TRILLIUM LIFT STATION REHABILITATION DESIGN

QUOTATION REQUEST

FOR ENGINEERING SERVICES

22-114 WORK ORDER #3

January 17, 2023

Naperville Water Utilities is seeking to obtain the services of a shortlisted firm (RFQ 22-114) to perform final engineering services of Trillium lift station Rehabilitation. The City intends to provide the firm a purchase order within two weeks of opening quotes. The deadline for submitting quota proposal is February 17, 2023 at 3:00PM.

BACKGROUND

Trillium lift station is located at 2426 Trillium Ln, Naperville. (See location map in exhibit 1) It was originally built in 1995. It consists of one wet well, one dry well, MCC control panel and one standby generator.

The wet well is about 20.4 feet in depth, with two sanitary submersible pumps, the design flow rate for each pump is 35 gpm @ 62.3 feet TDH. Both pumps are 3-phase, 208 volts and 3 hp. In addition, the wet well also includes pump guide rail, float switches, lift chain, 2.5” discharging pipes, and check valves.

The dry well is about 6.5 feet in depth, it includes 2.5 inch discharging pipes, 2-gate valves and one bypass valve.

The control panel includes Automatic Transfer Switch, (ATS), two VFDs, pump control panel and telemetry panel. The standby generator set is manufactured by Kohner Power System, model 30 RZ. It is 30 kw with 3 phases, 4 wire output. The original engineering plan is included in Exhibit 2.

The station has not been rebuilt since 1995. Therefore, the station is aged and need to be rehabilitated.

PROPOSED IMPROVEMENTS

Following are the proposed improvements which need to be included in this project.

Wet well:

1. Check pump curve and system curve, replace existing two pumps.

2. Guide rail, lift chain and other pump accessories need to be replaced.

3. Mechanical floats need to be replaced by Radar level measurements (primary) and level transducers (secondary).

4. Wet well structure needs to be coated needs to be coated with Raven 405 epoxy coating (250 mm min.). Adhesion and Holiday testing will be required. Exterior of the canister needs to be painted with corporate bronze.

5. Both wet well and valve vault hatches need to be replaced with safety grates. Intrusion alarm needs to be installed and connected to SCADA.

6. Wet well discharging pipes, pipe supports need to be replaced. New pipes need to be coated.

7. All electrical conduits and cables need to be replaced.

8. Need to install one Mixer.

9. Replace anode.

Valve Vault:

1. Wet well structure needs to be coated needs to be coated with Raven 405 epoxy coating (250 mm min.). Adhesion and Holiday testing will be required. Exterior of the canister needs to be painted with corporate bronze.

2. Discharging pipe, pipe supports, and elbows need to be replaced (316 stainless steel)

3. Needs to install pressure transmitters and flow meter. Both integrated with the PLC. All data will be review via the City's current SCADA System.

4. Replace anode.

5. Replace check valve, the new check valve shall have limit switch connecting to SCADA.

Electrical and Control

1. Install new traffic box, which will include MCC, SCADA, VFDs, ATS and all other controls. The new traffic box shall be 304 stainless steel, NEMA 4X.

2. install new vented Stainless steel junction box.

2. ATS needs to be replaced with Kohler ATS, match the new generator.

3. Standby generator needs to be replaced.

4. Three new VFDs need to be installed, two for pumps and one for the new mixer.

5. Existing PLC might can be reused.

6. Besides VFDs, pump control panel and ATS, following items shall be included inside/or attached new traffic box:

- High Water Level Alarm in wet well needs to be installed (Both lights and audio).
- Valve vault flooding alarm needs to be installed. (Both lights and audio)

- New Beijer 15" HMI needs to be installed.
- New power monitor is needed.
- VeriSafe absence of voltage tester to be installed.
- Install phoenix UPS, needs to be communicated with SCADA.
- New anode protection box.
- Existing cellular antenna can be reused and attached to the traffic box.
- Install exterior LED lights.
- New Graceport ethernet port with GFI to be install on control cabinet door.

7. PLCs, SCADA and program design shall be done by City integrator. SCADA design allowance should include screen and report development.

Standby Generator

Replace the existing standby generator package.

General Site Work

- Replace all the cables and conduits onsite.
- Replace all concrete pads on site.
- Sanitary manhole needs to be coated with Raven 405 epoxy coating (250 mm min.) from bench to rim excluding the channel. Adhesion and Holiday testing will be required.
- Remove and replace triangular concrete section surrounding the sanitary manhole.
- Remove and replace concrete curb and gutter in from of wells, control box, and generator.
- Contact Nicor for gas connection. Replace gas meter? Most likely in good condition.
- Contact CoMed for potential electrical meter replacement.
- Installed vented junction box. Use VFD cable between VFD and junction box.
- Designer needs to come up a bypassing plan to insure the station's continuous operation during construction.

DESIGN APPROACH

1. Survey-Consultant shall perform necessary site survey, obtain adequate information to perform the design.

2. 30% engineering design-consultant shall develop site layout, mechanical plan view, section view and equipment selections and submit to owner for review. A review meeting will be held.

3. 90% engineering design-Consultant shall develop all the engineering documents ready for construction, the engineering plan set shall include but not limit to: cover sheet, general notes, demolition plan, proposed wet well plan view, sections, proposed valve vault plain view and sections, electrical plan, control plan, proposed by passing design, erosion control, site restoration plan and details.

Consultant will also develop construction specifications and engineering cost estimates during this stage. Consultant will submit above document's for owner's review. A review meeting will be held to go through all the comments.

4. 100% design, consultant will address client's comments, prepare IEPA permit, building permit and submit it to client's final approval

5. Final Bid documents: Consultant will address any remaining comments city might have and finalize the bid documents.

6. Construction assistance and as-built drawing: consultant will budget 95 hours for shop drawing review, construction assistance and prepare as-built drawings, this amount would be listed separately and billed by T&M.

DELIVERABLE:

- One hardcopy of final bid documents (Full Size Plan & Specifications)
- PDF of engineering plan and bid specifications
- AutoCAD version of approved engineering plan
- Word document of specifications

PROPOSAL CONTENTS

- Include personal's Resume who will be involved in this project and their roles.
- Include a mile stone schedule of completion each submittal of this project.
- Any suggestions consultant might have to improve this project. (No need to repeat items that are already listed above)
- Include a fee calculation sheet(s) structured as below:
  1. Consultant's lump fee for design:
  2. City Integrator's allowance: $25000 (T&M), no administration fee from consultant can be applied. (This will be charged by Advanced Automation and Controls, Inc based on T&M)
  3. Provide 95 hours construction services (To be charged as T&M).
  5. Maximum Fee: Add above 1 to 3
  6. Include hourly rates for the staffs who will involve in this project

- Include this document in the submittal, fill the maximum fee calculated above in the last page of this document and provide the signature.

IMPORTANT DTAES

- City will host a mandatary site visit on January 24 (Tuesday), 9:30 AM at Trillium Station. (2426 Trillium Ln, Naperville)
- The quota proposal is due on February 17 (Friday), 3:00PM. Please email your quota to Jason Xi at xij@naperville.il.us

The cost of all equipment and labor to complete the work as identified shall be:

$ _____

Quote Provided by: _____
Signature Printed

Company and Address: _____

_____

_____

QUOTES ARE DUE NO LATER THAN 3:00 P.M. STANDARD CENTRAL TIME ON FRIDAY, February 17, 2023. QUOTES TO BE SUBMITTED BY EMAIL TO Jason Xi AT Jxi@naperville.il.us. ANY QUESTIONS SHOULD BE EMAILED TO Jason Xi AT JXI@naperville.il.us. THE CITY OF NAPERVILLE IS TAX EXEMPT.

EXHIBIT 1

LOCATION MAP

LOCATION MAP (2426 Trillium Ln,)

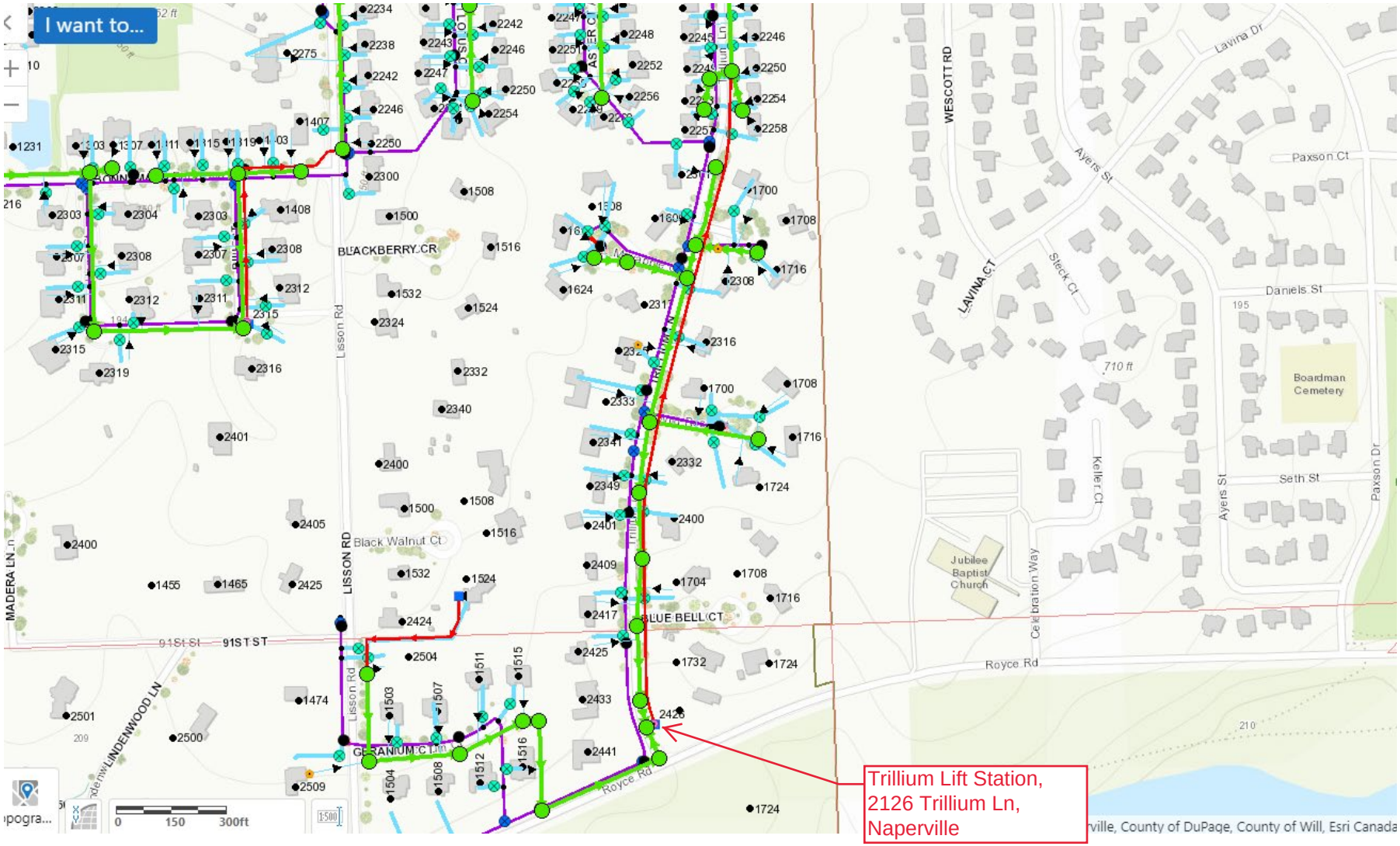


EXHIBIT 2

ORIGINAL ENGINEEIRNG PLAN

FINAL ENGINEERING FOR

CITY OF NAPERVILLE
TRILLIUM LANE WATERMAIN AND SANITARY SEWER EXTENSION

MAYOR
GEORGE PRADEL

CITY COUNCIL MEMBERS
MARY ELLINGSON
KEVIN GALLAHER
DOUGLAS KRAUSE
CAROLYN LE SAGE
SAMUEL MACRANE
MARGARET PRICE
JAMES SIDDALL
GARY VON BEHREN

CITY MANAGER
RONALD MILLER

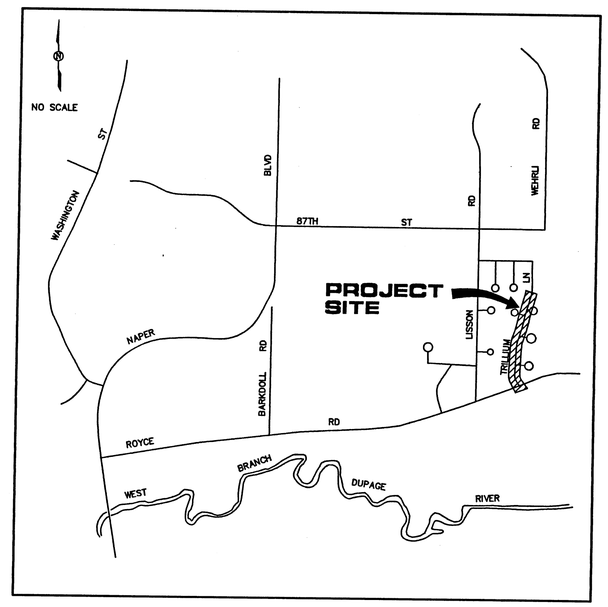
PUBLIC UTILITIES DIRECTOR
ALLAN POOLE, P.E.

ASSISTANT DIRECTOR-WATER & WASTEWATER
ALLEN PANEK

ENGINEERING MANAGER
JIM HOLZAPFEL, P.E.

INDEX TO SHEETS

1	TITLE SHEET
2	GENERAL NOTES, ALIGNMENT, & TIES AND CONTROL
3	TRAFFIC CONTROL AND TYPICAL SECTIONS
4-7	ROADWAY PLAN & PROFILES
8	SANITARY SEWER LIFT STATION SPECIFICATIONS AND DETAILS
9-10	DETAILS



LOCATION MAP

LEGEND

PROPOSED	EXISTING	DESCRIPTION
		SANITARY SEWER
		STORM SEWER
W	W	WATERMAIN
WS, B-BOX	WS, B-BOX	WATER SERVICE
		END SECTION
	2"G	GAS MAIN
E	E	UNDERGROUND ELECTRIC
	CT	UNDERGROUND CABLE TV
	T	UNDERGROUND TELEPHONE
		SIDEWALK
		CONCRETE CURB & GUTTER
		DEPRESSED CURB & GUTTER
	X	FENCE
X		PROTECTIVE TREE FENCE AND EARTH SAWCUT @ ROOTS
		EASEMENT
		R.O.W.
	SIZE	CMP
		DITCH/SWALE
700	700	CONTOURS
		VALVE & VAULT
		VALVE & BOX
		FIRE HYDRANT
		STREET LIGHT
		POWER POLE
		INLET
		CATCH BASIN
		MANHOLE
		B-BOX
	6"	DECIDUOUS TREE
	6"	PINE TREE
	6"	TREE TO BE REMOVED
		ELECTRIC STRUCTURE
		TELEPHONE PEDESTAL
		CABLE TV PEDESTAL
		EARTH SAWCUT
699.58	(699.58)	ELEVATION
	RIM / INVERT	STRUCTURE INFORMATION

SW into Kane?
Non STA Cost
Existing Sw/Lv
Soils Report - Ex
Dwg No

STATE OF ILLINOIS
COUNTY OF DUPAGE } SS

I, LOUIS H. WEHRSPANN, AN ILLINOIS LICENSED PROFESSIONAL ENGINEER, HEREBY CERTIFY THAT THESE PLANS HAVE BEEN PREPARED BY ROAKE AND ASSOCIATES, INC. UNDER MY PERSONAL DIRECTION FOR THE EXCLUSIVE USE OF THE CLIENT NOTED BELOW. REPRODUCTION OR USE BY THIRD PARTIES IS STRICTLY PROHIBITED WITHOUT THE WRITTEN PERMISSION OF THE UNDERSIGNED.

GIVEN UNDER MY HAND AND SEAL THIS 30 DAY OF OCTOBER, 1995

ILLINOIS LICENSED PROFESSIONAL ENGINEER NO. 48925
REGISTRATION VALID THROUGH NOVEMBER 30, 1995

LOUIS H. WEHRSPANN
062-048925
REGISTERED PROFESSIONAL ENGINEER
STATE OF ILLINOIS

3419-01

ROAKE AND ASSOCIATES, INC.
CONSULTING ENGINEERS • LAND SURVEYORS • PLANNERS
1887 HIGH GROVE LN • NAPERVILLE IL 60540 • (708) 355-3232

PREPARED FOR:
CITY OF NAPERVILLE
DEPARTMENT OF PUBLIC UTILITIES–W & W
400 SOUTH EAGLE STREET
NAPERVILLE, ILLINOIS 60566 (708) 420-6131

REVISIONS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION

TITLE SHEET

DRN/CKD BY: KR/LW	DISC. NO.: 35423TS	FLD. BK./PG.:	SHEET 1 of 1
SCALE: NONE	DATE: 10/27/95	JOB NO.: 354.023	

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RECORD DRAWINGS
FOR
CITY OF NAPERVILLE
TRILLIUM LANE WATERMAIN AND SANITARY SEWER EXTENSION

Grid 194

MAYOR
GEORGE PRADEL

CITY COUNCIL MEMBERS
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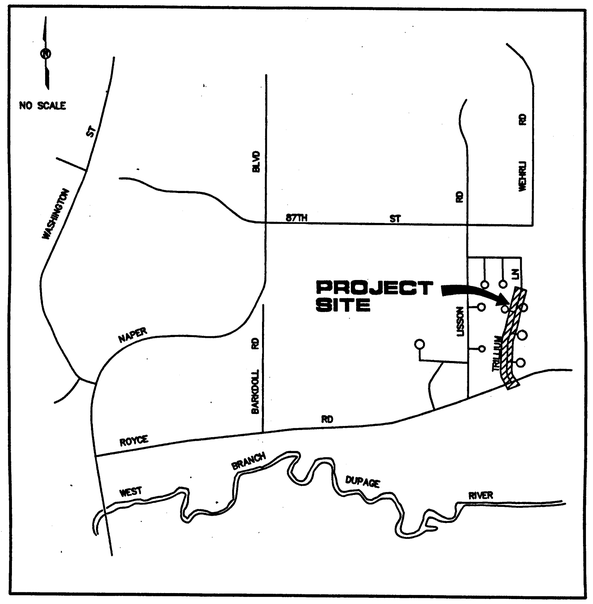
11	SANITARY SEWER LIFT STATION SPECIFICATIONS AND DETAILS
12-13	DETAILS

THIS PROJECT IS TO BE CONSTRUCTED UNDER THE FOLLOWING PERMITS



LOCATION MAP

LEGEND

AS BUILT	PROPOSED	DESCRIPTION
		MANHOLE
		CATCH BASIN
		INLET
		STORM SEWER
SEWER SERVICE	SEWER SERVICE	SANITARY SEWER
WATER SERVICE & B-BOX	WATER SERVICE & B-BOX	WATERMAIN
		VALVE & VAULT
		VALVE & BOX
		FIRE HYDRANT
		STREET LIGHT
		POWER POLE
	680	CONTOURS
	ELEV	ELEVATIONS
		SIDEWALK
		CURB
		GUTTER FLAG W/REVERSE PITCH
		CENTERLINE
		30' BUILDING LINE
		TRENCH BACKFILL
	S	SILT FENCE
	NO / STA / GRATE / STRUCTURE / RIM / INVERT	STRUCTURE CALLOUT
	F.H. #X / XXX.X	FIRE HYDRANT CALLOUT
	GRADE RING ELEV.	STRAW BALE SEDIMENT TRAP

RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATERMAIN SANITARY SEWER STORM SEWER	9/14/98	LHW
STORMWATER MANAGEMENT		
OUTDOOR LIGHTING		

ENGINEER'S CERTIFICATE

STATE OF ILLINOIS)
COUNTY OF DUPAGE) SS

I, LOUIS H. WEHRSPANN, AN ILLINOIS LICENSED PROFESSIONAL ENGINEER, HEREBY DECLARE THAT THESE "RECORD DRAWINGS" PERTAINING TO (WATER MAIN, SANITARY SEWER, STORM SEWER) ~~(STORMWATER MANAGEMENT) (OUTDOOR LIGHTING)~~ CONSISTING OF SHEETS 1 AND 4-10

CONTAIN FIELD OBSERVATIONS BY THE ENGINEER AS WELL AS INFORMATION PROVIDED BY CONTRACTORS WHICH HAS NOT BEEN VERIFIED. IT IS MY PROFESSIONAL OPINION THAT THESE "RECORD DRAWINGS" SUBSTANTIATE THAT THE IMPROVEMENTS CONSTRUCTED AS PART OF THIS PROJECT WILL FUNCTION IN SUBSTANTIAL CONFORMANCE TO THE DESIGN INTENT OF THE APPROVED ENGINEERING PLANS.

