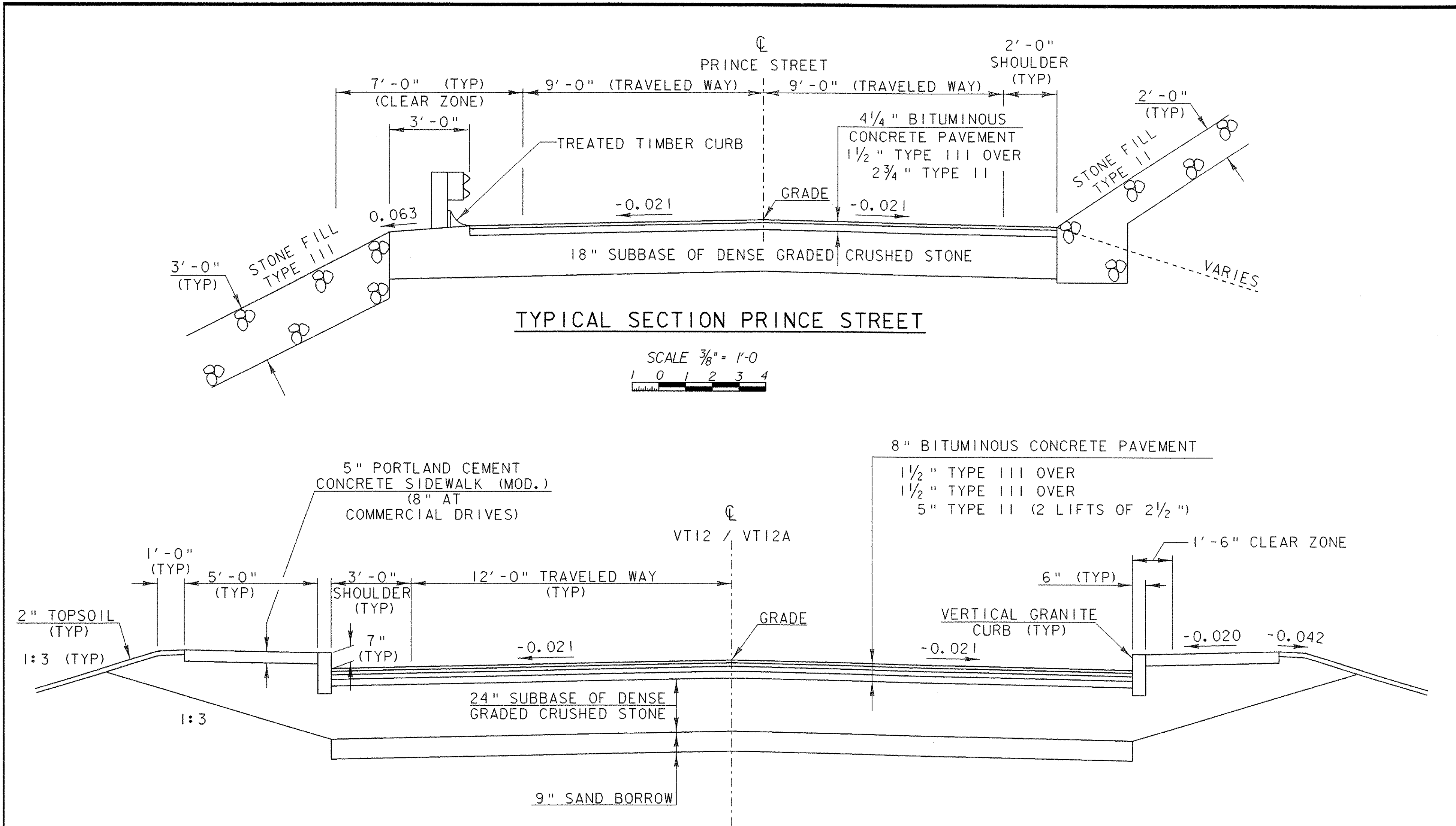




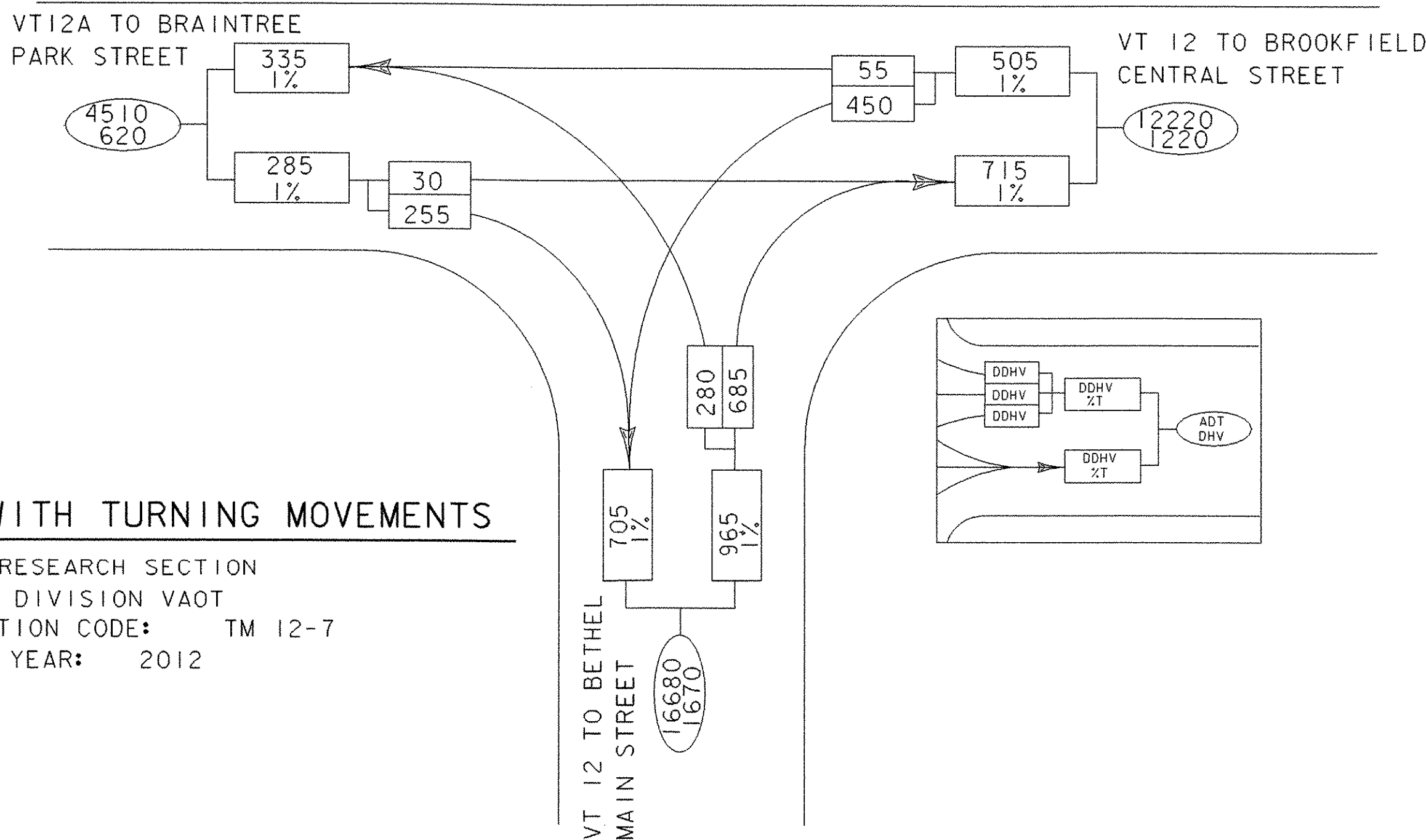
TYPICAL SECTION PRINCE STREET

VT12 / VT12A TYPICAL SECTION

MATERIAL ITEM	TOLERANCE
PAVEMENT	± 1/4" TOTAL THICKNESS
AGGREGATE SURFACE COURSE	± 1/2"
BASE COURSE	± 1/2"
SUBBASE	± 1"
SAND BORROW	± 1"
GRANULAR BORROW	± 1"

TRAFFIC DATA WITH TURNING MOVEMENTS

TRAFFIC RESEARCH SECTION
PLANNING DIVISION VAOT
INTERSECTION CODE: TM 12-7
ANALYSIS YEAR: 2012



FINAL HYDRAULICS REPORT

HYDROLOGIC DATA

DRAINAGE AREA: 62.3 sq. mi.
CHARACTER OF TERRAIN: Rolling to hilly
CHARACTER & TYPE OF STREAM: Straight, semi-alluvial, not braided, and not anabranching
NATURE OF STREAMBED: Gravel and cobbles
02.33= 3500 cfs 050= 8000 cfs
010= 6000 cfs 0100= 10500 cfs
025= 7200 cfs 0500= 15000 cfs
DATE OF FLOOD OF RECORD: November 1927
WATER SURFACE ELEV.: 656.0+ ESTIMATED DISCHARGE: Unknown
NATURAL STREAM VELOCITY @ 0.50 = 11.9 fps
ICE CONDITIONS: Moderate 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: There is a low dam just downstream of the bridge.
WATERSHED STORAGE: 1/2 HEADWATERS UNIFORM THROUGHOUT WATERSHED X IMMEDIATELY ABOVE SITE

EXISTING STRUCTURE

STRUCTURE TYPE: Four span concrete T-beam bridge YEAR BUILT: 1929
CLEAR SPAN (NORMAL TO STREAM): 203' total
VERTICAL CLEARANCE ABOVE STREAMBED: 30'
WATERWAY OF FULL OPENING: 4,500 sq. ft.
DISPOSITION OF STRUCTURE: Replace
TYPE OF MATERIAL UNDER SUBSTRUCTURE: Unknown
WATER SURFACE ELEV. @ 02.33= 645.1 VELOCITY= 10.3 fps
010= 647.1 " 11.5 fps
025= 647.8 " 11.7 fps
050= 648.3 " 11.9 fps
0100= 649.8 " 12.1 fps

LONG TERM STREAM BED CHANGES: none noted.

