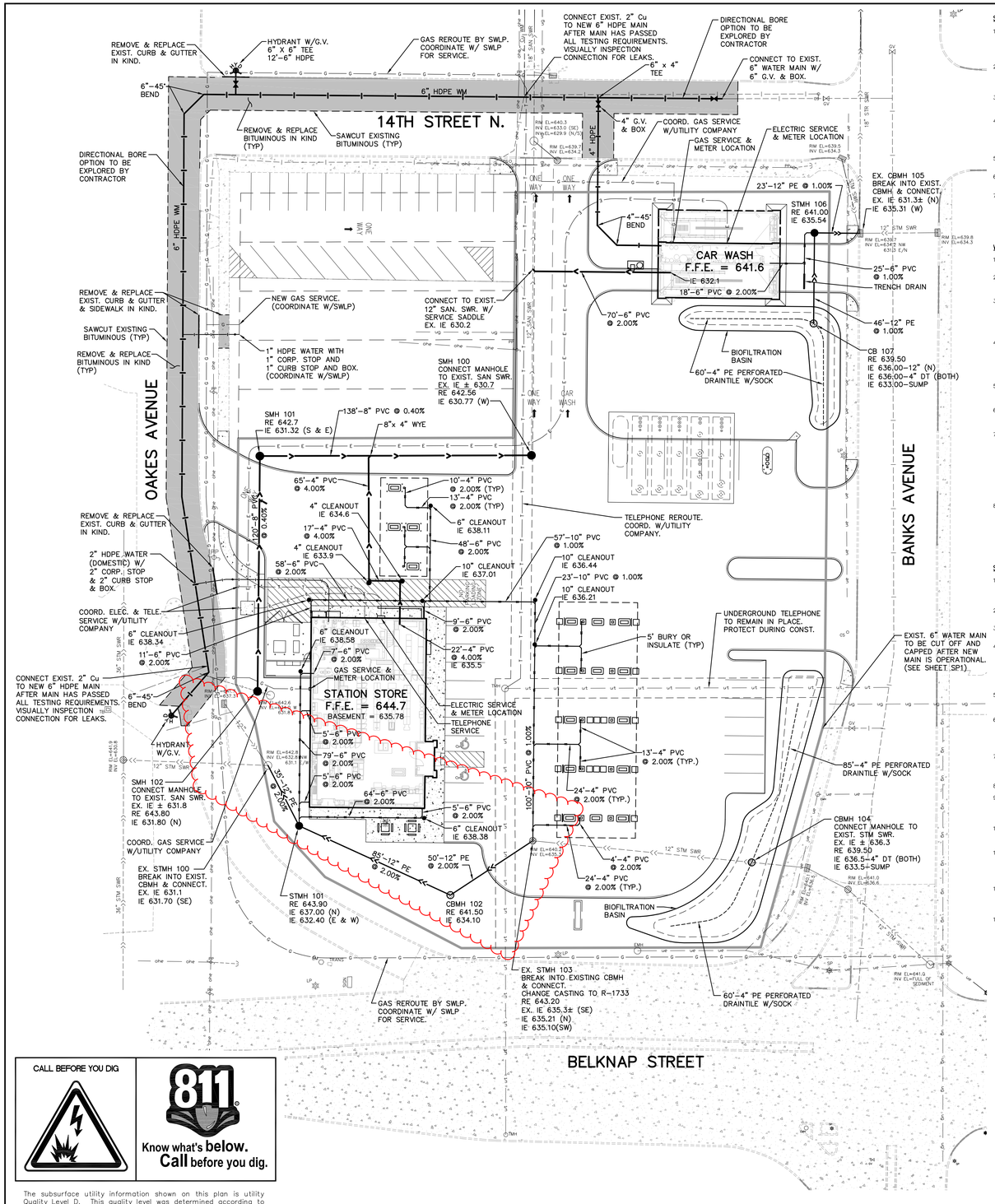

CALL BEFORE YOU DIG

811 Know what's below. Call before you dig.

The subsurface utility information shown on this plan is utility Quality Level D. This quality level was determined according to the guidelines of CI/ASCE 38-02, entitled "Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data."

