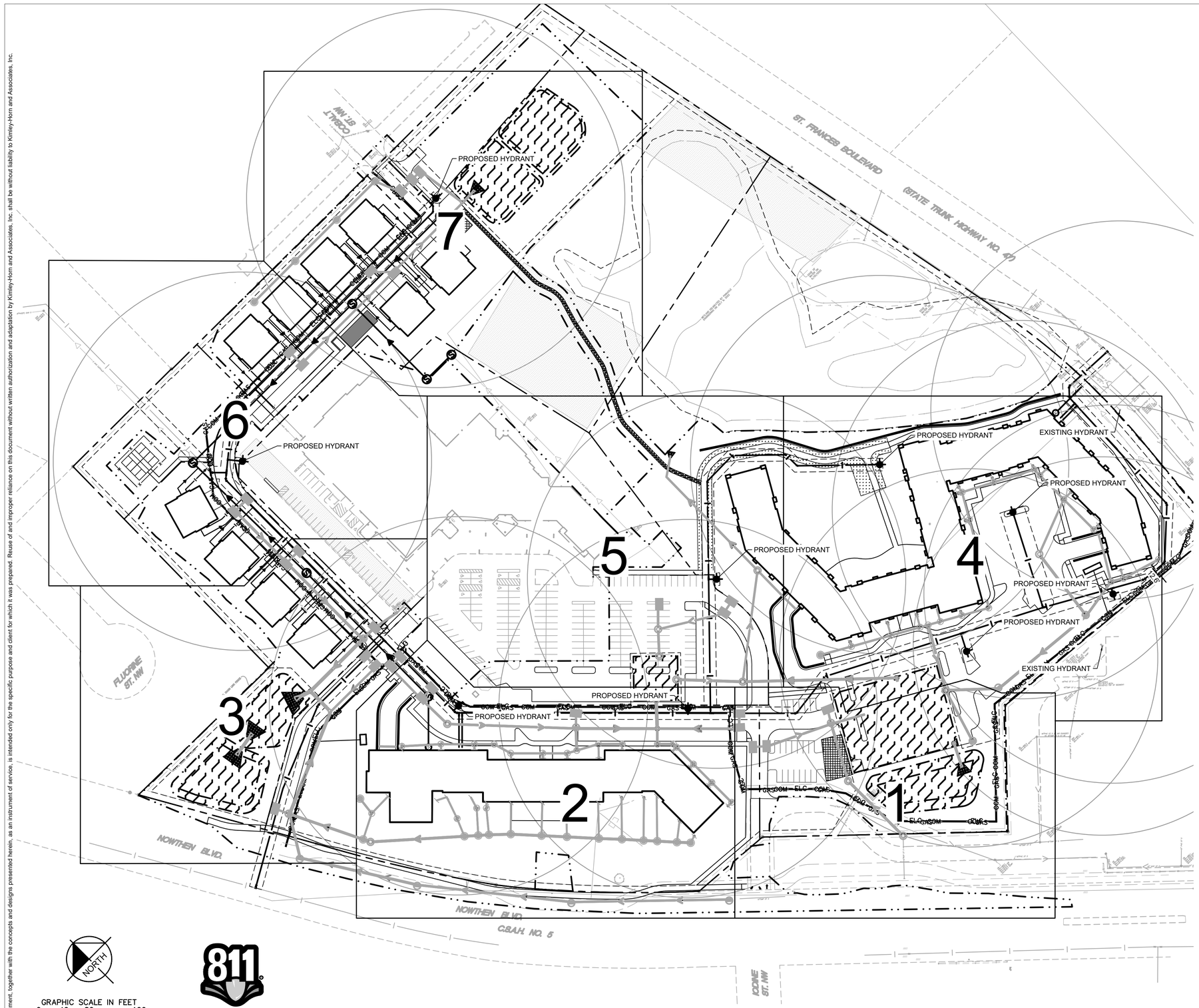

LEGEND

EXISTING	PROPOSED	
		GATE VALVE
		HYDRANT
		REDUCER
		TEE
		SANITARY SEWER MANHOLE
		SANITARY CLEANOUT
		STORM MANHOLE (SOLID CASTING)
		STORM MANHOLE (ROUND INLET CASTING)
		STORM MANHOLE/ CATCH BASIN (CURB INLET CASTING)
		STORM SEWER CLENOUT
		FLARED END SECTION
		WATERMAIN
		SANITARY SEWER
		STORM SEWER
ELC	ELC	UNDERGROUND ELECTRIC
COM	COM	TELEPHONE
GAS	GAS	GAS MAIN

UTILITY PLAN NOTES

1. ALL FILL MATERIAL IS TO BE IN PLACE, AND COMPACTED BEFORE INSTALLATION OF PROPOSED UTILITIES.
2. SANITARY SEWER PIPE SHALL BE AS FOLLOWS:
   8" PVC SDR35 PER ASTM D-3034, FOR PIPES LESS THAN 13' DEEP
   8" PVC SDR26 PER ASTM D-3034, FOR PIPES MORE THAN 13' DEEP
   4" PVC SDR26 PER ASTM D-3034
3. WATER LINES SHALL BE AS FOLLOWS:
   6" AND LARGER, C-900 PVC PER AWWA
   SMALLER THAN 3" PIPING SHALL BE COPPER TUBE TYPE "K" PER
4. MINIMUM TRENCH WIDTH SHALL BE 3 FEET.
5. ALL WATER JOINTS ARE TO BE MECHANICAL JOINTS WITH RESTRAINTS SUCH AS THRUST BLOCKING, WITH STAINLESS STEEL OR COBALT BLUE BOLTS, OR AS INDICATED IN THE CITY SPECIFICATIONS AND PROJECT DOCUMENTS.
6. ALL UTILITIES SHOULD BE KEPT TEN (10') APART (PARALLEL) OR WHEN CROSSING 18" VERTICAL CLEARANCE (OUTSIDE EDGE OF PIPE TO OUTSIDE EDGE OF PIPE OR STRUCTURE).
7. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 7'-5" COVER ON ALL WATERLINES.
8. IN THE EVENT OF A VERTICAL CONFLICT BETWEEN WATER LINES, SANITARY LINES, STORM LINES AND GAS LINES, OR ANY OBSTRUCTION (EXISTING AND PROPOSED), THE SANITARY LINE SHALL BE SCH. 40 OR C900 WITH MECHANICAL JOINTS AT LEAST 10 FEET ON EITHER SIDE OF THE CENTER LINE OF THE CROSSING. THE WATER LINE SHALL HAVE MECHANICAL JOINTS WITH APPROPRIATE FASTENERS AS REQUIRED TO PROVIDE A MINIMUM OF 18" VERTICAL SEPARATION. MEETING REQUIREMENTS OF ANSI A21.10 OR ANSI 21.11 (AWWA C-151) (CLASS 50).
9. LINES UNDERGROUND SHALL BE INSTALLED, INSPECTED AND APPROVED BEFORE BACKFILLING.
10. TOPS OF MANHOLES SHALL BE RAISED AS NECESSARY TO BE FLUSH WITH PROPOSED PAVEMENT ELEVATIONS, AND TO BE ONE FOOT ABOVE FINISHED GROUND ELEVATIONS, IN GREEN AREAS, WITH WATERTIGHT LIDS.
11. ALL CONCRETE FOR ENCASEMENTS SHALL HAVE A MINIMUM 28 DAY COMPRESSION STRENGTH AT 3000 P.S.I.
12. EXISTING UTILITIES SHALL BE VERIFIED IN FIELD PRIOR TO INSTALLATION OF ANY NEW LINES.
13. REFER TO INTERIOR PLUMBING DRAWINGS FOR TIE-IN OF ALL UTILITIES.
14. CONTRACTOR IS RESPONSIBLE FOR COMPLYING TO THE SPECIFICATIONS OF THE CITY OF RAMSEY AND STATE OF MN WITH REGARDS TO MATERIALS AND INSTALLATION OF THE WATER AND SEWER LINES.
15. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
16. CONTRACTOR IS RESPONSIBLE FOR ALL NECESSARY INSPECTIONS AND/OR CERTIFICATIONS REQUIRED BY CODES AND/OR UTILITY SERVICE COMPANIES.
17. CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES FOR INSTALLATION REQUIREMENTS AND SPECIFICATIONS.
18. CONTRACTOR SHALL REFERENCE ARCH / MEP PLANS FOR SITE LIGHTING AND ELECTRICAL PLAN.
19. BACKFLOW DEVICES (DDCV AND PRZ ASSEMBLIES) AND METERS ARE LOCATED IN THE INTERIOR OF THE BUILDING. REF. ARCH / MEP PLANS.
20. ALL ONSITE SANITARY SEWER SHALL BE PRIVATELY OWNED AND MAINTAINED.
21. ALL WATERMAIN STUBOUTS SHALL BE MECHANICALLY RESTRAINED WITH REACTION BLOCKING.

