

CITY OF GRAND RAPIDS
GRAND RAPIDS, MICHIGAN
PUBLIC SERVICES

WATER MAIN
IN
THORNAPPLE RIVER DRIVE (N), BURGER DRIVE,
BROOKHILLS COURT, WINTERBERRY COURT,
BROOKPOINT DRIVE, MISTY LANE,
WOODBROOK DRIVE, TRICKLEWOOD DRIVE,
RIDGEMONT COURT, SANDY LANE DRIVE,
SANDY LANE COURT,
THORNAPPLE RIVER DRIVE (S),
OAKMONT STREET, FOREST VALLEY DRIVE,
WHITE OAK COURT, OAK CREEK COURT,
FOREST VALLEY COURT, OAK TREE DRIVE,
MAPLECREST DRIVE, MAPLECREST COURT,
AND AQUA FRIA COURT
(BURGER-GOODWOOD NEIGHBORHOOD WATER MAIN - PHASE 2)

UTILITIES - CONTACT INFORMATION

PUBLIC	PRIVATE
CITY OF GRAND RAPIDS TRAFFIC SAFETY DEPT. 509 WEALTHY ST. SW GRAND RAPIDS, MI 49503 (616) 456-3847	CONSUMERS ENERGY COMPANY (ELECTRIC) 4000 CLAY AVE. SW GRAND RAPIDS, MI 49501-0201 (616) 530-4115 (AERIAL DIST) (616) 530-4381 (METRO UG)
CITY OF GRAND RAPIDS WATER SYSTEM 1900 OAK INDUSTRIAL DR. NE GRAND RAPIDS, MI 49505 (616) 456-3141 (616) 456-3000 AFTER HRS	AT&T (TEL/FIBER OPTIC) 955 36TH ST. SE GRAND RAPIDS, MI 49508 (866) 491-2069
KENT COUNTY ROAD COMMISSION 1500 SCRIBNER AVE. NW GRAND RAPIDS, MI 49504 (616) 242-6910	DTE ENERGY/MICHCON (NATURAL GAS) 444 WEALTHY ST. SW GRAND RAPIDS, MI 49503 (800) 947-5000
KENT COUNTY DEPT. OF PUBLIC WORKS (616) 336-2500	COMCAST (CABLE TV) 955 CENTURY AVE. SW GRAND RAPIDS, MI 49503 (269) 209-9908

BID SET				AS-BUILT RECORD	
BID SET NO.	DATE	BID SET NO.	DATE	CONTRACTOR	
				FIELD ENGINEER	
				INSPECTED BY	
				AS-BUILT BY	
				AS-BUILT DATE	
				BORINGS BY	
				WATER PIPE MANUFACTURER	
				SANITARY PIPE MANUFACTURER	
				STORM PIPE MANUFACTURER	

PERMITS					
E.G.L.E. WATER SYSTEM PERMIT NO.:		OTHER:		NO.:	
E.G.L.E. WASTEWATER SYSTEM PERMIT NO.:		OTHER:		NO.:	
M.D.O.T. RIGHT-OF-WAY PERMIT NO.:		OTHER:		NO.:	

CITY COMMISSION PROC. NO. _____ DATE _____ ADDITIONAL CITY COMMISSION PROCEEDINGS

MDOT AGREEMENT CONTRACT AWARDED PROCEEDING NO. _____ DATE _____ PURPOSE _____

FINANCIAL AGREEMENT SHPO AGREEMENT _____

GRANT AGREEMENT COST SHARING AGREEMENT _____

PUBLIC UTILITIES EASEMENT (SEE EASEMENT DESCRIPTION SHEET) _____

INDEX OF SHEETS

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STANDARD PLANS NOT PRINTED WITH PLANS

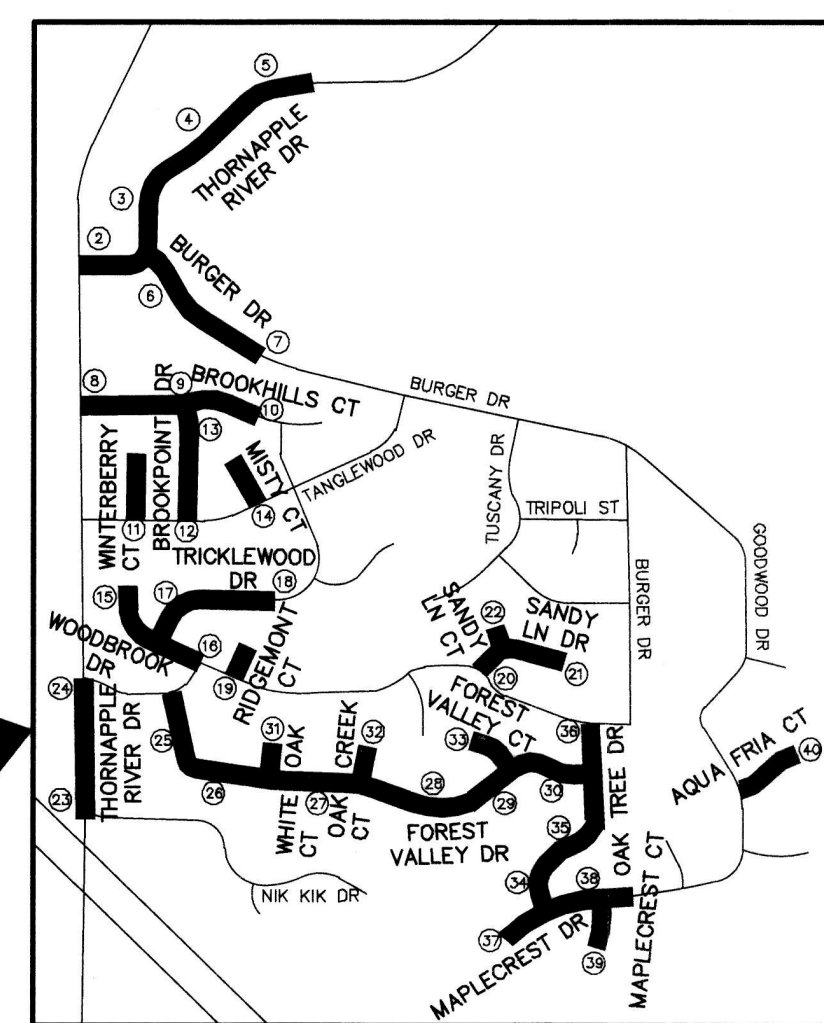
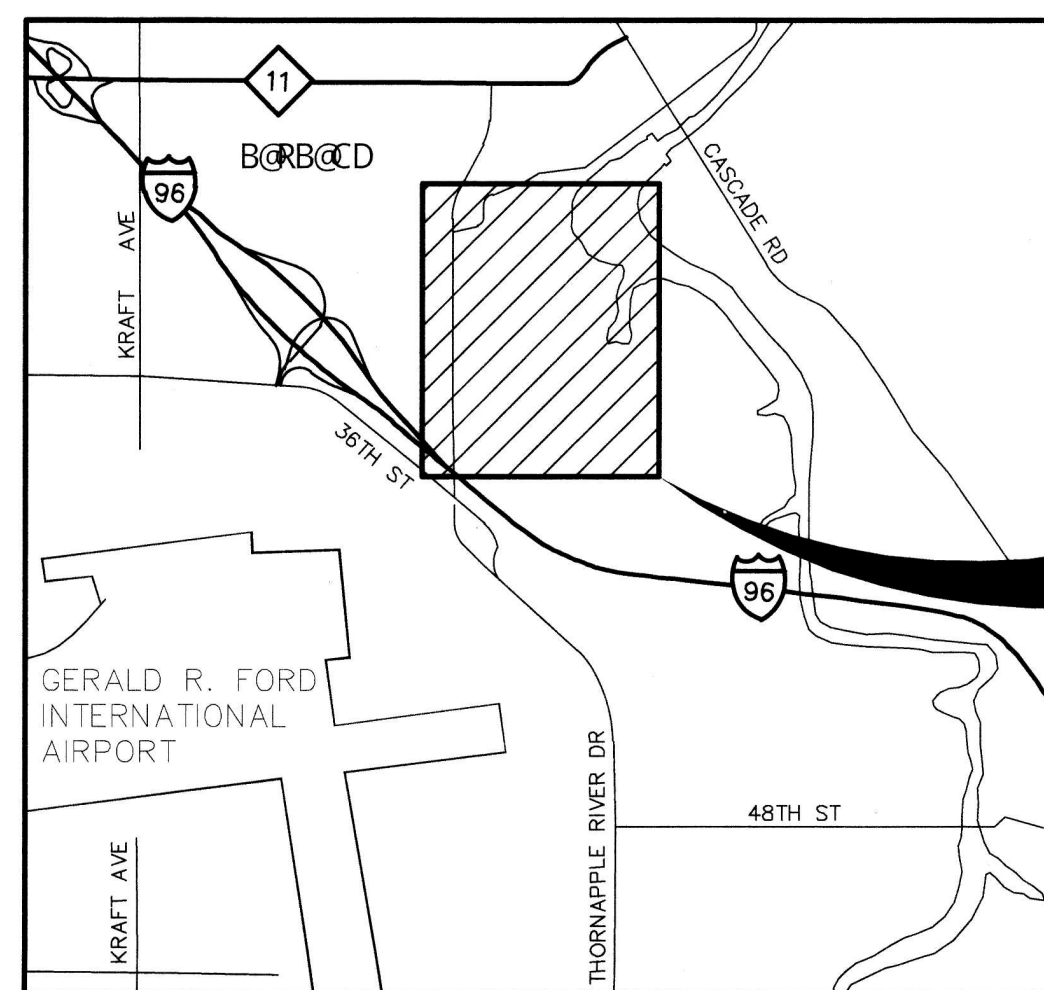
- R - 28 - J CURB RAMP AND DETECTABLE WARNING DETAILS
- R - 86 - F PRECAST CONCRETE END SECTION FOR PIPE CULVERT
- R - 92 - C STEEL GRATES FOR END SECTIONS

CALL 811 FOR MISS DIG

FOR PROTECTION OF UNDERGROUND UTILITIES AND IN CONFORMANCE WITH PUBLIC ACT 53, 1974, THE CONTRACTOR SHALL CALL 811 A MINIMUM OF THREE (3) FULL WORKING DAYS (EXCLUDING SATURDAYS, SUNDAYS AND HOLIDAYS) PRIOR TO EXCAVATING IN THE VICINITY OF UTILITY LINES. ALL "MISS DIG" PARTICIPATING MEMBERS WILL THUS BE ROUTINELY NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF THE RESPONSIBILITY OF NOTIFYING UTILITY OWNERS WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.

GENERAL NOTES

1. MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2021 EDITION OF THE CITY OF GRAND RAPIDS STANDARD CONSTRUCTION SPECIFICATIONS, EXCEPT AS OTHERWISE INDICATED ON THESE PLANS OR IN THE SUPPLEMENTAL SPECIAL SPECIFICATIONS.
2. IF A WATER SERVICE (COPPER, LEAD OR OTHERWISE) IS DISTURBED, DAMAGED, RELOCATED OR REPLACED FROM THE WATER MAIN TO THE CURB STOP, WHETHER PLANNED OR UNINTENTIONAL, THE CONTRACTOR IS TO HAVE THE SERVICE MATERIAL VERIFIED FROM THE MAIN TO THE METER. IF ANY PORTION IS FOUND TO BE LEAD, THEN THE CONTRACTOR MUST HAVE THE LEAD REPLACED WITH A COPPER WATER SERVICE. ALL WATER SERVICE REPLACEMENTS MUST BE COMPLETED BY A REGISTERED UNDERGROUND CONTRACTOR. IF THE REPLACEMENT INVOLVES WORK ON PRIVATE PROPERTY, THE CONTRACTOR IS TO CONTACT THE ENGINEER IMMEDIATELY TO OBTAIN PERMISSIONS FOR THE SERVICE TO BE REPLACED BY CITY OF GRAND RAPIDS UNDERGROUND CONTRACTORS ON TERM CONTRACT FOR LEAD SERVICE REPLACEMENT. THE CONTRACTOR WILL REIMBURSE THE CITY FOR THIS COST.



JOB SITE

THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

PROJECT LOCATION

CITY OF GRAND RAPIDS
PROFESSIONAL PERSON IN RESPONSIBLE CHARGE OF THE PROJECT
SHEETS
1-67
NAME OF LICENSEE
KEVIN E. KOSTER, P.E.
NUMBER
6201064709
SIGNATURE
<i>Kevin E. Koster</i>
STATE OF MICHIGAN
KEVIN E. KOSTER
ENGINEER
No. 6201064709
LICENSED PROFESSIONAL ENGINEER

SURVEYED & DESIGNED BY:	
Prein & Newhof Engineers • Surveyors • Environmental • Laboratory	
City of Grand Rapids Public Services Engineering Department	
WATER MAIN IN (STREETS LISTED ABOVE)	
(BURGER- GOODWOOD NEIGHBORHOOD WATER MAIN - PHASE 2)	
Drawn by	JDH / PFN Notes in N/A
Check/Field	JM Office JS
Approved	<i>Tim Burkman</i> 3/4/2023 Tim Burkman, P.E., City Engineer Date
APPROVAL OF SHEET(S)	1- 67 ONLY
Project No.	GPF No.
22009	5892
Sheet No.	1 of 67

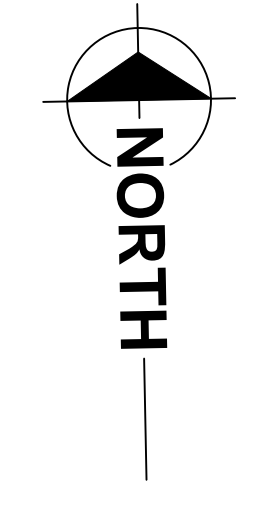
- (1) TEE, 12 INCH X 12 INCH X 12 INCH
- (2) VALVE AND BOX, 12 INCH
- (2) SLEEVE, 12 INCH
- WATER MAIN, 12 INCH (HP)

- (1) BEND, 11 1/4 DEGREE, 12 INCH
- (4) BEND, 45 DEGREE, 12 INCH
- WATER MAIN, 12 INCH (HP)

- (1) BEND, 22 1/2 DEGREE, 12 INCH
- (1) TEE, 12 INCH X 12 INCH X 12 INCH
- (1) REDUCER, 12 INCH X 8 INCH
- (1) VALVE AND BOX, 8 INCH

- (1) BEND, 11 1/4 DEGREE, 8 INCH

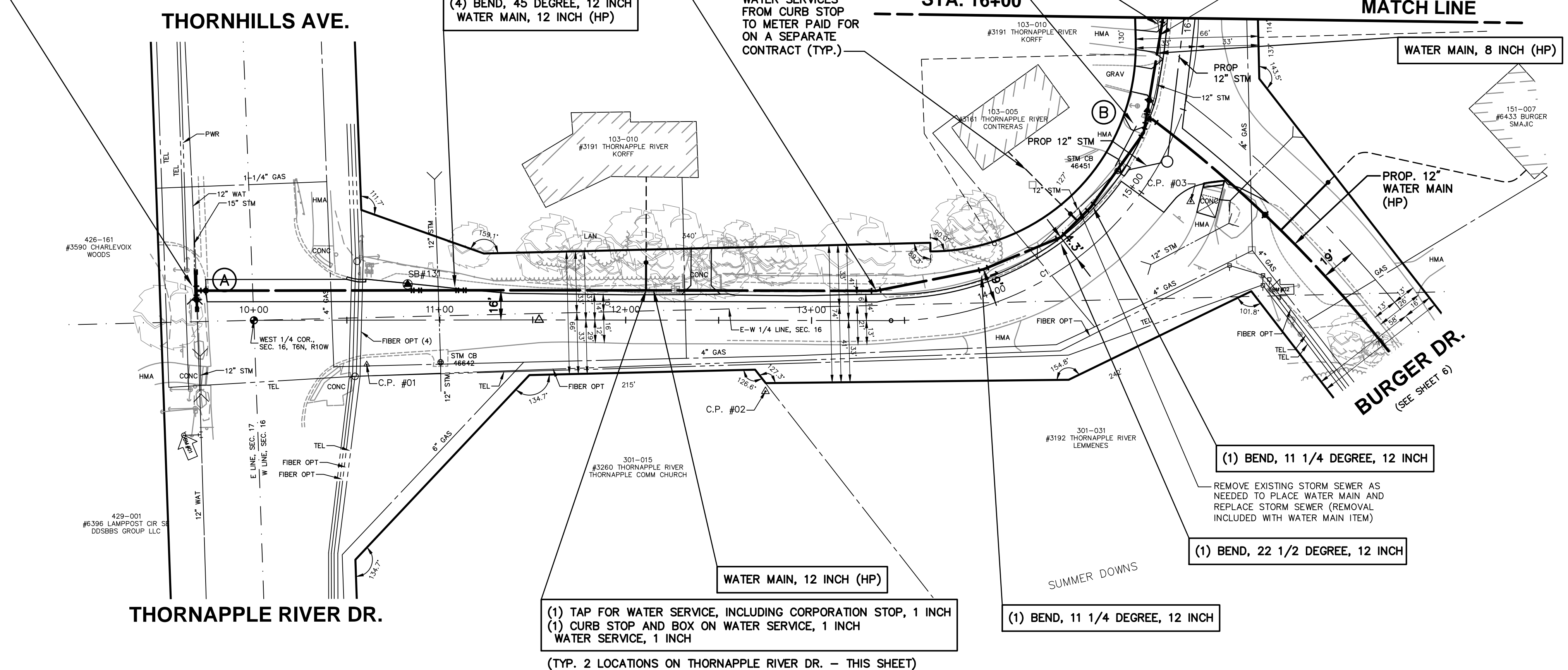
REMOVE EXISTING STORM SEWER AS NEEDED TO PLACE WATER MAIN AND REPLACE STORM SEWER (REMOVAL INCLUDED WITH WATER MAIN ITEM)



CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C1	264'	165'	N45°27'17"E 236'

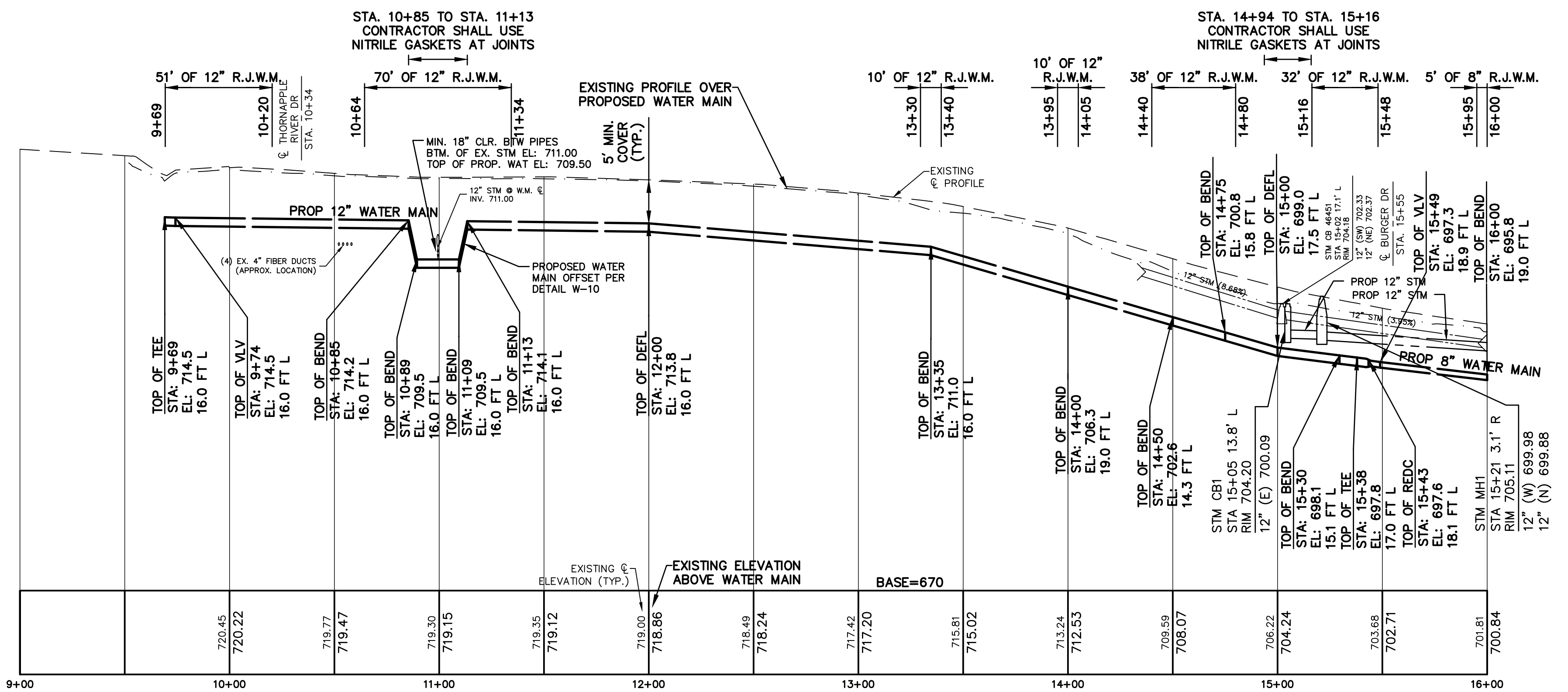
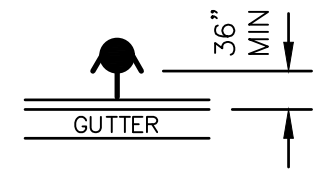
BENCHMARKS
 B.M. #01 - BM TOP OF FLANGE BOLT UNDER E ON HYD - ELE. 724.74
 B.M. #02 - BM SET 60D ON E SIDE OF P.P. - ELE. 705.18'
CONTROL POINTS
 #01 - CP P&N TRAV CAP 3' WEST OF B/C @ P.C. - ELE. 720.13
 #02 - CP P&N TRAV CAP 3' WEST OF BIT WALK OPPOSITE P.O.P.L.E - ELE. 720.91'
 #03 - CP P&N TRAV CAP 6' SOUTH OF EBT SW QUADRANT OF T.APPLE RIVER & BURGER - ELE. 705.28'

SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 VERT. 1"=10'



WATER MAIN GENERAL NOTES

1. WATER MAIN CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE STANDARD CONSTRUCTION SPECIFICATIONS OF CITY OF GRAND RAPIDS, 2021 EDITION, AND ALL REVISIONS THEREOF.
2. DEPTH OF THE PROPOSED WATER MAIN SHALL BE 5'-9" FROM ROAD CENTERLINE GRADE TO CENTERLINE OF PIPE OR HAVE A MINIMUM OF 5'-0" OF COVER TO THE TOP OF THE PIPE UNLESS OTHERWISE NOTED ON DRAWINGS. ADJUSTMENT MAY BE REQUIRED TO AVOID CONFLICTS WITH EXISTING OR PROPOSED UTILITIES.
3. ALL PIPE TO HAVE NECESSARY JOINT RESTRAINTS PER SECTION 4.316 OF THE STANDARD CONSTRUCTION SPECIFICATIONS OF THE CITY OF GRAND RAPIDS, INCLUDING TABLE 4.3-7 AND DETAIL W-15.
4. ALL WATER MAIN TO BE ZINC-COATED. WATER SERVICES ARE NOT SUBJECT TO THIS REQUIREMENT.
5. WATER MAINS 6" DIAMETER AND LESS CALLED TO BE ABANDONED ON DRAWINGS DO NOT REQUIRE FILLING, BUT ALL OPEN ENDS ARE TO BE CAPPED AND PLUGGED WITH CONCRETE. COST TO BE INCLUDED IN ITEMS FOR LAYING NEW WATER MAIN.
6. EXPOSE ALL UNDERGROUND UTILITIES AT POTENTIAL POINTS OF CONFLICT BEFORE LAYING WATER MAIN TO DETERMINE WHETHER TO GO OVER OR UNDER EXISTING UTILITIES. THE WATER MAIN SHALL BE DEFLECTED TO GO OVER OR UNDER EXISTING UTILITIES WHEN REQUIRED BY THE ENGINEER. 45° BENDS TO ACCOMPLISH ELEVATION CHANGES OF THE WATER MAIN WILL ONLY BE USED WHEN REQUIRED OR APPROVED BY THE ENGINEER.
7. REPLACEMENT OF WATER SERVICES SHALL BE A MINIMUM OF 1" COPPER FOR RESIDENTIAL PROPERTIES AND 1-1/2" COPPER FOR COMMERCIAL PROPERTIES.
8. FINAL DETERMINATION FOR REPLACEMENT OR RECONNECTION OF ALL WATER SERVICES INCLUDING THE SIZE SHALL BE AS REQUIRED BY THE ENGINEER & WATER DEPARTMENT. THIS MAY REQUIRE DISCUSSION BETWEEN THE ENGINEER, WATER DEPARTMENT AND THE PROPERTY OWNER.
9. CURB AND GUTTER SHALL BE REMOVED AND REPLACED WHEN LAYING WATER SERVICES UNDER IT. NO TUNNELING UNDER THE CURB AND GUTTER WILL BE ALLOWED TO LAY WATER SERVICES EXCEPT WHERE THE WATER SERVICE IS DIRECTIONALLY BORED.
10. FOR ALL ABANDONED UTILITIES THAT ARE REMOVED AS PART OF CONSTRUCTION OF A NEW UTILITY SUCH REMOVAL OF THE ABANDONED UTILITY TO LAY THE NEW UTILITY SHALL BE CONSIDERED TO BE INCLUDED IN THE ITEM FOR LAYING OF THE NEW UTILITY AND WILL NOT BE PAID FOR SEPARATELY. THIS IS ALSO THE CASE FOR THOSE UTILITIES THAT ARE DESIGNATED TO BE ABANDONED ON THE PLANS BUT END UP BEING REMOVED IN ORDER TO LAY A NEW UTILITY.
11. NEW HYDRANTS TO BE SET A MINIMUM OF 36" FROM FACE OF CURB TO FACE OF HYDRANT.
12. CURB STOPS IN PAVED AREAS (DRIVEWAYS, ETC) SHALL BE SET IN A VALVE BOX CASING (SEE CURB BOX IN PAVEMENT DETAIL).
13. THE CONTRACTOR IS TO VERIFY THE LOCATIONS OF EXISTING SEPTIC TANKS/FIELDS (INCLUDED IN PLACING WATER SERVICES). PROVIDE A MINIMUM OF 6" CLEARANCE BETWEEN EXISTING SERVICES OR UTILITIES AND THE PROPOSED WATER SERVICE. LOCATIONS OF PROPOSED WATER TAPS AND CONNECTIONS TO EXISTING WATER SERVICES SHALL BE APPROVED BY THE ENGINEER.
14. ALL 1" WATER SERVICES SHALL HAVE A VADLE™ CURB BOX LOCK INSTALLED WITH THE CURB BOX. INSTALLATIONS IN SIDEWALK OR DRIVEWAY LOCATIONS SHALL BE FURTHER STABILIZED BY PLACING A BRICK IMMEDIATELY UNDER THE BASE OF THE CURB BOX LOCK.
15. CURB STOP BOXES TO BE PLACED 7' OFF THE RIGHT-OF-WAY LINE AND A MINIMUM OF 2' FROM ANY GAS MAIN, UNLESS OTHERWISE SPECIFIED BY ENGINEER.
16. CONTRACTOR TO PLACE 2' TAIL ONTO THE PRIVATE SIDE OF THE CURB STOP BOX THAT IS EITHER CRIMPED OR CAPPED OFF.
17. CONTRACTOR TO MAINTAIN A MINIMUM OF 2' FROM THE EDGE OF CATCH BASINS AND DRAINAGE STRUCTURES TO THE EDGE OF THE WATER MAIN



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REVISIONS		
NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:

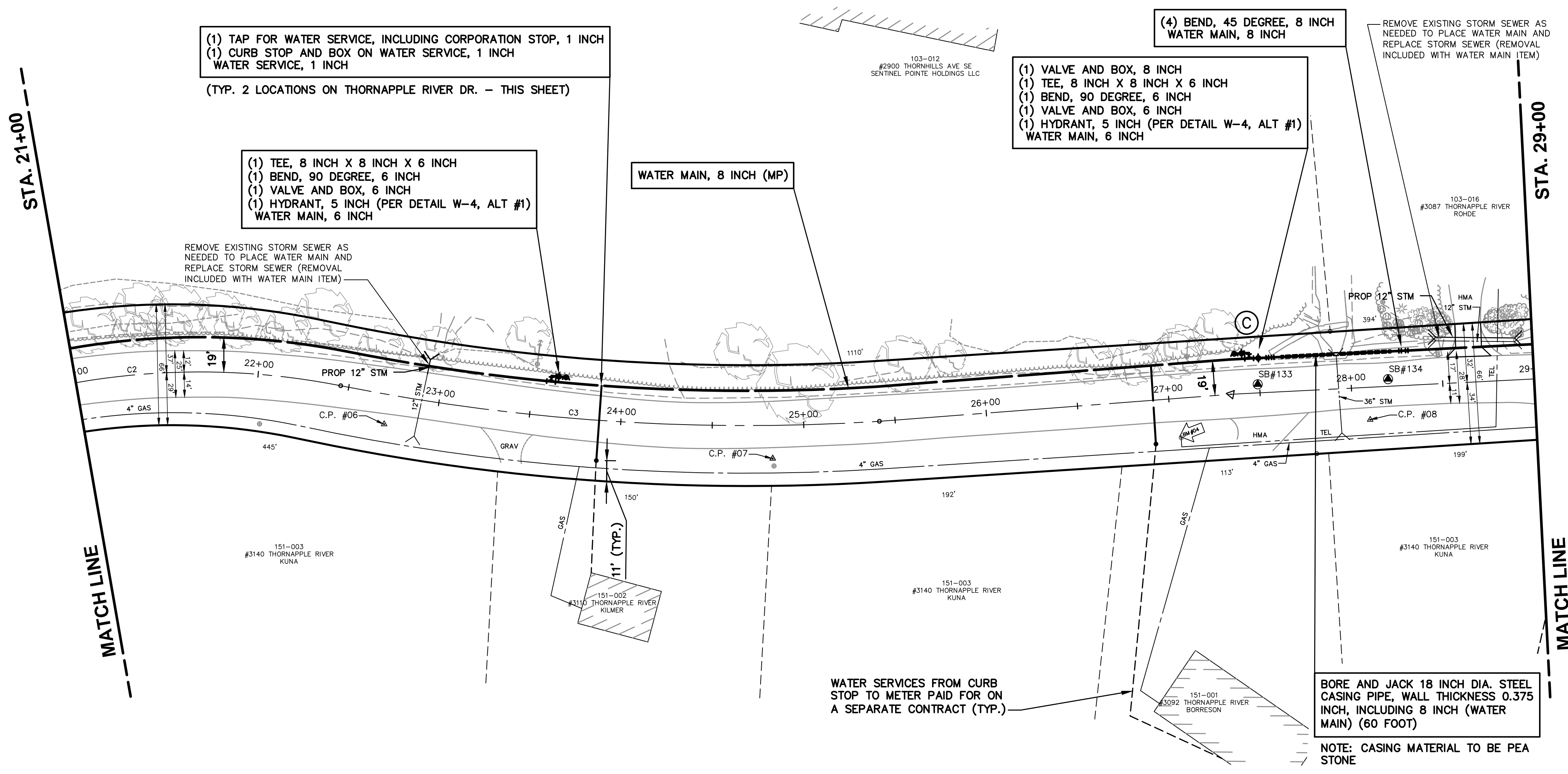
Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 THORNAPPLE RIVER DRIVE
 FROM THORNHILLS AVE.
 TO
 450' EAST OF MAHESH DR. (PVT.)
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by: JDH/PFN
 Check: Field JM
 Check: Office JS

GPF No. **5892**
 Sheet No. **2 of 67**



CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C2	424'	395'	N3025°03'E 404'
C3	296'	1140'	N53°32'22"E 295'

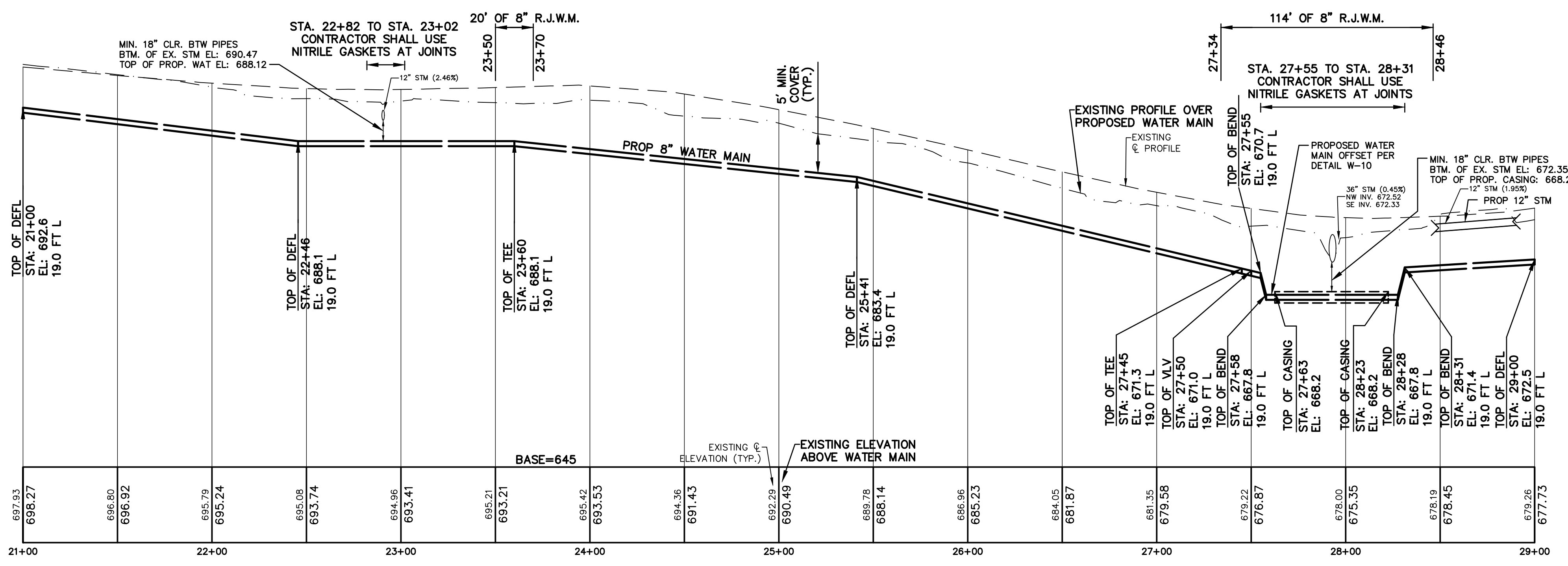
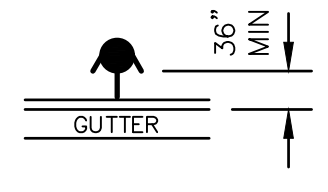
BENCHMARKS
 B.M. #04 - BM SET 60D N SIDE PP. 8' S OF E/B. 40' W OF DRIVEWAY 3092 - ELE. 680.29
 #06 - CP P&N TRAV CAP 5.5' SE OF E/B. 70' SW OF DRIVE 3110 - ELE. 694.60
 #07 - CP P&N TRAV CAP 5' SOUTH OF EBT ADJACENT TO POLE - ELE. 692.42
 #08 - CP 60D NAIL 5.5' S OF E/B. 15' E OF CREEK CROSSING - ELE. 676.45

CONTROL POINTS
 #06 - CP P&N TRAV CAP 5.5' SE OF E/B. 70' SW OF DRIVE 3110 - ELE. 694.60
 #07 - CP P&N TRAV CAP 5' SOUTH OF EBT ADJACENT TO POLE - ELE. 692.42
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SCALES
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 PROFILE 1"=40'
 HORIZ. 1"=40'
 VERT. 1"=10'

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REVISIONS

NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:
Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 THORNAPPLE RIVER DRIVE**
 FROM THORNHILLS AVE.
 TO
 450' EAST OF MAHESH DR. (PVT.)
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. **5892** Sheet No. **4 of 67**
 Check: Field JM
 Check: Office JS

(1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1.5 INCH
(1) CURB STOP AND BOX ON WATER SERVICE, 1.5 INCH
WATER SERVICE, 1.5 INCH

(TYP. 2 LOCATIONS ON THORNAPPLE RIVER DR. - THIS SHEET)
#6590, AND #6600 MAHESH DR)

(1) TEE, 8 INCH X 8 INCH X 6 INCH
(1) BEND, 90 DEGREE, 6 INCH
(1) VALVE AND BOX, 6 INCH
(1) HYDRANT, 5 INCH (PER DETAIL W-4, ALT #1)
WATER MAIN, 6 INCH

(1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
(1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH
WATER SERVICE, 1 INCH

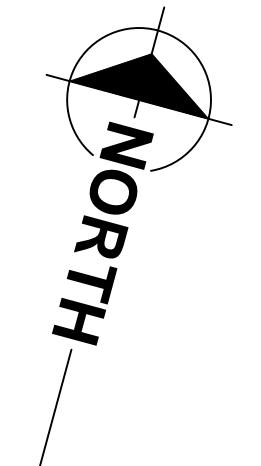
(TYP. 3 LOCATIONS ON THORNAPPLE RIVER DR. - THIS SHEET)
#3044, #3056, #3087 THORNAPPLE RIVER DR)

(1) SLEEVE 12 INCH
(1) REDUCER, 12 INCH X 8 INCH

CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C4	238'	409'	N82°58'07"E 235'
C5	576'	2539'	N86°09'00"E 575'

BENCHMARKS
B.M. #05 - BM SPIKE IN S SIDE OF P.P. - ELE. 708.23

CONTROL POINTS
#09 - CP P&N TRAV CAP 6' NORTH OF EBT
OPPOSITE CL MAHESH DRIVE - ELE. 681.76
#10 - CP 60D NAIL 4' S OF E/B. 5' E OF DRIVE. -
ELE. 690.61
#11 - CP P&N TRAV CAP 3' NORTH OF EBT
OPPOSITE MAIL BOX HOUSE - ELE. 694.39



SCALES
PLAN 1"=40'
PROFILE 1"=40'
VERT. 1"=10'

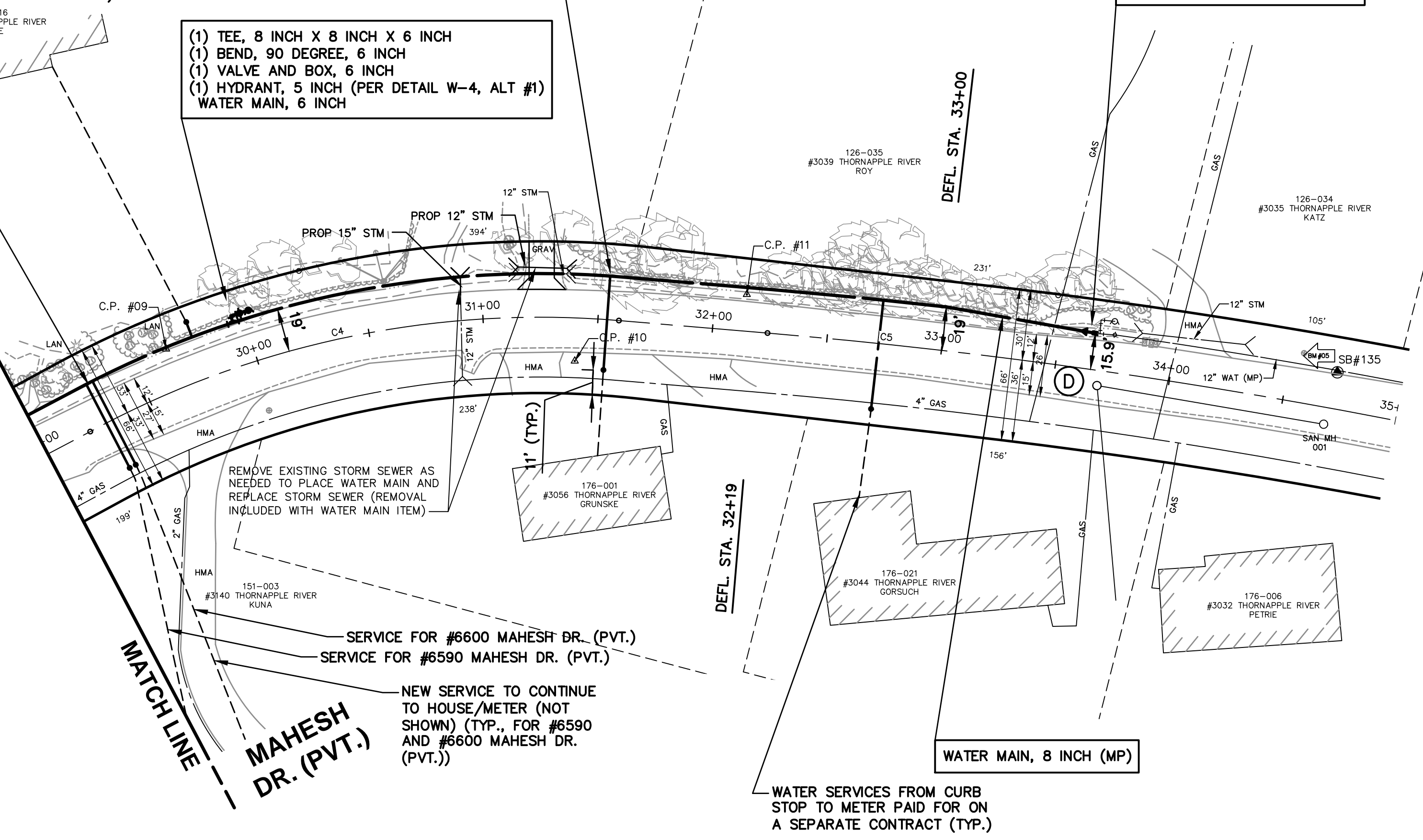
STA. 29+00

DEFL. STA. 33+00

DEFL. STA. 32+19

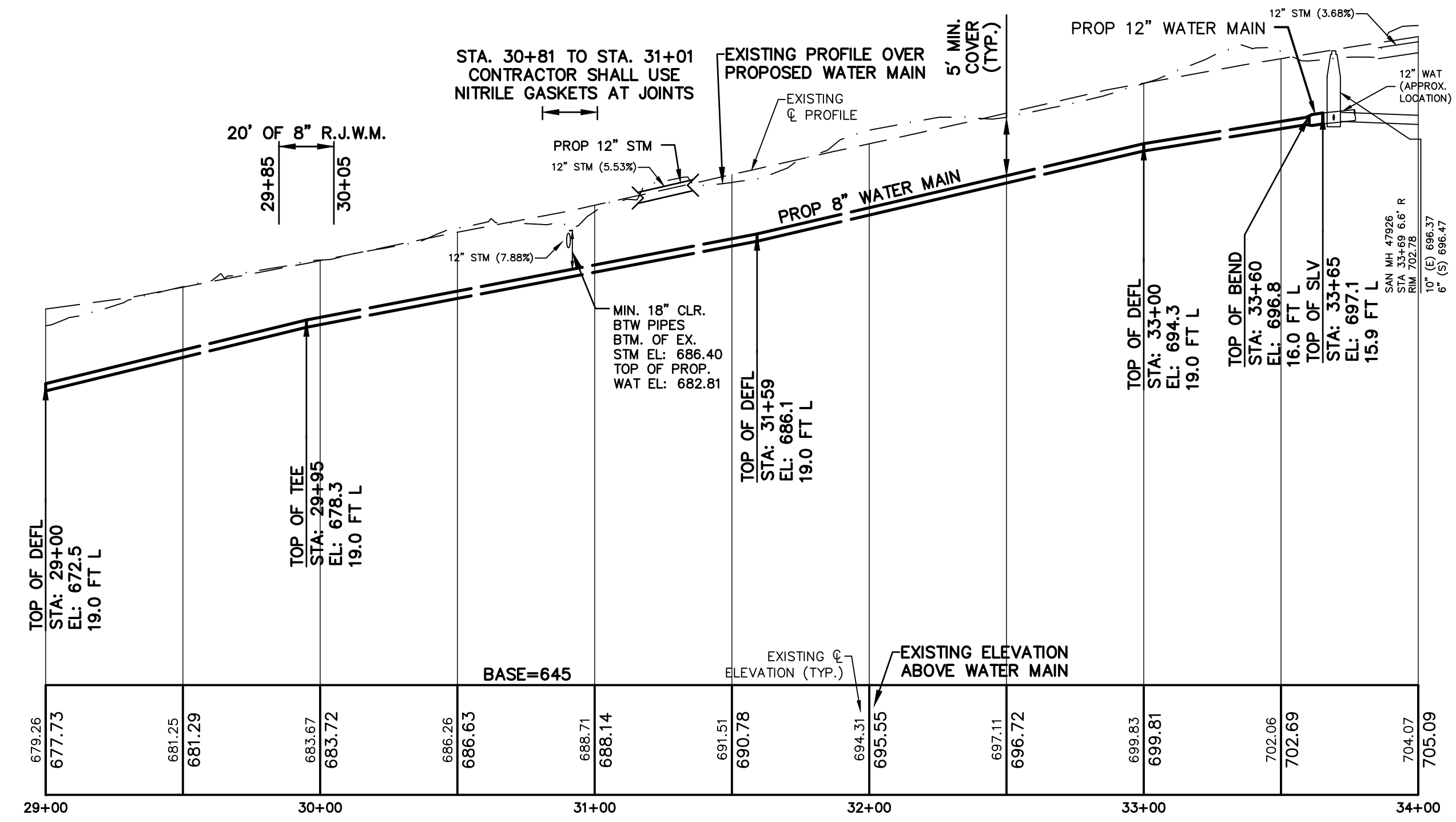
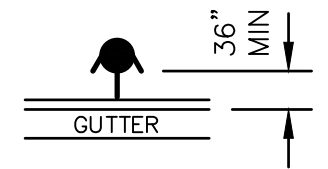
MAHESH DR. (PVT.)

WATER MAIN, 8 INCH (MP)



WATER MAIN GENERAL NOTES

1. WATER MAIN CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE STANDARD CONSTRUCTION SPECIFICATIONS OF CITY OF GRAND RAPIDS, 2021 EDITION, AND ALL REVISIONS THEREOF.
2. DEPTH OF THE PROPOSED WATER MAIN SHALL BE 5'-9" FROM ROAD CENTERLINE GRADE TO CENTERLINE OF PIPE OR HAVE A MINIMUM OF 5'-0" OF COVER TO THE TOP OF THE PIPE UNLESS OTHERWISE NOTED ON DRAWINGS. ADJUSTMENT MAY BE REQUIRED TO AVOID CONFLICTS WITH EXISTING OR PROPOSED UTILITIES.
3. ALL PIPE TO HAVE NECESSARY JOINT RESTRAINTS PER SECTION 4.316 OF THE STANDARD CONSTRUCTION SPECIFICATIONS OF THE CITY OF GRAND RAPIDS, INCLUDING TABLE 4.3-7 AND DETAIL W-15.
4. ALL WATER MAIN TO BE ZINC-COATED. WATER SERVICES ARE NOT SUBJECT TO THIS REQUIREMENT.
5. WATER MAINS 6" DIAMETER AND LESS CALLED TO BE ABANDONED ON DRAWINGS DO NOT REQUIRE FILLING, BUT ALL OPEN ENDS ARE TO BE CAPPED AND PLUGGED WITH CONCRETE. COST TO BE INCLUDED IN ITEMS FOR LAYING NEW WATER MAIN.
6. EXPOSE ALL UNDERGROUND UTILITIES AT POTENTIAL POINTS OF CONFLICT BEFORE LAYING WATER MAIN TO DETERMINE WHETHER TO GO OVER OR UNDER THE EXISTING UTILITIES. THE WATER MAIN SHALL BE DEFLECTED TO GO OVER OR UNDER EXISTING UTILITIES WHEN REQUIRED BY THE ENGINEER. 45° BENDS TO ACCOMPLISH ELEVATION CHANGES OF THE WATER MAIN WILL ONLY BE USED WHEN REQUIRED OR APPROVED BY THE ENGINEER.
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8. FINAL DETERMINATION FOR REPLACEMENT OR RECONNECTION OF ALL WATER SERVICES INCLUDING THE SIZE SHALL BE AS REQUIRED BY THE ENGINEER & WATER DEPARTMENT. THIS MAY REQUIRE DISCUSSION BETWEEN THE ENGINEER, WATER DEPARTMENT AND THE PROPERTY OWNER.
9. CURB AND GUTTER SHALL BE REMOVED AND REPLACED WHEN LAYING WATER SERVICES UNDER IT. NO TUNNELING UNDER THE CURB AND GUTTER WILL BE ALLOWED TO LAY WATER SERVICES EXCEPT WHERE THE WATER SERVICE IS DIRECTIONALLY BORED.
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11. NEW HYDRANTS TO BE SET A MINIMUM OF 36" FROM FACE OF CURB TO FACE OF HYDRANT.
12. CURB STOPS IN PAVED AREAS (DRIVEWAYS, ETC) SHALL BE SET IN A VALVE BOX CASING (SEE CURB BOX IN PAVEMENT DETAIL).
13. THE CONTRACTOR IS TO VERIFY THE LOCATIONS OF EXISTING SEPTIC TANKS/FIELDS (INCLUDED IN PLACING WATER SERVICES). PROVIDE A MINIMUM OF 6" CLEARANCE BETWEEN EXISTING SERVICES OR UTILITIES AND THE PROPOSED WATER SERVICE. LOCATIONS OF PROPOSED WATER TAPS AND CONNECTIONS TO EXISTING WATER SERVICES SHALL BE APPROVED BY THE ENGINEER.
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16. CONTRACTOR TO PLACE 2" TAIL ONTO THE PRIVATE SIDE OF THE CURB STOP BOX THAT IS EITHER CRIMPED OR CAPPED OFF.
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THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

REVISIONS		
NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:

Prein & Newhof
Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
Public Services
Engineering Department

**WATER MAIN
IN
THORNAPPLE RIVER DRIVE
FROM THORNHILLS AVE.
TO
450' EAST OF MAHESH DR. (PVT.)
(BURGER-GOODWOOD NEIGHBORHOOD
WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 5 of 67
Check: Field JM
Check: Office JS

(1) BEND, 22 1/2 DEGREE, 12 INCH

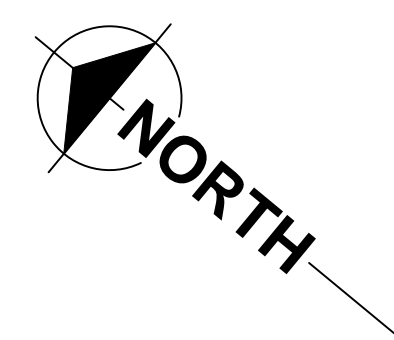
(1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
 (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH
 WATER SERVICE, 1 INCH
 (TYP. 4 LOCATIONS ON BURGER DR. - THIS SHEET)

(1) TEE, 12 INCH X 12 INCH X 6 INCH
 (1) BEND, 90 DEGREE, 6 INCH
 (1) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH (PER DETAIL W-4, ALT #1)
 WATER MAIN, 6 INCH

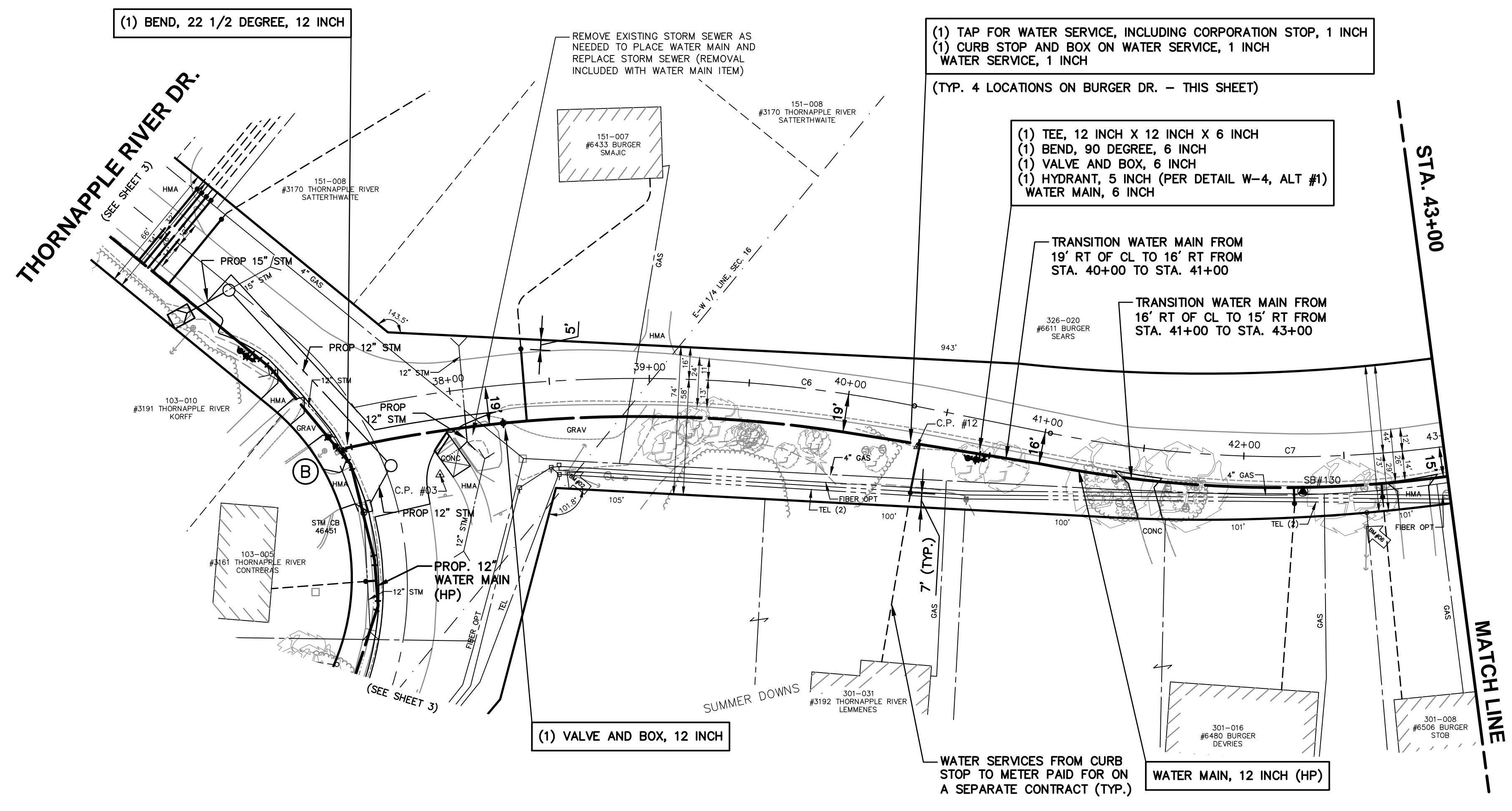
(1) VALVE AND BOX, 12 INCH

CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C6	282'	700'	S39°42'49"E 280'
C7	312'	600'	S43°04'29"E 308'

BENCHMARKS
 B.M. #02 - BM SET 60D ON E SIDE OF P.P. - ELE. 705.18
 B.M. #06 - BM SET 60D NAIL IN N SIDE OF P.P. - ELE. 713.20
CONTROL POINTS
 #03 - CP P&N TRAV CAP 6" SOUTH OF EBT SW QUADRANT OF T. APPLE RIVER & BURGER - ELE. 705.28
 #12 - CP P&N TRAV CAP 7" WEST OF EBT IN FRONT OF HOUSE - ELE. 710.09

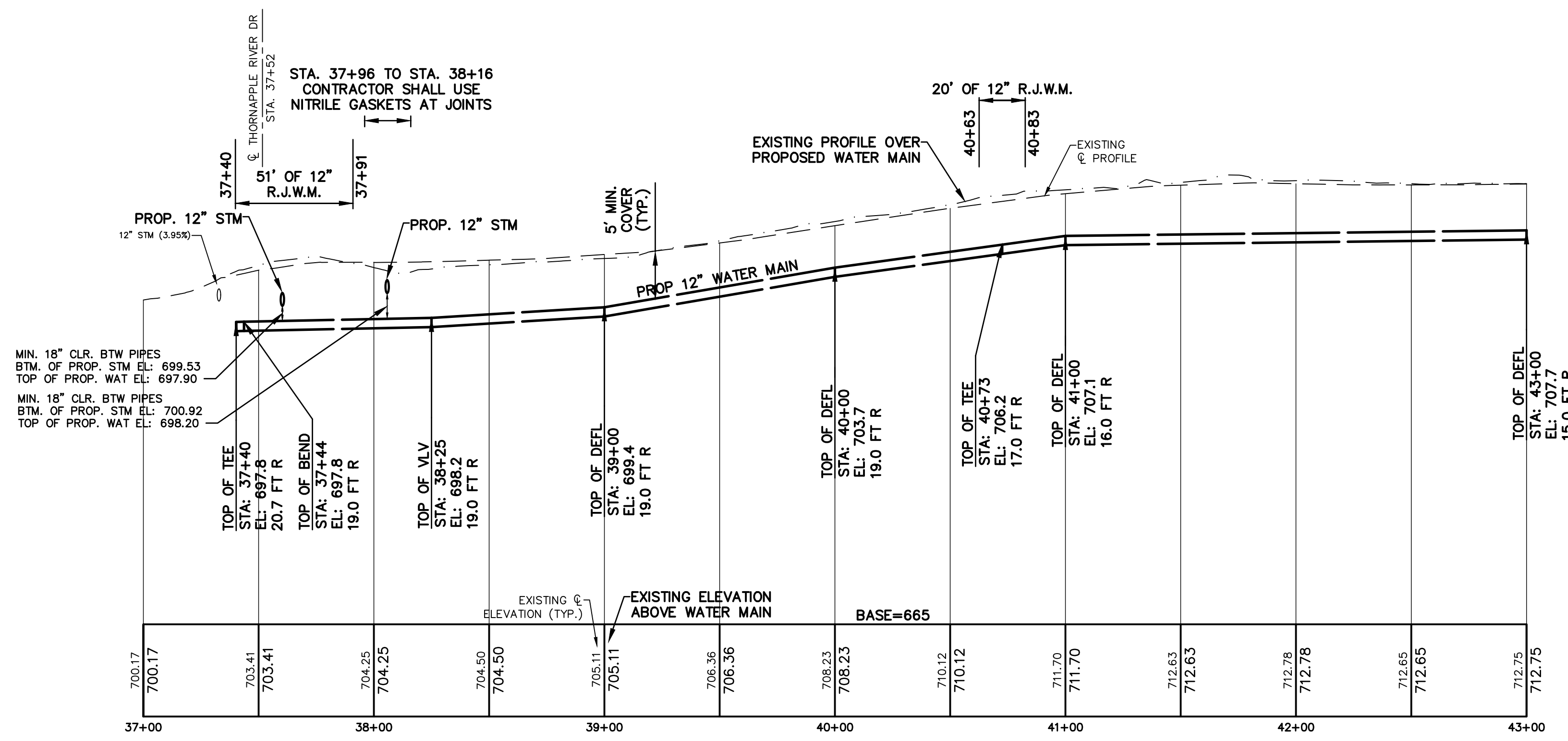
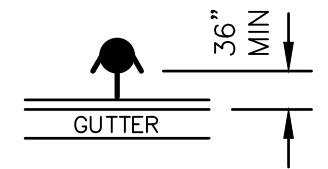


SCALES
 PLAN 1"=40'
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 HORIZ. 1"=40'
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REVISIONS		
NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 BURGER DRIVE
 FROM THORNAPPLE RIVER DR.
 TO
 100' EAST OF WESTRIDGE DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 6 of 67
 Check: Field JM
 Check: Office JS

(1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1.5 INCH CURB STOP AND BOX ON WATER SERVICE, 1.5 INCH WATER SERVICE, 1.5 INCH

(TYP. 5 LOCATIONS ON BURGER DR. - THIS SHEET)

(1) TEE, 12 INCH X 12 INCH X 6 INCH
(1) VALVE AND BOX, 6 INCH
(1) HYDRANT, 5 INCH (PER DETAIL W-4, STANDARD)
WATER MAIN, 6 INCH

(1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH CURB STOP AND BOX ON WATER SERVICE, 1 INCH WATER SERVICE, 1 INCH

(TYP. 5 LOCATIONS ON BURGER DR. - THIS SHEET)

SERVICE FOR #3180, #6555, AND #6579

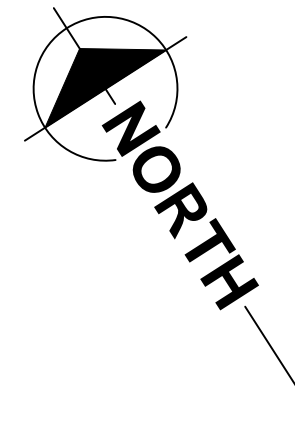
SERVICE FOR #6577, AND #6575

NEW SERVICE TO CONTINUE TO HOUSE/METER (NOT SHOWN) (TYP., FOR #3180, #6555, #6579, #6577, AND #6575)

WATER MAIN, 12 INCH (HP)

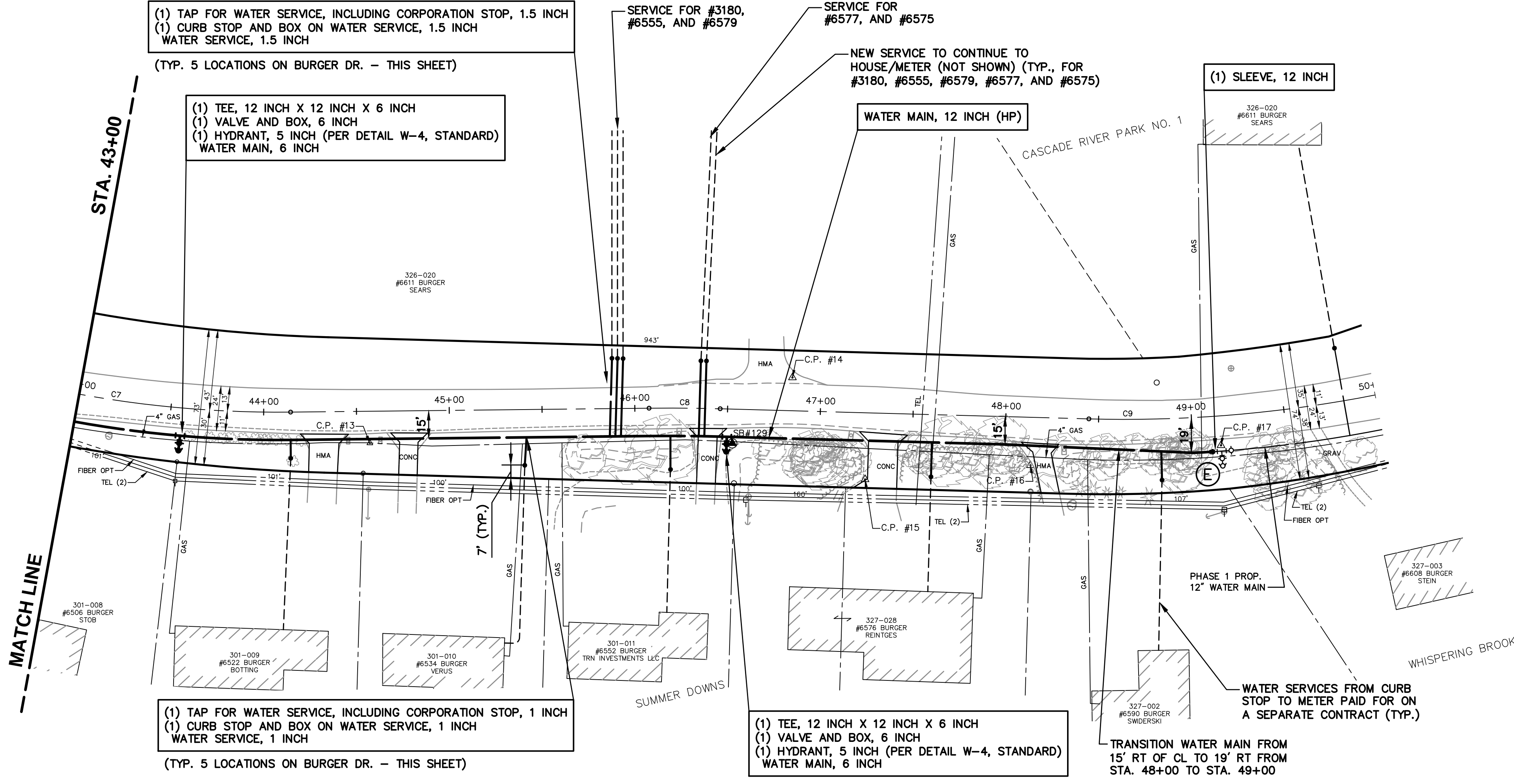
(1) SLEEVE, 12 INCH

CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C7	312'	600'	S43°04'28"E 308'
C8	38'	1000'	S56°52'06"E 38'
C9	253'	705'	S66°03'08"E 251'



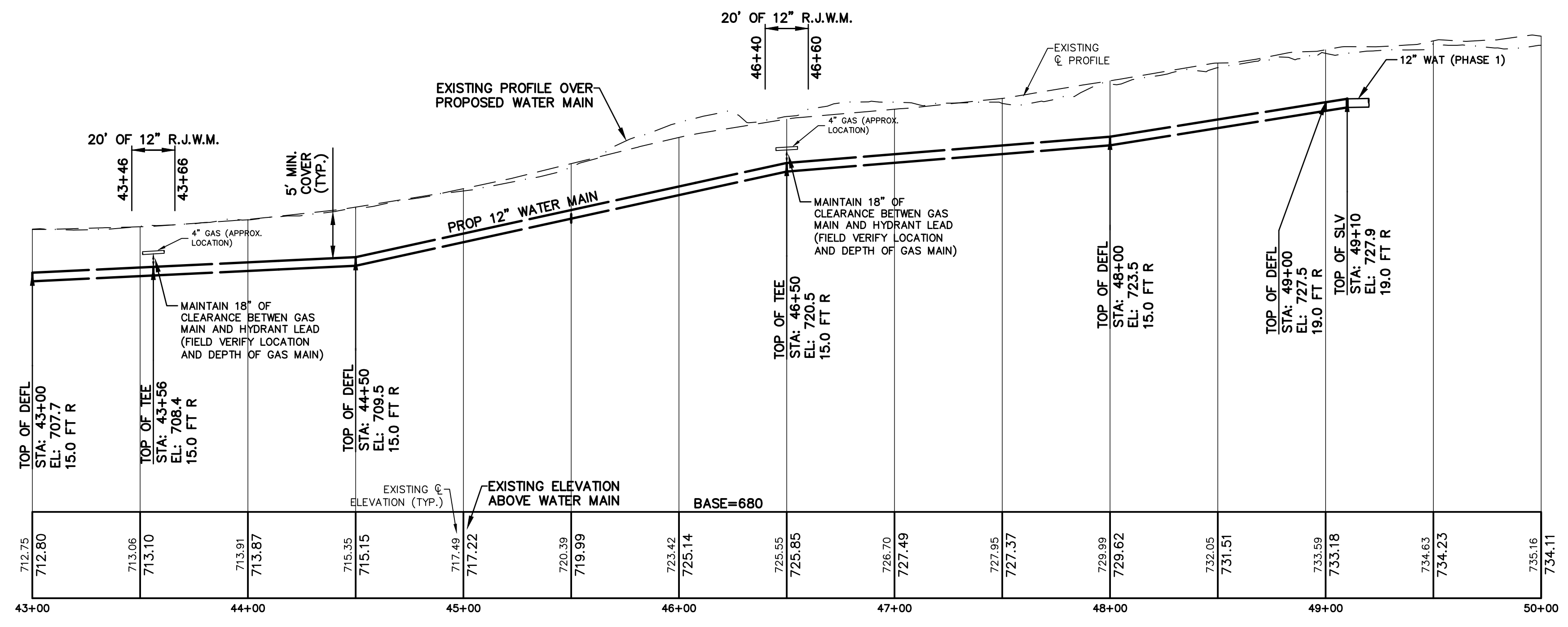
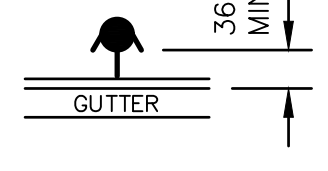
SCALES
PLAN 1"=40'
PROFILE 1"=40'
VERT. 1"=10'

CONTROL POINTS
#13 - CP P&N TRAV CAP 5FT S OF EB OPP PP 6534 - ELE. 715.28
#14 - CP MAG NAIL IN PAVEMENT LARGE PK 3FT SW OF MID EB WESTRIDGE - ELE. 726.36
#15 - CP 60D NAIL 0.4' NW OF CONC DR - ELE. 727.78
#16 - CP 60D NAIL 1' W OF E/B DR TO 6590 - ELE. 729.94
#17 - CP P&N TRAV CAP 3FT S OF EB OPP PP AT PI - ELE. 733.94



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REVISIONS		
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SURVEYED & DESIGNED BY:

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Engineers • Surveyors • Environmental • Laboratory

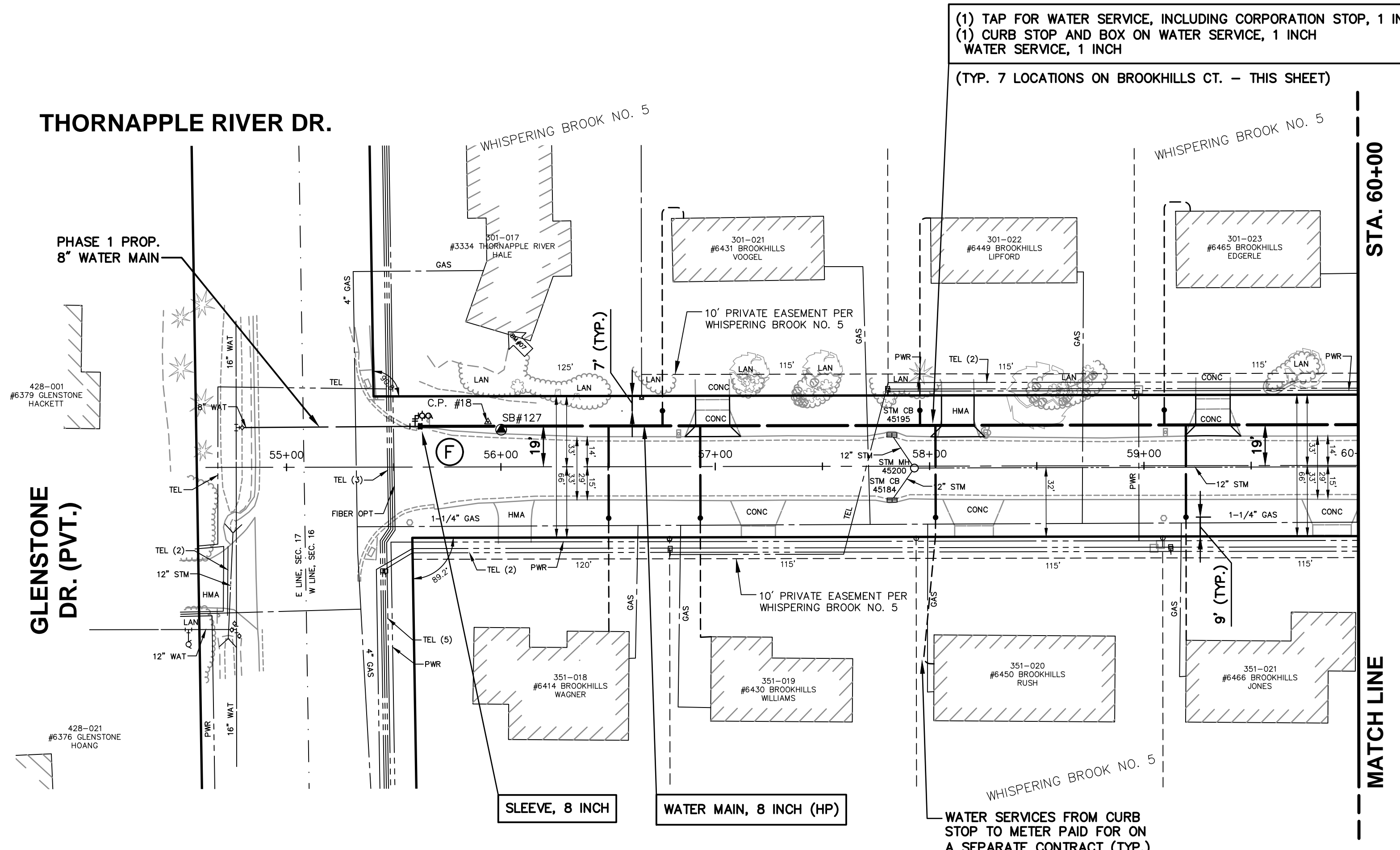
City of Grand Rapids
Public Services
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**WATER MAIN
IN
BURGER DRIVE**
FROM THORNAPPLE RIVER DR.
TO
100' EAST OF WESTRIDGE DR.
(BURGER-GOODWOOD NEIGHBORHOOD
WATER MAIN - PHASE 2)

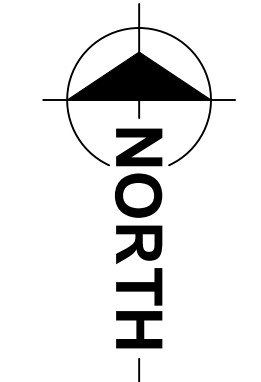
Drawn by JDH/PFN GPF No. 5892 Sheet No. 7 of 67
Check: Field JM
Check: Office JS

THORNAPPLE RIVER DR.

