

**WOOD RODGERS**  
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

Appendix B

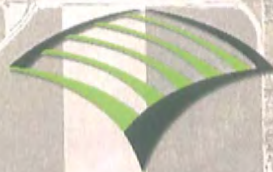


**Appendix B**

**CD CONTAINING  
HYDROLOGIC AND  
HYDRAULIC MODELS  
NOT INCLUDED**

**WOOD RODGERS**  
DEVELOPING INNOVATIVE DESIGN SOLUTIONS

Appendix C

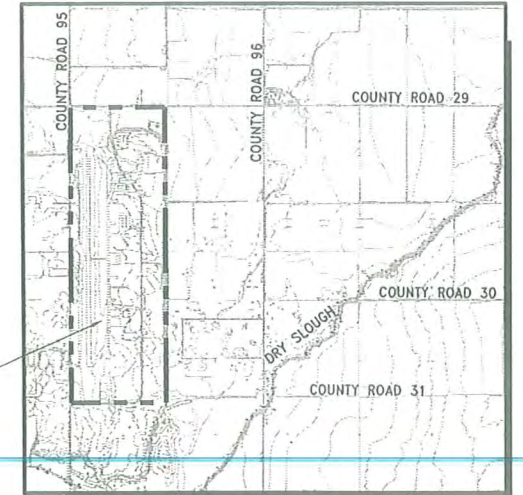


**Appendix C**

# COUNTY OF YOLO

## YOLO COUNTY AIRPORT DRAINAGE PLAN UPDATE

### PRELIMINARY DESIGN



Project Site

VICINITY MAP

NOT TO SCALE

**LEGEND**

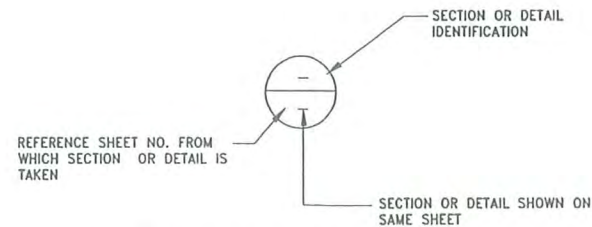
**ABBREVIATIONS**

ITEM	EXISTING	PROPOSED
CENTERLINE	— — — — —	— — — — —
RIGHT-OF-WAY	— — — — —	N/A
LIMIT OF CONSTRUCTION ZONE	N/A	— — — — —
EASEMENT	— · — · — · —	— — — — —
TEMPORARY CONSTRUCTION EASEMENT	N/A	— · — · — · —
FENCE	-X -X -X-	-X -X -X-
UTILITY POLE	⊕	⊕
EARTH SLOPE	N/A	TOP TOE
FLOW LINE	N/A	FL 99.00
OVERHEAD POWER LINE	— OH —	— OH —
UNDERGROUND POWER LINE	— (#E) —	— (#E) —
CONSTRUCTION CENTERLINE W/STATION	N/A	48+00
GROUND CONTOUR	— 12 —	— 12 —
SPOT ELEVATION	x 99.7	122.35
EARTH	[Hatched pattern]	[Hatched pattern]
CONCRETE	[Stippled pattern]	[Stippled pattern]
AGGREGATE BASE	N/A	[Dotted pattern]
STRUCTURE BACKFILL	N/A	[Diagonal hatched pattern]
RIPRAP/STONE PROTECTION	N/A	[Irregular stone pattern]
CONTROL DENSITY FILL/CDF	N/A	[Stippled pattern]
SWALE OR DITCH FLOW		
WATER SURFACE	N/A	
STRUCTURE OUTLINE	— — — — —	— — — — —

ACI	AMERICAN CONCRETE INSTITUTE	LF	LINEAR FEET
ALT	ALTERNATE	MAX	MAXIMUM
APP, APPROX	APPROXIMATE	MIN	MINIMUM
ASTM	AMERICAN SOCIETY FOR TESTING MATERIALS	MISC	MISCELLANEOUS
? , D	ANGLE	N	NORTH
BM	BENCHMARK	NO	NUMBER
BF	BOTTOM FACE	NTS	NOT TO SCALE
CDF	CONTROL DENSITY FILL	OD	OUTSIDE DIAMETER
CIPCP	CAST IN PLACE CONCRETE PIPE	OF	OUTSIDE FACE
CONST	CONSTRUCTION	PERM	PERMANENT
CC	CENTER-TO-CENTER	PC	POINT OF CURVATURE
CJ	CONSTRUCTION JOINT	PI	POINT OF INTERSECTION
C	CENTERLINE	PL, P	PLATE
CLR	CLEAR	PSI	POUNDS PER SQUARE INCH
CONC	CONCRETE	PVC	POLYVINYL CHLORIDE
CONTR	CONTRACTION	R	RADIUS
db	BAR DIAMETER	RCP	REINFORCED CONCRETE PIPE
DIA, ϕ	DIAMETER	REINF REQ	REINFORCING REQUIRED
DIP	DUCTILE IRON PIPE	ROW	RIGHT OF WAY
DS	DOWNSTEAM	S	SOUTH
DWG	DRAWING	SCH	SCHEDULE
E	EAST	SECT	SECTION
EA	EACH	SF	SQUARE FOOT
EF	EACH FACE	SHT	SHEET
EW	EACH WAY	SPEC	SPECIFICATIONS
EL	ELEVATION	SS	STAINLESS STEEL
ESVCP	EXTRA STRONG VITRIFIED CLAY PIPE	STA	STATION
EXIST	EXISTING	STR	STRUCTURE
FOC	FACE OF CURB	TEMP	TEMPORARY
FT	FOOT OR FEET	TS	STRUCTURAL TUBING
FTG	FOOTING	TYP	TYPICAL
GB	GRADE BREAK	TOW	TOP OF WALL
GALV	GALVANIZED	TRANS	TRANSITION
GL	GROUND LINE	US	UPSTREAM
H	HEIGHT	VERT	VERTICAL
HORIZ	HORIZONTAL	W/	WITH
ID	INSIDE DIAMETER		
IF	INSIDE FACE		
INV	INVERT		
JT	JOINT		
L	LENGTH		

**SHEET INDEX**

- TITLE SHEET
- GENERAL PLAN
- DETENTION/WATER QUALITY POND #1 - PLAN, SECTIONS, AND DETAILS
- DETENTION/WATER QUALITY POND #2 - PLAN, SECTIONS, AND DETAILS
- DETENTION/WATER QUALITY POND #3 - PLAN, SECTIONS, AND DETAILS
- DETENTION/WATER QUALITY POND #2 - PLAN, SECTIONS, AND DETAILS
- CULVERT CROSSING #1 - PLAN AND SECTIONS
- CULVERT CROSSING #2 - PLAN AND SECTIONS
- CULVERT CROSSING #3 - PLAN AND SECTIONS
- CULVERT CROSSING #4 - PLAN AND SECTIONS



**SECTION AND DETAIL CROSS-REFERENCING CONVENTIONS**

HALF-SIZE PRINT

WOOD RODGERS

PRELIMINARY

DATE:

REVISIONS				BENCH MARK DESCRIPTION:	ELEV.
NO.	DESCRIPTION	DATE	BY		

( SEE SHEET NO. 1 )

**COUNTY OF YOLO**  
DEPARTMENT OF PUBLIC WORKS, AIRPORT DIVISION

SCALE	DRAWN BY: J. PRITCHARD	DESIGNED BY: J. PRITCHARD	CHECKED BY: F. BORCALLI
HORIZ. =	DATE: DECEMBER 2005	R.C.E. C. 66R39	R.C.E. 17544
VERT. =			

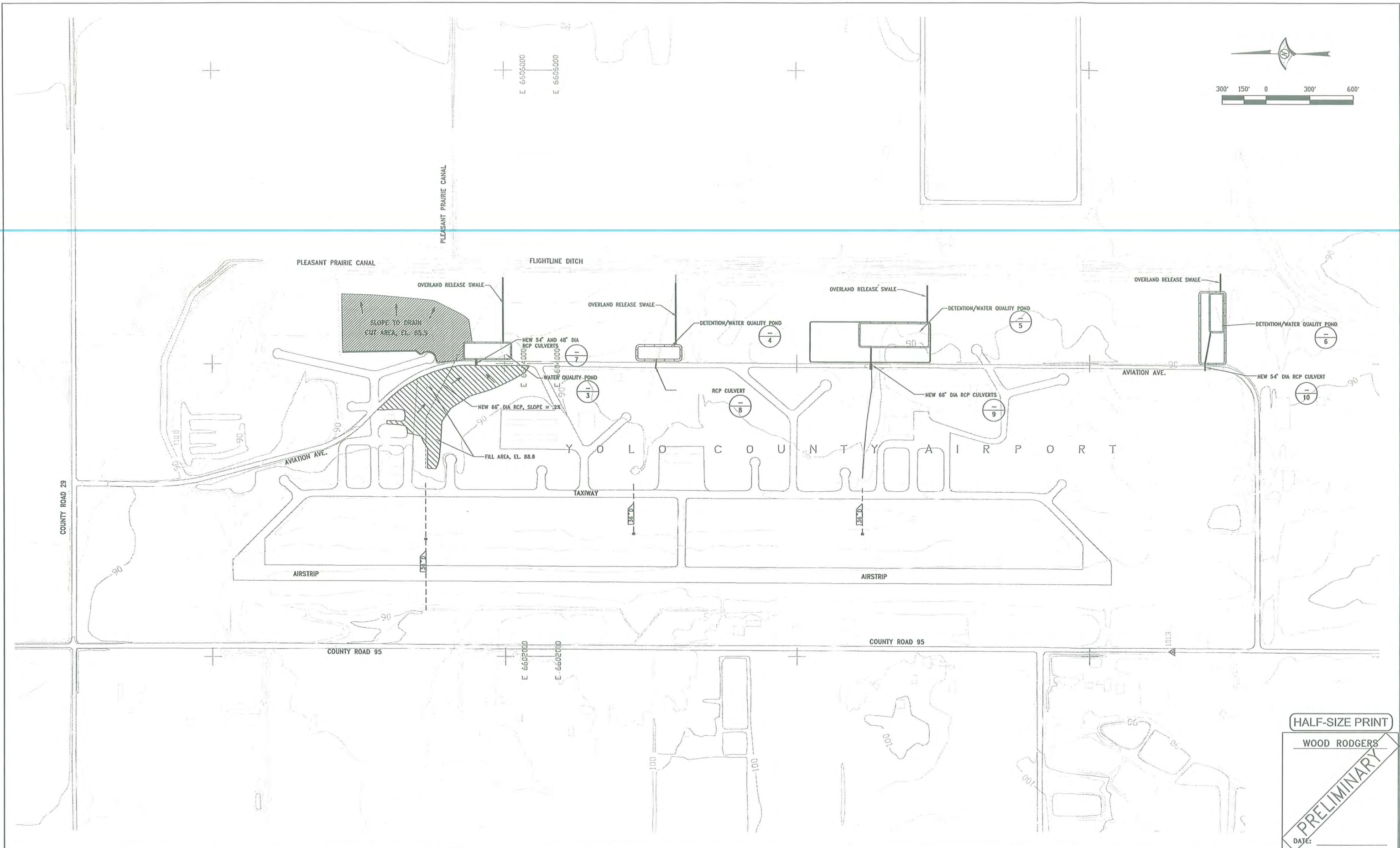
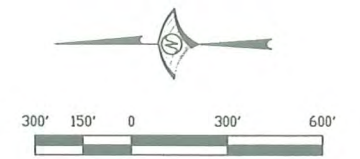
**WOOD RODGERS**  
DEVELOPING INNOVATIVE DESIGN SOLUTIONS  
3301 C St, Bldg. 100-B Sacramento, CA 95816  
Tel 916.341.7760 Fax 916.341.7767

