

UTILITIES - CONTACT INFORMATION

PUBLIC

CITY OF GRAND RAPIDS TRAFFIC SAFETY DEPT.
509 WEALTHY ST. SW
GRAND RAPIDS, MI 49503
(616) 456-3847

CITY OF GRAND RAPIDS WATER SYSTEM
1900 OAK INDUSTRIAL DR. NE
GRAND RAPIDS, MI 49505
(616) 456-3141 (616) 456-3000 AFTER HRS

KENT COUNTY ROAD COMMISSION
1500 SCRIBNER AVE. NW
GRAND RAPIDS, MI 49504
(616) 242-6910

KENT COUNTY DEPT. OF PUBLIC WORKS
(616) 336-2500

PRIVATE

CONSUMERS ENERGY COMPANY (ELECTRIC)
4000 CLAY AVE. SW
GRAND RAPIDS, MI 49501-0201
(616) 530-4115 (AERIAL DIST)
(616) 530-4381 (METRO UG)

AT&T (TEL/FIBER OPTIC)
955 36TH ST. SE
GRAND RAPIDS, MI 49508
(866) 491-2069

DTE ENERGY/MICHCON (NATURAL GAS)
444 WEALTHY ST. SW
GRAND RAPIDS, MI 49503
(800) 947-5000

COMCAST (CABLE TV)
955 CENTURY AVE. SW
GRAND RAPIDS, MI 49503
(269) 209-9908



**CITY OF GRAND RAPIDS
GRAND RAPIDS, MICHIGAN
PUBLIC SERVICES**

**WATER MAIN
IN
BURGER DRIVE, TANGLEWOOD DRIVE,
TRICKLEWOOD DRIVE,
TRICKLEWOOD COURT,
BROOKHILLS COURT, TUSCANY DRIVE,
CIMARRON DRIVE, TRIPOLI STREET,
AND TRIPOLI COURT
(BURGER-GOODWOOD NEIGHBORHOOD WATER MAIN - PHASE 1)**

BID SET			
BID SET NO.	DATE	BID SET NO.	DATE

REVISIONS			
REV NO.	DATE	SHEET NUMBER(S)	APPROVED BY

AS-BUILT RECORD	
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

- 1 TITLE SHEET
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- 16 BROOKHILLS COURT
- 17-19 TUSCANY DRIVE
- 20-21 CIMARRON DRIVE
- 22 TRIPOLI STREET
- 23 TRIPOLI COURT

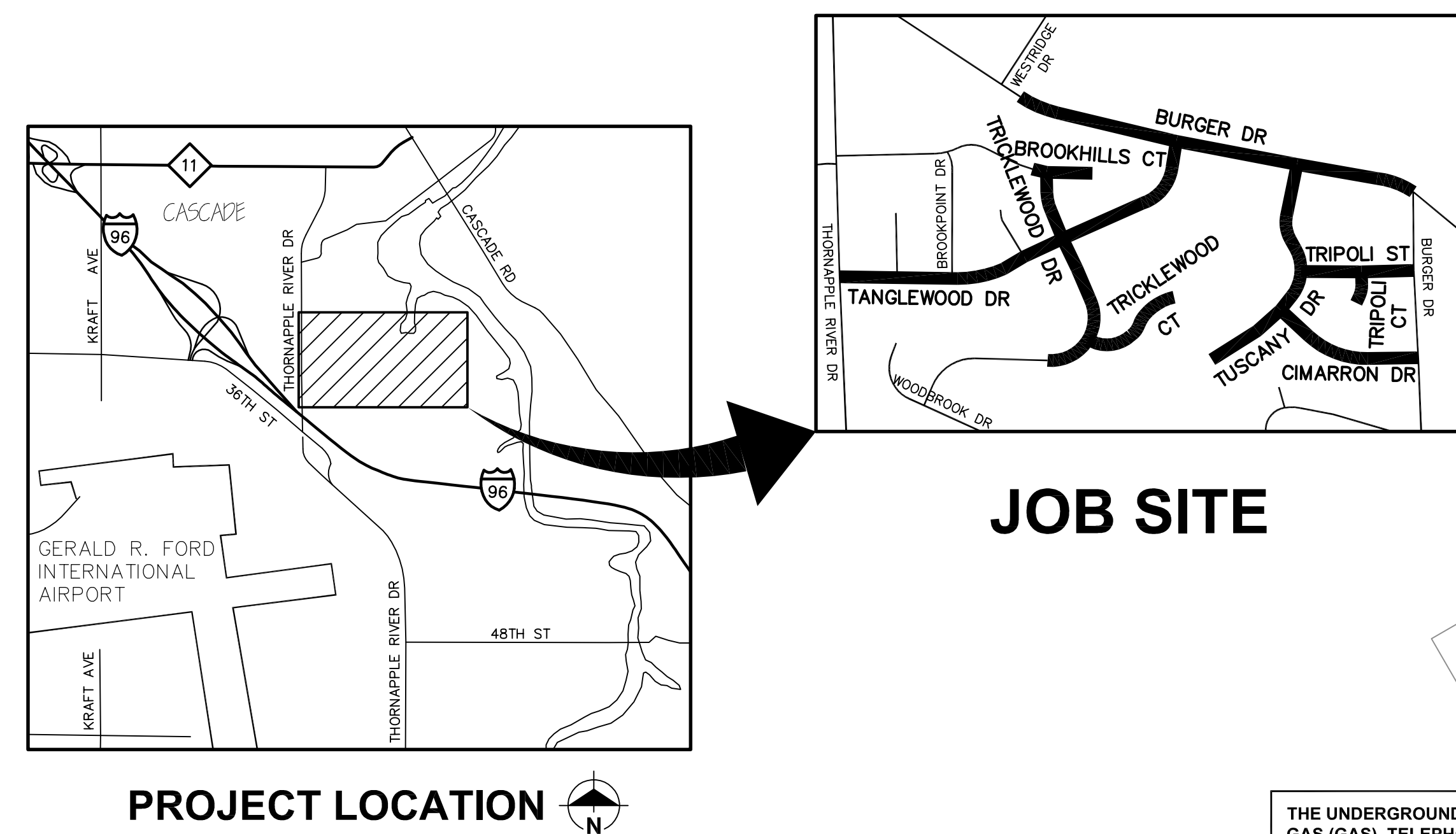
- IMPROVEMENTS**
- 24-25 BURGER DRIVE
 - 26-27 TANGLEWOOD DRIVE
 - 28-29 TRICKLEWOOD DRIVE
 - 30 TRICKLEWOOD COURT
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CALL 811 FOR MISS DIG

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 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

- 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.
- 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.



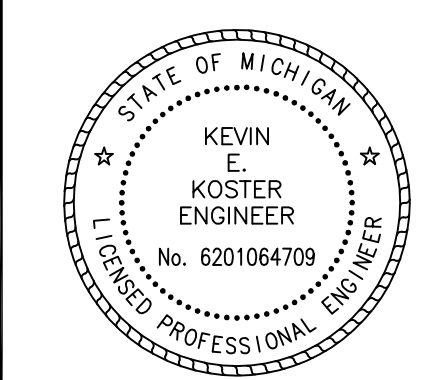
JOB SITE

PROJECT LOCATION

DRAFT
02/2022

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.

CITY OF GRAND RAPIDS	
PROFESSIONAL PERSON IN RESPONSIBLE CHARGE OF THE PROJECT	
SHEETS	1-38
NAME OF LICENSEE	KEVIN E. KOSTER, P.E.
NUMBER	6201064709
SIGNATURE	



SURVEYED & DESIGNED BY:

Prein&Newhof
Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
Public Services
Engineering Department

**WATER MAIN
IN
BURGER DRIVE
TANGLEWOOD DRIVE
TRICKLEWOOD DRIVE
TRICKLEWOOD COURT
BROOKHILLS COURT
TUSCANY DRIVE
CIMARRON DRIVE
TRIPOLI STREET
TRIPOLI COURT
(BURGER-GOODWOOD NEIGHBORHOOD
WATER MAIN - PHASE 1)**

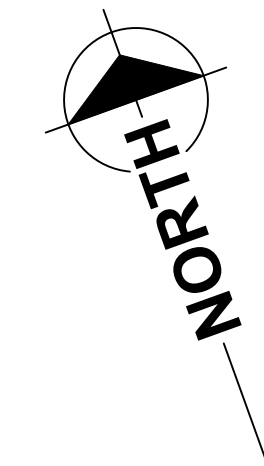
Drawn by JDH Notes in N/A

Check Field XX / XX Office KEK / BGV

Approved Tim Burkman, P.E., City Engineer Date _____

APPROVAL OF SHEET(S) 1-38 ONLY

Project No. 21044	GPF No. 5843	Sheet No. 1 of 38
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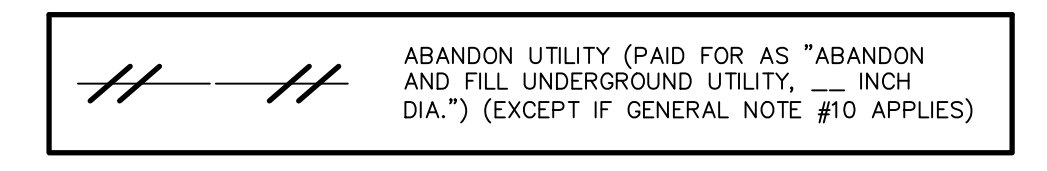


CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C1	234'	700'	S65°20'39"E 233'

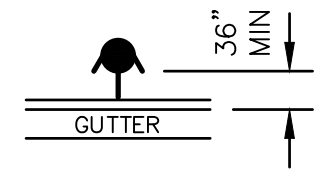
BENCHMARK #01
 B.M. E.L. 734.31 - BM @ 6608 BURGER 25 FT EAST OF DRIVE AND 25 FT SOUTH OF CENTERLINE. SET RR SPIKE NORTH SIDE PP 1.0 FT ABOVE GROUND.

CONTROL POINTS
 #05 - P&N TRAV CAP 3FT S OF FW 4FT W OF BW - E.L. 733.94
 #08 - P&N TRAV CAP 3FT N OF EB 25FT E OF DR @ 6677 - E.L. 733.14

REMOVAL LEGEND



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 LOCATIONS OF THE EXISTING WATER SERVICES AND SEWER LATERALS SHOWN ARE APPROXIMATE AND ACTUAL LOCATIONS MAY VARY. THE CONTRACTOR IS TO VERIFY THE LOCATIONS OF EXISTING SERVICES (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, 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
- (A) - (X) WATER MAIN TESTING LIMITS

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

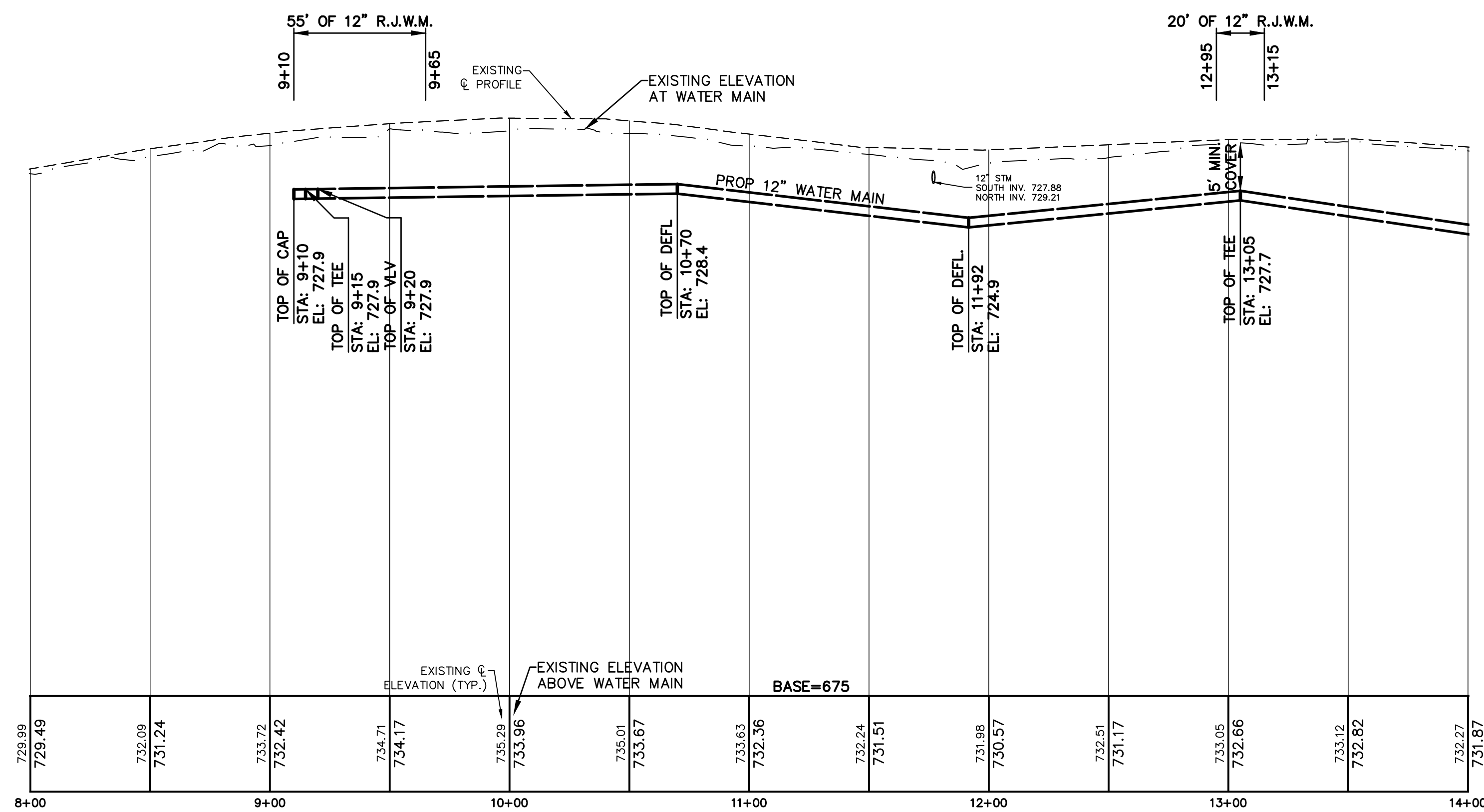
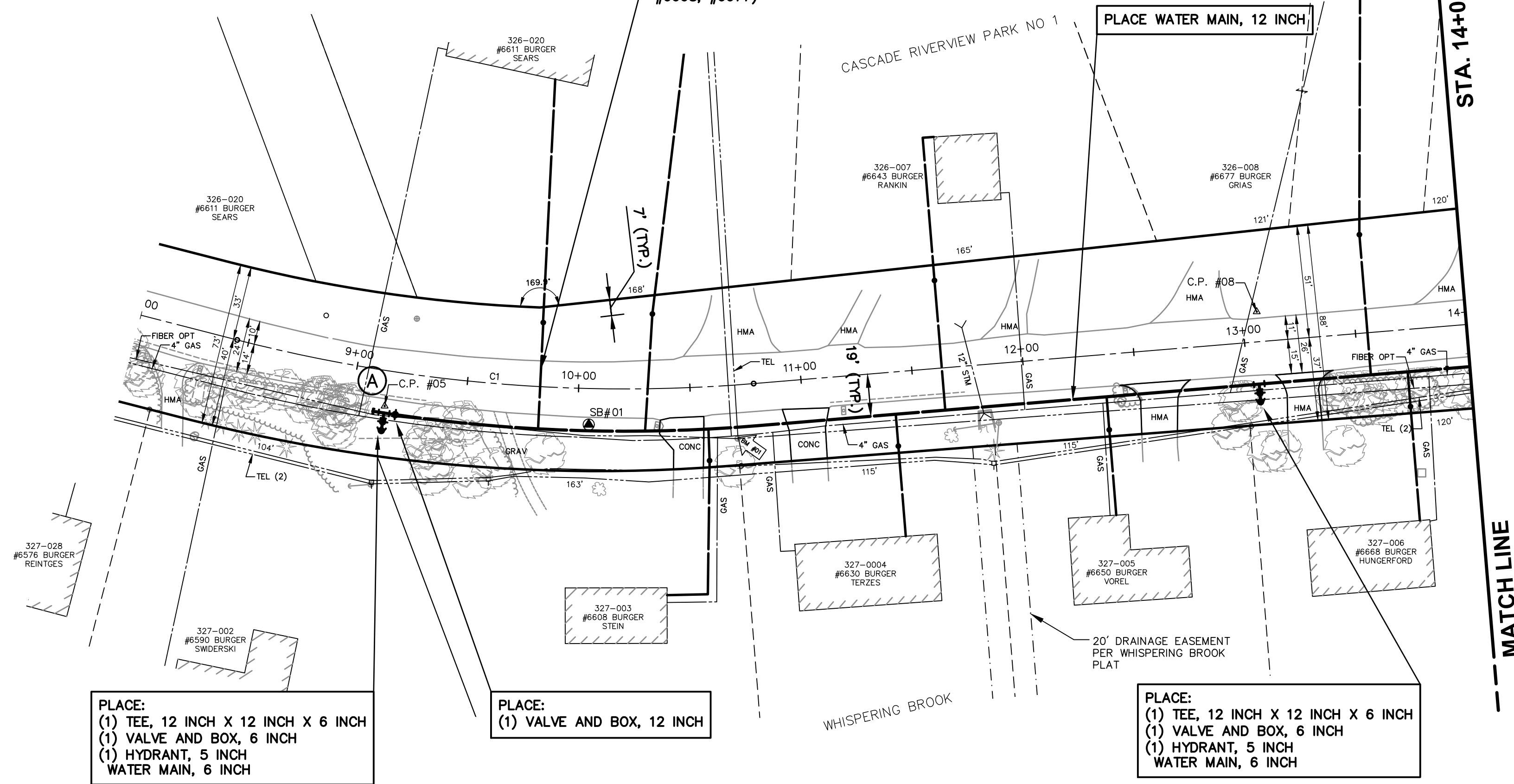
TYP. 8 LOCATIONS (#6608, #6611, #6625, #6630, #6643, #6650, #6668, #6677)

PLACE WATER MAIN, 12 INCH

PLACE:
 (1) TEE, 12 INCH X 12 INCH X 6 INCH
 (1) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH
 WATER MAIN, 6 INCH

PLACE:
 (1) VALVE AND BOX, 12 INCH

PLACE:
 (1) TEE, 12 INCH X 12 INCH X 6 INCH
 (1) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH
 WATER MAIN, 6 INCH



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

DRAFT

02/2022

WATER MAIN

SURVEYED & DESIGNED BY:

Prein & Newhof

Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

WATER MAIN IN BURGER DRIVE

FROM 100' EAST OF WESTRIDGE DR.
 TO
 GOODWOOD DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)

Drawn by JDH GPF No. 5843 Sheet No. 2 of 38
 Check: Field KEK
 Check: Office KEK

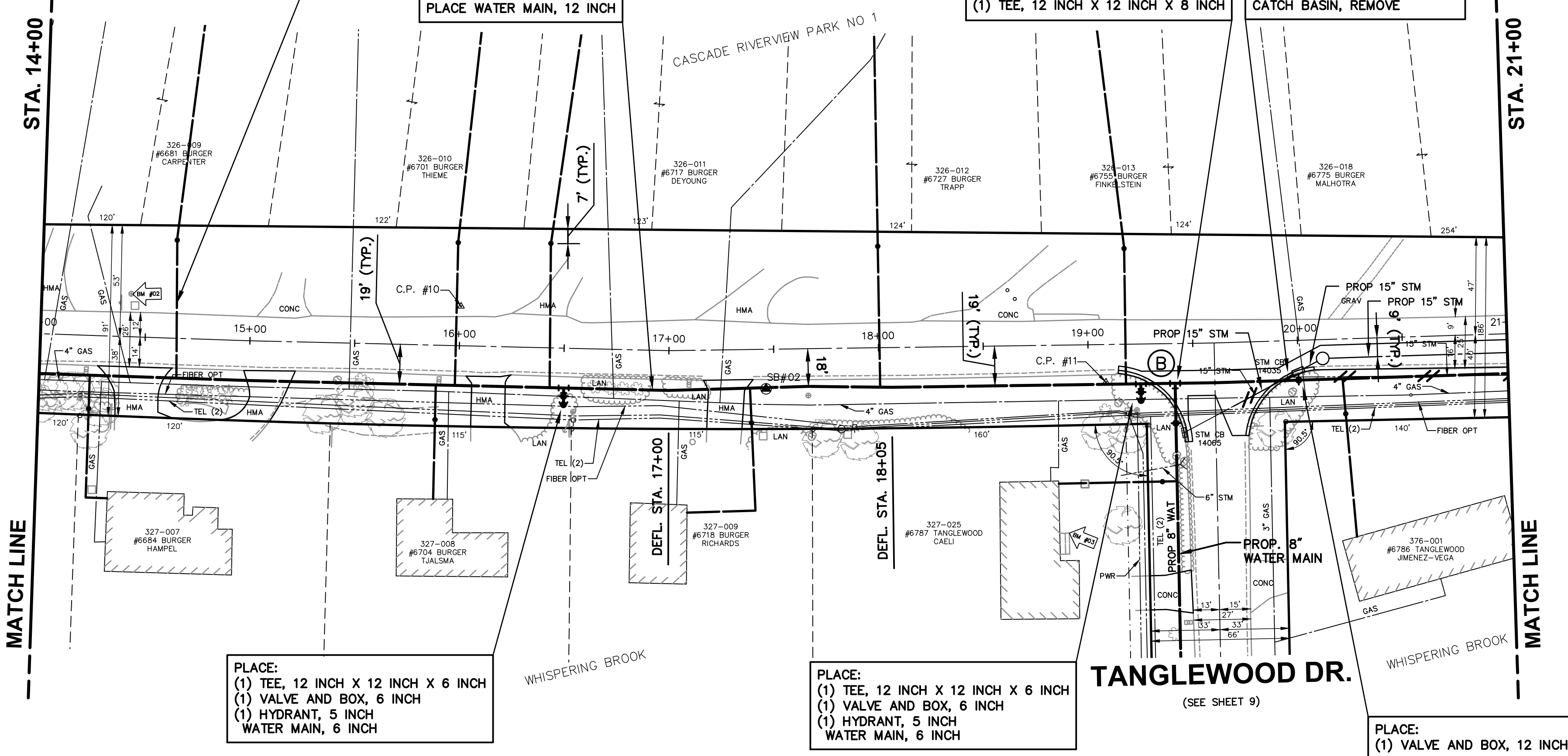
PLACE:
 (1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1 INCH
 (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH
 WATER SERVICE, 1 INCH

TYP. 9 LOCATIONS (#6681, #6684, #6701, #6704, #6717, #6718, #6727, #6755, #6786)

PLACE WATER MAIN, 12 INCH

PLACE:
 (1) TEE, 12 INCH X 12 INCH X 8 INCH

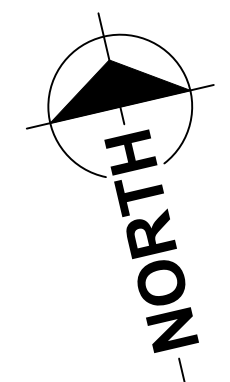
MANHOLE, VALVE CHAMBER, OR
 CATCH BASIN, REMOVE



PLACE:
 (1) TEE, 12 INCH X 12 INCH X 6 INCH
 (1) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH
 WATER MAIN, 6 INCH

PLACE:
 (1) TEE, 12 INCH X 12 INCH X 6 INCH
 (1) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH
 WATER MAIN, 6 INCH

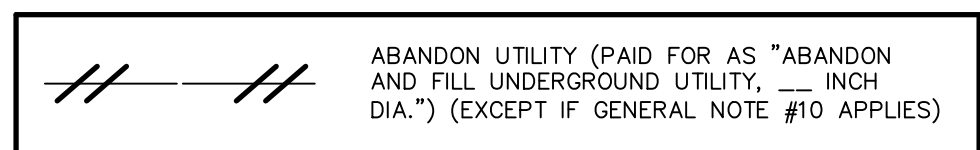
PLACE:
 (1) VALVE AND BOX, 12 INCH



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

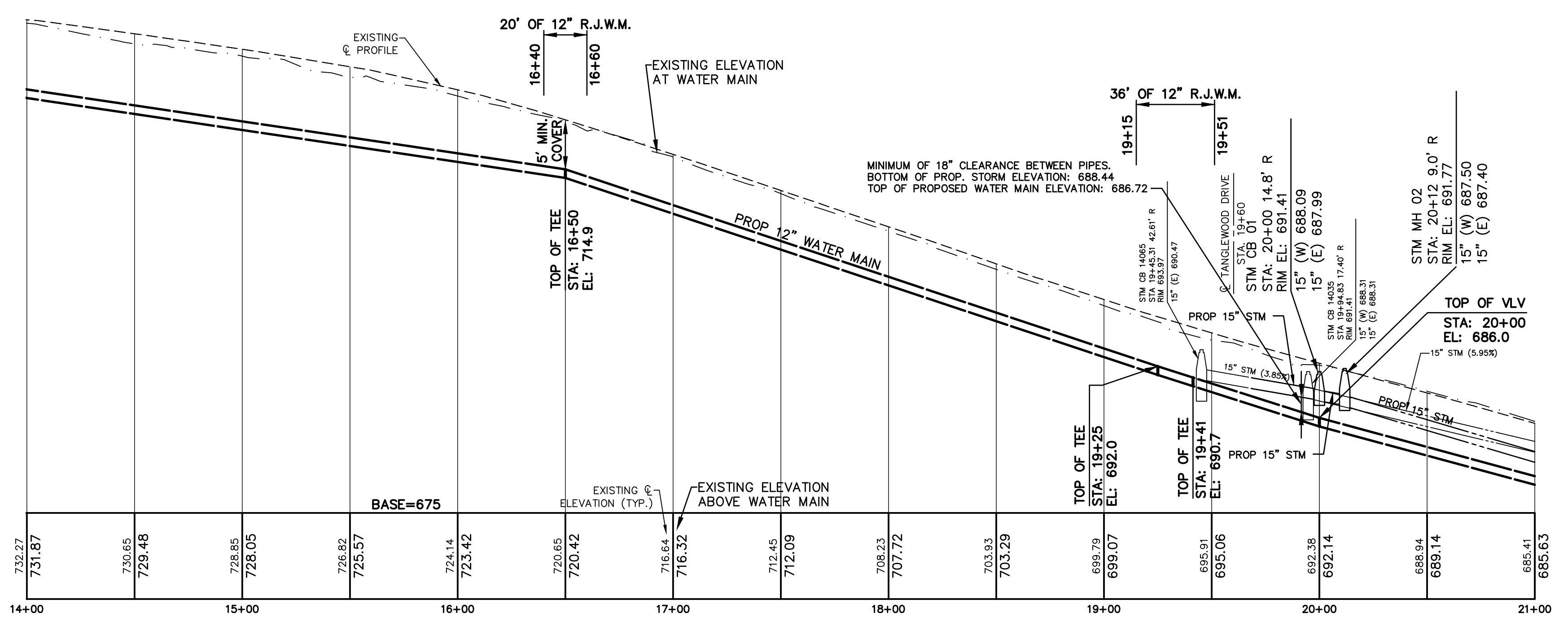
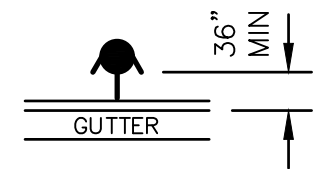
BENCHMARK #02
 B.M. E.L. 731.09 - BM @ 6681 BURGER FOUND.
 BOAT SPIKE EAST SIDE PP 1.0 FT ABOVE GROUND,
 30FT NORTH OF CENTERLINE.
 BENCHMARK #03
 B.M. E.L. 699.80 - BM NE CORNER BOTTOM STEP
 6787 TANGLEWOOD
 CONTROL POINTS
 C.P. #10 - P&N TRAV CAP 3FT N OF EB @ 6704
 - E.L. 724.43
 C.P. #11 - P&N TRAV CAP 4FT S OF EB BURGER
 4FT W OF LANDSCAPE ROCKS - E.L. 698.69

REMOVAL LEGEND



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REVISIONS		
NO.	DATE	DESCRIPTION

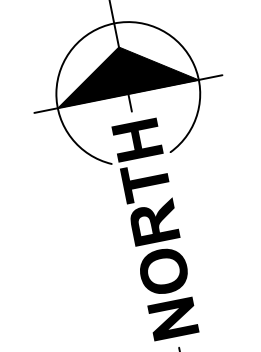
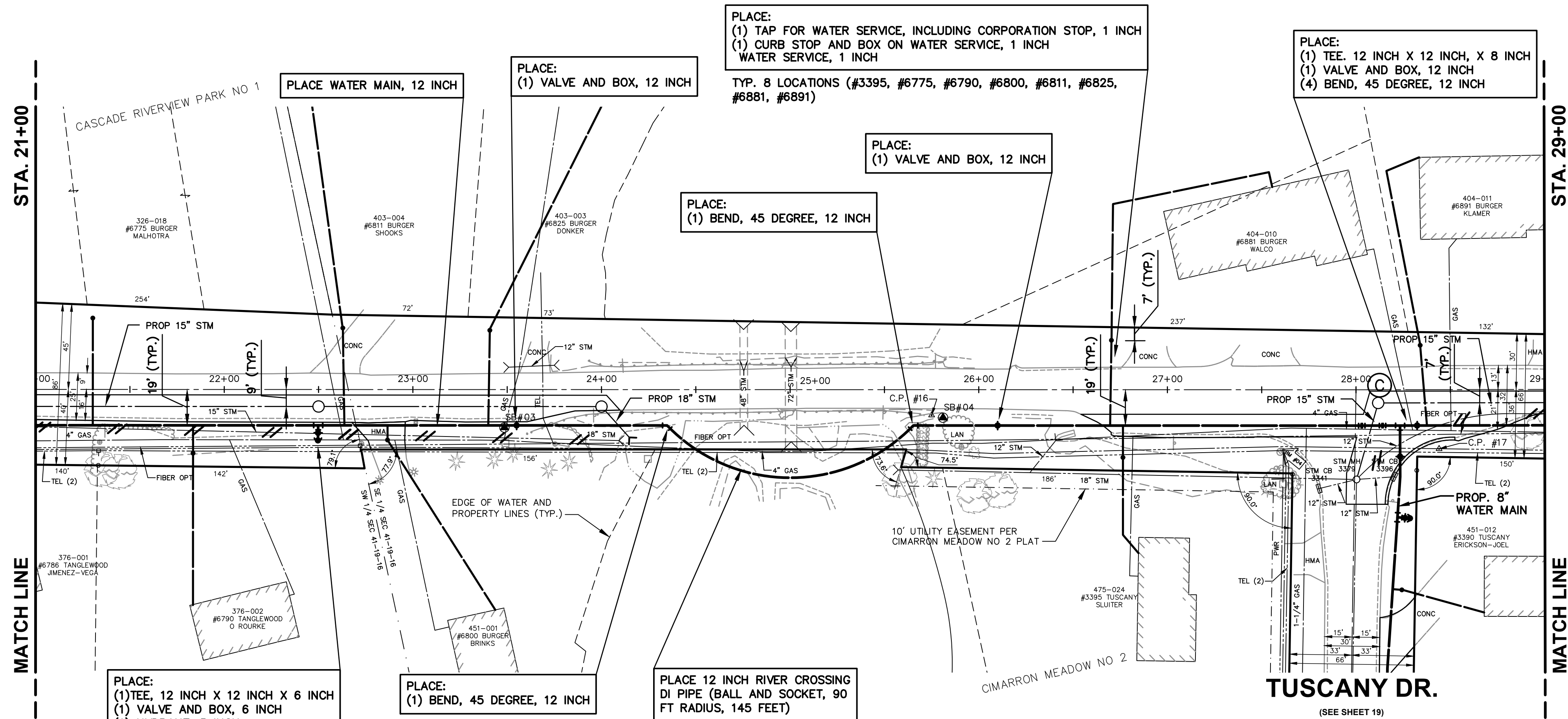
DRAFT
 02/2022

WATER MAIN

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

City of Grand Rapids
 Public Services
 Engineering Department
**WATER MAIN
 IN
 BURGER DRIVE**
 FROM 100' EAST OF WESTRIDGE DR.
 TO
 GOODWOOD DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)

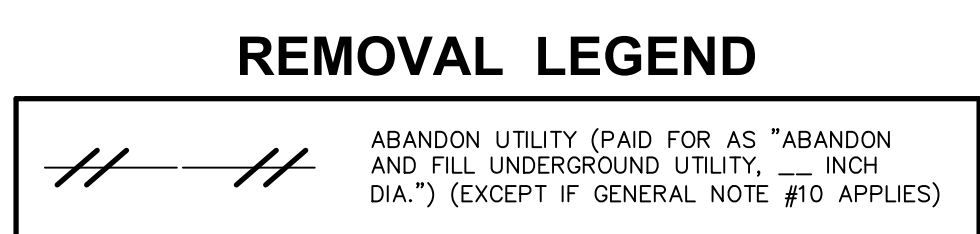
Drawn by JDH GPF No. 5843 Sheet No. 3 of 38
 Check: Field KEK
 Check: Office KEK



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

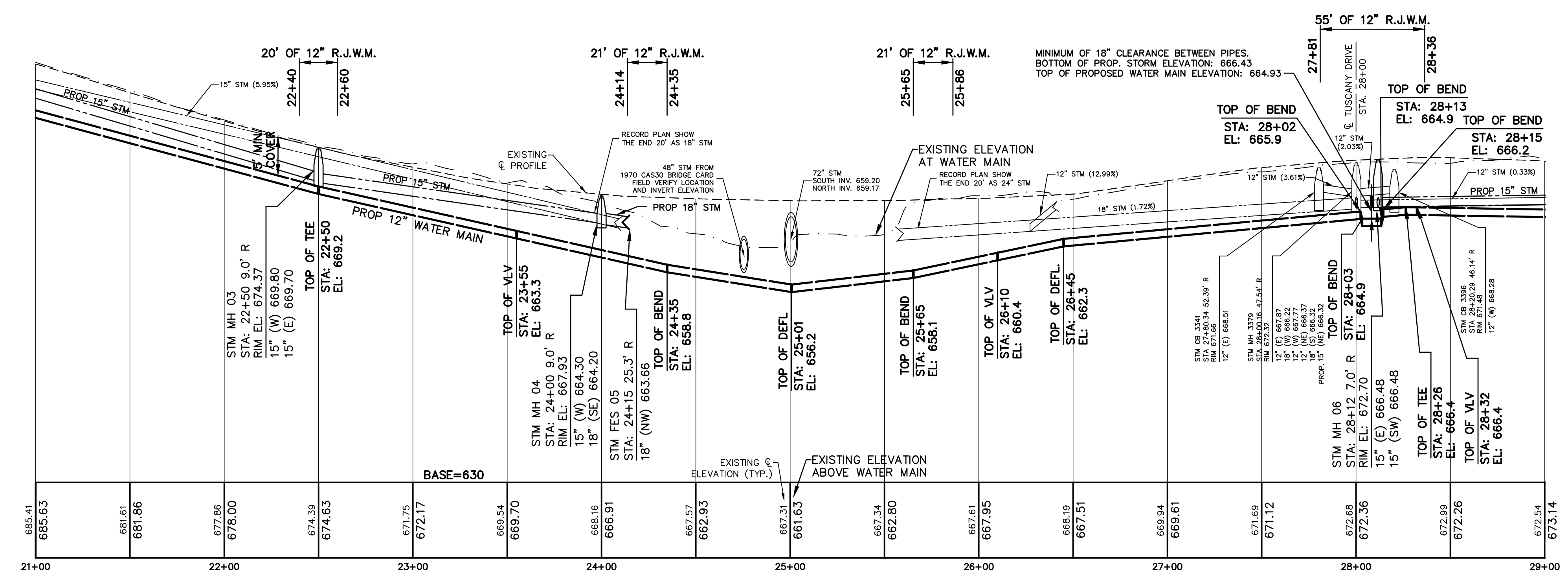
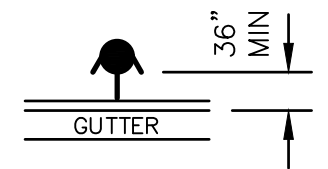
BENCHMARK #04
 B.M. E.L. 672.42 - BM SET RR SPIKE
 N-SIDE PP. SW QUAD BURGER & TUSCANY

CONTROL POINTS
 C.P. #16 - CP TRAV CAP 4.5 FT E OF
 END GUARDRAIL 3.5 SW EB BURGER -
 E.L. 666.89
 C.P. #17 - CP / P&N TRAV CAP 3' S
 OF B/C. 9' W OF E END CURB - E.L.
 672.62



WATER MAIN GENERAL NOTES

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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

DRAFT
02/2022

WATER MAIN

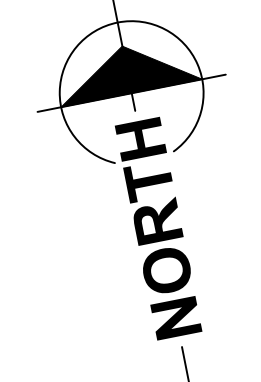
SURVEYED & DESIGNED BY:
Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 BURGER DRIVE**

FROM 100' EAST OF WESTRIDGE DR.
 TO
 GOODWOOD DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)

Drawn by JDH GPF No. 5843 Sheet No. 4 of 38
 Check: Field KEK
 Check: Office KEK



CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C2	345'	650'	S63°34'08"E 341'

BENCHMARK #05
 B.M. ELE. 674.32 - BM FOUND RR SPIKE
 IN W SIDE PP @ 6944 BURGER

BENCHMARK #06
 B.M. ELE. 684.06 - BM SET RR SPIKE IN
 W SIDE PP @ 6995 BURGER

CONTROL POINTS
 C.P. #18 - CP TRAV CAP 5' N OF E/B.
 15' E OF E/B DR TO 6931 - ELE. 668.82
 C.P. #19 - CP TRAV CAP 4' N OF E/B.
 8' W OF E/B DR TO 3402 - ELE. 685.15