GLENSTONE DR. (PVT.)



- (1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
- (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH WATER SERVICE, 1 INCH
- (TYP. 7 LOCATIONS ON BROOKHILLS CT. - THIS SHEET)



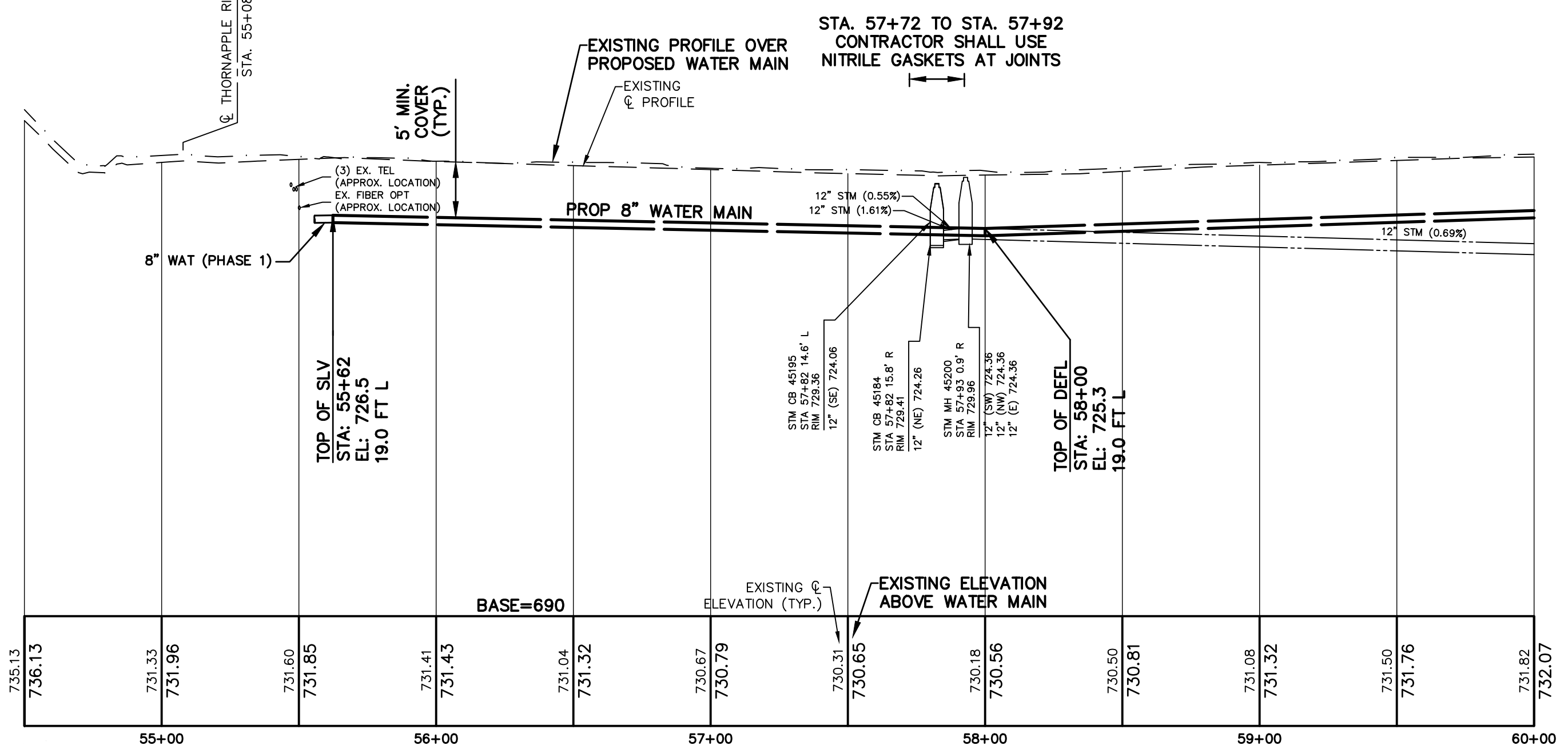
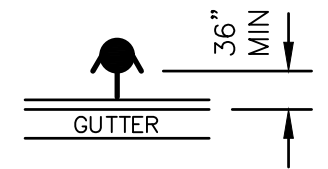
BENCHMARKS
 B.M. #07 - TOP NE CORNER CONC SLAB AT HSE
 LINE, 0.1' S & 4.9' W OF SE CORNER OF HSE. #3334
 - ELE. 737.49

CONTROL POINTS
 #18 - CP P&N TRAV CAP @ #3334 - ELE. 731.82

SCALES
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 PROFILE: 1"=40'
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SURVEYED & DESIGNED BY:

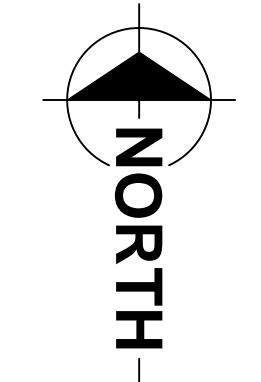
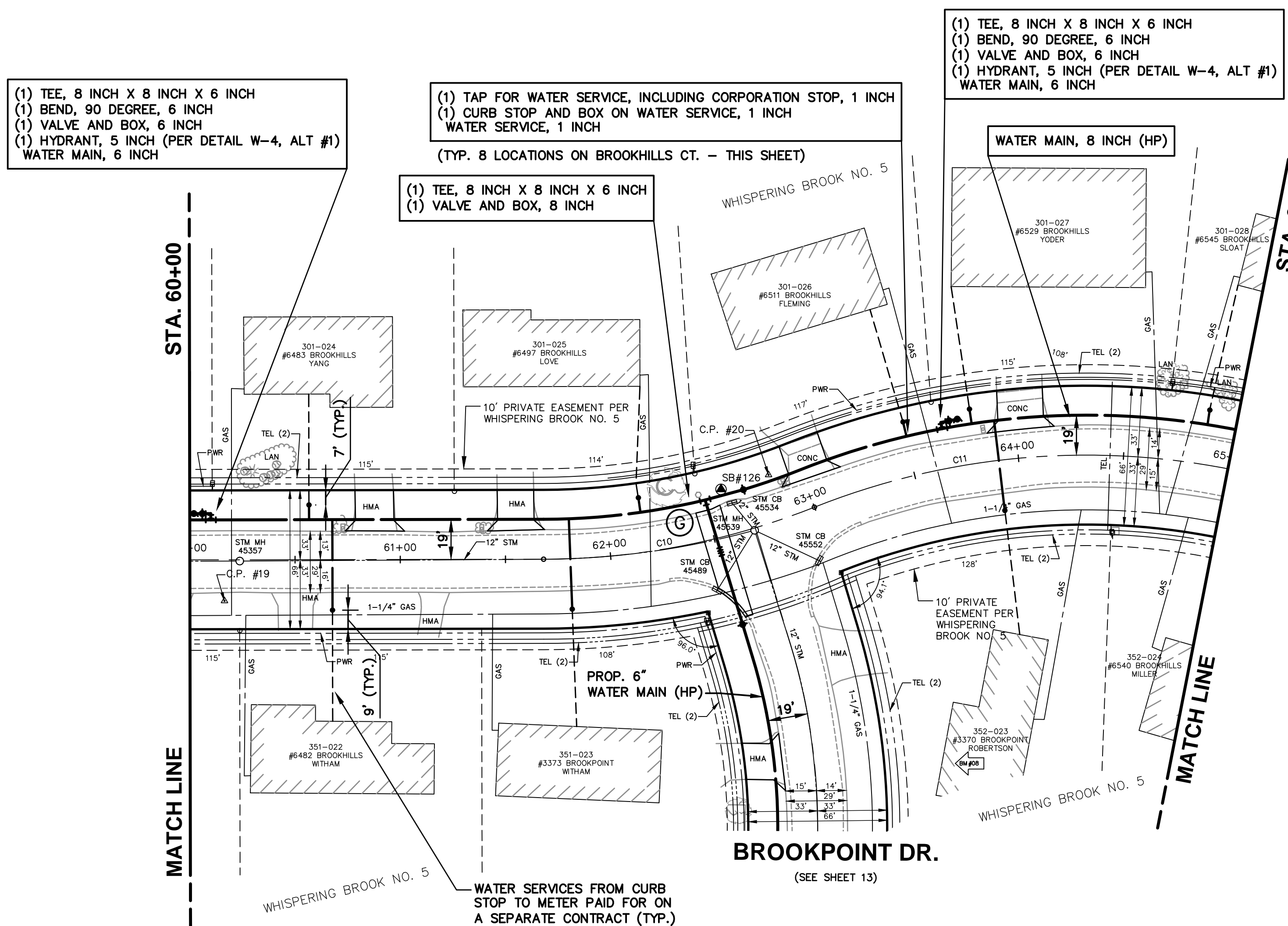
Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 BROOKHILLS COURT**

FROM THORNAPPLE RIVER DR.
 TO
 TRICKLEWOOD DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. 5892 Sheet No. 8 of 67
 Check: Field JM
 Check: Office JS



CURVE DATA				
CURVE #	LENGTH	RADIUS	CHORD	
C10	132'	350'	N79°06'36"E 131'	
C11	320'	350'	S85°29'13"E 309'	

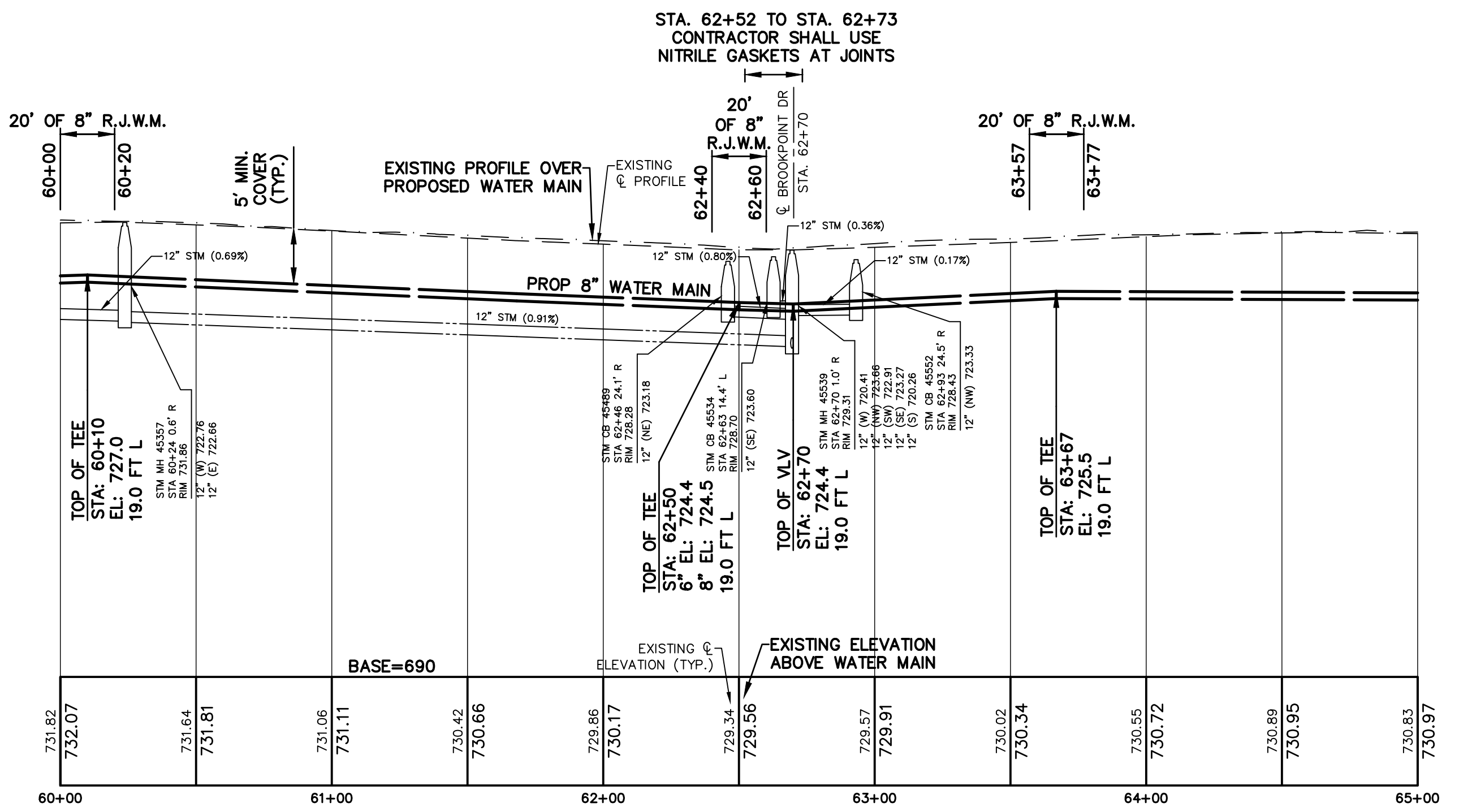
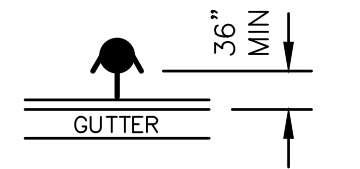
BENCHMARKS
 B.M. #08 - TOP SW COR CONC STEP. @ HSE #3370.
 0.7' ABOVE WALK. - ELE. 731.13

CONTROL POINTS
 #19 - CP P&N TRAV CAP & #6482 BROOKHILLS - ELE. 731.91
 #20 - CP P&N TRAV CAP BROOKPOINT DR & BROOKHILLS CT BN OF N EB BE OF CL BROOKPOINT - ELE. 729.99

SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 VERT. 1"=10'

WATER MAIN GENERAL NOTES

1. WATER MAIN CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE STANDARD CONSTRUCTION SPECIFICATIONS OF CITY OF GRAND RAPIDS, 2021 EDITION, AND ALL REVISIONS THEREOF.
2. DEPTH OF THE PROPOSED WATER MAIN SHALL BE 5'-9" FROM ROAD CENTERLINE GRADE TO CENTERLINE OF PIPE OR HAVE A MINIMUM OF 5'-0" OF COVER TO THE TOP OF THE PIPE UNLESS OTHERWISE NOTED ON DRAWINGS. ADJUSTMENT MAY BE REQUIRED TO AVOID CONFLICTS WITH EXISTING OR PROPOSED UTILITIES.
3. ALL PIPE TO HAVE NECESSARY JOINT RESTRAINTS PER SECTION 4.316 OF THE STANDARD CONSTRUCTION SPECIFICATIONS OF THE CITY OF GRAND RAPIDS, INCLUDING TABLE 4.3-7 AND DETAIL W-15.
4. ALL WATER MAIN TO BE ZINC-COATED. WATER SERVICES ARE NOT SUBJECT TO THIS REQUIREMENT.
5. WATER MAINS 6" DIAMETER AND LESS CALLED TO BE ABANDONED ON DRAWINGS DO NOT REQUIRE FILLING, BUT ALL OPEN ENDS ARE TO BE CAPPED AND PLUGGED WITH CONCRETE. COST TO BE INCLUDED IN ITEMS FOR LAYING NEW WATER MAIN.
6. EXPOSE ALL UNDERGROUND UTILITIES AT POTENTIAL POINTS OF CONFLICT BEFORE LAYING WATER MAIN TO DETERMINE WHETHER TO GO OVER OR UNDER THE EXISTING UTILITIES. THE WATER MAIN SHALL BE DEFLECTED TO GO OVER OR UNDER EXISTING UTILITIES WHEN REQUIRED BY THE ENGINEER. 45° BENDS TO ACCOMPLISH ELEVATION CHANGES OF THE WATER MAIN WILL ONLY BE USED WHEN REQUIRED OR APPROVED BY THE ENGINEER.
7. REPLACEMENT OF WATER SERVICES SHALL BE A MINIMUM OF 1" COPPER FOR RESIDENTIAL PROPERTIES AND 1-1/2" COPPER FOR COMMERCIAL PROPERTIES.
8. FINAL DETERMINATION FOR REPLACEMENT OR RECONNECTION OF ALL WATER SERVICES INCLUDING THE SIZE SHALL BE AS REQUIRED BY THE ENGINEER & WATER DEPARTMENT. THIS MAY REQUIRE DISCUSSION BETWEEN THE ENGINEER, WATER DEPARTMENT AND THE PROPERTY OWNER.
9. CURB AND GUTTER SHALL BE REMOVED AND REPLACED WHEN LAYING WATER SERVICES UNDER IT. NO TUNNELING UNDER THE CURB AND GUTTER WILL BE ALLOWED TO LAY WATER SERVICES EXCEPT WHERE THE WATER SERVICE IS DIRECTIONALLY BORED.
10. FOR ALL ABANDONED UTILITIES THAT ARE REMOVED AS PART OF CONSTRUCTION OF A NEW UTILITY SUCH REMOVAL OF THE ABANDONED UTILITY TO LAY THE NEW UTILITY SHALL BE CONSIDERED TO BE INCLUDED IN THE ITEM FOR LAYING OF THE NEW UTILITY AND WILL NOT BE PAID FOR SEPARATELY. THIS IS ALSO THE CASE FOR THOSE UTILITIES THAT ARE DESIGNATED TO BE ABANDONED ON THE PLANS BUT END UP BEING REMOVED IN ORDER TO LAY A NEW UTILITY.
11. NEW HYDRANTS TO BE SET A MINIMUM OF 36" FROM FACE OF CURB TO FACE OF HYDRANT.
12. CURB STOPS IN PAVED AREAS (DRIVEWAYS, ETC) SHALL BE SET IN A VALVE BOX CASING (SEE CURB BOX IN PAVEMENT DETAIL).
13. THE CONTRACTOR IS TO VERIFY THE LOCATIONS OF EXISTING SEPTIC TANKS/FIELDS (INCLUDED IN PLACING WATER SERVICES). PROVIDE A MINIMUM OF 6" CLEARANCE BETWEEN EXISTING SERVICES OR UTILITIES AND THE PROPOSED WATER SERVICE. LOCATIONS OF PROPOSED WATER TAPS AND CONNECTIONS TO EXISTING WATER SERVICES SHALL BE APPROVED BY THE ENGINEER.
14. ALL 1" WATER SERVICES SHALL HAVE A VADLE™ CURB BOX LOCK INSTALLED WITH THE CURB BOX. INSTALLATIONS IN SIDEWALK OR DRIVEWAY LOCATIONS SHALL BE FURTHER STABILIZED BY PLACING A BRICK IMMEDIATELY UNDER THE BASE OF THE CURB BOX LOCK.
15. CURB STOP BOXES TO BE PLACED 7' OFF THE RIGHT-OF-WAY LINE AND A MINIMUM OF 2' FROM ANY GAS MAIN, UNLESS OTHERWISE SPECIFIED BY ENGINEER.
16. CONTRACTOR TO PLACE 2' TAIL ONTO THE PRIVATE SIDE OF THE CURB STOP BOX THAT IS EITHER CRIMPED OR CAPPED OFF.
17. CONTRACTOR TO MAINTAIN A MINIMUM OF 2' FROM THE EDGE OF CATCH BASINS AND DRAINAGE STRUCTURES TO THE EDGE OF THE WATER MAIN



THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

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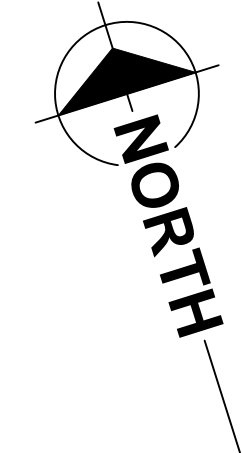
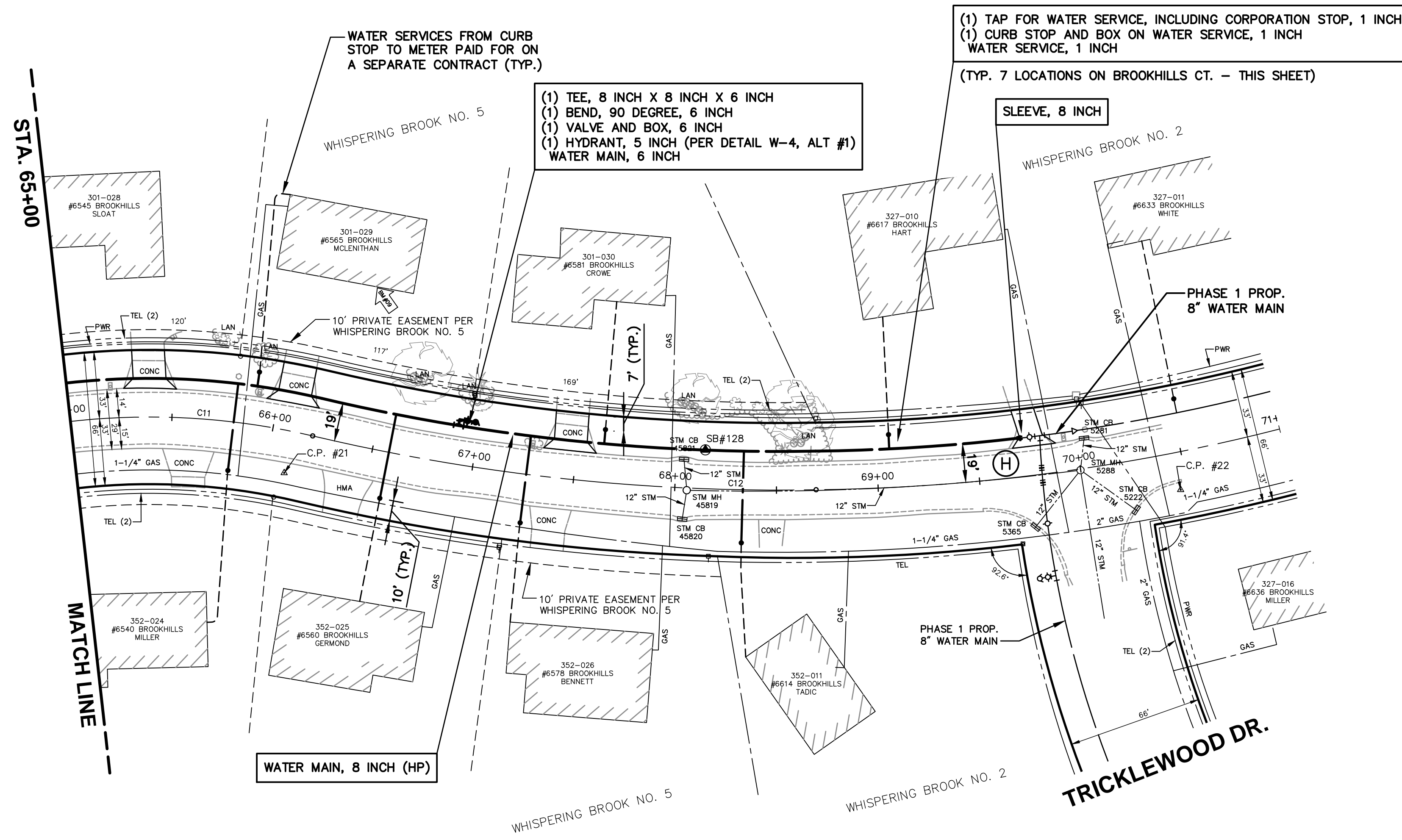
SURVEYED & DESIGNED BY:

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Drawn by JDH/PFN GPF No. 5892 Sheet No. 9 of 67
 Check: Field JM
 Check: Office JS



CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
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C12	250'	1001'	566.26' ± 35'E 249'

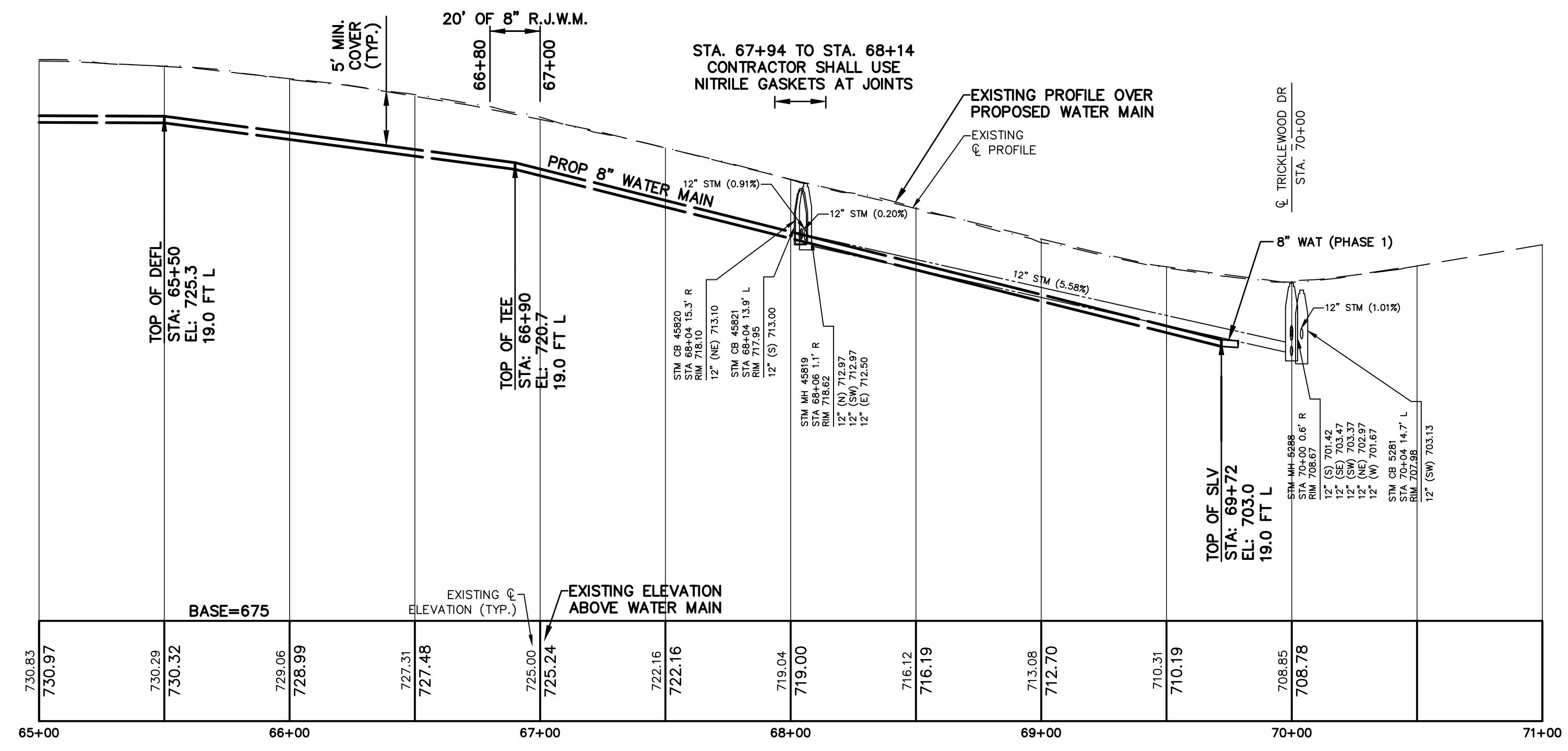
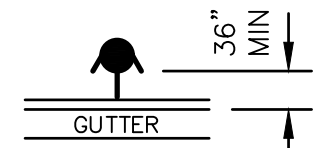
BENCHMARKS
 B.M. #09 - TOP SW CORNER CONC STEP. 0.8' ABOVE WALK. - ELE. 730.87

CONTROL POINTS
 #21 - CP P&N TRAV CAP #6560 BROOKHILLS - ELE. 728.86
 #22 - CP P&N TRAV CAP 3FT SW BC SE END CURB TRICKLEWOOD AND BROOKHILLS - ELE. 710.02

SCALES
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 PROFILE: 1"=40'
 VERT. 1"=10'

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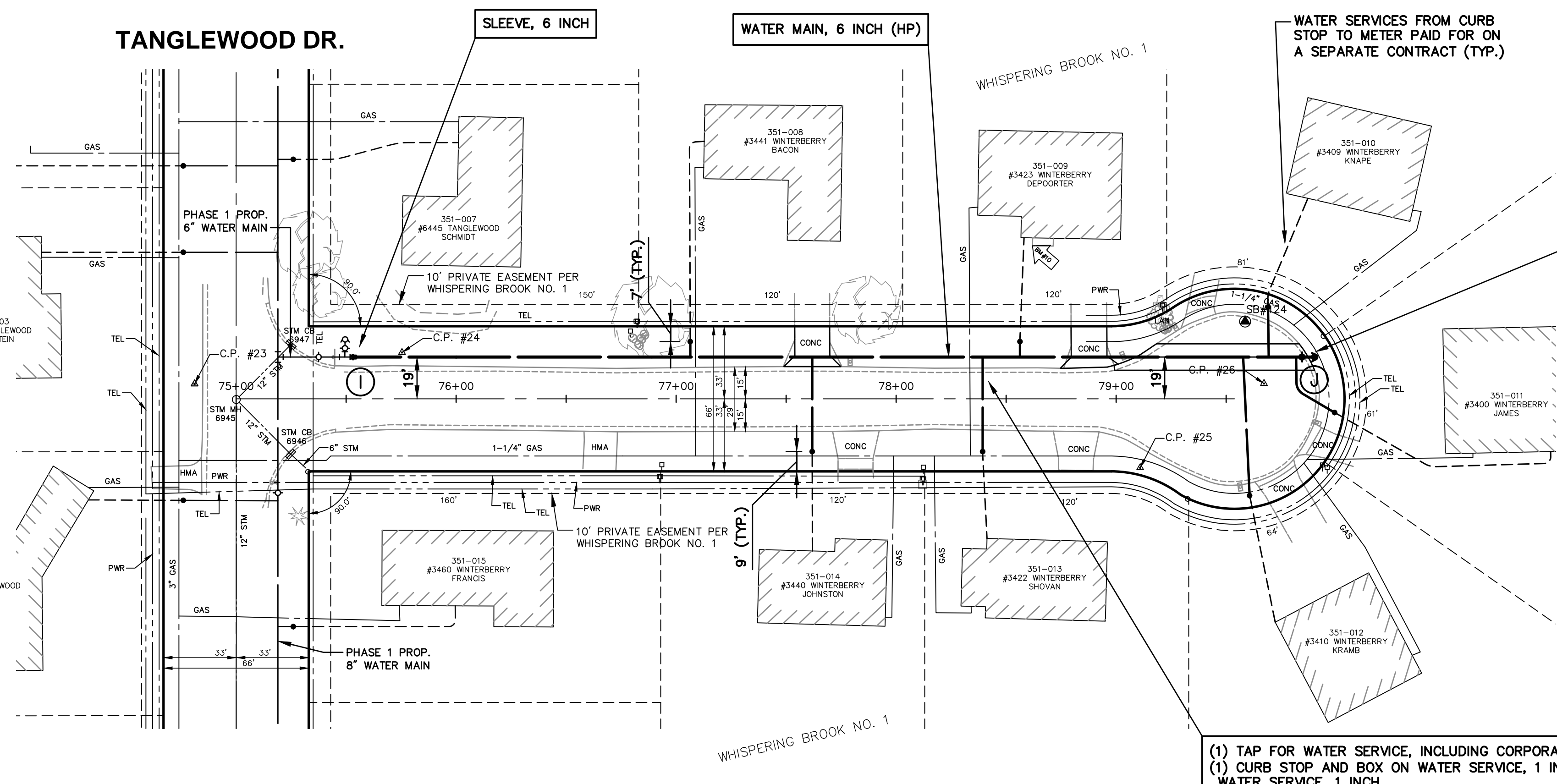
REVISIONS		
NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:
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**WATER MAIN
 IN
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 FROM THORNAPPLE RIVER DR.
 TO
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 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by: JDH/PFN GPF No. 5892 Sheet No. 10 of 67
 Check: Field JM
 Check: Office JS



SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 HORZ. 1"=40'
 VERT. 1"=10'

BENCHMARKS
 B.M. #10 - TOP SE CORNER CONC STEP, 0.5' ABOVE WALK. - ELE. 709.46

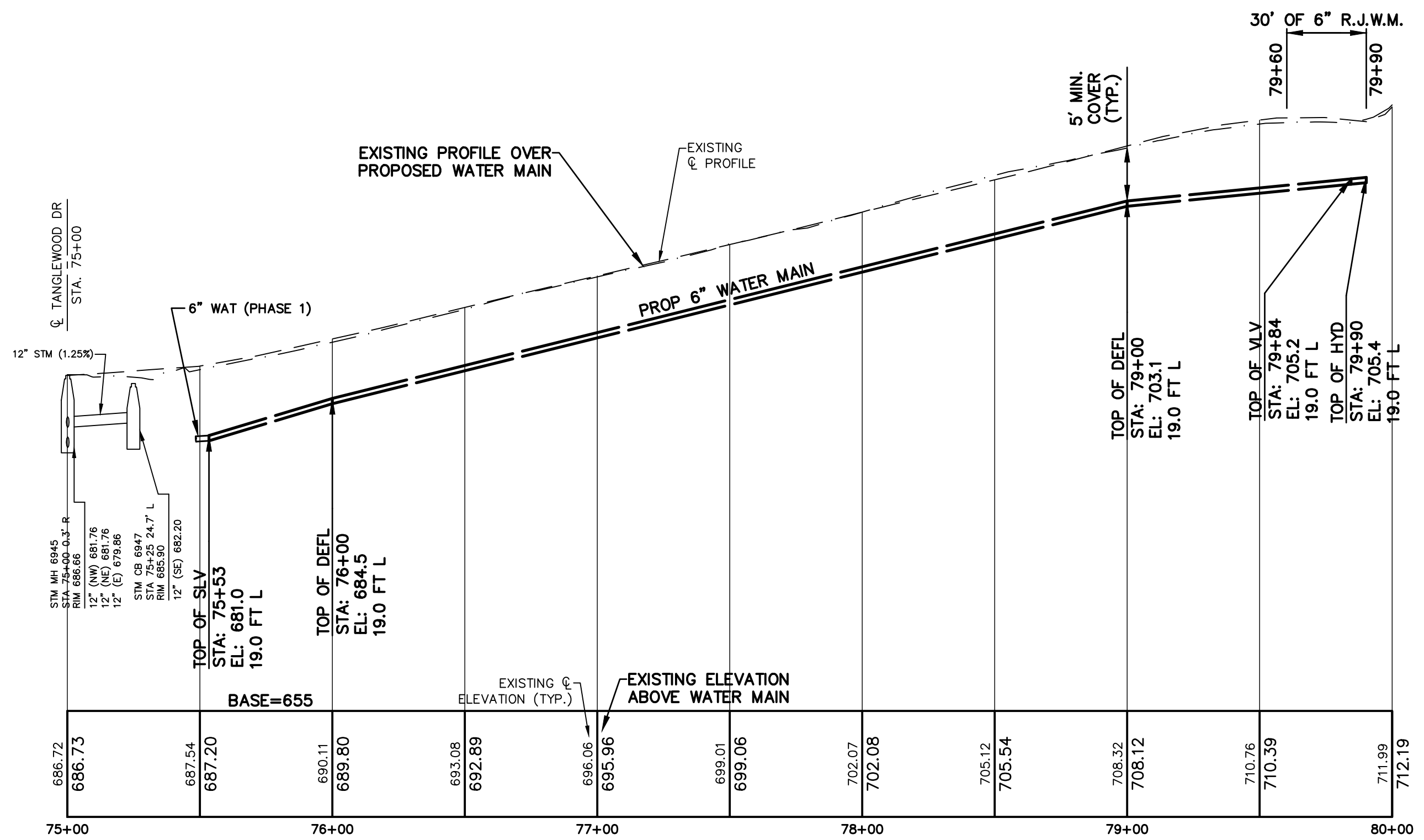
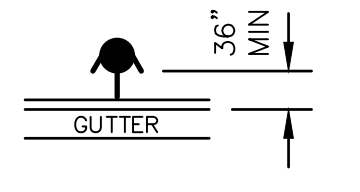
CONTROL POINTS
 #23 - CP P&N TRAV CAP 4FT S EB TANGLEWOOD 6FT W EDGE DRIVE 6454 - ELE. 686.91
 #24 - CP P&N TRAV CAP WINTERBERRY & TANGLEWOOD 6 W OF EB S FACE HSE 6445 - ELE. 688.63
 #25 - CP P&N TRAV CAP WINTERBERRY @ CUL DE SAC 15 N OF DR TO HSE 3422 - ELE. 709.90
 #26 - CP MAG NAIL IN PAVEMENT - ELE. 710.92

(1) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH (PER DETAIL W-4, STANDARD)
 WATER MAIN, 6 INCH

(1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
 (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH WATER SERVICE, 1 INCH
 (TYP. 7 LOCATIONS ON WINTERBERRY CT.)

WATER MAIN GENERAL NOTES

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REVISIONS		
NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:

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City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 WINTERBERRY COURT
 FROM TANGLEWOOD DR.
 TO
 NORTH END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by: JDH/PFN GPF No. 5892 Sheet No. 11 of 67
 Check: Field JM
 Check: Office JS

(1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
 (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH
 WATER SERVICE, 1 INCH

(TYP. 3 LOCATIONS ON BROOKPOINT DR. - THIS SHEET)

(1) TEE, 6 INCH X 6 INCH X 6 INCH
 (1) BEND, 90 DEGREE, 6 INCH
 (1) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH (PER DETAIL W-4, ALT #1)
 WATER MAIN, 6 INCH

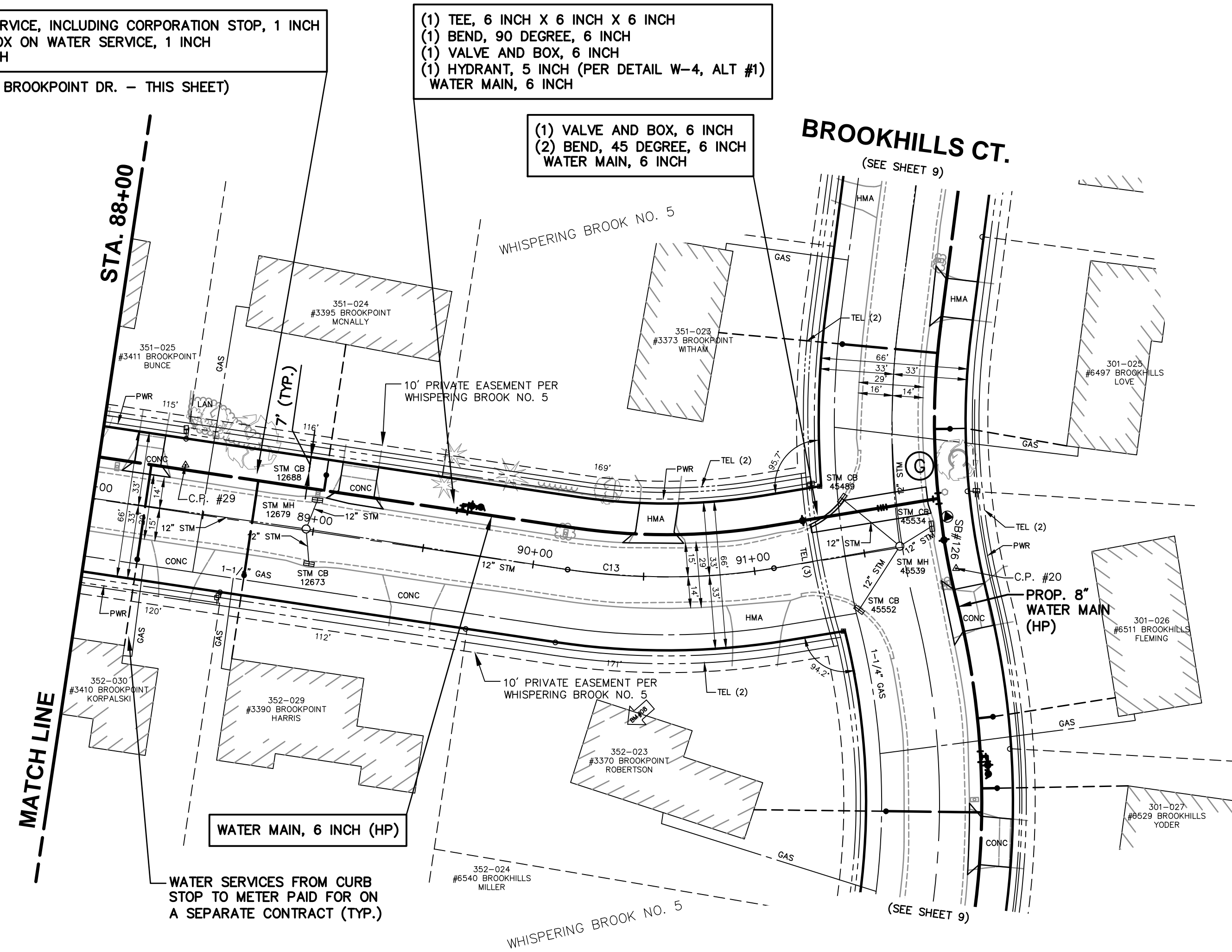
(1) VALVE AND BOX, 6 INCH
 (2) BEND, 45 DEGREE, 6 INCH
 WATER MAIN, 6 INCH



BENCHMARKS
 B.M. #08 - TOP SW COR CONC STEP. @ HSE #3370.
 0.7' ABOVE WALK. - ELE. 731.13

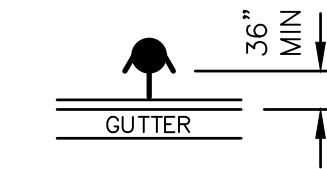
CONTROL POINTS
 #20 - CP P&N TRAV CAP BROOKPOINT DR &
 BROOKHILLS CT 8 N OF N EB BE OF CL BROOKPOINT
 - ELE. 729.99
 #29 - CP P&N TRAV CAP BROOKPOINT DR 4.5 W OF
 EB @ S PROP LINE HSE 3395 - ELE. 712.52

SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 HORZ. 1"=40'
 VERT. 1"=10'



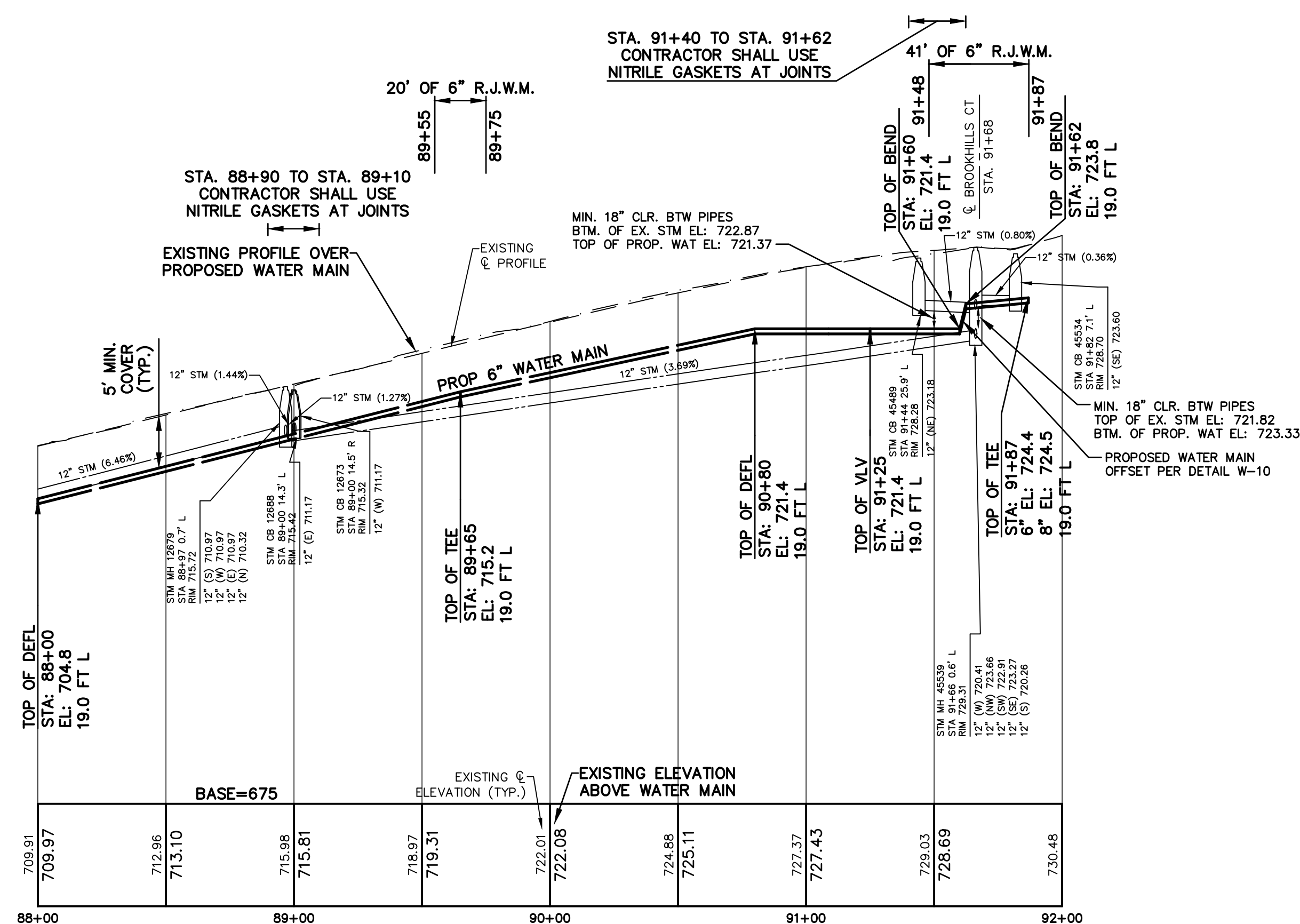
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17. CONTRACTOR TO MAINTAIN A MINIMUM OF 2' FROM THE EDGE OF CATCH BASINS AND DRAINAGE STRUCTURES TO THE EDGE OF THE WATER MAIN

(A) - (NN) WATER MAIN TESTING LIMITS



THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

REVISIONS

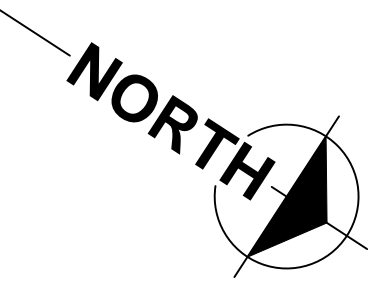
NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:
Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department
**WATER MAIN
 IN
 BROOKPOINT DRIVE
 FROM TANGLEWOOD DR.
 TO
 BROOKHILLS CT.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 13 of 67
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TANGLEWOOD DR.

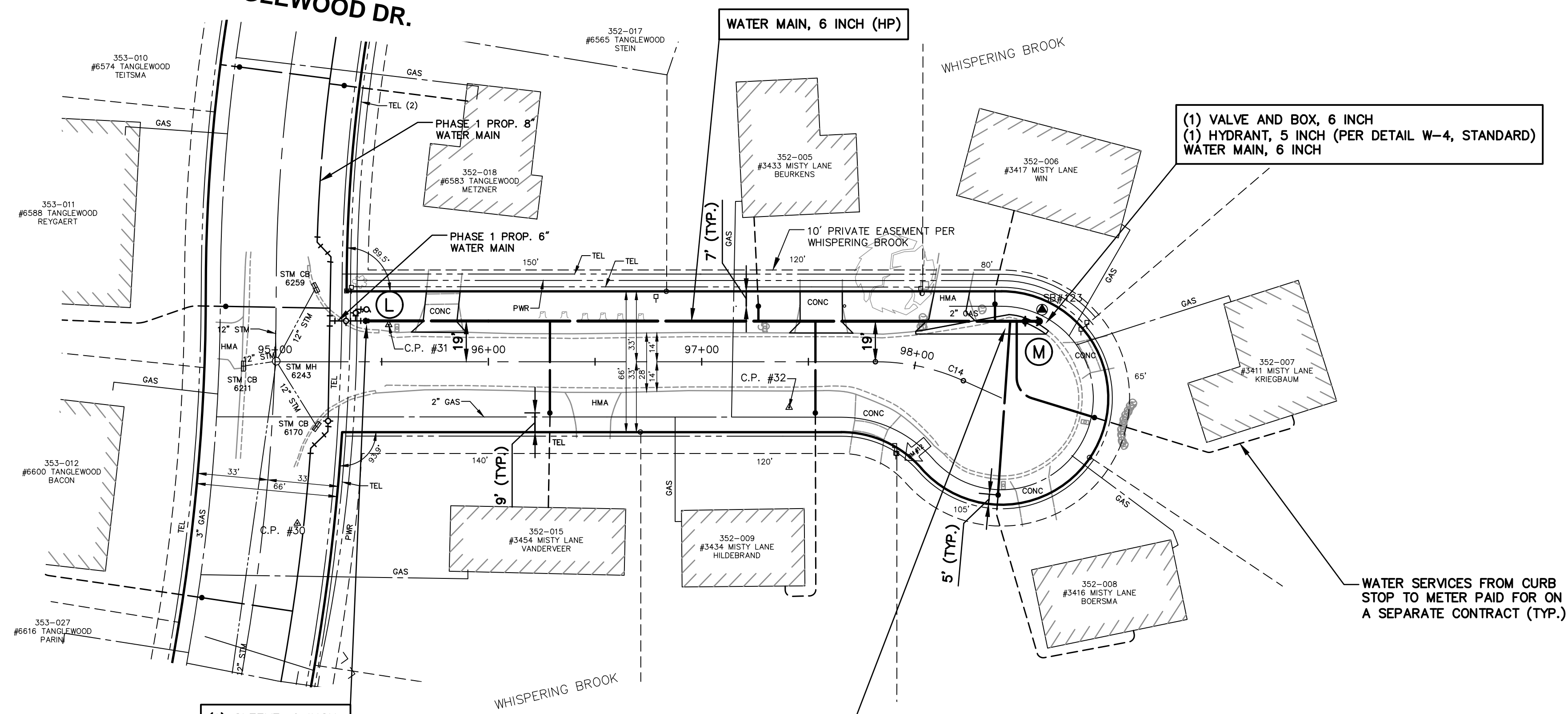


CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C14	43'	100'	N20°52'38"W 42'

BENCHMARKS
 B.M. #12 - SET MAG VERTICAL IN W-ROOT OF 24" TRIPLE COTTONWOOD. - ELE. 698.16

CONTROL POINTS
 #30 - S OF HSE #3454 - ELE. 684.18
 #31 - CP P&N TRAV CAP 4FT SE MB 6583 MISTY LN 3FT SW EB - ELE. 684.30
 #32 - CP P&N TRAV CAP AT N FACE HSE 3434 EXT 8 E OF EB - ELE. 694.15

SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 VERT. 1"=10'



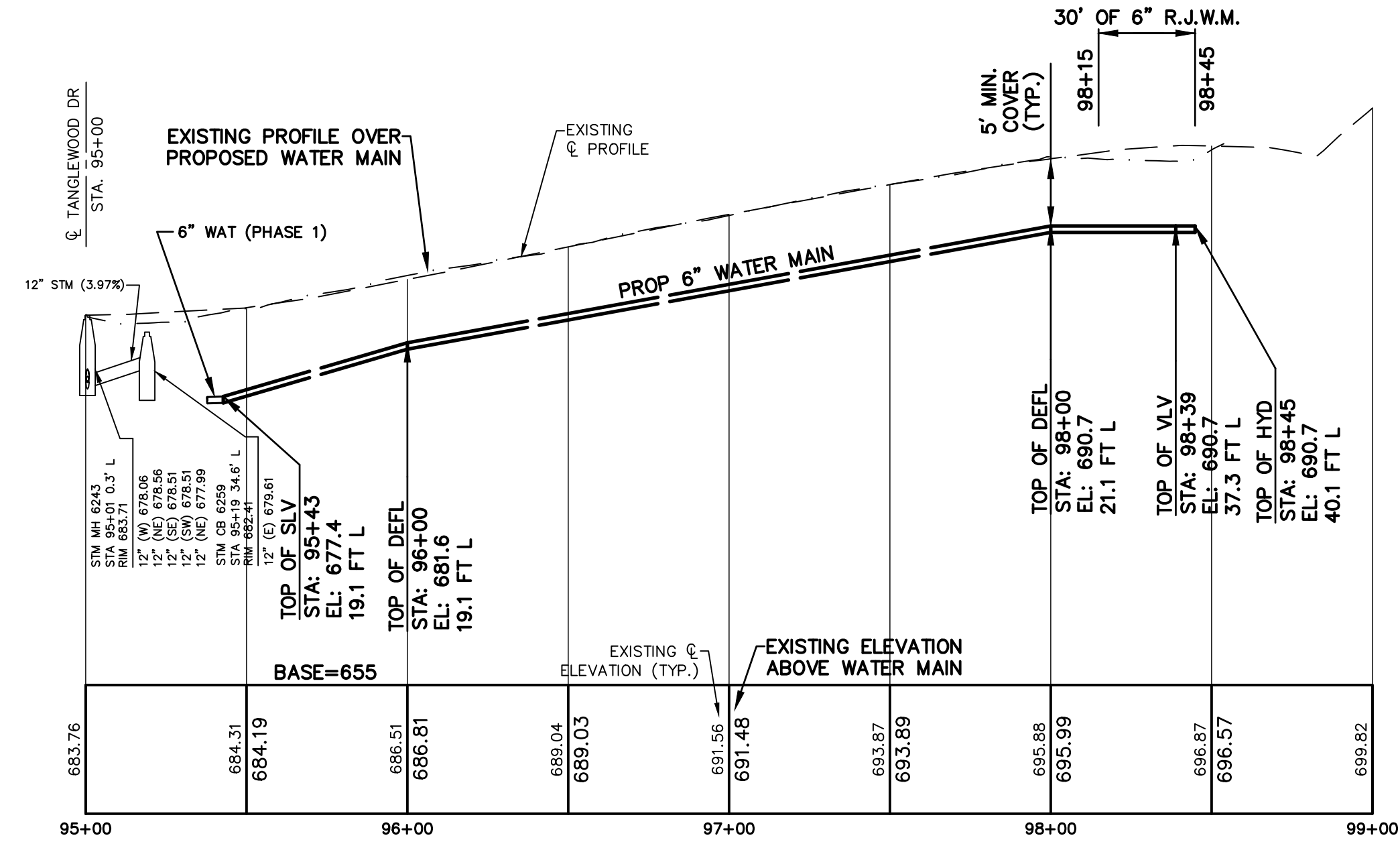
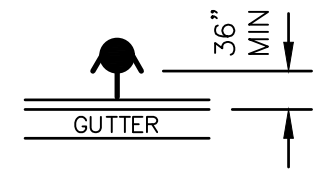
(1) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH (PER DETAIL W-4, STANDARD)
 WATER MAIN, 6 INCH

(1) SLEEVE, 6 INCH
 (1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
 (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH
 WATER SERVICE, 1 INCH
 (TYP. 6 LOCATIONS ON MISTY CT.)

WATER SERVICES FROM CURB STOP TO METER PAID FOR ON A SEPARATE CONTRACT (TYP.)

