VALUE ENGINEERING
MOD 1 TRAINING REPORT

SR 3 Connector @ SR 120 Alt

Project No. MSL00-0004-00(403)
Cobb County
PI No. 0004403
February 18, 2009

OWNER:

Georgia Department of Transportation
600 West Peachtree Street
Atlanta, GA 30308
(404.631.1770)

VALUE ENGINEERING
MOD 1 INSTRUCTOR:

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EXECUTIVE SUMMARY

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MOD 1 TRAINING REPORT

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Project No. MSL00-0004-00(403)
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February 18, 2009

Overview

This report summarizes the results of a Value Engineering (VE) study for roadway improvements on SR Connector @ SR 120 Alt in Cobb County. The study was conducted as part of the Mod 1 training session held for select GDOT staff on January 26 to 30, 2009. On Monday, January 26, 2009, the design team gave an overview of the project to the VE team and on Friday, January 30, 2009, the VE Team presented their recommendations.

This project is the upgrade of the SR 120 / Roswell Road at SR 120 Loop interchange adding a loop ramp in the northwest quadrant. The project will begin at SR 120 Loop, MP 2.55 and extend 0.75 miles to SR 120 Loop MP 1.80. The existing SR 120 Loop roadway is a 4 lane section with 12 foot travel lanes, 10 foot outside shoulders and an 18 foot wide raised median. SR 120 is a 4 lane roadway with a raised median. The purpose for adding the loop is to eliminate the conflict between the heavy traffic travelling eastbound on SR 120 and the heavy left turn traffic from SR 120 to the SR 120 Loop southbound on-ramp. The addition of the loop ramp will allow the SR 120 / SR 120 Loop interchange to operate at a level of service of C or better.

The project will construct a loop ramp in the northwest quadrant of the interchange and include a new bridge over SR 120 / Roswell Road. The existing southbound exit ramp will be realigned further west to accommodate the proposed ramp. There will be 2 separate access locations onto SR120 Loop southbound for traffic entering from SR 120 westbound and SR 120 eastbound. The double left turn lanes along SR 120 west will be restriped to through lanes and tapered to the existing 2 lane section. The two right hand westbound through lanes will be striped out to right turn only lanes into the proposed loop ramp with the interchange project. A design exception is required due to the substandard horizontal clearance on SR 120 underneath the SR 120 loop. The total estimated construction cost of the project is $10,100,000. This does not include right of way, reimbursible utilities or inflation.

This report presents the VE Team's recommendations and all back-up information for consideration by the decision-makers. This **Executive Summary** includes a brief description of each recommendation. The **Study Identification** section contains information about the project and the team. The **Recommendations** section presents a more detailed description and support information about each recommendation. The **Appendix** includes a complete record of the Team's activities and findings as well as the meeting attendees sign in sheet. The reader is encouraged to review all sections of the report in order to obtain a complete understanding of the VE process.

DEVELOPMENT PHASE - EXECUTIVE SUMMARY

Project: MSL00-0004-00(403), Cobb Co.	**Team:** 6
Location: SR 3 Connector/Roswell Road @ SR 120 Loop	**Date:**

This project is the upgrade of SR 3/Roswell Road and SR 120 Loop Interchange to add a Loop Ramp in the northwest quadrant. This proposed project includes construction of separate southbound on ramp and the widening of Roswell Road to add auxiliary lanes and raised median. The project has an estimated cost of $1,500.000.

The VE Team identified 10 areas of opportunity for project improvement and cost savings. The first area of saving reduces height of side barrier @ a cost saving of $30,167.00. The second is to reduce the length of Wall 5 by about 500 feet at a cost savings of $133,100.00. The third area is to eliminate Wall #6 at a cost saving of $598,944.00. The fourth area is shorings reduction and elimination at a saving of $329,875. The fifth area of saving cost is in the area of separating pavement section at a cost saving of $240,000. The sixth area is in the area of reducing the 20' raised median width to 8 feet, and add stripping at a cost saving of $14,622.92. The seventh area of saving cost is to drop out 1 of 2 lanes of Ramp B after the loop at a cost saving of $100,000.00

The implementation of the 10 recommendations have the potential to save a total of about $1,500,000.00 from a total project cost of about $15,350,000. This project is schedule for a June 2009 Letting. If the letting can be shifted to December 2009 all ten recommendation could be implemented. All recommendation actually improve the overall project construction time.

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DEVELOPMENT PHASE - SUMMARY OF COST SAVINGS

Project: MSL00-0004-00(403), Cobb Co.
Location: SR 3 Connector/Roswell Road @ SR 120 Loop

Team No.: 6
Date:

Idea No.	Creative Idea Description	Original Initial Cost	Proposed Initial Cost	Initial Cost Savings	Future Savings	Total Life Cycle Savings
A-1	Reduce Height of Side Barrier	$458,501.63	$428,334.43	$30,167.20		
A-2	Reduce Length of Wall #5 by 500 ft	$303,000.00	$169,900.00	$133,100.00		
A-3	Eliminate Wall #6	$634,544.40	$35,600.00	$598,944.40		
A-4A	Eliminate/Reduce Shoring (Wall 5)	$389,500.00	$260,000.00	$129,500.00		
A-4B	Eliminate/Reduce Shoring (Wall 6)	$272,500.00	$68,125.00	$204,375.00		
B-1	Prepare Separate Sections for each Ramp	$550,000.00	$310,000.00	$240,000.00		
B-4	Reduce Raised Median width to 8 ft & stripe out pave for 445 ft	$37,355.50	$22,732.58	$14,622.92		
B-5	Drop 1 of 2 Lanes of Ramp B after Loop	$350,000.00	$250,000.00	$100,000.00		
B-6	Reduce Ramp A & Ramp B Loop paved shoulder from 10' to 6'	$120,000.00	$70,000.00	$50,000.00		
C-3	Balance Cut & Fill for Ramp A & Ramp B Loop					
C-4	Reduce Ramp B Loop Wall #2 Profile Design Speed to 45 mph like Wall #1 on Ramp A	N/A	No Change	None		

STUDY IDENTIFICATION

STUDY IDENTIFICATION

Project: SR 3 Conn./Roswell Road @ SR120 Loop	**Date:** 01/26/2009
Location: GDOT HQ-Atlanta, 4th Floor; Conducted as part of Module 1 Training	

VE Team Members

Name:	Position:	Organization:	Telephone:
Peter Emmanuel	Asst. Design Group Mgr. (QA-QC)	GDOT-RD	4)631-1554
Stanley Hill	Asst. Office Head (Presenter)	GDOT-CD	4)631-1560
Irene Belinfante	Design Group Mgr.(QA-QC)	GDOT-BD	4)631-1881
Daniel Pass	Asst. Design Group Mgr. (Team Leader)	GDOT-RD	4)631-1651

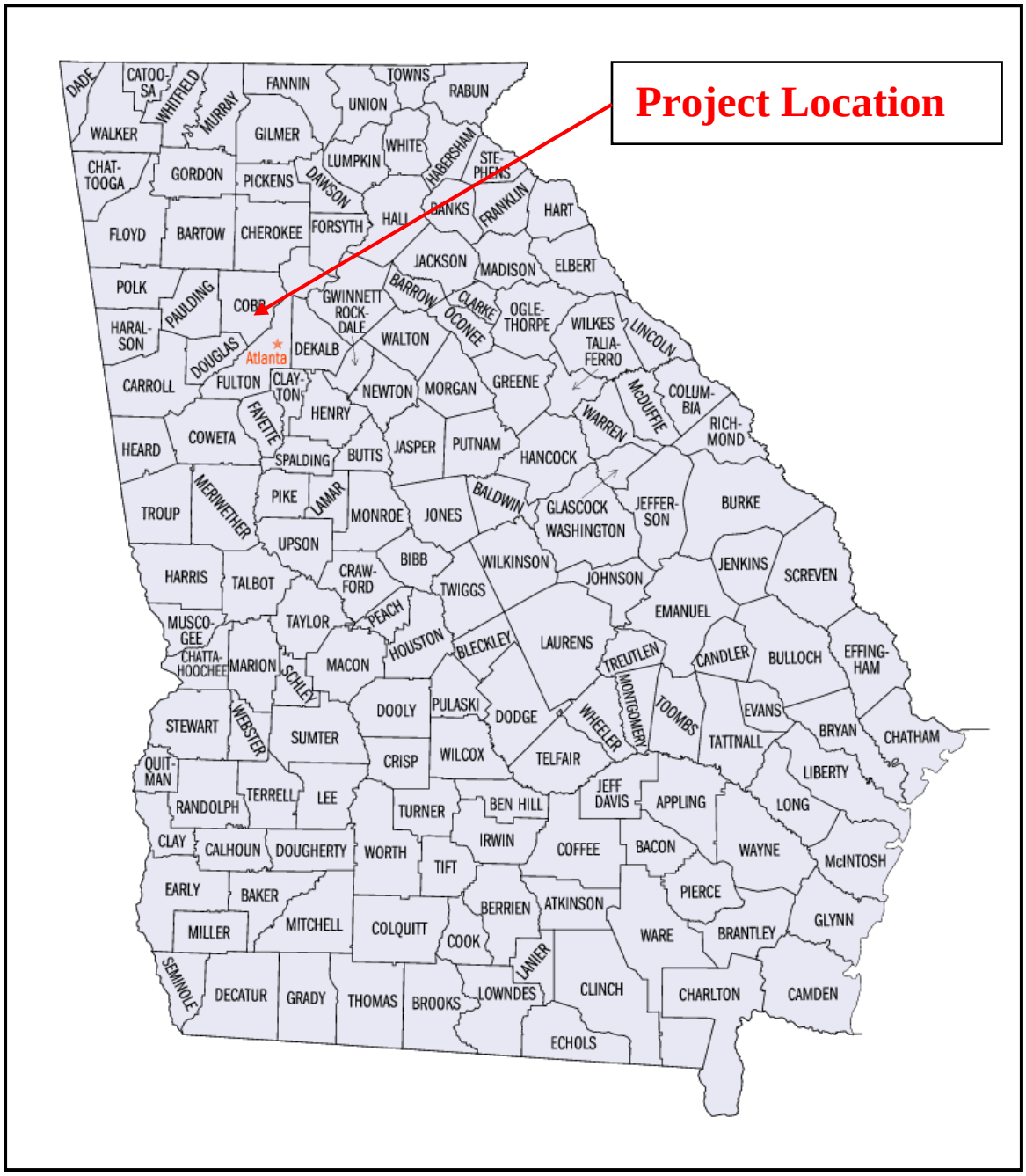
Project Description

This project is the upgrade of the SR 3 Connector/Roswell Road and SR 120 Loop interchange to add a loop ramp in the northwest quadrant. This proposed project includes construction of separate southbound on ramp and the widening of Roswell Road to add auxiliary lanes and raised median construction cost is $9.2 million. R/W cost is $3,000,000.00 (to be acquired by Cobb Co.) and the project is twinned to east with longitudinal project to improve SR 120/Roswell Road.

Project Constraints

1) The interchange form will remain as designed
2) The Required R/W has been purchased
3) There are no utility reimbursement
4) Substandard horizontal clearance of SR 120/Roswell Road is under bridge.

Figure 1
Project Vicinity Map



County Map of Georgia

VE RECOMMENDATIONS

DEVELOPMENT AND RECOMMENDATION PHASE

Project: MSL00-0004-00 (403) COBB COUNTY

Idea No.:	Sheet No.:	CREATIVE IDEA: REDUCE HEIGHT OF SIDE BARRIER
A-1	1 of 1	

Comp By: LAB Date: 1/29/09 Checked By: Date:

Original Concept: THE ORIGINAL DESIGN FOR WALL NO. 4 CALLED FOR A 760.54 FT. LONG SIDE BARRIER TO HOLD THE FILL FOR RAMP "B" AT THE END OF BR. NO. 1 THE SIDE BARRIER FOOTING IS LOCATED ON ORIGINAL GROUND.

Proposed Change: THE RECOMMENDATION IS TO REDUCE THE HEIGHT OF THE SIDE BARRIER AND CALL FOR SPECIAL FILL COMPACTION UNDER THE WALL.

Justification: IF THE FILL UNDER WALL NO. 4 IS CAREFULLY COMPACTED, THE WALL FOUNDATION CAN BE PLACED ON THE FILL AND THE HEIGHT OF THE SIDE BARRIER CAN BE REDUCED DUE TO THE LENGTH OF THE SIDE BARRIER, THE SAVINGS WOULD BE SIGNIFICANT.

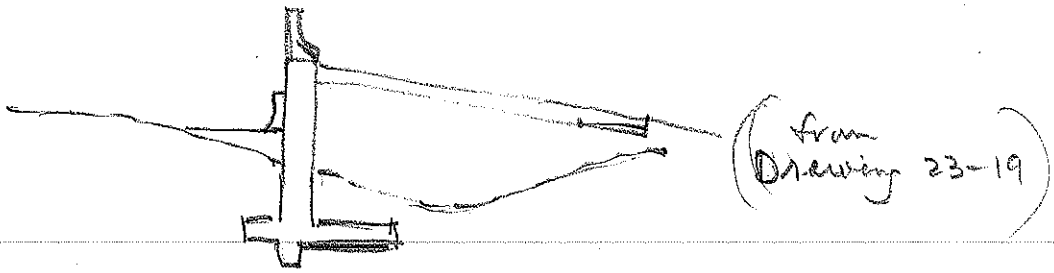
LIFE CYCLE COST SUMMARY		INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
INITIAL COST:	Original	$458,501.63		
	Proposed	$428,334.43		
	Savings	$ 30,167.20		$30,167.20
FUTURE COST:	Savings		—	—
TOTAL PRESENT WORTH SAVINGS				$30,167.20

SKETCH

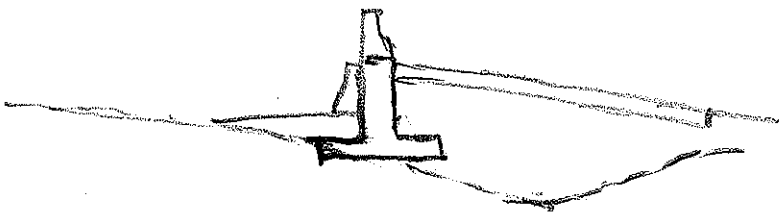
Project: MSL 00-0004-00(403) COBB CO.

Idea No.: A-1
Client::
Sheet of

Proposed Wall No. 4



Recommended Wall No. 4



CALCULATIONS

Project: MSL 00 - 0004 - 00(403) COBB CO.

Idea No.: A - 1
Client::
Sheet /of /

COST OF ORIGINAL WALL NO. 4:

TYPE	LENGTH	UNIT COST/L.F.	COST
2A	156'	$444.19	$69,293.64
2B	205'	$530.57	$108,766.85
2C	399'	$702.86	$280,441.14
		TOTAL	$458,501.63

COST OF RECOMMENDED WALL:

TYPE	LENGTH	UNIT COST/L.F.	COST
2A	226'	$444.19	$100,386.94
2B	275'	$530.57	$145,906.75
2C	259'	$702.86	$182,040.74
		TOTAL	$478,334.43

DEVELOPMENT AND RECOMMENDATION PHASE

Project: MSL00 - 0004 -00 (403) COBB COUNTY

Idea No.:	Sheet No.:	CREATIVE IDEA:
A-2	1 of 1	REDUCE LENGTH OF WALL NO. 5 BY APPROXIMATELY 300 FT.

Comp By: JAB Date: 1/29/09 Checked By: Date:

Original Concept: THE ORIGINAL DESIGN CALLS FOR WALL 5 TO SUPPORT FILL FOR RAMP "A." THE WALL CONSISTS OF TYPE 2A-C SIDE BARRIER WITH MSE WALL OVER THE RECONSTRUCTED CULVERT.

Proposed Change: REDUCE LENGTH OF WALL BY USING A 2:1 SLOPE.

Justification: THE ORIGINAL DESIGN WAS BASED ON THE ASSUMPTION THAT THE WALL IS REQUIRED TO PROTECT WETLANDS; HOWEVER, THERE ARE NO WETLANDS.

LIFE CYCLE COST SUMMARY		INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
INITIAL COST:	Original	$303,000.00		
	Proposed	$169,900.00		
	Savings	$133,100.00		$133,100.00
FUTURE COST:	Savings		—	—
TOTAL PRESENT WORTH SAVINGS				$133,100.00

CALCULATIONS

Project: MSL00-0004-00(403) COBB CO.

Idea No.: A-2
Client::
Sheet of

WALL NO. 5
PORTION OF WALL TO BE ELIMINATED:

TYPE	LENGTH	COST/L.F.	COST
2A	75'	$444.19	$33,314.25
2B	125'	$530.57	$66,321.25
2C	100'	$702.86	$70,286.00
		SAVINGS	$169,921.50

ADD THE FOLLOWING TO OBTAIN ORIG. COST:

TYPE	LENGTH	COST/LF	COST
2C	50'	$702.86	$35,143.00

TYPE	S.F.	COST/S.F.	COST
MSE 0-20'	2175	$44.96	$97,788.00

ESTIMATED COST OF ORIG. WALL: $303,000

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DEVELOPMENT AND RECOMMENDATION PHASE

Project: MSL00-0004-00(403) COBB COUNTY

Idea No.:	Sheet No.:	CREATIVE IDEA: ELIMINATE WALL NO. 6
A-3	1 of 1	

Comp By: aB Date: 1/29/09 Checked By: Date:

Original Concept: THE ORIGINAL DESIGN CALLED FOR MSE WALL NO. 6 TO RETAIN FILL FOR RAMP "E." A LARGE AMOUNT OF SHORING IS USED TO BUILD THE MSE WALL AND REPLACE A PORTION OF THE CULVERT.

Proposed Change: ELIMINATE WALL NO. 6 AND USE A 2:1 SLOPE.

Justification: THE ORIGINAL DESIGN WAS BASED ON THE ASSUMPTION THAT THE WALL IS REQUIRED TO PROTECT WETLANDS; HOWEVER, THERE ARE NO WETLANDS. THE COST OF EARTHWORK WOULD INCREASE BUT THE COST OF SHORING WOULD BE ELIMINATED OR REDUCED.

LIFE CYCLE COST SUMMARY		INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
INITIAL COST:	Original	$634,544.40		
	Proposed	$ 35,600.00		
	Savings	$598,944.40		$598,944.40
FUTURE COST:	Savings		—	$598,944.40
TOTAL PRESENT WORTH SAVINGS				

CALCULATIONS

Project: MSL00-004-00(403) COBB CO.

Idea No.: A-3
Client::
Sheet of

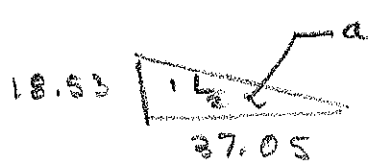
COST OF ORIGINAL WALL NO. 6 TO BE ELIMINATED

HT. WALL FACE	SF	COST
0-10'	126	$5503.75
10'-20'	1176	$52,828.00
20'-30'	6845	$303,712.65
WALL FACE:		$362,044.40
SNORING:		$272,500.00
	TOTAL	$634,544.40

COST OF 2:1 FILL

LOCATION		HEIGHT
NEAR BEGIN	1004.88 - 985 =	19.88'
MIDPOINT	1007.15 - 977 =	30.15'
NEAR END	1010.90 - 1004 =	6.90'

AVE HT. 18.53



area fill 343.27 ft²

$(343.27\ ft^2)(350')(\frac{1}{27})($8/C.Y.$) = $35,598.19$

USE $35,600 FOR EARTHWORK

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DEVELOPMENT AND RECOMMENDATION PHASE

Project: MSL00-0004-00(403) COBB COUNTY

Idea No.:	Sheet No.:	CREATIVE IDEA:
A-4a	1 of 2	ELIMINATE/REDUCE SHORING AT ONE OR MORE WALLS

Comp By: DAB Date: 1/29/09 Checked By: Date:

Original Concept: THE ORIGINAL DESIGN OF WALL NO. 5 CALLS FOR SIDE BARRIER AND SHORING TO BUILD THE SIDE BARRIER.

Proposed Change: IDEA A-2 WAS TO REDUCE THE LENGTH OF WALL NO. 5. SHORING WILL NOT BE REQUIRED WHERE THE WALL IS ELIMINATED. IF THE WALL IS RETAINED, THE SHORING COULD BE ELIMINATED BY HAVING A 1:1½ SLOPE BEHIND THE WALL.

Justification: THE SHORING ON THIS PROJECT APPEARS TO HAVE BEEN SET UP FOR THE ENTIRE LENGTH OF THE WALL. SHORING IS PROBABLY ONLY NEEDED TO PLACE THE STRAPS FOR THE MSE WALL (IF WALL IS NEEDED) AND TO REPLACE THE CULVERT (IF NECESSARY).

LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
INITIAL COST: Original	$389,500		
Proposed	$260,000		
Savings	$129,500		$129,500
FUTURE COST: Savings		—	—
TOTAL PRESENT WORTH SAVINGS			$129,500

VE-9

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DEVELOPMENT AND RECOMMENDATION PHASE

Project: MSL00-0004-00(403) COBB COUNTY

Idea No.:	Sheet No.:	CREATIVE IDEA:
A-4B	2 of 2	ELIMINATE/REDUCE SHORING AT ONE OR MORE WALLS

Comp By: RAB Date: 1/29/09 Checked By: Date:

Original Concept: THE ORIGINAL DESIGN CALLS FOR A GREAT DEAL OF SHORING TO BUILD WALL NO. 6.

Proposed Change: IDEA A-3 WAS TO ELIMINATE WALL NO. 6. MOST OF THE SHORING FOR WALL NO. 6 WOULD ALSO BE ELIMINATED. SOME SHORING MAY STILL BE NEEDED TO REPLACE THE CULVERT UNDER THE WALL (IF NECESSARY).

Justification: THE JUSTIFICATION FOR IDEA A-4 WITH RESPECT TO WALL 6 IS THE SAME JUSTIFICATION FOR ELIMINATING WALL 6, I.E., THAT THERE ARE NO WETLANDS.

LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
INITIAL COST: Original	$272,500.00		
Proposed	$ 68,125.00		
Savings	$ 204,375.00		$ 204,375.00
FUTURE COST: Savings		—	—
TOTAL PRESENT WORTH SAVINGS			$ 204,375.00

DEVELOPMENT AND RECOMMENDATION PHASE

Project: MSL00-0004-00(403), Cobb Co.

