PROJECT CALCULATIONS

Guadalupe Drainage Improvement Project
10-Year Design

FLOOD CONTROL DISTRICT of MARICOPA COUNTY 1959

Flood Control District of Maricopa County
Contract No. FCD 2001C015
PCN 035-02-31

Registered Professional Engineer (Civil) CERTIFICATE No. 26882 DANIEL E. STOUGH Date Signed 11-28-01 ARIZONA U.S.A.

December 2001

Sverdrup

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QUANTITIES

Quantities for CADD Summary Sheets
(Sheet-by-Sheet Quantity Tabulation)

ABC & DG For Roads
Curb & Gutter Removal/Replacement
Riprap D50=12" Outlet Protection
Angular Riprap For Channel Lining & Median Catch Basins D50=4"
Dike Volumes
Overexcavation Quantities, S. Basin
Pipe Length for Vertical Water Pipe Realignment

CONSTRUCTION TIME CALCULATIONS

(Project Construction Schedule Spreadsheet)
Construction Time (Hand Tabulations)

STORM DRAIN GEOMETRY

Storm Drains 1, 1-1, 2, 2-1, 2-2, 2-3, 2-4, 2-5, 3, 4, 5, 6, 7, 8, 9, 10, Pipe 001
V-Ditches: South, Central, Central 2, Central 3, North, Calle Pitaya
(Arranged in order of appearance on Construction Plans)

Registered Professional Engineer (Civil)
CERTIFICATE NO.
26882
DANIEL E.
STOUGH
Date Signed 11-28-01
ARIZONA U.S.A.

Sverdrup

A Jacobs Company

FAX COVER SHEET

875 W. Elliot Road
Suite 201
Tempe, AZ 85284

Phone : (480) 763-8600
FAX Number : (480) 763-8601

FAX TO	COMPANY	FAX TELEPHONE NO.
Don Rerick	FCDMC	602-506-8561

FROM: Brad Olbert

No. of Pages: 5
(including cover sheet)

Don, attached is a copy of the irrigation pressure drop calculations for the Guadalupe Drainage Improvement Project.

Job No. or BD No. W7X70300

Date: 12/11/2001

Time: 4:50 p.m.

FAX Operator: BDO

1 OF 4

McCloskey • Peltz, Inc.

LANDSCAPE ARCHITECTS

One West Elliot Road, Suite 110
Tempe, Arizona 85284-1310
(480)838-7774 or 838-4777

FRICTION LOSS CALCULATIONS

PROJECT FCDMC/GUADALUPE

SITE/POC NORTH BASIN

PRESSURE AT SITE SOURCE VERIFIED WITH CITY PSI 63.0 TO 72.6

CITY OF TEMPE WATER MANAGEMENT	350.2669	8/10/2001
CONTACT	PHONE	DATE

FRICTION LOSS THROUGH: (TO FARTHEST HEAD)*

WATER METER (3")	PSI	2.50
REDUCED PRESSURE VACUUM BREAKER (3")	PSI	10.50
MAIN LINE PIPE (3") 890' MAXIMUM .36/100' =	PSI	3.20
VALVE MASTER 3" (57.2 GPM)	PSI	2.50
CONTROL 2" (57.2 GPM)	PSI	1.31
LATERAL LINE PIPE 200' MAX. @ .66/100 =	PSI	1.32
* TOTAL FRICTION LOSS	PSI	21.33
* REQUIRED PRESSURE AT HEAD	PSI	40.00

(TOTAL FRICTION LOSS)+(REQUIRED P.S.I. AT HEAD)

* PRESSURE REQUIRED AT SOURCE	PSI	61.33

(1) NOTES: WORSE CASE SCENARIOS ARE USED FOR ABOVE CALCULATIONS

(2) NOTE: SOME PRESSURE MAY BE GAINED DUE TO ELEVATION CHANGE INTO BASIN.

FRICTION LOSS CHART SHALL BE COPIED, COMPLETED AND SUBMITTED FOR APPROVAL BY THE CONTRACTOR PRIOR TO ORDERING ANY IRRIGATION MATERIALS OR STARTING ANY ANY IRRIGATION INSTALLATIONS

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McCloskey • Peltz, Inc.

LANDSCAPE ARCHITECTS

One West Elliot Road, Suite 110
Tempe, Arizona 85284-1310
(480)838-7774 or 838-4777

FRICTION LOSS CALCULATIONS

PROJECT ~~FLONG / GUADALUPE~~

SITE/POC ~~NORTHEAST BASIN~~

PRESSURE AT SITE SOURCE VERIFIED WITH CITY PSI 62.0 TO 72.6

CITY OF TEMPE ~~WATER MANAGEMENT~~ 350-2669 8/10/2001
CONTACT PHONE DATE

FRICTION LOSS THROUGH: (TO FARTHEST HEAD)*

WATER METER	PSI	0.5
REDUCED PRESSURE VACUUM BREAKER	PSI	11.0
MAIN LINE PIPE (1") 515' MAX @ 5.15 x 1.59/100'	PSI	8.19
VALVE MASTER 1" (8.0 GPM)	PSI	2.0
CONTROL 1" (8.0 GPM)	PSI	2.0
LATERAL LINE PIPE 3/4" @ 200 (580) 5.8 x .79/100	PSI	4.58
* TOTAL FRICTION LOSS	PSI	28.27
* REQUIRED PRESSURE AT ~~HEAD~~ ~~EMITTER~~	PSI	20

(TOTAL FRICTION LOSS)+(REQUIRED P.S.I. AT HEAD)

* PRESSURE REQUIRED AT SOURCE	PSI	48.27

NOTE: (1) ON 1 OF 4

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3 of 4

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LANDSCAPE ARCHITECTS

One West Elliot Road, Suite 110
Tempe, Arizona 85284-1310
(480)838-7774 or 838-4777

FRICTION LOSS CALCULATIONS

PROJECT FCDMC/GUADALUPE

SITE/POC CENTRAL BASIN

PRESSURE AT SITE SOURCE VERIFIED WITH CITY PSI 63.0 TO 72.6

CITY OF TEMPE WATER MANAGEMENT	350-2669	8/10/2001
CONTACT	PHONE	DATE

FRICTION LOSS THROUGH: (TO FARTHEST HEAD)*

WATER METER (3")	PSI	2.50
REDUCED PRESSURE VACUUM BREAKER(3")	PSI	10.50
MAIN LINE PIPE (3") 685' MAX. @ .20/100'	PSI	1.37
VALVE MASTER 3" 44.0 GPM	PSI	2.80
CONTROL 2" 44.0 GPM	PSI	.98
LATERAL LINE PIPE 236' MAX @ 1.14/100	PSI	2.69
* TOTAL FRICTION LOSS	PSI	20.84
* REQUIRED PRESSURE AT HEAD	PSI	40.00

(TOTAL FRICTION LOSS)+(REQUIRED P.S.I. AT HEAD)

* PRESSURE REQUIRED AT SOURCE	PSI	60.84

NOTE: ① 1 of 4
② 1 of 4

FRICTION LOSS CHART SHALL BE COPIED, COMPLETED AND SUBMITTED FOR APPROVAL BY THE CONTRACTOR PRIOR TO ORDERING ANY IRRIGATION MATERIALS OR STARTING ANY ANY IRRIGATION INSTALLATIONS

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LANDSCAPE ARCHITECTS

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Tempe, Arizona 85284-1310
(480)838-7774 or 838-4777

FRICTION LOSS CALCULATIONS

PROJECT FCMC / GUADALUPE

SITE/POC SOUTH BASIN

PRESSURE AT SITE SOURCE VERIFIED WITH CITY PSI 63.0 TO 72.6

CONTACT	PHONE	DATE
CITY OF TEMPE WATER MANAGEMENT	350-2669	8/10/2001

FRICTION LOSS THROUGH: (TO FARTHEST HEAD)*

WATER METER (3")	PSI	2.50
REDUCED PRESSURE VACUUM BREAKER (3")	PSI	10.50
MAIN LINE PIPE (3") 830' MAX @ .30/100	PSI	2.49
VALVE MASTER 3" (52.8 GPM)	PSI	.98
CONTROL 2" (52.8 GPM)	PSI	1.00
LATERAL LINE PIPE 275' MAX @ 2.08/100	PSI	5.72
* TOTAL FRICTION LOSS	PSI	23.19
* REQUIRED PRESSURE AT HEAD	PSI	40.00

(TOTAL FRICTION LOSS)+(REQUIRED P.S.I. AT HEAD)

* PRESSURE REQUIRED AT SOURCE	PSI	63.19

NOTE: ① 1 of 4
② 1 of 4

FRICTION LOSS CHART SHALL BE COPIED, COMPLETED AND SUBMITTED FOR APPROVAL BY THE CONTRACTOR PRIOR TO ORDERING ANY IRRIGATION MATERIALS OR STARTING ANY ANY IRRIGATION INSTALLATIONS

By: DES
Ckd: BDO

QUANTITIES FOR CADD SUMMARY SHEETS
Guadalupe Drainage Improvement Project - 10-YR
100% Quantities (initially BASED ON 95% REVIEW CADD SHEETS AND COST ANALYSIS COMMENTS 11-09-01, DJR)

..cluding Landscape BID LIST (11/08/01)
Project Control No. 035-02-31

Item No.	Item Description	Unit	SHEET NUMBER							SHEET NUMBER							SHEET NUMBER				SHEET NUMBER										
			28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56
201-1	Tree Removal	EA																											1		
211-1	Earth Dike (ADOT C-03.10, Type A)	CY																				23		23							
211-2	South Basin Over-Excavated Area, Backfill	CY																													
215-1	Earthwork for Retention Basins	CY																													
215-2	Earthwork for V-Ditches & Dirt Ditches	LF																								334	100		440	500	500
215-3	South Basin Over-Excavation	CY																													
220-1	Plain Riprap D50 = 12"	CY					73			131															280	73		26	23		
310-1	4" ABC For O&M Access & Perim Rds, Access Ramps, & Pathways	SY																								454	314				
310-2	2" DG for O&M Access & Perim Rds, Access Ramps, & Pathways	SY																								454	314				
310-3	4" ABC for Storm Drain 2-5	SY																			475										
321-1	2" D1/2 A.C. Pavement, Storm Drain 2-5	SY																			475										
340-1	Cutoff Wall 3' Deep (Typ Section R10)	LF																													
340-2	Cutoff Wall 4' Deep (Det 19E)	LF					96			144															111	70		49	58		
340-5	Sidewalk (MAG Det 230) Allowance	SF																													
345-1	Adjust Sewer Manhole Frame & Cover (MAG Std Det 422)	EA																			1										
350-1	Remove Exist Catch Basins & Pipe, & Install Plug (Det 10D)	EA					1																								
350-2	Remove Abandoned Telephone Cable	LF																				400	270								
350-3	Remove Existing Headwalls	EA																				1									
350-4	Remove Existing Water Lines	LF				60			138				143	172	129	90				45	60										
350-5	Remove Existing A.C. Plugs from Curb Inlets	EA																													
350-6	Remove Existing Fencing	LF																											386	484	130
350-7	Remove Existing Barricade	EA																													
350-8	Remove Asphalt Pavement for SD 2-5	SY																			475										
350-9	Remove Existing Sanitary Sewer Pipe	LF																													
350-10	Remove Existing Sanitary Sewer Manholes	EA																													
350-11	Remove & Reinstall Exist Mail Boxes	EA											1	2		1					1										
350-14	Remove & Dispose of Tires	TONS																													
350-17	Remove & Dispose of Driveways & Culverts	L Sum																													
415-1	Barricade	LF																													
420-1	Chain Link Fence, 6-foot, Plain	LF																											384	484	229
420-2	Chain Link Fence, 3-foot, Plain	LF																													
432-1	Gravel Mulch	SY																													
505-1	Catch Basin (MAG Det 535 Type F) w/ Apron	EA								1												1		2	1						
505-2	Catch Basin (MAG Det 535 Type F-Double) w/ Apron	EA																								2		1			1
505-3	Catch Basin (P-1570) - Dbl w/ (2) 10' Slot Drains, Vert Curb	EA														1					2										
505-4	Catch Basin (P-1570) - Dbl w/ 10' Slot Drain, Roll Curb	EA		1	2						1	2	2	3	2			2	4	2											
505-5	Catch Basin (P-1570) - Dbl w/ 20' Slot Drain, Roll Curb	EA			1	1			4					1	2		1	1													
505-6	Catch Basin (P-1570) - Dbl w/ 20' Slot Drain, Valley Gutter	EA	1	1														1													
505-7	Catch Basin (MAG Det 538 Type H-Double) w/ Conc. Apron	EA																							1				2	2	
505-8	Median Catch Basin (Det 11), Sta 14+28, SD 3	EA																				1									
505-9	Median Catch Basin (Det 11A), Sta 19+50, SD 3	EA																					1								
505-10	Median Catch Basin (Det 21), Sta 15+21, SD 4	EA																									1				
505-11	Median Catch Basin (Det 23), Sta 30+36, SD 1	EA					1																								
505-12	Median Catch Basin (Det 23A), Sta 21+80, SD 3	EA																													

By: DES
Ckd: BDO

505-13	Median Catch Basin (Det 23E), Sta10+00, SD 9	EA																						1							
505-14	Cross Street Storm Drain Inlet	LF	30.0					31.5					34.5				31.5			31.5											
505-15	Bleedoff Structure (Det 06), SD 10	EA																													
505-16	Bleedoff Structure (Det 01), SD 8	EA																													
505-17	Headwall for 48" Pipe (ADOT B-11.12), SD 7	EA																													
505-18	Headwall for 30" Pipe (MAG Det 501-4), SD 9	EA																													
505-19	Headwall for 60" Pipe (ADOT B-11.12), SD 1	EA					1																								
505-20	Drop Inlet Headwall, 36" Pipe (MAG Det 501-5), SD 2-2	EA														1															
505-21	Headwall for 66" Pipe (ADOT B-11.12), SD 2	EA								1																					
505-22	Headwall for 24" Pipe (MAG Det 501-4), SD 6	EA																													
505-23	Headwall for 2-48" Pipes (ADOT B-11.14), SD 3	EA																							1						
505-24	Headwall for 18" Pipe (MAG Det 501-4), SD 10	EA																													
505-25	Headwall for 36" Pipe (MAG Det 501-4), SD 4; Pipe 001	EA																								1		1			
505-26	Headwall for 42" Pipe (MAG Det 501-4), SD 5	EA																											1		
505-27	Drop Manhole Concrete Vault (Det 09D), SD 3	EA																							1						
505-28	Drop Manhole Concrete Vault (Det 09B), SD 3	EA																				1									
505-29	Concrete Vault (Det 09B), SD 7	EA																													
505-30	Concrete Spillway (Det 04)	SY																													
505-31	Concrete Sediment Trap (Det 20), SD 2-2	SY																													
505-32	Concrete V-Ditch (Typ Sec T)	LF																													
515-1	Access Gate, Single	EA																								1					
520-1	Steel Handrail, 42"	LF					35			50						12									45	13		13	15		
520-2	Tubular Steel Ornamental Fencing	LF																													
520-3	Safety Post (MAG Det 140)	EA																													
520-4	Removable Safety Post (Detail 07D)	EA																													
602-1	Jack & Bore for 60-inch RGRCP	LF					81																								
610-1	6" DIP Water Line	LF				60			138				143	138	129	90				45	60										
610-2	8" DIP Water Line	LF												34																	
610-3	12" DIP Water Line	LF																													
615-1	8" VCP Sanitary Sewer	LF																													
615-2	12" VCP Sanitary Sewer	LF																													
615-3	18" VCP Sanitary Sewer	LF																													
618-1	18" RGRCP Class IV	LF	14	28	47	10			56	14	14	28	32	64	81	15	20	71	56	28	7			8	20	7					
618-2	24" RGRCP Class III	LF													31						230	42		8		17					
618-3	30" RGRCP Class III	LF	427	167				446	200				460	500	140		480	120													180
618-4	36" RGRCP Class III	LF		333	500	90			50						320	271		315		398		314	6	6		400	144	68	110	500	280
618-5	42" RGRCP Class III	LF																65	488	61		72	450		244				390		
618-6	48" RGRCP Class III	LF				410	37																								
618-7	54" RGRCP Class III	LF										395			51								50	500	246						
618-8	60" RGRCP Class III	LF					176				354	106																			
618-9	66" RGRCP Class III	LF								300	146																				
618-10	18" RGRCP Class IV at ADOT Wall	LF																													
618-11	30" DIP, Class 52	LF																													
618-12	Concrete Pipe Collar (ADOT Det C-13.80)	EA																				1									
618-13	Concrete Plug for 36" Pipe (MAG Det 427)	EA																									1	1			
618-14	Two 4" PVC Conduits	LF																													
625-1	Manhole Base (MAG Det 520) & Shaft (MAG Det 522)	EA				2							1	1	1	1					1								1	2	1
625-2	Manhole Base (MAG Det 521) & Shaft (MAG Det 522)	EA									1	1												1							
625-3	Manhole Base (Detail 09A) & Shaft (MAG Det 522)	EA	1	1	1			1	1					1	1		1	2	1	2						1					
625-4	Sewer Manhole (MAG Det 420)	EA																													
635-1	Drywell, Single Chamber	EA																													
635-2	Drywell, Double Chamber	EA																													

Quantities based on summary sheet dated (11-19-01), and Landscaping Quantities on LQ-1, 11-20-01

By: DES
Ckd: BDO

QUANTITIES FOR CADD SUMMARY SHEETS
Guadalupe Drainage Improvement Project - 10-YR
100% Quantities (initially BASED ON 95% REVIEW CADD SHEETS

..cluding Landscape BID LIST (11/08/01)
Project Control No. 035-02-31

			SHEET NUMBER										SHEET NUMBER				SHEET NUM		N BASIN			NE BASIN	CENTRAL BASIN		
Item No.	Item Description	Unit	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
201-1	Tree Removal	EA			3	2	1						2		2	1									
211-1	Earth Dike (ADOT C-03.10, Type A)	CY																							
211-2	South Basin Over-Excavated Area, Backfill	CY																							
215-1	Earthwork for Retention Basins	CY																		21170		13195		35066	
215-2	Earthwork for V-Ditches & Dirt Ditches	LF	148	224	500	450	266	160	300	488	549	198				275									190
215-3	South Basin Over-Excavation	CY																							
220-1	Plain Riprap D50 = 12"	CY		24									79				24								
310-1	4" ABC For O&M Access & Perim Rds, Access Ramps, & Pathways	SY														400				2,419		1,310		4,552	56
310-2	2" DG for O&M Access & Perim Rds, Access Ramps, & Pathways	SY														400				2,419		1,310		4,552	56
310-3	4" ABC for Storm Drain 2-5	SY																							
321-1	2" D1/2 A.C. Pavement, Storm Drain 2-5	SY																							
340-1	Cutoff Wall 3' Deep (Typ Section R10)	LF						10												444	304	526		182	170
340-2	Cutoff Wall 4' Deep (Det 19E)	LF		65									80				59								
340-5	Sidewalk (MAG Det 230) Allowance	SF																		60	30			56	54
345-1	Adjust Sewer Manhole Frame & Cover (MAG Std Det 422)	EA																							
350-1	Remove Exist Catch Basins & Pipe, & Install Plug (Det 10D)	EA						1																	
350-2	Remove Abandoned Telephone Cable	LF																							
350-3	Remove Existing Headwalls	EA																							10
350-4	Remove Existing Water Lines	LF											30												
350-5	Remove Existing A.C. Plugs from Curb Inlets	EA											5												
350-6	Remove Existing Fencing	LF		202	190						247	105				30				714	610	1220		382	636
350-7	Remove Existing Barricade	EA							1																
350-8	Remove Asphalt Pavement for SD 2-5	SY																							
350-9	Remove Existing Sanitary Sewer Pipe	LF																							
350-10	Remove Existing Sanitary Sewer Manholes	EA																							
350-11	Remove & Reinstall Exist Mail Boxes	EA																							
350-14	Remove & Dispose of Tires	TONS	4																						
350-17	Remove & Dispose of Driveways & Culverts	L Sum																							1
415-1	Barricade	LF							25																
420-1	Chain Link Fence, 6-foot, Plain	LF	208	190	190						247	105				231				490				275	283
420-2	Chain Link Fence, 3-foot, Plain	LF																		439	464				
432-1	Gravel Mulch	SY																				2750			
505-1	Catch Basin (MAG Det 535 Type F) w/ Apron	EA				1						1													
505-2	Catch Basin (MAG Det 535 Type F-Double) w/ Apron	EA		1	1																				
505-3	Catch Basin (P-1570) - Dbl w/ (2) 10' Slot Drains, Vert Curb	EA																							
505-4	Catch Basin (P-1570) - Dbl w/ 10' Slot Drain, Roll Curb	EA																							
505-5	Catch Basin (P-1570) - Dbl w/ 20' Slot Drain, Roll Curb	EA																							
505-6	Catch Basin (P-1570) - Dbl w/ 20' Slot Drain, Valley Gutter	EA																							
505-7	Catch Basin (MAG Det 538 Type H-Double) w/ Conc. Apron	EA		1																					
505-8	Median Catch Basin (Det 11), Sta 14+28, SD 3	EA																							
505-9	Median Catch Basin (Det 11A), Sta 19+50, SD 3	EA																							
505-10	Median Catch Basin (Det 21), Sta 15+21, SD 4	EA																							
505-11	Median Catch Basin (Det 23), Sta 30+36, SD 1	EA																							
505-12	Median Catch Basin (Det 23A), Sta 21+80, SD 3	EA														1									

