

# CITY OF LINO LAKES MINNESOTA

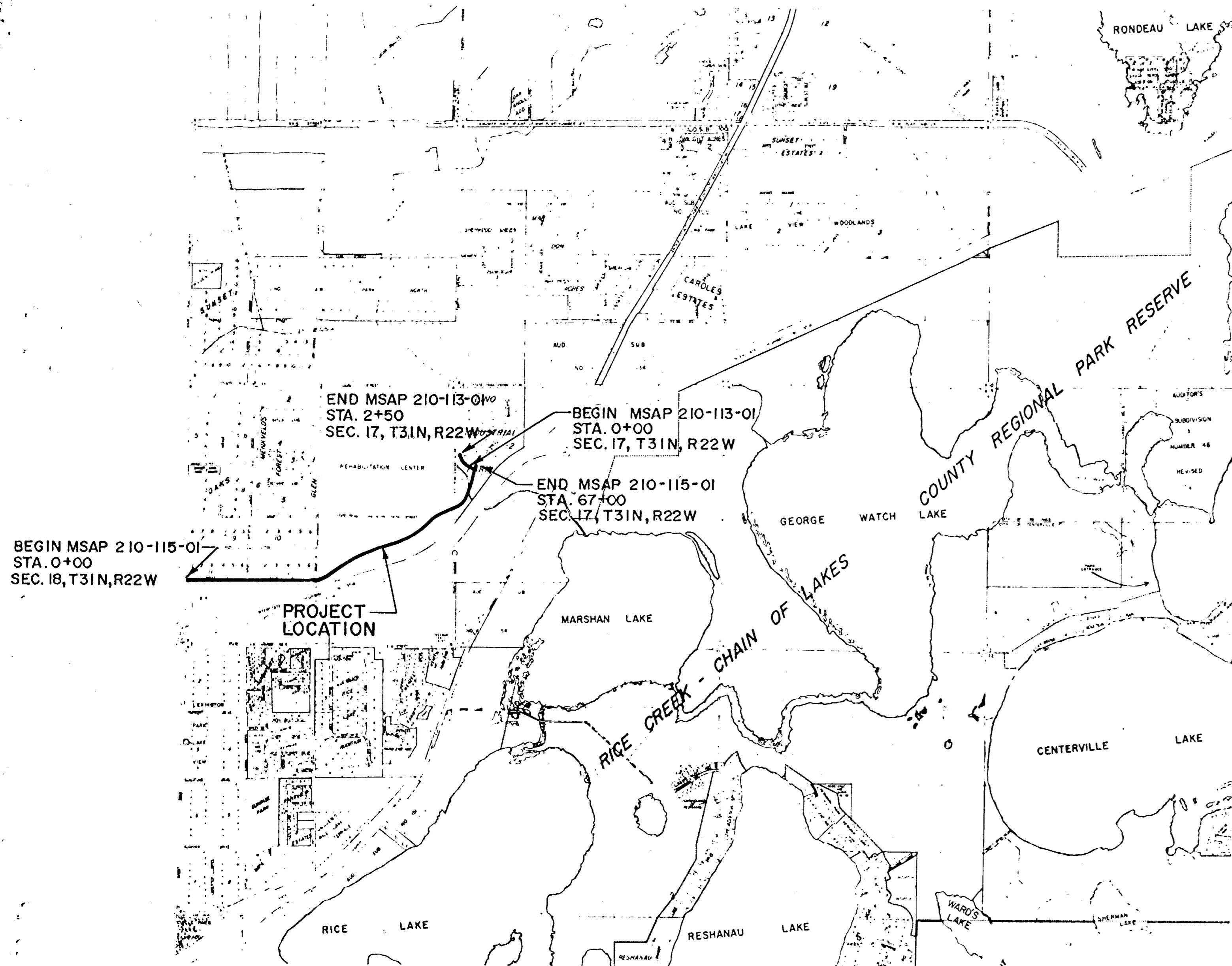
## APOLLO DRIVE IMPROVEMENTS

MSAP 210-113-01 & 210-115-01

### INCLUDING SANITARY, STORM SEWER, WATERMAIN AND STREET CONSTRUCTION

LIST OF DRAWINGS

DRAWING NO.	DESCRIPTION
1	TITLE SHEET
2	LOCATION MAP, TYPICAL SECTIONS
3	STATEMENT OF ESTIMATED QUANTITIES
4	STREET IMPROVEMENTS, STATION 0+00 TO STATION 12+00
5	STREET IMPROVEMENTS, STATION 12+00 TO STATION 25+00
6	STREET IMPROVEMENTS, STATION 25+00 TO STATION 38+00
7	STREET IMPROVEMENTS, STATION 38+00 TO STATION 50+00
8	STREET IMPROVEMENTS, STATION 50+00 TO STATION 63+00
9	STREET IMPROVEMENTS, STATION 63+00 TO STATION 67+00, FOURTH AVENUE
10	UTILITIES, STATION 0+00 TO STATION 12+00
11	UTILITIES, STATION 12+00 TO STATION 25+00
12	UTILITIES, STATION 25+00 TO STATION 38+00
13	UTILITIES, STATION 38+00 TO STATION 50+00
14	UTILITIES, STATION 50+00 TO STATION 63+00
15	UTILITIES, STATION 63+00 TO STATION 67+00, FOURTH AVENUE
16	LANDSCAPING PLAN
17	CROSS SECTIONS, STATION 0+12.15 TO STATION 17+00
18	CROSS SECTIONS, STATION 18+00 TO STATION 31+00
19	CROSS SECTIONS, STATION 32+00 TO STATION 45+00
20	CROSS SECTIONS, STATION 46+00 TO STATION 55+18.87
21	CROSS SECTIONS, STATION 56+00 TO STATION 65+00
22	CROSS SECTIONS, STATION 66+00 TO STATION 67+00, FOURTH AVENUE



BEGIN MSAP 210-115-01  
STA. 0+00  
SEC. 18, T31N, R22W

END MSAP 210-113-01  
STA. 2+50  
SEC. 17, T31N, R22W

BEGIN MSAP 210-113-01  
STA. 0+00  
SEC. 17, T31N, R22W

END MSAP 210-115-01  
STA. 67+00  
SEC. 17, T31N, R22W

PROJECT  
LOCATION

**4TH AVENUE**  
MSAP 210-113-01  
FROM APOLLO DRIVE  
TO TRUNK HIGHWAY NO. 49

4TH AVENUE	MSAP 210-113-01
GROSS LENGTH	250 FEET 0.05 MILES
BRIDGES LENGTH	0 FEET 0 MILES
EXCEPTIONS LENGTH	0 FEET 0 MILES
NET LENGTH	250 FEET 0.05 MILES

**APOLLO DRIVE**  
MSAP 210-115-01  
FROM SUNSET ROAD  
TO TRUNK HIGHWAY NO.49

APOLLO DRIVE	MSAP 210-115-01
GROSS LENGTH	6700 FEET 1.27 MILES
BRIDGES LENGTH	0 FEET 0 MILES
EXCEPTIONS LENGTH	943.33 FEET .178 MILES
NET LENGTH	5756 FEET 1.09 MILES

DESIGN DESIGNATION	MSAP 210-113-01	MSAP 210-115-01
PRESENT ADT (1992)	NA	NA
PROJECTED ADT (2012)	600	3000
FUNCTIONAL CLASSIFICATION	LOW DENS COLL	HIGH DENS COLL
NO OF TRAFFIC LANES	2	4
NO PARKING LANES	2	0
R-VALUE	R=50	R=50
SIGMA N-18 FACTOR	117.157	607.295
DESIGN LOAD (TON)	10	10
DESIGN SPEED (MPH)	30	*50
STOPPING SIGHT DISTANCE BASED ON 3.5' HEIGHT OF EYE		
STOPPING SIGHT DISTANCE BASED ON 0.5' HT OF OBJECT		

\* DESIGN SPEED NOT ACHIEVED AT:  
STA 50+43.59 TO STA 53+07.58 45 MPH  
STA 55+18.87 TO STA 61+98.21 45 MPH

**SPECIFICATIONS**  
THE MINNESOTA DEPARTMENT OF TRANSPORTATION  
STANDARD SPECIFICATIONS FOR CONSTRUCTION, 1988 EDITION  
SUPPLEMENTED JANUARY 3, 1991, SHALL GOVERN AS AMENDED  
BY THE SUPPLEMENTAL SPECIFICATIONS AND SPECIAL PROVISIONS

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: 10/18/11 REG. NO. 12251

RECOMMENDED  
APPROVED ..... 1992  
LINO LAKES CITY ENGINEER

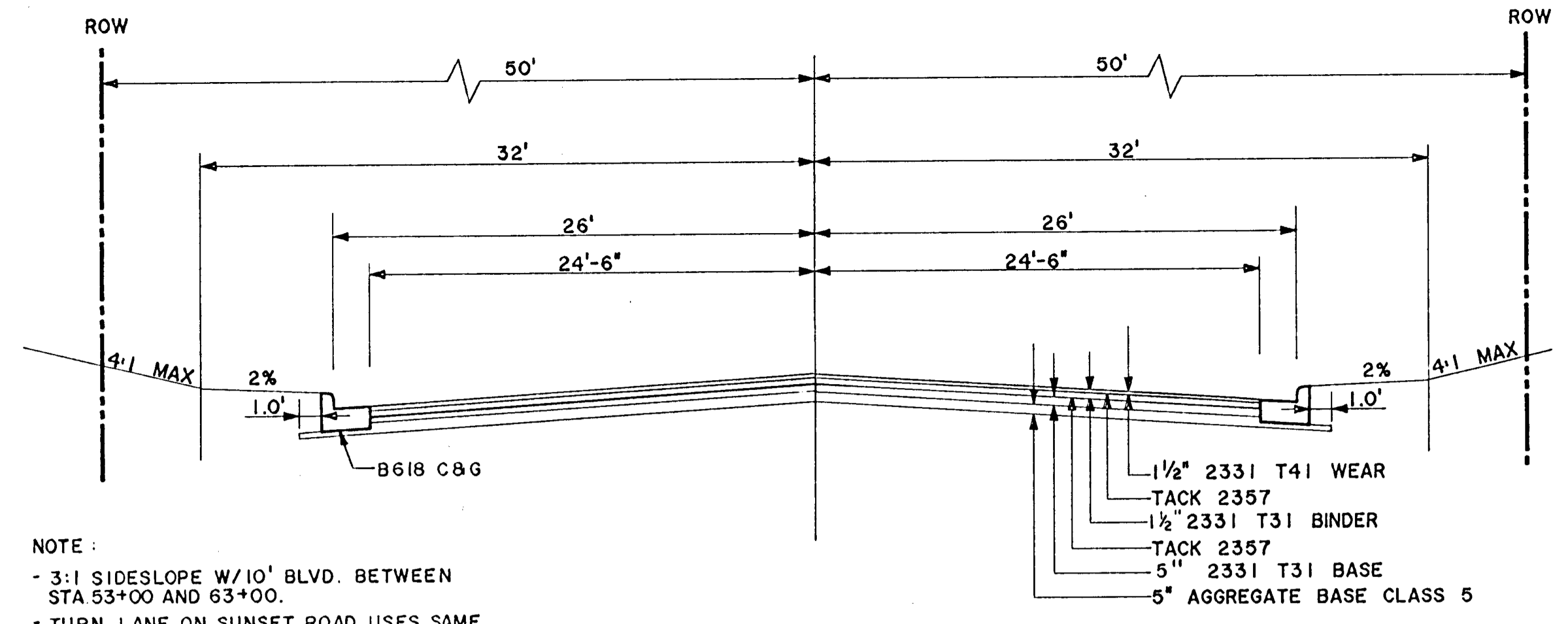
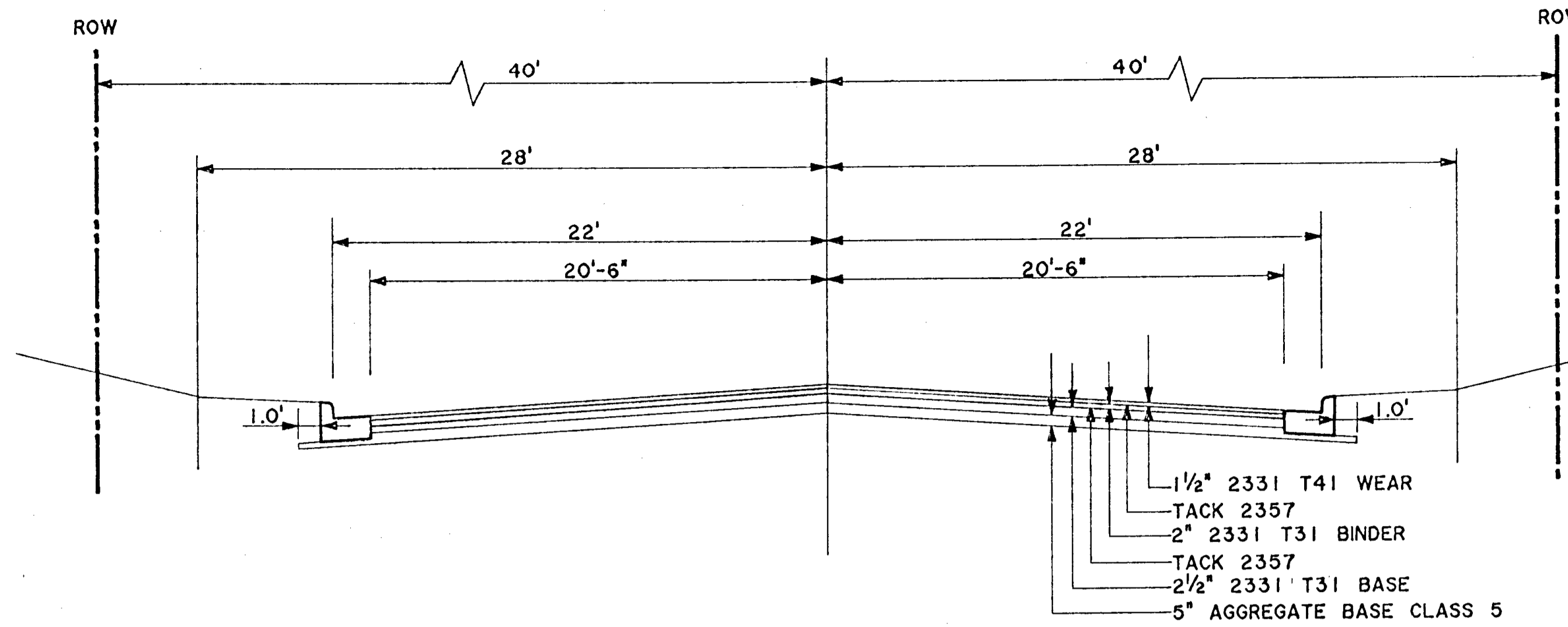
RECOMMENDED  
APPROVED ..... 1992  
ANOKA COUNTY ENGINEER

RECOMMENDED  
APPROVED ..... 1992  
DISTRICT STATE AID ENGR

RECOMMENDED  
APPROVED ..... 1992  
STATE AID PLANS & SPECIFICATIONS ENGR

APPROVED ..... 1992  
DIRECTOR, OFFICE OF STATE AID

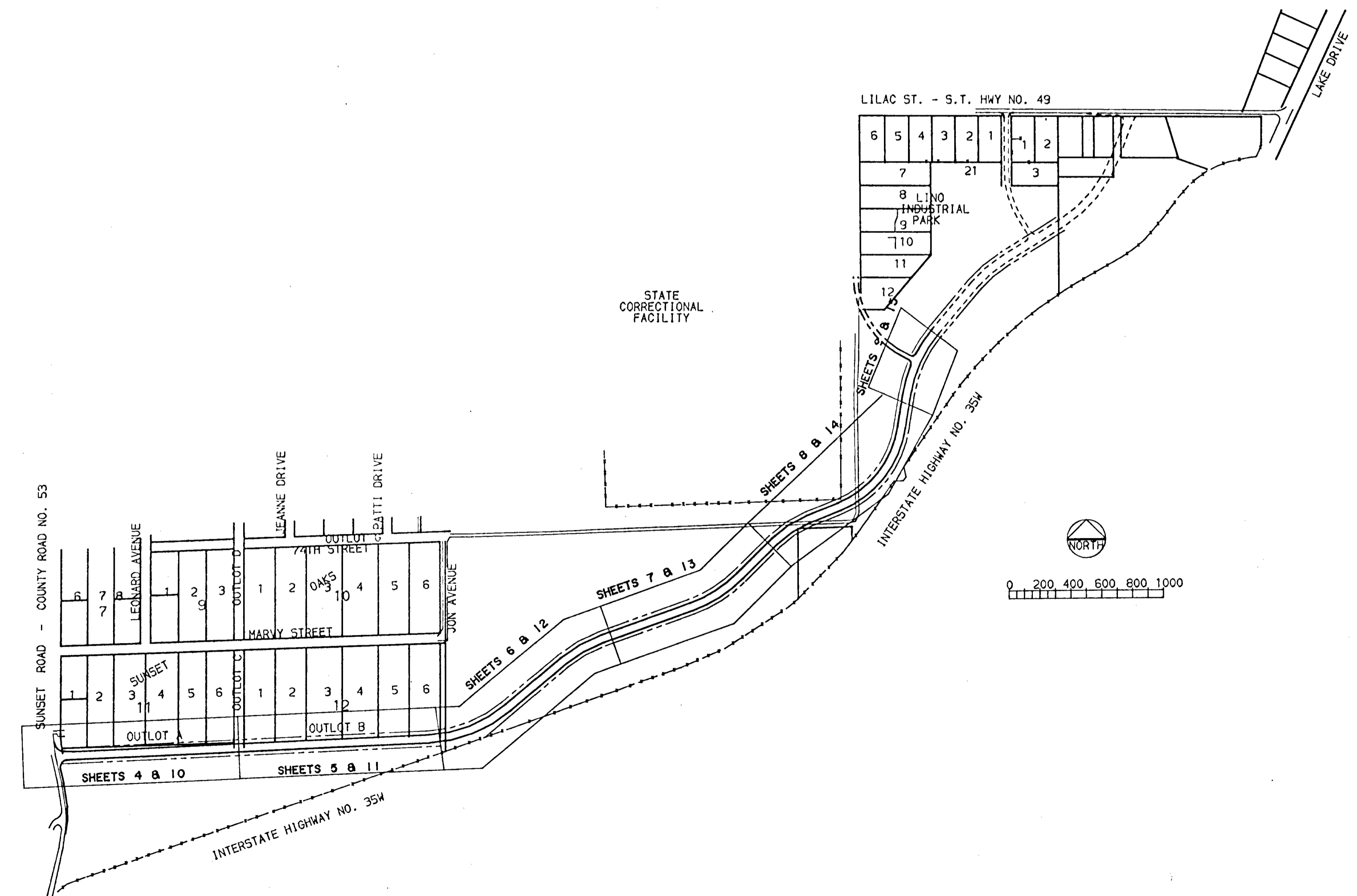
**TKDA**  
TOLTZ, KING, DUVAL, ANDERSON  
AND ASSOCIATES INCORPORATED  
ENGINEERS ARCHITECTS PLANNERS  
SAINT PAUL, MINNESOTA



NOTE:  
 - 3:1 SIDESLOPE W/10' BLVD. BETWEEN STA 53+00 AND 63+00.  
 - TURN LANE ON SUNSET ROAD USES SAME PAVEMENT SECTION AS APOLLO DRIVE.  
 - TACK QUANTITY COMPUTED BASED ON AN APPLICATION RATE OF .05 GA./SY.

