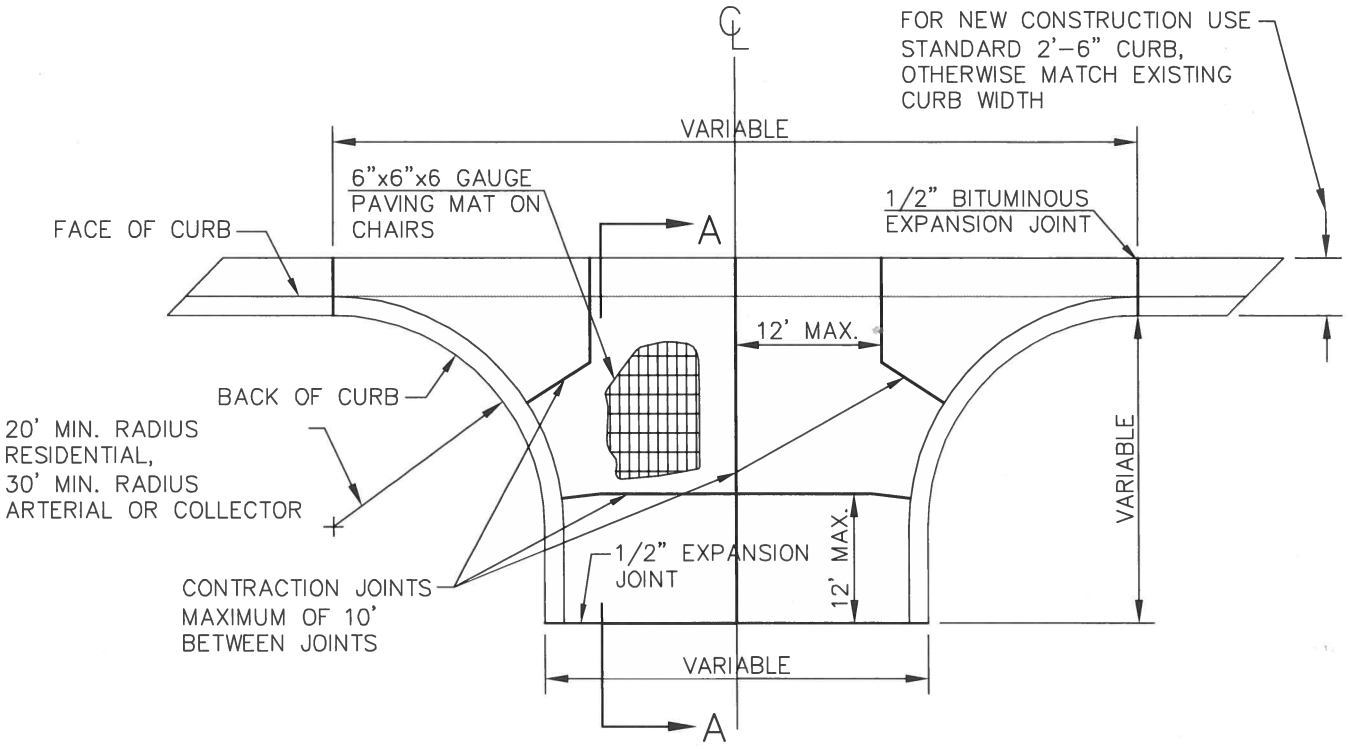
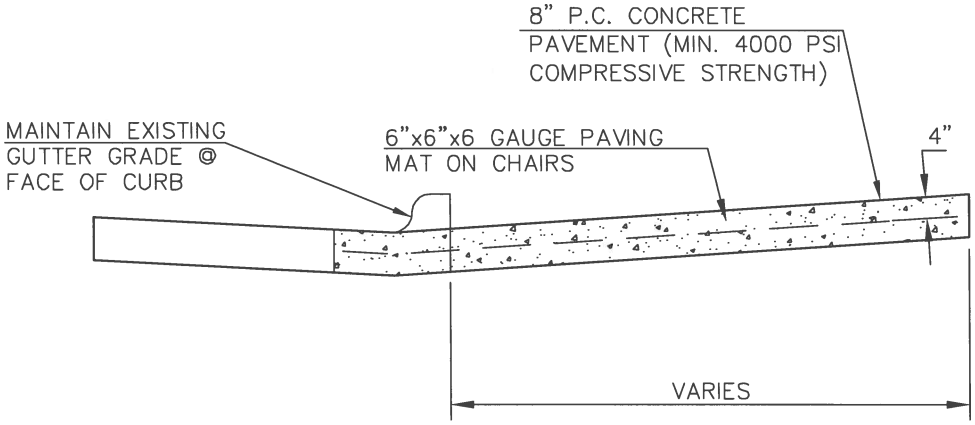


PLAN



SECTION A–A

NOTE: CONTRACTOR TO REVIEW STREET AND INTERSECTION GRADES PER PLANS TO ASSURE POSITIVE DRAINAGE AT INTERSECTION.

NOT TO SCALE

PUBLIC WORKS STANDARD DETAILS

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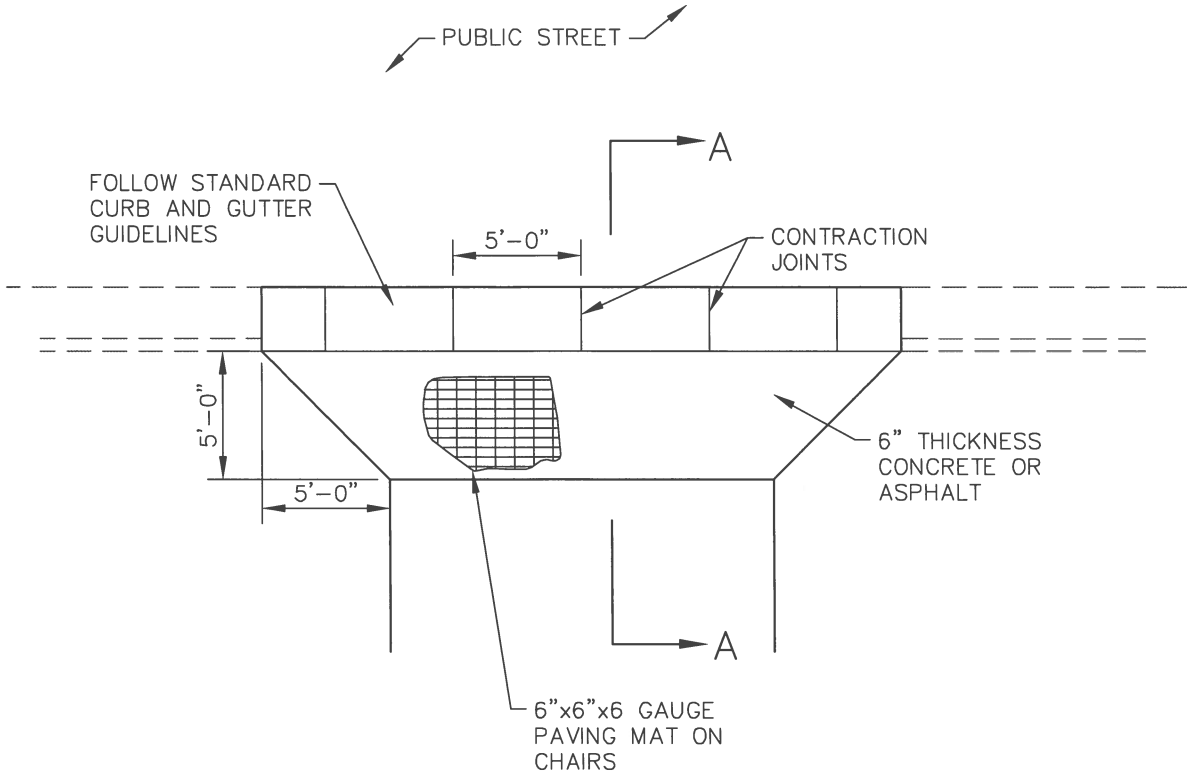
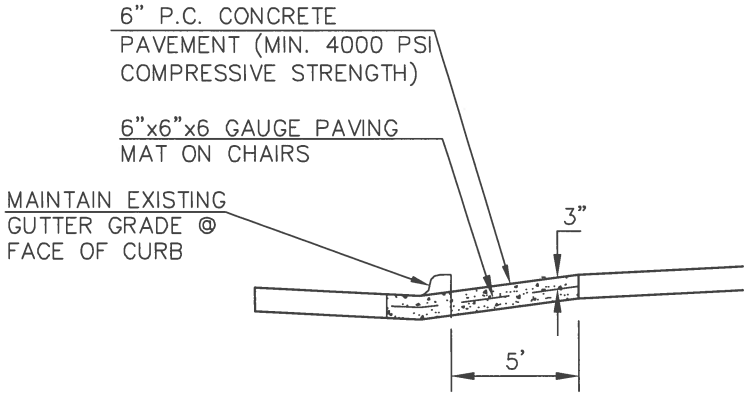
CONCRETE INTERSECTION

DATE: MARCH 2013
FILE NAME: CONC INTERSECTION.DWG

KVE PN A13_6318





SECTION A-A

NOTE: CONTRACTOR TO REVIEW STREET GRADES PER PLANS TO ASSURE POSITIVE DRAINAGE.

NOT TO SCALE

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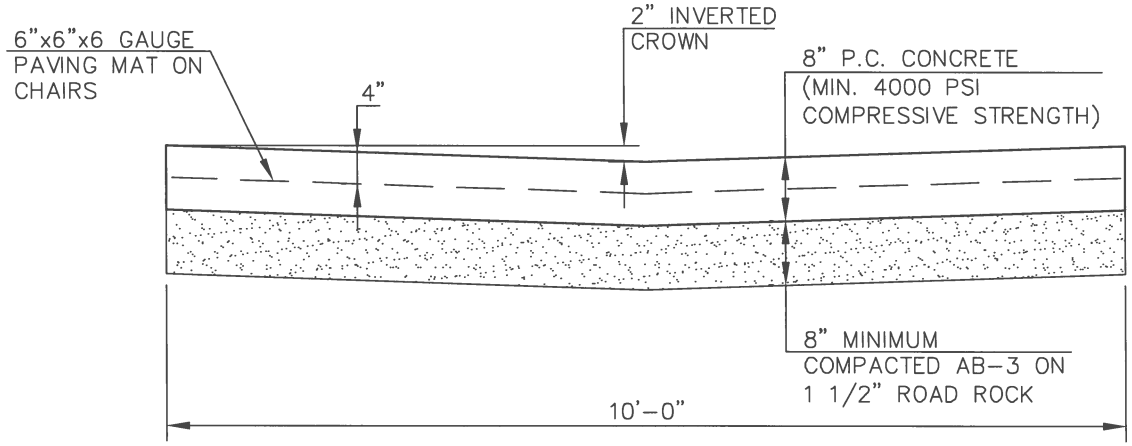
DRIVEWAY & ALLEY ENTRANCE DETAIL

DATE: MARCH 2013
FILE NAME: DRIVEWAY.DWG

KVE PN A13_6318



NOT TO SCALE

PUBLIC WORKS STANDARD DETAILS

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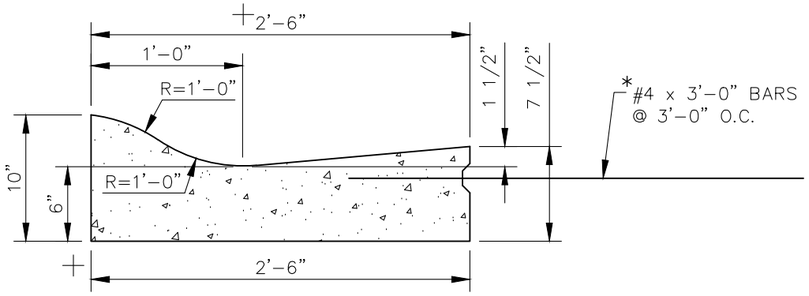
VALLEY GUTTER

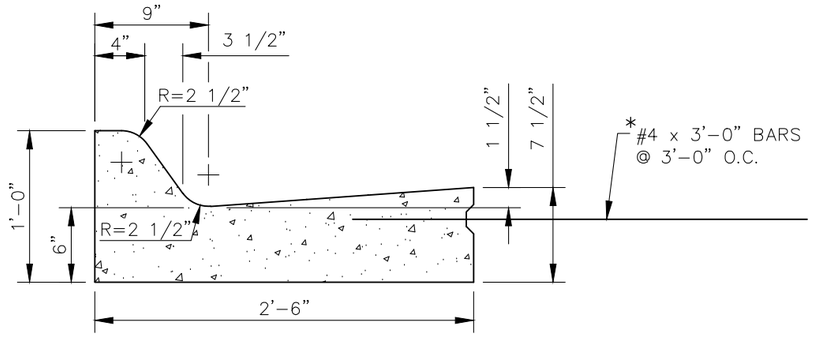
DATE: MARCH 2013
FILE NAME: VALLEY GUTTER.DWG

KVE PN A13_6318



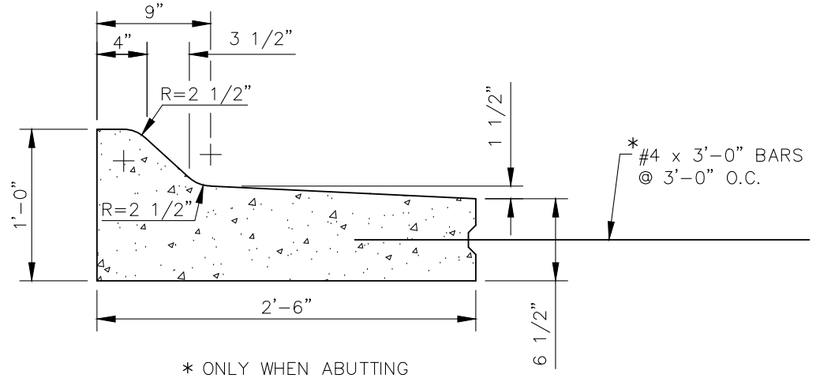
* ONLY WHEN ABUTTING
CONCRETE PAVEMENT

ROLLED BACK CURB



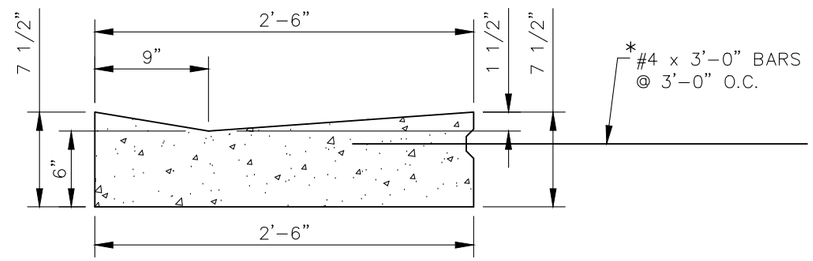
* ONLY WHEN ABUTTING
CONCRETE PAVEMENT

FULL HEIGHT CURB



* ONLY WHEN ABUTTING
CONCRETE PAVEMENT

DUMP CURB



* ONLY WHEN ABUTTING
CONCRETE PAVEMENT

ENTRANCE CURB

(FOR FULL HEIGHT CURB)

NOTE:
1. ALL REPLACEMENT CURB & GUTTER SHALL HAVE TWO #4 BARS EXTENDED THE LENGTH OF THE REPLACEMENT AT 9 INCHES FROM EACH EDGE.