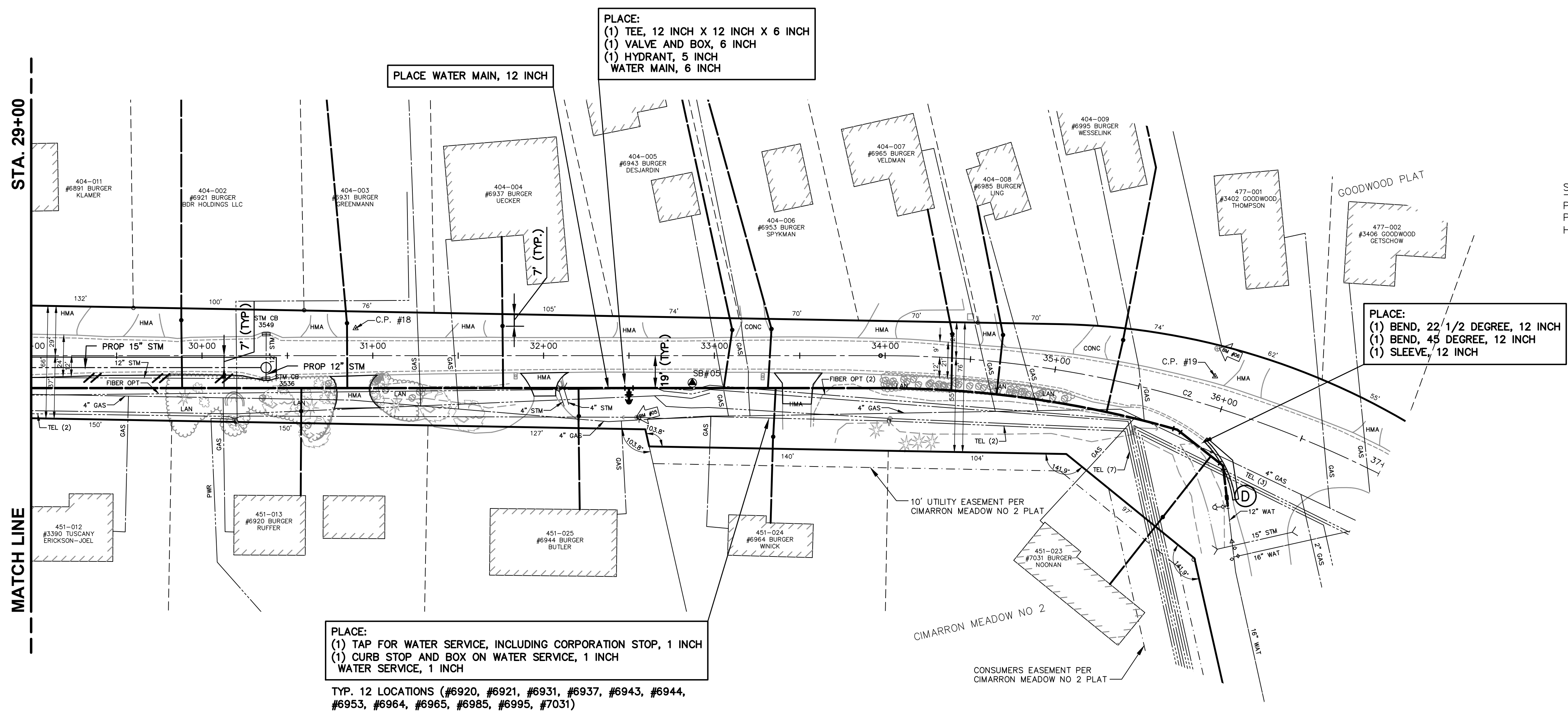
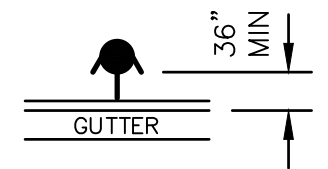
SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 HORIZ. 1"=40'
 VERT. 1"=10'

REMOVAL LEGEND

ABANDON UTILITY (PAID FOR AS "ABANDON AND FILL UNDERGROUND UTILITY, ___ INCH DIA.") (EXCEPT IF GENERAL NOTE #10 APPLIES)

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- (A) - (X) WATER MAIN TESTING LIMITS



PLACE:
 (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. 12 LOCATIONS (#6920, #6921, #6931, #6937, #6943, #6944, #6953, #6964, #6965, #6985, #6995, #7031)

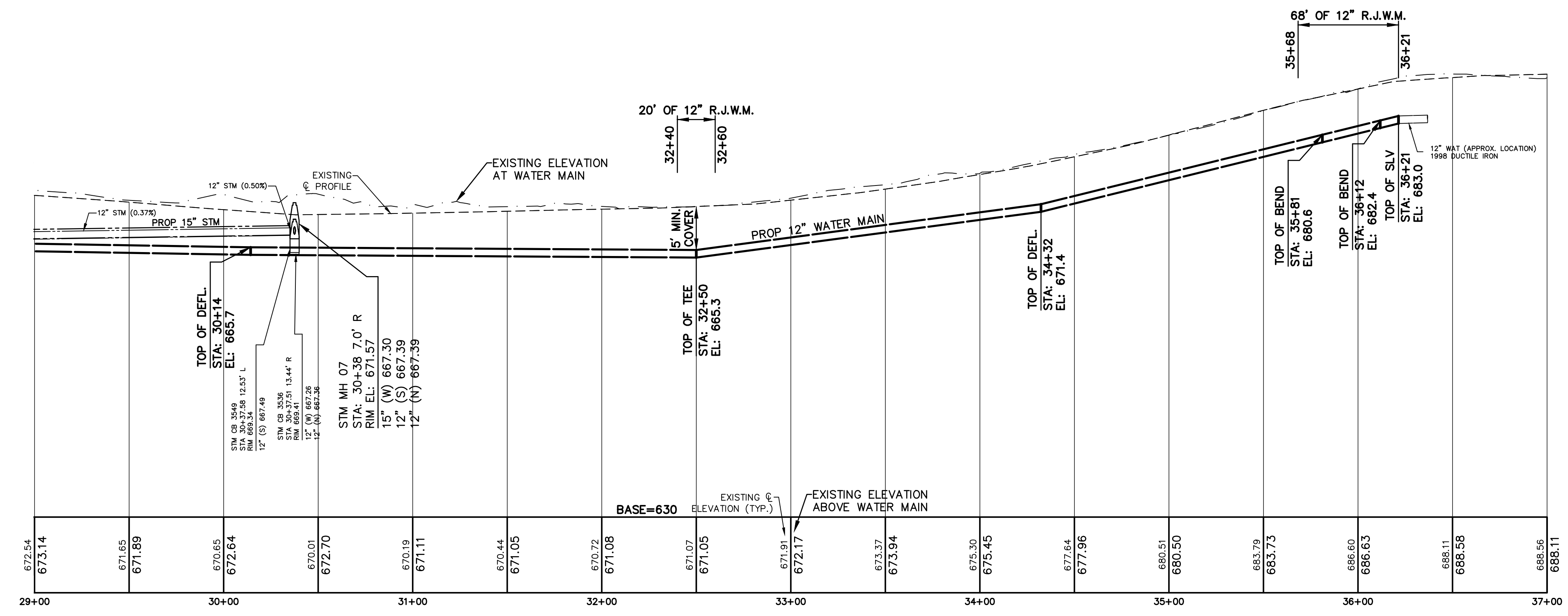
PLACE:
 (1) BEND, 22 1/2 DEGREE, 12 INCH
 (1) BEND, 45 DEGREE, 12 INCH
 (1) SLEEVE, 12 INCH

PLACE:
 (1) TEE, 12 INCH X 12 INCH X 6 INCH
 (1) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH
 WATER MAIN, 6 INCH

PLACE WATER MAIN, 12 INCH

STA. 29+00

MATCH LINE



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REVISIONS		
NO.	DATE	DESCRIPTION

DRAFT
 02/2022

WATER MAIN

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

City of Grand Rapids
 Public Services
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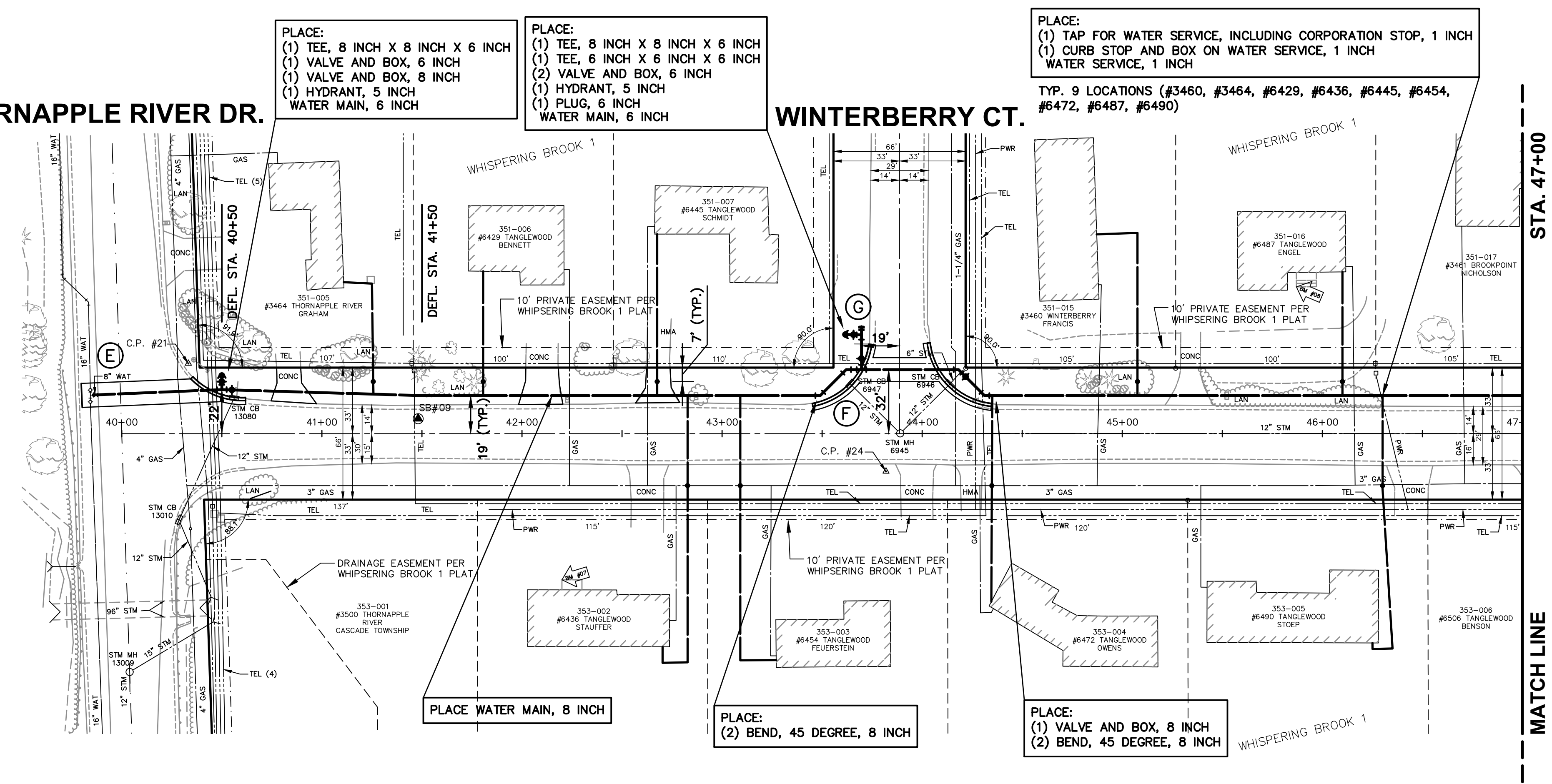
**WATER MAIN
 IN
 BURGER DRIVE**

FROM 100' EAST OF WESTRIDGE DR.
 TO
 GOODWOOD DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)

Drawn by JDH GPF No. 5843 Sheet No. 5 of 38
 Check: Field KEK
 Check: Office KEK

THORNAPPLE RIVER DR.

WINTERBERRY CT.

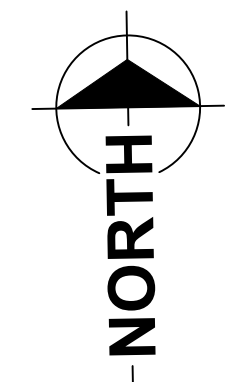


PLACE:
 (1) TEE, 8 INCH X 8 INCH X 6 INCH
 (1) VALVE AND BOX, 6 INCH
 (1) VALVE AND BOX, 8 INCH
 (1) HYDRANT, 5 INCH
 (1) PLUG, 6 INCH
 WATER MAIN, 6 INCH

PLACE:
 (1) TEE, 8 INCH X 8 INCH X 6 INCH
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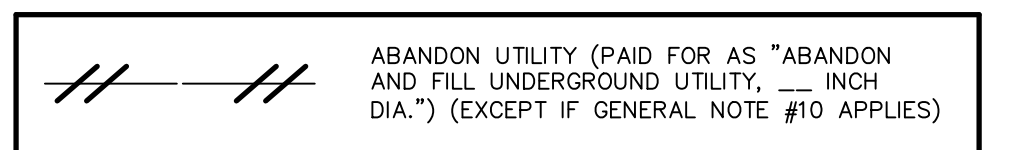
TYP. 9 LOCATIONS (#3460, #3464, #6429, #6436, #6445, #6454, #6472, #6487, #6490)



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

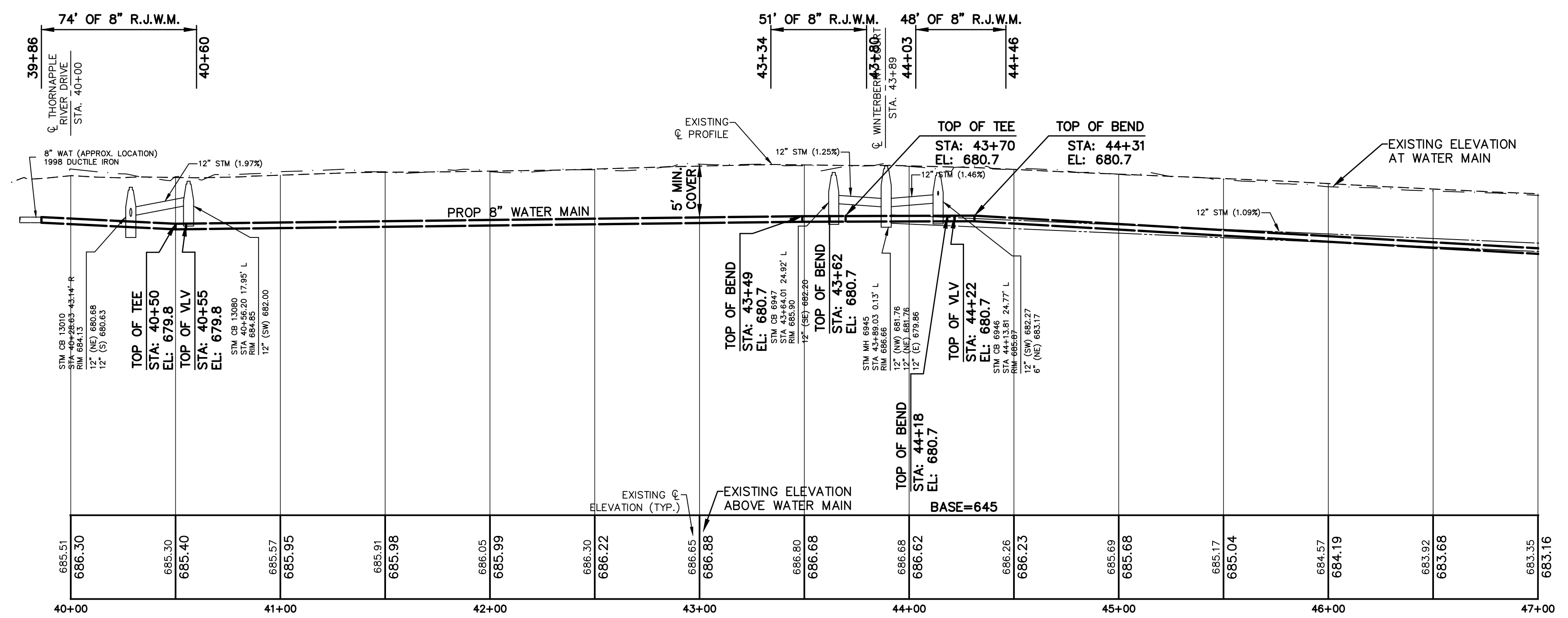
BENCHMARK #07
 B.M. ELE. 687.03 - BM NW CORNER FRONT LANDING @ 6436 TANGLEWOOD
 BENCHMARK #08
 B.M. ELE. 690.38 - BM SW CORNER CONC FRONT STEP @ 6487 TANGLEWOOD
 CONTROL POINTS
 C.P. #21 - CP TRAV CAP 2FT NE OF BC 3FT FROM PIP - ELE. 686.34
 C.P. #24 - CP TRAV CAP 4FT S EB TANGLEWOOD 6FT W EDGE DRIVE 6454 - ELE. 686.91

REMOVAL LEGEND



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WATER MAIN

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

City of Grand Rapids
 Public Services
 Engineering Department
**WATER MAIN
 IN
 TANGLEWOOD DRIVE**
 FROM THORNAPPLE RIVER DR.
 TO
 BURGER DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)

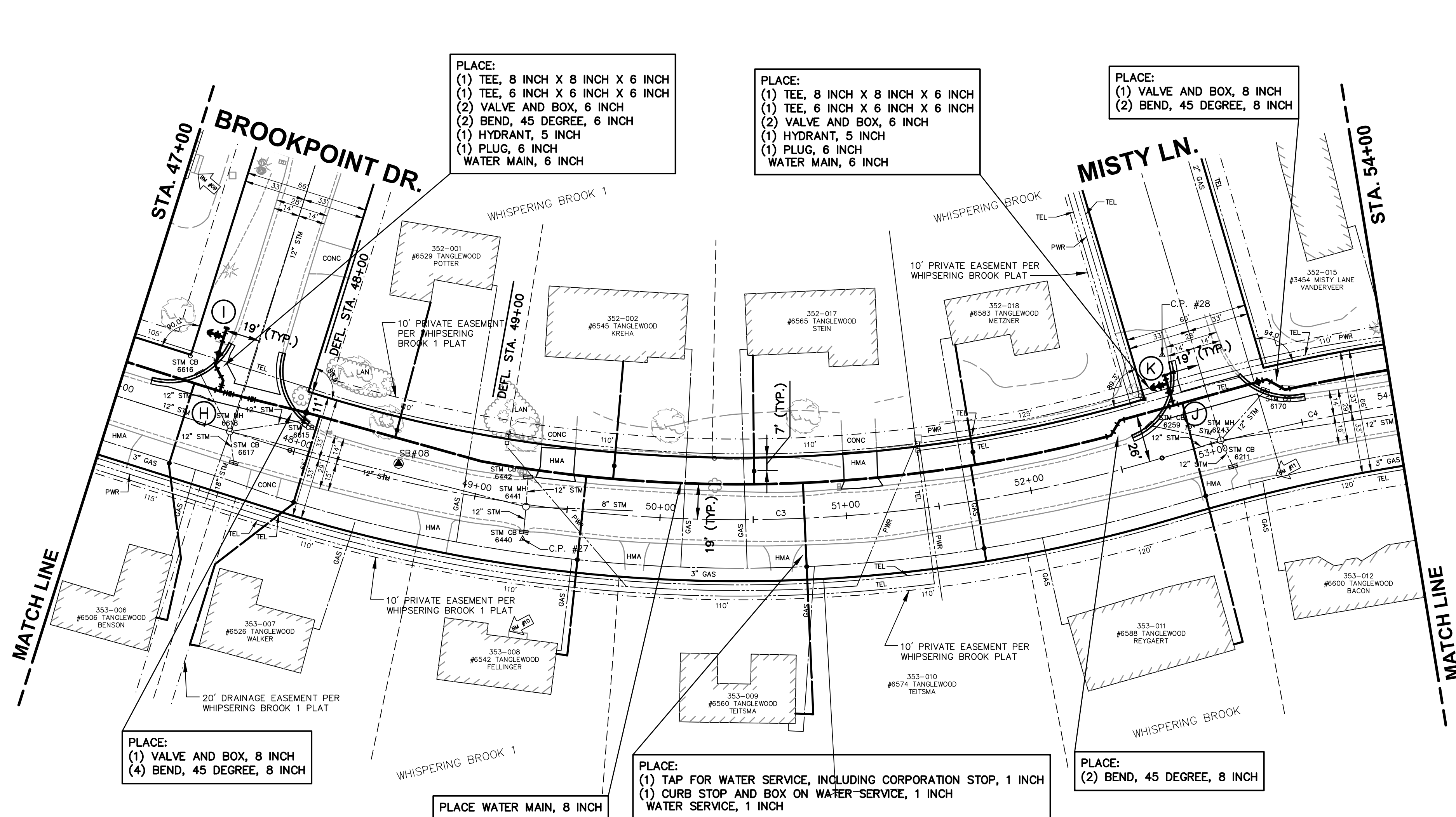
DRAFT
 02/2022

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REVISIONS

NO.	DATE	DESCRIPTION

Drawn by JDH GPF No. 5843 Sheet No. 6 of 38
 Check: Field KEK
 Check: Office KEK



PLACE:
 (1) TEE, 8 INCH X 8 INCH X 6 INCH
 (1) TEE, 6 INCH X 6 INCH X 6 INCH
 (2) VALVE AND BOX, 6 INCH
 (2) BEND, 45 DEGREE, 6 INCH
 (1) HYDRANT, 5 INCH
 (1) PLUG, 6 INCH
 WATER MAIN, 6 INCH

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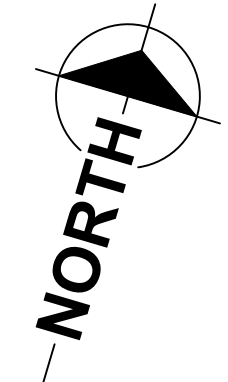
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PLACE WATER MAIN, 8 INCH

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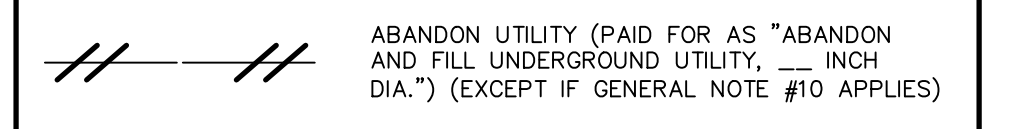
TYP. 10 LOCATIONS (#6506, #6526, #6529, #6542, #6545, #6560, #6565, #6574, #6583, #6588)



CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C3	475'	797'	N74°00'34"E 468'
C4	175'	1000'	N61°57'57"E 174'

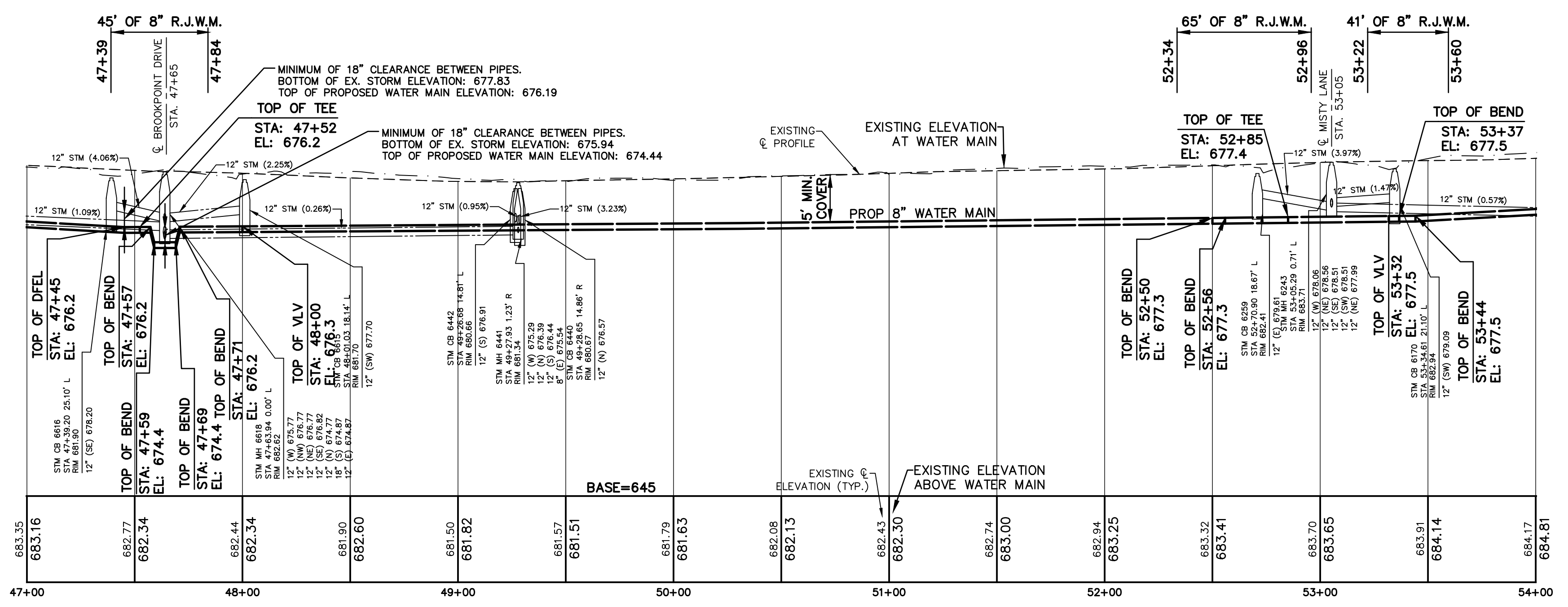
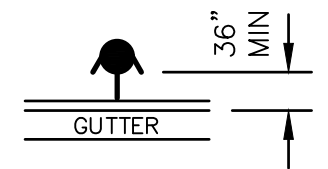
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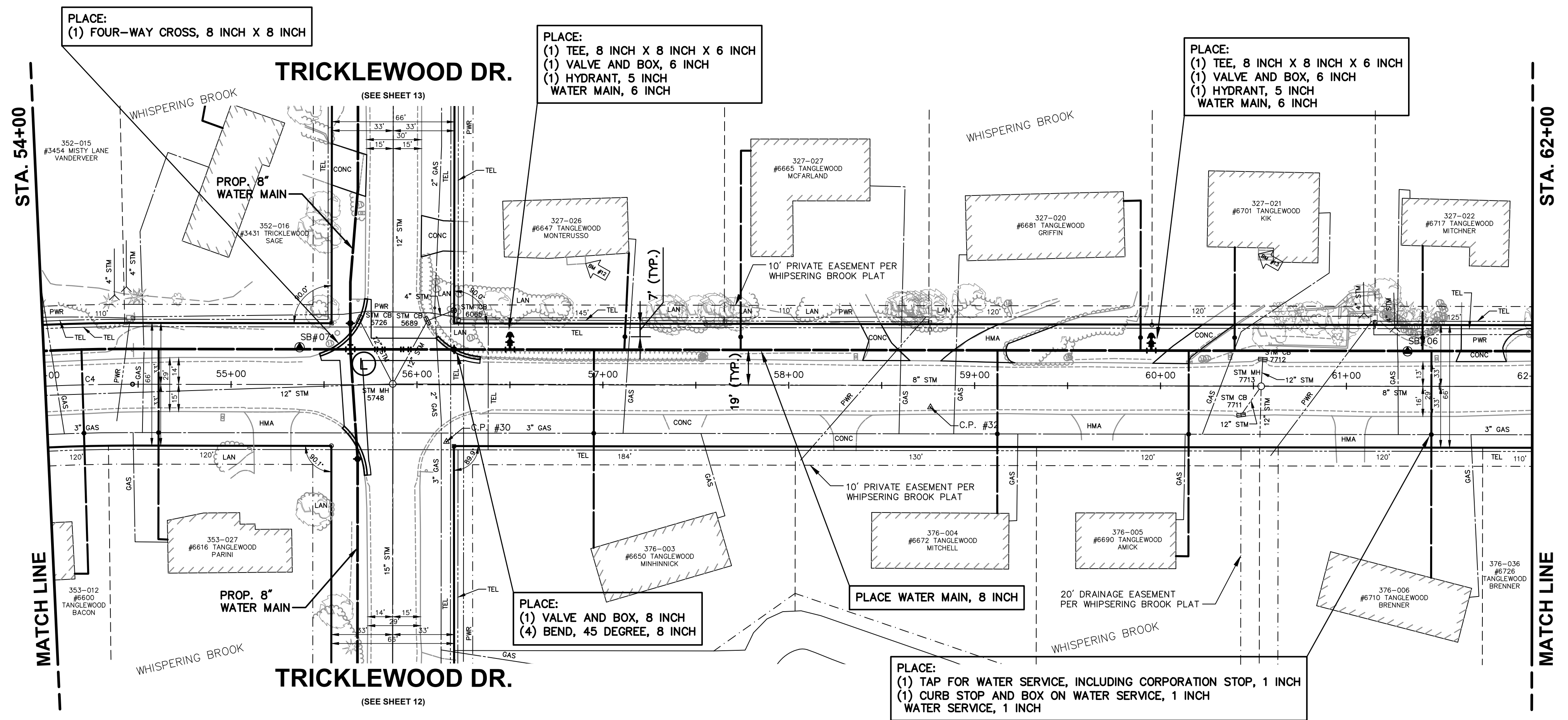


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REVISIONS		
NO.	DATE	DESCRIPTION

DRAFT
02/2022

WATER MAIN
 SURVEYED & DESIGNED BY:
Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory
 City of Grand Rapids
 Public Services
 Engineering Department
WATER MAIN
 IN
TANGLEWOOD DRIVE
 FROM THORNAPPLE RIVER DR.
 TO
 BURGER DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)
 Drawn by JDH GPF No. 5843 Sheet No. 7 of 38
 Check: Field KEK
 Check: Office KEK



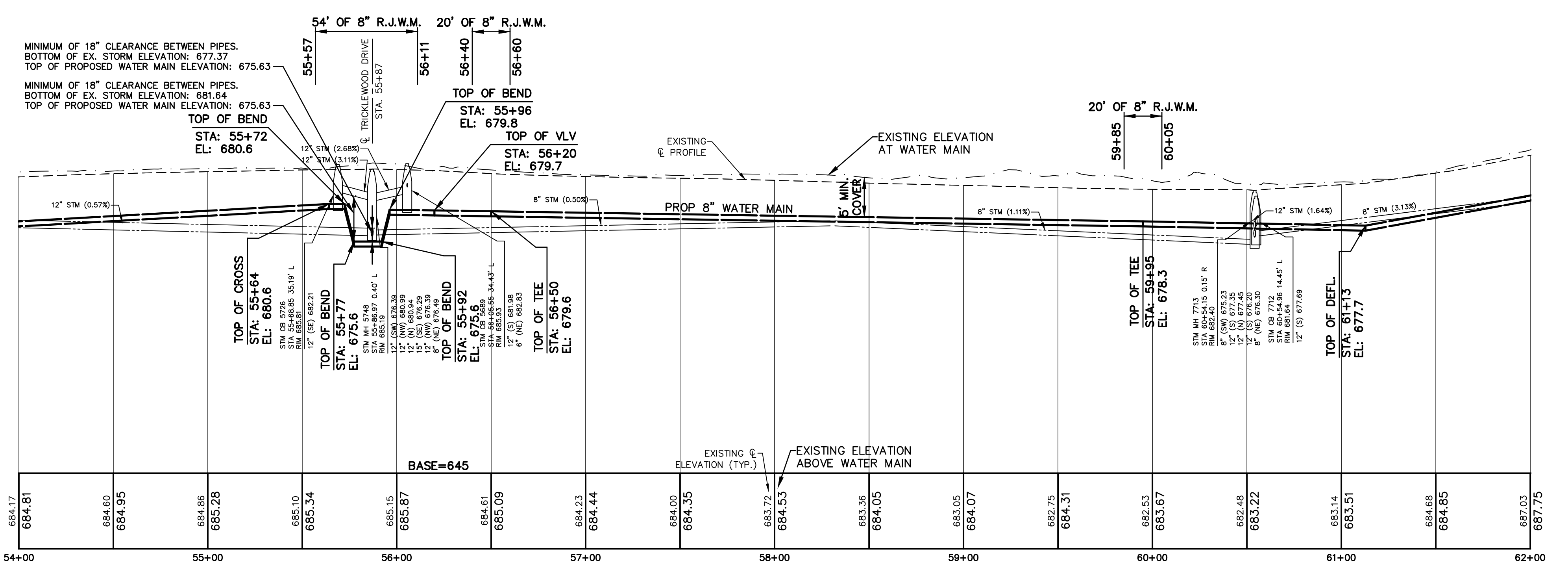
CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C4	175'	1000'	N61°57'57"E 174'

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

REMOVAL LEGEND

ABANDON UTILITY (PAID FOR AS "ABANDON AND FILL UNDERGROUND UTILITY, ___ INCH DIA.") (EXCEPT IF GENERAL NOTE #10 APPLIES)

- 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.
 - 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.
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 - EXPLORE 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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STA.	ELEVATION
54+00	684.17
54+10	684.81
54+20	684.60
54+30	684.95
54+40	684.96
54+50	685.28
54+60	685.10
54+70	685.34
54+80	685.15
54+90	685.87
55+00	684.61
55+10	685.09
55+20	684.23
55+30	684.44
55+40	684.00
55+50	684.35
55+60	683.72
55+70	684.53
55+80	683.36
55+90	684.05
56+00	683.05
56+10	684.07
56+20	682.75
56+30	684.31
56+40	682.53
56+50	683.67
56+60	682.48
56+70	683.22
56+80	683.14
56+90	683.51
57+00	684.68
57+10	684.85
57+20	687.03
57+30	687.75

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NO.	DATE	DESCRIPTION

DRAFT
02/2022

WATER MAIN

SURVEYED & DESIGNED BY:

Prein & Newhof
Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
Public Services
Engineering Department

**WATER MAIN
IN
TANGLEWOOD DRIVE**
FROM THORNAPPLE RIVER DR.
TO
BURGER DR.
(BURGER-GOODWOOD NEIGHBORHOOD
WATER MAIN - PHASE 1)

Drawn by JDH GPF No. 5843 Sheet No. 8 of 38
Check: Field KEK
Check: Office KEK



CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C5	288'	300'	N39°27'44"E 277'

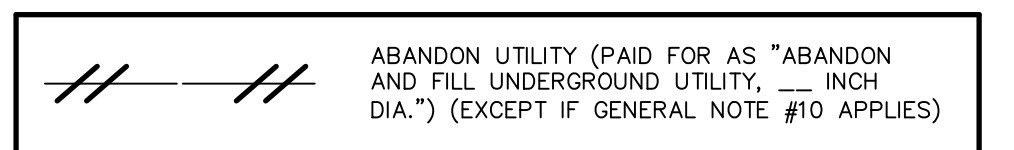
BENCHMARK #03
 B.M. ELE. 699.80 - BM NE CORNER
 BOTTOM STEP @ 6787 TANGLEWOOD

BENCHMARK #09
 B.M. ELE. 692.29 - BM NAIL IN CAP N
 FACE OF 24 IN OAK AT GROUND 5 FT W
 OF DRIVE @ 6742 TANGLEWOOD

CONTROL POINTS
 C.P. #34 - CP TRAV CAP 3FT SW MB 6742
 TANGLEWOOD 2FT SE E/B - ELE. 691.47
 C.P. #35 - CP TRAV CAP 7FT E MB 6770
 TANGLEWOOD 9FT S EDB - ELE. 698.32

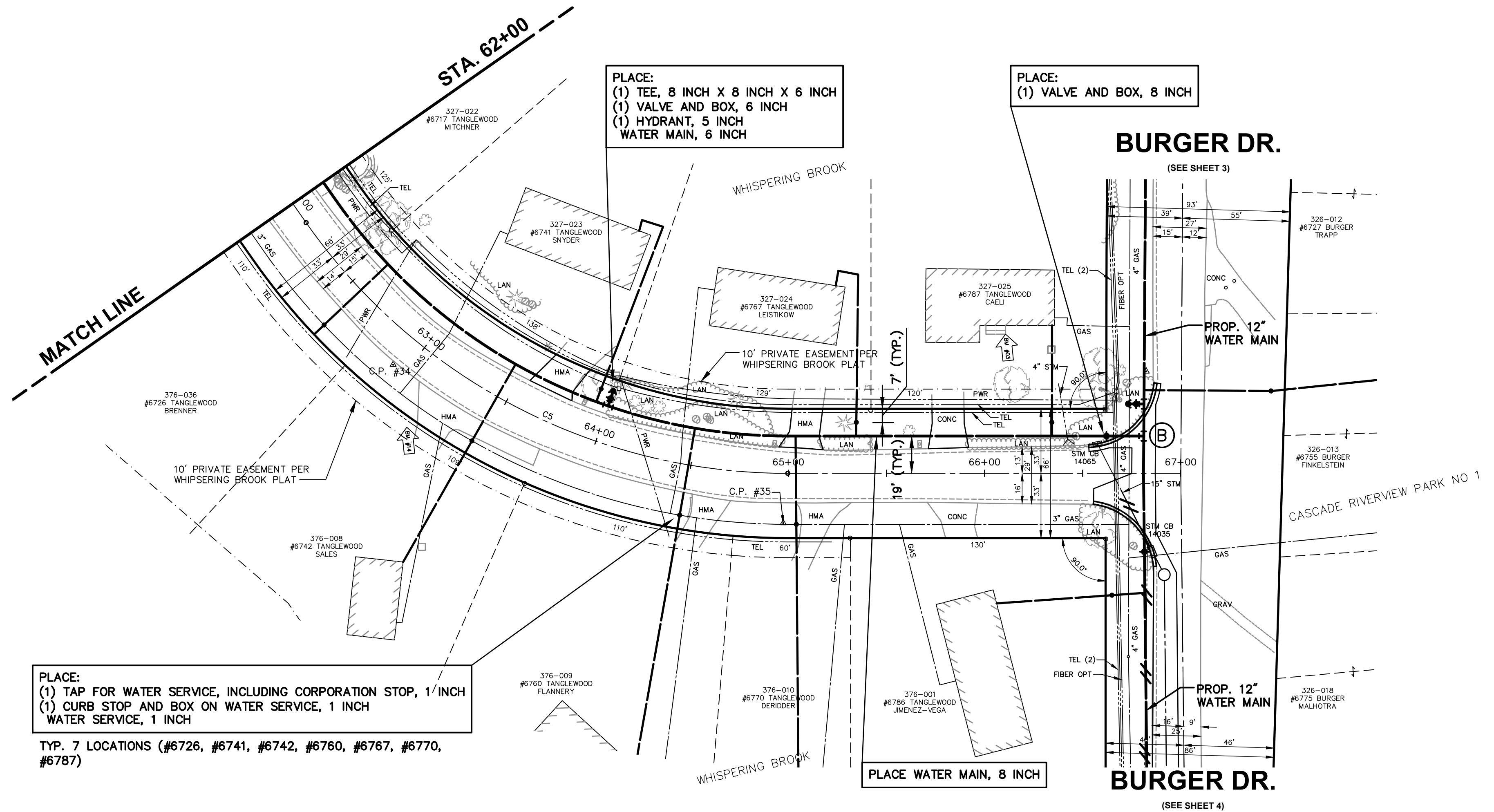
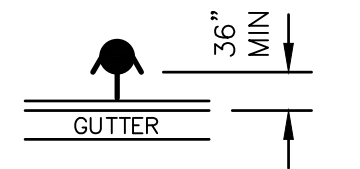
SCALES
 PLAN: 1"=40'
 PROFILE: 1"=40'
 HORZ.: 1"=40'
 VERT.: 1"=10'

