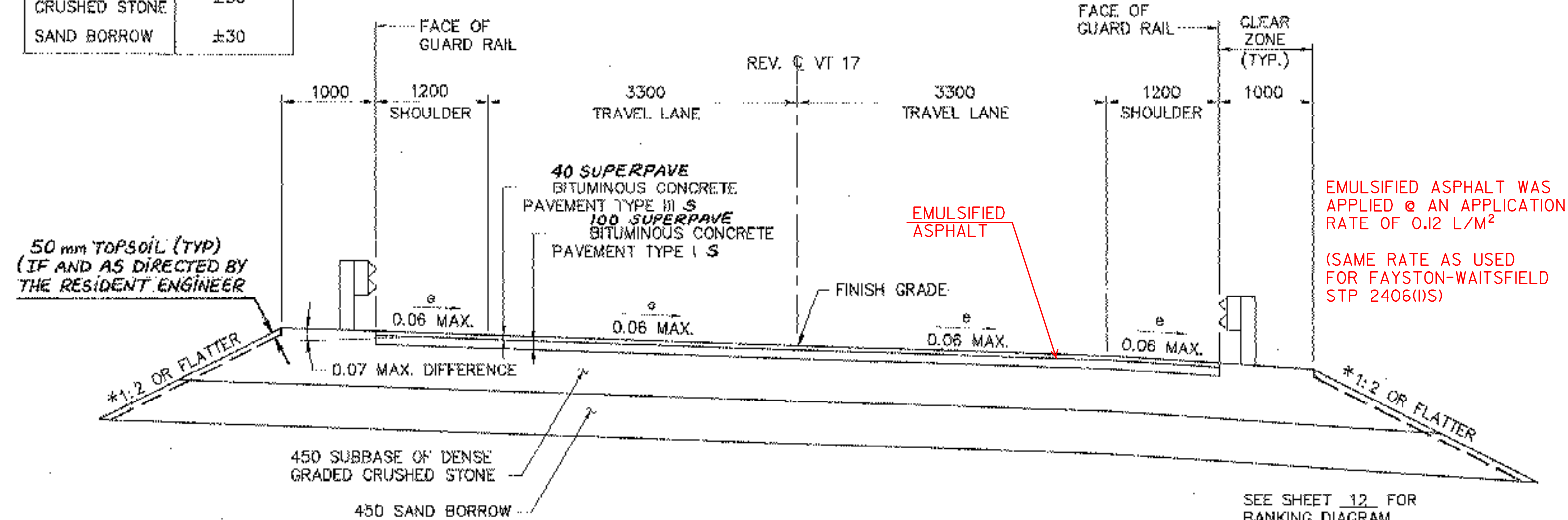
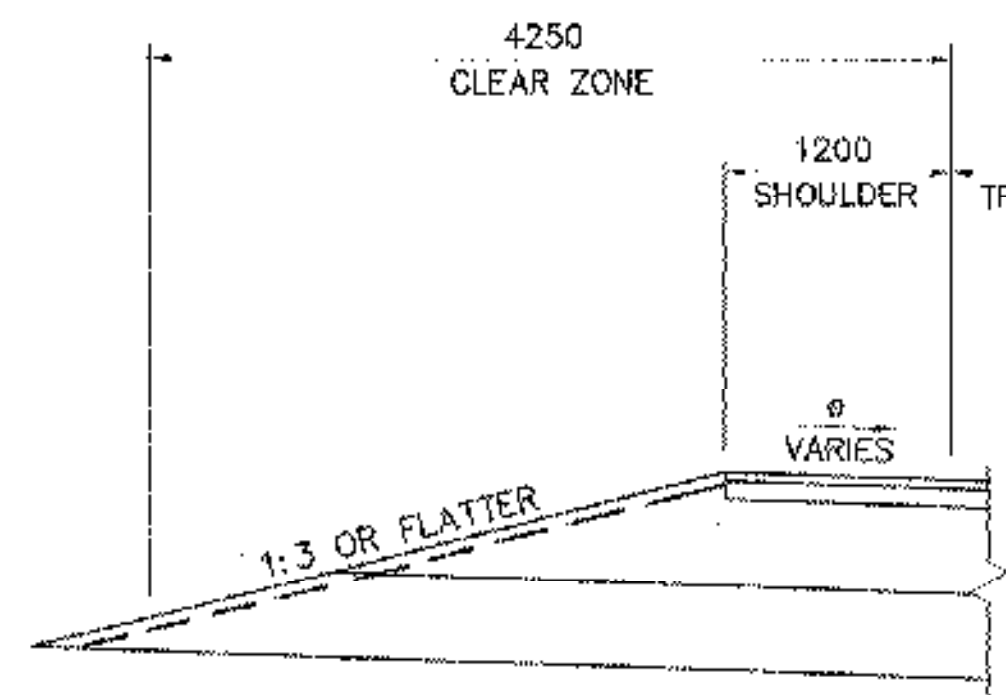


