

STATE OF MINNESOTA
DEPARTMENT OF TRANSPORTATION

CONSTRUCTION PLAN FOR CULVERT NOS. 95700 & 95701

Between C.S.A.H. 26 And CO. RD. 76
2800' N. OF SECTION LINE T 33 N, T 34 N & 150' N. OF SECTION LINE 28, 33 IN T 34 N
From 1000' W. OF SECTION LINE 32, 33 R 22 W To 150' E. OF SECTION LINE 28, 29 R 22 W
Give proper reference to Sections, Township and Range

S.P. 02-599-01	S.P. 02-599-02
GROSS LENGTH <u>224.0</u> FEET <u>0.042</u> MILES	GROSS LENGTH <u>124.0</u> FEET <u>0.023</u> MILES
BRIDGE LENGTH <u>224.0</u> FEET <u>0.042</u> MILES	BRIDGE LENGTH <u>124.0</u> FEET <u>0.023</u> MILES
EXCEPTIONS-LENGTH <u>0.0</u> FEET <u>0.0</u> MILES	EXCEPTIONS-LENGTH <u>0.0</u> FEET <u>0.0</u> MILES
NET LENGTH <u>224.0</u> FEET <u>0.042</u> MILES	NET LENGTH <u>124.0</u> FEET <u>0.023</u> MILES

INDEX OF SHEETS

Sheet No. 1. Title Sheet & Layout Map

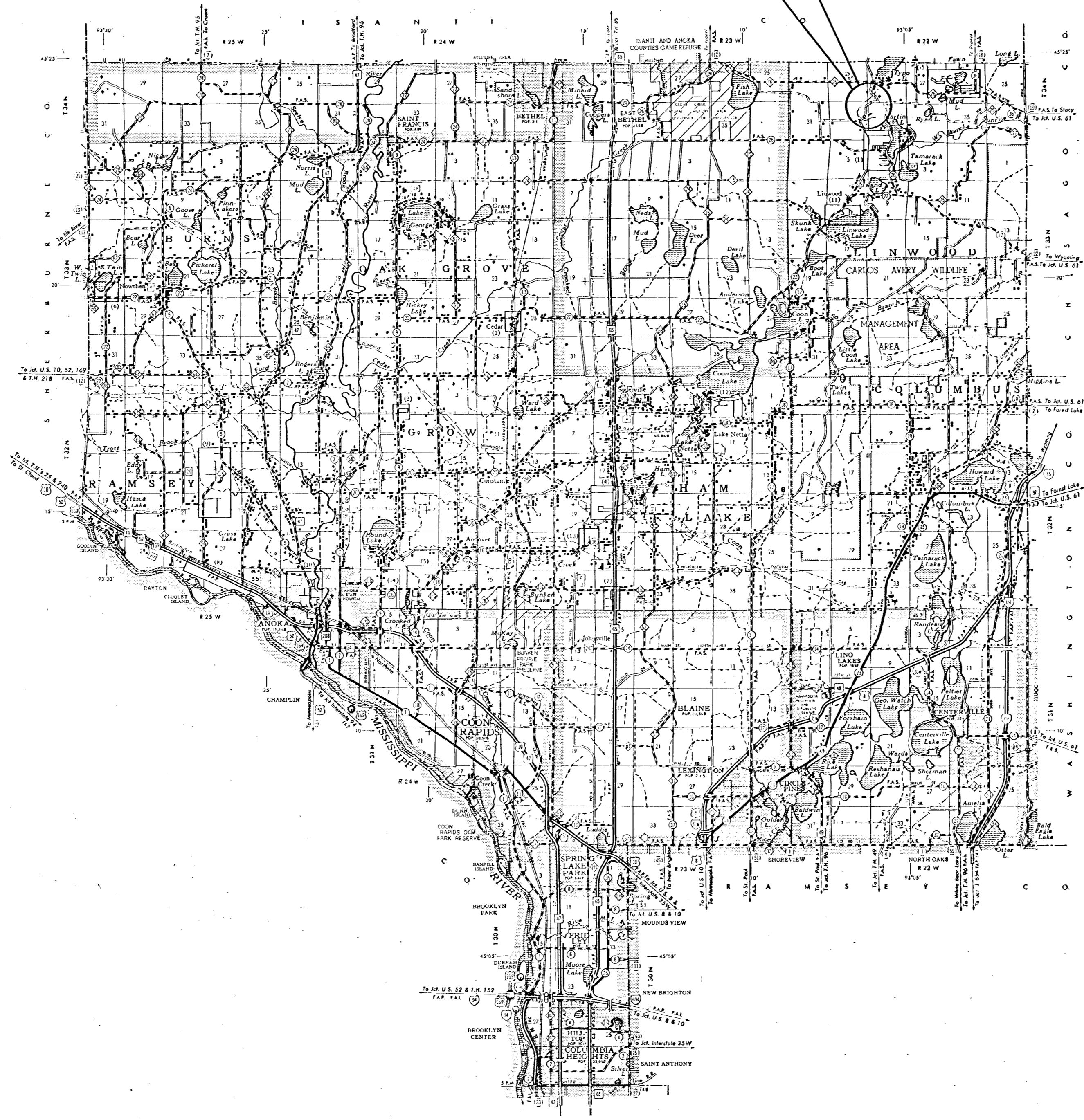
- No. 2. Est. Quantities & Culvert Details
- No. 3. Culvert Survey
- No. 4. Plan & Profile
- No. 5. Culvert Survey
- No. 6. Plan & Profile

CONVENTIONAL SIGNS

- STATE LINE
- COUNTY LINE
- TOWNSHIP OR RANGE LINE
- SECTION LINE
- QUARTER LINE
- SIXTEENTH LINE
- RIGHT OF WAY LINE
- PRESENT RIGHT OF WAY LINE
- CONTROL OF ACCESS LINE
- PROPERTY LINE (Except Land Line)
- VACATED PLATTED PROPERTY
- CORPORATE OR CITY LIMITS
- TRUNK HIGHWAY CENTER LINE
- RELAYING WALL
- RAILROAD
- RAILROAD RIGHT OF WAY LINE
- REVER OR CREEK
- DRY RUN
- DRAINAGE DITCH
- ELECTRIC POWER LINE
- TELEPHONE OR TELEGRAPH LINE
- JOINT TELEPHONE AND POWER
- CONDUIT
- TELEPHONE CABLE - AERIAL
- TELEPHONE CABLE UNDERGROUND
- POWER CABLE UNDERGROUND
- GAS MAIN
- CULVERT
- DROP INLET
- GUARD RAIL
- BARBED WIRE FENCE
- WOODEN WIRE FENCE
- CHAIN LINK FENCE
- RAILROAD SNOW FENCE
- STONE WALL OR FENCE
- HEDGE
- WATER PIPE
- SEWER PIPE
- DRAIN TILE
- SPRINGS
- MARSH
- TIMBER
- ORCHARD
- BRUSH
- MURSEY
- CATCH BASIN
- MANHOLE
- FIRE HYDRANT
- STREET LIGHT
- RAILROAD CROSSING SIGN
- RAILROAD CROSSING BELL
- ELECTRIC WARNING SIGN
- CROSSING GATE
- CATTLE GUARD
- OVERPASS (Highway Over)
- UNDERPASS (Highway Under)
- BRIDGE
- BUILDING (One Story Frame)
- F FRAME
- S STONE
- B BRICK
- IRON PIPE OR ROD
- MONUMENT (STONE, CONCRETE, OR METAL)
- WOODEN PILE
- GRAVEL PIT
- SAND PIT
- BORROW PIT
- ROCK QUARRY
- MEANDER CORNER

BROS 9102 (1)
S.P. 02-599-01 TWP. RD. 181
BEGIN 200+46.0
END 202+70.0

BROS 9102 (2)
S.P. 02-599-02 TWP. RD. 90
BEGIN 100+83.0
END 102+07.0



GOVERNING SPECIFICATIONS
THE 1983 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.

ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITH IN THE CONSTRUCTION OF THIS PROJECT.

TKDA
ENGINEERS ARCHITECTS PLANNERS
TOLTZ, KING, DUVAL, ANDERSON AND ASSOCIATES, INCORPORATED
2500 AMERICAN NATIONAL BANK BLDG.
SAINT PAUL, MINNESOTA 55101

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.

David H. Berkowitz REG. NO. 7982, 19 82

APPROVED *Paul R. Russell* COUNTY ENGINEER DATE 5-3-84

ANOKA COUNTY REG. NO. 6547

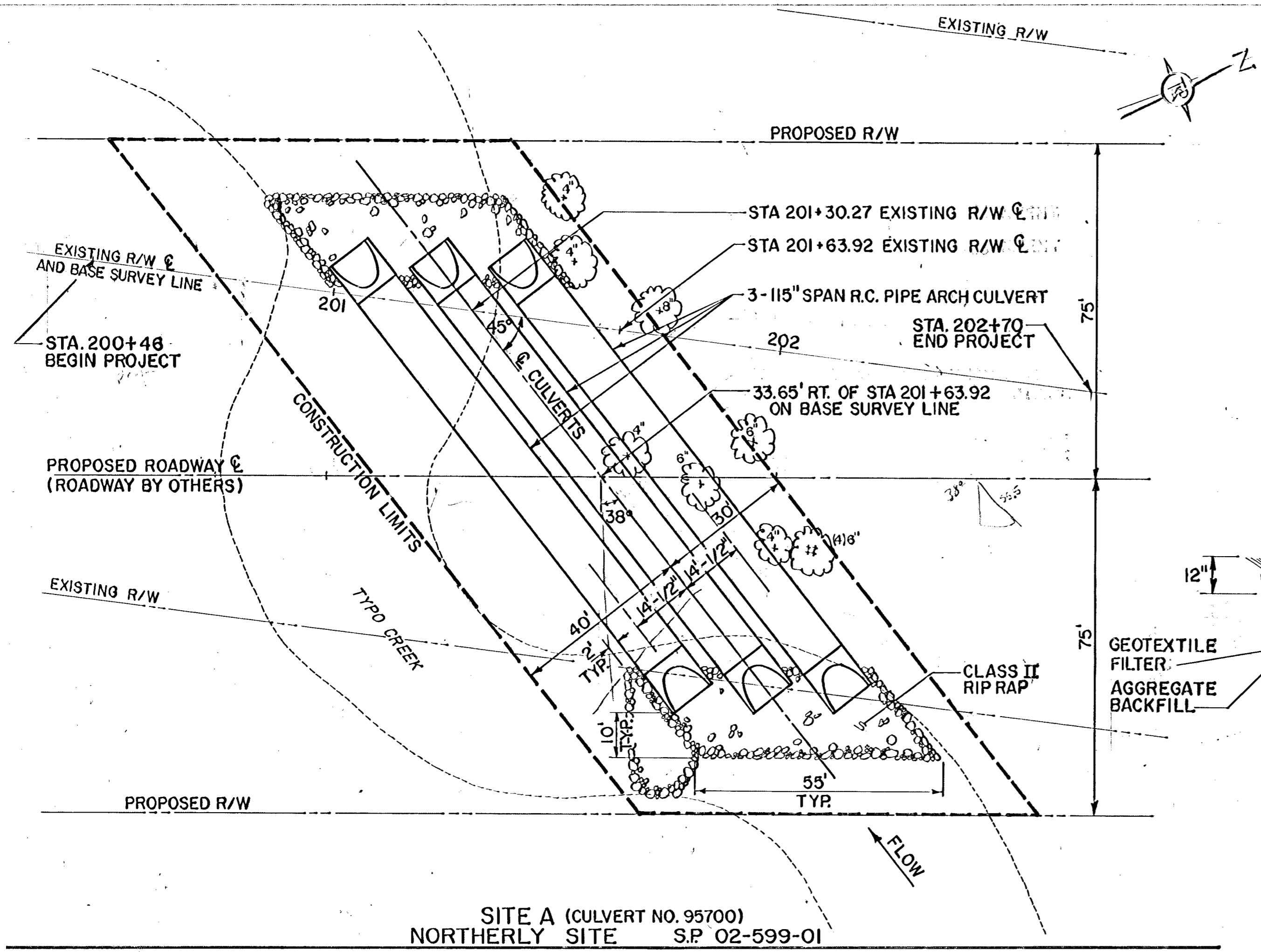
RECOMMENDED FOR APPROVAL *C.E. Weichselbaum* 10-7-1984 DISTRICT ENGINEER

