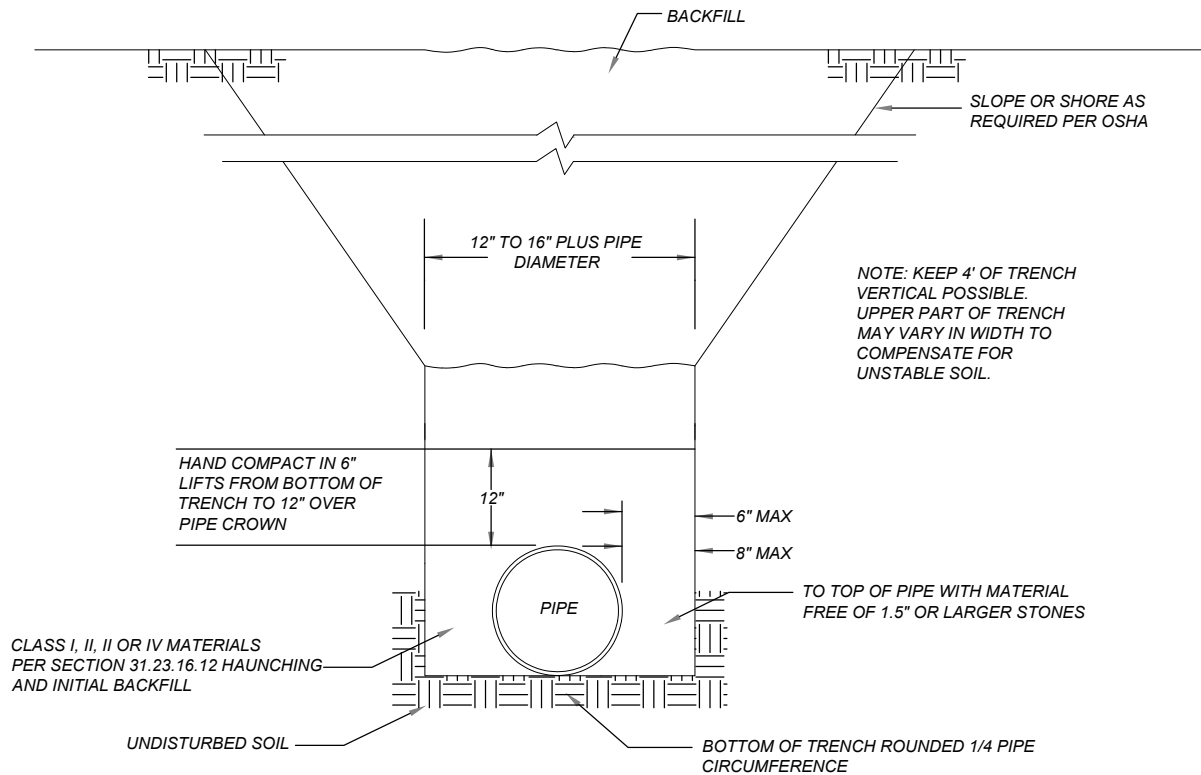


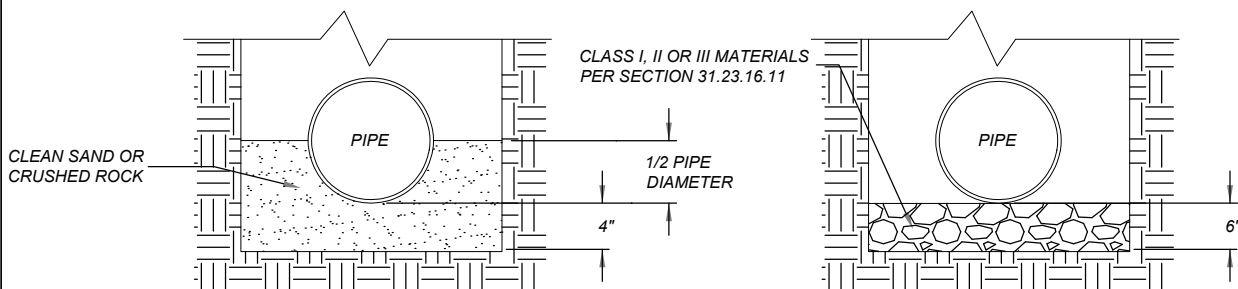
DETAIL M01-TRENCH-TYPICAL & ALTERNATE

SECTION 31.23.16.12 HAUNCHING AND INITIAL BACKFILL



TYPICAL TRENCH
NOT TO SCALE

SECTION 31.23.16.11 BEDDING

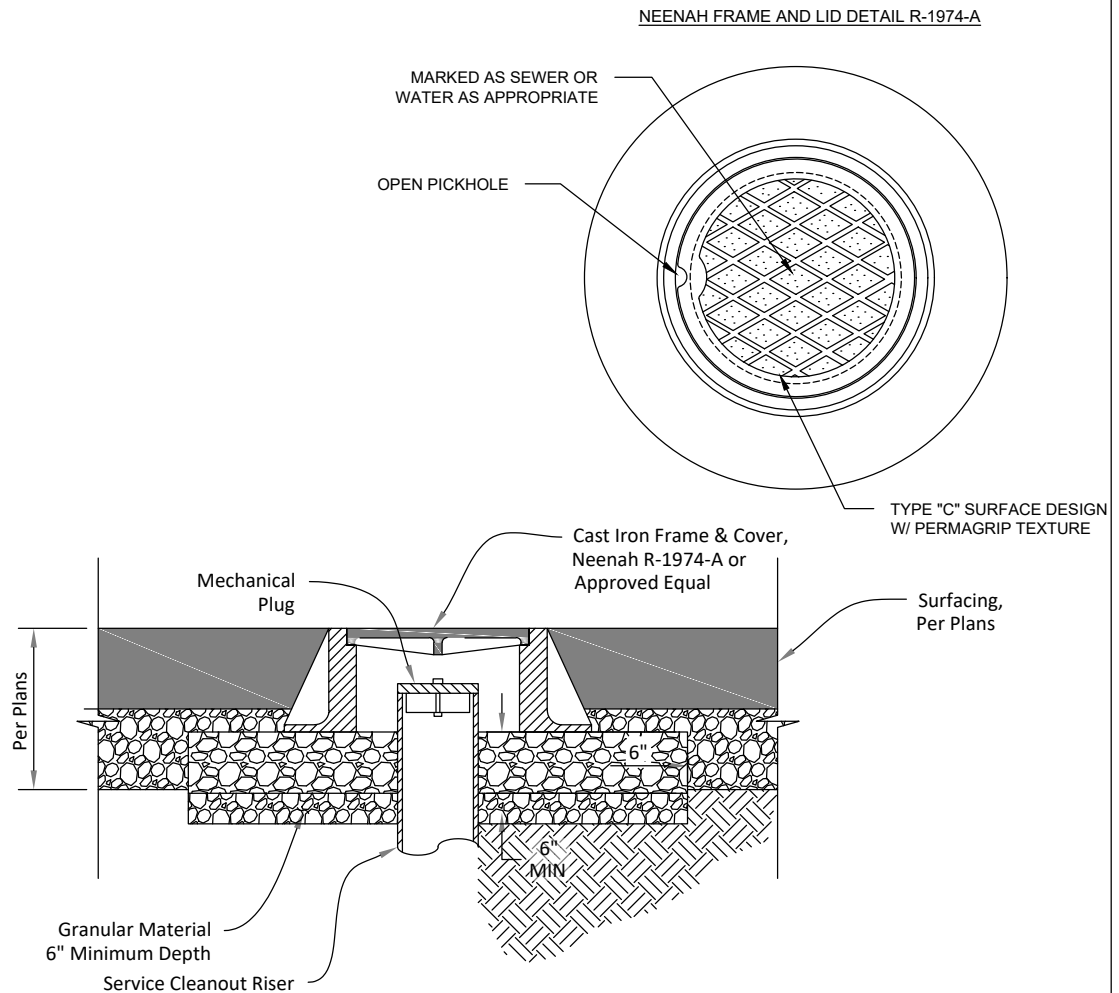


ALTERNATE TRENCH BOTTOM PREPARATION
NOT TO SCALE

CITY OF BOX ELDER
STANDARD DETAIL M01
SHALLOW MANHOLE SECTION



DETAIL S05- SANITARY SEWER CLEANOUT IN TRAVEL SURFACE



Note:

1. This detail shall be used when sanitary sewer service cleanouts are located in concrete or asphalt surfaced areas, or as shown in plans.

N.T.S.

CITY OF BOX ELDER
STANDARD DETAIL S05 - SANITARY
SEWER CLEANOUT IN TRAVEL SURFACE



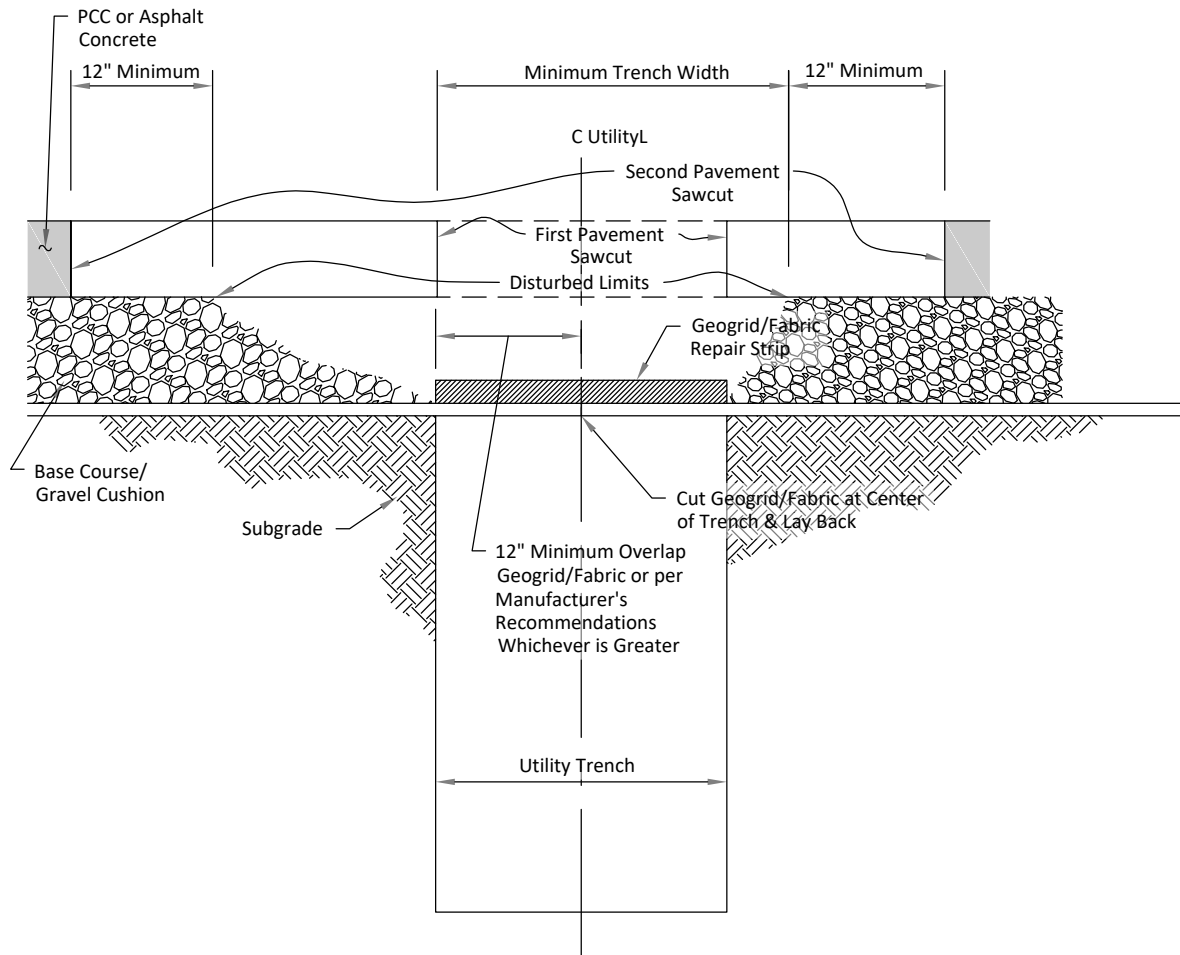
DETAIL #S05

REVISÉ 02/2025

Standard Details

###

DETAIL M05- GEOGRID FABRIC UTILITY TRENCH PATCH



Notes:

1. All saw cuts to be full depth.
2. Patch material shall match the existing pavement material (eg. PCC pavement shall be patched with PCC and existing asphalt pavement with asphalt).
3. For asphalt patches base course & asphalt concrete thickness to match existing but in no case will be less than 6" base & 5" asphalt concrete. The existing vertical asphalt face shall be tacked.
4. For PCC pavement patches - see Section 31.23.16.05.
5. PCC pavement removals shall be per Section 31.23.16.05.
6. Trenches are shown to diagram patching requirements and at a minimum meet the minimum trench width table below. Trenches shall be constructed to meet OSHA requirements.
7. Pavement removal between first and second saw cut shall be removed at time of patching.