REMOVAL LEGEND



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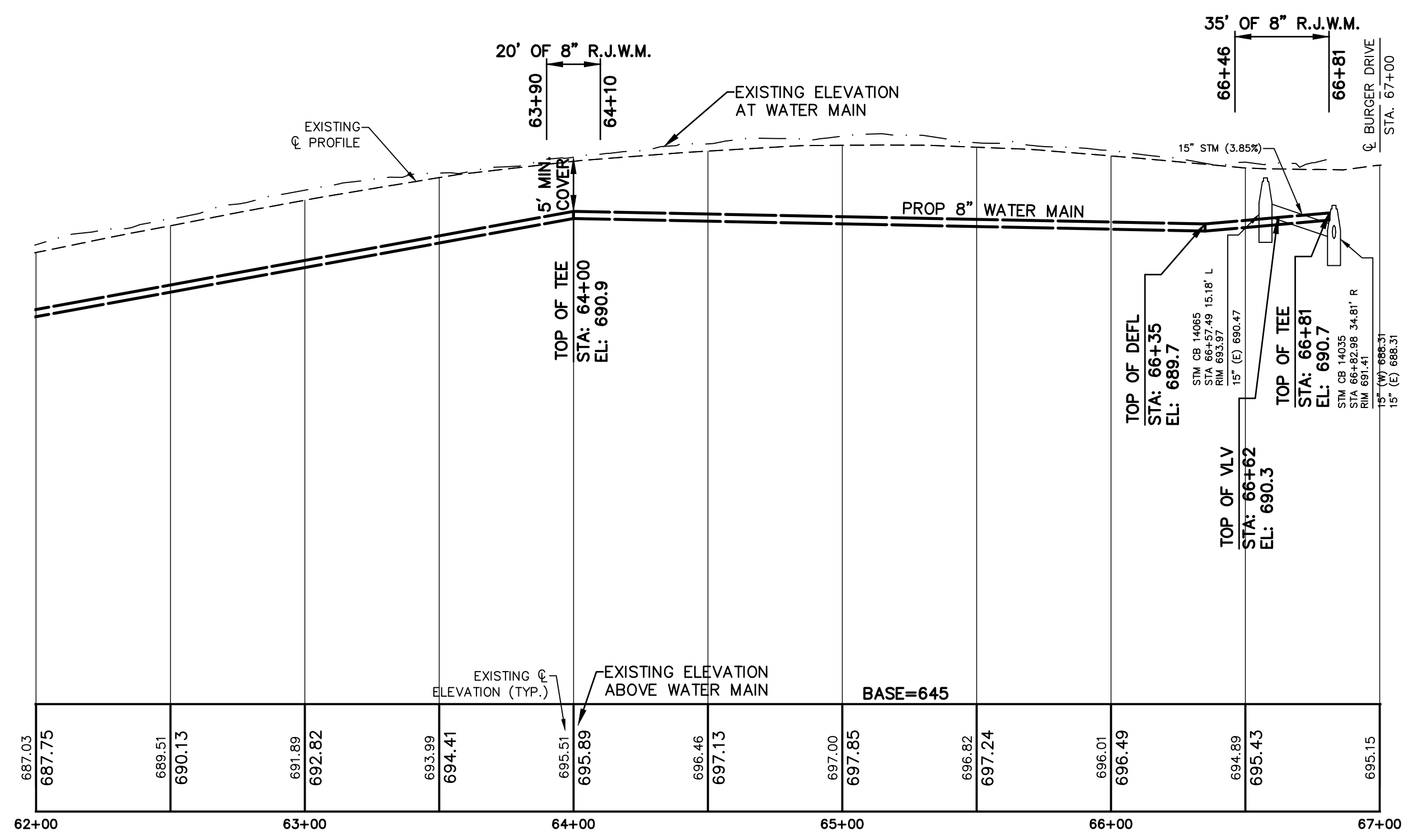
PLACE:
 (1) TAP FOR WATER SERVICE, INCLUDING CORPORATION STOP, 1/1 INCH
 (1) CURB STOP AND BOX ON WATER SERVICE, 1 INCH
 WATER SERVICE, 1 INCH

TYP. 7 LOCATIONS (#6726, #6741, #6742, #6760, #6767, #6770, #6787)

PLACE:
 (1) TEE, 8 INCH X 8 INCH X 6 INCH
 (1) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH
 WATER MAIN, 6 INCH

PLACE:
 (1) VALVE AND BOX, 8 INCH

PLACE WATER MAIN, 8 INCH



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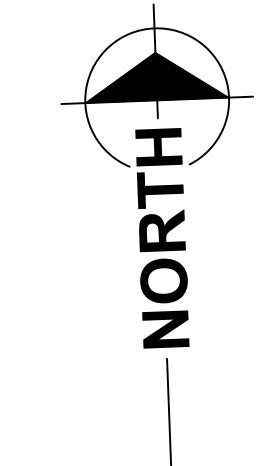
WATER MAIN

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

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 TANGLEWOOD DRIVE
 FROM THORNAPPLE RIVER DR.
 TO
 BURGER DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)**

Drawn by JDH GPF No. 5843 Sheet No. 9 of 38
 Check: Field KEK
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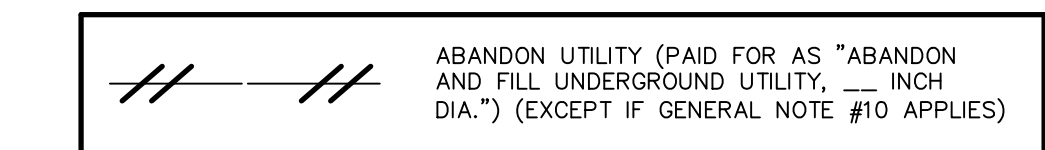
CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C6	603'	300'	N34°32'52"E 507'

BENCHMARK #15
 B.M. ELE. 731.51 - BM TOP NE CORNER
 BOTTOM CONC STEP 0.7 FT ABOVE WALK
 @ #3588 TRICKLEWOOD

CONTROL POINTS
 C.P. #36 - CP / P&N TRAV CAP 3FT TO
 ROCKS IN YARD 3588 TRICKLEWOOD - ELE.
 728.46
 C.P. #37 - CP / P&N TRAV CAP 3FT TO EB
 IN LINE WITH WELL 3548 TRICKLEWOOD - ELE.
 721.95

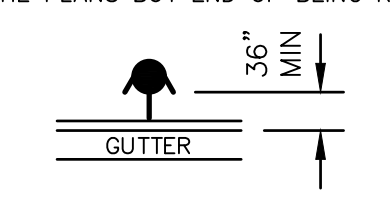
SCALES
 PLAN 1"=40'
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 VERT. 1"=10'

REMOVAL LEGEND



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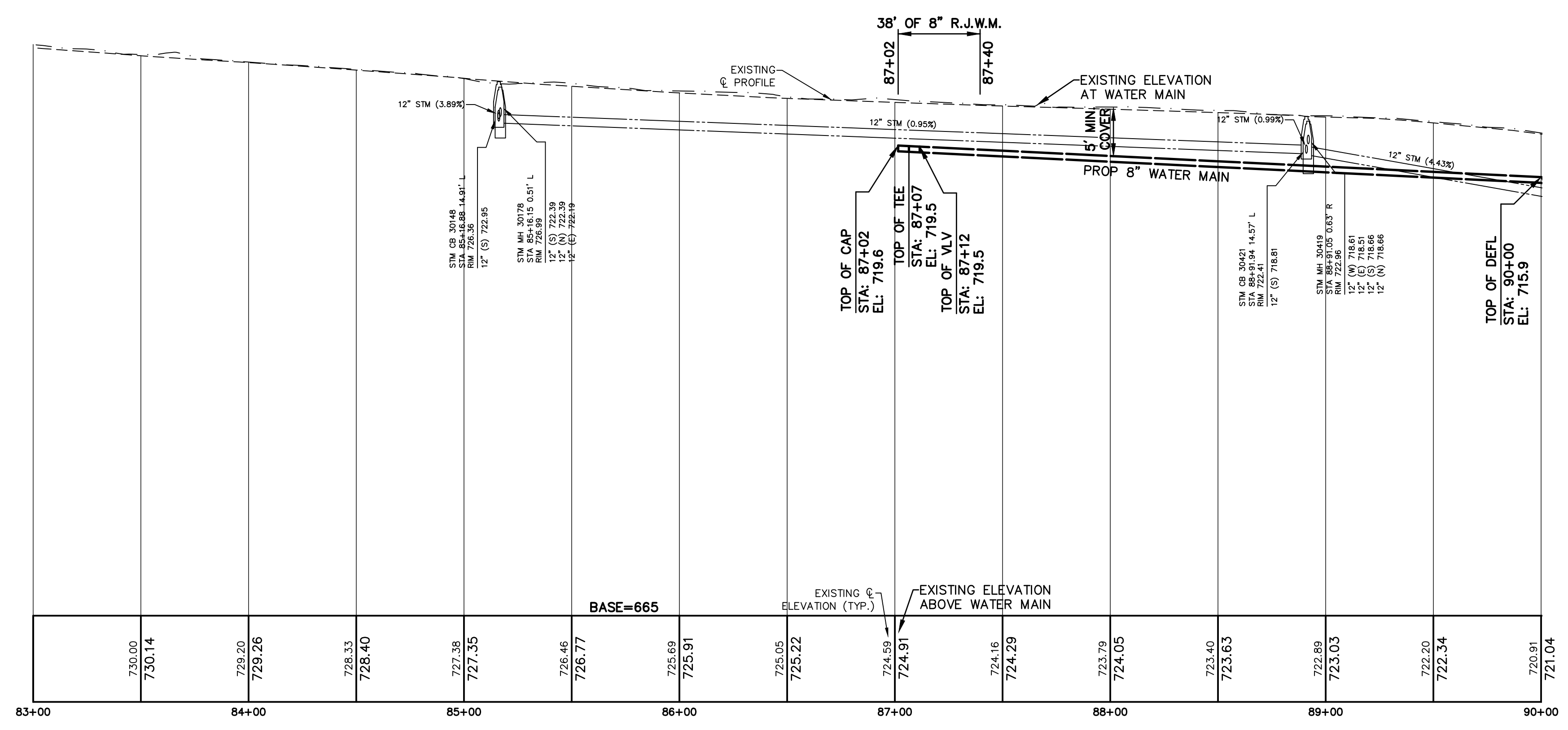
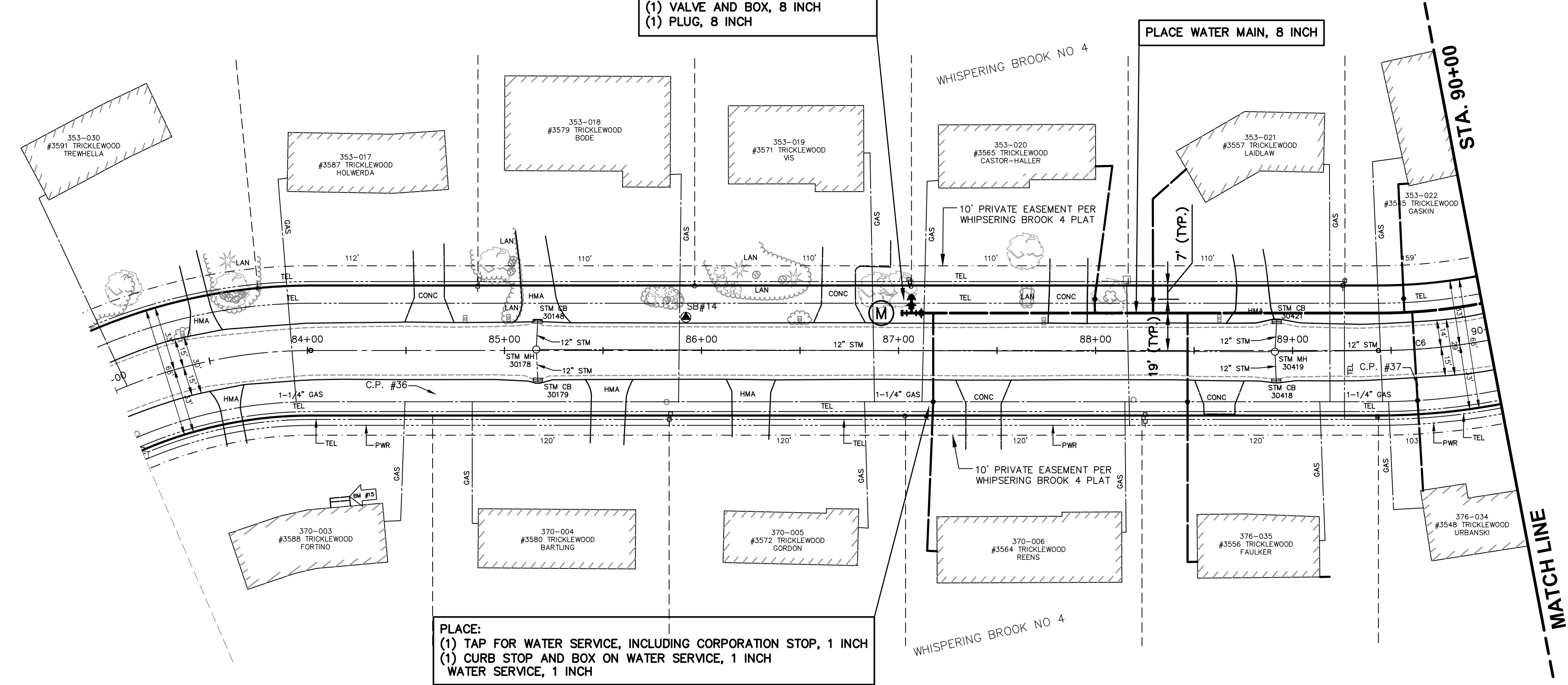


PLACE:
 (1) TEE, 8 INCH X 8 INCH X 6 INCH
 (1) HYDRANT, 5 INCH
 (1) VALVE AND BOX, 6 INCH
 (1) VALVE AND BOX, 8 INCH
 (1) PLUG, 8 INCH

PLACE WATER MAIN, 8 INCH

PLACE:
 (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 (#3545, #3548, #3556, #3557, #3564, #3565)



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REVISIONS		
NO.	DATE	DESCRIPTION

WATER MAIN

SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 TRICKLEWOOD DRIVE**

FROM 250' SOUTH WEST OF TRICKLEWOOD CT.
 TO
 BROOKHILLS CT.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)

Drawn by JDH GPF No. 5843 Sheet No. 10 of 38
 Check: Field KEK
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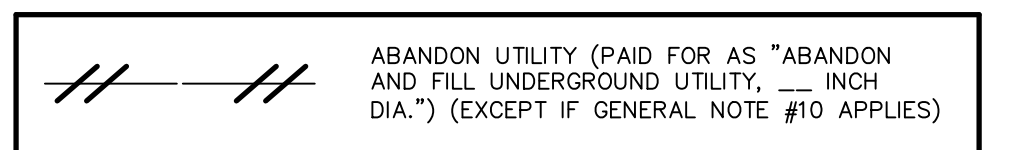
DRAFT
02/2022

CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
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BENCHMARK #16
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 FRONT STEP @ 6682 TRICKLEWOOD CT

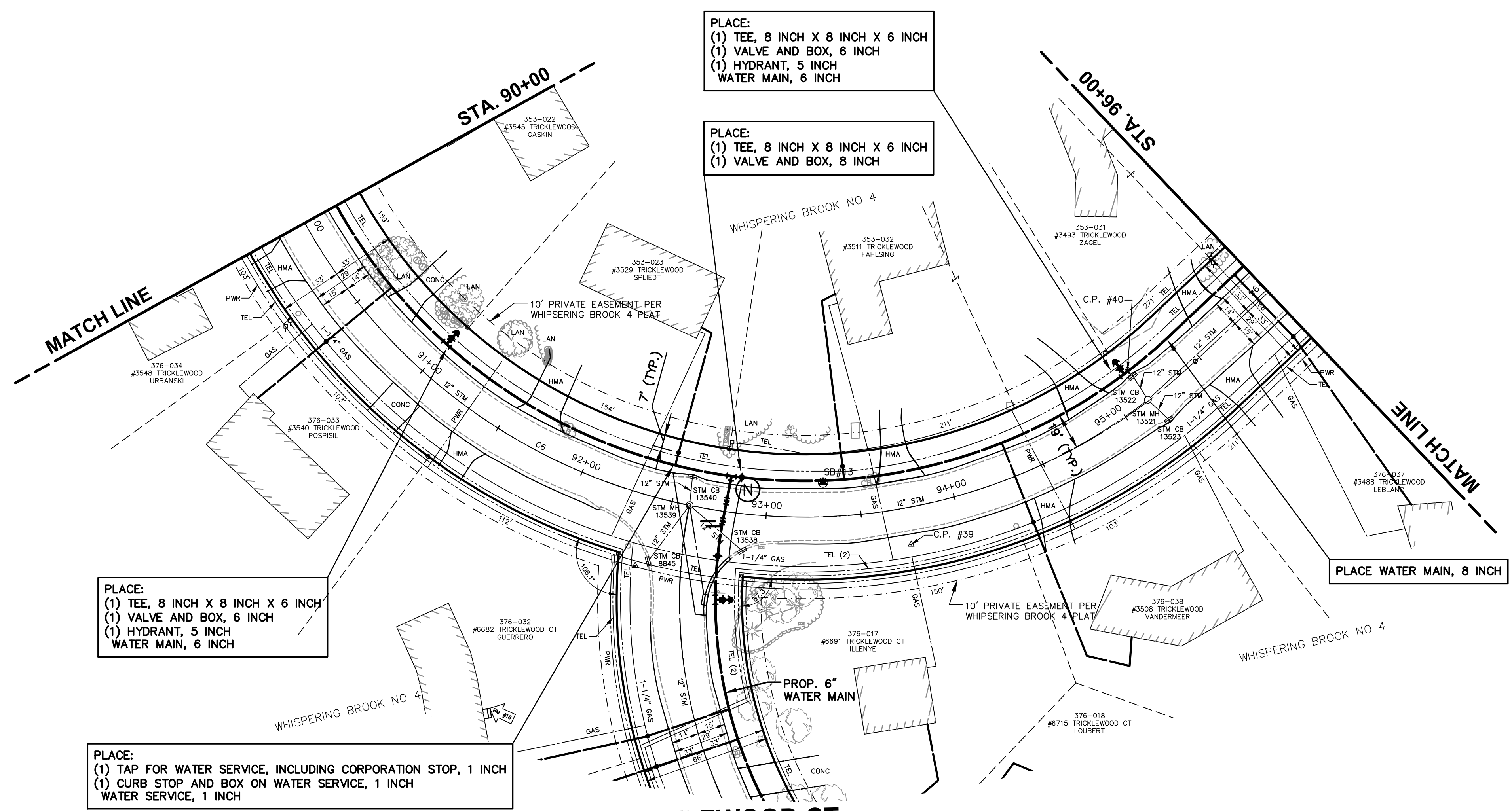
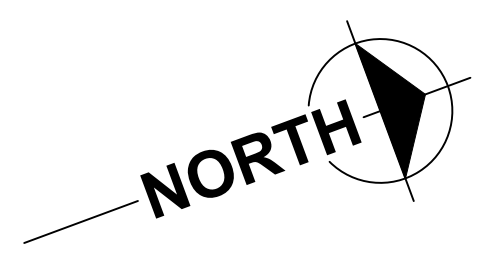
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 17. CONTRACTOR TO MAINTAIN A MINIMUM OF 2' FROM THE EDGE OF CATCH BASINS AND DRAINAGE STRUCTURES TO THE EDGE OF THE WATER MAIN
- (A) - (X) WATER MAIN TESTING LIMITS



PLACE:
 (1) TEE, 8 INCH X 8 INCH X 6 INCH
 (1) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH
 WATER MAIN, 6 INCH

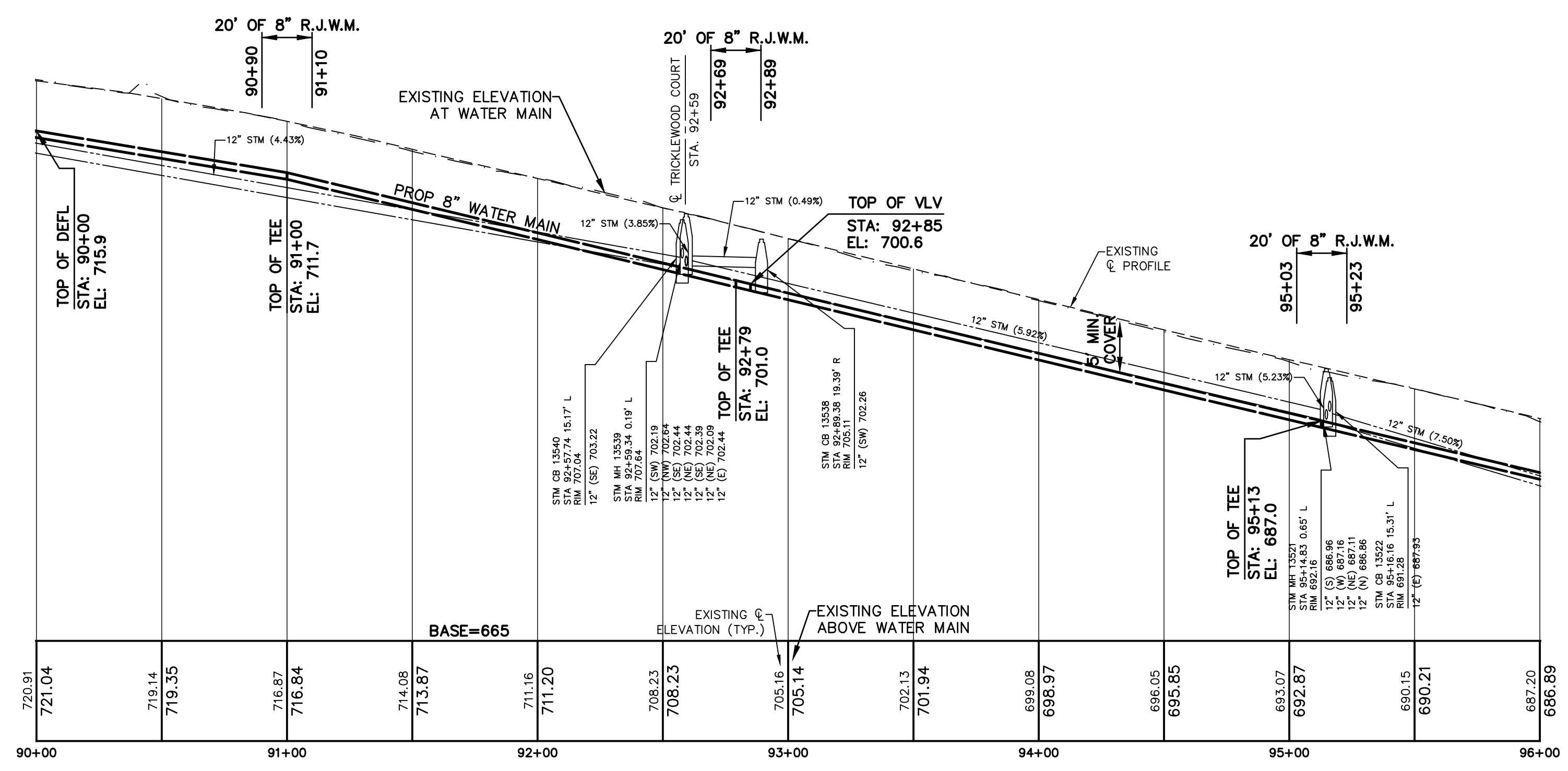
PLACE:
 (1) TEE, 8 INCH X 8 INCH X 6 INCH
 (1) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH
 WATER MAIN, 6 INCH

PLACE:
 (1) TEE, 8 INCH X 8 INCH X 6 INCH
 (1) VALVE AND BOX, 8 INCH

PLACE:
 (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 (#3488, #3508, #3511, #3529, #3540)

TRICKLEWOOD CT.
 (SEE SHEET 14)



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

DRAFT
 02/2022

WATER MAIN

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

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 TRICKLEWOOD DRIVE**

FROM 250' SOUTH WEST OF TRICKLEWOOD CT.
 TO
 BROOKHILLS CT.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)

Drawn by JDH GPF No. 5843 Sheet No. 11 of 38
 Check: Field KEK
 Check: Office KEK

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

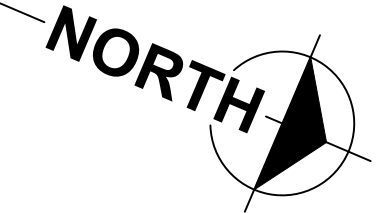
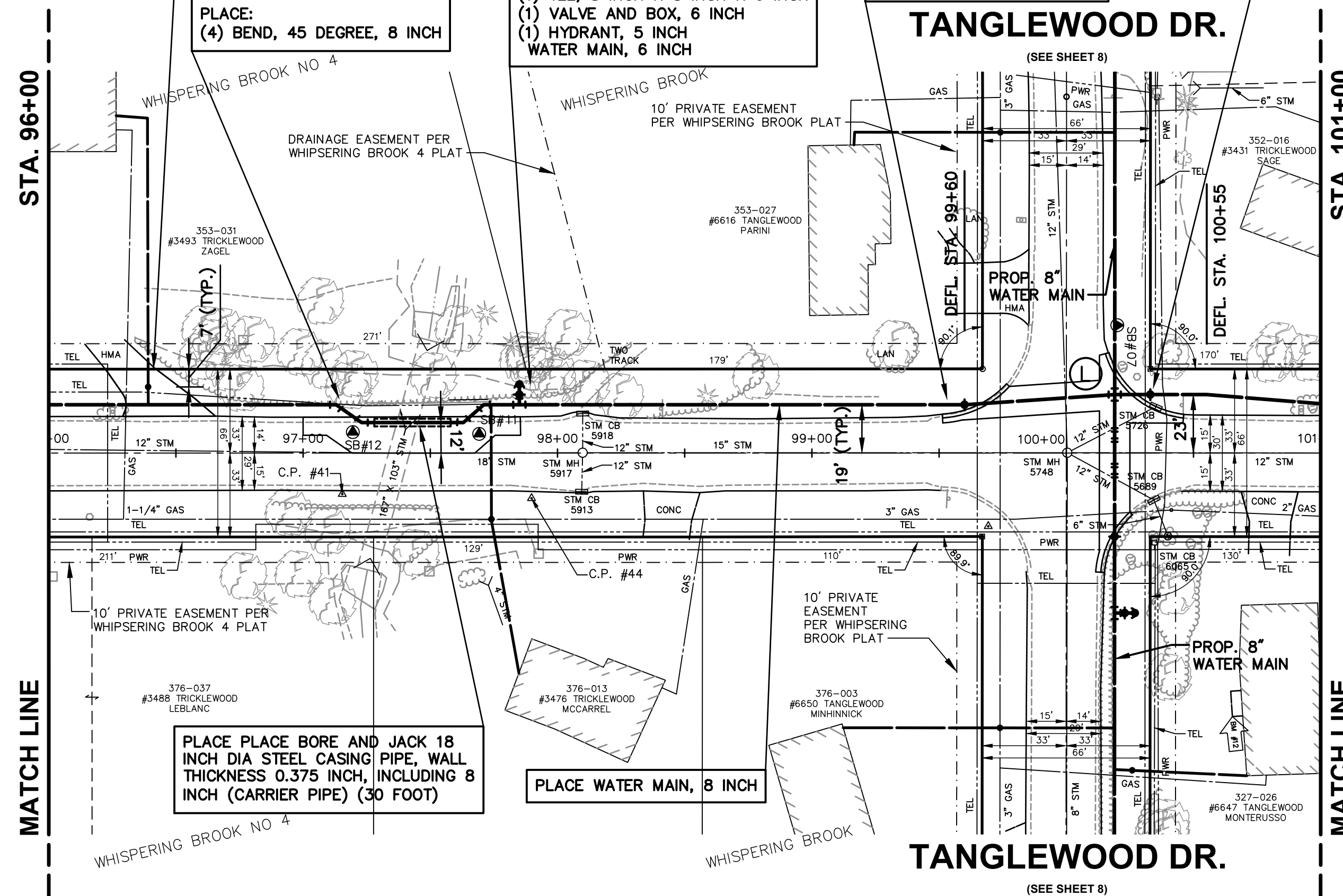
TYP. 2 LOCATIONS (#3476, #3493)

PLACE:
 (4) BEND, 45 DEGREE, 8 INCH

PLACE:
 (1) TEE, 8 INCH X 8 INCH X 6 INCH
 (1) VALVE AND BOX, 6 INCH
 (1) HYDRANT, 5 INCH
 WATER MAIN, 6 INCH

PLACE:
 (1) VALVE AND BOX, 8 INCH

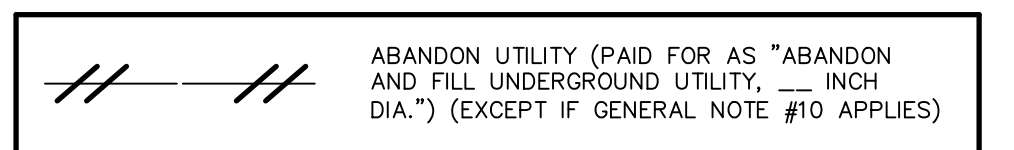
PLACE:
 (1) VALVE AND BOX, 8 INCH



BENCHMARK #12
 B.M. E.L. 690.43 - BM NE CORNER
 BOTTOM FRONT STEP @ 6647 TANGLEWOOD
 CONTROL POINTS
 C.P. #41 - CP TRAV CAP 1FT ENE EB
 TRICKLEWOOD SFT WSW GUARDRAIL - E.L.
 680.06
 C.P. #44 - CP TRAV CAP 3FT E OF EB -
 E.L. 677.38

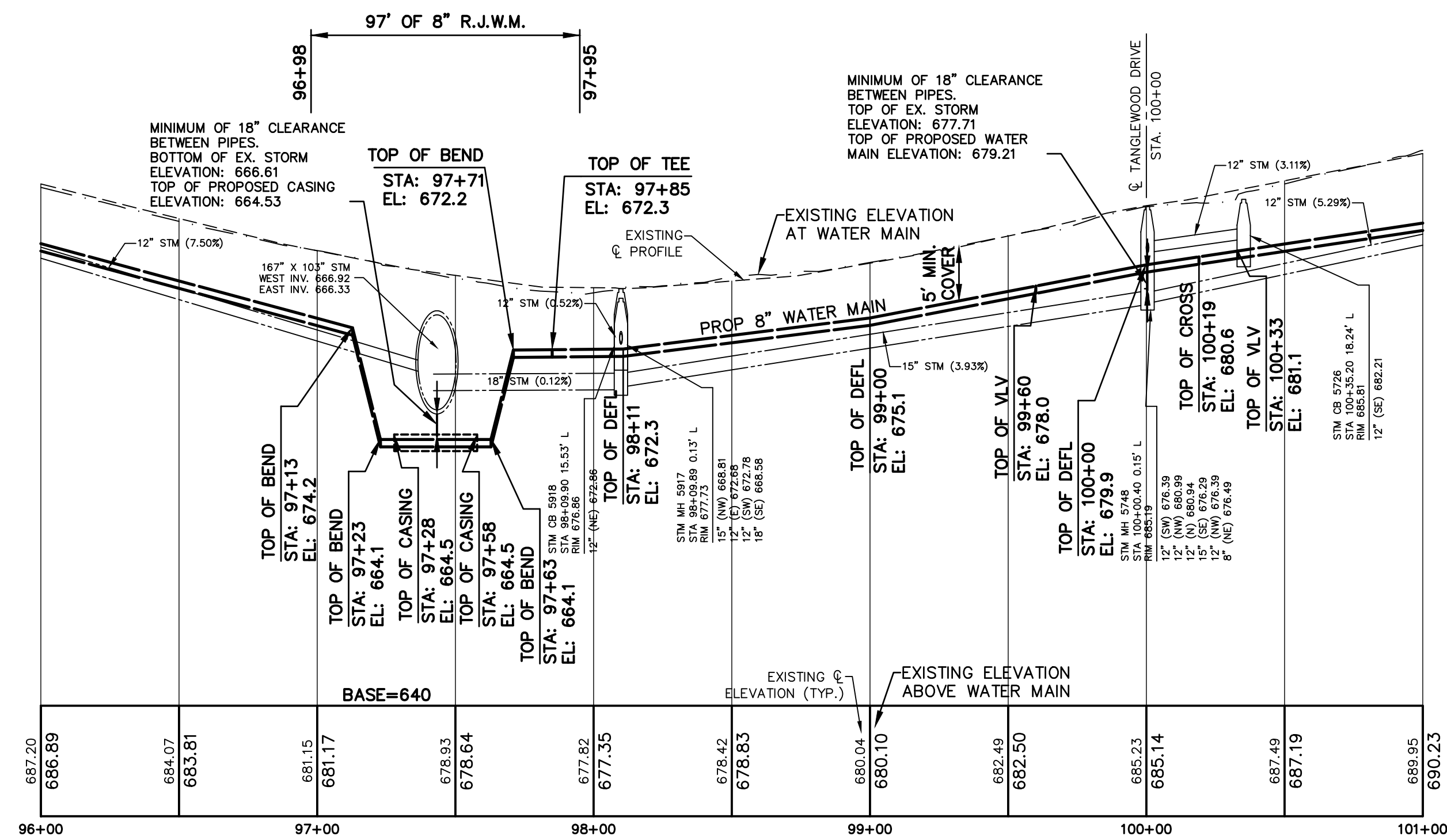
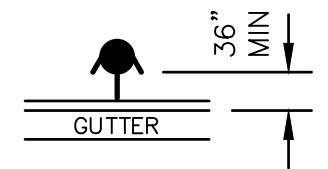
SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 HORIZ. 1"=40'
 VERT. 1"=10'

REMOVAL LEGEND



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REVISIONS

NO.	DATE	DESCRIPTION

DRAFT
 02/2022

WATER MAIN

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

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 TRICKLEWOOD DRIVE**

FROM 250' SOUTH WEST OF TRICKLEWOOD CT.
 TO
 BROOKHILLS CT.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)

Drawn by JDH GPF No. 5843 Sheet No. 12 of 38
 Check: Field KEK
 Check: Office KEK



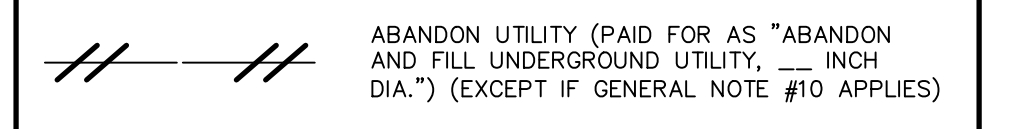
CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C7	311'	500'	N5°10'28"W 306'

BENCHMARK #17
 B.M. ELE. 699.33 - BM MAG NAIL IN BASE OF S SIDE MAPLE 30 FT E OF EDGE OF PAVEMENT AT 3414 TRICKLEWOOD

CONTROL POINTS
 C.P. #45 - CP TRAV CAP 7FT W EB 3413 TRICKLEWOOD 19.5 NE HEMLOCK - ELE. 697.05
 C.P. #46 - CP TRAV CAP 3FT SW BC SE END CURB TRICKLEWOOD AND BROOKHILLS - ELE. 710.02

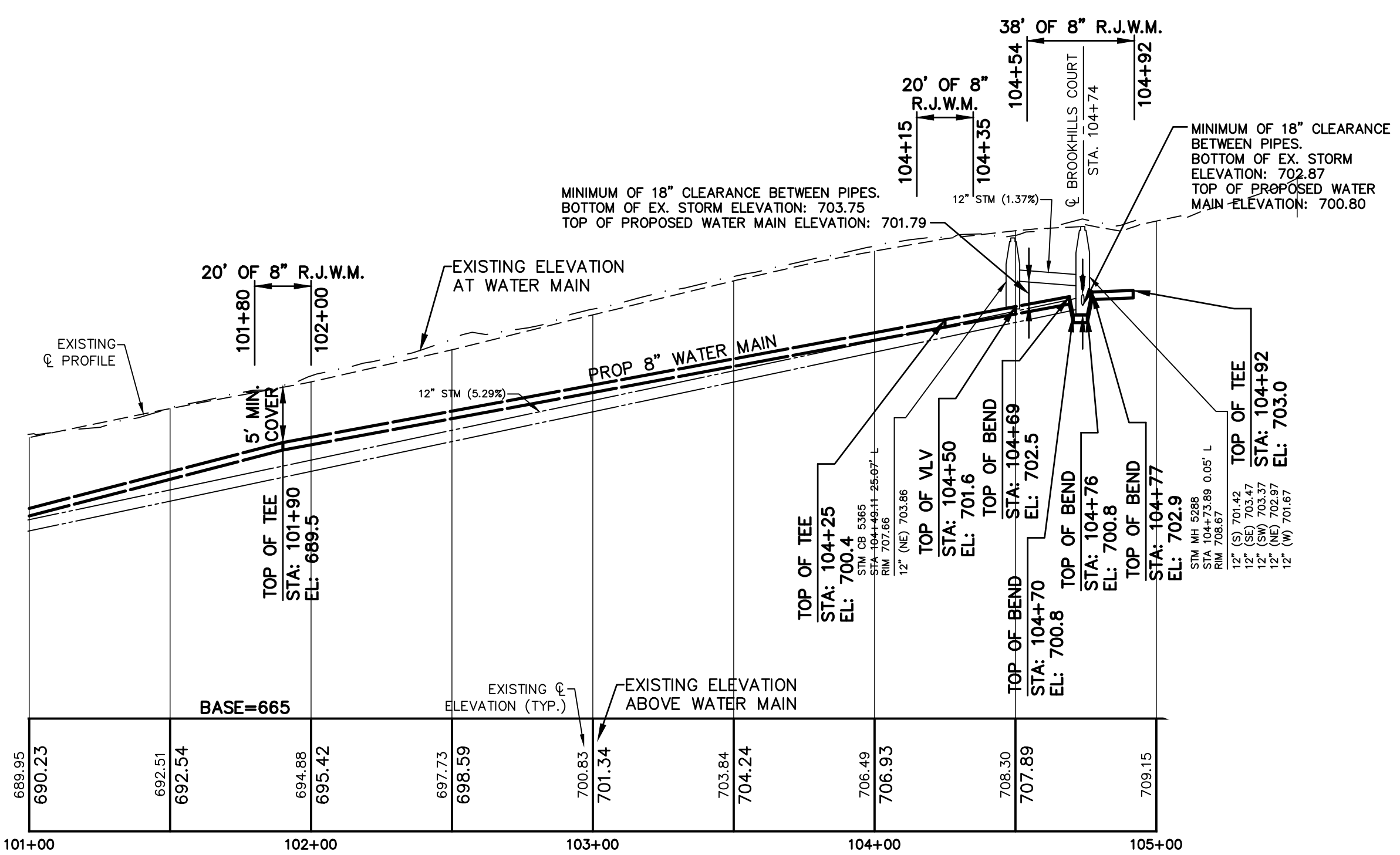
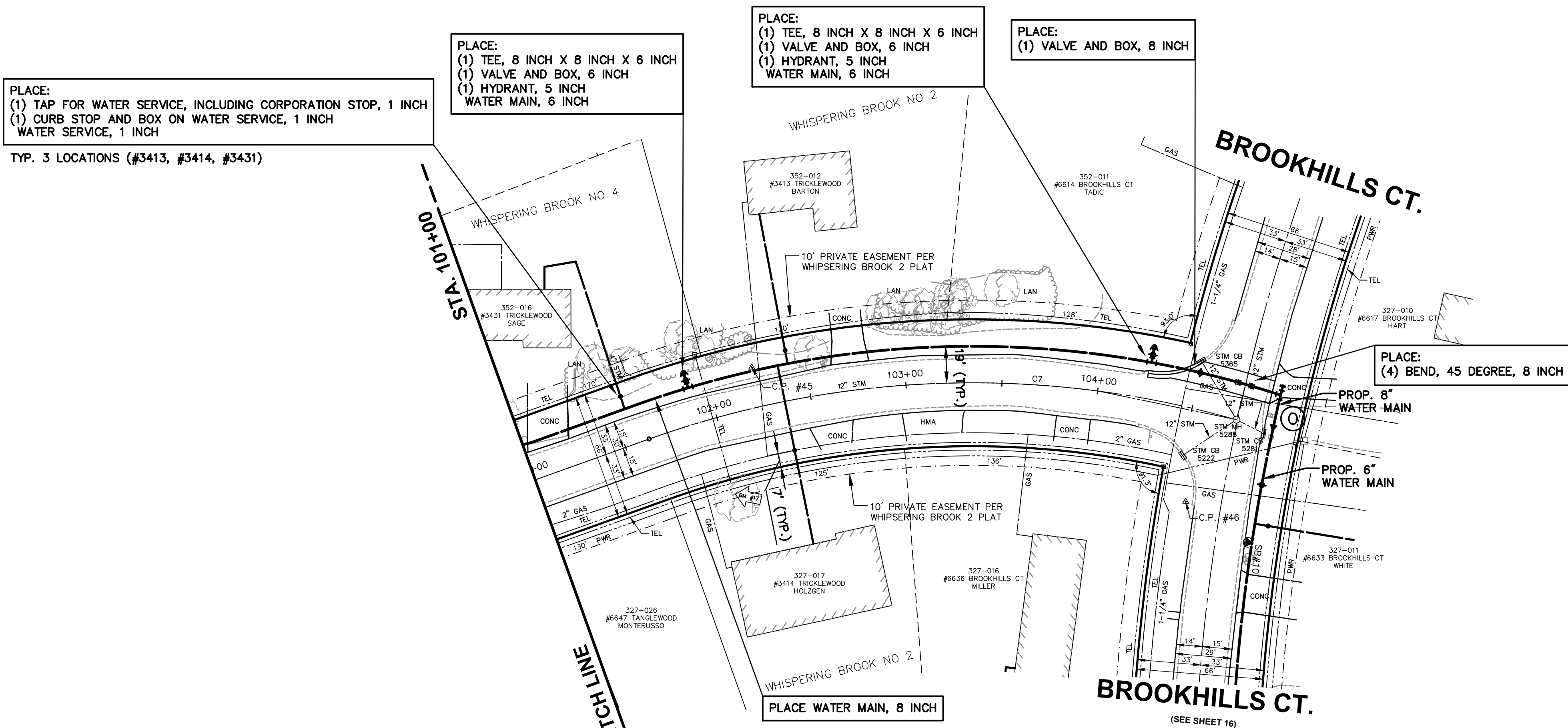
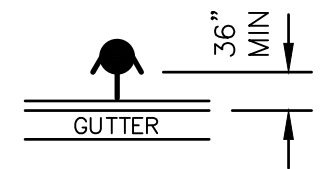
SCALES
 PLAN 1"=40'
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 VERT. 1"=10'

