



218 N. Meridian Street
 P.O. Box 129
 Belle Plaine, MN 56011

Building Official, Jim Tiegs
Phone: 952-873-5553
Fax: 952-873-5509

PLUMBING PERMIT APPLICATION		Plumbing Permit:	
		<input type="checkbox"/> Building Permit:	
STRUCTURE USE: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial		WORK CLASS: <input type="checkbox"/> New <input type="checkbox"/> Addition <input type="checkbox"/> Remodel <input type="checkbox"/> Replacement	
CONTRACTOR	<input type="checkbox"/> Homeowner Name or Company:		
Phone:	Contractor's License:		E-Mail:
Address:			
WORK DESCRIPTION:		VALUATION (<i>Labor & Materials</i>): \$	
<input type="checkbox"/> Backflow Preventer	<input type="checkbox"/> Roof Leader-Rainwater	<input type="checkbox"/> Water Heater	<input type="checkbox"/> Piping/ Treating Equip.
<input type="checkbox"/> Bathtub	<input type="checkbox"/> Shower	<input type="checkbox"/> Dishwasher	<input type="checkbox"/> Rough-in Future Fixtures
<input type="checkbox"/> Drinking Fountain	<input type="checkbox"/> Urinal	<input type="checkbox"/> Sump Basket/ Pump	<input type="checkbox"/> Kitchen Sink & Disposal
<input type="checkbox"/> Floor Sink or Drain	<input type="checkbox"/> Washer Stand Pipe	<input type="checkbox"/> Laundry Tray/ Sink	<input type="checkbox"/> Misc. Fixtures
<input type="checkbox"/> Lavatory (<i>Wash Basin</i>)	<input type="checkbox"/> Water Closet (<i>Toilet</i>)	<input type="checkbox"/> Second Meter	
<input type="checkbox"/> Lawn Sprinkler System	<input type="checkbox"/> Water Softener		
MECHANICAL PERMIT APPLICATION		Mechanical Permit:	
		<input type="checkbox"/> Building Permit:	
STRUCTURE USE: <input type="checkbox"/> Residential <input type="checkbox"/> Commercial		WORK CLASS: <input type="checkbox"/> New <input type="checkbox"/> Addition <input type="checkbox"/> Remodel <input type="checkbox"/> Replacement	
CONTRACTOR	<input type="checkbox"/> Homeowner Name or Company:		
Phone:	Mechanical Bond:		E-Mail:
Address:			
WORK DESCRIPTION:			
EQUIPMENT PROPOSED:		VALUATION (<i>Labor & Materials</i>): \$	
<input type="checkbox"/> Furnace: BTU Rating_____	<input type="checkbox"/> A/C: Seer_____	<input type="checkbox"/> Boiler: BTU Rating_____	
<input type="checkbox"/> Fireplace: BTU Rating_____	<input type="checkbox"/> Air Exchange: CFM_____	<input type="checkbox"/> Exhausting Device: CFM_____	
OFFICE USE ONLY PLUMBING/ MECHANICAL FEES			
Plumbing Permit Fees (Residential, Minimum Fee \$50.00) (Commercial, Minimum Fee \$75.00)		Mechanical Permit Fees (Residential, Minimum Fee \$50.00) (Commercial, Minimum Fee \$75.00)	
Number of Fixtures:		Number of Fixtures:	
Permit Fee: \$		Permit Fee: \$	
State Surcharge: \$		State Surcharge: \$	
Other: \$		Other: \$	
Total: \$		Total: \$	
Plumbing and Mechanical payment(s), issue date, transaction number and issued by are recorded on building permit.			

Inspections

Scheduling Inspection:

Inspections are conducted between the hours of 8:00 a.m. to 3:00 p.m. Monday through Friday. Schedule inspections by calling **952-873-5553**, Monday through Friday from 8:00 a.m. to 4:30 p.m. *A 24-hour notice is required for scheduling all inspections.*

Office Time:

The inspector has set office hours; if you need to schedule an office appointment, you can do so during this time.

City Rules & Regulations

Developer's Agreements:

Below is the language from the developer's agreements:

- No building permits shall be issued for any lot within the proposed subdivision until the underground utilities, including small utilities, have been placed and approved; the sub-grade approved; sod or silt fencing installed development-wide; and the streets has been paved and approved by the City.
- Sod shall be placed behind all new concrete curb at least two rolls in width.
- Driveways, either bituminous or concrete, must be in place prior to issuance of a certificate of occupancy (weather permitting).
- All construction debris shall be stored in an enclosed container and shall be fireproof, watertight and impervious to insects and rodents. Fenced storage containers are prohibited.
- If construction debris is not removed by builders, the developer shall be responsible for the cost of removal. If the construction debris is not removed within 48 hours of written notice by the City, no building inspections will be conducted in the subdivision.
- The developer shall promptly clean dirt and debris from street that has resulted from construction work by the developer, its agents, contractors or assigns. If dirt and debris are not cleaned within 24 hours written notice from the City, no building inspections will be issued for the subdivision.

In developments prior to 2003 (*exceptions: Chatfield on the Green and Provence on the River*), the developer is responsible to plant one tree per lot and two trees on corner lots.

Noise Regulations:

Construction activities are limited to the hours of 7 a.m. to 10 p.m. Monday through Friday and 9:00 a.m. to 9:00 p.m. on weekends and holidays. Violation of the ordinance is a misdemeanor.

Snow Removal Regulations:

From November 1 to April 1, no vehicle or equipment is to be on the street until the street is cleared to its full width. Snow removal regulations are in effect when one-half (½) inch or more of snow has fallen.

Watering Restrictions:

No outdoor watering is allowed between the hours of 9:00 a.m. and 5:00 p.m. This is in effect all year and no exceptions are given for new seed or sod.

Seed and Sod Requirements:

Seed or sod is required to be established within one year of the issuance of the certificate of occupancy.

New Construction Energy Code Compliance Certificate

Per R401.3 Certificate. A building certificate shall be posted on or in the electrical distribution panel.

