

# MINNESOTA DEPARTMENT OF TRANSPORTATION

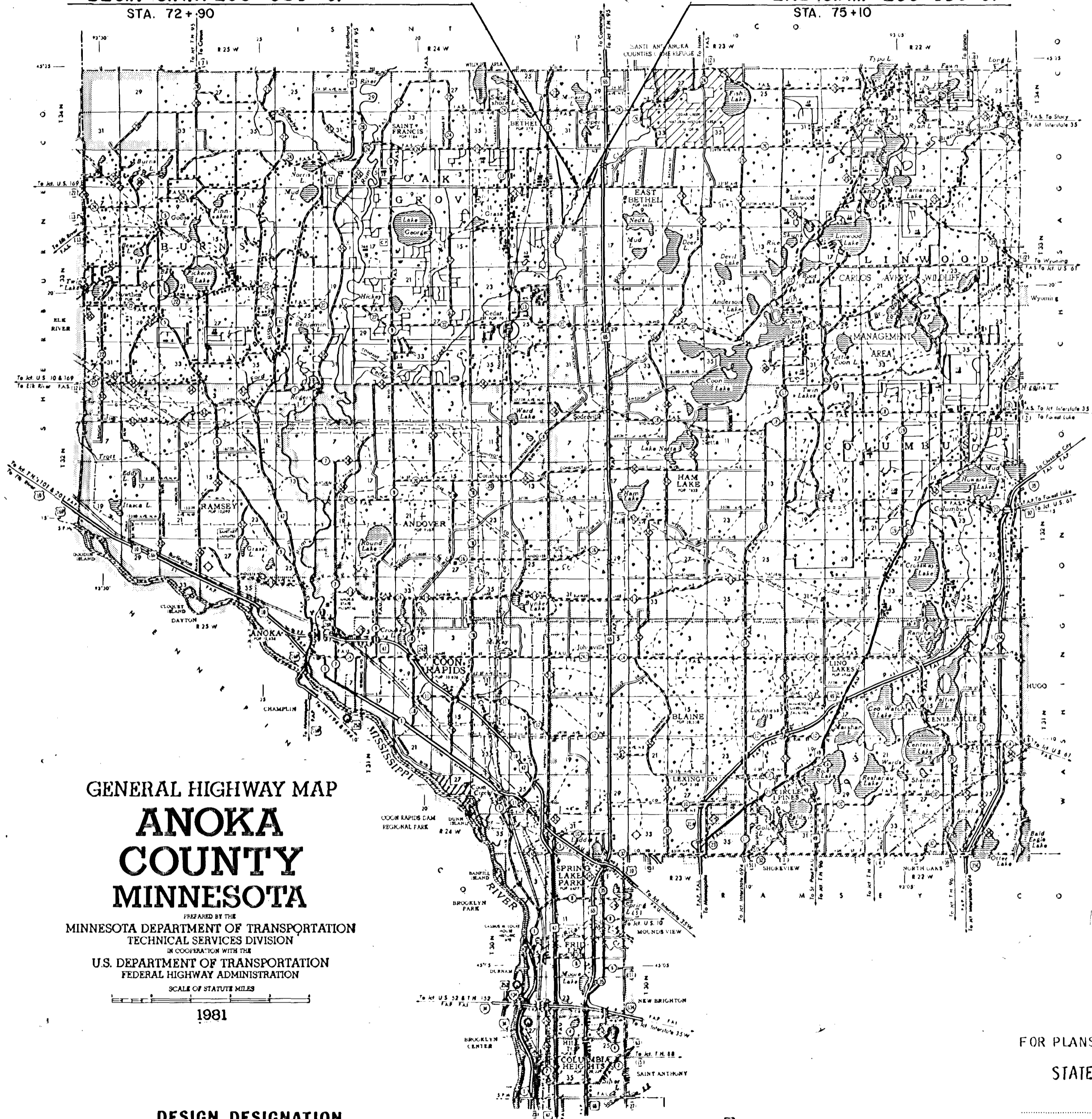
## CONSTRUCTION PLAN FOR 138 1/2" SPAN R.C.P ARCH CULVERT