Idea No.:	Sheet No.:	CREATIVE IDEA:
B-1	of	Prepare Separate Sections for each Ramp (i.e. A, B & E.

Comp By: DGP Date:1-28-09 Checked By: Date:

Original Concept:

The current approved Pavement Design for Ramp A uses Traffic Volumes which exceed project projections. Ramp B&E were Designed for higher Traffic Volumes of the two. It provided 5% under design to 5% over design.

Proposed Change:

Reduce Pavement requirements by providing separate designs for each Ramp based on projected volumes of each Ramp. Also allow 10 to 15% under design of pavement section.

Justification:

Each Ramp can be designed for its own Traffic projections 10 to 15% under-design. Consider future overlay anticipated during 20 year design life of pavement.

LIFE CYCLE COST SUMMARY		INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
INITIAL COST:	Original	550,000		
	Proposed	310,000		
	Savings	240,000		-
FUTURE COST:	Savings		-	-
TOTAL PRESENT WORTH SAVINGS				240,000

COST WORKSHEET

Project: MSL00-0004-00(403), Cobb Co.

Idea No.: B-1
Client:: GADOT
Sheet of

CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
Item	Unit	No. Units	Cost/Unit	Total Cost	No. Units	Cost/Unit	Total Cost
RAMP A							
402-3121 (25MM)	TN	1814	62	112,468	1088	62	67,456
310-1101 (GAB)	TN	4480	18	80,640	3718	18	66,924
RAMP B							
402-3121 25MM	TN	4884	62	302808	2442	52	151404
RAMP E							
402-3121 25MM	TN	444	62	27528	266	62	16,492
310-1101 GAB	TN	1219	18	21942	610	18	10,980
Subtotal:							
Mark-up (%)							
Total				545,386			313,256
Total Rounded				**550,000**			**310,000**

CALCULATIONS

Project: MSL00-0004-00(403), Cobb Co.

Idea No.: B-1
Client:: GADOT
Sheet of

RAMP A 1-WAY

*CORRECT TRAFFIC – 1 WAY 2010 (3,750)
2030 (4,200)
*USE 1.0 LDF, 9% TRUCK, 1.OO 18-K ESAL
2.5 SOIL SUPPORT + 1.8 REGIONAL FACTOR

CURRENT DESIGN 7.4 % OVER DESIGN
→10 TO 15% UNDER OR CONSIDERING LENGTH OF RAMP RELATIVE TO BRIDGE
→REDUCE 25 MM SUPERPAVE 5" TO 3"
→REDUCE GAB 12" TO 10"
YIELDS 12% UNDER DESIGN

RAMP B 1-WAY

*CORRECT TRAFFIC – 1 WAY 2010 (7,750)
2030 (10,100)
→REDUCE 25 MM SUPERPAVE 8" TO 4"
YIELDS 4.9% UNDER DESIGN

RAMP E 1-WAY

*CORRECT TRAFFIC – 1 WAY 2010 (450)
2030 (690)
→REDUCE 25 MM SUPERPAVE 5" TO 3"
→REDUCE GAB 12" TO 6"
YIELDS 0.1% OVER DESIGN

ROADWAY	12.5 MM		19 MM		25 MM		GAB	
	CURRENT	PROPOSED	CURRENT	PROPOSED	CURRENT	PROPOSED	CURRENT	PROPOSED
RAMP A	1.5	1.5	2	2	5	3	12	10
			% REDUCTION →		40%		17%	
RAMP B	1.5	1.5	2	2	8	4	12	12
			% REDUCTION →		50%		0%	
RAMP C	1.5	1.5	2	2	5	3	12	6
			% REDUCTION →		40%		50%	

SEE ATTACHMENT

DEVELOPMENT AND RECOMMENDATION PHASE

Project: MSL00-0004-00(403), Cobb Co.

Idea No.:	**Sheet No.:**	**CREATIVE IDEA:** Reduce raised median width to 8' and stripe out pave for 445'
B-4	of	

Comp By: SH Date: 1-28-09 Checked By: Date:

Original Concept:
The current design proposed to construct a 8' to 9' concrete 6" median for 560' on SR 3 Conn/ Roswell Road.

Proposed Change:
It is recommended to reduce the width of the median from a 19' max to 8' for 445' along SR 3 Conn./Roswell Road.

Justification:
Constructing the reduce median width would be consistent with the 8' width on the Westside of SR 3 Conn./Roswell Road. Constructing the 8' width median reduce construction time for completion and reduce the cost of the project.

LIFE CYCLE COST SUMMARY		INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
INITIAL COST:	Original	$37,355.50		
	Proposed	$22,732.58		
	Savings	$14,622.92		
FUTURE COST:	Savings			
TOTAL PRESENT WORTH SAVINGS				$14,622.92

SKETCH

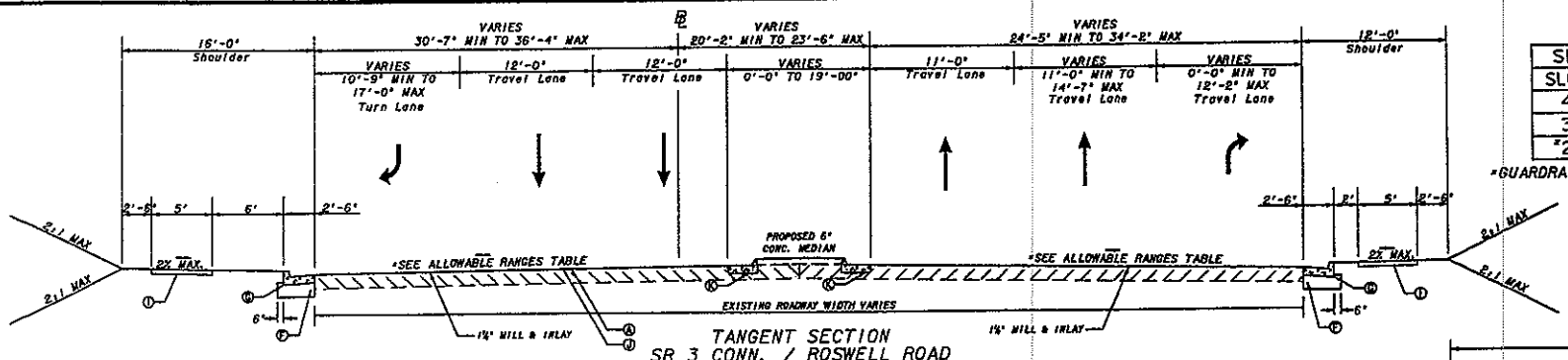
Project: MSL00-0004-00(403), Cobb Co.	Idea No.: B-4 Client:: GDOT Sheet of

See Attachment

B-4

ORIGINAL

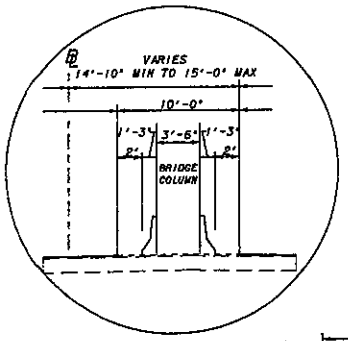
COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
COBB	M5100-0004-00(403)		



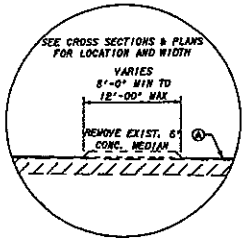
TANGENT SECTION
SR 3 CONN. / ROSWELL ROAD
STA. 3+68.67 TO STA. 10+75.71
TS-11

SLOPE CONTROLS		
SLOPE	CUT	FILL
4:1	0-6'	0-6'
3:1	--	--
*2:1	OVER 6'	OVER 6'

*GUARDRAIL REQUIRED ON FILL SLOPES

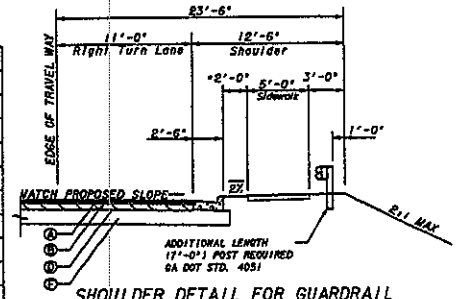


*SR 120 / ROSWELL ROAD
STA. 12+98.00 TO STA. 14+08.38

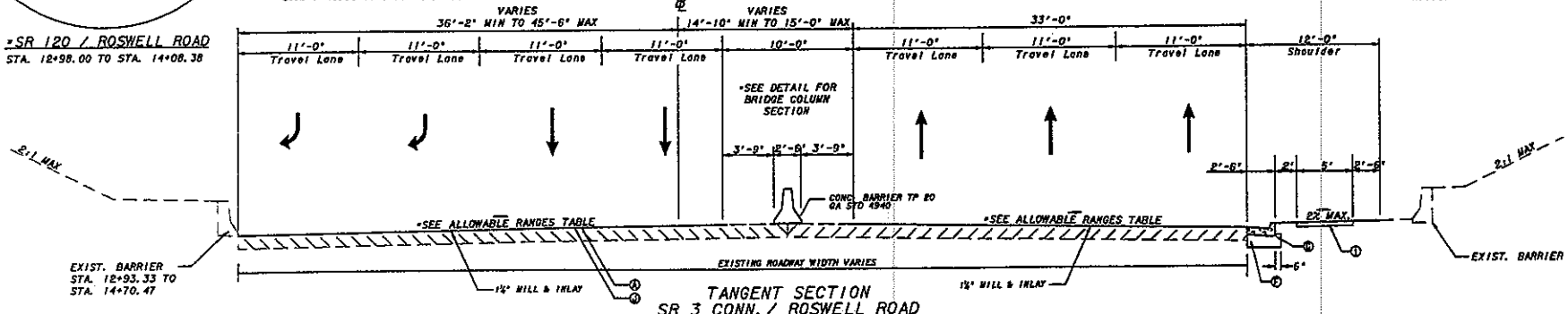


SR 3 CONN. /ROSWELL RD.
REMOVE EXIST. 6" CONC. MEDIAN ISLAND
STA. 7+41.98 TO STA. 12+07.05

PAVEMENT MATERIAL SCHEDULE
(A) RECYCLED ASPH. CONC. 12.5 mm SMA, 166 LBS./SY
(B) RECYCLED ASPH. CONC. 19 mm SUPERPAVE, 220 LBS./SY
(C) RECYCLED ASPH. CONC. 25 mm SUPERPAVE, 550 LBS./SY
(D) RECYCLED ASPH. CONC. 25 mm SUPERPAVE, 880 LBS./SY
(E) GRADED AGGREGATE BASE COURSE, 6"
(F) GRADED AGGREGATE BASE COURSE, 12"
(G) CONCRETE CURB & GUTTER, 8" X 30", TYPE 2, GA STD. 9032 B
(H) CONCRETE V-GUTTER, GA STD. DETAIL 033
(I) 5' CONCRETE SIDEWALK, 4 INCH THICK
(J) ASPHALTIC CONCRETE LEVELING, AS REQUIRED
(K) CONCRETE CURB & GUTTER, 8" X 30", TYPE 7, GA STD. 9032 B



SHOULDER DETAIL FOR GUARDRAIL
SEE PLAN FOR LOCATION
SEE GA STD 4052 FOR DETAILS
N. T. S.



TANGENT SECTION
SR 3 CONN. / ROSWELL ROAD
STA. 10+75.71 TO STA. 15+96.85
TS-12

PBS&J

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN
TYPICAL SECTIONS

B-4

PROPOSED

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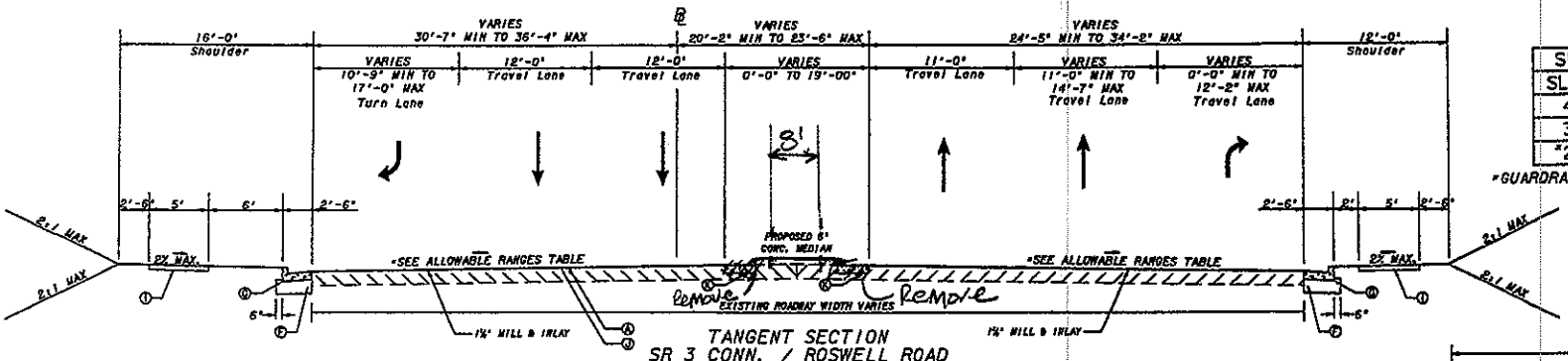
COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
COBB	STP00-0004-00(403)		

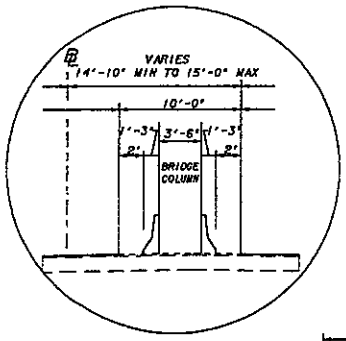


TANGENT SECTION
SR 3 CONN. / ROSWELL ROAD
STA. 3+68.67 TO STA. 10+75.71
TS-11

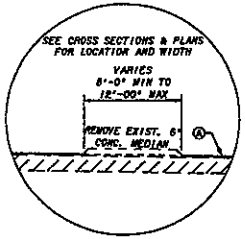
SLOPE CONTROLS		
SLOPE	CUT	FILL
4:1	0-6'	0-6'
3:1	--	--
*2:1	OVER 6'	OVER 6'

*GUARDRAIL REQUIRED ON FILL SLOPES

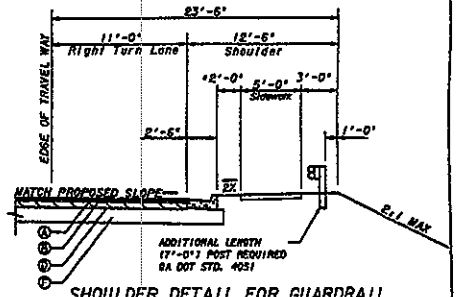
PAVEMENT MATERIAL SCHEDULE
(A) RECYCLED ASPH. CONC. 12.5 mm SMA, 165 LBS./SY
(B) RECYCLED ASPH. CONC. 19 mm SUPERPAVE, 220 LBS./SY
(C) RECYCLED ASPH. CONC. 25 mm SUPERPAVE, 550 LBS./SY
(D) RECYCLED ASPH. CONC. 25 mm SUPERPAVE, 880 LBS./SY
(E) GRADED AGGREGATE BASE COURSE, 6"
(F) GRADED AGGREGATE BASE COURSE, 12"
(G) CONCRETE CURB & GUTTER, 8" X 30", TYPE 2, GA STD. 9032 B
(H) CONCRETE V-GUTTER, GA STD. DETAIL 033
(I) 5' CONCRETE SIDEWALK, 4 INCH THICK
(J) ASPHALTIC CONCRETE LEVELING, AS REQUIRED
(K) CONCRETE CURB & GUTTER, 8" X 30", TYPE 7, GA STD. 9032 B



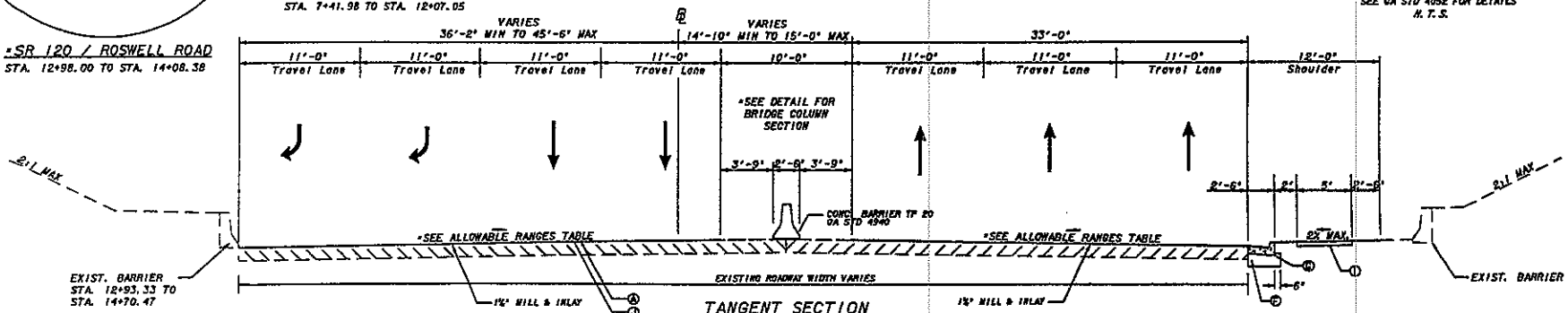
*SR 120 / ROSWELL ROAD
STA. 12+98.00 TO STA. 14+08.38



SR 3 CONN./ROSWELL RD.
REMOVE EXIST. 6" CONC. MEDIAN ISLAND
STA. 7+41.98 TO STA. 12+07.05



SHOULDER DETAIL FOR GUARDRAIL
SEE PLAN FOR LOCATION
SEE GA STD 4052 FOR DETAILS
H.T.S.



TANGENT SECTION
SR 3 CONN. / ROSWELL ROAD
STA. 10+75.71 TO STA. 15+96.85
TS-12

PBS&J

REVISION DATES		

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN
TYPICAL SECTIONS

COST WORKSHEET

Project: MSL00-0004-00(403), Cobb Co.

Idea No.: B-4
Client:: GDOT
Sheet of

CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
Item	Unit	No. Units	Cost/Unit	Total Cost	No. Units	Cost/Unit	Total Cost
Concrete Median, 6 in	SY	650	$57.47	$37,355.50			
					395.56	$57.47	$23,732.58
Subtotal:							
Mark-up (%)				$37,335.90			$22,732.58
Total							
Total Rounded							

CALCULATIONS

Project: MSL00-0004-00(403), Cobb Co.	Idea No.: B-4 Client:: GDOT Sheet of

This will occur along SR 3 Conn./Roswell Road:

(Sta. 5+08) + (Sta. 9+55) = 445'

Width = 8'

(445') (8') = 3,560 sf / (9 sf/sy) = 395.56 sy

Median Cost:

(395.56 sy) ($57.47) = $22,732.58

DEVELOPMENT AND RECOMMENDATION PHASE

Project: MSL00-0004-00(403), Cobb Co.

Idea No.:	Sheet No.:	CREATIVE IDEA:
B-5	of	Drop 1 OF 2 Lanes OF Ramp "B" After Loop

Comp By: DGP Date: 1/29/2009 Checked By: Date:

Original Concept:
Ramp B is 2-lane loop where second lane is maintained for 1500' beyond end of loop.

Proposed Change:
Begin lane taper to drop lane at end of loop. Reduces lineage by 1300' – one lane.

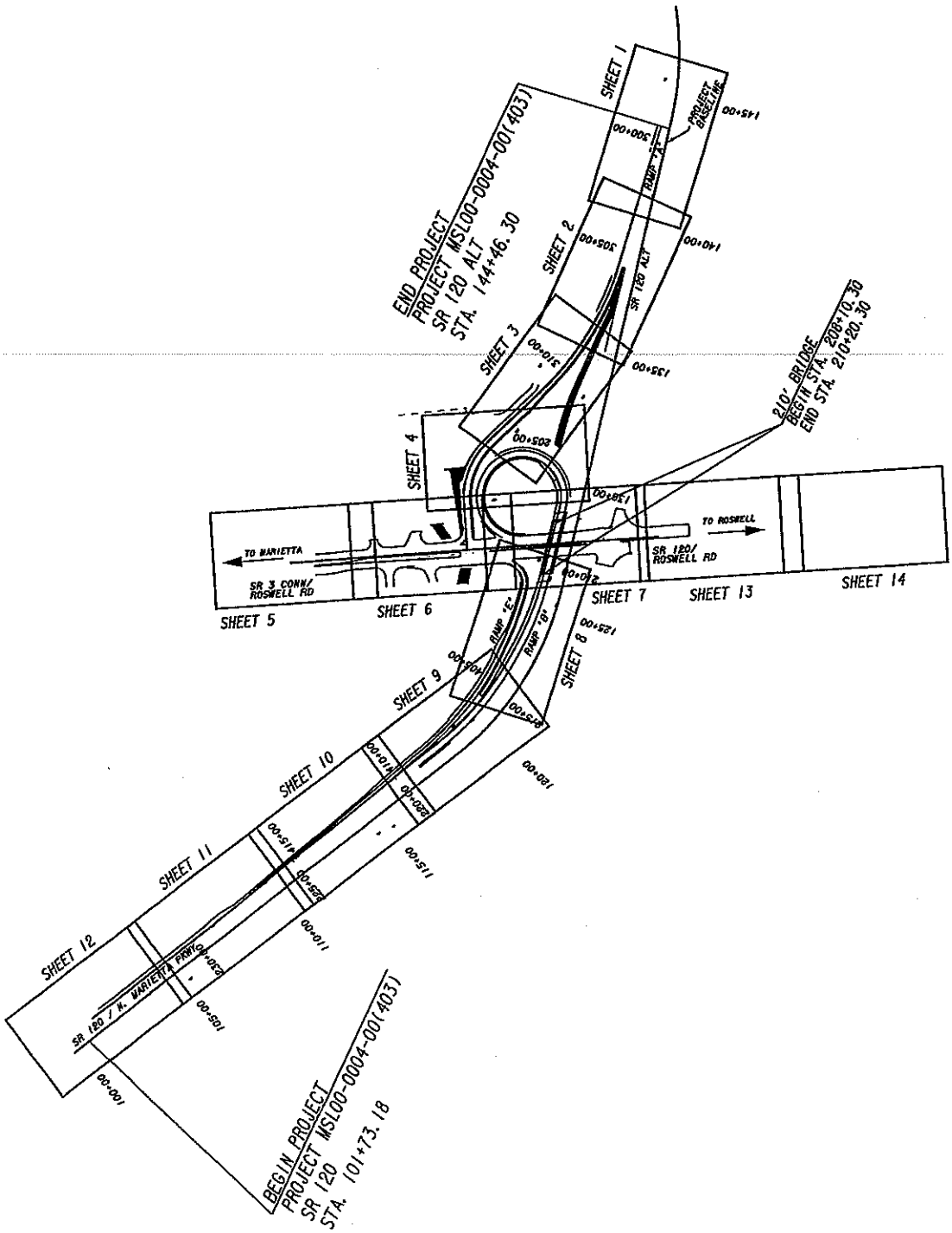
Justification:
Design year traffic does not justify 2-lane Ramp B beyond loop portion of ramp. Based on estimated capacities of 1 and 2 lane ramps. Recommend design engineer justify 2 lanes beyond loop by detailed capacity analysis.

