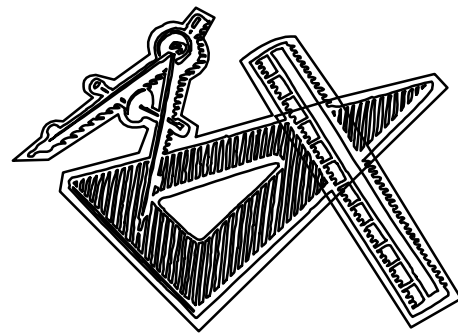
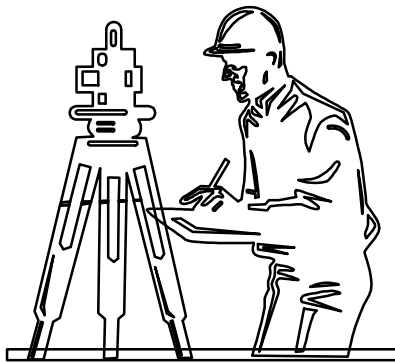


STANDARD DETAILS



STREET AND DRAINAGE FACILITIES IMPROVEMENTS

APRIL 2015



STANDARD DETAILS INDEX

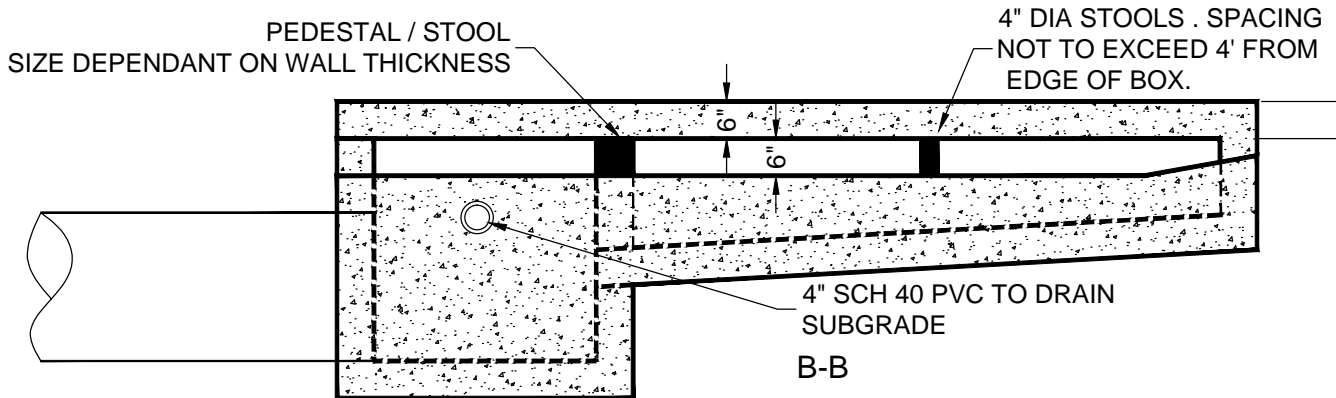
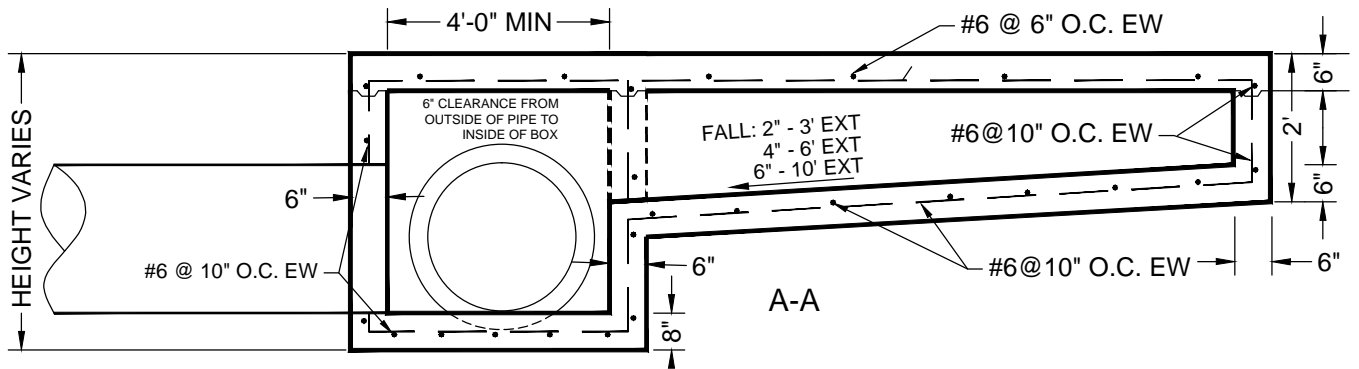
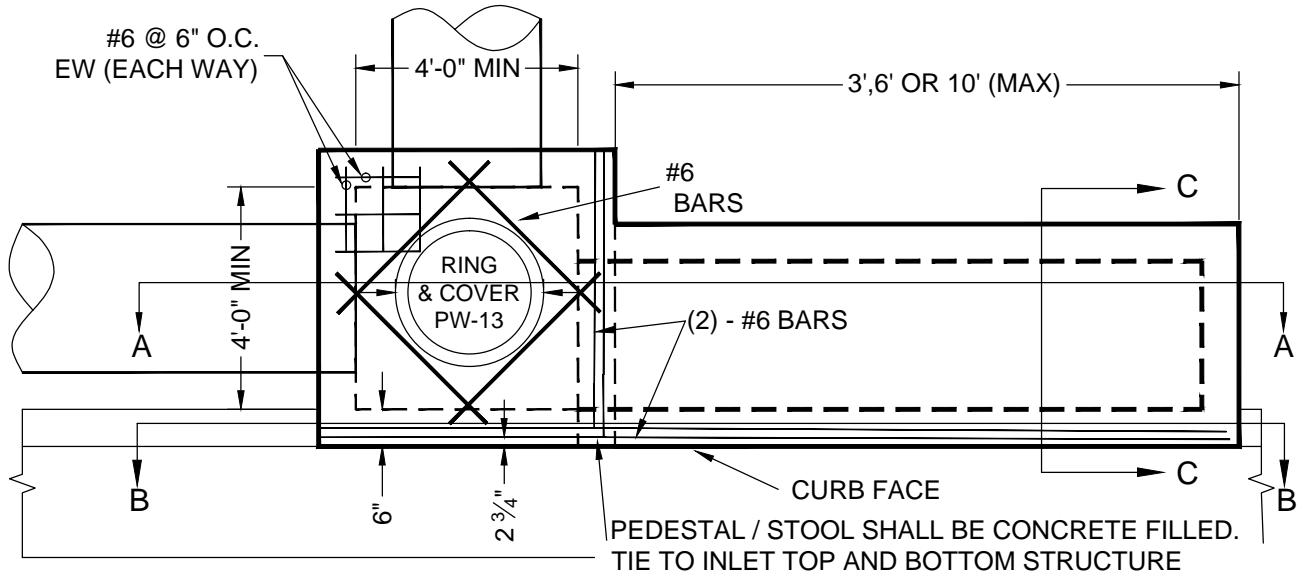
| TITLE | PW |
|------------------------------------|-------|
| RECTANGULAR CURB INLET | PW-1A |
| CIRCULAR CURB INLET | PW-1B |
| INLET WITH BACK OPENING | PW-2 |
| GUTTER DEPRESSION | PW-3 |
| HEADWALL | PW-4 |
| AREA INLET | PW-6 |
| THROAT OPENING (NOT IN RADIUS) | PW-9 |
| THROAT OPENING (IN RADIUS) | PW-10 |
| JUNCTION BOX IN ROADWAY | PW-11 |
| CURB INLET STEPS | PW-12 |
| MANHOLE FRAME AND COVER | PW-13 |
| MAILBOX INSTALLATION | PW-17 |
| PROJECT KIOSK | PW-18 |
| SUB-DRAIN DETAIL | PW-19 |
| HANDRAIL DETAIL (ALTERNATE) | PW-20 |
| HANDRAIL DETAIL | PW-21 |
| RESIDENTIAL STREET | PW-22 |
| COLLECTOR OR COMMERCIAL STREET | PW-23 |
| ARTERIAL STREET | PW-24 |
| UTILITY CUT-EXISTING STREET | PW-25 |
| DRAINAGE PIPE BACKFILL | PW-26 |
| TRENCH BACKFILL REQUIREMENTS | PW-27 |
| CLASS 1 CURB | PW-28 |
| CLASS 3 CURB | PW-29 |
| RESIDENTIAL DRIVEWAY | PW-30 |
| RESIDENTIAL DRIVEWAY | PW-31 |
| RESIDENTIAL DRIVEWAY | PW-32 |
| COMMERCIAL DRIVEWAY | PW-34 |
| ALLEY TURNOUT | PW-35 |
| DRIVEWAY GRADING DETAIL A | PW-36 |
| DRIVEWAY GRADING DETAIL B | PW-37 |
| DRIVEWAY GRADING DETAIL C | PW-38 |
| DRIVEWAY GRADING DETAIL D | PW-39 |
| DRIVEWAY GRADING DETAIL E | PW-40 |
| SIDEWALK | PW-41 |
| ADJACENT TO CURB (AT GRADE) | PW-42 |
| ADJACENT TO CURB (FILL SECTION) | PW-43 |
| ADJACENT TO CURB (CUT SECTION) | PW-44 |
| ADJACENT TO CURB (FILL SECTION A) | PW-45 |
| CROSSOVER BRIDGE | PW-46 |
| CROSSOVER BRIDGE | PW-47 |
| ACCESS RAMPS NOTES & RAMP CRITERIA | PW-48 |
| ACCESS RAMP TYPE 1 | PW-49 |
| ACCESS RAMP TYPE 2 & TYPE 4 | PW-50 |
| ACCESS RAMP TYPE 3 | PW-51 |
| ACCESS RAMP TYPE 3 | PW-52 |
| ACCESS RAMP TYPE 5 | PW-53 |
| RETAINING WALL DETAIL | PW-54 |
| WOOD FENCE (WOOD POST) | PW-57 |
| WOOD FENCE (METAL POST) | PW-58 |
| GROUTED RIP-RAP | PW-60 |
| SLOPE ROUNDING | PW-61 |
| RIPRAP END SECTION | PW-62 |
| SILT FENCE | PW-63 |
| CONSTRUCTION EXIT | PW-64 |
| SURFACE ROUGHENING | PW-65 |
| TEMPORARY STABILIZATION | PW-66 |
| DIVERSION BERM | PW-67 |
| CHECK DAM | PW-68 |
| TEMPORARY DOWN DRAIN | PW-69 |
| ROCK DAM | PW-70 |
| INLET PROTECTION | PW-71 |