Date Certificate Posted



Mailing Address of the Dwelling or Dwelling Unit	City
Name of Residential Contractor	MN License Number

THERMAL ENVELOPE										RADON CONTROL SYSTEM		
Insulation Location	Total R-Value of all Types of Insulation	Type: Check All That Apply								Passive (No Fan)		
		Non or Not Applicable	Fiberglass, Blown	Fiberglass, Batts	Foam, Closed Cell	Foam Open Cell	Mineral Fiberboard	Rigid, Extruded Polystyrene	Rigid, Isocyanurate	Active (With fan and monometer or other system monitoring device)		
Below Entire Slab											Location (or future location) of Fan:	
Foundation Wall											Other Please Describe Here:	
Perimeter of Slab on Grade												
Rim Joist (1st Floor)												
Rim Joist (2nd Floor+)												
Wall												
Ceiling, flat												
Ceiling, vaulted												
Bay Windows or cantilevered areas												
Floors over unconditioned area												
Describe other insulated areas												
Building envelope air tightness:					Duct system air tightness:							
Windows & Doors					Heating or Cooling Ducts Outside Conditioned Spaces							
Average U-Factor (excludes skylights and one door) U:					Not applicable, all ducts located in conditioned space							
Solar Heat Gain Coefficient (SHGC):					R-value							
MECHANICAL SYSTEMS										Make-up Air <i>Select a Type</i>		
Appliances	Heating System		Domestic Water Heater		Cooling System					Not required per mech. code		
Fuel Type										Passive		
Manufacturer										Powered		
Model										Interlocked with exhaust device. Describe:		
Rating or Size	Input in BTUS:		Capacity in Gallons:		Output in Tons:					Other, describe:		
Efficiency	AFUE or HSPF%				SEER/EER					Location of duct or system:		
Residential Load Calculation	Heating Loss		Heating Gain		Cooling Load					Cfm's		
										" round duct OR		
										" metal duct		
MECHANICAL VENTILATION SYSTEM										Combustion Air <i>Select a Type</i>		
Describe any additional or combined heating or cooling systems if installed: (e.g. two furnaces or air source heat pump with gas back-up furnace): Select Type										Not required per mech. code		
										Heat Recover Ventilator (HRV) Capacity in cfm's:		Low:
Energy Recover Ventilator (ERV) Capacity in cfm's:		Low:		High:						Other, describe:		
Balanced Ventilation capacity in cfm's:										Location of duct or system:		
Location of fan(s), describe:										Cfm's		
Capacity continuous ventilation rate in cfm's:										" round duct OR		
Total ventilation (intermittent + continuous) rate in cfm's:										" metal duct		

New Home Construction Checklist

Site Address: _____ Permit #: _____

Submission Checklist (incomplete applications/submittals will not be processed until all information is completed)

- Completed and Signed Permit Application(s), including all License numbers and bond numbers
- Completed New Construction Energy Code Compliance Certificate, Construction Site Erosion Control Requirements, Ventilation Requirements, Make-up Air/Combustion Air Requirements,
- Heat Loss/Gain Calculations
- 2 Sets of Building Plans – Floor Plans, Elevations, Section Details
- Digital set of Building Plans submitted to lblue@ci.belleplaine.mn.us or jtiegs@ci.belleplaine.mn.us
- 2 Copies of the Site Survey

Foundation Information

Typical Footing Size Width _____ Depth _____

Foundation Type: Masonry Poured Wall ICF Wood

Foundation Thickness: 8 inch 10 inch 12 inch

Foundation Waterproofing: _____

Foundation Drainage System Type: _____

Minnesota Residential Energy Code

MN Rules Chapter 1322

Ventilation Requirements

Total Ventilation Rate (CFM) $(0.02 \times \text{square feet of conditioned space}) + [15 \times (\text{number of bedrooms} + 1)]$
 $(0.02 \times \text{_____}) + [15 \times (\text{_____} + 1)] = \text{_____ CFM}$

Continuous Ventilation Rate (CFM) Total Ventilation Rate/2 (never less than 40cfm)
 $\text{_____} / 2 = \text{_____ CFM}$

OR

	Number of Bedrooms					
	1	2	3	4	5	6 ²
Conditioned space ¹ (in sq. ft.)	Total / Continuous					
1000-1500	60 / 40	75 / 40	90 / 45	105 / 53	120 / 60	135 / 68
1501-2000	70 / 40	85 / 43	100 / 50	115 / 58	130 / 65	145 / 73
2001-2500	80 / 40	95 / 48	110 / 55	125 / 63	140 / 70	155 / 78
2501-3000	90 / 45	105 / 53	120 / 60	135 / 68	150 / 75	165 / 83
3001-3500	100 / 50	115 / 58	130 / 65	145 / 73	160 / 80	175 / 88
3501-4000	110 / 55	125 / 63	140 / 70	155 / 78	170 / 85	185 / 93
4001-4500	120 / 60	135 / 68	150 / 75	165 / 83	180 / 90	195 / 98
4501-5000	130 / 65	145 / 73	160 / 80	175 / 88	190 / 95	205 / 103
5001-5500	140 / 70	155 / 78	170 / 85	185 / 93	200 / 100	215 / 108
5501-6000 ²	150 / 75	165 / 83	180 / 90	195 / 98	210 / 105	225 / 113

¹ Conditioned space includes the basement.

² If conditioned space exceeds 6000 sq. ft. or there are more than 6 bedrooms, use equation listed above to calculate total ventilation rate and continuous ventilation rate.

International Mechanical Code

MN Rules Chapter 1346

MAKE-UP AIR REQUIREMENTS: (This work sheet assumes One or Multiple power vent or direct vent appliances or no combustion appliances)

80 % of largest exhaust rating (cfm) + _____

Clothes Dryer (cfm) + 135

TOTAL Exhaust Capacity (cfm) = _____ (a)

Sq. Ft. of Conditioned Space: _____ X 0.15 = _____ (b) Est. House Infiltration (cfm)
(Includes unfinished basements)

_____ (a) - _____ (b) = _____

TOTAL Exhaust Capacity (cfm) Est. House Infiltration (cfm) Make-up Air Quantity (cfm)
(If value is negative, no make-up air is needed)

Passive Openings	Make-up Air Quantity (cfm)	Duct Diameter ^{1,2}	Passive Openings	Make-up Air Quantity (cfm)	Duct Diameter ^{1,2}
	1-36	3		110-163	6
	37-66	4		164-232	7
	67-109	5		233-317	8

¹ An equivalent length of 100 feet of round smooth metal duct is assumed. Subtract 40 for the exterior hood and ten feet for each 90-degree elbow to determine the remaining length of straight duct allowed.