REMOVAL LEGEND



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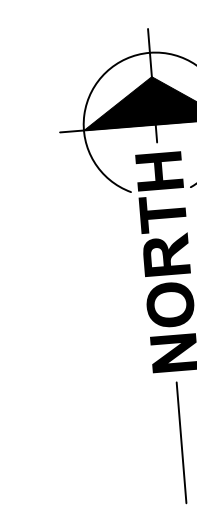
WATER MAIN

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

City of Grand Rapids
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WATER MAIN
 IN
TRICKLEWOOD DRIVE
 FROM 250' SOUTH WEST OF TRICKLEWOOD CT.
 TO
 BROOKHILLS CT.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)

Drawn by JDH GPF No. 5843 Sheet No. 13 of 38
 Check: Field KEK
 Check: Office KEK



CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
CB	415'	250'	N74°25'15"E 369'

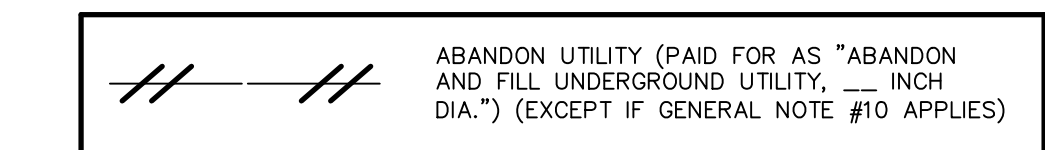
SCALES	
PLAN	1"=40'
PROFILE	1"=40'
HORZ.	1"=40'
VERT.	1"=10'

BENCHMARK #16
B.M. E.L. 720.91 - BM NW CORNER FRONT STEP @ 6682 TRICKLEWOOD CT

BENCHMARK #18
B.M. E.L. 718.97 - BM NE CORNER BOTTOM FRONT STEP @ 6700 TRICKLEWOOD CT

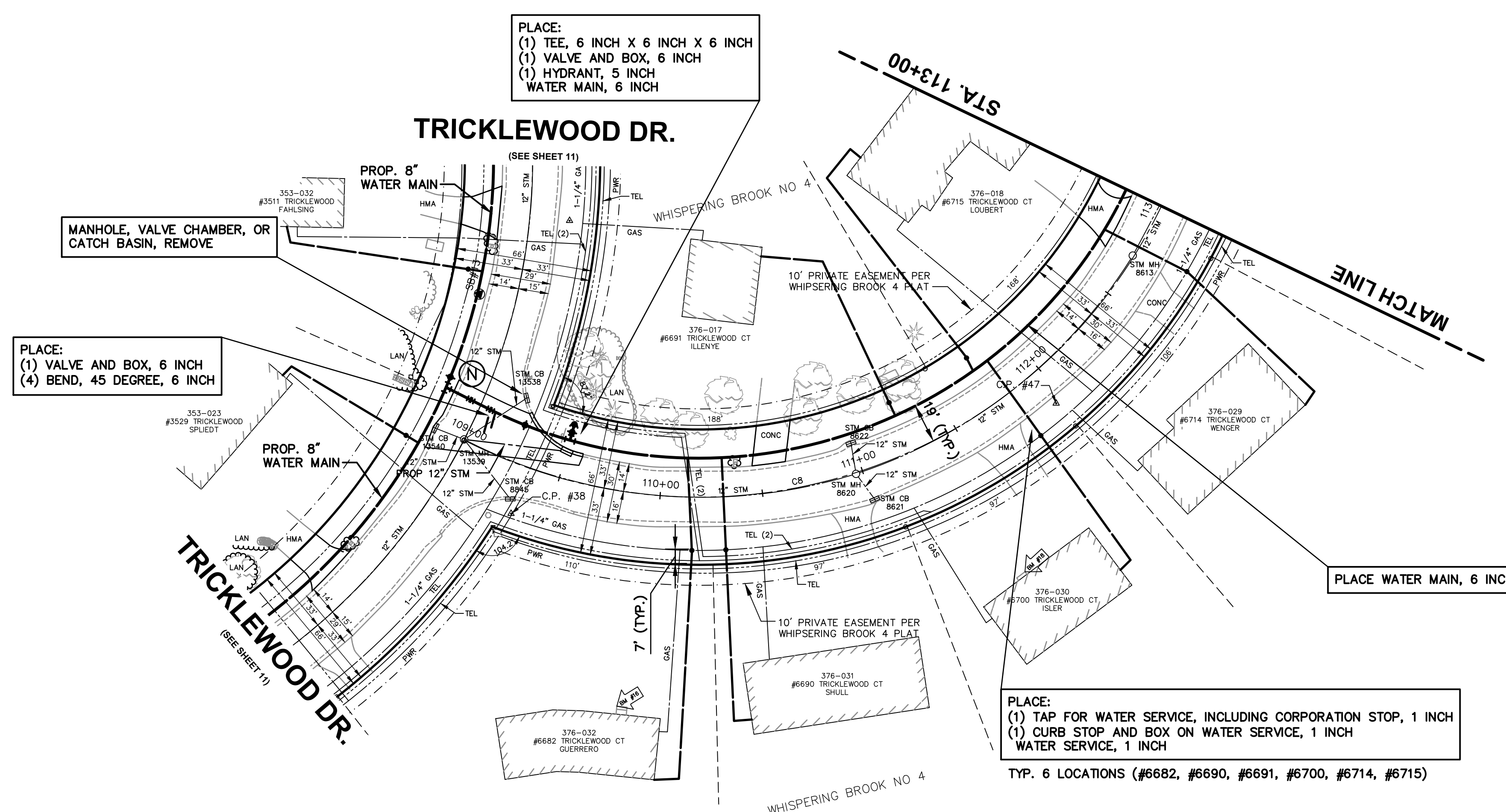
CONTROL POINTS
C.P. #38 - CP TRAV CAP 6FT S BC AT CB 11FT E LIGHT POLE - E.L. 708.29
C.P. #47 - CP TRAV CAP 6FT S EB IN LINE WITH TPED 6700 TRICKLEWOOD CT - E.L. 717.68

REMOVAL LEGEND



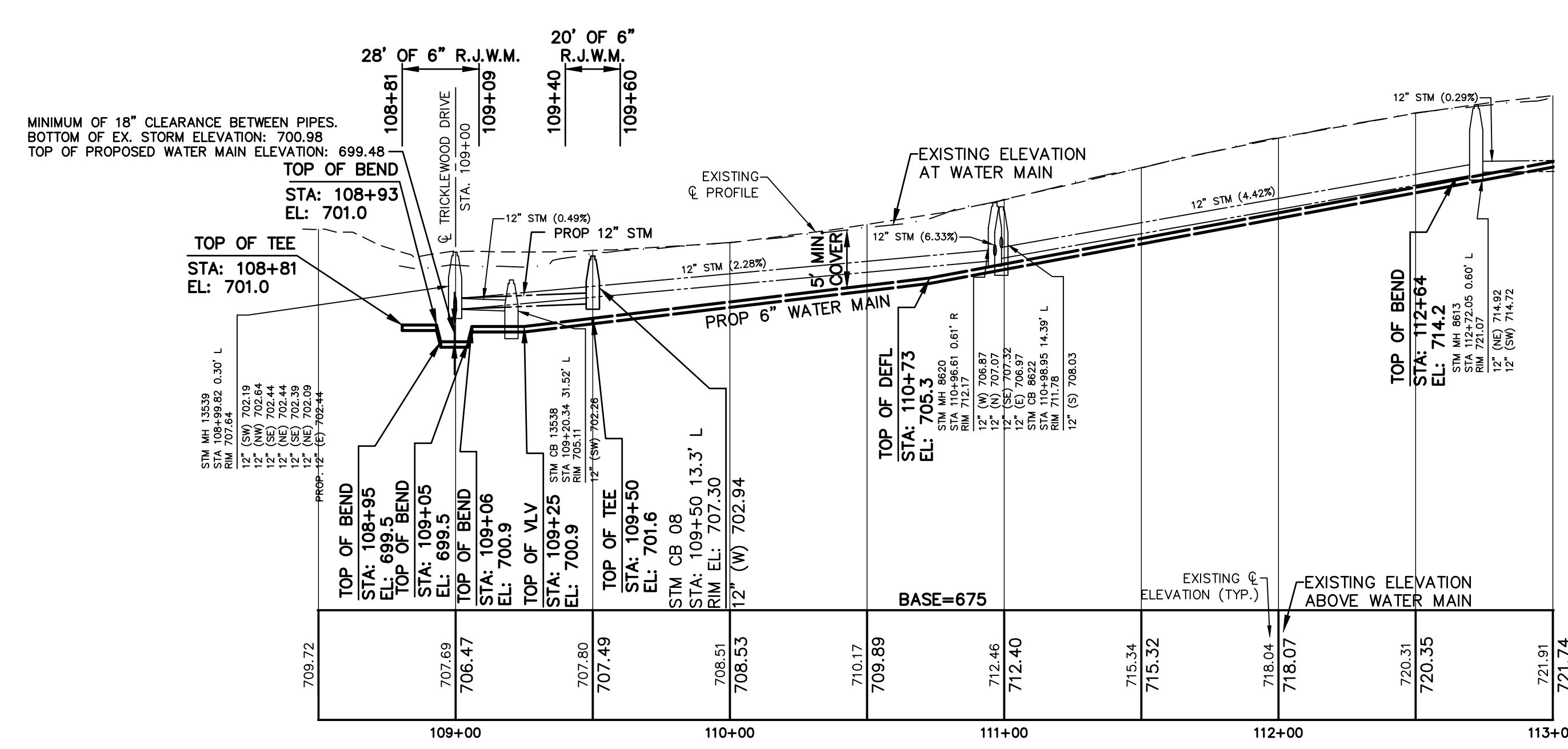
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TYP. 6 LOCATIONS (#6682, #6690, #6691, #6700, #6714, #6715)



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SURVEYED & DESIGNED BY:

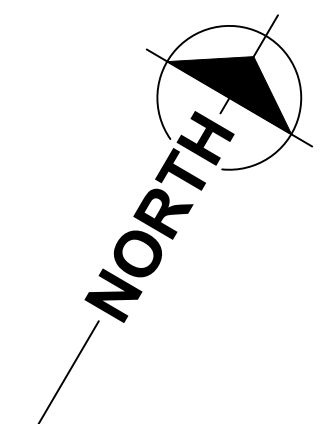
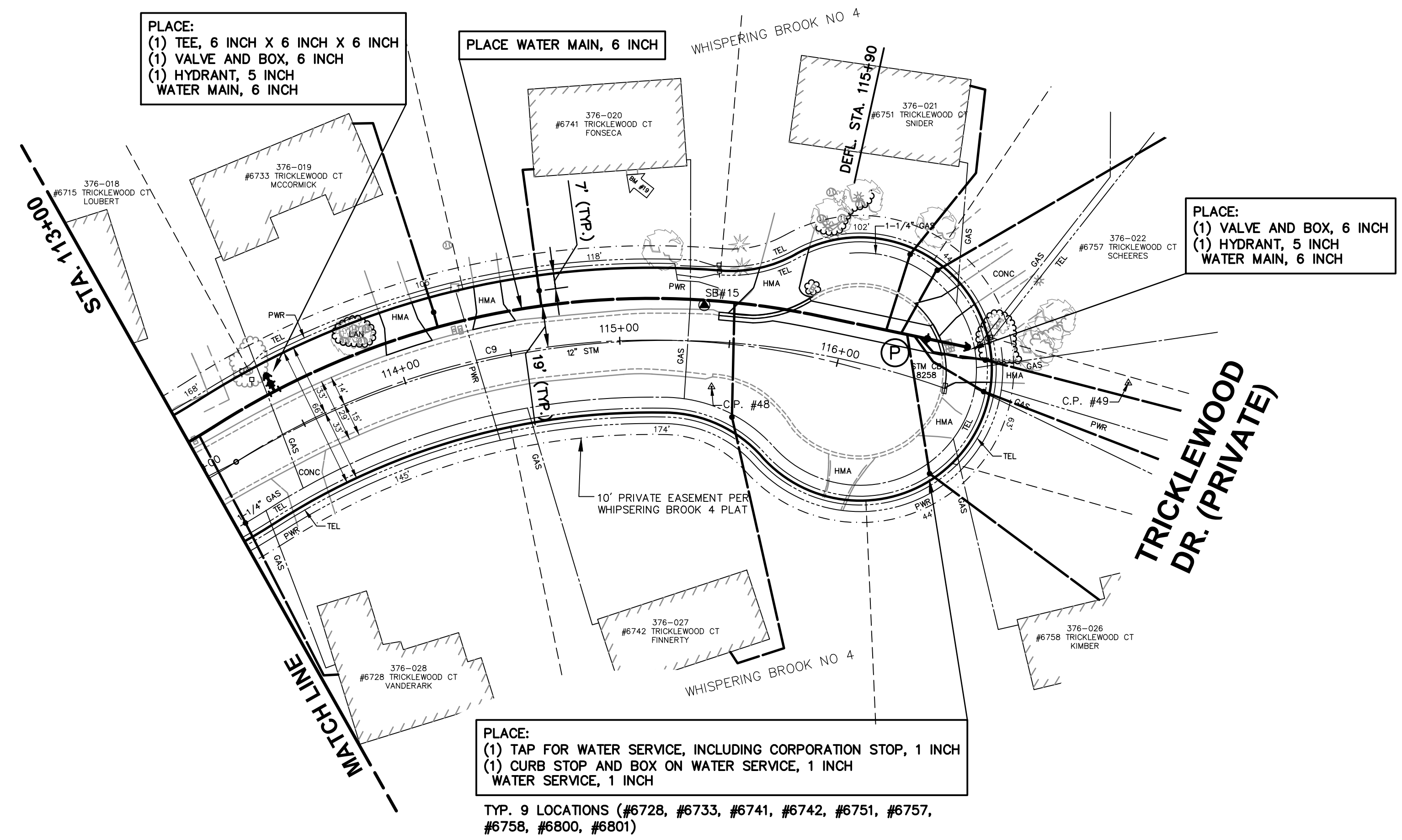
Prein & Newhof

Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
Public Services
Engineering Department

WATER MAIN IN TRICKLEWOOD COURT FROM TRICKLEWOOD DRIVE TO EAST END (BURGER-GOODWOOD NEIGHBORHOOD WATER MAIN - PHASE 1)

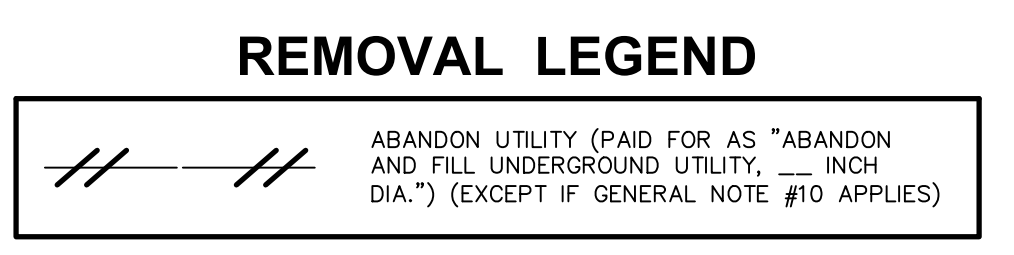
Drawn by JDH GPF No. 5843 Sheet No. 14 of 38
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SCALES
 PLAN 1"=40'
 PROFILE 1"=40'
 HORZ. 1"=40'
 VERT. 1"=10'

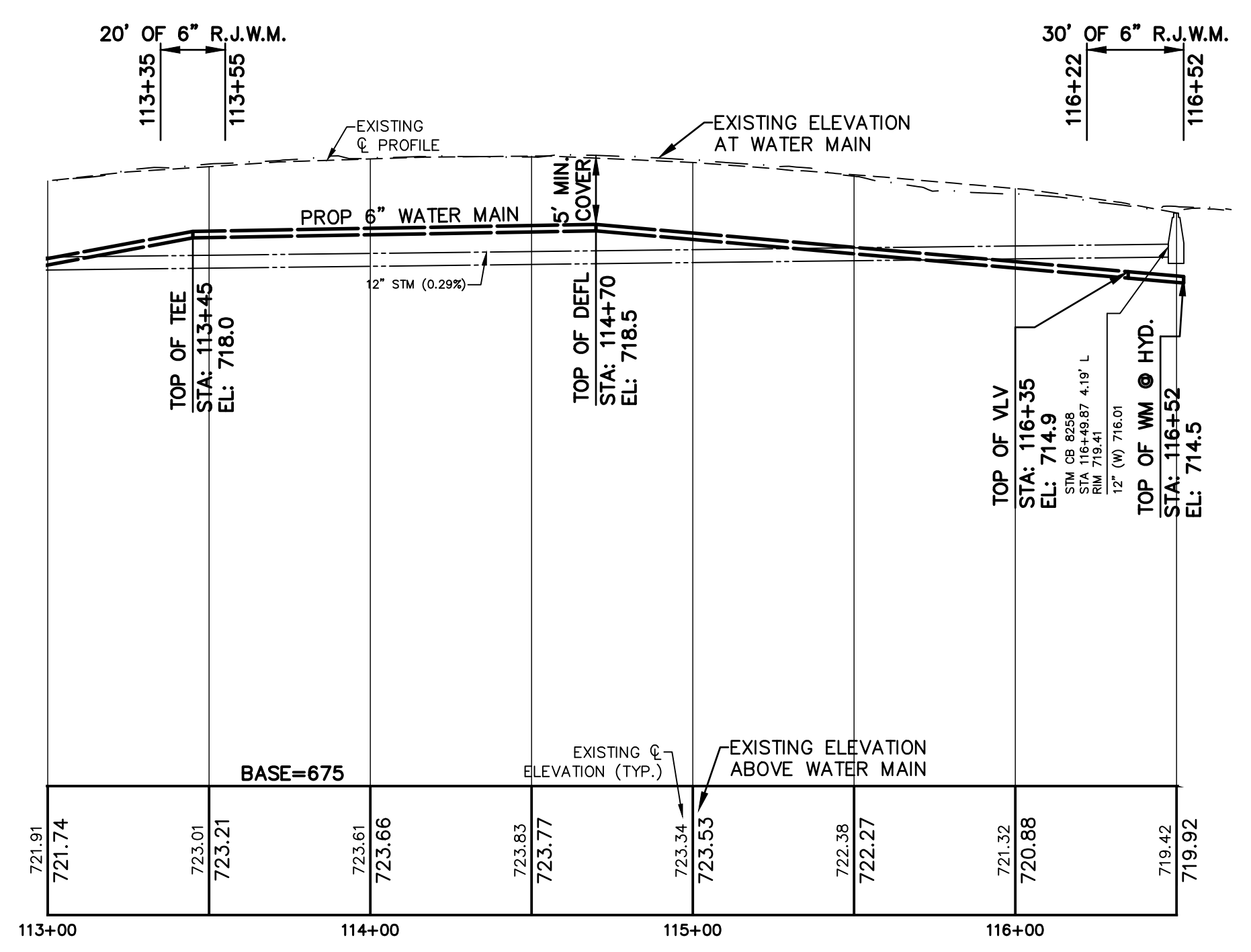
CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C9	296'	350'	N51°10'17"E 288'

BENCHMARK #19
 B.M. E.L. 726.58 - BM SW CORNER BOTTOM FRONT STEP @ 6741 TRICKLEWOOD CT
 CONTROL POINTS
 C.P. #48 - CP TRAV CAP 3FT SE BC END CURB AT CUL DE SAC TRICKLEWOOD CT - E.L. 722.51
 C.P. #49 - CP NAIL IN PAVEMENT 2 FT S EDGE DRIVE 6801 TRICKLEWOOD CT 100FT FROM CUL DE SAC - E.L. 716.29



WATER MAIN GENERAL NOTES

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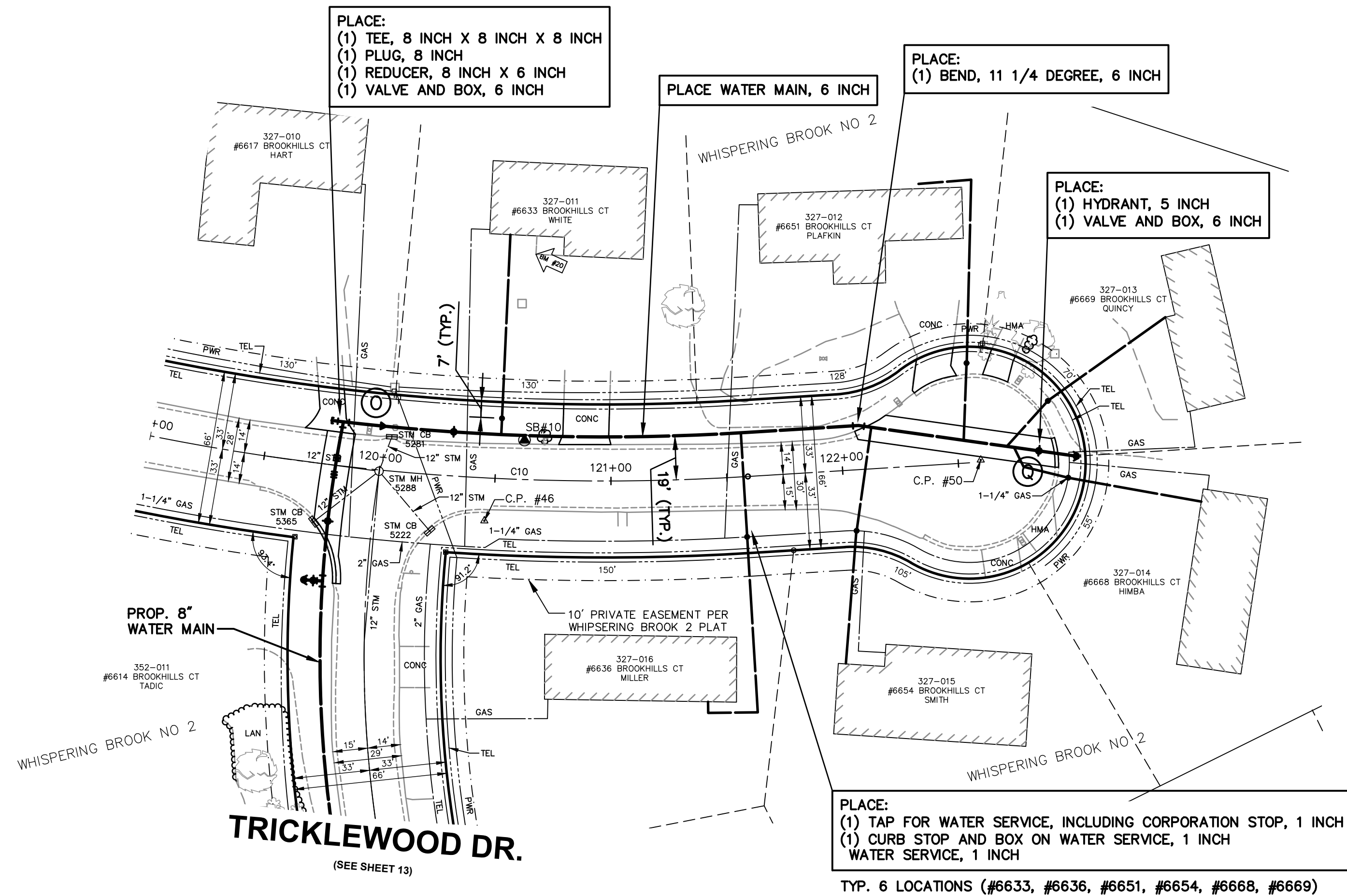


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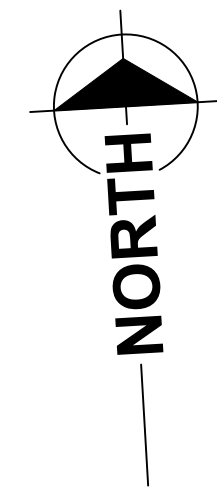
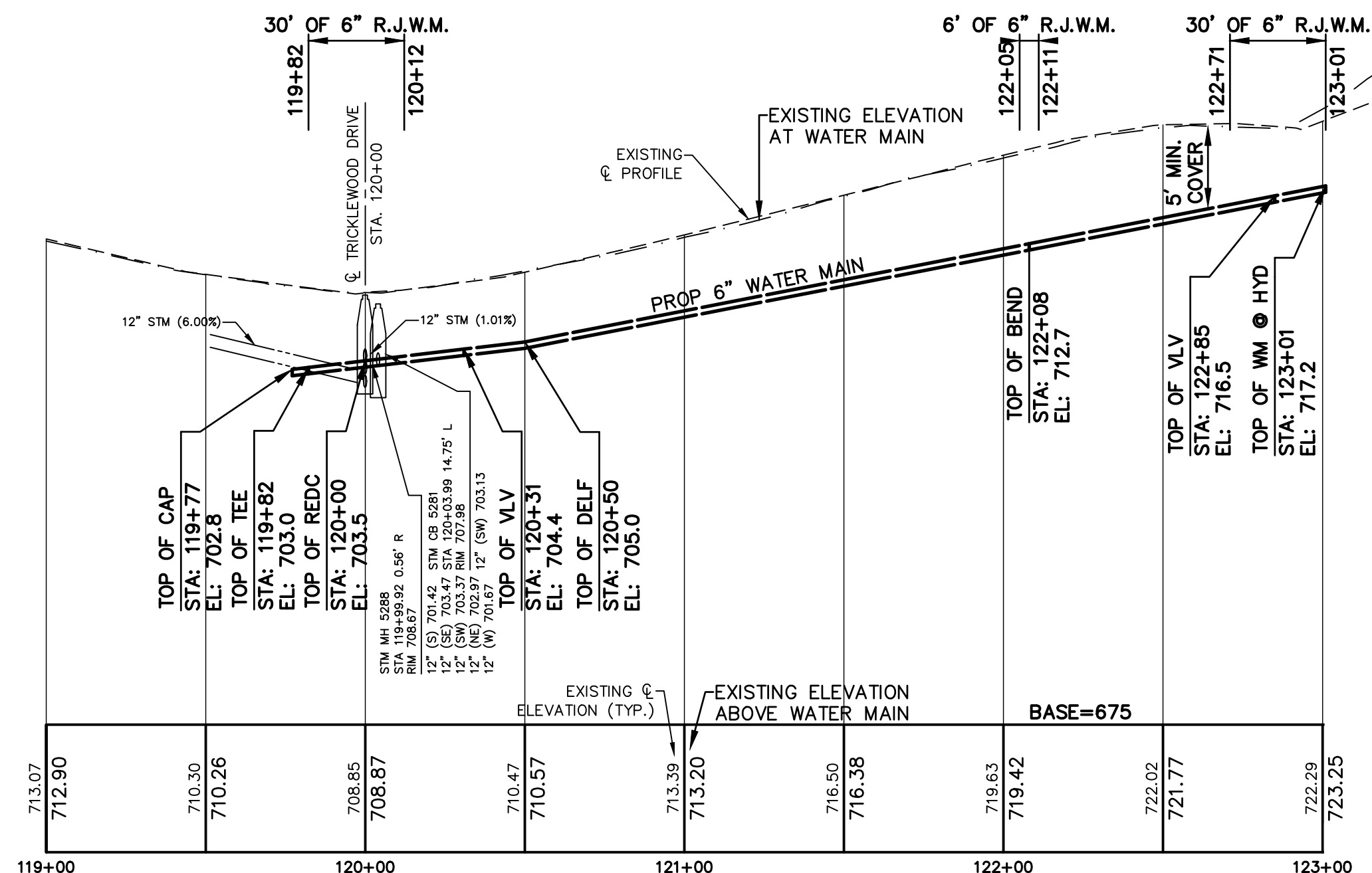
REVISIONS		
NO.	DATE	DESCRIPTION

DRAFT
 02/2022

WATER MAIN
 SURVEYED & DESIGNED BY:
Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory
 City of Grand Rapids
 Public Services
 Engineering Department
WATER MAIN
 IN
TRICKLEWOOD COURT
 FROM TRICKLEWOOD DRIVE
 TO
 EAST END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)
 Drawn by JDH GPF No. 5843 Sheet No. 15 of 38
 Check: Field KEK
 Check: Office KEK



TYP. 6 LOCATIONS (#6633, #6636, #6651, #6654, #6668, #6669)



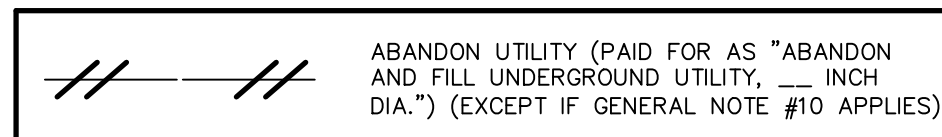
SCALES
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 PROFILE 1"=40'
 VERT. 1"=10'

BENCHMARK #20
 B.M. ELE. 719.80 - BM FRONT W CORNER OF CONC PORCH @ 6633 BROOKHILLS CT

CONTROL POINTS
 C.P. #46 - CP TRAV CAP 3FT SW BC SE END CURB TRICKLEWOOD AND BROOKHILLS - ELE. 710.02
 C.P. #50 - CP NAIL IN PAVEMENT CENTER OF BROOKHILLS CUL DE SAC - ELE. 722.17

CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C10	274'	1014'	S82°20'02"E 273'

REMOVAL LEGEND



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(A) - (X) WATER MAIN TESTING LIMITS

WATER MAIN

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

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 BROOKHILLS COURT
 FROM TRICKLEWOOD DR.
 TO
 EAST END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)**

DRAFT
 02/2022

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REVISIONS

NO.	DATE	DESCRIPTION

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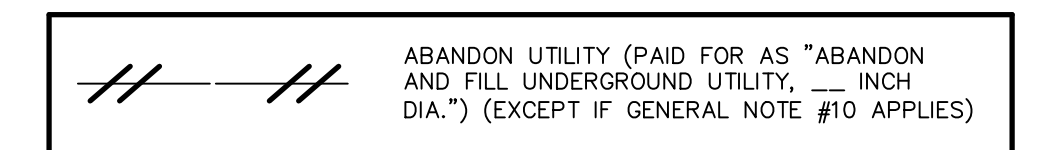
CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C12	382'	300'	N35°21'E 356'
C13	235'	302'	N10°52'W 229'

BENCHMARK #22
 B.M. ELE: 698.33 - BM TOP NW CORNER OF BOTTOM CONC STEP. 0.8 FT ABOVE WALK @ 3506 TUSCANY

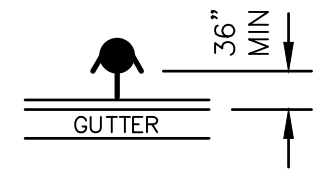
CONTROL POINTS
 C.P. #53 - CP TRAV CAP 3' W OF E/B. 12' N OF C/L TRIPOLI EXT - ELE. 695.20
 C.P. #54 - CP 60D NAIL 2' W OF E/B. 4' S OF DR 3467. 4' N OF MB 3467 - ELE. 693.59

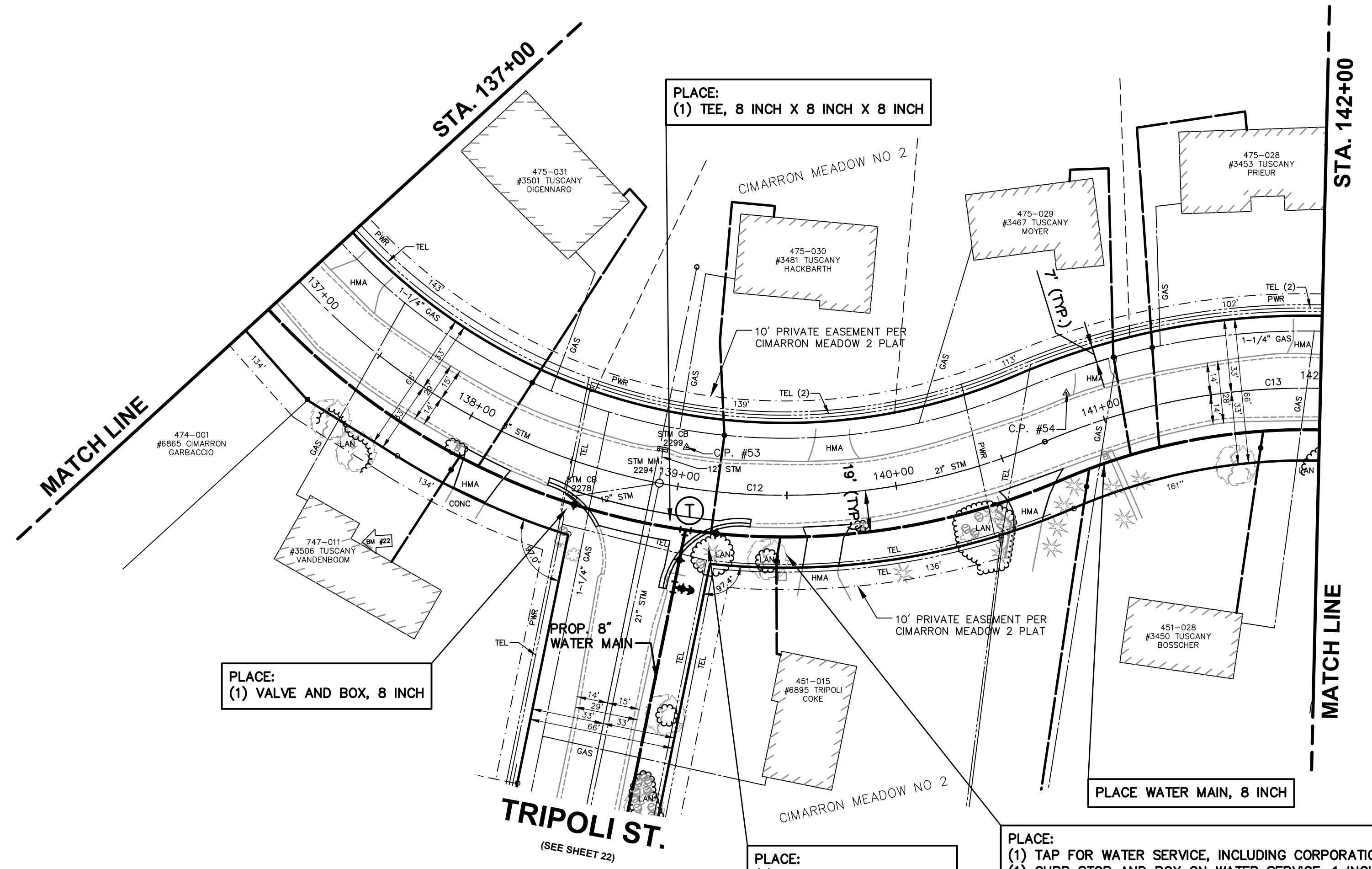
PLAN 1"=40'
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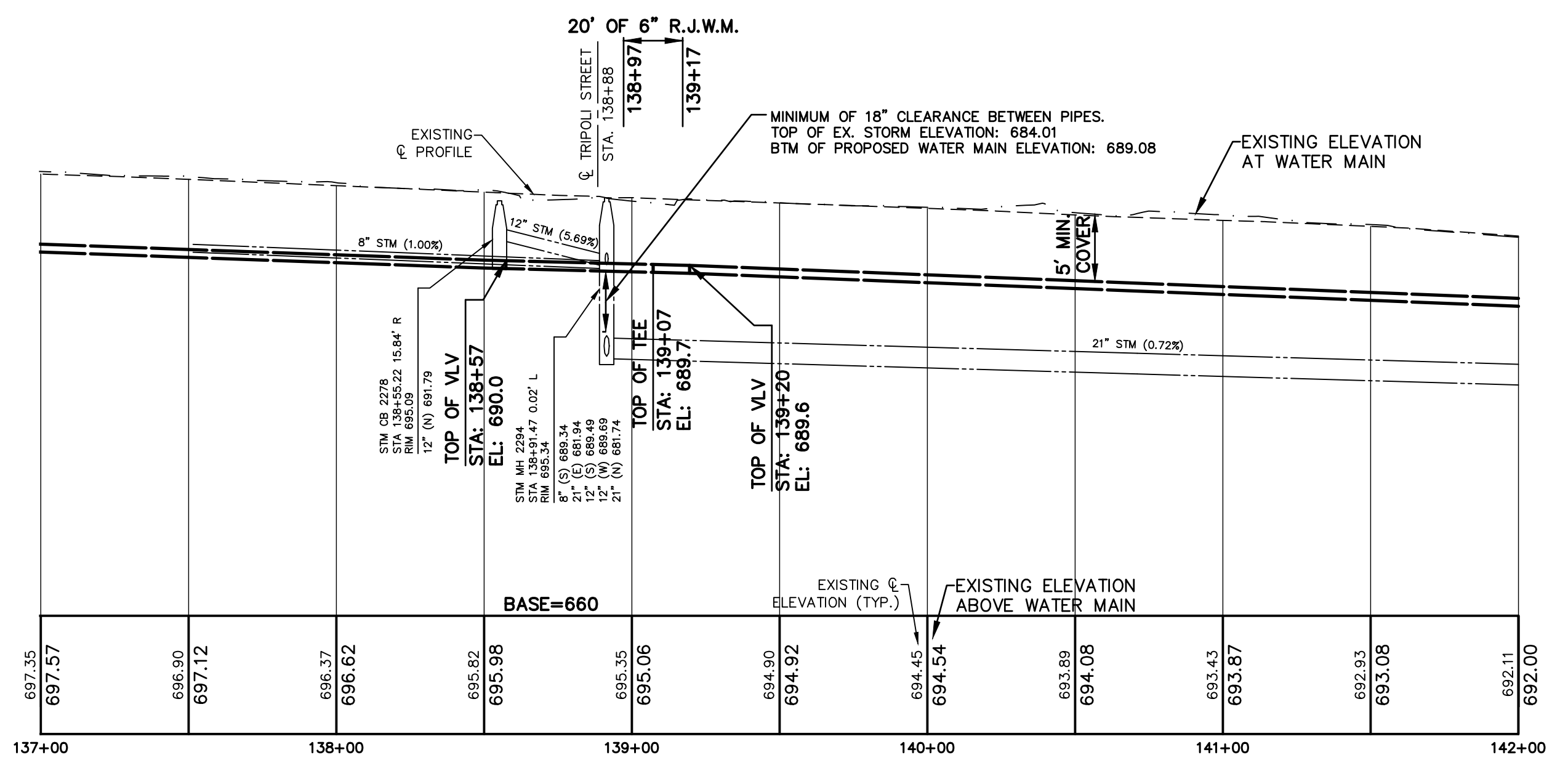
PLACE:
(1) VALVE AND BOX, 8 INCH

PLACE:
(1) TEE, 8 INCH X 8 INCH X 8 INCH

PLACE:
(1) VALVE AND BOX, 8 INCH

PLACE:
(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. 8 LOCATIONS (#3450, #3452, #3453, #3467, #3481, #3501, #3506, #6895)



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REVISIONS		
NO.	DATE	DESCRIPTION