TABLE 11-1 MINIMUM TRENCH WIDTH TABLE	
Pipe Diameter	Minimum Width
<8 in.	24"
8in. - 12in.	30"
14in. - 18in.	36"
20in. - 21in.	42"
24in. - 36in.	1.25 (Pipe O.D.) Plus 12in.
>36in.	Per Plans

N.T.S.

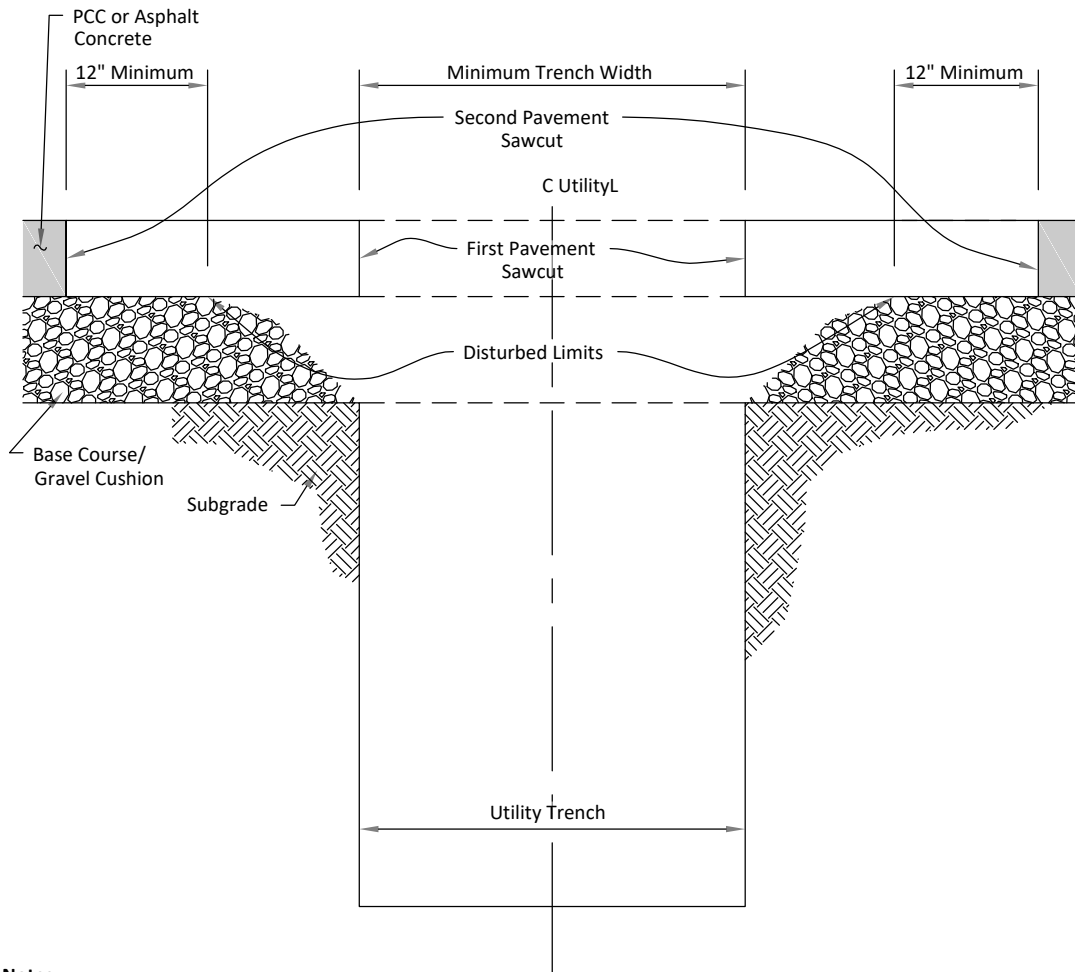
CITY OF BOX ELDER STANDARD DETAIL M05 - GEOGRID FABRIC UTILITY TRENCH PATCH



DETAIL #M05

REVISED 02/2025

DETAIL M06- UTILITY TRENCH DETAIL



Notes:

1. All saw cuts to be full depth.
2. Patch material shall match the existing pavement material (eg. PCC pavement shall be patched with PCC and existing asphalt pavement with asphalt).
3. For asphalt patches base course & asphalt concrete thickness to match existing but in no case will be less than 6" base & 5" asphalt concrete. The existing vertical asphalt face shall be tacked.
4. For PCC pavement patches - see Section 31.23.16.05.
5. PCC pavement removals shall be per Section 31.23.16.05.
6. Trenches are shown to diagram patching requirements and at a minimum meet the minimum trench width table below. Trenches shall be constructed to meet OSHA requirements.
7. Pavement removal between first and second saw cut shall be removed at time of patching.

TABLE 11-1 MINIMUM TRENCH WIDTH TABLE

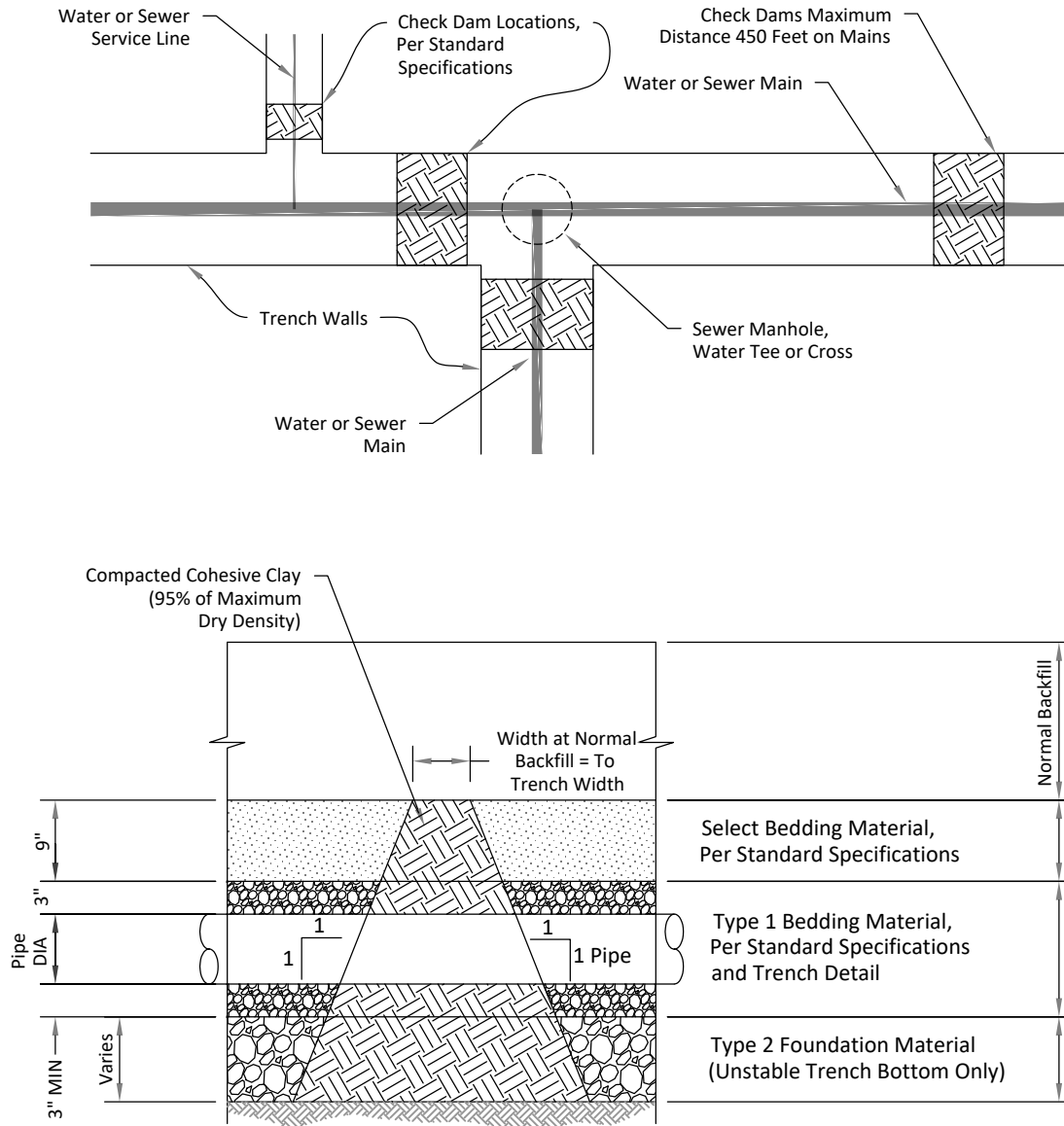
Pipe Diameter	Minimum Width
<8 in.	24"
8in. - 12in.	30"
14in. - 18in.	36"
20in. - 21in.	42"
24in. - 36in.	1.25 (Pipe O.D.) Plus 12in.
>36in.	Per Plans

N.T.S.

CITY OF BOX ELDER
STANDARD DETAIL M05
UTILITY TRENCH DETAIL



DETAIL M07- TYPICAL TRENCH CHECK DAM DETAIL FOR WATER & SEWER MAINS



Note:

Check dam installation locations shall be as indicated on the plans. However during construction, check dam installation locations may be moved due to field conditions. The check dam shall extend from the bottom of the excavation through the bedding material to the "Normal Backfill" and shall extend completely to each trench sidewall. Do not construct check dam around pipe joint.

N.T.S.