WATER MAIN GENERAL NOTES

1. WATER MAIN CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE STANDARD CONSTRUCTION SPECIFICATIONS OF CITY OF GRAND RAPIDS, 2021 EDITION, AND ALL REVISIONS THEREOF.
2. DEPTH OF THE PROPOSED WATER MAIN SHALL BE 5'-9" FROM ROAD CENTERLINE GRADE TO CENTERLINE OF PIPE OR HAVE A MINIMUM OF 5'-0" OF COVER TO THE TOP OF THE PIPE UNLESS OTHERWISE NOTED ON DRAWINGS. ADJUSTMENT MAY BE REQUIRED TO AVOID CONFLICTS WITH EXISTING OR PROPOSED UTILITIES.
3. ALL PIPE TO HAVE NECESSARY JOINT RESTRAINTS PER SECTION 4.3.16 OF THE STANDARD CONSTRUCTION SPECIFICATIONS OF THE CITY OF GRAND RAPIDS, INCLUDING TABLE 4.3-7 AND DETAIL W-15.
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5. WATER MAINS 6" DIAMETER AND LESS CALLED TO BE ABANDONED ON DRAWINGS DO NOT REQUIRE FILLING, BUT ALL OPEN ENDS ARE TO BE CAPPED AND PLUGGED WITH CONCRETE. COST TO BE INCLUDED IN ITEMS FOR LAYING NEW WATER MAIN.
6. EXPOSE ALL UNDERGROUND UTILITIES AT POTENTIAL POINTS OF CONFLICT BEFORE LAYING WATER MAIN TO DETERMINE WHETHER TO GO OVER OR UNDER THE EXISTING UTILITIES. THE WATER MAIN SHALL BE DEFLECTED TO GO OVER OR UNDER EXISTING UTILITIES WHEN REQUIRED BY THE ENGINEER. 45° BENDS TO ACCOMPLISH ELEVATION CHANGES OF THE WATER MAIN WILL ONLY BE USED WHEN REQUIRED OR APPROVED BY THE ENGINEER.
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8. FINAL DETERMINATION FOR REPLACEMENT OR RECONNECTION OF ALL WATER SERVICES INCLUDING THE SIZE SHALL BE AS REQUIRED BY THE ENGINEER & WATER DEPARTMENT. THIS MAY REQUIRE DISCUSSION BETWEEN THE ENGINEER, WATER DEPARTMENT AND THE PROPERTY OWNER.
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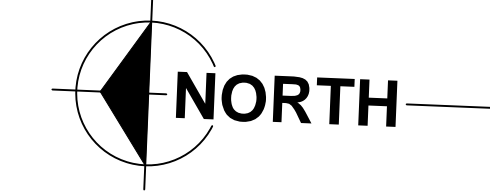
SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 MISTY LANE COURT
 FROM TANGLEWOOD DR.
 TO
 NORTH END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 14 of 67
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 Check: Office JS

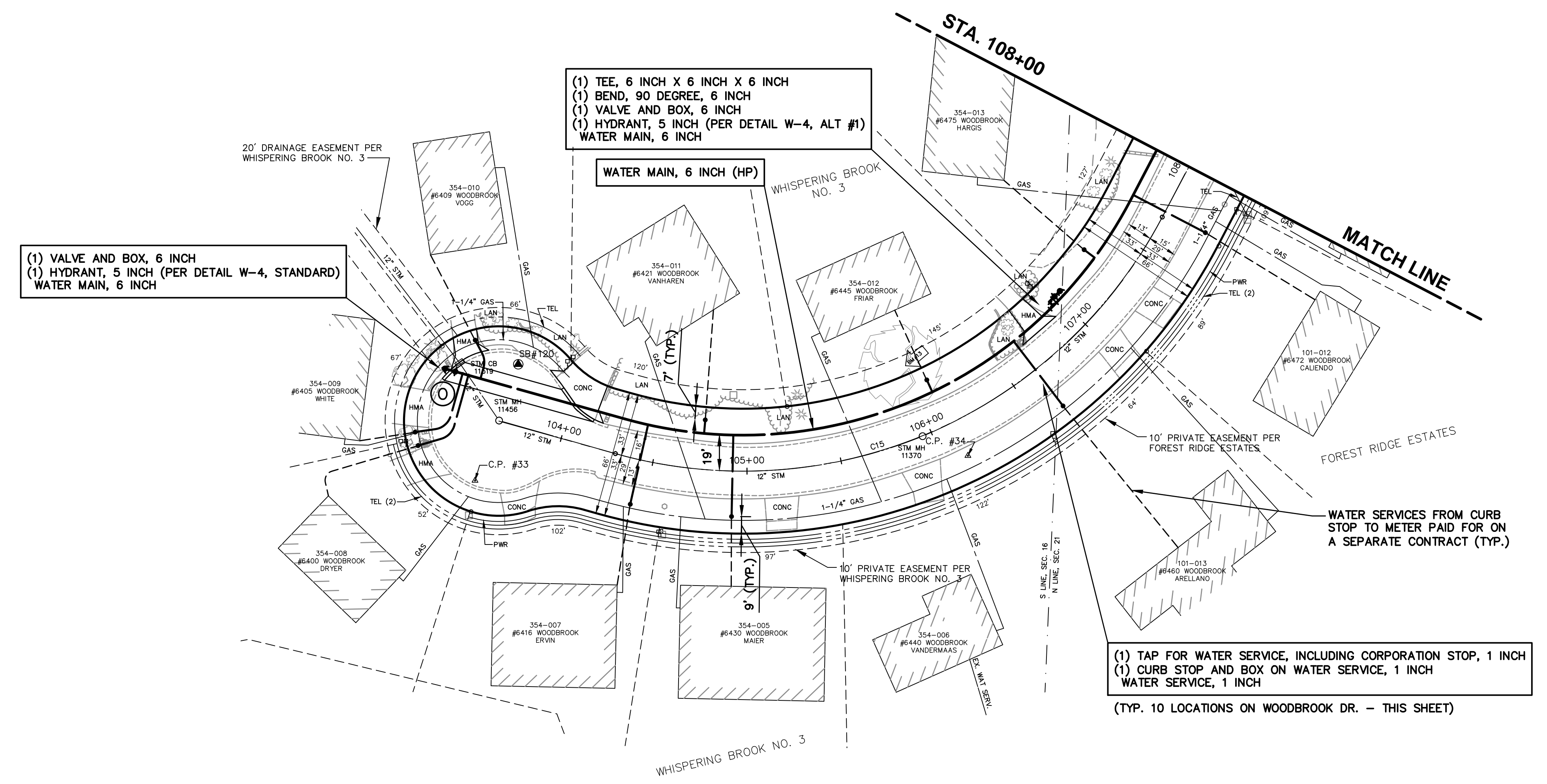


CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C15	340'	250'	S25°47'12"E 314'

BENCHMARKS
 B.M. #13 - SET MAG VERTICAL IN S-ROOT OF 34" OAK @ HSE #6445. - ELE. 732.84

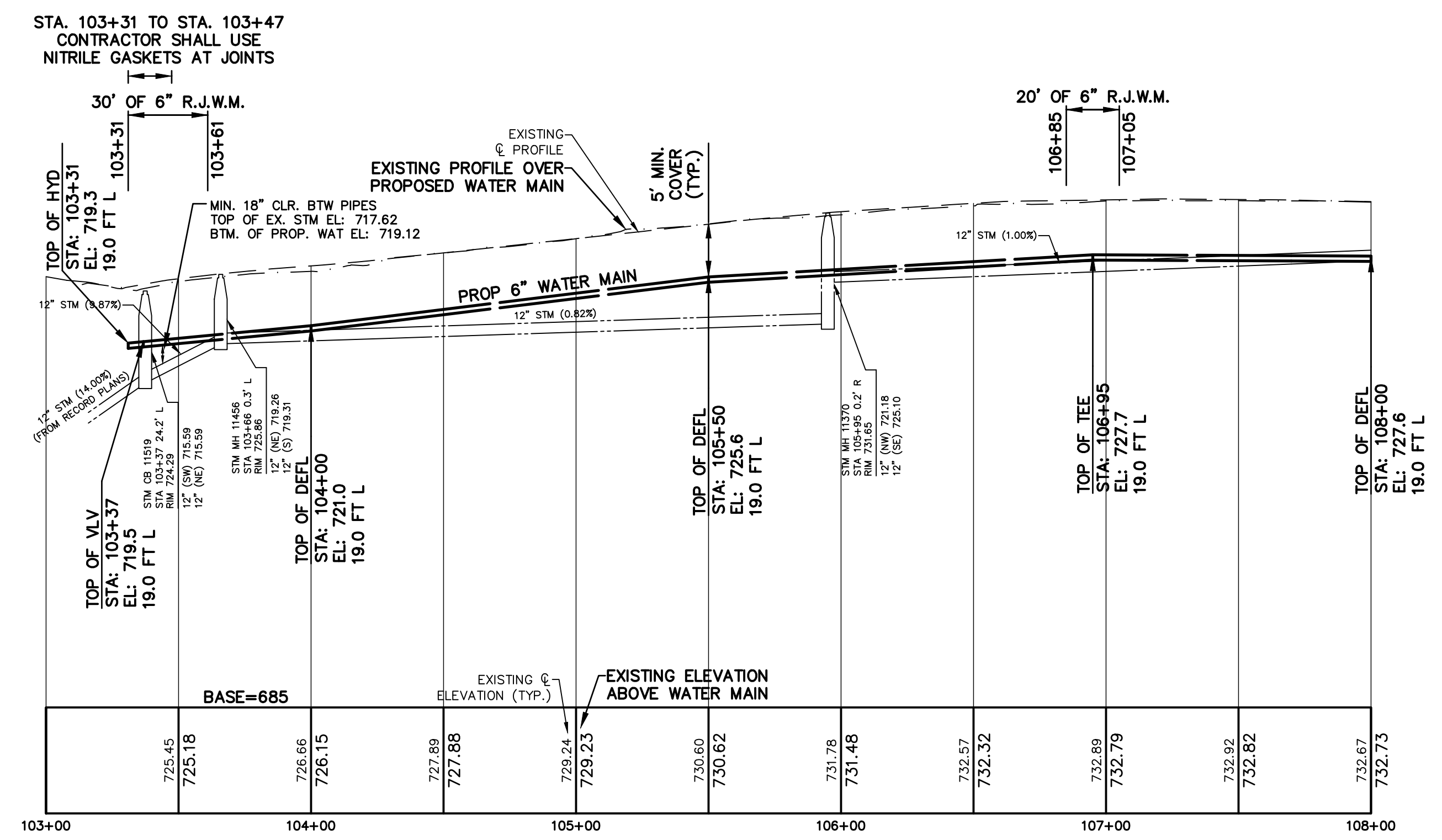
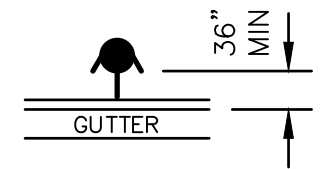
CONTROL POINTS
 #33 - CP MAG NAIL IN PAVEMENT - ELE. 725.20'
 #34 - CP P&N TRAV CAP - ELE. 732.16'

SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 HORZ. 1"=40'
 VERT. 1"=10'



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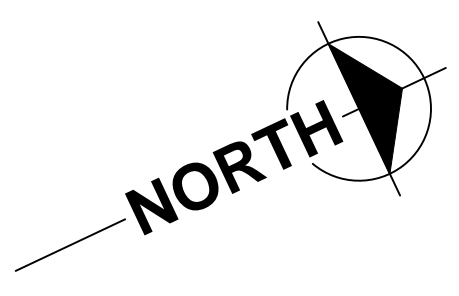
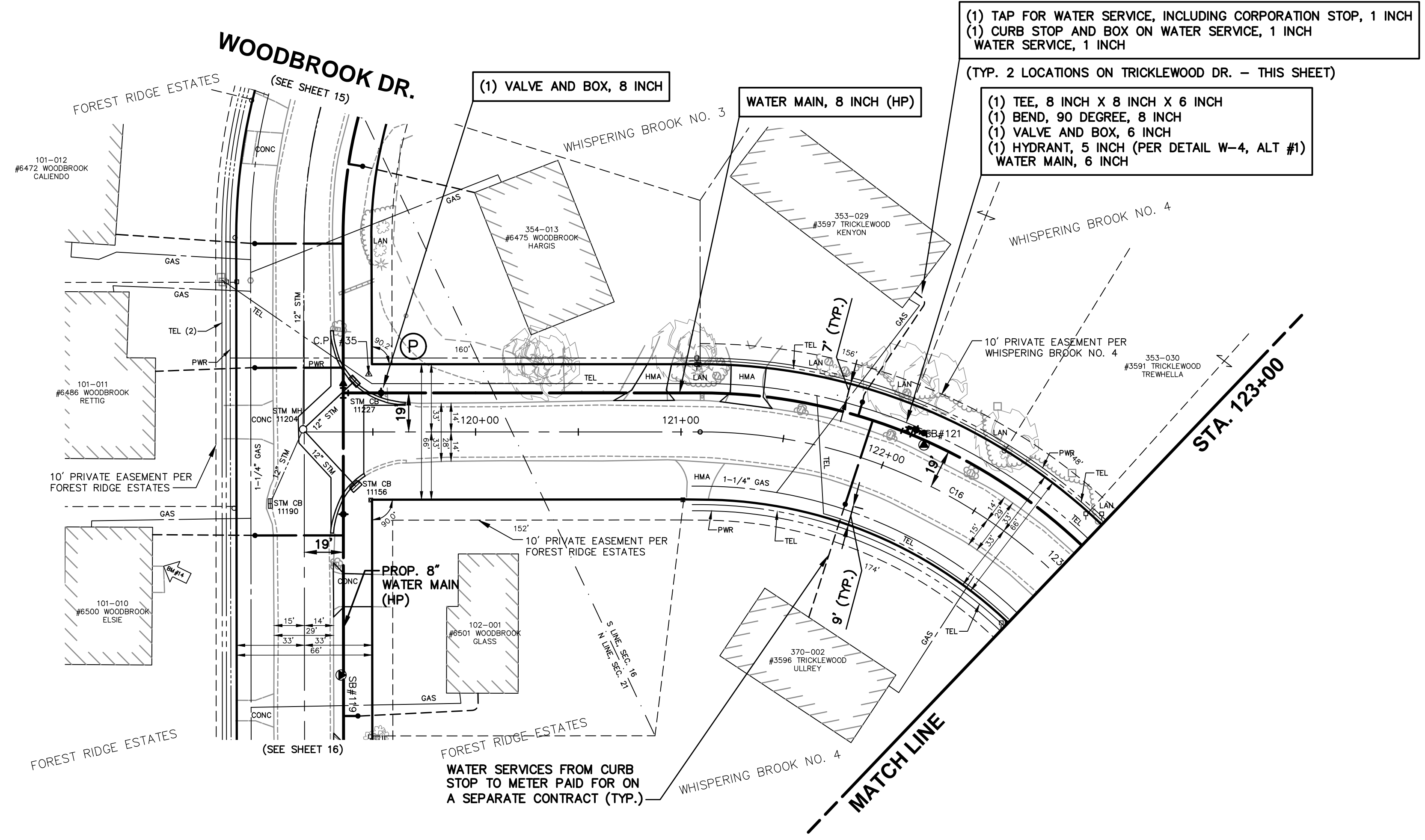
SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 WOODBROOK DRIVE
 FROM NORTH END
 TO
 RIDGEMONT DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 15 of 67
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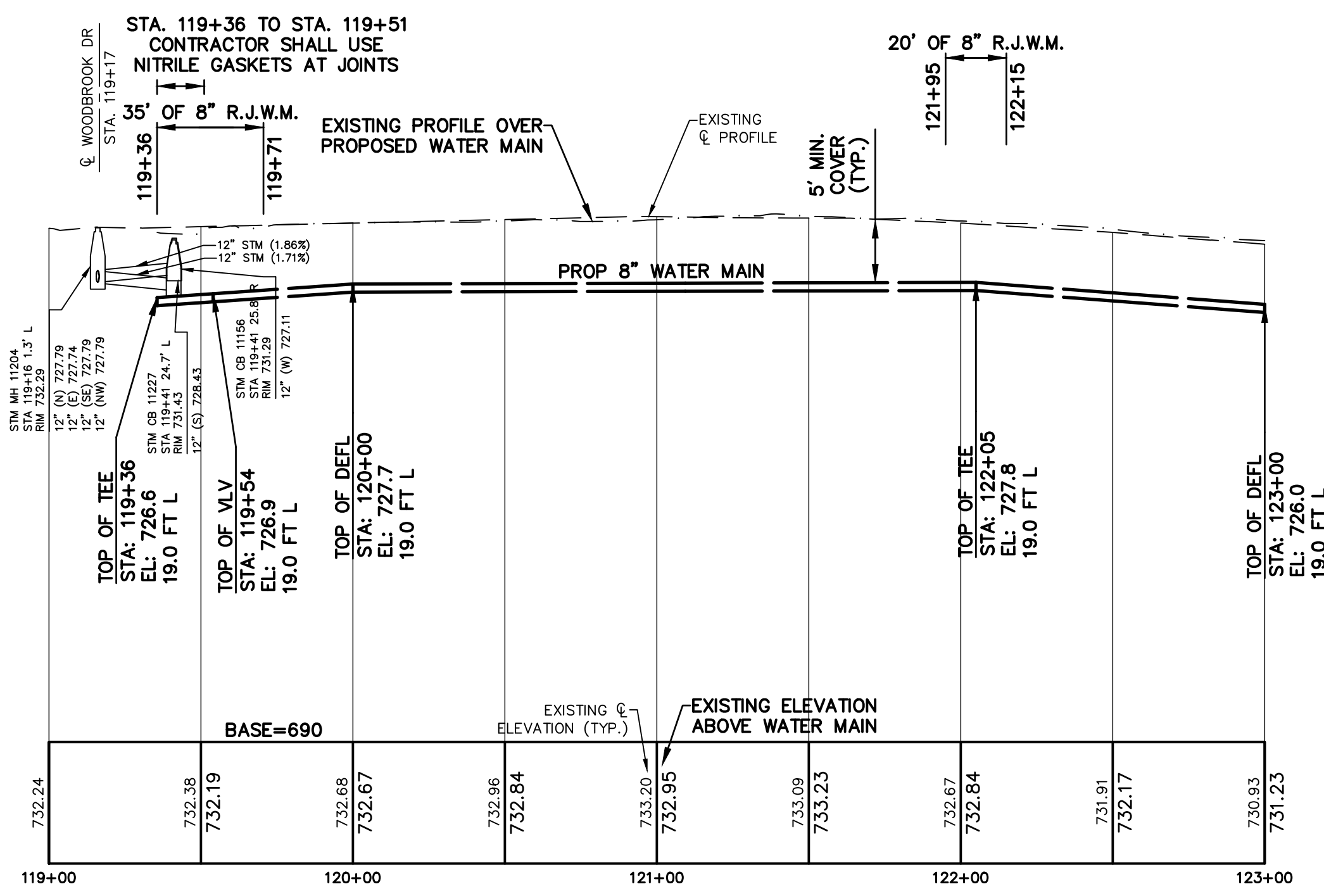
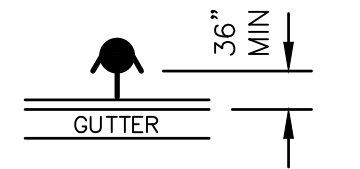
SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 HORZ. 1"=40'
 VERT. 1"=10'

CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C16	292'	250'	N58°42'59"E 276'

BENCHMARKS
 B.M. #14 - TOP NW CORNER OF BOTTOM STEP, 0.65' ABOVE WALK. - ELE. 735.52'
 CONTROL POINTS
 #35 - CP P&N TRAV CAP - ELE. 732.46'

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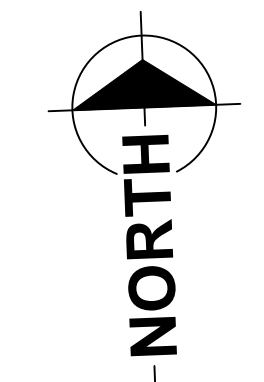
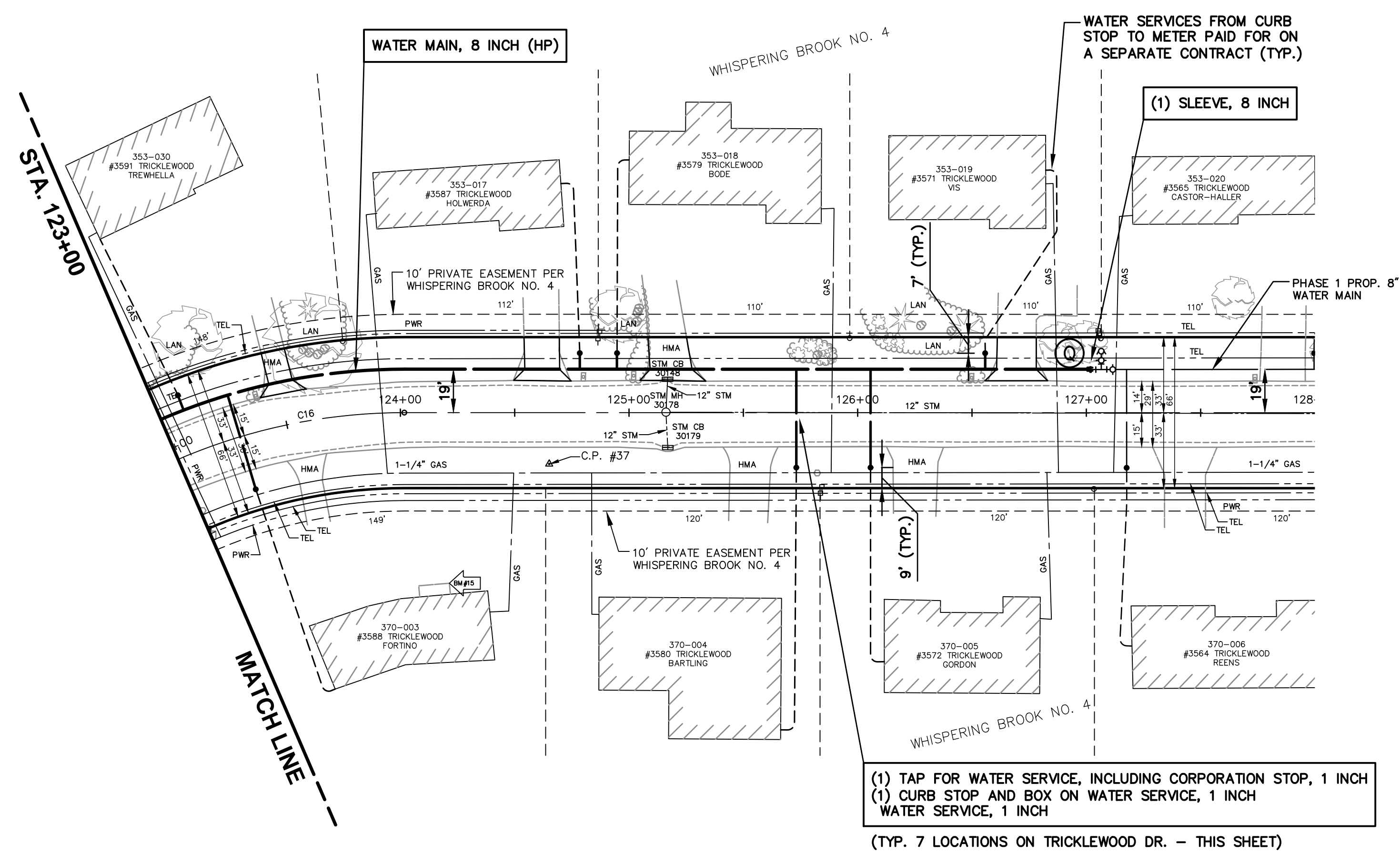
SURVEYED & DESIGNED BY:

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City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 TRICKLEWOOD DRIVE
 FROM WOODBROOK DR.
 TO
 250' SOUTH WEST OF TRICKLEWOOD CT.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. **5892** Sheet No. **17 of 67**
 Check: Field JM
 Check: Office JS



CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C16	292'	250'	N58°42'59\"/>

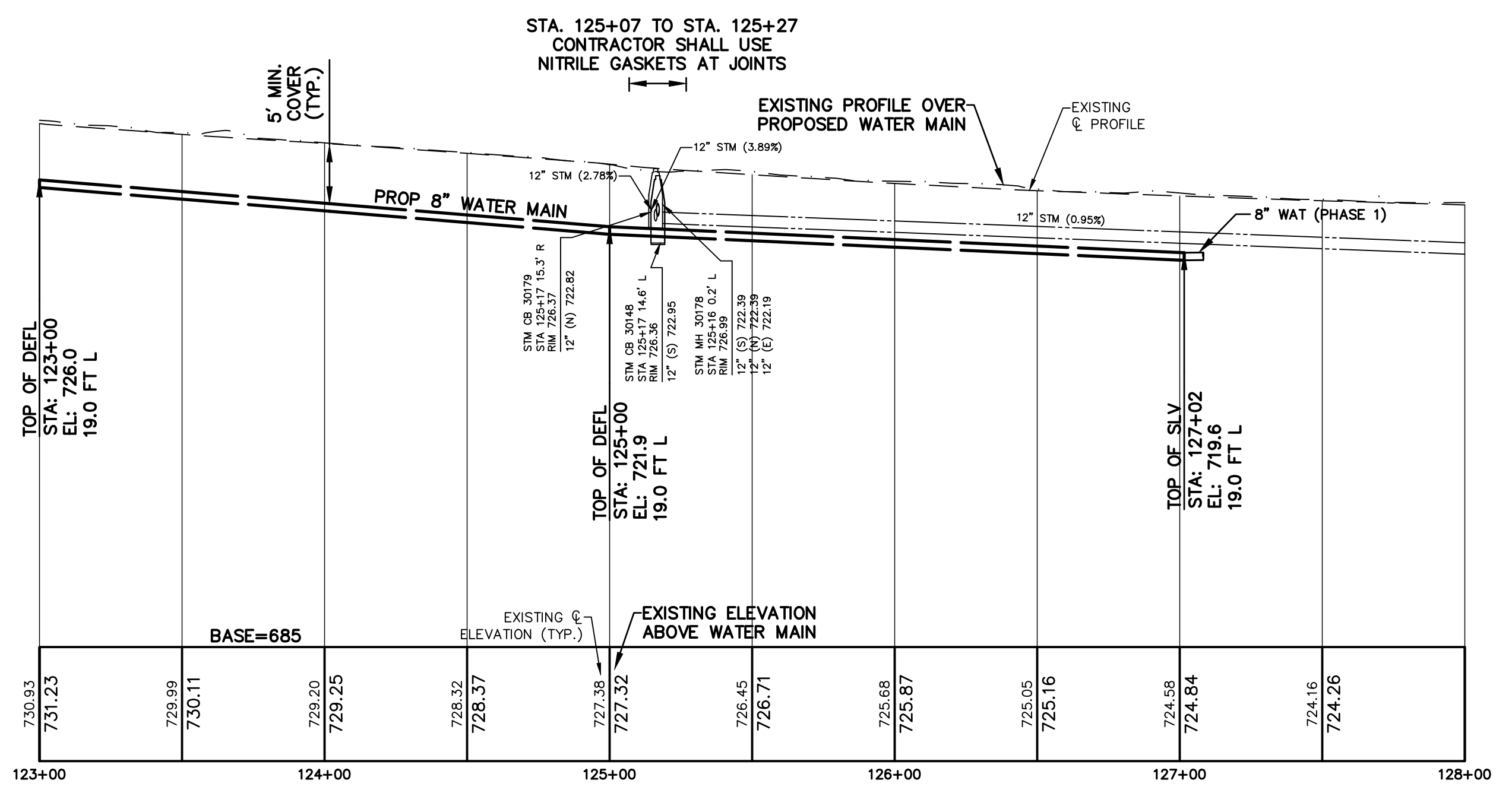
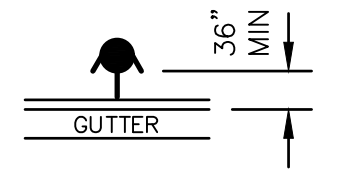
BENCHMARKS
 B.M. #15 - BM TOP NE CORNER OF BOTTOM CONC STEP 0.7 ABOVE WALK - ELE. 731.51'

CONTROL POINTS
 #37 - CP P&N TRAV CAP 3FT TO ROCKS IN YARD 3588 TRICKLEWOOD - ELE. 728.46

SCALES
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 PROFILE 1"=40'
 HORZ. 1"=40'
 VERT. 1"=10'

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(1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
 (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH
 WATER SERVICE, 1 INCH
 (TYP. 7 LOCATIONS ON TRICKLEWOOD DR. - THIS SHEET)

THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

REVISIONS		
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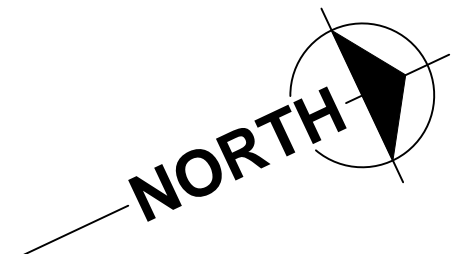
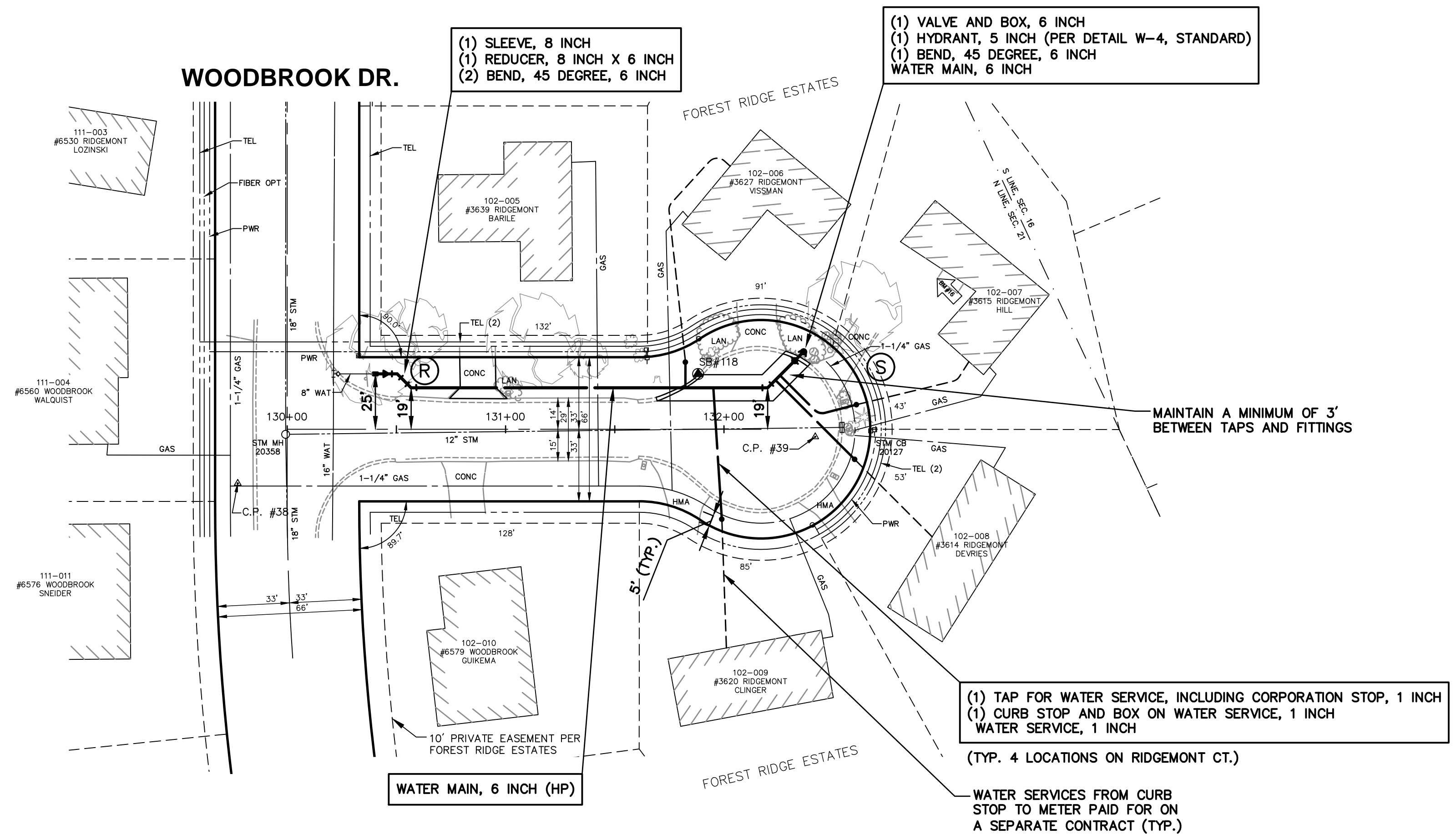
SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 TRICKLEWOOD DRIVE
 FROM WOODBROOK DR.
 TO
 250' SOUTH WEST OF TRICKLEWOOD CT.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 18 of 67
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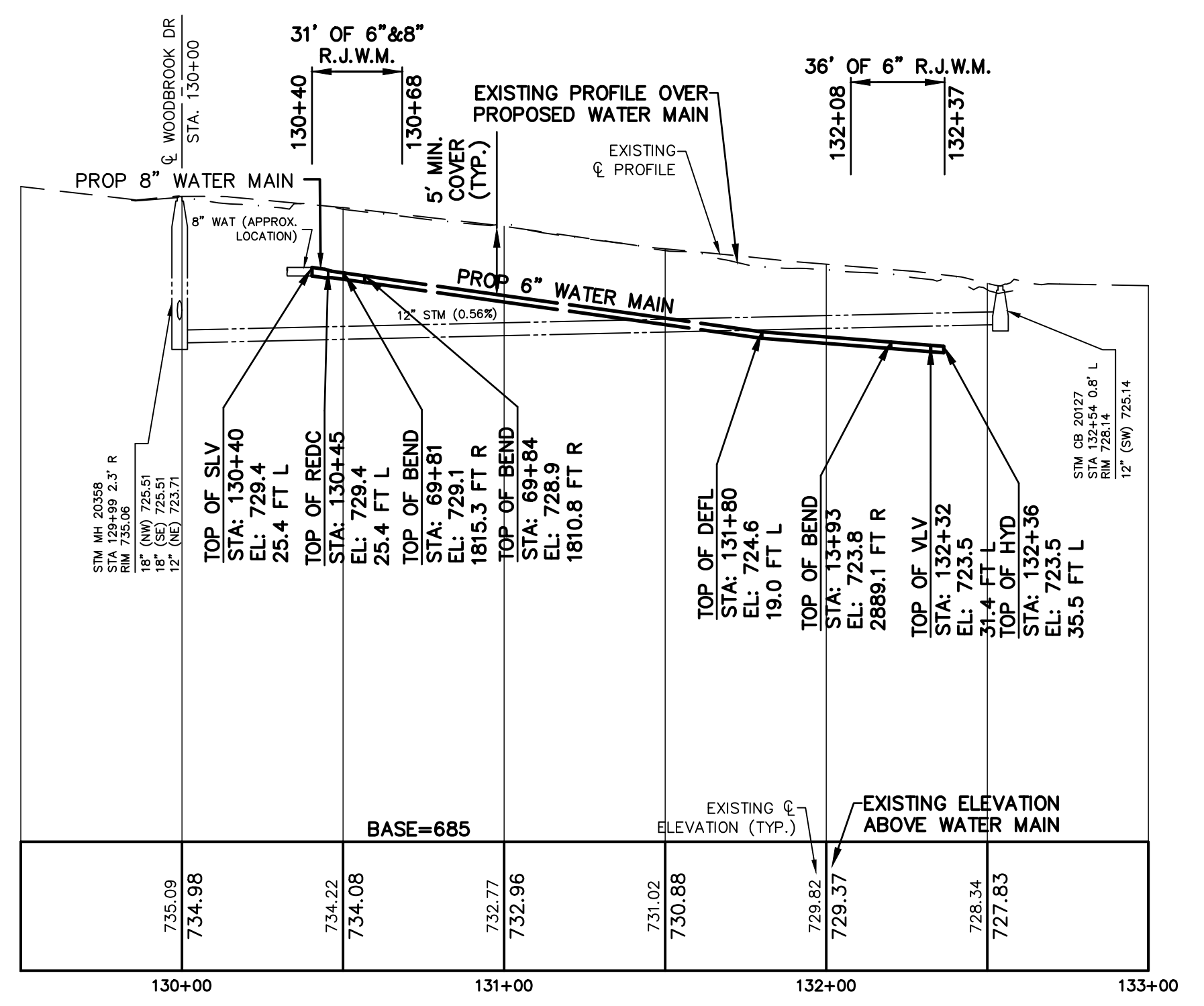
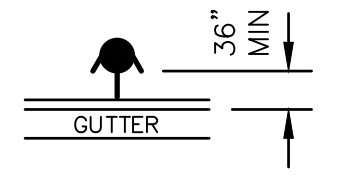


SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 VERT. 1"=10'

BENCHMARKS
 B.M. #16 - BM SW CORNER BOTTOM STEP #3615 RIDGEMONT CT - ELE. 729.92
 CONTROL POINTS
 #38 - CP P&N TRAV CAP - ELE. 735.20
 #39 - CP MAG NAIL IN PAVEMENT - ELE. 728.76

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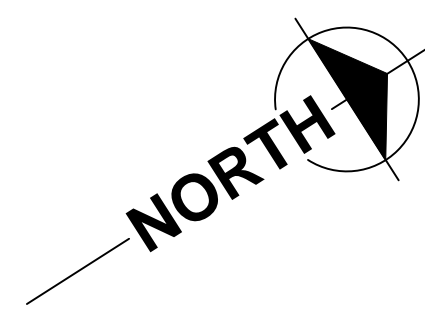
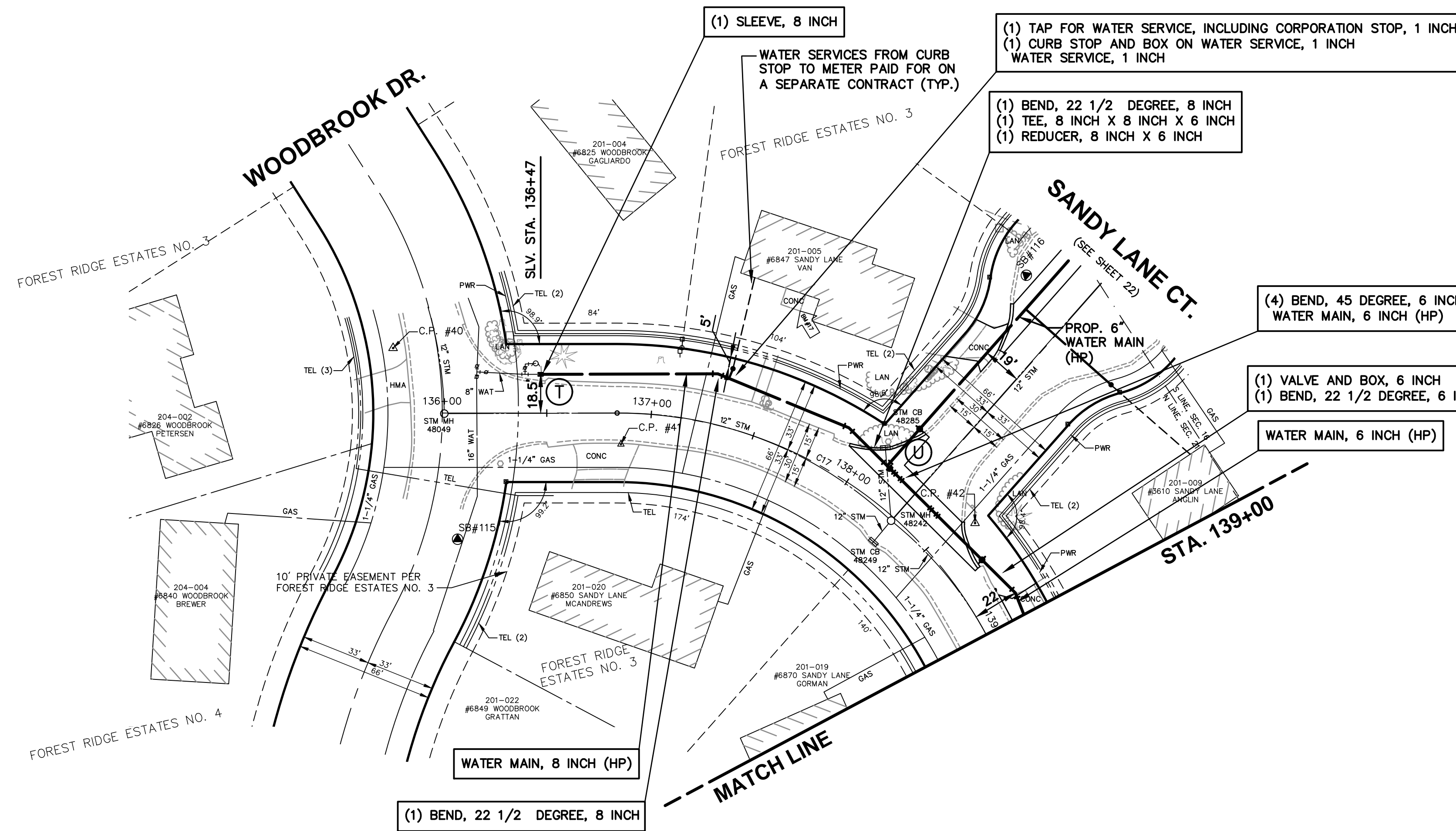
SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 RIDGEMONT COURT
 FROM WOODBROOK DR.
 TO
 NORTH END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. **5892** Sheet No. **19 of 67**
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 Check: Office JS



SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 VERT. 1"=10'

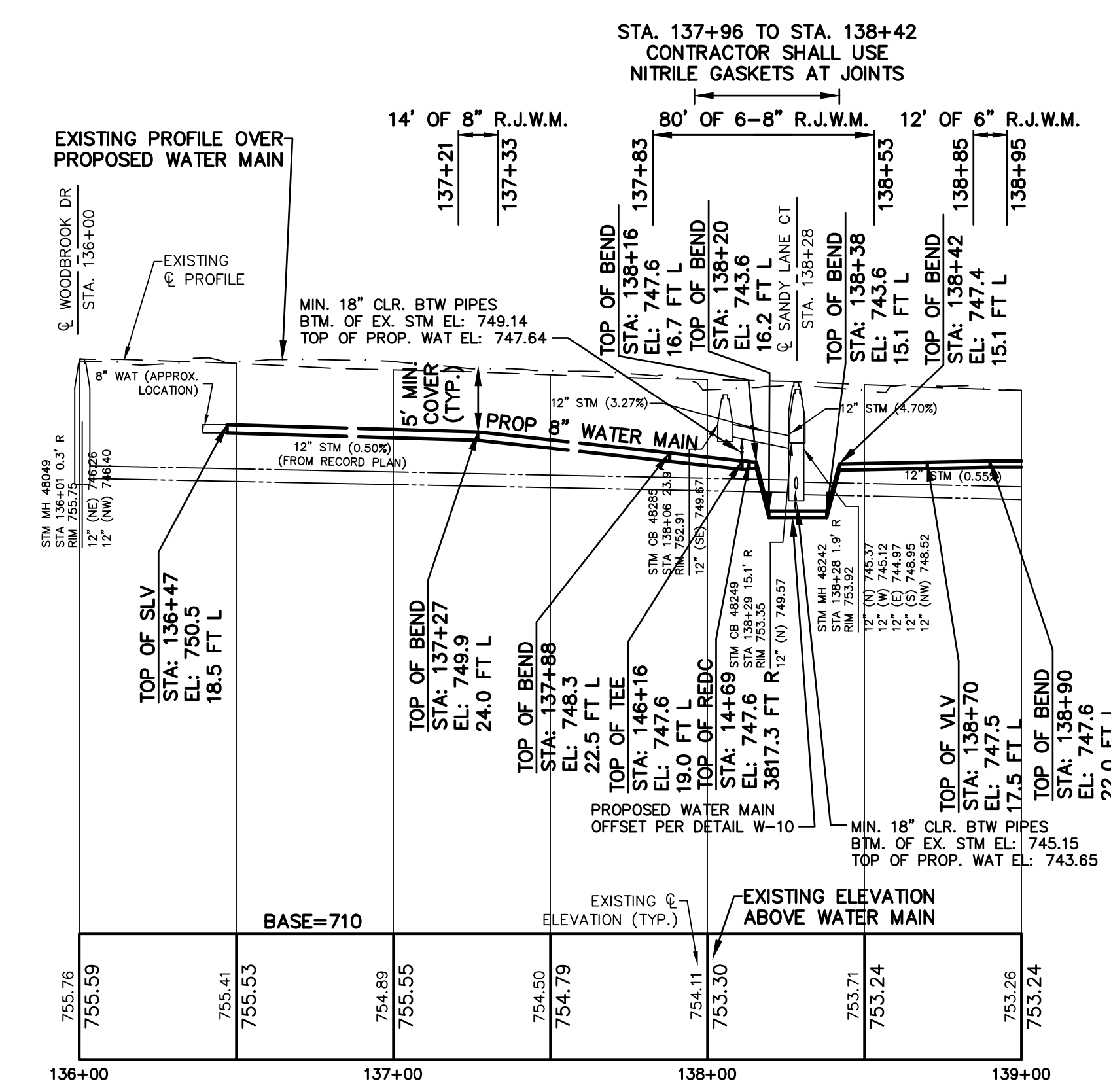
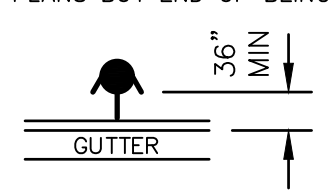
CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C17	244'	200'	N67°33'39"E 228'

BENCHMARKS
 B.M. #17 - BM TOP NE COR CONC PORCH, 0.9' ABOVE GROUND - ELE. 757.50
 #40 - CP P&N TRAV CAP - ELE. 755.67
 #41 - CP @ #6850 SANDY LANE - ELE. 754.86
 #42 - CP P&N TRAV CAP - ELE. 753.90

CONTROL POINTS
 #204-002 #6826 WOODBROOK PETERSEN
 #204-004 #6840 WOODBROOK BREWER
 #201-004 #6825 WOODBROOK CAGLIARDO
 #201-005 #6847 SANDY LANE VAN
 #201-009 #6810 SANDY LANE ANGLIN
 #201-019 #6870 SANDY LANE GORMAN
 #201-022 #6849 WOODBROOK GRATTA

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REVISIONS		
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SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 SANDY LANE DRIVE
 FROM WOODBROOK DR.
 TO
 EAST END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. **5892** Sheet No. **20 of 67**
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 Check: Office JS

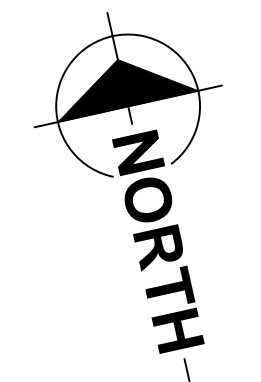
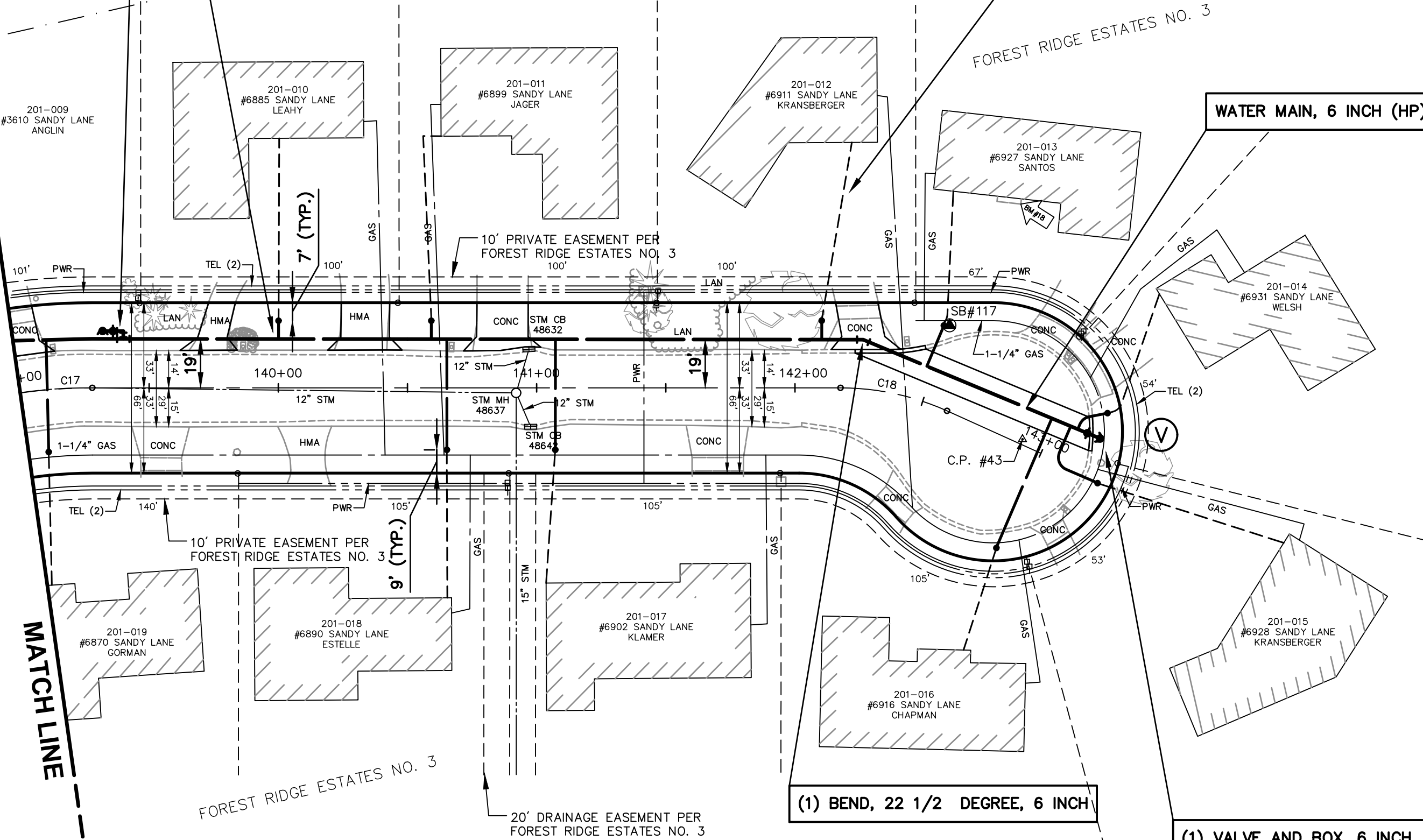
- (1) TEE, 6 INCH X 6 INCH X 6 INCH
- (1) BEND, 90 DEGREE, 8 INCH
- (1) VALVE AND BOX, 6 INCH
- (1) HYDRANT, 5 INCH (PER DETAIL W-4, ALT #1)
- WATER MAIN, 6 INCH

- (1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
- (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH
- WATER SERVICE, 1 INCH

(TYP. 10 LOCATIONS ON SANDY LANE DR. - THIS SHEET)

WATER SERVICES FROM CURB STOP TO METER PAID FOR ON A SEPARATE CONTRACT (TYP.)

STA. 139+00



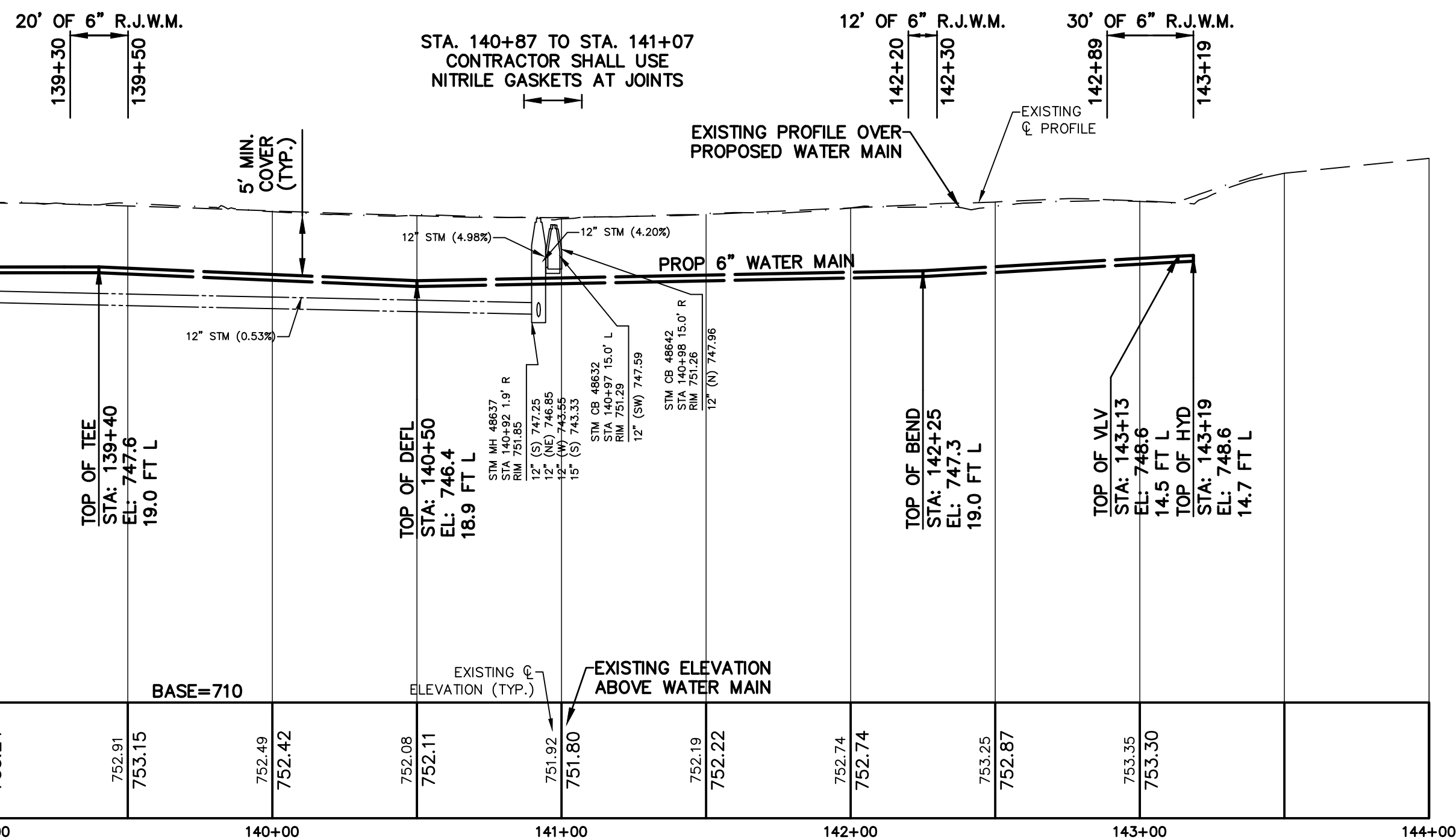
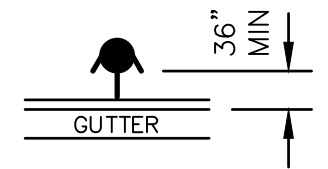
SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 HORIZ. 1"=40'
 VERT. 1"=10'

CURVE DATA				
CURVE #	LENGTH	RADIUS	CHORD	
C17	244'	200'	N67°33'39"E 229'	
C18	42'	100'	S85°15'53"E 42'	

BENCHMARKS
 B.M. #18 - BM TOP SE CORNER OF CONC PORCH. 0.5' ABOVE WALK. - ELE. 754.37
 CONTROL POINTS
 #43 - CP MAG NAIL IN PAVEMENT - ELE. 753.49

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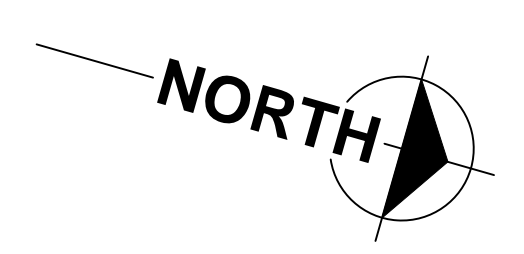
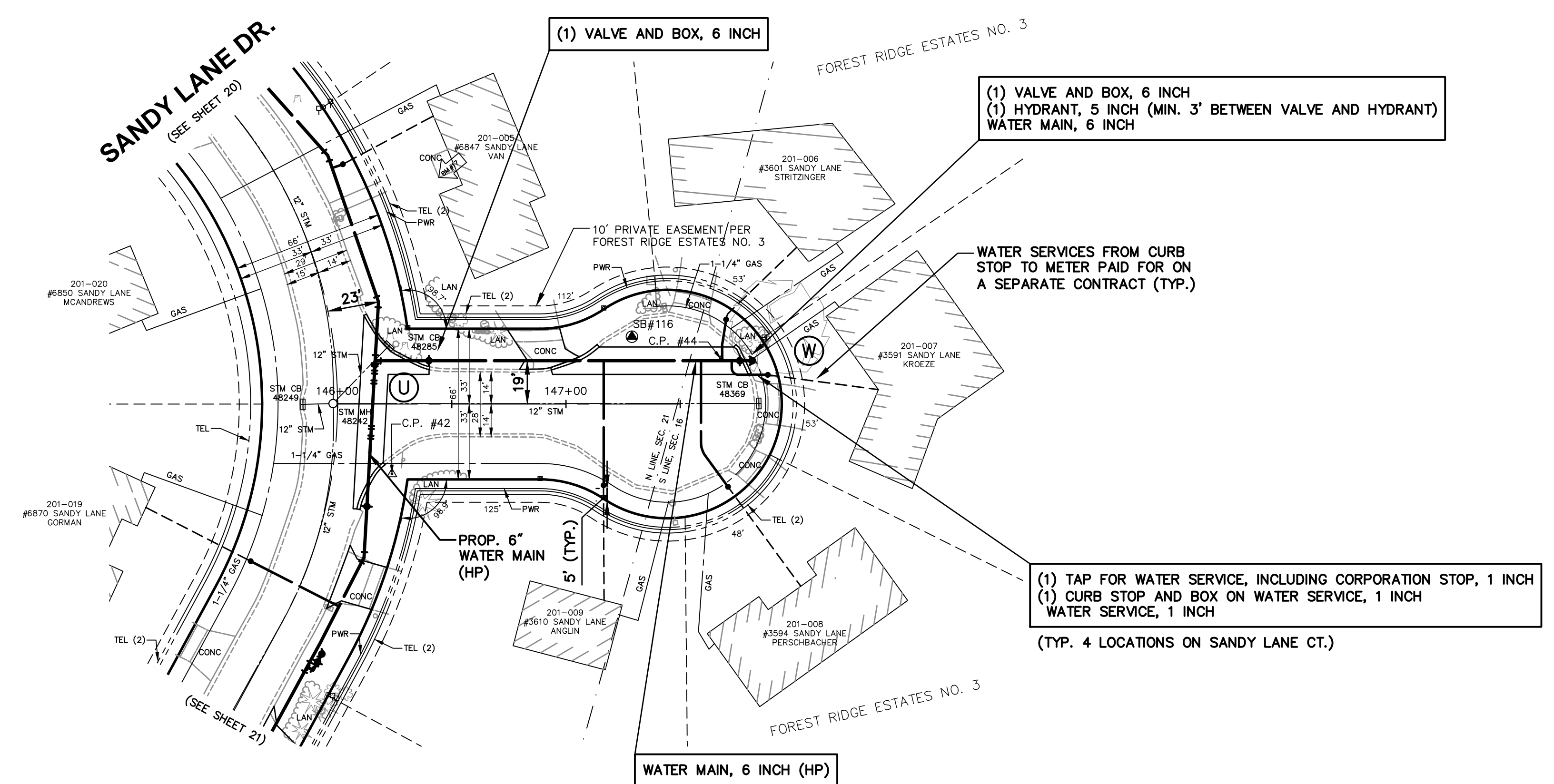
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**WATER MAIN
 IN
 SANDY LANE DRIVE
 FROM WOODBROOK DR.
 TO
 EAST END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 21 of 67
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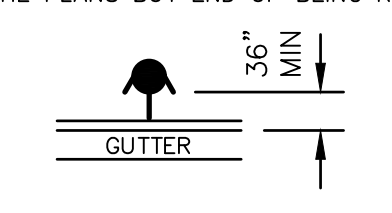
BENCHMARKS
 B.M. #17 - BM TOP NE COR PORCH. 0.9' ABOVE GROUND - ELE. 757.50

CONTROL POINTS
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 #44 - CP MAG NAIL IN PAVEMENT - ELE. 750.20

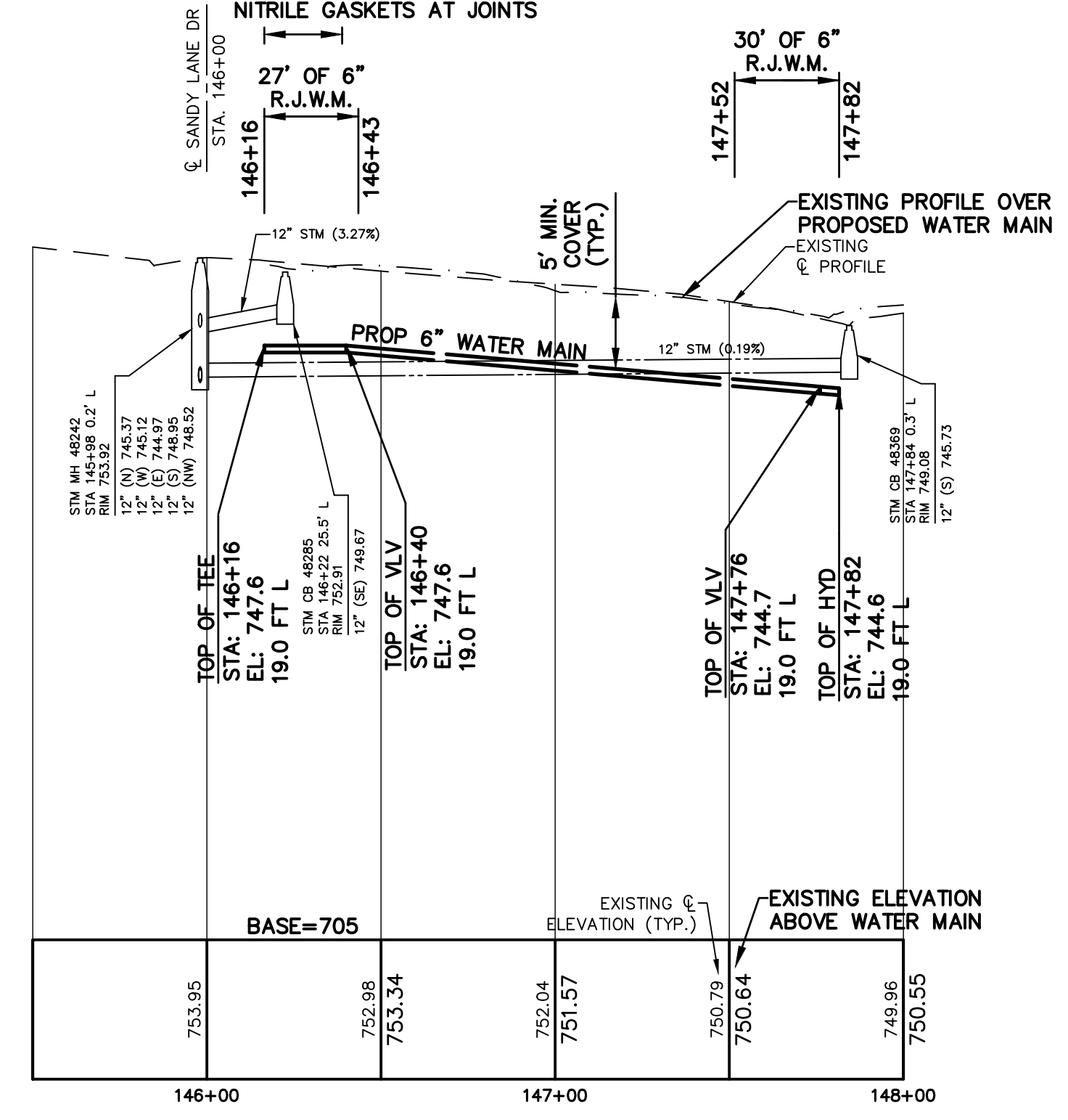
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STA. 146+16 TO STA. 146+32
 CONTRACTOR SHALL USE
 NITRILE GASKETS AT JOINTS



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REVISIONS

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SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
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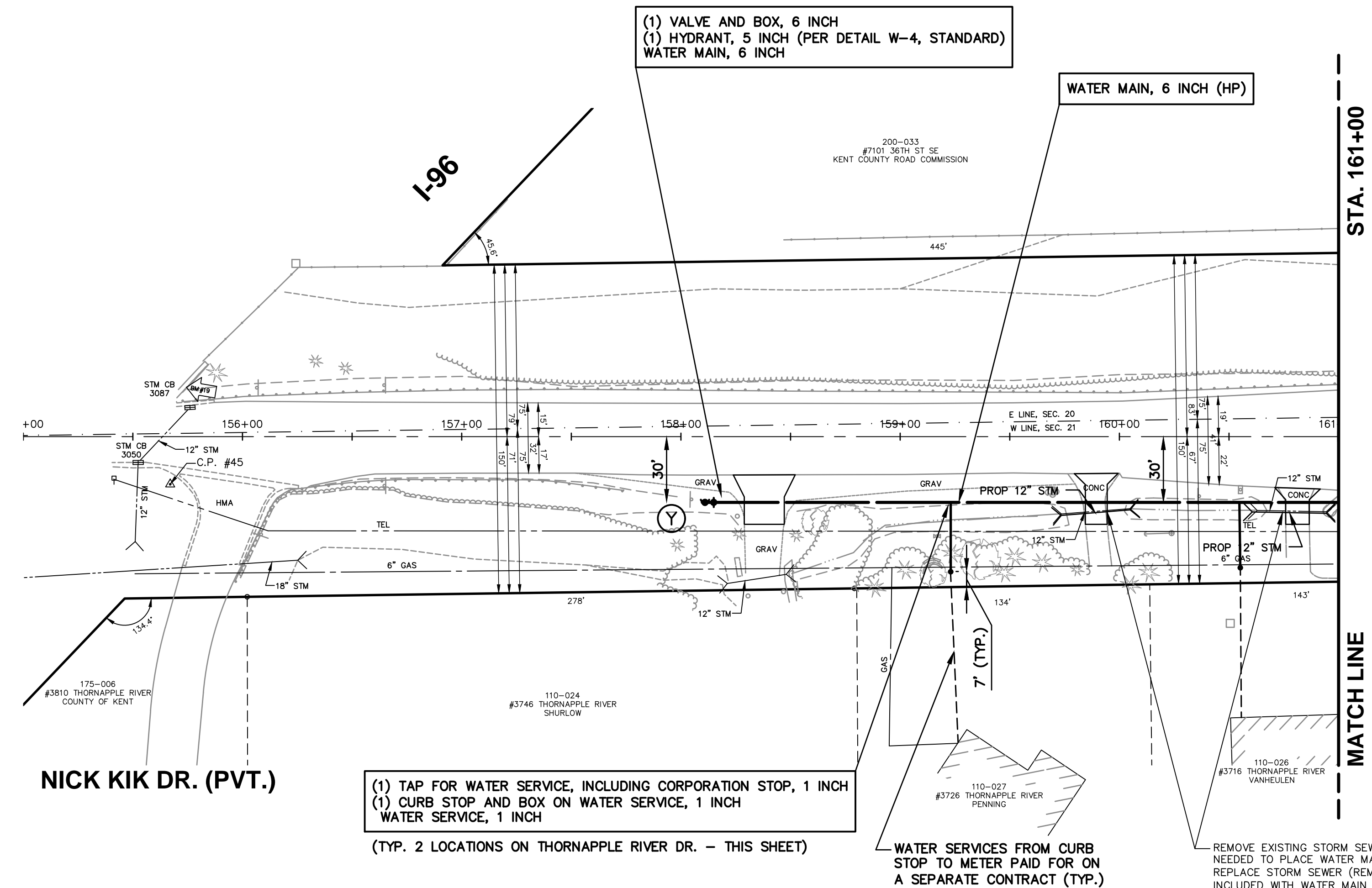
**WATER MAIN
 IN
 SANDY LANE COURT
 FROM SANDY LANE DR.
 TO
 NORTH END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 22 of 67
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BENCHMARKS
 B.M. #19 - ACROSS STREET FROM NICK KIK DR.
 CHISSELED SQUARE ON TOP OF NW COR HEADWALL 6
 FEET WEST OF NW CORNER OF BRIDGE DECK 1.0FT
 ABOVE GROUND. - ELE. 753.91
 CONTROL POINTS
 #45 - CP P&N TRAV CAP - ELE. 753.36



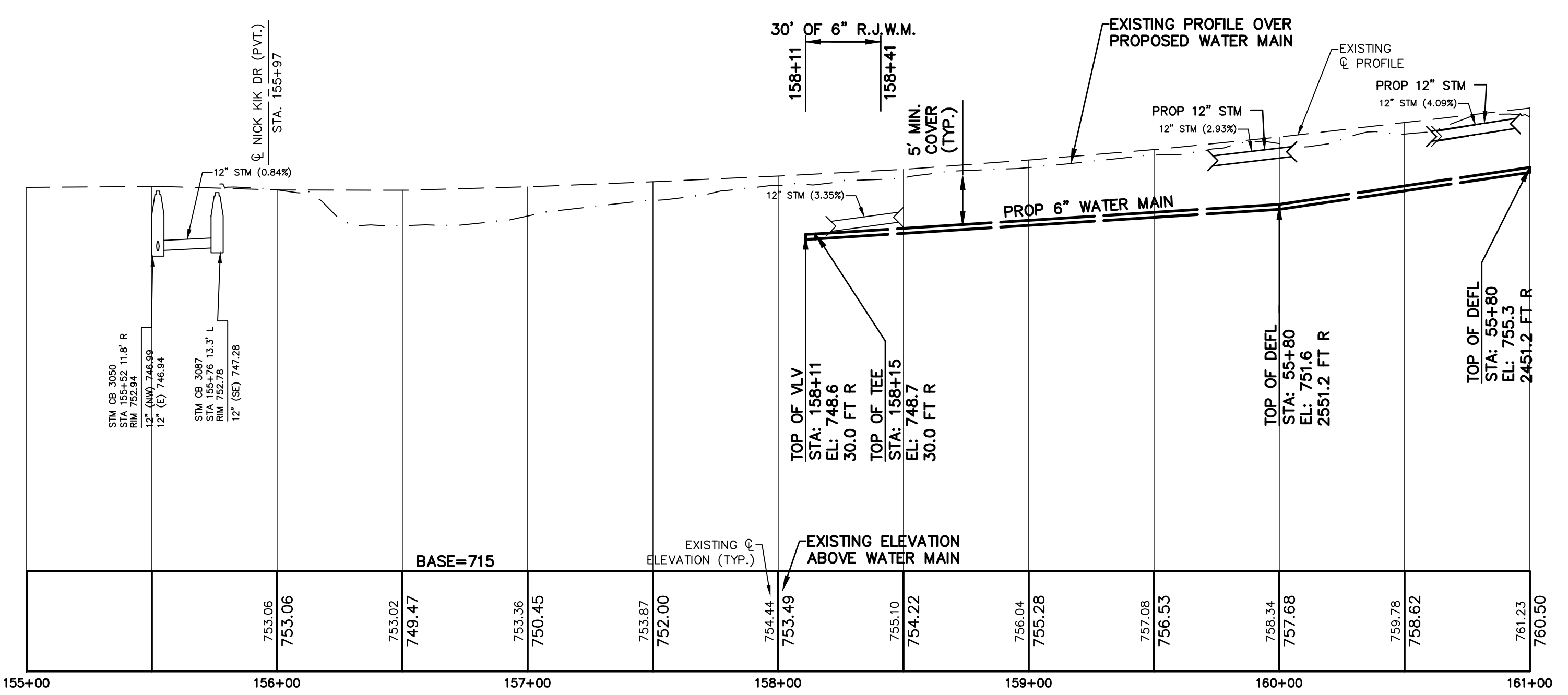
SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 HORZ. 1"=40'
 VERT. 1"=10'