GIVEN UNDER MY HAND AND SEAL THIS 4th DAY OF SEPTEMBER A.D., 1998.

ILLINOIS LICENSED PROFESSIONAL ENGINEER NO. 062-048925
LICENSE VALID THROUGH NOVEMBER 30, 1999
(NOT VALID WITHOUT ORIGINAL SIGNATURE)

LOUIS H. WEHRSPANN 062-048925 REGISTERED PROFESSIONAL ENGINEER STATE OF ILLINOIS

COPY: 1, 4-10 11 10-5-98

ROAKE AND ASSOCIATES, INC.
CONSULTING ENGINEERS • LAND SURVEYORS • PLANNERS
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PREPARED FOR:
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REVISIONS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION
TITLE SHEET- RECORD DRAWING

DRN/CKD BY: SM/LW	DISC. NO.: AB35423T	FLD. BK./PG.:	SHEET NO. 1 of 13
SCALE: NONE	DATE: 8/28/98	JOB NO.: 354.023	

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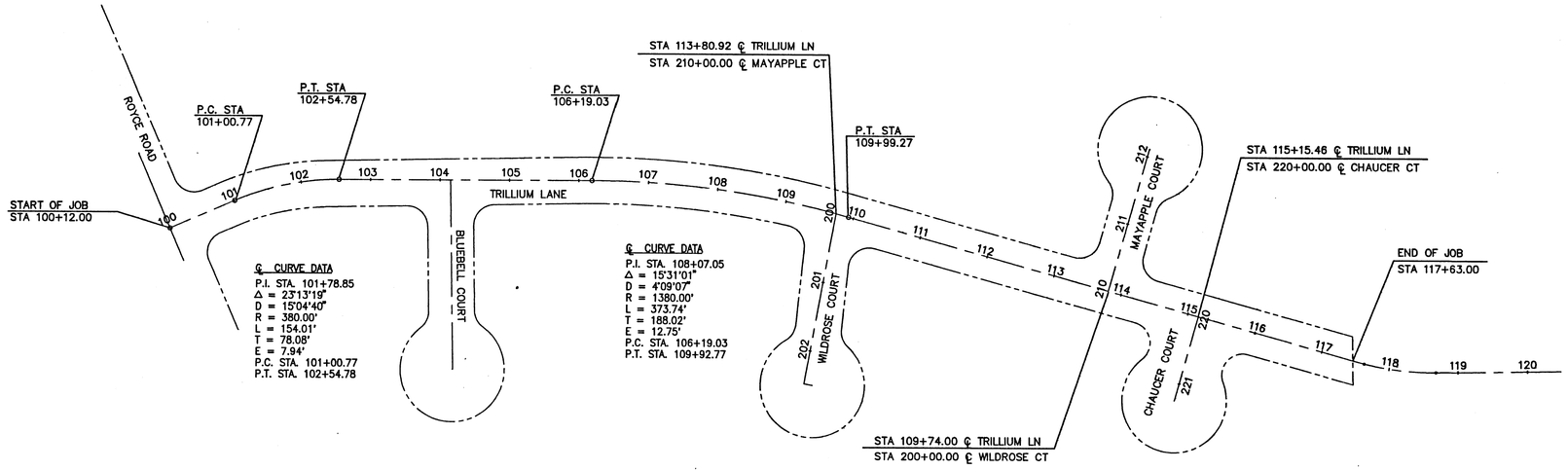
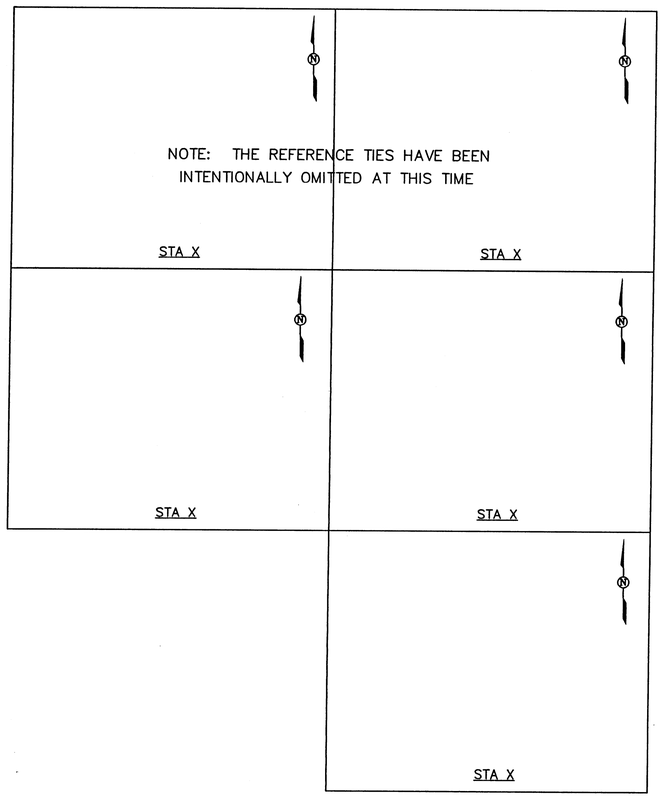


BENCHMARKS

B.M. #1 BERNSTEN 3D MONUMENT ON THE SOUTH SIDE OF ROYCE ROAD AT LISSON ROAD 695.21

B.M. #2 BERNSTEN 3D MONUMENT ON THE NORTH SIDE OF ROYCE ROAD WEST OF CHURCH ENTRANCE 696.61

REFERENCE TIES FOR TRILLIUM LANE SURVEY LINE



GENERAL NOTES

1. ALL CONSTRUCTION SHALL BE DONE IN ACCORDANCE WITH:
   A. STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION AS ADOPTED JULY 1, 1994, BY THE STATE OF ILLINOIS DEPARTMENT OF TRANSPORTATION, HEREINAFTER REFERRED TO AS "STANDARD SPECIFICATIONS."
   B. STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS AS ADOPTED MAY 1986, BY THE ILLINOIS SOCIETY OF PROFESSIONAL ENGINEERS, ET AL.
   C. STANDARD SPECIFICATIONS FOR THE CITY OF NAPERVILLE AS ADOPTED MARCH 1989, RELEASE DATE AUGUST 1989.
2. THE CITY OF NAPERVILLE DEPARTMENT OF PUBLIC WORKS – CONSTRUCTION DIVISION (708–420–6100) AND DEPARTMENT OF PUBLIC UTILITIES (708–420–6185) SHALL BE CONTACTED AT LEAST 48 HOURS PRIOR TO CONSTRUCTION.
3. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND BONDING PRIOR TO COMMENCING CONSTRUCTION.
4. THE ATTENTION OF THE CONTRACTOR IS DIRECTED TO THE PROVISIONS OF ARTICLES 102.05 AND 105.07 OF THE STANDARD SPECIFICATIONS.
5. THE CONTRACTOR SHALL FURNISH, MAINTAIN, AND REMOVE ALL TRAFFIC CONTROL DEVICES NECESSARY TO PROTECT LIVE TRAFFIC AND WORK ZONE. SUCH TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE PLANS, NOTES, STANDARD SPECIFICATIONS, SPECIAL PROVISIONS, AND THE "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES."
6. THE CONTRACTOR WILL CONFINE HIS OPERATIONS TO WITHIN THE AREAS DESIGNATED BY THE CONSTRUCTION LIMITS SHOWN ON THE PLANS. DAMAGE TO PROPERTY OUTSIDE OF THESE LIMITS WILL BE RESTORED TO THE CONDITION THAT EXISTED PRIOR TO THE PROJECT AND SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
7. THE CONTRACTOR SHALL PROTECT ALL TREES AND SHRUBS ADJACENT TO THE CONSTRUCTION ZONE DURING THE CONSTRUCTION OPERATIONS, IN ACCORDANCE WITH SECTION 201 OF THE STANDARD SPECIFICATIONS, THE SPECIAL PROVISIONS, AS INDICATED ON THE PLANS, AND AS DIRECTED BY THE ENGINEER. A QUANTITY FOR TREE PROTECTION FENCE AND EARTH SAWCUT HAS BEEN INCLUDED IN THE SUMMARY OF QUANTITIES.
8. THE CONTRACTOR SHALL MAINTAIN A SET OF "AS–BUILT" DRAWINGS NOTING ALL PIPE LENGTHS, BENDS, TEES, AND CHANGES TO THE PLANS, AND THE LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND ROCK ENCOUNTERED. A MYLAR REPRODUCIBLE AS–BUILT DRAWING MUST BE SUBMITTED TO THE NAPERVILLE DEPARTMENT OF PUBLIC WORKS FOR REVIEW AND APPROVAL UPON COMPLETION OF THE PROJECT.
9. THE CONTRACTOR SHALL MAINTAIN ACCESS TO ABUTTING PROPERTY DURING THE CONSTRUCTION OF THIS PROJECT, EXCEPT FOR PERIODS OF SHORT DURATION, AS APPROVED BY THE ENGINEER. A QUANTITY FOR TEMPORARY STONE HAS BEEN INCLUDED IN THE SUMMARY OF QUANTITIES.
10. ALL DRIVEWAYS SHALL BE REPLACED IN KIND PER THE TYPICAL RESIDENTIAL DRIVEWAY DETAIL AND THE DIMENSIONS SHOWN IN THE PLANS. A FULL DEPTH SAWCUT SHALL BE PROVIDED AT THE EXISTING EDGE OF PAVEMENT AND AT THE LOCATION AS SHOWN ON THE PLANS. SAWCUTTING WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED INCIDENTAL TO PAVEMENT REMOVAL.
11. THE DIMENSIONS AND LOCATIONS OF UTILITY FACILITIES AS SHOWN ON THESE PLANS ARE AN ESTIMATE FOR DESIGN PURPOSES ONLY, AND ARE NOT INTENDED FOR USE AS FIELD LOCATIONS FOR CONSTRUCTION. BEFORE BEGINNING ANY DIGGING OR EXCAVATION, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CONTACT J.U.L.I.E. AT 800–892–0123 TO VERIFY UTILITY LOCATIONS.
12. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO MAINTAIN SATISFACTORY DRAINAGE OF THE PROJECT SITE AND THOSE AREAS THAT PRESENTLY DRAIN THROUGH THE PROJECT SITE, AT ALL TIMES DURING THE CONSTRUCTION PERIOD. THE COST OF PROVIDING, INSTALLING, AND MAINTAINING THESE MEASURES SHALL BE INCIDENTAL TO THE COST OF THE CONTRACT.
13. ALL TRENCHES FALLING UNDER OR WITHIN TWO FEET OF PROPOSED OR EXISTING PAVED SURFACES (INCLUDING SIDEWALK) SHALL BE BACKFILLED WITH SELECT GRANULAR MATERIAL CONFORMING TO THE GRADATION OF CA–6. BACKFILLING SHALL BE IN ACCORDANCE WITH SECTION 603.08 OF THE STANDARD SPECIFICATIONS AND THE TRENCH SECTION DETAILS. ESTIMATED TRENCH BACKFILL QUANTITIES HAVE BEEN CALCULATED USING A 3'–2" TRENCH WIDTH AS RECOMMENDED FOR A 8 INCH WATERMAIN IN THE STANDARD SPECIFICATIONS FOR WATER AND SEWER MAIN CONSTRUCTION IN ILLINOIS.
14. A QUANTITY FOR STORM SEWERS, TYPE I (C.S.P. CLASS 2) 8 INCH, HAS BEEN ADDED TO THE SUMMARY OF QUANTITIES IN THE EVENT FIELD TILE IS ENCOUNTERED AND IS TO BE CONNECTED TO A PROPOSED DRAINAGE STRUCTURE, SEWER, OR DITCH AS DIRECTED BY THE ENGINEER.
15. A QUANTITY FOR EXPLORATION TRENCH (84 INCH DEPTH) HAS BEEN ADDED TO THE SUMMARY OF QUANTITIES AND IS ONLY TO BE USED AT THE ENGINEER'S DIRECTION.
16. ALL DISTURBED AREAS SHALL RECEIVE A 8 INCH LAYER OF TOPSOIL AND SOD.
17. SODDING: ALL DISTURBED AREAS TO BE SODDED SHALL INCLUDE FERTILIZER NUTRIENTS AND SUPPLEMENTAL WATERING WHICH IS TO BE USED AFTER THE INITIAL WATERING (AS SPECIFIED AND AS DIRECTED BY THE ENGINEER), APPLIED AT A RATE OF 10 GALLONS PER SQUARE YARD SODDING. SODDED SLOPES WHICH ARE 2:1 OR STEEPER SHALL BE STAKED.
18. FERTILIZER NUTRIENTS SHALL HAVE A 5–3–2 RATIO AND SHALL BE APPLIED AT A RATE OF 180 POUNDS PER ACRE – 90 POUNDS NITROGEN FERTILIZER NUTRIENT, 54 POUNDS PHOSPHOROUS FERTILIZER NUTRIENT, AND 36 POUNDS POTASSIUM NUTRIENT FOR HYDRO–SEEDING, CLASS IA AND SODDING, SALT TOLERANT.
19. ALL WATERMAIN SHALL HAVE A MINIMUM OF FIVE (5) FEET OF COVER AND SHALL BE RUN IN STRAIGHT ALIGNMENT, UNLESS SPECIFICALLY SHOWN OTHERWISE ON THE PLANS.
20. ALL WATERMAIN SHALL BE CEMENT LINED DUCTILE IRON PIPE, CLASS 52 CONFORMING TO AWWA C–150 WITH PUSH–ON OR MECHANICAL JOINTS. ALL WATERMAIN EXTENSIONS SHALL BE TERMINATED WITH A MECHANICAL JOINT PLUG. ANY REQUIRED REMOVAL OF ABANDONED WATERMAIN AND INSTALLATION OF MECHANICAL JOINT PLUGS SHALL BE CONSIDERED INCIDENTAL TO DUCTILE IRON WATERMAIN, CLASS 52, 8 INCH.
21. POLYETHYLENE FILM WRAP FOR WATERMAIN IN ACCORDANCE WITH AWWA C–105–82 SHALL BE PLACED OVER ALL WATERMAIN SUCH THAT THE WATERMAIN SHALL NOT BE IN DIRECT CONTACT WITH THE TRENCH SOIL. THIS ITEM WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE PER LINEAL FOOT FOR DUCTILE IRON WATERMAIN, CLASS 52, 8 INCH.
22. ALL WATERMAINS SHALL BE PRESSURE TESTED AND DISINFECTED IN ACCORDANCE WITH STANDARDS AND PROCEDURES MEETING THE APPROVAL OF THE MUNICIPALITY. THE COST OF TESTING AND DISINFECTION SHALL BE INCLUDED IN THE VARIOUS WATERMAIN LINE ITEMS.
23. FIRE HYDRANTS SHALL BE WATEROUS PACER WB–67 (5–1/4" BARREL), CLOW F–2500 (4–1/2" BARREL) AND MUELLER A–421 (4–1/2" BARREL).
24. CONNECTIONS TO THE EXISTING WATER SYSTEM SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
25. THE CA–6 PIPE BEDDING (4 INCH MINIMUM THICKNESS) SHALL NOT BE PAID FOR SEPARATELY BUT SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE FOR DUCTILE IRON WATERMAIN, CLASS 52, 8 INCH.
26. ADJUSTMENT OF FRAMES OF ALL VALVE VAULTS SHALL BE MADE WITH PRECAST CONCRETE ADJUSTING RINGS SET IN PERFORMED BUTYL MASTIC RUB–R–NEK OR APPROVED EQUAL, AND NO MORE THAN 12 INCHES OF ADJUSTING RINGS WILL BE PERMITTED.
27. CORPORATION STOPS AND COPPER TUBING (TYPE "K") REQUIRED TO BLEED OFF AIR, CHLORINATE THE WATERMAIN, OR PRESSURE TEST SHALL BE PROVIDED BY THE CONTRACTOR AT NO COST TO THE CITY. NO COMPENSATION FOR THE MATERIAL, LABOR, AND EQUIPMENT INCLUDING, BUT NOT LIMITED TO THE INSTALLATION OF THE CORPORATION STOP TO THE MAIN, THE COPPER TUBING (TYPE "K"), AND ANY INCIDENTAL ITEMS AS REQUIRED BY THE ENGINEER.
28. EXISTING WATERMAIN VALVES SHALL BE OPERATED BY CITY OF NAPERVILLE DIVISION OF WATER DISTRIBUTION AND COLLECTION DIVISION (WD & CD), WATER AND WASTEWATER UTILITIES DEPARTMENT PERSONNEL ONLY. THE CONTRACTOR SHALL NOTIFY THE WD & CD AT LEAST 48 HOURS PRIOR TO THE TIME WHEN VALVE TURNING IS REQUIRED. 48 HOURS NOTICE SHALL NOT INCLUDE WEEKENDS.
29. WATERMAIN VALVES SHALL COMPLY WITH SECTION 511 OF THE STANDARD SPECIFICATIONS FOR THE CITY OF NAPERVILLE. ALL VALVES SHALL BE RESILIENT WEDGE VALVES MEETING AWWA C509–80 STANDARDS. VALVES FROM THE FOLLOWING MANUFACTURERS ARE ACCEPTABLE: AMERICAN, CLOW, OR WATEROUS.
30. THE CONTRACTOR SHALL VERIFY THE SIZE AND LOCATION OF THE EXISTING SERVICES PRIOR TO INSTALLATION.
31. AT ALL LOCATIONS WHERE EXISTING ROADWAY OR DRIVEWAY PAVEMENT IS TO BE REMOVED, THE CONTRACTOR SHALL PROVIDE A FULL–DEPTH SAWCUT ADJACENT TO THE EXISTING PAVEMENT TO REMAIN. THIS WORK WILL NOT BE PAID FOR SEPARATELY BUT SHALL BE CONSIDERED INCIDENTAL TO THE PAVEMENT REMOVAL.
32. THE STATION – OFFSET – ELEVATIONS NOTED FOR ALL DRAINAGE STRUCTURES LOCATED IN THE CURB LINE REFER TO THE POSITION OF THE ADJACENT PROPOSED EDGE OF PAVEMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE OFFSET NECESSARY TO THE VARIOUS DIAMETER PRECAST CONCRETE SECTIONS SO AS TO SET THE FRAME AND GRATES IN THE PROPER LOCATION. ALL OTHER STRUCTURES ARE DIMENSIONED TO THE CENTER OF THE STRUCTURE, ELEVATION INDICATED RIM GRADES. ALL PIPE LENGTHS SHOWN ON THE PLANS ARE FROM CENTER OF STRUCTURE. HOWEVER, PAYMENT WILL BE MADE IN ACCORDANCE WITH ARTICLE 550 OF THE STANDARD SPECIFICATIONS.
33. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CLEAN ALL DRAINAGE STRUCTURES NEWLY CONSTRUCTED OF ALL DEBRIS ACCUMULATED DURING CONSTRUCTION OPERATIONS. THIS WORK WILL NOT BE PAID FOR SEPARATELY BUT WILL BE INCIDENTAL TO THE CONTRACT.
34. THE COST OF MAKING STORM SEWER CONNECTIONS SHALL BE INCIDENTAL TO THE COST OF THE STORM SEWER BEING CONNECTED.

