HISTORIC BEGINNINGS · 1847

Farmington City

Standard Details

Updated: August 10, 2011

INDEX TO FARMINGTON STANDARD DETAILS

2007 APWA STANDARD PLANS ADOPTED BY FARMINGTON CITY

(The following APWA Standard Plans are made part of the Farmington City Standard Drawings by reference. All of APWA standards and specifications are available on the web at http://utah.apwa.net/)

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*** Micro-synthetic fibers shall be added to the concrete mix design. Micro-synthetic fibers shall serve to reduce plastic shrinkage cracking, reduce water migration and damage from freeze/thaw and improve durability. Fibers shall conform to ASTM 1116/C 1116M, Type III fiber reinforced concrete and shall be applied per manufacturer's recommendations.**

REVISED August 10,2011

Flare driveway approach – type A

1. UNTREATED BASE COURSE: Provide material specified in APWA Section 32 11 23.
   A. Do not use gravel as a substitute for untreated base course without ENGINEER's permission.
   B. Place material per APWA Section 32 05 10.
   C. Compact per APWA Section 31 23 26 to a modified proctor density of 95 percent or greater. Maximum lift thickness before compaction is 8 inches when using riding compaction equipment or 6 inches when using hand held compaction equipment.

2. CONCRETE: Class 4000 per APWA Section 03 30 04.
   A. If necessary, provide concrete that achieves design strength in less than 7 days. Use caution; however, as concrete crazing (spider cracks) may develop if air temperature exceeds 90 degrees F.
   B. Place concrete per APWA Section 03 30 10.
   C. Provide 1/2 inch radius on concrete edges exposed to public view.
   D. Cure concrete per APWA Section 03 39 00 with type ID Class A or B (clear with fugitive dye) membrane forming compound unless specified otherwise.

3. EXPANSION JOINT: Make expansion joints vertical, full depth, 1/2 inch wide with type F1 joint filler material per APWA Section 32 13 73. Set top of filler flush with surface of concrete.

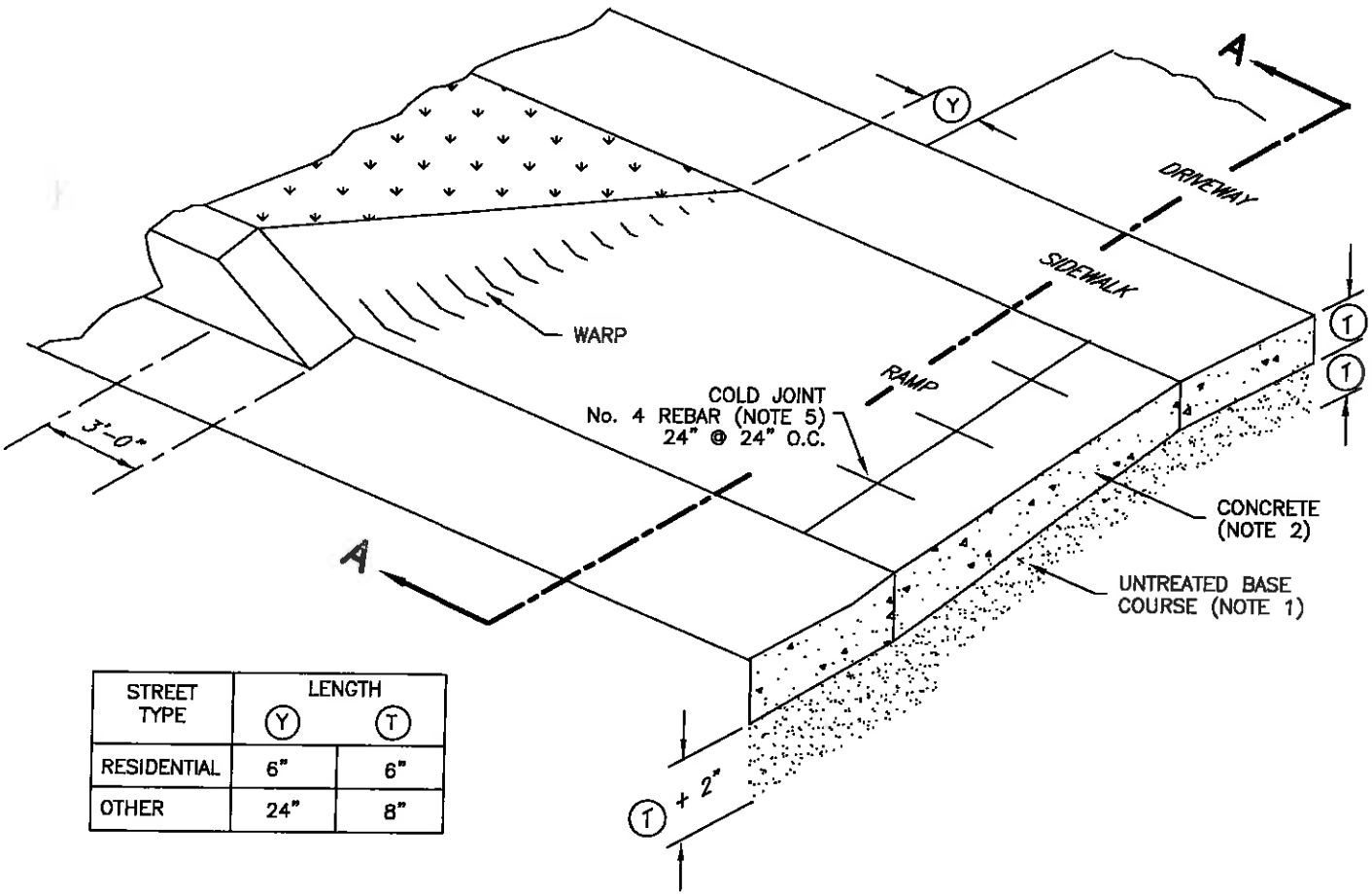
4. CONTRACTION JOINT: Make contraction joints vertical.
   A. 1/8 inch wide and 1 inch deep or 1/4 slab thickness if slab is greater than 4 inches thick.
   B. Maximum length to width ratio for non-square panels is 1.5 to 1.
   C. Maximum panel length (in feet) is 2.5 times the slab thickness (in inches) to a maximum of 15 feet.

5. REINFORCEMENT: ASTM A 615, grade 60, galvanized or epoxy coated deformed steel. See APWA Section 03 20 00 requirements . Not required if driveway ramp is constructed without a cold joint.

6. FIELD CHANGES TO SLOPE REQUIREMENTS: The following design parameters are to be used as a guide. Specific uses or site conditions may require profile design submittal for review and acceptance.
   A. As a rule, driveway grades may have a 6 percent change in slope over a 11 feet wheel base run for both crest or sag vertical curves.
   B. Where heavy truck use and fire truck access applies, or to improve design speed, design grades should be cut in half.

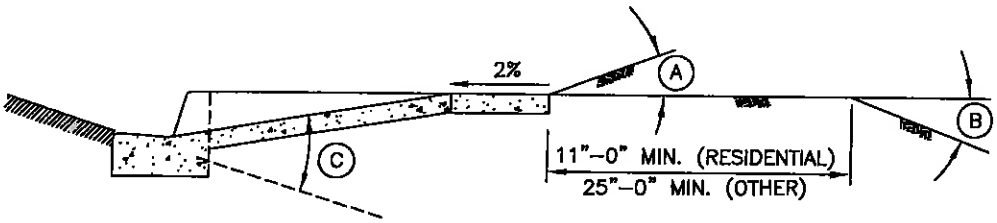
7. FINISH: Broomed.

8. PROTECTION AND REPAIR:
   A. Fill flow-line with water. Repair construction that doesn't drain.
   B. Protect concrete from deicing chemicals during cure period.



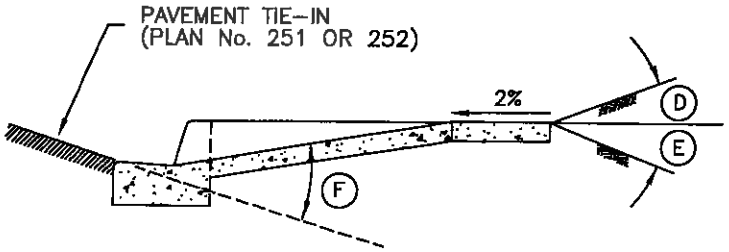
STREET TYPE	LENGTH (Y)	LENGTH (T)
RESIDENTIAL	6"	6"
OTHER	24"	8"

OBLIQUE



STREET TYPE	BREAKOVER ANGLE (MAXIMUM) (A)	(B)	(C)
RESIDENTIAL	16%	12%	16%
OTHER	6%	8%	10%

SECTION A–A – APPROACH REQUIRING SERVICE TRUCK ACCESS



STREET TYPE	BREAKOVER ANGLE (MAXIMUM) (D)	(E)	(F)
RESIDENTIAL	16%	12%	16%
OTHER	6%	8%	10%

SECTION A–A – TYPICAL DRIVEWAY APPROACH

Flare driveway approach - type A

Plan No. **221**

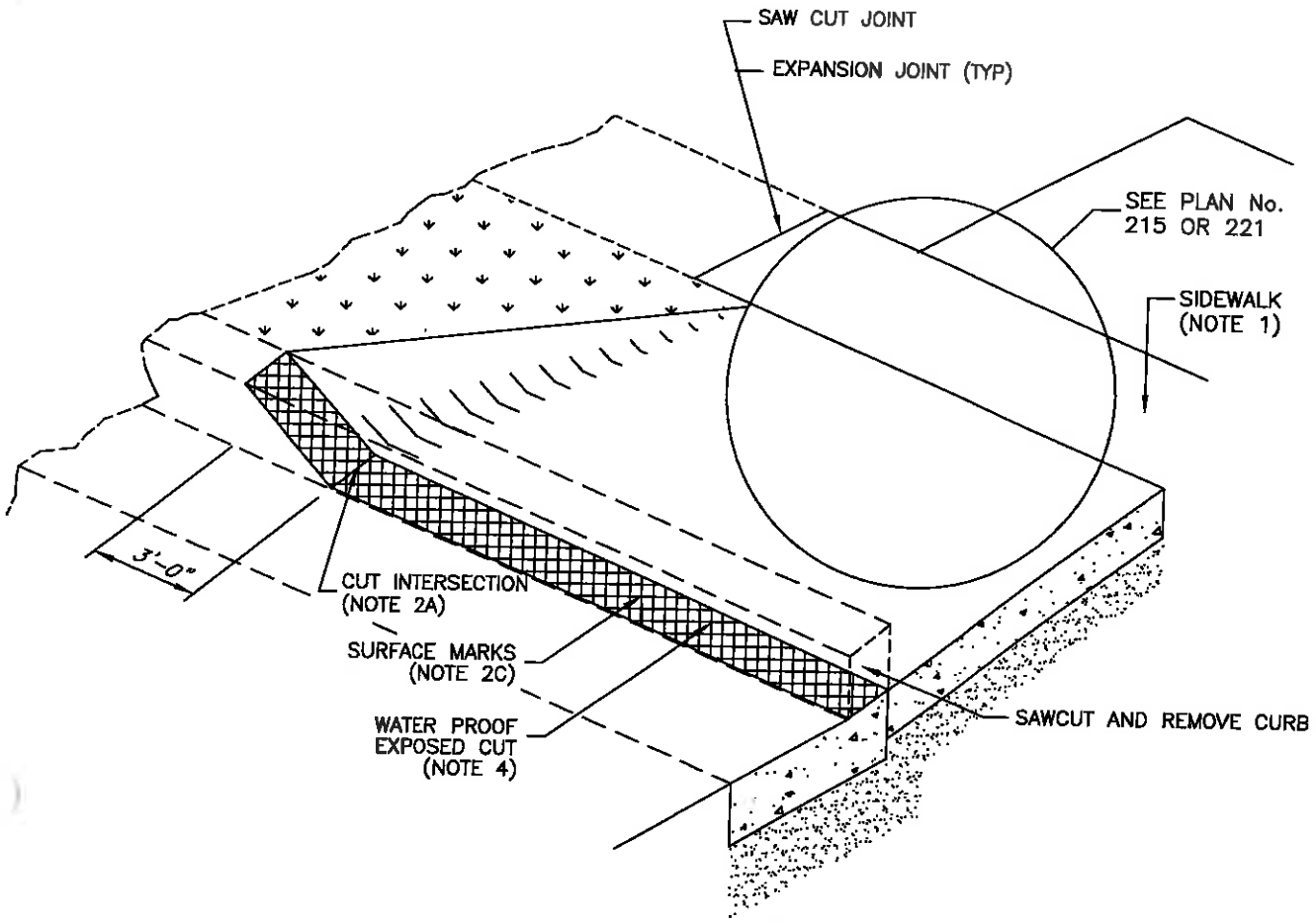
Saw-cut driveway approach

1. SIDEWALK:
   A. Remove and replace all deteriorated, weak, or unsound concrete.
   B. Thickness of sidewalk at driveway ramp to match thickness of driveway ramp.
   C. Match elevation of driveway walk to the nearest joint beyond the width of the driveway.

2. CURB CUTTING:
   A. No over-cutting where cuts merge.
   B. Bevel front edge at flow-line or have saw-cut match flow-line.
   C. Grind sawed surface so that no blade marks appear.

3. EXPANSION JOINT: Make expansion joints vertical.
   A. Full depth 1/2 inch thick type F1 joint filler material per APWA Section 32 13 73. Set top of filler flush with surface of concrete.

4. WATER PROOFING: Follow APWA Section 07 19 00 requirements.



OBLIQUE

Saw-cut driveway approach

Plan No.
222

Open driveway approach

1. UNTREATED BASE COURSE: Provide material specified in APWA Section 32 11 23.
   A. Do not use gravel as a substitute for untreated base course without ENGINEER's permission.
   B. Place material per APWA Section 32 05 10.
   C. Compact per APWA Section 31 23 26 to a modified proctor density of 95 percent or greater. Maximum lift thickness before compaction is 8 inches when using riding compaction equipment or 6 inches when using hand held compaction equipment.

2. CONCRETE: Class 4000 per APWA Section 03 30 04.
   A. If necessary, provide concrete that achieves design strength in less than 7 days. Use caution; however, as concrete crazing (spider cracks) may develop if air temperature exceeds 90 degrees F.
   B. Place concrete per APWA Section 03 30 10.
   C. Provide 1/2 inch radius on concrete edges exposed to public view.
   D. Cure concrete per APWA Section 03 39 00 with type ID Class A or B (clear with fugitive dye) membrane forming compound unless specified otherwise.

3. EXPANSION JOINT: Make expansion joints vertical, full depth, 1/2 inch wide with type F1 joint filler material per APWA Section 32 13 73. Set top of filler flush with surface of concrete.

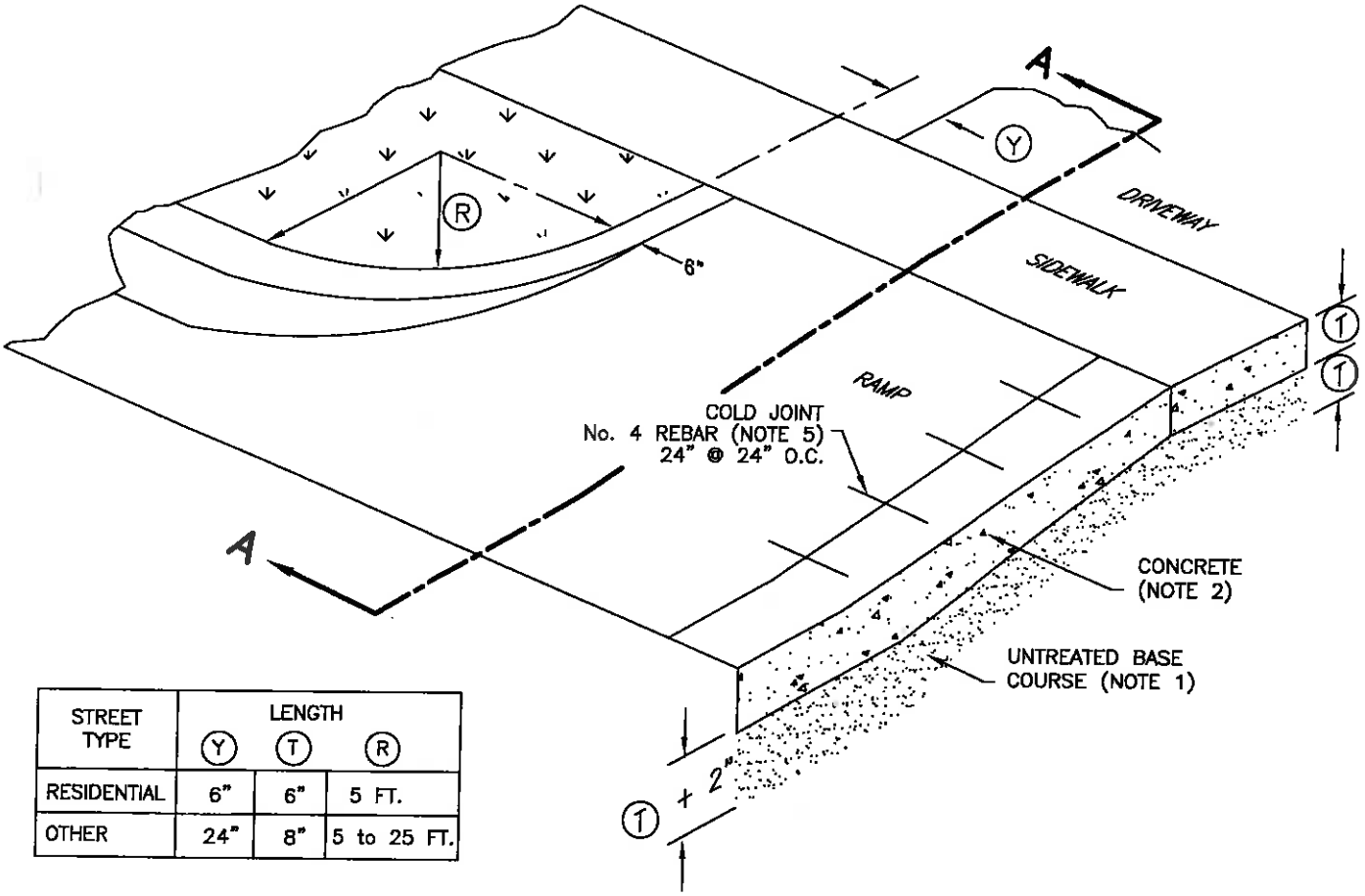
4. CONTRACTION JOINT: Make contraction joints vertical.
   A. 1/8 inch wide and 1 inch deep or 1/4 slab thickness if slab is greater than 4 inches thick.
   B. Maximum length to width ratio for non-square panels is 1.5 to 1.
   C. Maximum panel length (in feet) is 2.5 times the slab thickness (in inches) to a maximum of 15 feet.

5. REINFORCEMENT: ASTM A 615, grade 60, galvanized or epoxy coated deformed steel. See APWA Section 03 20 00 requirements . Not required if driveway ramp is constructed without a cold joint.

6. FIELD CHANGES TO SLOPE REQUIREMENTS: The following design parameters are to be used as a guide. Specific uses or site conditions may require profile design submittal for review and acceptance.
   A. As a rule, driveway grades may have a 6 percent change in slope over a 11 feet wheel base run for both crest or sag vertical curves.
   B. Where heavy truck use and fire truck access applies, or to improve design speed, design grades should be cut in half.

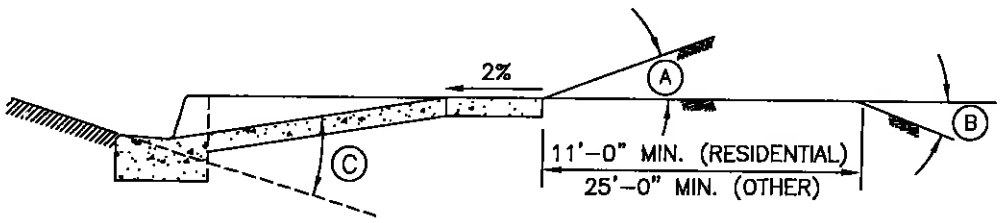
7. FINISH: Broomed.

8. PROTECTION AND REPAIR:
   A. Fill flow-line with water. Repair construction that doesn't drain.
   B. Protect concrete from deicing chemicals during cure period.



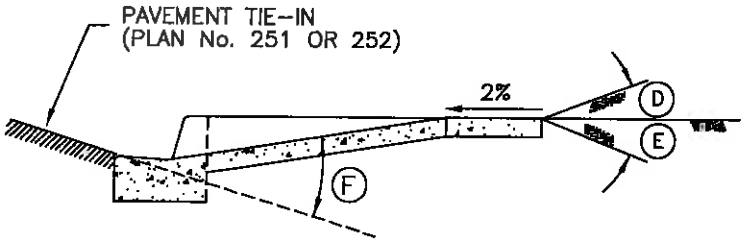
STREET TYPE	LENGTH Y	T	R
RESIDENTIAL	6"	6"	5 FT.
OTHER	24"	8"	5 to 25 FT.

OBLIQUE



STREET TYPE	BREAKOVER ANGLE (MAXIMUM) A	B	C
RESIDENTIAL	16%	12%	16%
OTHER	6%	8%	10%

SECTION A–A – APPROACH REQUIRING SERVICE TRUCK ACCESS



STREET TYPE	BREAKOVER ANGLE (MAXIMUM) D	E	F
RESIDENTIAL	16%	12%	16%
OTHER	6%	8%	10%

SECTION A–A – TYPICAL DRIVEWAY APPROACH

Open driveway approach

Plan No.
225

Asphalt concrete pavement tie in

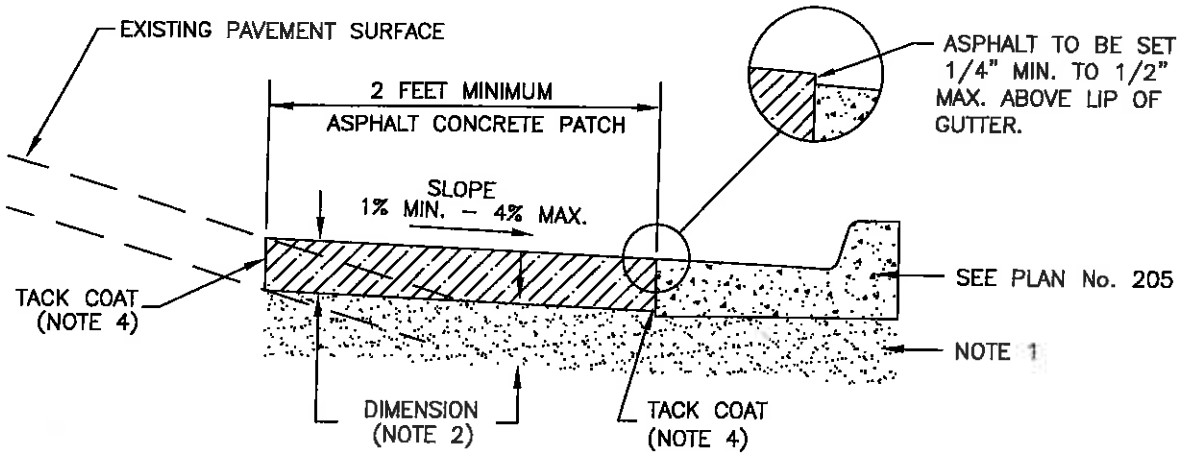
1. UNTREATED BASE COURSE: Provide material specified in APWA Section 32 11 23.
   A. Do not use gravel as a substitute for untreated base course without ENGINEER's permission.
   B. Place material per APWA Section 32 05 10.
   C. Compact per APWA Section 31 23 26 to a modified proctor density of 95 percent or greater. Maximum lift thickness before compaction is 8 inches when using riding compaction equipment or 6 inches when using hand held compaction equipment.

2. DIMENSION:
   A. Aggregate Base: Match existing thickness or 8 inches minimum.
   B. Asphalt Pavement: Match thickness plus 1 inch, or
      1) 6 inches maximum in residential streets
      2) 8 inches maximum in non-residential streets.

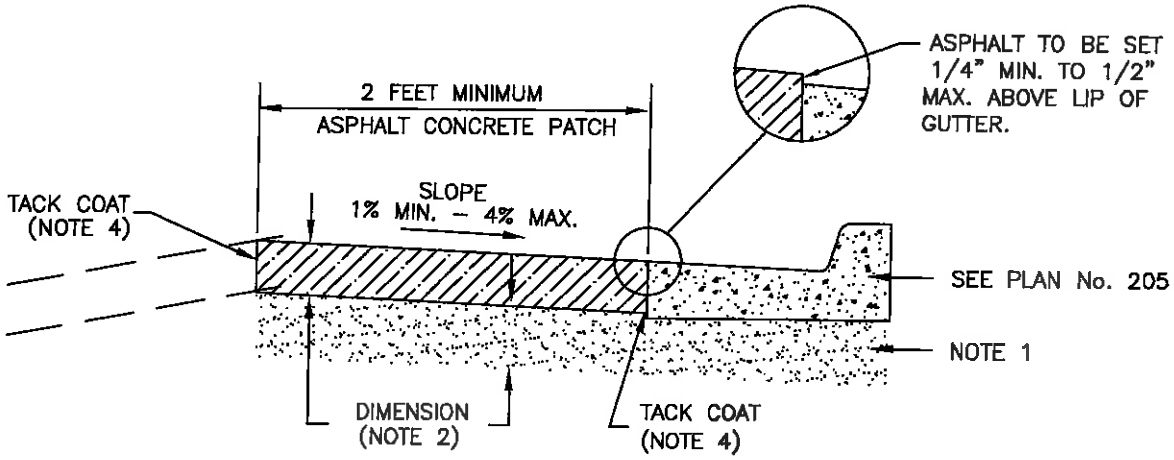
3. ASPHALT CONCRETE PAVEMENT JOINTS: Provide a neat straight joint between existing and new asphalt concrete. Saw-cut joint if existing pavement exceeds 2 inches in thickness or if portland cement concrete underlies asphalt concrete pavement.

4. TACK COAT: APWA Section 32 12 14. Clean all vertical surfaces adjacent to the patch. Apply full coverage tack coat.

5. ASPHALT PAVEMENT: Use hot weather or cold weather asphalt concrete patch material specified in APWA Section 33 05 25.
   A. Install in lifts no greater than 3 inches after compaction.
   B. Compact each lift to 94 percent of ASTM D 2041 (Rice Method) plus or minus 2 percent.



CASE 1 – POSITIVE STREET SLOPE TIE–IN



CASE 2 – NEGATIVE STREET SLOPE TIE–IN

Concrete pavement joints

1. REINFORCEMENT: ASTM A 615, grade 60, galvanized or epoxy coated deformed steel rebar or smooth steel dowels with diameter and length as indicated.
   A. Space rebar and dowels at 12 to 15 inches on center.
   B. Grease dowels to provide movement in expansion joints.
   C. Keep tie bars in the vertical center of the concrete slab and perpendicular to the joint during concrete placement.

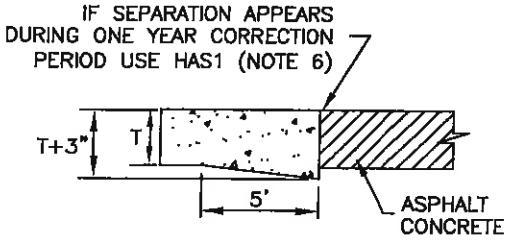
2. SAWING: Keep at least 3 working power saws on-site when concrete is being placed. Saw crack control joints (contraction joints) before shrinkage cracking takes place. Do not tear or ravel concrete during sawing. In cool weather, the joint sawing may be delayed only for the time required to prevent tearing and raveling the concrete. Cut joint to dimensions recommended by sealant manufacturer and approved by ENGINEER.

3. JOINTS: Lay out joints to aid construction and control random cracking.
   A. Longitudinal joint spacing is 12 feet for concrete pavement less than 9 inches thick and 15 feet for concrete pavement 9 inches thick and thicker.
   B. Transverse joints spacing is 30 x T (slab thickness in feet) where the maximum slab length to slab width ratio is 1.5 to 1.
   C. Extend transverse contraction joints continuously across the full width of the concrete. Make the joints coincide with curb and gutter joints.
   D. Make adjustments in joint locations to meet inlet or manhole locations.

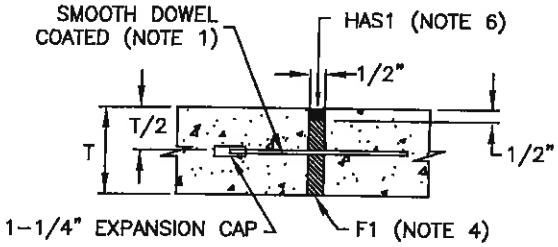
4. JOINT FILLER: Type F1 per APWA Section 32 13 73, extending to the bottom of the concrete slab.

5. BACKER ROD: Type 1 (round rod) APWA Section 32 13 73. It must be oversized approximately 25 percent to fit tightly into each joint and compatible with hot poured sealant.

6. JOINT SEALANT: Hot applied, APWA Section 32 13 73. Remove dirt, oil and curing compounds from joint reservoir. Seal joints immediately after cleaning.

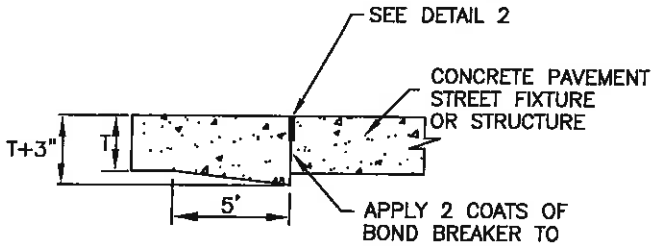


TYPE A

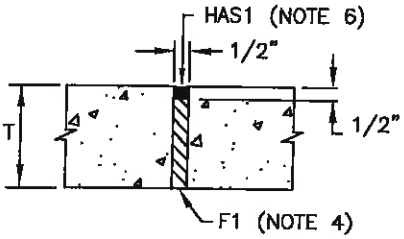


FOR DOWEL SIZE, SEE TABLE OF DIMENSION ON DRAWING 2

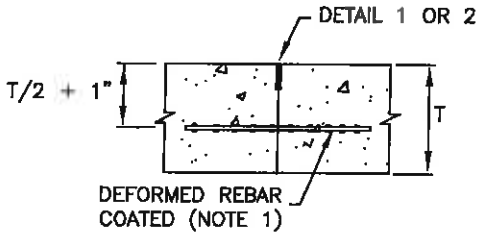
TYPE F



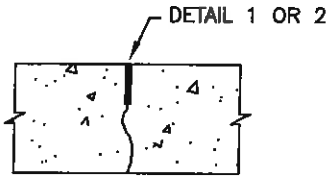
TYPE B



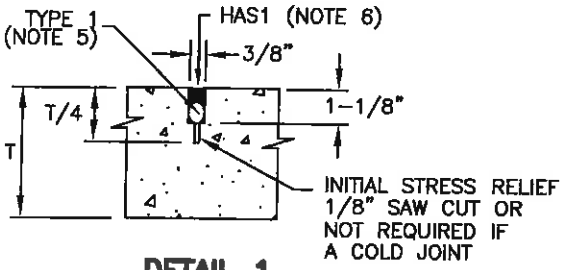
TYPE G



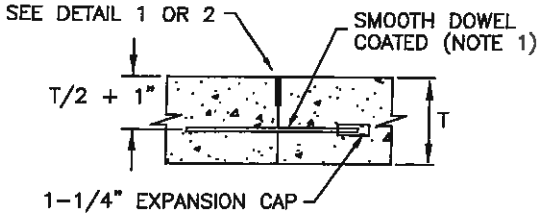
TYPE C



TYPE D

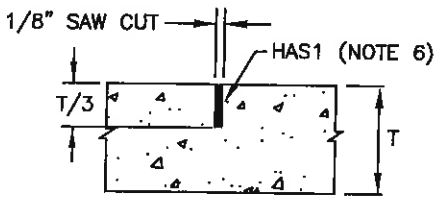


DETAIL 1



FOR DOWEL SIZE, SEE TABLE OF DIMENSIONS ON DRAWING 2

TYPE E



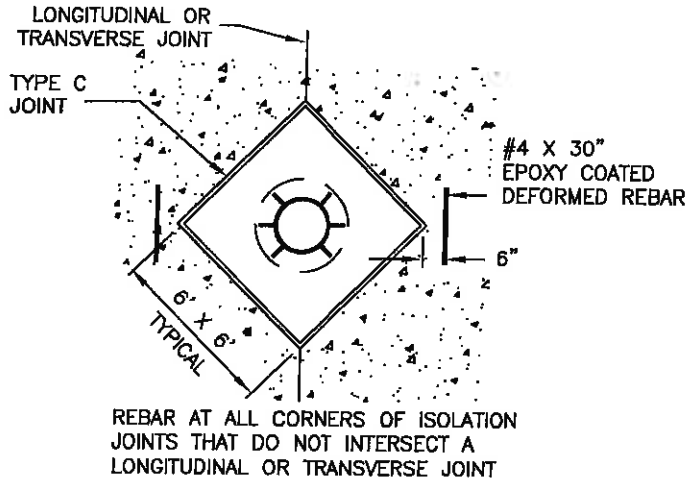
DETAIL 2

Concrete pavement joints

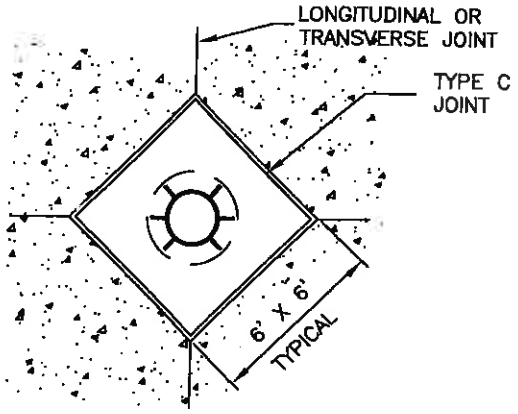
Plan No.
261
Drawing 1 of 2

Concrete pavement joints

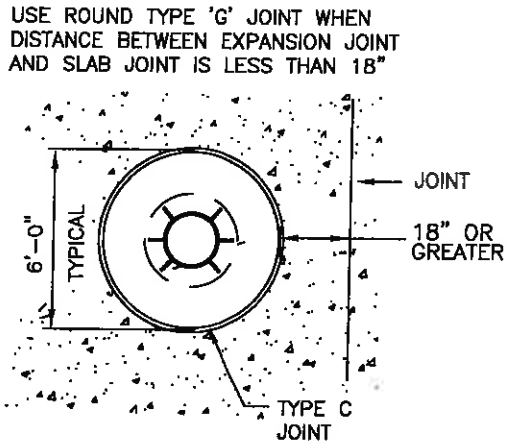
1. BASKET ASSEMBLY:
   A. Attach basket assembly firmly to existing or new base. Secure dowels and tie bars firmly in the basket assembly. All wire sizes shown are minimum.
   B. During concrete placement, keep the dowels in vertical center of the concrete, perpendicular to the joint, and parallel to the direction of concrete slab expansion.



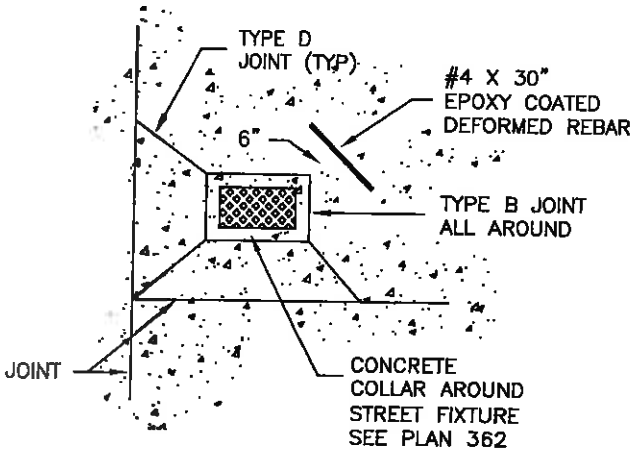
EXAMPLE 1



EXAMPLE 2



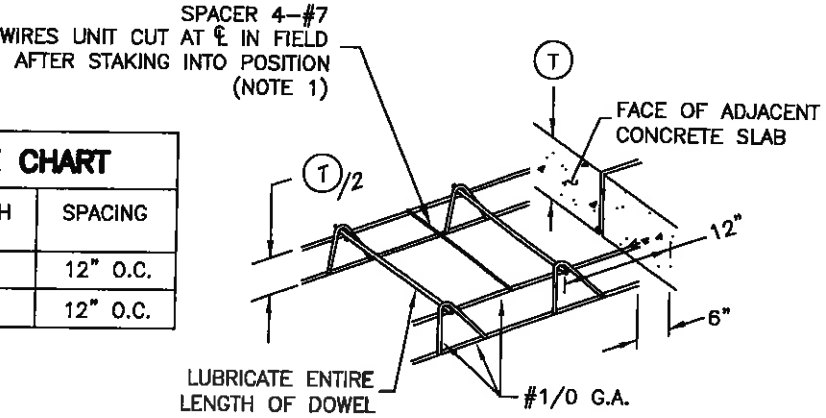
EXAMPLE 3



EXAMPLE 4

TYPICAL STREET FIXTURE ISOLATION JOINTS

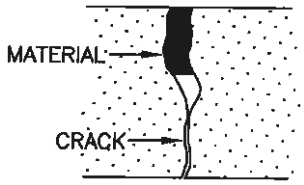
DOWEL OR REBAR SIZE CHART			
(T)	DIAMETER (inches)	TOTAL LENGTH (inches)	SPACING
5"–8"	5/8	14	12" O.C.
9"–12"	1	18	12" O.C.



DOWEL OR TIE–BAR BASKET ASSEMBLY

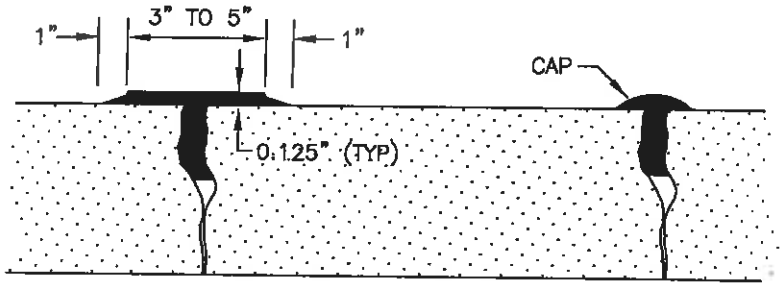
Crack filling – asphalt pavement

1. FILLER: Asphalt rubber or rubberized asphalt per APWA Section 32 01 17.



TYPE A

FLUSH FILL



TYPE A **TYPE B**

CAP FILL

Monument cap and base

1. ABBREVIATIONS: The following is a list of commonly used abbreviations used on the monument cap. Apply other marks and abbreviations as applicable.

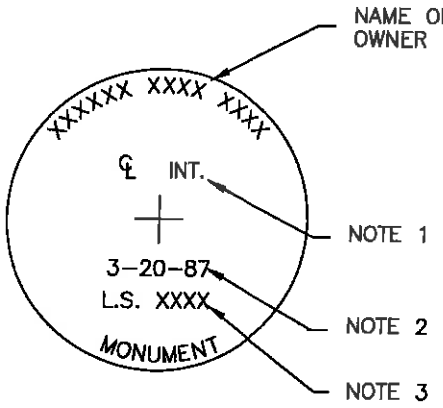
INT	Intersection
ML INT	Monument line intersection
P.C.	Point of curvature
P.C.C.	Point of compound curve
P.I.	Point of intersection
P.O.C.	Point on curve
P.O.T.	Point on Tangent
P.R.C.	Point of reverse curve
P.T.	Point of tangency
S.C.	Section Corner
W.C.	Witness corner

2. DATE: Show month, day, and year when cap was marked.

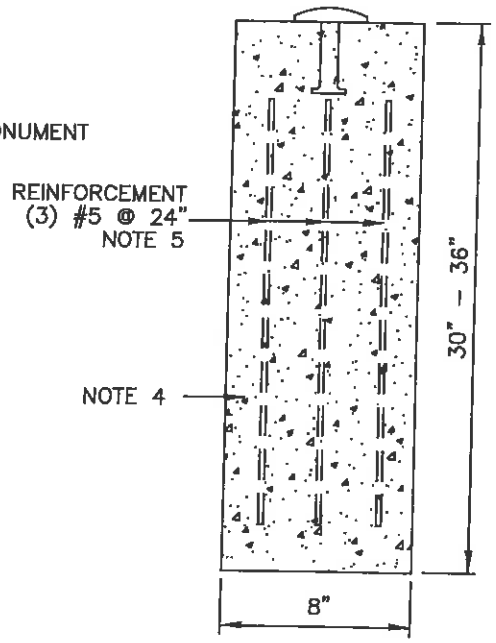
3. LICENSE: Show license number of land surveyor who marked the cap.

4. CONCRETE: Class 4000 per APWA Section 03 30 04 for precast and cast in-place monuments.

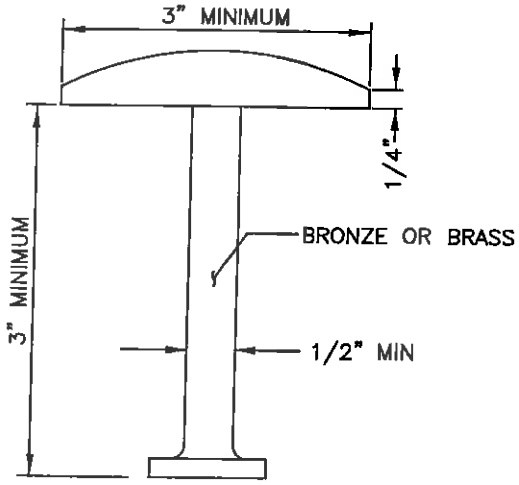
5. REINFORCEMENT: ASTM A 615, grade 60, deformed steel rebar.



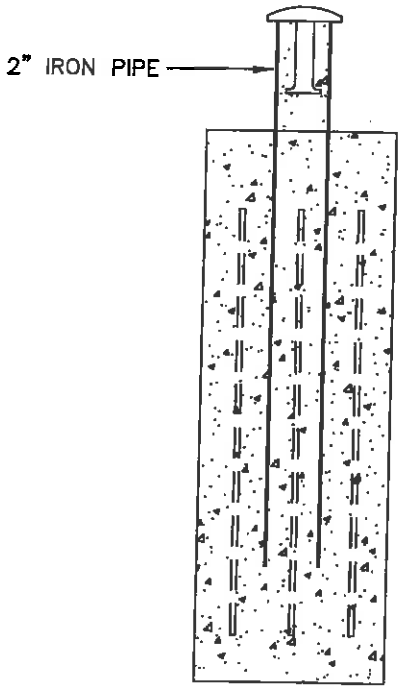
CAP PLAN



SECTION OF BASE
TYPICAL SETTING



CAP SECTION



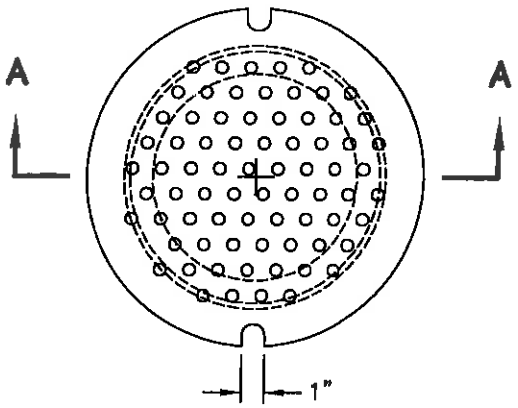
SECTION OF BASE
ALTERNATE SETTING

Monument cap and base

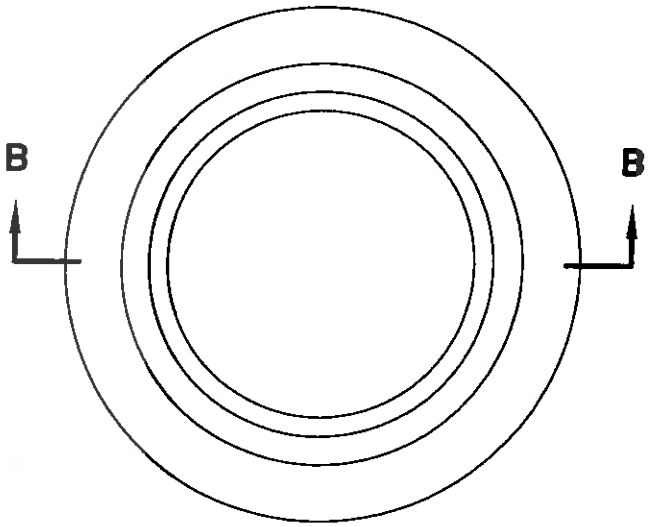
Plan No.
272

Frame and cover for monument

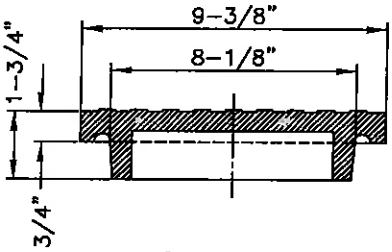
1. CASTINGS: Grey iron class 20 minimum per ASTM A 48.
2. COATINGS: Coat all metal parts with asphaltum paint.
3. SETTING: Set frame independent of monument base.



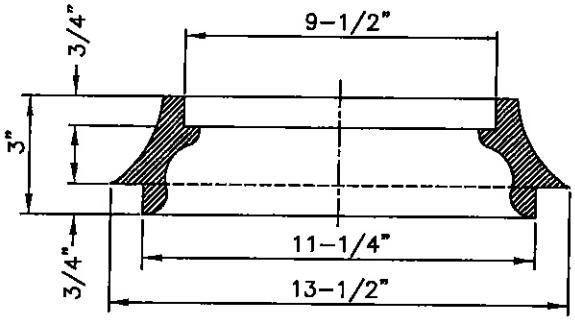
COVER



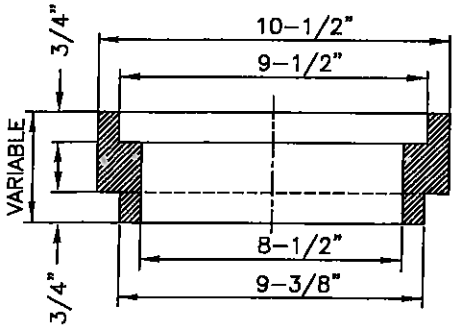
FRAME



SECTION A–A



SECTION B–B



EXTENSION

NOTE: USE EXTENSION IN PORTLAND CEMENT CONCRETE PAVEMENTS. USE FRAME IN ASPHALT CONCRETE PAVEMENTS

Frame and cover for monument

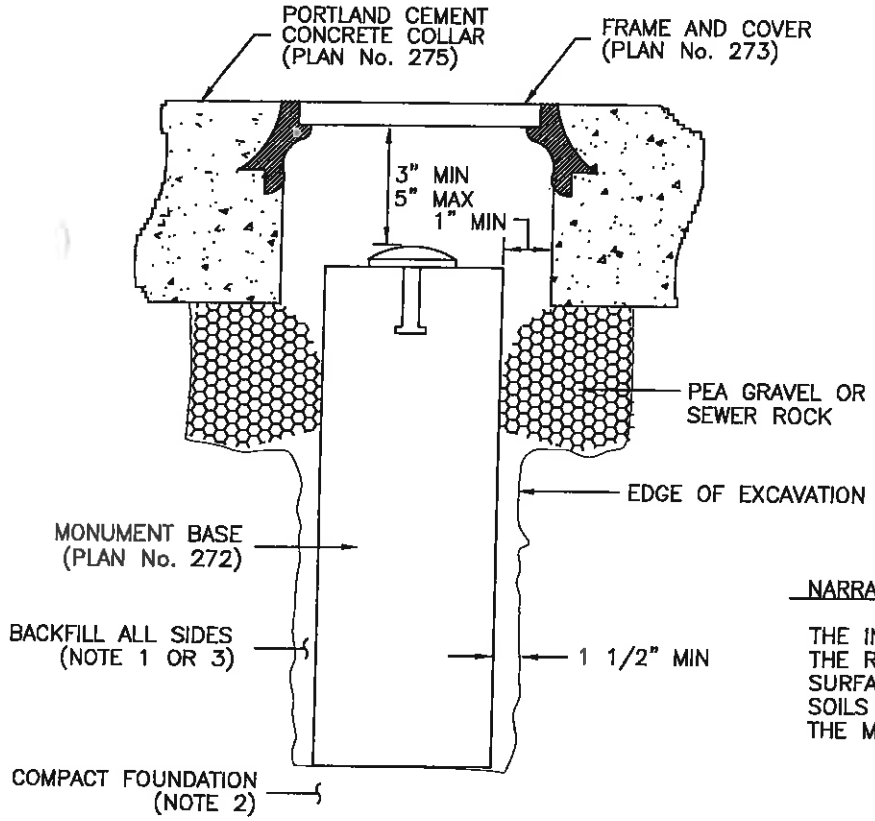
Plan No.
273

Survey monument placement under pavements

1. BACKFILL: Install and compact all backfill material per APWA Section 32 05 10.

2. FOUNDATION: Compact bottom of excavated hole before placement of precast or cast in-place monument post.

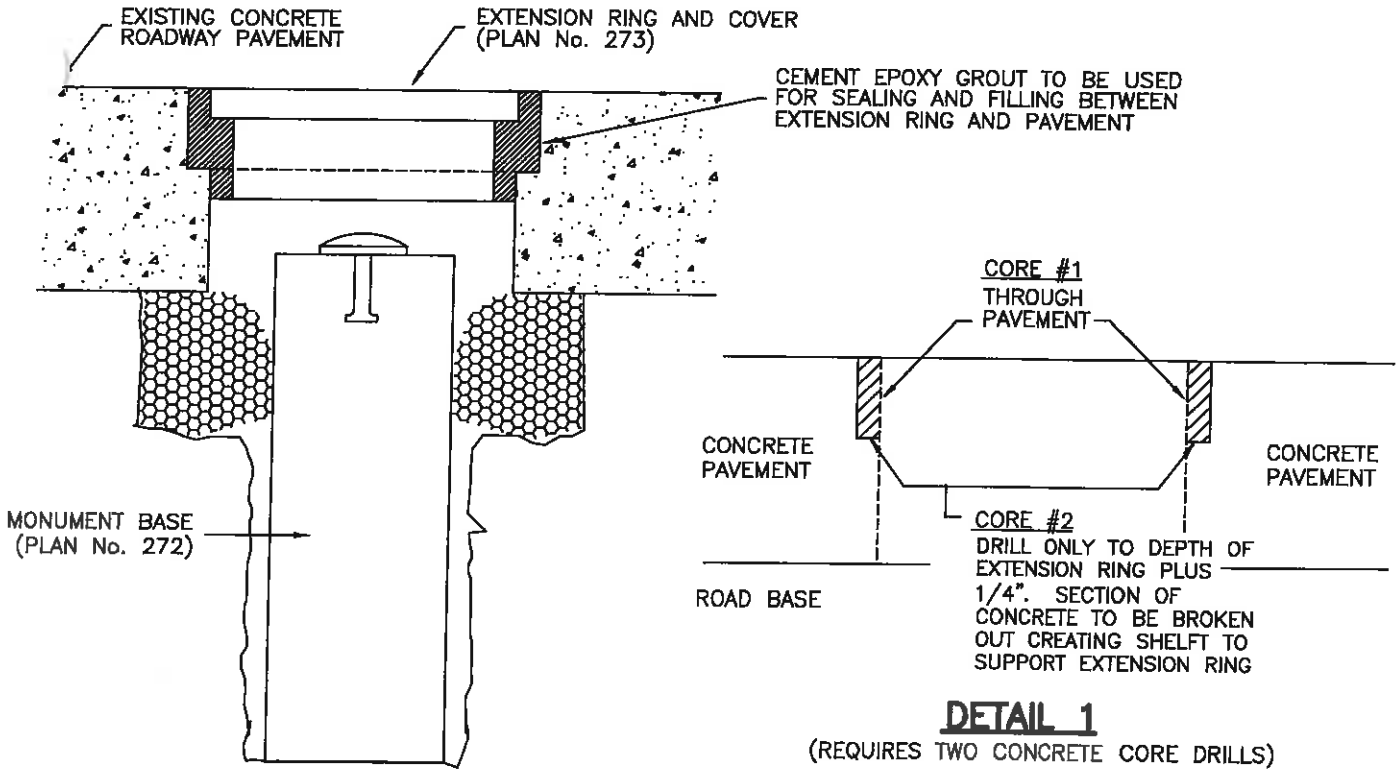
3. CONCRETE: Class 4000 per APWA Section 03 30 04.



NARRATIVE

THE INSTALLED MONUMENT MUST BE INDEPENDENT OF THE ROADWAY PAVEMENT. VIBRATIONS OF THE PAVEMENT SURFACE MUST BE TRANSMITTED TO THE UNDERLYING SOILS AND NOT TO THE MONUMENT. THIS WILL ASSURE THE MONUMENT REMAINS UNDISTURBED

(A) ASPHALT CONCRETE PAVEMENTS



DETAIL 1

(REQUIRES TWO CONCRETE CORE DRILLS)

(B) CEMENT CONCRETE PAVEMENTS

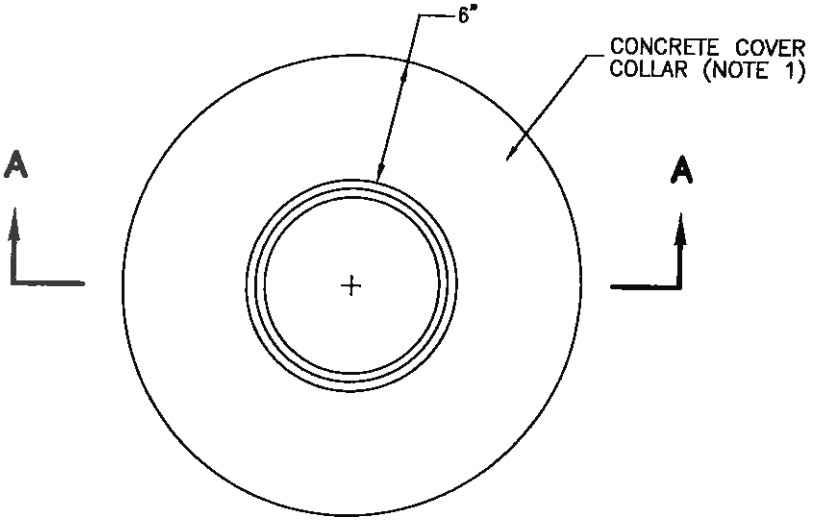
Survey monument placement under pavements

Plan No. **274**

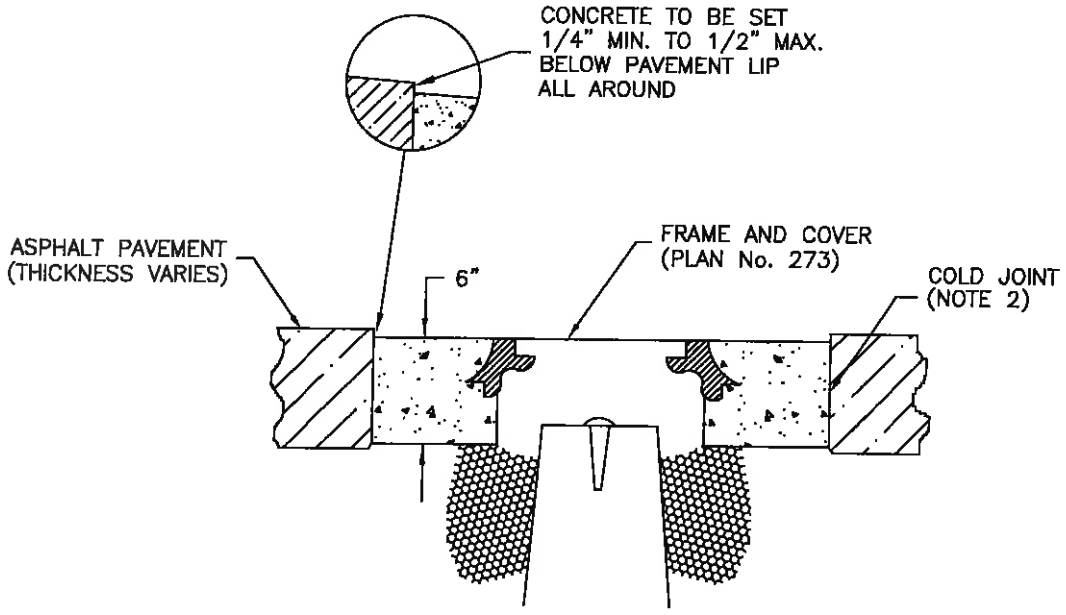
Cover collar for survey monuments

1. CONCRETE: Class 4000 per APWA Section 03 30 04. Place concrete per APWA Section 03 30 10. Cure per APWA Section 03 39 00.

2. JOINTS: Provide a neat vertical joint between existing and new asphalt concrete surfaces. Provide concentric circle cut. Clean edges of all dirt, oil and loose debris.



PLAN



SECTION A–A

Cover collar for survey monuments

Plan No.
275

30" Frame and cover – type A

1. CASTINGS: Grey iron class 35 minimum per ASTM A 48.

2. COATINGS: Except machined surfaces, coat all metal parts with asphaltum paint.

3. INSCRIPTIONS: Cast the words "STORM DRAIN" on the cover flush with the surface finish.

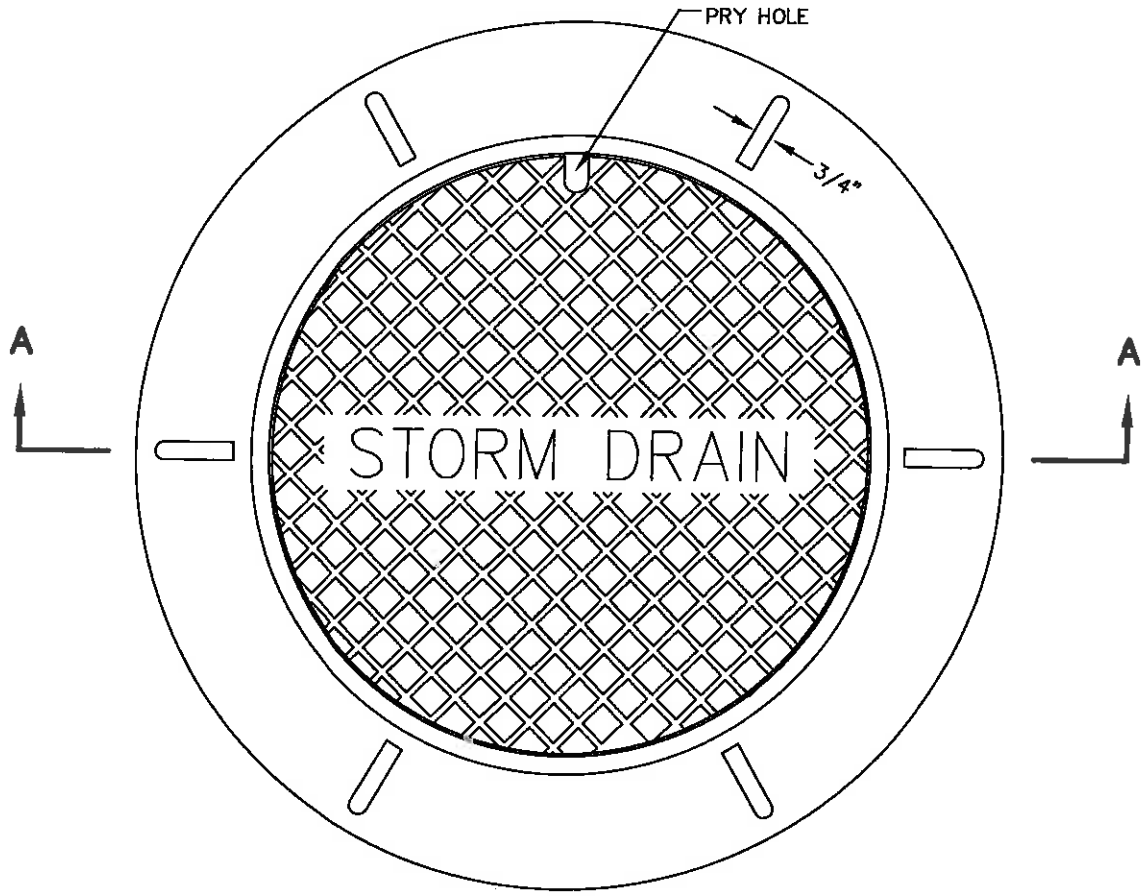
4. HEAT NUMBER: Place foundry and heat number on the inside of the frame and on the bottom of the cover.

5. FIT: $\sqrt{}$ designates machined surface. Give the frame and cover a machine finish so the cover will not rock.

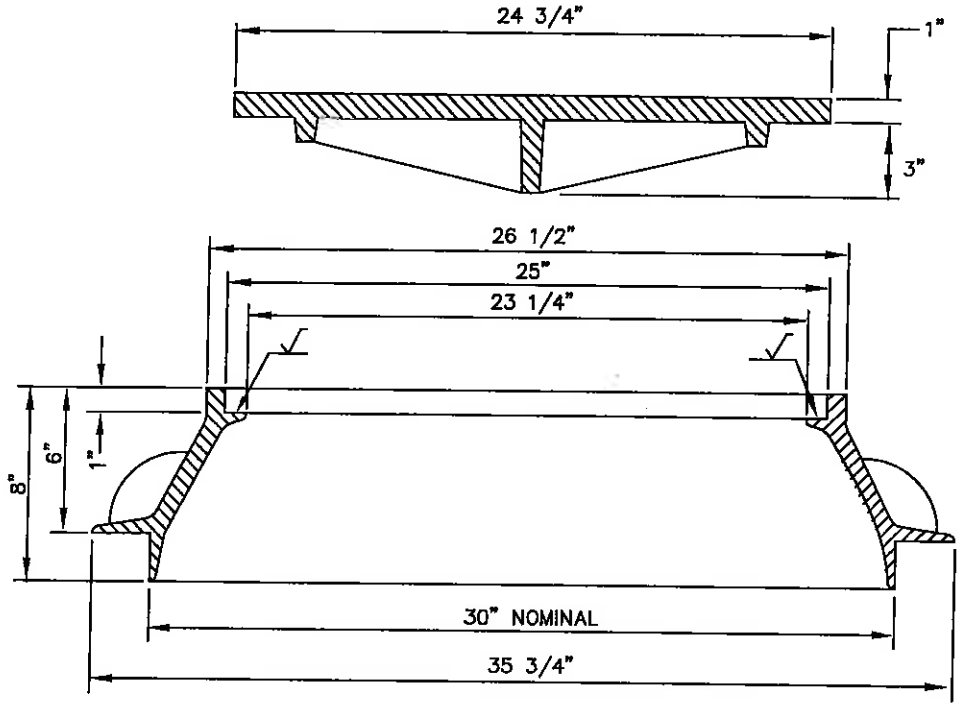
6. LOCKING: Provide covers for manholes located in easements, rights-of-way, alleys, parking lots, and all other places except paved streets, with allen socket set screw locking devices. Drill and tap two holes to a depth of 1 inch at 90 degrees to pry hole and install 3/4 x 3/4 inch allen socket set screws.