² If flexible duct is used, increase the duct diameter by one inch. Flexible duct shall be stretched with minimal sags.

International Fuel Gas Code

MN Rules Chapter 1346

COMBUSTION AIR REQUIREMENTS:

	Input BTU	Atmospheric Vent	Fan Assist/ Power Vent	Direct Vent	Electric
Water Heater	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Furnace/Boiler	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Furnace/Boiler	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other	_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Combustion Appliance Space (CAS) volume: _____ ft³ Total Btu of Combustion Equip. _____
(Include entire unfinished basement in volume) (DO NOT include Direct Vent or Electric equipment)

INPUT RATING (Btu)	STANDARD METHOD (ft ³)	INPUT RATING (Btu)	STANDARD METHOD (ft ³)
30,000	1500	55,000	2750
35,000	1750	60,000	3000
40,000	2000	65,000	3250
45,000	2250	70,000	3500
50,000	2500	75,000	3750

Using the table above, find the btu rating that matches your TOTAL btu of combustion equip. (round up) and find the corresponding STANDARD METHOD volume. If your CAS is more than STANDARD METHOD volume, no additional combustion air is required. If not, contact Building Inspection Department for additional forms.



Construction Site Erosion Control Requirements

All construction site activity in the City of Belle Plaine shall include the necessary precautions to control and mitigate the erosion of soil, sediment, silt, gravel, or other material onto adjacent roadways. The property owner and/or permit holder for the construction site shall be responsible for complying with the requirements set for below as well as those contained in the City of Belle Plaine Subdivision and Zoning Ordinances; including activities by subcontractors, suppliers, or others involved with the construction project. The list represents minimum requirements for all sites – larger projects or projects located on erosion prone or erosion sensitive sites may be subject to additional measures at the direction of the City Engineer, Zoning Administrator, or the Building Official.

1. All material tracked or otherwise deposited on roadways adjacent to a construction site or on roadways being used as haul routes for material being delivered to or being removed from a site shall be cleaned daily, unless more frequent cleaning is required by the City.
2. All material, which is deposited on adjacent roadways as a result of a precipitation event, shall be removed, including the cleaning of storm sewer or overland drainage ditches, within 24 hours following the event.
3. Construction sites will be required to install silt fencing in all down slope areas and the front yard. For more severe erosion problems, additional measures shall be taken, such as installing hay bales, constructing earth berms or sediment traps, or taking other actions, which reduce or eliminate erosion from the site. Should an access onto the site be desired, a rock entrance of 2"-4" quarry rock will be required. This entrance must be maintained and replaced with new rock when it fails to perform due to excessive soil covering the entrance.
4. Should the property owner and/or permit holder fail to clean the material from the roadway as needed/directed or fail to install the appropriate erosion control measures, the following steps will be taken:
 - a. A Cease Work Order will be issued on the project and shall remain in effect until such time as the necessary cleaning and installation of erosion control measures is complete
 - b. The City will contract for necessary cleaning and installation of erosion control measures and bill the property owner / permit holder for said work. A Certificate of Occupancy will not be issued until such time as payment(s) for the work has been made.
 - c. Issuance of additional permits to the permit holder for other construction projects within the City of Belle Plaine will be withheld until such time as corrective action is completed.

I, _____, the property owner / permit holder for the construction activity taking
Name
place at _____ in the City of Belle Plaine declare that I have read, understood, and will
Property Address
abide by the conditions listed above regarding erosion control on this project.

Signed

Date

Telephone

CITY OF BELLE PLAINE NEW RESIDENTIAL CONSTRUCTION CHECKLIST

SITE ADDRESS: _____

PERMIT #: _____

To schedule an inspection, call the Building Inspections Department at
952-873-5553 • MONDAY – FRIDAY • 8:00 A.M. TO 4:30 P.M.

THE INSPECTOR MUST BE MET ON SITE AND ALL ITEMS MUST BE COMPLETED BEFORE
CONSTRUCTION/EXCAVATION. A RE-INSPECTION FEE WILL BE CHARGED IF THE INSPECTOR IS NOT MET OR
CONSTRUCTION/EXCAVATION HAS BEGUN PRIOR TO SITE INSPECTION.

- | Pass | Fail | NA | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Permit on site |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Address posted on site |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Locate and show property stakes and building pad stakes |
| _____ | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | | Setback Requirements |
| | | | Actual: Front: _____ Rear: _____ Side: _____ Side: _____ |
| | | | Req.: Front: _____ Rear: _____ Side: _____ Side: _____ |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Grading/drainage swales established away from neighboring structures |
| _____ | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Erosion control device established, where required/necessary |
| _____ | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Verify elevation of sanitary sewer service to low floor elevation |
| _____ | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Condition of water shut-off/service (mark with contractor's stake) |
| _____ | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Condition of curb and gutter abutting property to be built |
| _____ | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Condition of storm sewer grate abutting the property |
| _____ | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Curbs properly bridged for construction traffic |
| _____ | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Condition of trail way abutting the property (if applicable) |
| _____ | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Condition of light or other utility fixtures abutting the property (if applicable) |
| _____ | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Locate and show corrected soil area stakes (if applicable) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Culvert inspection (if applicable) |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Enclosed garbage container on site and maintained |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | On site sanitation |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Rock on site at time of footing inspection. |

Verify Lot Type: Walk Out Look Out Rambler

Signature of Building Official	Date	Signature of Site Contractor	Date



City of Belle Plaine
Planning and Zoning Department
218 North Meridian Street, P. O. Box 129
Belle Plaine, MN 56011
Phone: 952-873-5553 Fax: 952-873-5509

CERTIFICATE OF GRADING

I hereby certify that on _____, I conducted an inspection at
Date

House Number

Street Name

Lot

Block

Subdivision Name

I have verified the grades and elevations of the site and building are consistent with the approved grading/drainage plan, the Certificate of Survey submitted, and which was approved with the building permit.* Under the laws of the State of Minnesota I am a duly registered Engineer and/or Land Surveyor.