IS THE ROADWAY OVERTOPPED BELOW THE 0100? No FREQUENCY:
RELIEF ELEVATION: 665.5 DISCHARGE OVER ROAD @ 0100: None

UPSTREAM STRUCTURE: TOWN: Randolph DISTANCE: 1.2 miles
HIGHWAY NO.: CVRR STRUCTURE NO.:
STRUCTURE TYPE: Unknown
CLEAR SPAN: CLEAR HEIGHT:
YEAR BUILT: FULL WATERWAY:

DOWNSTREAM STRUCTURE: TOWN: Bethel DISTANCE:
HIGHWAY NO.: CVRR STRUCTURE NO.:
STRUCTURE TYPE: Unknown
CLEAR SPAN: CLEAR HEIGHT:
YEAR BUILT: FULL WATERWAY:

PROPOSED STRUCTURE

STRUCTURE TYPE: Two span bridge
CLEAR SPAN (NORMAL TO STREAM): 2 SPAN 100' - 100'
VERTICAL CLEARANCE ABOVE STREAMBED: 32'
WATERWAY OF FULL OPENING: 4,800 sq. ft.
WATER SURFACE ELEV. @ 02.33= 644.8 VELOCITY= 10.3 fps
010= 646.8 " 11.5 fps
025= 647.6 " 11.7 fps
050= 648.0 " 11.9 fps
0100= 649.4 " 12.1 fps
IS THE ROADWAY OVERTOPPED BELOW THE 0100? No FREQUENCY:
RELIEF ELEVATION: 673.4 DISCHARGE OVER ROAD @ 0100: None
AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 668.6
VERTICAL CLEARANCE @ 0.100 = 19.2'
SCOUR: 1' of contraction scour + 6' of pier scour, at 0100 and 0500.
REQUIRED CHANNEL PROTECTION: Stone Fill, Type III below elev. 650.0.

PERMIT INFORMATION

AVERAGE DAILY FLOW: 130 cfs
ORDINARY LOW WATER: 60 cfs ELEV.: 638.0
ORDINARY HIGH WATER: 1500 cfs ELEV.: 642.0

ADDITIONAL COMMENTS

DESIGN CRITERIA:
1. DESIGN LIVE LOAD AASHTO HS-25
2. DESIGN SPAN 2 SPAN 100' - 100'
3. ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL N/A ON LEDGE 10 KSF
4. ALLOWABLE LOAD FOR PILING 162 K TYPE HP 14 x 73 ESTIMATED LENGTH SEE BORING LOGS
5. STRUCTURAL STEEL AASHTO GRADE M270, GRADE 50W
6. REINFORCING STEEL GRADE 60
7. CONCRETE CLASS A (HPC-A) f'c : 4000 PSI
CONCRETE CLASS B (HPC-B) f'c : 3500 PSI
8. DESIGN METHOD LOAD FACTOR

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 TWO WAY TRAFFIC CONTROL SIGNALS REQUIRED NO
MINIMUM CLEAR SPAN (NORMAL TO STREAM): 100 ft min VERTICAL CLEARANCE ABOVE STREAMBED: Bottom of beam elev. 649.0 min
WATERWAY OF FULL OPENING: 1300 sq. ft. min
ARE SIDEWALKS REQUIRED? YES IF SO, ON WHAT SIDE? DOWNSTREAM SIDE
STRUCTURE TYPE: Two-way bridge

LOAD FACTOR LOAD RATING (TONS)

LOADING LEVELS (LOAD FACTOR)	H	HS	3S2	6 AXLE	3A, STR.	4A, STR.	5A, SEMI
INVENTORY A=2.17; B=1.00	38*	69					
POSTED A=1.55; B=1.40	54*	96	114		88	90	105
OPERATING A=1.30; B=1.67		115	136	154	105	107	

STRENGTH RF= $\frac{0.95 F_y S_{LL+1} - M_{DL} S_{LL+1} - M_{SD} S_{SD+1}}{A \times M_{LL+1}}$ SERVICEABILITY RF= B $\left[\frac{0.95 F_y S_{LL+1} - M_{DL} S_{LL+1} - M_{SD} S_{SD+1}}{1.67 M_{LL+1}} \right]$

ESAL SUMMARY

Intersection Leg	1994-2012	1994-2032
VT12A	1,765,000	6,788,000
VT12 (Braintree)	4,713,000	18,026,000
VT12 (Randolph)	6,432,000	24,595,000
DESIGN SPEED: 30 mph		

PRELIMINARY INFORMATION & ROADWAY TYPICALS

PROJECT NAME: RANDOLPH
PROJECT NUMBER: BRF 0241 (29)

FILE NAME: /str5/88j096/sj096typ.dgn PLOT DATE: 29-AUG-2006
PROJECT LEADER: W. SYMONDS DRAWN BY: G. SHANGRAW
DESIGNED BY: W.B. SYMONDS CHECKED BY: T. SUMNER
sj096p.i. SHEET 3 OF 135