4TH AVENUE, MSAP 210-113-01

APOLLO DRIVE, MSAP 210-115-01

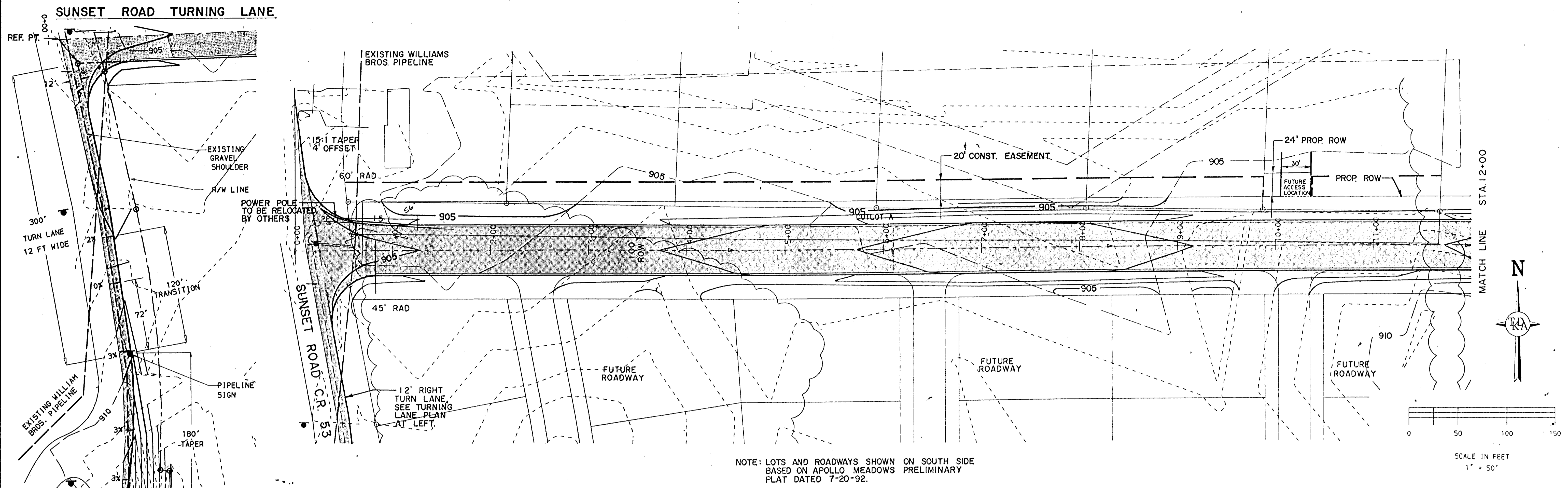


ORIGINAL SURVEY FIELDBOOK BY DATE	STAKING FIELDBOOK BY DATE	AS BUILT FIELDBOOK BY DATE
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DESIGNED		I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA	<b>TKDA</b> TOLTZ, KING, DUVALL, ANDERSON AND ASSOCIATES INCORPORATED SAINT PAUL, MINNESOTA	APOLLO DRIVE IMPROVEMENTS		LOCATION MAP AND TYPICAL SECTIONS		COMMISSION NO. 10071
DRAWN				MINNESOTA		SHEET NO. 2 OF 22 SHEETS		
NO.	DATE			BY	DATE	REG. NO.		
		JMP	1/2/16	20934				

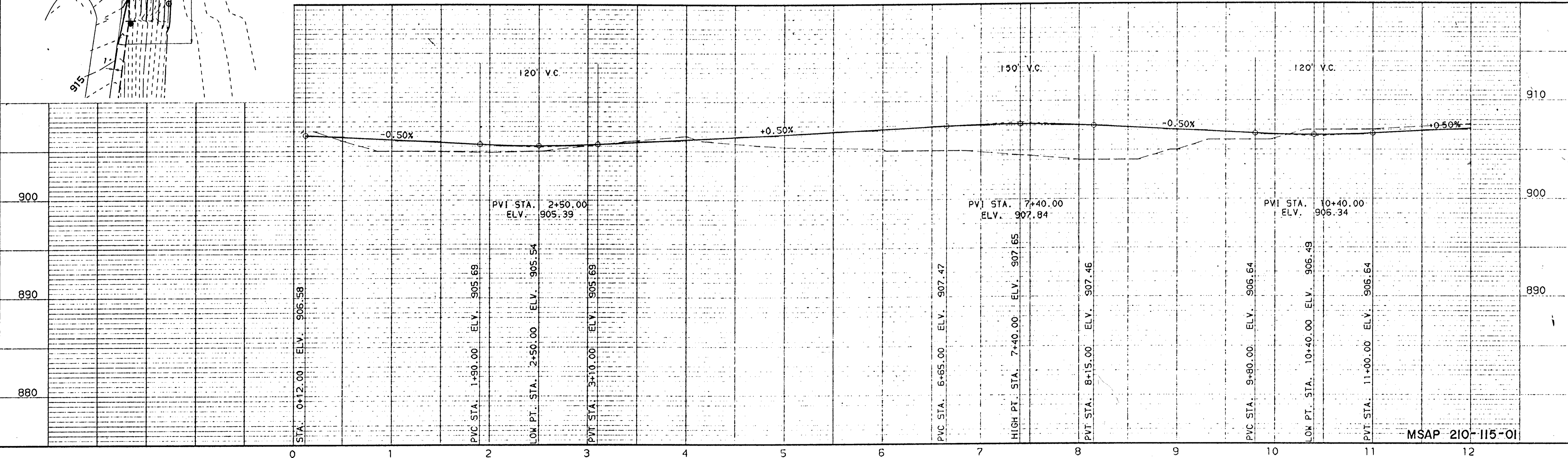
ORIG





NOTE: LOTS AND ROADWAYS SHOWN ON SOUTH SIDE BASED ON APOLLO MEADOWS PRELIMINARY PLAT DATED 7-20-92.

ORIGINAL SURVEY	AS BUILT
FIELDBOOK BY DATE	FIELDBOOK BY DATE
STAKING	
FIELDBOOK BY DATE	



MSAP 210-115-01

NO.	DATE	BY	DESCRIPTION
REVISIONS			

DESIGNED TAC IMB  
 CHECKED JMP  
 DRAWN LCS CRS IMB  
 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 1/27/92 REG. NO. 20834

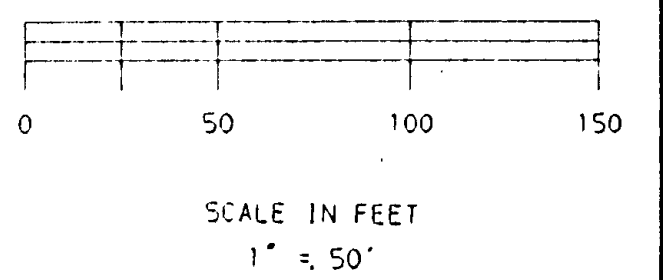
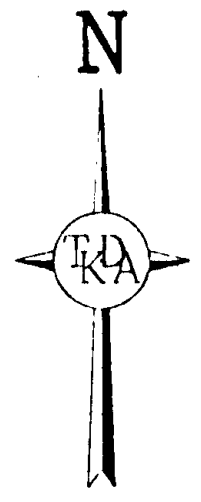
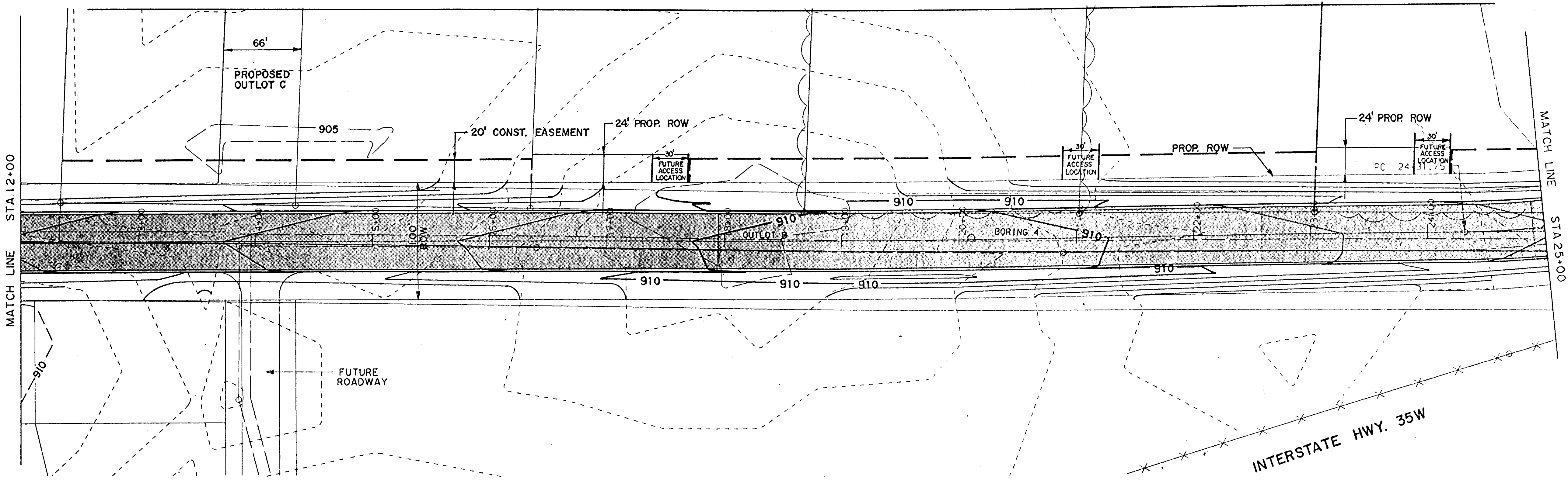
**TKDA**  
 ENGINEERS ARCHITECTS PLANNERS  
 TOLTZ, KING, DUVALL, ANDERSON AND ASSOCIATES, INCORPORATED  
 SAINT PAUL, MINNESOTA

APOLLO DRIVE IMPROVEMENTS  
 LINO LAKES MINNESOTA

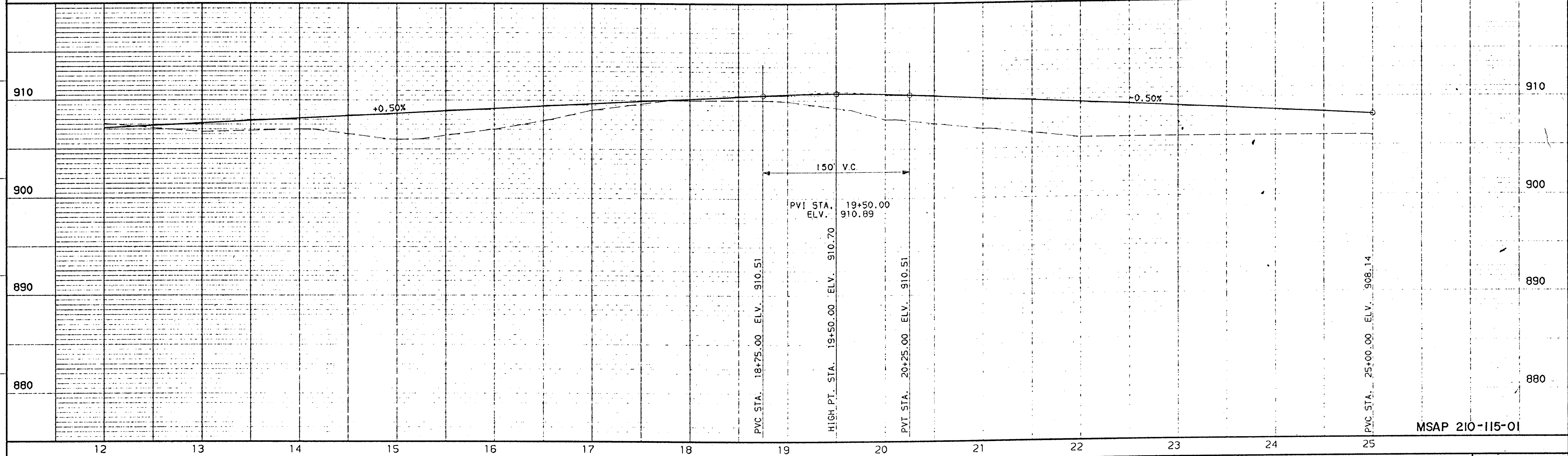
STREET IMPROVEMENTS  
 STA 0+00 TO STA 12+00  
 SHEET NO. 4 OF 22 SHEETS

COMMISSION NO. 10071

STATION	SUPERELEVATION SLOPE %	
	LEFT	RIGHT
21+41.75	-2	-2
22+38.75	-2	0
23+35.75	-2	+2
25+28.75	-6	+6



NOTE: LOTS AND ROADWAYS SHOWN ON SOUTH SIDE BASED ON APOLLO MEADOWS PRELIMINARY PLAT DATED 7-20-92.



MSAP 210-115-01

ORIGINAL SURVEY	AS BUILT
FIELDBOOK BY DATE	FIELDBOOK BY DATE
STAKING	
FIELDBOOK BY DATE	

NO.	DATE	BY	DESCRIPTION
REVISIONS			

DESIGNED: TAC, IMB, CHECKED: JMP  
 DRAWN: LGS, CRS, IMB  
 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: *[Signature]* REG. NO. 20834

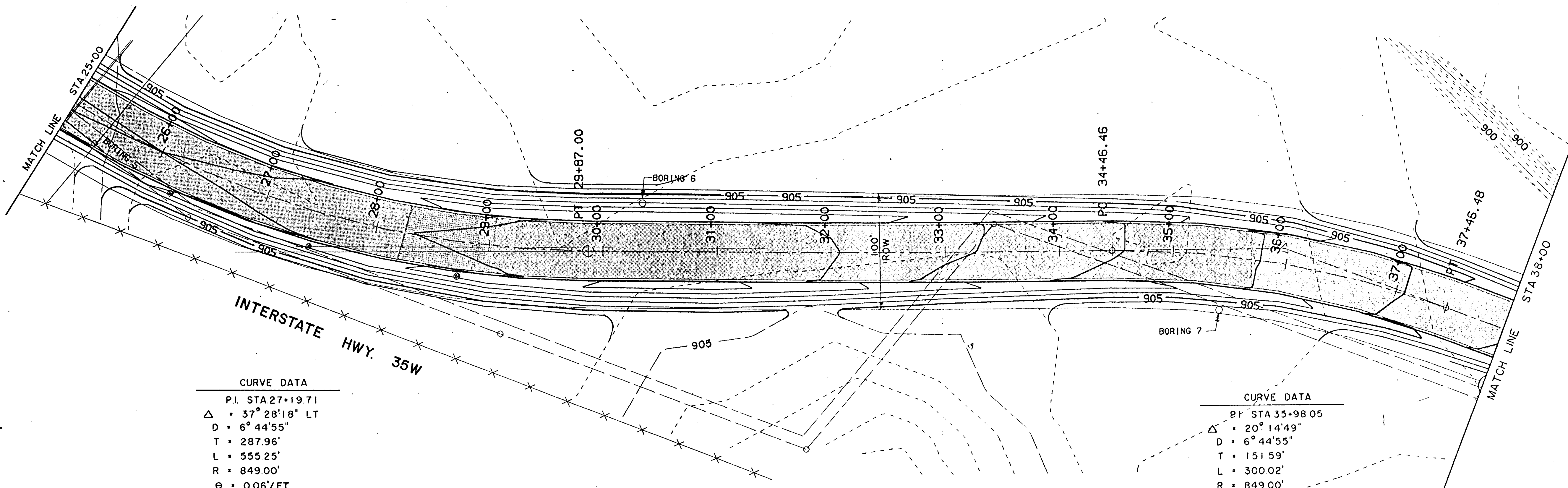
**TKDA**  
 ENGINEERS ARCHITECTS PLANNERS  
 TOLTZ, KING, DUVALL, ANDERSON AND ASSOCIATES, INCORPORATED  
 SAINT PAUL, MINNESOTA