- 002

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PREPARED FOR:
CITY OF NAPERVILLE
DEPARTMENT OF PUBLIC UTILITIES–W & W
400 SOUTH EAGLE STREET
NAPERVILLE, ILLINOIS 60566 (708) 420–6131

REVISIONS

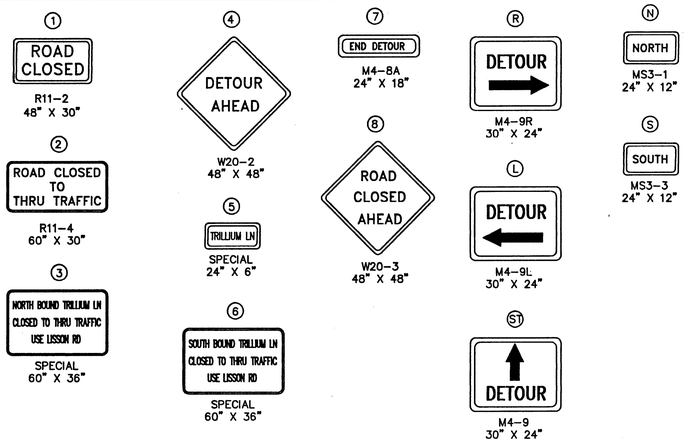
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

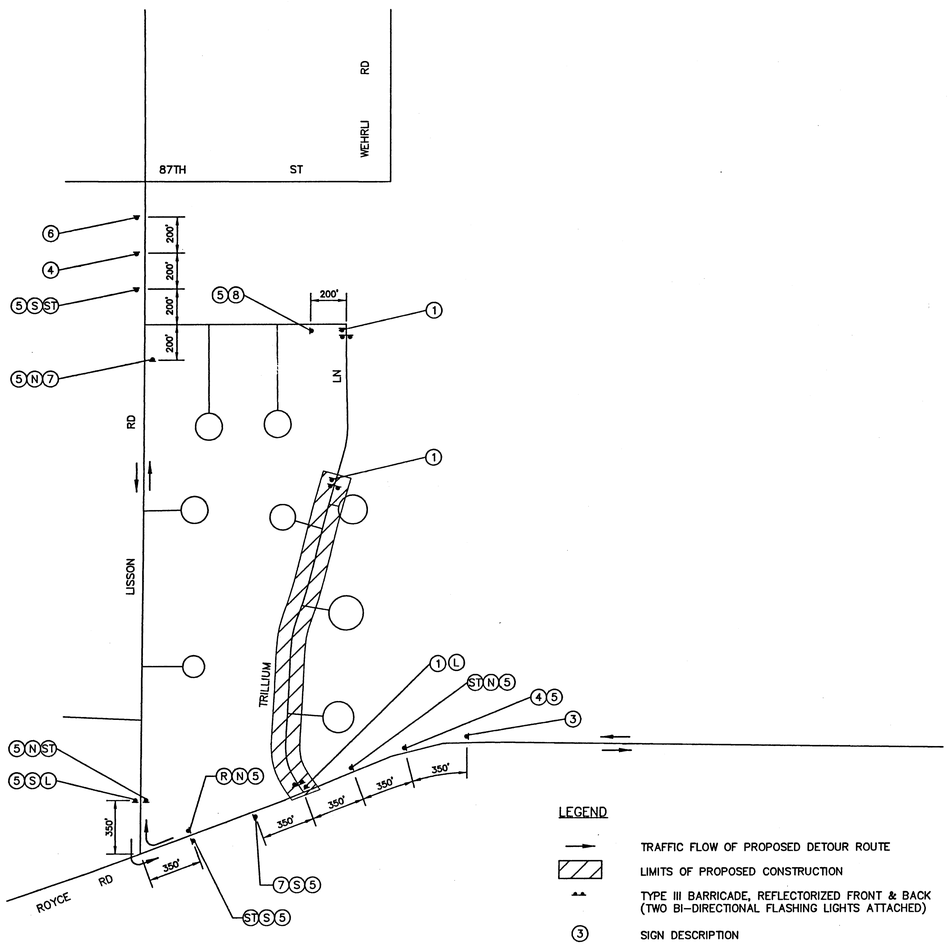
TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION

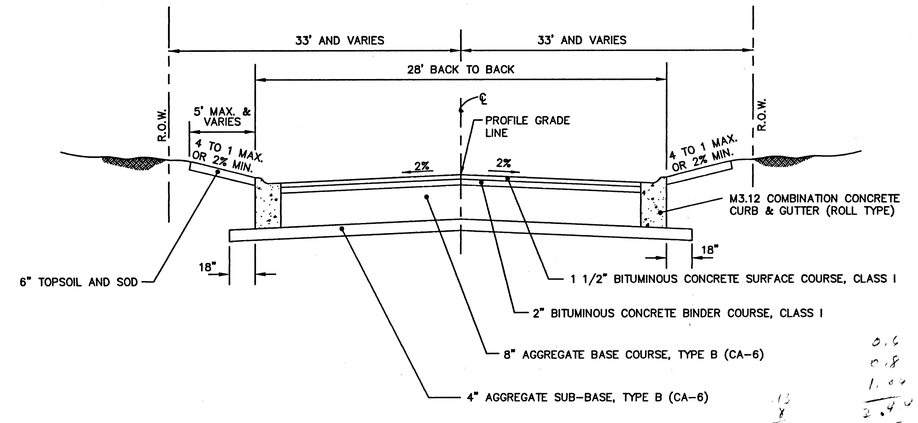
GENERAL NOTES, ALIGNMENT, & TIES AND CONTROL

DRN/CKD BY:	KR/LW	DISC NO.:	35423GN	FLD. BK./PG.	78/1	SHEET NO.	2 OF 1
SCALE:	NONE	DATE:	10/27/95	JOB NO.:	354.023		

G:\354\023\35423GN Fri Oct 27 22:12:04 1995 lhw
lhw/gr: \354\021\35421gn2.doc

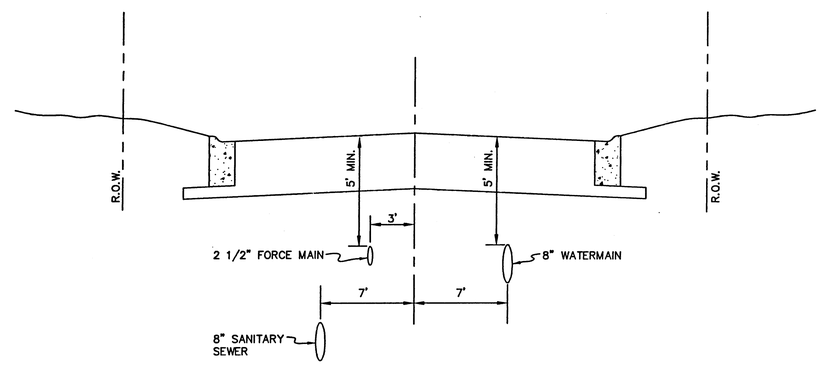






TYPICAL ROADWAY PAVEMENT SECTION

N.T.S.



TYPICAL UTILITY SECTION

N.T.S.

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REVISIONS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION

TRAFFIC CONTROL AND TYPICAL SECTIONS

DRN/CKD BY: KER/LHW	DISC NO.: 354\024\35424TC	FLD. BK./PG.	SHEET NO. 3 OF 10
SCALE: NONE	DATE: 10/27/95	JOB NO.: 354.024	

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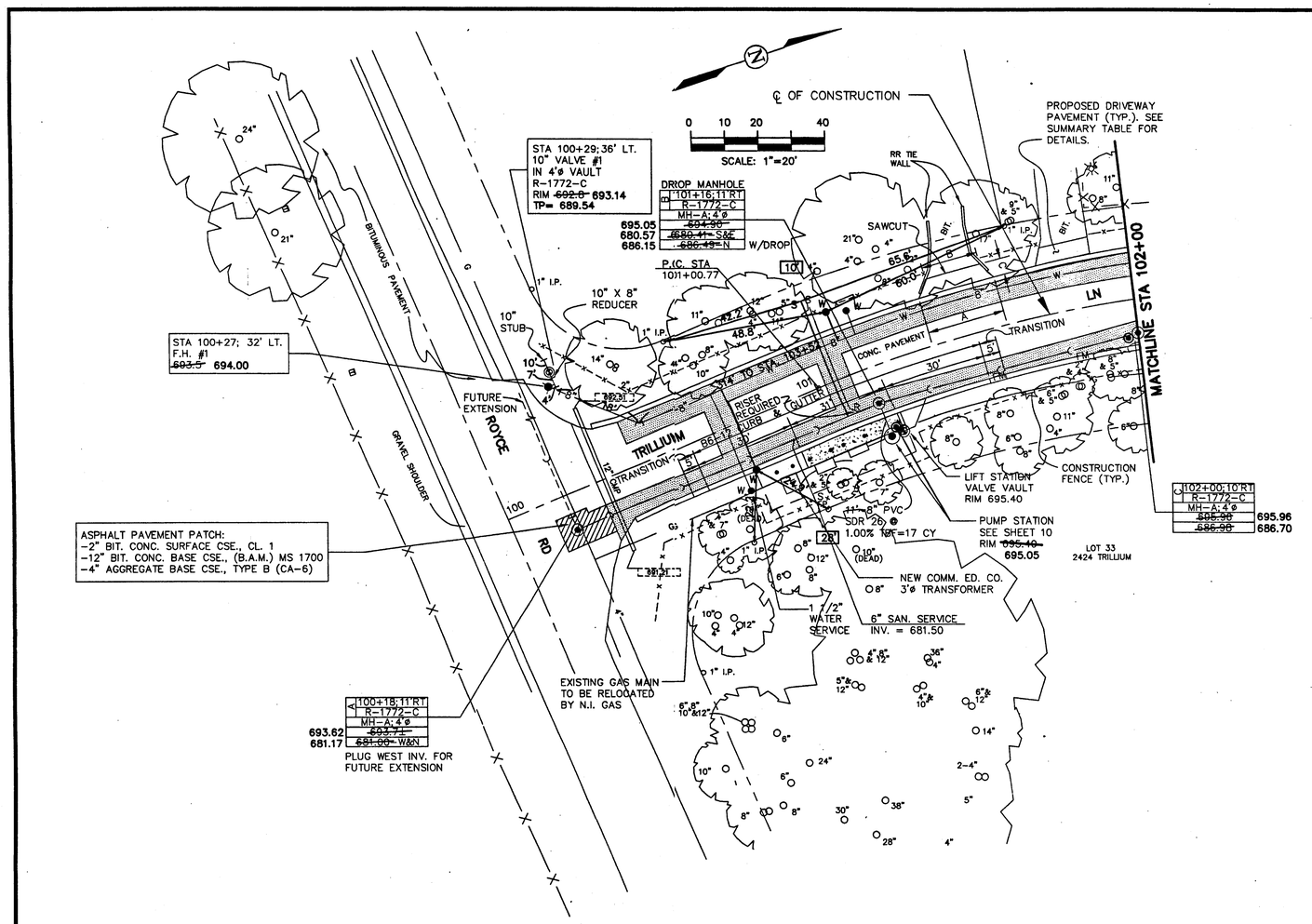
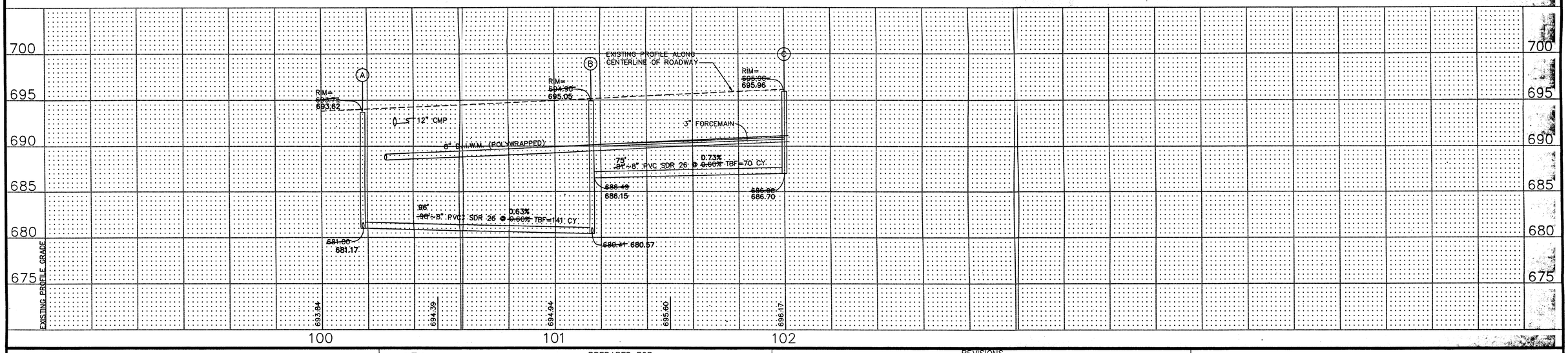


RECORD DRAWING
DATE: 8\28\98

272 DISTANCE FROM SANITARY "T" TO DOWNSSTREAM MANHOLE

STRUCTURE: COORDINATES		
STRUCTURE	NORTHING	EASTING
CL OF CONST. PK NAIL 100+00.000	1011.91	1001.02
CL OF CONST. "+" CUT 117+35.511	2574.11	1717.68
SANITARY SEWER		
LIFT STATION	1033.08	1009.28
B- MANHOLE	1128.54	1002.94
C- MANHOLE	1205.88	1007.92
WATERMAIN		
1- HYDRANT	1038.48	966.78
1- VALVE VAULT	1040.14	961.39

RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATERMAIN SANITARY SEWER STORM SEWER	9/4/98	MW
STORM~~WATER MANAGEMENT~~		
OUTDOOR ~~LIGHTING~~		



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REVISIONS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION

TRILLIUM LANE PLAN & PROFILE STA. 100+00 – 102+00– RECORD DRAWING

DRN/CKD BY: SM/LW	DISC. NO.: TRIL4AB	FLD. BK./PG.: 78/1	SHEET NO. 4 of 13
SCALE: HORZ.-1" = 20' VERT.-1" = 5'	DATE: 8/28/98	JOB NO.: 354.023	

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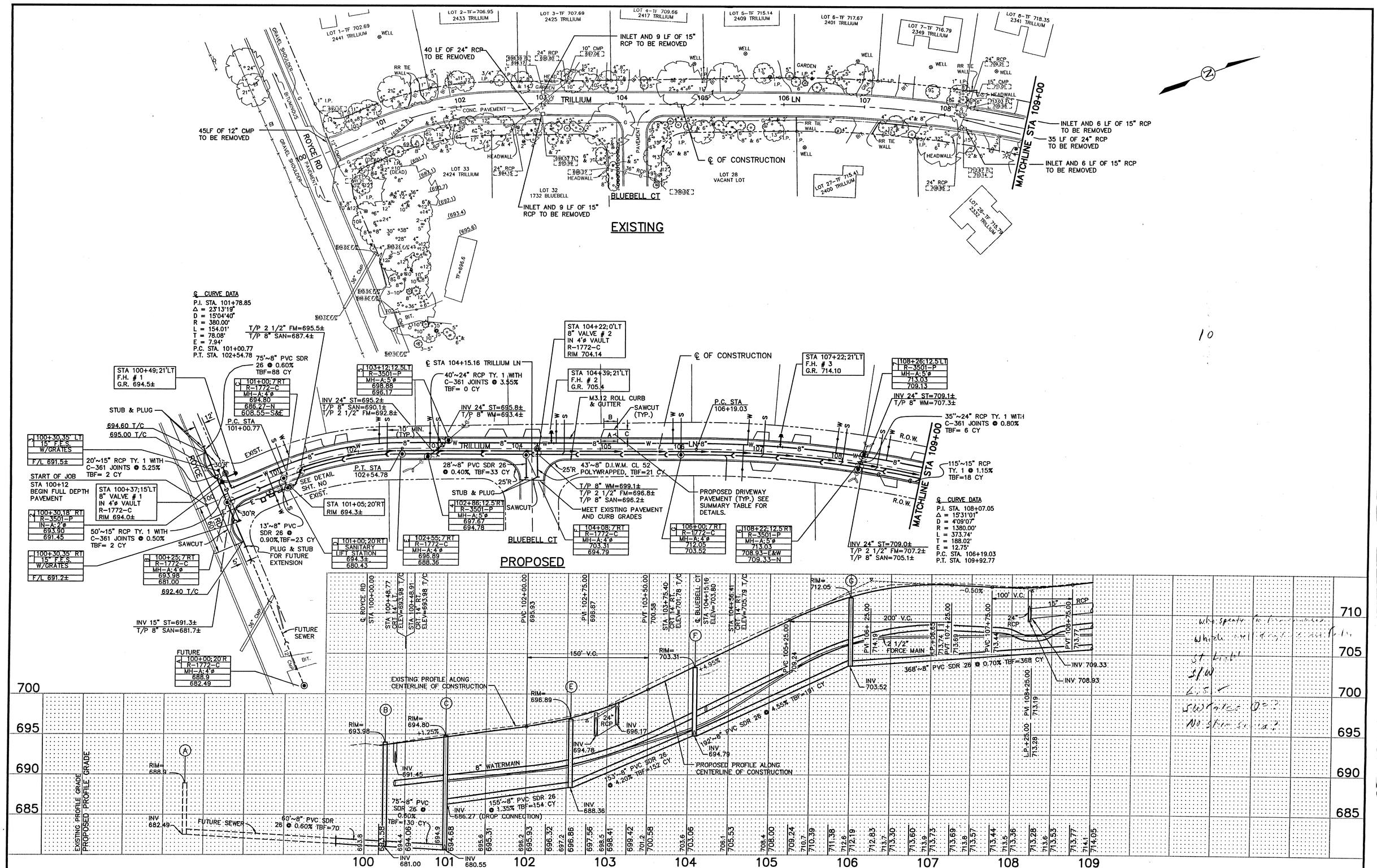

10

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REVISIONS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION

TRILLIUM LANE PLAN & PROFILE STA. 100+12 – 109+00

DRN/CKD BY: KR/LW	DISC. NO.: TRILLPP1	FLD. BK./PG.: 78/1	SHEET NO. 4 of 10
SCALE: HORZ.-1" = 50' VERT.-1" = 5'	DATE: 10/27/95	JOB NO.: 354.023	

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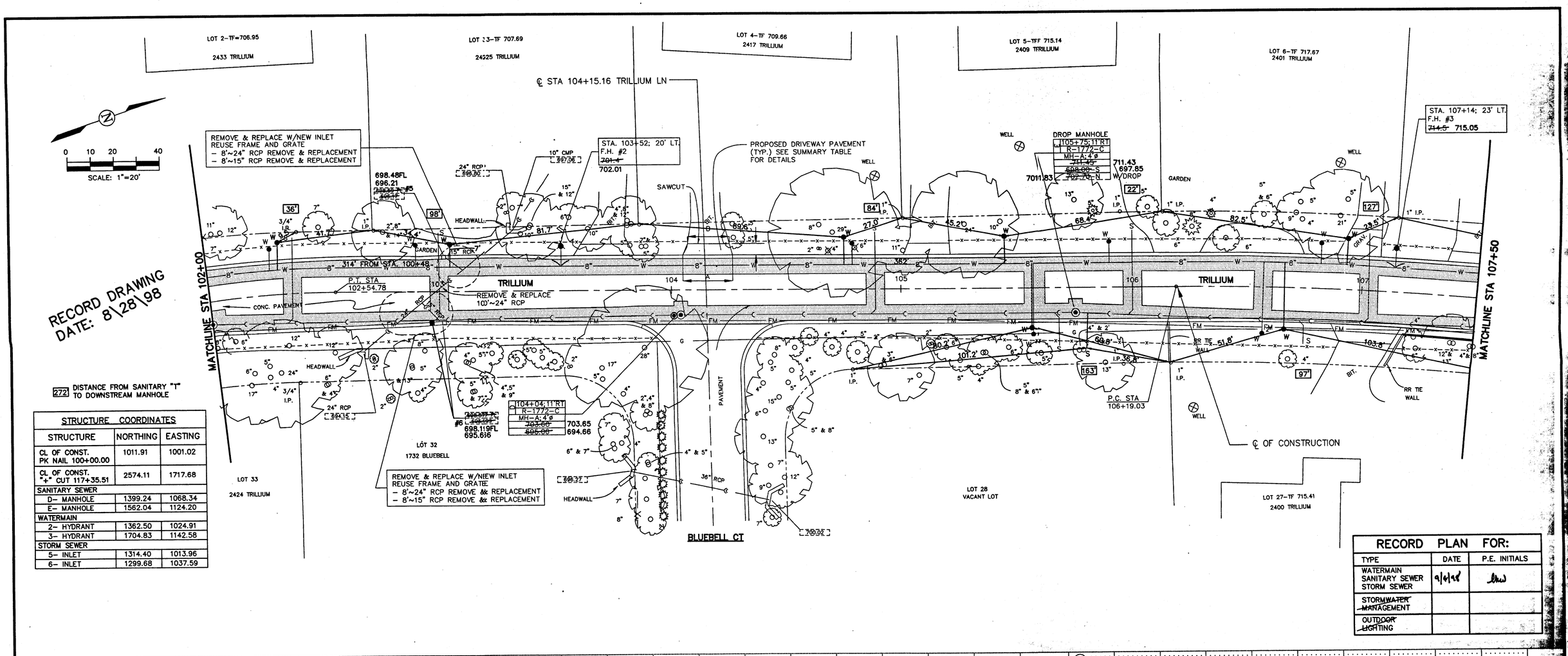
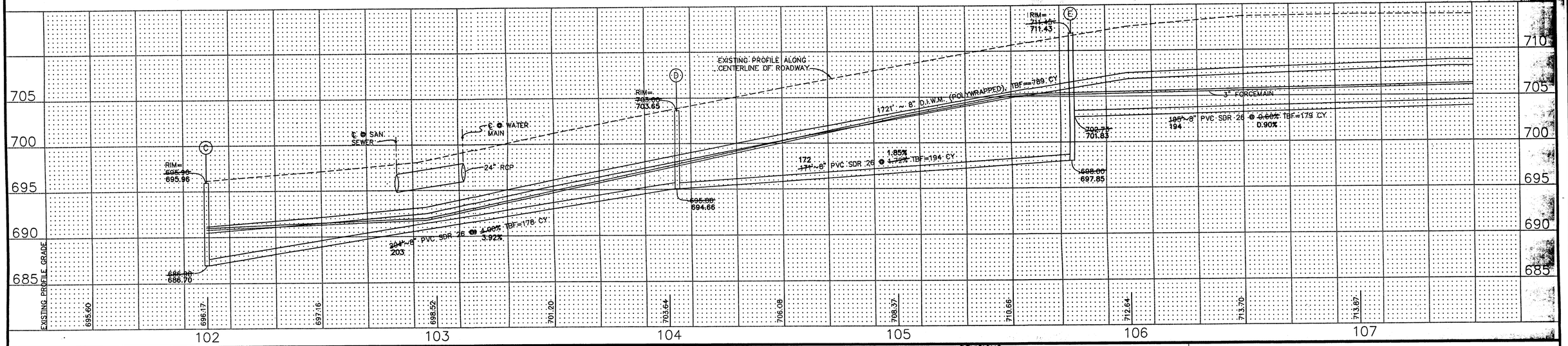


