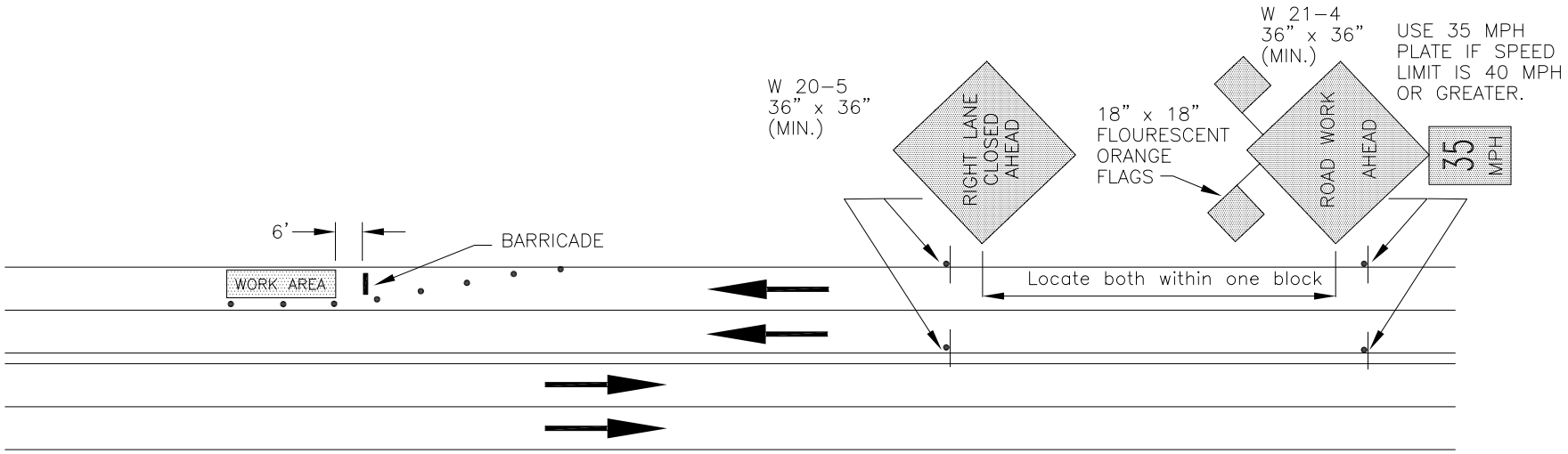


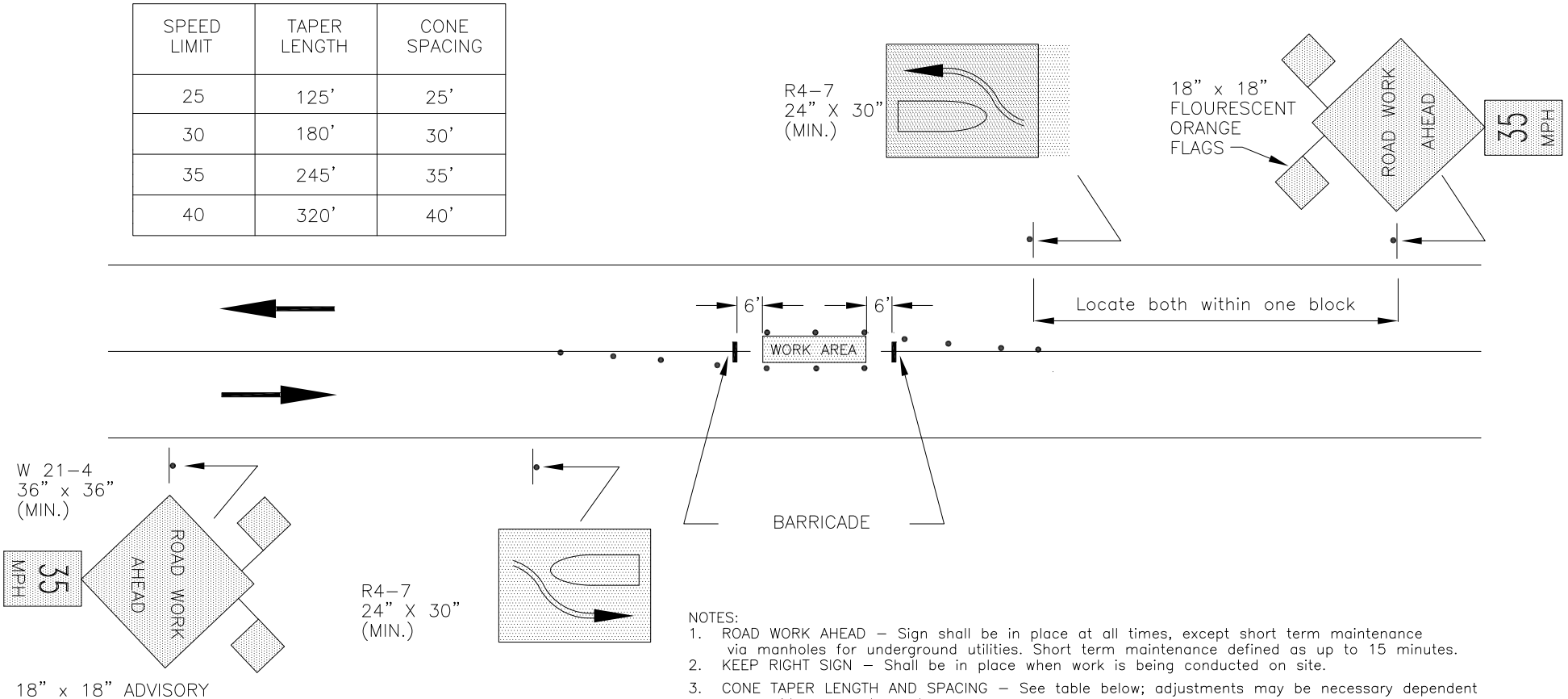
NOTES:

1. ROAD WORK AHEAD – Sign shall be in place at all times, except short term maintenance via manholes for underground utilities. Short term maintenance defined as up to 15 minutes long.
2. RIGHT LANE CLOSED SIGN – Shall be in place when work is being conducted on site; shall not be in use at unattended sites.
3. CONE TAPER LENGTH AND SPACING – See table below; adjustments may be necessary dependent upon side approaches, etc.
4. SPECIAL CONDITIONS – These standards are for short term daytime operations – if traffic control devices are needed during hours of darkness, a traffic control plan shall be submitted for approval.
5. ALL VEHICULAR EQUIPMENT – Working on the roadway or on or near the roadway shoulder shall be equipped with a rotating amber beacon mounted in a manner that assures visibility to approaching traffic at all times.
6. ALL SIGNS, DEVICES AND MOUNTS – Shall meet current North Dakota Dept. of Highways and MUTCD standards and specifications.
7. BARRICADE PLACEMENT – Barricades shall be a minimum of six (6) feet. Short term maintenance via manholes for underground utilities do not require barricades.
8. If the work area within or near an intersection affects traffic movement, additional traffic control devices may be required.

SPEED LIMIT	TAPER LENGTH	CONE SPACING
25	125'	25'
30	180'	30'
35	245'	35'
40	320'	40'

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	TRAFFIC CONTROL MINIMUM STANDARD URBAN WORK SITE 4-LANE ROAD WORK SITE CLOSING ONE LANE	NO. 01570-1 AUG. 2011

SPEED LIMIT	TAPER LENGTH	CONE SPACING
25	125'	25'
30	180'	30'
35	245'	35'
40	320'	40'



18" x 18" ADVISORY SPEED PLATE

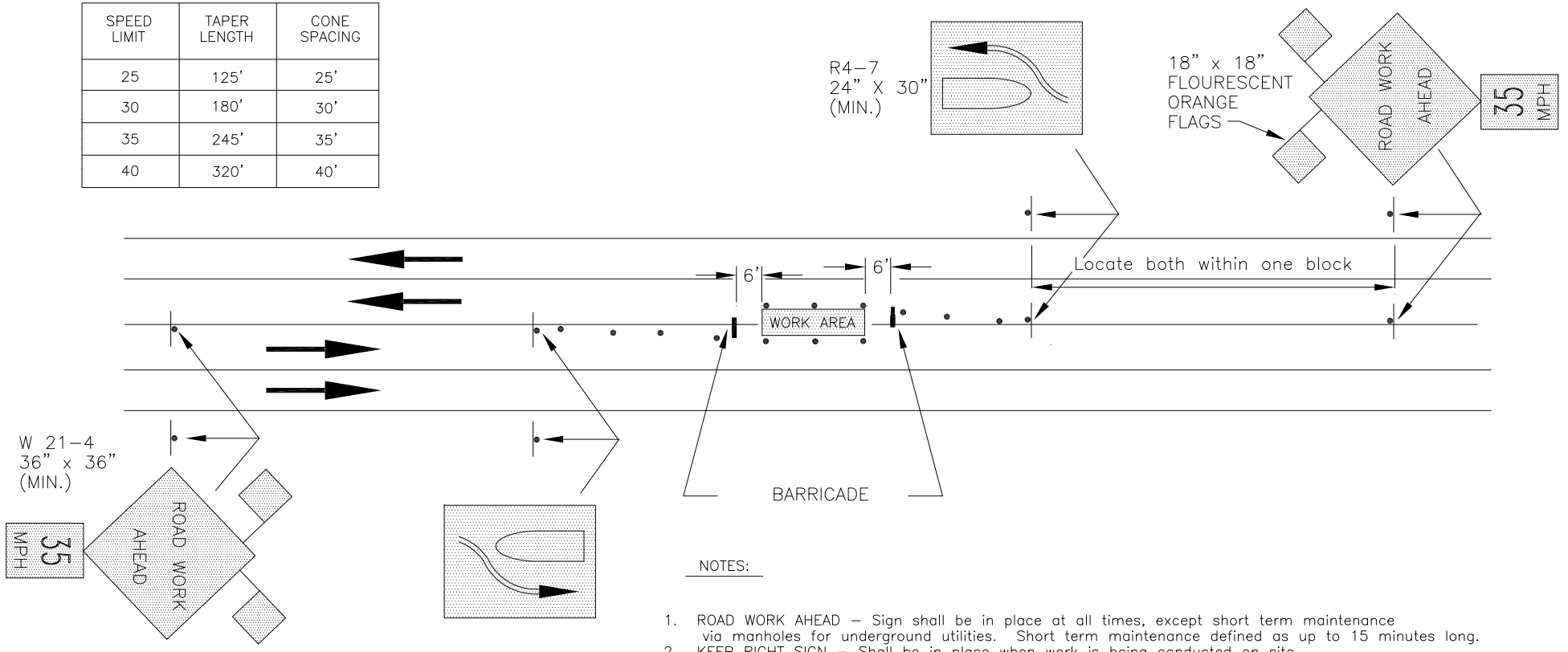
USE 35 MPH PLATE IF SPEED LIMIT IS 40 MPH OR GREATER.

NOTES:

1. ROAD WORK AHEAD – Sign shall be in place at all times, except short term maintenance via manholes for underground utilities. Short term maintenance defined as up to 15 minutes.
2. KEEP RIGHT SIGN – Shall be in place when work is being conducted on site.
3. CONE TAPER LENGTH AND SPACING – See table below; adjustments may be necessary dependent upon side approaches, etc.
4. SPECIAL CONDITIONS – These standards are for short term daytime operations – if traffic control devices are needed during hours of darkness, a traffic control plan shall be submitted for approval.
5. ALL VEHICULAR EQUIPMENT – Working on the roadway or on or near the roadway shoulder shall be equipped with a rotating amber beacon mounted in a manner that assures visibility to approaching traffic at all times.
6. ALL SIGNS, DEVICES AND MOUNTS – Shall meet current North Dakota Dept. of Highways and MUTCD standards and specifications.
7. BARRICADE PLACEMENT – Barricades shall be a minimum of six (6) feet. Short term maintenance via manholes for underground utilities do not require barricades.
8. If the work area within or near an intersection affects traffic movement, additional traffic control devices may be required.

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	TRAFFIC CONTROL MINIMUM STANDARD URBAN WORK SITE 2-LANE WORK SITE ON CENTERLINE	NO. 01570-2 AUG. 2011

SPEED LIMIT	TAPER LENGTH	CONE SPACING
25	125'	25'
30	180'	30'
35	245'	35'
40	320'	40'



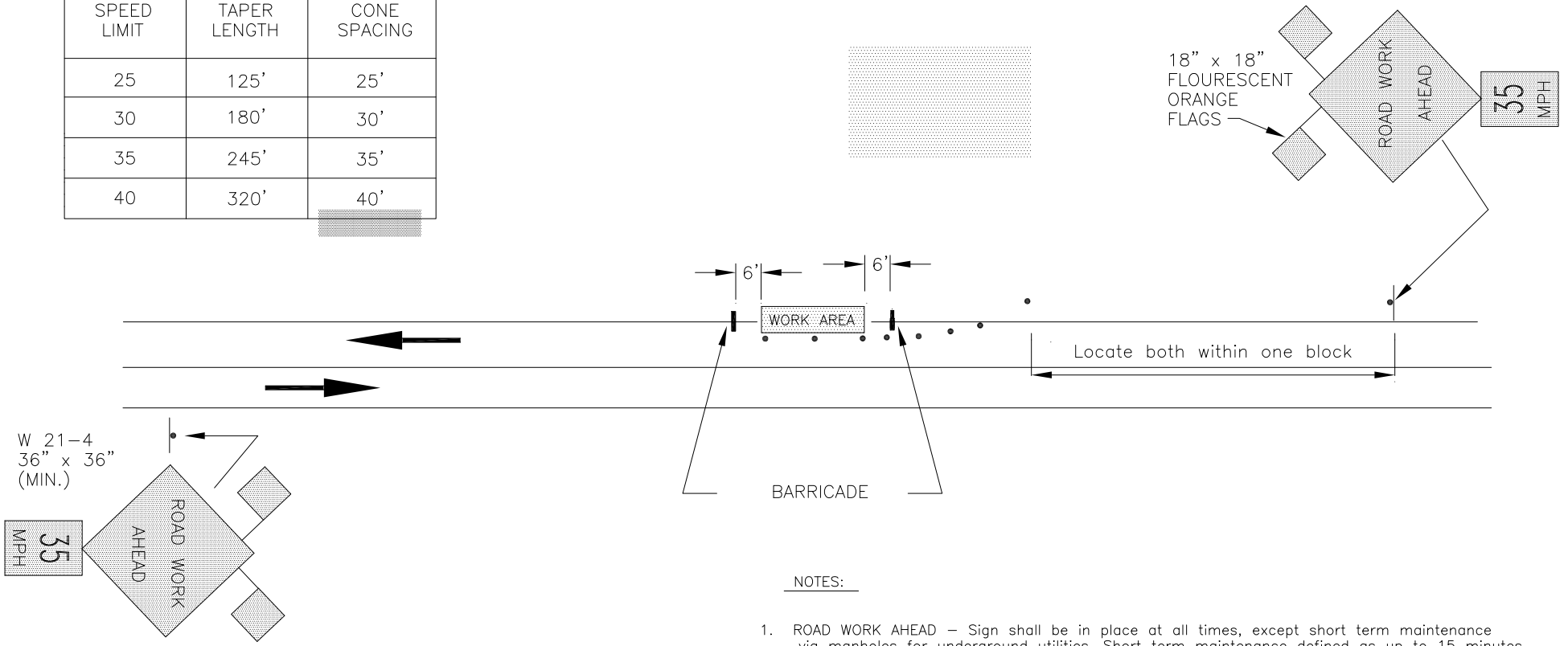
USE 35 MPH PLATE IF SPEED LIMIT IS 40 MPH OR GREATER.

NOTES:

1. ROAD WORK AHEAD – Sign shall be in place at all times, except short term maintenance via manholes for underground utilities. Short term maintenance defined as up to 15 minutes long.
2. KEEP RIGHT SIGN – Shall be in place when work is being conducted on site.
3. CONE TAPER LENGTH AND SPACING – See table below; adjustments may be necessary dependent upon side approaches, etc.
4. SPECIAL CONDITIONS – These standards are for short term daytime operations – if traffic control devices are needed during hours of darkness, a traffic control plan shall be submitted for approval.
5. ALL VEHICULAR EQUIPMENT – Working on the roadway or on or near the roadway shoulder shall be equipped with a rotating amber beacon mounted in a manner that assures visibility to approaching traffic at all times.
6. ALL SIGNS, DEVICES AND MOUNTS – Shall meet current North Dakota Dept. of Highways and MUTCD standards and specifications.
7. BARRICADE PLACEMENT – Barricades shall be a minimum of six (6) feet. Short term maintenance via manholes for underground utilities do not require barricades.
8. If the work area within or near an intersection affects traffic movement, additional traffic control devices may be required.

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	TRAFFIC CONTROL MINIMUM STANDARD URBAN WORK SITE 4-LANE WORK SITE ON CENTERLINE, PARTIALLY BLOCKING INSIDE LANES	NO. 01570-3 AUG. 2011

SPEED LIMIT	TAPER LENGTH	CONE SPACING
25	125'	25'
30	180'	30'
35	245'	35'
40	320'	40'



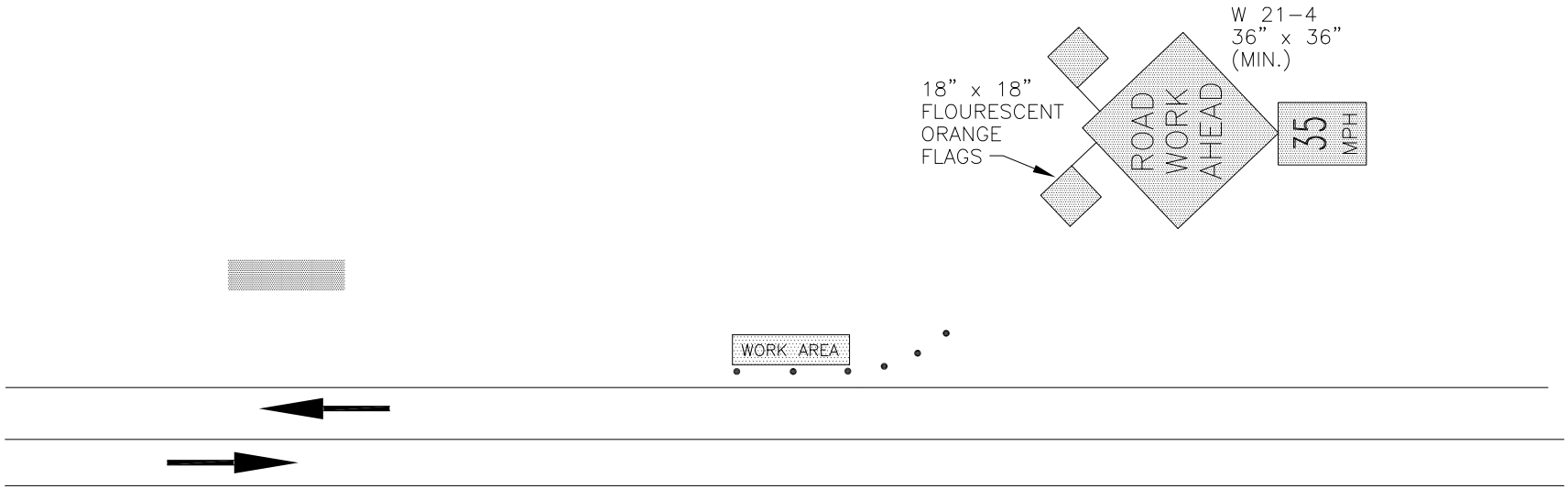
USE 35 MPH PLATE IF SPEED LIMIT IS 40 MPH OR GREATER.

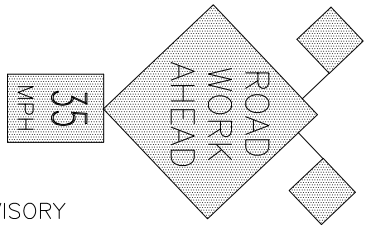
NOTE: IF REMAINING ROADWAY WIDTH IS INADEQUATE TO ALLOW TWO-WAY TRAFFIC, USE FLAGPERSON (SEE DRAWING NO. 6)

NOTES:

1. ROAD WORK AHEAD – Sign shall be in place at all times, except short term maintenance via manholes for underground utilities. Short term maintenance defined as up to 15 minutes.
2. The lane encroachment should either permit a remaining lane width of 10 feet, or the lane should be closed.
3. CONE TAPER LENGTH AND SPACING – See table below; adjustments may be necessary dependent upon side approaches, etc.
4. SPECIAL CONDITIONS – These standards are for short term daytime operations – if traffic control devices are needed during hours of darkness, a traffic control plan shall be submitted for approval.
5. ALL VEHICULAR EQUIPMENT – Working on the roadway or on or near the roadway shoulder shall be equipped with a rotating amber beacon mounted in a manner that assures visibility to approaching traffic at all times.
6. ALL SIGNS, DEVICES AND MOUNTS – Shall meet current North Dakota Dept. of Highways and MUTCD standards and specifications.
7. BARRICADE PLACEMENT – Barricades shall be a minimum of six (6) feet. Short term maintenance via manholes for underground utilities do not require barricades.
8. If the work area within or near an intersection affects traffic movement, additional traffic control devices may be required.

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	TRAFFIC CONTROL MINIMUM STANDARD URBAN WORK SITE 2-LANE ROAD, 1 LANE PARTIALLY OR FULLY CLOSED BY WORK AREA	NO. 01570-4 AUG. 2011



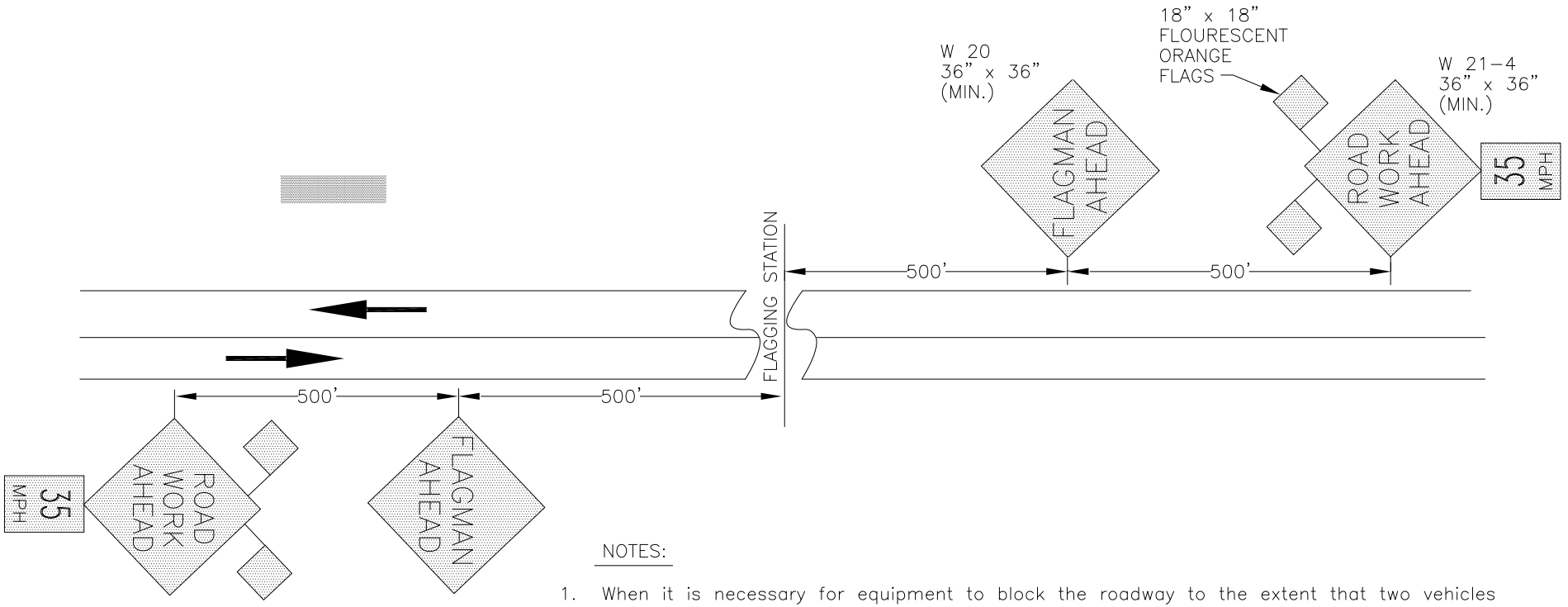


18" x 18" ADVISORY
SPEED PLATE

NOTES:

1. Sign assembly shall be displayed at a distance of not more than 1000 feet nor less than 750 feet from end of work site.
2. SPECIAL CONDITIONS – These standards are for short term daytime operations – if traffic control devices are needed during hours of darkness, a traffic control plan shall be submitted for approval.
3. ALL VEHICULAR EQUIPMENT – Working on the roadway or on or near the roadway shoulder shall be equipped with a rotating amber beacon mounted in a manner that assures visibility to approaching traffic at all times.
4. ALL SIGNS, DEVICES AND MOUNTS – Shall meet current North Dakota Dept. of Highways and MUTCD standards and specifications.

