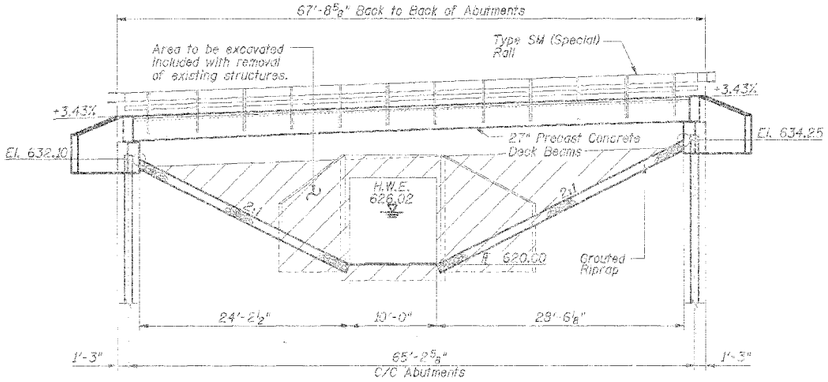
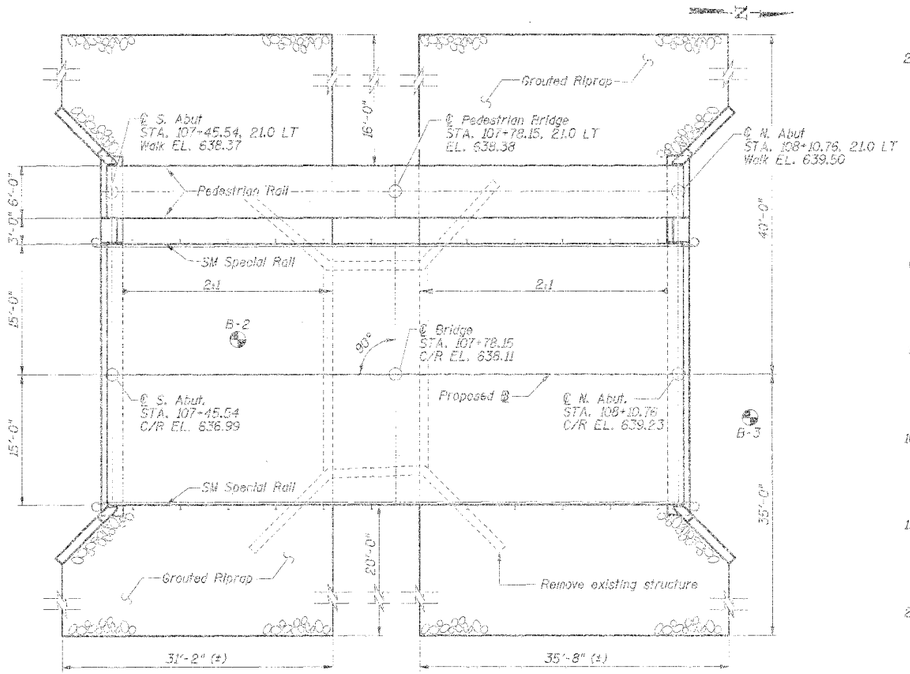
TRAFFIC RTE.	SECTION	COUNTY	SHEETS NO.	TOTAL SHEETS
FAS 507	*	Vermilion	54	48
FED. ROAD PROJ. NO.		BUREAU PERMIT PROJECT		

*05-00154-00-BR

Existing Structure: Cast-in-place concrete box culvert, 9.95' wide by 12.40 tall with cast-in-place concrete wingwalls.



ELEVATION



PLAN

BORING B-1

Location: STA 107+26, 5' RT., Elev. 630.7

Water Levels
While Drilling: Below Depth of Boring
At Completion: -

	N	Qu	W	
0				0-7" Tar and Chip, 7-11" Stone
	34	-	9.6	Dark Brown Silty Clay, Stiff to Very Stiff, Moist
5	7	-	11.9	
	52	2.5	-	Brown Sandy Clay, Stiff to Very Stiff, Moist
	14 1/2"	-	-	Brown Highly Weathered Shale
10				
	47/9"	-	-	
15				Gray Shale
	80/8"	-	-	
20				
	100/2"	-	-	
25				End of Boring

BORING B-2

Location: STA 107+60, 4' LT., Elev. 631.3

Water Levels
While Drilling: Below Depth of Boring
At Completion: -

	N	Qu	W	
0				0-6" Tar and Chip, 6-8" Stone
	22	3.2	18.7	
5	16	-	17.2	Brown silty clay, trace sand & gravel, stiff to very stiff, moist
	14	2.5	8.1	Brown sandy clay, very stiff
10	133/10"	-	-	Brown highly weathed shale.
15	160/8"	-	-	Gray Shale
20	100/5"	-	-	
25	100/3"	-	-	End of Boring

BORING B-3

Location: STA 108+19, 5' RT., Elev. 633.9

Water Levels
While Drilling: Below Depth of Boring
At Completion: -

	N	Qu	W	
0				0-6" Tar and Chip, 6-8" Stone
	22	3.2	18.7	
5	16	-	17.2	Brown Silty Clay, Trace Sand & Gravel, Stiff to Very Stiff, Moist
	14	2.5	8.1	Brown Sandy Clay, Very Stiff, Moist
10	133/10"	-	-	Brown Highly Weathered Shale
15	160/8"	-	-	
20	100/5"	-	-	Gray Shale
25	100/3"	-	-	End of Boring