2. MINIMUM 4000 PSI COMPRESSIVE STRENGTH CONCRETE.

NOT TO SCALE

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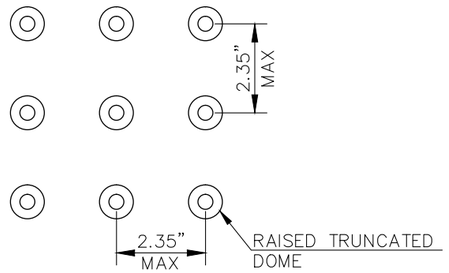
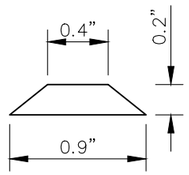
CURB DETAILS

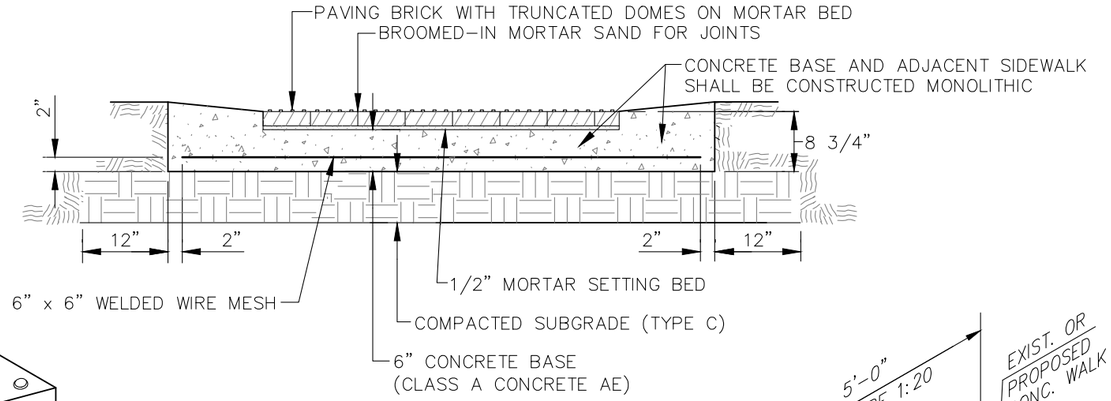
DATE: MARCH 2013
FILE NAME: CURB.DWG



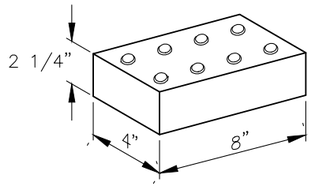
DETECTABLE WARNING SURFACE PATTERN



RAISED TRUNCATED DOME DETAIL

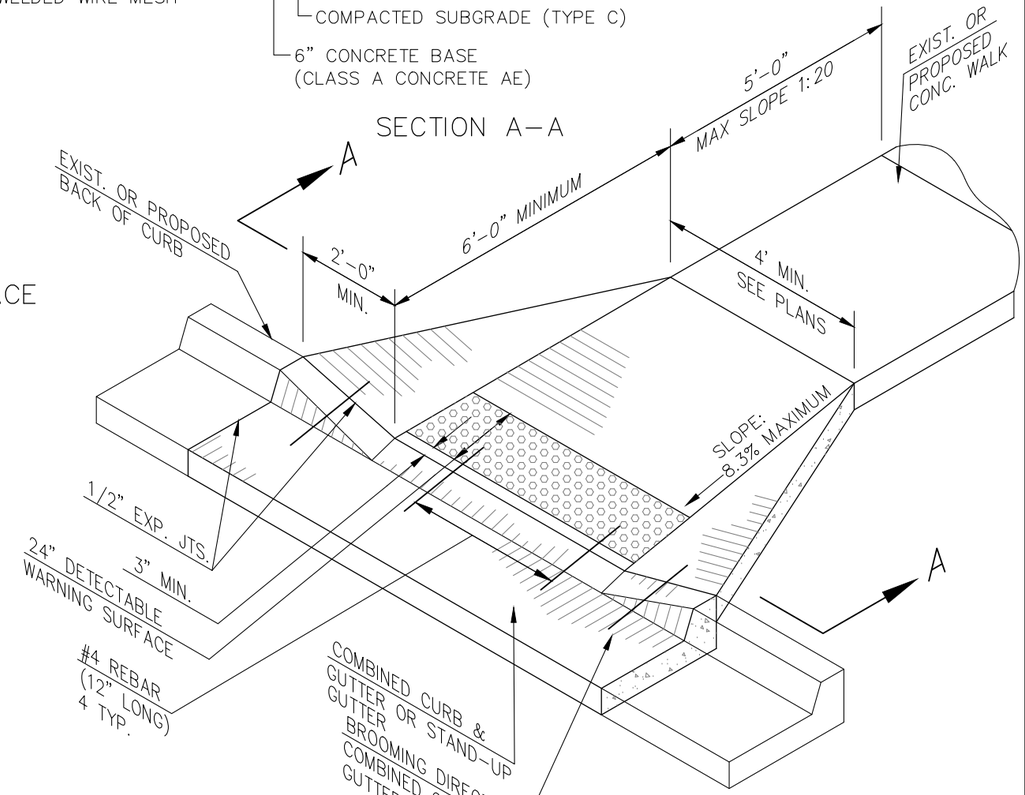


SECTION A-A



PAVER BRICK WITH TRUNCATED DOME SURFACE

ISOMETRIC OF RAMP WITH LANDING



ISOMETRIC OF RAMP WITH PERPENDICULAR WALK SHOWN

NOTE:
1. DETECTABLE WARNING SURFACE TO BE PLACED A MINIMUM OF 3 INCHES FROM BACK OF CURB AND ALIGNED IN THE DIRECTION OF PEDESTRIAN TRAVEL.

2. MINIMUM 4000 PSI COMPRESSIVE STRENGTH CONCRETE.

NOT TO SCALE

* DETECTABLE WARNING SURFACE ON RAMPS SHALL BE SUBJECT TO FEDERAL ADA CURRENT COMPLIANCE.

REV. #	REV. DATE	REV. BY	REVISION DESCRIPTION
1	7/15/15	JT	REVISED PER CITY REQUEST

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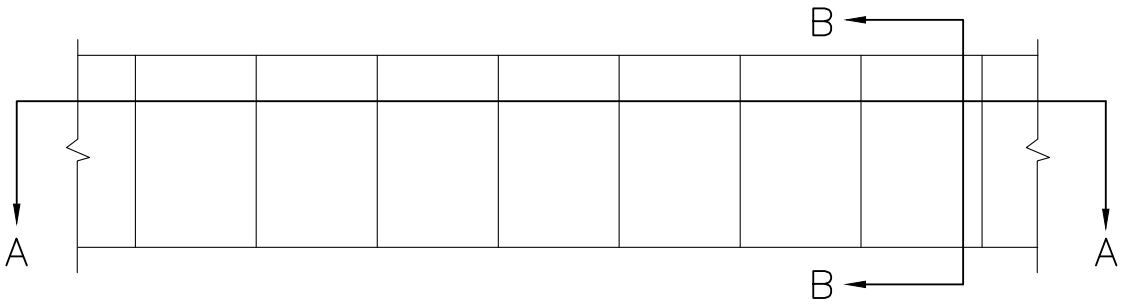
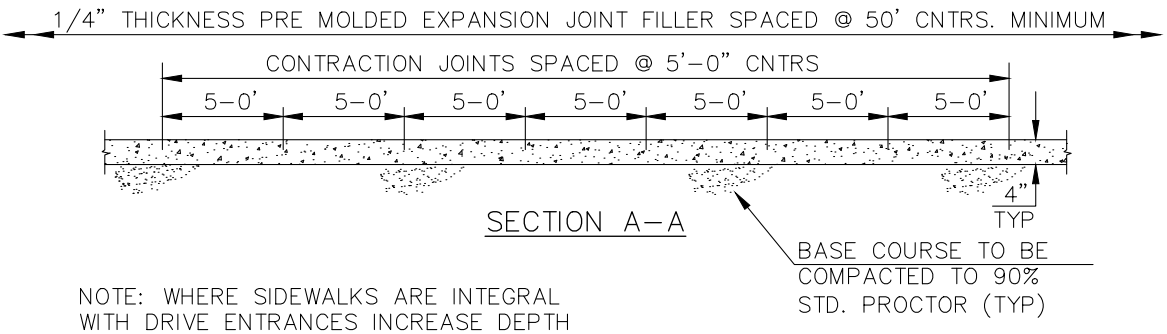
SIDEWALK RAMPS

DATE: MARCH 2013
FILE NAME: SIDEWALK RAMPS.DWG

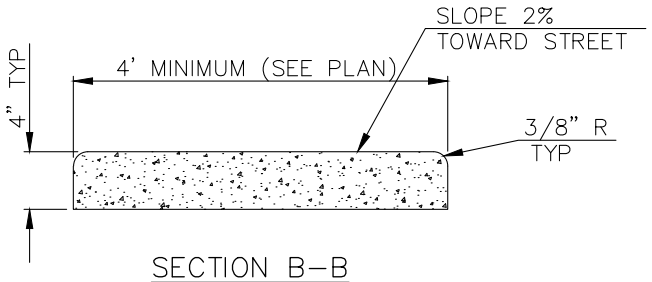


PLAN VIEW



SECTION A-A

NOTE: WHERE SIDEWALKS ARE INTEGRAL WITH DRIVE ENTRANCES INCREASE DEPTH TO 6" AND PROVIDE REINFORCING USING 6"x6"x6 GAUGE PAVING MAT MINIMUM.



SECTION B-B

NOTE: CONCRETE SHALL BE CLASS A WITH f'c = 4000 PSI.

REV. #	REV. DATE	REV. BY	REVISION DESCRIPTION
1	7/15/15	JT	REVISED PER CITY REQUEST

NOT TO SCALE

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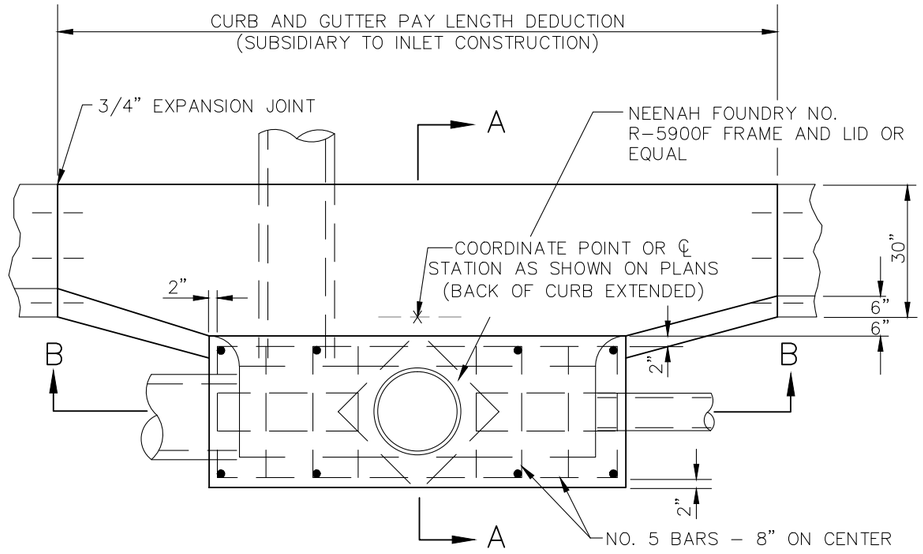
CONCRETE SIDEWALK

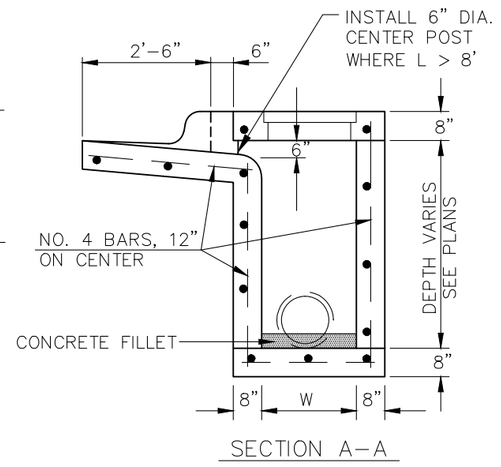
DATE: MARCH 2013

FILE NAME: CONC SIDEWALK.DWG

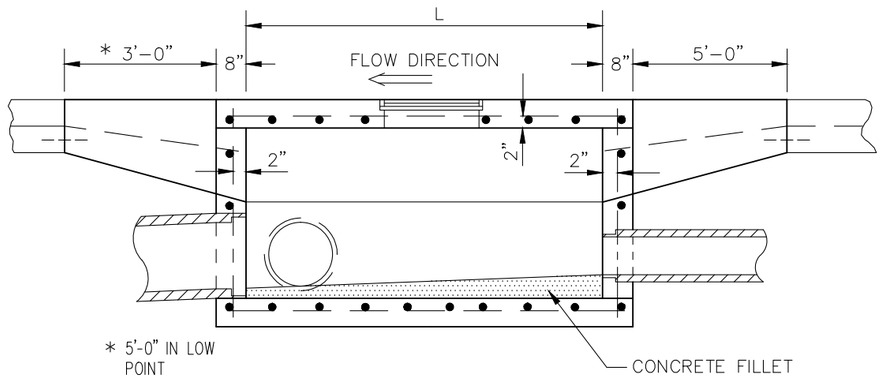
KVE PN A13_6318



TOP VIEW



SECTION A–A



SECTION B–B

NOTES:
1. USE 4000 P.S.I. CONCRETE IN SIDE WALL AND SLAB.
2. PROVIDE 3/4" ROUNDED EDGE ON ALL EXPOSED CORNERS.
3. WHERE INLETS ARE SET IN CURVES, FORM FRONT WALL TO CONFORM TO CURVE.
4. PRE-CAST UNITS MAY BE SUBSTITUTED WITH THE ENGINEERS APPROVAL. SHOP DRAWINGS AND DESIGN CALCULATIONS MUST BE SUBMITTED.
5. THE TOP OF THE INLET SHALL BE SLOPED TO FIT STREET, SIDEWALK, OR FINISHED GROUND ELEVATIONS