RECOMMENDED FOR APPROVAL *Dwight O. Ottobald* 1-16-1984

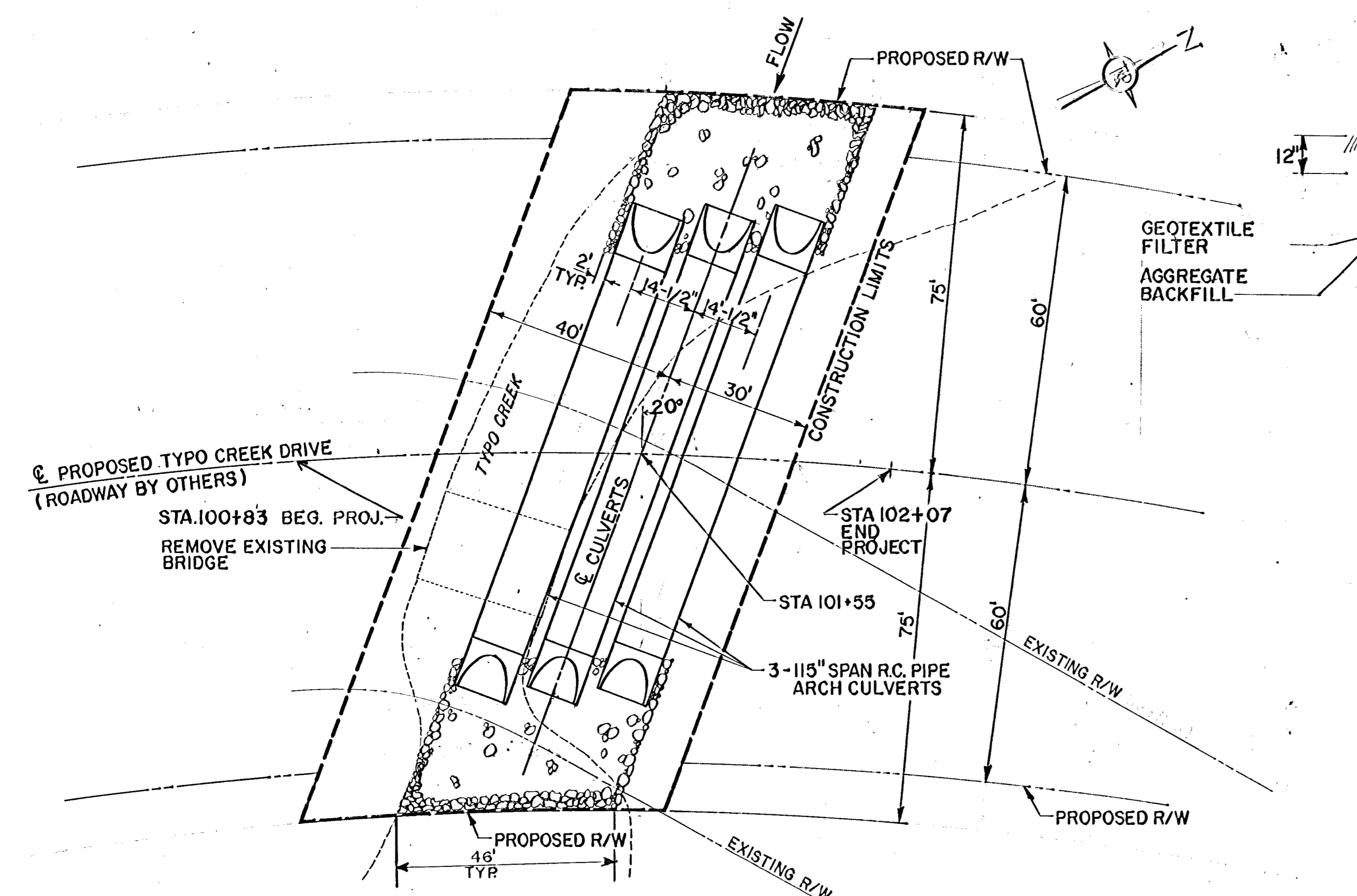
APPROVED 1-17-84 *[Signature]* STATE ENGINEER

County Proj. No. _____

DESIGN DESIGNATION
ADT (CURRENT YEAR) 782 Soil Factor 50%
ADT YR. 2004 1250
T (HEAVY COMMERCIAL) 80
9 Ton Design
Design Speed 50 MPH
Design Speed not achieved at:
STA _____ TO STA _____ MPH
STA _____ TO STA _____ MPH