(1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
 (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH
 WATER SERVICE, 1 INCH
 (TYP. 2 LOCATIONS ON THORNAPPLE RIVER DR. - THIS SHEET)

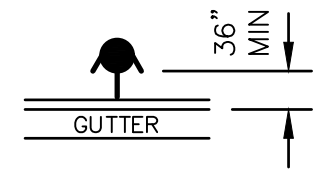
(1) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH (PER DETAIL W-4, STANDARD)
 WATER MAIN, 6 INCH

REMOVE EXISTING STORM SEWER AS
 NEEDED TO PLACE WATER MAIN AND
 REPLACE STORM SEWER (REMOVAL
 INCLUDED WITH WATER MAIN ITEM)



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(A) - (NN) WATER MAIN TESTING LIMITS

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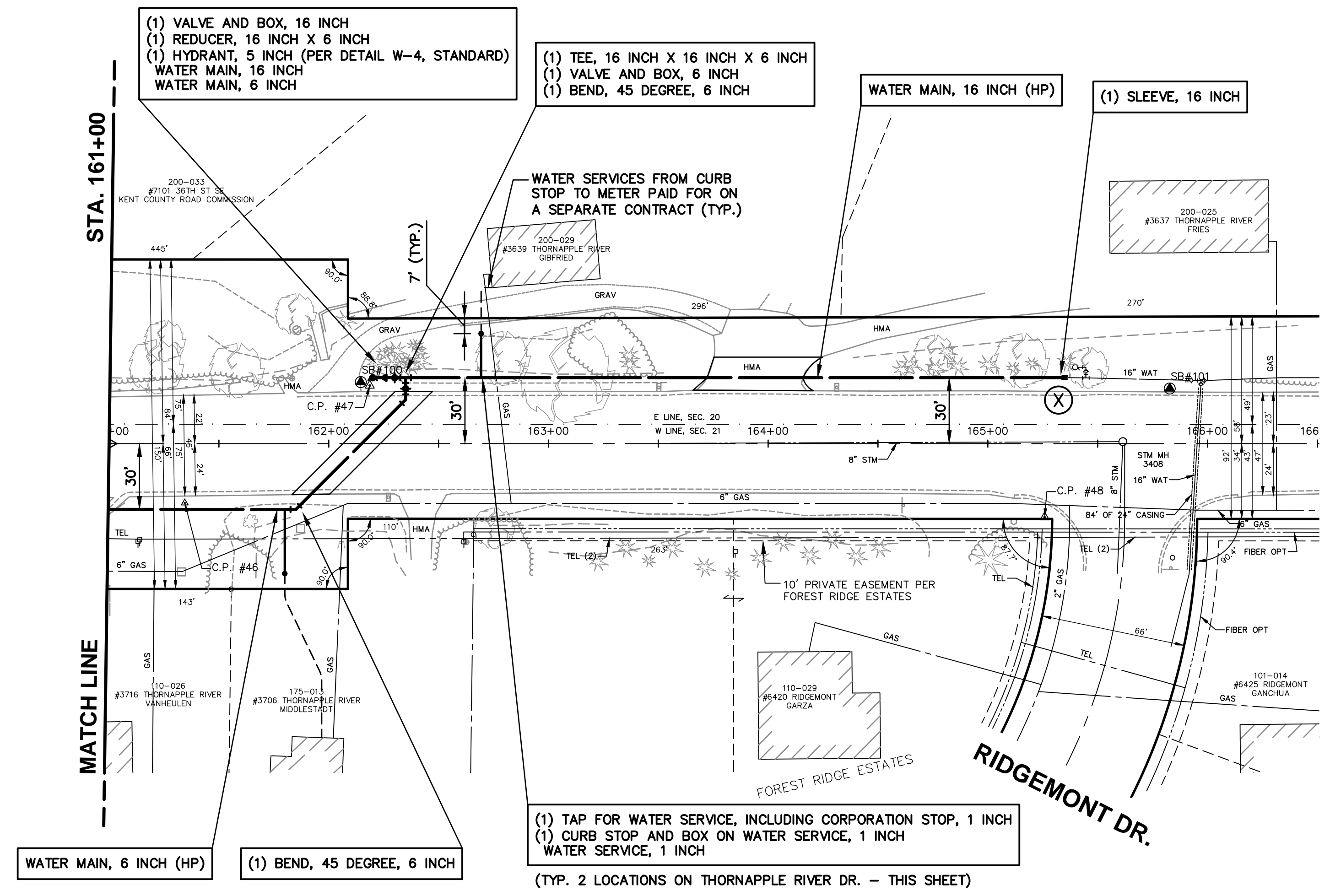
REVISIONS		
NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:
Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 THORNAPPLE RIVER DRIVE
 FROM NICK KIK DR. (PVT.)
 TO
 RIDGEMONT DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 23 of 67
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 Check: Office JS



CONTROL POINTS

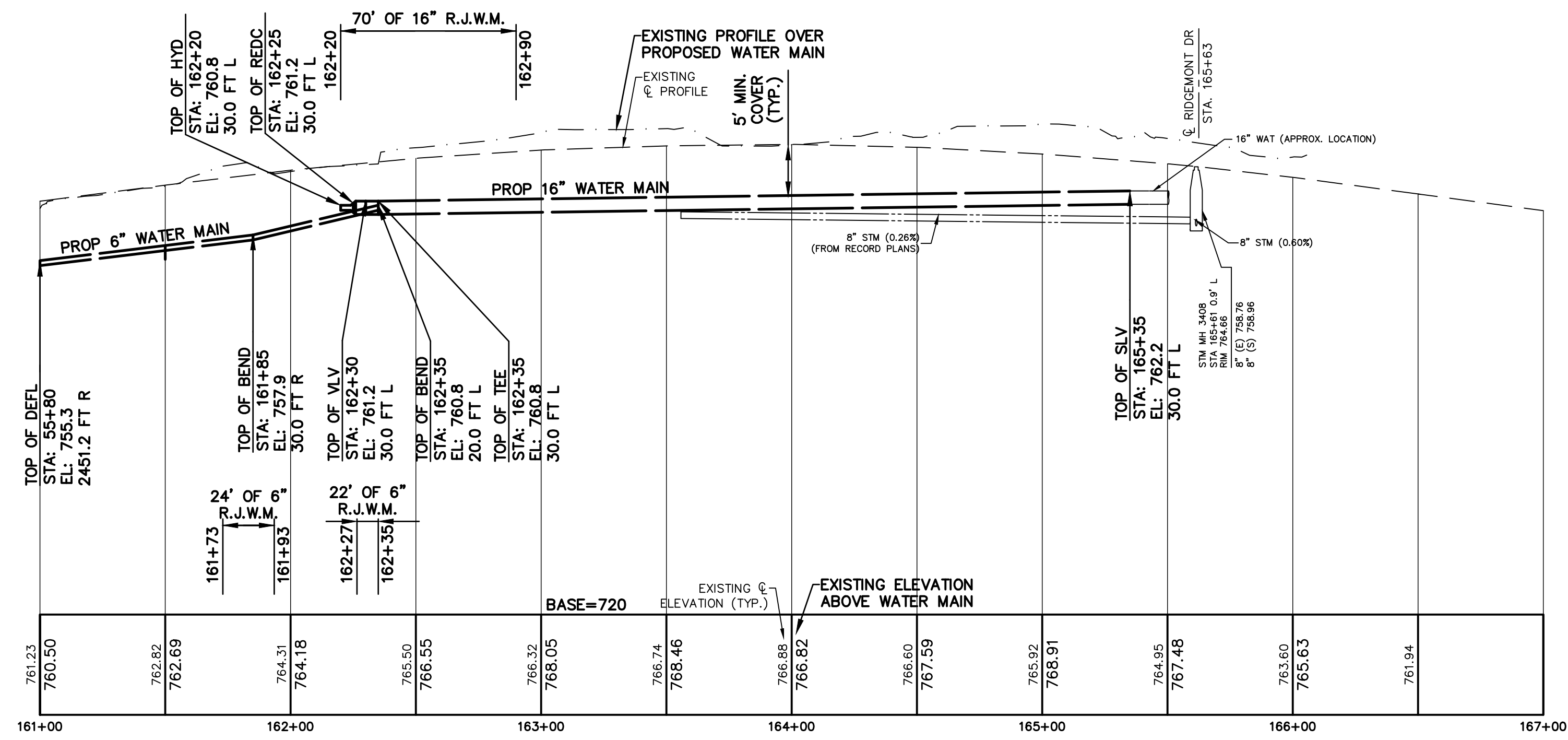
#46	- CP 3 FT E BIT @ 3716	- ELE. 762.40
#47	- CP P&N TRAV CAP	- ELE. 764.69
#48	- CP P&N TRAV CAP	- ELE. 765.16



SCALES
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 PROFILE 1"=40'
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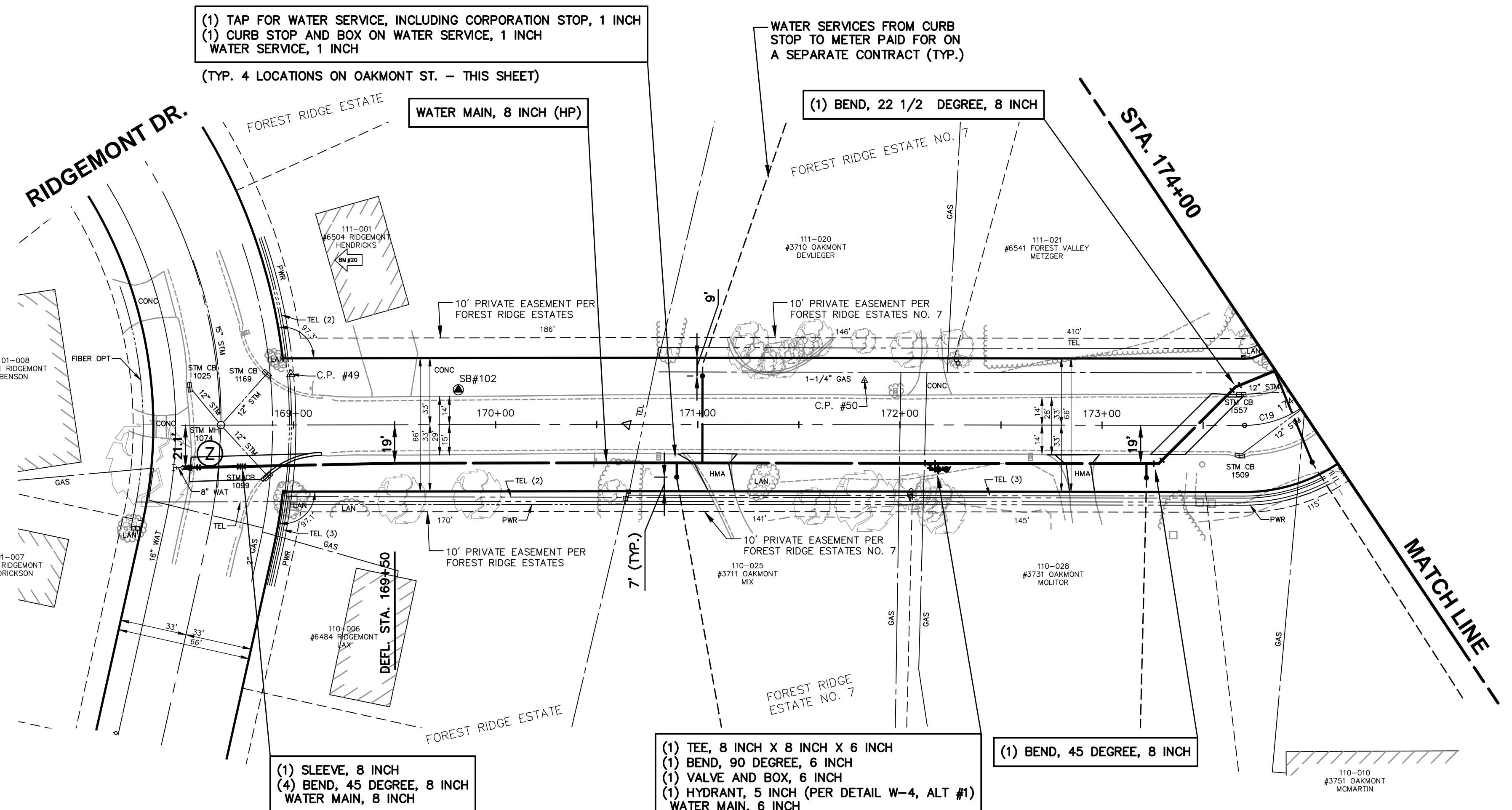
SURVEYED & DESIGNED BY:

Prein & Newhof
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**WATER MAIN
 IN
 THORNAPPLE RIVER DRIVE
 FROM NICK KIK DR. (PVT.)
 TO
 RIDGEMONT DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. **5892** Sheet No. **24 of 67**
 Check: Field JM
 Check: Office JS



CURVE DATA

CURVE #	LENGTH	RADIUS	CHORD
C19	59'	50'	54712.36'E 56'

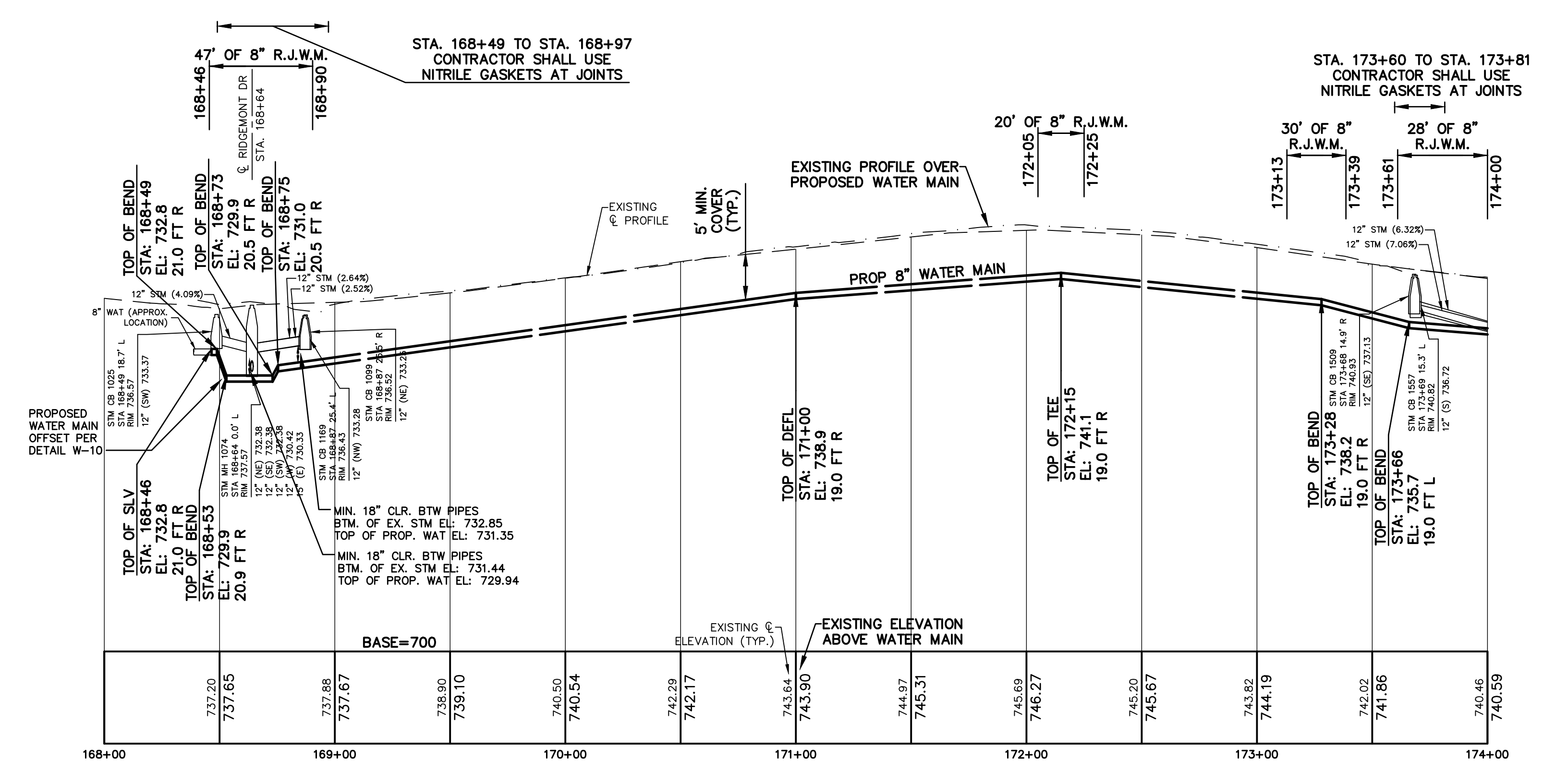
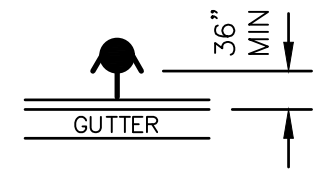
BENCHMARKS
 B.M. #20 - TOP OF CONC PORCH, 0.5' E OF BRICK GAR CORNER 0.9' ABOVE WALK. - ELE. 741.44

CONTROL POINTS
 #49 - CP P&N TRAV CAP - ELE. 737.96
 #50 - CP P&N TRAV CAP - ELE. 746.17

SCALES
 PLAN: 1"=40'
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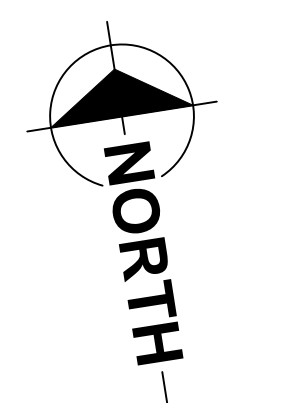
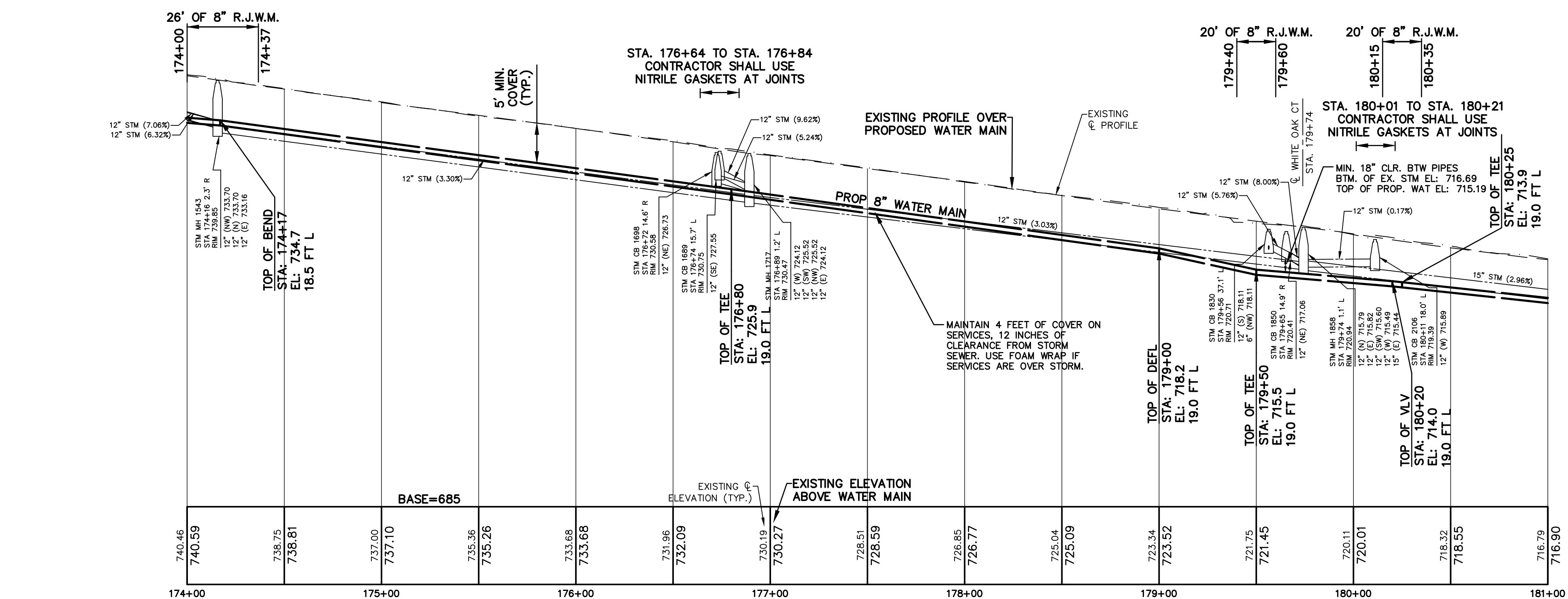
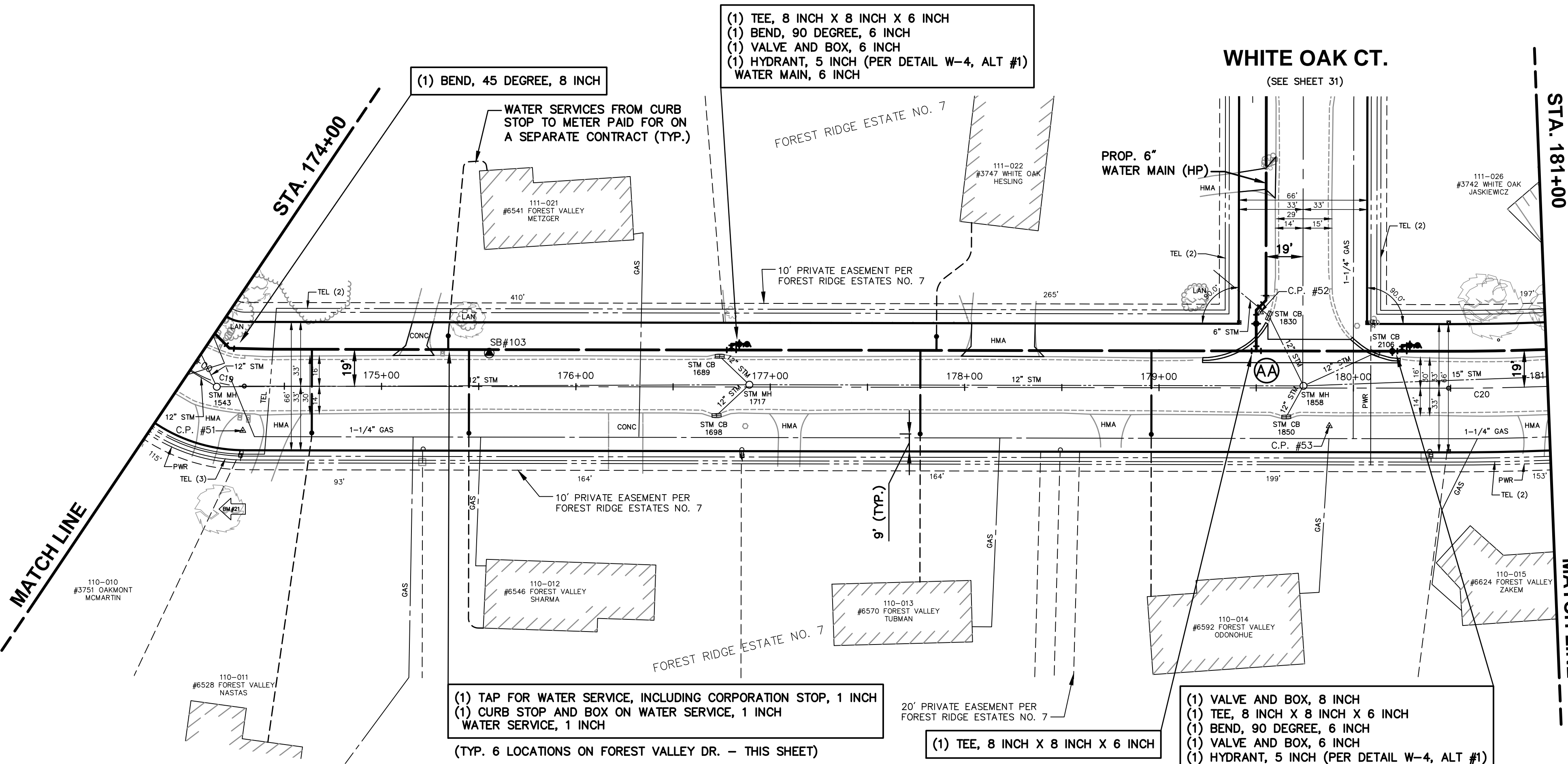
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**WATER MAIN
 IN
 OAKMONT STREET
 FROM RIDGEMONT DR.
 TO
 FOREST VALLEY DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. **5892** Sheet No. **25 of 67**
 Check: Field JM
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SCALES
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 PROFILE 1"=40'
 VERT. 1"=10'

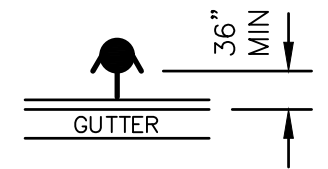
CURVE DATA			
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C20	200'	1237'	S85°33'31"E 199'

BENCHMARKS
 B.M. #21 - SET MAG VERTICAL IN NE ROOT OF 18" TWIN MAPLE - ELE. 742.35

CONTROL POINTS
 #51 - CP P&N TRAV CAP - ELE. 739.89
 #52 - CP P&N TRAV CAP - ELE. 721.73
 #53 - CP @ #6592 FOREST VALLEY - ELE. 720.66

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12. CURB STOPS IN PAVED AREAS (DRIVEWAYS, ETC) SHALL BE SET IN A VALVE BOX CASING (SEE CURB BOX IN PAVEMENT DETAIL).
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16. CONTRACTOR TO PLACE 2' TAIL ONTO THE PRIVATE SIDE OF THE CURB STOP BOX THAT IS EITHER CRIMPED OR CAPPED OFF.
17. CONTRACTOR TO MAINTAIN A MINIMUM OF 2' FROM THE EDGE OF CATCH BASINS AND DRAINAGE STRUCTURES TO THE EDGE OF THE WATER MAIN



(A) - (NN) WATER MAIN TESTING LIMITS

THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

REVISIONS

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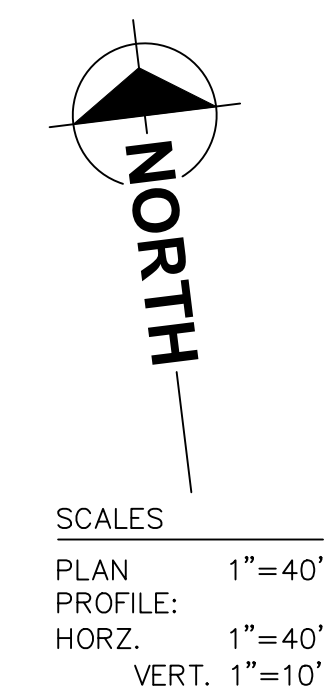
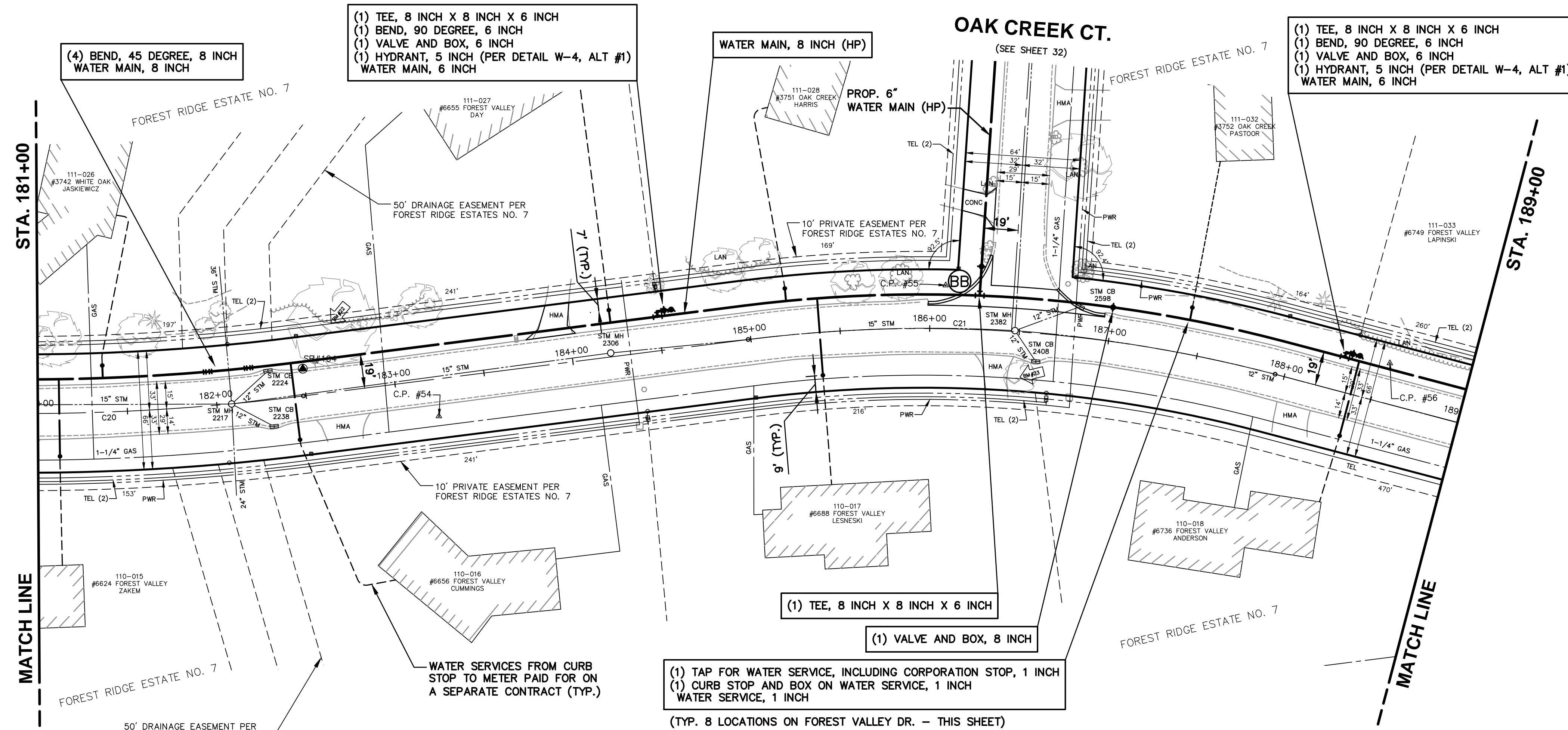
SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
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**WATER MAIN
 IN
 FOREST VALLEY DRIVE
 OAKMONT ST.
 TO
 OAK TREE DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. **5892** Sheet No. **26 of 67**
 Check: Field JM
 Check: Office JS



BENCHMARKS

B.M. #22 - SET 60D IN S SIDE 42\"/>

B.M. #23 - SET MAG VERTICAL IN N ROOT OF 16\"/>

MAPLE - ELE. 722.16

CONTROL POINTS

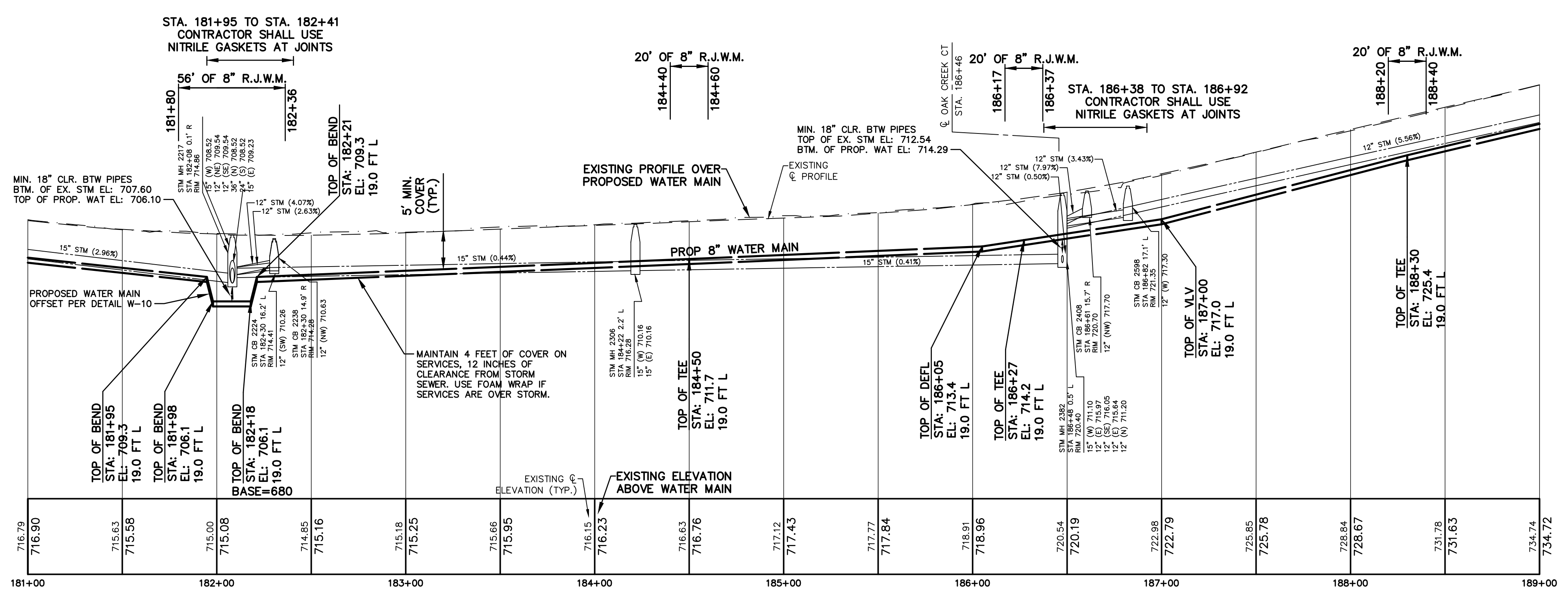
#54 - CP P&N TRAV CAP - ELE. 715.71

#55 - CP P&N TRAV CAP - ELE. 719.63

#56 - CP P&N TRAV CAP - ELE. 732.19

CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C20	200'	1237'	S85°33'31\"/>
C21	286'	772'	S79°10'52\"/>

- WATER MAIN GENERAL NOTES**
- WATER MAIN CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE STANDARD CONSTRUCTION SPECIFICATIONS OF CITY OF GRAND RAPIDS, 2021 EDITION, AND ALL REVISIONS THEREOF.
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REVISIONS

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Drawn by JDH/PFN GPF No. 5892 Sheet No. 27 of 67

Check: Field JM

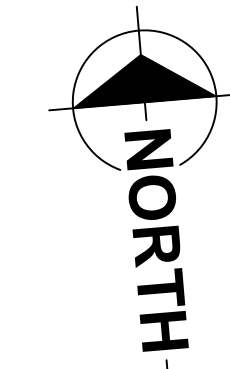
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SURVEYED & DESIGNED BY:

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City of Grand Rapids
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**WATER MAIN
 IN
 FOREST VALLEY DRIVE
 OAKMONT ST.
 TO
 OAK TREE DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**



CURVE DATA			
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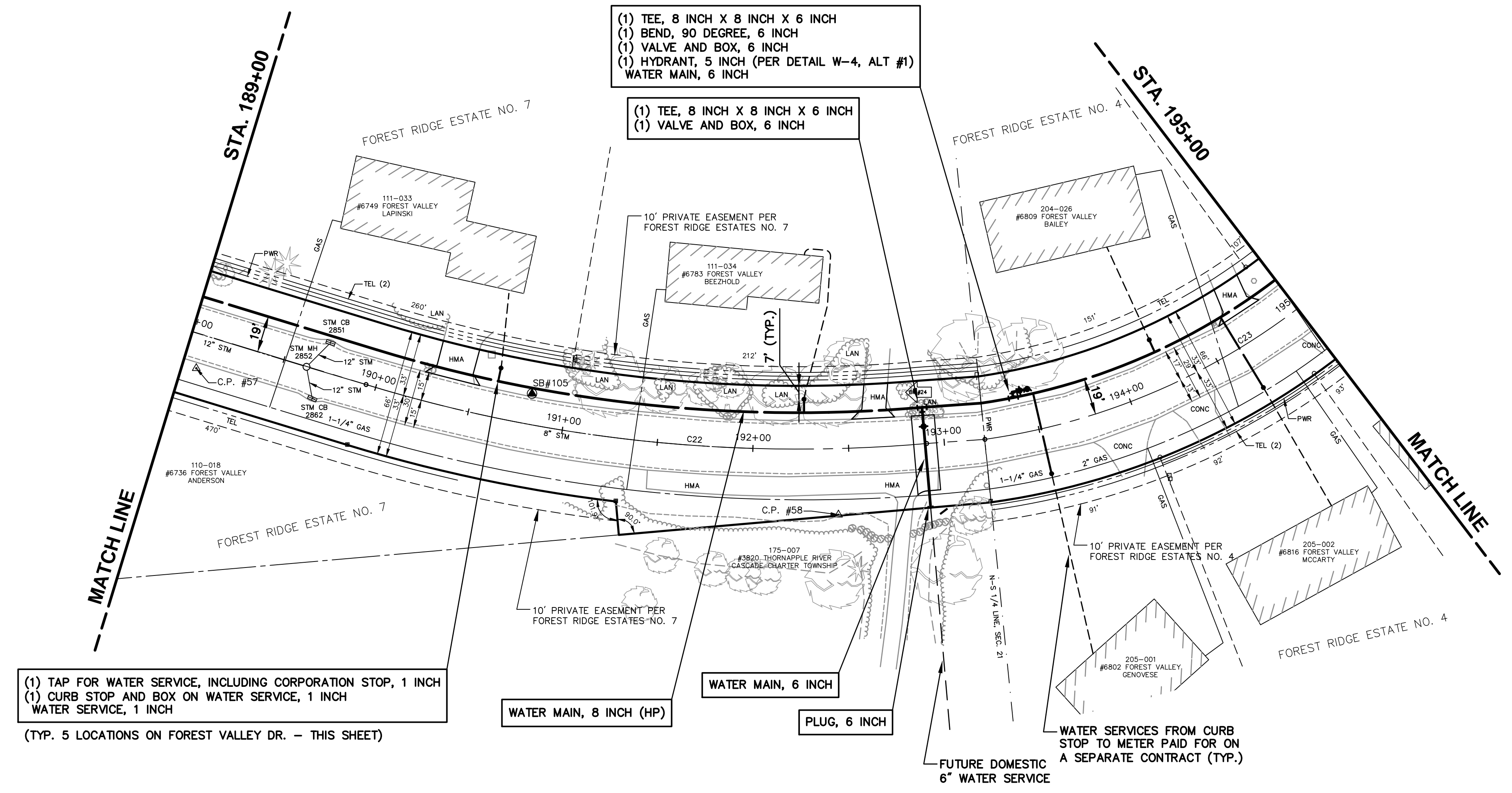
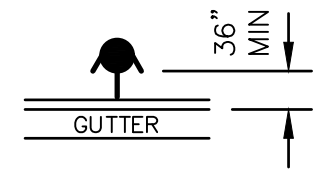
BENCHMARKS
 B.M. #24 - SET MAG VERTICAL IN SE ROOT OF 14" PINE - ELE. 752.05

CONTROL POINTS
 #57 - CP @ #6736 FOREST VALLEY - ELE. 734.86
 #58 - CP P&N TRAV CAP - ELE. 751.46

SCALES
 PLAN: 1"=40'
 PROFILE: 1"=40'
 HORZ.: 1"=40'
 VERT.: 1"=10'

WATER MAIN GENERAL NOTES

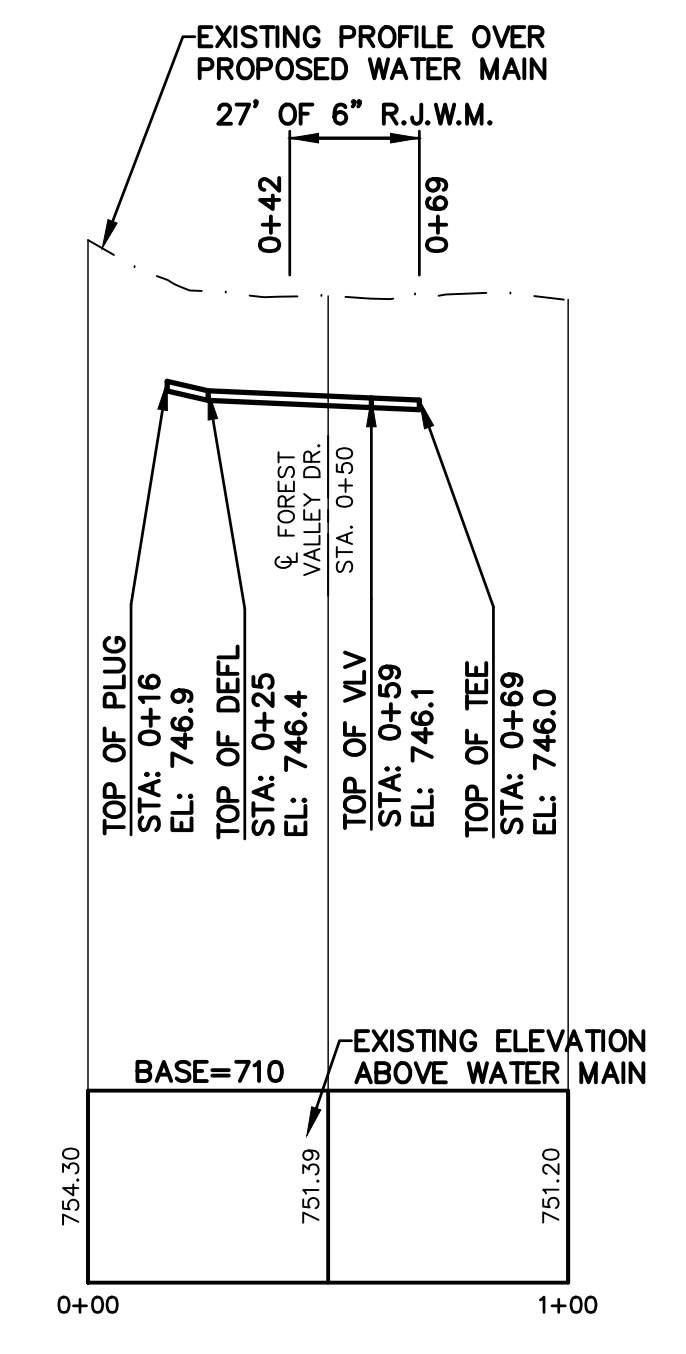
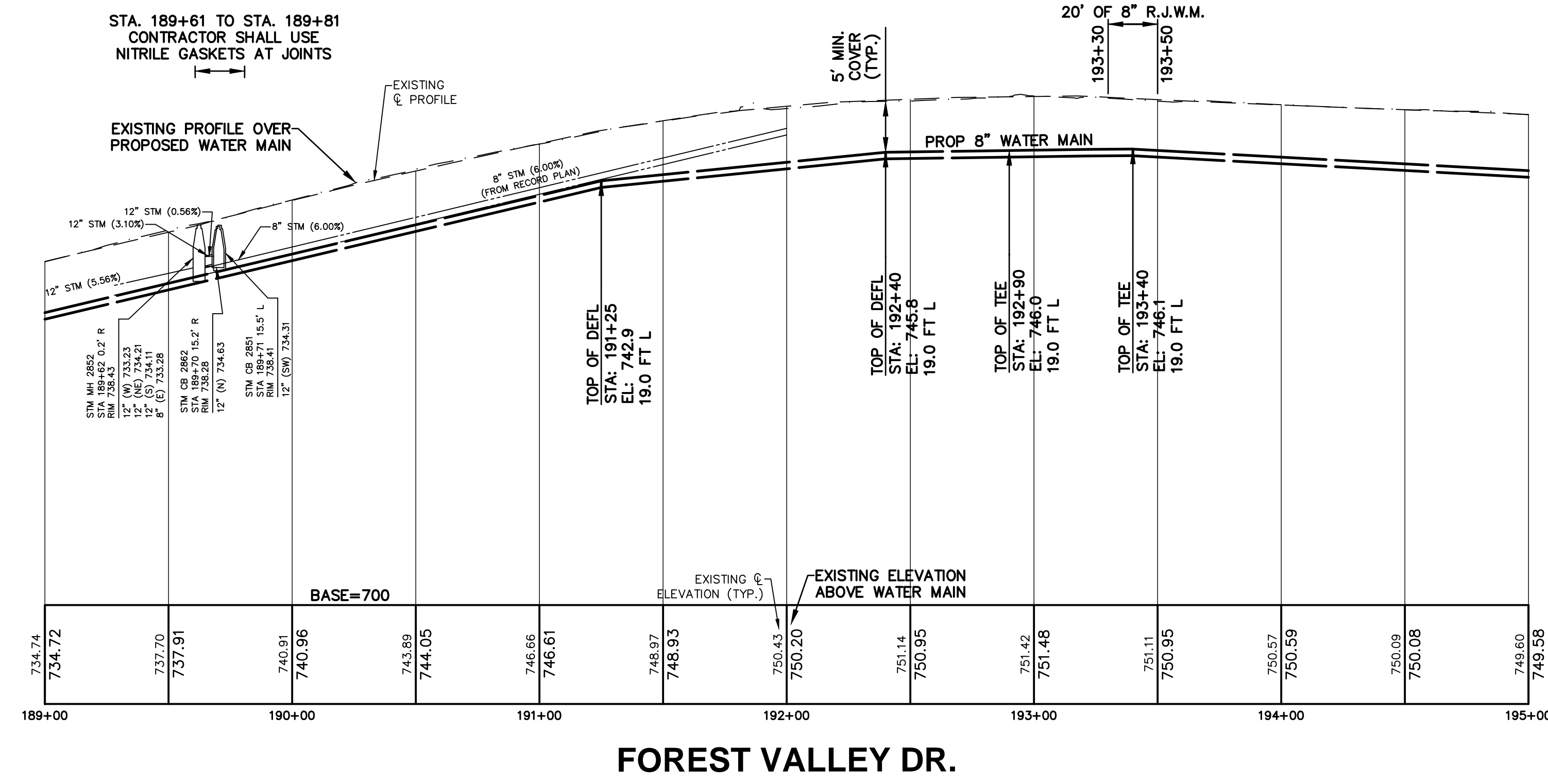
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(1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
 (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH
 WATER SERVICE, 1 INCH
 (TYP. 5 LOCATIONS ON FOREST VALLEY DR. - THIS SHEET)

WATER MAIN, 8 INCH (HP)
 WATER MAIN, 6 INCH
 PLUG, 6 INCH

WATER SERVICES FROM CURB STOP TO METER PAID FOR ON A SEPARATE CONTRACT (TYP.)
 FUTURE DOMESTIC 6" WATER SERVICE



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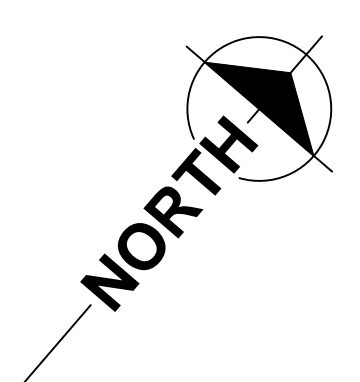
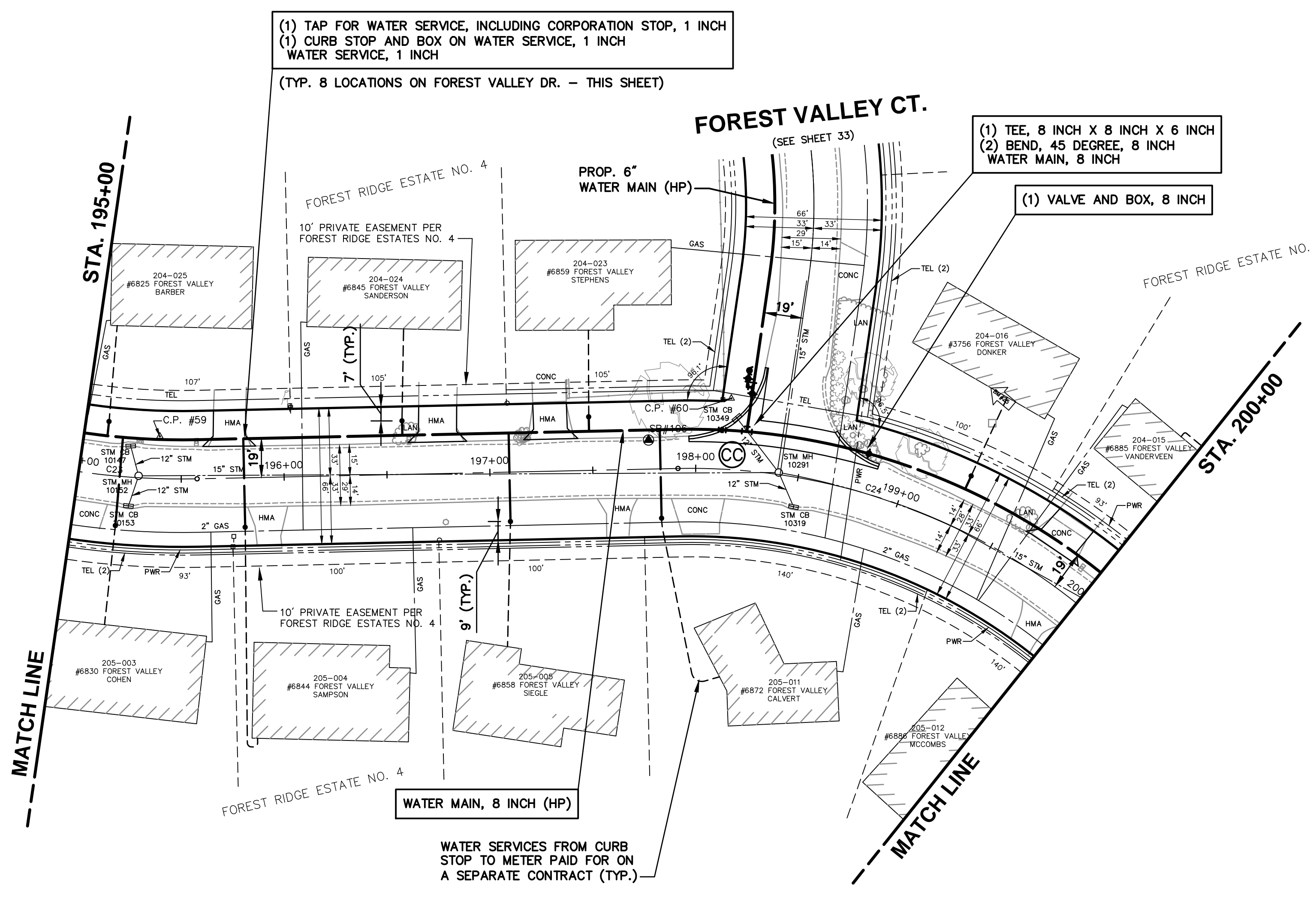
REVISIONS		
NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:
Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

WATER MAIN IN FOREST VALLEY DRIVE
 OAKMONT ST. TO OAK TREE DR.
 (BURGER-GOODWOOD NEIGHBORHOOD WATER MAIN - PHASE 2)

Drawn by: JDH/PFN GPF No. **5892** Sheet No. **28 of 67**
 Check: Field JM
 Check: Office JS



CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C23	236'	350'	N67°24'50"E 232'
C24	374'	300'	N83°48'35"E 351'

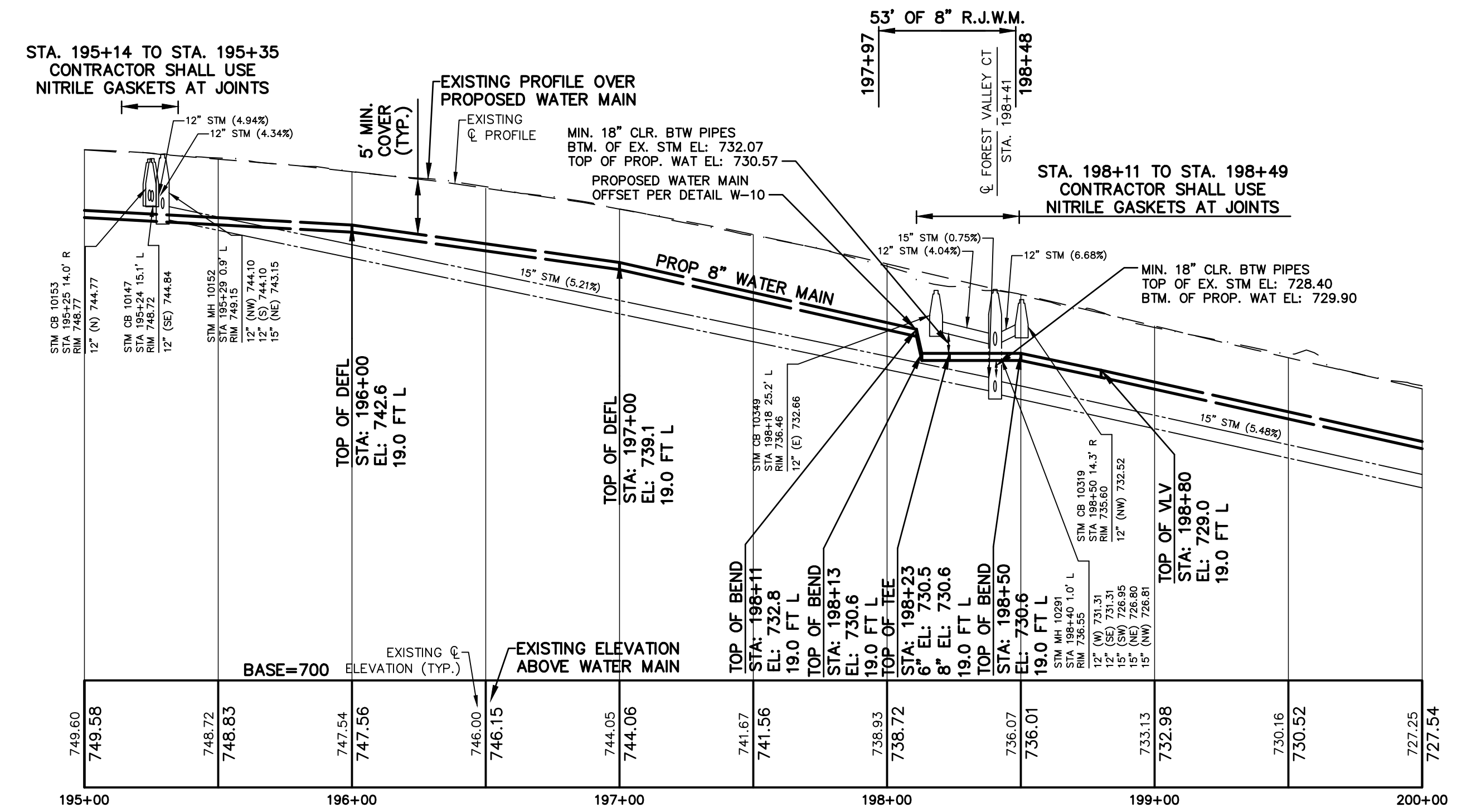
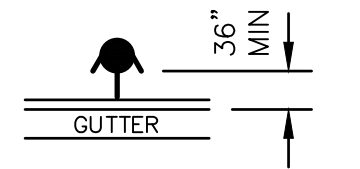
BENCHMARKS
B.M. #25 - TOP SW CORNER OF BRICK STEP. 0.8' ABOVE WALK @ HSE #3756 - ELE. 734.47

CONTROL POINTS
#59 - CP P&N TRAV CAP - ELE. 749.09
#60 - CP P&N TRAV CAP - ELE. 737.36

SCALES
PLAN 1"=40'
PROFILE 1"=40'
VERT. 1"=10'

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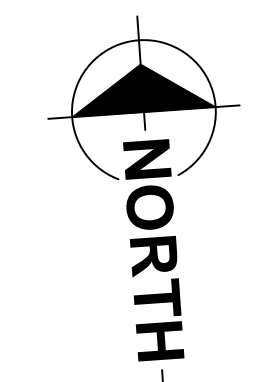
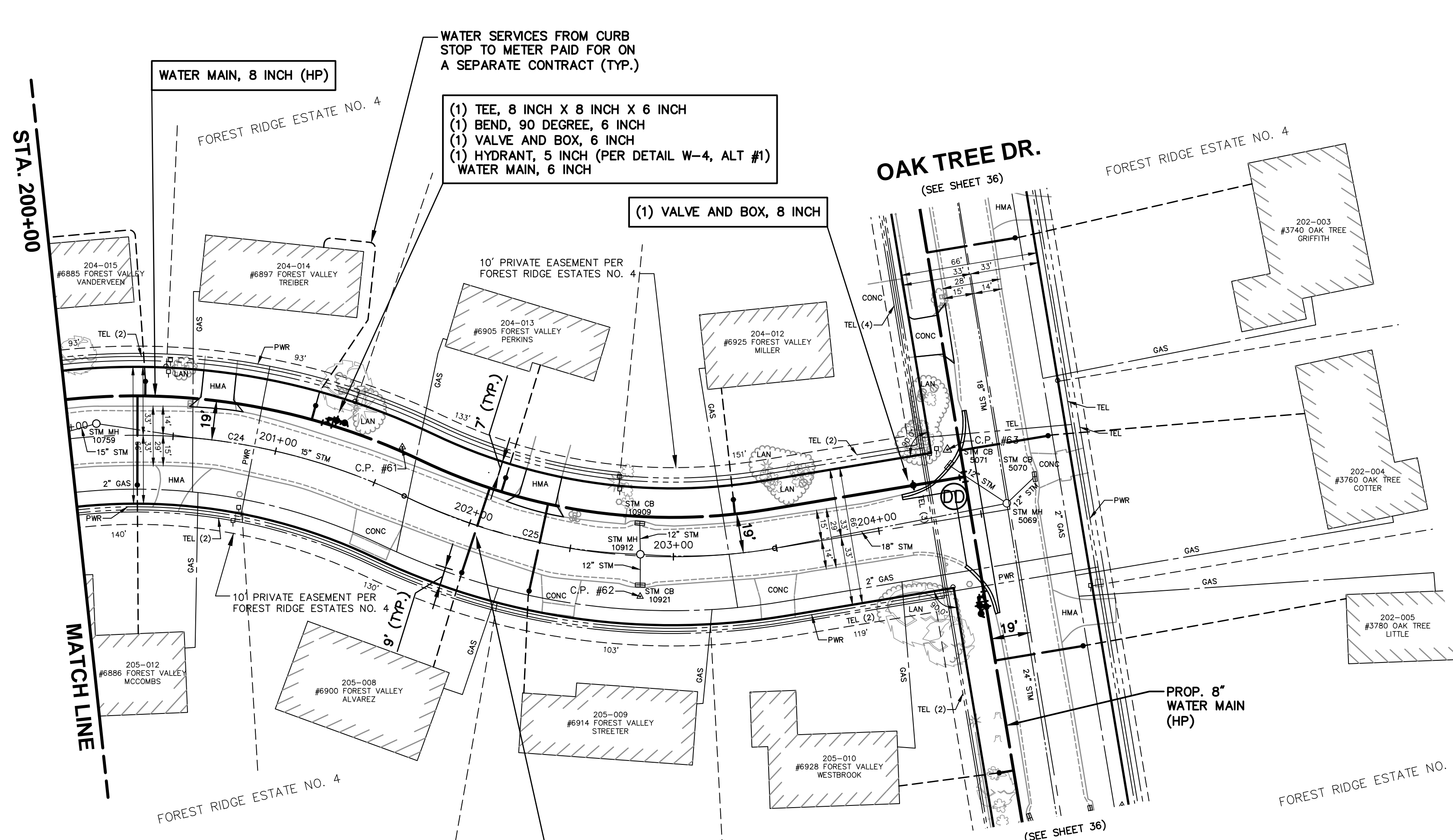
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**WATER MAIN
IN
FOREST VALLEY DRIVE**

OAKMONT ST.
TO
OAK TREE DR.
(BURGER-GOODWOOD NEIGHBORHOOD
WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. 5892 Sheet No. 29 of 67
Check: Field JM
Check: Office JS



CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C24	374'	300'	N83°48'35"E 351'
C25	183'	300'	S77°56'26"E 180'

CONTROL POINTS	
#61	- CP P&N TRAV CAP - ELE. 720.87
#62	- CP P&N TRAV CAP 5' S OF CB - ELE. 718.73
#63	- CP P&N TRAV CAP - ELE. 720.54

SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 HORZ. 1"=10'
 VERT. 1"=10'

- (1) TEE, 8 INCH X 8 INCH X 6 INCH
- (1) BEND, 90 DEGREE, 6 INCH
- (1) VALVE AND BOX, 6 INCH
- (1) HYDRANT, 5 INCH (PER DETAIL W-4, ALT #1)
- WATER MAIN, 6 INCH

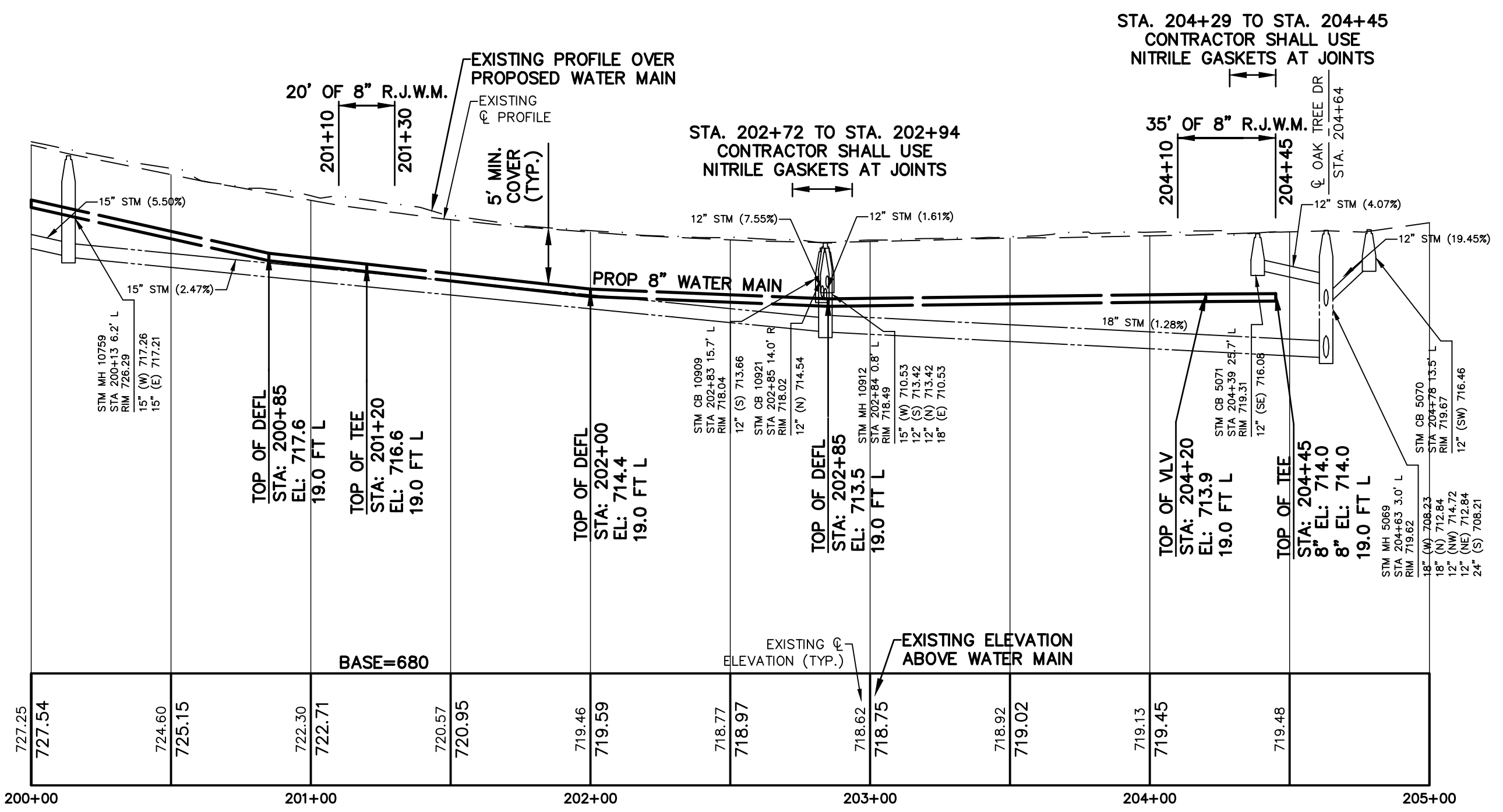
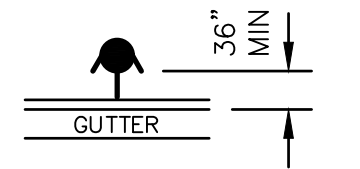
(1) VALVE AND BOX, 8 INCH

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- (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH WATER SERVICE, 1 INCH

(TYP. 7 LOCATIONS ON FOREST VALLEY DR. - THIS SHEET)

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REVISIONS		
NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

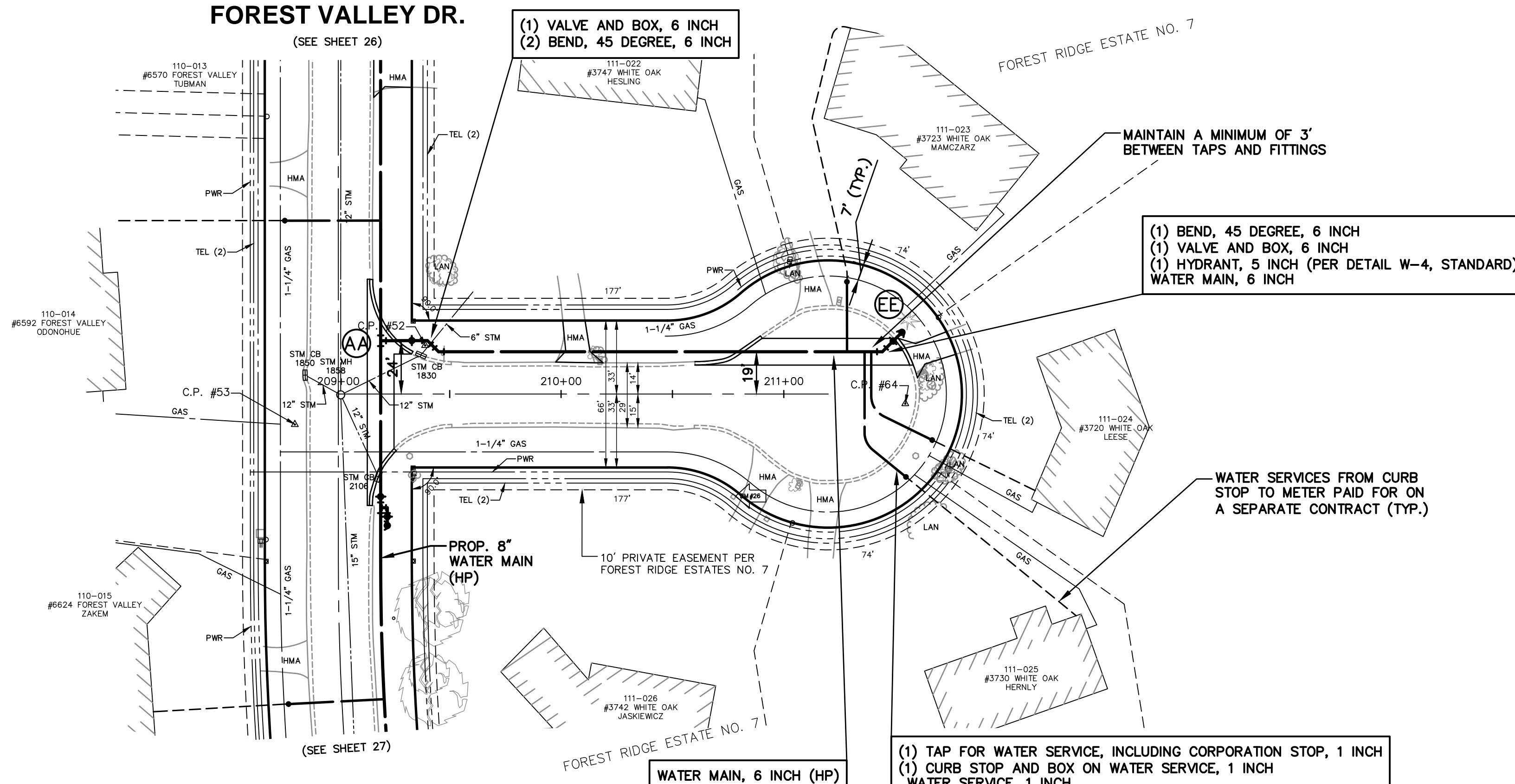
City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 FOREST VALLEY DRIVE
 OAKMONT ST.
 TO
 OAK TREE DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. **5892** Sheet No. **30 of 67**
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FOREST VALLEY DR.

