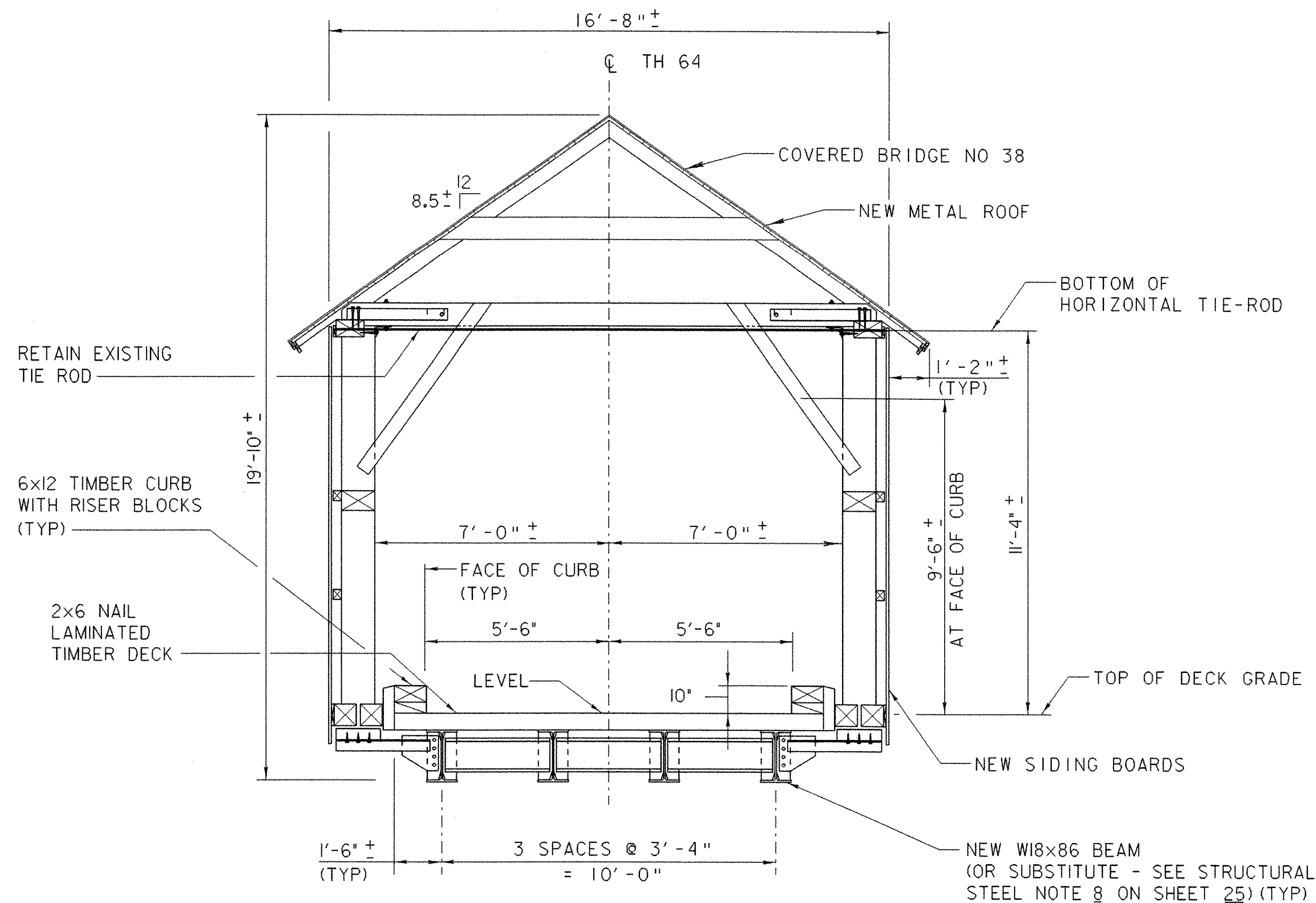


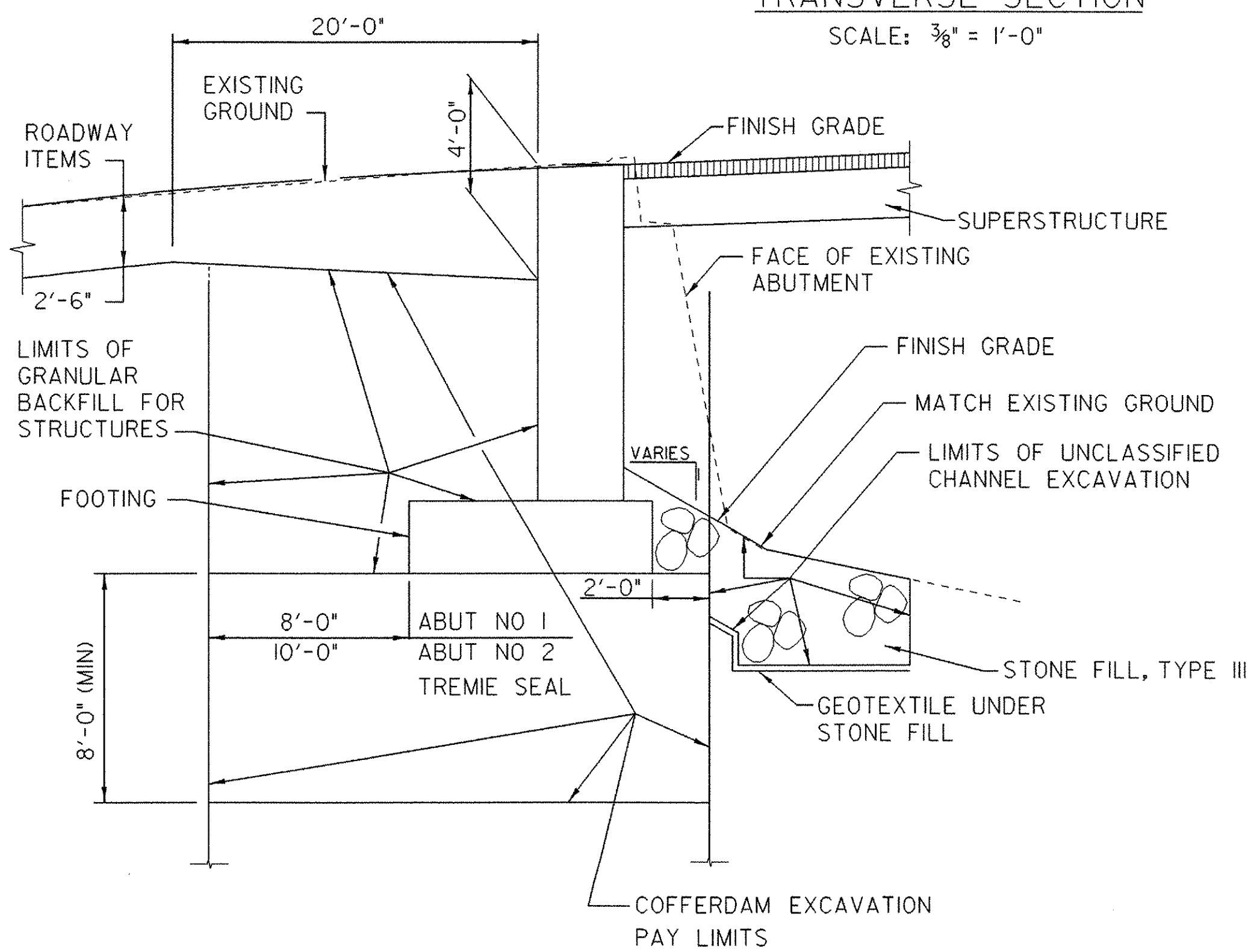
FINAL HYDRAULICS REPORT

HYDROLOGIC DATA		Date: June 2006	
DRAINAGE AREA: 46.9 sq. mi.			
CHARACTER OF TERRAIN: Hilly to mountainous. Mostly forested with some open areas.			
STREAM CHARACTERISTICS: Incised, sinuous and laterally unstable in the project area.			
NATURE OF STREAMBED: Mostly gravel and sand with some cobbles.			
PEAK FLOW DATA			
Q 2.33 = 1,500 cfs	Q 50 = 7,000 cfs		
Q 10 = 3,700 cfs	Q 100 = 8,550 cfs		
Q 25 = 5,950 cfs	Q 500 = 13,700 cfs		
DATE OF FLOOD OF RECORD: November 1927			
ESTIMATED DISCHARGE: unknown			
WATER SURFACE ELEV.: unknown			
NATURAL STREAM VELOCITY: @ Q25 = 8.3 fps			
ICE CONDITIONS: Moderate to heavy			
DEBRIS: Moderate			
DOES THE STREAM REACH MAXIMUM HIGHWATER ELEV. RAPIDLY? No			
IS ORDINARY RISE RAPID? No			
IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? No			
IF YES, DESCRIBE:			
WATERSHED STORAGE: 1.0%			
HEADWATERS: UNIFORM: X			
IMMEDIATELY ABOVE SITE:			
EXISTING STRUCTURE INFORMATION			
STRUCTURE TYPE: Single span covered bridge			
