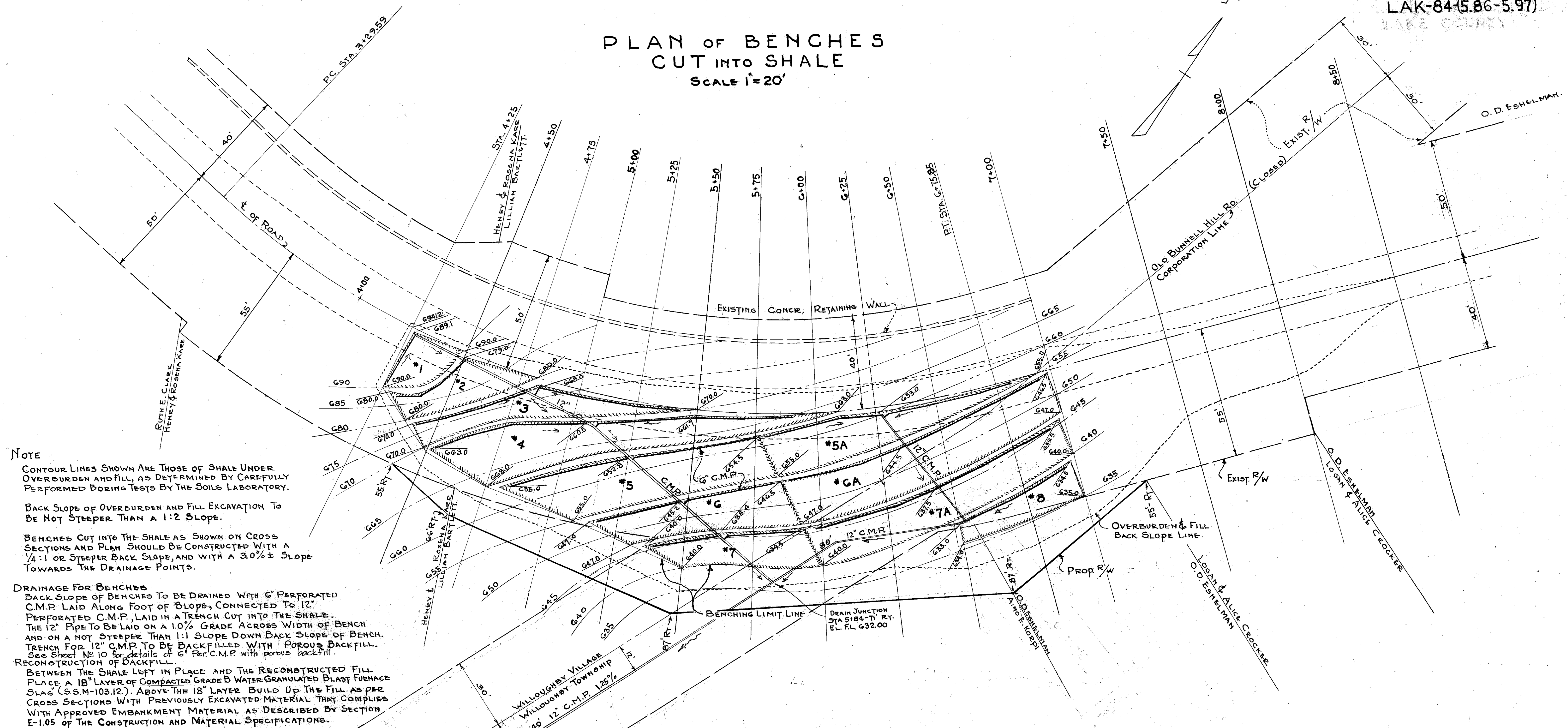


PLAN of BENCHES CUT INTO SHALE

SCALE 1"=20'



NOTE
 CONTOUR LINES SHOWN ARE THOSE OF SHALE UNDER OVERBURDEN AND FILL, AS DETERMINED BY CAREFULLY PERFORMED BORING TESTS BY THE SOILS LABORATORY.

BACK SLOPE OF OVERBURDEN AND FILL EXCAVATION TO BE NOT STEEPER THAN A 1:2 SLOPE.

BENCHES CUT INTO THE SHALE AS SHOWN ON CROSS SECTIONS AND PLAN SHOULD BE CONSTRUCTED WITH A 1/4:1 OR STEEPER BACK SLOPE, AND WITH A 3.0% ± SLOPE TOWARDS THE DRAINAGE POINTS.