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CONSULTANTS

Kimley»Horn

PROJECT TITLE

HAVILAND FIELDS

ISSUE	DATE	DESCRIPTION
1	2024-02-09	SITE PLAN REVIEW
2	2024-03-12	SITE PLAN REVIEW R1

CERTIFICATION

NOT FOR CONSTRUCTION

DRAWN BY	GAR
CHECKED BY	MCB
COMMISSION NUMBER	

SHEET TITLE

UTILITY PLAN

SHEET NUMBER

C600

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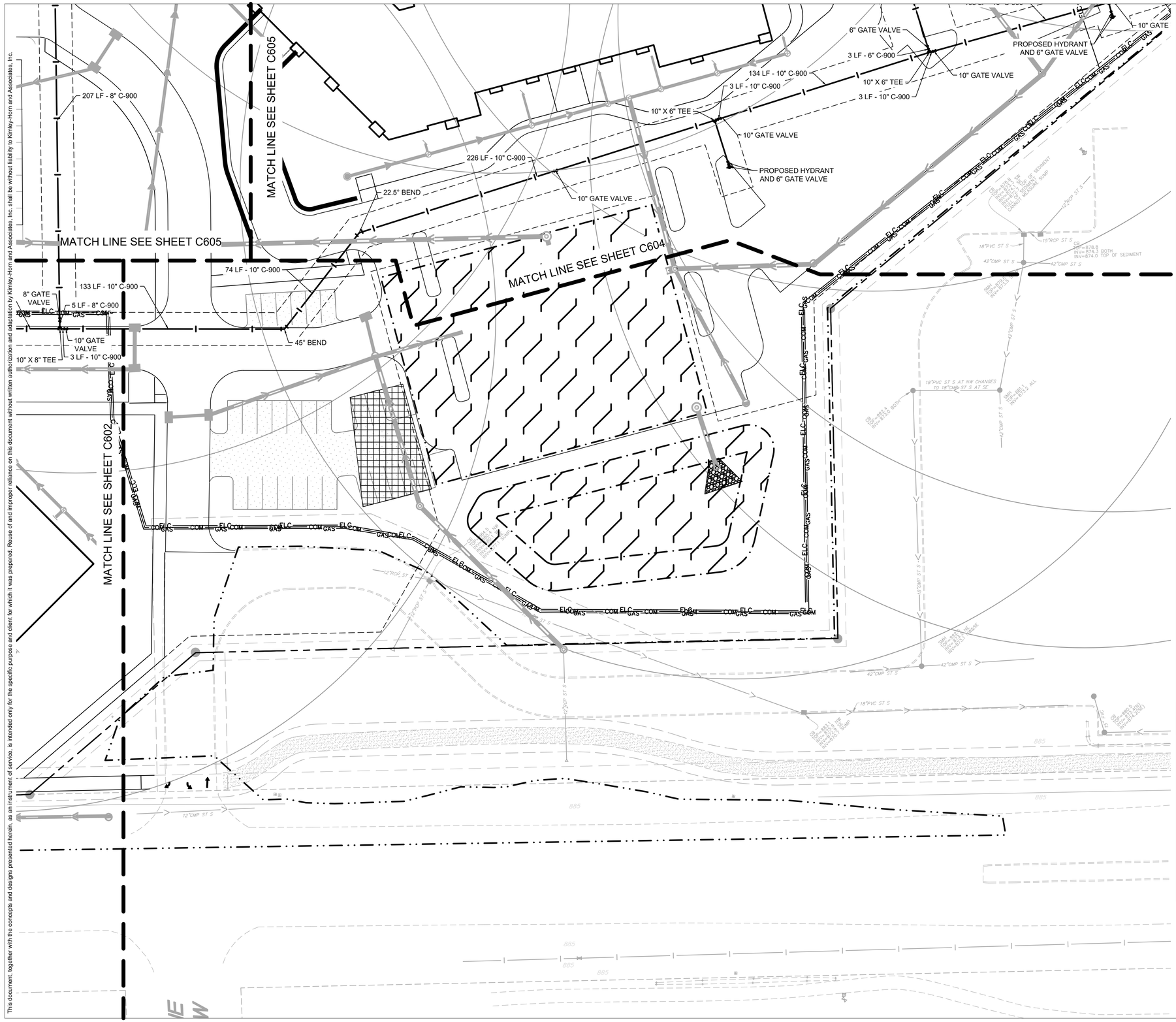
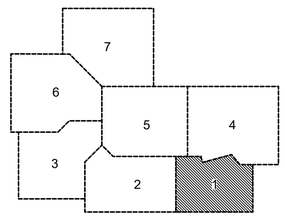


LEGEND

EXISTING	PROPOSED	
		GATE VALVE
		HYDRANT
		REDUCER
		TEE
		SANITARY SEWER MANHOLE
		SANITARY CLEANOUT
		STORM MANHOLE (SOLID CASTING)
		STORM MANHOLE (ROUND INLET CASTING)
		STORM MANHOLE/ CATCH BASIN (CURB INLET CASTING)
		STORM SEWER CLENOUT
		FLARED END SECTION
		WATERMAIN
		SANITARY SEWER
		STORM SEWER
ELC	ELC	UNDERGROUND ELECTRIC
COM	COM	TELEPHONE
GAS	GAS	GAS MAIN

AREA KEY MAP

NOT TO SCALE



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COMMISSION NUMBER	

SHEET TITLE

UTILITY PLAN ENLARGEMENTS

SHEET NUMBER

C601

8" X 4" WYE
IE: 869.96

1" CORP. WITH 1" COPPER TYPE K WATER LINE

8" GATE VALVE
3 LF - 8" C-900
10" X 8" REDUCER
3 LF - 10" C-900
10"x10" TEE
3 LF - 10" C-900
10" GATE VALVE

275 LF - 8" PVC @ 0.50%

8" X 4" WYE
IE: 870.39

174 LF - 10" C-900

MATCH LINE SEE SHEET C603

154 LF - 10" C-900

MATCH LINE SEE SHEET C605

207 LF - 8" C-900

SSWR-106
RE:883.21
IE:871.24 SW
IE:871.14 N

PROPOSED HYDRANT AND 6" GATE VALVE
5 LF - 10" C-900
10" X 10" TEE
5 LF - 10" C-900
10" X 4" TEE
5 LF - 10" C-900
10" GATE VALVE
4" GATE VALVE

8 LF - 6" C-900
10" X 6" TEE

81 LF - 8" PVC @ 0.50%

3 LF - 10" C-900

45° BEND

10" GATE VALVE

213 LF - 10" C-900

141 LF - 10" C-900

36 LF - 10" C-900

PROPOSED HYDRANT AND 6" GATE VALVE
5 LF - 6" C-900

8" GATE VALVE

133 LF - 10" C-900

5 LF - 8" C-900

10" GATE VALVE

10" GATE VALVE

10" X 6" TEE

10" X 8" TEE

3 LF - 10" C-900

SSWR-107
COORDINATE WITH MEP
RE:886.02
IE:871.64 NE

LC

ELC

TRANSFORMER

10" C-900 FIRE SERVICE LINE TO WITHIN 5' OF BUILDING, COORDINATE WITH MEP

6" C-900 WATER SERVICE LINE TO WITHIN 5' OF BUILDING, COORDINATE WITH MEP

MATCH LINE SEE SHEET C603

MATCH LINE SEE SHEET C601

12"CMP S

NOWTHEN BLVD.

C.S.A.H. NO. 5

LEGEND

EXISTING	PROPOSED	
		GATE VALVE
		HYDRANT
		REDUCER
		TEE
		SANITARY SEWER MANHOLE
		SANITARY CLEANOUT
		STORM MANHOLE (SOLID CASTING)
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		STORM MANHOLE/ CATCH BASIN (CURB INLET CASTING)
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		FLARED END SECTION
		WATERMAIN
		SANITARY SEWER
		STORM SEWER
ELC	ELC	UNDERGROUND ELECTRIC
COM	COM	TELEPHONE
GAS	GAS	GAS MAIN

AREA KEY MAP

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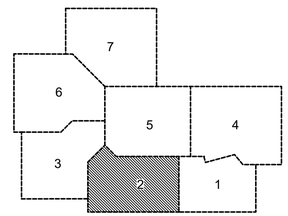

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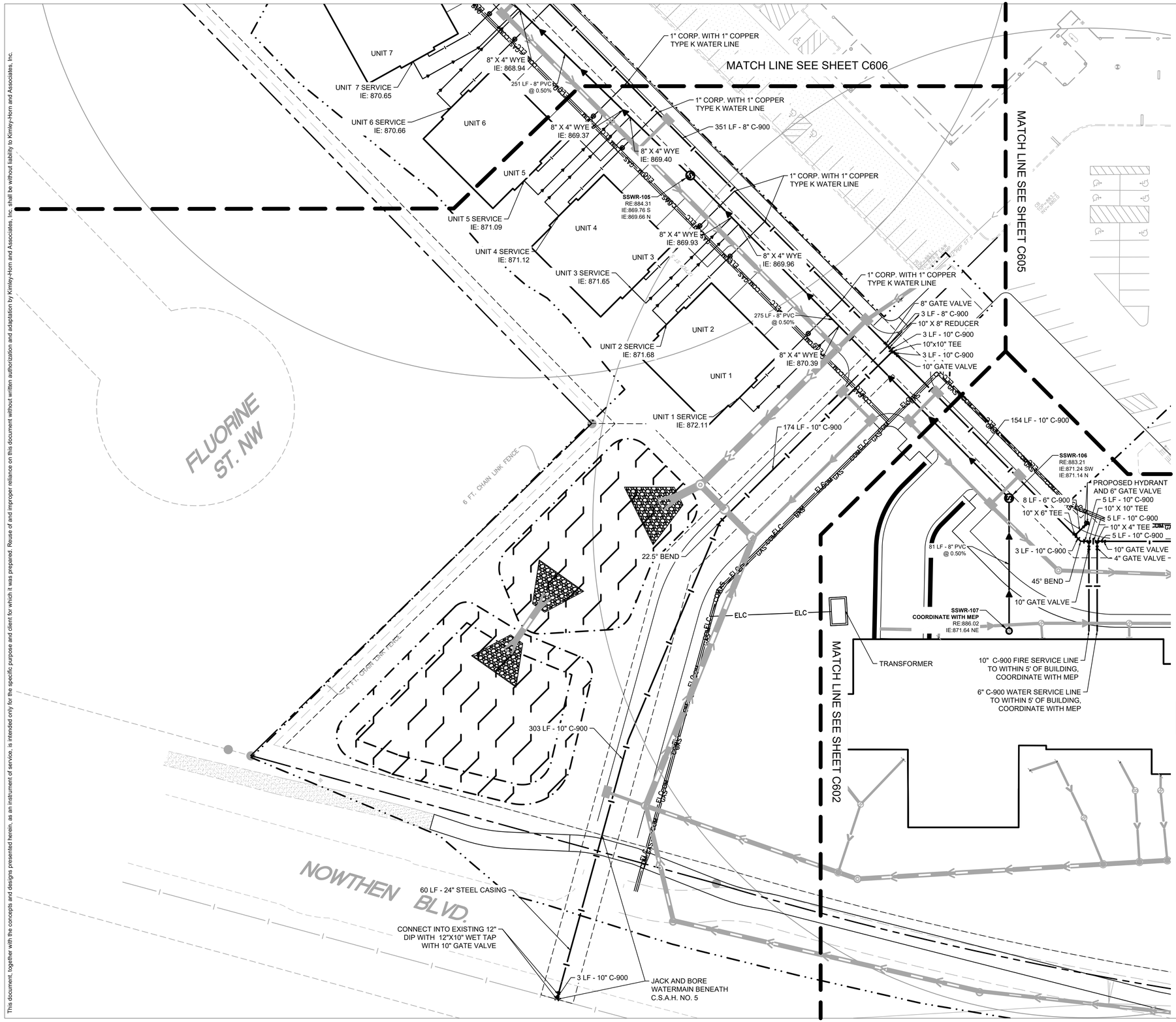
SHEET TITLE

