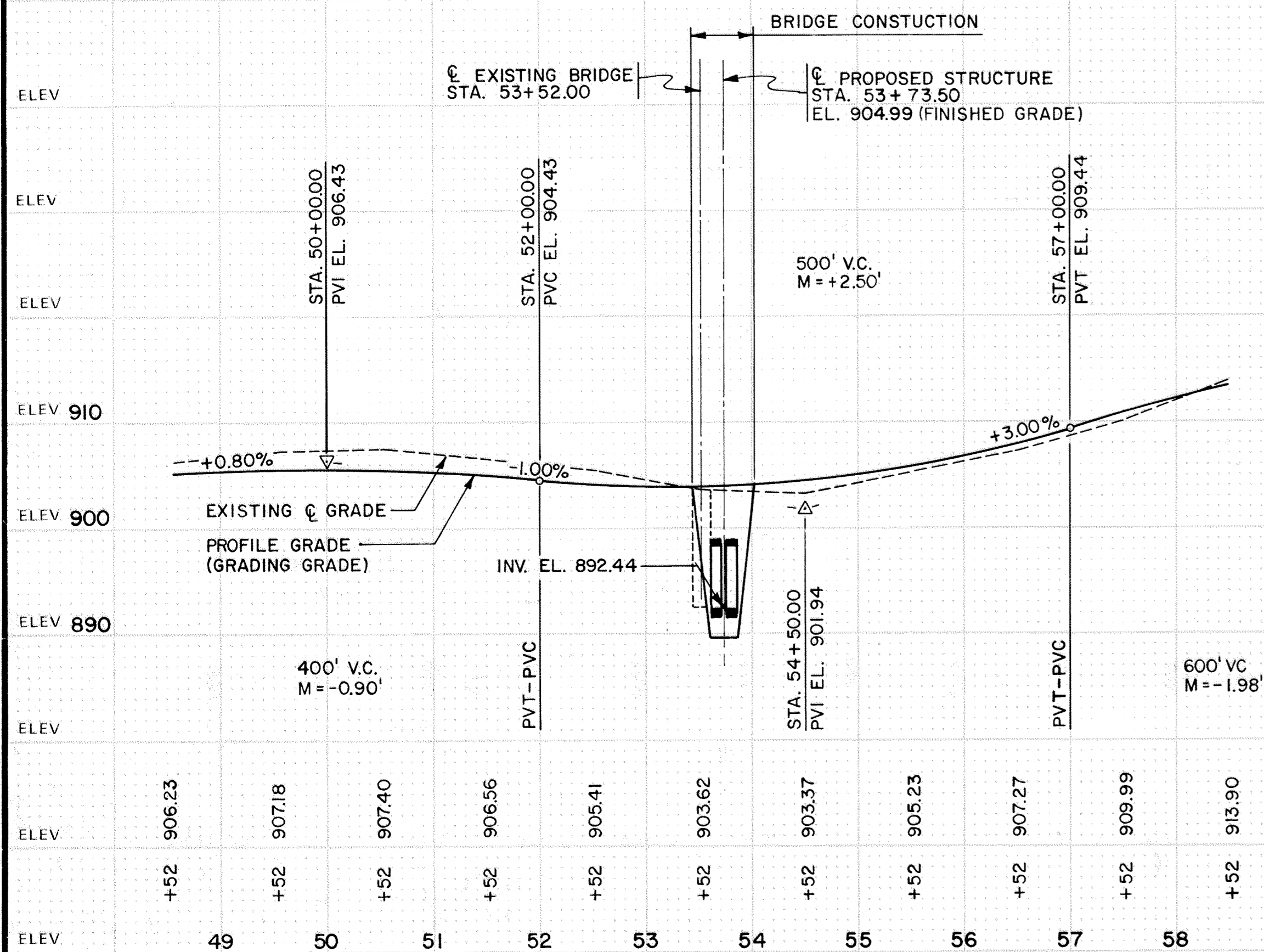


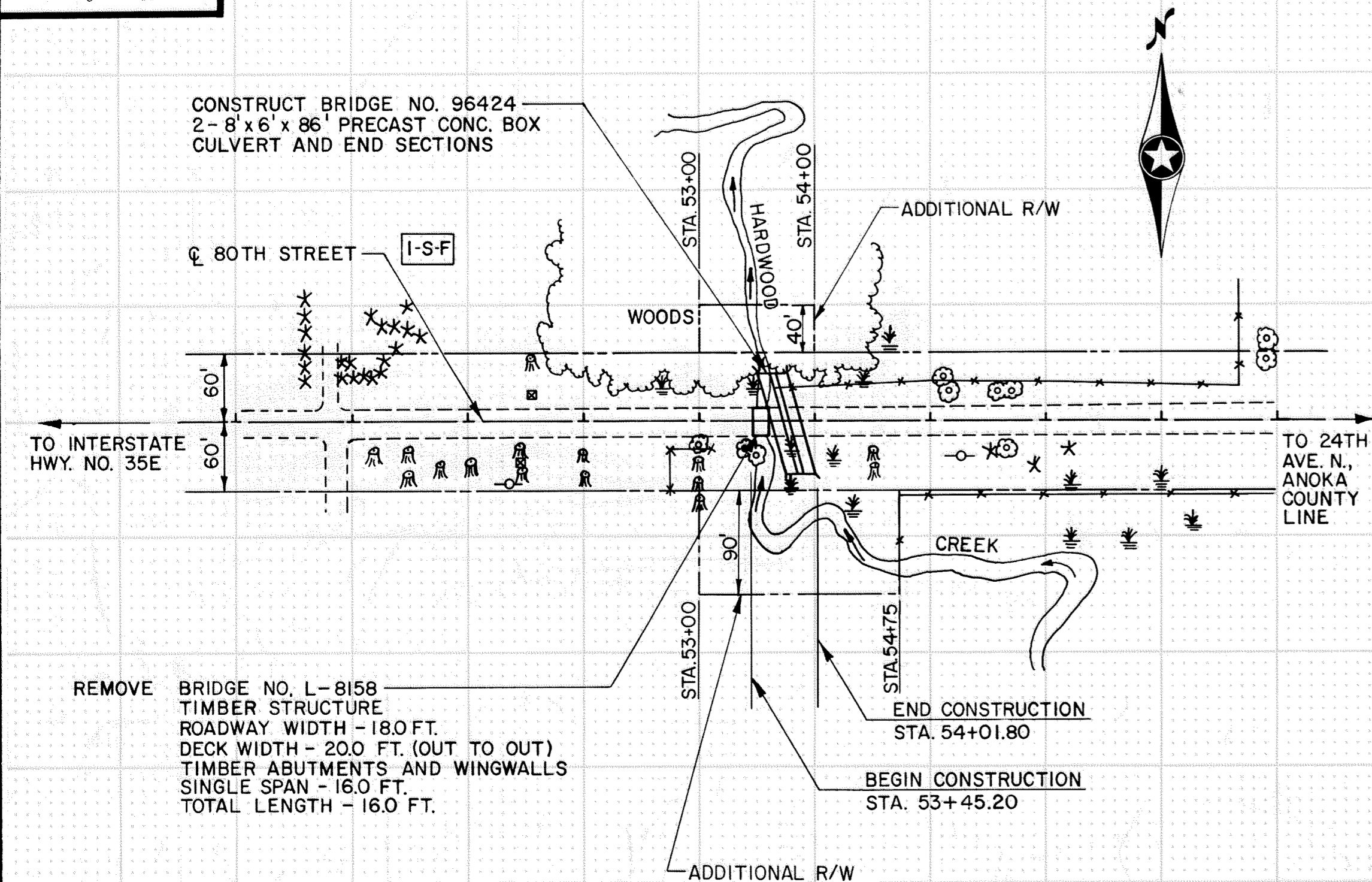
**CONTRACTED PROFILE**

SCALE: HOR. 1"=100' VER. 1"=5'