MATERIAL ITEM	THICKNESS TOLERANCE
PAVEMENT	±5 (TOTAL)
DENSE GRADED CRUSHED STONE	±30
SAND BORROW	±30



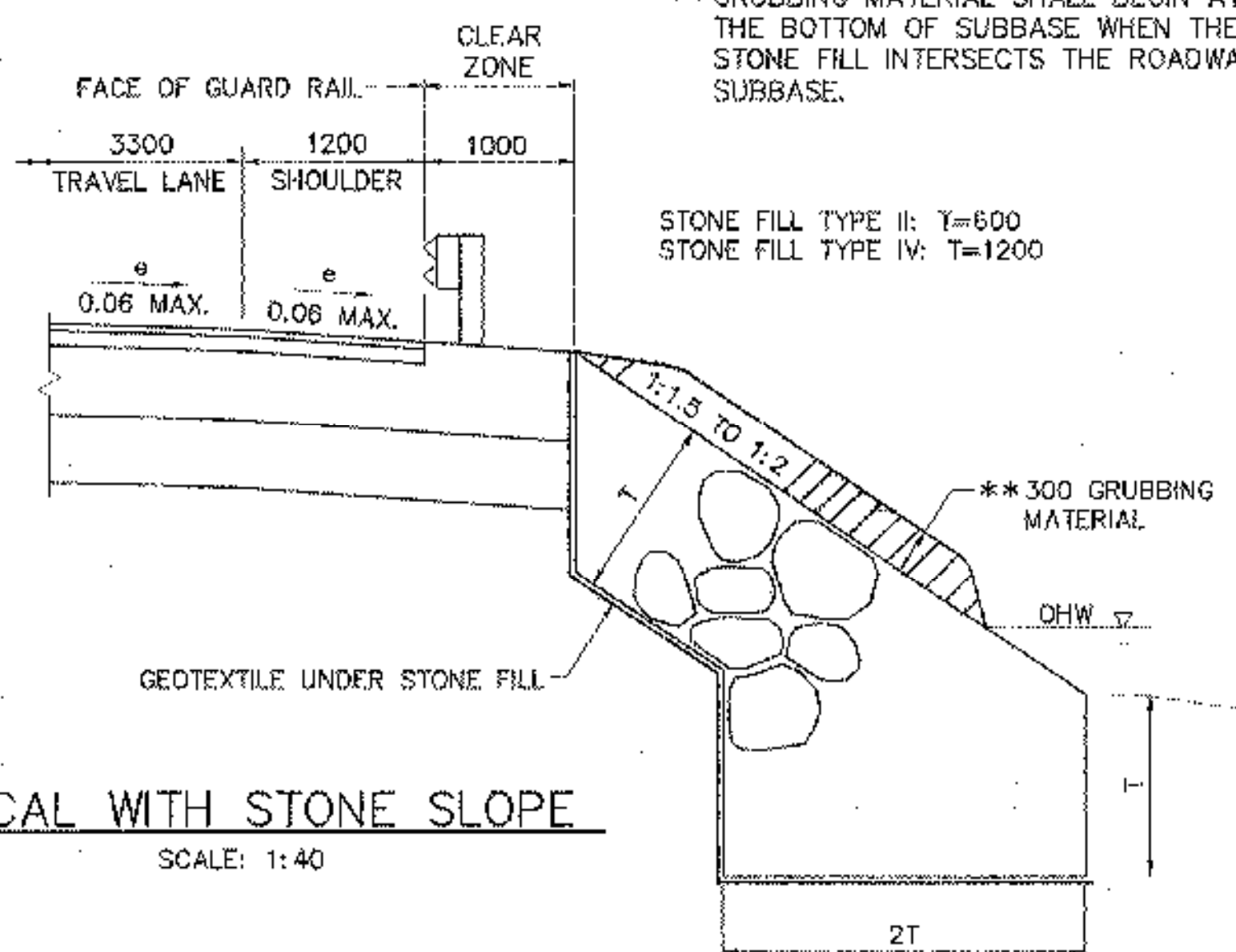
ROADWAY SECTION WITH GUARD RAIL

SCALE: 1:40



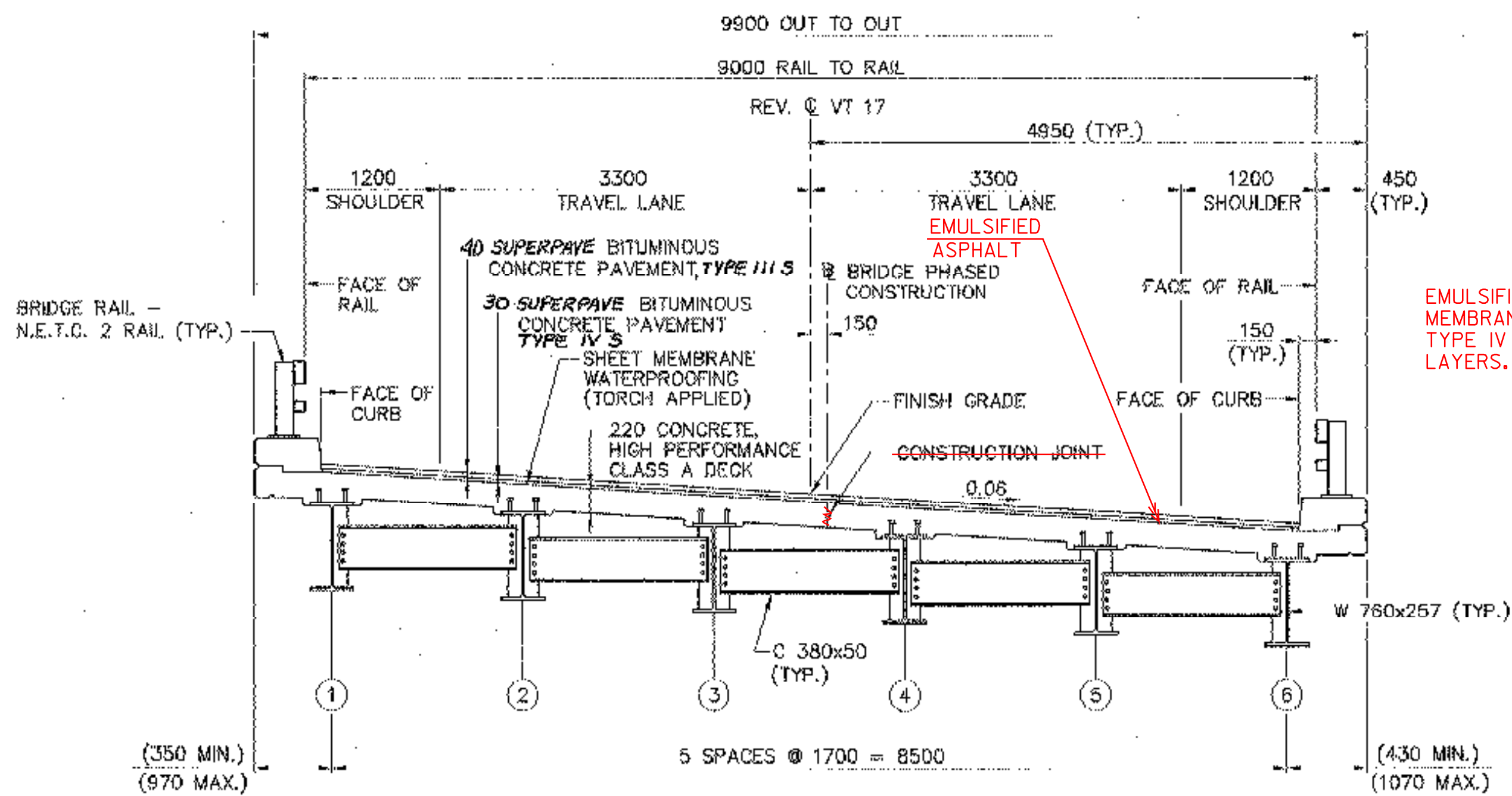
\*TYPICAL WITHOUT GUARD RAIL

SCALE: 1:40



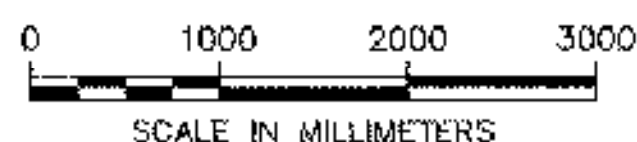
\*TYPICAL WITH STONE SLOPE

SCALE: 1:40



TYPICAL SECTION

SCALE: 1:40



FINAL HYDRAULICS REPORT



HYDROLOGIC DATA

DRAINAGE AREA = 49 km<sup>2</sup>  
 CHARACTER OF TERRAIN: MOUNTAINOUS, MOSTLY FORESTED AND RESIDENTIAL  