TITLE
 RECTANGULAR CURB INLET
 WITH THROAT EXTENSIONS

Issue Date
 APR 2015

PW-1A
 Revision Date

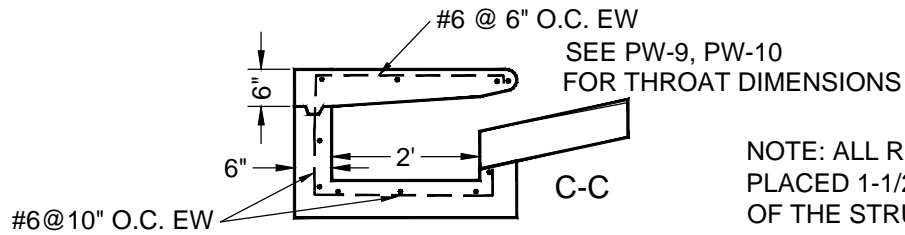




TITLE
RECTANGULAR CURB INLET
WITH THROAT EXTENSIONS

Issue Date
APR 2015

PW-1A
Revision Date



NOTE:

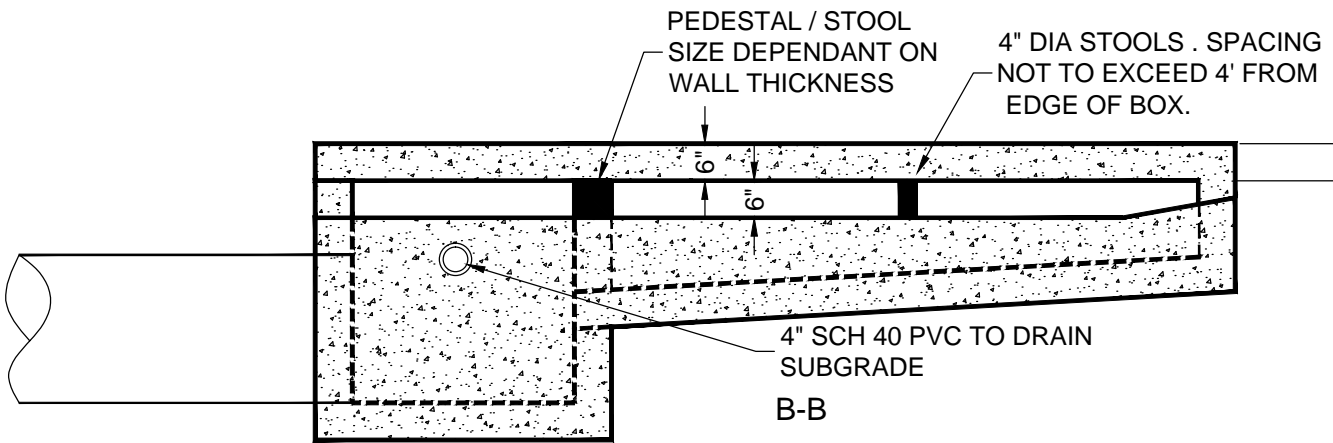
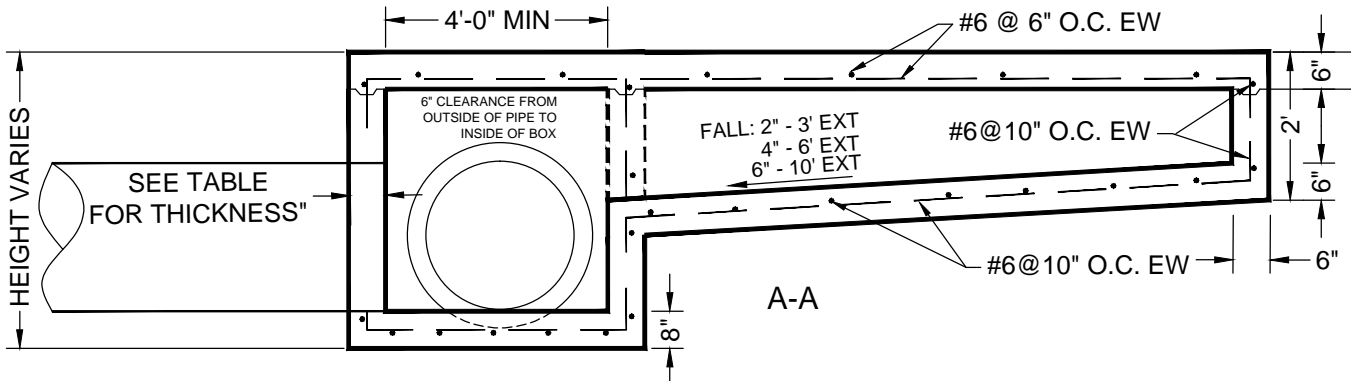
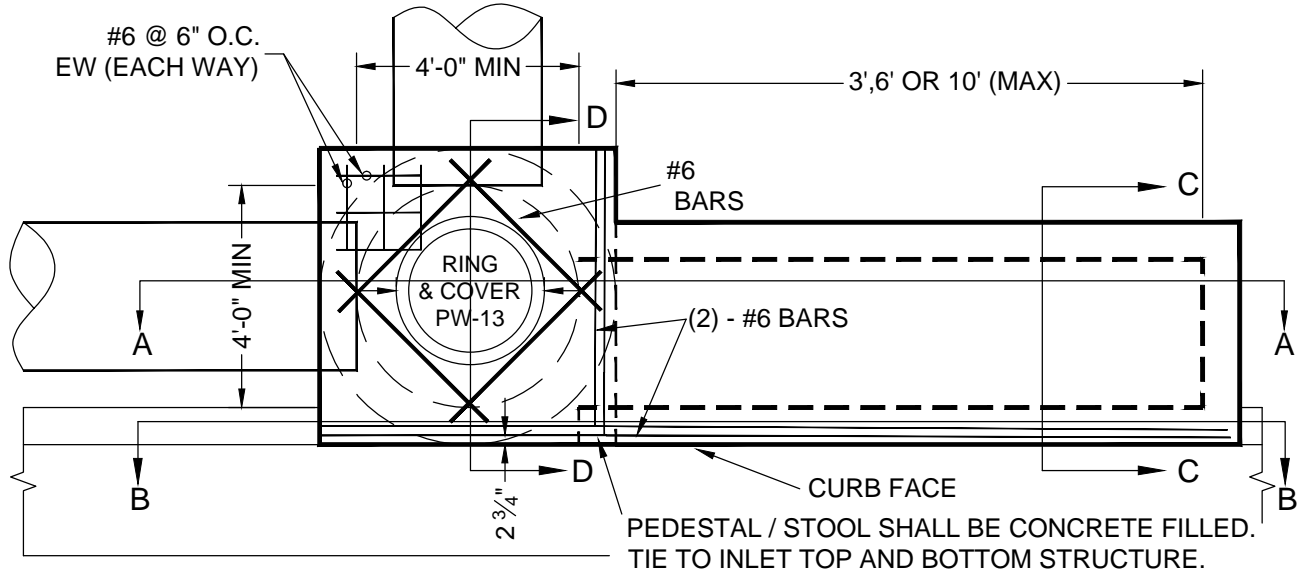
PRE-CAST STRUCTURES ARE ALLOWED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ASSURE COMPLIANCE OF PRE-CAST STRUCTURES TO STANDARD DESIGN DETAILS AND PLAN CONFIGURATIONS.



TITLE
 CIRCULAR CURB INLET
 WITH THROAT EXTENSIONS

Issue Date
 APR 2015

PW-1B
 Revision Date

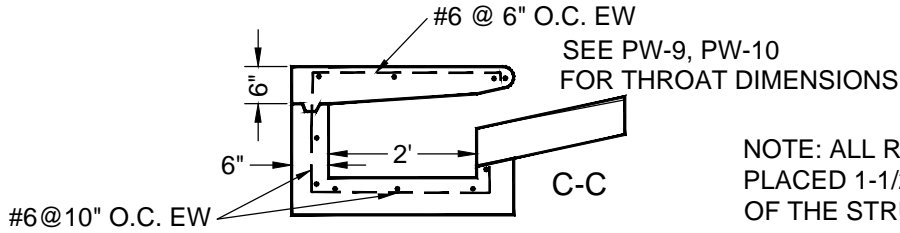




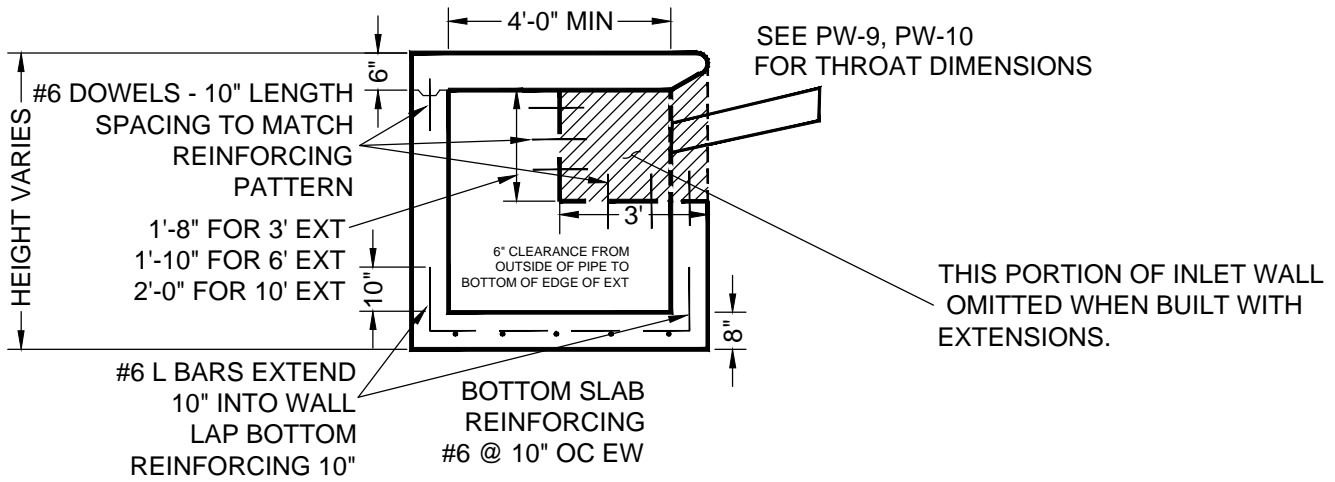
TITLE
CIRCULAR CURB INLET
WITH THROAT EXTENSIONS

Issue Date
 APR 2015

PW-1B
 Revision Date



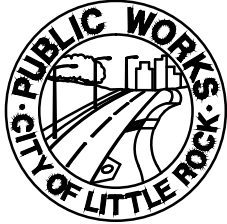
NOTE: ALL REINFORCING TO BE PLACED 1-1/2" CLEAR TO THE INSIDE OF THE STRUCTURE.



| DIA. OF STRUCTURE | WALL THICKNESS | DIA. OF OUTLET PIPE |
|-------------------|----------------|---------------------|
| 4' I.D. | 6" | 15" Thru 27" |
| 5' I.D. | 8" | 30" Thru 42" |
| 6' I.D. | 8" | 48" Thru 54" |
| 8' I.D. | 10" | 60" Thru 72" |