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	TRAFFIC CONTROL MINIMUM STANDARD RURAL WORK SITE WORK ADJACENT TO THE PRESENT TRAVELED WAY (PTW)	NO. 01570-5 AUG. 2011

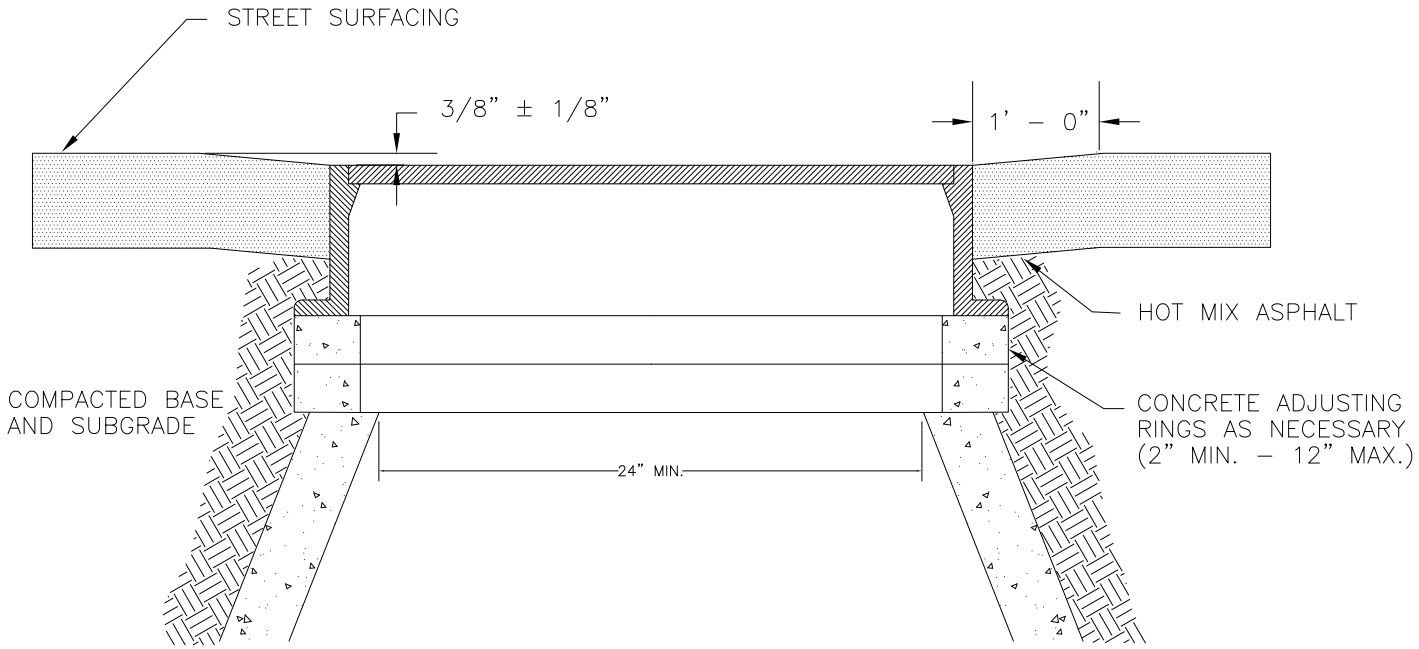


18" x 18" ADVISORY
SPEED PLATE

NOTES:

1. When it is necessary for equipment to block the roadway to the extent that two vehicles cannot pass on the roadway at the work site, flagmen, with appropriate warning signs shall be used.
2. FLAGGING – Any person engaged in flagging shall conform to the criteria set forth in the pamphlet "INSTRUCTIONS TO FLAGPERSONS" prepared by the North Dakota Dept. of Highways.
3. SPECIAL CONDITIONS – These standards are for short term daytime operations – if traffic control devices are needed during hours of darkness, a traffic control plan shall be submitted for approval.
4. ALL VEHICULAR EQUIPMENT – Working on the roadway or on or near the roadway shoulder shall be equipped with a rotating amber beacon mounted in a manner that assures visibility to approaching traffic at all times.
5. ALL SIGNS, DEVICES AND MOUNTS – Shall meet current North Dakota Dept. of Highways and MUTCD standards and specifications.

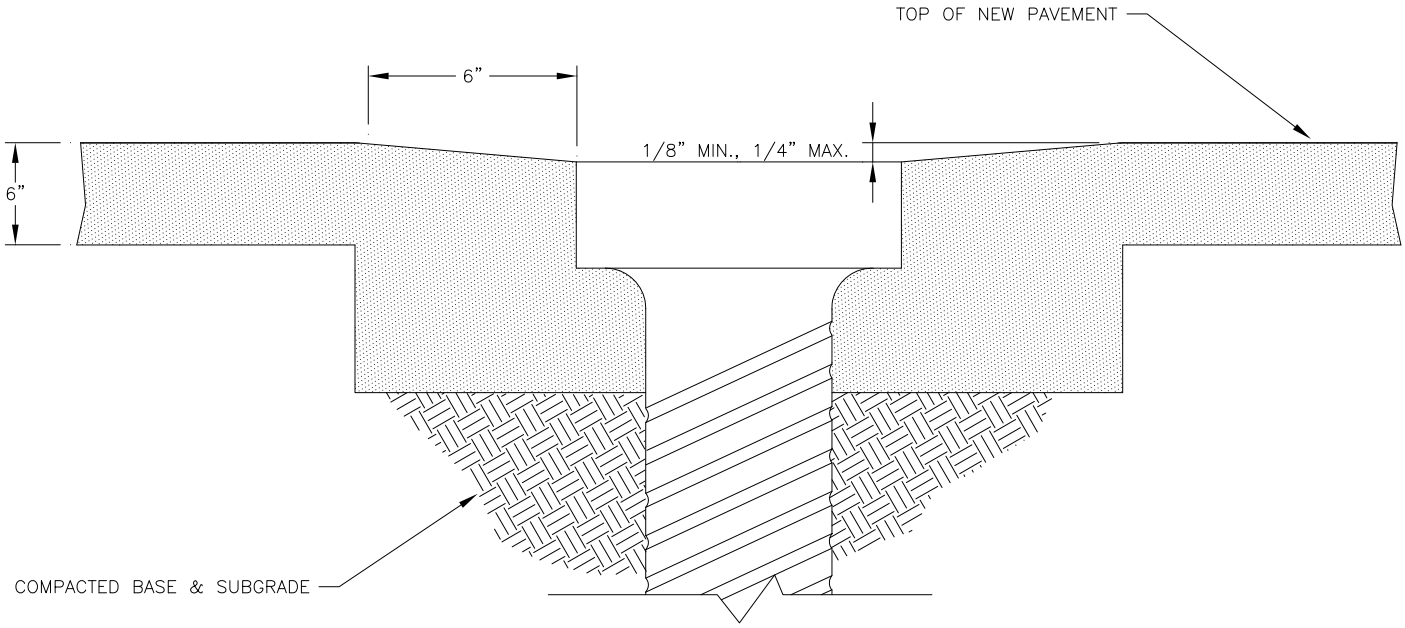
CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	TRAFFIC CONTROL MINIMUM STANDARD RURAL WORK SITE UTILITY WORK ON OR ACROSS THE PRESENT TRAVELED WAY (PTW)	NO. 01570-6 AUG. 2011



NOTES:

1. Adjust manholes upward with adjusting rings under frame.
2. Adjust manhole downward by removing cone and barrel sections as necessary and replacing with sections of length required to match grade.
3. Slope manhole frame as required to match slope of street.
4. Final manhole adjustment shall be made before paving.
5. All joints between manhole sections, top cone, adjusting rings, and manhole ring shall be watertight. Joint material shall be "Ram–Nek" or approved equal.
6. Manhole ring and cover shall be adjusted to match final crown and grade of street. Use Anderson Precast or approved equal concrete angled adjustment rings to obtain required angle.
7. Manhole ring and cover: use MCI 305 frame, 305A cover, or IFCO 772 frame, 772–B cover

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	MANHOLE ADJUSTMENT DETAIL	NO. 02213–1 AUG. 2011



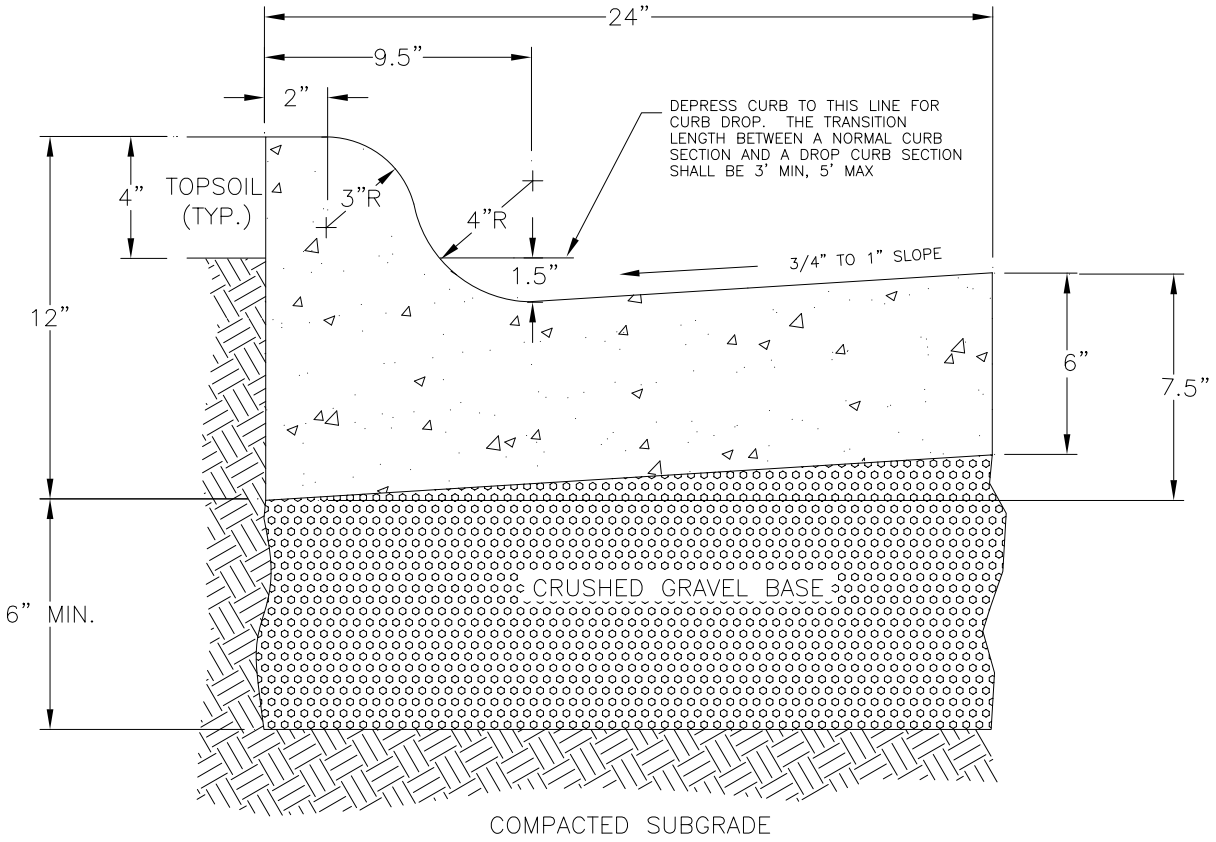
NOTES:

1. Adjust water valves upward or downward as required. Final adjustment shall be made after paving and before seal coating.

2. Model No. 69 Tyler Corporation adjustable screw–type risers may be used to raise or adjust existing valve boxes only.

3. Valve box adjustment shown is designated as Type II water valve adjustment. Type I water valve adjustment is similar except with a concrete collar.

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	WATER VALVE ADJUSTMENT DETAIL	NO. 02213–2 AUG. 2011



NOTES:

1. Subgrade or base course compaction shall conform to section 02230 (M.P.W. Specs., 1996 ed.)

2. Contraction joints shall be placed at 10' intervals and shall have a minimum depth of 3/4" and minimum width of 1/8".

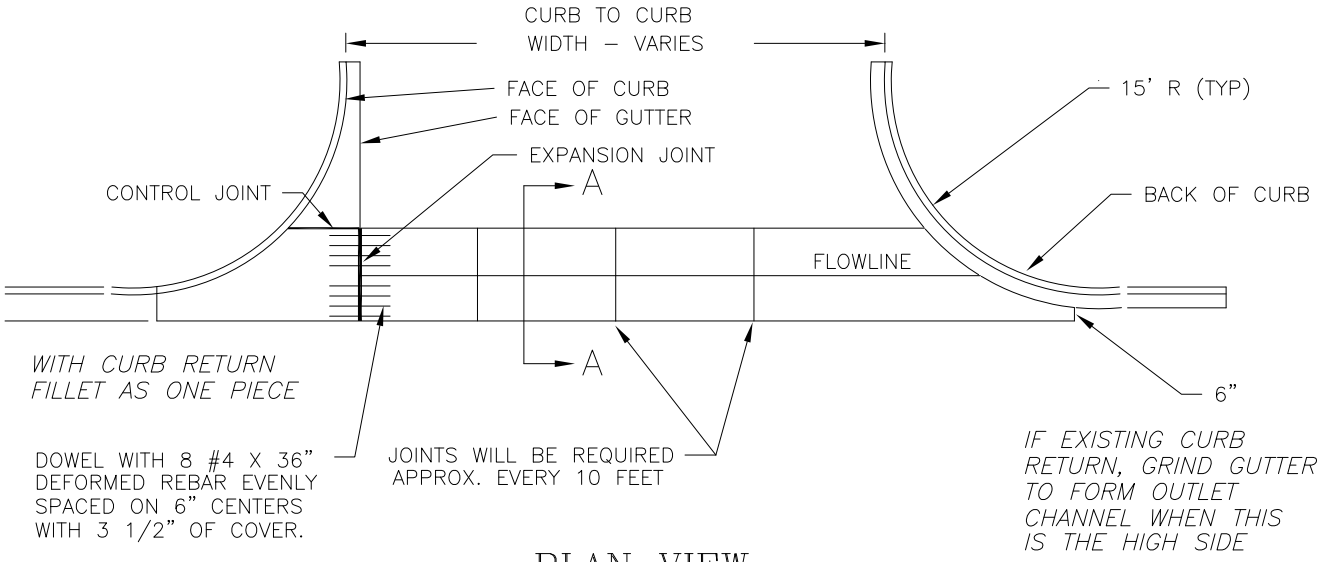
3. 1/2" expansion joint material shall be placed at all P.C.s, P.T.s, curb returns and at not more than 300' intervals. The expansion material shall extend through the full depth of the curb and gutter.

4. No curb and gutter shall be placed without a final form inspection by the City Engineer or his representative.

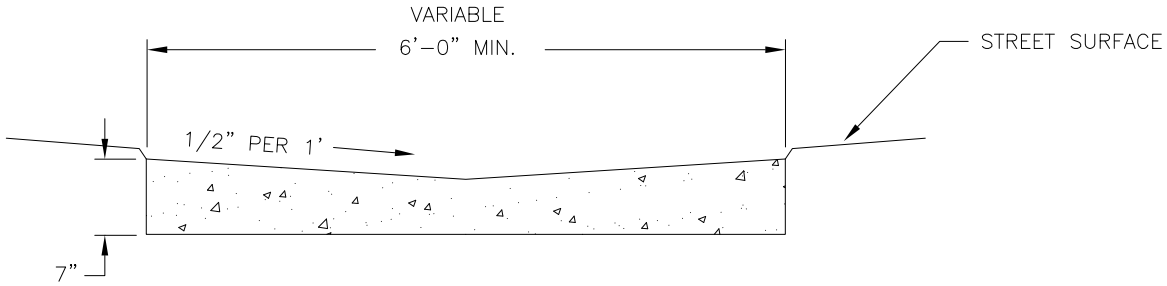
5. Concrete shall be Class M–4000.

6. Crushed gravel base shall meet the requirements of Section 02235 (MPW SPECS, 1996 ed.)

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	INTEGRAL CONCRETE CURB & GUTTER	NO. 02528–1 AUG. 2011



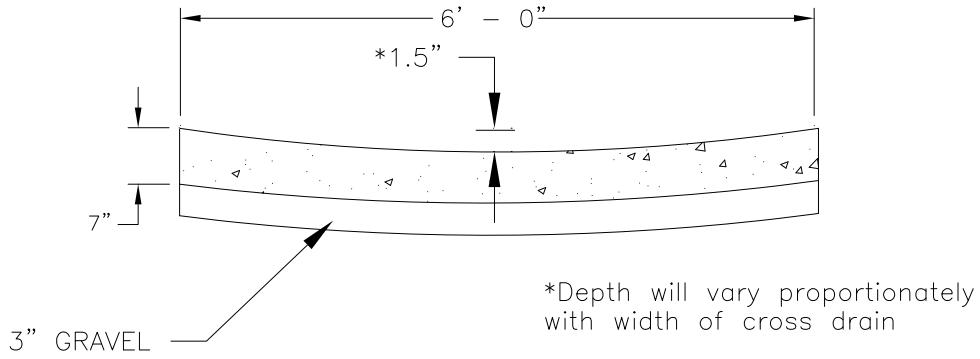
PLAN VIEW

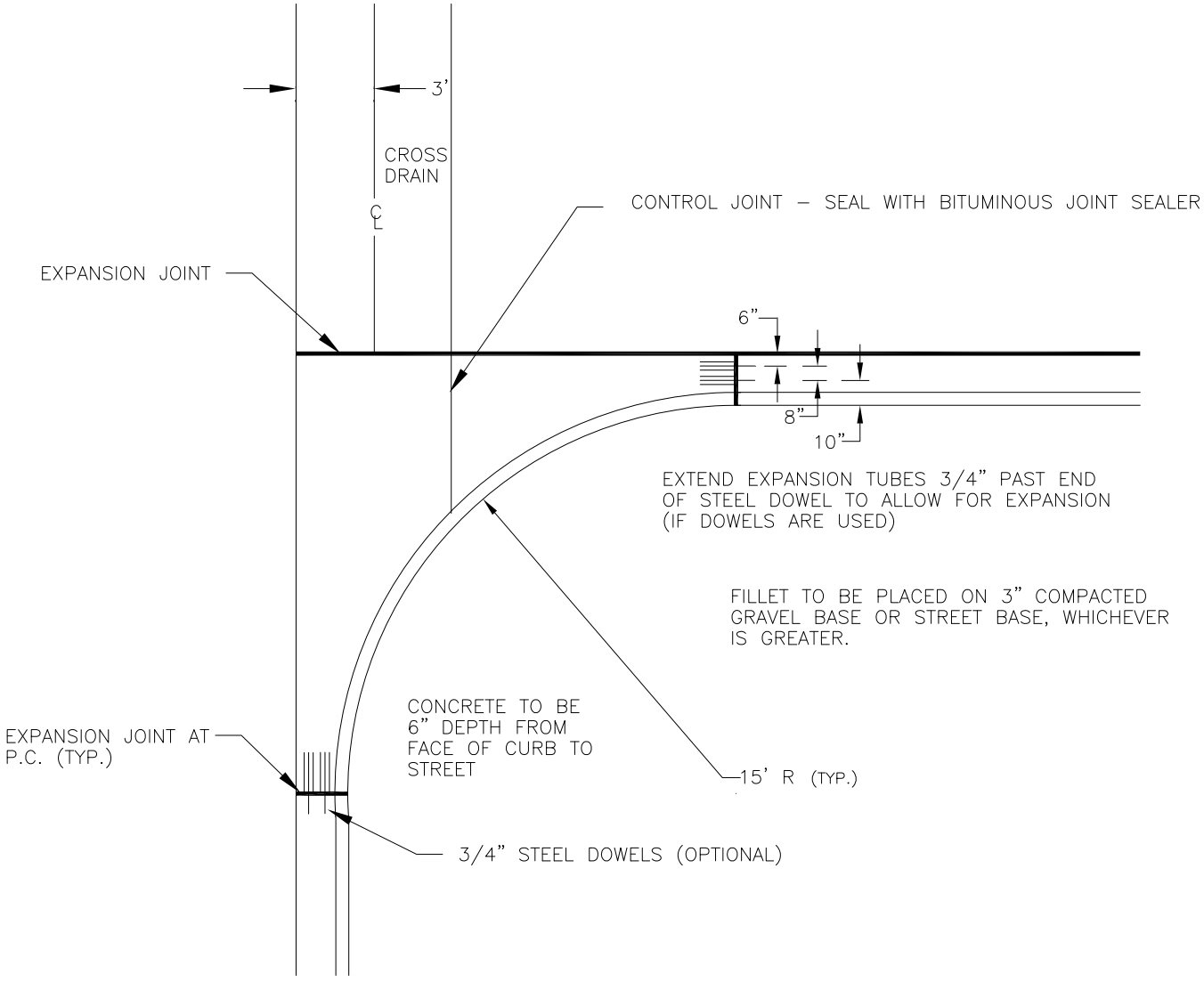


SECTION A–A

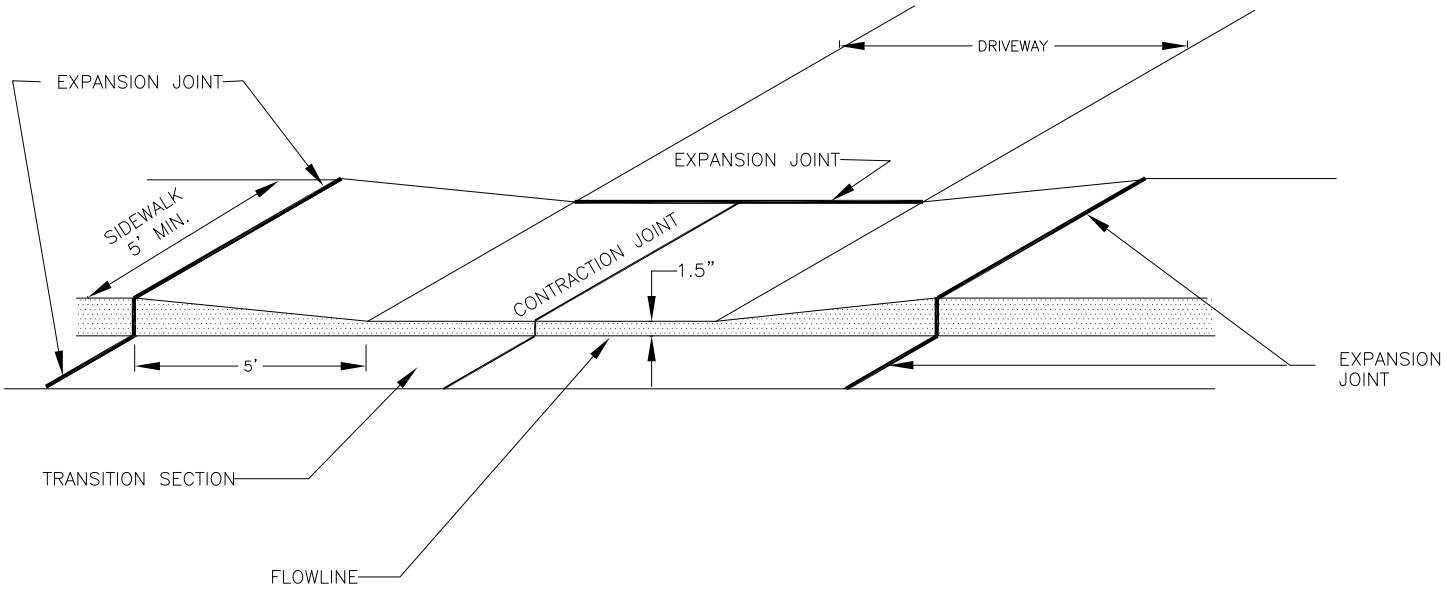
NOTES: THE WIDTH WITH PROPORTIONAL INVERT MAY VARY TO SATISFY THE DESIGN REQUIREMENTS OF INDIVIDUAL APPLICATIONS. FINISHED STREET SURFACE TO BE 1/8" TO 1/4" ABOVE EDGES OF DOUBLE GUTTER.

