E.L. ROBINSON
ENGINEERING

Computation for: **ESTIMATED QUANTITIES**

SFN: **4903278**

Structure: **MAD-71-06.31L**

PID: **107630**

Design:	**JOL**	Date	**August 27, 2021**
Check:	**MMD**	Date	**September 8, 2021**
Update:		Date	
Recheck:		Date	

File Names

Comments

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DESIGN:	JOL	**DATE:**	8/27/21	**UPDATE:**		**DATE:**	
CHECK:	MMD	**DATE:**	9/8/21	**RECHECK:**		**DATE:**	
STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630

ITEM: 202E11003 **PAY UNIT:** LS
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN
SUPPLEMENTAL DESCRIPTION:

	SUBTOTAL	TOTAL
SPECIAL INSTRUCTIONS:	**TOTAL**	**LS**

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STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630

ITEM: 202E22900 **PAY UNIT:** SY
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: APPROACH SLAB REMOVED
SUPPLEMENTAL DESCRIPTION:

			SUBTOTAL	TOTAL
L =	25	ft		
W =	44.33333	ft		
A =	1108.3	sq ft		
	123.1	SY		
# =	2			
total A =	246	SY	246	246

SPECIAL INSTRUCTIONS:	**TOTAL**	**246**

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STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630

ITEM: 203E35001 **PAY UNIT:** CY
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: GRANULAR EMBANKMENT, AS PER PLAN
SUPPLEMENTAL DESCRIPTION:

				SUBTOTAL	TOTAL
Rear Cross Section Area =	370	sq ft	(measured in Microstation)		
width =	64.66	ft			
MSE fill width =	16.17	ft			
net width =	48.49742	ft			
volume =	17944.05	cu ft			
	665	cu yd			
Forward Cross Section Area =	375	sq ft	(measured in Microstation)		
width =	64.66	ft			
MSE fill width =	16.17	ft			
net width =	48.49742	ft			
volume =	18186.53	cu ft			
	674	cu yd			
total volume =	1338	cu yd		1,338	1,338

SPECIAL INSTRUCTIONS: **TOTAL** **1,338**

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CHECK:	MMD	**DATE:**	9/8/21	**RECHECK:**		**DATE:**	
STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630

ITEM: 503E11100 **PAY UNIT:** LS
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: COFFERDAMS AND EXCAVATION BRACING
SUPPLEMENTAL DESCRIPTION:

	SUBTOTAL	TOTAL
SPECIAL INSTRUCTIONS:	**TOTAL**	**LS**

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DESIGN:	JOL	DATE:	8/27/21	UPDATE:		DATE:	
CHECK:	MMD	DATE:	9/8/21	RECHECK:		DATE:	
STRUCTURE:	MAD-71-06.31L			SFN:	4903278	PID:	107630

ITEM: 503E21100 PAY UNIT: CY
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: UNCLASSIFIED EXCAVATION
SUPPLEMENTAL DESCRIPTION:

	SUBTOTAL	TOTAL
PEDESTAL FOOTING:		
ave depth = 4.25 ft; width = 13.5 ft; length = 78.1 ft; # = 2		
key depth = 1.75 ft; width = 1 ft; length = 68.02083 ft; # = 2		
volume = 8961.975 cu ft; 331.9 CY		
volume = 238.0729 cu ft; 8.8 CY	341	341
TALL WINGWALL FOOTING:		
ave depth = 10 ft; width = 13.5 ft; length = 24 ft; # = 4		
volume = 12960 cu ft; 480.0 CY	480	821
SHORT WINGWALL FOOTING:		
ave depth = 10 ft; width = 12 ft; length = 25.5 ft; # = 4		
volume = 12240 cu ft; 453.3 CY	453	1,274
SPECIAL INSTRUCTIONS: CHECK UNIT OF MEASURE	TOTAL	1,274

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DESIGN:	JOL	**DATE:**	8/27/21	**UPDATE:**		**DATE:**	
CHECK:	MMD	**DATE:**	9/8/21	**RECHECK:**		**DATE:**	
STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630