NOT TO SCALE

REV. #	REV. DATE	REV. BY	REVISION DESCRIPTION
1	7/15/15	JT	REVISED PER CITY REQUEST

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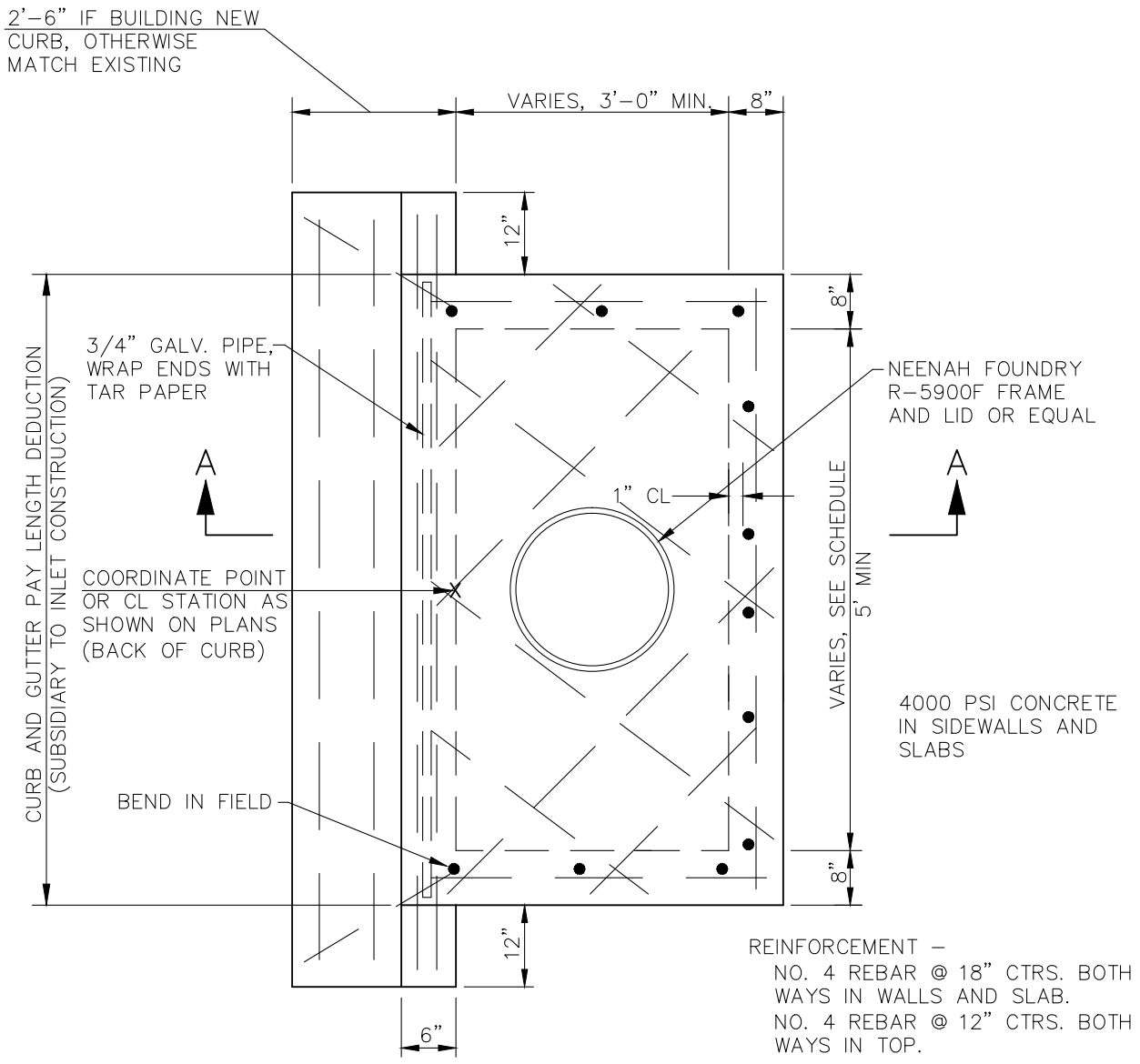
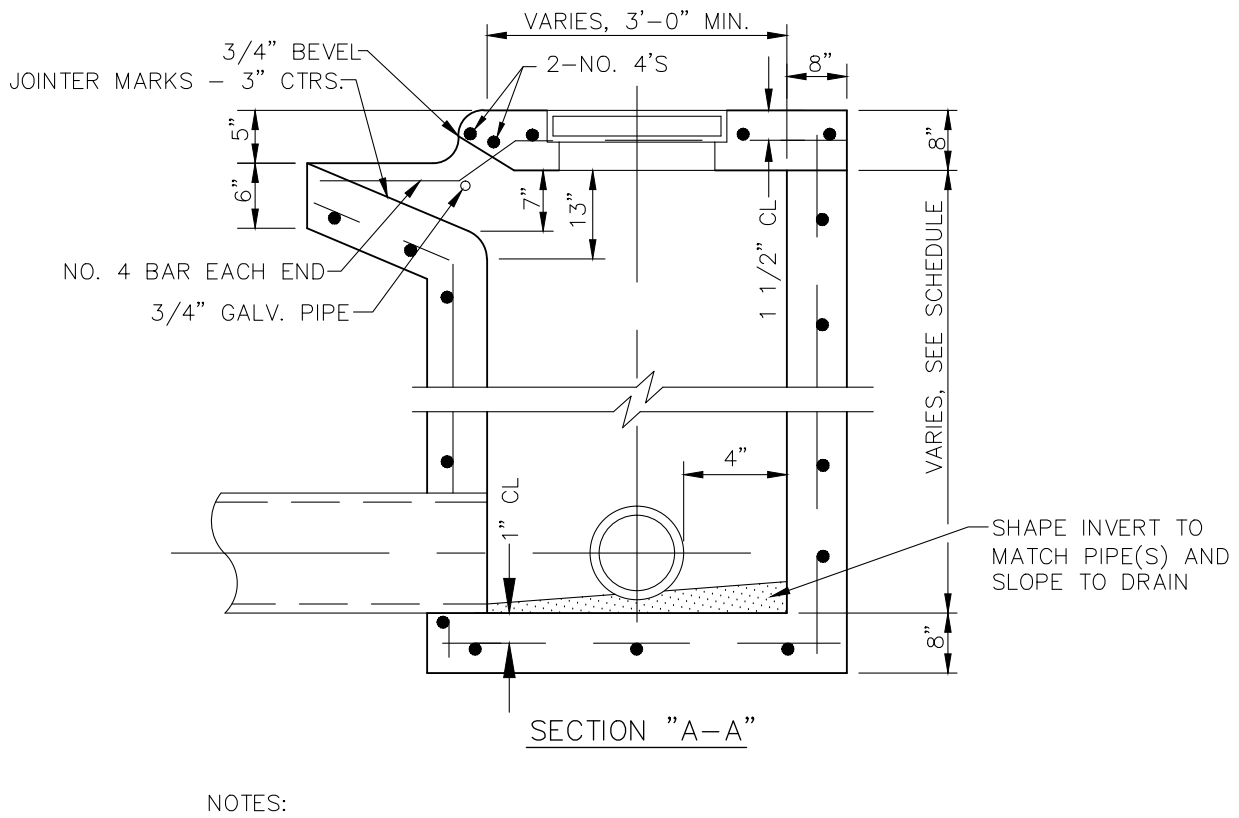
SETBACK CURB INLET

DATE: MARCH 2013

FILE NAME: CURB INLET SETBACK.DWG



TOP VIEW



SECTION "A–A"

NOTES:
1. USE 4000 P.S.I. CONCRETE IN SIDE WALL AND SLAB.
2. PROVIDE 3/4" ROUNDED EDGE ON ALL EXPOSED CORNERS.
3. WHERE INLETS ARE SET IN CURVES, FORM FRONT WALL TO CONFORM TO CURVE.
4. PRE–CAST UNITS MAY BE SUBSTITUTED WITH THE ENGINEERS APPROVAL. SHOP DRAWINGS AND DESIGN CALCULATIONS MUST BE SUBMITTED.
5. THE TOP OF THE INLET SHALL BE SLOPED TO FIT STREET, SIDEWALK, OR FINISHED GROUND ELEVATIONS

REV. #	REV. DATE	REV. BY	REVISION DESCRIPTION
1	7/15/15	JT	REVISED PER CITY REQUEST

NOT TO SCALE

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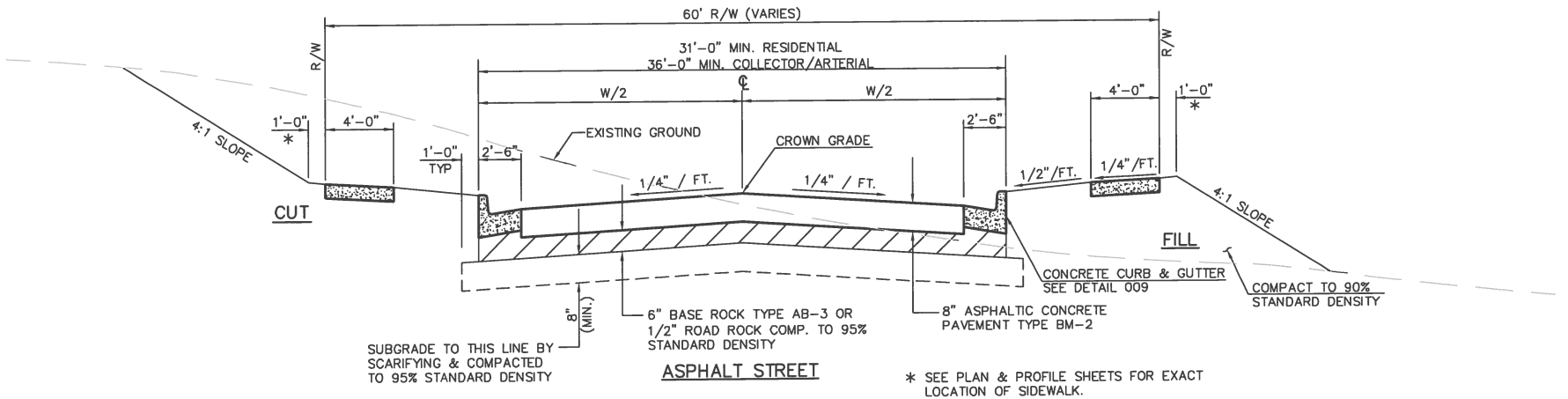
CURB INLET

DATE: MARCH 2013

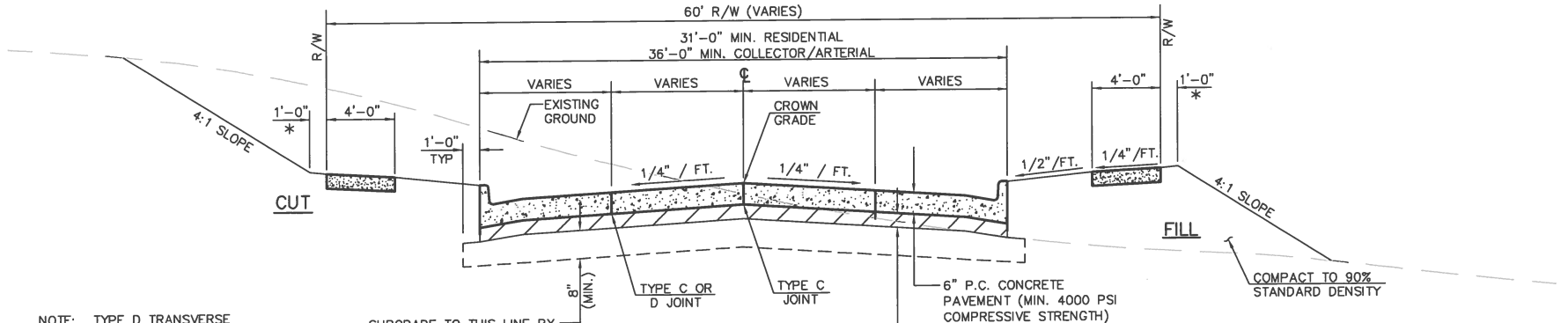
FILE NAME: CURB INLET.DWG

KVE PN A13_6318



ASPHALT STREET

* SEE PLAN & PROFILE SHEETS FOR EXACT LOCATION OF SIDEWALK.



NOTE: TYPE D TRANSVERSE CONTRACTION JOINTS REQUIRED ON 12'-0" CENTERS.

CONCRETE STREET
ALTERNATE

* SEE PLAN & PROFILE SHEETS FOR EXACT LOCATION OF SIDEWALK.