APOLLO DRIVE IMPROVEMENTS  
 LINO LAKES MINNESOTA

STREET IMPROVEMENTS  
 STA 12+00 TO STA 25+00  
 SHEET NO. 5 OF 22 SHEETS

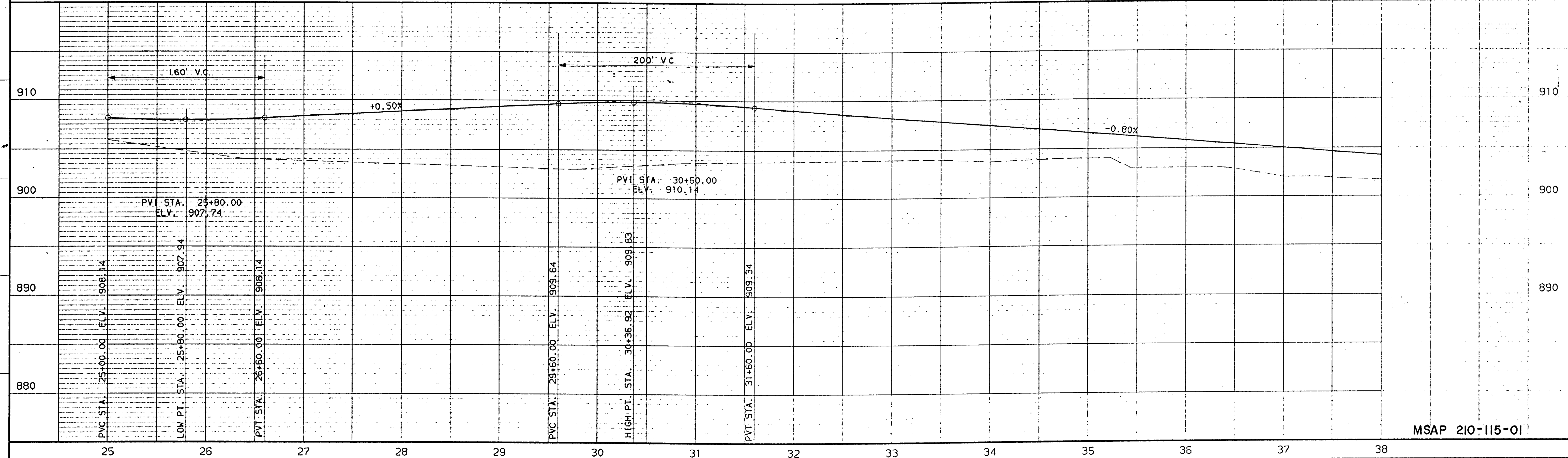
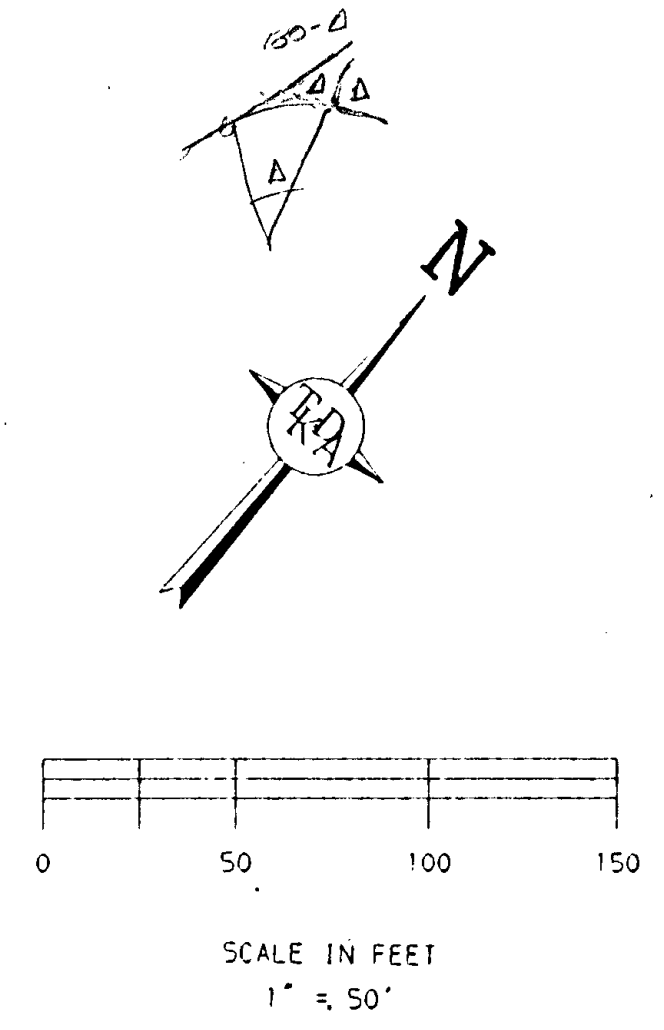
COMMISSION NO.  
 10071

STATION	SUPERELEVATION SLOPE %	
	LEFT	RIGHT
23+35.75	-2	+2
25+28.75	-6	+6
28+90.00	-6	+6
30+83.00	-2	+2
31+56.46	-2	0
31+80.00	0	0
32+53.46	0	-2
32+77.00	+2	-2
33+50.46	+6	-6
35+43.46	+6	-6
36+49.48	+6	-6
38+42.48	+2	-2



**CURVE DATA**  
 P.I. STA 27+19.71  
 $\Delta = 37^\circ 28' 18''$  LT  
 $D = 6^\circ 44' 55''$   
 $T = 287.96'$   
 $L = 555.25'$   
 $R = 849.00'$   
 $e = 0.06'/FT$

**CURVE DATA**  
 P.I. STA 35+98.05  
 $\Delta = 20^\circ 14' 49''$   
 $D = 6^\circ 44' 55''$   
 $T = 151.59'$   
 $L = 300.02'$   
 $R = 849.00'$   
 $e = 0.06'/FT$



ORIGINAL SURVEY AS BUILT  
 FIELDBOOK BY DATE  
 STAKING FIELDBOOK BY DATE

MSAP 210-115-01

NO.	DATE	BY	DESCRIPTION
REVISIONS			

DESIGNED TAC  
 CHECKED IMB  
 JMB  
 DRAWN LCS  
 CRS  
 IMB  
 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: 11/12/92 REG. NO. 20834

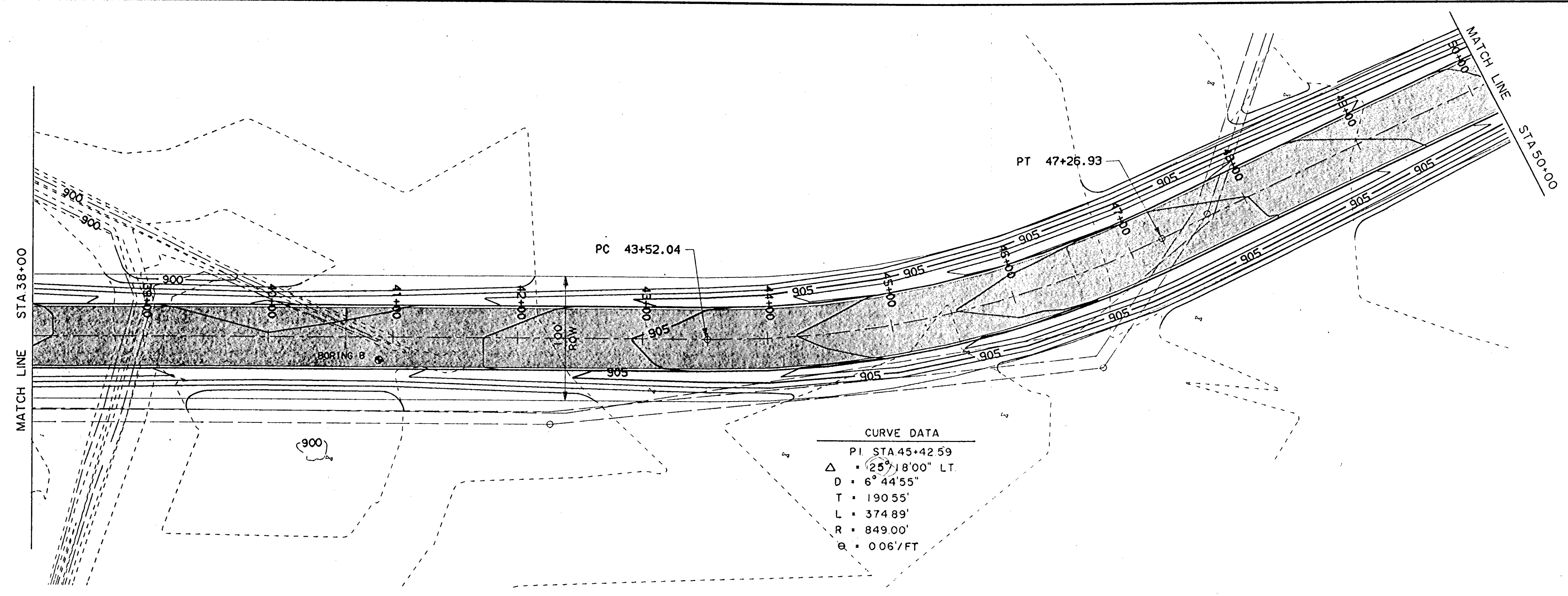
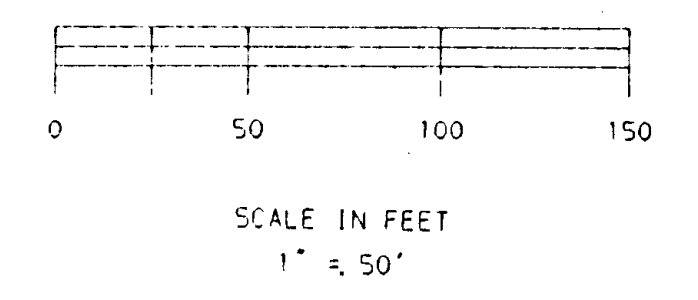
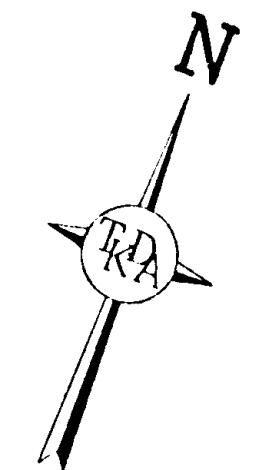
**TKDA**  
 ENGINEERS ARCHITECTS PLANNERS  
 TOLTZ, KING, DUVALL, ANDERSON AND ASSOCIATES INCORPORATED  
 SAINT PAUL, MINNESOTA

APOLLO DRIVE IMPROVEMENTS  
 LINO LAKES MINNESOTA

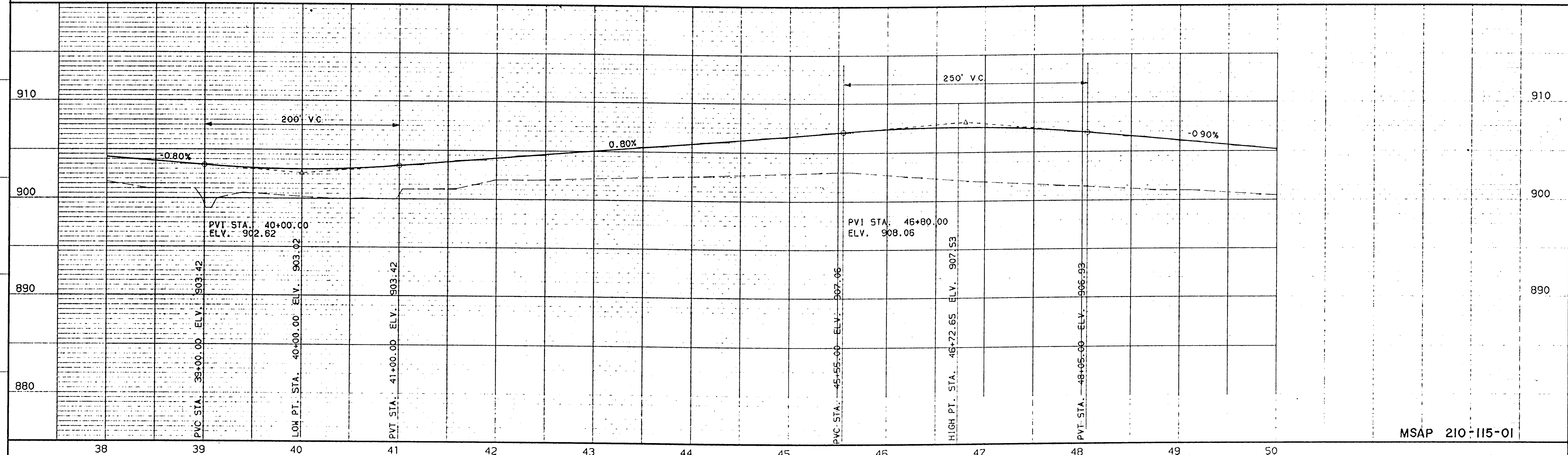
STREET IMPROVEMENTS  
 STA 25+00 TO STA 38+00  
 SHEET NO. 6 OF 22 SHEETS

COMMISSION NO.  
 10071

STATION	SUPERELEVATION SLOPE %	
	LEFT	RIGHT
36+49.48	+6	-6
38+42.48	+2	-2
39+39.48	0	0
40+36.48	-2	-2
40+62.04	-2	-2
41+59.04	-2	0
42+56.04	-2	+2
44+49.04	-6	+6
46+47.76	-6	+6
48+06.10	-2	+2
48+85.27	0	0
49+64.44	+2	-2
51+22.76	+6	-6



**CURVE DATA**  
 PI STA 45+42.59  
 $\Delta = 25^\circ 18'00''$  LT.  
 $D = 6^\circ 44'55''$   
 $T = 190.55'$   
 $L = 374.89'$   
 $R = 849.00'$   
 $e = 0.06'/FT$



MSAP 210-115-01

ORIGINAL SURVEY FIELDBOOK BY DATE  
 STAKING FIELDBOOK BY DATE  
 AS BUILT FIELDBOOK BY DATE

NO.	DATE	BY	DESCRIPTION
REVISIONS			

DESIGNED TAC IMB  
 CHECKED JMB  
 DRAWN LCS CRS  
 IMB  
 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 *12/12/12* REG. NO. 20834

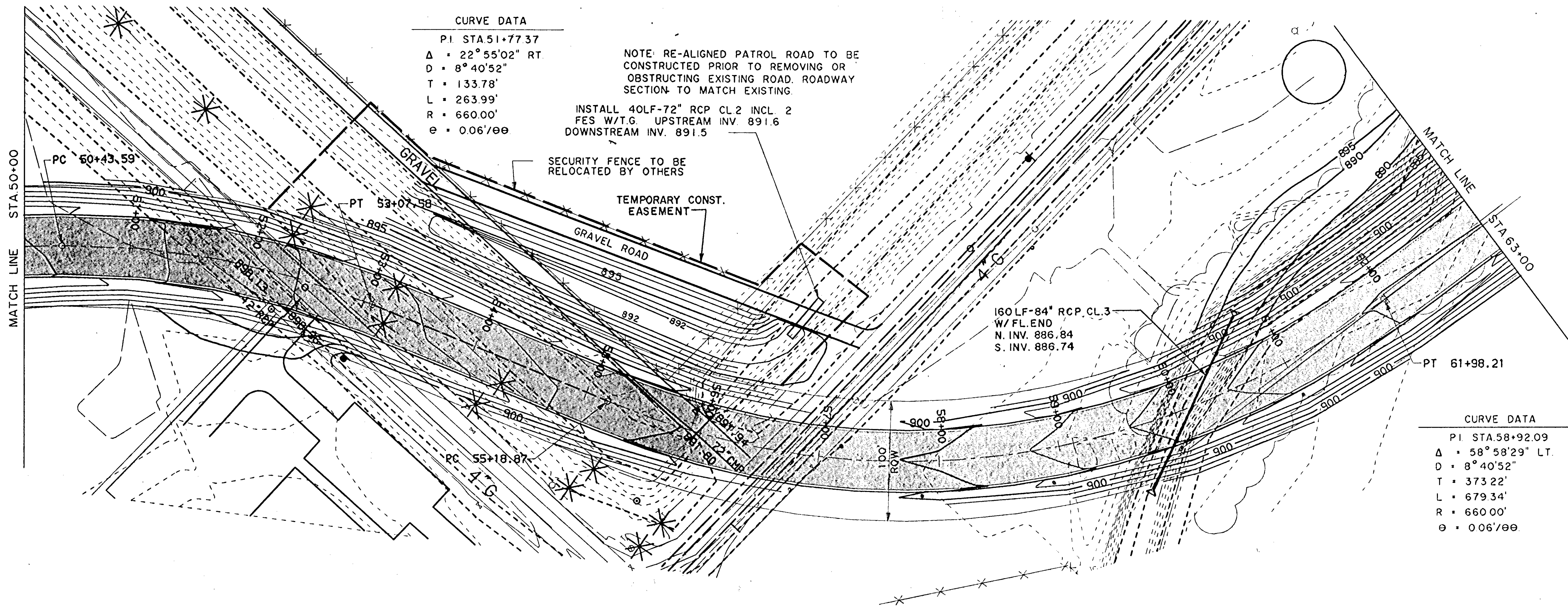
**TKDA**  
 ENGINEERS ARCHITECTS PLANNERS

TOLTZ, KING, DUVALL, ANDERSON AND ASSOCIATES, INCORPORATED  
 SAINT PAUL, MINNESOTA

**APOLLO DRIVE IMPROVEMENTS**  
 LINO LAKES MINNESOTA

STREET IMPROVEMENTS  
 STA 38+00 TO STA 50+00  
 SHEET NO. 7 OF 22 SHEETS

COMMISSION NO.  
 10071

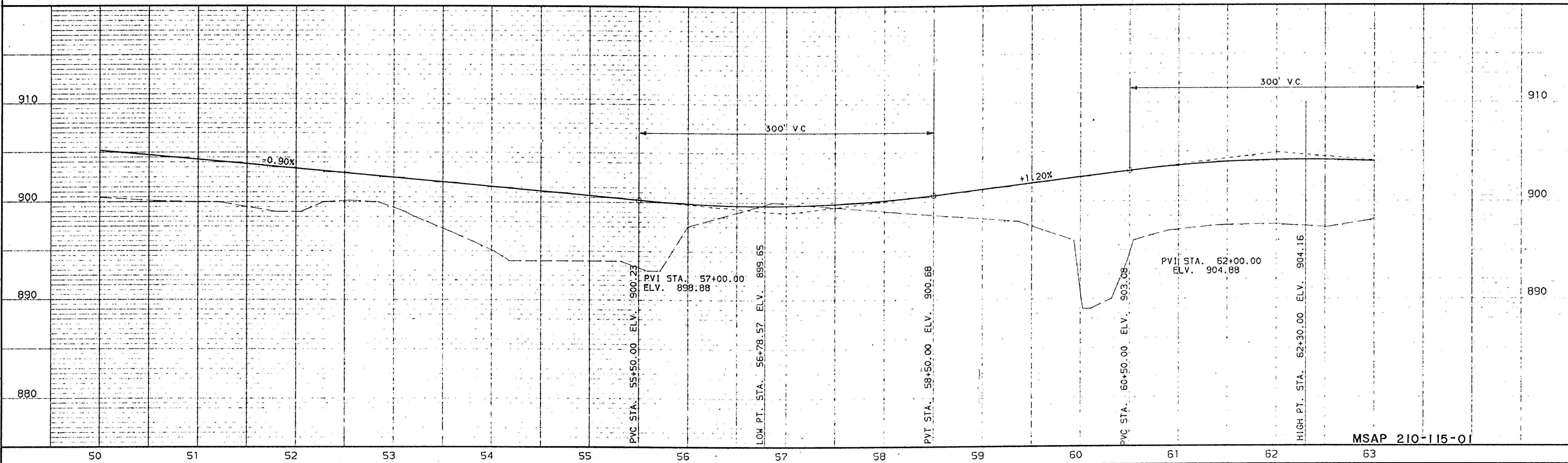
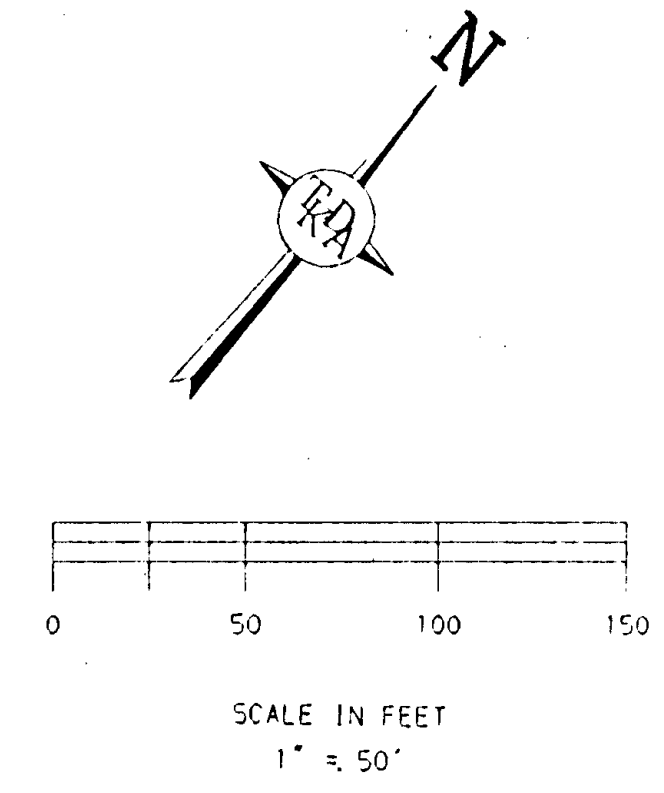