272 DISTANCE FROM SANITARY "T" TO DOWNSTREAM MANHOLE

STRUCTURE COORDINATES		
STRUCTURE	NORTHING	EASTING
CL OF CONST. PK NAIL 100+00.00	1011.91	1001.02
CL OF CONST. "+" CUT 117+35.51	2574.11	1717.68
SANITARY SEWER		
D- MANHOLE	1399.24	1068.34
E- MANHOLE	1562.04	1124.20
WATERMAIN		
2- HYDRANT	1362.50	1024.91
3- HYDRANT	1704.83	1142.58
STORM SEWER		
5- INLET	1314.40	1013.96
6- INLET	1299.68	1037.59

RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATERMAIN SANITARY SEWER STORM SEWER	9/4/98	lhw
STORM ~~WATER MANAGEMENT~~		
OUTDOOR ~~LIGHTING~~		



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REVISIONS					
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION

TRILLIUM LANE PLAN & PROFILE STA. 102+00 - 107+50- RECORD DRAWING

DRN/CKD BY: SM/LW	DISC. NO.: TRIL1AB	FLD. BK./PG.: 78/1	SHEET NO.
SCALE: HORZ.-1" = 20' VERT.-1" = 5'	DATE: 8/28/98	JOB NO.: 354.023	5 of 13

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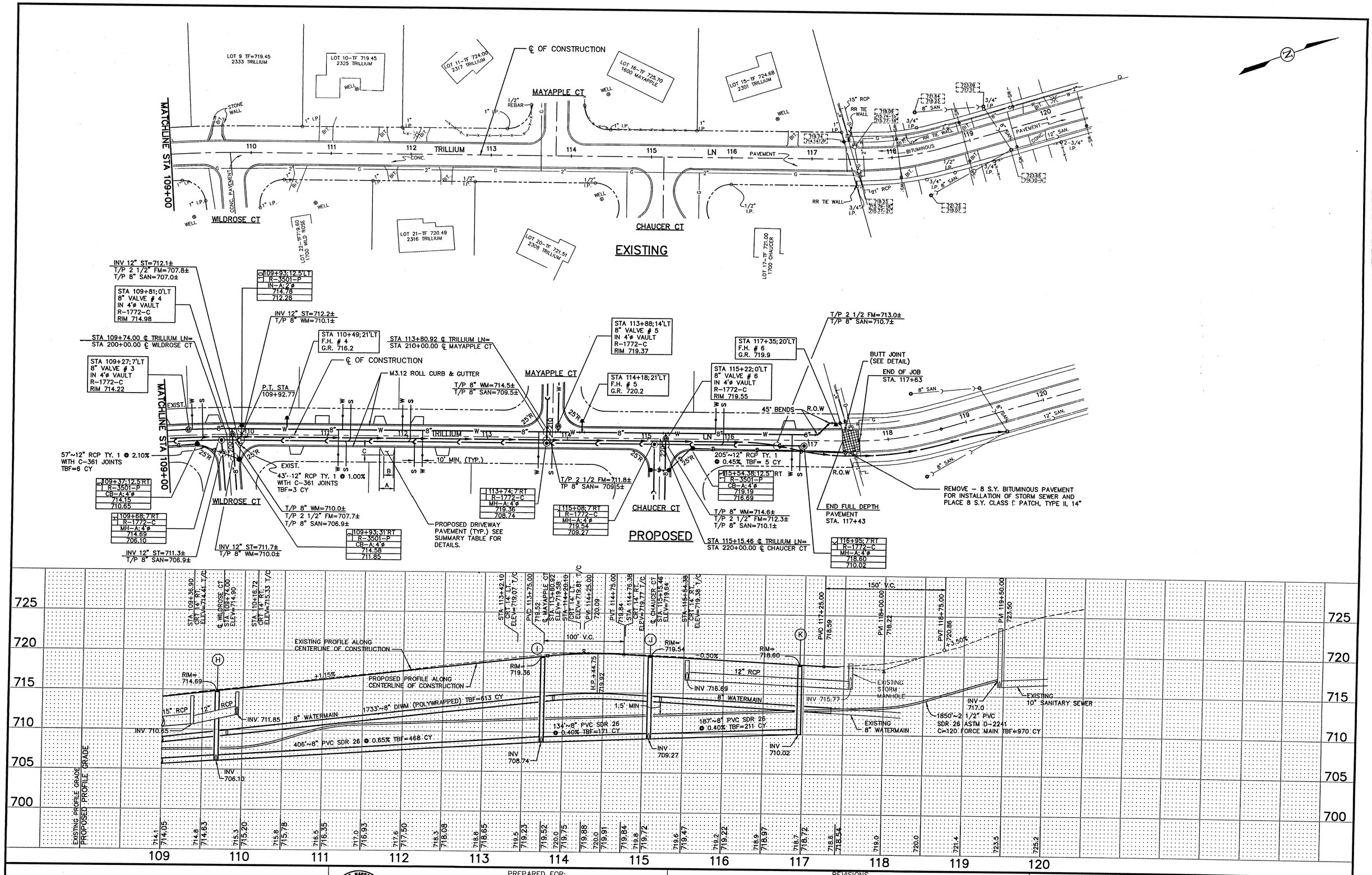

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REVISIONS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION

TRILLIUM LANE PLAN & PROFILE STA. 109+00 - 117+63

DRN/CKD BY: KR/LW	DISC. NO.: TRILLPP2	FLD. BK./PG.: 78/1	SHEET NO. 5 of 10
SCALE: HORZ.-1" = 50' VERT.-1" = 5'	DATE: 10/27/95	JOB NO.: 354.023	

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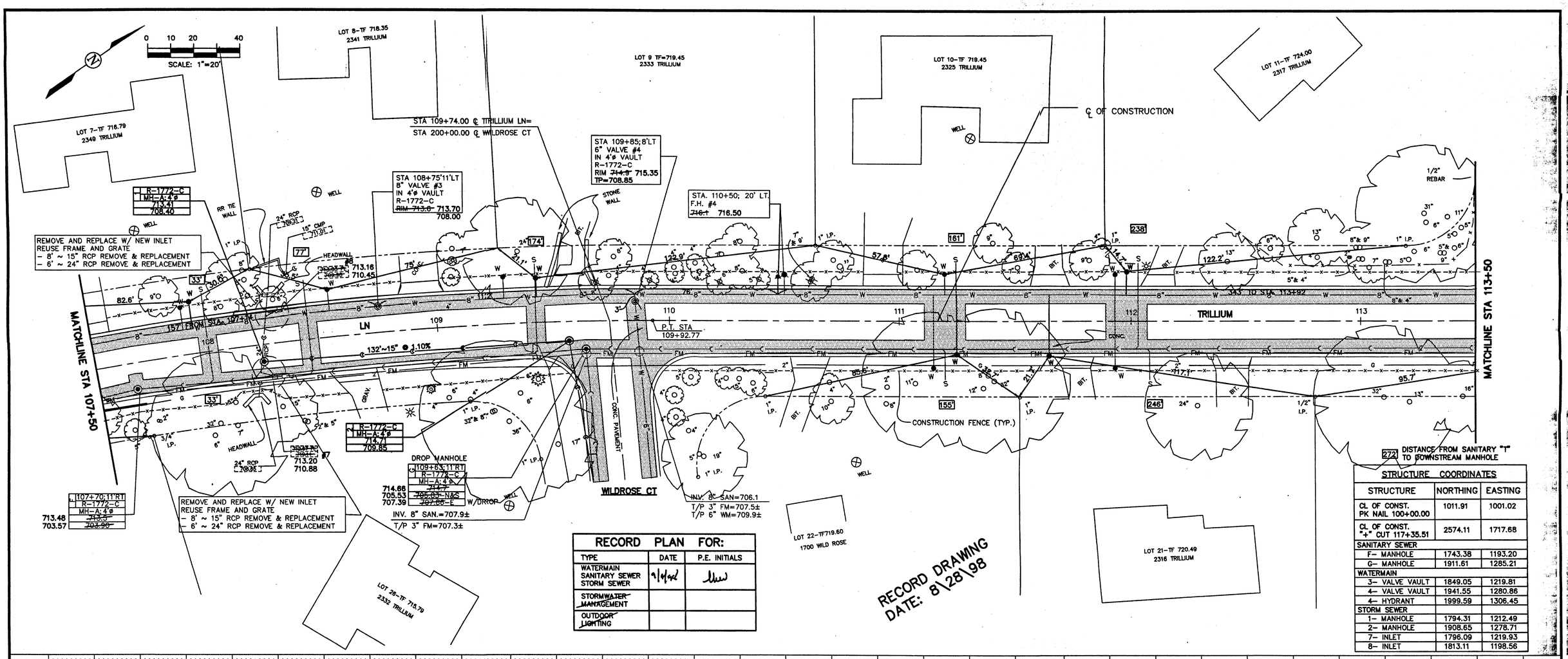
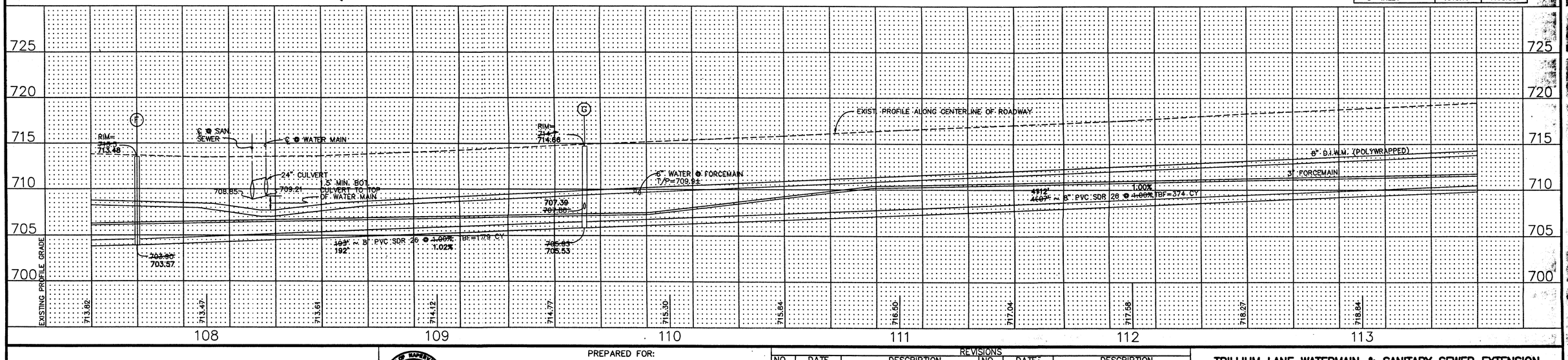


RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATERMAIN SANITARY SEWER STORM SEWER	9/4/98	
~~STORMWATER MANAGEMENT~~		
~~OUTDOOR LIGHTING~~		

STRUCTURE COORDINATES		
STRUCTURE	NORTHING	EASTING
CL OF CONST. PK NAIL 100+00.00	1011.91	1001.02
CL OF CONST. "+" CUT 117+35.51	2574.11	1717.68
SANITARY SEWER		
F- MANHOLE	1743.38	1193.20
G- MANHOLE	1911.61	1285.21
WATERMAIN		
3- VALVE VAULT	1849.05	1219.81
4- VALVE VAULT	1941.55	1280.86
4- HYDRANT	1999.59	1306.45
STORM SEWER		
1- MANHOLE	1794.31	1212.49
2- MANHOLE	1908.65	1278.71
7- INLET	1796.09	1219.93
8- INLET	1813.11	1198.56



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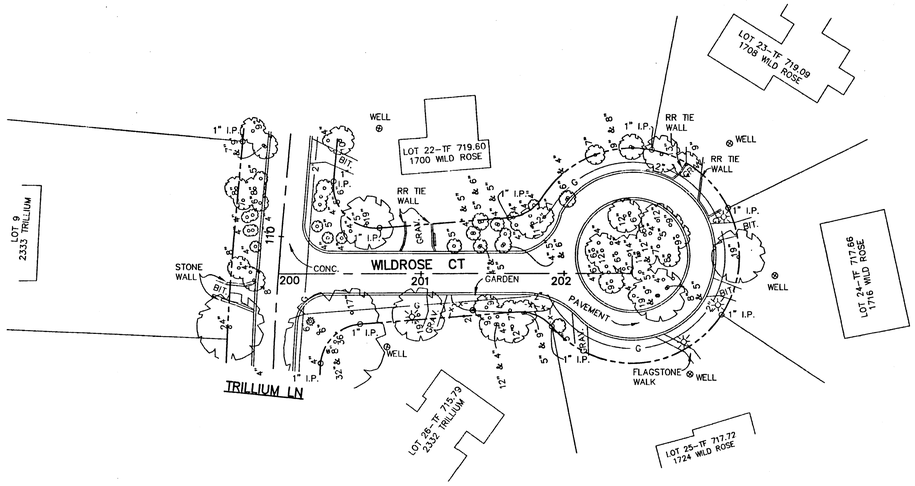
REVISIONS					
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION

TRILLIUM LANE PLAN & PROFILE STA. 107+50 – 113+50– RECORD DRAWING

DRN/CKD BY:SM/LW | DISC. NO.: TRIL2AB | FLD. BK./PG.: 78/1 | SHEET NO. 6 of 13
SCALE: HORZ.-1" = 20' VERT.-1" = 5' | DATE: 8/28/98 | JOB NO.: 354.023



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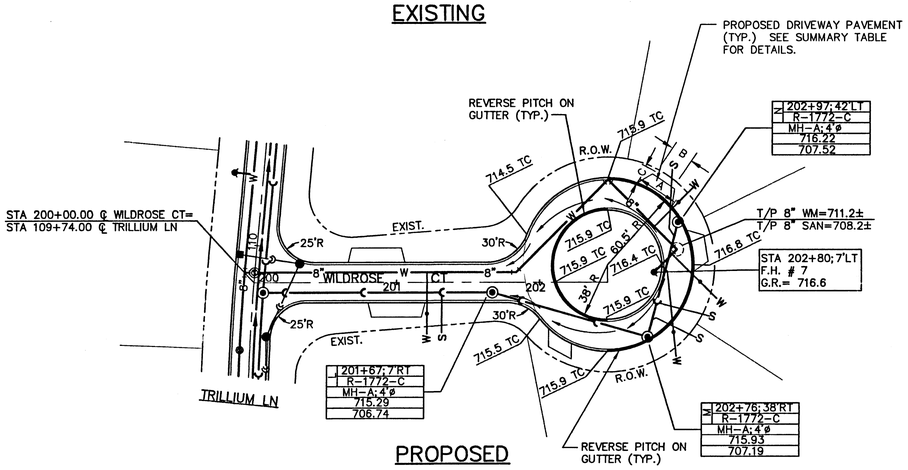
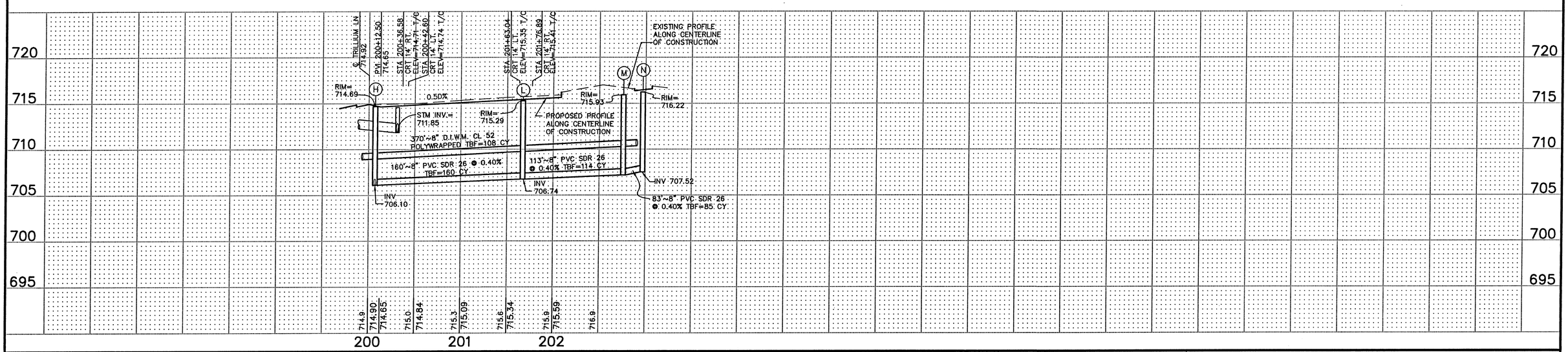


PROPOSED

SUMMARY OF DRIVEWAY PAVEMENT QUANITIES

Roadway Name and Station				Dimensions			Bit. Pvmt.
Trillium Ln.	Wildrose Ct.	Mayapple Ct.	Chaucer Ct.	A (ft)	B (ft)	C (ft)	(sq yds)
101+50, LT				23	11	10	19
101+80, LT				17	13	10	17
103+70, LT				26	16	10	23
104+15, LT				22	17	10	22
105+10, LT				20	16	10	20
107+00, LT				19	15	10	19
107+00, RT				30	22	10	29
107+50, LT				23	19	10	23
108+65, RT				21	16	10	21
108+95, LT				19	14	10	18
109+55, LT				19	13	10	18
110+60,RT				17	11	10	16
110+90, LT				17	17	10	19
111+65, LT				16	11	10	15
111+75, RT				17	13	10	17
112+10, LT				15	11	10	14
112+40, RT				18	14	10	18
116+75, LT				16	14	10	17
	201+00, LT			24	17	10	23
	201+10, RT			14	10	10	13
	202+10, RT			10	10	10	11
	202+80, LT			23	14	10	21
	203+05, RT			14	10	10	13
	203+05, LT			14	10	10	13
		211+70, RT		20	18	10	21
		211+70, LT		22	16	10	21
		212+40, RT		20	12	10	18
		212+50, LT		15	12	10	15
		212+60, RT		15	11	10	14
		212+60, LT		19	13	10	18
			221+30, RT	25	25	10	28
			221+30, LT	25	23	10	27
			221+80, RT	14	10	10	13
			221+80, LT	18	15	10	18

See Residental Driveway Detail for more information.