SITE A (CULVERT NO. 95700)
NORTHERLY SITE S.P. 02-599-01

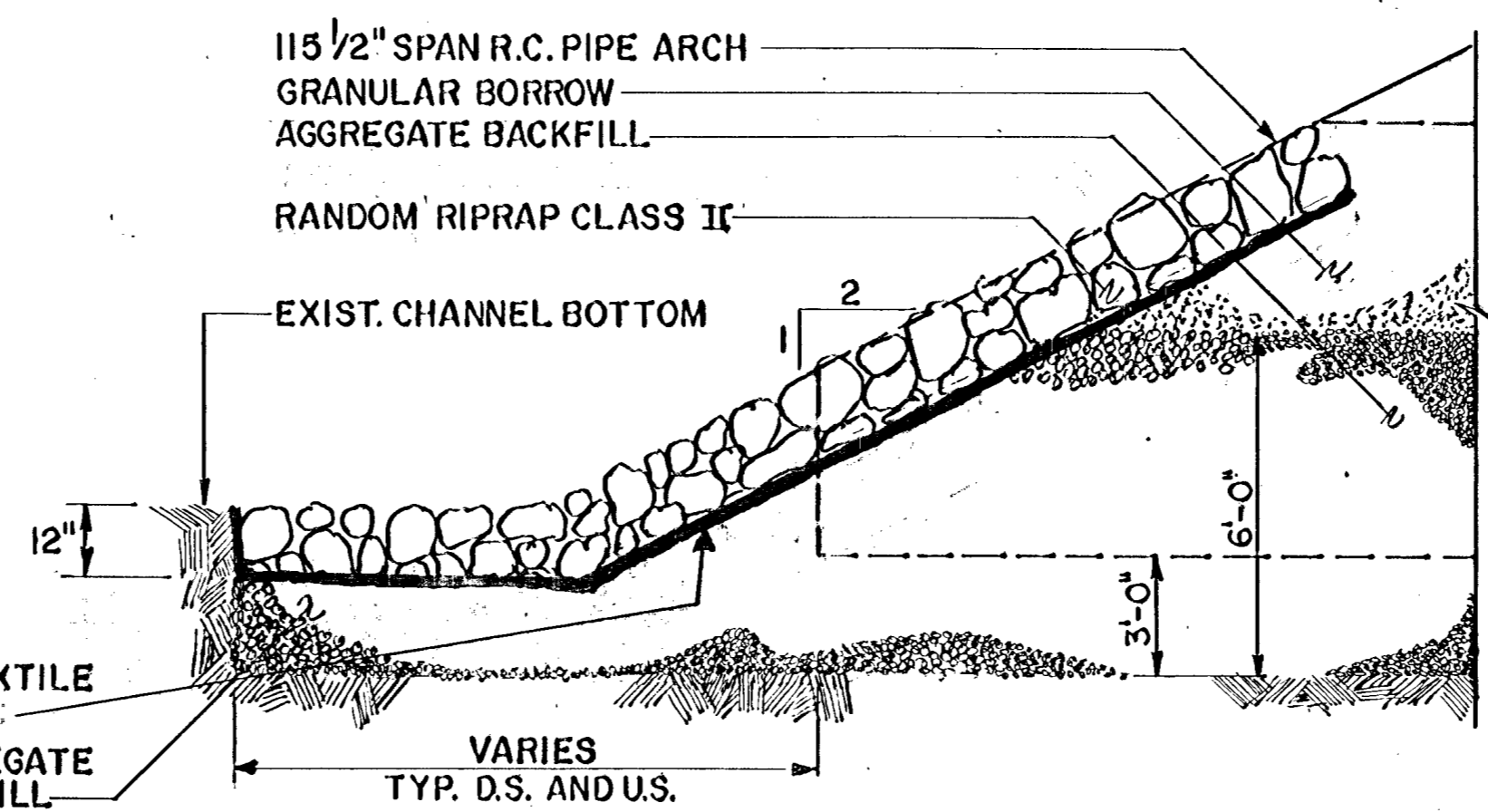


SITE B (CULVERT NO. 95701)
SOUTHERLY SITE S.P. 02-599-02

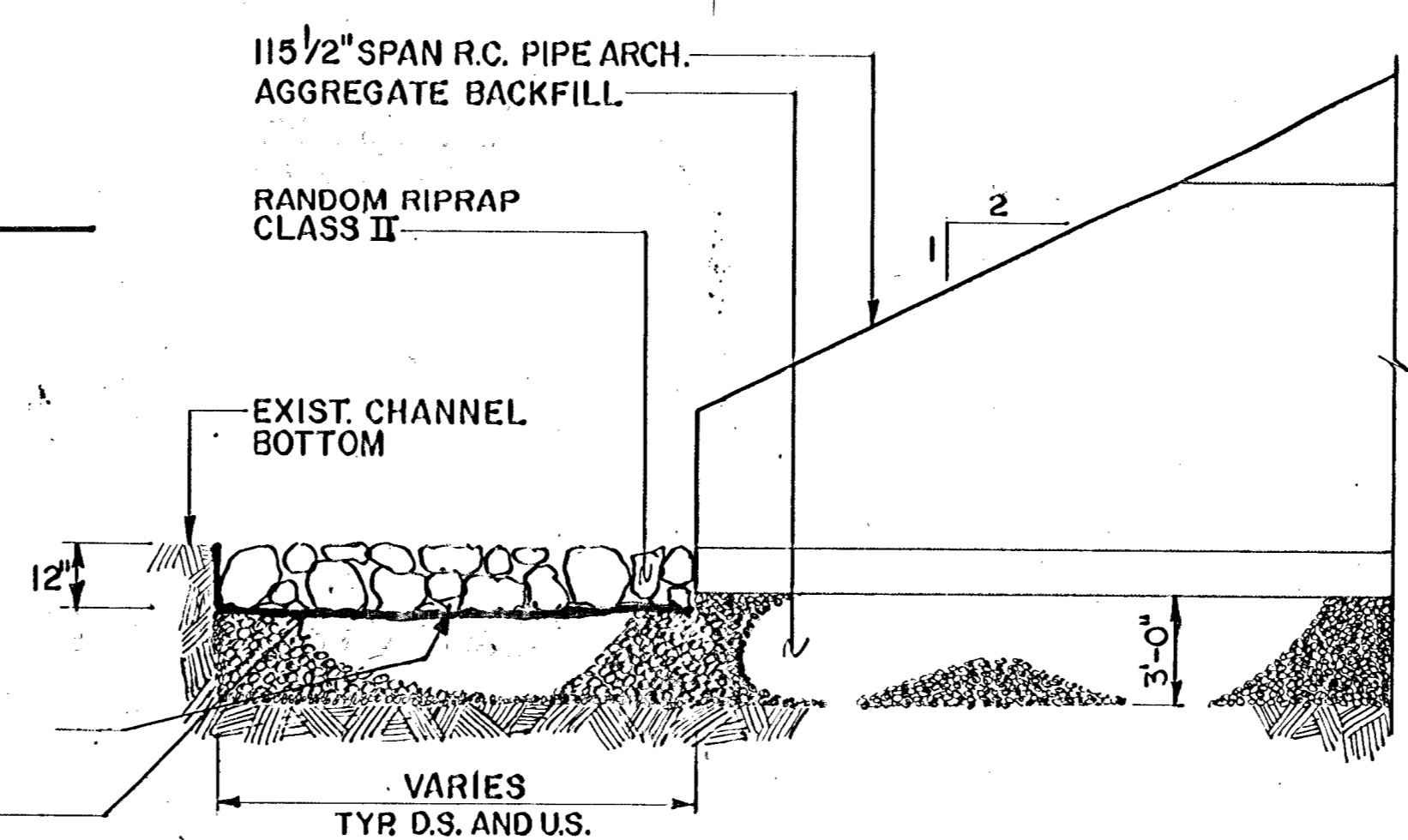
① STANDARD PLATES

ITEM NO.	SPECIFICATION REFERENCE TO STANDARD PLATES
0004A	SPECIFICATION REFERENCE TO STANDARD PLATES
3014J	REINFORCED CONCRETE PIPE - ARCH DETAIL
3114Q	SECTIONAL CONCRETE APRON FOR RC PIPE - ARCH
3145C	CONCRETE PIPE TIES
8000H	STANDARD BARRICADES
3007A	SHEAR REINFORCEMENT FOR PRECAST DRAINAGE STRUCTURES

① THE FOLLOWING STANDARD PLATES, AS APPROVED BY FHWA, SHALL APPLY ON THIS PROJECT.



NOTE: EXACT LIMITS OF RIPRAP TO BE DETERMINED BY ENGINEER IN THE FIELD.



FUTURE SURFACE
1 1/2" 2331 WEARING COURSE
1 1/2" 2331 BINDER COURSE
4" CLASS 5 AGGREGATE

RECOVERY AREA
25'-0"

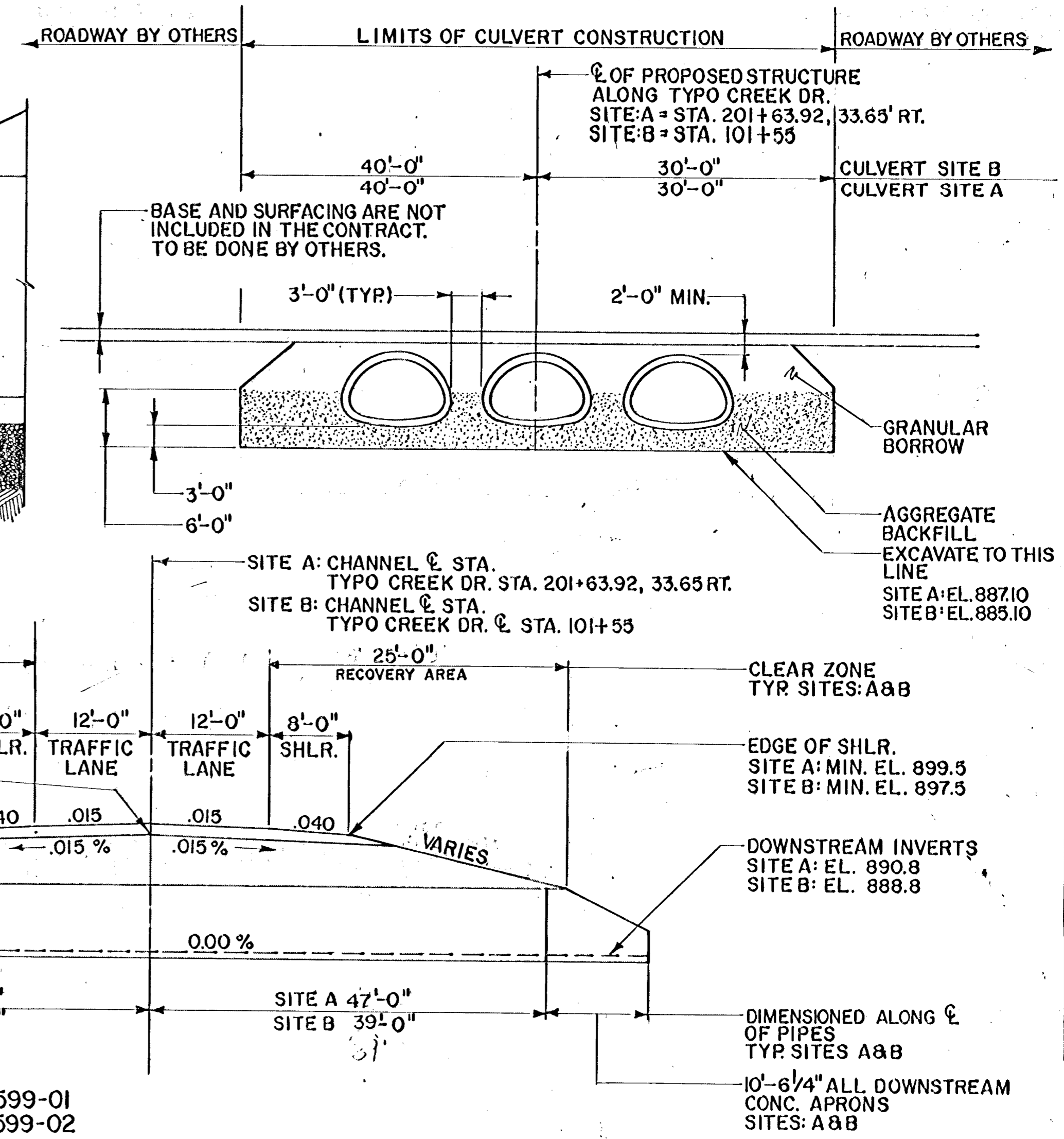
UPSTREAM INVERTS
SITE A: EL. 890.8
SITE B: EL. 888.8

11'-1/4" ALL UPSTREAM CONC. APRONS
SITES: A & B

SUMMARY OF ESTIMATED QUANTITIES (2-CULVERTS)

ITEM NO.	ITEM	UNIT.	SP-02-599-01	SP-02-599-02
			BROS. 9102(1) A	BROS. 9102(2) B
2021.501	MOBILIZATION	L.S.	0.5	0.5
2105.522	SELECT GRANULAR BORROW (LV) MODIFIED	C.Y.	2200	1640
2442.501	REMOVE OLD BRIDGE	L.S.		1
2451.501	STRUCTURE EXCAVATION, CLASS U (LV)	C.Y.	4260	4180
2451.505	AGGREGATE BACKFILL (LV)	C.Y.	2370	2150
2501.521	115" SPAN RC PIPE - ARCH CULVERTS, CLASS IIIA	L.F.	282	234
2501.525	115" SPAN RC PIPE - ARCH APRONS	EACH	6	6
2511.501	RANDOM RIP RAP, CLASS II	C.Y.	140	140
2101.502	CLEARING	TREE	11	
2101.507	GRUBBING	TREE	8	
2511.515	GEOTEXTILE FILTER	S.Y.	420	420
0573602	HAY OR STRAW BALES	EACH	175	150

① NON PARTICIPATING ITEM
CAUTION SHALL BE TAKEN NOT TO DISTURB AREAS OUTSIDE THE CONSTRUCTION LIMITS.
② TO BE USED FOR TEMPORARY EROSION CONTROL AS DIRECTED BY THE ENGINEER.