7. CLEANOUT STRUCTURE: See Plan No. 330.

8. MANHOLE STRUCTURES: See Plan No. 341.



TYPE A



SECTION A–A

30" Frame and cover

Plan No.
302
Drawing 1 of 2

30" Frame and cover – type B

1. CASTINGS: Grey iron class 35 minimum per ASTM A 48.

2. COATINGS: Except machined surfaces, coat all metal parts with asphaltum paint.

3. INSCRIPTIONS: Cast the words "STORM DRAIN" on the cover flush with the surface finish.

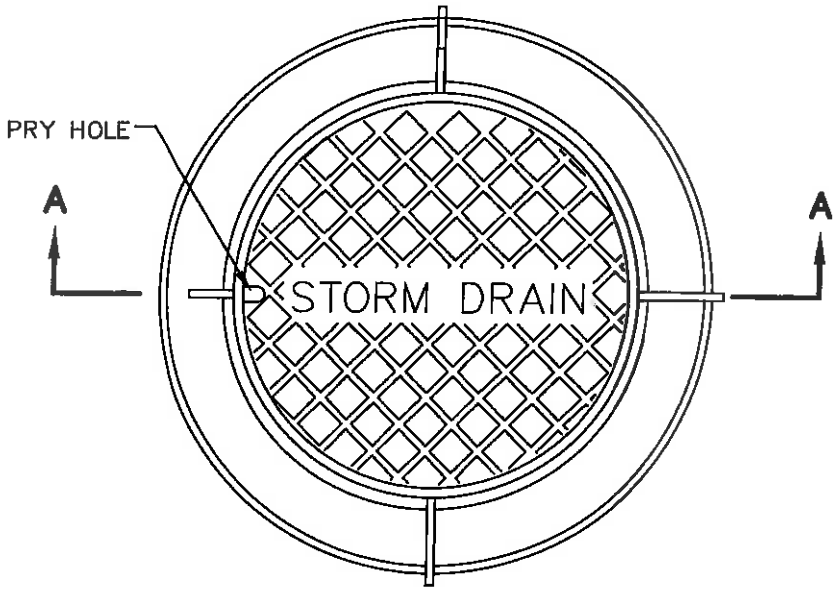
4. HEAT NUMBER: Place foundry and heat number on the inside of the frame and on the bottom of the cover.

5. FIT: $\sqrt{}$ designates machined surface. Give the frame and cover a machine finish so the cover will not rock.

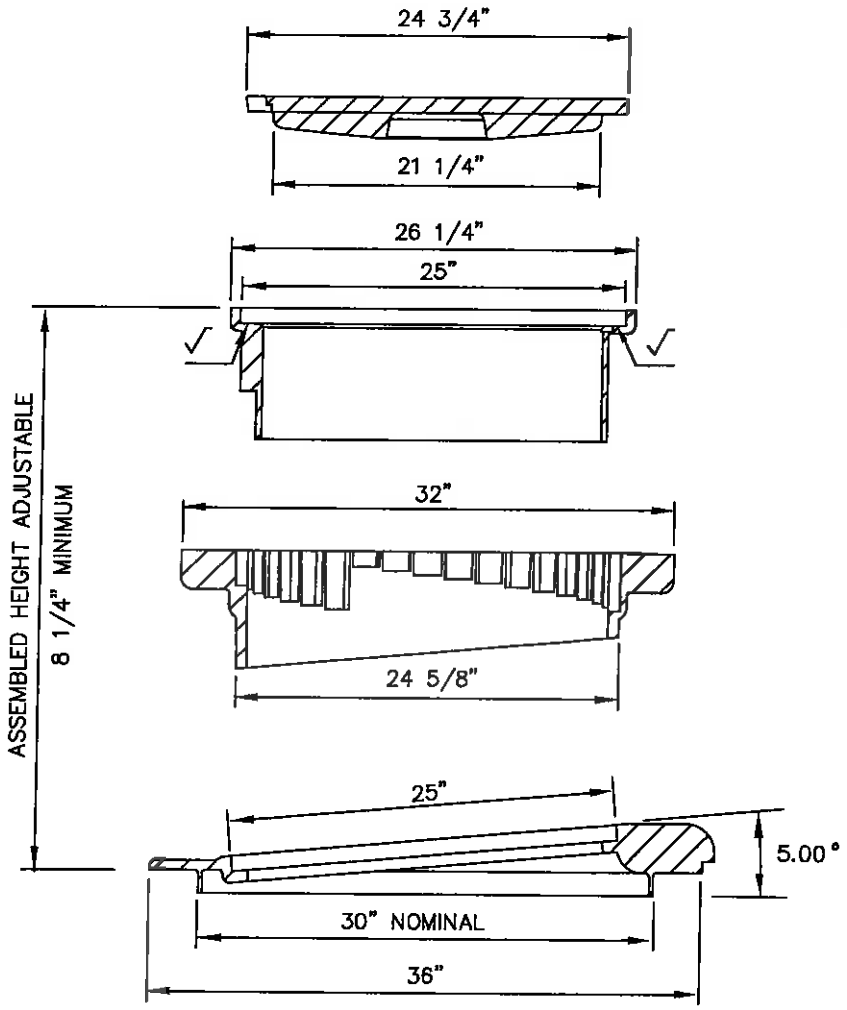
6. LOCKING: Provide covers for manholes located in easements, rights-of-way, alleys, parking lots, and all other places except paved streets, with allen socket set screw locking devices. Drill and tap two holes to a depth of 1 inch at 90 degrees to pry hole and install 3/4 x 3/4 inch allen socket set screws.

7. CLEANOUT STRUCTURE: See Plan No. 330.

8. MANHOLE STRUCTURES: See Plan No. 341.



TYPE B



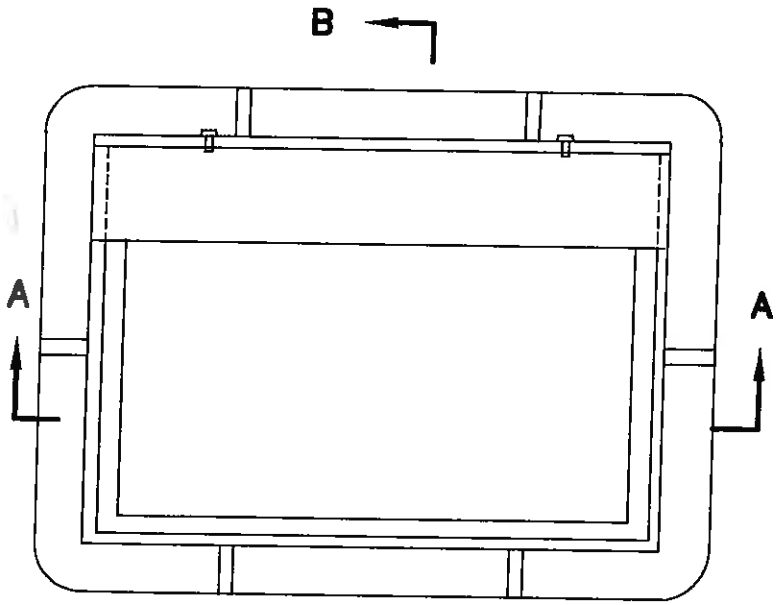
SECTION A–A

30" Frame and cover

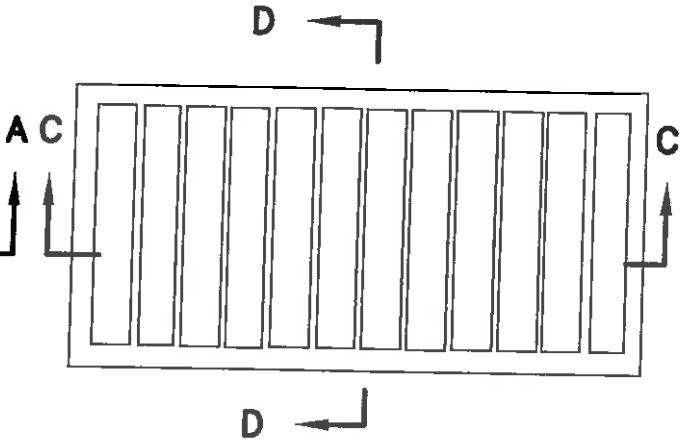
Plan No.
302
Drawing 2 of 2

35 1/2" Grate and frame with adjustable curb box

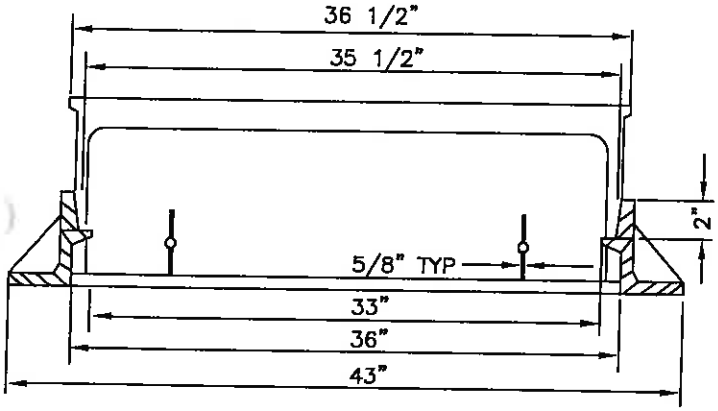
1. CASTING: Grey iron class 35 minimum per ASTM A 48.
2. COATINGS: Except machined surfaces, coat all metal parts with asphaltum paint.
3. INLET BOX: See Plan No. 315.



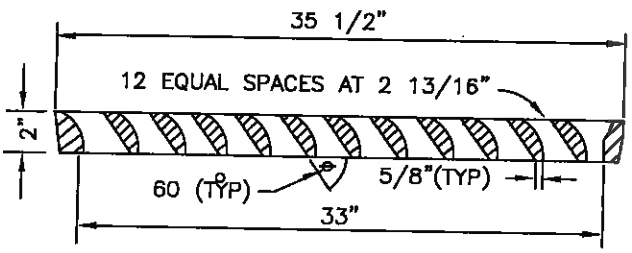
PLAN



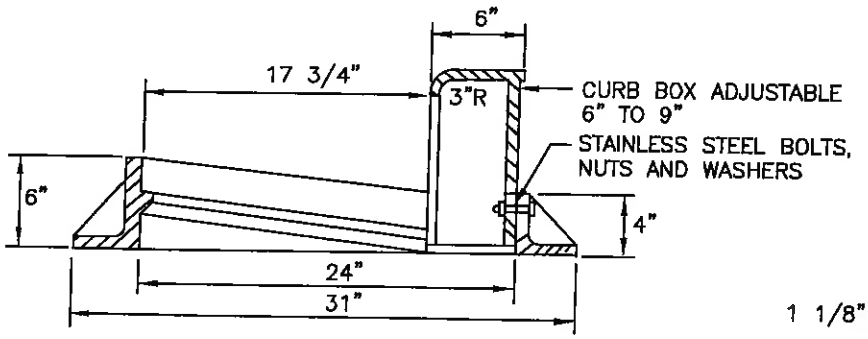
PLAN



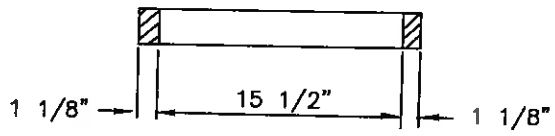
SECTION A–A



SECTION C–C



SECTION B–B



SECTION D–D

35 1/2" Grate and frame with adjustable curb box

Plan No.
308

Catch basin

1. UNTREATED BASE COURSE: Provide material specified in APWA Section 32 11 23.
   A. Do not use gravel as a substitute for untreated base course without ENGINEER's permission.
   B. Place material per APWA Section 31 23 23.
   C. Compact per APWA Section 31 23 26 to a modified proctor density of 95 percent or greater. Maximum lift thickness before compaction is 8 inches when using riding compaction equipment or 6 inches when using hand held compaction equipment.

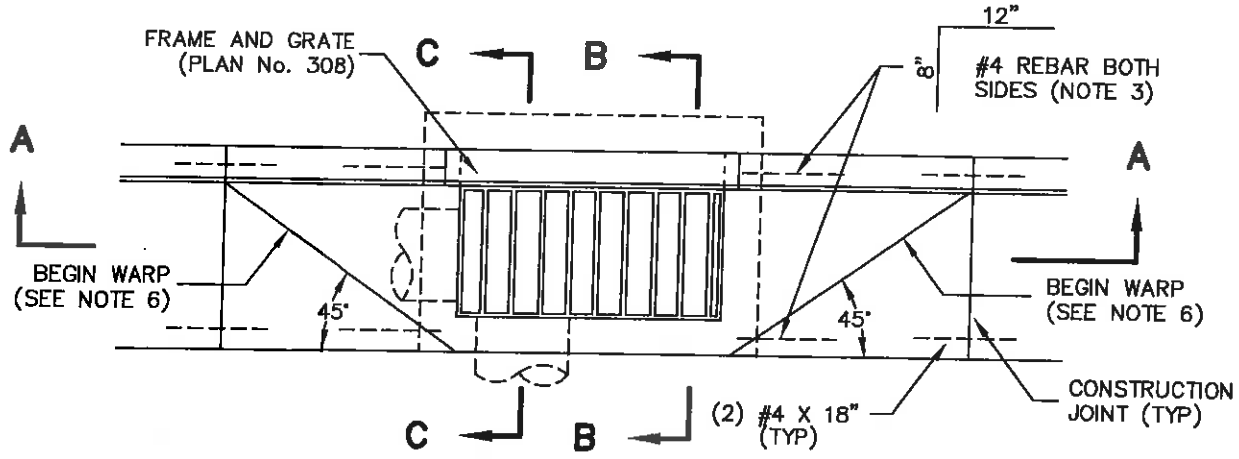
2. BACKFILL: Provide and place per APWA Section 31 23 23 on all sides of basin. Compact per APWA Section 31 23 26 to a modified proctor density of 95 percent or greater. Maximum lift thickness is 8 inches before compaction.

3. REINFORCEMENT: ASTM A 615, grade 60, deformed steel.

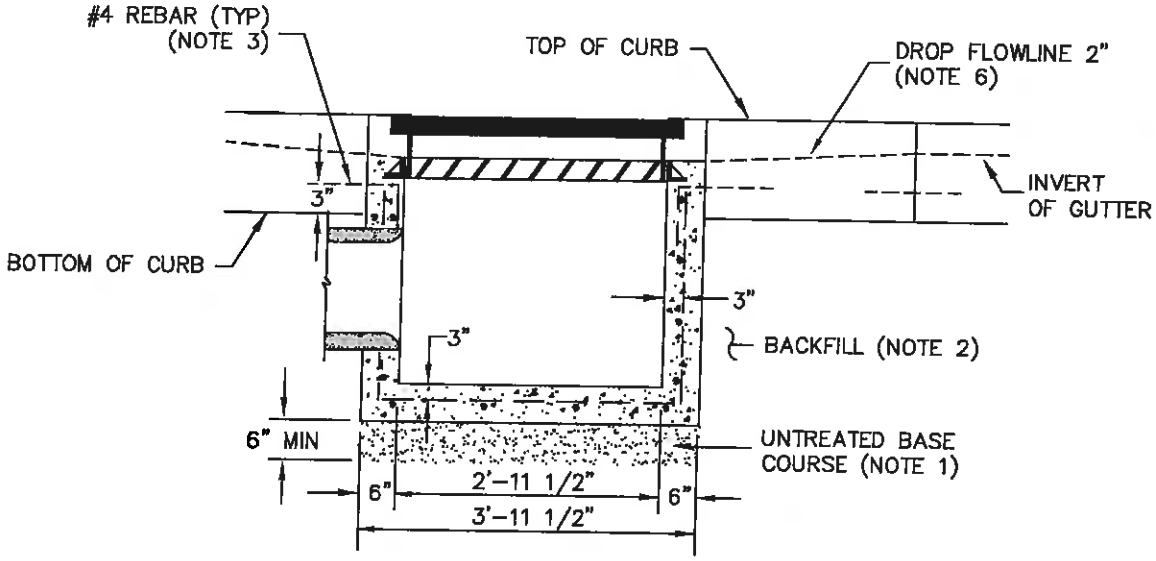
4. CONCRETE: Class 4000 per APWA Section 03 30 04. Place concrete per APWA Section 03 30 10 Cure per APWA Section 03 39 00.

5. PIPE LATERALS: The drawing shows alternate connections to the catch basin. Refer to construction drawings for connection locations.

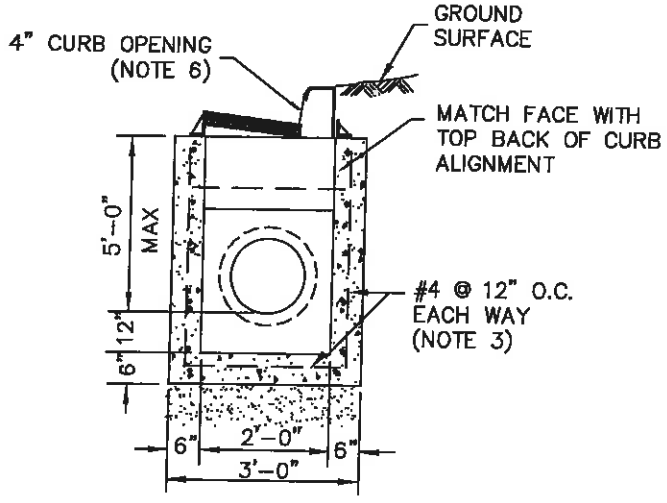
6. CURB FACE OPENING: Make opening at least 4 inches high. Provide at least a 2 inch drop between the "begin warp" line in the gutter flow-line and the top of the grate at the curb face opening.



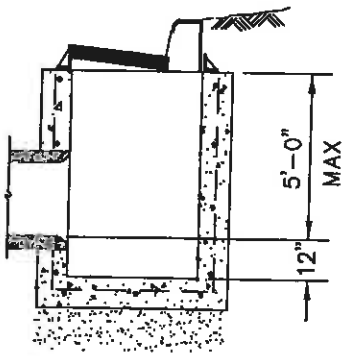
TYPE A - CURB INLET WITH SINGLE GRATE



SECTION A–A



SECTION B–B



SECTION C–C

Catch basin

1. UNTREATED BASE COURSE: Provide material specified in APWA Section 32 11 23.
   A. Do not use gravel as a substitute for untreated base course without ENGINEER's permission.
   B. Place material per APWA Section 31 23 23.
   C. Compact per APWA Section 31 23 26 to a modified proctor density of 95 percent or greater. Maximum lift thickness before compaction is 8 inches when using riding compaction equipment or 6 inches when using hand held compaction equipment.

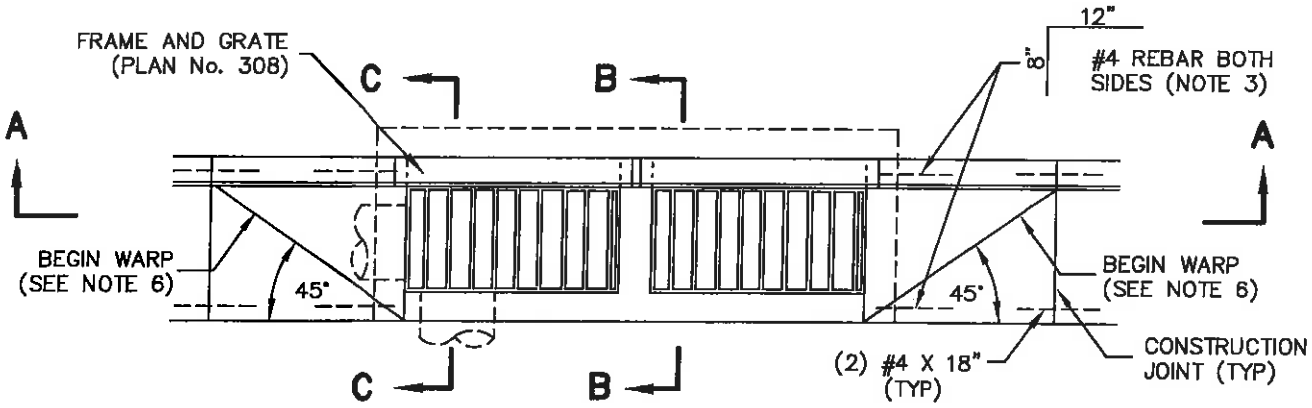
2. BACKFILL: Provide and place per APWA Section 31 23 23 on all sides of basin. Compact per APWA Section 31 23 26 to a modified proctor density of 95 percent or greater. Maximum lift thickness is 8 inches before compaction.

3. REINFORCEMENT: ASTM A 615, grade 60, deformed steel.

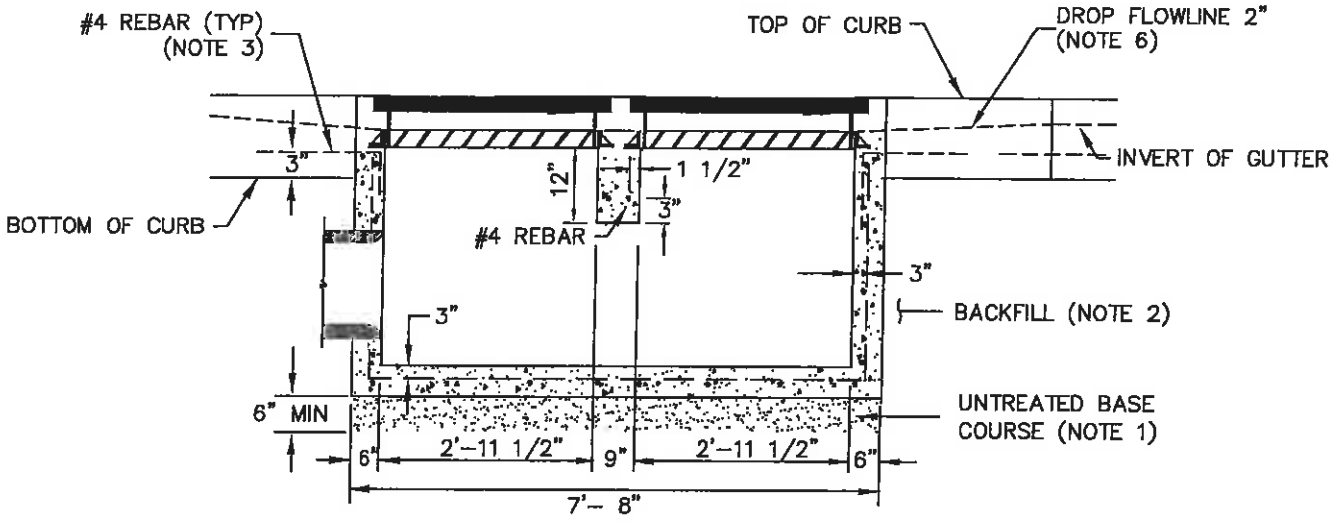
4. CONCRETE: Class 4000 per APWA Section 03 30 04. Place concrete per APWA Section 03 30 10. Cure per APWA Section 03 39 00.

5. PIPE LATERALS: The drawing shows alternate connections to the catch basin. Refer to construction drawings for connection locations.

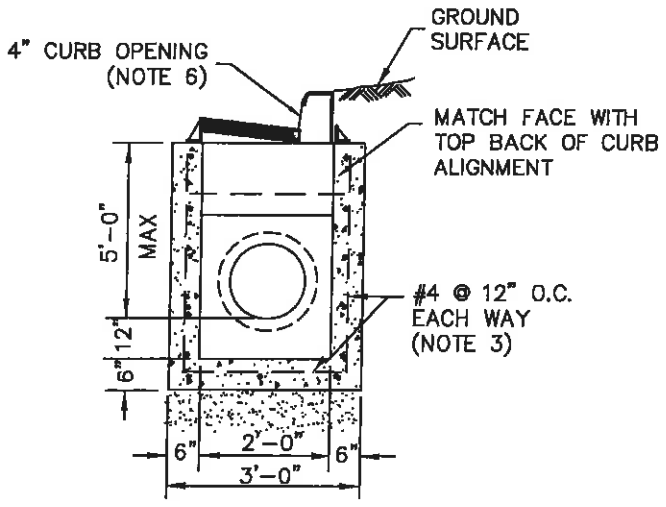
6. CURB FACE OPENING: Make opening at least 4 inches high. Provide at least a 2 inch drop between the "begin warp" line in the gutter flow-line and the top of the grate at the curb face opening.



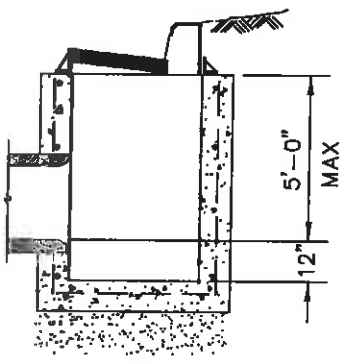
TYPE B - CURB INLET WITH DOUBLE GRATE



SECTION A–A



SECTION B–B



SECTION C–C

Catch basin

Combination inlet / cleanout box

1. UNTREATED BASE COURSE: Provide material specified in APWA Section 32 11 23.
   A. Do not use gravel as a substitute for untreated base course without ENGINEER's permission.
   B. Place material per APWA Section 31 23 23.
   C. Compact per APWA Section 31 23 26 to a modified proctor density of 95 percent or greater. Maximum lift thickness before compaction is 8 inches when using riding compaction equipment or 6 inches when using hand held compaction equipment.

2. BACKFILL: Provide and place per APWA Section 31 23 23 on all sides of basin. Compact per APWA Section 31 23 26 to a modified proctor density of 95 percent or greater. Maximum lift thickness is 8 inches before compaction.

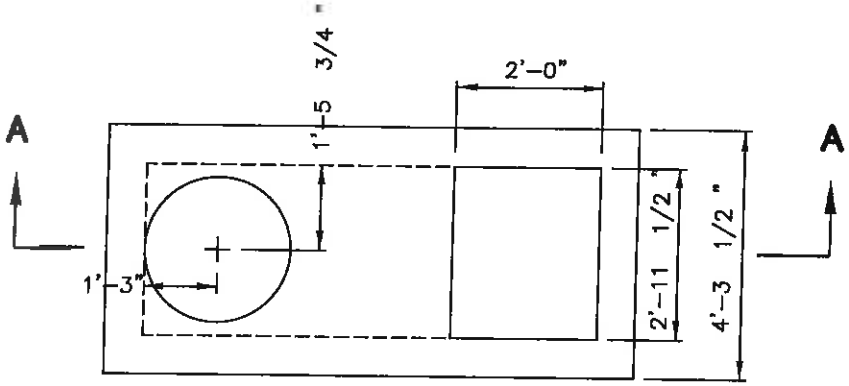
3. REINFORCEMENT: ASTM A 615, grade 60, deformed steel. See APWA Section 03 20 00 requirements.

4. CONCRETE: Class 4000 per APWA Section 03 30 04. Place concrete per APWA Section 03 30 10. Cure per APWA Section 03 39 00.

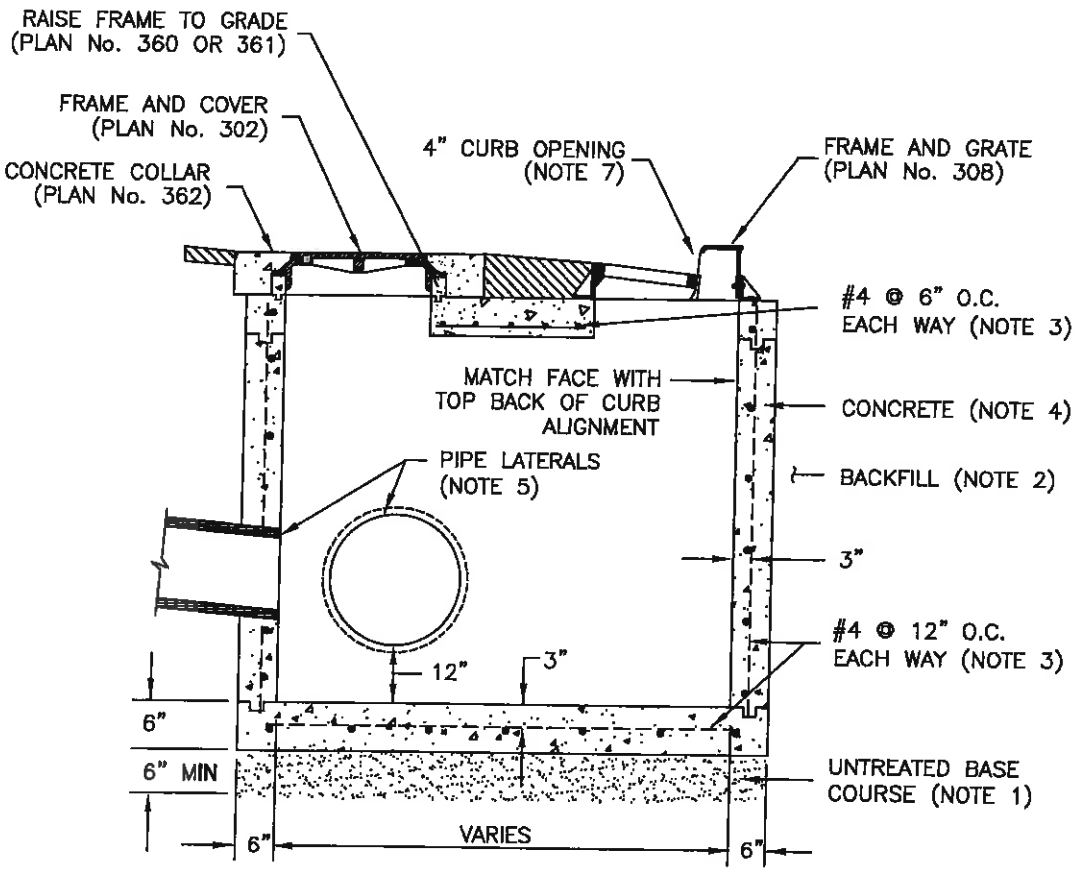
5. PIPE LATERALS: The drawing shows alternate connections to the catch basin. Refer to construction drawings for connection locations.

6. LADDER RUNGS: Provide plastic coated steel ladder rungs in boxes over 6 feet deep. Place bottom rung 6 inches above top of pipe.

7. CURB FACE OPENING: Make opening at least 4 inches high. Provide at least a 2 inch drop from the concrete gutter flow-line to the top of the grate at the curb face opening.



PLAN



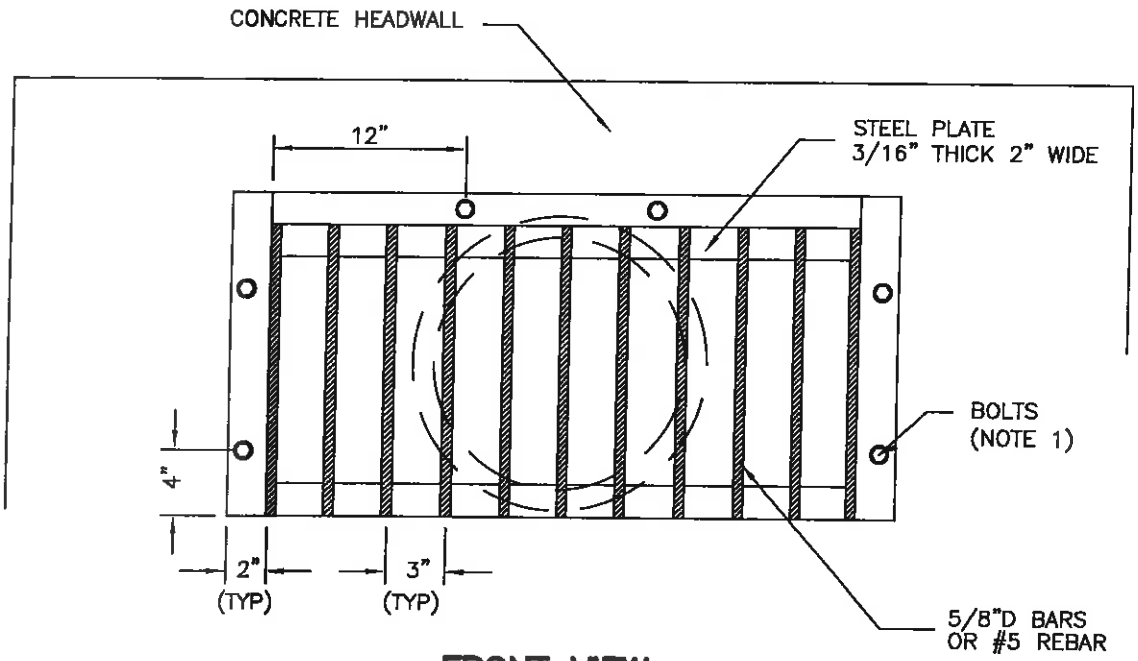
SECTION A–A

Combination inlet/cleanout box

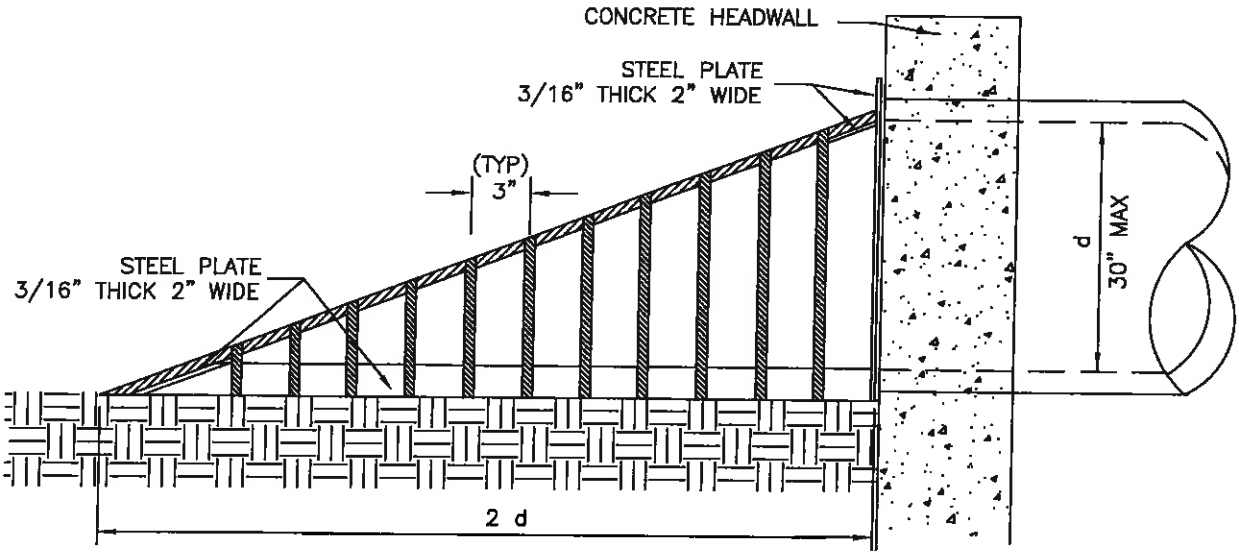
Plan No.
316

Debris grate inlet

1. BOLTS: Use 1/2 inch stainless steel bolts and 1/8 inch stainless steel washers.
2. STEEL: ASTM A 36 steel.
3. JOINTS: All joints to be welded.
4. COATING: Coat all metal parts with asphaltum paint.



FRONT VIEW



RIGHT SIDE VIEW

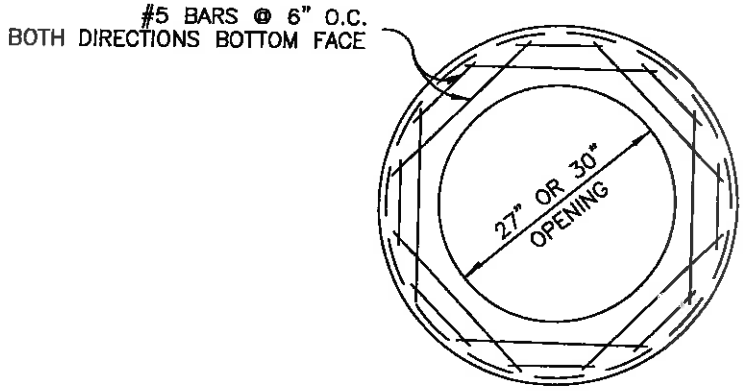
Debris grate inlet

Plan No.
320

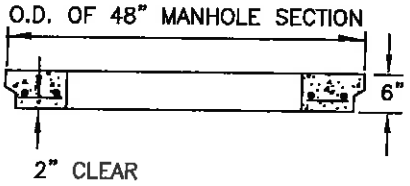
Concrete Deck

1. REINFORCEMENT: ASTM A 615, grade 60, deformed steel. See APWA Section 03 20 00 requirements.

2. CONCRETE: Class 4000 per APWA Section 03 30 04. Place concrete per APWA Section 03 30 10. Cure per APWA Section 03 39 00.



48" DECK PLAN



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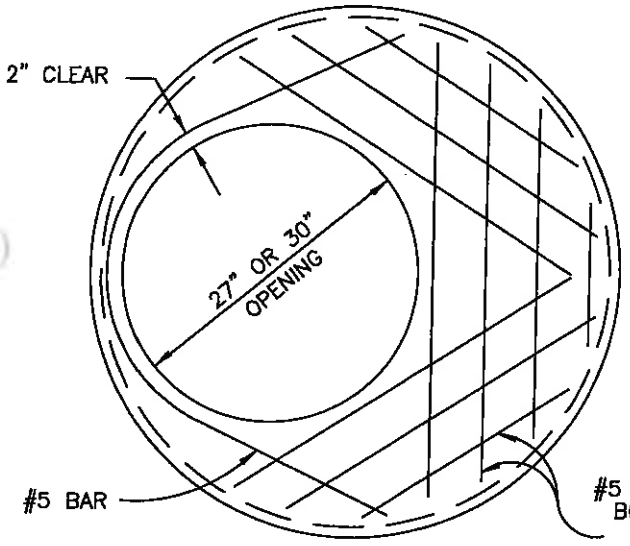
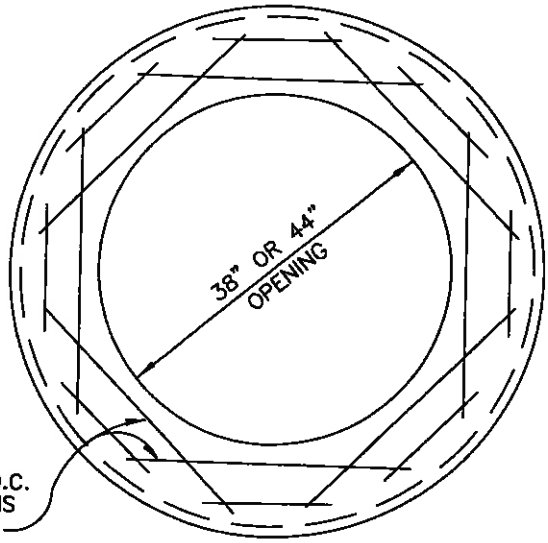
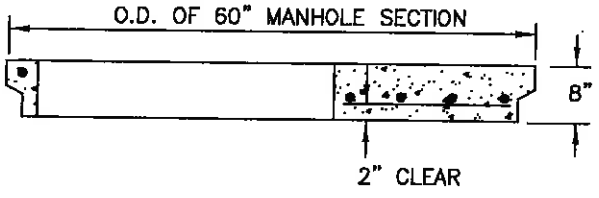


60" DECK PLAN



60" DECK PLAN



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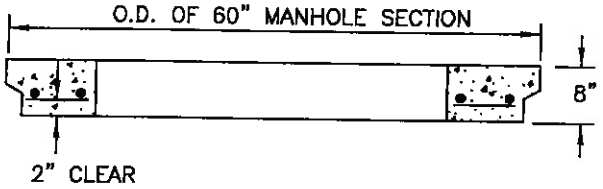


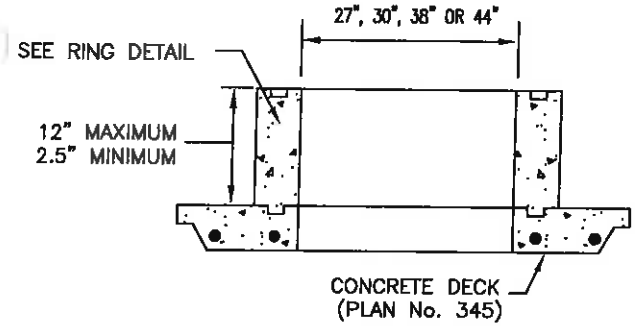
SECTION

Raise frame to grade – grade ring

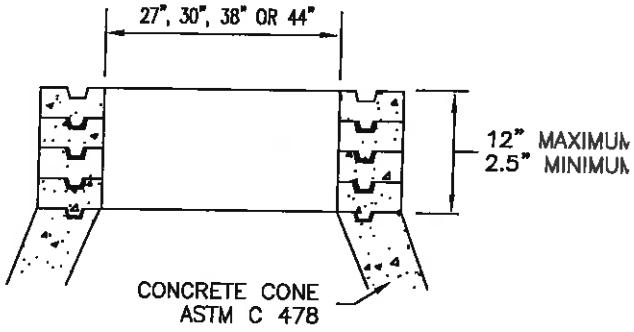
1. CONCRETE: Class 4000 per APWA Section 03 30 04. Place concrete per APWA Section 03 30 10. Cure per APWA Section 03 39 00.

2. REINFORCEMENT: ASTM A 615, grade 60 steel per APWA Section 03 20 00.
   A. 2 1/2" High Rings: Provide two 1/4" diameter steel hoops tied with No. 14 AWS gage wire, 8" on center.
   B. 6" and 8" High Rings: Provide four 1/4" diameter steel hoops, tied with No. 14 AWS gage wire, 8" on center.

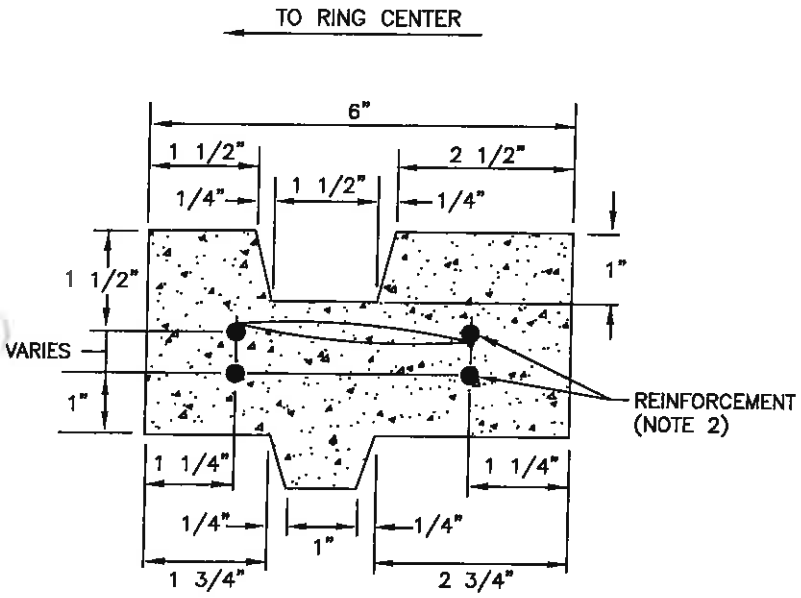
3. JOINTS: Seat rings with a compressible gasket for non-pressurized applications.



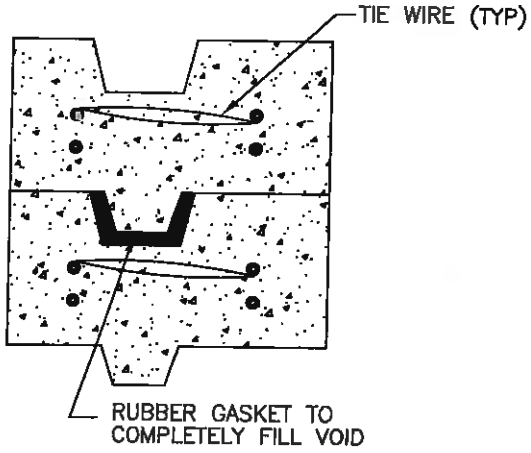
DECK SECTION



CONE SECTION



RING DETAIL

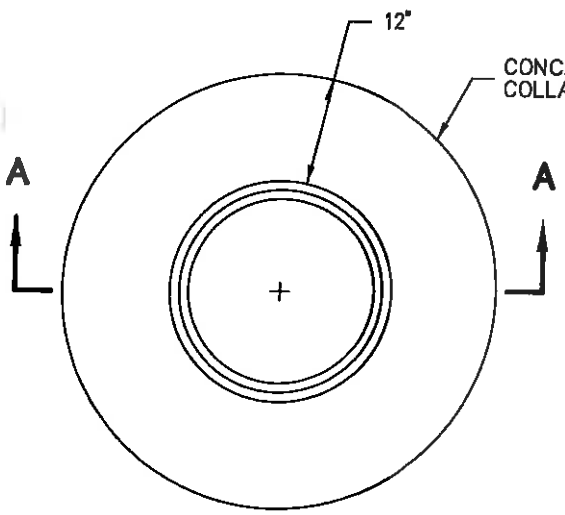


GASKET DETAIL

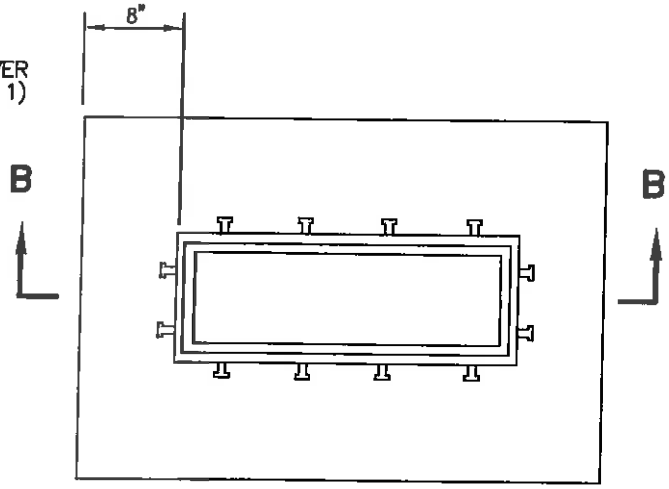
Cover collar for storm drains

1. CONCRETE: Class 4000 per APWA Section 03 30 04. Place concrete per APWA Section 03 30 10. Cure per APWA Section 03 39 00.

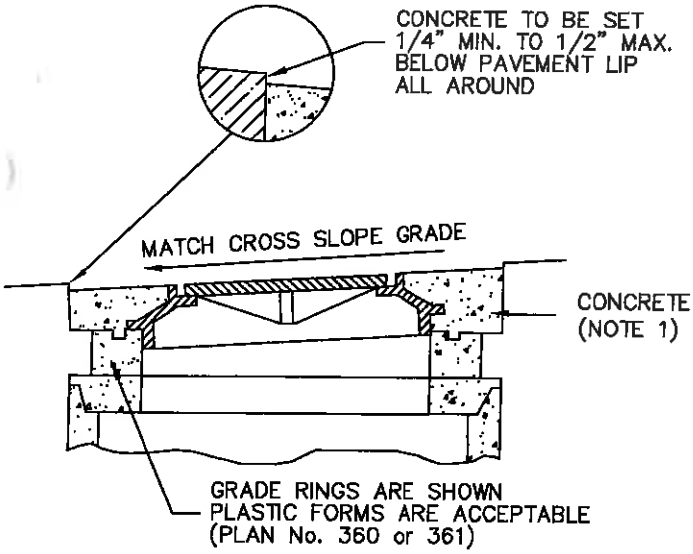
2. JOINTS: Provide a neat straight joint between existing and new asphalt concrete surfaces. Provide concentric circle or straight edge cut. Clean edges of all dirt, oil and loose debris.



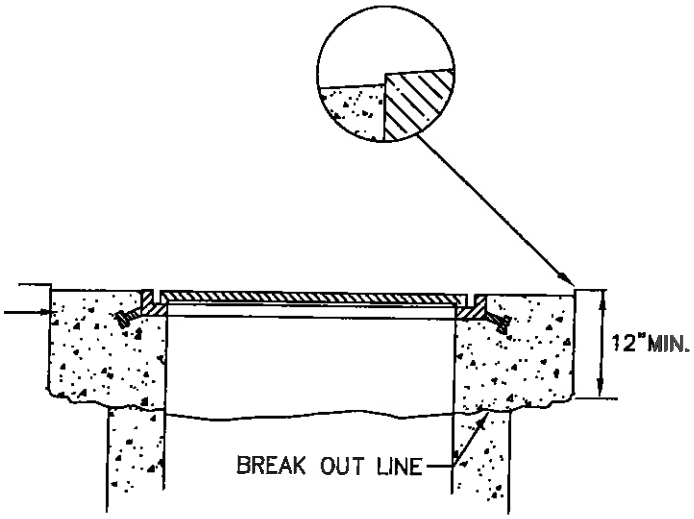
PLAN



PLAN



SECTION A–A



SECTION B–B

Cover collar for storm drains

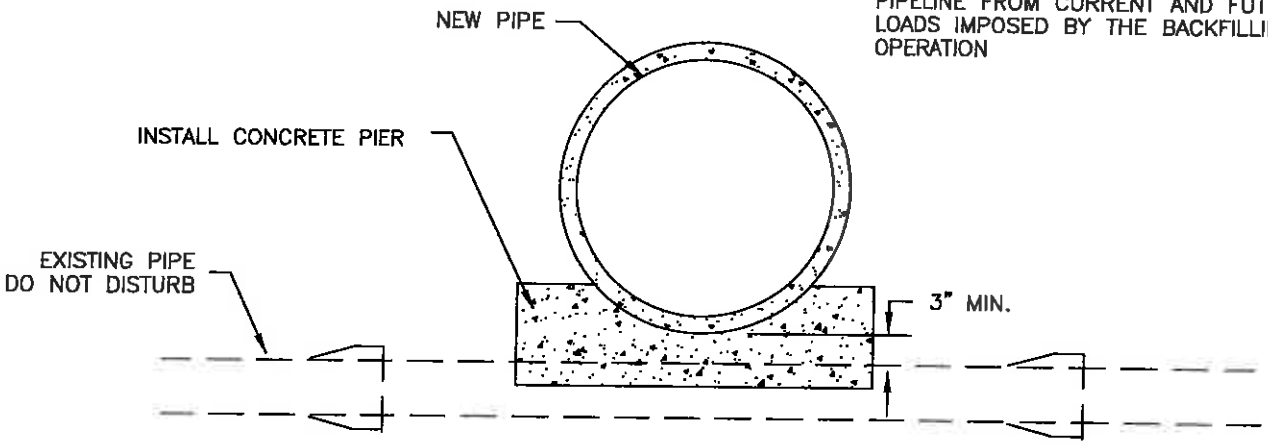
Plan No.
362

Concrete pier

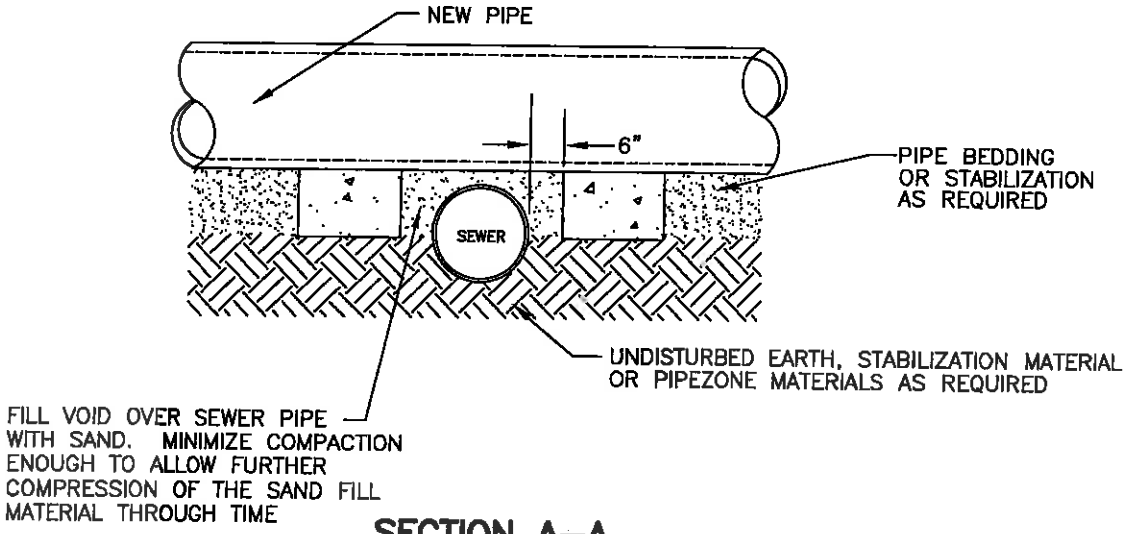
1. BACKFILL: Install and compact all backfill material per APWA Section 33 05 20.
2. CONCRETE: Class 4000 per APWA Section 03 30 04.

NARRATIVE

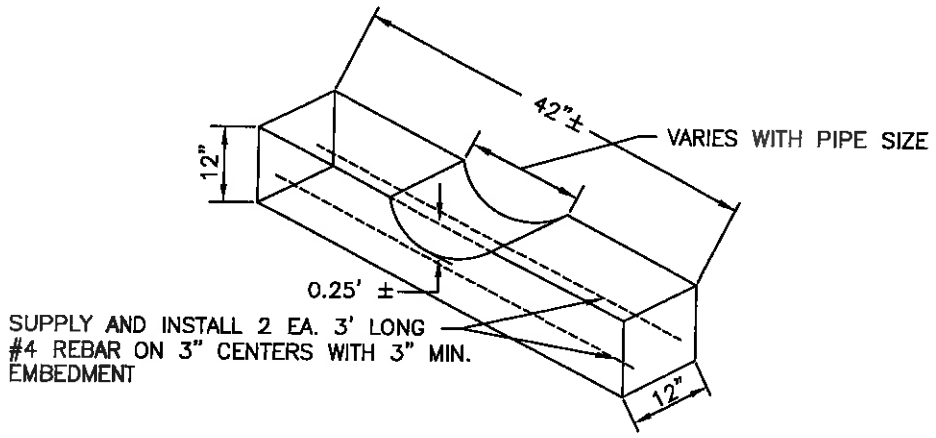
USE CAUTION WHEN CROSSING OVER BURIED PIPELINE. THE PURPOSE FOR PROVIDING THE PIERS SHOWN IN THIS DRAWING IS TO PROTECT THE UNDERLYING PIPELINE FROM CURRENT AND FUTURE LOADS IMPOSED BY THE BACKFILLING OPERATION



CONCRETE PIER DETAILS



SECTION A–A



OBLIQUE

Concrete pier

Plan No.
373

Grease trap

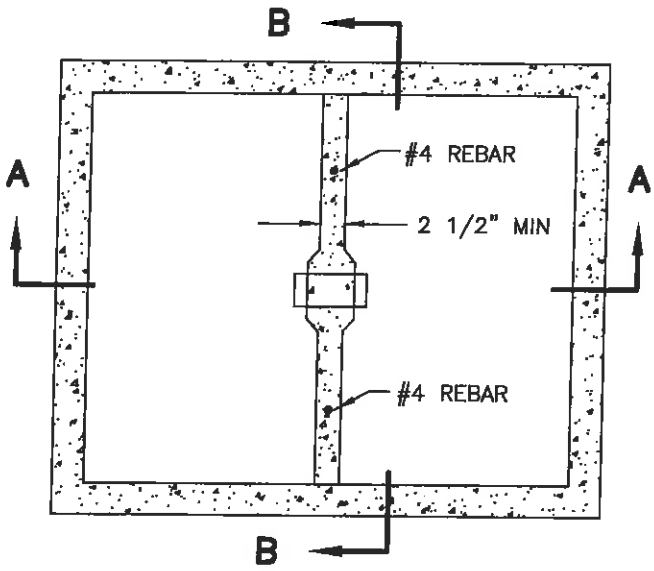
1. INSPECTION: Prior to backfilling around concrete box, secure inspection of installation by ENGINEER.

2. BACKFILL: Provide and place per APWA Section 31 23 23. Compact per APWA Section 31 23 26 to a modified proctor density of 95 percent or greater. Maximum lift thickness is 8 inches before compaction.

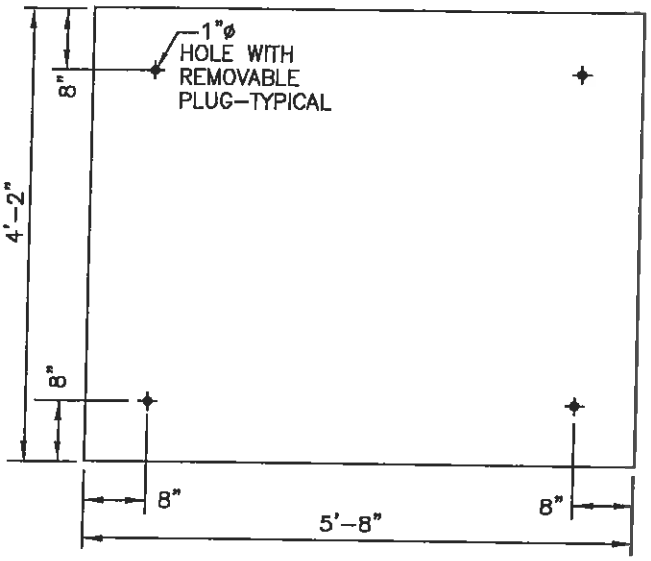
3. REINFORCEMENT: ASTM A 615, grade 60, deformed steel. See APWA Section 03 20 00 requirements.

4. CONCRETE: Class 4000 per APWA Section 03 30 04. Place concrete per APWA Section 03 30 10. Cure per APWA Section 03 39 00.

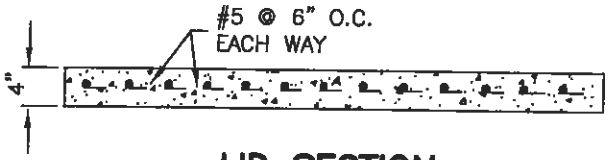
5. WALL PENETRATIONS: Fill annular space around piping with waterproof sealer.



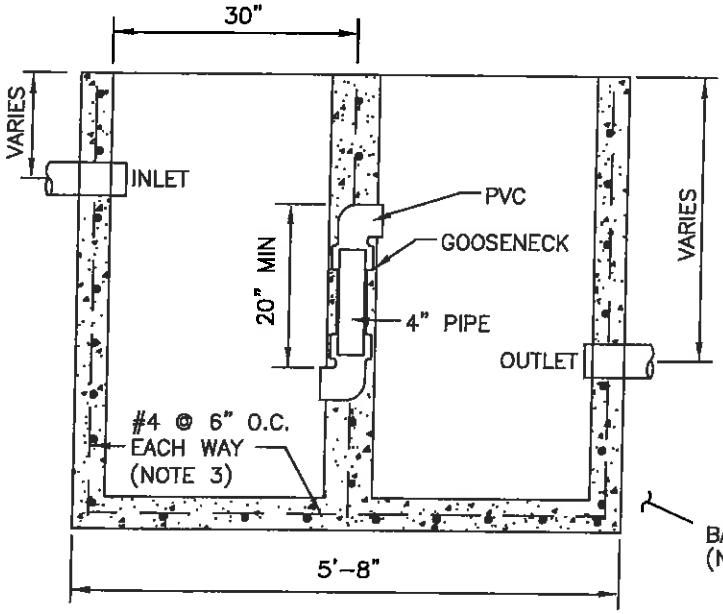
BOX PLAN



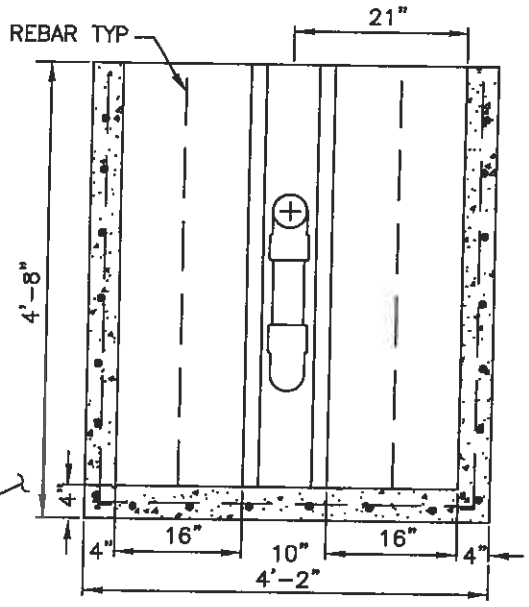
LID PLAN



LID SECTION



SECTION A–A



SECTION B–B

Plan No.
441

Grease trap

INDEX TO FARMINGTON STANDARD DETAILS

SPECIAL PROVISIONS FOR FARMINGTON CITY

(These standards are supplemental to the APWA details adopted by Farmington City. Included in these standards are details that are unique to Farmington City or not adequately represented by APWA. Developers should receive a full set of these drawings.)

205 SP	Curb and Gutter
207 SP	Lateral Marking
211 SP	Waterway
215 SP	Intersection Site Distance
231 SP	Concrete Sidewalk
235 SP	Sidewalk Ramp at Corner
236 SP	Sidewalk Ramp on Block Face
250 SP	Pavement Section
255 SP	Asphalt Concrete "T" patch
258 SP	Street Intersection
259 SP	Typical Cul-de-sac
260 SP	Roadway Sections
268 SP	Concrete Collars
292 SP	Typical Street Sign
341 SP	Storm Drain Manhole
342 SP	Junction Box
380 SP	Storm Drain Trench Section
384 SP	Land Drain Trench Section
390 SP	Forebay
391 SP	Detention Basin
511 SP	Fire Hydrant
521 SP	Water Connection
542 SP	Waterline Loop
561 SP	Thrust Block
562 SP	Tie Down Thrust Restraint
565 SP	Water Trench Section
570 SP	Valve Box Detail
573 SP	Standard Pressure Reducing Valve Station
576 SP	Casing Detail
640 SP	Rock Retaining Wall
650 SP	Silt Fence
840 SP	Mid-Block Crosswalks
850 SP	Example Plat
851 SP	Example Grading and Drainage Plan
852 SP	Example Plan and Profile

CURB AND GUTTER

NOTES:

1. UNTREATED BASE COURSE: PROVIDE MATERIAL SPECIFIED IN APWA SECTION 32 11 23. DO NOT USE GRAVEL OR SEWER ROCK WITHOUT ENGINEER'S APPROVAL. PLACE PER APWA SECTION 32 05 10. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95-PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8-INCHES WHEN USING RIDING COMPACTION EQUIPMENT OR 6-INCHES WHEN USING HAND HELD EQUIPMENT.

2. DIMENSION: FOR CURB AND GUTTER WITH FLOWLINE GRADES GREATER THAN 0.5 PERCENT (S = 0.005) ROADBASE DIMENSION IS 6 INCHES. FOR CURB AND GUTTER WITH FLOWLINE GRADES LESS THAN 0.5 PERCENT ROADBASE DIMENSION IS 8 INCHES.