(SEE SHEET 26)

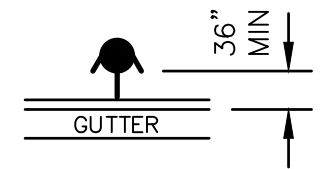


SCALES
 PLAN 1"=40'
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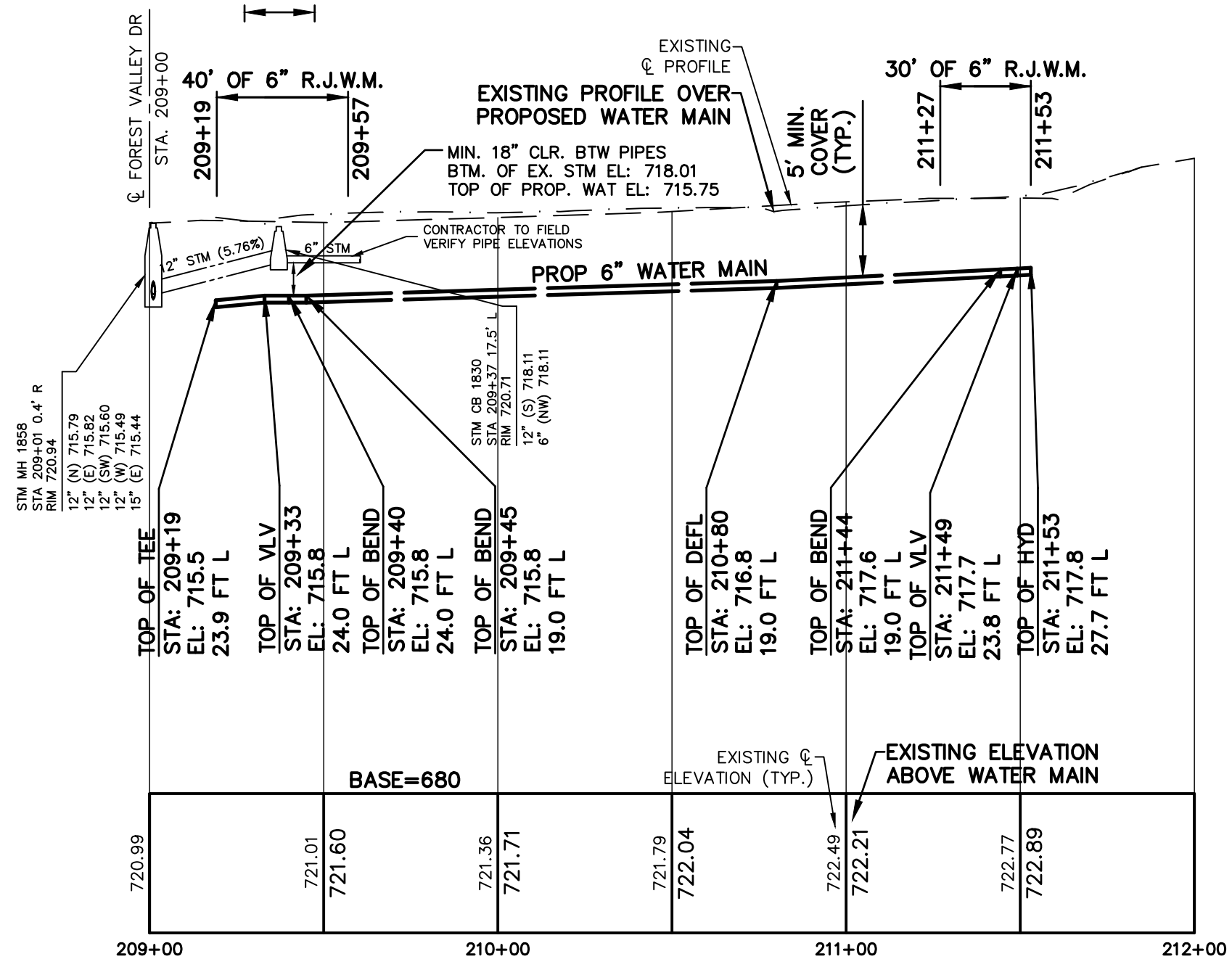
BENCHMARKS
 B.M. #26 - TOP N CORNER OF BRICK PILLAR, S SIDE DRIVE TO #3742, 1.9' ABOVE GROUND - ELE. 724.11
 CONTROL POINTS
 #52 - CP P&N TRAV CAP - ELE. 721.73
 #53 - CP @ #6592 FOREST VALLEY - ELE. 720.66
 #64 - CP MAG NAIL IN PAVEMENT - ELE. 722.75

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STA. 209+27 TO STA. 209+47
 CONTRACTOR SHALL USE
 NITRILE GASKETS AT JOINTS



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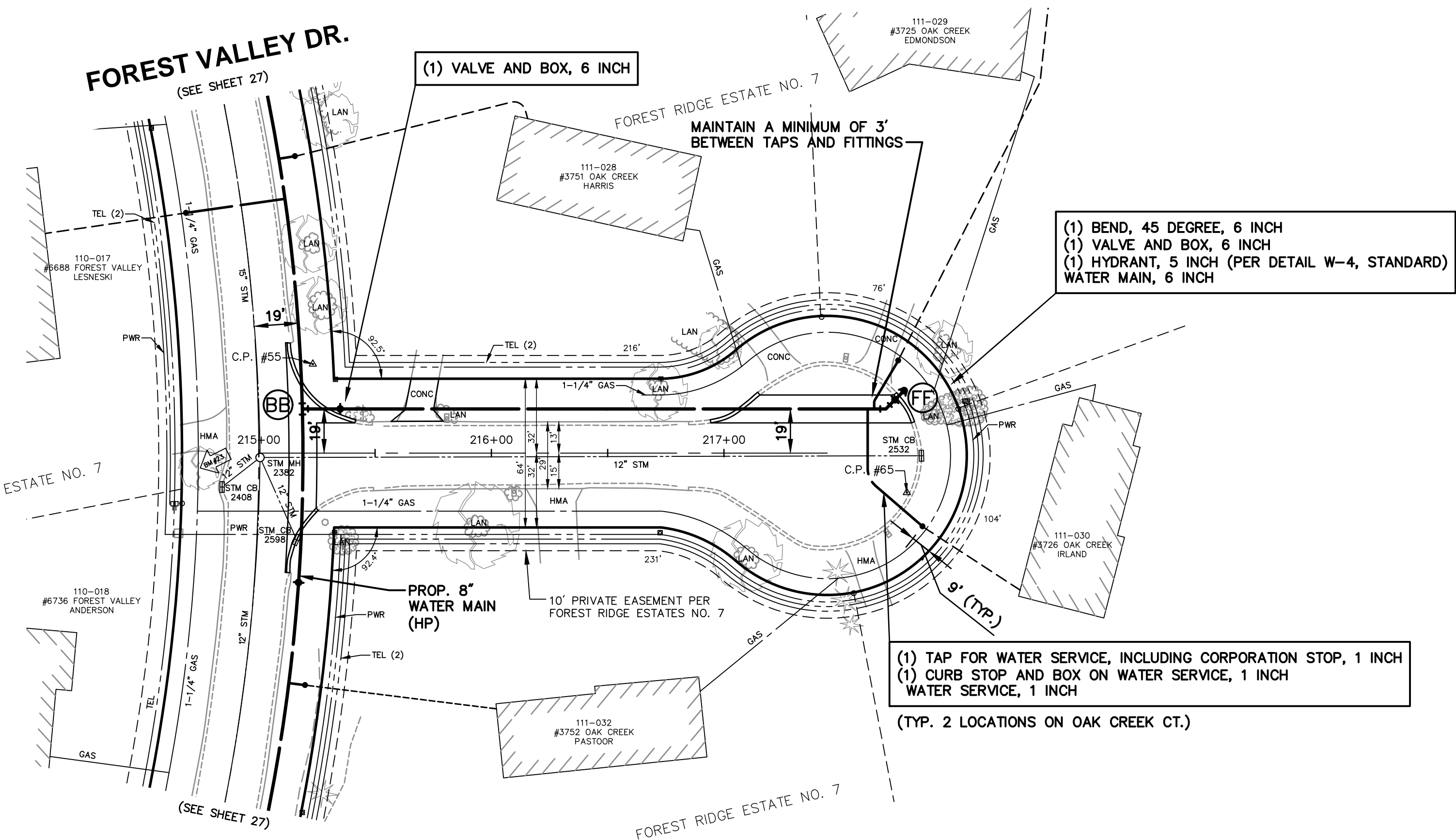
SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 WHITE OAK COURT
 FOREST VALLEY DR.
 TO
 NORTH END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 31 of 67
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 Check: Office JS



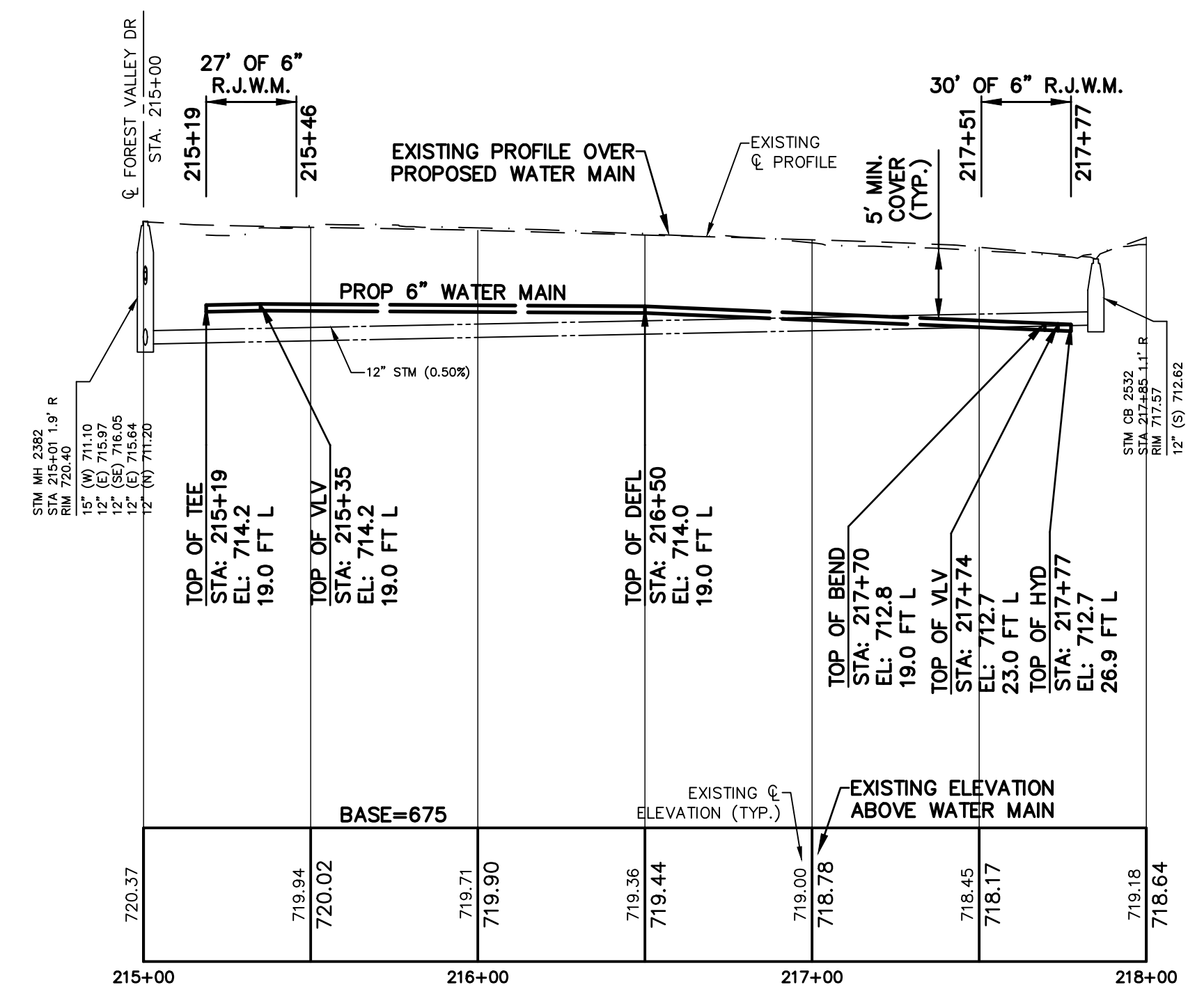
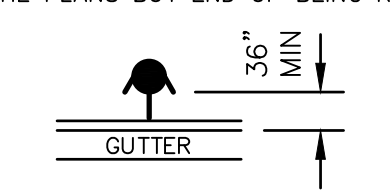
BENCHMARKS
 B.M. #23 - SET MAG VERTICAL IN N ROOT OF 16" MAPLE - ELE. 722.16

CONTROL POINTS
 #55 - CP P&N TRAV CAP - ELE. 719.63
 #65 - CP MAG NAIL IN PAVEMENT - ELE. 717.95

SCALES
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REVISIONS

NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:
Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 OAK CREEK COURT**
 FOREST VALLEY DR.
 TO
 NORTH END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. 5892 Sheet No. 32 of 67
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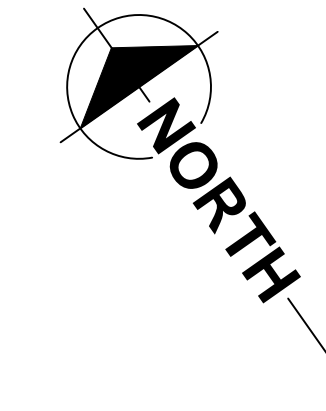
(1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
 (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH
 WATER SERVICE, 1 INCH

(TYP. 6 LOCATIONS ON FOREST VALLEY CT.)

WATER SERVICES FROM CURB STOP TO METER PAID FOR ON A SEPARATE CONTRACT (TYP.)

(1) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH (PER DETAIL W-4, STANDARD)
 WATER MAIN, 6 INCH

(1) TEE, 6 INCH X 6 INCH X 6 INCH
 (1) BEND, 90 DEGREE, 6 INCH
 (2) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH (PER DETAIL W-4, ALT #1)
 WATER MAIN, 6 INCH



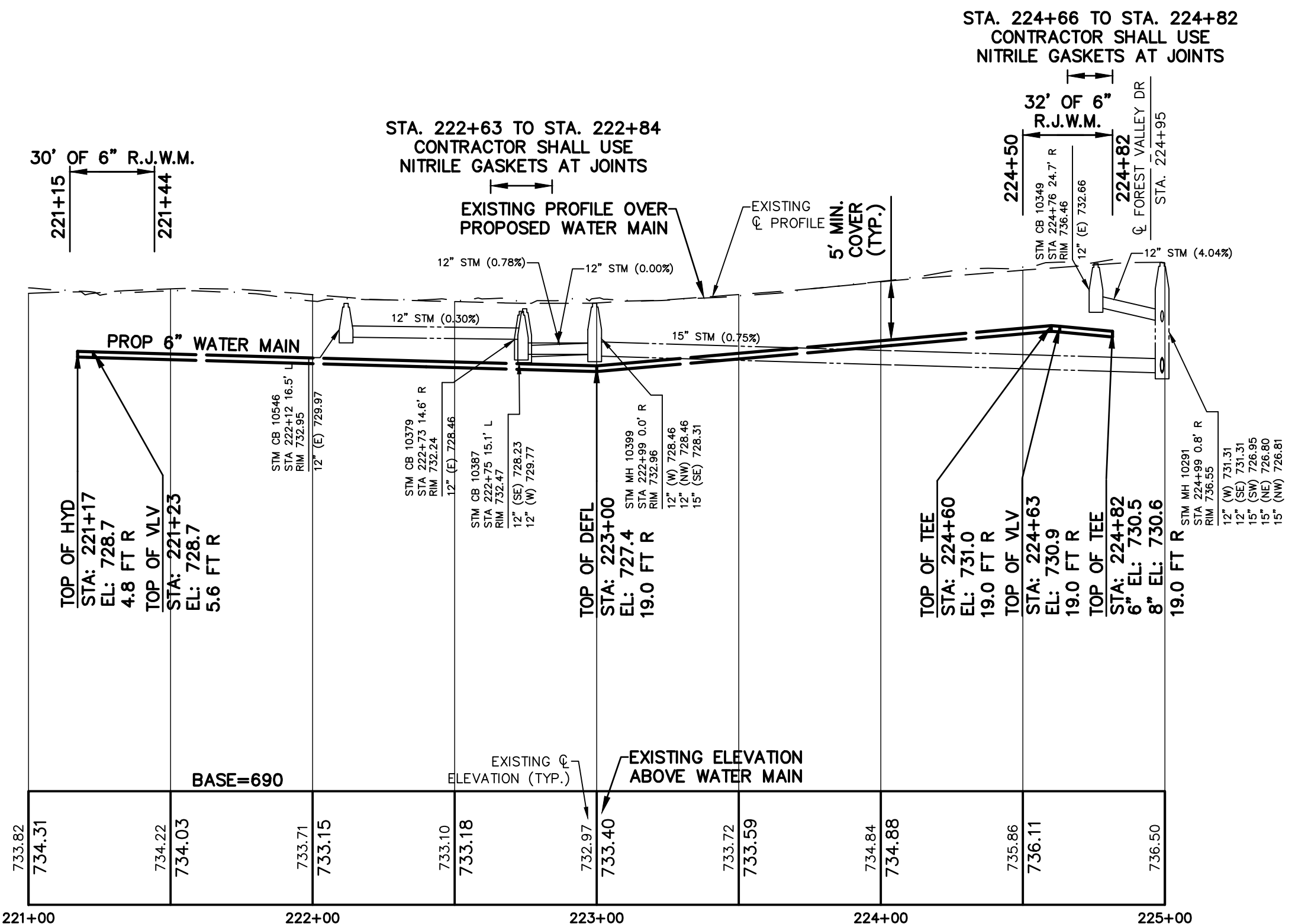
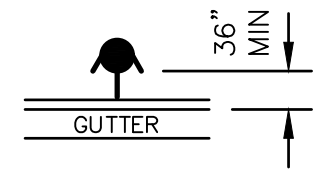
CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C26	188'	250'	S53°56'21"E 183'

BENCHMARKS
 B.M. #27 - TOP SW COR CONC STEP. 0.8' ABOVE WALK @ HSE #3712 - ELE. 739.07
 B.M. #25 - TOP SW CORNER OF BRICK STEP. 0.8' ABOVE WALK @ HSE #3756 - ELE. 734.47
 CONTROL POINTS
 #60 - CP P&N TRAV CAP - ELE. 737.36
 #66 - CP P&N TRAV CAP - ELE. 735.00

SCALES
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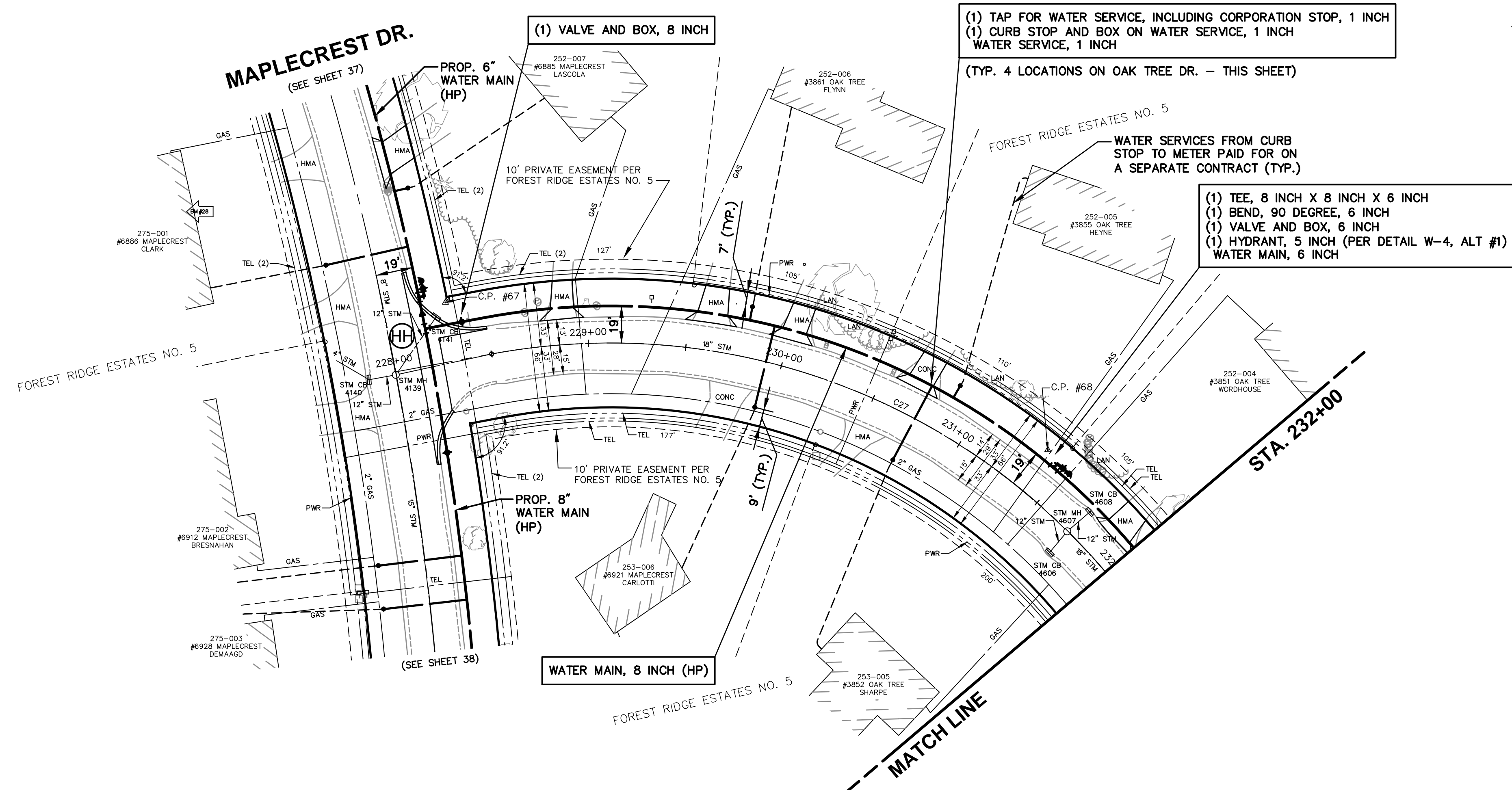
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City of Grand Rapids
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**WATER MAIN
 IN
 FOREST VALLEY COURT
 WEST END
 TO
 FOREST VALLEY DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 33 of 67
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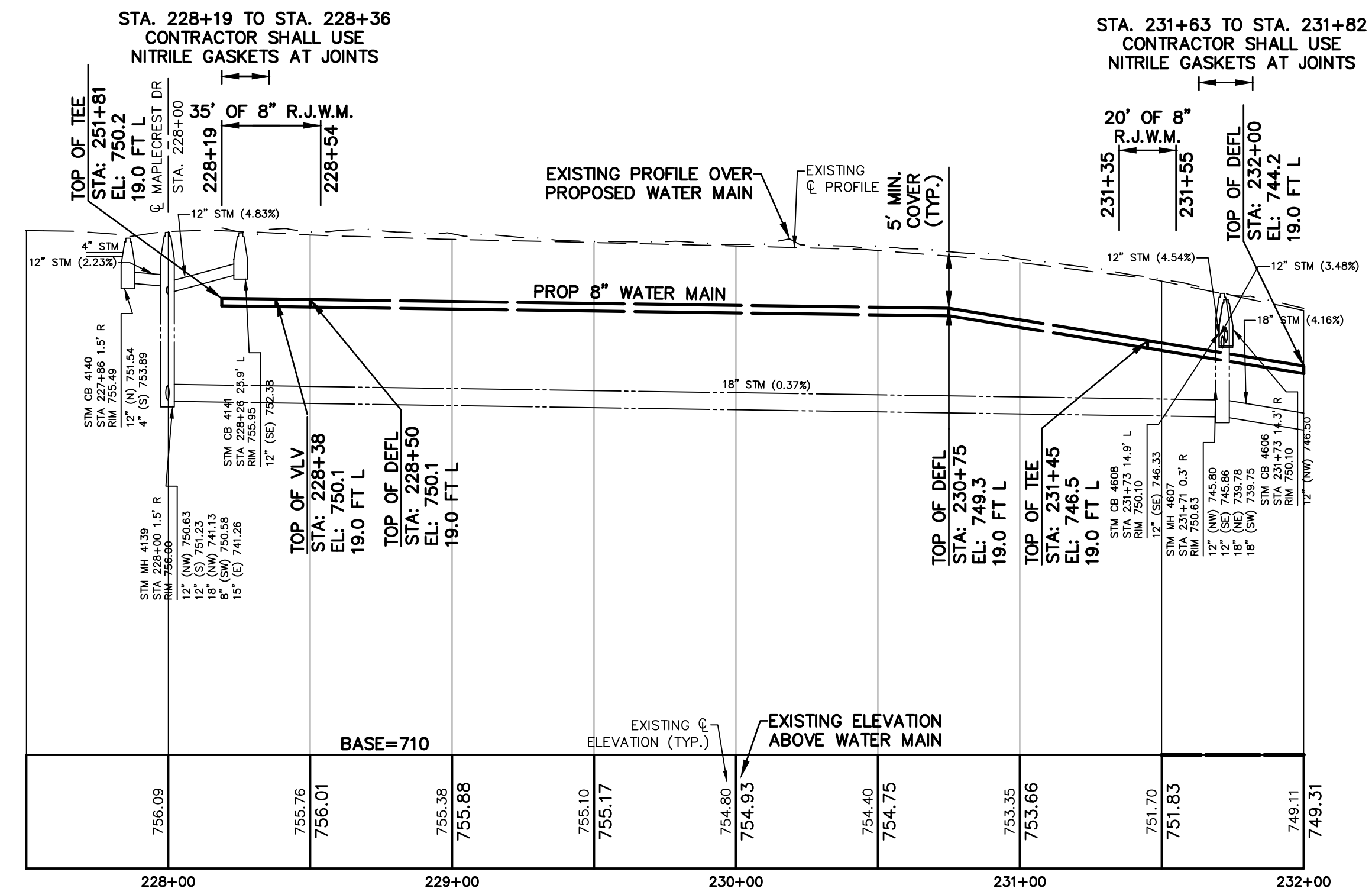
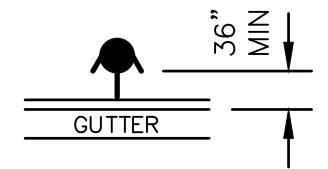
CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C27	418'	333'	N14°03'51"E 391'

SCALES
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 PROFILE 1"=40'
 HORZ. 1"=40'
 VERT. 1"=10'

BENCHMARKS
 B.M. #28 - HSE #6886 TOP OF NE CONC PORCH STEP BY RED DOOR 1.0 FT ABOVE WALK - ELE. 762.97
 CONTROL POINTS
 #67 - CP P&N TRAV CAP - ELE. 757.37
 #68 - CP P&N TRAV CAP 10FT E OF BIT OPP HOUSE 3855 - ELE. 752.75

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9. CURB AND GUTTER SHALL BE REMOVED AND REPLACED WHEN LAYING WATER SERVICES UNDER IT. NO TUNNELING UNDER THE CURB AND GUTTER WILL BE ALLOWED TO LAY WATER SERVICES EXCEPT WHERE THE WATER SERVICE IS DIRECTIONALLY BORED.
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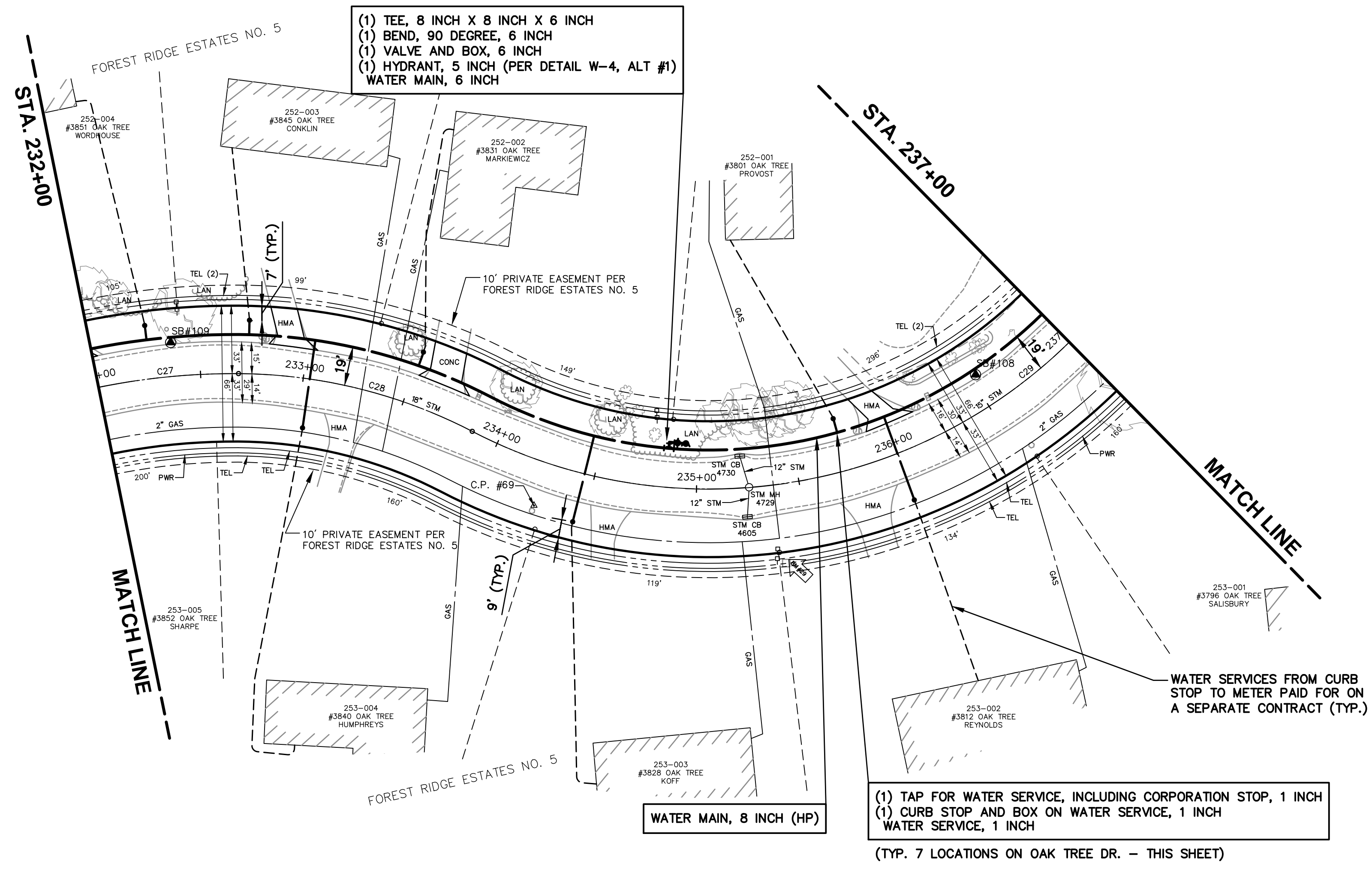
SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

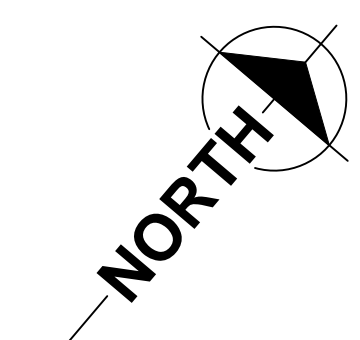
**WATER MAIN
 IN
 OAK TREE DRIVE**
 MAPLECREST DR.
 TO
 WOODBROOK DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. 5892 Sheet No. 34 of 67
 Check: Field JM
 Check: Office JS



- (1) TEE, 8 INCH X 8 INCH X 6 INCH
- (1) BEND, 90 DEGREE, 6 INCH
- (1) VALVE AND BOX, 6 INCH
- (1) HYDRANT, 5 INCH (PER DETAIL W-4, ALT #1)
- WATER MAIN, 6 INCH

- (1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
 - (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH
 - WATER SERVICE, 1 INCH
- (TYP. 7 LOCATIONS ON OAK TREE DR. - THIS SHEET)



CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C27	418'	333'	N14°03'51"E 391'
C28	118'	250'	N63°35'52"E 117'
C29	360'	250'	N35°50'52"E 330'

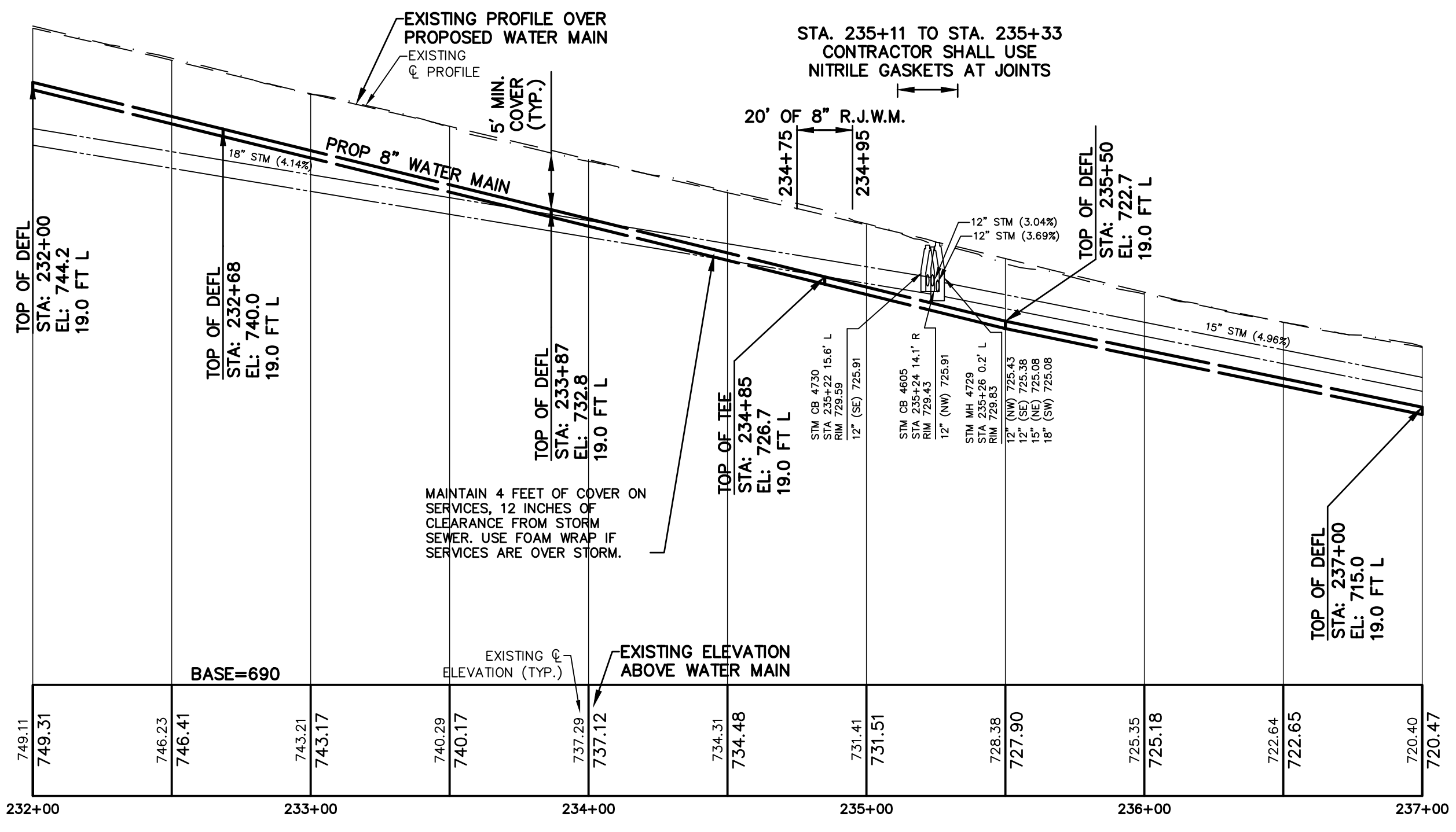
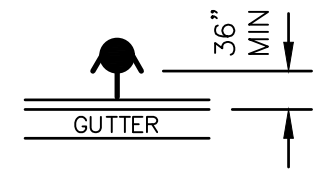
BENCHMARKS
 B.M. #29 - #3812 CHISSELED SQUARE
 NORTHWEST CORNER OF 4FT X 4FT
 CONCRETE PAD TO ELECTRIC TRANSFORMER
 BOX 0.1 FT ABOVE GROUND. - ELE. 729.40

CONTROL POINTS
 #69 - CP P&N TRAV CAP 8FT E OF BIT
 OPP LP - ELE. 736.28

SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 VERT. 1"=10'

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REVISIONS		
NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 OAK TREE DRIVE
 MAPLECREST DR.
 TO
 WOODBROOK DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 35 of 67
 Check: Field JM
 Check: Office JS

- (1) VALVE AND BOX, 6 INCH
- (1) TEE, 8 INCH X 8 INCH X 6 INCH
- (1) BEND, 90 DEGREE, 6 INCH
- (1) VALVE AND BOX, 6 INCH
- (1) HYDRANT, 5 INCH (PER DETAIL W-4, ALT #1)
- WATER MAIN, 6 INCH

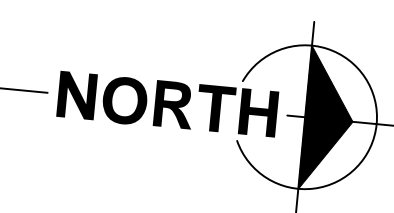
- (2) BEND, 45 DEGREE, 8 INCH
- (1) SLEEVE, 8 INCH
- WATER MAIN, 8 INCH

- (1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
- (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH
- WATER SERVICE, 1 INCH
- (TYP. 5 LOCATIONS ON OAK TREE DR. - THIS SHEET)

CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C29	360'	250'	N35°50'52"E 330'

BENCHMARKS
 B.M. #30 - #6965 WOODBROOK, TOP OF NORTH HYDRANT FLANGE BOLT UNDER E IN ELI W 0.95 FEET ABOVE GROUND. - ELE. 741.13

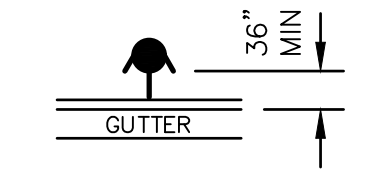
CONTROL POINTS
 #63 - CP P&N TRAV CAP - ELE. 720.54
 #70 - CP P&N TRAV CAP 10FT E OF OFF DECIDUOUS 3796 - ELE. 720.11
 #71 - CP P&N TRAV CAP 15FT E OF CATCH BASIN - ELE. 717.84
 #72 - CP P&N TRAV CAP - ELE. 738.33



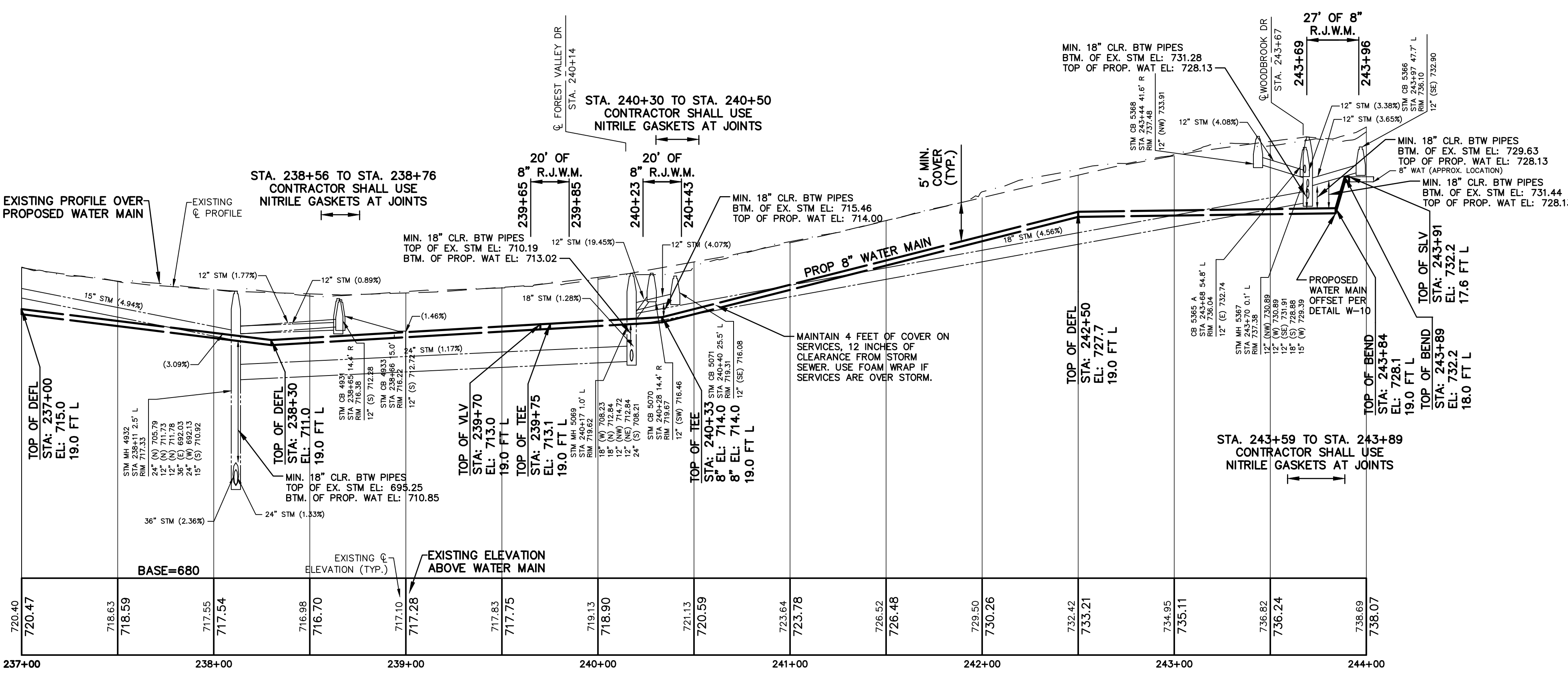
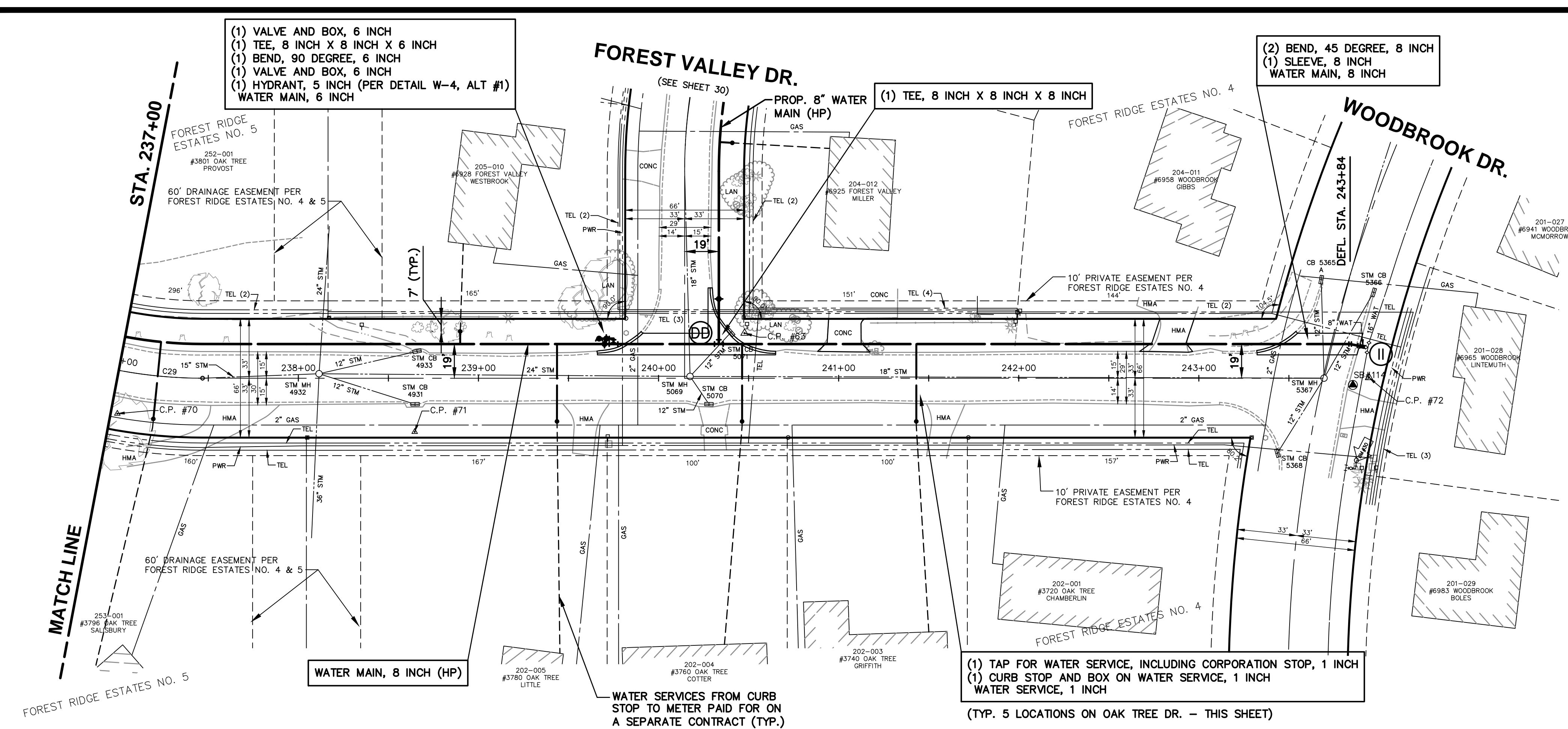
SCALES
 PLAN: 1"=40'
 PROFILE: 1"=40'
 VERT. 1"=10'

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(A) - (NN) WATER MAIN TESTING LIMITS



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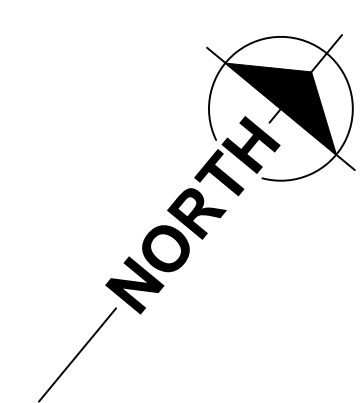
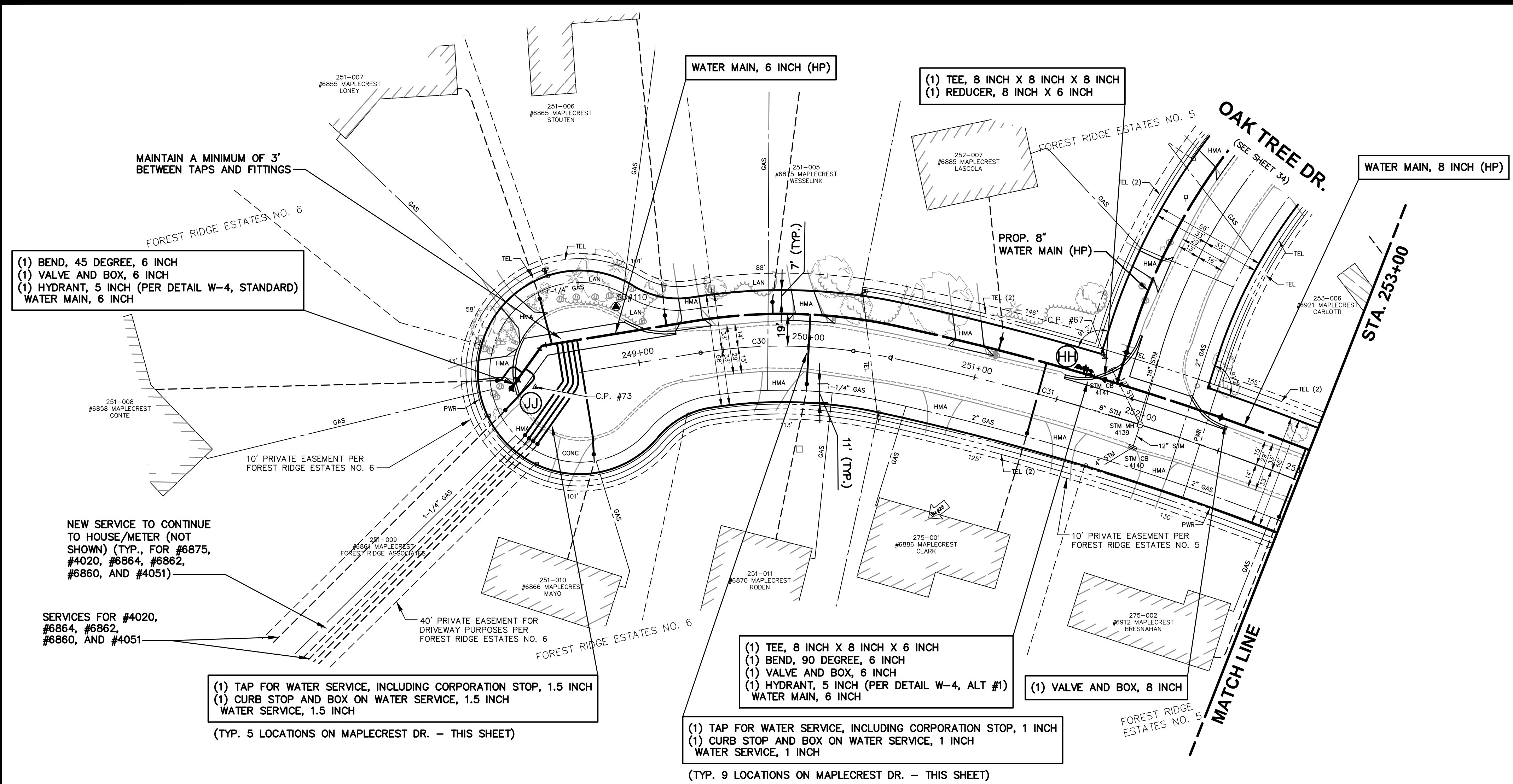
SURVEYED & DESIGNED BY:

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**WATER MAIN
 IN
 OAK TREE DRIVE**
 MAPLECREST DR.
 TO
 WOODBROOK DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by: J.D.H./P.F.N. GPF No. 5892 Sheet No. 36 of 67
 Check: Field J.M.
 Check: Office J.S.



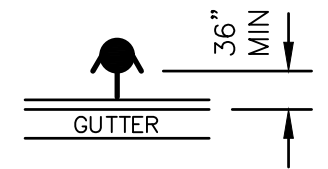
CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C30	90'	300'	N49°46'51"E 90'
C31	740'	1600'	N75°54'52"E 733'

BENCHMARKS
 B.M. #28 - HSE #6886 TOP OF NE CONC PORCH
 STEP BY RED DOOR 1.0 FT ABOVE WALK - E.L. 762.97
CONTROL POINTS
 #67 - CP P&N TRAV CAP - E.L. 757.37
 #73 - CP MAG NAIL IN PAVEMENT - E.L. 768.58'

SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 VERT. 1"=10'

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(1) BEND, 45 DEGREE, 6 INCH
 (1) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH (PER DETAIL W-4, STANDARD)
 WATER MAIN, 6 INCH

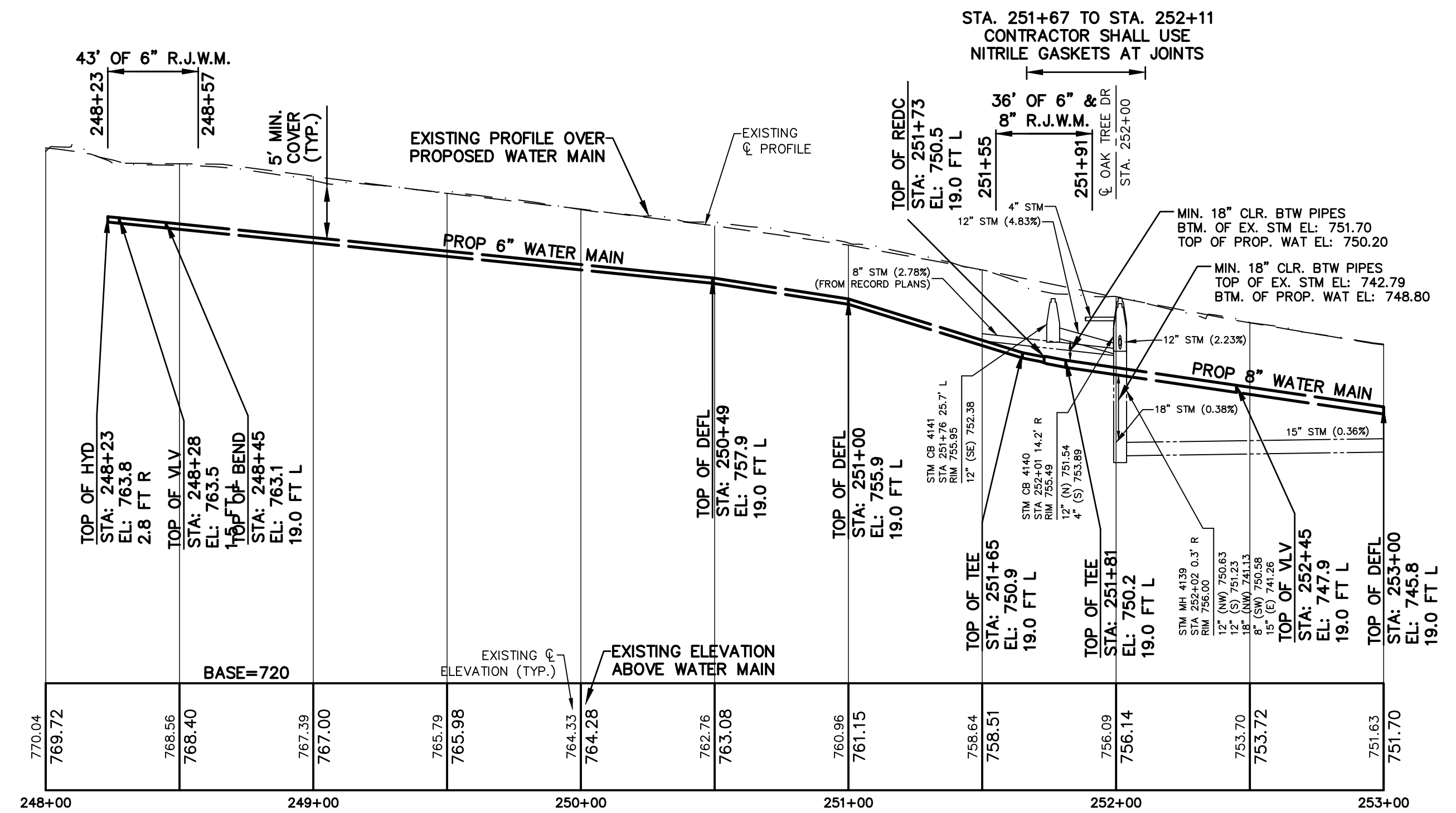
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 (1) REDUCER, 8 INCH X 6 INCH

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 (1) HYDRANT, 5 INCH (PER DETAIL W-4, ALT #1)
 WATER MAIN, 6 INCH

(1) VALVE AND BOX, 8 INCH

(1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1.5 INCH
 (1) CURB STOP AND BOX ON WATER SERVICE, 1.5 INCH
 WATER SERVICE, 1.5 INCH
 (TYP. 5 LOCATIONS ON MAPLECREST DR. - THIS SHEET)

(1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
 (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH
 WATER SERVICE, 1 INCH
 (TYP. 9 LOCATIONS ON MAPLECREST DR. - THIS SHEET)



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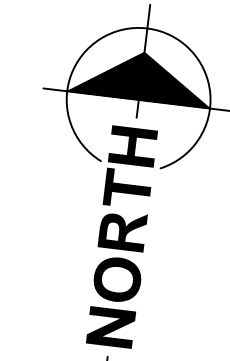
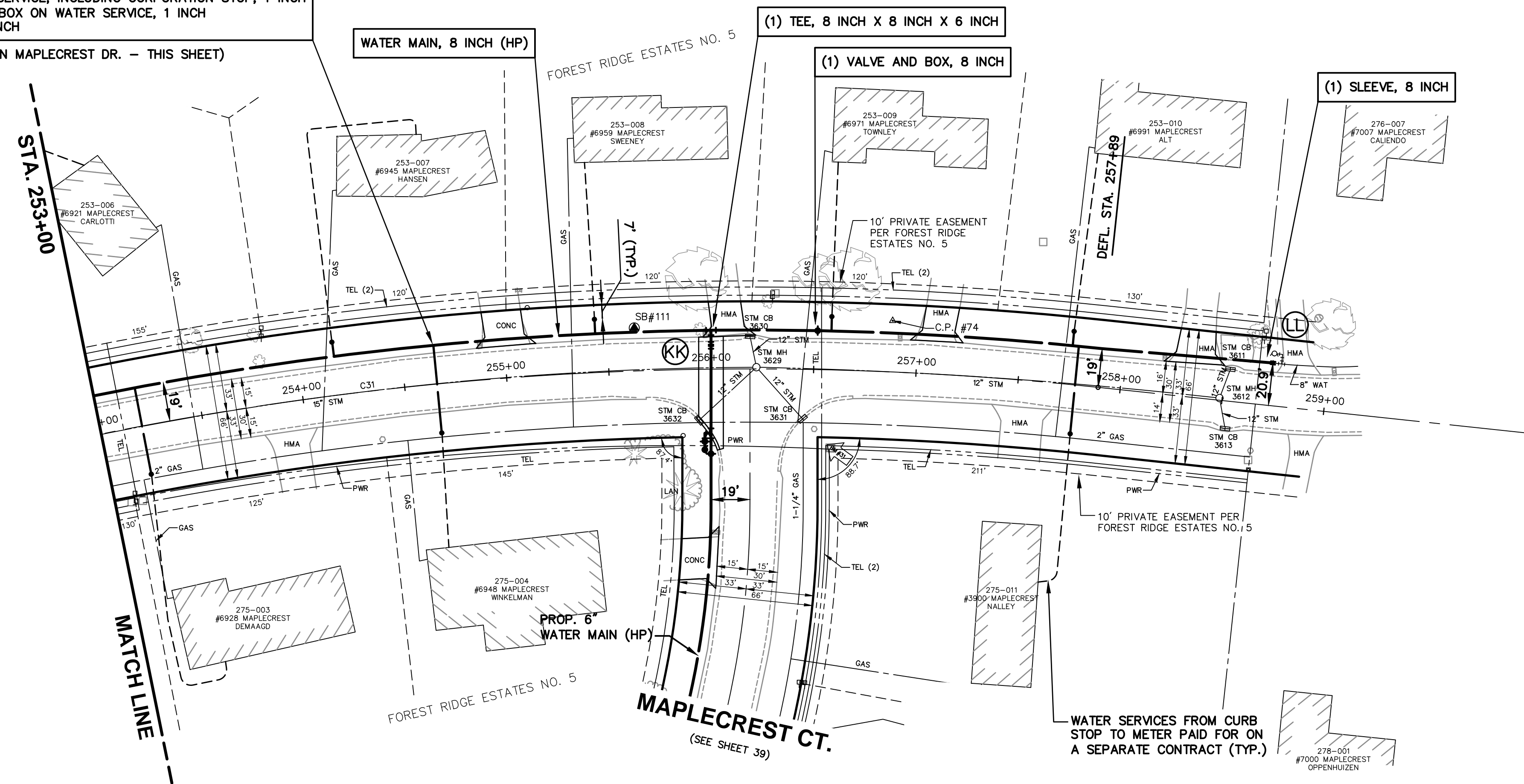
NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:
Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory
 City of Grand Rapids
 Public Services
 Engineering Department
**WATER MAIN
 IN
 MAPLECREST DRIVE
 WEST END
 TO
 250' EAST OF MAPLECREST CT.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 37 of 67
 Check: Field JM
 Check: Office JS

(1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
 (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH
 WATER SERVICE, 1 INCH

(TYP. 7 LOCATIONS ON MAPLECREST DR. - THIS SHEET)



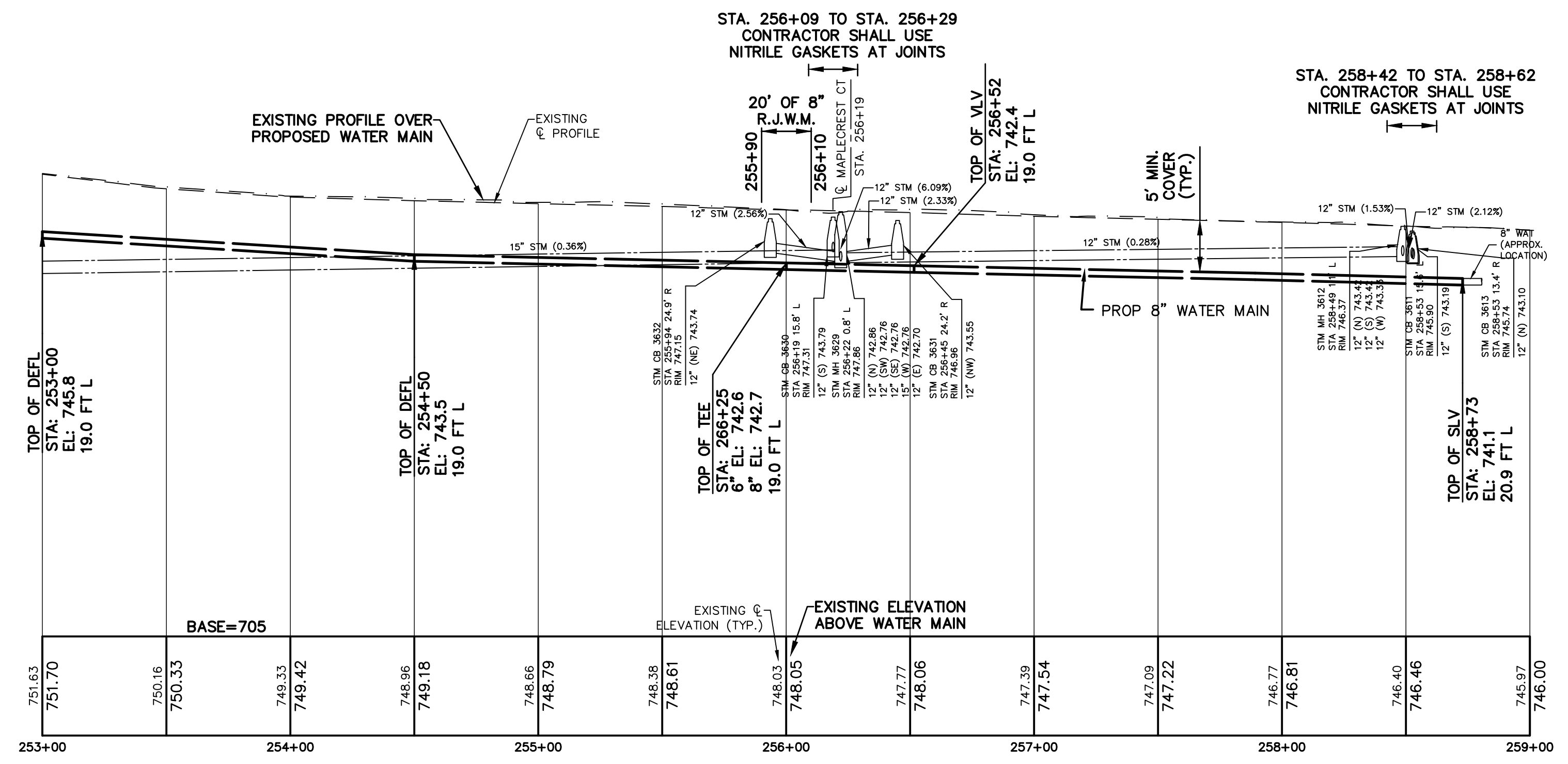
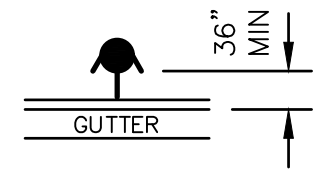
CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C31	740'	1600'	N75°54'27"E 733'

BENCHMARKS
 B.M. #31 - CHISSELED SQUARE
 NORTHWEST CORNER CONCRETE PAD
 0.3FT ABOVE GROUND. - ELE. 748.68
CONTROL POINTS
 #74 - CP P&N TRAV CAP - ELE. 748.23

SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 VERT. 1"=10'