SITE A: CHANNEL C. STA. TYPO CREEK DR. STA. 201+63.92, 33.65 RT.
SITE B: CHANNEL C. STA. TYPO CREEK DR. C. STA. 101+55

CLEAR ZONE
TYR SITES: A & B

EDGE OF SHLR.
SITE A: MIN. EL. 899.5
SITE B: MIN. EL. 897.5

DOWNSTREAM INVERTS
SITE A: EL. 890.8
SITE B: EL. 888.8

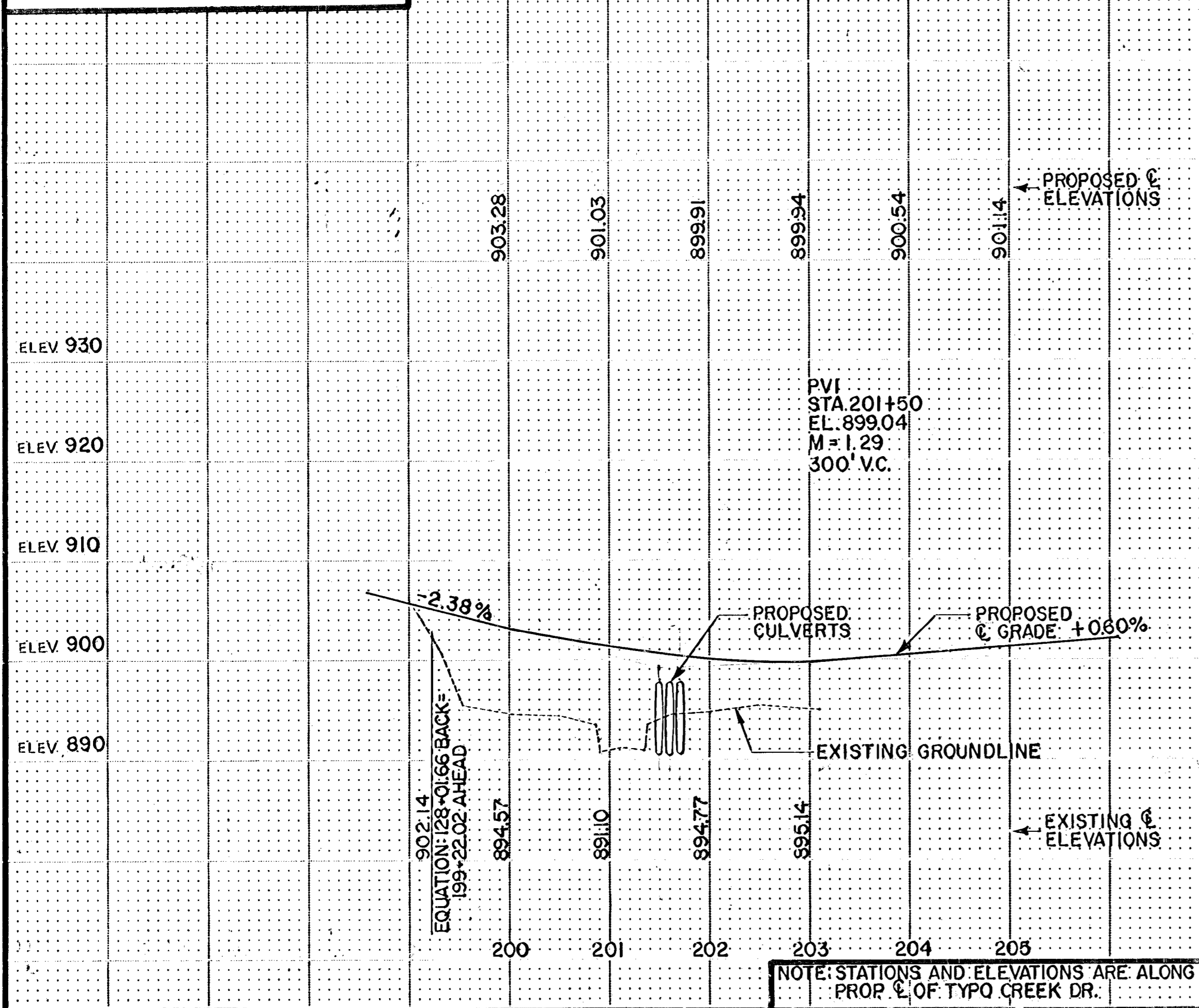
DIMENSIONED ALONG C. OF PIPES
TYR SITES: A & B
10'-6 1/4" ALL DOWNSTREAM CONC. APRONS
SITES: A & B

S.P. 02-599-01
S.P. 02-599-02

* SEE CULVERT SURVEY SHEET FOR TYPICAL ROADWAY SECTION

CONTRACTED PROFILE

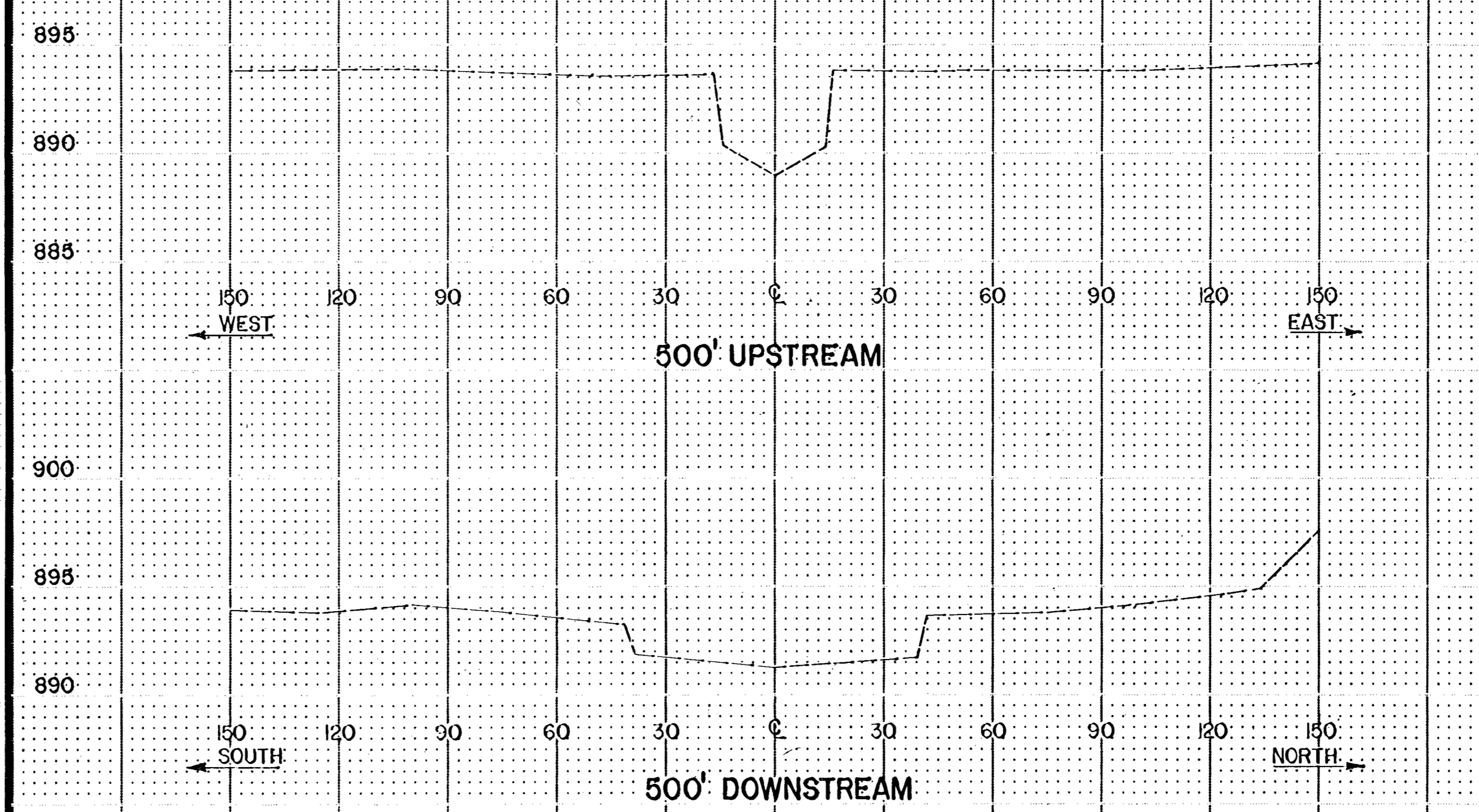
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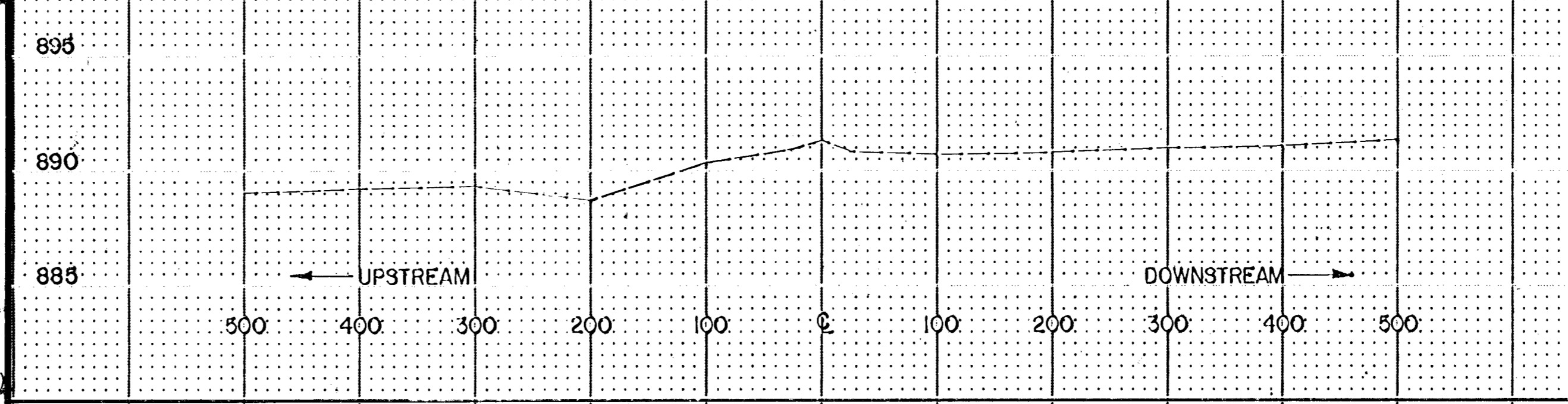
TYPICAL SECTIONS & PERTINENT DATA