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REVISIONS					
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION

WILDROSE COURT PLAN & PROFILE STA 200+00.00-202+47.79

DRN/CKD BY: KR/LW	DISC. NO.: WILDPP	FLD. BK./PG.: 78/1	SHEET NO. 6 of 10
SCALE: HORZ.-1" = 50' VERT.-1" = 5'	DATE: 10/27/95	JOB NO.: 354.023	

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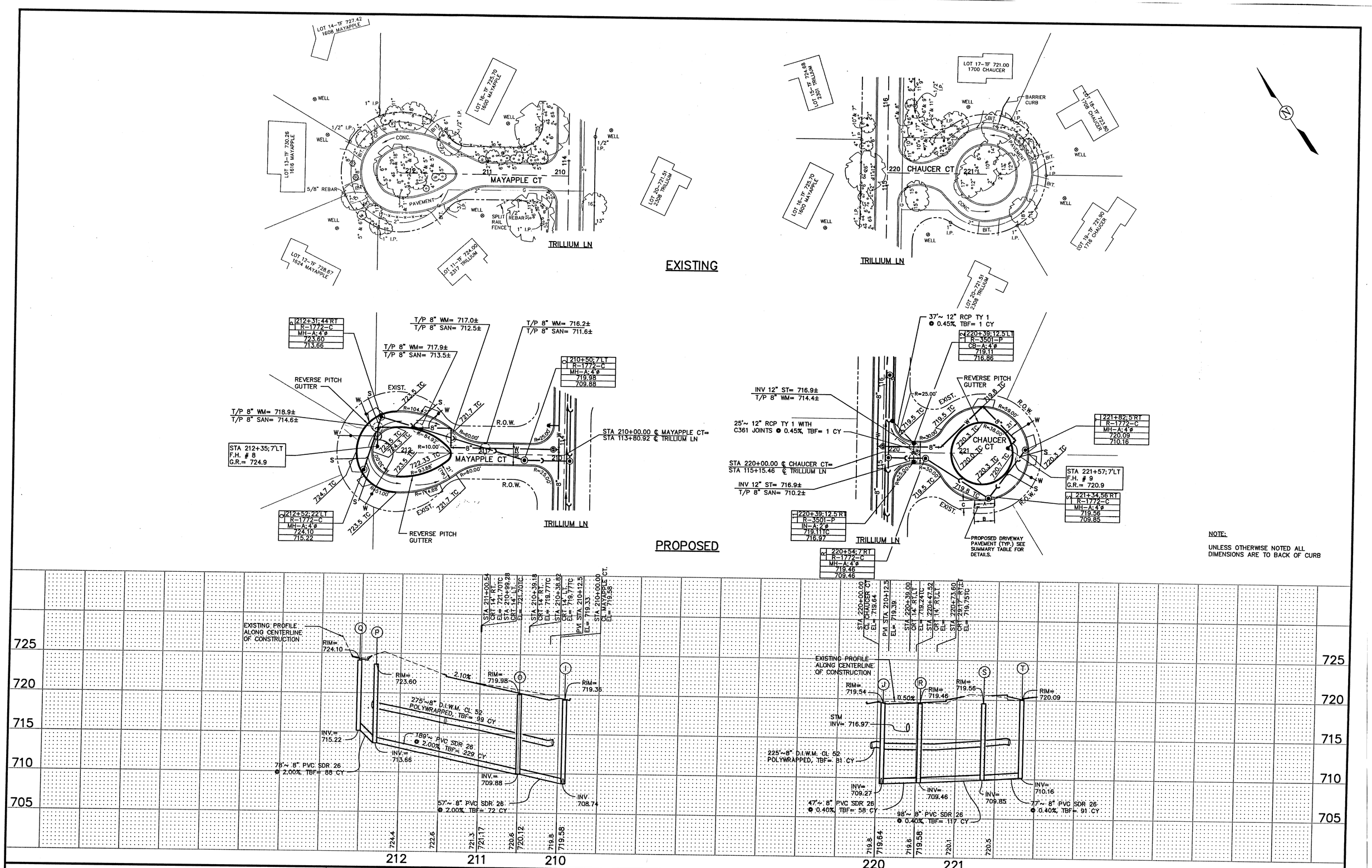

NOTE:

UNLESS OTHERWISE NOTED ALL DIMENSIONS ARE TO BACK OF CURB

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REVISIONS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

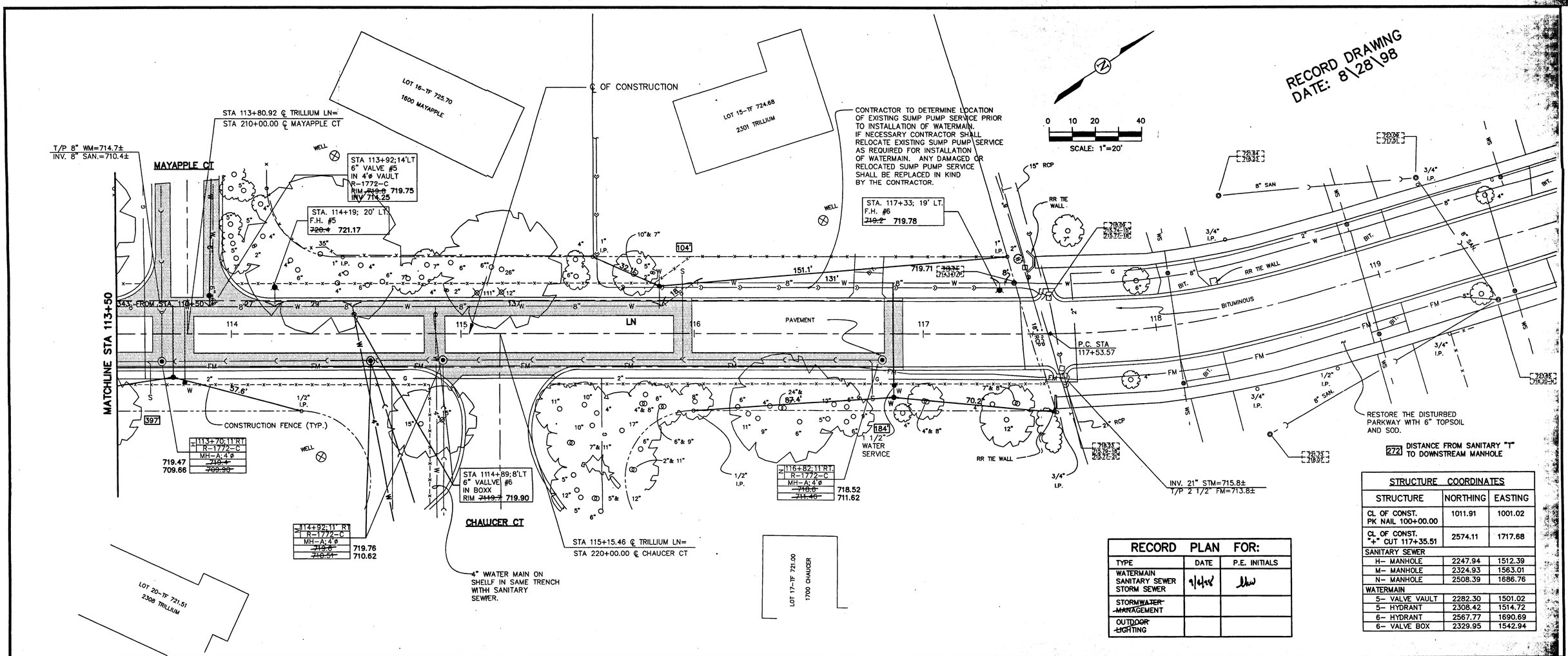
TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION

MAYAPPLE CT & CHAUCER CT PLAN & PROFILE

DRN/CKD BY: KR/LW	DISC. NO.: MAYPP	FLD. BK./PG.: 78/1	SHEET NO.
SCALE: HORZ.-1" = 50' VERT.-1" = 5'	DATE: 10/27/95	JOB NO.: 354.023	7 of 10

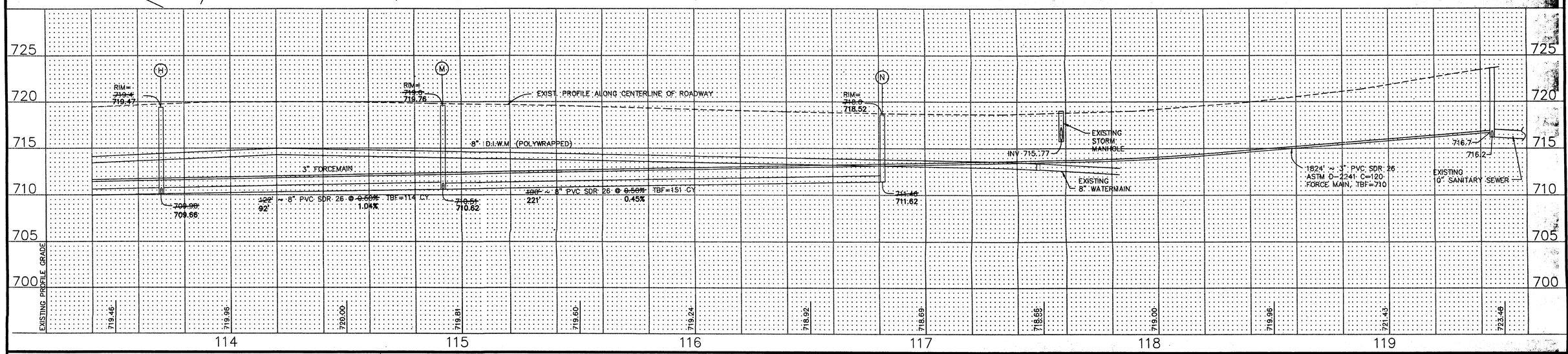
G:\354\023\MAYPP Sat Oct 28 14:35:56 1995

RECORD DRAWING
DATE: 8\28\98



STRUCTURE COORDINATES		
STRUCTURE	NORTHING	EASTING
CL OF CONST. PK NAIL 100+00.00	1011.91	1001.02
CL OF CONST. "+" CUT 117+35.51	2574.11	1717.68
SANITARY SEWER		
H- MANHOLE	2247.94	1512.39
M- MANHOLE	2324.93	1563.01
N- MANHOLE	2508.39	1686.76
WATERMAIN		
5- VALVE VAULT	2282.30	1501.02
5- HYDRANT	2308.42	1514.72
6- HYDRANT	2567.77	1690.69
6- VALVE BOX	2329.95	1542.94

RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATERMAIN SANITARY SEWER STORM SEWER	9/28/98	[illegible]
STORM~~WATER MANAGEMENT~~		
OUTDOOR ~~LIGHTING~~		



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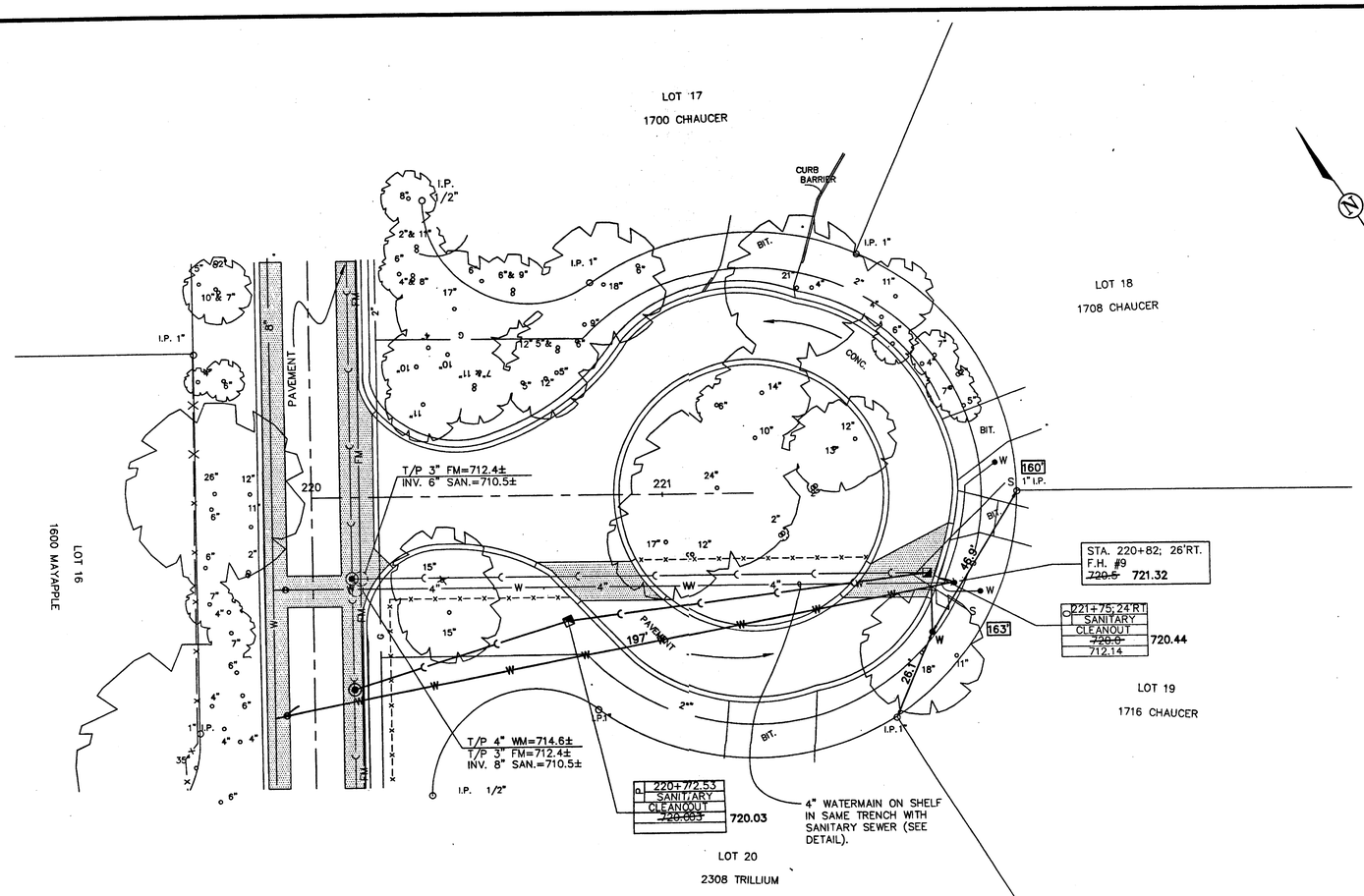
REVISIONS					
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

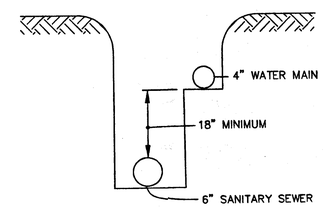
TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION

TRILLIUM LANE PLAN & PROFILE STA. 113+50 – END– RECORD DRAWING

DRN/CKD BY: SM/LW	DISC. NO.: TRIL3BAB	FLD. BK./PG.: 78/1	SHEET NO.
SCALE: HORZ.-1" = 20' VERT.-1" = 5'	DATE: 8/28/98	JOB NO.: 354.023	7 of 13

J:\354\023\TRIL3BAB Fri Sep 4 14:27:19 1998 SM





WATER MAIN / SANITARY SEWER
DETAIL FOR CHAUCER CT.
N.T.S.

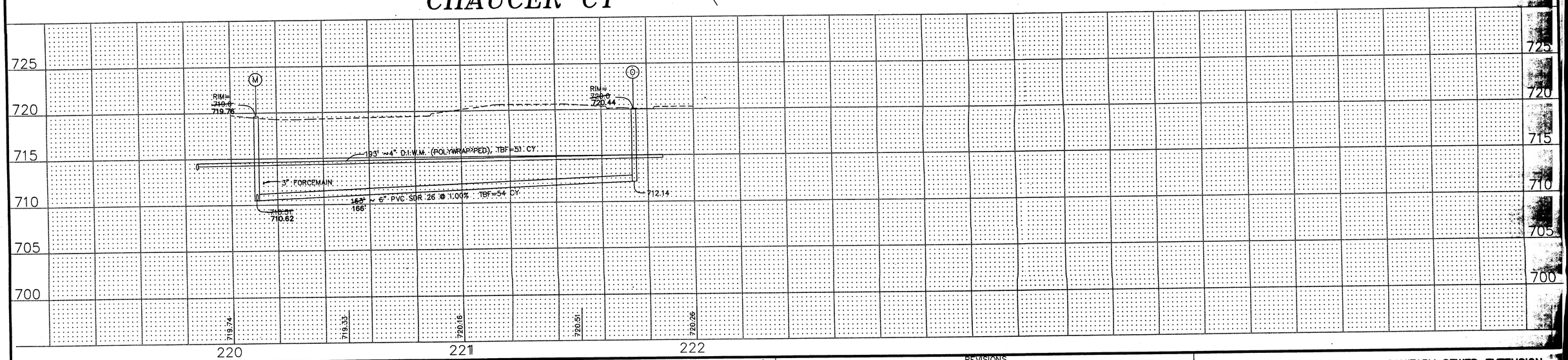
RECORD DRAWING
DATE: 8\28\98

272 DISTANCE FROM SANITARY "T" TO DOWNSTREAM MANHOLE

STRUCTURE COORDINATES		
STRUCTURE	NORTHING	EASTING
CL OF CONST. PK NAIL 100+00.00	1011.91	1001.02
CL OF CONST. "+" CUT 117+35.51	2574.11	1717.68
SANITARY SEWER		
O– CLEANOUT	2259.47	1715.96
P– CLEANOUT	2306.30	1624.15
WATERMAIN		
9– HYDRANT	2252.55	1722.08

RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATERMAIN SANITARY SEWER STORM SEWER	8/28/98	LW
~~STORMWATER MANAGEMENT~~		
~~OUTDOOR LIGHTING~~		

CHAUCER CT



ROAKE AND ASSOCIATES, INC.
CONSULTING ENGINEERS • LAND SURVEYORS • PLANNERS
1887 HIGH GROVE LN • NAPERVILLE IL 60540 • (630) 355-3232

PREPARED FOR:
CITY OF NAPERVILLE
DEPARTMENT OF PUBLIC UTILITIES–W & W
400 SOUTH EAGLE STREET
NAPERVILLE, ILLINOIS 60566 (630) 420-6131

REVISIONS					
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION

CHAUCER CT. PLAN & PROFILE STA. 220+00 – END– RECORD DRAWING

DRN/CKD BY: SM/LW	DISC. NO.: CHAUPAB	FLD. BK./PG.: 78/1	SHEET NO. 8 of 13
SCALE: HORZ.–1" = 20' VERT.–1" = 5'	DATE: 8/28/98	JOB NO.: 354.023	

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LIFT STATION SPECIFICATIONS

GENERAL

The Contractor shall furnish all labor, materials, equipment and incidentals required to provide a duplex pumping system as specified herein. The system shall be by the same manufacturer as supplying the pump and motor control panel so as to insure suitability and assurance of experience in matching the equipment together and to insure single source responsibility for the equipment.

The system shall consist of (2) sewage grinder pumps, level control devices, discharge plumbing with hydraulically sealed discharge flange, pump mounting plates with bottom rail supports, upper rail supports, lifting chain, pedestal mount and cord sealing plates for panel or NEMA 4 junction box; to be installed in factory fabricated steel basin with cover or on-site concrete basin. A NEMA 3R weatherproof control box shall be supplied for mounting at the sump site or remote from the basin, as required. Structure and dimensions to be as shown on drawing.

OPERATING CONDITIONS

Each pump shall have a capacity of 35 GPM against a total head of 62.3 feet. Pump motor shall be 3.0 HP, three (3) phase, 208 volts, 3,450 RPM, 60 cycle.

SUMP LEVEL CONTROLS

A solid state level management system shall be supplied to control sump levels. Float switches shall be supplied to provide alarm signals. The float switch shall be sealed in a solid polypropylene float for corrosion and shock resistance. The support wire shall have a heavy Neoprene jacket. A weight shall be attached to the cord above the float to hold switch in place in sump and efficiently prevent sharp bends in the cord when the float operates. Float switches shall be Model Number 3900 as provided by Hydromatic Pumps.

The solid state level management system shall be Metropolitan Model LMS400 wet well level control and monitoring system. LED level indicators to show liquid level in 3-inch increments up to 14 feet. Push button adjustments to be provided for on/off elevators. In wet well and audio and visual alarms that can be connected to telemetry systems, all level can be adjusted up or down by simple touchpad operators. The level controller shall be mounted on the face of the inner panel inside the traffic enclosure.

The level transducer shall be a submersible solid state instrument designed to continuously translate sensed level to an electric signal for system control. The sensing element shall be of the strain gauge type using a piezoresistive silicon chip with an integral wheatstone bridge circuit. The unit shall be housed in a sealed, 316 stainless steel housing. Transducer shall meet or exceed the following requirements:

Accuracy	+/- 1% (Of full transducer span)
Temperature	+/- 3% (Of full transducer span)
Operating Temperature Range	-54°C to +121°C

OPERATION OF SYSTEM

On sump level rise, lower sensor shall first be energized, then upper level sensor shall next energize and start lead pump. With lead pump operating, sump level shall lower to low sensor turn-off setting and pump shall stop. Alternating relay shall index on stopping of pump so that lag pump will start first on next operation and become lead pump. If sump level continues to rise when lead pump is operating, override switch shall energize and start lag pump. Both lead and lag pump shall operate together until low level sensor turns off both pumps. If level continues to rise when both pumps are operating, alarm sensor shall energize and signal the alarm. If one pump should fail for any reason, the second pump shall operate on the override control and if level rises above override control, alarm shall signal. All level sensors shall be adjustable for level setting from the surface.