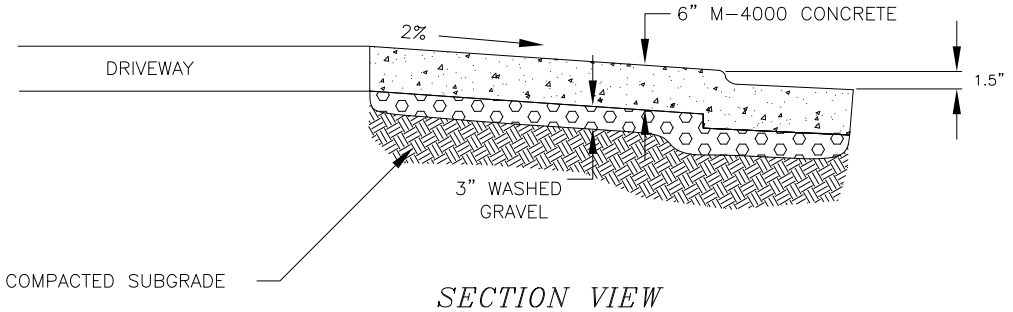
CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	DOUBLE GUTTER DETAIL FOR STREET INTERSECTION	NO. 02529–1 AUG. 2011





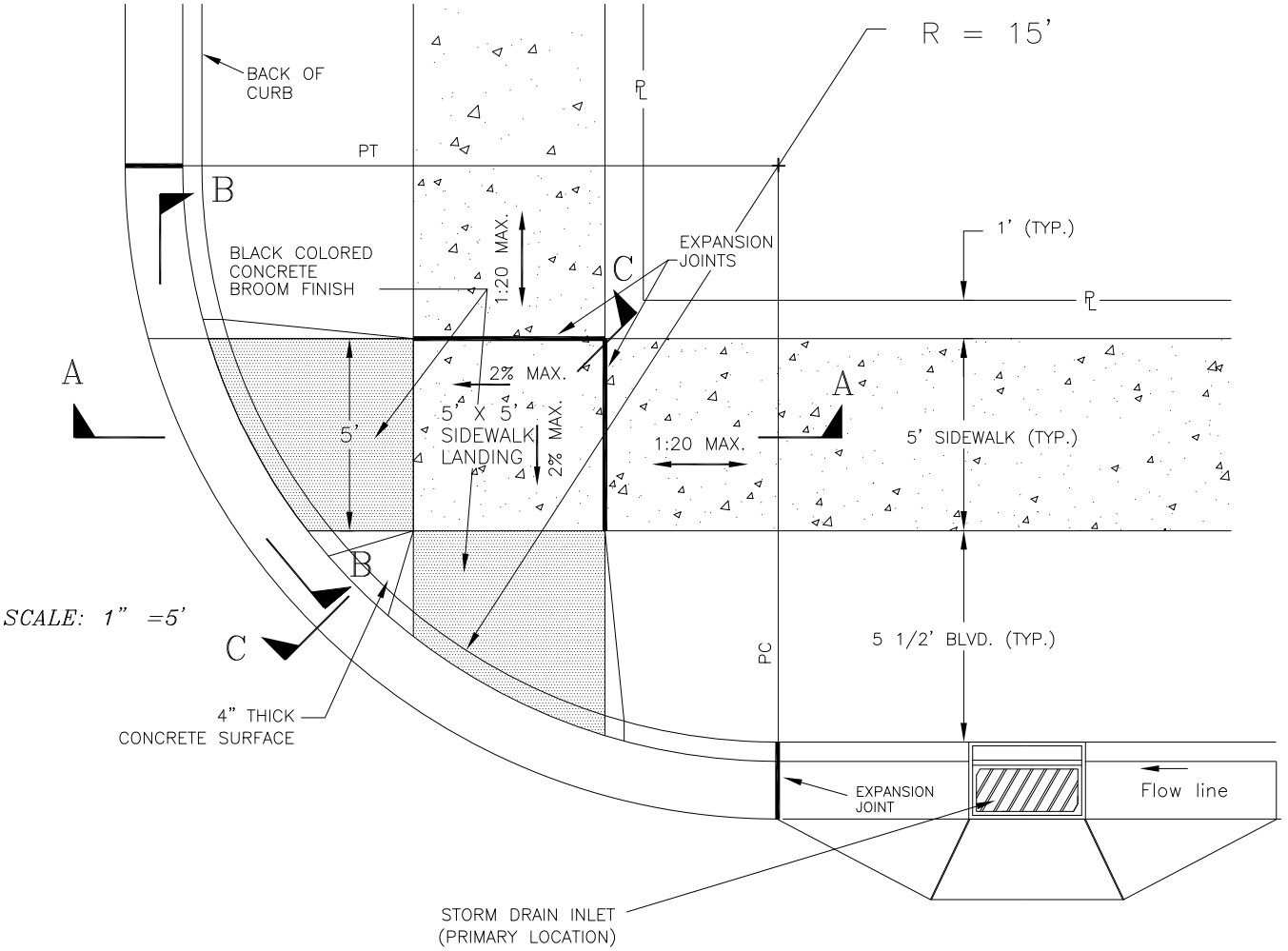
CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	STANDARD FILLET	NO. 02529–2 AUG. 2011

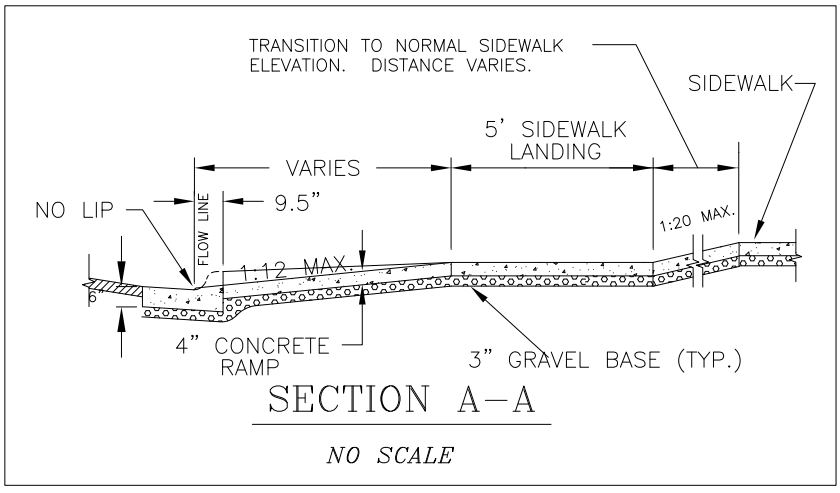




SECTION VIEW

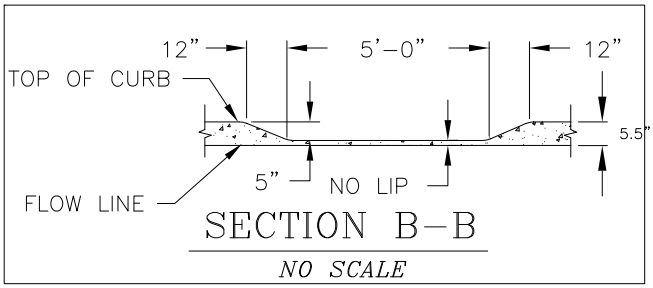
CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	DRIVEWAY APPROACH WITH SIDEWALK ADJACENT TO CURB	NO. 02529-5 AUG. 2011





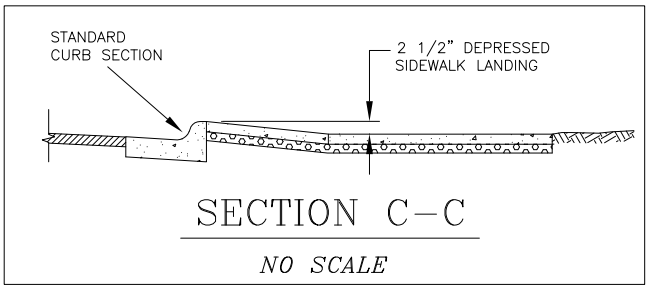
SECTION A–A

NO SCALE



SECTION B–B

NO SCALE



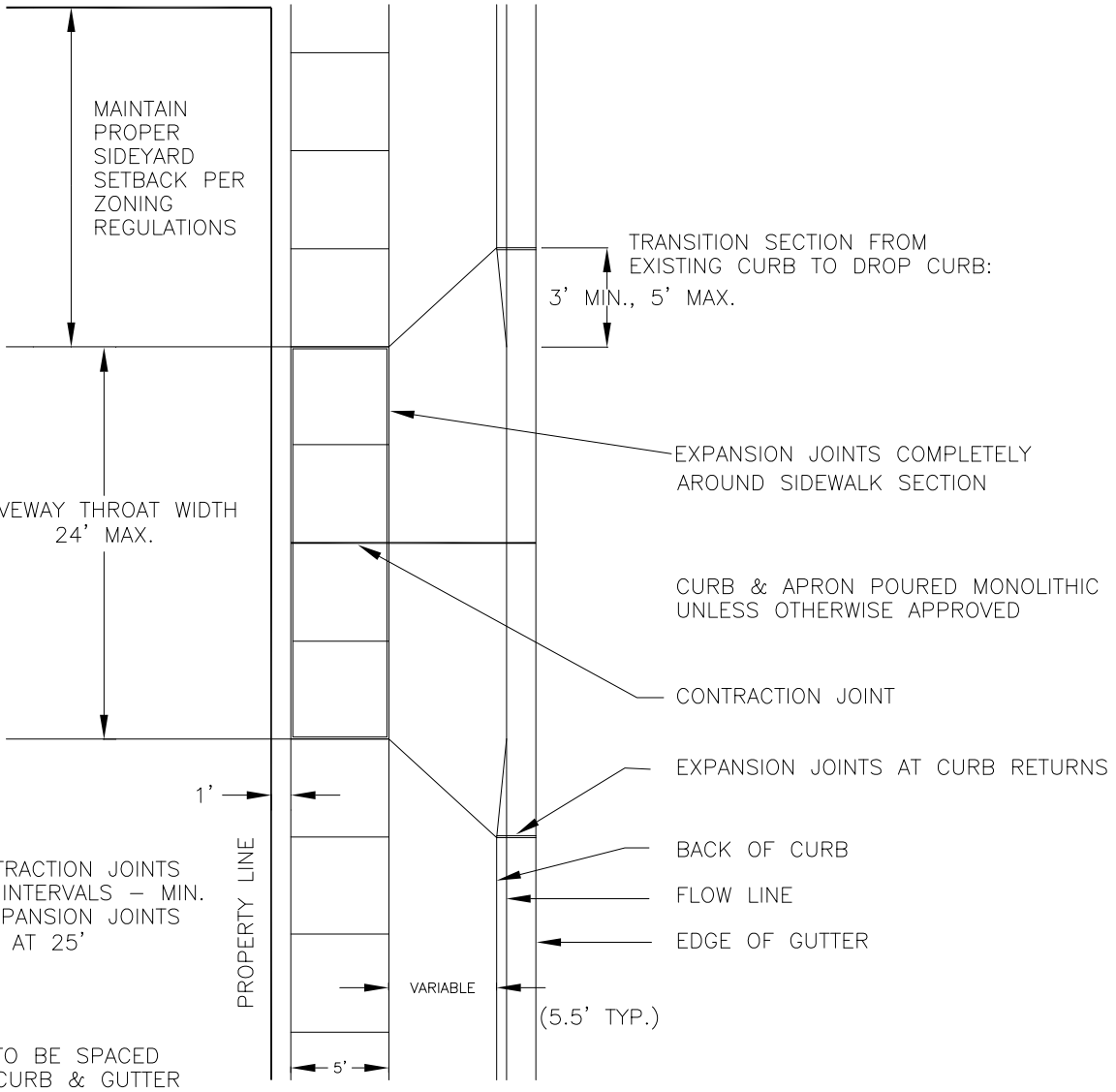
SECTION C–C

NO SCALE

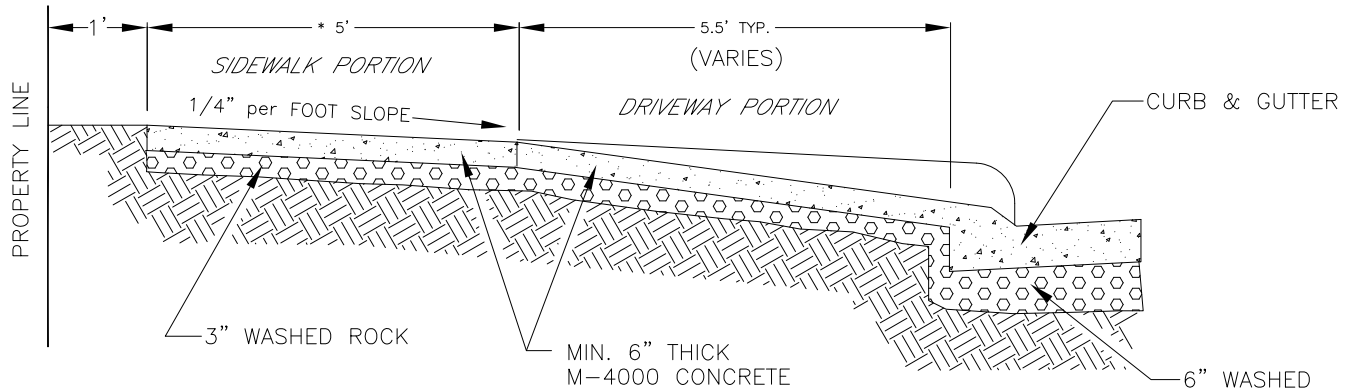
CONSTRUCTION NOTES:

1. Standard applies to new construction, with max. curb R=15', and min. 5.5' boulevards.
2. Ramp and curb can be poured monolithically.
3. Storm drain inlets shall be constructed "upstream" of ramps. Alternative locations permitted only upon City Engineer's approval.
4. Ramp width shall be 5' minimum.
5. Sidewalk cross–slopes shall not exceed 2%.
6. Begin ramp slope at flowline of gutter

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: AS SHOWN	BOULEVARD SIDEWALK PERPENDICULAR PEDESTRIAN RAMP (15' MAX. RADIUS/5.5' MIN. BOULEVARD)	NO. 02529–8 AUG. 2011

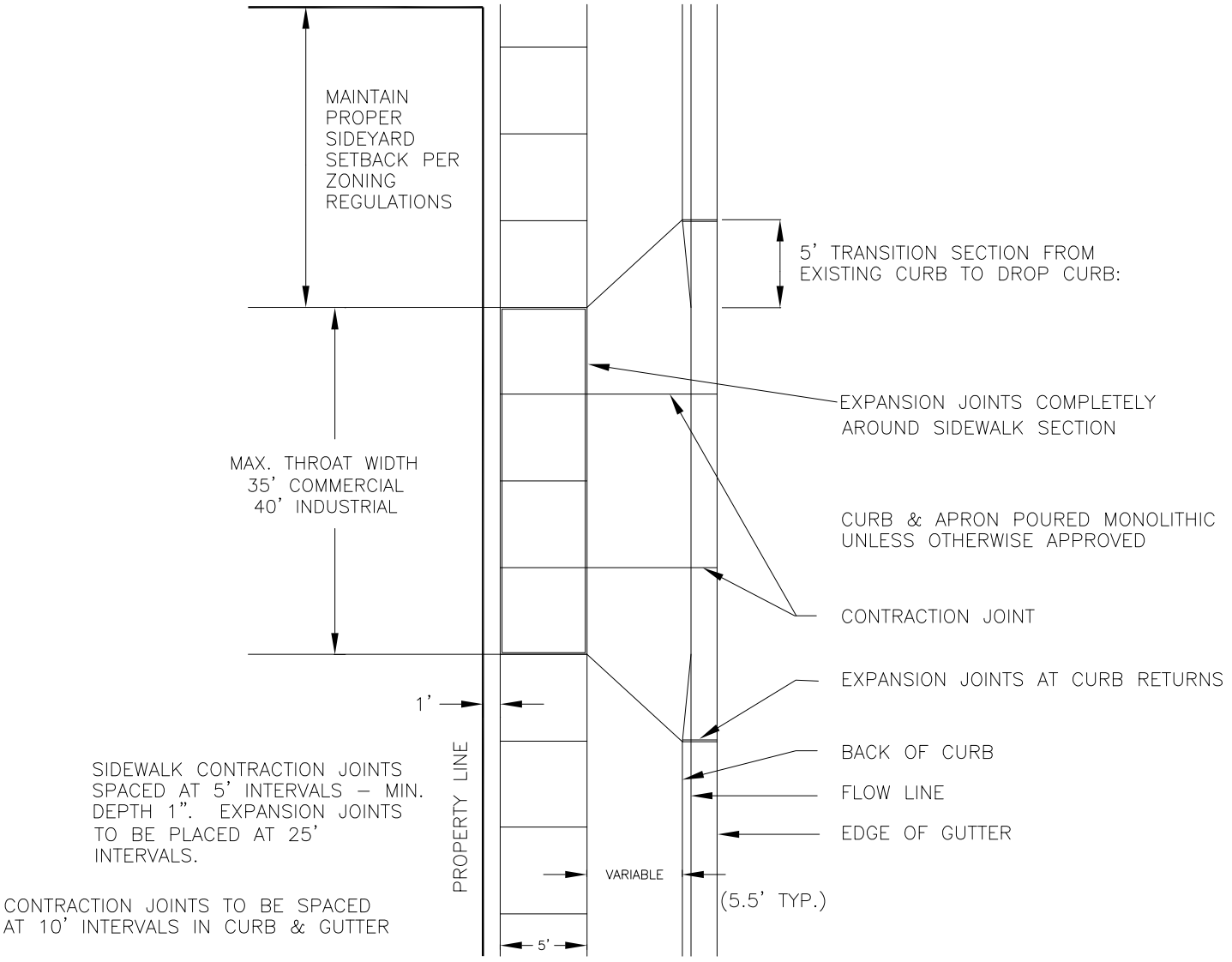


EXPANSION JOINT MATERIAL SHALL BE 1/2" THICK PRE–FORMED BITUMINOUS TREATED FIBERBOARD FILLER.
ALL CURB REPLACEMENT SHALL BE DONE WITH INTEGRAL CURB AND GUTTER UNLESS OTHERWISE APPROVED.



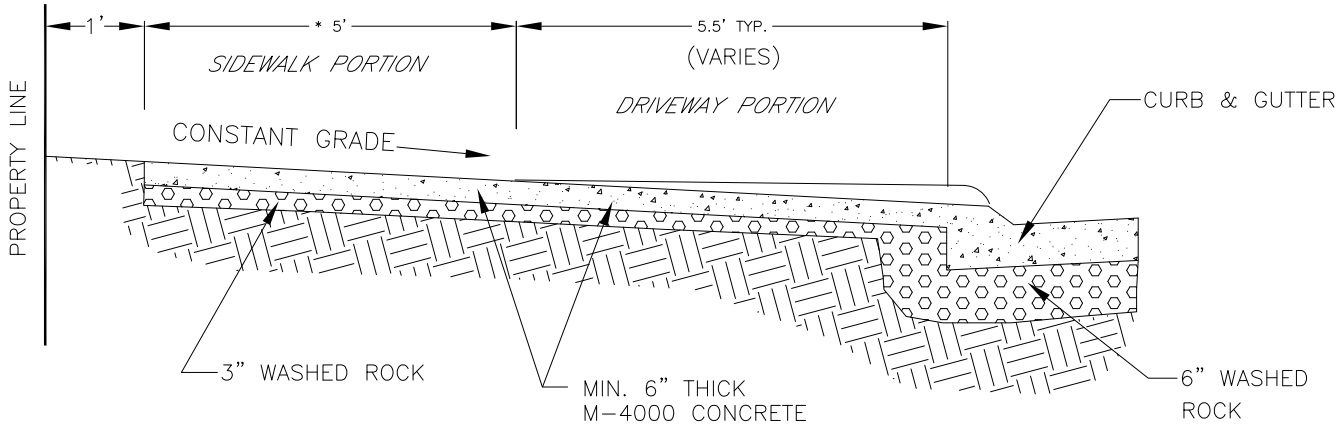
* OR MATCH EXISTING OR REQUIRED SIDEWALK WIDTH

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	RESIDENTIAL DRIVEWAY APPROACH	NO. 02529–10 AUG. 2011



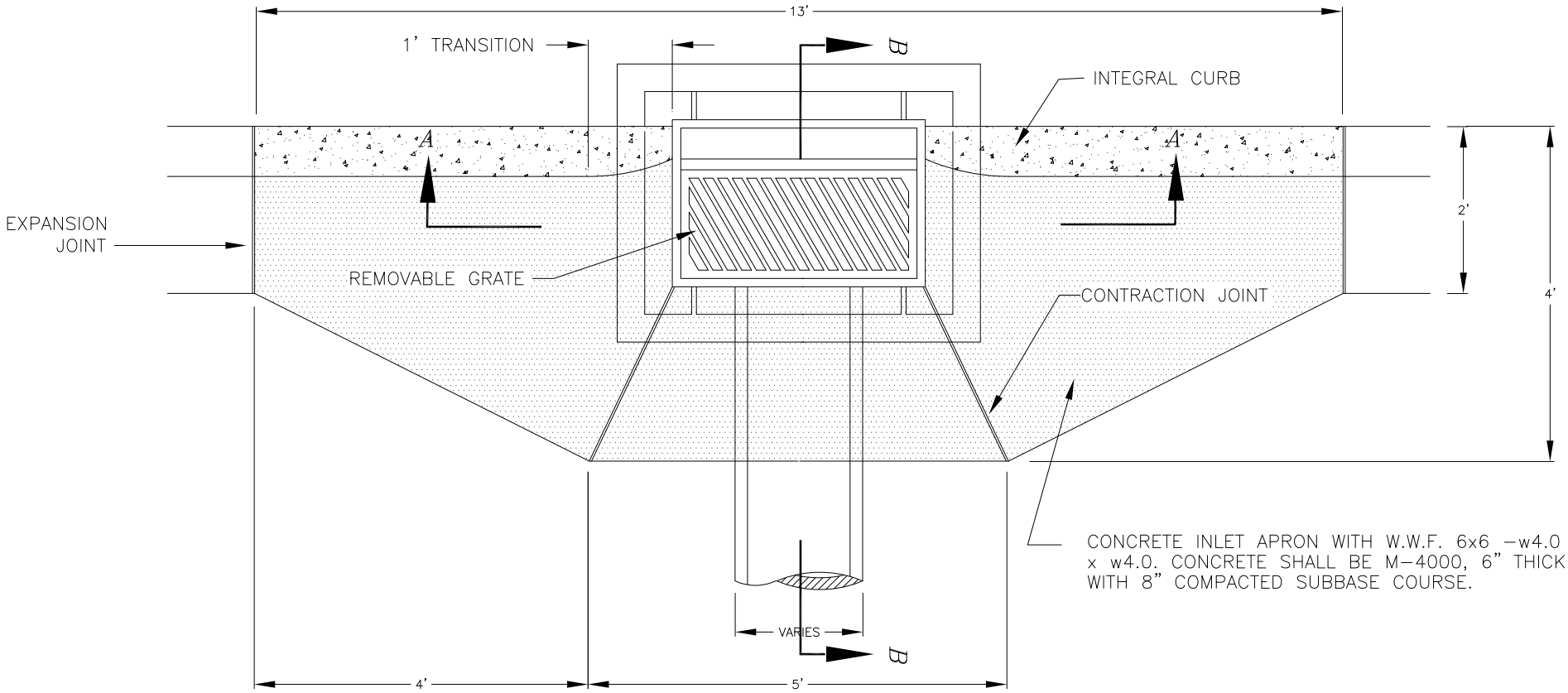
EXPANSION JOINT MATERIAL SHALL BE 1/2" THICK PRE-FORMED BITUMINOUS TREATED FIBERBOARD FILLER.
ALL CURB REPLACEMENT SHALL BE DONE WITH INTEGRAL CURB AND GUTTER UNLESS OTHERWISE APPROVED.

GRADE ESTABLISHED AS 1/4" RISE PER FOOT FROM TOP OF ADJACENT FULL HEIGHT CURB OR MATCH EXISTING SIDEWALK GRADE



* OR MATCH EXISTING OR REQUIRED SIDEWALK WIDTH

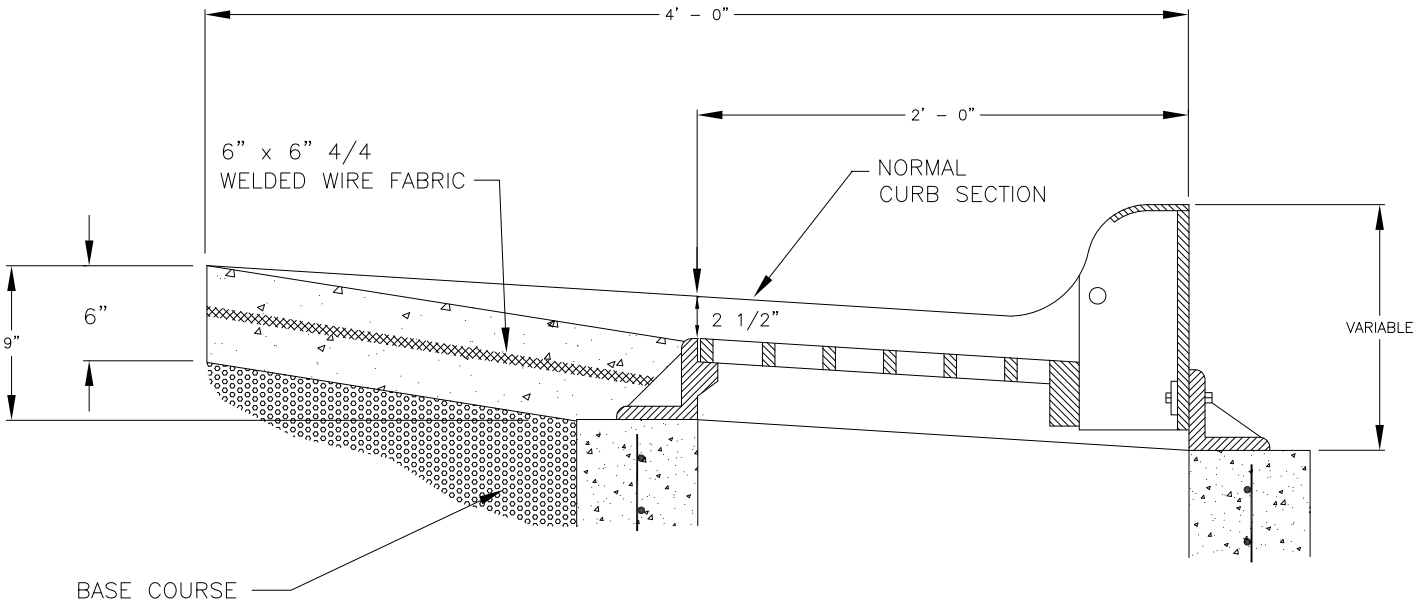
CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	COMMERCIAL DRIVEWAY APPROACH	NO. 02529-11 AUG. 2011



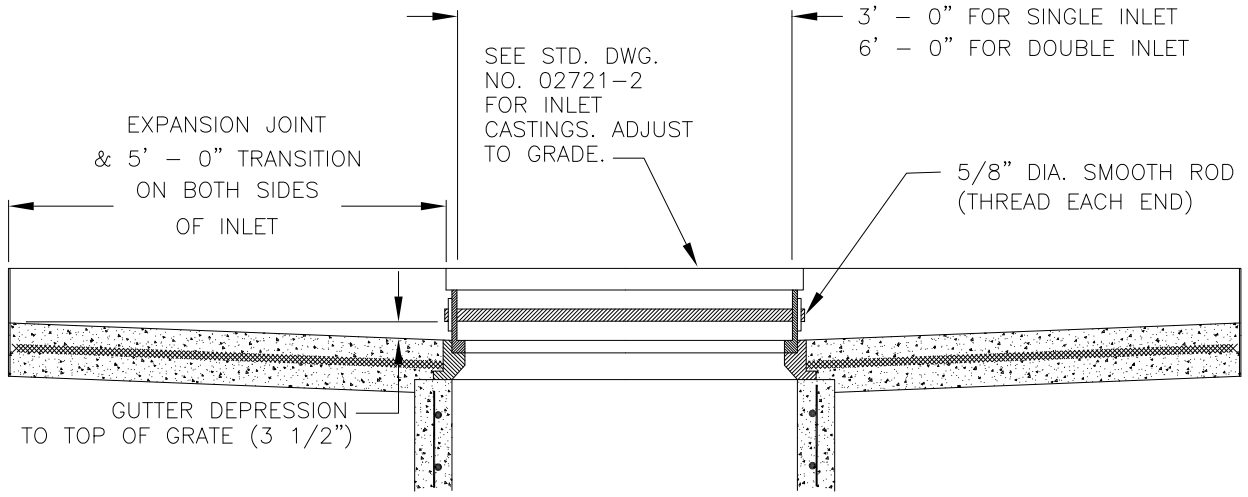
INLET & APRON TYPE 1

NOTE: SEE STANDARD DRAWING NO. 02529–13 FOR TYPICAL SECTIONS.

