

Municipality Unincorporated
 County Cook
 Road District Palatine Township
 Other Agency _____
 Project _____
 Section 10-251-90-BR



**Illinois Department
of Transportation**

**Preliminary Bridge Design
and Hydraulic Report**

Route Briarwood Lane
 Stream Salt Creek
 Ex. St. No. 016-4000
 Pr. St. No. _____
 Prepared by KAS
 Agency/Firm Haeger Engineering, LLC
 Date 10/28/2011

Funding Type: HBP STU STR Enhancement
 TBP MFT Non-MFT Other (Palatine Twp. Road District Funds)

Sufficiency Rating 81 Existing clear span length 36
 Functionally Obsolete Yes No
 Structurally Deficient Yes No

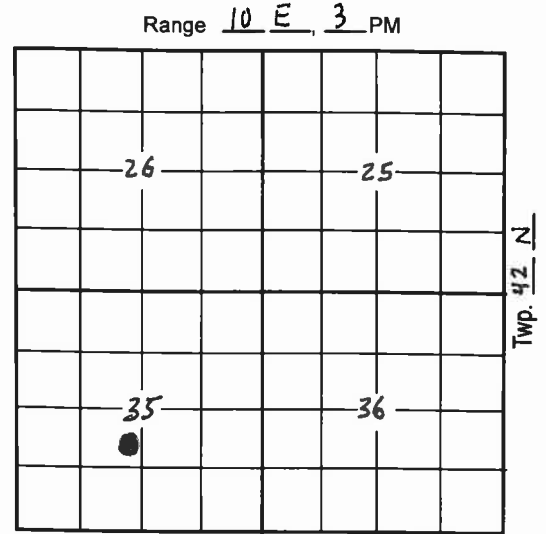
Construction Information

Proposed Letting Date 04/01/2011

Shop Plan Review by Local Agency Consultant State
 Fabrication Inspection by Local Agency Consultant State

Approach Roadway Information

Surface Type: Existing Bituminous Proposed Bituminous
 Surface Width: Existing 20' - 21' Proposed 21' - 27'
 Shldr to Shldr Width: Existing 20' - 21' Proposed 21' - 27'
 Elevation of Low Point: Existing 709.4, 709.6 Proposed 709.4, 706.6
 Proposed Side Slopes Wall
 Roadway Functional Classification Local (Urban)
 DHV _____ Current ADT 650 Design Year ADT 650
 % Trucks 3 Design Speed 25
 3R Design Guidelines Used Yes No



Locate bridge accurately above

Proposed Structure Information

Type of Structure Proposed Bridge Culvert "Standard Plans" Bridge Pedestrian/Bicycle
 Vehicle Design Loading HS-20 Pedestrian/Bicycle Design Loading NA
 Superstructure Type Three Sided Precast Structure
 Structure Length Back to Back Abutments 43.5' Span Length 40 Clear Span, 30' Long
 Clear Roadway Width 27' Rail Type Parapet Wall w Rail Crash Tested Rail Required Yes No
 Wearing Surface Type Bituminous Wearing Surface Thickness Varies
 Deicing Agents Used Yes No
 Embankment Slope Under Bridge Wall Proposed Skew Angle 0 Forward on. Rt. Lt.
 Pier Type NA Abutment Type Abutment wall on footing
 Proposed Pile Type NA
 Borings By Soil and Material Consultants Expected Submittal Date for Borings 08/31/2011

Hydraulic Data

Exist. Br. Cr. El. 710.99 @ Sta. 50+00 (CL Rd/Br) Prop. Br. Cr. El. 712.19 @ Sta. 50+00 (Cl Rd/Br)
 Exist. Low Beam Elev. Top Barrel = 709.6 Proposed Low Beam Elev. 710.13 @ Cl, 709.13 @ Wall
 Exist. Freeboard 0' (LP in Rd lwr) Proposed Freeboard 0' (LP in Rd lwr) Streambed Elev. 702.2+/-
 Drainage Area 16.7 sq. mi. Crossing Location Rural Urban
 Crossing Located within a Mapped National Flood Insurance Program Area Yes No (Map No. 0183J)
 Crossing Located within a Northeast Region (District #1) FEMA Mapped Floodway Yes No
 Crossing Located over designated "Public Bodies of Water" Yes No