YEAR BUILT: 1904			
CLEAR SPAN(NORMAL TO STREAM): 31'			
VERTICAL CLEARANCE ABOVE STREAMBED: 14'			
WATERWAY OF FULL OPENING: 362 sq. ft.			
DISPOSITION OF STRUCTURE: Rehabilitate superstructure on new abutments			
TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown			
WATER SURFACE ELEVATIONS AT:			
Q2.33 = 575.2'	VELOCITY = 8.1 fps		
Q10 = 579.3'	" 11.6 fps		
Q25 = 581.8'	" 7.9 fps		
Q50 = 582.4'	" 9.2 fps		
Q100 = 583.2'	" 10.0 fps		
LONG TERM STREAMBED CHANGES: There is a 2' deep scour hole starting upstream of the bridge and extending through the bridge. There has been some undermining of abutments.			
IS THE ROADWAY OVERTOPPED BELOW Q100: Yes			
FREQUENCY: Between Q2.33 and Q10			
RELIEF ELEVATION: 577.2'			
DISCHARGE OVER ROAD @Q100: 4,693 cfs			
UPSTREAM STRUCTURE			
TOWN: Randolph	DISTANCE: 5,400'		
HIGHWAY #: VT 14	STRUCTURE #: 36		
CLEAR SPAN: 54'	CLEAR HEIGHT: 10'		
YEAR BUILT: 1989	FULL WATERWAY: 430 sq. ft.		
STRUCTURE TYPE: Steel beam bridge			
DOWNSTREAM STRUCTURE			
TOWN: Randolph	DISTANCE: 2,500'		
HIGHWAY #: T.H. 65	STRUCTURE #: 35		
