BRIDGE MEMORANDUM

Cole County, Route 179 over Wears Creek and Frog Hollow Road
District: 5
Job No: J5U0441G
Design No: A5982

Final Layout: 27.00m, 33.00m, 38.00m, 35.00m, 38.00m, 31.00m continuous composite plate girder spans (using weathering steel). Use non-integral end bents with straight turnback wings (3.4m Lt and 4.9m Rt at Bent 1; 4.3m Lt and 3.6m Rt at Bent 7 from fill face to tip of wing).

Skew: Varies. Use 40.00d L.A. Bents 1 through 4 and 30.00d L.A. Bents 5 through 7.

Grade: PVI Sta. 2+532.600, Elev 185.330, -5.000% Bk, 5.000% Ahd, 340.0 m VC

Loading: MS18

Present Bridge: None

Tie Station: 2+400.000 at C/L Bent 5.

Traffic Handling: Not applicable (New construction).

General Notes:
* Alignment is tangent with stationing and profile grade at the C/L of Route 179.
* Intersection of C/L Route 179 and C/L Frog Hollow Road at Sta 2+417.043 (Rte 179) and Sta 0+140.640 (FHR).
* Provide substructure for future roadway width of 31.80m and superstructure for present roadway width of 25.80m (roadway widths are symmetrical about the C/L Route 179). Provide 410 mm exterior safety barrier curbs and 635 mm double faced median barrier curb at the center of the 4.2 m median (Bridge items).
* Placement of intermediate bents to avoid interference with the existing sewer line is not feasible due to horizontal clearance requirements at Frog Hollow Road as well as hydraulic restrictions imposed by the presence of a "floodway" at Wears Creek. As a result, the sewer line will need to be relocated.
* Provide 2:1 (normal) spill fill slopes. A 0.60m rock blanket(Rdwy item) is required at the south spill fill only. Place to a height of elev 185.22m at Bent 7. The base of the rock blanket is to extend 4.0m along the ground line toward Wears Creek.
* Fill exception Sta 2+266.12 +/- to Sta 2+469.78 +/-
* Provide approach slabs for a roadway width of 31.80m (Bridge item). Temporary barrier curbs across the approach slab to be provided as a Roadway item.
* Provide a horizontal clearance of 9.50 m from C/L Frog Hollow Road and a final minimum vertical clearance of 4.75 m (estimated future grade along Frog Hollow Road to be assumed to be -0.75% from elev 184.000 at Sta 0+90 to elev 183.250 at Sta 0+190).
* Provide an opening of 10.0m horizontal x 4.5m vertical at Frog Hollow Road during construction.
* Right-of-Way as required for new construction.
* A June 15, 1981 NFIP flood study for Cole Co., MO (Panel 290107 0080) shows this construction site in an area subject to 100-year flooding. A "floodway" will be crossed by the new structure. The Bridge Division is to obtain the floodplain development permit.

* Hydrologic Data: D.A. = 7.82 sq. km. (Rolling)
Design Frequency = 100 yrs.
Q(100) = 157.44 cu meters/sec
D.H.W. = 184.40 m
Estimated Backwater = 0.19 m

SRS
9/15/99

Bridge Office Stephen R. Spradlin 10/29/98

Estimate: ~~$3,255,300~~ $4,399,200

District Jeffrey L. Leftwich

District Keith A. Hansen

Design Traffic
Des Yr-ADT= 15,800
Des Yr-ADTT= 950

DESIGN LAYOUT

Division of Bridges

No. A5982
Job J5U0441G

Route 179 County Cole Over Wears Creek and Frog Hollow Road

STRUCTURE

(27.00m-33.00m-38.00m-35.00m-38.00m-31.00m)(Measured along ℄ Rte.179)

SUPERSTRUCTURE Continuous Composite ℙ Girder Spans

Roadway--- Provide Substructure for Future roadway width of 31.80m and Superstructure for present Roadway width of 25.80m (Roadway widths are symmetrical about ℄ Rte.179). Provide 410mm Exterior Safety Barrier Curbs and 635mm Dble. Faced Median Barrior Curb at center of the 4.2m median (Bridge Item).

Skew---- Varies. Use 40°00'00" L.A. Bts.1 thru 4 and 30°00'00" L.A. Bts.5 thru 7.