LIFE CYCLE COST SUMMARY		INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
INITIAL COST:	Original	$350,000.00		
	Proposed	$250,000.00		
	Savings	$100,000.00		N/A
FUTURE COST:	Savings		N/A	N/A
TOTAL PRESENT WORTH SAVINGS				$100,000.00

SKETCH

Project: MSL00-0004-00(403)

Idea No.: B-5
Client::
Sheet of 1 of 1



COST WORKSHEET

Project: MSL00-0004-00(403), Cobb Co.

Idea No.: B-5
Client:: GDOT
Sheet of

CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
Item	Unit	No. Units	Cost/Unit	Total Cost	No. Units	Cost/Unit	Total Cost
400-3604 (12 MM SMA)	TN	525	$101.00	$53,025.00	385	$101.00	$38,885.00
402-3121 (25 MM)	TN	2816	$62.00	$174,592.00	2053	$62.00	$127,286.00
402-3190 (19 MM)	TN	704	$67.00	$47,168.00	513	$67.00	$34,371.00
310-1101 (GAB)	TN	4032	$18.00	$72,576.00	2940	$18.00	$52,920.00
Subtotal:							
Mark-up (%)							
Total				$347,361.00			$253,462.00
Total Rounded				**$350,000.00**			**$250,000.00**

CALCULATIONS

Project: MSL00-0004-00(403), Cobb Co.	Idea No.: B-5 Client:: GDOT Sheet of

1) Design Speeds:
*Loop portion of ramp – 25 mph per plans – DWG 12-01
*Remaining Portion of ramp – profile indicates >= 55 mph. Horizontal radius = 1200' (KC42), Which is adequate for SE max of 8% and 55 mph

2) Required Taper Length
*Drop one 12' Lane
Length = (Width of Shift) (Design Speed) = (12) (55) = 660'

3) Capacity assessment to justify lane drop
Ramp DHV Max is 2640 vph
Service Flow Rate Table Based on HCM 2000 (Table 6-7 Interchange, Planning, Operational Analysis & Geometric Design – March 20-22, 2007)

	Capacity (1 Lane)	Capacity (2 lane)
Loop portion (25 mph)	~1800	~3300
Beyond Loop portion (55mph)	~2100	~4200
Pending Detailed Capacity analysis allow lane drop		

4) Reduction in pavement area

	Reduction
Loop Ramp Length – 750'	None
Bridge Length – 200'	None
2-lane Beyond Loop (minus bridge) – 1,300'	1300'
Taper Length for Drop – 700'	12' width

5) Costs (consider travel lane only) – Initial/Proposed
→Travel area (750' + 1300' + (700/2))(24') = 57,600 sf = 6,400 sy
→Reduction area (1300')(12') = 15,600 sf = 1,733 sy

	Total Area (Tons)	Reduction Area (Tons)	New Area (Tons)
12.5 mm (165 lb/sy)	528	143	385
19 mm (220 lb/sy)	704	191	513
25 mm (880 lb/sy)	2816	763	2053
12" GAB	4032	1092	2940

DEVELOPMENT AND RECOMMENDATION PHASE

Project: MSL00-0004-00(403), Cobb Co.

Idea No.:	Sheet No.:	CREATIVE IDEA:
B-6	of	Reduction of Ramp "A" & Ramp "B" Loop Paved Shoulder from 10' to 6'

Comp By: PBE Date: 1/29/2009 Checked By: Date:

Original Concept:
Ramp A has a paved shoulder of 10' from Sta. 307+46 to Sta. 318+05.39. Ramp "B" Loop has a paved shoulder of 10' from Sta. 205+50 to Sta. 215+00

Proposed Change:
Reduce Ramp A paved shoulder of 10' to 6' from Sta. 307+46 to Sta. 318+05.39. Reduce Ramp "B" Loop paved shoulder of 10' to 6' from Sta. 205+50 to Sta. 215+00.

Justification:
Reducing the paved shoulder will save pavement and allow the unpaved remaining portion of the shoulder to be grass.

LIFE CYCLE COST SUMMARY		INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
INITIAL COST:	Original	$120,000		
	Proposed	$70,000		
	Savings	$50,000		
FUTURE COST:	Savings			
TOTAL PRESENT WORTH SAVINGS				$50,000

SKETCH

Project: MSL00-0004-00(403), Cobb Co.	Idea No.: B-6 Client:: GDOT Sheet of

See Attachments

COST WORKSHEET

Project: MSL00-0004-00(403), Cobb Co.

Idea No.: B-6
Client:: GDOT
Sheet of

CONSTRUCTION ELEMENT		ORIGINAL ESTIMATE			NEW ESTIMATE		
Item	Unit	No. Units	Cost/Unit	Total Cost	No. Units	Cost/Unit	Total Cost
400-3604 (12 MM SMA)	TN	289	$29,250	$263,146.00	173	$101.21	$17,500
402-3190 (19 MM)	TN	385	$25,900	$232,754.00	232	$67.27	$15,600
402-3121 (25 MM)	TN	963	$59,900	$538,963.00	578	$62.20	$35,950
310-1101 (GAB)	TN	245	$4,450	$378,469.00	147	$18.20	$2,675
Subtotal:							
Mark-up (%)							
Total				$119,500			$71,725
Total Rounded				**$120,000**			**$70,000**

CALCULATIONS

Project: MSL00-0004-00(403), Cobb Co.

Idea No.: B-6
Client:: GDOT
Sheet of

1) Ramp A from Sta. 300+00.00 RT to Sta. 318+05.39 RT:
*Right Shoulder Pavement
(31410.11'-30746.00')(10') = 6641.10 sf = 738 sy (existing)
(30746.00'-30000.00')(10') = 7460.00 sf = 829 sy (existing)
(31805.39'-31410.11')(10') = 3953.00 sf = 440 sy (existing)
(31410.11'-30746.00')(6') = 3985.00 sf = 443 sy (proposed)
(30746.00'-30000.00')(6') = 4476.00 sf = 498 sy (proposed)
(31805.39'-31410.11')(6') = 2372.00 sf = 264 sy (proposed)

*Left Shoulder Pavement
(31805.39'-31410.11')(10') = 3953.00 sf = 440 sy (existing)
(31805.39'-31410.11')(6') = 2372.00 sf = 264 sy (proposed)

Existing Total Pavement Area = 2447 sy
Proposed Total Pavement Area = 1469 sy

2) Ramp B from Sta. 205+50 LT to Sta. 215+50 LT
*Left Shoulder Pavement
(21500'-20550')(10') = 9500.00 sf = 1056 sy (existing)
(21500'-20550')(6') = 5700.00 sf = 634 sy (proposed)

	Ramp A		Ramp B	
	Existing (Tons)	Proposed (Tons)	Existing (Tons)	Proposed (Tons)
12.5 mm SMA (165 lb/sy)	202	121	87	52
19 mm (220 lb/sy)	269	162	116	70
25 mm (550 lb/sy)	673	404	290	174
12" GAB	171	103	74	44

DEVELOPMENT AND RECOMMENDATION PHASE

Project: MSL00-0004-00(403) COBB COUNTY

Idea No.:	Sheet No.:	CREATIVE IDEA: BALANCE CUT AND FILL FOR RAMP "A" AND LOOP RAMP "B"
C-3	1 of 1	

Comp By: PBE Date: 1/29/09 Checked By: Date:

Original Concept:

EXIT RAMP "A" EARTHWORK: EXCAV. (CUT) = 52,721.03 C.Y. / EMBANK. (FILL) = 4,158.36 C.Y.

EXCESS WASTE = 48,562.66 C.Y.

LOOP RAMP "B" EARTHWORK: EXCAV. (CUT) = 30,747.29 C.Y. / EMBANK. (FILL) = 39,799.00 C.Y.

BORROW = 9051.71 C.Y.

Proposed Change:

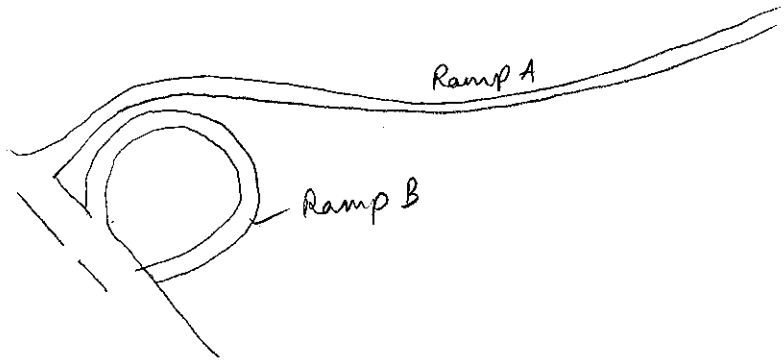
BALANCE CUT & FILL FOR EXIT RAMP "A" AND LOOP RAMP "B" TO REDUCE THE AMOUNT OF EXCESS WASTE ON WALL NO. 1 (FROM STA. 308+00 TO 317+20) AND WALL NO. 2 (FROM STA 201+66.91 TO 204+45)

Justification: REDUCING THE PAVED SHOULDER FROM MORE THAN 10' TO 6' FOR EARTHWORK CROSS-SECTION WITHOUT GUARDRAIL WILL REDUCE THE AMOUNT OF CUT AND FILL NEEDED AND YIELD COST SAVINGS.

LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
INITIAL COST: Original			
Proposed			
Savings			
FUTURE COST: Savings			
TOTAL PRESENT WORTH SAVINGS			

SKETCH

Project: MSL00-0004-00(403)	Idea No. : C-3 Client:: Sheet of



CALCULATIONS

Project: MSL 00-0004-00(403) COBB CO.	Idea No.: C-3 Client:: Sheet of

RAMP "A"

PROPOSED

(STA 31410.11 RT - 307.46 RT) (6' PAV. SHLDR) (1.7083') = 6806.99 CF
= 252.11 CY

EXISTING

(" ")(10' PAV. SHLDR)(1.7083') = 11345.00 C.F.
= 420.19 CY

RAMP "B"

EXISTING

(STA 21500 RT - 20550 LT) (10' PAV. SHLDR) (1.7083') = 16229 CF
= 601.07 CY

PROPOSED

(" ")(6' PAV. SHLDR) (1.7083') = 9738 CF
= 360.67 CY

(CUT)

RAMP "A"

(420.19 CY - 252.11 CY) = 168.08 (AMOUNT SAVE)

(FILL)

RAMP "B"

(601.07 C.Y. - 360.67 CY) = 240.40 (AMOUNT SAVE)

UNCLASSIFIED EXCAV. = 168.08 CY. $\left(\frac{\$2.90}{C.Y.}\right)$ = $487

BORROW EXCAV. INCL. MATL = 240.40 C.Y. $\left(\frac{\$5.43}{CY}\right)$ = $1305

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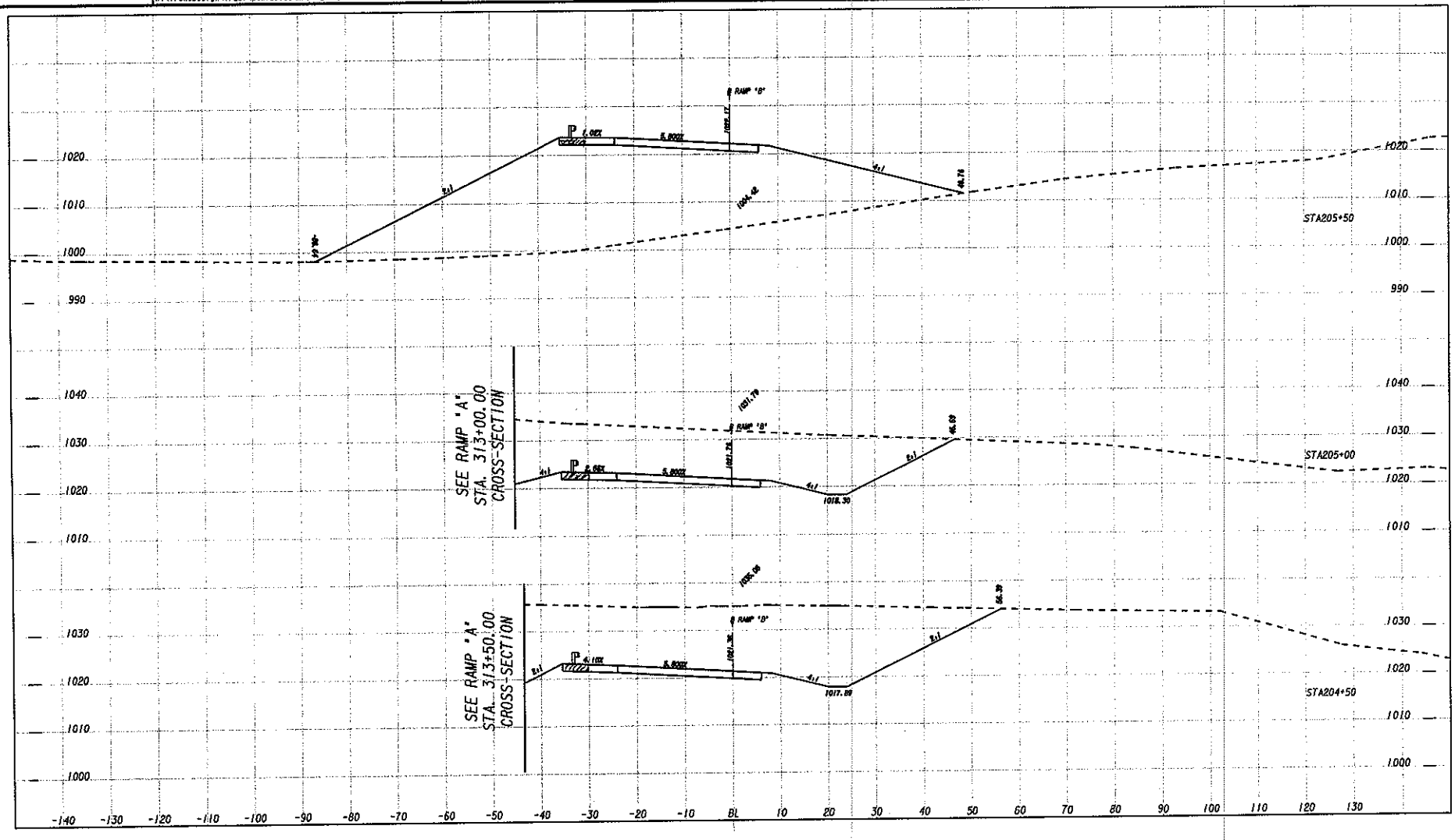

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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

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RAMP "B"

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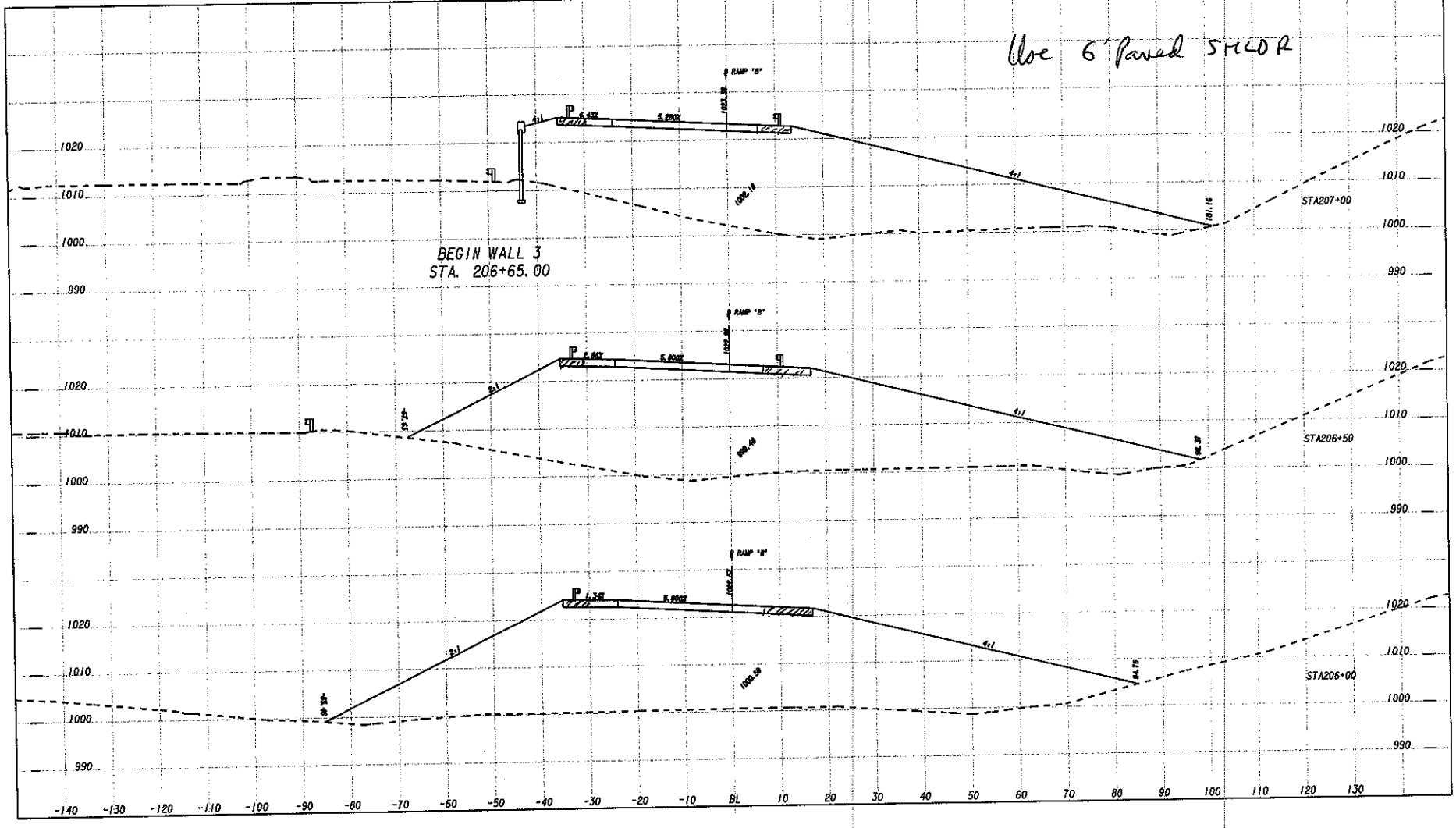

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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

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RAMP "B"

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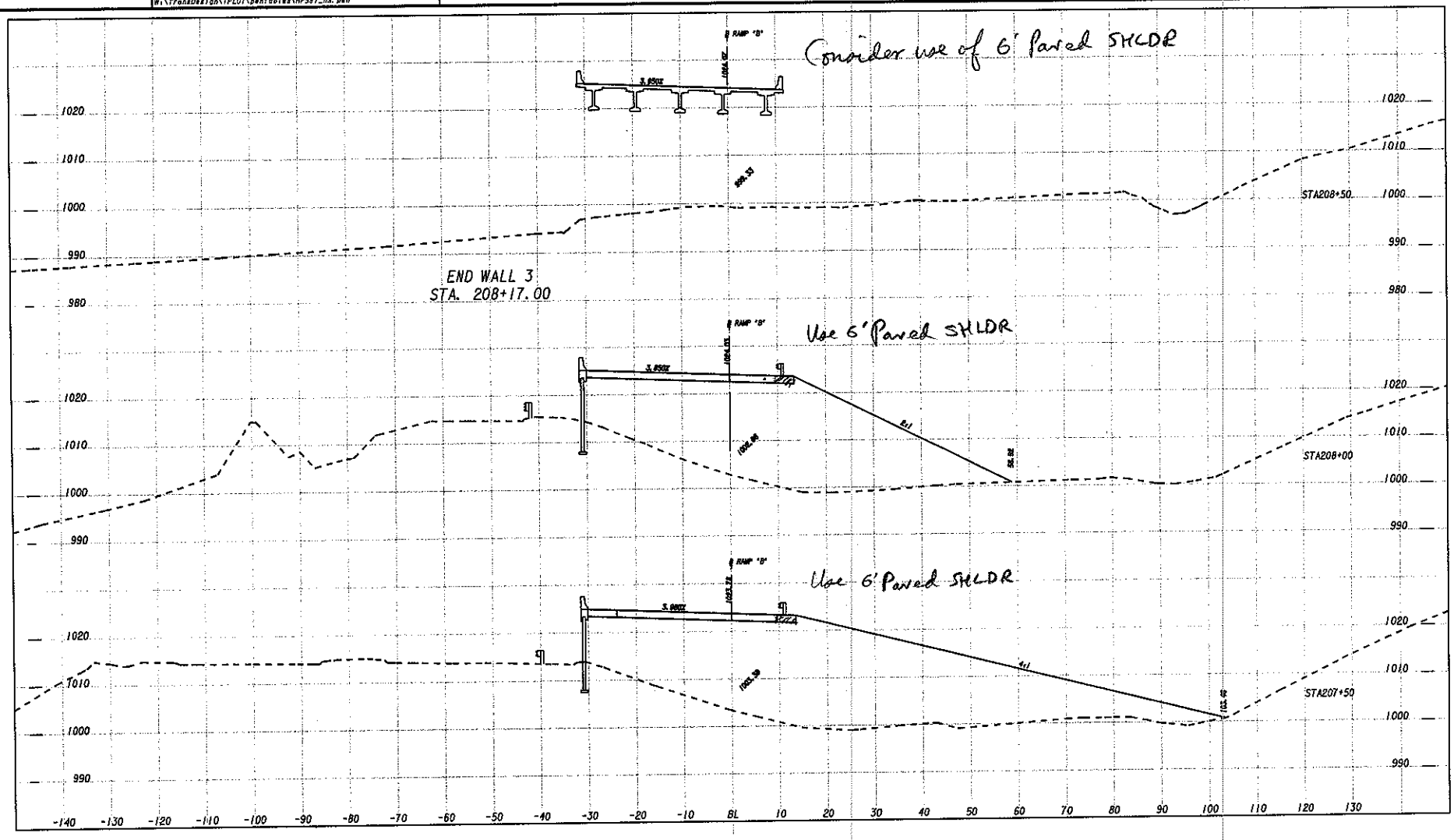