NOT TO SCALE

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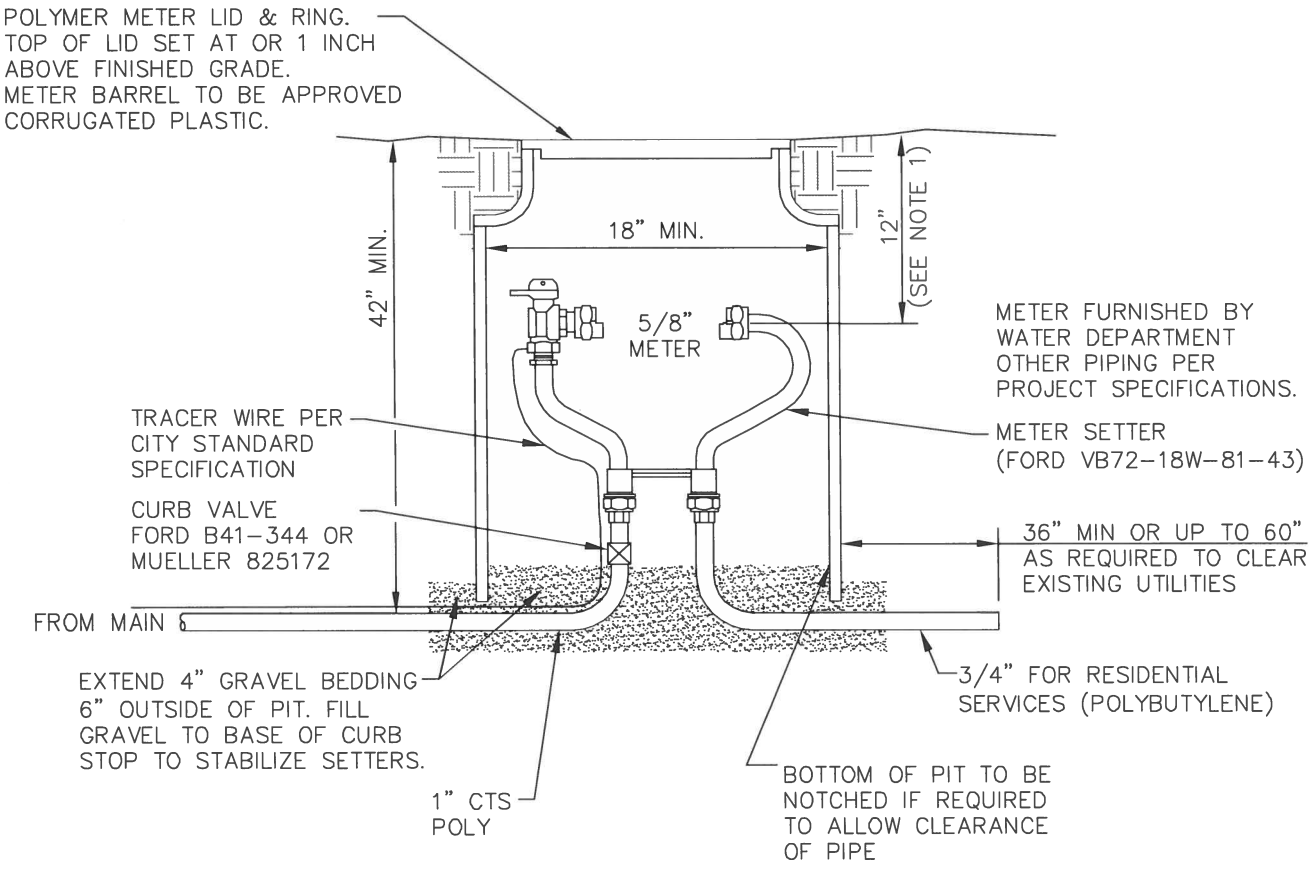
TYPICAL STREET SECTION

DATE: MARCH 2013
FILE NAME: TYPICAL SECTION.DWG

KVE PN A13_6318



GENERAL RULES

1. CLEARANCE FROM FINISHED GRADE TO CENTERLINE OF METER REGISTER.
2 90% COMPACTION IS REQUIRED UNDER AND AROUND ALL METER PITS.

NOT TO SCALE

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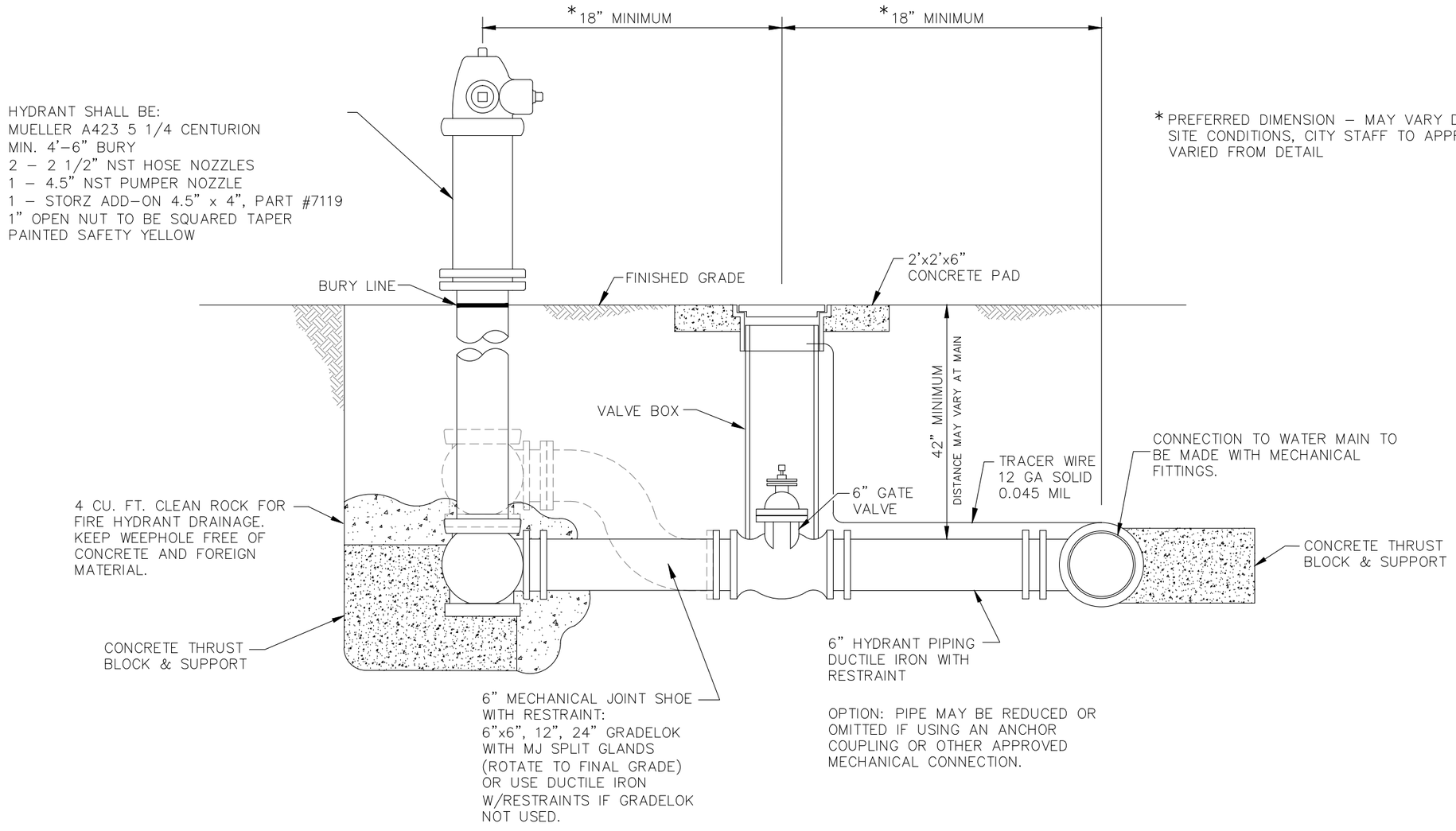
DOMESTIC WATER METER SET FOR 3/4" & 1" SERVICE LINES

DATE: MARCH 2013
FILE NAME: WATER METER.DWG

KVE PN A13_6318



NOTE: CONTRACTOR TO TAKE CARE IN PLACING FIRE HYDRANT AT PROPER ELEVATIONS. ANY ADJUSTMENTS OR FITTINGS REQUIRED TO PLACE FIRE HYDRANT AT PROPER ELEVATION WILL BE AT THE CONTRACTORS EXPENSE INCLUDING INSTALLATION ON EXISTING MAINS. WHEN FIRE HYDRANT IS LOCATED WITHIN 4'-6" OF WATER MAIN, THERE WILL BE NO PAYMENT FOR WATER MAIN TO HYDRANT. UP TO 4'-6" IS PAID FOR UNDER FIRE HYDRANT WITH GATE VALVE BID ITEM.

NOT TO SCALE

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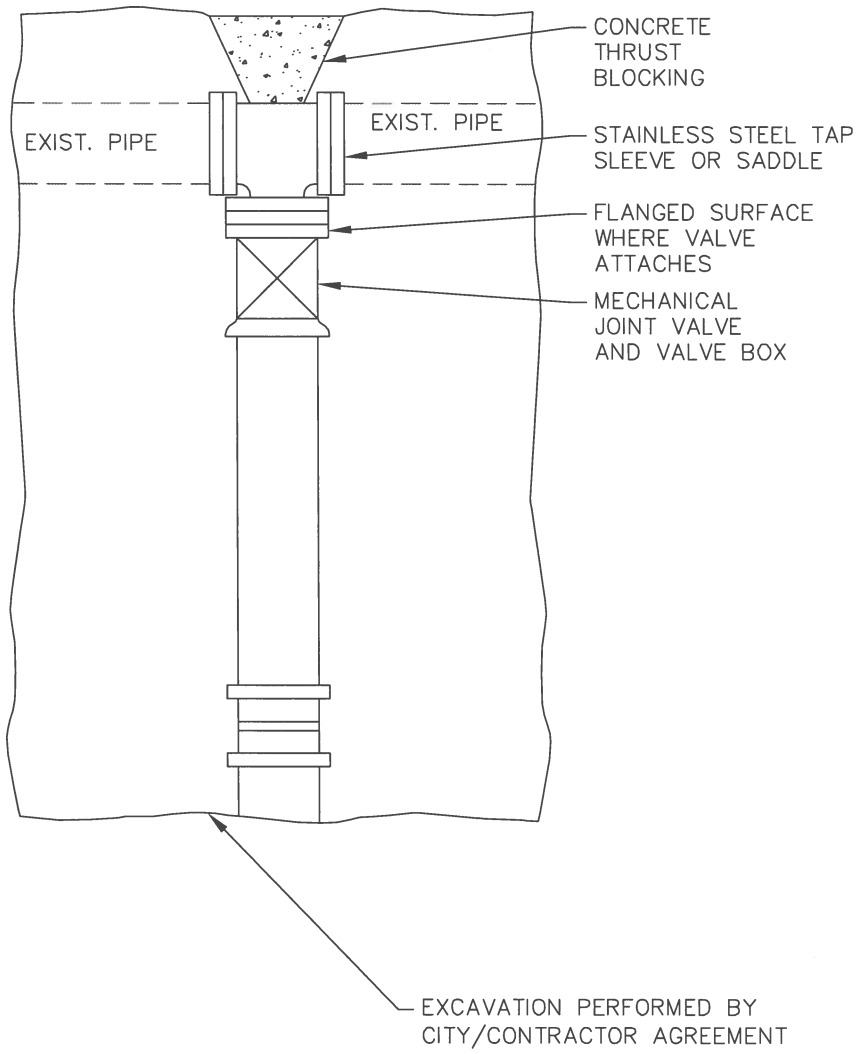
FIRE HYDRANT ASSEMBLY

DATE: SEPT 2013
FILE NAME: FIRE HYDRANT.DWG



GENERAL RULES

1. BEFORE PERFORMING TAP, AIR TEST TAPPING SLEEVE AND VALVE TO 150 LBS. FOR 2 HOURS.

NOT TO SCALE

PUBLIC WORKS STANDARD DETAILS

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SIDE-TAPPING WATER MAIN DETAIL

DATE: MARCH 2013
FILE NAME: WATER TAP.DWG

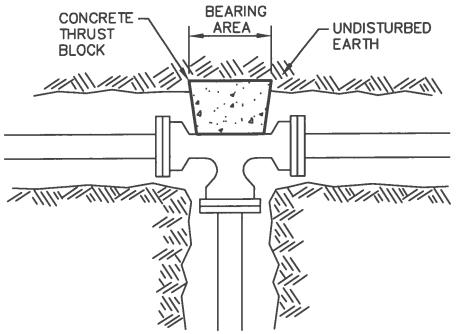
KVE PN A13_6318

THRUST BLOCK BEARING AREA					
PIPE SIZE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND	TEE
4"	2 SQ. FT.	1 SQ. FT.	1 SQ. FT.	1 SQ. FT.	1 SQ. FT.
6"	3 SQ. FT.	2 SQ. FT.	1 SQ. FT.	1 SQ. FT.	2 SQ. FT.
8"	5 SQ. FT.	3 SQ. FT.	2 SQ. FT.	1 SQ. FT.	3 SQ. FT.
10"	7 SQ. FT.	4 SQ. FT.	2 SQ. FT.	2 SQ. FT.	5 SQ. FT.
12"	12 SQ. FT.	7 SQ. FT.	4 SQ. FT.	3 SQ. FT.	8 SQ. FT.

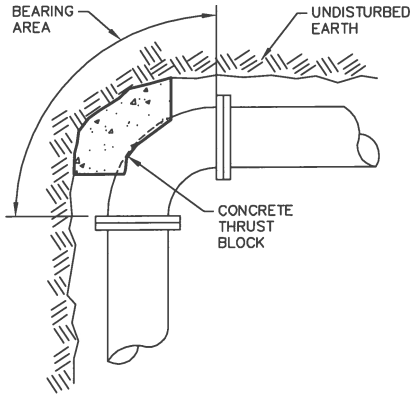
VERTICAL CHANGE ANCHORS								
PIPE SIZE	90° BEND		45° BEND		22 1/2° BEND		11 1/4° BEND	
	CONCRETE NO.		CONCRETE NO.		CONCRETE NO.		CONCRETE NO.	
	C.Y.	BAR	C.Y.	BAR	C.Y.	BAR	C.Y.	BAR
6"	2.0	2	1.0	1	1.0	1	1.0	1
8"	3.5	4	2.0	2	1.0	1	1.0	1
10"	5.5	6	3.0	3	1.5	2	1.0	1
12"	8.0	8	4.5	5	2.5	3	2.0	2

BLOCKING OF TEES IS TO BE PLACED OPPOSITE THE BRANCH & AREA IS BASED ON BRANCH SIZE. ALL MATERIAL, LABOR, AND EQUIPMENT REQUIRED TO CONSTRUCT CONCRETE THRUST BLOCKS SHALL BE CONSIDERED SUBSIDIARY TO OTHER ITEMS OF WORK.