COUNTY OF YOLO  
YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE - PRELIMINARY DESIGN

TITLE SHEET

P: P00-019  
JN: P549

SHEET  
1  
OF  
10



HALF-SIZE PRINT

WOOD RODGERS

**PRELIMINARY**

NO.	REVISIONS DESCRIPTION	DATE	BY

**BENCH MARK** ELEV. \_\_\_\_\_  
 DESCRIPTION: \_\_\_\_\_  
 (SEE SHEET NO. 1)

**COUNTY OF YOLO**  
 DEPARTMENT OF PUBLIC WORKS, AIRPORT DIVISION

SCALE  
 HORIZ. = \_\_\_\_\_  
 VERT. = \_\_\_\_\_

DRAWN BY: J. PRITCHARD  
 DATE: DECEMBER 2005

DESIGNED BY: J. PRITCHARD  
 R.C.E. C. 66839 DATE \_\_\_\_\_

CHECKED BY: F. BORCALLI  
 R.C.E. 17544 DATE \_\_\_\_\_

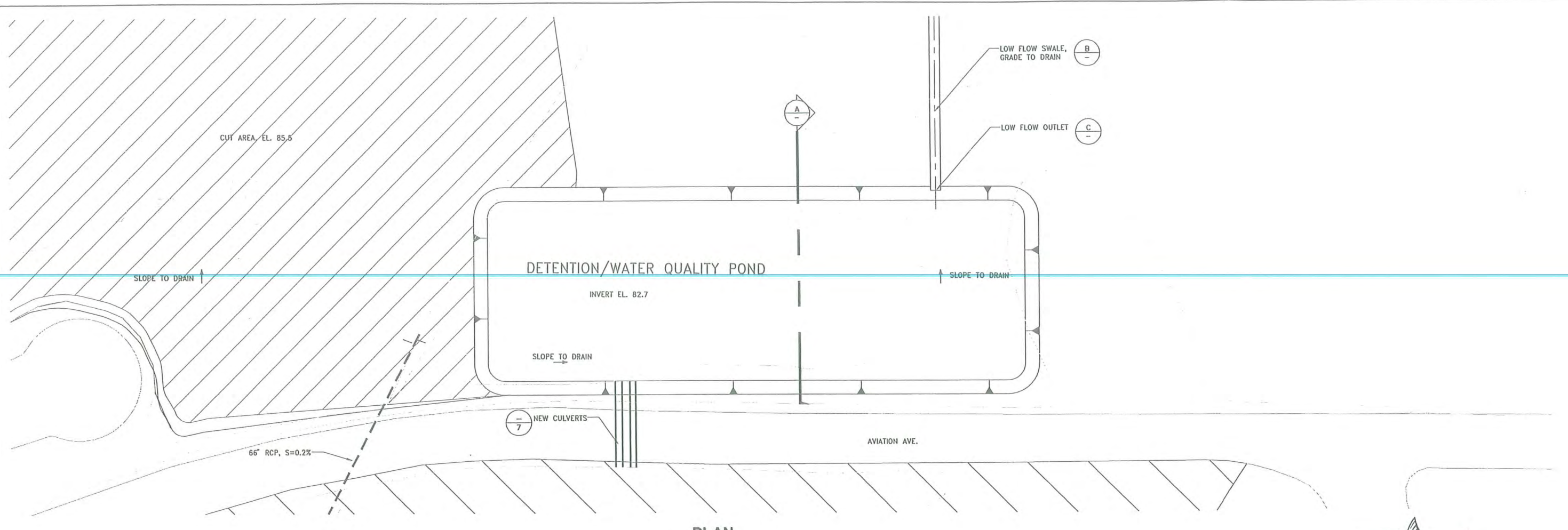
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 Sacramento, CA 95816 Fax 916.341.7767

COUNTY OF YOLO  
 YOLO COUNTY AIRPORT  
 DRAINAGE PLAN UPDATE - PRELIMINARY DESIGN

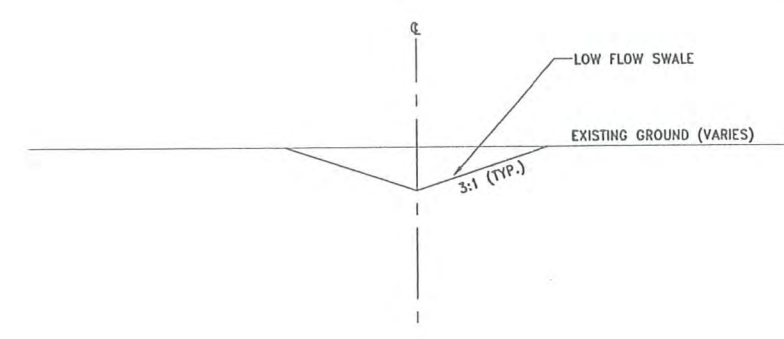
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P: P00-019  
 JN: P549  
 SHEET 2 OF 10

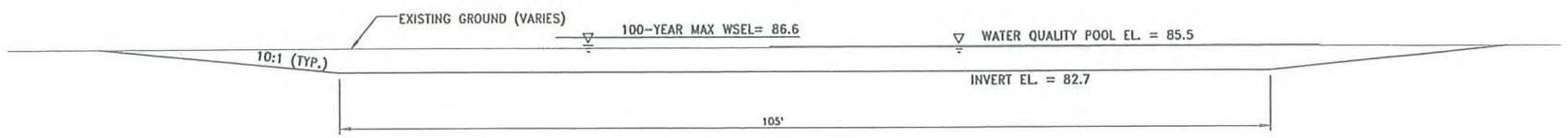
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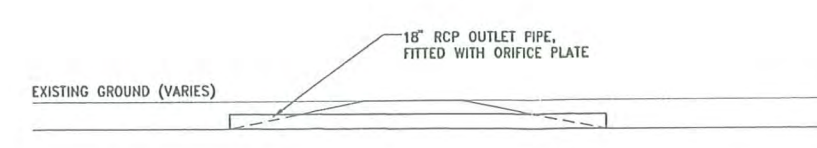
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SCALE: 1" = 30'



**DETAIL B**  
NOT TO SCALE



**SECTION A**  
SCALE: 1" = 10'



**DETAIL C**  
NOT TO SCALE

HALF-SIZE PRINT  
WOOD RODGERS  
**PRELIMINARY**  
DATE: \_\_\_\_\_

REVISIONS			
NO.	DESCRIPTION	DATE	BY

**BENCH MARK** ELEV. \_\_\_\_\_  
DESCRIPTION: \_\_\_\_\_  
( SEE SHEET NO. 1 )

**COUNTY OF YOLO**  
DEPARTMENT OF PUBLIC WORKS, AIRPORT DIVISION

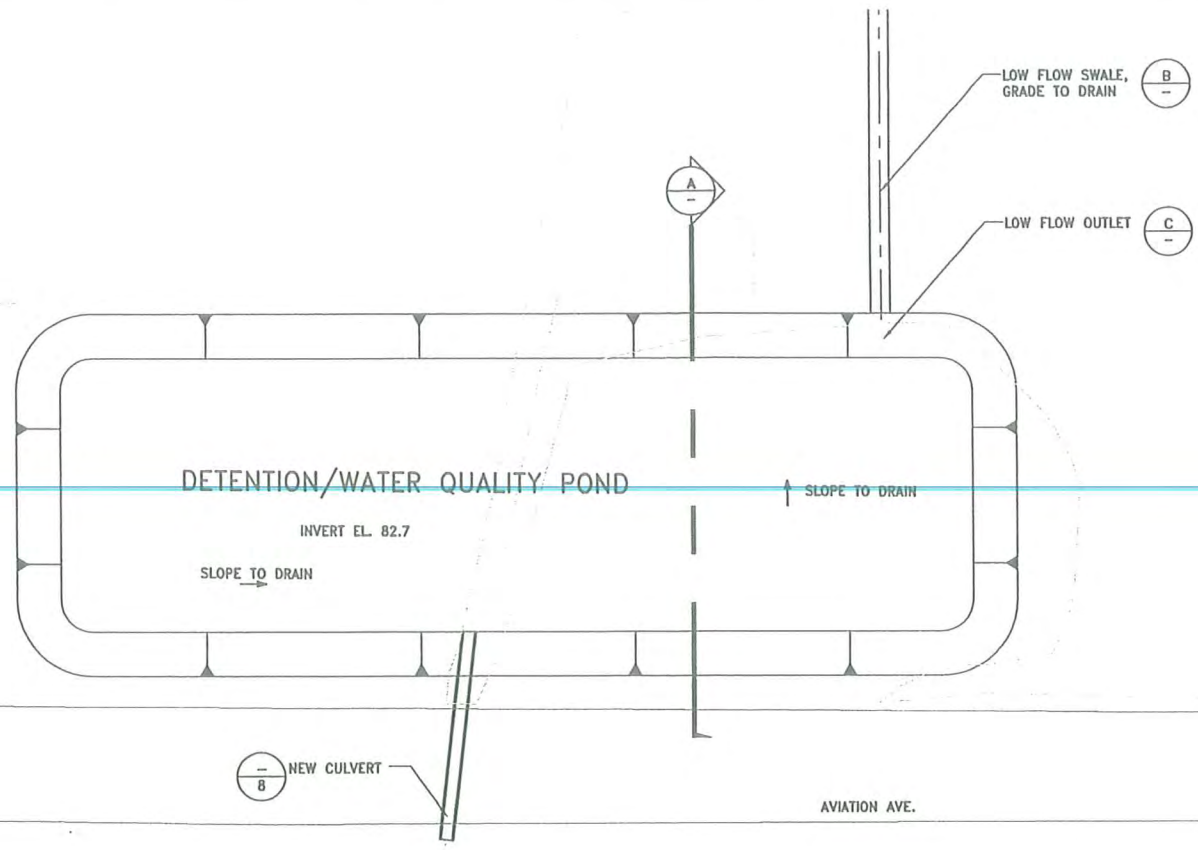
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Sacramento, CA 95816 Fax 916.341.7787

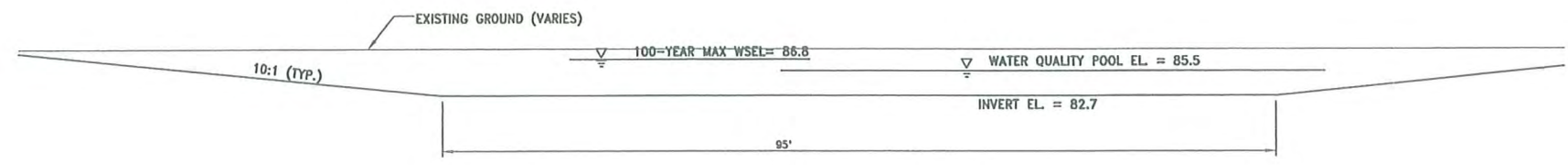
COUNTY OF YOLO  
YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE - PRELIMINARY DESIGN  
DETENTION POND #1  
PLAN, SECTION, AND DETAILS