CLEAR SPAN: 28'	CLEAR HEIGHT: 10'		
YEAR BUILT: 1919	FULL WATERWAY:		
STRUCTURE TYPE: Steel beam bridge			
DESIGN CRITERIA:			
1. DESIGN LIVE LOAD AASHTO HS20-44			
2. DESIGN SPAN 37'-0"			
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL 3.3 KSF ON LEDGE N/A			
4. ALLOWABLE LOAD FOR PILING N/A TYPE N/A ESTIMATED LENGTH N/A			
5. STRUCTURAL STEEL AASHTO GRADE 50			
6. REINFORCING STEEL GRADE 60			
7. HIGH PERFORMANCE CONCRETE CLASS A f _c = 4000 PSI			
HIGH PERFORMANCE CONCRETE CLASS B f _c = 3500 PSI			
CONCRETE CLASS C f _c = 3000 PSI (TREMIE)			
TRAFFIC DATA			
2007 ADT = 40			
2007 DHV < 10			
2007 %D = 64			
2007 %T = 4.0			
2007 ADTT < 5			
2007-2027 ESAL'S < 10,000			
2007-2027 ESAL'S < 15,000			
DESIGN SPEED = N/A			
(REFER TO VERMONT STATE STANDARDS SECTION 6.6)			
TRAFFIC MAINTENANCE:			
1. IS TRAFFIC TO BE MAINTAINED? YES IF YES, ON EXISTING STRUCTURE NO OR ON TEMPORARY BRIDGE YES			
2. TEMPORARY BRIDGE REQUIREMENTS: ONE OR TWO WAY ONE-WAY TRAFFIC CONTROL SIGNALS REQUIRED NO			
MINIMUM			
ARE SIDEWALKS REQUIRED? NO IF SO, ON WHAT SIDE? N/A			