DRAFT
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WATER MAIN

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

City of Grand Rapids
 Public Services
 Engineering Department

WATER MAIN
 IN
TUSCANY DRIVE
 FROM SOUTH EAST END
 TO
 BURGER DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)

Drawn by JDH GPF No. 5843 Sheet No. 18 of 38
 Check: Field KEK
 Check: Office KEK



CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
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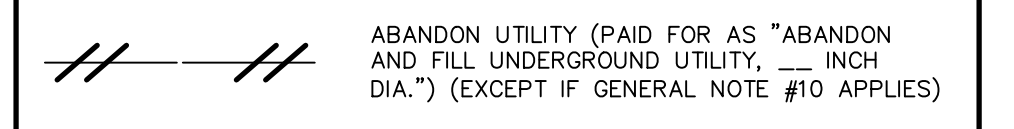
BENCHMARK #04
 B.M. ELE. 672.42 - BM SET RR SPIKE N-SIDE
 PP. SW QUAD BURGER & TUSCANY NAN

BENCHMARK #23
 B.M. ELE. 692.86 - BM SET 60 D VERTICAL IN
 W ROOT OF 24" OAK

CONTROL POINTS
 C.P. #17 - CP TRAV CAP 3' S OF B/C.
 9' W OF E END CURB - ELE. 672.62
 C.P. #55 - CP TRAV CAP 3' W OF E/B.
 12' N OF C/L TRIPOLI EXT - ELE. 688.67

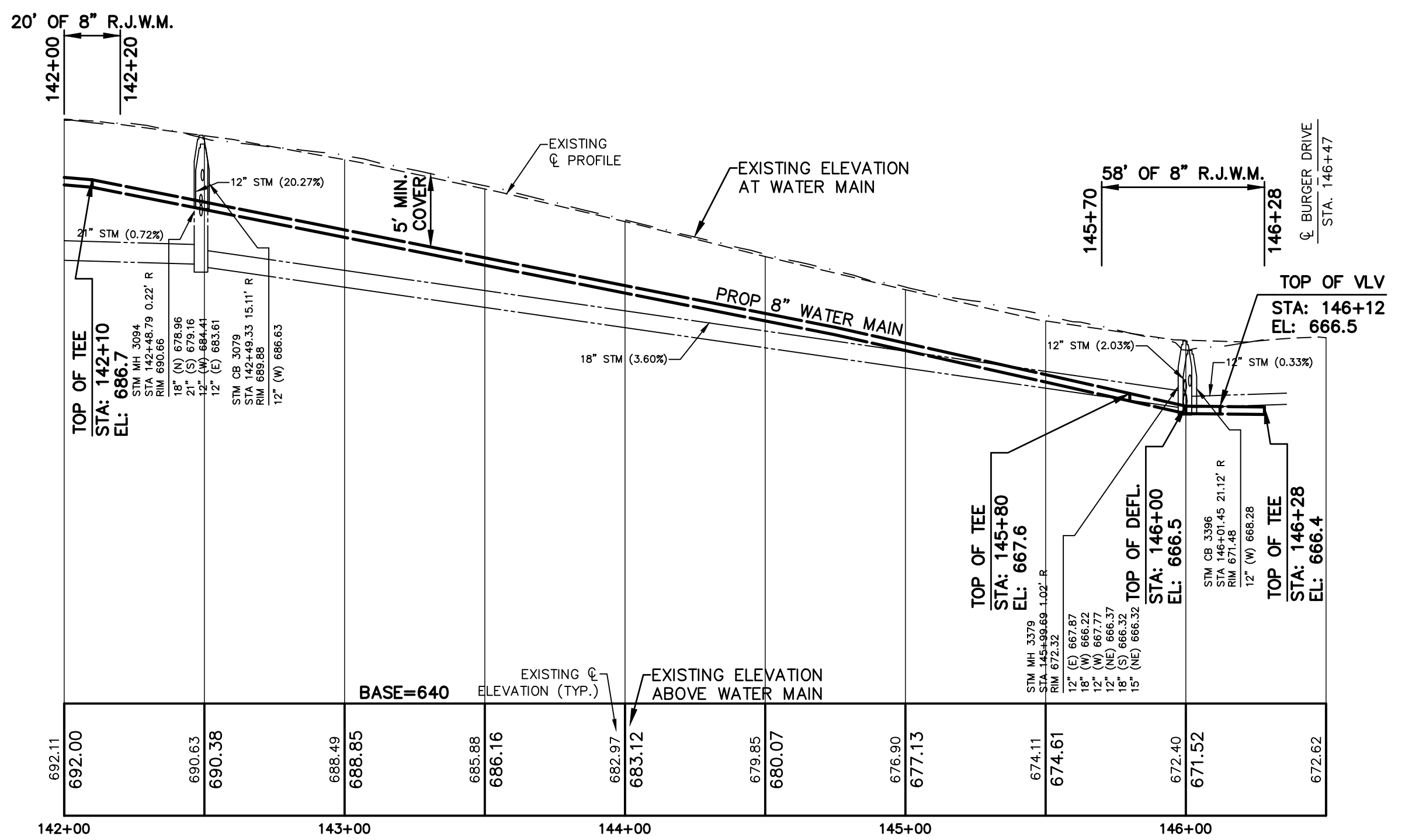
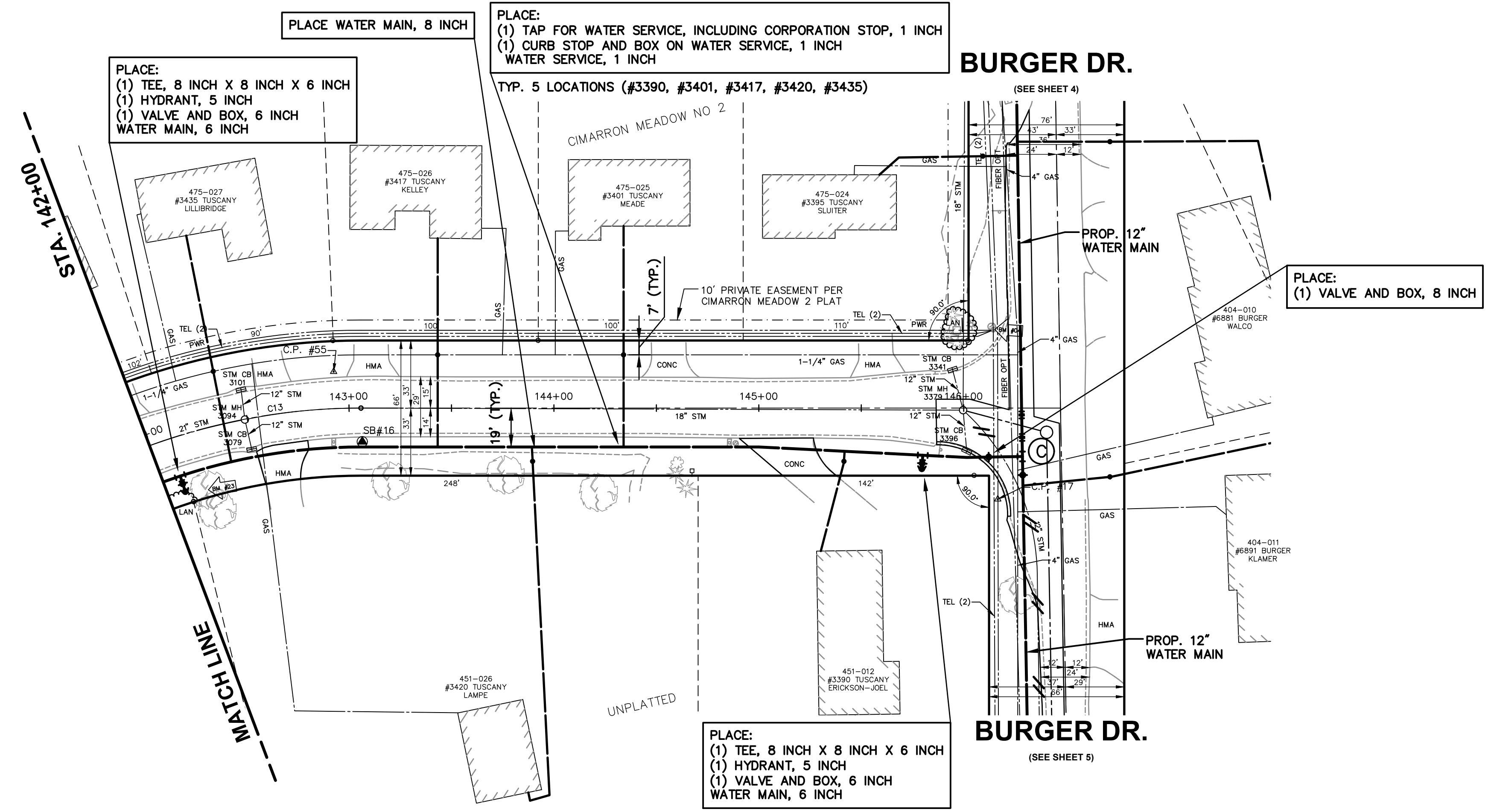
SCALES
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REMOVAL LEGEND



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15. CURB STOP BOXES TO BE PLACED 7' OFF THE RIGHT-OF-WAY LINE, 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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DRAFT
02/2022

WATER MAIN

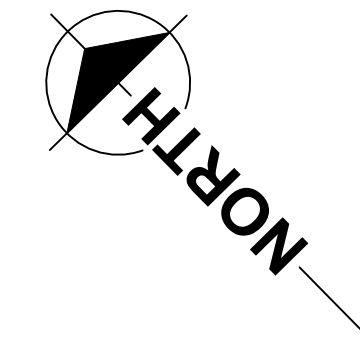
SURVEYED & DESIGNED BY:
Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 TUSCANY DRIVE**

FROM SOUTH EAST END
 TO
 BURGER DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)

Drawn by JDH GPF No. 5843 Sheet No. 19 of 38
 Check: Field KEK
 Check: Office KEK



CONTROL POINTS

C.P. #52 - CP TRAV CAP 4' S OF B/C.
5.8' E OF NEIGHBORHOOD LIBRARY BOX -
ELE. 698.77

C.P. #56 - CP TRAV CAP 3' S OF E/B.
7.4' NNE OF LP - ELE. 709.18

CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C14	431'	550'	N67°56'06"W 420'

SCALES

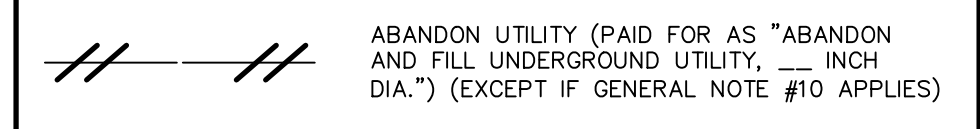
PLAN 1"=40'

PROFILE 1"=40'

HORZ. 1"=40'

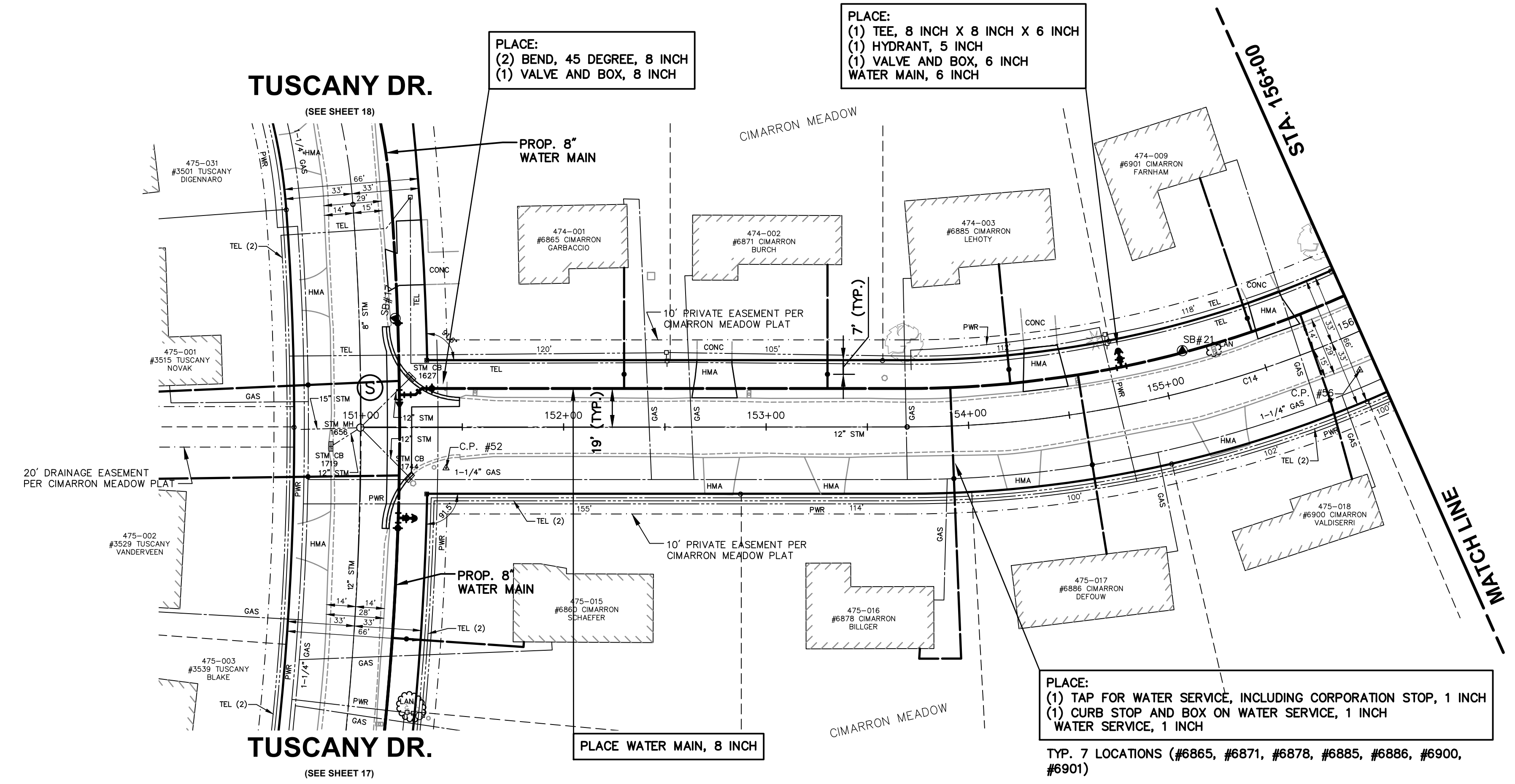
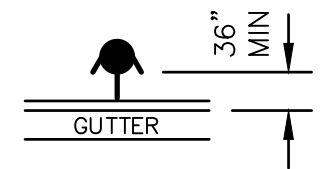
VERT. 1"=10'

REMOVAL LEGEND



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.
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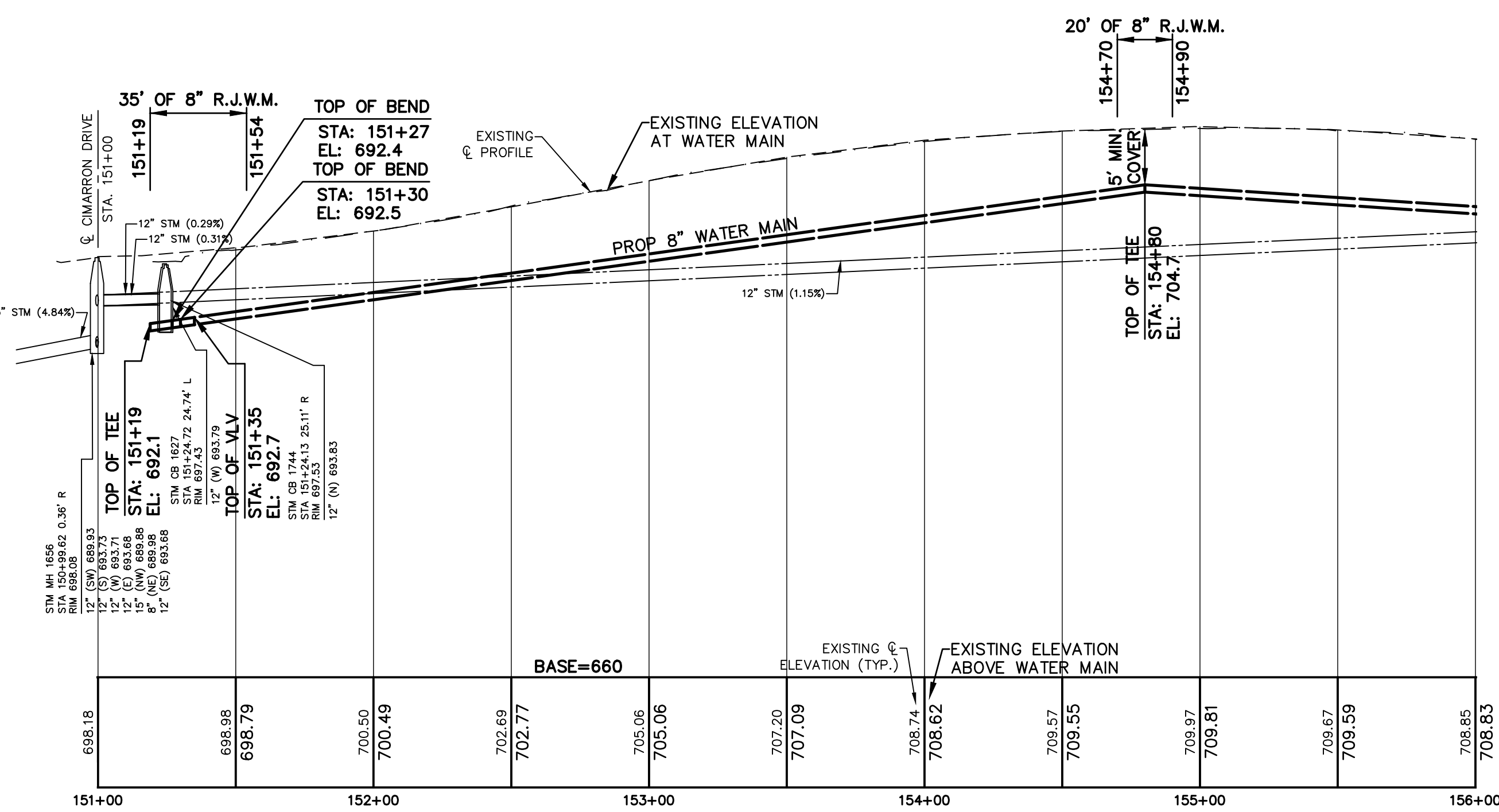


TUSCANY DR.

TUSCANY DR.

STA. 151+00

MATCHLINE



PLACE:

(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 (#6865, #6871, #6878, #6885, #6886, #6900, #6901)

PLACE:

(2) BEND, 45 DEGREE, 8 INCH

(1) VALVE AND BOX, 8 INCH

PLACE:

(1) TEE, 8 INCH X 8 INCH X 6 INCH

(1) HYDRANT, 5 INCH

(1) VALVE AND BOX, 6 INCH

WATER MAIN, 6 INCH

PLACE WATER MAIN, 8 INCH

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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WATER MAIN

SURVEYED & DESIGNED BY:

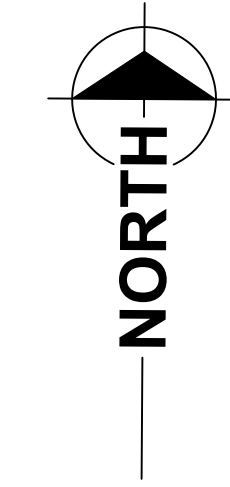
Prein & Newhof
Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
Public Services
Engineering Department

WATER MAIN
IN
CIMARRON DRIVE
FROM TUSCANY DR.
TO
BURGER DR.
(BURGER-GOODWOOD NEIGHBORHOOD
WATER MAIN - PHASE 1)

Drawn by JDH GPF No. 5843 Sheet No. 20 of 38

Check: Field KEK
Check: Office KEK



CURVE DATA			
CURVE #	LENGTH	RADIUS	CHORD
C14	431'	550'	N67°56'06"W 420'

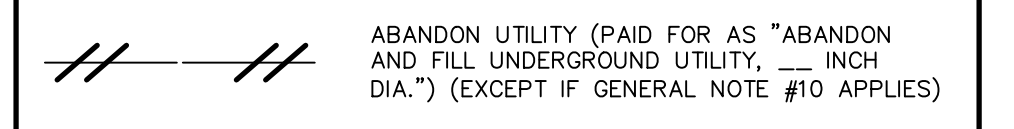
SCALES	
PLAN	1"=40'
PROFILE:	
HORZ.	1"=40'
VERT.	1"=10'

BENCHMARK #24
 B.M. E.L. 713.65 - BM TOP NE CORNER BOTTOM CONC STEP @ HSE 6916 0.65 FT ABOVE WALK

BENCHMARK #25
 B.M. E.L. 705.10 - BM TOP SW CORNER CONC WALK 10' S OF PORCH @ HSE 6985

CONTROL POINTS
 C.P. #57 - CP / P&N TRAV CAP 3' E OF E/B. 5' N OF MB - ELE. 702.00

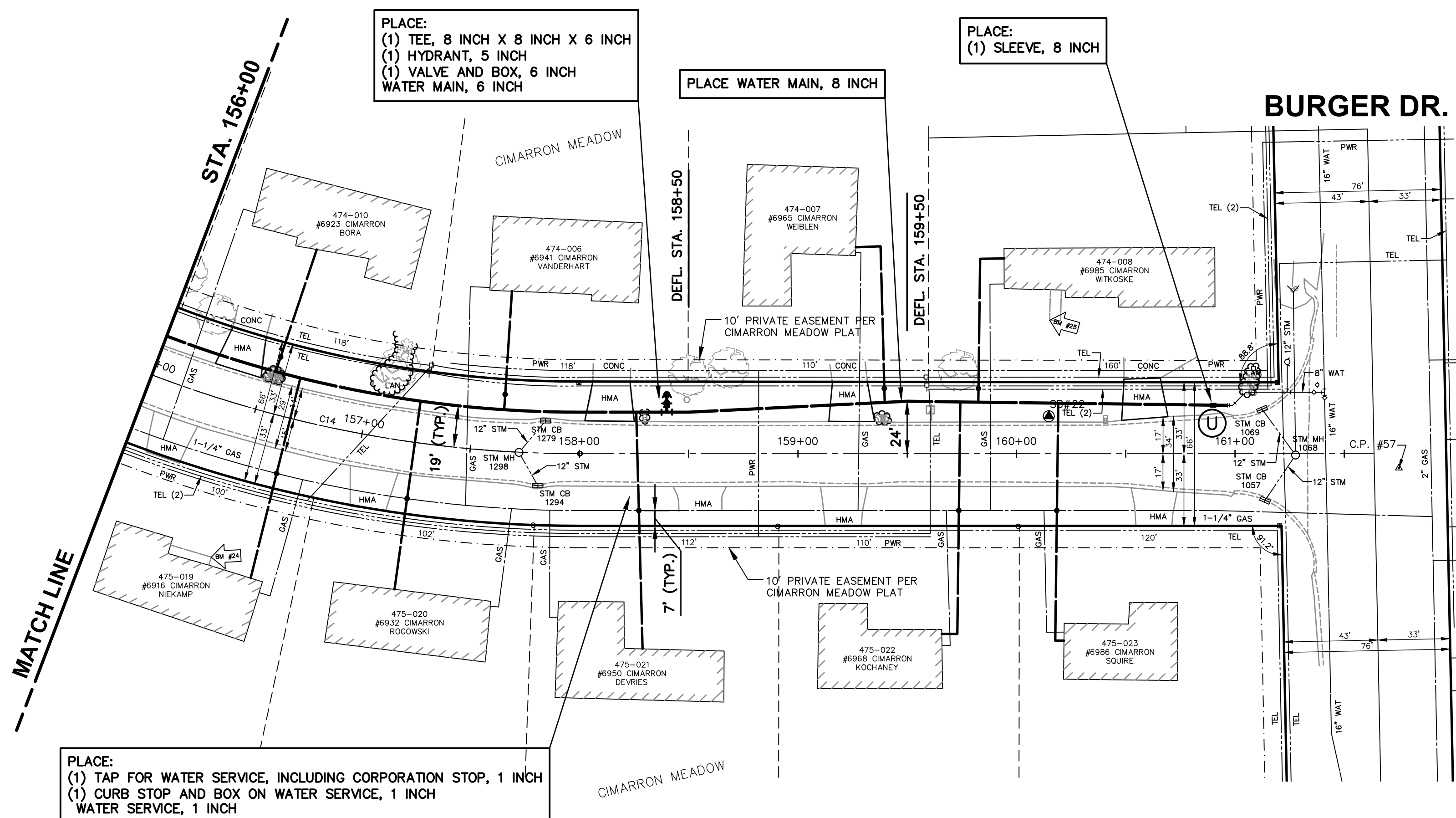
REMOVAL LEGEND



WATER MAIN GENERAL NOTES

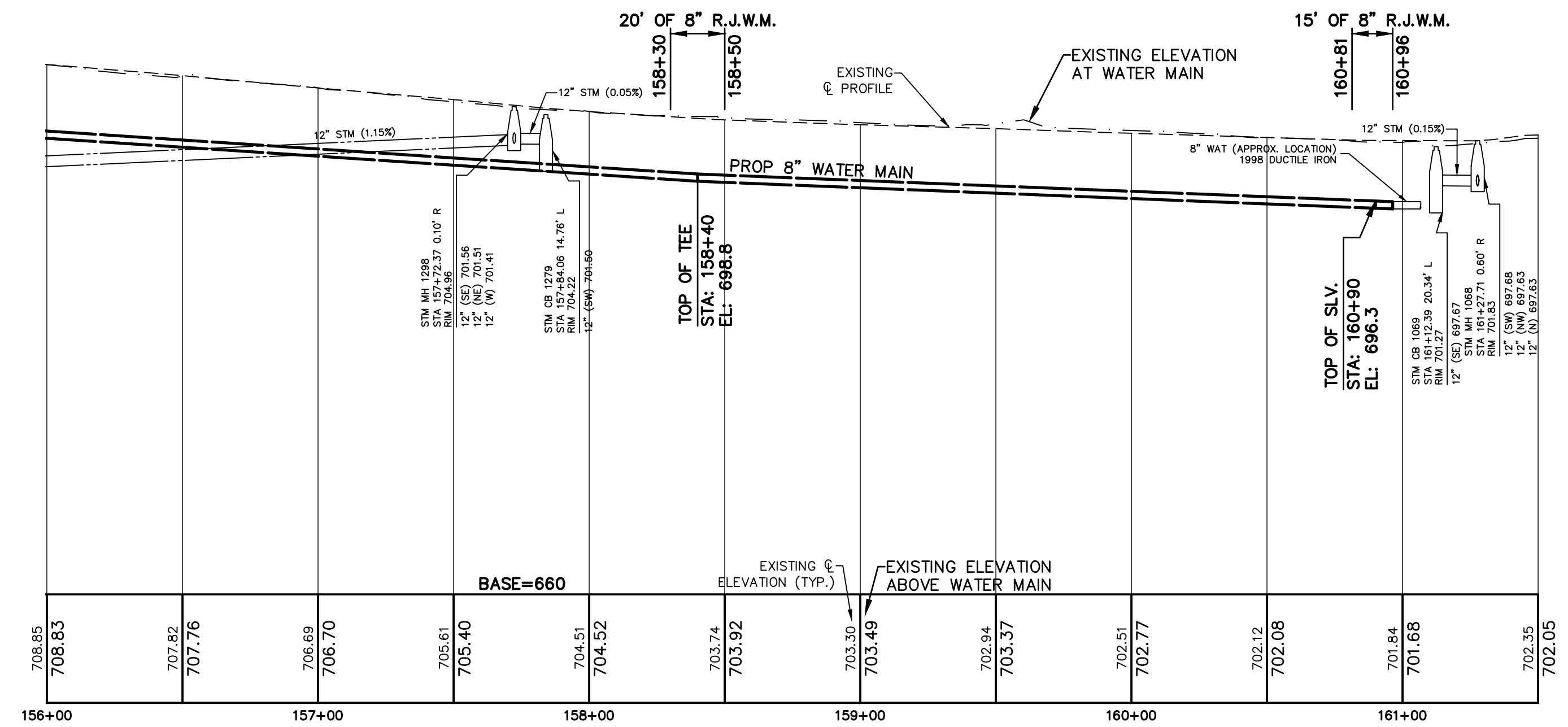
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(A) - (X) WATER MAIN TESTING LIMITS



PLACE:
 (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 (#6916, #6923, #6932, #6941, #6950, #6965, #6968, #6985, #6986)



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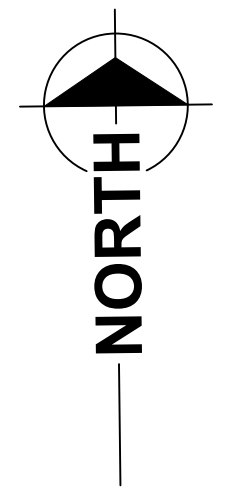
WATER MAIN

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

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 CIMARRON DRIVE
 FROM TUSCANY DR.
 TO
 BURGER DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)**

Drawn by JDH GPF No. 5843 Sheet No. 21 of 38
 Check: Field KEK
 Check: Office KEK



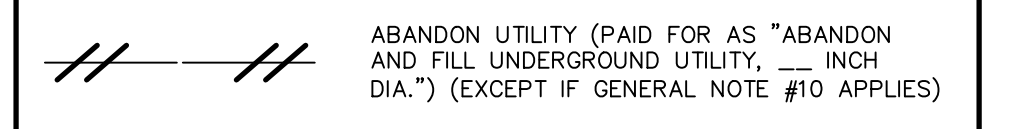
BENCHMARK #22
 B.M. ELE. 698.33 - BM TOP NW CORNER
 BOTTOM CONC STEP 0.6 FT ABOVE WALK
 @ 3506 TUSCANY

BENCHMARK #26
 B.M. ELE. 695.77 - BM TOP SW CORNER
 BOTTOM CONC STEP @ 6933 TRIPOLI 0.5
 FT ABOVE WALK

CONTROL POINTS
 C.P. #53 - CP TRAV CAP 3' W OF
 E/B. 12' N OF C/L TRIPOLI EXT -
 ELE. 695.20
 C.P. #59 - CP NAIL IN PAVEMENT
 ON C/L TRIPOLI CT. 15' S OF C/L
 TRIPOLI DR - ELE. 692.23

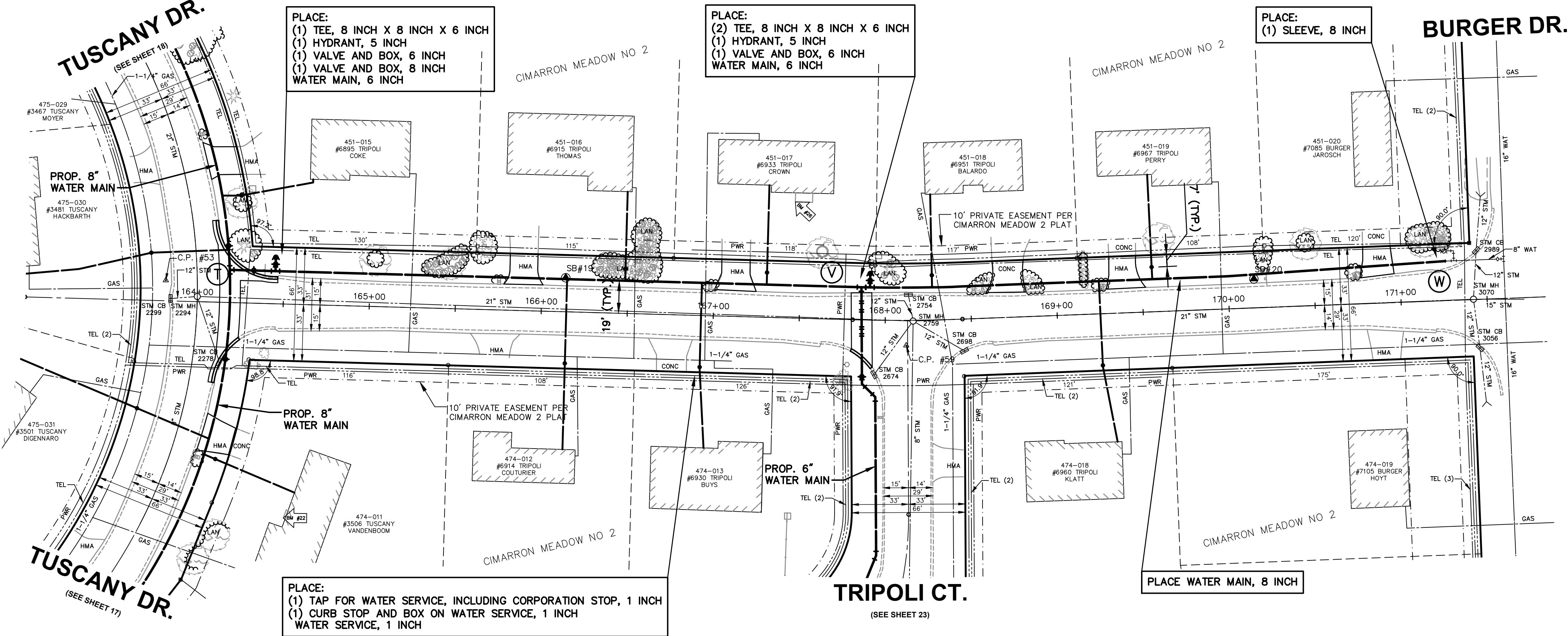
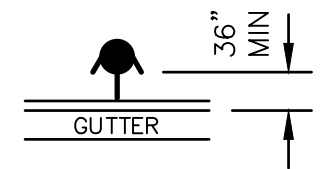
SCALES
 PLAN 1"=40'
 PROFILE: 1"=40'
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 VERT. 1"=10'

REMOVAL LEGEND

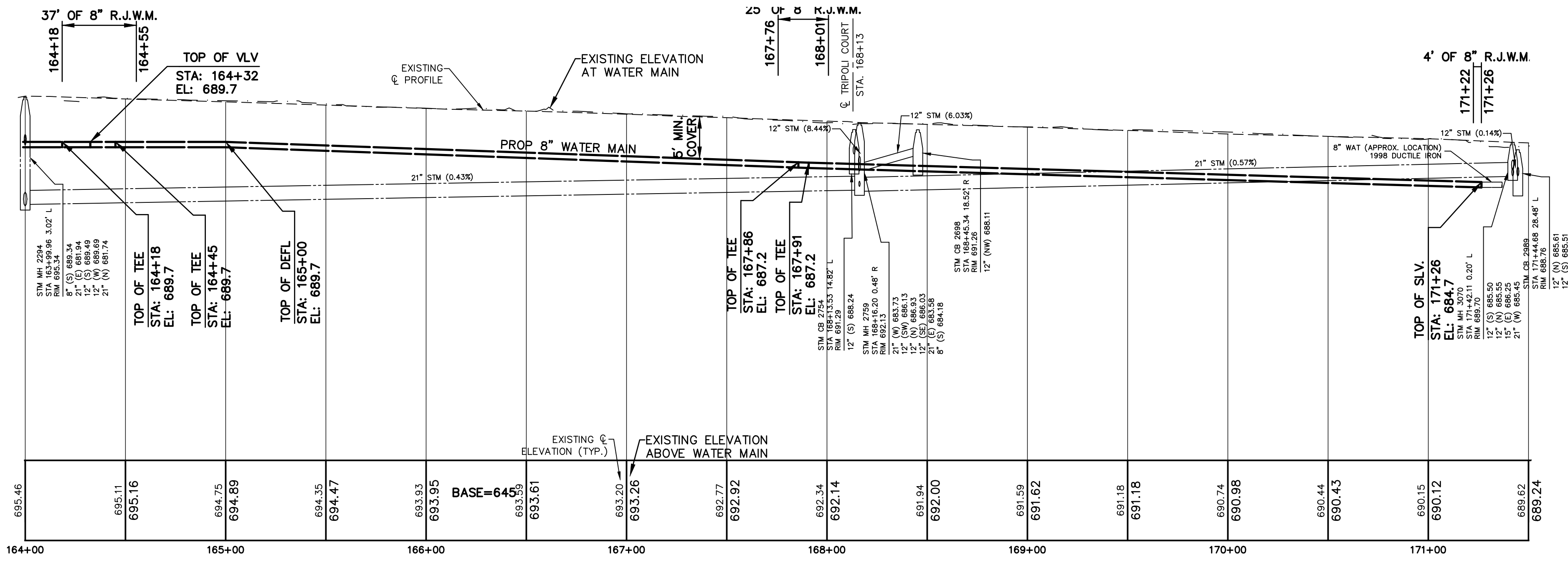


WATER MAIN GENERAL NOTES

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TYP. 7 LOCATIONS (#6914, #6915, #6930, #6933, #6951, #6960, #6967)



WATER MAIN

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

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 TRIPOLI STREET
 FROM TUSCANY DR.
 TO
 BURGER DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)**

DRAFT
 02/2022

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REVISIONS

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Drawn by JDH GPF No. 5843 Sheet No. 22 of 38
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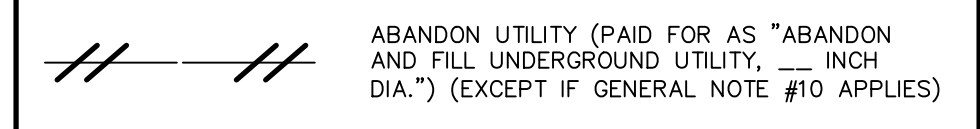
BENCHMARK #26
 ELE. 695.77 - BM TOP SW CORNER BOTTOM
 CONC STEP @ 6933 TRIPOLI 0.5 FT ABOVE WALK

BENCHMARK #27
 B.M. ELE. 697.64 - BM SW CORNER BOTTOM
 STEP @ 3516 TRIPOLI CT

CONTROL POINTS
 C.P. #59 - CP NAIL IN PAVEMENT ON
 C/L TRIPOLI CT. 15' S OF C/L TRIPOLI DR
 - ELE. 692.23
 C.P. #81 - CP P&N TRAV CAP 3' E OF
 MAILBOX 3516 TRIPOLI CT - ELE. 694.71