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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

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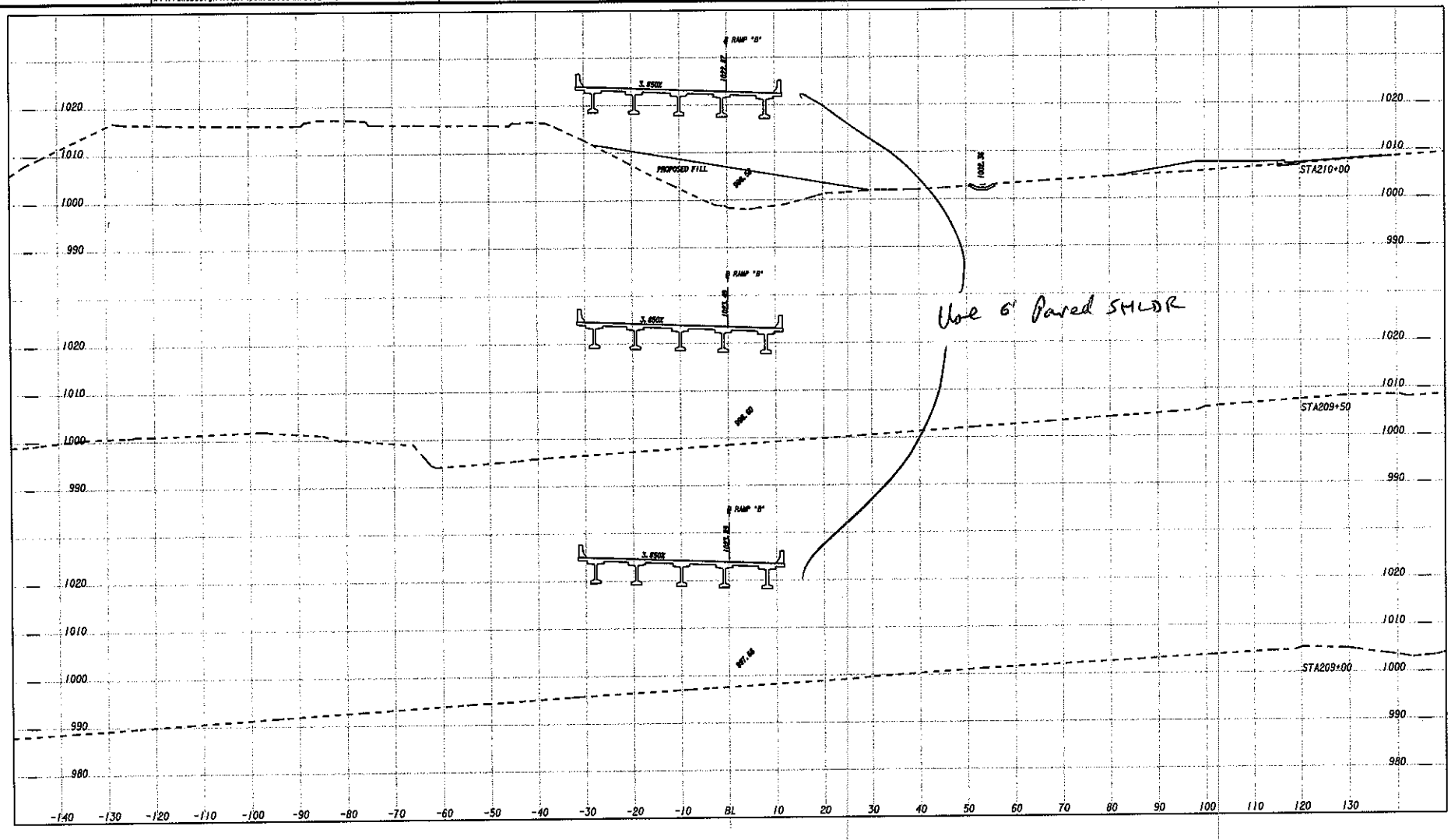

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SCALE IN FEET

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

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COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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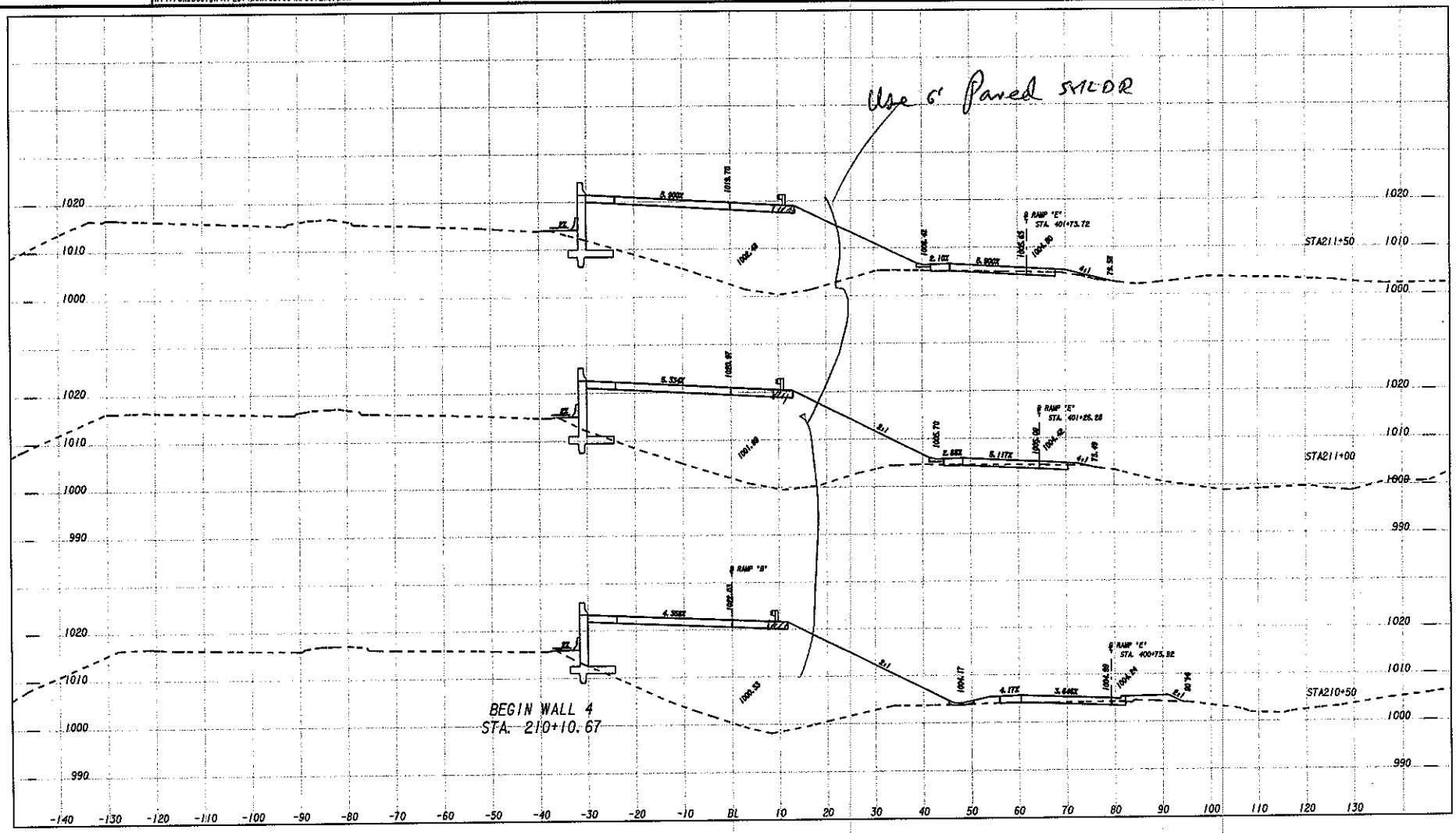

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(SCALE IN FEET)

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

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RAMP "B" & RAMP "F"

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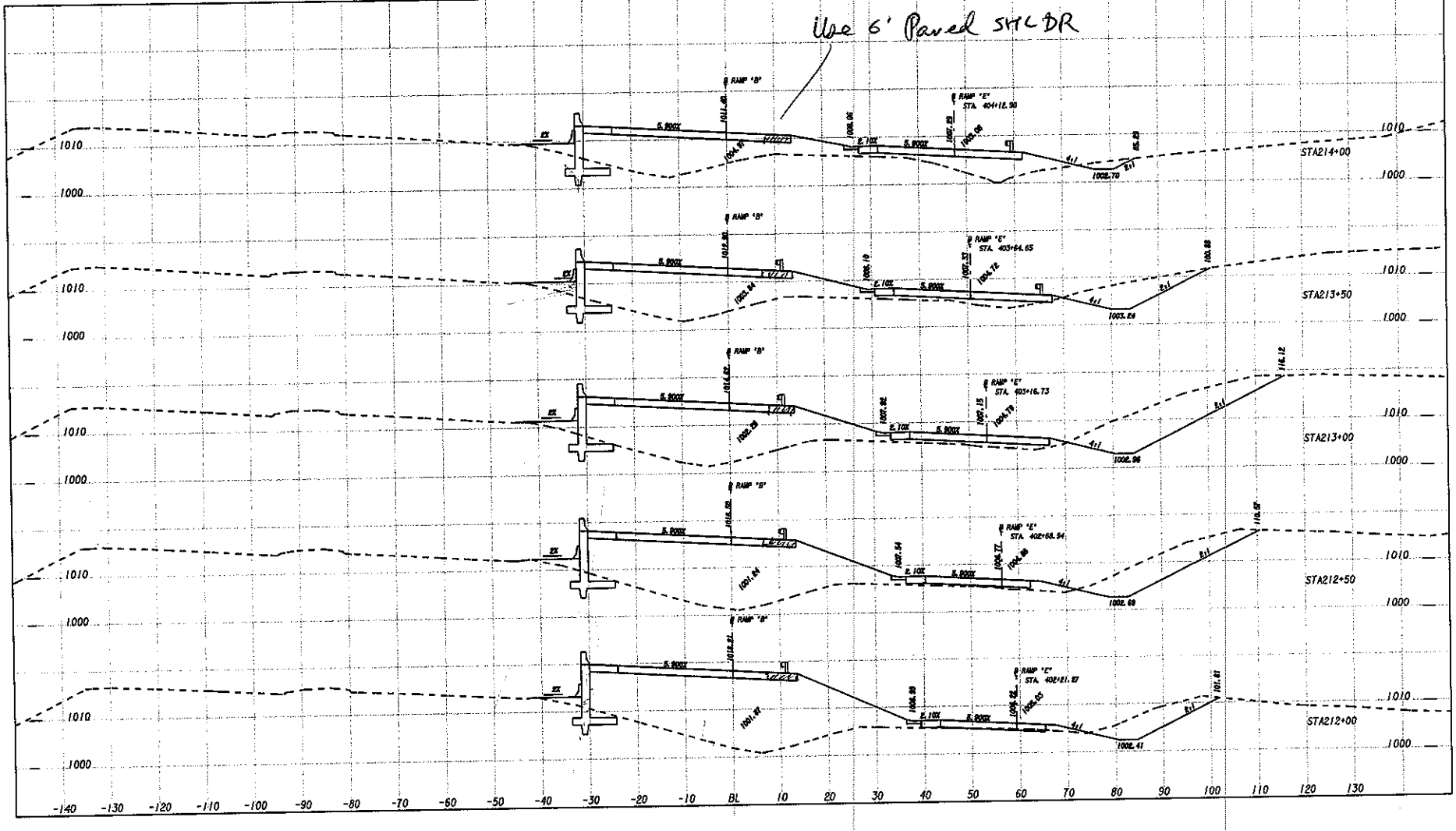

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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

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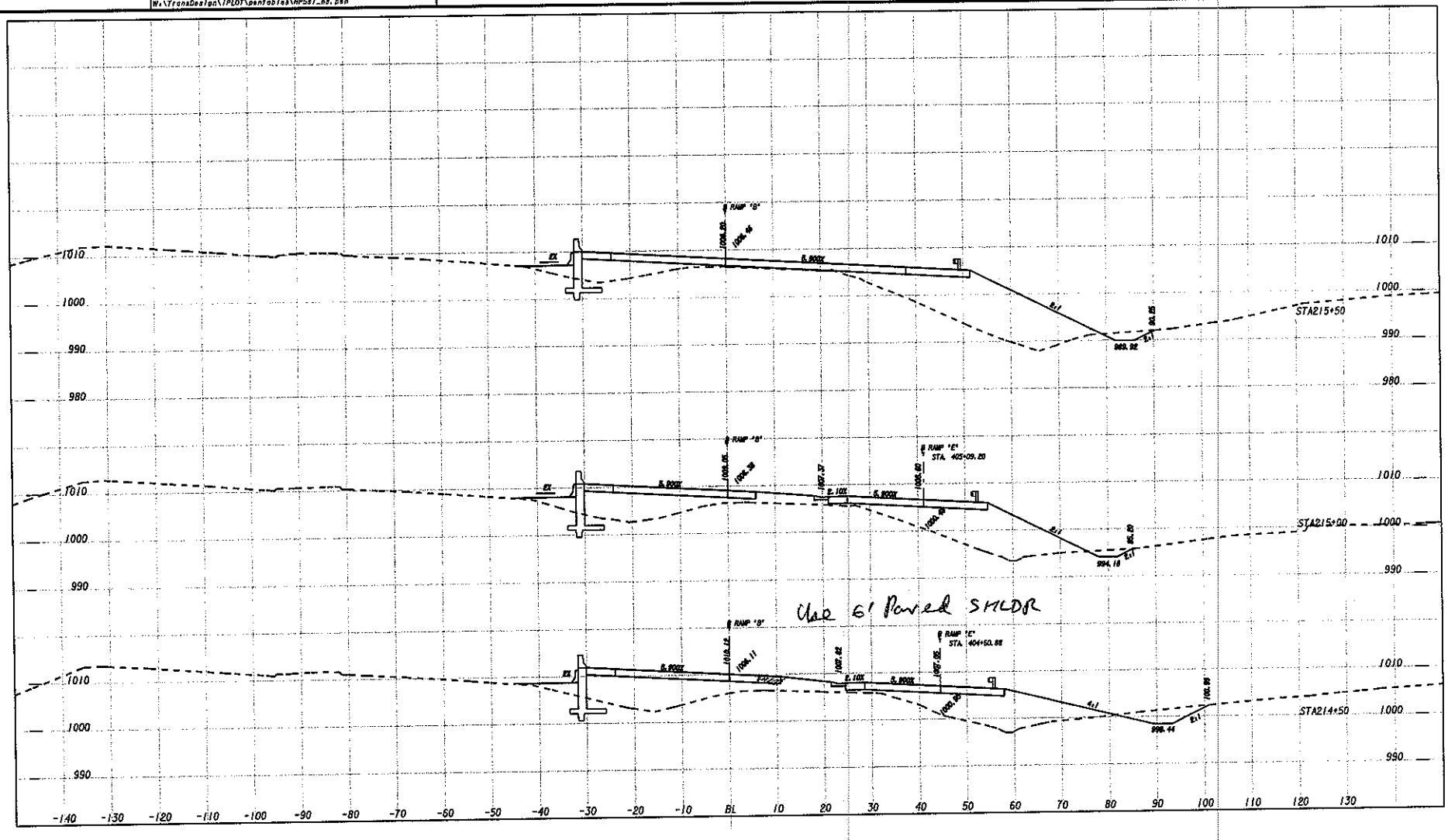

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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

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COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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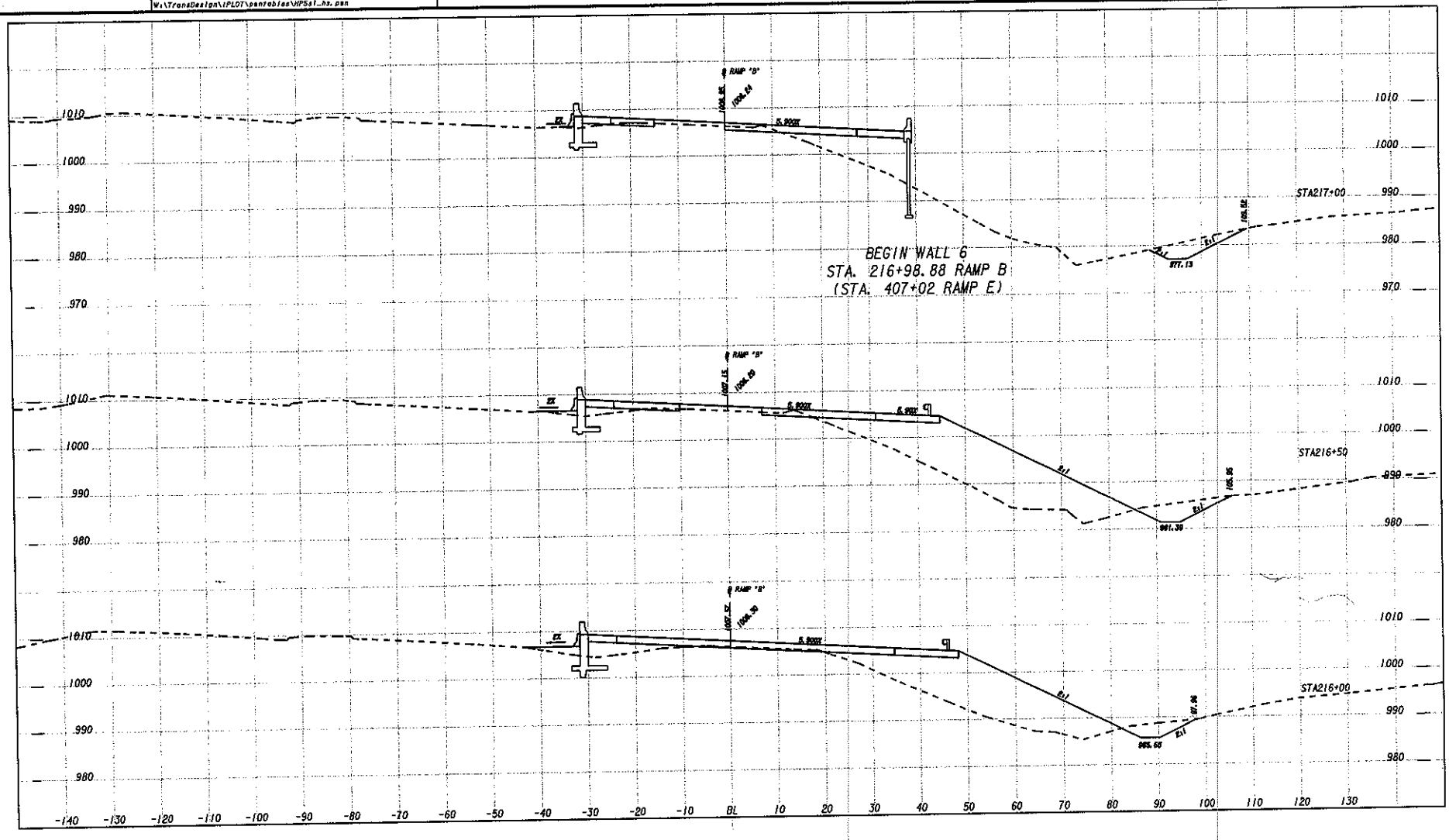

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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

SR 3 CONN @ SR 120 ALT INT.
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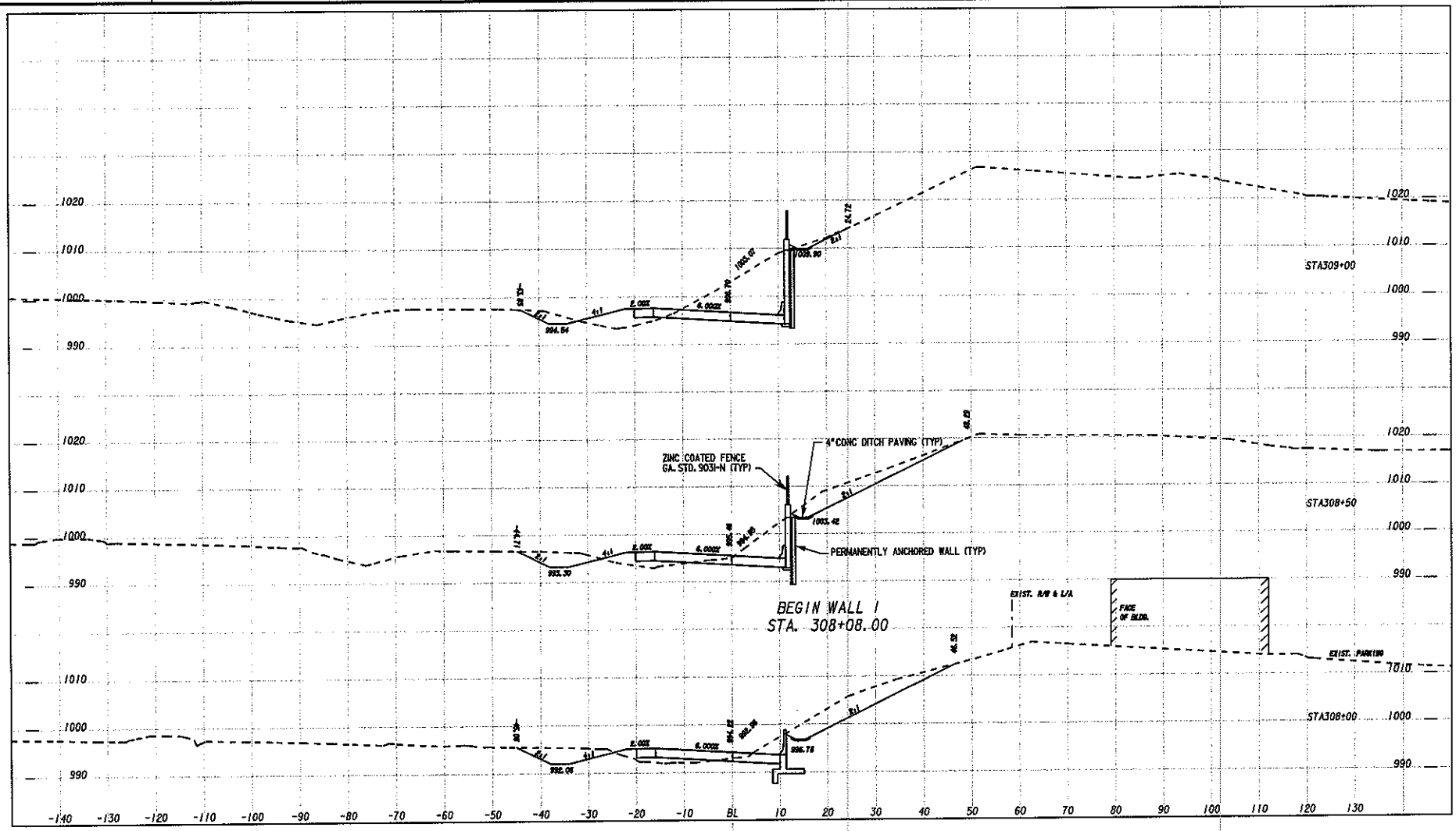