UTILITY PLAN ENLARGEMENTS

SHEET NUMBER

C602



LEGEND

EXISTING	PROPOSED	
		GATE VALVE
		HYDRANT
		REDUCER
		TEE
		SANITARY SEWER MANHOLE
		SANITARY CLEANOUT
		STORM MANHOLE (SOLID CASTING)
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		WATERMAIN
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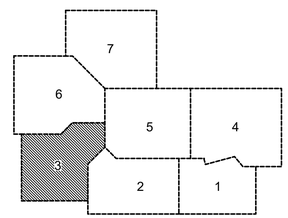
		STORM SEWER
ELC	ELC	UNDERGROUND ELECTRIC
COM	COM	TELEPHONE
GAS	GAS	GAS MAIN

AREA KEY MAP

NOT TO SCALE



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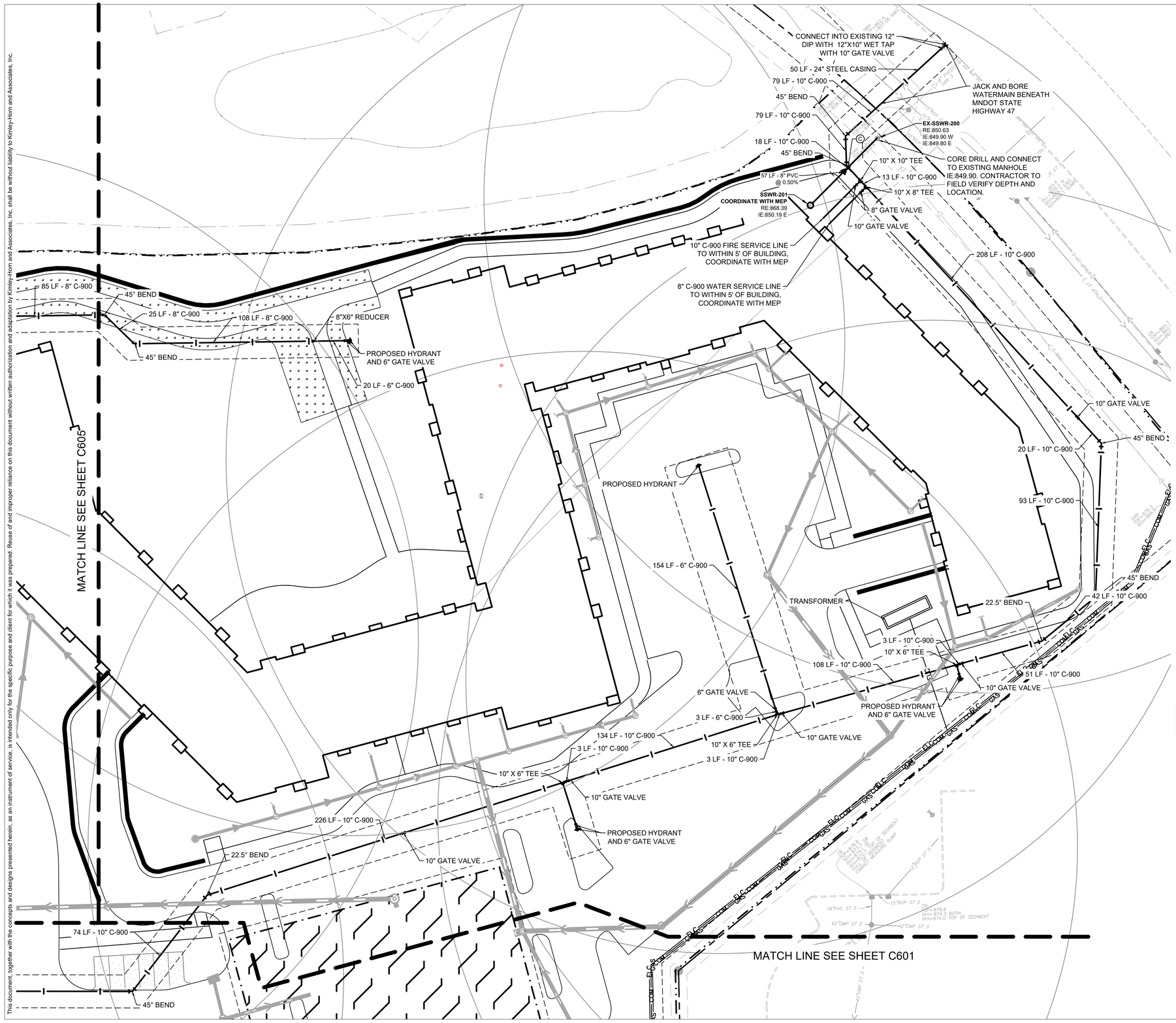
COMMISSION NUMBER	

SHEET TITLE

UTILITY PLAN ENLARGEMENTS

SHEET NUMBER

C603



LEGEND

EXISTING	PROPOSED	
		GATE VALVE
		HYDRANT
		REDUCER
		TEE
		SANITARY SEWER MANHOLE
		SANITARY CLEANOUT
		STORM MANHOLE (SOLID CASTING)
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		STORM SEWER
ELC	ELC	UNDERGROUND ELECTRIC
COM	COM	TELEPHONE
GAS	GAS	GAS MAIN

AREA KEY MAP

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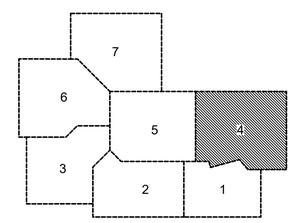

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SHEET TITLE

UTILITY PLAN ENLARGEMENTS

SHEET NUMBER

C604

MATCH LINE SEE SHEET C607

MATCH LINE SEE SHEET C606

MATCH LINE SEE SHEET C603

MATCH LINE SEE SHEET C604

MATCH LINE SEE SHEET C602

1" CORP. WITH 1" COPPER TYPE K WATER LINE

8" GATE VALVE

3 LF - 8" C-900

10" X 8" REDUCER

3 LF - 10" C-900

10"x10" TEE

3 LF - 10" C-900

10" GATE VALVE

154 LF - 10" C-900

SSWR-106
RE:883.21
IE:871.24 SW
IE:871.14 N

PROPOSED HYDRANT AND 6" GATE VALVE

8 LF - 6" C-900

10" X 6" TEE

5 LF - 10" C-900

10" X 10" TEE

5 LF - 10" C-900

10" X 4" TEE

5 LF - 10" C-900

10" GATE VALVE

4" GATE VALVE

3 LF - 10" C-900

45° BEND

81 LF - 8" PVC @ 0.50%

10" GATE VALVE

SSWR-107
COORDINATE WITH MEP
RE:886.02
IE:871.64 NE

213 LF - 10" C-900

141 LF - 10" C-900

36 LF - 10" C-900

PROPOSED HYDRANT AND 6" GATE VALVE

5 LF - 6" C-900

8" GATE VALVE

133 LF - 10" C-900

5 LF - 8" C-900

74 LF - 10" C-900

10" GATE VALVE

10" X 6" TEE

10" X 8" TEE

10" GATE VALVE

3 LF - 10" C-900

45° BEND

85 LF - 8" C-900

45° BEND

57 LF - 8" C-900

45° BEND

25 LF - 8"

45° BEND

45° BEND

152 LF - 8" C-900

8" GATE VALVE

10 LF - 6" C-900

PROPOSED HYDRANT AND 6" GATE VALVE

3 LF - 8" C-900

8" X 6" TEE

207 LF - 8" C-900

LEGEND

EXISTING	PROPOSED	
		GATE VALVE
		HYDRANT
		REDUCER
		TEE
		SANITARY SEWER MANHOLE
		SANITARY CLEANOUT
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		STORM SEWER
ELC	ELC	UNDERGROUND ELECTRIC
COM	COM	TELEPHONE
GAS	GAS	GAS MAIN