PROPOSED STRUCTURE	
STRUCTURE TYPE:	Rehabilitate existing covered bridge on new abutments
CLEAR SPAN(NORMAL TO STREAM):	35'
VERTICAL CLEARANCE ABOVE STREAMBED:	14'
WATERWAY OF FULL OPENING:	408 sq. ft.
WATER SURFACE ELEVATIONS AT:	
Q2.33 = 575.0'	VELOCITY= 7.1 fps
Q10 = 578.9'	" 10.7 fps
Q25 = 580.4'	" 10.7 fps
Q50 = 582.3'	" 9.0 fps
Q100 = 582.9'	" 9.8 fps
IS THE ROADWAY OVERTOPPED BELOW Q100: Yes	
FREQUENCY: Between Q2.33 and Q10	
RELIEF ELEVATION: 577.2'	
DISCHARGE OVER ROAD @Q100: 4,355 cfs	
AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 580.0'	
VERTICAL CLEARANCE: @ Q10 = 1.1'	
SCOUR: Maximum contraction scour depth = 4' and occurs at Q25.	
REQUIRED CHANNEL PROTECTION: Stone Fill, Type III	
PERMIT INFORMATION	
AVERAGE DAILY FLOW:	100 cfs
ORDINARY LOW WATER:	50 cfs
ORDINARY HIGH WATER:	650 cfs
DEPTH OR ELEVATION:	Elev. 569.0'
	Elev. 573'
TEMPORARY BRIDGE REQUIREMENTS	
STRUCTURE TYPE: The temporary bridge will be constructed under a separate project.	
CLEAR SPAN (NORMAL TO STREAM):	
VERTICAL CLEARANCE ABOVE STREAMBED:	
WATERWAY AREA OF FULL OPENING:	
ADDITIONAL INFORMATION	



TRANSVERSE SECTION
SCALE: 3/8" = 1'-0"



TYPICAL ABUTMENT EARTHWORK SECTION
NOT TO SCALE

NOTES:

1. COFFERDAM SIZE TO BE DETERMINED BY THE CONTRACTOR. THE MINIMUM SIZE SHALL ACCOMMODATE THE TREMIE SEAL DIMENSIONS SHOWN ON THE PLANS.
2. THE PAY LIMITS OF "COFFERDAM EXCAVATION, EARTH" AND "COFFERDAM EXCAVATION, ROCK" SHALL BE 2'-0" OUTSIDE THE PERIMETER OF THE FOOTING EXCEPT AS NOTED.
3. IF A COFFERDAM IS CONSTRUCTED WHICH IS LARGER THAN THE COFFERDAM EXCAVATION PAY LIMITS, PAYMENT FOR ALL UNCLASSIFIED CHANNEL EXCAVATION, INCLUDING THAT PORTION WHICH IS INSIDE THE COFFERDAM BUT OUTSIDE THE COFFERDAM EXCAVATION PAY LIMITS, WILL BE MADE AT THE CONTRACT UNIT PRICE FOR UNCLASSIFIED CHANNEL EXCAVATION.
4. THE COST FOR TREMIE SEALS SHALL BE INCLUDED IN ITEM 208.40.
5. PORTIONS OF THE EXISTING ABUTMENTS THAT ARE OUTSIDE THE COFFERDAM LIMITS SHALL BE REMOVED AS NECESSARY TO ACCOMMODATE THE NEW GRADING AND STONE FILL. COST SHALL BE INCLUDED IN ITEM 203.27, "UNCLASSIFIED CHANNEL EXCAVATION."
6. EXCAVATION REQUIRED FOR ROADWAY ITEMS (ABOVE COFFERDAM EXCAVATION PAY LIMITS) IS INCLUDED IN ITEM 203.15, "COMMON EXCAVATION".

WORKING STRESS LOAD RATING (TONS)							
STRESS LEVELS (LOAD FACTOR)	TRUCK						
	H	HS	SS2	6 AXLE	3A STR	4A STR	5A SEMI
INVENTORY F _b	26	48					
POSTED 1.2x F _b	32	58	119		64	93	115
OPERATING 1.33x F _b		64	132	157	71	103	

LOAD RATING BASED ON NO 1 OR NO 2 S-P-F LAMINATED DECK WITH F_b = 1.46x875 PSI

STATE OF VERMONT
AGENCY OF TRANSPORTATION

Town Of	RANDOLPH	Bridge No.	38
Highway No.	TH 64	Log Sta.	
		Surv. Sta.	

PRELIMINARY INFORMATION SHEET

Designed By	K. ZIENKIEWICZ	Drawn By	M. WILLIAMS
Checked By	S. HODGDON	Bridge Design Supervisor	S. HODGDON
Date	6/07	Date	6/07

PROJECT	RANDOLPH	PROJECT NO.	BHO 1444 (44)
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I.G.C. Info.
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