

KWIK TRIP STORE #1782

PERMIT SET CITY OF RAMSEY ANOKA COUNTY, MINNESOTA

**Kwik
TRIP**

**Kwik
STAR**

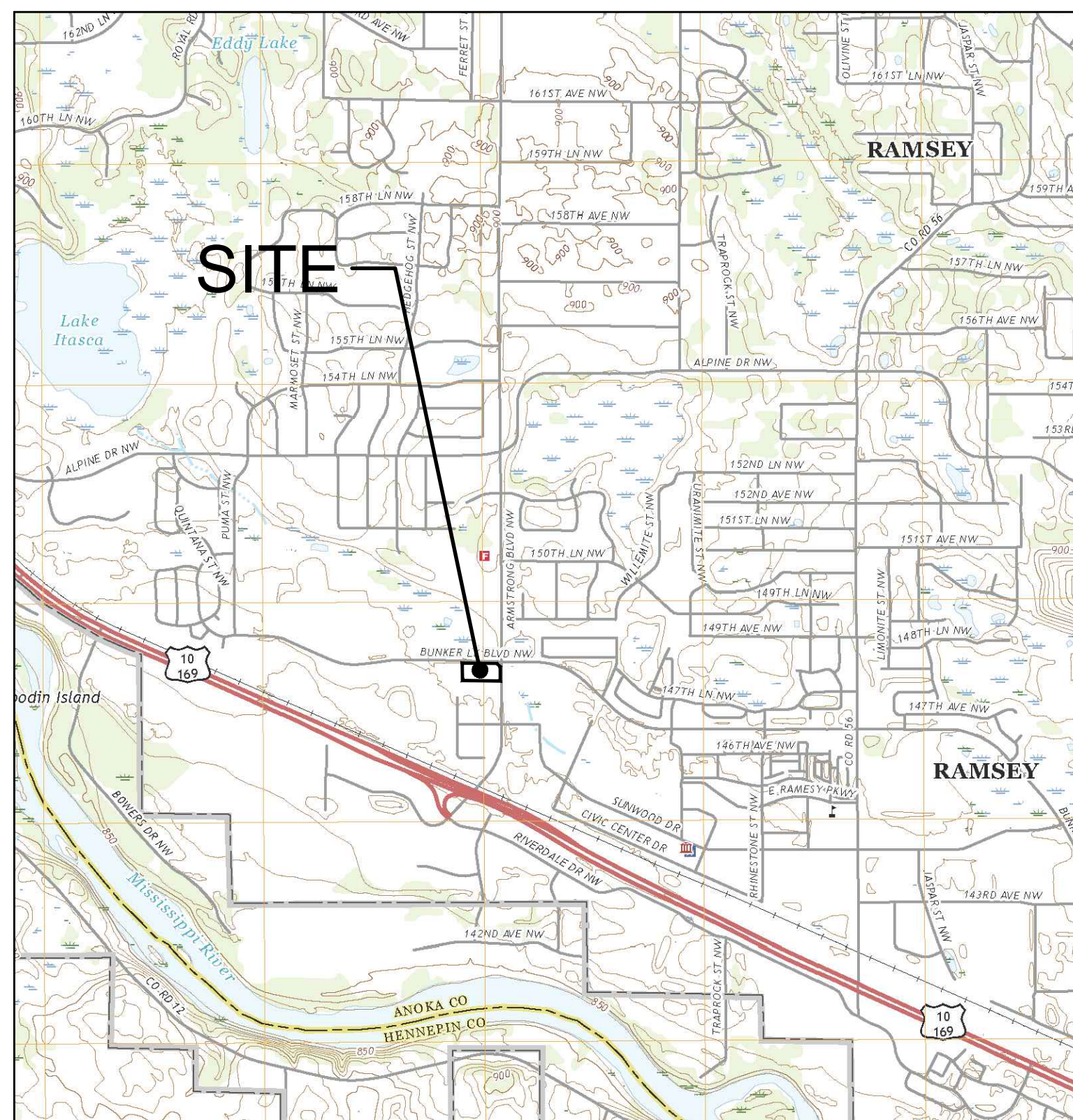
KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960

**CARLSON
ENGINEERING**

3890 PHEASANT RIDGE DRIVE NE, SUITE 100, BLAINE, MN 55449
TEL 763-489-7900, FAX 763-489-7959
CARLSON-ENGINEERING.COM

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 Minnesota.

Name: Daniel J. Wilke, P.E.
Signature: *D. Wilke*
Date: 01/30/25 License #: 53182



SITE LOCATION MAP



AERIAL LOCATION MAP

DRAWING INDEX

C001	TITLE SHEET
C010	ALTA SURVEY
C020	DEMO PLAN
C100	SITE KEYNOTE PLAN
C180	SITE CIRCULATION PLAN
C181	SITE DIMENSION PLAN
C200	GRADE PLAN
C201	GRADE PLAN (SPOT DETAIL)
C300	STORM SEWER PLAN
C301	STORM SEWER NOTES & DETAILS
C400	UTILITY PLAN
C401	UTILITY NOTES
C500	SITE PLAN DETAILS
C501	SITE PLAN DETAILS
C502	SITE PLAN DETAILS
C600	EROSION CONTROL PLAN
C601	EROSION CONTROL NOTES
C602	EROSION CONTROL DETAILS
C603	EROSION CONTROL DETAILS
C700	LANDSCAPE PLAN
C701	LANDSCAPE PLAN
C702	TREE PRESERVATION PLAN
C800	PHOTOMETRIC LIGHTING PLAN
C801	PHOTOMETRIC RENDERING PLANS

COVER SHEET

CONVENIENCE STORE #1782
WITH 1-BAY CARWASH

BUNKER LAKE BLVD & ARMSTRONG BLVD NW
RAMSEY, MINNESOTA

OWNER
KWIK TRIP, INC
NATE BYOM
1626 OAK STREET
LA CROSSE, WI 54602
PHONE: 608-791-7448
EMAIL: nbyom@kwiktrip.com

CIVIL ENGINEER
CARLSON MCCAIN, INC.
DANIEL WILKE
15650 36TH AVENUE N, #110
PLYMOUTH, MN 55446
PHONE: 952-346-3864
EMAIL: dwilke@carlsonmccain.com

SITE DESIGNER
CARLSON MCCAIN, INC.
DANIEL WILKE
15650 36TH AVENUE N, #110
PLYMOUTH, MN 55446
PHONE: 952-346-3864
EMAIL: dwilke@carlsonmccain.com

SURVEYOR
CARLSON ENGINEERING, INC.
THOMAS BALLUFF
3890 PHEASANT RIDGE DR NE, #100
BLAINE, MN 55449
PHONE: 763-489-7916
EMAIL: tballuff@carlsonmccain.com

#	DATE	DESCRIPTION
1	03/10/25	Per Owner Comments
2	04/08/25	Per City Comments

DRAWN BY	DJW
SCALE	GRAPHIC
PROJ. NO.	11224-00
DATE	2025-01-30
SHEET	1782 C001

PROPERTY DESCRIPTION: (Per Schedule A of Title Commitment No. 1663266, with a commitment date of September 17, 2024 at 8:00 A.M., prepared by First American Title Insurance Company d.b.a. Tri County Abstract and Title Guaranty)

Lot 2, Block 1, HY-10 RAMSEY 2ND ADDITION, except the North 70 feet thereof and also except Parcel 3, Anoka County Highway Right of Way Plat No. 74, Anoka County, Minnesota.
(abstract property)

GENERAL NOTES:

- Bearings shown hereon are based on the West line of Parcel 3, ANOKA COUNTY RIGHT OF WAY PLAT NO. 74, which is assumed to bear S00°12'14"E.
- Monuments have been found or set at all major corners of the boundary and indicated on this survey.
- Surveyed property address, per commitment: 14816 Armstrong Boulevard NW, Ramsey, MN 55303.
- Per FEMA Flood Insurance Rate Map Number 27003C02806 with an effective date of 12/16/15, surveyed property is located in Zone X, areas of minimal flooding. Areas determined to be outside 500-year floodplain determined to be outside the 1% and 0.2% annual chance floodplains.
- Surveyed property contains 3,324,946 sq. ft. (87.46 acres).
- BENCHMARK: Minnesota Department of Transportation Geodetic GSD Station No. 808 (MnDot Name HYATT MNDT) - Elevation 878.97 ft. (NAVD 88)
- Per the zoning classification letter provided by Todd A. Larson, Planning Manager with the City of Ramsey and dated September 24, 2024, surveyed property is zoned B-3 Regional Business District (East of Ferret Street), and I-1 Light Industrial (West of Ferret Street).
B-3 (Regional Business District)
Setback Requirements:
Front - 20 feet
Side (interior) - 10 feet
Side (to right of way) - 20 feet
Rear (interior) - 35 feet
Rear (to right of way) - 20 feet
Building Height - 50 feet building maximum
Floor space area requirements - None, though 40% max building footprint
Parking requirements - 1:250 sq. ft., parking at the pump facilities.
Note - The setbacks listed above require and interpretation by the surveyor and are not graphically depicted.
- No buildings were observed on the surveyed property.
- No identifiable parking spaces were observed on the surveyed property.
- Above ground utilities have been field located as shown. Underground utilities shown hereon are those which were field marked by utility companies responding to Gopher State One Call. Ticket No's 242762834 and 242762835, both dated 10/02/24 or were taken from utility plans provided by the City of Ramsey. All underground locations shown hereon are APPROXIMATE. Prior to any excavations or digging, contact Gopher State One Call for an on-site location (651-454-0002). However, lacking excavation, the exact location of underground features cannot be accurately, completely, and reliably depicted. In addition, Gopher State One Call locate and other similar utility locate requests from surveyors may be ignored or result in an incomplete response. Where additional or more detailed information is required, the client is advised that excavation may be necessary.
- Surveyor is not aware of changes in street right-of-way lines either completed or proposed, and available from the controlling jurisdiction. There was no observable evidence of recent street or sidewalk construction or repairs.
- Plottable offsite (i.e., appurtenant) easements or servitude's disclosed in documents provided to or obtained by the surveyor are shown hereon.

13) Per Schedule B, Part II Exceptions of the previously listed title commitment:

- Items 1-4, 6-8 - Not survey related and/or not plottable.
- Item 5 - Easements or claims of easement not shown by the public records. (Non known or provided.)
- Item 9 - Rights of the public and others entitled to the use of that portion of the land in Schedule "A" lying within the bounds of, including but not limited to: Any street, highway, road, and/or alley, as laid out, presently used, or dedicated. (Roads and road easements are shown hereon.)
- Item 10 - An easement for right-of-way for electric transmission or distribution line or system and incidental purposes in the document recorded April 29, 1953 as Doc. No. 150150 and Amended by Doc. Nos. 186679 and 535217 of Official Records. (Partial Release of Easement per Document No. 335217 recorded in 1979 confirms this easement to a 10 foot strip lying contiguous with the westerly edge of road right of way of County Road No. 83. However, the westerly edge of road right of way in 1979 is unknown. In 1987, the plat of HY-10 Ramsey 2nd Addition was filed deducting 60 feet of right of way for County Road No. 83. In 2009, Anoka County Highway Right-of-Way Plat No. 74 was filed and additional 10 feet was taken in fee for road right of way. Based on this, it appears the Electric Transmission and Distribution Easement would lie within the current right of way of County Road No. 83 and is not shown hereon.
- Item 11 - The terms and provisions contained in the document entitled "Ordinance #86-11" recorded October 28, 1987 as Doc. No. 784944 of Official Records. (Not survey related.)
- Item 12 - A document entitled "Anoka County Highway Right-of-Way Plat No. 74" recorded September 10, 2009 as Doc. No. 2010105.001 of Official Records. (As shown hereon. The Temporary Easement expired on 6/30/2011.)
- Item 13 - Condemnation of certain lands taken by the State of Minnesota for trunk highway and incidental purposes as contained in Final Certificate recorded September 22, 2010 as Doc. No. 2017718.003. (Said document is the fee taking instrument for Parcel 3 of Anoka County Highway Right of Way Plat No. 74 and Parcel 3 is shown hereon.)
- Item 14 - An easement for street right of way and drainage and utility and incidental purposes in the document recorded June 9, 2023 as Doc. No. 2392316.002 of Official Records. (As shown hereon.)
- Item 15 - Drainage and utility easement(s) as shown on the plat HY-10 RAMSEY 2ND ADDITION. (As shown hereon.)

STATEMENT OF POSSIBLE ENCROACHMENTS:

- Underground electric line, underground fiber optic line, and utility boxes, as shown hereon.
- Existing snow fence, as shown hereon.
- Existing mow line along the west line of the surveyed property, as shown.

CERTIFICATION:

To: Kwik Trip, Inc., a Wisconsin Corporation; First American Title Insurance Company d.b.a. Tri County Abstract and Title Guaranty.

This is to certify that this map or plat and the survey on which it is based were made in accordance with the 2021 Minimum Standard Detail Requirements for ALTA/NSPS Land Title Surveys, jointly established and adopted by ALTA and NSPS, and includes items 1, 2, 3, 4, 5, 6(a), 6(b), 7(a), 8, 9, 11(a), 14, 17, 18, 20, 20(c), and 20(d) of Table A thereof. The field work was completed on October 15, 2024.

Date of Plat or Map: November 5, 2024

Signed: Carlson McCain, Inc.

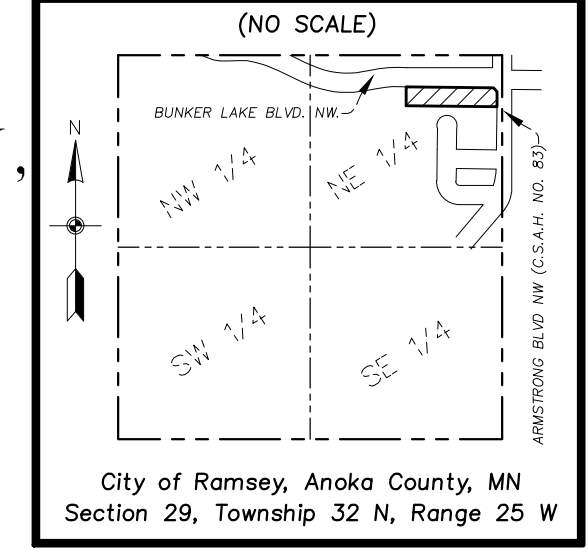
By: Thomas R. Balluff, L.S.
Minnesota License No. 40361
tballuff@carlsonmccain.com

ALTA/NSPS LAND TITLE SURVEY

**LOT 2, BLOCK 1, HY-10 RAMSEY 2ND ADDITION,
ANOKA COUNTY, MINNESOTA**

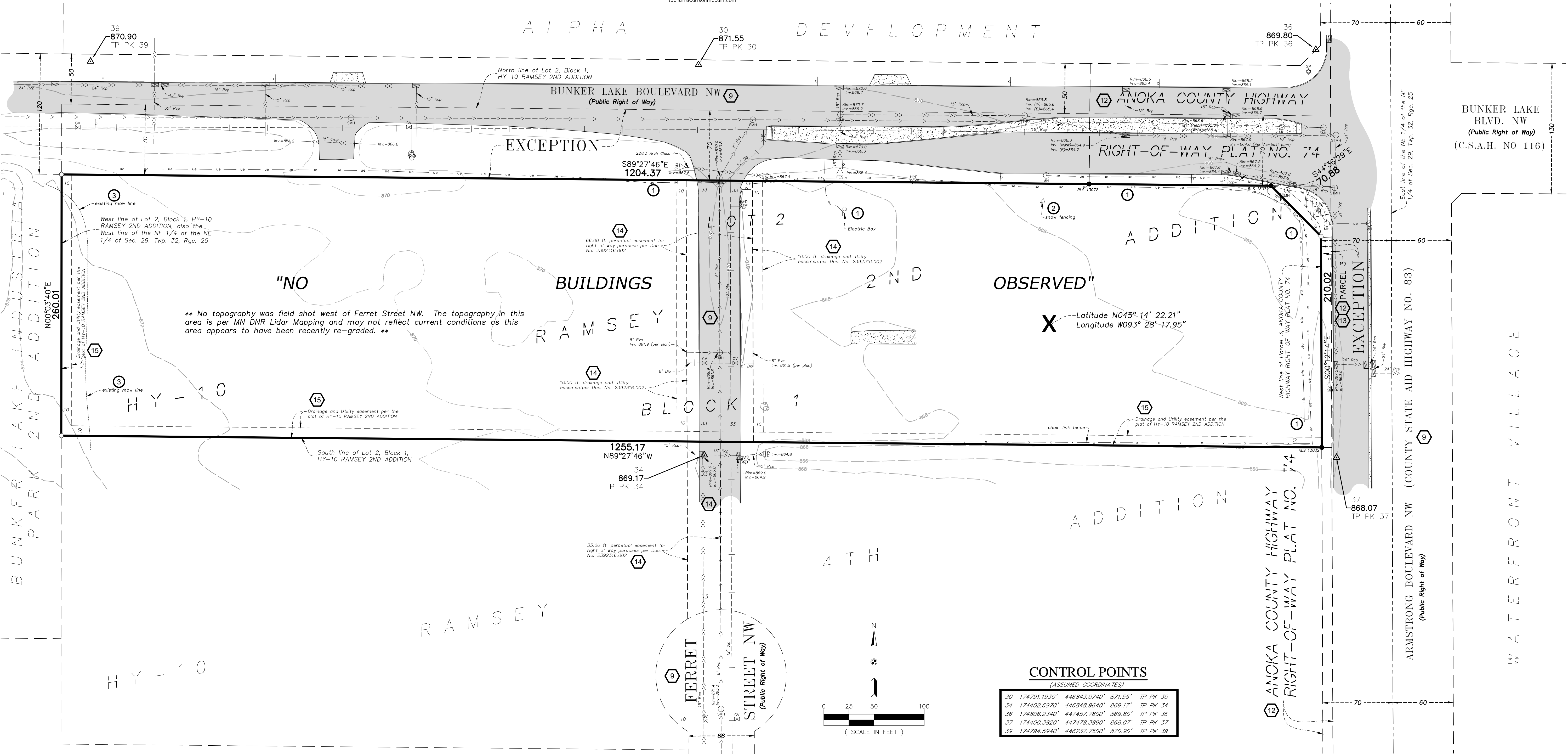
KWIK TRIP, INC.

VICINITY MAP



LEGEND

- - Denotes Found Iron Monument
- - Denotes 5/8 inch by 14 inch rebar, marked with RLS 40361
- ⊙ - Denotes Semaphore
- ⊕ - Denotes Miscellaneous Sign
- ⊖ - Denotes Sanitary Manhole
- ⊗ - Denotes Storm Manhole
- ⊘ - Denotes Miscellaneous Manhole
- ⊙ - Denotes Catch Basin
- △ - Denotes Flared End Section
- ⊕ - Denotes Fire Hydrant
- ⊖ - Denotes Gate Valve
- ⊗ - Denotes Electric Box
- ⊘ - Denotes Hand Hole
- ⊙ - Denotes Underground Electric
- ⊗ - Denotes Underground Fiber Optic
- ⊘ - Denotes Watermain
- ⊙ - Denotes Sanitary Sewer
- - Denotes Storm Sewer
- - Denotes Existing Fence as noted
- - Denotes Concrete Surface
- - Denotes Bituminous Surface
- - Denotes Existing 2 Ft. Contour
- - Denotes Existing 10 Ft. Contour



CONTROL POINTS
(ASSUMED COORDINATES)

30	174791.1930	446843.0740	871.55'	TP PK 30
34	174402.6970	446848.9640	869.17'	TP PK 34
36	174806.2340	447457.7800	869.80'	TP PK 36
37	174400.3820	447478.3890	866.07'	TP PK 37
39	174794.5940	446237.7500	870.90'	TP PK 39

CARLSON MCCAIN
ENGINEERING SURVEYING ENVIRONMENTAL

3890 PHEASANT RIDGE DRIVE NE, SUITE 100, BLAINE, MN 55449
TEL: 763-489-7900 | FAX: 763-489-7995 | CARLSONMCCAIN.COM

ALTA/NSPS LAND TITLE SURVEY

PROPOSED
KWIK TRIP 1782
Ramsey, Minnesota

KWIK TRIP, INC.
1626 Oak Street
P.O. Box 2107
La Crosse, WI 54602

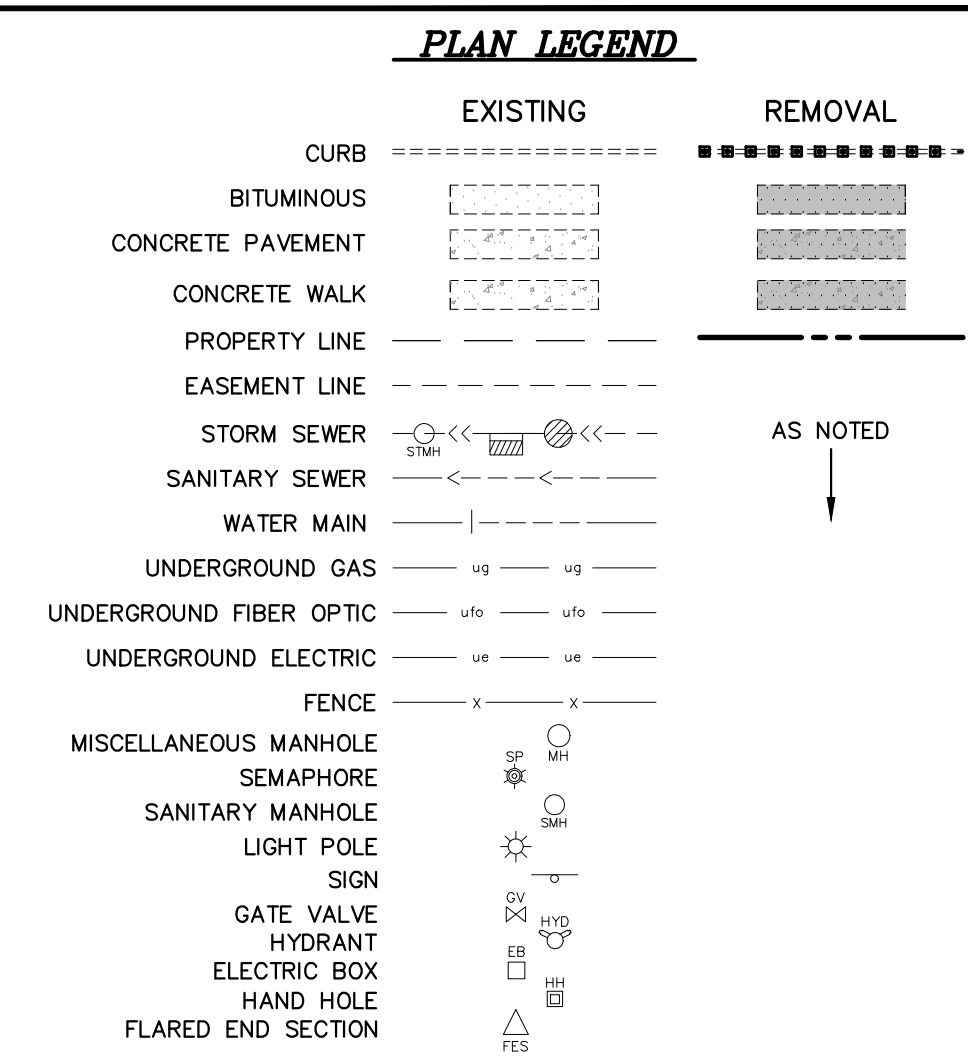
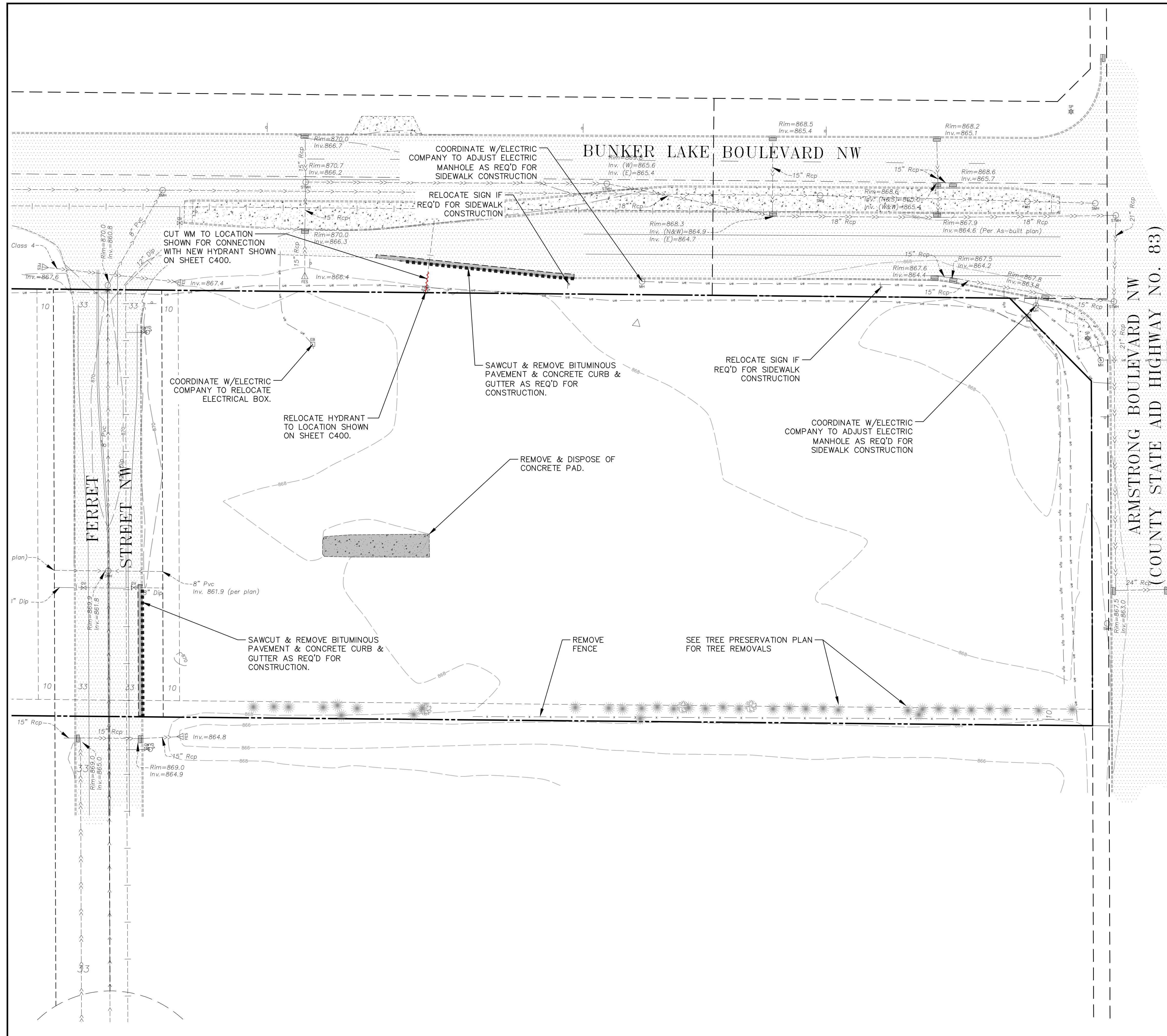
REVISIONS

1.	Sheet Number - 4/04/2025
2.	
3.	
4.	
5.	
6.	

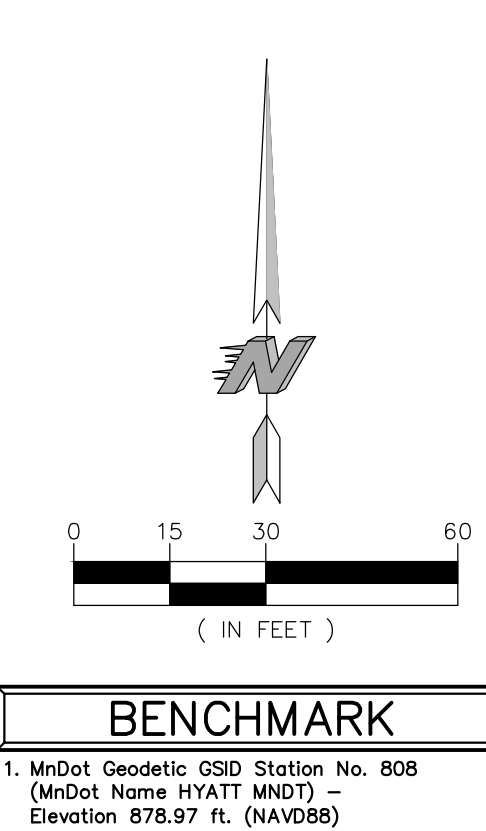
DRAWN BY: bjk
ISSUE DATE: 11/05/24
FILE NO: 2836

THOMAS R. BALLUFF
REGISTERED LAND SURVEYOR
40361
STATE OF MINNESOTA

C010



- REMOVAL PLAN NOTES**
- ALL EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION, DEPTH AND TYPES OF EXISTING UTILITIES AND TO NOTIFY THE OWNER AND ENGINEER IMMEDIATELY OF ANY DISCREPANCIES OR VARIATIONS FROM THE PLANS.
 - IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT ALL EXISTING UTILITIES, APPURTENANCES AND STRUCTURES NOT INDICATED FOR REMOVAL. DAMAGE CAUSED BY DEMOLITION OPERATIONS SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER.
 - CONTRACTOR TO REMOVE/RELOCATE EXISTING PRIVATE UTILITIES AS NECESSARY. THE CONTRACTOR SHALL COORDINATE THESE ACTIVITIES WITH THE UTILITY COMPANIES.
 - THE CONTRACTOR IS RESPONSIBLE FOR ALL THE REMOVALS SHOWN ON THE PLANS AND SHALL CONFORM/ADHERE TO ALL GOVERNING STATE AND LOCAL REGULATIONS. ALL PERMITS, APPLICATIONS AND FEES ARE THE RESPONSIBILITY OF THE CONTRACTOR.



CALL BEFORE YOU DIG



KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960

3890 PHEASANT RIDGE DRIVE NE, SUITE 100, BLAINE, MN 55449
TEL 763.489.7900 | FAX 763.489.7959
CARLSON-ENGINEERING.COM

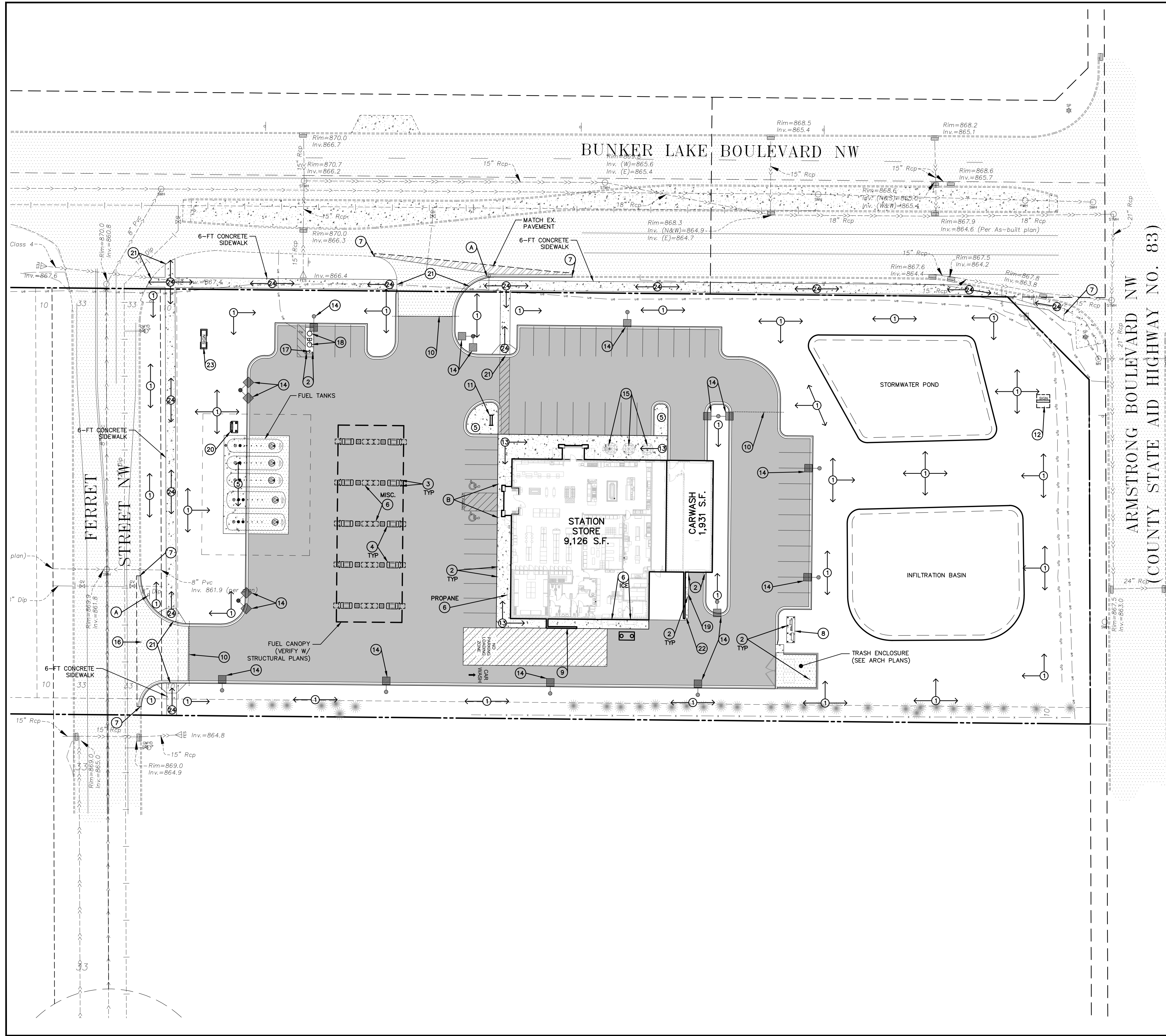
I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Name: Daniel J. Wilke, P.E.
Signature: *Daniel J. Wilke*
Date: 01/30/25 License #: 53182

DEMO PLAN
CONVENIENCE STORE #1782
WITH 1-BAY CARWASH
BUNKER LAKE BLVD & ARMSTRONG BLVD NW
RAMSEY, MINNESOTA

#	DATE	DESCRIPTION
1	03/10/25	Per Owner Comments
2	04/08/25	Per City Comments

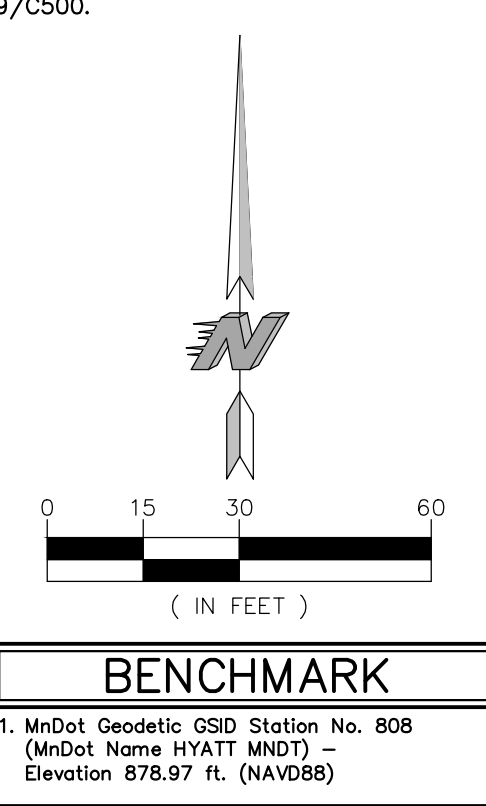
DRAWN BY: DJW
SCALE: GRAPHIC
PROJ. NO.: 11224-00
DATE: 2025-01-30
SHEET: 1782 C020



PLAN LEGEND

EXISTING	PROPOSED
CURB	BITUMINOUS
CONCRETE PAVEMENT	CONCRETE WALK
PROPERTY LINE	EASEMENT LINE
STORM SEWER	SANITARY SEWER
WATER MAIN	UNDERGROUND GAS
UNDERGROUND FIBER OPTIC	UNDERGROUND ELECTRIC
FENCE	MISCELLANEOUS MANHOLE
SANITARY MANHOLE	SANITARY MANHOLE
LIGHT POLE	SIGN
GATE VALVE	HYDRANT
ELECTRIC BOX	HAND HOLE
FLARED END SECTION	

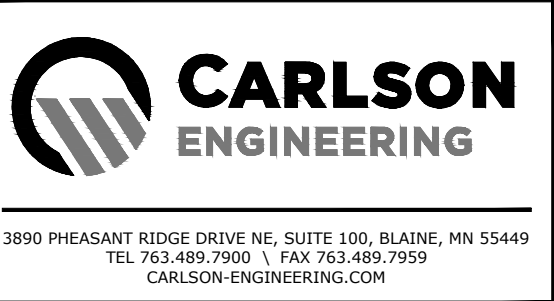
- PLAN KEYNOTES**
- LANDSCAPE AREA. SEE SHEET L1.
 - 30" HEIGHT, 6" DIAMETER CONCRETE FILLED PIPE BOLLARD. SEE DETAIL 6/C500.
 - 36" HEIGHT, 6" DIAMETER CONCRETE FILLED PIPE BOLLARD. SEE DETAIL 7/C500.
 - CONCRETE ISLAND WITH 6" EXPOSURE WITH FUEL DISPENSER. DISPENSER PER OWNER.
 - 4" CONCRETE WALK.
 - OUTDOOR MERCHANDISING.
 - MATCH EXISTING CURB & GUTTER/SIDEWALK/PAVEMENT.
 - TRANSFORMER LOCATION.
 - TOTE SCREENING WALL. SEE ARCHITECTURAL PLANS.
 - PVC IRRIGATION SLEEVE UNDER PAVEMENT. VERIFY WITH IRRIGATION PLAN FOR EXACT SIZE AND LOCATION BEFORE INSTALLATION.
 - BIKE RACK PER OWNER.
 - PYLON SIGN.
 - 6" INTEGRAL CONCRETE WALK/CURB.
 - SITE AREA LIGHT WITH CONCRETE BASE PER DETAIL 5/C500.
 - PICNIC TABLE PER OWNER.
 - CONCRETE VALLEY GUTTER PER DETAIL 3/C501.
 - "FREE AIR" COMPRESSOR PER OWNER. PROVIDE SIGNAGE PER OWNER.
 - AUTO VACUUM PER OWNER ON CONCRETE ISLAND WITH 6" EXPOSURE. PROVIDE TRASH CONTAINER PER OWNER.
 - CARWASH KEYPAD PER OWNER. PROVIDE TRASH CONTAINER PER OWNER.
 - FUEL TANKS VENT STAND PER OWNER.
 - PEDESTRIAN RAMP.
 - 6" CONCRETE CURB ISLAND.
 - MONUMENT SIGN.
 - 6" CONCRETE SIDEWALK.
- SIGN SCHEDULE (PER MMUTCD)**
- (A) STOP SIGN: R1-1 (30"x30")
 - (B) HANDICAP PVC BOLLARD SLEEVE PER OWNER. SEE DETAIL 9/C500.