CITY OF BOX ELDER

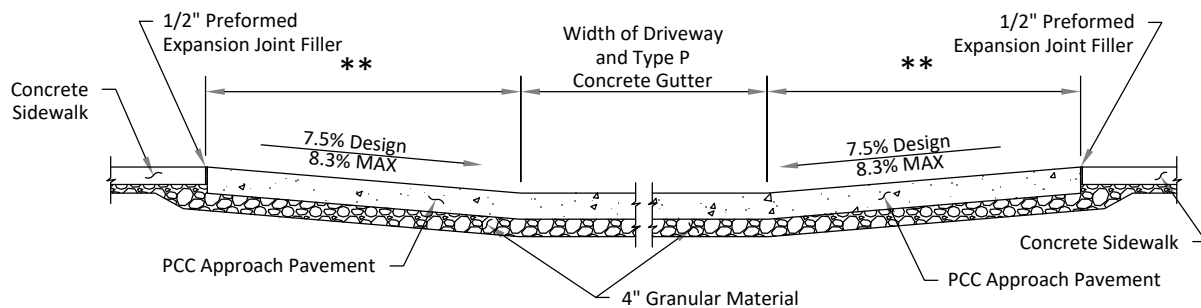
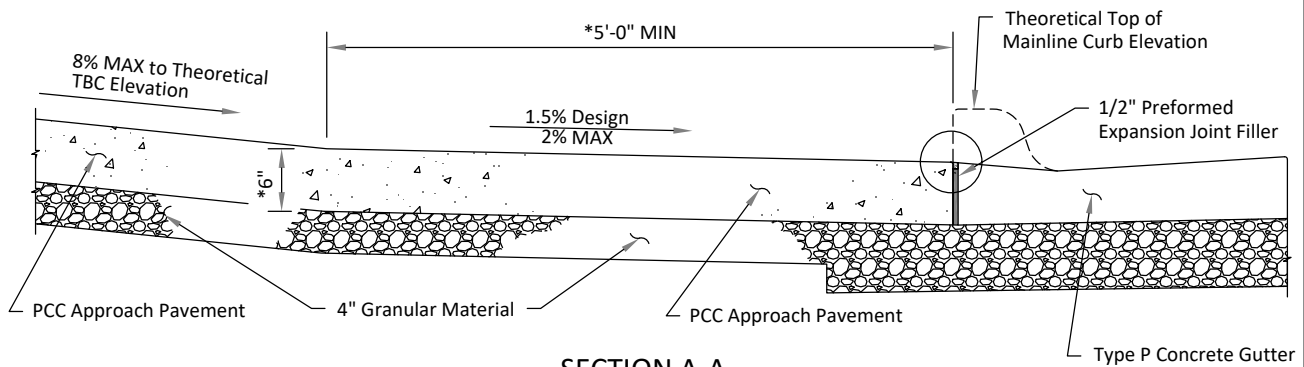
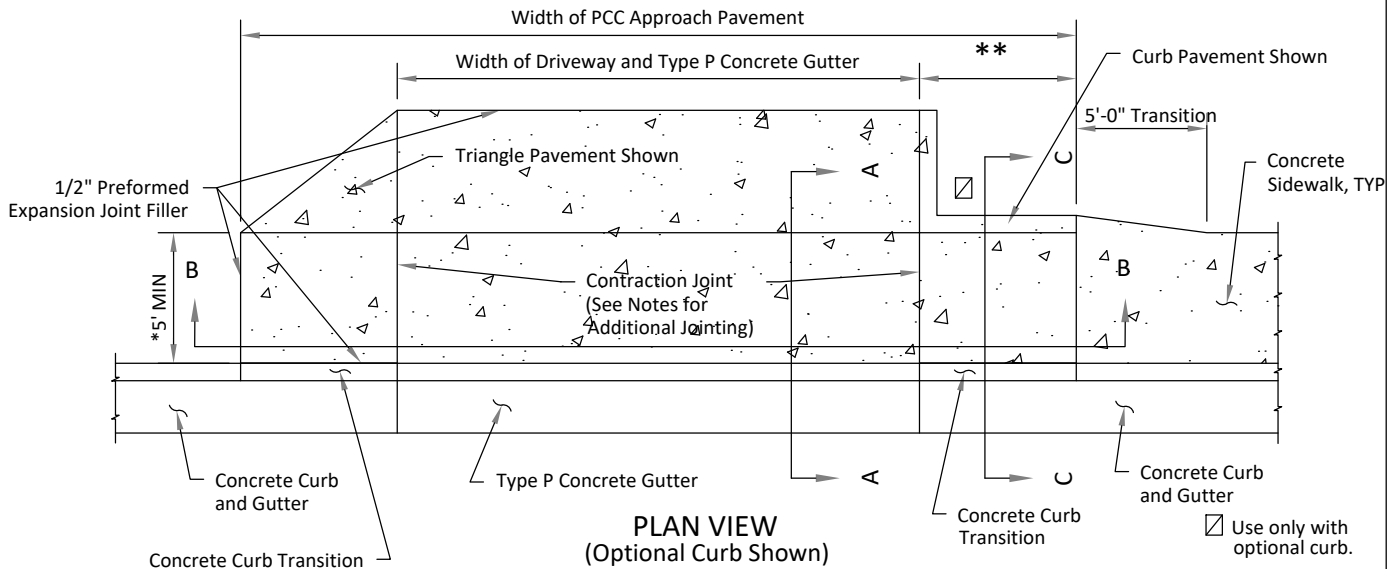
**STANDARD DETAIL M07 - TYPICAL TRENCH
CHECK DAMS FOR WATER & SEWER MAINS**



DETAIL #M07

REVISED 02/2025

DETAIL RD061- RESIDENTIAL DRIVEWAY APPROACH



- * Sidewalks to be constructed adjacent to the curb shall be a minimum of 5' in width for lane, place and local roads and a minimum of 6' for all other roads. The cross slope of the sidewalk is designed at 1.5% and will not be steeper than 2% unless specified otherwise in the plans.
- ** The slope of the driveway approach pavement in these areas will match the slope of the concrete curb transition and the length will not be longer than 15'. The slope is designed at 7.5% and will not be steeper than 8.3% unless specified otherwise in the plans.

N.T.S.

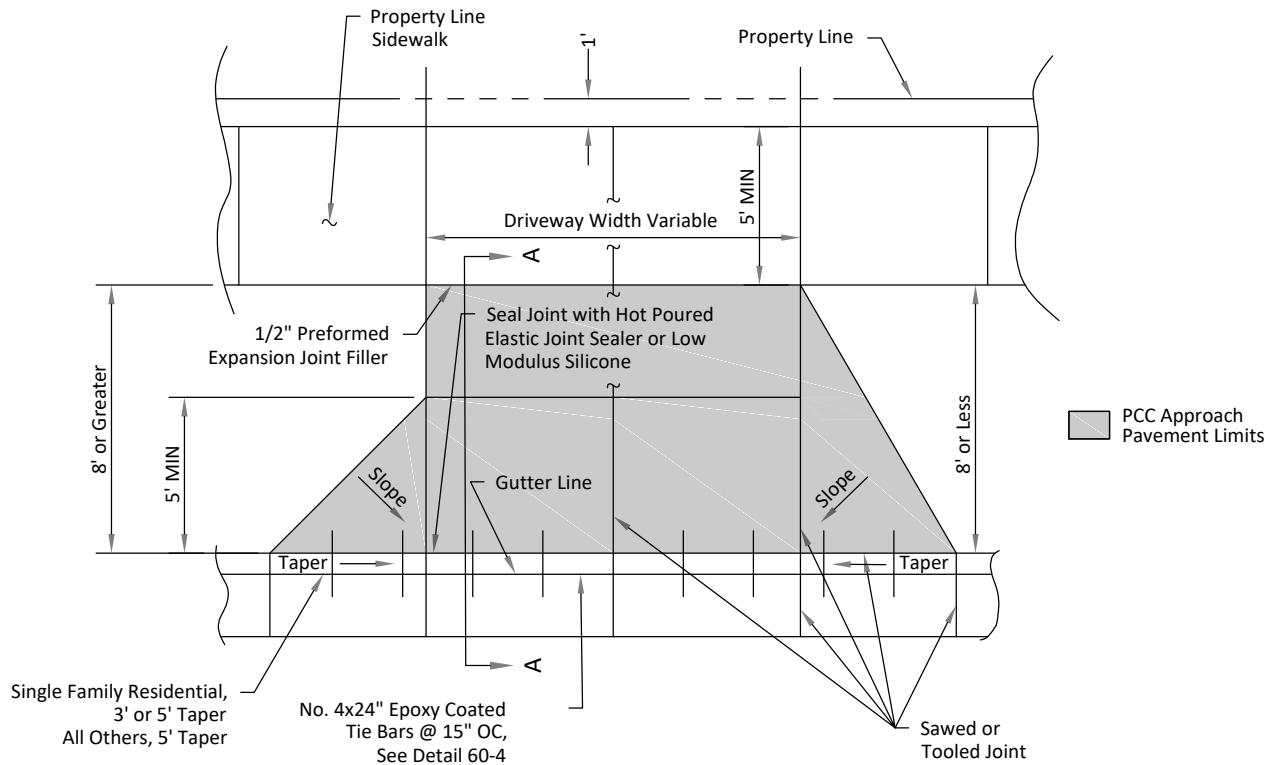
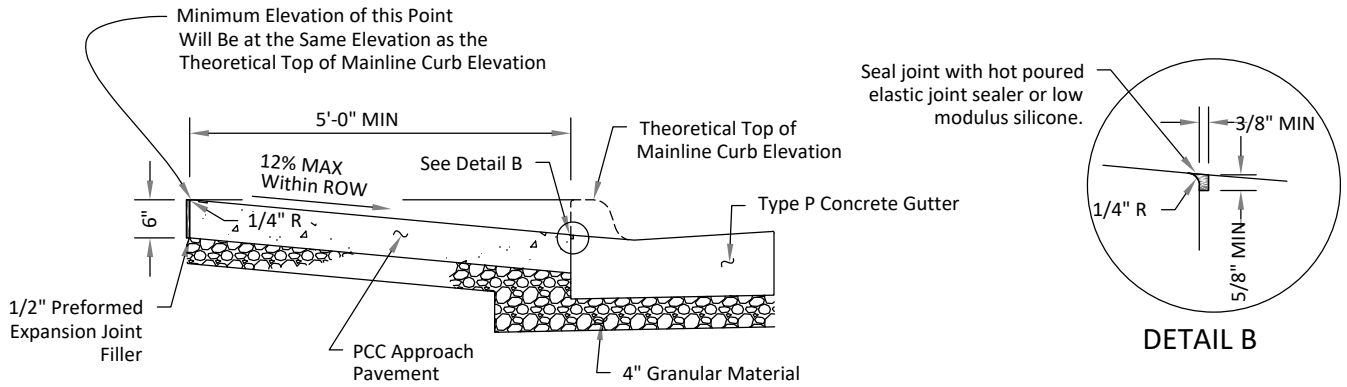
CITY OF BOX ELDER
STANDARD DETAIL RD061
RESIDENTIAL DRIVEWAY APPROACH



DETAIL #RD061

REVISED 02/2025

DETAIL RS013 - RESIDENTIAL DRIVEWAY APPROACH (PROPERTY LINE SIDEWALK)



Notes:

- Driveway widths shall be per Box Elder Infrastructure Design Standards.
- Contraction joints in the PCC approach pavement shall be a minimum of 1/4 the thickness of the approach pavement.
Additional contraction joints not shown in the Plan View will be spaced as follows:
 - Joints shall be equally spaced across the driveway. Driveways up to 36' in width shall have a maximum joint spacing of 12'.
 - Driveways greater than 36' in width and up to 40' in width shall have 4 equally spaced joints.
- All costs for furnishing and placing the PCC approach pavement and constructing the expansion and contraction joints including labor, equipment, excavation, and materials including the earthen backfill will be incidental to the contract unit price per square yard for the corresponding PCC Approach Pavement contract item.
- The sidewalk width through the full width of the driveway opening shall be 5' wide minimum.

N.T.S.