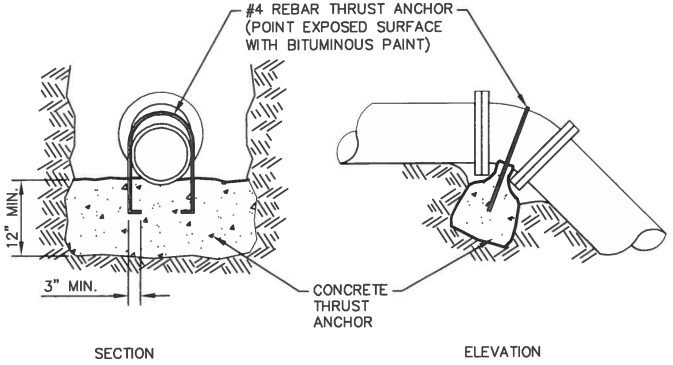
THE CONCRETE AND STEEL REQUIRED FOR ALL FITTINGS NOT LISTED SHALL BE THE SAME AMOUNT AS REQUIRED FOR THE 22 1/2° BENDS, CONCRETE AND STEEL ARE SUBSIDIARY TO OTHER ITEMS OF WORK. THE SPACING FOR MULTIPLE REBAR ANCHORS SHALL BE 2" C-C.



STANDARD TEE



TYPICAL BEND



VERTICAL CHANGE IN DIRECTION

NOT TO SCALE

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CONCRETE THRUST BLOCK

DATE: MARCH 2013

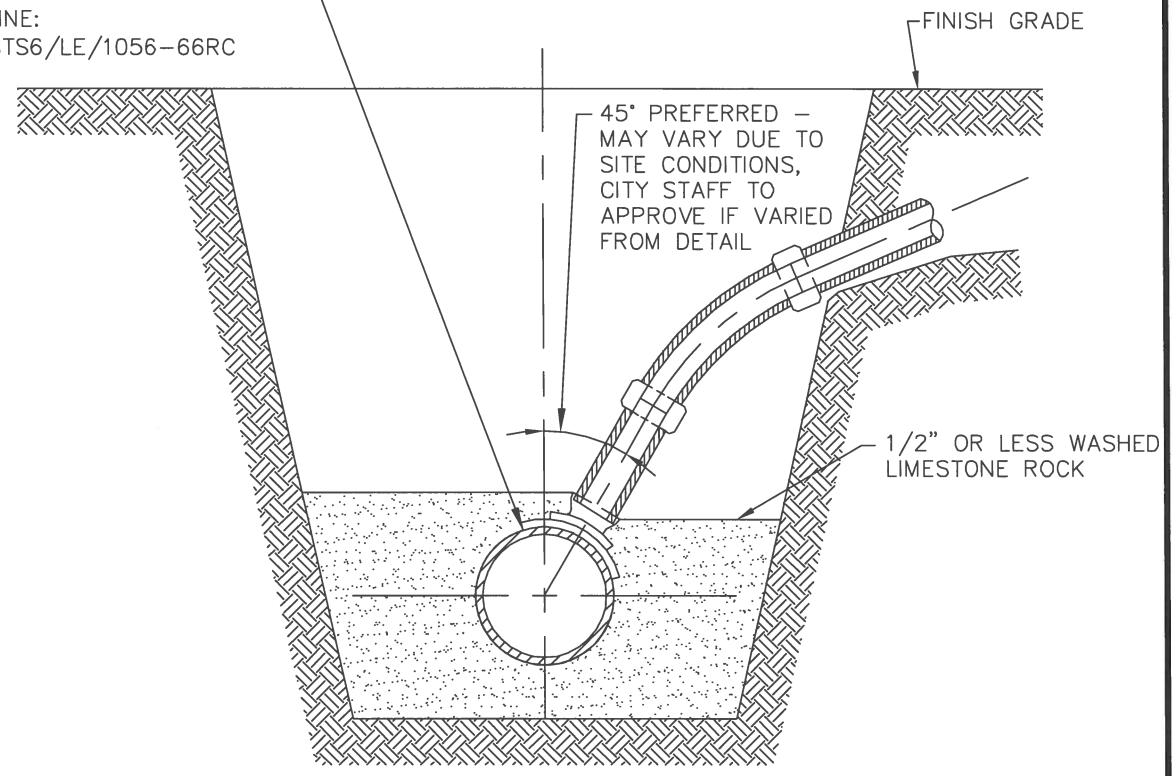
FILE NAME: THRUST BLOCK.DWG

KVE PN A13_6318

SPIGOT TYPE SADDLE WITH STAINLESS STEEL SHIELDED COUPLING WITH STAINLESS STEEL SADDLE BAND KIT

FOR 4" SERVICE LINE:
PREDCO PART # STS4/LE/1056-44RC

FOR 6" SERVICE LINE:
PREDCO PART # STS6/LE/1056-66RC



NOT TO SCALE

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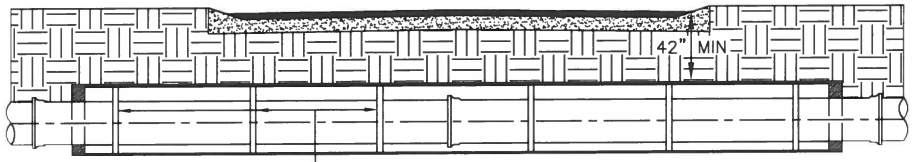
PRIVATE LINE CONNECTIONS TO SEWER MAIN

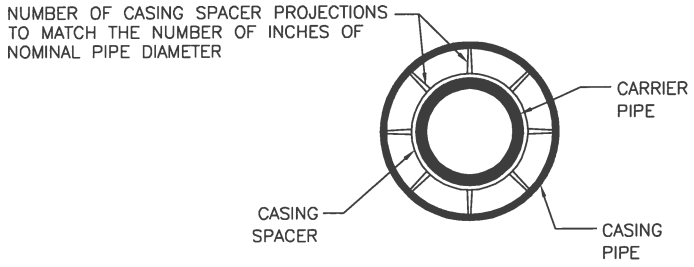
DATE: MARCH 2013
FILE NAME: SEWER SERVICE.DWG

KVE PN A13_6318

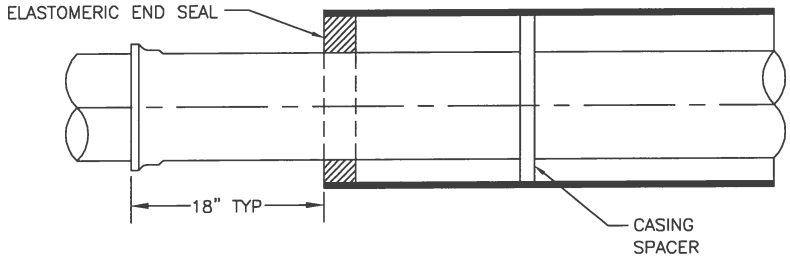


PROVIDE CASING SPACERS @ 6' SPACING TO POSITION CARRIER PIPE SUCH THAT THE REQUIRED ALIGNMENT AND GRADE IS MAINTAINED IN A RESTRAINED POSITION WITHIN THE CASING PIPE

ELEVATION



SECTION



END DETAIL

NOTES:

1) CASING SPACERS SHALL USE DOUBLE-BACKED TAPE PROVIDED WITH THE SPACERS TO FASTEN THEM TIGHTLY ONTO THE CARRIER PIPE SO THAT THE SPACERS DO NOT MOVE DURING INSTALLATION.

2) CASING SPACERS SHALL BE PROJECTION-TYPE, TOTALLY NON-METALLIC CONSTRUCTED OF PREFORMED SECTIONS OF HIGH-DENSITY POLYETHYLENE.

3) CASING SPACERS SHALL BE ISO 9002 CERTIFIED FOR STRENGTH AND QUALITY.

NOT TO SCALE

PUBLIC WORKS STANDARD DETAILS

ABILENE KANSAS
419 N. BROADWAY
P.O. BOX 519
ABILENE, KANSAS 67410-0519
PHONE 785-263-2550
FAX 785-263-2552
www.abilenecityhall.com