CALL BEFORE YOU DIG



KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960



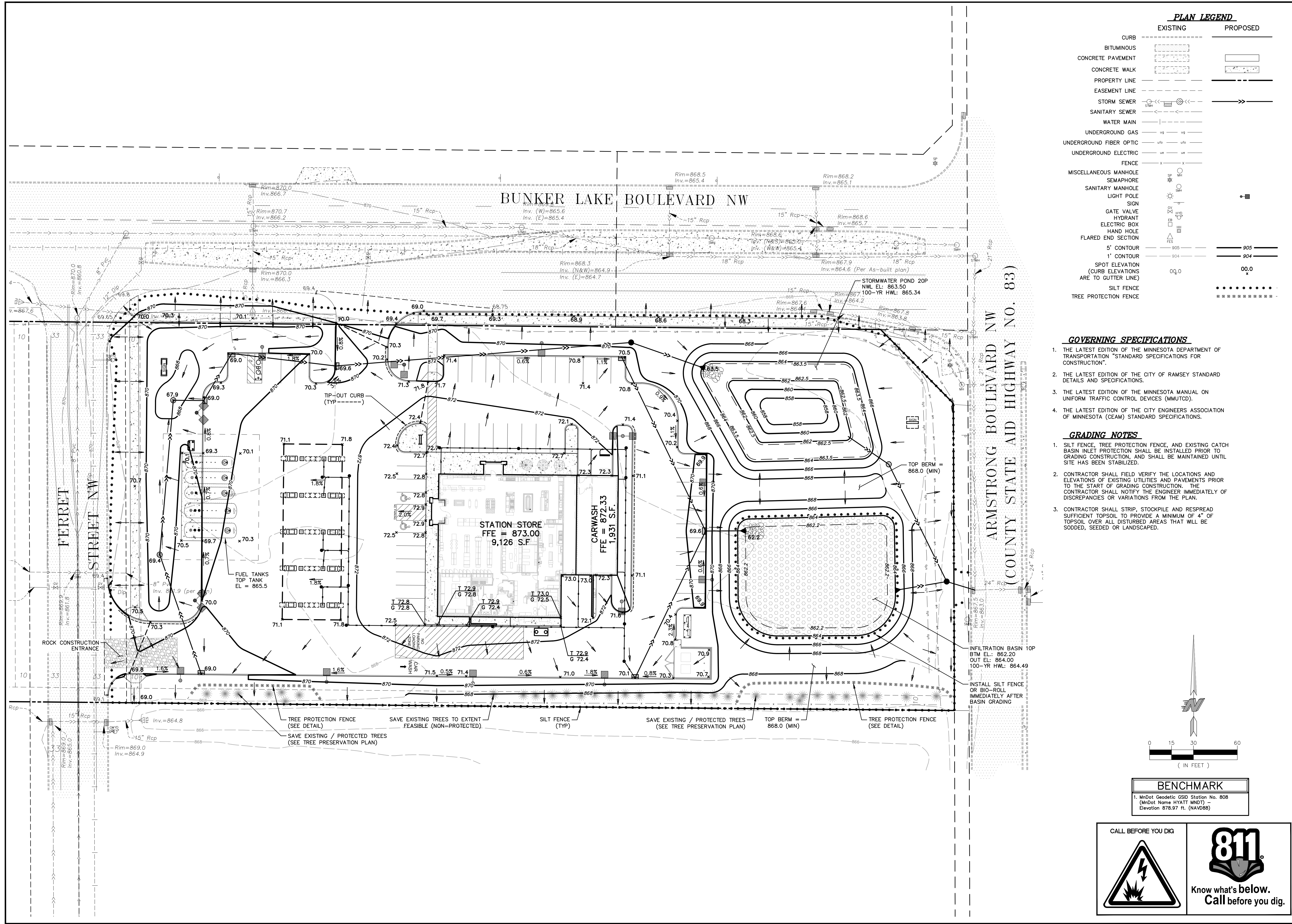
I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Name: Daniel J. Wilke, P.E.
Signature: *[Signature]*
Date: 01/30/25 License #: 53182

SITE KEYNOTE PLAN
CONVENIENCE STORE #1782
WITH 1-BAY CARWASH
BUNKER LAKE BLVD & ARMSTRONG BLVD NW
RAMSEY, MINNESOTA

#	DATE	DESCRIPTION
1	03/10/25	Per Owner Comments
2	04/08/25	Per City Comments

DRAWN BY: DJW
SCALE: GRAPHIC
PROJ. NO.: 11224-00
DATE: 2025-01-30
SHEET: 1782 C100

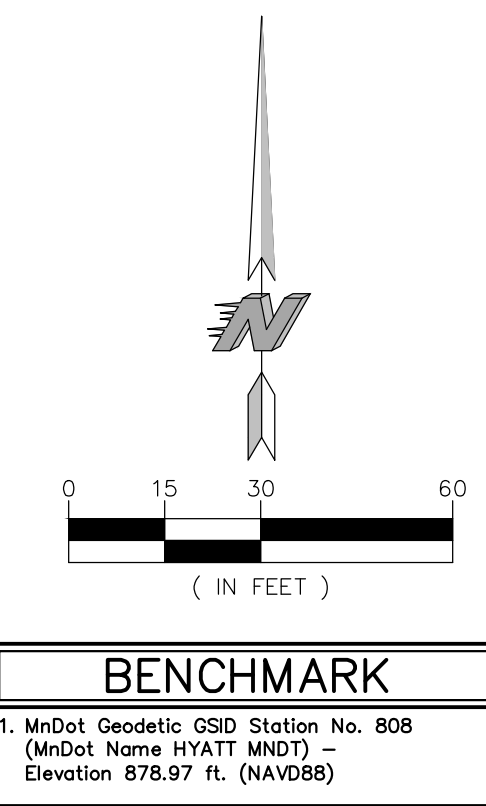


PLAN LEGEND

EXISTING	PROPOSED
CURB	
BITUMINOUS	
CONCRETE PAVEMENT	
CONCRETE WALK	
PROPERTY LINE	
EASEMENT LINE	
STORM SEWER	
SANITARY SEWER	
WATER MAIN	
UNDERGROUND GAS	
UNDERGROUND FIBER OPTIC	
UNDERGROUND ELECTRIC	
FENCE	
MISCELLANEOUS MANHOLE	
SEMAPHORE	
SANITARY MANHOLE	
LIGHT POLE	
SIGN	
GATE VALVE	
HYDRANT	
ELECTRIC BOX	
HAND HOLE	
FLARED END SECTION	
5' CONTOUR	
1' CONTOUR	
SPOT ELEVATION (CURB ELEVATIONS ARE TO GUTTER LINE)	
SILT FENCE	
TREE PROTECTION FENCE	

- GOVERNING SPECIFICATIONS**
- THE LATEST EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION".
 - THE LATEST EDITION OF THE CITY OF RAMSEY STANDARD DETAILS AND SPECIFICATIONS.
 - THE LATEST EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD).
 - THE LATEST EDITION OF THE CITY ENGINEERS ASSOCIATION OF MINNESOTA (CEAM) STANDARD SPECIFICATIONS.

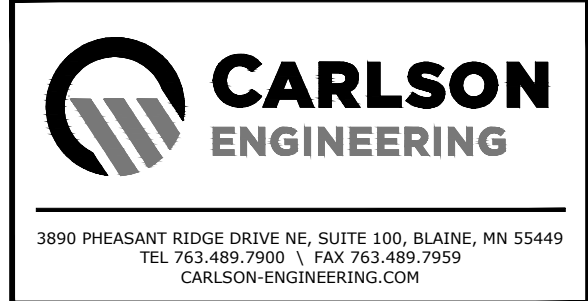
- GRADING NOTES**
- SILT FENCE, TREE PROTECTION FENCE, AND EXISTING CATCH BASIN INLET PROTECTION SHALL BE INSTALLED PRIOR TO GRADING CONSTRUCTION, AND SHALL BE MAINTAINED UNTIL SITE HAS BEEN STABILIZED.
 - CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES AND PAVEMENTS PRIOR TO THE START OF GRADING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF DISCREPANCIES OR VARIATIONS FROM THE PLAN.
 - CONTRACTOR SHALL STRIP, STOCKPILE AND RESPREAD SUFFICIENT TOPSOIL TO PROVIDE A MINIMUM OF 4" OF TOPSOIL OVER ALL DISTURBED AREAS THAT WILL BE SODDED, SEED OR LANDSCAPED.



CALL BEFORE YOU DIG



KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960



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 Minnesota.

Name: Daniel J. Wilke, P.E.
Signature: *[Signature]*
Date: 01/30/25 License #: 53182

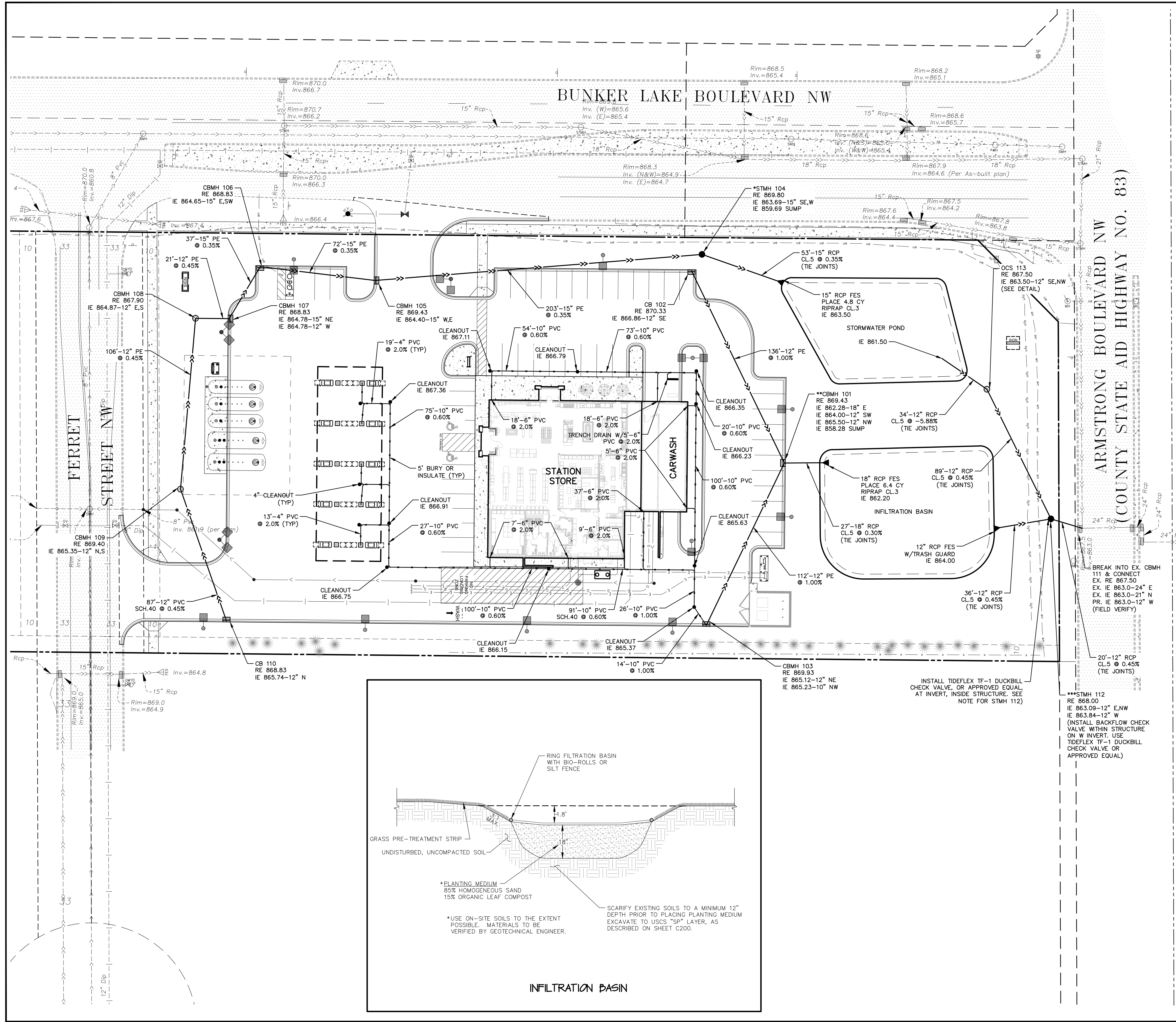
GRADE PLAN

CONVENIENCE STORE #1782 WITH 1-BAY CARWASH

**BUNKER LAKE BLVD & ARMSTRONG BLVD NW
RAMSEY, MINNESOTA**

#	DATE	DESCRIPTION
1	03/10/25	Per Owner Comments
2	04/08/25	Per City Comments

DRAWN BY: DJW
SCALE: GRAPHIC
PROJ. NO.: 11224-00
DATE: 2025-01-30
SHEET: 1782 C200



PLAN LEGEND

EXISTING	PROPOSED
CURB	
BITUMINOUS CONCRETE PAVEMENT	
CONCRETE WALK	
PROPERTY LINE	
EASEMENT LINE	
STORM SEWER	
SANITARY SEWER	
WATER MAIN	
UNDERGROUND GAS	
UNDERGROUND FIBER OPTIC	
UNDERGROUND ELECTRIC	
FENCE	
MISCELLANEOUS MANHOLE	
SEMAPHORE	
SANITARY MANHOLE	
LIGHT POLE	
SIGN	
GATE VALVE	
HYDRANT	
ELECTRIC BOX	
HAND HOLE	
FLARED END SECTION	

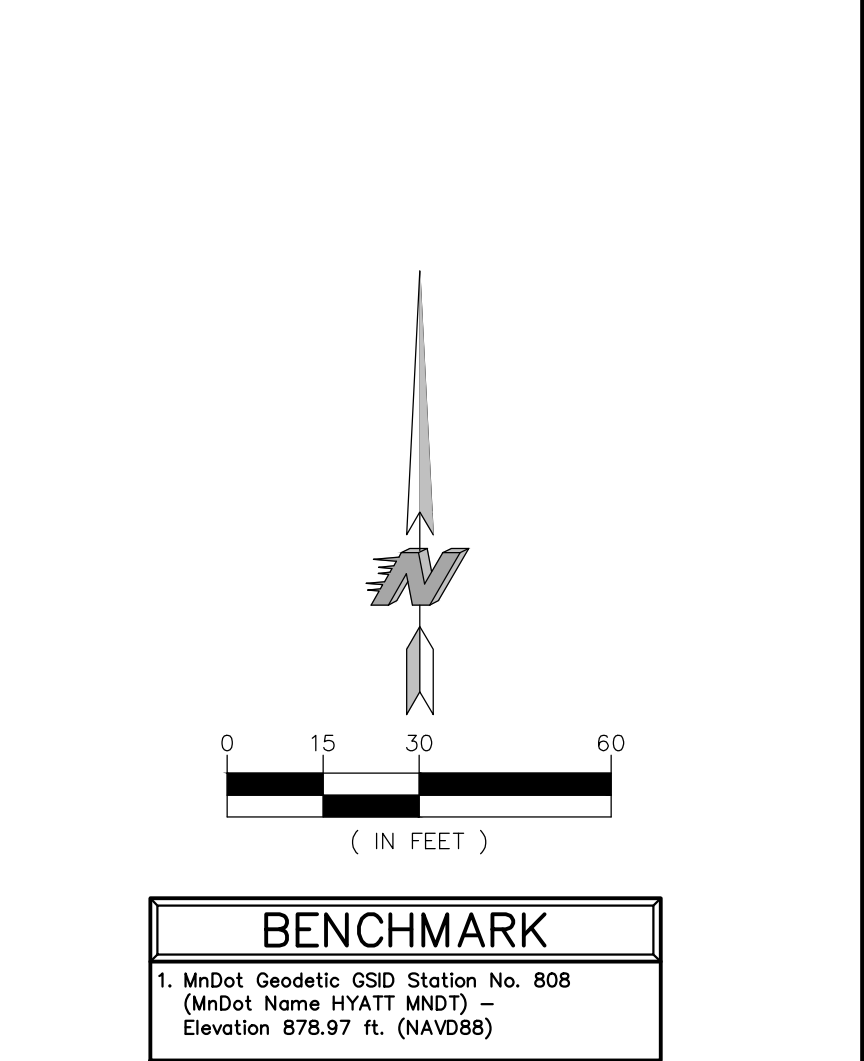
STORM SEWER SCHEDULE

STRUCTURE	NEENAH CASTING or EQUAL
OCS-113	48" DIA. SEE DETAIL
***STMH-112	48" DIA. R-1733
CBMH-111	EX. EX.
CB-110	24"x 36" R-3067-VB
CBMH-109	48" DIA. R-4342
CBMH-108	48" DIA. R-4342
CBMH-107	48" DIA. R-3067-VB
CBMH-106	48" DIA. R-3067-V
CBMH-105	48" DIA. R-3067-VB
*STMH-104	48" DIA. R-1733
CBMH-103	48" DIA. R-3067-V
CB-102	24"x 36" R-3067-V
*CBMH-101	48" DIA. R-3067-VB

* INSTALL 18R SNOOT OIL & DEBRIS STOP AS MANUFACTURED BY BMP, INC. ON OUTLET PIPE.

** INSTALL 24R SNOOT OIL & DEBRIS STOP AS MANUFACTURED BY BMP, INC. ON OUTLET PIPE.

*** INSTALL BACKFLOW CHECK VALVE WITHIN STRUCTURE ON W INVERT. USE TIDEFLEX TF-1 DUCKBILL CHECK VALVE OR APPROVED EQUAL.

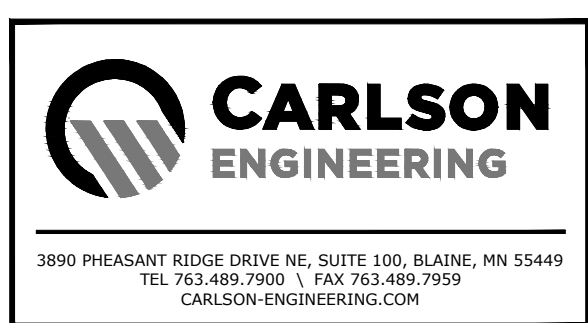


CALL BEFORE YOU DIG

Know what's below. Call before you dig.



KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960



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 Minnesota.

Name: Daniel J. Wilke, P.E.
Signature: *D. Wilke*
Date: 01/30/25 License #: 53182

STORM SEWER PLAN

CONVENIENCE STORE #1782 WITH 1-BAY CARWASH

**BUNKER LAKE BLVD & ARMSTRONG BLVD NW
RAMSEY, MINNESOTA**

#	DATE	DESCRIPTION
1	03/10/25	Per Owner Comments
2	04/08/25	Per City Comments

DRAWN BY: DJW
SCALE: GRAPHIC
PROJ. NO.: 11224-00
DATE: 2025-01-30
SHEET: 1782 C300

STORM DRAINAGE:

- Unless otherwise indicated, use reinforced, precast, concrete maintenance holes and catchbasins conforming to ASTM C478, furnished with water stop rubber gaskets and precast basins. Joints for all precast maintenance hole sections shall have gaskets, rubber "O" ring gaskets in accordance with ASTM C443. These gaskets are normally used in sewers to hold infiltration and exfiltration to a practical minimum and are adequate for hydrostatic heads up to 30'. The inside barrel diameter shall not be less than 18 inches.
- Install catchbasin castings with specified rim elevation as shown.
- All joints and connections in the storm sewer system shall be gastight or watertight. Use flexible compression joints to make watertight connections to manholes in accordance with Minnesota Rules part 4714.0778. Where permitted by the administrative authority, approved resilient rubber seals or waterstop gaskets may be used in order to make watertight connections to manholes, catchbasins, and other structures. Use Fernco "Concrete Manhole Adaptors" or "Large Diameter Waterstop", Press-Seal "Waterstop Gasket Rings", or approved equal. Cement mortar joints alone are not allowed unless making repairs or connections to existing lines having such joints.
- The building sewer starts 2 feet outside of the building. See Uniform Plumbing Code (UPC) part 715.1. Material installed within 2 feet of the building must be of materials approved for use inside of or within the building.
- The exterior storm water piping must comply with the following requirements: (A) Double wyes may not be used for drainage fittings in the horizontal position (see Minnesota Rules, Chapter 4714, Section 310.5), because proper pipe slope cannot be maintained on both of the lateral branches. (B) Changes in direction in drainage piping must be made by appropriate use of wyes and bends (see Minnesota Rules, Chapter 4714, Section 706.0). When connecting any vertical drop to a horizontal run, use a wye and a 1/8 bend (45 deg.) or a sanitary combo. A sanitary combo is a combination wye and a 1/8 bend combined in a single fitting. The reason is to form a long radius bend in order to insure that the water is directed in the downstream direction as it enters the horizontal run. Tees are not allowed where the direction of flow changes from either vertical to horizontal or horizontal to horizontal.
- PVC Pipe (Outside of the Building): Use solid-core, Schedule 40 Polyvinyl Chloride (PVC) Plastic Pipe for all designated PVC storm sewer services outside of the building. The PVC pipe shall meet or exceed the industry standards and requirements as set forth by the American Society for Testing and Materials (ASTM) D1785 and D2685. Fittings must comply with ASTM D1966, D2665, or F794. Joints must be solvent cemented or push-on utilizing an elastomeric seal. Use of solvent cement joints is allowed for building services. Approved cement joints in PVC pipe must include use of ASTM F856 organic primer and cement in accordance with Uniform Plumbing Code (UPC), part 603.13.2. Pipe with solvent cement joints shall be joined with PVC cement conforming to ASTM D2524. The installation must comply with ASTM D2321, which requires open-trench installation on a continuous granular bed.
- Cleanouts: Install cleanouts on all roof drains. Cleanouts shall be installed at every wye, sweep, and bend. Install cleanouts on all storm sewer services in accordance with UPC part 719.0 and 1101.12. The distance between cleanouts in horizontal piping shall not exceed 100 feet for pipes 4-inch and over in size. Cleanouts shall be set at 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 (Neanah R-1914-A, or approved equal) over all cleanouts. Provide cleanouts at the base of the roof leader connections at the gas island pump stations.
- Fittings: Provide directional fittings for the storm piping serving the gas island pump stations. All changes in direction of flow in drain piping shall be made by the appropriate use of 45 degree wyes, long or short sweep quarter bends, sixth, eighth, or sixteenth bends, or by a combination of these or other equivalent fittings.
- RCD: 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 made up of concrete surfaces with a groove on the spigot for an O-ring rubber gasket (also referred to as a confined O-ring type joint) in accordance with ASTM C261. These joints are normally used in gravity sewers where exceptional tightness is required. This type of joint provides exceptional water tightness in both the straight and deflected position and meets all the joint requirements of ASTM C443.
- BC Access: Install a reinforced concrete apron on the free end of all daylighted RCP storm sewer pipe. Tie the last three sections (including apron) to an daylighted RCP storm sewer with a minimum of two tie bolt fasteners per section. This requirement applies to both upstream and downstream pipe joints and outlets. All tie bolts shall be set at the same nominal size 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.
- Gates on Horizontal Pipes: Install safety-trap gates on all horizontal inlets/outlets greater than 6 inches in diameter. The gates shall be placed so that the rods or bars are not more than 3 inches downstream of the inlet/outlet. Rods or bars shall be spaced so that the openings do not permit the passage of a 6-inch sphere.
- 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 in accordance with the Minnesota Rules part 4714.1109 and UPC part 1109.0. 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.
- Drainage: In accordance with Minnesota Rules part 4714.1102.5, on all drainage 3-inches to 6-inches in diameter, install drainage with high permeability circular knit polymeric filament filter sock per ASTM D6707-01. Mdot 3733 type 1 sewn seam non-woven fabric shall not be used. Drainage pipe directly connected to the storm sewer is classified as storm sewer. Drainage inlet elevations to the catch basins must be above the storm sewer outlet elevations.
- Use Neenan R-3067-DR/UL casting with curb box, or approved equal, on CB #1, CB#2, CB#4 and CB #5. Casting shall include the "NO DUMPING, DRAINS TO RIVER", environmental notice.
- Use Zurn Z886 trench drain model 8606N with black oxidant resistant epoxy coated ductile grate - Class C for proposed trench drain.
- Use Neenan Faundry Co. R-1642 casting with self-sealing, solid, type B lid, or approved equal, on all storm sewer maintenance holes. Covers shall bear the "Storm Sewer" label.
- Trace Wire: Install locating wires on all conductive and non-conductive storm sewer, sanitary sewer, and water lines in accordance with the Minnesota Rural Water Association (MRWA) Trace Wire Specification Guide and Details (www.mrwa.com/PDF/TraceWireSpec.pdf). Use #12 HDPE-insulated copper-clad steel wire rated for underground service. The color of the insulating jacket shall be: storm sewer-green, sanitary sewer-green, and water lines-blue. Install the wire on the bottom side of the pipe below the spring line. Fasten the wire to the pipe with tape or plastic ties at 2' intervals. Do not wrap the trace wire around the corresponding utility. Do not connect the trace wire to existing conductive utilities. Use Copperhead Dycron 3-Way or Locking Snake Bite connectors rated for underground applications or approved equal at all crossings or service connections. Twist or connectors are not allowed. Trace wire must be properly grounded at all dead ends and services. Install grade-level/in-ground trace wire access boxes and drive-in magnesium grounding anodes at all dead ends, services, and fire hydrants. Trace wire access boxes shall be color coded as follows: storm sewer-green, sanitary sewer-green, and water lines-blue.
- Detectable Warning Tape: Install detectable underground warning tape directly above all underground utilities at a depth of 457 mm (18 inches) below finished grade, unless otherwise indicated. Underground warning tape shall be 3-inches wide with a minimum 5.0 mill overall thickness. Tape shall be manufactured using a 0.8 mil clear virgin polypropylene film, reverse printed and laminated to a 0.35 mil solid aluminum foil core, and then laminated to a 3.75 mil clear virgin polyethylene film. The aluminum backing makes it easy to find using a non-ferrous locator. Tape shall be printed using a diagonally striped design for maximum visibility and meet the APWA Color-Code standard for identification of buried utilities. Use Pipe-In Utility Products (www.pipeinutility.com) detectable marking tape or approved equal.
- Install anti-seepage diaphragms at the locations indicated on the plan in accordance with MNDOT Standard Specification 2501 and MNDOT Standard Plate No. 3146C.
- 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 approved equal.

- tops of the pipes on mechanically compacted and leveled pipe bedding material. Use high density, closed cell, rigid board material equivalent to Dow Styrofoam HI-40 plastic foam insulation.
- 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 up. 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. Do not lay pipe in water or when the trench conditions are unsuitable for such work.
- Line ponds with 2" thick impervious clay liner per detail.
- Clean sediment and debris from sewers, sumps and stormwater basins prior to final owner acceptance.
- Telesive all existing lines prior to connection.
- Provide a final storm water management report that will serve to verify that the intent of the approved storm water management design has been met. The report shall include record drawings, measurements, and photographic evidence of the on-site storm water management system. The report shall substantiate that all aspects of the original design have been adequately provided for by the construction of the project.
- Install finger drains at each and every proposed catchbasin (see detail). Finger drains around catch basin inlets shall not be installed below the crown of the storm drain piping.

HDPE REQUIREMENTS:

- Install dual-wall, smooth interior, corrugated high-density polyethylene (HDPE) pipe at locations indicated on the plan. High-density polyethylene (HDPE) storm sewers must meet ASTM F714 (see Minnesota Rules, Chapter 4714 and Installation Table 1).
- Dual-wall, smooth interior, corrugated high-density polyethylene (HDPE) pipe shall conform to the requirements of AASHTO M252 for pipe sizes 4-inch to 10-inch diameter. Dual-wall, smooth interior, corrugated high-density polyethylene (HDPE) pipe shall conform to the requirements of ASTM F2306 (Virgin PE material) for pipe sizes 12-inch to 60-inch diameter.
- All fittings must comply with ASTM D3312.
- Water-tight joints must be used on all connections (including structures) in conformance with ASTM F2310.
- HDPE pipe connections into all concrete structures must be made with water tight materials utilizing Nyoplast "Manhole Adaptors" along with Press-Seal or Kor-In-Seal "Waterlight Connector", Cast-In-Place "Precast Waterlight Connector", or approved equals. Where the alignment precludes the use of the above approved waterlight methods, Consoe 231 WaterStop sealant, or approved equal will only be allowed with approval by the Administrative Authority.
- Lay all HDPE pipe on a continuous granular bed. Installation must comply with ASTM D2321. All sections of the corrugated HDPE pipe shall be coated in order to provide water-tight joints.
- 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 material for deflection testing. If the deflection test is to be run using a rigid ball or mandrel, it shall have a diameter equal to 90% 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.

INFILTRATION AREA CONSTRUCTION:

- Protect the infiltration area from compaction and disturbance of existing soils.
- Report any signs of high water table or compaction of the in place soils to the Engineer.
- Schedule the construction so that excavation of the infiltration system to final grade occurs after the contributing drainage areas have been constructed and fully stabilized. Excavate the infiltration areas to allow one foot of final grade initially. Delay final excavation of the basin floor until all disturbed areas tributary to the basin are stabilized. Utilize tracked excavation equipment that has reduced light bearing pressures. No heavy equipment is allowed on the infiltration areas or after construction.
- Delineate the location of infiltration areas (e.g. with flags, stakes, signs, all fence, etc.) before work begins so that heavy construction equipment will not compact the soil in the proposed infiltration system.
- Excavation of infiltration areas shall be completed using a backhoe with a toothed bucket.
- The bottom excavations surface of infiltration areas shall be level without dips or swales.
- Native soils in infiltration areas shall be de-compacted to a minimum depth of 18 inches prior to placing planting media or rock.
- Planting media and rock shall remain uncontaminated (not mixed with other soil) before and during installation.
- During construction, stormwater must be routed around infiltration areas until all construction activity has ceased and tributary surface are cleaned of sediment.
- Installation of infiltration practices shall be done during periods of dry weather and completed before the rainfall event. Placement of planting media or rock shall be on dry native soil only.
- Use rigorous erosion prevention and sediment controls (e.g. diversion berms) during the construction of the infiltration system in order to keep sediment and runoff completely away from the infiltration area.
- Inspect all infiltration areas in order to ensure that no sediment from ongoing construction activity is reaching the infiltration areas and that these areas are protected from compaction due to construction equipment driving across the infiltration areas.
- Prior to construction, provide dual-rim infiltration testing (ASTM D-3385) at the infiltration site in order to verify infiltration rates used for the basin design. The tests shall be performed at the bottom elevation of the infiltration basin and shall be performed by a qualified geotechnical professional. Do not begin construction until soil type and infiltration rate verification has been made. Perform a minimum of 2 tests at each infiltration site (0.5-acre bottom area or less). Perform 2 additional tests for every additional 0.5-acre bottom area. Verify the number of tests with the geotechnical professional and the governing authorities.
- 2.5' of engineered soil is to be used as the surface layer of the infiltration basin. It shall consist of 40% by volume silica sand, topsoil (20% by volume if loam texture, 30% by volume if loamy sand texture), and 30%-40% by volume compost material.
- Coarse filter aggregate shall be a free draining mineral product, excluding crushed carbonate quarry rock, limestone, crushed concrete, and salvaged bituminous mixture.
- After final grading, till the floor of the infiltration area to a depth of at least 18 inches in order to provide a well sorted, porous surface texture. Till in 8 inches of compost material if the soils become compacted.
- Place all excavated materials downstream and away from the infiltration area during and after excavation.
- Stabilize the bottom and sideslopes of the infiltration area immediately following construction of the basin.
- Use **patent** MM state seed mixture 33-261. Apply seed mixture at a rate of 35 lbs per acre in accordance with MNDOT Standard Spec. 2575. Incorporate a Type 3 fertilizer (incorporate a 22-2-2 fertilizer at 22 lbs per acre) into the soil at an application rate of 200 lbs per acre by disk prior to seeding. Prepare the soil in accordance with MNDOT Standard Spec. 2574.3.
- Establish native seed mix in accordance with MNDOT Standard Spec. 2575.3. Seed native mixes with a native seed drill, a drop type seeder, or a hydro seeder at the adjusted bulk application rate of each mixture. Use a soil capable of accurately metering the types of seed planted and capable of maintaining a uniform mixture of seeds during drilling. Use a drill with disk furrow opener and a packer assembly to compact the soil over the drill to reduce native mixes in rows spaced no greater than 8 inches apart. Place seeds to a final planting depth from 1/2 inch to 1 inch. Perform drill seeding at a right angle to surface drainage. A drop type seeder equipped with a separate seed box for the fully seed and a soil packer assembly may be used in lieu of a drill with disk opener. Use a cylinder or spinner type seeder or seeder no greater than 1 acre or an area inaccessible to other equipment, as approved by the Engineer. Lightly harrow or rake the site following the seeding operation. Pack the site following harrowing in order to ensure a firm seedbed.
- Comply with the requirements of MNDOT Standard Spec. Table 2575-1 for season of planting native seed mixtures. The appropriate dates for spring seeding are from April 15 through July 20. Fall seeding dates are from September 20 to October 20. Dormant seeding dates are from October 20 to November 15. Dormant seeding will only be allowed if the maximum soil temperature at a depth of 1 inch does not exceed 40 degrees F in order to prevent germination. When the dates in the season of planting prohibit seeding of the permanent seed mixture, apply temporary seeding and mulch in order to comply with the requirements of the GENERAL STORMWATER PERMIT FOR CONSTRUCTION ACTIVITY and then apply permanent seeding at a later date.
- Water and maintain seeded areas on a timely day-to-day basis. In the event of a seeding failure, reseed and re-mulch the areas where the original seed has failed to grow and perform additional watering as necessary or no additional coat to the Owner.
- Maintenance of Areas Planted With Native Seeds: To reduce weed establishment, mow 2 to 3 times (30 days apart) during the first year with the mower deck about 6" - 8" off the ground. Mow one time during the 2nd year before weeds set their seeds. Mow once every 3 to 5 years following the initial 2 years of maintenance in order to remove dead plant material and stimulate new seed.