P: P00-019  
JN: P549  
SHEET 3 OF 10

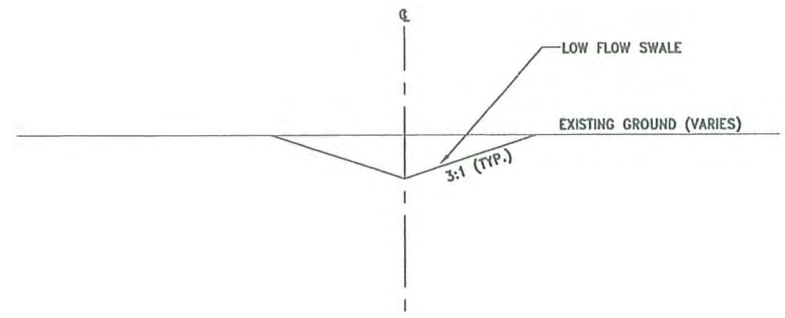
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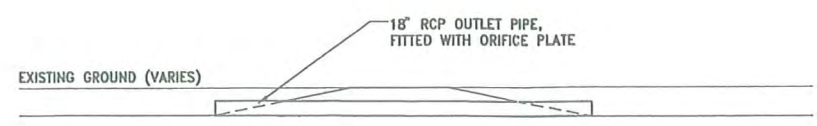
**PLAN**  
SCALE: 1" = 30'



**SECTION**  
SCALE: 1"=10'



**DETAIL**  
NOT TO SCALE



**DETAIL**  
NOT TO SCALE



HALF-SIZE PRINT  
WOOD RODGERS  
**PRELIMINARY**  
DATE: \_\_\_\_\_

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK ELEV. \_\_\_\_\_  
DESCRIPTION: \_\_\_\_\_  
( SEE SHEET NO. 1 )

**COUNTY OF YOLO**  
DEPARTMENT OF PUBLIC WORKS, AIRPORT DIVISION

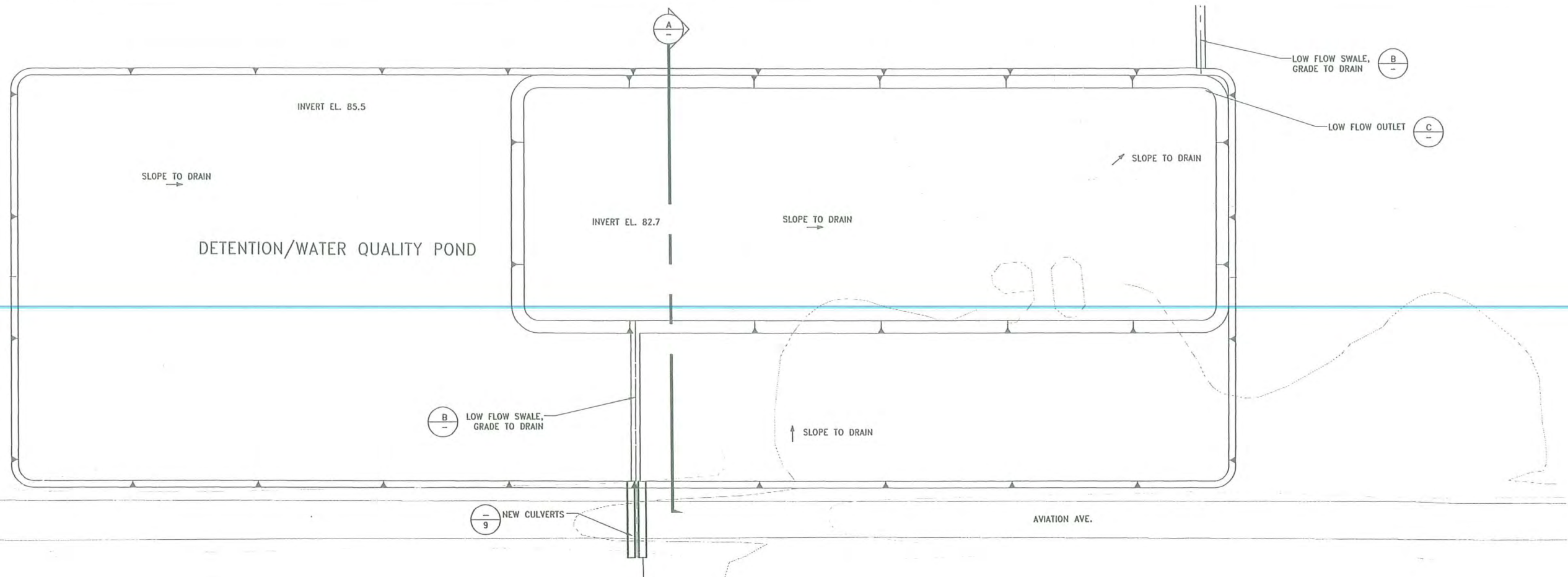
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Sacramento, CA 95816 Fax 916.341.7767

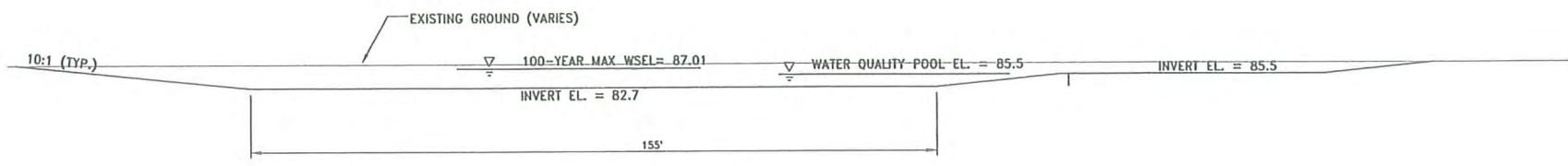
COUNTY OF YOLO  
YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE - PRELIMINARY DESIGN  
DETENTION POND #2  
PLAN, SECTION, AND DETAILS

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SHEET 4 OF 10

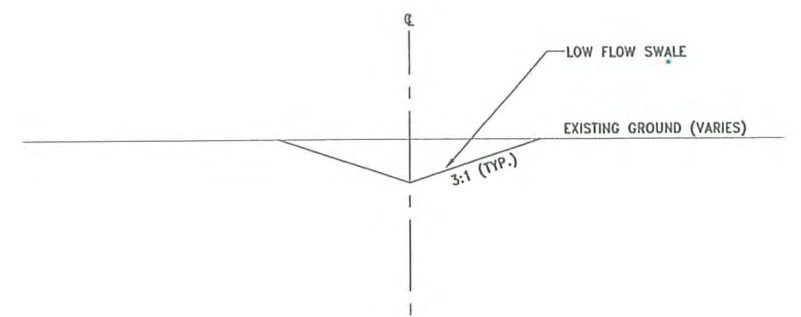
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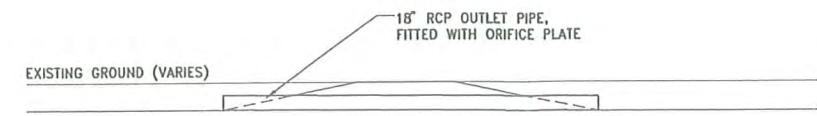
**PLAN**  
SCALE: 1" = 40'



**SECTION**  
SCALE: 1" = 20'



**DETAIL**  
NOT TO SCALE



**DETAIL**  
NOT TO SCALE

HALF-SIZE PRINT  
WOOD RODGERS  
**PRELIMINARY**  
DATE: \_\_\_\_\_

REVISIONS				BENCH MARK DESCRIPTION:	ELEV. _____
NO.	DESCRIPTION	DATE	BY		

( SEE SHEET NO. 1 )

**COUNTY OF YOLO**  
DEPARTMENT OF PUBLIC WORKS, AIRPORT DIVISION

SCALE HORIZ. = _____ VERT. = _____	DRAWN BY: J. PRITCHARD DATE: DECEMBER 2005	DESIGNED BY: J. PRITCHARD R.C.E. C 66839 DATE _____	CHECKED BY: F. BORCALLI R.C.E. 17544 DATE _____
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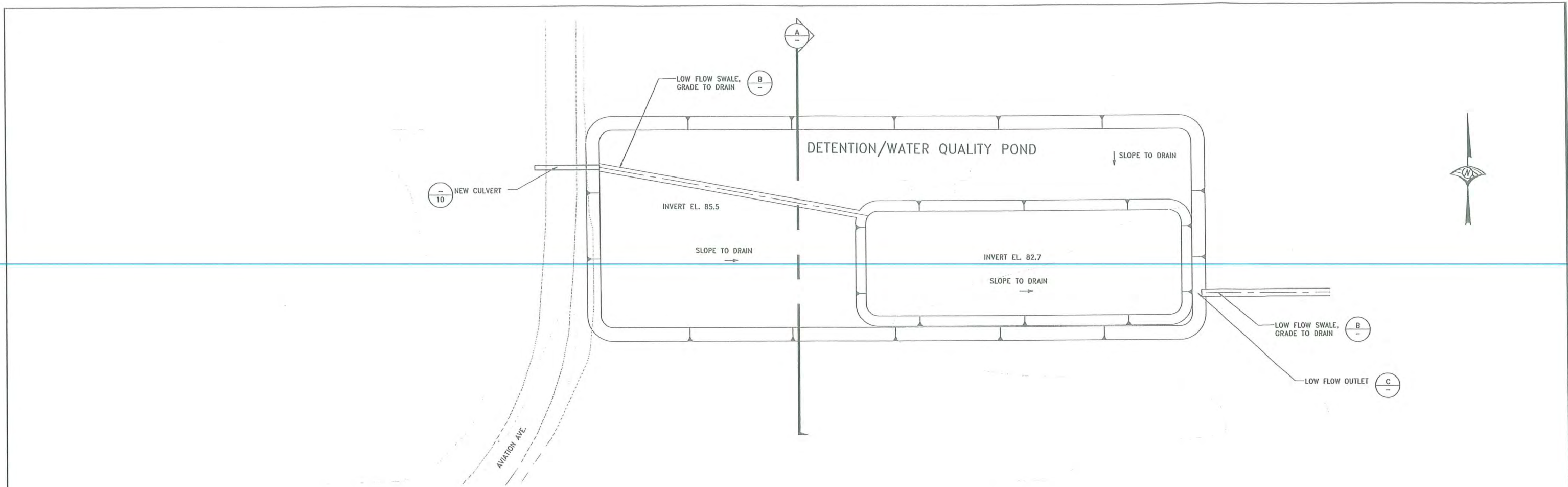
**WOOD RODGERS**  
DEVELOPING INNOVATIVE DESIGN SOLUTIONS  
3301 C St, Bldg. 100-B Sacramento, CA 95818  
Tel 916.341.7760 Fax 916.341.7767

COUNTY OF YOLO  
YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE - PRELIMINARY DESIGN  
DETENTION POND #3  
PLAN, SECTION, AND DETAILS

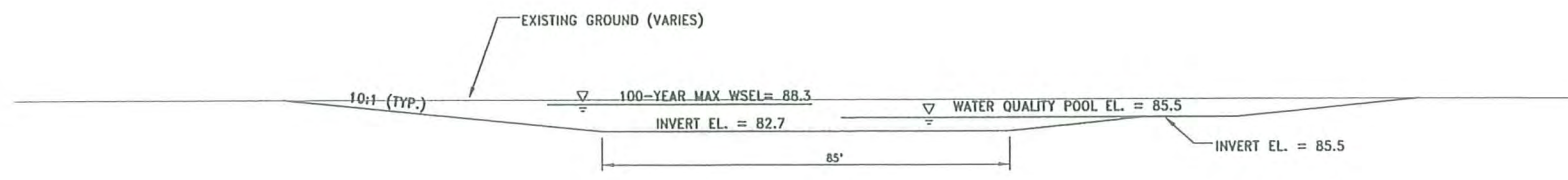
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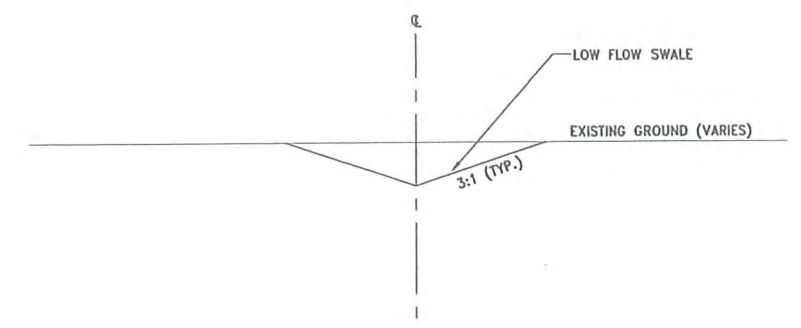