 CHARACTER & TYPE OF STREAM: SMALL, SINUOUS, SEMI-ALLUVIAL, PROBABLY INCISED  
 FLOODPLAIN, WITH PERENNIAL BUT FLASHY FLOW HABIT  
 NATURE OF STREAMBED: GRAVEL, COBBLES, SMALL BOULDERS

Q2.33 = 16 m <sup>3</sup> /s	Q50 = 60 m <sup>3</sup> /s
Q10 = 35 m <sup>3</sup> /s	Q100 = 72 m <sup>3</sup> /s
Q25 = 48 m <sup>3</sup> /s	Q500 = 108 m <sup>3</sup> /s

DATE OF FLOOD RECORD: 1927, 1938  
 WATER SURFACE ELEV.: SEE NOTE 3 ESTIMATED DISCHARGE: ---  
 NATURAL STREAM VELOCITY @ Q50 = 3.1 m/s  
 ICE CONDITIONS: MODERATE DEBRIS: MODERATE  
 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: ---

WATERSHED STORAGE <1% HEADWATERS --- UNIFORM THROUGHOUT WATERSHED YES  
 IMMEDIATELY ABOVE SITE ---

EXISTING STRUCTURE

STRUCTURE TYPE: SINGLE SPAN STEEL STRINGER WITH CONCRETE DECK YEAR BUILT: 1939  
 AND SPILL THROUGH ABUTMENTS ---  
 CLEAR SPAN (NORMAL TO STREAM): 19.7 m  
 VERTICAL CLEARANCE ABOVE STREAMBED: 4.2 m  
 WATERWAY OF FULL OPENING: 59.2 m<sup>2</sup>  
 DISPOSITION OF STRUCTURE: SUPERSTRUCTURE TO BE REPLACED