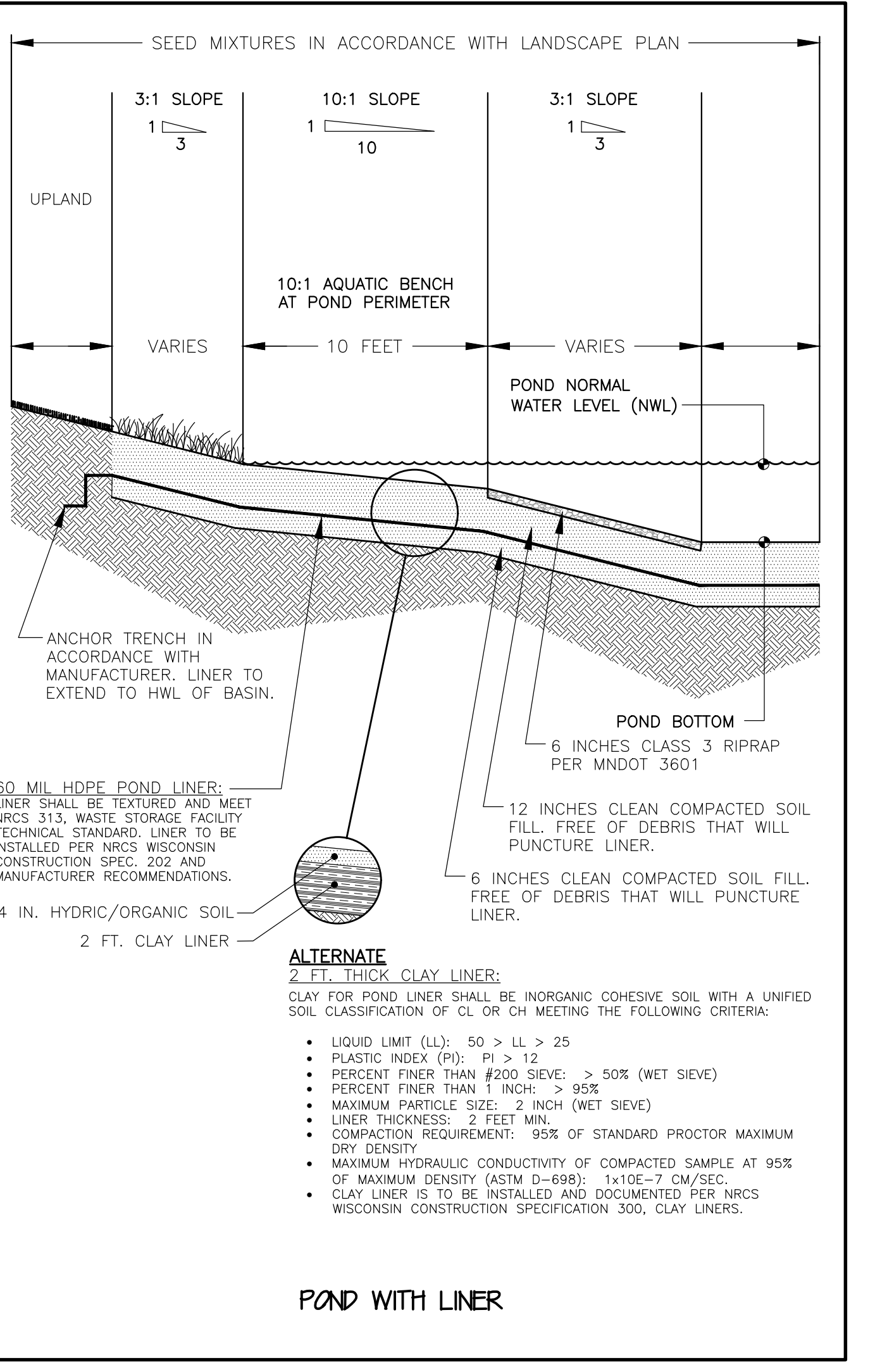
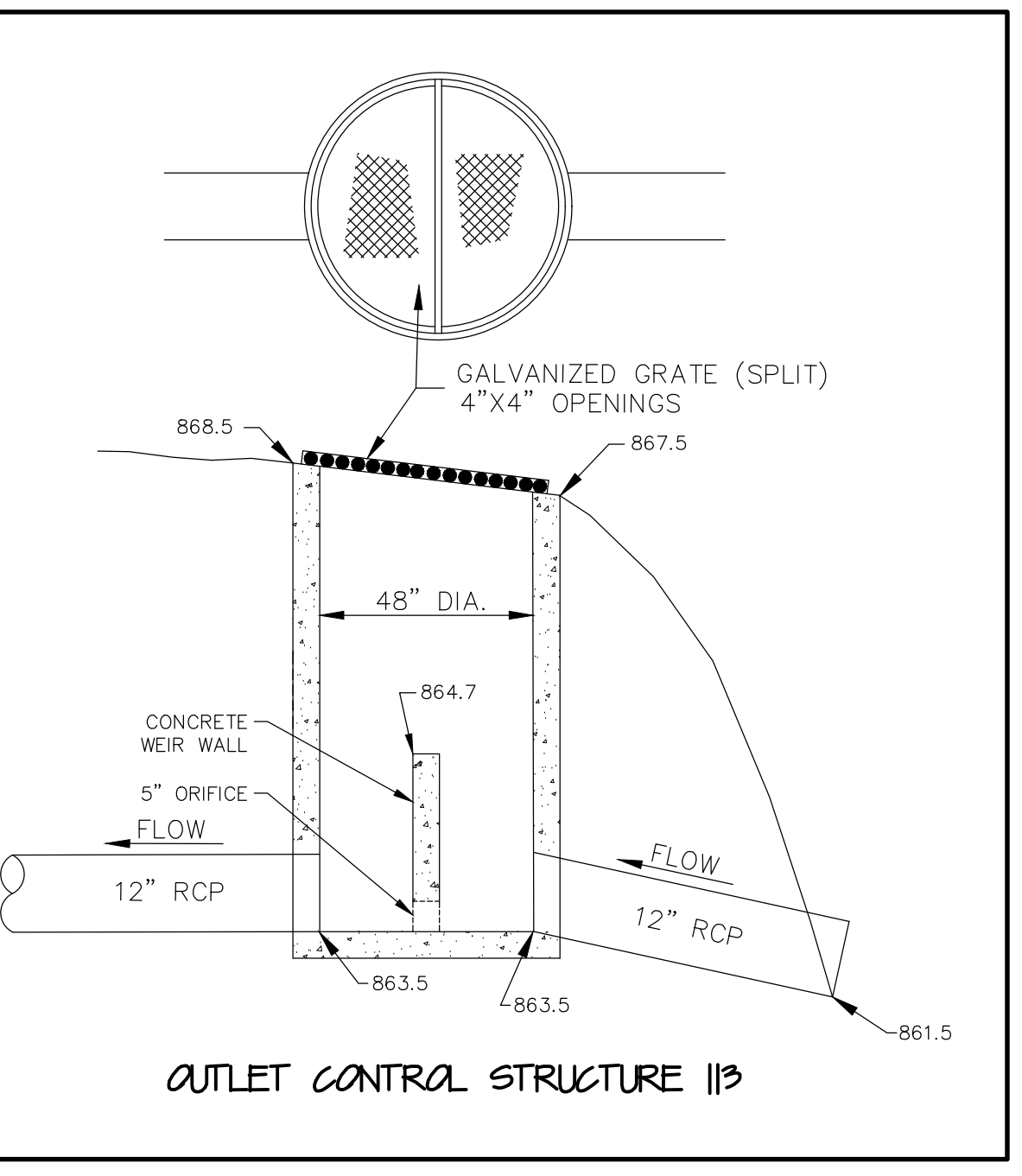
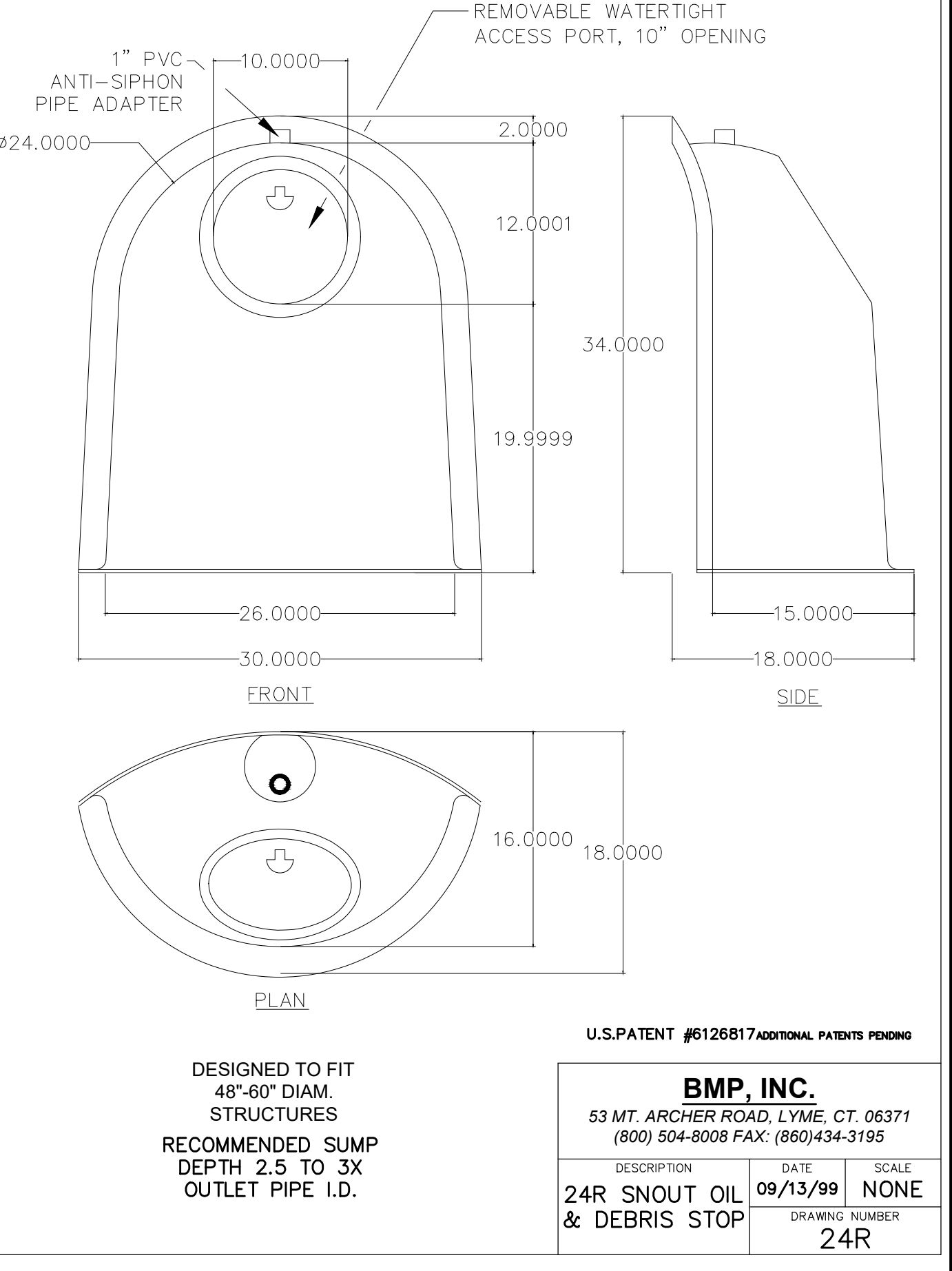
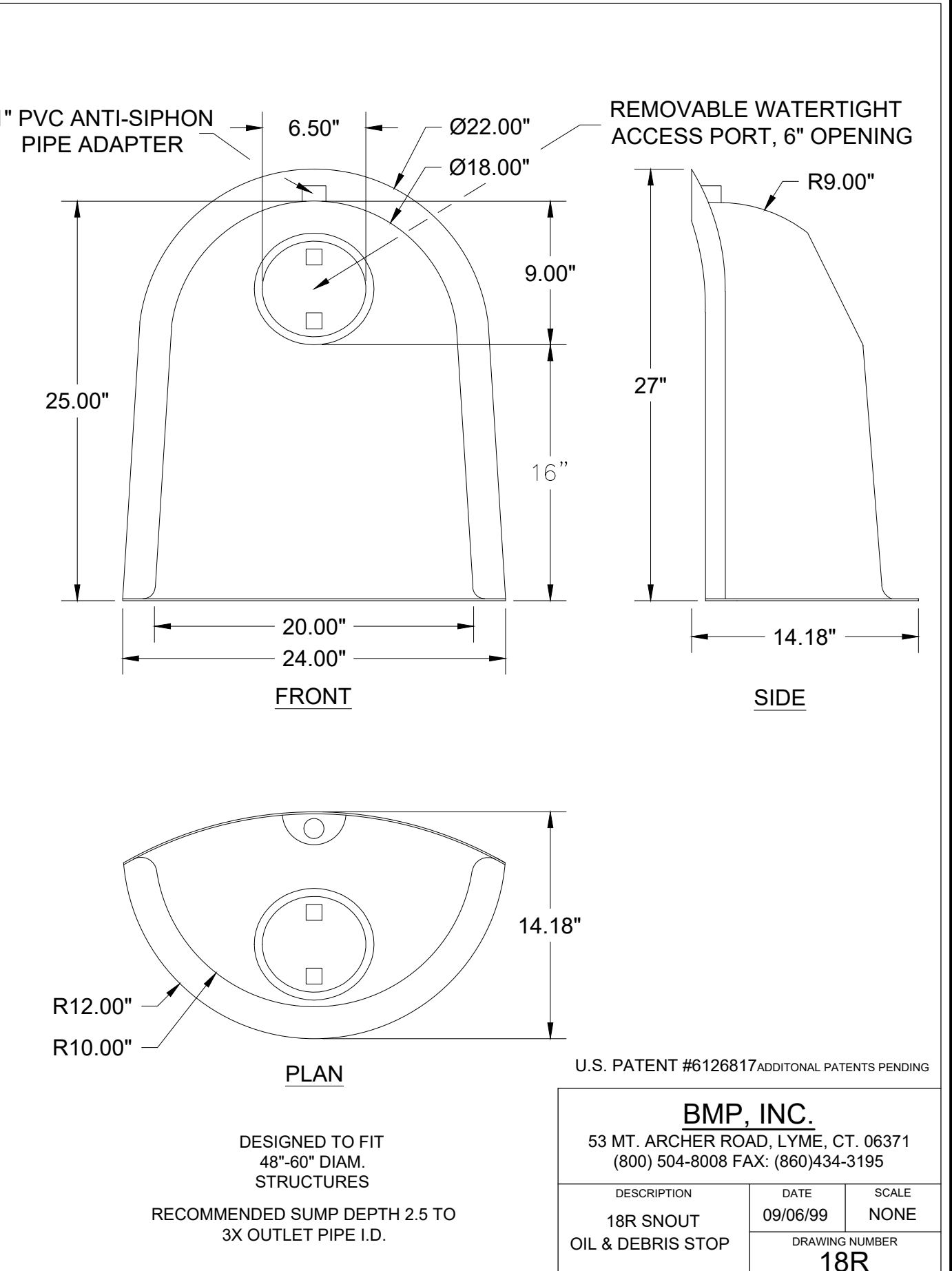


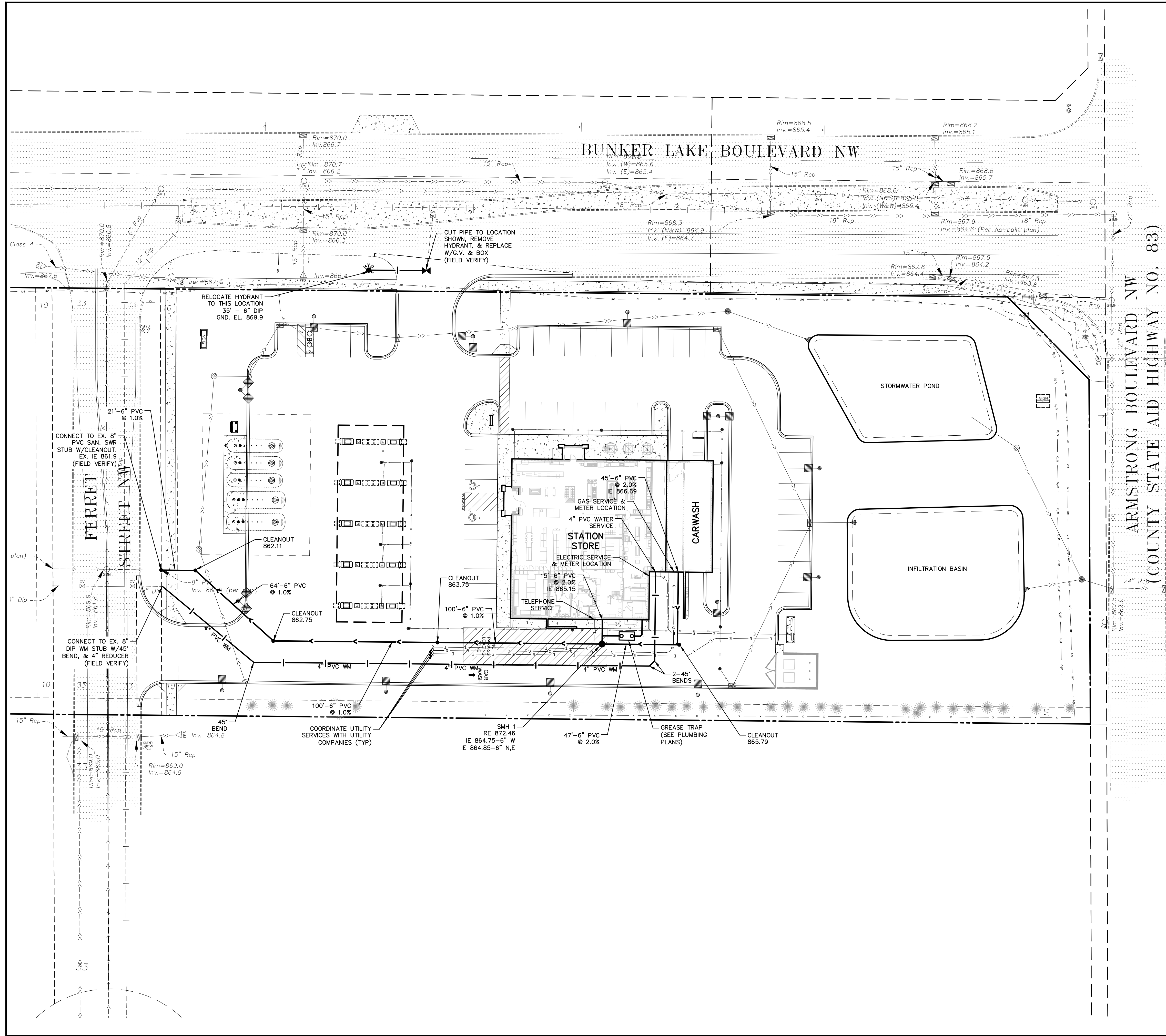
TABLE OF QUANTITIES RIPRAP AT RCP OUTLETS

DIA. OF PIPE (IN.)	CLASS II d ₅₀ = 6"				CLASS III d ₅₀ = 9"				CLASS IV d ₅₀ = 12"			
	GEOTEXTILE FILTER UNDER RIPRAP	12" GRANULAR FILTER UNDER RIPRAP	18" GRANULAR FILTER UNDER RIPRAP	24" GRANULAR FILTER UNDER RIPRAP	GEOTEXTILE FILTER UNDER RIPRAP	12" GRANULAR FILTER UNDER RIPRAP	18" GRANULAR FILTER UNDER RIPRAP	24" GRANULAR FILTER UNDER RIPRAP	GEOTEXTILE FILTER UNDER RIPRAP	12" GRANULAR FILTER UNDER RIPRAP	18" GRANULAR FILTER UNDER RIPRAP	24" GRANULAR FILTER UNDER RIPRAP
12	8	18.9	0.2	3.0	18.6	0.3	4.4	22.6	0.3	5.9	0.4	6.4
15	8	18.0	0.2	3.2	22.8	0.3	4.8	29.8	0.4	6.4	0.4	6.4
18	10	22.4	0.3	4.3	25.6	0.4	6.4	29.0	0.5	8.5	0.5	8.5
21	10	24.1	0.3	4.7	27.4	0.4	7.1	30.2	0.6	9.4	0.6	9.4
24	12	29.7	0.5	6.2	33.4	0.8	9.2	37.3	1.0	12.3	1.0	12.3
27	12	31.4	0.5	6.6	35.2	0.9	9.9	38.7	1.1	13.3	1.1	13.3
30	14	37.4	0.8	8.2	41.6	1.1	12.3	46.0	1.5	16.4	1.5	16.4
33	14	38.8	0.8	8.6	43.4	1.1	12.6	47.8	1.6	17.4	1.6	17.4
42	18	52.8	1.2	12.5	57.8	1.7	18.7	63.0	2.3	24.9	2.3	24.9
48	20	61.1	1.5	14.5	66.2	2.2	22.2	71.0	2.9	29.8	2.9	29.8

TABLE OF QUANTITIES RIPRAP AT RCP-A OUTLETS

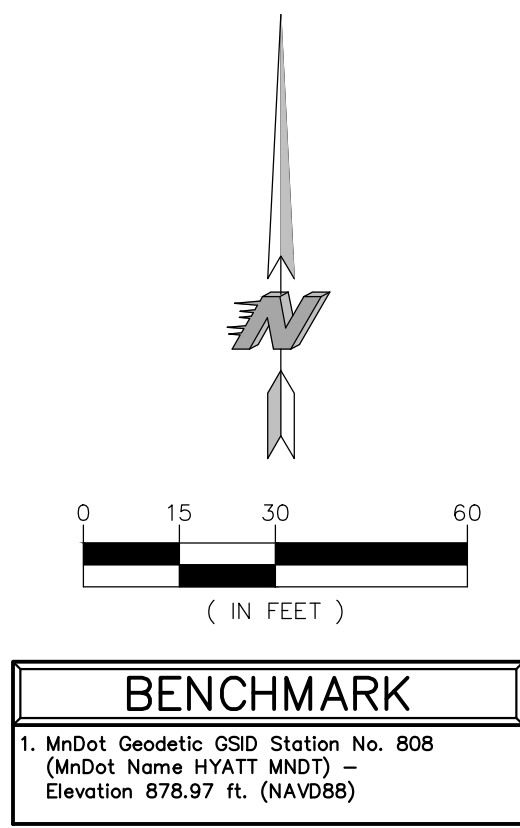
SPAN OF ARCH (IN.)	CLASS II d ₅₀ = 6"				CLASS III d ₅₀ = 9"				CLASS IV d ₅₀ = 12"			
	GEOTEXTILE FILTER UNDER RIPRAP	12" GRANULAR FILTER UNDER RIPRAP	18" GRANULAR FILTER UNDER RIPRAP	24" GRANULAR FILTER UNDER RIPRAP	GEOTEXTILE FILTER UNDER RIPRAP	12" GRANULAR FILTER UNDER RIPRAP	18" GRANULAR FILTER UNDER RIPRAP	24" GRANULAR FILTER UNDER RIPRAP	GEOTEXTILE FILTER UNDER RIPRAP	12" GRANULAR FILTER UNDER RIPRAP	18" GRANULAR FILTER UNDER RIPRAP	24" GRANULAR FILTER UNDER RIPRAP
12	10	22.4	0.3	4.1	25.6	0.4	6.1	29.0	0.5	8.1	0.5	8.1
18	12	29.5	0.5	5.7	33.2	0.7	8.5	37.1	0.9	11.3	0.9	11.3
24	14	37.3	0.8	7.5	41.5	1.1	11.2	45.8	1.5	14.9	1.5	14.9
43	16	45.9	1.1	9.5	50.5	1.6	14.3	55.3	2.1	19.0	2.1	19.0
53	18	52.5	1.3	11.3	57.5	1.7	16.5	62.7	2.3	22.5	2.3	22.5
58	20	59.9	1.3	13.2	65.2	1.9	19.8	70.7	2.5	26.4	2.5	26.4

NOTES:
REQUIREMENTS FOR GEOTEXTILE TYPE, RIPRAP SIZE AND THICKNESS WILL BE DESIGNATED IN THE PLAN.
PIPE SIZES LARGER THAN THOSE SHOWN REQUIRE A SPECIAL DESIGN.
① FOR PIPES GREATER THAN OR EQUAL TO 30", USE L5.
② GEOTEXTILE FILTER, SPEC. 3723, SHALL COVER THE BOTTOM AND SIDES OF THE AREA EXCAVATED FOR THE RIPRAP.
③ GRANULAR FILTER MATERIALS:
• GRANULAR FILTER, UNDER RIPRAP, SHALL BE 12" GRANULAR FILTER, SPEC. 3601, OR 18" GRANULAR FILTER, SPEC. 3602, OR 24" GRANULAR FILTER, SPEC. 3603, OR 30" GRANULAR FILTER, SPEC. 3604, OR 36" GRANULAR FILTER, SPEC. 3605, OR 42" GRANULAR FILTER, SPEC. 3606, OR 48" GRANULAR FILTER, SPEC. 3607, OR 54" GRANULAR FILTER, SPEC. 3608, OR 60" GRANULAR FILTER, SPEC. 3609, OR 66" GRANULAR FILTER, SPEC. 3610, OR 72" GRANULAR FILTER, SPEC. 3611, OR 78" GRANULAR FILTER, SPEC. 3612, OR 84" GRANULAR FILTER, SPEC. 3613, OR 90" GRANULAR FILTER, SPEC. 3614, OR 96" GRANULAR FILTER, SPEC. 3615, OR 102" GRANULAR FILTER, SPEC. 3616, OR 108" GRANULAR FILTER, SPEC. 3617, OR 114" GRANULAR FILTER, SPEC. 3618, OR 120" GRANULAR FILTER, SPEC. 3619, OR 126" GRANULAR FILTER, SPEC. 3620, OR 132" GRANULAR FILTER, SPEC. 3621, OR 138" GRANULAR FILTER, SPEC. 3622, OR 144" GRANULAR FILTER, SPEC. 3623, OR 150" GRANULAR FILTER, SPEC. 3624, OR 156" GRANULAR FILTER, SPEC. 3625, OR 162" GRANULAR FILTER, SPEC. 3626, OR 168" GRANULAR FILTER, SPEC. 3627, OR 174" GRANULAR FILTER, SPEC. 3628, OR 180" GRANULAR FILTER, SPEC. 3629, OR 186" GRANULAR FILTER, SPEC. 3630, OR 192" GRANULAR FILTER, SPEC. 3631, OR 198" GRANULAR FILTER, SPEC. 3632, OR 204" GRANULAR FILTER, SPEC. 3633, OR 210" GRANULAR FILTER, SPEC. 3634, OR 216" GRANULAR FILTER, SPEC. 3635, OR 222" GRANULAR FILTER, SPEC. 3636, OR 228" GRANULAR FILTER, SPEC. 3637, OR 234" GRANULAR FILTER, SPEC. 3638, OR 240" GRANULAR FILTER, SPEC. 3639, OR 246" GRANULAR FILTER, SPEC. 3640, OR 252" GRANULAR FILTER, SPEC. 3641, OR 258" GRANULAR FILTER, SPEC. 3642, OR 264" GRANULAR FILTER, SPEC. 3643, OR 270" GRANULAR FILTER, SPEC. 3644, OR 276" GRANULAR FILTER, SPEC. 3645, OR 282" GRANULAR FILTER, SPEC. 3646, OR 288" GRANULAR FILTER, SPEC. 3647, OR 294" GRANULAR FILTER, SPEC. 3648, OR 300" GRANULAR FILTER, SPEC. 3649, OR 306" GRANULAR FILTER, SPEC. 3650, OR 312" GRANULAR FILTER, SPEC. 3651, OR 318" GRANULAR FILTER, SPEC. 3652, OR 324" GRANULAR FILTER, SPEC. 3653, OR 330" GRANULAR FILTER, SPEC. 3654, OR 336" GRANULAR FILTER, SPEC. 3655, OR 342" GRANULAR FILTER, SPEC. 3656, OR 348" GRANULAR FILTER, SPEC. 3657, OR 354" GRANULAR FILTER, SPEC. 3658, OR 360" GRANULAR FILTER, SPEC. 3659, OR 366" GRANULAR FILTER, SPEC. 3660, OR 372" GRANULAR FILTER, SPEC. 3661, OR 378" GRANULAR FILTER, SPEC. 3662, OR 384" GRANULAR FILTER, SPEC. 3663, OR 390" GRANULAR FILTER, SPEC. 3664, OR 396" GRANULAR FILTER, SPEC. 3665, OR 402" GRANULAR FILTER, SPEC. 3666, OR 408" GRANULAR FILTER, SPEC. 3667, OR 414" GRANULAR FILTER, SPEC. 3668, OR 420" GRANULAR FILTER, SPEC. 3669, OR 426" GRANULAR FILTER, SPEC. 3670, OR 432" GRANULAR FILTER, SPEC. 3671, OR 438" GRANULAR FILTER, SPEC. 3672, OR 444" GRANULAR FILTER, SPEC. 3673, OR 450" GRANULAR FILTER, SPEC. 3674, OR 456" GRANULAR FILTER, SPEC. 3675, OR 462" GRANULAR FILTER, SPEC. 3676, OR 468" GRANULAR FILTER, SPEC. 3677, OR 474" GRANULAR FILTER, SPEC. 3678, OR 480" GRANULAR FILTER, SPEC. 3679, OR 486" GRANULAR FILTER, SPEC. 3680, OR 492" GRANULAR FILTER, SPEC. 3681, OR 498" GRANULAR FILTER, SPEC. 3682, OR 504" GRANULAR FILTER, SPEC. 3683, OR 510" GRANULAR FILTER, SPEC. 3684, OR 516" GRANULAR FILTER, SPEC. 3685, OR 522" GRANULAR FILTER, SPEC. 3686, OR 528" GRANULAR FILTER, SPEC. 3687, OR 534" GRANULAR FILTER, SPEC. 3688, OR 540" GRANULAR FILTER, SPEC. 3689, OR 546" GRANULAR FILTER, SPEC. 3690, OR 552" GRANULAR FILTER, SPEC. 3691, OR 558" GRANULAR FILTER, SPEC. 3692, OR 564" GRANULAR FILTER, SPEC. 3693, OR 570" GRANULAR FILTER, SPEC. 3694, OR 576" GRANULAR FILTER, SPEC. 3695, OR 582" GRANULAR FILTER, SPEC. 3696, OR 588" GRANULAR FILTER, SPEC. 3697, OR 594" GRANULAR FILTER, SPEC. 3698, OR 600" GRANULAR FILTER, SPEC. 3699, OR 606" GRANULAR FILTER, SPEC. 3700, OR 612" GRANULAR FILTER, SPEC. 3701, OR 618" GRANULAR FILTER, SPEC. 3702, OR 624" GRANULAR FILTER, SPEC. 3703, OR 630" GRANULAR FILTER, SPEC. 3704, OR 636" GRANULAR FILTER, SPEC. 3705, OR 642" GRANULAR FILTER, SPEC. 3706, OR 648" GRANULAR FILTER, SPEC. 3707, OR 654" GRANULAR FILTER, SPEC. 3708, OR 660" GRANULAR FILTER, SPEC. 3709, OR 666" GRANULAR FILTER, SPEC. 3710, OR 672" GRANULAR FILTER, SPEC. 3711, OR 678" GRANULAR FILTER, SPEC. 3712, OR 684" GRANULAR FILTER, SPEC. 3713, OR 690" GRANULAR FILTER, SPEC. 3714, OR 696" GRANULAR FILTER, SPEC. 3715, OR 702" GRANULAR FILTER, SPEC. 3716, OR 708" GRANULAR FILTER, SPEC. 3717, OR 714" GRANULAR FILTER, SPEC. 3718, OR 720" GRANULAR FILTER, SPEC. 3719, OR 726" GRANULAR FILTER, SPEC. 3720, OR 732" GRANULAR FILTER, SPEC. 3721, OR 738" GRANULAR FILTER, SPEC. 3722, OR 744" GRANULAR FILTER, SPEC. 3723, OR 750" GRANULAR FILTER, SPEC. 3724, OR 756" GRANULAR FILTER, SPEC. 3725, OR 762" GRANULAR FILTER, SPEC. 3726, OR 768" GRANULAR FILTER, SPEC. 3727, OR 774" GRANULAR FILTER, SPEC. 3728, OR 780" GRANULAR FILTER, SPEC. 3729, OR 786" GRANULAR FILTER, SPEC. 3730, OR 792" GRANULAR FILTER, SPEC. 3731, OR 798" GRANULAR FILTER, SPEC. 3732, OR 804" GRANULAR FILTER, SPEC. 3733, OR 810" GRANULAR FILTER, SPEC. 3734, OR 816" GRANULAR FILTER, SPEC. 3735, OR 822" GRANULAR FILTER, SPEC. 3736, OR 828" GRANULAR FILTER, SPEC. 3737, OR 834" GRANULAR FILTER, SPEC. 3738, OR 840" GRANULAR FILTER, SPEC. 3739, OR 846" GRANULAR FILTER, SPEC. 3740, OR 852" GRANULAR FILTER, SPEC. 3741, OR 858" GRANULAR FILTER, SPEC. 3742, OR 864" GRANULAR FILTER, SPEC. 3743, OR 870" GRANULAR FILTER, SPEC. 3744, OR 876" GRANULAR FILTER, SPEC. 3745, OR 882" GRANULAR FILTER, SPEC. 3746, OR 888" GRANULAR FILTER, SPEC. 3747, OR 894" GRANULAR FILTER, SPEC. 3748, OR 900" GRANULAR FILTER, SPEC. 3749, OR 906" GRANULAR FILTER, SPEC. 3750, OR 912" GRANULAR FILTER, SPEC. 3751, OR 918" GRANULAR FILTER, SPEC. 3752, OR 924" GRANULAR FILTER, SPEC. 3753, OR 930" GRANULAR FILTER, SPEC. 3754, OR 936" GRANULAR FILTER, SPEC. 3755, OR 942" GRANULAR FILTER, SPEC. 3756, OR 948" GRANULAR FILTER, SPEC. 3757, OR 954" GRANULAR FILTER, SPEC. 3758, OR 960" GRANULAR FILTER, SPEC. 3759, OR 966" GRANULAR FILTER, SPEC. 3760, OR 972" GRANULAR FILTER, SPEC. 3761, OR 978" GRANULAR FILTER, SPEC. 3762, OR 984" GRANULAR FILTER, SPEC. 3763, OR 990" GRANULAR FILTER, SPEC. 3764, OR 996" GRANULAR FILTER, SPEC. 3765, OR 1002" GRANULAR FILTER, SPEC. 3766, OR 1008" GRANULAR FILTER, SPEC. 3767, OR 1014" GRAN



PLAN LEGEND

EXISTING	PROPOSED
CURB	
BITUMINOUS CONCRETE PAVEMENT	
CONCRETE WALK	
PROPERTY LINE	
EASEMENT LINE	
STORM SEWER	
SANITARY SEWER	
WATER MAIN	
UNDERGROUND GAS	
UNDERGROUND FIBER OPTIC	
UNDERGROUND ELECTRIC	
MISCELLANEOUS MANHOLE	
SEMAPHORE	
SANITARY MANHOLE	
LIGHT POLE	
SIGN	
GATE VALVE	
HYDRANT	
ELECTRIC BOX	
HAND HOLE	
FLARED END SECTION	

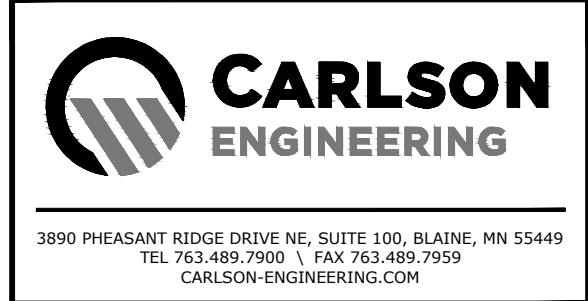


CALL BEFORE YOU DIG

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



KWIK TRIP, Inc.
 P.O. BOX 2107
 1626 OAK STREET
 LA CROSSE, WI 54602-2107
 PH. (608) 781-8988
 FAX (608) 781-8960



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 Minnesota.

