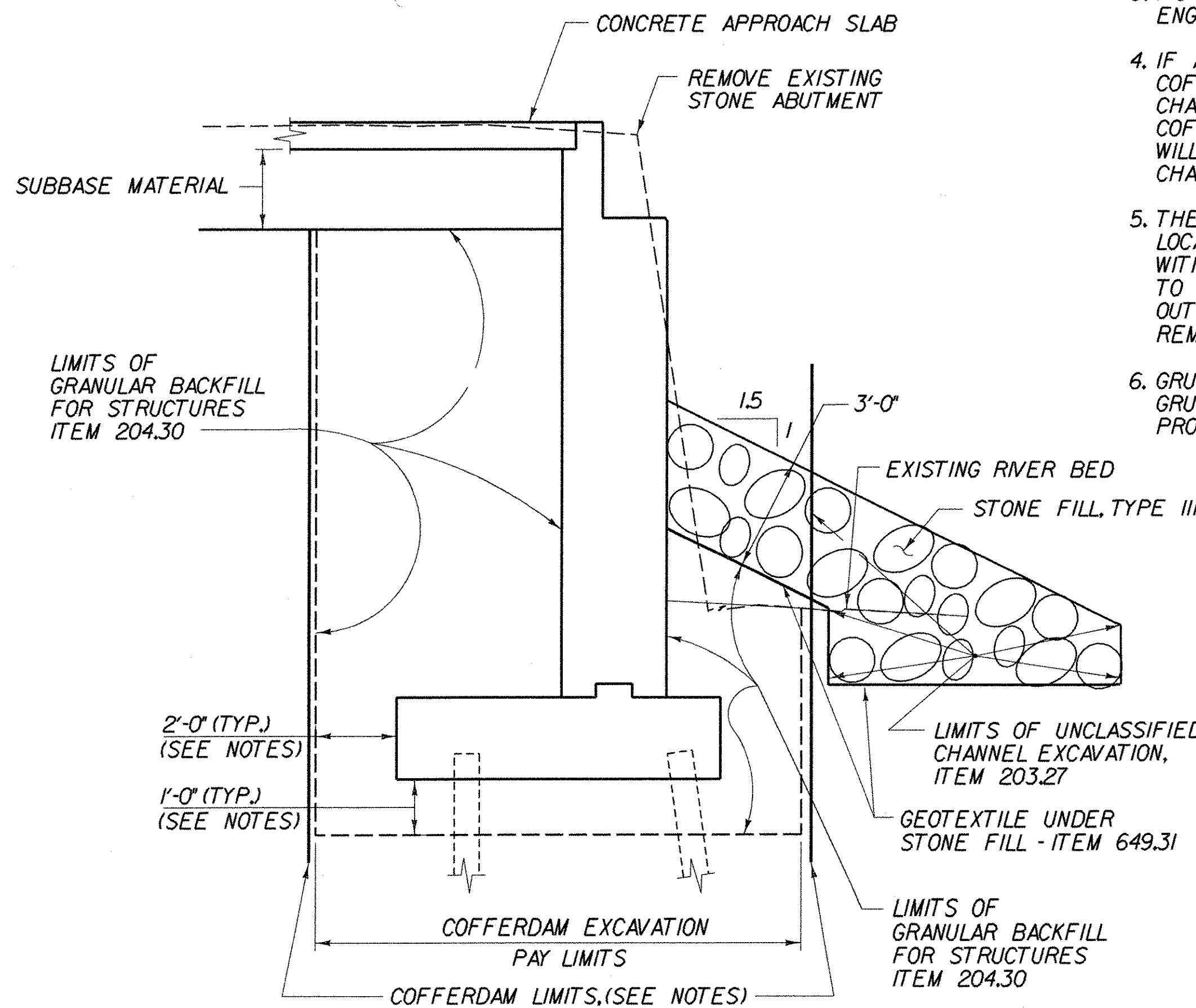


TYPICAL BRIDGE SECTION

SCALE 1/4" = 1'-0"  
 1 0 2 4 6

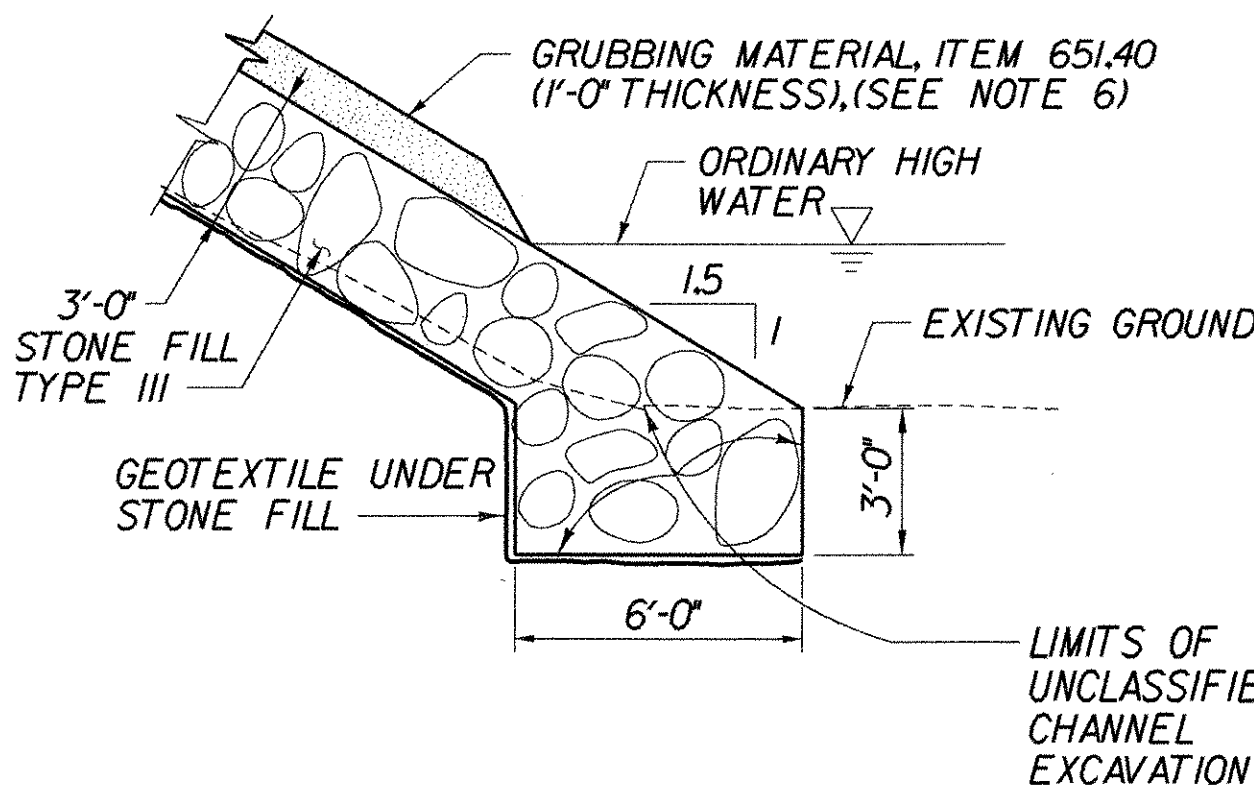
NOTES:

1. COFFERDAM SIZE TO BE DETERMINED BY THE CONTRACTOR
2. THE PAY LIMITS OF ITEM 208.35 "COFFERDAM EXCAVATION,(EARTH)" AND ITEM 208.30 "COFFERDAM EXCAVATION,(ROCK)" SHALL BE 2'-0" OUTSIDE THE PERIMETER OF THE FOOTING.
3. 1'-0" UNDERCUT AS DETERMINED NECESSARY BY THE RESIDENT ENGINEER.
4. IF A COFFERDAM IS CONSTRUCTED WHICH IS LARGER THAN THE COFFERDAM EXCAVATION PAY LIMITS, PAYMENT FOR ALL UNCLASSIFIED CHANNEL EXCAVATION, (EXCAVATION WHICH IS INSIDE THE COFFERDAM BUT OUTSIDE THE COFFERDAM EXCAVATION PAY LIMITS), WILL BE MADE AT THE CONTRACT UNIT PRICE FOR UNCLASSIFIED CHANNEL EXCAVATION.
5. THE COST TO REMOVE THE EXISTING ABUTMENTS AND WINGWALLS LOCATED INSIDE THE COFFERDAM LIMITS SHALL BE PAID FOR WITH COFFERDAM EXCAVATION ROCK, ITEM 208.35. THE COST TO REMOVE THE EXISTING ABUTMENTS AND WINGWALLS LOCATED OUTSIDE THE COFFERDAM LIMITS SHALL BE PAID FOR WITH REMOVAL OF CONCRETE OR MASONRY, ITEM 529.25.
6. GRUBBING MATERIAL SHALL BE PLACED AS INDICATED, EXCEPT GRUBBING MATERIAL SHALL NOT BE PLACED UNDER THE PROPOSED BRIDGE.