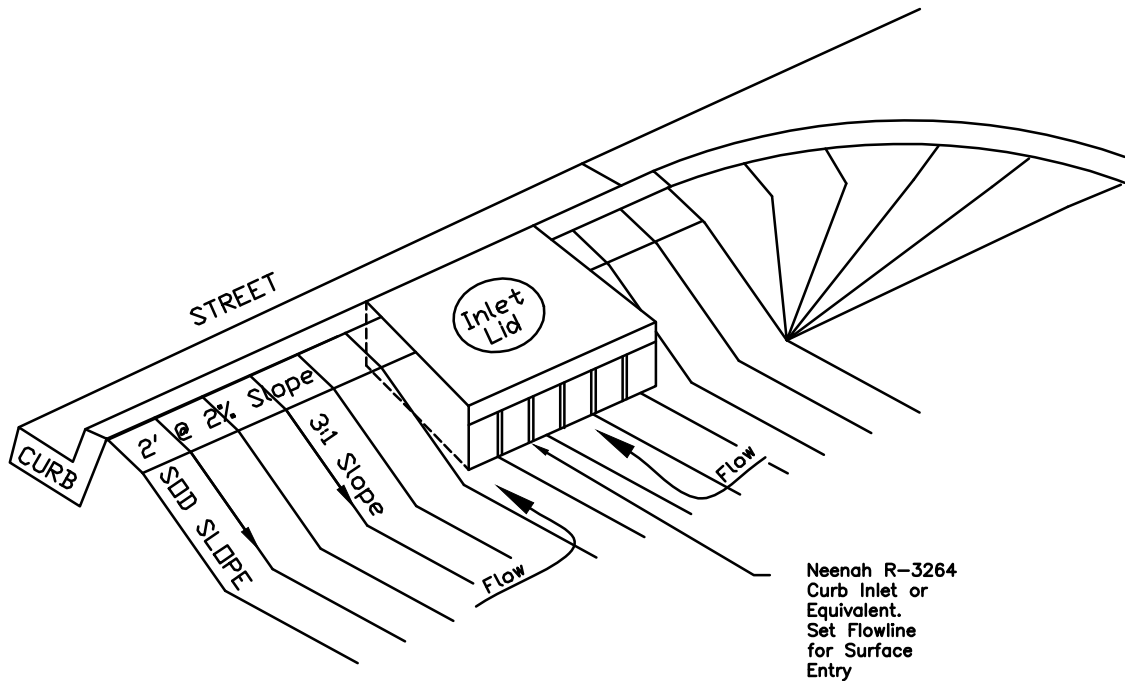
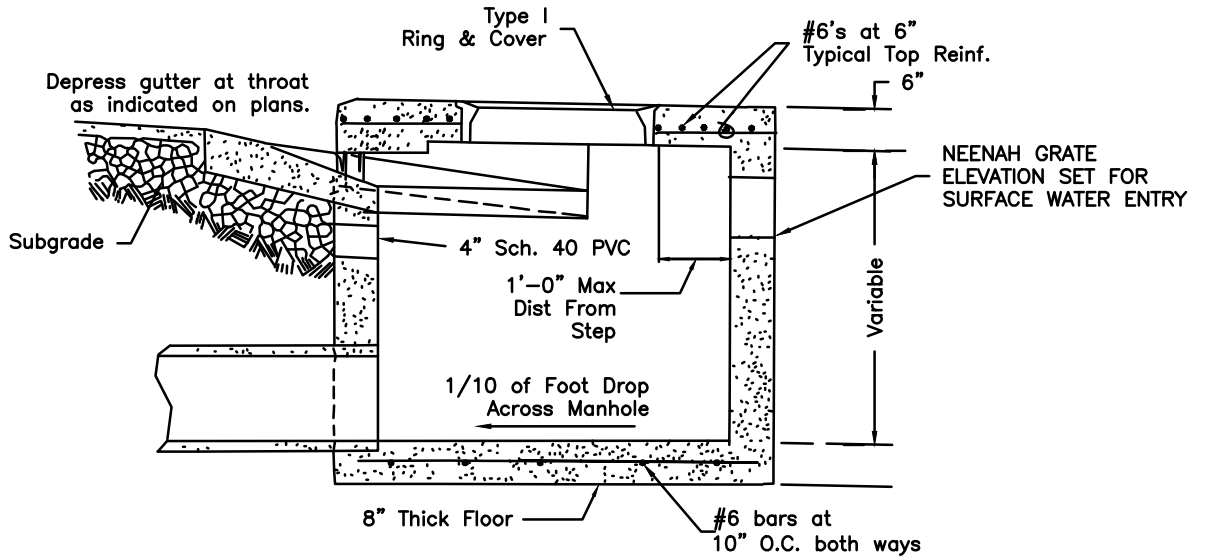
NOTE:

PRE-CAST STRUCTURES ARE ALLOWED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ASSURE COMPLIANCE OF PRE-CAST STRUCTURES TO STANDARD DESIGN DETAILS AND PLAN CONFIGURATIONS.



TITLE
INLET W/ BACK OPENING
FOR SURFACE WATER

| | |
|------------|---------------|
| Issue Date | PW-2 |
| APR 2015 | Revision Date |

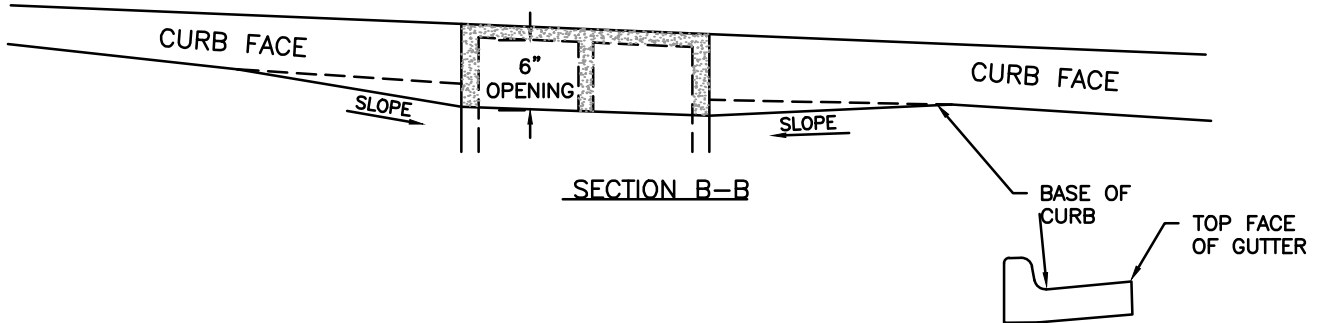
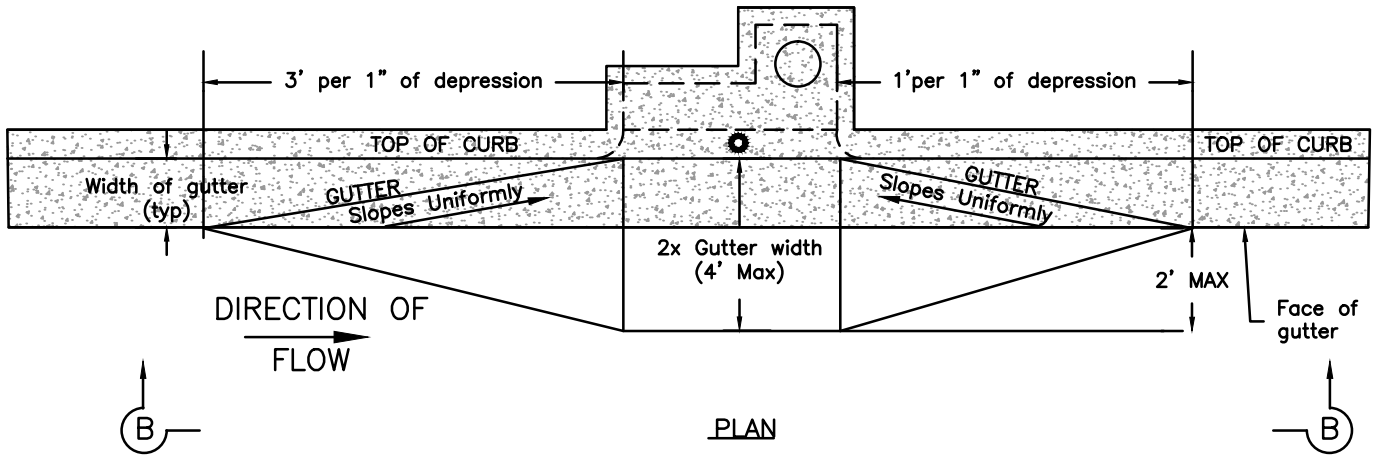


CURB INLET W/ YARD DRAINAGE



TITLE
GUTTER DEPRESSION
DETAIL
TYPICAL DEPRESSION IS 4"

| | |
|------------|---------------|
| Issue Date | PW-3 |
| 02/15 | Revision Date |
| | APR 2015 |