ITEM: 504E11101 **PAY UNIT:** SF
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: STEEL SHEET PILING LEFT IN PLACE, AS PER PLAN
SUPPLEMENTAL DESCRIPTION: SECTION MODULUS = 18.1 IN3/FT

	SUBTOTAL	TOTAL
ABUTMENTS:		
ht. = 18 ft		
length = 10 ft		
A = 180 SF		
# locations = 2		
total A = 360 SF	360	360
WINGWALLS:		
ht. = 16 ft		
length = 27.5 ft		
A = 440 SF		
# locations = 4		
total A = 1760 SF	1,760	2,120
SPECIAL INSTRUCTIONS:	**TOTAL**	**2,120**

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CHECK:	MMD	**DATE:**	9/8/21	**RECHECK:**		**DATE:**	
STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630

ITEM: 509E10000 **PAY UNIT:** LB
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: EPOXY COATED REINFORCING STEEL
SUPPLEMENTAL DESCRIPTION:

	SUBTOTAL	TOTAL
Railing = 6696 LB	6,696	6,696
Walls = 35473 LB	35,473	42,169
Footing = 27449 LB	27,449	69,618
SPECIAL INSTRUCTIONS:	**TOTAL**	**69,618**

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DESIGN:	JOL	**DATE:**	8/27/21	**UPDATE:**		**DATE:**	
CHECK:	MMD	**DATE:**	9/8/21	**RECHECK:**		**DATE:**	
STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630

ITEM: 509E30020 **PAY UNIT:** FT
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: NO. 4 GFRP DEFORMED BARS
SUPPLEMENTAL DESCRIPTION:

	SUBTOTAL	TOTAL
Railing = 4147.17 FT	4,147	4,147
SPECIAL INSTRUCTIONS:	**TOTAL**	**4,147**

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CHECK:	MMD	**DATE:**	9/8/21	**RECHECK:**		**DATE:**	
STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630
ITEM:	511E34448	**PAY UNIT:**	CY				
SUBJECT:	ESTIMATED QUANTITIES						

DESCRIPTION: CLASS QC2 CONCRETE, BRIDGE DECK (PARAPET)

SUPPLEMENTAL DESCRIPTION:

			SUBTOTAL	TOTAL
A =	588	sq in		
	4.08	sq ft		
length =	109.7	ft		
# =	2			
total volume =	896.2	cu ft		
	33.2	cu yd	33	33
transition:				
A1 =	588	sq in		
A2 =	352	sq in		
ave A =	470	sq in		
	3.26	sq ft		
length =	14.0	ft		
# =	4			
total volume =	182.8	cu ft		
	6.8	cu yd	7	40

SPECIAL INSTRUCTIONS: CHECK UNIT OF MEASURE

TOTAL **40**

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DESIGN:	JOL	DATE:	8/27/21	UPDATE:		DATE:	
CHECK:	MMD	DATE:	9/8/21	RECHECK:		DATE:	
STRUCTURE:	MAD-71-06.31L			SFN:	4903278	PID:	107630

ITEM: 511E46012 PAY UNIT: CY
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: CLASS QC1 CONCRETE WITH QC/QA, RETAINING/WINGWALL NOT INCLUDING FOOTING
SUPPLEMENTAL DESCRIPTION:

	SUBTOTAL	TOTAL
short wingwall:		
ht = 11.74 ft		
length = 24.5 ft		
thickness = 1.5 ft		
volume = 431.4 cu ft		
# = 4		
total volume = 1725.8 cu ft		
63.9 CY	64	64
tall wingwall:		
ht = 19.75 ft		
length = 24 ft		
thickness = 1.5 ft		
volume = 711.0 cu ft		
# = 4		
total volume = 2844.0 cu ft		
105.3 CY	105	169
pedestal wall:		
A = 22.4 sq ft		
length = 68.021 ft		
volume = 1525.2 cu ft		
# = 2		
total volume = 3050.4 cu ft		
113.0 CY	113	282
SPECIAL INSTRUCTIONS:	TOTAL	282