TYPICAL EARTHWORK DETAIL

N.T.S.



TYPICAL CHANNEL HALF SECTION

SCALE: 1/4" = 1'-0"

FINAL HYDRAULICS REPORT

HYDROLOGIC DATA

DRAINAGE AREA= 244 sq. mi  
 CHARACTER OF TERRAIN: STEEP TO MODERATELY SLOPED HILLS  
 CHARACTER & TYPE OF STREAM: MEDIUM SIZE PERENNIAL STREAM WITH MODERATE VALLEY RELIEF AND A NARROW FLOOD PLAIN.  
 NATURE OF STREAMBED: SILT, SAND WITH RANDOM COBBLES.

DATE OF FLOOD OF RECORD: NOV. 1927  
 WATER SURFACE ELEV.: UNKNOWN ESTIMATED DISCHARGE: UNKNOWN  
 NATURAL STREAM VELOCITY @ 050 = 7.4 ft/s  
 ICE CONDITIONS: YES DEBRIS: MODERATE  
 DOES THE STREAM REACH MAXIMUM HIGHWATER ELEVATION RAPIDLY? NO  
 IS ORDINARY RISE RAPID? NO  
 IS STAGE AFFECTED BY UPSTREAM OR DOWNSTREAM CONDITIONS? YES  
 IF YES, DESCRIBE. ARNOLD FALLS DAM APPROXIMATELY 2.3 MILES DOWNSTREAM  
 WATERSHED STORAGE: X HEADWATERS UNIFORM THROUGHOUT WATERSHED IMMEDIATELY ABOVE SITE

EXISTING STRUCTURE

STRUCTURE TYPE: THRU-TRUSS YEAR BUILT: 1919  
 CLEAR SPAN (NORMAL TO STREAM): 97'-2 1/2"  
 VERTICAL CLEARANCE ABOVE STREAMBED: 19'-0"  
 WATERWAY OF FULL OPENING: 1813 S.F.  
 DISPOSITION OF STRUCTURE: REMOVE EXISTING STRUCTURE

TYPE OF MATERIAL UNDER SUBSTRUCTURE: MEDIUM TO DENSE SILTY SAND  
 WATER SURFACE ELEV. @ 02.33= 585.0 ft. VELOCITY = 3.0 ft/s  
 010= 586.3 ft. VELOCITY = 5.4 ft/s  
 025= 587.9 ft. VELOCITY = 6.6 ft/s  
 050= 588.8 ft. VELOCITY = 7.4 ft/s  
 0100= 589.7 ft. VELOCITY = 8.2 ft/s

LONG TERM STREAM BED CHANGES: NEGLIGIBLE  
 IS THE ROADWAY OVERTOPPED BELOW THE 0100? YES FREQUENCY: BELOW 0.50  
 RELIEF ELEVATION: 588.0 DISCHARGE OVER ROAD @ 0100: 391 cfs

UPSTREAM STRUCTURE: TOWN: ST. JOHNSBURY DISTANCE: 1.2 MILES  
 HIGHWAY NO.: U.S. 5 STRUCTURE NO.: BR135  
 STRUCTURE TYPE: 5 SPAN MULTIGURDER  
 CLEAR SPAN: 412 FT. CLEAR HEIGHT:  
 YEAR BUILT: UNKNOWN FULL WATERWAY: 2900 S.F.

DOWNSTREAM STRUCTURE: TOWN: ST. JOHNSBURY DISTANCE: 1.7 MILES  
 HIGHWAY NO.: TH. 10 STRUCTURE NO.: VT973  
 STRUCTURE TYPE: UNKNOWN  
 CLEAR SPAN: 391 FT. CLEAR HEIGHT:  
 YEAR BUILT: UNKNOWN FULL WATERWAY: 3400 S.F.