AREA KEY MAP

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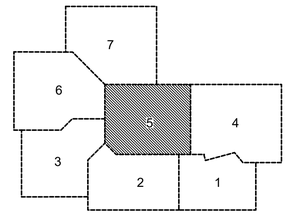

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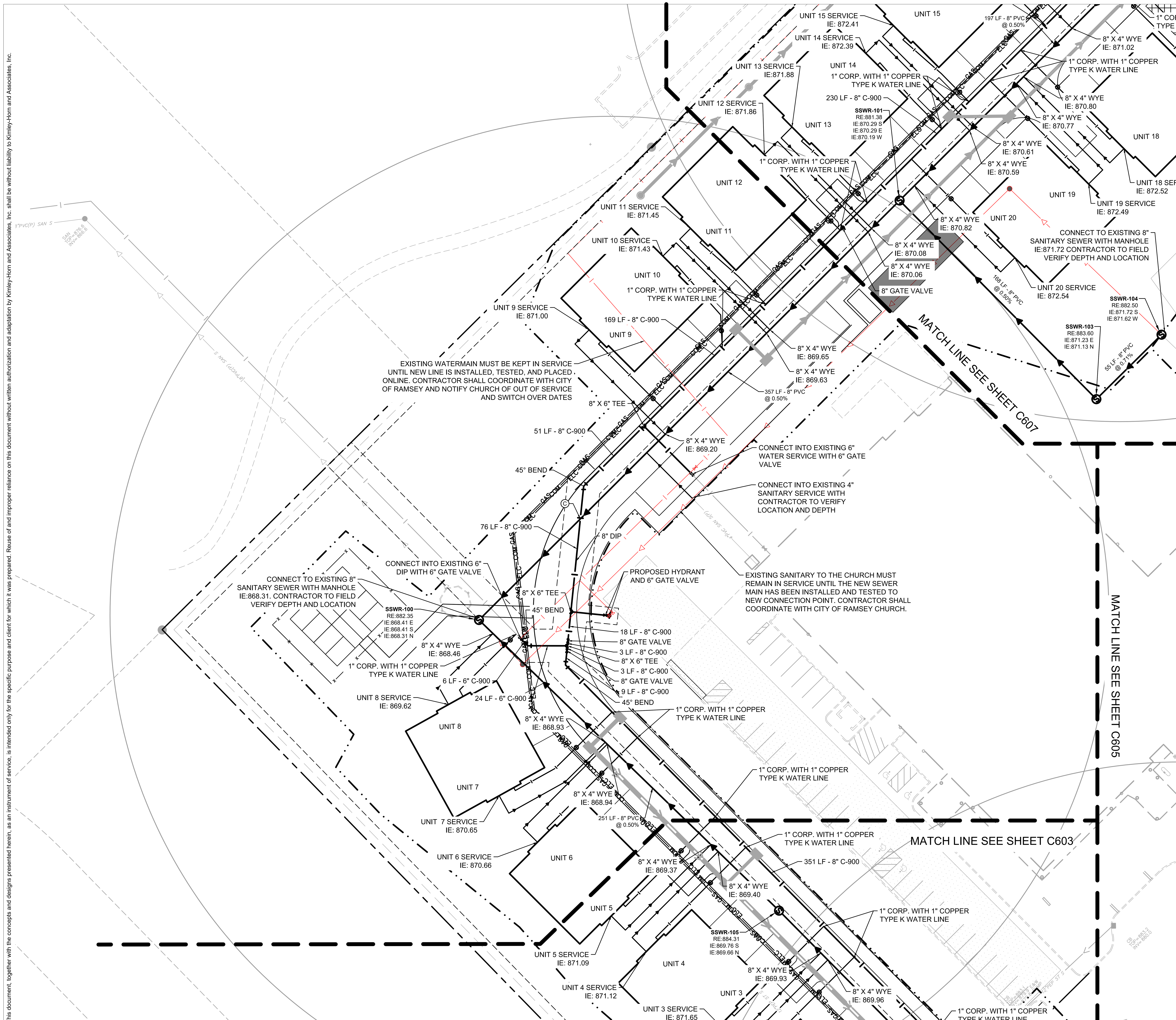
SHEET TITLE

UTILITY PLAN ENLARGEMENTS

SHEET NUMBER

C605



LEGEND

EXISTING	PROPOSED	
		GATE VALVE
		HYDRANT
		REDUCER
		TEE
		SANITARY SEWER MANHOLE
		SANITARY CLEANOUT
		STORM MANHOLE (SOLID CASTING)
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		STORM MANHOLE/ CATCH BASIN (CURB INLET CASTING)
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		FLARED END SECTION
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		STORM SEWER
ELC	ELC	UNDERGROUND ELECTRIC
COM	COM	TELEPHONE
GAS	GAS	GAS MAIN

AREA KEY MAP

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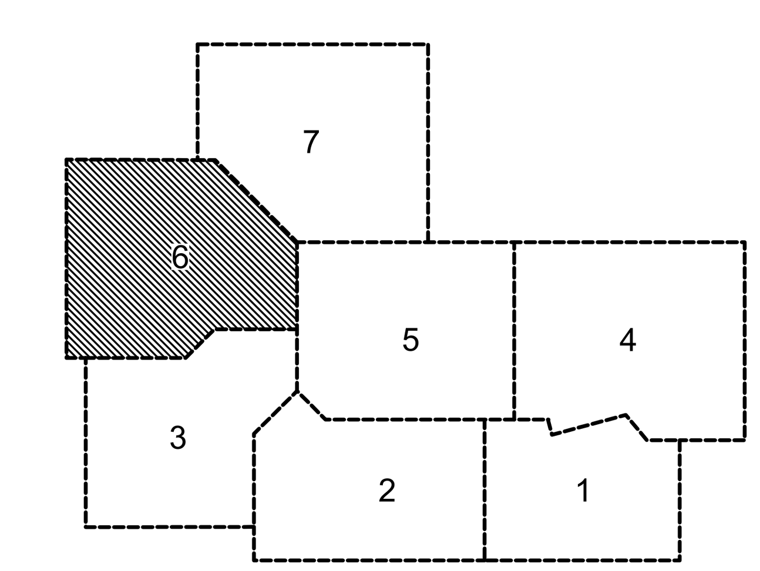

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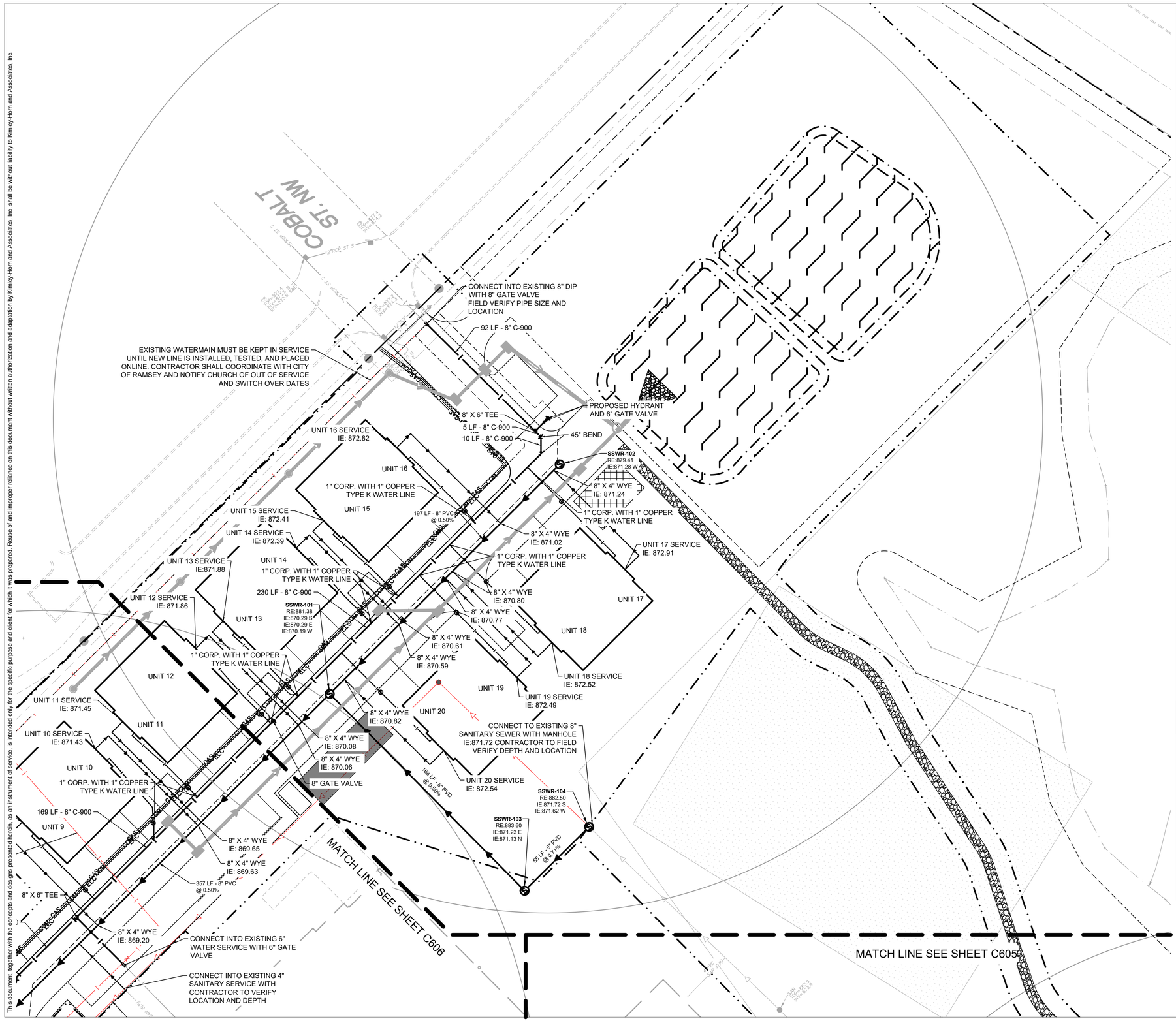
SHEET TITLE