By: DES
Ckd: BDO

505-13	Median Catch Basin (Det 23E), Sta10+00, SD 9	EA																								
505-14	Cross Street Storm Drain Inlet	LF																								
505-15	Bleedoff Structure (Det 06), SD 10	EA															1									
505-16	Bleedoff Structure (Det 01), SD 8	EA													1											
505-17	Headwall for 48" Pipe (ADOT B-11.12), SD 7	EA											1													
505-18	Headwall for 30" Pipe (MAG Det 501-4), SD 9	EA														1										
505-19	Headwall for 60" Pipe (ADOT B-11.12), SD 1	EA																								
505-20	Drop Inlet Headwall, 36" Pipe (MAG Det 501-5), SD 2-2	EA																								
505-21	Headwall for 66" Pipe (ADOT B-11.12), SD 2	EA																								
505-22	Headwall for 24" Pipe (MAG Det 501-4), SD 6	EA		1																						
505-23	Headwall for 2-48" Pipes (ADOT B-11.14), SD 3	EA																								
505-24	Headwall for 18" Pipe (MAG Det 501-4), SD 10	EA															1									
505-25	Headwall for 36" Pipe (MAG Det 501-4), SD 4; Pipe 001	EA																								
505-26	Headwall for 42" Pipe (MAG Det 501-4), SD 5	EA																								
505-27	Drop Manhole Concrete Vault (Det 09D), SD 3	EA																								
505-28	Drop Manhole Concrete Vault (Det 09B), SD 3	EA																								
505-29	Concrete Vault (Det 09B), SD 7	EA											1													
505-30	Concrete Spillway (Det 04)	SY														33										
505-31	Concrete Sediment Trap (Det 20), SD 2-2	SY					120																			
505-32	Concrete V-Ditch (Typ Sec T)	LF					180	200																		
515-1	Access Gate, Single	EA																						1		
520-1	Steel Handrail, 42"	LF		8			233	200					38				10									
520-2	Tubular Steel Ornamental Fencing	LF																				1205				
520-3	Safety Post (MAG Det 140)	EA					12				4					5					2					
520-4	Removable Safety Post (Detail 07D)	EA					1									2										
602-1	Jack & Bore for 60-inch RGRCP	LF																								
610-1	6" DIP Water Line	LF																								
610-2	8" DIP Water Line	LF																								
610-3	12" DIP Water Line	LF											30													
615-1	8" VCP Sanitary Sewer	LF																								
615-2	12" VCP Sanitary Sewer	LF																								
615-3	18" VCP Sanitary Sewer	LF																								
618-1	18" RGRCP Class IV	LF										42		480	424			136								
618-2	24" RGRCP Class III	LF		300	500	199																				
618-3	30" RGRCP Class III	LF															146									
618-4	36" RGRCP Class III	LF																								
618-5	42" RGRCP Class III	LF																								
618-6	48" RGRCP Class III	LF											235													
618-7	54" RGRCP Class III	LF																								
618-8	60" RGRCP Class III	LF																								
618-9	66" RGRCP Class III	LF																								
618-10	18" RGRCP Class IV at ADOT Wall	LF												20												
618-11	30" DIP, Class 52	LF															82									
618-12	Concrete Pipe Collar (ADOT Det C-13.80)	EA																								
618-13	Concrete Plug for 36" Pipe (MAG Det 427)	EA																								
618-14	Two 4" PVC Conduits	LF											79													
625-1	Manhole Base (MAG Det 520) & Shaft (MAG Det 522)	EA		1	1	1								2	1											
625-2	Manhole Base (MAG Det 521) & Shaft (MAG Det 522)	EA																								
625-3	Manhole Base (Detail 09A) & Shaft (MAG Det 522)	EA															1									
625-4	Sewer Manhole (MAG Det 420)	EA																								
635-1	Drywell, Single Chamber	EA																		1		7		1		
635-2	Drywell, Double Chamber	EA																			1	1			1	

Quantities based on summary sheet dated (11-19-01), and Landscaping Quantities on LQ-1, 11-2

QUANTITIES FOR CADD SUMMARY SHEETS
Guadalupe Drainage Improvement Project - 10-YR
100% Quantities (initially BASED ON 95% REVIEW CADD SHEETS

Including Landscape BID LIST (11/08/01)
Project Control No. 035-02-31

Item No.	Item Description	Unit	SOUTH BASIN 80	81	82	114	116	117	118	TOTAL
201-1	Tree Removal	EA			1					13
211-1	Earth Dike (ADOT C-03.10, Type A)	CY								46
211-2	South Basin Over-Excavated Area, Backfill	CY			2522					2,522
215-1	Earthwork for Retention Basins	CY		26091						95,522
215-2	Earthwork for V-Ditches & Dirt Ditches	LF		261	210					6,093
215-3	South Basin Over-Excavation	CY			1600					1,600
220-1	Plain Riprap D50 = 12"	CY								733
310-1	4" ABC For O&M Access & Perim Rds, Access Ramps, & Pathways	SY		3,202						12,707
310-2	2" DG for O&M Access & Perim Rds, Access Ramps, & Pathways	SY		3,202						12,707
310-3	4" ABC for Storm Drain 2-5	SY								475
321-1	2" D1/2 A.C. Pavement, Storm Drain 2-5	SY								475
340-1	Cutoff Wall 3' Deep (Typ Section R10)	LF		207	135					1,978
340-2	Cutoff Wall 4' Deep (Det 19E)	LF								732
340-5	Sidewalk (MAG Det 230) Allowance	SF		137						337
345-1	Adjust Sewer Manhole Frame & Cover (MAG Std Det 422)	EA								1
350-1	Remove Exist Catch Basins & Pipe, & Install Plug (Det 10D)	EA								2
350-2	Remove Abandoned Telephone Cable	LF								670
350-3	Remove Existing Headwalls	EA								11
350-4	Remove Existing Water Lines	LF				232				1,099
350-5	Remove Existing A.C. Plugs from Curb Inlets	EA								5
350-6	Remove Existing Fencing	LF		697	280					6,313
350-7	Remove Existing Barricade	EA								1
350-8	Remove Asphalt Pavement for SD 2-5	SY								475
350-9	Remove Existing Sanitary Sewer Pipe	LF					10	20	100	130
350-10	Remove Existing Sanitary Sewer Manholes	EA					1	2		3
350-11	Remove & Reinstall Exist Mail Boxes	EA								5
350-14	Remove & Dispose of Tires	TONS								4
350-17	Remove & Dispose of Driveways & Culverts	L Sum								1
415-1	Barricade	LF								25
420-1	Chain Link Fence, 6-foot, Plain	LF		380	520					4,216
420-2	Chain Link Fence, 3-foot, Plain	LF								903
432-1	Gravel Mulch	SY								2,750
505-1	Catch Basin (MAG Det 535 Type F) w/ Apron	EA								7
505-2	Catch Basin (MAG Det 535 Type F-Double) w/ Apron	EA								6
505-3	Catch Basin (P-1570) - Dbl w/ (2) 10' Slot Drains, Vert Curb	EA								3
505-4	Catch Basin (P-1570) - Dbl w/ 10' Slot Drain, Roll Curb	EA								21
505-5	Catch Basin (P-1570) - Dbl w/ 20' Slot Drain, Roll Curb	EA								11
505-6	Catch Basin (P-1570) - Dbl w/ 20' Slot Drain, Valley Gutter	EA								3
505-7	Catch Basin (MAG Det 538 Type H-Double) w/ Conc. Apron	EA								6
505-8	Median Catch Basin (Det 11), Sta 14+28, SD 3	EA								1
505-9	Median Catch Basin (Det 11A), Sta 19+50, SD 3	EA								1
505-10	Median Catch Basin (Det 21), Sta 15+21, SD 4	EA								1
505-11	Median Catch Basin (Det 23), Sta 30+36, SD 1	EA								1
505-12	Median Catch Basin (Det 23A), Sta 21+80, SD 3	EA								1

505-13	Median Catch Basin (Det 23E), Sta10+00, SD 9	EA								1
505-14	Cross Street Storm Drain Inlet	LF								159
505-15	Bleedoff Structure (Det 06), SD 10	EA								1
505-16	Bleedoff Structure (Det 01), SD 8	EA								1
505-17	Headwall for 48" Pipe (ADOT B-11.12), SD 7	EA								1
505-18	Headwall for 30" Pipe (MAG Det 501-4), SD 9	EA								1
505-19	Headwall for 60" Pipe (ADOT B-11.12), SD 1	EA								1
505-20	Drop Inlet Headwall, 36" Pipe (MAG Det 501-5), SD 2-2	EA								1
505-21	Headwall for 66" Pipe (ADOT B-11.12), SD 2	EA								1
505-22	Headwall for 24" Pipe (MAG Det 501-4), SD 6	EA								1
505-23	Headwall for 2-48" Pipes (ADOT B-11.14), SD 3	EA								1
505-24	Headwall for 18" Pipe (MAG Det 501-4), SD 10	EA								1
505-25	Headwall for 36" Pipe (MAG Det 501-4), SD 4; Pipe 001	EA								2
505-26	Headwall for 42" Pipe (MAG Det 501-4), SD 5	EA								1
505-27	Drop Manhole Concrete Vault (Det 09D), SD 3	EA								1
505-28	Drop Manhole Concrete Vault (Det 09B), SD 3	EA								1
505-29	Concrete Vault (Det 09B), SD 7	EA								1
505-30	Concrete Spillway (Det 04)	SY								33
505-31	Concrete Sediment Trap (Det 20), SD 2-2	SY								120
505-32	Concrete V-Ditch (Typ Sec T)	LF								380
515-1	Access Gate, Single	EA								2
520-1	Steel Handrail, 42"	LF								672
520-2	Tubular Steel Ornamental Fencing	LF								1,205
520-3	Safety Post (MAG Det 140)	EA								23
520-4	Removable Safety Post (Detail 07D)	EA								3
602-1	Jack & Bore for 60-inch RGRCP	LF								81
610-1	6" DIP Water Line	LF				245				1,048
610-2	8" DIP Water Line	LF								34
610-3	12" DIP Water Line	LF								30
615-1	8" VCP Sanitary Sewer	LF					12	181	104	297
615-2	12" VCP Sanitary Sewer	LF					478	319		797
615-3	18" VCP Sanitary Sewer	LF						12		12
618-1	18" RGRCP Class IV	LF								1,652
618-2	24" RGRCP Class III	LF								1,327
618-3	30" RGRCP Class III	LF								3,266
618-4	36" RGRCP Class III	LF								4,105
618-5	42" RGRCP Class III	LF								1,770
618-6	48" RGRCP Class III	LF								682
618-7	54" RGRCP Class III	LF								1,242
618-8	60" RGRCP Class III	LF								636
618-9	66" RGRCP Class III	LF								446
618-10	18" RGRCP Class IV at ADOT Wall	LF								20
618-11	30" DIP, Class 52	LF								82
618-12	Concrete Pipe Collar (ADOT Det C-13.80)	EA								1
618-13	Concrete Plug for 36" Pipe (MAG Det 427)	EA								2
618-14	Two 4" PVC Conduits	LF								79
625-1	Manhole Base (MAG Det 520) & Shaft (MAG Det 522)	EA								17
625-2	Manhole Base (MAG Det 521) & Shaft (MAG Det 522)	EA								3
625-3	Manhole Base (Detail 09A) & Shaft (MAG Det 522)	EA								15
625-4	Sewer Manhole (MAG Det 420)	EA					2	2	2	6
635-1	Drywell, Single Chamber	EA		2						11
635-2	Drywell, Double Chamber	EA		1						4

Quantities based on summary sheet dated (11-19-01), and Landscaping Quantities on LQ-1, 11-2

SVERDRUP

JOB GUADALUPE DIP

SHEET NO. 1 OF

DATE 10-12-01

COMPUTATIONS FOR QTYS 100%
ABC & DG FOR ROADS

BY DES CHKD BDD

ABC FOR NORTH BASIN — 2419 SY

(AB ON CERRITOS ENTRY COUNTED W SD9)

PERIMETER RD & ACCESS RAMPS

10+00 TO 26+00	1600 LF × 12/9 =	2133
W. CONNECTOR,	50 LF × 12/9 =	67
E: ACCESS,	(186 + 60) LF × 8/9 =	219
		2419

NE BASIN

PERIMETER RD	860 LF × 12/9 =	1147 SY
10' ACCESS RAMP	147 LF × 10/9 =	163 SY
		1310 SY

CENTRAL BASIN

PERIMETER RD & W. ACCESS RAMP	2614 LF × 12/9 =	3485 SY
E. ACCESS RAMP,	500 LF × 12/9 =	666 SY
S. ACCESS RAMP,	55 LF × 8/9 =	49 SY
5' PATHS NORTH	313 LF × 5/9 =	174 SY
SOUTH	395 LF × 5/9 =	219 SY
		4552

SOUTH BASIN

PERIMETER RD		
STA 2+12 TO 17+31	1519 LF × 12/9	2025 SY
ACCESS RAMP		
STA 0+00 TO 8+83	883 × 12/9	1177 SY
		3202 SY

(NW ENTRY / 02 M ROAD COUNTED W/ SD4)

SVERDRUP

JOB GUADALUPE

COMPUTATIONS FOR QUANTITIES 100%

SHEET NO. 1 OF

DATE 10-17-01

BY DES CHKD BDD

CURB & GUTTER REMOVAL

FOR TYPE "A" CURB (VERT) 8' + 2 * (10' + 2') = 32 LF/EACH

FOR TYPE "C" CURB (ROLL) 8' + (10' + 2' + 2') = 22 LF/EACH
W/ 10' SLOTTED DRAIN

W/ 20' SLOTTED DRAIN 8' + (20' + 2' + 2') = 32 LF/EACH

FOR VALLEY GUTTER
W/ 20 LF SLOTTED DRAIN 8' + (20' + 2' + 2') = 32 LF/EACH

ALLOWANCE FOR REMOVALS, CURB

TYPE "A" CURB 2 X 32 LF → 64 LF

TYPE "C" CURB, 10' SLT DRN 25 X 22 LF → 550 LF

TYPE "C" CURB, 20' SLT DRN 9 X 32 LF → 228 LF

VALLEY GUTTER W/ 20' SLT DRN 3 X 32 LF → 96 LF

938 LF (NPI)

CURB REPLACEMENT FOR
HOUSE CONNECTION SEWER

ASSUME 6' PER HCS X 32 EACH 192 LF

FOR WATER SERVICE CONNECTIONS

ASSUME 6' PER WS CONNECTION X ~28 EA = 168 LF

FOR MISC CURB REPLACEMENT AT ADY & HIGHLINE 6

366 LF

USE 400 LF

GUADALUPE DRAINAGE IMP. PROJ 10-YR

PROJECT: RIPRAP CALCS, QUANTITIES

SUBJECT: 12" D_{50} FOR OUTLET PROTECTION

JOB NO.	NO.
W7X70300	
DESIGNED BY: DES	CHECK BY: BDe
DATE: 10-05-01	OF

OUTLET PROTECTION

STM DRN 1

$AREA_{APRON} = 952$ SQ FT — MEASURED IN CADD INSIDE OF CUTOFF WALL

$\forall_{12''RIPRAP} = A * d$ — where $d = 2'$ (TYP)

$= 952 * 2 / 27 = \underline{70.5 \text{ CU YD}}$ see table below

SIMILARLY

OUTLET FOR STM DRN #	AREA (SQ FT)	d (FT)	VOLUME (CU YD)
2	2013	2	149
3	1317	2	98
4	809	2	60
5	344	2	26
6	357	2	27
7	730	2	54
9	340	2	25
PIPE 001	344	2	25
1	952	2	71
			535

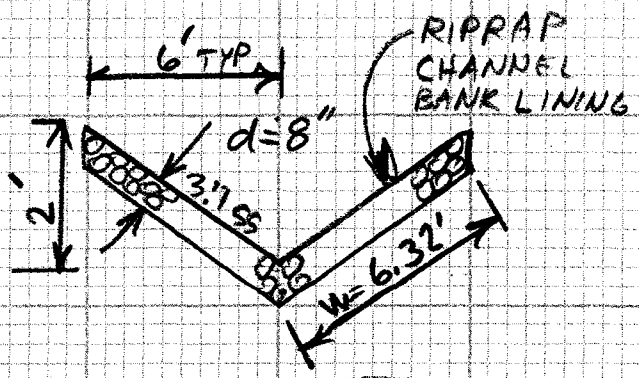
PROJECT: GUADALUPE DRAIN. IMP. PROJ 10-YR		JOB NO. W7X70300	NO.
SUBJECT: RIPRAP VOLUMES		DESIGNED BY D. STOUGH	CHECK BY: SDO
ANGULAR RIPRAP FOR CHANNEL LINING AND MEDIAN CATCH BASINS D50=4"		DATE 10-05-01	OF

CHANNEL - CERRITOS
ANGULAR RIPRAP

L = 262 LF

W = 2 * (6.32')

d = 0.66'



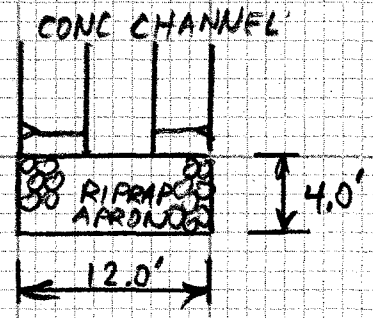
$W = \sqrt{2^2 + 6^2} = 6.32'$

$\forall = 262 * 2 * 6.32' * 0.66' / 27$

$\forall = 80.95$ USE 81 CY ☆

☆ INCLUDED W/ LANDSCAPE QUANTITIES

INLET APRON FOR CERRITOS V-DITCH
ANGULAR RIPRAP



L = 4.00'

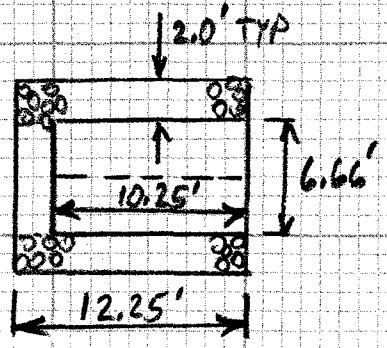
W = 12.00'

d = 0.66'

$\forall = 4 * 12 * 0.66 / 27$

$= 1.17$ USE 1.2 CY

DOUBLE MEDIAN CATCH BASIN (TYP), PLAIN RIPRAP



L = 2 * (12.25) + 6.66' = 31.16'

W = 2.00'

D = 1.00'

$\forall = 31.16' * 2.00' * 1.00' / 27$

$= 2.31$ CY USE 2.3 CY INCLUDED W/ CATCH BASIN COST

GUADALUPE DRAIN. IMP. PROJ. 10-YR

PROJECT	JOB NO.	NO.
RIPRAP QUANTITIES	W7X70300	
SUBJECT: 4" D_{50} RIPRAP FOR MEDIAN CATCH BASINS CONTINUED	DESIGNED BY: D STOUGH	CHECK BY:
	DATE: 10-05-01	OF

SINGLE MEDIAN CATCH BASIN

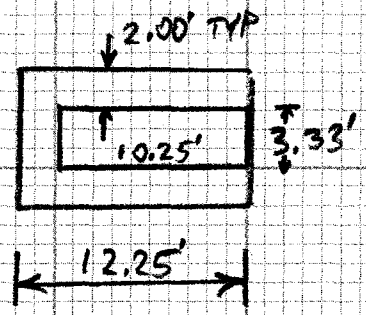
$L = 2 * 12.25' + 3.33' = 27.83'$

$W = 2.0'$

$d = 1.0'$

$\forall = 27.83 * 2.00' * 1.00' / 27$

$= 2.06$ CY USE $\boxed{2 \text{ CY}}$



SUMMARY OF MEDIAN CATCH BASIN RIPRAP QUANTITIES

STM DRN #	CATCH BASIN STA	TYPE OF C.B.	RIPRAP VOLUME (CY)	DETAIL IN 90% PLANS	NOTES
3	14+28	DBL	2.3	11	INCL. W/ CATCH BASIN
3	19+50	DBL	2.3	11	INCL. W/ CATCH BASIN
3	21+80	SINGLE	2.1	23	INCL. W/ CATCH BASIN
9	10+00	SINGLE		23	RIPRAP INCLUDED AS PART OF CERRITOS DITCH

CATCH BASIN FOR SD4

$L = 2 * 14.25 + 3.33' = 31.8'$

$W = 4.0'$

$d = 1.0'$

$\forall = 31.8' * 4.00' * 1.00' / 27 = 4.7$ USE 5 CY

COUNT SEPARATELY

SVERDRUP

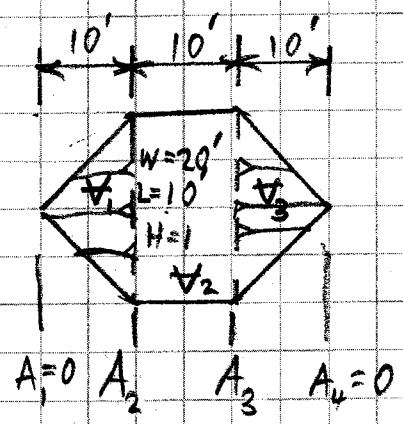
JOB GUADALUPE DRAINAGE IMPROVEMENT SHEET NO. 1 OF 1

DATE 11-12-01

COMPUTATIONS FOR EARTH DIKE QTYS BY DES CHKD BDO

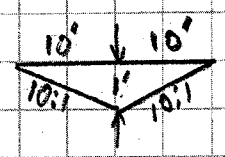
DIKE VOLUMES

USE AVERAGE END AREA METHOD



$A_1 = A_4 = \emptyset$ (ENDS)