PBSJ

(SCALE IN FEET)

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

SR 3 CONN @ SR 120 ALT INT.
RAMP "A"

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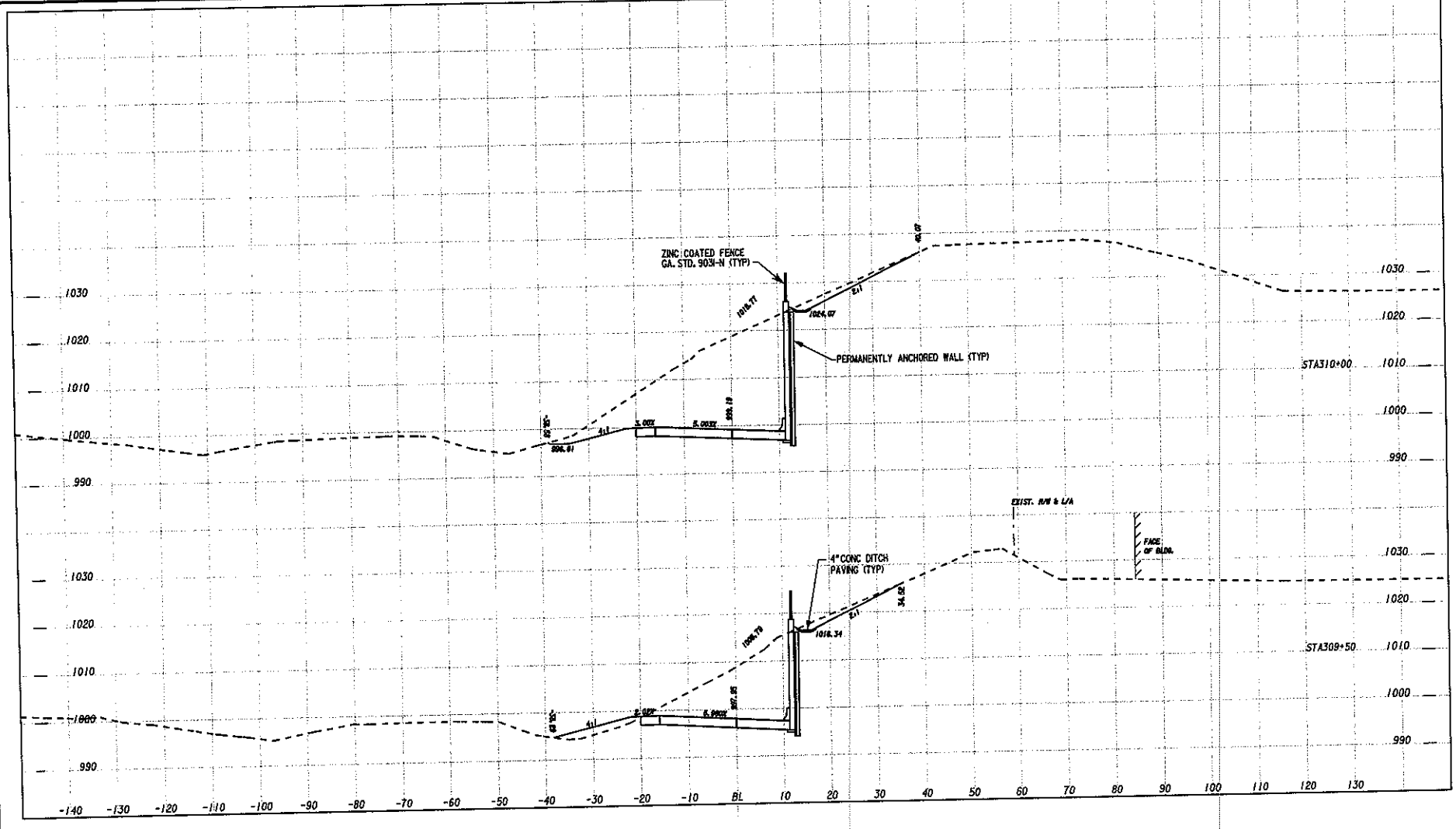
COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
COBB	MSL00-0004-001(403)		



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(SCALE IN FEET)

REVISION DATES	

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

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RAMP 'A'

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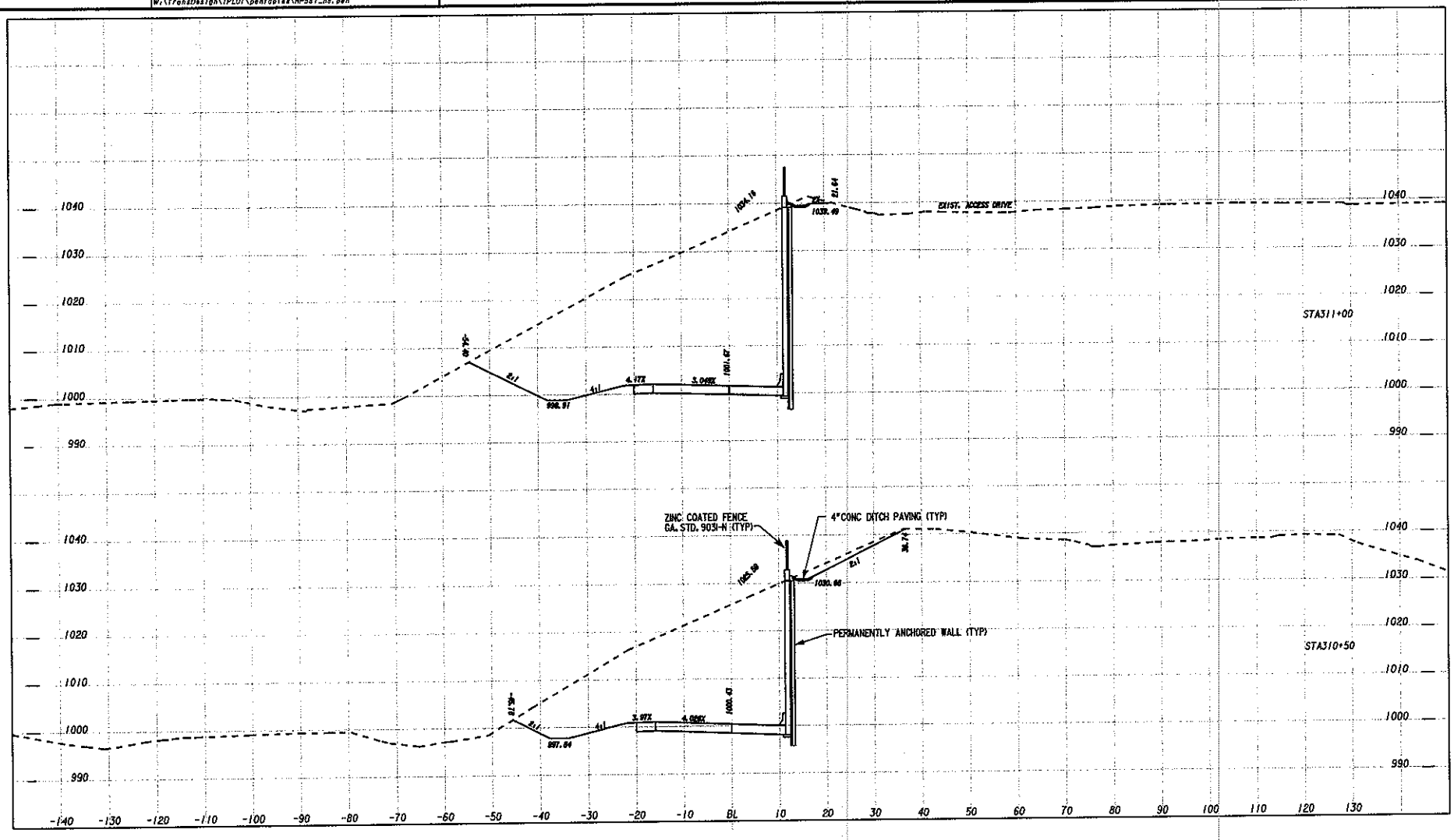
COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
COBB	MSL00-0004-00(403)		



PBSJ

SCALE IN FEET

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

SR 3 CONN @ SR 120 ALT INT.
RAMP "A"

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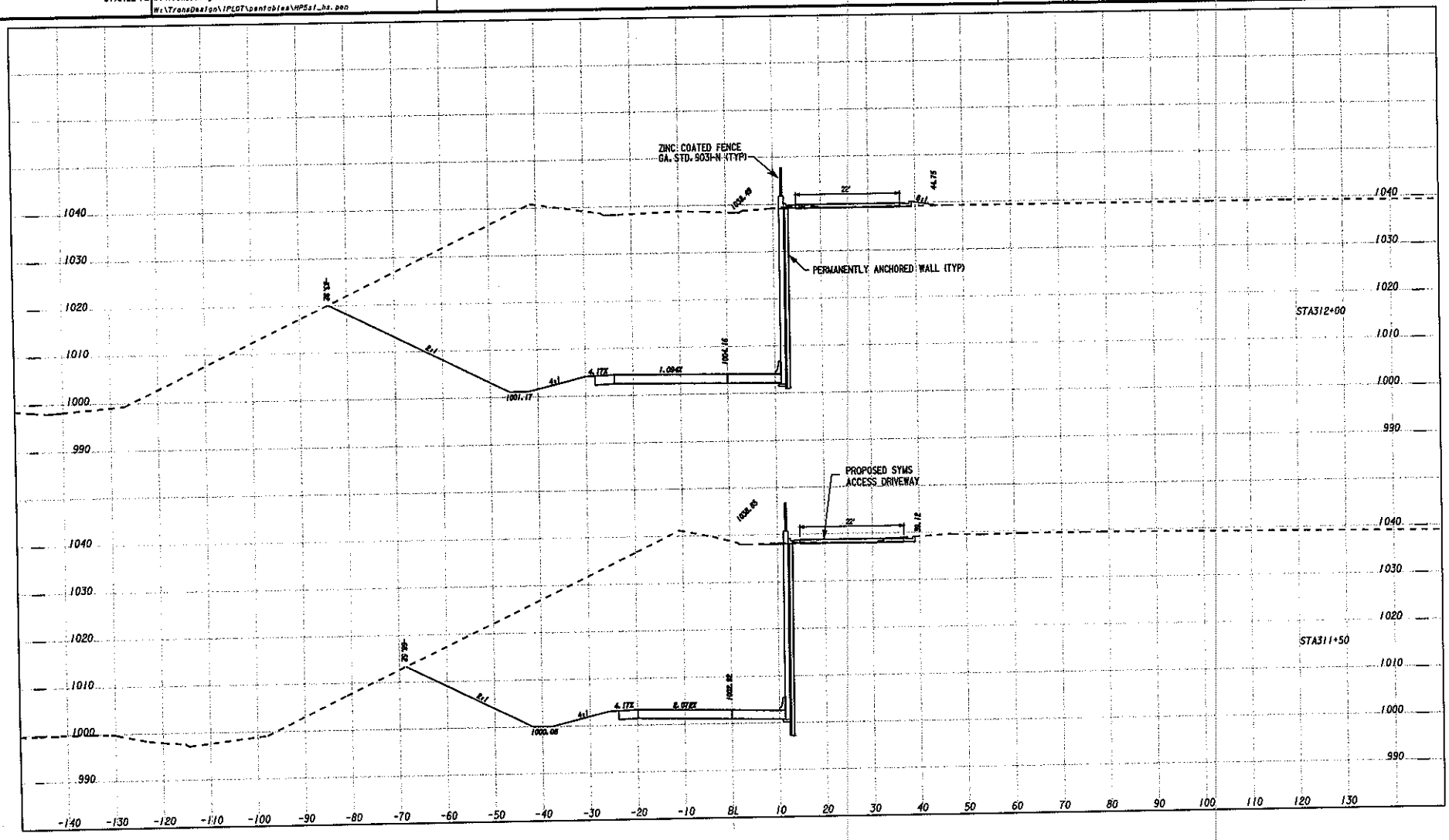
COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
COBB	M5100-0004-00(403)		



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(SCALE IN FEET)

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

SR 3 CONN @ SR 120 ALT INT.
RAMP "A"

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COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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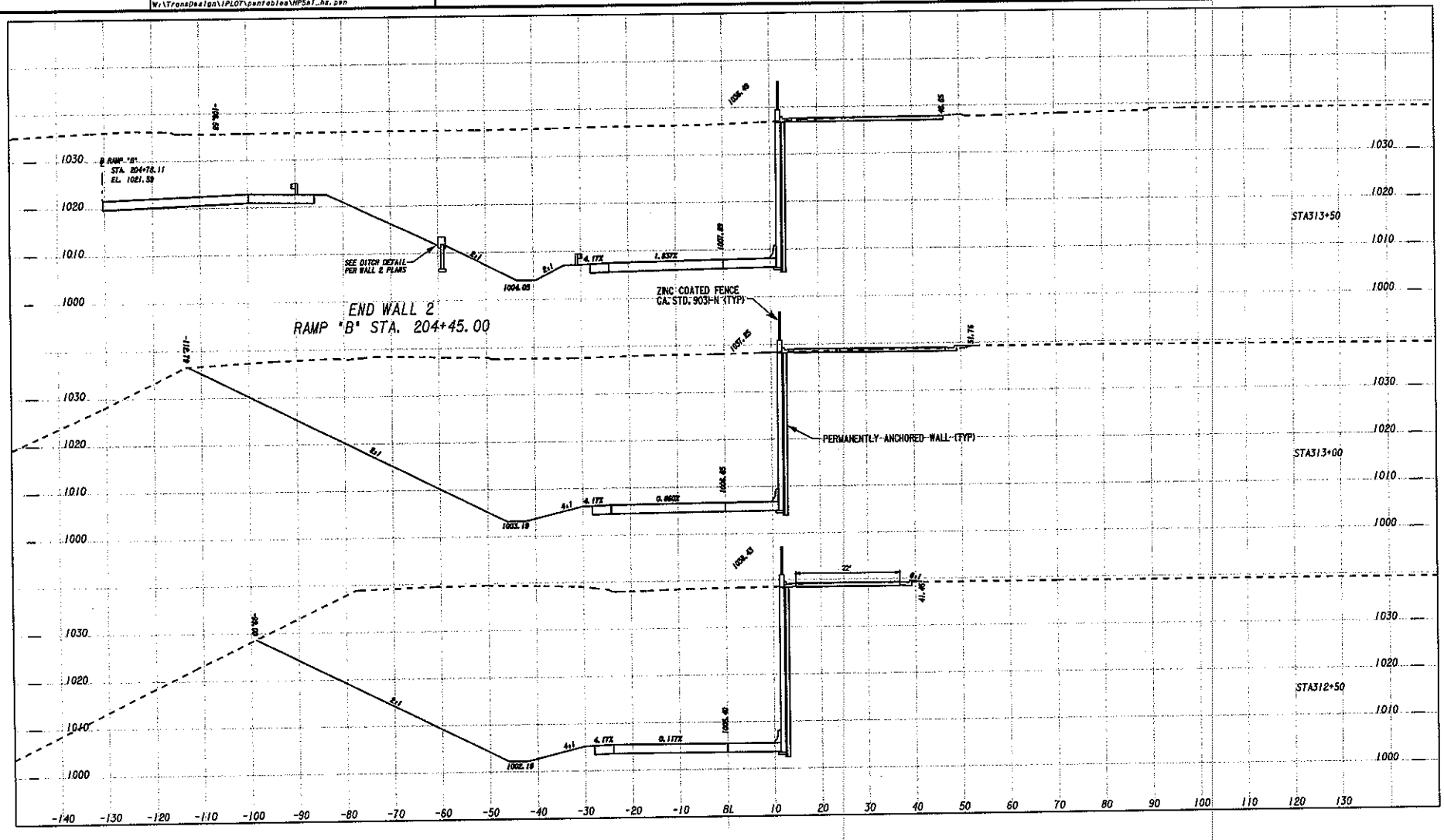

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REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

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COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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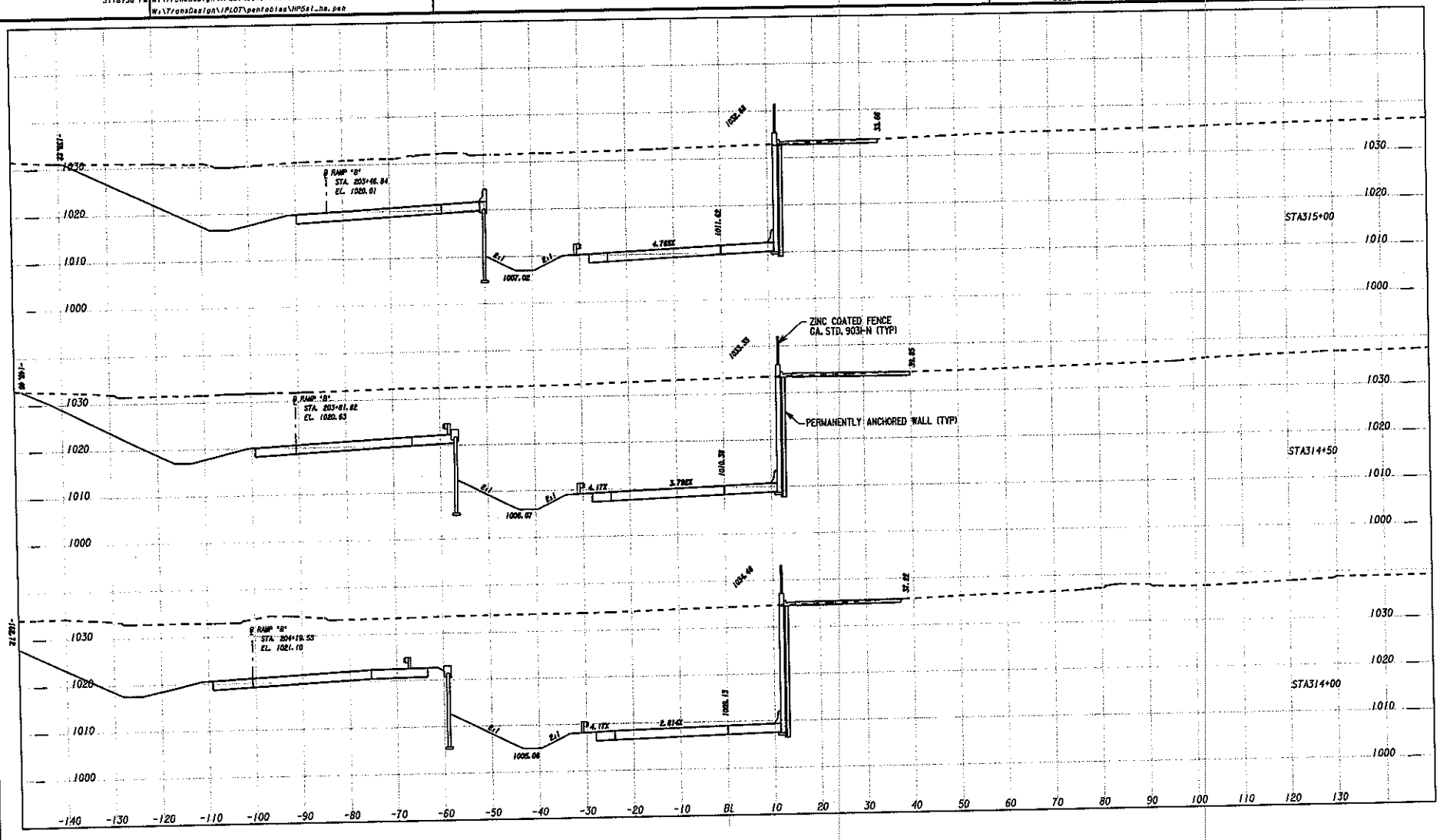

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(SCALE IN FEET)