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	INLET APRON PLAN	NO. 02529–12 AUG. 2011

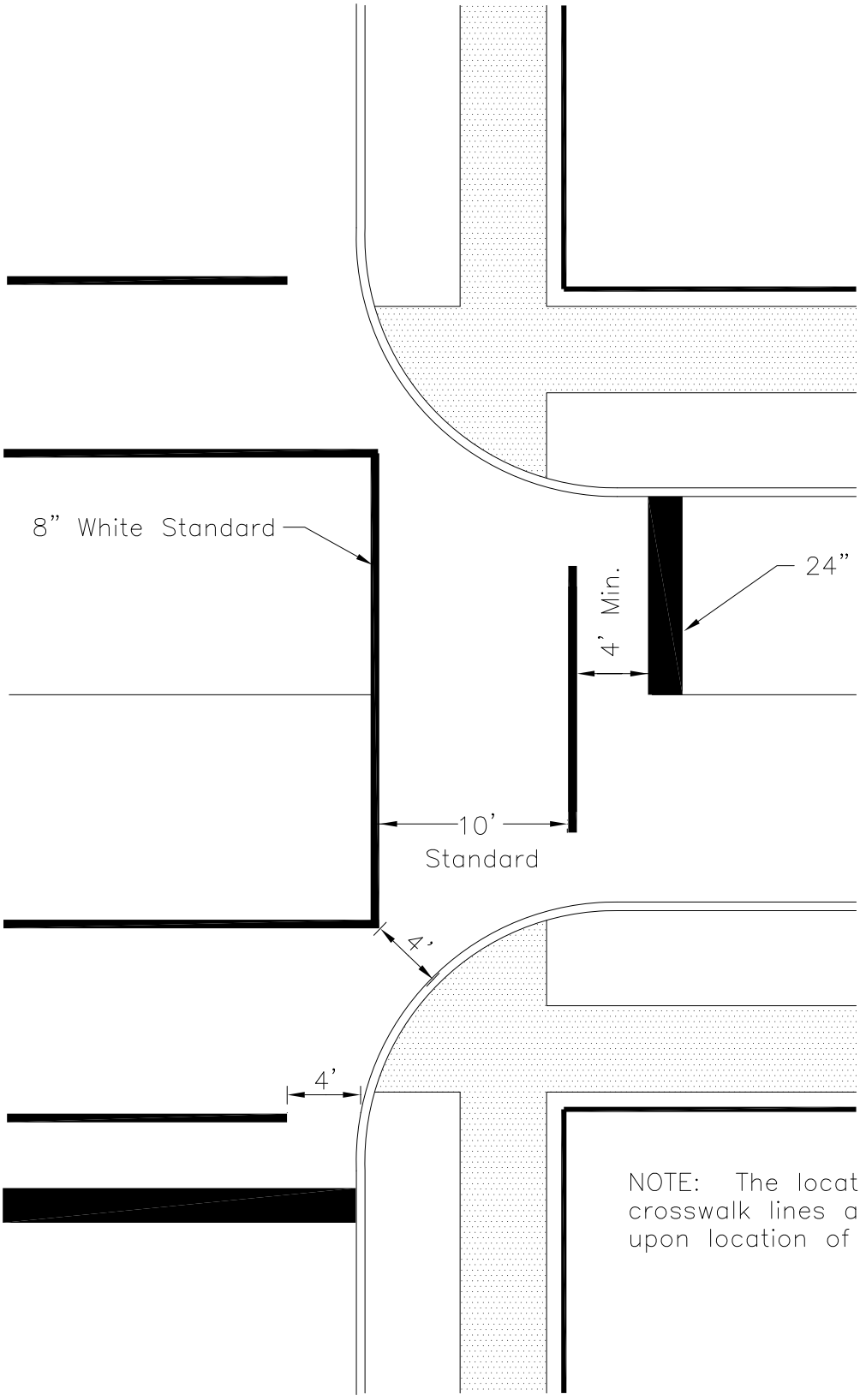


SECTION B–B



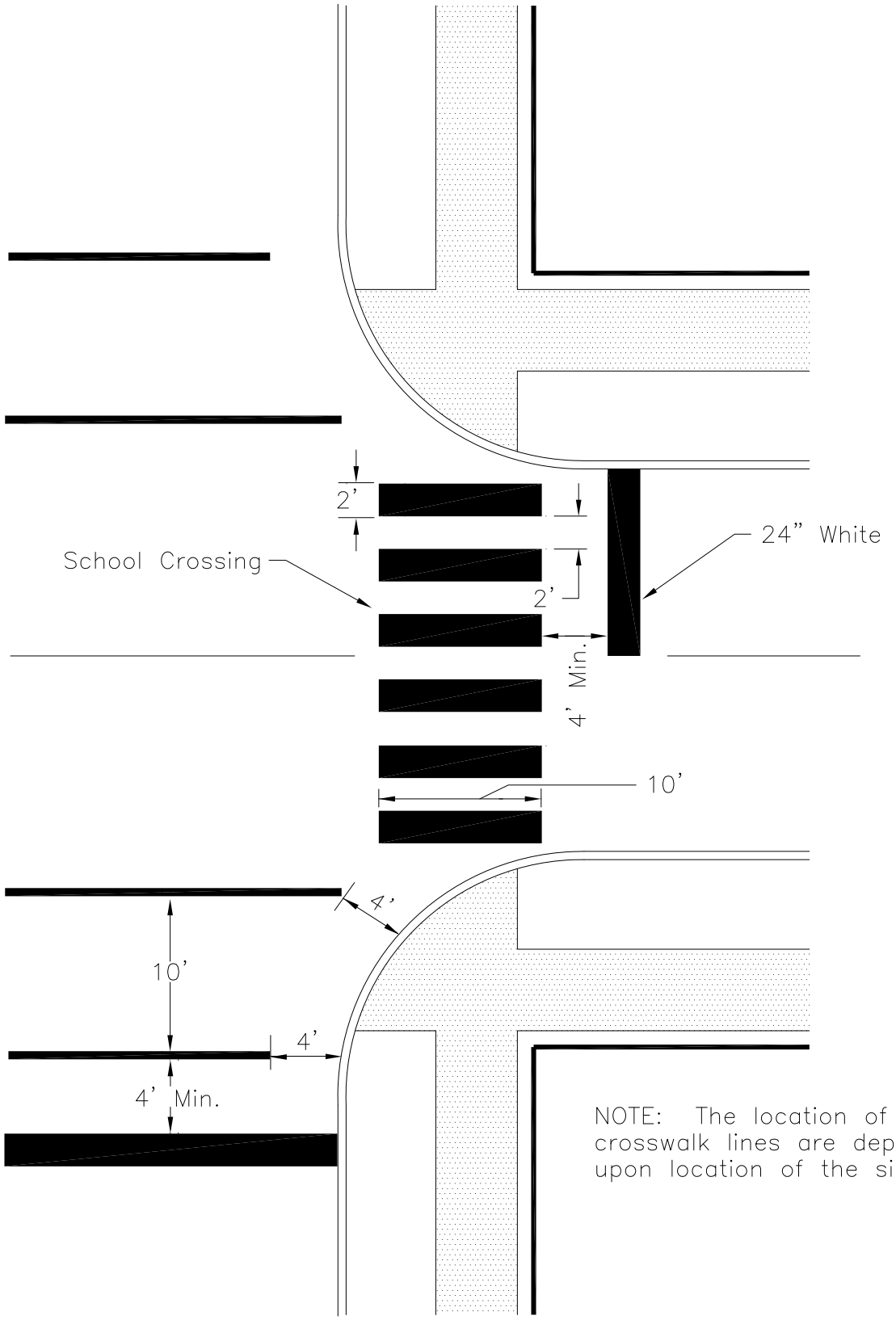
SECTION A–A

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	CONCRETE APRON SECTIONS FOR CURB INLET	NO. 02529–13 AUG. 2011



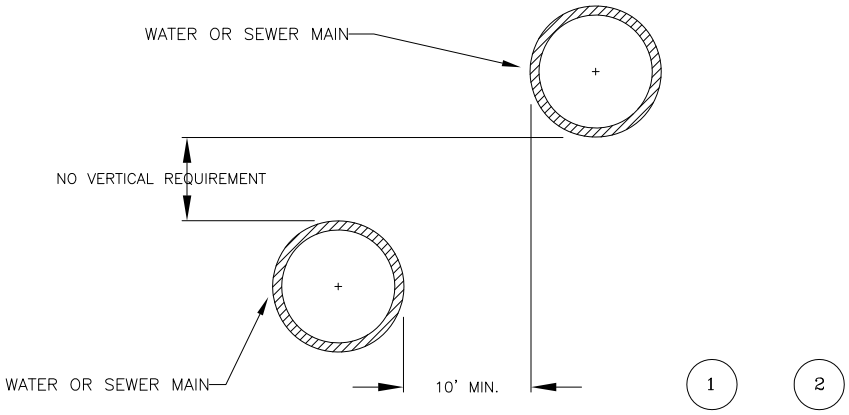
NOTE: The location of the crosswalk lines are dependent upon location of the sidewalks.

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	TYPICAL PAVEMENT MARKINGS FOR PEDESTRIAN CROSSINGS (TYPE "A" CROSSINGS)	NO. 02581-1 AUG. 2011

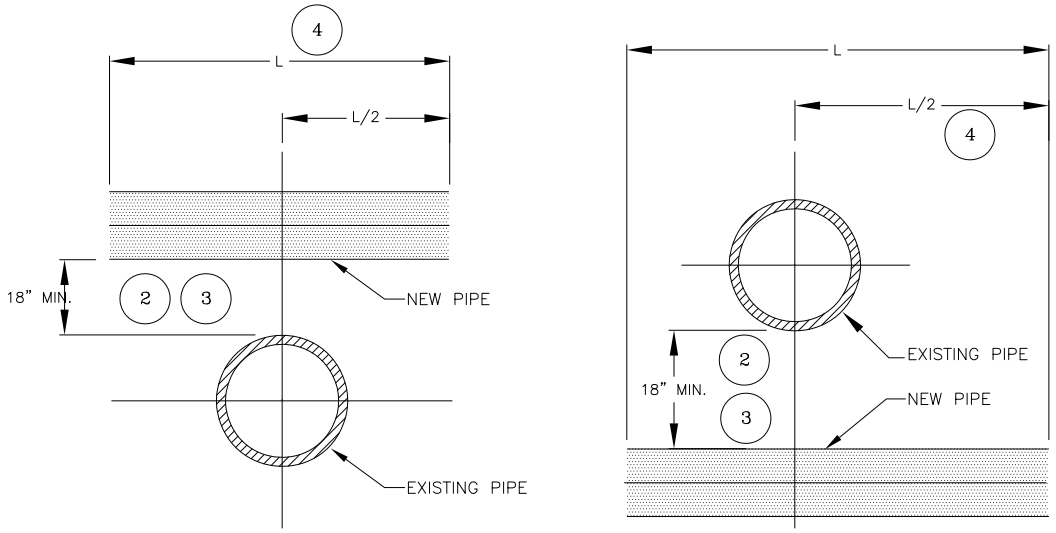


NOTE: The location of the crosswalk lines are dependent upon location of the sidewalks.

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	TYPICAL PAVEMENT MARKINGS FOR SCHOOL CROSSINGS (TYPE "B" CROSSINGS)	NO. 02581-2 AUG. 2011



PARALLEL ARRANGEMENT



CROSSINGS (5)

1. Specific North Dakota Department of Health and Environmental Sciences approval is required for a horizontal separation distance less than 10 feet and for a vertical separation distance of less than 1.5 feet between water main and gravity sewer main.

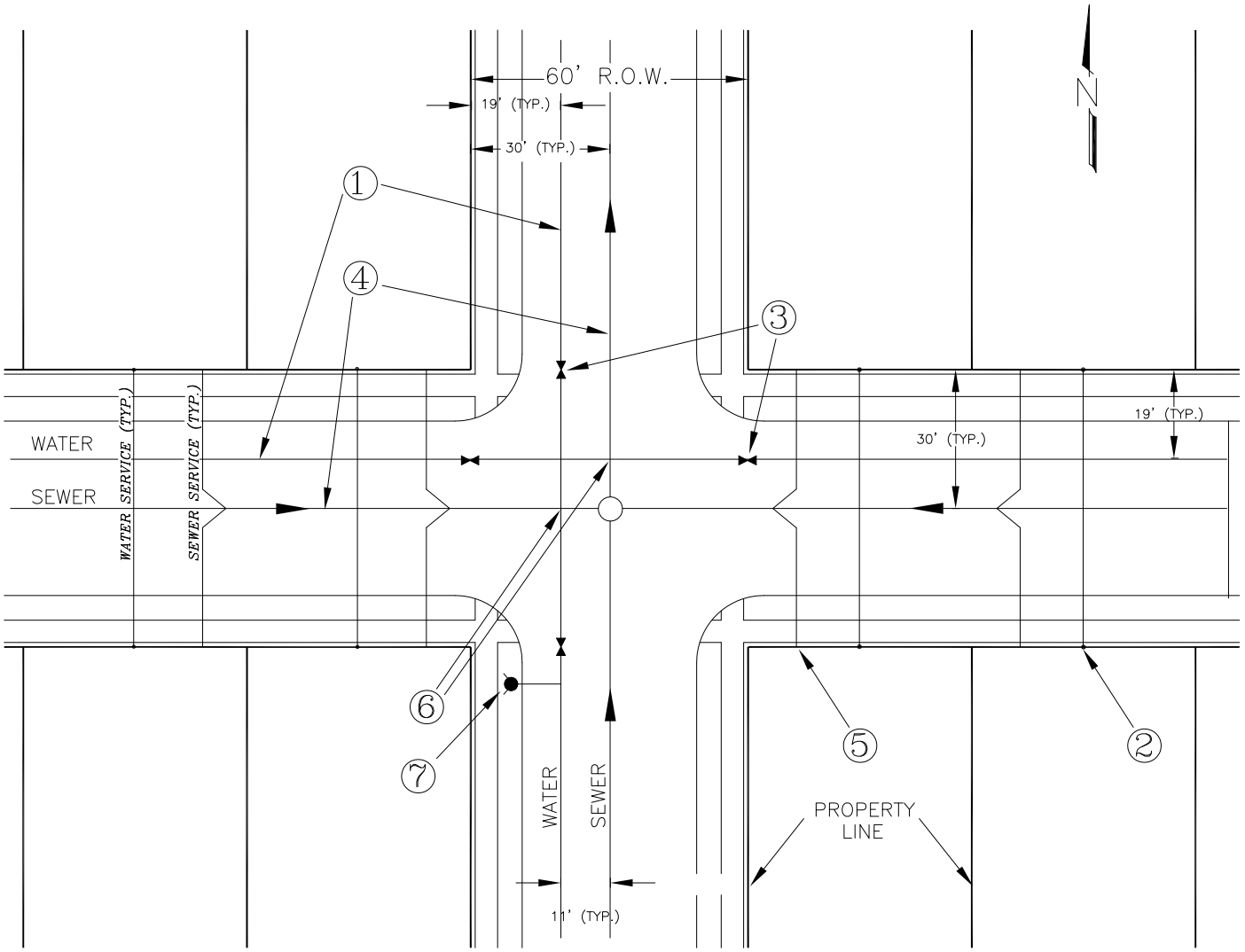
2. No exception to the minimum separation requirements (vertical or horizontal) is permitted when the sewage carrying pipe is a force main. All crossings shall be arranged so that the sewer main or sewer force main joints will be equidistant and as far as possible from the water main being crossed.

3. Where less than 18 inches of vertical separation has been approved by both the City of Bozeman and the North Dakota Department of Health and Environmental Sciences, the new gravity sewer main, or the new water main, at the crossing shall be made from a full length of pipe centered on the crossing, and the crossing angle shall be approximately 90 degrees. New gravity sewer mains crossing within 18 inches of a new or existing water main must also meet or exceed the requirements of "Recommended Practice for Low–Pressure Air Testing of Installed Sewer Pipe" (UNI–B–90, or latest version).

4. "L" is the longest available standard length of pipe as supplied by a pipe manufacturer.

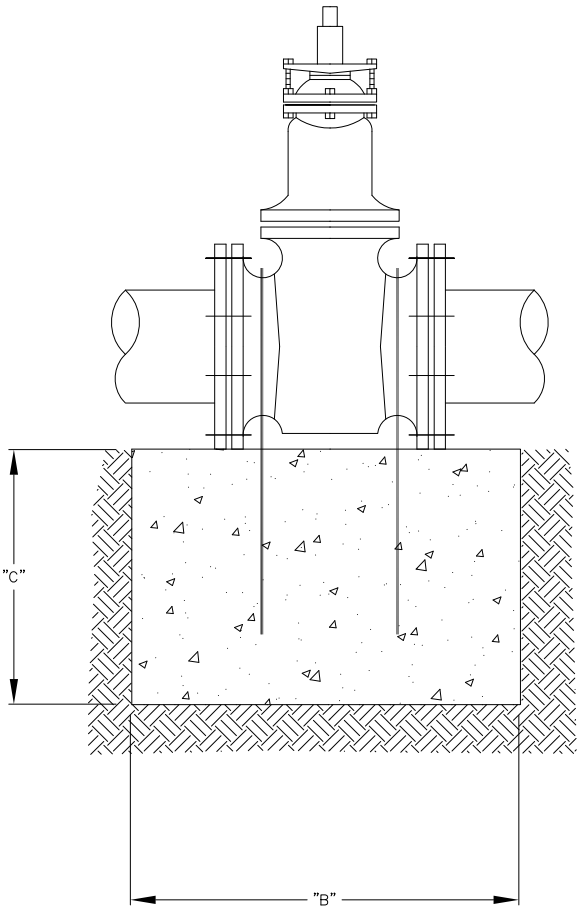
5. Adequate structural support for pipes at crossings shall be provided.

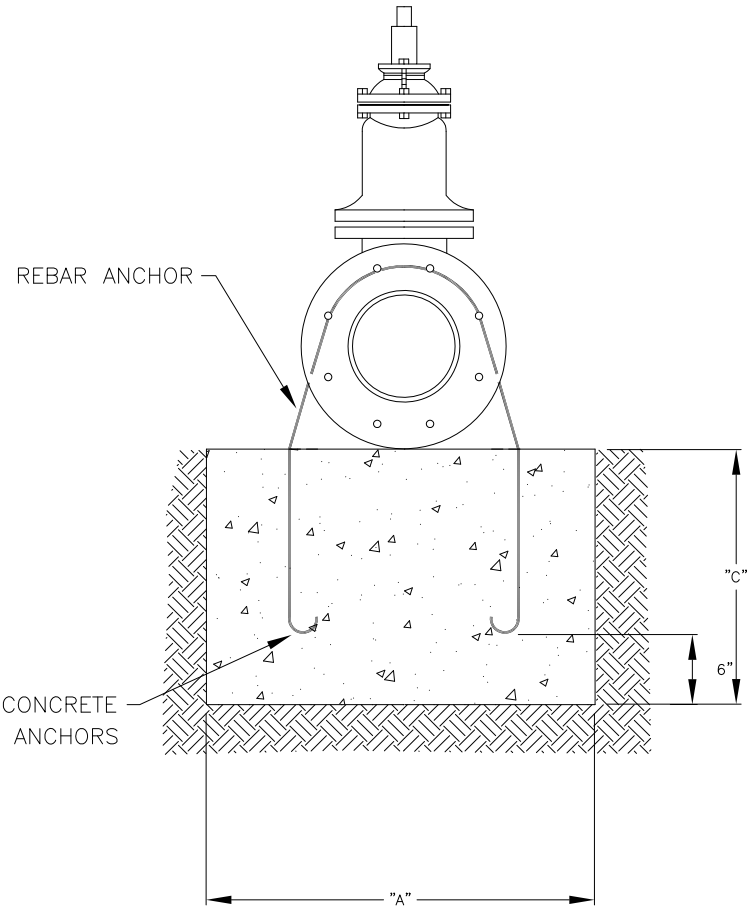
CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	WATER AND SEWER MAIN SEPARATION	NO. 02713–2 AUG. 2011



1. WATER MAINS LOCATED 19' FROM THE NORTH OR WEST RIGHT-OF-WAY PROPERTY LINE.
2. WATER SERVICE STUB LOCATED AT CENTER OF LOT; SEE STANDARD DRAWING NO. 02719-1 FOR DETAILS.
3. WATER MAIN VALVES LOCATED AT PROPERTY LINE.
4. SEWER MAINS LOCATED 30' FROM THE NORTH OR WEST RIGHT-OF-WAY PROPERTY LINE.
5. SEWER SERVICE STUB LOCATED 15' UPSTREAM FROM DOWNSTREAM PROPERTY LINE.
6. WATER & SEWER MAIN CROSSING; SEE STANDARD DRAWING NO. 02713-2 FOR DETAILS.
7. HYDRANTS LOCATED 5' FROM VALVE.

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	WATER & SEWER MAIN AND SERVICES LOCATION STANDARDS	NO. 02713-4 AUG. 2011





NOTE: COAT RODS WITH "KOPPERS" BITUMASTIC NO. 50 COATING OR EQUAL.

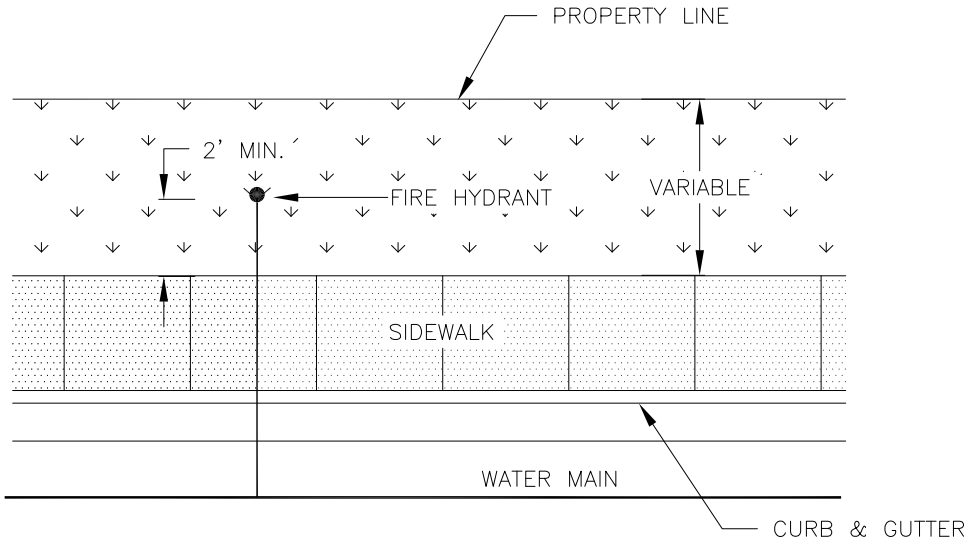
THRUST BLOCK DIMENSIONS

Anchor Rod Size	Valve Size	100 PSI			150 PSI			200 PSI			250 PSI			300 PSI		
		"A"	"B"	"C"	"A"	"B"	"C"	"A"	"B"	"C"	"A"	"B"	"C"	"A"	"B"	"C"
1/2"	6"&8"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-0"	2'-7"
1/2"	10"	2'-0"	2'-0"	2'-0"	2'-6"	2'-6"	2'-0"	2'-9"	2'-6"	2'-6"	3'-0"	3'-0"	3'-0"	3'-7"	3'-0"	3'-0"
1/2"	12"	2'-3"	2'-0"	2'-0"	3'-0"	3'-0"	2'-8"	3'-5"	3'-0"	3'-0"	4'-3"	3'-0"	3'-0"	5'-1"	3'-0"	3'-0"
1"	14"	2'-3"	2'-0"	2'-0"	3'-5"	3'-0"	3'-0"	4'-6"	3'-0"	3'-0"	4'-0"	4'-0"	4'-0"	4'-9"	4'-0"	4'-0"
1 1/8"	16"	3'-0"	3'-0"	3'-0"	4'-4"	3'-0"	3'-0"	4'-1"	4'-0"	4'-0"	5'-1"	4'-0"	4'-0"	6'-1"	4'-0"	4'-0"
1 1/4"	18"	3'-8"	3'-0"	3'-0"	5'-5"	3'-0"	3'-0"	5'-1"	4'-0"	4'-0"	6'-4"	4'-0"	4'-0"	5'-9"	5'-0"	5'-0"
1 3/8"	24"	4'-4"	4'-0"	4'-0"	6'-5"	4'-0"	4'-0"	6'-6"	5'-0"	5'-0"	6'-5"	6'-0"	6'-0"	7'-8"	6'-0"	6'-0"

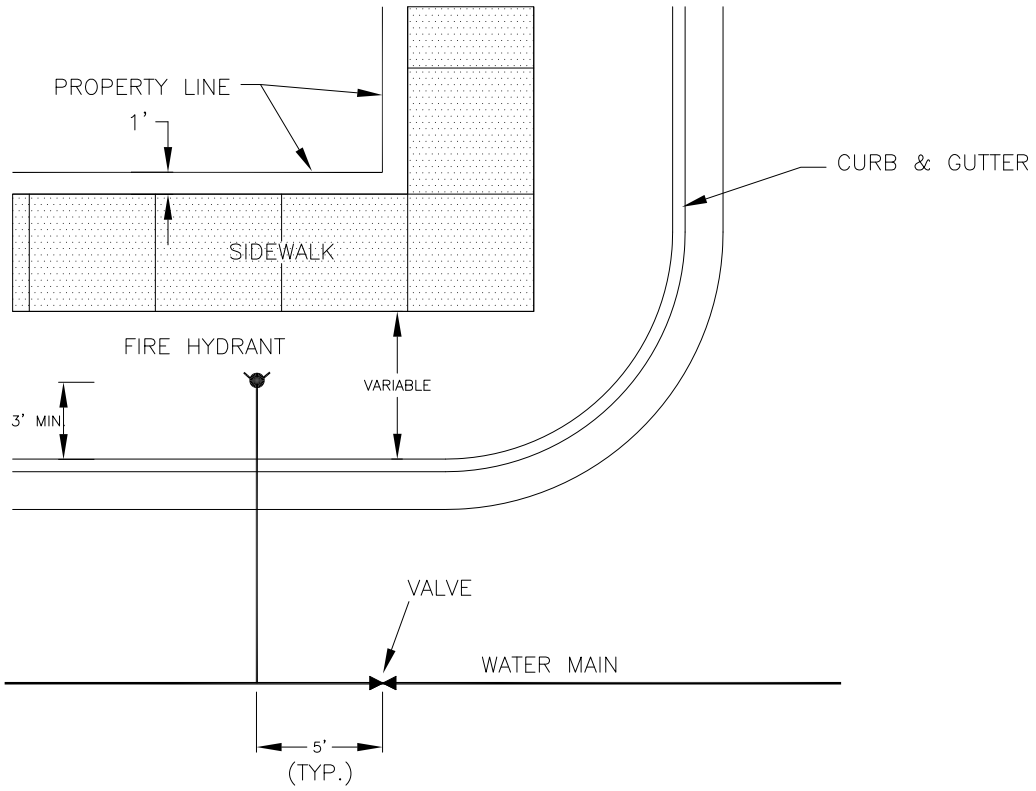
NOTE: Pressures shown above are maximum working pressures in system.