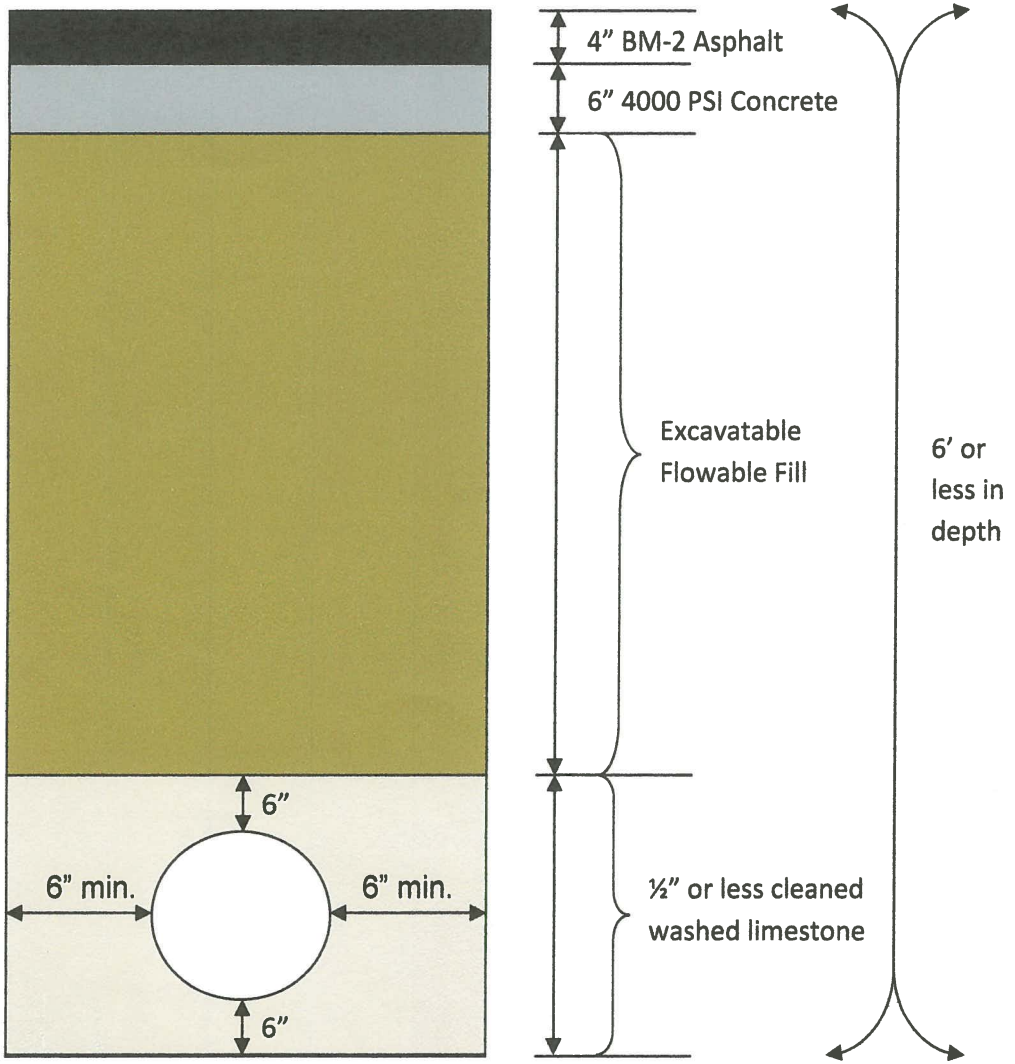
BORING & CASING DETAIL

DATE: MARCH 2013

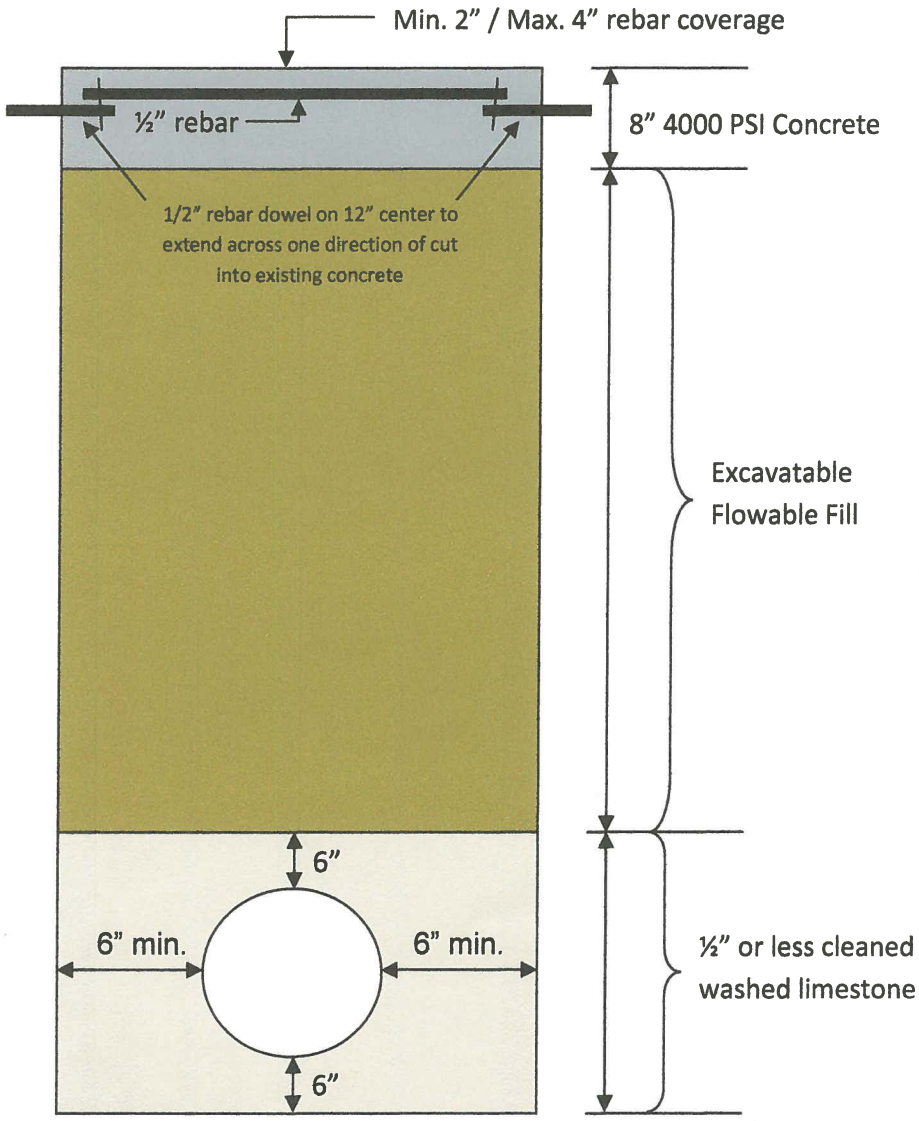
FILE NAME: BORING CASING.DWG

KVE PN A13_6318

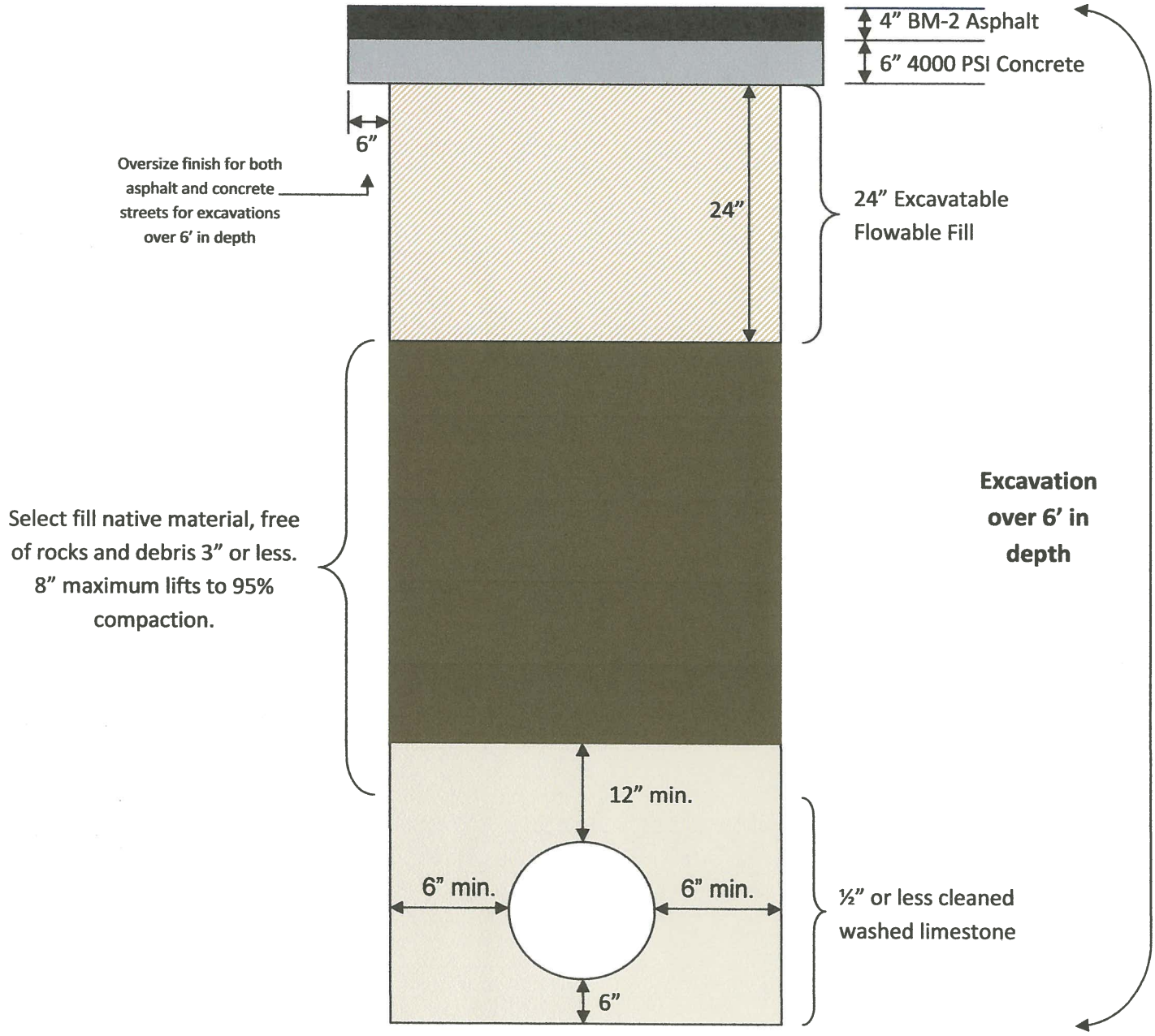
Backfill/Bedding for Street, Alley, or Driveway in Existing Asphalt Right of Way



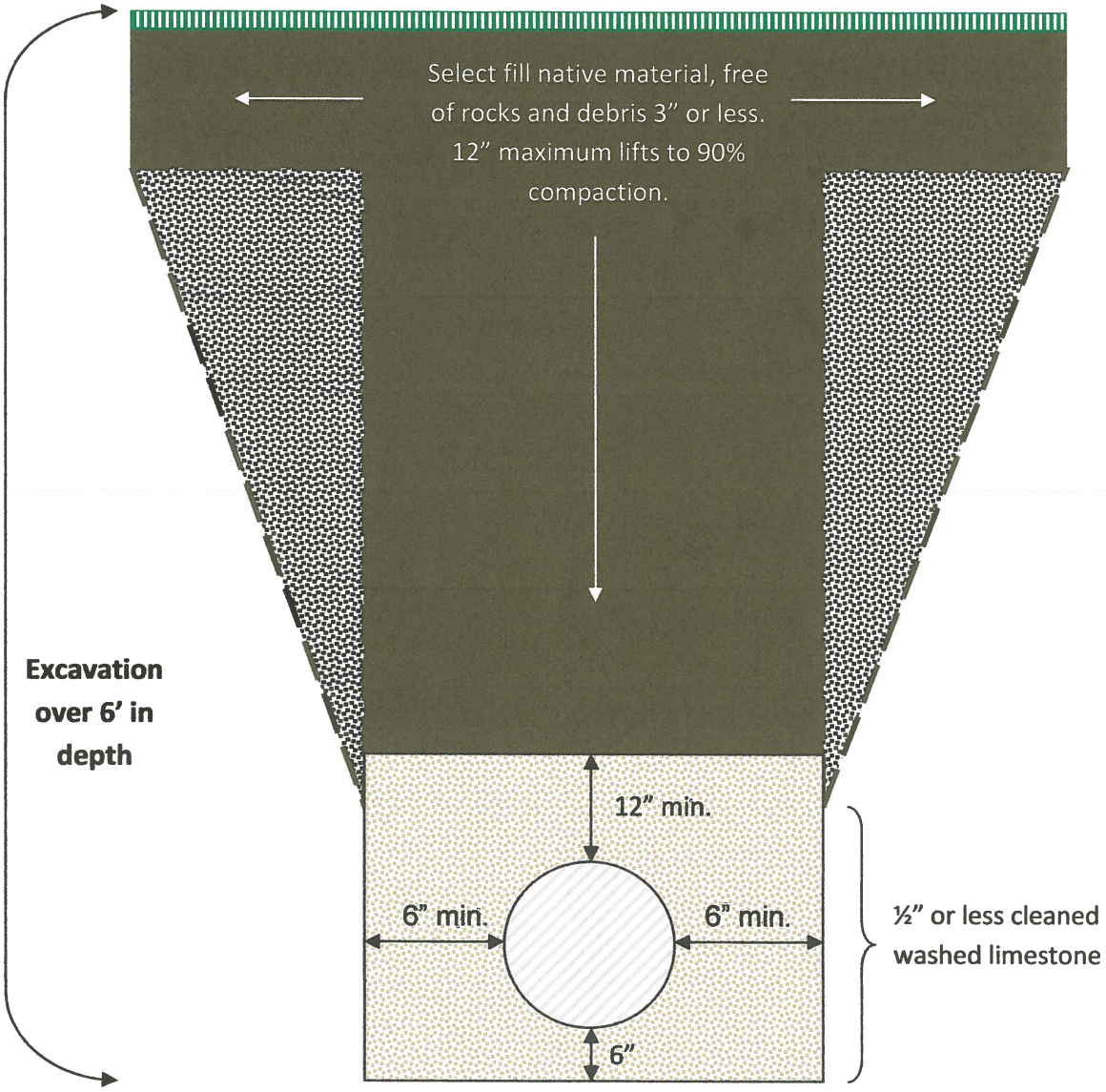
Backfill/Bedding for Street, Alley, or Driveway in Existing Concrete Right of Way



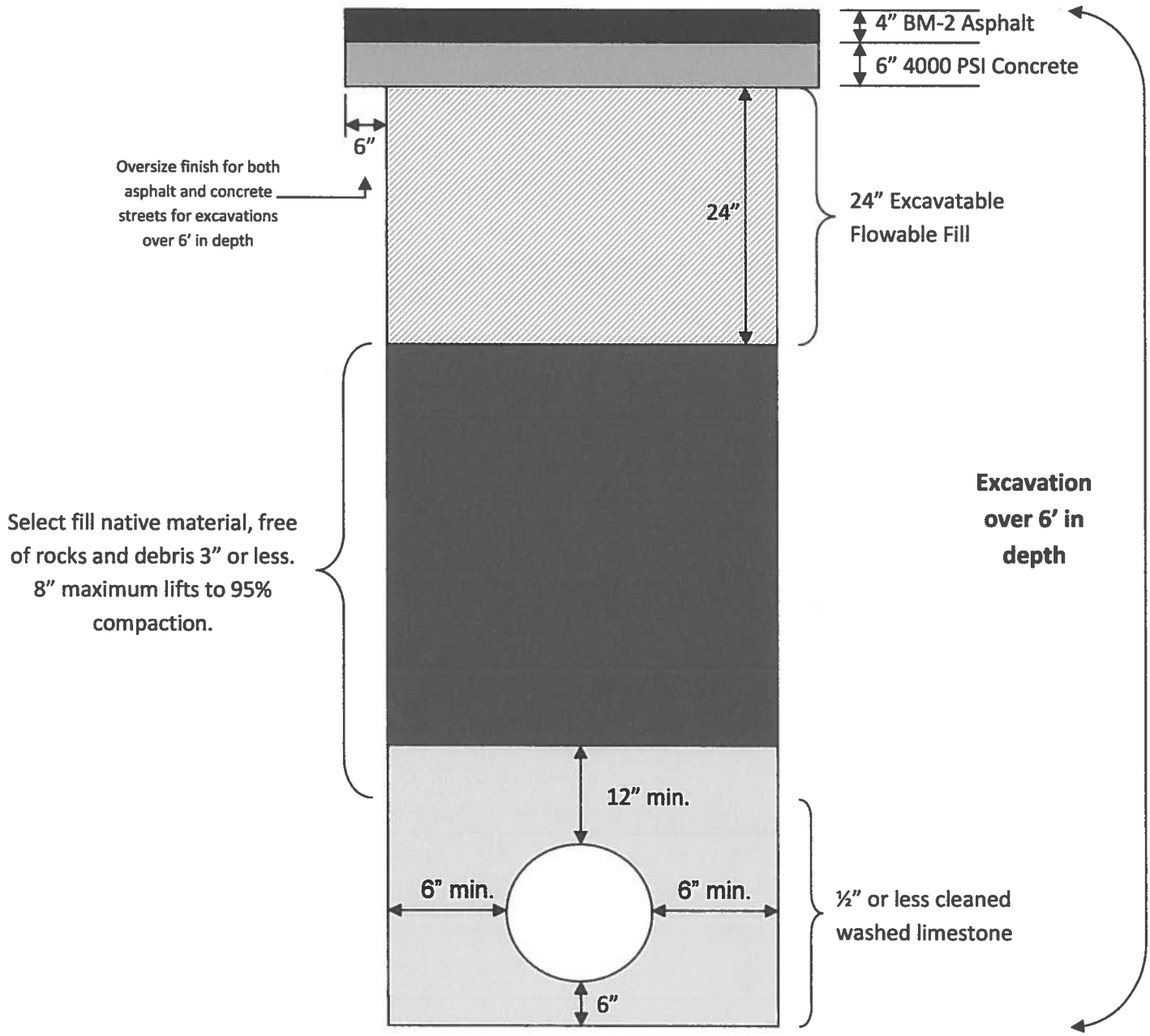
Backfill/Bedding for Street, Alley, or Driveway in Existing Asphalt or Concrete Right of Way with excavation over 6' in depth



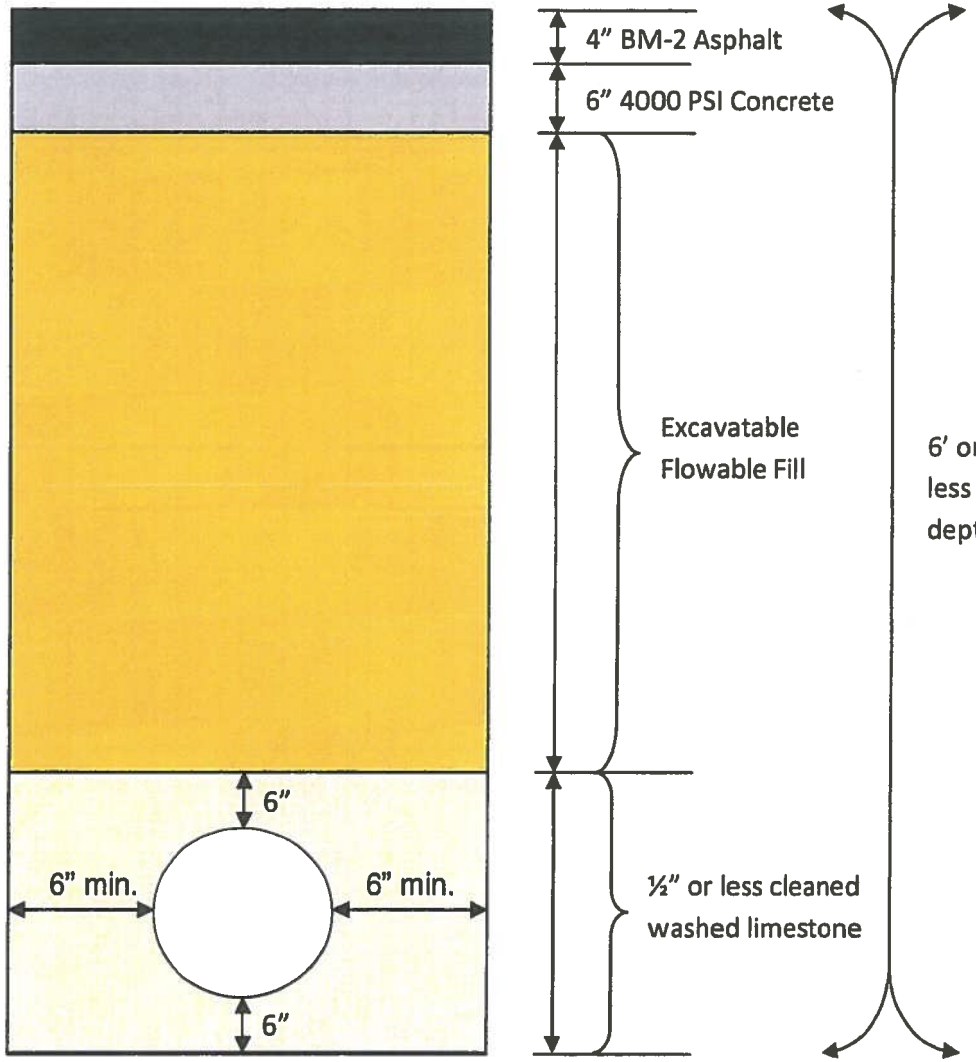
Bedding in open ground (shown with sloped or benched excavation) where no driving surface exists