$A_2 = 2 * \frac{1' * 10'}{2} = 10 SF$



$A_3 = 2 * \frac{1' * 10'}{2} = 10 SF$

AVG END AREA METHOD

$\forall_1 = \left(\frac{\emptyset + 10}{2}\right) * 10' = 50$ CU FT

$\forall_2 = \left(\frac{10' + 10'}{2}\right) * 10' = 100$ CU FT

$\forall_3 = \left(\frac{10' + \emptyset'}{2}\right) * 10' = 50$ CU FT

$\forall_{TOTAL} = 50 CF + 100 CF + 50 CF = 200 CF = 7.4 CUYD \times 3 =$

$= 22.2$ CU YD USE <u>23 CU YD</u>

PROJECT: GUADALUPE DRAIN. IMP. PROJ	JOB NO.: W7X70320
SUBJECT: OVEREXCAVATION QUANTITIES, S BASIN	NO.
	DESIGNED BY: D. STOUGH
	CHECK BY: SDO
	DATE: 10-5-01
	OF

4

OVEREXCAVATION OF TOXAPHENE PRISM
ELEV 1216 TO 1220

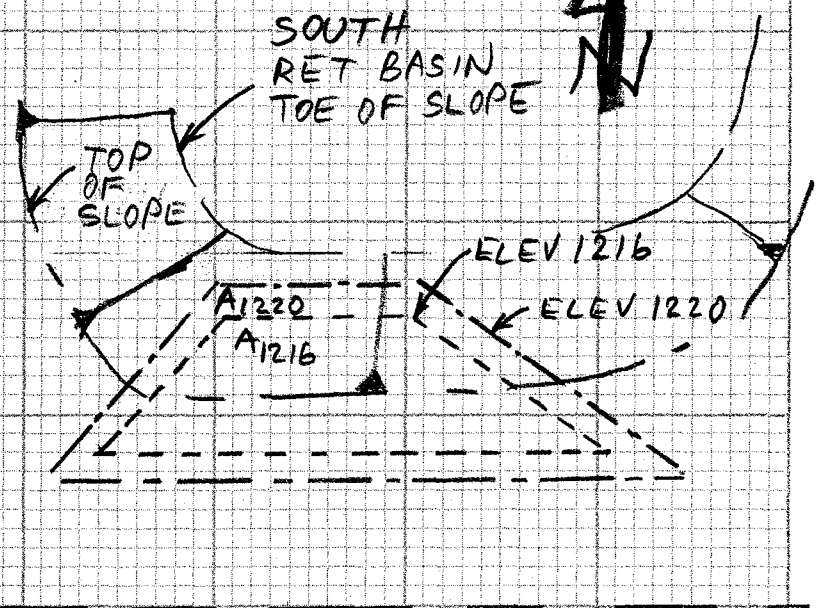
A_{1216} = 5007 SQ FT

A_{1220} = 7441 SQ FT

A_{AVG} = (5007 + 7441)/2 =
= 6224 SQ FT

$\forall_{TOX}$ = 6224 * 4'/27

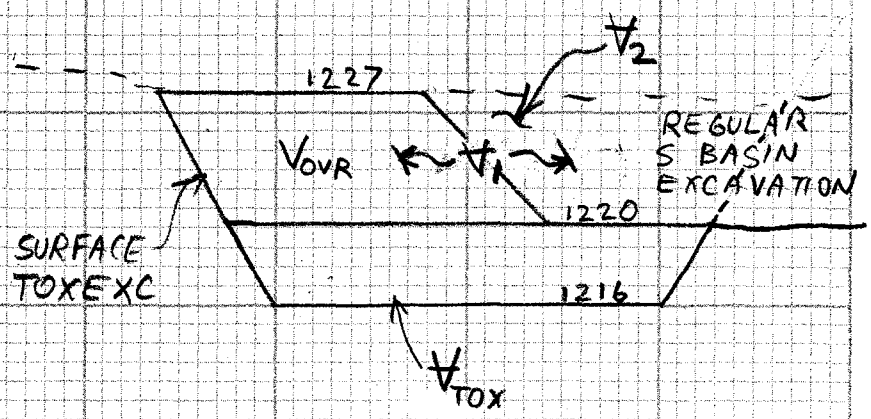
$\forall_{TOX}$ = **922 CU YD**



$\forall_{OVR} = \forall_1 - V_2$ SEE INROADS TRIANGLE VOLUME REPORT

= 2615 - 1015

V_{OVR} = **1600 CY**



SVERDRUP

JOB GUADALUPE TX 70300

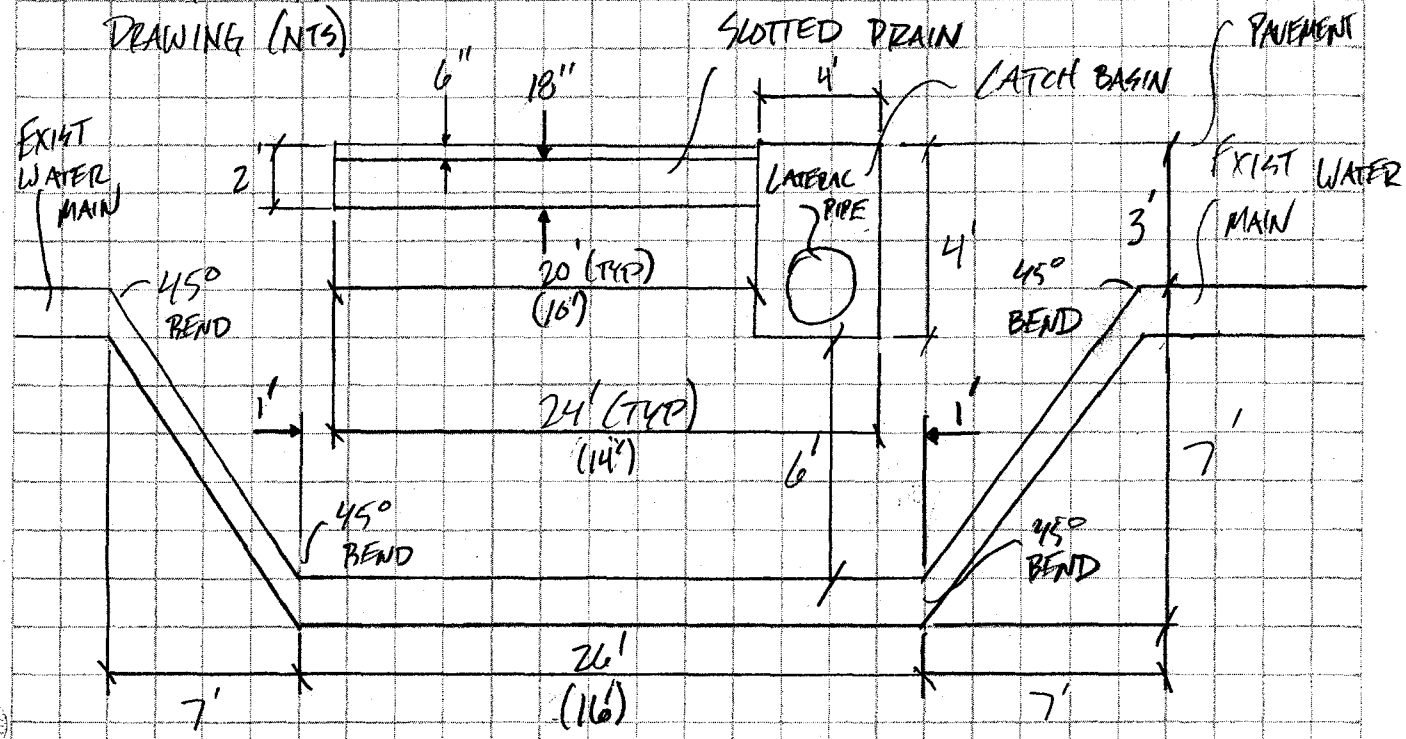
SHEET NO. 1 OF 2

DATE 6/26/01

COMPUTATIONS FOR PIPE LENGTH FOR VERTICAL WATER PIPE REALIGNMENT

BY KMP CHKD BLO

EXAMPLE PROFILE DRAWING (NTS)



PIPE LENGTH TOTAL = 7' + 26' + 7' ⇒ 40'

IF SLOTTED DRAIN LENGTH = 10' THEN

PIPE LENGTH TOTAL = 7 + 16 + 7 ⇒ 30''

LOCATED ON ATTACHED PLAN SHEETS ARE THE LOCATIONS OF THE VERTICAL REALIGNMENTS.

-NOTE- THE 20' SLOTTED DRAINS ARE HIGHLIGHTED ~~GREEN~~.

THE 10' SLOTTED DRAINS ARE HIGHLIGHTED LIGHT BLUE.

SVERDRUP

JOB GUADALUPE 7X70300

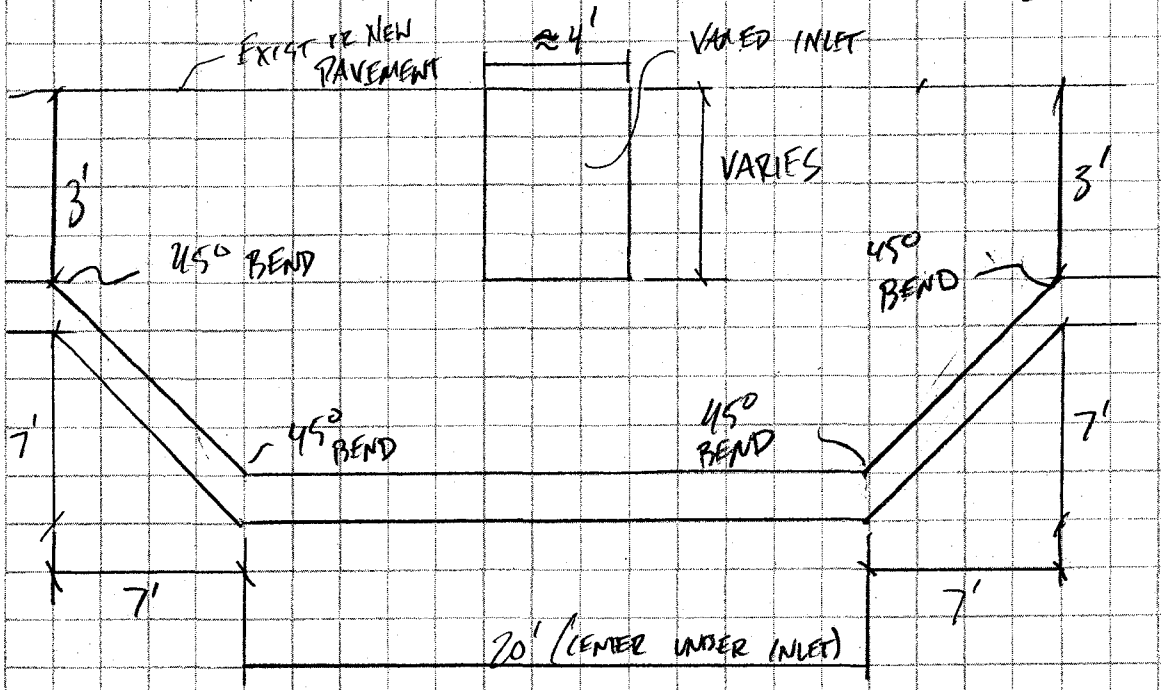
SHEET NO. 2 OF 2

DATE JUNE 28, 2001

COMPUTATIONS FOR PIPE LENGTH FOR VERTICAL REALIGNMENT

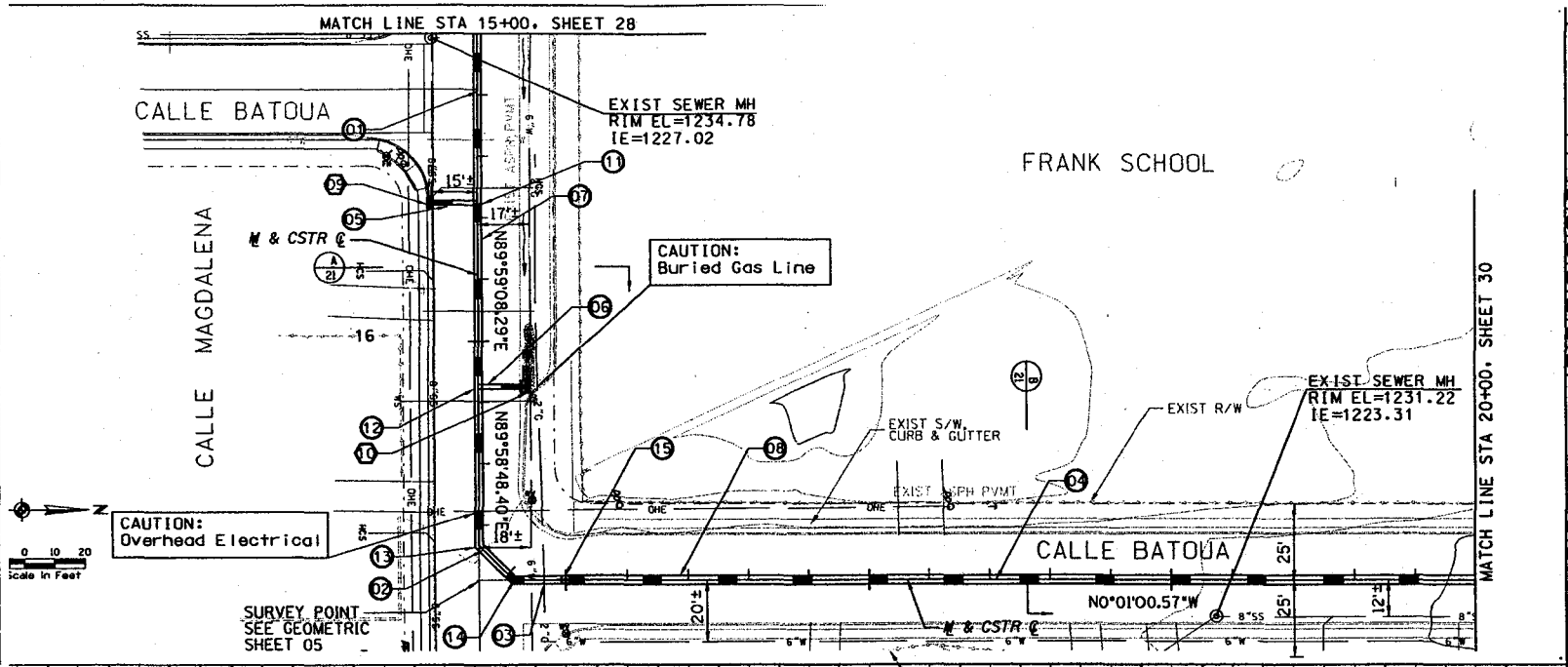
BY KMP CHKD BDO

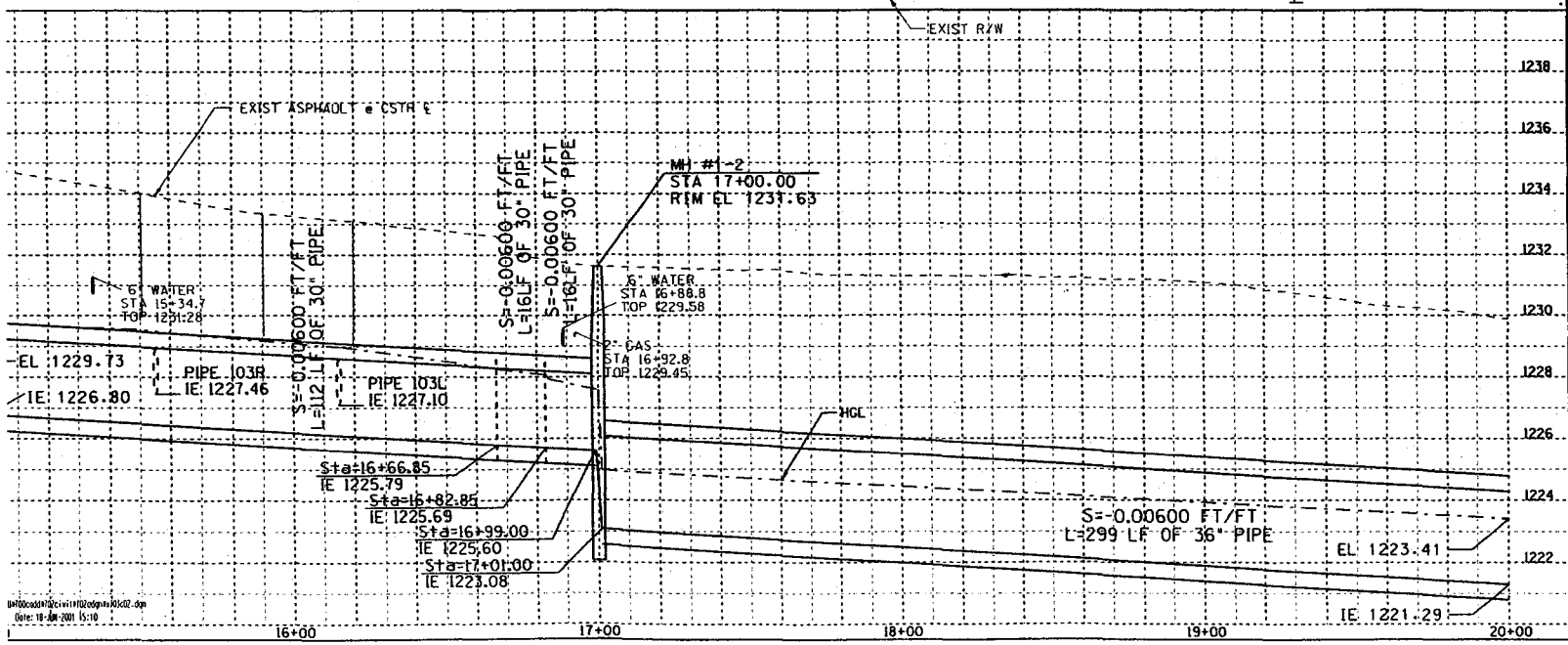
EXAMPLE DRAWING OF VANED INLET CROSSING (PROFILE) (NTS)



PIPE LENGTH = 7' + 20' + 7 => 34'

-NOTE- IN ATTACHED SHEETS, THE GRATE INLETS ARE HIGHLIGHTED [redacted]





☐ REMOVE ☐

TWO WORKING DAYS BEFORE YOU DIG, CALL 263-1100 BLUE STAKE

○ CONSTRUCT ○

INSTALL NEW STORM DRAIN PIPE

NO.	STATION TO STATION	DIAMETER INCHES	LENGTH FEET
01	15+00 TO 16+66.85	30	167
02	16+66.85 TO 16+82.85	30	16
03	16+82.85 TO 16+99	30	16
04	17+01 TO 20+00	36	299
05	15+55, RT	18	14
06	16+15, LT	18	14

PAVEMENT REPLACEMENT

NO.	STATION TO STATION	UNIT	QUANTITY
07	15+00 TO 17+00	SY	122
08	17+00 TO 20+00	SY	200

NEW CATCH BASIN AND SLOTTED DRAIN

NO.	STATION	TYPE	LENGTH & SIZE
09	15+55 RT	P-1570, N, L=6.5'	10'x18" SL DR
10	16+15	P-1570, N, L=6.5'	[redacted] SL DR

PREFABRICATED FITTING

NO.	STATION	TYPE	SIZE	ANGLE
11	15+55	TEE	30"x30"x18"	N/A
12	16+15	TEE	30"x30"x18"	N/A
13	16+66.85	BEND	30"x30"	
14	16+82.85	BEND	30"x30"	