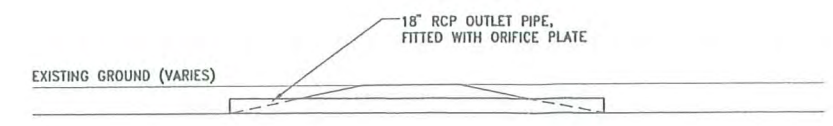
**PLAN**  
SCALE: 1" = 40'



**SECTION**  
SCALE: 1" = 20'



**DETAIL**  
NOT TO SCALE



**DETAIL**  
NOT TO SCALE

HALF-SIZE PRINT  
WOOD RODGERS  
**PRELIMINARY**  
DATE: \_\_\_\_\_

REVISIONS				BENCH MARK DESCRIPTION:	ELEV. _____
NO.	DESCRIPTION	DATE	BY		
				( SEE SHEET NO. 1 )	

**COUNTY OF YOLO**  
DEPARTMENT OF PUBLIC WORKS, AIRPORT DIVISION

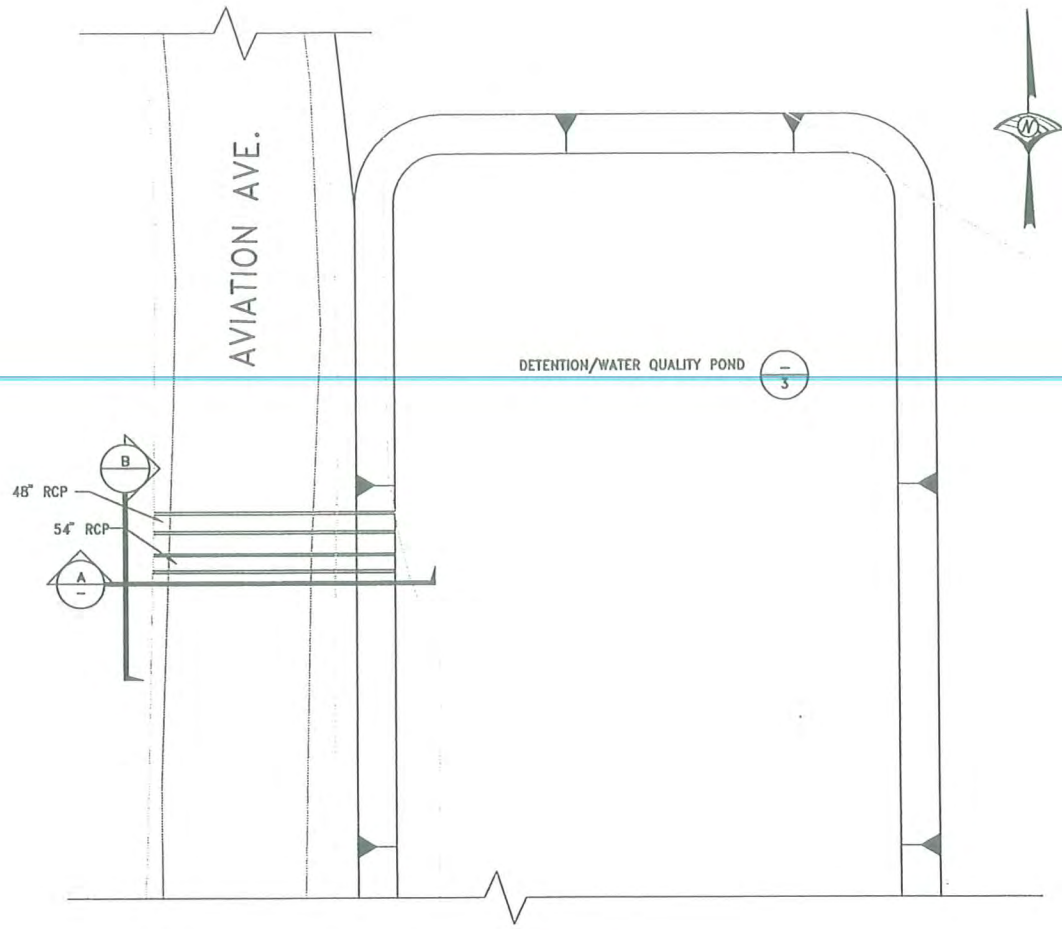
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Sacramento, CA 95816 Fax 916.341.7767

COUNTY OF YOLO  
YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE - PRELIMINARY DESIGN  
DETENTION POND #4  
PLAN, SECTION, & DETAILS

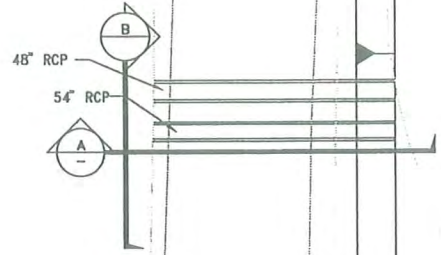
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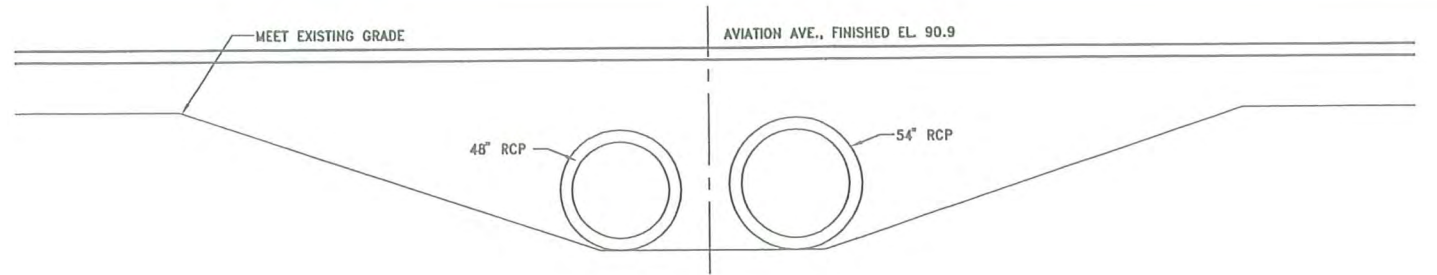


DETENTION/WATER QUALITY POND

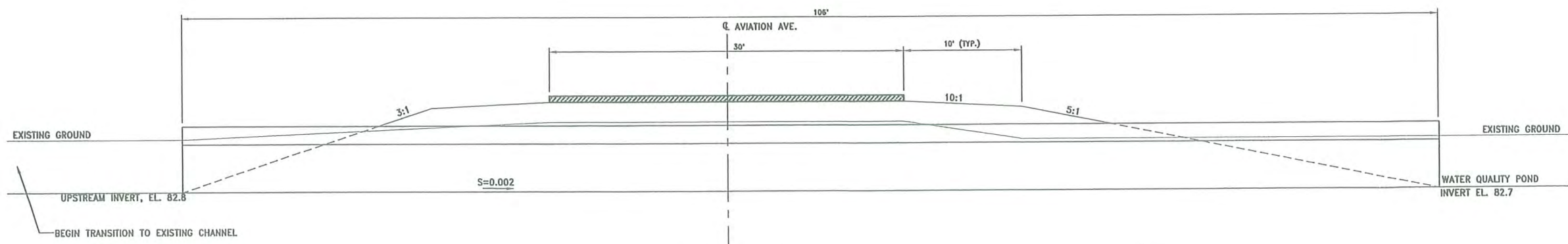
AVIATION AVE.



**PLAN**  
SCALE: 1" = 20'



**SECTION**  
SCALE: 1/4" = 1'



**SECTION**  
SCALE: 3/16" = 1'

HALF-SIZE PRINT  
WOOD RODGERS  
**PRELIMINARY**  
DATE: \_\_\_\_\_

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK ELEV. \_\_\_\_\_  
DESCRIPTION: \_\_\_\_\_  
( SEE SHEET NO. 1 )

SCALE  
HORIZ. = \_\_\_\_\_  
VERT. = \_\_\_\_\_

**COUNTY OF YOLO**  
DEPARTMENT OF PUBLIC WORKS, AIRPORT DIVISION

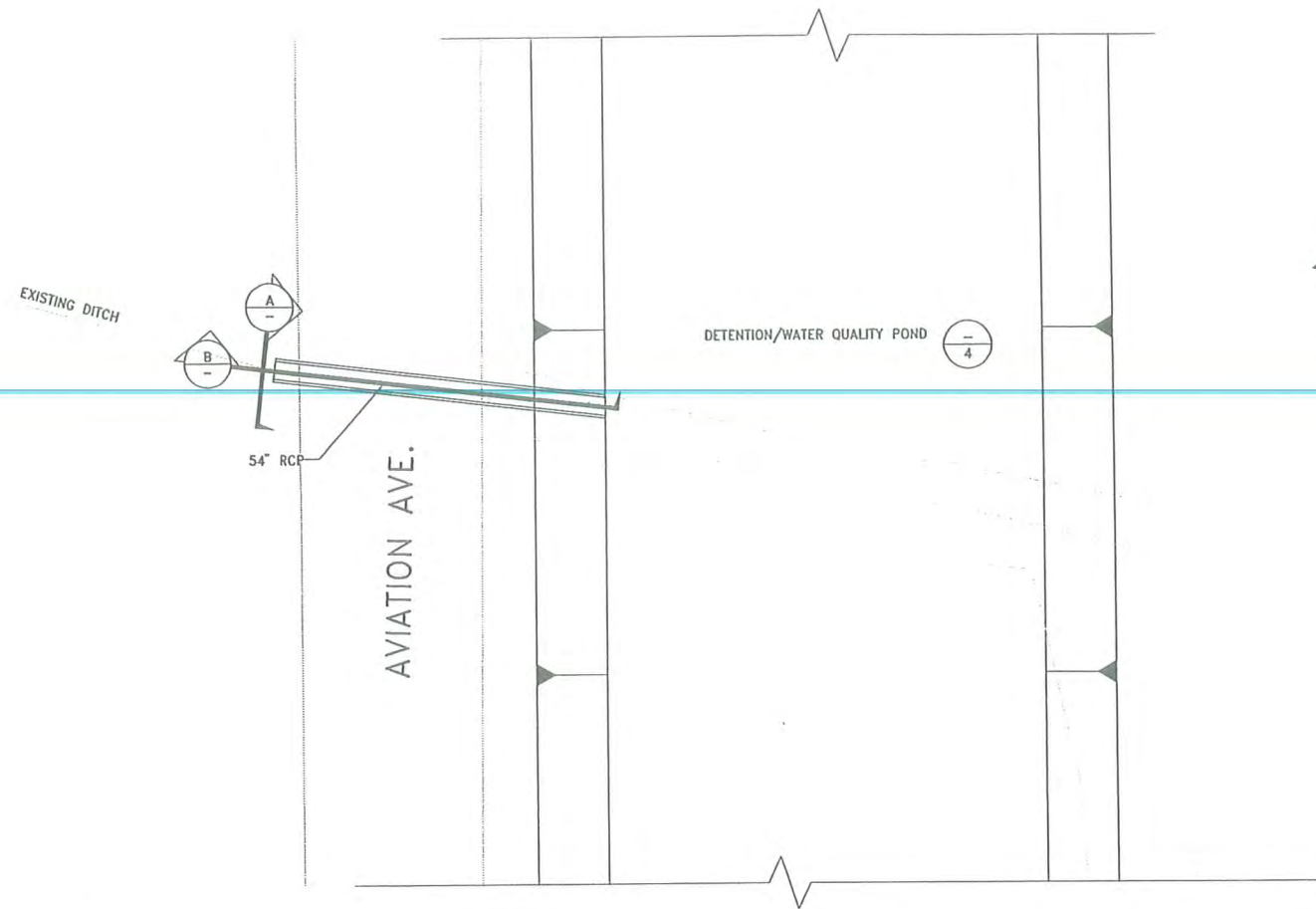
DRAWN BY: J. PRITCHARD	DESIGNED BY: J. PRITCHARD	CHECKED BY: F. BORCALLI
DATE: DECEMBER 2005	R.C.E. C. 66839 DATE: _____	R.C.E. 17544 DATE: _____