Signature: _____

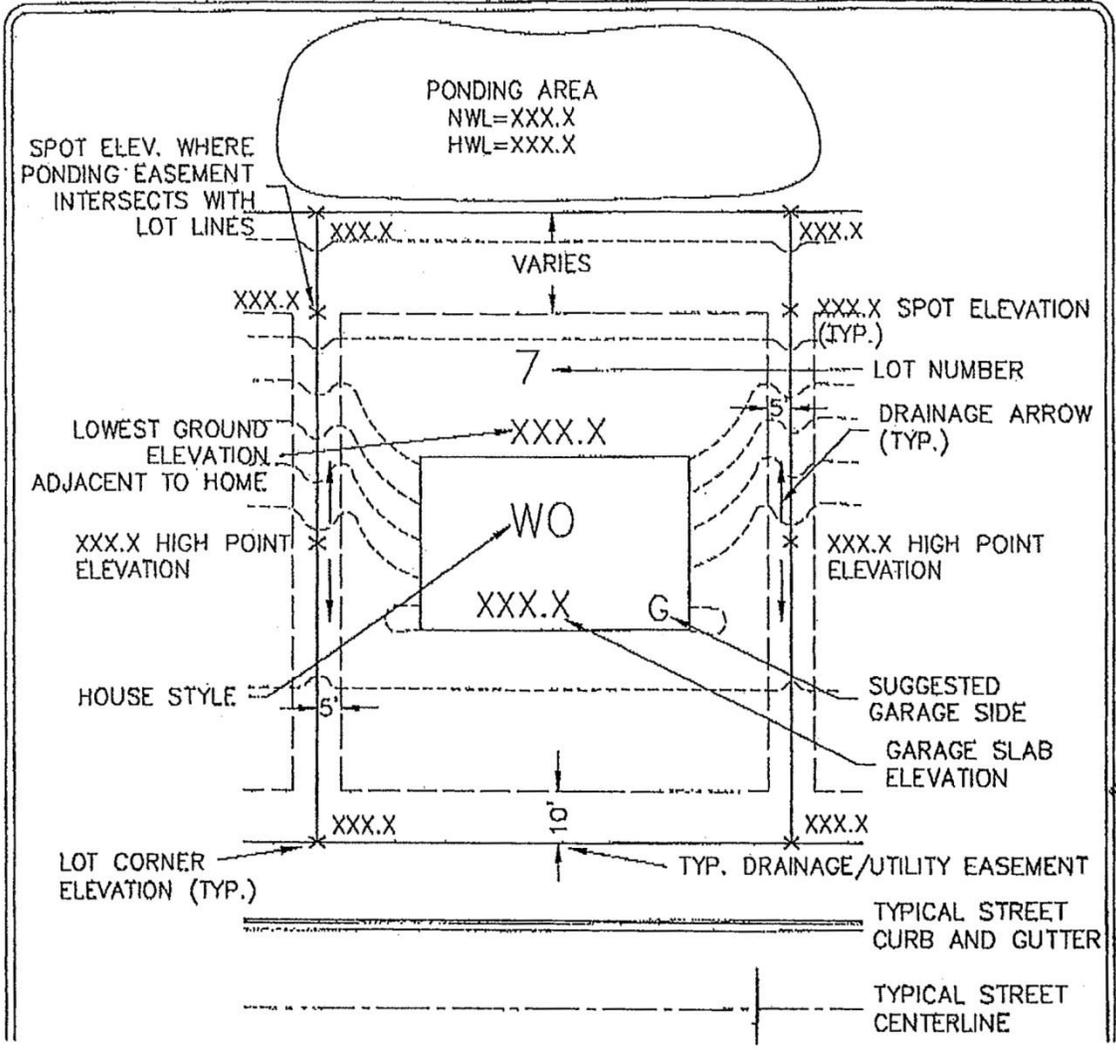
Firm Name: _____

Registration Number: _____

Date: _____

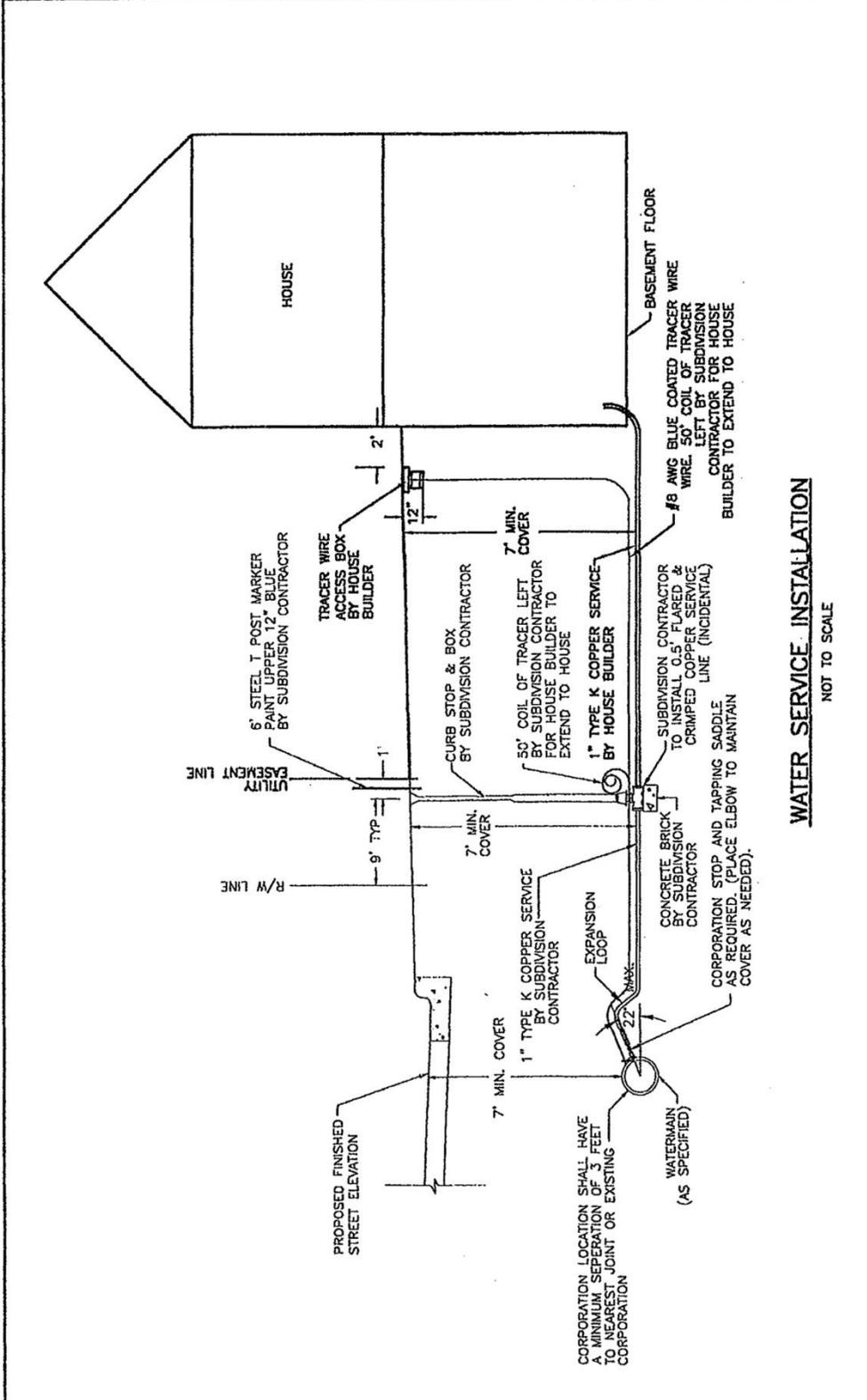
Note:

- This Certificate MUST BE signed and on file with the City of Belle Plaine before a final Certificate of Occupancy will be issued.
- Inconsistencies between the plan and the as-built conditions will require the submittal of a revised survey.



STANDARD DETAILS
REQUIRED LOT GRADING INFORMATION

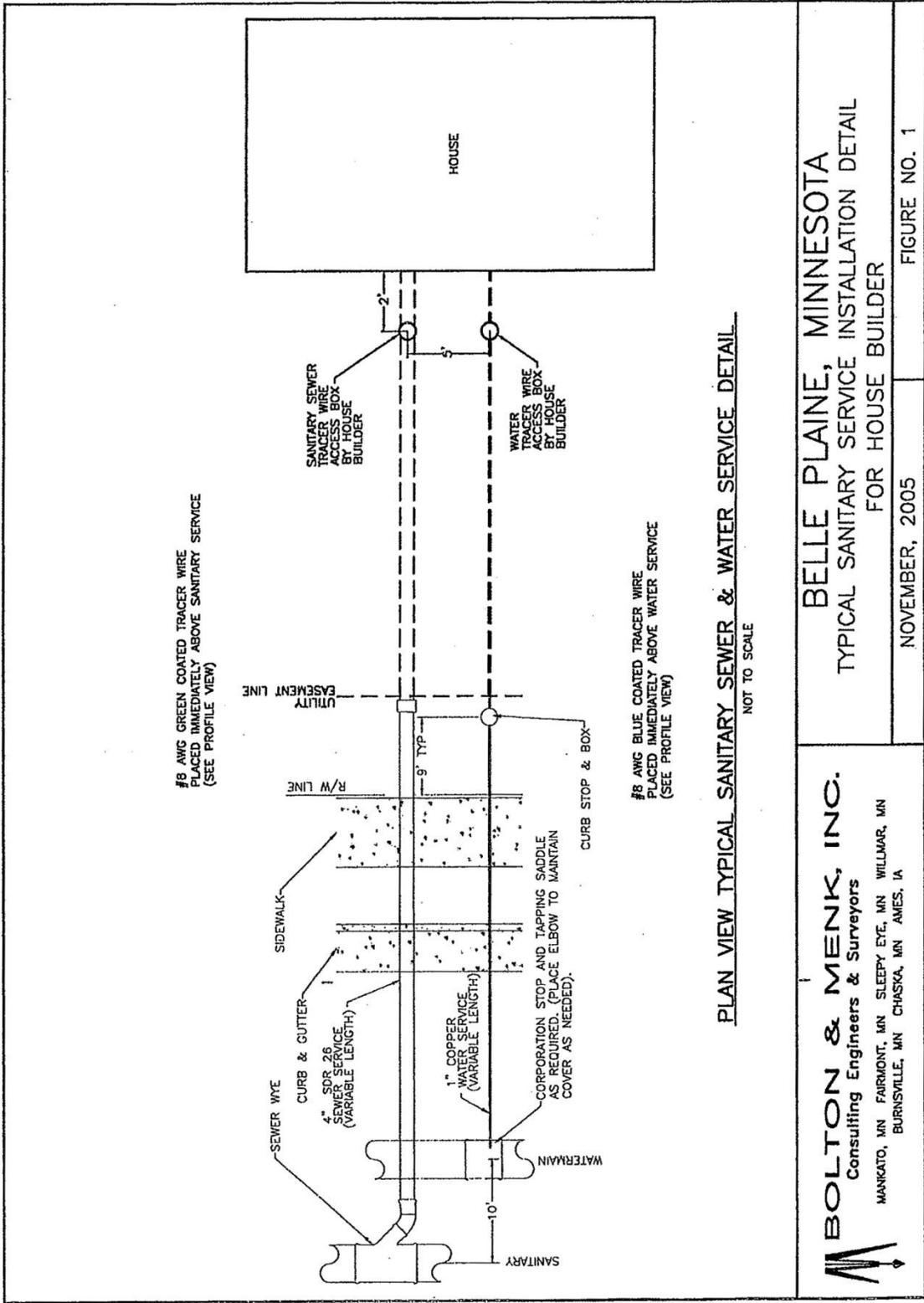
Last Revision:
BRA Plate No.
City Plate No.