INSTALL NEW STORM DRAIN MANHOLE

NO.	STATION	BASE DETAIL	SHAFT DETAIL
15	17+00	DET D09	DET D09

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

GUADALUPE DRAINAGE IMPROVEMENT
TOWN OF GUADALUPE
PROJECT CONTROL NO. 035-02-31

60% PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

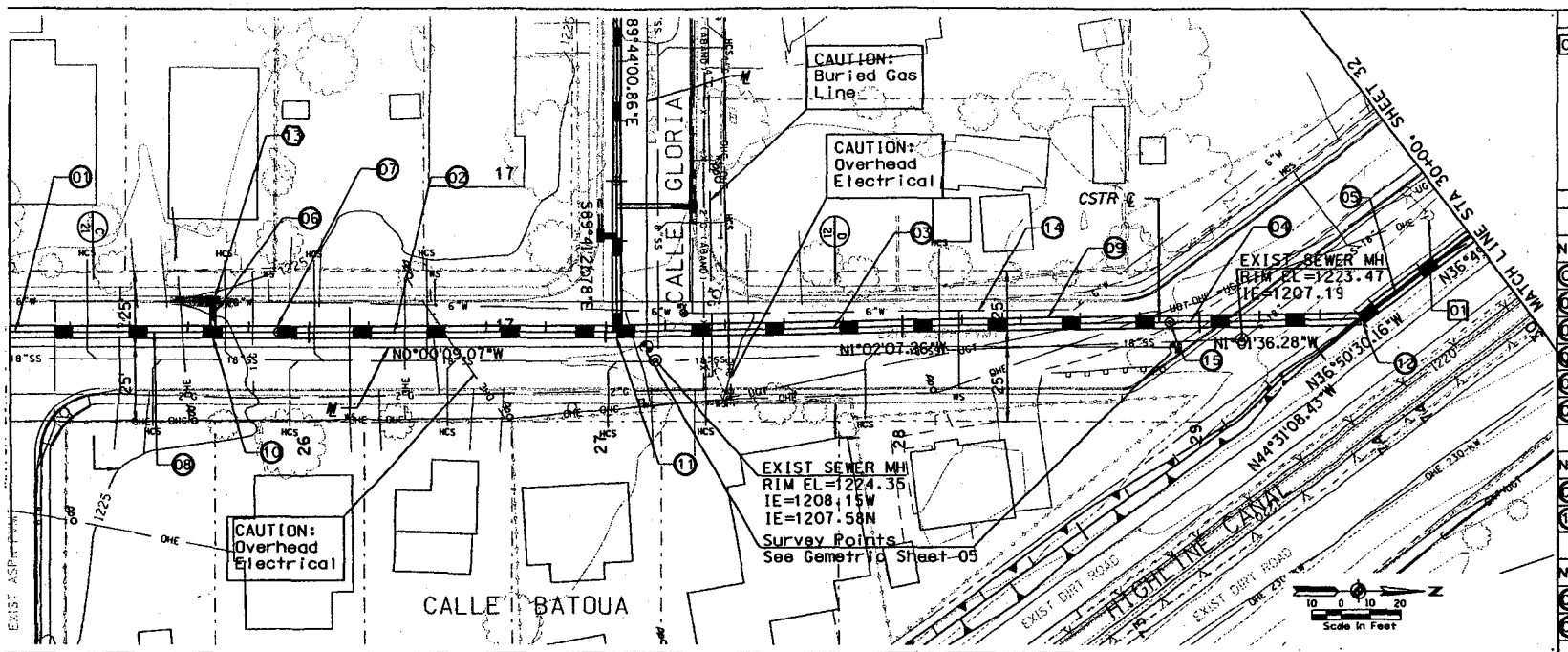
	BY	DATE
DESIGNED	O. STOUGH	06/01
DRAWN	B. EDGAR	06/01
CHECKED	B. OLBERT	06/01

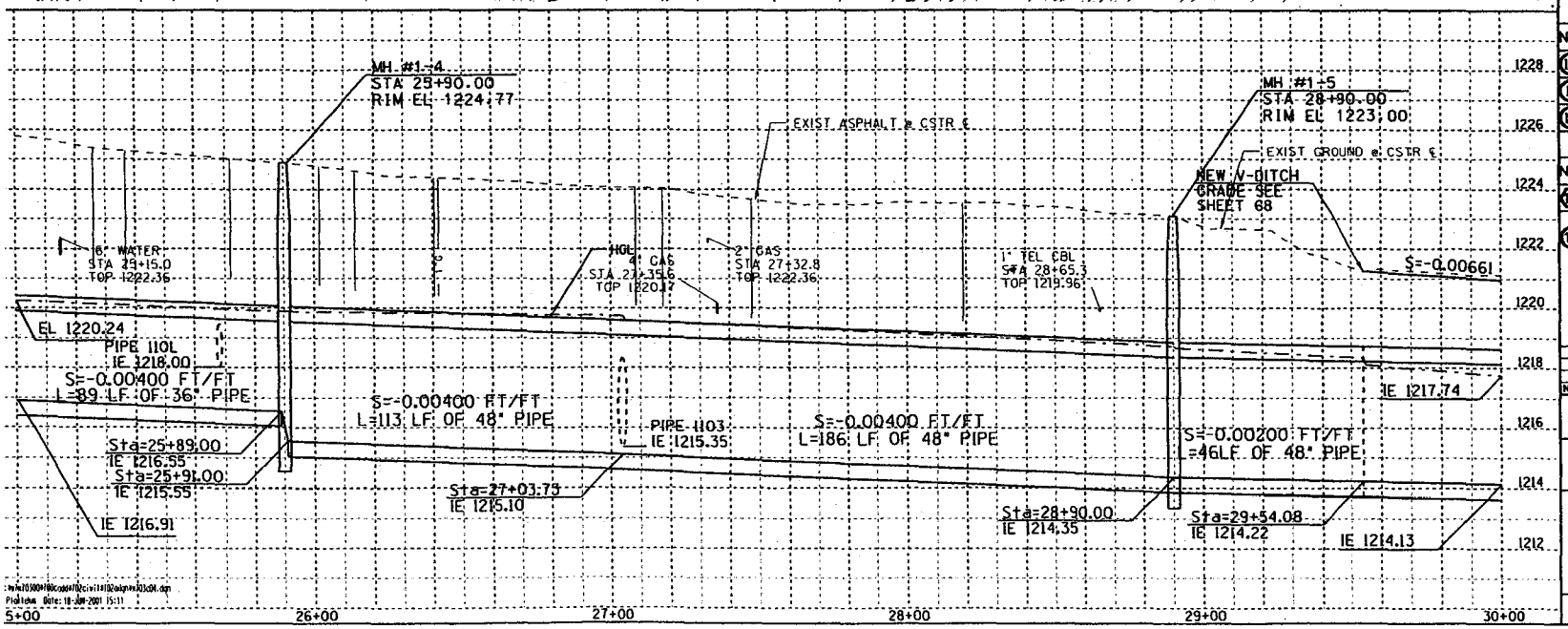
Sverdrup

DRAWING NO. C02

PLAN AND PROFILE SHEET SDI, STA 15+00 TO STA 20+00

SHEET OF 29





☐ REMOVE ☐

01 LUMINAIRE & POLE TO BE RELOCATED BY OTHERS

TWO WORKING DAYS BEFORE YOU DIG, CALL 263-1100 BLUE STAKE

○ CONSTRUCT ○

INSTALL NEW STORM DRAIN PIPE

NO.	STATION TO STATION	DIAMETER INCHES	LENGTH FEET
01	25+00 TO 25+89	36	89
02	25+91 TO 27+03.75	48	113
03	27+03.75 TO 28+90	48	186
04	28+90 TO 29+54.08	48	64
05	29+54.08 TO 30+00	48	46
06	25+68 LT	18	9

INSTALL NEW STORM DRAIN MANHOLE

NO.	STATION	BASE DETAIL	SHAFT DETAIL
07	25+90	MAG DET 520	MAG DET 522
15	28+90	MAG DET 520	MAG DET 522

PAVEMENT REPLACEMENT

NO.	STATION TO STATION	UNIT	QUANTITY
08	25+00 TO 25+90	SY	60
09	25+90 TO 28+80	SY	233

PREFABRICATED FITTING

NO.	STATION	TYPE	SIZE	ANGLE
10	25+68	TEE	36"x36"x18"	45
11	27+03.75	TEE	48"x48"x36"	N/A
12	29+54.08	BEND	48"x48"	37

NEW CATCH BASIN AND SLOTTED DRAIN

NO.	STATION	TYPE	LENGTH & SIZE
13	25+68 LT	P-1570 N, L=6.5'	[illegible] x 18" SL DR

14 Install Conc Encasement of Exist 6" Water Line (Per Det 404-1) Sta 27+00 to Sta 28+60, 160 LF

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

GUADALUPE DRAINAGE IMPROVEMENT
TOWN OF GUADALUPE
PROJECT CONTROL NO. 035-02-31

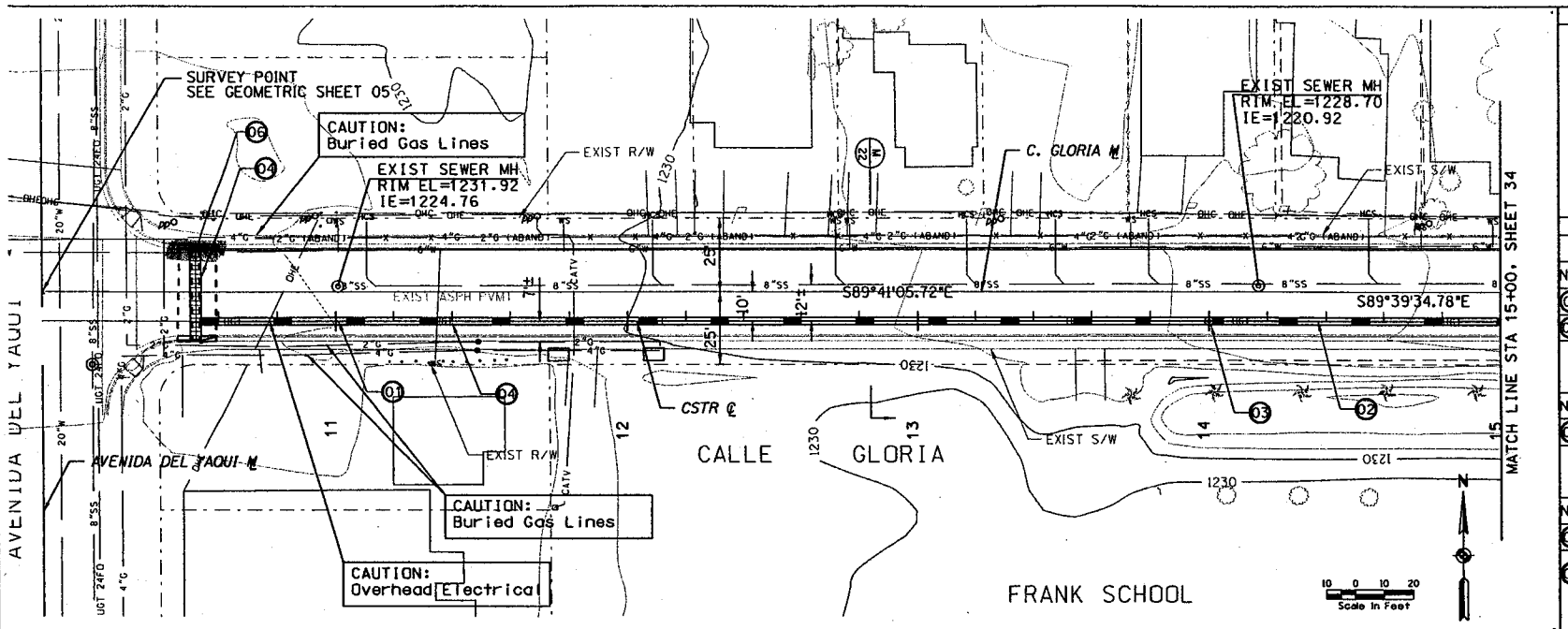
60% PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

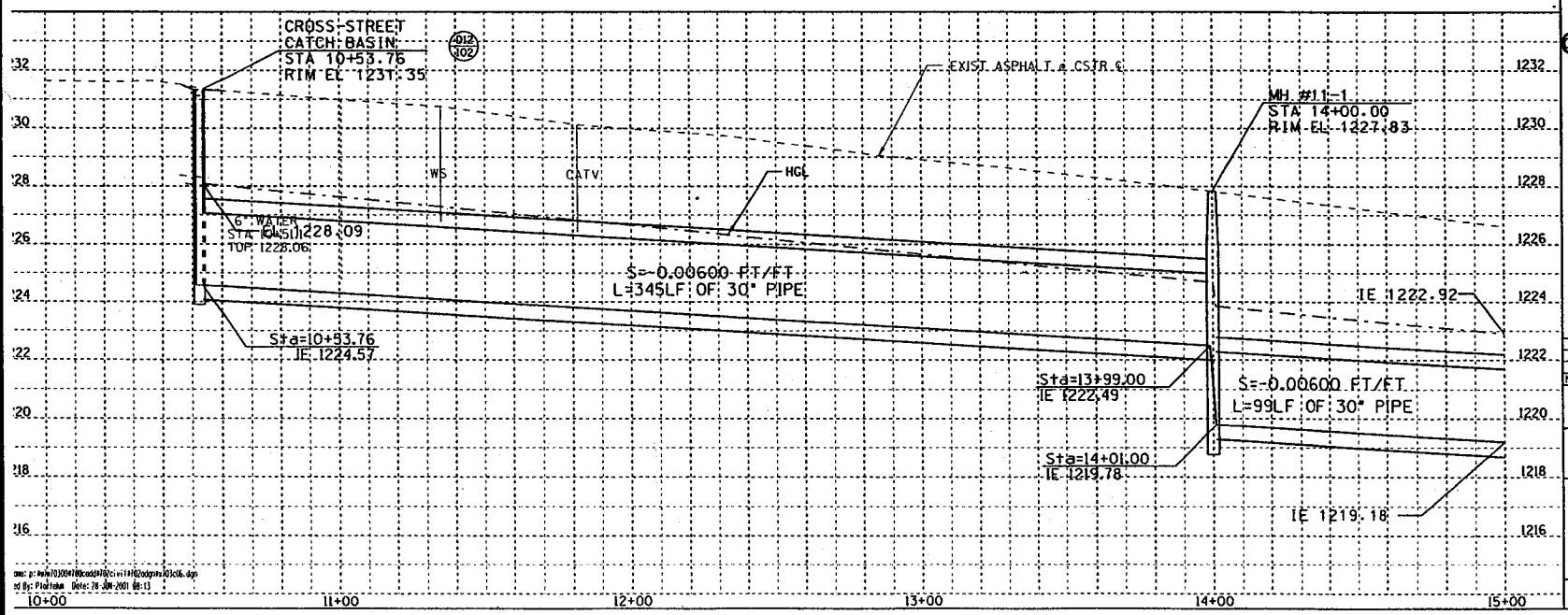
	BY	DATE
DESIGNED	D. STOUGH	06/01
DRAWN	B. EDGAR	06/01
CHECKED	B. OLBERT	06/01

Sverdrup

DRAWING NO. C04 | PLAN AND PROFILE SHEET SDI, STA 25+00 TO STA 30+00 | SHEET OF 31

Plot Date: 18-JUN-2001 15:11





REMOVE

BLUE STAKE

CONSTRUCT

INSTALL NEW STORM DRAIN PIPE

NO.	STATION TO STATION	DIAMETER INCHES	LENGTH FEET
01	10+53.76 TO 13+99	30	345
02	14+01 TO 15+00	30	99

INSTALL NEW STORM DRAIN MANHOLE

NO.	STATION	BASE DETAIL	SHAFT DETAIL
03	14+00.00	MAG DET D09	MAG DET D09

PAVEMENT REPLACEMENT

NO.	STATION TO STATION	UNIT	QUANTITY
04	10+60 TO 15+00	SY	271

05 INSTALL CROSS-STREET INLET, L = 31.5 LF W/ VANED GRATE, 1 EACH STA 10+53.76 (D12/102)

06 VERTICAL REALIGNMENT OF EXIST WATER LINE PER MAG DET 370, STA 10+53 34 LF

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

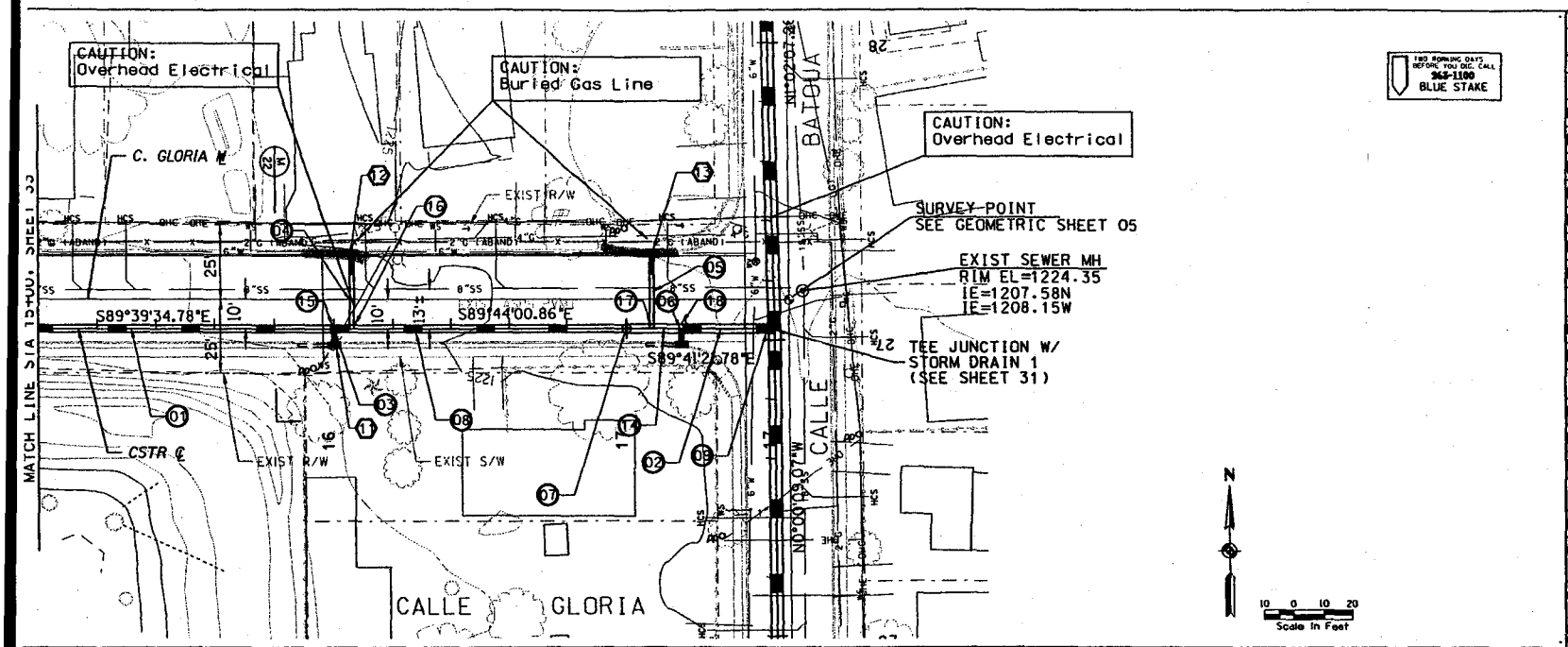
GUADALUPE DRAINAGE IMPROVEMENT
TOWN OF GUADALUPE
PROJECT CONTROL NO. 035-02-31

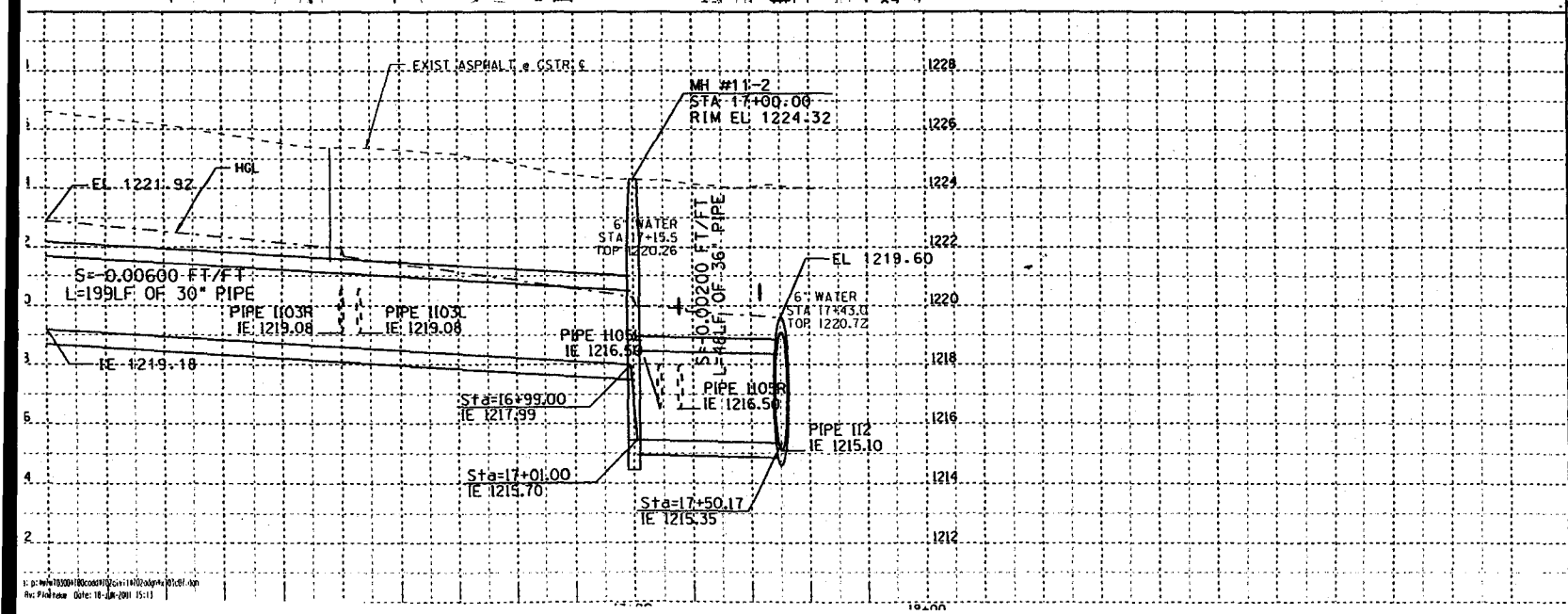
60% PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	BY	DATE
DESIGNED	D. STOUGH	06/01
DRAWN	B. EDGAR	06/01
CHECKED	B. OLBERT	06/01

Sverdrup

DRAWING NO.	PLAN AND PROFILE SHEET	SHEET OF
C06	SD 1-1, STA 10+00 TO STA 15+00	33





☐ REMOVE ☐

○ CONSTRUCT ○

INSTALL NEW STORM DRAIN PIPE

NO.	STATION TO STATION	DIAMETER INCHES	LENGTH FEET
01	15+00 TO 16+99	30	199
02	17+01 TO 17+49.2±	36	49
03	16+00, RT	18	4
04	16+06, LT	18	23
05	17+12, LT	18	23
06	17+18, RT	18	4

INSTALL NEW STORM DRAIN MANHOLE

NO.	STATION	BASE DETAIL	SHAFT DETAIL
07	17+00	DET D09	DET D09

PAVEMENT REPLACEMENT

NO.	STATION TO STATION	UNIT	QUANTITY
08	15+00 TO 17+00	SY	123
09	17+00 TO 17+49	SY	33

NEW CATCH BASIN AND SLOTTED DRAIN

NO.	STATION	TYPE	LENGTH & SIZE
11	16+00, RT	P-1570 N, L=6.5'	20' x 18" SLDR
[redacted]	[redacted]	P-1570 N, L=6.5'	[redacted]
[redacted]	[redacted]	P-1570 N, L=6.5'	[redacted]
14	17+18, RT	P-1570 N, L=6.5'	20' x 18" SLDR