**PLAT**

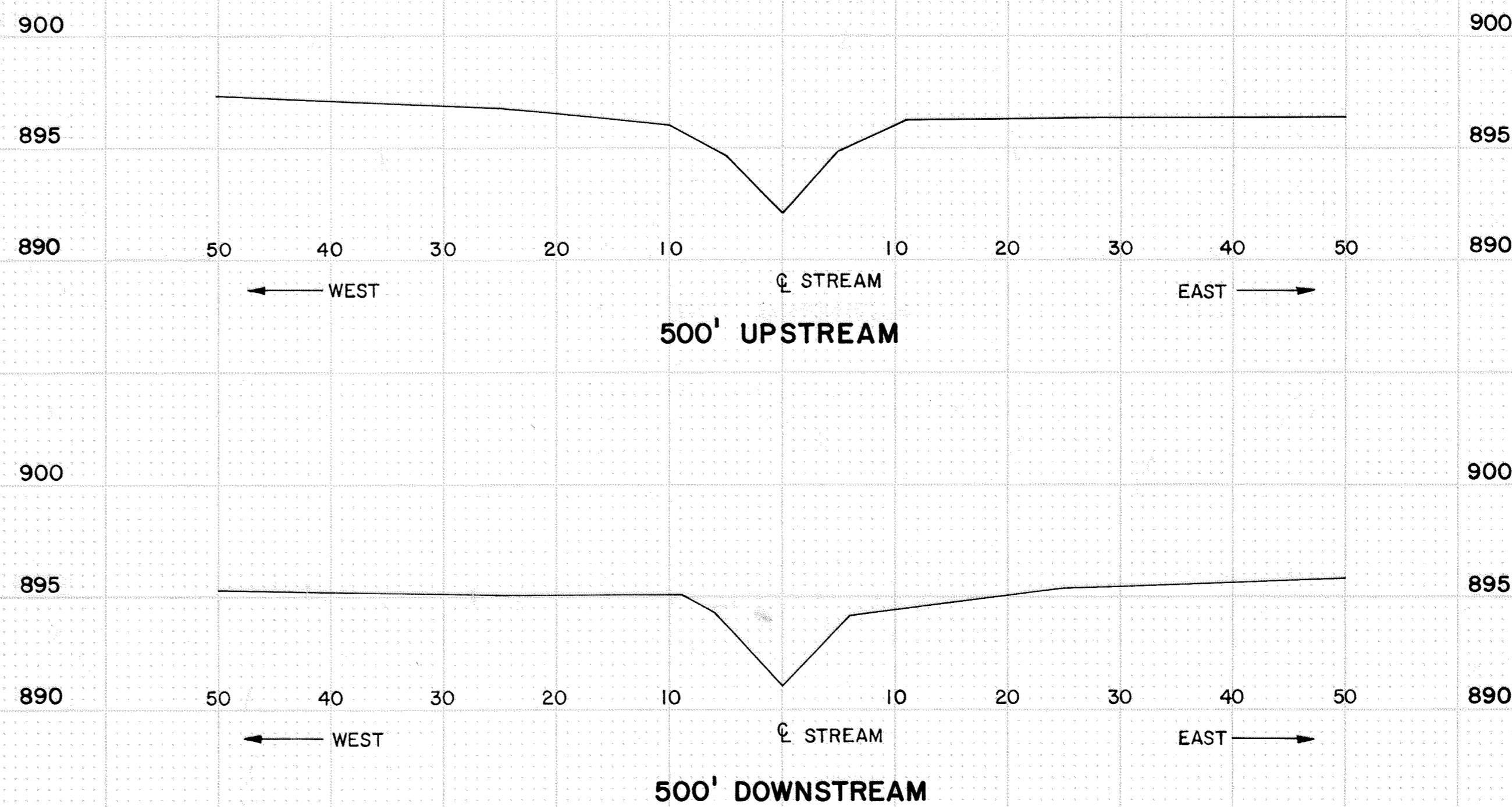
SCALE: 1"=100'