Name: Daniel J. Wilke, P.E.
 Signature: *D. Wilke*
 Date: 01/30/25 License #: 53182

UTILITY PLAN

CONVENIENCE STORE #1782 WITH 1-BAY CARWASH

**BUNKER LAKE BLVD & ARMSTRONG BLVD NW
 RAMSEY, MINNESOTA**

#	DATE	DESCRIPTION
1	03/10/25	Per Owner Comments
2	04/08/25	Per City Comments

DRAWN BY: DJW
 SCALE: GRAPHIC
 PROJ. NO.: 11224-00
 DATE: 2025-01-30
 SHEET: 1782 C400

GENERAL:

- 1. Existing boundary, location, topographic, and utility information shown on this plan is from a field survey by E.G. Rud & Sons, Inc. dated 11/11/24. The Engineer is not responsible for inaccuracies related to the survey information.
2. Perform all construction work in accordance with State and Local requirements.
3. Perform all construction activity in accordance with the Minnesota Pollution Control Agency GENERAL STORMWATER PERMIT FOR CONSTRUCTION ACTIVITY issued August 1, 2023 and all subsequent amendments thereto.
4. Comply with all applicable local, state, and federal safety regulations. Comply with the work safety practices specified by the Occupational Safety and Health Administration (OSHA). OSHA prohibits entry into "confined spaces," such as manholes and inlets (see 29 CFR Section 1910.146), without undertaking certain specific practices and procedures. Bunch or pipe sidewalks in order to provide safe working conditions and stability for the placement of engineered fill. Perform excavations in accordance with the requirements of O.S.H.A. 29 CFR, Part 1926, Subpart P, Excavations. The Contractor is responsible for naming the "Confined Individuals" in accordance with CFR 1926.6. Slipping or tripping for excavations greater than 20 feet deep must be approved by a registered professional engineer (see 1926.609).

- 46. Construct sanitary sewer, watermain, and storm sewer utilities in accordance with the City Engineer's Association of Minnesota Standard Specifications sections 2600, 2611, and 2621 dated 2013, or the latest revised edition.
47. These plans, prepared by Carlson McCall, LLC, do not extend to or include systems pertaining to the safety of the construction contractor or its employees, agents, or representatives in the performance of the work. The seal of Carlson McCall's registered professional engineer hereon does not extend to any such safety systems that may nor or hereafter be incorporated into these plans. The construction contractor shall prepare or obtain the appropriate safety systems which may be required by U.S. Occupational Safety and Health Administration (OSHA) and/or local regulations.
48. Existing utilities shown on this plan are located as accurately as possible. However, the Engineer does not guarantee that all utilities are shown, or if shown are in the exact locations indicated on the plan. It is the Contractor's responsibility to ascertain the final vertical and horizontal location of all existing utilities (including municipal water and sewer lines and appurtenances) and to notify the owners of the utilities a minimum of 48 working hours prior to construction in a given area, requesting location in the field, as exact as possible, of all utilities which may be affected by the construction.
49. Trace Wire: Install locating wires on all conductive and non-conductive storm sewer, sanitary sewer, and water lines in accordance with the Minnesota Rural Water Association (MRWA) Trace Wire Specification Guide and Details (www.mrwa.com/PDF/TraceWireSpecGuideFinalWeb09.pdf). Use #12 HDPE-insulated copper-clad steel wire rated for underground service. The color of the insulating jacket shall be as follows: ground-red, storm sewer-green, sanitary sewer-green, and water lines-blue. Install the wire on the bottom side of the pipe below the spring line. Fasten the wire to the pipe with tape or plastic ties at 5' intervals. Do not wrap the trace wire around the corresponding utility. Do not connect the trace wire to existing conductive utilities. Use Copperhead Dyrcon 3-Way or Locking Snake Bite connectors rated for underground direct bury applications or approved equal of all crossings or service connections. Twist on connectors are not allowed. Trace wire must be properly grounded at all dead ends and services. Install grade-level/in-ground trace wire access boxes and drive-in magnesium grounding anodes at all dead ends, services, and fire hydrants. Trace wire access boxes shall be color coded as follows: storm sewer-green, sanitary sewer-green, and water lines-blue.
50. Detectable Warning Tape: Install detectable underground warning tape directly above all underground utilities at a depth of 457 mm (18 inches) below finished grade, unless otherwise indicated. Underground warning tape shall be 3-inches wide with a minimum 5.0 mil overall thickness. Tape shall be manufactured using a 0.8 mil clear virgin polypropylene film, reverse printed and laminated to a 0.35 mil solid aluminum foil core, and then laminated to a 3.75 mil clear virgin polyethylene film. The aluminum backing makes underground assets easy to find using a non-ferrous locator. Tape shall be printed using a diagonally striped design for maximum visibility and meet the APWA Color-Code standard for identification of buried utilities. Use Pro-Line Safety Products (www.prolinesafety.com) detectable marking tape or approved equal.
51. See architect for building waterproofing and foundation drainage.
52. Place #3 rebar at 3' on center in all 6" thick concrete pavement locations. Place #4 rebar at 4' on center in all 8" thick concrete pavement locations.
53. Place #4 x 2"-0" tie bar at 3' on center in all concrete curb and gutter.
54. Record as-built information on construction progress or at appropriate construction intervals. Secure and deliver to the Owner as-built information showing locations, top, and invert elevations of manholes, catchbasins, cleanouts, inlet and outlet pipes, valves, hydrants, and related structures. Location ties shall be to permanent monuments or buildings.
55. Test reports required for project close-out include but are not limited to: density test reports, bacteriological tests on the water system, pressure tests on the water system, leak tests on the sewer system, and deflection tests on all HDPE pipe.
56. Removing Markings: Markings that are no longer applicable for roadway conditions or restrictions and that might cause confusion for the road user shall be removed or obliterated to be unidentifiable as a marking as soon as practical. Pavement marking obliteration shall remove the non-applicable pavement marking material, and the obliteration method shall minimize pavement skidding and improve existing pavement markings with black paint or spraying with asphalt shall not be accepted as a substitute for removal or obliteration.
57. Completely remove marking from locations shown on the plan in accordance with MUTCD Standard Specification Section 2102. Use one or a combination of air blasting, water blasting, and grinding. Provide a dust control system and remove accumulated sand or other materials. Collect, contain, and dispose of dust or residue from removals.

WATER DISTRIBUTION SYSTEM:

- 1. Bring all utility utilities to 2' outside of the building line with the exception of the water service. Extend water service into the building and up to the floor for the water meter. Do not install PVC water service pipe under or within any building, structure, or part thereof.
2. CITY REQUIRES A MINIMUM OF 48 HOURS NOTICE PRIOR TO ANY WATER SHUTDOWN.
3. Separation of Water and Sewer: Construct sewer and water services in accordance with Minnesota Rules, part 4714.0721 and Uniform Plumbing Code (UPC) parts 720.0 and 721.0. Provide a minimum horizontal separation of 10 feet between all water and sewer lines, including manholes, catch basins, storm sewer, sanitary sewer, drainage, or other potential sources for contamination. Measure the separation distance from the outer edge of the pipe to the outer edge of the continuation source (outer edge of structures, piping, etc.). At water and sewer crossings, the bottom of the water pipe located within ten feet of the point of crossing must be at least 12-inches above the top of the sewer pipe. Shifts in pipe material must be approved by the Engineer. No joints or connections are allowed in accordance with the requirements of Minnesota Rules part 4714.0710 and UPC part 701.0. No joints or connections are allowed on the water line within 10-feet of the crossing.
4. Watermain Details: Maintain 8-feet of cover over the top of the water lines to the finished grade. Verify elevation of proposed and existing water lines of all utility crossings. Install the water meter and related devices in order to clear storm sewers, sanitary sewers, or other utilities as required. Include boxes to lower water lines in the base bid.
5. Disinfect: Disinfect all completed watermain 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 in accordance with Minnesota Rules, part 4714.0609 and UPC part 609.3. Do not use the tablet method on solvent-welded plastic or on screw-on-joint steel pipe because of the danger of fire or explosion from the reaction of the joint compounds with the calcium hypochlorite. Retain the treated water in the pipeline 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 testing kits.
6. 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 2 working hours prior to any testing. Pressure test the water system in accordance with the UPC part 620.4. Pressurize the waterline to a water pressure of 1034-kPa (150-psi) gauge pressure (measured at the point of lowest elevation) by means of a pump connected to the pipe in a salsolator ymaner. Do not add water to the watermain in order to maintain the required pressure during the water main pressure testing. Minnesota Department of Health: The watermain shall be pressure tested at 150-psi for at least two hours with not more than a 2-psi pressure drop during the last hour of the test.
7. All water supply piping connecting to municipal water main must have a 150 psi minimum pressure rating.
8. Copper tube for water services must comply with ASTM B88 and shall have a weight not less than Type L (in accordance with Minnesota Rules part 4714.0604 and UPC part 604.0.)
9. Ductile Iron pipe (DIP) water services must comply with AWWA C151/ANSI A21.51 or AWWA C115/ANSI A21.51 (See Minnesota Rules part 4714.0604 and UPC part 604.0.). Use Thickness Class 52 DIP with push-on joints. Use petroleum resistant gaskets, Nitrile (NBR), or approved equal. All watermain fittings must be in accordance with all watermain fittings. Use only ANSI 304 stainless steel bolts and nuts on all watermain fittings. Use only ANSI 304 stainless steel pipe coated with a layer of arc-sprayed zinc per ISO 8179. The interior cement mortar lining shall be applied without asphalt seal coating. Polyethylene encasement is required on all ductile iron pipe. Use V-Bio Enhanced Polyethylene Encasement or approved equal.
10. Polyvinyl Chloride (PVC) Building Water Services must comply with ASTM D1785, ASTM D2241, or AWWA C900; pressure rated for water (See Minnesota Rules part 4714.0604 and UPC part 604.0.). Do not install PVC water service pipe under or within any building, structure, or part thereof.
11. Polyvinyl Chloride (PVC) Watermain: Use AWWA C900 for all PVC watermain furnished with integral elastomeric bell and spigot joints; minimum pressure Class 150; dimension ratio not greater than 18; laying length 20 feet. Use EBAA Iron, Inc., "Series 2000 PV Megalug," or approved equal for restraint on C900 PVC watermain. Use only ANSI 304 stainless steel bolts and nuts on all watermain fittings, valves, and hydrants.
12. 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, extensions, tees, crosses, plugs, all hydrant valves, and all hydrants in accordance with City requirements. Use "Series 1100 Megalug" manufactured by EBAA Iron Inc. castings, Texas, or approved equal, installed in accordance with manufacturer's recommendations for restraint on Ductile Iron Pipe. Restraint devices are to have epoxy coating or approved equivalent. Restraint device hardware shall be ANSI 304 stainless steel, or approved equivalent.
13. Watermain Valves: At all valve locations which require a 12" or smaller valve, install gate valves which are all of the compression resilient seated (CRS) type. Use American Fire Control's Series 2000 Ductile Iron Resilient Wedge Gate Valve, or approved equal. Gate valves shall conform to AWWA C209. Install cast iron valve boxes conforming to ASTM A48 at each valve location. Valve boxes shall be the three-piece type with 5'-47" shafts. Use the type with hot 6-bolt or equivalent. Valve boxes shall have at least 6" of adjustment above and below finished grade. Drop covers on valve boxes shall be round and bear the word "WATER" cast on the top. Use Tyler 6860-G "Stopnut" covers with extended skirt, or equivalent. All valve hardware shall be ANSI 304 stainless steel, or approved equivalent.
14. Curb Valves and Boxes: Use Mueller H-10334 extension type curb box with Minneapolis pattern base, or approved equal, at all 2" through 24" curb stop locations. Stationary rod is required on all curb stops. Use Mueller Company Mark II Orised No. H-15154N curb stop, or approved equal, and stainless steel stem rod.
15. Fire hydrants shall be in accordance with the requirements of the local municipality. Do not connect hydrant drains to sanitary sewers or storm sewers. Do not locate hydrants within 10 feet of sanitary sewers or storm sewers. When placing fire hydrants in locations where the groundwater table is less than 8 feet below the ground surface, plug the hydrant drain holes and equip the hydrants with a top stating the need for pumping after use. Maintain a 3-foot clear space around the circumference of all fire hydrants. All hydrant hardware shall be ANSI 304 stainless steel, or approved equivalent.
16. Do not connect new watermain to existing until the 24 hour main is pressure tested and disinfected.
17. Trace Wire: Install locating wires on all conductive and non-conductive storm sewer, sanitary sewer, and water lines in accordance with the Minnesota Rural Water Association (MRWA) Trace Wire Specification Guide and Details (www.mrwa.com/PDF/TraceWireSpecGuideFinalWeb09.pdf). Use #12 HDPE-insulated copper-clad steel wire rated for underground service. The color of the insulating jacket shall be as follows: ground-red, storm sewer-green, sanitary sewer-green, and water lines-blue. Install the wire on the bottom side of the pipe below the spring line. Fasten the wire to the pipe with tape or plastic ties at 5' intervals. Do not wrap the trace wire around the corresponding utility. Do not connect the trace wire to existing conductive utilities. Use Copperhead Dyrcon 3-Way or Locking Snake Bite connectors rated for underground direct bury applications or approved equal of all crossings or service connections. Twist on connectors are not allowed. Trace wire must be properly grounded at all dead ends and services. Install grade-level/in-ground trace wire access boxes and drive-in magnesium grounding anodes at all dead ends, services, and fire hydrants. Trace wire access boxes shall be color coded as follows: storm sewer-green, sanitary sewer-green, and water lines-blue.
18. Detectable Warning Tape: Install detectable underground warning tape directly above all underground utilities at a depth of 457 mm (18 inches) below finished grade, unless otherwise indicated. Underground warning tape shall be 3-inches wide with a minimum 5.0 mil overall thickness. Tape shall be manufactured using a 0.8 mil clear virgin polypropylene film, reverse printed and laminated to a 0.35 mil solid aluminum foil core, and then laminated to a 3.75 mil clear virgin polyethylene film. The aluminum backing makes underground assets easy to find using a non-ferrous locator. Tape shall be printed using a diagonally striped design for maximum visibility and meet the APWA Color-Code standard for identification of buried utilities. Use Pro-Line Safety Products (www.prolinesafety.com) detectable marking tape or approved equal.
19. Threaded hose connections including hose bibbs and hydrants must include a back flow prevention device in accordance with Minnesota Rules, part 4714.0603 and UPC part 603.0. Wall hydrants must meet ASSE Standard 1019 (see Table 603.2). Where permitted by the administrative authority, wall hydrants may utilize non-removable ASSE 1022 backflow preventers or non-removable ASSE 1011 vacuum breakers and provision is made to protect from freezing (see Minnesota Rules, Chapter 4714, Sections 603.5.7, 312.6, and 3011.2).
20. All newly installed or replacement pipes, pipe fittings, plumbing fittings and fixtures, including backflow preventers, that are installed on potable water systems or systems that are required to distribute water for potable use, are required to meet the requirements of the Drinking Water Act, which establishes a maximum lead content of 0.25 percent by weight, based on the weight of the wetted surfaces. Solder and flux for potable water systems shall contain less than 0.2 percent lead. Joints must include non-corrosive non-toxic paste-type flux complying with ASTM B813 (See Minnesota Rules, Chapter 4714, Section 603.3.4). (See Minnesota Rules, part 4714.0604 and UPC part 604.11).
21. Do not exceed the manufacturer's specifications for curvature of pipe and deflection at pipe joints. Securely close all open ends of pipe and fittings with watertight plugs when work is not in progress. Keep the interior of all pipes clean and remove any dirt or debris from joint surfaces after the pipes have been lowered into the trench. Install all valves plumb and located according to the plans.
22. Insulate the watermain at locations indicated on the plan. Provide a minimum insulation thickness of 4 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 material equivalent to DOW Styrofoam Highguard 40 Polystyrene insulation. Individual insulation board dimensions typically measure 4' wide by 8' long by 2" thick.

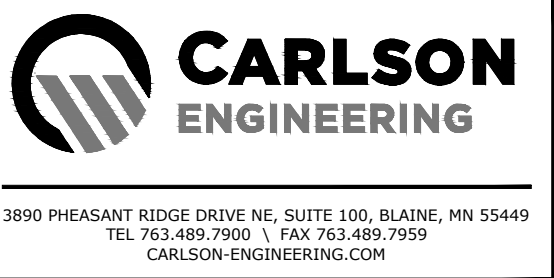
SANITARY SEWER:

- 1. Unless otherwise 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 (15 inches) 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 C443. These joints are normally used in sewers to hold infiltration and exfiltration to a practical minimum and are adequate for hydrostatic heads up to 30'. The inside barrel diameter shall not be less than 48 inches.
2. All joints and connections in the sewer system shall be gas-tight or watertight. Use flexible compression joints to make watertight connections to manholes in accordance with Minnesota Rules part 4714.0716. Where permitted by the administrative authority, approved resilient rubber joints or waterstop gaskets must be used in order to make watertight connections to manholes and other structures. Use Fernco "Concrete Manhole Adaptors" or "Large Diameter Waterstops", Press-Seal "Waterstop Grouting Rings", or approved equal. Cement mortar joints are permitted only for repairs or connections to existing lines having such joints.
3. The building sewer starts 2 feet outside of the building. See Uniform Plumbing Code (UPC) part 715.1. Material installed within 2 feet of the building must be of materials approved for use inside of or within the building.
4. The exterior sanitary sewer piping must comply with the following requirements: (A) Ductile wyes may not be used for drainage fittings in the horizontal position (see Minnesota Rules, Chapter 4714, Section 3102.5). Proper pipe slope cannot be maintained on both of the offset branches. (B) Changes in direction in drainage piping must be made by appropriate use of wyes and bends (see Minnesota Rules, Chapter 4714, Section 706.0). Tees are not allowed where the direction of flow changes from either vertical to horizontal or horizontal to horizontal.
5. Pipe: Use self-cure, Schedule 40 Polyvinyl Chloride (PVC) Plastic Pipe for all designated PVC sanitary sewer services outside of the building. The PVC pipe shall meet or exceed the industry standards and requirements as set forth by the American Society for Testing and Materials (ASTM) D1785 and D2665. Fittings must comply with ASTM D1866, D2665, or F794. Joints must be approved mechanical or push-on utilizing an elastomeric seal. Use of solvent cement joints is allowed for building services. Solvent cement joints in PVC pipe must include use of ASTM F658 puppa primer and cement in accordance with Uniform Plumbing Code (UPC), part 603.13.2. Pipe with solvent cement joints shall be joined with PVC cement conforming to ASTM D2564. The installation must comply with ASTM D2321, which requires open-trench installation on a continuous granular bed.
6. Cleanouts: Install cleanouts on all sanitary sewer services in accordance with UPC part 719.0 and 1101.12. 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 (Nenah R-1914-A, or approved equal) over all cleanouts.
7. Testing: Pressure test all sanitary sewer lines in accordance with the Minnesota Rules parts 4714.0712 and 4714.0723 and UPC parts 712.0 and 723.0. 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.
8. Install flexible watertight frame/chimney seals on all sanitary sewer maintenance holes in order to seal the outside of the chimney from the cast iron frame down to the cone. The seal shall be a continuous seamless band made of high quality EPDM (Ethylene Propylene Diene Monomer) rubber with a minimum thickness of 65 mils. Use Internal/External Adaptor Seal as manufactured by Adaptor, Inc. (www.adaptorinc.com/wp-content/uploads/2019/04/ADAR_SealManholeSeal.pdf), Int-Shield (Int-Shield one piece molded sealing system as manufactured by Sealing Systems, Inc. (www.sealingsystems.com)), or approved equal.
9. Use Nenah Foundry Co. R-1642 coating with self-welding, solid, type B fil, or approved equal, on all sanitary sewer maintenance holes. Covers shall bear the "Sanitary Sewer" label.
10. Trace Wire: Install locating wires on all conductive and non-conductive storm sewer, sanitary sewer, and water lines in accordance with the Minnesota Rural Water Association (MRWA) Trace Wire Specification Guide and Details (www.mrwa.com/PDF/TraceWireSpecGuideFinalWeb09.pdf). Use #12 HDPE-insulated copper-clad steel wire rated for underground service. The color of the insulating jacket shall be as follows: ground-red, storm sewer-green, sanitary sewer-green, and water lines-blue. Install the wire on the bottom side of the pipe below the spring line. Fasten the wire to the pipe with tape or plastic ties at 5' intervals. Do not wrap the trace wire around the corresponding utility. Do not connect the trace wire to existing conductive utilities. Use Copperhead Dyrcon 3-Way or Locking Snake Bite connectors rated for underground direct bury applications or approved equal of all crossings or service connections. Twist on connectors are not allowed. Trace wire must be properly grounded at all dead ends and services. Install grade-level/in-ground trace wire access boxes and drive-in magnesium grounding anodes at all dead ends, services, and fire hydrants. Trace wire access boxes shall be color coded as follows: storm sewer-green, sanitary sewer-green, and water lines-blue.

- 11. Detectable Warning Tape: Install detectable underground warning tape directly above all underground utilities at a depth of 457 mm (18 inches) below finished grade, unless otherwise indicated. Underground warning tape shall be 3-inches wide with a minimum 5.0 mil overall thickness. Tape shall be manufactured using a 0.8 mil clear virgin polypropylene film, reverse printed and laminated to a 0.35 mil solid aluminum foil core, and then laminated to a 3.75 mil clear virgin polyethylene film. The aluminum backing makes underground assets easy to find using a non-ferrous locator. Tape shall be printed using a diagonally striped design for maximum visibility and meet the APWA Color-Code standard for identification of buried utilities. Use Pro-Line Safety Products (www.prolinesafety.com) detectable marking tape or approved equal.
12. The minimum depth of cover for sanitary sewer without installation is 5 feet. Insulate sanitary sewer services at locations where the depth of cover is less than 5 feet. Provide a minimum insulation thickness of 4 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 material equivalent to DOW Styrofoam Highguard 40 Polystyrene insulation. Individual insulation board dimensions typically measure 4' wide by 8' long by 2" thick.
13. 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 at receiving groove end of the pipe pointing up-grade. When connecting to an existing pipe, uncover the existing pipe along the existing grade in order to allow any adjustments in the proposed line and grade before laying any pipe. Do not lay pipes in water or when the trench conditions are unsuitable for such work.
14. All saddle tee or wye fittings must provide an integrally molded pipe joint in the branch for positive protection against service pipe insertion beyond the inside of the sewer main pipe wall.
15. Terminate all new sewer stubs with a water-tight gasketed cap properly braced in order to withstand the infiltration-exfiltration test. Install grade-level/in-ground trace wire access boxes and drive-in magnesium grounding anodes at the end of all stubs.
16. Televisé all existing lines prior to connection.



KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960



3890 PRESHANT RIDGE DRIVE NE, SUITE 100, BLAINE, MN 55449
TEL 763.489.7900 | FAX 763.489.7959
CARLSON-ENGINEERING.COM

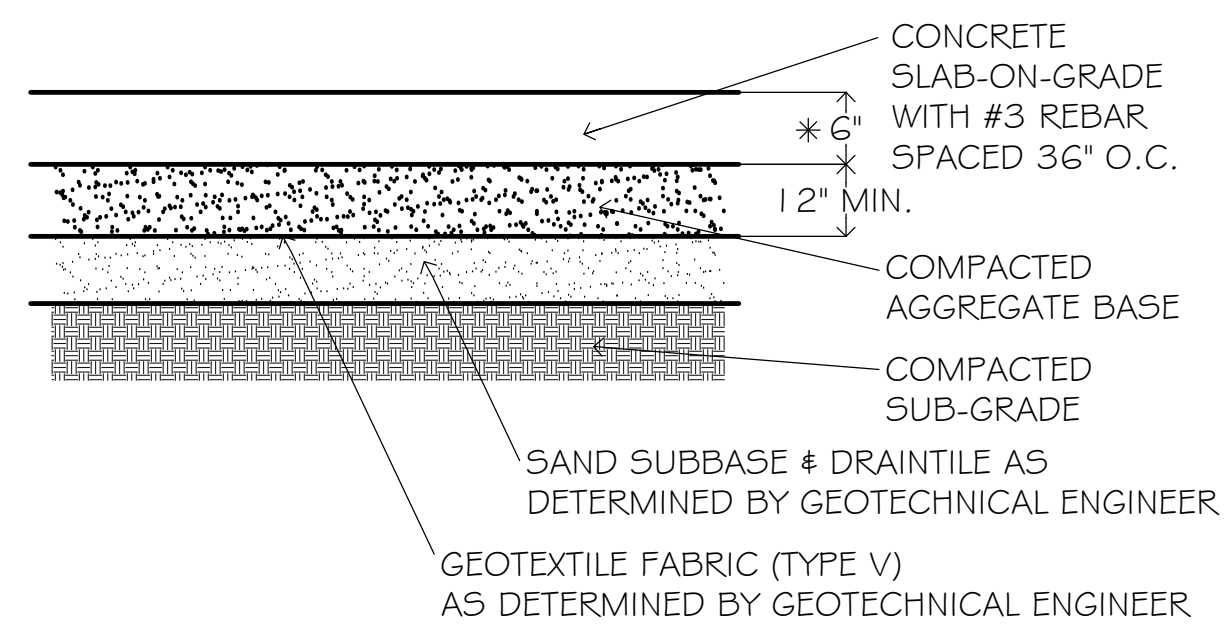
I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Name: Daniel J. Wilke, P.E.
Signature: [Signature]
Date: 01/30/25 License # 53182

UTILITY NOTES
CONVENIENCE STORE #1782
WITH 1-BAY CARWASH
BUNKER LAKE BLVD & ARMSTRONG BLVD NW
RAMSEY, MINNESOTA

Table with 3 columns: #, DATE, DESCRIPTION. Row 1: 03/10/25, Per Owner Comments. Row 2: 04/08/25, Per City Comments.

DRAWN BY: DJW
SCALE: GRAPHIC
PROJ. NO.: 11224-00
DATE: 2025-01-30
SHEET: 1782 C401



CONCRETE SLAB-ON-GRADE WITH #3 REBAR SPACED 36" O.C. *6" MIN. 12" MIN.

COMPACTED AGGREGATE BASE

COMPACTED SUB-GRADE

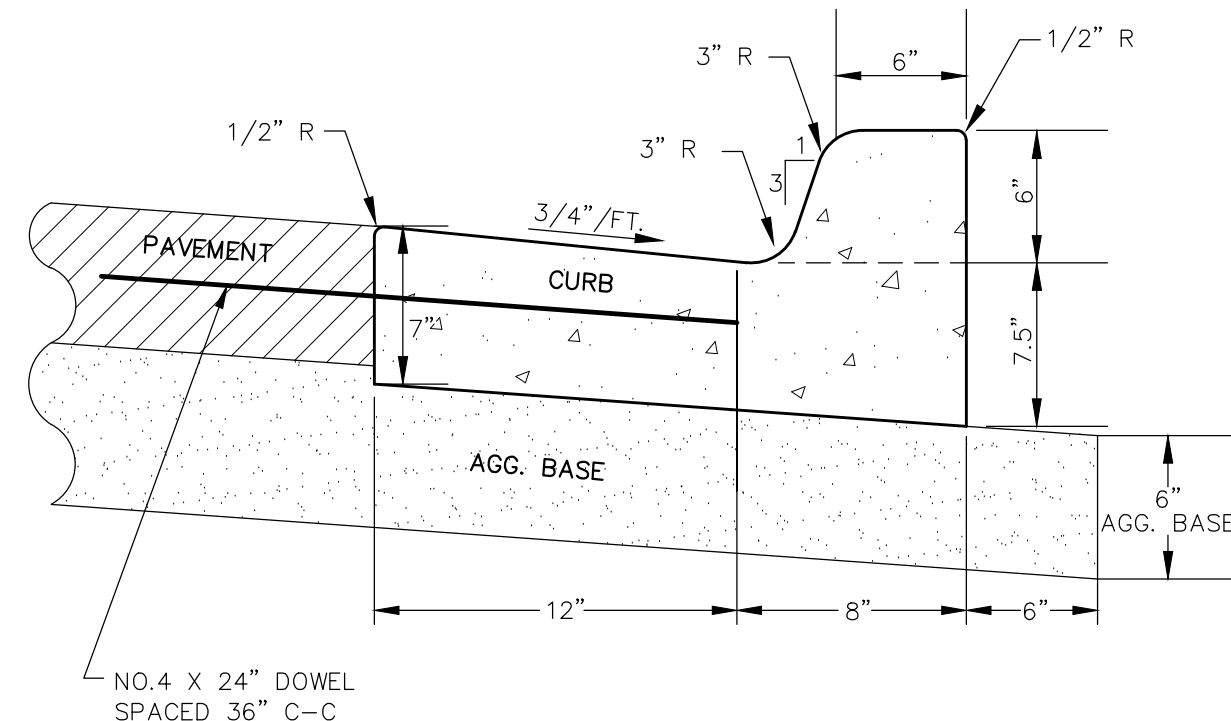
SAND SUBBASE & DRAINTILE AS DETERMINED BY GEOTECHNICAL ENGINEER

GEOTEXTILE FABRIC (TYPE V) AS DETERMINED BY GEOTECHNICAL ENGINEER

HEAVY DUTY INCREASE TO 8" THICK W/ #4 REBAR SPACED 36" O.C. AS NOTED ON PLANS (I.E. OVER TANKS & AT ENTRANCES)

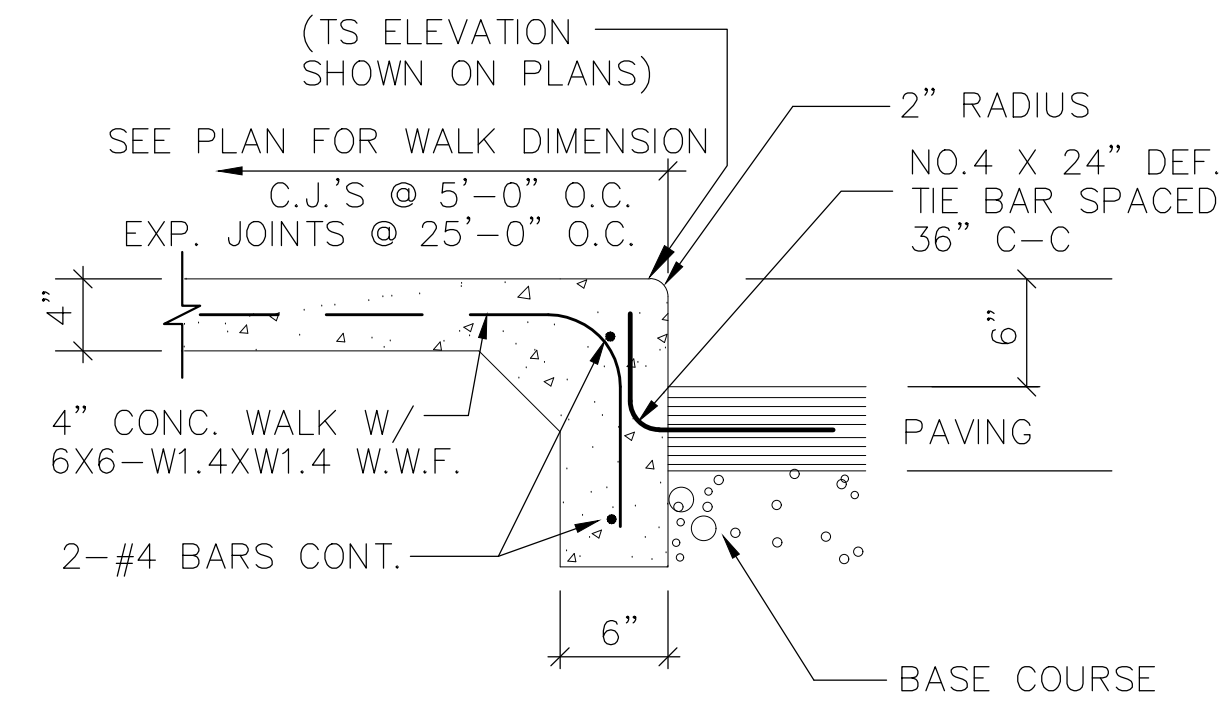
NOTE: PAVEMENT SECTION TO BE VERIFIED W/ GEOTECHNICAL REPORT.

1 | 6" CONCRETE PAVEMENT SECTION (LIGHT DUTY)
C500 NO SCALE

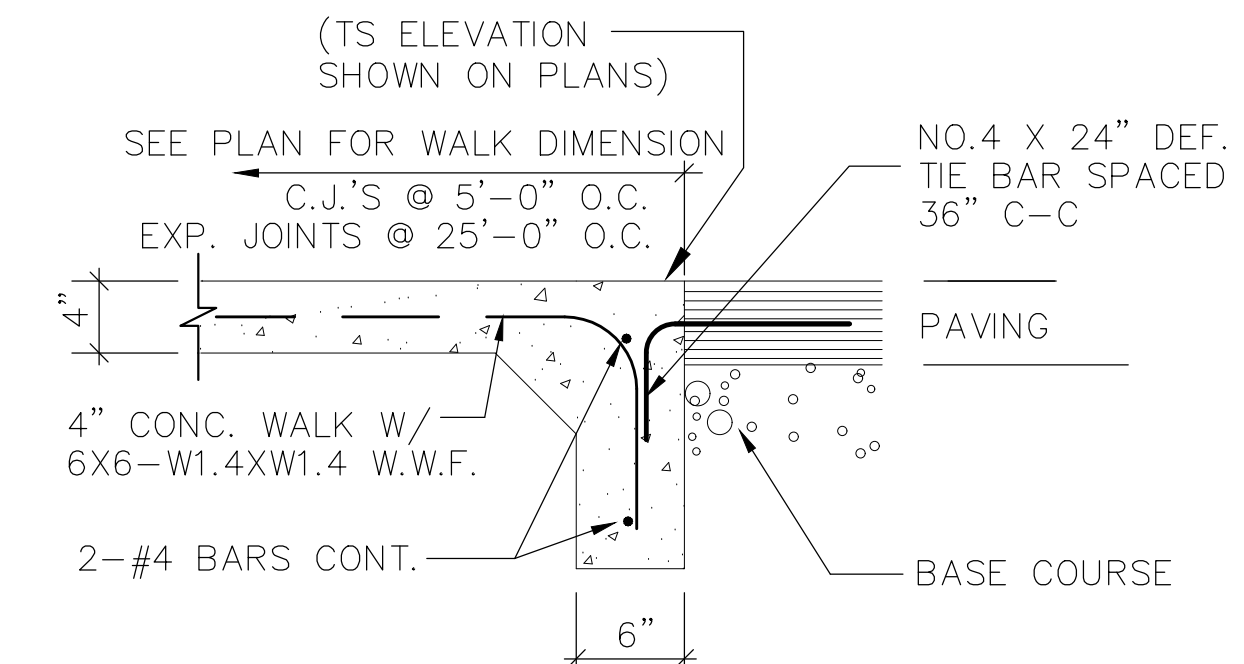


* TIPOUT CURB SHALL SLOPE OUT AT 3/4" PER FOOT.