BORING DATA

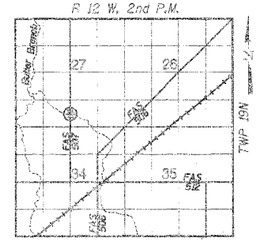
N - Standard Penetration Test - Blows per foot to drive 2" O.D. split spoon sampler 12" with 140 lb. hammer falling 30".
Qu - Unconfined Compressive Strength - Tons/Sq. Ft.
W - Water Content - Percentage of oven dry weight - %
B - Bulge Failure, V - Shear Failure, S - Splitting Failure
E - Estimated Value

*Boreholes caved at a depth of approximately 15.5' upon completion

GENERAL NOTES

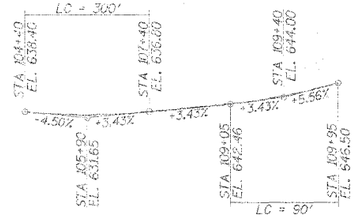
1. Reinforcement bars shall conform to the requirements of AASHTO M31, M42 or M55 Grade 60.
2. Layout of slope protection system may be varied in the field to suit ground conditions as directed by the Engineer.
3. The Contractor shall drive 1 steel test pile in a permanent location at each abutment as directed by the Engineer before ordering the remainder of piles.
4. Boring Data is shown only as an aid to bidders in estimating soil conditions which may be encountered during construction.
5. Class SI or MS Concrete shall be used in the abutments.

R 12 W, 2nd P.M.



LOCATION SKETCH

Drainage Area	2.81 Sq. Mi.
Existing Opening (30 Yr.)	56.2 Sq. Ft.
Required Opening (30 Yr.)	131.2 Sq. Ft.
Proposed Opening (30 Yr.)	132.7 Sq. Ft.
Design Discharge (30 Yr.)	654.7 C.F.S.
Computed Discharge (100 Yr.)	823.9 C.F.S.
30 Yr. Head	0.00 Ft.
100 Yr. Head	0.00 Ft.



PROFILE GRADE

DESIGN SPECIFICATIONS

AASHTO (2002) & applicable interims

DESIGN LOADING

HS 20-44
25 P.S.F Future Wearing Surface

DESIGN STRESSES

f'_c = 3,500 psi (Cast-in-Place Concrete)
f'_c = 5,000 psi (P.P.C. Units)
f'_{ci} = 4,000 psi (P.P.C. Units)
f_y = 60,000 psi (Reinforcement)
f_s = 270,000 psi (½" ϕ Strands)
f_{si} = 201,960 psi (½" ϕ Strands)

TOTAL BILL OF MATERIAL

ITEM	UNIT	SUPER	SUB	TOTAL
Removal of Existing Structures	Each	1		1
Structure Excavation	Cu. Yds.		20	20
Concrete Structures	Cu. Yds.		60.3	60.3
Precast Prestressed Concrete Deck Beams (27" Deep)	Sq. Ft.	2390		2390
Steel Railing, Type SM	Foot	132		132
Pedestrian Railing	Foot	137		137
Reinforcement Bars	Pounds		3840	3840
Test Piles, Steel HP10x42	Each		2	2
Pile Shoes	Each		14	14
Name Plate	Each		1	1
Waterproofing Membrane System	Sq. Yds.	221		221
Furnishing Steel Piles HP 10x42	Foot		168	168
Driving Piles	Foot		168	168
Grouted Riprap	Sq. Yds.		548	548
Conc. Cut-off Wall	Cu. Yds.		7.6	7.6
Controlled Low-Strength Material	Cu. Yds.		102	102

I certify that to the best of my knowledge, information and belief, this bridge design is structurally adequate for the design loading shown on the plans. The design is an economical one for the style of structure and complies with the requirements of the current "AASHTO Standard Specifications for Highway Bridges."

LICENSED STRUCTURAL ENGINEER JOHN A. FRAUENHOFFER 81-4192 CHAMPAIGN STATE OF ILLINOIS

JOHN A. FRAUENHOFFER
Illinois Licensed Structural Engineer Number 4192
License Expires 11/30/06

STRUCTURE NO. 092-6040
SEC. 05-00154-00-BR BUILT 200_
FAU 7060/FAS 507
VILLAGE OF CATLIN/VERMILION COUNTY
LOADING HS-20-44

NAME PLATE
See Standard 515001

DSGN	K.J. Hoffmann					
DR	K.J. Hoffmann					
CHK	J.A. Frauenhoffer					
APVD	J.A. Frauenhoffer	NO.	DATE	REVISION	BY	APVD

FRAUENHOFFER
Frauenhoffer and Associates, P.C. Consulting Engineers
3002 Crossing Court Champaign, IL 61822 217-351-6258

GENERAL PLAN AND ELEVATION
VILLAGE OF CATLIN
SECTION 05-00154-00-BR
VERMILION COUNTY

SHEET 48
DWG 5022-Gpe.dgn
DATE AUG 2006
PROJ NO. 5022