THRUST BLOCKING AND ANCHORS ARE REQUIRED ON ALL 6" VALVES AND LARGER UNLESS SPECIFIED BY THE ENGINEER

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	THRUST BLOCKING FOR WATER MAIN VALVES	NO. 02718-1 AUG. 2011

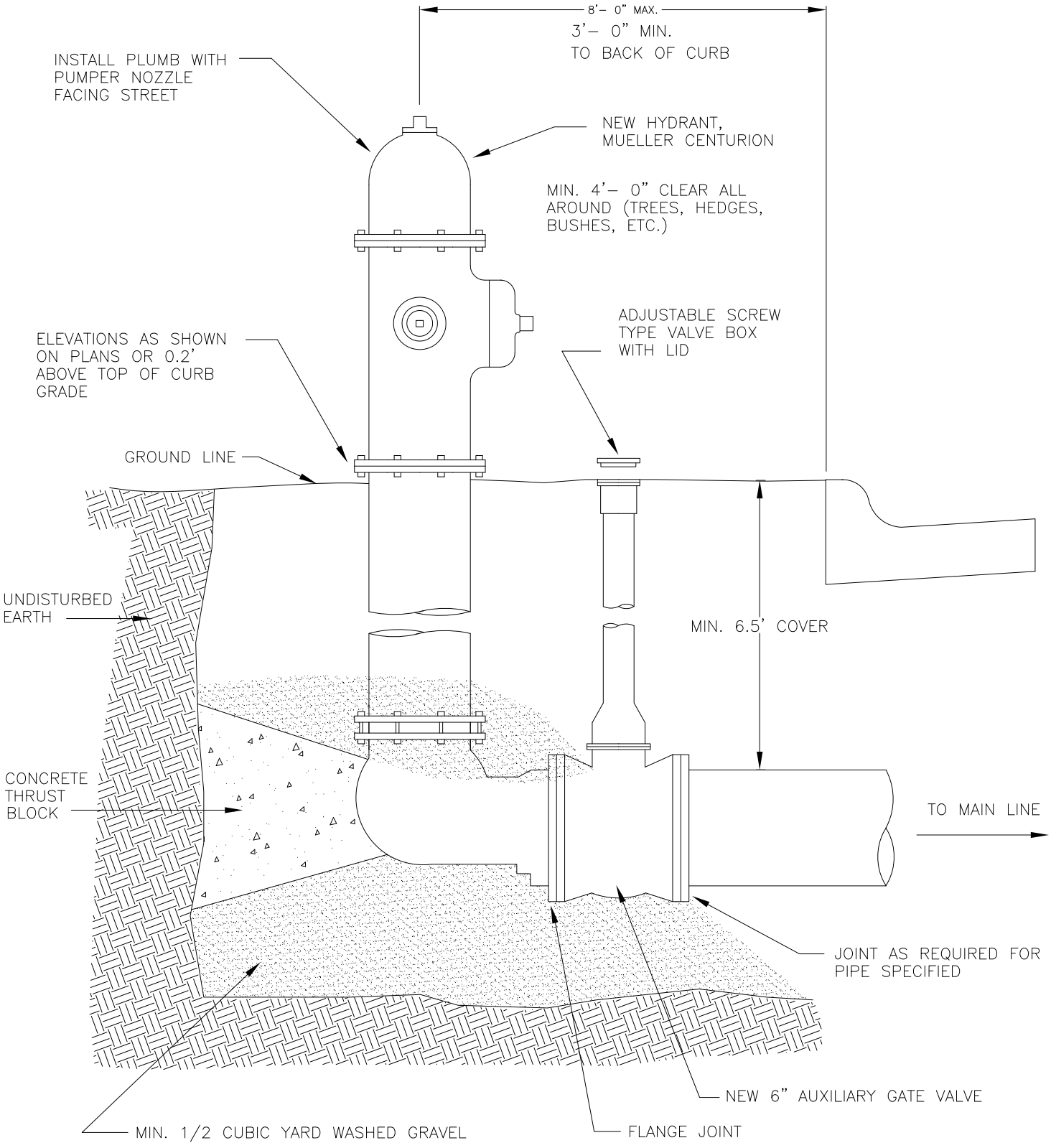


CURB WALK DETAIL

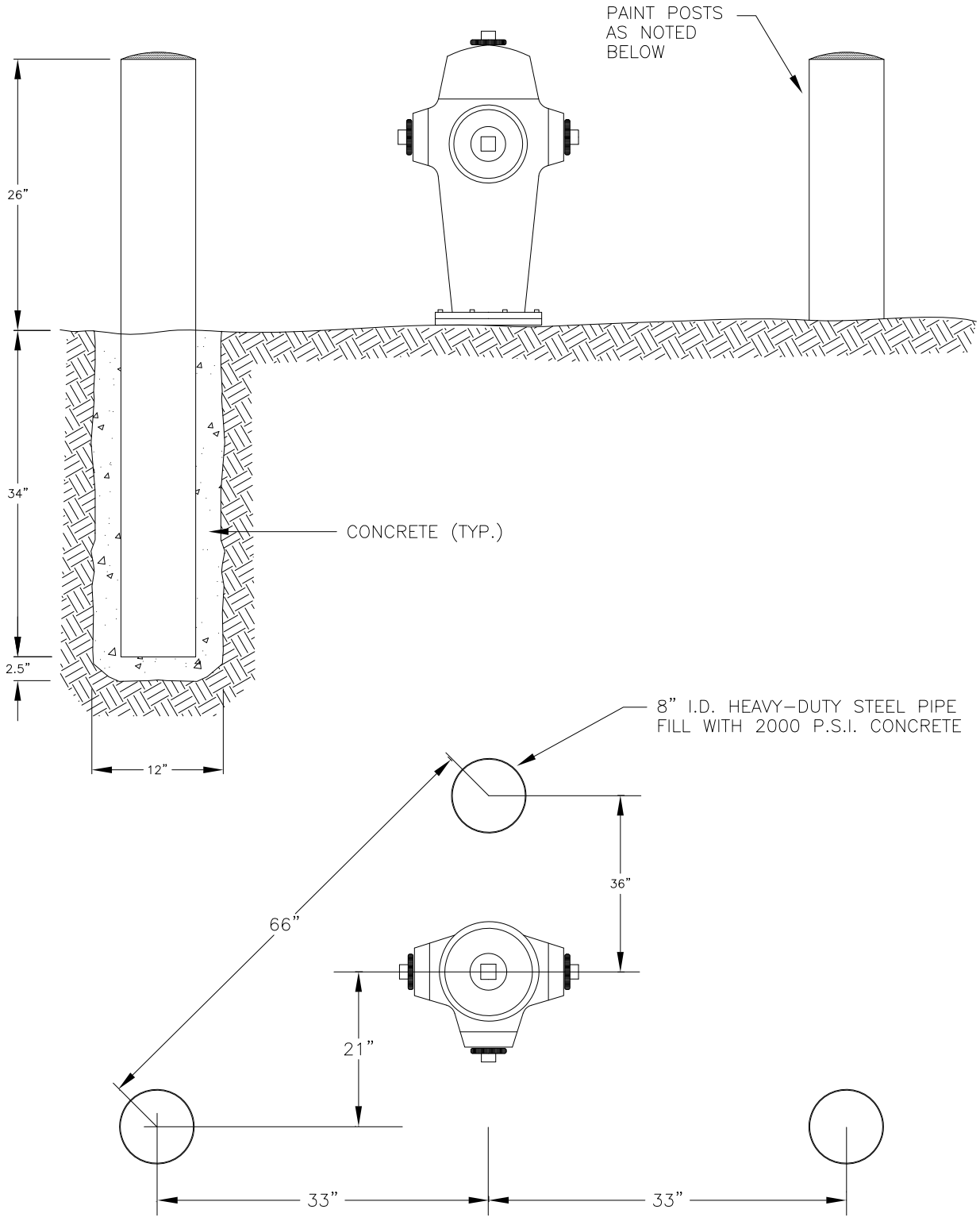


BOULEVARD WALK DETAIL

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	HYDRANT LOCATION DETAIL	NO. 02718-3 AUG. 2011

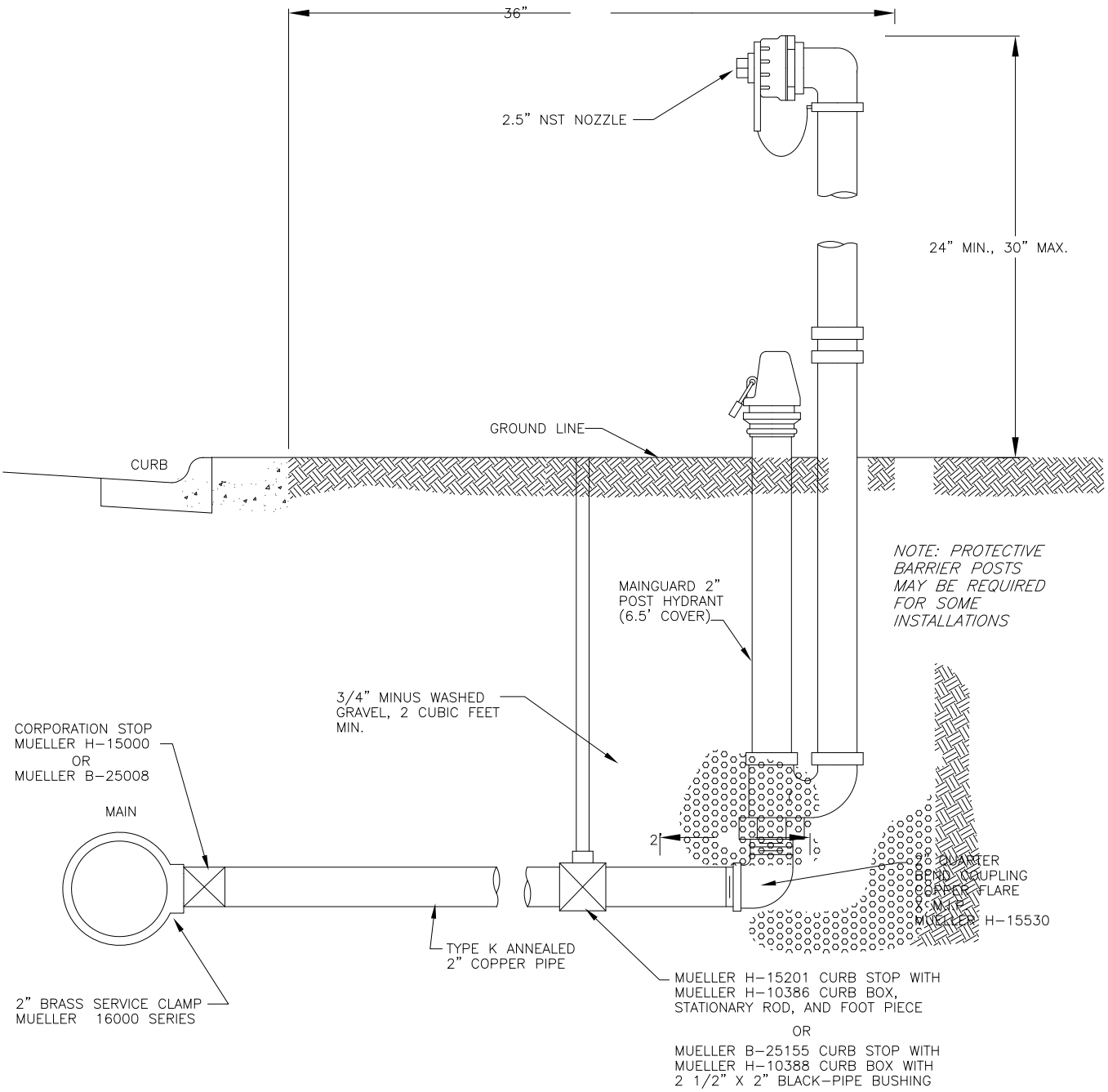


CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	FIRE HYDRANT	NO. 02718–4 AUG. 2011



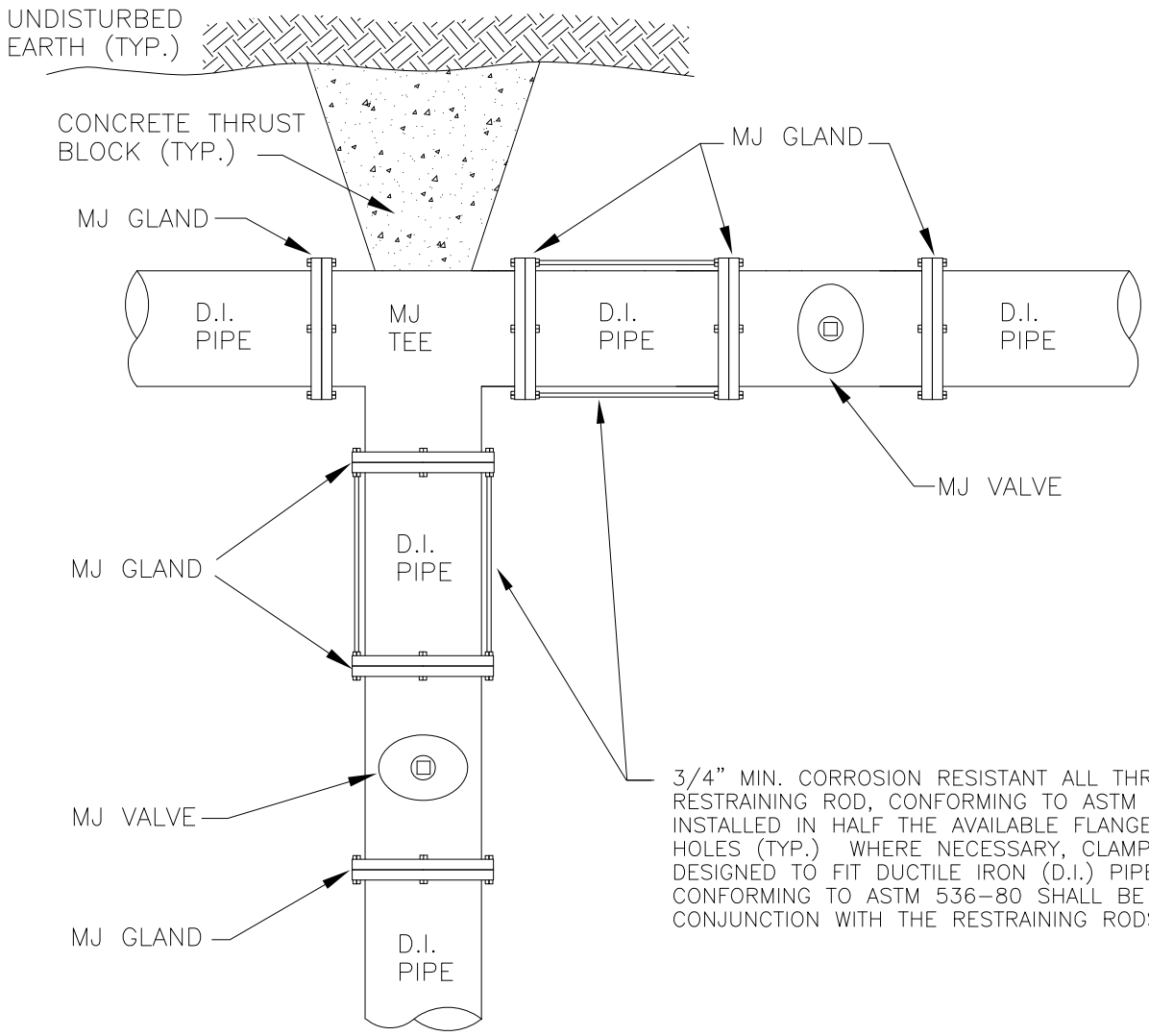
NOTE: POST NOT REQUIRED WHERE NATURAL BARRIERS EXIST.
PAINT POSTS WITH SHERWIN-WILLIAMS METALATEX SEMI-GLOSS COATING, SAFETY RED (B42 R38 620-4069).

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	HYDRANT BARRIER POSTS	NO. 02718-5 AUG. 2011

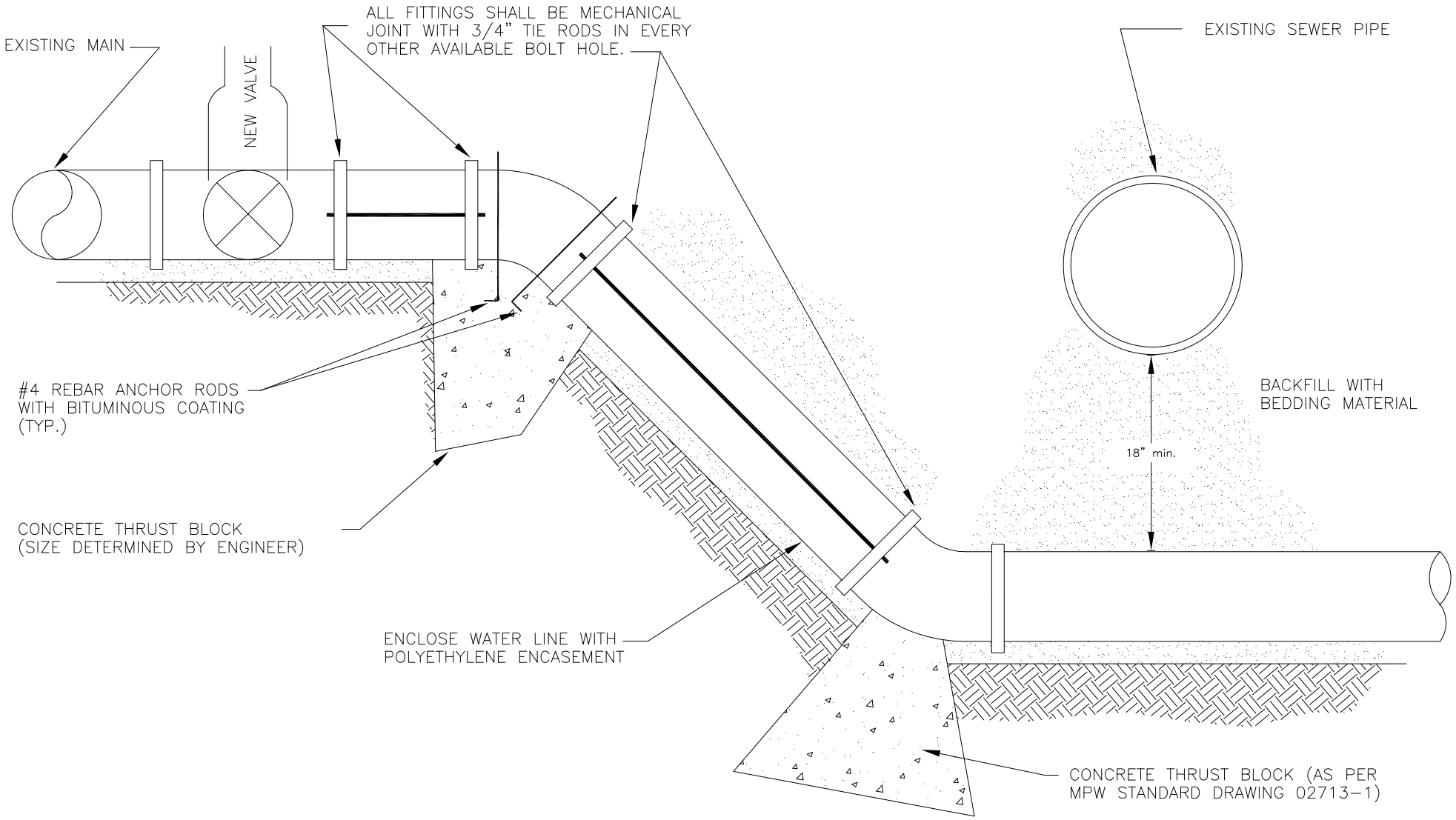


Blow-off hydrants shall be non-freezing, self draining type with a 6.5' bury. These hydrants will be furnished with a 2" FIP inlet, a non-turning operating rod, and shall open to the left. All of the working parts shall be of bronze-to-bronze design, and be serviceable from above grade with no digging. The outlet shall also be bronze and be 2 1/2" NST. Hydrants shall be lockable and shall be Mainguard #77 as manufactured by Kupferle Foundry Co., St. Louis, MO, or approved equal.

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	STANDARD BLOW-OFF HYDRANT	NO. 02718-7 AUG. 2011

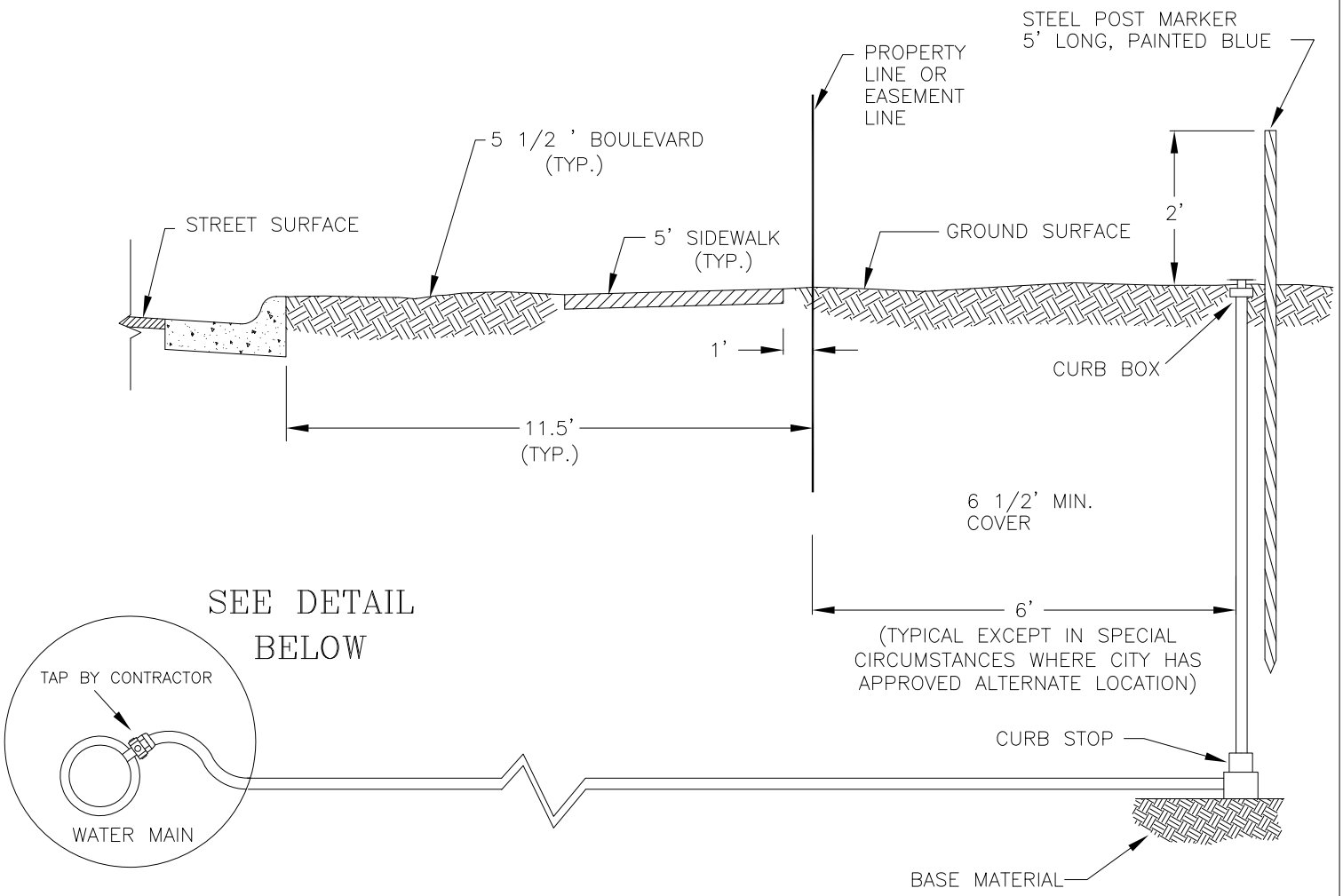


CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	TYPICAL VALVE/TEE RESTRAINT	NO. 02718-8 AUG. 2011

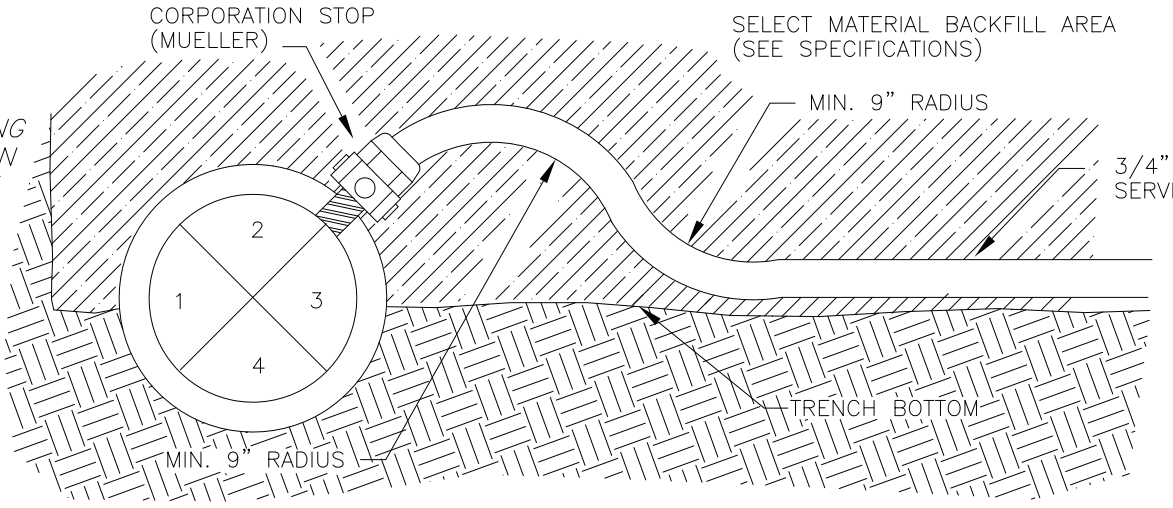


NOTE: POLYETHYLENE ENCASEMENT ON ALL DUCTILE IRON PIPE AND FITTINGS AS SPECIFIED.

