DESIGN SERVICES UNIT
__CO __EC __SD

JUN 22 '04

__SF __WM
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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

MEMORADUM TO: Roadway Design Project Engineers

FROM: Jay A. Bennett, PE
State Roadway Design Engineer

DATE: June 21, 2004

SUBJECT: Earthwork Balance Card for Clustered Projects

A few months ago, I sent an e-mail instructing everyone how we would handle the earthwork balance card for clustered projects. I would like to restate that process again and also include the attached example for your use.

As shown in the example, when Project A gets clustered with Project B, three Earthwork Balance cards will be prepared. One for Project A, one for Project B, and one for the clustered projects A/B.

An earthwork plan summary will be prepared for project A and project B independently and included in each respective set of plans. We have not been asked to provide an earthwork plan summary for the clustered projects A and B. However, the combined balance card should be placed in the project folder during plans turn-in. It will be sent to the divisions along with a copy of the calculation of quantities for the A/B cluster project following the project letting.

If you have any questions, please contact Ron Allen, PE, Assistant State Roadway Design Engineer, or me.

JAB/rda

Attachments

cc: Art McMillan, PE
Ron Allen, PE
Scott Blevins, PE
Dewayne Sykes, PE
Cynthia Perry, PE

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN UNIT
1582 MAIL SERVICE CENTER
RALEIGH NC 27699-1582

TELEPHONE: 919-250-4016
FAX: 919-250-4036

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
CENTURY CENTER COMPLEX
BUILDING A
1000 BIRCH RIDGE DRIVE
RALEIGH NC

EARTHWORK SUMMARY

Volumes in Cubic YDS

PROJECT **PROJECT A** COUNTY DATE 6/21/04 SHEET 1 OF 1

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	ROCK EMB.	EARTH EMB.	EMBANK. +15%	BORROW	ROCK EXCAV.	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
L	130+00	160+00	60,000	5,000	3,000	7,000	48,000	75,000	5,000	70,000	89,000	36,000			10,000	10,000
Y1	10+00	20+00	10,000				10,000	8,000		8,000	9,600			400		400
		SUBTOTAL	70,000	5,000	3,000	7,000	58,000	83,000	5,000	78,000	98,600	36,000		400	10,000	10,400
L	160+00	190+00	50,000	10,000			40,000	7,000	7,000		7,000		3,000	40,000		43,000
		SUBTOTAL	50,000	10,000			40,000	7,000	7,000		7,000		3,000	40,000		43,000
L	190+00	220+00	40,000			8,000	32,000	80,000		80,000	96,000	64,000			8,000	8,000
Y2	20+00	30+00	20,000		7,000		20,000	25,000		25,000	30,000	10,000			7,000	7,000
		SUBTOTAL	60,000		7,000	8,000	52,000	105,000		105,000	126,000	74,000			15,000	15,000
	TOTAL		180,000	15,000	10,000	15,000	150,000	195,000	12,000	183,000	231,600	110,000	3,000	40,400	25,000	68,400
Loss due to clear. & Grub.			-5,000				-5,000					5,000				
Rock waste to repl. bor.									3,000	-3,000		-3,000	-3,000			-3,000
Adjust for rock waste											-600	-600				
Earth waste to repl. Bor.												-40,400		-40,400		-40,400
Est. shoulder material								12,000		12,000	14,400	14,400				
Additional undercut					5,000			5,000		5,000	6,000	6,000			5,000	5,000
	PROJECT	TOTALS	175,000	15,000	15,000	15,000	145,000	212,000	15,000	197,000	251,400	91,400	0	0	30,000	30,000
Est. for repl. Topsoil on borrow pits												4,570				
	GRAND	TOTALS	175,000									95,970				
	SAY		175,500									96,500				

EARTHWORK SUMMARY

Volumes in Cubic YDS

PROJECT **PROJECT B** COUNTY DATE 6/21/04 SHEET 1 OF 1

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	ROCK EMB.	EARTH EMB.	EMBANK. +15%	BORROW	ROCK EXCAV.	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
L	220+00	250+00	75,000	10,000	5,000	1,000	64,000	60,000	10,000	50,000	70,000			4,000	6,000	10,000
Y10	15+00	25+00	8,000				8,000	10,000		10,000	12,000	4,000				
		SUBTOTAL	83,000	10,000	5,000	1,000	72,000	70,000	10,000	60,000	82,000	4,000		4,000	6,000	10,000
L	250+00	280+00	14,000	2,000			12,000	20,000	2,000	18,000	23,600	9,600				
		SUBTOTAL	14,000	2,000			12,000	20,000	2,000	18,000	23,600	9,600				
L	280+00	310+00	80,000			12,000	68,000	40,000		40,000	48,000			20,000	12,000	32,000
Y11	27+00	39+00	20,000	1,000	7,000		19,000	3,000	1,000	2,000	3,400			16,600	7,000	23,600
		SUBTOTAL	100,000	1,000	7,000	12,000	87,000	43,000	1,000	42,000	51,400			36,600	19,000	55,600
	TOTAL		197,000	13,000	12,000	13,000	171,000	133,000	13,000	120,000	157,000	13,600		40,600	25,000	65,600
Loss due to clear. & Grub.			-5,000				-5,000							-5,000		-5,000
Adjust undercut					5,000			5,000		5,000	6,000	6,000			5,000	5,000
Waste to repl. Bor.												-19,600		-19,600		-19,600
	GRAND	TOTALS	192,000	13,000	17,000	13,000	166,000	138,000	13,000	125,000	163,000			16,000	30,000	46,000
	SAY		192,500													

Shoulder Borrow = 12,000 C.Y.