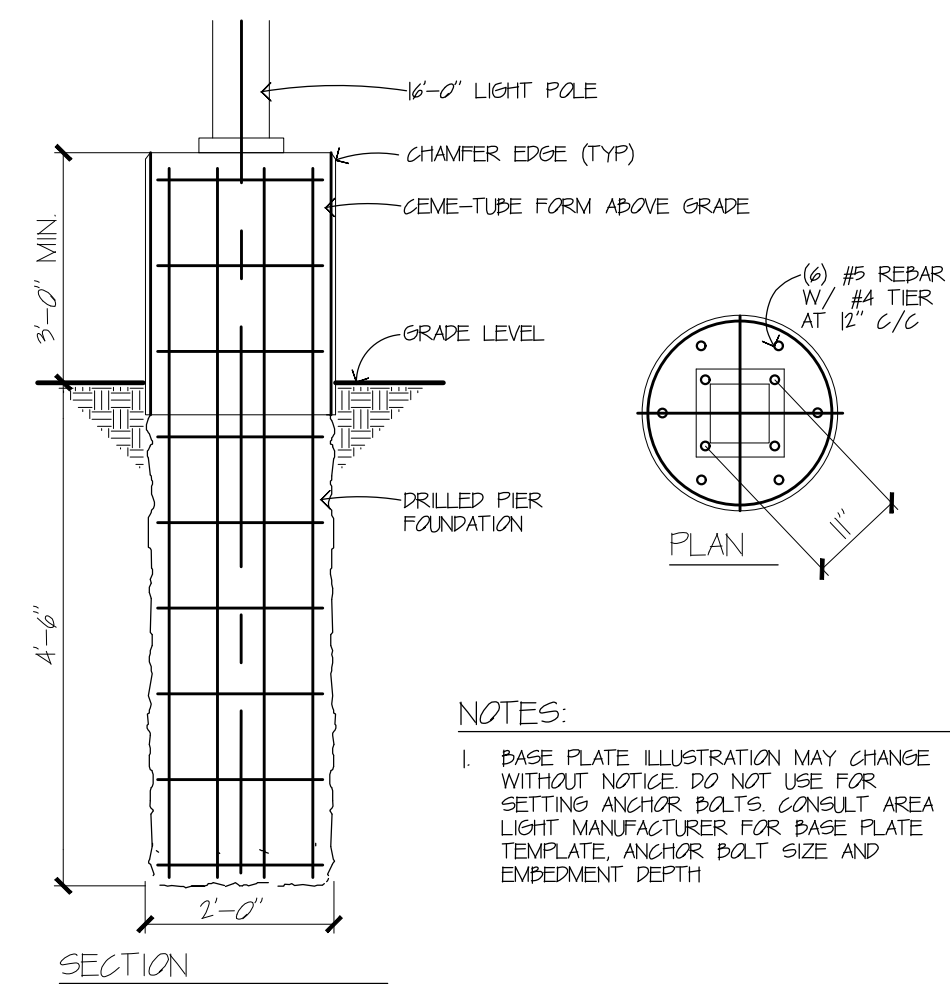
2 | B-612 CONCRETE CURB & GUTTER
C500 NO SCALE



3 | SIDEWALK/ CURB DETAIL
C500 NO SCALE



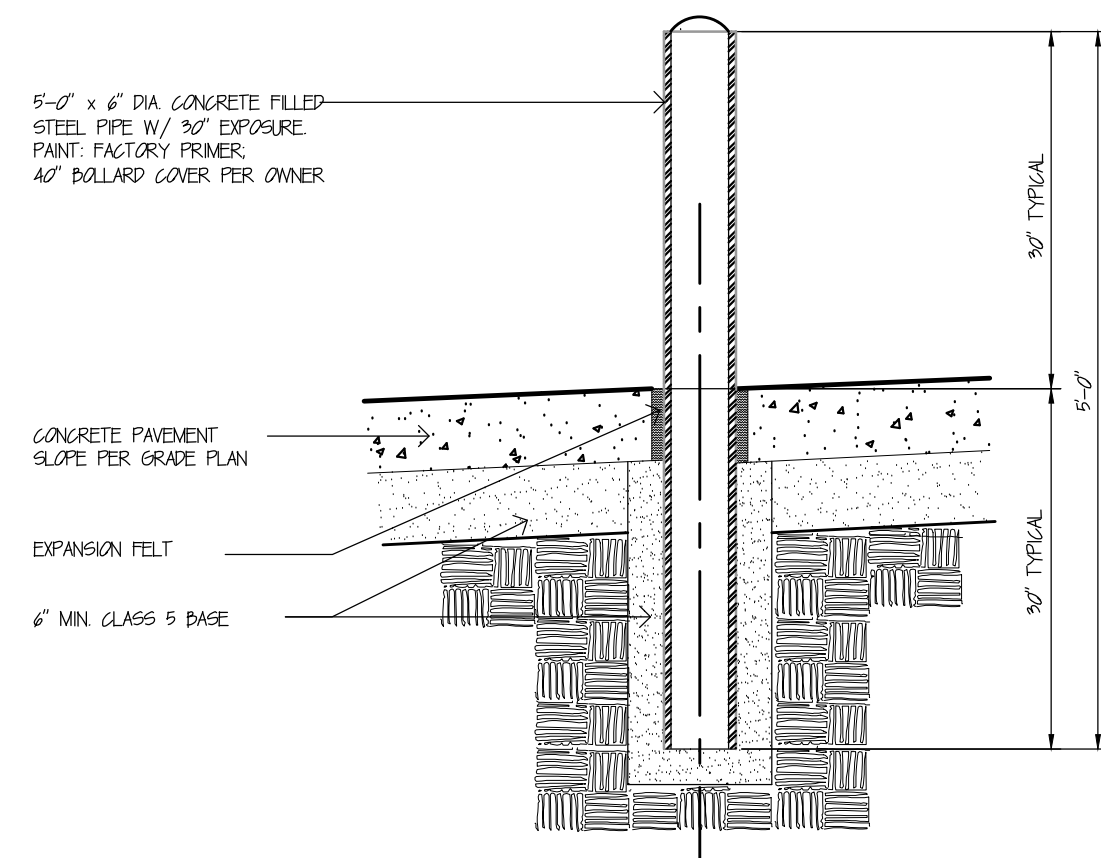
4 | SIDEWALK/ CURB DETAIL (FLUSH PAVEMENT)
C500 NO SCALE



NOTES:
1. BASE PLATE ILLUSTRATION MAY CHANGE WITHOUT NOTICE. DO NOT USE FOR SETTING ANCHOR BOLTS. CONSULT AREA LIGHT MANUFACTURER FOR BASE PLATE TEMPLATE, ANCHOR BOLT SIZE AND EMBEDMENT DEPTH.

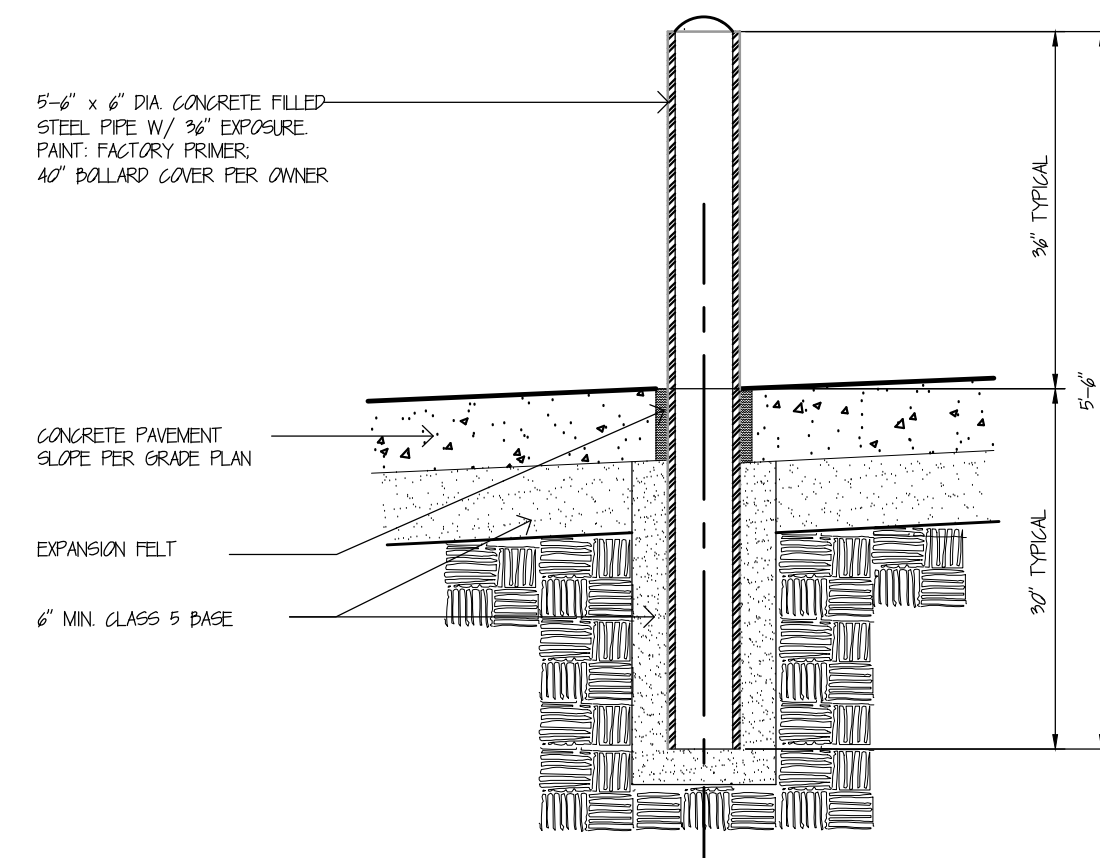
5 | ROUND AREALIGHT FOUNDATION
C500 NO SCALE

NOTE: SEE ARCHITECTURAL PLANS FOR REMOVABLE BOLLARD LOCATION AND DETAIL.

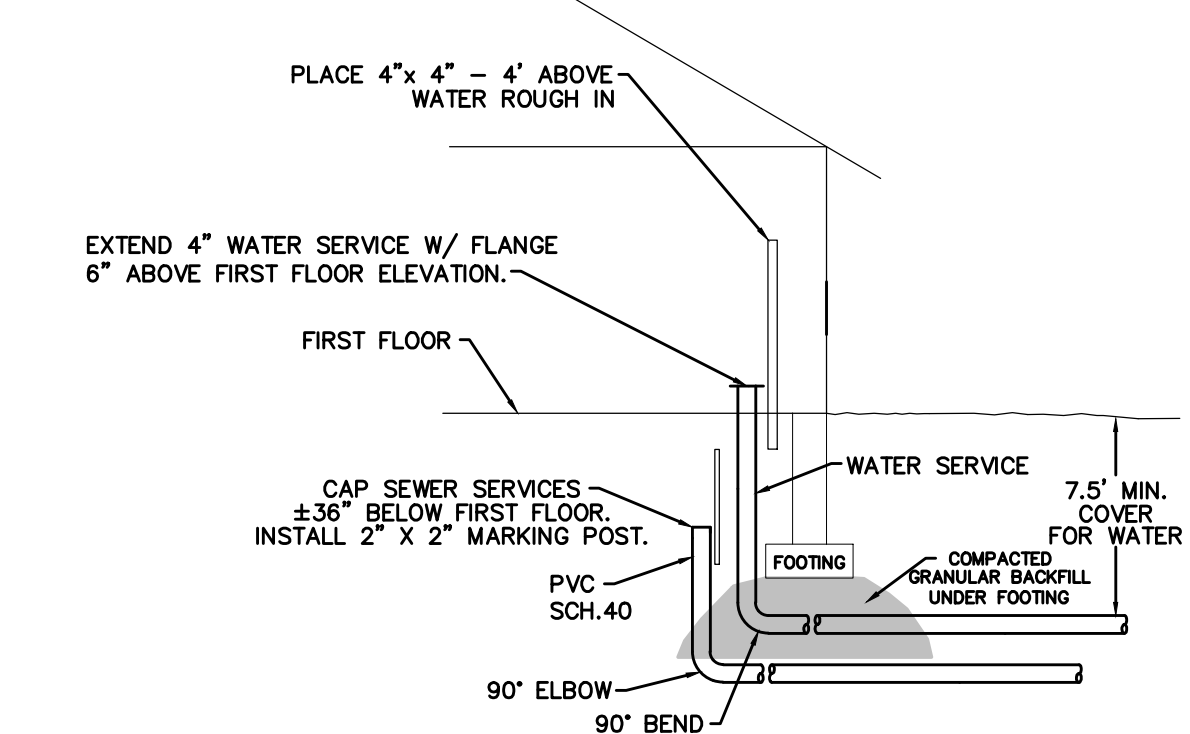


6 | 6" PIPE BOLLARD - 5'
C500 NO SCALE

NOTE: SEE ARCHITECTURAL PLANS FOR REMOVABLE BOLLARD LOCATION AND DETAIL.



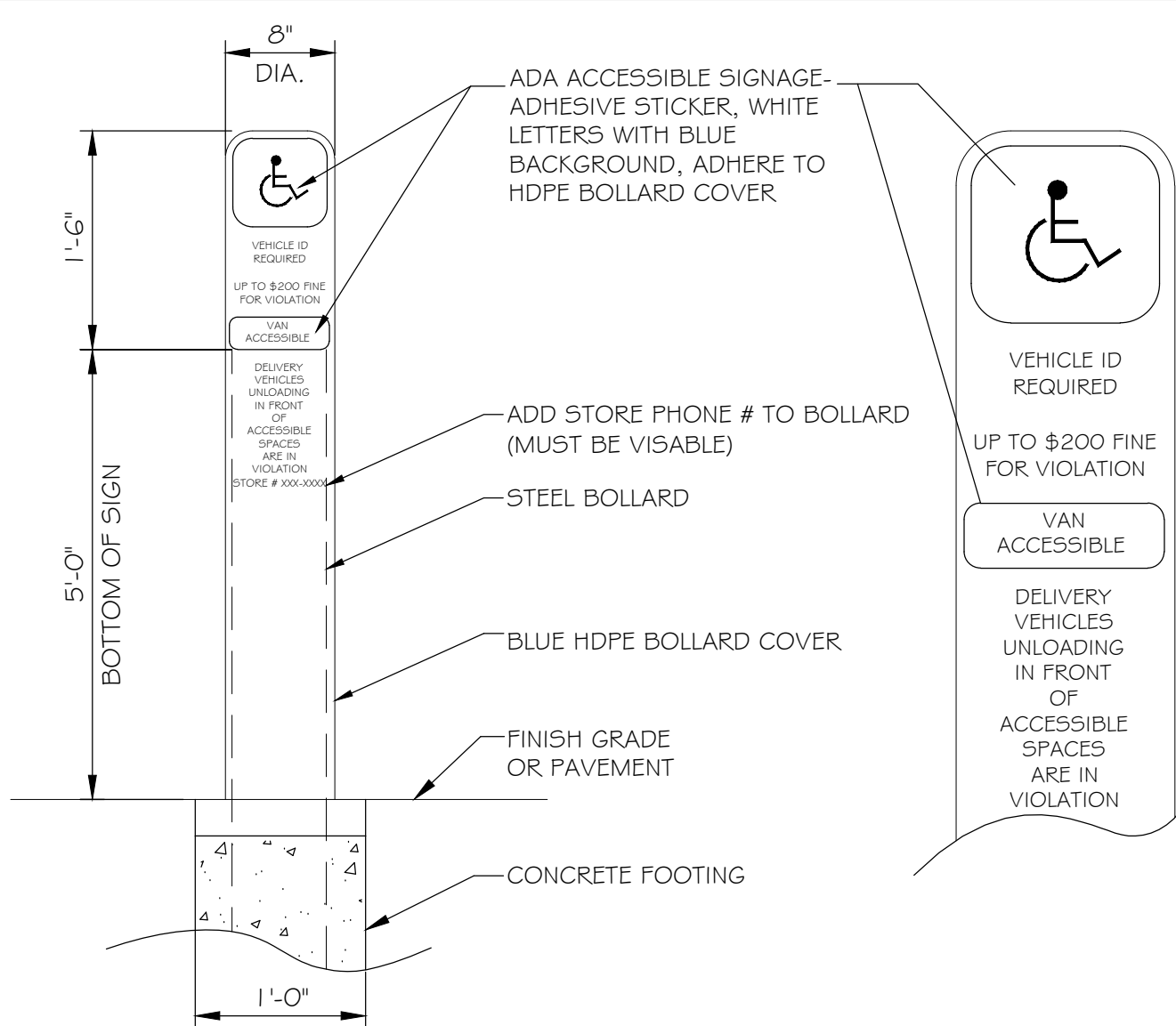
7 | 6" PIPE BOLLARD - 5'-6"
C500 NO SCALE



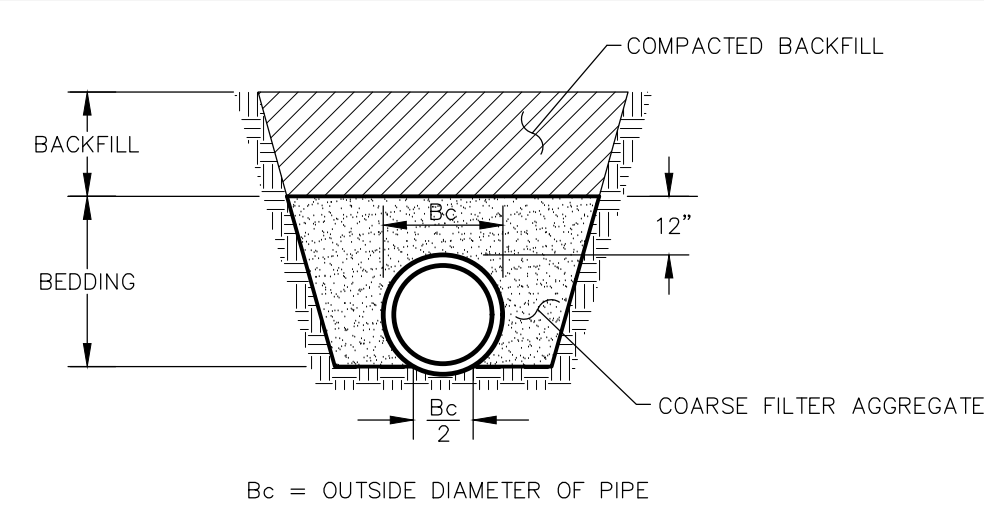
WATER NOTES: 4" WATER SERVICE W/FLANGE SHALL BE EXTENDED TO 6" ABOVE FIRST FLOOR ELEVATION. ALL SERVICES SHALL BE MARKED WITH A 4" X 4" POST, 4' ABOVE GRADE.

SEWER NOTES: SANITARY SEWER SERVICES FOR BUILDINGS SHALL BE EXTENDED VERTICALLY TO APPROXIMATELY 36" BELOW FIRST FLOOR ELEVATION AND CAPPED. ALL SERVICES SHALL BE MARKED WITH A 2" X 2" POST.

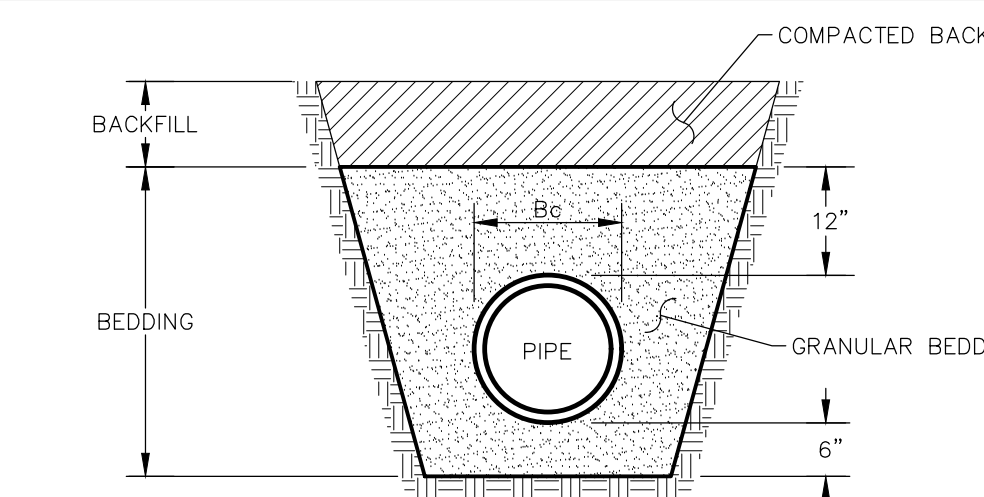
8 | SANITARY & WATER SERVICE INSTALLATION
C500 NO SCALE



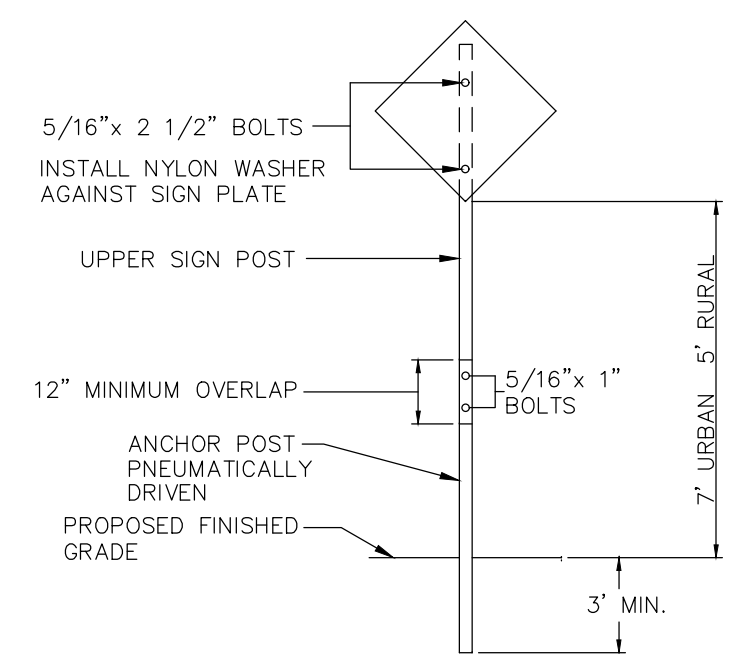
9 | ADA BOLLARD SIGNAGE
C500 NO SCALE



10 | DIP & RCP PIPE BEDDING
C500 NO SCALE

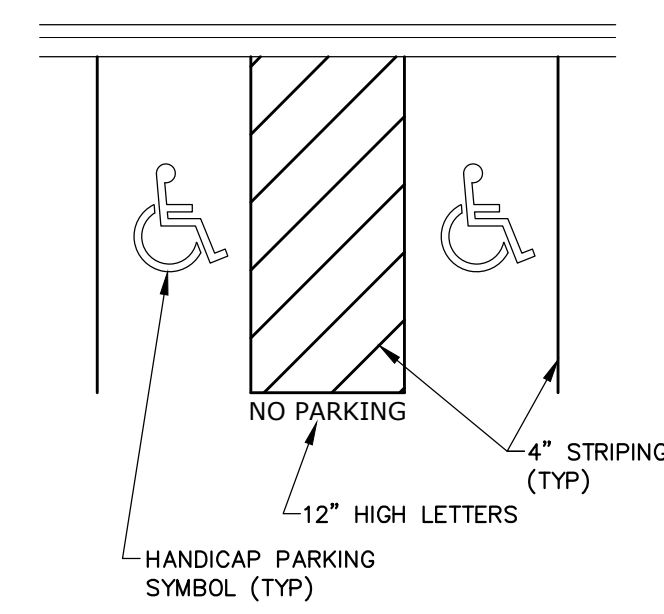


11 | PVC PIPE BEDDING
C500 NO SCALE



NOTES:
1. MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH CITY SPECIFICATIONS.
2. SIGN PANELS-REFLECTIVE SHEETING, VP DIAMOND GRADE.
3. BOLTS SHALL BE TAMPER PROOF.
4. FLANGED CHANNEL SIGN POSTS SHALL BE PAINTED GREEN, 3 LB./L.F. AND 7' LONG.
5. SIGNS INSTALLED IN CONCRETE SHALL HAVE AN APPROVED BREAK-AWAY DEVICE.
6. EDGE OF SIGN SHALL BE MINIMUM 18" FROM BACK OF CURB.

12 | TRAFFIC SIGN INSTALLATION
C500 NO SCALE



13 | HANDICAP PARKING SPACE STRIPING
C500 NO SCALE

Kwik Trip

Kwik Star

KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960

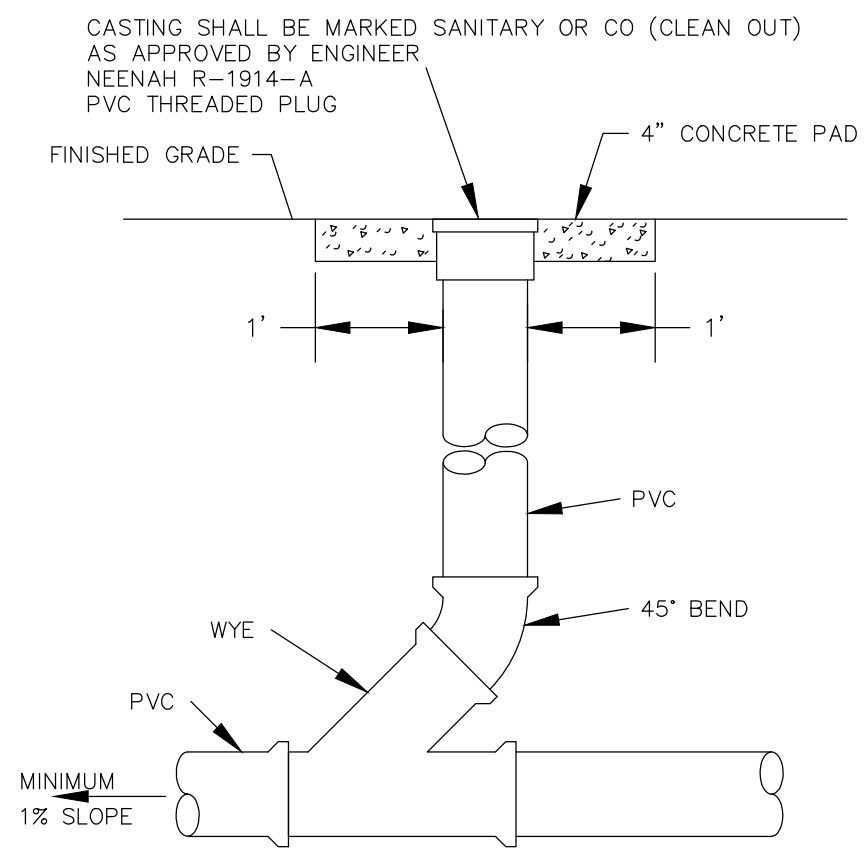
CARLSON ENGINEERING
3890 PHEASANT RIDGE DRIVE NE, SUITE 100, BLAINE, MN 55449
TEL. 763.489.7900 | FAX 763.489.7959
CARLSON-ENGINEERING.COM

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 Minnesota.
Name: Daniel J. Wilke, P.E.
Signature: [Signature]
Date: 01/30/25 License #: 53182

DETAILS
CONVENIENCE STORE #1782
WITH 1-BAY CARWASH
BUNKER LAKE BLVD & ARMSTRONG BLVD NW
RAMSEY, MINNESOTA

#	DATE	DESCRIPTION
▲	03/10/25	Per Owner Comments
▲	04/08/25	Per City Comments

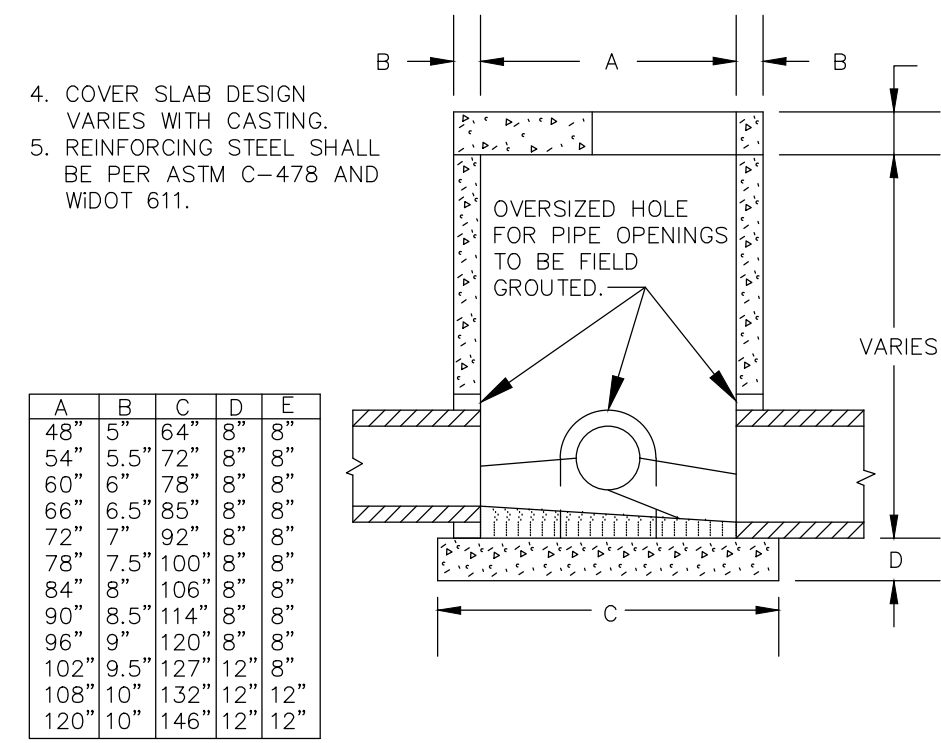
DRAWN BY: DJW
SCALE: GRAPHIC
PROJ. NO.: 11224-00
DATE: 2025-01-30
SHEET: 1782 C500



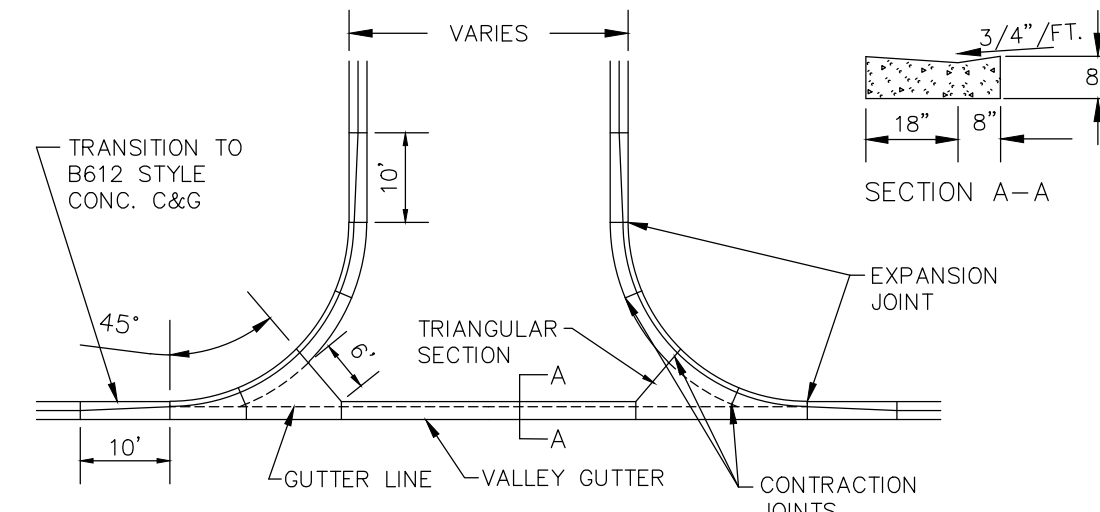
NOTES:
 - ALL JOINTS SHALL BE SOLVENT WELD EXCEPT AS NOTED.
 - CLEAN OUTS ARE REQUIRED AT 100' SPACING AND AT CHANGE OF DIRECTION.
 - ALL CLEAN OUTS SHALL BE EQUIPPED WITH A FROST SLEEVE.

1 SERVICE CLEAN OUT
 C501 NO SCALE

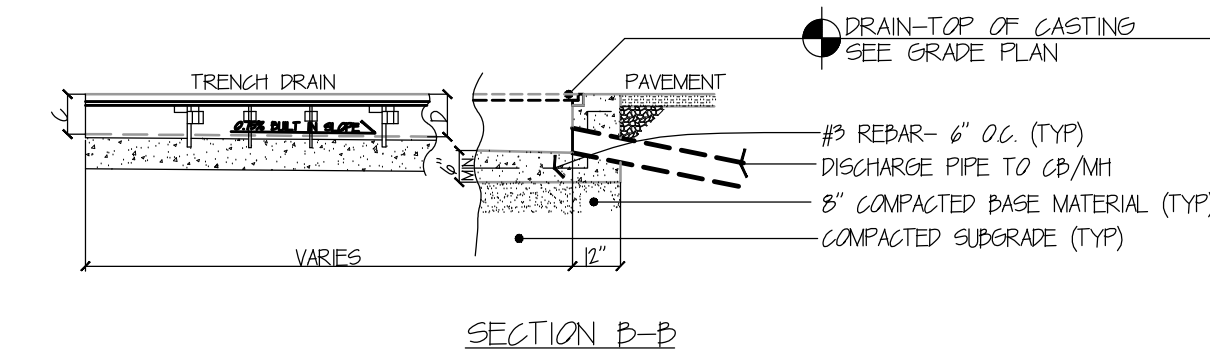
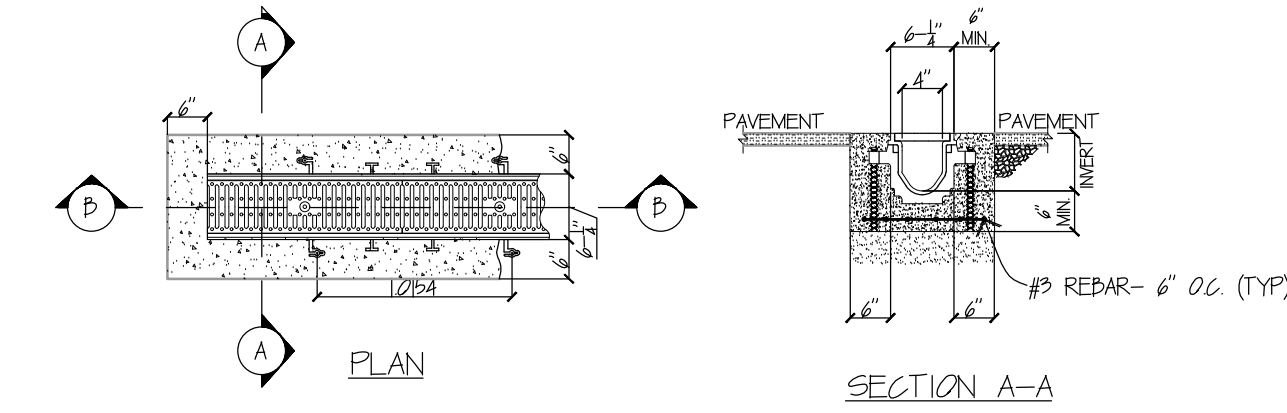
NOTES:
 1. 54" THRU 120" DIA. STRUCTURES ARE MANUFACTURED WITH BELL END FACING DOWN.
 2. STRUCTURES ARE MANUFACTURED IN ACCORDANCE WITH ASTM C-478 AND WIDOT 611 WITH RUBBER GASKET JOINTS.
 3. PROVIDE MORTAR FILLETS TO FIT THE BOTTOM PORTION OF PIPE TO DIRECT FLOW TO OUTLET HALF-WAY UP PIPE MINIMUM.