PREFABRICATED FITTING

NO.	STATION	TYPE	SIZE	ANGLE
15	16+00	TEE	30"x30"x18"	N/A
16	16+06	TEE	30"x30"x18"	N/A
17	17+12	TEE	36"x36"x18"	N/A
18	17+18	TEE	36"x36"x18"	N/A

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

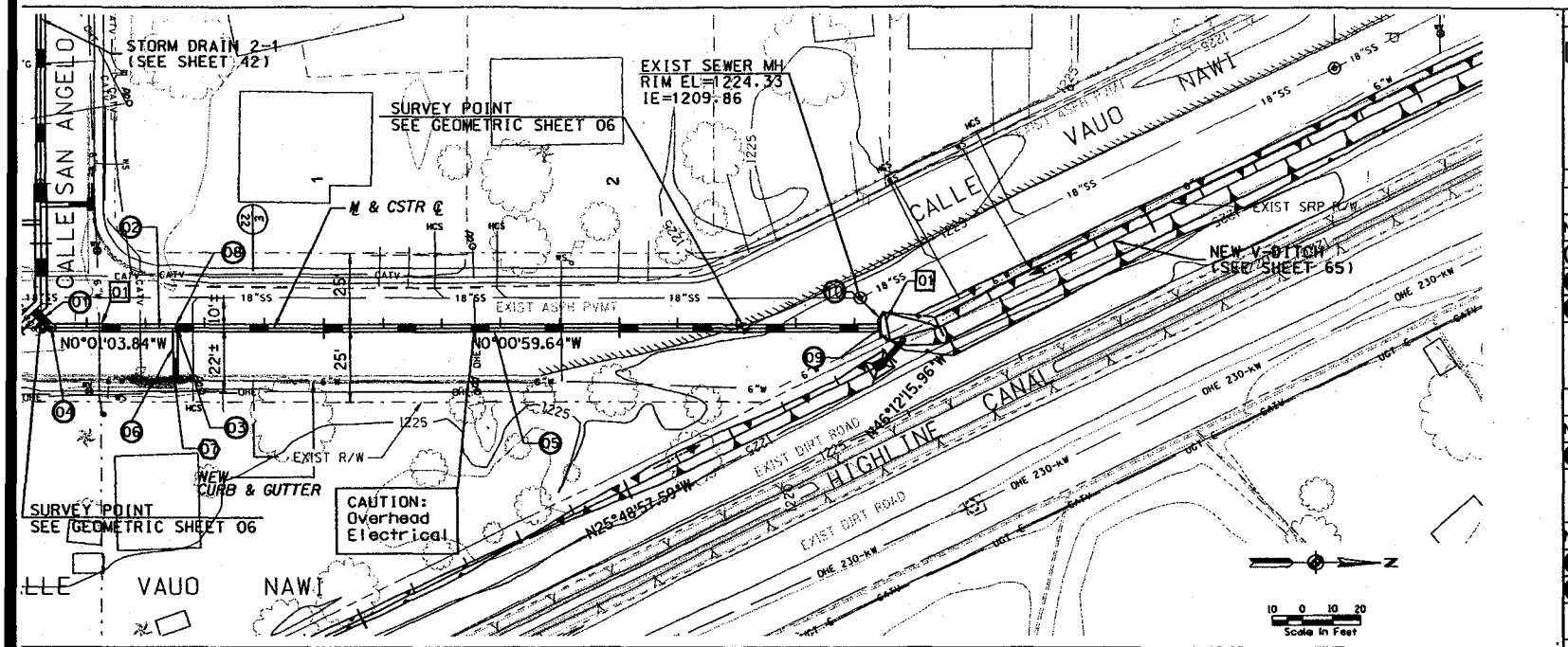
GUADALUPE DRAINAGE IMPROVEMENT
TOWN OF GUADALUPE
PROJECT CONTROL NO. 035-02-31

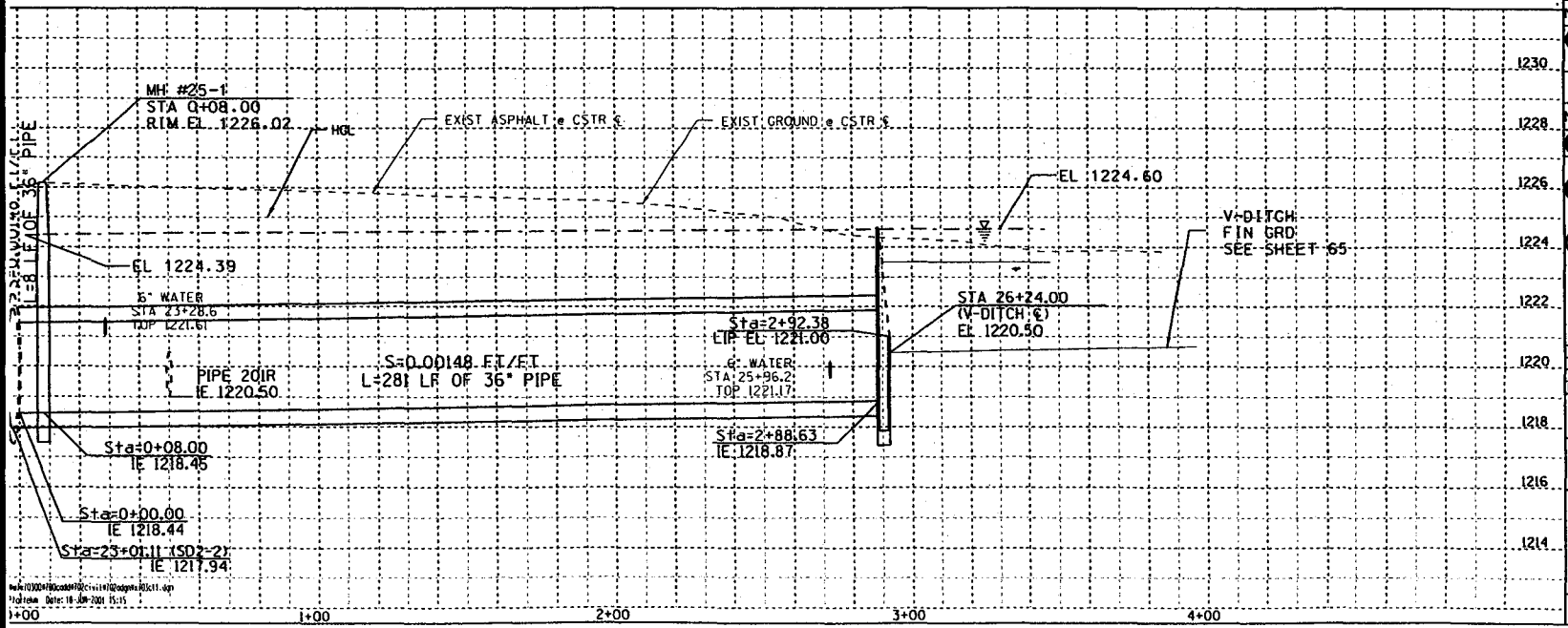
60% PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	BY	DATE
DESIGNED	D. STOUGH	06/01
DRAWN	B. EDGAR	06/01
CHECKED	B. OLBERT	06/01

Sverdrup

DRAWING NO.		SHEET OF
C07	PLAN AND PROFILE SHEET SD 1-1, STA 15+00 TO STA 17+50	34





REMOVE

01 RELOCATE 6" WATER LINE, 2 EACH
STA 0+25±, 0+90±

TWO WORKING DAYS BEFORE YOU DIG, CALL 263-1100 BLUE STAKE

CONSTRUCT

INSTALL NEW STORM DRAIN PIPE

NO.	STATION TO STATION	DIAMETER INCHES	LENGTH FEET
01	0+00 TO 0+08	36	8
02	0+08 TO 2+88.63	36	281
03	0+50, RT	18	15

INSTALL NEW STORM DRAIN MANHOLE

NO.	STATION	BASE DETAIL	SHAFT DETAIL
04	0+08	MAG DET 520	MAG DET 522

PAVEMENT REPLACEMENT

NO.	STATION TO STATION	UNIT	QUANTITY
05	0+00 TO 2+40	SY	147
06	LATERAL 0+50	SY	8

NEW CATCH BASIN AND CONNECTOR PIPE

NO.	STATION	TYPE	LENGTH & SIZE
[illegible]	[illegible]	P-1570 N, L=6.5'	[illegible]

PREFABRICATED FITTING

NO.	STATION	TYPE	SIZE	ANGLE
08	0+50 RT	TEE	36"x36"x18"	N/A

09 INSTALL CONC HEADWALL AND APRON, FOR 36" PIPE W/ TRASH RACK, PER MAG DET 501-5, STA 26+15.00, 1 EACH

10 INSTALL 42" STEEL HANDRAIL, 12 LF (D08 98)

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

GUADALUPE DRAINAGE IMPROVEMENT
TOWN OF GUADALUPE
PROJECT CONTROL NO. 035-02-31

60% PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	BY	DATE
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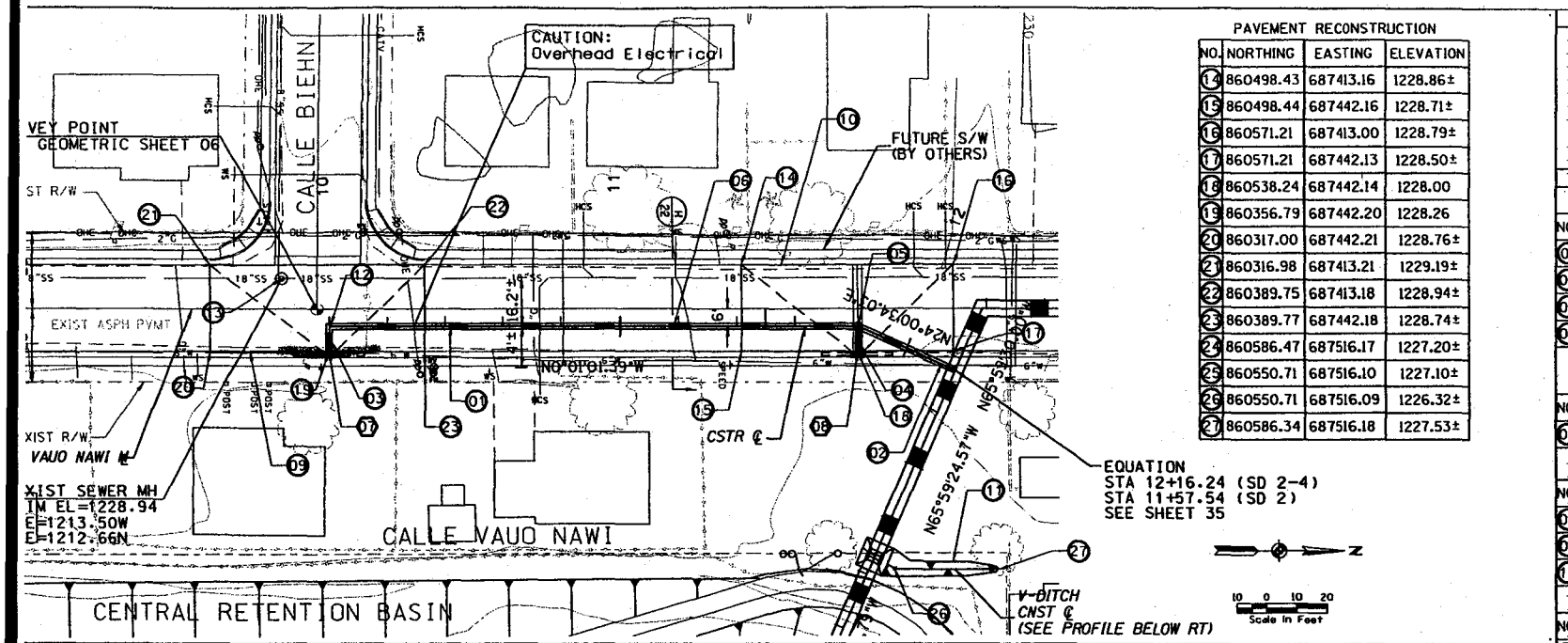
DRAWN	B. EDGAR	06/01
CHECKED	B. OLBERT	06/01

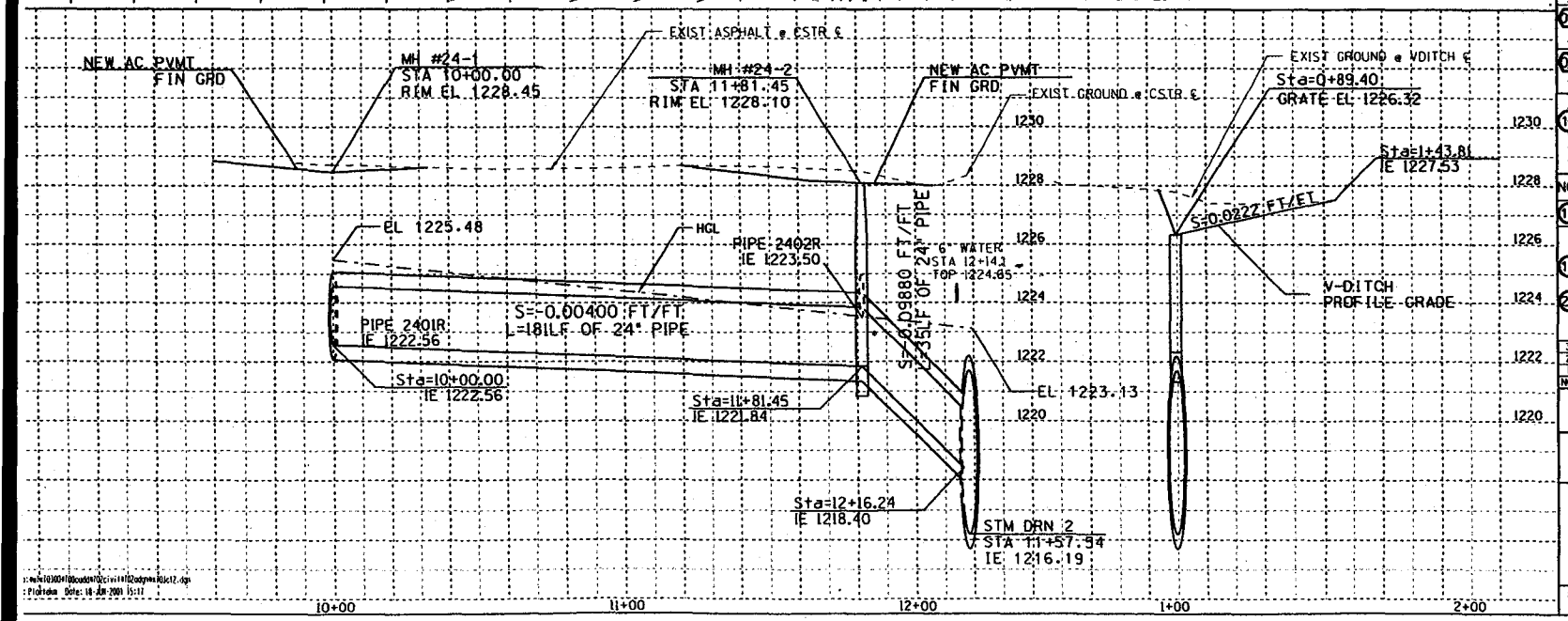
Sverdrup

DRAWING NO. C11 | PLAN AND PROFILE SHEET SD 2-5,STA 0+00 TO STA 2+89 | SHEET OF 38



PAVEMENT RECONSTRUCTION

NO.	NORTHING	EASTING	ELEVATION
14	860498.43	687413.16	1228.86±
15	860498.44	687442.16	1228.71±
16	860571.21	687413.00	1228.79±
17	860571.21	687442.13	1228.50±
18	860538.24	687442.14	1228.00
19	860356.79	687442.20	1228.26
20	860317.00	687442.21	1228.76±
21	860316.98	687413.21	1229.19±
22	860389.75	687413.18	1228.94±
23	860389.77	687442.18	1228.74±
24	860586.47	687516.17	1227.20±
25	860550.71	687516.10	1227.10±
26	860550.71	687516.09	1226.32±
27	860586.34	687516.18	1227.53±



☐ REMOVE ☐

TWO WORKING DAYS BEFORE YOU DIG, CALL 263-1100 BLUE STAKE

○ CONSTRUCT ○

INSTALL NEW STORM DRAIN PIPE

NO.	STATION TO STATION	DIAMETER INCHES	LENGTH FEET
01	10+00 TO 11+81	24	181
02	11+81 TO 12+16	24	35
03	10+00, RT	24	7
04	11+81.45, RT	18	7

INSTALL NEW STORM DRAIN MANHOLE

NO.	STATION	BASE DETAIL	SHAFT DETAIL
05	11+81.45	MAG DET 520	MAG DET 522

PAVEMENT REPLACEMENT

NO.	STATION TO STATION	UNIT	QUANTITY
06	10+33 TO 11+42	SY	77
09	9+60 TO 10+33	SY	210
10	11+42 TO 12+14	SY	240

NEW CATCH BASIN AND SLOTTED DRAIN

NO.	STATION	TYPE	LENGTH & SIZE
02	~~10+00, RT~~	P-1570 N, L=6.5'	~~(2) 10' x 18"~~
08	11+81.45 RT	P-1570 N, L=6.5'	(2) 10' x 18"

11 NEW V-DITCH ON CSTR ℄, STA 0+90 TO STA 1+44 — 54 LF (R3/25)

PREFABRICATED FITTING

NO.	STATION	TYPE	SIZE	ANGLE
12	10+00	BEND	24"x24"	90

13 ADJUST SEWER MANHOLE AND FRAME PER MAG DET 422 — 1 EACH

26 INSTALL ACCESS GATE, 1 EACH PEDESTRAIN ENTRANCE ON SOUTH END (DOT 97)

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

GUADALUPE DRAINAGE IMPROVEMENT
TOWN OF GUADALUPE
PROJECT CONTROL NO. 035-02-31

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	BY	DATE
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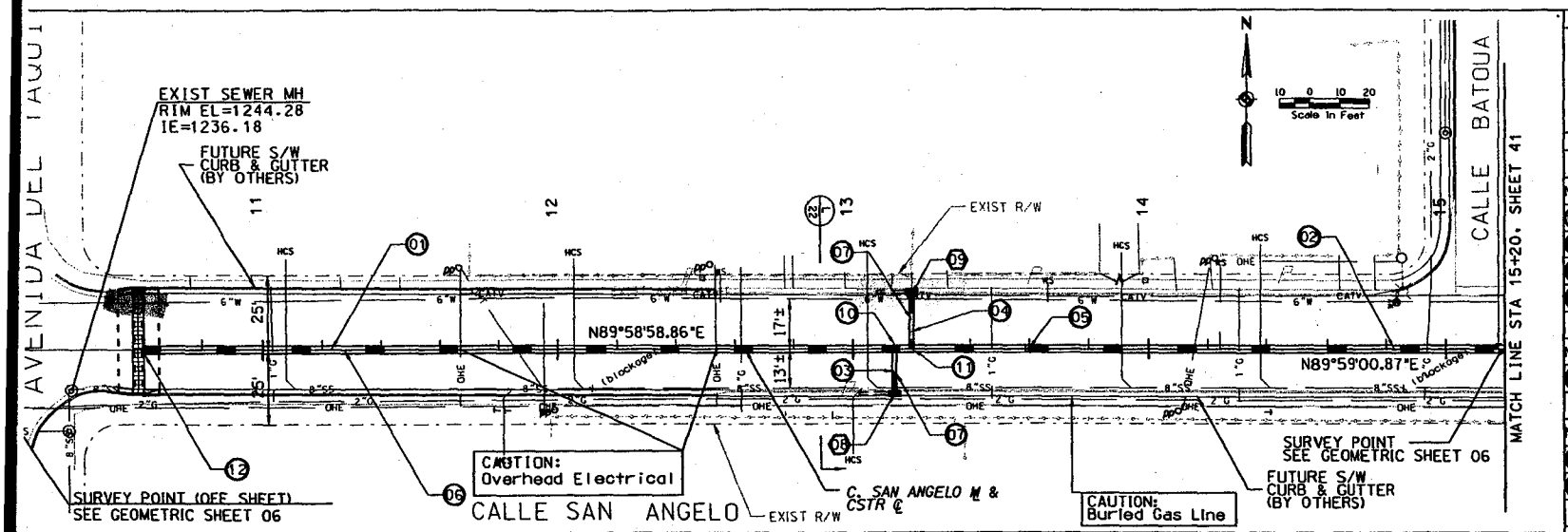
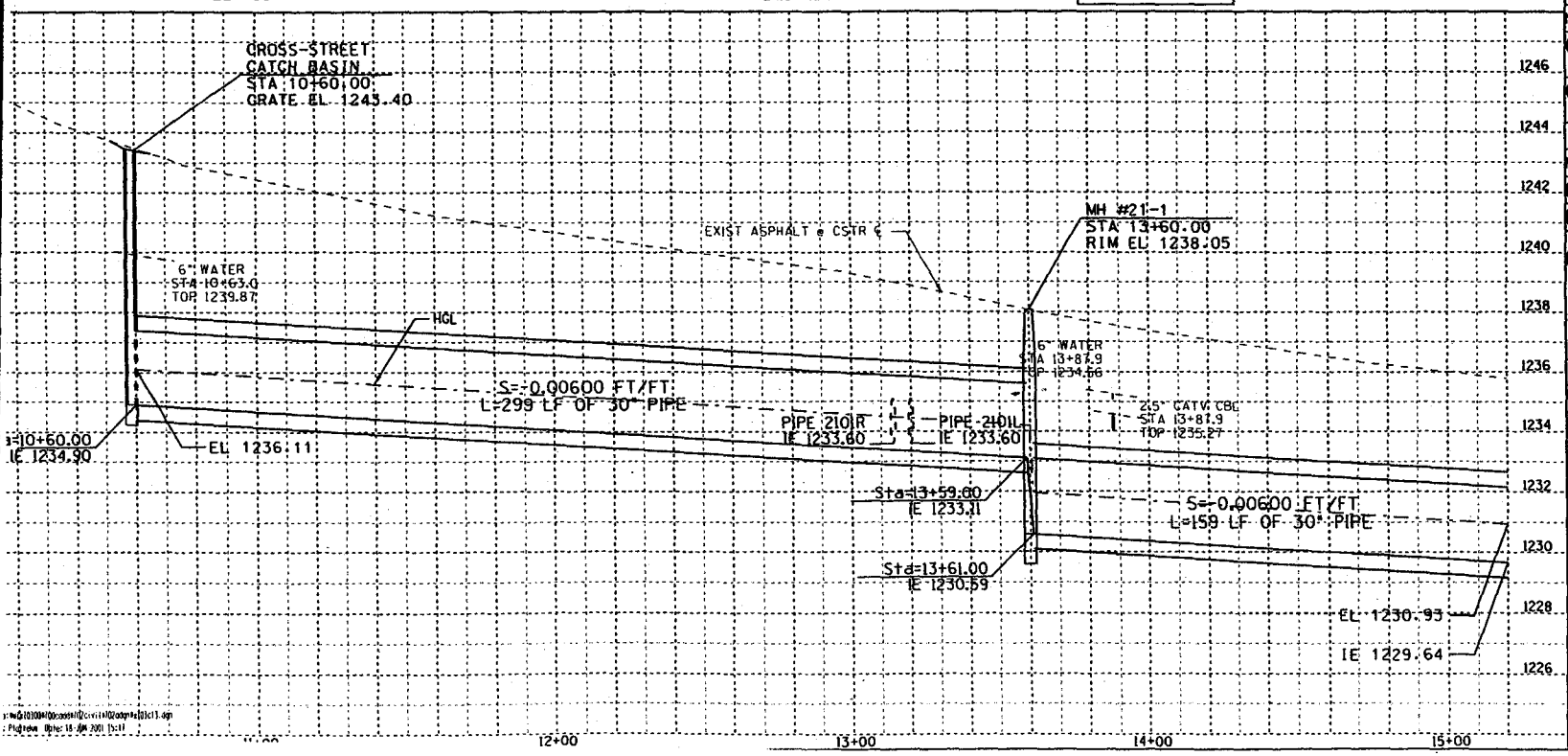
DRAWN	B. EDGAR	06/01
CHECKED	B. OLBERT	06/01