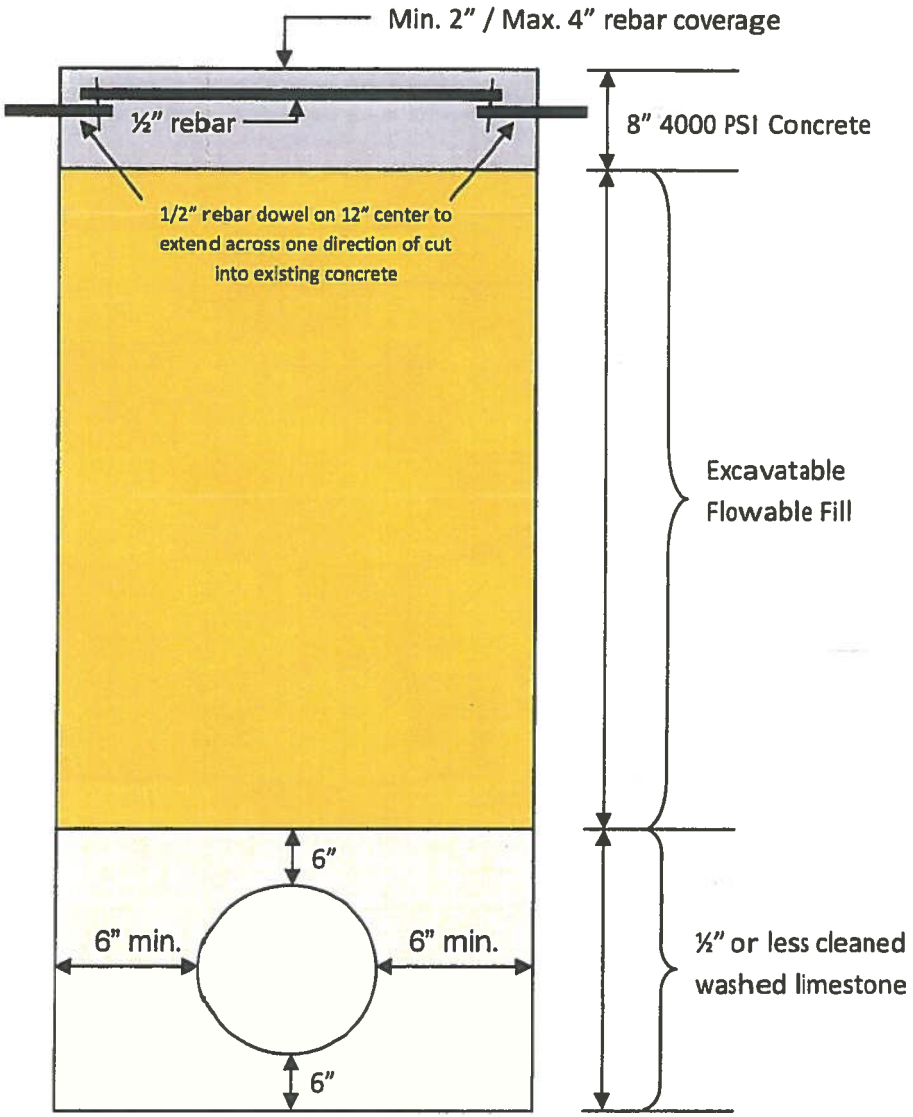
Backfill/Bedding for Street, Alley, or Driveway in Existing Asphalt or Concrete Right of Way with excavation over 6' in depth



Backfill/Bedding for Street, Alley, or Driveway in Existing Asphalt Right of Way



Backfill/Bedding for Street, Alley, or Driveway in Existing Concrete Right of Way



Section 6F.57 High-Level Warning Devices (Flag Trees)

Option:

A high-level warning device (flag tree) may supplement other TTC devices in TTC zones.

Support:

A high-level warning device is designed to be seen over the top of typical passenger cars. A typical high-level warning device is shown in Figure 6F-2.

Standard:

A high-level warning device shall consist of a minimum of two flags with or without a Type B high-intensity flashing warning light. The distance from the roadway to the bottom of the lens of the light and to the lowest point of the flag material shall be not less than 2.4 m (8 ft). The flag shall be 400 mm (16 in) square or larger and shall be orange or fluorescent red-orange in color.

Option:

An appropriate warning sign may be mounted below the flags.

Support:

High-level warning devices are most commonly used in high-density road user situations to warn road users of short-term operations.

Section 6F.58 Channelizing Devices

Standard:

Designs of various channelizing devices shall be as shown in Figure 6F–7.

Support:

The function of channelizing devices is to warn road users of conditions created by work activities in or near the roadway and to guide road users. Channelizing devices include cones, tubular markers, vertical panels, drums, barricades, and temporary raised islands.

Channelizing devices provide for smooth and gradual vehicular traffic flow from one lane to another, onto a bypass or detour, or into a narrower traveled way. They are also used to separate vehicular traffic from the work space, pavement drop-offs, pedestrian or shared-use paths, or opposing directions of vehicular traffic.

Standard:

Devices used to channelize pedestrians shall be detectable to users of long canes and visible to persons having low vision.

Where barricades are used to channelize pedestrians, there shall be continuous detectable bottom and top rails with no gaps between individual barricades to be detectable to users of long canes. The bottom of the bottom rail shall be no higher than 150 mm (6 in) above the ground surface. The top of the top rail shall be no lower than 900 mm (36 in) above the ground surface.

Option:

A gap not exceeding 150 mm (6 in) between the bottom rail and the ground surface may be used to facilitate drainage.

Standard:

If drums, cones, or tubular markers are used to channelize pedestrians, they shall be located such that there are no gaps between the bases of the devices, in order to create a continuous bottom, and the height of each individual drum, cone, or tubular marker shall be no less than 900 mm (36 in) to be detectable to users of long canes.

Guidance:

Channelizing devices should be constructed and ballasted to perform in a predictable manner when inadvertently struck by a vehicle. Channelizing devices should be crashworthy. Fragments or other debris from the device or the ballast should not pose a significant hazard to road users or workers.

The spacing of channelizing devices should not exceed a distance in meters (feet) equal to 0.2 times the speed limit in km/h (1.0 times the speed limit in mph) when used for taper channelization, and a distance in meters (feet) equal to 0.4 times the speed limit in km/h (2.0 times the speed limit in mph) when used for tangent channelization.

When channelizing devices have the potential of leading vehicular traffic out of the intended vehicular traffic space as shown in Figure 6H-39, the channelizing devices should be extended a distance in meters (feet) of 0.4 times the speed limit in km/h (2.0 times the speed limit in mph) beyond the end of the transition area.

Option:

Warning lights may be added to channelizing devices in areas with frequent fog, snow, or severe roadway curvature, or where visual distractions are present.

Standard:

Warning lights shall flash when placed on channelizing devices used alone or in a cluster to warn of a condition. Warning lights placed on channelizing devices used in a series to channelize road users shall be steady-burn.

The retroreflective material used on channelizing devices shall have a smooth, sealed outer surface that will display a similar color day or night.

Option:

The name and telephone number of the highway agency, contractor, or supplier may be shown on the nonretroreflective surface of all types of channelizing devices.

Standard:

The letters and numbers of the name and telephone number shall be nonretroreflective and not over 50 mm (2 in) in height.

Guidance:

Particular attention should be given to maintaining the channelizing devices to keep them clean, visible, and properly positioned at all times.

Standard:

Devices that are damaged or have lost a significant amount of their retroreflectivity and effectiveness shall be replaced.

Section 6F.59 Cones

Standard:

Cones (see Figure 6F-7, Sheet 1 of 2) shall be predominantly orange and shall be made of a material that can be struck without causing damage to the impacting vehicle. For daytime and low-speed roadways, cones shall be not less than 450 mm (18 in) in height. When cones are used on freeways and other high-speed highways or at night on all highways, or when more conspicuous guidance is needed, cones shall be a minimum of 700 mm (28 in) in height.

For nighttime use, cones shall be retroreflectorized or equipped with lighting devices for maximum visibility. Retroreflectorization of cones that are 700 to 900 mm (28 to 36 in) in height shall be provided by a 150 mm (6 in) wide white band located 75 to 100 mm (3 to 4 in) from the top of the cone and an additional 100 mm (4 in) wide white band located approximately 50 mm (2 in) below the 150 mm (6 in) band.

Retroreflectorization of cones that are more than 900 mm (36 in) in height shall be provided by horizontal, circumferential, alternating orange and white retroreflective stripes that are 100 to 150 mm (4 to 6 in) wide. Each cone shall have a minimum of two orange and two white stripes with the top stripe being orange. Any nonretroreflective spaces between the orange and white stripes shall not exceed 75 mm (3 in) in width.

Option:

Traffic cones may be used to channelize road users, divide opposing vehicular traffic lanes, divide lanes when two or more lanes are kept open in the same direction, and delineate short duration maintenance and utility work.

Guidance:

Steps should be taken to minimize the possibility of cones being blown over or displaced by wind or moving vehicular traffic.

Cones should not be used for pedestrian channelization or as pedestrian barriers in TTC zones on or along sidewalks unless they are continuous between individual devices and detectable to users of long canes.

Option:

Cones may be doubled up to increase their weight.

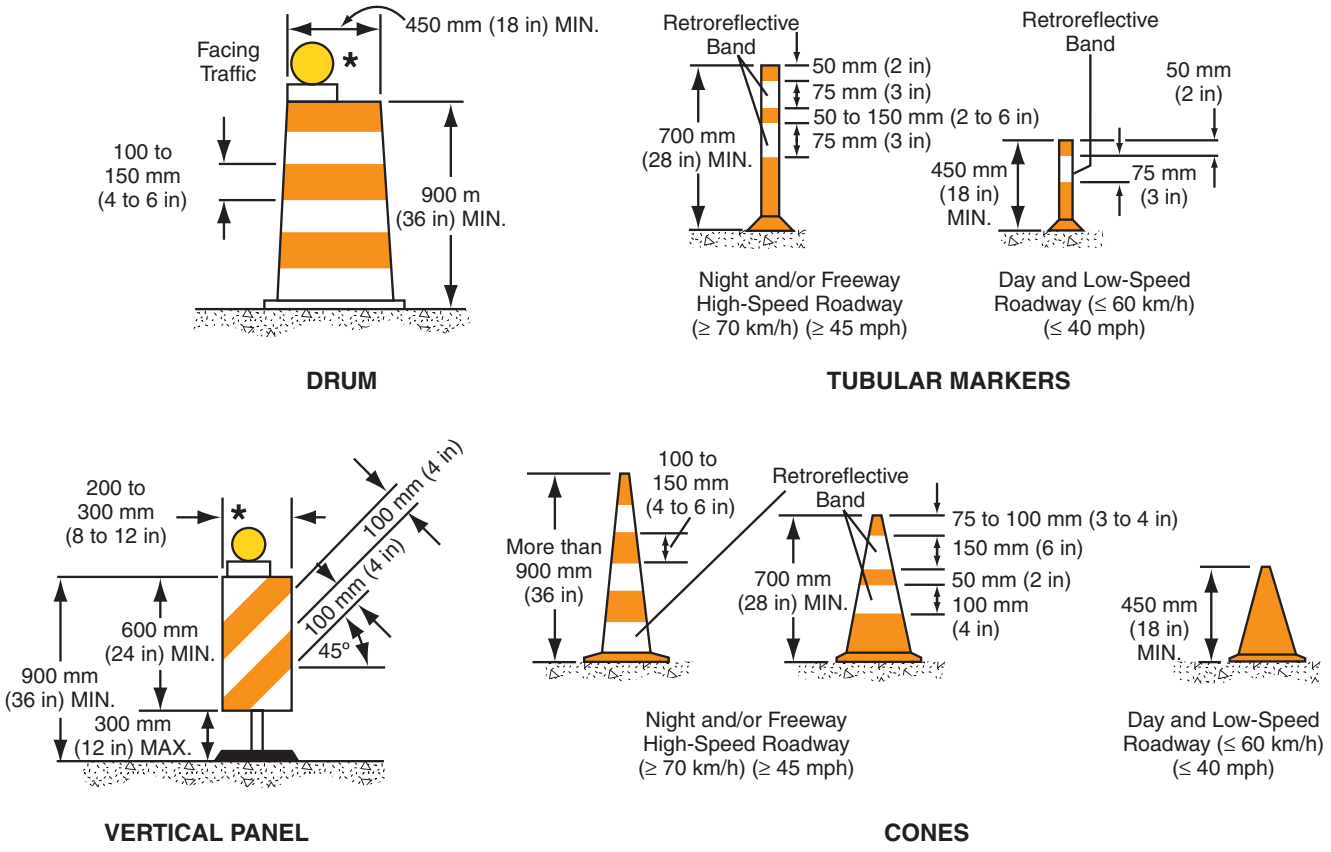
Support:

Some cones are constructed with bases that can be filled with ballast. Others have specially weighted bases, or weight such as sandbag rings that can be dropped over the cones and onto the base to provide added stability.

Guidance:

Ballast should be kept to the minimum amount needed.