CITY OF BOX ELDER

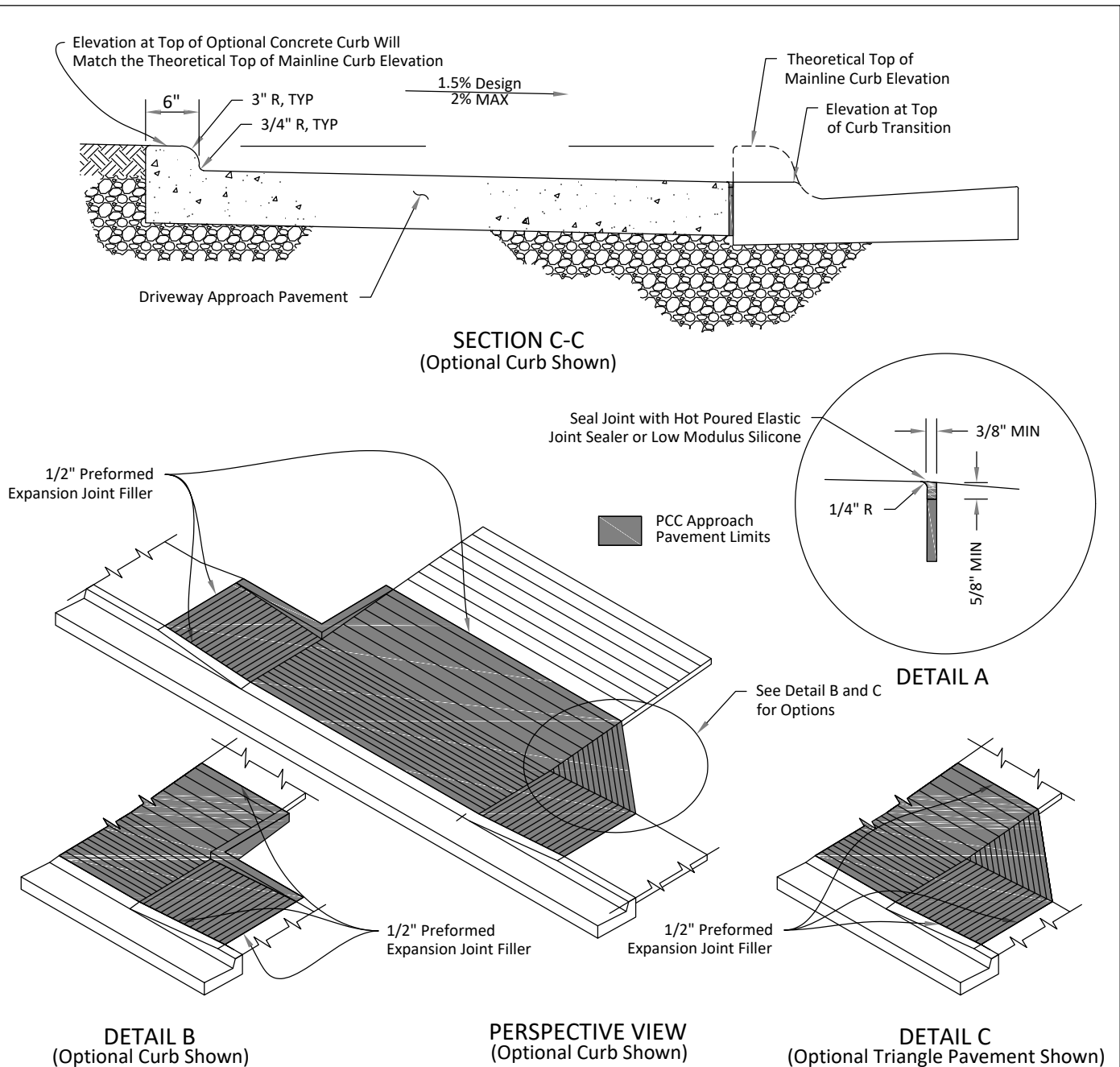
**STANDARD DETAIL RS013 - RESIDENTIAL DRIVEWAY
APPROACH (PROPERTY LINE SIDEWALK)**



DETAIL #RS013

REVISED 02/2025

DETAIL RS014 - RESIDENTIAL DRIVEWAY APPROACH (CURBSIDE SIDEWALK)



Notes:

1. Driveway widths shall be per Box Elder Infrastructure Design Standards.
2. Detail C shall be used unless otherwise shown in the plans and specifications or as directed by the Engineer.
3. Contraction joints in the driveway approach pavement shall be a minimum of 1/4 the thickness of the approach pavement.
Additional contraction joints not shown in the Plan View will be spaced as follows:
 - a. Joints shall be equally spaced across the driveway. Driveways up to 36' in width shall have a maximum joint spacing of 12'.
 - b. Driveways greater than 36' in width and up to 40' in width shall have 4 equally spaced joints.

N.T.S.

CITY OF BOX ELDER

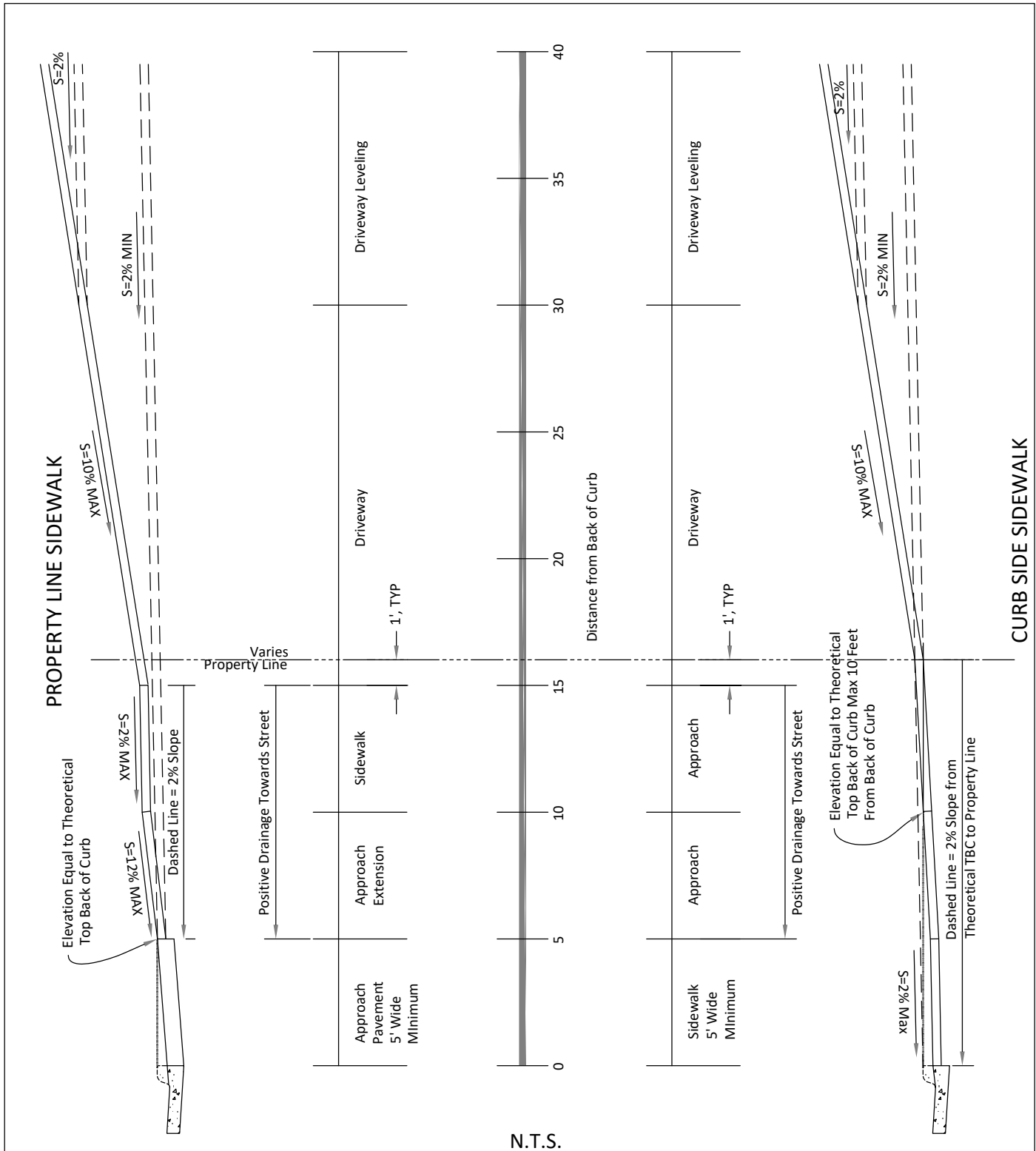
**STANDARD DETAIL RS014 - RESIDENTIAL DRIVEWAY
APPROACH (CURBSIDE SIDEWALK)**



DETAIL #RS014

REVISED 02/2025

DETAIL RS015- DRIVEWAY PROFILE GRADE



CITY OF BOX ELDER STANDARD DETAIL RS015 DRIVEWAY PROFILE GRADE

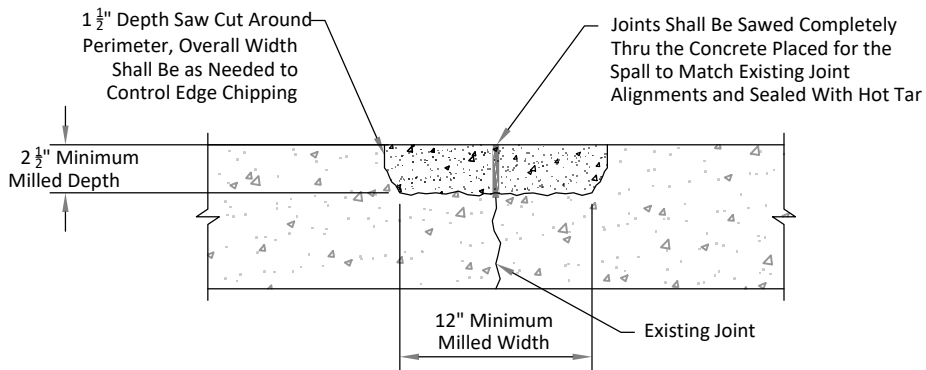
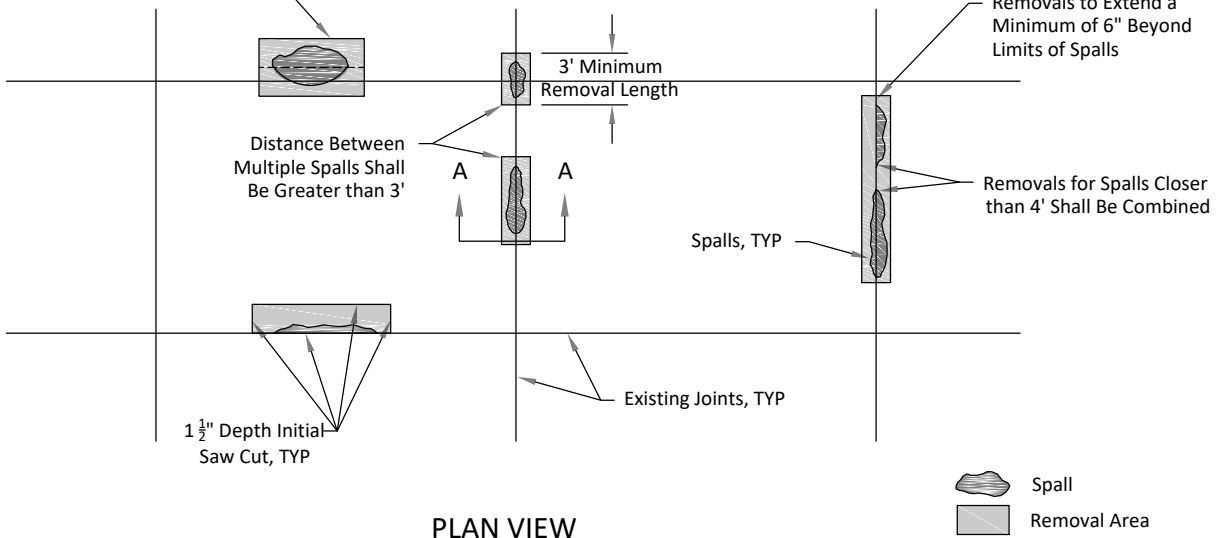


DETAIL #RS015

REVISED 02/2025

DETAIL M08- SPALL REPAIR

Spalls Requiring Multiple Milling Passes Shall Extend into Sound Concrete on All Sides



N.T.S.