LOCATED ON SIMS ROAD FROM 143.6' W of N 1/4 Cor. SEC. 18-33-23 TO 76.4' E of N 1/4 Cor. SEC. 18-33-23  
OVER CEDAR CREEK

STATE PROJ. NO. 203-080-01  
MINN. PROJ. NO. BR03 9502  
GROSS LENGTH 220 FEET 0.042 MILES  
BRIDGES-LENGTH FEET MILES  
EXCEPTIONS-LENGTH FEET MILES  
NET LENGTH 220 FEET 0.042 MILES  
MILE POINT TO MILE POINT

STATE PROJ. NO.  
MINN. PROJ. NO.  
GROSS LENGTH FEET MILES  
BRIDGES-LENGTH FEET MILES  
EXCEPTIONS-LENGTH FEET MILES  
NET LENGTH FEET MILES  
MILE POINT TO MILE POINT

BEGIN S.A.P. 203-080-01 STA. 72+90  
END S.A.P. 203-080-01 STA. 75+10

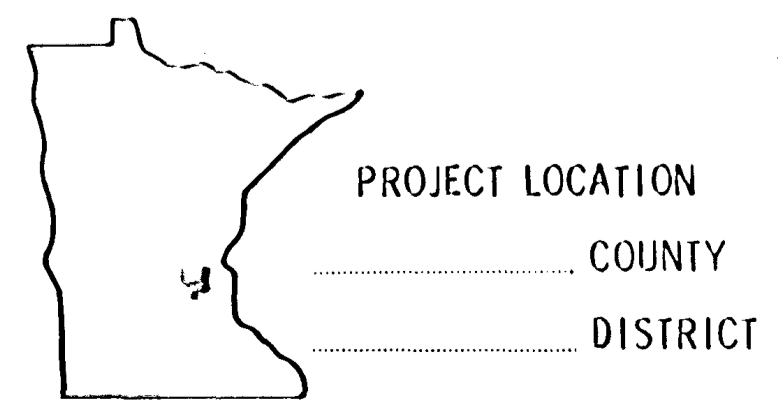


GENERAL HIGHWAY MAP  
**ANOKA COUNTY MINNESOTA**  
PREPARED BY THE  
MINNESOTA DEPARTMENT OF TRANSPORTATION  
TECHNICAL SERVICES DIVISION  
IN COOPERATION WITH THE  
U.S. DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
SCALE OF STATUTE MILES  
1981

SCALES  
PLAN 100'  
PROFILE 10'  
INDEX MAP 2 mi.  
GENERAL LAYOUT 5'

PLAN REVISIONS		
DATE	SHEET NO.	APPROVED BY

**DESIGN DESIGNATION**  
ADT (Current Year) 1980 = 437 Design Speed 55 MPH  
ADT (Future Year) 2000 = 874 Based on Sight Distance  
DHV (Design Hr. Vol.) = Height of eye Height of object  
D (Directional Distr.) = % Design Speed not achieved at:  
T (Heavy Commercial) = % STA. TO STA. MPH  
CULVERT LOAD (LIVE) H-20 STA. TO STA. MPH



FOR PLANS AND UTILITIES SYMBOLS SEE TECHNICAL MANUAL  
STATE PROJ. NO. AREA JOB

FED. PROJ. NO.  
MINN. PROJ. NO. BR03 9502

### GOVERNING SPECIFICATIONS

THE 1978 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION" SHALL GOVERN.

### INDEX

- Sheet No. 1 Title Sheet & Location Map
- " No. 2 Estimated Quantities & Typical Section
- " No. 3 Plan & Profile



CONSULTING ENGINEERS & LAND SURVEYORS  
1448 COUNTY ROAD J  
MINNEAPOLIS,  
MINNESOTA, 55432  
PHONE: 612-784-9348

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
DATE 2-17-1982 REG. NO. 4448 ENGR. *W. Comstock*  
EAST BETHEL CITY ENGINEER  
DESIGN SQUAD