SANITARY SEWER:

1. Pipe: Use solid-core, SDR-35, ASTM D3034 (or approved equal) Polyvinyl Chloride (PVC) Plastic Pipe for all designated PVC sanitary sewer services. Joints for all sanitary sewer shall have push-on joints with elastomeric gaskets. Use of solvent cement joints is allowed for building services. Solvent cement joints in PVC pipe must include use of a primer which is of contrasting color to the pipe and cement. Pipe with solvent cement joints shall be joined with PVC cement conforming to ASTM D2564. Lay all PVC pipe on a continuous granular bed. Installation must comply with ASTM D2321.
2. Cleanouts: Install cleanouts on all sanitary sewer services. The distance between cleanouts in horizontal piping shall not exceed 100 feet for pipes 4-inch and over in size. Cleanouts shall be of the same nominal size as the pipes they serve. Include frost sleeves and concrete frame and pipe support. Install a meter box frame and solid lid (Neenah R-1914-A, or approved equal) over all cleanouts, unless otherwise noted.
3. Testing: Pressure test all sanitary sewer lines. Test all flexible sanitary sewer lines for deflection after the sewer line has been installed and backfill has been in place for at least 30 days. No pipe shall exceed a deflection of 5%. If the test fails, make necessary repairs and retest.
4. Unless other indicated, use reinforced, precast, concrete maintenance holes conforming to ASTM C478, furnished with precast bases. Sanitary sewer maintenance holes shall be supplied with pre-formed inverts and flexible neoprene sleeve connections for all lateral lines 375 mm (15inches) in diameter or less, unless otherwise indicated. Joints for all precast maintenance hole sections shall have confined, rubber "O"-ring gaskets in accordance with ASTM C923. The inside barrel diameter shall not be less than 48 inches.
5. Install flexible watertight frame/chimney seals on all sanitary sewer maintenance holes. Use either Manufactured Maintenance Hole Frame/Chimney Seals or Elastomeric Waterproofing Frame/Chimney Seals.
6. Use Neenah Foundry Co. R-1642 casting with self-sealing, solid, type B lid, or approved equal, on all sanitary sewer maintenance holes. Covers shall bear the "Sanitary Sewer" label.
7. TRACER WIRE: Locating requirements – a means to locate buried underground exterior non metallic sewers/mains must be provided with tracer wire or other methods in order to be located in accordance with the provisions of the Wisconsin Statutes 182.0175(2r) and the Wisconsin Department of Commerce COMM 82.30(11)(h).

WATER DISTRIBUTION SYSTEM (REFER TO SUPERIOR WATER LIGHT & POWER STANDARDS):