CITY OF BOX ELDER
STANDARD DETAIL M08
SPALL REPAIR



DETAIL #M08

REVISED 02/2025

DETAIL M08A - SPALL REPAIR

Notes:

1. Spall quantities shown in the plans are approximate and are based on field measurements at the time of plans preparation. Spall repairs shall be marked in the field by the engineer and may vary from the plans based on field conditions.
2. Spalls will be marked out to the nearest whole foot. Removal is to extend 6 inches beyond the spall on transverse joints. Minimum length of removal shall be 3'. Joints containing spalls closer than 4' shall have the removal limits combined. Multiple milling passes may be required in areas where existing spalls are too wide to remove in one pass.
3. Spall repair areas shall be removed thru the use of a vertical edge milling machine. The milled width shall be a minimum of 12" and shall have a uniform depth of 2.5" over the area to be removed. An initial saw cut will be required around the perimeter of the removal area. The saw cut shall be a minimum of 1.5" depth to control edge chipping beyond the area to be repaired.
4. Prior to the placement of concrete the surface of the milled area shall be sand blasted to remove any additional unsound concrete and free latances. Compressed air shall then be used for the final cleaning of the surface. After final cleaning of the spall a bonding mortar shall be mixed and applied to all existing concrete surfaces (horizontal and vertical) to receive the spall fill material. The bonding mortar shall consist of the following proportions: 2 parts portland cement to 1 part sand. The portland cement and sand shall be mixed with enough water to form a thick creamy consistency. The Contractor may propose to utilize other commercially available bonding agents thru the submittal process.
5. The surface temperature shall be 40 degrees and rising prior to the placement of the bonding agent and concrete fill material. The concrete fill material shall be consolidated by the use of a small spud vibrator.
6. The final finishing procedure is to paint a sand-cement grout, the same grout used for the bonding mortar, at the edges of the repair to impede delamination of the patch. This ensures that a high percentage of cementitious material is available to glue the edges of the patch material to the existing concrete, helping to prevent the infiltration of moisture that can lead to delamination if water at the interface freezes in cold weather. The final surface shall be a broomed finish.
7. Joints shall be sawed to match existing joints and shall be sawed to the depth of the spall material plus 0.25". The sawed joint shall be sealed using hot tar.
8. Linseed oil cure shall be applied at a rate of 1 gallon per 75 SF. The repair areas shall be covered for 48 hours following the application of cure. Cold weather concreting procedures shall be followed during the 48 hour covering period, as needed.
9. Fill material for the spall areas shall be a commercially supplied redi-mix concrete conforming to the following proportions:

Cement	750 lbs
Course agg	1330 lbs
Fine agg	1330 lbs
Air	4.5% to 7.5%
Slump	1" to 4"
Max w/c ratio	0.42
Water reducer	As Needed
10. Course aggregate shall be 3/8 chip rock. Fly ash will not be allowed. A concrete mix design shall be submitted for acceptance prior to use on the project.
11. Payment for the spall repair will be by the square foot (SF) of repair. Payment shall include all work required to mill and remove existing, saw cutting to control edge chipping, final saw cutting, sealing, concrete placement and all associated items.
12. Processes and procedures for spall repair within this detail are from the National Concrete Pavement Technology Centers guide for partial depth repair of concrete pavements dated April 2012.

N.T.S.

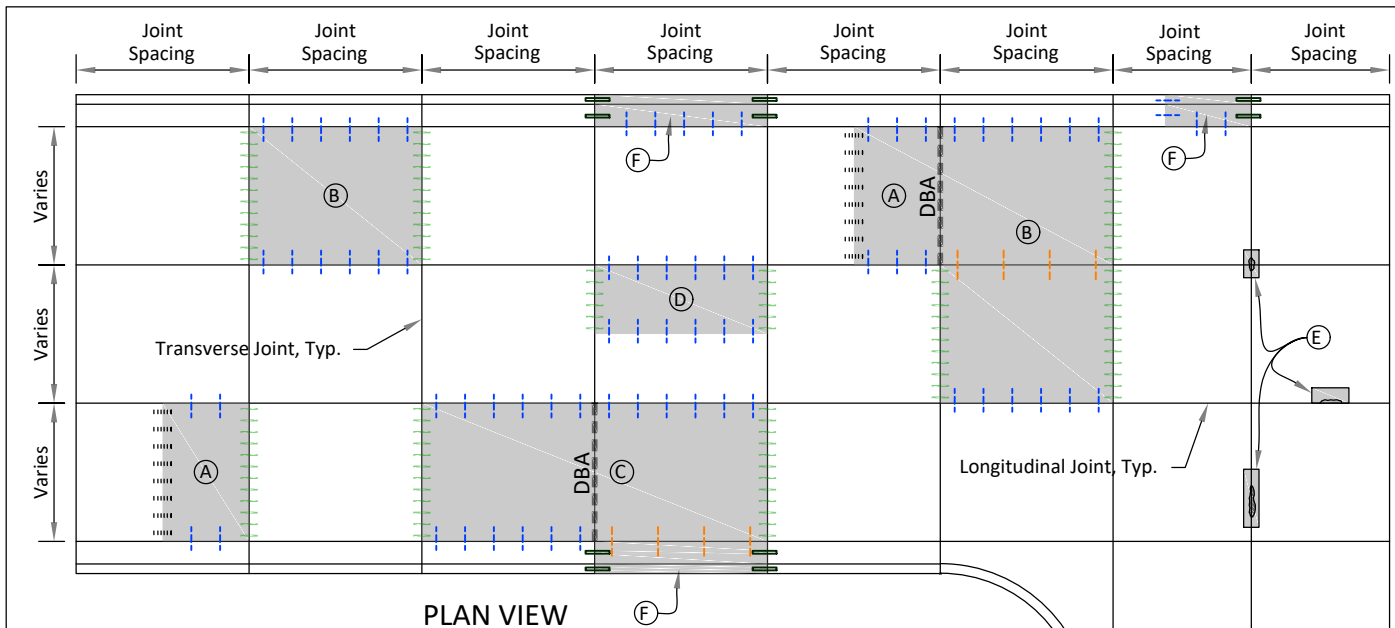
CITY OF BOX ELDER STANDARD DETAIL M08A SPALL REPAIR



DETAIL #M08A

REVISED 02/2025

DETAIL M09 - CONCRETE PAVING REPAIR



Steel Bars for Transverse Joints

- Drilled epoxy coated plain round dowel bar 12" center to center. (See chart for size.)
- Drilled epoxy coated deformed tie bar 18" center to center. (See chart for size.)

DBA Dowel Basket Assembly (See chart for size.)

Steel Bars for Longitudinal Joints

- No. 5 x 30" epoxy coated deformed tie bars. Placed in monolithic pavement centered on joint - spaced 48" center to center.
- No. 5 x 24" epoxy coated deformed tie bars. Drilled and epoxied 9" minimum depth into existing concrete - spaced 30" center to center.

Steel Bars for Curb and Gutter and Concrete Fillets

- No. 5 x 24" epoxy coated deformed tie bars. Drilled and epoxied 9" minimum depth into existing curb and gutter.
- No. 5 x 24" epoxy coated smooth dowel bars. Drilled and epoxied 9" minimum depth into existing curb and gutter.
- No. 5 x 30" epoxy coated deformed tie bars. Placed in monolithic pavement centered on joint - spaced 48" center to center.
- No. 5 x 24" epoxy coated deformed tie bars. Drilled and epoxied 9" minimum depth into existing concrete - spaced 30" center to center.
- No. 4 x 24" epoxy rebar. Drilled and epoxy 9" minimum depth into existing concrete. See Section 32.13.13.14 details for spacing.

PCC Pavement Repair Areas, Full Depth

- (A) Half panel repair, transverse. Only half panels will be allowed. See detail.
- (B) Full panel repair.
- (C) Multiple full panels. Dowel basket assemblies shall be used for new transverse joints.
- (D) Half panel repair, longitudinal. Only half panels will be allowed.

PCC Pavement Spall Repair Areas, Partial Depth

- (E) Spall repair areas. See detail.

Curb and Gutter and Concrete Fillet

- (F) See Section 32.13.13.14

PAVEMENT THICKNESS	EPOXY COATED BAR SIZE
7" to 7 1/2"	1" x 18" Smooth Bar or No. 8 Deformed Bar
8" to 10"	1 1/4" x 18" Smooth Bar or No. 9 Deformed Bar
10 1/2" to 13"	1 1/2" x 18" Smooth Bar or No. 10 Deformed Bar

Notes:

- Concrete shall be sawed full depth. Final removal limits are shown. A second saw cut is required for all concrete removals.
- Joints, both transverse and longitudinal, shall be constructed to match existing joints unless directed by the Engineer.
- Joints shall be sawed and sealed as per details.

N.T.S.

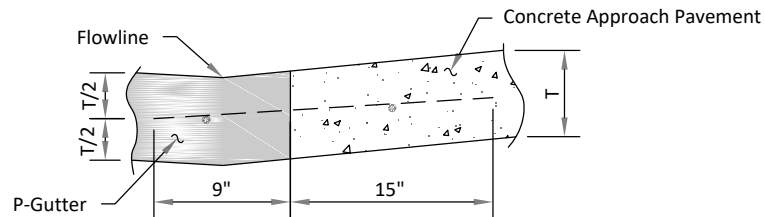
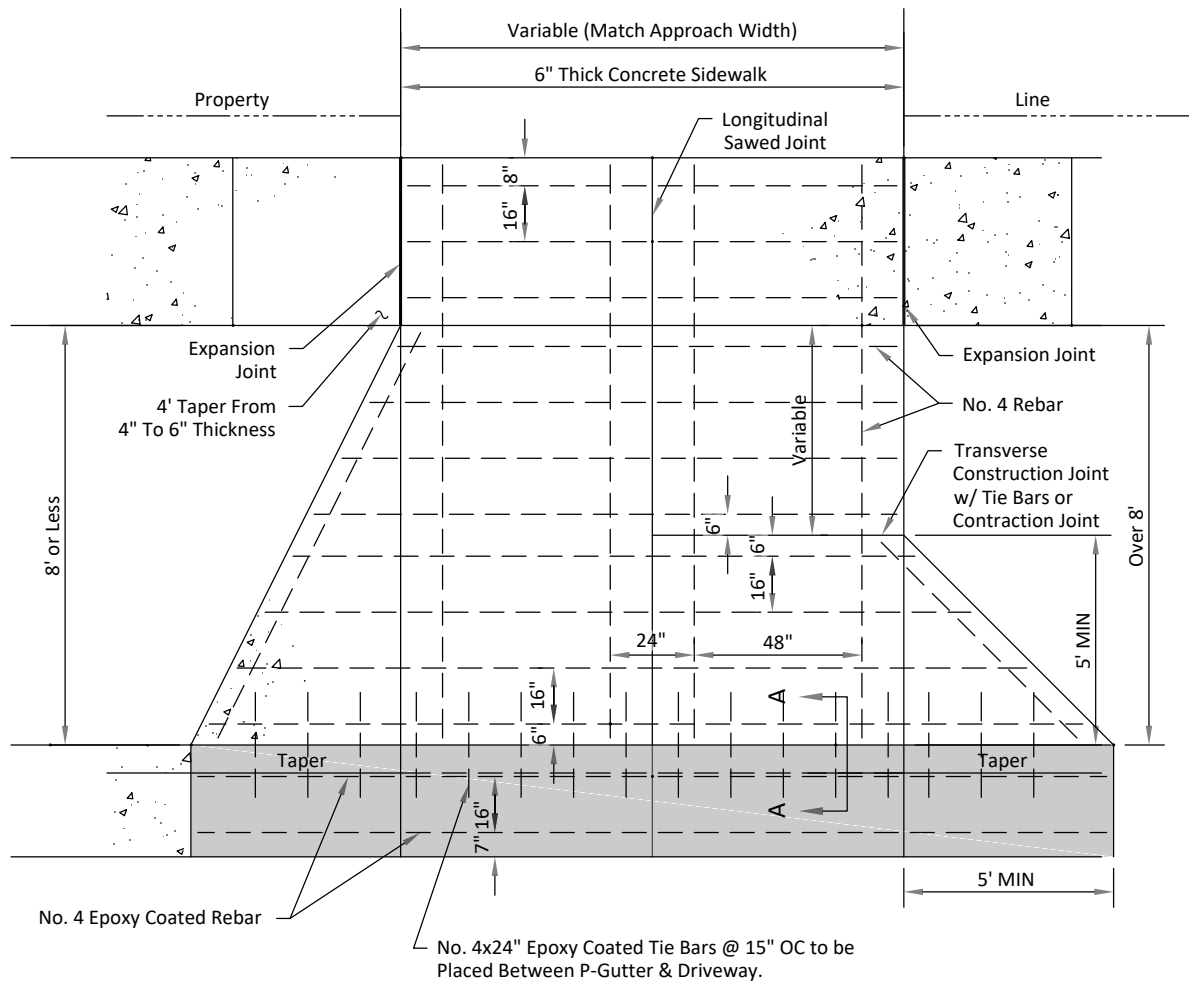
CITY OF BOX ELDER STANDARD DETAIL M09 CONCRETE PAVING REPAIR