- Right of Way Approval DIRECTOR, RIGHT OF WAY OPERATIONS 19
- Recommended for Approval *C.E. Wiehoborn* 8/30/1982 DISTRICT DIRECTOR SAE 19
- Recommended for Approval *Robert D. Ottobahl* 8-30-1982 PLANS ENGINEER 19
- Recommended for Approval DESIGN SERVICES DIRECTOR 19
- Recommended for Approval 19
- Approved 8-31-1982 *Ray Johnson* DIRECTOR, OFFICE OF ENGINEERING SERVICES 19

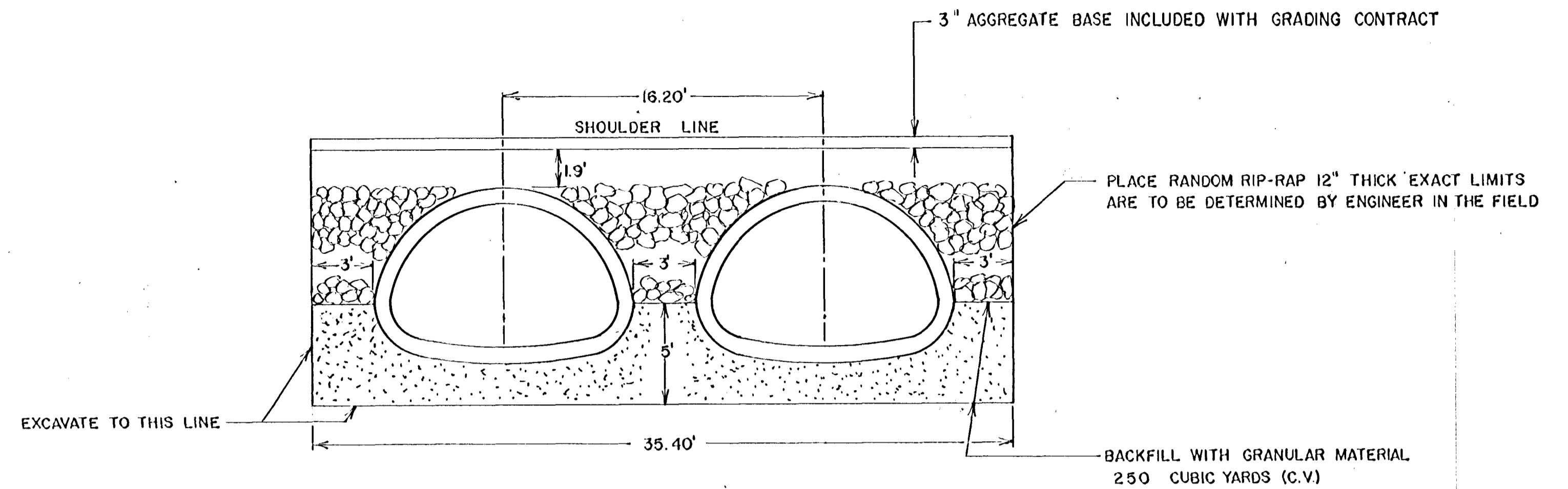
DEPARTMENT OF TRANSPORTATION  
FEDERAL HIGHWAY ADMINISTRATION  
APPROVED  
DIVISION ADMINISTRATOR DATE

I HEREBY CERTIFY THAT THE FINAL FIELD REVISIONS, IF ANY, OF THIS PLAN WERE MADE BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DATE REG. NO.