NOTE: LOW POINT / (SAG) INLETS : SLOPE SHALL BE 1 FT PER 1" OF DEPRESSION BOTH SIDES

GUTTER DEPRESSION DETAIL

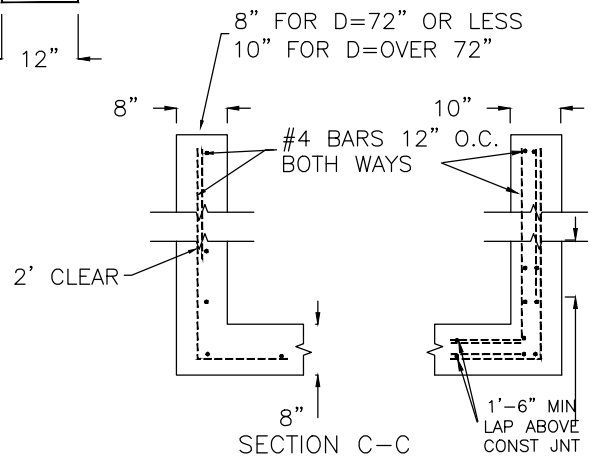
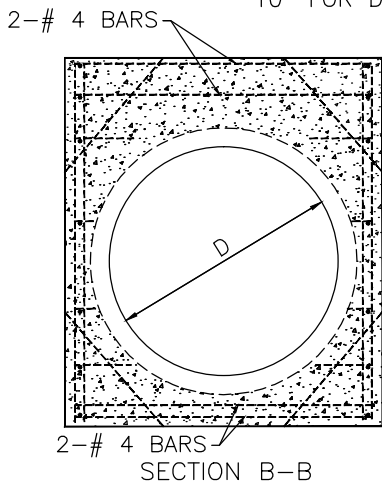
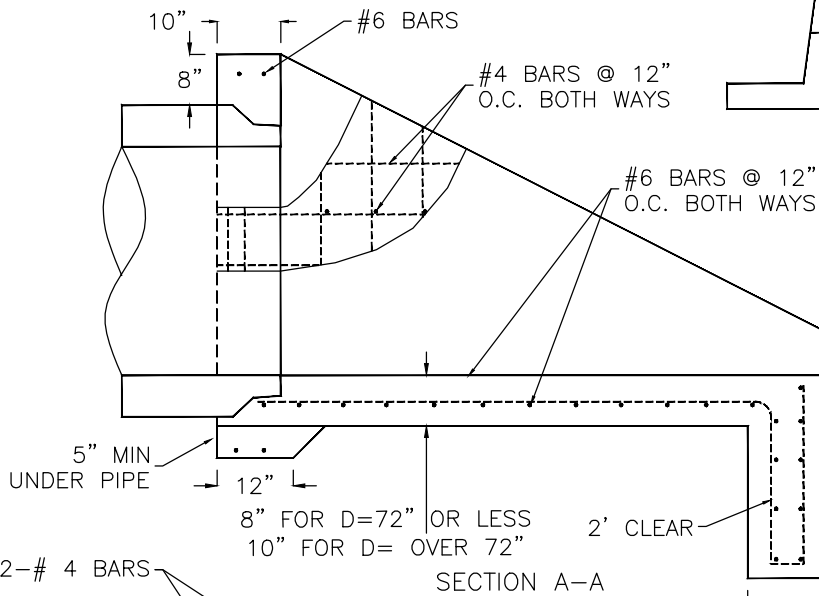
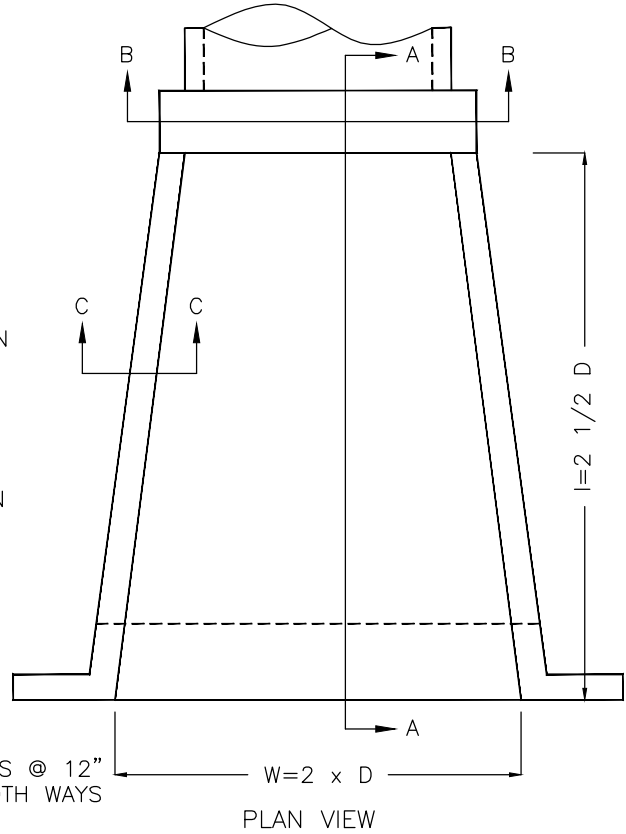
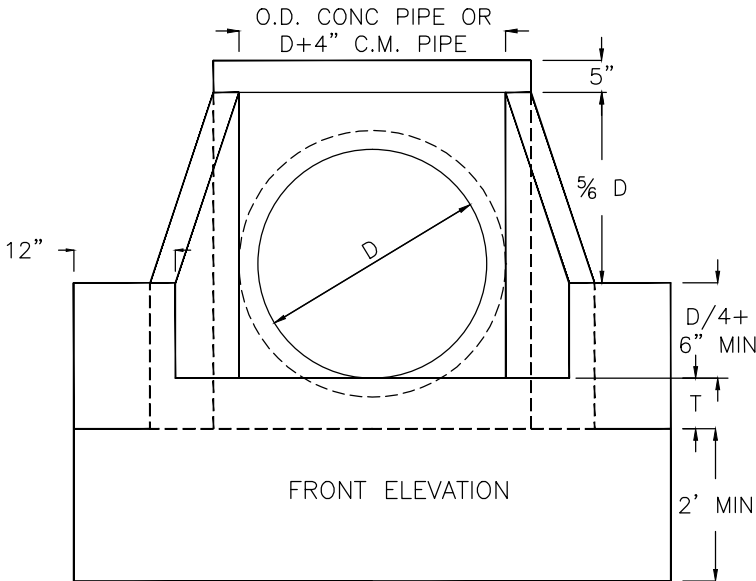
NOTE: THE TOP FACE OF GUTTER SHALL DROP 1/2 OF THE GUTTER DEPRESSION ACROSS THE INLET OPENING.



TITLE
HEAD WALL DETAIL

Issue Date
APR 2015

PW-4
Revision Date

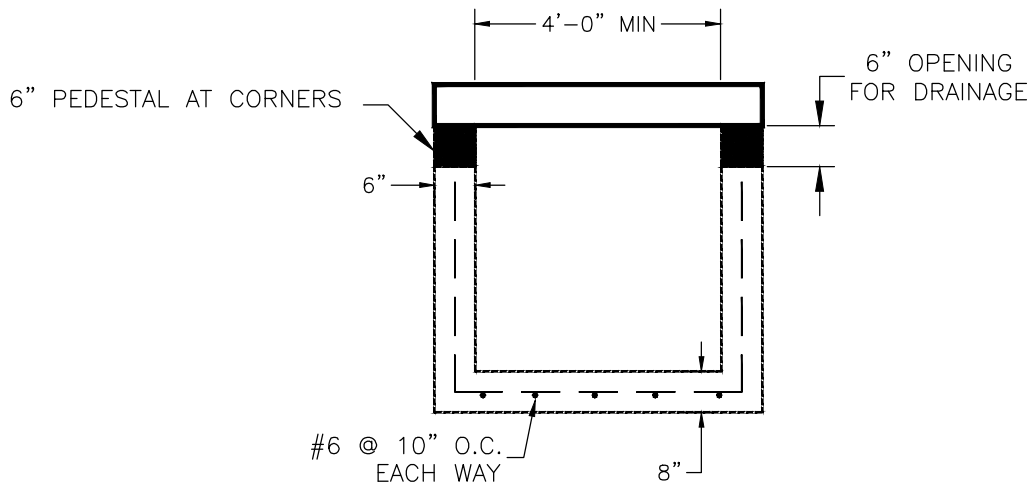
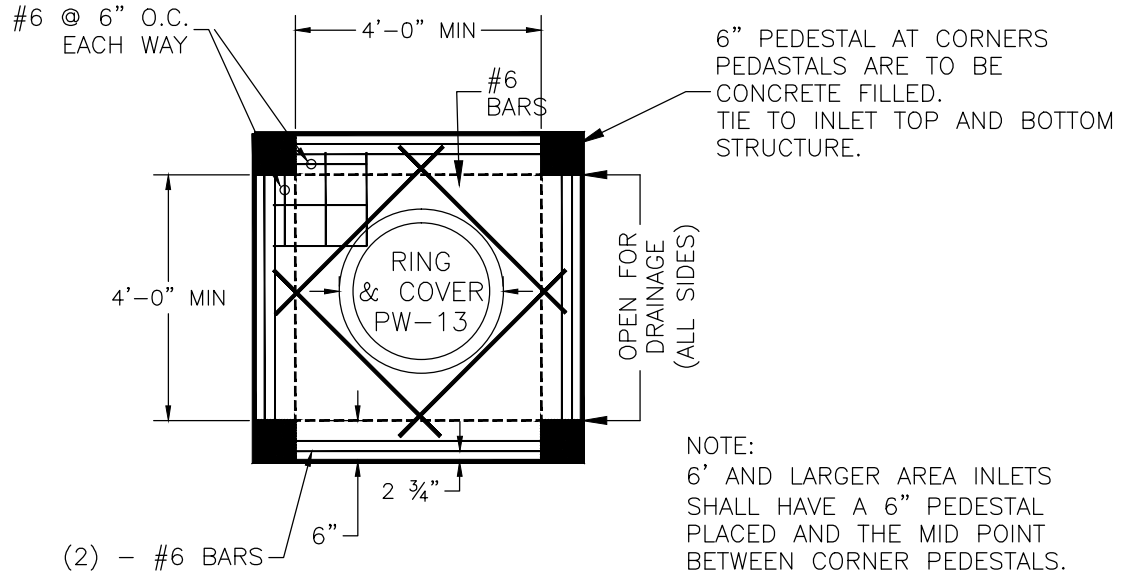




TITLE
AREA INLET

Issue Date
APRIL 2014

PW-6
Revision Date
APR 2015



NOTE:

PRE-CAST STRUCTURES ARE ALLOWED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ASSURE COMPLIANCE OF PRE-CAST STRUCTURES TO STANDARD DESIGN DETAILS AND PLAN CONFIGURATIONS.

ROUND AREA INLETS ARE ALLOWED. REFER TO PW-1B FOR STRUCTURE REINFORCING.

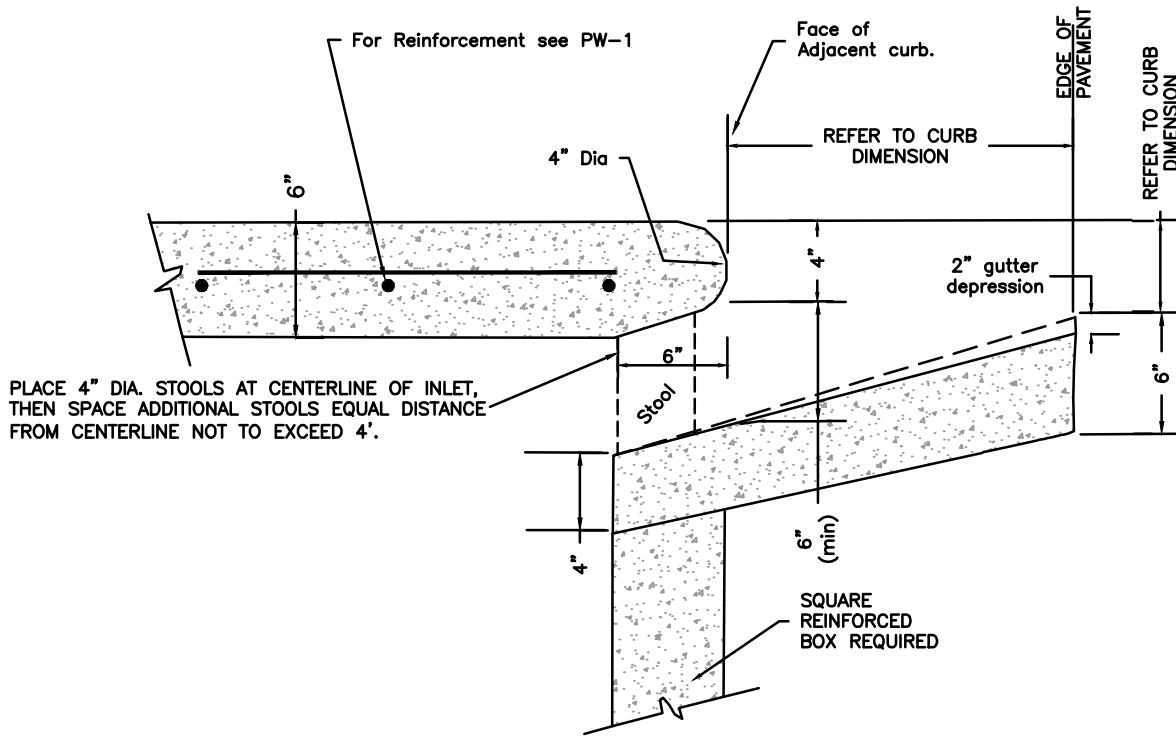


TITLE

TYPICAL DRAINAGE INLET
THROAT OPENING DETAIL
(NOT IN CURB RADIUS)