UTILITY PLAN ENLARGEMENTS

SHEET NUMBER

C606



LEGEND

EXISTING	PROPOSED	
		GATE VALVE
		HYDRANT
		REDUCER
		TEE
		SANITARY SEWER MANHOLE
		SANITARY CLEANOUT
		STORM MANHOLE (SOLID CASTING)
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ELC	ELC	UNDERGROUND ELECTRIC
COM	COM	TELEPHONE
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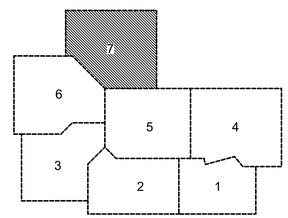

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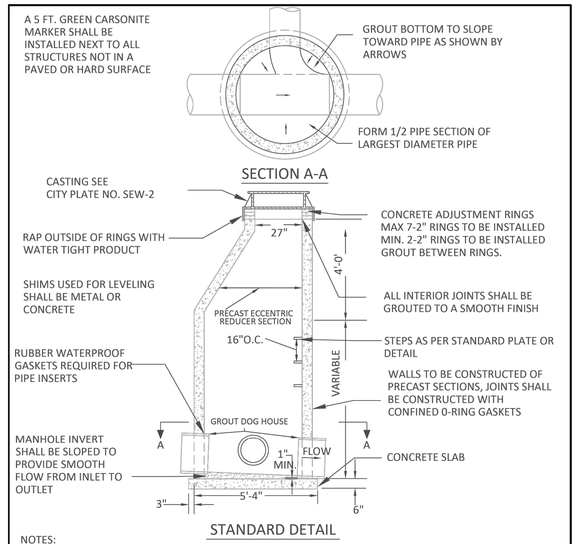
SHEET TITLE

UTILITY PLAN ENLARGEMENTS

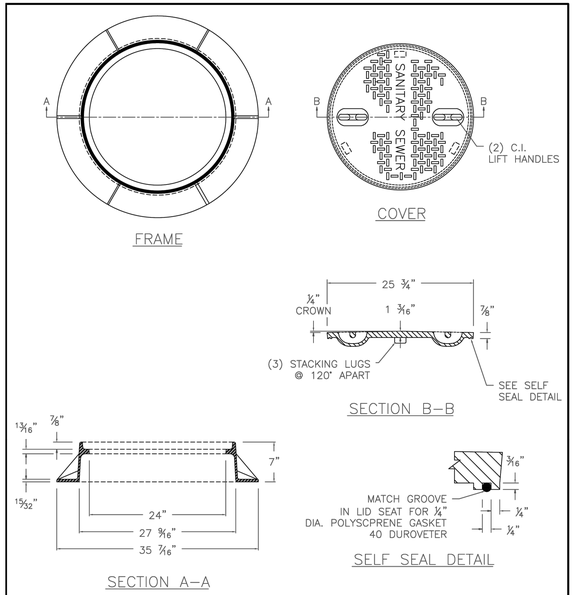
SHEET NUMBER

C607



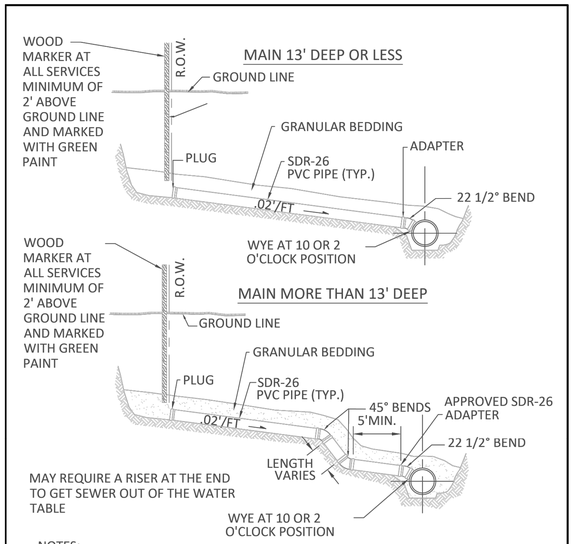
NOTES:
1. 12 GAUGE COPPER CLAD STEEL TRACER WIRE IS REQUIRED WITH ALL SEWER LINES (FOR DETAILED INFO. REFER TO MINNESOTA RURAL WATER ASSOCIATION TRACER WIRE SPECIFICATION AT WWW.MRWA.COM)
2. 6" BASE FOR ALL MANHOLES LESS THAN 14 FT. OF DEPTH, INCREASE BASE THICKNESS 2" PER 6 FT. OF DEPTH BEYOND 14 FT
3. 5" PRECAST BASE MAY BE USED FOR MANHOLES LESS THAN 14 FT. DEEP
4. ALL INVERTS TO BE 0.10' ABOVE OUTLET

APPROVED: 1 - 2024	City of RAMSEY	STANDARD DETAILS: SANITARY MANHOLE
		CITY PLATE No. SEW-1



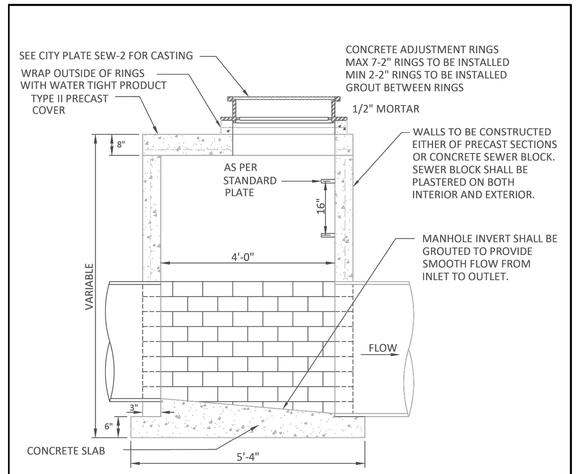
NOTE: NOT TO SCALE

APPROVED: 11 – 2015	City of RAMSEY	STANDARD DETAILS: WATER TIGHT CASTING
		CITY PLATE No. SEW–2



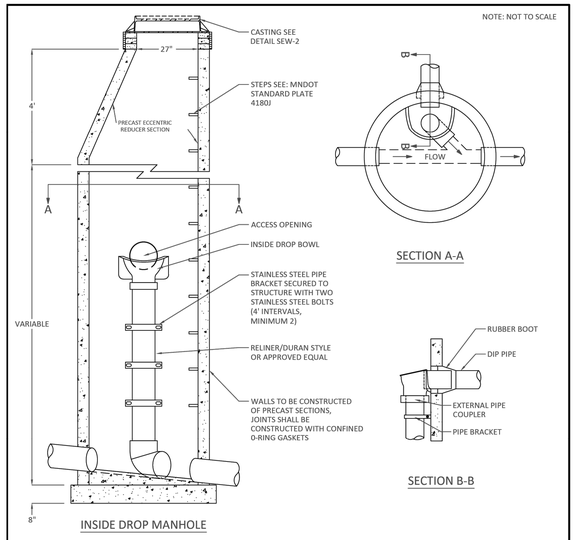
NOTES:
1. 12 GAUGE COPPER CLAD STEEL TRACER WIRE IS REQUIRED WITH ALL SEWER LINES (FOR DETAILED INFO. REFER TO MINNESOTA RURAL WATER ASSOCIATION TRACER WIRE SPECIFICATION AT WWW.MRWA.COM)

APPROVED: 1 - 2024	City of RAMSEY	STANDARD DETAILS: SANITARY SEWER SERVICE
		CITY PLATE No. SEW-3



NOTE:
1. 12 GAUGE COPPER CLAD STEEL TRACER WIRE IS REQUIRED WITH ALL SEWER LINES (FOR DETAILED INFO. REFER TO MINNESOTA RURAL WATER ASSOCIATION TRACER WIRE SPECIFICATION AT WWW.MRWA.COM)

APPROVED: 1 - 2024	City of RAMSEY	STANDARD DETAILS: SLAB-TOP MANHOLE
		CITY PLATE No. SEW-4



NOTES:
1. CONCRETE ADJUSTMENT RINGS, MIN 2 MAX 7 - 2" RINGS TO BE INSTALLED. ALL INTERIOR JOINTS SHALL BE GROUTED TO A SMOOTH FINISH. WRAP OUTSIDE OF RINGS WITH WATER TIGHT PRODUCT
2. 8" BASE FOR AL MANHOLES LESS THAN 14 FT. DEEP. INCREASE BASE THICKNESS 2" PER 6 FT. OF DEPTH BEYOND 14 FT. & REINFORCEMENT WITH 6"X6" & 10"X10" MESH
3. MANHOLE INVERT SHALL BE SLOPED TO PROVIDE SMOOTH FLOW INLET TO OUTLET. RUBBER WATERPROOF GASKETS REQUIRED FOR PIPE INSERTS
4. DUCTILE IRON PIPE TO BE USED FROM TEE TO UNDISTURBED SOIL
5. 12 GAUGE COPPER CLAD STEEL TRACER WIRE IS REQUIRED WITH ALL SEWER LINES (FOR DETAILED INFO. REFER TO MINNESOTA RURAL WATER ASSOCIATION TRACER WIRE SPECIFICATION AT WWW.MRWA.COM)

APPROVED: 1 - 2024	City of RAMSEY	STANDARD DETAILS: INSIDE DROP MANHOLE
		CITY PLATE No. SEW-5

RELINER® INSIDE DROP SYSTEM SPECIFICATIONS

1. PRODUCT NAME

RELINER® INSIDE DROP SYSTEM
U.S. Patent 6074130 Canadian Patent # 2269565
All RELINER Products are proudly made in the U.S.A.