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DESIGN:	JOL	DATE:	8/27/21	UPDATE:		DATE:	
CHECK:	MMD	DATE:	9/8/21	RECHECK:		DATE:	
STRUCTURE:	MAD-71-06.31L			SFN:	4903278	PID:	107630

ITEM: 511E46512 PAY UNIT: CY
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: CLASS QC1 CONCRETE WITH QC/QA, FOOTING
SUPPLEMENTAL DESCRIPTION:

	SUBTOTAL	TOTAL
short wingwall:		
length = 24.5 ft width = 10 ft thickness = 3 ft volume = 735.0 cu ft # = 4 total volume = 2940.0 cu ft 108.9 CY	109	109
tall wingwall:		
length 1 = 16.03 ft length 2 = 22.64 ft ave length = 19.3 width = 11.5 ft thickness = 3 ft volume = 667.1 cu ft # = 2 total volume = 1334.1 cu ft 49.4 CY length 3 = 13.45 ft length 4 = 20.05 ft ave length = 16.8 width = 11.5 ft thickness = 3 ft volume = 577.9 cu ft # = 2 total volume = 1155.8 cu ft 42.8 CY chamf L1= 2.53 ft chamf L2= 1.45 ft area = 1.83425 sq ft th. = 3 ft volume = 5.5 cu ft # = 2 al volume = 11.0 cu ft 0.4 CY	93	202
pedestal wall:		
length = 76.094 ft width = 11.5 ft thickness = 3 ft volume = 2625.2 cu ft # = 2 total volume = 5250.5 cu ft 194.5 CY	194	396
SPECIAL INSTRUCTIONS:	TOTAL	396

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STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630

ITEM: 511E46612 **PAY UNIT:** CY
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: CLASS QC1 CONCRETE WITH QC/QA, HEADWALL
SUPPLEMENTAL DESCRIPTION:

			SUBTOTAL	TOTAL
ht =	1.25	ft		
length =	40.74	ft		
thickness =	1.5	ft		
volume =	76.4	cu ft		
# =	2			
total volume =	152.8	cu ft		
	5.7	CY	6	6

SPECIAL INSTRUCTIONS: **TOTAL** **6**

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DESIGN:	JOL	DATE:	8/27/21	UPDATE:		DATE:	
CHECK:	MMD	DATE:	9/8/21	RECHECK:		DATE:	
STRUCTURE:	MAD-71-06.31L			SFN:	4903278	PID:	107630

ITEM: 512E10100 PAY UNIT: SY
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)
SUPPLEMENTAL DESCRIPTION:

	SUBTOTAL	TOTAL
precast:		
interior perimeter = 66.31 ft; length = 68.02 ft; A = 4510.9 sq ft		
end area = 61.34 sq ft; # = 2; A = 122.7 sq ft		
total area = 4633.6 sq ft; 514.8 SY	515	515
headwall:		
ave. ht. = 1.25 ft; length = 40.74 ft; # = 2; A = 101.8 sq ft; 11.3 SY	11	526
parapet:		
perimeter = 7.93 ft; length = 109.74 ft; # = 2; A = 1741.2 sq ft		
ave trans perimeter = 7.38 ft; length = 14.00 ft; # = 4; A = 413.5 sq ft		
total area = 2154.7 sq ft; 239.4 SY	239	765
short wingwall:		
ave. ht. = 5.7 ft; length = 24.50 ft; # = 4; A = 558.6 sq ft; 62.1 SY	62	827
tall wingwall:		
ave. ht. = 16 ft; length = 24.00 ft; # = 4; A = 1536.0 sq ft; 170.7 SY	171	998
SPECIAL INSTRUCTIONS:	TOTAL	998

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CHECK:	MMD	**DATE:**	9/8/21	**RECHECK:**		**DATE:**	
STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630

ITEM: 512E33000 **PAY UNIT:** SY
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: TYPE 2 WATERPROOFING
SUPPLEMENTAL DESCRIPTION:

	SUBTOTAL	TOTAL
on precast sides:		
ht = 11.17 ft		
length = 71.02 ft		
# = 2		
A = 1586.7 sq ft		
176.3 SY	176	176
in corners:		
ht = 7.15 ft		
width = 3.0 ft		
# = 4		
A = 85.8 sq ft		
9.5 SY	10	186
SPECIAL INSTRUCTIONS: CHECK UNIT OF MEASURE	**TOTAL**	**186**