CHECK VALVE AND PIPING

The discharge piping shall include a HYDROMATIC ball check valve with hydraulically sealed discharge flanges and a gate valve for each pump. Discharge from station shall be fitted with NPT coupling(s). All piping external to the station shall be furnished and installed by the Contractor.

HYDRAULIC SEALING FLANGE

The discharge of each pump shall be fitted with a diaphragm-type hydraulically operated sealing flange. When pump is in operation, pressure shall force diaphragm against discharge elbow flange, providing a leak-proof seal. When pump is idle, pressure shall be removed from diaphragm so that pump can be removed from the sump with no mechanical contact of sealing flanges. Complete weight of pump to rest on bottom support plat, no weight to be supported on guiderails or discharge elbow. Sealing diaphragm to be removable and to be mounted on pump discharge flange. Diaphragm material to be Buna N rubber.

PUMP MOUNTING BASES

A separate mounting plate shall be furnished for each pump. These plates shall include adjustable guide rail supports and discharge elbow with flange to align with pump hydraulic sealing flange. Plates and fittings shall be coated with tar base Epoxy paint.

ACCESS FRAME AND COVER

A double door access frame assembly should be supplied. Access frames and covers shall be fabricated of steel and shall be coated inside and outside with tar base Epoxy paint. Frame shall support guide rails and electrical wiring channel. A separate hinged cover shall be provided for each pump. Cover shall be provided with lifting handle and safety latch to hold cover in the open position. Locking hasps shall be furnished for each cover. Access frame and covers shall be Model Number 4094.

INTERMEDIATE RAIL SUPPORTS

Where sump is more than 12 feet deep, intermediate rail supports shall be furnished to stiffen the 2" guide rails. Rail supports shall be Model Number 4726.

ELECTRICAL CONTROL PANEL

Control panel shall have a NEMA 3R weatherproof enclosure and shall be dead front with separate removable inside panel to protect electrical equipment. A lock hasp shall be provided on outside door. A circuit shall be provided for each pump, and magnetic starter with 3 leg overload protection shall be supplied for each pump. An alternating relay shall be provided to alternate pumps on each successive cycle of operation. Starter shall have auxiliary contracts to operate both pumps on override condition. An interlock relay shall be provided to automatically re-connect the control circuit in case of a circuit breaker trip on one pump. H-O-A switches and run lights shall be provided for each pump. Terminal strip shall be provided for connecting pump and control wires. Additional terminals shall be provided to connect alarm.

WIRING CHANNEL

When control box is to be mounted on sump cover or near to the sump, the wiring channel shall be used. Wiring channel shall provide cord grip holders for the pump cords and the control cords. The channel box shall have a removable cover for easy adjustment of cords to pumping levels required. All cords shall extend from one end of the box and be taken through conduit in sump cover to control box. No splices shall be made in the wiring channel. Continuous cords must be used from control panel to pumps and controls. Wiring channel shall mount on supports fastened to access frame. Wiring channel shall be Model Number 4722.

ALARM

A high water alarm shall be supplied. Alarm flashing light to be supplied in separate NEMA 3R enclosure for mounting at the control box or remote from box. Alarm light shall glow dim at all times, except under alarm conditions, then light shall glow bright and flash. Flashing Alarm Light Model Number 4440.

CONTROL PANEL

Control panel to include:

- Seal Failure Alarm
- Space Heater (100W Striplheater with thermostat).
- Duplex Receptacle with GFCI.
- Elapsed Time Meters for each pump.

MANUFACTURER'S WARRANTY

All manufactured articles will be warranted free from any defect in manufacture and installation for a period of two years from date of acceptance or as required in the Specifications, and agreement acceptable to the Owner covering this provision will be furnished prior to payment for the article.

OPERATIONS AND MAINTENANCE MANUALS

Prior to final inspection, provide 4 duplicate loose leaf, three ring, bound copies in durable covers of the following items organized and tab indexed in accordance with the specifications format:

a. Maintenance and operating instructions as published by the material suppliers and equipment manufacturers.
b. Specified guarantees and warranties and bonds.
c. Emergency instructions.
d. Wiring diagrams.
e. Shop drawings and product data.
f. Inspection procedures.
g. Assembly drawings and parts lists with identification symbols or part numbers for all replaceable parts and assemblies.
h. Test reports.

TELEMETRY SYSTEM

All equipment shall be as manufactured by QEI, or approved equal, and shall be compatible with the existing City telemetry system. The equipment shall be capable of transmitting the following conditions: Power Failure; High Level Alarm; Stand by Power Failure; Generator Run; Pump 1 Run; Pump 2 Run; Scan Fail; Line Fail (Phone).

STAND-BY GENERATOR

The Contractor shall furnish and install a stand-by generator set, Model 30RZ, as manufactured by Kohler Power Systems. The unit shall consist of the components listed below, new and unused, all assembled and tested as a complete unit by the set manufacturer. The unit shall be rated 30 kw continuous, 30 kw stand-by, and output shall be 120/208 volt, 60 Hz connected for 3 phase, 4 wire.

FUEL

The fuel shall be natural gas.

ENGINE

The engine shall be 4 cylinder, 4 cycle liquid cooled with V-belt driven water pump through a radiator with pusher fan system, dry manifolds and shall develop 49 HP at 1800 RPM. Engine shall be equipped with remote controlled positive engaging electric starter system which does not become disengaged until the engine is self-sustaining; positive pressure oiling system with oil filter, injector for specified fuel, battery recharging with automatic static voltage regulator and minimum 5 amp output; cooling thermostat; a mechanical speed and frequency governor with maximum droop not to exceed 5% at full load. In addition, engine will be equipped with high and manual reset. An air cleaner shall be furnished.

EXHAUST

The exhaust system shall include a flexible exhaust with NPT threaded ends and critical type muffler sized so that back pressure does not exceed 20 inches of water when installed.

GENERATOR

There shall be provided a revolving field, open drip-proof synchronous alternating current generator rated 38 KVA with brushless exciter and static automatic silicon controlled rectifier voltage regulator, with minimum adjustment rate of 5%. Unit shall be of single bearing construction, directly connected to the engine by a semi-flexible steel drive disc. The stator and the armature shall be laminated silicone steel, and all windings shall be twice dipped and baked in insulating varnish. The units shall have a centrifugal blower to force air through the generator, which is to operate at 70 degrees centigrade continuous rated temperature rise. Insulation shall be Class F. Temperature rise shall not exceed NEMA MG1-22.40 at the stand-by rating.

Generator unit shall be of the three phase, 12 lead, broad range re-connectable type and shall have a transient overload capacity of 300% of rated KVA at low power factor for motor starting. Voltage change shall not exceed 12% on application or removal of full load with two second recovery. Maximum voltage shall not exceed plus or minus 1%.

UNIT MOUNTING AND ACCESSORIES

The entire unit shall be assembled and mounted on a steel frame base of rigid construction. The base shall include a unit mounted battery rack, complete with one battery for 12 volts operation rated at 95 amp hours at the 20 hour rate, and cables. A unit mounted, vibration isolated, control box, including equipment for voltage regulation and engine control; field circuit protection; overcranking protection; terminal board for remote control connections; oil pressure gauge; coolant temperature gauge; static regulated battery charging with battery charging ammeter; safety shutdown for low oil pressure and high coolant temperature and overspeed with three failure indicators; an output terminal box for power connections; voltmeter; ammeter and meter transfer switch frequency meter, hourmeter and local-off-remote switch shall be furnished. In addition, the unit manufactured shall provide properly sized vibration isolators for placement between the base and floor.

In addition to the above operation specifications, the system shall be equipped with the following accessories:

A. Automatic cycle cranking to allow 5 - ten to fifteen second cranking cycles with ten to fifteen second rest periods between cranking attempts. Cranking shall lock out and light an indicator after five attempts. It shall reset automatically if engine starts or manually if engine does not start after five attempts. No thermal devices will be permitted.
B. Exerciser timer with load pick-up. Minimum operation of 15 minutes once per week.
C. Regulated constant voltage static temperature compensated battery charger rated five amps minimum. D.C. charging ammeter; regulator shall taper to trickle for fully charged battery, and shall be automatically disconnected from the battery during cranking.
D. Load circuit breaker.

TESTING

Prior to shipment, the generator set manufacturer shall set up the test on the generator and shall certify that the unit has performed satisfactorily.

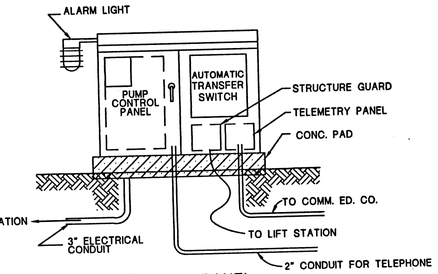
INSTALLED ACCESSORIES SHALL BE

- Mounted battery, rack and cables.
- Lock-out relay.
- Outdoor, steel, weatherproof, fully lockable enclosure (base mounted) for Concrete pad mounting.
- Contacts for generator fail.
- Water jacket / Lube oil heater.
- Flexible exhaust connector (stainless steel).
- Vibration isolators.
- Automatic transfer switch located in traffic box (NEMA 3R) enclosure.
- Exerciser timer.

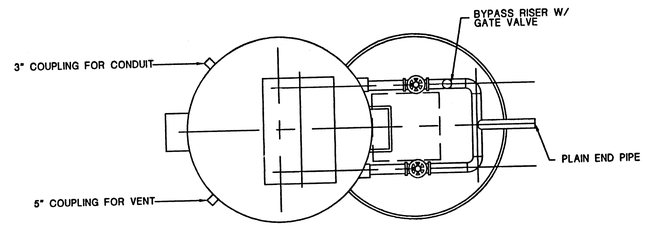
AUTOMATIC TRANSFER SWITCH

The Contractor shall furnish, install, test and certify an automatic transfer control system including a transfer switch rated 600 V AC, for in-rush current 20 times continuous rating and current interruption capacity six normal line voltage sensing relays and sequencing controls such that the loss times rated capacity, to handle motor, tungsten or mixed loads. Switches shall be mechanically held in the normal position. There shall be three of power in any normal line below 75% rated voltage initiates transfer to second power supply. Upon restoration of power, the transfer panel, after a time delay adjustable to 10 minutes, shall transfer load back to normal line. The Contractor shall be U.L. listed for this service. In addition to the above operational specifications, the system shall be equipped with the following accessories:

1. An on-off switch with indicator to prevent transfer during service periods.
2. A test switch to permit simulation of normal line failure, including pick-up of the emergency line.
3. Load-side circuit breakers sized to generator from closing on a fault.
4. Adjustable close differential relays.
5. Terminal boards for control wiring connections.
6. Automatic cycle cranking to allow five - ten to fifteen second cracking cycles with ten to fifteen second rest periods between cranking attempts. Cranking shall lock out and light an indicator after five attempts. It shall reset automatically if engine starts or manually if engine does not start after five attempts. No thermal devices will be permitted.
7. Exerciser timer with load pick-up minimum operation of 15 minutes once per week.
8. Regulated constant voltage static temperature compensated battery charger rated five amps minimum, DC charging ammeter. Regulator shall taper to trickle for fully charged battery, and shall be automatically disconnected from the battery during cranking.

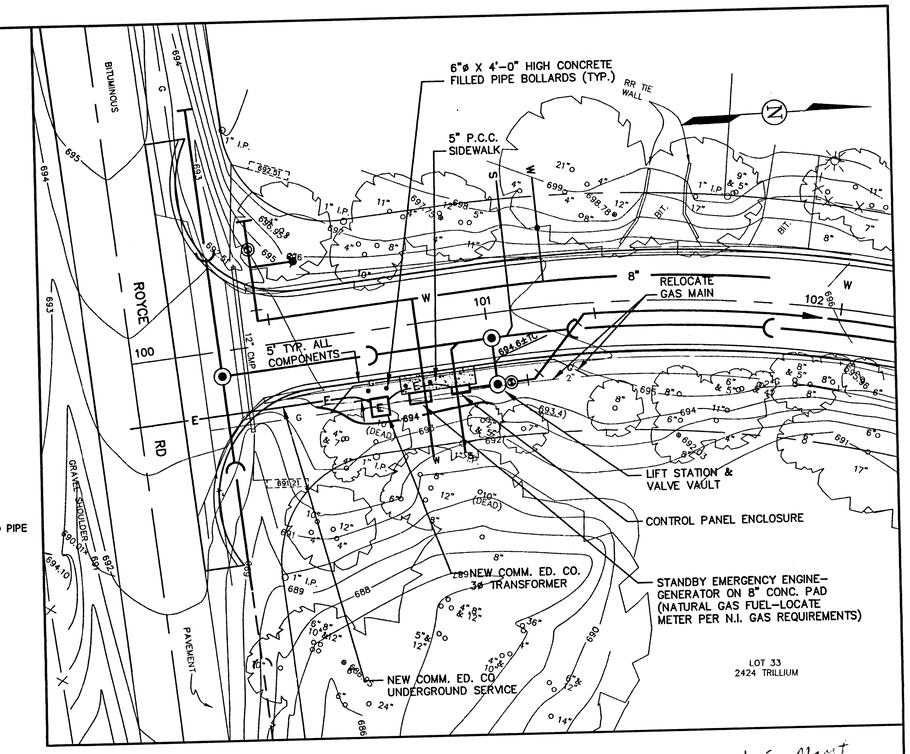


CONTROL PANEL



PLAN VIEW

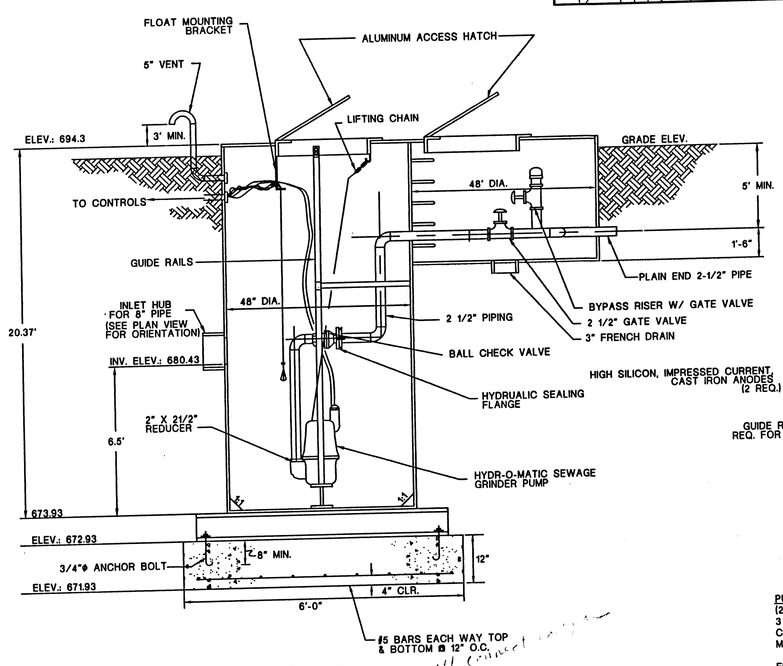
NOTE - ALL AT OR ABOVE GRADE COMPONENTS, INCLUDING CONTROL PANEL ENCLOSURE, AND GENERATOR ENCLOSURE, IF SPECIFIED TO BE PAINTED WITH TNEMIC HI-BUILD TNEME-GLOSS (SERIES 2H) ALKYD ENAMEL. OWNER TO PROVIDE COLOR SAMPLE.



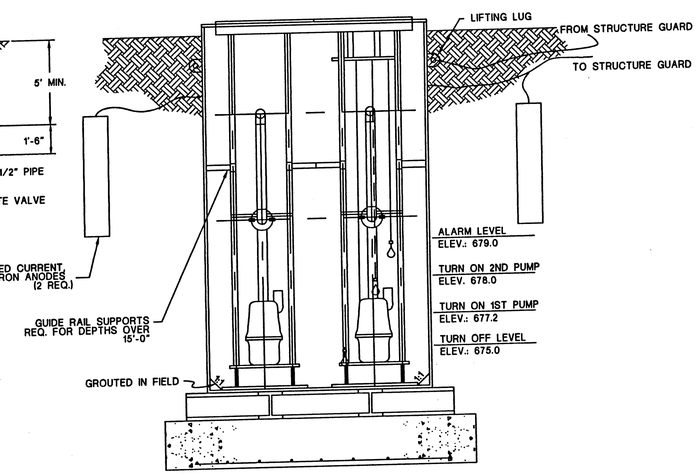
LOCATION PLAN

SCALE: 1"=20'

L.S. Mant



SIDE VIEW



END VIEW

WET WELL DESIGN CRITERIA

EST. PEAK HOURLY INFLOW (65 LOTS) = 63 GPM
EST. PEAK HOURLY INTERIM INFLOW (28 LOTS) = 27 GPM
EST AVERAGE HOURLY INTERIM INFLOW (28 LOTS) =7 GPM
(7 GPM) (30 MIN. RET. TIME) = 210 GAL.
210 GAL./35 GPM = 6.0 MIN. CYCLE (PEAK)
2.2' OPERATING RANGE

FORCEMAIN DESIGN CRITERIA

2 1/2" PVC SDR-26 ASTM D-2241 C=120
ELEVATION HEAD = 42 FT
EQ. LENGTH ~ 1877 L.F.
V = 2.0 FPS @ 35 GPM

PUMP REQUIREMENTS

(2) HYDROMATIC SPGH-300 PUMPS
3 HP 3450 RPM 5" IMPELLER
CAPACITY - 35 GPM @ 62.3' TDH
MAXIMUM WET WELL RETENTION TIME NOT TO EXCEED 30 MIN.

ELECTRICAL REQUIREMENTS (NEMA CLASS I, GROUP D, DIVISION II

208V 3ø 60 HZ 3 HP

BUOYANCY DATA

DISPLACED STATION VOLUME - 214 FT^3	=	13,350 LBS.
EST. STATION WEIGHT	-	5400 LBS.
NET UPLIFT	-	7670 LBS.

WEIGHT OF SOIL (SUBMERGED) ABOVE FOUNDATION = 13,560 LBS
STATION IS NOT BUOYANT AFTER BACKFILLING. IF FLOODING OF EXCAVATION IS POSSIBLE AFTER PLACEMENT OF WET WELL AND BEFORE BACKFILL, FLOODING OF STATION IS SUGGESTED FOR STABILITY.