SCALES AS SHOWN

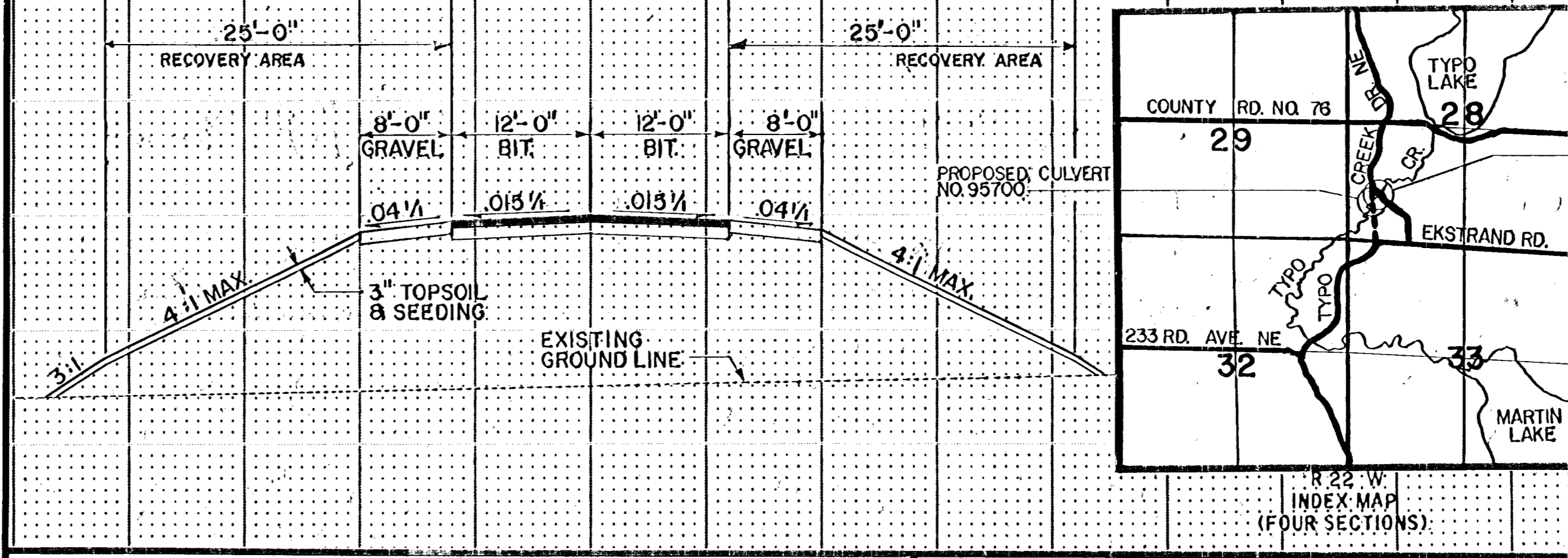
TYPICAL CHANNEL SECTIONS



STREAM PROFILE

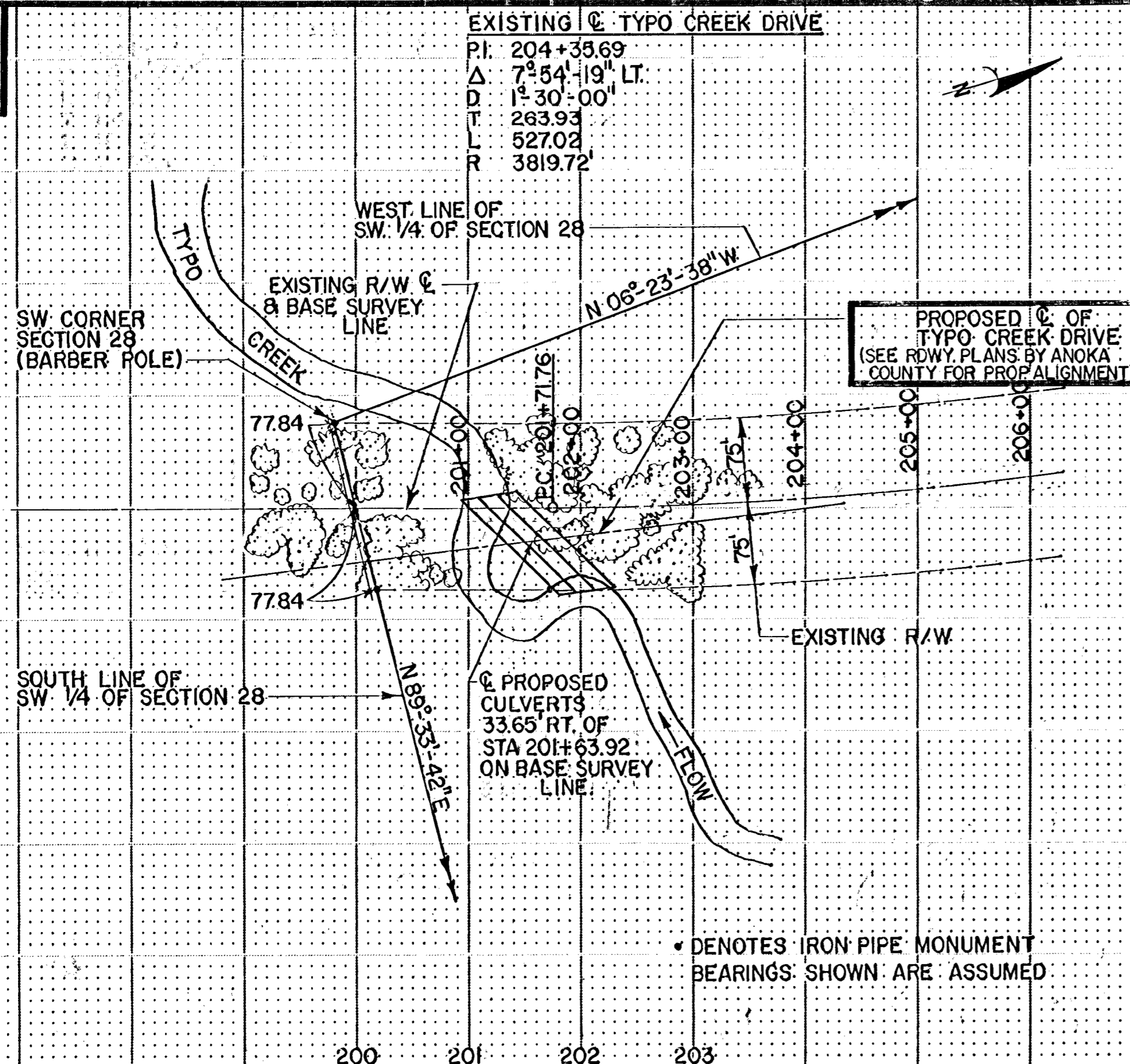


PROPOSED ROADWAY SECTION



PLAT

SCALE: 1" = 100'



Fed. Proj. No.

LOCATION ENGINEER'S OBSERVATIONS AT CULVERT 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. **EXISTING BRIDGE NO. L-8149, LOCATED AT COUNTY RD. NO. 76 & TYPO CREEK, STEEL BMS. & CONCRETE DECK, 23.8' x 18' DECK DIMENSION, 110 SQ. FT. CROSS SECTIONAL AREA. BRIDGE AND ROADWAY OVERTOPPED BY 100 YR. FLOOD**
- Apparent highwater elevation: **895.67** Obtained from **ACCORDING TO RESIDENT NEAR PROPOSED BRIDGE SITE**
- Other data: Approx. velocity of water at time of survey. **NOT AVAILABLE**

HYDRAULIC ENGINEERS RECOMMENDATION

DATE

Stream or ditch designation **TYPY CREEK**

Drainage area **213 SQ. MI.**

Max. flood on record **UNK.** Design flood (.50 yr. freq.) **208** C.F.S.

Max. observed highwater elevation **UNK.** Design highwater elevation **895.90**

Design mean velocity through structure **1.8** F.P.S.

Low superstructure at or above elevation **896.80**

Flowline elevation **890.80** Skew angle **38°**

Waterway area req'd. below elevation Sq. Ft. at Rt. angles to channel

In the interest of flood plain zoning the regional flood (100 yr. freq.) is **327** C.F.S. at stage **896.30** and mean velocity of **2.7** F.P.S. with **0.2** 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

Culvert survey sheets made from: **TKDA SURVEY - MARCH 1980**

Bench mark elevation **897.28** (M.S.L. 1929 Adj.)
 Location: **TOP OF BARBER POLE - SW CORNER SECTION 28, TWP 34 N., R. 22 W.**

MINNESOTA
 DEPARTMENT OF TRANSPORTATION

CULVERT SURVEY

AT MILE POINT ON **TYPY CREEK DR. NE**
 (T.H., C.S.A.H., C.R. etc.)

PROPOSED CULVERT LOCATED **0.4** MILES **S** OF

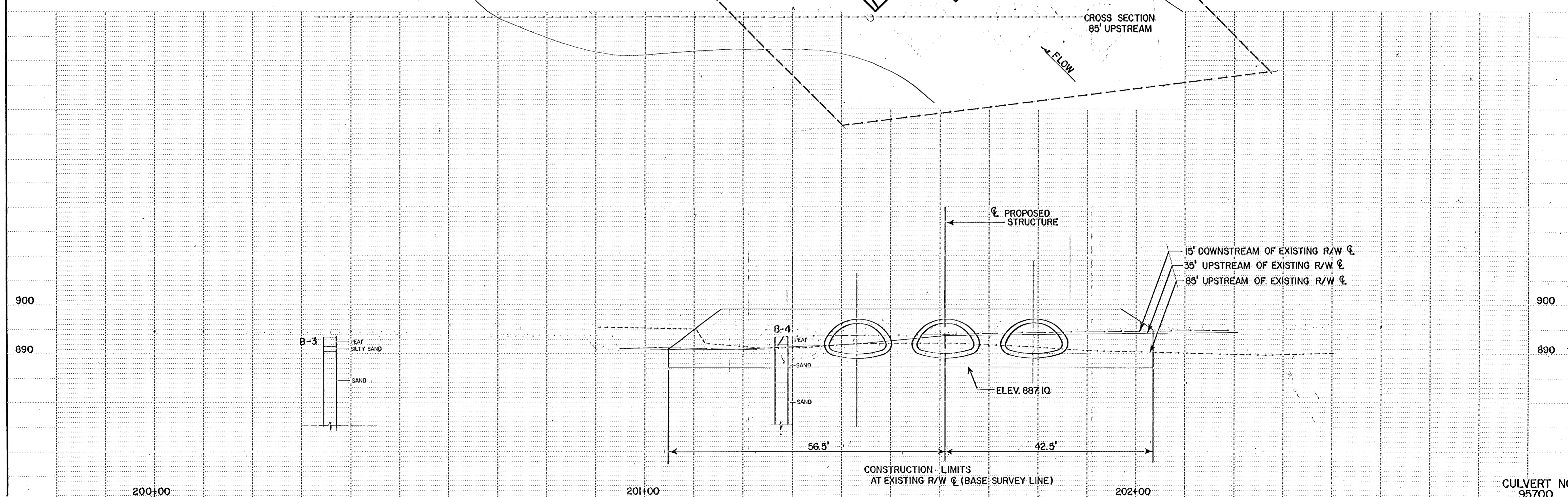
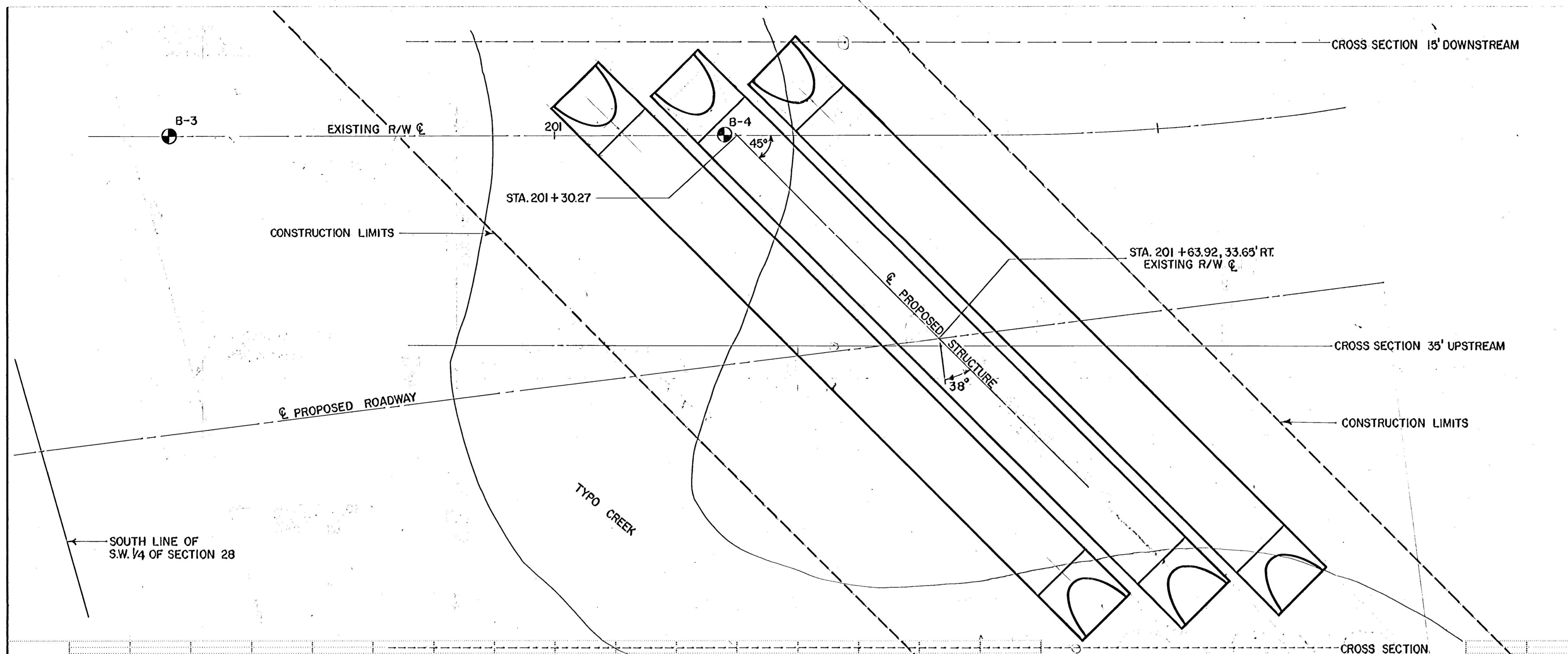
COUNTY ROAD NO. 76