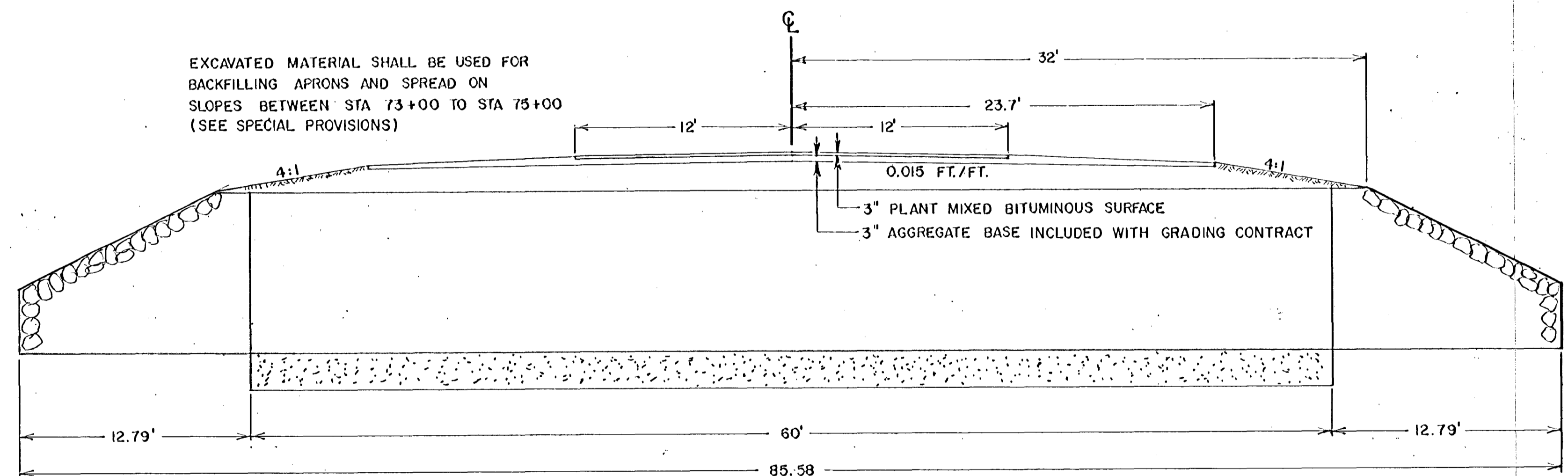
CITY OF EAST BETHEL PROJ. NO. 7910  
STATE AID PROJ. NO. 203-080-01 SHEET NO. 1 OF 3 SHEETS

ESTIMATED		QUANTITIES		
ITEM NO.	ITEM	UNIT	PARTICIPATING	NON PARTICIPATING
2105.523	COMMON BORROW (C.V.)	CU. YD.		1480 (P)
2105.511	COMMON CHANNEL EXCAVATION (L.V.)	CU. YD.		35 (P)
2442.501	REMOVE OLD BRIDGE	LUMP SUM		1
2451.503	GRANULAR BACKFILL (C.V.)	CU. YD.	250 (P)	
2501.521	138-1/2" SPAN R.C. PIPE - ARCH CULVERT CLASS II A	LIN. FT.	120	
2501.525	138-1/2" SPAN R.C. PIPE - ARCH APRONS	EACH	4	
2511.501	RANDOM RIP-RAP CLASS A	CU. YD.	50	
2511.504	FILTER BLANKET TYPE I	CU. YD.	0	