**SUPERELEVATION SLOPE %**

STATION	LEFT	RIGHT
49+64.44	+2	-2
51+22.76	+6	-6
52+54.76	+6	-6
53+60.40	+2	-2
54+13.22	0	0
54+66.04	-2	+2
55+71.69	-6	+6
61+44.70	-6	+6
62+51.72	-2	+2
63+05.23	0	0

**CURVE DATA**

PI STA 58+92.09  
 Δ = 58° 58' 29" LT  
 D = 8° 40' 52"  
 T = 373.22'  
 L = 679.34'  
 R = 660.00'  
 e = 0.06'/100



ORIGINAL SURVEY FIELDBOOK BY DATE  
 STAKING FIELDBOOK BY DATE  
 AS BUILT FIELDBOOK BY DATE

NO.	DATE	BY	DESCRIPTION

DESIGNED TAC IMB  
 CHECKED JMP  
 DRAWN LCS CRS IMB  
 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 11/14/92 REG. NO. 20934

**TKDA**  
 ENGINEERS-ARCHITECTS-PLANNERS  
 TOLTZ, KING, OLYALL, ANDERSON AND ASSOCIATES, INCORPORATED  
 SAINT PAUL, MINNESOTA

**APOLLO DRIVE IMPROVEMENTS**  
 LINO LAKES MINNESOTA

**STREET IMPROVEMENTS**  
 STA 50+00 TO STA 63+00  
 SHEET NO. 8 OF 22 SHEETS

COMMISSION NO. 10071



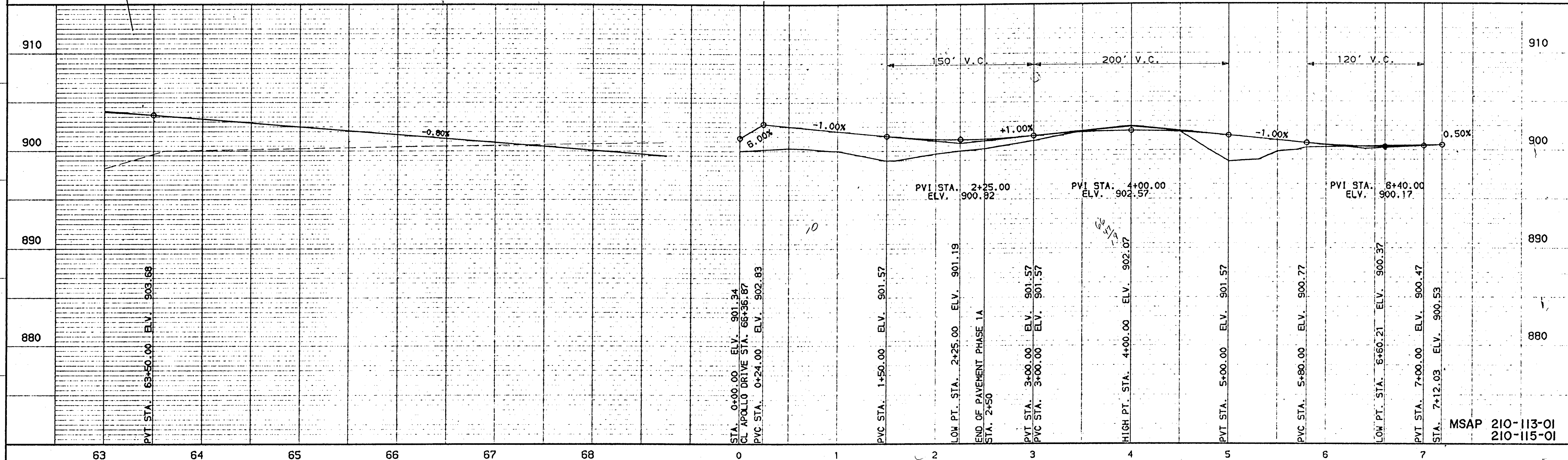
20' LONG, 10' WIDE OVERFLOW  
AT ELEV. 888.5, MNDOT CLASS 3  
RIP-RAP, TOP AND SIDES TO  
BOTTOM OF CHANNEL.

**SUPERELEVATION**  
SLOPE %

STATION	LEFT	RIGHT
62+51.72	-2	+2
63+05.23	0	0
63+58.74	+2	-2
64+65.75	+6	-6
67+74.16	+6	-6

**CURVE DATA**  
PI STA 66+47.33  
Δ = 30° 57' 20" RT.  
D = 6° 44' 55"  
T = 235.09'  
L = 458.69'  
R = 849.00'  
e = 0.06'/FT.

**CURVE DATA**  
PI STA 4+26.51  
Δ = 64° 13' 55" RT.  
D = 9° 57' 52"  
T = 360.92'  
L = 644.61'  
R = 575.00'  
e = 0.06'/FT.



ORIGINAL SURVEY  
FIELDBOOK BY DATE

AS BUILT  
FIELDBOOK BY DATE

NO.	DATE	BY	DESCRIPTION

DESIGNED TAC  
CHECKED IMB  
JMP

DRAWN LCS  
CRS  
IMB

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: 11/21/12 REG. NO. 20834

**TKDA**  
ENGINEERS ARCHITECTS PLANNERS

TOLTZ, KING, CUVALL, ANDERSON AND ASSOCIATES INCORPORATED  
SAINT PAUL, MINNESOTA

**APOLLO DRIVE IMPROVEMENTS**

LINO LAKES MINNESOTA

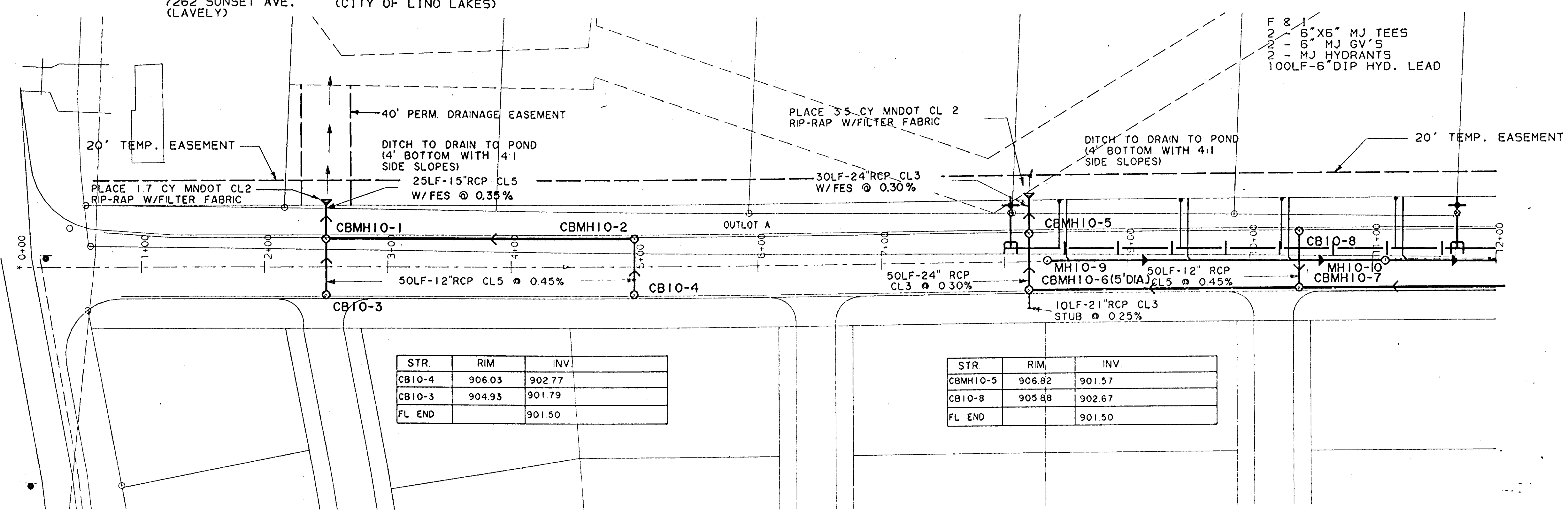
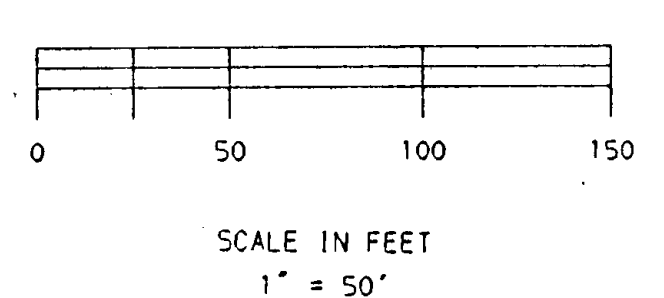
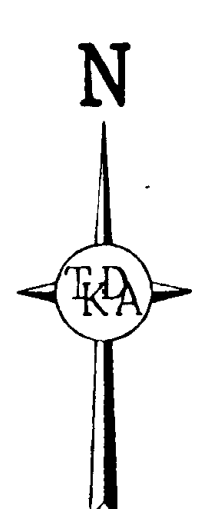
**STREET IMPROVEMENTS**  
STA. 63+00 TO STA. 67+00, 4TH AV.

SHEET NO. 9 OF 22 SHEETS

COMMISSION NO.  
10071

7262 SUNSET AVE. (LAVELY) (CITY OF LINO LAKES) 32 MARVY ST. (WOLFBAUER) 46 MARVY ST. (SUGGS) 60 MARVY ST. (CISEWSKI) 74 MARVY ST. (LEESE) OUTLOT C

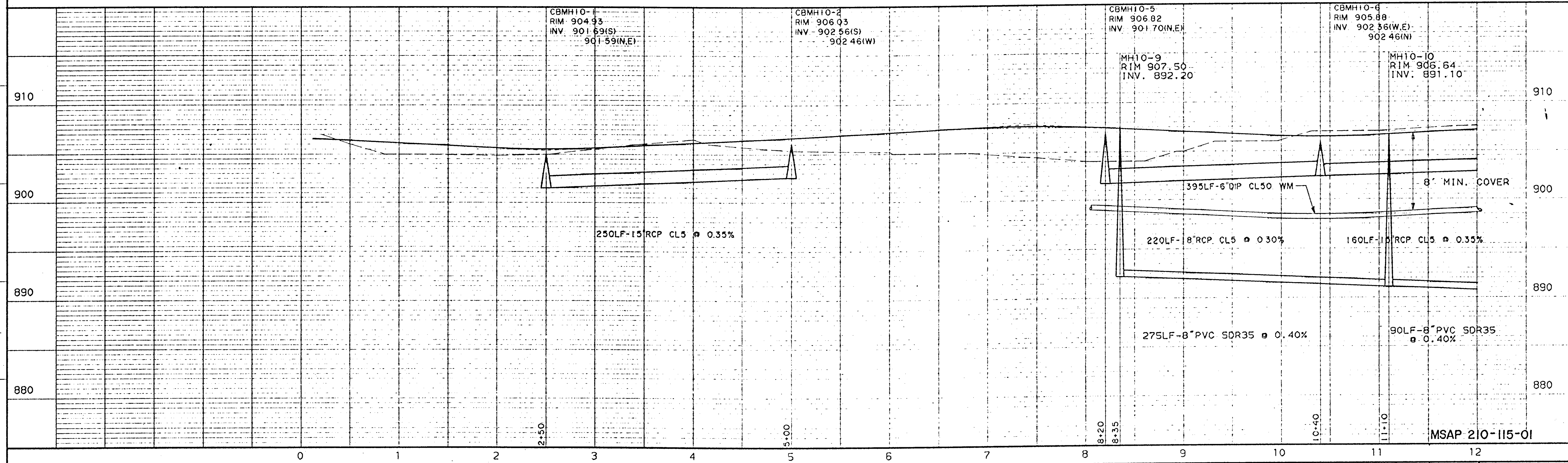
- F & I
- 2 - 6" X 6" MJ TEES
- 2 - 6" MJ GV'S
- 2 - MJ HYDRANTS
- 100LF-6" DIP HYD. LEAD



STR.	RIM	INV.
CB10-4	906.03	902.77
CB10-3	904.93	901.79
FL END		901.50

STR.	RIM	INV.
CBMH10-5	906.82	901.57
CB10-8	905.88	902.67
FL END		901.50

ORIGINAL SURVEY FIELDBOOK BY DATE  
 STAKING FIELDBOOK BY DATE  
 AS BUILT FIELDBOOK BY DATE



MSAP 210-115-01

NO.	DATE	BY	DESCRIPTION

DESIGNED DAF  
 DRAWN JMP  
 CHECKED LCS  
 CRD  
 IMB  
 JMP  
 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 *1/27/12* REG. NO. 20834

**TKDA**  
 ENGINEERS ARCHITECTS PLANNERS  
 TOLTZ, KING, DUVALL, ANDERSON AND ASSOCIATES INCORPORATED  
 SAINT PAUL, MINNESOTA

**APOLLO DRIVE IMPROVEMENTS**  
 LINO LAKES MINNESOTA

**UTILITIES**  
 STA 0+00 TO STA 12+00  
 SHEET NO. 10 OF 22 SHEETS

COMMISSION NO.  
**10071**

STR.	RIM	INV.
CB11-3	907.23	903.71
CB11-4	908.73	904.86
CB11-7	909.22	905.19

OUTLET C      100 MARVY ST. (MUELLNER)      120 MARVY ST. (JOHNSON)      140 MARVY ST. (HUNTINGTON)      158 MARVY ST. (PHILLIPS)      178 MARVY ST. (BERGLUND)      198 MARVY ST. (KING)

SALVAGE 1 - 12" MJ BFV AND REINST 1 - 16" X 12" REDUCER  
 75LF-24" PVC SDR35 SAN. SEWER @ 0.10% W/PLUG

F&I 1 - 16" X 12" MJ TEE  
 1 - 16" X 6" MJ REDUCER  
 1 - 6" MJ GV  
 1 - 12" MJ PLUG

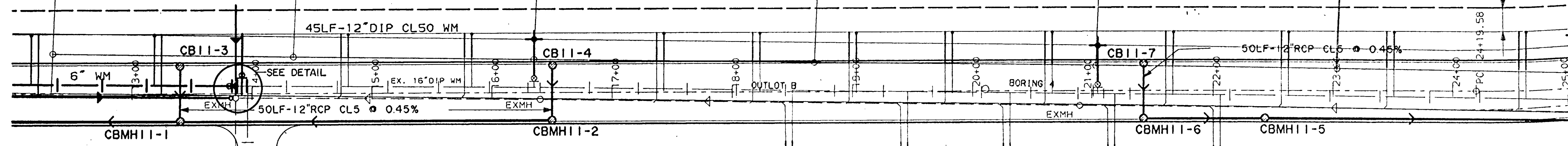
SALVAGE & REINSTALL EX. SAN. SEWER VERTICAL SERVICE CLEANOUTS

SALVAGE & REINSTALL EX. 1" CURB BOXES CONNECT TO EX. EX. 1" CURB STOP

F & I 3-MJ HYDRANTS  
 150LF-6" DIP HYD. LEAD

NOTE: ALL SANITARY SEWER SERVICES AND WATER SERVICES TO BE EXTENDED TO THE LIMITS OF THE NEW R.O.W.

20' TEMPORARY EASEMENT

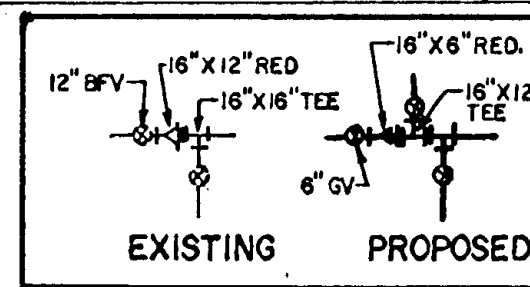


PLACE 4X4 AT END OF S.S. FROM PIPE TO GROUND W/FENCE FENCE MARKER

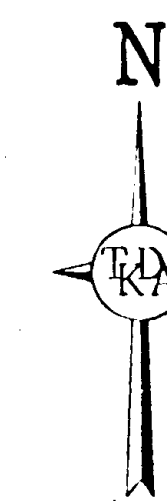
NOTE: CLEAN EXISTING DRAINAGE CHANNEL TO DRAIN FROM THE DRIVEWAY CULVERT LOCATED 450' NORTH OF APOLLO DR STA. 14+00 (ALSO CLEAN DRIVEWAY CULVERT) TO THE MARVY ST CROSS CULVERT LOCATED 650' NORTH OF APOLLO DR. STA. 19+00 (USE CHANNEL SEC WITH 5' BOTTOM WIDTH AND 4:1 SIDE SLOPES BLEND TO MATCH EXISTING)

ADD TWO (2) ADDITIONAL 15" RCP CL5 CULVERTS 25LF EA. AT INV. EL. 900.3 (INCLUDES FL. END SEC. AND 1.7 CY. MNDOT RIP-RAP FOR INLET AND OUTLET OF EACH CULVERT) TO THE DITCH CROSSING OF THE DRIVEWAY LOCATED 1800' NORTH OF APOLLO DR. STA. 20+50 (TOTAL OF APPROX. 900LF OF DITCH CLEANING, AVERAGE DEPTH 1.0'). ALSO INCLUDE RESTORATION OF MARVY ST. AND DRIVEWAY, AND REVEGETATION OF CHANNEL.