SEC. **28** TWP **34 N.** R. **22 W.**

TOWNSHIP **LINWOOD** COUNTY **ANOKA**

CULVERT NO. **95700**

CROSS SECTION 15' DOWNSTREAM



200+00

201+00

202+00

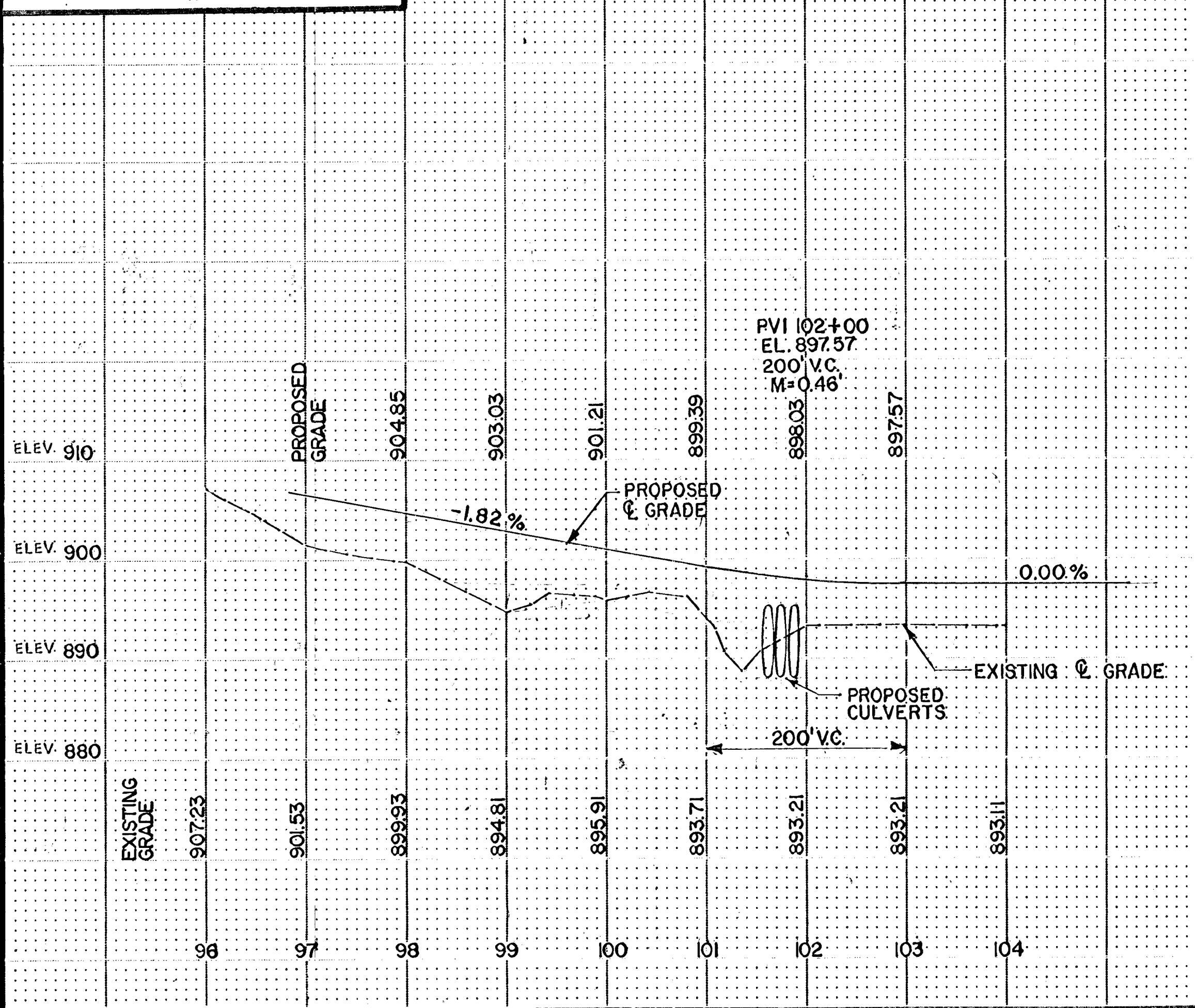
State Proj. No. 02-599-01

CULVERT NO. 95700

Sheet No. 4 of 6 Sheets

CONTRACTED PROFILE

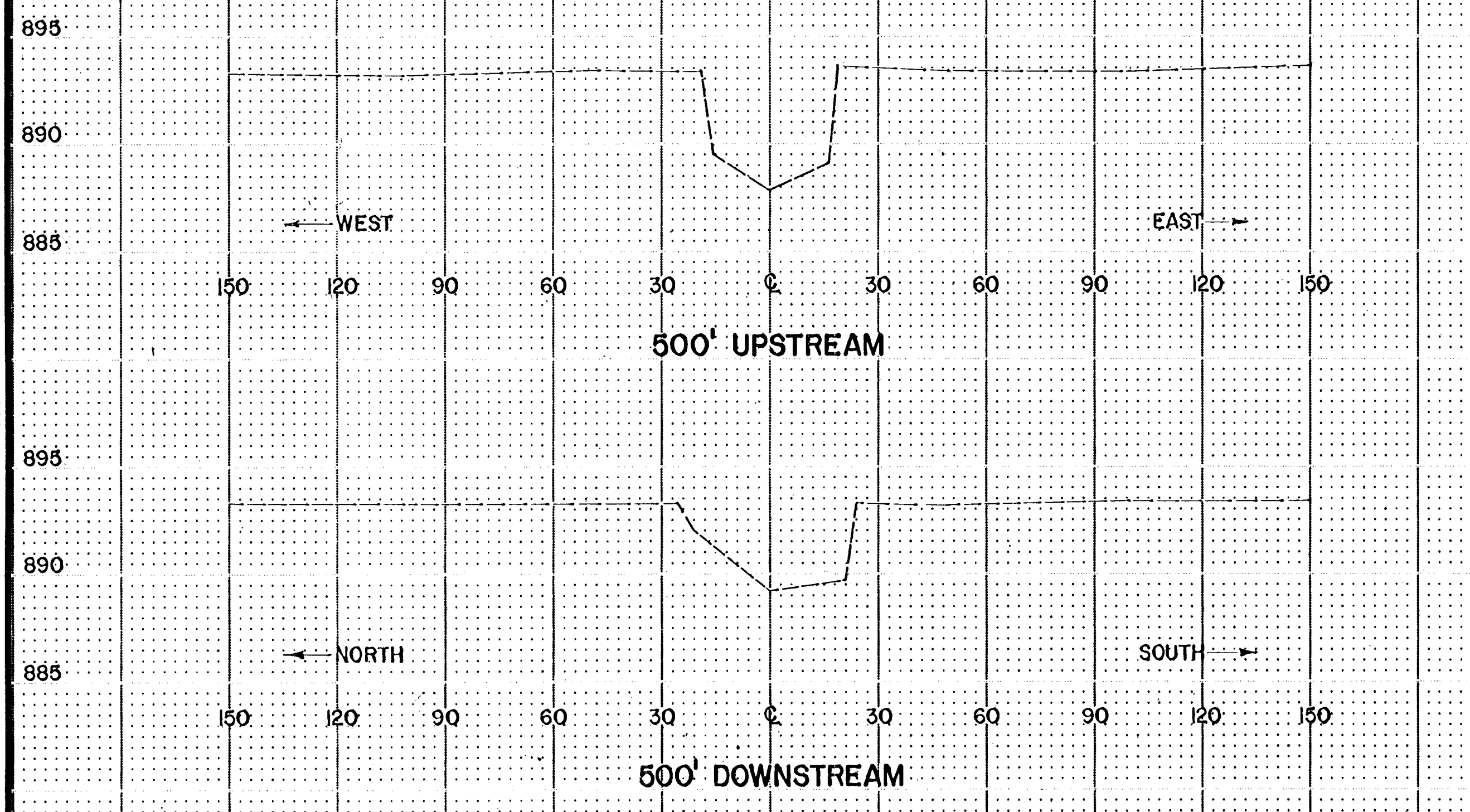
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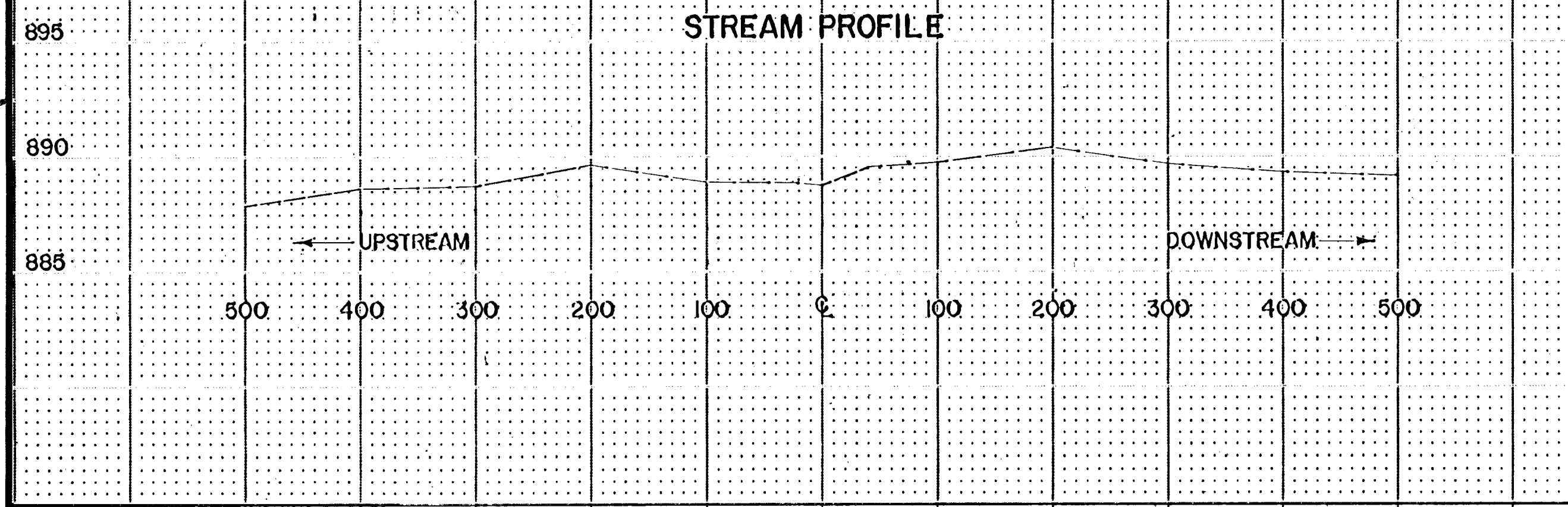
TYPICAL SECTIONS & PERTINENT DATA