DETAIL #M09

REVISED 02/2025

DETAIL M10 - 6" REINFORCED DRIVEWAY APPROACH AND SIDEWALK



SECTION A-A

Notes:

1. Minimum depth of granular material placed under reinforced driveway approach shall be 4".
2. When removing existing curb & gutter for new approach construction, an expansion joint shall be constructed.
3. Reinforced driveway and sidewalk shall be placed at all alley entrances and at driveways into property which is multi-family, commercial, light industrial and heavy industrial.
4. No. 4 rebar shall be placed as per detail and tied together. 2" clearance shall be maintained between bottom of concrete and rebar.

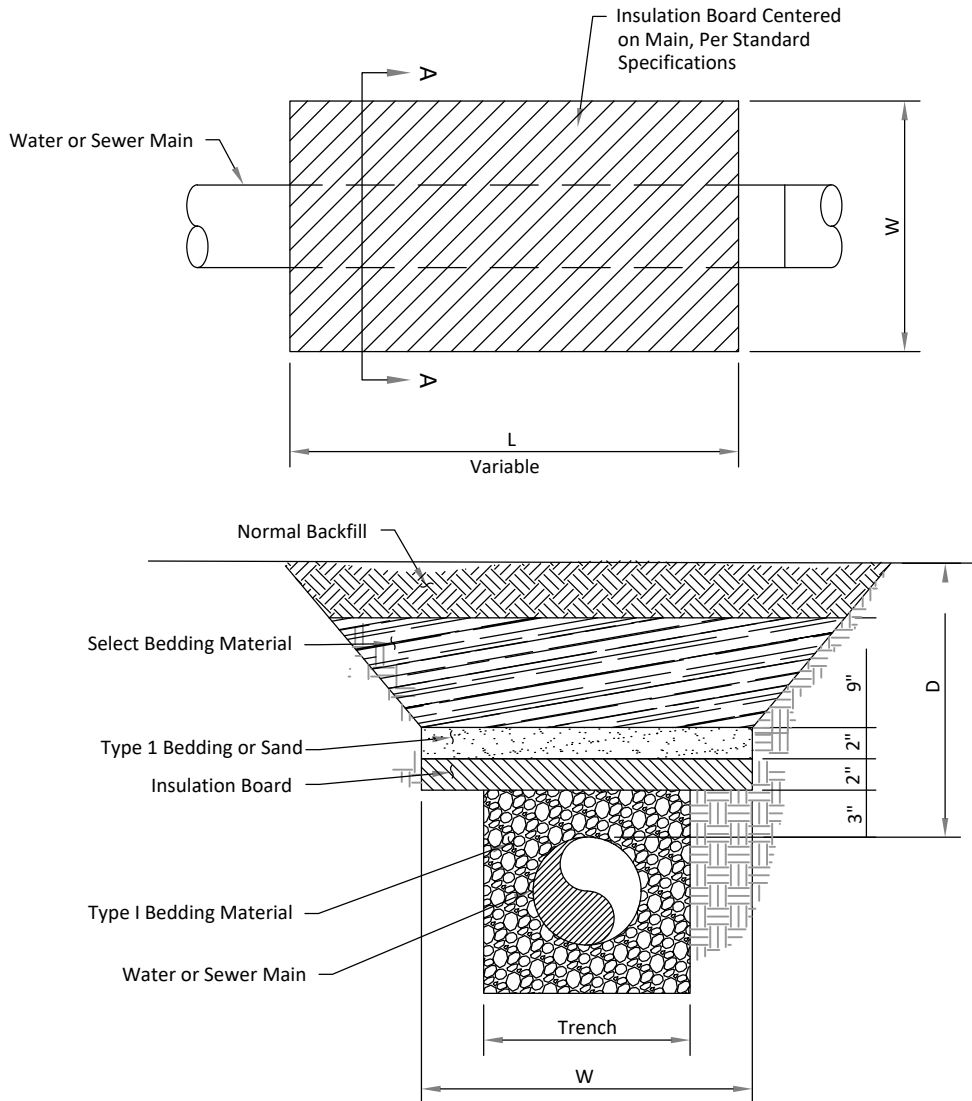
N.T.S.

CITY OF BOX ELDER

STANDARD DETAIL M10 - 6" REINFORCED
DRIVEWAY APPROACH AND SIDEWALK



DETAIL M11- WATER AND SEWER INSULATION DETAIL



INSULATION WIDTH FOR PIPE DEPTH

Water		Sewer	
D (Feet)	W (Feet)	D (Feet)	W (Feet)
3	8	2.5	8
4	6	3	6
5	4	3.5	4

Water mains 20 inch diameter and larger -
insulation not required for 5 foot bury depths.

Note:

1. The use of insulation requires prior approval by the Public Works Director.
2. Refer to 31.23.16.14

N.T.S.

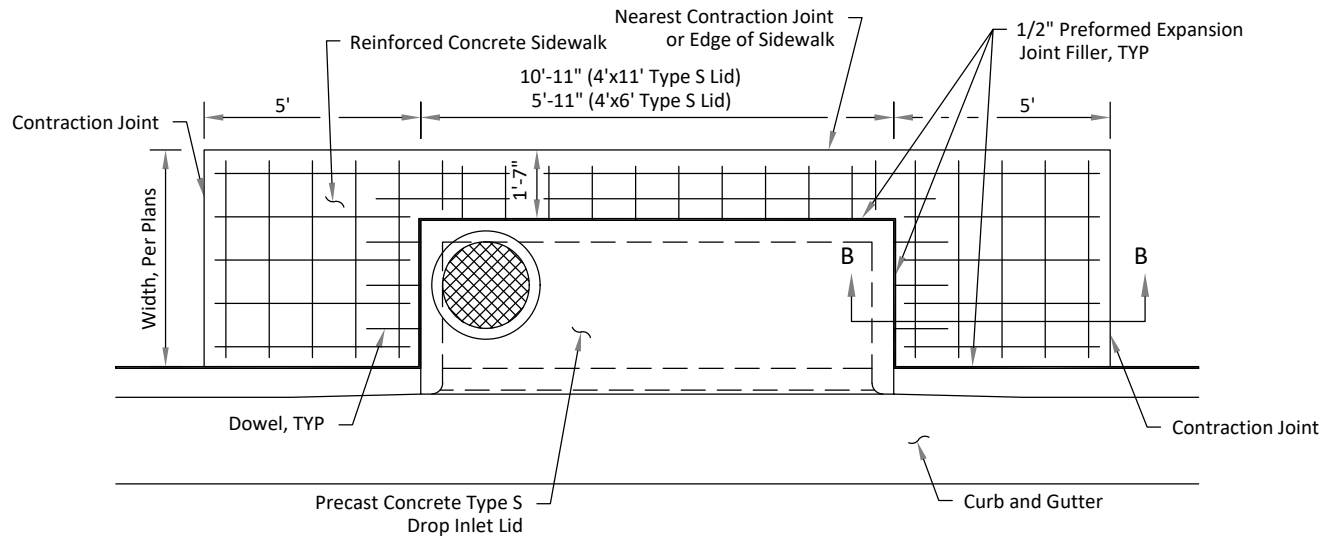
CITY OF BOX ELDER STANDARD DETAIL M11 WATER & SEWER INSULATION



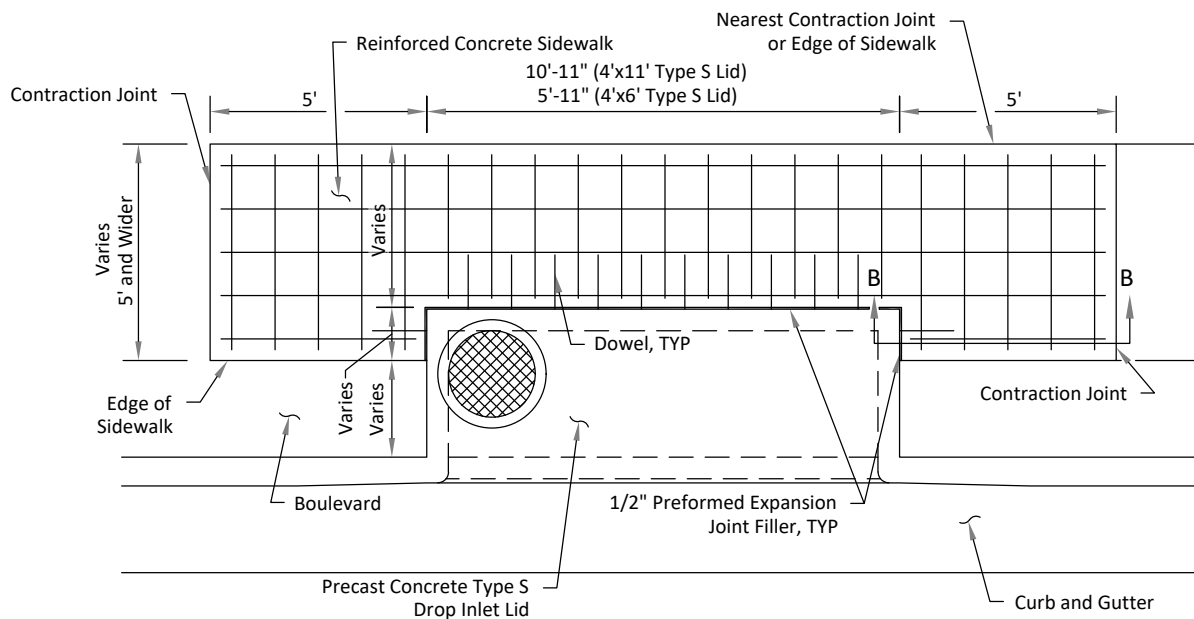
DETAIL #M11

REVISED 02/2025

DETAIL RS016- REINFORCED CONCRETE SIDEWALK ADJACENT TO PRECAST CONCRETE TYPE S DROP INLET



PLAN VIEW
(Curbside Reinforced Concrete Sidewalk)



PLAN VIEW
(Reinforced Concrete Sidewalk With Boulevard)

N.T.S.