DESIGN CRITERIA:

1. DESIGN LIVE LOAD AASHTO HS 25
2. DESIGN SPAN 102'-0"
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL N/A ON LEDGE N/A
4. ALLOWABLE LOAD FOR PILING 353 K TYPE HP 14 x 73 ESTIMATED LENGTH 10' (AVG.) @ WINGWALL 1, 20' (AVG.) @ ABUT. 1 & WINGWALL 2, 45' (AVG.) @ ABUT. 2
5. STRUCTURAL STEEL AASHTO M270 GR 50 (GALVANIZED) TENSION 27,000 psi
6. REINFORCING STEEL GRADE 60 COMPRESSION 20,000 psi
7. CONCRETE, HIGH PERFORMANCE CLASS A  $f'_c = 4,000$  psi  
 CONCRETE, HIGH PERFORMANCE CLASS B  $f'_c = 3,500$  psi

TRAFFIC MAINTENANCE:

1. IS TRAFFIC TO BE MAINTAINED? NO IF YES, ON EXISTING STRUCTURE OR ON TEMPORARY BRIDGE
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:

PROPOSED STRUCTURE

STRUCTURE TYPE: THRU - MODIFIED WARREN TRUSS  
 CLEAR SPAN (NORMAL TO STREAM): 100'-0"  
 VERTICAL CLEARANCE ABOVE STREAMBED: 19'-4"  
 WATERWAY OF FULL OPENING: 1828 S.F.

WATER SURFACE ELEV. @ 02.33= 585.0 ft. VELOCITY = 2.9 ft/s  
 010= 586.9 ft. VELOCITY = 5.2 ft/s  
 025= 587.9 ft. VELOCITY = 6.3 ft/s  
 050= 588.8 ft. VELOCITY = 7.1 ft/s  
 0100= 589.7 ft. VELOCITY = 7.8 ft/s

IS THE ROADWAY OVERTOPPED BELOW THE 0100? YES FREQUENCY: BELOW 0.50  
 RELIEF ELEVATION: 588.0 ft. DISCHARGE OVER ROAD @ 0100: 397.0 cfs

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 589.63 ft.  
 VERTICAL CLEARANCE @ 050 = 0.83 ft.

SCOUR: CONTRACTION SCOUR = 0, ALL EVENTS  
 REQUIRED CHANNEL PROTECTION: TYPE III STONE FILL AT ABUTMENTS

PERMIT INFORMATION

AVERAGE DAILY FLOW: 508 cfs  
 ORDINARY LOW WATER: 222 cfs ELEV: 573.3 ft.  
 ORDINARY HIGH WATER: 1588 cfs ELEV: 575.5 ft.

ADDITIONAL COMMENTS

ALL ELEVATIONS IN HYDRAULICS REPORT REFERENCE U.S. CUSTOMARY UNITS.  
 COFFERDAMS REQUIRED FOR ABUTMENT AND WINGWALL CONSTRUCTION.

FOUNDATION NOTES:

ABUT. 1: STEEL HP PILES (WWD) IN ROCK SOCKETS, AND DRIVEN STEEL HP PILES.  
 ABUT. 2: DRIVEN STEEL HP PILES.



STATE OF VERMONT AGENCY OF TRANSPORTATION

Town Of ST. JOHNSBURY Bridge No. 29  
 Log Sta.  
 Highway No. T.H. 85 Surv. Sta.

DEPOT HILL ROAD OVER THE PASSUMPSIC RIVER

PRELIMINARY INFORMATION

Designed By M. MULLEN Drawn by Wm WEATHERBY  
 Checked By Date Bridge Design Supervisor  
 M. OLSTAD 7/2003 P. HALSTEAD Date 9/2006

PROJECT ST. JOHNSBURY PROJECT NO. BRO 1447(19)

I.G.C. Info.

Bridge Sheet No. BR101 Sheet 34 OF 72

\* TRUSS FABRICATOR SHALL SUPPLY DATA TO COMPLETE THE LOAD RATING TABLE

LOADING LEVELS (LOAD FACTOR)	LOAD FACTOR LOAD RATING * (TONS)					
	H	HS	3S2	6 AXLE	TRUCK 3A, STR.	4A, STR. 5A, SEMI
INVENTORY A=2.17; B=1.00						
POSTED A=1.55; B=1.40						
OPERATING A=1.30; B=1.67						

STRENGTH  $RF = \frac{0.9 M_n - 1.3 M_{DL}}{A \times M_{LL+I}}$  SERVICEABILITY  $RF = B \left[ \frac{0.95 F_y S_{LL+I} - M_{DL}}{M_{LL+I}} - \frac{M_{SD}}{M_{LL+I}} \right]$

PROJECTED TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	% ADTT
2006	820	-	-	-	-
2026	1120	160	-	<1%	5

20 YEAR ESAL FOR FLEXIBLE PAVEMENT FROM 2006 TO 2026 : 36,000  
 40 YEAR ESAL FOR FLEXIBLE PAVEMENT FROM 2006 TO 2046 : 99,000  
 DESIGN SPEED: 30 MPH