TYPE OF MATERIAL UNDER SUBSTRUCTURE: UNKNOWN (SEE NOTE 2)

WATER SURFACE ELEV. @ Q2.33 = 262.55	VELOCITY = 1.59 m/s
(SEE NOTE 5) Q10 = 263.10	" = 2.25 m/s
Q25 = 263.41	" = 2.68 m/s
Q50 = 263.66	" = 3.09 m/s
Q100 = 263.87	" = 3.40 m/s

LONG TERM STREAM BED CHANGES: UNKNOWN

IS THE ROADWAY OVERTOPPED BELOW THE Q100? NO FREQUENCY: >Q500  
 RELIEF ELEVATION: --- DISCHARGE OVER ROAD @ Q100: 0 cms

UPSTREAM STRUCTURE: TOWN: FAYSTON DISTANCE: 671 m  
 HIGHWAY NO.: VT 17 STRUCTURE NO.: 35  
 STRUCTURE TYPE: SINGLE SPAN STEEL STRINGER WITH CONCRETE DECK  
 CLEAR SPAN: 15.8 m CLEAR HEIGHT: 3.3 m  
 YEAR BUILT: 1939 FULL WATERWAY: 40.8 m<sup>2</sup>

DOWNSTREAM STRUCTURE: TOWN: FAYSTON DISTANCE: 402 m  
 HIGHWAY NO.: VT 17 STRUCTURE NO.: ---  
 STRUCTURE TYPE: ---  
 CLEAR SPAN: --- CLEAR HEIGHT: ---  
 YEAR BUILT: --- FULL WATERWAY: ---

PROPOSED STRUCTURE

(SEE NOTE 4)  
 STRUCTURE TYPE: SINGLE SPAN STEEL STRINGER WITH CONCRETE DECK  
 CLEAR SPAN (NORMAL TO STREAM): 19.7 m  
 VERTICAL CLEARANCE ABOVE STREAMBED: 4.2 m  
 WATERWAY OF FULL OPENING: 59.2 m<sup>2</sup>

WATER SURFACE ELEV. @ Q2.33 = 262.55	VELOCITY = 1.59 m/s
(SEE NOTE 5) Q10 = 263.10	" = 2.25 m/s
Q25 = 263.41	" = 2.68 m/s
Q50 = 263.66	" = 3.09 m/s
Q100 = 263.87	" = 3.40 m/s

IS THE ROADWAY OVERTOPPED BELOW THE Q100? NO FREQUENCY: >Q500  
 RELIEF ELEVATION: --- DISCHARGE OVER ROAD @ Q100: 0 cms

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 264.0  
 VERTICAL CLEARANCE @ Q100: 3.1 m  
 SCOUR: ---

REQUIRED CHANNEL PROTECTION: STONE FILL, TYPE IV

PERMIT INFORMATION

AVERAGE DAILY FLOW: 1.1 m<sup>3</sup>/s  
 ORDINARY LOW WATER: 0.6 m<sup>3</sup>/s DEPTH: WSEL: 261.36  
 ORDINARY HIGH WATER: 6.7 m<sup>3</sup>/s DEPTH: WSEL: 261.81

ADDITIONAL COMMENTS

1. PEAK DISCHARGES FOR 10 YEAR, 50 YEAR, 100 YEAR AND 500 YEAR EVENTS WERE OBTAINED FROM FAYSTON FIS (MARCH 1980) AND 2.33 AND 25 YEAR EVENTS WERE APPROXIMATED USING GRAPHICAL METHODS.
2. THE EXISTING 1939 PLANS DENOTE "GRAVEL" AND "BOULDERS" AT ONE BORING LOCATION. TIMBER PILES WERE ORIGINALLY SPECIFIED AND LATER ELIMINATED PER AS-BUILT NOTES.
3. THE EXISTING 1939 PLANS INDICATE "HIGH WATER LEVEL (SEPT. 1938)" AT AN ELEVATION APPROXIMATELY 0.10 METERS BELOW THE EXISTING STEEL STRINGERS.
4. HYDRAULIC CONDITIONS FOR PROPOSED STRUCTURE ARE COMPARABLE TO EXISTING STRUCTURE.
5. WATER SURFACE ELEVATIONS ARE PROVIDED AT A SECTION 32.6 m UPSTREAM OF THE BRIDGE. VELOCITIES ARE PROVIDED AT THE BRIDGE.