WATER SERVICE INSTALLATION

NOT TO SCALE

 <p>BOLTON & MENK, INC. Consulting Engineers & Surveyors MANKATO, MN FAIRMONT, MN SLEEPY EYE, MN WILLMAR, MN BURNSVILLE, MN CHASKA, MN AMES, IA</p>	<p>BELLE PLAINE, MINNESOTA WATER SERVICE FOR HOUSE BUILDER</p>
<p>NOVEMBER, 2005</p>	<p>FIGURE NO. 1</p>



BOLTON & MENK, INC.
 Consulting Engineers & Surveyors
 MANKATO, MN FAIRMONT, MN SLEEPY EYE, MN WILLMAR, MN
 BURNSVILLE, MN CHASKA, MN AMES, IA

BELLE PLAINE, MINNESOTA
 TYPICAL SANITARY SERVICE INSTALLATION DETAIL
 FOR HOUSE BUILDER

NOVEMBER, 2005

FIGURE NO. 1

Water Meter Installations

Code Requirements

- Water meters must be installed 2' to 4' above the floor.
- Prior to water meter installation service line “**MUST BE FLUSHED**”.
- The City of Belle Plaine requires a shut-off valve to be installed **BEFORE** and **AFTER** the water meter.
- Water meters must be accessible for service at all times, including when construction is completed.
- Water meters must be installed in the horizontal position.
- All water coming into the building must be metered.
- Water meters must be installed immediately after water shut off valve. *(Service line, shut off valve, 90 street L if required to stay horizontal, meter socket and meter.)*
- The City of Belle Plaine does not allow any horns or any other type of short cuts.
- An arrow on outlet side marks directional flow of meter.

Required Inspection:

- After the building is completely plumbed, notify the Belle Plaine Utilities Department at 952-873-4644. *(The City of Belle Plaine requires a 24 hour notice to wire and seal meter, schedule your inspections accordingly.)*
- The Public Utilities Department runs the wire and seals the meters. At this time, we will run water through the meter to check meter operation.

Utility Contacts:

- Public Works Utilities Specialist; Mark Herd 952-873-4644
- Public Works Superintendent; Al Fahey 952-873-6742

Sewer/Water Utility - Trace Wire Specification

Storm Sewer System

This section shall be included at the discretion of the facility owner.

- If the storm sewer system includes service laterals for connection of private drains and tile lines, it shall be specified the same as a sanitary sewer application.
- Lay mainline trace wire continuously, by-passing around the outside of manholes/structure on the North or East side.

Prohibited Products and Methods

The following products and methods shall not be allowed or acceptable

- Uninsulated trace wire
- Trace wire insulations other than HDPE
- Trace wires not domestically manufactured
- Non locking, friction fit, twist on or taped connectors
- Brass or copper ground rods
- Wire connections utilizing taping or spray-on waterproofing
- Looped wire or continuous wire installations, that has multiple wires laid side-by-side or in close proximity to one another
- Trace wire wrapped around the corresponding utility
- Brass fittings with trace wire connection lugs
- Wire terminations within the roadway, i.e. in valve boxes, cleanouts, manholes, etc.
- Connecting trace wire to existing conductive utilities

Testing

All new trace wire installations shall be located using typical low frequency (512Hz) line tracing equipment, witnessed by the contractor, engineer and facility owner as applicable, prior to acceptance of ownership.

This verification shall be performed upon completion of rough grading and again prior to final acceptance of the project.

Continuity testing in lieu of actual line tracing shall not be accepted.

Sewer/Water Utility - Trace Wire Specification

- Any damage occurring during installation of the trace wire must be immediately repaired by removing the damaged wire, and installing a new section of wire with approved connectors. Taping and/or spray coating shall not be allowed.
- Trace wire shall be installed at the bottom half of the pipe and secured (taped/tied) at 5' intervals.
- Trace wire must be properly grounded as specified.
- Trace wire on all service laterals/stubs must terminate at an approved trace wire access box located directly above the utility, at the edge of the road right-of-way, but out of the roadway. (See Trace wire Termination/Access)
- At all mainline dead-ends, trace wire shall go to ground using an approved connection to a drive-in magnesium grounding anode rod, buried at the same depth as the trace wire. (See Grounding)
- Mainline trace wire shall not be connected to existing conductive pipes. Treat as a mainline dead-end, ground using an approved waterproof connection to a grounding anode buried at the same depth as the trace wire.
- All service lateral trace wires shall be a single wire, connected to the mainline trace wire using a mainline to lateral lug connector, installed without cutting/splicing the mainline trace wire.
- In occurrences where an existing trace wire is encountered on an existing utility that is being extended or tied into, the new trace wire and existing trace wire shall be connected using approved splice connectors, and shall be properly grounded at the splice location as specified.

Sanitary Sewer System

- A mainline trace wire must be installed, with all service lateral trace wires properly connected to the mainline trace wire, to ensure full tracing/locating capabilities from a single connection point.
- Lay mainline trace wire continuously, by-passing around the outside of manholes/structures on the North or East side.
- Trace wire on all sanitary service laterals must terminate at an approved trace wire access box color coded green and located directly above the service lateral at the edge of road right of way.

Water System

- A mainline trace wire must be installed, with all service lateral trace wires properly connected to the mainline trace wire, to ensure full tracing/locating capabilities from a single connection point.
- Lay mainline trace wire continuously, by-passing around the outside of valves and fittings on the North or East side.
- Trace wire on all water service laterals must terminate at an approved trace wire access box color coded blue and located directly above the service lateral at the edge of road right of way.
- Above-ground tracer wire access boxes will be installed on all fire hydrants.
- All conductive and non-conductive service lines shall include tracer wire.

Sewer/Water Utility - Trace Wire Specification

- **Service Laterals on public property** - Trace wire must terminate at an approved grade level/in-ground trace wire access box, located at the edge of the road right-of-way, and out of the roadway.
- **Service Laterals on private property** - Trace wire must terminate at an approved above-ground trace wire access box, affixed to the building exterior directly above where the utility enters the building, at an elevation not greater than 5 vertical feet above finished grade, or terminate at an approved grade level/in-ground trace wire access box, located within 2 linear feet of the building being served by the utility.
- **Hydrants** – Trace wire must terminate at an approved above-ground trace wire access box, properly affixed to the hydrant grade flange. (affixing with tape or plastic ties shall not be acceptable)
- **Long-runs, in excess of 500 linear feet without service laterals or hydrants** - Trace wire access must be provided utilizing an approved grade level/in-ground trace wire access box, located at the edge of the road right-of-way, and out of the roadway. The grade level/in-ground trace wire access box shall be delineated using a minimum 48" polyethylene marker post, color coded per APWA standard for the specific utility being marked.