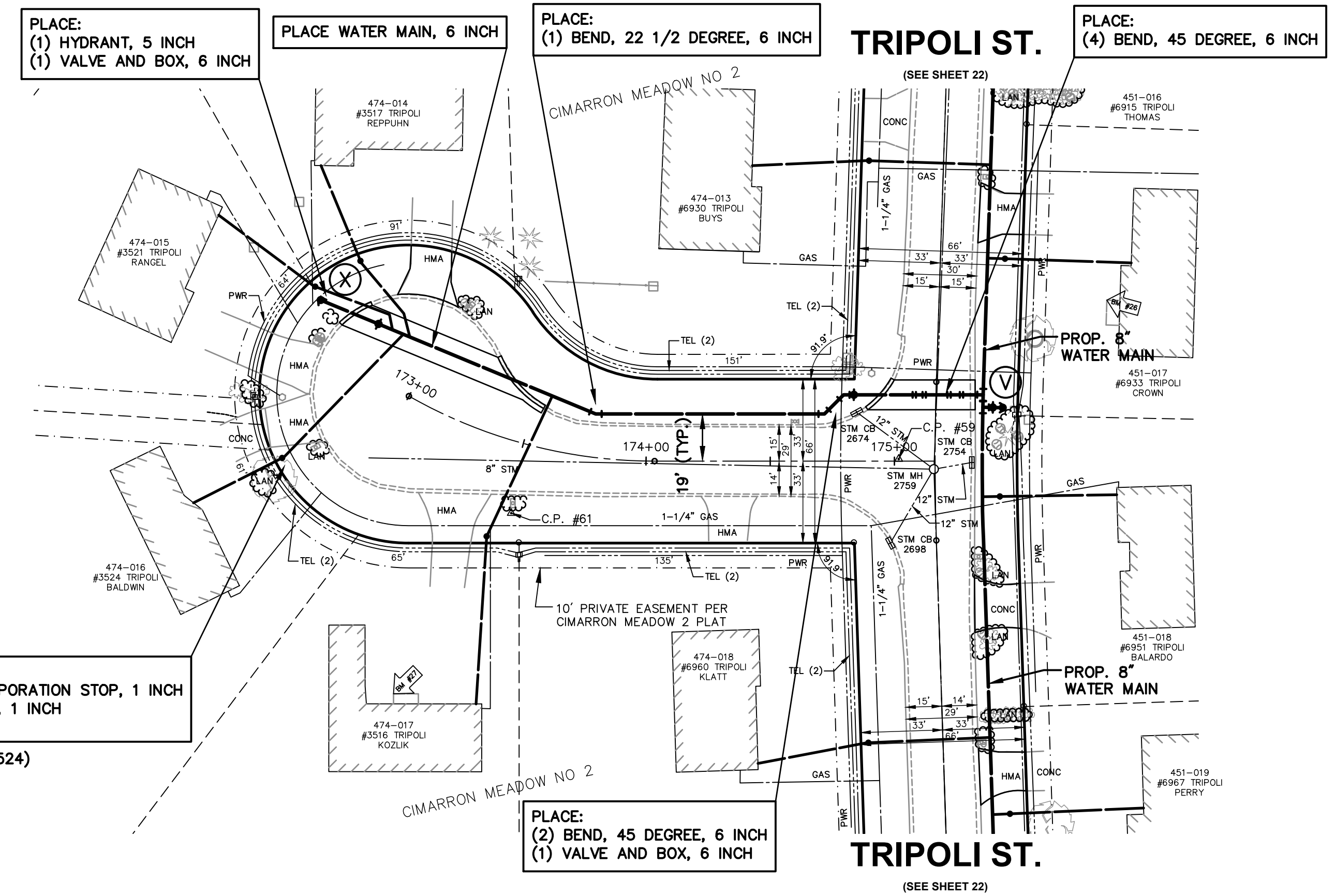
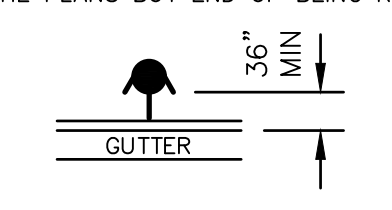
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REMOVAL LEGEND



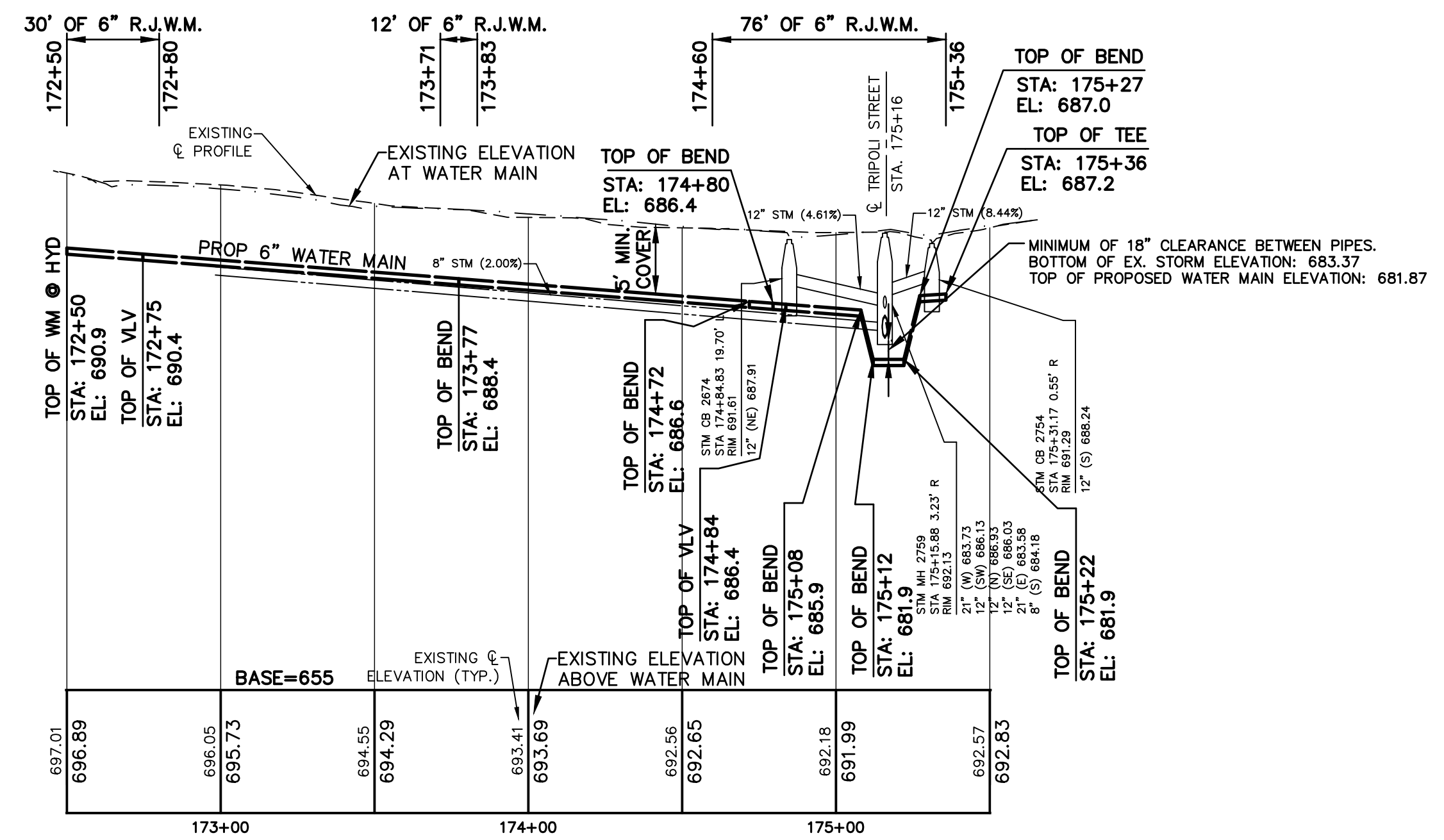
WATER MAIN GENERAL NOTES

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 LOCATIONS OF THE EXISTING WATER SERVICES AND SEWER LATERALS SHOWN ARE APPROXIMATE AND ACTUAL LOCATIONS MAY VARY. THE CONTRACTOR IS TO VERIFY THE LOCATIONS OF EXISTING SERVICES (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, 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



PLACE:
 (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 (#3516, #3517, #3521, #3524)



WATER MAIN

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

City of Grand Rapids
 Public Services
 Engineering Department

**WATER MAIN
 IN
 TRIPOLI COURT
 FROM SOUTH END
 TO
 TRIPOLI ST.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)**

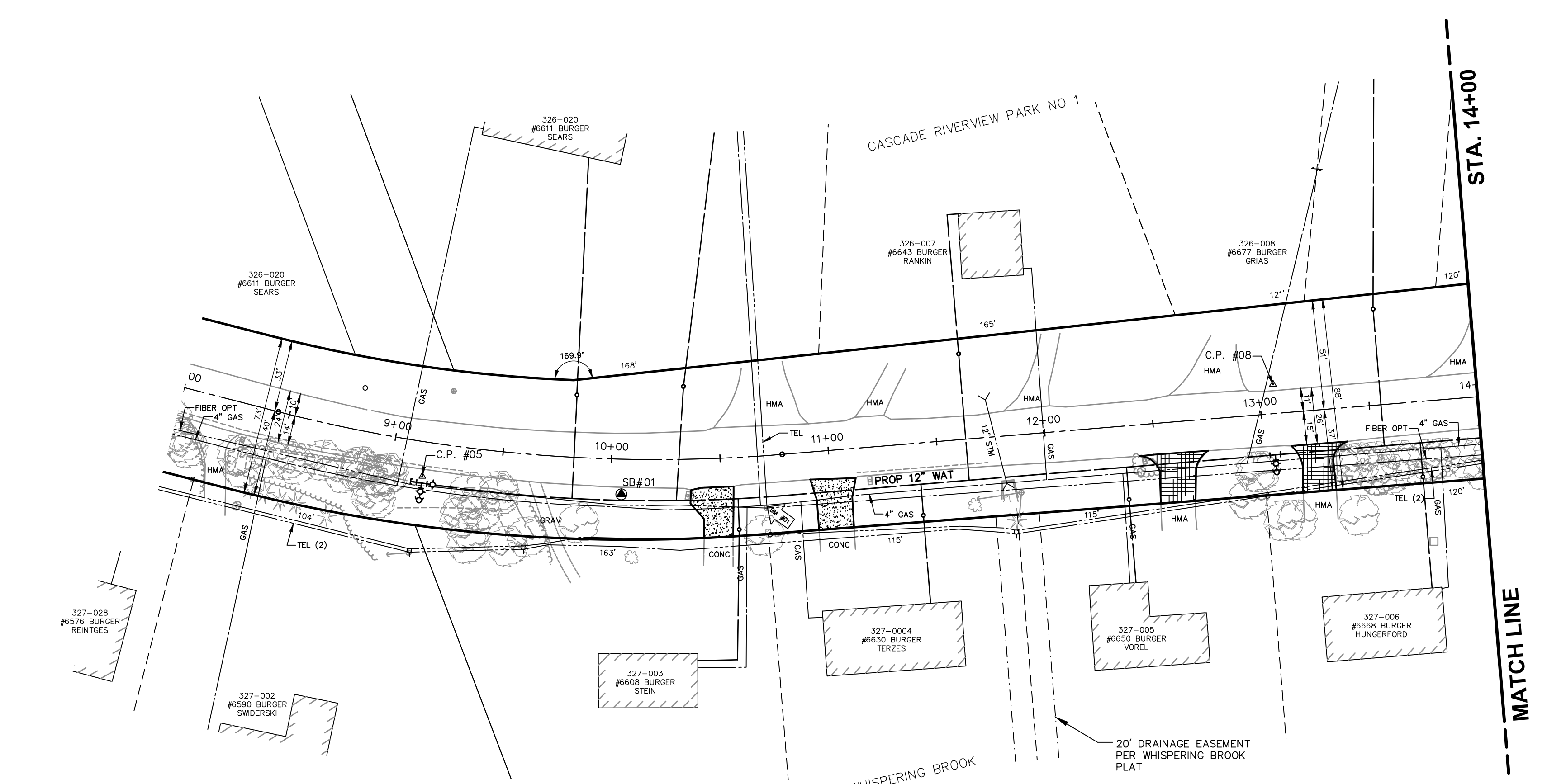
DRAFT
 02/2022

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

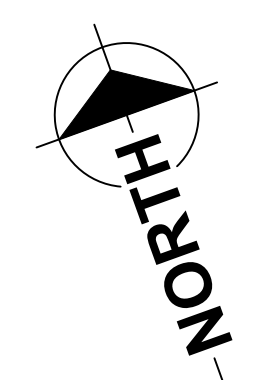
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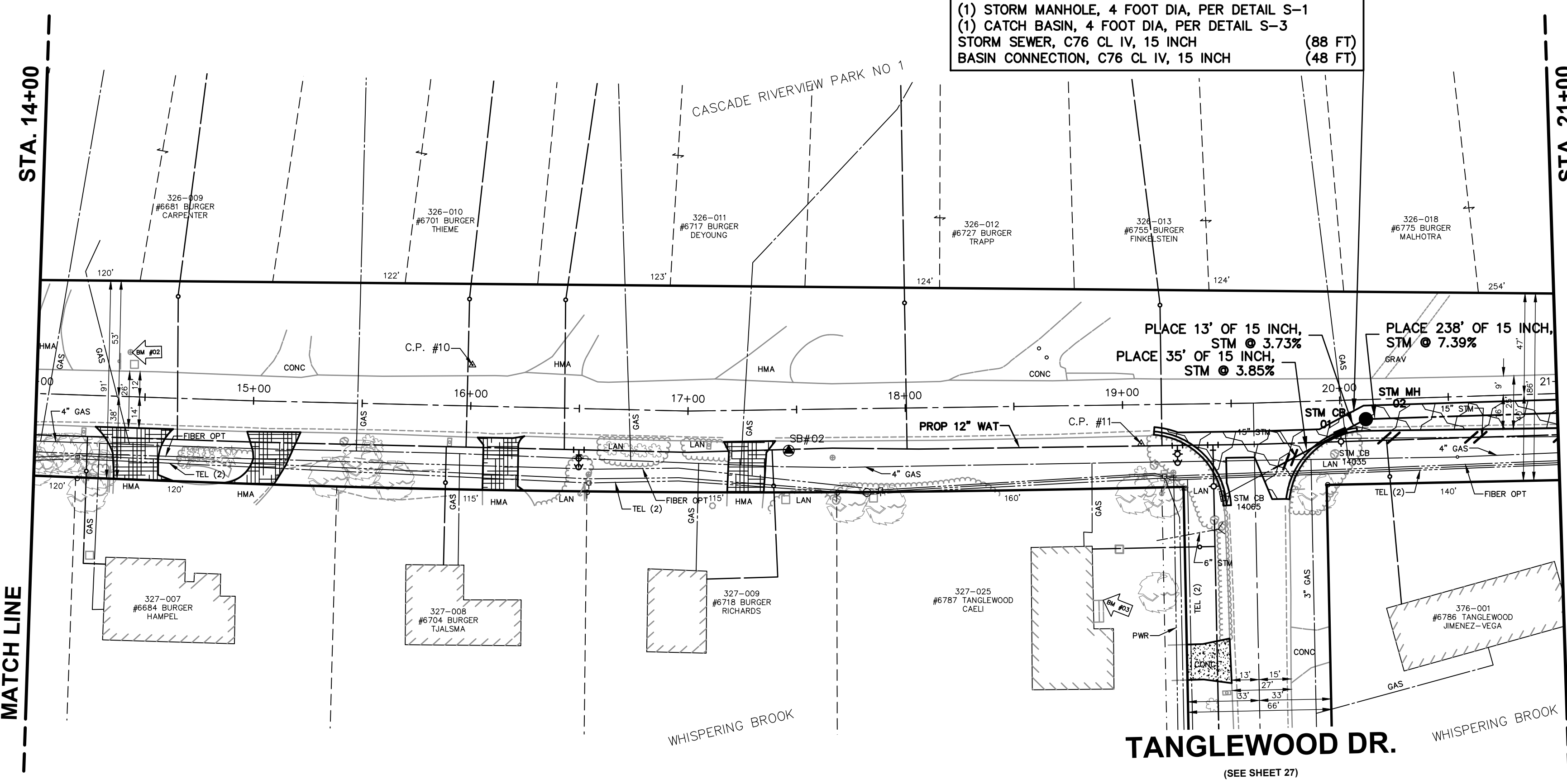
BENCHMARK #01
 B.M. ELE. 734.31 - BM @ 6608 BURGER 25 FT EAST OF DRIVE AND 25 FT SOUTH OF CENTERLINE. SET RR SPIKE NORTH SIDE PP 1.0 FT ABOVE GROUND.

CONTROL POINTS
 #05 - P&N TRAV CAP 3FT S OF FW 4FT W OF BW - ELE. 733.94
 #08 - P&N TRAV CAP 3FT N OF EB 25FT E OF DR @ 6677 - ELE. 733.14



SCALE
 PLAN 1"=40'

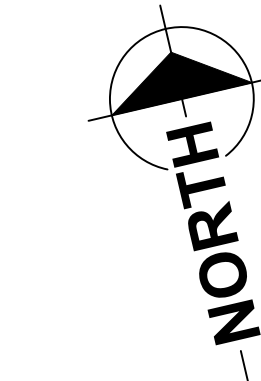
PLACE:
 (1) STORM MANHOLE, 4 FOOT DIA, PER DETAIL S-1
 (1) CATCH BASIN, 4 FOOT DIA, PER DETAIL S-3
 STORM SEWER, C76 CL IV, 15 INCH (88 FT)
 BASIN CONNECTION, C76 CL IV, 15 INCH (48 FT)



BENCHMARK #02
 B.M. ELE. 731.09 - BM @ 6681 BURGER FOUND BOAT SPIKE EAST SIDE PP 1.0 FT ABOVE GROUND. 30FT NORTH OF CENTERLINE.

BENCHMARK #03
 B.M. ELE. 699.80 - BM NE CORNER BOTTOM STEP 6787 TANGLEWOOD

CONTROL POINTS
 C.P. #10 - P&N TRAV CAP 3FT N OF EB @ 6704 - ELE. 724.43
 C.P. #11 - P&N TRAV CAP 4FT S OF EB BURGER 4FT W OF LANDSCAPE ROCKS - ELE. 698.69



LEGEND

- PLACE "CURB AND GUTTER ____"
- PLACE 4" OF TOPSOIL, INCLUDING SEED, FERTILIZER AND MULCH (PAID FOR AS "____")
- ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "DR STRUCTURE COVER, ADJ. SPECIAL" AND/OR "DR STRUCTURE COVER, SPECIAL") (SEE DETAIL P-228 (MODIFIED)). ALL CATCH BASIN CASTING ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "DR STRUCTURE COVER, ADJ. SPECIAL" AND/OR "DR STRUCTURE COVER, SPECIAL")
- PLACE ____ LIFTS OF 2.0" HMA, ____ LBS/SQ.YD (PAID FOR AS "____"). PLACE ____ AGGREGATE BASE (PAID FOR AS "____") (SEE CROSS-SECTION SHEET FOR MORE INFORMATION).
- PLACE ____ CONCRETE DRIVE APPROACH, PER DETAIL P-3A (PAID FOR AS "____") EXCEPT WHERE NOTED OTHERWISE OR AS OTHERWISE REQUIRED BY ENGINEER.
- PLACE ____ HMA, ____ LBS/SQ.YD. (PAID FOR AS "____"). PLACE ____ AGGREGATE BASE AND SUBBASE (PAID FOR AS "____") (SEE CROSS-SECTION SHEET FOR MORE INFORMATION).

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.

IMPROVEMENTS

SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 BURGER DRIVE**

FROM 100' EAST OF WESTRIDGE DR.
 TO
 GOODWOOD DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)

DRAFT
 02/2022

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.

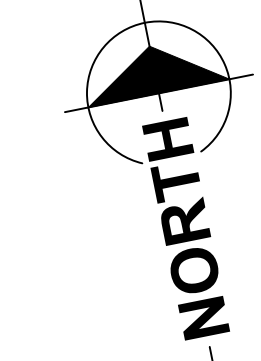
REVISIONS		
NO.	DATE	DESCRIPTION

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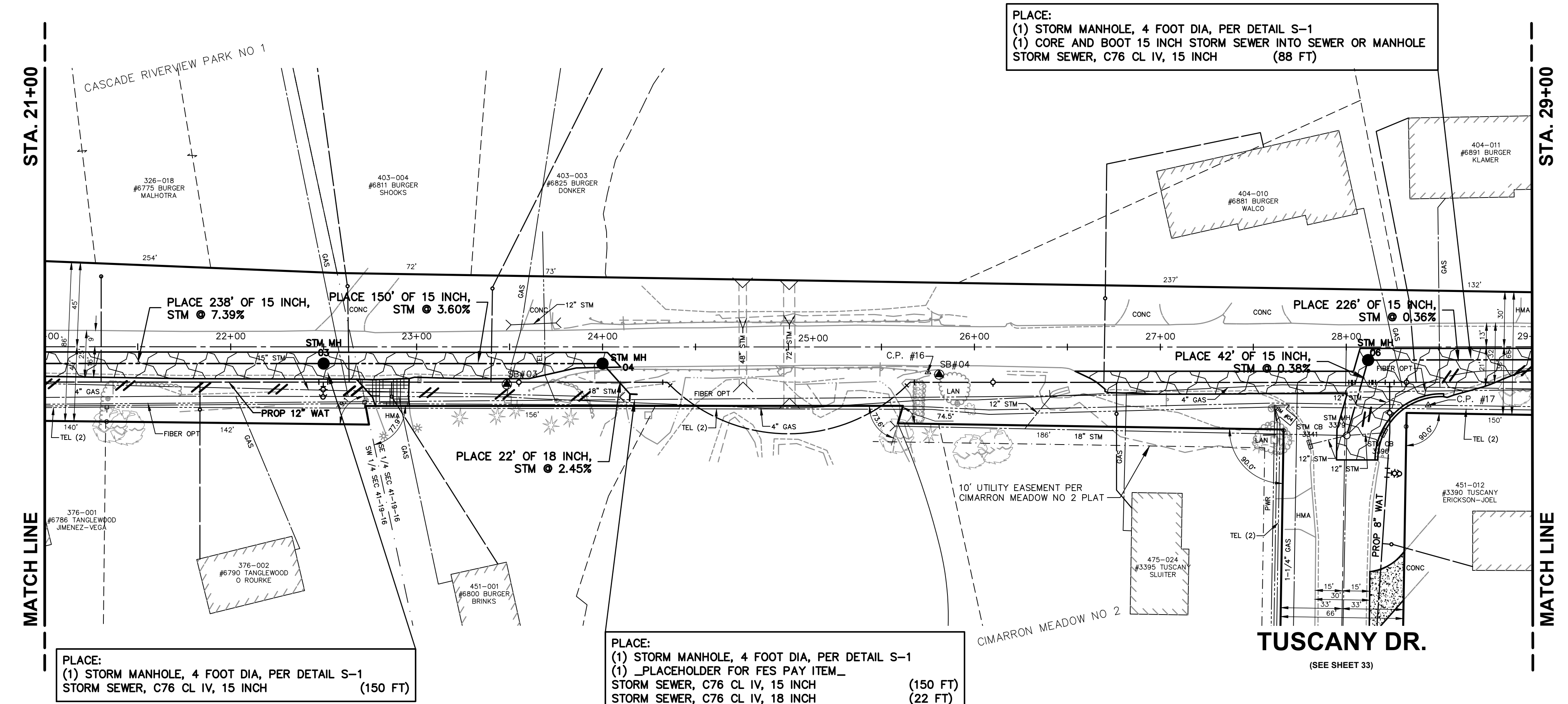
PLACE:
 (1) STORM MANHOLE, 4 FOOT DIA, PER DETAIL S-1
 (1) CORE AND BOOT 15 INCH STORM SEWER INTO SEWER OR MANHOLE
 STORM SEWER, C76 CL IV, 15 INCH (88 FT)

BENCHMARK #04
 B.M. ELE. 672.42 - BM SET RR SPIKE
 N-SIDE PP. SW QUAD BURGER & TUSCANY

CONTROL POINTS
 C.P. #16 - CP TRAV CAP 4.5 FT E OF
 END GUARDRAIL 3.5 SW EB BURGER -
 ELE. 666.88
 C.P. #17 - CP / P&N TRAV CAP 3' S
 OF B/C. 9' W OF E END CURB - ELE.
 672.62



SCALE
 PLAN 1"=40'



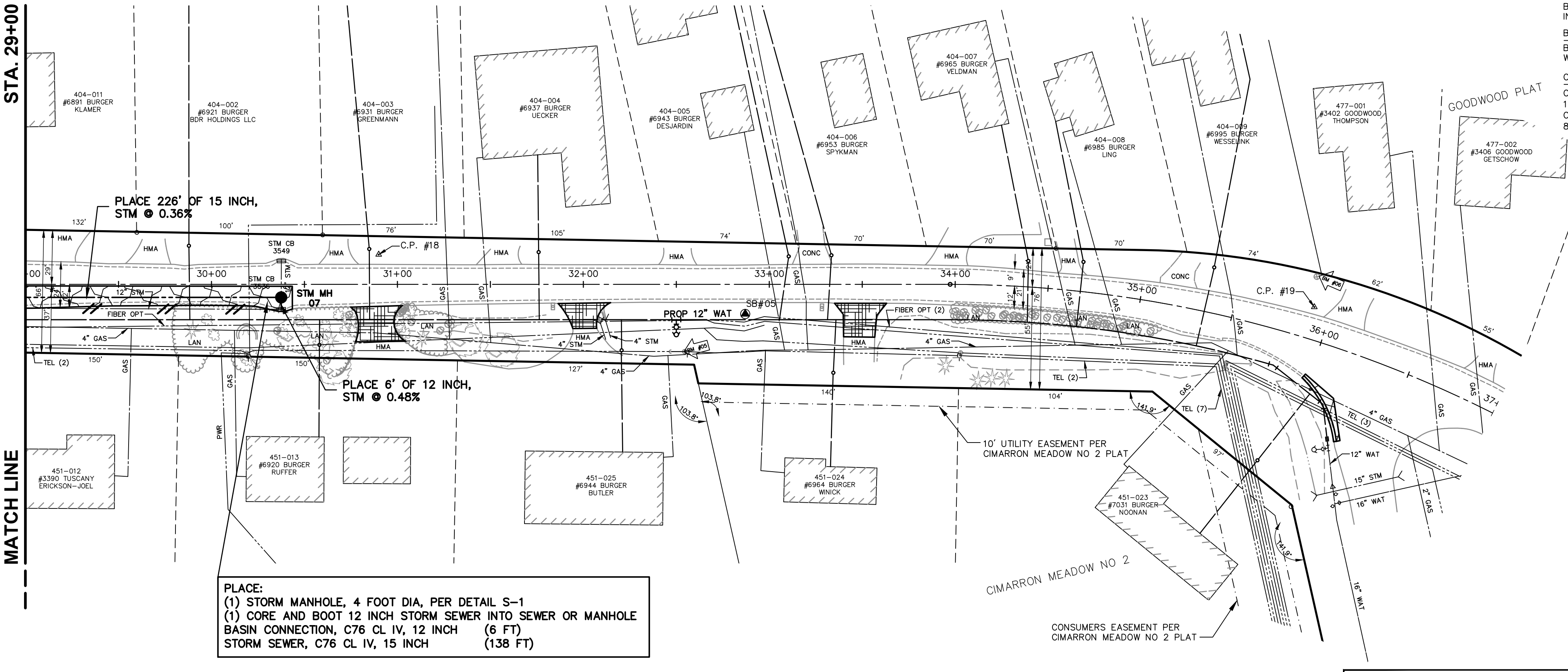
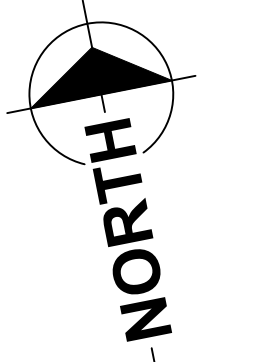
PLACE:
 (1) STORM MANHOLE, 4 FOOT DIA, PER DETAIL S-1
 STORM SEWER, C76 CL IV, 15 INCH (150 FT)

PLACE:
 (1) STORM MANHOLE, 4 FOOT DIA, PER DETAIL S-1
 (1) PLACEHOLDER FOR FES PAY ITEM
 STORM SEWER, C76 CL IV, 15 INCH (150 FT)
 STORM SEWER, C76 CL IV, 18 INCH (22 FT)

BENCHMARK #05
 B.M. ELE. 674.32 - BM FOUND RR SPIKE
 IN W SIDE PP @ 6944 BURGER

BENCHMARK #06
 B.M. ELE. 684.06 - BM SET RR SPIKE IN
 W SIDE PP @ 6995 BURGER

CONTROL POINTS
 C.P. #18 - CP TRAV CAP 5' N OF E/B.
 15' E OF E/B DR TO 6931 - ELE. 668.82
 C.P. #19 - CP TRAV CAP 4' N OF E/B.
 8' W OF E/B DR TO 3402 - ELE. 665.15



PLACE:
 (1) STORM MANHOLE, 4 FOOT DIA, PER DETAIL S-1
 (1) CORE AND BOOT 12 INCH STORM SEWER INTO SEWER OR MANHOLE
 BASIN CONNECTION, C76 CL IV, 12 INCH (6 FT)
 STORM SEWER, C76 CL IV, 15 INCH (138 FT)

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
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REVISIONS		
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LEGEND

- PLACE "CURB AND GUTTER ____"
- PLACE 4" OF TOPSOIL, INCLUDING SEED, FERTILIZER AND MULCH (PAID FOR AS "____")
- ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "DR STRUCTURE COVER, ADJ. SPECIAL" AND/OR "DR STRUCTURE COVER, SPECIAL") (SEE DETAIL P-229 (MODIFIED)). ALL CATCH BASIN CASTING ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "DR STRUCTURE COVER, ADJ. SPECIAL" AND/OR "DR STRUCTURE COVER, SPECIAL")
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IMPROVEMENTS

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

City of Grand Rapids
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**IMPROVEMENTS
 IN
 BURGER DRIVE**

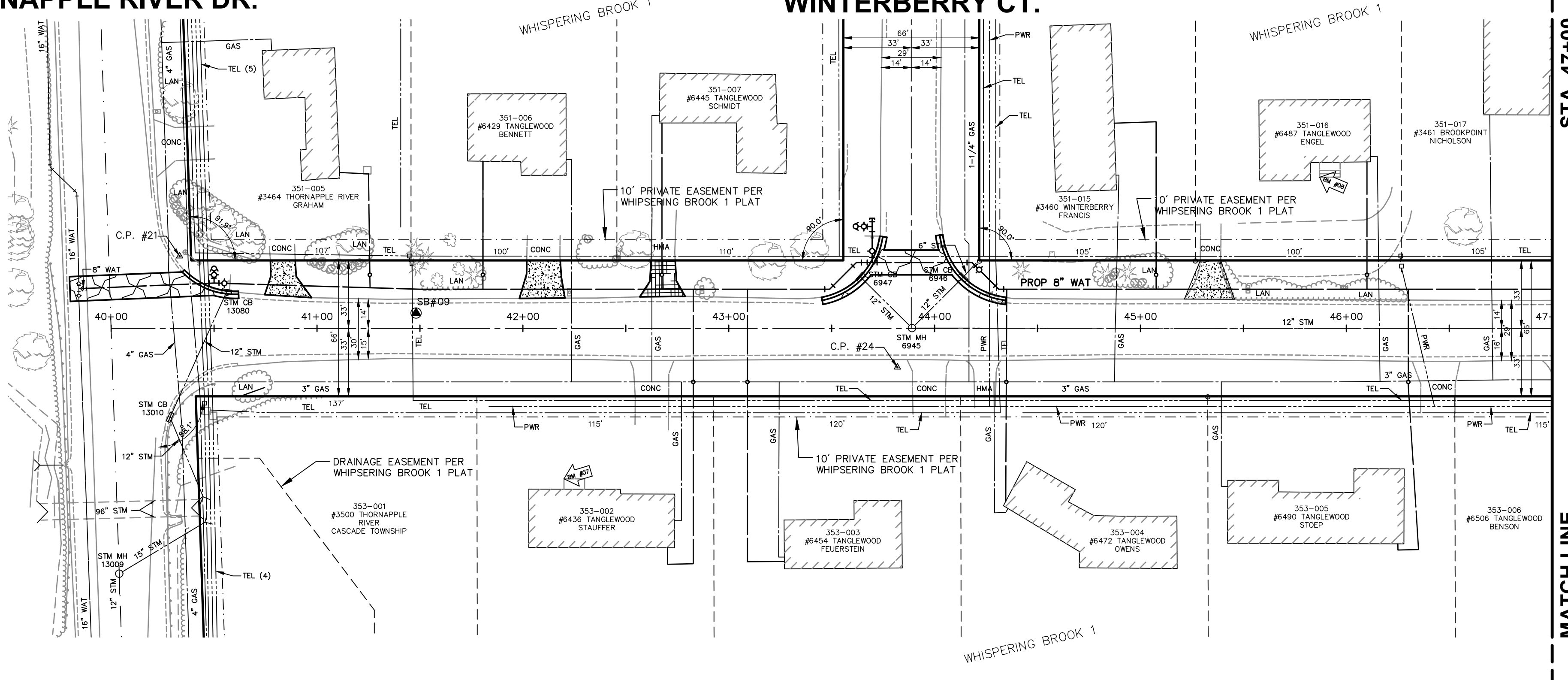
FROM 100' EAST OF WESTRIDGE DR.
 TO
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 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)

DRAFT
 02/2022

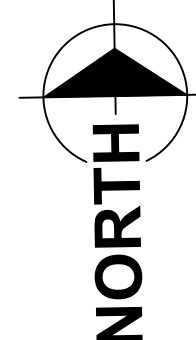
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THORNAPPLE RIVER DR.

WINTERBERRY CT.



BENCHMARK #07
 B.M. ELE. 687.03 - BM NW CORNER FRONT LANDING @ 6436 TANGLEWOOD
 BENCHMARK #08
 B.M. ELE. 690.38 - BM SW CORNER CONC FRONT STEP @ 6487 TANGLEWOOD
 CONTROL POINTS
 C.P. #21 - CP TRAV CAP 2FT NE OF BC 3FT FROM PLP - ELE. 686.34
 C.P. #24 - CP TRAV CAP 4FT S EB TANGLEWOOD 6FT W EDGE DRIVE 6454 - ELE. 686.91

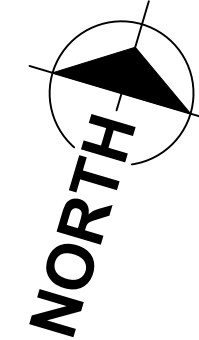


SCALES
 PLAN 1"=40'

LEGEND

- PLACE "CURB AND GUTTER ____"
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BENCHMARK #09
 B.M. ELE. 693.63 - BM SE CORNER CONC FRONT STEP @ 3461 BROOKPOINT
 BENCHMARK #10
 B.M. ELE. 685.49 - BM NW CORNER SECOND STEP @ 6542 TANGLEWOOD 1.3 FT ABOVE GROUND
 BENCHMARK #11
 B.M. ELE. 684.07 - BM MAG NAIL IN ROOT ON 18 IN SPRUCE 2.5 FT SE SPLIT RAIL FENCE @ 6600 TANGLEWOOD
 CONTROL POINTS
 C.P. #27 - CP TRAV CAP 3FT SE CB AT 6542 TANGLEWOOD - ELE. 681.48
 C.P. #28 - CP TRAV CAP 4FT SE MB 6583 MISTY LN 3FT SW EB - ELE. 684.30



IMPROVEMENTS GENERAL NOTES

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IMPROVEMENTS

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**IMPROVEMENTS
 IN
 TANGLEWOOD DRIVE**
 FROM THORNAPPLE RIVER DR.
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 WATER MAIN - PHASE 1)

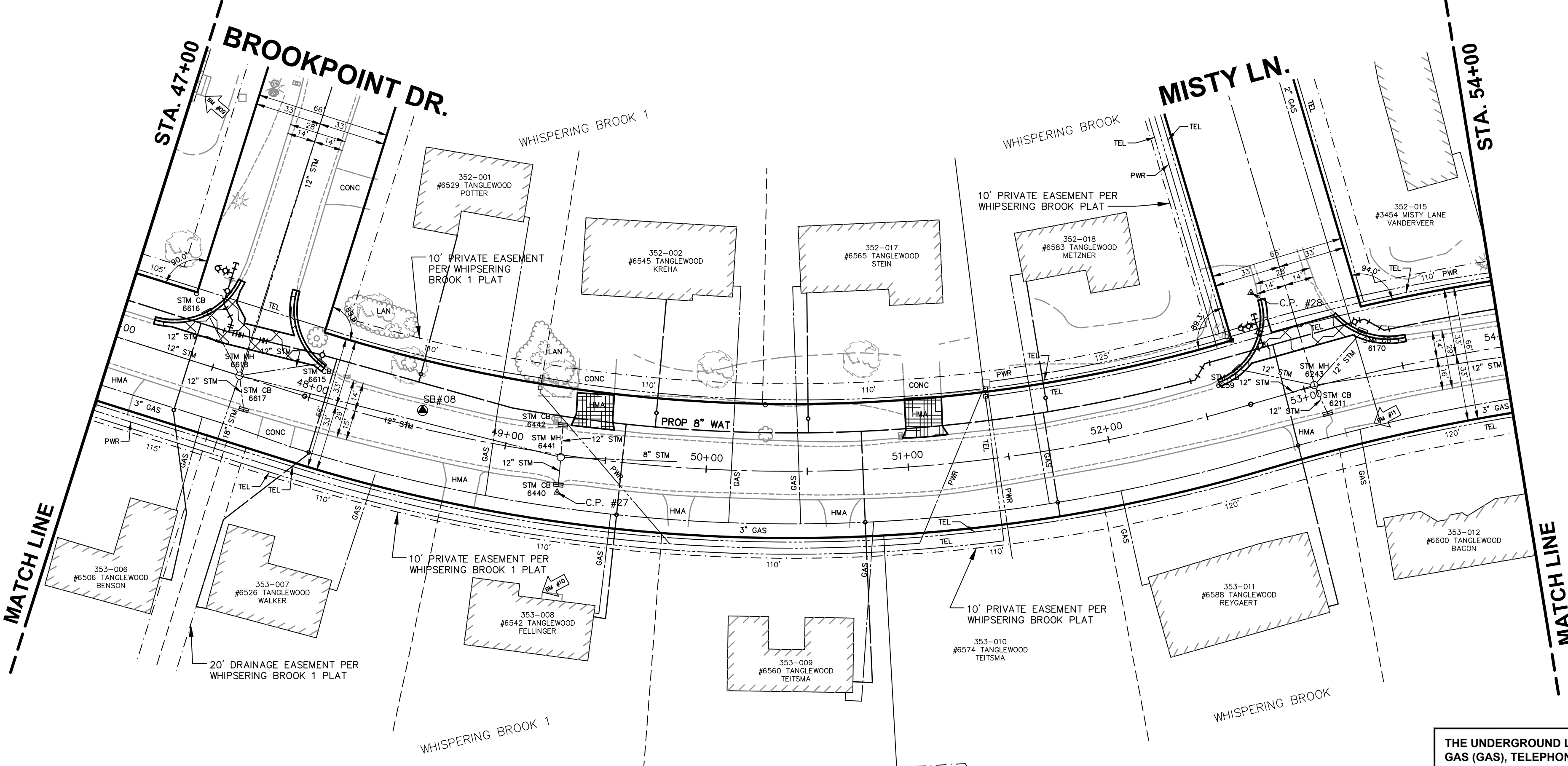
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THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS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

REVISIONS

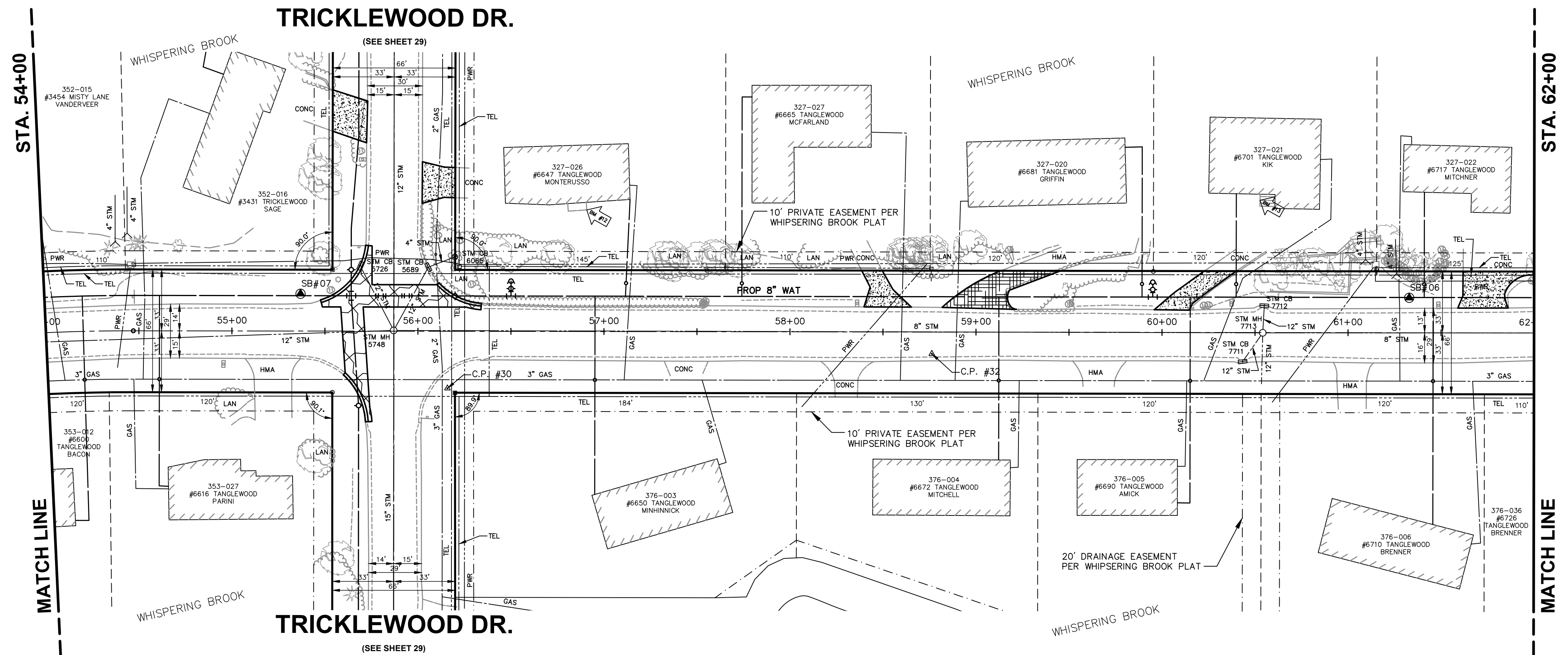
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MATCH LINE