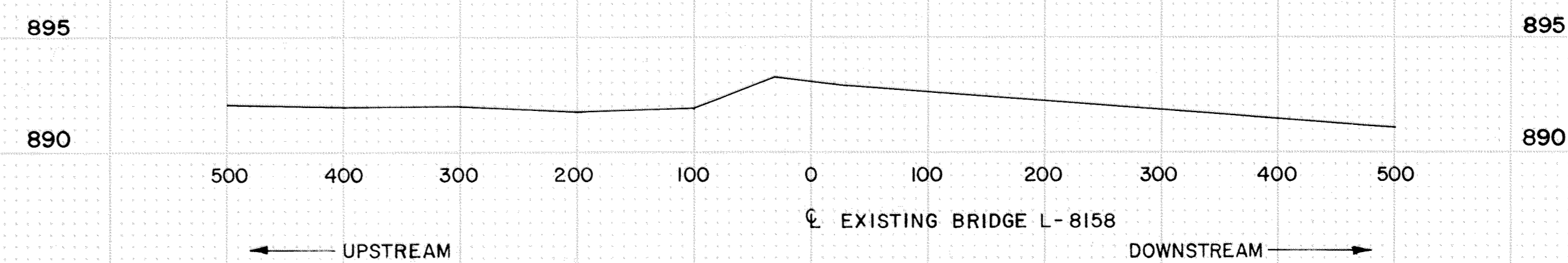
**TYPICAL SECTIONS & PERTINENT DATA**

SCALES AS SHOWN

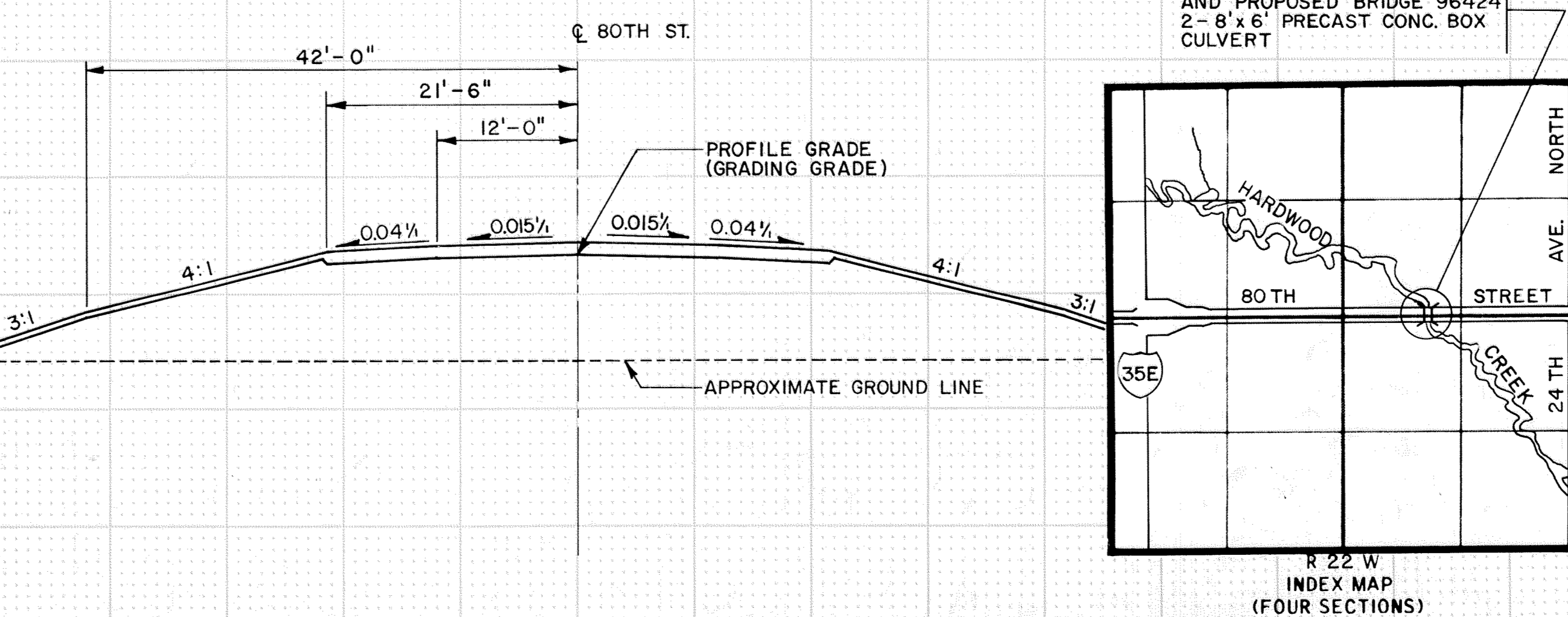
**TYPICAL CHANNEL SECTIONS**



**STREAM PROFILE**



**PROPOSED ROADWAY SECTION**



**Fed. Proj. No.**

LOCATION ENGINEER'S OBSERVATIONS AT BRIDGE SITE

- Special Features: Waterfalls, dams, floods, ice, debris, sliding banks, recreational boating. **NONE**
- Other bridges or culverts over the same stream (particularly structures which carry high water without overflow of roadway): Given location, type, length, height above high water, cross-sectional area etc.
- Apparent highwater elevation: Obtained from
- Other data: Approx. velocity of water at time of survey

**HYDRAULIC ENGINEERS RECOMMENDATION**

DATE JULY 3, 1986

Stream or ditch designation **HARDWOOD CREEK**  
 Drainage area **17.1 SQ. MI.**  
 Max. flood on record **UNKNOWN** Design flood (100 yr. freq.) **.600** C.F.S.  
 Max. observed highwater elevation **UNKNOWN** Design highwater elevation  
 Design mean velocity through structure **6.25** F.P.S.  
 Low superstructure at or above elevation **898.44**  
 Flowline elevation **892.3** Skew angle  
 Waterway area req'd. below elevation **899.65** **96** Sq. Ft. at Rt. angles to channel

In the interest of flood plain zoning the regional flood (100 yr. freq.) is **.600** C.F.S. at stage **898.25** and mean velocity of **6.25** F.P.S. with **1.0** Ft. swellhead. The above recommendation will provide a structure of adequate waterway to pass the regional flood within criteria established by the Dept. of Natural Resources.

**FOUNDATION ENGINEERS RECOMMENDATION**

DATE

Bridge survey sheets made from: **TKDA SURVEY - MARCH 1986**

Bench mark elevation **919.32** (M.S.L. 1929 Adj.)  
 Location: **USGS DISC SE CORNER BRIDGE AT INT. 35E & 80TH ST.**

MINNESOTA DEPARTMENT OF TRANSPORTATION

**BRIDGE SURVEY**

AT MILE POINT **N/A** ON **80TH STREET**  
 (T.H., C.S.A.H., C.R. etc.)  
 PROPOSED BRIDGE LOCATED **1** MILES EAST OF  
**JCT. CSAH 21**  
 SEC. **12** TWP. **31 N** R. **22 W**  
**CITY OF LINO LAKES**  
 TOWNSHIP COUNTY **ANOKA**  
**BRIDGE NO. 96424**