Issue Date
AUG, 2006

PW-9
Revision Date
APR 2015



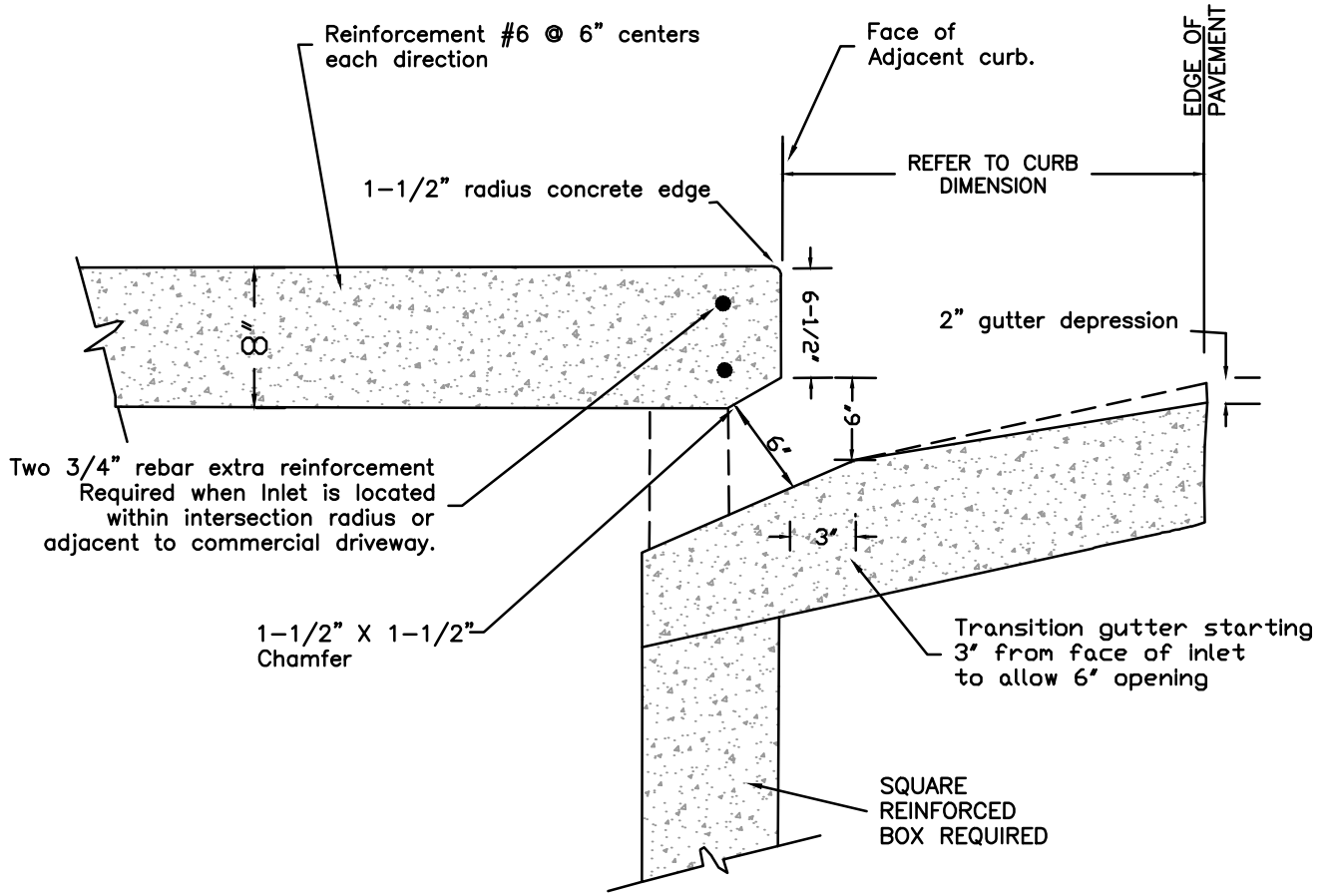
INLET THROAT BETWEEN STOOLS

NOTE: This detail is not to be used for inlets in curb radius.
See PW-10 for detail of inlet top in curb radius.

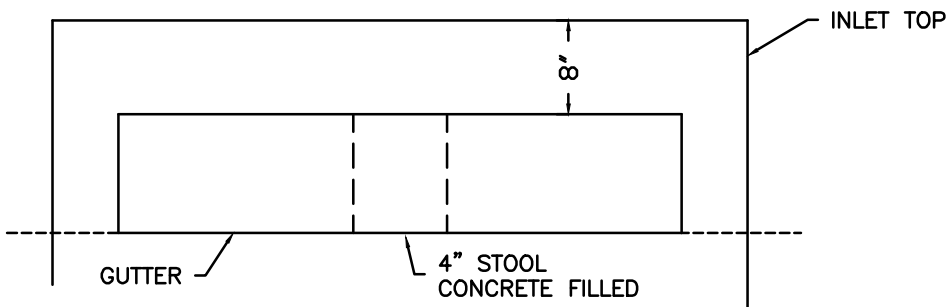


TITLE
 TYPICAL DRAINAGE INLET
 THROAT OPENING AND TOP
 DETAIL WHERE IN CURB RADIUS

| | |
|------------|---------------|
| | PW-10 |
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |



INLET THROAT IN RADIUS (SIDE VIEW)



INLET THROAT IN RADIUS (FRONT VIEW)

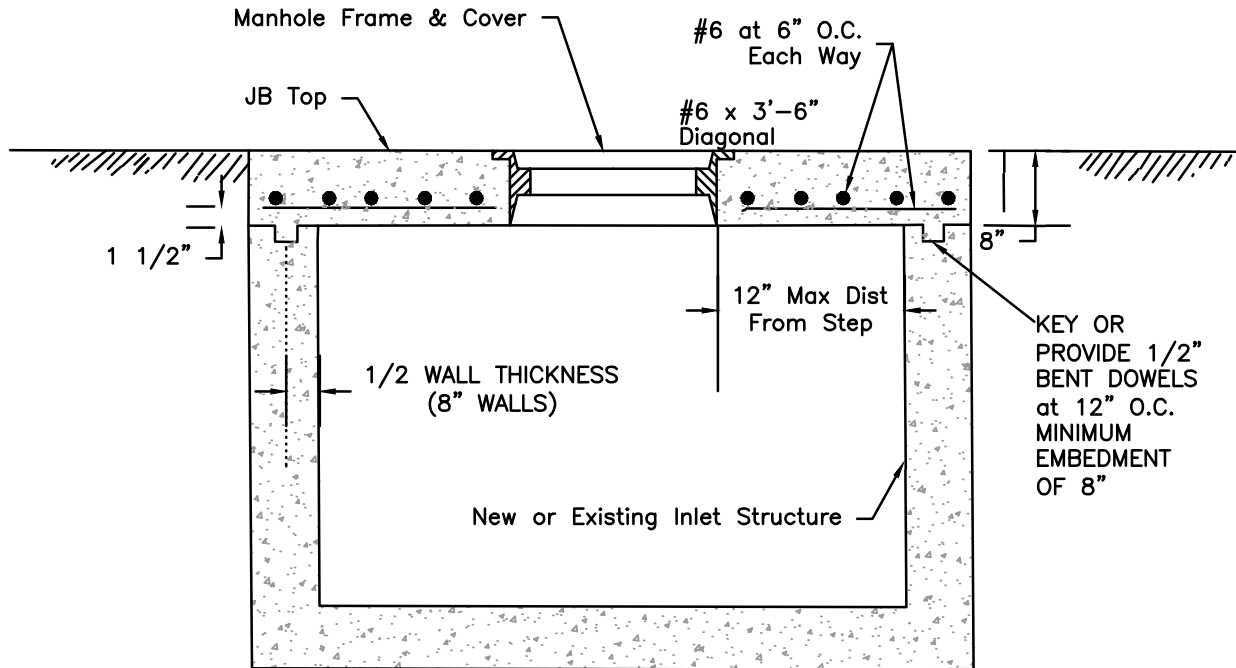
PLACE 4" DIA. STOOLS AT CENTERLINE OF INLET,
 THEN SPACE ADDITIONAL STOOLS EQUAL DISTANCE
 FROM CENTERLINE NOT TO EXCEED 3'.



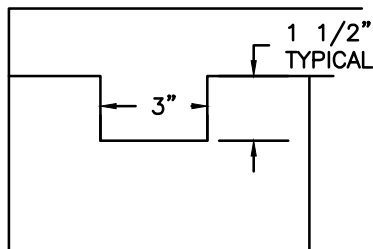
TITLE
JUNCTION BOX
IN ROADWAY

Issue Date
AUG, 2006

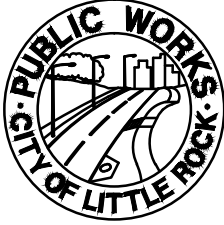
PW-11
Revision Date
APR 2015



NOTE: Junction box top may be held below ACHM Surface and manhole cover extended up flush with paving surface.