2. MANUFACTURER

RELINER®/Duran Inc.
53 Mount Archer Rd.
Lyme CT 06371
Phone: (800) 508-6001, (860) 434-0277
Fax: (877) 434-3197
E Mail: info@reliner.com
Web site: http://www.reliner.com

3. PRODUCT DESCRIPTION

Basic Application: RELINER® INSIDE DROP SYSTEM is a plastic composite collection device that facilitates the controlled drop of effluent into the main stream flow of a sanitary manhole. The Drop Bowl permits easy inspection and cleaning without the need to enter the structure. The custom made adjustable stainless steel straps fully support the drop pipe.

Advantages of the INSIDE DROP SYSTEM by RELINER®

- Reduce maintenance
- Eliminate confined space entry
- Speed Inspection
- Simplify cleaning
- Reduce turbulence and odor
- Solids and liquids remain together
- Erosion of structure eliminated
- High corrosion resistance
- Allow workers to enter structure without risk of effluent contact
- Increase pump life in Wet Wells

Composition and Materials: RELINER® DROP BOWL is hand fabricated in the USA from marine grade fiberglass. The clamping pipe supports are of 304 stainless steel with 18-8 stainless nuts and bolts.

These materials have extremely high resistance to sewer acids while providing very smooth, low maintenance assemblies.

The open design allows for grade level inspection and cleaning while containing the incoming material and conducting it smoothly into the main flow of the system.
The RELINER Drop system is compatible with virtually all types of manhole construction and rehabilitation technologies and materials.

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CONSULTANTS

Kimley»Horn

PROJECT TITLE

HAVILAND FIELDS

PRELIMINARY - NOT FOR CONSTRUCTION

CERTIFICATION

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CHECKED BY	
COMMISSION NUMBER	

SHEET TITLE

UTILITY DETAILS

SHEET NUMBER

C608

RELINER® INSIDE DROP SYSTEM SPECIFICATIONS

4. TECHNICAL DATA

RELINER® INSIDE DROP components consist of
1) Standard size composite Drop Bowls
2) Stainless steel adjustable clamping brackets

RELINER composite components are hand and chopper gun laminations of these properties:

Physical Properties of Unsaturated Polyester Resin Reinforced Laminates
(33 / 66 Glass / Resin 1.5 oz mat Laminates .125 in.)

Flexural Strength	(psi)	ASTM D-790	27,100
Flexural Modulus	(psi)	ASTM D-790	1,157,000
Tensile Strength	(psi)	ASTM D-638	16,700
Tensile Modulus	(psi)	ASTM D-638	1,457,000
Tensile Elongation (%)		ASTM D-638	1.54
Hardness, Barcol 934.1		ASTM D-2583	55 - 60

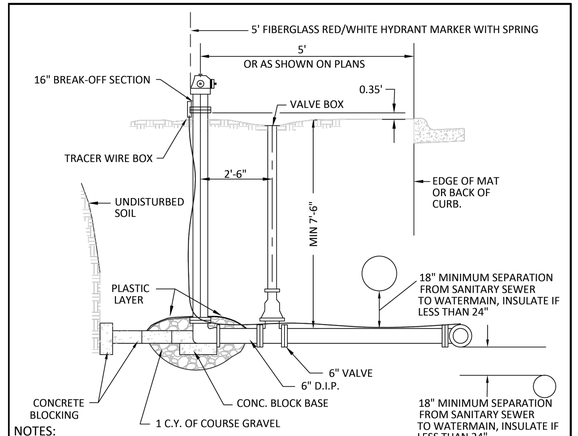
Physical Properties of ISO Gel Coat

	Room Temperature Cured for 45 hours	Post Cured at 50 for 24 hours
Tensile Strength	6,218	6,581
Elongation, %	2.70	1.90
Flexural Strength, psi	11,363	11,329
Heat Distortion, °F	0.544×10^6	0.713×10^6
Mandrel Flex, Mandrel Diameter in Inches	--	1.0

Stainless steel clamping bracket materials:
304 series non-magnetic stainless steel - 11GA
18-8 series non-magnetic stainless steel 3/8 x 18

Sample Specification for RELINER® INSIDE DROP SYSTEM:

All new and/or existing manhole structures employing inside drop connections for services and collector sewers shall use the RELINER® Inside Drop Bowl components as produced by RELINER® / Duran Inc. 53 Mt. Archer Rd. Lyme CT 06371 (800) 508-6001, fax (877) 434-3197 or equal. Bowl size shall be determined by incoming pipe sizes and flow rates. The bowl shall be installed as per manufacturer's instructions using stainless steel fasteners. The drop pipe of SDR 35, Schedule 40 or other shall be securely attached to the manhole wall using stainless steel RELINER® Adjustable Clamping Brackets and stainless steel fasteners. Bracket interval shall be 4 feet maximum (minimum of 2 brackets). The connection of Drop Bowl to drop pipe shall be by flexible external pipe coupler. The turn-out at the base end of the drop pipe shall be accomplished with an appropriately angled PVC pipe elbow (45 degree recommended).



NOTES:
1. HYDRANT SHALL BE 5-1/4" WB67 WATEROUS PACER OR APPROVED EQUAL.
2. HYDRANTS TO BE ORDERED FOR 8'-0" BURY. IN AREAS OF EXTRA DEPTH ON THE WATERMAIN, HYDRANTS EXTENSIONS MAY BE REQUIRED.
3. HYDRANTS SHALL BE BLOCKED OR TIED TO THE TEE AT MAIN WITH 2-3/4" DIAMETER TIE RODS. ALL TIE RODS TO BE COAL TAR COATED AFTER INSTALLATION. RESTRAINED JOINT PIPE AND RETAINING GLANDS MAY BE USED.
4. TOP NUT OF HYDRANT 2.5' ABOVE TOP BACK OF CURB OR BITUMINOUS SURFACE.
5. HYDRANTS BURIED BELOW WATER TABLE, DRAIN HOLES NEED TO BE PLUGGED AND HYDRANT MARKED BY PAINTING 5" CAP YELLOW.
6. BRUSH PAINT ALL HYDRANTS AFTER INSTALLATION IS COMPLETE.
7. PUMPER NOZZLE .5.75" O.D. X 4 T.P.I, HOSE NOZZLE 3.06" O.D. X 7 T.P.I.
8. 12 GAUGE COPPER CLAD STEEL TRACER WIRE IS REQUIRED WITH ALL WATER LINES (FOR DETAILED INFO. REFER TO MINNESOTA RURAL WATER ASSOCIATION TRACER WIRE SPECIFICATION AT WWW.MRWA.COM)