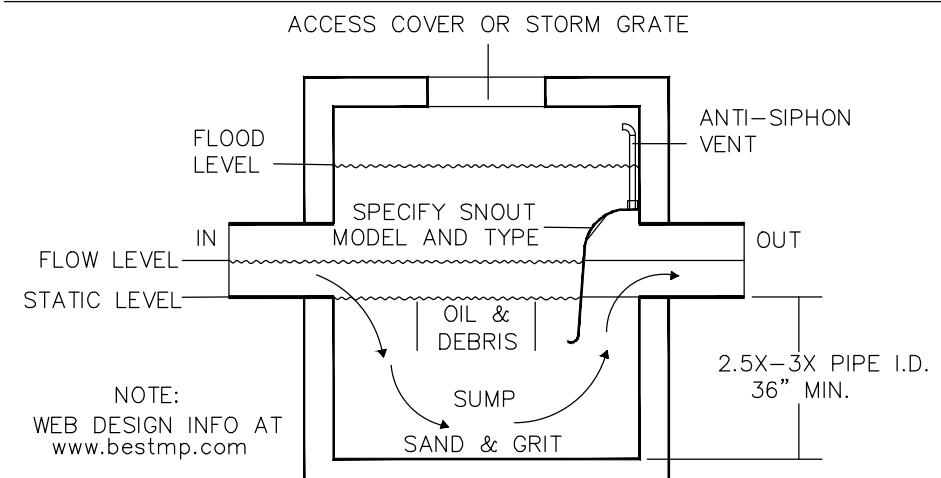
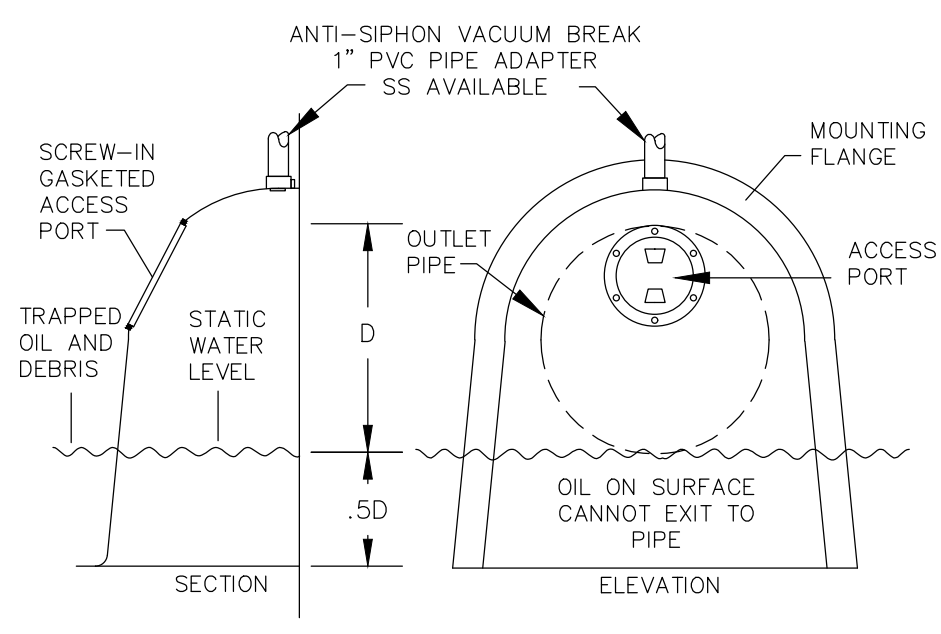
2 STANDARD STORM SEWER
 CATCH BASIN/MANHOLE
 & MANHOLE
 C501 NO SCALE



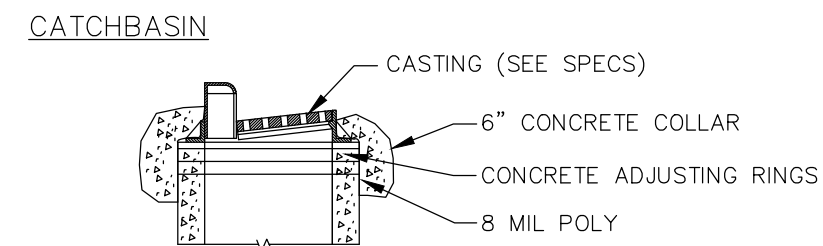
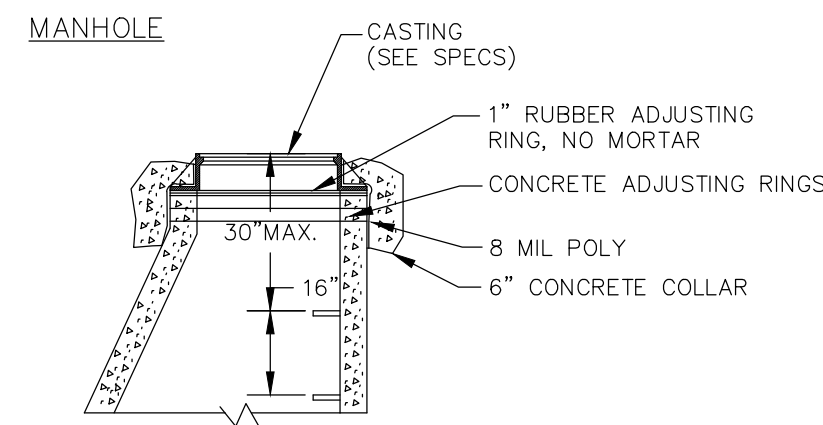
3 CONCRETE VALLEY GUTTER
 C501 NO SCALE



4 Z 886 TRENCH DRAIN DETAIL
 C501 NO SCALE

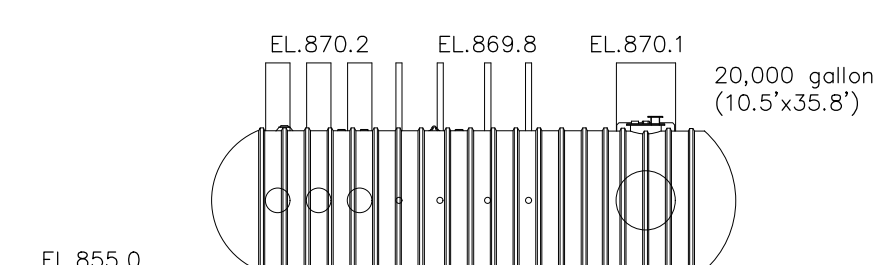
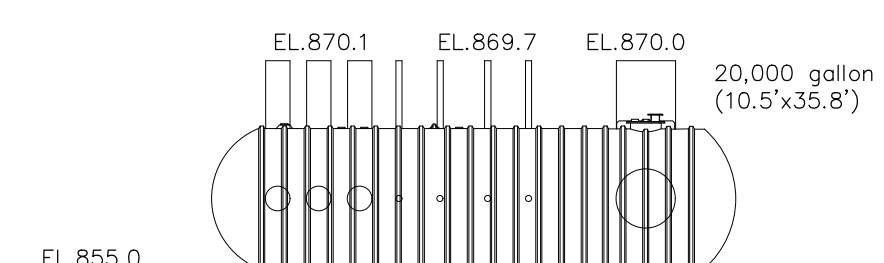
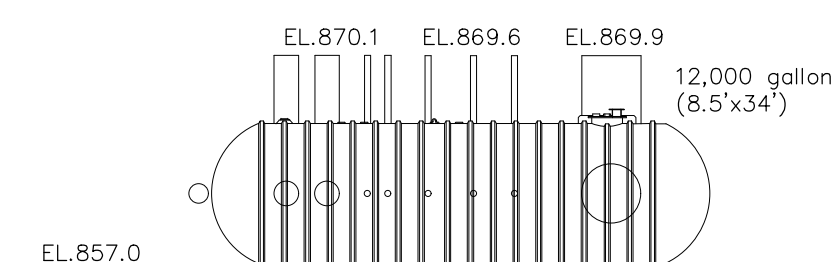
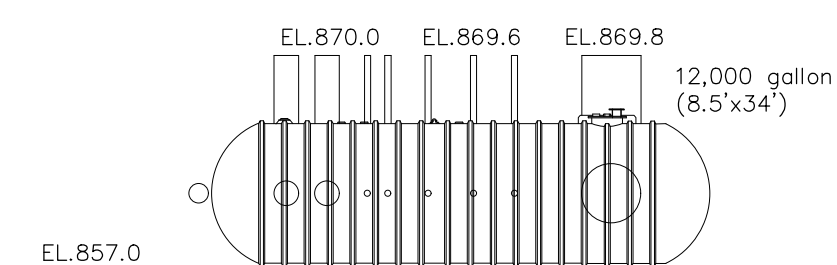
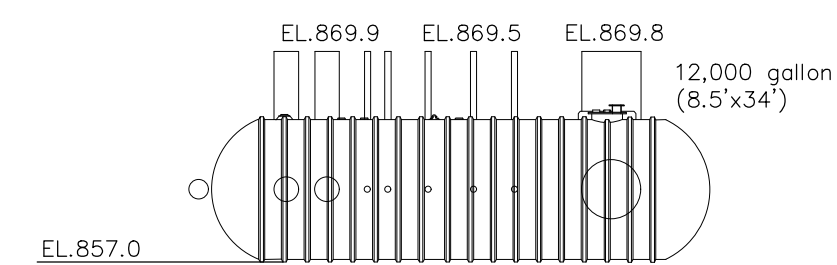
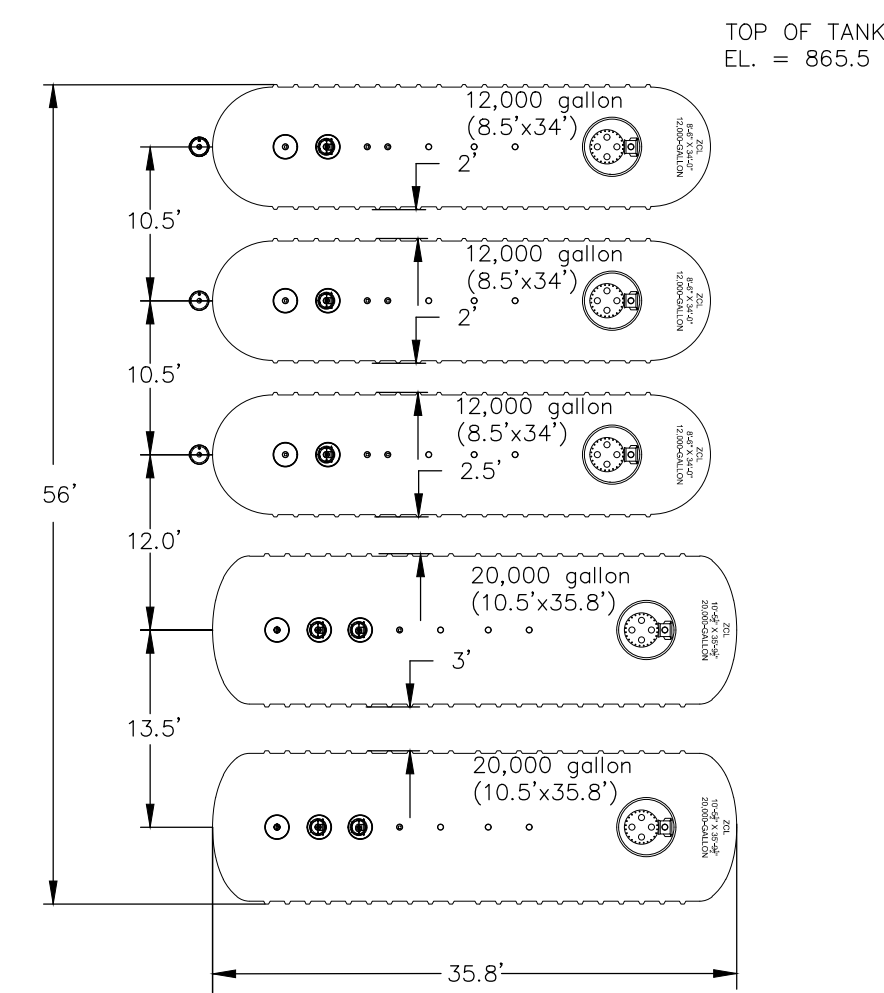


5 "SNOUT" OIL-WATER-DEBRIS SEPARATOR
 C501 NO SCALE



NOTES:
 1. USE MINIMUM OF 2-0.2\"/>

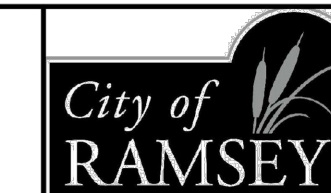
6 ADJUSTING RINGS & STEPS
 C501 NO SCALE



7 TANK COMPLEX DIAGRAMS AND ELEVATIONS
 C501 NO SCALE

Notes:
 1. INSTALLATION OF 4" OF TOPSOIL REQUIRED ACROSS ALL DISTURBED AREAS.
 2. TOPSOIL IS DEFINED AS BLACK DIRT COMPOSED OF UNCONSOLIDATED MATERIAL, LARGELY UNDECOMPOSED ORGANIC MATTER WHICH IS SUITABLE FOUNDATION FOR VEGETATIVE GROWTH.
 3. THE COMPOSITION OF TOPSOIL SHOULD CONTAIN NO MORE THAN THIRTY-FIVE PERCENT (35%) SAND CONTENT.

APPROVED:
 7 - 2019



STANDARD DETAILS:
 TOPSOIL REQUIREMENTS

CITY PLATE No. ERO-6

**Kwik
 Trip**

**Kwik
 Star**

KWIK TRIP, Inc.
 P.O. BOX 2107
 1626 OAK STREET
 LA CROSSE, WI 54602-2107
 PH. (608) 781-8988
 FAX (608) 781-8960

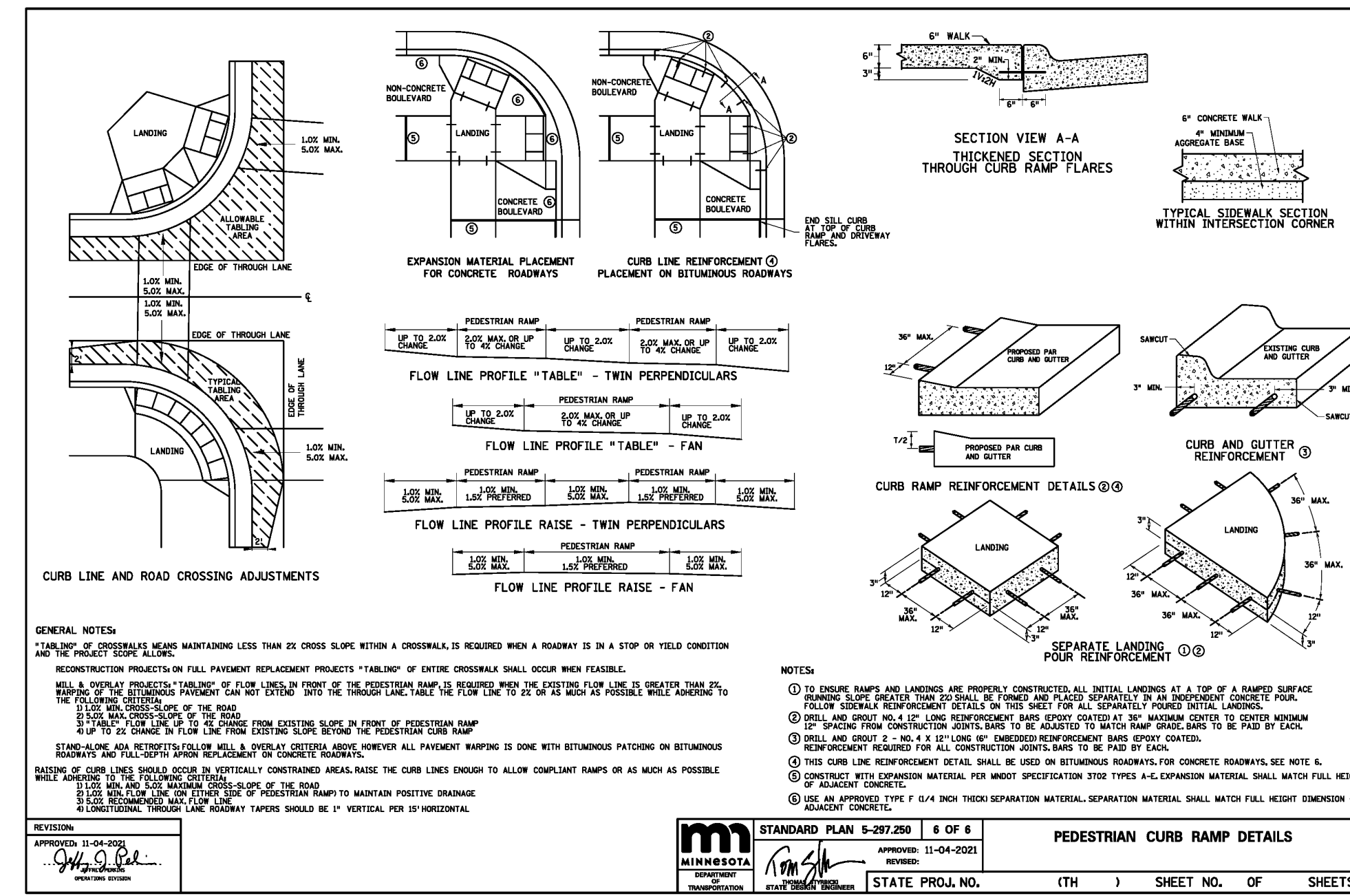
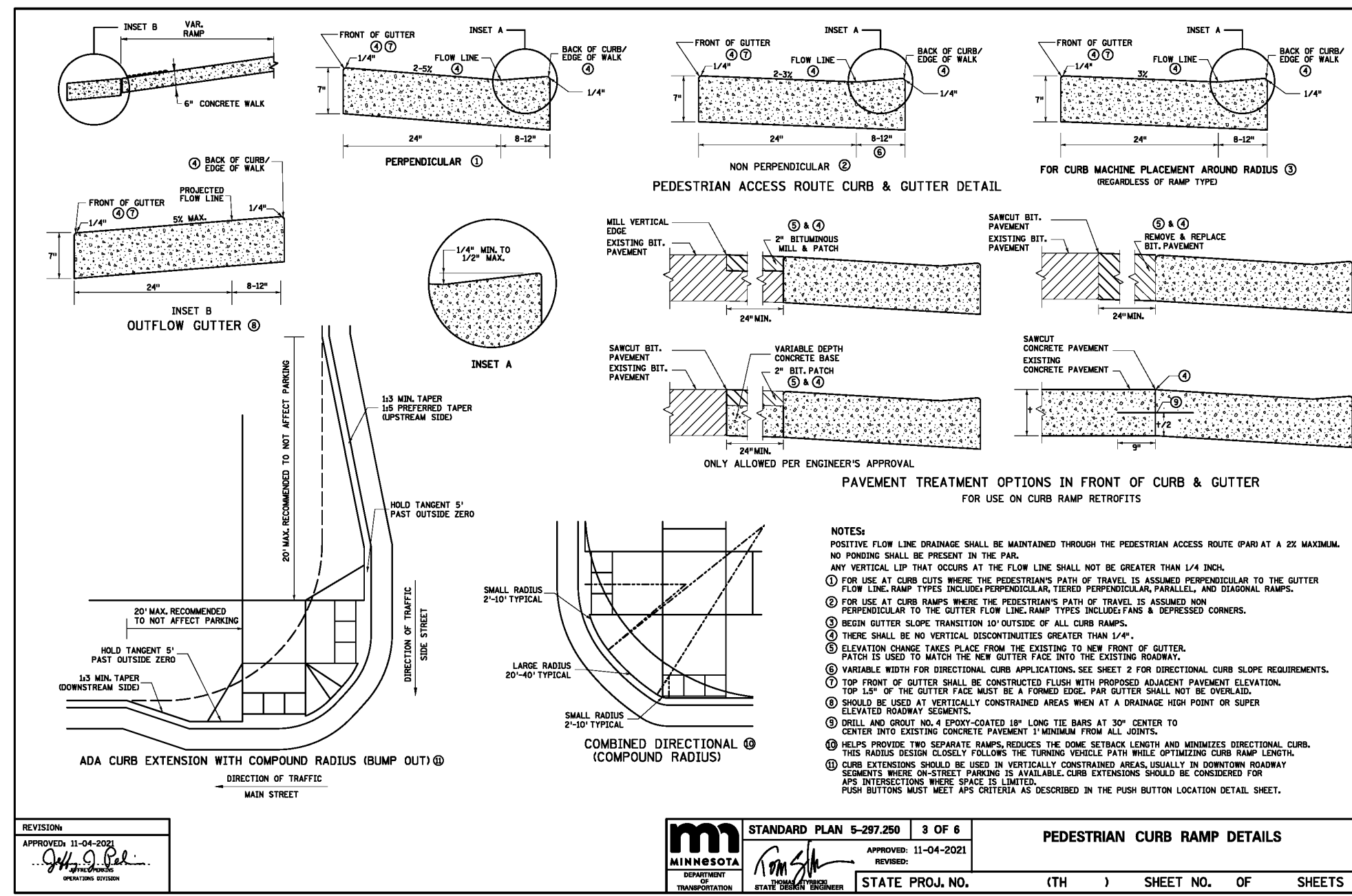
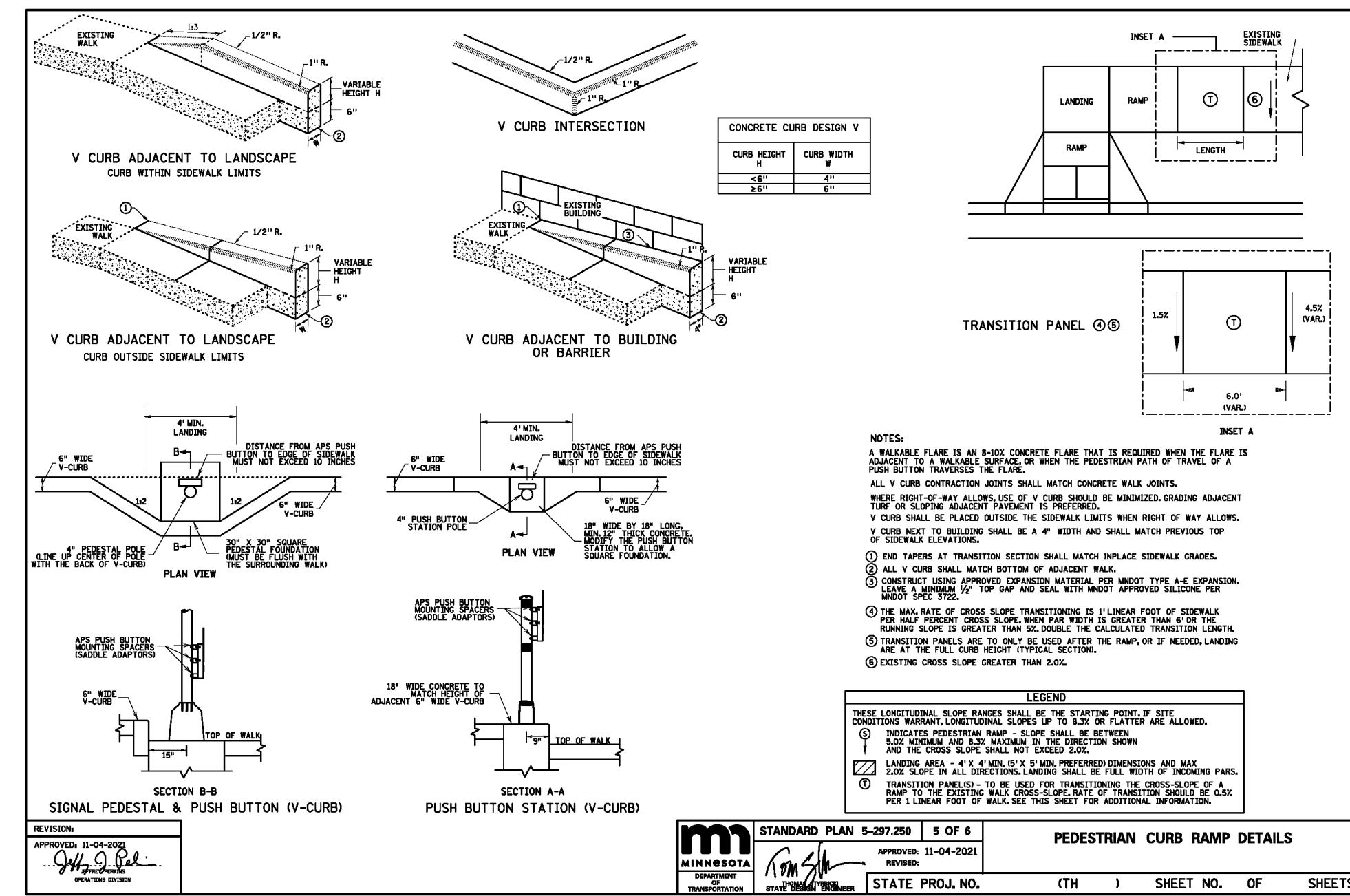
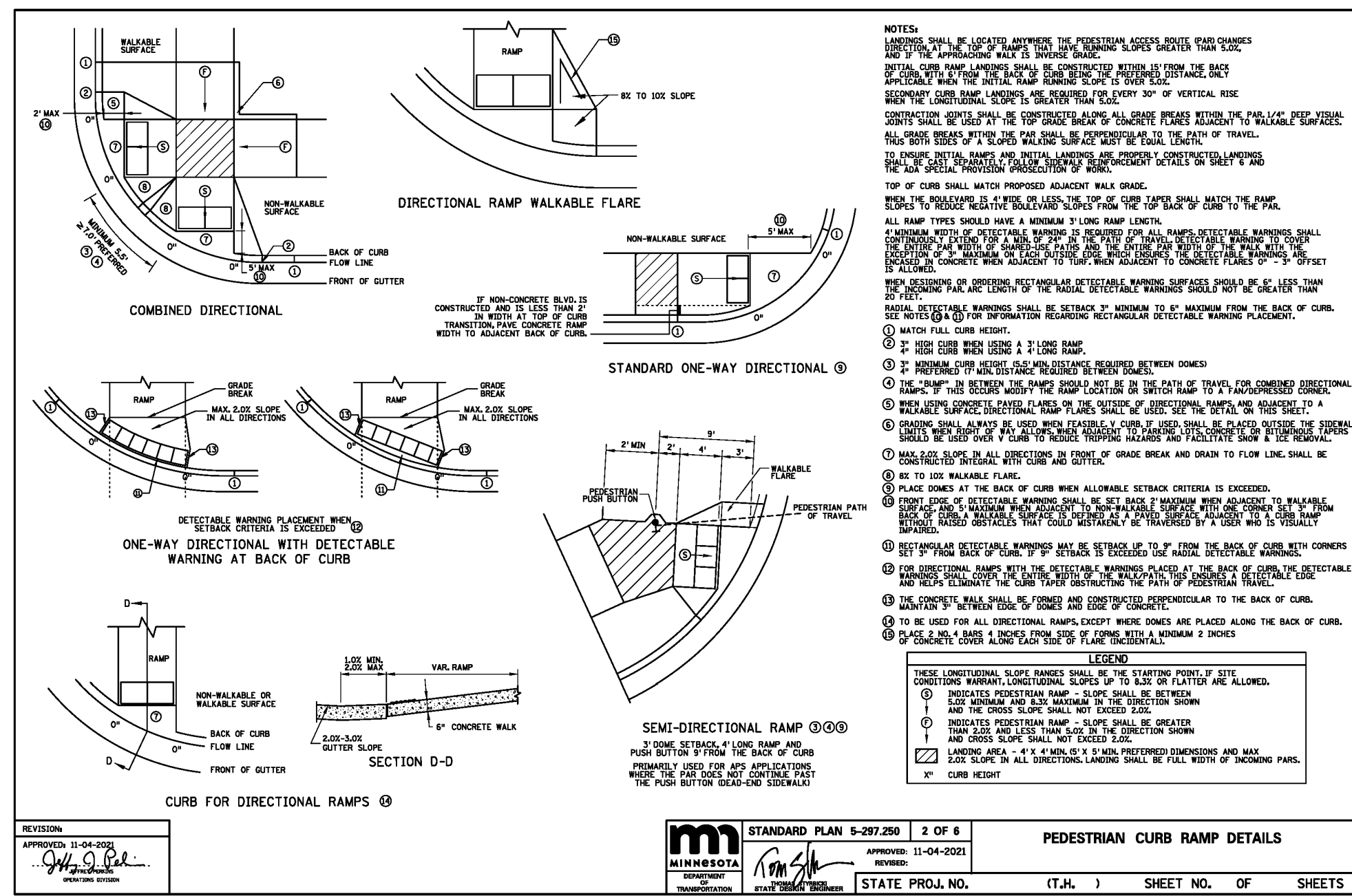
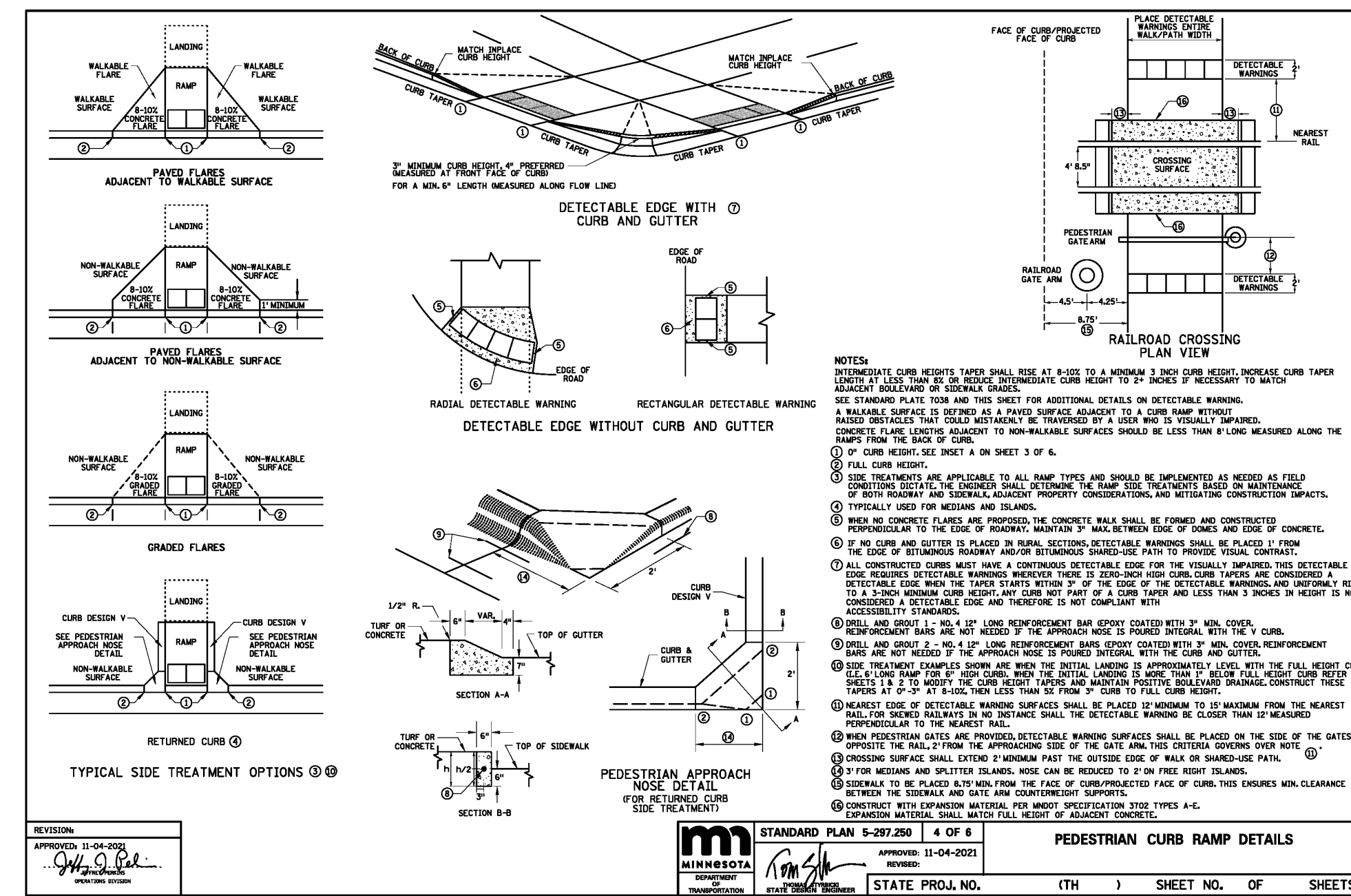
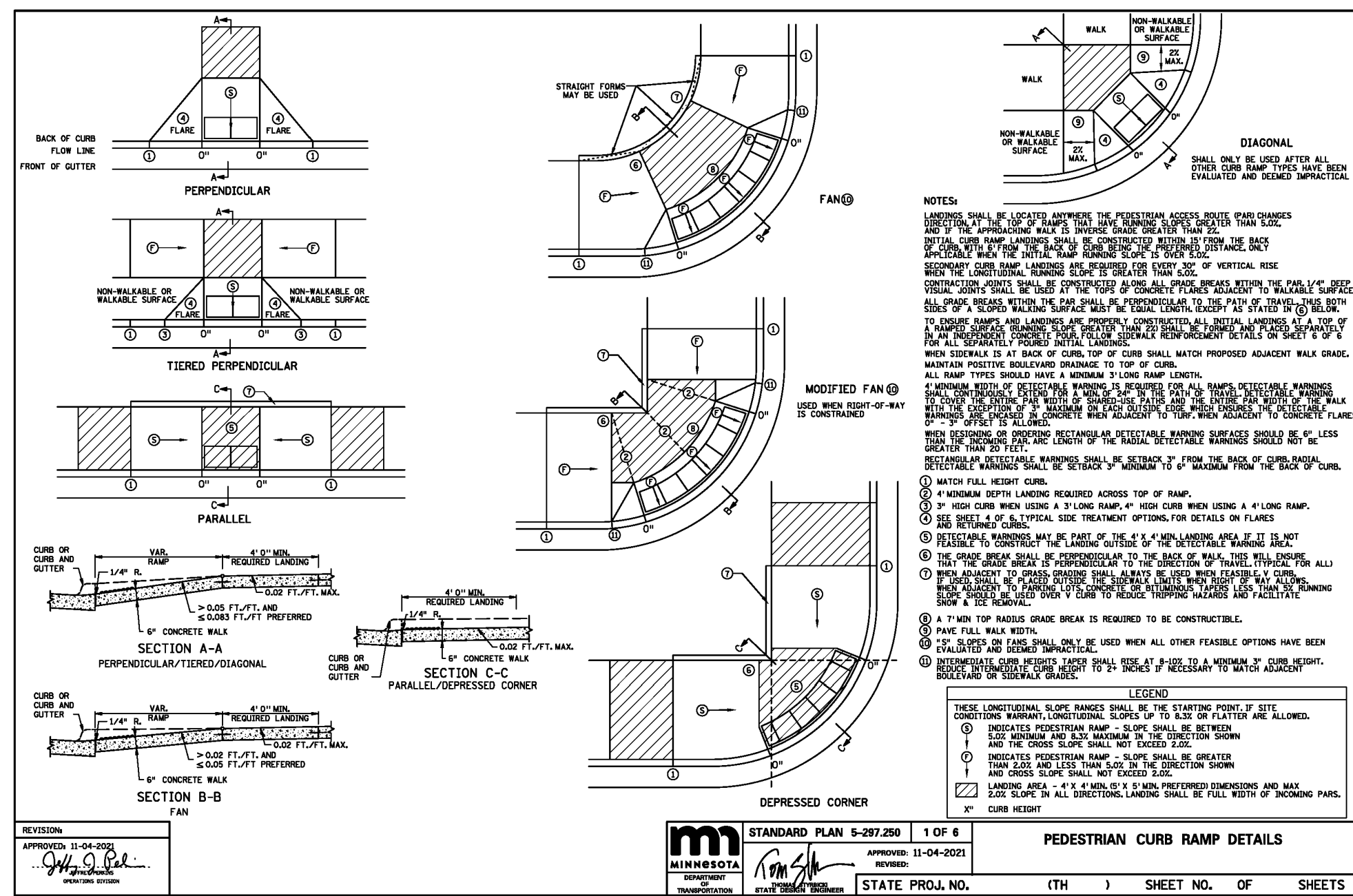
**CARLSON
 ENGINEERING**
 3890 PHEASANT RIDGE DRIVE NE, SUITE 100, BLAINE, MN 55449
 TEL 763-489-7900, FAX 763-489-7959
 CARLSON-ENGINEERING.COM

