

FINAL HYDRAULICS REPORT

HYDROLOGIC DATA

DRAINAGE AREA = 18.1 SQUARE MILES
 CHARACTER OF TERRAIN: STEEP, MOUNTAINOUS, WOODED
 CHARACTER & TYPE OF STREAM: SMALL STREAMS, ALLUVIAL FLOOD PLAIN WITH PERENNIAL BROOK, FLASHY FLOW HABIT
 NATURE OF STREAMBED: GRAVEL, COBBLES, SMALL Boulders, LEDGE

02.33 = 1024 C.F.S. 050 = 3704 C.F.S.
 010 = 825 C.F.S. 0100 = 3867 C.F.S.
 025 = 2000 C.F.S. 0500 = 6666 C.F.S.

DATE OF FLOOD OF RECORD: 1892, 1927, 1936, 1940, 1975, 1976
 WATER SURFACE ELEV.: UNKNOWN ESTIMATED DISCHARGE: UNKNOWN
 NATURAL STREAM VELOCITY @ 0.25: 7.4 FPS
 ICE CONDITIONS: DEBRIS: _____
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY? YES
 IS ORDINARY RISE RAPID? YES
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? NO
 IF YES, DESCRIBE: _____

PROPOSED STRUCTURE

STRUCTURE TYPE: SEE NOTE 2
 WATERWAY OF FULL OPENING: _____
 CLEAR SPAN (NORMAL TO STREAM): 62.6 FT.
 VERTICAL CLEARANCE ABOVE STREAMBED: 21.6 FT.
 WATERWAY OF FULL OPENING: 1438 SQUARE FEET

WATER SURFACE ELEV. @ 02.33 = 520.8 FT. VELOCITY = 4.6 F.P.S.
 010 = 522.5 FT. " = 5.8 F.P.S.
 025 = 523.5 FT. " = 6.6 F.P.S.
 050 = 524.4 FT. " = 7.3 F.P.S.
 0100 = 525.3 FT. " = 7.9 F.P.S.

IS THE ROADWAY OVERTOPPED BELOW THE 0100? NO FREQUENCY: N/A
 RELIEF ELEVATION: N/A DISCHARGE OVER ROAD @ 0100: NONE
 AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 527.2 FT.
 VERTICAL CLEARANCE @ 0.25 = 13.7 FT.

SCOUR: SEE NOTE 3
 REQUIRED CHANNEL PROTECTION: _____

EXISTING STRUCTURE

STRUCTURE TYPE: TIMBER COVERED BRIDGE (BANGPOST TRUSS) YEAR BUILT: 1922
 CLEAR SPAN (NORMAL TO STREAM): 62.6 FT.
 VERTICAL CLEARANCE ABOVE STREAMBED: 21.6 FT.
 WATERWAY OF FULL OPENING: 1437 SQUARE FEET
 DISPOSITION OF STRUCTURE: EXISTING HISTORIC STRUCTURE TO BE REHABILITATED

TYPE OF MATERIAL UNDER SUBSTRUCTURE: LEDGE (PRESUMED)

WATER SURFACE ELEV. @ 02.33 = 520.8 FT. VELOCITY = 4.6 F.P.S.
 010 = 522.5 FT. " = 5.8 F.P.S.
 025 = 523.5 FT. " = 6.6 F.P.S.
 050 = 524.4 FT. " = 7.3 F.P.S.
 0100 = 525.3 FT. " = 7.9 F.P.S.

LONG TERM STREAM BED CHANGES: NONE
 IS THE ROADWAY OVERTOPPED BELOW THE 0100? NO FREQUENCY: 1/200
 RELIEF ELEVATION: N/A DISCHARGE OVER ROAD @ 0100: 0 C.F.S.

UPSTREAM STRUCTURE: TOWN CAMBRIDGE DISTANCE: 1.0 MILES
 HIGHWAY NO.: 31/7A STRUCTURE NO.: 00042
 STRUCTURE TYPE: 2 SPAN CONCRETE T-BEAM
 CLEAR SPAN: 62 FT. CLEAR HEIGHT: _____
 YEAR BUILT: 1922 FULL WATERWAY: _____

DOWNSTREAM STRUCTURE: TOWN CAMBRIDGE DISTANCE: 1.0 MILES
 HIGHWAY NO.: 31/25 STRUCTURE NO.: E2022
 STRUCTURE TYPE: 2 SPAN STEEL BEAM
 CLEAR SPAN: 2 x 66 FT. CLEAR HEIGHT: _____
 YEAR BUILT: 1992 FULL WATERWAY: _____

PERMIT INFORMATION

AVERAGE DAILY FLOW: 30 C.F.S.
 ORDINARY LOW WATER: 20 C.F.S. DEPTH: 0.2 FT.
 ORDINARY HIGH WATER: 400 C.F.S. DEPTH: 1.8 FT.