CITY OF BOX ELDER

STANDARD DETAIL RS016 - REINFORCED CONCRETE SIDEWALK

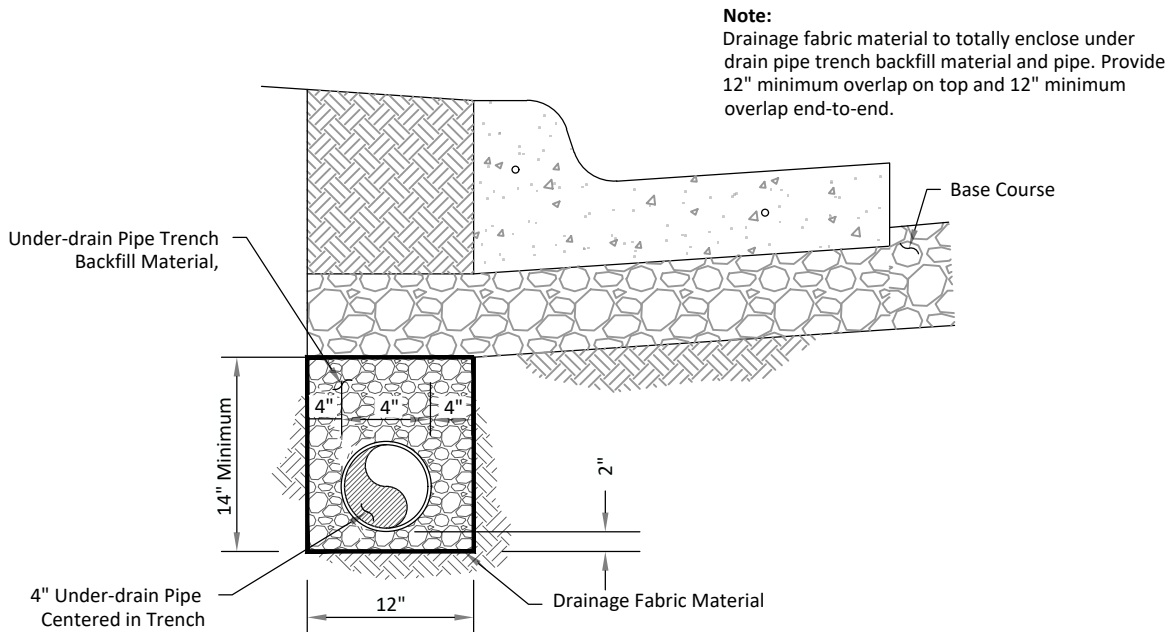
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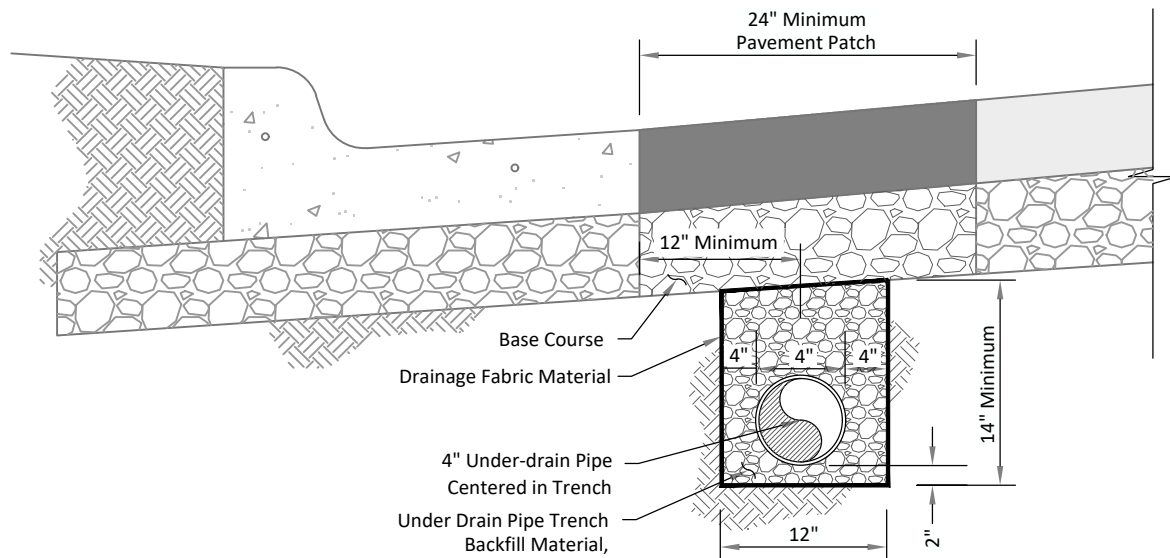
DETAIL #RS016

REVISED 02/2025

DETAIL RS061- UNDER DRAIN DETAIL



UNDER-DRAIN
NEW CURB & GUTTER

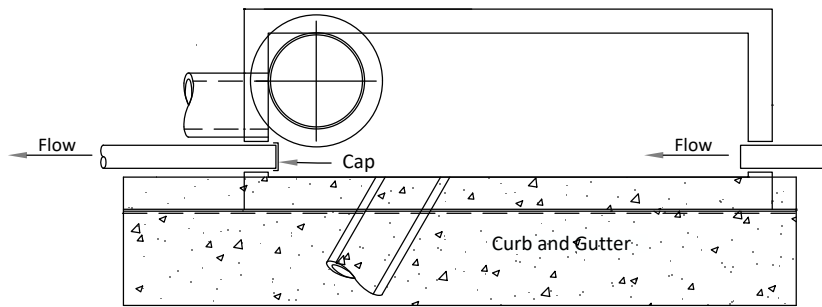


UNDER-DRAIN
EXISTING CURB & GUTTER
N.T.S.

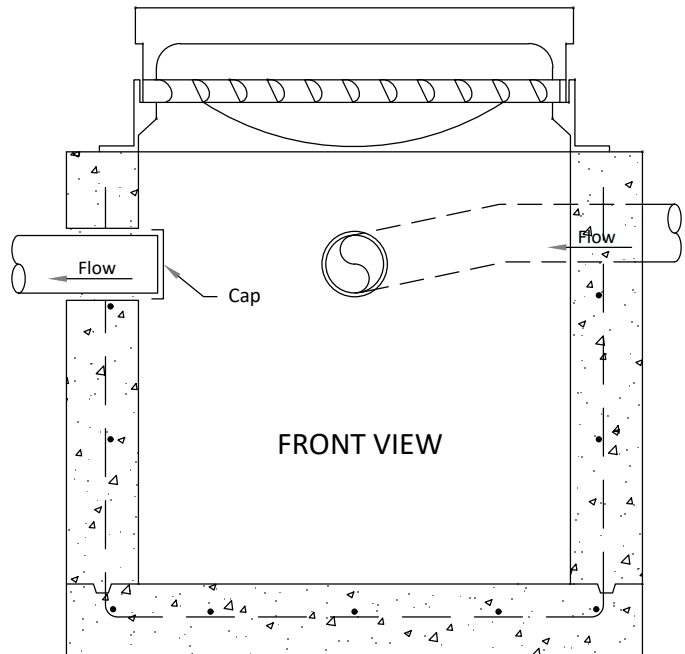
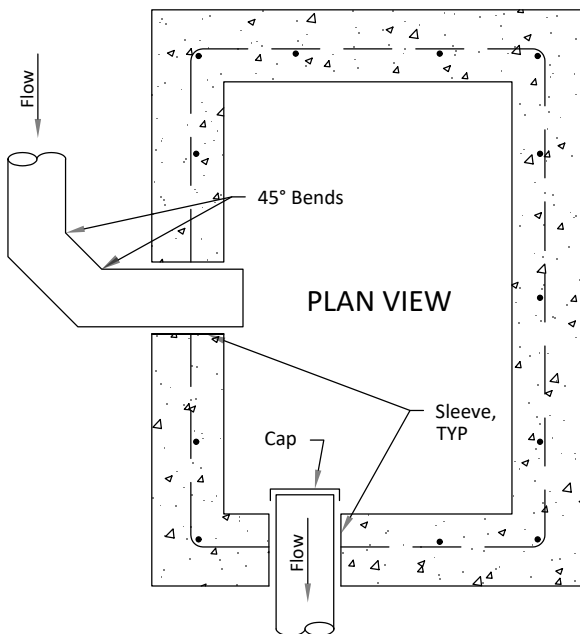
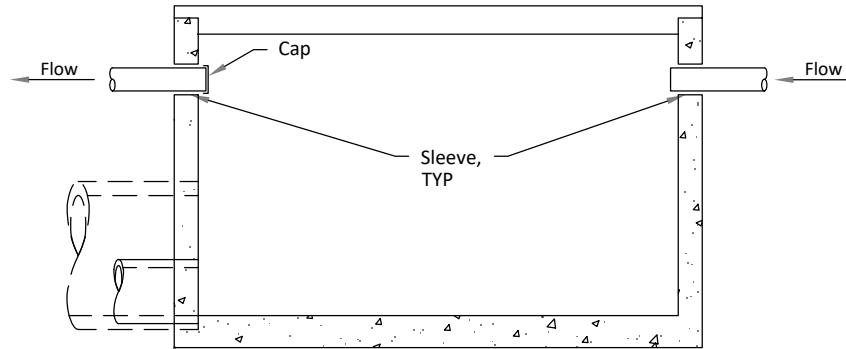
CITY OF BOX ELDER
STANDARD DETAIL RD061
UNDER DRAIN DETAIL



DETAIL RD062- UNDER DRAIN CONNECTION DETAIL



Note:
Underdrain connection into inlet
shall be made watertight using non-
shrink grout or approved equal.
(Typical All Connections)



N.T.S.