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Sacramento, CA 95816 Fax 916.341.7767

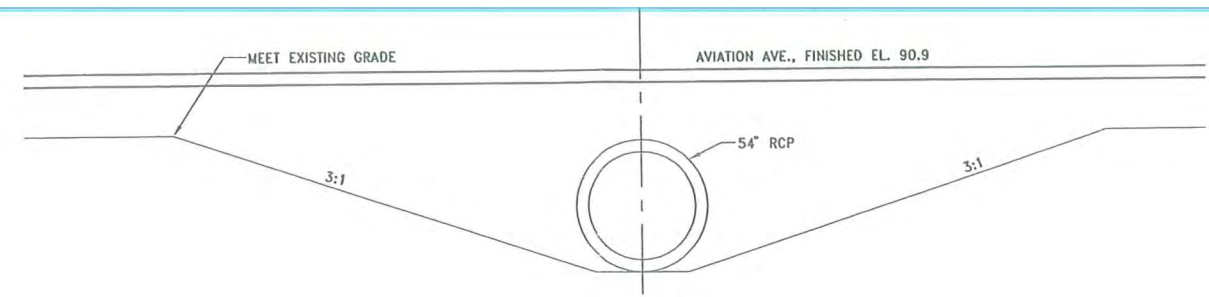
COUNTY OF YOLO  
YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE - PRELIMINARY DESIGN  
CULVERT CROSSING #1  
PLAN AND SECTIONS

P: P00-019  
JN: P549  
SHEET 7 OF 10

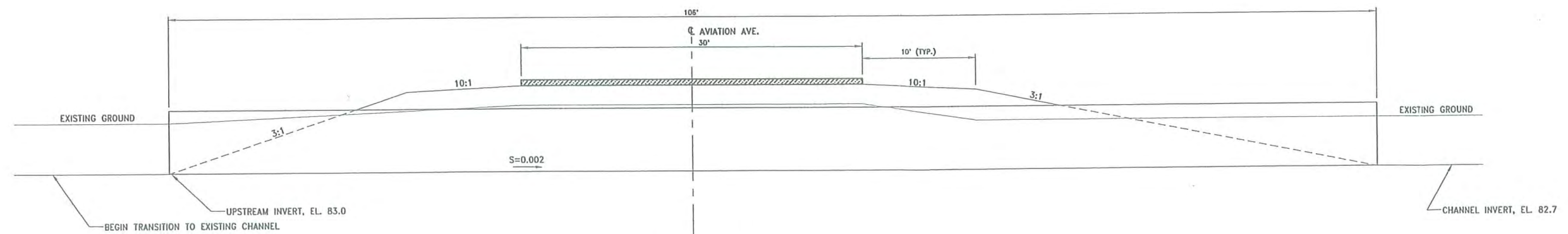
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**PLAN**  
SCALE: 1" = 20'



**SECTION**  
SCALE: 3/16" = 1'



**SECTION**  
SCALE: 3/16" = 1'

HALF-SIZE PRINT  
WOOD RODGERS  
**PRELIMINARY**  
DATE: \_\_\_\_\_

REVISIONS			
NO.	DESCRIPTION	DATE	BY

BENCH MARK ELEV. \_\_\_\_\_  
DESCRIPTION: \_\_\_\_\_  
( SEE SHEET NO. 1 )

**COUNTY OF YOLO**  
DEPARTMENT OF PUBLIC WORKS, AIRPORT DIVISION

SCALE  
HORIZ. = \_\_\_\_\_  
VERT. = \_\_\_\_\_

DRAWN BY: J. PRITCHARD  
DATE: DECEMBER 2005

DESIGNED BY: J. PRITCHARD  
R.C.E. C. 66839 DATE: \_\_\_\_\_

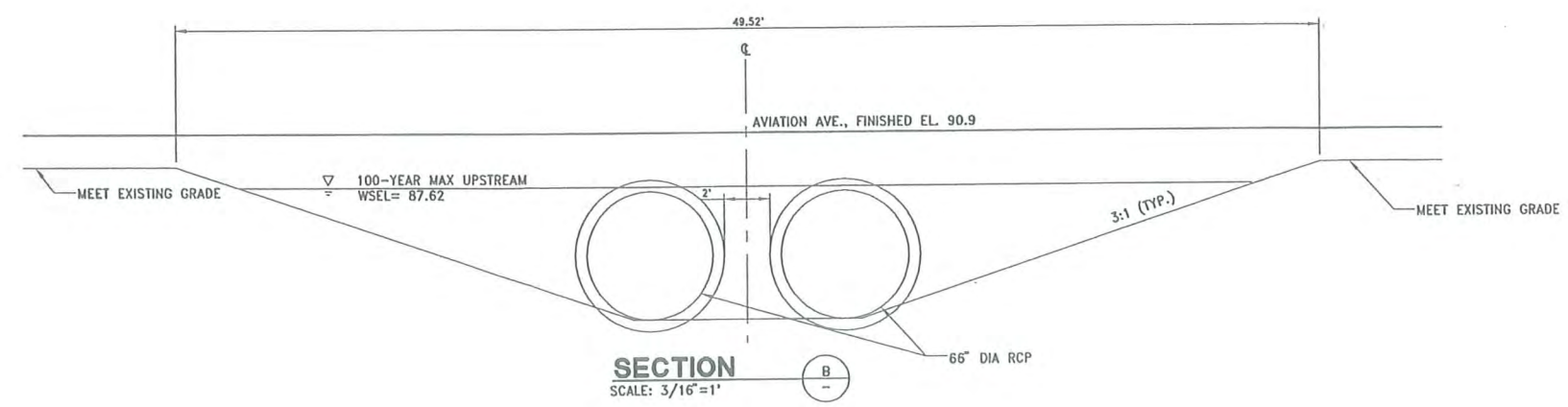
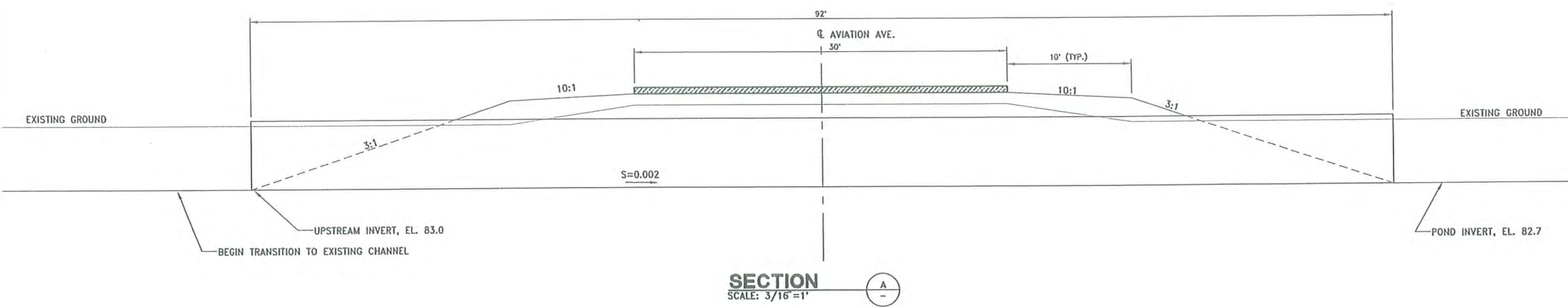
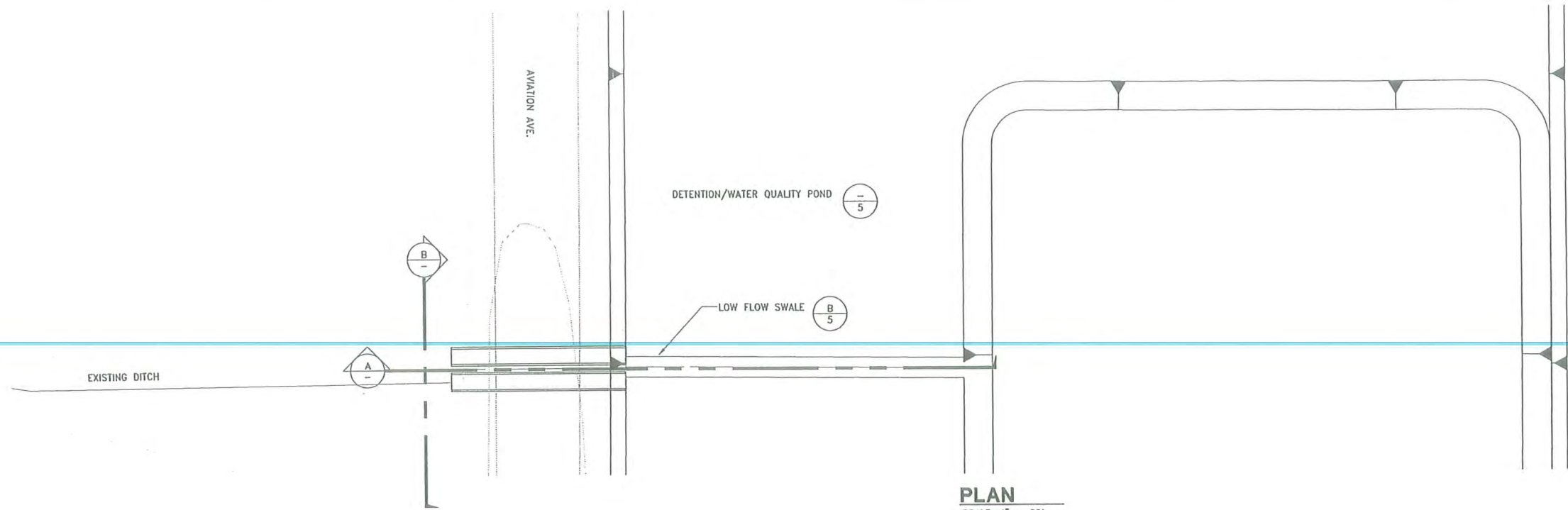
CHECKED BY: F. BORCALLI  
R.C.E. 17544 DATE: \_\_\_\_\_

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DEVELOPING INNOVATIVE DESIGN SOLUTIONS  
3301 C St, Bldg. 100-B Tel 916.341.7760  
Sacramento, CA 95816 Fax 916.341.7767

COUNTY OF YOLO  
YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE - PRELIMINARY DESIGN  
CULVERT CROSSING #2  
PLAN AND SECTIONS

P: P00-019  
JN: P549  
SHEET 8 OF 10

J:\yolo\8284\_001\_YoloCo\_Airport\YoloCo\_Airport-0A\Civil\Draw\C-08-SS-06.dwg 12/05/05 2:08pm pritchard



HALF-SIZE PRINT

WOOD RODGERS

**PRELIMINARY**

DATE: \_\_\_\_\_

REVISIONS				BENCH MARK DESCRIPTION:	ELEV. _____
NO.	DESCRIPTION	DATE	BY		
				( SEE SHEET NO. 1 )	