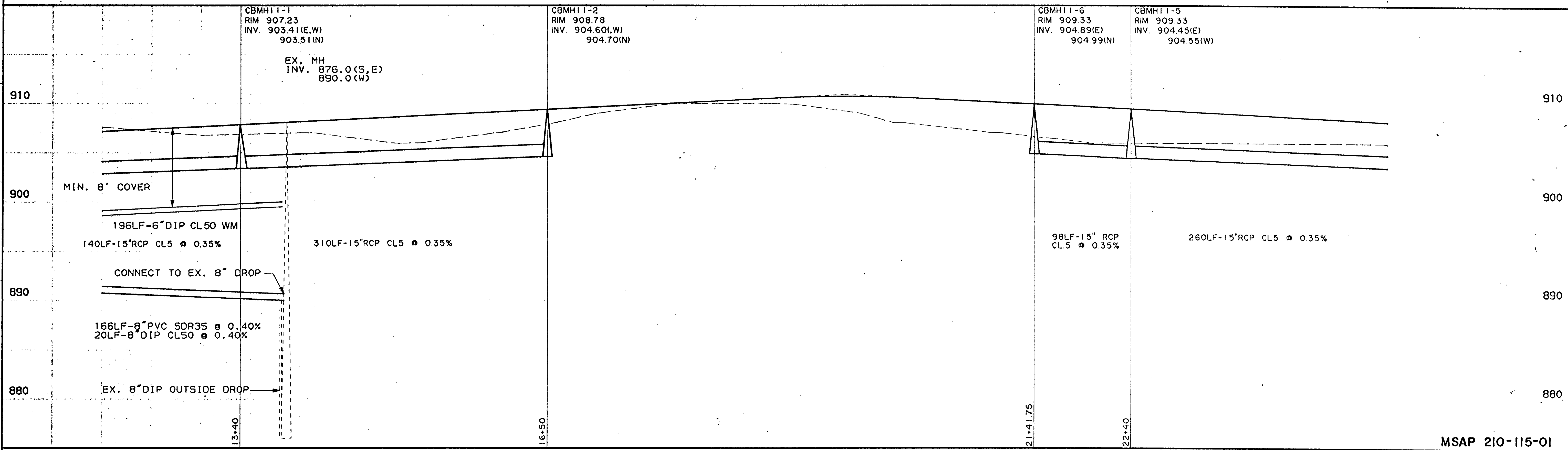
REPLACE EXISTING MARVY ST. 20" X 28" CMPA CROSS CULVERT WITH 50LF-24" RCP CL3 CULVERT AT INV. EL. 901.0 (INCLUDES FL. END SEC. AND 3.5 CY. MNDOT CL2 RIP-RAP WITH FILTER FABRIC FOR BOTH INLET AND OUTLET). CONTINUE CLEANING EXISTING CHANNEL TO DRAIN FROM MARVY ST. TO THE EXISTING STORM SEWER STORAGE POND LOCATED APPROX. 940' NORTH OF APOLLO DR. STA. 21+00.



DETAIL



SCALE IN FEET  
1" = 50'



ORIGINAL SURVEY FIELDBOOK BY DATE  
 STAKING FIELDBOOK BY DATE  
 AS BUILT FIELDBOOK BY DATE

NO.	DATE	BY	DESCRIPTION
REVISIONS			

DESIGNED DAF  
 DRAWN JMP  
 CHECKED JMB  
 JMB

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: 11/12/12 REG. NO. 20834

**TKDA**  
 ENGINEERS ARCHITECTS PLANNERS

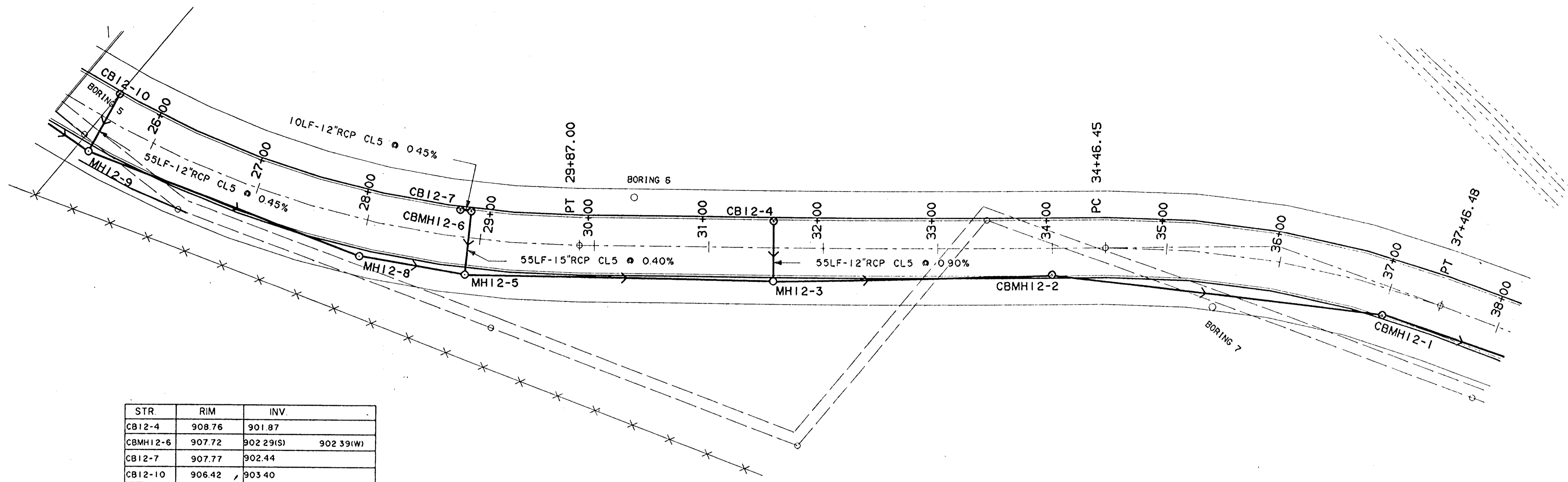
TOLTZ, KING, DUVALL, ANDERSON AND ASSOCIATES INCORPORATED  
 SAINT PAUL, MINNESOTA

APOLLO DRIVE IMPROVEMENTS  
 LINO LAKES MINNESOTA

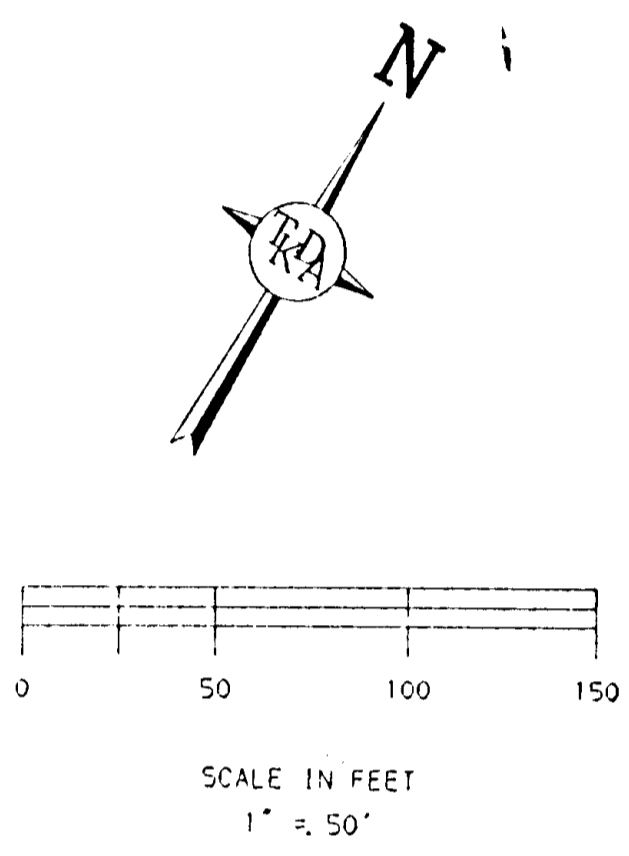
UTILITIES  
 STA 12+00 TO STA 25+00  
 SHEET NO. 11 OF 22 SHEETS

COMMISSION NO. 10071

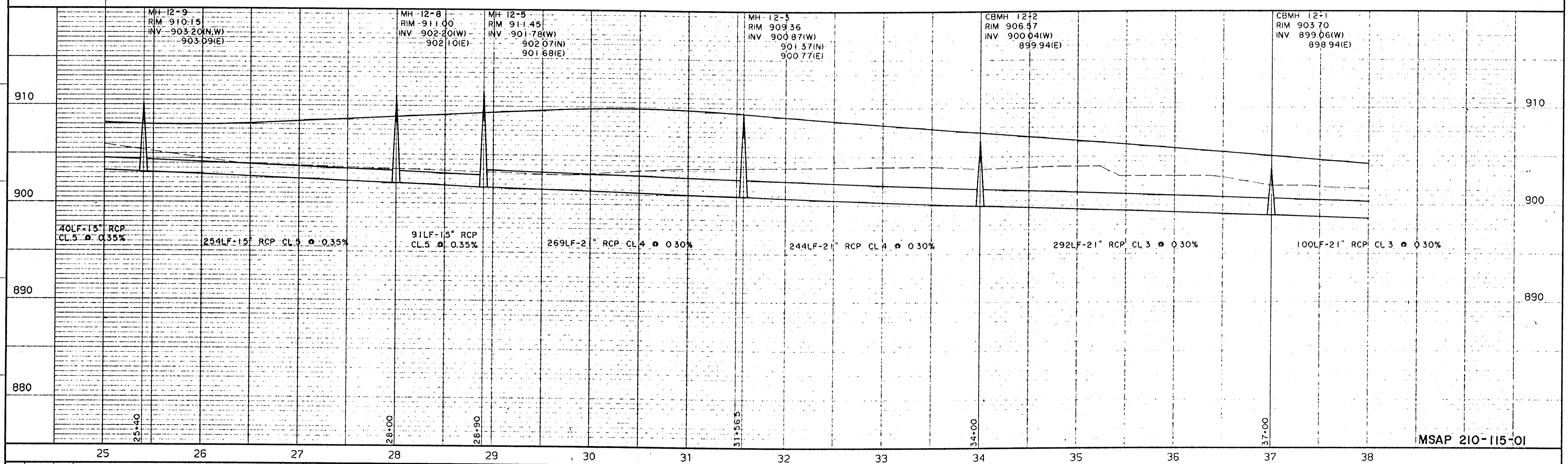
MSAP 210-115-01



STR	RIM	INV.
CB12-4	908.76	901.87
CBMH12-6	907.72	902.29(S) 902.39(W)
CB12-7	907.77	902.44
CB12-10	906.42	903.40



ORIGINAL SURVEY  
 FIELDBOOK BY DATE  
 STAKING  
 FIELDBOOK BY DATE  
 AS BUILT  
 FIELDBOOK BY DATE



MSAP 210-115-01

NO.	DATE	BY	DESCRIPTION

DESIGNED: DAF  
 CHECKED: JMP  
 DRAWN: LCS  
 CRS: IMB  
 IMB  
 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: 11/12/12 REG. NO. 20934

TKDA

ENGINEERS ARCHITECTS PLANNERS

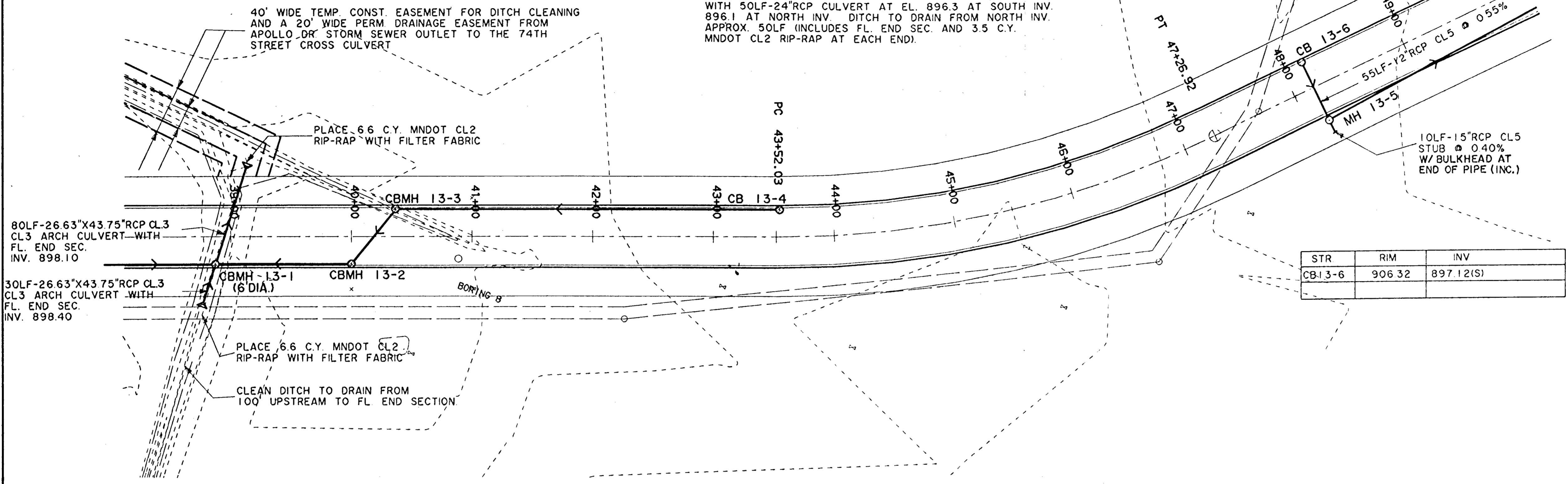
TOLTZ, KING, DUVALL, ANDERSON AND ASSOCIATES INCORPORATED  
SAINT PAUL, MINNESOTA

**APOLLO DRIVE IMPROVEMENTS**  
 LINO LAKES MINNESOTA

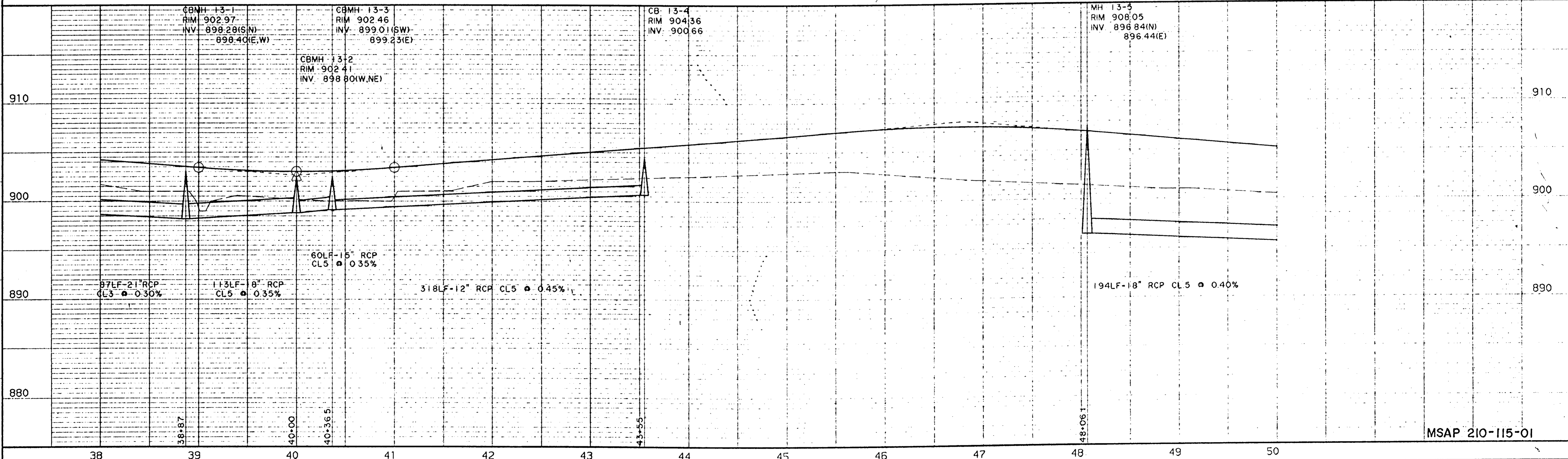
**UTILITIES**  
 STA 25+00 TO STA 38+00  
 SHEET NO. 12 OF 22 SHEETS  
 COMMISSION NO. 10071

NOTE: CLEAN EXISTING DITCH TO DRAIN FROM APOLLO DRIVE STORM SEWER OUTLET AT STATION 39+00 TO THE 74TH ST. CROSS CULVERT LOCATED APPROXIMATELY 1100 FT NORTH OF APOLLO DRIVE STATION 33+00 (USE 4' BOTTOM WITH 4:1 SIDE SLOPES, DITCH SECTION).

REPLACE EXISTING EXISTING 18" CMP 74TH CROSS CULVERT WITH 50LF-24" RCP CULVERT AT EL. 896.3 AT SOUTH INV. 896.1 AT NORTH INV. DITCH TO DRAIN FROM NORTH INV. APPROX. 50LF INCLUDES FL. END SEC. AND 3.5 C.Y. MNDOT CL2 RIP-RAP AT EACH END.