3. CONCRETE: CLASS 4000 PER APWA SECTION 03 30 04. PLACE PER APWA SECTION 03 30 10. CURE PER APWA SECTION 03 39 00.

A. IF NECESSARY, PROVIDE CONCRETE THAT ACHIEVES DESIGN STRENGTH IN LESS THAN 7 DAYS. USE CAUTION, HOWEVER, AS SPIDER CRACKS DEVELOP IF AIR TEMPERATURE EXCEEDS 90 DEGREES F.

B. UNLESS SHOWN OTHERWISE, PROVIDE 1/2 INCH RADIUS ON CONCRETE EDGES EXPOSED TO PUBLIC VIEW.

4. EXPANSION JOINTS:

A. FULL DEPTH 1/2 INCH THICK TYPE F1 JOINT FILLER MATERIAL PER APWA SECTION 32 13 73. SET TOP OF FILLER FLUSH WITH SURFACE OF CONCRETE.

B. EXPANSION JOINTS ARE NOT REQUIRED IN SLIP FORMWORK JOINTS ARE REQUIRED AT THE START OR END OF THE INSTALLATION ACTIVITY, AND AT THE START OR END OF A STREET INTERSECTION CURB RADIUS RETURN.

5. CONTRACTION JOINTS: MAKE CONTRACTION JOINTS VERTICAL, AT LEAST 1/8 INCH WIDE, AND 2 INCHES DEEP OR ¼ SLAB THICKNESS IF THE SLAB IS GREATER THAN 8 INCHES THICK. IF NECESSARY, MATCH LOCATION OF CONTRACTION JOINTS IN PORTLAND CEMENT CONCRETE PAVEMENTS.

6. FINISH BROOMED

7. PROTECTION AND REPAIR:

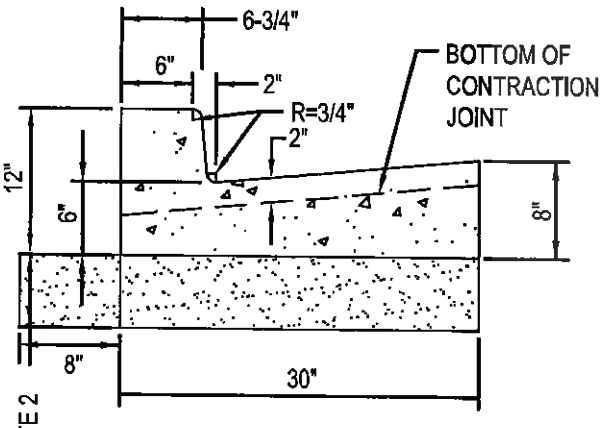
A. FILL FLOW LINE WITH WATER. REPLACE CONSTRUCTIONTHAT DOES NOT DRAIN.

B. PROTECT CONCRETE FROM DE-ICING CHEMICALS DURING CURING.

C. DO NOT POUR CONCRETE WHEN TEMPERATURE IS 40°F OR BELOW.

D. CURB AND GUTTER IS TO BE REPLACED IN SECTIONS.

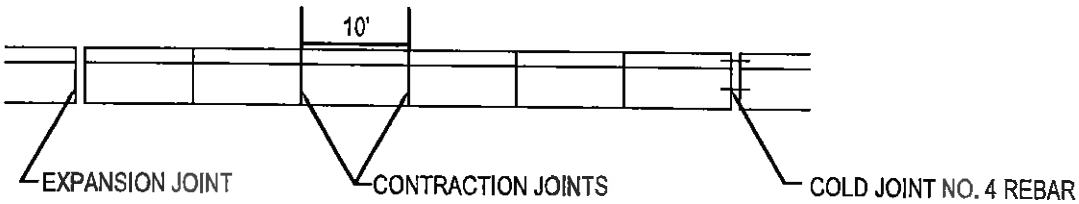
PLAN NO. 205 ST



CONCRETE AREA = 1.665 SQ. FT.

TYPE A

SPECIAL APPROVAL REQUIRED FOR OTHER
TYPES OF CURB & GUTTER



CURB AND GUTTER JOINT DETAIL

* MICRO -SYNTHETIC FIBERS SHALL BE ADDED TO THE CONCRETE MIX DESIGN. MICRO-SYNTHETIC FIBERS SHALL SERVE TO REDUCE PLASTIC SHRINKAGE CRACKING, REDUCE WATER MIGRATION, AND DAMAGE FROM FREEZE/THAW AND IMPROVE DURABILITY. FIBERS SHALL CONFORM TO ASTM 116/C 1116M, TYPE III FIBER REINFORCED CONCRETE AND SHALL BE APPLIED PER MANUFACTURER'S RECOMMENDATIONS.

CURB AND GUTTER

PLAN NO. 205 SP

REVISED 02/05/08

LATERAL MARKING

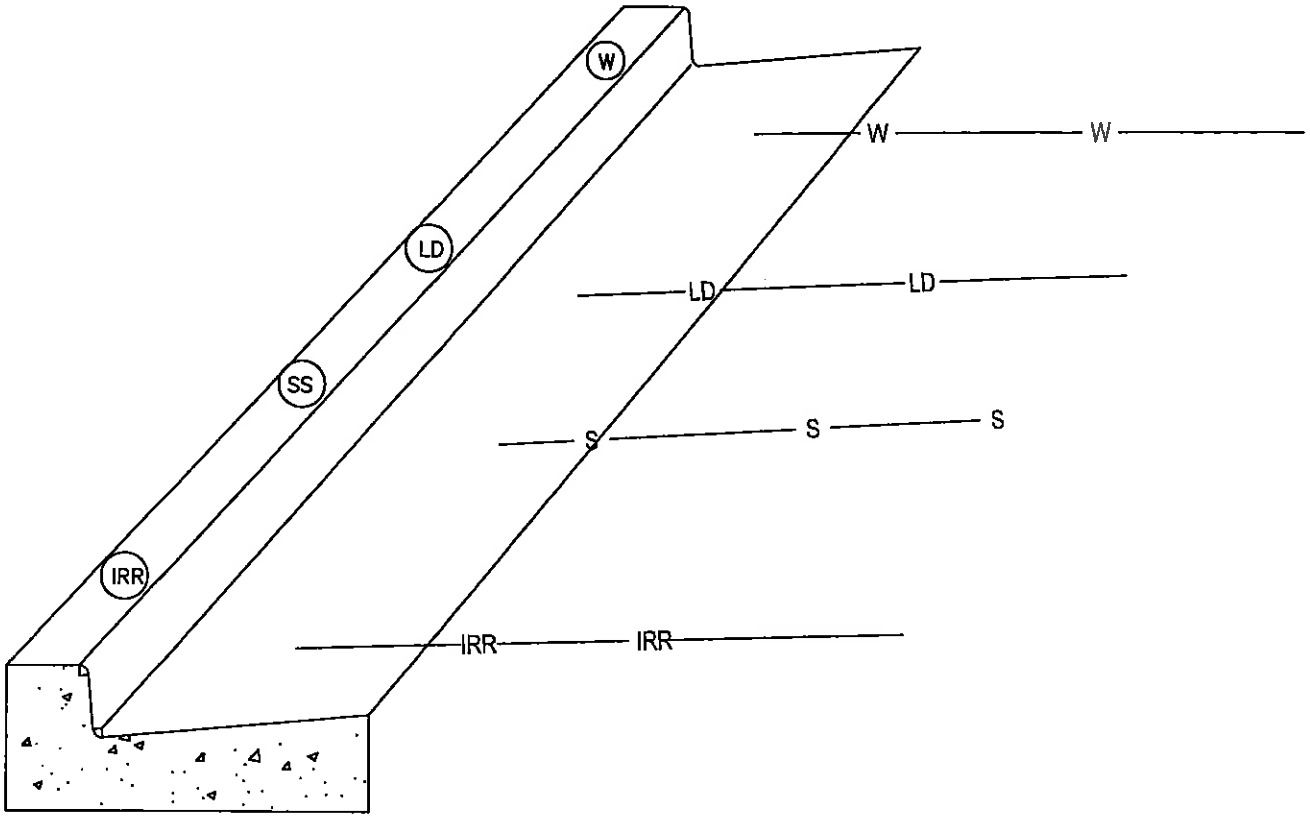
NOTES:

1. MARK THE LOCATION OF UTILITY LATERALS IN THE TOP BACK OF CURB.

2. FARMINGTON CITY PUBLIC WORKS HAS IRON CASTS TO BE USED TO IMPRINT THE CONCRETE WITH UTILITY SYMBOLS. IRON CASTS ARE TO BE BORROWED AND RETURNED TO THE CITY.

3. WHERE CURB CUTS OCCUR AT LATERAL LOCATION, USE MARKING PINS TO DESIGNATE THE LATERAL LOCATION.

PLAN NO. *207 SP*



* MICRO -SYNTHETIC FIBERS SHALL BE ADDED TO THE CONCRETE MIX DESIGN. MICRO-SYNTHETIC FIBERS SHALL SERVE TO REDUCE PLASTIC SHRINKAGE CRACKING, REDUCE WATER MIGRATION, AND DAMAGE FROM FREEZE/THAW AND IMPROVE DURABILITY. FIBERS SHALL CONFORM TO ASTM 116/C 1116M, TYPE III FIBER REINFORCED CONCRETE AND SHALL BE APPLIED PER MANUFACTURER'S RECOMMENDATIONS.

LATERAL MARKING

PLAN NO. ***207 SP***

REVISED 02/05/08

WATERWAY

NOTES:

1. UNTREATED BASE COURSE: PROVIDE MATERIAL SPECIFIED IN APWA SECTION 32 11 23. DO NOT USE GRAVEL OR SEWER ROCK. PLACE PER APWA SECTION 32 05 10. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95-PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8-INCHES AFTER COMPACTION.

2. CONCRETE: CLASS 4000 PER APWA SECTION 03 30 04.
   A. IF NECESSARY, PROVIDE CONCRETE THAT ACHIEVES DESIGN STRENGTH IN LESS THAN 7 DAYS. USE CAUTION, HOWEVER, AS SPIDER CRACKS DEVELOP IF AIR TEMPERATURE EXCEEDS 90 DEGREES F.
   B. PLACE PER APWA SECTION 03 30 10.
   C. UNLESS SHOWN OTHERWISE, PROVIDE 1/2 INCH RADIUS ON CONCRETE EDGES EXPOSED TO PUBLIC VIEW.
   D. APPLY A CURING COMPOUND PER APWA SECTION 03 39 00 OR USE AN ACCEPTABLE ALTERNATE CURING METHOD

3. EXPANSION JOINTS: FULL DEPTH 1/2 INCH THICK TYPE F1 JOINT FILLER MATERIAL PER APWA SECTION 32 13 73. SET TOP OF FILLER FLUSH WITH SURFACE OF CONCRETE.

4. CONTRACTION JOINTS: MAKE CONTRACTION JOINTS VERTICAL, AT LEAST 1/8 INCH WIDE, AND 2 INCHES DEEP OR ¼ SLAB THICKNESS IF THE SLAB IS GREATER THAN 8 INCHES THICK.

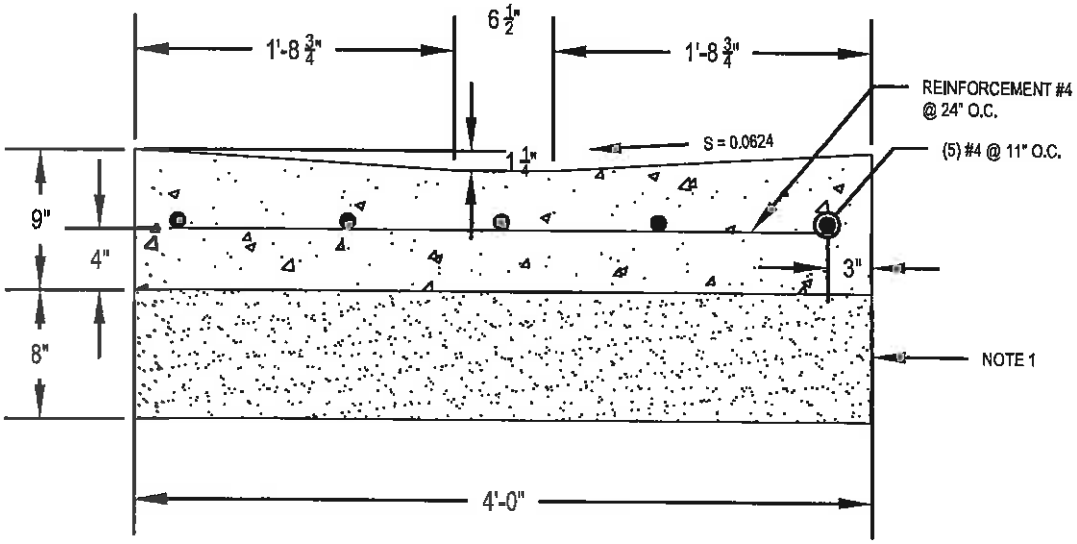
5. REINFORCEMENT: ASTM A 615, GRADE 60, GLAVANIZED OR EPOXY COATED DEFORMED STEEL. SEE APWA SECTION 03 20 00 REQUIREMENTS

6. FINISH: BROOMED

7. PROTECTION AND REPAIR
   A. FILL FLOW-LINE WITH WATER. REPLACE CONSTRUCTION THAT DOES NOT DRAIN.
   B. PROTECT CONCRETE FROM DE-ICING CHEMICALS DURING CURING

8. WATERWAY USE MUST BE APPROVED

PLAN NO. *211 SP*



CONCRETE AREA = 2.764 SQ. FT.

* MICRO -SYNTHETIC FIBERS SHALL BE ADDED TO THE CONCRETE MIX DESIGN. MICRO-SYNTHETIC FIBERS SHALL SERVE TO REDUCE PLASTIC SHRINKAGE CRACKING, REDUCE WATER MIGRATION, AND DAMAGE FROM FREEZE/THAW AND IMPROVE DURABILITY. FIBERS SHALL CONFORM TO ASTM 116/C 1116M, TYPE III FIBER REINFORCED CONCRETE AND SHALL BE APPLIED PER MANUFACTURER'S RECOMMENDATIONS.

WATERWAY

PLAN NO. *211 SP*

REVISED 02/05/08

INTERSECTION SIGHT DISTANCE

NOTES:

1. INTERSECTION SIGHT TRIANGLES TYPICALLY ARE FORMED BY THE STREET PROPERTY LINES AND A LINE CONNECTING THEM BETWEEN POINTS THIRTY (30) FEET FROM THE INTERSECTION OF THE TWO STREET PROPERTY LINES. INTERSECTION GEOMETRY WILL CHANGE SIGHT DISTANCE REQUIREMENTS. NO IMPROVEMENTS ALLOWED OVER 3 FEET HIGH MEASURED FROM THE TOP BACK OF CURB (UNLESS OTHERWISE APPROVED BY THE CITY TRANSPORTATION ENGINEER).

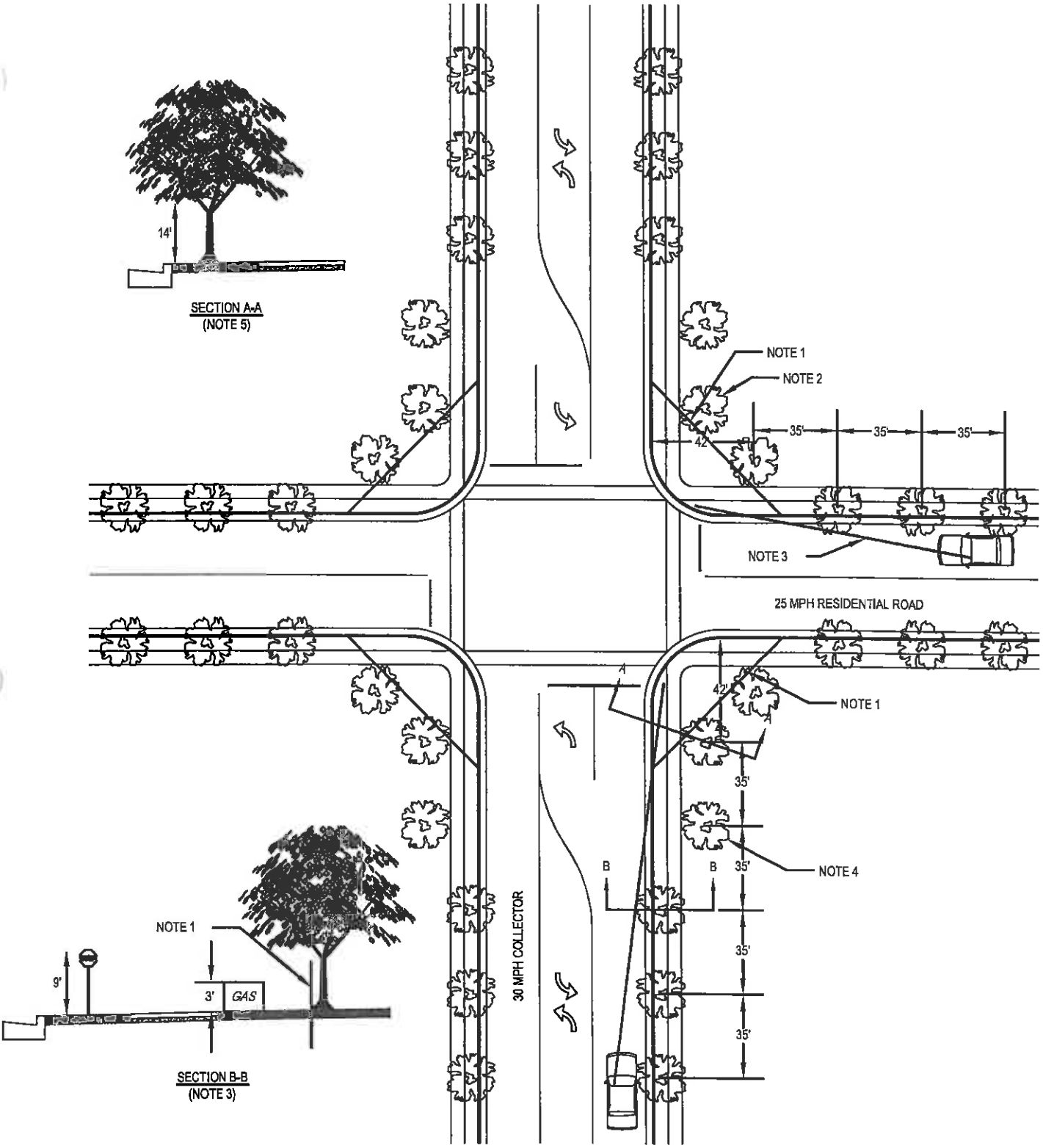
2. TREES MUST BE PLANTED OUTSIDE OF THE SIGHT TRIANGLE. BRANCHES NEED TO BE TRIMMED TO TEN (10) FEET ABOVE THE TOP BACK OF CURB.

3. REQUIRED SIGHT DISTANCE TO STOP SIGNS ON ROADS WITH A SPEED LIMIT OF 25 MPH IS 100 FEET. SPEED LIMITS OF 30 MPH OR MORE REQUIRES 150 FEET OF CLEAR SIGHT DISTANCE TO STOP SIGNS.

4. STREET TREES PLANTED WITHIN THE PARKSTRIP SHALL BE TRIMMED TO 14 FEET ABOVE THE TOP BACK OF THE CURB WHEN THE CANOPY CROSSES INTO THE ROADWAY AREA (BEYOND THE TOP BACK OF CURB).

5. FOR T-INTERSECTIONS USE A SIGHT TRIANGLE FORMED BY THE STREET PROPERTY LINE AND A LINE CONNECTING THEM BETWEEN POINTS MEASURED 20 FEET FROM THE INTERSECTION ON THE INTERCEPTING STREET AND 60 FEET FROM THE INTERSECTION ON THE THROUGH STREET.

PLAN NO. *215 SP*



INTERSECTION SIGHT DISTANCE

PLAN NO. 215 SP

REVISED 02/05/08

DRAWING 1 OF 1

CONCRETE SIDEWALK

NOTES:

1. UNTREATED BASE COURSE: PROVIDE MATERIAL SPECIFIED IN APWA SECTION 32 11 23. DO NOT USE GRAVEL WITHOUT ENGINEERS PERMISSION. PLACE PER APWA SECTION 32 05 10. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95-PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8-INCHES AFTER COMPACTION.

2. CONCRETE: CLASS 4000 PER APWA SECTION 03 30 04.
   A. IF NECESSARY, PROVIDE CONCRETE THAT ACHIEVES DESIGN STRENGTH IN LESS THAN 7 DAYS. USE CAUTION, HOWEVER, AS SPIDER CRACKS DEVELOP IF AIR TEMPERATURE EXCEEDS 90 DEGREES F.
   B. PLACE PER APWA SECTION 03 30 10.
   C. UNLESS SHOWN OTHERWISE, PROVIDE 1/2 INCH RADIUS ON CONCRETE EDGES EXPOSED TO PUBLIC VIEW.
   D. APPLY A CURING COMPOUND PER APWA SECTION 03 39 00 OR USE AN ACCEPTABLE ALTERNATE CURING METHOD

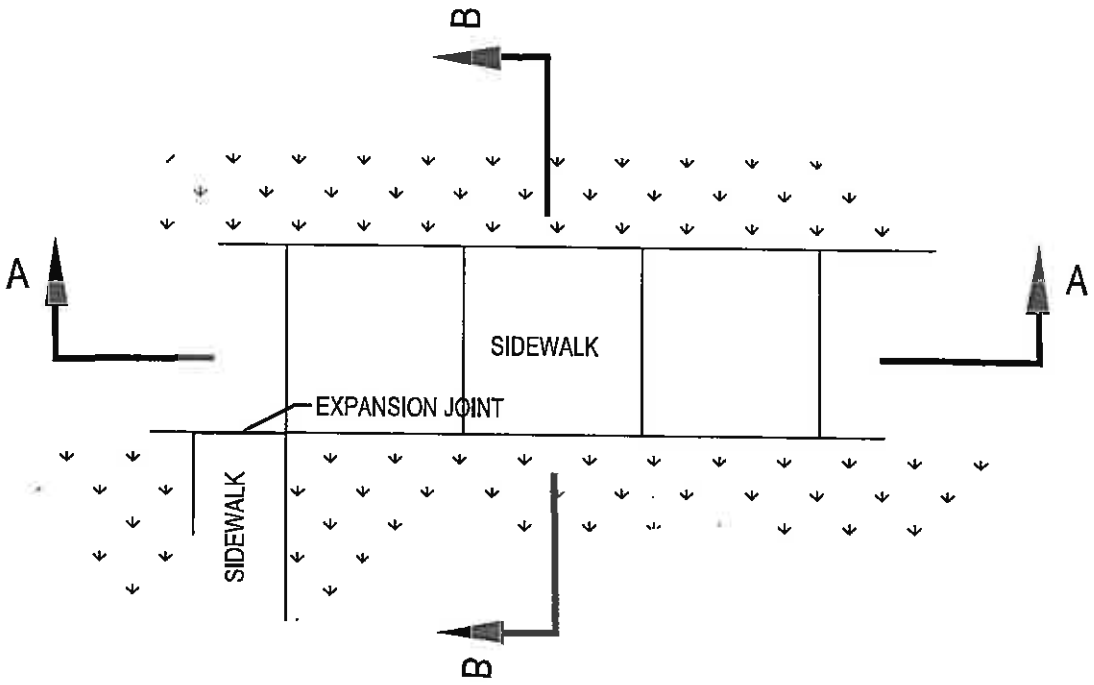
3. EXPANSION JOINTS: FULL DEPTH 1/2 INCH THICK TYPE F1 JOINT FILLER MATERIAL PER APWA SECTION 32 13 73. SET TOP OF FILLER FLUSH WITH SURFACE OF CONCRETE.

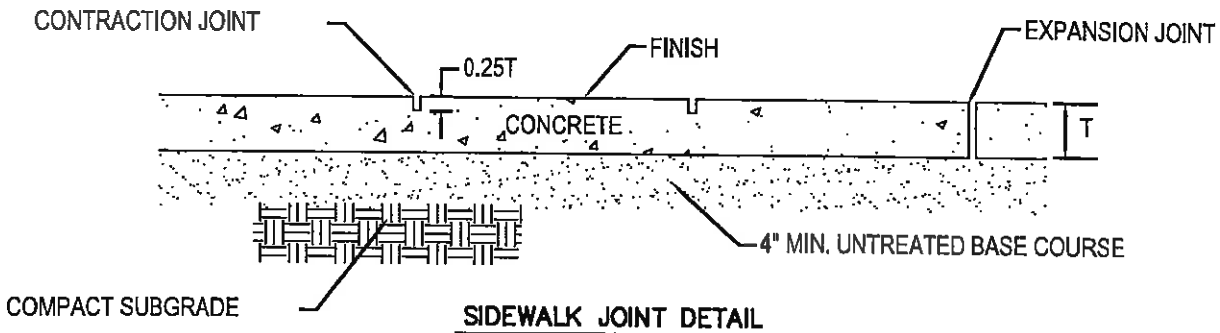
4. CONTRACTION JOINTS: MAKE CONTRACTION JOINTS VERTICAL, AT LEAST 1/8 INCH WIDE, AND 1 INCH DEEP OR ¼ SLAB THICKNESS IF THE SLAB IS GREATER THAN 4 INCHES THICK.

5. FINISH: BROOMED

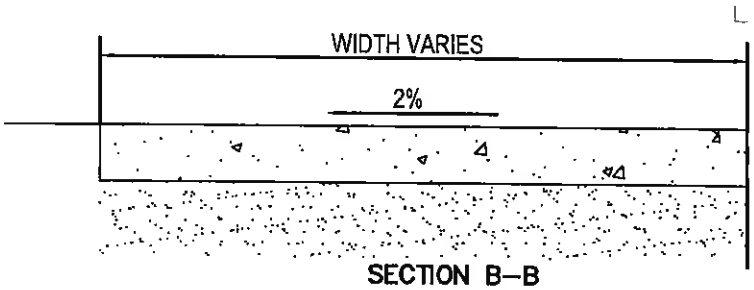
6. DEPTH OF SIDEWALK (T):
   A. NEW CONSTRUCTION: NOMINAL 6" IN RESIDENTIAL ZONES, 8" IN NON-RESIDENTIAL ZONES.
   B. REMOVAL AND REPLACEMENT CONSTRUCTION: MATCH EXISTING.

* MICRO -SYNTHETIC FIBERS SHALL BE ADDED TO THE CONCRETE MIX DESIGN. MICRO-SYNTHETIC FIBERS SHALL SERVE TO REDUCE PLASTIC SHRINKAGE CRACKING, REDUCE WATER MIGRATION, AND DAMAGE FROM FREEZE/THAW AND IMPROVE DURABILITY. FIBERS SHALL CONFORM TO ASTM 116/C 1116M, TYPE III FIBER REINFORCED CONCRETE AND SHALL BE APPLIED PER MANUFACTURER'S RECOMMENDATIONS.

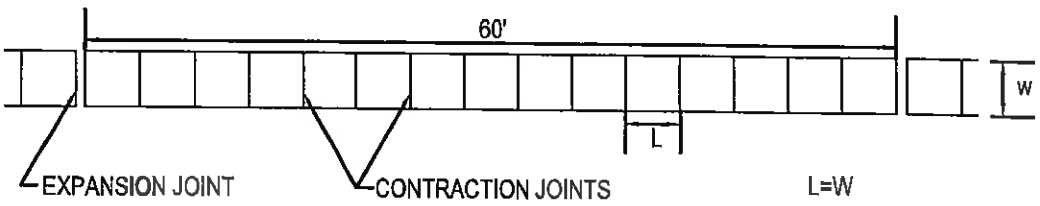




SIDEWALK JOINT DETAIL



SECTION B–B



SIDEWALK JOINT DETAIL

CONCRETE SIDEWALK

PLAN NO. *231 SP*

REVISED 02/05/08

SIDEWALK RADIUS RAMP

NOTES:

1. UNTREATED BASE COURSE: PROVIDE MATERIAL SPECIFIED IN APWA SECTION 32 11 23. DO NOT USE GRAVEL OR SEWER ROCK. PLACE PER APWA SECTION 32 05 10. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95% OR GREATER. MAXIMUM LIFT THICKNESS IS 8" BEFORE COMPACTION.

2. CONCRETE: CLASS 4000 PER APWA SECTION 03 30 04. PLACE PER APWA SECTION 03 30 10. CURE PER APWA SECTION 03 39 00.
   A. IF NECESSARY PROVIDE CONCRETE THAT ACHIEVES DESIGN STRENGTH IN LESS THAN 7 DAYS. USE CAUTION, HOWEVER, AS SPIDER CRACKS DEVELOP IF AIR TEMPERATURE EXCEEDS 90°F.
   B. UNLESS SHOWN OTHERWISE, PROVIDE 1/2" RADIUS ON CONCRETE EDGES EXPOSED TO PUBLIC VIEW.

3. EXPANSION JOINTS: FULL DEPTH 1/2" THICK TYPE F1 JOINT FILLER MATERIAL PER APWA SECTION 32 13 73. SET TOP OF FILLER FLUSH WITH SURFACE OF CONCRETE.

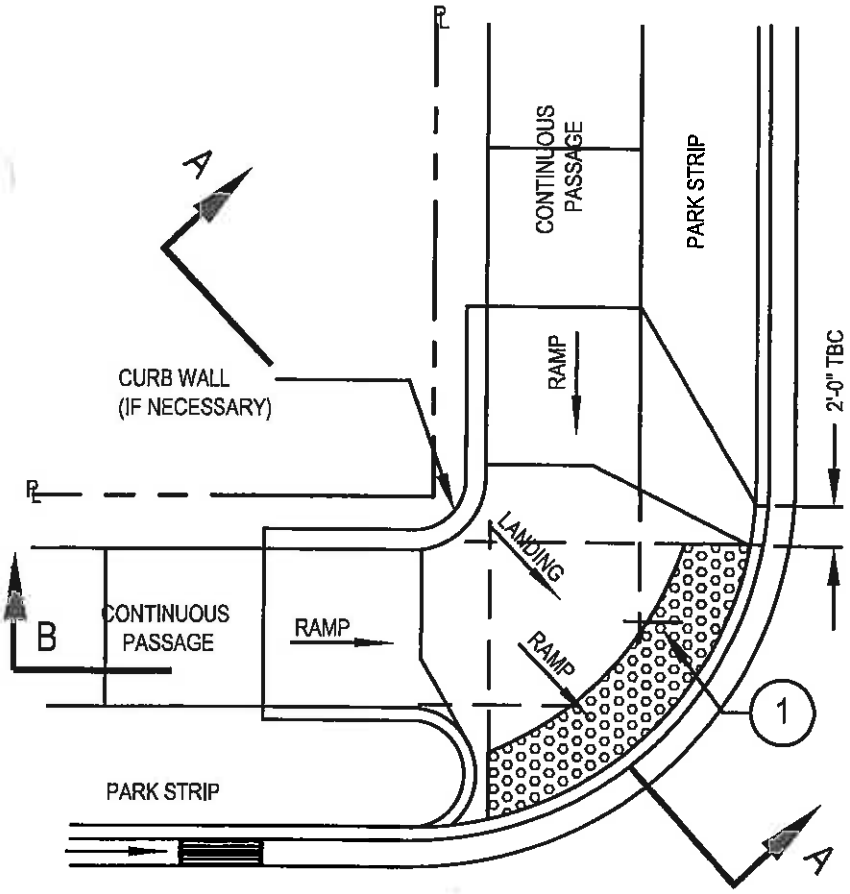
4. CONTRACTION JOINTS: MAKE CONTRACTION JOINTS VERTICAL.
   A. MAKE JOINTS AT LEAST 1/8" WIDE AND 1" DEEP OR 1/4 SLAB THICKNESS IF THE SLAB IS GREATER THAN 4" THICK.
   B. PROVIDE 1/2" RADIUS TOOLED TOP.
   C. MAXIMUM LENGTH TO WIDTH RATIO FOR NON-SQUARE PANELS IS 1.5 TO 1.
   D. MAXIMUM PANEL LENGTH IS 15'.

5. THE APPROVED PRODUCTS FOR THE TRUNCATED DOME DETECTABLE WARNING SURFACE ARE:
   BLACK DOGFACE ARCIS TACTILE PANELS AND
   DARK GREY ARMOR-TILE CAST-IN-PLACE SYSTEM

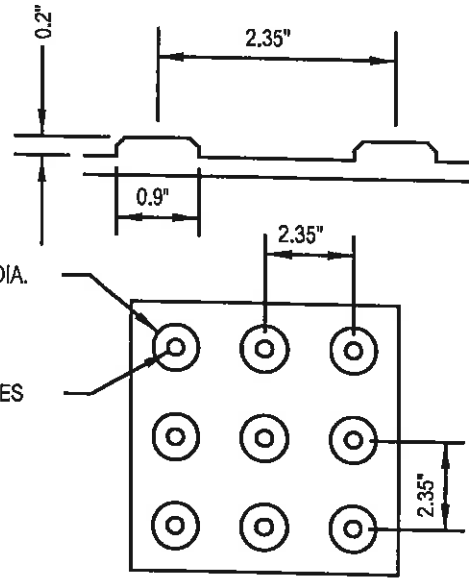
6. DETECTABLE WARNING SURFACE IS TO COVER FULL WIDTH OF RAMP AND EXTEND TO THE PROJECTED SIDEWALK IN BOTH DIRECTIONS.

* MICRO -SYNTHETIC FIBERS SHALL BE ADDED TO THE CONCRETE MIX DESIGN. MICRO-SYNTHETIC FIBERS SHALL SERVE TO REDUCE PLASTIC SHRINKAGE CRACKING, REDUCE WATER MIGRATION, AND DAMAGE FROM FREEZE/THAW AND IMPROVE DURABILITY. FIBERS SHALL CONFORM TO ASTM 116/C 1116M, TYPE III FIBER REINFORCED CONCRETE AND SHALL BE APPLIED PER MANUFACTURER'S RECOMMENDATIONS.

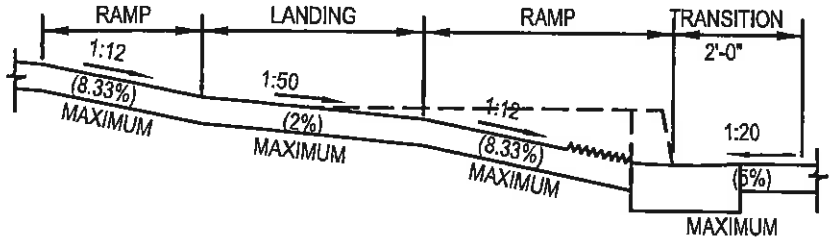
PLAN NO. 235 SP



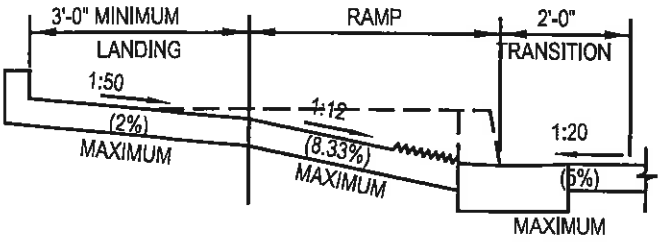
PLAN



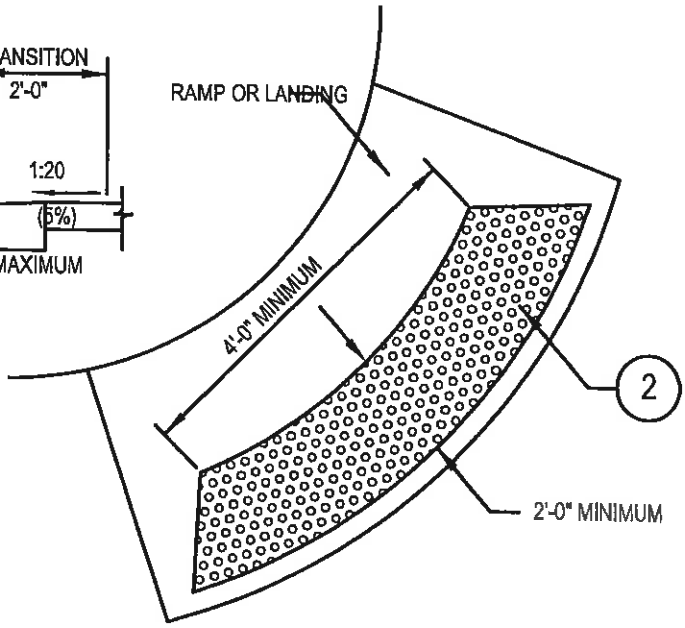
DETECTABLE WARNING PATTERN 2



SECTION B-A



SECTION A-A



DETECTABLE WARNING SURFACE 1

SIDEWALK RADIUS RAMP
MODERATELY WIDE PARK STRIP

PLAN NO. *235 SP*

REVISED 02/05/08

DRAWING 3 OF 3

SIDEWALK RADIUS RAMP

NOTES:

1. UNTREATED BASE COURSE: PROVIDE MATERIAL SPECIFIED IN APWA SECTION 32 11 23. DO NOT USE GRAVEL OR SEWER ROCK. PLACE PER APWA SECTION 32 05 10. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95% OR GREATER. MAXIMUM LIFT THICKNESS IS 8" BEFORE COMPACTION.

2. CONCRETE: CLASS 4000 PER APWA SECTION 03 30 04. PLACE PER APWA SECTION 03 30 10. CURE PER APWA SECTION 03 39 00.
   A. IF NECESSARY PROVIDE CONCRETE THAT ACHIEVES DESIGN STRENGTH IN LESS THAN 7 DAYS. USE CAUTION, HOWEVER, AS SPIDER CRACKS DEVELOP IF AIR TEMPERATURE EXCEEDS 90°F.
   B. UNLESS SHOWN OTHERWISE, PROVIDE 1/2" RADIUS ON CONCRETE EDGES EXPOSED TO PUBLIC VIEW.

3. EXPANSION JOINTS: FULL DEPTH 1/2" THICK TYPE F1 JOINT FILLER MATERIAL PER APWA SECTION 32 13 73. SET TOP OF FILLER FLUSH WITH SURFACE OF CONCRETE.

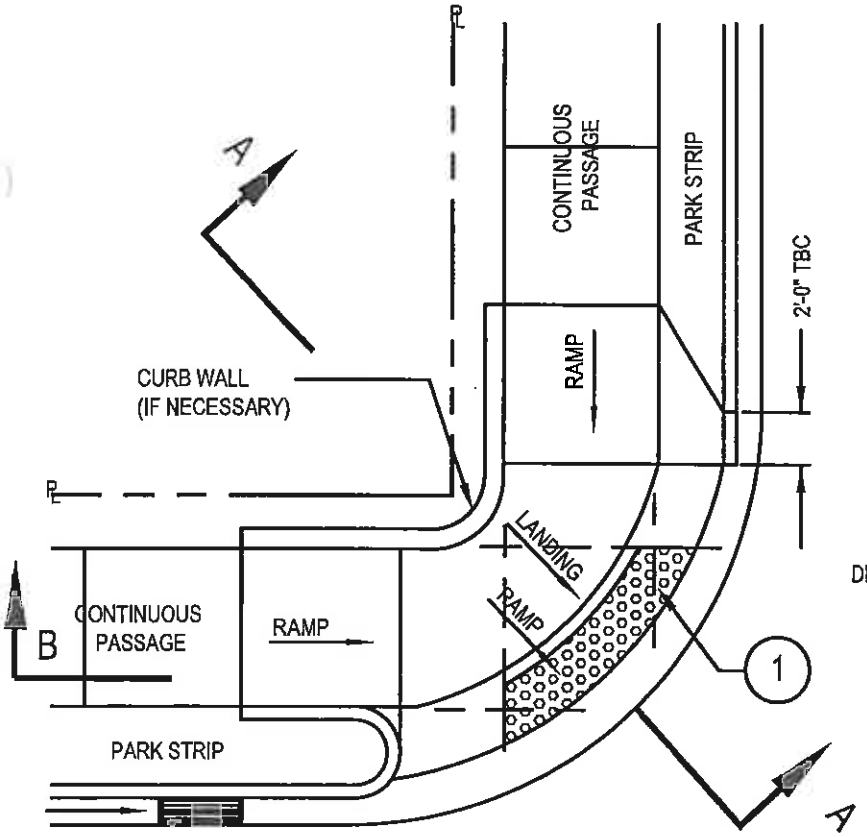
4. CONTRACTION JOINTS: MAKE CONTRACTION JOINTS VERTICAL.
   A. MAKE JOINTS AT LEAST 1/8" WIDE AND 1" DEEP OR 1/4 SLAB THICKNESS IF THE SLAB IS GREATER THAN 4" THICK.
   B. PROVIDE 1/2" RADIUS TOOLED TOP.
   C. MAXIMUM LENGTH TO WIDTH RATIO FOR NON-SQUARE PANELS IS 1.5 TO 1.
   D. MAXIMUM PANEL LENGTH IS 15'.

5. THE APPROVED PRODUCTS FOR THE TRUNCATED DOME DETECTABLE WARNING SURFACE ARE:
   BLACK DOGFACE ARCIS TACTILE PANELS AND
   DARK GREY ARMOR-TILE CAST-IN-PLACE SYSTEM

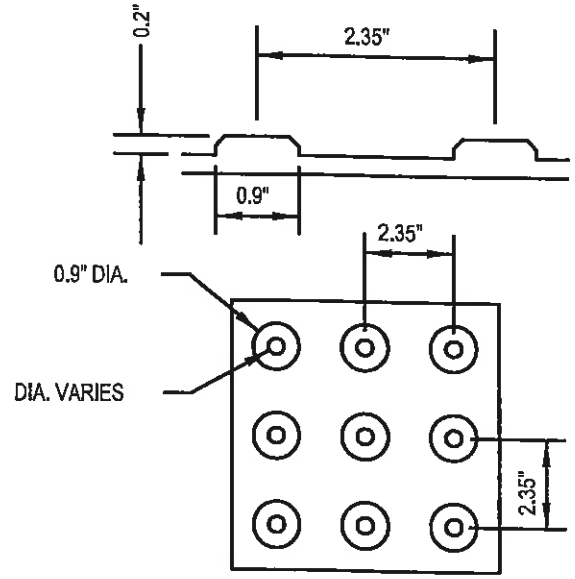
6. DETECTABLE WARNING SURFACE IS TO COVER FULL WIDTH OF RAMP AND EXTEND TO THE PROJECTED SIDEWALK IN BOTH DIRECTIONS.

* MICRO -SYNTHETIC FIBERS SHALL BE ADDED TO THE CONCRETE MIX DESIGN. MICRO-SYNTHETIC FIBERS SHALL SERVE TO REDUCE PLASTIC SHRINKAGE CRACKING, REDUCE WATER MIGRATION, AND DAMAGE FROM FREEZE/THAW AND IMPROVE DURABILITY. FIBERS SHALL CONFORM TO ASTM 116/C 1116M, TYPE III FIBER REINFORCED CONCRETE AND SHALL BE APPLIED PER MANUFACTURER'S RECOMMENDATIONS.

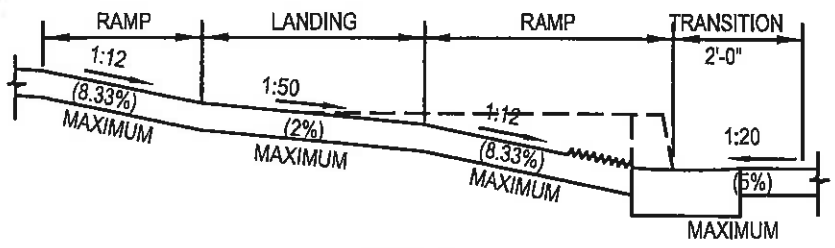
PLAN NO. *235 SP*



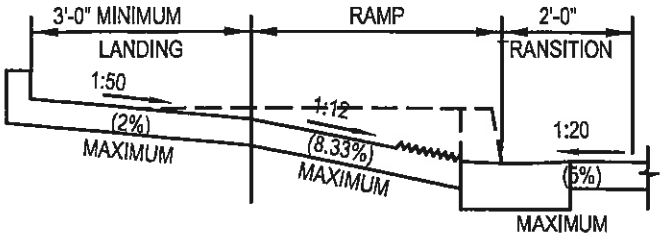
PLAN



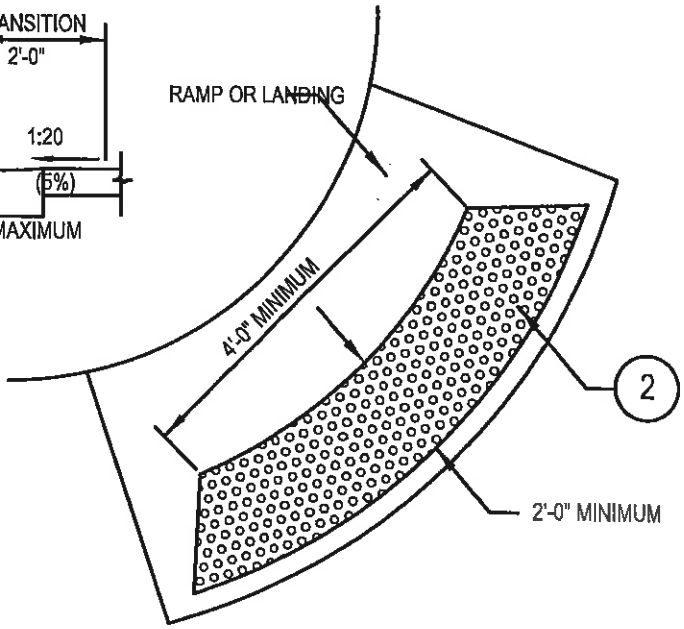
DETECTABLE WARNING PATTERN 2



SECTION B-A



SECTION A-A



DETECTABLE WARNING SURFACE 1

SIDEWALK RADIUS RAMP NARROW PARK STRIP

PLAN NO. 235 SP

REVISED 02/05/08

DRAWING 2 OF 3

SIDEWALK RADIUS RAMP

NOTES:

1. UNTREATED BASE COURSE: PROVIDE MATERIAL SPECIFIED IN APWA SECTION 32 11 23. DO NOT USE GRAVEL OR SEWER ROCK. PLACE PER APWA SECTION 32 05 10. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95% OR GREATER. MAXIMUM LIFT THICKNESS IS 8" BEFORE COMPACTION.

2. CONCRETE: CLASS 4000 PER APWA SECTION 03 30 04. PLACE PER APWA SECTION 03 30 10. CURE PER APWA SECTION 03 39 00.
   A. IF NECESSARY PROVIDE CONCRETE THAT ACHIEVES DESIGN STRENGTH IN LESS THAN 7 DAYS. USE CAUTION, HOWEVER, AS SPIDER CRACKS DEVELOP IF AIR TEMPERATURE EXCEEDS 90°F.
   B. UNLESS SHOWN OTHERWISE, PROVIDE 1/2" RADIUS ON CONCRETE EDGES EXPOSED TO PUBLIC VIEW.

3. EXPANSION JOINTS: FULL DEPTH 1/2" THICK TYPE F1 JOINT FILLER MATERIAL PER APWA SECTION 32 13 73. SET TOP OF FILLER FLUSH WITH SURFACE OF CONCRETE.

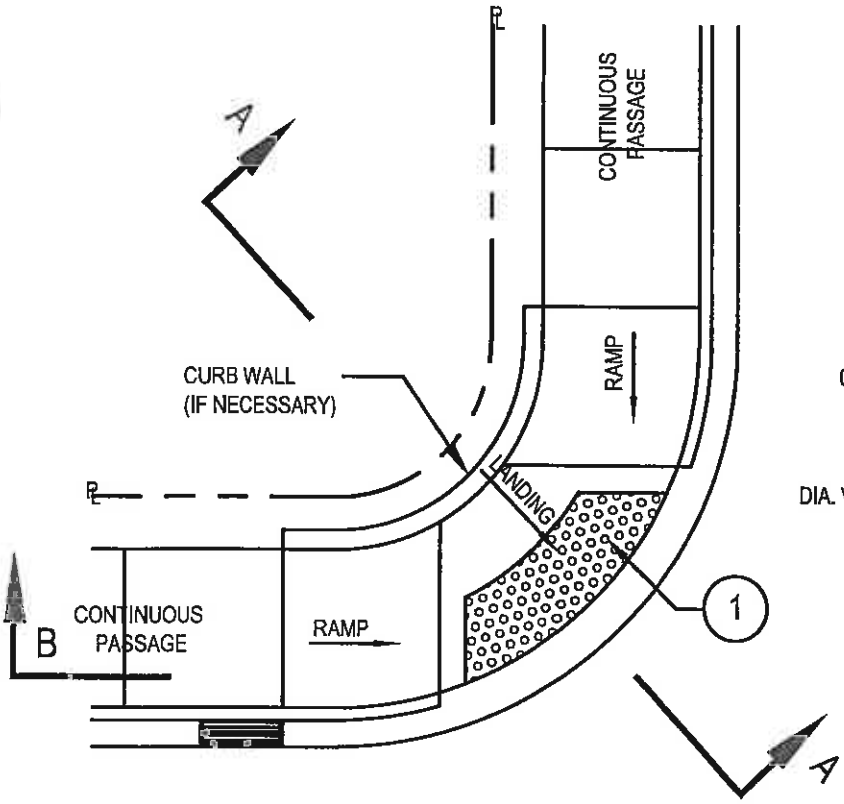
4. CONTRACTION JOINTS: MAKE CONTRACTION JOINTS VERTICAL.
   A. MAKE JOINTS AT LEAST 1/8" WIDE AND 1" DEEP OR 1/4 SLAB THICKNESS IF THE SLAB IS GREATER THAN 4" THICK.
   B. PROVIDE 1/2" RADIUS TOOLED TOP.
   C. MAXIMUM LENGTH TO WIDTH RATIO FOR NON-SQUARE PANELS IS 1.5 TO 1.
   D. MAXIMUM PANEL LENGTH IS 15'.

5. THE APPROVED PRODUCTS FOR THE TRUNCATED DOME DETECTABLE WARNING SURFACE ARE:
   BLACK DOGFACE ARCIS TACTILE PANELS AND
   DARK GREY ARMOR-TILE CAST-IN-PLACE SYSTEM

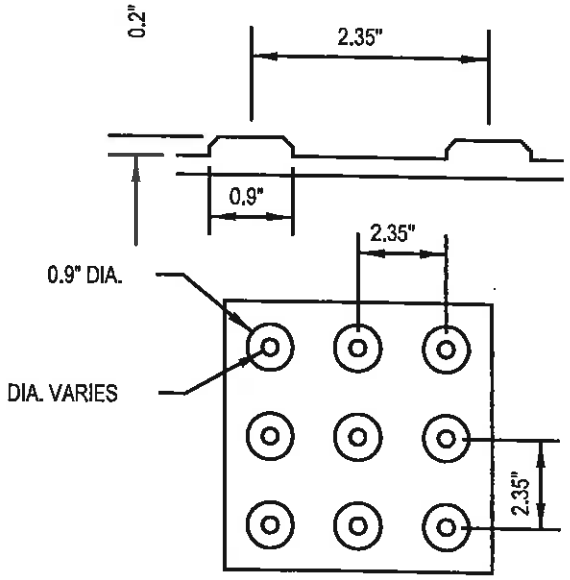
6. DETECTABLE WARNING SURFACE IS TO COVER FULL WIDTH OF RAMP AND EXTEND TO THE PROJECTED SIDEWALK IN BOTH DIRECTIONS.

* MICRO -SYNTHETIC FIBERS SHALL BE ADDED TO THE CONCRETE MIX DESIGN. MICRO-SYNTHETIC FIBERS SHALL SERVE TO REDUCE PLASTIC SHRINKAGE CRACKING, REDUCE WATER MIGRATION, AND DAMAGE FROM FREEZE/THAW AND IMPROVE DURABILITY. FIBERS SHALL CONFORM TO ASTM 116/C 1116M, TYPE III FIBER REINFORCED CONCRETE AND SHALL BE APPLIED PER MANUFACTURER'S RECOMMENDATIONS.

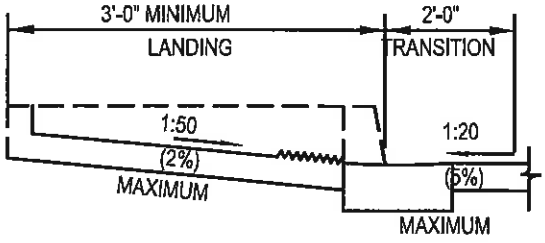
PLAN NO. 235 SP



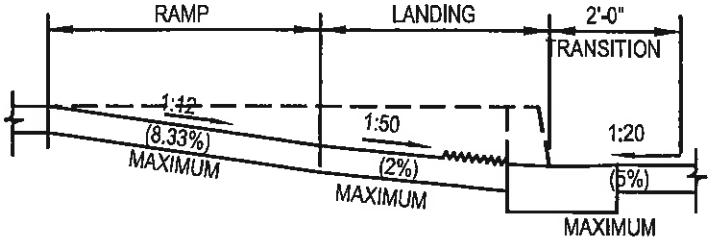
PLAN



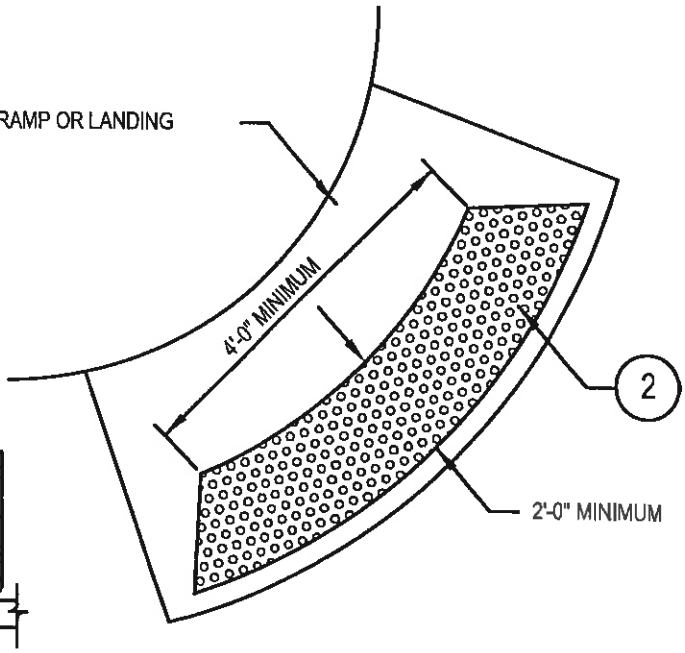
DETECTABLE WARNING PATTERN 2



SECTION A-A



SECTION B-A



DETECTABLE WARNING SURFACE 1

SIDEWALK RADIUS RAMP NO PARK STRIP

PLAN NO. 235 SP

REVISED 2/5/08

DRAWING 1 OF 3

SIDEWALK RAMP ON BLOCK FACE

NOTES:

1. UNTREATED BASE COURSE: PROVIDE MATERIAL SPECIFIED IN APWA SECTION 32 11 23. DO NOT USE GRAVEL OR SEWER ROCK. PLACE PER APWA SECTION 32 05 10. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95% OR GREATER. MAXIMUM LIFT THICKNESS IS 8" BEFORE COMPACTION.

2. CONCRETE: CLASS 4000 PER APWA SECTION 03 30 04. PLACE PER APWA SECTION 03 30 10. CURE PER APWA SECTION 03 39 00.
   A. IF NECESSARY PROVIDE CONCRETE THAT ACHIEVES DESIGN STRENGTH IN LESS THAN 7 DAYS. USE CAUTION, HOWEVER, AS SPIDER CRACKS DEVELOP IF AIR TEMPERATURE EXCEEDS 90°F.
   B. UNLESS SHOWN OTHERWISE, PROVIDE 1/2" RADIUS ON CONCRETE EDGES EXPOSED TO PUBLIC VIEW.

3. EXPANSION JOINTS: FULL DEPTH 1/2" THICK TYPE F1 JOINT FILLER MATERIAL PER APWA SECTION 32 13 73. SET TOP OF FILLER FLUSH WITH SURFACE OF CONCRETE.

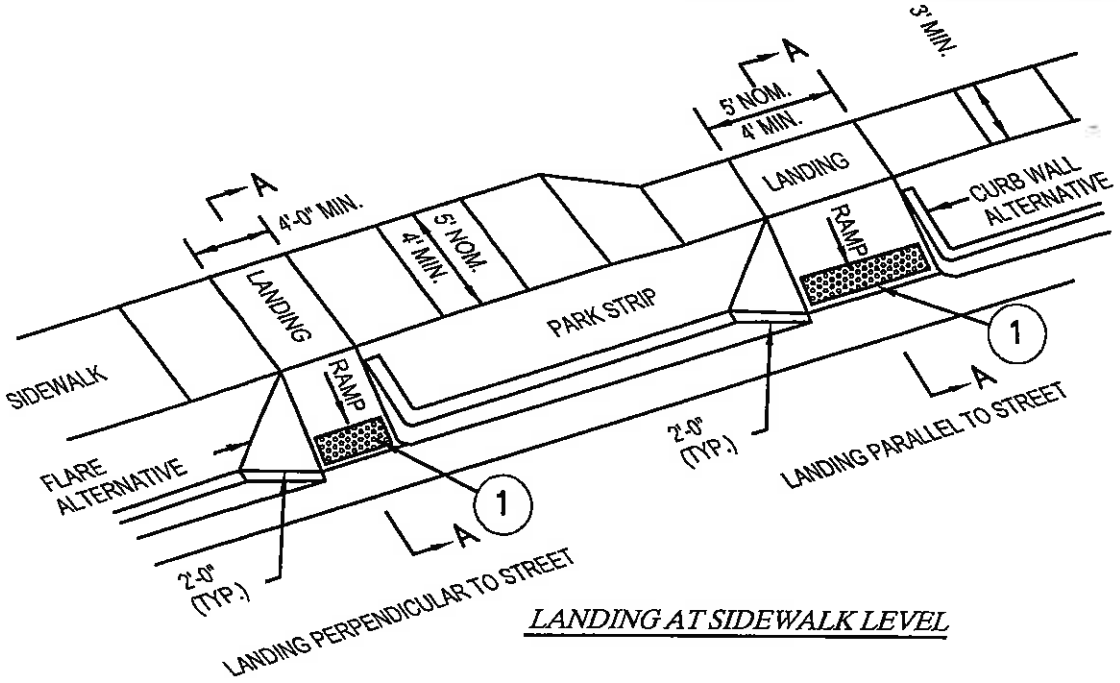
4. CONTRACTION JOINTS: MAKE CONTRACTION JOINTS VERTICAL.
   A. MAKE JOINTS AT LEAST 1/8" WIDE AND 1" DEEP OR 1/4 SLAB THICKNESS IF THE SLAB IS GREATER THAN 4" THICK.
   B. PROVIDE 1/2" RADIUS TOOLED TOP.
   C. MAXIMUM LENGTH TO WIDTH RATIO FOR NON-SQUARE PANELS IS 1.5 TO 1.
   D. MAXIMUM PANEL LENGTH IS 15'.

5. THE APPROVED PRODUCTS FOR THE TRUNCATED DOME DETECTABLE WARNING SURFACE ARE:
   BLACK DOGFACE ARCIS TACTILE PANELS AND
   DARK GREY ARMOR-TILE CAST-IN-PLACE SYSTEM

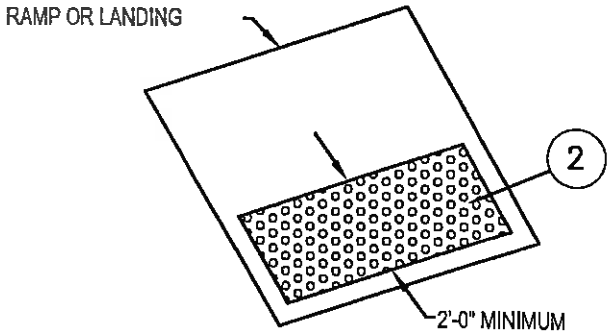
6. DETECTABLE WATRNING SURFACE IS TO COVER FULL WIDTH OF RAMP.

* MICRO -SYNTHETIC FIBERS SHALL BE ADDED TO THE CONCRETE MIX DESIGN. MICRO-SYNTHETIC FIBERS SHALL SERVE TO REDUCE PLASTIC SHRINKAGE CRACKING, REDUCE WATER MIGRATION, AND DAMAGE FROM FREEZE/THAW AND IMPROVE DURABILITY. FIBERS SHALL CONFORM TO ASTM 116/C 1116M, TYPE III FIBER REINFORCED CONCRETE AND SHALL BE APPLIED PER MANUFACTURER'S RECOMMENDATIONS.

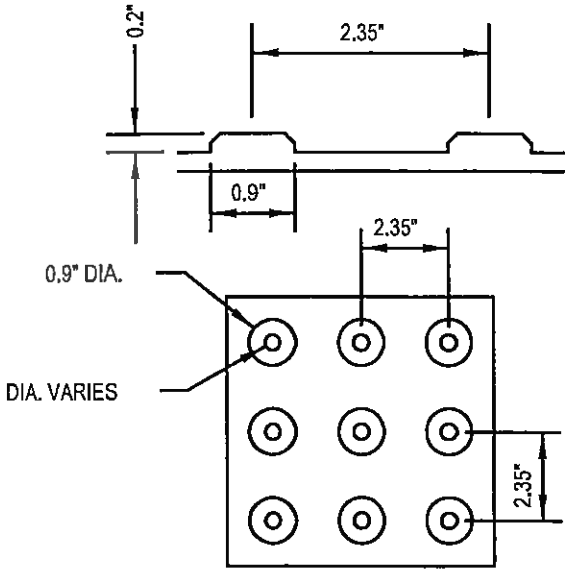
PLAN NO. *236 SP*



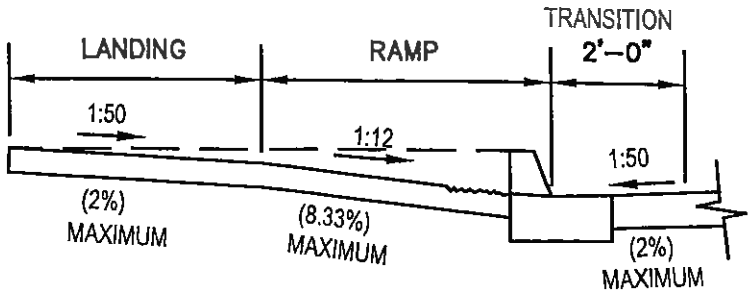
LANDING AT SIDEWALK LEVEL



DETECTABLE WARNING SURFACE 1



DETECTABLE WARNING PATTERN 2



SECTION A-A

SIDEWALK RAMP ON BLOCK FACE

PLAN NO. 236 SP

SIDEWALK RAMP ON BLOCK FACE

NOTES:

1. UNTREATED BASE COURSE: PROVIDE MATERIAL SPECIFIED IN APWA SECTION 32 11 23. DO NOT USE GRAVEL OR SEWER ROCK. PLACE PER APWA SECTION 32 05 10. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95% OR GREATER. MAXIMUM LIFT THICKNESS IS 8" BEFORE COMPACTION.