**COUNTY OF YOLO**  
DEPARTMENT OF PUBLIC WORKS, AIRPORT DIVISION

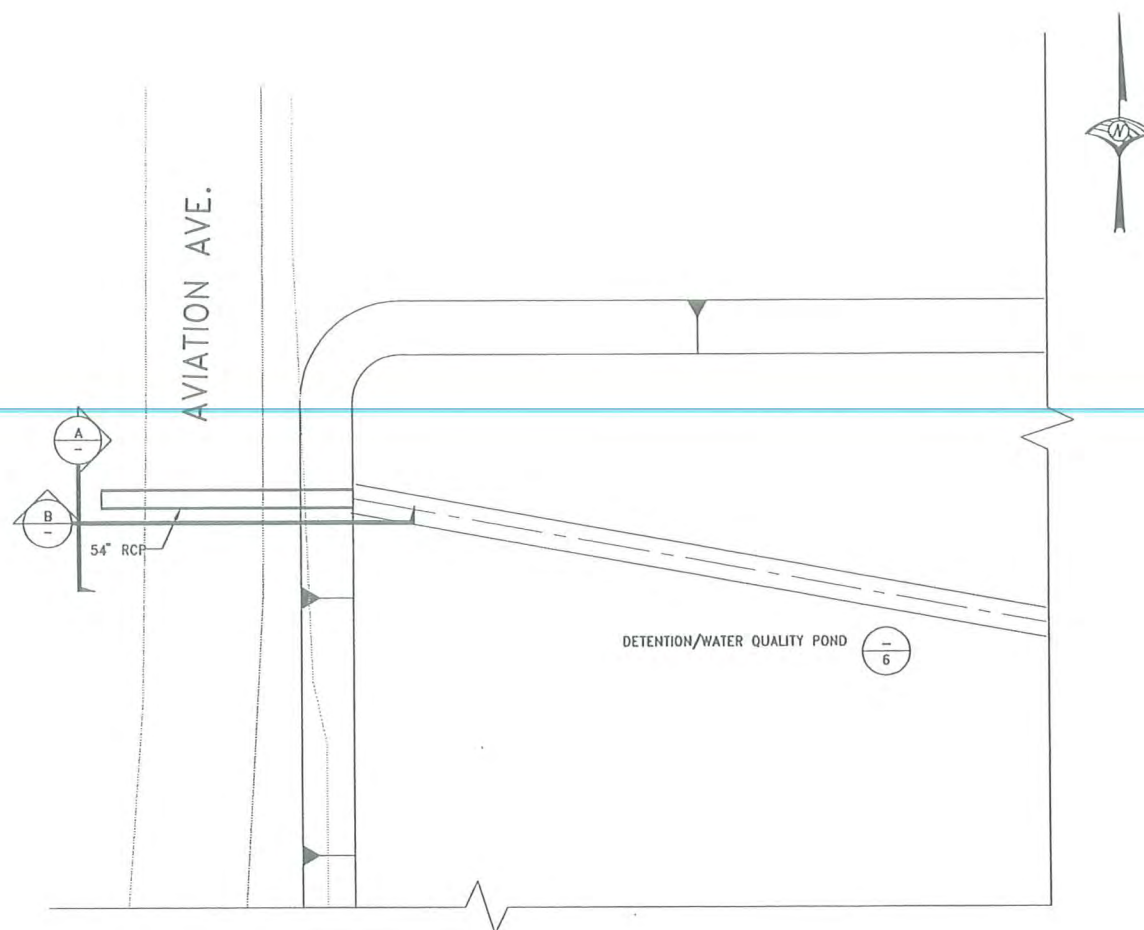
SCALE HORIZ. = _____ VERT. = _____	DRAWN BY: J. PRITCHARD DATE: DECEMBER 2005	DESIGNED BY: J. PRITCHARD R.C.E. C. 66839 DATE: _____	CHECKED BY: F. BORCALLI R.C.E. 17544 DATE: _____
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Sacramento, CA 95816 Fax 916.341.7707

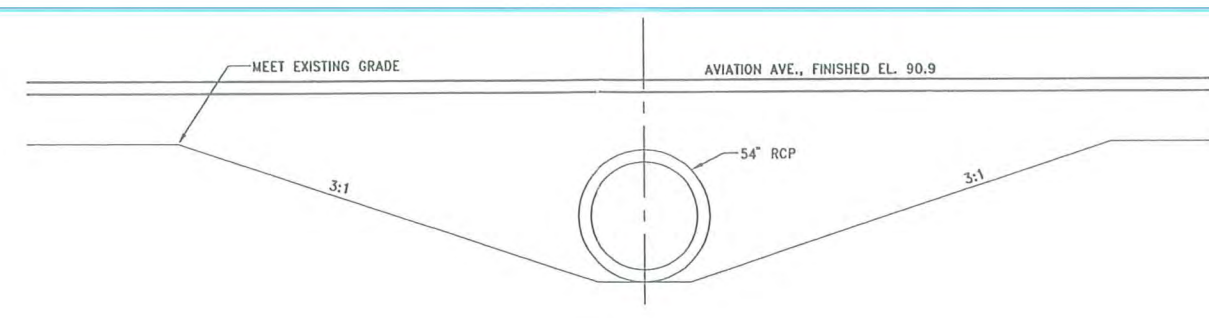
COUNTY OF YOLO  
YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE - PRELIMINARY DESIGN  
**CULVERT CROSSING #3**  
**PLAN AND SECTIONS**

P: P00-019	JN: P549	SHEET 9 OF 10
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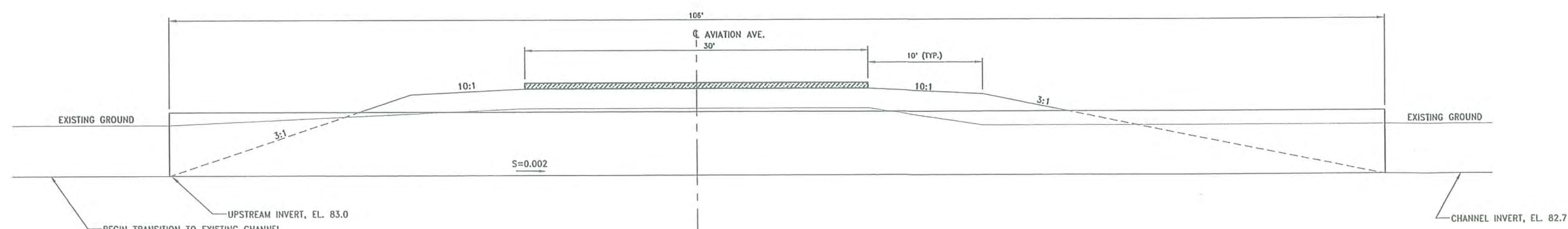
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**PLAN**  
SCALE: 1" = 20'



**SECTION**  
SCALE: 3/16" = 1'



**SECTION**  
SCALE: 3/16" = 1'

HALF-SIZE PRINT  
WOOD RODGERS  
**PRELIMINARY**  
DATE:

REVISIONS				BENCH MARK ELEV. _____ DESCRIPTION: ( SEE SHEET NO. 1 )
NO.	DESCRIPTION	DATE	BY	

**COUNTY OF YOLO**  
DEPARTMENT OF PUBLIC WORKS, AIRPORT DIVISION

SCALE HORIZ. = _____ VERT. = _____	DRAWN BY: <u>J. PRITCHARD</u> DATE: <u>DECEMBER 2005</u>	DESIGNED BY: <u>J. PRITCHARD</u> R.C.E. C. <u>66839</u> DATE: _____	CHECKED BY: <u>F. BORCALLI</u> R.C.E. <u>17544</u> DATE: _____
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**WOOD RODGERS**  
DEVELOPING INNOVATIVE DESIGN SOLUTIONS  
3301 G St, Bldg. 100-B Tel 916.341.7760  
Sacramento, CA 95815 Fax 916.341.7767

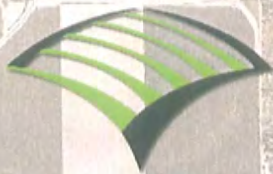
COUNTY OF YOLO  
YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE - PRELIMINARY DESIGN  
**CULVERT CROSSING #4**  
**PLAN AND SECTIONS**

P: P00-019  
JN: P549  
SHEET 10 OF 10

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**WOOD RODGERS**  
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Appendix D



**Appendix D**

**APPENDIX D**

**COUNTY OF YOLO**

**YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE**

**OPINION OF PROBABLE COSTS<sup>1</sup> ULTIMATE CONDITIONS**

Sheet 1 of 3

Description	Quantity	Unit	Unit Cost, \$	Total Cost, \$ <sup>1</sup>
<b>I. Drainage Areas 1 and 2 Facilities</b>				
<b>a. Flood Control Excavation East of Aviation Avenue</b>				
· Excavate using Self-Propelled Scrapers	4,090	cy	3.61	14,800
· Spread, Shape Excess Material in Spoil Areas	4,908	cy	2.14	10,500
· Compaction	4,908	cy	0.26	1,300
<b>b. Water Quality Pond Construction</b>				
· Excavate using Self-Propelled Scrapers	4,533	cy	3.61	16,400
· Spread, Shape Excess Material in Spoil Areas	5,440	cy	2.14	11,600
· Compaction	5,440	cy	0.26	1,400
· 18" RCP low flow outlet pipe w/orifice plate	54	lf	29.55	1,600
<b>c. Install 54-inch RCP and 48-inch RCP to drain on-site runoff to Water Quality Pond</b>				
· Excavate using Excavator	663	cy	1.93	1,300
· Structural Backfill	569	cy	0.78	443
· Load Excess Material Onto Trucks	226	cy	0.22	50
· Hauling, 12 c.y. dump truck	226	cy	3.64	800
· Spread, Shape Excess Material in Spoil Areas	226	cy	2.14	500
· Compaction	226	cy	0.26	100
· Road Base Material Replacement, 12" Aggregate Base Course	107.0	sy	12.69	1,358
· Asphalt Concrete Paving Replacement	107.0	sy	8.50	910
· Asphalt Concrete Paving Removal	107.0	sy	5.28	565
· Pavement Markings, 8" wide	30.0	lf	0.41	12
· Signs	2.0	ea	83.15	166
· 48" Diameter RCP Pipes	106	lf	123.41	13,100
· 54" Diameter RCP Pipes	106	lf	155.04	16,400
<b>d. Install 66-inch RCP to isolate off-site runoff from water quality treatment</b>				
· Excavate using Excavator	5,688	cy	1.93	11,000
· Structural Backfill	4,887	cy	0.78	3,806
· Load Excess Material Onto Trucks	1,938	cy	0.22	430
· Hauling, 12 c.y. dump truck	1,938	cy	3.64	7,100
· Spread, Shape Excess Material in Spoil Areas	1,938	cy	2.14	4,100
· Compaction	1,938	cy	0.26	500
· Road Base Material Replacement, 12" Aggregate Base Course	72.0	sy	12.69	914
· Asphalt Concrete Paving Replacement	72.0	sy	8.50	612
· Asphalt Concrete Paving Removal	72.0	sy	5.28	380
· Pavement Markings, 8" wide	15.0	lf	0.41	6
· Signs	2.0	ea	83.15	166
· 66" Diameter RCP Pipes	910	lf	218.94	199,200
<b>e. Mobilization/Demobilization (5%)</b>	1	ls	16,075.98	16,100
<b>Subtotal Drainage Areas 1 and 2 Facilities</b>				<b>337,620</b>