DRAINAGE FOR BENCHES
 BACK SLOPE OF BENCHES TO BE DRAINED WITH 6" PERFORATED C.M.P. LAID ALONG FOOT OF SLOPE, CONNECTED TO 12" PERFORATED C.M.P., LAID IN A TRENCH CUT INTO THE SHALE. THE 12" PIPE TO BE LAID ON A 1.0% GRADE ACROSS WIDTH OF BENCH AND ON A NOT STEEPER THAN 1:1 SLOPE DOWN BACK SLOPE OF BENCH. TRENCH FOR 12" C.M.P. TO BE BACKFILLED WITH POROUS BACKFILL. See Sheet No. 10 for details of 6" Per. C.M.P. with porous backfill.

RECONSTRUCTION OF BACKFILL
 BETWEEN THE SHALE LEFT IN PLACE AND THE RECONSTRUCTED FILL PLACE A 18" LAYER OF COMPACTED GRADE B WATER GRANULATED BLAST FURNACE SLAG (S.S.M-103.12). ABOVE THE 18" LAYER BUILD UP THE FILL AS PER CROSS SECTIONS WITH PREVIOUSLY EXCAVATED MATERIAL THAT COMPLIES WITH APPROVED EMBANKMENT MATERIAL AS DESCRIBED BY SECTION E-1.05 OF THE CONSTRUCTION AND MATERIAL SPECIFICATIONS.

OUTLET FOR UNDERDRAIN
 BEYOND BENCHING AREA BACKFILL OUTLET TRENCH 1.0 FOOT ABOVE TOP OF PIPE WITH POROUS MATERIAL. ABOVE THE POROUS BACKFILL USE PREVIOUSLY EXCAVATED MATERIAL. SEE DETAIL SHEET #G.

EMBANKMENT - The moisture content of all embankment material shall be less than optimum at the time of compaction. Embankment material placed on fill containing or exceeding optimum moisture, whether caused by rain or from the state of the material as it is received, shall be aerated by discing or other approved method for full depth of the course to reduce the moisture content to or below optimum at the time of compaction.

BENCH NO.	PIPE UNDERDRAINS																				
	6" PERFORATED C.M.P. ITEM I-4				6" C.M.P. SPECIALS ITEM I-5				12" PERFORATED C.M.P. ITEM I-4				12" C.M.P. SPECIALS ITEM I-5								
	LENGTH OF PIPE (FT.)				45° BENDS 90° BENDS				LENGTH OF PIPE (FT.)				45° BENDS 90° BENDS TEES WYES CROSSES								
1	4	10	12	14	16	20			4	6	10	12	14	16	20	2-12"x12"	1-12"x6"				
2		2					2-6"x6"					2	1	1		2-12"x12"	1-12"x6"				
3	1	1		2		3										2-12"x12"	1-12"x6"	1-12"x12"x6"	1-12"x12"x6"		
4		2				6	2-6"x6"					2				2-12"x12"	1-12"x6"	1-12"x12"x6"	1-12"x12"x6"		
5			2			4	1-6"x6"					1		1		2-12"x12"	1-12"x6"	1-12"x12"x6"	1-12"x12"x6"		
5A				1	2	3	2-6"x6"					1				2-12"x12"	1-12"x6"	1-12"x12"x6"	1-12"x12"x6"		
6				1		3	1-6"x6"					2				2-12"x12"	1-12"x6"	1-12"x12"x6"	1-12"x12"x6"		
6A						5						1				2-12"x12"				1-12"x6"x6"	
7A				3		1	1-6"x6"					1				1-12"x12"	1-12"x12"			1-12"x6"x6"	
7		1	1			4							1			1-12"x12"				1-12"x6"x6"	
8				2		1						2				2-12"x12"				1-12"x6"x12"	
OUTLET															12					1-12"x12"x12"	
TOTALS	1	10	2	10	2	30	9	1	1	3	9	4	2	3	16	19	2	8	5	2	
TOTAL LENGTH 6" PIPE = 900 FT. TOTAL 6" SPECIALS = 10 TOTAL LENGTH 12" PIPE = 556 FT. TOTAL 12" SPECIALS = 36																					

CONCR. HEADWALL				
STATION	SIDE Rt. or Lt.	EXCAV.	STEEL	CLASS "C" CONCR.
4+60±	Rt.	1.5	20	0.7
TOTALS		1.5	20	0.7

WILLOUGHBY VILLAGE
 WILLOUGHBY TOWNSHIP
 240' 12" C.M.P. 1.25%
 STA. 4+60 ± 240' RT. FL. EL. 629.00
 BUILD REINF. CONCR. HEADWALL
 STD. CONSTR. DWG. S-27 P.C.1