DESIGN CRITERIA:

1. DESIGN LIVE LOAD AASHTO MS22.5
2. DESIGN SPAN 23.839 m
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOL 850 kPa (ABUT. NO 1) ON LEDGE 950 kPa (ABUT. NO. 2)
4. ALLOWABLE LOAD FOR PILING TYPE --- ESTIMATED LENGTH ---
5. STRUCTURAL STEEL AASHTO M270M GRADE 345W
6. REINFORCING STEEL GRADE 420
7. CONCRETE, HIGH PERFORMANCE CLASS A f<sub>c</sub> 30 MPa CLASS B f<sub>c</sub> 25 MPa

TRAFFIC MAINTENANCE:

1. IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE YES\*\* OR ON TEMPORARY BRIDGE NO
2. TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY --- TRAFFIC CONTROL SIGNALS REQUIRED ---  
 MINIMUM CLEAR SPAN (NORMAL TO STREAM): --- VERTICAL CLEARANCE ABOVE STREAMBED: ---  
 WATERWAY OF FULL OPENING: ---  
 ARE SIDEWALKS REQUIRED? --- IF SO, ON WHAT SIDE? ---  
 STRUCTURE TYPE: ---

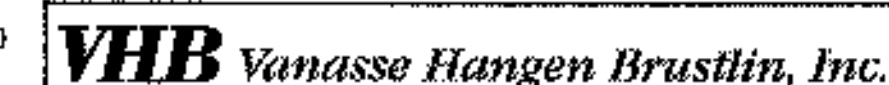
\*\* PHASED CONSTRUCTION WITH TEMPORARY TRAFFIC CONTROL SIGNAL

LOADING LEVELS (LOAD FACTORS)	LOAD FACTOR LOAD RATING (METRIC TONNES)						
	M	MS	3S2	6 AXLE	3A STR	4A STR	5A SEMI
INVENTORY A=2.17 B=1.00	35	48					
POSTED A=1.55 B=1.40	48	67	82		61	62	74
OPERATING A=1.30 B=1.67		80	97	115	72	74	

STRENGTH RF =  $\frac{\phi M_n}{A \times M_{ULH}}$  \*SERVICEABILITY RF =  $B \times \frac{M_{ULH} - M_{ULS}}{1.67 M_{ULH}}$

TRAFFIC DATA

2000 ADT = 3900 2020 ADT = 5100 2000-2020 ESAL'S 792,000  
 2000 DHV = 570 2020 DHV = 740 2000-2040 ESAL'S 1,946,000  
 2000 ADTT = 100 2020 ADTT = 100 DESIGN SPEED = 65 km/h  
 2000 % D = 66 2020 % D = 66  
 2000 % T = 2.5 2020 % T = 2.0



STATE OF VERMONT AGENCY OF TRANSPORTATION

Town Of FAYSTON Bridge No. 36  
 Highway No. VT 17 Log Sta. ---  
 Surv. Sta. ---

PRELIMINARY INFORMATION SHEET

Designed By S.M. GUNN/R.L. JOY Drawn By B.J. MASSE  
 Checked By M.A. COLGAN Date 1/06 Bridge Design Supervisor M.A. COLGAN Date 1/06  
 PROJECT FAYSTON PROJECT NO. BHF 0200(9)  
 I.G.C. Info. ---  
 Bridge Sheet No. 50543PI Sheet 2 of 70