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	WATER MAIN CROSSING BELOW EXISTING SEWER MAIN	NO. 02718-9 AUG. 2011



DETAIL OF A PROPERLY INSTALLED CORPORATION STOP, SHOWING GOOSENECK IN SERVICE PIPE

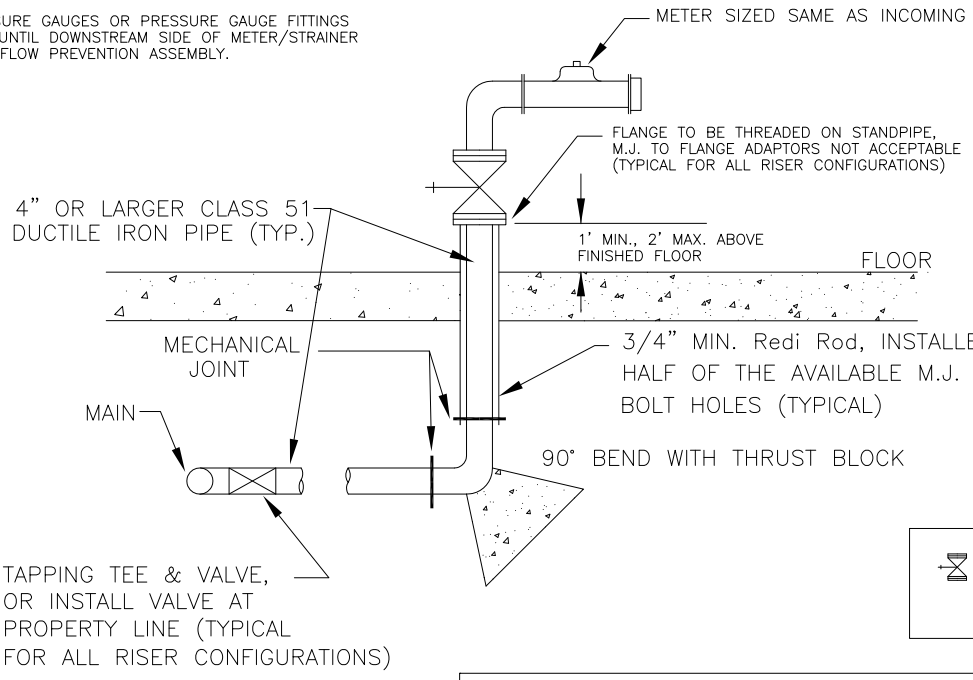


GENERAL NOTES:

1. WATER SERVICE LINES SHALL HAVE A MINIMUM 6 1/2 FOOT COVER MEASURED FROM THE EXISTING GROUND SURFACE, EXCEPT THAT COVER SHALL BE MEASURED FROM CENTER LINE STREET GRADE WHEN SERVICE LINES ARE LAID TO A STREET SIDE WHICH HAS AN UPHILL SLOPE. WATER SERVICE LINES SHALL HAVE A MAXIMUM 7 1/2 FOOT COVER AT CURB STOP.
2. WATER SERVICE LINES SHALL BE INSTALLED WHERE SHOWN ON THE DRAWINGS OR AS SPECIFIED.
3. BEDDING SHALL BE 1" DIA. MAXIMUM WITHIN 6" OF SERVICE PIPE.

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	WATER SERVICE LINE	NO. 02719-1 AUG. 2011

NO PRESSURE GAUGES OR PRESSURE GAUGE FITTINGS ALLOWED UNTIL DOWNSTREAM SIDE OF METER/STRAINER AND BACKFLOW PREVENTION ASSEMBLY.

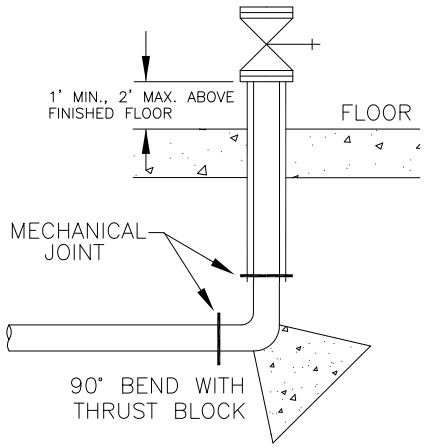


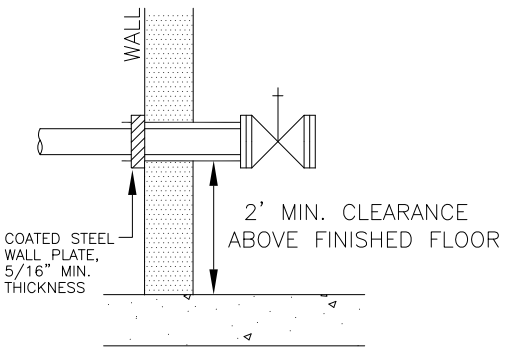
BACKFLOW PREVENTION ASSEMBLY MUST CONNECT DIRECTLY TO METER/ STRAINER UNLESS SEPARATED BY SIZE REDUCTION PIPE AS DESCRIBED IN SECTION 8 BELOW.

LEGEND

FLANGED OS&Y VALVE

PROVIDE FLEXIBLE, WATER–TIGHT CONNECTION FOR ALL WALL OR FLOOR PIPE PENETRATION.





CITY OF DUNN CENTER REQUIREMENTS FOR INSTALLATION OF DOUBLE CHECK VALVE ASSEMBLY

1. The FIRST fitting inside of the building shall be a UL listed flanged Kennedy or Mueller OS&Y valve the same size as the service line. Combination strainer/meter immediately following OS&Y valve or elbow attached directly to OS&Y valve –– meter must set horizontal.

2. All Double Check Valve Assemblies shall be:
   a. UL or FM listed.
   b. Approved by the University of Southern California Foundation for Cross Connection Control and Hydraulic Research (USCFCCCHR) for operation in the proposed position (vertical or horizontal) as shown on approved plans.
   c. Installed as shown on the approved plans.

3. Horizontal installations must be a minimum of 2' above the finished floor.

4. The service riser must be a minimum of 2' from any outside wall.

5. The incoming service line shall be a minimum 6.5', and a max–imum of 7.5' below the finished grade.

6. All service line appurtenances shall have a minimum pressure rating of 175 PSI.

7. All service lines 4" and larger shall be Class 51 Ductile Iron Pipe.

8. Line sizing: The Double Check Valve Assembly and meter shall be equal in size to both the incoming pipe diameter (upstream) and outgoing pipe diamter (downstream). For example, a 4" service line should have a 4" meter and Double Check Valve Assembly.

Should this installation criteria be impossible, or undesirable, the following modifications may be made:
a. The incoming pipe diameter (upstream) shall be the same size (nominal size) as the Double Check Valve Assembly for a minimum of ten (10) pipe diameters upstream of (in front of) the Double Check Valve Assembly.
b. The outgoing pipe diameter (downstream) shall be the same size (nominal size) as the Double Check Valve Assembly for a minimum of three (3) pipe diameters downstream of (in back of) the Double Check Valve Assembly.
c. EXAMPLE:
   Incoming (upstream) service line = 4"
   Double Check Valve Assembly = 2"
   Outgoing (downstream) line size = 4"
The incoming line upstream must be reduced to a 2" line size a minimum of 20" (10 x 2") prior to the installation of the Double Check Valve Assembly, and the downstream line must be reduced to 2" for a distance of 6" (3 x 2") before it is upsized to the downstream line size of 4".
d. Meter must be same size as incoming line.

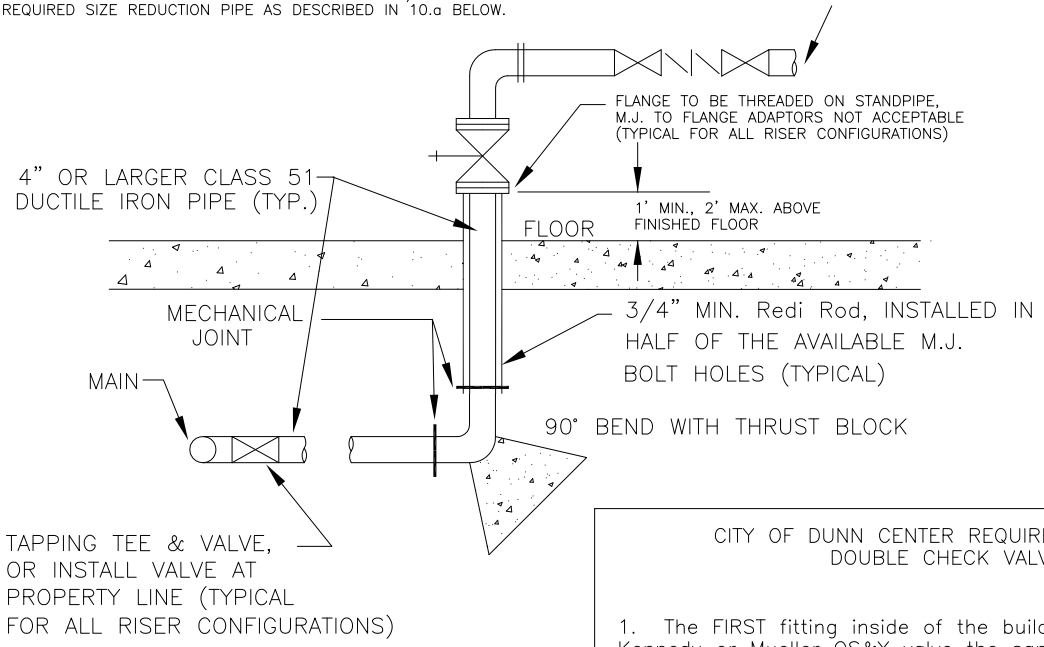
CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	STANDARD DOMESTIC SERVICE LINE INSTALLATION FOR SIZES 4" AND LARGER	NO. 02719–2 AUG. 2011

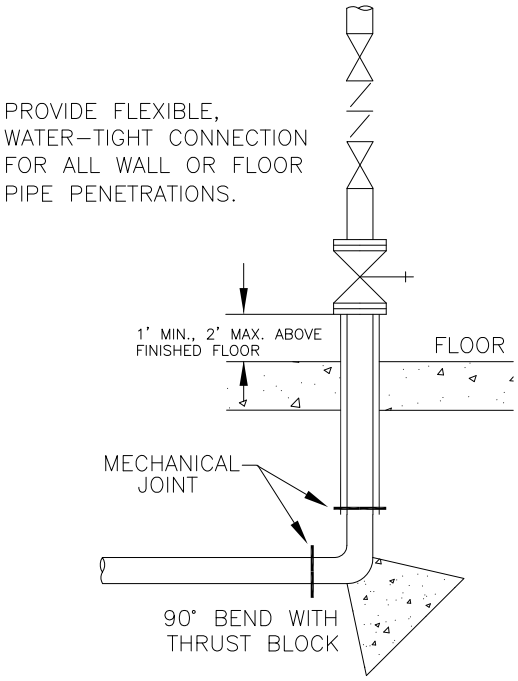
ONLY FITTINGS ALLOWED BETWEEN FIRST OS&Y VALVE AND BACKFLOW ASSEMBLY TO BE EITHER 90° BEND AND/OR REQUIRED SIZE REDUCTION PIPE AS DESCRIBED IN 10.a BELOW.

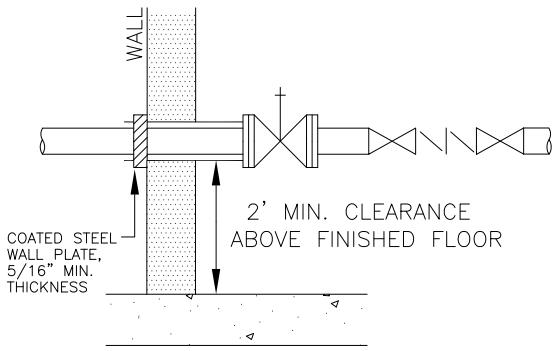
NO PRESSURE GAUGES OR PRESSURE GAUGE FITTINGS ALLOWED UNTIL DOWNSTREAM SIDE OF BACKFLOW ASSEMBLY

LEGEND

- FLANGED OS&Y VALVE
- DOUBLE CHECK VALVE MIN. REQUIREMENT) AS INDICATED ON APPROVED PLAN(S)







CITY OF DUNN CENTER REQUIREMENTS FOR INSTALLATION OF DOUBLE CHECK VALVE ASSEMBLY

1. The FIRST fitting inside of the building shall be a UL listed flanged Kennedy or Mueller OS&Y valve the same size as the fire service line.

2. All Double Check Valve Assemblies shall be:
   a. UL or FM listed.
   b. Approved by the University of Southern California Foundation for Cross Connection Control and Hydraulic Research (USCFCCCHR) for operation in the proposed position (vertical or horizontal) as shown on approved plans.
   c. Installed as shown on the approved plans.

3. A flow detection device shall be installed immediately following the Double Check Valve Assembly (alarm check valve, flow sensor/alarm, meter, etc.) as shown on the approved plans. Paddle-type flow alarms not permitted on dry systems.

4. A Double Detector Check Valve Assembly may be used with a standard City of DUNN CENTER meter. The meter loop of the Double Detector Check Valve shall have a Double Check Valve Assembly installed which meets the same installation criteria specified above in requirement number two.

5. Horizontal installations must be a minimum of 2' above the finished floor.

6. The fire service riser must be a minimum of 2' from any outside wall, and a minimum of 1' from any interior wall.

7. The incoming fire service line shall be a minimum 6.5', and a maximum of 7.5' below the finished grade.

8. All fire service line appurtenances shall have a minimum pressure rating of 175 PSI.

9. All fire service lines 4" and larger shall be Class 51 Ductile Iron Pipe.

10. Line sizing: The Double Check Valve Assembly shall be equal in size to both the incoming pipe diameter (upstream) and outgoing pipe diameter (downstream). For example, a 4" fire service line should have a 4" Double Check Valve Assembly.

Should this installation criteria be impossible, or undesirable, the following modifications may be made:
a. The incoming pipe diameter (upstream) shall be the same size (nominal size) as the Double Check Valve Assembly for a minimum of ten (10) pipe diameters upstream of (in front of) the Double Check Valve Assembly.
b. The outgoing pipe diameter (downstream) shall be the same size (nominal size) as the Double Check Valve Assembly for a minimum of three (3) pipe diameters downstream of (in back of) the Double Check Valve Assembly.
c. EXAMPLE:

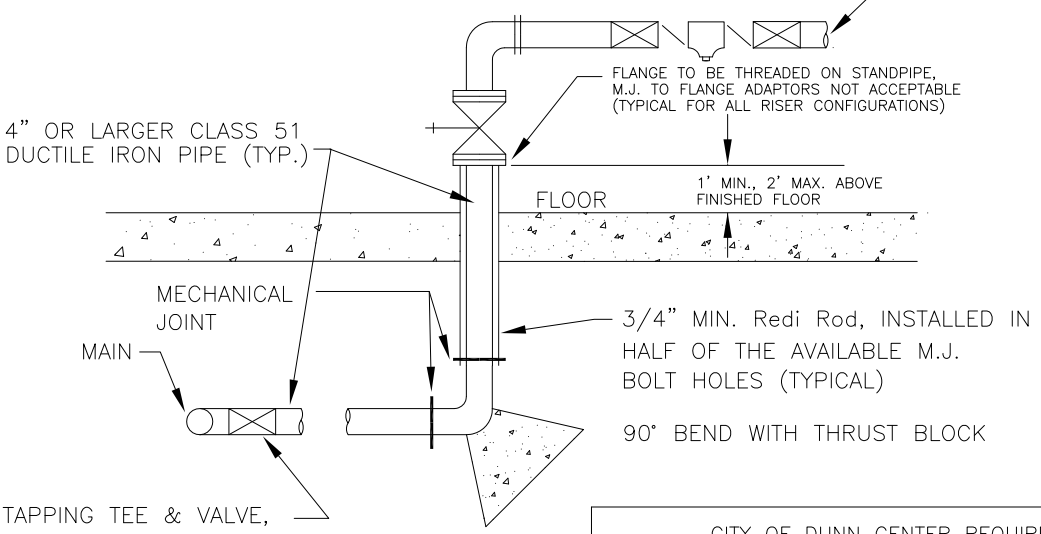
Incoming (upstream) fire service line	= 4"
Double Check Valve Assembly	= 2"
Outgoing (downstream) line size	= 4"

The incoming line upstream must be reduced to a 2" line size a minimum of 20" (10 x 2") prior to the installation of the Double Check Valve Assembly, and the downstream line must be reduced to 2" for a distance of 6" (3 x 2") before it is upsized to the downstream line size of 4".

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	STANDARD FIRE SERVICE LINE INSTALLATION FOR CLASS I, II, & III SYSTEMS	NO. 02719-3 AUG. 2011

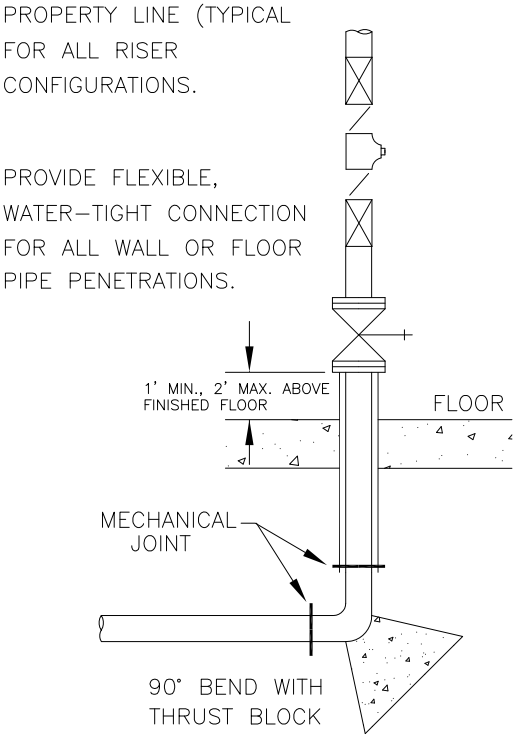
ONLY FITTINGS ALLOWED BETWEEN FIRST OS&Y VALVE AND BACKFLOW ASSEMBLY TO BE EITHER 90° BEND AND/OR REQUIRED SIZE REDUCTION PIPE AS DESCRIBED IN 10.a BELOW

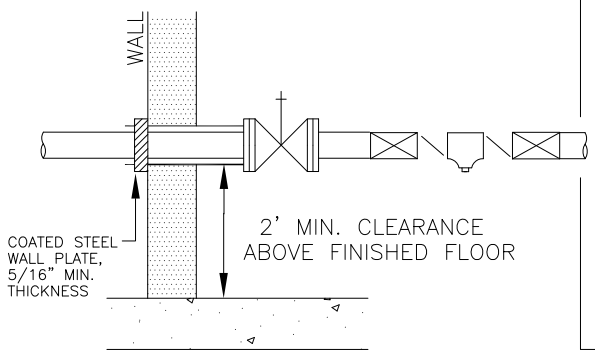
NO PRESSURE GAUGES OR PRESSURE GAUGE FITTINGS ALLOWED UNTIL DOWNSTREAM SIDE OF BACKFLOW ASSEMBLY



LEGEND

- FLANGED OS&Y VALVE
- REDUCED–PRESSURE BACKFLOW–PREVENTION ASSEMBLY (MINIMUM REQUIREMENT) AS INDICATED ON APPROVED PLAN(S)





CITY OF DUNN CENTER REQUIREMENTS FOR INSTALLATION OF REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY

1. The FIRST fitting inside of the building shall be a UL listed flanged Kennedy or Mueller OS&Y valve the same size as the fire service line.

2. All Reduced Pressure Backflow Prevention Assemblies shall be:
   a. UL or FM listed.
   b. Approved by the University of Southern California Foundation for Cross Connection Control and Hydraulic Research (USCFCCCHR) for operation in the proposed position (vertical or horizontal) as shown on approved plans.
   c. Installed as shown on the approved plans.

3. A flow detection device shall be installed immediately following the Reduced Pressure Backflow Prevention Assembly (alarm check valve, flow sensor/alarm, meter, etc.) as shown on the approved plans. Paddle–type flow alarms not permitted on dry systems.

4. Horizontal installations must be a minimum of 2' above the finished floor.

5. The fire service riser must be a minimum of 2' from any outside wall, and a minimum of 1' from any interior wall.

6. The incoming fire service line shall be a minimum of 6.5', and a max–imum of 7.5' below the finished grade.

7. All fire service line appurtenances shall have a minimum pressure rating of 175 PSI.

8. All fire service lines 4" and larger shall be Class 51 Ductile Iron Pipe.

9. Line sizing: The Reduced Pressure Backflow Prevention Assembly shall be equal in size to both the incoming pipe diameter (upstream) and outgoing pipe diameter (downstream). For example, a 4" fire service line should have a 4" Reduced Pressure Backflow Prevention Assembly.

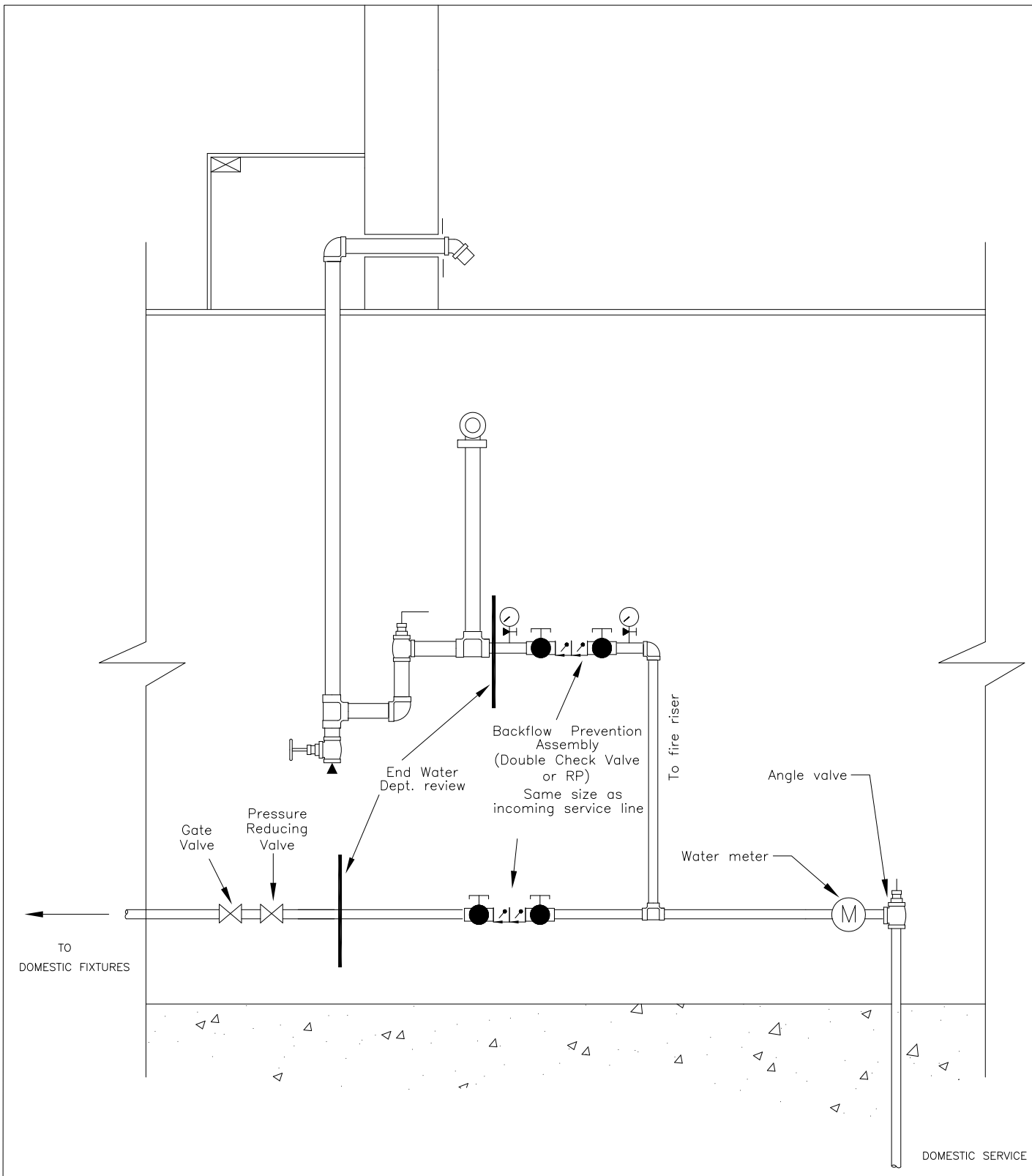
Should this installation criteria be impossible, or undesirable, the following modifications may be made:

a. The incoming pipe diameter (upstream) shall be the same size (nominal size) as the Reduced Pressure Backflow Prevention Assembly for a minimum of ten (10) pipe diameters upstream of (in front of) the Reduced Pressure Backflow Prevention Assembly.
b. The outgoing pipe diameter (downstream) shall be the same size (nominal size) as the Reduced Pressure Backflow Prevention Assembly for a minimum of three (3) pipe diameters downstream of (in back of) Reduced Pressure Backflow Prevention Assembly.
c. EXAMPLE:
   Incoming (upstream) fire service line = 4"
   Reduced Pressure Backflow Prevention Assembly = 2"
   Outgoing (downstream) line size = 4"

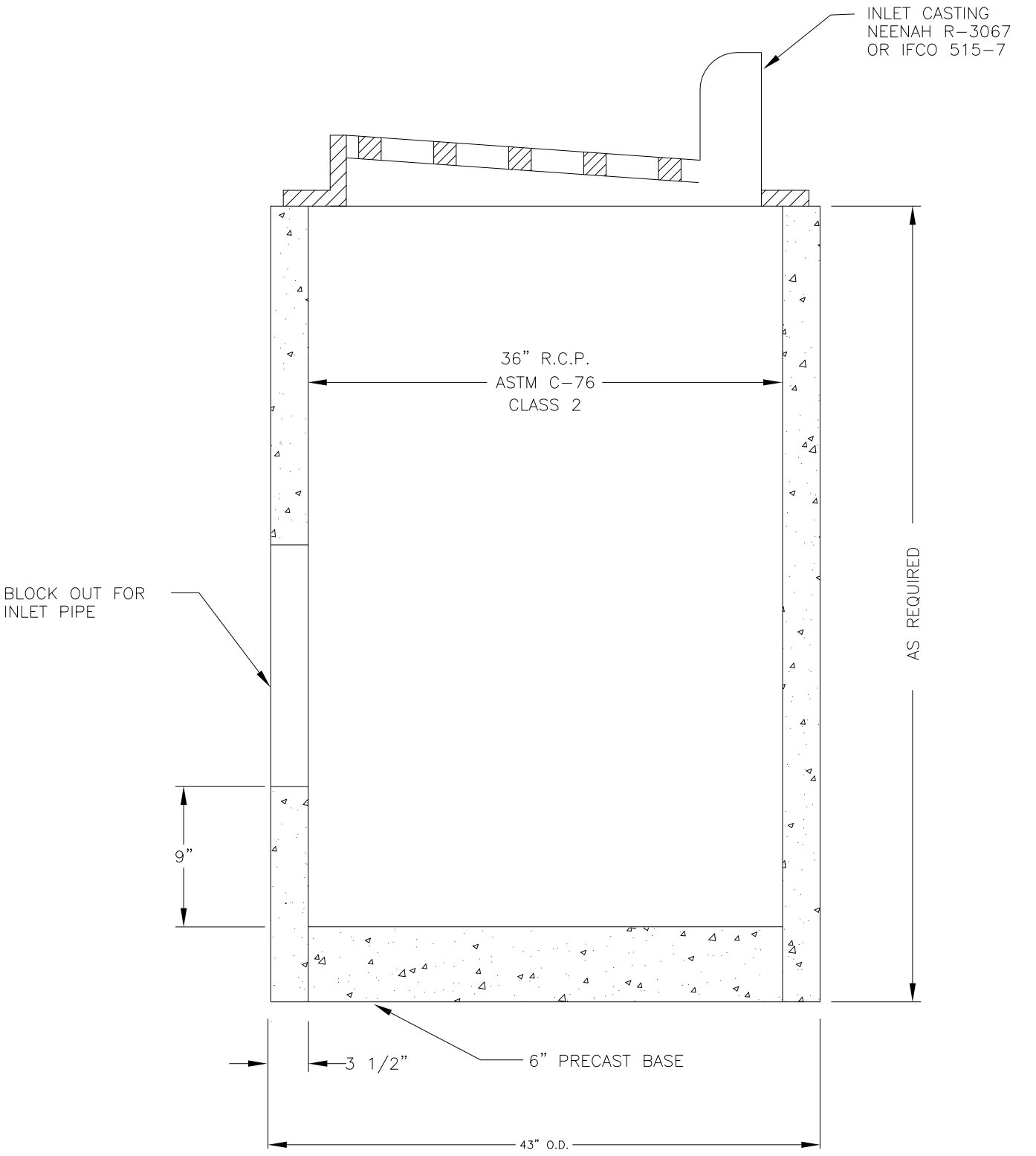
The incoming line upstream must be reduced to a 2" line size a minimum of 20" (10 x 2") prior to the installation of the Reduced Pressure Backflow Prevention Assembly, and the downstream line must be reduced to 2" for a distance of 6" (3 x 2") before it is upsized to the downstream line size of 4".