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

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COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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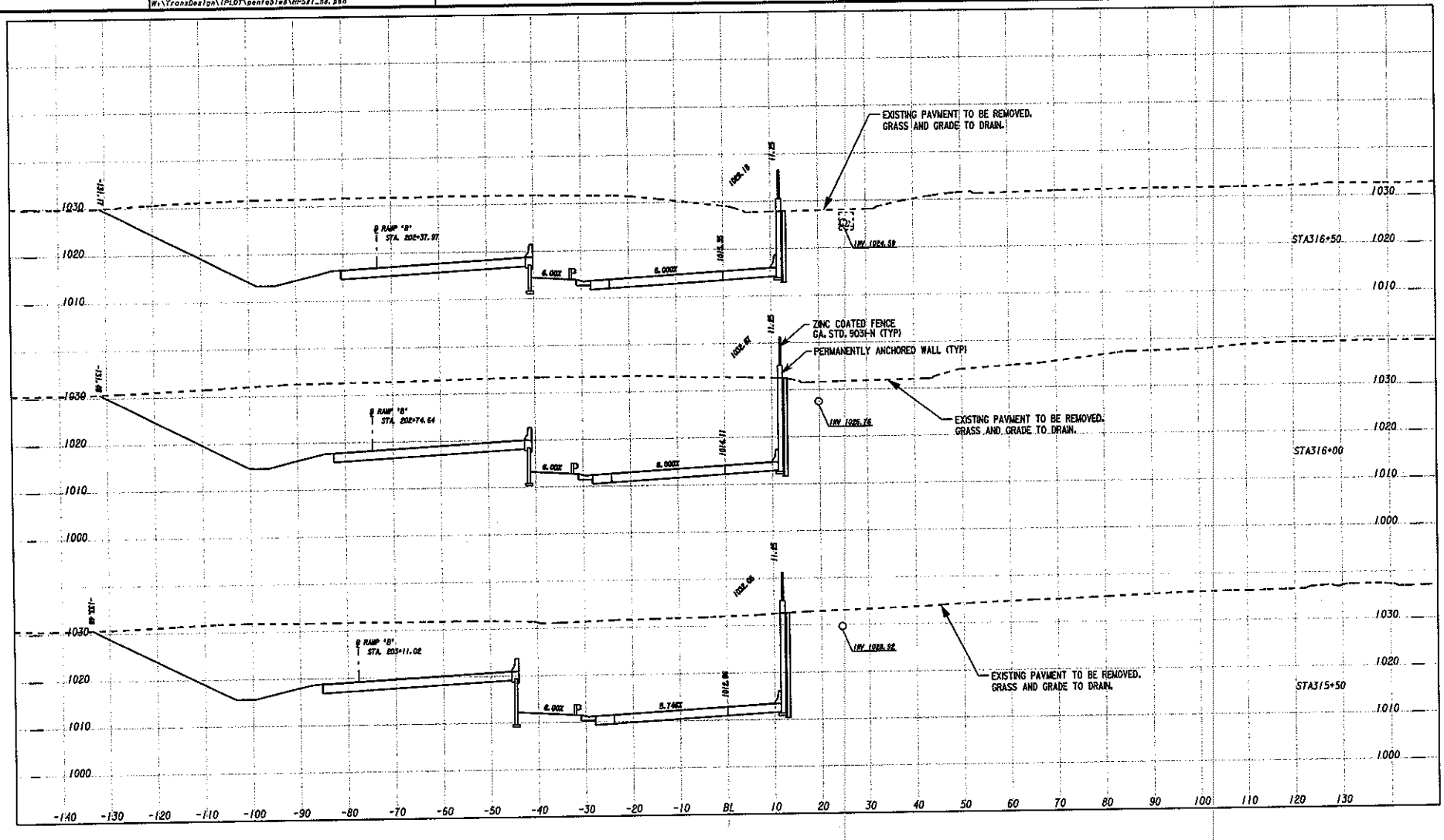

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(SCALE IN FEET)

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

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COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
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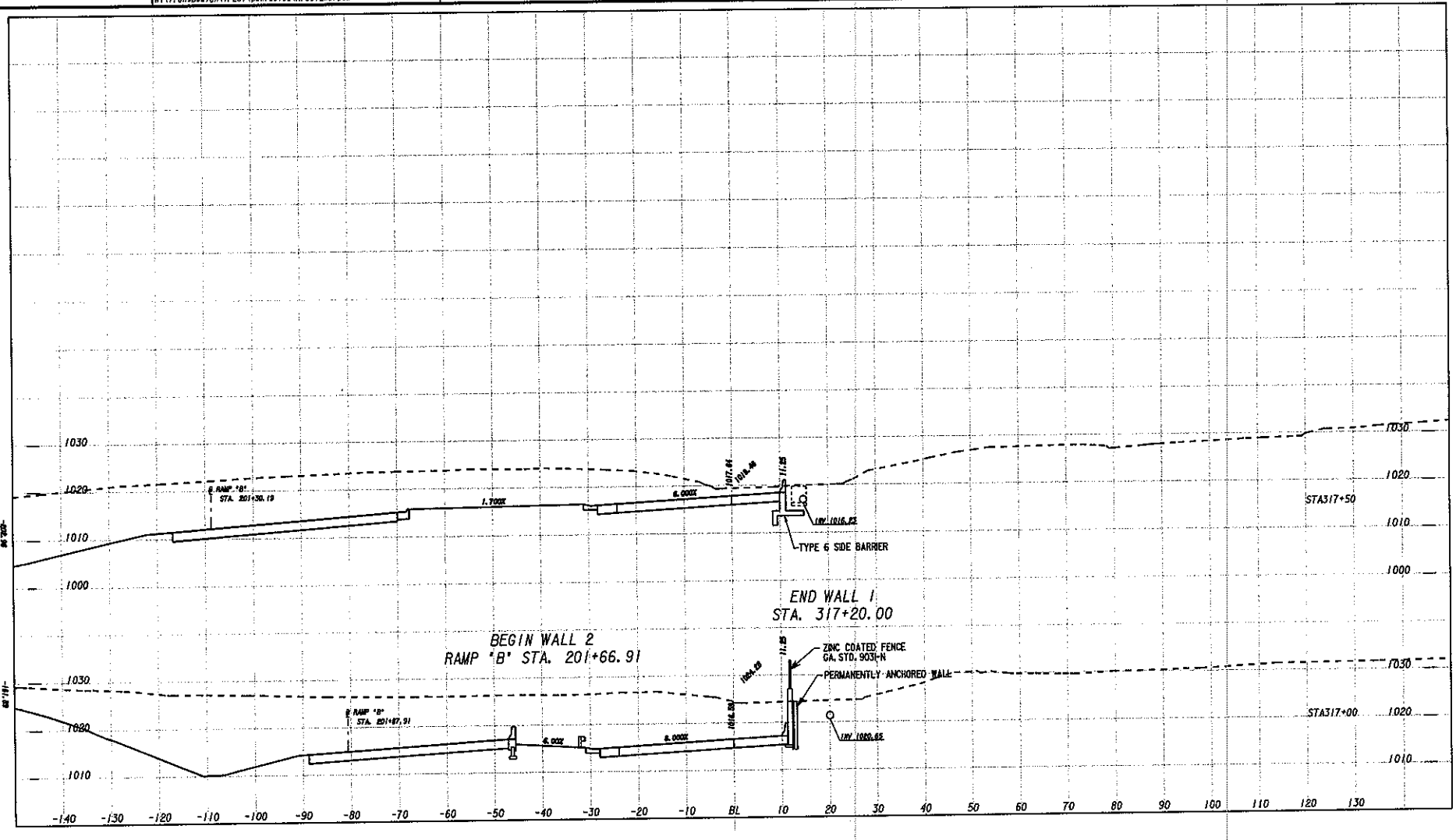

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(SCALE IN FEET)

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

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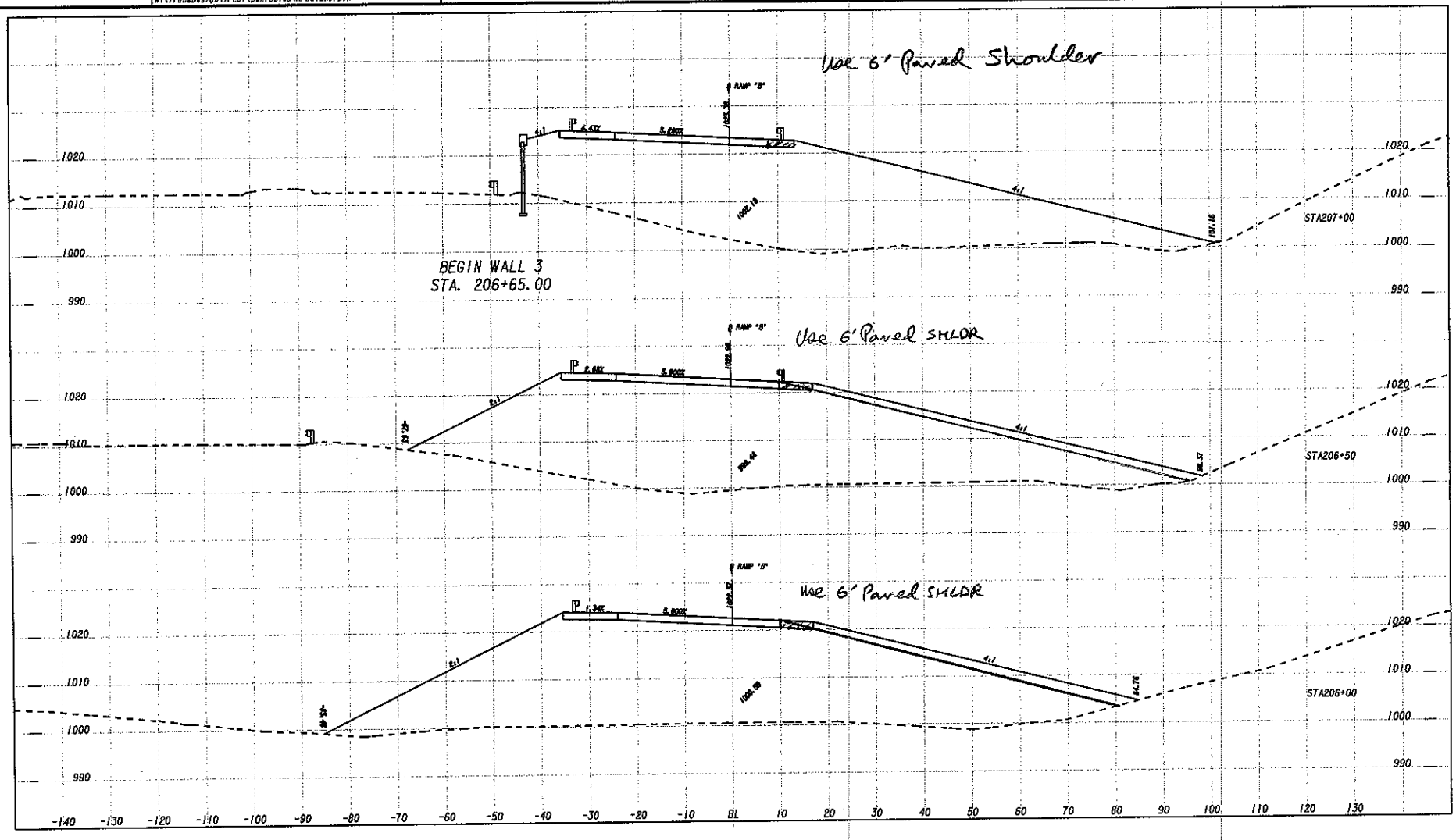
COUNTY	PROJECT NUMBER	SHEET NO.	TOTAL SHEETS
COBB	MSL00-0004-00(403)		



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(SCALE IN FEET)

REVISION DATES

STATE OF GEORGIA
DEPARTMENT OF TRANSPORTATION
OFFICE: URBAN DESIGN

EARTHWORK CROSS SECTIONS

SR 3 CONN @ SR 120 ALT INT.
RAMP "B"

DRAWING NO. 23-14

ITEM CODE	ITEM DESCRIPTION	QUANTITY	USE	UM	MEAN	WTD AVG
201-1500	CLEARING & GRUBBING -	4.00	4	LS	1810589.23	1810589.23
205-0001	UNCLASS EXCAV	3525365.00	3	CY	6.41	2.90
206-0002	BORROW EXCAV, INCL MATL	159011.00	1	CY	5.43	5.43
207-0203	FOUND BKFILL MATL, TP II	8734.00	26	CY	51.94	54.34
207-2003	IMPERFECT TRENCH BKFILL MATL, TP III	325.00	2	CY	32.50	33.30
208-0100	IN PLACE EMBANKMENT	148000.00	1	CY	3.50	3.50
208-0200	ROCK EMBANKMENT	23150.00	5	CY	42.67	43.33
209-0203	STABILIZER MATL, TP III	2400.00	1	TN	18.23	18.23
209-2122	SELECT MATL SUBGRADE, CL II, 12 IN	1720.00	1	SY	20.00	20.00
210-0100	GRADING COMPLETE -	71.00	71	LS	735235.20	735235.20
210-0200	GRADING PER MILE	614.83	66	LM	6658.66	6033.89
211-0200	BRIDGE EXCAVATION, GRADE SEPARATION	5321.00	7	CY	39.43	34.58
211-0300	BRIDGE EXCAVATION, STREAM CROSSING	2758.00	6	CY	34.00	29.59
212-1000	GRANULAR EMBANKMENT, INCL MATL & HAUL	76448.00	3	CY	18.35	9.82
214-0100	MITIGATION SITE CONSTRUCTION	2.00	2	LS	1923014.00	1923014.00
217-1000	REMOVAL OF UNDERGROUND STORAGE TANK, STA NO -	2.00	1	EA	11025.00	11025.00
217-1500	OVEREXCAVATION OF CONTAMINATED SOIL	50.00	1	CY	63.00	63.00
231-1200	MISCELLANEOUS CONSTRUCTION, ROADS, STREETS AND DRIVEWAYS	5821.00	67	EA	206.31	162.76
232-4000	SUB-BALLAST	13500.00	1	TN	33.70	33.70
310-1101	GR AGGR BASE CRS, INCL MATL	933810.00	45	TN	21.75	18.12
310-5040	GR AGGR BASE CRS, 4 INCH, INCL MATL	485.00	1	SY	13.76	13.76
310-5060	GR AGGR BASE CRS, 6 INCH, INCL MATL	6028.00	5	SY	13.95	12.06
310-5080	GR AGGR BASE CRS, 8 INCH, INCL MATL	57765.00	11	SY	16.05	15.32
310-5100	GR AGGR BASE CRS, 10 INCH, INCL MATL	23725.00	4	SY	16.44	16.35
310-5120	GR AGGR BASE CRS, 12 INCH, INCL MATL	63000.00	2	SY	21.66	22.75
318-3000	AGGR SURF CRS	34840.00	49	TN	22.50	21.18
400-3205	ASPH CONC 12.5 MM OGFC, GP 2 ONLY, INCL BITUM MATL & H LIME	1645.00	1	TN	89.00	89.00
400-3206	ASPH CONC 12.5 MM OGFC, GP 2 ONLY, INCL POLYMER-MODIFIED	26526.00	2	TN	128.80	72.96
400-3604	ASPH CONC 12.5 MM SMA, GP 2 ONLY, INCL POLYMER-MODIFIED	7400.00	1	TN	105.77	105.77
400-3624	ASPH CONC 12.5 MM PEM, GP 2 ONLY, INCL POLYMER-MODIFIED	4600.00	1	TN	80.94	80.94
402-1802	RECYCLED ASPH CONC PATCHING, INCL BITUM MATL & H LIME	130815.00	65	TN	103.92	83.02
402-1811	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL	426.00	1	TN	112.72	112.72
402-1812	RECYCLED ASPH CONC LEVELING, INCL BITUM MATL & H LIME	542682.00	208	TN	75.47	69.73
402-3100	RECYCLED ASPH CONC 9.5 MM SUPERPAVE, TYPE I, GP 1 OR	350812.00	82	TN	70.30	69.19
402-3101	RECYCLED ASPH CONC 9.5 MM SUPERPAVE, TYPE I, BLEND 1, INCL	168447.00	47	TN	71.55	72.68
402-3102	RECYCLED ASPH CONC 9.5 MM SUPERPAVE, TYPE II, BLEND 1, INCL	188239.00	29	TN	71.96	72.23
402-3103	RECYCLED ASPH CONC 9.5 MM SUPERPAVE, TYPE II, GP 2 ONLY,	303089.00	35	TN	78.56	70.26
402-3110	RECYCLED ASPH CONC 9.5 MM SUPERPAVE, GP 1 OR 2, INCL BITUM	2290.00	2	TN	87.55	87.62
402-3113	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 1 OR 2, INCL BITUM	31674.00	20	TN	72.14	67.88
402-3121	RECYCLED ASPH CONC 25 MM SUPERPAVE, GP 1 OR 2, INCL BITUM	372586.00	54	TN	74.50	62.61
402-3130	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL BITUM	619704.00	73	TN	77.83	64.62
402-3131	RECYCLED ASPH CONC 9.5 MM SUPERPAVE, GP 2 ONLY, INCL	1200.00	1	TN	85.00	85.00
402-3190	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2,INCL BITUM	282530.00	73	TN	80.23	67.65
402-4510	RECYCLED ASPH CONC 12.5 MM SUPERPAVE, GP 2 ONLY, INCL	229343.00	16	TN	72.55	67.86
402-4514	RECYCLED ASPH CONC 19 MM SUPERPAVE, GP 1 OR 2, INCL	1157.00	1	TN	90.02	90.02
407-0010	ASPHALT-RUBBER JOINT AND CRACK SEAL, TP M	11844.00	5	LF	6.47	2.96
407-0020	ASPHALT-RUBBER JOINT AND CRACK SEAL, TP S	1982.00	1	LF	9.10	9.10
413-1000	BITUM TACK COAT	2236646.00	233	GL	2.59	2.14
424-5007	SINGLE SURFACE TRTMT, STN SIZE 7 , GP 1 OR 2	1009232.00	7	SY	1.21	0.94
424-5089	SINGLE SURFACE TRTMT, STN SIZE 89, GP 1 OR 2	850043.00	5	SY	0.85	0.81
424-5107	SINGLE SURFACE TRTMT, STN SIZE 7 , GP 2 ONLY	4144683.00	22	SY	0.88	0.79
424-6089	DOUBLE SURFACE TRTMT, STN SIZE 7 & 89, GP 1 OR 2	1095346.00	9	SY	1.87	1.82

Soil Survey Summary

Project Number: MSL-0004-00(403)
P.I. Number: 0004403
SR-120/Roswell Road & North Marietta Parkway Interchange Improvements
Cobb County

Prepared for:
State of Georgia
Department of Transportation
Geotechnical Engineering Bureau

Prepared by:
Professional Service Industries, Inc.
95 Chastain Road, Suite 301
Kennesaw, Georgia 30144

Subconsultant to:
PBS&J
5665 New Northside Drive
Suite 400
Atlanta, Georgia 30328

April 13, 2005

SOIL SURVEY SUMMARY

For

SR-120/Roswell Road & North Marietta Parkway Interchange Improvements

MSL-0004-00(403), Cobb County

PI No. 0004403

1. Location / Description

This project is for the improvements of SR 120/Roswell Road and North Marietta Parkway Interchange. These improvements include, providing a new entrance ramp from Roswell Road to N. Marietta Pkwy. from STA 200+00 to 234+69.23, relocating the exit ramp from N. Marietta Pkwy. to Roswell Road from STA 400+00 to 417+97 and widening and relocating the other entrance ramp from Roswell Road to N. Marietta Pkwy. from STA 300+00 to STA 314+97.11. The project lies within the city limits of Marietta in Cobb County.

2. Geology

This project will be geologically sited in the Biotite Gneiss/Mica Schist/Amphibolite Formation of the Georgia Piedmont Region.

3. Rock

Hard rock, noted as auger refusal and requiring blasting for removal, was encountered near or above grade at the following locations:

Station to Station	Location
303+50± to 311+50±	Left & Right
211+50± to 213+50±	Right.

4. Removal

No material requiring removal was encountered.

5. Waste

None of the materials found on this project will require wasting.

6. Subgrade Materials

No additional subgrade material will be required for this project.

7. Pavement Design Values

We recommend the following values for use in the pavement design calculations for this project:

Soil Support Value = 2.5
Regional Factor = 1.8
Subgrade Reaction, k = 130 pci

Graded aggregate base is the only base material recommended for use on this project.

8. Slopes Maximum 2:1 slopes will be safe for this project.

9. Groundwater Groundwater was not encountered at locations of subsurface borings, except in the boring at STA 214+00 at the time of the investigation, but is not expected to cause problems during construction.

10. Shrinkage We recommend an average shrinkage factor of 20 % for use in the earthwork calculations for this project.

11. Rock Swell We recommend the use of an average swell factor of 30% for material shown as hard rock on the soil profile sheets.

12. Culverts We recommend that a 12-inch blanket of Type II Foundation Backfill material be placed under the barrel of all culverts and 46-inch diameter and larger cross-drains on this project.

13. Corrosion Reference should be made to the attached "Pipe Culvert Materials Recommendations".

14. Bench Detail Where new fills are to be placed on existing slopes steeper than 3:1, the existing slope should be benched in accordance with the attached detail.

15. Pavement Design We recommend the use of a minimum 10 inches of graded aggregate base, or the equivalent, in the pavement section for this project due to subgrade soils of low soil support values. However, this depth of base material may be slightly reduced on side streets with low-volume traffic.

16. Slopes Maximum 2:1 slopes will be safe for this project. However, embankment and cut slopes that are greater than 35 feet high will require construction of a berm in accordance with the attached detail at the following locations:

Station to Station	Location
STA 305+50± to 310+00±	Right.