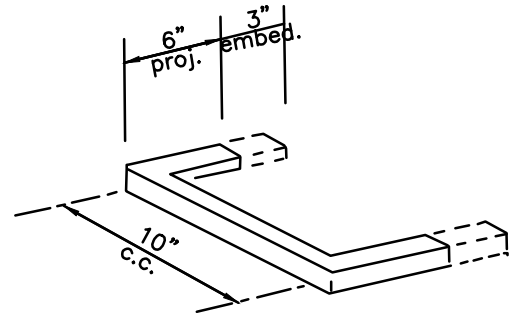
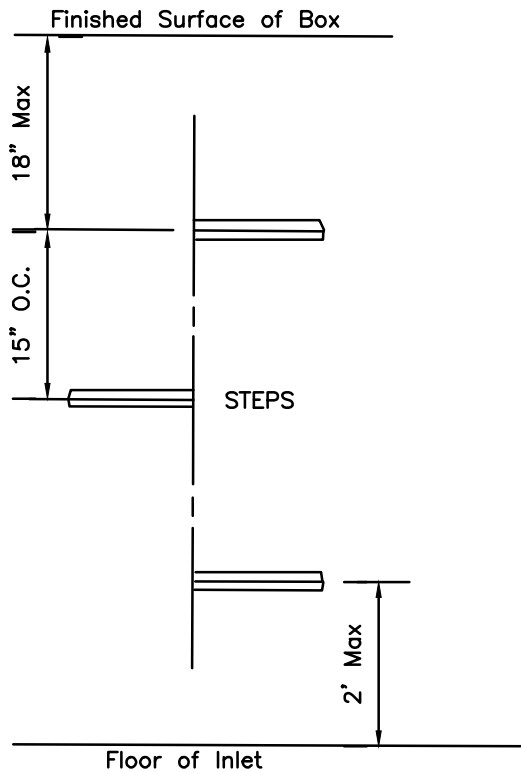
8" WALL-KEY DETAIL



TITLE
CURB INLET STEPS

Issue Date
AUG, 2006

PW-12
Revision Date
APR 2015



- A. Manhole steps: corrosion resistant, coated, and reinforced with steel per ASTM C-478. Steel reinforcing minimum 1/2" diameter.
- B. Acceptable Manufacturers:
 - 1. Utility Products Inc. Perma Step 100-2
 - 2. ICM Inc. Polypropylene coated steps.
 - 3. M.A Industries, Inc. Polypropylene coated steps.
#PSI-PF
 - 4. BOWCO, by H. Bowen Co.
- C. Capable of supporting minimum 300 lb. load.
- D. Non-Slip textured treads.
- E. Required in all structures 3'-0" deep or greater.



TITLE

MANHOLE FRAME & COVER

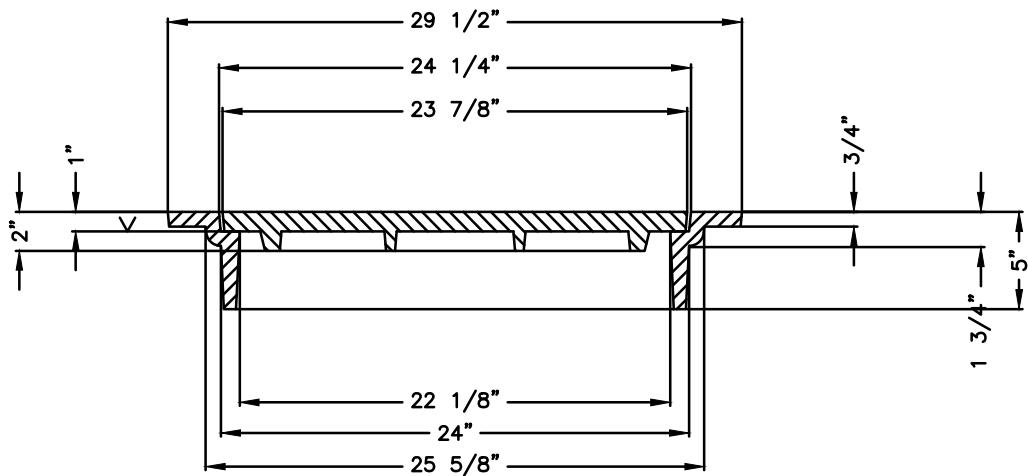
Issue Date
AUG, 2006

PW-13
Revision Date
APR 2015

7/8" BORDER



2 CONCEALED PICKS



NOTE:

1. FURNISHED WITH MACHINED HORIZONTAL BEARING SURFACES.

ITEM:

1. #2018-A (ENVIRONMENTAL) AS MANUFACTURED BY DEETER FOUNDRY, INC. OR EAST JORDAN 2750A MANHOLE COVER (275-24) WITH ABOVE LETTERING, OR APPROVED EQUAL PER ENGINEER.

MATERIAL: CAST GRAY IRON ASTM A-48,
CLASS 35B

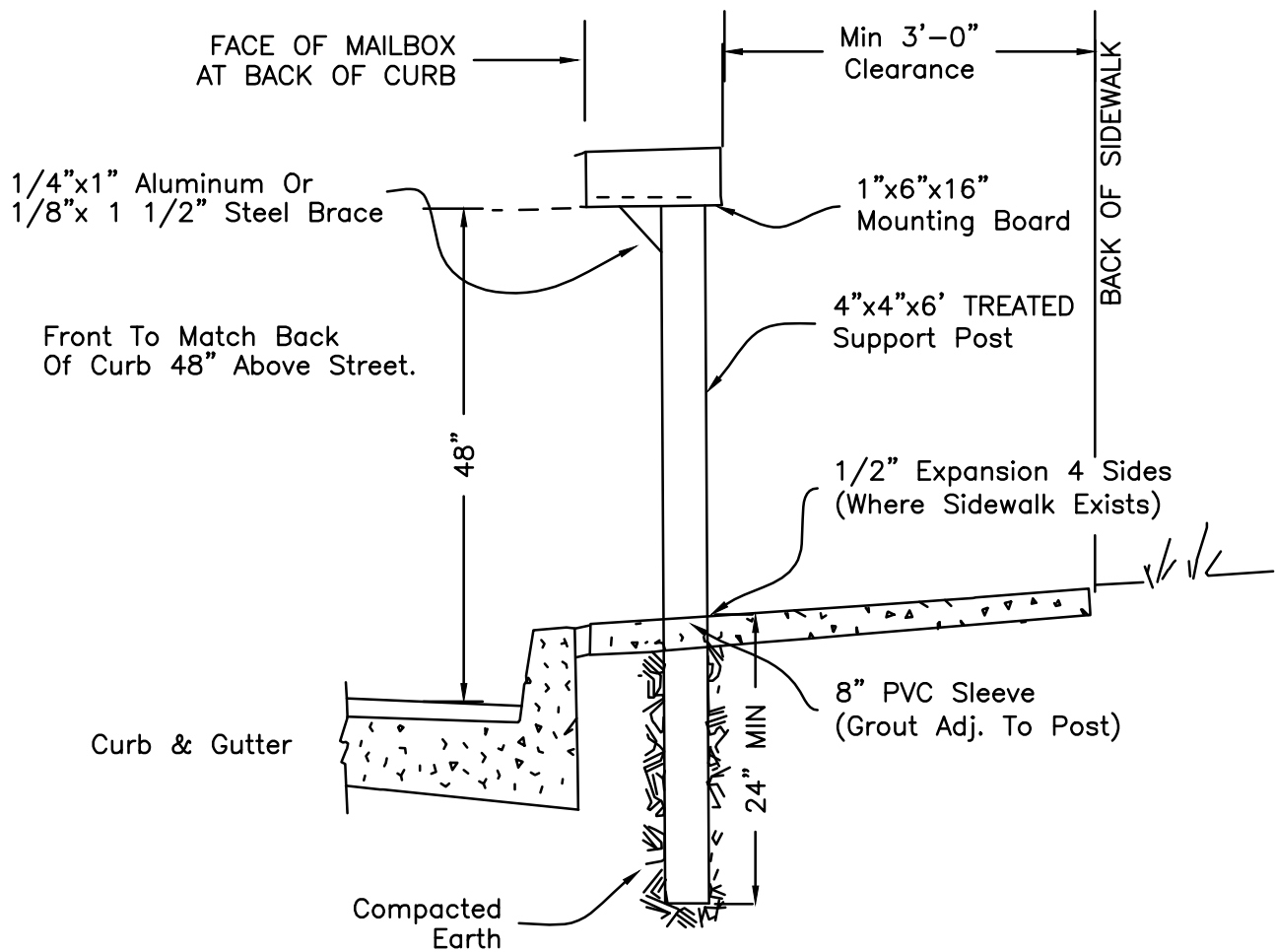
FINISH: NO PAINT

WEIGHT: COVER 140 LBS.
FRAME 133 LBS.



TITLE
MAIL BOX INSTALLATION
DETAIL

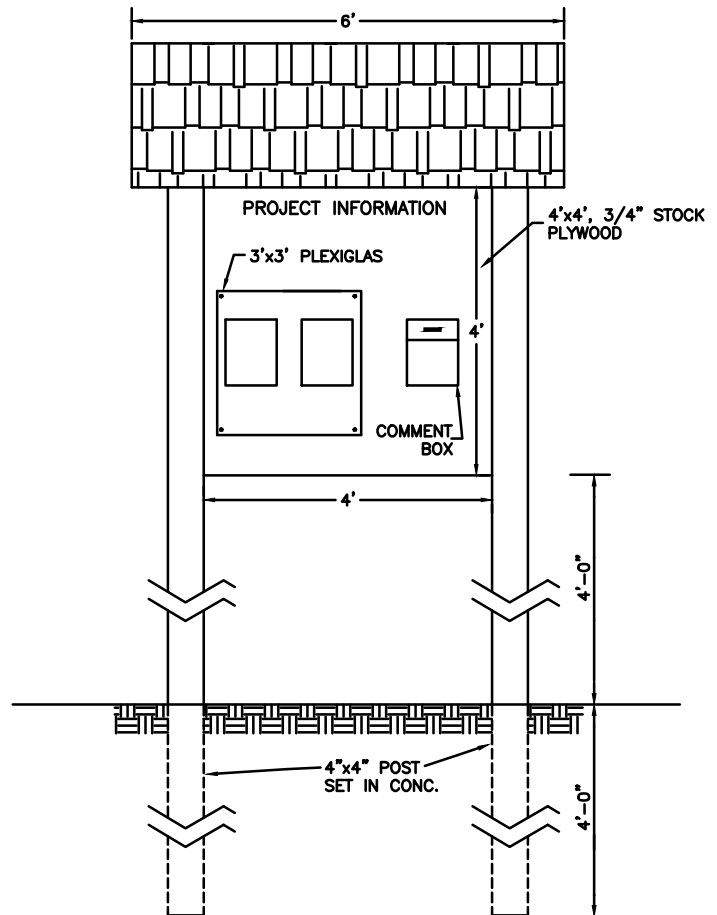
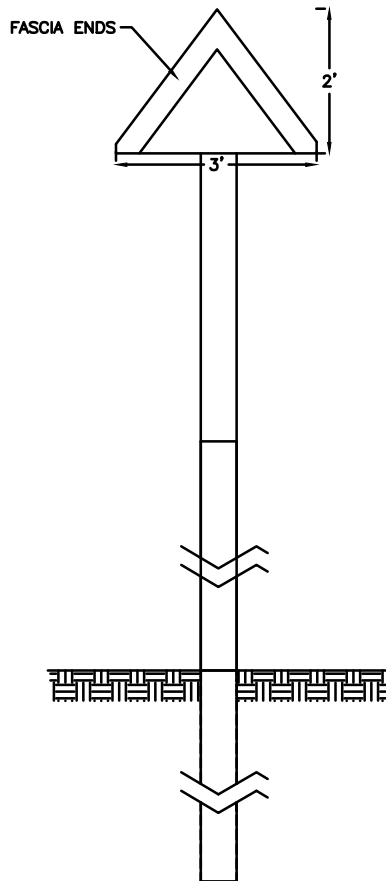
| | |
|------------|---------------|
| | PW-17 |
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |





TITLE
PROJECT KIOSK

| | |
|------------|---------------|
| | PW-18 |
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |



- ROOF: 1/2" BOARD SHEATHING
RAFTERS ON 24" C-C (2"x4" HORIZONTAL)
- SHINGLES: 3-TAB SQUARE BUTT (100 LB)
OR ROLL ROOFING (MINERAL SURFACED)
ROOFING FELT (15-LB)
- PAINT: (ALL EXPOSED WOOD SHALL BE PAINTED)
LIGHT GREY, DARK ROOF
INCLUDING UNDER EAVES.