APPROVED: 1 - 2024	City of RAMSEY	STANDARD DETAILS: HYDRANT
		CITY PLATE No. WAT-1

RELINER® INSIDE DROP SYSTEM SPECIFICATIONS

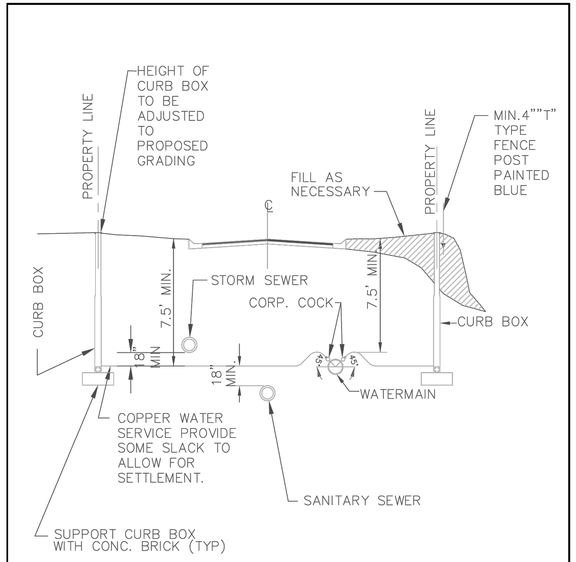
5. INSTALLATION

1. Select **Drop Bowl** of size appropriate to flow rate and pipe diameter.
(Examples: The "A" Bowl with 4" outlet will service up through full 6" inlets. The "A" Bowl with 6" outlet will service up through full 8" inlets. Can be used for 10" & 12" inlet moderate flows.
The "B" Bowl with 8" outlet will service up through full 10" inlets. The "B" Bowl with 10" outlet will service up through full 12" inlets. Can be used for 15" and 16" moderate flows. Larger sizes and flat configurations are also available) A pipe downsize is possible in most applications.
2a. Trim incoming pipe so that only 2" maximum protrudes into manhole.
2b. For improved flow control, cut a "V" shaped notch at bottom edge of incoming pipe.
3. Center Drop Bowl directly under incoming pipe, allow approximately 1" clearance between pipe and bowl.
4. Attach Drop Bowl to manhole wall with 3/8" diameter stainless steel anchors (See following instructions).
NOTE: A & B Bowls are best installed with (4) 3/8" expansion anchors
NOTE: 24 & 30 Bowls are best installed with (6) 3/8" expansion anchors
NOTE: 36 & 48 Bowls require (8) & (10) respectively 3" Wedge Anchors – see install instructions on the other side
NOTE: Fiberglass Manhole Installation Requires Special bolts!!!!!!— see install instructions on the other side
(1) Drill a 3/4"hole into the base material to the required depth (approximately 1- 1/4" deep.)
(2) Blow the hole clean of dust and other material.
(3) Insert the anchor into the hole (Lead shield out).
(4) Position a setting tool or a 9/16 socket against the anchor outer cone. (The outer rim of the tool or socket should seat onto the lead shield rim.)
(5) Using the tool or socket, set the anchor by driving the lead sleeve over the cone using several sharp hammer blows. (Be sure the anchor is at the required embedment depth.)
(6) Position the fixture, insert screw or bolt and tighten.
5. Cut and mount SDR 35 PVC drop pipe of diameter appropriate to Drop Bowl size and flow using RELINER adjustable stainless steel clamping brackets. Use a minimum of 2 brackets with a maximum spacing of 4 feet (RELINER clamping brackets will adjust to allow drop pipe to maintain correct stand off from wall).
6. Connection from Drop Bowl to drop pipe shall be by flexible external pipe connector ("Fernco" recommended.)
7. Install appropriate pipe elbow to provide smooth transition into channel flow. (We recommend a 45 degree elbow.)

Our Drop Bowl warranty is void if the drop pipe is not installed with the correct RELINER pipe support brackets as these brackets fully support the drop pipe and hold it off the wall the correct distance. (see #5 above)

OPTIONAL DROP BOWL INSTALLATION ANCHORS -- These parts are shipped assembled.

3/8 X 1" X 16 18-8 stainless hex cap screw full thread, 3/8 18-8 stainless washers, 3/8 16 x 1-1/4 lead tamp-in expansion anchors

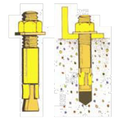


WATER SERVICE
NTS

APPROVED: 3 - 2022	City of RAMSEY	STANDARD DETAILS: WATER SERVICE
		CITY PLATE No. WAT-2

RELINER® INSIDE DROP SYSTEM SPECIFICATIONS

Concrete Wedge Anchor Installation



How to install

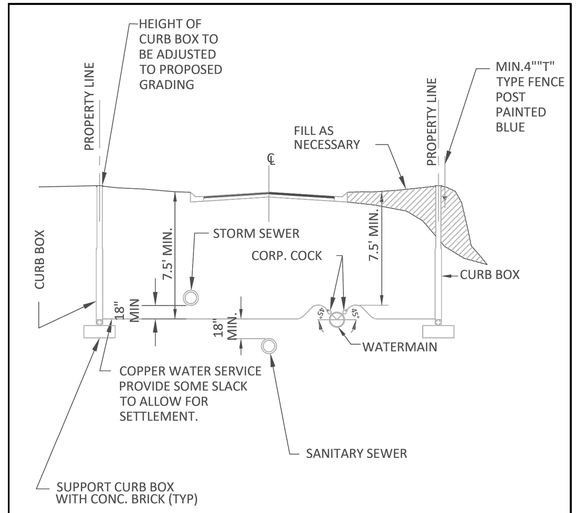
1. Drill hole in concrete (hole dia. same as thread dia.)= (3/8") maximum depth of hole could be any depth beyond minimum recommended depth. Clean out hole of all debris.

2. Place nut on the end of the wedge anchor (to protect the threads of the wedge anchor during installation) Drive wedge anchor into drilled hole through fixture so that nut is flush with fixture.

3. Tighten nut until wrench resistance is felt (approximately 3 to 4 turns of the nut after snugged up) anchorage is now complete.

Stainless Drive Screw for Fiberglass Manholes Installation

(1) Drill a 1/4" pilot hole into the base material
(2) Insert the self-tapping 3/8" stainless hex head screw and turn clockwise.
(3) Run the screw in until the head flange is in contact with the structure.
(4) Remove the screw and install the part. Do not over-tighten, around 10 to 15 # of torque is all that is required. (if ground water is high, set screws with 3M 5200 sealant



WATER SERVICE
NTS

NOTES:
1. 12 GAUGE COPPER CLAD STEEL TRACER WIRE IS REQUIRED WITH ALL WATER LINES (FOR DETAILED INFO. REFER TO MINNESOTA RURAL WATER ASSOCIATION TRACER WIRE SPECIFICATION AT WWW.MRWA.COM)

APPROVED: 1 - 2024	City of RAMSEY	STANDARD DETAILS: WATER SERVICE
		CITY PLATE No. WAT-2

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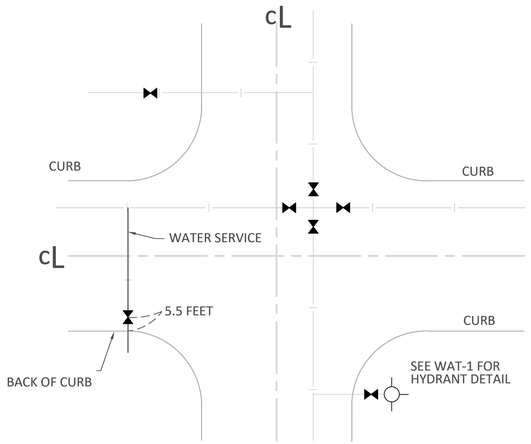
UTILITY DETAILS

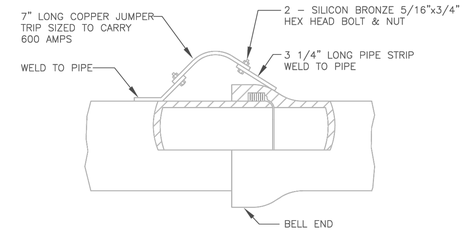
SHEET NUMBER

C609



NOTES:
1. VALVES TO BE CLUSTERED AT CROSS ON THE TEE BY PLACING IMMEDIATELY ADJACENT TO FITTINGS.
2. WATERMAIN TO BE LOCATED ON NORTH AND EAST SIDES OF STREET 10 FEET FROM CENTERLINE.
3. ALL SERVICE VALVES IN ROAD WAY SHALL BE 5.5 FEET FROM BACK OF CONCRETE CURB.
4. ALL VALVES NOT IN BITUMINOUS PAVEMENT SHALL BE MARKED WITH A BLUE 5 FOOT CARSONITE MARKER.

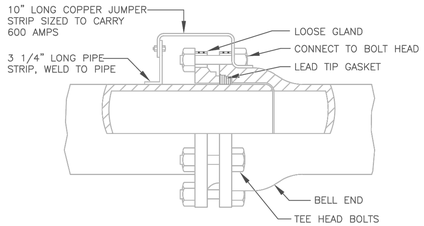
APPROVED: 1 - 2024	City of RAMSEY	STANDARD DETAILS: WATERMAIN VALVE LOCATION
		CITY PLATE No. WAT-3



PUSH ON JOINT

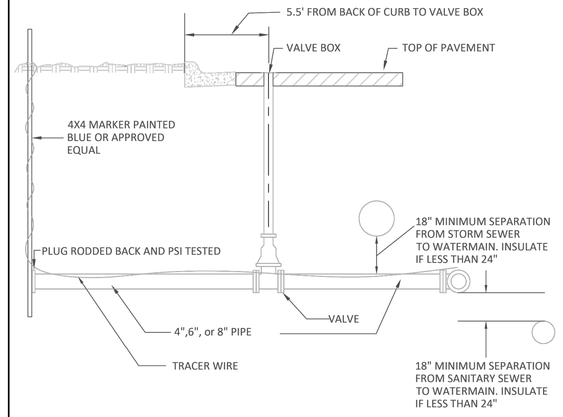
NOTE: DO NOT PASS CURRENT THROUGH PIPE UNLESS PIPE IS FULL OF WATER.

ALTERNATE METHOD BY AMERICAN CAST –IRON USING 4 COPPER CONTACT STRIPS IS AN APPROVED EQUAL TO ABOVE



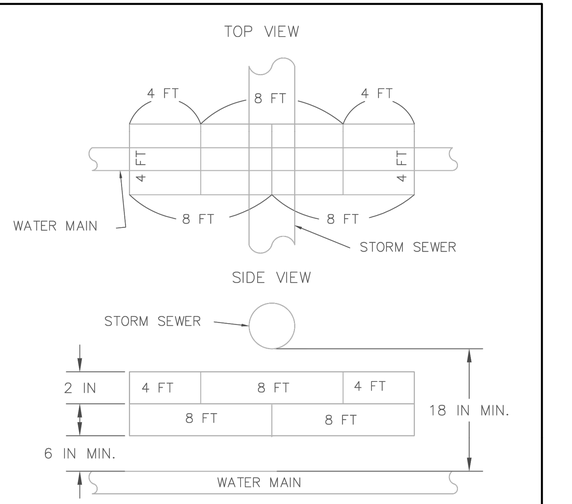
MECHANICAL JOINT

APPROVED: 1 – 2016	City of RAMSEY	STANDARD DETAILS: JOINT CONNECTION
		CITY PLATE No. WAT–4



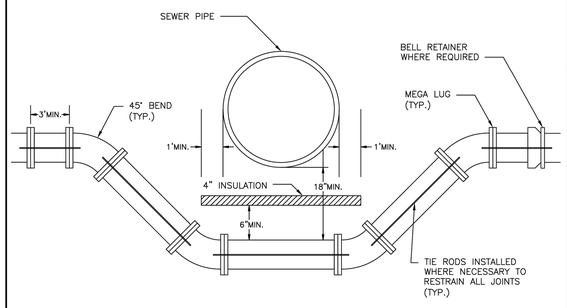
NOTES:
1. SHALL BE BLOCKED OR TIED TO THE MAIN WITH 2-3/4" DIAMETER TIE RODS. ALL TIE RODS TO BE COAL TAR COATED AFTER INSTALLATION. RESTRAINED JOINT PIPE AND RETAINING GLANDS MAY BE USED.
2. 12 GAUGE COPPER CLAD STEEL TRACER WIRE IS REQUIRED WITH ALL WATER LINES (FOR DETAILED INFO. REFER TO MINNESOTA RURAL WATER ASSOCIATION TRACER WIRE SPECIFICATION AT WWW.MRWA.COM)