17. Serrated Slopes Serrated slopes will not be required on this project.

18. Special Problems Several residences and businesses are located very close to the construction limits of this project. Vibrations from construction may cause some concern with property owners. We recommend

kc22_prop.erp → Exit Ramp ("A")

CAiCE Visual Roads Design System
EarthWork Report from H:\COBB\721310\721310\kc22_prop.EAR : Wed Jan 03 09:50:35 2007

EarthWork Class Table : C:\CAiCE\EWCLASS\Gdotewrk.tbl
Description : GDOT Earthwork Class Table

	Area Type	Area	Inc.Vol.	Cum.Vol.	MassHaul
Station 300+00.00					
	EXCAV	27.12			
	EMBANK	0.00			
	CUT	27.12			
	USABLE	27.12			
	FILL	0.00			
Station 300+50.00					
	EXCAV	24.05	47.38	47.38	
	EMBANK	0.23	0.22	0.22	
	CUT	24.05	47.38	47.38	
	USABLE	24.05	47.38	47.38	
	FILL	0.23	0.22	0.22	
					47.17
Station 301+00.00					
	EXCAV	17.50	38.47	85.86	
	EMBANK	16.03	15.06	15.28	
	CUT	17.50	38.47	85.86	
	USABLE	17.50	38.47	85.86	
	FILL	16.03	15.06	15.28	
					70.58
Station 301+50.00					
	EXCAV	12.36	27.65	113.51	
	EMBANK	45.77	57.23	72.50	
	CUT	12.36	27.65	113.51	
	USABLE	12.36	27.65	113.51	
	FILL	45.77	57.23	72.50	
					41.00
Station 302+00.00					
	EXCAV	8.01	18.86	132.36	
	EMBANK	66.99	104.41	176.92	
	CUT	8.01	18.86	132.36	
	USABLE	8.01	18.86	132.36	
	FILL	66.99	104.41	176.92	
					-44.55
Station 302+50.00					
	EXCAV	4.94	11.99	144.35	
	EMBANK	75.11	131.57	308.49	
	CUT	4.94	11.99	144.35	
	USABLE	4.94	11.99	144.35	
	FILL	75.11	131.57	308.49	
					-164.14
Station 303+00.00					
	EXCAV	24.14	26.92	171.27	
	EMBANK	214.25	267.93	576.42	
	CUT	24.14	26.92	171.27	
	USABLE	24.14	26.92	171.27	
	FILL	214.25	267.93	576.42	
					-405.15
Station 303+50.00					
	EXCAV	17.06	38.14	209.42	
	EMBANK	286.95	464.08	1040.50	
	CUT	17.06	38.14	209.42	
	USABLE	17.06	38.14	209.42	
	FILL	286.95	464.08	1040.50	

-831.08

Station 304+00.00

EXCAV	11.94	26.85	236.26
EMBANK	366.28	604.84	1645.35
CUT	11.94	26.85	236.26
USABLE	11.94	26.85	236.26
FILL	366.28	604.84	1645.35

-1409.08

Station 304+50.00

EXCAV	0.00	11.05	247.32
EMBANK	430.40	737.66	2383.01
CUT	0.00	11.05	247.32
USABLE	0.00	11.05	247.32
FILL	430.40	737.66	2383.01

-2135.69

Station 305+00.00

EXCAV	0.00	0.00	247.32
EMBANK	472.16	835.70	3218.71
CUT	0.00	0.00	247.32
USABLE	0.00	0.00	247.32
FILL	472.16	835.70	3218.71

-2971.39

Station 305+50.00

EXCAV	11.28	10.44	257.76
EMBANK	105.31	534.69	3753.40
CUT	11.28	10.44	257.76
USABLE	11.28	10.44	257.76
FILL	105.31	534.69	3753.40

-3495.65

Station 306+00.00

EXCAV	20.54	29.46	287.22
EMBANK	19.53	115.60	3869.00
CUT	20.54	29.46	287.22
USABLE	20.54	29.46	287.22
FILL	19.53	115.60	3869.00

-3581.78

Station 306+50.00

EXCAV	26.20	43.27	330.49
EMBANK	17.50	34.29	3903.29
CUT	26.20	43.27	330.49
USABLE	26.20	43.27	330.49
FILL	17.50	34.29	3903.29

-3572.80

Station 307+00.00

EXCAV	42.27	63.40	393.89
EMBANK	12.45	27.73	3931.02
CUT	42.27	63.40	393.89
USABLE	42.27	63.40	393.89
FILL	12.45	27.73	3931.02

-3537.13

Station 307+50.00

EXCAV	67.69	101.82	495.70
EMBANK	16.60	26.90	3957.92
CUT	67.69	101.82	495.70
USABLE	67.69	101.82	495.70
FILL	16.60	26.90	3957.92

-3462.22

Station 308+00.00

EXCAV	74.39	131.56	627.26
EMBANK	18.70	32.69	3990.61
CUT	74.39	131.56	627.26
USABLE	74.39	131.56	627.26
FILL	18.70	32.69	3990.61

-3363.35

Station 308+50.00

EXCAV	100.25	161.71	788.97
EMBANK	22.46	38.12	4028.73
CUT	100.25	161.71	788.97
USABLE	100.25	161.71	788.97
FILL	22.46	38.12	4028.73

-3239.75

Station 309+00.00

EXCAV	194.54	272.95	1061.93
EMBANK	35.02	53.22	4081.95
CUT	194.54	272.95	1061.93
USABLE	194.54	272.95	1061.93
FILL	35.02	53.22	4081.95

-3020.02

Station 309+50.00

EXCAV	314.58	471.40	1533.33
EMBANK	23.75	54.42	4136.37
CUT	314.58	471.40	1533.33
USABLE	314.58	471.40	1533.33
FILL	23.75	54.42	4136.37

-2603.04

Station 310+00.00

EXCAV	625.55	870.49	2403.81
EMBANK	0.00	21.99	4158.36
CUT	625.55	870.49	2403.81
USABLE	625.55	870.49	2403.81
FILL	0.00	21.99	4158.36

-1754.55

Station 310+50.00

EXCAV	1021.17	1524.74	3928.55
EMBANK	0.00	0.00	4158.36
CUT	1021.17	1524.74	3928.55
USABLE	1021.17	1524.74	3928.55
FILL	0.00	0.00	4158.36

-229.81

Station 311+00.00

EXCAV	1497.23	2331.85	6260.41
EMBANK	0.00	0.00	4158.36
CUT	1497.23	2331.85	6260.41
USABLE	1497.23	2331.85	6260.41
FILL	0.00	0.00	4158.36

2102.05

Station 311+50.00

EXCAV	2163.37	3389.45	9649.86
EMBANK	0.00	0.00	4158.36
CUT	2163.37	3389.45	9649.86
USABLE	2163.37	3389.45	9649.86
FILL	0.00	0.00	4158.36

5491.49

Station 312+00.00

EXCAV	2783.57	4580.50	14230.35
EMBANK	0.00	0.00	4158.36
CUT	2783.57	4580.50	14230.35
USABLE	2783.57	4580.50	14230.35
FILL	0.00	0.00	4158.36

10071.99

Station 312+50.00

EXCAV	3133.39	5478.67	19709.02
EMBANK	0.00	0.00	4158.36
CUT	3133.39	5478.67	19709.02
USABLE	3133.39	5478.67	19709.02
FILL	0.00	0.00	4158.36

					15550.66
Station 313+00.00					
	EXCAV	3076.48	5749.88	25458.90	
	EMBANK	0.00	0.00	4158.36	
	CUT	3076.48	5749.88	25458.90	
	USABLE	3076.48	5749.88	25458.90	
	FILL	0.00	0.00	4158.36	
					21300.54
Station 313+50.00					
	EXCAV	2652.04	5304.18	30763.08	
	EMBANK	0.00	0.00	4158.36	
	CUT	2652.04	5304.18	30763.08	
	USABLE	2652.04	5304.18	30763.08	
	FILL	0.00	0.00	4158.36	
					26604.72
Station 314+00.00					
	EXCAV	2288.71	4574.77	35337.85	
	EMBANK	0.00	0.00	4158.36	
	CUT	2288.71	4574.77	35337.85	
	USABLE	2288.71	4574.77	35337.85	
	FILL	0.00	0.00	4158.36	
					31179.49
Station 314+50.00					
	EXCAV	2033.27	4001.84	39339.69	
	EMBANK	0.00	0.00	4158.36	
	CUT	2033.27	4001.84	39339.69	
	USABLE	2033.27	4001.84	39339.69	
	FILL	0.00	0.00	4158.36	
					35181.33
Station 315+00.00					
	EXCAV	1847.65	3593.45	42933.13	
	EMBANK	0.00	0.00	4158.36	
	CUT	1847.65	3593.45	42933.13	
	USABLE	1847.65	3593.45	42933.13	
	FILL	0.00	0.00	4158.36	
					38774.77
Station 315+50.00					
	EXCAV	1121.65	2749.35	45682.49	
	EMBANK	0.00	0.00	4158.36	
	CUT	1121.65	2749.35	45682.49	
	USABLE	1121.65	2749.35	45682.49	
	FILL	0.00	0.00	4158.36	
					41524.13
Station 316+00.00					
	EXCAV	1126.87	2081.97	47764.46	
	EMBANK	0.00	0.00	4158.36	
	CUT	1126.87	2081.97	47764.46	
	USABLE	1126.87	2081.97	47764.46	
	FILL	0.00	0.00	4158.36	
					43606.10
Station 316+50.00					
	EXCAV	898.86	1875.68	49640.13	
	EMBANK	0.00	0.00	4158.36	
	CUT	898.86	1875.68	49640.13	
	USABLE	898.86	1875.68	49640.13	
	FILL	0.00	0.00	4158.36	
					45481.77
Station 317+00.00					
	EXCAV	650.66	1434.74	51074.87	
	EMBANK	0.00	0.00	4158.36	
	CUT	650.66	1434.74	51074.87	
	USABLE	650.66	1434.74	51074.87	
	FILL	0.00	0.00	4158.36	

					46916.51
Station 317+50.00					
	EXCAV	492.24	1058.24	52133.11	
	EMBANK	0.00	0.00	4158.36	
	CUT	492.24	1058.24	52133.11	
	USABLE	492.24	1058.24	52133.11	
	FILL	0.00	0.00	4158.36	
					47974.75
Station 318+00.00					
	EXCAV	71.35	521.85	52654.96	
	EMBANK	0.00	0.00	4158.36	
	CUT	71.35	521.85	52654.96	
	USABLE	71.35	521.85	52654.96	
	FILL	0.00	0.00	4158.36	
					48496.60
Station 318+50.00					
	EXCAV	0.00	66.07	52721.03	
	EMBANK	0.00	0.00	4158.36	
	CUT	0.00	66.07	52721.03	
	USABLE	0.00	66.07	52721.03	
	FILL	0.00	0.00	4158.36	
					48562.66

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kc21_prop.erp → Loop Ramp ("B")

CAiCE Visual Roads Design System
EarthWork Report from H:\COBB\721310\721310\kc21_prop.EAR : Wed Jan 03 09:49:38 2007

EarthWork Class Table : C:\CAiCE\EWCLASS\Gdotewrk.tbl
Description : GDOT Earthwork Class Table

	Area Type	Area	Inc.Vol.	Cum.Vol.	MassHaul
Station 200+00.00					
	EXCAV	54.61			
	EMBANK	0.00			
	CUT	54.61			
	USABLE	54.61			
	FILL	0.00			
Station 200+50.00					
	EXCAV	302.67	330.81	330.81	
	EMBANK	12.20	11.29	11.29	
	CUT	302.67	330.81	330.81	
	USABLE	302.67	330.81	330.81	
	FILL	12.20	11.29	11.29	
					319.52
Station 201+00.00					
	EXCAV	792.76	1014.29	1345.10	
	EMBANK	3.12	14.18	25.48	
	CUT	792.76	1014.29	1345.10	
	USABLE	792.76	1014.29	1345.10	
	FILL	3.12	14.18	25.48	
					1319.62
Station 201+50.00					
	EXCAV	1323.96	1959.93	3305.03	
	EMBANK	0.00	2.89	28.36	
	CUT	1323.96	1959.93	3305.03	
	USABLE	1323.96	1959.93	3305.03	
	FILL	0.00	2.89	28.36	
					3276.67
Station 202+00.00					
	EXCAV	1090.13	2235.27	5540.30	
	EMBANK	0.00	0.00	28.36	
	CUT	1090.13	2235.27	5540.30	
	USABLE	1090.13	2235.27	5540.30	
	FILL	0.00	0.00	28.36	
					5511.94
Station 202+50.00					
	EXCAV	1244.83	2162.00	7702.30	
	EMBANK	0.00	0.00	28.36	
	CUT	1244.83	2162.00	7702.30	
	USABLE	1244.83	2162.00	7702.30	
	FILL	0.00	0.00	28.36	
					7673.94
Station 203+00.00					
	EXCAV	1086.20	2158.36	9860.66	
	EMBANK	0.00	0.00	28.36	
	CUT	1086.20	2158.36	9860.66	
	USABLE	1086.20	2158.36	9860.66	
	FILL	0.00	0.00	28.36	
					9832.30
Station 203+50.00					
	EXCAV	908.04	1846.52	11707.18	
	EMBANK	0.00	0.00	28.36	
	CUT	908.04	1846.52	11707.18	
	USABLE	908.04	1846.52	11707.18	
	FILL	0.00	0.00	28.36	

					11678.82
Station 204+00.00					
	EXCAV	1024.09	1789.01	13496.19	
	EMBANK	0.00	0.00	28.36	
	CUT	1024.09	1789.01	13496.19	
	USABLE	1024.09	1789.01	13496.19	
	FILL	0.00	0.00	28.36	
					13467.82
Station 204+50.00					
	EXCAV	3410.89	4106.46	17602.64	
	EMBANK	0.00	0.00	28.36	
	CUT	3410.89	4106.46	17602.64	
	USABLE	3410.89	4106.46	17602.64	
	FILL	0.00	0.00	28.36	
					17574.28
Station 205+00.00					
	EXCAV	1303.21	4364.91	21967.55	
	EMBANK	0.00	0.00	28.36	
	CUT	1303.21	4364.91	21967.55	
	USABLE	1303.21	4364.91	21967.55	
	FILL	0.00	0.00	28.36	
					21939.19
Station 205+50.00					
	EXCAV	0.00	1206.68	23174.23	
	EMBANK	1760.12	1629.74	1658.10	
	CUT	0.00	1206.68	23174.23	
	USABLE	0.00	1206.68	23174.23	
	FILL	1760.12	1629.74	1658.10	
					21516.13
Station 206+00.00					
	EXCAV	0.00	0.00	23174.23	
	EMBANK	2546.59	3987.70	5645.80	
	CUT	0.00	0.00	23174.23	
	USABLE	0.00	0.00	23174.23	
	FILL	2546.59	3987.70	5645.80	
					17528.44
Station 206+50.00					
	EXCAV	0.00	0.00	23174.23	
	EMBANK	2395.47	4575.99	10221.78	
	CUT	0.00	0.00	23174.23	
	USABLE	0.00	0.00	23174.23	
	FILL	2395.47	4575.99	10221.78	
					12952.45
Station 207+00.00					
	EXCAV	0.00	0.00	23174.23	
	EMBANK	1946.60	4020.43	14242.21	
	CUT	0.00	0.00	23174.23	
	USABLE	0.00	0.00	23174.23	
	FILL	1946.60	4020.43	14242.21	
					8932.02
Station 207+50.00					
	EXCAV	0.00	0.00	23174.23	
	EMBANK	1764.68	3436.37	17678.58	
	CUT	0.00	0.00	23174.23	
	USABLE	0.00	0.00	23174.23	
	FILL	1764.68	3436.37	17678.58	
					5495.65
Station 208+00.00					
	EXCAV	0.00	0.00	23174.23	
	EMBANK	1235.94	2778.35	20456.94	
	CUT	0.00	0.00	23174.23	
	USABLE	0.00	0.00	23174.23	
	FILL	1235.94	2778.35	20456.94	

					2717.30
Station 208+50.00					
	EXCAV	0.00	0.00	23174.23	
	EMBANK	0.00	1144.39	21601.32	
	CUT	0.00	0.00	23174.23	
	USABLE	0.00	0.00	23174.23	
	FILL	0.00	1144.39	21601.32	
					1572.91
Station 209+00.00					
	EXCAV	0.00	0.00	23174.23	
	EMBANK	0.00	0.00	21601.32	
	CUT	0.00	0.00	23174.23	
	USABLE	0.00	0.00	23174.23	
	FILL	0.00	0.00	21601.32	
					1572.91
Station 209+50.00					
	EXCAV	0.00	0.00	23174.23	
	EMBANK	0.00	0.00	21601.32	
	CUT	0.00	0.00	23174.23	
	USABLE	0.00	0.00	23174.23	
	FILL	0.00	0.00	21601.32	
					1572.91
Station 210+00.00					
	EXCAV	0.00	0.00	23174.23	
	EMBANK	0.00	0.00	21601.32	
	CUT	0.00	0.00	23174.23	
	USABLE	0.00	0.00	23174.23	
	FILL	0.00	0.00	21601.32	
					1572.91
Station 210+50.00					
	EXCAV	18.67	17.29	23191.52	
	EMBANK	1071.80	992.41	22593.73	
	CUT	18.67	17.29	23191.52	
	USABLE	18.67	17.29	23191.52	
	FILL	1071.80	992.41	22593.73	
					597.79
Station 211+00.00					
	EXCAV	23.89	39.41	23230.93	
	EMBANK	938.43	1861.32	24455.05	
	CUT	23.89	39.41	23230.93	
	USABLE	23.89	39.41	23230.93	
	FILL	938.43	1861.32	24455.05	
					-1224.12
Station 211+50.00					
	EXCAV	19.88	40.53	23271.46	
	EMBANK	794.89	1604.93	26059.98	
	CUT	19.88	40.53	23271.46	
	USABLE	19.88	40.53	23271.46	
	FILL	794.89	1604.93	26059.98	
					-2788.52
Station 212+00.00					
	EXCAV	96.04	107.34	23378.80	
	EMBANK	686.28	1371.46	27431.44	
	CUT	96.04	107.34	23378.80	
	USABLE	96.04	107.34	23378.80	
	FILL	686.28	1371.46	27431.44	
					-4052.64
Station 212+50.00					
	EXCAV	150.52	228.30	23607.10	
	EMBANK	595.47	1186.81	28618.25	
	CUT	150.52	228.30	23607.10	
	USABLE	150.52	228.30	23607.10	
	FILL	595.47	1186.81	28618.25	

-5011.16

Station 213+00.00

EXCAV	232.12	354.29	23961.39
EMBANK	459.82	977.12	29595.37
CUT	232.12	354.29	23961.39
USABLE	232.12	354.29	23961.39
FILL	459.82	977.12	29595.37

-5633.98

Station 213+50.00

EXCAV	97.17	304.89	24266.28
EMBANK	345.65	745.80	30341.17
CUT	97.17	304.89	24266.28
USABLE	97.17	304.89	24266.28
FILL	345.65	745.80	30341.17

-6074.89

Station 214+00.00

EXCAV	12.89	101.91	24368.19
EMBANK	255.86	556.95	30898.12
CUT	12.89	101.91	24368.19
USABLE	12.89	101.91	24368.19
FILL	255.86	556.95	30898.12

-6529.93

Station 214+50.00

EXCAV	35.88	45.16	24413.36
EMBANK	195.17	417.61	31315.74
CUT	35.88	45.16	24413.36
USABLE	35.88	45.16	24413.36
FILL	195.17	417.61	31315.74

-6902.38

Station 215+00.00

EXCAV	9.26	41.80	24455.16
EMBANK	378.55	531.22	31846.95
CUT	9.26	41.80	24455.16
USABLE	9.26	41.80	24455.16
FILL	378.55	531.22	31846.95

-7391.80

Station 215+50.00

EXCAV	19.59	26.71	24481.87
EMBANK	413.24	733.14	32580.09
CUT	19.59	26.71	24481.87
USABLE	19.59	26.71	24481.87
FILL	413.24	733.14	32580.09

-8098.22

Station 216+00.00

EXCAV	47.44	62.06	24543.93
EMBANK	434.86	785.28	33365.37
CUT	47.44	62.06	24543.93
USABLE	47.44	62.06	24543.93
FILL	434.86	785.28	33365.37

-8821.44

Station 216+50.00

EXCAV	81.72	119.60	24663.53
EMBANK	490.79	857.08	34222.45
CUT	81.72	119.60	24663.53
USABLE	81.72	119.60	24663.53
FILL	490.79	857.08	34222.45

-9558.92

Station 217+00.00

EXCAV	39.64	112.37	24775.90
EMBANK	109.71	556.02	34778.47
CUT	39.64	112.37	24775.90
USABLE	39.64	112.37	24775.90
FILL	109.71	556.02	34778.47

-10002.57

Station 217+50.00

EXCAV	42.99	76.51	24852.41
EMBANK	144.99	235.84	35014.31
CUT	42.99	76.51	24852.41
USABLE	42.99	76.51	24852.41
FILL	144.99	235.84	35014.31

-10161.90

Station 218+00.00

EXCAV	41.52	78.25	24930.66
EMBANK	170.61	292.22	35306.53
CUT	41.52	78.25	24930.66
USABLE	41.52	78.25	24930.66
FILL	170.61	292.22	35306.53

-10375.87

Station 218+50.00

EXCAV	32.13	68.20	24998.86
EMBANK	192.44	336.16	35642.69
CUT	32.13	68.20	24998.86
USABLE	32.13	68.20	24998.86
FILL	192.44	336.16	35642.69

-10643.84

Station 219+00.00

EXCAV	33.68	60.93	25059.79
EMBANK	206.10	369.02	36011.71
CUT	33.68	60.93	25059.79
USABLE	33.68	60.93	25059.79
FILL	206.10	369.02	36011.71

-10951.92

Station 219+50.00

EXCAV	27.97	57.08	25116.87
EMBANK	173.02	351.03	36362.74
CUT	27.97	57.08	25116.87
USABLE	27.97	57.08	25116.87
FILL	173.02	351.03	36362.74

-11245.87

Station 220+00.00

EXCAV	36.55	59.74	25176.61
EMBANK	46.41	203.17	36565.91
CUT	36.55	59.74	25176.61
USABLE	36.55	59.74	25176.61
FILL	46.41	203.17	36565.91

-11389.31

Station 220+50.00

EXCAV	60.60	89.95	25266.55
EMBANK	18.55	60.15	36626.06
CUT	60.60	89.95	25266.55
USABLE	60.60	89.95	25266.55
FILL	18.55	60.15	36626.06

-11359.51

Station 221+00.00

EXCAV	61.06	112.64	25379.20
EMBANK	14.31	30.42	36656.49
CUT	61.06	112.64	25379.20
USABLE	61.06	112.64	25379.20
FILL	14.31	30.42	36656.49

-11277.29

Station 221+50.00

EXCAV	53.42	106.00	25485.20
EMBANK	16.20	28.25	36684.73
CUT	53.42	106.00	25485.20
USABLE	53.42	106.00	25485.20
FILL	16.20	28.25	36684.73

-11199.53

Station 222+00.00

EXCAV	43.57	89.81	25575.01
EMBANK	30.23	42.98	36727.72
CUT	43.57	89.81	25575.01
USABLE	43.57	89.81	25575.01
FILL	30.23	42.98	36727.72

-11152.71

Station 222+50.00

EXCAV	75.88	110.60	25685.61
EMBANK	12.70	39.75	36767.46
CUT	75.88	110.60	25685.61
USABLE	75.88	110.60	25685.61
FILL	12.70	39.75	36767.46