2. CONCRETE: CLASS 4000 PER APWA SECTION 03 30 04. PLACE PER APWA SECTION 03 30 10. CURE PER APWA SECTION 03 39 00.
   A. IF NECESSARY PROVIDE CONCRETE THAT ACHIEVES DESIGN STRENGTH IN LESS THAN 7 DAYS. USE CAUTION, HOWEVER, AS SPIDER CRACKS DEVELOP IF AIR TEMPERATURE EXCEEDS 90°F.
   B. UNLESS SHOWN OTHERWISE, PROVIDE 1/2" RADIUS ON CONCRETE EDGES EXPOSED TO PUBLIC VIEW.

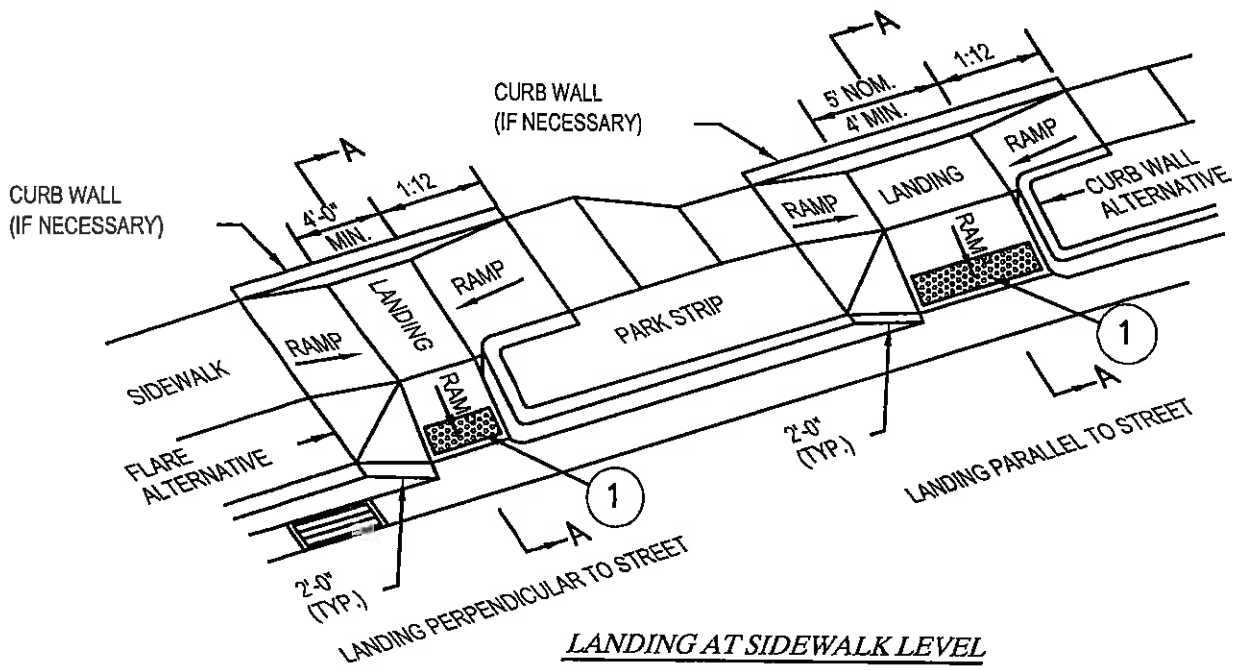
3. EXPANSION JOINTS: FULL DEPTH 1/2" THICK TYPE F1 JOINT FILLER MATERIAL PER APWA SECTION 32 13 73. SET TOP OF FILLER FLUSH WITH SURFACE OF CONCRETE.

4. CONTRACTION JOINTS: MAKE CONTRACTION JOINTS VERTICAL.
   A. MAKE JOINTS AT LEAST 1/8" WIDE AND 1" DEEP OR 1/4 SLAB THICKNESS IF THE SLAB IS GREATER THAN 4" THICK.
   B. PROVIDE 1/2" RADIUS TOOLED TOP.
   C. MAXIMUM LENGTH TO WIDTH RATIO FOR NON-SQUARE PANELS IS 1.5 TO 1.
   D. MAXIMUM PANEL LENGTH IS 15'.

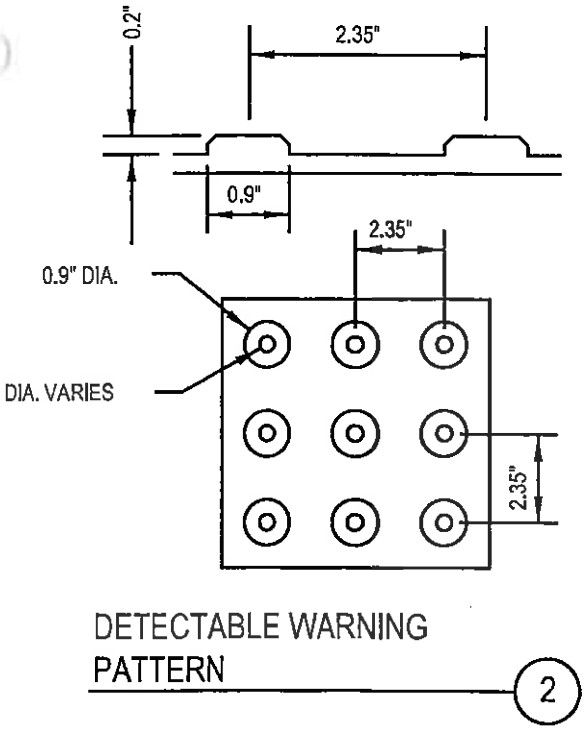
5. THE APPROVED PRODUCTS FOR THE TRUNCATED DOME DETECTABLE WARNING SURFACE ARE:
   BLACK DOGFACE ARCIS TACTILE PANELS AND
   DARK GREY ARMOR-TILE CAST-IN-PLACE SYSTEM

6. DETECTABLE WATRNING SURFACE IS TO COVER FULL WIDTH OF RAMP.

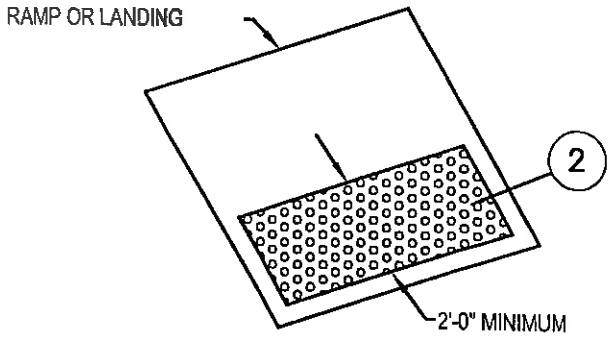
* MICRO -SYNTHETIC FIBERS SHALL BE ADDED TO THE CONCRETE MIX DESIGN. MICRO-SYNTHETIC FIBERS SHALL SERVE TO REDUCE PLASTIC SHRINKAGE CRACKING, REDUCE WATER MIGRATION, AND DAMAGE FROM FREEZE/THAW AND IMPROVE DURABILITY. FIBERS SHALL CONFORM TO ASTM 116/C 1116M, TYPE III FIBER REINFORCED CONCRETE AND SHALL BE APPLIED PER MANUFACTURER'S RECOMMENDATIONS.



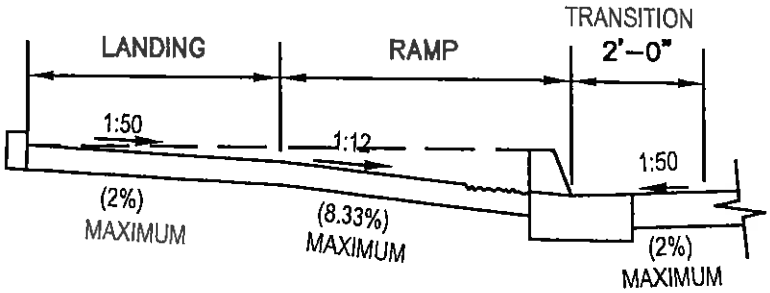
LANDING AT SIDEWALK LEVEL



DETECTABLE WARNING
PATTERN
2



DETECTABLE WARNING
SURFACE
1



SECTION A-A

SIDEWALK RAMP ON BLOCK FACE

PLAN NO. 236 SP

SIDEWALK RAMP ON BLOCK FACE

NOTES:

1. UNTREATED BASE COURSE: PROVIDE MATERIAL SPECIFIED IN APWA SECTION 32 11 23. DO NOT USE GRAVEL OR SEWER ROCK. PLACE PER APWA SECTION 32 05 10. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95% OR GREATER. MAXIMUM LIFT THICKNESS IS 8" BEFORE COMPACTION.

2. CONCRETE: CLASS 4000 PER APWA SECTION 03 30 04. PLACE PER APWA SECTION 03 30 10. CURE PER APWA SECTION 03 39 00.
   A. IF NECESSARY PROVIDE CONCRETE THAT ACHIEVES DESIGN STRENGTH IN LESS THAN 7 DAYS. USE CAUTION, HOWEVER, AS SPIDER CRACKS DEVELOP IF AIR TEMPERATURE EXCEEDS 90°F.
   B. UNLESS SHOWN OTHERWISE, PROVIDE 1/2" RADIUS ON CONCRETE EDGES EXPOSED TO PUBLIC VIEW.

3. EXPANSION JOINTS: FULL DEPTH 1/2" THICK TYPE F1 JOINT FILLER MATERIAL PER APWA SECTION 32 13 73. SET TOP OF FILLER FLUSH WITH SURFACE OF CONCRETE.

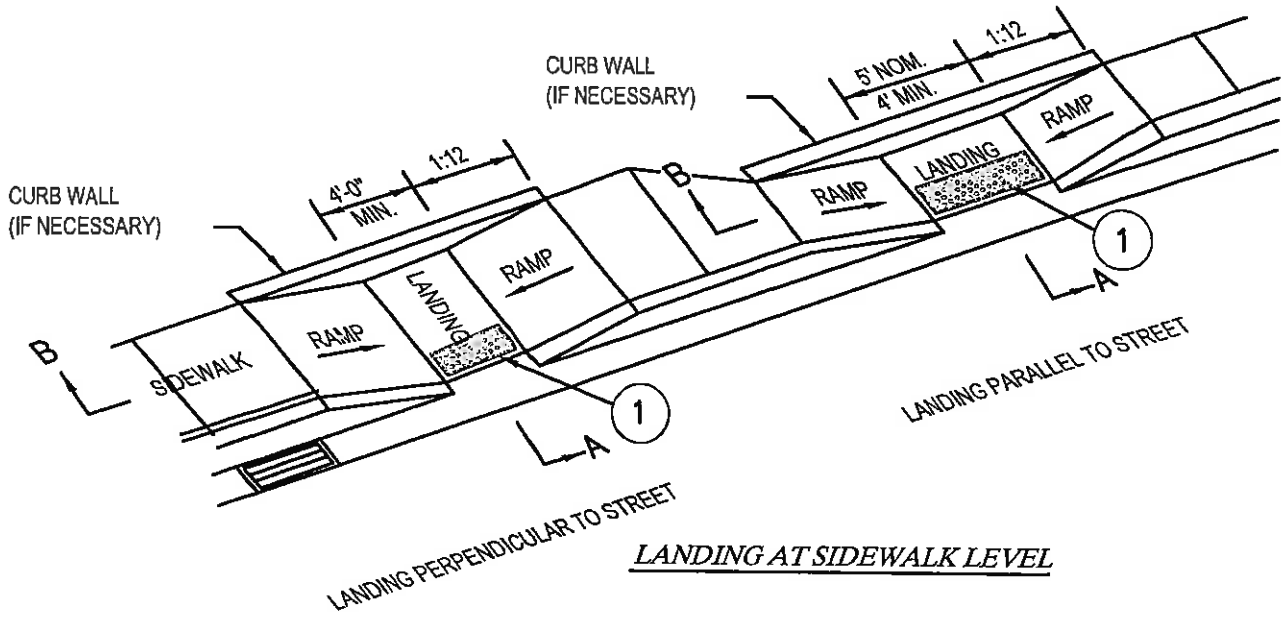
4. CONTRACTION JOINTS: MAKE CONTRACTION JOINTS VERTICAL.
   A. MAKE JOINTS AT LEAST 1/8" WIDE AND 1" DEEP OR 1/4 SLAB THICKNESS IF THE SLAB IS GREATER THAN 4" THICK.
   B. PROVIDE 1/2" RADIUS TOOLED TOP.
   C. MAXIMUM LENGTH TO WIDTH RATIO FOR NON-SQUARE PANELS IS 1.5 TO 1.
   D. MAXIMUM PANEL LENGTH IS 15'.

5. THE APPROVED PRODUCTS FOR THE TRUNCATED DOME DETECTABLE WARNING SURFACE ARE:
   BLACK DOGFACE ARCIS TACTILE PANELS AND
   DARK GREY ARMOR-TILE CAST-IN-PLACE SYSTEM

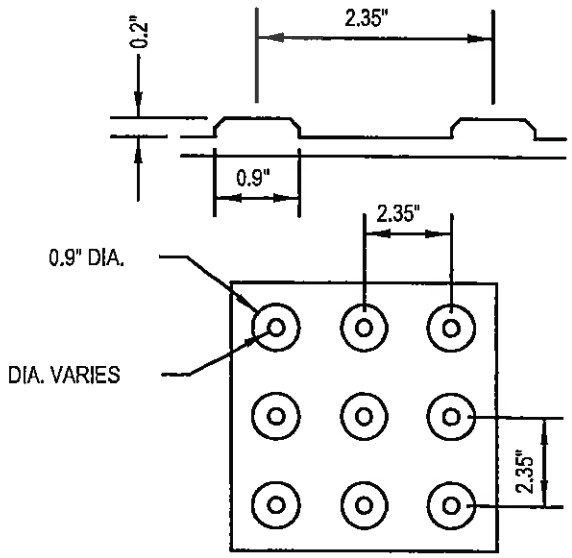
6. DETECTABLE WATRNING SURFACE IS TO COVER FULL WIDTH OF RAMP.

* MICRO -SYNTHETIC FIBERS SHALL BE ADDED TO THE CONCRETE MIX DESIGN. MICRO-SYNTHETIC FIBERS SHALL SERVE TO REDUCE PLASTIC SHRINKAGE CRACKING, REDUCE WATER MIGRATION, AND DAMAGE FROM FREEZE/THAW AND IMPROVE DURABILITY. FIBERS SHALL CONFORM TO ASTM 116/C 1116M, TYPE III FIBER REINFORCED CONCRETE AND SHALL BE APPLIED PER MANUFACTURER'S RECOMMENDATIONS.

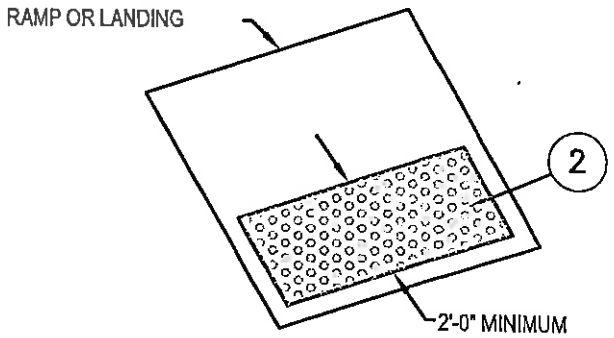
PLAN NO. 236 SP



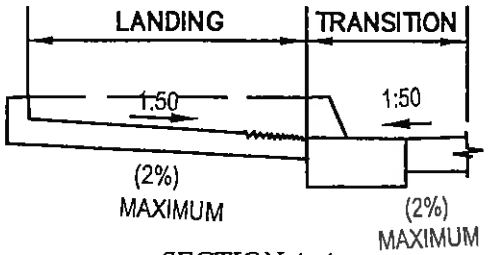
LANDING AT SIDEWALK LEVEL



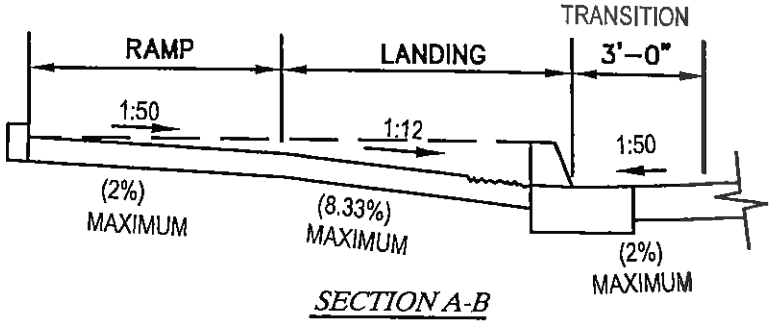
DETECTABLE WARNING PATTERN 2



DETECTABLE WARNING SURFACE 1



SECTION A-A



SECTION A-B

SIDEWALK RAMP ON BLOCK FACE

PLAN NO. 236 SP

PAVEMENT SECTION

NOTES:

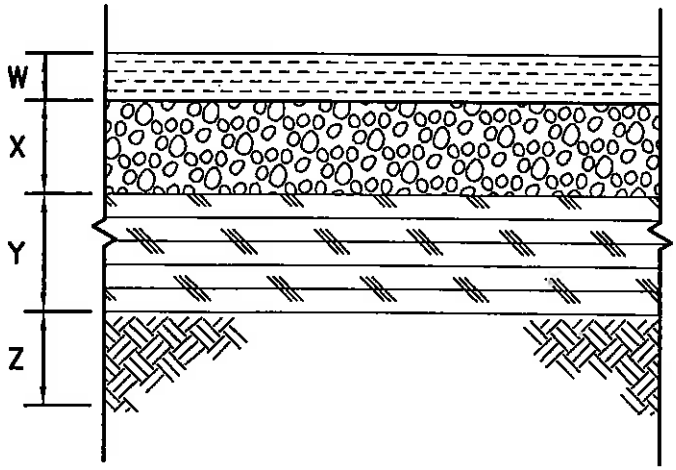
1. ASPHALT PAVEMENT: USE 1/2" ASPHALT CONCRETE SPECIFIED IN APWA SECTION 32 12 05.
   A. INSTALL LIFTS NO GREATER THAN 3-INCHES AND NOT LESS THEN 2-INCHES AS MEASURED AFTER COMPACTION.
   B. COMPACT WITHIN THE RANGE OF 96 TO 98 PERCENT RELATIVE TO THE ASTM D 5581 (MARSHALL METHOD) OR 93 TO 97 PERCENT RELATIVE TO ASTM D 2041 (RICE METHOD).

2. UNTREATED BASE COURSE: PROVIDE MATERIAL SPECIFIC IN APWA SECTION 32 11 23. DO NOT USE GRAVEL OR SEWER ROCK. PLACE PER APWA SECTION 32 05 10. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95-PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8-INCHES BEFORE COMPACTION.

3. GRANULAR BORROW: USE GRANULAR BORROW SPECIFIED IN APWA SECTION 31 05 13. COMPACT PER APWA SECTION
32 23 26 TO A MODIFIED PROCTOR OF 92-PERCENT OR GREATER.

4. DEVELOPER WILL PLACE DEPOSITS WITH THE CITY FOR NEW ROADS TO BE MICROSURFACED (SLURRY SEAL) AND CRACK SEALED, ONE TO TWO YEARS AFTER PAVING, AS DIRECTED BY THE CITY PUBLIC WORKS DIRECTOR.

W, X, Y AND Z (VARIES SEE TABLE BELOW)



ASPHALT PAVEMENT SEE NOTE 1

UNTREATED BASE COURSE SEE NOTE 2

GRANULAR BORROW AS REQUIRED FOR GRADING OR AS RECOMMENDED IN THE SOILS REPORT SEE NOTE 3

PROPERLY PREPARED AND GRADED SUBGRADE AS SPECIFIED BY DEVELOPERS' GEOTECHNICAL ENGINEER

MINIMUM PAVEMENT SECTION REQUIREMENTS

STREET CLASSIFICATION	*ASPHALT PAVEMENT THICKNESS*	*UNTREATED BASE COURSE*	*GRANULAR BACKFILL BORROW*	*PROPERLY PREPARED SUBGRADE*
LOCAL 55' RIGHT–OF–WAY	3–INCHES MIN.	12–INCHES MIN.	BASED ON SPECIFIC CONDITIONS	BASED ON SPECIFIC SOILS REPORT
IMPORTANT LOCAL 60' RIGHT–OF–WAY	4–INCHES MIN.	12–INCHES MIN.	BASED ON SPECIFIC CONDITIONS	BASED ON SPECIFIC SOILS REPORT
MINOR COLLECTOR 66' RIGHT–OF–WAY	BASED ON SPECIFIC CONDITIONS (4" MIN.)	BASED ON SPECIFIC CONDITIONS (VARIES 12" MIN.)	BASED ON SPECIFIC CONDITIONS	BASED ON SPECIFIC SOILS REPORT
MAJOR COLLECTOR 80' RIGHT–OF–WAY	BASED ON SPECIFIC CONDITIONS (4" MIN.)	BASED ON SPECIFIC CONDITIONS (VARIES 12" MIN.)	BASED ON SPECIFIC CONDITIONS	BASED ON SPECIFIC SOILS REPORT
MINOR ARTERIAL 100' RIGHT–OF–WAY	BASED ON SPECIFIC CONDITIONS (4" MIN.)	BASED ON SPECIFIC CONDITIONS (VARIES 12" MIN.)	BASED ON SPECIFIC CONDITIONS	BASED ON SPECIFIC SOILS REPORT
MAJOR ARTERIAL 106' RIGHT–OF–WAY	BASED ON SPECIFIC CONDITIONS (4" MIN.)	BASED ON SPECIFIC CONDITIONS (VARIES 12" MIN.)	BASED ON SPECIFIC CONDITIONS	BASED ON SPECIFIC SOILS REPORT

STANDARD ASPHALT PAVEMENT SECTION

PLAN NO. 250 SP

REVISED 10/15/10

DRAWING 1 OF 1

ASPHALT CONCRETE "T" PATCH

NOTES:

1. ADDITIONAL PAVEMENT REMOVAL: REMOVE ADDITIONAL PAVEMENT TO A PAINTED LANE STRIPE, A LIP OF GUTTER, A CURB, AN EXISTING PAVEMENT PATCH, OR AN EDGE OF THE PAVEMENT IF SUCH STREET FEATURE IS WITH 2-FEET OF THE SECOND SAW-CUT.

2. UNTREATED BASE COURSE: PROVIDE MATERIAL SPECIFIED IN APWA SECTION 32 11 23.
   A. DO NOT USE GRAVEL AS AS SUBSTITUTE FOR UNTREATED BASE COURSE WITHOUT ENGINEER'S PERMISSION
   B. PLACE PER APWA SECTION 32 05 10.
   C. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95-PERCENT OR GREATER. MAXIMUM LIFT THICKNESS BEFORE COMPACTION IS 8-INCHES WHEN USING RIDING COMPACTION EQUIPMENT OR 6-INCHES WHEN USING HAND HELD COMPACTION EQUIPMENT.

3. FLOWABLE FILL: PROVIDE 28-DAY 60-PSI CONTROLLED LOW STRENGTH MATERIAL AS SPECIFIED IN APWA SECTION 31 05 15. USE FILL MATERIAL WHICH FLOWS EASILY AND VIBRATION IS NOT REQUIRED. CURE TO INITIAL SET BEFORE PLACING NEW UNTREATED BASE COURSE OR NEW ASPHALT PAVEMENT. USE FLOWABLE FILL IN EXCAVATIONS THAT ARE TOO NARROW TO RECEIVE COMPACTION EQUIPMENT, AND AT THE DISCRETION OF THE CITY PUBLIC WORKS DIRECTOR.

4. TACK COAT: APWA SECTION 32 12 14 FULL TACK COAT COVERAGE ON ALL VERTICAL SURFACES. PER APWA 32 12 14

5. ASPHALT PAVEMENT: USE ASPHALT CONCRETE SPECIFIED IN APWA 33 05 25.
   A. INSTALL IN LIFTS NO GREATER THAN 3-INCHES AFTER COMPACTION.
   B. COMPACT TO 94 PERCENT OF ASTM D 2041 (RICE METHOD) PLUS OR MINUS 2 PERCENT.

6. JOINT REPAIR: IF A CRACK OCCURS AT THE "T" PATCH CONNECTION TO EXISTING PAVEMENT OR AT ANY STREET FIXTURE, SEAL THE CRACK PER APWA SECTION 32 01 17.

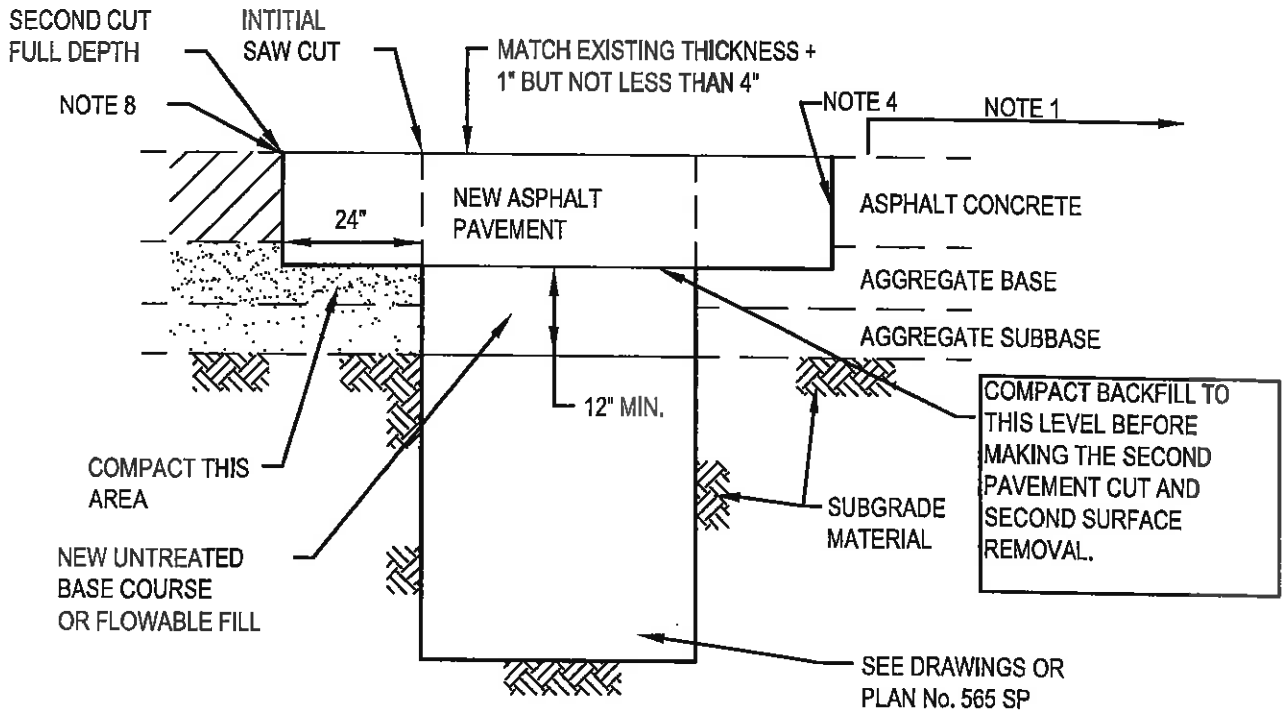
7. PATCH REPAIR: REPAIR THE ASPHALT PAVEMENT PATCH IF ANY OF THE FOLLOWING CONDITIONS WITHIN THE PATCH OCCUR.
   A. PAVEMENT SURFACE DISTORTION EXCEEDS 1/4-INCH DEVIATION IN 10-FEET. REPAIR OPTION: PLANE OFF SURFACE DISTORTIONS. COAT PLANED SURFACES WITH A CATIONIC OR ANIONIC EMULSION THAT COMPLIES WITH APWA SECTION 32 12 03 AND PROVIDE SAND BLOTTER.
   B. CRACKS AT LEAST 1-FOOT LONG AND 1/4-INCH WIDE OCCUR MORE OFTEN THAN 1 IN 10 SQUARE FEET. REPAIR OPTION: CRACK SEAL
   C. ASPHALT RAVELING IS GREATER THAN 1 SQUARE FOOT PER 100 SQUARE FEET. REPAIR OPTION: MILL AND INLAY.

8. PROVIDE ASPHALT OVERLAY ½ ROAD WIDE (AT A MINIMUM) FOR FULL LENGTH OF TRENCH TO ENSURE POSITIVE DRAINAGE OF THE ROAD.

9. PROVIDE AT LEAST 1 WORKING DAY NOTIFICATION TO THE CITY INSPECTOR PRIOR TO TRENCH BACKFILLING, CONCRETE POURS, ASPHALT PAVING OR COMPACTION TESTING. FAILURE TO OBTAIN INSPECTION MAY RESULT IN THE EXCAVATION BEING REOPENED OR WORK REPLACED.

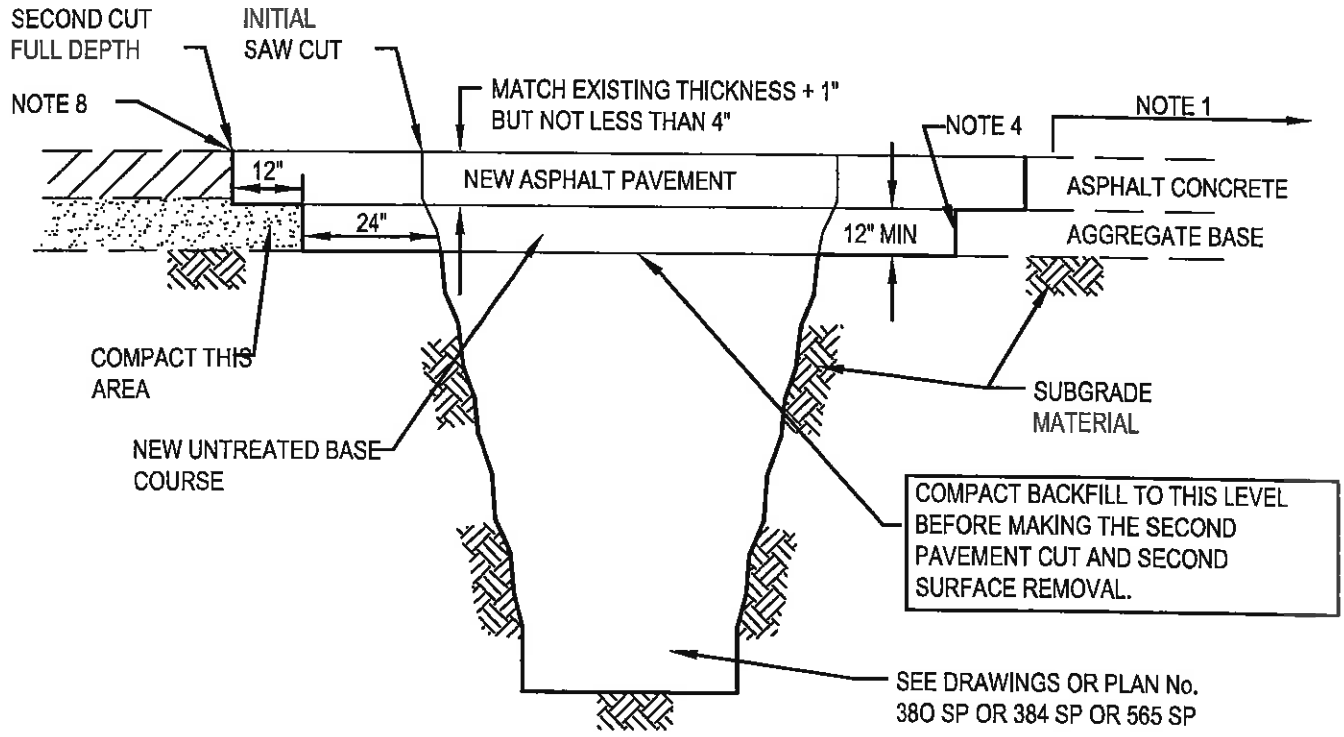
10. PLACE SLURRY SEAL OR MICROSURFACING AS DIRECTED BY THE PUBLIC WORKS DIRECTOR.

PLAN NO. 255 SP



SHALLOW EXCAVATION ASPHALT PAVEMENT

(42" OR LESS FROM PAVEMENT SURFACE TO BOTTOM OF EXCAVATION)



DEEP EXCAVATION ASPHALT PAVEMENT

ASPHALT CONCRETE "T" PATCH

PLAN NO. 255 SP

REVISED 10/15/10

DRAWING 1 OF 2

ASPHALT CONCRETE "T" PATCH

NOTES:

1. ADDITIONAL PAVEMENT REMOVAL: REMOVE ADDITIONAL PAVEMENT TO A PAINTED LANE STRIPE, A LIP OF GUTTER, A CURB, AN EXISTING PAVEMENT PATCH, OR AN EDGE OF THE PAVEMENT IF SUCH STREET FEATURE IS WITH 2-FEET OF THE SECOND SAW-CUT.

2. UNTREATED BASE COURSE: PROVIDE MATERIAL SPECIFIED IN APWA SECTION 32 11 23.
   A. DO NOT USE GRAVEL AS AS SUBSTITUTE FOR UNTREATED BASE COURSE WITHOUT ENGINEER'S PERMISSION
   B. PLACE PER APWA SECTION 32 05 10.
   C. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95-PERCENT OR GREATER. MAXIMUM LIFT THICKNESS BEFORE COMPACTION IS 8-INCHES WHEN USING RIDING COMPACTION EQUIPMENT OR 6-INCHES WHEN USING HAND HELD COMPACTION EQUIPMENT.

3. FLOWABLE FILL: PROVIDE 28-DAY 60-PSI CONTROLLED LOW STRENGTH MATERIAL AS SPECIFIED IN APWA SECTION 31 05 15. USE FILL MATERIAL WHICH FLOWS EASILY AND VIBRATION IS NOT REQUIRED. CURE TO INITIAL SET BEFORE PLACING NEW UNTREATED BASE COURSE OR NEW ASPHALT PAVEMENT. USE FLOWABLE FILL IN EXCAVATIONS THAT ARE TOO NARROW TO RECEIVE COMPACTION EQUIPMENT, AND AT THE DISCRETION OF THE CITY PUBLIC WORKS DIRECTOR.

4. TACK COAT: APWA SECTION 32 12 14 FULL TACK COAT COVERAGE ON ALL VERTICAL SURFACES.

5. ASPHALT PAVEMENT: USE ASPHALT CONCRETE SPECIFIED IN APWA 33 05 25.
   A. INSTALL IN LIFTS NO GREATER THAN 3-INCHES AFTER COMPACTION.
   B. COMPACT TO 94 PERCENT OF ASTM D 2041 (RICE METHOD) PLUS OR MINUS 2 PERCENT.

6. REINFORCEMENT: ASTM A 615, GRADE 60, NO, 5 GALVANIZED OR EPOXY COATED DEFORMED STEEL 12-INCHES ON CENTER.
   A. REQUIRED IF EXISTING CONCRETE THICKNESS IS 6-INCHES OR GREATER
   B. NOT REQUIRED IF (1) EXISTING CONCRETE IS LESS THAN 6" THICK, (2) EXISTING CONCRETE IS DETERIORATING, (3) EXCAVATION IS LESS THAN 3 SQUARE FEE, (4) ASPHALT PAVEMENT IS SUBSTITUTED FOR CONCRETE SUBSTRATE.

7. JOINT REPAIR: IF A CRACK OCCURS AT THE "T" PATCH CONNECTION TO EXISTING PAVEMENT OR AT ANY STREET FIXTURE, SEAL THE CRACK PER APWA SECTION 32 01 17.

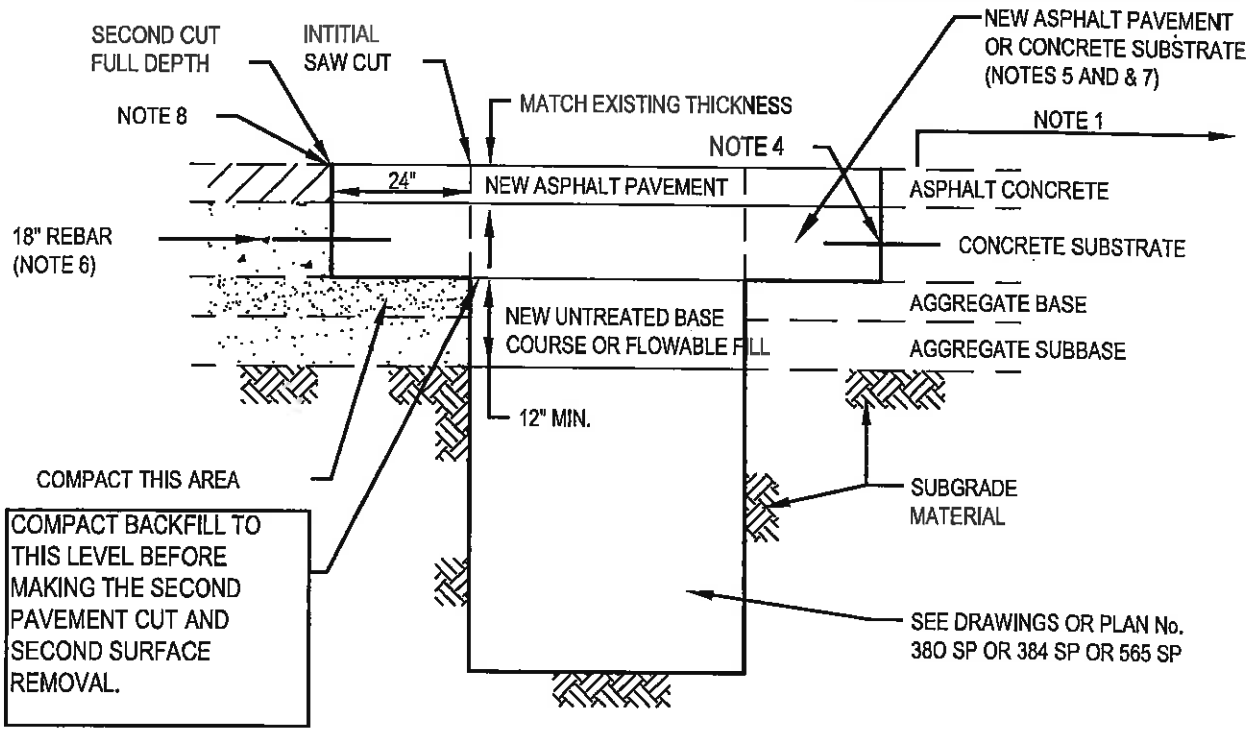
8. PATCH REPAIR: REPAIR THE ASPHALT PAVEMENT PATCH IF ANY OF THE FOLLOWING CONDITIONS WITHIN THE PATCH OCCUR.
   A. PAVEMENT SURFACE DISTORTION EXCEEDS 1/4-INCH DEVIATION IN 10-FEET. REPAIR OPTION: PLANE OFF SURFACE DISTORTIONS. COAT PLANED SURFACES WITH A CATIONIC OR ANIONIC EMULSION THAT COMPLIES WITH APWA SECTION 32 12 03 AND PROVIDE SAND BLOTTER.
   B. CRACKS AT LEAST 1-FOOT LONG AND 1/4-INCH WIDE OCCUR MORE OFTEN THAN 1 IN 10 SQUARE FEET. REPAIR OPTION: CRACK SEAL
   C. ASPHALT RAVELING IS GREATER THAN 1 SQUARE FOOT PER 100 SQUARE FEET. REPAIR OPTION: MILL AND INLAY.

9. PROVIDE ASPHALT OVERLAY ½ ROAD WIDE (AT A MINIMUM) FOR FULL LENGTH OF TRENCH TO ENSURE POSITIVE DRAINAGE OF THE ROAD.

10. PROVIDE AT LEAST 1 WORKING DAY NOTIFICATION TO THE CITY INSPECTOR PRIOR TO TRENCH BACKFILLING, CONCRETE POURS, ASPHALT PAVING OR COMPACTION TESTING. FAILURE TO OBTAIN INSPECTION MAY RESULT IN THE EXCAVATION BEING REOPENED OR WORK REPLACED.

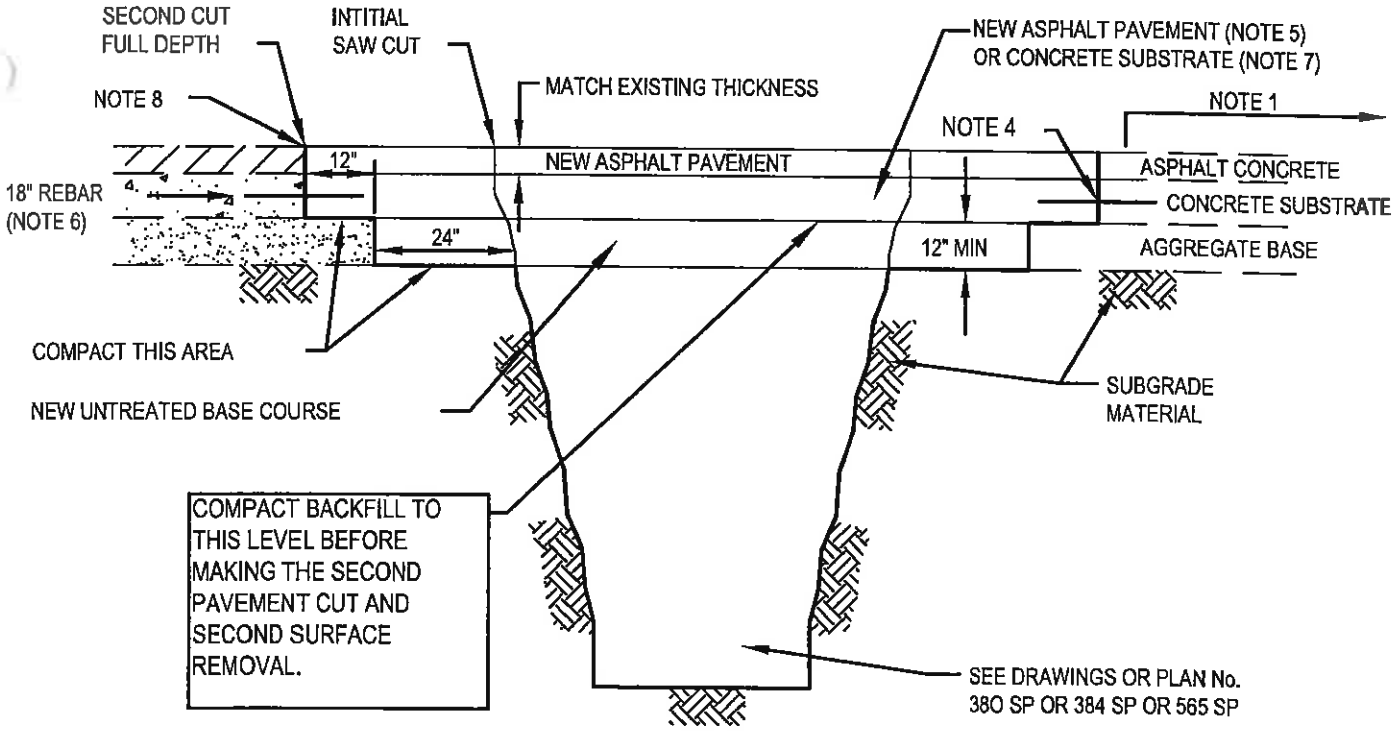
11. PLACE SLURRY SEAL OR MICROSURFACING AS DIRECTED BY PUBLIC WORKS DIRECTOR.

PLAN NO. *255 SP*



SHALLOW EXCAVATION COMPOSITE PAVEMENT

(42" OR LESS FROM PAVEMENT SURFACE TO BOTTOM OF EXCAVATION)



DEEP EXCAVATION COMPOSITE PAVEMENT

ASPHALT CONCRETE "T" PATCH

PLAN NO. 255 SP

REVISED 10/15/10

DRAWING 2 OF 2

TYPICAL STREET INTERSECTION

NOTES:

1. ANY VARIATION TO CITY STANDARD REQUIRES APPROVAL.

2. WHERE WATER LINES MUST CROSS SEWER LINES THE BOTTOM OF THE WATER LINE SHALL BE LAID AT LEAST 18" ABOVE THE TOP OF THE SEWER LINE FOR A DISTANCE OF AT LEAST 10 FEET ON EITHER SIDE OF THE SEWER LINE WITH NO JOINTS.

3. CULINARY WATER LINES TYPICALLY LOCATED ON NORTH/EAST OF THE CENTERLINE OF THE ROAD.

4. SANITARY SEWER LINES TYPICALLY LOCATED ON SOUTH/WEST OF THE CENTERLINE OF THE ROAD.

5. MAX ALLOWABLE TRANSVERSE SLOPE ON FARMINGTON CITY ROADS SHALL NOT EXCEED 1'-0" ELEVATION DIFFERENCE BETWEEN CURBS.

6. LOCATE WATER VALVES ON LINE WITH PROPERTY LINES.

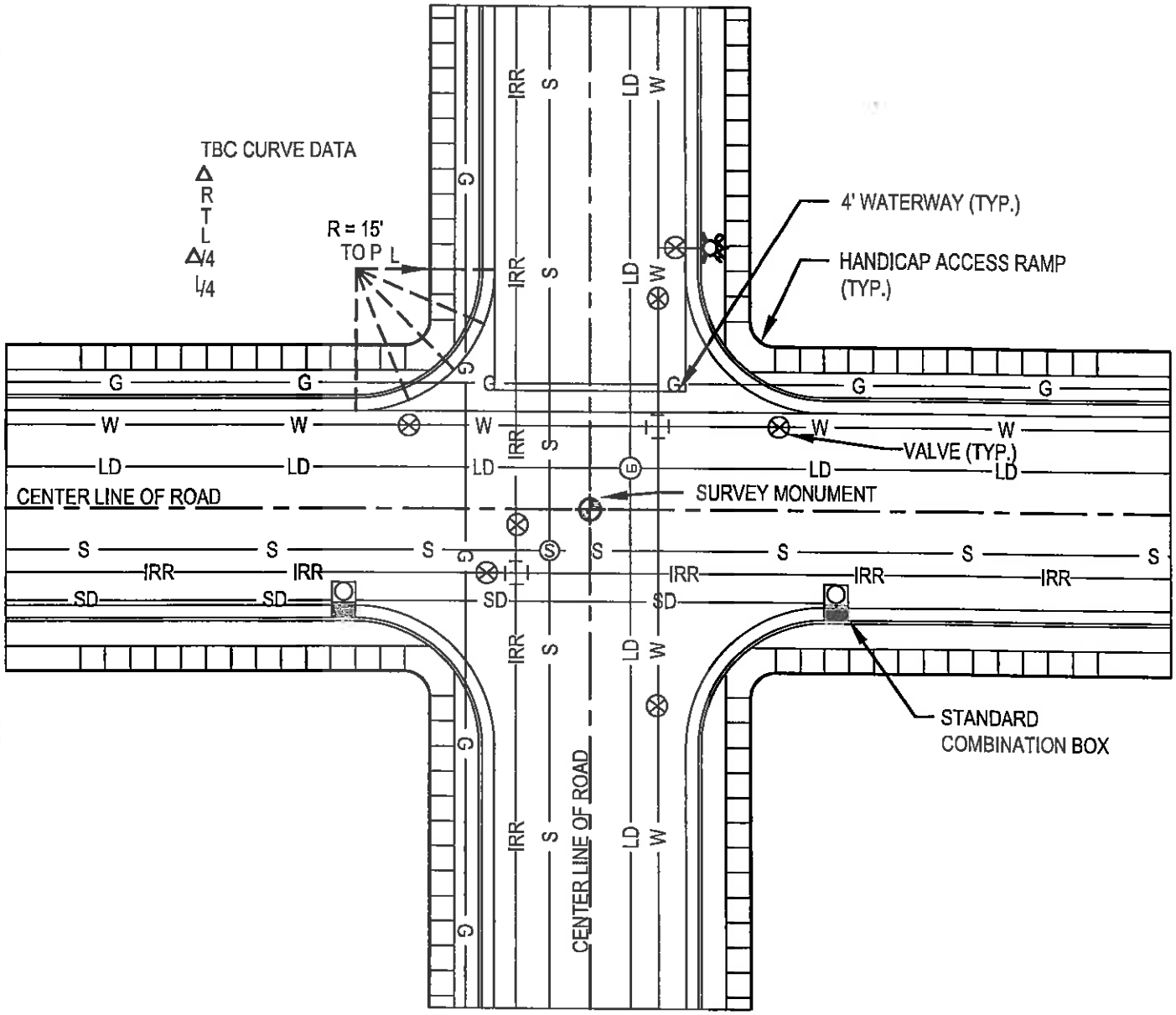
7. DESIGN SEWER AND WATER MAINS WITH 10' MINIMUM HORIZONTAL SEPARATION.

8. FIRE HYDRANT VALVE IS TO BE FLANGED TO TEE.

9. SPACE FIRE HYDRANTS AT 300' INTERVALS OR AS REQUIRED BY FIRE CHIEF.

10. LAND DRAINS TO HAVE SPECIAL TAXES TO USERS.

PLAN NO. *258 SP*



UNLESS OTHERWISE APPROVED DEPTH OF COVER OVER UTILITY LINES SHALL BE AS FOLLOWS:

—— W —— WATER	48" MIN.
—— S —— SEWER	60" MIN.
—— SD —— STORM DRAIN	SEE STORM DRAIN TRENCH SECTION
—— IRR —— PRESSURE IRRIGATION	PER JURISDICTIONAL AUTHORITY
—— G —— GAS	24" MIN.
—— LD —— LAND DRAIN	

TYPICAL STREET INTERSECTION

PLAN NO. 258 SP

REVISED 02/05/08

DRAWING 1 OF 1

TYPICAL CUL-DE-SAC

NOTES:

1. WHERE WATER LINES MUST CROSS SEWER LINES THE BOTTOM OF THE WATER LINE SHALL BE LAID AT LEAST 18" ABOVE THE TOP OF THE SEWER LINE FOR A DISTANCE OF AT LEAST 10 FEET ON EITHER SIDE OF THE SEWER LINE WITH NO JOINTS.

2. CULINARY WATER LINES TYPICALLY LOCATED ON NORTH/EAST OF THE CENTERLINE OF THE ROAD.

3. SANITARY SEWER LINES TYPICALLY LOCATED ON SOUTH/WEST OF THE CENTERLINE OF THE ROAD.

4. MAXIMUM ALLOWABLE TRANSVERSE SLOPE ON FARMINGTON CITY ROADS SHALL NOT EXCEED 1'-0" ELEVATION DIFFERENCE BETWEEN CURBS.

5. LOCATE CULINARY WATER VALVES AT THE PROPERTY LINES EXTENDED.

6. DESIGN SEWER AND WATER MAINS WITH 10' MINIMUM HORIZONTAL SEPARATION.

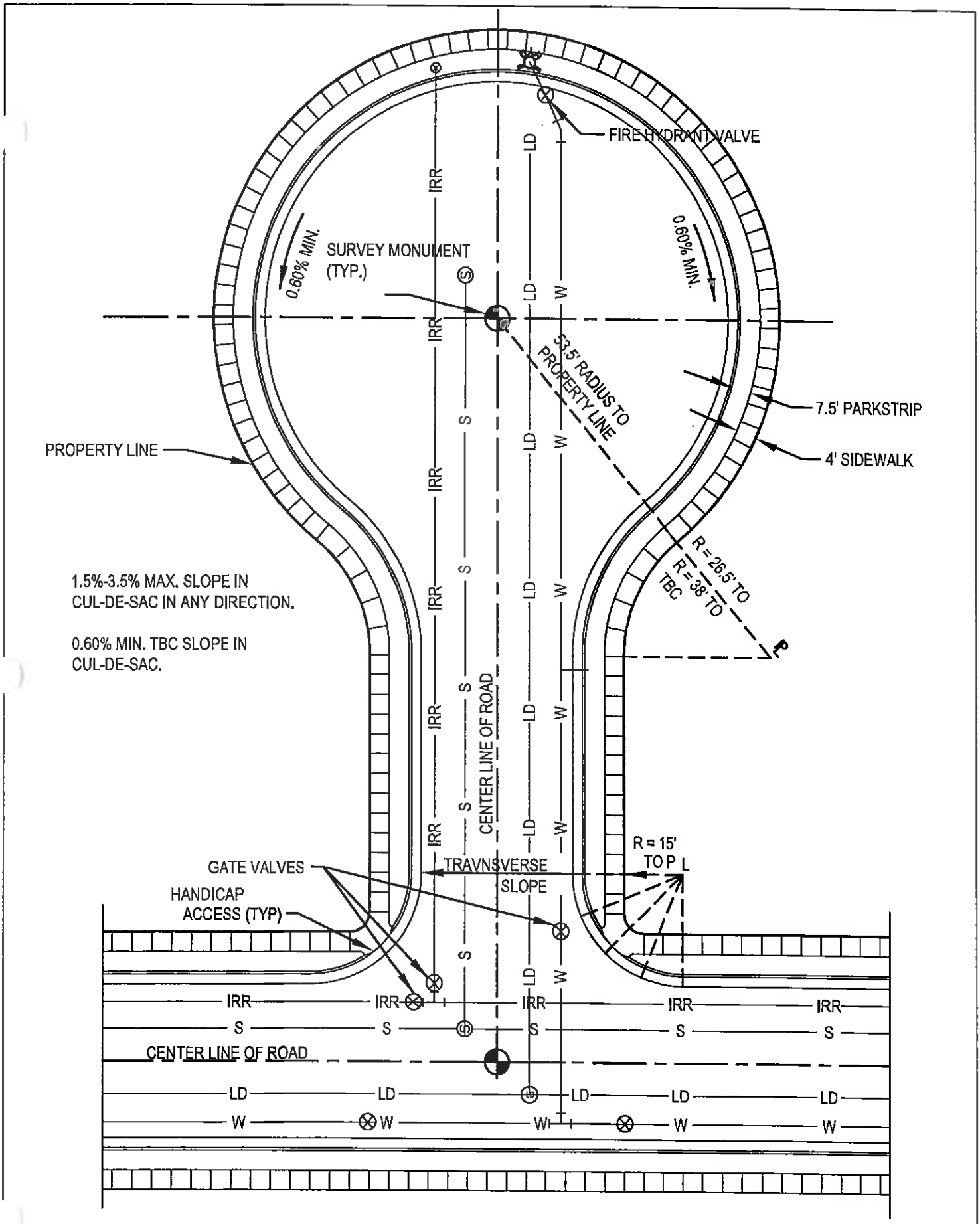
7. FIRE HYDRANT LOCATE @ BACK OF CUL-DE-SAC.

8. IRRIGATION BLOW OFF VALVE REGULATED BY JURISDICTIONAL SECONDARY WATER COMPANY(FAPID OF WDWCD).

9. 12% MAX. SLOPE IN ROAD

10. LAND DRAINS TO HAVE SPECIAL TAXES TO USERS.

PLAN NO. *259 SP*



TYPICAL CUL-DE-SAC

PLAN NO. 259 SP

REVISED 02/05/08

DRAWING 1 OF 1

ROAD SECTIONS

NOTES:

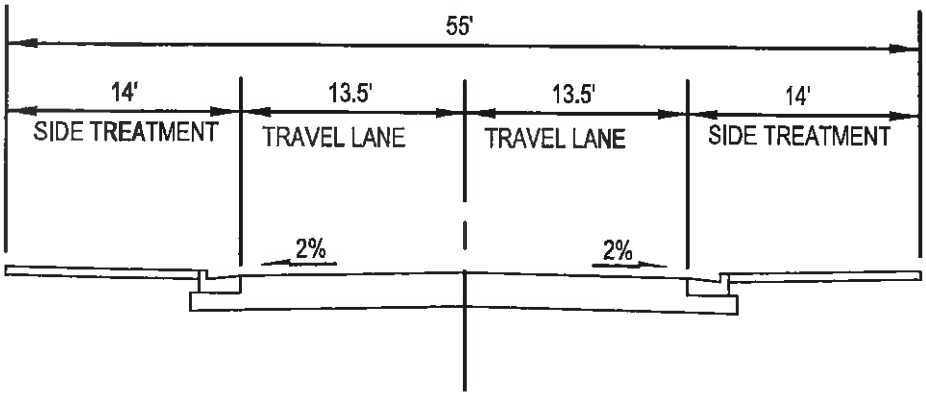
1. SIDE TREATMENTS ARE TO BE SLOPED AT 2% TO THE TOP BACK OF CURB.

2. SLOPE AT 2.0% TOWARDS THE PROPERTY LINE WITH SPECIAL PERMISSION FROM THE CITY ENGINEER.

3. MINIMUM APSHALT PAVEMENT FOR ANY ROAD (PUBLIC OR PRIVATE) IS 27 FEET.

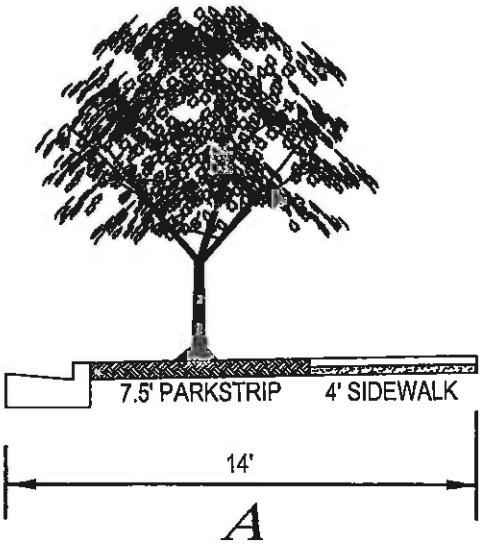
PLAN NO. *260 SP*

LOCAL



55-FOOT RIGHT-OF-WAY

2 LANES



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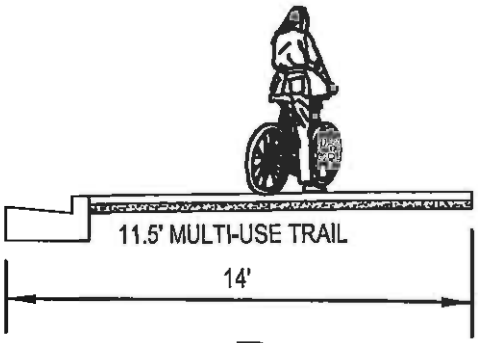


B

SIDE TREATMENTS

ROAD SECTION

PLAN NO. 260 SP

REVISED 02/05/08

DRAWING 1 OF 6

ROAD SECTIONS

NOTES:

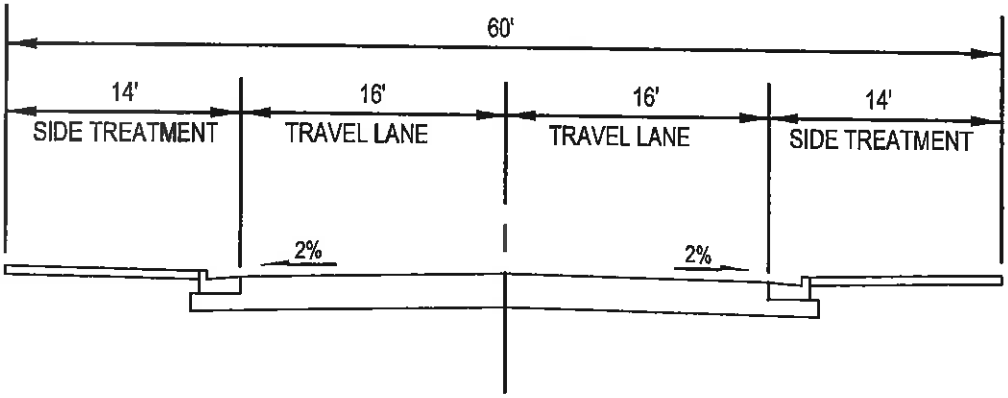
1. SIDE TREATMENTS ARE TO BE SLOPED AT 2% TO THE TOP BACK OF CURB.

2. SLOPE AT 2.0% TOWARDS THE PROPERTY LINE WITH SPECIAL PERMISSION FROM THE CITY ENGINEER.

3. MINIMUM APSHALT PAVEMENT FOR ANY ROAD (PUBLIC OR PRIVATE) IS 27 FEET.

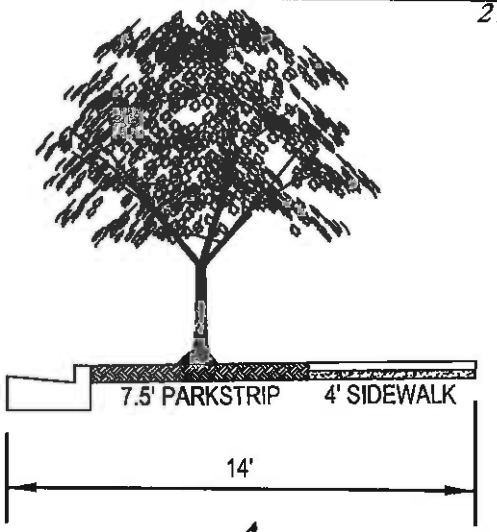
PLAN NO. *260 SP*

IMPORTANT LOCAL



60-FOOT RIGHT-OF-WAY

2 LANES



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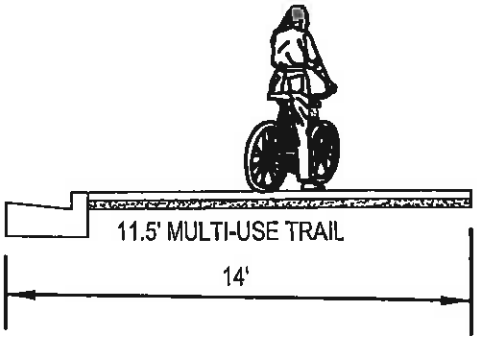


B

SIDE TREATMENTS

ROAD SECTION

REVISED 02/05/08

PLAN NO. 260 SP

DRAWING 2 OF 6

ROAD SECTIONS

NOTES:

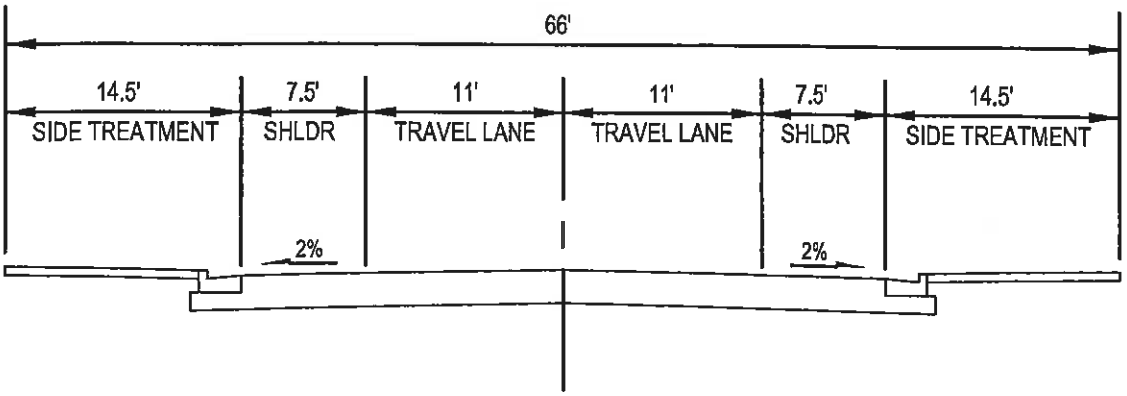
1. SIDE TREATMENTS ARE TO BE SLOPED AT 2% TO THE TOP BACK OF CURB.