1. Separation of Water and Sewer: Provide a minimum horizontal separation of 10 feet between all water and sewer lines. Provide a minimum separation of 18 inches at all water line and sewer line crossings.
2. Watermain Depth: Maintain 7.5 feet of cover over the top of the water lines to the finished grade. Verify elevation of proposed and existing water lines at all utility crossings. Install the water lines at greater depths in order to clear storm sewers, sanitary sewers, or other utilities as required. Include costs to lower water lines in the base bid.
3. Disinfection: Disinfect all completed watermains in accordance with AWWA Standard C651. If the tablet or continuous feed methods are used, disinfect using water that contains at least 50 ppm of available chlorine. Retain the treated water in the line for at least 24 hours. Measure the chlorine residual at the end of the 24 hour period. The free chlorine residual must be at least 10 mg/l measured at any point in the line. Measurement of the chlorine concentration at regular intervals shall be in accordance with Standard Methods, AWWA M-12, or using appropriate chlorine test kits.
4. Testing: Pressure test and perform bacteriological tests on all water lines under the supervision of the City Public Works Department. Notify the City at least 24 working hours prior to any testing. Pressurize the watermain to 1034 kPa (150 psi) gauge pressure (measured at the point of lowest elevation) by means of a pump connected to the pipe in a satisfactory manner. Maintain the test pressure for a minimum of 2 hours. Do not add water to the watermain in order to maintain the required pressure during the watermain pressure testing. The test section of pipe is acceptable with a pressure drop of 14 kPa (2 psi) or less.
5. For 6 inch, 8 inch and 12inch watermain, use polyethylene pipe conforming to ASTM 3035 and AWWA C906-07, Polyethylene (PE) Pressure Pipe and Fittings, fused-type suitable for use on ductile iron pipe size (DIPS) HDPE pipe. Use only stainless steel bolts and nuts on all watermain fittings, valves, and hydrants.
6. Use mechanical joint restraint devices for joint restraint on all watermain bends having a vertical or horizontal deflection of 22-1/2 degrees or greater, all valves, stubs, extension, tees, crosses, plugs, all hydrant valves, and all hydrants in accordance with Superior Water Light and Power requirements.
7. Gate Valves shall be in accordance with Chapter 8.27.0, Wisconsin Water and Sewer Specifications, except as modified herein:
   7.1. Gate valves: resilient seated, conforming to AWWA C515.
   7.2. Working pressure: 200 psi.
   7.3. Ends: mechanical joint complete with gasket, gland, and bolts. Bolts or valve flange shall be provided with means for preventing the bolt from slipping in the slotted holes.
   7.4. Operating stem: non-rising with O-ring seals.
   7.5. Operating nut: 2-inch square, open left.
   7.6. Bonnet to body connection: stainless steel bolts and nuts.
   7.7. Valve boxes: adjustable screw type.
   7.8. Gate Valve adaptor: Adaptor, Inc., or equal.
8. TRACER WIRE: Locating requirements – a means to locate buried underground exterior non metallic sewers/mains must be provided with tracer wire or other methods in order to be located in accordance with the provisions of the Wisconsin Statutes 182.0175(2r) and the Wisconsin Department of Commerce COMM 82.30(11)(h).

STORM DRAINAGE:

1. Unless otherwise indicated, use reinforced, precast, concrete maintenance holes and catch basins conforming to ASTM C478, furnished with water stop gaskets and precast bases. Joints for all precast maintenance hole sections shall have confined, rubber "O"-ring gaskets in accordance with ASTM C923. The inside barrel diameter shall not be less that 48 inches, unless otherwise noted.
2. All joints and connections to catch basins or manholes shall be watertight. Use resilient rubber seals, waterstop gaskets, or approved equal. Cement mortar joints are not allowed.
3. Maintenance holes and catch basins in paved areas shall be sumped 0.05 feet. Catch basins in the gutter line shall be sumped 0.17 feet. Elevations shown on the plans represent the sumped elevations.
4. PVC Pipe: Use solid-core, SDR-35, ASTM D3034 Polyvinyl Chloride (PVC) Pipe for designated PVC storm sewer services 4 to 15-inches in diameter. Use solid-core, SDR-35, ASTM F679 Polyvinyl Chloride (PVC) pipe for designated PVC storm sewer services 18 to 27-inches in diameter. Joints for all storm sewer shall have push-on joints with elastomeric gaskets. Use of solvent cement joints in allowed for building services. Solvent cement joints in PVC pipe must include use of a primer which is of a contrasting color to the pipe and cement. Pipe with solvent cement joints shall be joined with PVC cement conforming to ASTM D2564. Lay all PVC pipe on a continuous granular bed. Installation must comply with ASTM D2321.
5. RCP: Reinforced concrete pipe (RCP) and fittings shall conform to ASTM C76, Design C, with circular reinforcing for the class of pipe specified. Use Class IV RCP for pipes 21" and larger. Use Class V RCP for pipes 18" and smaller. Joints shall be Bureau of Reclamation type R-4, with confined rubber "O"-ring gaskets in accordance with ASTM C361.
6. RC Aprons: Install a reinforced concrete apron on the free end of all daylight RCP storm sewer pipes. Tie the last three sections (including apron) of all daylight RCP storm sewers with a minimum of two tie bolt fasteners per joint. This requirement applies to both upstream and downstream pipe inlets and outlets. For concrete culverts, tie all joints. Ties to be used only when to hold the pipe sections together, not for pulling the sections tight. Nuts and washers are not required on inside of 675 mm (27 inch) or less diameter pipes. Install safety-trash racks on all concrete aprons.
7. Testing: Test all portions of storm sewer that are within 10 feet of buildings, within 10 feet of buried water lines, within 50 feet of water wells, or that pass through soil or water identified as being contaminated. Test all flexible storm sewer lines for deflection after the sewer line has been installed and backfill has been in place for at least 30 days. No pipe shall exceed a deflection of 5%. If the test fails, make necessary repairs and retest.
8. Use Neenah castings, or approved equal, of the type indicated in the Storm Sewer Schedule.
9. Install detectable underground marking tape directly above all PVC, polyethylene, and other nonconductive underground utilities at a depth of 457 mm (18 inches) below finished grade, unless otherwise indicated. Bring the tape to the surface at various locations in order to provide connection points for located the underground utility. Install blue Rhino TriView Flex Test Stations, or approved equal, with black caps at each surface location.
10. TRACER WIRE: Locating requirements – a means to locate buried underground exterior non metallic sewers/mains must be provided with tracer wire or other methods in order to be located in accordance with the provisions of the Wisconsin Statutes 182.0175(2r) and the Wisconsin Department of Commerce COMM 82.30(11)(k).
11. The minimum depth of cover for building and canopy roof drain leaders without insulation is 5 feet. Insulate roof drain leaders at locations where the depth of cover is less than 5 feet. Provide a minimum insulation thickness of 2 inches. The insulation must be at least 4 feet wide and centered on the pipe. Install the insulation boards 6 inches above the tops of the pipes on mechanically compacted and leveled pipe bedding material. Use high density, closed cell, rigid board equivalent to DOW Styrofoam Hi-40 plastic foam insulation.
12. Cleanouts: Install cleanouts on all roof drains in accordance with S.P.S. 382.35 (3)(C)(1). The distance between cleanouts in horizontal piping shall not exceed 100 feet for pipes 10-inches and under in size. Cleanouts shall be of the same nominal size as the pipes they serve. Install a meter box frame and solid lid (Neenah R-1914-A, or approved equal) over all cleanouts unless otherwise noted.
13. HDPE Requirements:
   13.1. Install dual-wall, smooth interior, corrugated high-density polyethylene (HDPE) pipe at located indicated on the plan.
   13.2. HDPE pipe shall conform to the requirements of AASHTO M252 for pipe sizes 4-inch and 10-inch diameter.
   13.3. HPDE pipe shall conform to the requirements of ASTM F2306 for pipe sizes 12-inch to 60-inch.
   13.4. All fittings must comply with ASTM Standard D3212.
   13.5. Water-tight joints must be used at all connections including structures.
   13.6. Lay all HDPE pipe on a continuous granular bed. Installation must comply with ASTM D2321. All sections of the corrugated HDPE pipe shall be coupled in order to provide water tight joints.
   13.7. Perform deflection tests on all HDPE pipe after the sewer lines have been installed and backfill has been in place for at least 30 days. No pipe shall exceed a deflection of 5%. If the test fails, make necessary repairs and perform the test again until acceptable. Supply the mandrel for deflection testing. If the deflection test is to be run using a rigid ball or mandrel, it shall have a diameter equal to 94% of the inside diameter of the pipe. The ball or mandrel shall be clearly stamped with the diameter. Perform the tests without mechanical pulling devices.

