

## HEAVY LOAD ROUTES

Heavy load routes are created from a series of road links or road sections. They may also be composed by linking together sections of other previously defined routes. Links are created by specifying node numbers at the beginning and end of a section of road, the number of bridge structures in the link and the plan numbers of each structure. Links may be empty, with plan numbers being added later as data becomes available.

## STRUCTURE DATA

Data for each structure includes information for identification and analysis control; the structure type; its geometry and material properties; the design standard; and moment, shear and reaction capacities (if available).

## HEAVY LOAD VEHICLES

Heavy load vehicles are defined by specifying the load, width and spacing of each axle in the vehicle. Vehicles of up to 50 axles may be analysed and run in either direction along the route.

## METHODOLOGY

HLR compares moment & shear capacities of each valid structure along the route against corresponding maximum forces induced by the HL vehicle. Analysis is based on a continuous-beam model, with transverse distribution of moments to deck beams (if any) calculated using simple distribution factors. Where moment capacities are unknown a load ratio method has been developed to identify potential overload. Factors used in this method may be changed by the user to suit local conditions.

Checks are performed to determine the severity of any overload and the type of consequent travel restriction to be placed on the structure. Three overload conditions are available, corresponding to travel restricted to 10 kph in any lane, travel restricted to 5 kph down the centreline

of the bridge carriageway, or a total restriction to travel by the heavy load on the structure.

The system will also check for other road-related restrictions such as structure width or height or mandatory speed limits.

## REPORTING

A comprehensive series of reports are available, including detailed results for all structures encountered on the route. Moment and shear envelopes are generated for all continuous structures analysed. Features have also been included for editing and modifying system-recommended restrictions prior to the printing of formal reports.

## DATA BASE FEATURES

Route, vehicle and structure data are stored in a text-based file-oriented data base. Comprehensive facilities have been provided for maintaining route, vehicle and structure data in the data base and for storing and retrieving heavy load applications.

## MINIMUM SYSTEM REQUIREMENTS

HLR is a PC-based system requiring an IBM AT class of machine with a minimum of 512K memory in which to run. Hard disk space requirements will depend on the number of structures, vehicles, links and HL applications that are to be stored in the data base.

## ENQUIRIES

George SOBOL, Structural Computing Engineer  
Bridge Support Unit  
Department of Transport  
33-37 Warwick Street WALKERVILLE SA 5081  
Telephone: + 618 343 2330  
Facsimile: + 618 343 2740

HLR: Restricted Structures 20/03/95

HL2165 O'BRIENS HEAVY HAULAGE  
CAT DION DOZER, BLADE DETACHED  
SA/VIC BORDER TO SA/MA BORDER VIA MORGAN

PLAN NUMBER	DESIGN YEAR & STANDARD	SPAN No & LENGTH	MATER'L TYPE & SPACING	STRUCT. TYPE & GIRDERS	GIRDER CAPACITIES			HEAVY LOAD EFFECT			RESTRICTIONS NOTES & COMMENTS	
					Moment O/L %	M (kNm)	Modload Ratio	M (kNm)	Ratio	Ratio		
3180	KINGSTON BRIDGE	1.730M EAST OF RN7015, KINGSTON-LOXTON	408									
1969	6	PSC BRIDGE			(+) M (-) M	SECTION 7	3198	2795	2155	10 kph EDGE	[E]	
HS20	39.600	2.300m BEAM	3042 -3600	2866 -3643	408	SECTION 6	3214	2810	2156	10 kph EDGE		*R2-2000 [E]
5	39.600	2.300m BEAM	(+) M (-) M	4977 -1972	408	SECTION 10	-1992	-1742	-1343	10 kph EDGE	[E]	
2	39.600	2.300m BEAM	(+) M (-) M	4977 -1972	408	SECTION 2	-2000	-1749	-1348	10 kph EDGE	[E]	
1	39.600	2.300m BEAM	(+) M (-) M	4977 -1972	408	SECTION 6	3141	2746	2117	10 kph EDGE		
			2866 -3643	3042 -3600	408	SECTION 5	3333	2914	2246	10 kph EDGE		
EUDUNDA, KAPUNDA (Start Node 36 End Node 32)												
3273	HANSBOROUGH BRIDGE	7.70M SW OF RN 3867, SADDLEWORTH-EUDUNDA	454				525	425	327	10 kph EDGE	SPANS 3 & 4	
1968	3	PSC BRIDGE										
HS20	13.500	1.420 BEAM	276	454			550	446	343	10 kph EDGE	SPANS 2 & 5	
			14.000	1.420 BEAM								
9093	CULVERT	7.45KM SOUTH WEST OF RN4343 KAPUNDA-TRURO					1.40	1.73	2.25	1.40	10 kph EDGE	[E]
		1.26KM NE OF RN4343, KAPUNDA-TRURO										
65188	BRIDGE OVER ALLEN CRK	1.26KM NE OF RN4343, KAPUNDA-TRURO	871	1295			1390	1146	884	10 kph EDGE		
1976	1	PSC BRIDGE										
HS18	18.500	2.500 BEAM										
JAMESTOWN (VIA BYPASS), GLADSTONE (Start Node 30 End Node 13)												

STRUCTURAL MAINTENANCE UNIT - HEAVY LOAD ANALYSIS REPORT

HEAVY LOAD No : HL2165 APPLICATION No : PC 23471

To STO Permit:-

O'BRIENS HEAVY HAULAGE  
CAT DION DOZER, BLADE DETACHED  
SA/VIC BORDER TO SA/MA BORDER VIA MORGAN

The above vehicle and load is permitted to travel over bridge structures on the following route:

SA/VIC BORDER, YAMBA, LOXTON, KINGSTON, OVERLAND CORNER, MORGAN, EUDUNDA, KAPUNDA, TABLE, BLACK SPYRINGS, HANSON, WARRISTOWN, NECTAR BROW, PT AUGUSTA, MACCOURSE RD, CARLTON PDS, ROGERS ST, YORKIES CROSSING, PT AUGUSTA, LINCOLN GAP, IRON KNOW, SA/MA BORDER

CONDITIONS OF TRAVEL

STURT HIGHWAY [RN7200]

10 kph over  
KINGSTON BRIDGE [3180]  
1.730M EAST OF RN7015, KINGSTON-LOXTON

KAPUNDA - MORGAN [RN3873]

10 kph over  
HANSBOROUGH BRIDGE [3273]  
7.70M SW OF RN 3867, SADDLEWORTH-EUDUNDA

10 kph over  
CULVERT [9093]  
7.45KM SOUTH WEST OF RN4343 KAPUNDA-TRURO

10 kph over  
BRIDGE OVER ALLEN CRK [65188]  
1.26KM NE OF RN4343, KAPUNDA-TRURO

WARRISTOWN - JAMESTOWN [RN3492]

10 kph over  
FLOODWAY [1381]  
0.110M WEST OF RN3495, HUGHES GAP-CRYSTAL BROOK