2. SLOPE AT 2.0% TOWARDS THE PROPERTY LINE WITH SPECIAL PERMISSION FROM THE CITY ENGINEER.

3. MINIMUM APSHALT PAVEMENT FOR ANY ROAD (PUBLIC OR PRIVATE) IS 27 FEET.

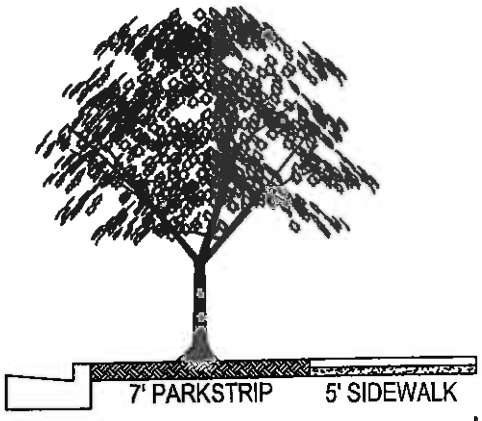
PLAN NO. *260 SP*

MINOR COLLECTOR



66-FOOT RIGHT-OF-WAY

2 LANES



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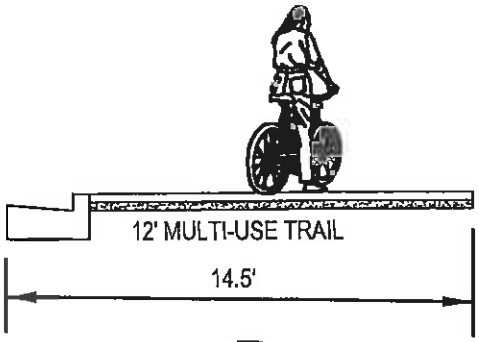


B

SIDE TREATMENTS

ROAD SECTION

PLAN NO. 260 SP

REVISED 02/05/08

DRAWING 3 OF 6

ROAD SECTIONS

NOTES:

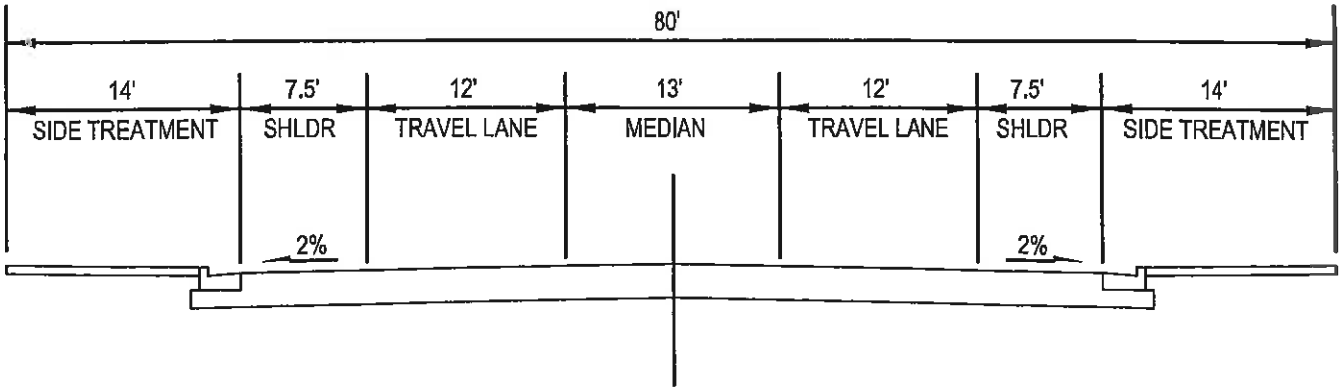
1. SIDE TREATMENTS ARE TO BE SLOPED AT 2% TO THE TOP BACK OF CURB.

2. SLOPE AT 2.0% TOWARDS THE PROPERTY LINE WITH SPECIAL PERMISSION FROM THE CITY ENGINEER.

3. MINIMUM APSHALT PAVEMENT FOR ANY ROAD (PUBLIC OR PRIVATE) IS 27 FEET.

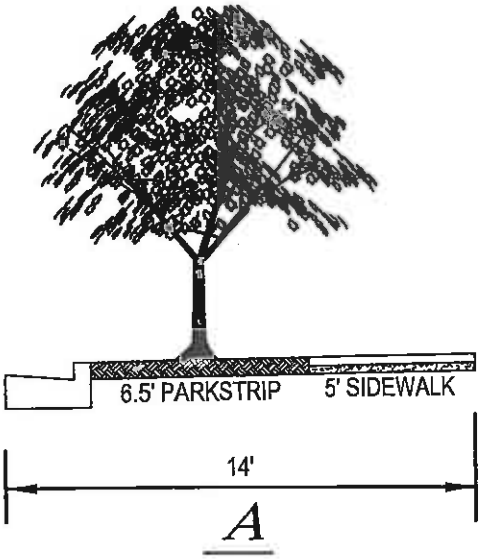
PLAN NO. *260 SP*

MAJOR COLLECTOR



80-FOOT RIGHT-OF-WAY

3 LANES



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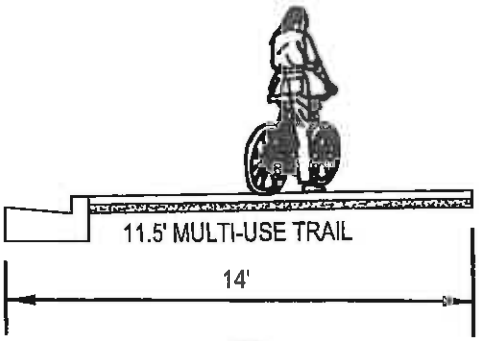


B

SIDE TREATMENTS

ROAD SECTION

PLAN NO. 260 SP

REVISED 02/05/08

DRAWING 4 OF 6

ROAD SECTIONS

NOTES:

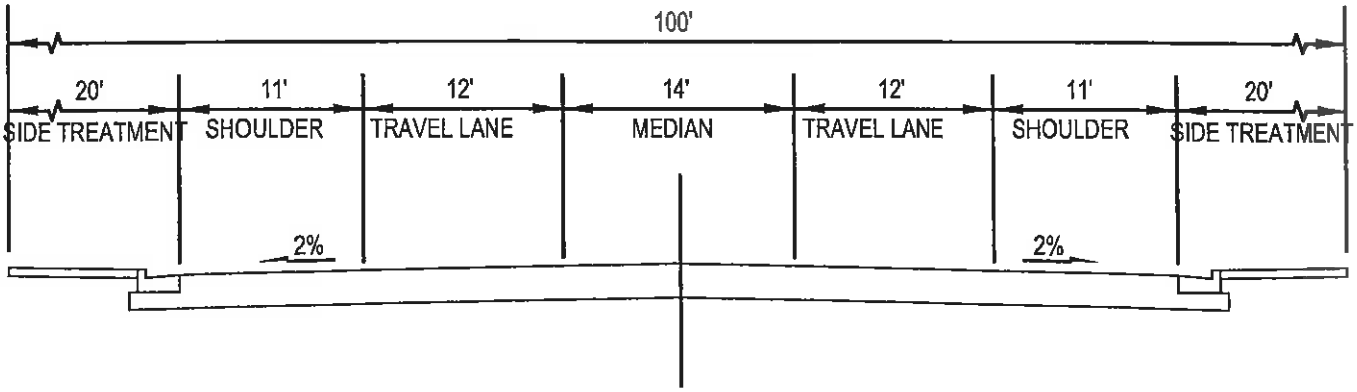
1. SIDE TREATMENTS ARE TO BE SLOPED AT 2% TO THE TOP BACK OF CURB.

2. SLOPE AT 2.0% TOWARDS THE PROPERTY LINE WITH SPECIAL PERMISSION FROM THE CITY ENGINEER.

3. MINIMUM APSHALT PAVEMENT FOR ANY ROAD (PUBLIC OR PRIVATE) IS 27 FEET.

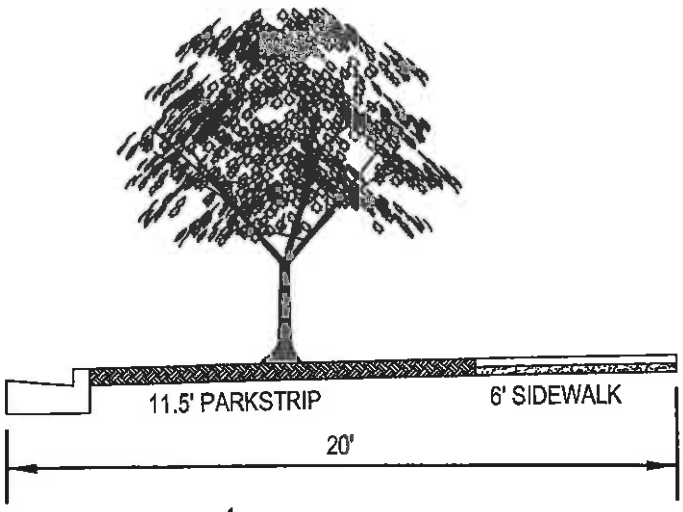
PLAN NO. *260 SP*

MINOR ARTERIAL



100-FOOT RIGHT-OF-WAY

3-5 LANES



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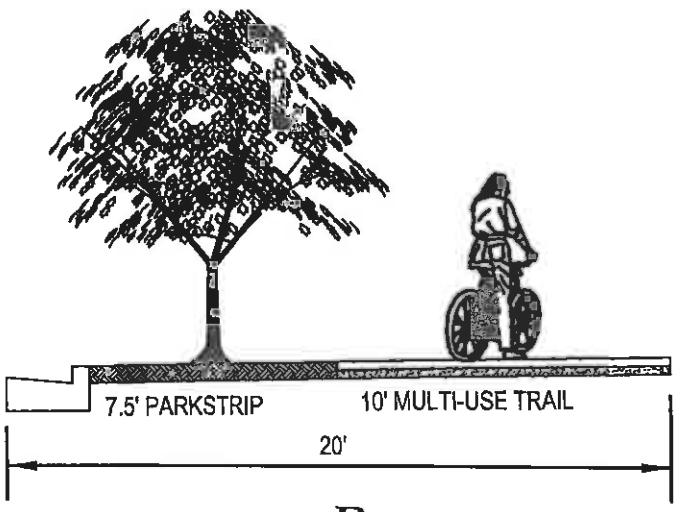


B

SIDE TREATMENTS

ROAD SECTION

PLAN NO. 260 SP

DRAWING 5 OF 6

REVISED 02/05/08

ROAD SECTIONS

NOTES:

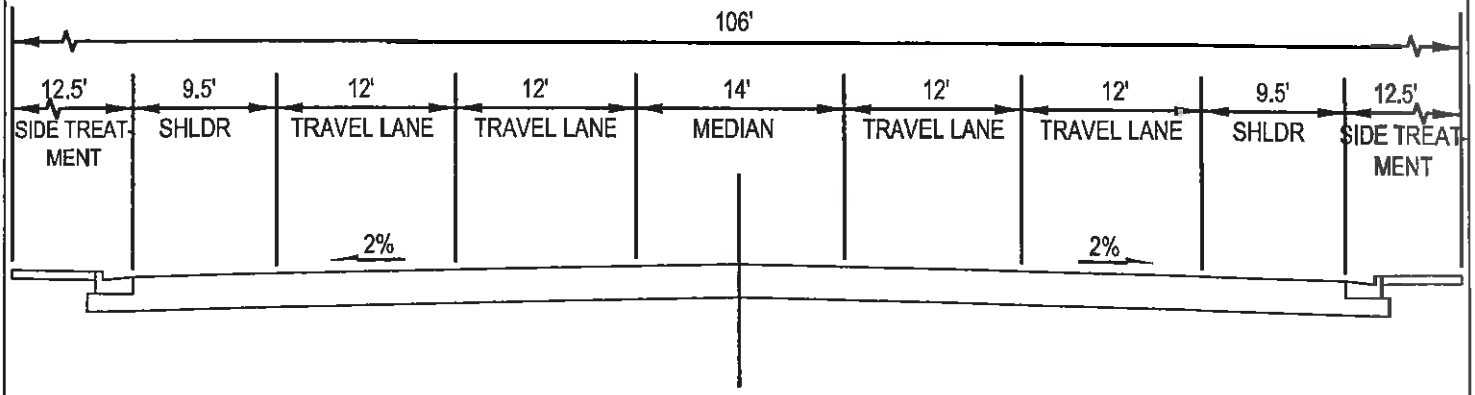
1. SIDE TREATMENTS ARE TO BE SLOPED AT 2% TO THE TOP BACK OF CURB.

2. SLOPE AT 2.0% TOWARDS THE PROPERTY LINE WITH SPECIAL PERMISSION FROM THE CITY ENGINEER.

3. MINIMUM APSHALT PAVEMENT FOR ANY ROAD (PUBLIC OR PRIVATE) IS 27 FEET.

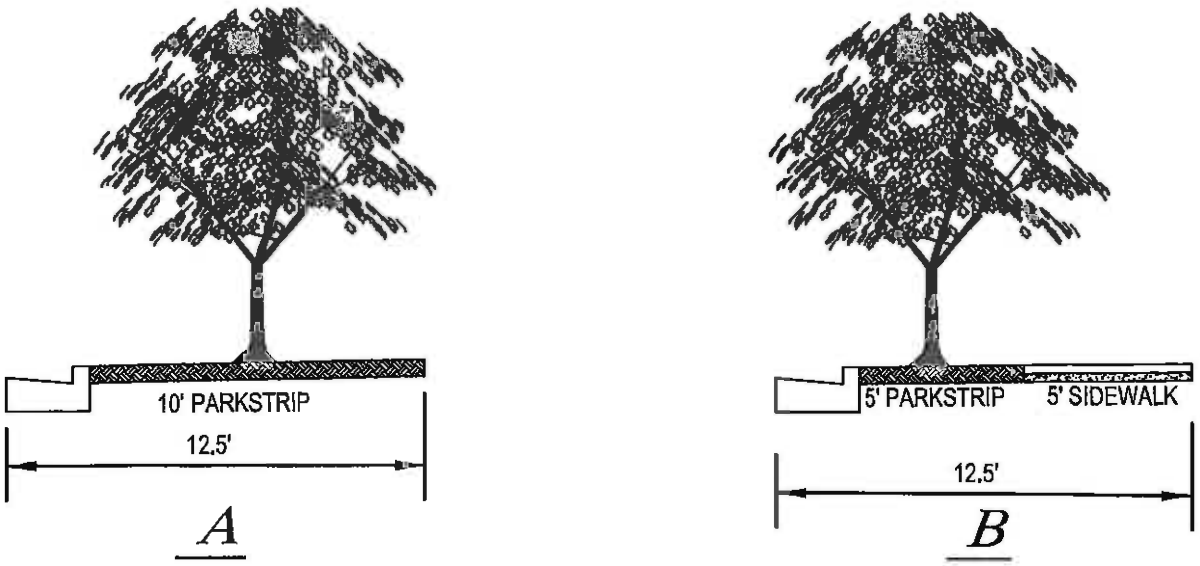
PLAN NO. 260 SP

MAJOR ARTERIAL



106-FOOT RIGHT-OF-WAY

5 LANES



SIDE TREATMENTS

ROAD SECTION

PLAN NO. 260 SP

REVISED 02/05/08

DRAWING 6 OF 6

CONCRETE COLLARS

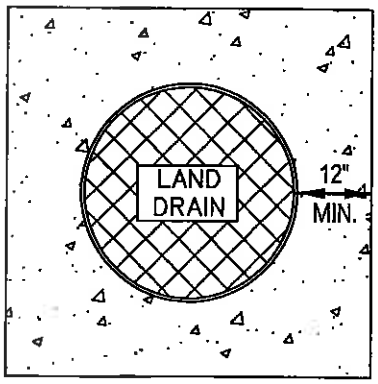
NOTES:

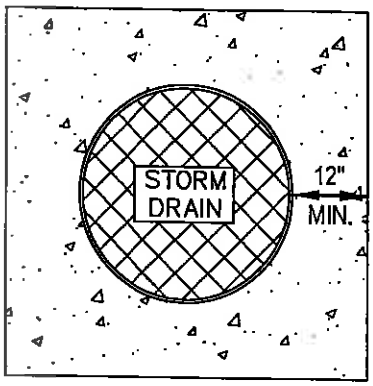
1. CONCRETE: CLASS 4000 PER APWA SECTION 03 30 04. A. IF NECESSARY, PROVIDE CONCRETE THAT ACHIEVES DESIGN STRENGTH IN LESS THAN 7 DAYS. USE CAUTION, HOWEVER, AS SPIDER CRACKS DEVELOP IF AIR TEMPERATURE EXCEEDS 90 DEGREES F.
   B. PLACE PER APWA SECTION 03 30 10.

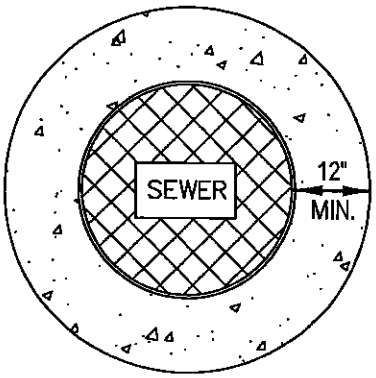
2. FINISH: BROOMED

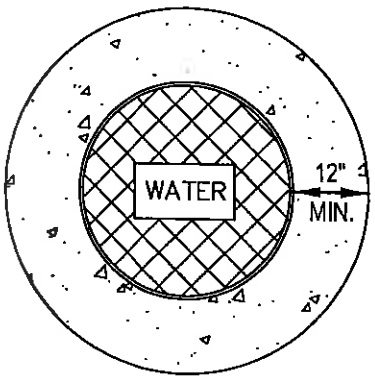
3. INSTALL SQUARE CONCRETE COLLARS FOR STORM DRAIN AND LAND DRAIN MANHOLES AND BOXES. INSTALL ROUND CONCRETE COLLARS ON SEWER MANHOLES AND CULINARY WATER BOXES.

PLAN NO. *268 SP*









* MICRO -SYNTHETIC FIBERS SHALL BE ADDED TO THE CONCRETE MIX DESIGN. MICRO-SYNTHETIC FIBERS SHALL SERVE TO REDUCE PLASTIC SHRINKAGE CRACKING, REDUCE WATER MIGRATION, AND DAMAGE FROM FREEZE/THAW AND IMPROVE DURABILITY. FIBERS SHALL CONFORM TO ASTM 116/C 1116M, TYPE III FIBER REINFORCED CONCRETE AND SHALL BE APPLIED PER MANUFACTURER'S RECOMMENDATIONS.

CONCRETE COLLARS

PLAN NO. ***268 SP***

REVISED 02/05/08

STREET SIGNS

NOTES:

1. SECURE CITY ENGINEER'S APPROVAL OF SIGN FORMAT AND INSTALLATIONS LOCATION.

2. INSTALL SIGNS AS DIRECTED BY CITY.

3. INSTALL THE EDGE OF THE SIGN 2 FEET FROM THE VERTICAL EXTENSION OF THE BACK OF CURB AS NEAR AS POSSIBLE TO THE APPROACH CURB P.C.

4. SIGN SHALL BE PLACED IN CONFORMANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

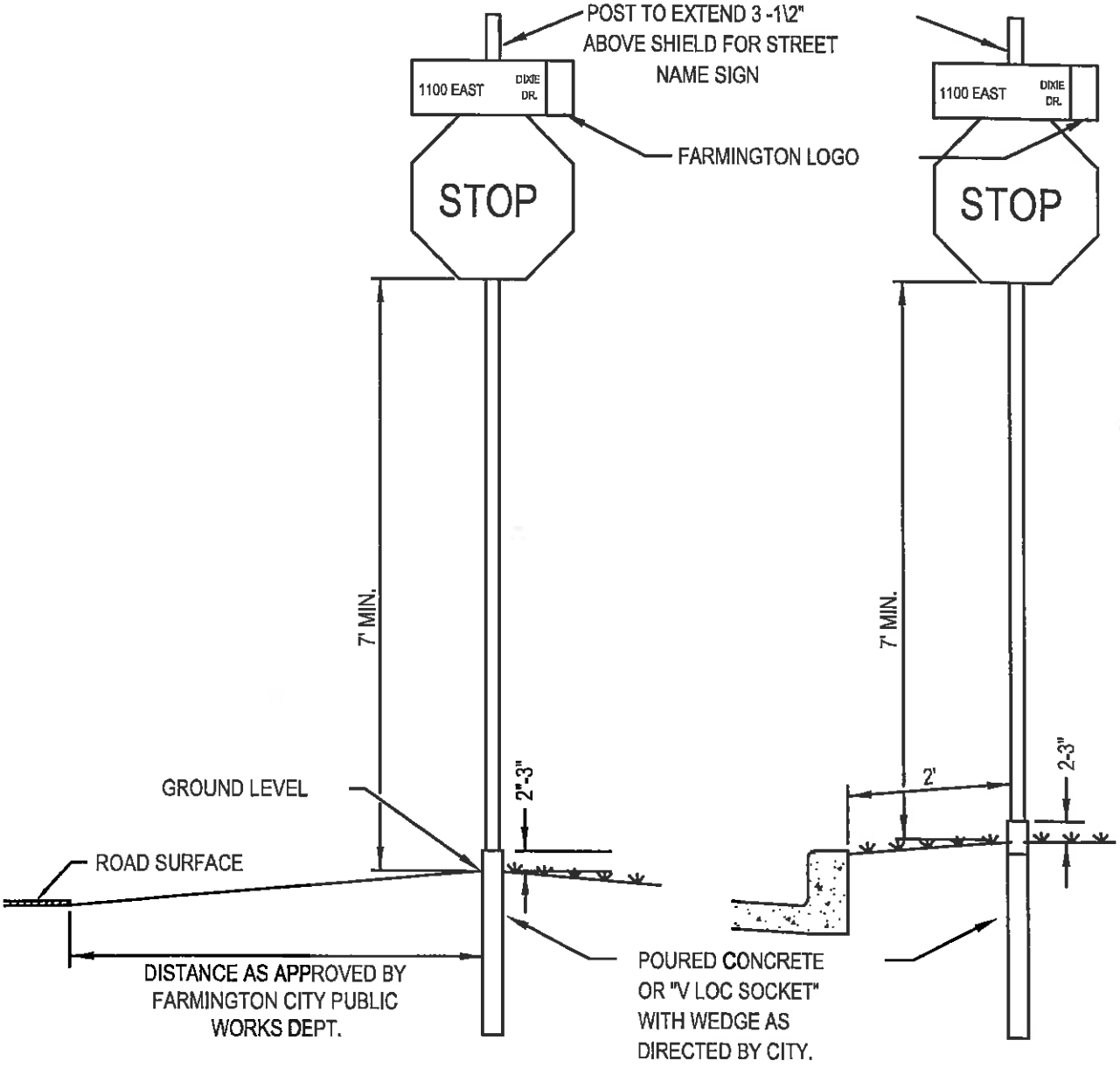
5. STREET NAME AND STOP SIGNS SHALL BE PLACED BEHIND THE SIDEWALK AND SHALL BE REQUIRED AS DIRECTED BY THE CITY ENGINEER IN ALL CITY STREETS.

6. ALL POST COMPONENTS SHALL BE GALVANIZED.

7. TO PRESERVE UNIFORMITY, STREET SIGNS ARE TO BE ORDERED AND INSTALLED BY FARMINGTON CITY FOR PUBLIC ROADS. SIGNS ARE PAID FOR WIITH DEPOSITS BY THE DEVELOPER FOR NEW SUBDIVISIONS.

TYPICAL RURAL INSTALLATION

TYPICAL SIDEWALK INSTALLATION



COMBINATION STOP-ADDRESS STREET SIGNS

STREET SIGNS

PLAN NO. 292 SP

REVISED 02/05/08

DRAWING 1 OF 2

STREET SIGNS

NOTES:

1. SECURE CITY ENGINEER'S APPROVAL OF SIGN FORMAT AND INSTALLATIONS LOCATION.

2. INSTALL SIGNS AS DIRECTED BY CITY.

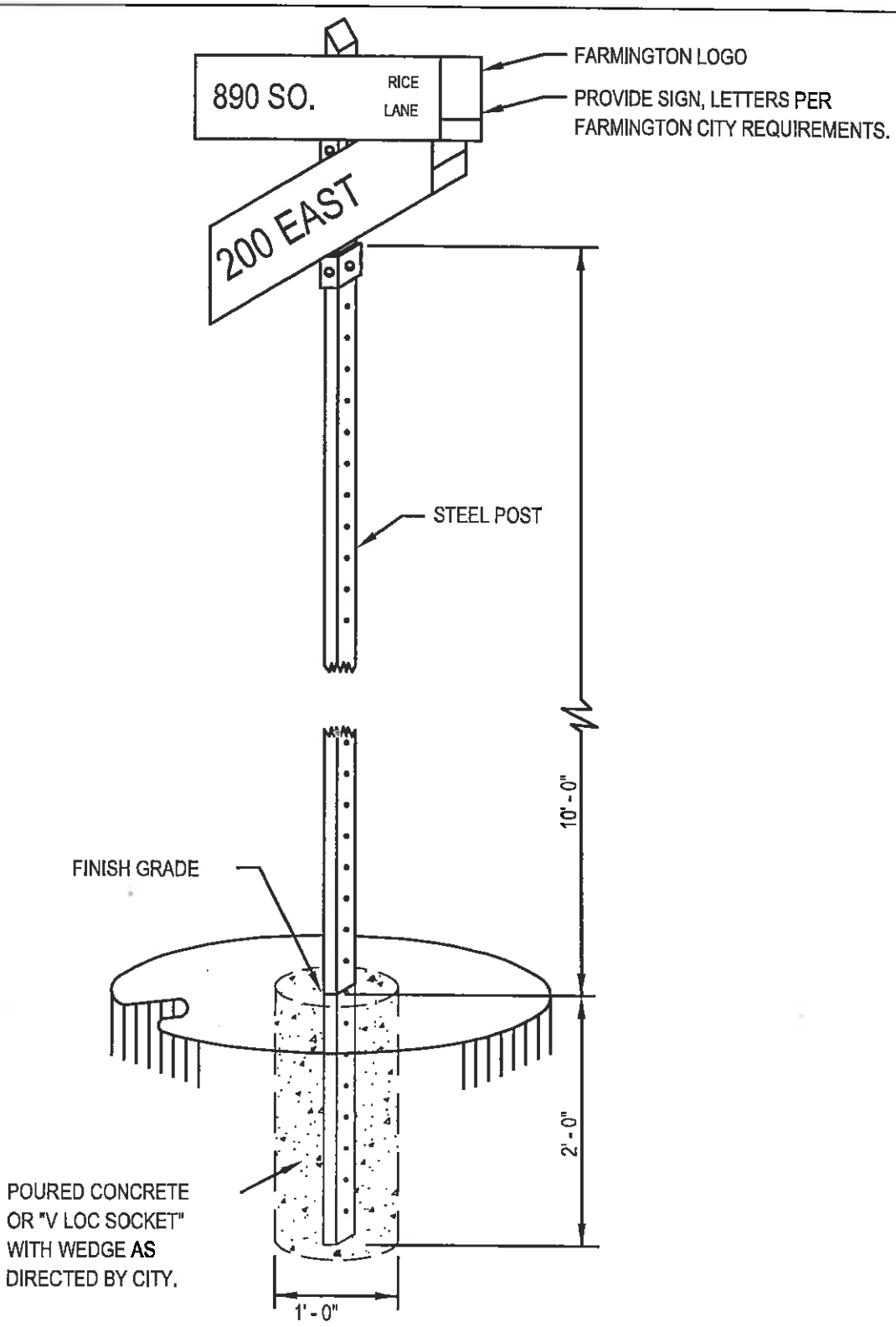
3. INSTALL THE EDGE OF THE SIGN 2 FEET FROM THE VERTICAL EXTENSION OF THE BACK OF CURB AS NEAR AS POSSIBLE TO THE APPROACH CURB P.C.

4. SIGN SHALL BE PLACED IN CONFORMANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES.

5. STREET NAME AND STOP SIGNS SHALL BE PLACED BEHIND THE SIDEWALK AND SHALL BE REQUIRED AS DIRECTED BY THE CITY ENGINEER IN ALL CITY STREETS.

6. ALL POST COMPONENTS SHALL BE GALVANIZED.

7. TO PRESERVE UNIFORMITY, STREET SIGNS ARE TO BE ORDERED AND INSTALLED BY FARMINGTON CITY FOR PUBLIC ROADS. SIGNS ARE PAID FOR WIITH DEPOSITS BY THE DEVELOPER FOR NEW SUBDIVISIONS.



TYPICAL STREET NAME SIGN

STREET SIGNS

PLAN NO. 292 SP

REVISED 02/05/08

DRAWING 2 OF 2

STORM DRAIN / LAND DRAIN MANHOLE

NOTES:

1. HEIGHT VARIES.

2. USE CONCENTRIC CONES.

3. FOR SHALLOW APPLICATIONS REPLACE CONES WITH FLAT LIDS AND GRADE RINGS (HS-20 TRAFFIC LOAD RATED.)

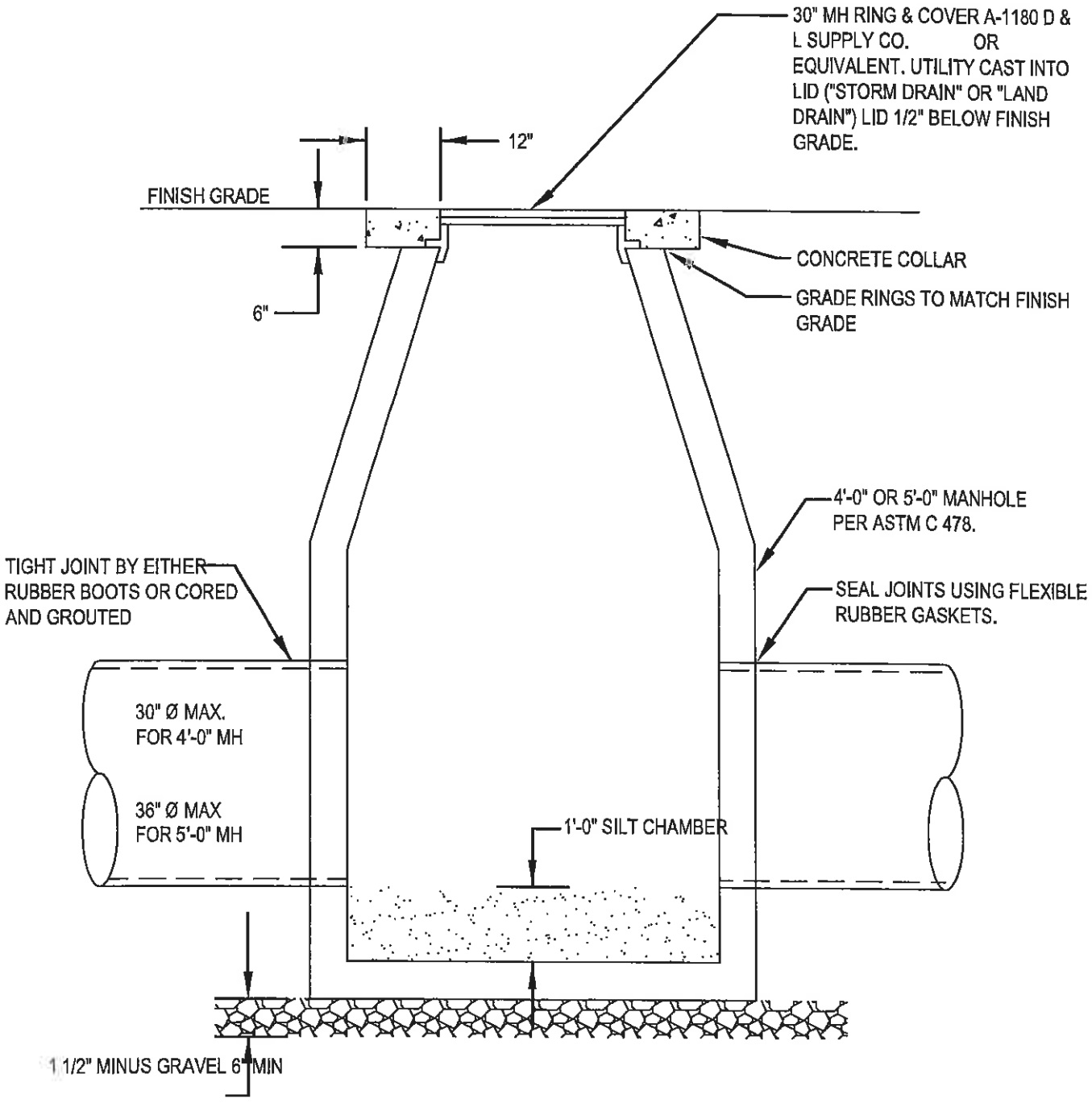
4. JUNCTION BOXES MAY BE SUBSTITUTED FOR MANHOLES. SUBMIT BOX DESIGN WITH STAMPED ENGINEERING LOAD DESIGN CALCULATION FOR HS-20 TRAFFIC LOAD.

5. BACKFILL: PROVIDE AND PLACE PER APWA SECTION 31 23 23. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95-PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8-INCHES BEFORE COMPACTION.

6. CONCRETE: CLASS 4000 PER APWA 03 30 04. PLACE PER APWA SECTION 03 30 10. CURE PER APWA SECTION 03 39 00.

7. ALL MANHOLE LIDS ARE TO BE FLAT (WITH NO RIBS) WITH THE UTILITY NAME CAST INTO THE MANHOLE (I.E. "STORM DRAIN", "SEWER", "WATER", "LAND DRAIN" ETC.)

PLAN NO. *341 SP*



STORM DRAIN / LAND DRAIN MANHOLE

PLAN NO. *341 SP*

REVISED 02/05/08

DRAWING 1 OF 1

JUNCTION BOX

NOTES:

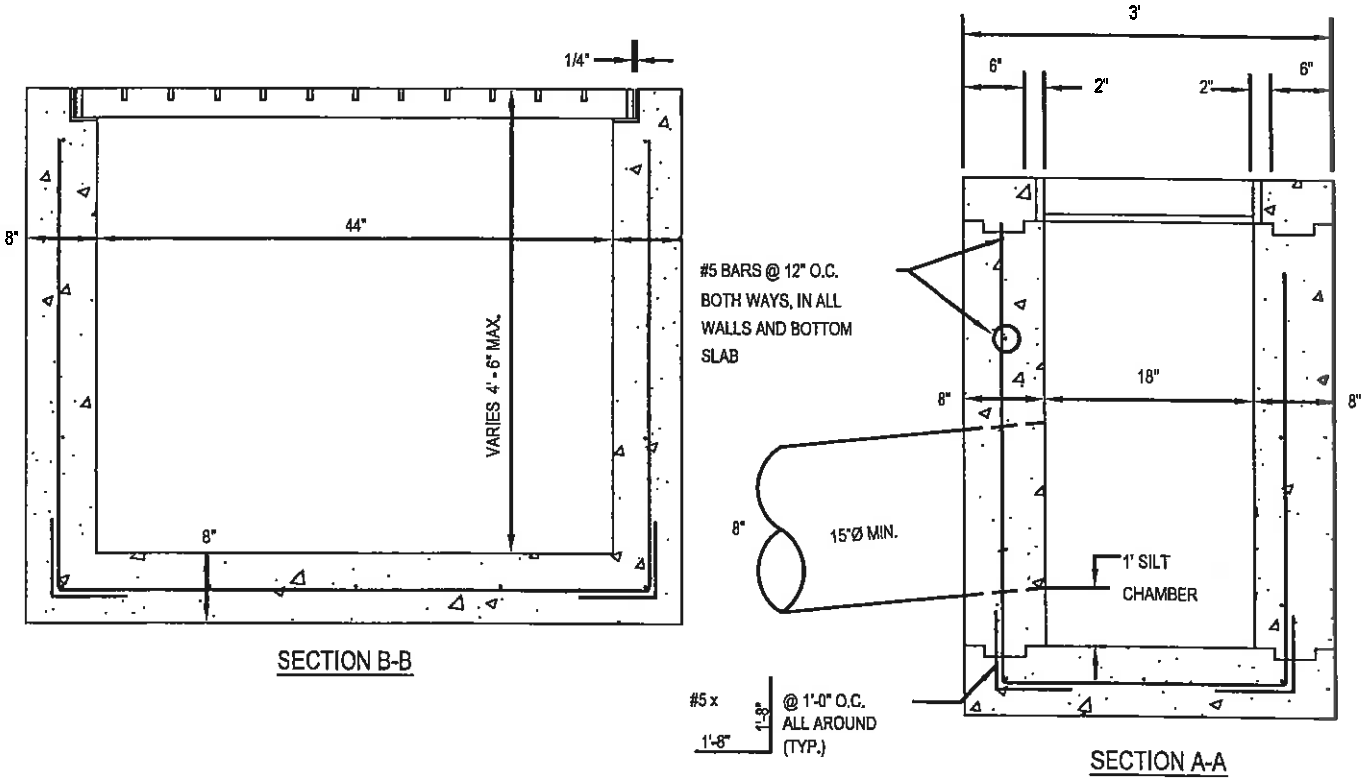
1. PRECAST BOXES DESIGNED FOR HS-20 TRAFFIC LOADING.

2. CONCRETE:CLASS 4000 PER APWA SECTION 03 30 04. PLACE CONCRETE PER APWA SECTION 03 30 10. CURE PER APWA SECTION 03 39 00.

3. REINFORCEMENT: ASTM A 615, GRADE 60, DEFORMED STEEL. SEE APWA SECTION 03 20 00.

4. PRECAST BOX DIMENSIONS MAY VARY. USE A STANDARD BOX AND SUBMIT FOR APPROVAL.

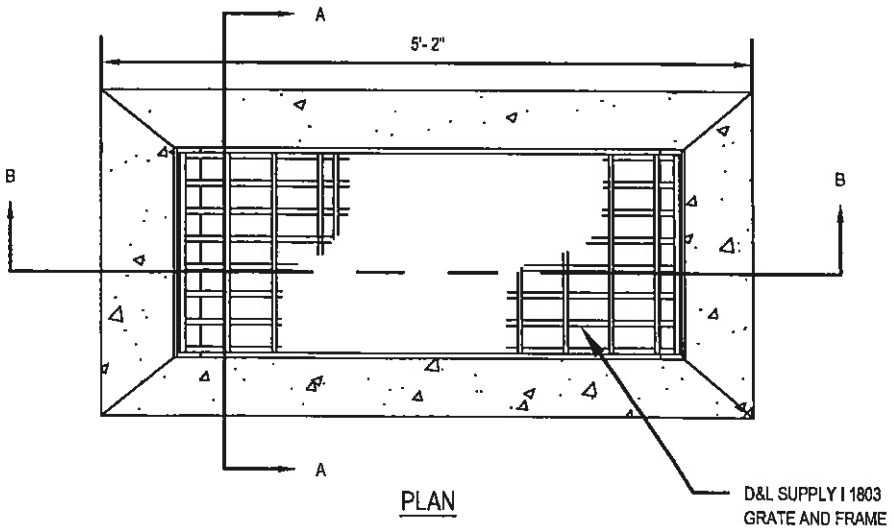
PLAN NO. *342 SP*



SECTION B-B

SECTION A-A

CROSS SECTIONS



PLAN

TOP VIEW

JUNCTION BOX

REVISED 02/05/08

PLAN NO. 342 SP
DRAWING 1 OF 1

STORM DRAIN TRENCH SECTION

NOTES:

1. BACKFILL: LIMIT MAXIMUM PARTICLE SIZE IN TRENCH BACKFILL TO 6-INCHES.
   A. BACKFILL MATERIAL. PLACE BACKFILL PER APWA SECTION 33 05 20. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95-PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8-INCHES BEFORE COMPACTION.
   B. QUALITY CONTROL COMPACTION TEST RESULT DATA SHALL BE SUBMITTED TO CITY.

2. LANDSCAPE RESTORATION: PROVIDE LANDSCAPED SURFACES WITH TOPSOIL. RAKE TO MATCH EXISTING GRADE. REPLACE VEGETATION TO MATCH PRE-CONSTRUCTION CONDITIONS. SEE APWA SECTION 32 92 00 OR 32 93 13 REQUIREMENTS.

3. PAVEMENT RESTORATION: DO NOT INSTALL ASPHALT OR CONCRETE SURFACING UNTIL TRENCH COMPACTION IS ACCEPTED BY CITY.

4. PIPE LOCATION: INSTALL PIPE IN CENTER OF TRENCH NO CLOSER THAN 6-INCHES FROM WALL OF PIPE TO WALL OF TRENCH.

5. TRENCH IS TO MEET OR EXCEED OSHA STANDARDS.

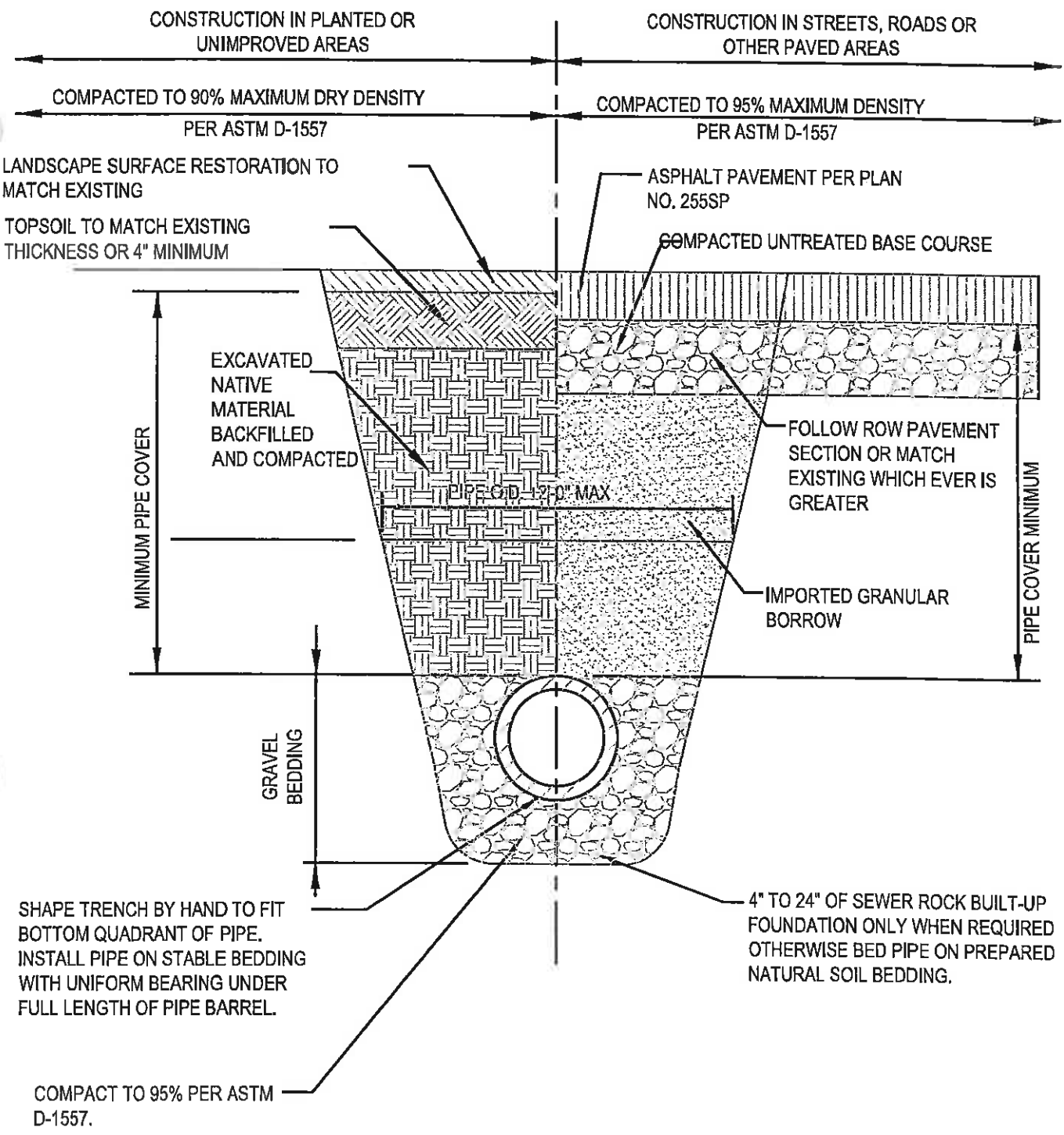
6. FOLLOW PIPE MANUFACTURERS RECOMMENDATIONS FOR INSTALLATION IF MORE STRINGENT.

7. ALL STORM DRAIN LINES ARE TO BE TV INSPECTED, SUBMIT TAPE TO PUBLIC WORKS FOR REVIEW. PRIOR TO TVING THE LINE, THE PIPE IS TO BE CLEANED AND FLUSHED. PAVEMENT IS NOT TO BE PLACED UNTIL PUBLIC WORKS HAS REVIEWED AND APPROVED OF THE LINE.

8. MINIMUM STORM DRAIN SIZE IS 15".

9. MINIMUM SLOPE FOR ALL STORM DRAIN IS 0.40%.

PLAN NO. *380 SP*



MINIMUM PIPE COVER FOR PVC, CMP, AND ADS PIPE IS 2'. MINIMUM PIPE COVER FOR RCP CLASS III OR V IS 1'.

STORM DRAIN TRENCH SECTION

PLAN NO. 380 SP

REVISED 10/15/10

DRAWING 1 OF 1

LAND DRAIN TRENCH SECTION

NOTES:

1. BACKFILL: LIMIT MAXIMUM PARTICLE SIZE IN TRENCH BACKFILL TO 6-INCHES.
   A. BACKFILL MATERIAL. PLACE BACKFILL PER APWA SECTION 03 05 20. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95-PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8-INCHES BEFORE COMPACTION.
   B. QUALITY CONTROL COMPACTION TEST RESULT DATA IS TO BE SUBMITTED TO THE CITY.

2. LANDSCAPE RESTORATION: PROVIDE LANDSCAPED SURFACES WITH TOPSOIL. RAKE TO MATCH EXISTING GRADE. REPLACE VEGETATION TO MATCH PRE-CONSTRUCTION CONDITIONS. SEE APWA SECTION 32 92 00 OR 32 93 13 REQUIREMENTS.

3. PAVEMENT RESTORATION: DO NOT INSTALL ASPHALT OR CONCRETE SURFACING UNTIL TRENCH COMPACTION IS ACCEPTED BY CITY.

4. PIPE LOCATION: INSTALL PIPE IN CENTER OF TRENCH NO CLOSER THAN 6-INCHES FROM WALL OF PIPE TO WALL OF TRENCH.

5. TRENCH IS TO MEET OR EXCEED OSHA STANDARDS.

6. FOLLOW PIPE MANUFACTURERS RECOMMENDATIONS FOR INSTALLATION IF MORE STRINGENT.

7. PLACE 12 GAUGE TRACER WIRE IN TRENCH WITH THE LAND DRAIN LINE AND LATERALS

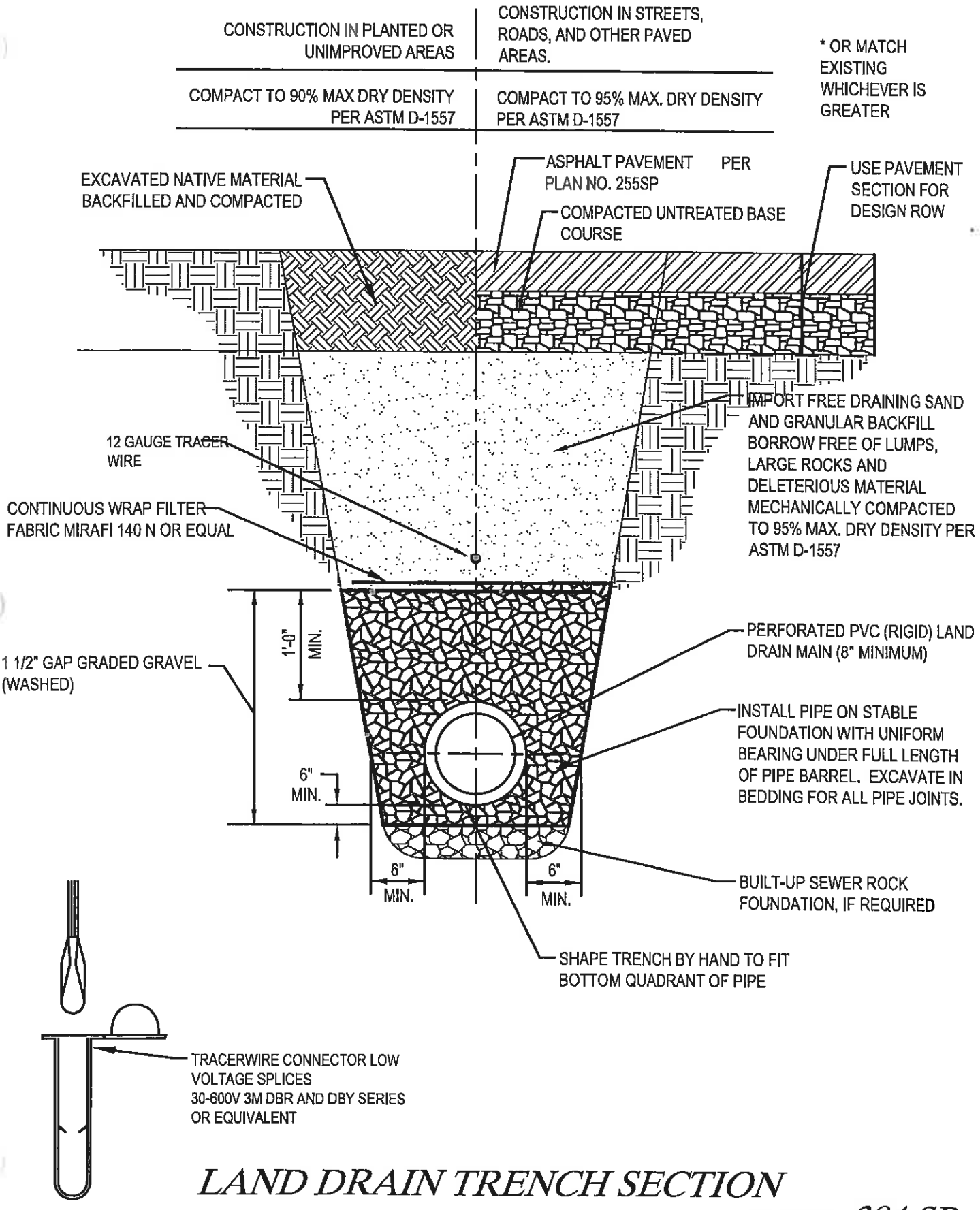
8. CONDUCTIVITY TEST TO BE DONE ON TRACER WIRES AFTER INSTALLATION. STREET NOT TO BE PAVED BEFORE CONDUCTIVITY TEST.

9. ALL LAND DRAIN LINEW ARE TO BE TV INSPECTED. SUBMIT TAPE TO PUBLIC WORKS FOR REVIEW. PAVEMENT IS NOT TO BE PLACED UNTIL PUBLIC WORKS HAS REVIEWED AND APPROVED OF THE LINE. PRIOR TO TVING THIS LINE, THE PIPE IS TO BE CLEANED AND FLUSHED.

10. MINIMUM SLOPE ON LAND DRAIN PIPE IS 0.40%.

11. LAND DRAIN SYSTEMS ARE NOT TO CONNECT INTO STORM DRAIN LINES.

PLAN NO. *384 SP*



LAND DRAIN TRENCH SECTION

PLAN NO. 384 SP

REVISED 02/05/08

DRAWING 1 OF 1

FOREBAY

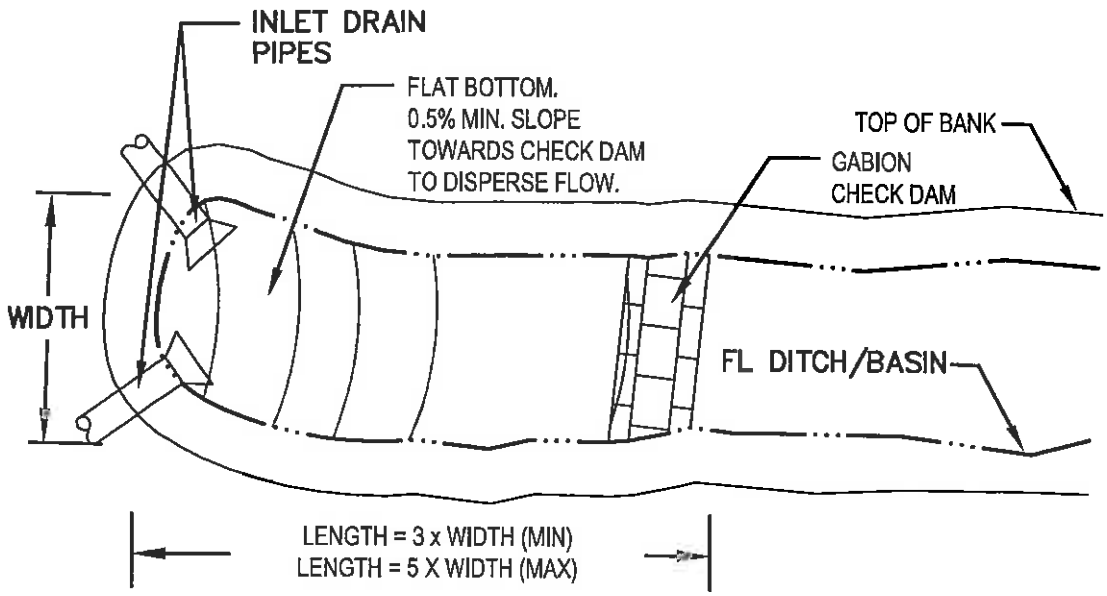
NOTES:

1. SIZE FOREBAY TO CONTAIN 0.1 INCHES PER IMPERVIOUS ACRE OF CONTRIBUTING DRAINAGE AREA.

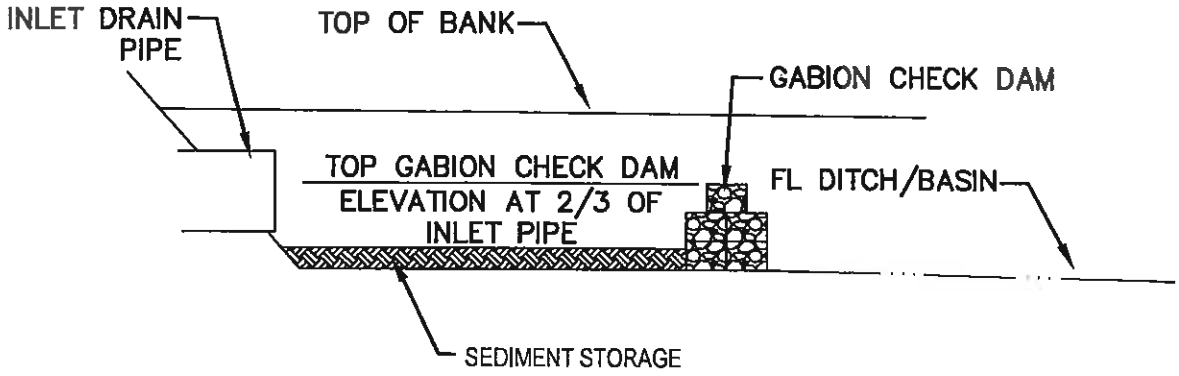
2. EXIT VELOCITIES SHALL BE NON-EROSIVE.

PLAN NO. *390 SP*

INTERIOR SIDE SLOPES 3:1 (MIN)
EXTERIOR EMBANKMENT 2:1 (MIN)



PLAN VIEW



CROSS SECTION

FOREBAY

REVISED 02/05/08

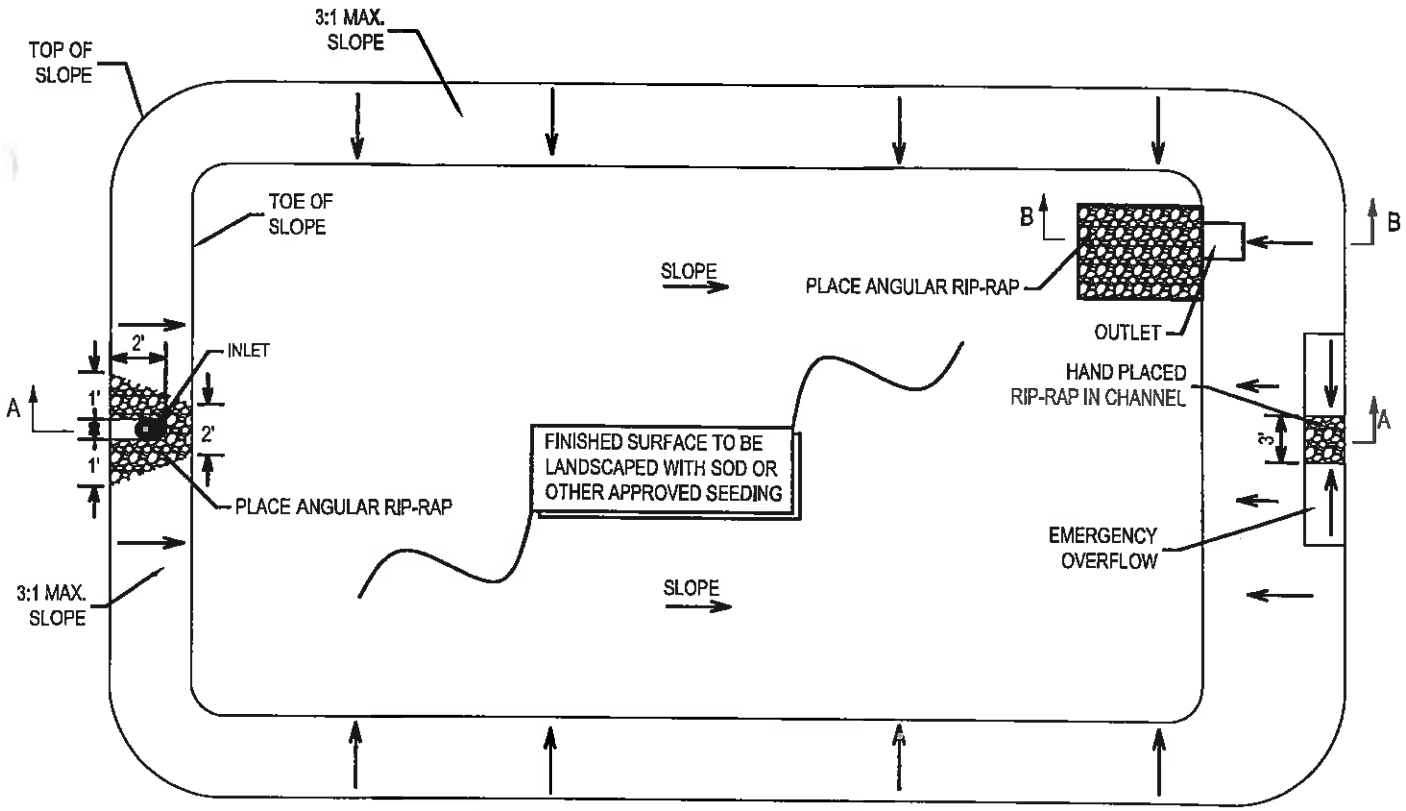
PLAN NO. 390 SP
DRAWING 1 OF 1

DETENTION BASIN

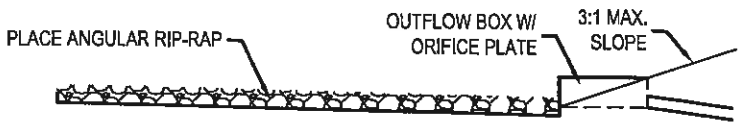
NOTES:

1. SUBMIT FOR APPROVAL A LANDSCAPING PLAN FOR DETENTION BASIN FOR REVIEW AND APPROVAL BY CITY.
2. DETENTION BASIN IS TO BE SIZED FOR THE 100-YR STORM.
3. SUBMIT AN OWNERSHIP AND MAINTENANCE PLAN FOR REVIEW AND APPROVAL. ENTER INTO ANY NECESSARY AGREEMENTS FOR SUCH AS DIRECTED BY CITY.