KIOSK TO BE PLACED ON PROJECT
AS DIRECTED BY THE ENGINEER.
OR AS SHOWN ON PLANS.



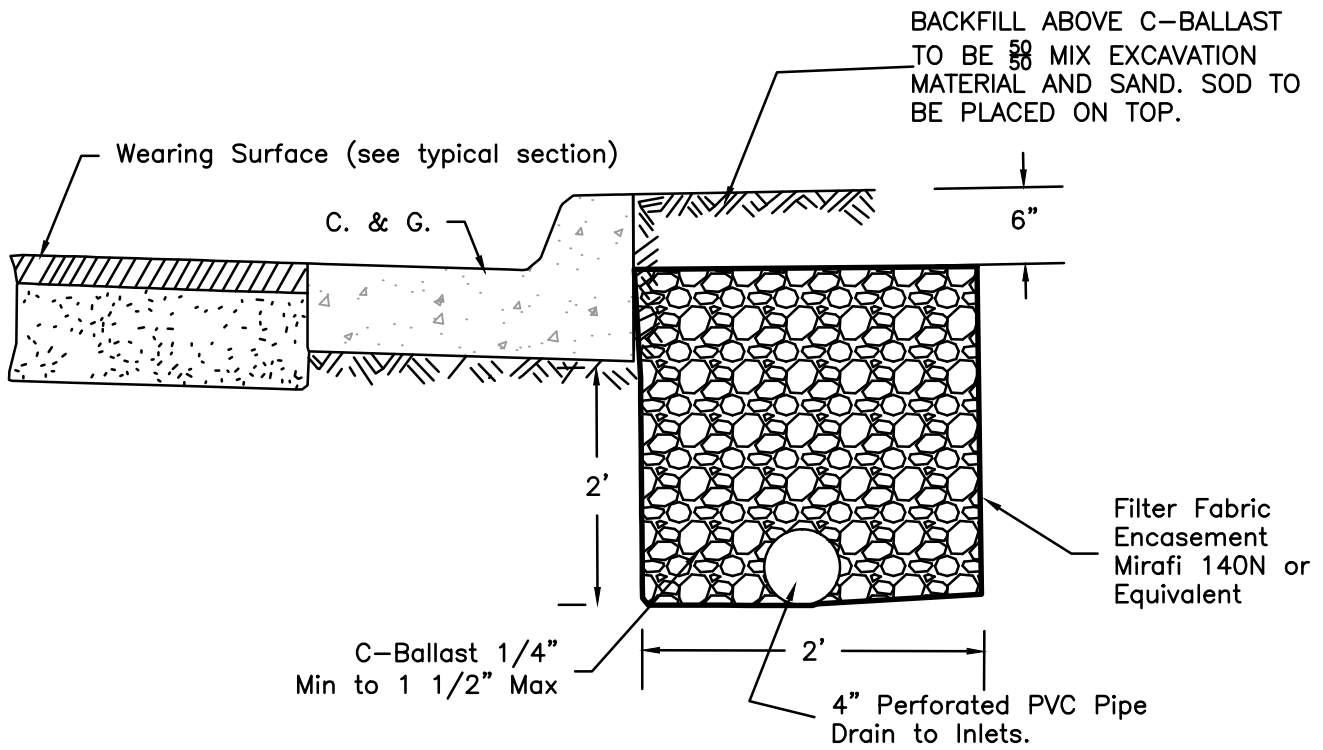
TITLE

SUB-DRAIN DETAIL

Issue Date
AUG, 2006

PW-19
Revision Date
APR 2015

NOTE: Placement and Location of Sub-Drain shall be determined by Engineer during Construction Period or as Indicated on Plans.



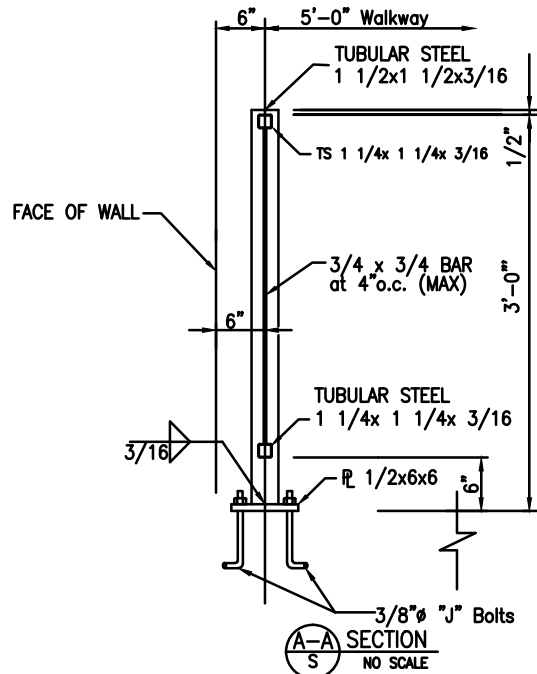
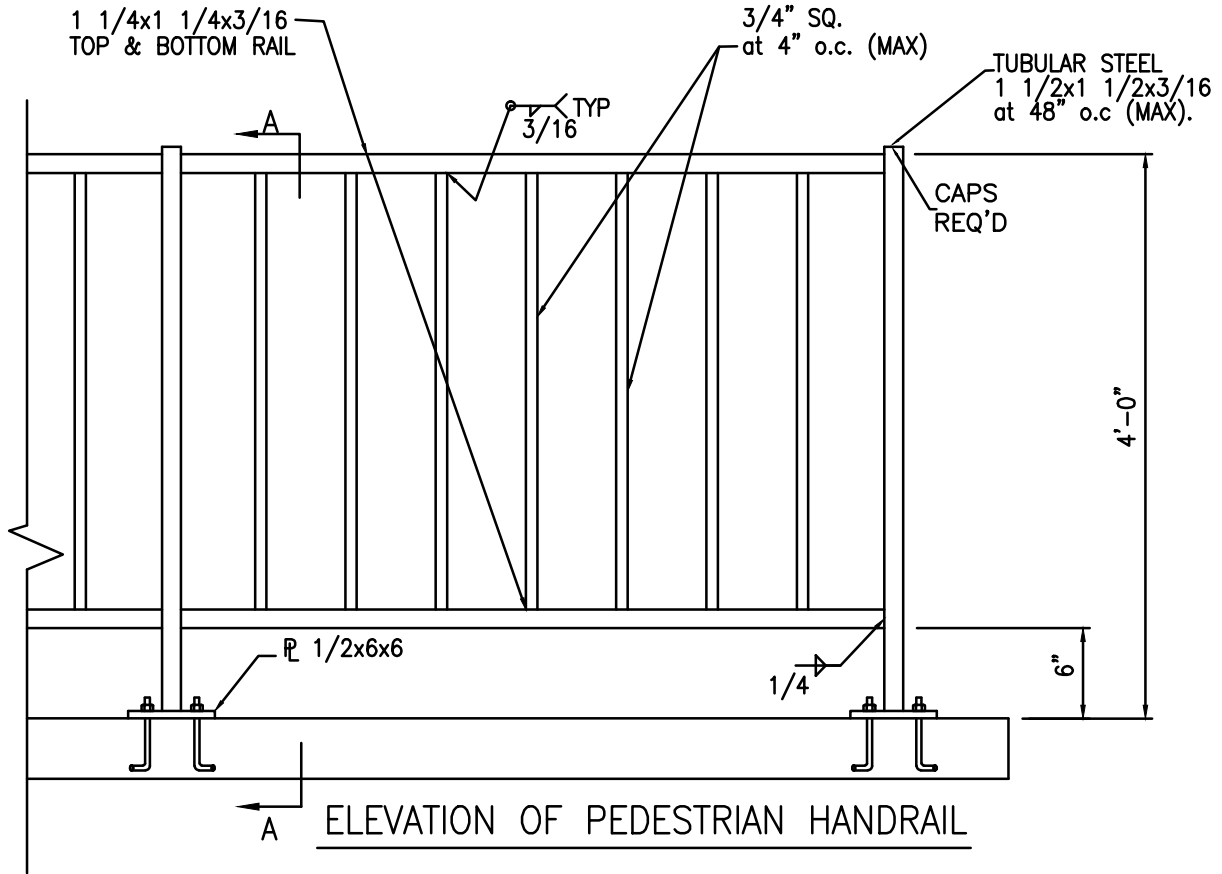
SUB-DRAIN DETAIL



TITLE
HANDRAIL DETAIL
ALTERNATE

Issue Date
AUG, 2006

PW-20
Revision Date
APR 2015



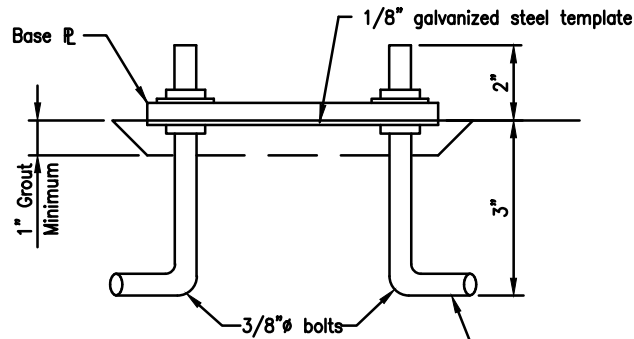
Material for pedestrian handrail shall be AASHTO M270, Gr. 36 and shall be painted (black). Nuts & washers shall be stainless steel as noted on details.