WATER MAIN GENERAL NOTES

1. WATER MAIN CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE STANDARD CONSTRUCTION SPECIFICATIONS OF CITY OF GRAND RAPIDS, 2021 EDITION, AND ALL REVISIONS THEREOF.
2. DEPTH OF THE PROPOSED WATER MAIN SHALL BE 5'-9" FROM ROAD CENTERLINE GRADE TO CENTERLINE OF PIPE OR HAVE A MINIMUM OF 5'-0" OF COVER TO THE TOP OF THE PIPE UNLESS OTHERWISE NOTED ON DRAWINGS. ADJUSTMENT MAY BE REQUIRED TO AVOID CONFLICTS WITH EXISTING OR PROPOSED UTILITIES.
3. ALL PIPE TO HAVE NECESSARY JOINT RESTRAINTS PER SECTION 4.3.16 OF THE STANDARD CONSTRUCTION SPECIFICATIONS OF THE CITY OF GRAND RAPIDS, INCLUDING TABLE 4.3-7 AND DETAIL W-15.
4. ALL WATER MAIN TO BE ZINC-COATED. WATER SERVICES ARE NOT SUBJECT TO THIS REQUIREMENT.
5. WATER MAINS 6" DIAMETER AND LESS CALLED TO BE ABANDONED ON DRAWINGS DO NOT REQUIRE FILLING, BUT ALL OPEN ENDS ARE TO BE CAPPED AND PLUGGED WITH CONCRETE. COST TO BE INCLUDED IN ITEMS FOR LAYING NEW WATER MAIN.
6. EXPOSE ALL UNDERGROUND UTILITIES AT POTENTIAL POINTS OF CONFLICT BEFORE LAYING WATER MAIN TO DETERMINE WHETHER TO GO OVER OR UNDER THE EXISTING UTILITIES. THE WATER MAIN SHALL BE DEFLECTED TO GO OVER OR UNDER EXISTING UTILITIES WHEN REQUIRED BY THE ENGINEER. 45° BENDS TO ACCOMPLISH ELEVATION CHANGES OF THE WATER MAIN WILL ONLY BE USED WHEN REQUIRED OR APPROVED BY THE ENGINEER.
7. REPLACEMENT OF WATER SERVICES SHALL BE A MINIMUM OF 1" COPPER FOR RESIDENTIAL PROPERTIES AND 1-1/2" COPPER FOR COMMERCIAL PROPERTIES.
8. FINAL DETERMINATION FOR REPLACEMENT OR RECONNECTION OF ALL WATER SERVICES INCLUDING THE SIZE SHALL BE AS REQUIRED BY THE ENGINEER & WATER DEPARTMENT. THIS MAY REQUIRE DISCUSSION BETWEEN THE ENGINEER, WATER DEPARTMENT AND THE PROPERTY OWNER.
9. CURB AND GUTTER SHALL BE REMOVED AND REPLACED WHEN LAYING WATER SERVICES UNDER IT. NO TUNNELING UNDER THE CURB AND GUTTER WILL BE ALLOWED TO LAY WATER SERVICES EXCEPT WHERE THE WATER SERVICE IS DIRECTIONALLY BORED.
10. FOR ALL ABANDONED UTILITIES THAT ARE REMOVED AS PART OF CONSTRUCTION OF A NEW UTILITY SUCH REMOVAL OF THE ABANDONED UTILITY TO LAY THE NEW UTILITY SHALL BE CONSIDERED TO BE INCLUDED IN THE ITEM FOR LAYING OF THE NEW UTILITY AND WILL NOT BE PAID FOR SEPARATELY. THIS IS ALSO THE CASE FOR THOSE UTILITIES THAT ARE DESIGNATED TO BE ABANDONED ON THE PLANS BUT END UP BEING REMOVED IN ORDER TO LAY A NEW UTILITY.
11. NEW HYDRANTS TO BE SET A MINIMUM OF 36" FROM FACE OF CURB TO FACE OF HYDRANT.
12. CURB STOPS IN PAVED AREAS (DRIVEWAYS, ETC) SHALL BE SET IN A VALVE BOX CASING (SEE CURB BOX IN PAVEMENT DETAIL).
13. THE CONTRACTOR IS TO VERIFY THE LOCATIONS OF EXISTING SEPTIC TANKS/FIELDS (INCLUDED IN PLACING WATER SERVICES). PROVIDE A MINIMUM OF 6" CLEARANCE BETWEEN EXISTING SERVICES OR UTILITIES AND THE PROPOSED WATER SERVICE. LOCATIONS OF PROPOSED WATER TAPS AND CONNECTIONS TO EXISTING WATER SERVICES SHALL BE APPROVED BY THE ENGINEER.
14. ALL 1" WATER SERVICES SHALL HAVE A VADLE™ CURB BOX LOCK INSTALLED WITH THE CURB BOX. INSTALLATIONS IN SIDEWALK OR DRIVEWAY LOCATIONS SHALL BE FURTHER STABILIZED BY PLACING A BRICK IMMEDIATELY UNDER THE BASE OF THE CURB BOX LOCK.
15. CURB STOP BOXES TO BE PLACED 7' OFF THE RIGHT-OF-WAY LINE AND A MINIMUM OF 2' FROM ANY GAS MAIN, UNLESS OTHERWISE SPECIFIED BY ENGINEER.
16. CONTRACTOR TO PLACE 2" TAIL ONTO THE PRIVATE SIDE OF THE CURB STOP BOX THAT IS EITHER CRIMPED OR CAPPED OFF.
17. CONTRACTOR TO MAINTAIN A MINIMUM OF 2' FROM THE EDGE OF CATCH BASINS AND DRAINAGE STRUCTURES TO THE EDGE OF THE WATER MAIN



THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

REVISIONS

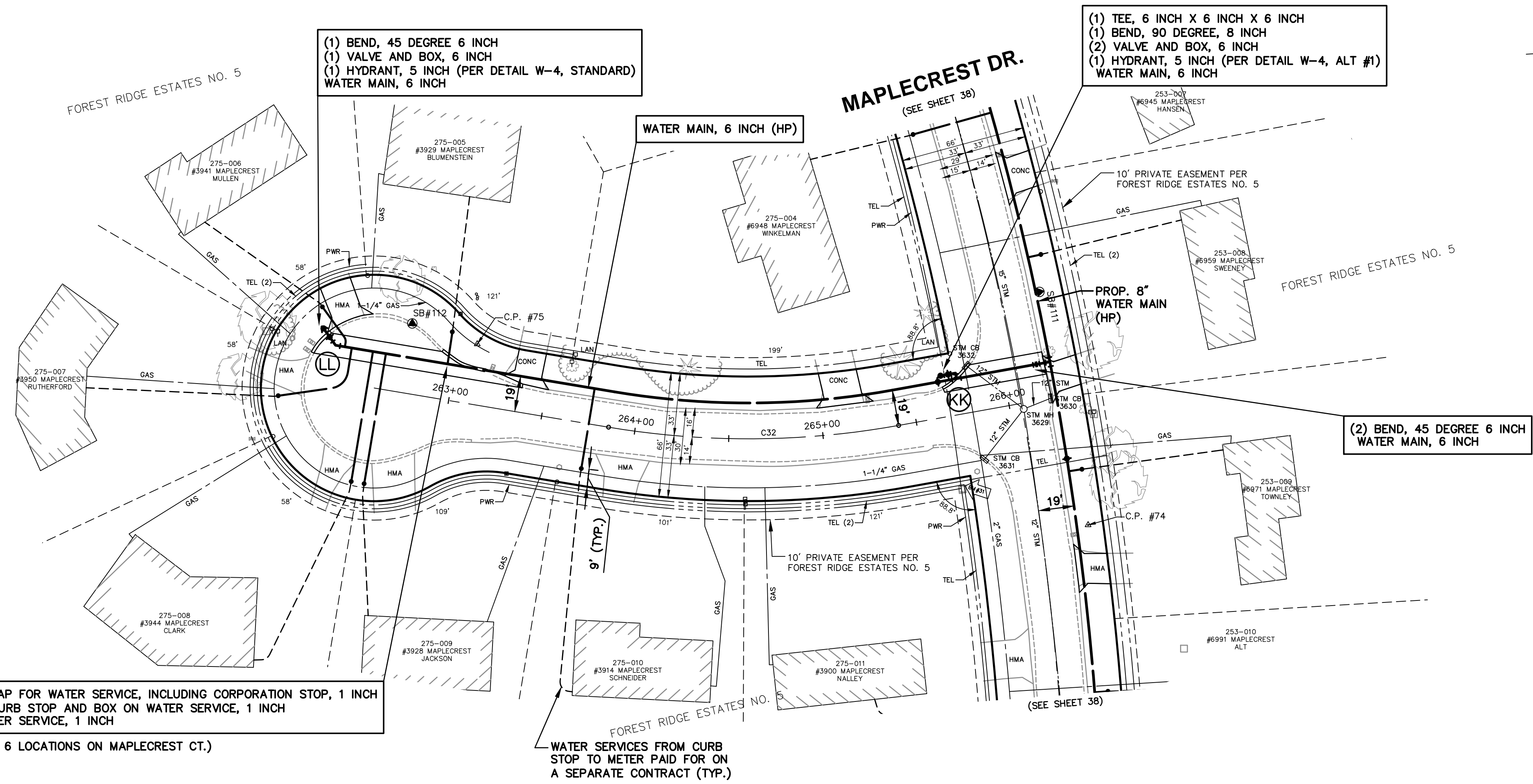
NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:
Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 MAPLECREST DRIVE
 WEST END
 TO
 250' EAST OF MAPLECREST CT.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 38 of 67
 Check: Field JM
 Check: Office JS



NORTH

SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 VERT. 1"=10'

CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C32	154'	450'	N2°33'51"E 154'

BENCHMARKS
 B.M. #31 - CHISSELED SQUARE
 NORTHWEST CORNER CONCRETE PAD
 0.3FT ABOVE GROUND. - ELE. 748.68

CONTROL POINTS
 #74 - CP P&N TRAV CAP - ELE. 748.23
 #75 - CP P&N TRAV CAP - ELE. 755.01

- (1) BEND, 45 DEGREE 6 INCH
- (1) VALVE AND BOX, 6 INCH
- (1) HYDRANT, 5 INCH (PER DETAIL W-4, STANDARD)
- WATER MAIN, 6 INCH

- (1) TEE, 6 INCH X 6 INCH X 6 INCH
- (1) BEND, 90 DEGREE, 8 INCH
- (2) VALVE AND BOX, 6 INCH
- (1) HYDRANT, 5 INCH (PER DETAIL W-4, ALT #1)
- WATER MAIN, 6 INCH

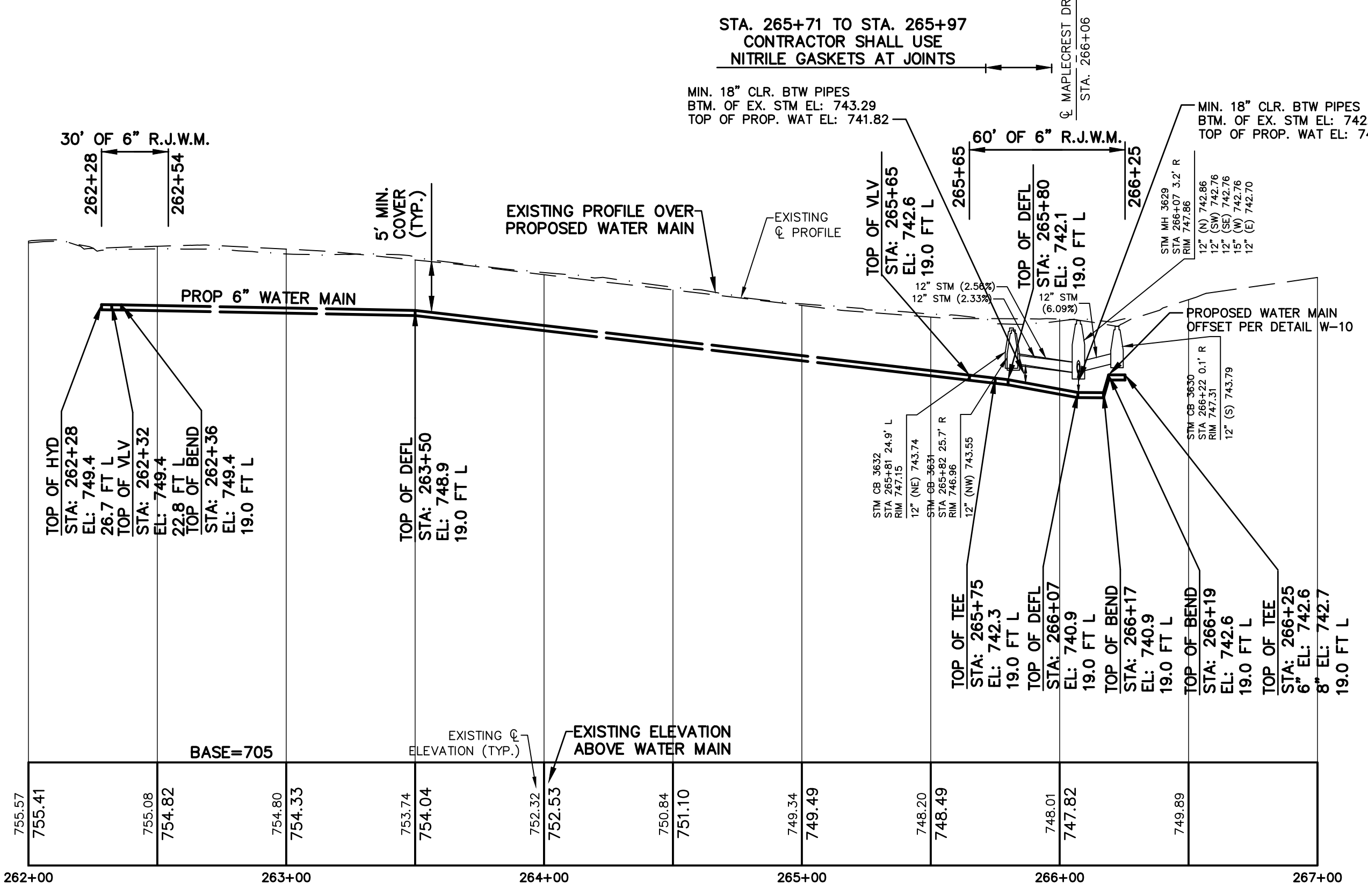
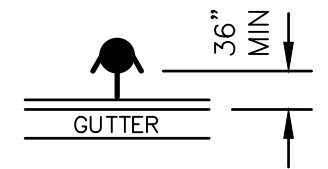
- (1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
 - (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH
 - WATER SERVICE, 1 INCH
- (TYP. 6 LOCATIONS ON MAPLECREST CT.)

- (2) BEND, 45 DEGREE 6 INCH
- WATER MAIN, 6 INCH

WATER SERVICES FROM CURB STOP TO METER PAID FOR ON A SEPARATE CONTRACT (TYP.)

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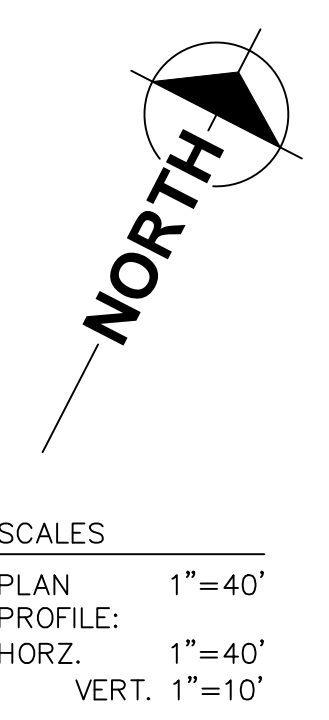
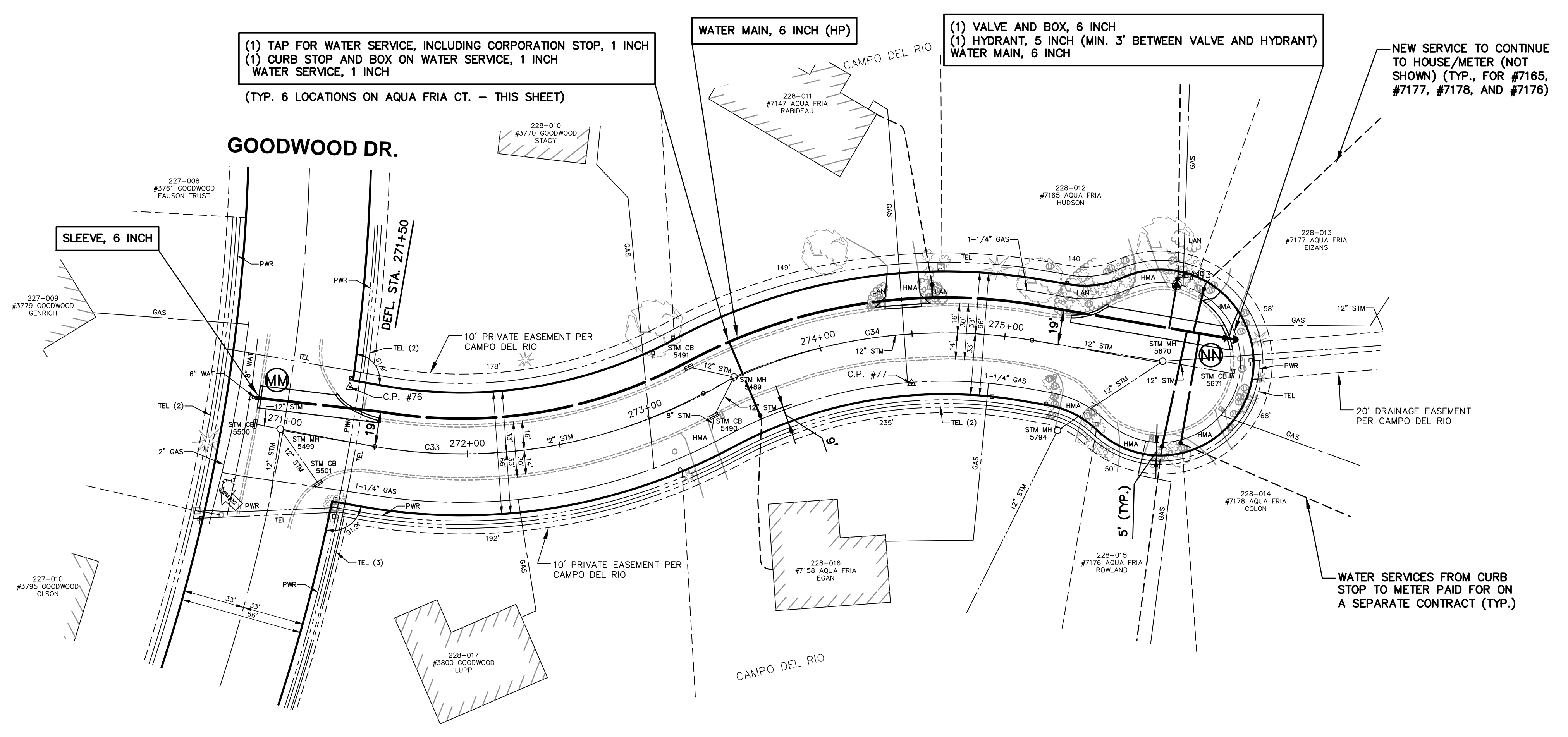
SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 MAPLECREST COURT
 SOUTH END
 TO
 MAPLECREST DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 39 of 67
 Check: Field JM
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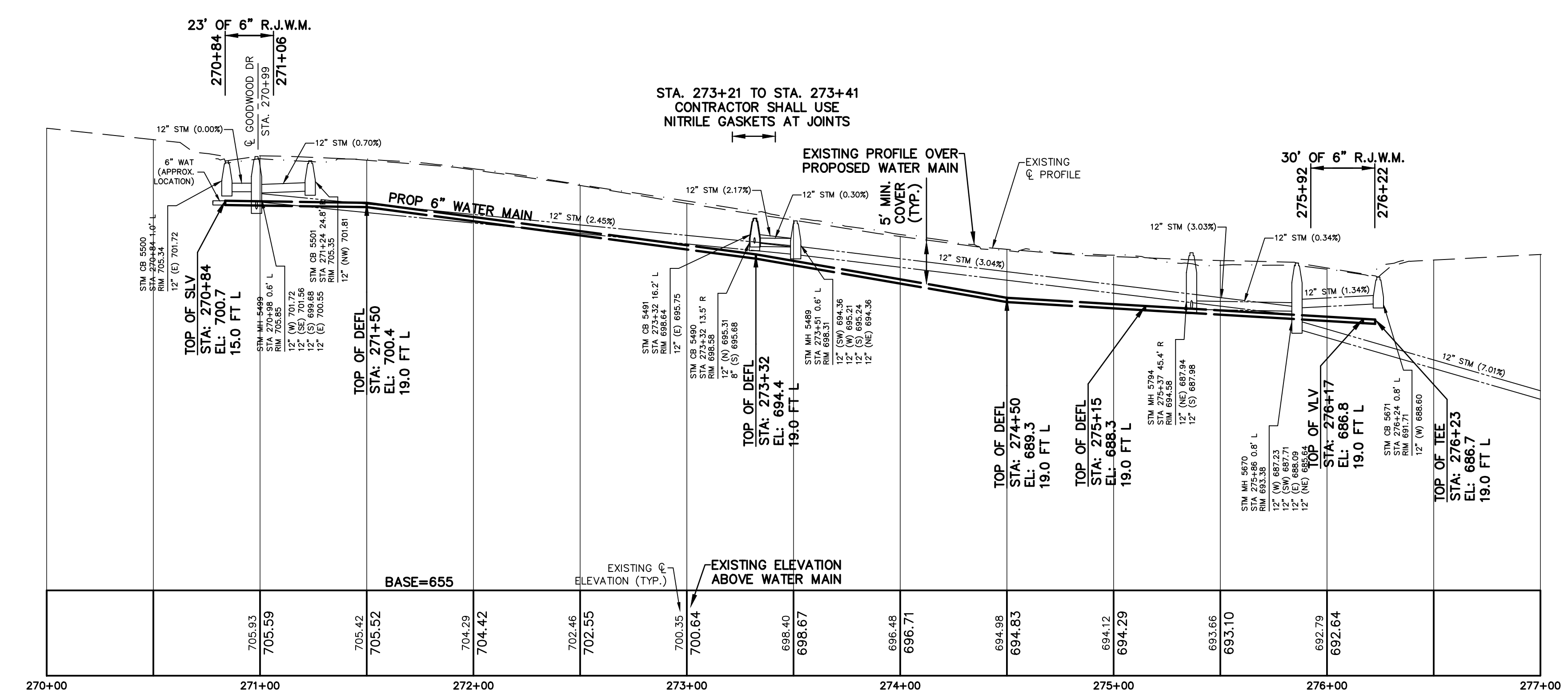
CURVE DATA				
CURVE #	LENGTH	RADIUS	CHORD	
C33	182'	275'	N53°34'10"E 179'	
C34	182'	275'	N53°34'10"E 179'	

BENCHMARKS
 B.M. #32 - TOP OF HYDRANT FLANGE BOLT UNDER E IN E/W 0.7 FT ABOVE GROUND. - ELE. 707.82

CONTROL POINTS
 #76 - CP P&N TRAV CAP - ELE. 705.90
 #77 - CP P&N TRAV CAP - ELE. 695.61

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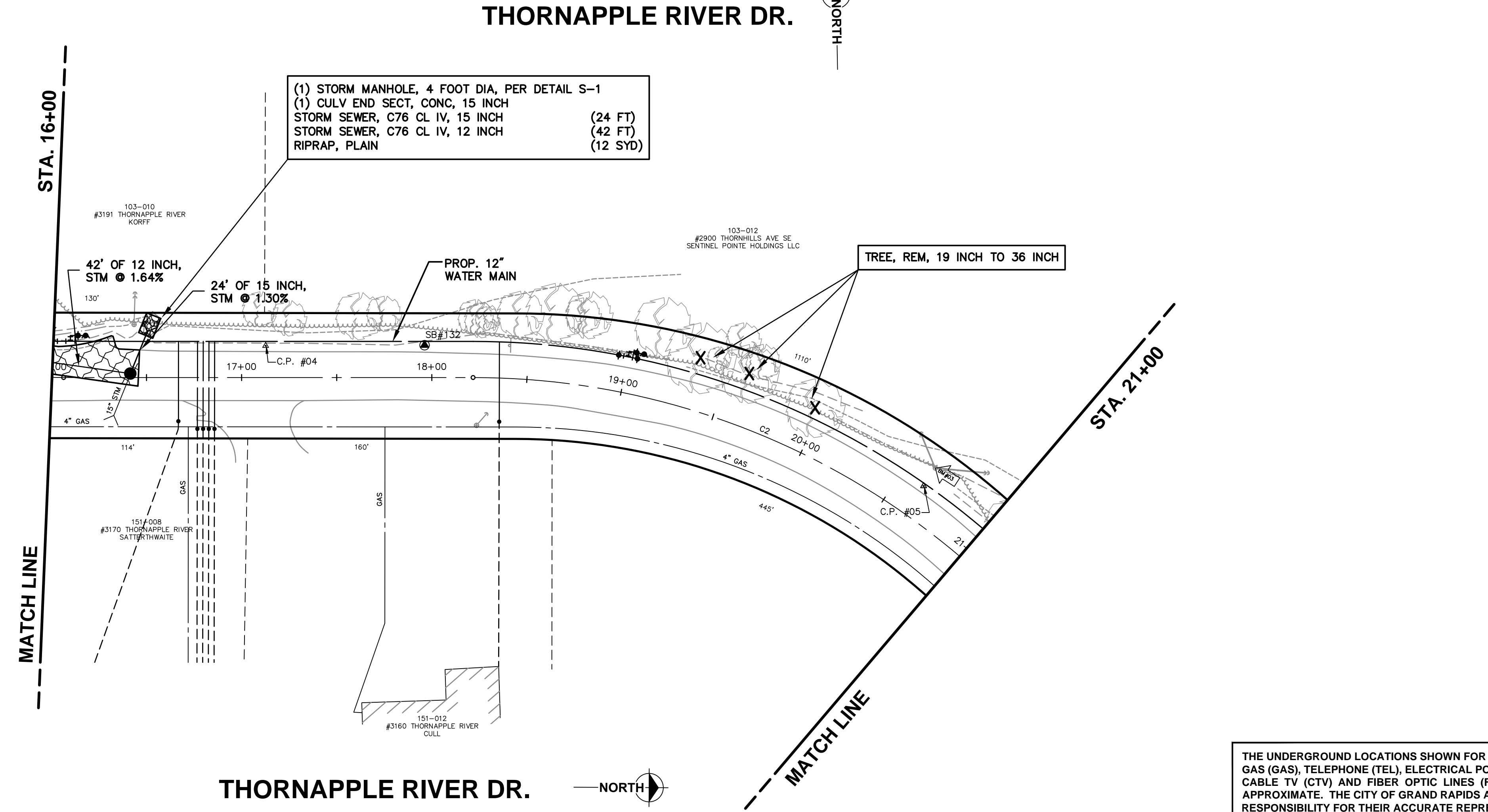
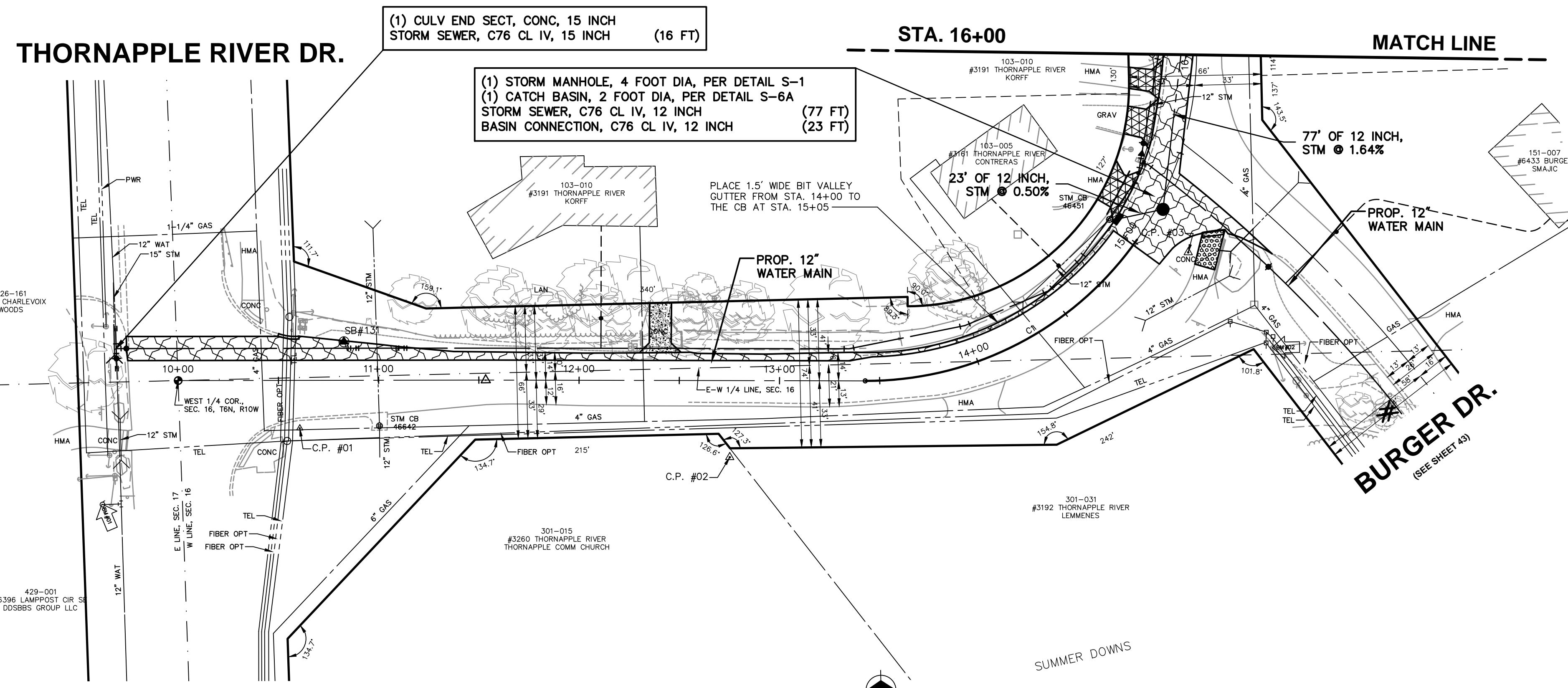
SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 AQUA FRIA COURT
 GOODWOOD DR.
 TO
 EAST END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 40 of 67
 Check: Field JM
 Check: Office JS



BENCHMARKS
 B.M. #01 - BM TOP OF FLANGE BOLT UNDER E ON HYD - ELE. 724.74
 B.M. #02 - BM SET 60D ON E SIDE OF P.P. - ELE. 705.18'
 B.M. #03 - BM SET 60D E SIDE OF P.P. - ELE. 699.09

CONTROL POINTS
 #01 - CP P&N TRAV CAP 3' WEST OF B/C @ P.C. - ELE. 720.13
 #02 - CP P&N TRAV CAP 3' WEST OF BIT WALK OPPOSITE P.POLE - ELE. 720.91'
 #03 - CP P&N TRAV CAP 6' SOUTH OF EBT SW QUADRANT OF T.APPLE RIVER & BURGER - ELE. 705.28'

BENCHMARKS
 B.M. #03 - BM SET 60D E SIDE OF P.P. - ELE. 699.09

CONTROL POINTS
 #04 - CP P&N TRAV CAP 3' NORTH OF EBT OPPOSITE DRIVE HOUSE - ELE. 700.17
 #05 - CP P&N TRAV CAP 3' NORTH OF EBT ADJACENT TO P.POLE - ELE. 699.53

SCALE
 PLAN 1"=40'

LEGEND

- PLACE "CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
- ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")
- PLACE 1.5" OF 5E1 @ 165 LBS/SYD OVER 2" 3C @ 220 LBS/SYD (BOTH PAID FOR AS "HMA APPROACH") OVER 6" AGGREGATE BASE (PAID FOR AS "AGGREGATE BASE, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
- PLACE 6" CONCRETE DRIVE APPROACH (PAID FOR AS "DRIVEWAY, NONREINF CONC, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
- PLACE 1.5" OF 5E1 @ 165 LBS/SYD (PAID FOR AS "HMA, 5E1") OVER 2" 3C @ 220 LBS/SYD (PAID FOR AS "HMA, 3C") OVER 6" AGGREGATE BASE (PAID FOR AS "AGGREGATE BASE, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
- PLACE SIDEWALK RAMP PER MDOT STANDARD PLAN R-28 SERIES SIDEWALK RAMP AND DETECTABLE WARNING DETAILS AS REQUIRED BY ENGINEER. PAID FOR AS "CURB RAMP, CONC. _ INCH" AND "DETECTABLE WARNING SURFACE".

IMPROVEMENTS GENERAL NOTES

- TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.

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INFORMATION ONLY

REVISIONS

NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

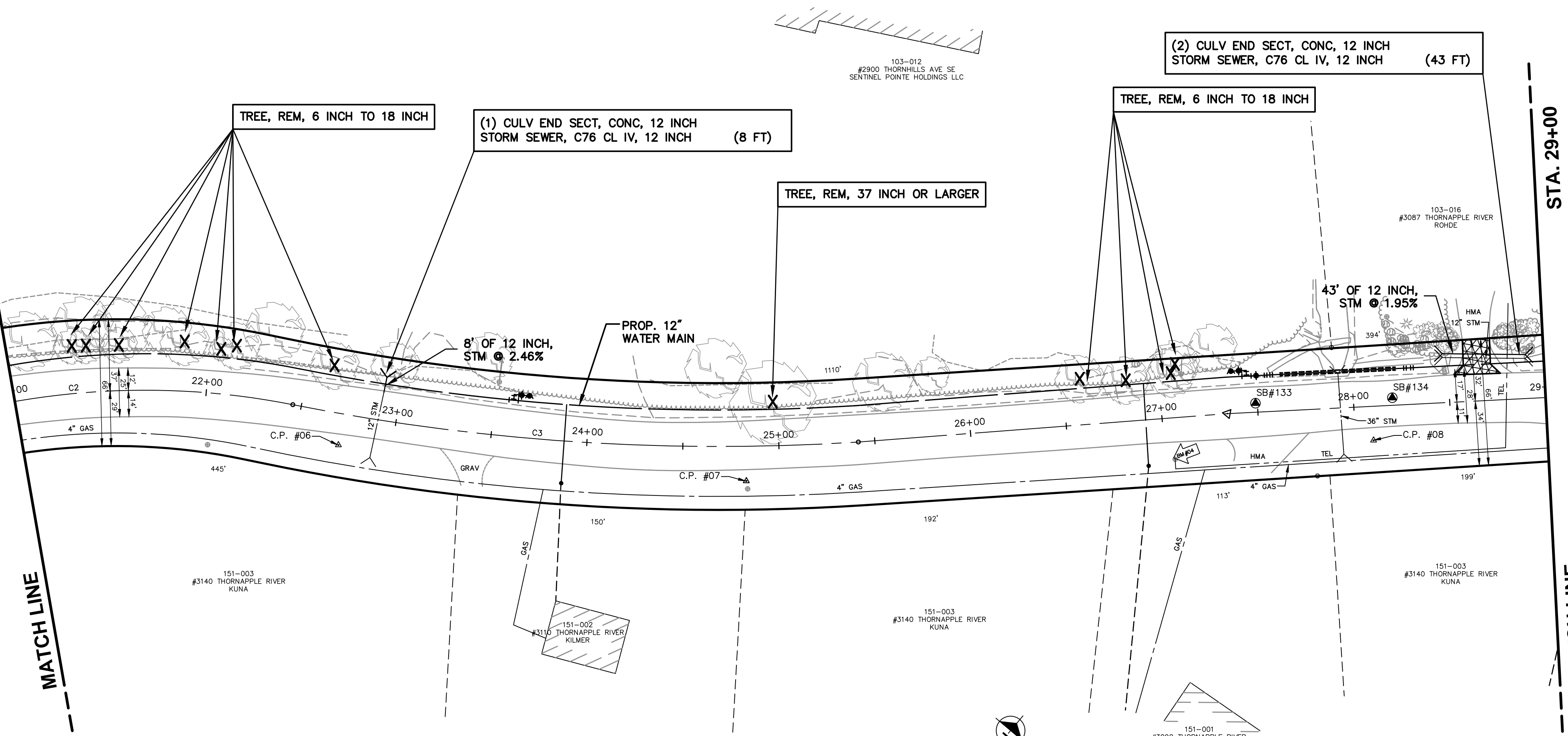
City of Grand Rapids
 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 THORNAPPLE RIVER DRIVE
 FROM THORNHILLS AVE.
 TO
 450' EAST OF MAHESH DR. (PVT.)
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. **5892** Sheet No. **41** of **67**
 Check: Field _____
 Check: Office _____

STA. 21+00

STA. 29+00



BENCHMARKS
 B.M. #04 - BM SET 600 N SIDE PP. 8' S OF E/B. 40' W OF DRIVEWAY 3092 - ELE. 680.29

CONTROL POINTS
 #06 - CP P&N TRAV CAP 5.5' SE OF E/B. 70' SW OF DRIVE 3110 - ELE. 694.60
 #07 - CP P&N TRAV CAP 5' SOUTH OF EBT ADJACENT TO P.POLE - ELE. 692.42
 #08 - CP 60D NAIL 5.5' S OF E/B. 15' E OF CREEK CROSSING - ELE. 676.45

BENCHMARKS
 B.M. #05 - BM SPIKE IN S SIDE OF P.P. - ELE. 708.23

CONTROL POINTS
 #09 - CP P&N TRAV CAP 6' NORTH OF EBT OPPOSITE CL MAHESH DRIVE - ELE. 681.76
 #10 - CP 60D NAIL 4' S OF E/B. 5' E OF DRIVE. - ELE. 690.61
 #11 - CP P&N TRAV CAP 3' NORTH OF EBT OPPOSITE MAIL BOX HOUSE - ELE. 694.39

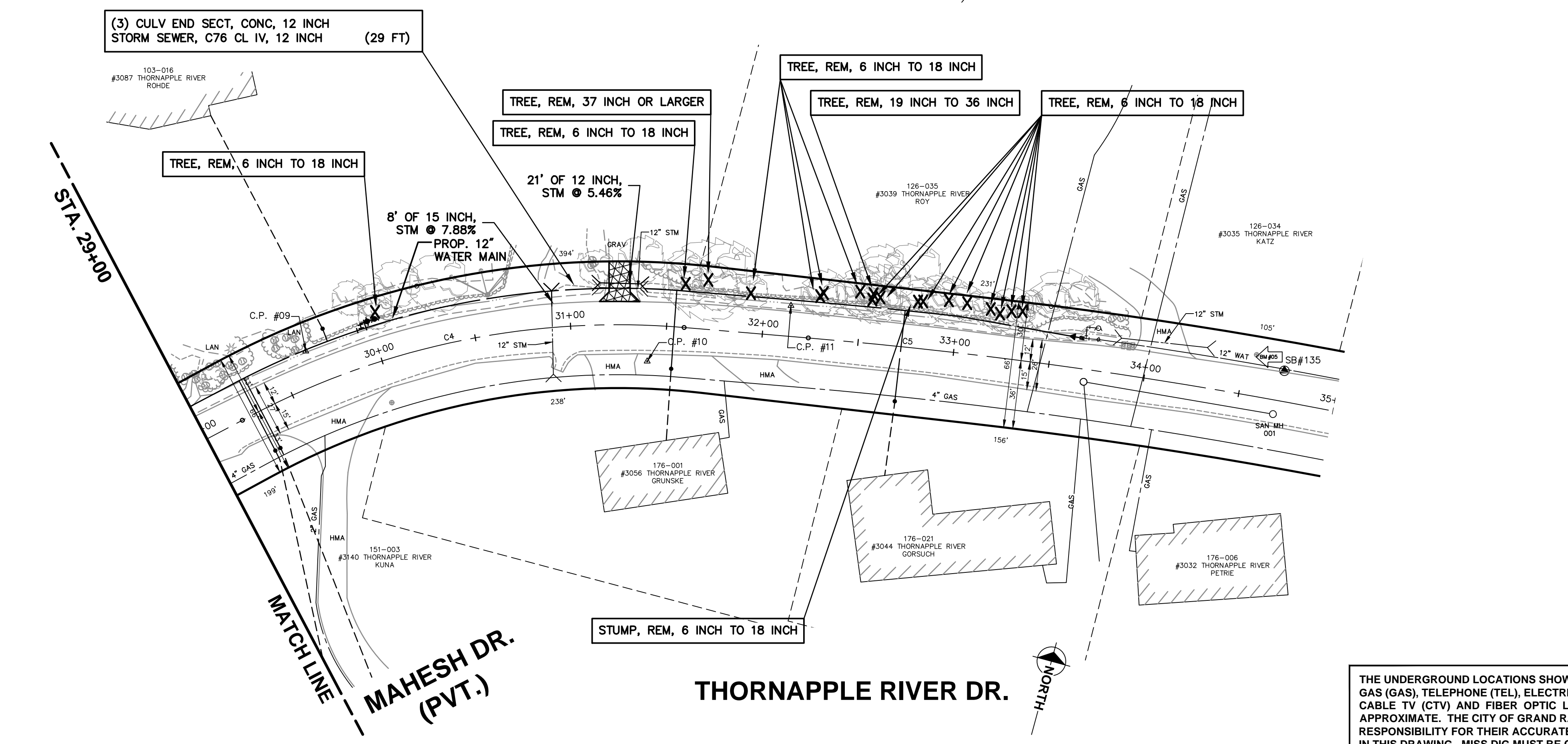
SCALE
 PLAN 1"=40'

LEGEND

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- ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")
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- PLACE 6" CONCRETE DRIVE APPROACH (PAID FOR AS "DRIVEWAY, NONREINF CONC, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
- PLACE 1.5" OF 5E1 @ 165 LBS/SYD (PAID FOR AS "HMA, 5E1") OVER 2" 3C @ 220 LBS/SYD (PAID FOR AS "HMA, 3C") OVER 6" AGGREGATE BASE (PAID FOR AS "AGGREGATE BASE, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
- PLACE SIDEWALK RAMP PER MDOT STANDARD PLAN R-28 SERIES SIDEWALK RAMP AND DETECTABLE WARNING DETAILS AS REQUIRED BY ENGINEER. PAID FOR AS "CURB RAMP, CONC. 6 INCH" AND "DETECTABLE WARNING SURFACE".

IMPROVEMENTS GENERAL NOTES

- TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.



STA. 29+00

MAHESH DR. (PVT.)

THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

INFORMATION ONLY

REVISIONS

NO.	DATE	DESCRIPTION

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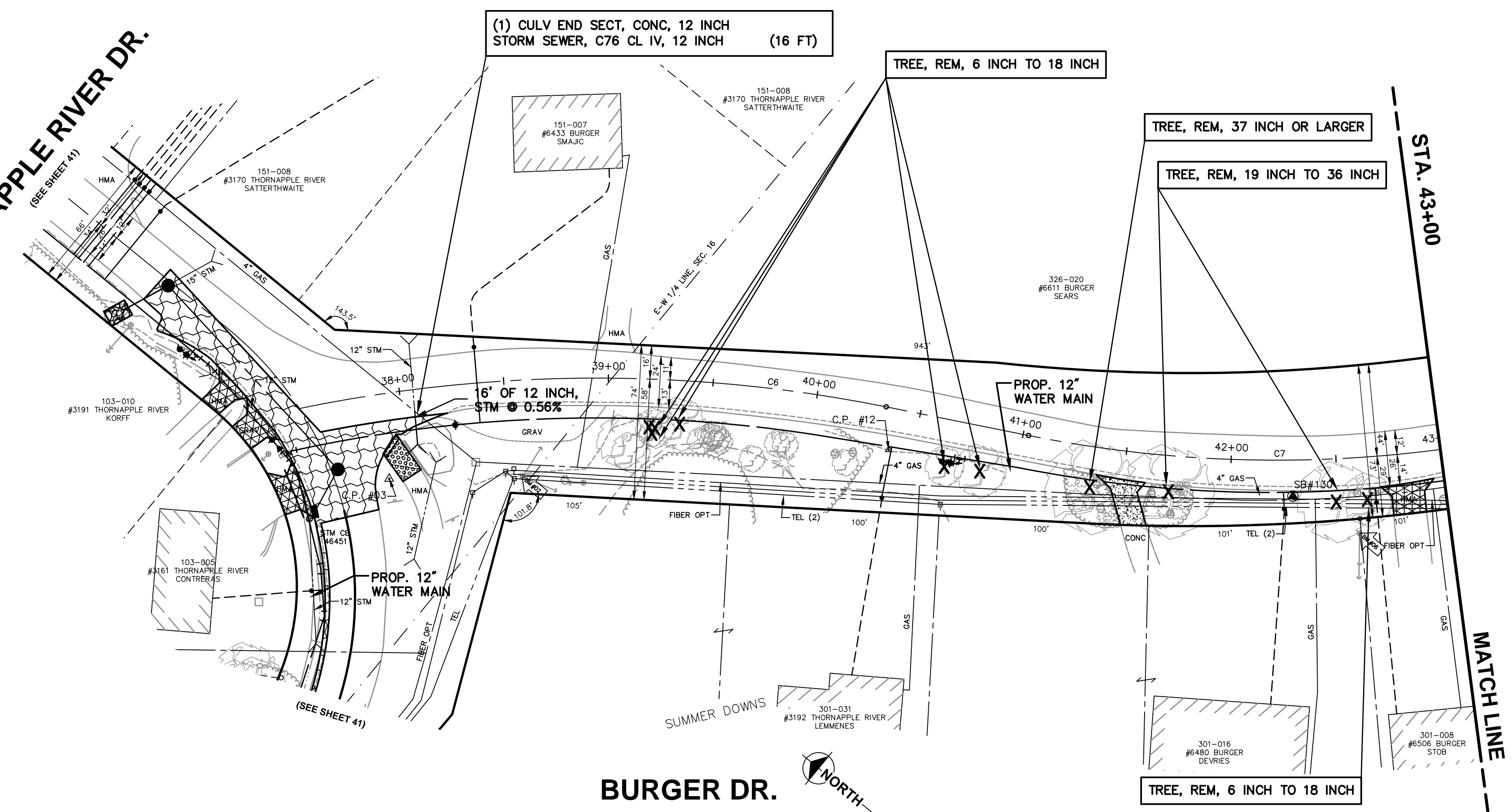
Prein & Newhof
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City of Grand Rapids
 Public Services
 Engineering Department

IMPROVEMENTS IN THORNAPPLE RIVER DRIVE FROM THORNHILLS AVE. TO 450' EAST OF MAHESH DR. (PVT.) (BURGER-GOODWOOD NEIGHBORHOOD WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. **5892** Sheet No. **42 of 67**
 Check: Field _____
 Check: Office _____

THORNAPPLE RIVER DR.
(SEE SHEET 41)



(1) CULV END SECT, CONC, 12 INCH
STORM SEWER, C76 CL IV, 12 INCH (16 FT)

TREE, REM, 6 INCH TO 18 INCH

TREE, REM, 37 INCH OR LARGER

TREE, REM, 19 INCH TO 36 INCH

STA. 43+00

PROP. 12" WATER MAIN

PROP. 12" WATER MAIN

16' OF 12 INCH,
STM @ 0.56%

BURGER DR.

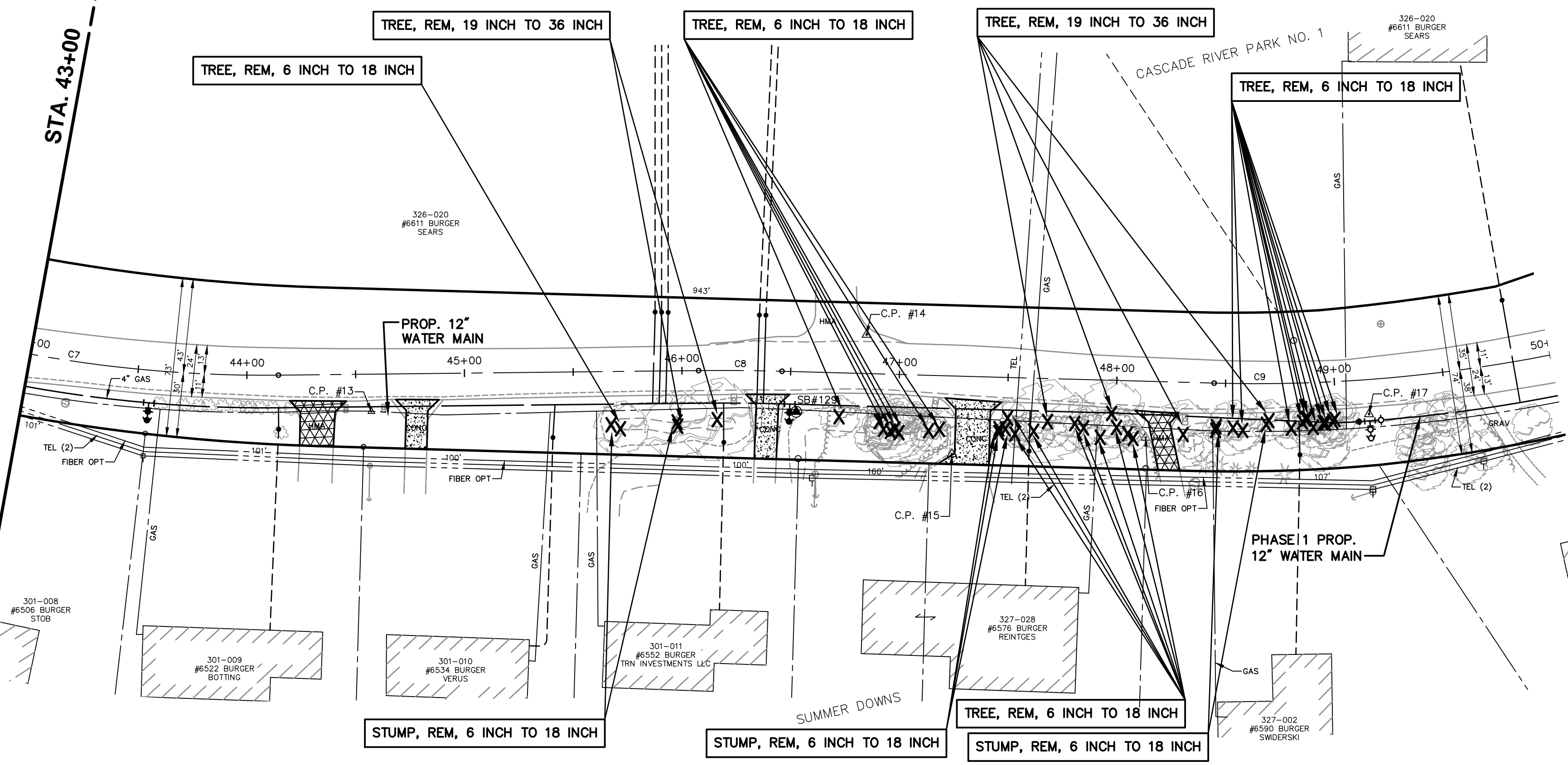


TREE, REM, 6 INCH TO 18 INCH

MATCH LINE

STA. 43+00

MATCH LINE



TREE, REM, 6 INCH TO 18 INCH

TREE, REM, 19 INCH TO 36 INCH

TREE, REM, 6 INCH TO 18 INCH

TREE, REM, 19 INCH TO 36 INCH

TREE, REM, 6 INCH TO 18 INCH

PROP. 12" WATER MAIN

STUMP, REM, 6 INCH TO 18 INCH

STUMP, REM, 6 INCH TO 18 INCH

TREE, REM, 6 INCH TO 18 INCH

STUMP, REM, 6 INCH TO 18 INCH

BURGER DR.



PHASE 1 PROP. 12" WATER MAIN

WHISPERING BROOK

BENCHMARKS
B.M. #02 - BM SET 60D ON E SIDE OF P.P. - ELE. 705.18
B.M. #06 - BM SET 60D NAIL IN N SIDE OF P.P. - ELE. 713.20
CONTROL POINTS
#03 - CP P&N TRAV CAP 6' SOUTH OF EBT SW QUADRANT OF T.APPLE RIVER & BURGER - ELE. 729.94
#12 - CP P&N TRAV CAP 7' WEST OF EBT IN FRONT OF HOUSE - ELE. 710.09

CONTROL POINTS
#13 - CP P&N TRAV CAP 5FT S OF EB OPP PP 6534 - ELE. 715.28
#14 - CP MAG NAIL IN PAVEMENT LARGE PK 3FT SW OF MID EB WESTRIDGE - ELE. 726.36
#15 - CP 60D NAIL 0.4' NW OF CONC DR - ELE. 727.78
#16 - CP 60D NAIL 1' W OF E/B DR TO 6590 - ELE. 729.94
#17 - CP P&N TRAV CAP 3FT S OF EB OPP PP AT PI - ELE. 733.94

SCALE
PLAN 1"=40'

LEGEND

- PLACE "CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
- ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")
- PLACE 1.5" OF 5E1 @ 165 LBS/SYD OVER 2" 3C @ 220 LBS/SYD (BOTH PAID FOR AS "HMA APPROACH") OVER 6" AGGREGATE BASE (PAID FOR AS "AGGREGATE BASE, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
- PLACE 6" CONCRETE DRIVE APPROACH (PAID FOR AS "DRIVEWAY, NONREINF CONC, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
- PLACE 1.5" OF 5E1 @ 165 LBS/SYD (PAID FOR AS "HMA, 5E1") OVER 2" 3C @ 220 LBS/SYD (PAID FOR AS "HMA, 3C") OVER 6" AGGREGATE BASE (PAID FOR AS "AGGREGATE BASE, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
- PLACE SIDEWALK RAMP PER MDOT STANDARD PLAN R-28 SERIES SIDEWALK RAMP AND DETECTABLE WARNING DETAILS AS REQUIRED BY ENGINEER. PAID FOR AS "CURB RAMP, CONC, 12 INCH" AND "DETECTABLE WARNING SURFACE".

IMPROVEMENTS GENERAL NOTES
1. TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.

THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

INFORMATION ONLY

REVISIONS

NO.	DATE	DESCRIPTION

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Public Services
Engineering Department

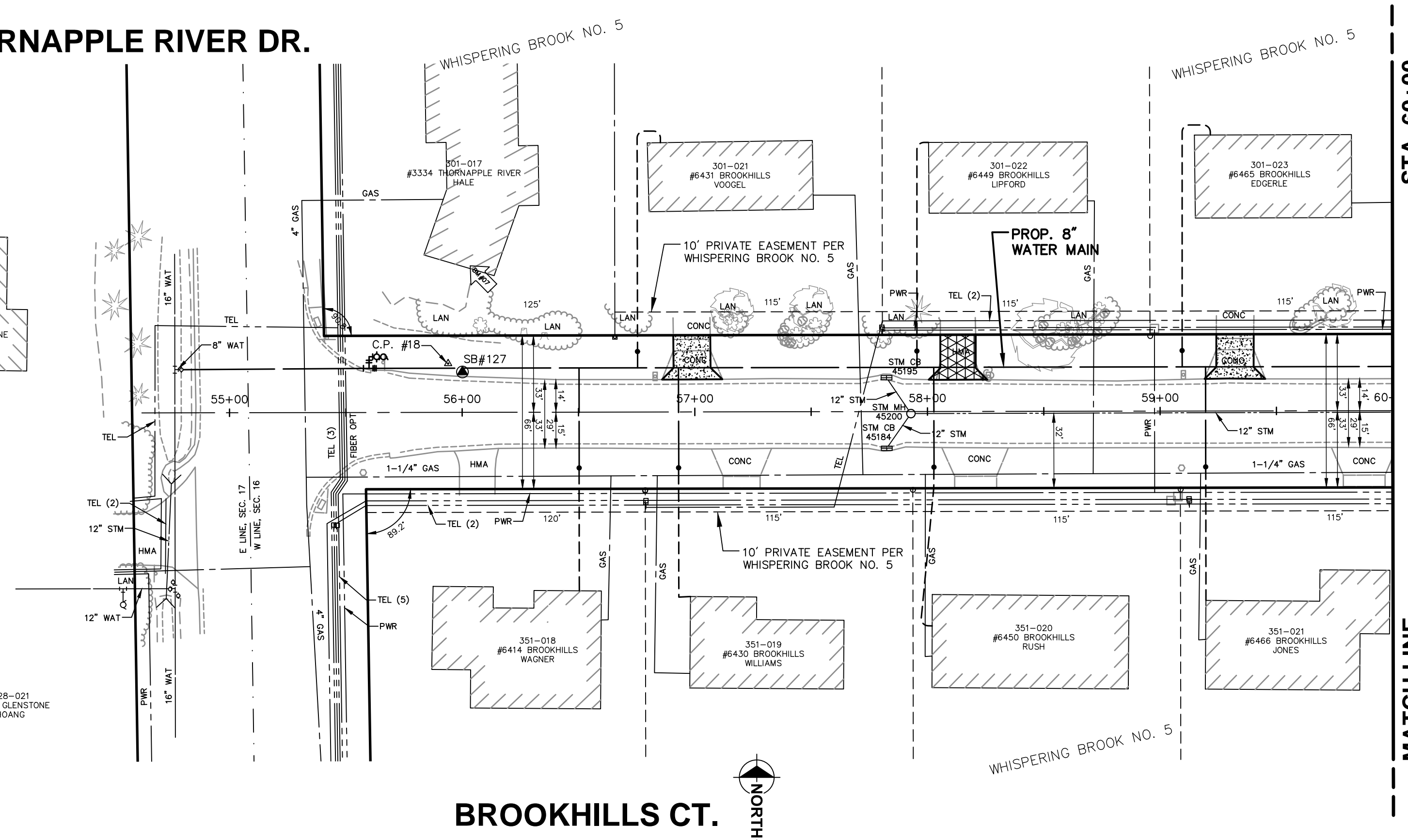
**IMPROVEMENTS
IN
BURGER DRIVE**
FROM THORNAPPLE RIVER DR.
TO
100' EAST OF WESTRIDGE DR.
(BURGER-GOODWOOD NEIGHBORHOOD
WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. 5892 Sheet No. 43 of 67
Check: Field _____
Check: Office _____

THORNAPPLE RIVER DR.

GLENSTONE DR. (PVT.)

428-021 #6376 GLENSTONE HOANG



BROOKHILLS CT.



STA. 60+00

MATCH LINE

BENCHMARKS
 B.M. #07 - TOP NE CORNER CONC SLAB AT HSE LINE, 0.1' S & 4.9' W OF SE CORNER OF HSE. #3334 - ELE. 737.49
 CONTROL POINTS
 #18 - CP P&N TRAV CAP @ #3334 - ELE. 731.82

BENCHMARKS
 B.M. #08 - TOP SW COR CONC STEP. @ HSE #3370, 0.7' ABOVE WALK. - ELE. 731.13
 CONTROL POINTS
 #19 - CP P&N TRAV CAP & #6482 BROOKHILLS - ELE. 731.91
 #20 - CP P&N TRAV CAP BROOKPOINT DR & BROOKHILLS CT BN OF N EB BE OF CL BROOKPOINT - ELE. 729.99

SCALE
 PLAN 1"=40'

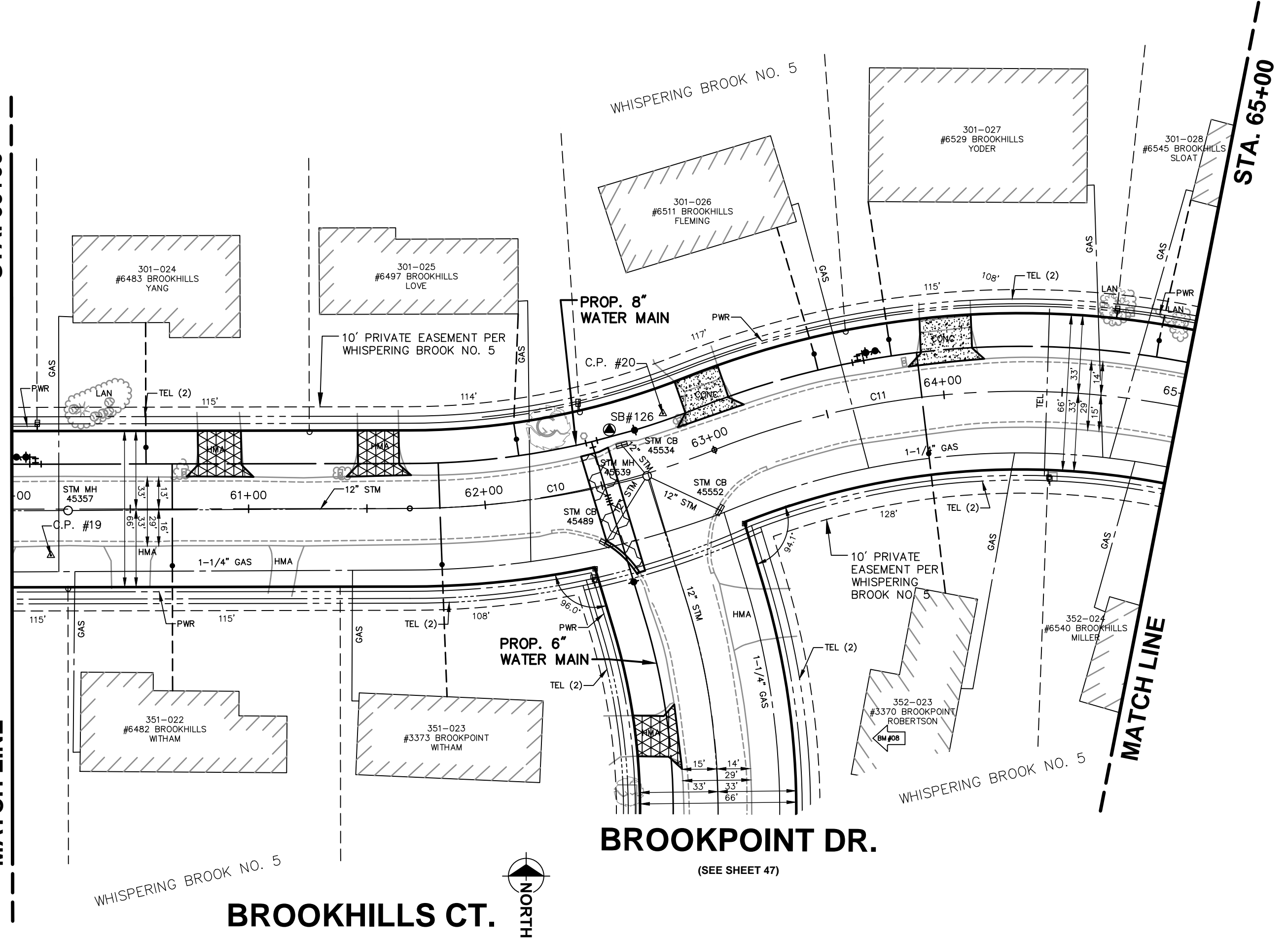
LEGEND

- PLACE "CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
- ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")
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- PLACE SIDEWALK RAMP PER MDOT STANDARD PLAN R-28 SERIES SIDEWALK RAMP AND DETECTABLE WARNING DETAILS AS REQUIRED BY ENGINEER. PAID FOR AS "CURB RAMP, CONC. 4 INCH" AND "DETECTABLE WARNING SURFACE".

IMPROVEMENTS GENERAL NOTES
 1. TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.

STA. 60+00

MATCH LINE



BROOKPOINT DR.

(SEE SHEET 47)



STA. 65+00

MATCH LINE

THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

INFORMATION ONLY

REVISIONS		
NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:
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City of Grand Rapids
 Public Services
 Engineering Department

IMPROVEMENTS
 IN
BROOKHILLS COURT
 FROM THORNAPPLE RIVER DR.
 TO
 TRICKLEWOOD DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

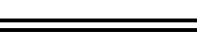
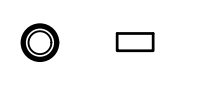
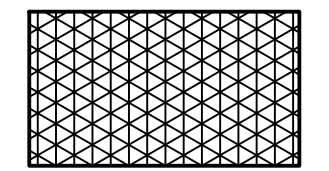



Drawn by JDH/PFN GPF No. 5892 Sheet No. 44 of 67
 Check: Field _____
 Check: Office _____

BENCHMARKS
 B.M. #09 - TOP SW CORNER CONC STEP. 0.8' ABOVE WALK. - ELE. 730.87

CONTROL POINTS
 #21 - CP P&N TRAV CAP #6560 BROOKHILLS - ELE. 728.86
 #22 - CP P&N TRAV CAP 3FT SW BC SE END CURB TRICKLEWOOD AND BROOKHILLS - ELE. 710.02

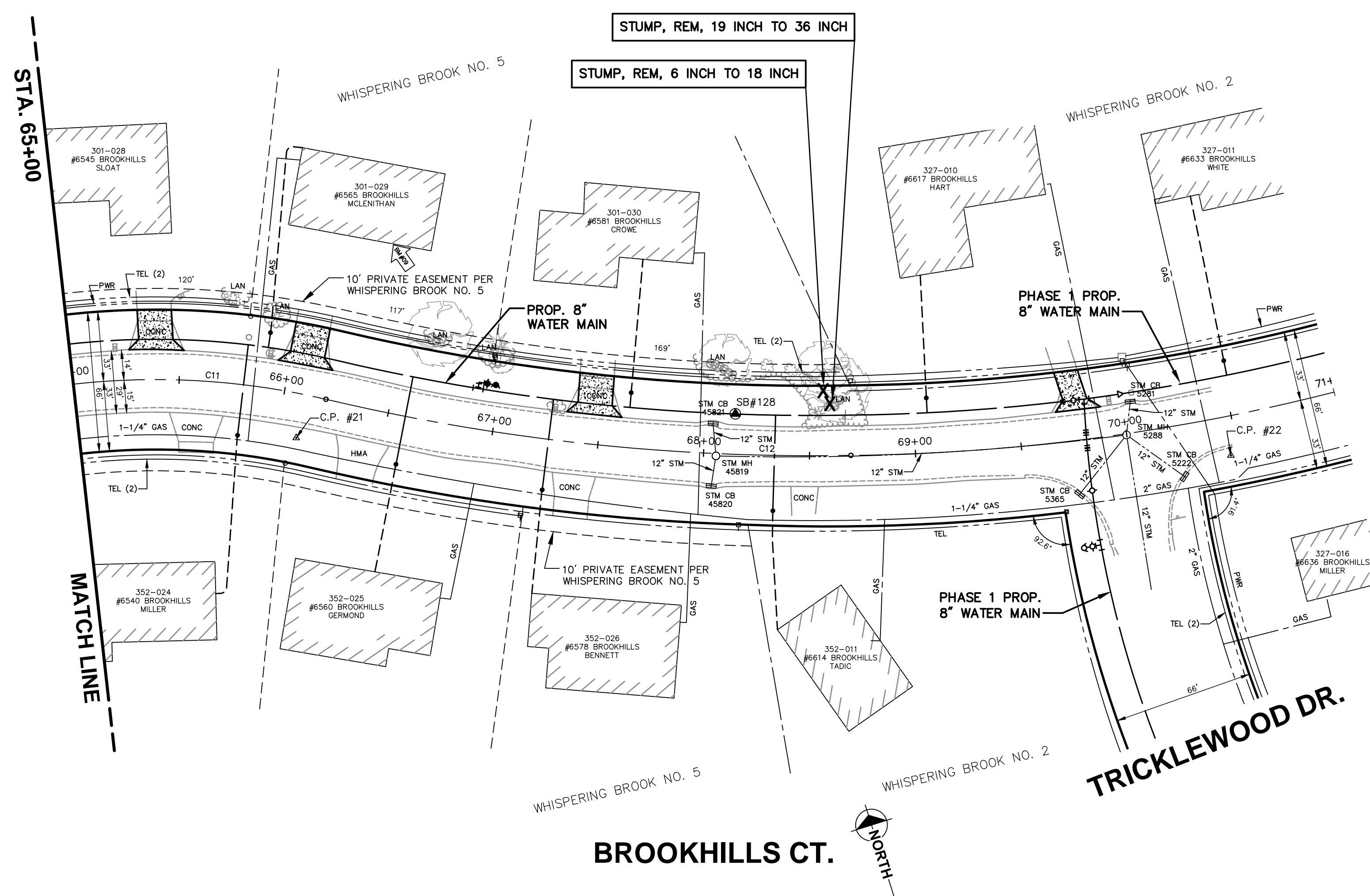
SCALE
 PLAN 1"=40'

LEGEND

	PLACE "CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
	ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")
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	PLACE 6" CONCRETE DRIVE APPROACH (PAID FOR AS "DRIVEWAY, NONREINF CONC, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
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	PLACE SIDEWALK RAMP PER MDOT STANDARD PLAN R-28 SERIES SIDEWALK RAMP AND DETECTABLE WARNING DETAILS AS REQUIRED BY ENGINEER. PAID FOR AS "CURB RAMP, CONC. _ INCH" AND "DETECTABLE WARNING SURFACE".