STANDARD PLATES AS APPROVED BY F.H.W.A. SHALL APPLY ON THIS PROJECT

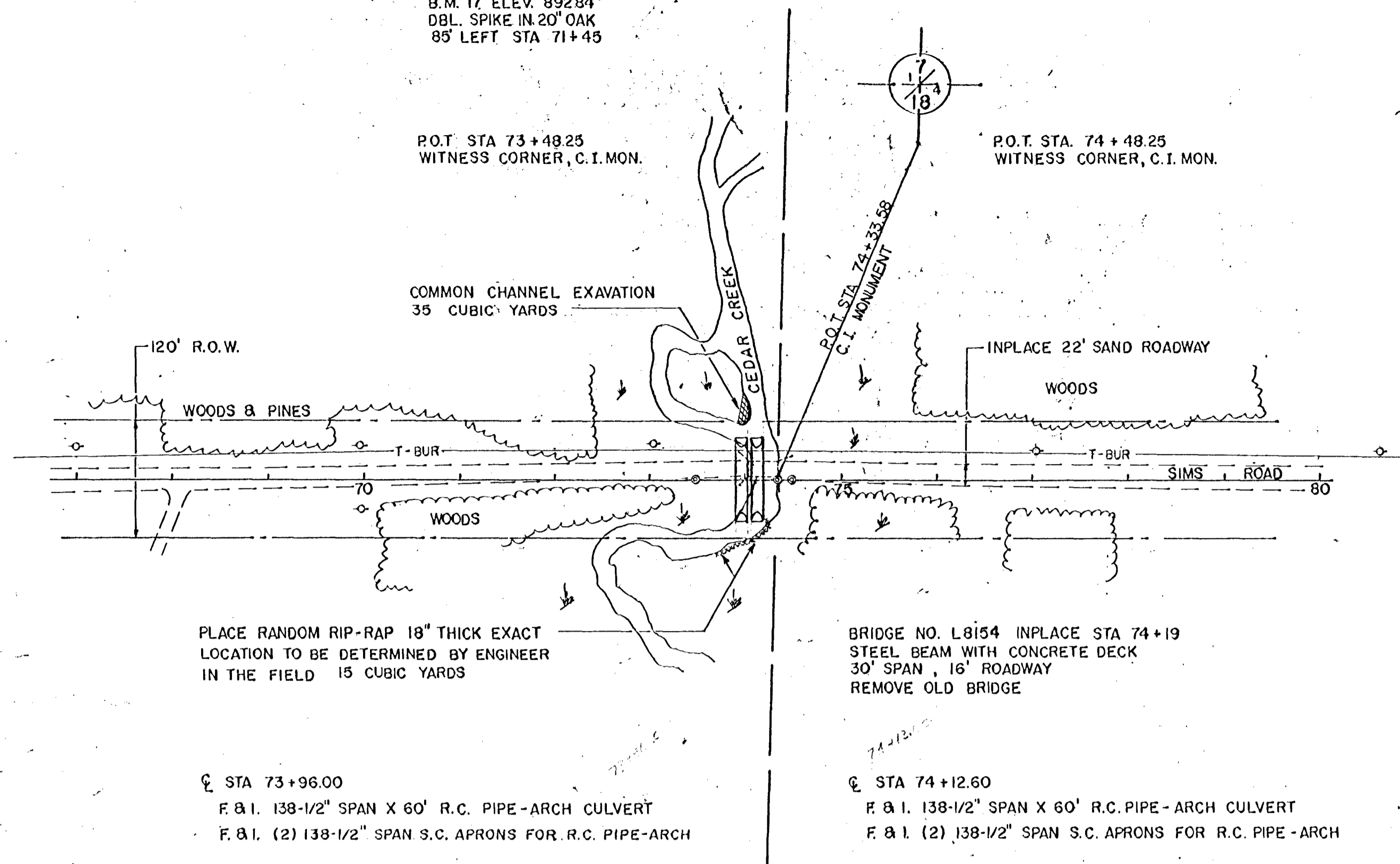
STANDARD	PLATES
0003 A	SPECIFICATION REFERENCE TO STANDARD PLATES
3014 J	REINFORCED CONCRETE PIPE-ARCH DETAIL
3114 G	SECTIONAL CONCRETE APRON FOR REINFORCED CONCRETE PIPE-ARCH
3145 A	CONCRETE PIPE JOINT TIES (U BOLTS)
8000H	STANDARD BARRICADES



B.M. 17 ELEV. 892.84  
DBL. SPIKE IN 20' OAK  
85' LEFT STA 71+45

P.O.T. STA 73+48.25  
WITNESS CORNER, C.I. MON.

P.O.T. STA. 74+48.25  
WITNESS CORNER, C.I. MON.