ADDITIONAL COMMENTS

- PEAK DISCHARGES DEVELOPED BY M-J ARE COMPARABLE TO 1992 FLOOD INSURANCE STUDY CONSIDERING DRAINAGE AREA RELATIONSHIPS.
- HYDRAULIC CONDITIONS FOR PROPOSED STRUCTURE ARE SIMILAR TO EXISTING STRUCTURE.
- NO CHANNEL SCOUR WAS OBSERVED BY INSPECTORS (FOUNDATIONS ON BEDROCK).
- WATER SURFACE ELEVATIONS ARE PROVIDED UPSTREAM OF EXISTING BRIDGE. VELOCITIES ARE PROVIDED AT THE BRIDGE.

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2002	160	20	59	5	10
2022	210	30	59	5	10

18 Kip ESAL for flexible pavement from 2002 to 2022: 50,000
 18 Kip ESAL for flexible pavement from 2002 to 2042: 85,000
 Design speed: 20 MPH

DESIGN CRITERIA:

- DESIGN LIVE LOAD AASHTO: H-15 (POSTED)
- DESIGN SPAN: 62.6 FT.
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL: N/A ON LEDGE: N/A
- ALLOWABLE LOAD FOR PILING: N/A TYPE: N/A ESTIMATED LENGTH: N/A
- STRUCTURAL STEEL AASHTO GRADE: N/A
- REINFORCING STEEL GRADE: 60
- CONCRETE HIGH PERFORMANCE A: $f'_c = 4000$ PSI
 CONCRETE HIGH PERFORMANCE B: $f'_c = 3500$ PSI

TRAFFIC MAINTENANCE:

- IS TRAFFIC TO BE MAINTAINED? NO IF YES, ON EXISTING STRUCTURE: NO OR ON TEMPORARY BRIDGE: NO
 - TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY: N/A TRAFFIC CONTROL SIGNALS REQUIRED: NO
 BRIDGE TO BE CLOSED DURING CONSTRUCTION WITH TRAFFIC DETOURED AROUND BRIDGE SITE.
- ARE SIDEWALKS REQUIRED? NO IF SO, ON WHAT SIDE? N/A

ASD FACTOR LOAD RATING (TONS)

LOADING LEVELS	TRUCK				
	N	HS	3S2	6 AXLE	3A. STR. 4A. STR. 5A. SEMI
INVENTORY	4.0	---	---	---	---
POSTED	5.0	---	---	---	---
OPERATING	5.7	---	---	---	---

COMMENTS: EXISTING FLOORBEAMS CONTROL LOAD RATING

STATE OF VERMONT AGENCY OF TRANSPORTATION

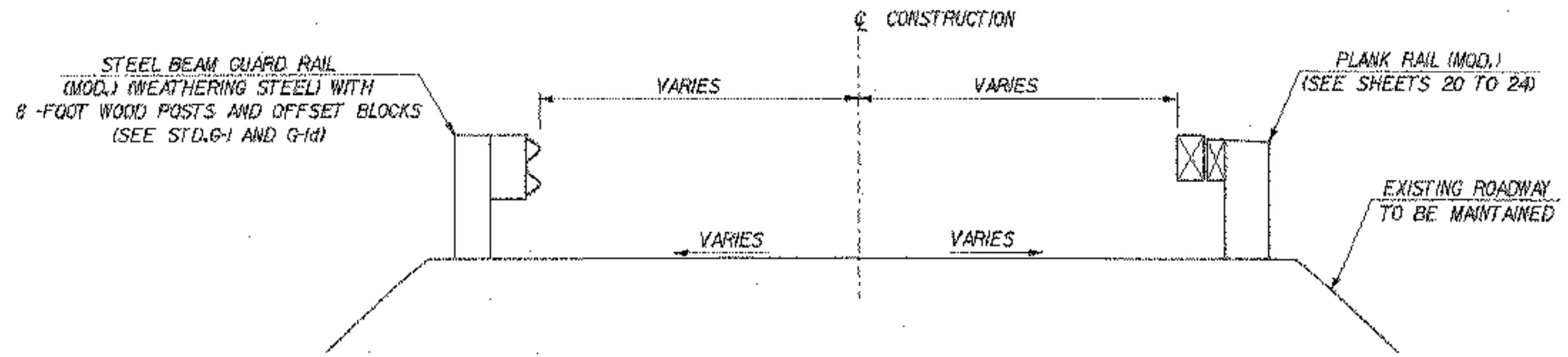
Town Of: CAMBRIDGE Bridge No.: 30
 Highway No.: TH 31 Log Sta. _____
 Surv. Sta. _____