Sverdrup

DRAWING NO. C12 — PLAN AND PROFILE SHEET SD 2-4, STA 10+00 TO STA 12+18 — SHEET OF 39





☐ REMOVE ☐

TWO WORKING DAYS BEFORE YOU DIG, CALL 263-1100 BLUE STAKE

○ CONSTRUCT ○

INSTALL NEW STORM DRAIN PIPE

NO.	STATION TO STATION	DIAMETER INCHES	LENGTH FEET
01	10+60 TO 13+59	30	299
02	13+61 TO 15+00	30	159
03	13+16, RT	18	13
04	13+20, LT	18	17

INSTALL NEW STORM DRAIN MANHOLE

NO.	STATION	BASE DETAIL	SHAFT DETAIL
05	13+60	DET D09	DET D09

PAVEMENT REPLACEMENT

NO.	STATION TO STATION	UNIT	QUANTITY
06	10+60 TO 15+20	SY	282
07	LATERAL 13+74, 13+80	SY	15

NEW CATCH BASIN AND CONNECTOR PIPE

NO.	STATION	TYPE	LENGTH & SIZE
08	13+74	P-1570 N, L=6.5'	10' x 18"
09	13+80	P-1570 N, L=6.5'	10' x 18"

PREFABRICATED FITTING

NO.	STATION	TYPE	SIZE	ANGLE
10	13+74	TEE	30"x30"x18"	N/A
11	13+80	TEE	30"x30"x18"	N/A

12 INSTALL CROSS-STREET INLET, L = 34.5 LF W/ VANED GRATE, , 1 EACH STA 10+60.00 (014/104)

NO.	REVISION	BY	DATE
3			
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FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

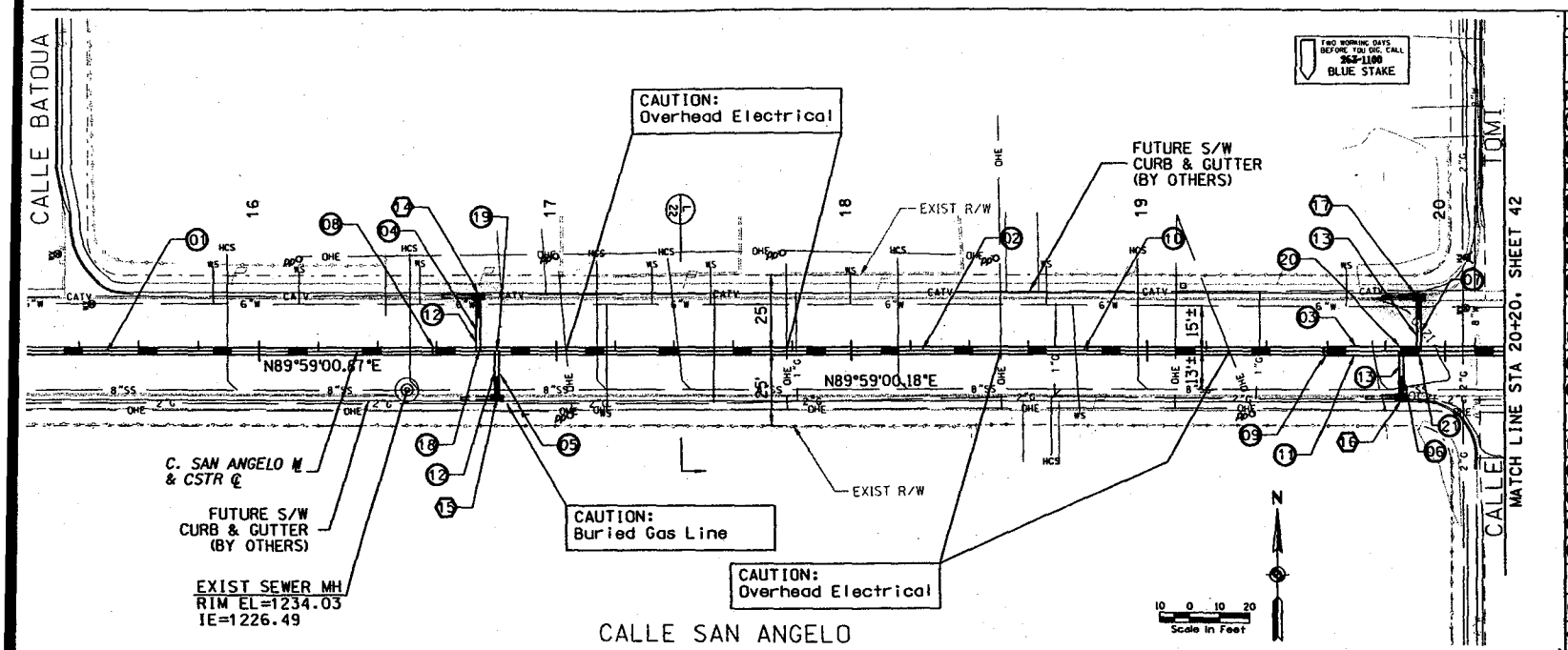
GUADALUPE DRAINAGE IMPROVEMENT
TOWN OF GUADALUPE
PROJECT CONTROL NO. 035-02-31

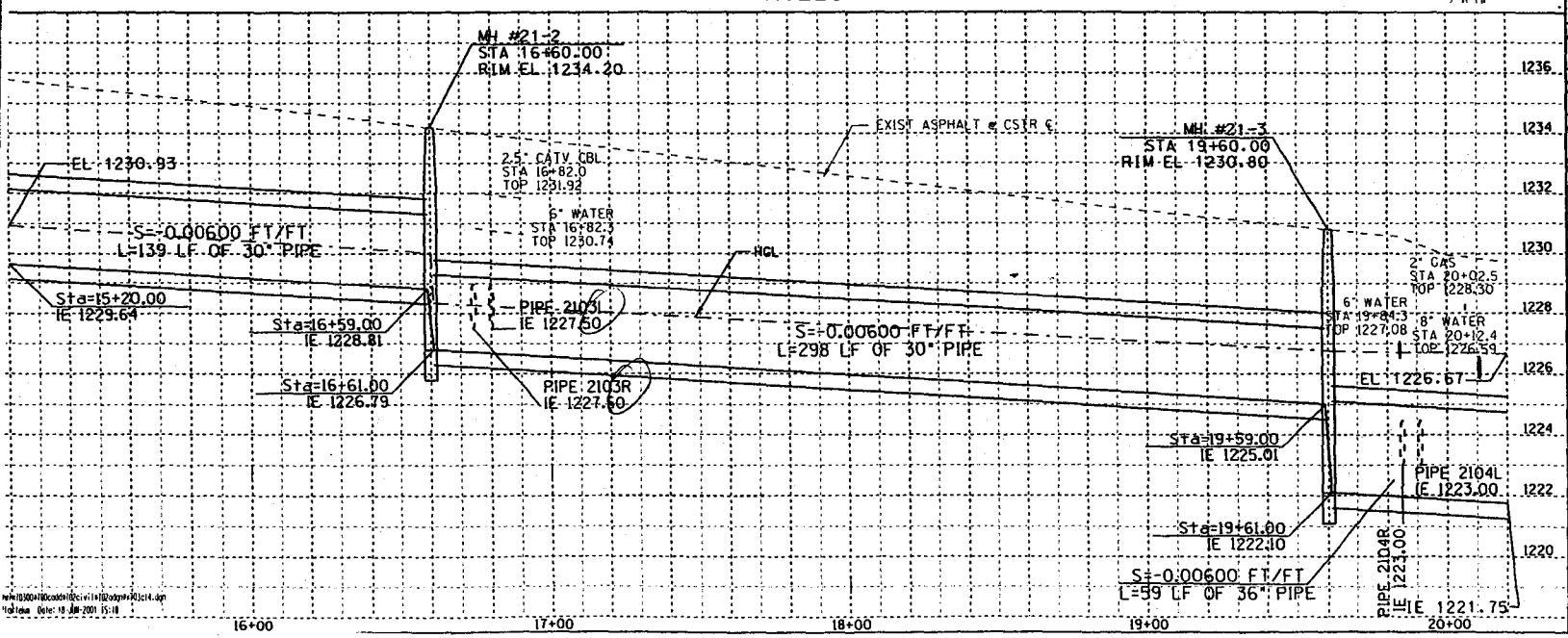
60% PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	BY	DATE
DESIGNED	D. STOUGH	06/01
DRAWN	B. EDGAR	06/01
CHECKED	B. OLBERT	06/01

Swerdrup

DRAWING NO.	PLAN AND PROFILE SHEET	SHEET OF
C13	SD2-1, STA 10+00 TO STA 15+20	40





☐ REMOVE ☐

○ CONSTRUCT ○

INSTALL NEW STORM DRAIN PIPE

NO.	STATION TO STATION	DIAMETER INCHES	LENGTH FEET
01	15+20 TO 16+59	30	139
02	16+61 TO 19+59	30	298
03	19+61 TO 20+20	36	59
04	16+74, LT	18	16
05	16+80, RT	18	14
06	19+85, RT	18	14
07	19+91, LT	18	16

INSTALL NEW STORM DRAIN MANHOLE

NO.	STATION	BASE DETAIL	SHAFT DETAIL
08	16+60	DET D09	DET D09
09	19+60	DET D09	DET D09

PAVEMENT REPLACEMENT

NO.	STATION TO STATION	UNIT	QUANTITY
10	15+20 TO 19+60	SY	269
11	19+60 TO 20+20	SY	40
12	LATERAL 16+74,16+80	SY	15
13	LATERAL 19+85,19+91	SY	15

NEW CATCH BASIN AND SLOTTED DRAIN

NO.	STATION	TYPE	LENGTH & SIZE
14	16+74 LT	P-1570 N, L=6.5'	10' x 18"
15	16+80 RT	P-1570 N, L=6.5'	10' x 18"
16	19+85 RT	P-1570 N, L=6.5'	10' x 18"
17	19+91 LT	P-1570 N, L=6.5'	10' x 18"

PREFABRICATED FITTING

NO.	STATION	TYPE	SIZE	ANGLE
18	16+74	TEE	30"x30"x18"	N/A
19	19+80	TEE	30"x30"x18"	N/A
20	19+85	TEE	36"x36"x18"	N/A
21	19+91	TEE	36"x36"x18"	N/A

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

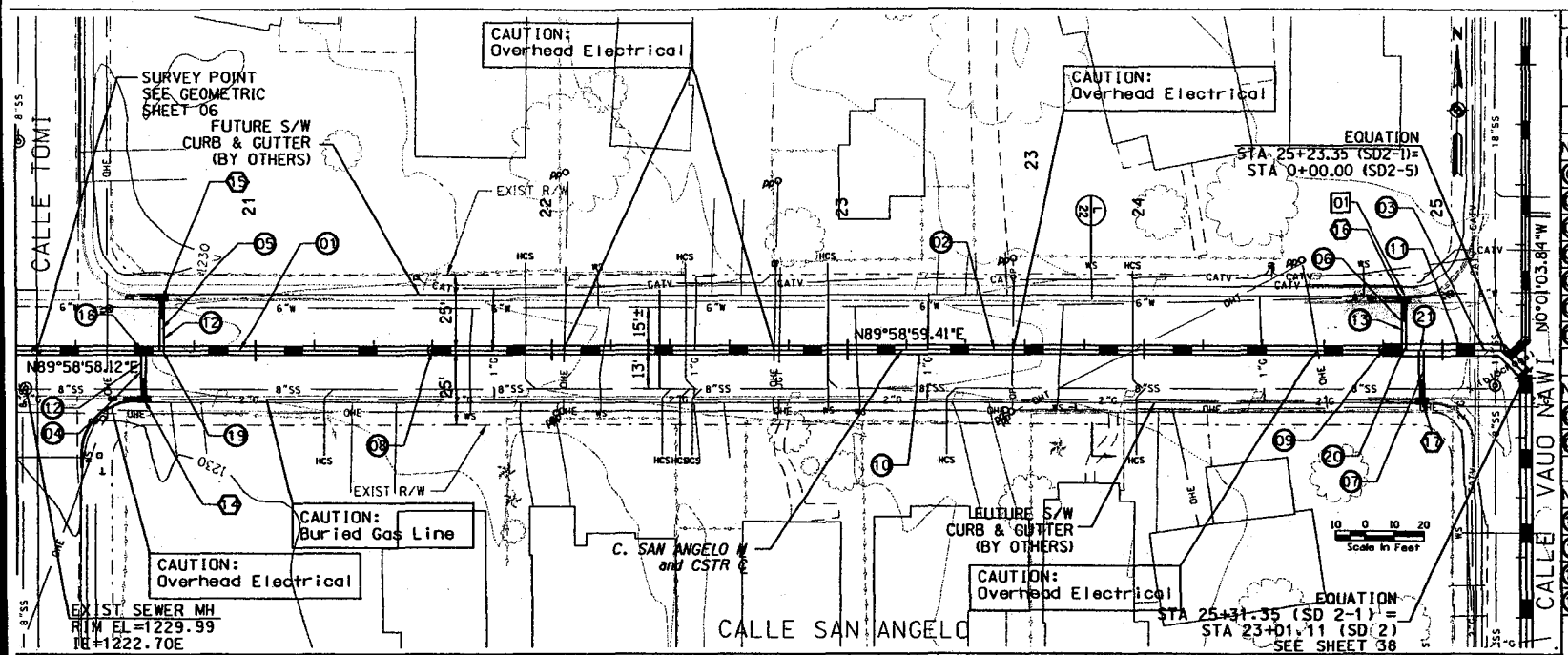
GUADALUPE DRAINAGE IMPROVEMENT
TOWN OF GUADALUPE
PROJECT CONTROL NO. 035-02-31

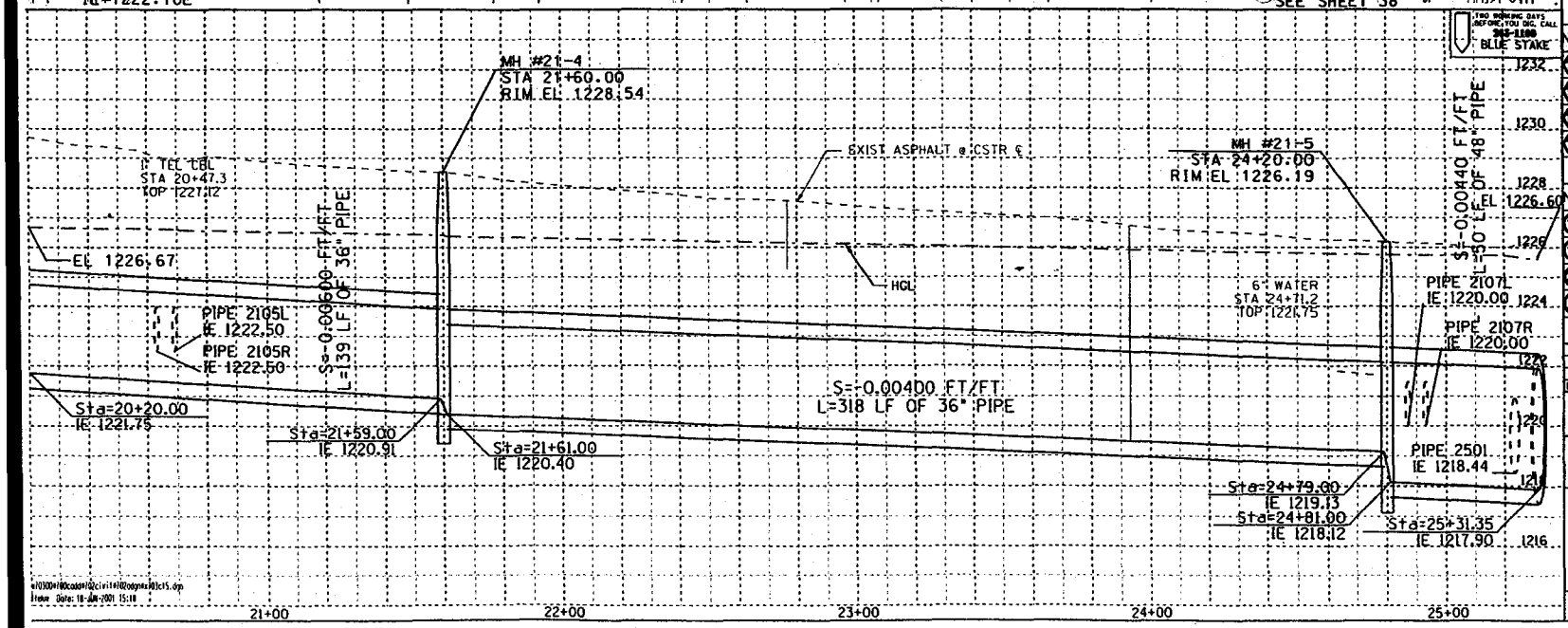
60% PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	BY	DATE
DESIGNED	D. STOUGH	06/01
DRAWN	B. EDGAR	06/01
CHECKED	B. OLBERT	06/01

Sverdrup

DRAWING NO.	PLAN AND PROFILE SHEET	SHEET OF
C14	SD2-1, STA 15+20 TO STA 20+20	41





☐ REMOVE ☐

01 RELOCATE 6" WATER LINE, 1 EA

○ CONSTRUCT ○

INSTALL NEW STORM DRAIN PIPE

NO.	STATION TO STATION	DIAMETER INCHES	LENGTH FEET
01	20+20 TO 21+59	36	139
02	21+61 TO 24+79	36	318
03	24+81 TO 25+31.35	48	50
04	20+63, RT	18	14
05	20+69, LT	18	16
06	24+87, LT	18	15
07	24+93, RT	18	15

INSTALL NEW STORM DRAIN MANHOLE

NO.	STATION	BASE DETAIL	SHAFT DETAIL
08	21+60	DET D09	DET D09
09	24+20	DET D09	DET D09

PAVEMENT REPLACEMENT

NO.	STATION TO STATION	UNIT	QUANTITY
10	20+20 TO 24+80	SY	307
11	24+80 TO 25+31	SY	40
12	LAT 20+63, 20+69	SY	15
13	LAT 24+87, 24+93	SY	15

NEW CATCH BASIN AND SLOTTED DRAIN

NO.	STATION	TYPE	LENGTH & SIZE
14	20+63 RT	P-1570 N, L=6.5'	10' x 18" SL DR
15	20+69 LT	P-1570 N, L=6.5'	10' x 18" SL DR
16	24+87 LT	P-1570 N, L=6.5'	10' x 18" SL DR
17	24+93 RT	P-1570 N, L=6.5'	10' x 18" SL DR

PREFABRICATED FITTING

NO.	STATION	TYPE	SIZE	ANGLE
18	20+63	TEE	36"x36"x18"	N/A
19	20+69	TEE	36"x36"x18"	N/A
20	24+87	TEE	48"x48"x18"	N/A
21	24+93	TEE	48"x48"x18"	N/A