APPENDIX D

COUNTY OF YOLO

YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE

OPINION OF PROBABLE COSTS <sup>1</sup> ULTIMATE CONDITIONS

Sheet 2 of 3

Description	Quantity	Unit	Unit Cost, \$	Total Cost, \$ <sup>1</sup>
<b>3. Drainage Area #3 Facilities</b>				
<b>a. Install 54-inch RCP crossing Aviation Avenue</b>				
· Excavate using Excavator	354	cy	1.48	500
· Structural Backfill	296	cy	0.78	231
· Load Excess Material Onto Trucks	128	cy	0.22	29
· Hauling, 12 c.y. dump truck	128	cy	3.64	500
· Spread, Shape Excess Material in Spoil Areas	128	cy	2.14	300
· Compaction	128	cy	0.26	0
· Road Base Material Replacement, 12" Aggregate Base Course	72.0	sy	12.69	914
· Asphalt Concrete Paving Replacement	72.0	sy	8.50	612
· Asphalt Concrete Paving Removal	72.0	sy	5.28	380
· Pavement Markings, 8" wide	22.0	lf	0.41	9
· Signs	2.0	ea	83.15	166
· 54" Diameter RCP Pipes	98	lf	155.04	15,200
<b>b. Detention/Water Quality Pond Construction</b>				
· Excavate using Self-Propelled Scrapers	5,260	cy	3.61	19,000
· Spread, Shape Excess Material in Spoil Areas	6,312	cy	2.14	13,500
· Compaction	6,312	cy	0.26	1,700
· 18" RCP low flow outlet pipe w/orifice plate	54	lf	29.55	1,600
<b>c. Mobilization/Demobilization (5%)</b>	1	ls	2,732.02	2,700
<b>Subtotal Drainage Area #3 Facilities</b>				<b>57,340</b>
<b>4. Drainage Area #4 Facilities</b>				
<b>a. Install (2) 66-inch RCPs crossing Aviation Avenue</b>				
· Excavate using Excavator	851	cy	1.48	1,300
· Structural Backfill	721	cy	0.78	561
· Load Excess Material Onto Trucks	300	cy	0.22	67
· Hauling, 12 c.y. dump truck	300	cy	3.64	1,100
· Spread, Shape Excess Material in Spoil Areas	300	cy	2.14	600
· Compaction	300	cy	0.26	100
· Road Base Material Replacement, 12" Aggregate Base Course	107.0	sy	12.69	1,358
· Asphalt Concrete Paving Replacement	107.0	sy	8.50	910
· Asphalt Concrete Paving Removal	107.0	sy	5.28	565
· Pavement Markings, 8" wide	22.0	lf	0.41	9
· Signs	2.0	ea	83.15	166
· 66" Diameter RCP Pipes	184	lf	218.94	40,300
<b>b. Detention/Water Quality Pond Construction</b>				
· Excavate using Self-Propelled Scrapers	27,265	cy	3.61	98,400
· Spread, Shape Excess Material in Spoil Areas	32,718	cy	2.14	70,000
· Compaction	32,718	cy	0.26	8,600
· 18" RCP low flow outlet pipe w/orifice plate	54	lf	29.55	1,600
<b>c. Mobilization/Demobilization (5%)</b>	1	ls	11,281.78	11,300
<b>Subtotal Drainage Area #4 Facilities</b>				<b>236,936</b>



APPENDIX D

COUNTY OF YOLO

YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE

OPINION OF PROBABLE COSTS<sup>1</sup> ULTIMATE CONDITIONS

Sheet 3 of 3

Description	Quantity	Unit	Unit Cost, \$	Total Cost, \$ <sup>1</sup>
<b>5. Drainage Area #5 Facilities</b>				
<b>a. Install 54-inch RCP crossing Aviation Avenue</b>				
· Excavate using Excavator	361	cy	1.48	500
· Structural Backfill	302	cy	0.78	235
· Load Excess Material Onto Trucks	131	cy	0.22	29
· Hauling, 12 c.y. dump truck	131	cy	3.64	500
· Spread, Shape Excess Material in Spoil Areas	131	cy	2.14	300
· Compaction	131	cy	0.26	35
· Road Base Material Replacement, 12" Aggregate Base Course	72.0	sy	12.69	914
· Asphalt Concrete Paving Replacement	72.0	sy	8.50	612
· Asphalt Concrete Paving Removal	72.0	sy	5.28	380
· Pavement Markings, 8" wide	22.0	lf	0.41	9
· Signs	2.0	ea	83.15	166
· 54" Diameter RCP Pipes	100	lf	155.04	15,500
<b>b. Water Quality Pond Construction</b>				
· Excavate using Self-Propelled Scrapers	13,468	cy	3.61	48,600
· Spread, Shape Excess Material in Spoil Areas	16,162	cy	2.14	34,600
· Compaction	16,162	cy	0.26	4,300
· 18" RCP low flow outlet pipe w/orifice plate	54	lf	29.55	1,600
<b>c. Mobilization/Demobilization (5%)</b>				
	1	ls	5,414.01	5,400
<b>Subtotal Drainage Area #5 Conveyance and Water Quality Facilities</b>				<b>113,680</b>
<b>Subtotal - Ultimate Facilities</b>				<b>745,576</b>
Construction Contingencies (15%)				111,836
Contractor Overhead and Profit (15%)				111,836
Administration, Engineering, and Environmental (25%)				186,394
<b>TOTAL ULTIMATE FACILITIES COST</b>				<b>1,155,642</b>

<sup>1</sup>Unit costs are based upon RSMeans Heavy Construction Cost Data 2005

APPENDIX D

COUNTY OF YOLO

YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE

OPINION OF PROBABLE COSTS<sup>1</sup> ALTERNATIVE 1

Sheet 1 of 3

Description	Quantity	Unit	Unit Cost, \$	Total Cost, \$ <sup>1</sup>
<b>1. Regional Detention/Water Quality Pond East of Aviation Avenue</b>				
<b>a. Pond Construction (Flood Control Component)</b>				
· Excavate using Self-Propelled Scrapers	63,433	cy	3.61	228,900
· Spread, Shape Excess Material in Spoil Areas	76,120	cy	2.14	162,800
· Compaction	76,120	cy	0.26	20,000
<b>b. Pond Construction (Water Quality Component)</b>				
· Excavate using Self-Propelled Scrapers	18,470	cy	3.61	66,700
· Spread, Shape Excess Material in Spoil Areas	22,164	cy	2.14	47,400
· Compaction	22,164	cy	0.26	5,800
<b>c. Water Quality Outlet Structure and Low Flow Channel</b>				
· 18" RCP low flow outlet pipe w/orifice plate	54	lf	29.55	1,600
· Excavate using Excavator, loaded onto trucks	439	cy	2.22	1,000
· Hauling, 12 c.y. dump truck	527	cy	3.64	1,900
· Spread, Shape Excess Material in Spoil Areas	527	cy	2.14	1,100
· Compaction	527	cy	0.26	100
<b>d. Flood Control Outlet Structure</b>				
· 36" RCP low flow outlet pipe	40	lf	81.78	3,300
· Grouted Riprap - Weir Construction	355	sy	70.43	25,000
<b>e. Mobilization/Demobilization (5%)</b>	1	ls	28,280.00	28,300
<b>Subtotal Regional Detention/Water Quality Pond East of Aviation Ave.</b>				<b>593,900</b>
<b>2. Drainage Areas 1 and 2, Conveyance Facilities</b>				
<b>a. Install 54-inch RCP and 48-inch RCP to drain on-site runoff to Water Quality Pond</b>				
· Excavate using Excavator	663	cy	1.93	1,300
· Structural Backfill	569	cy	0.78	443
· Load Excess Material Onto Trucks	226	cy	0.22	50
· Hauling, 12 c.y. dump truck	226	cy	3.64	800
· Spread, Shape Excess Material in Spoil Areas	226	cy	2.14	500
· Compaction	226	cy	0.26	100
· Road Base Material Replacement, 12" Aggregate Base Course	107.0	sy	12.69	1,358
· Asphalt Concrete Paving Replacement	107.0	sy	8.50	910
· Asphalt Concrete Paving Removal	107.0	sy	5.28	565
· Pavement Markings, 8" wide	30.0	lf	0.41	12
· Signs	2.0	ea	83.15	166
· 48" Diameter RCP Pipes	106	lf	123.41	13,100
· 54" Diameter RCP Pipes	106	lf	155.04	16,400
<b>b. Install 66-inch RCP to isolate off-site runoff from water quality treatment</b>				
· Excavate using Excavator	5,688	cy	1.93	11,000
· Structural Backfill	4,887	cy	0.78	3,806
· Load Excess Material Onto Trucks	1,938	cy	0.22	430
· Hauling, 12 c.y. dump truck	1,938	cy	3.64	7,100
· Spread, Shape Excess Material in Spoil Areas	1,938	cy	2.14	4,100
· Compaction	1,938	cy	0.26	500
· Road Base Material Replacement, 12" Aggregate Base Course	72.0	sy	12.69	914
· Asphalt Concrete Paving Replacement	72.0	sy	8.50	612
· Asphalt Concrete Paving Removal	72.0	sy	5.28	380
· Pavement Markings, 8" wide	15.0	lf	0.41	6

APPENDIX D

COUNTY OF YOLO

YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE

OPINION OF PROBABLE COSTS<sup>1</sup> ALTERNATIVE 1

Sheet 2 of 3

Description	Quantity	Unit	Unit Cost, \$	Total Cost, \$ <sup>1</sup>
· Signs	2.0	ea	83.15	166
· 66" Diameter RCP Pipes	910	lf	218.94	199,200
c. Mobilization/Demobilization (5%)	1	ls	13,195.98	13,200
<b>Subtotal Drainage Areas 1 and 2, Conveyance Facilities</b>				<b>277,120</b>
<b>3. Drainage Area #3 Conveyance Facilities</b>				
a. Install 54-inch RCP crossing Aviation Avenue				
· Excavate using Excavator	354	cy	1.48	500
· Structural Backfill	296	cy	0.78	231
· Load Excess Material Onto Trucks	128	cy	0.22	29
· Hauling, 12 c.y. dump truck	128	cy	3.64	500
· Spread, Shape Excess Material in Spoil Areas	128	cy	2.14	300
· Compaction	128	cy	0.26	0
· Road Base Material Replacement, 12" Aggregate Base Course	72.0	sy	12.69	914
· Asphalt Concrete Paving Replacement	72.0	sy	8.50	612
· Asphalt Concrete Paving Removal	72.0	sy	5.28	380
· Pavement Markings, 8" wide	22.0	lf	0.41	9
· Signs	2.0	ea	83.15	166
· 54" Diameter RCP Pipes	98	lf	155.04	15,200
b. Mobilization/Demobilization (5%)	1	ls	942.02	900
<b>Subtotal Drainage Area #3 Conveyance Facilities</b>				<b>19,740</b>
<b>4. Drainage Area #4 Conveyance Facilities</b>				
a. Install (2) 66-inch RCPs crossing Aviation Avenue				
· Excavate using Excavator	851	cy	1.48	1,300
· Structural Backfill	721	cy	0.78	561
· Load Excess Material Onto Trucks	300	cy	0.22	67
· Hauling, 12 c.y. Dump Truck	300	cy	3.64	1,100
· Spread, Shape Excess Material in Spoil Areas	300	cy	2.14	600
· Compaction	300	cy	0.26	100
· Road Base Material Replacement, 12" Aggregate Base Course	107.0	sy	12.69	1,358
· Asphalt Concrete Paving Replacement	107.0	sy	8.50	910
· Asphalt Concrete Paving Removal	107.0	sy	5.28	565
· Pavement Markings, 8" wide	22.0	lf	0.41	9
· Signs	2.0	ea	83.15	166
· 66" Diameter RCP Pipes	184	lf	218.94	40,300
b. Open Channel Construction				
· Excavate using Excavator	1,444	cy	1.48	2,100
· Load Excess Material Onto Trucks	1,733	cy	0.22	385
· Hauling, 12 c.y. dump truck	1,733	cy	3.64	6,300
· Spread, Shape Excess Material in Spoil Areas	1,733	cy	2.14	3,700
· Compaction	1,733	cy	0.26	500
· Riprap at Downstream Face of Culvert #3	200	sy	70.43	14,100
c. Mobilization/Demobilization (5%)	1	ls	3,706.04	3,700
<b>Subtotal Drainage Area #4 Conveyance Facilities</b>				<b>77,821</b>