STR	RIM	INV
CB 13-6	906.32	897.12(S)



ORIGINAL SURVEY	FIELDBOOK BY DATE
AS BUILT	FIELDBOOK BY DATE
STAKING	FIELDBOOK BY DATE

NO.	DATE	BY	DESCRIPTION
REVISIONS			

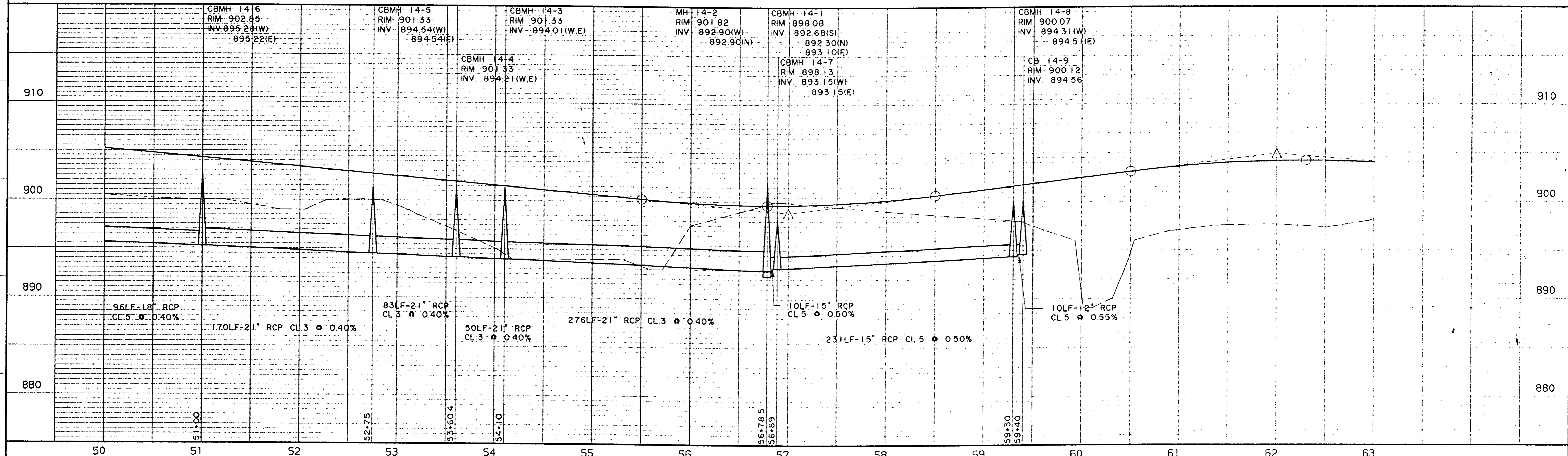
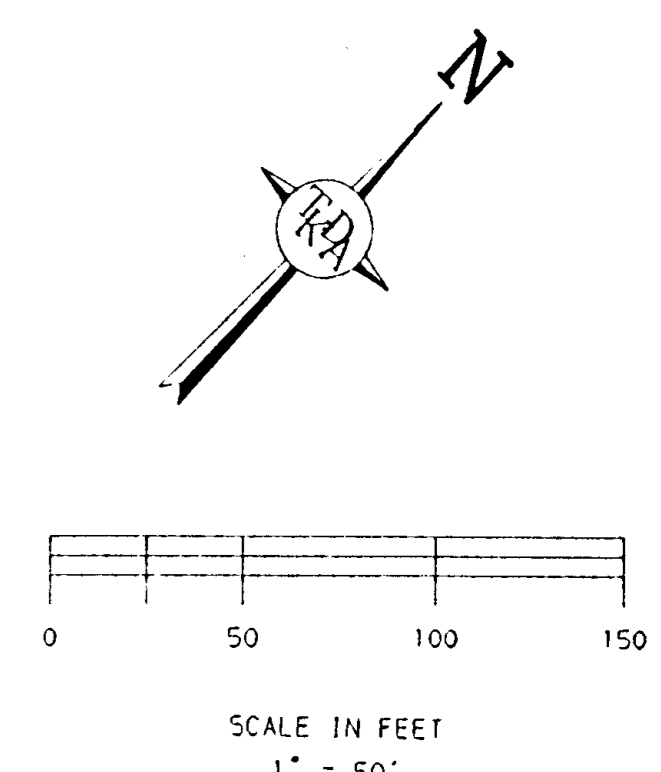
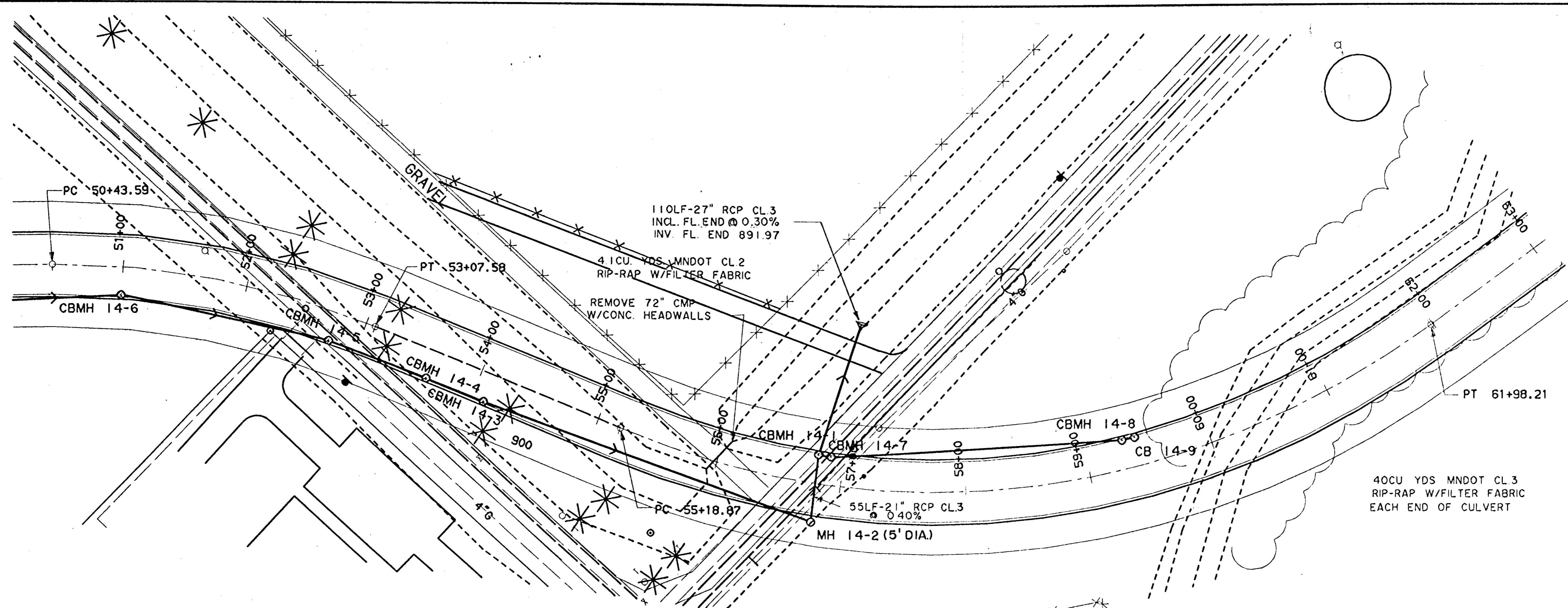
DESIGNED: DAF  
 DRAWN: LCS, CRS, IMB  
 CHECKED: JMP  
 I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.  
 DATE: 11/27/12 REG. NO. 20834

**TKDA**  
 ENGINEERS ARCHITECTS PLANNERS  
 TOLTZ, KING, DUVALL, ANDERSON AND ASSOCIATES INCORPORATED  
 SAINT PAUL, MINNESOTA

APOLLO DRIVE IMPROVEMENTS  
 LINO LAKES MINNESOTA

UTILITIES  
 STA 38+00 TO STA 50+00  
 SHEET NO. 13 OF 22 SHEETS

COMMISSION NO.  
 10071



AS BUILT  
FIELDBOOK BY DATE

STARTING  
FIELDBOOK BY DATE

ORIGINAL SURVEY  
FIELDBOOK BY DATE

NO.	DATE	BY	DESCRIPTION
REVISIONS			

DESIGNED DAP JMP	DRAWN LCS IMB	CHECKED JMP	DATE 11/21/92
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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.

**TKDA**  
ENGINEERS ARCHITECTS PLANNERS

TOLTZ, KING, DUVALL, ANDERSON AND ASSOCIATES INCORPORATED  
SAINT PAUL, MINNESOTA

**APOLLO DRIVE IMPROVEMENTS**

**UTILITIES**  
STA 50+00 TO STA 63+00

COMMISSION NO. 10071

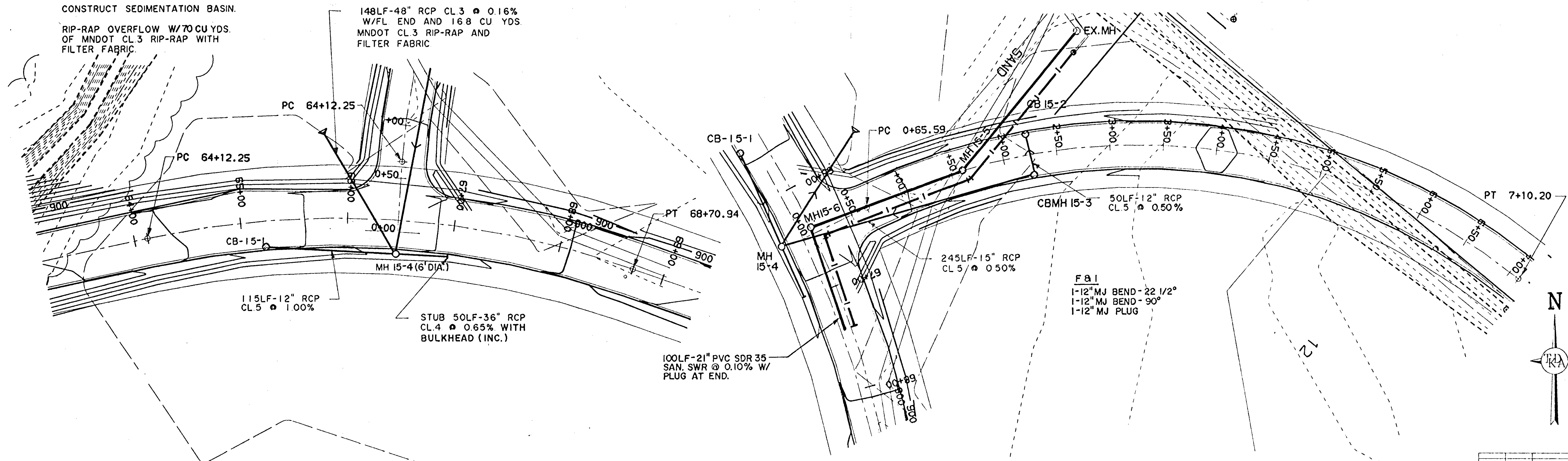
SHEET NO. 14 OF 22 SHEETS

LINO LAKES MINNESOTA

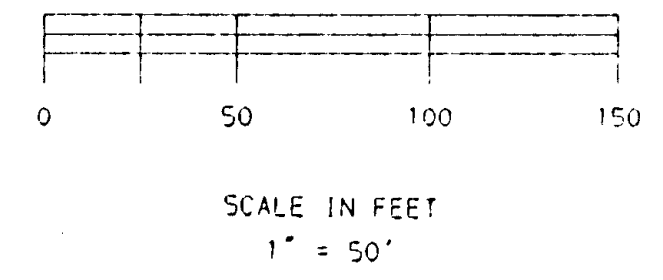
CONSTRUCT SEDIMENTATION BASIN.

RIP-RAP OVERFLOW W/70 CU YDS. OF MNDOT CL 3 RIP-RAP WITH FILTER FABRIC.

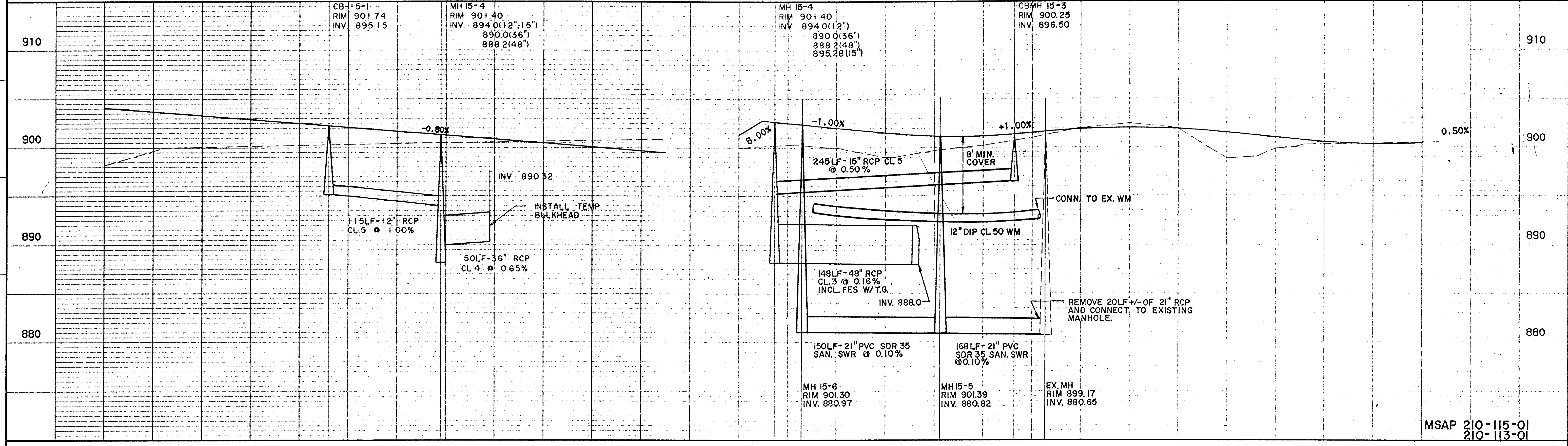
148LF-48" RCP CL 3 @ 0.16% W/FL END AND 168 CU YDS. MNDOT CL 3 RIP-RAP AND FILTER FABRIC



STR.	RIM	INV.
CB 15-2	900.25	896.75



ORIGINAL SURVEY FIELDBOOK BY DATE  
 STAKING FIELDBOOK BY DATE  
 AS BUILT FIELDBOOK BY DATE



MSAP 210-115-01  
210-113-01

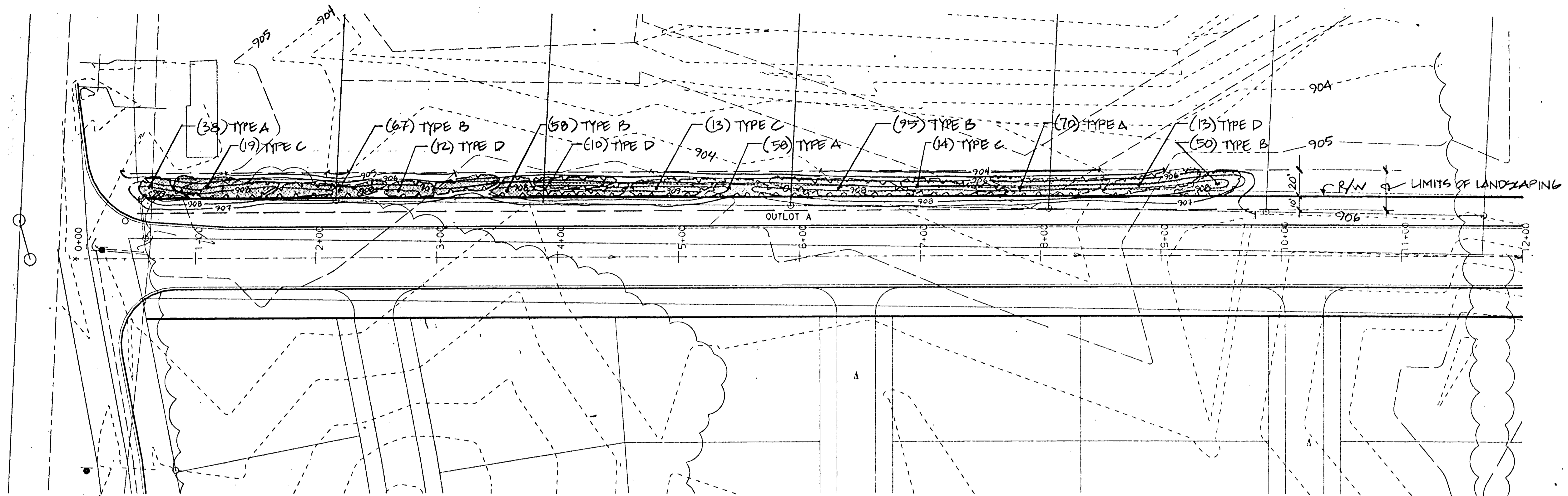
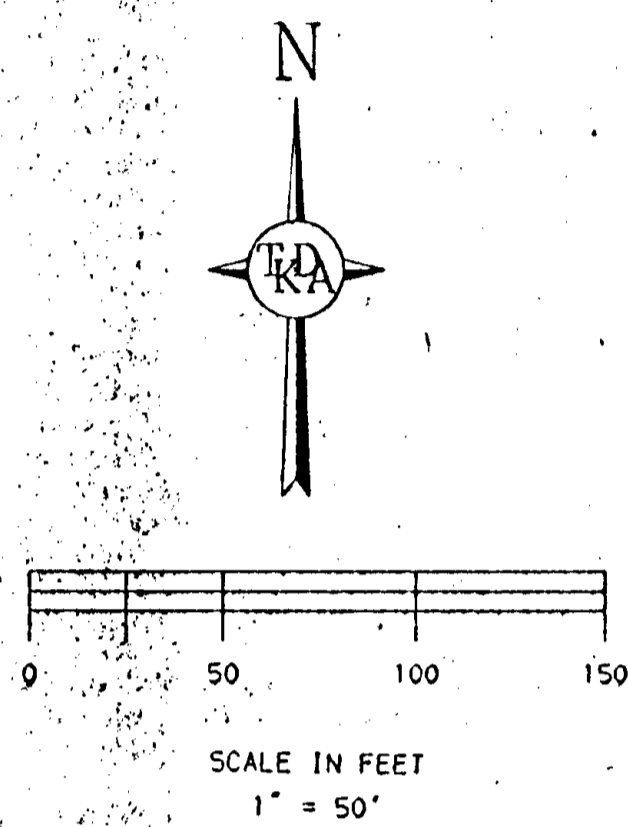
NO.	DATE	BY	DESCRIPTION

DESIGNED DAF  
 DRAWN LCS  
 CHECKED IMB  
 JUMP  
 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 *1/14/12* REG. NO. 20834

**TKDA**  
 ENGINEERS ARCHITECTS PLANNERS  
 TOLTZ, KING, DUVALL, ANDERSON AND ASSOCIATES INCORPORATED  
 SAINT PAUL, MINNESOTA