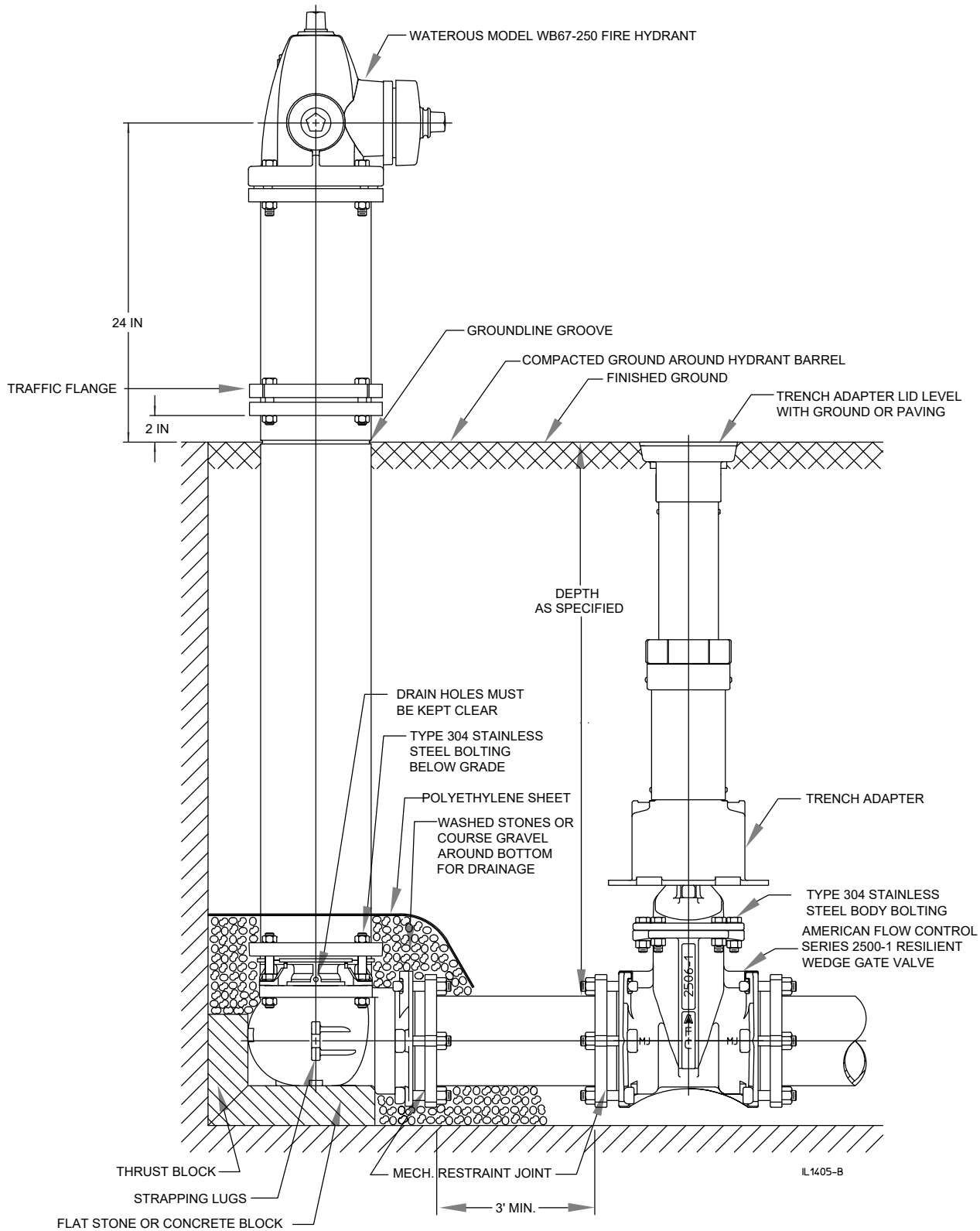
CITY OF BOX ELDER
STANDARD DETAIL RD062
UNDER DRAIN CONNECTION DETAIL



DETAIL #RD062

REVISED 02/2025

DETAIL W02-HYDRANT WITH GATE VALVE & BOX



HYDRANT WITH GATE VALVE & BOX

NOT TO SCALE

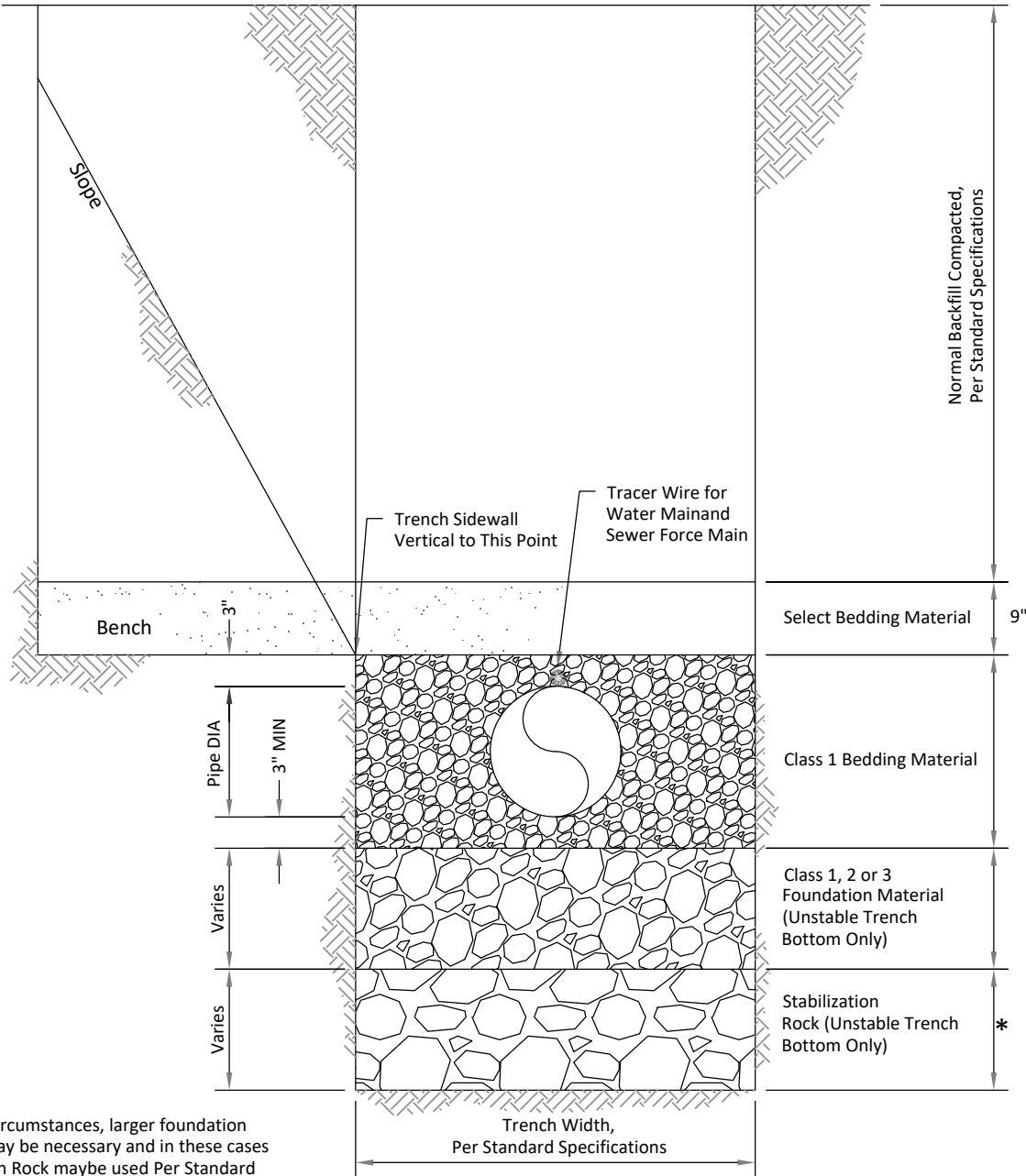
CITY OF BOX ELDER

STANDARD DETAIL W02

HYDRANT WITH GATE VALVE & BOX



DETAIL M01A - TRENCH DETAIL FOR PVC WATER AND SEWER MAINS



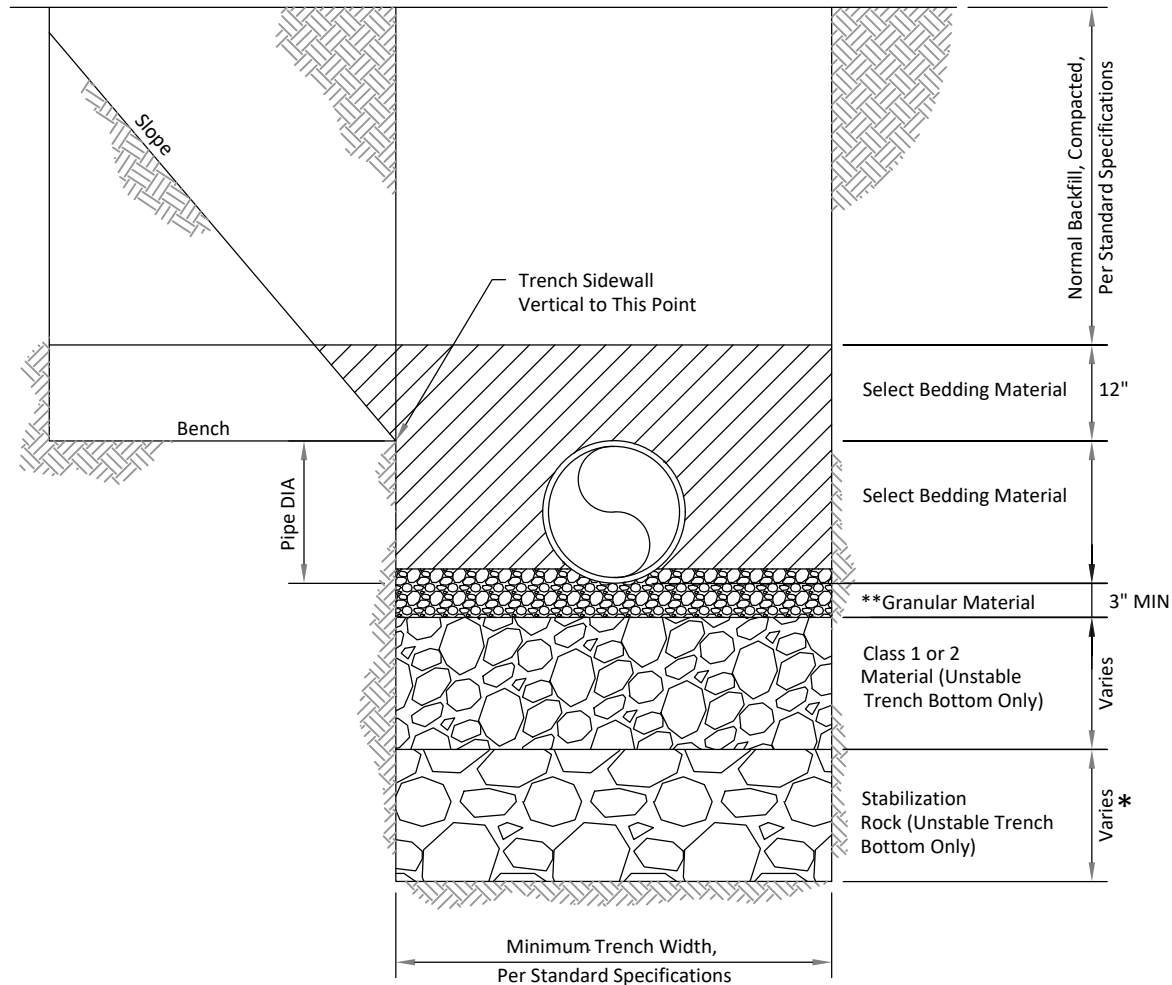
*In some circumstances, larger foundation material may be necessary and in these cases stabilization Rock maybe used Per Standard Specifications, 31.23.16.11. If Stabilization Rock is used, then a minimum 6 inches of Class 3 Foundation Material shall be placed directly above the material and prior to the placement of the Type 1 Bedding Material.

N.T.S.

CITY OF BOX ELDER
STANDARD DETAIL M01
TRENCH DETAIL FOR PVC WATER AND SEWER MAINS



DETAIL M01B - TRENCH DETAIL FOR RCP STORM SEWER MAINS



*In some circumstances, larger foundation material may be necessary and in these cases stabilization Rock maybe used Per Standard Specifications, 31.23.16.11. If Stabilization Rock is used, then a minimum 6 inches of Class 3 Foundation Material shall be placed directly above the material and prior to the placement of the granular material.

** Granular material shall be per Standard Specifications, 31.23.16. Bedding thickness below the pipe in inches shall be the outer pipe diameter (OD) in inches divided by 24 (OD/24) and no less than 3". Bedding beneath the pipe shall be in contact with the pipe for a distance no less than 1/3 the outer diameter (OD/3). The bedding shall extend the full width of the trench. Compaction above the bedding shall be per Standard Specifications, 31.23.16.13.

N.T.S.

CITY OF BOX ELDER
STANDARD DETAIL M08

TRENCH DETAIL FOR RCP STORM SEWER MAINS



DETAIL #M08

REVISED 02/2025