Design Flood Data

Design Flood Frequency 30 Design Discharge 805 Design High Water Elev. 709.12
 Exist. Br. Opening 238 sq. ft. Exist. Over-the-Road N/A
 Prop. Br. Opening 276 sq. ft. Prop. Over-the-Road N/A
100 Year Flood Data
 100 Year Discharge 1083 cfs 100 Year High Water Elev. 710.01
 Exist. Br. Opening 256 sq. ft. Exist. Over-the-Road 101 sq. ft. Exist. Created Head 0.10'
 Prop. Br. Opening 302 sq. ft. Prop. Over-the-Road 121 sq. ft. Prop. Created Head 0.17'

If proposed structure and over-the-road area will not carry entire flow, state kind and area of additional waterway

Type of Streambed soil _____ Will drift or ice permit pier in channel? Yes No
Has scour occurred at or near existing structure? Yes No; If yes, reason for scour _____ Per Master Summary
Report (S-107) the existing structure has a scour critical rating of 8 based on evaluation method B, based on
an analysis that was performed on 4/10/2006 by the Central Bureau B&S.

Comments on hydraulic adequacy of existing structure _____ Existing structure is adequate given creek capacity and
not source of flooding. Water overtops Briarwood lane at approximately the 50 year rainfall event.

Has the existing structure been the cause of demonstrable flood damage to adjacent property? Yes No
If yes, describe damage _____ Not directly, flood elevations are similar for creek without structure, the creek
itself can't handle flows.

Comments on the hydraulic adequacy of upstream and downstream structures and their comparable relationship to the
proposed structure _____ 53 crossing is located downstream and has adequate capacity.
Crestwood lane bridge is located upstream and restricts flows as illustrated by the drop in profiles.

Will houses, places of business or valuable property be affected by backwater from the proposed bridge? Yes No
If yes, describe property and effect of backwater _____ Existing creek does not have capacity for higher flows.
Overtopping of Briarwood lane occurs at approximately the 50 Year Event.

Is any channel excavation beyond that required to construct the substructure required in the channel? Yes No
If yes, describe extent of channel excavation _____ Excavation for removal of existing structure and construction of
proposed structure as well as excavation for rip rap scour protection.

Will a channel realignment be required? Yes No (If yes, attach Channel Change Sketch)
Are stream flow data (gaging station or flood study) available for the stream at or near the proposed site? Yes No
(If yes, attach an analysis of the stream flow data)
Provide information regarding high water from other streams, reservoirs, flood control projects, proposed channel
changes, strip mine areas or other controls affecting the hydraulic or hydrologic properties of the crossing site _____ N/A

Scour Analysis

Was a HEC-18 scour analysis performed? Yes No
Were all substructure units being utilized evaluated to consider the effect of anticipated scour? Yes No
Will scour protection or corrective actions be required? Yes No
If yes, describe protection or corrective actions. _____ Scour protection shown on plans was based on Scour Protection
Detail provided by Hy-Span Bridge Systems to protect substructure and sufficiency will be reviewed by
designer at time of structural design.

Attachments (Check those items below that are included.)

- Reproduction of applicable portion of USGS quadrangle showing locations of proposed bridge and properties affected by backwater caused by the proposed structure
- Cross sections as required by WSPRO including floodplain above high water elevation
- Streambed profile
- Profile of existing and proposed roadway across floodplain
- Hydraulic calculations
- Joint Application Form for construction permit submittals (Joint Form NCR-426)
- Waterway sketch
- Channel change sketch
- Applicable certification(s)
- Boring data
- Scour analysis/evaluation
- Other _____ Various see report. Joint App. Permit Form will be completed after initial comments received from CCHD/IDOT.