PLAN NO. *391 SP*



CROSS SECTION A-A



CROSS SECTION B-B

DETENTION BASIN

PLAN NO. 391 SP

REVISED 10/15/10

DRAWING 1 OF 1

FIRE HYDRANT

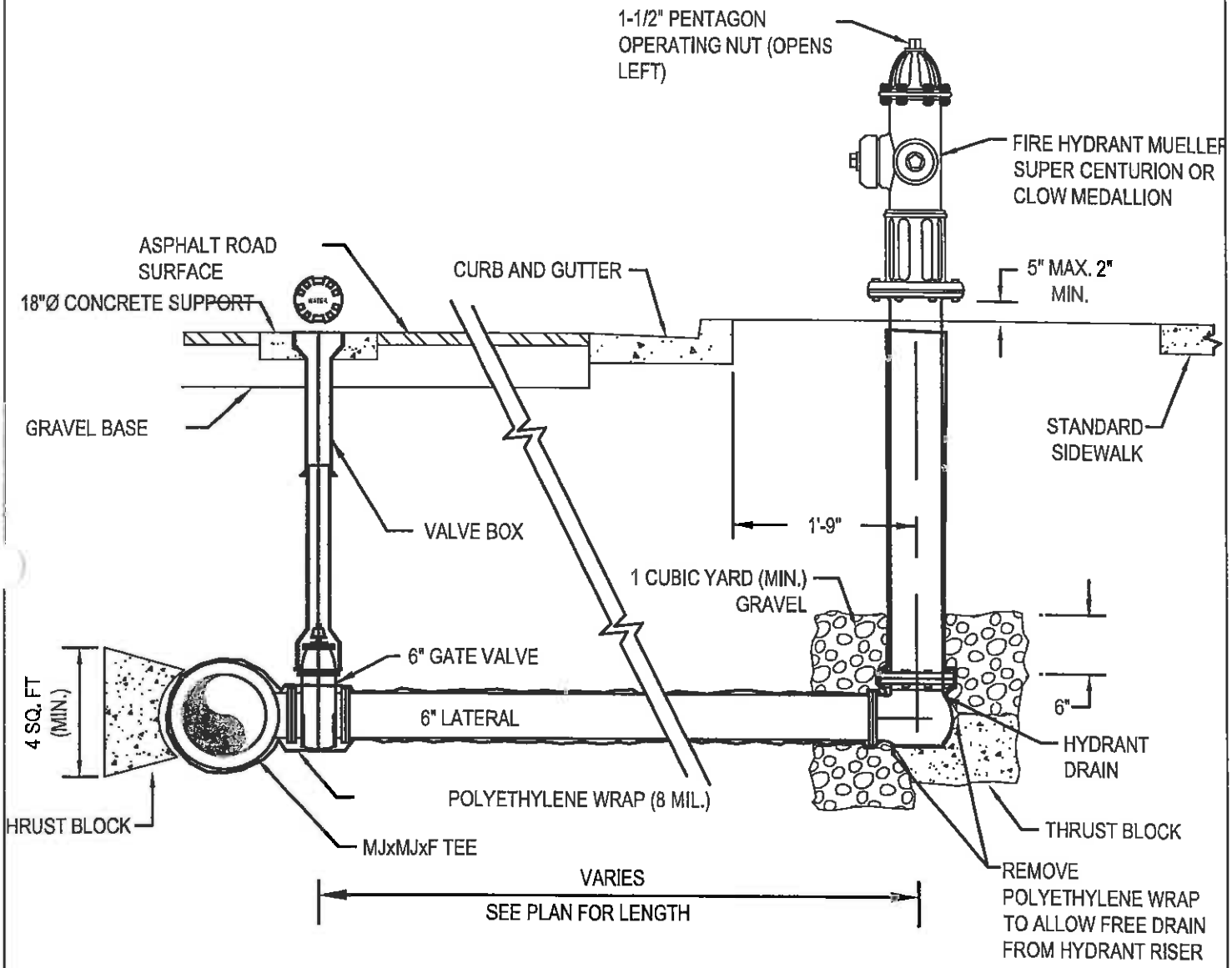
NOTES:

1. FIRE HYDRANT VALVE IS TO BE FLANGED TO TEE.

2. SPACE FIRE HYDRANTS AT 300' INTERVALS OR AS REQUIRED BY FIRE CHIEF.

3. FIRE HYDRANTS TO BE LOCATED ON SAME SIDE OF ROAD CENTERLINE AS THE WATER MAIN.

PLAN NO. 511 SP



FIRE HYDRANT

PLAN NO. 511 SP

REVISED 02/05/08

DRAWING 1 OF 1

WATER SERVICE CONNECTION

NOTES:

1. 10'-0" MIN. EDGE TO EDGE HORIZONTAL CLEARANCE IS REQUIRED BETWEEN WATER AND SEWER LATERAL SERVICE.

2. WHERE WATER AND SEWER LATERALS MUST CROSS, WATER LATERAL SHALL BE 18" ABOVE THE SEWER LATERAL AS MEASURED FROM THE BOTTOM TO TOP OF PIPES. THIS SEPERATION SHALL BE MAINTAINED FOR AT LEAST 10'-0" EITHER SIDE OF CROSS POINT.

3. NO METER BOXES SHALL BE INSTALLED IN DRIVE APPROACHES OR SIDEWALKS.

4. MINIMUM LATERAL SIZE 3/4".

5. 1" METERS REQUIRE-20" METER BOX DIA.

6. PRIOR TO BACKFILLING AROUND METER BOX SECURE INSPECTION OF INSTALLATION FROM CITY.

7. BACKFILL: PROVIDE AND PLACE PER APWA SECTION 33 05 20. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95-PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8-INCHES BEFORE COMPACTION.

8. PRESSURE TEST ALL WATERLINES AND SERVICES

9.WATER LATERALS ARE TO BE LOCATED 5' OFF OF THE PROPERTY LINE. WATER METERS ARE NOT TO BE RELOCATED AFTER INSTALLATION.

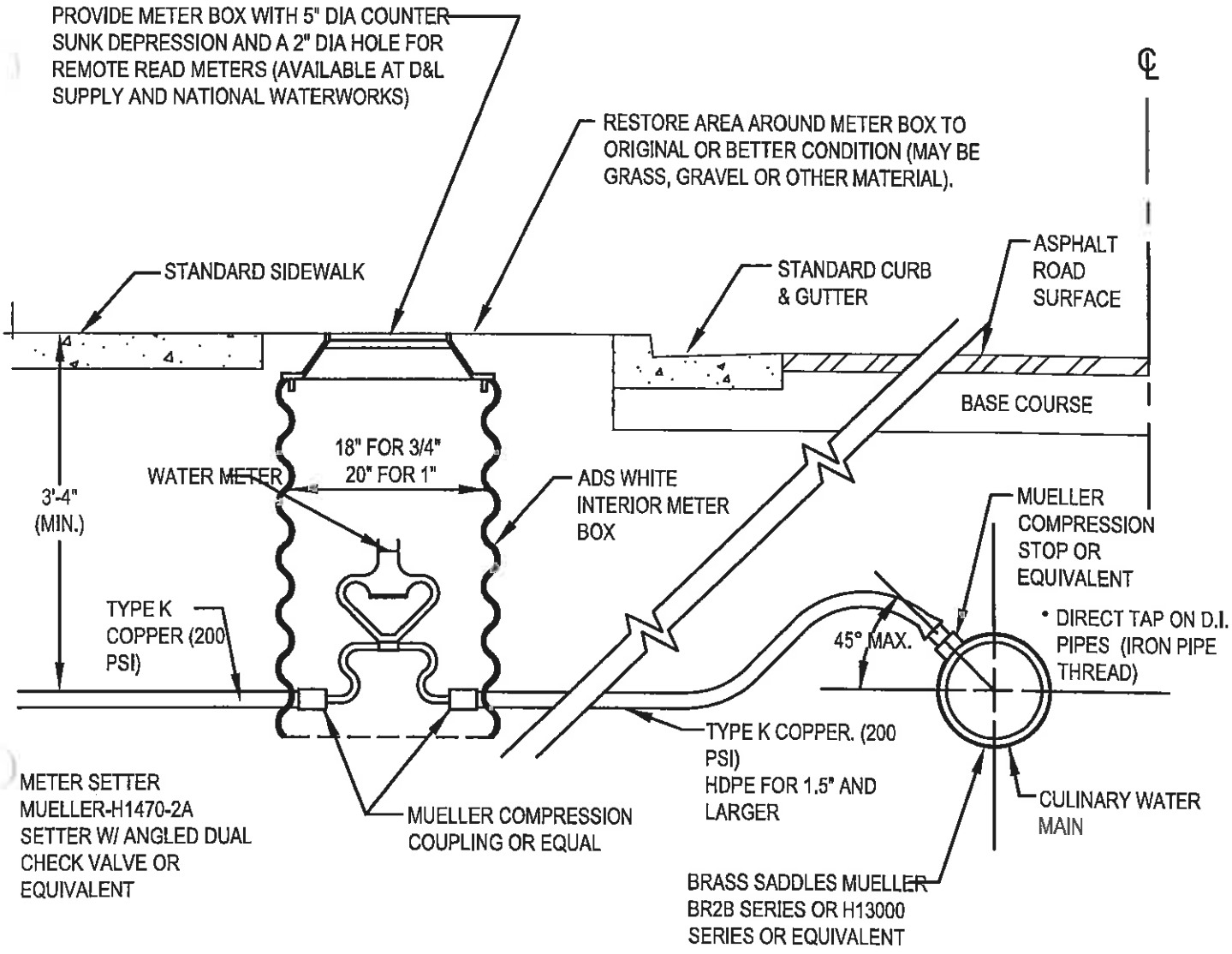
10. TYPE K COPPER PIPE IS PREFERRED ON LATERALS. HDPE PIPE CAN BE USED IF TRACER WIRE IS INSTALLED WITH THE LATERAL.

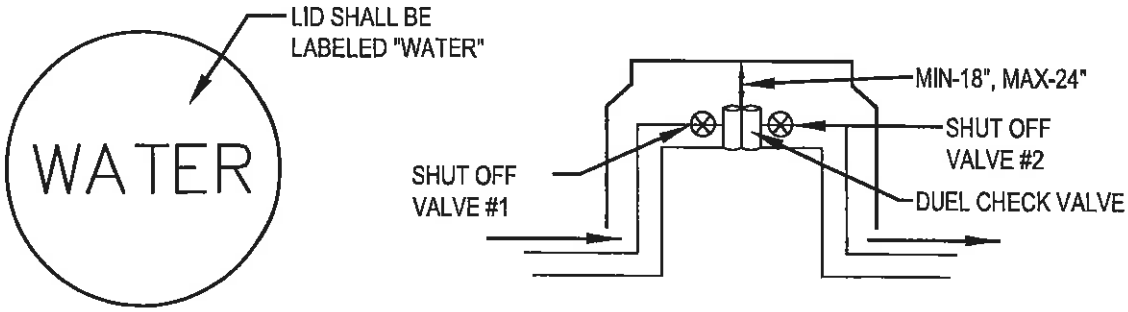
11. WATER LATERALS ARE TO BE INSTALLED AT 90° ANGLES FROM THE WATER MAIN AND EXTEND STRAIGHT OFF THE CORP STOP WHERE POSSIBLE (EXCEPTIONS WILL BE ALLOWED IN CUL-DE-SACS)

12. COORDINATE WITH THE CITY FOR INSTALLATION OF METERS LARGER THAN 1".

13. IT IS THE HOMEOWNERS RESPONSIBILITY TO MAINTAIN VALVE AND METER BOXES ON THEIR PROPERTY TO ENSURE THAT THEY ARE EXPOSED, ACCESSABLE AND AT GRADE.

PLAN NO. 521 SP





3/4" & 1" WATER SERVICE CONNECTION

PLAN NO. *521 SP*

REVISED 02/05/08

DRAWING 1 OF 1

PREFABRICATED STEEL LOOP

NOTES:

NOTE 1: LINING AND COATING SPECIFICATIONS FOR UNDERGROUND PIPING

ALL FABRICATED STEEL PIPING SHALL BE SANDBLASTED TO "NEAR WHITE" (SSPC-SP10). EACH SECTION OF PIPE AND OR FITTINGS SHALL BE PRIMED BY THE SPRAYING METHOD WITH TNEMEC SERIES FC-20 POTA POX (FAST CURE) EPOXY-POLYAMIDE 20-1255 BEIGE PRIMER. THIS SHALL BE 7.0 MILS WET AND 4.0 MILS AFTER DRYING. THE MINIMUM DRYING TIME SHALL BE 3 HOURS AT 77 DEGREES F. OR 12 HOURS AT 50 DEGREES F. BEFORE INTERMEDIATE COATS ARE APPLIED. PROPER CURING WILL NOT OCCUR UNDER 35 DEGREES F.

INTERMEDIATE AND TOPCOAT SHALL BE TNEMEC SERIES FC-20 POTA POX (FAST CURE) EPOXY POLYAMIDE 20-AA83 TANK WHITE APPLIED BY THE SPRAYING METHOD. EACH COAT SHALL BE 9.0 MILS WET AND 5.0 MILS DRY PER COAT. THE MINIMUM DRY TIME SHALL BE 3 HOURS AT 77 DEGREES F. OR 12 HOURS AT 50 DEGREES F. BEFORE FINISH COAT IS APPLIED. PROPER CURING WILL NOT UNDER 35 DEGREES F.

TOTAL DRY FILM THICKNESS SHALL BE 14.0 MILS (MINIMUM).

ALL WELDED JOINTS OR OTHER REPAIRS SHALL BE MADE IN THE DAME MANNER AS LISTED ABOVE.

ALL UNDERGROUND LOOPS, SPOOLS, AND FABRICATED PIPING SHALL BE DOUBLE TAPE WRAPPED AFTER THE ABOVE COATINGS, WITH POLYKEN 934-35 PIPE WRAP OR EQUAL.

ALL TNEMEC PRODUCTS LISTED ABOVE ARE LISTED BY THE STATE OF UTAH, BOARD OF HEALTH, NSF AND CONFORMS TO AWWA 1DO1 INSIDE SYSTEM NO. 1.

2. ALL WELDING IS TO BE FULL PENETRATION BUTT WELDS PER AWWA C-200 OR C-206.

3. BACK FILL AND COMPACT TRENCH TO SPECIFIED COMPACTION PRIOR TO SUPPLYING TEST PRESSURE AT WATER LINE LOOPS.

4. INSPECTION: PRIOR TO BACKFILLING TRENCH EXCAVATION, SECURE INSPECTION OF INSTALLATION BY ENGINEER.

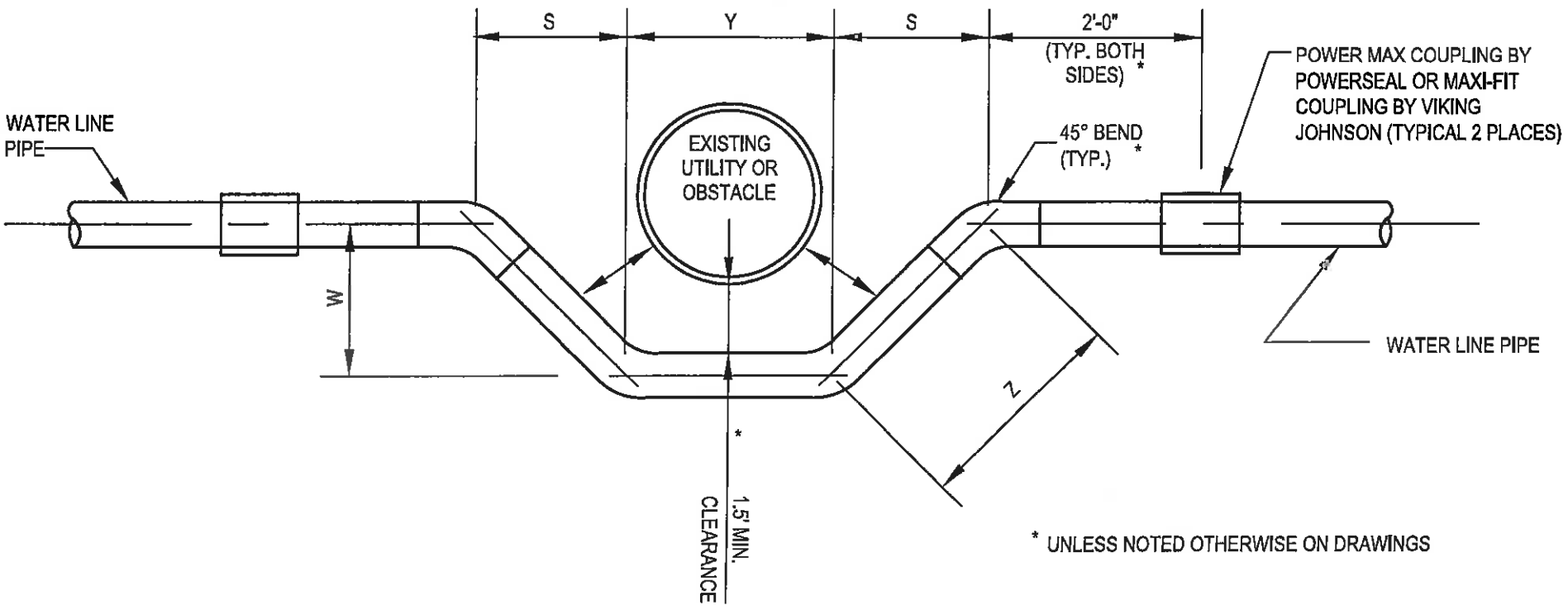
5. BACKFILL: PROVIDE AND PLACE PER APWA SECTION 33 05 20. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95-PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8-INCHES BEFORE COMPACTION.

6. GREASE: APPLY POLY-FM GREASE TO ALL BURIED METAL SURFACES. WRAP WITH 8-MILLIMETER THICK POLYETHYLENE SHEET AND TAPE WRAP.

7. O.D. OF STEEL LOOP TO MATCH O.D. OF CONNECTING WATER LINE PIPE.

8. ALL STEEL LOOPS WITH A "Y" DIMENSION OF 10' OR GREATER SHALL REQUIRE UPLIFT AND DOWN THRUST BLOCKS.

PLAN NO. 542 SP



PREFABRICATED STEEL LOOP

PLAN NO. 542 SP

DRAWING 1 OF 1

REVISED 10/15/10

THRUST BLOCKS

NOTES:

1. THRUST BLOCKS TO BE SIZED USING 200 PSI WATER PRESSURE AND SOIL BEARING PRESSURE AS DETERMINED FROM A SITE SPECIFIC SOILS REPORT. THE TABLE IS FOR A SOIL BEARING PRESSURE OF 1000 PSF

2. CONCRETE: CLASS 2000 MINIMUM PER APWA SECTION 03 30 04. POUR CONCRETE AGAINST UNDISTURBED SOIL.

3. PIPE JOINTS: DO NOT COVER WITH CONCRETE. LEAVE COMPLETELY ACCESSIBLE.

4. GREASE: APPLY POLY-FM GREASE TO ALL BURIED METAL SURFACES. WRAP WITH 8 MIL THICK POLYETHYLENE SHEET AND TAPE WRAP.

5. SPECIAL CONSTRUCTION REQUIREMENTS:
   A. THRUST DESIGN FOR PIPE SIZES, CONFIGURATIONS AND SOIL BEARING PRESSURE NOT SHOWN REQUIRE SPECIAL DESIGN.
   B. BEARING AREAS, VOLUMES AND SPECIAL THRUST BLOCKING DETAILS SHOWN ON DRAWINGS TAKE PRECEDENCE OVER THIS PLAN.
   C. REINFORCING STEEL BARS TO BE EPOXY COATED AT LEAT 15 MILS THICK. MINIMUM STRESS YIELD OF TIE DOWN BARS IS 70,000 PSI.
   D. LOCKING RESTRAINT DEVICES MAY BE USED IN CONJUNCTION WITH CONCRETE THRUST BLOCKING (WITH APPROVAL)

6. INSPECTION: PRIOR TO BACKFILLING AROUND THRUST BLOCK, SECURE INSPECTION OF INSTALLATION BY CITY.

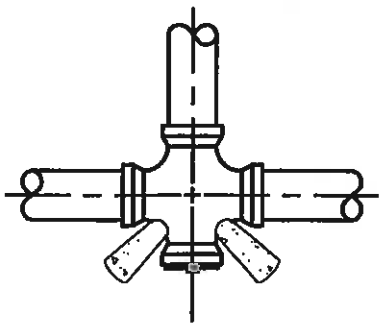
7. BACKFILL: PROVIDE AND PLACE PER APWA SECTION 33 05 20. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95-PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8-INCHES BEFORE COMPACTION.

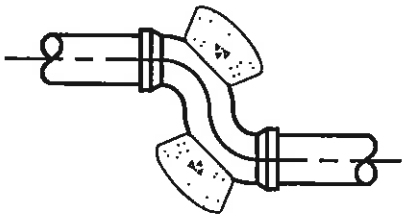
THRUST BLOCK SIZING ASSUMING 1000 PSF SOIL BEARING PRESSURE

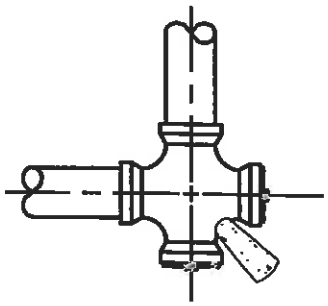
PIPE	11.25 Degree Bend			22.5 Degree Bend			45 Degree Bend		
DIAMETER	W	H	L	W	H	L	W	H	L
4"	0.84	0.84	0.72	1.18	1.18	1.02	1.67	1.67	1.45
6"	1.22	1.22	1.06	1.73	1.73	1.50	2.41	2.41	2.09
8"	1.58	1.58	1.37	2.24	2.24	1.94	3.13	3.13	2.71
10"	1.95	1.95	1.69	2.76	2.76	2.39	3.85	3.85	3.33
12"	2.32	2.32	2.01	3.27	3.27	2.83	4.58	4.58	3.97
14"	2.68	2.68	2.32	3.79	3.79	3.29	5.31	5.31	4.60
16"	3.05	3.05	2.64	4.31	4.31	3.73	6.03	6.03	5.22
18"	3.42	3.42	2.96	4.83	4.83	4.18	6.76	6.76	5.85
20"	3.78	3.78	3.27	5.34	5.34	4.62	7.48	7.48	6.48
24"	4.53	4.53	3.92	6.39	6.39	5.53	8.94	8.94	7.75

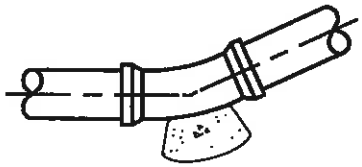
PIPE	67.5 Degree Bend			90 Degree Bend			Tee, Dead End, Valve		
DIAMETER	W	H	L	W	H	L	W	H	L
4"	2.00	2.00	1.73	2.26	2.26	1.96	1.90	1.90	1.64
6"	2.90	2.90	2.51	3.27	3.27	2.83	2.76	2.76	2.39
8"	3.77	3.77	3.26	4.25	4.25	3.68	3.58	3.58	3.10
10"	4.65	4.65	4.02	5.23	5.23	4.53	4.40	4.40	3.81
12"	5.51	5.51	4.77	6.22	6.22	5.39	5.23	5.23	4.53
14"	6.40	6.40	5.54	7.21	7.21	6.25	6.07	6.07	5.25
16"	7.27	7.27	6.30	8.20	8.20	7.10	6.90	6.90	5.97
18"	8.15	8.15	7.06	9.20	9.20	7.97	7.73	7.73	6.70
20"	9.02	9.02	7.81	10.17	10.17	8.81	8.56	8.56	7.41
24"	10.78	10.78	9.34	12.16	12.16	10.53	10.23	10.23	8.86

PLAN NO.
561 SP

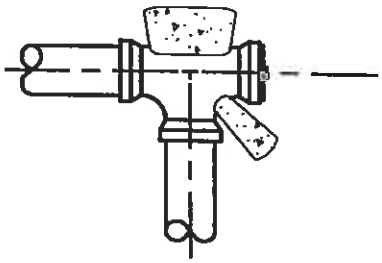


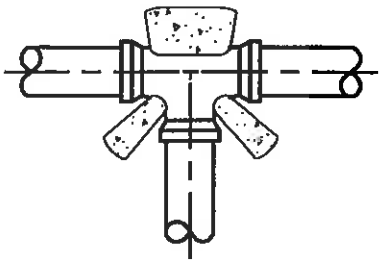


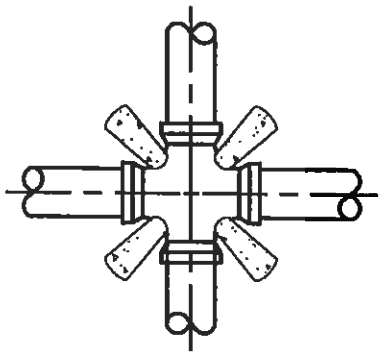


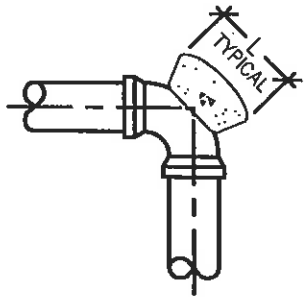


HORIZONTAL BEND









THRUST BLOCKS

PLAN NO. 561 SP

DRAWING 1 OF 1

REVISED 02/05/08

TIE-DOWN THRUST RESTRAINTS

NOTES:

1. THRUST BLOCK TO BE SIZED USING 200 PSI WATER PRESSURE AND THE CONCRETE WEIGHT DETERMINED FROM THE MIX DESIGN. THE TABLE IS REPRESENTITIVE OF CONCRETE WITH A WEIGHT OF 150 LBS/FT^2.

2. CONCRETE: CLASS 2000 MINIMUM PER APWA SECTION 03 30 04. POUR CONCRETE AGAINST UNDISTURBED SOIL.

3. PIPE JOINTS: DO NOT COVER WITH CONCRETE. LEAVE COMPLETELY ACCESSIBLE.

4. GREASE: APPLY POLY-FM GREASE TO ALL BURIED METAL SURFACES. WRAP WITH 8 MIL THICK POLYETHYLENE SHEET AND TAPE WRAP.

5. SPECIAL CONSTRUCTION REQUIREMENTS:
   A. THRUST DESIGN FOR PIPE SIZES, CONFIGURATIONS AND SOIL BEARING PRESSURE NOT SHOWN REQUIRE SPECIAL DESIGN.
   B. BEARING AREAS, VOLUMES AND SPECIAL THRUST BLOCKING DETAILS SHOWN ON DRAWINGS TAKE PRECEDENCE OVER THIS PLAN.
   C. REINFORCING STEEL BARS TO BE EPOXY COATED AT LEAST 15 MILS THICK. MINUMUM STRESS YIELD STRENGTH OF TIE-DOWN BARS IS 70,000 PSI.
   D. LOCKING RESTRAINT DEVICES MAY BE USED IN CONJUNCTION WITH CONCRETE THRUST BLOCKING (WITH APPROVAL)
   E. CONCRETE MUST BE ALLOWED TO CURE IN THRUST RESTRAINTS FOR 5 DAYS PRIOR TO PRESSUREISZING WATERLINES.

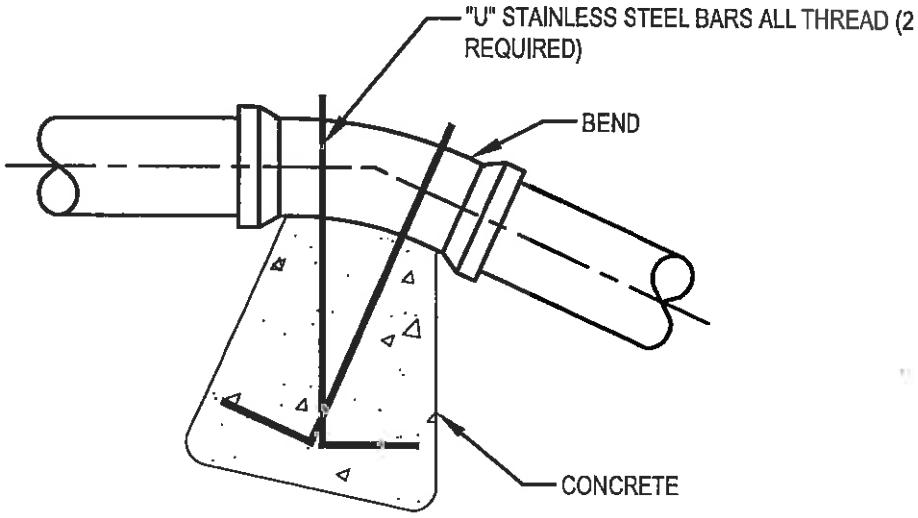
6. INSPECTION: PRIOR TO BACKFILLING AROUND THRUST BLOCK, SECURE INSPECTION OF INSTALLATION BY CITY.

7. BACKFILL: PROVIDE AND PLACE PER APWA SECTION 33 05 20. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95-PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8-INCHES BEFORE COMPACTION.

PIPE DIAMETER	VOLUME OF CONCRETE IN CUBIC FEET		
	11.25 Degree Bend	22.5 Degree Bend	45 Degree Bend
4"	7	14	25
6"	15	29	54
8"	25	49	91
10"	38	74	137
12"	54	105	194
14"	72	141	260
16"	93	182	337
18"	117	229	423
20"	143	280	518
24"	204	400	740

PLAN NO. *562 SP*

WEIGHT OF CONCRETE TO RESIST 100% OF TOTAL THRUST



VERTICAL BEND

TIE-DOWN THRUST RESTRAINTS

PLAN NO. 562 SP

REVISED 02/05/08

DRAWING 1 OF 1

CULINARY WATER TRENCH SECTION

NOTES:

1. BACKFILL: LIMIT MAXIMUM PARTICLE SIZE IN TRENCH BACKFILL TO 6-INCHES.
   A. BACKFILL MATERIAL. PLACE BACKFILL PER APWA SECTION 33 05 20. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95-PERCENT OR GREATER. MAXIMUM LIFT THICKNESS IS 8-INCHES BEFORE COMPACTION.
   B. SUBMISSION OF QUALITY CONTROL COMPACTION TEST RESULT DATA MAY BE REQUESTED BY THE CITY AT ANY TIME. CONTRACTOR TO PROVIDE RESULTS OF TEST IMMEDIATELY UPON REQUEST.

2. LANDSCAPE RESTORATION: PROVIDE LANDSCAPED SURFACES WITH TOPSOIL. RAKE TO MATCH EXISTING GRADE. REPLACE VEGETATION TO MATCH PRE-CONSTRUCTION CONDITIONS. SEE APWA SECTION 32 92 00 OR 32 93 13 REQUIREMENTS.

3. PAVEMENT RESTORATION: DO NOT INSTALL ASPHALT OR CONCRETE SURFACING UNTIL TRENCH COMPACTION IS ACCEPTED BY CITY.

4. ALL WATER PIPE INSTALLED ON THE BENCHES OF FARMINGTON CITY SHALL BE DUCTILE IRON.

5. PIPE LOCATION: INSTALL PIPE IN CENTER OF TRENCH NO CLOSER THAN 6-INCHES FROM WALL OF PIPE TO WALL OF TRENCH.

6. TRENCH IS TO MEET OR EXCEED OSHA STANDARDS.

7. FOLLOW PIPE MANUFACTURERS RECOMMENDATIONS FOR INSTALLATION IF MORE STRINGENT.

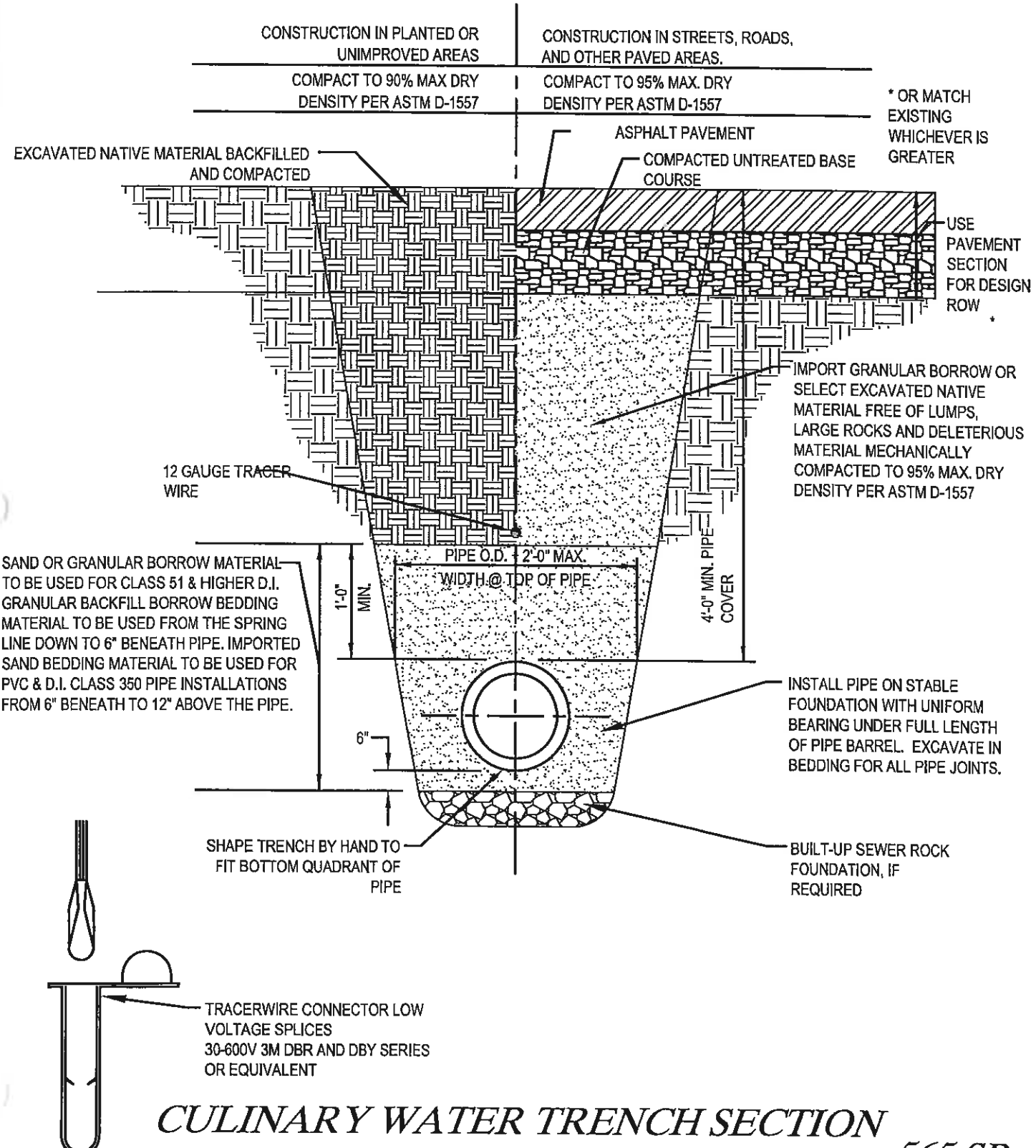
8. PLACE 12 GAUGE TRACER WIRE IN TRENCH WITH THE WATER MAIN; BRING UP TRACER WIRE THROUGH VALVE BOXES. WHEN TRACER WIRE IS TO BE SPLICED, USE CONNECTORS.

9. CONDUCTIVITY TEST TO BE DONE ON TRACER WIRES AFTER INSTALLATION. STREET NOT TO BE PAVED BEFORE CONDUCTIVITY TEST.

10. PRESSURE TEST WATERLINES AND SERVICES FOR 2 HOURS AT 200 PSI WITH NO LOSS.

11. PVC WATERLINE IS TO BE 200 PRESSURE CLASS (PVC C-900 DR-14).

PLAN NO. *565 SP*



CULINARY WATER TRENCH SECTION

PLAN NO. 565 SP

REVISED 02/05/08

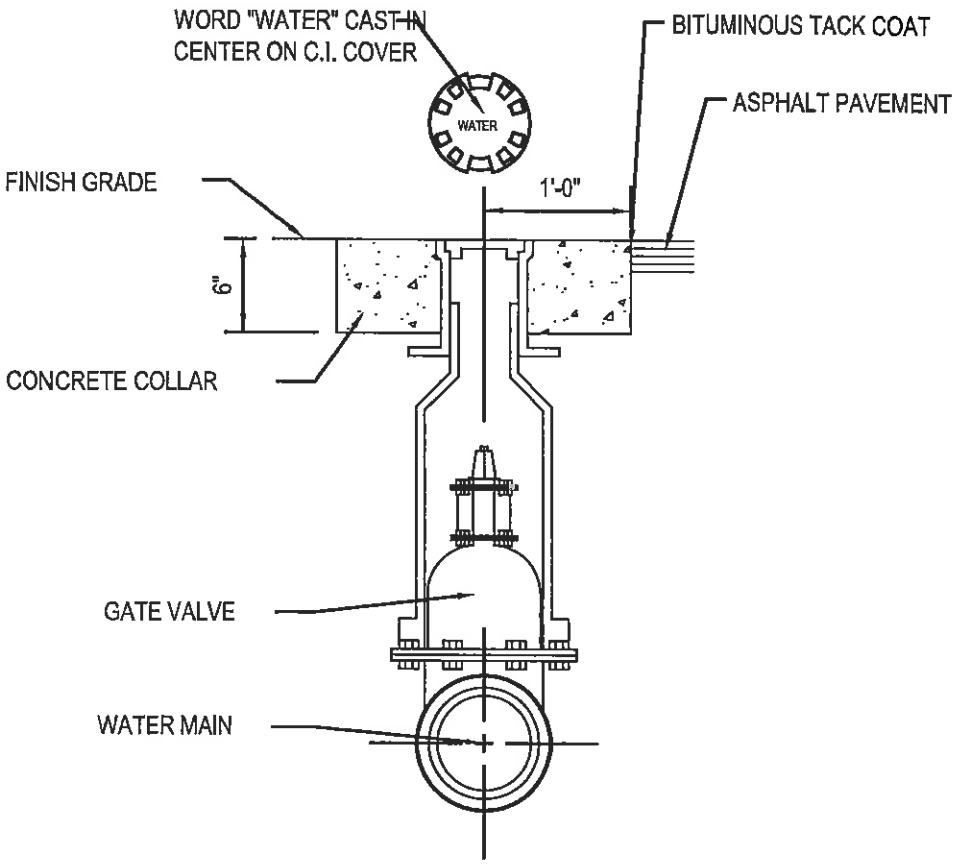
DRAWING 1 OF 1

TYPICAL VALVE BOX

NOTES:

1. CAST IRON WATER COVERS ARE TO BE ROUND.

PLAN NO. *570 SP*



PAVED AREAS

TYPICAL VALVE BOX

PLAN NO. *570 SP*

REVISED 02/05/08

DRAWING 1 OF 1

STANDARD PRESSURE REDUCING VALVE STATIOI

NOTES:

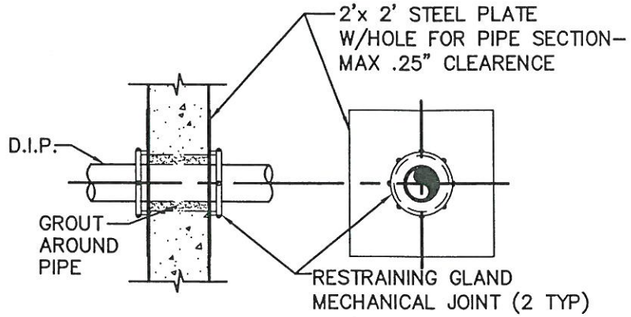
1. ALL REINFORCING STEEL SHALL BE EPOXY–COATED DEFORMED BILLET–STEEL BARS CONFORMING TO AASHTO M 284 AND M 31M GRADE 400, RESPECTIVELY.

2. REINFORCING STEEL SHALL HAVE 2" MIN. CONCRETE COVER EXCEPT WHERE NOTED OTHERWISE.

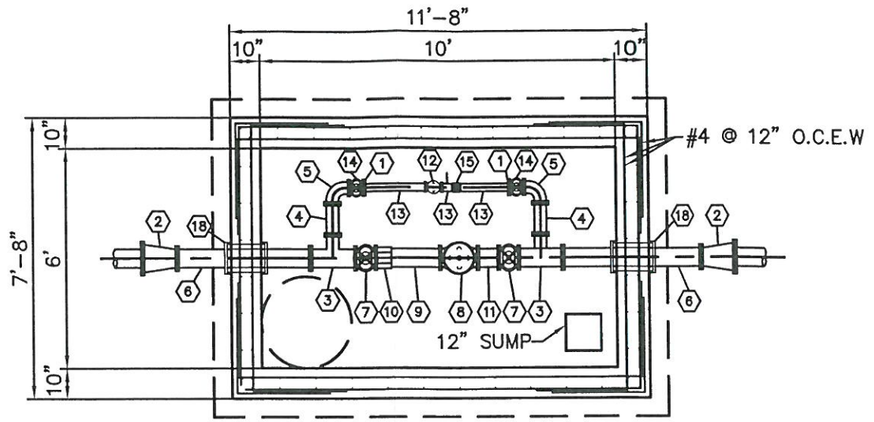
3. ALL CAST–IN–PLACE CONCRETE SHALL BE CLASS AA(AE) EXCEPT WHERE SPECIFIED OTHERWISE.

PLAN NO. 573 SP

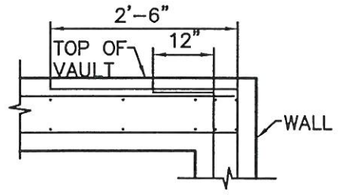
MARK	QTY	DESCRIPTION
①	2	4"x 2.5" BLIND FLANGE W/THREADED CONNECTION
②	1	8"x 6" FLG. REDUCER
③	2	6"x 4" FLG. REDUCING TEE
④	2	4" FLG. DIP SPOOL
⑤	2	4" 90° FLG. ELBOW
⑥	2	6" FLG. DIP SPOOL
⑦	2	6" FLG. GATE VALVE
⑧	1	6" FLG. PRESSURE REDUCING VALVE
⑨	1	6" FLG. FLG. x PE NIPPLE
⑩	1	6" FLG. x PE CAST FLANGED COUPLING ADAPTER
⑪	1	6" FLG. DIP SPOOL
⑫	1	6" FLG. PRESSURE REDUCING VALVE
⑬	3	2.5" FLG. GALVANIZED PIPE
⑭	2	4" FLG. GATE VALVE
⑮	2	2.5" FLG. GALVANIZED UNION
⑯	2	ADJUSTABLE PIPE SUPPORT
⑰	2	PRESSURE GAUGE
⑱	2	WALL THRUST RESTRAINT AND ADDITIONAL REINFORCING



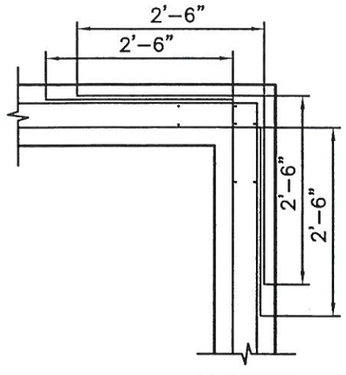
WALL PENETRATION DETAIL



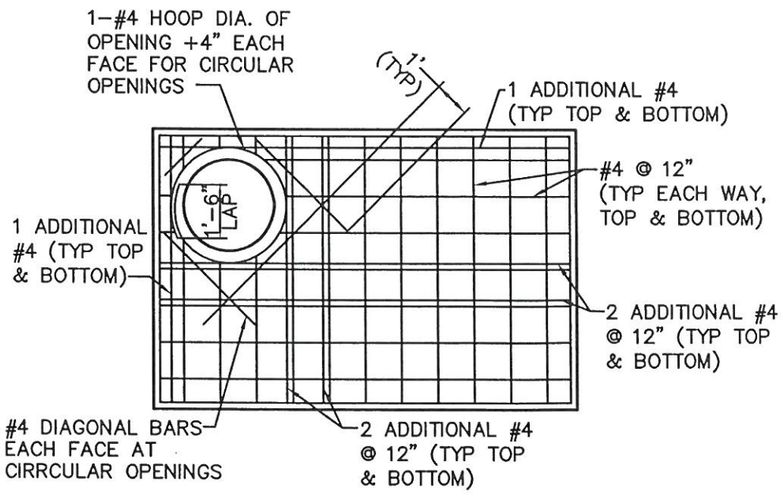
PLAN



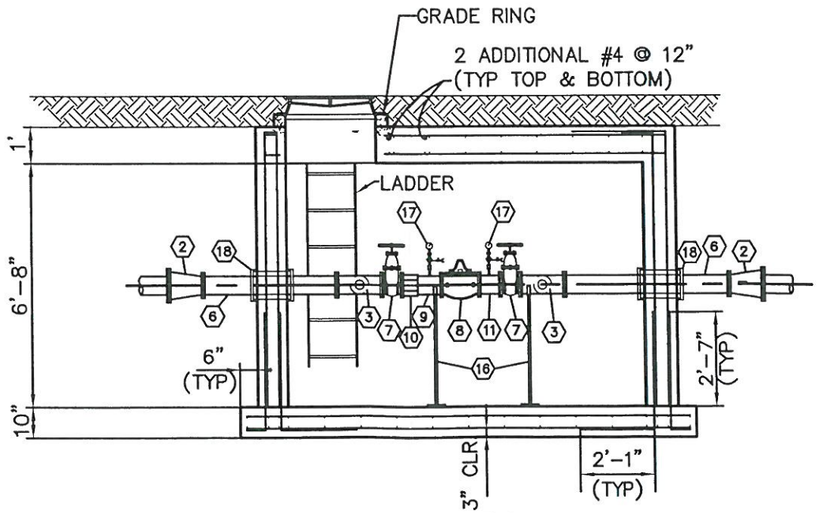
TYPICAL VERTICAL
CORNER REINFORCEMENT



TYPICAL
HORIZONTAL
CORNER
REINFORCEMENT



ROOF PLAN



ELEVATION

STANDARD PRESSURE REDUCING VALVE STATION

REVISED 02/05/08

PLAN NO. 573 SP

DRAWING 1 OF 1

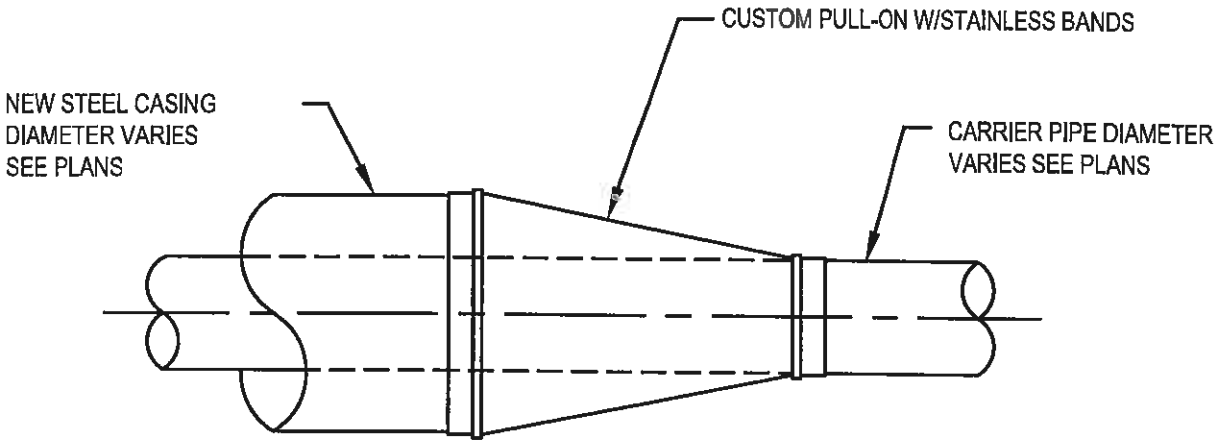
CASING DETAIL

NOTES:

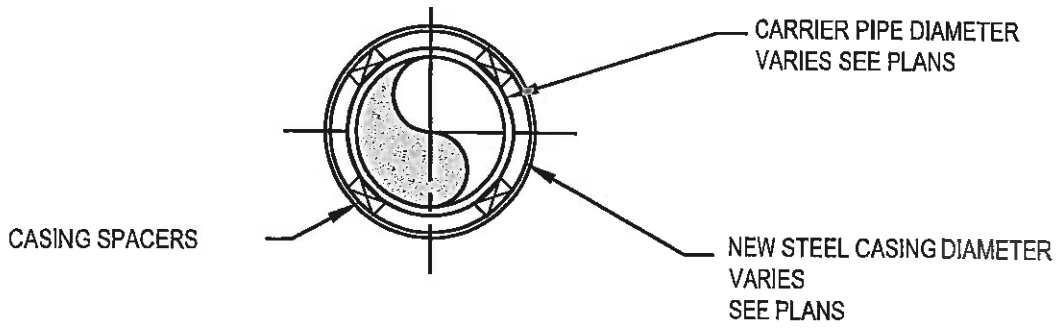
1. PLACE CASING SPACERS PER MANUFACTURES RECOMMENDATIONS.

2. CARRIER PIPE IS TO BE APPROVED BY THE WATER DEVELOPMENT.

PLAN NO. *576 SP*



CASING END SEAL



CASING SECTION

CASING DETAIL

PLAN NO. 576 SP

DRAWING 1 OF 1

REVISED 02/05/08

ROCK RETAINING WALL

NOTES:

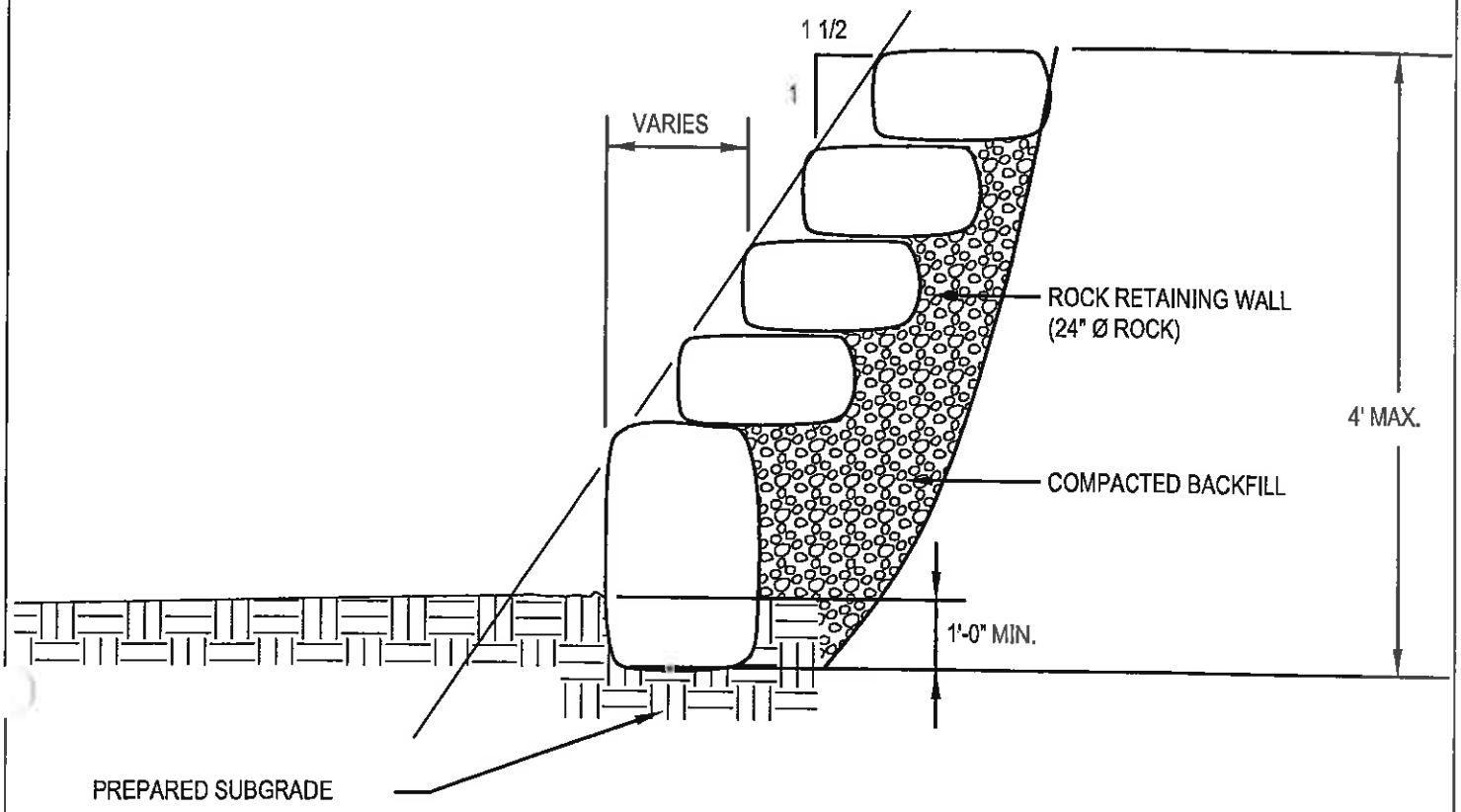
1. ROCK RETAINING WALLS NOT MEETING THIS STANDARD WILL REQUIRE A GEOTECHNICAL ENGINEERED DESIGN.

2. BACKFILL: LIMIT MAXIMUM PARTICLE SIZE OF BACKFILL MATERIAL TO 6 INCHES. PLACE BACKFILL PER APWA SECTION
31 23 23. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95% OR GREATER. MAXIMUM LIFT THICKNESS IS 8 INCHES BEFORE COMPACTION. DO NOT USE CLAY WITHOUT ENGINEERS REVIEW AND ACCEPTANCE.

3. LANDSCAPE RESTORATION: PROVIDE LANDSCAPED SURFACES WITH TOPSOIL. RAKE TO MATCH EXISTING GRADE. REPLACE VEGETATION TO MATCH PRECONSTRUCTION CONDITIONS. SEE APWA SECTION 32 92 00 OR 32 93 13 REQUIREMENTS.

4. MUST MEET BUILDING CODE STANDARDS FOUND IN IBC.

PLAN NO. *640 SP*



ROCK RETAINING WALL

PLAN NO. 640 SP

REVISED 02/05/08

DRAWING 1 OF 1

SILT FENCE- FOR CHANNEL EROSION

NOTES:

1. DETAIL PROVIDED COURTSEY OF USDA, NATURAL RESOURCES CONSERVATION SERVICE.

2. WOVEN WIRE AND WIRE NETTING FENCING SHALL CONFORM TO THE REQUIREMENTS OF ASTM STANDARD A116 FOR RHW SPECIFIED TYPES AND STYLES OF FENCING. WOVEN WIRE SHALL HAVE ZINC COATING OF AT LEAST 0.6 OUNCE PER SQUARE FOOT OF WIRE 2,0-SURFACE UNLESS OTHERWISE SPECIFIED.

3. STAYS AND FASTENERS SHALL CONFORM TO THE REQUIREMENTS OF ASAE STANDARD EP250.2 UNLESS OTHERWISE SPECIFIED.

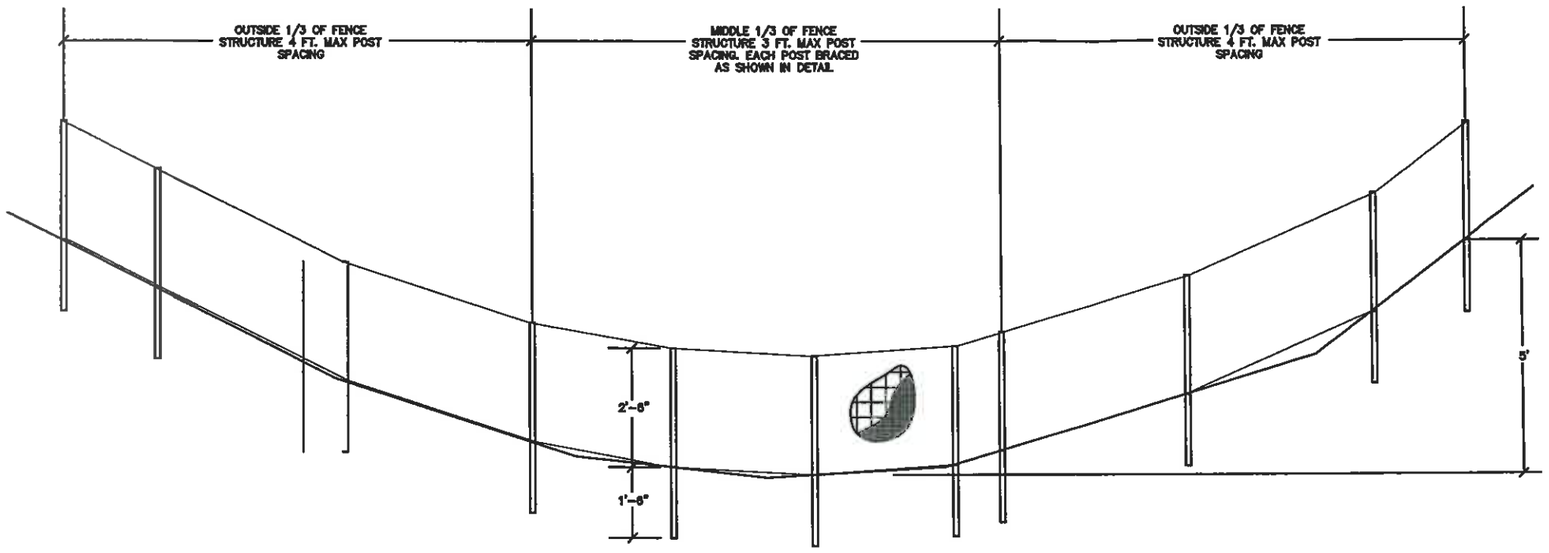
4. TENSION WIRES SHALL HAVE A TENSILE STRENGTH NOT LESS THAN 58,000 POUNDS PER SQUARE INCH. STAYS, FASTENERS, AND TENSION WIRES SHALL HAVE CLASS 3 COATING AS SPECIFIED IN ASTM SPECIFICATION A641.

5. STEEL FENCE POSTS AND BRACES SHALL CONFORM TO THE REQUIREMENTS OF ASTM STANDARD A702.

6. GEOTEXTILE SILT FENCE FABRIC SHALL MEET THE REQUIREMENTS OF ASTM STANDARD D6461.

7. THIS SILT FENCE DETAIL WAS SPECIFICALLY CREATED TO BE USED IN CHANNELS. IT IS MORE HEAVILY REINFORCED THAN WHAT IS TYPICALLY NEEDED FOR MOST USES OF SILT FENCES.

PLAN NO. *650 SP*

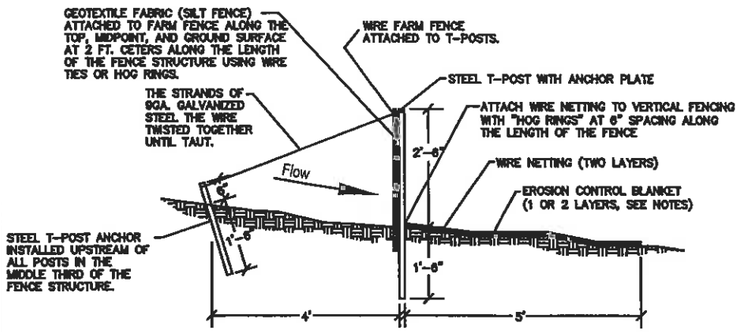


Wire Fence Structure

Typical Channel Cross Section

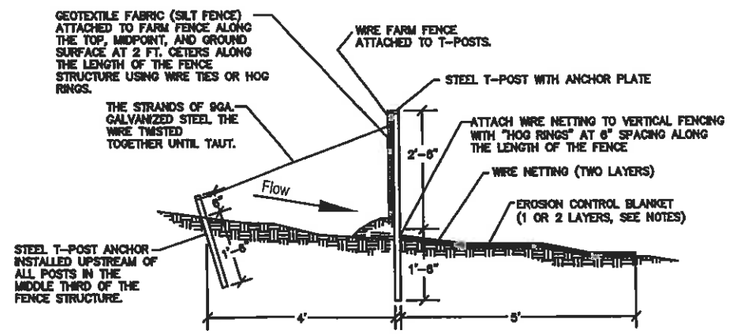
Construction Notes

1. STEEL POSTS SHALL BE DRIVEN SO THAT THE ANCHOR PLATES ARE BELOW GROUND AND TO THE DEPTH SPECIFIED. POSTS SHALL BE TRIMMED TO THE HEIGHT SHOWN ON THE DRAWINGS OR MAY BE DRIVEN DEEPER THAN SHOWN SUCH THAT THE REQUIRED HEIGHT IS MET.
2. THE GEOTEXTILE SILT FENCE SHALL BE TIED TO THE FARM FENCE AT THE TOP, MIDPOINT, AND BOTTOM OF THE FENCE AT 2 FOOT CENTERS ALONG THE LENGTH OF THE FENCE STRUCTURE.
3. THE WIRE NETTING AND EROSION CONTROL BLANKET APRON TO THE STRUCTURE SHALL BE ATTACHED TO THE VERTICAL FENCE USING HOG RINGS AT 6" CENTERS ALONG THE LENGTH OF THE THE FENCE, AND ANCHORED TO THE GROUND USING ⅜" DIAMETER, 9 INCH LONG STAPLES AT 4 FOOT CENTERS. HOOKS MADE FROM #3 REBAR MAY BE SUBSTITUTED FOR THE STAPLES.
4. SPLICES IN THE EROSION CONTROL BLANKET SHALL HAVE A MINIMUM OVERLAP OF 6 INCHES.
5. THE EROSION CONTROL BLANKET USED IN THE APRON SHALL CONSIST OF 2 LAYERS OF THE C-125 BLANKET OT A SINGLE LAYER OF THE P-300 BLANKET.



Typical Cross-Section

(Middle 1/3 braced, outside 2/3's unbraced)



Alternate Typical Cross-Section

(Middle 1/3 braced, outside 2/3's unbraced)

Material Notes

1. EROSION CONTROL BLANKET:
   NORTH AMERICAN GREEN PRODUCT
   C-125 COCONUT FIBER BLANKET OR
   P-300 NYLON BLANKET, OR EQUIVENLENT.
2. T-SECTION POST, 5FEET LONG SHALL BE USED.
3. FENCING SHALL BE GALVANIZED STEEL MEETING THE REQUIRMENTS OF ASTM A116. VERTICAL FENCING SHALL BE WOVEN WIRE, DESIGN NUMBER 939-6-12.5(FARM FENCE) WITH A MAXIMUM OF 9 LINE WIRES AND 39" IN HEIGHT. THE MAXIMUM SPACING OF STAY WIRES IS 6". INTERMEDIATE LINE WIRES AND STAY WIRES SHALL BE 12.5 GAUGE OR HEAVIER.
4. WIRE NETTING SHALL BE GALVANIZED STEEL MESH. THE WIRE SHALL BE 20 GA. OR HEAVIER. THE MAXIMUM OPENING SHALL BE 1.5 INCHES.
5. THE GEOTEXTILE FABRIC (SILT FENCE) SHALL CONFORM TO ASTM D6461.

SILT FENCE- FOR CHANNEL EROSION

PLAN NO. 650 SP

DRAWING 1 OF 1

REVISED 02/05/08

MID-BLOCK CROSSWALKS

NOTES:

MARKED CROSSWALKS MAY BE USED BASED ON ENGINEERING JUDGEMENT TO DELINEATE PREFERRED PEDESTRIAN PATHS ACROSS ROADWAYS UNDER THE FOLLOWING CONDITIONS:

- AT LOCATIONS WITH STOP SIGNS OR TRAFFIC SIGNALS
- AT NON-SIGNALIZED STREET CROSSINGS LOCATIONS WHERE AN ENGINEERING STUDY DICTATES THAT THE USE OF SPECIALLY DESIGNATED CROSSWALKS IS DESIREABLE FOR TRAFFIC/PEDESTRIAN SAFETY AND MOBILITY, THE ENGINEERING STUDY SHOULD EXAMINE THE NUMBER OF MOTOR VEHICLE LANES, PEDESTRIAN EXPOSURE, AVERAGE DAILY TRAFFIC, POSTED SPEED LIMIT, AND GEOMETRY OF THE LOCATION.
- AT APPROVED SCHOOL CROSSINGS OR FOR CROSSINGS ON RECOMMENDED SCHOOL ROUTES.

CROSSWALKS MARKINGS SHOULD NOT BE USED AT ALL INTERSECTIONS. SIGNING AND PAVEMENT MARKINGS SHOULD MEET MUTCH REQUIREMENTS WHERE APPLICABLE.

THE CITY ENGINEER IS HEREBY AUTHORIZED TO DESIGNATE AND MAINTAIN BY APPROPRIATE DEVICES, MARKS OR LINES UPON THE SURFACE OF THE ROADWAY, CROSSWALKS WHERE IN HIS OR HER OPINION THERE IS A PARTICULAR DANGER TO PEDESTRIANS CROSSING THE ROADWAY, AND AT SUCH OTHER PLACES AS HE OR SHE MAY DEEM NECESSARY.

THE FOLLOWING ARE GUIDELINES TO BE USED WHEN EVALUATING FOR A MID-BLOCK ROAD CROSSWALK:

TRAFFIC VOLUME: tRAFFIC VOLUMES FOR A TWO-LANE ROADWAY SHOULD NOT BE GREATER THAN 10,000VPD.

