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Quantity Sheets for TH2-9103 are located in the beginning of the plan set.

**LIST OF STANDARDS**

B-71	11/16/00
D-6	06/01/94
D-15	06/01/94
E-100	01/06/97
E-100A	01/06/97
E-101	03/10/97
E-102	08/08/95
E-102A	08/08/95
E-106	08/08/95
E-107	08/08/95
E-107A	08/08/95
E-108	08/18/95
E-110	08/08/95
E-121	08/08/95
E-140	08/30/96
E-170	11/04/99
E-171A	08/09/95
E-171B	08/09/95
E-171C	08/09/95
E-172	08/09/95
E-175	11/17/93
G-1b	06/01/94
G-18	06/01/94
T-1	06/01/94
T-2	06/01/94

**EXISTING STRUCTURE**

1. STRUCTURE TYPE SINGLE SPAN CONCRETE SLAB OVERALL LENGTH 27'-6" INVENTORY RATING X
2. SPAN LENGTH(S) CENTER TO CENTER OF BEARINGS 25'-6"
3. CLEAR SPAN LENGTH(S) NORMAL TO STREAM 10'-4"
4. WATERWAY AREA OF FULL OPENING (NORMAL TO STREAM) 67.2 sq ft VERTICAL CLEARANCE ABOVE STREAMBED 6'-6"
5. WATER SURFACE ELEVATION @ 0.2, 33 589.7 WATER SURFACE ELEVATION @ 0.50 590.8
6. WATER SURFACE ELEVATION AT FLOOD OF RECORD X YEAR        ESTIMATED DISCHARGE
7. DOES ALL WATER PASS THROUGH EXISTING STRUCTURE? NO IF NOT, AT WHAT FREQUENCY AND ELEVATION DOES RELIEF OCCUR? 0.50 EL 591.0
8. TYPE OF SUBSTRUCTURE FOUNDATION MATERIAL X
9. DISPOSITION OF STRUCTURE REMOVAL

**NEW STRUCTURE**

- STRUCTURE GEOMETRY:
1. STRUCTURE TYPE SINGLE SPAN CONCRETE SLAB OVERALL LENGTH 28'-2 1/2"
  2. SPAN LENGTH(S) CENTER TO CENTER OF BEARINGS 25'-11 1/2"
  3. VERTICAL CLEARANCE ABOVE STREAMBED OR ROAD UNDER 6.5 ft
  4. CLEAR SPAN LENGTH(S) NORMAL TO STREAM 10'-0"
  5. WATERWAY AREA OF FULL OPENING (NORMAL TO STREAM) 62.4 sq ft
  6. ARE PROVISIONS TO BE MADE FOR PUBLIC UTILITIES? NO

- HYDRAULIC DATA:
1. Q 2.33 20 cfs WATER ELEVATION 586.5 VELOCITY 7.5 fps
  - Q 18 400 cfs WATER ELEVATION 587.5 VELOCITY 9.3 fps
  - Q 25 550 cfs WATER ELEVATION 588.1 VELOCITY 10.3 fps
  - Q 50 700 cfs WATER ELEVATION 588.5 VELOCITY 11.2 fps
  - Q 100 870 cfs WATER ELEVATION 589.4 VELOCITY 12.0 fps
  2. DRAINAGE AREA 3.42 sq mi CHARACTER OF TERRAIN HILLY, MOSTLY FORESTED
  3. ARE THERE OBJECTIONS TO A PIER IN THE STREAM? YES
  4. DOES STREAM REACH ITS MAXIMUM HIGH WATER ELEVATION RAPIDLY? YES IS ORDINARY RISE RAPID? YES
  5. NATURE OF NATURAL STREAMBED X
  6. ESTIMATED SCOUR DEPTH X COMMENT ON: DRIFT X ICE SLIGHT
  7. WILL ALL WATER PASS THROUGH NEW STRUCTURE? YES IF NOT, WHAT FREQUENCY AND ELEVATION WILL RELIEF OCCUR?
  8. VERTICAL CLEARANCE ABOVE 0.00 10 ft
  9. ALLOWABLE WATER SURFACE ELEVATION 590.4 LIMITED BY AVERAGE LOW ELEVATION OF SUPERSTRUCTURE
  10. IS DESIGN STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? NO IF YES, DESCRIBE
  11. ORDINARY LOW WATER 5 cfs DEPTH 0.2 ft ORDINARY HIGH WATER 90 cfs DEPTH 1.5 ft
  12. AVERAGE DAILY FLOW 10 cfs STREAMBANK OR CHANNEL PROTECTION REQUIRED STONE FILL TYPE II
  13. DISTANCE TO EXISTING UPSTREAM STRUCTURE 3600 ft SPAN 15 ft WATERWAY AREA OF FULL OPENING 75 sq ft 0 X
  14. DISTANCE TO EXISTING DOWNSTREAM STRUCTURE N/A SPAN        WATERWAY AREA OF FULL OPENING 0