Grounding

- Trace wire must be properly grounded at all dead ends/stubs
- Grounding of trace wire shall be achieved by use of a drive-in magnesium grounding anode rod with a minimum of 20ft of #14 red HDPE insulated copper clad steel wire connected to anode (minimum 0.5 lb.) specifically manufactured for this purpose, and buried at the same elevation as the utility.
- When grounding the trace wire at dead ends/stubs, the grounding anode shall be installed in a direction 180 degrees opposite of the trace wire, at the maximum possible distance.
- When grounding the trace wire in areas where the trace wire is continuous and neither the mainline trace wire or the grounding anode wire will be terminated at/above grade, install grounding anode directly beneath and in-line with the trace wire. Do not coil excess wire from grounding anode. In this installation method, the grounding anode wire shall be trimmed to an appropriate length before connecting to trace wire with a mainline to lateral lug connector.
- Where the anode wire will be connected to a trace wire access box, a minimum of 2 ft. of excess/slack wire is required after meeting final elevation.

Installation

General

- Trace wire installation shall be performed in such a manner that allows proper access for connection of line tracing equipment, proper locating of wire without loss or deterioration of low frequency (512Hz) signal for distances in excess of 1,000 linear feet, and without distortion of signal caused by multiple wires being installed in close proximity to one another.
- Trace wire systems must be installed as a single continuous wire, except where using approved connectors. No looping or coiling of wire is allowed.

Sewer/Water Utility - Trace Wire Specification

Materials

General

All trace wire and trace wire products shall be domestically manufactured in the U.S.A.

All trace wire shall have HDPE insulation intended for direct bury, color coated per APWA standard for the specific utility being marked.

Trace wire

- **Open Trench** - Trace wire shall be #12 AWG Copper Clad Steel, High Strength with minimum 450 lb. break load, with minimum 30 mil HDPE insulation thickness.
- **Directional Drilling/Boring** - Trace wire shall be #12 AWG Copper Clad Steel, Extra High Strength with minimum 1,150 lb. break load, with minimum 30 mil HDPE insulation thickness.
- **Trace wire – Pipe Bursting/Slip Lining** - Trace wire shall be 7 x 7 Stranded Copper Clad Steel, Extreme Strength with 4,700 lb. break load, with minimum 50 ml HDPE insulation thickness.

Connectors

- All mainline trace wires must be interconnected in intersections, at mainline tees and mainline crosses. At tees, the three wires shall be joined using a single 3-way lockable connector. At Crosses, the four wires shall be joined using a 4-way connector. Use of two 3-way connectors with a short jumper wire between them is an acceptable alternative.
- **Direct bury wire connectors** – shall include 3-way lockable connectors and mainline to lateral lug connectors specifically manufactured for use in underground trace wire installation. Connectors shall be dielectric silicon filled to seal out moisture and corrosion, and shall be installed in a manner so as to prevent any uninsulated wire exposure.
- Non locking friction fit, twist on or taped connectors are prohibited.

Termination/Access

- All trace wire termination points must utilize an approved trace wire access box (above ground access box or grade level/in-ground access box as applicable), specifically manufactured for this purpose.
- All grade level/in-ground access boxes shall be appropriately identified with “sewer” or “water” cast into the cap and be color coded.
- A minimum of 2 ft. of excess/slack wire is required in all trace wire access boxes after meeting final elevation.
- All trace wire access boxes must include a manually interruptible conductive/connective link between the terminal(s) for the trace wire connection and the terminal for the grounding anode wire connection.
- Grounding anode wire shall be connected to the identified (or bottom) terminal on all access boxes.

Sewer/Water Utility - Trace Wire Specification

Products

The following products have been deemed acceptable and appropriate. These products are a guide only to help you choose the correct applications for your tracer wire project.

- Copper clad Steel (CCS) trace wire
 - Open Trench – Copperhead #12 High Strength part # 1230-HS
 - Directional Drilling/Boring - Copperhead Extra High Strength part # 1245*EHS
 - Pipe Bursting/Slip Lining – Copperhead SoloShot Extreme Strength 7 x 7 Stranded part # PBX-50
- Connectors
 - Copperhead 3-way locking connector part # LSC1230*
 - DryConn 3- way Direct Bury Lug: Copperhead Part # 3WB-01
- Termination/Access
 - Non-Roadway access boxes applications: Trace wire access boxes Grade level Copperhead adjustable lite duty Part # LD14*TP
 - Concrete / Driveway access box applications: Trace wire access boxes Grade level Copperhead Part # CD14*TP 14”
 - Fire hydrant trace wire access box applications: Above ground two terminal with 1” conduit. Copperhead part # T3-75-F (Cobra T3 Test Station, denoting “F” includes mounting flange)
- Grounding
 - Drive in Magnesium Anode: Copperhead Part # ANO-1005 (1.5 lb)

Manufacture product options:

The information provided by Copperhead Industries gives you product options to help you choose the correct wire – termination/access points – connectors and grounding products. Other manufactures provide these products; this information is only a guide.