SPEED: UNCONTROLLED MID-BLOCK CROSSWALKS SHOULD NOT BE CONSIDERED WHERE THE 85TH PERCENTILE SPEED IS GREATER THAN 40MPH.

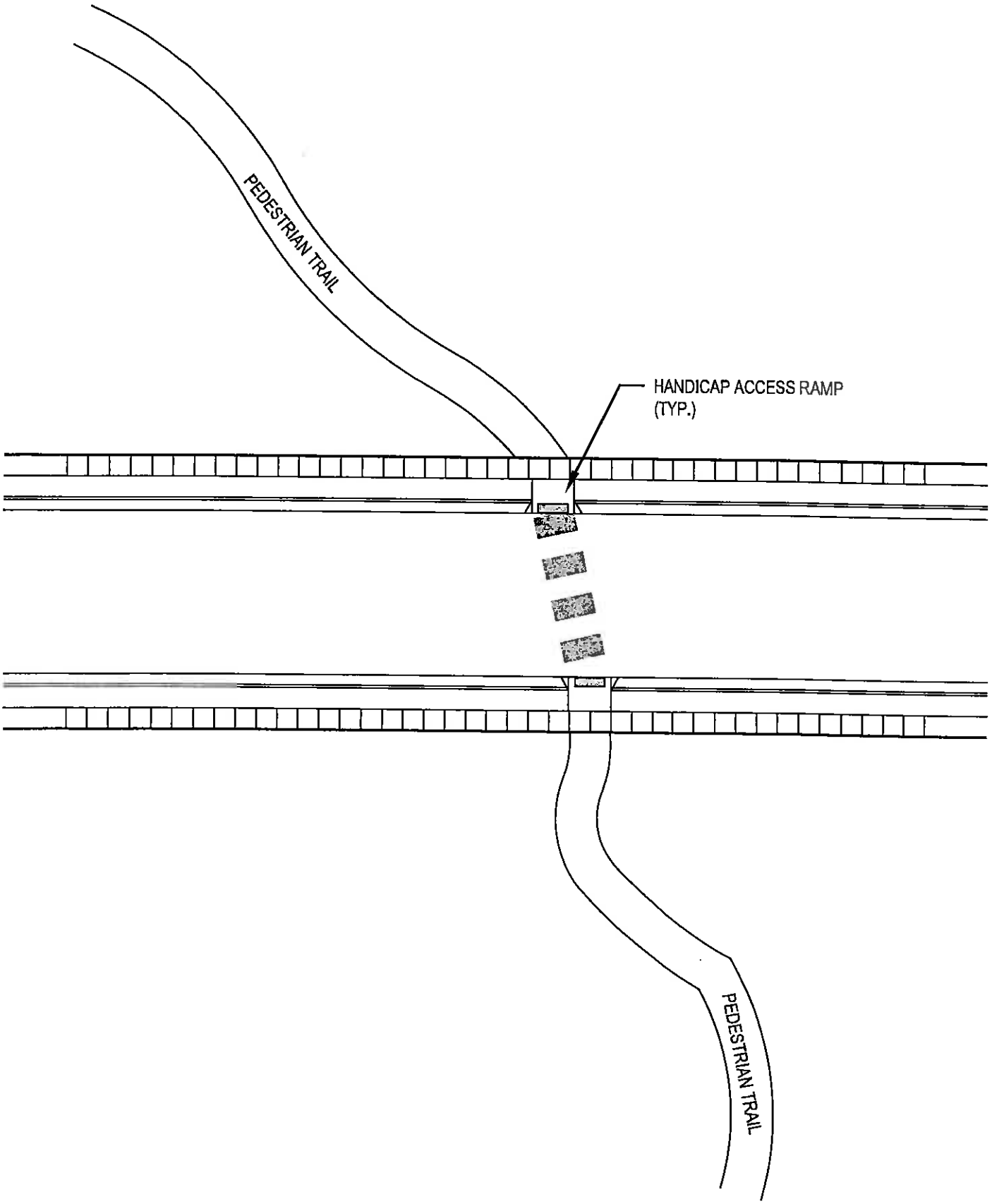
PEDESTRIAN VOLUME: THE PEDESTRIAN VOLUME SHOULD SERVE 10 PEDESTRIANS PER PEAK HOUR, 5 ELDERLY AND/OR CHILDREN PER PEAK HOUR, OR 20 PEDESTRIANS TOTAL FOR THE HIGHERST CONSECUTIVE 4-HOUR PERIOD. SPECIAL CONSIDERATION SHOULD BE GIVEN IF THE CROSSING IS ON A DIRECT ROUTE TO OR FROM A PEDESTRIAN GENERATOR, SUCH AS A SCHOOL, LIBRARY, HOSPITAL, SENIOR CENTER, SHOPPING CENTER, PARK, EMPLOYMENT CENTER AND TRANSIT CENTER OR SERVICE.

LOCATION: MID-BLOCKCROSSWALKS SHOULS BE LOCATED, AS MUCH AS POSSIBLE, MIDWAY BETWEEN STOP OR SIGNAL CONTROLLED INTERSECTIONS. MID BLOCK CROSSWALKS SHOULS BE LOCATED AT LEAST 150' FROM ANOTHER CROSSING LOCATION OR CONTROLLED INTERSECTION.

SIGHT DISTANCE: THE SIGHT DISTANCE IN FEET SHOULD BE GREATER THAN 10 TIMES THE SPEED LIMIT.

TREATMENT: SPECIAL TREATMENT FOR MID-BLOCK CROSSWALKS SHOULD BE CONSIDERED INCLUDING THE FOLLOWING: RAISED CROSSWALKS, CURB EXTENTIONS OR BULBOUTS, MEDIAN REFUGES, ADEQUATE NIGHTTIME LIGHTING, INSTALLING ADVANCE WARNING MARKINGS, SPECIAL SIGNS, AND ACTUATED WARNING SYSTEMS AND REMOVING ON-STREET PARKING AT CROSSWALK APPROACHES. EACH OF THESE TREATMENTS SHALL BE CONSIDERED FOR POSSIBLE IMPLEMENTATION AT ANY QUALIFYING MID-BLOCK CROSSWALK LOCATIONS. THESE TREATMENTS MAY ALSO BE USED TO ALLOW INSTALLATION OF CROSSINGS THAT DO NOT OTHERWISE MEET ALL OF THE GUIDELINES COVERED ABOVE AS REVIEWED AND RECOMMENDED BY THE CITY ENGINEER.

PLAN NO. 840 S1



MID-BLOCK CROSSWALKS

PLAN NO. *840 SP*

REVISED 02/05/08

EXAMPLE OF PLAT

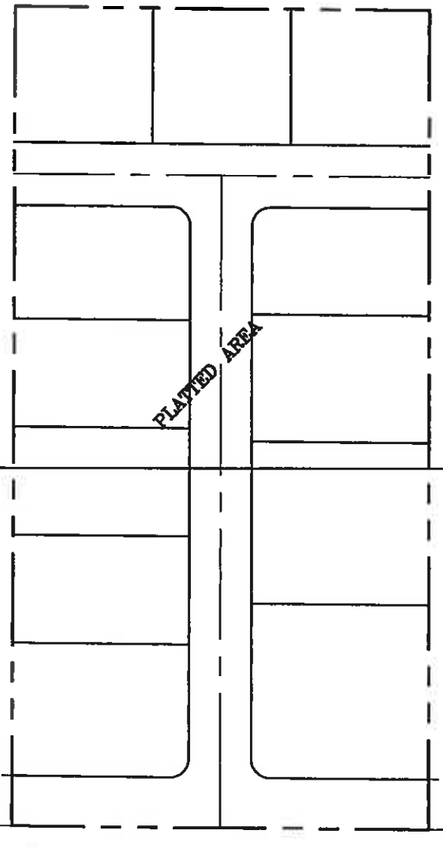
NOTES:

1. FOLLOW DAVIS COUNTY RECORDER REQUIREMENTS FOR DRAWING AND SUBMITTING A PLAT.

2. THE IRRIGATION DISTRICTS THAT SERVICE THE CITY OF FARMINGTON ARE:
   A. BENCHLAND WATER DISTRICT
   B. WEBER BASIN WATER CONSERVANCY DISTRICT

TITLE OF SUBDIVISION

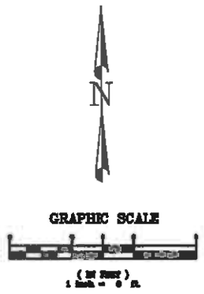
SECTION LOCATION



NOTE TO ENGINEER:
MIN. SCALE: 1" = 50'
MIN. LETTER SIZE: LEROY 100

19"

30"



SURVEYOR'S CERTIFICATE

BOUNDARY DESCRIPTION

OWNER'S DEDICATION

ACKNOWLEDGMENT

COMPANY LOGO (small)						
IRRIGATION COMPANY APPROVAL Approved this__day of _____AD, 20__ by (Irrigation company's name) By:	**SEWER DISTRICT APPROVAL** Approved this__day of _____AD, 20__ by the Central Davis Sewer District By:	**PLANNING COMMISSION APPROVAL** Approved this__day of _____AD, 20__ by the Farmington City Planning and Zoning Commission. By: Chairman	**CITY ENGINEER'S APPROVAL** Approved this__day of _____AD, 20__ by the Farmington City Engineer. By:	**CITY ATTORNEY'S APPROVAL** Approved this__day of _____AD, 20__ by the Farmington City Attorney. By:	**CITY COUNCIL APPROVAL** Approved this__day of _____AD, 20__ by the Farmington City. Farmington City Recorder _____ Mayor _____	**RECORDED #** _____ State of Utah, County of Davis, Recorded and filed at the request of _____ Date____ Time____ Book____ Page____ Fee $_____ County Recorder By: Deputy County Recorder_____

EXAMPLE OF PLAT

REVISED 02/05/08

PLAN NO. 850 SP

DRAWING 1 OF 1

EXAMPLE DETAILED GRADING AND DRAINAGE PLAN

NOTES:

1. PROVIDE A DETAILED GRADING AND DRAINAGE PLAN THAT IS LOT SPECIFIC. INCLUDE THINGS SUCH AS BERMS, SWALES, DRAINAGE ARROWS, STORM DRAIN PIPING, EXISTING AND PROPOSED GRADING, FINISH FLOOR ELEVATIONS, DETENTION OR RETENTION BASINS, ETC.

2. WATER IS NOT ALLOWED TO CROSS OTHERS PROPERTY WITHOUT A DRAINAGE EASEMENT.

3. FINISH FLOOR ELEVATIONS ARE TO BE GIVEN RELATIVE TO THE TOP BACK OF CURB ELEVATIONS ALLOWING FOR 6" OF EXPOSED FOUNDATION, A 6" DROP IN THE FIRST 10' AND A 2% SLOPE TO THE AREA WHICH IT IS DRAINING. SHOW ALL ELEVATIONS AT LOT CORNERS.

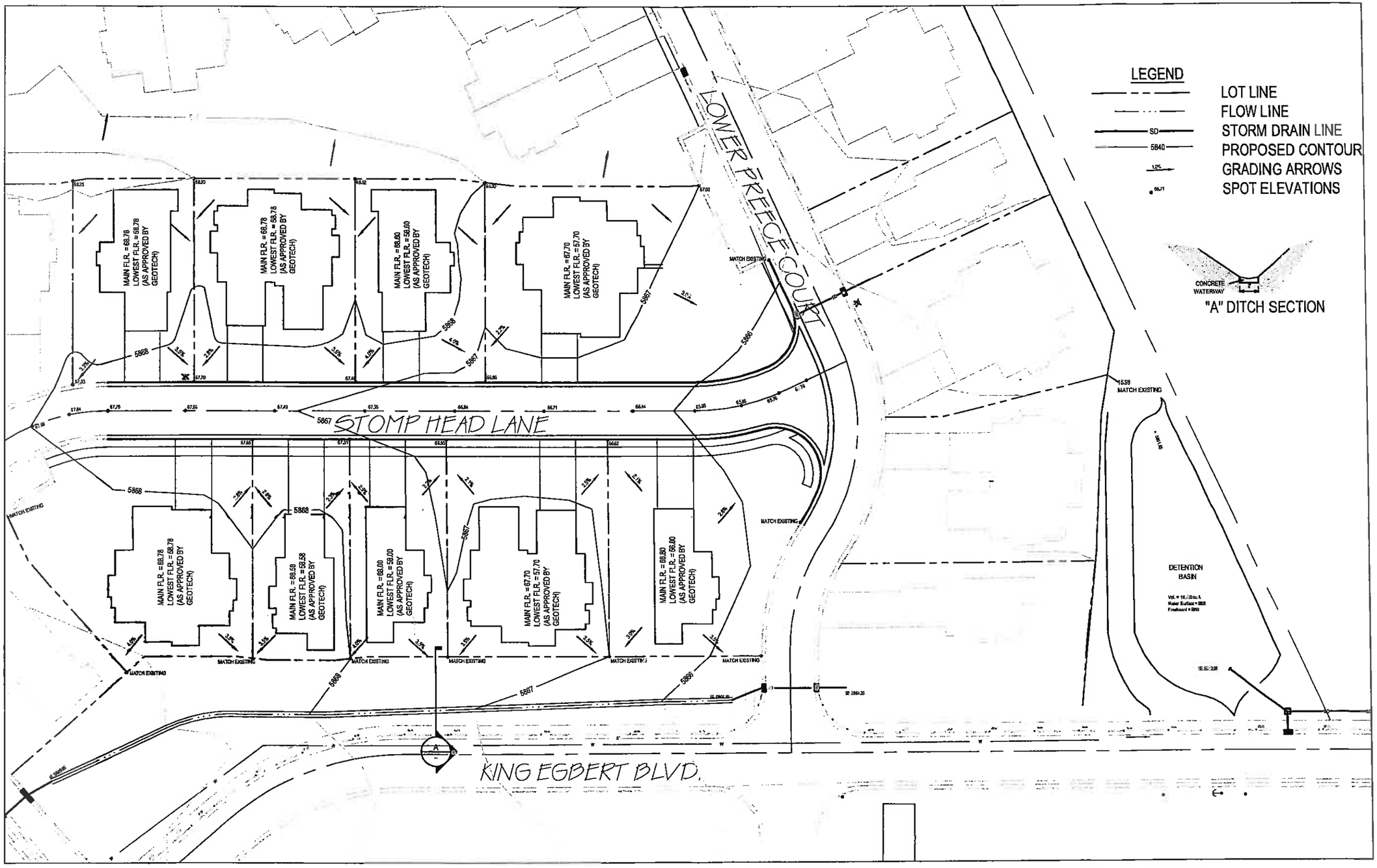
4. SUBDIVISION SHALL BE GRADED TO THE APPROVED GRADING PLAN PRIOR TO ACCEPTANCE BY THE CITY AND BEFORE ANY PERMITS ARE ISSUED.

5. DEVELOPER SHALL PROVIDE AN AS-BUILT SURVEY TO THE CITY AT THE COMPLETION OF GRADING CERTIFYING ELEVATIONS.

6. ELEVATIONS AT ADJOINING PROPERTIES ARE TO MATCH EXISTING GRADE OR PROVIDE THE NECESSARY SLOPE EASEMENTS.

7. THE DEVELOPER SHALL PROVIDE FOR THE NATURAL DRAINAGE.

PLAN NO. *851 SI*



EXAMPLE DETAILED GRADING AND DRAINAGE PLAN

PLAN NO. 851 SP

DRAWING 1 OF 1

REVISED 07/19/11

EXAMPLE PLAN AND PROFILE

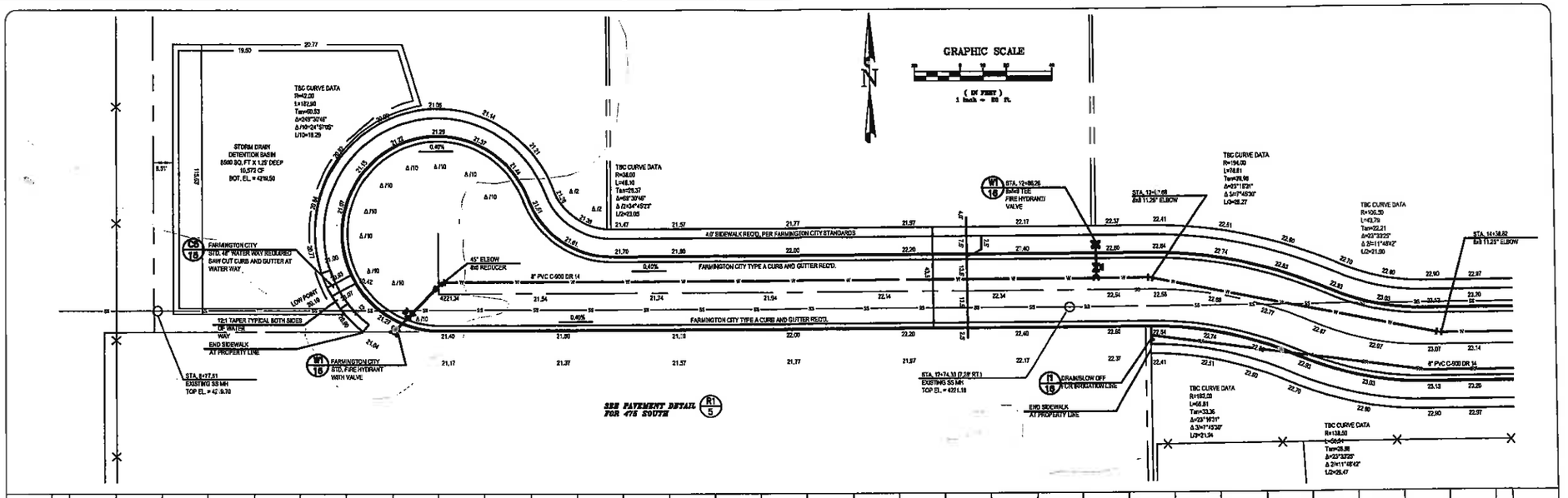
NOTES:

1. DRAWINGS ARE TO CONFORM TO FARMINGTON CITY STANDARDS AND SPECIFICATIONS.

2. ALL GRAVITY FLOW LINES ARE TO BE SHOWN IN PROFILE

3. FINISH GRADE ELEVATION SHOULD BE PROVIDED AT 50' INTERVALS FOR TBC AND CENTERLINE ON ROAD STRAIGHT-AWAYS AND @ 25' INTERVALS ALONG CURVES

PLAN NO. 852 St



REVISIONS			
REVISIONS	BY	DATE	DESCRIPTION

PRINCIPAL: Paul Hirst
PROJECT MANAGER: Doug Cramer
CHECKED: Tanney North
DRAWN BY: Bryce Curtis
SCALE: 1" = 20'
DATE ISSUED: Aug. 25, 2003

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Farmington City Utah

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2
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EXAMPLE PLAN AND PROFILE

PLAN NO. 852 SP
DRAWING 1 OF 1

REVISED 02/05/08

- **SPECIAL PROVISIONS – FARMINGTON CITY STORMWATER BMPs (These standards are supplemental to the best management practices (BMPs) outlined in the Farmington City Stormwater Management Plan. Only those details as indicated below have been included in this document. Refer to the Stormwater Management Plan document for additional information.)**

CONSTRUCTION SITE STORMWATER RUNOFF CONTROL

MINIMIZE CLEARING
901 Land Grading
902 Permanent Diversions
903 Preservation of Natural Vegetation (included)

STABILIZE EXPOSED SOILS
904 Chemical Stabilization (included)
905 Mulching (included)
906 Permanent Seeding (included)
907 Sodding
908 Soil Roughening (included)

PERIMETER CONTROLS
909 Temporary Diversion Dikes, Earth Dikes, & Interceptor Dikes (included)
910 Erosion control Devices (Silt Fence / Straw Bales) (included)
911 Aggressive Street Sweeping for Contractors (included)

PHASE CONSTRUCTION
912 Construction sequencing
913 Dust Control (included)

INSTALL SEDIMENT TRAPPING DEVICES
914 Sediment Basins and Rock Dams (included)
915 Sediment Filters and Sediment Chambers
916 Sediment Trap (included)

INLET PROTECTION
917 Stabilized Construction Entrances (included)
918 Storm Drain Inlet Protection (included)

EDUCATION AND AWARENESS
919 Contractor Certification & Inspector Training

PROTECT STEEP SLOPES
920 Geotextiles (included)
921 Soil Retention
922 Temporary Slope Drain (included)
923 Temporary storm drain diversion

STABILIZE DRAINAGE WAYS
924 Check Dams (included)
925 Filter Berms
926 Grass-Lined Channels
927 Riprap (included)

PROTECT WATERWAYS
928 Temporary Stream Crossings (included)
929 Vegetated Buffer

EDUCATION AND AWARENESS
930 BMP Inspection and Maintenance
931 Equipment and Vehicle Wash Down Area (included)

POST-CONSTRUCTION STORMWATER MANAGEMENT IN NEW DEVELOPMENT AND REDEVELOPMENT
RUNOFF PRETREATMENT PRACTICES
932 Catch Basins / Catch Basin Insert
933 In-Line Storage
934 Manufactured Products for Stormwater Inlets

VEGETAVIE PRACTICES
935 Stormwater Wetland (included)
936 Grassed Swales
937 Grassed Filter Strip (included)

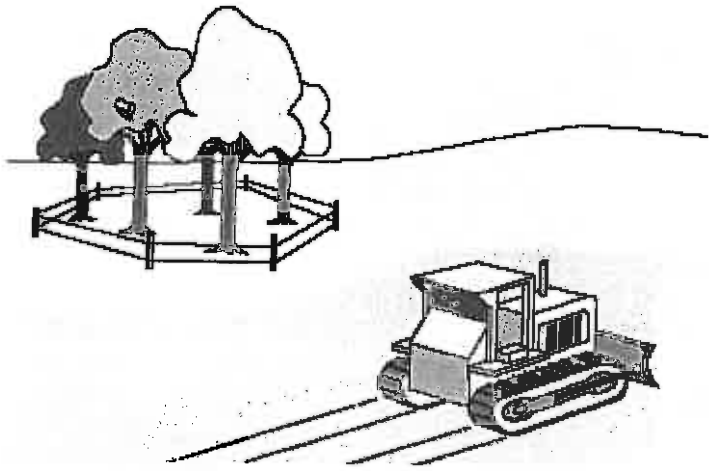
BETTER SITE DESIGN
938 Conservation Easements
939 Infrastructure Planning
940 Open Space Design
941 Narrower Residential Streets
942 Reduction of Curbs and Gutters
943 Green Parking
944 Urban Forestry
945 Alternative Pavers
946 Buffer Zones

PONDS
947 Dry Extended Detention Pond (included)
948 Wet Ponds (included)

POLLUTION PREVENTION AND GOOD HOUSEKEEPING
SOURCE CONTROLS
949 Street and Parking Lot Sweeping
950 Inlet Cleaning
951 Landscaping and Lawn Care
952 Illegal Dumping Control
953 Automobile Maintenance
954 Vehicle Washing
955 Pest Control
956 Roadway and Bridge Maintenance

MATERIALS MANAGEMENT
957 Hazardous Materials Storage (included)
958 Road Salt Application and Storage
959 Spill Response and Prevention (included)
960 Used Oil Recycling
961 Portable Toilet (included)

903 BMP: Preservation of Existing Vegetation



DESCRIPTION:
Carefully planned preservation of existing vegetation minimizes the potential of removing or injuring existing trees, vines, shrubs and/or grasses that serve as erosion controls.

APPLICATIONS:
This technique is applicable to all types of sites. Areas where preserving vegetation can be particularly beneficial are floodplains, wetlands, stream banks, steep slopes, and other areas where erosion controls would be difficult to establish, install, or maintain.

INSTALLATION/APPLICATION CRITERIA:
- Clearly mark, flag or fence vegetation or areas where vegetation should be preserved.
- Prepare landscaping plans which include as much existing vegetation as possible and state proper care during and after construction.
- Define and protect with berms, fencing, signs, etc. a setback area from vegetation to be preserved.
- Propose landscaping plans which do not include plant species that compete with the existing vegetation.
- Do not locate construction traffic routes, spoil piles, etc. where significant adverse impact on existing vegetation may occur.

LIMITATIONS:
- Requires forward planning by the owner/developer, contractor and design staff.
- For sites with diverse topography, it is often difficult and expensive to save existing trees while grading the site satisfactorily for the planned development.
- May not be cost effective with high land costs.

MAINTENANCE:
- Inspection and maintenance requirements for protection of vegetation are low.
- Maintenance of native trees or vegetation should conform to landscape plan specifications.

OBJECTIVES
- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☒ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☐ Control Internal Erosion

FARMINGTON
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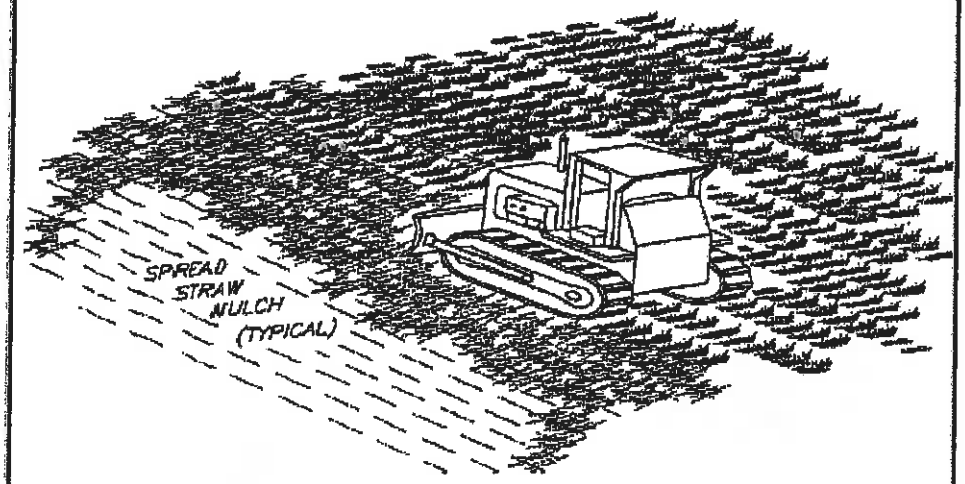
TARGETED POLLUTANTS
- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS
- ☐ Capital Costs
- ☐ O&M Costs
- ☐ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

904A BMP: Chemical Mulch



DESCRIPTION:
Applying materials such as vinyl, asphalt, plastics, or rubber on an unprotected slope to temporarily stabilize the slope.

APPLICATIONS:
- As a tacking agent to aid the stabilization of mulches (where matting is not used).
- As a short-term alternative in areas where temporary seeding practices cannot be used because of seasonal condition or climate.
- On steep and rocky slopes where neither mechanical methods or mulches and protective netting can be effectively applied.

INSTALLATION/APPLICATION CRITERIA:
- The application rates and procedures recommended by the manufacturer of a chemical stabilization product should be followed to prevent the products from forming ponds and from creating large areas where moisture cannot get through.
- For permanent application, chemical mulches (when used with seed and mulch) should be applied over wood fiber or straw mulch.

LIMITATIONS:
- Chemical mulches can create impervious surfaces and impact water quality if not properly applied.
- Some products may not be suitable for use near live streams.

MAINTENANCE:
- Inspect at regular intervals and after each runoff-producing storm event or at a minimum every two weeks.
- Replace chemical mulch as needed to ensure adequate level of coverage.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☒ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☒ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

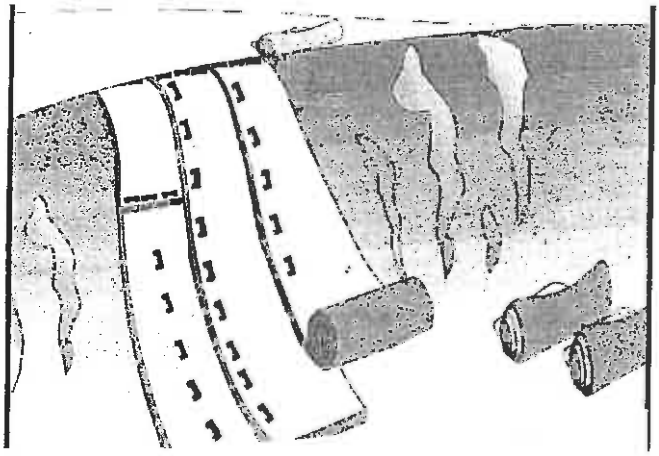
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☐ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

904B BMP: Erosion Control Blankets



DESCRIPTION:
Erosion control blankets are used on areas of high velocity runoff and/or steep grade, to aid in controlling erosion on critical areas by protecting young vegetation.

APPLICATION:
- Where vegetation is likely to grow too slowly to provide adequate stabilization.
- In areas subject to high winds where mulch would not be effective.

INSTALLATION/APPLICATION CRITERIA:
- Install erosion control blankets parallel to the direction of the slope.
- In ditches, apply in direction of the flow.
- Place erosion control blankets loosely on soil-do not stretch.
- Ends of blankets should be buried no less than six inches deep.
- Staple the edges of the blanket at least every three feet - per manufacturers' specifications

LIMITATIONS:
- Not recommended in areas which are still under construction.

MAINTENANCE:
- Check for erosion and undermining periodically, particulary after rainstorms.
- Repair dislocations or failures immediately.
- If washouts occur, reinstall after repairing slope damage.
- Monitor until permanently stabilized.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☒ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

905A BMP: Mulching

DESCRIPTION:
Placement of material such as straw, grass, woodchips, woodfibers or fabricated matting over open area.

APPLICATION:
- Any exposed area to remain untouched longer than 14 days and that will be exposed less than 60 days (seed areas to be exposed in excess of 60 days).
- Areas that have been seeded.
- Stockpiled soil material.

Material	Application	Depth	Comments
Gravel: Washed 1/4" to 1-1/2"	9 cy/1000 sf	3 inches	Good for traffic areas Good for short slopes
Straw: Air-dried, free of seeds and coarse material	2-3 bales /1000 sf	2 inches min.	Subject to wind blowing Tack down or keep moist
Wood Fiber Cellulose: Free from growth inhibitors; dyed green	35 lb/1000 sf	1 inch	For critical areas, double application rate; Limit to slopes < 3% and < 150 feet

INSTALLATION/APPLICATION CRITERIA:
- Roughen area to receive mulch to create depressions that mulch material can settle into.
- Apply mulch to required thickness and anchor as necessary.
- Ensure material used is weed free and does not contain any constituents that will inhibit plant growth.

LIMITATIONS:
- Anchoring may be required to prevent migration of mulch material.
- Downgradient control may be required to prevent mulch material being transported to storm water system.

MAINTENANCE:
- Inspect mulched areas after every rainfall event and at a minimum of monthly.
- Replace mulch on any bare areas and reanchor as necessary.
- Clean and replace downgradient controls as necessary

OBJECTIVES

- ■ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☒ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact
- ■ High ☒ Medium ☐ Low

905B BMP: Hydromulching

DESCRIPTION:
A combination of wood fiber mulch, processed grass, or hay or straw mulch and a tacking agent. It is made into a slurry, then applied to bare slopes or other bare areas to provide temporary stabilization.

APPLICATION:
- Small roadside slopes
- Large, relatively flat areas

INSTALLATION/APPLICATION CRITERIA:
- Legume seeds should be pellet inoculated with the appropriate bacteria.
- The seed should not remain in the hydromulcher tank for more than 30 minutes
- Wood fiber may be dyed to aid in uniform application
- Slurry should be uniformly applied until an adequate coverage is achieved
- The applicator should not be directed at one location for a long period of time; erosion will occur

LIMITATIONS:
- Will lose effectiveness after 1 year
- Can use only on physically stable slopes (at natural angle of repose, or less)

MAINTENANCE:
- Periodically inspect for damage caused by wind, water or human disturbance
- Promptly repair damaged areas

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

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TARGETED POLLUTANTS

- ☒ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ■ Floatable Materials
- ☐ Other Waste

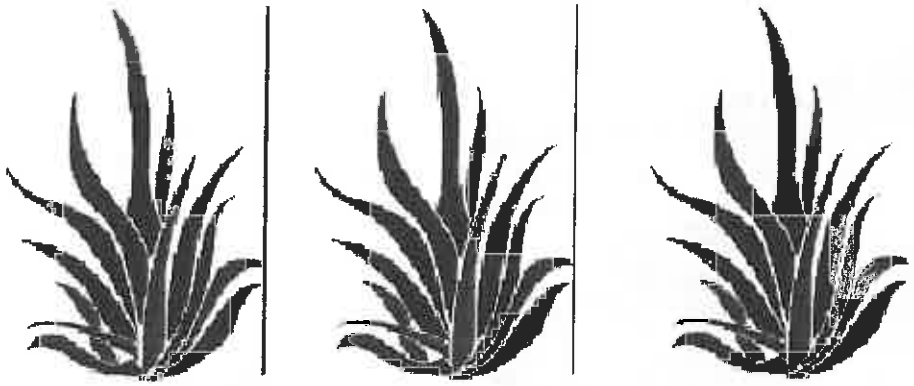
- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☒ Training

■ High ☒ Medium ☐ Low

906 BMP: Temporary and Permanent Seeding



OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

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DEFINITION:

Temporary seeding - establishment of short term cover by application of rapidly germinating seed mix (alternatively hydroseeding may be utilized). Permanent seeding - establishment of final term cover by application of perennial seed mix (alternatively sod may be utilized).

APPLICATION:

Disturbed areas that are at final grade and which will not be disturbed by continuing activities on site. Also areas that are not at final grade but which will be left untouched in excess of one year.

RECOMMENDED SEED MIX:

The recommended seed mix will be dependent on site specific information such as elevation, exposure, soils, water available and topography. Check with the County Extension Service for recommended mixes for site specific conditions:

Utah State University Extension Service
28 East State Street (Room 20)
Farmington, Utah 84025
phone (801) 451-3412

LIMITATIONS:

- Limited to areas that will not be subject to traffic or high usage.
- May require irrigation and fertilizer which creates potential for impacting runoff quality.
- May only be applied during appropriate planting season, temporary cover required until that time.

INSTALLATION:

- Roughen soil to a depth of 2 inches. Add fertilizer, manure, topsoil as necessary.
- Evenly distribute seed using a commonly accepted method such as; breast seeding, drilling, hydroseeding.
- Use a seed mix appropriate for soil and location that will provide rapid germination and growth. Check with County for recommended mix and application rate.
- Cover area with mulch if required due to steep slopes or unsuitable weather conditions.

MAINTENANCE:

- Provide irrigation as required to establish growth and to maintain plant cover through duration of project.
- Reseed as necessary to provide 75% coverage
- Remediate any areas damaged by erosion or traffic.
- When 75% coverage is achieved inspect monthly for damage and remediate as necessary.

TARGETED POLLUTANTS

- ■ Sediment
- ■ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

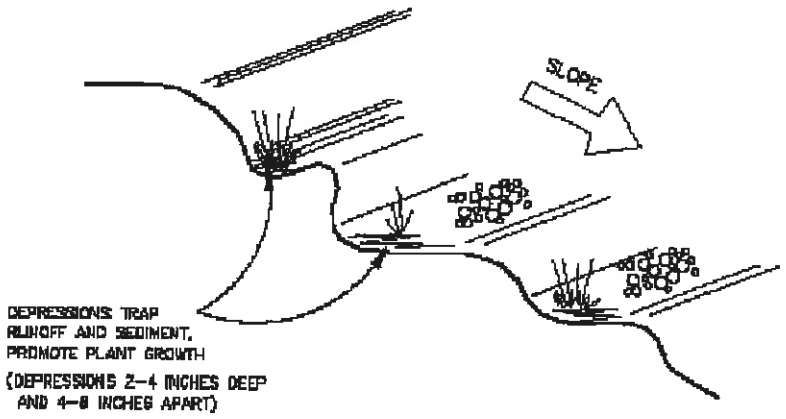
- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

908 BMP: Surface Roughening



DESCRIPTION:
Rough preparation of working areas leaving depressions and uneven surface. Depressions should be done parallel to contours.

APPLICATION:
Surface roughening is appropriate for all construction that will not be receiving impervious cover within 14 days and that will be exposed less than 60 days (seed areas to be open in excess of 60 days).

INSTALLATION/APPLICATION CRITERIA:
- Surface should be left in rough condition during initial earthwork activity.
- Surfaces that have become smoothed or compacted due to equipment traffic should be roughened by use of disks, spring harrows, teeth on front end loader, or similar, operating along the contours of the slope. Tracking (by crawler tractor driving up and down slope) may also be used to provide depressions parallel to contours.
- Avoid compaction of soils during roughening as this inhibits plant growth and promotes storm water runoff. Limit tracked machinery to sandy soil.
- Seed or mulch areas to be exposed in excess of 60 days.
- Employ dust controls. (See Dust Control Detail Sheet).

LIMITATIONS:
- Will not withstand heavy rainfall.
- Slopes steeper than 2:1 (50%) should be benched.(See Benching Detail Sheet).

MAINTENANCE:
- Inspect following any storm event and at a minimum of weekly.
- If erosion in the form of rills (small waterways formed by runoff) is evident, perform machine roughening of area.
- For vegetated slopes reseed areas that are bare or have been reworked.

OBJECTIVES
- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☒ Control Internal Erosion

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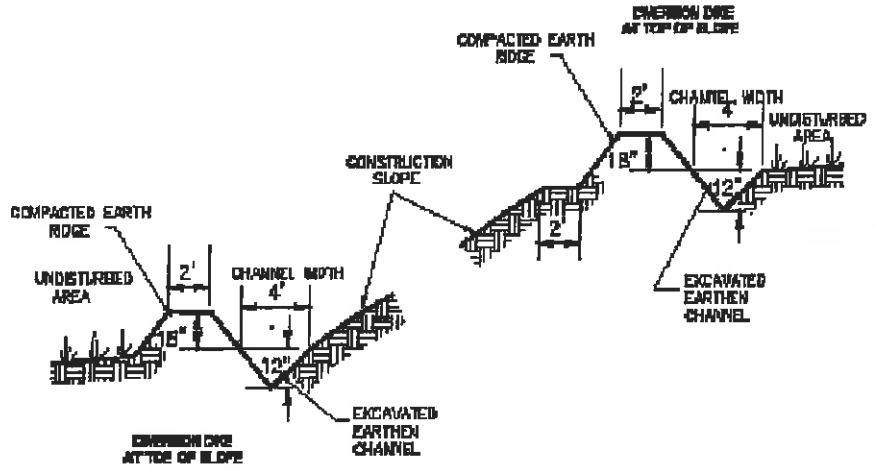
TARGETED POLLUTANTS
- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS
- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

909A BMP: Diversion Dike



DESCRIPTION:

A temporary sediment barrier and storm runoff conveyance consisting of an excavation channel and compacted earth ridge.

APPLICATION:

- Construct along top of construction slope to intercept upgradient runoff and convey around construction site.
- Construct along toe of construction to divert sediment laden runoff.
- Construct along midpoint of construction slope to intercept runoff and channel to controlled discharge point.
- Construct around base of soil stockpiles to capture sediment.
- Construct around perimeter of disturbed areas to capture sediment.

INSTALLATION/APPLICATION CRITERIA:

- Clear and grub area for dike construction.
- Excavate channel and place soil on downgradient side.
- Shape and machine compact excavated soil to form ridge.
- Place erosion protection (riprap, mulch) at outlet.
- Stabilize channel and ridge as required with mulch, gravel, or vegetative cover.

LIMITATIONS:

- Recommended maximum drainage area of 5 acres
- Recommended maximum sideslopes of 2h:1v (50%)
- Recommended maximum slope on channel of 1%

MAINTENANCE:

- Inspect immediately after any rainfall and at least daily during prolonged rainfall.
- Look for runoff breaching dike or eroding channel or sideslopes.
- Check discharge point for erosion or bypassing of flows.
- Repair and stabilize as necessary.
- Inspect daily during vehicular activity on slope, check for and repair any traffic damage.

OBJECTIVES

- ☐ Housekeeping Practices
- ☒ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

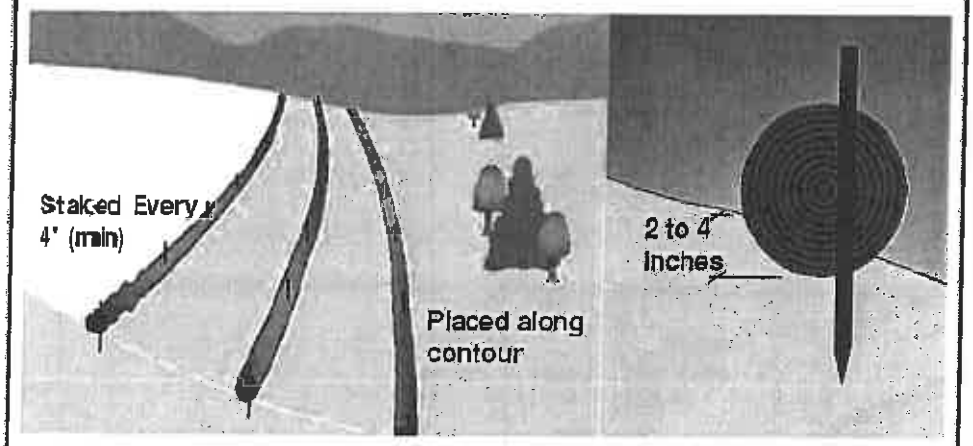
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

909B BMP: Fiber Rolls



DESCRIPTION:
Commercial products can be made from various types of fibers and shavings that are rolled up and used as sediment barriers.

APPLICATION:
- Good for sites with long slopes, generally flatter than 10:1

INSTALLATION/APPLICATION CRITERIA:
- Must be trenched into the ground 2 to 4 inches
- Must be staked every 4 feet (maximum)
- Manufacturer's instructions must be followed for installation of product

LIMITATIONS:
- Not applicable for high velocity flows
- Only use for a time period within the expected life-span of the product (check with manufacturer)

MAINTENANCE:
- Must be checked to ensure that runoff does not run under or bypass the fiber rolls
- Sediment build up must also be checked and excess sediment must be removed

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☐ Control Internal Erosion

FARMINGTON
HISTORIC BEGINNINGS • 1847

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

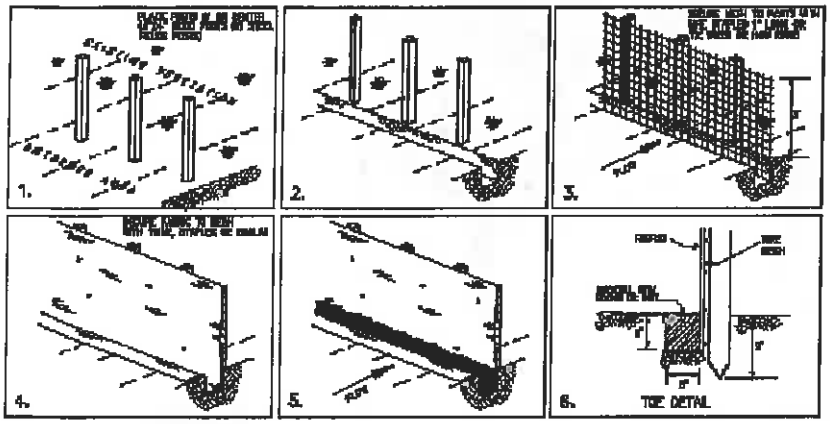
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☐ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

910A BMP: Silt Fence



DESCRIPTION:
A temporary sediment barrier consisting of entrenched filter fabric stretched across and secured to supporting posts.

APPLICATION:
- Perimeter control: place barrier at downgradient limits of disturbance
- Sediment barrier: place barrier at toe of slope or soil stockpile
- Protection of existing waterways: place barrier at top of stream bank
- Inlet protection: place fence surrounding catchbasins

INSTALLATION/APPLICATION CRITERIA:
- Place posts 6 feet apart on center along contour (or use preassembled unit) and drive 2 feet minimum into ground. Excavate an anchor trench immediately upgradient of posts.
- Secure wire mesh (14 gage min. With 6 inch openings) to upslope side of posts.
- Attach with heavy duty 1 inch long wire staples, tie wires or hog rings.
- Cut fabric to required width, unroll along length of barrier and drape over barrier. Secure fabric to mesh with twine, staples, or similar, with trailing edge extending into anchor trench.
- Backfill trench over filter fabric to anchor.

LIMITATIONS:
- Recommended maximum drainage area of 0.5 acre per 100 feet of fence
- Recommended maximum upgradient slope length of 150 feet
- Recommended maximum uphill grade of 2:1 (50%)
- Recommended maximum flow rate of 0.5 cfs
- Ponding should not be allowed behind fence

MAINTENANCE:
- Inspect immediately after any rainfall and at least daily during prolonged rainfall.
- Look for runoff bypassing ends of barriers or undercutting barriers.
- Repair or replace damaged areas of the barrier and remove accumulated sediment.
- Reanchor fence as necessary to prevent shortcutting.
- Remove accumulated sediment when it reaches ½ the height of the fence.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

FARMINGTON
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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

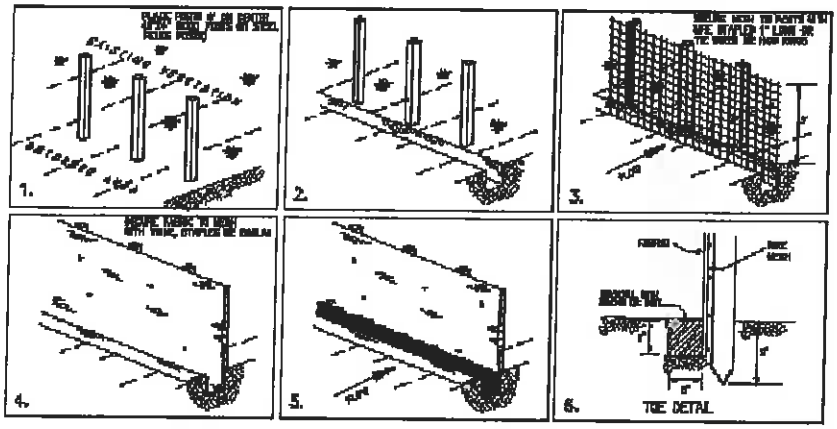
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact
■ High ☒ Medium ☐ Low

910B BMP: Silt Fence without Wire Mesh



DESCRIPTION:
A temporary sediment barrier consisting of entrenched filter fabric stretched across and secured to supporting posts.

APPLICATION:
- Perimeter control: place barrier at down gradient limits of disturbance
- Sediment barrier: place barrier at toe of slope or soil stockpile
- Protection of existing waterways: place barrier at top of stream bank
- Inlet protection: place fence surrounding catch basins

INSTALLATION/APPLICATION CRITERIA:
- Place posts 6 feet apart on center along contour (or use preassembled unit) and drive 2 feet minimum into ground. Excavate an anchor trench immediately up gradient of posts.
- Cut fabric to required width, unroll along length of barrier and drape over barrier. Secure fabric to mesh with twine, staples, or similar, with trailing edge extending into anchor trench.
- Backfill trench over filter fabric to anchor.
- Fabric must have 85% minimum sediment removal efficiency

LIMITATIONS:
- Recommended maximum drainage area of 0.5 acre per 100 feet of fence
- Recommended maximum upgradient slope length of 150 feet
- Recommended maximum uphill grade of 2:1 (50%)
- Recommended maximum flow rate of 0.5 cfs
- Ponding should not be allowed behind fence

MAINTENANCE:
- Inspect immediately after any rainfall and at least daily during prolonged rainfall.
- Look for runoff bypassing ends of barriers or undercutting barriers.
- Repair or replace damaged areas of the barrier and remove accumulated sediment.
- Reanchor fence as necessary to prevent shortcutting.
- Remove accumulated sediment when it reaches ½ the height of the fence.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

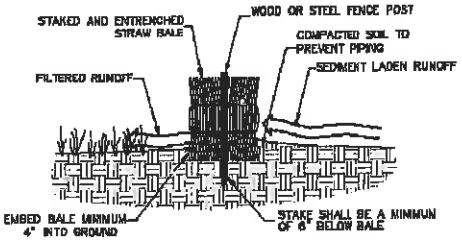
IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

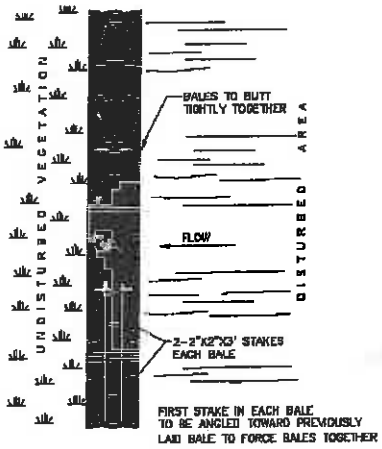
- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

■ High ☒ Medium ☐ Low

910C BMP: Straw Bale Barrier



SECTION



PLAN

DESCRIPTION:

Temporary sediment barrier consisting of a row of entrenched and anchored straw bales.

APPLICATION:

- Perimeter Control: place barrier at downgradient limits of disturbance.
- Sediment barrier: place barrier at toe of slope or soil stockpile.
- Protection of existing waterways: place barrier at top of stream bank.
- Inlet Protection.

INSTALLATION/APPLICATION CRITERIA:

- Excavate a 4-inch minimum deep trench along contour line, i.e. parallel to slope, removing all grass and other material that may allow underflow.
- Place bales in trench with ends tightly abutting, fill any gaps by wedging loose straw into openings.
- Anchor each bale with 2 stakes driven flush with the top of the bale.
- Backfill around bale and compact to prevent piping, backfill on uphill side to be built up 4-inches above ground at the barrier.

LIMITATIONS:

- Recommended maximum area of 0.5 acre per 100 feet of barrier
- Recommended maximum upgradient slope length of 150 feet
- Recommended maximum uphill grade of 2:1 (50%)

MAINTENANCE:

- Inspect immediately after any rainfall and at least daily during prolonged rainfall.
- Look for runoff bypassing ends of barriers or undercutting barriers.
- Repair or replace damaged areas of the barrier and remove accumulated sediment.
- Realign bales as necessary to provide continuous barrier and fill gaps.
- Recompact soil around barrier as necessary to prevent piping.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

911 BMP: Street Cleaning

DESCRIPTION:
Reduce the discharges of pollutants to stormwater from street surfaces by conducting street cleaning on a regular basis.

APPLICATION:
- Useful for any paved streets near construction sites where sediment is blown, tracked, or spilled onto the streets

APPROACH:
- Prioritize cleaning to use the most sophisticated sweepers, at the highest frequency, and in areas with the highest pollutant loading.
- Street cleaning should be done on a daily basis if necessary
- Restrict street parking prior to and during sweeping.
- Increase sweeping frequency just before the rainy season.
- Proper maintenance and operation of sweepers greatly increase their efficiency.
- Keep accurate operation logs to track programs.
- Reduce the number of parked vehicles using regulations.
- Sweepers effective at removing smaller particles (less than 10 microns) may generate dust that would lead to concerns over worker and public safety.
- Equipment selection can be key for this particular BMP. There are two types used, the mechanical broom sweepers (more effective at picking up large debris and cleaning wet streets), and the vacuum sweepers (more effective at removing fine particles and associated heavy metals). Many communities find it useful to have a compliment of both types in their fleet.

LIMITATIONS:
- Conventional sweepers are not able to remove oil and grease.
- Mechanical sweepers are not effective at removing finer sediments.
- Effectiveness may also be limited by street conditions, traffic congestion, presence of construction projects, climatic conditions and condition of curbs.

MAINTENANCE:
- Replace worn parts as necessary.
- Install main and gutter brooms of the appropriate weight.

PROGRAM ELEMENTS

- ☐ New Development
- ☐ Residential
- ☐ Commercial Activities
- ☐ Industrial Activities
- ☒ Municipal Facilities
- ☒ Illegal Discharges

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TARGETED POLLUTANTS

- ■ Sediment
- ■ Nutrients
- ■ Heavy Metals
- ☒ Toxic Materials
- ■ Oxygen Demanding Substances
- ☐ Oil & Grease
- ☒ Floatable Materials
- ☐ Bacteria & Viruses

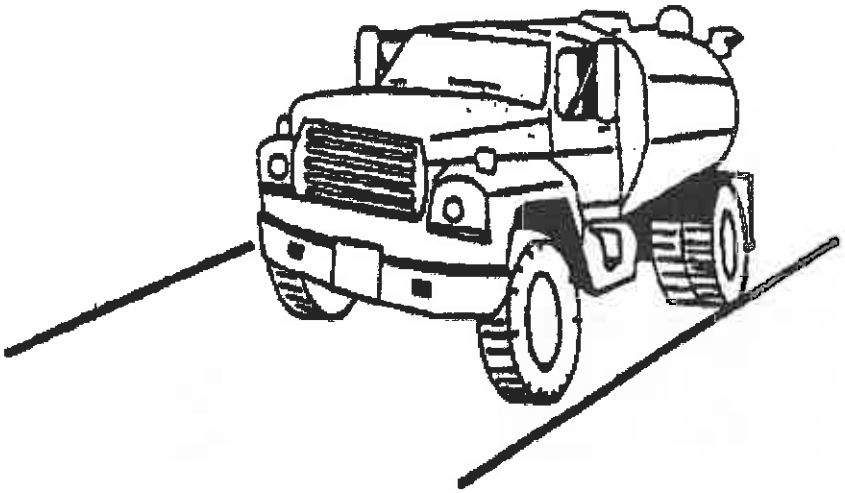
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ■ O&M Costs
- ☒ Regulatory
- ☒ Training
- ■ Staffing
- ☒ Administrative

■ High ☒ Medium ☐ Low

913 BMP: Dust Controls



OBJECTIVES

- ☒ Housekeeping Practices
- ☐ Contain Waste
- ☒ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

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DESCRIPTION:
Dust control measures are used to stabilize soil from wind erosion, and reduce dust by construction activities.

APPLICATION:
Dust control is useful in any process area, loading and unloading area, material handling areas, and transfer areas where dust is generated. Street sweeping is limited to areas that are paved.

INSTALLATION/APPLICATION CRITERIA:
- Mechanical dust collection systems are designed according to the size of dust particles and the amount of air to be processed. Manufacturers' recommendations should be followed for installation (as well as the design of the equipment).
- Two kinds of street weepers are common: brush and vacuum. Vacuum sweepers are more efficient and work best when the area is dry.
- Mechanical equipment should be operated according to the manufacturers' recommendations and should be inspected regularly.

LIMITATIONS:
- Is generally more expensive than manual systems.
- May be impossible to maintain by plant personnel (the more elaborate equipment).
- Is labor and equipment intensive and may not be effective for all pollutants (street sweepers).

MAINTENANCE:
If water sprayers are used, dust-contaminated waters should be collected and taken for treatment. Areas will probably need to be resprayed to keep dust from spreading.

TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

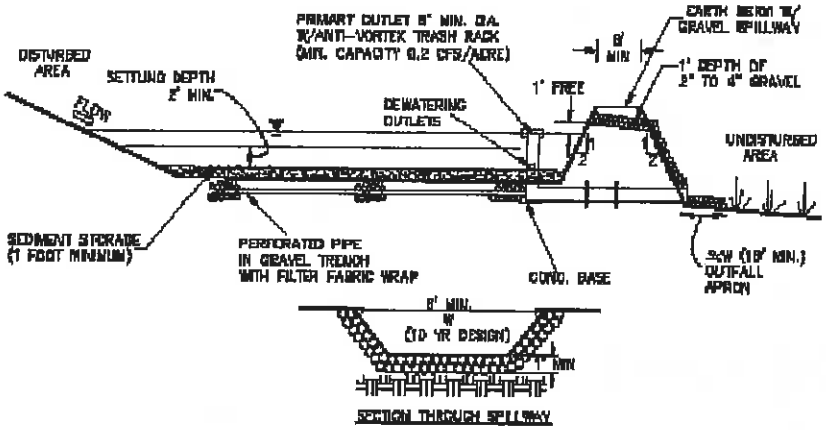
- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☒ Training

■ High ☒ Medium ☐ Low

914 BMP: Sediment Basin



DESCRIPTION:

A pond created by excavation or construction of an embankment, and designed to retain or detain runoff sufficiently to allow excessive sediment to settle.

APPLICATION:

- At the outlet of all disturbed watersheds 10 acres or larger.
- At the outlet of smaller disturbed watersheds, as necessary.
- Where post construction detention basins will be located.

INSTALLATION/APPLICATION CRITERIA:

- Design basin for site specific location, maintain effective flow length 2 times width.
- Excavate basin or construct compacted berm containment, ensure no downgradient hazard if failure should occur. (Provide minimum of 67 CY. Per acre of drainage area).
- Construct dewatering and outfall structure and emergency spillway with apron.

LIMITATIONS:

- Should be sized based on anticipated runoff, sediment loading and drainage area size.
- May require silt fence at outlet for entrapment of very fine silts and clays.
- May require safety fencing to prevent public access.
- Height restrictions for embankment regulated by Utah Division of Dam Safety.

MAINTENANCE:

- Inspect after each rainfall event and at a minimum of monthly.
- Repair any damage to berm, spillway or sidewalls.
- Remove accumulated sediment as it reaches 2/3 height of available storage.
- Check outlet for sedimentation/erosion of downgradient area and remediate as necessary. Install silt fence if sedimentation apparent.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☒ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☒ Toxic Materials
- ☐ Oil & Grease
- ☒ Floatable Materials
- ☐ Other Waste

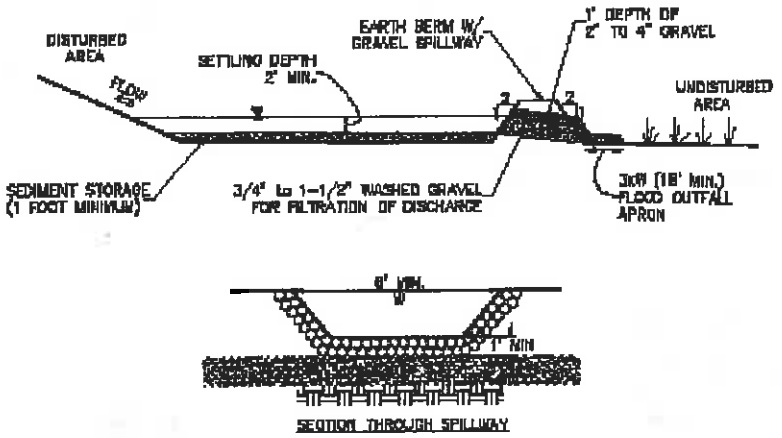
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

916A BMP: Sediment Trap



DESCRIPTION:

A sediment trap is a small excavated or bermed area where runoff from small drainage areas is detained and sediment can settle.

APPLICATION:

- Temporary control for runoff from disturbed areas of less than 3 acres.
- Temporary control for discharge from diversion dike, surface benching, or other temporary drainage measures.

INSTALLATION/APPLICATION CRITERIA:

- Design basin for site specific location.
- Excavate basin or construct compacted berm containment.
- Construct outfall spillway with apron.
- Provide downstream silt fence if necessary.

LIMITATIONS:

- Should be sized based on anticipated runoff, sediment loading and drainage area size.
- May require silt fence at outlet for entrapment of very fine silts and clays.

MAINTENANCE:

- Inspect after each rainfall event and at a minimum of monthly.
- Repair any damage to berm, spillway or sidewalls.
- Remove accumulated sediment as it reaches 2/3 height of available storage.
- Check outlet for sedimentation/erosion of downgradient area and remediate as necessary. Install silt fence if sedimentation apparent.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☒ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☒ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

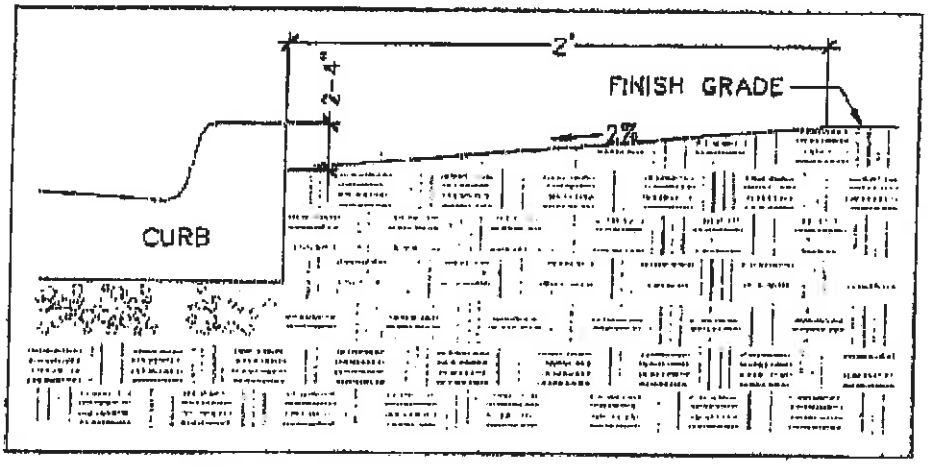
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☐ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

916B BMP: Curb Sedimentation Trap



DESCRIPTION:
A temporary sediment trap formed by excavation behind the curb

APPLICATION:
- Interception of runoff containing sediment from the lot during construction
- Retain sediment on the lot during construction

INSTALLATION/APPLICATION CRITERIA:
- Excavate soil behind curb to a depth of 2-4 inches
- Create slope of 2% from finished grade to curb for a distance of approximately 2 feet.