-11081.85

Station 223+00.00

EXCAV	141.39	201.17	25886.78
EMBANK	4.73	16.14	36783.60
CUT	141.39	201.17	25886.78
USABLE	141.39	201.17	25886.78
FILL	4.73	16.14	36783.60

-10896.82

Station 223+50.00

EXCAV	158.91	278.05	26164.84
EMBANK	1.87	6.11	36789.71
CUT	158.91	278.05	26164.84
USABLE	158.91	278.05	26164.84
FILL	1.87	6.11	36789.71

-10624.88

Station 224+00.00

EXCAV	202.21	334.37	26499.21
EMBANK	0.12	1.85	36791.56
CUT	202.21	334.37	26499.21
USABLE	202.21	334.37	26499.21
FILL	0.12	1.85	36791.56

-10292.35

Station 224+50.00

EXCAV	188.86	362.10	26861.31
EMBANK	0.02	0.13	36791.69
CUT	188.86	362.10	26861.31
USABLE	188.86	362.10	26861.31
FILL	0.02	0.13	36791.69

-9930.38

Station 225+00.00

EXCAV	195.28	355.69	27217.00
EMBANK	0.39	0.38	36792.07
CUT	195.28	355.69	27217.00
USABLE	195.28	355.69	27217.00
FILL	0.39	0.38	36792.07

-9575.07

Station 225+50.00

EXCAV	223.56	387.82	27604.82
EMBANK	0.54	0.86	36792.93
CUT	223.56	387.82	27604.82
USABLE	223.56	387.82	27604.82
FILL	0.54	0.86	36792.93

-9188.12

Station 226+00.00

EXCAV	263.59	451.06	28055.88
EMBANK	1.24	1.65	36794.59
CUT	263.59	451.06	28055.88
USABLE	263.59	451.06	28055.88
FILL	1.24	1.65	36794.59

-8738.71

Station 226+50.00

EXCAV	269.71	493.79	28549.67
EMBANK	3.22	4.13	36798.72
CUT	269.71	493.79	28549.67
USABLE	269.71	493.79	28549.67
FILL	3.22	4.13	36798.72

-8249.04

Station 227+00.00

EXCAV	174.21	411.04	28960.71
EMBANK	2.52	5.31	36804.03
CUT	174.21	411.04	28960.71
USABLE	174.21	411.04	28960.71
FILL	2.52	5.31	36804.03

-7843.32

Station 227+50.00

EXCAV	148.03	298.37	29259.08
EMBANK	1.68	3.89	36807.92
CUT	148.03	298.37	29259.08
USABLE	148.03	298.37	29259.08
FILL	1.68	3.89	36807.92

-7548.84

Station 228+00.00

EXCAV	72.99	204.64	29463.72
EMBANK	1.97	3.38	36811.30
CUT	72.99	204.64	29463.72
USABLE	72.99	204.64	29463.72
FILL	1.97	3.38	36811.30

-7347.58

Station 228+50.00

EXCAV	15.14	81.60	29545.32
EMBANK	8.79	9.97	36821.27
CUT	15.14	81.60	29545.32
USABLE	15.14	81.60	29545.32
FILL	8.79	9.97	36821.27

-7275.94

Station 229+00.00

EXCAV	54.49	64.48	29609.80
EMBANK	48.89	53.40	36874.67
CUT	54.49	64.48	29609.80
USABLE	54.49	64.48	29609.80
FILL	48.89	53.40	36874.67

-7264.87

Station 229+50.00

EXCAV	61.04	106.97	29716.77
EMBANK	86.16	125.05	36999.72
CUT	61.04	106.97	29716.77
USABLE	61.04	106.97	29716.77
FILL	86.16	125.05	36999.72

-7282.95

Station 230+00.00

EXCAV	55.55	107.95	29824.72
EMBANK	163.05	230.75	37230.47
CUT	55.55	107.95	29824.72
USABLE	55.55	107.95	29824.72
FILL	163.05	230.75	37230.47

-7405.75

Station 230+50.00

EXCAV	51.51	99.13	29923.85
EMBANK	108.66	251.58	37482.05
CUT	51.51	99.13	29923.85
USABLE	51.51	99.13	29923.85
FILL	108.66	251.58	37482.05

					-7558.20
Station 231+00.00					
	EXCAV	59.61	102.89	30026.74	
	EMBANK	119.04	210.83	37692.88	
	CUT	59.61	102.89	30026.74	
	USABLE	59.61	102.89	30026.74	
	FILL	119.04	210.83	37692.88	
					-7666.14
Station 231+50.00					
	EXCAV	55.26	106.36	30133.10	
	EMBANK	168.62	266.36	37959.23	
	CUT	55.26	106.36	30133.10	
	USABLE	55.26	106.36	30133.10	
	FILL	168.62	266.36	37959.23	
					-7826.14
Station 232+00.00					
	EXCAV	55.36	102.42	30235.52	
	EMBANK	215.15	355.34	38314.57	
	CUT	55.36	102.42	30235.52	
	USABLE	55.36	102.42	30235.52	
	FILL	215.15	355.34	38314.57	
					-8079.06
Station 232+50.00					
	EXCAV	57.70	104.68	30340.20	
	EMBANK	269.27	448.53	38763.11	
	CUT	57.70	104.68	30340.20	
	USABLE	57.70	104.68	30340.20	
	FILL	269.27	448.53	38763.11	
					-8422.91
Station 233+00.00					
	EXCAV	14.81	67.14	30407.34	
	EMBANK	285.05	513.26	39276.36	
	CUT	14.81	67.14	30407.34	
	USABLE	14.81	67.14	30407.34	
	FILL	285.05	513.26	39276.36	
					-8869.03
Station 233+50.00					
	EXCAV	66.37	75.17	30482.50	
	EMBANK	139.60	393.19	39669.56	
	CUT	66.37	75.17	30482.50	
	USABLE	66.37	75.17	30482.50	
	FILL	139.60	393.19	39669.56	
					-9187.06
Station 234+00.00					
	EXCAV	72.25	128.35	30610.85	
	EMBANK	0.10	129.35	39798.91	
	CUT	72.25	128.35	30610.85	
	USABLE	72.25	128.35	30610.85	
	FILL	0.10	129.35	39798.91	
					-9188.06
Station 234+50.00					
	EXCAV	75.11	136.44	30747.29	
	EMBANK	0.00	0.09	39799.00	
	CUT	75.11	136.44	30747.29	
	USABLE	75.11	136.44	30747.29	
	FILL	0.00	0.09	39799.00	
					-9051.71

DEVELOPMENT AND RECOMMENDATION PHASE

Project: MSL00-0004-00 (403)

Idea No.:	Sheet No.:	CREATIVE IDEA: C-4
C-4	of	

Comp By: PBE Date: 1/29/2009 Checked By: Date:

Original Concept: D_s = 55mph profile on Wall #1 on Ramp "A"
$D_s \leq$ 45mph profile on Wall #2 on Ramp "B" Loop (25mph exact)

Proposed Change: Consider Reduction in Wall #1 (Ramp "A" Sta. 308+00 to 317+20) and Wall #2 (Sta. 201+66.91 to 204+45 ⇒ Ramp "B" Loop).
After much review (see the sketch), reducing the profile is unfeasible and unneeded.

Justification:

LIFE CYCLE COST SUMMARY	INITIAL Project Cost	FUTURE Project Cost	TOTAL Present Worth Cost
INITIAL COST: Original	N/A		
Proposed	N/A		
Savings	N/A		N/A
FUTURE COST: Savings		NONE	N/A
TOTAL PRESENT WORTH SAVINGS			N/A

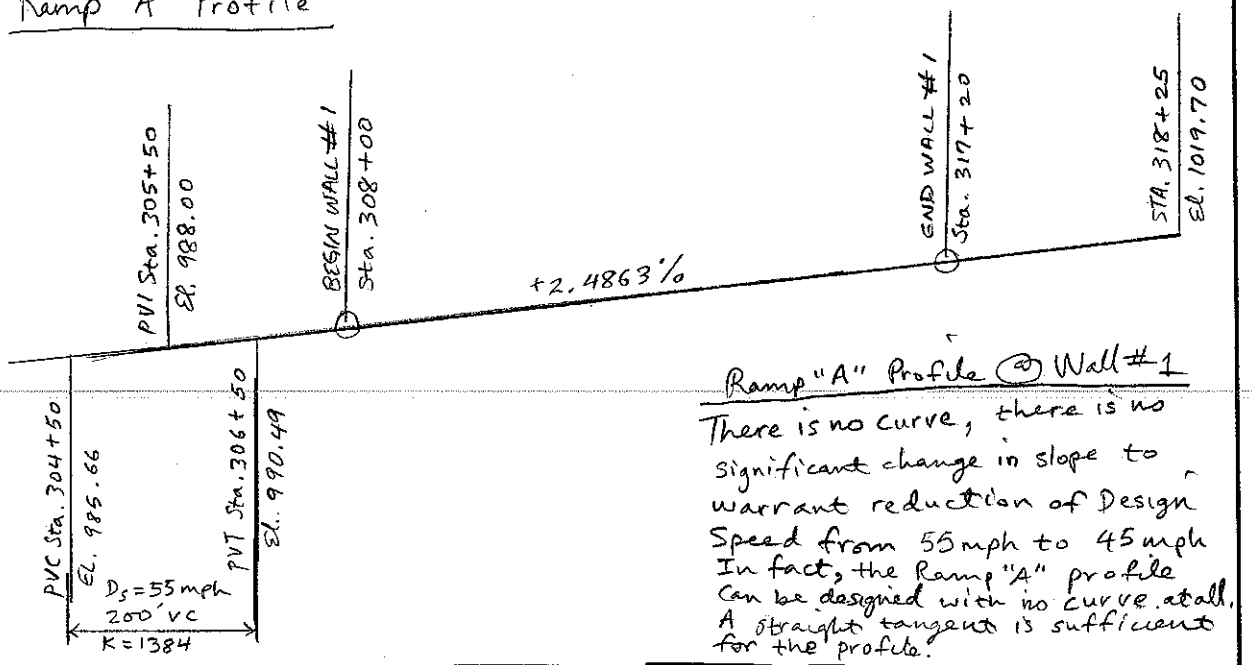
SKETCH

NOT RECOMMENDED

Project: MSL00-0004-00 (403)

Idea No.: C-4
Client::
Sheet of

Ramp "A" Profile



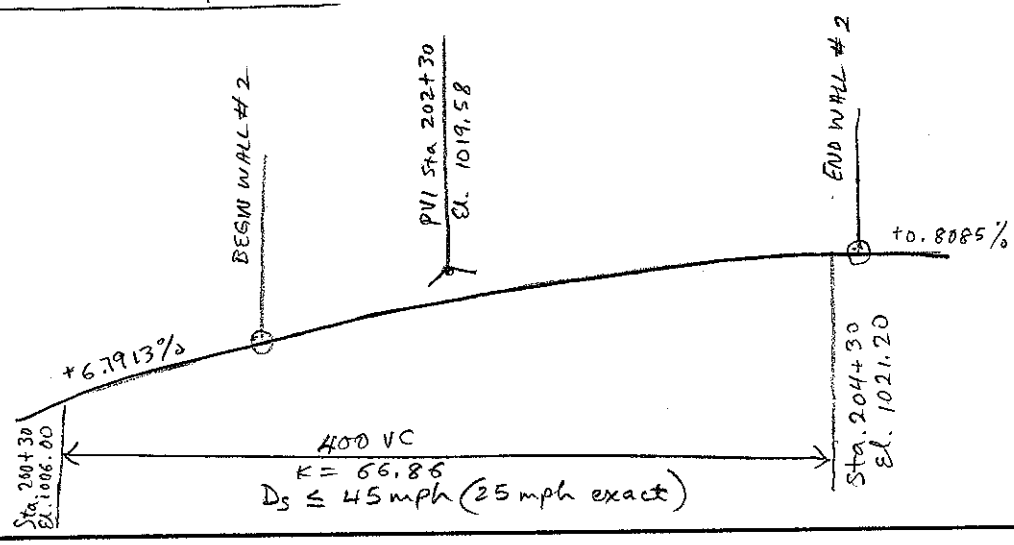
Ramp "A" Profile @ Wall #1

There is no curve, there is no significant change in slope to warrant reduction of Design Speed from 55 mph to 45 mph. In fact, the Ramp "A" profile can be designed with no curve at all. A straight tangent is sufficient for the profile.

Ramp "B" Profile @ Wall #2

The curve is already fitted close to the minimum K-value required @ Design Speed ≤ 45 mph

Ramp "B" Loop Profile



APPENDIX

INFORMATION PHASE - SOURCES

Approving/Authorizing Persons

Name:	Position:	Telephone:
Gerald Ross	Chief Engineer	404-631-1004
Ron Wishon	Engineering Services	404-631-1753

Personal Contacts

Name:	Telephone:	Notes:
Mike Wright	770-528-4375	Cobb County
Scott Dubord	770-933-0280	PBSJ
Andrew Hoeing	404-631-1691	GDOT-Urban Design
Butch Welch	404-631-1690	GDOT-Urban Design

Documents/Abstracts

Reference:	Reference:
Concept Report	Need Revised Need & Purpose Statement
Preconstruction Status Report	Project in the process of Final Plan submission to Bid
Detailed Cost Estimate	In the Final Plans phase
Final Plans	Provided more detailed
Final Project Concept Layout	Overview of project layout as design
Traffic Analysis	Computation of LOS for Signalized & Un-signalized
Soil Survey Report	All geotechnical Reports
Green Sheet	Current status of all outstanding issues on the project
FFPR Report & Responses	Responses to design issues
Pavement Design	Approved pavement and concrete thickness
Earthwork report	Ramp "A" & Ramp "B" Loop only

INFORMATION PHASE - COST MODEL

Project Name - MSL00-0004-00(403), Cobb Co.

Item	Description	$ Amount	% of Total Project
A	Walls	3,383,865.00	33.40%
B	Pavement	1,058,390.00	10.45%
C	Grading Complete	1,000,000.00	9.87%
D	Concrete Side Barrier	815,808.00	8.05%
E	Bridge No.1	715,124.00	7.06%
F	Traffic Control	500,000.00	4.94%
G	Drainage System	247,730.00	2.45%
H	Signals	201,450.00	1.98%
I	Relocate Waterlines	158,976.00	1.57%
	80% Cost Line		
J	Other Roadway	2,088,298.00	20.61%
K	Temporary Erosion Control	108,855.00	1.07%
L	Signing & Marking	81,113.00	0.80%
M	Permanent Erosion Control	46,875.00	0.46%
	TOTAL	$10,406,484	

INFORMATION PHASE – FUNCTION ANALYSIS

Project: MSL00-0004-00(403), Cobb Co.

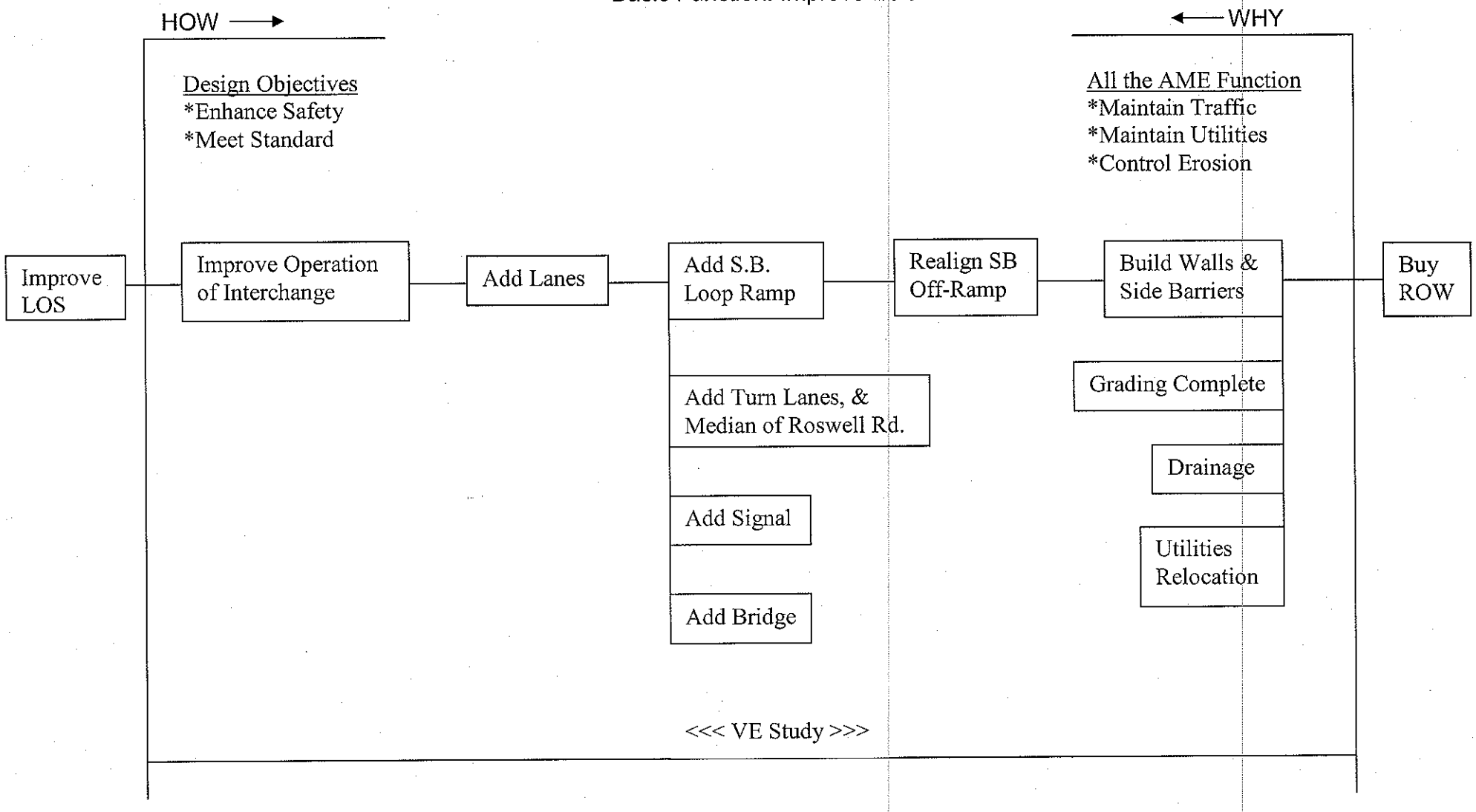
Function: Improve LOS

ITEM No.	DESCRIPTION	FUNCTION		INITIAL DOLLARS			
		Verb	Noun	Cost	% of Total	Worth/Save	Comments
A	Walls	Support	Road/Soil Slope	3,383,865.00	33.40%	2,000,000.00	Replace with Slopes
B	Pavement	Support	Vehicle	1,058,390.00	10.45%	950,000.00	Reduce length/section
C	Grading Complete	Complete	Grade	1,000,000.00	9.87%	750,000.00	Change Profile
D	Concrete Side Barrier	Retain	Soil	815,808.00	8.05%	700,000.00	Replace with Slopes
E	Bridge No.1	Separate	Grade	715,124.00	7.06%	500,000.00	Shorten
F	Traffic Control	Maintain	Traffic	500,000.00	4.94%	200,000.00	Simplify Staging
G	Drainage System	Convey	Water	247,730.00	2.45%	200,000.00	Replace with Ditches
H	Signals	Control	Traffic	201,450.00	1.98%	170,000.00	Replace with Stop Sign
I	Relocate Waterlines	Maintain	Water Supply	158,976.00	1.57%	158,976.00	Realign Road No Change

INVESTIGATION PHASE - FAST DIAGRAM

SR 3 Connector/Roswell Road @ SR 120 Loop Interchange Improvement

Basic Function: Improve LOS



CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	CREATIVE IDEA	COMMENTS	IDEA RATING
A	WALLS		
A-1	Change Wall #4 Type from Side Barrier to Gravity Wall	Reduce Cost. Special fill/compaction of subgrade below wall will be needed	7
A-2	Reduce Length of Wall #5 by approximately 300' and possible change the MSE part of the wall to Side Barrier	Reduce wall cost, increased earthwork, and box extension cost	6
A-3	Eliminate Wall #6		8
A-4	Eliminate & Reduce Staging	Reduce Shoring and increase earthwork	8
B	PAVEMENT		
B-1	Prepare Separate Sections for Each Ramp & SR 120 Loop	Reduce Pavement quantities. Increase construction complexity (need traffic diagram)	5
B-2	Change Type to Concrete	Increase Durability, Reduce Life-Cycle costs	3
B-3	Reduce Ramp "B" Length by 600'	Reduce Pavement quantities, County wants it	4
B-4	Reduce Raised Median Width to 8' – Stripe out Balance affects 400' Median	Possible Cost Savings would be less than $15,000.00 dollars	5
B-5	Drop one lane of Loop Ramp after entrance from Roswell Road	Reduce Pavement quantities. Reduction in LOS	7
B-6	Reduce Ramp "A" & Ramp "B" Loop paved shoulder from 10' to 6'	Reduce Pavement quantities. Reduction in earthwork.	8

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	CREATIVE IDEA	COMMENTS	IDEA RATING
C	GRADING COMPLETE		
C-1	Lower Profile of Ramp by 10'	Reduction in fill	4
C-2	Steepen Slopes from 2:1 to 1:1	Reduce Cut & Fill, Reduced Slope Stability	2
C-3	Balance Cut & Fill (Need Earthwork Report)	Reduce Grading Complete Cost	8
C-4	Realign Ramp "A" to 45 mph design speed and adjust profiles of Ramp "A" and "B" to better match each other	Reduce Wall #1 & #2. Required earthwork	5
D	Concrete Side Barrier		
E	Bridge No.1		

CREATIVE PHASE Creative Idea Listing		JUDGMENT PHASE Idea Evaluation	
No.	CREATIVE IDEA	COMMENTS	IDEA RATING
F	TRAFFIC CONTROL		
F-1	Improve Estimate which seems high	Would need input from construction	4
G	DRAINAGE SYSTEM		
G-1	Retain Existing Ramp A & B Box Culvert. Provide Structure to Bridge over existing Box to keep weight of Bored to Fill off Box	Eliminate Replacement of existing Box Culvert Extension	6
H	SIGNALS		
H-1	Signal Timing		
I	RELOCATE WATERLINES		
I-1	Change Type & Materials		