Loading--- MS18

Beg Sta--- 2+266.12±

Tie Sta--- 2+400.000 (℄ Bent No.5)

Alignment- Tangent

Grade---- P.V.I. Sta.2+532.600, (Elev.185.330), -5.000% Bk., +5.000% Ahd.
L= 340.00m V.C.

	① and ⑦ Non-Integral Conc. Pile Caps (With Deadman Anchors)	③ & ④ Drilled Shafts	② ⑤ & ⑥ Open Round Col. Bts. on Pile
SUBSTRUCTURE			

Ftg Loads---- ① ② ⑤ ⑥ & ⑦ Std. Specs. ③ & ④ See sheet 2 of 2.

Pile Type---- Steel

Length---- ① = 6.5m ② = 4.0m ⑤ = 5.0m ⑥ = 4.5m ⑦ = 10.5m

Elev. Ftg. Top (Not Above) ② 17.4m Lt.=189.0, 8.7m Lt.=188.5, ℄=188.5, 8.7m Rt.=188.5, 17.4m Rt.=188.0 ⑤ = 181.0 ⑥ = 180.5

Prebore to Elev.- ① =189.4 ② 17.4m Lt.=184.5, 8.7m Lt.=184.0, ℄=184.0, 8.7m Rt.=184.0, 17.4m Rt.=183.5 ⑤ =175.5 ⑥ =175.5 ⑦ =176.0

Excavation Datum- Elev.180.8

GENERAL:

Revetment/Slope- Provide 1:2 (Normal) Spill Fill Slopes. A 0.6m Rock Blanket (Rdwy. Item) is required at the south Spill Fill only. Place to a height of Elev.185.22m at Bent 7. The base of the Rock Blanket is to extend 4.0m along the ground line toward Wears Creek with Geotextile Material between Rock Blanket and natural ground.

End Fills---- Earth.

Traffic Handling---- Not applicable (New Construction).

Provide earth plugs at End Bents per Steve Spradlin Discussion with Bob Jany. KEG 1-27-2000

SRS 9/15/99

District contact is Bob Jany (573) 751-7709.

Sheet No. 1 of 2

Dated 12/31/98 By M.E. Estm ~~$3,311,000~~ $4,399,200

Date 04/07/99	Notes or Revisions in Conference	HYDROLOGIC DATA
Initials: S.R.S. M.L.N. P.W.K. K.E.G.		D.A.= 7.82 sq. km. (rolling) Des Q= 157.44 cu. meters/sec. Freq = 100 yrs. DHW = 184.40m Bkwtr= 0.19m Rdwy. Overtopping > 500 yrs.

Notes and Revisions after Conference (All revisions to be dated and initialed).

DESIGN LAYOUT

Division of Bridges

No. A5982

Job J5U0441G

Route 179 County Cole Over Wears Creek and Frog Hollow Road

SPECIAL REQUIREMENTS:

Stationing and Profile Grade along ℄ of Rte.179.
Intersection of ℄ Rte.179 and ℄ Frog Hollow Rd. at Sta.2+417.043 (Rte.179) and Sta.0+140.640 (FHR).

Provide approach slabs for a roadway width of 31.80m (Bridge Item). Temporary Barrier Curbs across the approach slab to be provided as a Roadway Item.

Use Weathering Steel.

Placement of Int. Bents to avoid interference with existing sewer line is not feasible due to horizontal clearance requirements at Frog Hollow Road as well as hydraulic restrictions imposed by the presence of a "floodway" at Wears Creek. As a result, the sewer line will need to be relocated.

Final Clearance: Minimum Vertical Clearance = 4.75m (Estimated Future Grade along Frog Hollow Rd. to be assumed to be -0.75% from Elev.184.000 at Sta.0+90 to Elev.183.250 at Sta.0+190).

Minimum Horizontal clearance = 9.50m (from ℄ Frog Hollow Road).

Const. Clearance: Minimum Vertical clearance = 4.50m

Minimum Horizontal clearance = 5.00m (from ℄ Frog Hollow Road).

Use an angle of internal friction of 25° for the dead-man anchor design.

Drilled shafts to be designed with an end bearing capacity of 2.8 MPa and a side resistance of 400 kPa per Materials Division recommendations.

Required rock socket length to be determined by final design. The Rock Socket length below the base of the Drilled Shaft is to be a minimum of 3.0m or twice the shaft diameter (which ever is greater).

NOTE TO BE PLACED ON FINAL PLANS: Permanent casings are to be provided at voids encountered in drilled shaft locations.