Figure 6F-7. Channelizing Devices *(Sheet 1 of 2)*



* Warning lights (optional)

Note: If drums, cones, or tubular markers are used to channelize pedestrians, they shall be located such that there are no gaps between the bases of the devices, in order to create a continuous bottom, and the height of each individual drum, cone, or tubular marker shall be no less than 900 mm (36 in) to be detectable to users of long canes.

Section 6F.60 Tubular Markers

Standard:

Tubular markers (see Figure 6F-7, Sheet 1 of 2) shall be predominantly orange and shall be not less than 450 mm (18 in) high and 50 mm (2 in) wide facing road users. They shall be made of a material that can be struck without causing damage to the impacting vehicle.

Tubular markers shall be a minimum of 700 mm (28 in) in height when they are used on freeways and other high-speed highways, on all highways during nighttime, or whenever more conspicuous guidance is needed.

For nighttime use, tubular markers shall be retroreflectorized. Retroreflectorization of 700 mm (28 in) or larger tubular markers shall be provided by two 75 mm (3 in) wide white bands placed a maximum of 50 mm (2 in) from the top with a maximum of 150 mm (6 in) between the bands.

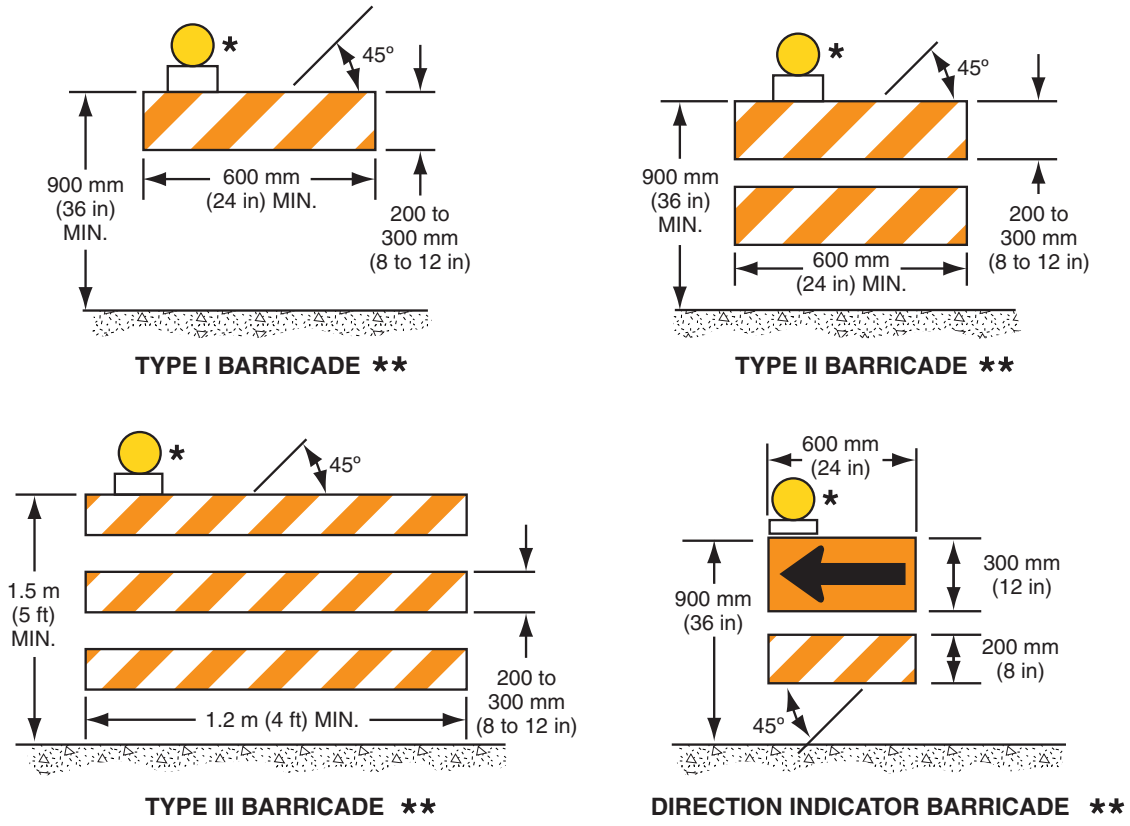
Guidance:

Tubular markers should not be used for pedestrian channelization or as pedestrian barriers in TTC zones on or along sidewalks unless they are continuous between individual devices and detectable to users of long canes.

Tubular markers have less visible area than other devices and should be used only where space restrictions do not allow for the use of other more visible devices.

Tubular markers should be stabilized by affixing them to the pavement, by using weighted bases, or weights such as sandbag rings that can be dropped over the tubular markers and onto the base to provide added stability. Ballast should be kept to the minimum amount needed.

Figure 6F-7. Channelizing Devices *(Sheet 2 of 2)*



* Warning lights (optional)

** Rail stripe widths shall be 150 mm (6 in), except that 100 mm (4 in) wide stripes may be used if rail lengths are less than 900 mm (36 in). The sides of barricades facing traffic shall have retroreflective rail faces.

Note: If barricades are used to channelize pedestrians, there shall be continuous detectable bottom and top rails with no gaps between individual barricades to be detectable to users of long canes. The bottom of the bottom rail shall be no higher than 150 mm (6 in) above the ground surface. The top of the top rail shall be no lower than 900 mm (36 in) above the ground surface.

Option:

Tubular markers may be used effectively to divide opposing lanes of road users, divide vehicular traffic lanes when two or more lanes of moving motor vehicle traffic are kept open in the same direction, and to delineate the edge of a pavement drop off where space limitations do not allow the use of larger devices.

Standard:

When a noncylindrical tubular marker is used, it shall be attached to the pavement in a manner such that the width facing road users meets the minimum requirements.

A tubular marker shall be attached to the pavement to display the minimum 50 mm (2 in) width to the approaching road users.

Section 6F.61 Vertical Panels

Standard:

Vertical panels (see Figure 6F-7, Sheet 1 of 2) shall be 200 to 300 mm (8 to 12 in) in width and at least 600 mm (24 in) in height. They shall have orange and white diagonal stripes and be retroreflectorized.

Vertical panels shall be mounted with the top a minimum of 900 mm (36 in) above the roadway.

Where the height of the vertical panel itself is 900 mm (36 in) or greater, a panel stripe width of 150 (6 in) shall be used.

Option:

Where the height of the vertical panel itself is less than 900 mm (36 in), a panel stripe width of 100 mm (4 in) may be used.

Standard:

Markings for vertical panels shall be alternating orange and white retroreflective stripes, sloping downward at an angle of 45 degrees in the direction vehicular traffic is to pass. Vertical panels used on freeways, expressways, and other high-speed roadways shall have a minimum of 169,000 mm^2 (270 in^2) retroreflective area facing vehicular traffic.

Option:

Where space is limited, vertical panels may be used to channelize vehicular traffic, divide opposing lanes, or replace barricades.

Section 6F.62 Drums

Standard:

Drums (see Figure 6F-7, Sheet 1 of 2) used for road user warning or channelization shall be constructed of lightweight, deformable materials. They shall be a minimum of 900 mm (36 in) in height and have at least a 450 mm (18 in) minimum width regardless of orientation. Metal drums shall not be used. The markings on drums shall be horizontal, circumferential, alternating orange and white retroreflective stripes 100 to 150 mm (4 to 6 in) wide. Each drum shall have a minimum of two orange and two white stripes with the top stripe being orange. Any nonretroreflectorized spaces between the horizontal orange and white stripes shall not exceed 75 mm (3 in) wide. Drums shall have closed tops that will not allow collection of construction debris or other debris.

Support:

Drums are highly visible, have good target value, give the appearance of being formidable obstacles and, therefore, command the respect of road users. They are portable enough to be shifted from place to place within a TTC zone in order to accommodate changing conditions, but are generally used in situations where they will remain in place for a prolonged period of time.

Option:

Although drums are most commonly used to channelize or delineate road user flow, they may also be used alone or in groups to mark specific locations.

Guidance:

Drums should not be used for pedestrian channelization or as pedestrian barriers in TTC zones on or along sidewalks unless they are continuous between individual devices and detectable to users of long canes.

Drums should not be weighted with sand, water, or any material to the extent that would make them hazardous to road users or workers when struck. Drums used in regions susceptible to freezing should have drain holes in the bottom so that water will not accumulate and freeze causing a hazard if struck by a road user.

Standard:

Ballast shall not be placed on the top of a drum.

Section 6F.63 Type I, II, or III Barricades

Support:

A barricade is a portable or fixed device having from one to three rails with appropriate markings and is used to control road users by closing, restricting, or delineating all or a portion of the right-of-way.

As shown in Figure 6F-7, Sheet 2 of 2, barricades are classified as either Type I, Type II, or Type III.

Standard:

Stripes on barricade rails shall be alternating orange and white retroreflective stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. Except as noted in the Option, the stripes shall be 150 mm (6 in) wide.

Option:

When rail lengths are less than 900 mm (36 in), 100 mm (4 in) wide stripes may be used.

Standard:

The minimum length for Type I and Type II Barricades shall be 600 mm (24 in), and the minimum length for Type III Barricades shall be 1200 mm (48 in). Each barricade rail shall be 200 to 300 mm (8 to 12 in) wide. Barricades used on freeways, expressways, and other high-speed roadways shall have a minimum of 169,000 mm^2 (270 in^2) of retroreflective area facing road users.

Guidance:

Where barricades extend entirely across a roadway, the stripes should slope downward in the direction toward which road users must turn.

Where both right and left turns are provided, the barricade stripes should slope downward in both directions from the center of the barricade or barricades.

Where no turns are intended, the stripes should be positioned to slope downward toward the center of the barricade or barricades.

Barricade rails should be supported in a manner that will allow them to be seen by the road user, and in a manner that provides a stable support that is not easily blown over or displaced.

The width of the existing pedestrian facility should be provided for the temporary facility if practical. Traffic control devices and other construction materials and features should not intrude into the usable width of the sidewalk, temporary pathway, or other pedestrian facility. When it is not possible to maintain a minimum width of 1500 mm (60 in) throughout the entire length of the pedestrian pathway, a 1500 x 1500 mm (60 x 60 in) passing space should be provided at least every 60 m (200 ft) to allow individuals in wheelchairs to pass.

Barricade rail supports should not project into pedestrian circulation routes more than 100 mm (4 in) from the support between 675 mm (27 in) and 2000 mm (80 in) from the surface as described in Section 4.4.1 of the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" (see Section 1A.11).

Option:

For Type I Barricades, the support may include other unstriped horizontal panels necessary to provide stability.

Guidance:

Barricades should be crashworthy as they are located adjacent to vehicular traffic flow and are subject to impact by errant vehicles.

On high-speed expressways or in other situations where barricades may be susceptible to overturning in the wind, ballasting should be used.

Option:

Sandbags may be placed on the lower parts of the frame or the stays of barricades to provide the required ballast.

Standard:

Ballast shall not be placed on top of any striped rail. Barricades shall not be ballasted by nondeformable objects such as rocks or chunks of concrete. Ballast shall not extend into the accessible passage width of 1500 mm (60 in).

Support:

Type I or Type II Barricades are intended for use in situations where road user flow is maintained through the TTC zone.

Option:

Barricades may be used alone or in groups to mark a specific condition or they may be used in a series for channelizing road users.

Type I Barricades may be used on conventional roads or urban streets.

Guidance:

Type II or Type III Barricades should be used on freeways and expressways or other high-speed roadways. Type III Barricades should be used to close or partially close a road.

Option:

Type III Barricades used at a road closure may be placed completely across a roadway or from curb to curb.

Guidance:

Where provision is made for access of authorized equipment and vehicles, the responsibility for Type III Barricades should be assigned to a person who will provide proper closure at the end of each work day.

Support:

When a highway is legally closed but access must still be allowed for local road users, barricades usually are not extended completely across the roadway.

Standard:

A sign (see Section 6F.09) shall be installed with the appropriate legend concerning permissible use by local road users. Adequate visibility of the barricades from both directions shall be provided.

Option:

Signs may be installed on barricades (see Section 6F.03).

Section 6F.64 Direction Indicator Barricades

Standard:

The Direction Indicator Barricade (see Figure 6F-7, Sheet 2 of 2) shall consist of a One-Direction Large Arrow (W1-6) sign mounted above a diagonal striped, horizontally aligned, retroreflective rail.

The One-Direction Large Arrow (W1-6) sign shall be black on an orange background. The stripes on the bottom rail shall be alternating orange and white retroreflective stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. The stripes shall be 100 mm (4 in) wide. The One-Direction Large Arrow (W1-6) sign shall be 600 x 300 mm (24 x 12 in). The bottom rail shall have a length of 600 mm (24 in) and a height of 200 mm (8 in).

Guidance:

The Direction Indicator Barricade, including any associated ballast or lights, should be crashworthy.

Option:

The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.

Guidance:

If used, Direction Indicator Barricades should be used in series to direct the driver through the transition and into the intended travel lane.

Section 6F.65 Temporary Traffic Barriers as Channelizing Devices

Support:

Temporary traffic barriers are not TTC devices in themselves; however, when placed in a position identical to a line of channelizing devices and marked and/or equipped with appropriate channelization features to provide guidance and warning both day and night, they serve as TTC devices.

Standard:

Temporary traffic barriers serving as TTC devices shall conform to requirements for such devices as set forth throughout Part 6.

Temporary traffic barriers shall not be used solely to channelize road users, but also to protect the work space (see Section 6F.81). If used to channelize vehicular traffic, the temporary traffic barrier shall be supplemented with delineation, pavement markings, or channelizing devices for improved daytime and nighttime visibility.

Guidance:

Temporary traffic barriers should not be used for a merging taper except in low-speed urban areas. Temporary traffic barriers should not be used for a constricted/restricted TTC zone.

When it is necessary to use a temporary traffic barrier for a merging taper in low-speed urban areas or for a constricted/restricted TTC zone, the taper shall be delineated and the taper length should be designed to optimize road user operations considering the available geometric conditions.

When used for channelization, temporary traffic barriers should be of a light color for increased visibility.

Section 6F.66 Longitudinal Channelizing Barricades

Support:

Longitudinal channelizing barricades are lightweight, deformable channelizing devices that can be used singly as Type I, II, or III barricades, or connected so they are highly visible and have good target value.

Guidance:

When used as a barricade, longitudinal channelizing barricades should conform to the general size, color, stripe pattern, retroreflectivity, and placement characteristics established for the devices described in Chapter 6F.