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 Minnesota.
 Name: Daniel J. Wilke, P.E.
 Signature: *D. Wilke*
 Date: 01/30/25 License #: 53182

DETAILS
CONVENIENCE STORE #1782
WITH 1-BAY CARWASH
BUNKER LAKE BLVD & ARMSTRONG BLVD NW
RAMSEY, MINNESOTA

#	DATE	DESCRIPTION
▲	03/10/25	Per Owner Comments
▲	04/08/25	Per City Comments

DRAWN BY: DJW
 SCALE: GRAPHIC
 PROJ. NO.: 11224-00
 DATE: 2025-01-30
 SHEET: 1782 C501



Kwik Trip

Kwik Star

KWIK TRIP, Inc.
 P.O. BOX 2107
 1626 OAK STREET
 LA CROSSE, WI 54602-2107
 PH. (608) 781-8988
 FAX (608) 781-8960

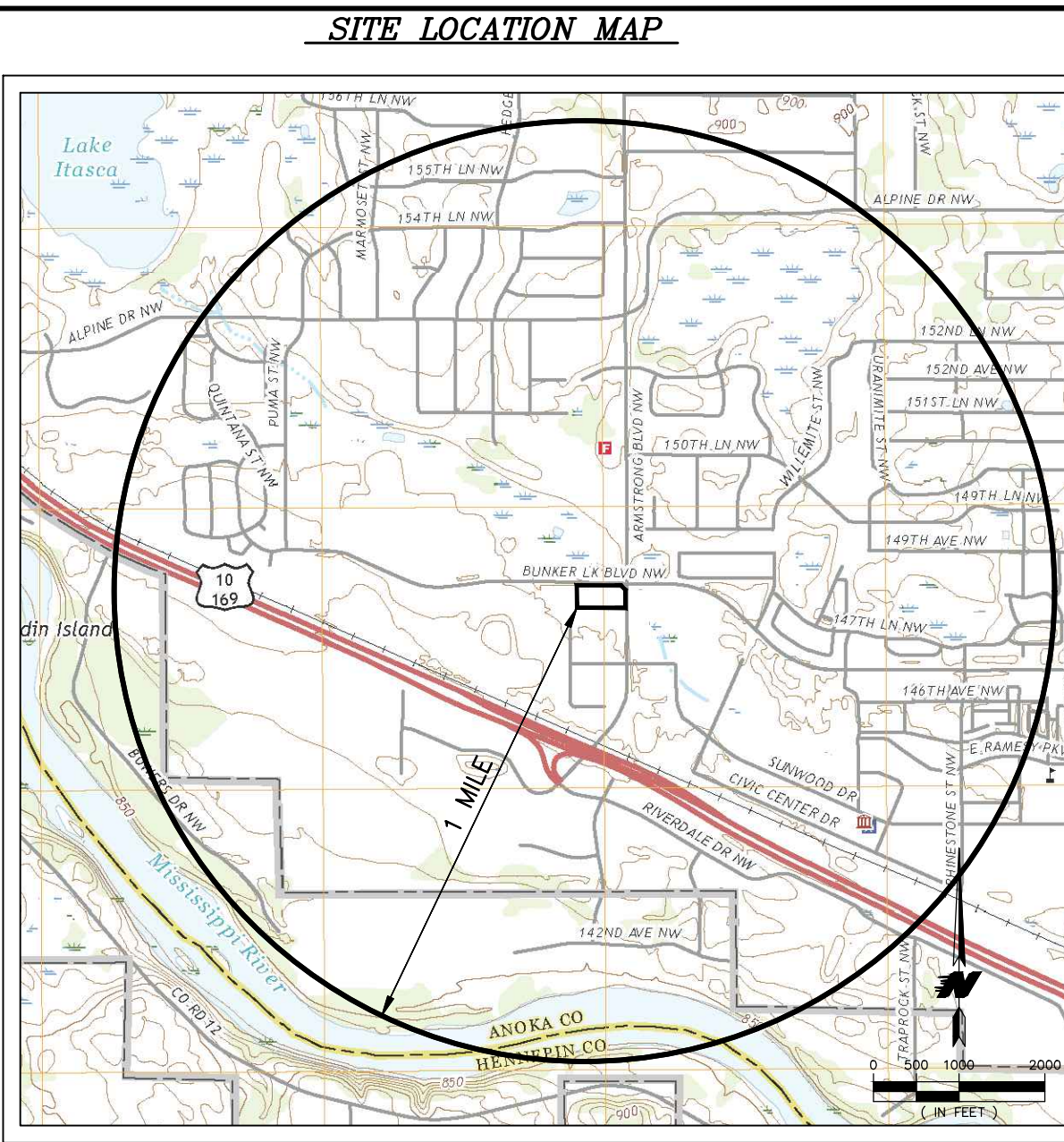
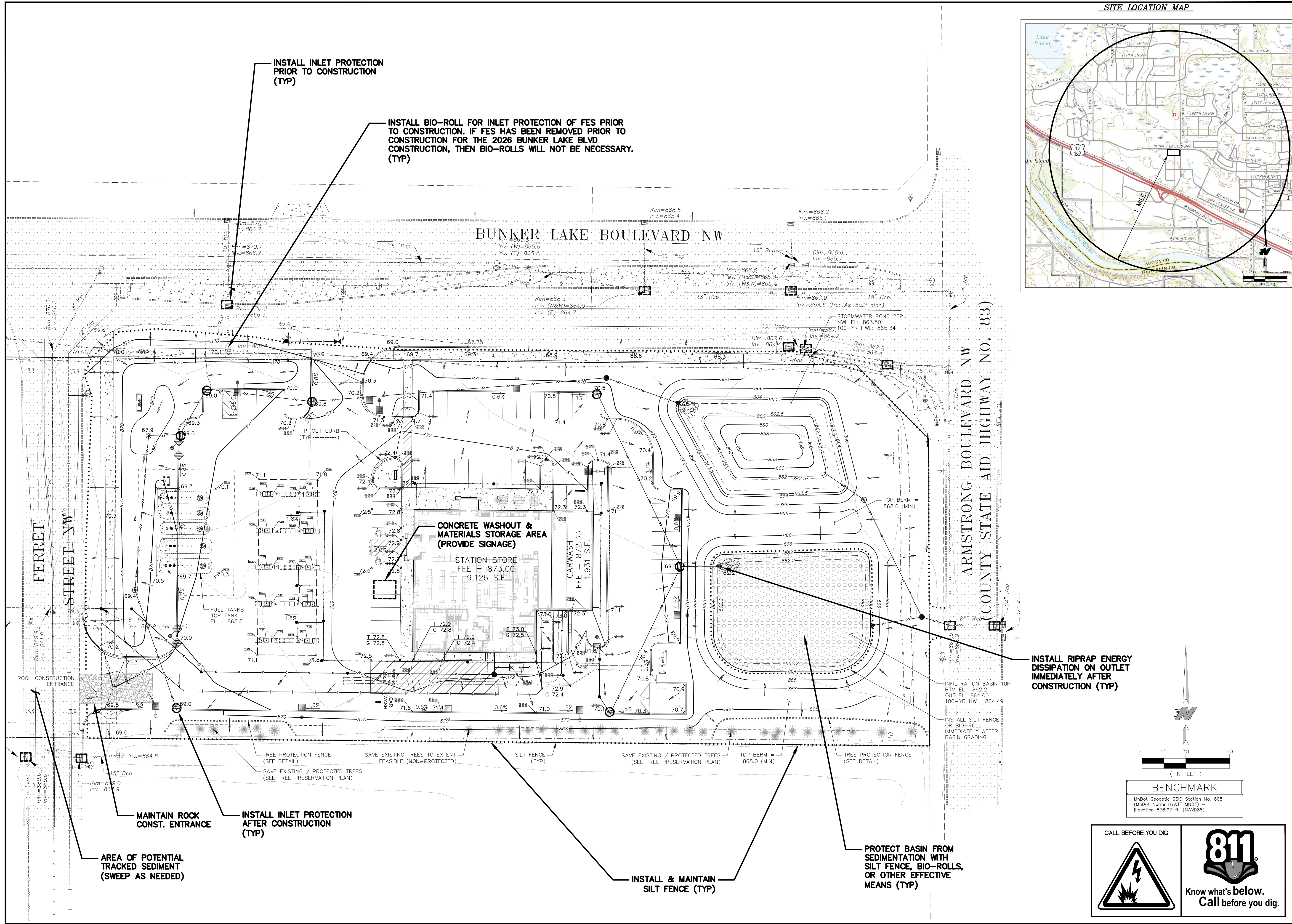
CARLSON ENGINEERING
 3890 PHEASANT RIDGE DRIVE NE, SUITE 100, BLAINE, MN 55449
 TEL 763.489.7900 | FAX 763.489.7959
 CARLSONENGINEERING.COM

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 Minnesota.
 Name: Daniel J. Wilke, P.E.
 Signature: [Signature]
 Date: 01/30/25 License #: 53182

DETAILS
CONVENIENCE STORE #1782
WITH 1-BAY CARWASH
BUNKER LAKE BLVD & ARMSTRONG BLVD NW
RAMSEY, MINNESOTA

#	DATE	DESCRIPTION
1	03/10/25	Per Owner Comments
2	04/08/25	Per City Comments
3		
4		
5		

DRAWN BY: DJW
 SCALE: GRAPHIC
 PROJ. NO.: 11224-00
 DATE: 2025-01-30
 SHEET: 1782 C502



KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960



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 Minnesota.

Name: Daniel J. Wilke, P.E.
Signature: *D. Wilke*
Date: 01/30/25 License #: 53182

EROSION CONTROL PLAN

CONVENIENCE STORE #1782 WITH 1-BAY CARWASH

**BUNKER LAKE BLVD & ARMSTRONG BLVD NW
RAMSEY, MINNESOTA**

#	DATE	DESCRIPTION
1	03/10/25	Per Owner Comments
2	04/08/25	Per City Comments

DRAWN BY: DJW
SCALE: GRAPHIC
PROJ. NO.: 11224-00
DATE: 2025-01-30
SHEET: 1782 C600

BENCHMARK
1. MnDot Geodetic GSD Station No. 808
(MnDot Name HYATT MNDT) -
Elevation 878.97 ft. (NAVD88)

CALL BEFORE YOU DIG

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

GENERAL INFORMATION

MINNESOTA'S CONSTRUCTION STORMWATER PERMIT IS AN EXTENSION OF THE NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM STORMWATER PROGRAM, WHICH IS PART OF THE FEDERAL CLEAN WATER ACT. REGULATED PARTIES MUST DEVELOP A STORMWATER POLLUTION PREVENTION PLAN (SWPPP). THE SWPPP PROVIDES INFORMATION ON THE EXISTING AND PROPOSED SITE CONDITIONS, CONTROL MEASURES FOR STORMWATER POLLUTION PREVENTION BEFORE, DURING AND AFTER CONSTRUCTION, INSPECTION, MAINTENANCE AND INFORMATION RELATED TO THE PERMANENT STORMWATER MANAGEMENT SYSTEM. THE SWPPP SHALL BE KEPT ON SITE AT ALL TIMES DURING ACTIVE CONSTRUCTION.

PROJECT INFORMATION

PROJECT NAME: CONVENIENCE STORE 1782 WITH 1-BAY CARWASH
PROJECT LOCATION: RAMSEY, ANOKA COUNTY, MINNESOTA
PROJECT OWNER: KWIK TRIP, INC.

RESPONSIBLE PARTIES

THE OWNER MUST IDENTIFY A PERSON KNOWLEDGEABLE AND EXPERIENCED IN THE APPLICATION OF EROSION PREVENTION AND SEDIMENT CONTROL BMP'S WHO WILL OVERSEE THE IMPLEMENTATION OF THE SWPPP, AND THE INSTALLATION, INSPECTION AND MAINTENANCE OF THE EROSION PREVENTION AND SEDIMENT CONTROL BMP'S.

SITE MANAGER: NATE BYOM - KWIK TRIP INC.

TRAINING DOCUMENTATION: CONSTRUCTION SITE MANAGEMENT (5/31/25 EXPIRATION) - UNIVERSITY OF MN

EXISTING SITE CONDITIONS

THE SITE IS LOCATED IN THE SOUTHWEST QUADRANT OF THE INTERSECTION OF BUNKER LAKE BOULEVARD AND ARMSTRONG BOULEVARD NW IN RAMSEY, ANOKA COUNTY, MINNESOTA. THE SITE IS BOUNDED ON THE NORTH BY BUNKER LAKE BOULEVARD, ON THE WEST BY FERRET STREET NW, ON THE SOUTH BY UNDEVELOPED GRASSLAND, AND ON THE EAST BY ARMSTRONG BOULEVARD NW. THE SITE IS CURRENTLY UNDEVELOPED GRASSLAND WITH TREES ALONG THE SOUTH PROPERTY LINE.

THE PROPOSED SITE BOUNDARY CONSISTS OF 3.350 ACRES. A DRAINAGE BOUNDARY OF 3.474 ACRES WILL BE CONSIDERED FOR THIS ANALYSIS, WHICH INCLUDES RUN-ON FROM THE RIGHT-OF-WAY. THE EXISTING DRAINAGE BOUNDARY CURRENTLY HAS 0.020 ACRES OF IMPERVIOUS SURFACE ONSITE.

THE SITE HAS A GENERALLY FLAT TOPOGRAPHY GENERALLY SLOPING TOWARDS THE NORTHWEST OR SOUTHEAST, WITH SLOPES GENERALLY RANGING FROM 0.5% TO 2% OVER THE DEVELOPED AREA. ELEVATIONS AT THE SITE RANGE FROM 870 IN THE CENTER OF THE WESTERN EDGE OF THE SITE, DOWN TO ABOUT 867 IN THE NORTHWEST AND SOUTHEAST CORNERS OF THE SITE. STORMWATER FROM THE SITE FLOWS TO THE CULVERT IN THE NORTHWEST CORNER OF THE SITE, OR TO A DITCH ALONG THE SOUTH SIDE OF THE SITE THAT FLOWS EAST. ANY STORMWATER LEAVING THE SITE ULTIMATELY FLOWS TO THE PROPERTY EAST OF THE SITE, ACROSS ARMSTRONG BOULEVARD.

PROPOSED SITE CONDITIONS

KWIK TRIP, INC. PLANS ON DEVELOPING THE SITE INTO A CONVENIENCE STORE WITH A SINGLE BAY CARWASH AND ASSOCIATED PARKING AND DRIVE AREAS. DURING CONSTRUCTION, APPROXIMATELY 3.3 ACRES WILL BE DISTURBED. BEFORE THE SITE IS CONSTRUCTED, THE DRAINAGE BOUNDARY WILL CONTAIN APPROXIMATELY 1.832 ACRES OF IMPERVIOUS SURFACE, WHICH IS AN INCREASE OF 1.812 ACRES.

STORMWATER FROM THE AREA WEST OF THE WEST FRONT OF THE STATION STORE WILL BE COLLECTED IN STORM SEWER AND WILL BE DIRECTED TO A STORMWATER POND. THE POND WILL OUTLET TO THE CATCH BASIN LOCATED EAST OF THE SITE BASINS ON ARMSTRONG BOULEVARD NW. THIS CATCH BASIN FLOWS TO THE RAMSEY TRUNK SEWER SYSTEM. ALL OTHER DEVELOPED PORTIONS OF THE SITE, WILL BE COLLECTED IN STORM SEWER AND ROUTED TO AN INFILTRATION BASIN, LOCATED IN THE SOUTHEASTERN PORTION OF THE SITE. THE INFILTRATION BASIN WILL OUTLET TO THE SAME LOCATION AS THE STORMWATER POND. A ONE-WAY CHECK VALVE WILL BE PLACED ON THE OUTLET OF THE INFILTRATION BASIN TO PREVENT OUTFLOW FROM THE STORMWATER POND FROM FLOWING INTO THE INFILTRATION BASIN. THE USE OF SEPARATE BASINS FOR STORMWATER CONTROL IS NECESSARY DUE TO RESTRICTIONS ON INFILTRATING RUNOFF FROM FUELING AREAS. INFILTRATION IS THE PREFERRED METHOD FOR MANAGING WATER QUALITY AND VOLUME CONTROL, THEREFORE THE MAXIMUM PRACTICAL AMOUNT OF RUNOFF HAS BEEN DIRECTED TO THE INFILTRATION BASIN, WHILE RUNOFF THAT CANNOT BE INFILTRATED IS DIRECTED TO THE STORMWATER POND. WHILE A FILTRATION BASIN WOULD PROVIDE BETTER WATER QUALITY THAN A NURP POND, THE OUTLET ELEVATION FOR THE SITE OF 863.0' IS TOO HIGH TO ALLOW FOR THE OUTLETTING OF A FILTRATION BASIN DRAIN TILE, SO A NURP POND WAS USED INSTEAD.

SOIL INFORMATION

IN OCTOBER OF 2024, BRAUN INTERTEC DRILLED TEN SOIL BORINGS TO APPROXIMATE NEAR SURFACE SOILS. THE BORINGS INDICATE THAT NEAR SURFACE SOILS CONSIST PRIMARILY OF POORLY GRADED SAND AND SILT SAND. THESE SOILS GENERALLY FALL WITHIN THE HYDROLOGIC SOIL GROUP (HSG) "B".

GROUNDWATER WAS FOUND TO BE PRESENT IN ALL OF THE BORINGS, AND WAS GENERALLY AT AN ELEVATION OF 858 TO 860. AN INFILTRATION RATE OF 0.8 IN/HR WAS USED FOR THE INFILTRATION BASIN, WHICH IS CONSISTENT FOR POORLY GRADED SANDS. THE BASIN WILL BE EXCAVATED TO THE POORLY GRADED SAND HORIZON SHOWN ON BORING ST-1 IN APPENDIX D, AND REFILLED WITH POORLY GRADED SAND TO ASSURE AN INFILTRATION RATE OF 0.8 IN/HR.

WETLAND CONSIDERATIONS

THERE ARE NO KNOWN WETLANDS ONSITE.

STORMWATER RECEIVING WATERS

ANY STORMWATER LEAVING THE SITE ULTIMATELY FLOWS TO THE PROPERTY EAST OF THE SITE, ACROSS ARMSTRONG BOULEVARD.

SPECIAL/IMPAIRED WATER CONSIDERATIONS

THE MISSISSIPPI RIVER IS LOCATED APPROXIMATELY 0.9 MILES SOUTH OF THE SITE AND IS ALSO AN IMPAIRED WATER. ADDITIONAL BMP'S INCLUDE: IMMEDIATE STABILIZATION OF EXPOSED SOIL AREAS, AND COMPLETE STABILIZATION WITHIN SEVEN (7) CALENDAR DAYS AFTER CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE TEMPORARILY OR PERMANENTLY CEASES, AND TEMPORARY SEDIMENTATION BASINS FOR COMMON DRAINAGE AREAS OF FIVE (5) ACRES OR MORE.

STORMWATER MANAGEMENT PLAN

THE CITY OF RAMSEY REQUIRES SITES TO PROVIDE A VOLUME CONTROL OF 1-INCH OF RUNOFF FROM NEWLY CREATED IMPERVIOUS SURFACES. THE PROPOSED SITE WILL CREATE APPROXIMATELY 1.812 ACRES OF IMPERVIOUS SURFACE. THE VOLUME CONTROL REQUIREMENT FOR THE IMPERVIOUS SURFACE AREA IS 0.151 ACRE-FEET. THE ONSITE INFILTRATION BASIN PROVIDES VOLUME CONTROL OF 0.309 ACRE-FEET.

THE LOWER RUM RIVER WATERSHED MANAGEMENT ORGANIZATION (LRRWMO) REQUIRES THAT A VOLUME EQUAL TO ONE INCH OF RUNOFF FROM ALL IMPERVIOUS SURFACES ON THE SITE SHALL BE INFILTRATED ON-SITE. THE PROPOSED SITE WILL CREATE APPROXIMATELY 1.812 ACRES OF IMPERVIOUS SURFACE. THE VOLUME CONTROL REQUIREMENT FOR THE IMPERVIOUS SURFACE AREA IS 0.151 ACRE-FEET. THE ONSITE INFILTRATION BASIN PROVIDES VOLUME CONTROL OF 0.309 ACRE-FEET.

THE CITY OF RAMSEY REQUIRES THAT NEW CONSTRUCTION SHALL HAVE A NO NET INCREASE IN TSS AND TP CONCENTRATIONS. A MIDS MODEL WAS PREPARED TO DETERMINE EXISTING AND PROPOSED TOTAL SUSPENDED SOLIDS (TSS) AND TOTAL PHOSPHORUS (TP) LOADS. THE EVENT MEAN CONCENTRATION (EMC) FOR TP IN THE EXISTING CONDITION IS 0.19 MG/L, WHICH IS THE VALUE FOR 'OPEN SPACE' RECOMMENDED BY THE MINNESOTA STORMWATER MANUAL. THE EMC FOR TP IN THE PROPOSED CONDITION IS 0.20 MG/L, WHICH IS THE VALUE FOR 'COMMERCIAL' RECOMMENDED BY THE MINNESOTA STORMWATER MANUAL. THE MIDS MODEL PREDICTS THAT THE EXISTING CONDITIONS WILL PRODUCE TSS AND TP VALUES OF 238.3 LBS AND 0.631 LBS, RESPECTIVELY. THE MIDS MODEL PREDICTS THAT THE PROPOSED STORMWATER SYSTEM WILL PRODUCE TSS AND TP VALUES OF 114.8 LBS AND 0.775 LBS, RESPECTIVELY. TP AND TSS VALUES FOR THE PROPOSED SYSTEM MEETS AND EXCEEDS THE CITY OF RAMSEY REQUIREMENTS FOR TSS AND TP.

THE LRRWMO REQUIRES THAT STORMWATER TREATMENT FACILITIES SHALL PROVIDE AT LEAST AN ANNUAL REMOVAL EFFICIENCY OF 60% TP AND AT LEAST AN ANNUAL REMOVAL EFFICIENCY OF 90% TSS. A MIDS MODEL WAS PERFORMED FOR THE RUNOFF TO THE PROPOSED BASINS IN THE PROPOSED CONDITION. RUNOFF THAT BYPASSES THE BASINS WERE EXCLUDED, SINCE THOSE AREAS CANNOT BE DIRECTED TOWARDS THE BASINS AND THEREFORE SKEW THE REMOVAL EFFICIENCY OF THE BASINS. THE MIDS MODEL INDICATES THAT THE REMOVAL EFFICIENCY FOR THE BASINS IS 75% FOR TP AND 90% FOR TSS, WHICH MEETS OR EXCEEDS THE LRRWMO REQUIREMENT.

PRETREATMENT FOR THE STORMWATER TREATMENT FACILITIES WILL BE PROVIDED BY SUMP MANHOLES EQUIPPED WITH SNOOT OIL/WATER/DEBRIS SEPARATORS.

PRIOR TO START OF CONSTRUCTION

THE FOLLOWING STORMWATER POLLUTION PREVENTION MEASURES SHALL BE IMPLEMENTED PRIOR TO CONSTRUCTION. REFER TO GRADING AND EROSION CONTROL PLANS FOR LOCATIONS.

- 1. SILT FENCE
SILT FENCE SHALL BE INSTALLED AT THE LIMIT OF GRADING ON ANY FILL SLOPE. ADDITIONAL SILT FENCE MAY BE REQUIRED IN CUT SLOPE AREAS. SILT FENCE SHALL ALSO BE INSTALLED AROUND ANY INFILTRATION/FILTRATION PRACTICE.
- 2. ROCK CONSTRUCTION ENTRANCE
ROCK CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT THE FIELD ENTRANCES TO THE SITE.
- 3. CATCH BASINS
ALL CATCH BASINS SHALL BE PROTECTED WITH INLET PROTECTION DEVICES APPROVED BY THE LOCAL GOVERNING UNIT. THESE SHALL INCLUDE, BUT ARE NOT LIMITED TO, WMCO PROTECTION DEVICES, INFRASAFE PROTECTION DEVICES, FILTER FABRIC, BIO ROLLS AND STRAW BALES.

DURING CONSTRUCTION

THE FOLLOWING STORMWATER POLLUTION PREVENTION MEASURES SHALL BE IMPLEMENTED DURING

CONSTRUCTION. REFER TO GRADING AND EROSION CONTROL PLANS FOR LOCATIONS.

- 1. PHASED GRADING
TO THE EXTENT POSSIBLE, GRADING SHALL BE PHASED TO MINIMIZE THE AMOUNT OF DISTURBED AREAS DURING SITE CONSTRUCTION.
 - 2. TRACKED SEDIMENT
ANY SEDIMENT TRACKED FROM THE SITE ONTO THE STREET SHALL BE REMOVED IMMEDIATELY UPON DETECTION. THE ROCK CONSTRUCTION ENTRANCE SHALL BE INSPECTED AND REPAIRED IF INUNDATED WITH SEDIMENT. SWEEPER MUST BE AVAILABLE ON-SITE WITHIN 3 HOURS NOTICE FROM THE CITY.
 - 3. STOCKPILES
STOCKPILES SHALL BE PLACED IN AN AREA THAT WILL MINIMIZE THE NEED FOR RELOCATION. IF A STOCKPILE WILL REMAIN IN PLACE FOR AN EXTENDED PERIOD OF TIME, STABILIZATION MEASURES SHALL BE IMPLEMENTED, INCLUDING BUT NOT LIMITED TO, SEEDING AND SILT FENCING. TEMPORARY STOCKPILES MUST HAVE SILT FENCE OR OTHER EFFECTIVE SEDIMENT CONTROLS AND CANNOT BE PLACED IN SURFACE WATERS, INCLUDING STORMWATER CONVEYANCES SUCH AS CURB AND GUTTER SYSTEMS, CONDUITS OR DITCHES.
 - 4. TOPSOIL
UPON GRADING COMPLETION, A MINIMUM OF 4 INCHES OF TOPSOIL SHALL BE PLACED OVER ALL DISTURBED AREAS, EXCLUDING PROPOSED STREETS AND PARKING AREAS.
 - 5. RESTORATION
ALL DISTURBED AREAS NOT ACTIVELY WORKED SHALL BE RESTORED WITH SEED AND MULCH, EROSION CONTROL BLANKET AND/OR SOD WITHIN 7 DAYS.
 - 6. SLOPES
IN ORDER TO MAINTAIN SHEET FLOW AND MINIMIZE RILLS AND/OR GULLIES, THERE SHALL BE NO UNBROKEN SLOPE LENGTH OF GREATER THAN 75 FEET FOR SLOPES WITH A GRADE OF 3:1 OR STEEPER.
 - 7. DRAINAGE DITCHES
THE NORMAL WETTED PERIMETER OF ANY TEMPORARY OR PERMANENT DRAINAGE DITCH THAT DRAINS WATER FROM THE SITE, OR DIVERTS WATER AROUND THE SITE, MUST BE STABILIZED WITHIN 200 LINEAL FEET FROM THE PROPERTY EDGE, OR FROM THE POINT OF DISCHARGE TO ANY SURFACE WATER. STABILIZATION MUST BE COMPLETED WITHIN 24 HOURS OF CONNECTING TO A SURFACE WATER.
 - 8. PIPE OUTLETS
PIPE OUTLETS MUST BE PROVIDED WITH TEMPORARY OR PERMANENT ENERGY DISSIPATION WITHIN 24 HOURS OF CONNECTION TO A SURFACE WATER.
 - 9. CATCH BASINS
ALL CATCH BASINS SHALL BE PROTECTED WITH INLET PROTECTION DEVICES APPROVED BY THE LOCAL GOVERNING UNIT. THESE SHALL INCLUDE, BUT ARE NOT LIMITED TO, WMCO PROTECTION DEVICES, INFRASAFE PROTECTION DEVICES, FILTER FABRIC, BIO ROLLS AND STRAW BALES.
 - 10. DUST
CONSTRUCTION DUST SHALL BE CONTAINED TO THE EXTENT POSSIBLE. IF THE SITE BECOMES EXCESSIVELY DUSTY, APPROPRIATE MEASURES SHALL BE TAKEN TO REDUCE DUST BEING TRANSPORTED FROM THE SITE. DUST CONTROL MEASURES INCLUDE, BUT ARE NOT LIMITED TO, WATERING AND CALCIUM CHLORIDE APPLICATION.
 - 11. DEWATERING
DEWATERING ACTIVITIES SHALL BE CONDUCTED WITH AND APPROVED BY THE LOCAL GOVERNING UNIT. IF THERE WILL BE ANY DEWATERING OR BASIN DRAINING THAT MAY HAVE TURBID OR SEDIMENT LADEN DISCHARGE, THE WATER MUST BE DISCHARGED TO A TEMPORARY OR PERMANENT SEDIMENTATION BASIN ON THE PROJECT SITE WHENEVER POSSIBLE. APPROPRIATE BMP'S SHALL BE USED FOR EROSION AND SEDIMENT CONTROL AND ENERGY DISSIPATION.
 - 12. CONSTRUCTION MATERIALS AND DEBRIS
CONSTRUCTION MATERIALS SHALL BE STORED IN AN ORDERLY MANNER AND IN AN AREA THAT WILL MINIMIZE CONFLICTS WITH OTHER CONSTRUCTION ACTIVITIES. CONSTRUCTION DEBRIS SHALL BE CONTAINED IN DUMPSTERS AND REMOVED FROM THE SITE AS NECESSARY.
 - 13. CHEMICALS
CHEMICALS SHALL BE STORED IN A SAFE AREA IN SEALED CONTAINERS WITH THE ORIGINAL LABELING AND MATERIAL SAFETY DATA SHEETS AVAILABLE.
 - 14. SPILLS AND CONTAMINATION
IF FUEL, OIL OR A HAZARDOUS CHEMICAL IS SPILLED OR DETECTED DURING CONSTRUCTION ACTIVITIES, ALL APPROPRIATE AGENCIES SHALL BE IMMEDIATELY NOTIFIED, INCLUDING, BUT NOT LIMITED TO, THE MINNESOTA DUTY OFFICER AT 800-422-0798.
 - 15. CONCRETE WASHOUT AREA
PERMITTEES MUST PROVIDE EFFECTIVE CONTAINMENT FOR ALL LIQUID AND SOLID WASTES GENERATED BY WASHOUT OPERATIONS (E.G., CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS AND OTHER CONSTRUCTION MATERIALS) RELATED TO THE CONSTRUCTION ACTIVITY. PERMITTEES MUST PREVENT LIQUID AND SOLID WASHOUT WASTES FROM CONTACTING THE GROUND AND MUST DESIGN THE CONTAINMENT SO IT DOES NOT RESULT IN RUNOFF FROM THE WASHOUT OPERATIONS OR AREAS. PERMITTEES MUST PROPERLY DISPOSE LIQUID AND SOLID WASTES IN COMPLIANCE WITH MPCA RULES. PERMITTEES MUST INSTALL A SIGN INDICATING THE LOCATION OF THE WASHOUT FACILITY.
- POST CONSTRUCTION**
WHEN THE SITE HAS BEEN COMPLETELY CONSTRUCTED, THE SITE MUST UNDERGO FINAL STABILIZATION. FINAL STABILIZATION OCCURS WHEN ALL OF THE GRADING, INFRASTRUCTURE AND BUILDING ACTIVITIES HAVE BEEN COMPLETED. TO ACHIEVE FINAL STABILIZATION, THE FOLLOWING MEASURES SHALL BE COMPLETED.
- 1. ALL DISTURBED AREAS WITHOUT PERMANENT IMPERVIOUS SURFACES SHALL BE STABILIZED BY A UNIFORM PERENNIAL VEGETATIVE COVER. AREAS NOT REQUIRING SOD OR EROSION CONTROL BLANKET SHALL BE SEEDED AND MULCHED.
 - 2. SEDIMENT FROM CONVEYANCES AND TEMPORARY SEDIMENTATION BASINS THAT ARE TO BE USED AS PERMANENT WATER QUALITY MANAGEMENT BASINS SHALL BE CLEANED OUT. SEDIMENTATION BASINS SHALL BE SUFFICIENTLY CLEANED OUT TO RETURN THE BASIN TO DESIGN CAPACITY. SEDIMENT MUST BE STABILIZED TO PREVENT IT FROM BEING WASHED BACK INTO THE BASIN OR CONVEYANCES DISCHARGING OFF-SITE OR TO SURFACE WATERS.
 - 3. WHEN STABILIZED VEGETATION HAS BEEN ESTABLISHED OVER 70 PERCENT OF THE PERVIOUS SURFACE AREA, ALL SYNTHETIC TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED. THIS INCLUDES, BUT IS NOT LIMITED TO, SILT FENCE, TREE FENCE AND CATCH BASIN INLET PROTECTION DEVICES.
- SWPPP DRAWING UPDATES**
UPDATE SWPPP DRAWING FOR LOCATIONS OF CONSTRUCTION DUMPSTER, PORTABLE TOILET, EQUIPMENT STAGING AREA(S), FUELING AREA(S), ETC. WHEN THEIR RESPECTIVE LOCATIONS ARE KNOWN.
- INSPECTIONS & RECORD KEEPING**
STORMWATER POLLUTION PREVENTION INSPECTIONS SHALL OCCUR ONCE EVERY SEVEN (7) DAYS DURING ACTIVE CONSTRUCTION AND WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS. INSPECTION REPORTS SHALL BE SENT TO THE CITY INSPECTOR FOLLOWING EVERY INSPECTION EVENT. INSPECTIONS MAY BE CEASED DURING FROZEN GROUND CONDITIONS. WHERE WORK HAS BEEN SUSPENDED DUE TO FROZEN GROUND CONDITIONS, THE REQUIRED INSPECTIONS AND MAINTENANCE MUST TAKE PLACE WITHIN 24 HOURS AFTER RUNOFF OCCURS AT THE SITE OR PRIOR TO RESUMING CONSTRUCTION, WHICHEVER COMES FIRST. DURING THE COURSE OF CONSTRUCTION, IT MAY BE DETERMINED THAT ADDITIONAL STORMWATER POLLUTION PREVENTION MEASURES MAY BE NEEDED, OR CERTAIN MEASURES ARE NOT PRACTICAL TO INSTALL. IN THESE CASES, AN AMENDMENT TO THE SWPPP SHALL BE MADE, AND SUPPORTING REASONS SHALL BE DOCUMENTED IN THE SWPPP.
- 1. THE EXCAVATOR IS RESPONSIBLE FOR ALL EROSION CONTROL INSPECTIONS.
 - 2. RECORD NAME OF INSPECTOR AND DATE AND TIME OF INSPECTION.
 - 3. RECORD RAINFALL AMOUNT SINCE MOST RECENT INSPECTION.
 - 4. INSPECT ROCK CONSTRUCTION ENTRANCES FOR SEDIMENTATION. INSPECT ADJACENT STREETS FOR SEDIMENT TRACKING.
 - 5. INSPECT SITE FOR EXCESSIVE EROSION AND SEDIMENT ACCUMULATION.
 - A. INSPECT SILT FENCE AND OTHER TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES FOR EROSION, SEDIMENTATION AND MALFUNCTIONING.
 - B. INSPECT FLARED END SECTIONS FOR EROSION AND SEDIMENTATION.
 - C. INSPECT PONDS, INFILTRATION BASINS, TEMPORARY SEDIMENTATION BASINS AND ALL OTHER BMP'S FOR EROSION AND SEDIMENTATION.
 - D. INSPECT SURFACE WATERS, INCLUDING DRAINAGE DITCHES AND CONVEYANCE SYSTEMS FOR EVIDENCE OF SEDIMENT BEING DEPOSITED BY EROSION.
 - 6. INSPECT SITE AND ADJACENT PROPERTIES FOR CONSTRUCTION DEBRIS, TRASH AND SPILLS.
 - 7. INSPECT STABILIZED AREAS FOR EROSION.
 - 8. RECORD RECOMMENDED REPAIRS, MAINTENANCE AND/OR REPLACEMENTS REQUIRED TO ENSURE EROSION AND SEDIMENTATION CONTROL MEASURES ARE SUFFICIENT.
 - 9. RECORD RECOMMENDED AMENDMENTS TO THE SWPPP.