IMPROVEMENTS GENERAL NOTES

- TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.



BROOKHILLS CT.



INFORMATION ONLY

THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

REVISIONS

NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:

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 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 BROOKHILLS COURT**
 FROM THORNAPPLE RIVER DR.
 TO
 TRICKLEWOOD DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. **5892** Sheet No. **45 of 67**
 Check: Field _____
 Check: Office _____

BENCHMARKS
 B.M. #10 - TOP SE CORNER CONC STEP. 0.5' ABOVE WALK. - ELE. 709.46

CONTROL POINTS
 #23 - CP P&N TRAV CAP 4FT S EB TANGLEWOOD 6FT W EDGE DRIVE 6454 - ELE. 686.91
 #24 - CP P&N TRAV CAP WINTERBERRY & TANGLEWOOD 6 W OF EB S FACE HSE 6445 - ELE. 688.63
 #25 - CP P&N TRAV CAP WINTERBERRY @ CUL DE SAC 15 N OF DR TO HSE 3422 - ELE. 709.90
 #26 - CP MAG NAIL IN PAVEMENT - ELE. 710.92

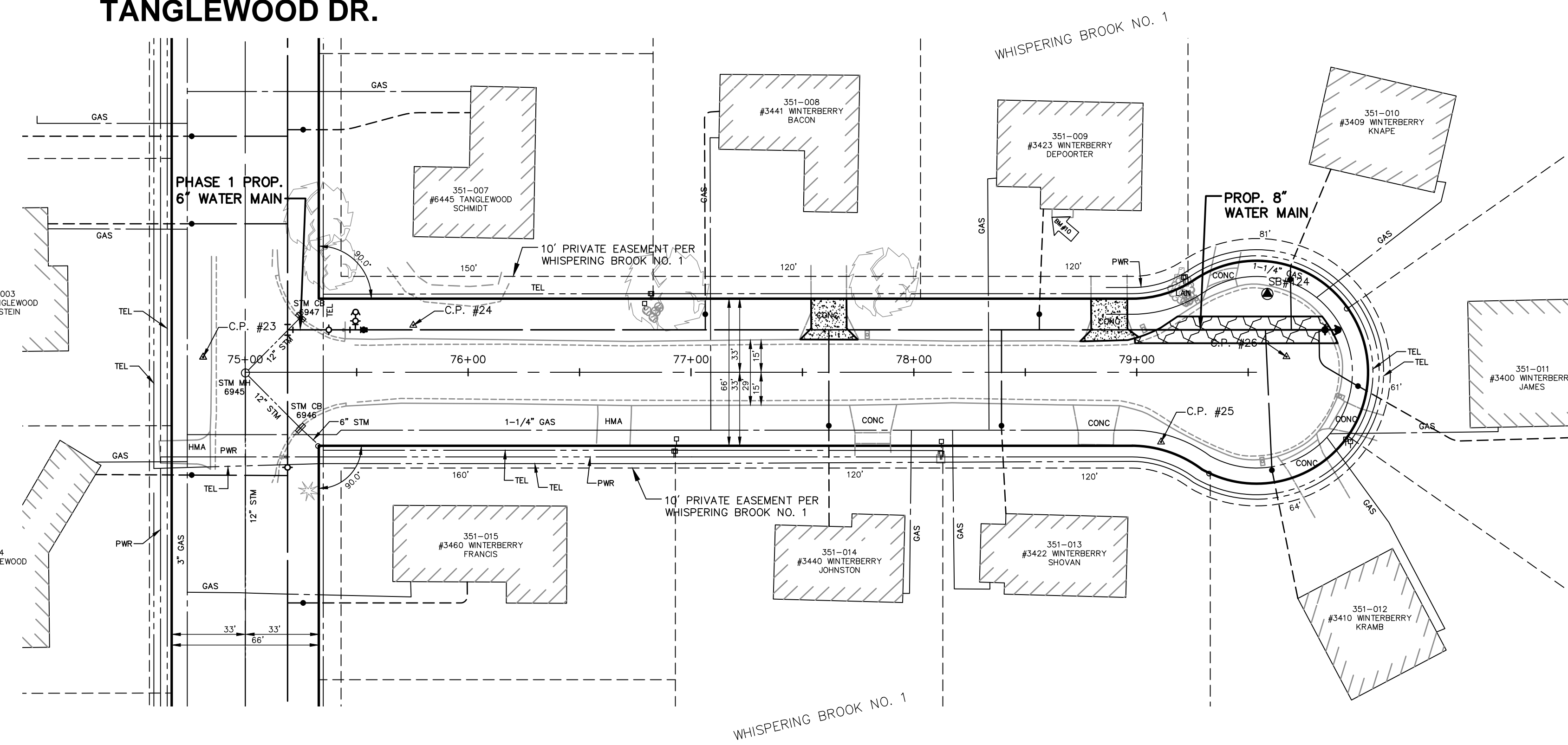
SCALE
 PLAN 1"=40'

LEGEND

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	PLACE 1.5" OF 5E1 @ 165 LBS/SYD OVER 2" 3C @ 220 LBS/SYD (BOTH PAID FOR AS "HMA APPROACH") OVER 6" AGGREGATE BASE (PAID FOR AS "AGGREGATE BASE, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
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	PLACE SIDEWALK RAMP PER MDOT STANDARD PLAN R-28 SERIES SIDEWALK RAMP AND DETECTABLE WARNING DETAILS AS REQUIRED BY ENGINEER. PAID FOR AS "CURB RAMP, CONC. 4 INCH" AND "DETECTABLE WARNING SURFACE".

IMPROVEMENTS GENERAL NOTES
 1. TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.

TANGLEWOOD DR.



WINTERBERRY CT. — NORTH

THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

INFORMATION ONLY

REVISIONS		
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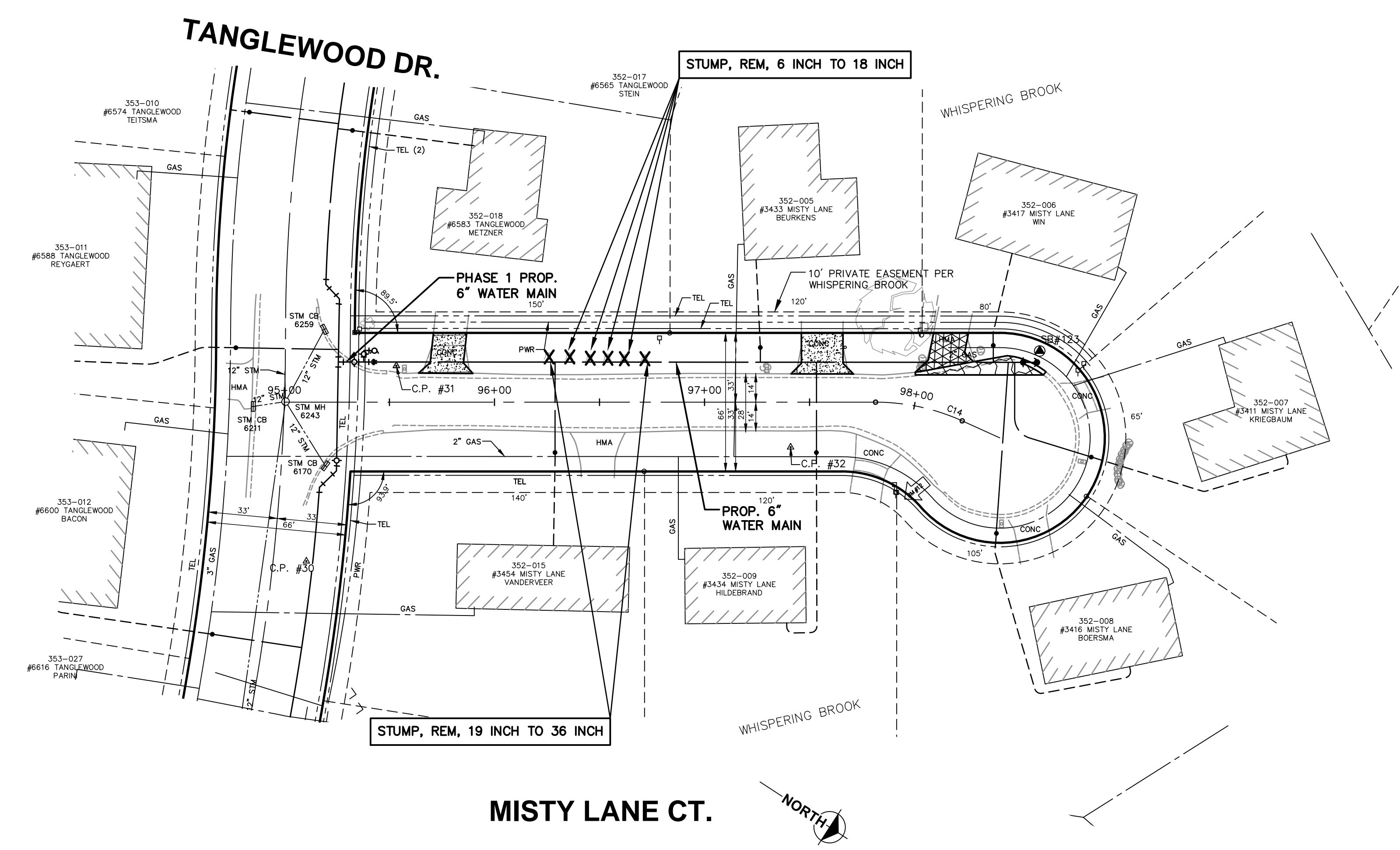
City of Grand Rapids
 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 WINTERBERRY COURT**
 FROM TANGLEWOOD DR.
 TO
 NORTH END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. **5892** Sheet No. **46 of 67**
 Check: Field _____
 Check: Office _____

BENCHMARKS
 B.M. #12 - SET MAG VERTICAL IN W-ROOT OF 24" TRIPLE COTTONWOOD. - ELE. 698.16

CONTROL POINTS
 #30 - S OF HSE #3454 - ELE. 684.18
 #31 - CP P&N TRAV CAP 4FT SE MB 6583 MISTY LN 3FT SW EB - ELE. 684.30
 #32 - CP P&N TRAV CAP AT N FACE HSE 3434 EXT 8 E OF EB - ELE. 694.15



SCALE
 PLAN 1"=40'

LEGEND

	PLACE "CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
	ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")
	PLACE 1.5" OF 5E1 @ 165 LBS/SYD OVER 2" 3C @ 220 LBS/SYD (BOTH PAID FOR AS "HMA APPROACH") OVER 6" AGGREGATE BASE (PAID FOR AS "AGGREGATE BASE, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
	PLACE 6" CONCRETE DRIVE APPROACH (PAID FOR AS "DRIVEWAY, NONREIN CONC, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
	PLACE 1.5" OF 5E1 @ 165 LBS/SYD (PAID FOR AS "HMA, 5E1") OVER 2" 3C @ 220 LBS/SYD (PAID FOR AS "HMA, 3C") OVER 6" AGGREGATE BASE (PAID FOR AS "AGGREGATE BASE, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
	PLACE SIDEWALK RAMP PER MDOT STANDARD PLAN R-28 SERIES SIDEWALK RAMP AND DETECTABLE WARNING DETAILS AS REQUIRED BY ENGINEER. PAID FOR AS "CURB RAMP, CONC. _ INCH" AND "DETECTABLE WARNING SURFACE".

IMPROVEMENTS GENERAL NOTES

- TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10" WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.

THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

INFORMATION ONLY

REVISIONS

NO.	DATE	DESCRIPTION

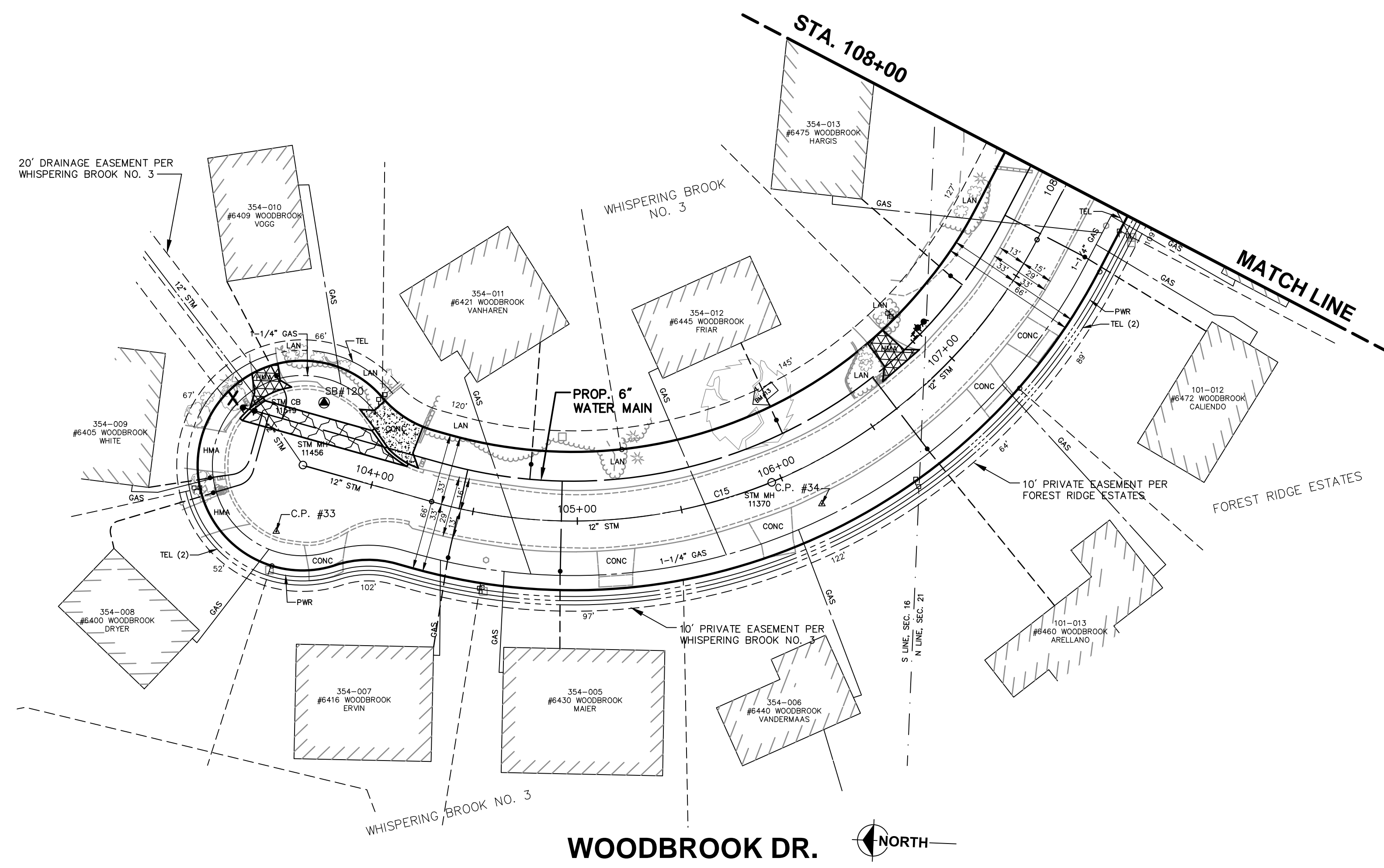
SURVEYED & DESIGNED BY:

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City of Grand Rapids
 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 MISTY LANE COURT**
 FROM TANGLEWOOD DR.
 TO
 NORTH END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. **5892** Sheet No. **48 of 67**
 Check: Field _____
 Check: Office _____



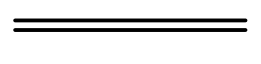

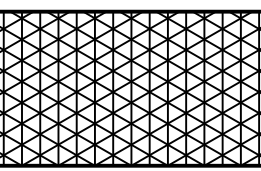


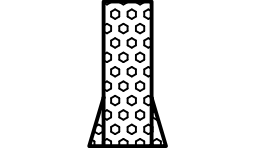
BENCHMARKS
 B.M. #13 - SET MAG VERTICAL IN S-ROOT OF 34" OAK @ HSE #6443. - ELE. 732.84
 B.M. #14 - TOP NW CORNER OF BOTTOM STEP. 0.65' ABOVE WALK. - ELE. 735.52

CONTROL POINTS
 #33 - CP MAG NAIL IN PAVEMENT - ELE. 725.20'
 #34 - CP P&N TRAV CAP - ELE. 732.16'

CONTROL POINTS
 #35 - CP P&N TRAV CAP - ELE. 732.46
 #36 - CP P&N TRAV CAP - ELE. 733.86

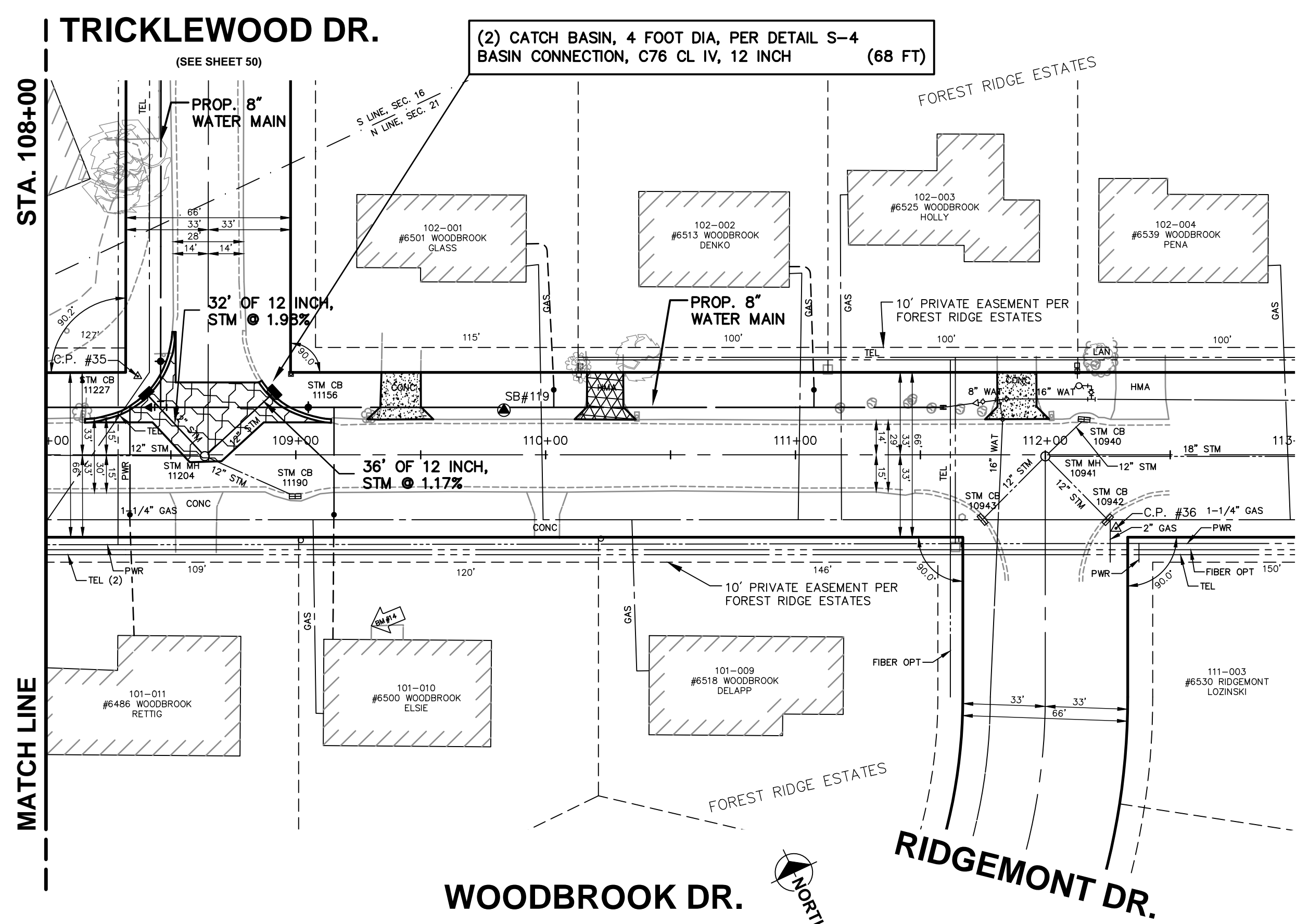
SCALE
 PLAN 1"=40'

LEGEND

-  PLACE "CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
-  ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")
-  PLACE 1.5" OF 5E1 @ 165 LBS/SYD OVER 2" 3C @ 220 LBS/SYD (BOTH PAID FOR AS "HMA APPROACH") OVER 6" AGGREGATE BASE (PAID FOR AS "AGGREGATE BASE, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
-  PLACE 6" CONCRETE DRIVE APPROACH (PAID FOR AS "DRIVEWAY, NONREINF CONC, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
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-  PLACE SIDEWALK RAMP PER MDOT STANDARD PLAN R-28 SERIES SIDEWALK RAMP AND DETECTABLE WARNING DETAILS AS REQUIRED BY ENGINEER. PAID FOR AS "CURB RAMP, CONC. 4 INCH" AND "DETECTABLE WARNING SURFACE".

IMPROVEMENTS GENERAL NOTES

- TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.



THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

INFORMATION ONLY

REVISIONS

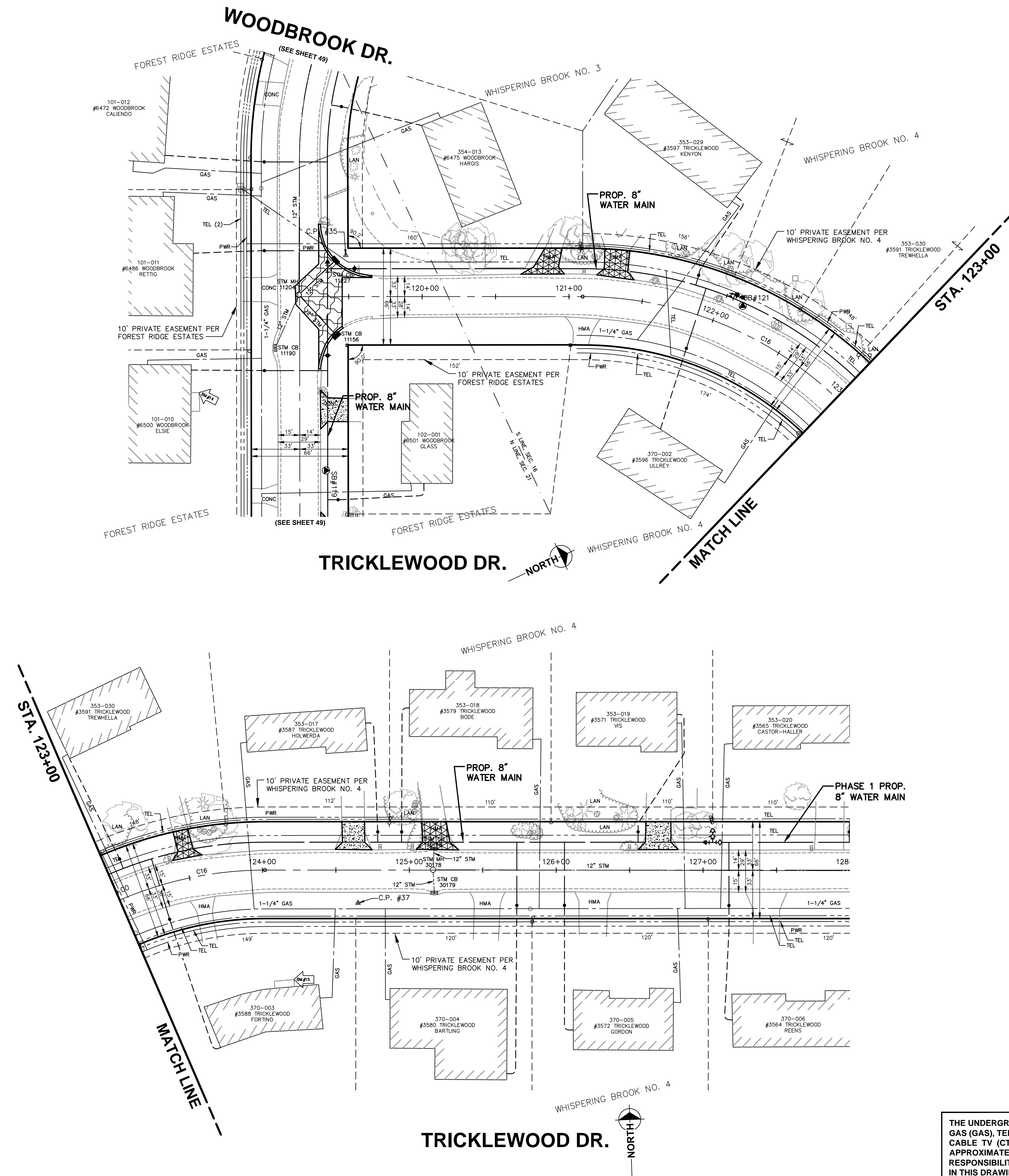
NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:
Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 WOODBROOK DRIVE
 FROM NORTH END
 TO
 RIDGEMONT DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. **5892** Sheet No. **49 of 67**
 Check: Field _____
 Check: Office _____

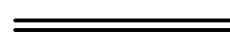

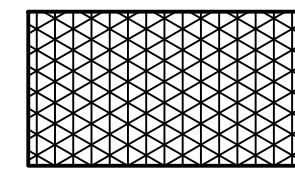
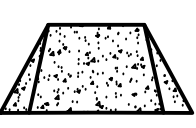
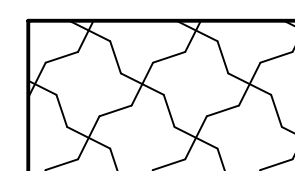
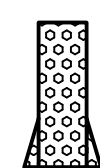


BENCHMARKS
 B.M. #14 - TOP NW CORNER OF BOTTOM STEP, 0.65' ABOVE WALK. - ELE. 735.52'
 B.M. #15 - BM TOP NE CORNER OF BOTTOM CONC STEP 0.7 ABOVE WALK - ELE. 731.51'

CONTROL POINTS
 #35 - CP P&N TRAV CAP - ELE. 732.46
 #37 - CP P&N TRAV CAP 3FT TO ROCKS IN YARD 3588 TRICKLEWOOD - ELE. 728.46

SCALE
 PLAN 1"=40'

LEGEND

-  PLACE CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
-  ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")
-  PLACE 1.5" OF 5E1 @ 165 LBS/SYD OVER 2" 3C @ 220 LBS/SYD (BOTH PAID FOR AS "HMA APPROACH") OVER 6" AGGREGATE BASE (PAID FOR AS "AGGREGATE BASE, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
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-  PLACE SIDEWALK RAMP PER MDOT STANDARD PLAN R-28 SERIES SIDEWALK RAMP AND DETECTABLE WARNING DETAILS AS REQUIRED BY ENGINEER. PAID FOR AS "CURB RAMP, CONC, 4 INCH" AND "DETECTABLE WARNING SURFACE".

IMPROVEMENTS GENERAL NOTES

- TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10" WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.

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INFORMATION ONLY

REVISIONS

NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:

Prein & Newhof
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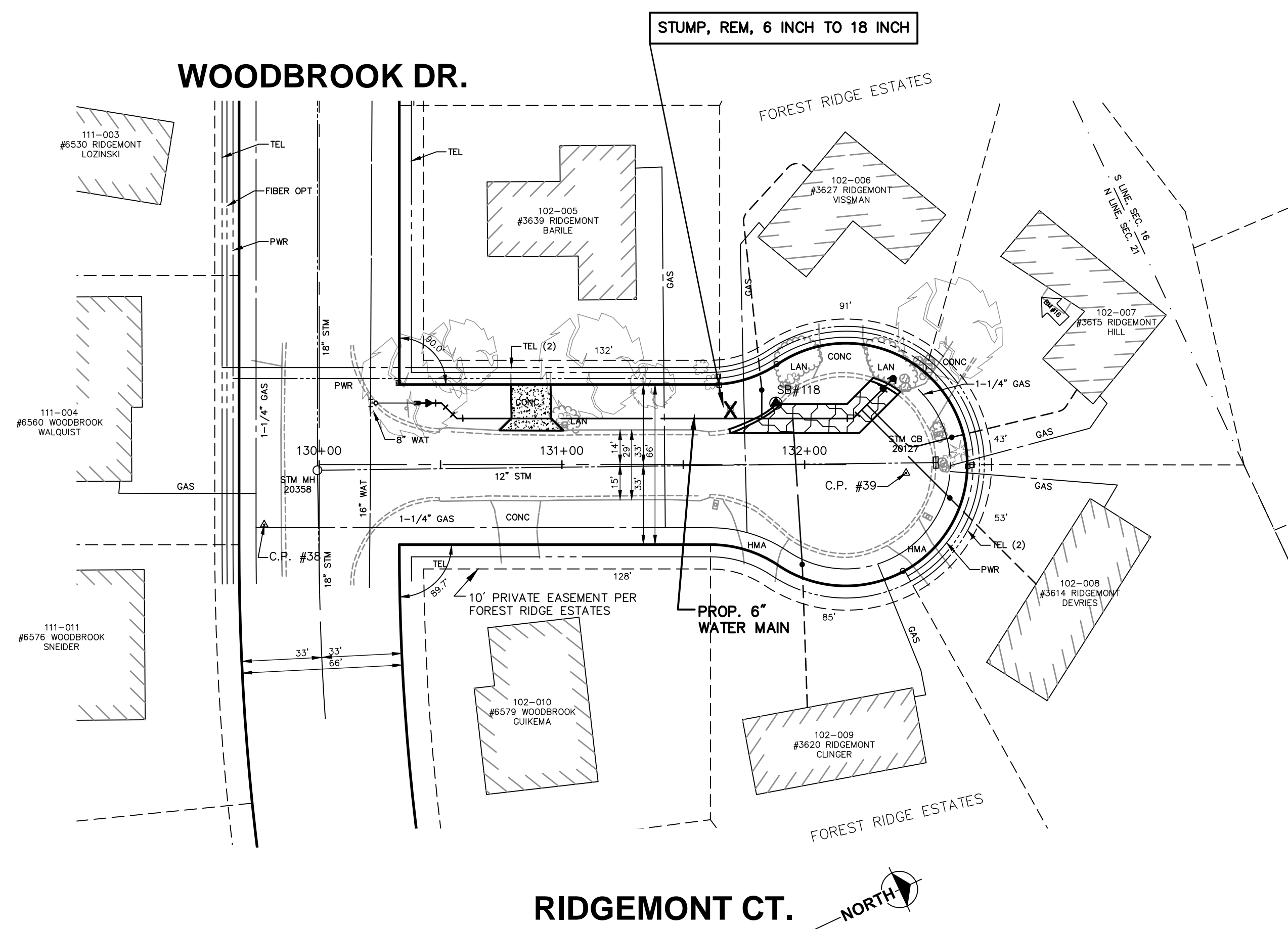
City of Grand Rapids
 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 TRICKLEWOOD DRIVE**
 FROM WOODBROOK DR.
 TO
 250' SOUTH WEST OF TRICKLEWOOD CT.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. **5892** Sheet No. **50 of 67**
 Check: Field _____
 Check: Office _____

BENCHMARKS
 B.M. #16 - BM SW CORNER BOTTOM STEP #3615
 RIDGEMONT CT - ELE. 729.92

CONTROL POINTS
 #38 - CP P&N TRAV CAP - ELE. 735.20
 #39 - CP MAG NAIL IN PAVEMENT - ELE. 728.76



SCALE
 PLAN 1"=40'

LEGEND

	PLACE "CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
	ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")
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IMPROVEMENTS GENERAL NOTES
 1. TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.

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INFORMATION ONLY		
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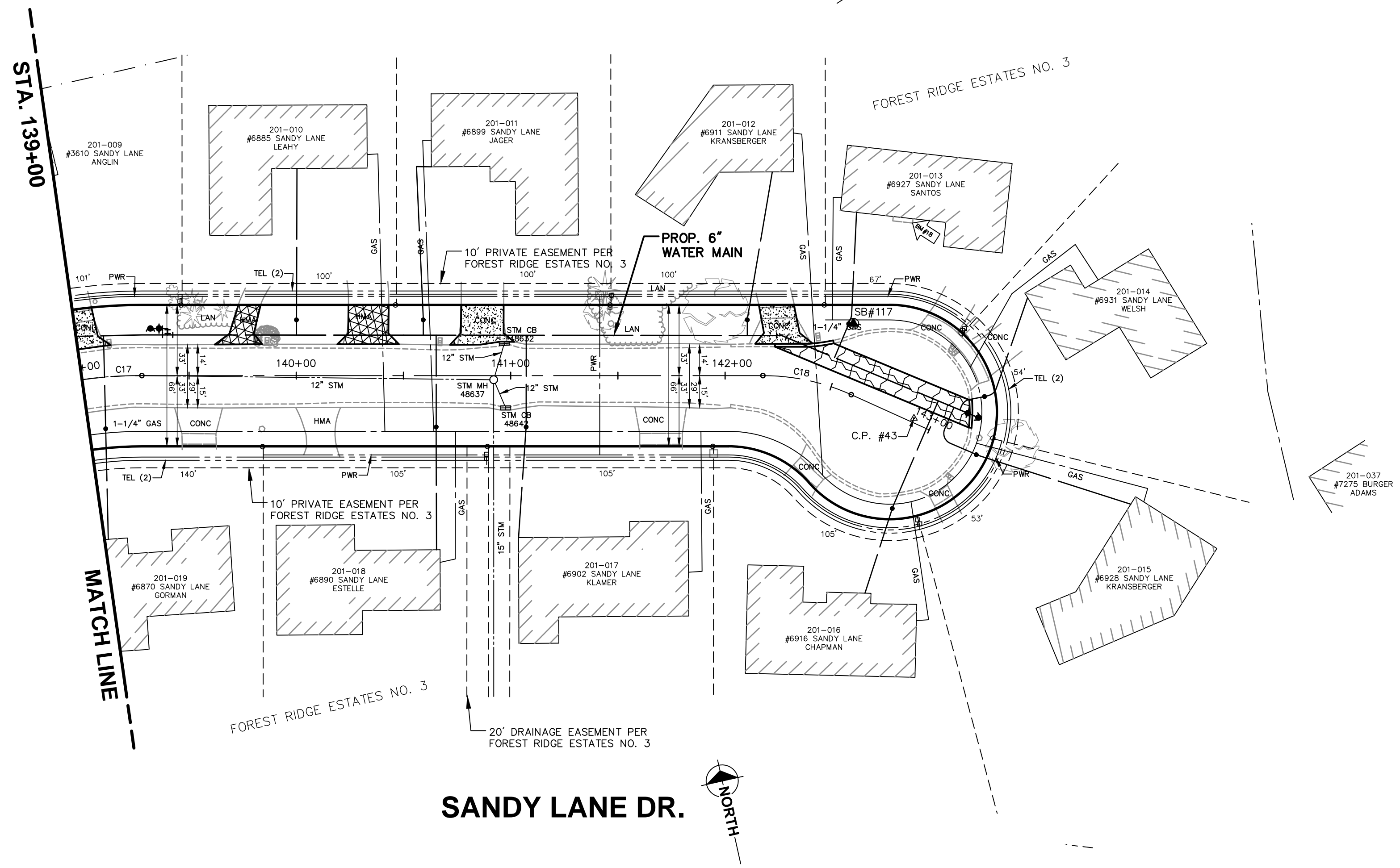
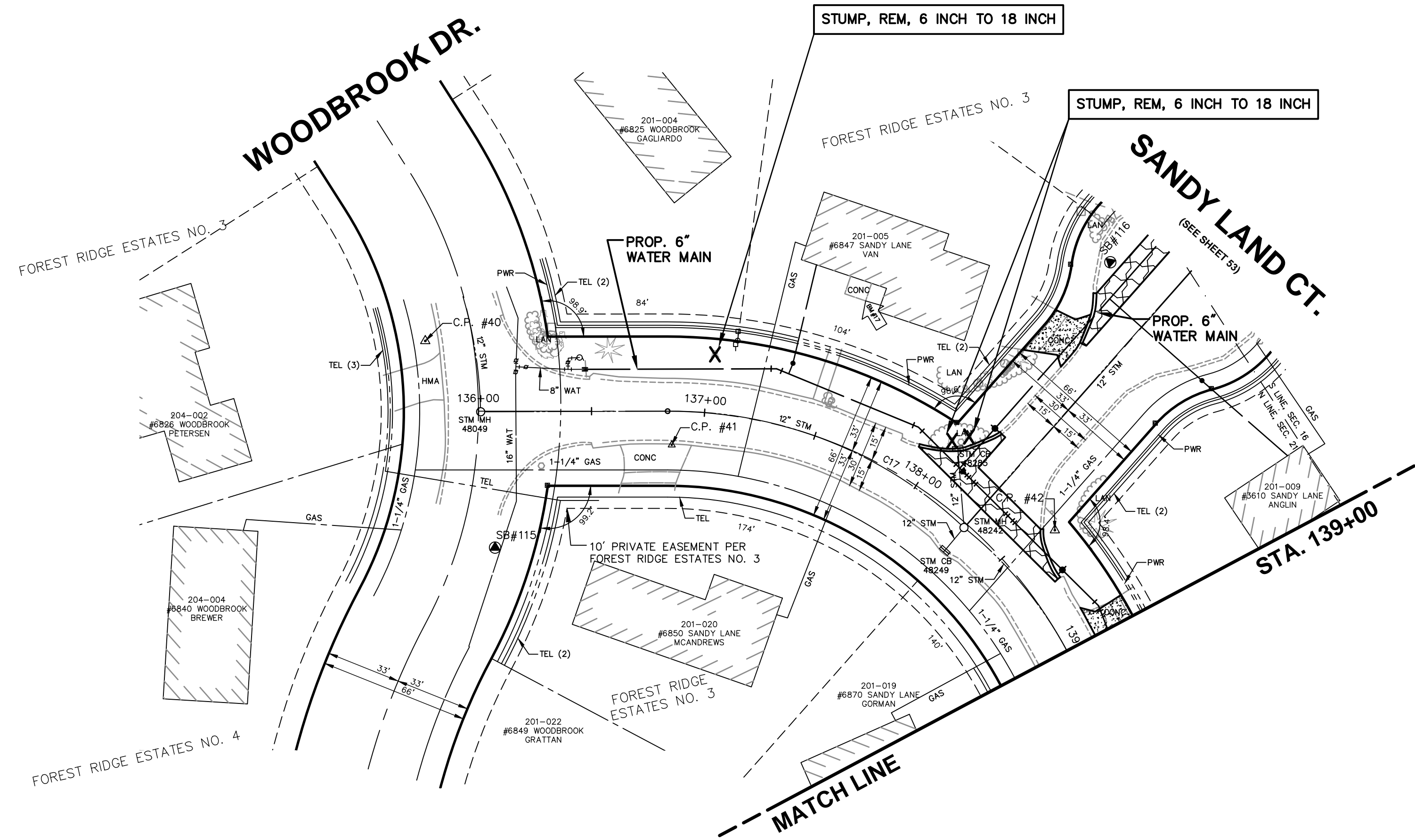
SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 RIDGEMONT COURT**
 FROM WOODBROOK DR.
 TO
 NORTH END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. **5892** Sheet No. **51** of **67**
 Check: Field _____
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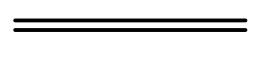

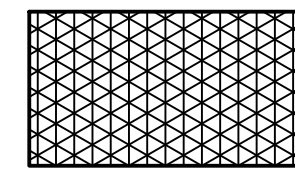
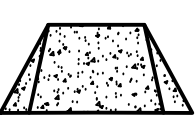
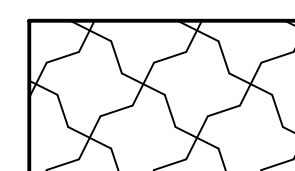
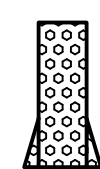
BENCHMARKS
 B.M. #17 - BM TOP NE COR CONC PORCH. 0.9' ABOVE GROUND - ELE. 757.50
 B.M. #18 - BM TOP SE CORNER OF CONC PORCH. 0.5' ABOVE WALK. - ELE. 754.37

CONTROL POINTS
 #40 - CP P&N TRAV CAP - ELE. 755.67
 #41 - CP @ #6850 SANDY LANE - ELE. 754.86
 #42 - CP P&N TRAV CAP - ELE. 753.80

CONTROL POINTS
 #43 - CP MAG NAIL IN PAVEMENT - ELE. 753.49

SCALE
 PLAN 1"=40'

LEGEND

-  PLACE CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
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INFORMATION ONLY

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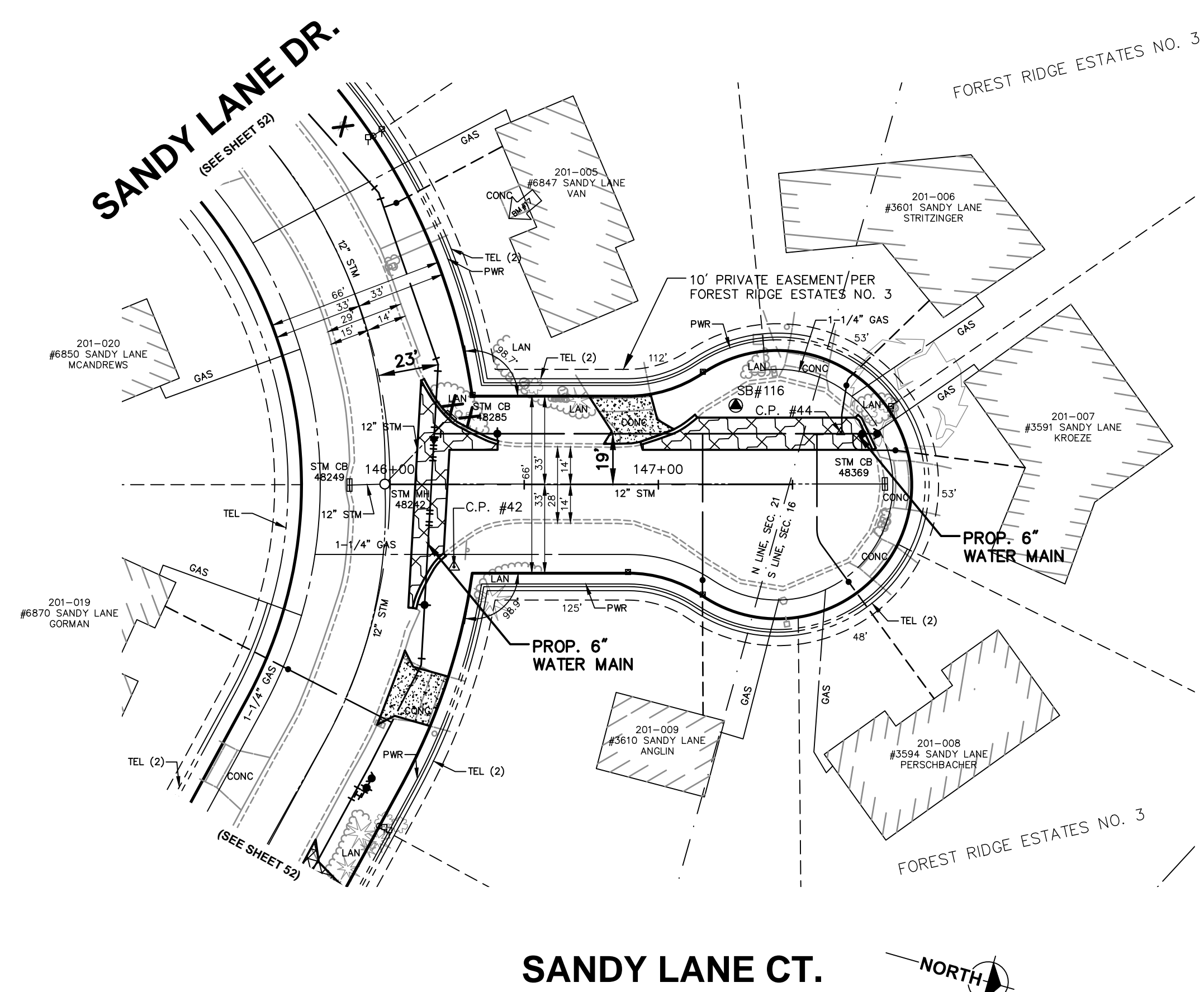
City of Grand Rapids
 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 SANDY LANE DRIVE
 FROM WOODBROOK DR.
 TO
 EAST END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 52 of 67
 Check: Field _____
 Check: Office _____

BENCHMARKS
 B.M. #17 - BM TOP NE COR CONC PORCH. 0.9'
 ABOVE GROUND - ELE. 757.50

CONTROL POINTS
 #42 - CP P&N TRAV CAP - ELE. 753.80
 #44 - CP MAG NAIL IN PAVEMENT - ELE. 750.20



SCALE
 PLAN 1"=40'

LEGEND

	PLACE "CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
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- IMPROVEMENTS GENERAL NOTES**
- TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.

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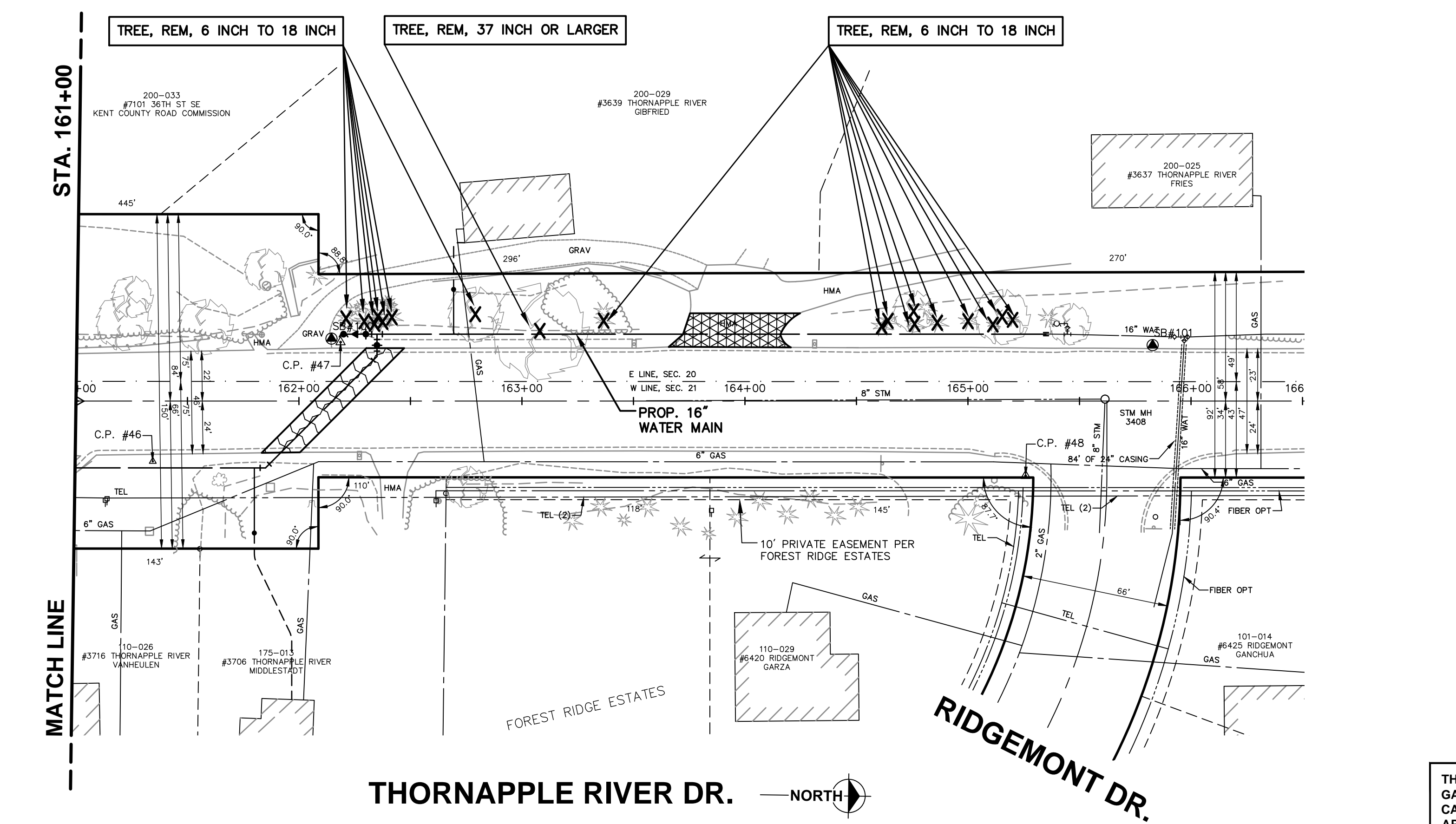
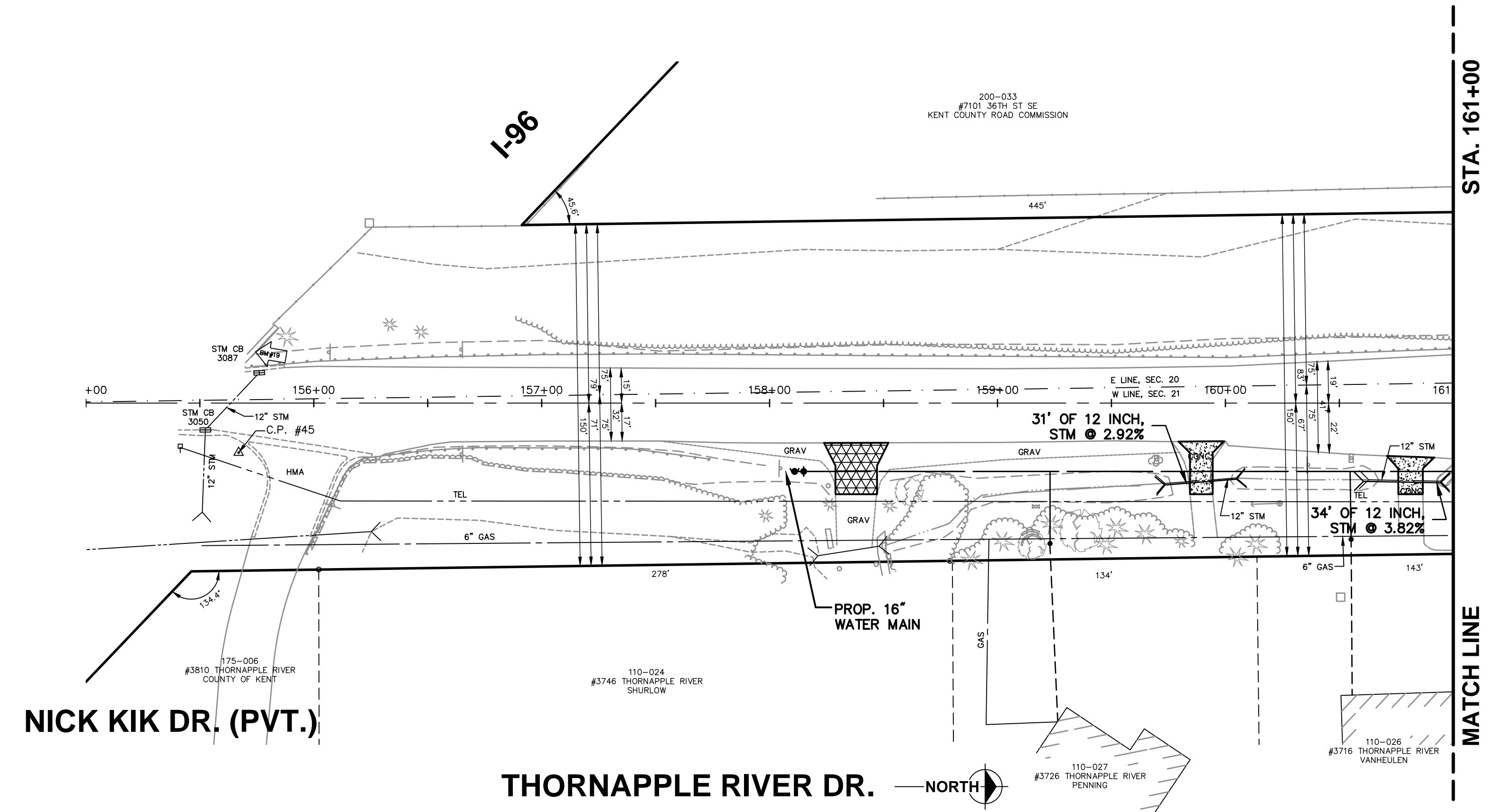
**IMPROVEMENTS
 IN
 SANDY LANE COURT**
 FROM SANDY LANE DR.
 TO
 NORTH END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by <u>JDH/PFN</u>	GPF No.	Sheet No.
Check: Field _____	5892	53 of 67
Check: Office _____		

BENCHMARKS
 B.M. #19 - ACROSS STREET FROM NICK KIK DR. CHISSELED SQUARE ON TOP OF NW COR HEADWALL 6 FEET WEST OF NW CORNER OF BRIDGE DECK 1.0FT ABOVE GROUND. - ELE. 753.91

CONTROL POINTS
 #46 - CP 3 FT E BIT @ 3716 - ELE. 762.40
 #47 - CP P&N TRAV CAP - ELE. 764.69
 #48 - CP P&N TRAV CAP - ELE. 765.16

CONTROL POINTS
 #45 - CP P&N TRAV CAP - ELE. 753.36



SCALE
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LEGEND

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 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 THORNAPPLE RIVER DRIVE
 FROM NICK KIK DR. (PVT.)
 TO
 RIDGEMONT DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. **5892** Sheet No. **54 of 67**
 Check: Field _____
 Check: Office _____

BENCHMARKS
 B.M. #20 - TOP OF CONC PORCH, 0.5' E OF BRICK GAR CORNER 0.9' ABOVE WALK. - ELE. 741.44

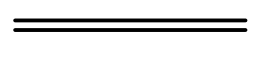

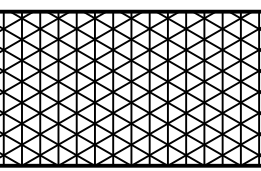


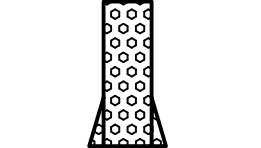
CONTROL POINTS
 #49 - CP P&N TRAV CAP - ELE. 737.96
 #50 - CP P&N TRAV CAP - ELE. 746.17

BENCHMARKS
 B.M. #21 - SET MAG VERTICAL IN NE ROOT OF 18" TWIN MAPLE - ELE. 742.35

CONTROL POINTS
 #51 - CP P&N TRAV CAP - ELE. 739.89
 #52 - CP P&N TRAV CAP - ELE. 721.73
 #53 - CP @ #6592 FOREST VALLEY - ELE. 720.66

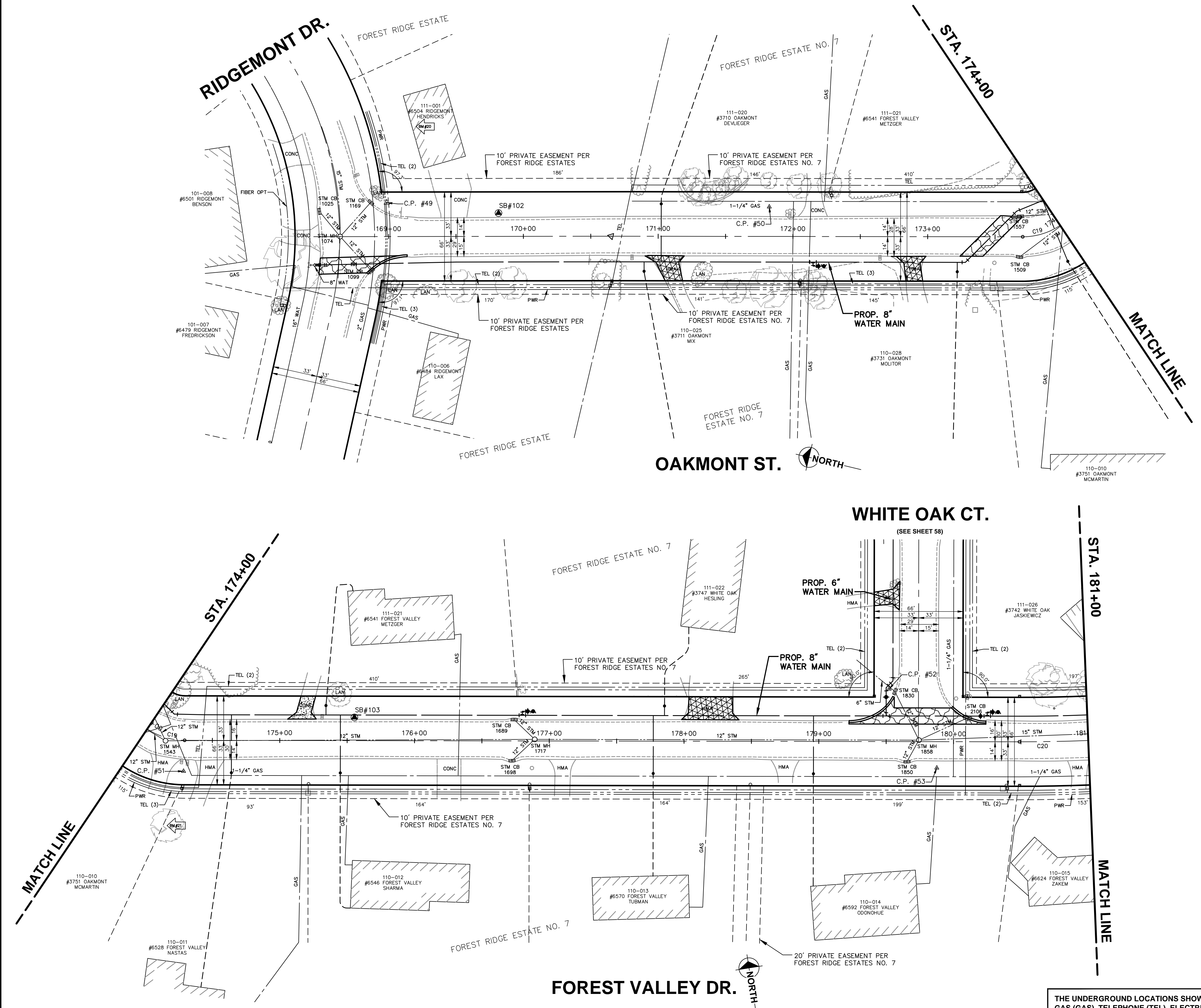
SCALE
 PLAN 1"=40'

LEGEND

-  PLACE "CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
-  ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")
-  PLACE 1.5" OF 5E1 @ 165 LBS/SYD OVER 2" 3C @ 220 LBS/SYD (BOTH PAID FOR AS "HMA APPROACH") OVER 6" AGGREGATE BASE (PAID FOR AS "AGGREGATE BASE, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
-  PLACE 6" CONCRETE DRIVE APPROACH (PAID FOR AS "DRIVEWAY, NONREIN CONC, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
-  PLACE 1.5" OF 5E1 @ 165 LBS/SYD (PAID FOR AS "HMA, 5E1") OVER 2" 3C @ 220 LBS/SYD (PAID FOR AS "HMA, 3C") OVER 6" AGGREGATE BASE (PAID FOR AS "AGGREGATE BASE, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
-  PLACE SIDEWALK RAMP PER MDOT STANDARD PLAN R-28 SERIES SIDEWALK RAMP AND DETECTABLE WARNING DETAILS AS REQUIRED BY ENGINEER. PAID FOR AS "CURB RAMP, CONC, 1/2 INCH" AND "DETECTABLE WARNING SURFACE".

IMPROVEMENTS GENERAL NOTES

- TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.



THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

INFORMATION ONLY

REVISIONS

NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 OAKMONT STREET
 AND
 FOREST VALLEY DRIVE**
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. 5892 Sheet No. 55 of 67
 Check: Field _____
 Check: Office _____

OAK CREEK CT.
(SEE SHEET 59)

BENCHMARKS		BENCHMARKS	
B.M. #22 - SET 60D IN S SIDE 42" COTTONWOOD - ELE. 716.29		B.M. #24 - SET MAG VERTICAL IN SE ROOT OF 14" PINE - ELE. 752.05	
B.M. #23 - SET MAG VERTICAL IN N ROOT OF 16" MAPLE - ELE. 722.16			
CONTROL POINTS		CONTROL POINTS	
#54 - CP P&N TRAV CAP - ELE. 715.71		#57 - CP @ #6736 FOREST VALLEY - ELE. 734.86	
#55 - CP P&N TRAV CAP - ELE. 719.63		#58 - CP P&N TRAV CAP - ELE. 751.46	
#56 - CP P&N TRAV CAP - ELE. 732.19			

SCALE
PLAN 1"=40'

LEGEND

	PLACE "CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
	ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")
	PLACE 1.5" OF 5E1 @ 165 LBS/SYD OVER 2" 3C @ 220 LBS/SYD (BOTH PAID FOR AS "HMA APPROACH") OVER 6" AGGREGATE BASE (PAID FOR AS "AGGREGATE BASE, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
	PLACE 6" CONCRETE DRIVE APPROACH (PAID FOR AS "DRIVEWAY, NONREIN CONC, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
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	PLACE SIDEWALK RAMP PER MDOT STANDARD PLAN R-28 SERIES SIDEWALK RAMP AND DETECTABLE WARNING DETAILS AS REQUIRED BY ENGINEER. PAID FOR AS "CURB RAMP, CONC, 4 INCH" AND "DETECTABLE WARNING SURFACE".

IMPROVEMENTS GENERAL NOTES
1. TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.

THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

INFORMATION ONLY

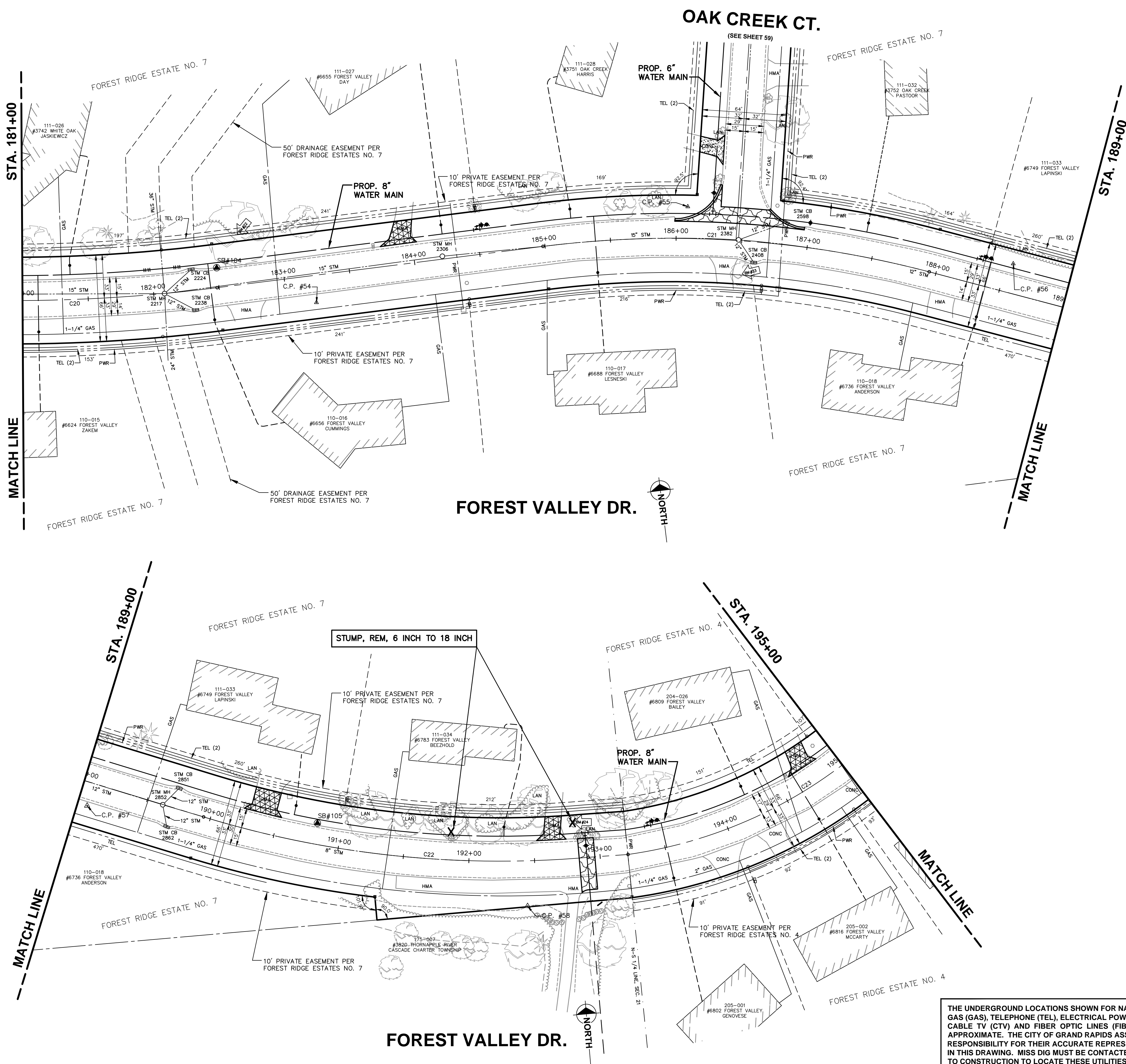
REVISIONS		
NO.	DATE	DESCRIPTION

Drawn by <u>JDH/PFN</u>	GPF No.	Sheet No.
Check: Field _____	5892	56 of 67
Check: Office _____		

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City of Grand Rapids
Public Services
Engineering Department

**IMPROVEMENTS
IN
FOREST VALLEY DRIVE
OAKMONT ST.
TO
OAK TREE DR.
(BURGER-GOODWOOD NEIGHBORHOOD
WATER MAIN - PHASE 2)**

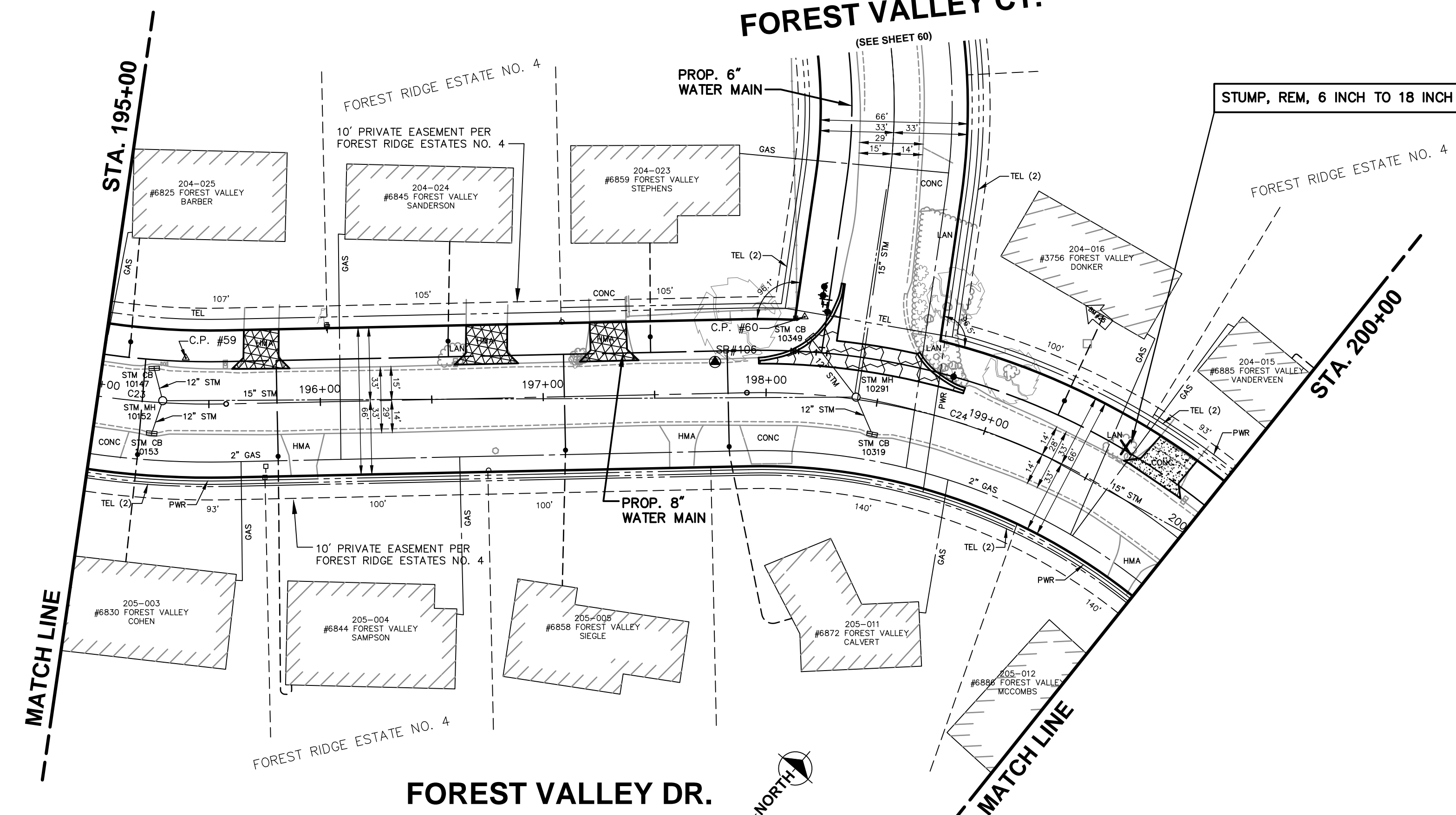


FOREST VALLEY CT.

BENCHMARKS
 B.M. #25 - TOP SW CORNER OF BRICK STEP. 0.8' ABOVE WALK @ HSE #3756 - ELE. 734.47

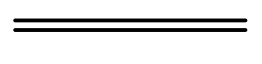
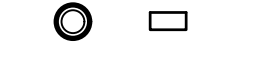
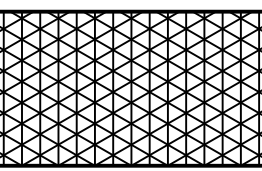


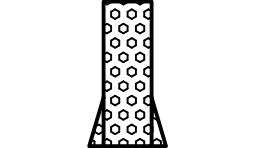
CONTROL POINTS
 #59 - CP P&N TRAV CAP - ELE. 749.09
 #60 - CP P&N TRAV CAP - ELE. 737.36

CONTROL POINTS
 #61 - CP P&N TRAV CAP - ELE. 720.87
 #62 - CP P&N TRAV CAP 5' S OF CB - ELE. 718.73
 #63 - CP P&N TRAV CAP - ELE. 720.54



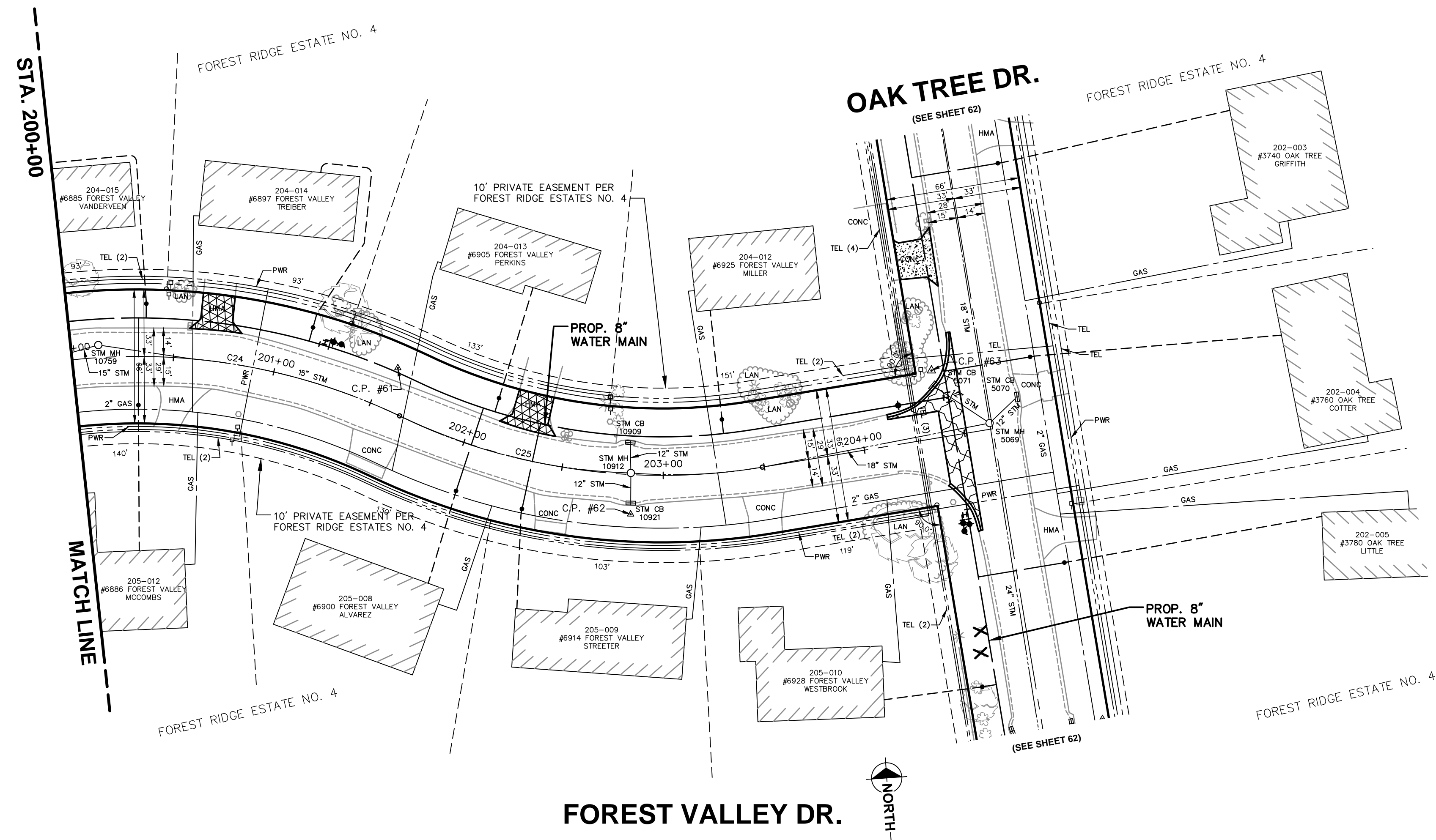
SCALE
 PLAN 1"=40'

LEGEND

-  PLACE "CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
-  ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")
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-  PLACE 6" CONCRETE DRIVE APPROACH (PAID FOR AS "DRIVEWAY, NONREIN CONC, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
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-  PLACE SIDEWALK RAMP PER MDOT STANDARD PLAN R-28 SERIES SIDEWALK RAMP AND DETECTABLE WARNING DETAILS AS REQUIRED BY ENGINEER. PAID FOR AS "CURB RAMP, CONC. 4 INCH" AND "DETECTABLE WARNING SURFACE".

IMPROVEMENTS GENERAL NOTES

- TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.



THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

INFORMATION ONLY

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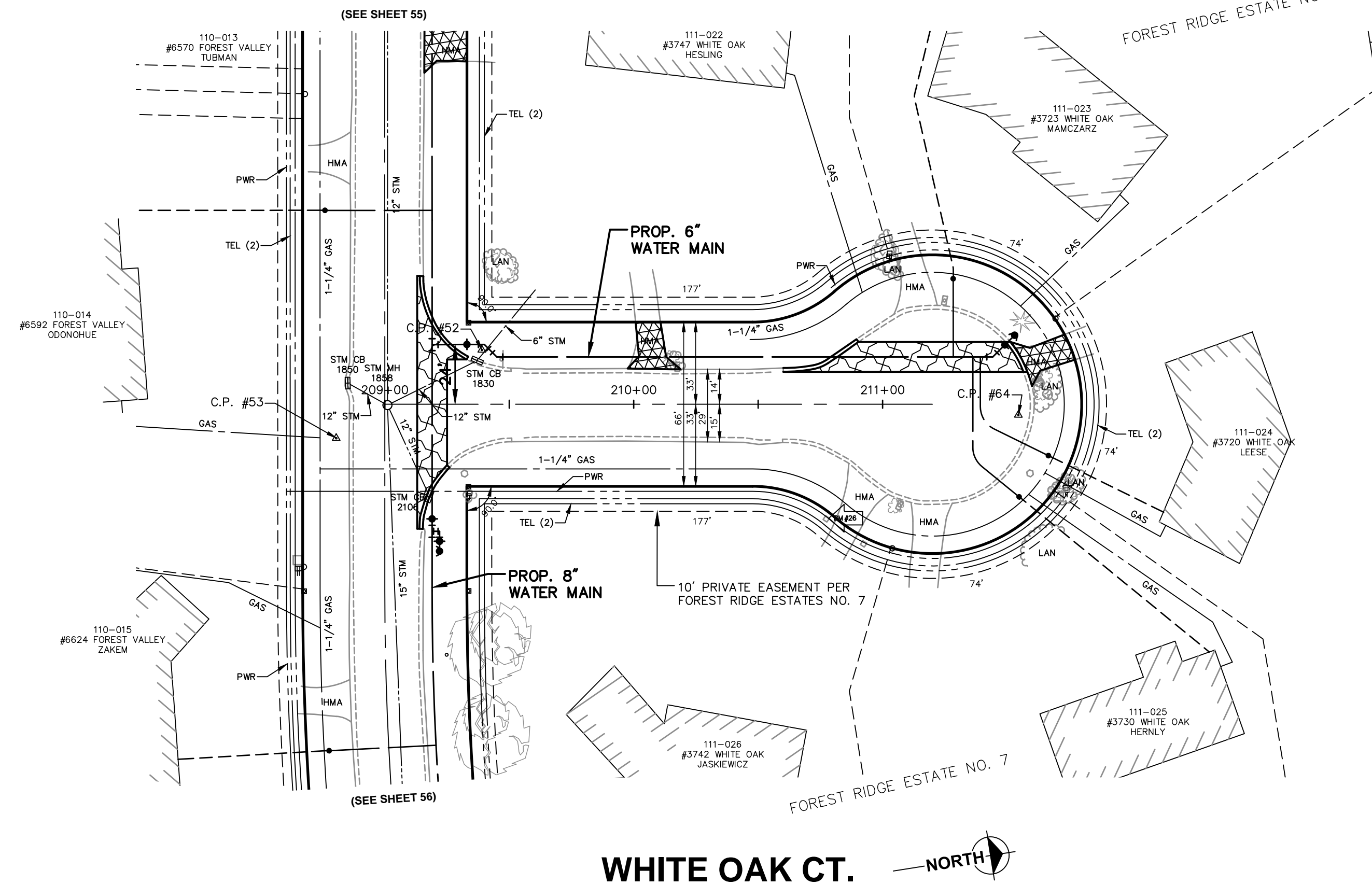
**IMPROVEMENTS
 IN
 FOREST VALLEY DRIVE
 OAKMONT ST.
 TO
 OAK TREE DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. **5892** Sheet No. **57 of 67**
 Check: Field _____
 Check: Office _____

BENCHMARKS
 B.M. #26 - TOP N CORNER OF BRICK PILLAR, S SIDE DRIVE TO #3742, 1.9' ABOVE GROUND - ELE. 724.11

CONTROL POINTS
 #52 - CP P&N TRAV CAP - ELE. 721.73
 #53 - CP @ #6592 FOREST VALLEY - ELE. 720.66
 #64 - CP MAG NAIL IN PAVEMENT - ELE. 722.75

FOREST VALLEY DR.



SCALE
 PLAN 1"=40'

LEGEND

	PLACE "CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
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	PLACE SIDEWALK RAMP PER MDOT STANDARD PLAN R-28 SERIES SIDEWALK RAMP AND DETECTABLE WARNING DETAILS AS REQUIRED BY ENGINEER. PAID FOR AS "CURB RAMP, CONC, 4 INCH" AND "DETECTABLE WARNING SURFACE".

IMPROVEMENTS GENERAL NOTES

- TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.

WHITE OAK CT.

THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

INFORMATION ONLY		
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City of Grand Rapids
 Public Services
 Engineering Department

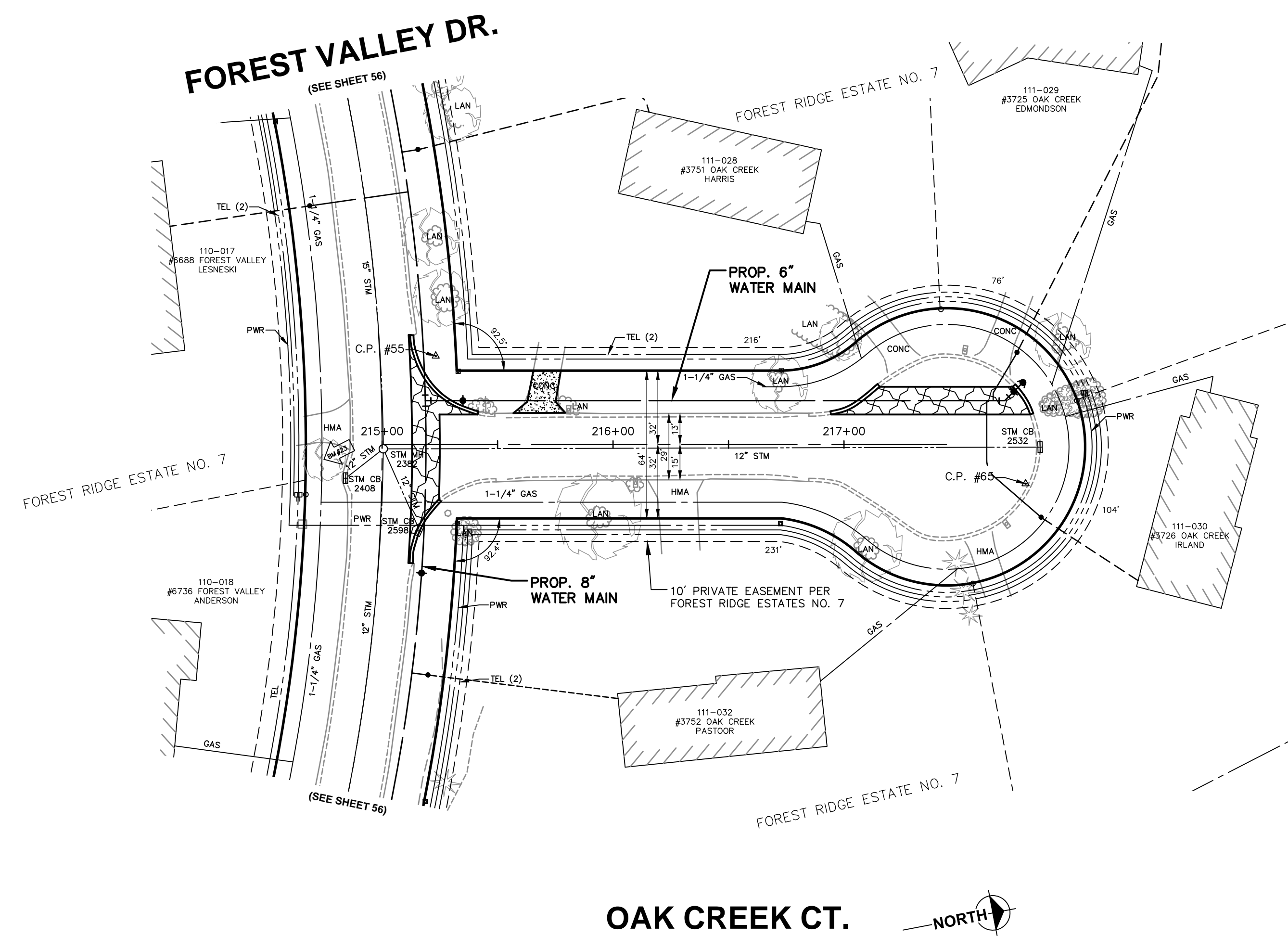
**IMPROVEMENTS
 IN
 WHITE OAK COURT**
 FOREST VALLEY DR.
 TO
 NORTH END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by <u>JDH/PFN</u>	GPF No. 5892	Sheet No. 58 of 67
Check: Field _____		
Check: Office _____		

BENCHMARKS
 B.M. #23 - SET MAG VERTICAL IN N ROOT OF 16" MAPLE - ELE. 722.16

CONTROL POINTS
 #55 - CP P&N TRAV CAP - ELE. 719.63
 #65 - CP MAG NAIL IN PAVEMENT - ELE. 717.95

SCALE
 PLAN 1"=40'



LEGEND

	PLACE "CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
	ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")
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IMPROVEMENTS GENERAL NOTES

- TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.

OAK CREEK CT.



INFORMATION ONLY

THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

REVISIONS		
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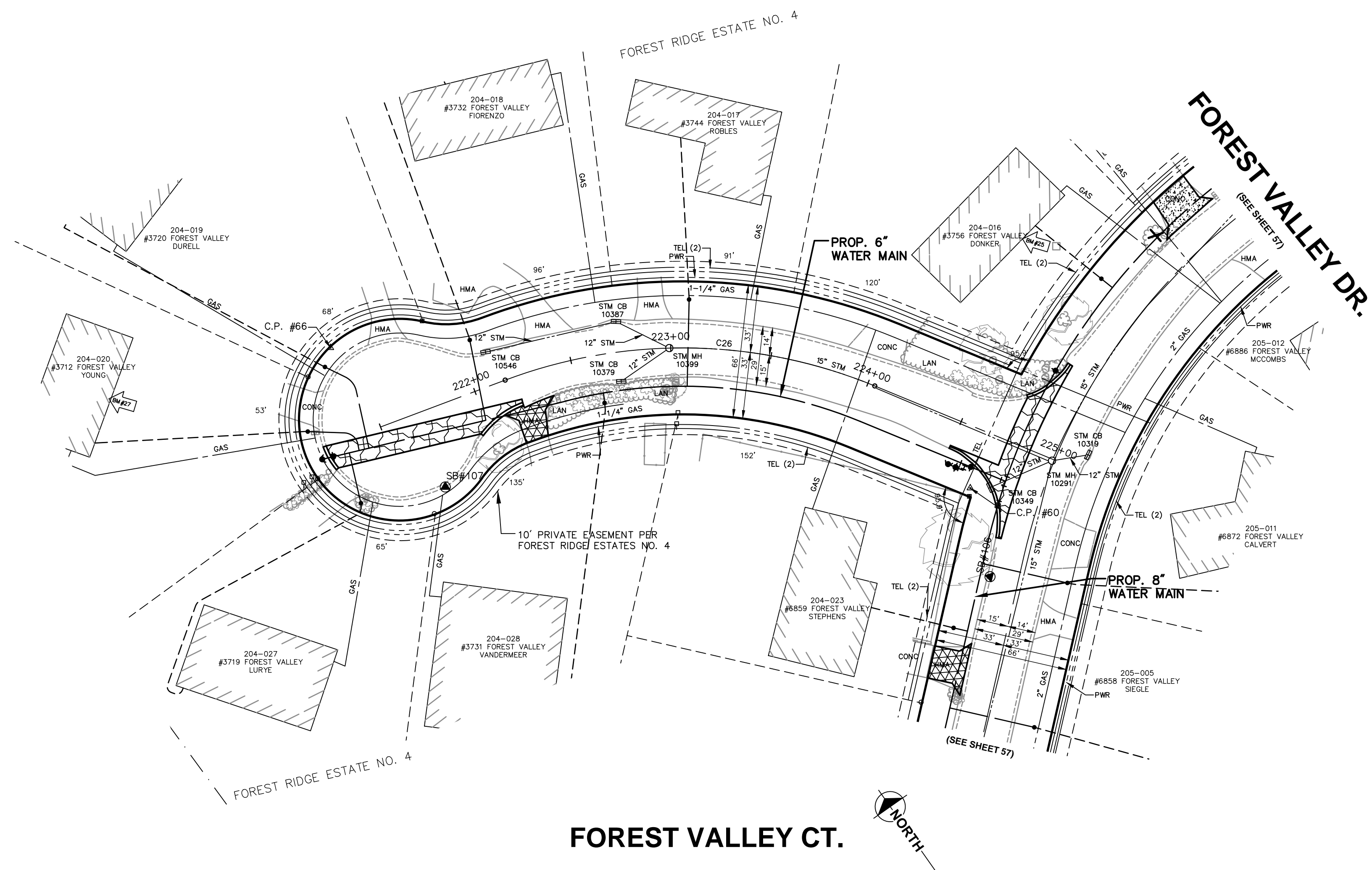
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City of Grand Rapids
 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 OAK CREEK COURT**
 FOREST VALLEY DR.
 TO
 NORTH END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. 5892 Sheet No. 59 of 67
 Check: Field _____
 Check: Office _____

BENCHMARKS
 B.M. #27 - TOP SW COR CONC STEP. 0.8' ABOVE WALK @ HSE #3712 - ELE. 739.07
 B.M. #25 - TOP SW CORNER OF BRICK STEP. 0.8' ABOVE WALK @ HSE #3756 - ELE. 734.47
 CONTROL POINTS
 #60 - CP P&N TRAV CAP - ELE. 737.36
 #66 - CP P&N TRAV CAP - ELE. 735.00



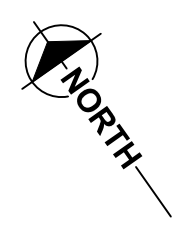
SCALE
 PLAN 1"=40'

LEGEND

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	PLACE SIDEWALK RAMP PER MDOT STANDARD PLAN R-28 SERIES SIDEWALK RAMP AND DETECTABLE WARNING DETAILS AS REQUIRED BY ENGINEER. PAID FOR AS "CURB RAMP, CONC. _ INCH" AND "DETECTABLE WARNING SURFACE".

IMPROVEMENTS GENERAL NOTES
 1. TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.

FOREST VALLEY CT.



INFORMATION ONLY

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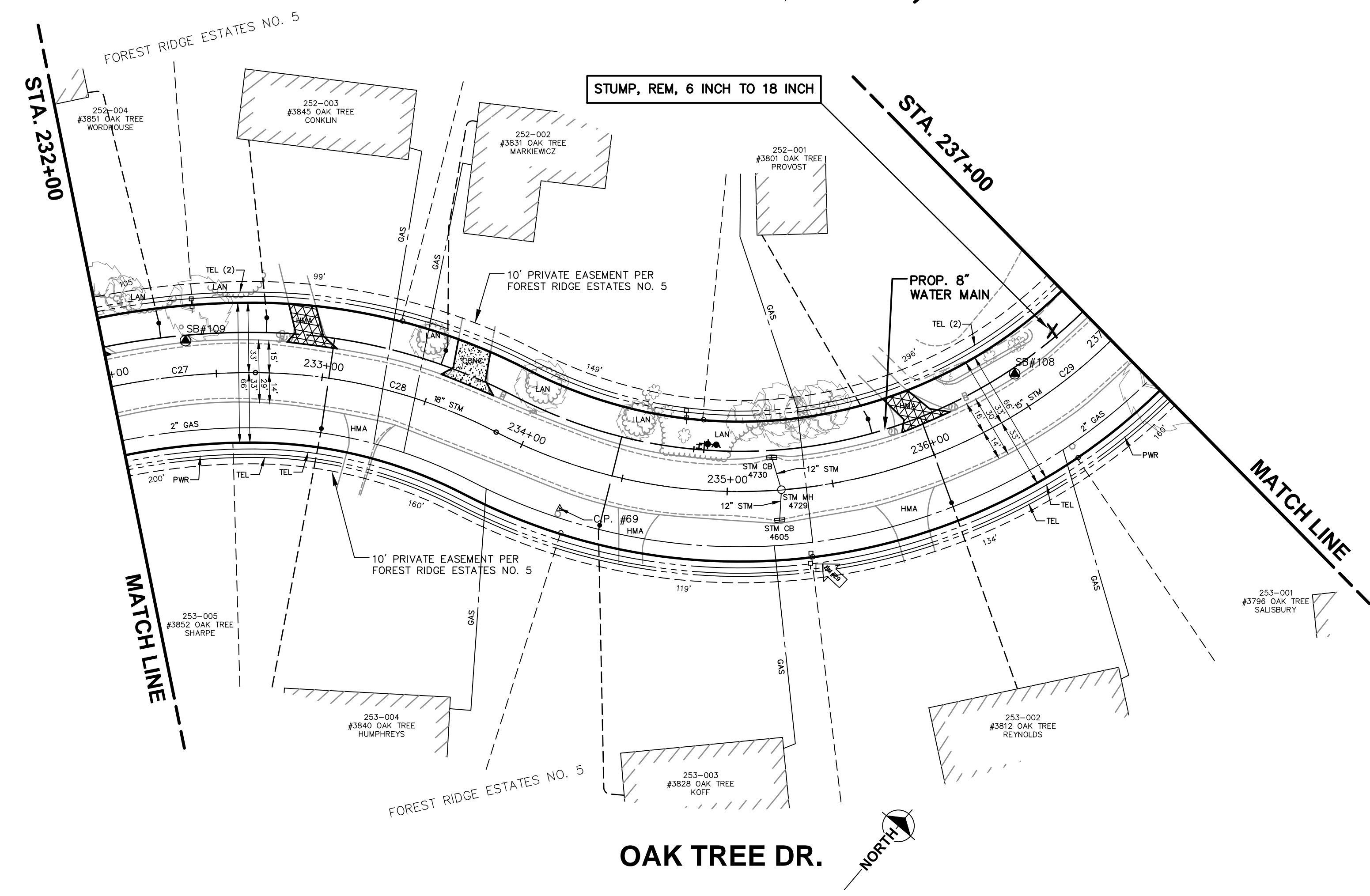
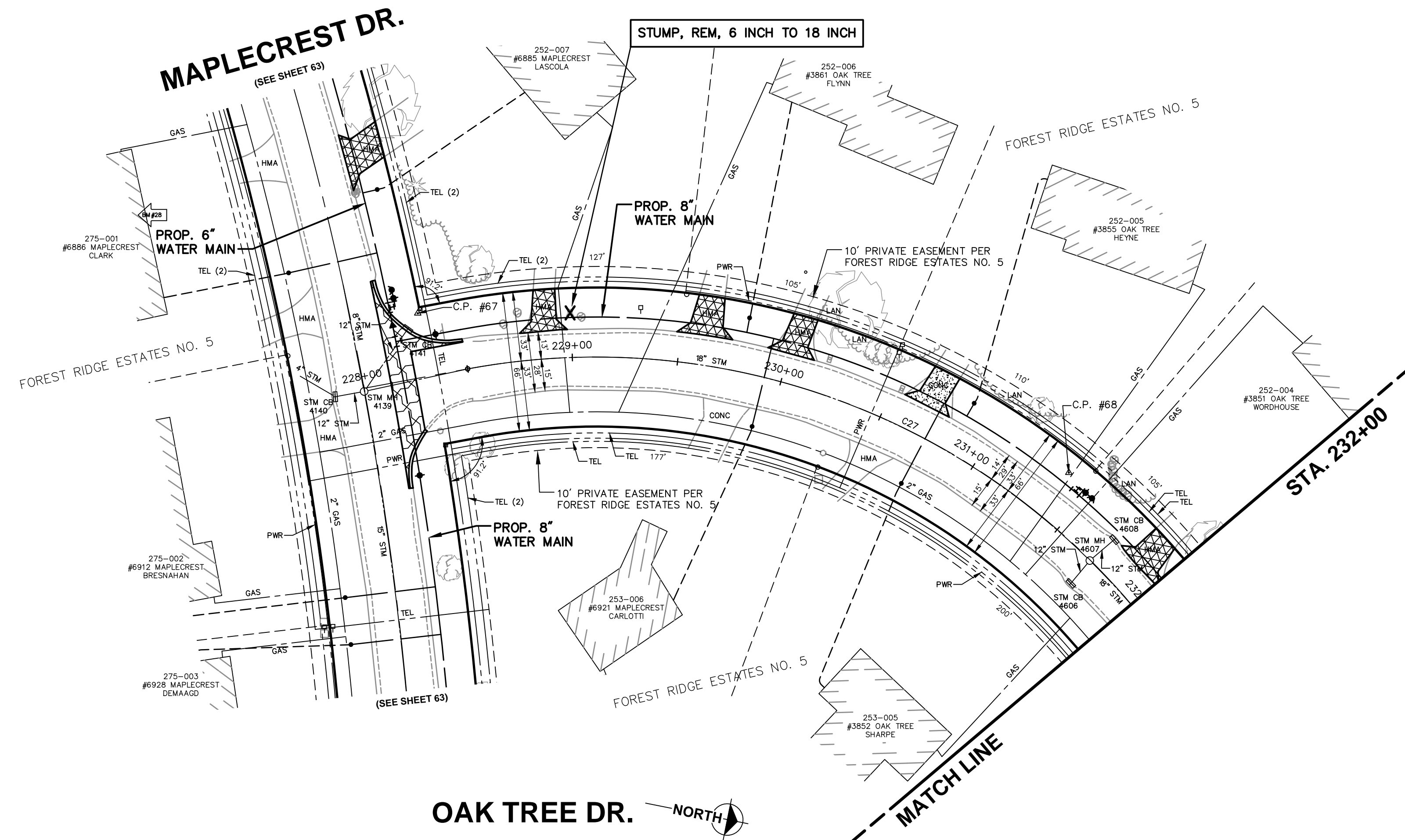
REVISIONS		
NO.	DATE	DESCRIPTION

SURVEYED & DESIGNED BY:
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City of Grand Rapids
 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 FOREST VALLEY COURT
 WEST END
 TO
 FOREST VALLEY DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 60 of 67
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 Check: Office _____

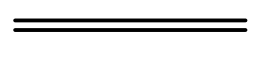
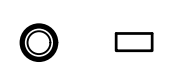
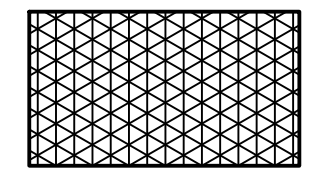
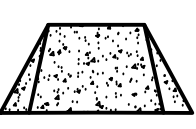
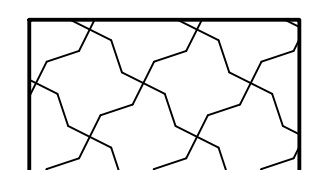
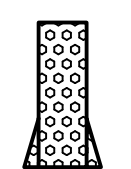


BENCHMARKS
 B.M. #28 - HSE #6886 TOP OF NE CONC PORCH STEP BY RED DOOR 1.0 FT ABOVE WALK - ELE. 762.97
CONTROL POINTS
 #67 - CP P&N TRAV CAP - ELE. 757.37
 #68 - CP P&N TRAV CAP 10FT E. OF BIT OPP HOUSE 3855 - ELE. 752.75

BENCHMARKS
 B.M. #29 - #3812 CHISSELD SQUARE NORTHWEST CORNER OF 4FT X 4FT CONCRETE PAD TO ELECTRIC TRANSFORMER BOX 0.1 FT ABOVE GROUND. - ELE. 729.40
CONTROL POINTS
 #69 - CP P&N TRAV CAP 8FT E OF BIT OPP LP - ELE. 736.28

SCALE
 PLAN 1"=40'

LEGEND

-  PLACE CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
-  ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")
-  PLACE 1.5" OF 5E1 @ 165 LBS/SYD OVER 2" 3C @ 220 LBS/SYD (BOTH PAID FOR AS "HMA APPROACH") OVER 6" AGGREGATE BASE (PAID FOR AS "AGGREGATE BASE, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
-  PLACE 6" CONCRETE DRIVE APPROACH (PAID FOR AS "DRIVEWAY, NONREINF CONC, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")
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-  PLACE SIDEWALK RAMP PER MDOT STANDARD PLAN R-28 SERIES SIDEWALK RAMP AND DETECTABLE WARNING DETAILS AS REQUIRED BY ENGINEER. PAID FOR AS "CURB RAMP, CONC. 4 INCH" AND "DETECTABLE WARNING SURFACE".

IMPROVEMENTS GENERAL NOTES
 1. TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.

THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

INFORMATION ONLY

REVISIONS

NO.	DATE	DESCRIPTION

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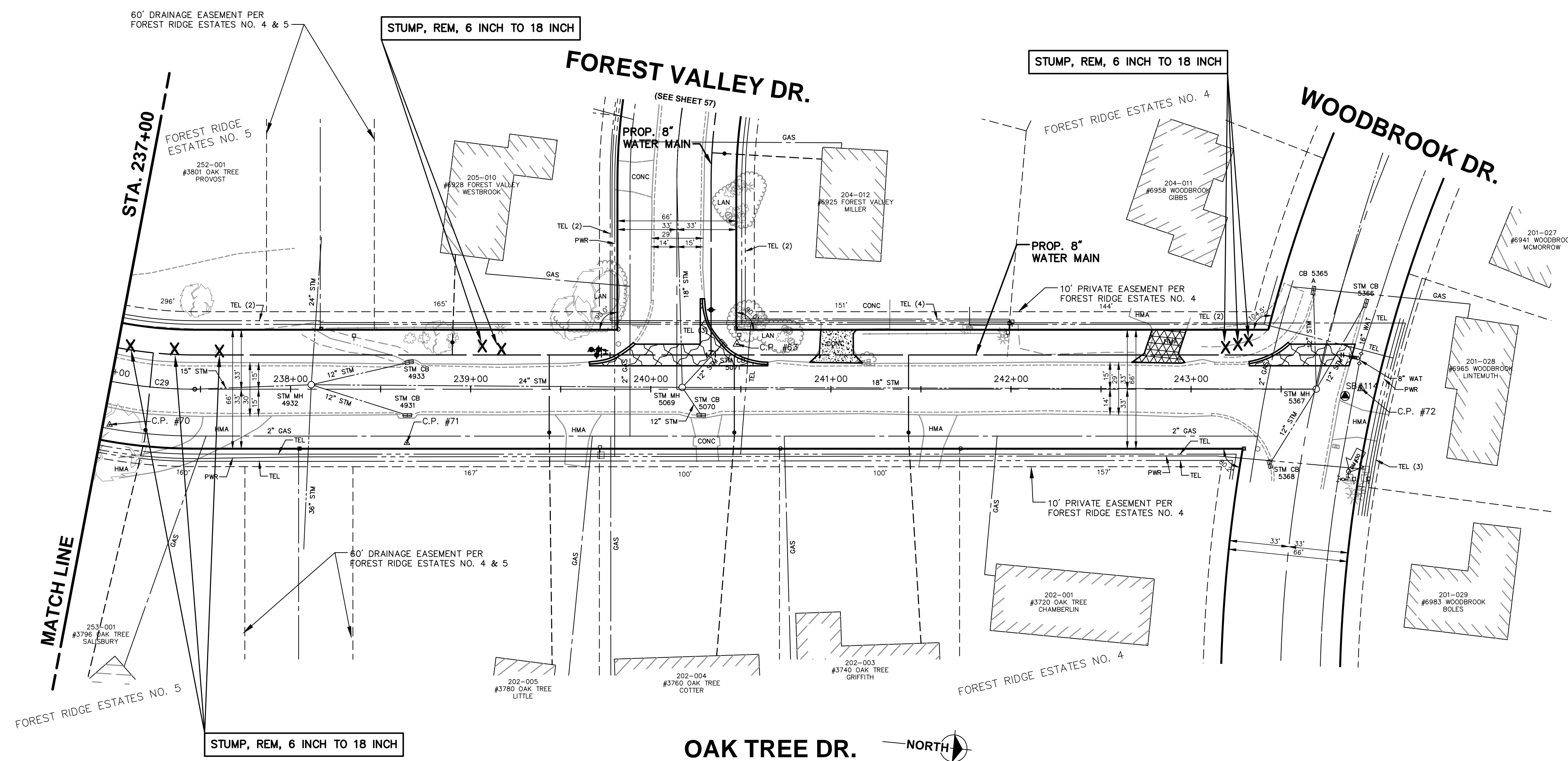
City of Grand Rapids
 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 OAK TREE DRIVE**
 MAPLECREST DR.
 TO
 WOODBROOK DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. **5892** Sheet No. **61** of **67**
 Check: Field _____
 Check: Office _____

BENCHMARKS
 B.M. #30 - #6965 WOODBROOK, TOP OF NORTH HYDRANT FLANGE BOLT UNDER E IN E/W 0.95 FEET ABOVE GROUND. - ELE. 741.13

CONTROL POINTS
 #63 - CP P&N TRAV CAP - ELE. 720.54
 #70 - CP P&N TRAV CAP 10FT E OF BIT OFF DECIDUOUS 3795 - ELE. 720.11
 #71 - CP P&N TRAV CAP 15FT E OF CATCH BASIN - ELE. 717.84
 #72 - CP P&N TRAV CAP - ELE. 738.33



SCALE
 PLAN 1"=40'

LEGEND

PLACE "CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"

ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")

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PLACE 6" CONCRETE DRIVE APPROACH (PAID FOR AS "DRIVEWAY, NONREINF CONC, 6 INCH") OVER 12" SAND SUBBASE (PAID FOR AS "SUBBASE, CIP")

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PLACE SIDEWALK RAMP PER MDOT STANDARD PLAN R-28 SERIES SIDEWALK RAMP AND DETECTABLE WARNING DETAILS AS REQUIRED BY ENGINEER. PAID FOR AS "CURB RAMP, CONC, 4 INCH" AND "DETECTABLE WARNING SURFACE".

IMPROVEMENTS GENERAL NOTES

1. TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.

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**IMPROVEMENTS
 IN
 OAK TREE DRIVE**

MAPLECREST DR.
 TO
 WOODBROOK DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. 5892 Sheet No. 62 of 67
 Check: Field _____
 Check: Office _____

BENCHMARKS
 B.M. #28 - HSE #6886 TOP OF NE CONC PORCH
 STEP BY RED DOOR 1.0 FT ABOVE WALK - ELE. 762.97

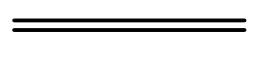
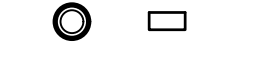
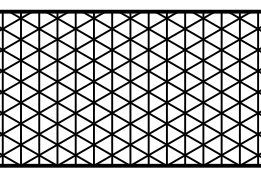


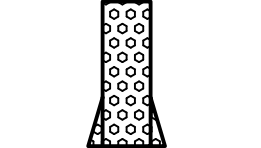
CONTROL POINTS
 #67 - CP P&N TRAV CAP - ELE. 757.37
 #73 - CP MAG NAIL IN PAVEMENT - ELE. 768.58'

BENCHMARKS
 B.M. #31 - CHISSELED SQUARE
 NORTHWEST CORNER CONCRETE PAD
 0.3FT ABOVE GROUND. - ELE. 748.68

CONTROL POINTS
 #74 - CP P&N TRAV CAP - ELE. 748.23

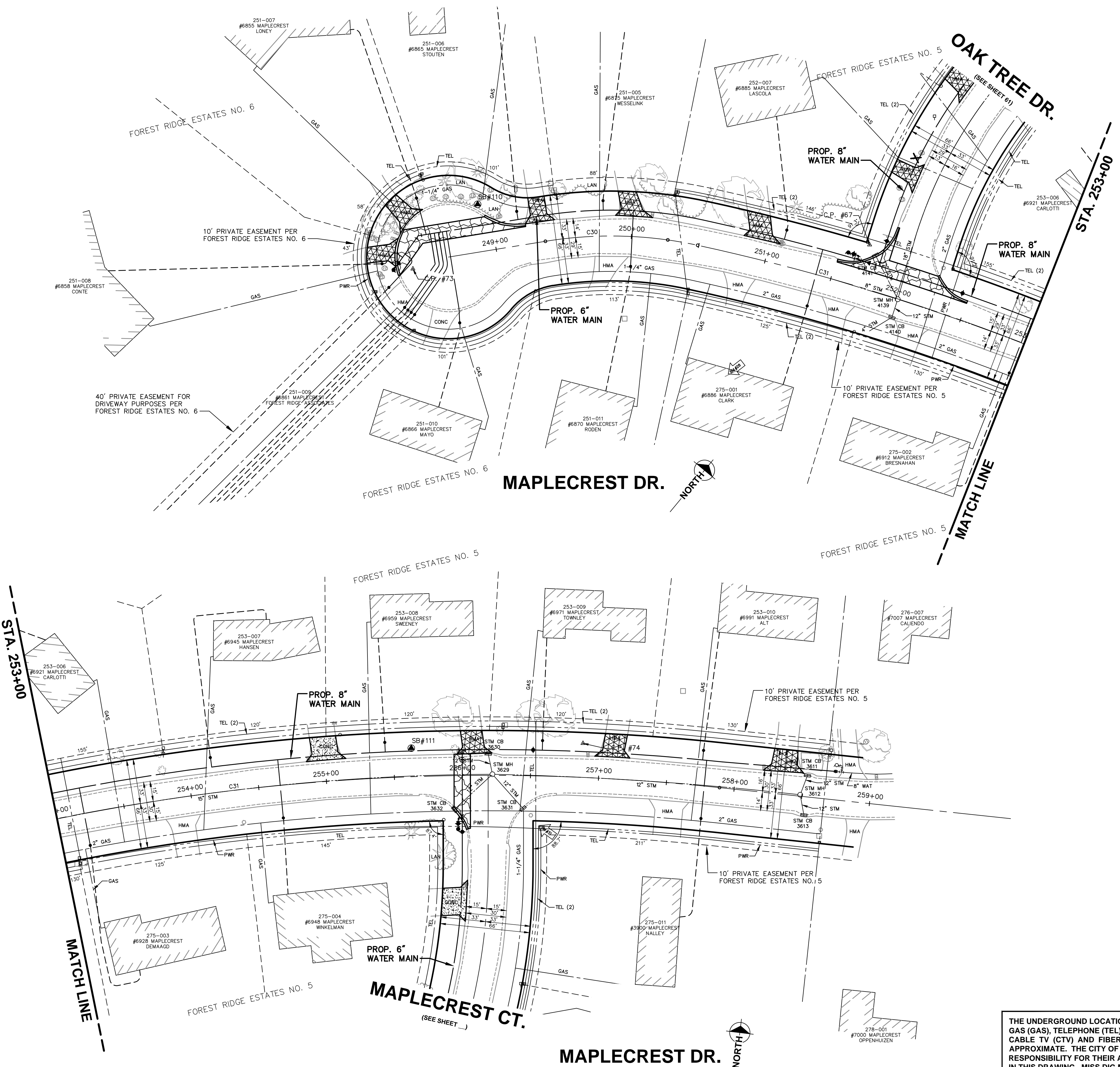
SCALE
 PLAN 1"=40'

LEGEND

-  PLACE CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5'
-  ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")
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IMPROVEMENTS GENERAL NOTES

- TRANSITION CURB AND GUTTER FROM PROPOSED WIDTH TO EXISTING WIDTH OVER 5'-10' WHERE NECESSARY. MATCH EXISTING AND PROPOSED GUTTER PAN GRADES TO AVOID STANDING WATER AS REQUIRED BY ENGINEER.



THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

INFORMATION ONLY

REVISIONS		
NO.	DATE	DESCRIPTION

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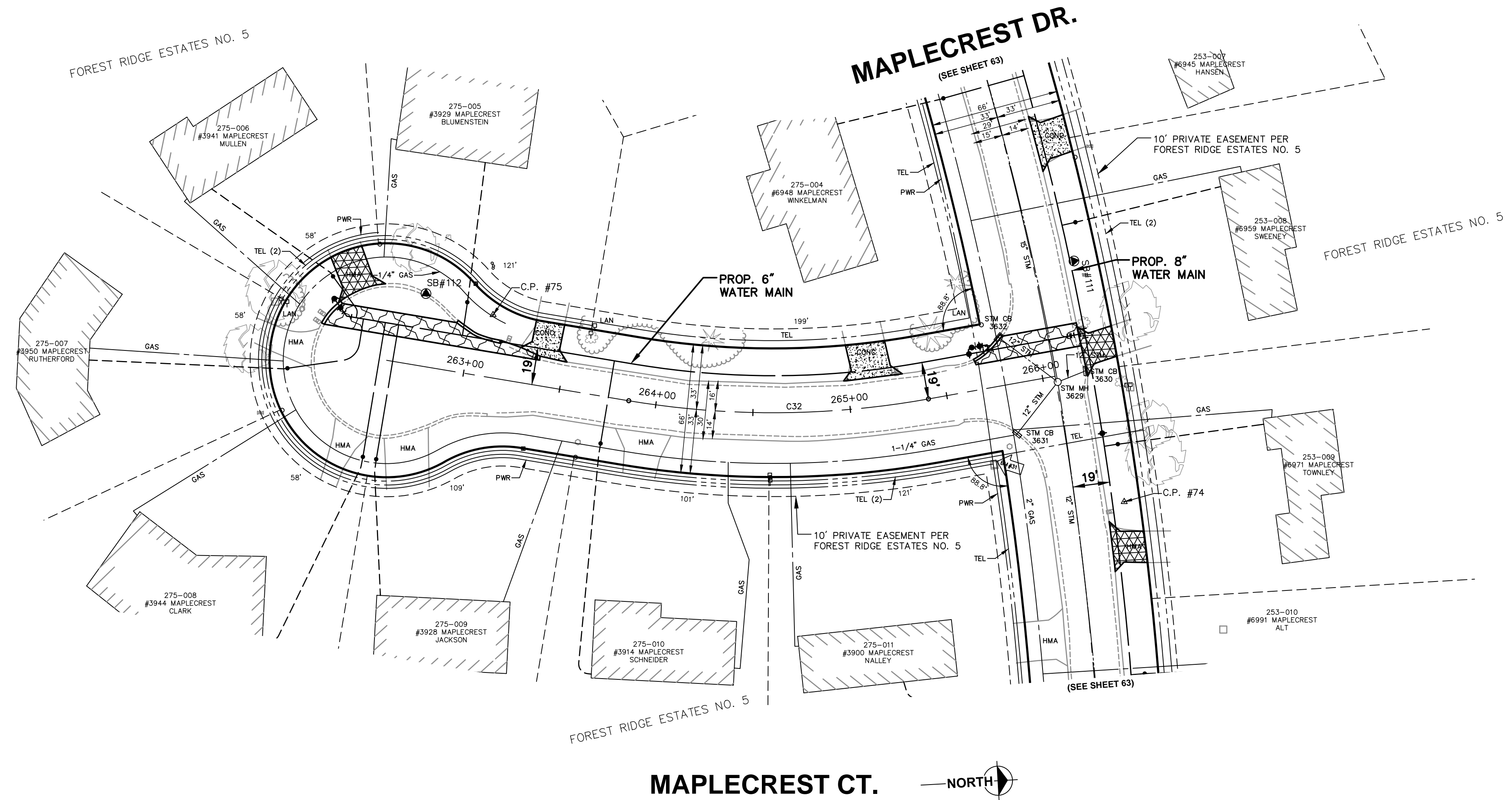
**IMPROVEMENTS
 IN
 MAPLECREST DRIVE**

WEST END
 TO
 250' EAST OF MAPLECREST CT.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. 5892 Sheet No. 63 of 67
 Check: Field _____
 Check: Office _____

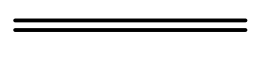

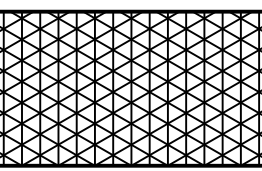
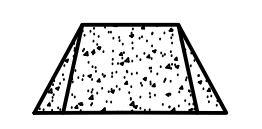
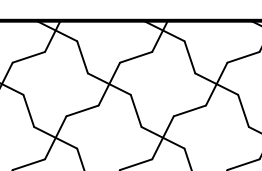
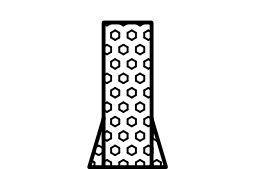
BENCHMARKS
 B.M. #31 - CHISSELD SQUARE
 NORTHWEST CORNER CONCRETE PAD
 0.3FT ABOVE GROUND. - ELE. 748.68

CONTROL POINTS
 #74 - CP P&N TRAV CAP - ELE. 748.23
 #75 - CP P&N TRAV CAP - ELE. 755.01



SCALE
 PLAN 1"=40'

LEGEND

-  PLACE "CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
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MAPLECREST CT. 

INFORMATION ONLY

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REVISIONS		
NO.	DATE	DESCRIPTION

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City of Grand Rapids
 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 MAPLECREST COURT
 SOUTH END
 TO
 MAPLECREST DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

Drawn by JDH/PFN GPF No. 5892 Sheet No. 64 of 67
 Check: Field _____
 Check: Office _____

BENCHMARKS
 B.M. #32 - TOP OF HYDRANT FLANGE BOLT UNDER E
 IN E.I.W 0.7 FT ABOVE GROUND. - ELE. 707.82

CONTROL POINTS
 #76 - CP P&N TRAV CAP - ELE. 705.90
 #77 - CP P&N TRAV CAP - ELE. 695.61

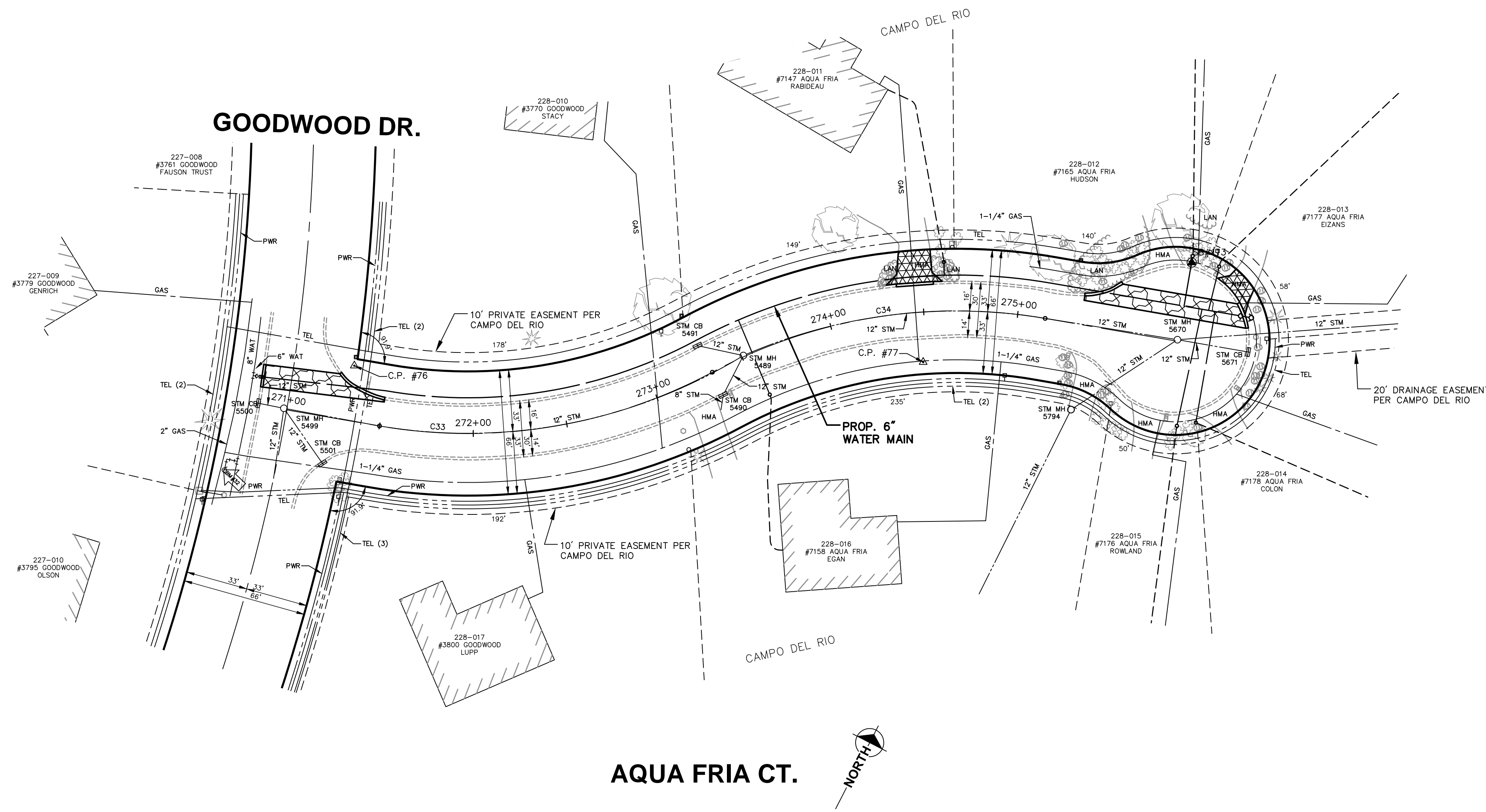
SCALE
 PLAN 1"=40'

LEGEND

	PLACE "CURB AND GUTTER, 18 INCH X 6 INCH PAN, PER DETAIL P-5"
	ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "MANHOLE CASTING, FURNISH" AND/OR MANHOLE "CASTING, ADJUST"). ALL CATCH BASIN CASTINGS ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "CATCH BASIN CASTING, FURNISH" AND/OR "CATCH BASIN CASTING, ADJUST")
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IMPROVEMENTS GENERAL NOTES

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AQUA FRIA CT.



THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION TO LOCATE THESE UTILITIES.

INFORMATION ONLY

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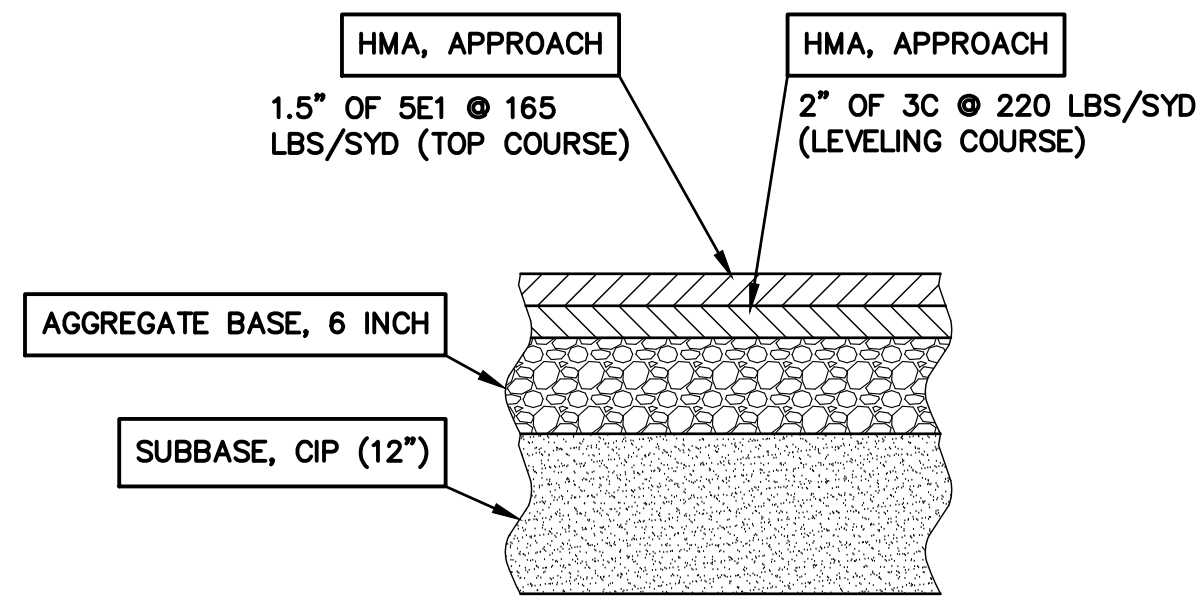
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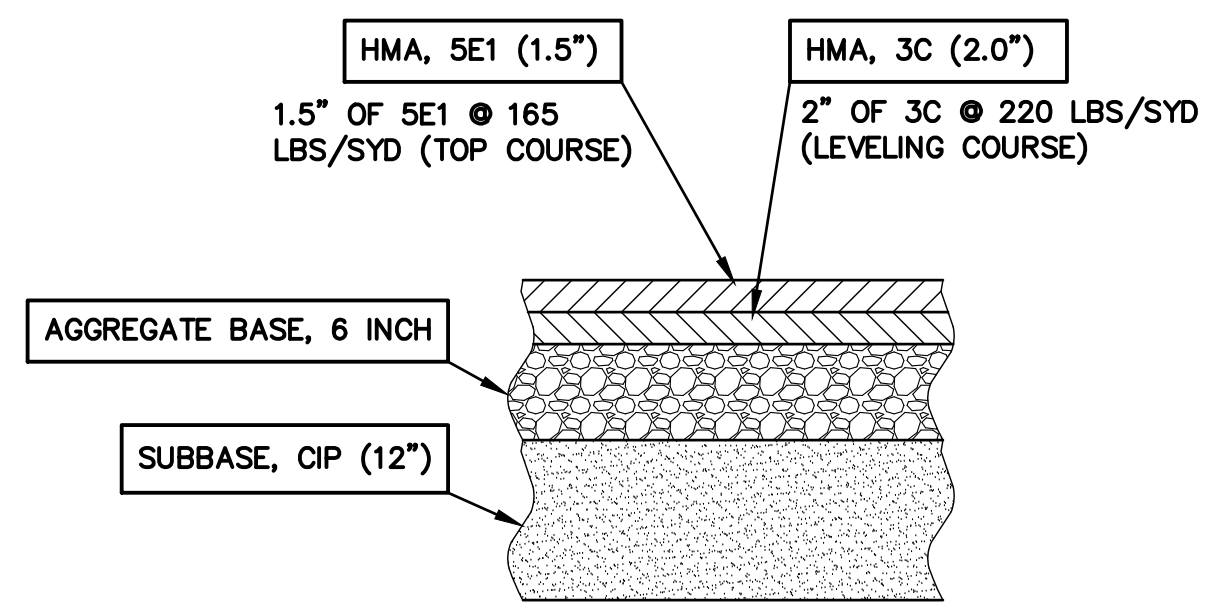
**IMPROVEMENTS
 IN
 AQUA FRIA COURT**
 GOODWOOD DR.
 TO
 EAST END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. **5892** Sheet No. **65 of 67**
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HMA APPROACH DETAIL

N.T.S.



HMA PAVEMENT DETAIL OVER UTILITY

N.T.S.

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City of Grand Rapids
 Public Services
 Engineering Department

WATER MAIN

IN

THORNAPPLE RIVER DRIVE (N)

BURGER DRIVE

BROOKHILLS COURT

WINTERBERRY COURT

BROOKPOINT DRIVE

MISTY LANE

WOODBROOK DRIVE

TRICKLEWOOD DRIVE

RIDGEMONT COURT

SANDY LANE DRIVE

SANDY LANE COURT

THORNAPPLE RIVER DRIVE (S)

OAKMONT STREET

FOREST VALLEY DRIVE

WHITE OAK COURT

OAK CREEK COURT

FOREST VALLEY COURT

OAK TREE DRIVE

MAPLECREST DRIVE

MAPLECREST COURT

AQUA FRIA COURT

(BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

**(BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)**

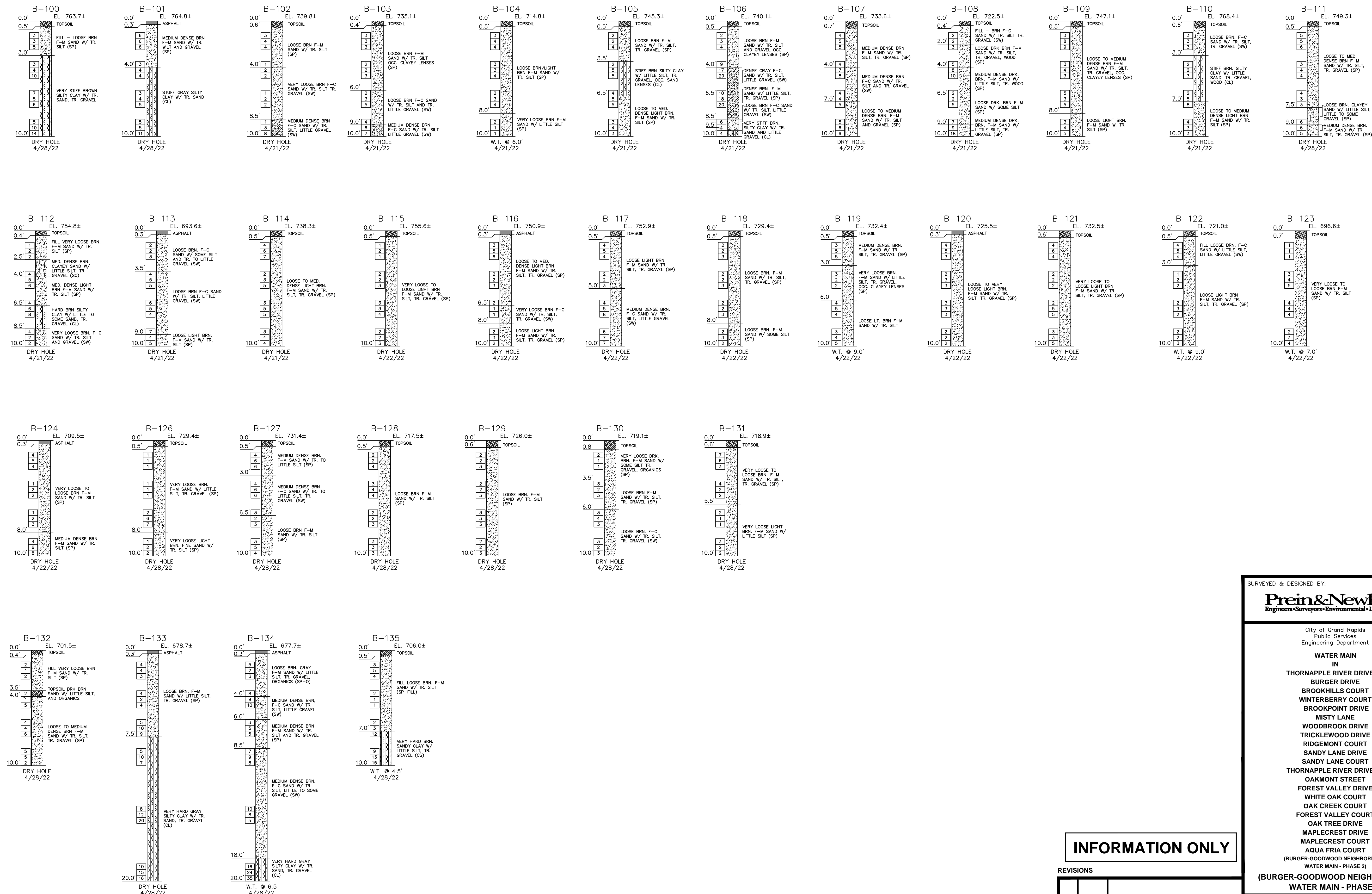
REVISIONS

NO.	DATE	DESCRIPTION

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GPF No. **5892**

Sheet No. **66 of 67**



INFORMATION ONLY

REVISIONS

NO.	DATE	DESCRIPTION

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City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 THORNAPPLE RIVER DRIVE (N)**

BURGER DRIVE
 BROOKHILLS COURT
 WINTERBERRY COURT
 BROOKPOINT DRIVE
 MISTY LANE
 WOODBROOK DRIVE
 TRICKLEWOOD DRIVE
 RIDGEMONT COURT
 SANDY LANE DRIVE
 SANDY LANE COURT
 THORNAPPLE RIVER DRIVE (S)
 OAKMONT STREET
 FOREST VALLEY DRIVE
 WHITE OAK COURT
 OAK CREEK COURT
 FOREST VALLEY COURT
 OAK TREE DRIVE
 MAPLECREST DRIVE
 MAPLECREST COURT
 AQUA FRIA COURT
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 2)

Drawn by JDH/PFN GPF No. **5892** Sheet No. **67 of 67**
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 Check: Office JS