EARTHWORK SUMMARY

Volumes in Cubic YDS

PROJECT **CLUSTERED PROJECT A/B** COUNTY DATE 6/21/04 SHEET 1 OF 2

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	ROCK EMB.	EARTH EMB.	EMBANK. +15%	BORROW	ROCK EXCAV.	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
L	130+00	160+00	60,000	5,000	3,000	7,000	48,000	75,000	5,000	70,000	89,000	36,000			10,000	10,000
Y1	10+00	20+00	10,000				10,000	8,000		8,000	9,600			400		400
		SUBTOTAL	70,000	5,000	3,000	7,000	58,000	83,000	5,000	78,000	98,600	36,000		400	10,000	10,400
L	160+00	190+00	50,000	10,000			40,000	7,000	7,000		7,000		3,000	40,000		43,000
		SUBTOTAL	50,000	10,000			40,000	7,000	7,000		7,000		3,000	40,000		43,000
L	190+00	220+00	40,000			8,000	32,000	80,000		80,000	96,000	64,000			8,000	8,000
Y2	20+00	30+00	20,000		7,000		20,000	25,000		25,000	30,000	10,000			7,000	7,000
		SUBTOTAL	60,000		7,000	8,000	52,000	105,000		105,000	126,000	74,000			15,000	15,000
PROJECT "A" TOTAL			180,000	15,000	10,000	15,000	150,000	195,000	12,000	183,000	231,600	110,000	3,000	40,400	25,000	68,400

FOR REMAINDER OF CLUSTERED SUMMARY SEE SHEET 2 OF 2

EARTHWORK SUMMARY

Volumes in Cubic YDS

PROJECT **CLUSTERED PROJECT A/B** COUNTY DATE 6/21/04

LINE	STATION	STATION	TOTAL EXCAV. (UNCL.)	ROCK EXCAV.	UNDERCUT	UNSUIT. EXCAV.	SUITABLE EXCAV.	TOTAL EMB.	ROCK EMB.	EARTH EMB.	EMBANK. +15%	BORROW	ROCK EXCAV.	SUITABLE WASTE	UNSUIT. WASTE	TOTAL WASTE
L	220+00	250+00	75,000	10,000	5,000	1,000	64,000	60,000	10,000	50,000	70,000			4,000	6,000	10,000
Y10	15+00	25+00	8,000				8,000	10,000		10,000	12,000	4,000				
		SUBTOTAL	83,000	10,000	5,000	1,000	72,000	70,000	10,000	60,000	82,000	4,000		4,000	6,000	10,000
L	250+00	280+00	14,000	2,000			12,000	20,000	2,000	18,000	23,600	9,600				
		SUBTOTAL	14,000	2,000			12,000	20,000	2,000	18,000	23,600	9,600				
L	280+00	310+00	80,000			12,000	68,000	40,000		40,000	48,000			20,000	12,000	32,000
Y11	27+00	39+00	20,000	1,000	7,000		19,000	3,000	1,000	2,000	3,400			16,600	7,000	23,600
		SUBTOTAL	100,000	1,000	7,000	12,000	87,000	43,000	1,000	42,000	51,400			36,600	19,000	55,600
PROJECT "B" TOTALS			197,000	13,000	12,000	13,000	171,000	133,000	13,000	120,000	157,000	13,600		40,600	25,000	65,600
PROJECT A/B TOTALS			377,000	28,000	22,000	28,000	321,000	328,000	25,000	303,000	388,600	123,600	3,000	81,000	50,000	134,000
Loss due to clear. & Grub.			-10,000				-10,000					10,000				
Rock waste to repl. bor.									3,000	-3,000		-3,000	-3,000			-3,000
Adjust for rock waste											-600	-600				
Earth waste to repl. Bor.												-81,000		-81,000		-81,000
Additional undercut					10,000			10,000		10,000	12,000	12,000			10,000	10,000
Est. shoulder material *								24,000		24,000	28,800	28,800				
	PROJECT TOTALS		367,000	28,000	32,000	28,000	311,000	362,000	28,000	334,000	428,800	89,800	0	0	60,000	60,000
Est. for repl. Topsoil on borrow pits												4,490				
	GRAND	TOTALS	367,000									94,290				
	SAY		368,000									95,000				

* Since this example is a "borrow" project, include material paid for as shoulder borrow in the project "B" individual contract into the estimated shoulder construction.

This will eliminate having both a shoulder borrow and a borrow excavation pay item in the clustered project.