SCALES AS SHOWN

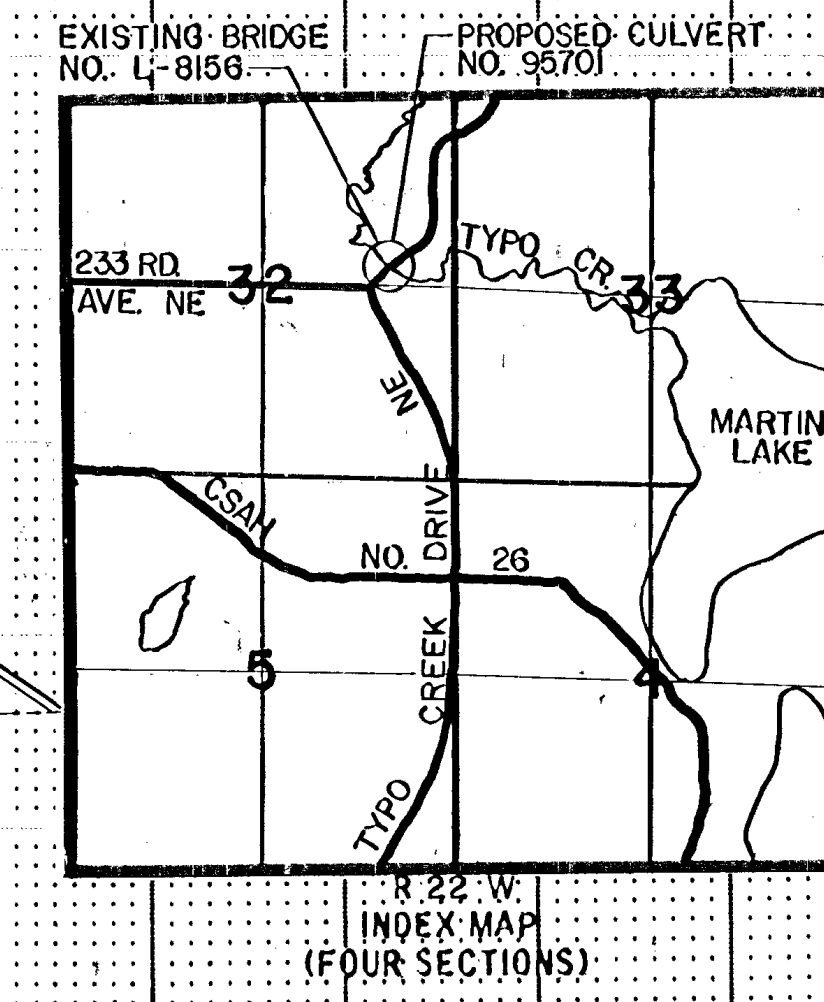
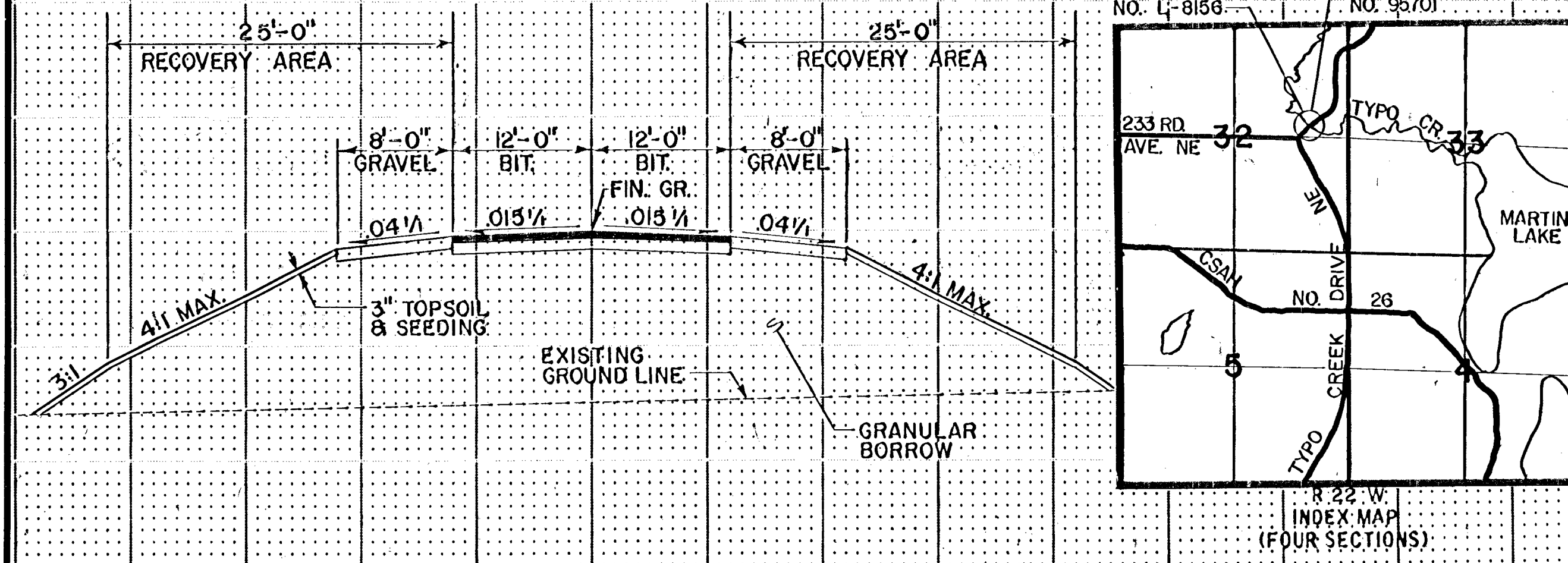
TYPICAL CHANNEL SECTIONS



STREAM PROFILE

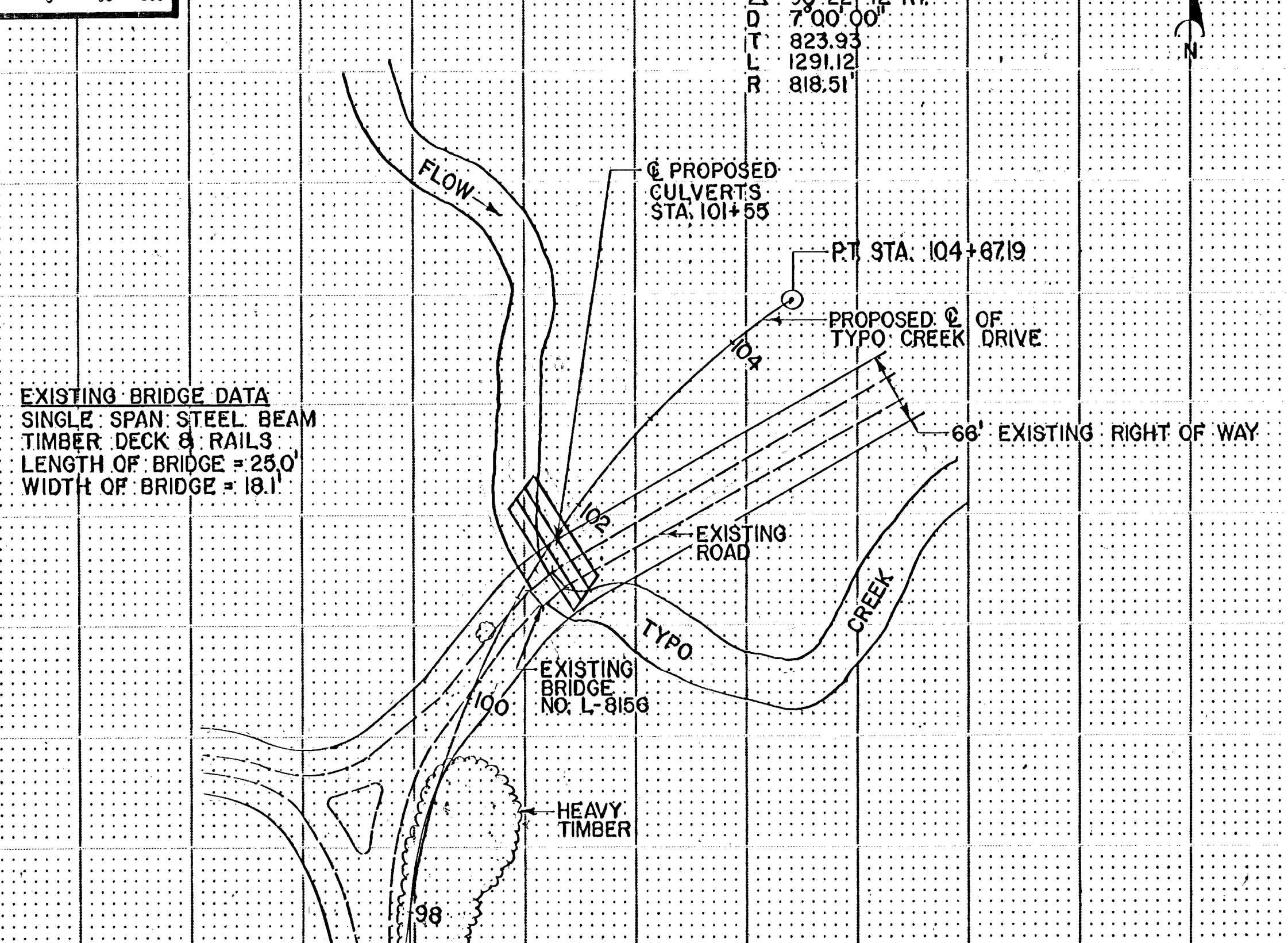


PROPOSED ROADWAY SECTION



PLAT

SCALE: 1" = 100'