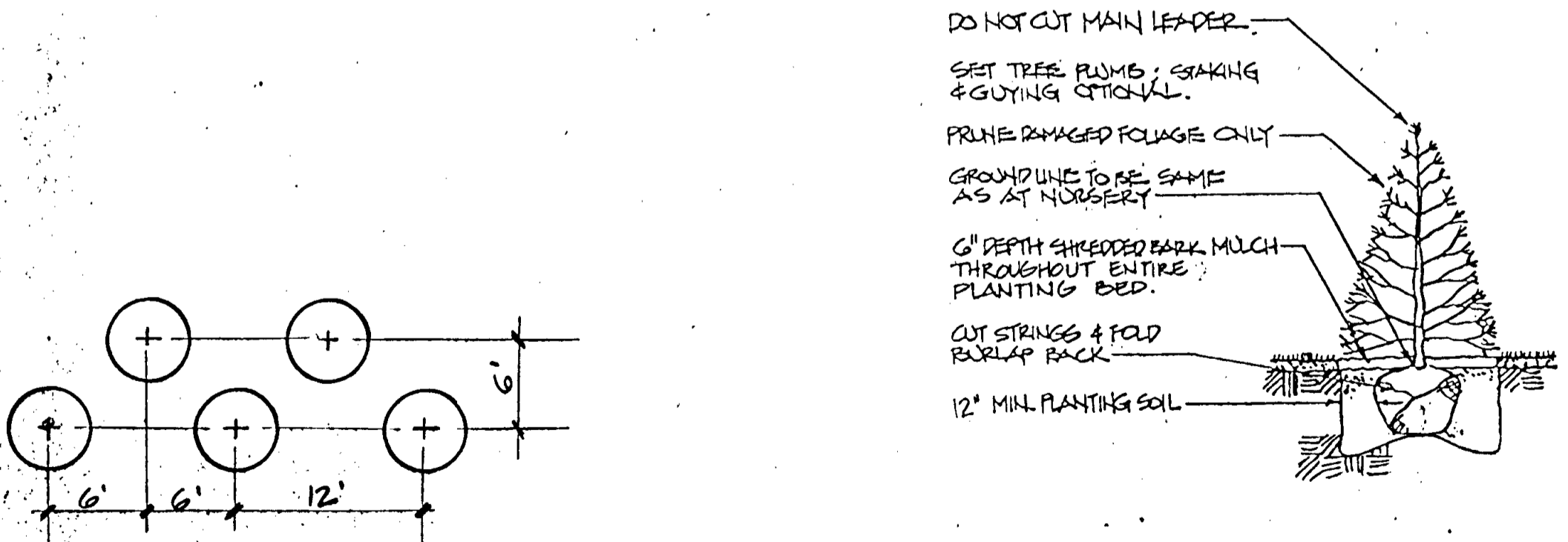
APOLLO DRIVE IMPROVEMENTS  
 LINO LAKES MINNESOTA

UTILITIES  
 STA. 63+00 TO STA. 67+00, 4TH AV.  
 SHEET NO. 15 OF 22 SHEETS  
 COMMISSION NO. 10071

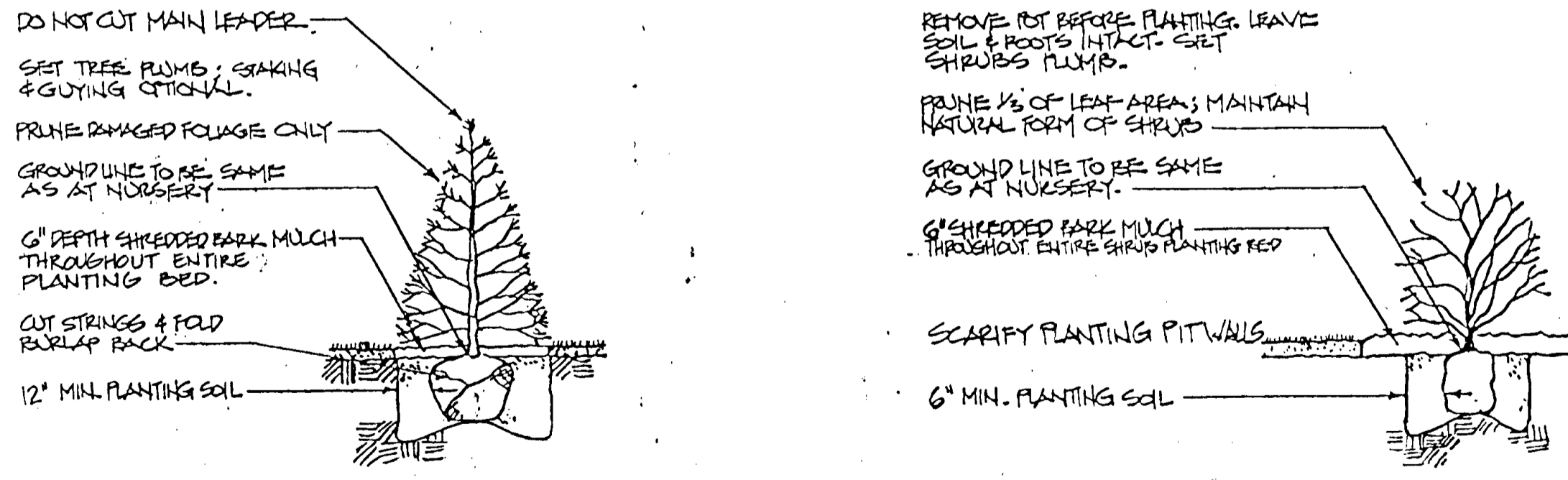


PLANT SCHEDULE						
TYPE	QUAN.	COMMON NAME	SCIENTIFIC NAME	SIZE	SPACING	METHOD
A	166	SMOOTH SUMAC	RHUS GLABRA	POT 24"	4' o.c.	(3/16)
B	270	AMUR MAPLE	ACER GINNALA	POT 24"	4' o.c.	(3/16)
C	34	PONDEROSA PINE	PINUS PONDEROSA	B&B 4'	SEE DRAWING	(2/16)
C	11	"	"	B&B 5'	(1/16)	(2/16)
D	26	BLACK HILLS SPRUCE	PICEA GLAUCA DENSATA	B&B 4'	(1/16)	(2/16)
D	9	"	"	B & B 5'	(1/16)	(2/16)

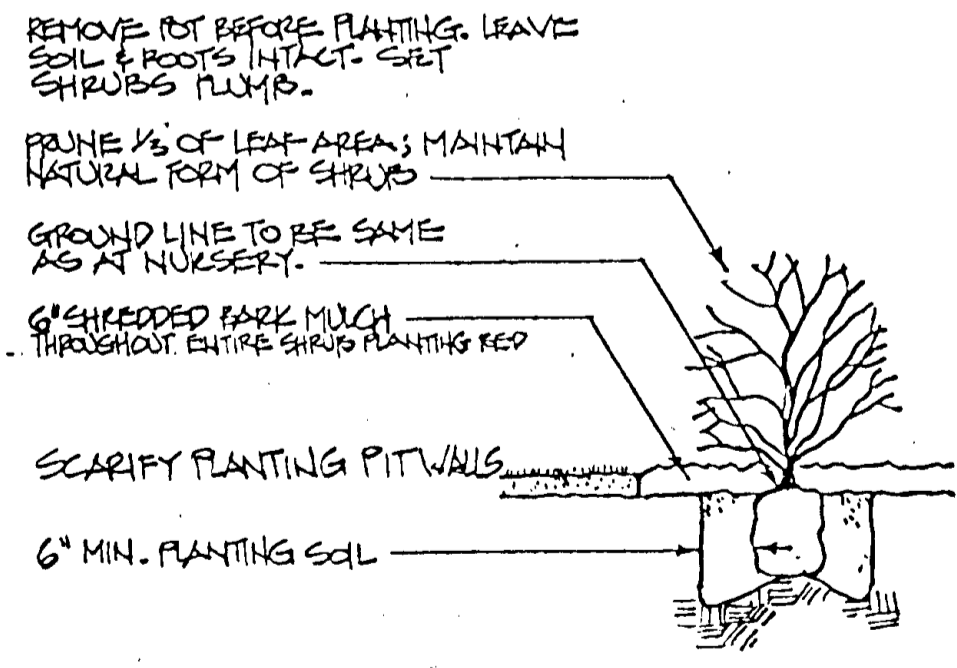
- NOTES:**
- ENTIRE PLANTING AREAS, SHOWN AS SHADED AREAS ON PLAN, TO BE COVERED WITH 6" MIN. SHREDDED BARK MULCH.
  - REMAINING AREAS WITHIN THE LIMITS OF LANDSCAPING TO BE SEEDED.
  - EVERGREENS TO BE PLANTED IN A RANDOM MIXTURE OF 4' AND 5' SIZES, AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
  - ALL SLOPES NOT TO EXCEED 4:1.



1 EVERGREEN SPACING DETAIL  
16 NO SCALE



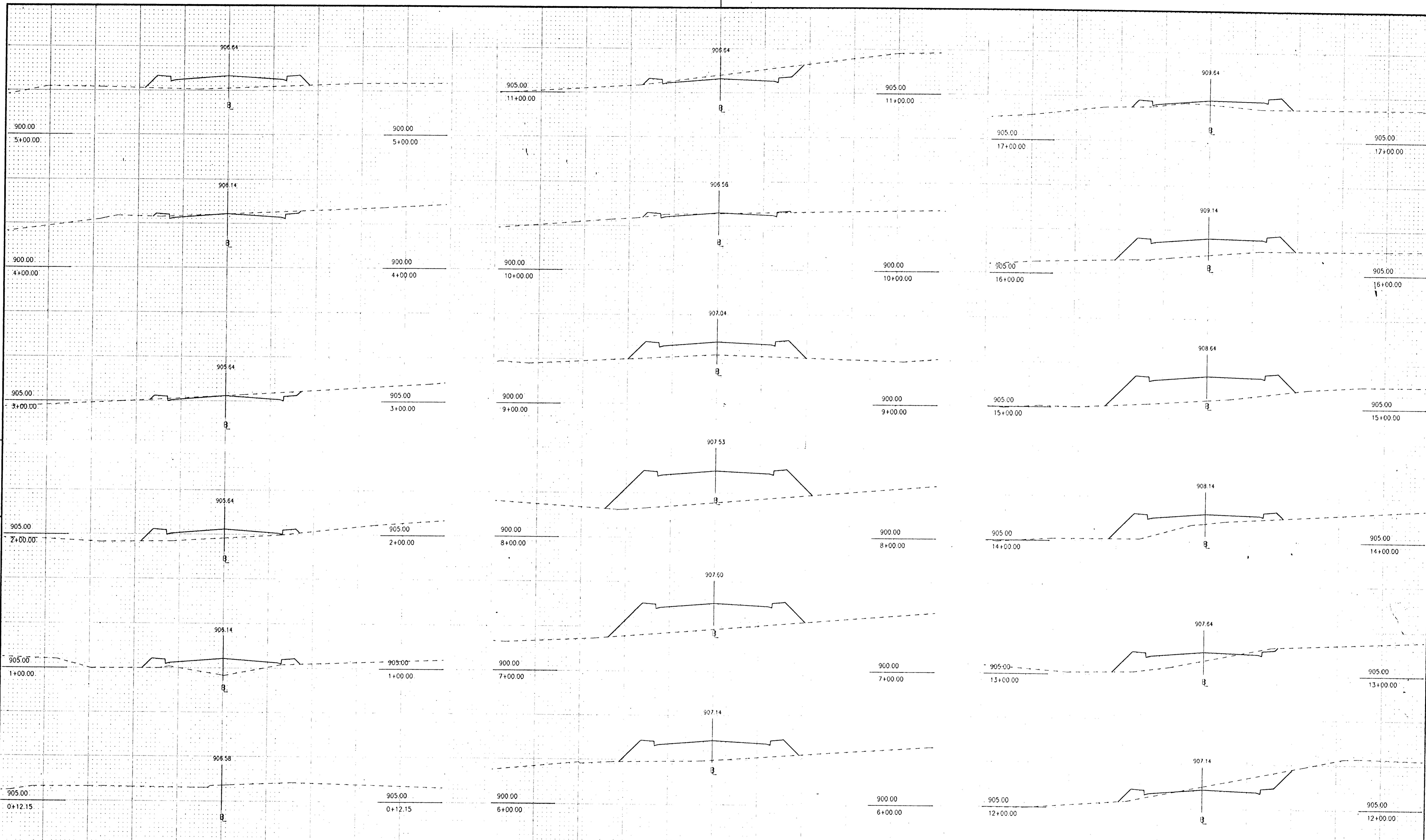
2 EVERGREEN TREE PLANTING DETAIL  
16 NO SCALE



3 SHRUB PLANTING DETAIL  
16 NO SCALE

DESIGNED: NB DRAWN: NB CHECKED: RLK DATE: 11/11/92		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. REG. NO. 20834		<b>TKDA</b> ENGINEERS ARCHITECTS PLANNERS		TOLTZ, KING, DUVALL, ANDERSON AND ASSOCIATES INCORPORATED SAINT PAUL, MINNESOTA		APOLLO DRIVE IMPROVEMENTS LINO LAKES MINNESOTA		APOLLO DRIVE LANDSCAPING PLAN SHEET NO. 16 OF 22 SHEETS		MSAP 210-115-01 COMMISSION NO. 10071	
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ORIGINAL SURVEY	BY	DATE	FIELD BOOK	BY	DATE
AS BUILT	BY	DATE	FIELD BOOK	BY	DATE
STARTING	BY	DATE	FIELD BOOK	BY	DATE

HORIZ SCALE 1"=20'  
VERT SCALE 1"=5'

NO.	DATE	BY	DESCRIPTION

DESIGNED	TAC	DRAWN	IMB
CHECKED	JMP	BY	

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

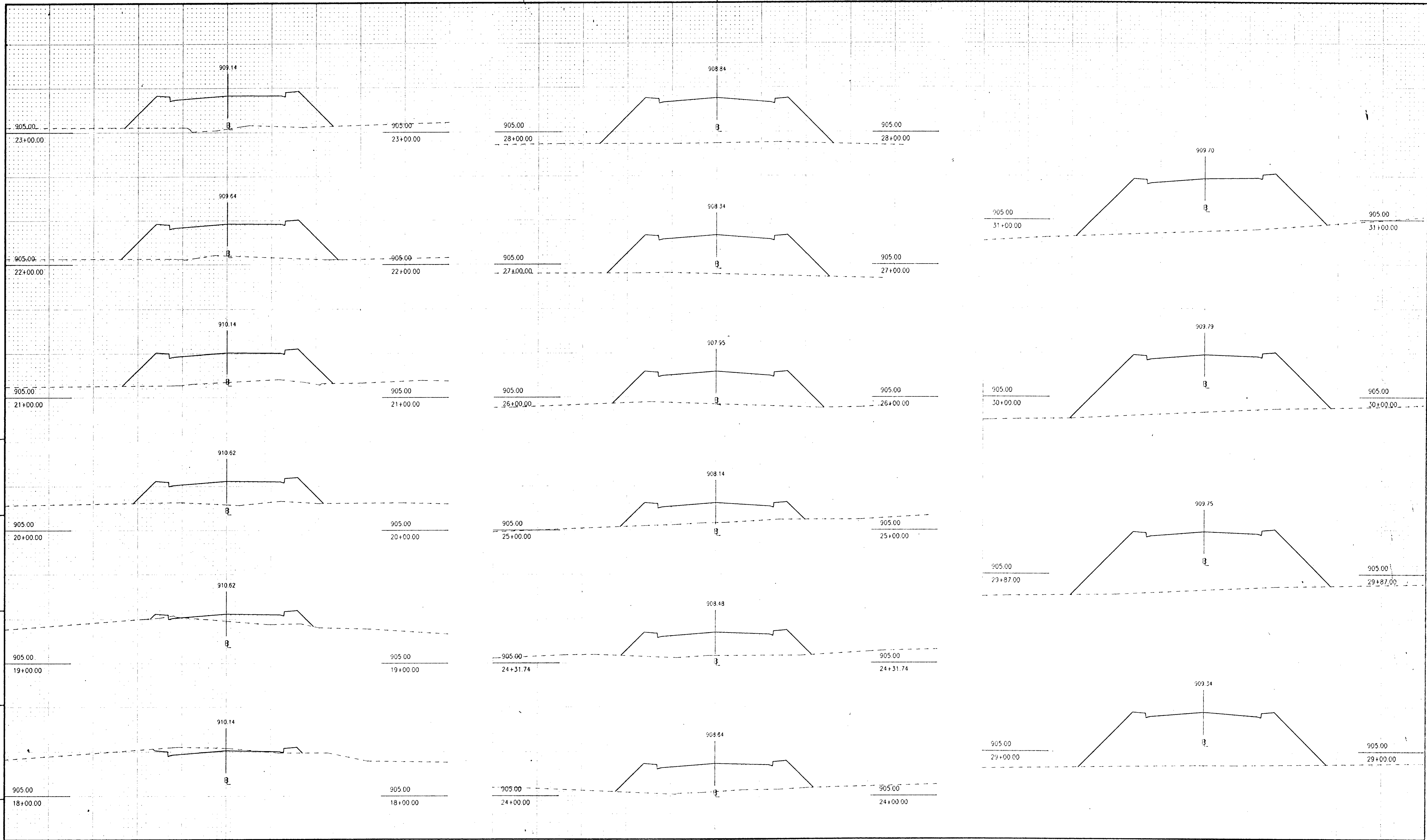
*[Signature]*  
DATE 7/27/92 REG. NO. 20834

**TKDA**  
ENGINEERS ARCHITECTS PLANNERS

TOLTZ KING DUVAL, ANDERSON AND ASSOCIATES INCORPORATED  
SAINT PAUL, MINNESOTA

APOLLO DRIVE IMPROVEMENTS  
LINO LAKES MINNESOTA

MSAP 210-115-01  
COMMISSION NO. 10071  
CROSS SECTIONS  
SHEET NO. 17 OF 22 SHEETS



AS BUILT BY DATE  
 STAKING BY DATE  
 ORIGINAL SURVEY BY DATE

HORIZ SCALE 1"=20'  
 VERT SCALE 1"=5'