10. A drain is required.

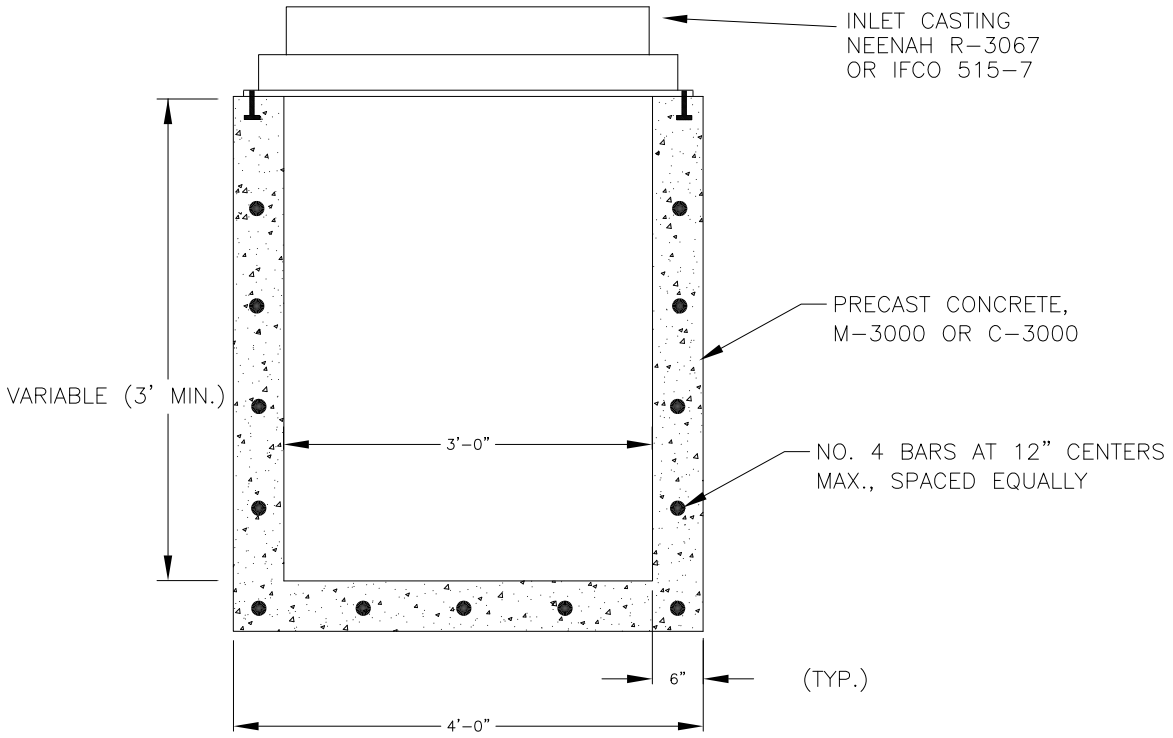
CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	STANDARD FIRE SERVICE LINE INSTALLATION FOR CLASS IV & V SYSTEMS	NO. 02719–4 AUG. 2011



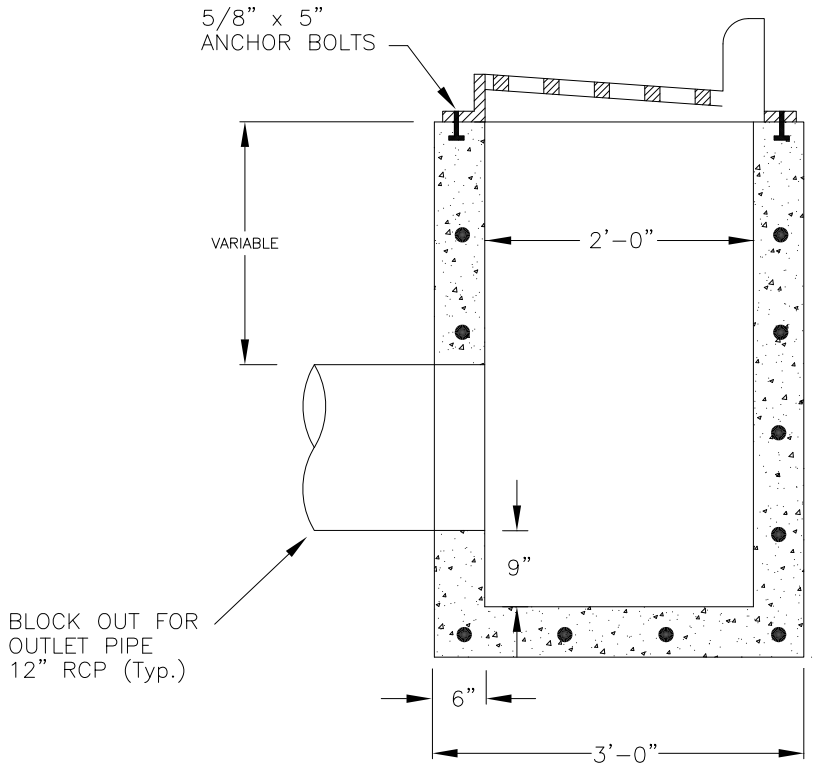
CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	TEMPORARY ALTERNATIVE WATER SUPPLY FOR DOWNTOWN BASEMENT SPRINKLER SYSTEMS	NO. 02719-5 AUG. 2011



CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	36" STANDARD STORM DRAIN INLET	NO. 02721-2 AUG. 2011



FRONT VIEW

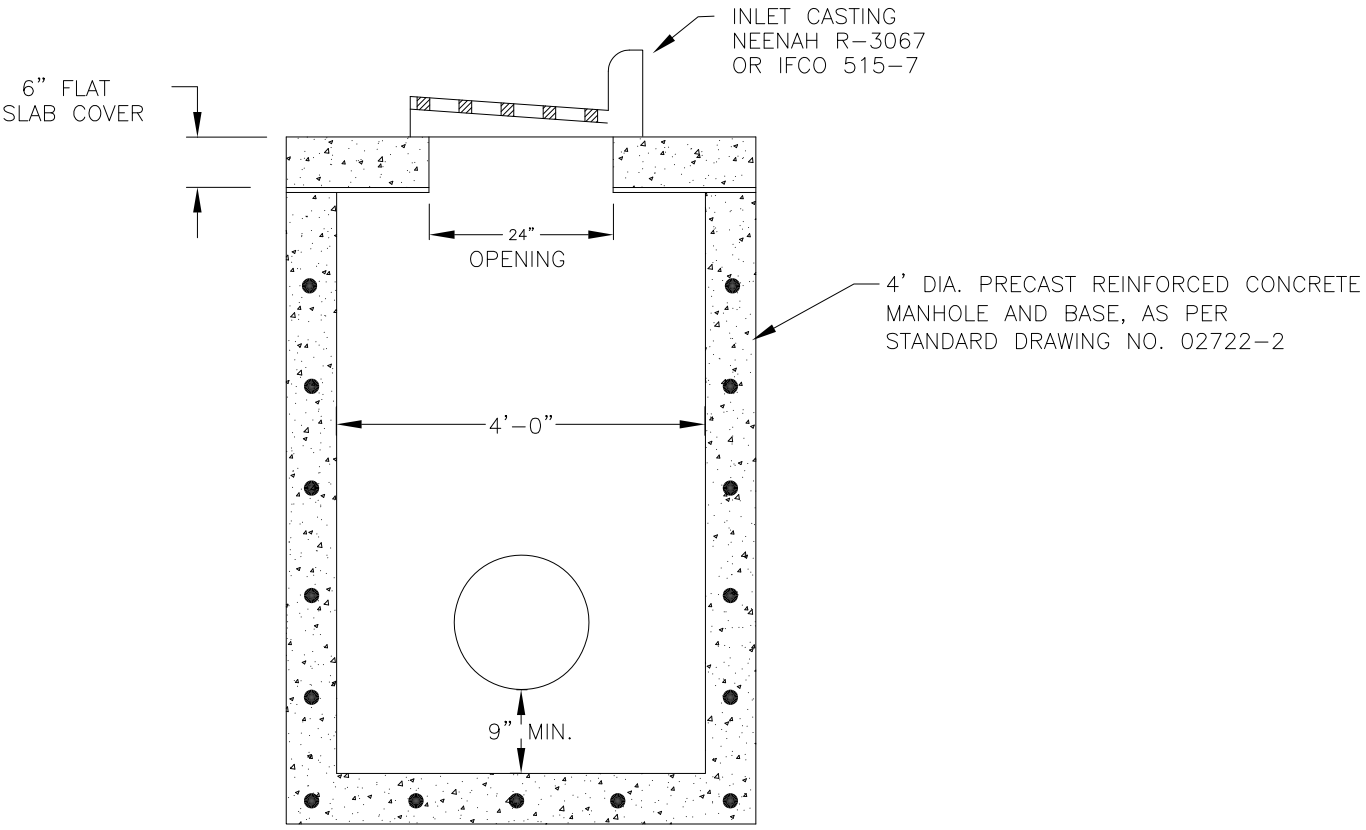


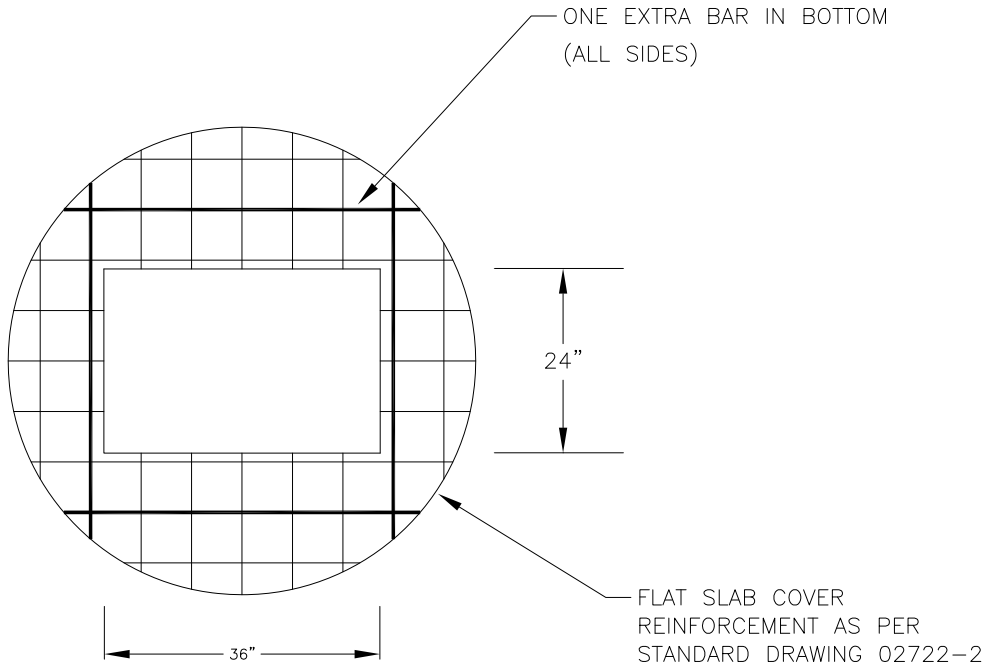
SIDE VIEW

CURB AND GUTTER TO BE WARPED TO MATCH INLET.

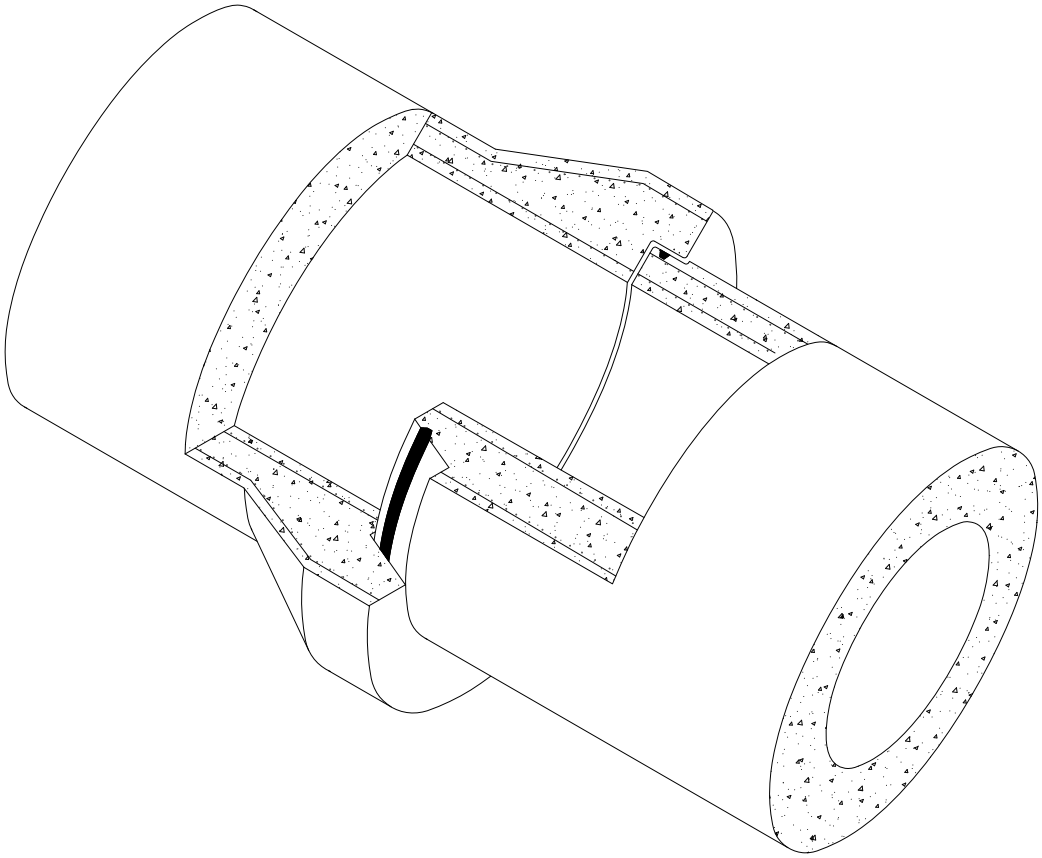
DESIGNERS WILL PROVIDE ADDITIONAL DESIGN DETAILS TO FIT SPECIFIC CONDITIONS.

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	STANDARD SQUARE STORM DRAIN INLET	NO. 02721-2A AUG. 2011

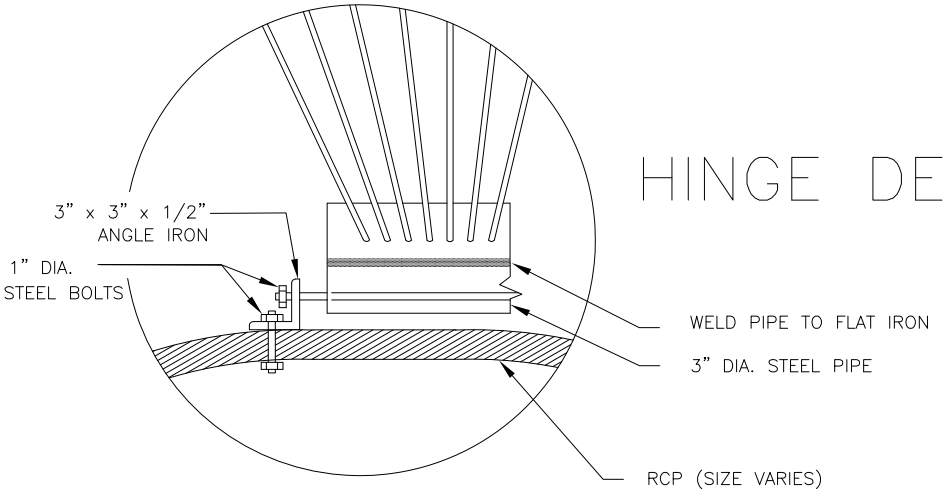




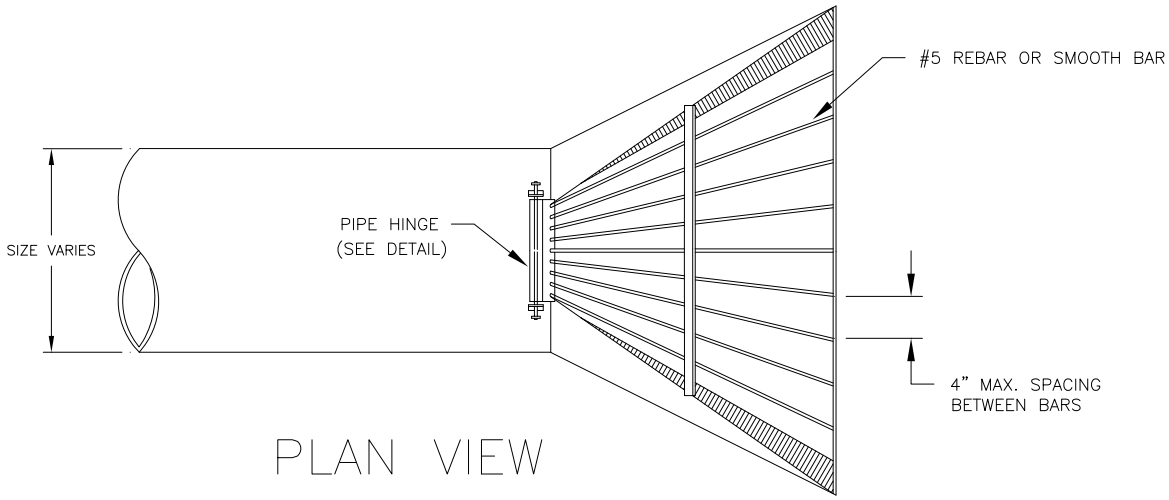
CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	COMBINATION MANHOLE AND CURB INLET	NO. 02721-2B AUG. 2011



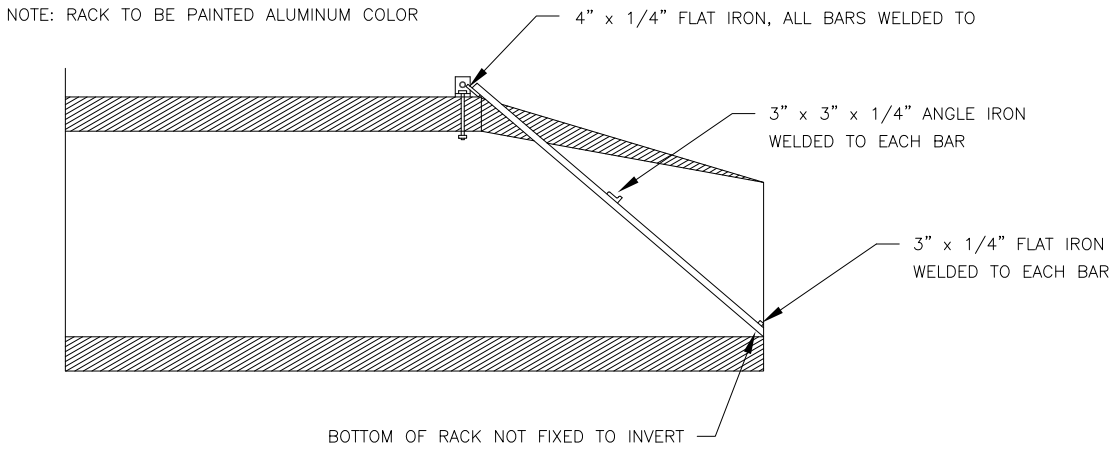
CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	REINFORCED CONCRETE PIPE O-RING GASKET JOINT ASTM C-443 and ASTM C-76	NO. 02721-4 AUG. 2011