CANYON ROAD OVER BREWSTER RIVER PRELIMINARY INFORMATION SHEET

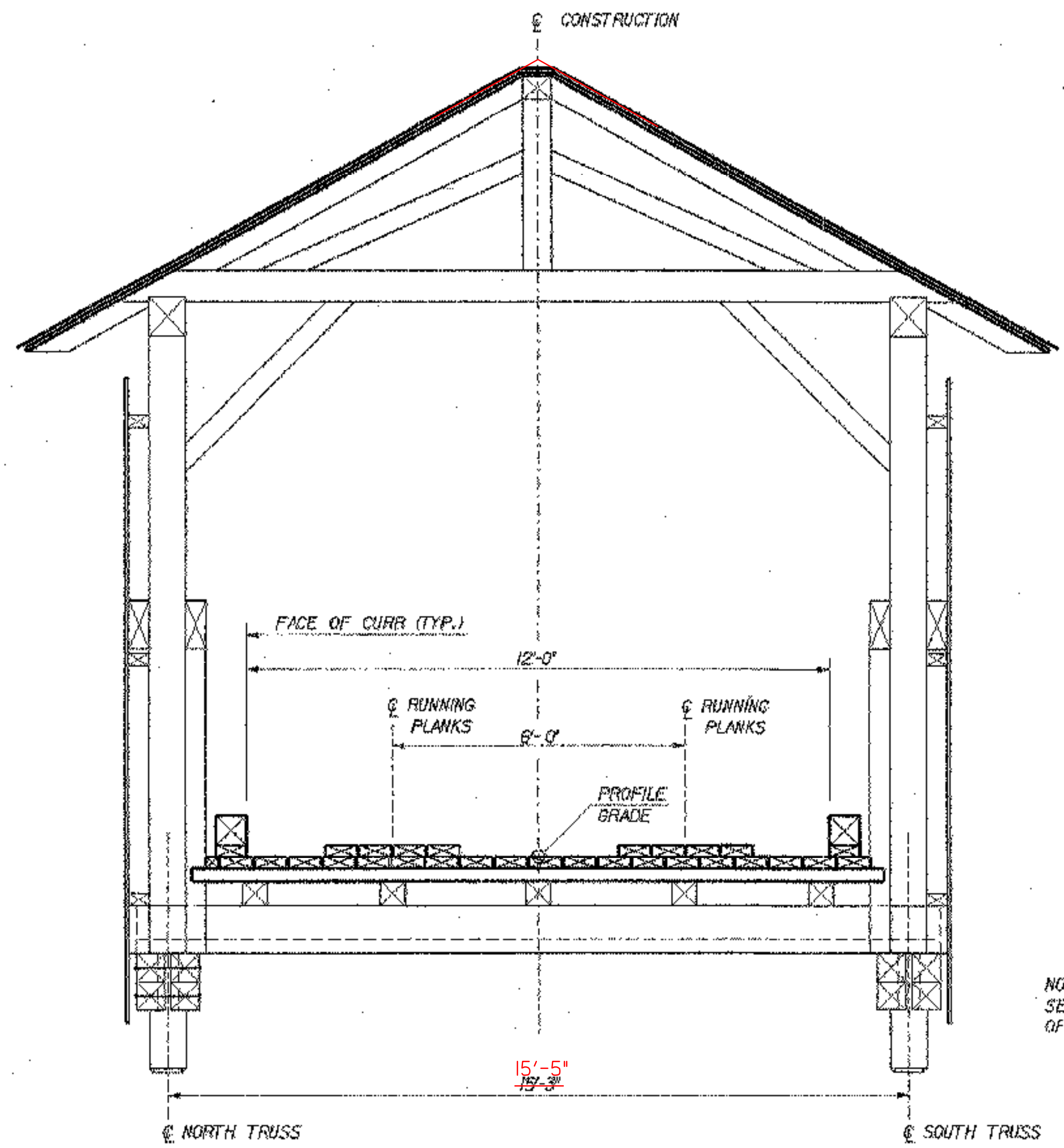
Designed By: R. JOY Drawn By: S. MERKWAY
 Checked By: _____ Date: 05/03 Bridge Design Supervisor: M. ZYDEL Date: 05/03

PROJECT: CAMBRIDGE PROJECT NO.: BHO 1448(24)

LG.C. Info. m:\549105\BRIDGE\BHO1448\24\12586.plt.dgn
 Bridge Sheet No.: _____ Sheet 2 of 26



TYPICAL ROADWAY SECTION
 SCALE 1/2" = 1'-0"



NEW TYPICAL BRIDGE SECTION
 SCALE 1/2" = 1'-0"

NOTE:
 SEE SHEET 12 FOR DESCRIPTION OF NEW WORK TO EXISTING TRUSS.

12-AJY-2003 PLOTTED