BENCHMARKS

1. BASE OF SPIKE LOCATED APPROXIMATELY 1,740 FEET NORTH OF THE INTERSECTION OF OAKES AVE. & 14TH ST. ELEVATION=634.22 FEET (NAVD88)
2. BASE OF SPIKE LOCATED APPROXIMATELY 1,225 FEET NORTH OF THE INTERSECTION OF OAKES AVE. & 14TH ST. ELEVATION=635.95 FEET (NAVD88)

GENERAL NOTES:

1. Governing Specifications: The latest edition of the Wisconsin Department of Transportation "Standard Specifications" and "Construction & Materials Manual", the City of Superior Standard Specifications, Superior Water Light and Power Standard Water Specifications, and the Wisconsin Plumbing Code.
2. Comply with the work safety practices specified by the Occupational Safety and Health Administration (OSHA). Comply with all applicable local, state, and federal safety regulations. OSHA prohibits entry into "confined spaces", such as manhole and inlets (see 29CFR Section 1910.146) without undertaking certain specific practices and procedures. Construction safety is solely the responsibility of the Contractor, who is also solely responsible for the means, methods, and sequencing of the construction operations.
3. Perform all utility work in accordance with State, City and Superior Water Light and Power requirements.
4. Connect to existing sanitary sewer MH's by coredrilling. Connect to existing storm sewer MH's by either sawcutting or coredrilling. Use saws or drills that provide water to the blade. Meet all City standards and specifications for the connection. Reconstruct inverts after installation. Use water stop gaskets in order to provide watertight seals when penetrating a structure wall with a pipe. Take measures before beginning construction to ensure that service connections do not cut into maintenance access structure joints or pipe barrel joints.
5. Perform trench excavations for all utilities in accordance with the requirements of OSHA 29 CFR. Part 1926, Subpart P, "Excavations and Trenches". (www.osha.gov)
6. Coordinate building utility connection locations at 5 ft. out from the proposed building with the interior plumbing contractor prior to construction. Verify water and sewer service locations and elevations with the Mechanical Engineer prior to construction.
7. The locations of existing utilities shown on this plan are from record information and field as-built data. The Engineer does not guarantee that all existing utilities are shown or, if shown, exist in the locations indicated on the plan. Is it he Contractor's responsibility to verify the vertical and horizontal location of all existing utilities (including water service lines and appurtenances). Notify the Engineer of any discrepancies.
8. Contact utility companies for locations of all public and private utilities within the work area prior to beginning construction. Contact Digger's Hotline at 811 for locations of existing utilities at least 72 hours (not including weekends or holidays) before beginning any construction. Obtain ticket number and meet with representatives of the various utilities at the site. Provide the Owner with the ticket number information. Digger's Hotline is a free service that locates municipal and utility company lines, but does not locate private utility lines. Use an independent locator service or other means in order to obtain locations of private utilities including, but not limited to, underground electric cables, telephone, TV, and lawn sprinkler lines.
9. Pothole to verify the location of existing underground facilities at a sufficient number of locations in order to assure that no conflict with the proposed work exists and that sufficient clearance is available.
10. Where existing gas, electric, cable, or telephone utilities conflict with the work, coordinate the abandonment, relocation, offset, or support of the existing utilities with the appropriate utility companies. Coordinate new gas meter and gas line installation, electric meter and electric service installation, cable service and telephone service installation with the local utility companies.
11. Arrange for and secure suitable disposal areas off-site. Dispose of all excess soil, waste material, debris, and all materials not designated for salvage. Waste material and debris include trees, stumps, pipe, concrete, asphaltic concrete, cans, or other waste material from the construction operation. Obtain the rights to any waste area for disposal of unsuitable or surplus material either shown or not shown on the plans. All work in disposing of such material shall be considered incidental to the work. All disposal must conform to applicable solid waste disposal permit regulations. Obtain all necessary permits at no cost to the Owner.
12. Straight line saw-cut existing bituminous or concrete surfacing at the perimeter of pavement removal areas. Use saws that provide water to the blade. Tack, and match all connections to existing bituminous pavement.
13. Relocate overhead power, telephone, and cable lines as required.
14. All materials require for this work shall be new material conforming to the requirements for class, kind, grade, size, quality, and other details specified herein or as shown on the Plans. Do not use recycled or salvaged aggregate, asphaltic pavement, crushed concrete, or scrap shingles. Unless otherwise indicated, the Contractor shall furnish all required materials.
15. Restore the public right-of-way. Replace any concrete curb and gutter, bituminous pavement, sidewalk, or vegetative cover damaged by the construction activity. Restore damaged turf with sod within the public right-of-way. The work area shown is general and may need to be adjusted in the field.
16. When sawing or drilling concrete or masonry, use saws that provide water to the blade. Do not allow the slurry produced by this process to be tracked outside of the immediate work area or discharged into the sewer system.
17. Adjust all curb stops, valve boxes, maintenance hole castings, catch basin castings, cleanout covers, and similar items to finished grade.
18. Install all pipe with the ASTM identification numbers on the top for inspection. Commence pipe laying at the lowest point in the proposed sewer line. Lay the pipe with the bell end or receiving groove end of the pipe pointing upgrade. When connecting to an existing pipe, uncover the existing pipe in order to allow any adjustments in the proposed line and grade before laying any pipe.
19. Obtain and pay for all permits, tests, inspections, etc. required by agencies that have jurisdiction over the project. The Contractor is responsible for all bonds, letters of credit, or cash sureties related to the work. Execute and inspect work in accordance with all local and state codes, rules, ordinances, and regulations pertaining to the particular type of work involved.
20. Obtain permits from the City for work in the public right-of-way.
21. Construct sanitary sewer, watermain, and storm sewer utilities in accordance with the Standard Specifications for Sewer and Water Construction in Wisconsin, Sixth Edition, or the latest revised edition and Superior Water Light & Power Standards..
22. TRACER WIRE: Locating requirements – a means to locate buried underground exterior non metallic sewers/mains must be provided with tracer wire or other methods in order to be located in accordance with the provisions of the Wisconsin Statutes 182.0175(2r) and the Wisconsin Department of Commerce COMM 82.30(11)(h).