NO.	DATE	BY	DESCRIPTION

DESIGNED TAC  
 DRAWN IMB  
 CHECKED JMP

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 12/12/12 REG. NO. 20834

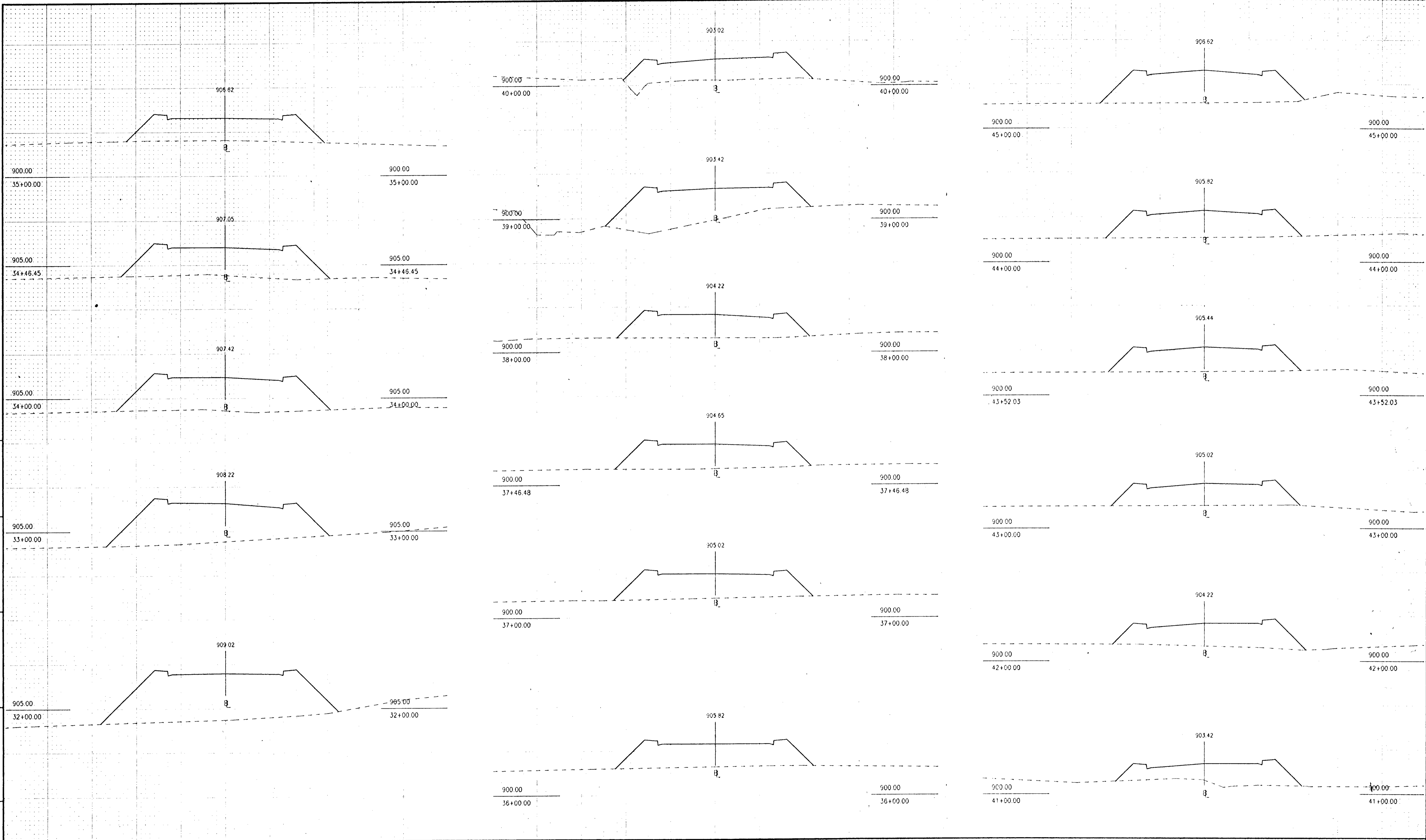
**TKDA**  
 ENGINEERS ARCHITECTS PLANNERS  
 TOLTZ KING DUVAL AND ASSOCIATES INCORPORATED  
 SAINT PAUL, MINNESOTA

APOLLO DRIVE IMPROVEMENTS  
 LINO LAKES MINNESOTA

CROSS SECTIONS  
 SHEET NO. 18 OF 22 SHEETS

MSAP 210-115-01

COMMISSION NO. 10071



ORIGINAL SURVEY	BY	DATE
FIELD BOOK		
STAKING	BY	DATE
FIELD BOOK		
AS BUILT	BY	DATE
FIELD BOOK		

HORIZ SCALE 1"=20'  
VERT SCALE 1"=5'

NO.	DATE	BY	DESCRIPTION

DESIGNED TAC  
DRAWN TAC  
CHECKED JMP

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

*[Signature]*  
DATE *7/1/19* REG. NO. 20834

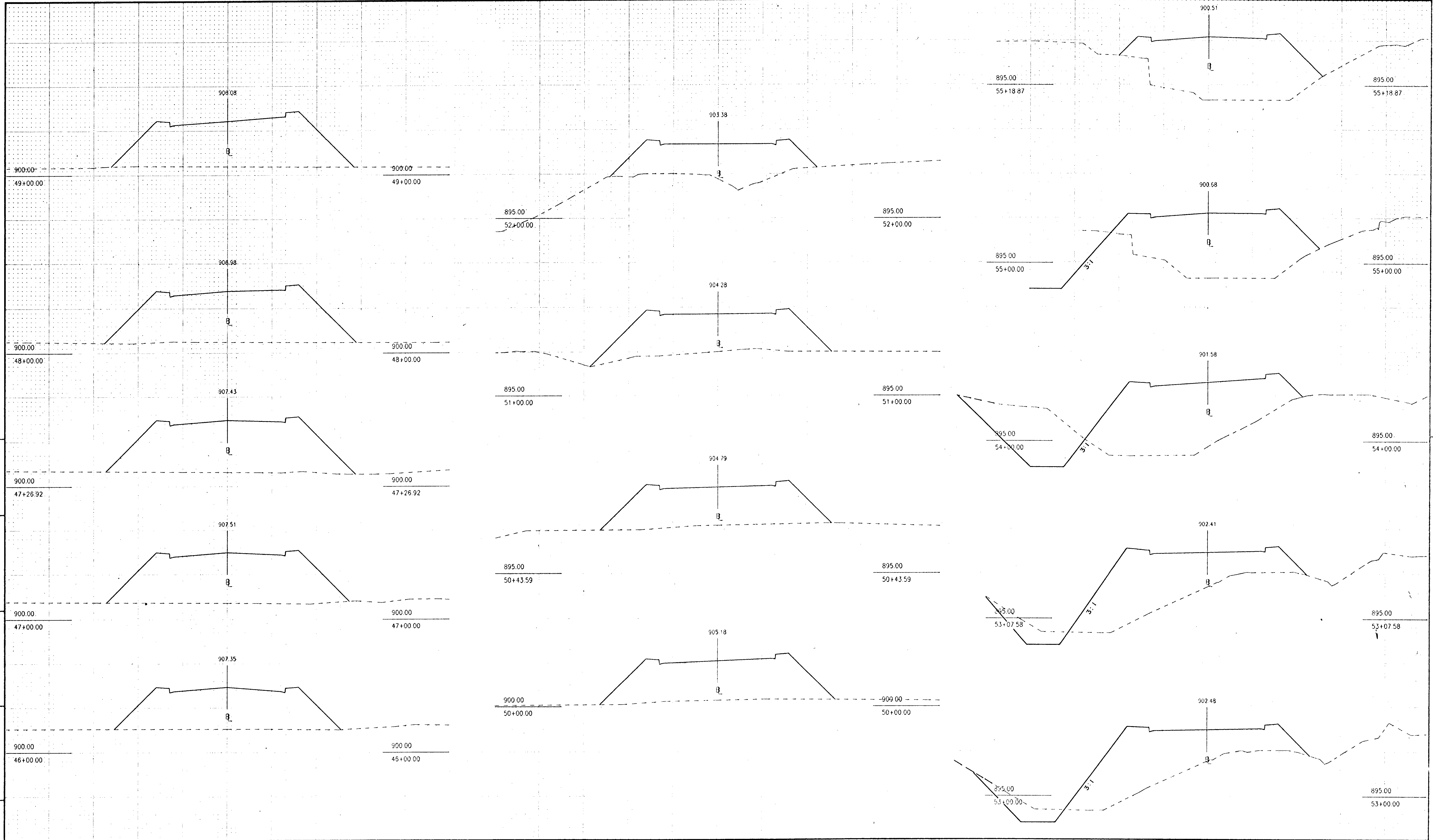
**TKDA**  
ENGINEERS ARCHITECTS PLANNERS

TOLTZ KING DUVAL, ANDERSON AND ASSOCIATES INCORPORATED  
SAINT PAUL, MINNESOTA

APOLLO DRIVE IMPROVEMENTS  
LINO LAKES MINNESOTA

CROSS SECTIONS  
SHEET NO. 19 OF 22 SHEETS

MSAP 210-115-01  
COMMISSION NO. 10071



ORIGINAL SURVEY	BY	DATE	FIELD BOOK	BY	DATE
STAKING	BY	DATE	FIELD BOOK	BY	DATE
AS BUILT	BY	DATE	FIELD BOOK	BY	DATE

HORIZ SCALE 1"=20'  
VERT SCALE 1"=5'

MSAP 210-115-01

NO.	DATE	BY	DESCRIPTION

DESIGNED	TAC	DRAWN	IMB
CHECKED	JMP		

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 7/2/92 REG. NO. 20834

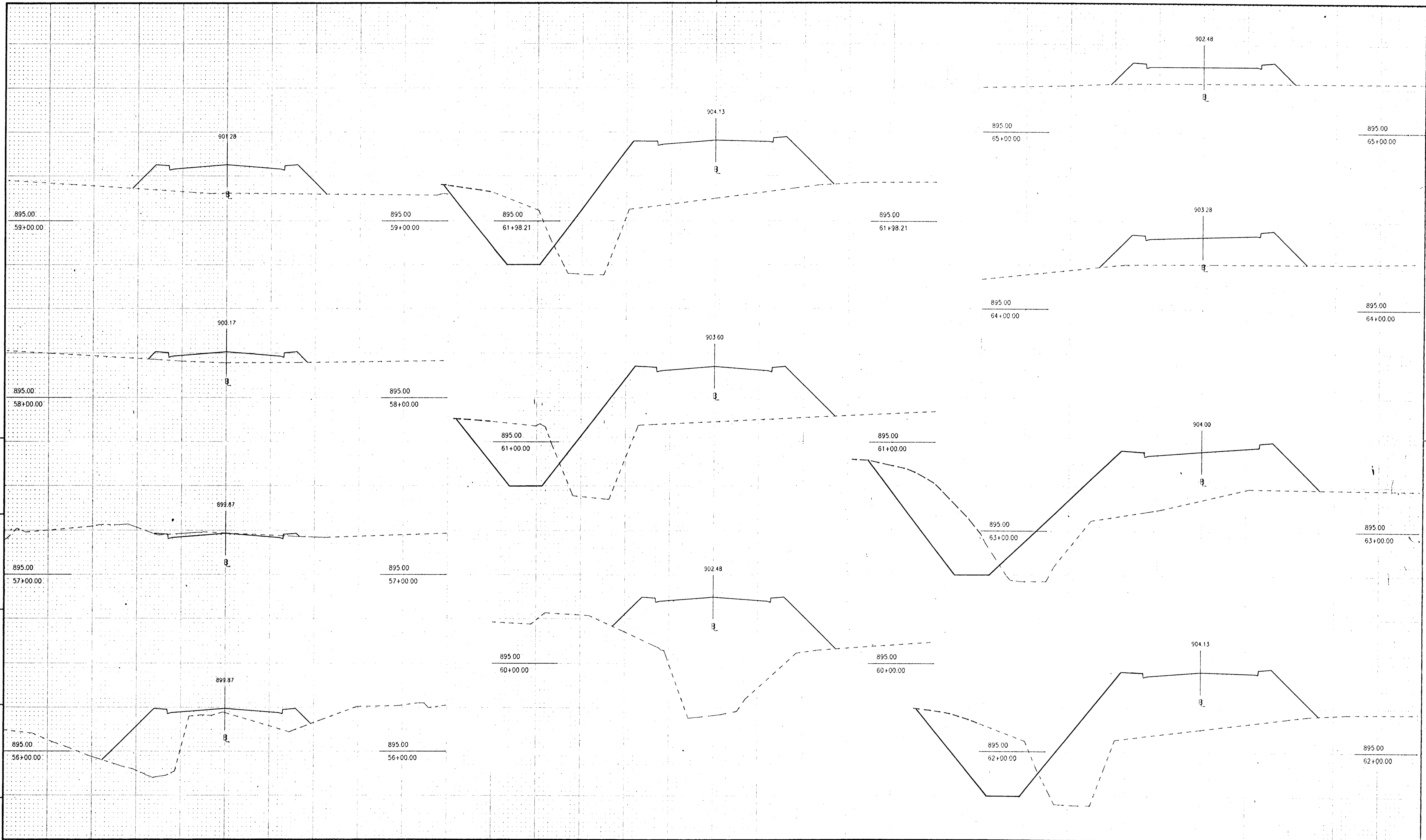
**TKDA**  
ENGINEERS ARCHITECTS PLANNERS

TOLTZ KING DUVAL ANDERSON AND ASSOCIATES INCORPORATED  
SAINT PAUL, MINNESOTA

APOLLO DRIVE IMPROVEMENTS  
LINO LAKES MINNESOTA

CROSS SECTIONS  
SHEET NO. 20 OF 22 SHEETS

COMMISSION NO.  
10071



ORIGINAL SURVEY FIELD BOOK	BY	DATE
	AS BUILT FIELD BOOK	DATE
STAKING FIELD BOOK	BY	DATE
	DATE	BY

HORIZ SCALE 1"=20'  
VERT SCALE 1"=5'

MSAP 210-115-01

NO.	DATE	BY	DESCRIPTION
REVISIONS			

DESIGNED DRAWN  
TAC IMB  
CHECKED  
JMP

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 4/2/12 REG. NO. 20934

**TKDA**

ENGINEERS ARCHITECTS PLANNERS

TOLTZ KING, DUVALL, ANDERSON AND ASSOCIATES INCORPORATED  
SAINT PAUL, MINNESOTA

APOLLO DRIVE IMPROVEMENTS

LINO LAKES

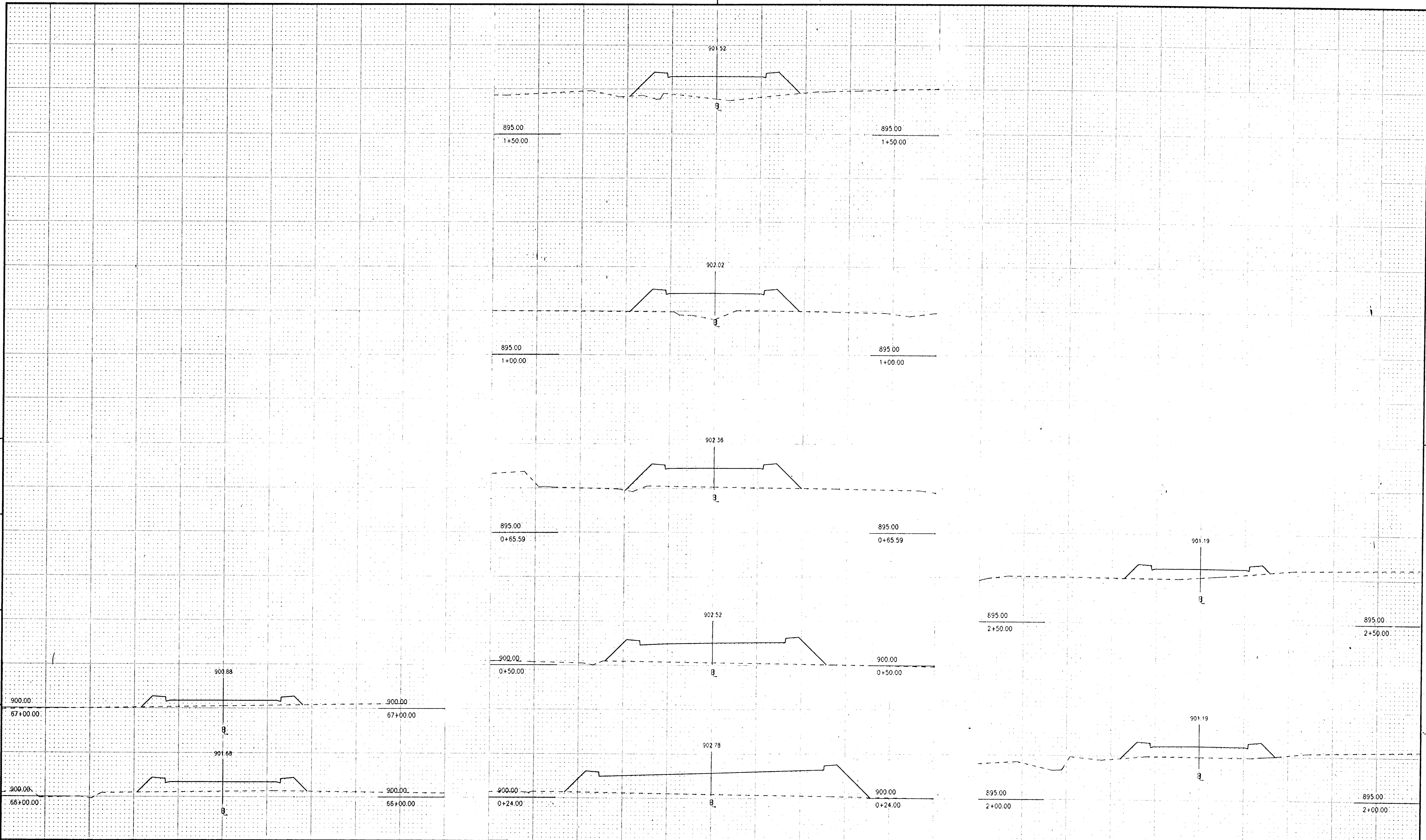
MINNESOTA

CROSS SECTIONS

SHEET NO. 21 OF 22 SHEETS

COMMISSION NO.  
10071

ORIGINAL SURVEY BY DATE FIELD BOOK AS-BUILT BY DATE FIELD BOOK  
 STAKING BY DATE FIELD BOOK



HORIZ SCALE 1"=20'  
 VERT SCALE 1"=5'

APOLLO DRIVE

4TH AVENUE

4TH AVENUE

MSAP 210-115-01  
 210-113-01

NO.	DATE	BY	DESCRIPTION

DESIGNED TAC  
 DRAWN IMB  
 CHECKED JMP

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 7/24/92 REG. NO. 20834

**TKDA**  
 ENGINEERS ARCHITECTS PLANNERS  
 TOLTZ, KING, DUVALL, ANDERSON AND ASSOCIATES INCORPORATED  
 SAINT PAUL, MINNESOTA

APOLLO DRIVE IMPROVEMENTS  
 LINO LAKES MINNESOTA

CROSS SECTIONS  
 SHEET NO. 22 OF 22 SHEETS

COMMISSION NO.  
 10071