APPENDIX D

COUNTY OF YOLO

YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE

OPINION OF PROBABLE COSTS<sup>1</sup> ALTERNATIVE 1

Sheet 3 of 3

Description	Quantity	Unit	Unit Cost, \$	Total Cost, \$ <sup>1</sup>
<b>5. Drainage Area #5 Conveyance and Water Quality Facilities</b>				
a. Install 48-inch RCP				
· Excavate using Excavator	933	cy	1.48	1,400
· Structural Backfill	794	cy	0.78	618
· Load Excess Material Onto Trucks	326	cy	0.22	72
· Hauling, 12 c.y. dump truck	326	cy	3.64	1,200
· Spread, Shape Excess Material in Spoil Areas	326	cy	2.14	700
· Compaction	326	cy	0.26	100
· Road Base Material Replacement, 12" Aggregate Base Course	72.0	sy	12.69	914
· Asphalt Concrete Paving Replacement	72.0	sy	8.50	612
· Asphalt Concrete Paving Removal	72.0	sy	5.28	380
· Pavement Markings, 8" wide	22.0	lf	0.41	9
· Signs	2.0	ea	83.15	166
· 48" Diameter RCP Pipe	500	lf	123.41	61,700
b. Water Quality Pond Construction				
· Excavate using Self-Propelled Scrapers	16,000	cy	3.61	57,700
· Spread, Shape Excess Material in Spoil Areas	19,200	cy	2.14	41,100
· Compaction	19,200	cy	0.26	5,100
· 18" RCP low flow outlet pipe w/orifice plate	54	lf	29.55	1,600
· Grouted Riprap - Emergency Spillway	355	sy	70.43	25,000
c. Mobilization/Demobilization (5%)	1	ls	9,918.59	9,900
<b>Subtotal Drainage Area #5 Conveyance and Water Quality Facilities</b>				<b>208,272</b>
<b>5. Drainage Area #6 Water Quality Facility</b>				
a. Water Quality Pond Construction				
· Excavate using Self-Propelled Scrapers	4,461	cy	3.61	16,100
· Spread, Shape Excess Material in Spoil Areas	5,353	cy	2.14	11,500
· Compaction	5,353	cy	0.26	1,400
· 18" RCP low flow outlet pipe w/orifice plate	54	lf	29.55	1,600
· Grouted Riprap - Emergency Spillway	355	sy	70.43	25,000
b. Mobilization/Demobilization (5%)	1	ls	2,780.00	2,800
<b>Subtotal Drainage Area #5 Conveyance and Water Quality Facilities</b>				<b>58,400</b>
<b>Subtotal - Alternative 1 Drainage Facilities</b>				<b>1,235,253</b>

<sup>1</sup>Unit costs are based upon RSMeans Heavy Construction Cost Data 2005

APPENDIX D

COUNTY OF YOLO

YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE

OPINION OF PROBABLE COSTS<sup>1</sup> ALTERNATIVE 2

Sheet 1 of 3

Description	Quantity	Unit	Unit Cost, \$	Total Cost, \$ <sup>1</sup>
<b>I. Drainage Areas 1 and 2 Facilities</b>				
<b>a. Flood Control Excavation East of Aviation Ave.</b>				
· Excavate using Self-Propelled Scrapers	4,090	cy	3.61	14,800
· Spread, Shape Excess Material in Spoil Areas	4,908	cy	2.14	10,500
· Compaction	4,908	cy	0.26	1,300
<b>b. Water Quality Pond Construction</b>				
· Excavate using Self-Propelled Scrapers	4,533	cy	3.61	16,400
· Spread, Shape Excess Material in Spoil Areas	5,440	cy	2.14	11,600
· Compaction	5,440	cy	0.26	1,400
· 18" RCP low flow outlet pipe w/orifice plate	54	lf	29.55	1,600
<b>c. Install 54-inch RCP and 48-inch RCP to drain on-site runoff to Water Quality Pond</b>				
· Excavate using Excavator	663	cy	1.93	1,300
· Structural Backfill	569	cy	0.78	443
· Load Excess Material Onto Trucks	226	cy	0.22	50
· Hauling, 12 c.y. dump truck	226	cy	3.64	800
· Spread, Shape Excess Material in Spoil Areas	226	cy	2.14	500
· Compaction	226	cy	0.26	100
· Road Base Material Replacement, 12" Aggregate Base Course	107.0	sy	12.69	1,358
· Asphalt Concrete Paving Replacement	107.0	sy	8.50	910
· Asphalt Concrete Paving Removal	107.0	sy	5.28	565
· Pavement Markings, 8" wide	30.0	lf	0.41	12
· Signs	2.0	ea	83.15	166
· 48" Diameter RCP Pipes	106	lf	123.41	13,100
· 54" Diameter RCP Pipes	106	lf	155.04	16,400
<b>d. Install 66-inch RCP to isolate off-site runoff from water quality treatment</b>				
· Excavate using Excavator	5,688	cy	1.93	11,000
· Structural Backfill	4,887	cy	0.78	3,806
· Load Excess Material Onto Trucks	1,938	cy	0.22	430
· Hauling, 12 c.y. dump truck	1,938	cy	3.64	7,100
· Spread, Shape Excess Material in Spoil Areas	1,938	cy	2.14	4,100
· Compaction	1,938	cy	0.26	500
· Road Base Material Replacement, 12" Aggregate Base Course	72.0	sy	12.69	914
· Asphalt Concrete Paving Replacement	72.0	sy	8.50	612
· Asphalt Concrete Paving Removal	72.0	sy	5.28	380
· Pavement Markings, 8" wide	15.0	lf	0.41	6
· Signs	2.0	ea	83.15	166
· 66" Diameter RCP Pipes	910	lf	218.94	199,200
<b>e. Mobilization/Demobilization (5%)</b>	1	ls	16,075.98	16,100
<b>Subtotal Drainage Areas 1 and 2 Facilities</b>				<b>337,620</b>

**APPENDIX D**

**COUNTY OF YOLO**

**YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE**

**OPINION OF PROBABLE COSTS<sup>1</sup> ALTERNATIVE 2**

Sheet 2 of 3

Description	Quantity	Unit	Unit Cost, \$	Total Cost, \$ <sup>1</sup>
<b>3. Drainage Area #3 Facilities</b>				
a. Install 54-inch RCP crossing Aviation Ave.				
· Excavate using Excavator	354	cy	1.48	500
· Structural Backfill	296	cy	0.78	231
· Load Excess Material Onto Trucks	128	cy	0.22	29
· Hauling, 12 c.y. dump truck	128	cy	3.64	500
· Spread, Shape Excess Material in Spoil Areas	128	cy	2.14	300
· Compaction	128	cy	0.26	0
· Road Base Material Replacement, 12" Aggregate Base Course	72.0	sy	12.69	914
· Asphalt Concrete Paving Replacement	72.0	sy	8.50	612
· Asphalt Concrete Paving Removal	72.0	sy	5.28	380
· Pavement Markings, 8" wide	22.0	lf	0.41	9
· Signs	2.0	ea	83.15	166
· 54" Diameter RCP Pipes	98	lf	155.04	15,200
b. Detention/Water Quality Pond Construction				
· Excavate using Self-Propelled Scrapers	5,260	cy	3.61	19,000
· Spread, Shape Excess Material in Spoil Areas	6,312	cy	2.14	13,500
· Compaction	6,312	cy	0.26	1,700
· 18" RCP low flow outlet pipe w/orifice plate	54	lf	29.55	1,600
c. Mobilization/Demobilization (5%)	1	ls	2,732.02	2,700
<b>Subtotal Drainage Area #3 Facilities</b>				<b>57,340</b>
<b>4. Drainage Area #4 Facilities</b>				
a. Install (2) 66-inch RCPs crossing Aviation Ave.				
· Excavate using Excavator	851	cy	1.48	1,300
· Structural Backfill	721	cy	0.78	561
· Load Excess Material Onto Trucks	300	cy	0.22	67
· Hauling, 12 c.y. dump truck	300	cy	3.64	1,100
· Spread, Shape Excess Material in Spoil Areas	300	cy	2.14	600
· Compaction	300	cy	0.26	100
· Road Base Material Replacement, 12" Aggregate Base Course	107.0	sy	12.69	1,358
· Asphalt Concrete Paving Replacement	107.0	sy	8.50	910
· Asphalt Concrete Paving Removal	107.0	sy	5.28	565
· Pavement Markings, 8" wide	22.0	lf	0.41	9
· Signs	2.0	ea	83.15	166
· 66" Diameter RCP Pipes	184	lf	218.94	40,300
b. Detention/Water Quality Pond Construction				
· Excavate using Self-Propelled Scrapers	27,265	cy	3.61	98,400
· Spread, Shape Excess Material in Spoil Areas	32,718	cy	2.14	70,000
· Compaction	32,718	cy	0.26	8,600
· 18" RCP low flow outlet pipe w/orifice plate	54	lf	29.55	1,600
c. Mobilization/Demobilization (5%)	1	ls	11,281.78	11,300
<b>Subtotal Drainage Area #4 Facilities</b>				<b>236,936</b>

APPENDIX D

COUNTY OF YOLO

YOLO COUNTY AIRPORT  
DRAINAGE PLAN UPDATE

OPINION OF PROBABLE COSTS<sup>1</sup> ALTERNATIVE 2

Sheet 3 of 3

Description	Quantity	Unit	Unit Cost, \$	Total Cost, \$ <sup>1</sup>
<b>5. Drainage Area #5 Facilities</b>				
<b>a. Install 54-inch RCP crossing Aviation Ave.</b>				
· Excavate using Excavator	361	cy	1.48	500
· Structural Backfill	302	cy	0.78	235
· Load Excess Material Onto Trucks	131	cy	0.22	29
· Hauling, 12 c.y. dump truck	131	cy	3.64	500
· Spread, Shape Excess Material in Spoil Areas	131	cy	2.14	300
· Compaction	131	cy	0.26	35
· Road Base Material Replacement, 12" Aggregate Base Course	72.0	sy	12.69	914
· Asphalt Concrete Paving Replacement	72.0	sy	8.50	612
· Asphalt Concrete Paving Removal	72.0	sy	5.28	380
· Pavement Markings, 8" wide	22.0	lf	0.41	9
· Signs	2.0	ea	83.15	166
· 54" Diameter RCP Pipes	100	lf	155.04	15,500
<b>b. Water Quality Pond Construction</b>				
· Excavate using Self-Propelled Scrapers	13,468	cy	3.61	48,600
· Spread, Shape Excess Material in Spoil Areas	16,162	cy	2.14	34,600
· Compaction	16,162	cy	0.26	4,300
· 18" RCP low flow outlet pipe w/orifice plate	54	lf	29.55	1,600
<b>c. Mobilization/Demobilization (5%)</b>				
	1	ls	5,414.01	5,400
<b>Subtotal Drainage Area #5 Conveyance and Water Quality Facilities</b>				<b>113,680</b>
<b>Subtotal - Alternative 2 Drainage Facilities</b>				<b>745,576</b>

<sup>1</sup>Unit costs are based upon RSMeans Heavy Construction Cost Data 2005