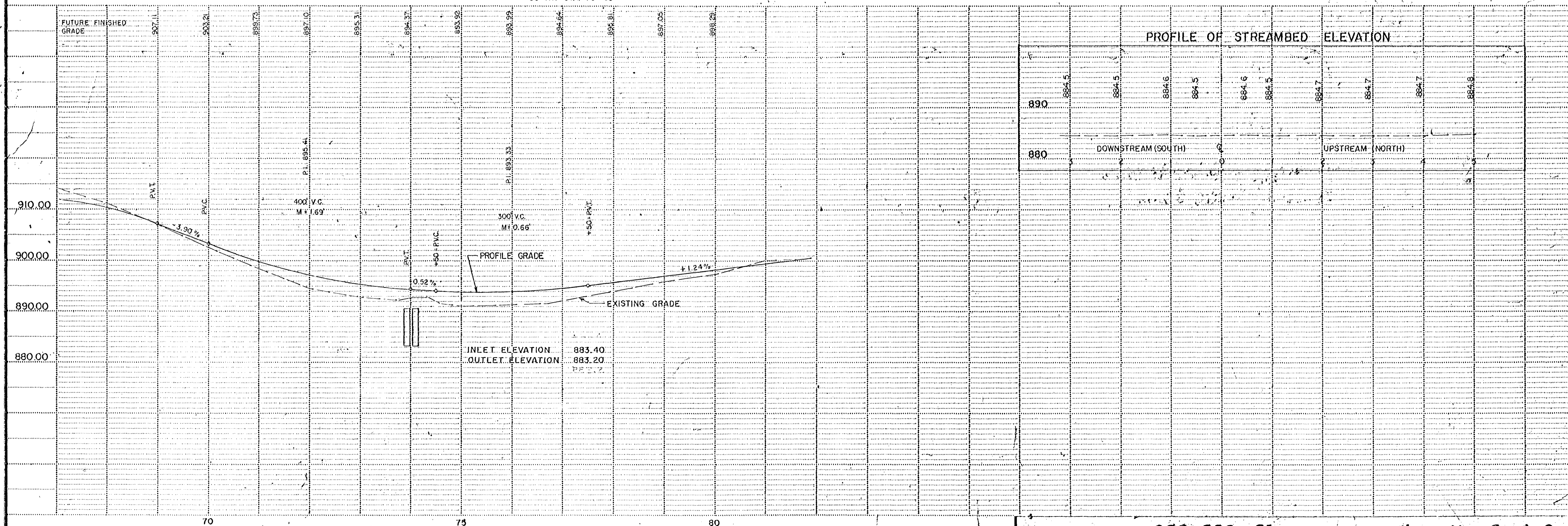
STREAM	CEDAR CREEK
DRAINAGE AREA	36 SQ. MI.
MAXIMUM DISCHARGE OF RECORD	UNKNOWN
MAXIMUM OBSERVED HIGHWATER ELEVATION	UNKNOWN
DESIGN DISCHARGE (100 YEAR FREQUENCY)	700 C. F. S.
a) DESIGN HIGHWATER ELEVATION	891.7
b) WATERWAY AREA BELOW ELEVATION 891.7	132 SQ. FT.
c) APPROXIMATE CHANNEL BOTTOM ELEVATION	884.0
d) MEAN VELOCITY THROUGH CULVERT	5.3 F.P.S.
e) MEAN VELOCITY IN NATURAL CHANNEL	0.5 F.P.S.
f) ADDITIONAL STAGE INCREASE VERSUS EXISTING BRIDGE	0.0
g) SWELL HEAD	0.70 FT.
h) SKEW	0°
OVERTOPPING FLOOD	1,150 C.F.S.
a) HEADWATER ELEVATION	894.0
b) TAILWATER ELEVATION	892.1
c) TOTAL STAGE INCREASE (500 YR)	1.9 FT.
d) ADDITIONAL STAGE INCREASE VERSUS EXISTING BRIDGE	1.2 FT.
NORMAL WATER ELEVATION	886.5

FLOOD FLOW DATA WAS OBTAINED FROM THE CITY OF EAST BETHEL, FLOOD INSURANCE STUDY, PERFORMED BY THE U.S. GEOLOGICAL SURVEY USING DETAILED METHODS.

☉ STA 73+96.00  
F & I. 138-1/2" SPAN X 60' R.C. PIPE-ARCH CULVERT  
F & I. (2) 138-1/2" SPAN S.C. APRONS FOR R.C. PIPE-ARCH

☉ STA 74+12.60  
F & I. 138-1/2" SPAN X 60' R.C. PIPE-ARCH CULVERT  
F & I. (2) 138-1/2" SPAN S.C. APRONS FOR R.C. PIPE-ARCH

B.M. 18 ELEV. 892.72  
R.R. SPIKE IN TRIPLE 24" OAK  
65' RT. STA. 76+85



19-1-184