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PREPARED FOR:
CITY OF NAPERVILLE
DEPARTMENT OF PUBLIC UTILITIES-W & W
400 SOUTH EAGLE STREET
NAPERVILLE, ILLINOIS 60566 (708) 420-6131

REVISIONS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

TRILLIUM LANE WATERMAIN AND SANITARY SEWER EXTENSION

SANITARY SEWER LIFT STATION SPECIFICATIONS & DETAILS

DRN/CKD BY: KR/SAR	DISC NO.:354\023\35423LFT	FLD. BK./PG.	SHEET NO. 8 OF
SCALE: NONE	DATE: 10/27/95	JOB NO.: 354.023	

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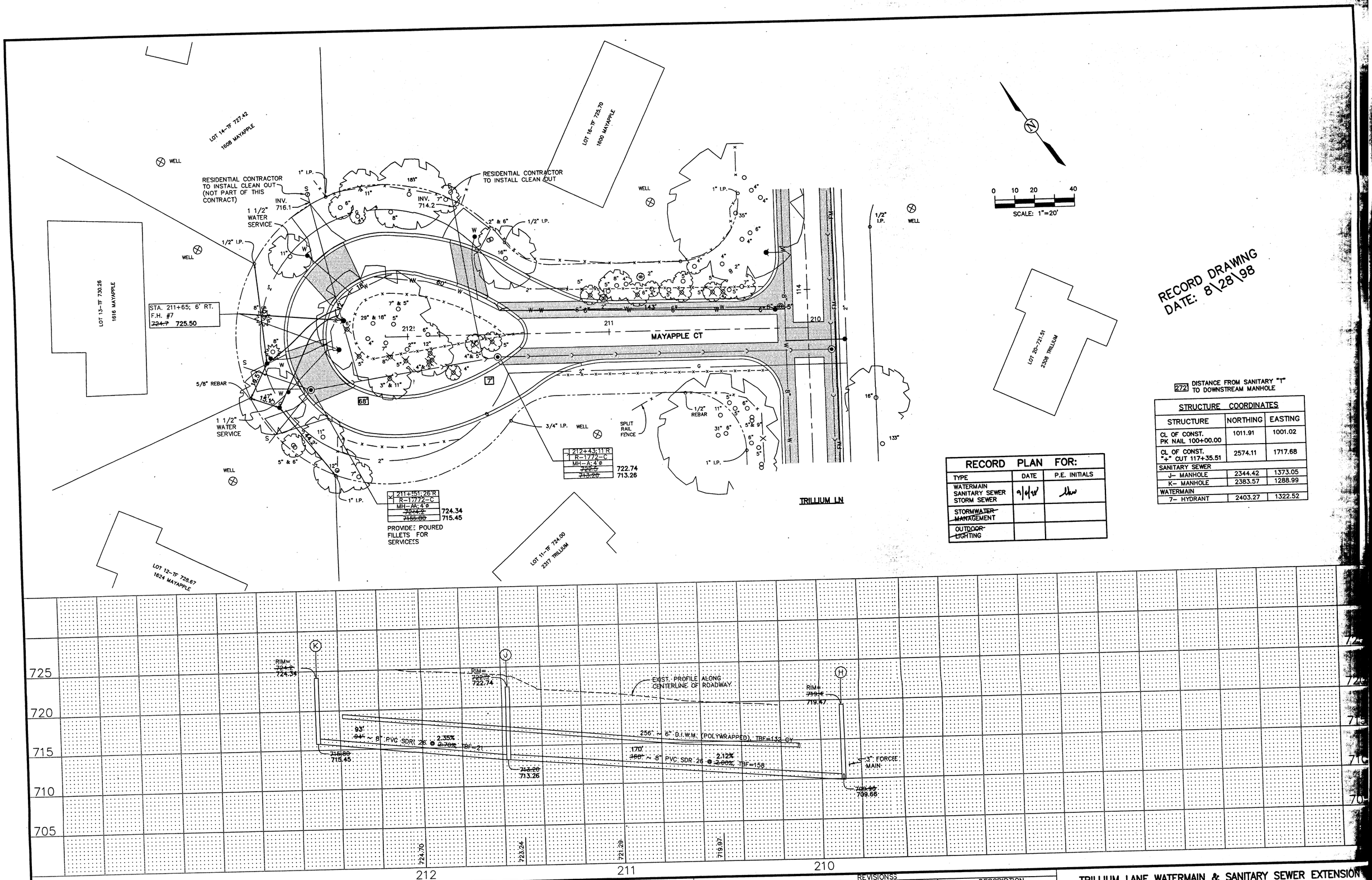
lhw/g:\354\023\lifstat.doc



RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATERMAIN SANITARY SEWER STORM SEWER	9/4/98	lhw
STORM~~WATER MANAGEMENT~~		
OUTDOOR ~~LIGHTING~~		

STRUCTURE COORDINATES		
STRUCTURE	NORTHING	EASTING
CL OF CONST. PK NAIL 100+00.00	1011.91	1001.02
CL OF CONST. "+" CUT 117+35.51	2574.11	1717.68
SANITARY SEWER		
J- MANHOLE	2344.42	1373.05
K- MANHOLE	2383.57	1288.99
WATERMAIN		
7- HYDRANT	2403.27	1322.52

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DEPARTMENT OF PUBLIC UTILITIES-W & W
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NAPERVILLE, ILLINOIS 60566 (630) 420-6131

REVISIONS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION

MAYAPPLE CT PLAN & PROFILE- RECORD DRAWING

DRN/CKD BY: SM/LW | DISC. NO.: MAYPPAB | FLD. BK./PG.: 78/1
SCALE: HORZ.-1" = 20' VERT.-1" = 5' | DATE: 8/28/98 | JOB NO.: 354.023
SHEET NO. 9 of 13

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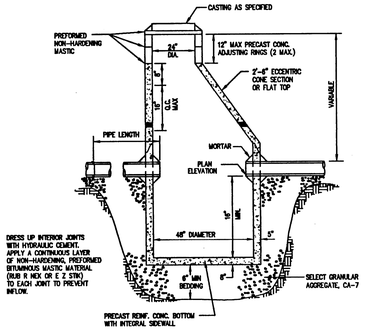
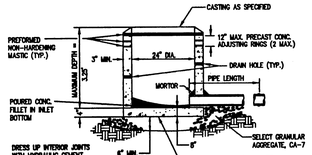
CATCHBASIN TYPE A



NOTES

1. Provide select granular backfill, CA-7 around manhole to subgrade elevation in paved areas.
2. Alternate manhole bottom – precast reinforced concrete base.
3. Concrete fillets shall be made with non-shrink mortar to provide a smooth transition between the casting and adjusting ring (or top of structure).
4. When adjustments are necessary, they will be performed with the maximum of two precast concrete rings set in a bed of preformed non-hardening mastic (Rub-R-Nek or approved equal) to a maximum height of twelve inches. Two inch rings shall only be used when adjustment is less than three inches.
5. No mortar shall be used to dress up inside adjusting rings.
6. A minimum of four (4), two (2) inch diameter holes shall be provided within one (1) foot of the lowest pipe invert. The holes shall be distributed equidistant around the perimeter of the structure. A one (1) foot by one (1) foot section of underdrain filter cloth material shall be sufficiently fixed to the outside of the manhole with mastic materials to prevent slippage during backfilling, the holes shall be either pre-cast or drilled. Drain holes are required for all manholes in paved areas.

INLET TYPE A



NOTES

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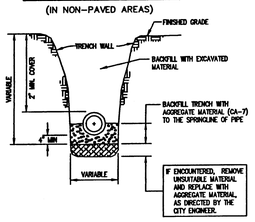
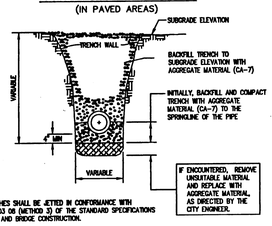
STORM SEWER TRENCH SECTION

(IN NON-PAVED AREAS)



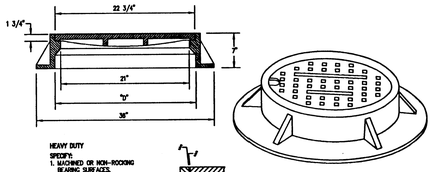
STORM SEWER TRENCH SECTION

(IN PAVED AREAS)



ALL TRENCHES SHALL BE JETTED IN CONFORMANCE WITH SECTION 603 OB (METHOD 3) OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

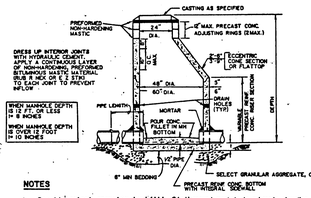
R-1772 SERIES MANHOLE FRAMES, SOLID LIDS



CATALOG NO. STANDARD DESIGN	MACHINED HORIZONTAL VERTICAL BEARING	D	WT LBS.
R-1772-C	R-1772-CM	24 1/2	380

STORM 3

MANHOLE TYPE A



NOTES

1. Provide select granular backfill, CA-11 around manhole to subgrade elevation in paved areas.
2. Alternate manhole bottom – precast reinforced concrete base.
3. Concrete fillets shall be made with non-shrink mortar to provide a smooth transition between the casting and adjusting ring (or top of structure). See Storm 6 & 7.
4. When adjustments are necessary, they will be performed with a maximum of two precast concrete rings set in a bed of preformed non-hardening mastic (Rub-R-Nek® or approved equal) to a maximum height of twelve inches. Two inch rings shall only be used when adjustment is less than three inches.
5. No mortar shall be used to dress up inside adjusting rings.
6. See Storm 19 for step detail
7. A minimum of four (4), two (2) inch diameter holes shall be provided within one (1) foot of the lowest pipe invert. The holes shall be distributed equidistant around the perimeter of the structure. A one (1) foot by one (1) foot section of underdrain filter cloth material shall be sufficiently fixed to the outside of the manhole with mastic materials to prevent slippage during backfilling. The holes shall be either pre-cast or drilled. Drain holes are required for all manholes in paved areas.
8. See Storm 19 for step detail.

MARCH 1989

GRATING FOR CONCRETE FLARED END SECTION

General Notes

Structural steel shapes and plates shall be in accordance with Article 710.04 of the Standard Specifications for Road and Bridge Construction.

Galvanized steel pipe shall be in accordance with Article 710.33 (b) of the Standard Specifications.

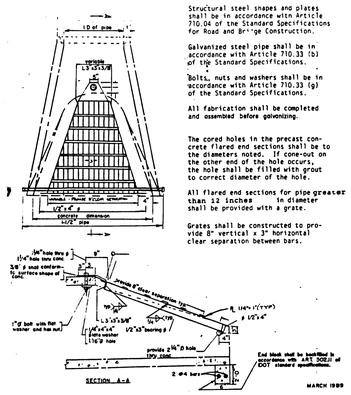
Bolts, nuts and washers shall be in accordance with Article 710.33 (g) of the Standard Specifications.

All fabrication shall be completed and assembled before galvanizing.

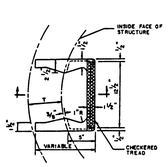
The cored holes in the precast concrete flared end sections shall be to the diameters noted. If cone-out on the other end of the hole occurs, the hole shall be filled with grout to correct diameter of the hole.

All flared end sections for pipe greater than 12 inches in diameter shall be provided with a grate.

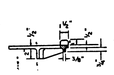
Grates shall be constructed to provide 8" vertical x 3" horizontal clear separation between bars.



MARCH 1989



PLAN



SECTION B-B

CAST IRON STEPS

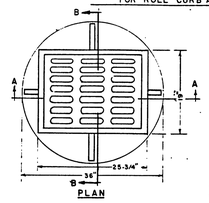
NOTES

1. CAST IRON STEPS SHALL BE GRAY IRON CONFORMING TO THE REQUIREMENTS OF ARTICLE 710.17 OF THE STANDARD SPECIFICATIONS.
2. STEPS SHALL BE EMBEDDED INTO WALL A MINIMUM OF 4 INCHES STEPS SHALL NOT BE EXTENDED ON THE OUTSIDE.
3. IF PLASTIC POLYMER STEPS ARE TO BE USED, THEY SHALL BE CONSTRUCTED IN CONFORMANCE WITH DOT STANDARDS.
4. STEPS SHALL BE NEATLY GROUTED IN PLACE WITH A NON-SHRINK HYDRAULIC CEMENT

FRAME & GRATE

FOR ROLL CURB AND GUTTER

STORM 14



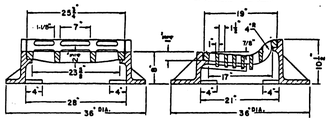
GENERAL NOTES:

THIS CAST GRATE MAY BE MADE OF EITHER GRAY IRON OR DUCTILE IRON CONFORMING TO THE STANDARD SPECIFICATIONS. DUCTILE IRON CASTING, SHALL BE GRADE 65-45-12 GRAY IRON CASTINGS SHALL BE PROOF LOADED IN ACCORDANCE WITH FEDERAL SPECIFICATION RR-F-621. THE PROOF LOAD SHALL BE 35,000 POUNDS ON A 9" X 9" CAST BLOCK. EAST JORDON 7325 OR NEENAH R-3561-P, OR EQUAL APPROVED BY CITY ENGINEER.

THE USE OF EITHER A CAST GRATE OR A STEEL GRATE WITH CAST FRAME SHALL BE THE OPTION OF THE CONTRACTOR.

THE MATERIAL FOR STEEL GRATE SHALL CONFORM TO A.S.T.M. A36 OR OF THE STANDARD SPECIFICATIONS FOR STRUCTURAL STEEL.

ALL CASTINGS MUST BE SHOP PAINTED WITH AN ASPHALTIC BASE PAINT

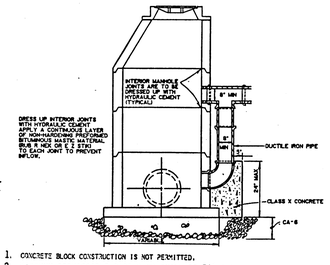


SECTION A-A

SECTION B-B

DROP CONNECTION TO SANITARY MANHOLE

SAN. 5

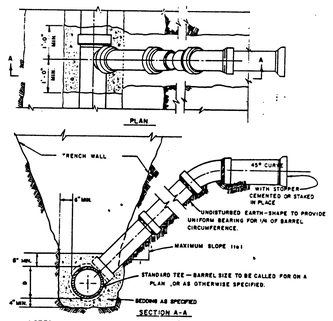


1. CONCRETE BLOCK CONSTRUCTION IS NOT PERMITTED.
2. MAXIMUM PERMISSIBLE PIPE SIZE SHALL BE 36" FOR LARGER SIZE SEE SAN.- NOA SAN.- 5.
3. THE JOINTS BETWEEN SECTIONS SHALL CONFORM TO A.S.T.M. C-443
4. DROP MANHOLE SHALL BE REQUIRED WHEN THE DIFFERENCE IN ELEVATION OF INVERTS OF TWO (2) INTERSECTING CONDUITS IS GREATER THAN 24 INCHES.
5. WHEN ADJUSTMENTS ARE NECESSARY, THEY WILL BE PERFORMED WITH A MAXIMUM OF TWO PRECAST CONCRETE RINGS SET IN A BED OF PREFORMED NON-HARDENING MASTIC (RUB-R-NEK OR APPROVED EQUAL) TO A MAXIMUM HEIGHT OF TWELVE INCHES.
6. TWO INCH ADJUSTING RINGS SHALL ONLY BE PERMITTED WHEN THE HEIGHT OF THE ADJUSTMENT IS LESS THAN THREE INCHES. NO MORTAR SHALL BE USED TO DRESS UP INSIDE ADJUSTING RINGS.

MARCH 1989

SAN. 8

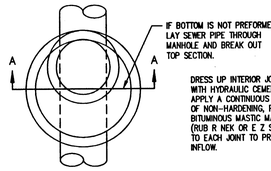
RISER FOR SERVICE LATERAL



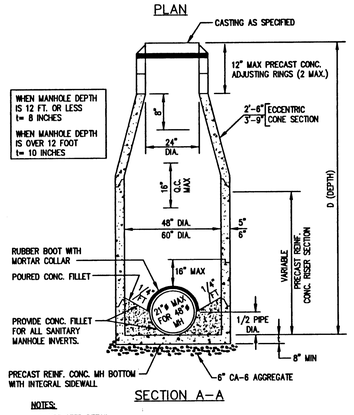
NOTES

1. THE OPEN ENDS SHALL BE PROTECTED FROM DEBRIS ENTERING THE LATERAL WITH EITHER POLYESTER OR STAPED CLAY COVER.
2. MAXIMUM SLOPE SHALL BE LESS THAN 1:1 WHEN IT IS NECESSARY TO SECURE BEDDING IN UNDISTURBED EARTH.
3. WHEN A SERVICE CONNECTION REQUIRES TAPPING AN EXISTING MAIN, THEN A SEWER SADDLE SHALL BE USED. "DOUBLE STRAP BELL-TEE" OR APPROVED EQUAL. SADDLE AND BOLTS MUST BE STAINLESS STEEL.

SANITARY MANHOLE



PLAN



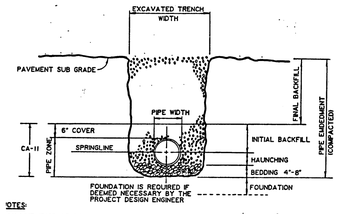
SECTION A–A

NOTES:

1. SEE STEP DETAIL
2. ALT. MH BOTTOM=PRECAST REINF. CONC. BASE.
3. PROVIDE CA-7 AGGREGATE BACKFILL AROUND MH TO SUBGRADE ELEV. IN PAVED AREAS.
4. CONCRETE FILLETS SHALL BE MADE WITH ADDITIONAL MORTAR TO PROVIDE A SMOOTH TRANSITION BETWEEN THE CASTING AND ADJ. RINGS (OR TOP OF STRUCTURE)

PVC TRENCH CROSS SECTION

SAN 10



NOTES:

ANY LINE: ID/OD OF PIPE PLUS 20"/24"
PIPE SIZES UP TO 24" USE ID PLUS 20", OVER 24" USE OD PLUS 24"
INAL BACKFILL-UNDER PAVED AREAS-CA-6 COMPACTED, UNDER UNPAVED AREAS-EARTH BACKFILL
RTIAL BACKFILL-SAME MATERIAL AS HAUNCHING, MINIMUM COVER ABOVE TOP OF PIPE 6"
AUNCHING-CA-11 COMPACTED
EDDING-GRAVEL, PEA GRAVEL OR CRUSHED STONE WITH A GRADATION WHICH SHALL CONFORM TO CA-11 SEE THE JULY 1, 1988 IDOT ROAD AND BRIDGE SPECIFICATIONS. THICKNESS EQUAL TO 1/4 THE OUTSIDE DIAMETER OF THE SEWER PIPE BUT SHALL NOT BE LESS THAN 4".

PVC PIPE-SDR26, HIGHER SDR NUMBER NOT ALLOWED. PROJECT ENGINEER MUST VERIFY NEED FOR A GIVEN SDR NUMBER

PVC PIPE MUST HAVE AT LEAST 5' OF COVER UNDER PAVED AREAS.

I PAVED AREAS ALL TRENCHES SHALL BE JETTED IN CONFORMANCE WITH SECTION 603.08 METHOD 3) OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

MARCH 1989

ROAKE AND ASSOCIATES, INC.
CONSULTING ENGINEERS • LAND SURVEYORS • PLANNERS
1887 HIGH GROVE LN • NAPERVILLE IL 60540 • (708) 355-3232

PREPARED FOR:
CITY OF NAPERVILLE
DEPARTMENT OF PUBLIC UTILITIES–W & W
400 SOUTH EAGLE STREET
NAPERVILLE, ILLINOIS 60566 (708) 420-6131

REVISIONS

NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

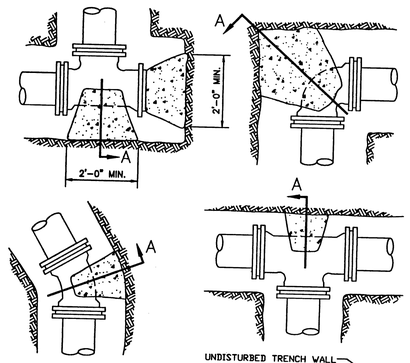
TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION

DETAILS

DRN/CKD BY: JDP\LHW	DISC NO.: 35423DS	FLD. BK./PG.	SHEET NO. 9 OF 10
SCALE: NONE	DATE: 10/27/95	JOB NO.: 354.023	

G:\354\023\35423DS Fri Oct 27 13:12:47 1995

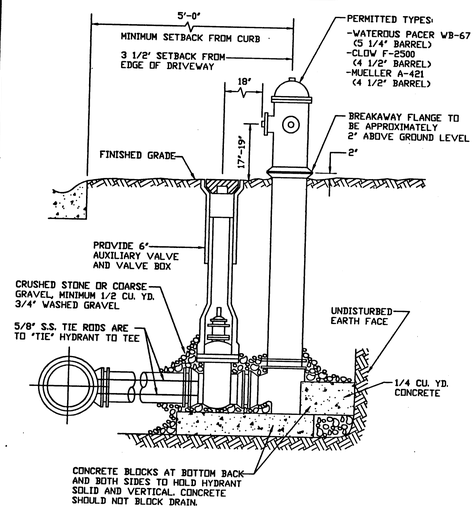
THRUST BLOCK INSTALLATION



THRUST BLOCKING TO PREVENT MOVEMENT OF LINES UNDER PRESSURE AT BENDS, TEES, CAPS, VALVES, HYDRANTS, & AT POINTS SPECIFIED BY ENGINEER SHALL BE CLASS "X" CONCRETE A MINIMUM OF 12" THICK, PLACED BETWEEN SOLID GROUND & FITTING, AND SHALL BE ANCHORED IN SUCH A MANNER THAT PIPE AND FITTING WILL BE ACCESSIBLE FOR REPAIRS. THRUST BLOCK SHALL BE PLACED AT BENDS OF 11 1/4 DEGREES OR MORE.

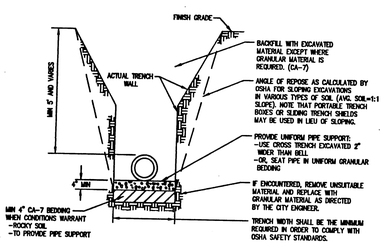
SECTION A

HYDRANT SETTING



TRENCH SECTION

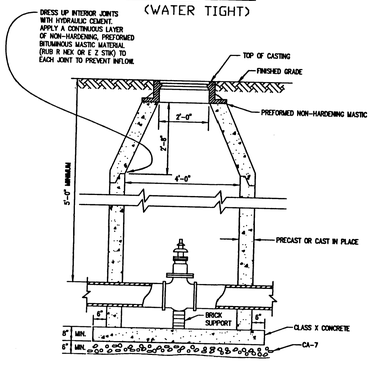
FOR WATERMAIN



IN PAVED AREAS ALL TRENCHES SHALL BE JETTED IN CONFORMANCE WITH SECTION 603.06 (METHOD 3) OF THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.