- 10. RECORD REPAIRS, MAINTENANCE AND/OR REPLACEMENTS THAT WERE COMPLETED SINCE THE LAST INSPECTION.
- NOTE: FOR AREAS THAT HAVE UNDERGONE FINAL STABILIZATION, INSPECTIONS CAN BE REDUCED TO ONCE PER MONTH.

MAINTENANCE

THE OWNER/CONTRACTOR IS RESPONSIBLE FOR THE OPERATION, INSPECTION AND MAINTENANCE OF ALL STORMWATER POLLUTION PREVENTION MEASURES FOR THE DURATION OF THE PROJECT. THE FOLLOWING GUIDELINES SHALL BE USED TO DETERMINE NECESSARY REPAIRS, MAINTENANCE AND/OR REPLACEMENT OF THE EROSION AND SEDIMENTATION CONTROL MEASURES.

- 1. ROCK CONSTRUCTION ENTRANCES SHALL BE REPAIRED OR REPLACED IF THE ROCK BECOMES INUNDATED WITH SEDIMENT AND/OR EXCESSIVE SEDIMENT IS BEING TRACKED FROM THE SITE. SEDIMENT TRACKED ONTO ADJACENT STREETS SHALL BE REMOVED. MEASURES SHALL BE TAKEN IMMEDIATELY UPON DISCOVERY.
- 2. SILT FENCE SHALL BE REPAIRED OR REPLACED WHEN SEDIMENT REACHES 1/3 THE HEIGHT OF THE SILT FENCE, THE SILT FENCE IS DAMAGED AND/OR THE SILT FENCE BECOMES NONFUNCTIONAL. MEASURES SHALL BE TAKEN WITHIN 24 HOURS OF DISCOVERY.
- 3. CATCH BASIN INLET PROTECTION DEVICES SHALL BE CLEANED WHEN SEDIMENT REACHES 1/3 THE HEIGHT OF THE SEDIMENT TRAP AND/OR REPAIRED OR REPLACED IF THE DEVICE BECOMES NONFUNCTIONAL. MEASURES SHALL BE TAKEN WITHIN 72 HOURS OF DISCOVERY.
- 4. FLARED END SECTIONS SHALL BE CLEANED IF DEBRIS IS RESTRICTING FLOW OR IF SEDIMENT HAS ACCUMULATED AT THE OUTLET. IF A FLARED END SECTION BECOMES NONFUNCTIONAL OR DAMAGED, IT SHALL BE REPAIRED OR REPLACED. MEASURES SHALL BE TAKEN WITHIN 72 HOURS OF DISCOVERY.
- 5. IF SEDIMENT IS OBSERVED OFF-SITE OR NEAR SURFACE WATERS, THE SOURCE OF SEDIMENT SHALL BE DETECTED AND ADDITIONAL MEASURES SHALL BE IMPLEMENTED. THE PERMITEE(S) SHALL COORDINATE SEDIMENT RETRIEVAL FROM SURFACE WATERS WITH ALL APPROPRIATE AGENCIES. MEASURES SHALL BE TAKEN WITHIN 7 DAYS OF DISCOVERY.
- 6. PONDS, INFILTRATION BASINS, TEMPORARY SEDIMENTATION BASINS AND ALL OTHER BMP'S SHALL BE CLEANED IF DEBRIS IS PRESENT AND/OR EXCESSIVE SEDIMENTATION HAS OCCURRED. TEMPORARY AND PERMANENT SEDIMENTATION BASINS MUST BE DRAINED AND THE SEDIMENT REMOVED WHEN SEDIMENT HAS FILLED THE BASIN TO 1/2 THE STORAGE VOLUME. NO SEDIMENT SHALL BE ALLOWED TO ACCUMULATE IN INFILTRATION BASINS. MEASURES SHALL BE TAKEN WITHIN 72 HOURS OF DISCOVERY.

NOTICE OF TERMINATION

THE PERMITEE(S) MUST SUBMIT A NOTICE OF TERMINATION (NOT) TO THE MPCA WITHIN 30 DAYS AFTER FINAL STABILIZATION IS COMPLETE, OR ANOTHER OWNER/OPERATOR (PERMITEE) HAS ASSUMED CONTROL OVER ALL AREAS OF THE SITE THAT HAVE NOT UNDERGONE FINAL STABILIZATION.

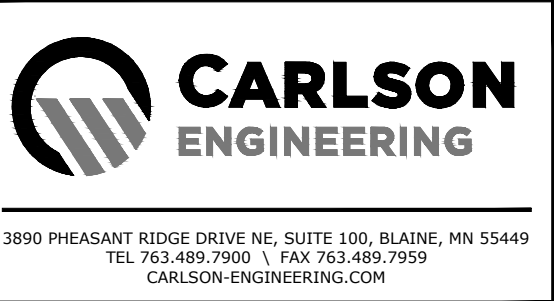
QUANTITIES

THE FOLLOWING TABLE PROVIDES ESTIMATED QUANTITIES FOR STORMWATER POLLUTION PREVENTION THROUGHOUT THE PROJECT.

ITEM	UNIT	ESTIMATED QUANTITY
ROCK ENTRANCE	EA.	1
SILT FENCE	L.F.	1,990
INLET PROTECTION	EA.	17
TURF ESTABLISHMENT	AC.	1.7



KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960



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 Minnesota.
Name: Daniel J. Wilke, P.E.
Signature: *D. Wilke*
Date: 01/30/25 License #: 53182

EROSION CONTROL NOTES

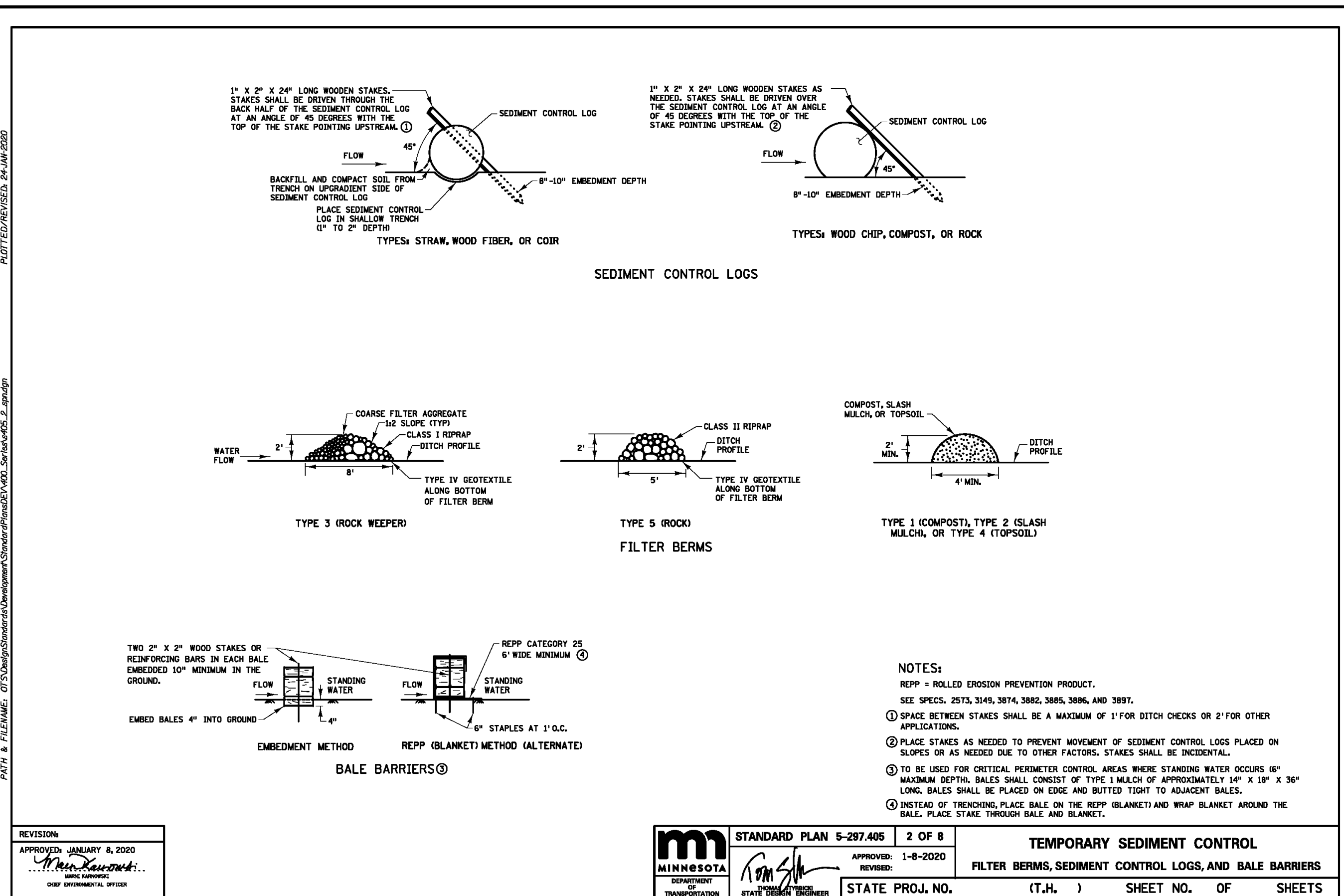
CONVENIENCE STORE #1782 WITH 1-BAY CARWASH

**BUNKER LAKE BLVD & ARMSTRONG BLVD NW
RAMSEY, MINNESOTA**

#	DATE	DESCRIPTION
▲	03/10/25	Per Owner Comments
▲	04/08/25	Per City Comments

DRAWN BY: DJW
SCALE: GRAPHIC
PROJ. NO.: 11224-00
DATE: 2025-01-30
SHEET: 1782 C601

SWPPP DESIGN CERTIFICATION	SWPPP INSTALLER CERTIFICATION	SWPPP INSPECTOR CERTIFICATION
I, Dan Wilke, hereby certify that I have completed design SWPPP, Erosion and Stormwater Management Certification Program <i>My certification expires May 2026</i>	I hereby certify that I have completed Installer SWPPP, Erosion and Stormwater Management Certification Program <i>signed</i> <i>expiration</i>	I hereby certify that I have completed Inspector SWPPP, Erosion and Stormwater Management Certification Program <i>signed</i> <i>expiration</i>



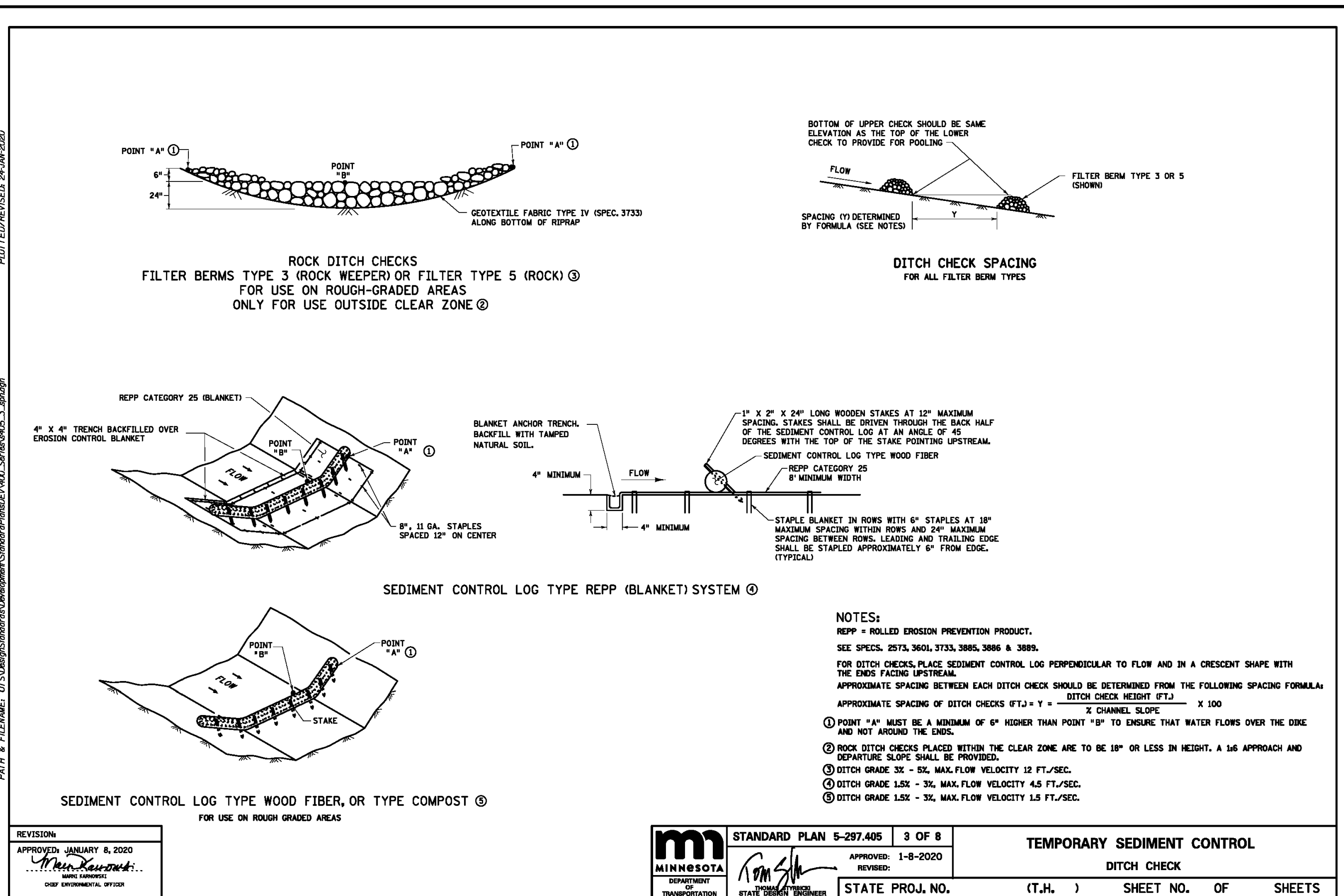
REVISION: APPROVED: JANUARY 8, 2020
 DRAWN BY: *Tom Sawyer*
 CHECKED BY: *Tom Sawyer*
 DATE: 01/08/2020

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.405 2 OF 8

TEMPORARY SEDIMENT CONTROL
 FILTER BERMS, SEDIMENT CONTROL LOGS, AND BALE BARRIERS

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS



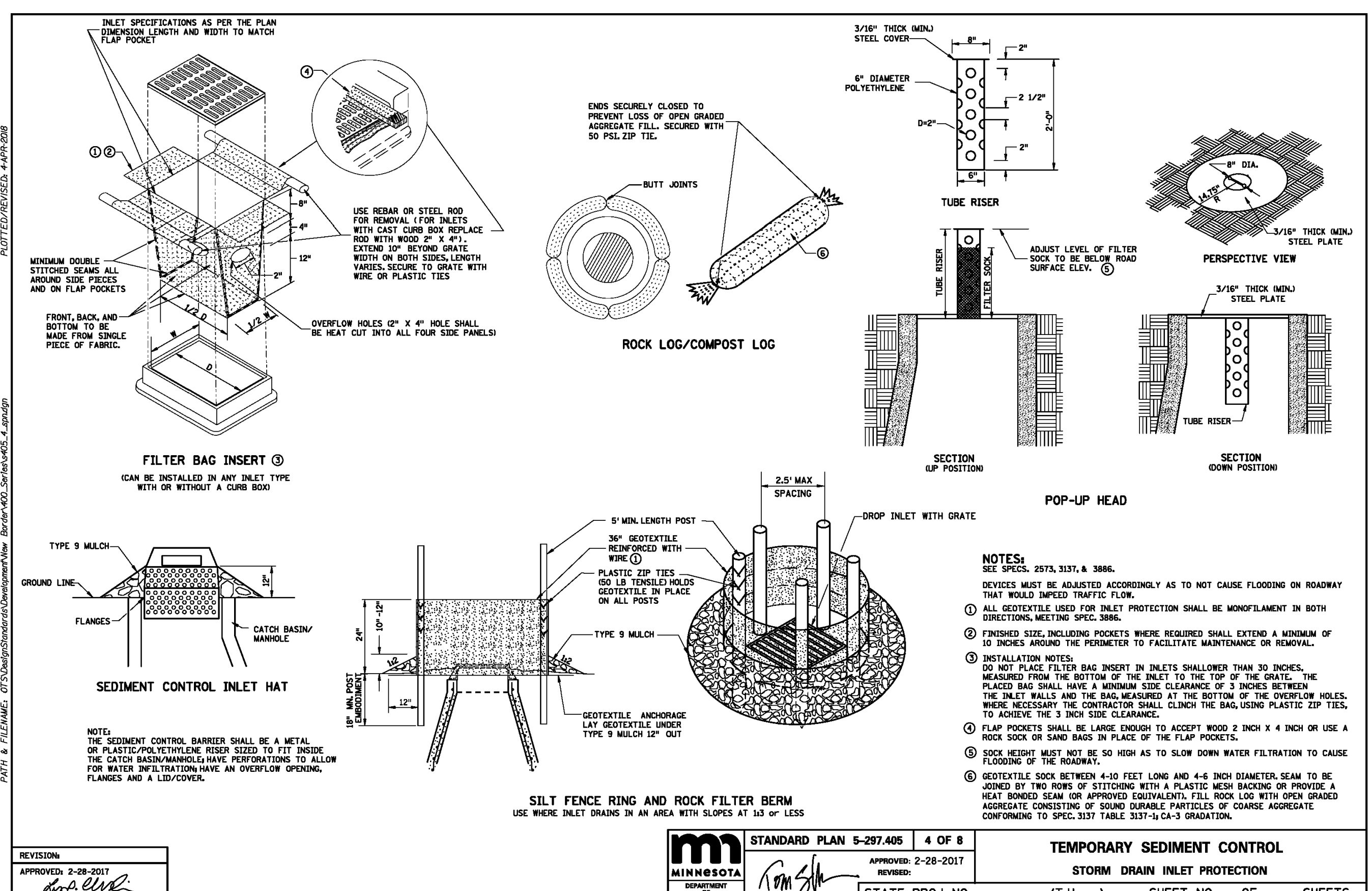
REVISION: APPROVED: JANUARY 8, 2020
 DRAWN BY: *Tom Sawyer*
 CHECKED BY: *Tom Sawyer*
 DATE: 01/08/2020

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.405 3 OF 8

TEMPORARY SEDIMENT CONTROL
 DITCH CHECK

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS



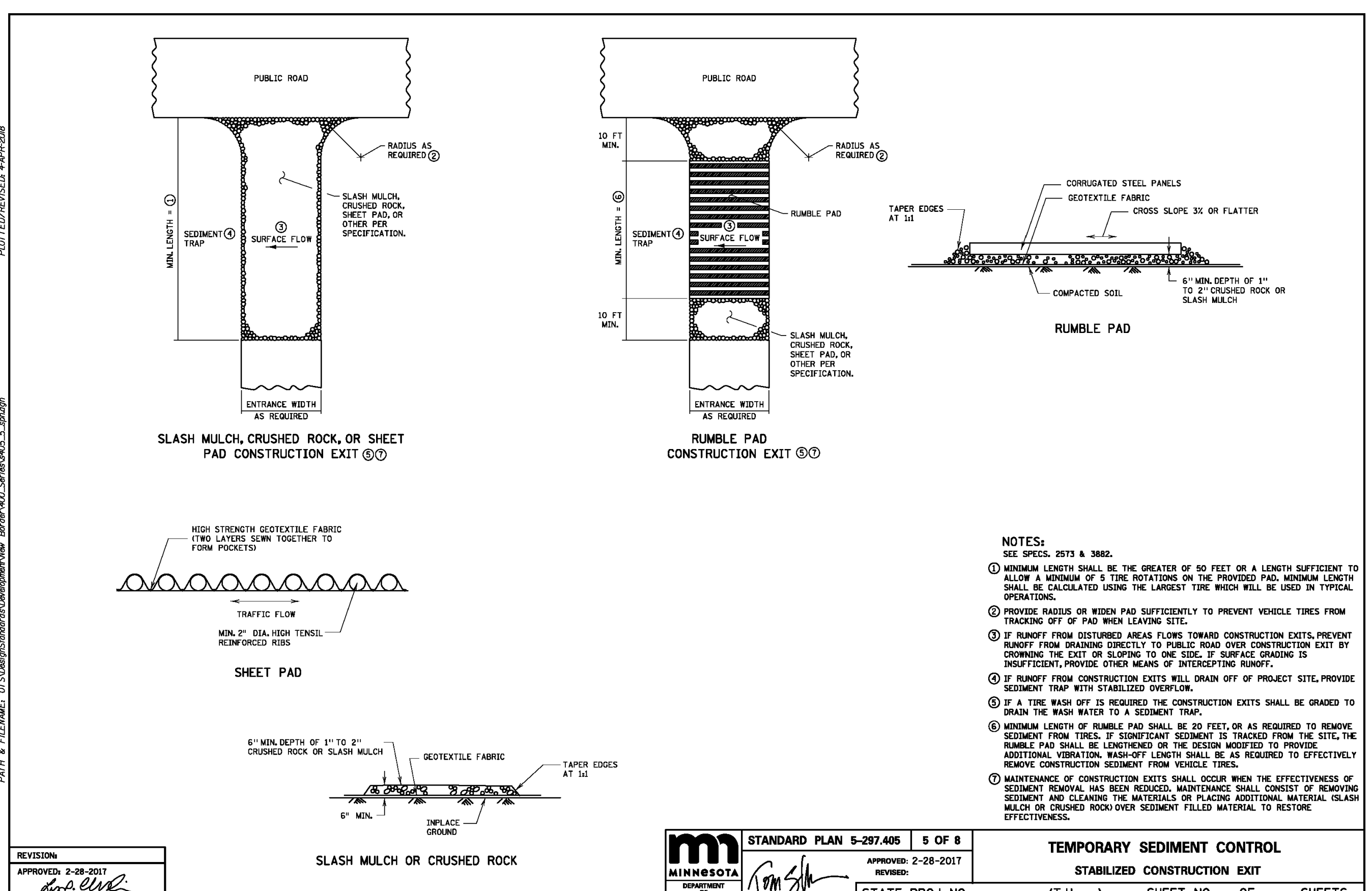
REVISION: APPROVED: 2-28-2017
 DRAWN BY: *Tom Sawyer*
 CHECKED BY: *Tom Sawyer*
 DATE: 02/28/2017

MINNESOTA DEPARTMENT OF TRANSPORTATION

STANDARD PLAN 5-297.405 4 OF 8

TEMPORARY SEDIMENT CONTROL
 STORM DRAIN INLET PROTECTION

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS



REVISION: APPROVED: 2-28-2017
 DRAWN BY: *Tom Sawyer*
 CHECKED BY: *Tom Sawyer*
 DATE: 02/28/2017

MINNESOTA DEPARTMENT OF TRANSPORTATION

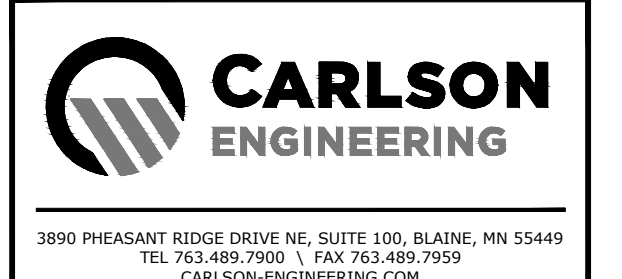
STANDARD PLAN 5-297.405 5 OF 8

TEMPORARY SEDIMENT CONTROL
 STABILIZED CONSTRUCTION EXIT

STATE PROJ. NO. (T.H.) SHEET NO. OF SHEETS



KWIK TRIP, Inc.
 P.O. BOX 2107
 162A OAK STREET
 LA CROSSE, WI 54602-2107
 PH. (608) 781-8988
 FAX (608) 781-8960



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 Minnesota.

Name: Daniel J. Wilke, P.E.
 Signature: *D. Wilke*
 Date: 01/30/25 License #51382

EROSION CONTROL DETAILS

CONVENIENCE STORE #1782 WITH 1-BAY CARWASH

BUNKER LAKE BLVD & ARMSTRONG BLVD NW RAMSEY, MINNESOTA

#	DATE	DESCRIPTION
1	03/10/25	Per Owner Comments
2	04/08/25	Per City Comments

DRAWN BY: DJW
 SCALE: GRAPHIC
 PROJ. NO. 11224-00
 DATE: 2025-01-30
 SHEET: 1782 C602

GENERAL NOTES:

1. FOOTCANDLE LEVELS SHOWN ON THIS PLAN ARE CALCULATED AT GRADE LEVEL.
2. ALL POLES SHALL BE INSTALLED A MINIMUM OF 3'-0" FROM BACK OF CURB TO EDGE OF POLE BASE UNLESS NOTED.
3. POLE THAT ARE LOCATED AT CORNER OF ISLAND SHALL BE A MINIMUM OF 6'-0" FROM BACK OF CURB TO EDGE OF POLE BASE. POLES THAT MUST BE INSTALLED LESS THAN 6'-0" FROM BACK OF CURB TO EDGE OF POLE BASE SHALL HAVE PROTECTIVE BOLLARDS INSTALLED AROUND THE POLE BASE. COORDINATE WITH KWIK TRIP PRIOR TO INSTALLATION.

KEYED NOTES:

1. COORDINATE LOCATION AND MOUNTING HEIGHT OF SECURITY CAMERA WITH OWNER.
2. CONTRACTOR SHALL INSTALL POLE MOUNT FIXTURE 12'-0" FROM THE OVER DIG OF UNDERGROUND FUEL TANK TO EDGE OF POLE BASE.
3. CONTRACTOR SHALL ENSURE ALL LIGHT FIXTURES ARE 20'-0" FROM FUEL TANK VENT.
4. CONTRACTOR SHALL POLE MOUNT FIXTURE 6'-0" FROM BACK OF CURB TO EDGE OF POLE BASE.
5. ENSURE POLE BASE IS FULLY COORDINATED TO AVOID THE UNDERGROUND STORM SEWER PIPING.

CALCULATION STATISTICS

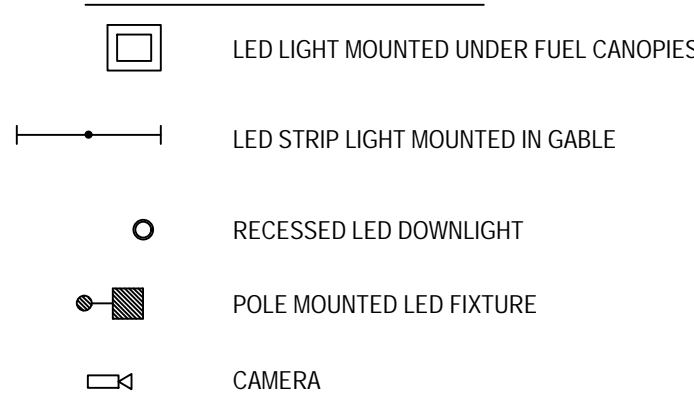
OVERALL SITE:
AVERAGE: 3.3
MAXIMUM: 54.6
MINIMUM: 0.0

FIXTURE QUANTITIES

D20 - 40
STE - 6
CF - 11
CS - 9
P13L - 4
P1F - 12
P1FL - 2

PROVIDE (13) 16' POLES.

FIXTURE SYMBOLS:

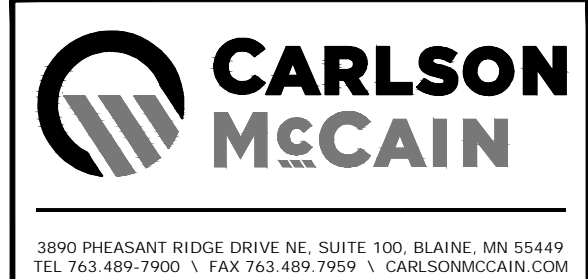


FIXTURE TYPES:

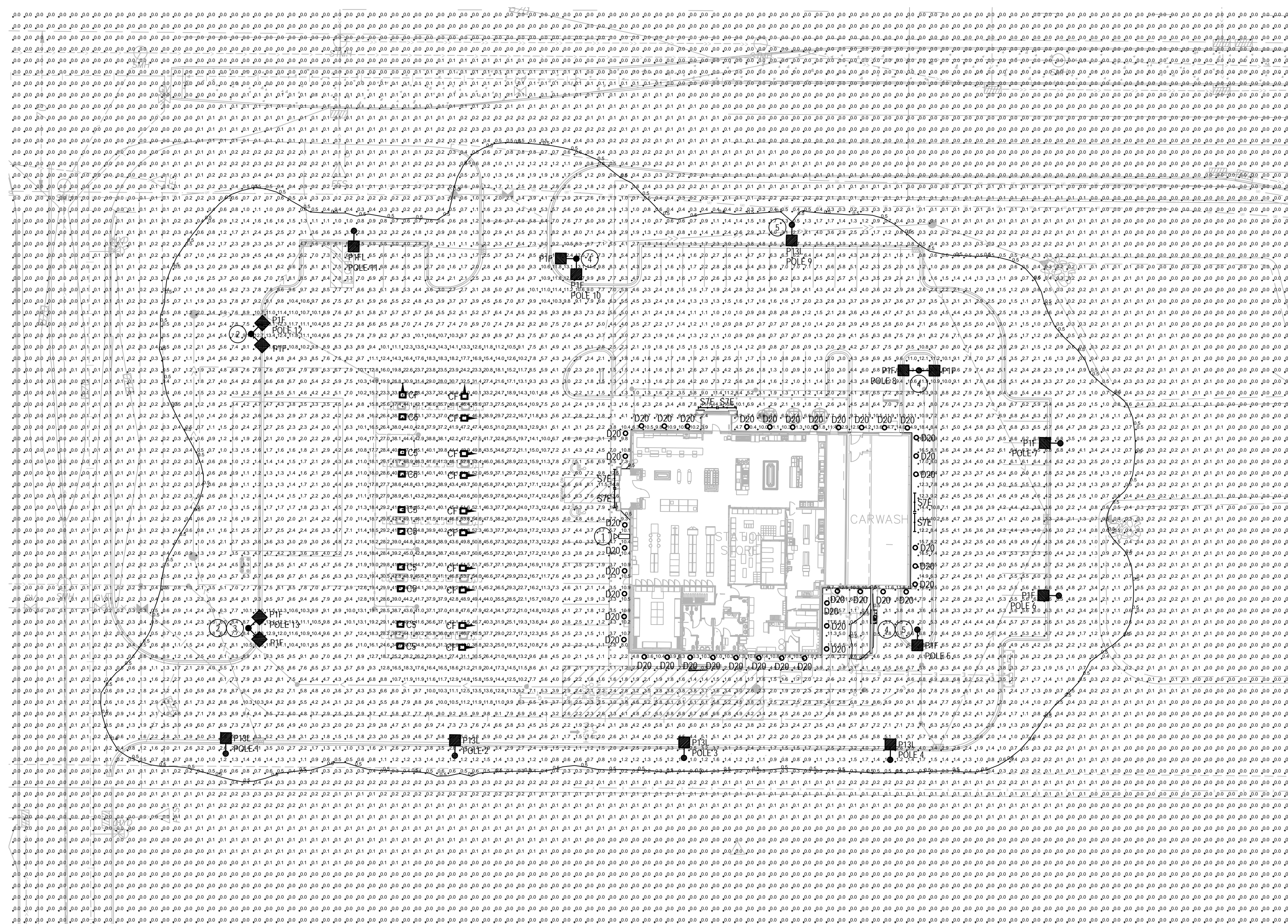
- D20 - RECESSED LED DOWNLIGHT GOTHAM EVO-35/50-8AR-WD-120-TRV FIXTURES ARE SHOWN DIMMED DOWN TO 35%.
- S7E - LED STRIP LIGHT MOUNTED IN GABLE LITHONIA T2L1N-L96-10000LM-FST-MVOLT
- CF - LSI LIGHTING: SCV-LED-23L-SCFT-UNV-DM-50-WHT MOUNTED UNDER GAS CANOPY MOUNT FIXTURES WITH FORWARD THROW OPTIC AIMING IN DIRECTION OF ARROW.
- C5 - LSI LIGHTING: SCV-LED-15L-SC-UNV-DM-50-WHT MOUNTED UNDER GAS CANOPY
- P13L - LSI LIGHTING: MRS-LED-18L-SIL-3-UNV-50-70CRI-WHT-IL
- P1F - LSI LIGHTING: MRS-LED-18L-SIL-FT-UNV-50-70CRI-WHT
- P1FL - LSI LIGHTING: MRS-LED-18L-SIL-FT-UNV-50-70CRI-WHT-IL



KWIK TRIP, Inc.
P.O. BOX 2107
1626 OAK STREET
LA CROSSE, WI 54602-2107
PH. (608) 781-8988
FAX (608) 781-8960



3990 PRAIRIESANCTUARY DRIVE NE, SUITE 100, BLAINE, MN 55449
TEL 763.489.7900 | FAX 763.489.7959 | CARLSONMCCAIN.COM



PHOTOMETRIC SITE PLAN
SCALE: 1" = 30'-0"

PHOTOMETRIC SITE PLAN
CONVENIENCE STORE #1782 WITH 1-BAY CARWASH
BUNKER LAKE BLVD & ARMSTRONG BLVD NW
RAMSEY, MINNESOTA

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the state of Minnesota.

Alex

Alex Czarnacki
Reg. No. 145440
Date: 01-08-25

#	DATE	DESCRIPTION

DRAWN BY: BAB / DLC
SCALE: AS SHOWN
PROJ. NO.: 11224-00
DATE: 2023-02-15
SHEET: C800



275 West Wisconsin Avenue, Suite 300
Milwaukee, WI 53203
414 / 259 1500
414 / 259 0037 fax