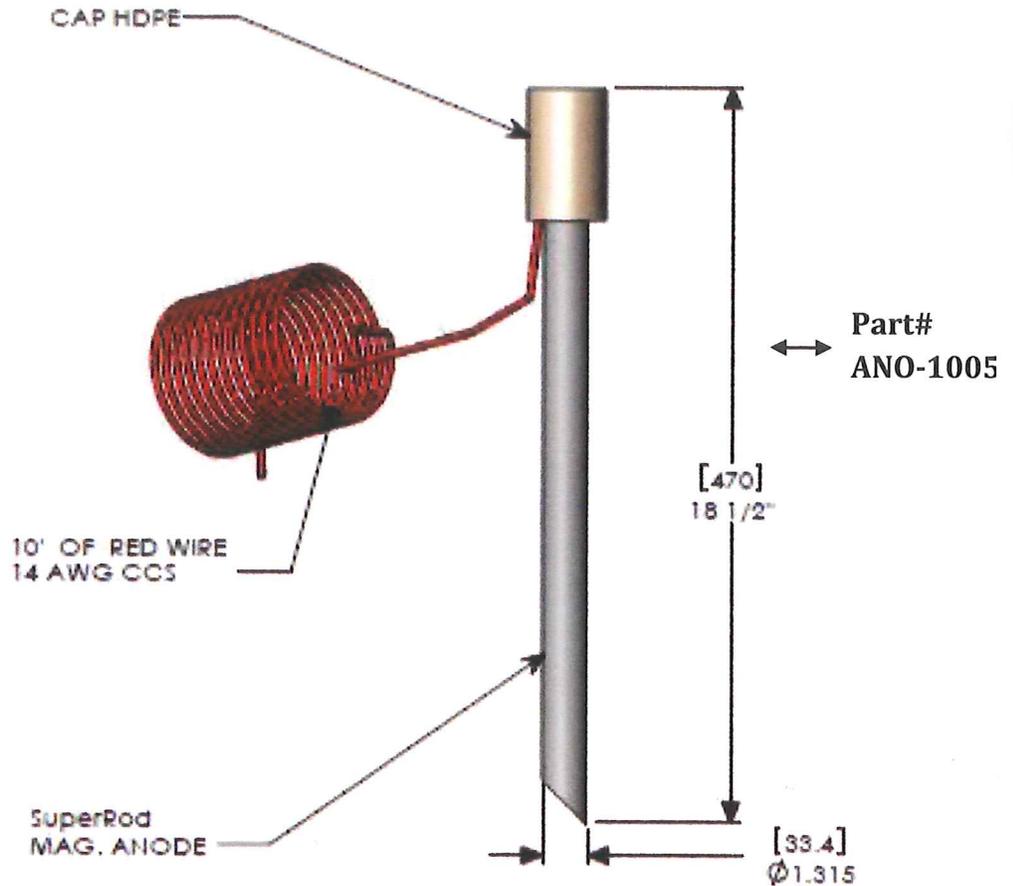


Installing Copperhead 1 Lb., Drive In, magnesium anode at all dead ends of your tracer wire system will complete the electrical circuit needed to enhance your signal and pin point location of utility. All circuits need to be grounded.

All dead ends not brought to surface should be connected to an anode.

Anodes may be spliced into existing system to improve signal and ability to locate.

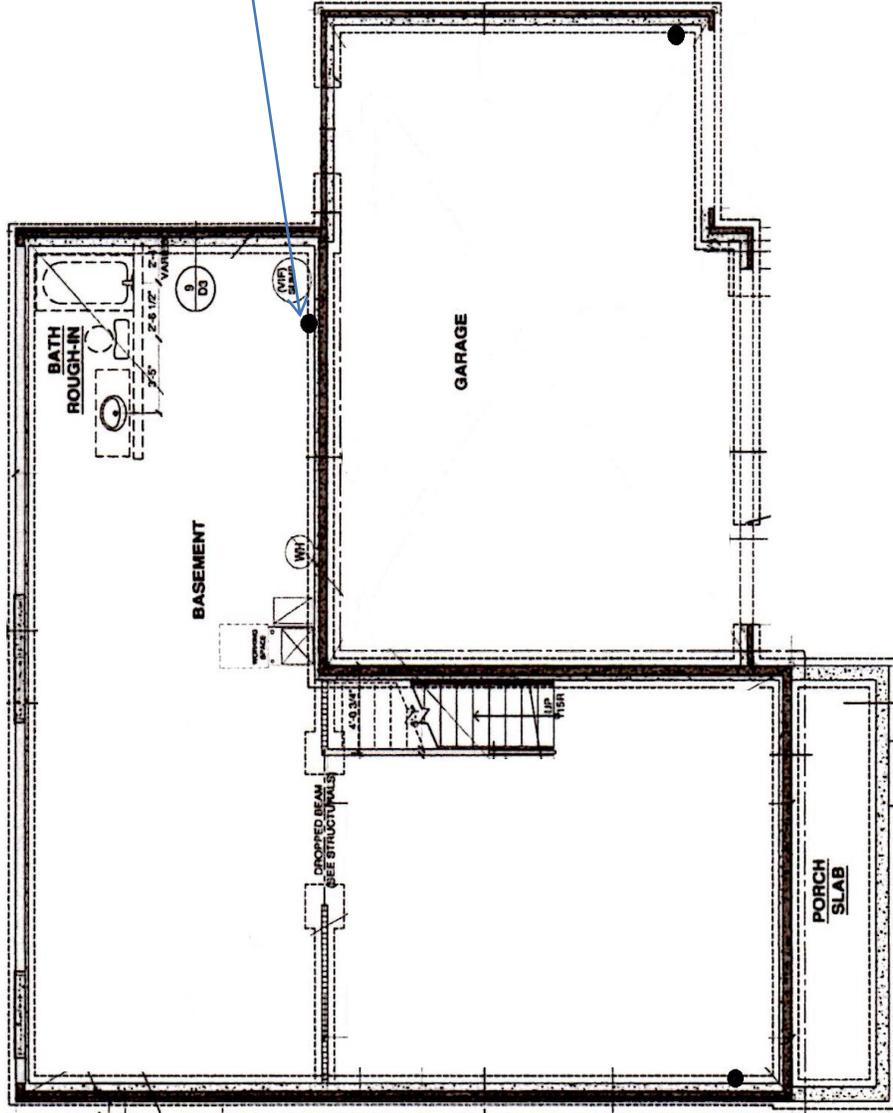
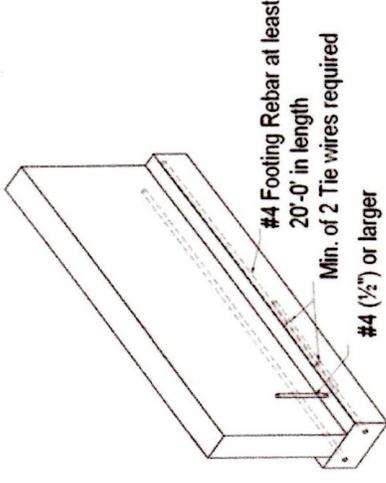
Copperhead SnakeBite connector is included with each anode shipped for that corrosion resistant splice.



Part #
SCB-01SR

Copperhead Industries, LLC
Monticello, MN 55362
Customer Service 877.726.5644
Fax 763.271.3694

Suggested Placement of Rebar Stub Up



Option: 1
 Basement Footing
 Option location determined by location of utility transformer or pedestal



Transformer

Option: 3
 Basement Footing in Utility Room by Water Stub In

Option: 2
 Garage Footing
 Option location determined by location of utility transformer or pedestal



Transformer