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DESIGN:	JOL	**DATE:**	8/27/21	**UPDATE:**		**DATE:**	
CHECK:	MMD	**DATE:**	9/8/21	**RECHECK:**		**DATE:**	
STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630

ITEM: 512E33010 **PAY UNIT:** SY
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: TYPE 3 WATERPROOFING
SUPPLEMENTAL DESCRIPTION:

			SUBTOTAL	TOTAL
width =	37.33	ft		
length =	68.02	ft		
A =	2539.4	sq ft		
	282.2	SY	282	282

SPECIAL INSTRUCTIONS: CHECK UNIT OF MEASURE

TOTAL **282**

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STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630

ITEM: 516E13600 **PAY UNIT:** SF
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: 1" PREFORMED EXPANSION JOINT FILLER
SUPPLEMENTAL DESCRIPTION:

	SUBTOTAL	TOTAL
wingwall/precast: ht = 19.8 ft width = 1.73 ft # = 4 A = 137.0 SF	137	137
parapet: area = 4.08 ft # = 4 A = 16.3 SF	16	153
SPECIAL INSTRUCTIONS:	**TOTAL**	**153**

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CHECK:	MMD	**DATE:**	9/8/21	**RECHECK:**		**DATE:**	
STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630

ITEM: 516E47001 **PAY UNIT:** LS
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN
SUPPLEMENTAL DESCRIPTION:

	SUBTOTAL	TOTAL
SPECIAL INSTRUCTIONS:	**TOTAL**	**LS**

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DESIGN:	JOL	DATE:	8/27/21	UPDATE:		DATE:	
CHECK:	MMD	DATE:	9/8/21	RECHECK:		DATE:	
STRUCTURE:	MAD-71-06.31L			SFN:	4903278	PID:	107630

ITEM: 518E21200 PAY UNIT: CY
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: POROUS BACKFILL WITH GEOTEXTILE FABRIC
SUPPLEMENTAL DESCRIPTION:

	SUBTOTAL	TOTAL
short wingwall:		
ht = 10.24 ft		
length = 24.5 ft		
thickness = 2 ft		
volume = 501.8 cu ft		
# = 4		
total volume = 2007.0 cu ft		
74.3 CY	74	74
tall wingwall:		
ht = 18.25 ft		
length = 24 ft		
thickness = 2 ft		
volume = 876.0 cu ft		
# = 4		
total volume = 3504.0 cu ft		
129.8 CY	130	204
pedestal wall:		
ht = 18.4 sq ft		
length = 68.021 ft		
thickness = 2 ft		
volume = 2503.2 cu ft		
# = 2		
total volume = 5006.3 cu ft		
185.4 CY	185	390
SPECIAL INSTRUCTIONS: CHECK UNIT OF MEASURE	TOTAL	390

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STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630

ITEM: 518E40000 **PAY UNIT:** FT
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: 6" PERFORATED CORRUGATED PLASTIC PIPE
SUPPLEMENTAL DESCRIPTION:

	SUBTOTAL	TOTAL
short wingwall:		
length = 24.5 ft		
# = 4		
total length = 98.0 FT	98	98
tall wingwall:		
length = 32 ft		
# = 4		
total length = 128.0 FT	128	226
pedestal wall:		
length = 68.021 ft		
# = 2		
total length = 136.0 FT	136	362
SPECIAL INSTRUCTIONS:	**TOTAL**	**362**

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CHECK:	MMD	**DATE:**	9/8/21	**RECHECK:**		**DATE:**	
STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630

ITEM: 611E70001 **PAY UNIT:** FT
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: CONDUIT, TYPE A, PRECAST REINFORCED CONCRETE THREE SIDED FLAT TOPPED CULVERT, AS PER PLAN
SUPPLEMENTAL DESCRIPTION: 33'-4" SPAN X 10'-0" RISE