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

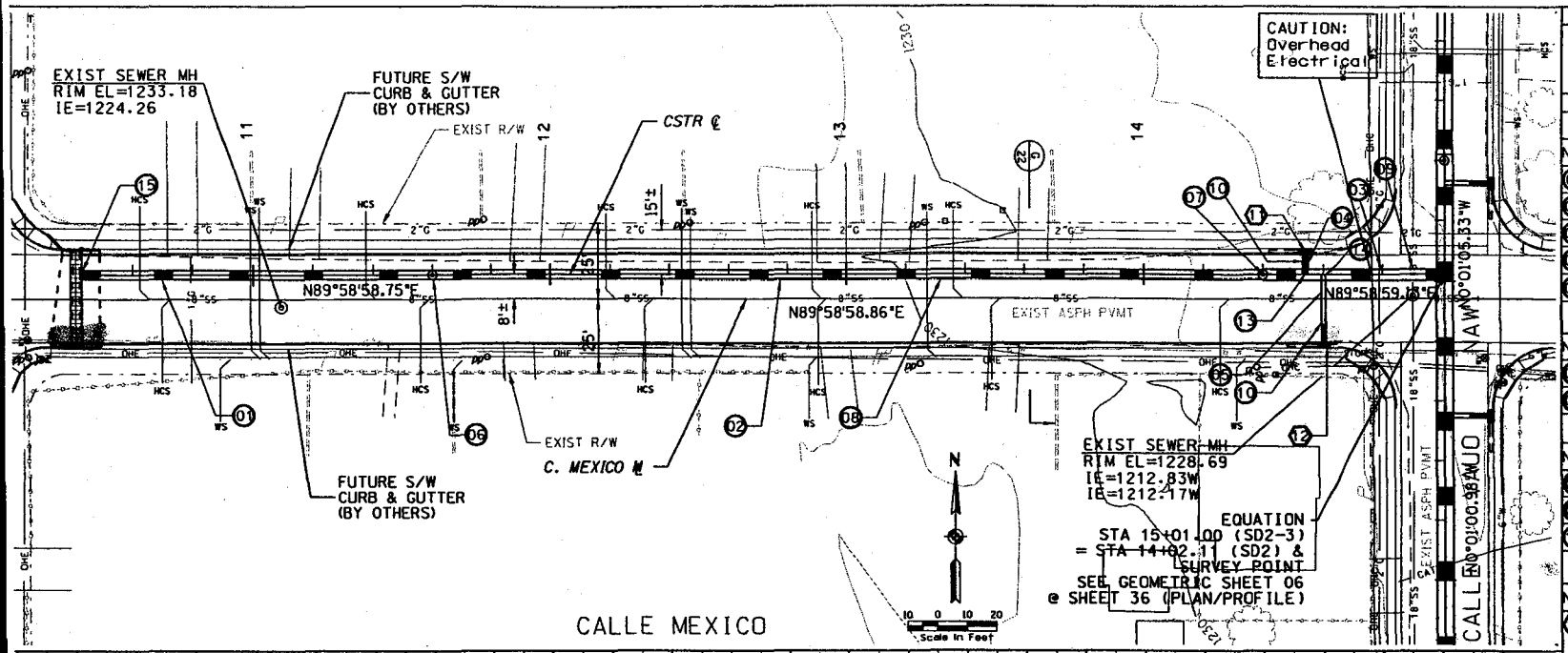
GUADALUPE DRAINAGE IMPROVEMENT
TOWN OF GUADALUPE
PROJECT CONTROL NO. 035-02-31

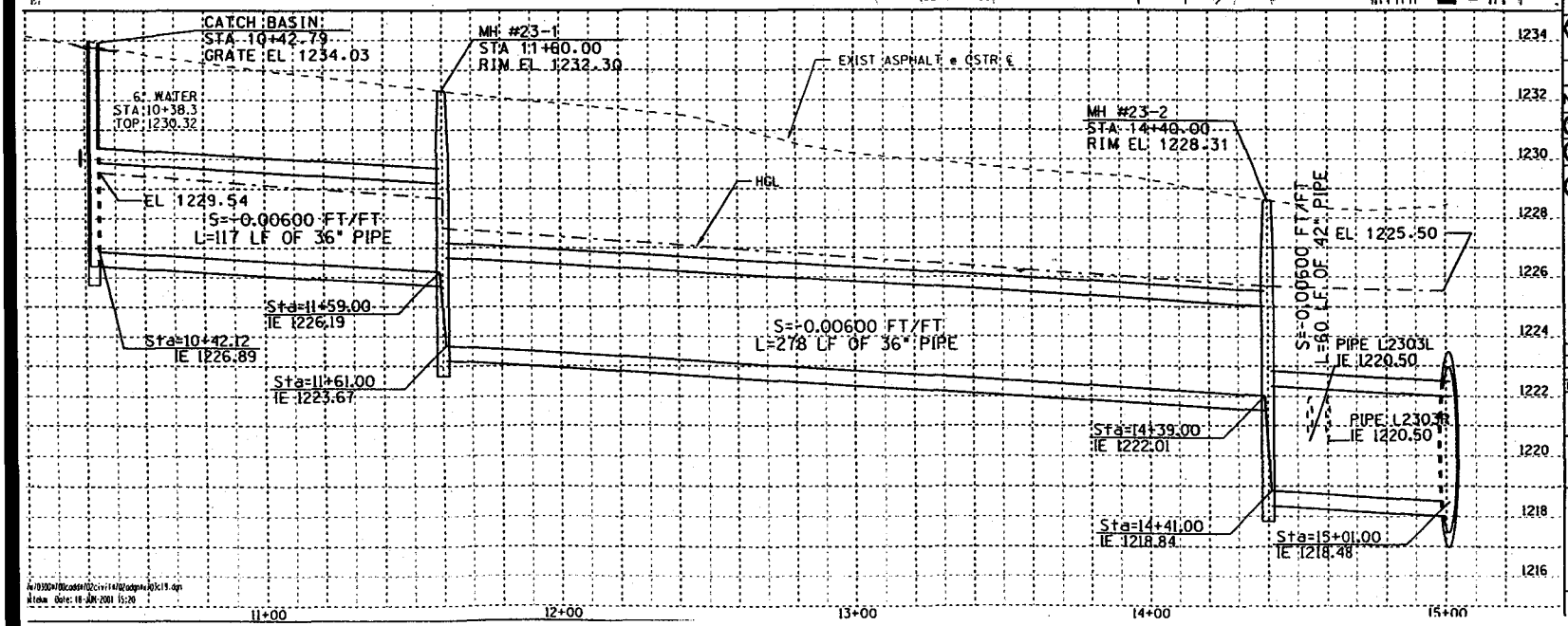
60% PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	BY	DATE
DESIGNED	D. STOUGH	06/01
DRAWN	B. EDGAR	06/01
CHECKED	B. OLBERT	06/01

Sverdrup

DRAWING NO. C15 — PLAN AND PROFILE SHEET SD2-1, STA 20+20 TO STA 25+31.35 — SHEET OF 42





☐ REMOVE ☐

TWO WORKING DAYS BEFORE YOU DIG, CALL 263-1100 BLUE STAKE

○ CONSTRUCT ○

INSTALL NEW STORM DRAIN PIPE

NO.	STATION TO STATION	DIAMETER INCHES	LENGTH FEET
01	10+42 TO 11+59	36	117
02	11+61 TO 14+39	36	278
03	14+41 TO 15+01	42	60
04	14+54 LT	18	6
05	14+60 RT	18	22

INSTALL NEW STORM DRAIN MANHOLE

NO.	STATION	BASE DETAIL	SHAFT DETAIL
06	11+60	DET D09	DET D09
07	14+40	DET D09	DET D09

PAVEMENT REPLACEMENT

NO.	STATION TO STATION	UNIT	QUANTITY
08	10+42 TO 14+40	SY	266
09	14+40 TO 15+01	SY	44
10	LAT 14+54, 14+60	SY	14

NEW CATCH BASIN AND SLOTTED DRAIN

NO.	STATION	TYPE	LENGTH & SIZE
11	14+54	P-1570 N, L=6.5'	10' x 18" SLDR
12	14+60	P-1570 N, L=6.5'	10' x 18"SLDR

PREFABRICATED FITTING

NO.	STATION	TYPE	SIZE	ANGLE
13	14+54	TEE	42"x42"x18"	N/A
14	14+60	TEE	42"x42"x18"	N/A

15 INSTALL CROSS-STREET INLET, L = 33 LF W/ VANED GRATE 1 EACH D16 106

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

GUADALUPE DRAINAGE IMPROVEMENT
TOWN OF GUADALUPE
PROJECT CONTROL NO. 035-02-31

60% PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	BY	DATE
DESIGNED	D. STOUGH	06/01
DRAWN	B. EDGAR	06/01
CHECKED	B. OLBERT	06/01

Swerdrup

DRAWING NO. C19 | PLAN AND PROFILE SHEET SD 2-3.STA 10+60 TO STA 15+01.00 | SHEET OF 46

Guadalupe Drainage Improvement Project
Project Control No. 035-02-31
Flood Control District of Maricopa County

Construction Time Calculations

Description	*Time (Days)*	*10*	*20*	*30*	*40*	*50*	*60*	*70*	*80*	*90*	*100*	*110*	*120*	*130*	*140*	*150*	*160*	*170*	*180*	*190*	*200*	*210*	*220*	*230*
MOBILIZATION	10.0																							
REMOVAL TOTAL	20.0																							
PIPEWORK TOTAL	190.0																							
EARTHWORK TOTAL	120.0																							
LANDSCAPE TOTAL	80.0																							
PROJECT CLOSEOUT	10.0																							

Jan *Feb* *Mar* *Apr* *May* *June* *July* *Aug* *Sept* *Oct* *Nov*

Month	*Working Days*	*Cumulative Work Days*	*Calandar Days*	*Cumulative Cal Days*
January (NTP: 1/7/02)	18	18	25	25
February	19	37	28	53
March	21	58	31	84
April	22	80	30	114
May	23	103	31	145
June	20	123	30	175
July	23	146	31	206
August	22	168	31	237
September	21	189	30	267
October	23	212	31	298
November (Completion Date: 11/12/02)	8	220	12	310

Guadalupe Drainage Improvement Project
Project Control No. 035-02-31
Flood Control District of Maricopa County

Construction Time Calculations

Item Description	*ADOT Rate*	*Unit*	*Means Rate*	*Unit*	*Quantity*	*Avg Rate*	*Rate to Use*	*Crews*	*Time (Days)*
Clear & Grub	1	mi/Day	1	acre/Day	15	1	5		3.0
Tree Removal	-	-	25	Ea/Day	15	25	25		0.6
Fence Removal	-	-	350	LF/Day	6,901	350	400		17.3
New Chain Link Fence	1600	LF/Day	250	LF/Day	4,067	925	900		4.5
REMOVAL TOTAL									25.4
USE									**20.0**
Remove Asphalt Pavement	1500	SY/Day	685	SY/Day	6,879	1,093	1000		6.9
Pipe Removal	-	-	130	LF/Day	1,390	130	200		7.0
6" DIP Water Line	-	-	290	LF/Day	680	290	290		2.3
12" VCP Sewer Line	200	LF/Day	150	LF/Day	1,209	175	175		6.9
18" HDPE	300	LF/Day	205	LF/Day	1,692	253	250		6.8
24" HDPE	300	LF/Day	175	LF/Day	1,279	238	225		5.7
30" HDPE	150	LF/Day	130	LF/Day	3,540	140	150		23.6
36" HDPE	150	LF/Day	130	LF/Day	4,024	140	140		28.7
42" HDPE	150	LF/Day	-	-	1,521	150	140		10.9
48" HDPE	150	LF/Day	110	LF/Day	1,119	130	130		8.6
54" RGRCP, Class III	30	LF/Day	40	LF/Day	795	35	35		22.7
60" RGRCP, Class III	30	LF/Day	35	LF/Day	458	33	35		13.1
66" RGRCP, Class III	30	LF/Day	35	LF/Day	444	33	35		12.7
66" RGRCP, Jack and Bore	-	-	9	LF/Day	140	-	9		15.6
30" DIP Culvert	-	-	38	LF/Day	80	-	40		2.0
Catch Basins	3	Ea/Day	2	Ea/Day	63	2	2		31.5
Manholes	3	Ea/Day	2	Ea/Day	30	2	2		15.0
Headwalls	1	Ea/Day	-	-	11	1	1		11.0
Pavement Replacement, 2"	-	-	2,300	SY/Day	5,744	2,300	2300		2.5
Pavement Replacement, 4"	-	-	1,200	SY/Day	1,135	1,200	1200		0.9
PIPEWORK TOTAL									234.3
USE									**190.0**

Guadalupe Drainage Improvement Project
Project Control No. 035-02-31
Flood Control District of Maricopa County

Construction Time Calculations

Item Description	*ADOT Rate*	*Unit*	*Means Rate*	*Unit*	*Quantity*	*Avg Rate*	*Rate to Use*	*Crews*	*Time (Days)*
Earthwork for Retention Basins	650	CY/Day	900	CY/Day	110,000	775	1000	1	110.0
Hauling (20 mi round trip with 10 20 CY trucks)	-	-	96	CY/Day	110,000	96	100	10	110.0
Finish Grading	3500	SY/Day	1,600	SY/Day	75,000	2,550	3000	1	25.0
EARTHWORK TOTAL									245.0
USE									**120.0**
Drywell	-	-	-	-	13	1	1	1	26.0
Landscape Irrigation	-	-	2,619	SF/Day	297,032	2,619	2500	4	29.7
Turf Grass	-	-	4,000	SY/Day	33,004	4,000	4000	1	8.3
Decomposed Granite	-	-	-	-	36,678	4,000	4000	1	9.2
Trees					358	25	25	1	14.3
Shrubs					242	50	50	1	4.8
Tubular Steel Ornamental Fencing			143	LF/Day	1,150	143	150	1	7.7
LANDSCAPE TOTAL									100.0
USE									**80.0**

SVERDRUP

JOB GUADALUPE DRAINAGE IMPROVEMENTS SHEET NO. 1 OF

DATE 8/29/01

COMPUTATIONS FOR CONST TIME BY RWM CHKD GDO

CLEAR & GRUB

ADOT RATE : 1 mi/DAY ≅ 5280' (200') = 24 acres/day

*MEANS p22 : 0.7 to 2 acres/DAY

USE 5 acres per day

*MEANS CONSTRUCTION COST DATA

TREE REMOVAL

MEANS RATE (p22) 17-47 trees/day

USE 25 TREES/day

FENCE REMOVAL

MEANS RATE (p 25) 280 to 430 LF/DAY

USE 350

NEW CHAIN LINK

ADOT RATE : 1200 to 2,000 LF/DAY

MEANS RATE (p57) : 250 LF/DAY → USE 900 LF/DAY

PVMT REMOVAL

ADOT RATE : 1000 to 2000 LF/DAY

MEANS RATE (p25) : 680 to 690 SY/DAY

SVERDRUP

JOB GUADALUPE DRAINAGE IMPROVEMENTS

COMPUTATIONS FOR CONST TIME CALCS.

SHEET NO. 2 OF

DATE 8/29/01

BY RWM CHKD SDO

PIPE REMOVAL

MEANS (p 26) : 80 to 175 LF/DAY

USE 200 LF/DAY

12" VCP SEWER PIPE

ADOT : 150 to 300 LF/DAY ≅ 200

MEANS (p 49) 150 LF/DAY → 175 LF/DAY

6" DIP WATER LINE

MEANS (p 50) : 290 LF/DAY

HDPE

ASSUME PRODUCTION RATES SIMILAR TO CMP

18" HDPE

MEANS (p 48) : USE CMP → 205 LF/DAY

24" HDPE

MEANS (p 48) → 175 LF/DAY

30" HDPE

MEANS (p 48) → 130 LF/DAY

36" HDPE MEANS (p 48) → 130 LF/DAY

SVERDRUP

JOB GUADALUPE DRAINAGE IMPROVEMENTS

COMPUTATIONS FOR CONST TIME EST

SHEET NO. 3 OF

DATE 8/29/01

BY RWM CHKD BDO

42" HDPE → MEANS (p48) → 120 LF/DAY

48" HDPE → MEANS (p48) → 110 LF/DAY

54" RCP → MEANS (p47) → 40 LF ± /DAY

60" RCP → MEANS (p47) → 35 LF/DAY

66" RCP → MEANS (p47) → 30 LF ± /DAY

HORIZONTAL BORING

MEANS p 38 9 LF/DAY

30" DIP

MEANS p 50 38 LF/DAY

CATCH BASIN

ADOT RATE 1-5 EA/DAY

MEANS RATE for 6' Deep (p45) → 1.5 EA/DAY

HEADWALLS

ADOT RATE 1 EA/DAY

MANHOLES

ADOT RATE 3 EA/DAY

MEANS 1.5 EA/DAY

```
          Project Name: GUAD10YRNEW
           Description:
orizontal Alignment Name: BATOUA
           Description: SD 1
            Preference: Default
                                        STATION      NORTHING       EASTING

Element: Linear
          POB (        )              10+00.00     862185.28     685899.08
           PI (        )              10+73.06     862185.31     685972.14
      Tangent Direction:   N 89^58'57.89" E
         Tangent Length:                 73.06

lement: Linear
           PI (        )              10+73.06     862185.31     685972.14
           PI (        )              16+66.85     862185.48     686565.94
      Tangent Direction:   N 89^58'58.86" E
         Tangent Length:                593.79

lement: Linear
           PI (        )              16+66.85     862185.48     686565.94
           PI (        )              16+82.85     862196.80     686577.24
      Tangent Direction:   N 44^58'56.17" E
         Tangent Length:                 15.99

lement: Linear
           PI (        )              16+82.85     862196.80     686577.24
           PI (        )              21+03.17     862617.12     686577.18
      Tangent Direction:   N  0^00'32.39" W
         Tangent Length:                420.33

lement: Linear
           PI (        )              21+03.17     862617.12     686577.18
           PI (        )              21+83.70     862653.70     686648.92
      Tangent Direction:   N 62^59'00.31" E
         Tangent Length:                 80.53

Element: Linear
           PI (        )              21+83.70     862653.70     686648.92
           PI (        )              27+08.73     863178.73     686648.80
      Tangent Direction:   N  0^00'45.18" W
         Tangent Length:                525.03

Element: Linear
           PI (        )              27+08.73     863178.73     686648.80
           PI (        )              29+54.08     863424.04     686644.38
      Tangent Direction:   N  1^01'59.44" W
         Tangent Length:                245.35

Element: Linear
           PI (        )              29+54.08     863424.04     686644.38
           PI (        )              30+36.60     863490.08     686594.89
      Tangent Direction:   N 36^50'48.65" W
         Tangent Length:                 82.53

Element: Linear
           PI (        )              30+36.60     863490.08     686594.89
          POE (        )              32+12.83     863666.30     686594.20
      Tangent Direction:   N  0^13'31.13" W
         Tangent Length:                176.23

          Project Name: GUAD10YRNEW
           Description:
orizontal Alignment Name: GLORIA
           Description: SD 1_1
            Preference: Default
                                        STATION      NORTHING       EASTING

lement: Linear
          POB (        )               9+99.51     863182.85     685898.73
           PI (        )              10+53.27     863182.56     685952.49
      Tangent Direction:   S 89^41'04.41" E
         Tangent Length:                 53.76

lement: Linear
           PI (        )              10+53.27     863182.56     685952.49
          POE (        )              17+49.59     863178.73     686648.80
      Tangent Direction:   S 89^41'05.47" E
         Tangent Length:                696.32

          Project Name: GUAD10YRNEW
           Description:
Horizontal Alignment Name: VNAWI_NO
           Description: SD 2
            Preference: Default
                                        STATION      NORTHING       EASTING

Element: Linear
          POB (        )               9+50.00     860496.33     687618.23
           PI (        )              10+00.00     860516.67     687572.56
      Tangent Direction:   N 65^59'32.94" W
         Tangent Length:                 50.00

E.  nt: Linear
           PI (        )              10+00.00     860516.67     687572.56
           PI (        )              11+58.56     860581.18     687427.72
      Tangent Direction:   N 65^59'25.44" W
         Tangent Length:                158.56

Element: Linear
           PI (        )              11+58.56     860581.18     687427.72
           PI (        )              14+02.11     860824.74     687427.64
      Tangent Direction:   N  0^01'00.98" W
```

Tangent Length: 243.55

Element: Linear
PI ( ) 14+02.11 860824.74 687427.64
PI ( ) 18+49.11 861271.74 687427.51
Tangent Direction: N 0^01'00.91" W
Tangent Length: 447.00

Element: Linear
PI ( ) 18+49.11 861271.74 687427.51
POE ( ) 23+01.11 861723.74 687427.38
Tangent Direction: N 0^01'00.69" W
Tangent Length: 452.00

Project Name: GUAD10YRNEW
Description:
Horizontal Alignment Name: SAN ANGELO
Description: SD 2-1
Preference: Default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	9+99.90	861731.29	685899.24
PI ( )	10+59.75	861731.31	685959.09
Tangent Direction: N 89^58'57.96" E			
Tangent Length: 59.85			
Element: Linear			
PI ( )	10+59.75	861731.31	685959.09
PI ( )	25+20.04	861731.73	687419.38
Tangent Direction: N 89^58'59.55" E			
Tangent Length: 1460.29			
Element: Linear			
PI ( )	25+20.04	861731.73	687419.38
POE ( )	25+31.35	861723.74	687427.38
Tangent Direction: S 45^01'04.46" E			
Tangent Length: 11.31			

Project Name: GUAD10YRNEW
Description:
Horizontal Alignment Name: VNAWI_NO_LAT
Description: SD 2-2
Preference: Default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	0+00.00	861729.39	687421.72
PI ( )	0+08.00	861735.05	687427.38
Tangent Direction: N 44^58'47.08" E			
Tangent Length: 8.00			
Element: Linear			
PI ( )	0+08.00	861735.05	687427.38
PI ( )	2+00.00	861927.05	687427.32
Tangent Direction: N 0^01'01.23" W			
Tangent Length: 192.00			
Element: Linear			
PI ( )	2+00.00	861927.05	687427.32
POE ( )	2+65.00	861991.84	687432.56
Tangent Direction: N 4^37'26.29" E			
Tangent Length: 65.00			

