

PRELIMINARY INFORMATION SHEET

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FINAL HYDRAULIC REPORT

HYDROLOGIC DATA Date: May 2009

DRAINAGE AREA : 0.7 sq. mi.
 CHARACTER OF TERRAIN : Forest and open, mixed use, hilly to mountainous
 STREAM CHARACTERISTICS : Sinuous, wetlands upstream
 NATURE OF STREAMBED : Clay and sand

PEAK FLOW DATA

Q 2.33 = 50 cfs Q 50 = 150 cfs
 Q 10 = 100 cfs Q 100 = 175 cfs
 Q 25 = 125 cfs Q 500 = 250 cfs

DATE OF FLOOD OF RECORD : unknown
 ESTIMATED DISCHARGE : unknown
 WATER SURFACE ELEV. : unknown
 NATURAL STREAM VELOCITY : @ Q100 = 5.5 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: 3% HEADWATERS: _____
 UNIFORM: _____
 IMMEDIATELY ABOVE SITE: X

EXISTING STRUCTURE INFORMATION

STRUCTURE TYPE: 7' corrugated metal pipe
 YEAR BUILT: 1963
 CLEAR SPAN(NORMAL TO STREAM): 7'
 VERTICAL CLEARANCE ABOVE STREAMBED: 7'
 WATERWAY OF FULL OPENING: 38.5 sq. ft.
 DISPOSITION OF STRUCTURE: line
 TYPE OF MATERIAL UNDER SUBSTRUCTURE: unknown

WATER SURFACE ELEVATIONS AT:

Q2.33 = 960.0' VELOCITY = 6.5 fps
 Q10 = 961.4' " 7.9 fps
 Q25 = 962.1' " 8.4 fps
 Q50 = 962.7' " 8.9 fps
 Q100 = 963.4' " 9.3 fps

LONG TERM STREAMBED CHANGES: None noted

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: N/A
 RELIEF ELEVATION: _____
 DISCHARGE OVER ROAD @Q100: _____

UPSTREAM STRUCTURE

TOWN: Derby DISTANCE: 4,500'
 HIGHWAY #: TH 27 STRUCTURE #: _____
 CLEAR SPAN: _____ CLEAR HEIGHT: _____
 YEAR BUILT: _____ FULL WATERWAY: _____
 STRUCTURE TYPE: _____

DOWNSTREAM STRUCTURE

TOWN: Derby DISTANCE: 750'
 HIGHWAY #: US 5 STRUCTURE #: _____
 CLEAR SPAN: _____ CLEAR HEIGHT: _____
 YEAR BUILT: _____ FULL WATERWAY: _____
 STRUCTURE TYPE: _____

0 LOAD RATING (TONS)

LOADING LEVELS	TRUCK						
	H	HS	3S2	6 AXLE	3A. STR.	4A. STR.	5A. SEM
INVENTORY							
POSTED							
OPERATING							

COMMENTS:

TRAFFIC DATA

YEAR	ADT	DHV	% D	% T	ADTT
2007	6000	780	50	18	1.08

20 year ESAL for flexible pavement from _____ to _____
 40 year ESAL for flexible pavement from _____ to _____
 Design Speed : mph

PROPOSED STRUCTURE

STRUCTURE TYPE: 6' CAAP Liner with beveled headwall

CLEAR SPAN(NORMAL TO STREAM): 6'
 VERTICAL CLEARANCE ABOVE STREAMBED: 6'
 WATERWAY OF FULL OPENING: 28.3 sq. ft.

WATER SURFACE ELEVATIONS AT:

Q2.33 = 960.4' VELOCITY= 6.6 fps
 Q10 = 961.9' " 8.2 fps
 Q25 = 962.7' " 8.8 fps
 Q50 = 963.7' " 9.4 fps
 Q100 = 966.2' " 9.9 fps

IS THE ROADWAY OVERTOPPED BELOW Q100: No
 FREQUENCY: N/A
 RELIEF ELEVATION: _____
 DISCHARGE OVER ROAD @Q100: _____

AVERAGE LOW ELEVATION OF SUPERSTRUCTURE: 963.5' @ inlet
 VERTICAL CLEARANCE: @ Q50 = 0' (inlet submerged at Q50)

SCOUR: Not calculated for culverts

REQUIRED CHANNEL PROTECTION: Stone Fill, Type II as needed

PERMIT INFORMATION

AVERAGE DAILY FLOW: 2 cfs DEPTH OR ELEVATION:
 ORDINARY LOW WATER: 1 cfs 0.5'
 ORDINARY HIGH WATER: 25 cfs 1.0'

TEMPORARY BRIDGE REQUIREMENTS

STRUCTURE TYPE: N/A
 CLEAR SPAN (NORMAL TO STREAM): _____
 VERTICAL CLEARANCE ABOVE STREAMBED: _____
 WATERWAY AREA OF FULL OPENING: _____

ADDITIONAL INFORMATION

DESIGN CRITERIA

- DESIGN LIVE LOAD AASHTO N/A
- DESIGN SPAN N/A
- ALLOWABLE LOAD FOR SPREAD FOOTINGS ON SOIL 4 ksf
ON LEDGE 10 ksf
- ALLOWABLE LOAD FOR PILING N/A
TYPE N/A
ESTIMATED LENGTH N/A
- STRUCTURAL STEEL AASHTO M270M/M270 GRADE 50W
- REINFORCING STEEL GRADE 60
- CONCRETE, HIGH PERFORMANCE CLASS A fc: 4000 psi
CONCRETE, HIGH PERFORMANCE CLASS B fc: 3500 psi
- DESIGN SOIL UNIT WEIGHT 140 pcf
- DESIGN LOAD FOR SPREAD FOOTINGS ON SOIL

TRAFFIC MAINTENANCE

- IS TRAFFIC TO BE MAINTAINED? YES
IF YES, ON EXISTING STRUCTURE? ON EXISTING STRUCTURE
OR ON TEMPORARY BRIDGE?
ONE OR TWO-WAY TRAVEL?
- TRAFFIC CONTROL SIGNALS REQUIRED? NO
- ARE SIDEWALKS REQUIRED? NO
IF SO, ON WHAT SIDE?

PROJECT NAME: LYNDON - DERBY

PROJECT NUMBER: IM CULV (19)

FILE NAME: engpi.xls PLOT DATE: 6/18/2009
 PROJECT LEADER: DMB DRAWN BY: RPH
 DESIGNED BY: RPH CHECKED BY: BRC
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