	SUBTOTAL	TOTAL
length = 68.02 ft	68	68
SPECIAL INSTRUCTIONS: SPECIFY SIZE (SPAN X RISE)	**TOTAL**	**68**

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CHECK:	MMD	**DATE:**	9/8/21	**RECHECK:**		**DATE:**	
STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630

ITEM: 623E38501 **PAY UNIT:** EACH
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: MONUMENT ASSEMBLY, AS PER PLAN
SUPPLEMENTAL DESCRIPTION:

	SUBTOTAL	TOTAL
rear # = 2 forward # = 2 total = 4	4	4
SPECIAL INSTRUCTIONS:	**TOTAL**	**4**

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CHECK:	MMD	**DATE:**	9/8/21	**RECHECK:**		**DATE:**	
STRUCTURE:	MAD-71-06.31L			**SFN:**	4903278	**PID:**	107630

ITEM: 867E00101 **PAY UNIT:** LS
SUBJECT: ESTIMATED QUANTITIES
DESCRIPTION: TEMPORARY WIRE FACED MECHANICALLY STABILIZED EARTH WALL, AS PER PLAN
SUPPLEMENTAL DESCRIPTION:

	SUBTOTAL	TOTAL
SPECIAL INSTRUCTIONS:	**TOTAL**	**LS**

MADE BY: JOL DATE: 8/27/2021
CHECKED BY: MMD DATE: 9/8/2021

ESTIMATED QUANTITIES

STRUCTURE FILE NUMBER: 4903278

ITEM	EXTENSION	TOTAL	UNIT	DESCRIPTION	SUBSTR.	SUPER.	GEN.	REFERENCE SHEET NO.
202	11003	LUMP		STRUCTURE REMOVED, OVER 20 FOOT SPAN, AS PER PLAN				
202	22900	246	SY	APPROACH SLAB REMOVED			246	
203	35001	1,338	CY	GRANULAR EMBANKMENT, AS PER PLAN			1,338	
503	11100	LUMP		COFFERDAMS AND EXCAVATION BRACING				
503	21100	1,274	CY	UNCLASSIFIED EXCAVATION	1,274			
504	11101	2,120	SF	STEEL SHEET PILING LEFT IN PLACE, AS PER PLAN (SECTION MODULUS = 18.1 IN3/FT)	2,120			
509	10000	69,618	LB	EPOXY COATED REINFORCING STEEL	62,922	6,696		
509	30020	4,147	FT	NO. 4 GFRP DEFORMED BARS		4,147		
511	34448	40	CY	CLASS QC2 CONCRETE, BRIDGE DECK (PARAPET)		40		
511	46012	282	CY	CLASS QC1 CONCRETE WITH QC/QA, RETAINING/WINGWALL NOT INCLUDING FOOTING	282			
511	46512	396	CY	CLASS QC1 CONCRETE WITH QC/QA, FOOTING	396			
511	46612	6	CY	CLASS QC1 CONCRETE WITH QC/QA, HEADWALL		6		
512	10100	998	SY	SEALING OF CONCRETE SURFACES (EPOXY-URETHANE)	233	765		
512	33000	186	SY	TYPE 2 WATERPROOFING	10	176		
512	33010	282	SY	TYPE 3 WATERPROOFING		282		
516	13600	153	SF	1" PREFORMED EXPANSION JOINT FILLER	137	16		
516	47001	LUMP		JACKING AND TEMPORARY SUPPORT OF SUPERSTRUCTURE, AS PER PLAN				
518	21200	390	CY	POROUS BACKFILL WITH GEOTEXTILE FABRIC	390			
518	40000	362	FT	6" PERFORATED CORRUGATED PLASTIC PIPE	362			
611	70001	68	FT	CONDUIT, TYPE A, PRECAST REINFORCED CONCRETE THREE SIDED FLAT TOPPED CULVERT, AS PER PLAN (33'-4" SPAN X 10'-0" RISE		68		
623	38501	4	EACH	MONUMENT ASSEMBLY, AS PER PLAN	4			
867	00101	LUMP		TEMPORARY WIRE FACED MECHANICALLY STABILIZED EARTH WALL, AS PER PLAN				