VALVE VAULT

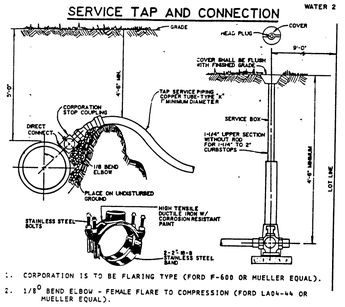
(WATER TIGHT)



1. NO MORE THAN 12 INCHES OF ADJUSTMENT RINGS MAY BE USED; HOWEVER NO MORE THAN ONE, TWO INCH ADJUSTMENT RING OR NO MORE THAN TWO RINGS IN TOTAL MAY BE USED.
2. VALVE MUST ALIGN WITH CENTER OF VAULT OPENING
3. CONES MUST BE CONCENTRIC WITH VALVES 12" AND SMALLER.
4. BUTTERFLY VALVES REQUIRE ECCENTRIC CONES.
5. WHEN ADJUSTMENTS ARE NECESSARY, THEY WILL BE PREFORMED WITH A MAXIMUM OF TWO (2) PRECAST CONCRETE RINGS SET IN A BED OF PREFORMED NON-HARDENING MASTIC (RUB-ER-NEK OR APPROVED EQUAL) TO A MAXIMUM HEIGHT OF TWELVE INCHES (12").

SERVICE TAP AND CONNECTION

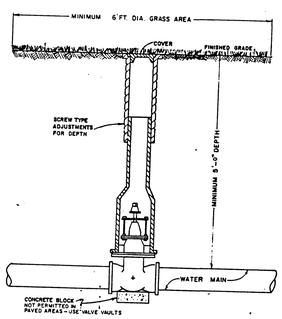
WATER 2



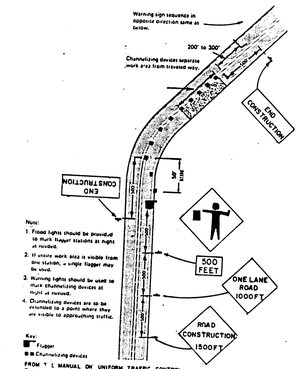
1. CORPORATION IS TO BE FLARING TYPE (FORD F-600 OR MUELLER EQUAL).
2. 1/8° BEND ELBOW - FEMALE FLARE TO COMPRESSION (FORD LA84-444 OR MUELLER EQUAL).
3. CURB BOX IS ARCH PATTERN, WITH INTERIOR ROD FOR 1" UPPER SECTION ONLY, WHEN USING 1" CURB STOPS.
4. CURB BOX IS ARCH PATTERN WITHOUT ROD WITH 1¼" UPPER IF FOR 1¼" - 2" CURB STOP.
5. CURB STOP IS WITH COMPRESSION COUPLINGS - FORD B44-444 (1" CURB-STOP) ETC. OR MUELLER EQUAL.
6. B-BOX CAP HAS 1 INCH THREADED BRASS PENTAGON PLUG WITH WORD "WATER" IN RAISED LETTERS.
7. SERVICE TAPS GREATER THAN 1" IN DIAMTER MUST HAVE A STAINLESS STEEL BANDED DUCTILE IRON SADDLE (FORD 101S, 202S OR MUELLER EQUAL.)
8. CORPORATION STOPS SHALL BE INSTALLED A MINIMUM OF 18" FROM PIPE ENDS AND MULTIPLE INSTALLATIONS SHOULD BE STAGGERED AROUND THE MAIN BY 90° AND SEPARATED BY 18".

MARCH 1989

VALVE BOX INSTALLATION

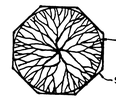


NOTES:
1. ALL VALVES IN PAVED AREAS OR VALVES CLOSER THAN 3' FROM A PAVED AREA SHALL BE VAULTED.
2. VALVES LARGER THAN 6" SHALL BE VAULTED.



MISC. 19

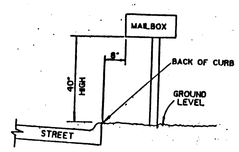
RECOMMENDED PRACTICES FOR TREES TO BE SAVED



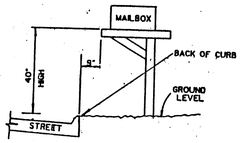
1. SNOW FENCE SHALL EXTEND TO THE DRIPLINE OF THE TREE. THE SNOW FENCE SHALL BE HIGH ENOUGH SO AS TO BE VISIBLE TO ALL CONSTRUCTION PERSONNEL.
2. GRADE CHANGES, UTILITY TRENCHES, STORAGE OF CONSTRUCTION MATERIAL, DUMPING OF WASTE OR STORAGE OF CONSTRUCTION EQUIPMENT SHALL NOT BE ALLOWED WITHIN SNOW FENCING.
3. IF A UTILITY MUST BE WITHIN 10 FEET OF THE TREE TRUNK, IT IS RECOMMENDED THAT IT BE AUGERED.
4. ALL TREES TO BE SAVED WHICH HAVE BEEN SUBJECTED TO CONSTRUCTION ACTIVITY WITHIN THE DRIPLINE SHOULD BE SELECTIVELY THINNED OUT BY AN ARBORIST SKILLED AT THIN SELECTIVE THINNING PROCEDURE. NONE OF THE TREES SHALL BE TOPPED, HEADED-BACK, SKINNED (REMOVAL OF INTERIOR BRANCHES), OR CLINGED WITH SPIKES. ALL DEAD WOOD SHOULD BE REMOVED TO REDUCE HAZARD.
5. IT IS RECOMMENDED THAT FOLLOWING CONSTRUCTION, TREES BE MAINTAINED IN THEIR NATIVE CONDITION. NO LAWN SHOULD BE PLACED AROUND THE TREES. IT IS RECOMMENDED THAT THE AREA BE MULCHED WITH 2 INCHES OF DECOMPOSED LEAVES AND 2 INCHES OF WOOD CHIPS OR BARK.

MAILBOX INSTALLATION DETAIL

MAILBOX MOUNTED ON POST



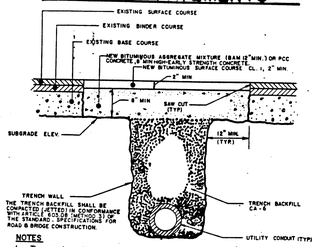
MAILBOX MOUNTED ON FRAME



NOTE: THE CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH ART. 107.20 OF THE STAND. SPECS. AND BE KNOWLEDGEABLE OF THE CONDITION OF EXISTING MAILBOXES TO BE MOVED PRIOR TO FINALIZING HIS BID.

UTILITY TRENCH PAVING SECTION THRU EXISTING FLEXIBLE PAVEMENTS

PVMT 15



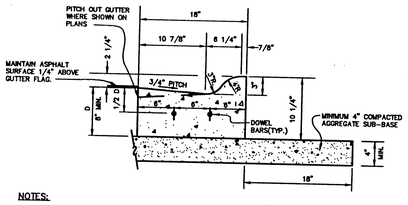
THE TRENCH BACKFILL SHALL BE COMPACTED (JETTED) IN CONFORMANCE WITH SECTION 603.06 (METHOD 3) OF THE STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION

NOTES:

1. The opening of pavements shall not be allowed without first receiving a permit from the Department of Transportation per Section 9-1-6 of the Naperville municipal code.
2. The trench shall be backfilled with aggregate (CA-6) and compacted to 95% of the standard proctor density. Trench spoil or excavated material shall be discarded by the contractor, at his expense, at dump sites or in a suitable fashion as approved by the City Engineer.
3. Prior to the placing of PCC concrete, the exposed edges of all existing pavement shall be saw cut to provide a smooth, clean edge, free of loose material.
4. Excavations shall be protected by barricades with flashing lights. A one (1) inch steel plate provided and maintained by the contractor at locations where adjustments are located in travel lanes until the surface restoration is complete. The plate shall be protected from sliding and provided with bituminous ramps as required.

MARCH 1989

MOUNTABLE CURB & GUTTER

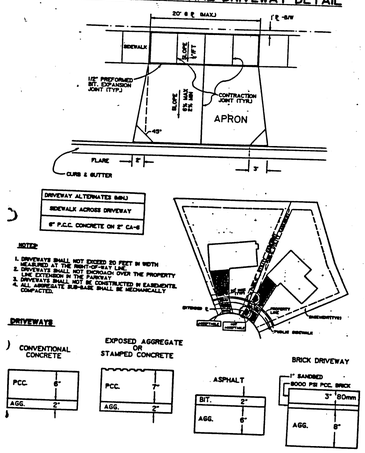


NOTES:

1. 3/4" PREFORMED BITUMINOUS EXPANSION JOINT MATERIAL WITH TWO (2) NUMBER 6 COATED SMOOTH DOWEL BARS BARS (3/4" DIAMETER X 18") WITH GREASE CAPS SHALL BE PLACED EVERY 150', 10' EITHER SIDE OF DRAINAGE STRUCTURES, P.C.'S RADIUS POINTS AND BACK OF CUL-DE-SACS. WHEN EXPANSION JOINTS ARE CONSTRUCTED ADJACENT TO EXISTING CURB AND GUTTER THE EXISTING CURB SHALL BE DRILLED AND TWO (2) NUMBER 6 COATED SMOOTH DOWEL BARS (3/4" DIAMETER X 18") GROUTED IN PLACE. GREASE CAPS SHALL BE PLACED ON THE SIDE OF THE NEW CURB AND GUTTER AND SHALL HAVE A PINCHED STOP THAT WILL PROVIDE A MINIMUM 1" EXPANSION.
2. TOOLED CONTROL JOINTS OR SAWCUTS SHALL BE MADE EVERY 15'.
3. SAWCUTS SHALL BE MADE WITHIN TWENTY-FOUR (24) HOURS AND SEALED WITH A CITY APPROVED JOINT

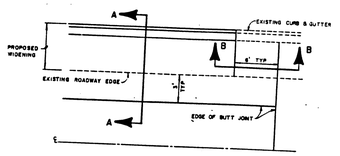
TYPICAL RESIDENTIAL DRIVEWAY DETAIL

PVMT 9

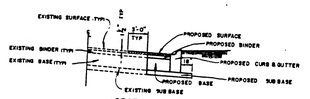


PVMT 16

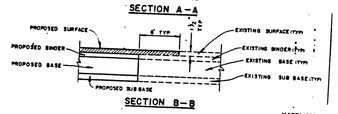
BUTT JOINT DETAIL



FOR WIDENING LESS THAN 6' WHERE COMPACTION IS DIFFICULT-CONCRETE BASE SHALL BE USED.



SECTION A-A

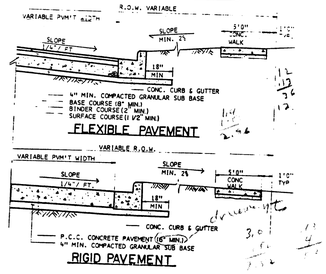


SECTION B-B

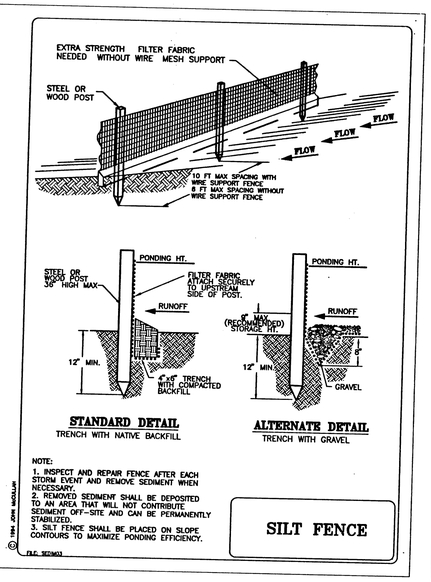
MARCH 1989

TYPICAL PAVEMENT DETAILS

PVMT 7



1. SOIL ANALYSIS AND TRAFFIC COUNTS MUST BE USED FOR DETERMINING TYPICAL SECTION.
2. INTEGRAL CURB AND GUTTER SHALL NOT BE PERMITTED WITH RIGID OR COMPOSITE PAVEMENTS.
3. THE FOLLOWING MATERIALS SHALL BE ACCEPTABLE AS BASE COURSE ALTERNATIVES: BITUMINOUS AGGREGATE MIXTURE (BAM); AGGREGATE; PCC CONCRETE.
4. AGGREGATE BASE COURSE ALTERNATE SHALL HAVE A MINIMUM DEPTH OF 12 INCHES.



NOTE:
1. INSPECT AND REPAIR FENCE AFTER EACH STORM EVENT AND REMOVE SEDIMENT WHEN NECESSARY.
2. REMOVED SEDIMENT SHALL BE DEPOSITED TO AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED.
3. SILT FENCE SHALL BE PLACED ON SLOPE CONTOURS TO MAXIMIZE PONDING EFFICIENCY.

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FILE: SEDIM03

SILT FENCE

ROAKE AND ASSOCIATES, INC.
CONSULTING ENGINEERS • LAND SURVEYORS • PLANNERS
1887 HIGH GROVE LN • NAPERVILLE IL 60540 • (708) 355-3232

PREPARED FOR:
CITY OF NAPERVILLE
DEPARTMENT OF PUBLIC UTILITIES-W & W
400 SOUTH EAGLE STREET
NAPERVILLE, ILLINOIS 60566 (708) 420-6131

REVISIONS

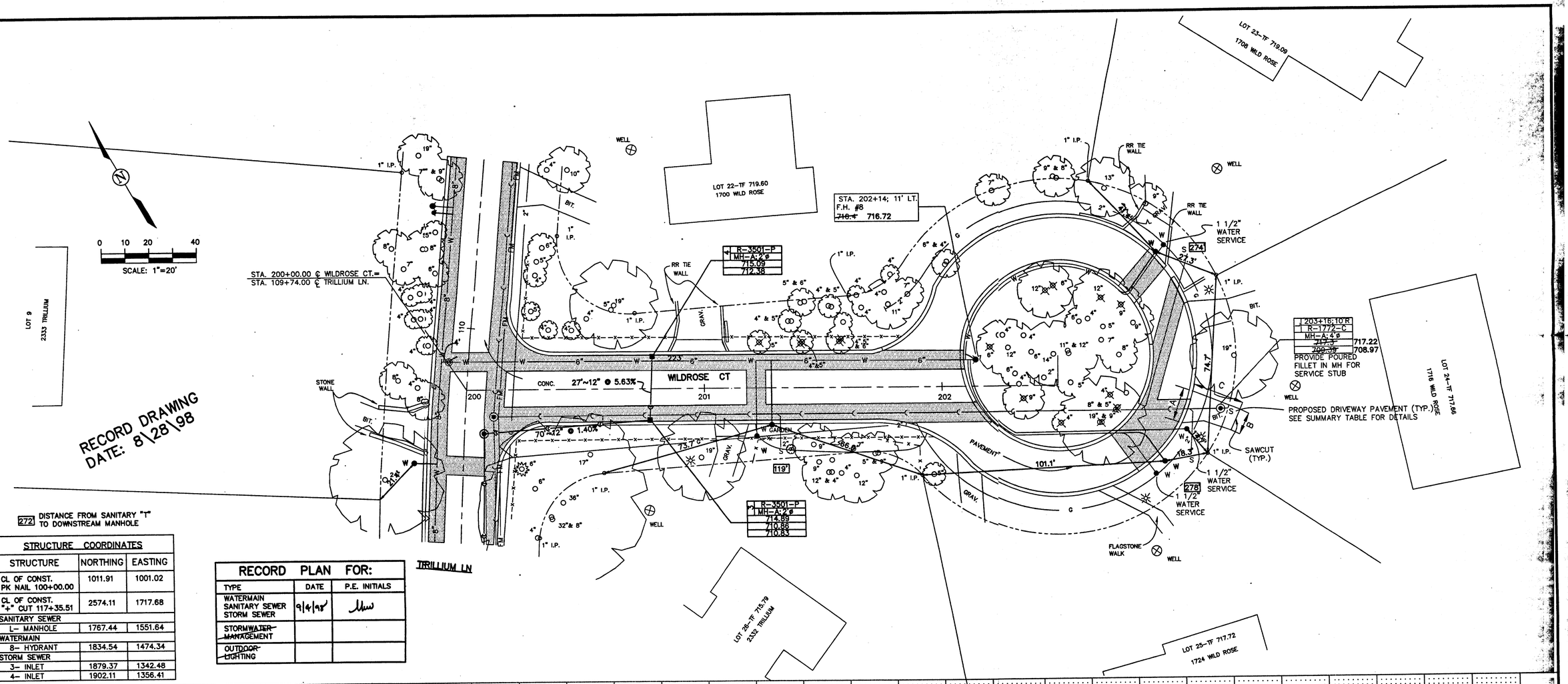
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION

DETAILS

DRN/CKD BY: JDP\LHW	DISC NO.: 35423DS	FLD. BK./PG.	SHEET NO. 10 OF 10
SCALE: NONE	DATE: 10/27/95	JOB NO.: 354.023	

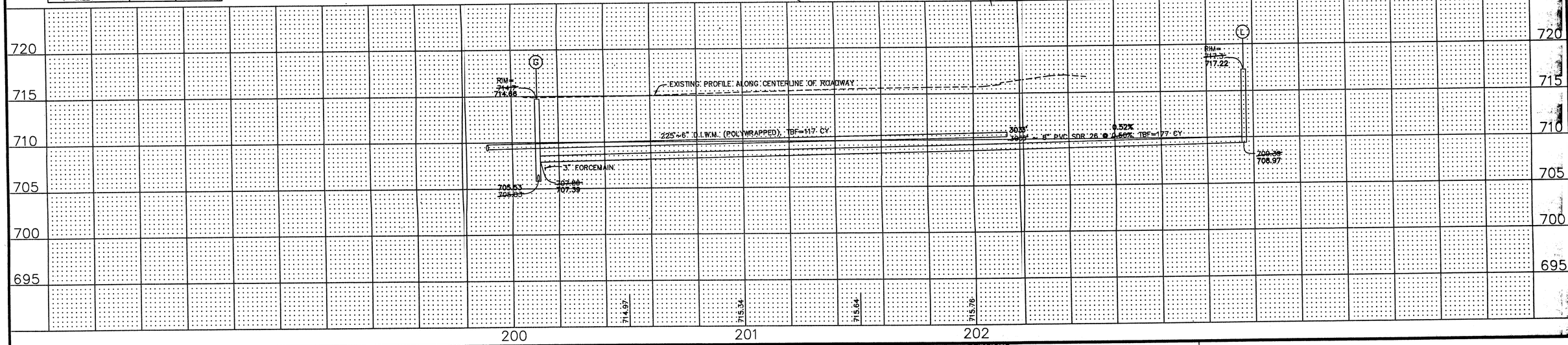
G:\354\023\35423DS Fri Oct 27 13:17:57 1995



272 DISTANCE FROM SANITARY "T" TO DOWNSTREAM MANHOLE

STRUCTURE COORDINATES		
STRUCTURE	NORTHING	EASTING
CL OF CONST. PK NAIL 100+00.00	1011.91	1001.02
CL OF CONST. "+" CUT 117+35.51	2574.11	1717.68
SANITARY SEWER		
1– MANHOLE	1767.44	1551.64
WATERMAIN		
8– HYDRANT	1834.54	1474.34
STORM SEWER		
3– INLET	1879.37	1342.48
4– INLET	1902.11	1356.41

RECORD PLAN FOR:		
TYPE	DATE	P.E. INITIALS
WATERMAIN SANITARY SEWER STORM SEWER	9/4/98	JMW
~~STORMWATER MANAGEMENT~~		
~~OUTDOOR LIGHTING~~		



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REVISIONS					
NO.	DATE	DESCRIPTION	NO.	DATE	DESCRIPTION

TRILLIUM LANE WATERMAIN & SANITARY SEWER EXTENSION

WILDROSE CT PLAN & PROFILE– RECORD DRAWING

DRN/CKD BY: SM/LW	DISC. NO.:WILDPPAB	FLD. BK./PG.:78/1	SHEET NO. 10 of 13
SCALE: HORZ.–1" = 20' VERT.–1" = 5'	DATE: 8/28/98	JOB NO.: 354.023	

\354\023\WILDPPAB Fri Sep 4 18:14:49 1998 SM