EXISTING BRIDGE DATA
 SINGLE SPAN STEEL BEAM
 TIMBER DECK & RAILS
 LENGTH OF BRIDGE = 250'
 WIDTH OF BRIDGE = 18.1'

PROPOSED TYPY CREEK DRIVE
 P.I. 100+00.00
 Δ 90°-22'-42" RT.
 D 7'00" 00"
 T 823.93
 L 1291.12
 R 818.51'

Fed. Proj. No.

LOCATION ENGINEER'S OBSERVATIONS AT CULVERT SITE

1. Special Features: Waterfalls, dams, floods, ice, debris, sliding banks, recreational boating.
 NONE

2. 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.)
 EXISTING BRIDGE NO. L-8156, LOCATED 25' DOWNSTREAM FROM PROPOSED LOCATION, STEEL BEAMS & TIMBER DECK, 250' x 18.1' DECK DIMENSION, 88 SQ. FT. CROSS SECTIONAL AREA, LOW MEMBER ELEV. 894.66, TOP OF BRIDGE DECK = 896.11

3. Apparent highwater elevation 895.67 Obtained from
 LOCAL RESIDENT

4. Other data: Approx. velocity of water at time of survey.....
 NOT AVAILABLE

HYDRAULIC ENGINEERS RECOMMENDATION

DATE

Stream or ditch designation TYPY CREEK
 Drainage area 22.7 SQ. MI.
 Max. flood on record UNK. Design flood (. . . 50 . . . yr. freq.) 208 . . . C.F.S.
 Max. observed highwater elevation UNK. Design highwater elevation 895.80
 Design mean velocity through structure 1.6 . . . F.P.S.
 Low superstructure at or above elevation 894.80
 Flowline elevation 888.80 Skew angle 20°
 Waterway area req'd. below elevation Sq. Ft. at Rt. angles to channel

In the interest of flood plain zoning the regional flood (100 yr. freq.) is 327 . . . C.F.S. at stage 896.0 . . . and mean velocity of . . . 2.5 . . . F.P.S. with . . . 0.2 . . . 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

Culvert survey sheets made from: TKDA SURVEY - MARCH 1980

Bench mark elevation: 897.01 (M.S.L. 1929 Adj.)
 Location: 60d SPK. TRIPLE 12" BIRCH ON PROPOSED
 STA. 99+32

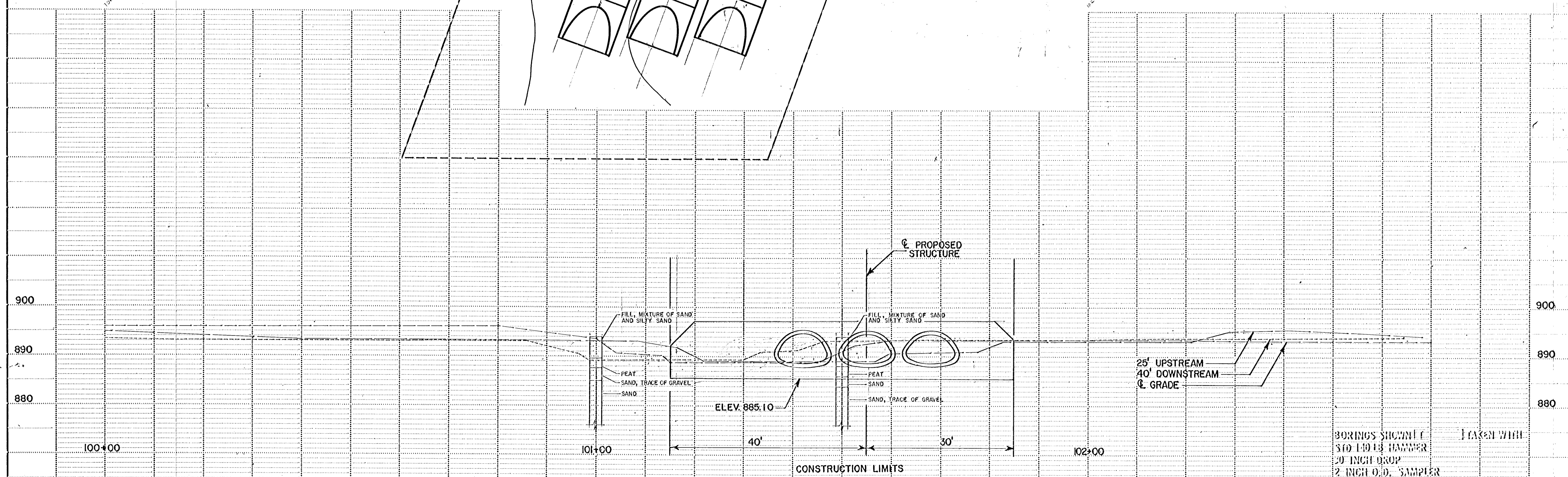
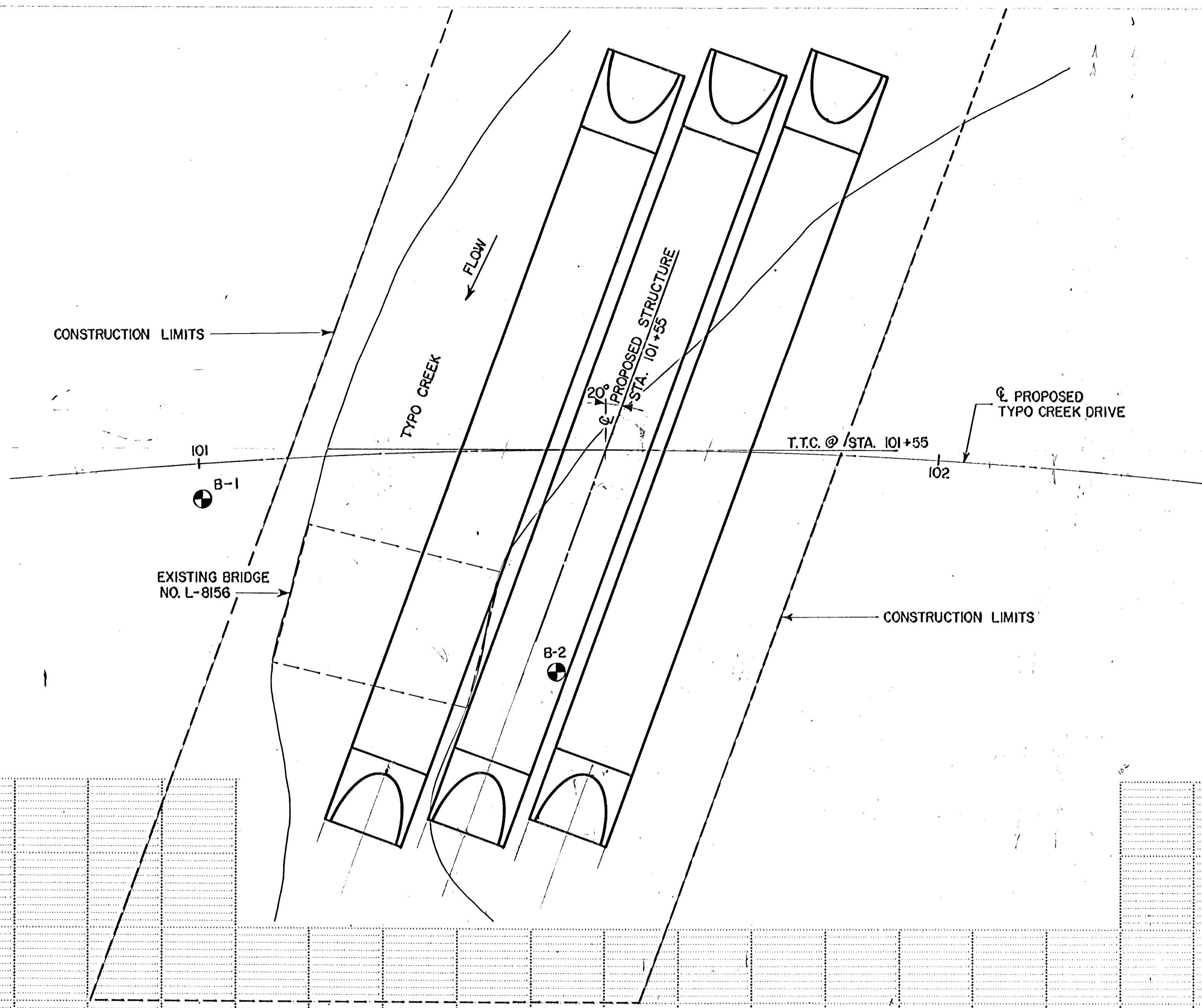
MINNESOTA
 DEPARTMENT OF TRANSPORTATION

CULVERT SURVEY

AT MILE POINT ON TYPY CREEK DR. NE
 (T.H., C.S.A.H., C.R. etc.)
 PROPOSED CULVERT LOCATED 0.8 MILES N. OF
 CSAH NO. 26

SEC. 32 TWP. 34 N. R. 22 W.
 TOWNSHIP LINWOOD COUNTY ANOKA

CULVERT NO. 95701



BORINGS SHOWN TAKEN WITH
 300 LB HAMMER
 20 INCH DROP
 2 INCH O.D. SAMPLER

SURVEY PLAN AND PROFILE

DES: JDS
 ENG: DHB

DR: EDM
 ENG: JDS

DATE: 12/10/59

State Proj. No. 02-599-02

Sheet No. 6 of 6 Sheets

CULVERT NO.
 95701