HINGE DETAIL

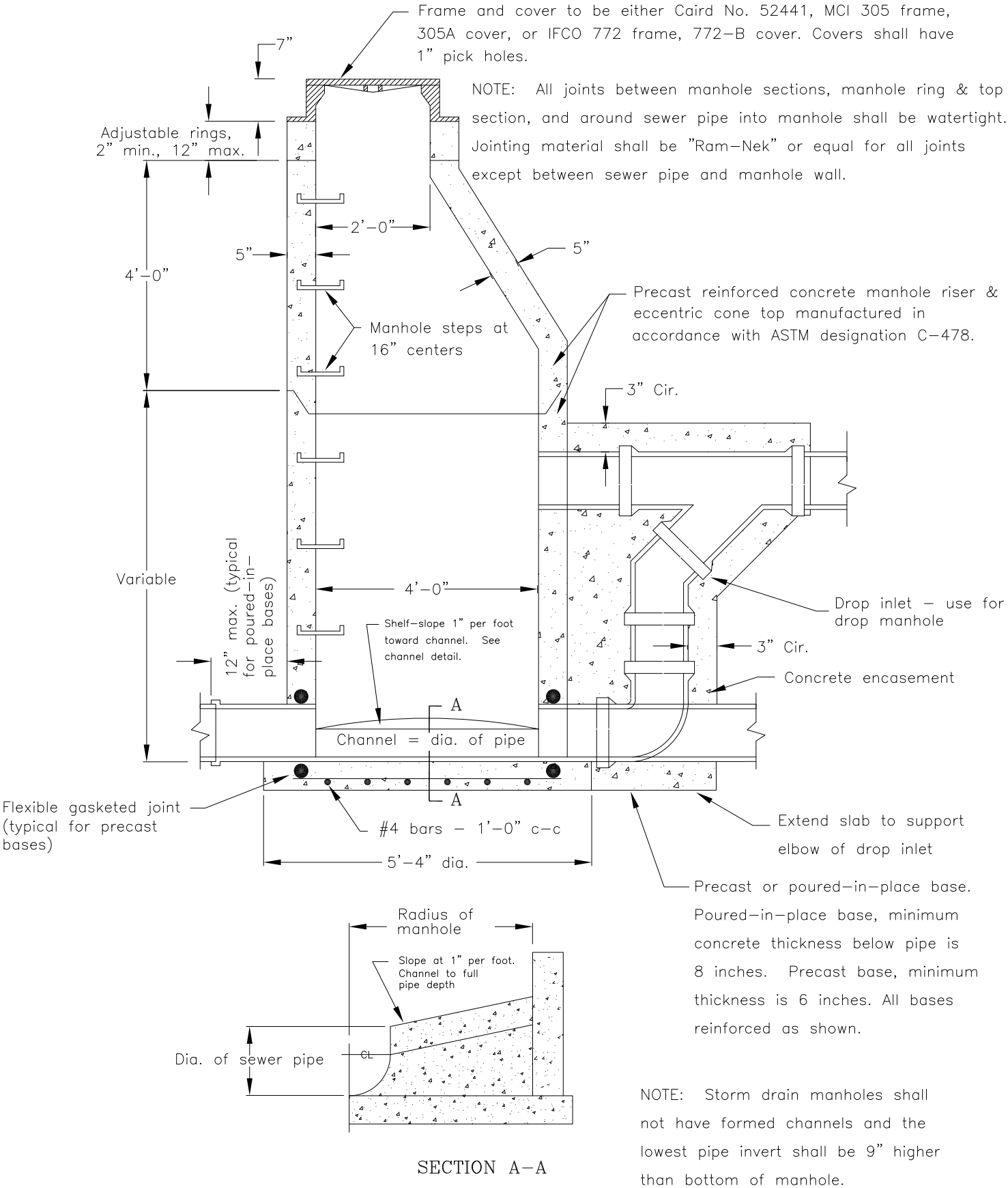


PLAN VIEW

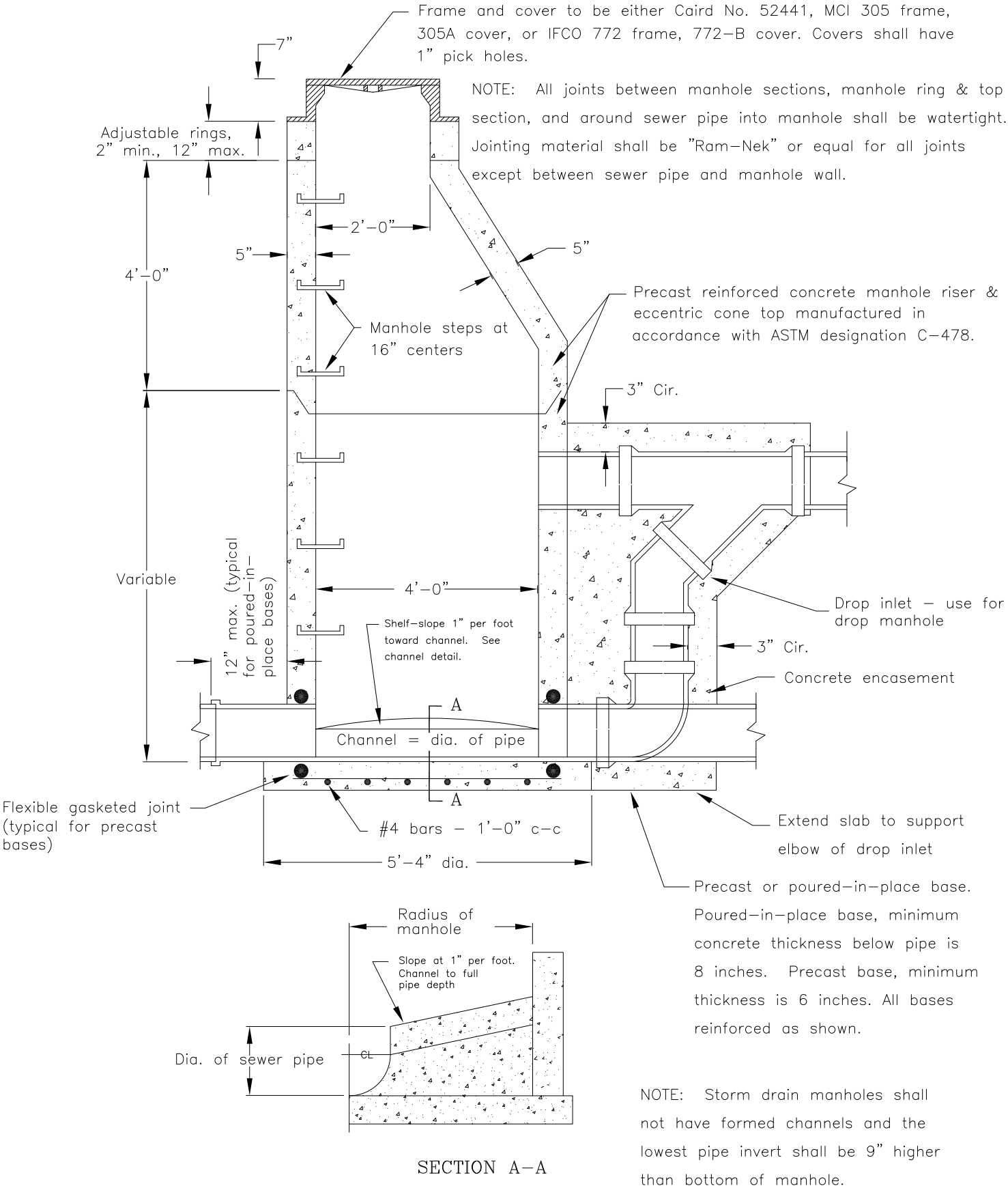


SECTION VIEW

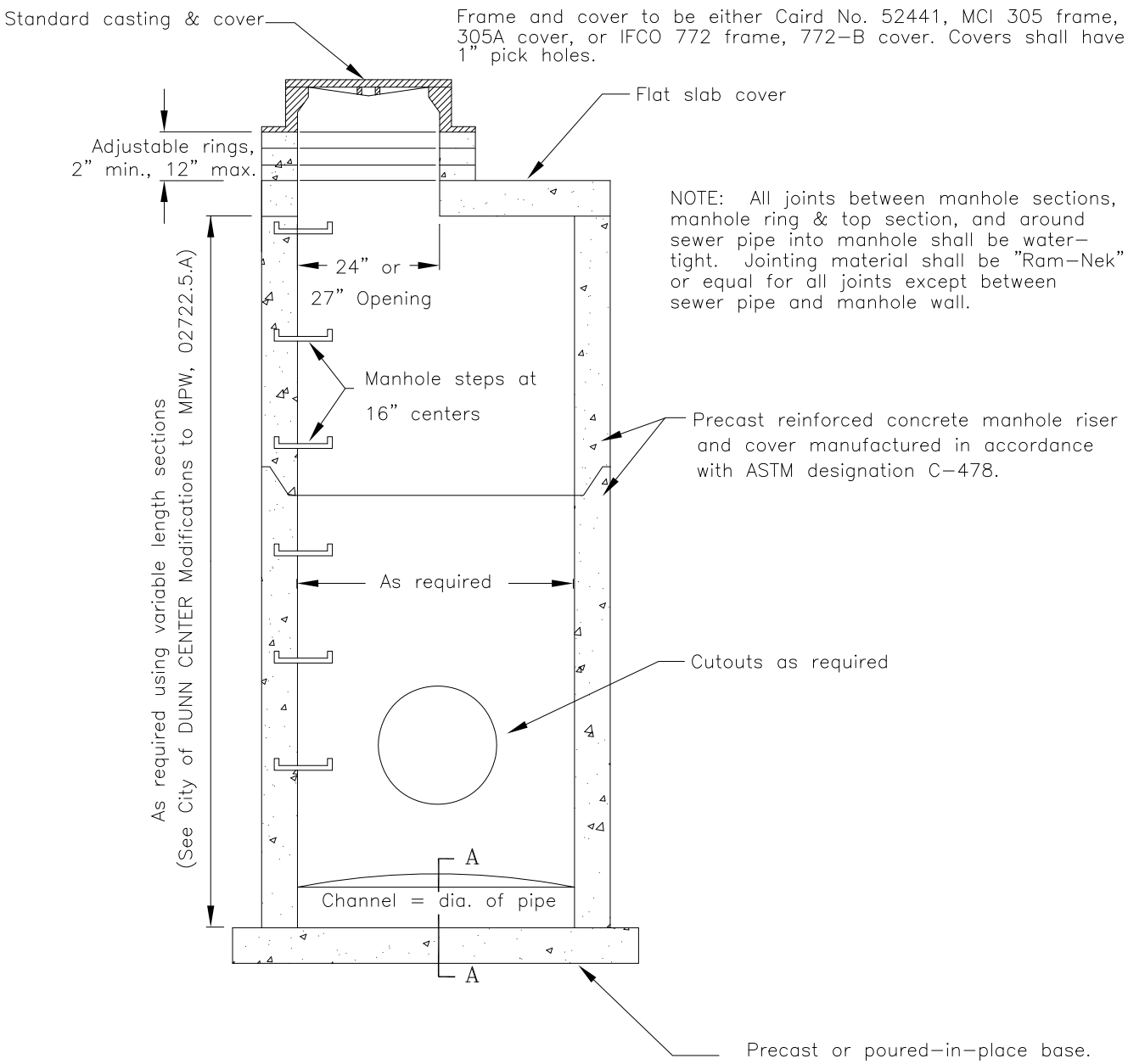
CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	STORM DRAIN DEBRIS RACK	NO. 02721-5 AUG. 2011

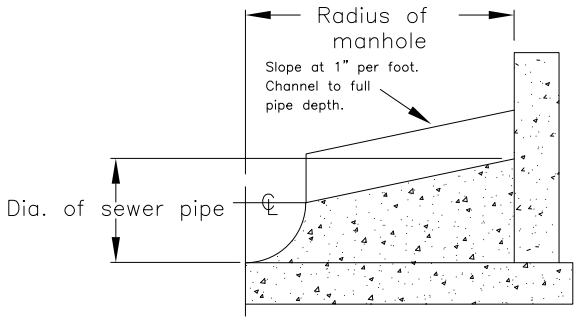


CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	SANITARY SEWER AND STORM DRAIN MANHOLE	NO. 02722–1 AUG. 2011



CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	SANITARY SEWER AND STORM DRAIN MANHOLE	NO. 02722–1 AUG. 2011

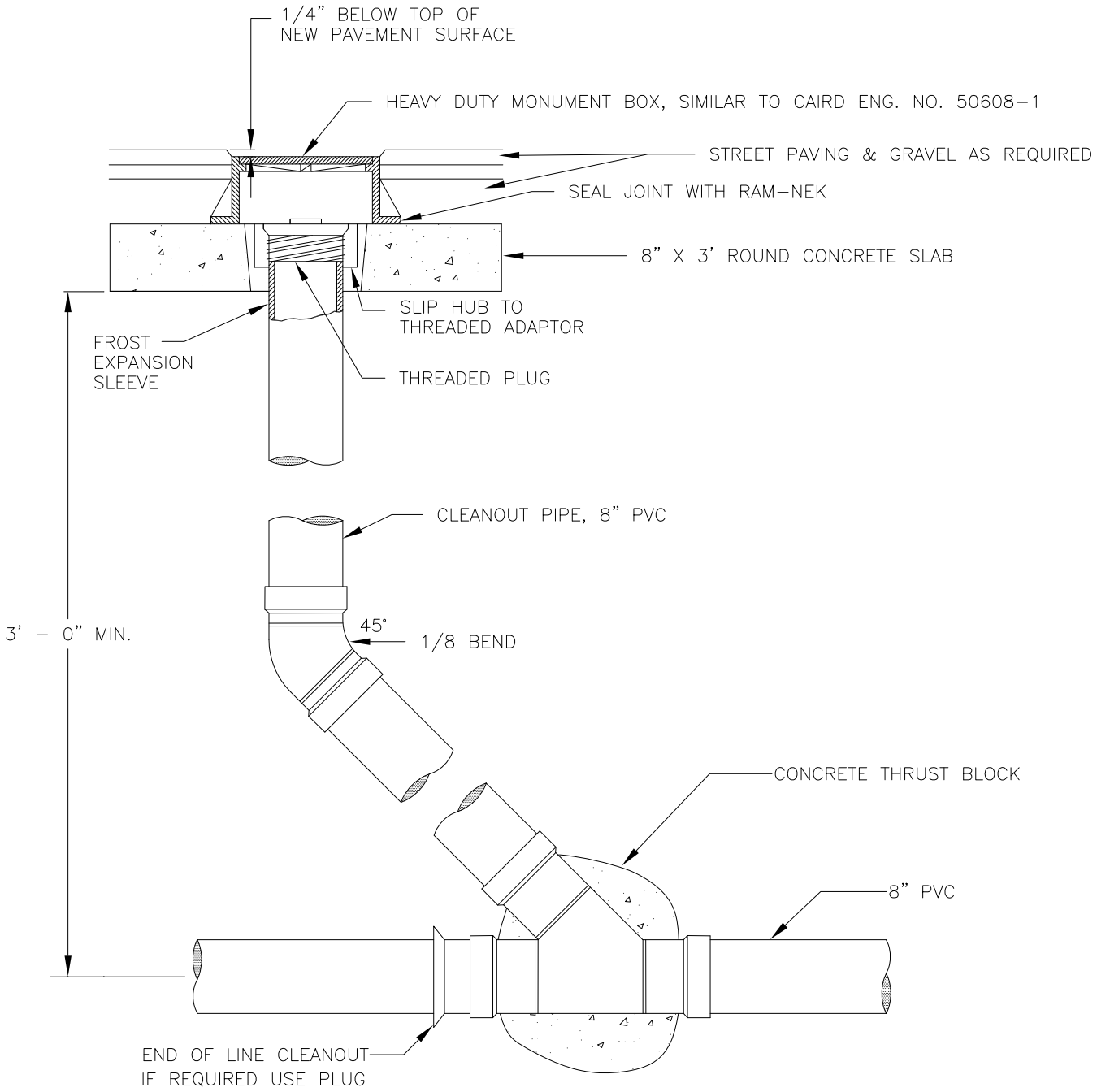




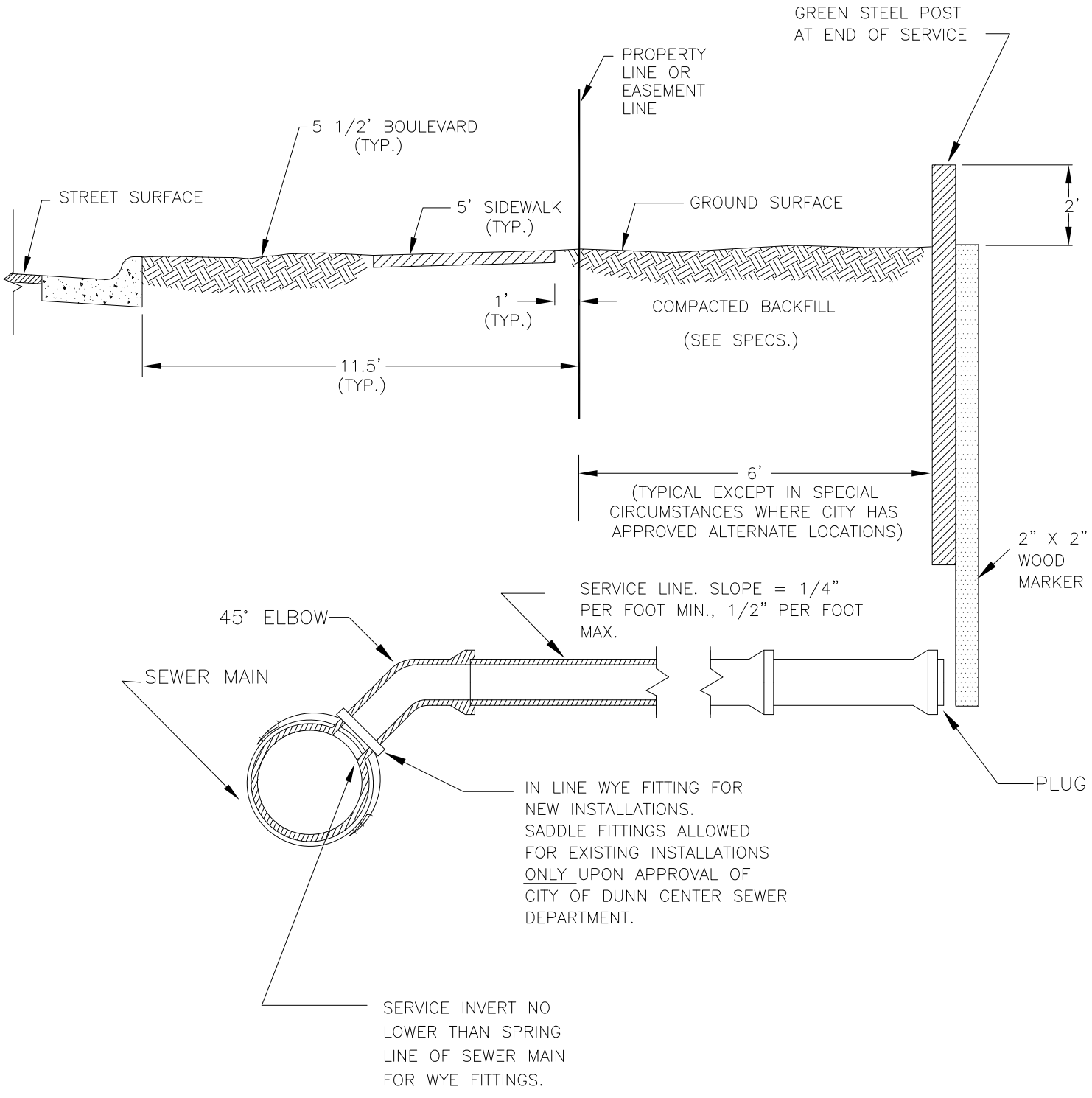
SECTION A–A

NOTE: Storm drain manholes shall not have formed channels and the lowest pipe invert shall be 9" higher than bottom of manhole.

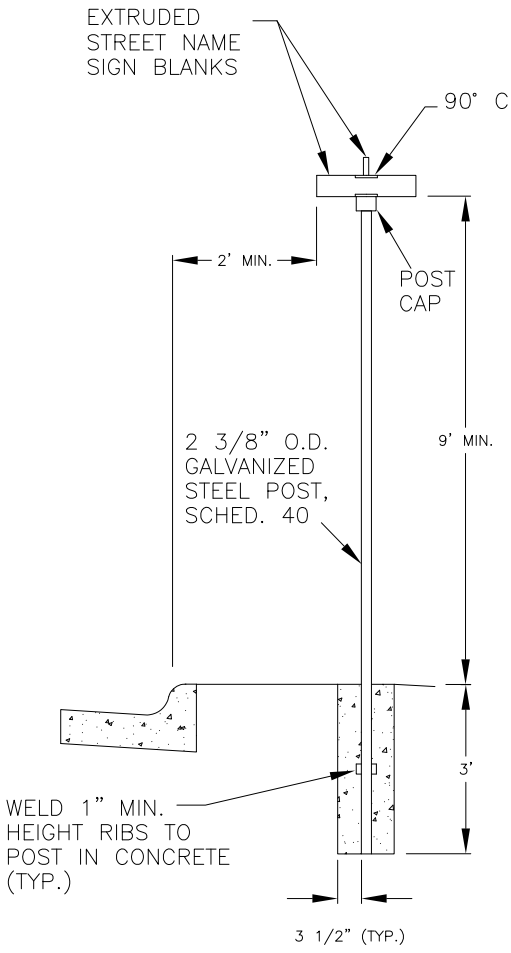
CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	STANDARD STRAIGHT MANHOLE	NO. 02722–2 AUG. 2011



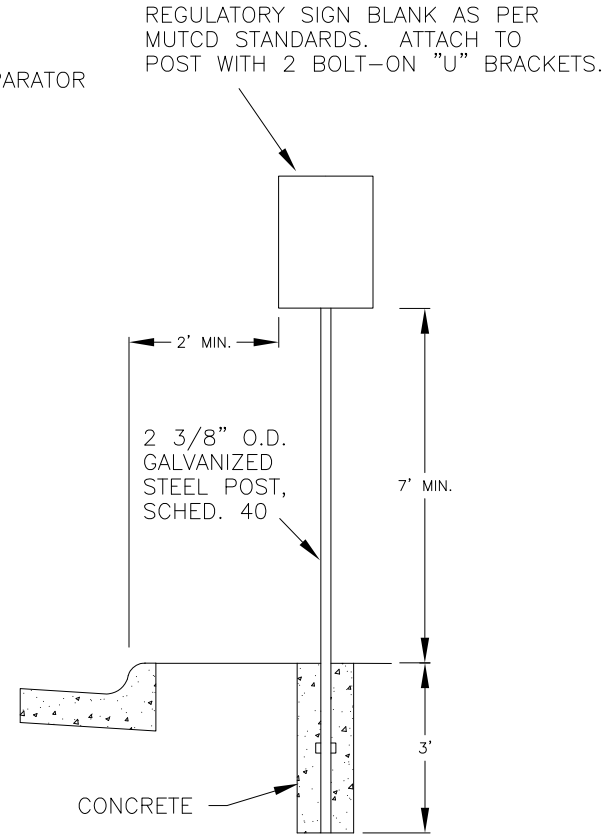
CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	SANITARY SEWER CLEANOUT	NO. 02722–9 AUG. 2011



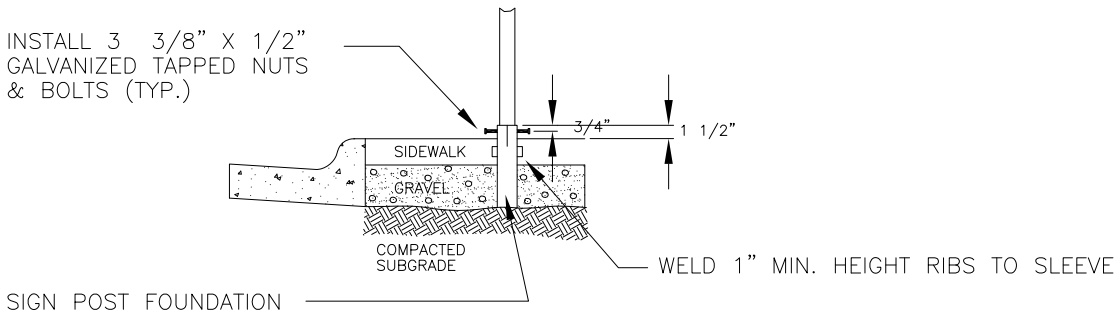
CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	SANITARY SEWER SERVICE LINE	NO. 02724-1 AUG. 2011



STREET MARKER SIGN

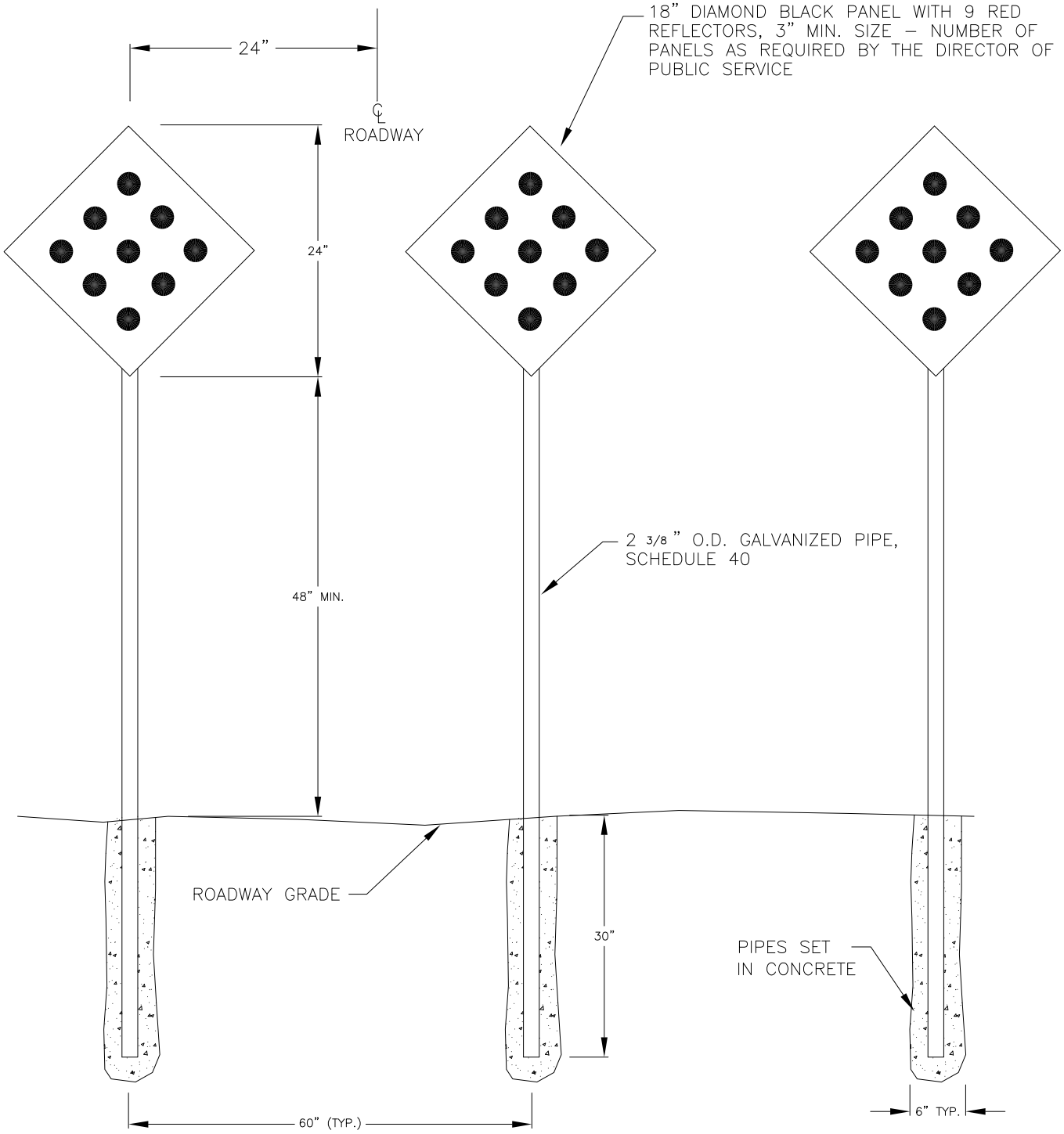


REGULATORY SIGN



SIGN POST FOUNDATION
SLEEVE DETAIL

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	SIGN INSTALLATION STANDARDS	NO. 09810-1 AUG. 2011



SIGN BLANKS SHALL BE CONSTRUCTION GRADE ALUMINUM, 0.08 INCH THICK, WITH ENGINEER GRADE REFLECTIVE SHEETING

CITY OF DUNN CENTER STANDARD DRAWING	SCALE: NONE	DEAD END BARRICADE DETAIL	NO. 09810–2 AUG. 2011