Project Name: GUAD10YRNEW
Description:
Horizontal Alignment Name: IGLESIA
Description: SD 2-3
Preference: Default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	10+00.00	861271.27	685899.40
PI ( )	10+59.35	861271.29	685958.75
Tangent Direction: N 89^58'57.44" E			
Tangent Length: 59.35			
Element: Linear			
PI ( )	10+59.35	861271.29	685958.75
POE ( )	25+28.12	861271.74	687427.51
Tangent Direction: N 89^58'57.23" E			
Tangent Length: 1468.77			

Project Name: GUAD10YRNEW
Description:
Horizontal Alignment Name: MEXICO
Description: SD 2-4
Preference: Default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	10+00.00	860824.59	686926.64
PI ( )	10+42.13	860824.60	686968.77
Tangent Direction: N 89^58'56.35" E			
Tangent Length: 42.13			
Element: Linear			
PI ( )	10+42.13	860824.60	686968.77
POE ( )	15+01.00	860824.74	687427.64
Tangent Direction: N 89^58'58.87" E			
Tangent Length: 458.87			

Project Name: GUAD10YRNEW

Description:
Horizontal Alignment Name: BIEHN
Description: SD 2-5
Preference: Default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	10+00.00	860356.79	687433.78
PI ( )	11+81.45	860538.23	687433.73
Tangent Direction:	N 0^01'01.39" W		
Tangent Length:	181.45		
Element: Linear			
PI ( )	11+81.45	860538.23	687433.73
POE ( )	12+18.24	860571.84	687448.70
Tangent Direction:	N 24^00'34.03" E		
Tangent Length:	36.79		

Project Name: GUAD10YRNEW
Description:
Horizontal Alignment Name: GUADALUPE
Description: SD 3
Preference: Default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	10+73.64	859954.92	685973.47
PI ( )	11+15.00	859956.71	686014.79
Tangent Direction:	N 87^31'01.00" E		
Tangent Length:	41.36		
Element: Linear			
PI ( )	11+15.00	859956.71	686014.79
PI ( )	17+30.00	859953.63	686629.79
Tangent Direction:	S 89^42'46.66" E		
Tangent Length:	615.00		
Element: Linear			
PI ( )	17+30.00	859953.63	686629.79
PI ( )	17+70.06	859962.43	686668.86
Tangent Direction:	N 77^18'04.68" E		
Tangent Length:	40.05		
Element: Linear			
PI ( )	17+70.06	859962.43	686668.86
PI ( )	27+55.00	859957.46	687653.79
Tangent Direction:	S 89^42'38.14" E		
Tangent Length:	984.94		
Element: Linear			
PI ( )	27+55.00	859957.46	687653.79
POE ( )	28+80.00	860082.46	687654.45
Tangent Direction:	N 0^18'05.78" E		
Tangent Length:	125.00		

Project Name: GUAD10YRNEW
Description:
Horizontal Alignment Name: SD4
Description: P.YAQUI property to S Basin
Preference: default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	10+00.00	857843.21	687718.73
PI ( )	11+01.32	857889.59	687628.65
Tangent Direction:	N 62^45'22.11" W		
Tangent Length:	101.32		
Element: Linear			
PI ( )	11+01.32	857889.59	687628.65
POE ( )	15+44.17	857891.87	687185.80
Tangent Direction:	N 89^42'16.20" W		
Tangent Length:	442.86		

Project Name: GUAD10YRNEW
Description:
Horizontal Alignment Name: VDITCH SO
Description: SD-5 & V-DITCH, S. OF GUADALUPE RD
Preference: Default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	15+00.00	857839.69	687860.52
PI ( )	16+00.00	857894.09	687944.43
Tangent Direction:	N 57^02'40.61" E		
Tangent Length:	100.00		
Element: Linear			
PI ( )	16+00.00	857894.09	687944.43
PI ( )	18+90.00	858184.08	687946.28
Tangent Direction:	N 0^22'00.81" E		
Tangent Length:	290.00		
Element: Linear			
PI ( )	18+90.00	858184.08	687946.28
PI ( )	21+80.00	858474.08	687947.09
Tangent Direction:	N 0^09'33.99" E		
Tangent Length:	290.00		
Element: Linear			
PI ( )	21+80.00	858474.08	687947.09
PI ( )	24+80.00	858774.03	687952.79
Tangent Direction:	N 1^05'17.24" E		

Tangent Length: 300.00

Element: Linear
PI ( ) 24+80.00 858774.03 687952.79
PI ( ) 27+80.00 859073.93 687960.48
Tangent Direction: N 1^28'08.53" E
Tangent Length: 300.00

Element: Linear
PI ( ) 27+80.00 859073.93 687960.48
PI ( ) 29+60.00 859253.63 687970.86
Tangent Direction: N 3^18'23.52" E
Tangent Length: 180.00

Element: Linear
PI ( ) 29+60.00 859253.63 687970.86
PI ( ) 30+60.91 859354.54 687971.72
Tangent Direction: N 0^29'07.64" E
Tangent Length: 100.91

Element: Linear
PI ( ) 30+60.91 859354.54 687971.72
POE ( ) 31+48.12 859441.50 687965.15
Tangent Direction: N 4^19'09.27" W
Tangent Length: 87.21

Project Name: GUAD10YRNEW
Description:
Horizontal Alignment Name: VDITCH_CEN
Description: SD-6, V-DITCH TO C. BASIN TO SAN ANGELO
Preference: Default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	42+00.39	860513.94	687752.59
PI ( )	43+06.22	860589.51	687826.68
Tangent Direction: N 44^26'05.73" E			
Tangent Length: 105.83			
Element: Linear			
PI ( )	43+06.22	860589.51	687826.68
PI ( )	44+80.00	860762.12	687806.60
Tangent Direction: N 6^37'59.85" W			
Tangent Length: 173.78			
Element: Linear			
PI ( )	44+80.00	860762.12	687806.60
PI ( )	47+59.99	861040.05	687772.70
Tangent Direction: N 6^57'14.64" W			
Tangent Length: 279.99			
Element: Linear			
PI ( )	47+59.99	861040.05	687772.70
PI ( )	48+73.36	861151.77	687753.41
Tangent Direction: N 9^47'54.84" W			
Tangent Length: 113.37			
Element: Linear			
PI ( )	48+73.36	861151.77	687753.41
PI ( )	49+59.76	861236.34	687735.71
Tangent Direction: N 11^49'18.44" W			
Tangent Length: 86.41			
Element: Linear			
PI ( )	49+59.76	861236.34	687735.71
PI ( )	50+60.00	861333.64	687711.62
Tangent Direction: N 13^54'27.32" W			
Tangent Length: 100.23			
Element: Linear			
PI ( )	50+60.00	861333.64	687711.62
PI ( )	51+98.44	861466.75	687673.55
Tangent Direction: N 15^57'30.90" W			
Tangent Length: 138.44			
Element: Linear			
PI ( )	51+98.44	861466.75	687673.55
PI ( )	53+51.93	861611.52	687622.57
Tangent Direction: N 19^24'01.23" W			
Tangent Length: 153.49			
Element: Linear			
PI ( )	53+51.93	861611.52	687622.57
POE ( )	54+50.02	861702.71	687586.42
Tangent Direction: N 21^37'35.99" W			
Tangent Length: 98.09			

Project Name: GUAD10YRNEW
Description:
Horizontal Alignment Name: VDITCH_CEN2
Description: V-DITCH, San Angelo to Sonora
Preference: Default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	54+50.00	861702.71	687586.43
PI ( )	56+05.85	861844.88	687522.57
Tangent Direction: N 24^11'14.33" W			
Tangent Length: 155.85			
Element: Linear			
PI ( )	56+05.85	861844.88	687522.57
POE ( )	57+80.00	862001.65	687446.73

Tangent Direction: N 25^48'56.97" W
Tangent Length: 174.15

Project Name: GUAD10YRNEW
Description:
Horizontal Alignment Name: VDITCH_CEN3
Description: V-DITCH, Sonora to Batoua
Preference: Default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	58+20.00	862035.96	687426.92
PI ( )	62+00.00	862378.12	687261.62
Tangent Direction: N 25^47'08.66" W			
Tangent Length: 380.00			
Element: Linear			
PI ( )	62+00.00	862378.12	687261.62
PI ( )	65+10.05	862657.30	687126.73
Tangent Direction: N 25^47'16.89" W			
Tangent Length: 310.05			
Element: Linear			
PI ( )	65+10.05	862657.30	687126.73
PI ( )	66+65.27	862796.92	687058.93
Tangent Direction: N 25^54'09.26" W			
Tangent Length: 155.22			
Element: Linear			
PI ( )	66+65.27	862796.92	687058.93
PI ( )	68+56.56	862962.51	686963.16
Tangent Direction: N 30^02'34.36" W			
Tangent Length: 191.29			
Element: Linear			
PI ( )	68+56.56	862962.51	686963.16
PI ( )	71+60.00	863217.19	686798.19
Tangent Direction: N 32^55'56.73" W			
Tangent Length: 303.44			
Element: Linear			
PI ( )	71+60.00	863217.19	686798.19
PI ( )	73+65.41	863383.71	686677.94
Tangent Direction: N 35^50'09.94" W			
Tangent Length: 205.41			
Element: Linear			
PI ( )	73+65.41	863383.71	686677.94
POE ( )	74+17.87	863424.04	686644.38
Tangent Direction: N 39^46'05.14" W			
Tangent Length: 52.46			

Project Name: GUAD10YRNEW
Description:
Horizontal Alignment Name: VDITCH_NO
Description: V-DITCH, Batoua SD-1 Inlet to ADY, SD 7-1
Preference: default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	74+18.00	863424.04	686644.38
PI ( )	75+00.53	863490.08	686594.89
Tangent Direction: N 36^50'48.65" W			
Tangent Length: 82.53			
Element: Linear			
PI ( )	75+00.53	863490.08	686594.89
PI ( )	75+66.87	863543.95	686556.17
Tangent Direction: N 35^42'26.77" W			
Tangent Length: 66.35			
Element: Linear			
PI ( )	75+66.87	863543.95	686556.17
PI ( )	77+44.65	863683.56	686446.10
Tangent Direction: N 38^15'05.79" W			
Tangent Length: 177.78			
Element: Linear			
PI ( )	77+44.65	863683.56	686446.10
PI ( )	80+75.54	863936.45	686232.72
Tangent Direction: N 40^09'20.82" W			
Tangent Length: 330.88			
Element: Linear			
PI ( )	80+75.54	863936.45	686232.72
PI ( )	83+39.61	864129.61	686052.66
Tangent Direction: N 42^59'26.44" W			
Tangent Length: 264.07			
Element: Linear			
PI ( )	83+39.61	864129.61	686052.66
PI ( )	84+63.19	864209.88	685958.69
Tangent Direction: N 49^29'45.99" W			
Tangent Length: 123.59			
Element: Linear			
PI ( )	84+63.19	864209.88	685958.69
POE ( )	85+03.89	864187.43	685924.74
Tangent Direction: S 56^31'33.03" W			
Tangent Length: 40.70			

Project Name: GUAD10YRNEW
Description:

Horizontal Alignment Name: VDITCH_PITAYA
Description: V-DITCH, N edge of Rd
Preference: Default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	5+00.00	863529.54	686503.67
PI ( )	5+50.00	863529.26	686553.67
Tangent Direction:	S 89^41'09.66" E		
Tangent Length:	50.00		
Element: Linear			
PI ( )	5+50.00	863529.26	686553.67
POE ( )	6+00.00	863528.99	686603.66
Tangent Direction:	S 89^41'09.66" E		
Tangent Length:	50.00		

Project Name: GUAD10YRNEW
Description:
Horizontal Alignment Name: ADY
Description: SD 7
Preference: default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	9+83.00	864303.61	685687.95
PI ( )	10+95.00	864293.35	685799.47
Tangent Direction:	S 84^44'37.46" E		
Tangent Length:	112.00		
Element: Linear			
PI ( )	10+95.00	864293.35	685799.47
PI ( )	11+60.55	864273.27	685861.87
Tangent Direction:	S 72^09'40.43" E		
Tangent Length:	65.55		
Element: Linear			
PI ( )	11+60.55	864273.27	685861.87
PI ( )	12+00.83	864250.34	685894.98
Tangent Direction:	S 55^17'38.26" E		
Tangent Length:	40.28		
Element: Linear			
PI ( )	12+00.83	864250.34	685894.98
PI ( )	12+18.28	864232.88	685895.13
Tangent Direction:	S 0^28'45.33" E		
Tangent Length:	17.45		
Element: Linear			
PI ( )	12+18.28	864232.88	685895.13
PI ( )	12+61.42	864189.75	685895.62
Tangent Direction:	S 0^39'07.95" E		
Tangent Length:	43.13		
Element: Linear			
PI ( )	12+61.42	864189.75	685895.62
PI ( )	12+95.58	864155.59	685895.88
Tangent Direction:	S 0^25'45.70" E		
Tangent Length:	34.16		
Element: Linear			
PI ( )	12+95.58	864155.59	685895.88
PI ( )	13+38.62	864112.55	685895.88
Tangent Direction:	S 0^00'09.59" W		
Tangent Length:	43.04		
Element: Linear			
PI ( )	13+38.62	864112.55	685895.88
POE ( )	14+08.57	864042.60	685896.50
Tangent Direction:	S 0^30'36.92" E		
Tangent Length:	69.96		

Project Name: GUAD10YRNEW
Description:
Horizontal Alignment Name: NBASIN NW
Description: SD 8, N basin outlet
Preference: Default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	10+00.00	864712.81	684655.67
PI ( )	10+64.44	864722.37	684719.39
Tangent Direction:	N 81^27'54.37" E		
Tangent Length:	64.44		
Element: Linear			
PI ( )	10+64.44	864722.37	684719.39
PI ( )	14+01.84	864650.70	685049.10
Tangent Direction:	S 77^44'12.84" E		
Tangent Length:	337.41		
Element: Linear			
PI ( )	14+01.84	864650.70	685049.10
PI ( )	17+04.50	864540.47	685330.97
Tangent Direction:	S 68^38'26.74" E		
Tangent Length:	302.66		
Element: Linear			
PI ( )	17+04.50	864540.47	685330.97
PI ( )	18+46.86	864479.72	685459.71
Tangent Direction:	S 64^44'12.39" E		
Tangent Length:	142.36		

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Element: Linear
            PI (         )          18+46.86     864479.72     685459.71
           POE (         )          19+21.75     864406.31     685474.53
   Tangent Direction:   S 11^24'45.76" E
      Tangent Length:                 74.89

           Project Name: GUAD10YRNEW
            Description:
Horizontal Alignment Name: CERRITOS
            Description: SD 9 & V-ditch from cerritos to N basin
             Preference: Default
                                     STATION      NORTHING       EASTING

Element: Linear
           POB (         )           6+94.13     863999.40     685160.44
            PC (         )           7+68.98     864074.25     685160.72
   Tangent Direction:   N  0^12'34.44" E
      Tangent Length:                 74.85

Element: Circular
            PC (         )           7+68.98     864074.25     685160.72
            PI (         )           8+68.01     864173.28     685161.08
            CC (         )                       864073.64     685328.72
            PT (         )           9+47.95     864220.92     685247.90
                 Radius:               168.00
                  Delta:        61^02'07.50" Right
Degree of Curvature(Arc):        34^06'16.67"
                 Length:               178.97
                Tangent:                99.03
                  Chord:               170.62
     Middle Ordinate:                   23.27
               External:                27.01
   Tangent Direction:   N  0^12'34.44" E
    Radial Direction:   S 89^47'25.56" E
     Chord Direction:   N 30^43'38.19" E
    Radial Direction:   S 28^45'18.06" E
   Tangent Direction:   N 61^14'41.94" E

Element: Linear
            PT (         )           9+47.95     864220.92     685247.90
            PI (         )          10+00.00     864245.96     685293.53
   Tangent Direction:   N 61^14'41.94" E
      Tangent Length:                 52.05

Element: Linear
            PI (         )          10+00.00     864245.96     685293.53
            PI (         )          11+45.00     864246.58     685438.53
   Tangent Direction:   N 89^45'13.79" E
      Tangent Length:                145.00

Element: Linear
            PI (         )          11+45.00     864246.58     685438.53
            PI (         )          12+27.50     864310.53     685490.65
   Tangent Direction:   N 39^10'52.38" E
      Tangent Length:                 82.50

Element: Linear
            PI (         )          12+27.50     864310.53     685490.65
           POE (         )          12+52.86     864335.80     685492.87
   Tangent Direction:   N  5^01'16.34" E
      Tangent Length:                 25.36


           Project Name: GUAD10YRNEW
            Description:
Horizontal Alignment Name: CBASIN_SW
            Description: SD 10, OUTLET DRAIN TO SRP MH
             Preference: Default
                                     STATION      NORTHING       EASTING

Element: Linear
           POB (         )           0+14.00     860109.06     687779.24
            PI (         )           0+95.00     860050.17     687834.85
   Tangent Direction:   S 43^21'33.10" E
      Tangent Length:                 81.00

Element: Linear
            PI (         )           0+95.00     860050.17     687834.85
            PI (         )           1+50.00     860010.18     687872.61
   Tangent Direction:   S 43^21'36.20" E
      Tangent Length:                 55.00

Element: Linear
            PI (         )           1+50.00     860010.18     687872.61
           POE (         )           2+20.01     859994.69     687940.89
   Tangent Direction:   S 77^13'13.18" E
      Tangent Length:                 70.01


           Project Name: GUAD10YRNEW
            Description:
Horizontal Alignment Name: SBASIN SW
            Description: PIPE 001, W inlet pipe for S BASIN
             Preference: Default
                                     STATION      NORTHING       EASTING

Element: Linear
           POB (         )           9+98.22     857674.68     687628.64
           POE (         )          10+58.34     857677.00     687688.72
   Tangent Direction:   N 87^47'18.47" E
      Tangent Length:                 60.12
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Project Name: GUAD10YRNEW
Description:
Horizontal Alignment Name: GUAD SS
Description: RELOCATION OF SAN SWR
Preference: Default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	17+22.08	859960.89	686621.90
PI ( )	17+53.11	859952.27	686651.71
Tangent Direction:	S 73^52'44.73" E		
Tangent Length:	31.03		
Element: Linear			
PI ( )	17+53.11	859952.27	686651.71
PI ( )	20+43.26	859950.82	686941.86
Tangent Direction:	S 89^42'45.65" E		
Tangent Length:	290.15		
Element: Linear			
PI ( )	20+43.26	859950.82	686941.86
PI ( )	22+31.06	859949.88	687129.65
Tangent Direction:	S 89^42'46.45" E		
Tangent Length:	187.80		
Element: Linear			
PI ( )	22+31.06	859949.88	687129.65
PI ( )	25+19.14	859948.43	687417.73
Tangent Direction:	S 89^42'45.41" E		
Tangent Length:	288.09		
Element: Linear			
PI ( )	25+19.14	859948.43	687417.73
PI ( )	27+91.06	859947.05	687689.65
Tangent Direction:	S 89^42'30.93" E		
Tangent Length:	271.92		
Element: Linear			
PI ( )	27+91.06	859947.05	687689.65
POE ( )	28+03.86	859956.01	687698.79
Tangent Direction:	N 45^33'48.84" E		
Tangent Length:	12.80		

Project Name: GUAD10YRNEW
Description:
Horizontal Alignment Name: WATER_ADY
Description: 12" line relocation
Preference: Default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	9+50.00	864153.68	685890.19
PI ( )	10+33.82	864237.50	685890.16
Tangent Direction:	N 0^01'13.82" W		
Tangent Length:	83.82		
Element: Linear			
PI ( )	10+33.82	864237.50	685890.16
PI ( )	10+50.00	864253.68	685890.15
Tangent Direction:	N 0^01'16.49" W		
Tangent Length:	16.18		
Element: Linear			
PI ( )	10+50.00	864253.68	685890.15
POE ( )	10+66.43	864270.11	685890.15
Tangent Direction:	N 0^01'15.34" W		
Tangent Length:	16.43		

Project Name: GUAD10YRNEW
Description:
Horizontal Alignment Name: WATER_CVN
Description: RELOCATED 6" STA 57+55 TO 59+45
Preference: Default

	STATION	NORTHING	EASTING
Element: Linear			
POB ( )	56+96.92	861910.81	687445.53
PI ( )	57+11.92	861925.79	687446.27
Tangent Direction:	N 2^49'53.42" E		
Tangent Length:	15.00		
Element: Linear			
PI ( )	57+11.92	861925.79	687446.27
PI ( )	58+03.58	862008.33	687406.42
Tangent Direction:	N 25^46'04.83" W		
Tangent Length:	91.66		
Element: Linear			
PI ( )	58+03.58	862008.33	687406.42
PI ( )	58+36.12	862039.06	687417.14
Tangent Direction:	N 19^13'56.27" E		
Tangent Length:	32.54		
Element: Linear			
PI ( )	58+36.12	862039.06	687417.14
PI ( )	59+20.00	862114.60	687380.67
Tangent Direction:	N 25^46'06.07" W		
Tangent Length:	83.88		
Element: Linear			
PI ( )	59+20.00	862114.60	687380.67
PI ( )	59+24.16	862118.75	687380.44

Tangent Direction:	N 3^15'58.20" W		
Tangent Length:	4.16		

lement: Linear

PI ( )	59+24.16	862118.75	687380.44
POE ( )	59+31.16	862125.06	687377.41
Tangent Direction:	N 25^39'26.06" W		
Tangent Length:	7.00		