MATCH LINE



BENCHMARK #12
 B.M. ELE. 690.43 - BM NE CORNER
 BOTTOM FRONT STEP @ 6647 TANGLEWOOD

BENCHMARK #13
 B.M. ELE. 696.02 - BM SW CORNER THIRD
 STEP FROM BOTTOM @ 6701 TANGLEWOOD

CONTROL POINTS
 C.P. #30 - CP TRAV CAP 6FT TO BC
 MIDPOINT SE CORNER TANGLEWOOD AND
 TRICKLEWOOD - ELE. 684.03
 C.P. #32 - CP MAG NAIL IN PAVEMENT
 4FT NW EB IN LINE WITH MAPLE AT 6672
 TANGLEWOOD - ELE. 682.86



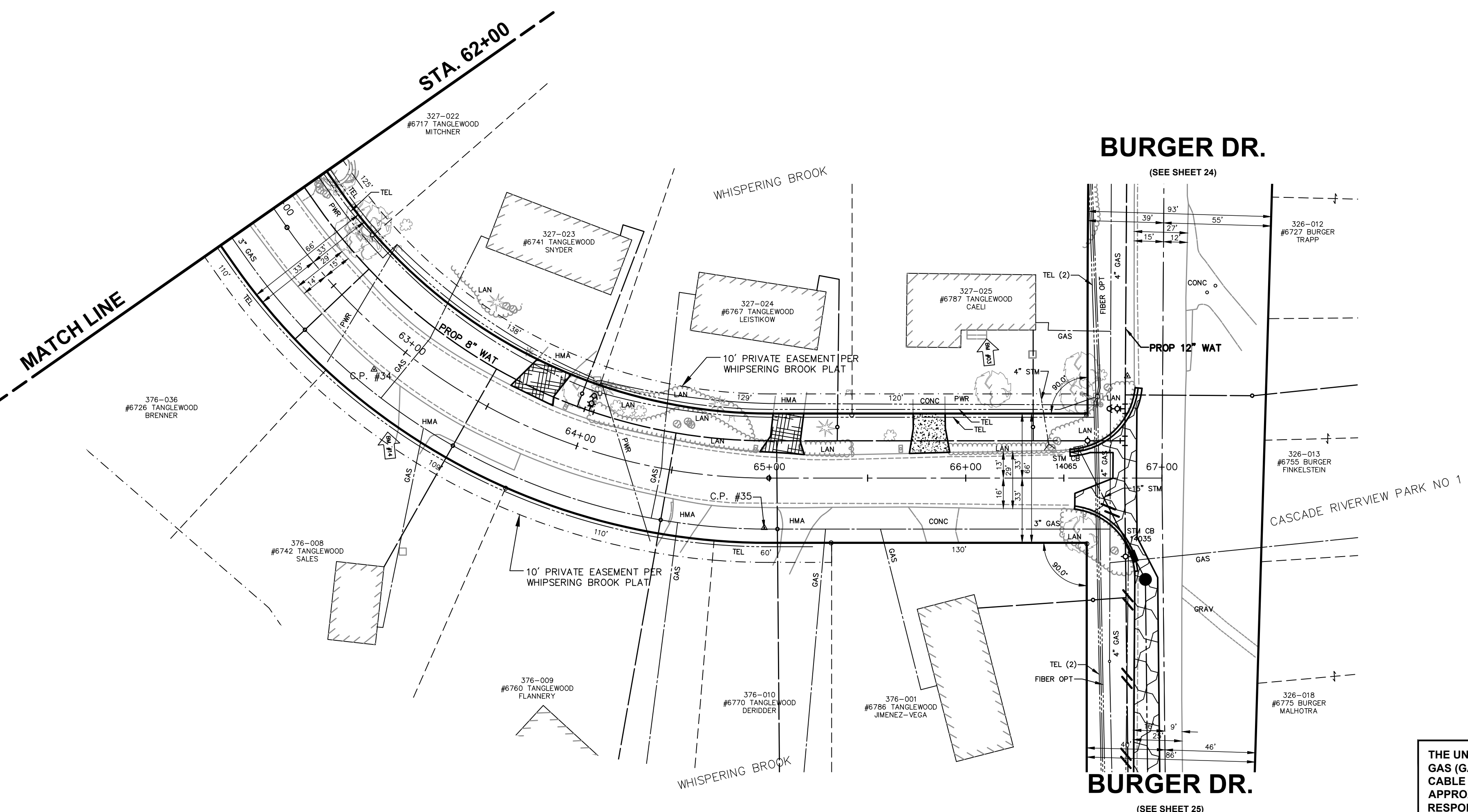
SCALE
 PLAN 1" = 40'

LEGEND

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IMPROVEMENTS GENERAL NOTES

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BENCHMARK #03
 B.M. ELE. 699.80 - BM NE CORNER
 BOTTOM STEP @ 6787 TANGLEWOOD

BENCHMARK #09
 B.M. ELE. 692.29 - BM NAIL IN CAP N
 FACE OF 24 IN OAK AT GROUND 5 FT W
 OF DRIVE @ 6742 TANGLEWOOD

CONTROL POINTS
 C.P. #34 - CP TRAV CAP 3FT SW MB 6742
 TANGLEWOOD 2FT SE E/B - ELE. 691.47
 C.P. #35 - CP TRAV CAP 7FT E MB 6770
 TANGLEWOOD 9FT S EDB - ELE. 698.32



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IMPROVEMENTS

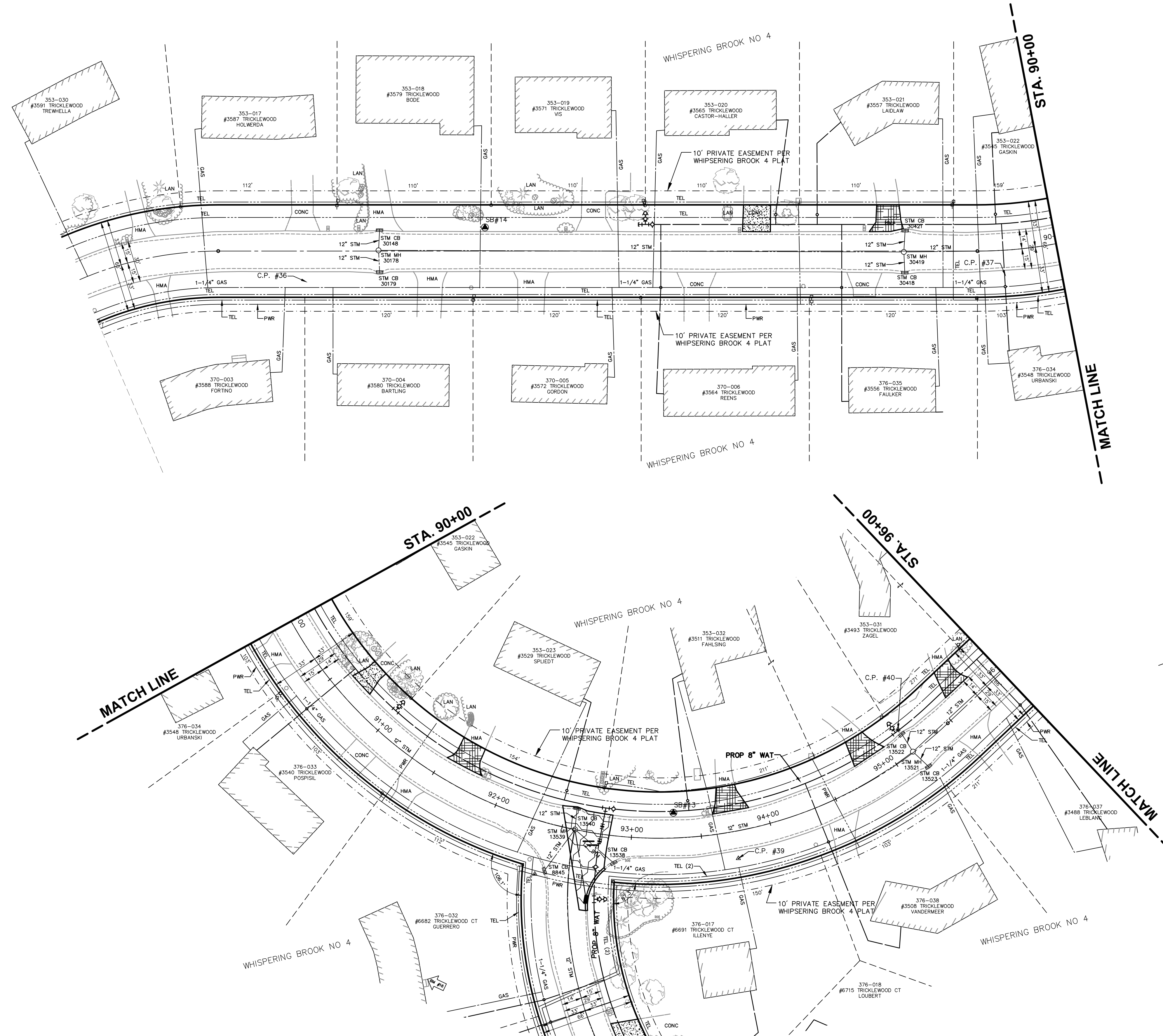
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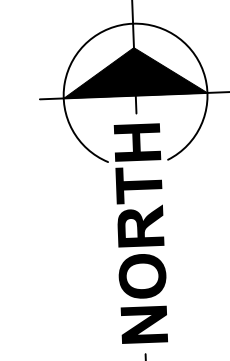
**IMPROVEMENTS
 IN
 TANGLEWOOD DRIVE**
 FROM THORNAPPLE RIVER DR.
 TO
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 WATER MAIN - PHASE 1)

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BENCHMARK #15
 B.M. ELE. 731.51 - BM TOP NE CORNER
 BOTTOM CONC STEP 0.7 FT ABOVE WALK
 @ #3588 TRICKLEWOOD

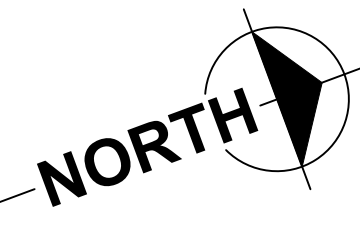
CONTROL POINTS
 C.P. #36 - CP / P&N TRAV CAP 3FT TO
 ROCKS IN YARD 3588 TRICKLEWOOD - ELE.
 728.46
 C.P. #37 - CP / P&N TRAV CAP 3FT TO EB
 IN LINE WITH WELL 3548 TRICKLEWOOD - ELE.
 721.95



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

BENCHMARK #16
 B.M. ELE. 720.91 - BM NW CORNER
 FRONT STEP @ 6682 TRICKLEWOOD CT

CONTROL POINTS
 C.P. #39 - CP TRAV CAP 3FT E OF EB OPP
 CENTER SOUTH DRIVE OF 3511 - ELE. 700.94
 C.P. #40 - CP TRAV CAP 3FT EB AT CB S
 OF 3493 TRICKLEWOOD - ELE. 691.92



SCALES
 PLAN 1"=40'

LEGEND

	PLACE "CURB AND GUTTER ____"
	PLACE 4" OF TOPSOIL, INCLUDING SEED, FERTILIZER AND MULCH (PAID FOR AS "____")
	ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "DR STRUCTURE COVER, ADJ. SPECIAL" AND/OR "DR STRUCTURE COVER, SPECIAL") (SEE DETAIL P-229 (MODIFIED)). ALL CATCH BASIN CASTING ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "DR STRUCTURE COVER, ADJ. SPECIAL" AND/OR "DR STRUCTURE COVER, SPECIAL")
	PLACE ____ LIFTS OF 2.0" HMA, @ ____ LBS/SQ.YD (PAID FOR AS "____"). PLACE ____ AGGREGATE BASE (PAID FOR AS "____") (SEE CROSS-SECTION SHEET FOR MORE INFORMATION).
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	PLACE ____ HMA, @ ____ LBS/SQ.YD. (PAID FOR AS "____"). PLACE ____ AGGREGATE BASE AND SUBBASE (PAID FOR AS "____") (SEE CROSS-SECTION SHEET FOR MORE INFORMATION).

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.

IMPROVEMENTS

SURVEYED & DESIGNED BY:

Prein & Newhof
 Engineers • Surveyors • Environmental • Laboratory

City of Grand Rapids
 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 TRICKLEWOOD DRIVE**

FROM 250' SOUTH WEST OF TRICKLEWOOD CT.
 TO
 BROOKHILLS CT.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)

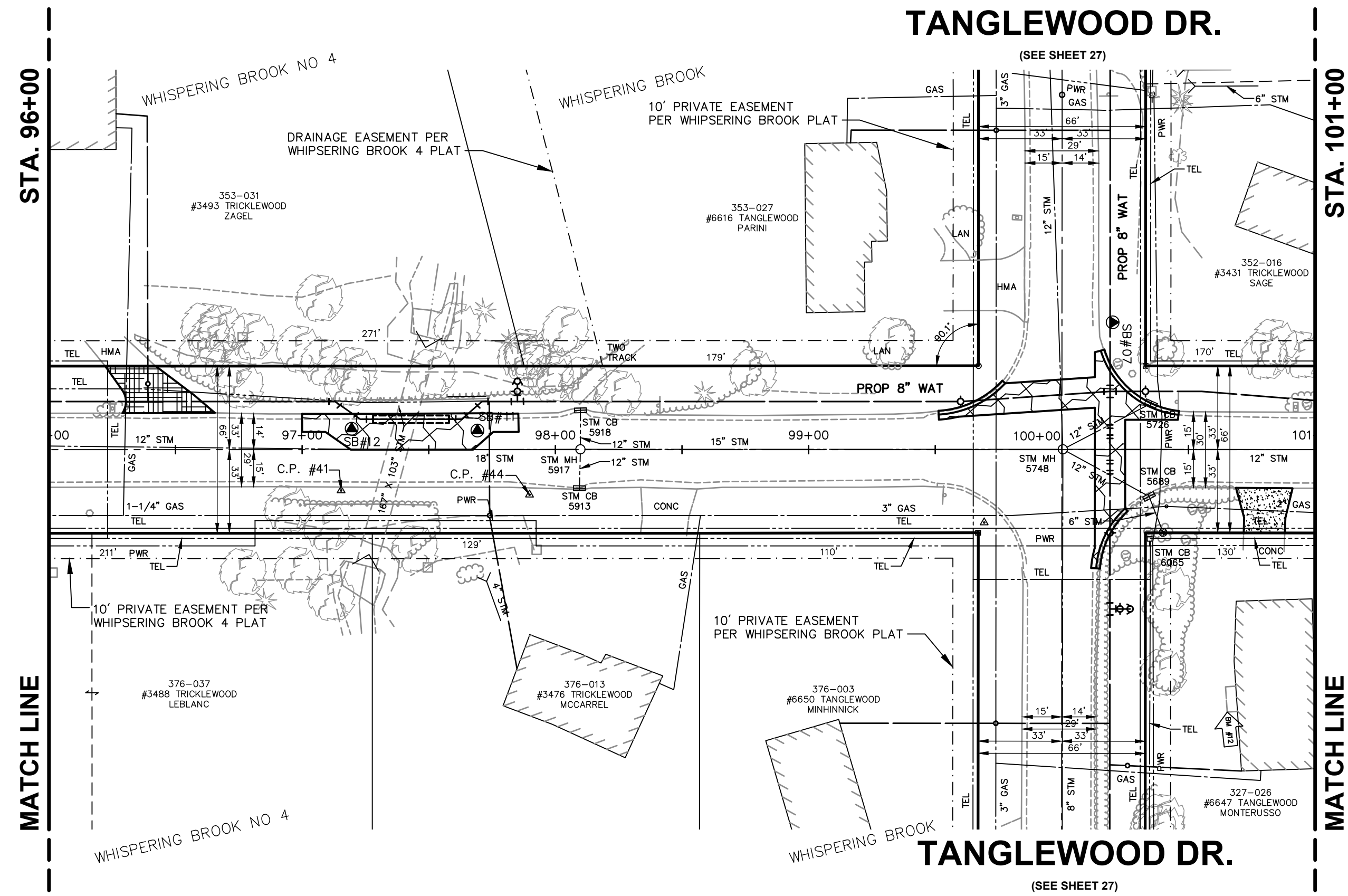
DRAFT
 02/2022

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REVISIONS		
NO.	DATE	DESCRIPTION

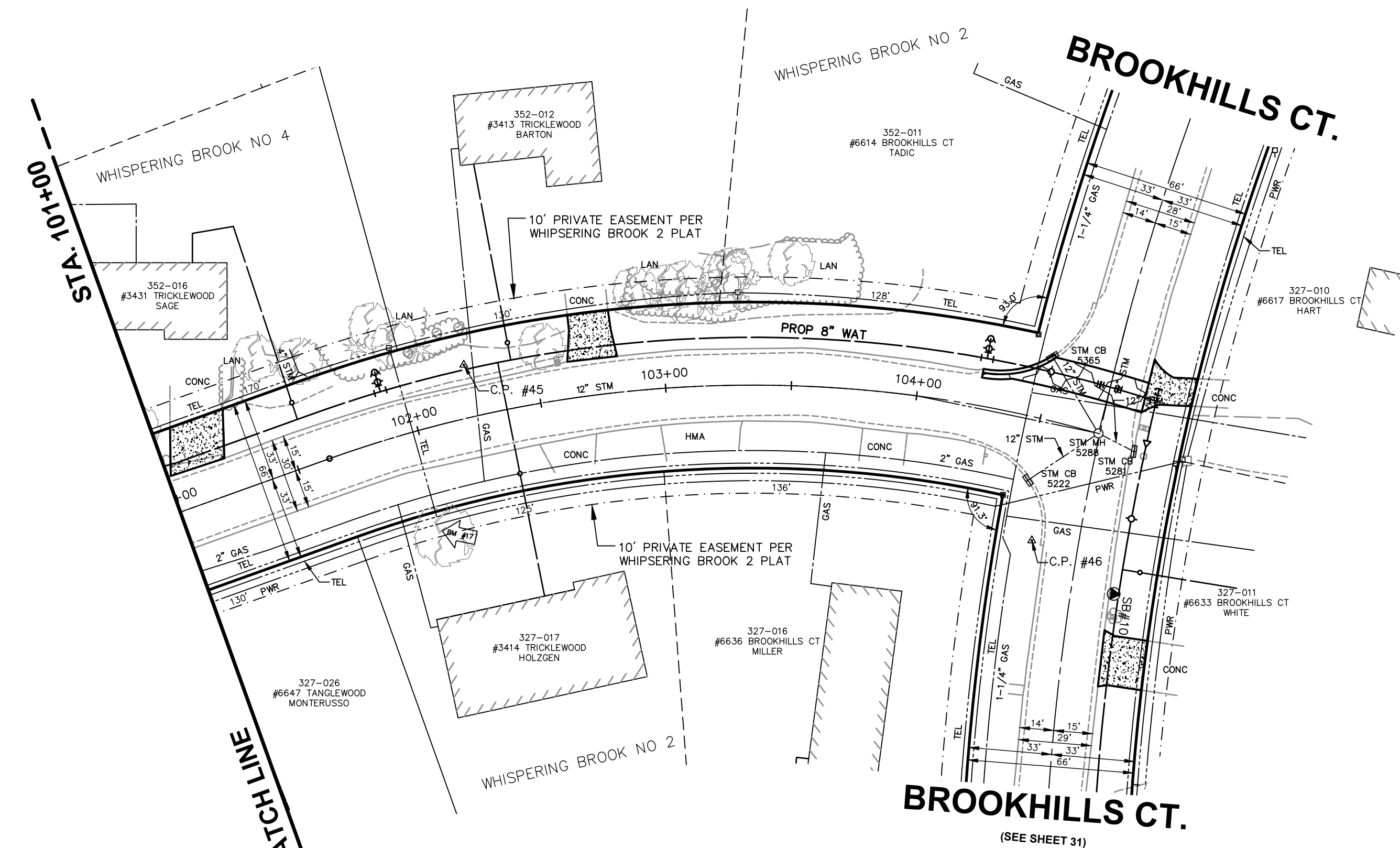
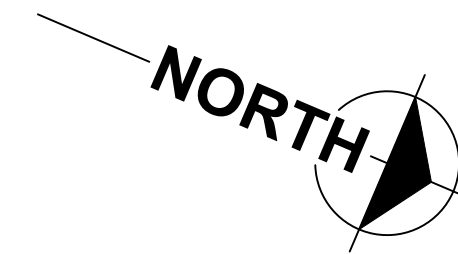
Drawn by <u>JDH</u>	GPF No. <u>5843</u>	Sheet No. <u>28 of 38</u>
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Check: Office <u>KEK</u>		

TRICKLEWOOD CT.
 (SEE SHEET 30)



BENCHMARK #12
 B.M. E.L.E. 690.43 - BM NE CORNER
 BOTTOM FRONT STEP @ 6647 TANGLEWOOD

CONTROL POINTS
 C.P. #41 - CP TRAV CAP 1FT ENE EB
 TRICKLEWOOD 5FT WSW GUARDRAIL - E.L.E.
 680.06
 C.P. #44 - CP TRAV CAP 3FT E OF EB -
 E.L.E. 677.58



BENCHMARK #17
 B.M. E.L.E. 699.33 - BM MAG NAIL IN BASE
 OF S SIDE MAPLE 30 FT E OF EDGE OF
 PAVEMENT AT 3414 TRICKLEWOOD

CONTROL POINTS
 C.P. #45 - CP TRAV CAP 7FT W EB 3413
 TRICKLEWOOD 19.5 NE HEMLOCK - E.L.E. 697.05
 C.P. #46 - CP TRAV CAP 3FT SW BC SE END
 CURB TRICKLEWOOD AND BROOKHILLS - E.L.E. 710.02



SCALE
 PLAN 1"=40'

LEGEND

	PLACE "CURB AND GUTTER ____"
	PLACE 4" OF TOPSOIL, INCLUDING SEED, FERTILIZER AND MULCH (PAID FOR AS "____")
	ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "DR STRUCTURE COVER, ADJ. SPECIAL" AND/OR "DR STRUCTURE COVER, SPECIAL") (SEE DETAIL P-229 (MODIFIED)). ALL CATCH BASIN CASTING ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "DR STRUCTURE COVER, ADJ. SPECIAL" AND/OR "DR STRUCTURE COVER, SPECIAL")
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IMPROVEMENTS

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

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**IMPROVEMENTS
 IN
 TRICKLEWOOD DRIVE**
 FROM 250' SOUTH WEST OF TRICKLEWOOD CT.
 TO
 BROOKHILLS CT.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)

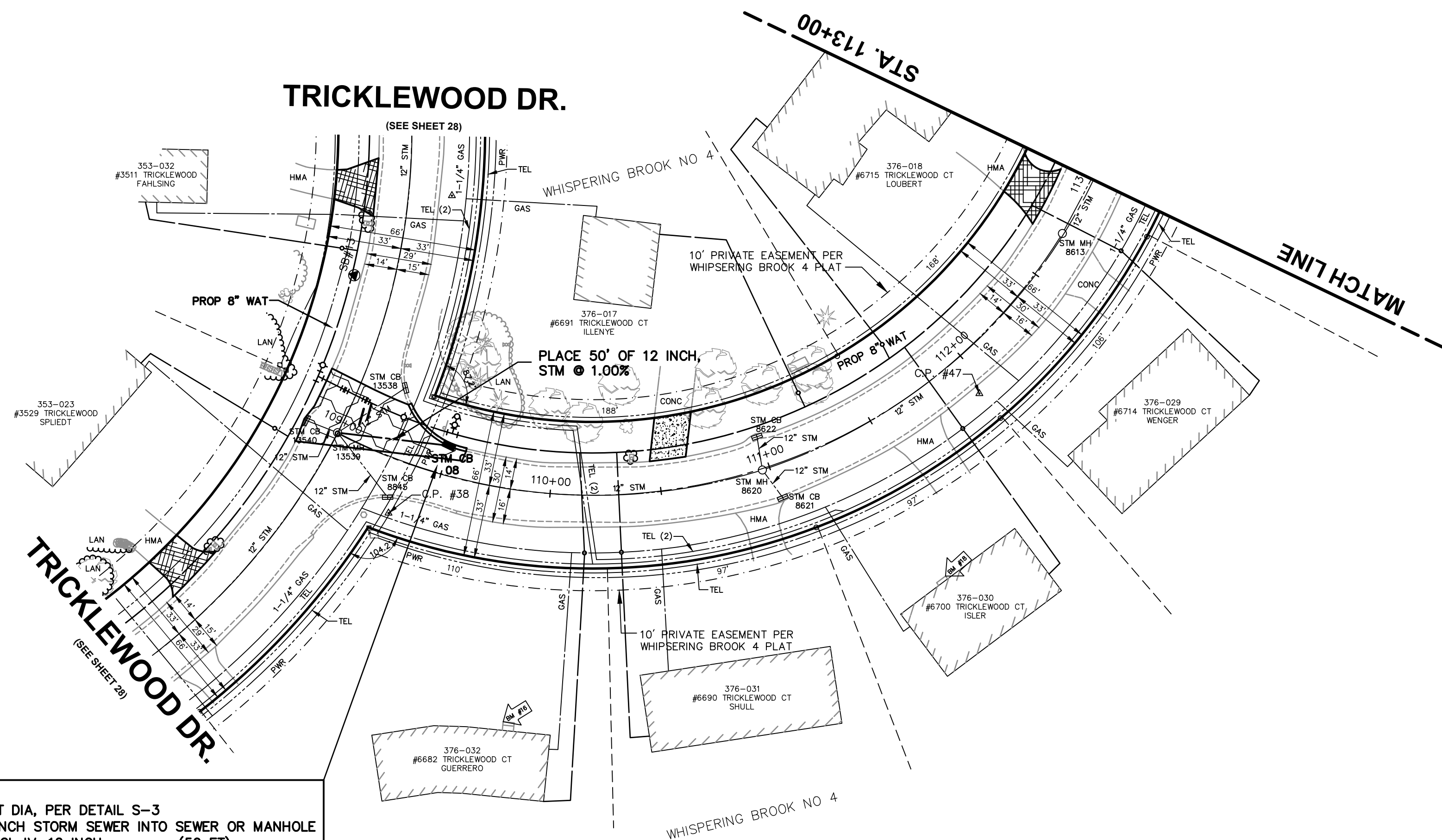
DRAFT
 02/2022

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REVISIONS

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Drawn by JDH GPF No. 5843 Sheet No. 29 of 38
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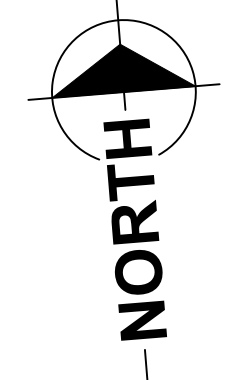


PLACE:
 (1) CATCH BASIN, 4 FOOT DIA, PER DETAIL S-3
 (1) CORE AND BOOT 12 INCH STORM SEWER INTO SEWER OR MANHOLE BASIN CONNECTION, C76 CL IV, 12 INCH (50 FT)

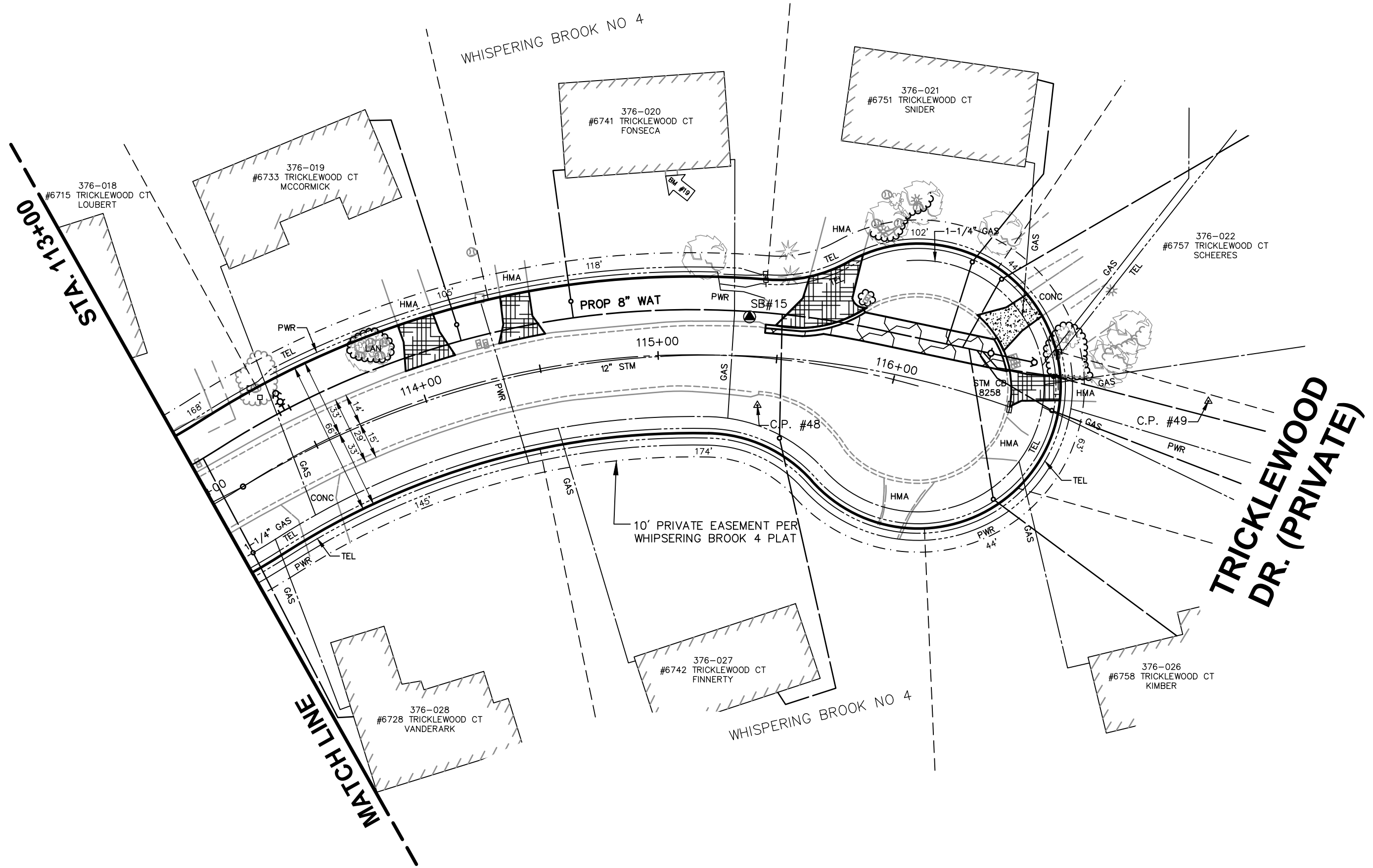
BENCHMARK #16
 B.M. ELE. 720.91 - BM NW CORNER FRONT STEP @ 6662 TRICKLEWOOD CT

BENCHMARK #18
 B.M. ELE. 718.97 - BM NE CORNER BOTTOM FRONT STEP @ 6700 TRICKLEWOOD CT

CONTROL POINTS
 C.P. #38 - CP TRAV CAP 6FT S BC AT CB 11FT E LIGHT POLE - ELE. 708.29
 C.P. #47 - CP TRAV CAP 6FT S EB IN LINE WITH TPED 6700 TRICKLEWOOD CT - ELE. 717.68

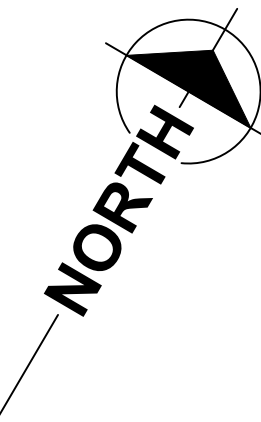


SCALE
 PLAN 1"=40'



BENCHMARK #19
 B.M. ELE. 726.58 - BM SW CORNER BOTTOM FRONT STEP @ 6741 TRICKLEWOOD CT

CONTROL POINTS
 C.P. #48 - CP TRAV CAP 3FT SE BC END CURB AT CUL DE SAC TRICKLEWOOD CT - ELE. 722.51
 C.P. #49 - CP NAIL IN PAVEMENT 2 FT S EDGE DRIVE 6801 TRICKLEWOOD CT 100FT FROM CUL DE SAC - ELE. 716.29



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REVISIONS

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LEGEND

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- ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "DR STRUCTURE COVER, ADJ. SPECIAL" AND/OR "DR STRUCTURE COVER, SPECIAL") (SEE DETAIL P-22B (MODIFIED)). ALL CATCH BASIN CASTING ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "DR STRUCTURE COVER, ADJ. SPECIAL" AND/OR "DR STRUCTURE COVER, SPECIAL")
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IMPROVEMENTS

SURVEYED & DESIGNED BY:

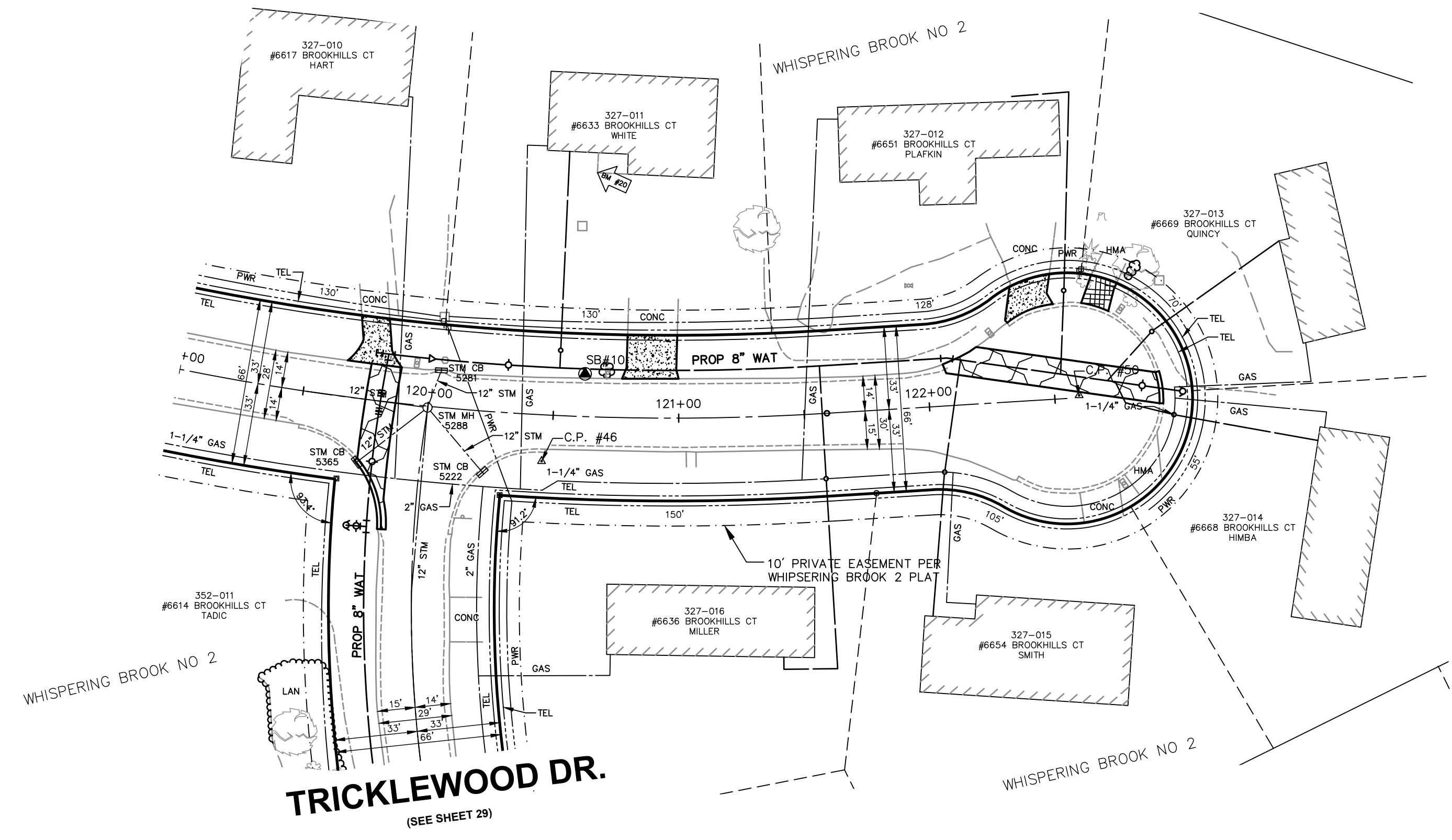
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 Public Services
 Engineering Department

IMPROVEMENTS IN TRICKLEWOOD COURT FROM TRICKLEWOOD DRIVE TO EAST END (BURGER-GOODWOOD NEIGHBORHOOD WATER MAIN - PHASE 1)

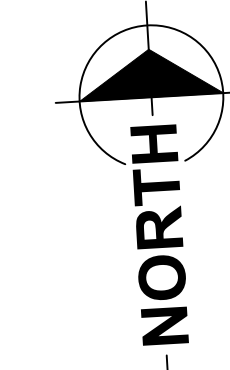
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BENCHMARK #20
 B.M. ELE. 719.80 - BM FRONT W CORNER
 OF CONC PORCH @ 6633 BROOKHILLS CT

CONTROL POINTS
 C.P. #46 - CP TRAV CAP 3FT SW BC SE
 END CURB TRICKLEWOOD AND BROOKHILLS
 - ELE. 710.02
 C.P. #50 - CP NAIL IN PAVEMENT
 CENTER OF BROOKHILLS CUL DE SAC -
 ELE. 722.17



SCALE
 PLAN 1" = 40'

LEGEND

	PLACE "CURB AND GUTTER ____"
	PLACE 4" OF TOPSOIL, INCLUDING SEED, FERTILIZER AND MULCH (PAID FOR AS "____")
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IMPROVEMENTS

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 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 BROOKHILLS COURT
 FROM TRICKLEWOOD DR.
 TO
 EAST END
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)**