STORM SEWER SCHEDULE

STRUCTURE		NEENAH CASTING or EQUAL
TYPE & No.	SIZE	
STMH-100	EXIST.	N/A
STMH-101	48" DIA.	R-1733
CBMH-102	48" DIA.	R-4342
STMH-103	EXIST.	R-1733
*CBMH-104	48" DIA.	R-4342
CBMH-105	EXIST.	N/A
STMH-106	48" DIA.	R-1733
*CB-107	48" DIA.	R-4342

*INSTALL 18R SNOUT OIL & DEBRIS STOP AS MANUFACTIURED BY BMP, INC.

UTILITY PLAN LEGEND

	EXISTING	PROPOSED
CURB		
BITUMINOUS		
CONCRETE WALK		
PROPERTY LINE		
EASEMENT LINE		
STORM SEWER		
DRAIN TILE		
SANITARY SEWER		
WATER MAIN		
UNDERGROUND GAS	ug ug	G G G
OVERHEAD ELECTRIC	ohe ohe	
UNDERGROUND ELECTRIC	ue ue	E E E
UNDERGROUND TELEPHONE	ut ut	T T T
MANHOLE	MH	
CLEANOUT		
HYDRANT	H/D	
GATE VALVE		
TELEPHONE BOX	TB	
ELECTRIC METER	EM	
ELECTRIC MANHOLE	EMH	
TELEPHONE MANHOLE	TMH	
GUARD POST	GP	
POWER POLE	PP	
LIGHT POLE	LP	
SEMAPHORE	SP	
SOIL BORING	TH B2	
TRANSFORMER	TRANS	
CURB STOP	CS	
PK NAIL	PK	

KWIK TRIP™ STORES

KWIK STAR™ STORES

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Phone: 763-489-7900 Fax: 763-489-7959

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Wisconsin

Name: Brian J. Krystofiak, P.E.
Signature:
Date: 10/18/13 License #: E-32415

UTILITY PLAN

CONVENIENCE STORE #203 WITH DIESEL & CARWASH

BELKNAP STREET & BANKS AVENUE
SUPERIOR, WISCONSIN

#	DATE	DESCRIPTION
1	01/17/14	Per City/Owner comments.

DRAWN BY	KMM
SCALE	GRAPHIC
PROJ. NO.	4736-00
DATE	2013-10-18
SHEET	SP4