APPROVED: 1 - 2024	City of RAMSEY	STANDARD DETAILS: COMMERCIAL SERVICE
		CITY PLATE No. WAT-5



NOTES: 1) SHEETS ARE 2 INCHES BY 4 FEET BY 8 FEET
2) SURFACE PREPARATION SHALL BE SMOOTH AND ROCK FREE
3) JOINTS WILL BE OVERLAPPED BY 4 FEET
4) POLYSTYRENE INSULATION OR APPROVED EQUAL
5) INSULATION REQUIRED WHERE PIPE SEPARATION IS < 2 FEET

APPROVED: 3 - 2022	City of RAMSEY	STANDARD DETAILS: WATER MAIN INSULATION
		CITY PLATE No. WAT-6



NOTE:

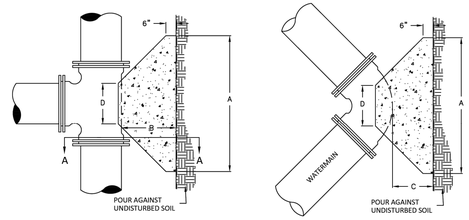
1. PROVIDE MEGA LUGS OR APPROVED EQUAL AT ALL JOINTS ON BENDS AND AS SHOWN ON THIS STANDARD PLATE.

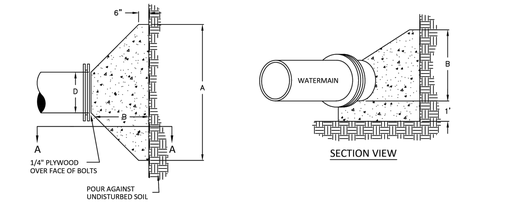
2. USE 2 – ¾" DIAMETER TIE RODS. ALL TIE RODS TO BE COAL TAR COATED AFTER INSTALLATION.

3. PROVIDE SAND CUSHION BETWEEN TOP OF WATERMAIN AND BOTTOM OF INSULATION, MIN. DIMENSIONS AS SHOWN ON THIS STANDARD PLATE.

NOTE: SEE STANDARD PLATE WAT–6 FOR UTILITY INSULATION REQUIREMENTS.

APPROVED: 6 – 2015	City of RAMSEY	STANDARD DETAILS: WATERMAIN LOWERING
		CITY PLATE No. WAT–7





PIPE SIZE	22 ½% BEND			45% BEND			90% BEND		
	A	B	C	A	B	C	A	B	C
12"	1'-10"	1'-10"	2'-0"	3'-4"	2'-0"	2'-0"	4'-9"	2'-6"	2'-0"
16"	3'-0"	2'-0"	2'-0"	3'-10"	3'-0"	2'-0"	6'-2"	3'-6"	2'-6"
20"	3'-6"	2'-8"	3'-0"	5'-6"	3'-4"	3'-0"	8'-4"	4'-0"	
24"	4'-4"	3'-0"	3'-0"	6'-10"	3'-10"	3'-0"	9'-8"	5'-0"	
30"	--	--	3'-6"	9'-3"	6'-0"	3'-6"	17'-0"	6'-0"	3'-6"

DIMENSION D SHALL BE AS LARGE AS POSSIBLE WITHOUT INTERFERING WITH MJ BOLTS.
NOTES:
1. BLOCKING TO BE POURED CONCRETE, MNDOT MIX DESIGN 3A32.
2. FITTINGS MUST BE COVERED W/POLY (8 MIL) PRIOR TO POURING CONCRETE
3. KEEP CONCRETE CLEAR OF BOLTS, JOINT AND ACCESSORIES.

APPROVED: 1 - 2024	City of RAMSEY	STANDARD DETAILS: THRUST BLOCKS
		CITY PLATE No. WAT-8

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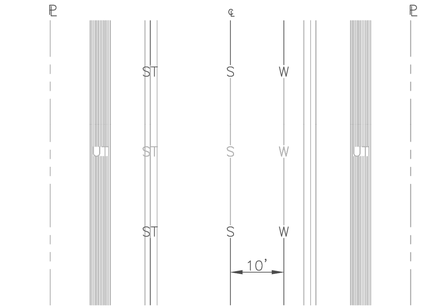


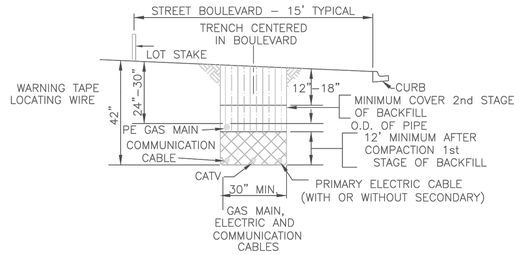
LEGEND
- S — SANITARY SEWER
- ST — STORM SEWER
- W — WATERMAIN
- UTILITY TRENCH
- ℄ PROPERTY LINE
- ℄ CENTERLINE OF STREET

NOTES:
1. WATERMAIN SHALL BE LOCATED NORTH & EAST OF CENTERLINE
2. UTILITY TRENCH SHALL BE A COMMON BURY FOR ELECTRIC, GAS, COMMUNICATIONS & CABLE TV.
3. THE COMMON BURY TRENCH SHALL BE LOCATED IN THE CENTER OF THE BOULEVARD BETWEEN BACK OF CURB & PROPERTY LINE.
4. STORM SEWER SHALL BE LOCATED BENEATH THE CURB ON THE STREET SIDE OPPOSITE TO THE WATERMAIN.
5. SEE DETAILS FOR MINUMUM DEPTH LOCATIONS.

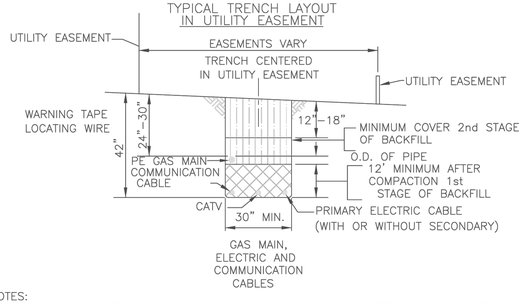
UTILITY LOCATIONS
N.T.S.

APPROVED: 7 – 1996	City of RAMSEY	STANDARD DETAILS: UTILITY LOCATIONS
		CITY PLATE No. UTL–1

TYPICAL TRENCH LAYOUT
IN STREET BOULEVARD



TYPICAL TRENCH LAYOUT
IN UTILITY EASEMENT

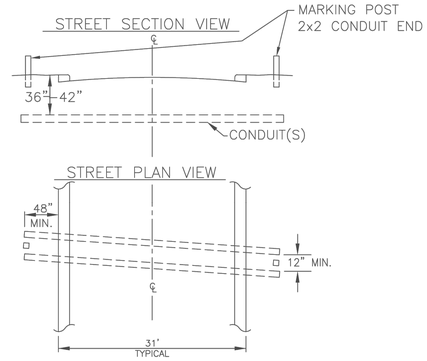


NOTES:
1. TRENCH AND UTILITY LOCATIONS SHALL CORRESPOND WITH STREET SERIES LAYOUT AND CONNEXUS PLANS.
2. WARNING TAPE AND LOCATING WIRE PLACED ABOVE GAS AND ELECTRIC

APPROVED: 7 – 1996	City of RAMSEY	STANDARD DETAILS: TYPICAL TRENCH LOCATION
		CITY PLATE No. UTL–2

CONDUIT INSTALLATION GUIDE

REQUIREMENTS
1. CONDUIT(S) SHALL BE 4" PVC SCHEDULE 40 UNLESS OTHERWISE NOTED.
2. DEPTH OF CONDUIT(S) SHALL BE 36" TO 42"
3. EXTEND CONDUIT(S) A MINIMUM OF 48" BEYOND CURB AND MARK ENDS WITH A 2X2 MARKING POST.
4. IF MULTIPLE CONDUIT(S) ARE NEEDED, THEY SHALL BE SEPARATED BY A MINIMUM OF 12".
5. AT STREET INTERSECTIONS, INSTALL THE CONDUIT(S) IN LINE WITH UTILITY TRENCH LINE WHICH IS 7' FROM LOT LINE.



CONDUIT INSTALLATION
N.T.S.

APPROVED: 4 – 2016	City of RAMSEY	STANDARD DETAILS: CONDUIT INSTALLATION
		CITY PLATE No. UTL–3

PRELIMINARY - NOT FOR CONSTRUCTION

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CONSULTANTS

Kimley»Horn

PROJECT TITLE

HAVILAND FIELDS

CERTIFICATION

NOT FOR CONSTRUCTION

DRAWN BY	
CHECKED BY	
COMMISSION NUMBER	

SHEET TITLE

UTILITY DETAILS

SHEET NUMBER

C611