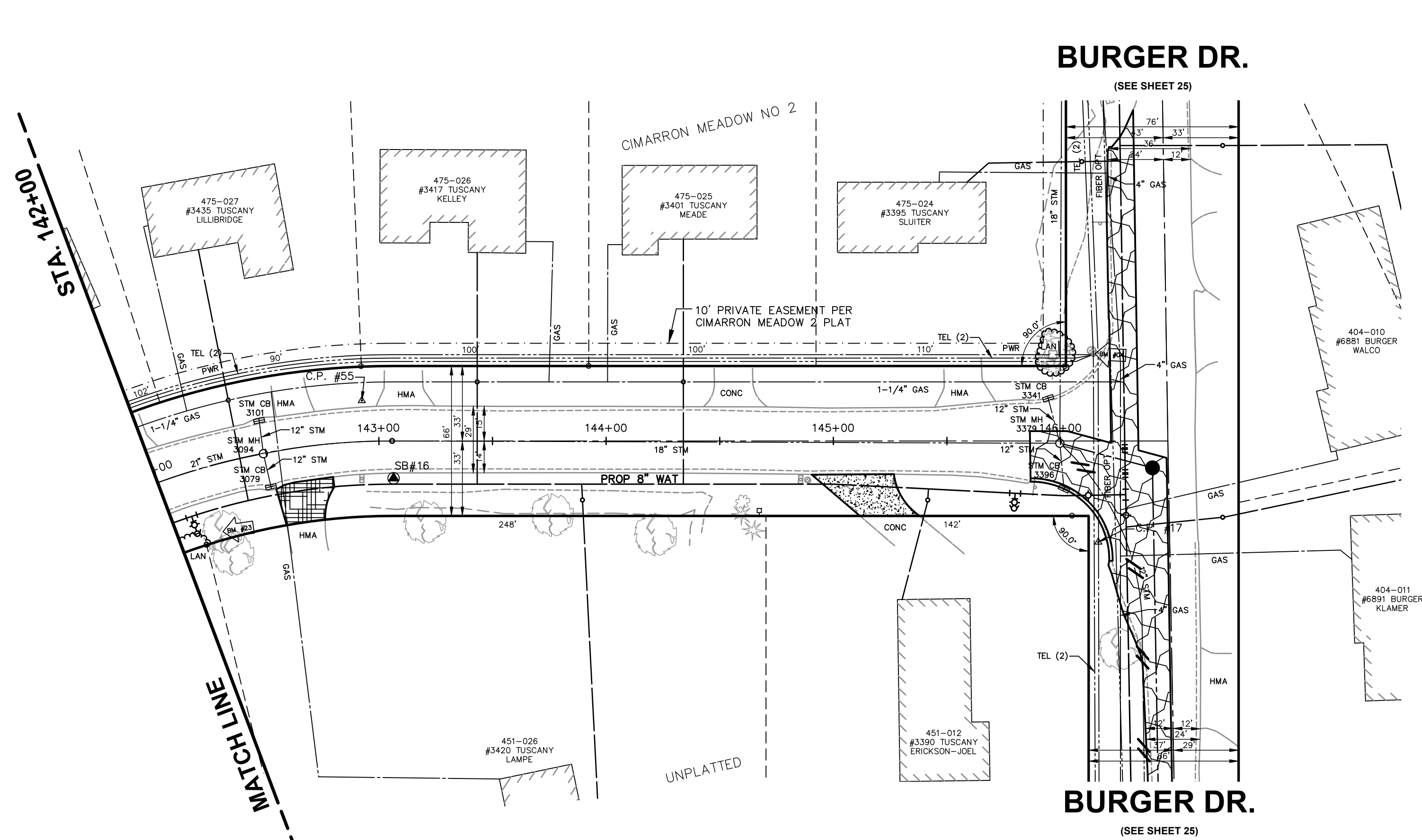
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REVISIONS

NO.	DATE	DESCRIPTION

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BENCHMARK #04
 B.M. ELE. 672.42 - BM SET RR SPIKE N-SIDE
 PP. SW QUAD BURGER & TUSCANY NAN

BENCHMARK #23
 B.M. ELE. 692.86 - BM SET 60 D VERTICAL IN
 W ROOT OF 24" OAK

CONTROL POINTS
 C.P. #17 - CP TRAV CAP 3' S OF B/C.
 9' W OF E END CURB - ELE. 672.62
 C.P. #55 - CP TRAV CAP 3' W OF E/B.
 12' N OF C/L TRIPOLI EXT - ELE. 688.67



SCALE
 PLAN 1"=40'

LEGEND

	PLACE "CURB AND GUTTER ____"
	PLACE 4" OF TOPSOIL, INCLUDING SEED, FERTILIZER AND MULCH (PAID FOR AS "____")
	ALL EXISTING MANHOLE CASTINGS SHALL BE ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "DR STRUCTURE COVER, ADJ. SPECIAL" AND/OR "DR STRUCTURE COVER, SPECIAL") (SEE DETAIL P-22B (MODIFIED)). ALL CATCH BASIN CASTING ADJUSTED TO GRADE AS DIRECTED BY THE ENGINEER (PAID FOR AS "DR STRUCTURE COVER, ADJ. SPECIAL" AND/OR "DR STRUCTURE COVER, SPECIAL")
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IMPROVEMENTS

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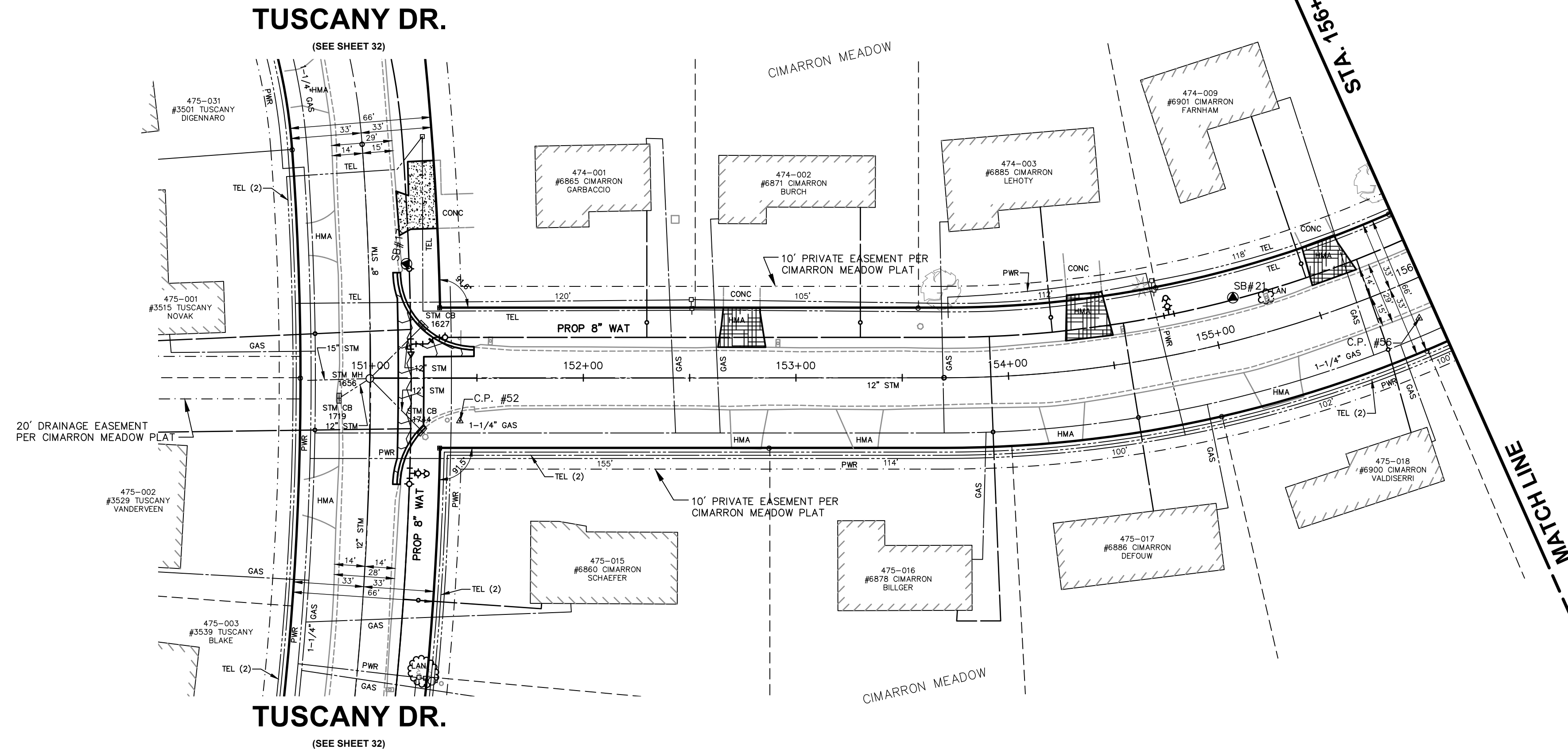
**IMPROVEMENTS
 IN
 TUSCANY DRIVE
 FROM SOUTH EAST END
 TO
 BURGER DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)**

DRAFT
 02/2022

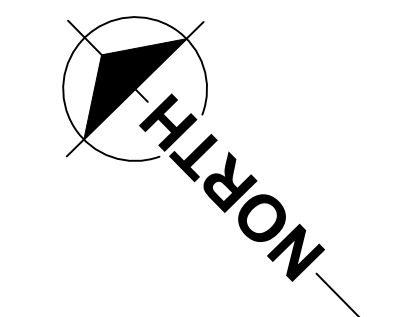
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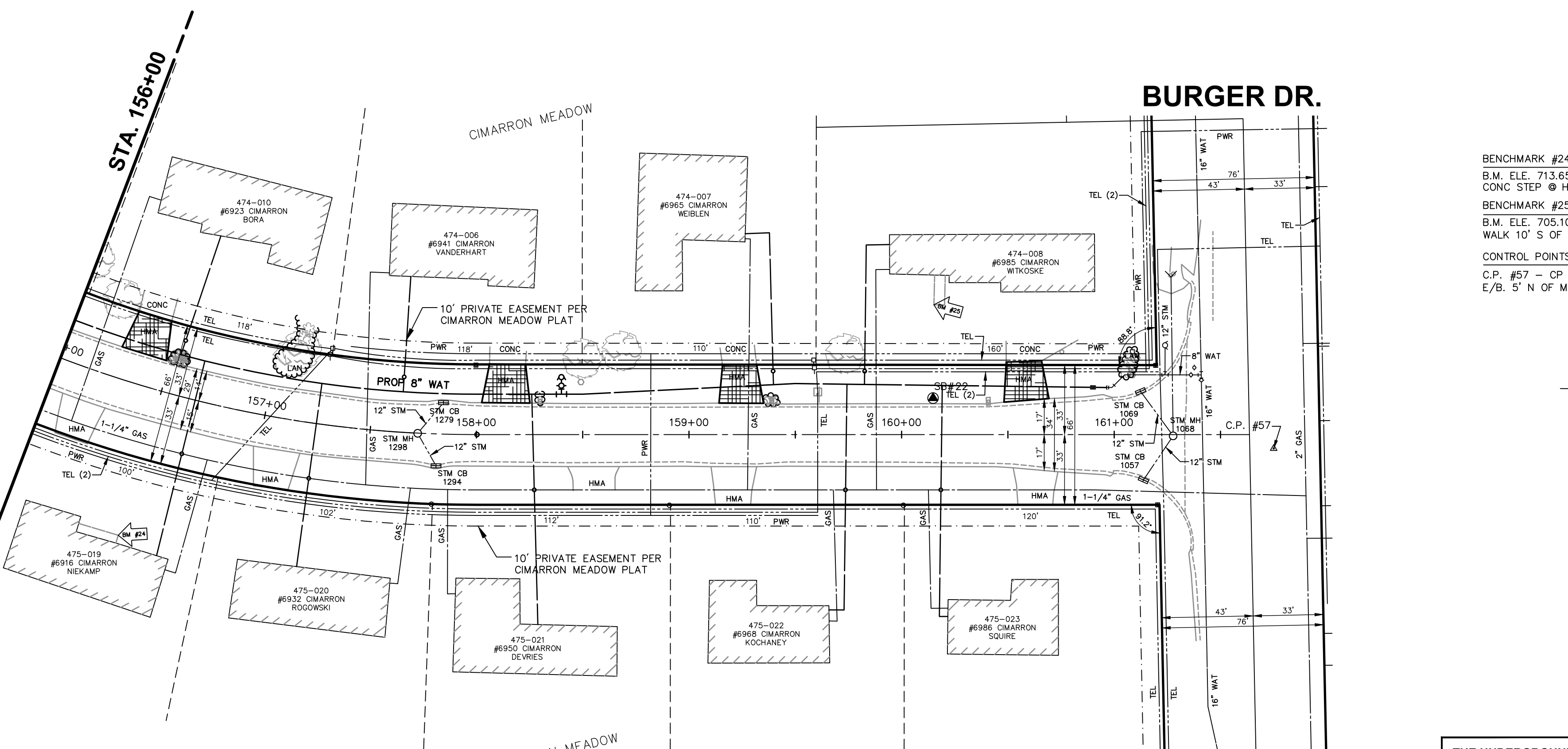
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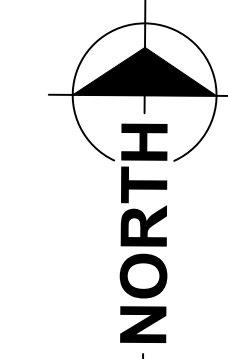
CONTROL POINTS
 C.P. #52 - CP TRAV CAP 4' S OF B/C,
 5.8' E OF NEIGHBORHOOD LIBRARY BOX -
 ELE. 698.77
 C.P. #56 - CP TRAV CAP 3' S OF E/B,
 7.4' NNE OF LP - ELE. 709.18



SCALES
 PLAN 1"=40'



BENCHMARK #24
 B.M. ELE. 713.65 - BM TOP NE CORNER BOTTOM
 CONC STEP @ HSE 6916 0.65 FT ABOVE WALK
 BENCHMARK #25
 B.M. ELE. 705.10 - BM TOP SW CORNER CONC
 WALK 10' S OF PORCH @ HSE 6985
 CONTROL POINTS
 C.P. #57 - CP / P&N TRAV CAP 3' E OF
 E/B. 5' N OF MB - ELE. 702.00



LEGEND

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- IMPROVEMENTS GENERAL NOTES**
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IMPROVEMENTS

SURVEYED & DESIGNED BY:
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 Public Services
 Engineering Department

**IMPROVEMENTS
 IN
 CIMARRON DRIVE
 FROM TUSCANY DR.
 TO
 BURGER DR.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)**

DRAFT
02/2022

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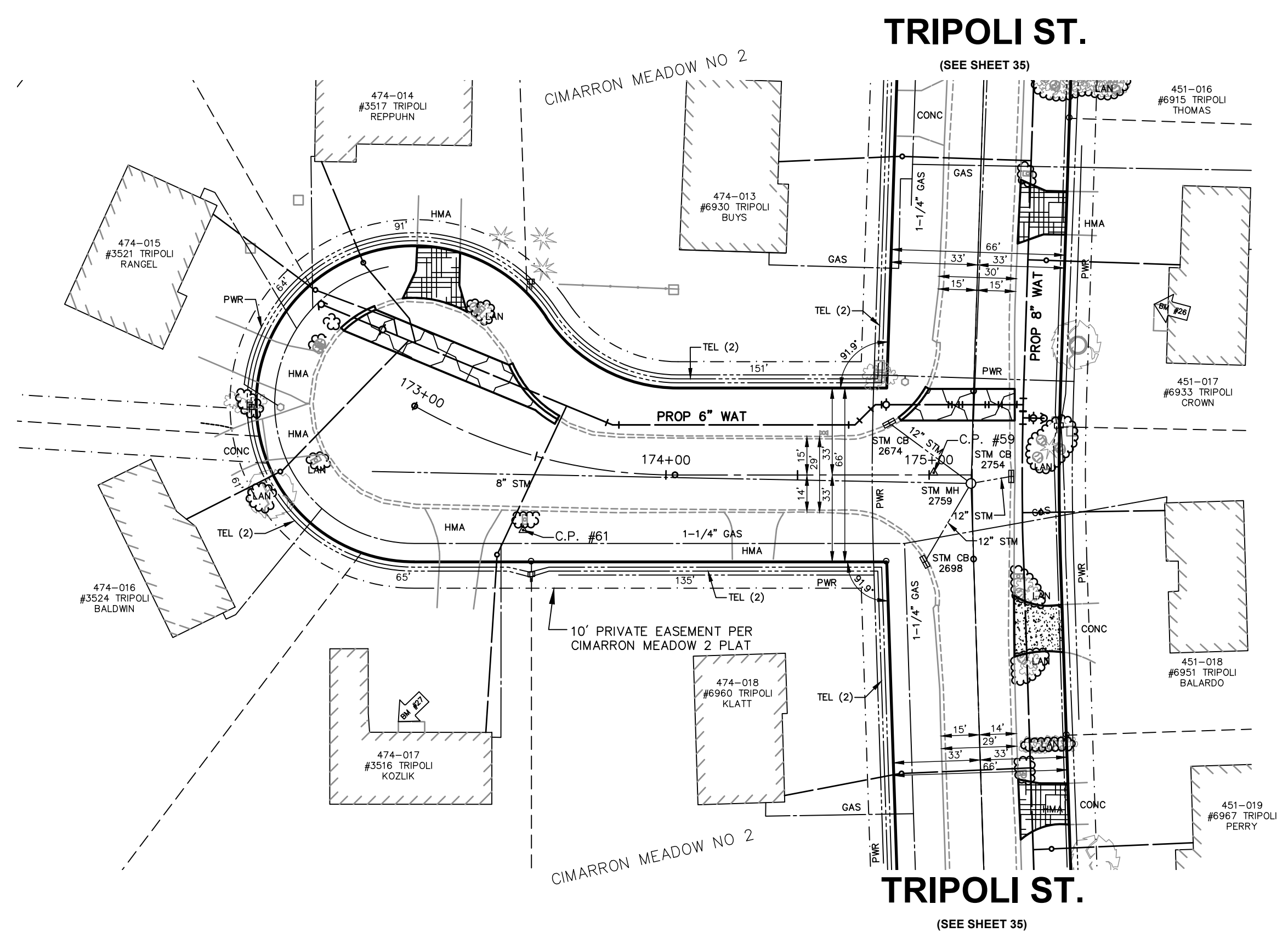
BENCHMARK #26
 ELE. 695.77 - BM TOP SW CORNER BOTTOM
 CONC STEP @ 6933 TRIPOLI 0.5 FT ABOVE WALK

BENCHMARK #27
 B.M. ELE. 697.64 - BM SW CORNER BOTTOM
 STEP @ 3516 TRIPOLI CT

CONTROL POINTS
 C.P. #59 - CP NAIL IN PAVEMENT ON
 C/L TRIPOLI CT. 15' S OF C/L TRIPOLI DR
 - ELE. 692.23
 C.P. #61 - CP P&N TRAV CAP 3' E OF
 MAILBOX 3516 TRIPOLI CT - ELE. 694.71



SCALES
 PLAN 1"=40'



LEGEND

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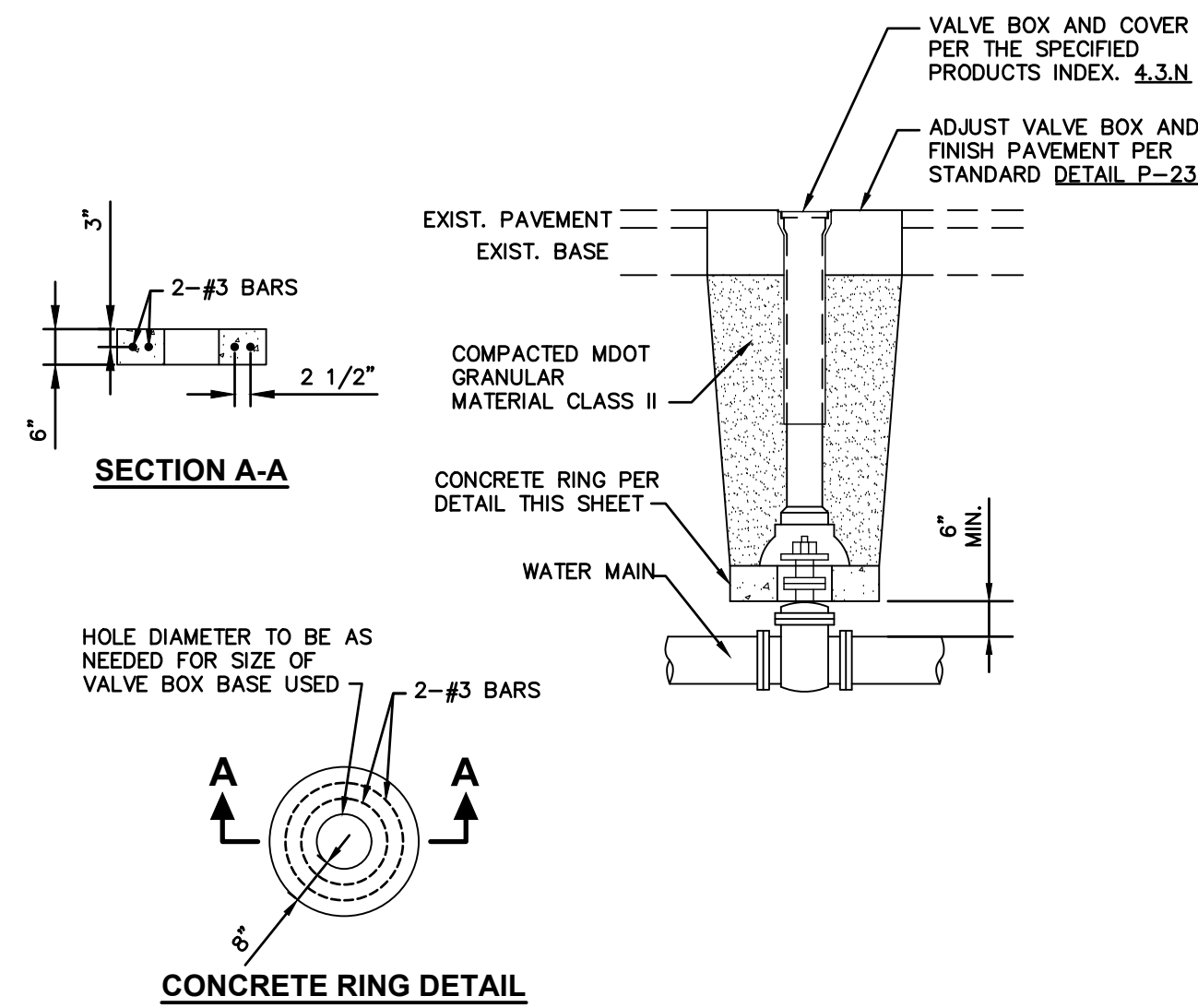
**IMPROVEMENTS
 IN
 TRIPOLI COURT
 FROM SOUTH END
 TO
 TRIPOLI ST.
 (BURGER-GOODWOOD NEIGHBORHOOD
 WATER MAIN - PHASE 1)**

DRAFT
 02/2022

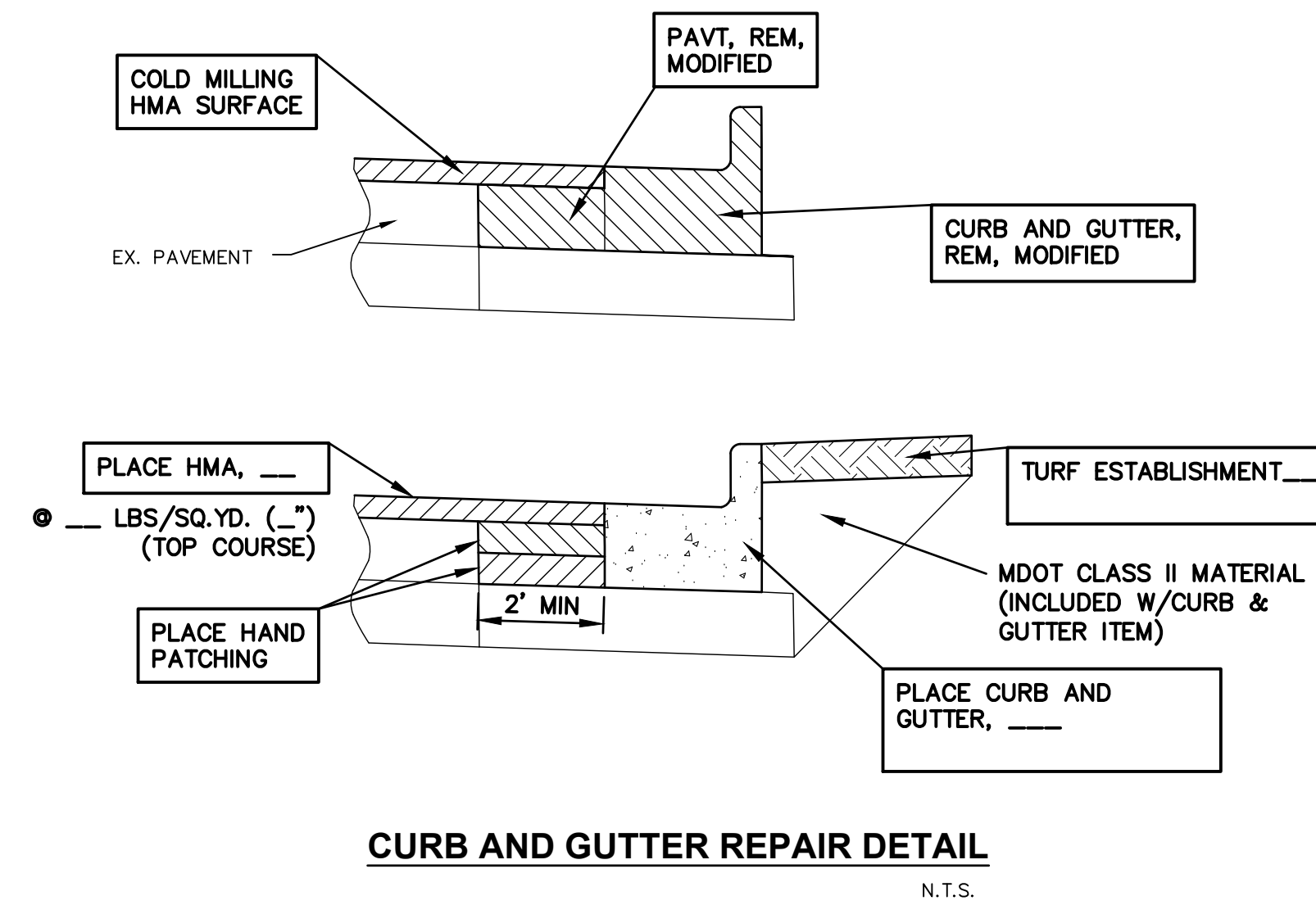
THE UNDERGROUND LOCATIONS SHOWN FOR NATURAL GAS (GAS), TELEPHONE (TEL), ELECTRICAL POWER (PWR), CABLE TV (CTV) AND FIBER OPTIC LINES (FIBER) ARE APPROXIMATE. THE CITY OF GRAND RAPIDS ASSUMES NO RESPONSIBILITY FOR THEIR ACCURATE REPRESENTATION IN THIS DRAWING. MISS DIG MUST BE CONTACTED PRIOR TO CONSTRUCTION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

REVISIONS		
NO.	DATE	DESCRIPTION

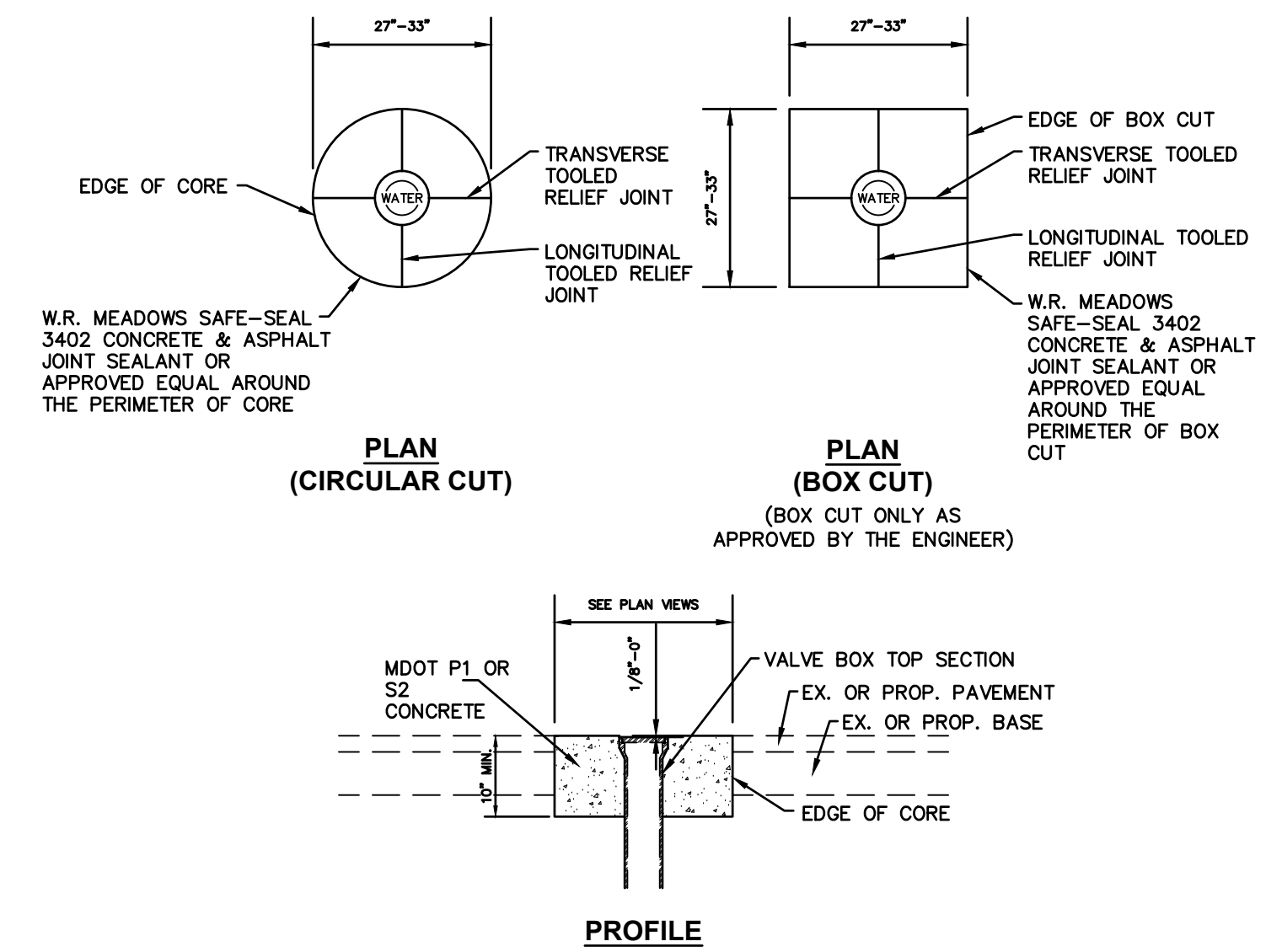
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VALVE BOX INSTALLATION FOR GATE VALVES
N.T.S.

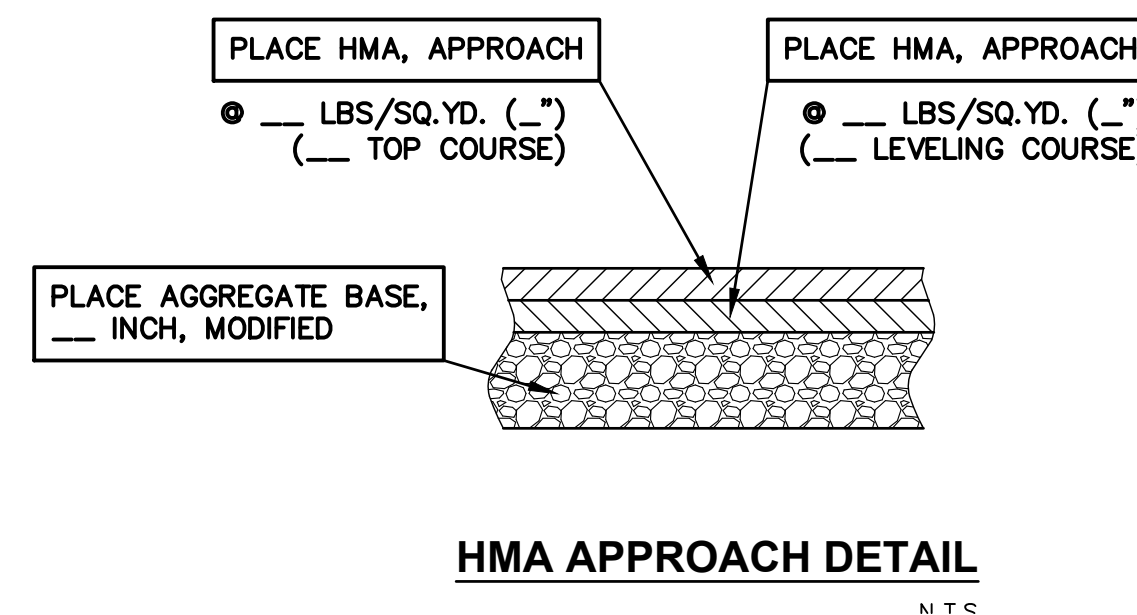


CURB AND GUTTER REPAIR DETAIL
N.T.S.

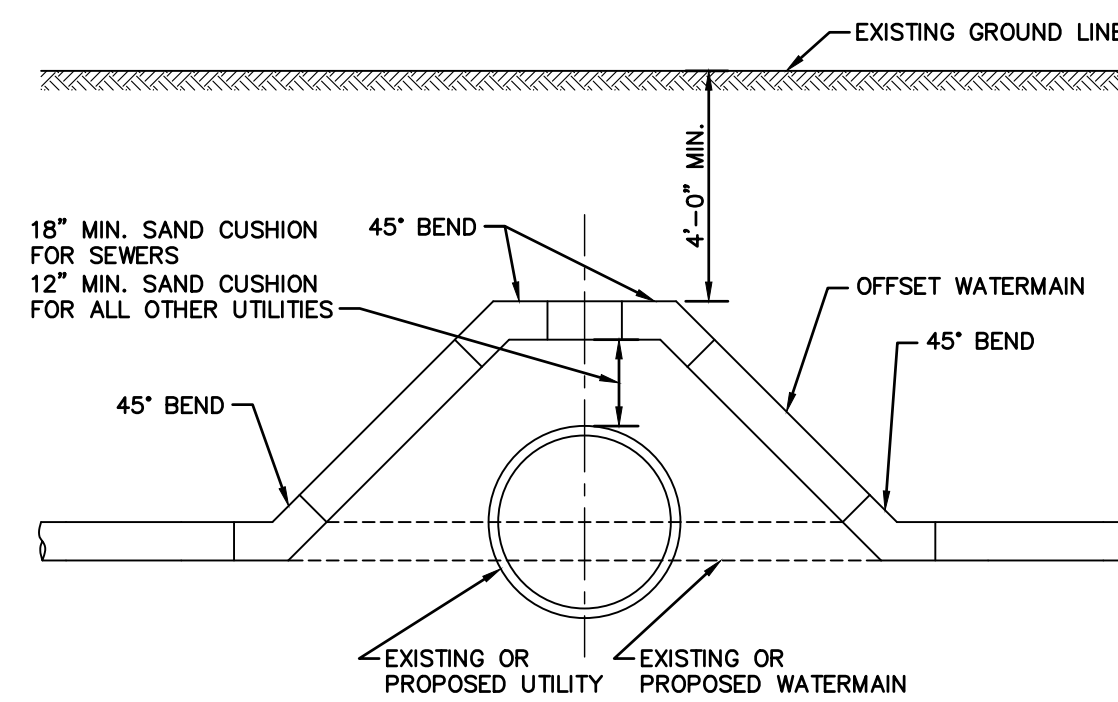


- NOTES:**
1. THE CONTRACTOR SHALL PAVE ALL LIFTS OF HMA (BASE, LEVELING, AND TOP) BEFORE RASING THE CASTINGS.
 2. ALL STRUCTURES SHALL BE WITNESSED AND LOGGED UTILIZING GPS PRIOR TO REMOVING EXISTING CASTINGS.
 3. BOX CUTS MAY BE PERMITTED IN SPECIAL CIRCUMSTANCE, AS APPROVED BY THE ENGINEER. EXCESS SAW CUTS (OVERCUT) SHALL BE SEALED UPON COMPLETION.
 4. ONLY SAW CUTTING AND HOLE CUTS SHALL BE ALLOWED. JACKHAMMERING MAY ONLY BE ALLOWED TO REMOVE PAVEMENT WITHIN THE PRECUT PAVEMENT.
 5. CONCRETE SHALL BE VIBRATED IN PLACE. VIBRATOR SHALL BE INSERTED AT 12" INTERVALS AND SHALL NOT BE DRAGGED THROUGH CONCRETE. CARE SHALL BE TAKEN AS TO NOT OVER VIBRATE CONCRETE.
 6. THE TOP OF THE CONCRETE SHALL BE BROOM FINISHED FLUSH WITH THE SURROUNDING HMA.
 7. CASTINGS SHALL BE PROTECTED FROM CONCRETE SPLATTER AND SHALL ALSO BE CLEANED UPON COMPLETION.
 8. NO HIGH EARLY CONCRETE MIX SHALL BE ALLOWED.
 9. APPLY CURE IMMEDIATELY UPON COMPLETION.
 10. THE CONTRACTOR SHALL CLEAN THE AREA OUTSIDE THE HOLE CUT TO ELIMINATE CONCRETE SPLATTER ON THE PAVEMENT.
 11. THE CONTRACTOR SHALL PROTECT THE CONCRETE AROUND THE CASTING FROM TRAFFIC AND EQUIPMENT FOR A MINIMUM OF 72 HOURS.
 12. THE CONTRACTOR SHALL PLACE W.R. MEADOWS - SAFE-SEAL 3405 - CONCRETE & ASPHALT JOINT SEALANT OR APPROVED EQUAL AROUND THE PERIMETER OF CORE/BOX CUT IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.

ADJUSTMENT OF VALVE BOX CASTING
N.T.S.



HMA APPROACH DETAIL
N.T.S.



- NOTES:**
1. WHEN THE MINIMUM CLEARANCE AND COVER CANNOT BE OBTAINED, THE WATER MAIN IS TO BE RELOCATED UNDER THE UTILITY.

W-10 WATER MAIN OFF-SET
N.T.S.

**TABLE IV
PIPE RESTRAINT LENGTH REQUIRED, FEET**

PIPE DIAMETER	TEES, 90° BENDS	45° BENDS	22½° BENDS	11¼° BENDS	DEAD ENDS	REDUCERS (ONE SIZE)	**
4"	19	8	4	2	21		
6"	27	12	6	3	30	14	63
8"	35	15	7	4	38	15	55
12"	51	21	10	5	55	27	120
16"	65	27	13	7	70	28	110
20"	79	33	16	8	86	28	104
24"	93	39	19	10	101	40	99

** IF STRAIGHT RUN OF PIPE ON SMALL SIDE OF REDUCER EXCEEDS THIS VALUE, THEN NO RESTRAINED JOINTS ARE NECESSARY.

FOR MORE INFORMATION ABOUT WATER MAIN RESTRAINT SEE THE CITY OF GRAND RAPIDS STANDARD CONSTRUCTION SPECIFICATIONS 2021 EDITION, SECTION 4.3 WATER MAINS.

MISCELLANEOUS DETAILS

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

City of Grand Rapids
Public Services
Engineering Department

**WATER MAIN
IN
BURGER DRIVE
TANGLEWOOD DRIVE
TRICKLEWOOD DRIVE
TRICKLEWOOD COURT
BROOKHILLS COURT
TUSCANY DRIVE
CIMARRON DRIVE
TRIPOLI STREET
TRIPOLI COURT
(BURGER-GOODWOOD NEIGHBORHOOD
WATER MAIN - PHASE 1)**

DRAFT
02/2022

REVISIONS

NO.	DATE	DESCRIPTION

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