LIMITATIONS:
- No limitations

MAINTENANCE:
- Inspect after each rainfall event and at a minimum of monthly.
- Remove accumulated sediment as it reaches 2/3 height of available storage.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☒ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☒ Toxic Materials
- ☐ Oil & Grease
- ☒ Floatable Materials
- ☐ Other Waste

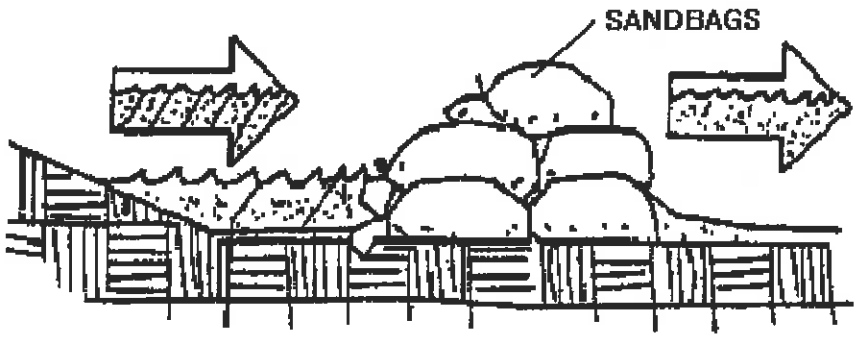
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

916C BMP: Sand Bag Barrier



DESCRIPTION:
Stacking sand bags along a level contour creates a barrier which detains sediment-laden water, ponding water upstream of the barrier and promoting sedimentation

APPLICATION:
- Along the perimeter of the site
- May be used in drainage areas up to 5 acres
- Along streams and channels
- Across swales with small catchments
- Around temporary spoil areas
- Below the toe of a cleared slope

INSTALLATION/APPLICATION CRITERIA:
- Install along a level contour
- Base of sand bag barrier should be at least 48" wide
- Height of sand bag barrier should be at least 18" high
- 4" PVC pipe may be installed between the top layer of sand bags to drain large flood flows
- Provide area behind barrier for runoff to pond and sediment to settle
- Place below the toe of a slope
- UV resistant bags should be used

LIMITATIONS:
- Sand bags are more expensive than other barriers, but also more durable
- Burlap should not be used

MAINTENANCE:
- Inspect after each rain and a minimum of once every two weeks
- Reshape or replace damaged sandbags immediately
- Remove buildup of sediment

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☒ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☒ Toxic Materials
- ☐ Oil & Grease
- ☒ Floatable Materials
- ☐ Other Waste

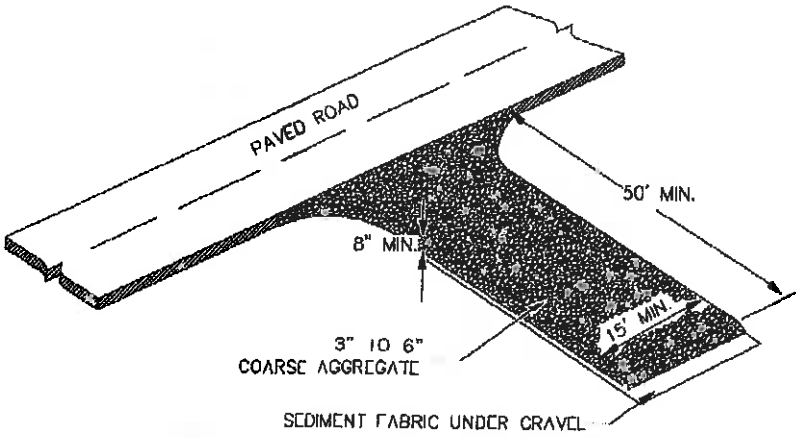
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

917 BMP: Stabilized Construction Entrance



DESCRIPTION:
A stabilized pad of crushed stone located where construction traffic enters or leaves the site from or to paved surface.

APPLICATIONS:
At any point of ingress or egress at a construction site where adjacent traveled way is paved. Generally applies to sites over 2 acres unless special conditions exist.

INSTALLATION/APPLICATION CRITERIA:
- Clear and grub area and grade to provide maximum slope of 2%.
- Compact subgrade and place filter fabric if desired (recommended for entrances to remain for more than 3 months.
- Place coarse aggregate, 3-6" **size,** to a minimum depth of 8 inches.

LIMITATIONS:
- Requires periodic top dressing with additional stones.
- Should be used in conjunction with street sweeping on adjacent public right-of-way.

MAINTENANCE:
- Inspect daily for loss of gravel or sediment buildup.
- Inspect adjacent roadway for sediment deposit and clean by sweeping or shoveling.
- Repair entrance and replace gravel as required to maintain control in good working condition.
- Expand stabilized area as required to accommodate traffic and prevent erosion at driveways

OBJECTIVES

- ☒ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☐ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

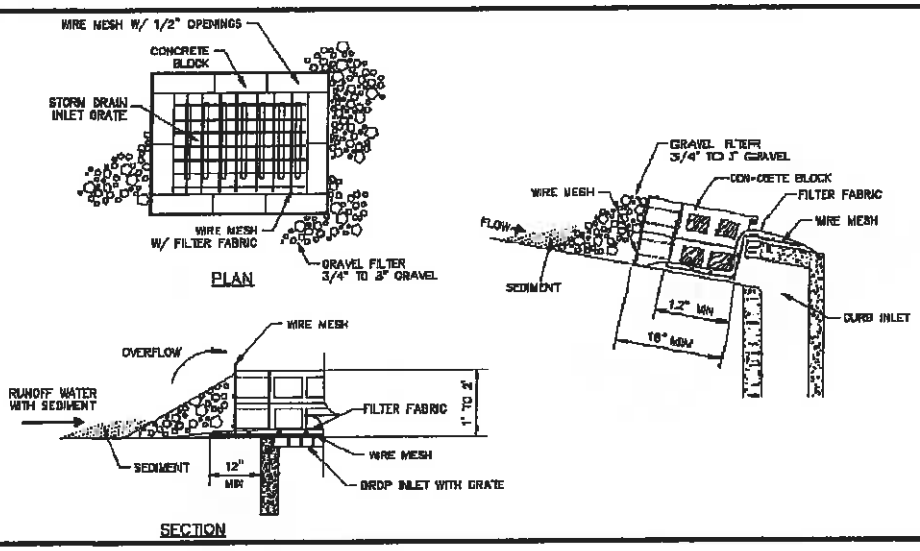
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

918A BMP: Inlet Protection - Concrete Block



DESCRIPTION:
Concrete block and gravel filter placed over inlet to storm drain system.

APPLICATION:
Construct at inlets in paved or unpaved areas where upgradient area is to be disturbed by construction activities.

INSTALLATION/APPLICATION CRITERIA:
- Place wire mesh (with ½ inch openings) over the inlet grate extending one foot past the grate in all directions.
- Place concrete blocks around the inlet with openings facing outward. Stack blocks to minimum height of 12-inches and maximum height of 24-inches.
- Place wire mesh around outside of blocks.
- Place gravel (3/4" to 3") around blocks.

LIMITATIONS:
- Recommended for maximum drainage area of one acre.
- Excess flows may bypass the inlet requiring down gradient controls.
- Ponding will occur at inlet.

MAINTENANCE:
- Inspect inlet protection after every large storm event and at a minimum of once monthly.
- Remove sediment accumulated when it reaches 4-inches in depth.
- Replace filter fabric and clean or replace gravel if clogging is apparent.

OBJECTIVES
- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

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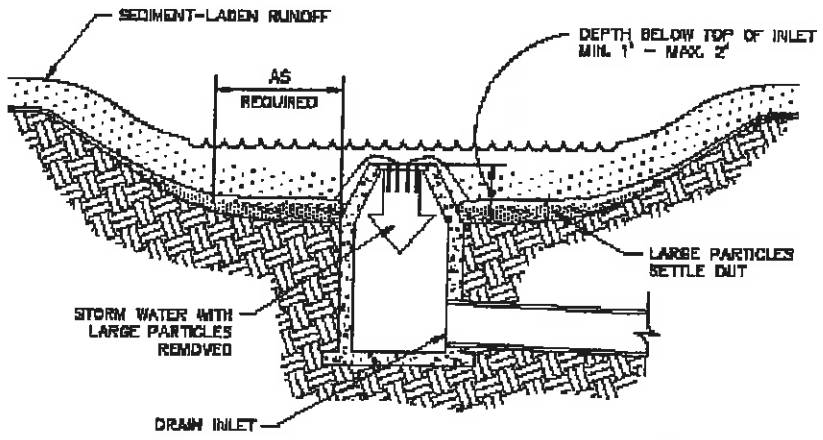
TARGETED POLLUTANTS
- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ■ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS
- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

918B BMP: Inlet Protection - Excavated



DESCRIPTION:
An area excavated around a storm drain inlet to impound water below the inlet.

APPLICATION:
Construct at storm drainage inlets located downgradient of areas to be disturbed by construction (for inlets in paved areas see other information sheets for inlet protection).

INSTALLATION/APPLICATION CRITERIA:
- Provide upgradient sediment controls, such as silt fence during construction of inlet.
- When construction of inlet is complete, excavate adjacent area 1 to 2 feet lower than the grate elevation. Size of excavated area should be based on soil type and contributing acreage.

LIMITATIONS:
- Recommended maximum contributing drainage area of one acre.
- Limited to inlets located in open unpaved areas.
- Requires flat area adjacent to inlet.

MAINTENANCE:
- Inspect inlet protection following storm event and at a minimum of once monthly.
- Remove accumulated sediment when it reaches one half of the excavated sump below the grate.
- Repair side slopes as required.

OBJECTIVES
- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

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TARGETED POLLUTANTS
- ■ Sediment
- ☐ Nutrients
- ☒ Toxic Materials
- ☐ Oil & Grease
- ■ Floatable Materials
- ☐ Other Waste

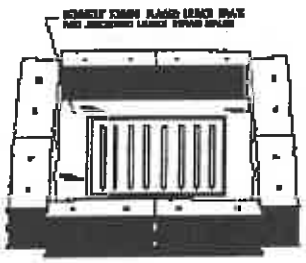
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS
- ☐ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

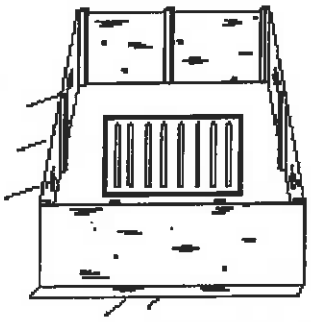
■ High ☒ Medium ☐ Low

918C BMP: Inlet Protection - Silt Fence or Straw Bale

INLET PROTECTION



STRAW BALE BARRIER



SILT FENCE

SEE INDIVIDUAL BMP INFORMATION SHEETS FOR INSTRUCTIONS FOR CONSTRUCTION OF STRAW BALE BARRIER AND SILT FENCE..

DESCRIPTION:
Sediment barrier erected around storm drain inlet.

APPLICATION:
Construct at storm drainage inlets located downgradient of areas to be disturbed by construction (for inlets in paved areas see other information sheets for inlet protection).

INSTALLATION/APPLICATION CRITERIA:
- Provide upgradient sediment controls, such as silt fence during construction of inlet.
- When construction of inlet is complete, erect straw bale barrier or silt fence surrounding perimeter of inlet. Follow instructions and guidelines on individual
- BMP information sheets for straw bale barrier and silt fence construction.

LIMITATIONS:
- Recommended maximum contributing drainage area of one acre.
- Limited to inlets located in open unpaved areas.
- Requires shallow slopes adjacent to inlet.

MAINTENANCE:
- Inspect inlet protection following storm event and at a minimum of once monthly.
- Remove accumulated sediment when it reaches 4-inches in depth.
- Repair or realign barrier/fence as needed.
- Look for bypassing or undercutting and recompact soil around barrier/fence as required.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

FARMINGTON
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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ■ Floatable Materials
- ☐ Other Waste

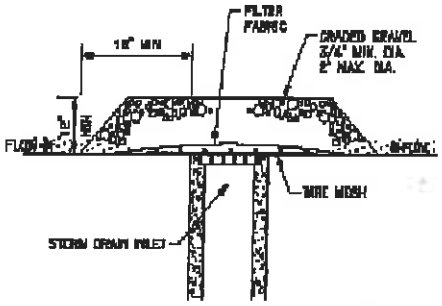
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

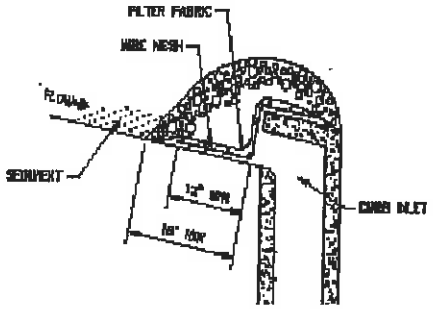
- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

918D BMP: Inlet Protection - Gravel



DROP INLET PROTECTION-GRAVEL



CURB INLET PROTECTION-GRAVEL

DESCRIPTION:
Placement of gravel filter over inlet to storm drain to filter storm water runoff.

APPLICATION:
Construct at inlets in paved or unpaved areas where upgradient area is to be disturbed by construction activities.

INSTALLATION/APPLICATION CRITERIA:
- Place wire mesh (with ½ inch openings) over the inlet grate extending one foot past the grate in all directions.
- Place filter fabric over the mesh. Filter fabric should be selected based on soil type.
- Place graded gravel, to a minimum depth of 12-inches, over the filter fabric and extending 18-inches past the grate in all directions.

LIMITATIONS:
Recommended for maximum drainage area of one acre.
Excess flows may bypass the inlet requiring down gradient controls.
Ponding will occur at inlet.

MAINTENANCE:
Inspect inlet protection after every large storm event and at a minimum of once monthly.
Remove sediment accumulated when it reaches 4-inches in depth.
Replace filter fabric and clean or replace gravel if clogging is apparent.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ■ Floatable Materials
- ☐ Other Waste

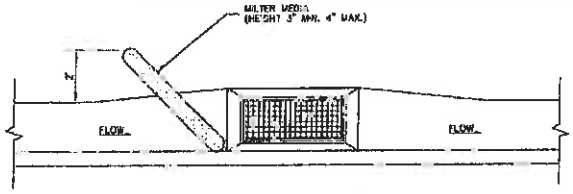
- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

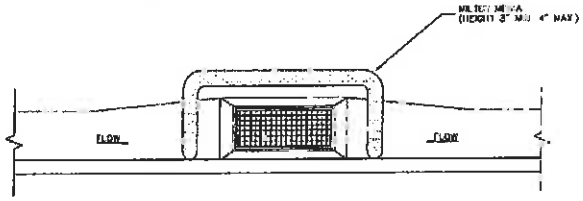
- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact
- ■ High ☒ Medium ☐ Low

918E BMP: Inlet Protection - Wattle



ON-GRADE INLET PROTECTION DETAIL



DROP INLET PROTECTION DETAIL

DESCRIPTION:
Sediment barrier erected around storm drain inlet.

APPLICATION:
Construct at storm drainage inlets located down-gradient of areas to be disturbed by construction.

INSTALLATION/APPLICATION CRITERIA:
- Provide up-gradient sediment controls, such as silt fencing during construction of inlet.
- When construction of curb and gutter and roadway is complete, install gravel filled bags or similar material around perimeter of inlet for drop inlets and at a 45° angle upstream for an on-grade inlet.

LIMITATIONS:
Recommended for maximum drainage area of one acre.
Required shallow slopes adjacent to inlet.
Excess flows may bypass the inlet requiring down gradient controls.
Ponding will occur at inlet.

MAINTENANCE:
Inspect inlet protection after every large storm event and at a minimum of once every 2 weeks.
Remove sediment accumulated when it reaches 4-inches in depth.
Look for bypassing or undercutting and repair or realign as needed.

OBJECTIVES

- ☒ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ■ Floatable Materials
- ☐ Other Waste

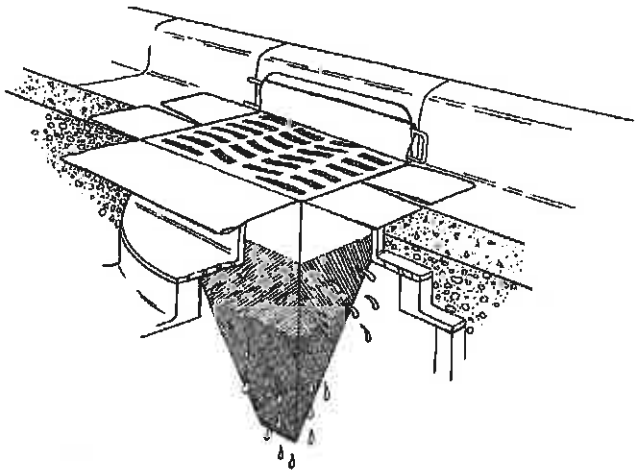
- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact
- ■ High ☒ Medium ☐ Low

918F BMP: Inlet Protection – Silt Bags



DESCRIPTION:
Collect and trap sediment and debris entering catch basins from either grated or curb inlets. Insert is made of fabric and is placed in the drain inlet around the perimeter of the grate. Runoff passes through the bag before discharging into the drain outlet pipe. Overflow holes are usually provided to pass larger flows without causing a backwater at the grate. Certain manufactured products include polymers intended to increase pollutant removal effectiveness.

APPLICATION:
- Storm drain inlet boxes

INSTALLATION/APPLICATION CRITERIA:
- Regular Maintenance is necessary
- Evaluation of the device chosen should be balanced with cost
- Hydraulic capacity controls effectiveness
- Most useful in small drainage areas (<1Acre)
- Ideal in combination with other BMP's

LIMITATIONS:
- Cost
- Maintenance required to prevent plugging and remain effective

MAINTENANCE:
Inspection after all storm events and as required between events

OBJECTIVES

- ☒ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ■ Floatable Materials
- ☐ Other Waste

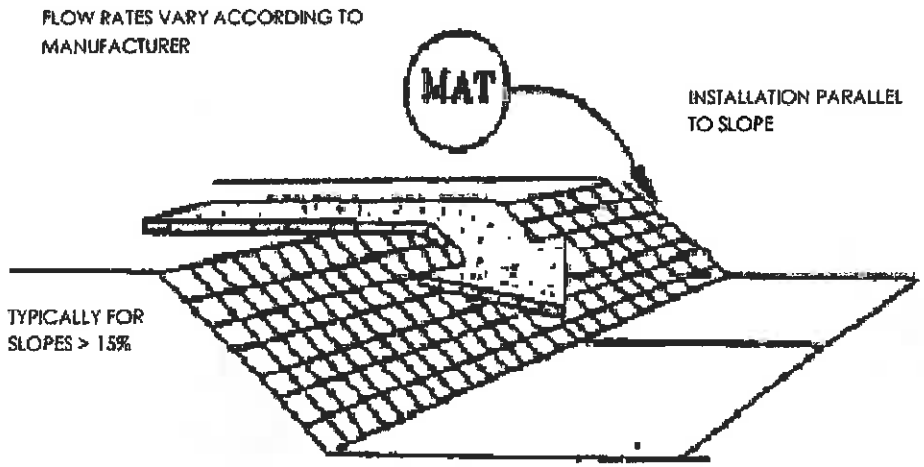
- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ■ Maintenance
- ☒ Training

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact
- ■ High ☒ Medium ☐ Low

920 BMP: Geotextiles and Mats



DESCRIPTION:
Mattings made of natural or synthetic material which are used to temporarily or permanently stabilize soil.

APPLICATION:
- Typically suited for post-construction site stabilization, but may be used for temporary stabilization of highly erosive soils.
- Channels and streams.
- Steep slopes.

INSTALLATION/APPLICATION CRITERIA:
- Mattings may be applied to disturbed soils and where existing vegetation has been removed.
- The following organic matting materials provide temporary protection until permanent vegetation is established, or when seasonal circumstances dictate the need for temporary stabilization until weather or construction delays are resolved: Jute mattings and straw mattings.
- The following synthetic mattings may be used for either temporary or postconstruction stabilization, both with and without vegetation: excelsior matting, glass fiber matting, mulch matting.
- Staples are needed to anchor the matting.

LIMITATIONS:
- Mattings are more costly than other BMP practices, limiting their use to areas where other BMPs are ineffective (e.g., channels, steep slopes).
- May delay seed germination, due to reduction in soil temperature.
- Installation requires experienced contractor to ensure soil stabilization and erosion protection.

MAINTENANCE:
- Inspect monthly and after significant rainfall.
- Re-anchor loosened matting and replace missing matting and staples as required.

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☒ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

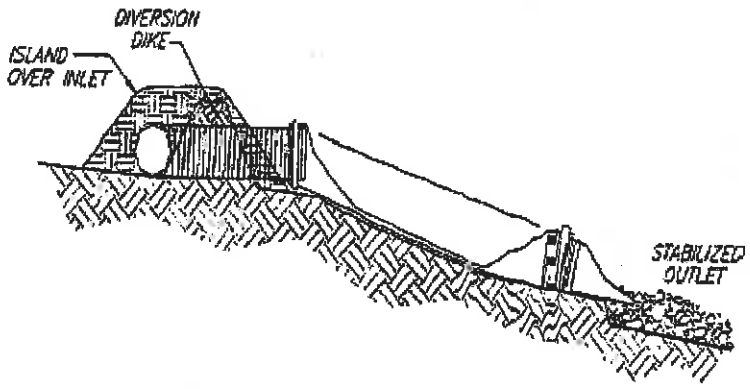
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

922A BMP: Slope Drain



OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☒ Control Internal Erosion

DESCRIPTION:
A temporary pipe or lined channel that drains the top of a slope to a stable discharge point at the bottom of a slope without causing erosion.

APPLICATIONS:
- Where concentrated flow of surface runoff must be conveyed down a slope in order to prevent erosion.
- Drainage for top slope diversion dikes or swales.
- Emergency spillway for a sediment basin.
- Drainage for top of cut/fill slopes where water can accumulate.

INSTALLATION/APPLICATION CRITERIA:
- Secure inlet and surround with dikes to prevent gully erosion, and anchor pipe to slope.
- Size to convey at least the peak of a 10-year, storm event.
- Stabilize outlet. (See Outlet Protection BMP).

LIMITATIONS:
- Maximum drainage area per slope drain is 5 acres.
- Clogged slope drains will force water around the pipe and cause slope erosion.
- Dissipation of high flow velocities at the pipe outlet is required to avoid downstream erosion.
- Failure can result in flooding and severe erosion.

MAINTENANCE:
- Structure must be inspected weekly and after storms.
- Inlet must be free of undercutting and no water should circumvent the entry.
- Outlet should not produce erosion; velocity dissipators must be maintained.
- Pipe anchors must be checked to ensure that the pipe remains anchored to the slope.

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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

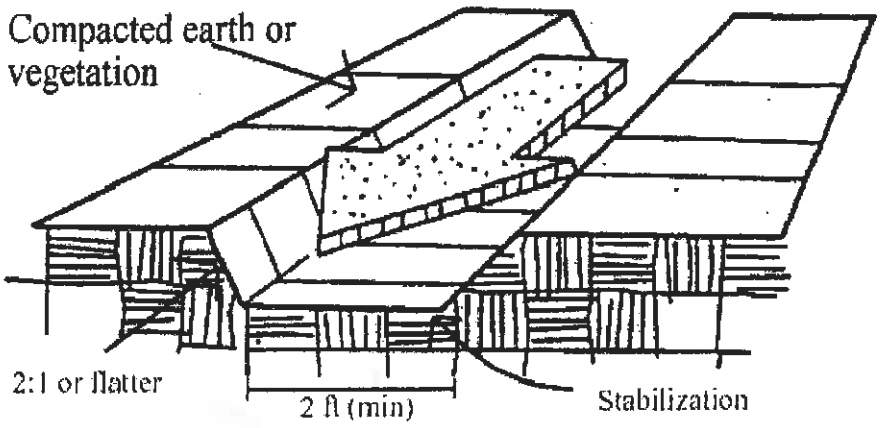
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact
■ High ☒ Medium ☐ Low

922B BMP: Temporary Drains and Swales



OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☒ Control Internal Erosion

DESCRIPTION:
Temporary drains and swales are used to divert off-site runoff around the construction site, divert runoff from stabilized areas around disturbed areas, and direct runoff into sediment.

APPLICATIONS:
- Temporary drains and swales are appropriate for diverting any upslope runoff around unstabilized or disturbed areas of the construction site.
- Prevent slope failures. Prevent damage to adjacent property. Prevents erosion and transport of sediments into waterways. Increases the potential for infiltration. Diverts sediment-laden runoff into sediment basins or traps.

INSTALLATION/APPLICATION:
- Temporary drainage swales will effectively convey runoff and avoid erosion if built properly.
- Size temporary drainage swales using local drainage design criteria. A permanent drainage channel must be designed by a professional engineer (see the local drainage design criteria for proper design).
- At a minimum, the drain/swale should conform to predevelopment drainage patterns and capacities.
- Construct the drain/swale with an uninterrupted, positive grade to a stabilized outlet. Provide erosion protection or energy dissipation measures if the flow out of the drain or swale can reach an erosive velocity.

LIMITATIONS:
- Temporary drains and swales or any other diversion of runoff should not adversely impact upstream or downstream properties.
- Temporary drains and swales must conform to local floodplain management requirements.

MAINTENANCE:
- Inspect weekly and after each rain.
- Repair any erosion immediately.
- Remove sediment which builds up in the swale and restricts its flow capacity.

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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

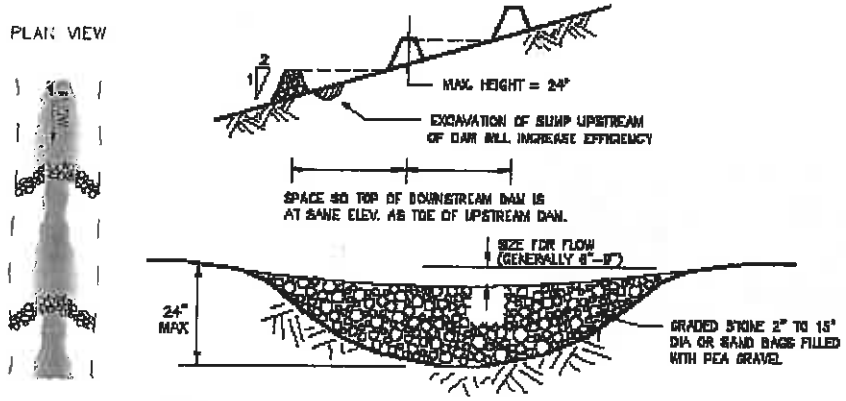
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☐ O&M Costs
- ☐ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

924 BMP: Rock Check Dams



DESCRIPTION:
A small, temporary dam constructed across a drainage ditch to reduce velocity of concentrated stormwater flows, thereby reducing the erosion of the ditch.

APPLICATION:
- Temporary drainage paths
- Permanent drainage ways not yet stabilized
- Existing drainage paths receiving increased flows due to construction

INSTALLATION/APPLICATION CRITERIA:
- Prepare location of dam by removing any debris and rough grading any irregularities in channel bottom
- Place rocks by hand or with appropriate machinery, do not dump
- Construct dam with center lower to pass design flow
- Construct 50% side slopes on dam

LIMITATIONS:
- Maximum recommended drainage area is 10 acres
- Maximum recommended height is 24"
- Do not use in running stream

MAINTENANCE:
- Inspect dams daily during prolonged rainfall, after each major rain event and at a minimum of once monthly.
- Remove any large debris and repair any damage to dam, channel or sideslopes.
- Remove accumulated sediment when it reaches one half the height of the dam.

OBJECTIVES
- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

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TARGETED POLLUTANTS
- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS
- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

927A BMP: Riprap

DESCRIPTION:
Riprap is a permanent, erosion-resistant protective layer made of loose stones. It is intended to protect soil from erosion in areas of concentrated runoff. Riprap may also be used to stabilize slopes that are unstable because of seepage problems.

APPLICATION:
- Riprap is normally used at locations where erosive forces from water flow exceed the ability of the soil or vegetative cover to resist those forces.
- Riprap can be used for pipe outlet protection, channel lining, scour protection, etc.
- Riprap is commonly used for wave protection on lakes.

INSTALLATION/APPLICATION CRITERIA:
- For slopes steeper than 2:1, consider using materials other than riprap for erosion protection.
- If riprap is being planned for the bottom of a permanently flowing channel, the bottom can be modified to enhance fish habitat. This can be done by constructing riffles and pools which simulate natural conditions.
- When working within flowing streams, measures should be taken to prevent excessive turbidity and erosion during construction. Bypassing base flows or temporarily blocking base flows are two possible methods. Work should be done during a period of low flow. In designing riprap consider the following:
- Use durable rock, such as granite, and a variety of rock sizes.
- The thickness of riprap layers should be at least 1.25 times the maximum stone diameter.
- Filter material is usually required between riprap and the underlying soil surface.

LIMITATIONS:
- Riprap may be unstable on very steep slopes.
- The placement of a riprap in streams requires a state stream alteration permit.

MAINTENANCE:
- Riprap should be inspected annually and after major storms.
- If riprap has been damaged, repairs should be made promptly to prevent a progressive failure.
- If repairs are needed repeatedly at one location, the site should be evaluated to see if original design conditions have changed.

CONSIDERATIONS

- ☒ Soils
- ☒ Area Required
- ☒ Slope
- ☐ Water Availability
- ☒ Aesthetics
- ☐ Hydraulic Head
- ☒ Environmental Side Effects

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TARGETED POLLUTANTS

- ☒ Sediment
- ☐ Nutrients
- ☐ Heavy Metals
- ☐ Toxic Materials
- ☐ Oxygen Demanding Substances
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses

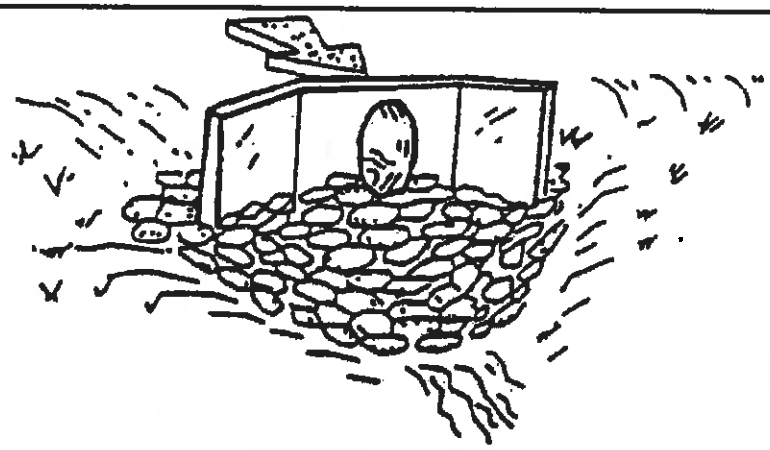
- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

927B BMP: Outlet Protection



DESCRIPTION:

A rock outlet protection is a physical device composed of rock, or grouted riprap which is placed at the outlet of a pipe to prevent scour of the soil caused by high pipe flow velocities, and to absorb flow energy to produce nonerosive velocities.

APPLICATION:

- Wherever discharge velocities and energies at the outlet culverts, conduits, or channels are sufficient to erode the next downstream reach
- Rock outlet protection is best suited for temporary use during construction because it is usually less expensive and easier to install than concrete aprons or energy dissipators
- A sediment trap below the pipe outlet is recommended if runoff is sediment laden
- Permanent rock riprap protection should be designed and sized by the engineer as part of the culvert, conduit or channel design
- Grouted riprap should be avoided in areas of freeze and thaw because the grout will break up

INSTALLATION/APPLICATION CRITERIA:

- Rock outlet protection is effective when the rock is sized and placed properly. When this is accomplished, rock outlets do much to limit erosion at pipe outlets. Rock size should be increased for high velocity flows. Best results are obtained when sound, durable, angular rock is used.

LIMITATIONS:

- Large storms often wash away the rock outlet protection and leave the area susceptible to erosion
- Sediment captured by the rock outlet protection may be difficult to remove without removing the rock
- Outlet protection may negatively impact channel habitat

MAINTENANCE:

- Inspect after each significant rain for erosion and/or disruption of the rock, and repair immediately
- Grouted or wire-tied rock riprap can minimize maintenance requirements

OBJECTIVES

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☒ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Heavy Metals
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Bacteria & Viruses
- ☐ Other Waste

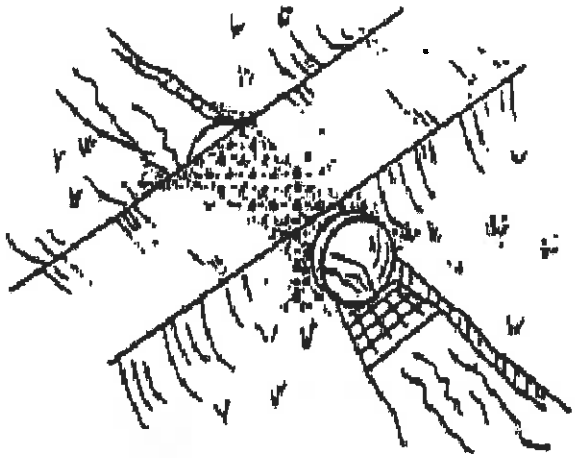
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

928 BMP: Temporary Stream Crossing



DESCRIPTION:
A temporary access stream crossing is a temporary culvert, ford or bridge placed across a waterway to provide access for construction purposes for a period of less than one year. Temporary access crossings are not intended to be used to maintain traffic for the general public.

APPLICATIONS:
Temporary stream crossings should be installed at all designated crossings of perennial and intermittent streams on the construction site, as well as for dry channels which may be significantly eroded by construction traffic.

INSTALLATION/APPLICATION:
Requires knowledge of stream flows and soil strength and should be designed under the direction of a Utah registered engineer with knowledge of both hydraulics and construction loading requirements for structures.

LIMITATIONS:
- May be an expensive for a temporary improvement.
- Requires other BMPs to minimize soil disturbance during installation and removal.
- Fords should only be used in dry weather.
- A Stream Alteration Permit may be required, contact the Utah Division of Water Rights before implementation.

MAINTENANCE:
- Inspect weekly and after each significant rainfall, including assessment of foundations.
- Periodically remove silt from crossings.
- Replace lost aggregated from inlets and outlets of culverts.

OBJECTIVES

- ☒ Housekeeping Practices
- ☐ Contain Waste
- ☒ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

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TARGETED POLLUTANTS

- ■ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ■ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

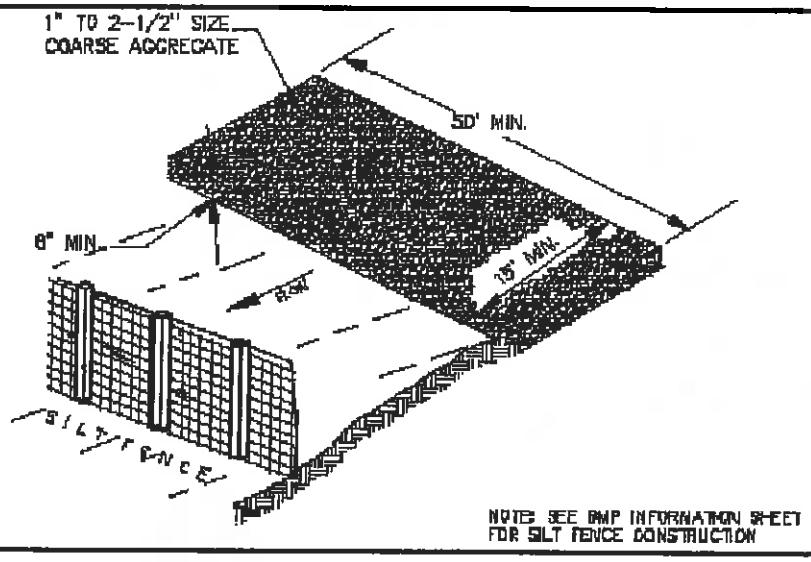
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☐ O&M Costs
- ■ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

931A BMP: Equipment and Vehicle Wash Down Area



DESCRIPTION:
A stabilized pad of crushed stone for general washing of equipment and construction vehicles.

APPLICATION:
At any site where regular washing of vehicles and equipment will occur. May also be used as a filling point for water trucks limiting erosion caused by overflow or spillage of water.

INSTALLATION/APPLICATION CRITERIA:
- Clear and grub area and grade to provide maximum slope of 1%
- Compact subgrade and place filter fabric if desired (recommended for wash areas to remain in use for more than 3 months).
- Place coarse aggregate, 1 to 2-1/2 inches in size, to a minimum depth of 8- inches.
- Install silt fence downgradient (see silt fence BMP information sheet).

LIMITATIONS:
Cannot be utilized for washing equipment or vehicles that may cause contamination of runoff such as fertilizer equipment or concrete equipment. Solely used to control sediment in wash water.

MAINTENANCE:
- Inspect daily for loss of gravel or sediment buildup.
- Inspect adjacent area for sediment deposit and install additional controls as necessary.
- Repair area and replace gravel as required to maintain control in good working condition.
- Expand stabilized area as required to accommodate activities.
- Maintain silt fence as outlined in specific silt fence BMP information sheet.

OBJECTIVES
- ☒ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☒ Control Internal Erosion

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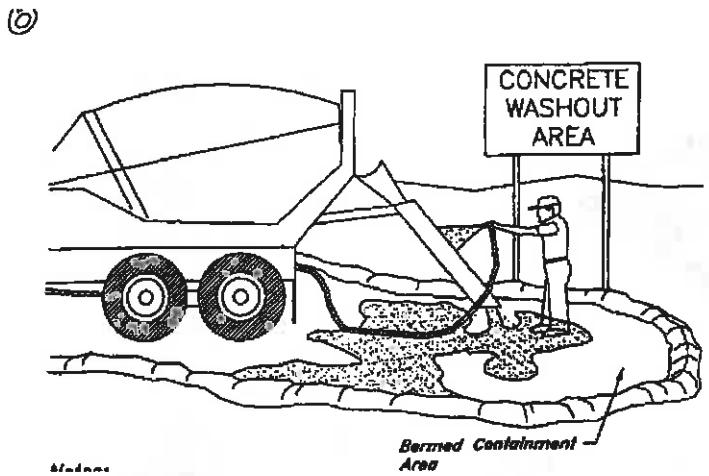
TARGETED POLLUTANTS
- ■ Sediment
- ☐ Nutrients
- ■ Toxic Materials
- ■ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS
- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

931B BMP: Concrete Waste Management



DESCRIPTION:
Prevent or reduce the discharge of pollutants to storm water from concrete waste by conducting washout off-site, performing on-site washout in a designated area, and training employees and subcontractors.

APPLICATION:
This technique is applicable to all types of sites

INSTALLATION/APPLICATION CRITERIA:
- Store dry materials under cover, away from drainage areas.
- Minimize excess mixing of fresh concrete, mortar or cement on-site.
- Perform washout of concrete trucks off-site or in designated areas only.
- Do not wash out concrete trucks into storm drains, open ditches, streets, or streams.
- Do not allow excess concrete to be dumped on-site, except in designated areas.
- When washing concrete to remove fine particles and expose the aggregate, avoid creating runoff by draining the water within a bermed or level area
- Train employees and subcontractors in proper concrete management.
- No spraying off of trucks in the street; windshield, wheels, outside of drum, etc.

LIMITATIONS:
Off-site washout of concrete wastes may not always be possible.

MAINTENANCE:
- Inspect subcontractors to ensure that concrete wastes are being properly managed.
- If using a temporary pit, dispose of hardened concrete on a regular basis.

OBJECTIVES

- ☐ Housekeeping Practices
- ☒ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

FARMINGTON
HISTORIC BEGINNINGS · 1847

TARGETED POLLUTANTS

- ☐ Sediment
- ☐ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ■ Other Waste

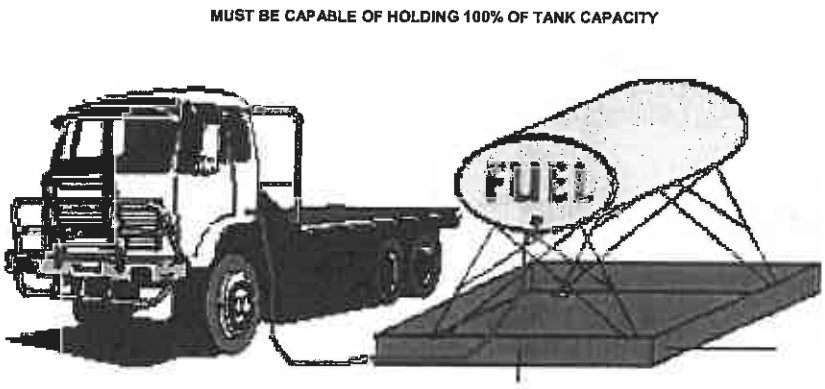
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☐ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☒ Training

■ High ☒ Medium ☐ Low

931C BMP: Vehicle and Equipment Fueling



DESCRIPTION:

Prevent fuel spills and leaks, and reduce their impacts to storm water by using off-site facilities, fueling in designated areas only, enclosing or covering stored fuel, implementing spill controls, and training employees and subcontractors.

INSTALLATION/APPLICATION CRITERIA:

- Use off-site fueling as much as possible. Fueling vehicles and equipment outdoors or in areas where fuel may spill/leak onto paved surfaces or into drainage pathways can pollute storm water. If you fuel a large number of vehicles or pieces of equipment, consider using an off-site fueling station. These businesses are better equipped to handle fuel and spills properly. Performing this work off-site can also be economical by eliminating the need for a separate fueling area at your site.
- If fueling must occur on-site, use designated areas, located away from drainage courses, to prevent the runon of storm water and the runoff of spills. Discourage "topping-off" of fuel tanks.
- Always use secondary containment, such as a drain pan or drop cloth, when fueling to catch spills/leaks. Place a stockpile of spill cleanup materials where it will be readily accessible. Use adsorbent materials on small spills rather than hosing down or burying the spill. Remove the adsorbent materials promptly and dispose of properly.
- Carry out all Federal and State requirements regarding above ground storage tanks. (40 CF Sub. J) Avoid mobile fueling of mobile construction equipment arounf the site; rather, transport the equipment to designated fueling areas. With the exception of tracked equipment such as bulldozers and perhaps forklifts, most vehicles should be able to travel to a designated area with little lost time. Train employees and subcontractors in proper fueling and cleanup procedures.

LIMITATIONS:

Sending vehicles/equipment off-site should be done in conjunction with Stabilized Construction Entrance.

MAINTENANCE:

- Keep ample supplies of spill cleanup materials on-site.
- Inspect fueling areas and storage tanks on a regular schedule.

OBJECTIVES

- ☒ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

FARMINGTON
HISTORIC BEGINNINGS · 1847

TARGETED POLLUTANTS

- ☐ Sediment
- ☐ Nutrients
- ☒ Toxic Materials
- ☒ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

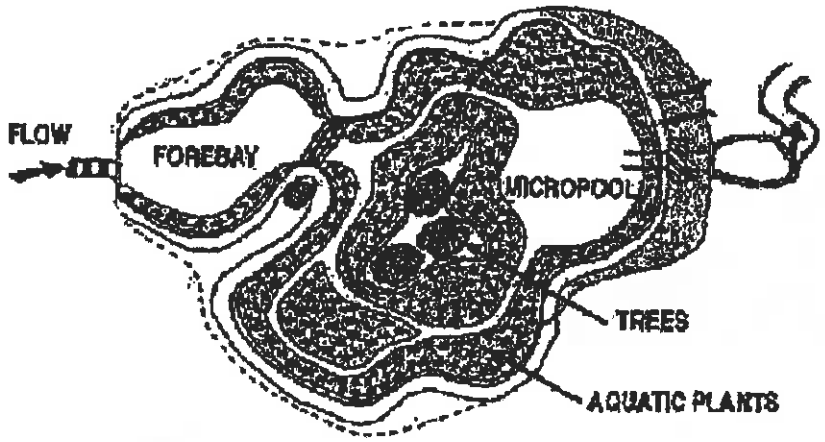
- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☒ Maintenance
- ☒ Training

■ High ☒ Medium ☐ Low

935 BMP: Constructed Wetlands



DESCRIPTION:
Constructed wetlands have a significant percentage of the facility covered by wetland vegetation.

APPLICATION:
- Need to achieve high level of particulate and some dissolved contaminant removal.
- Ideal for large, regional tributary areas.
- Multiple benefits of passive recreation and wildlife.

INSTALLATION/APPLICATION CRITERIA:
- Suitable soils for wetland vegetation are required.
- Surface area equal to at least 1% and preferably 2% of the tributary watershed.
- Involve qualified wetland ecologist to design and install wetland vegetation.
- Establishing wetland vegetation may be difficult.

LIMITATIONS:
- Concern for mosquitoes.
- Cannot be placed on steep unstable slopes.
- Need base flow to maintain water level.
- Not feasible in densely developed areas.
- Nutrient release may occur during winter.
- Overgrowth can lead to reduced hydraulic capacity.
- Regulatory agencies may limit water quality to constructed wetlands.

MAINTENANCE:
- Remove foreign debris and sediment build-up.
- Areas of bank erosion should be repaired.
- Remove nuisance species.
- Control mosquitoes.

CONSIDERATIONS

- ☒ Soils
- ☒ Area Required
- ☒ Slope
- ☒ Water Availability
- ☒ Aesthetics
- ☐ Hydraulic Head
- ☒ Environmental Side Effects

FARMINGTON
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TARGETED POLLUTANTS

- ■ Sediment
- ■ Nutrients
- ■ Heavy Metals
- ■ Toxic Materials
- ■ Oxygen Demanding Substances
- ■ Oil & Grease
- ■ Floatable Materials
- ☒ Bacteria & Viruses

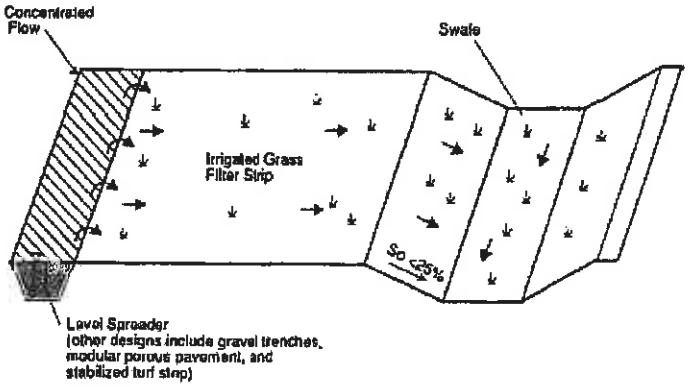
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

937 BMP: Grassed Filter Strip



General Description:

Filter strips are 20-foot-wide strips of natural or planted vegetation around a construction site. They are designed to cause deposition of sediments within the vegetation layer.

Applications:

- Suited for areas where the soils are well drained or moderately well drained.
- Areas where the bedrock and the water table are well below the surface.

Installation/Application Criteria:

- Make sure the vegetative cover is dense enough to protect underlying soil while causing sediment to settle.
- Filter strip must be approximately 20 feet wide to function well.
- The length should be approximately 50 to 75 feet. Where slopes become steeper the length of the strip must be increased.

Limitations:

- Only applicable in areas where vegetation is previously established or where sod is added.
- Vegetated filter strips will not function well on steep slopes, in hilly areas, or in highly paved areas.
- Sites with slopes of 15 percent or more may not be suitable for filtering storm water flows.

Maintenance:

- Check for channels and repair.
- Provide rock aprons to aid in slowing flow if necessary.
- Maintain vegetation at optimal height and thickness.

Objectives

- ☐ Housekeeping Practices
- ☐ Contain Waste
- ☐ Minimize Disturbed Areas
- ☒ Stabilize Disturbed Areas
- ☒ Protect Slopes/Channels
- ☒ Control Site Perimeter
- ☐ Control Internal Erosion

FARMINGTON
Historic Beginnings · 1847

Targeted Pollutants

- ■ Sediment
- ☒ Nutrients
- ☐ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

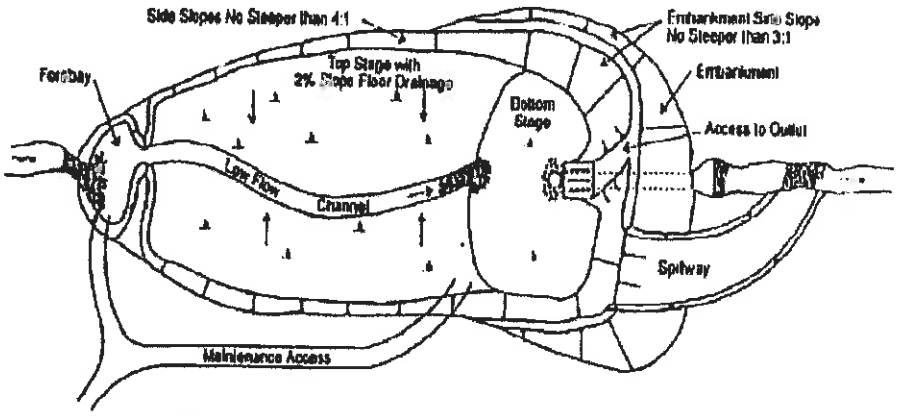
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

Implementation Requirements

- ■ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

947 BMP: Extended Detention Basins



DESCRIPTIONS:

Extended detention basins are dry between storms. During a storm the basin fills. A bottom outlet releases the stormwater slowly to provide time for sediments to settle.

APPLICATION:

- Objective is to remove only particulate pollutants.
- Use where lack of water prevents the use of wet ponds, wetlands or biofilters.
- Use where wet ponds or wetlands would cause unacceptable mosquito conditions.

INSTALLATION/APPLICATION CRITERIA:

- Basin volume is sized to capture a particular fraction of the runoff.
- Drawdown time of 24 to 40 hours.
- Shallow basin with large surface area performs better than deep basin with same volume.
- Place energy dissipators at the entrance to minimize bottom erosion and resuspension.
- Vegetate side slopes and bottom to the maximum extent practical.
- If side erosion is particularly severe, consider paving or soil stabilization.
- If floatables are a problem, protect outlet with trash rack or other device.
- Provide bypass or pass through capabilities for 100-year storm.

LIMITATIONS:

- May be less reliable than other treatment control BMPs. Inability to vegetate banks and bottom may result in erosion and resuspension.
- Limitation of the orifice diameter may preclude use in small watersheds.
- Requires differential elevation between inlet and outlet.

MAINTENANCE:

- Check outlet regularly for clogging.
- Check banks and bottom of basin for erosion and correct as necessary.
- Remove sediment when accumulation reaches 6-inches, or if resuspension is observed

CONSIDERATIONS

- ☐ Soils
- ☒ Area Required
- ☐ Slope
- ☐ Water Availability
- ☒ Aesthetics
- ☒ Hydraulic Head
- ☐ Environmental Side Effects

FARMINGTON
HISTORIC BEGINNINGS • 1847

TARGETED POLLUTANTS

- ■ Sediment
- ☒ Nutrients
- ☒ Heavy Metals
- ☒ Toxic Materials
- ☒ Oxygen Demanding Substances
- ☒ Oil & Grease
- ☒ Floatable Materials
- ☐ Bacteria & Viruses

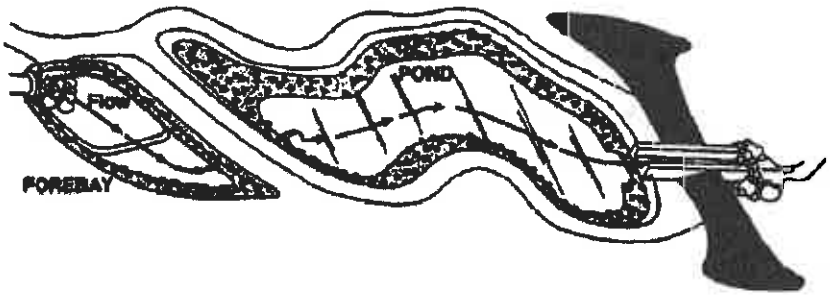
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

948 BMP: Wet Ponds



DESCRIPTION:
A wet pond has a permanent water pool to treat incoming stormwater. An enhanced wet pond includes a pretreatment sediment forebay.

APPLICATION:
- Need to achieve high level of particulate and some dissolved contaminant removal.
- Ideal for large, regional tributary areas.
- Multiple benefits of passive recreation (e.g. bird watching, wildlife habitat).

INSTALLATION/APPLICATION CRITERIA:
- Water depth of 3 to 9 feet.
- Wetland vegetation, occupying 25-50% of water surface area.
- Design to minimize short-circuiting.
- Bypass storms greater than two-year storm.
- Be careful when installing wetland vegetation.

LIMITATIONS:
- Concern for mosquitoes and maintaining oxygen in ponds.
- Cannot be placed on steep unstable slopes.
- Need base flow or supplemental water if water level is to be maintained.
- Infeasible in very dense urban areas.

MAINTENANCE:
- Remove floatables and sediment build-up.
- Correct erosion spots in banks.
- Control mosquitoes.
- May require permits from various regulatory agencies (e.g. Corps of Engineers).

CONSIDERATIONS

- ☐ Soils
- ☒ Area Required
- ☒ Slope
- ☒ Water Availability
- ☒ Aesthetics
- ☐ Hydraulic Head
- ☒ Environmental Side Effects

FARMINGTON
HISTORIC BEGINNINGS · 1847

TARGETED POLLUTANTS

- ■ Sediment
- ☒ Nutrients
- ☒ Heavy Metals
- ☒ Toxic Materials
- ☒ Oxygen Demanding Substances
- ☒ Oil & Grease
- ■ Floatable Materials
- ☒ Bacteria & Viruses

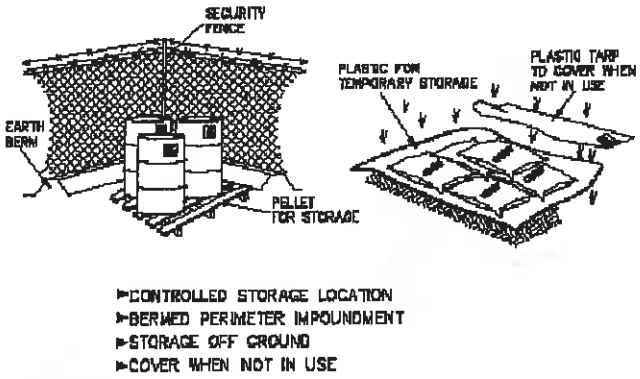
■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ■ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ☐ Training

■ High ☒ Medium ☐ Low

957 BMP: Materials Storage



- CONTROLLED STORAGE LOCATION
- BERMED PERIMETER IMPOUNDMENT
- STORAGE OFF GROUND
- COVER WHEN NOT IN USE

DESCRIPTION:
Controlled storage of on-site materials.

APPLICATION:
- Storage of hazardous, toxic, and all chemical substances.
- Any construction site with outside storage of materials.

INSTALLATION/APPLICATION CRITERIA:
- Designate a secured area with limited access as the storage location. Ensure no waterways or drainage paths are nearby.
- Construct compacted earthen berm, or similar perimeter containment around storage location for impoundment in the case of spills.
- Ensure all on-site personnel utilize designated storage area. Do not store excessive amounts of material that will not be utilized on site.
- For active use of materials away from the storage area ensure materials are not set directly on the ground and are covered when not in use. Protect storm drainage during use.

LIMITATIONS:
- Does not prevent contamination due to mishandling of products.
- Spill Prevention and Response Plan still required.
- Only effective if materials are actively stored in controlled location.

MAINTENANCE:
- Inspect daily and repair any damage to perimeter impoundment or security fencing.
- Check materials are being correctly stored (i.e. standing upright, in labeled containers, tightly capped) and that no materials are being stored away from the designated location.

OBJECTIVES
- ☒ Housekeeping Practices
- ☒ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

FARMINGTON
HISTORIC BEGINNINGS • 1847

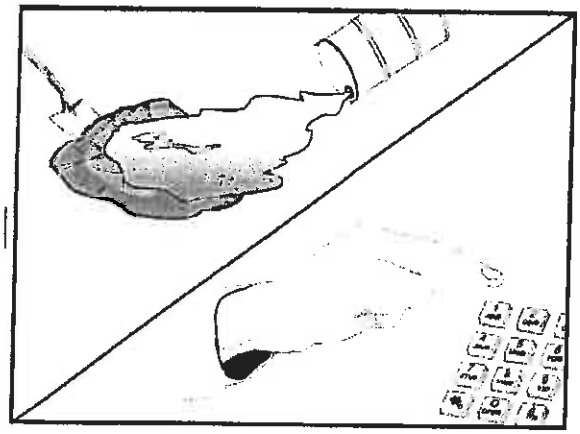
TARGETED POLLUTANTS
- ☐ Sediment
- ☐ Nutrients
- ■ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☒ Other Waste

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS
- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ■ Training

■ High ☒ Medium ☐ Low

959 BMP: Spill Clean-Up



Standard Symbol

BMP Objectives
- Soil Stabilization
- Sediment Control
- Tracking Control
- Wind Erosion Control
- Non-Storm Water Management
- Materials and Waste Management

DESCRIPTION:
Practices to clean-up leakage/spillage of on-site materials that may be harmful to receiving waters.

APPLICATION:
All Sites

INSTALLATION/APPLICATION CRITERIA:
- Store controlled materials within a storage area
- Educate personnel on prevention and clean-up
- Designate an Emergency Coordinator responsible practices and for providing spill response
- Maintain a supply of clean-up equipment on-site response agencies with phone numbers

METHODS:
- Clean-up spills/leaks immediately and remediate cause
- Use as little water as possible. NEVER HOSE DOWN OR BURY SPILL CONTAMINATED MATERIAL
- Use rags or absorbent material for clean up. Excavate contaminated soils. Dispose of clean-up material and soil as hazardous waste
- Document all spills with date, location, substance, volume, actions taken and other pertinent data
- Contact local Fire Department and State Division of Environmental Response and Remediation (Phone #536-4100) for any spill of reportable quantity

OBJECTIVES

- ☒ Housekeeping Practices
- ☒ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

FARMINGTON
HISTORIC BEGINNINGS • 1847

TARGETED POLLUTANTS

- ☐ Sediment
- ☐ Nutrients
- ■ Toxic Materials
- ☒ Oil & Grease
- ☐ Floatable Materials
- ☐ Other Waste

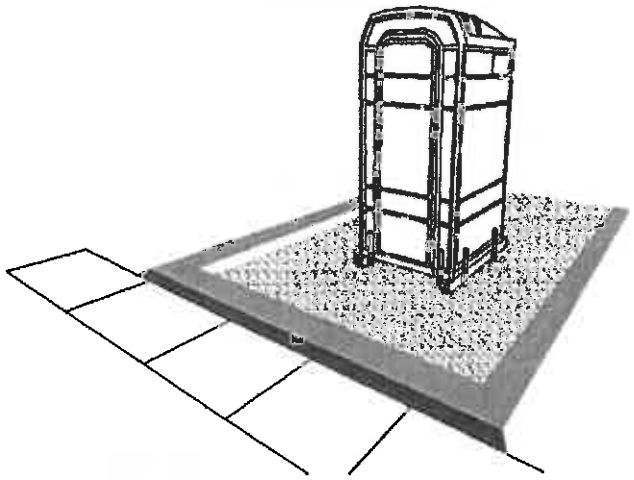
- ■ High Impact
- ☒ Medium Impact
- ☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☐ O&M Costs
- ☐ Maintenance
- ■ Training

■ High ☒ Medium ☐ Low

961 BMP: Portable Toilet



DESCRIPTION:
Temporary on-site sanitary facilities for construction personnel

APPLICATION:
All sites with no permanent sanitary facilities or where permanent facility is too far from activities

INSTALLATION/APPLICATION CRITERIA:
- Locate portable toilets in convenient locations throughout the site
- Prepare level, gravel surface and provide clear access to the toilets for servicing and for on-site personnel
- Construct earth berm perimeter (see Earth Berm Barrier Sheet), control for spill/ leak protection
- Anchor the portable toilet to prevent tipping

LIMITATIONS:
- No limitations

MAINTENANCE:
- Portable toilets should be maintained in good working order by licensed service with daily observation for leak detection
- Regular waste collection should be arranged with licensed service
- All waste should be deposited in sanitary sewer system for treatment with appropriate agency approval

OBJECTIVES

- ☒ Housekeeping Practices
- ☒ Contain Waste
- ☐ Minimize Disturbed Areas
- ☐ Stabilize Disturbed Areas
- ☐ Protect Slopes/Channels
- ☐ Control Site Perimeter
- ☐ Control Internal Erosion

FARMINGTON
HISTORIC BEGINNINGS · 1847

TARGETED POLLUTANTS

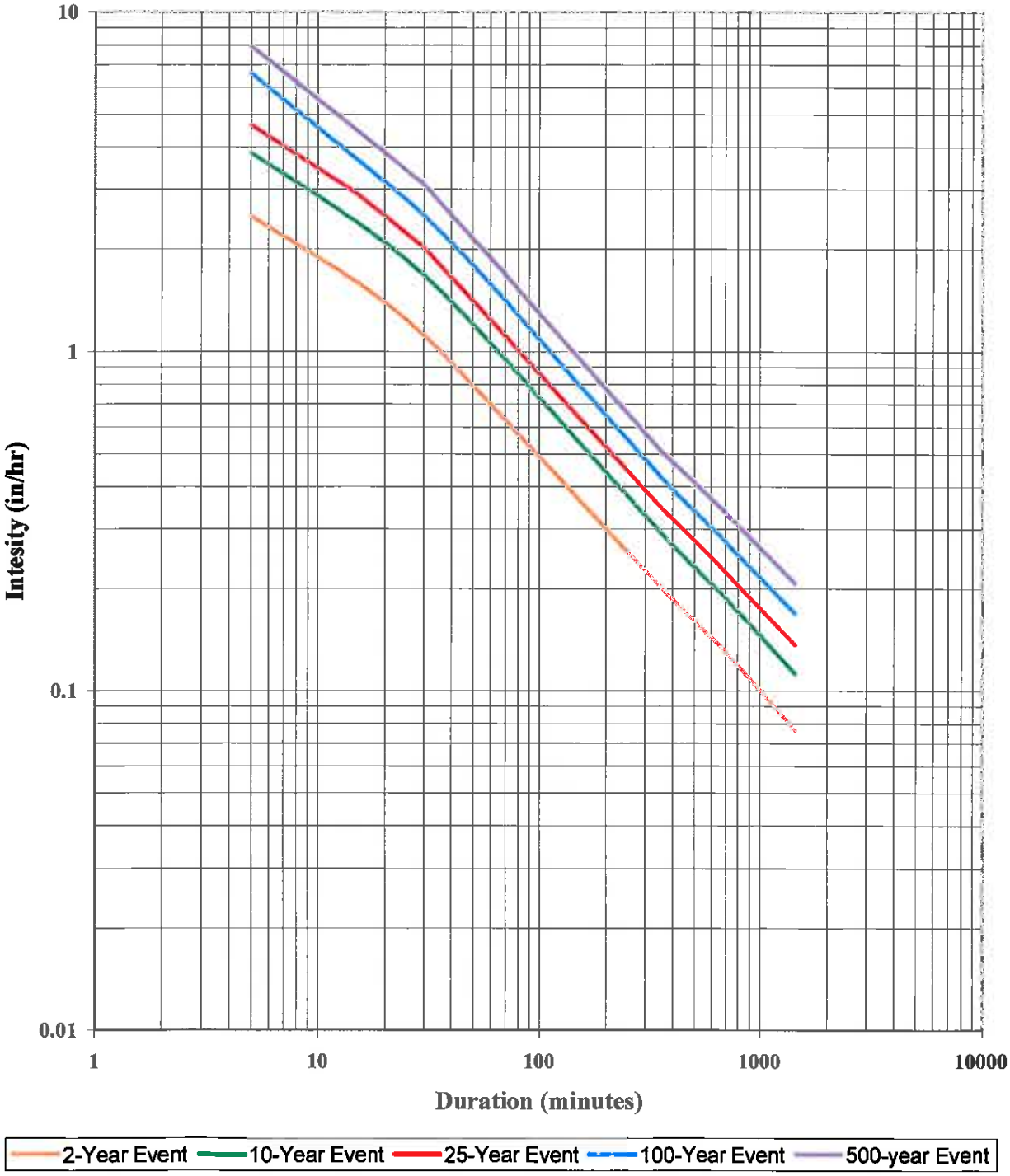
- ☐ Sediment
- ☐ Nutrients
- ■ Toxic Materials
- ☐ Oil & Grease
- ☐ Floatable Materials
- ☒ Other Waste

■ High Impact
☒ Medium Impact
☐ Low or Unknown Impact

IMPLEMENTATION REQUIREMENTS

- ☒ Capital Costs
- ☒ O&M Costs
- ☒ Maintenance
- ■ Training

■ High ☒ Medium ☐ Low

- **FARMINGTON CITY RAINFALL INTENSITY CURVE**
  (Rainfall curve to be used in sizing storm drain facilities for Farmington.)

Rainfall Intensity-Duration-Frequency Curve
Farmington, Utah