- ALLOWABLE STRESSES:
1. DESIGN LIVE LOAD AASHTO HS-25-44
  2. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL 4.5 KSF ABUT. NO. 1 ON LEDGE NO KSF ABUT. NO. 2
  3. ALLOWABLE LOAD FOR PILING N/A TYPE        ESTIMATED LENGTH
  4. ALLOWABLE STRESS FOR STRUCTURAL STEEL AASHTO N/A TENSION N/A
  5. ALLOWABLE STRESS FOR REINFORCING STEEL GRADE 60 TENSION 24000 psi COMPRESSION 20000 psi
  6. ALLOWABLE STRESS FOR HIGH PERFORMANCE CONCRETE CLASS A  $f_c$  4000 psi HIGH PERFORMANCE CONCRETE CLASS B  $f_c$  3500 psi

- TRAFFIC MAINTENANCE:
1. IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE YES OR ON TEMPORARY BRIDGE
  2. EXISTING BRIDGE REQUIREMENTS: ONE OR TWO WAY ONE WAY TRAFFIC CONTROL SIGNALS REQUIRED YES
  - MINIMUM CLEAR SPAN        MINIMUM CLEAR HEIGHT        MINIMUM WATERWAY AREA
  - ARE SIDEWALKS REQUIRED? NO IF SO, ON WHAT SIDE?
  - STAGE CONSTRUCTION

NOTES: N/A - NOT APPLICABLE X - UNKNOWN

**ADDITIONAL DESIGN CONSIDERATIONS**

**LOAD FACTOR LOAD RATING (TONS)**

LOADING LEVELS (LOAD FACTOR)	TRUCK					
	H	HS	352	6 AXLE	3A. STR.	4A. STR. 5A. SEMI
INVENTORY A=2.17	28	49				
POSTED A=1.55	40	69	82		47	49 82
OPERATING A=1.30		82	98	88	56	58

STRENGTH RF =  $\frac{0.9M_N - 1.3M_{DL}}{A \times M_{LL+I}}$

**TRAFFIC DATA**

YEAR	ADT	DHV	% D	% T	ADTT
1998	1830	255	51	7	130
2018	2480	350	51	6	145

18 kip ESAL for flexible pavement from 1998 to 2018: 1,946,000  
 18 kip ESAL for flexible pavement from 1998 to 2038: 7,088,000  
 Design speed: 30 mph

**PRELIMINARY INFORMATION**

PROJECT NAME: **ROCKINGHAM**  
 PROJECT NUMBER: **TH2 - 9103**  
 FILE NAME: 90c053\structures\sc053p1.i PLOT DATE: 20-MAR-2003  
 PROJECT MANAGER: R.R. WHITCOMB DRAWN BY: G. ROY  
 DESIGNED BY: G. ROY CHECKED BY: R. WHITCOMB  
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