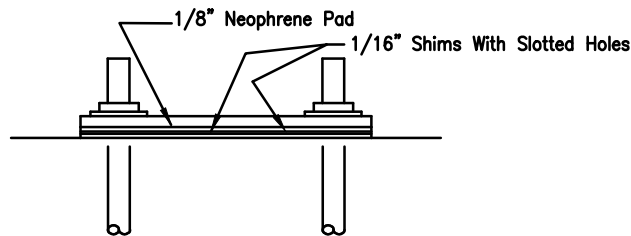
TITLE
HANDRAIL DETAIL

Issue Date
AUG, 2006

PW-21
Revision Date
APR 2015

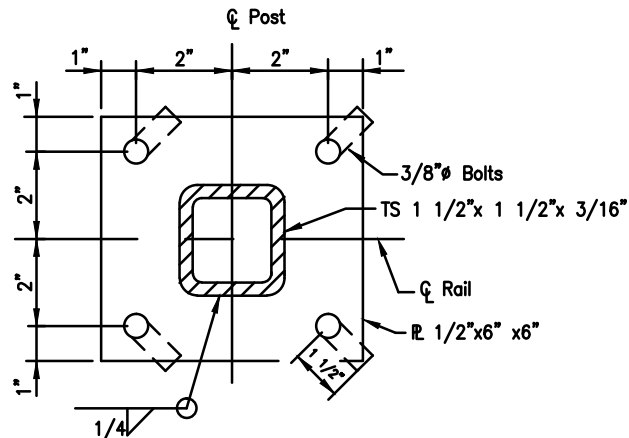


Stainless Steel Bolt ASTM A193, Grade B8 or B8A
Stainless Steel Nut AASHTO M292, Grade 8
Stainless Steel Washer ASTM A276, Grade 302

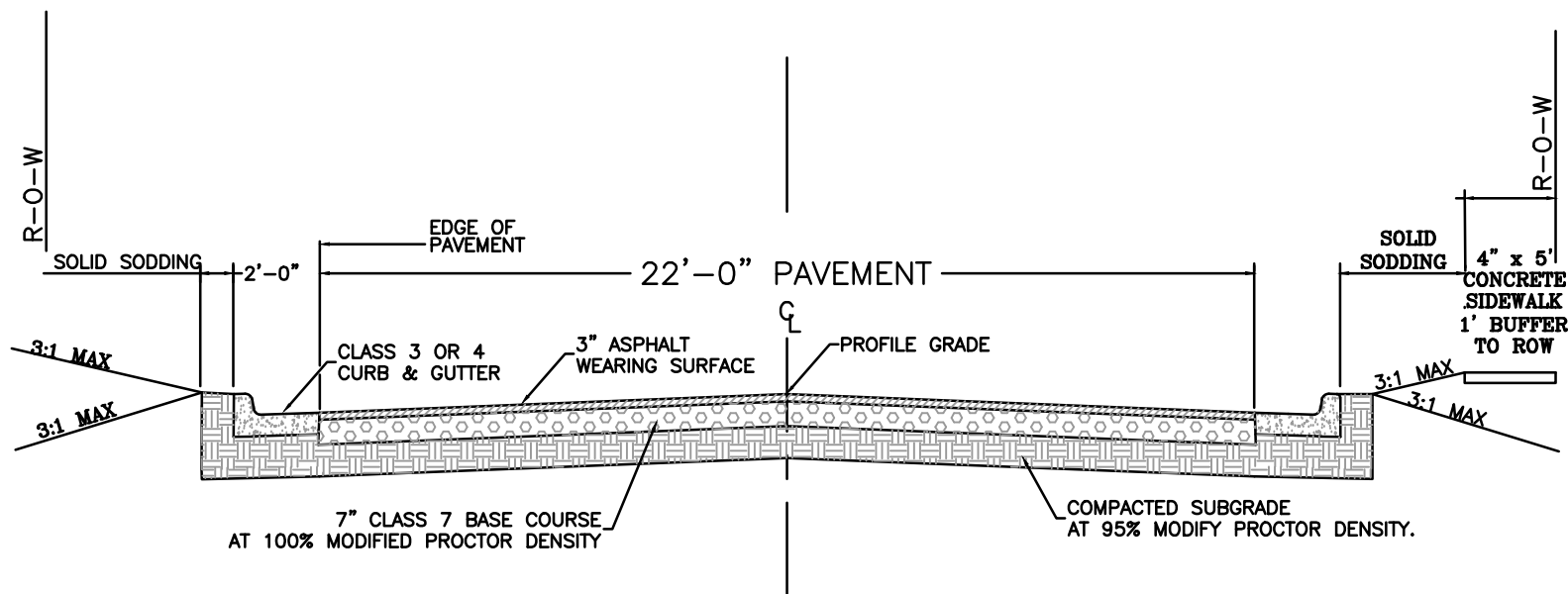


Contractor may place the 1/8" galvanized steel template on the finished sidewalk surface and provide shim plates and neoprene pads for leveling, in lieu of placing the template on nuts, leveling and finishing with grout.

Note: All posts & balusters shall be vertical.



HANDRAIL ANCHOR BOLT ASSEMBLIES



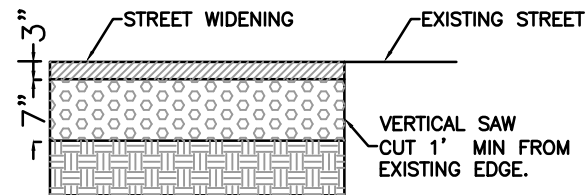
7" CLASS 7 BASE COURSE
AT 100% MODIFIED PROCTOR DENSITY

COMPACTED SUBGRADE
AT 95% MODIFY PROCTOR DENSITY.

GENERAL NOTES

1. IN AREAS TO RECEIVE BITUMINOUS PAVING, CONCRETE DRIVEWAYS, OR CURB AND GUTTER, SUBGRADE SHALL BE COMPACTED TO A DENSITY NOT LESS THAN 95% OF MAXIMUM DENSITY OBTAINED AT OPTIMUM MOISTURE CONTENT. (AASHTO T-180)
2. FOR AREAS OF SUBGRADE PREPARATION TO RECEIVE CONCRETE SIDEWALKS, SUBGRADE SHALL BE COMPACTED TO A DENSITY OF 90% MAXIMUM.(AASHTO T-180).
3. CRUSHED STONE- MATERIAL IN EACH COURSE SHALL BE COMPACTED TO A DENSITY OF 100% MAXIMUM (AASHTO T-191).
4. CENTERLINE PROFILE WILL REQUIRE HEIGHT GREATER THAN CURB FOR SOME STREETS TO MAINTAIN 2% CROSS-SLOPE.

THICKNESS SHALL BE DETERMINED BY SOIL TEST AND PAVEMENT DESIGN IF REQUIRED BY DEPARTMENT OF PUBLIC WORKS.
20'-0" PAVEMENT FOR MINOR RESIDENTIAL WHERE APPROVED BY CITY.



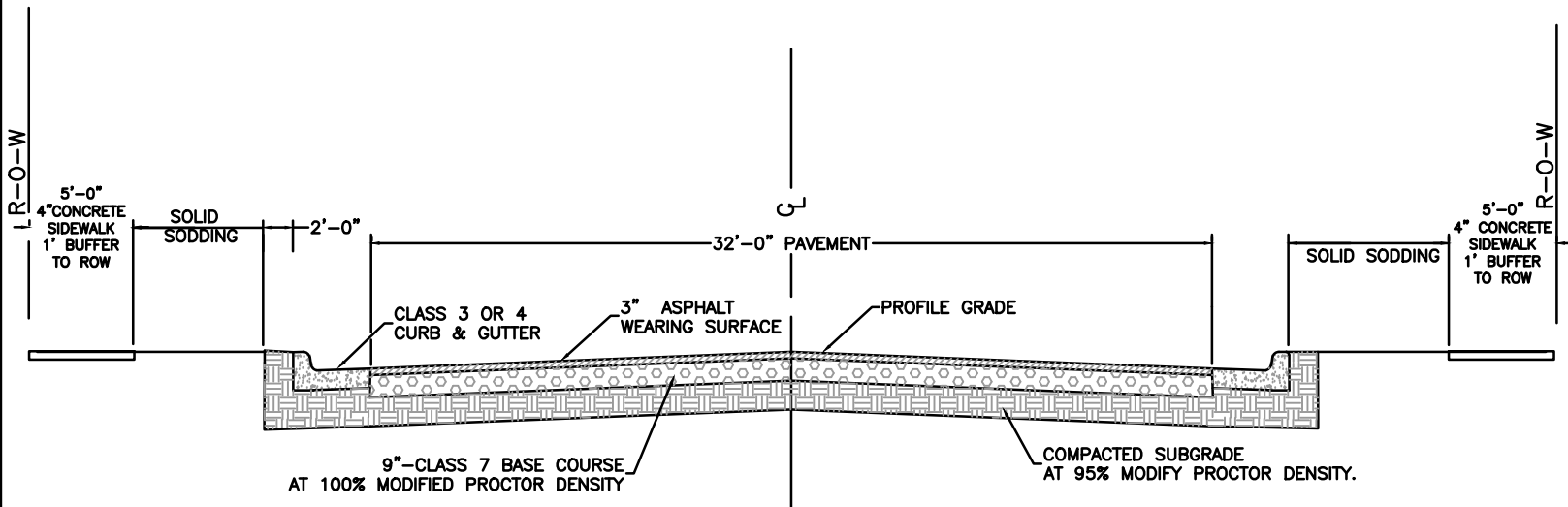
WIDENING EXISTING *

*NOTE: PAVEMENT RECONSTRUCTION TO CENTERLINE IS REQUIRED WHEN EXISTING STREET DOES NOT MEET THESE STANDARDS.

TITLE
TYPICAL SECTION
RESIDENTIAL STREET

Issue Date
AUG, 2006

Revision Date
APR 2015
PW-22



9"-CLASS 7 BASE COURSE
AT 100% MODIFIED PROCTOR DENSITY

COMPACTED SUBGRADE
AT 95% MODIFY PROCTOR DENSITY.

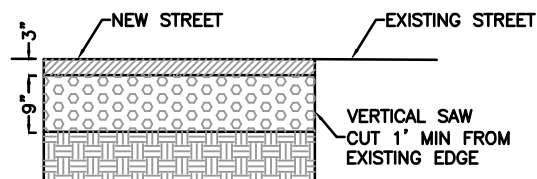
GENERAL NOTES

1. IN AREAS TO RECEIVE BITUMINOUS PAVING, CONCRETE DRIVEWAYS, OR CURB AND GUTTER, SUBGRADE SHALL BE COMPACTED TO A DENSITY NOT LESS THAN 95% OF MAXIMUM DENSITY OBTAINED AT OPTIMUM MOISTURE CONTENT. (AASHTO T-180)
2. FOR AREAS OF SUBGRADE PREPARATION TO RECEIVE CONCRETE SIDEWALKS, SUBGRADE SHALL BE COMPACTED TO A DENSITY 90% MAXIMUM.(AASHTO T-180).
3. CRUSHED STONE- DENSITY OF COMPACTED MATERIAL IN EACH COURSE SHALL BE COMPACTED TO A DENSITY 100% MAXIMUM .(AASHTO T-191).
4. CENTERLINE PROFILE WILL REQUIRE HEIGHT GREATER THAN CURB STREETS TO MAINTAIN 2% CROSS-SLOPE.

THICKNESS SHALL BE DETERMINED BY SOIL TEST AND PAVEMENT DESIGN IF REQUIRED BY DEPARTMENT OF PUBLIC WORKS.

NOTE:

* 8" CONCRETE W/ 3" ACHM (1 1/2 BINDER / 1 1/2 SURFACE) AS APPROVED BY PUBLIC WORKS AS SUBSTITUTE CONSTRUCTION. PAVEMENT RECONSTRUCTION TO CENTERLINE IS REQUIRED, IF EXISTING PAVEMENT DOES NOT CONFORM TO THESE STANDARDS.



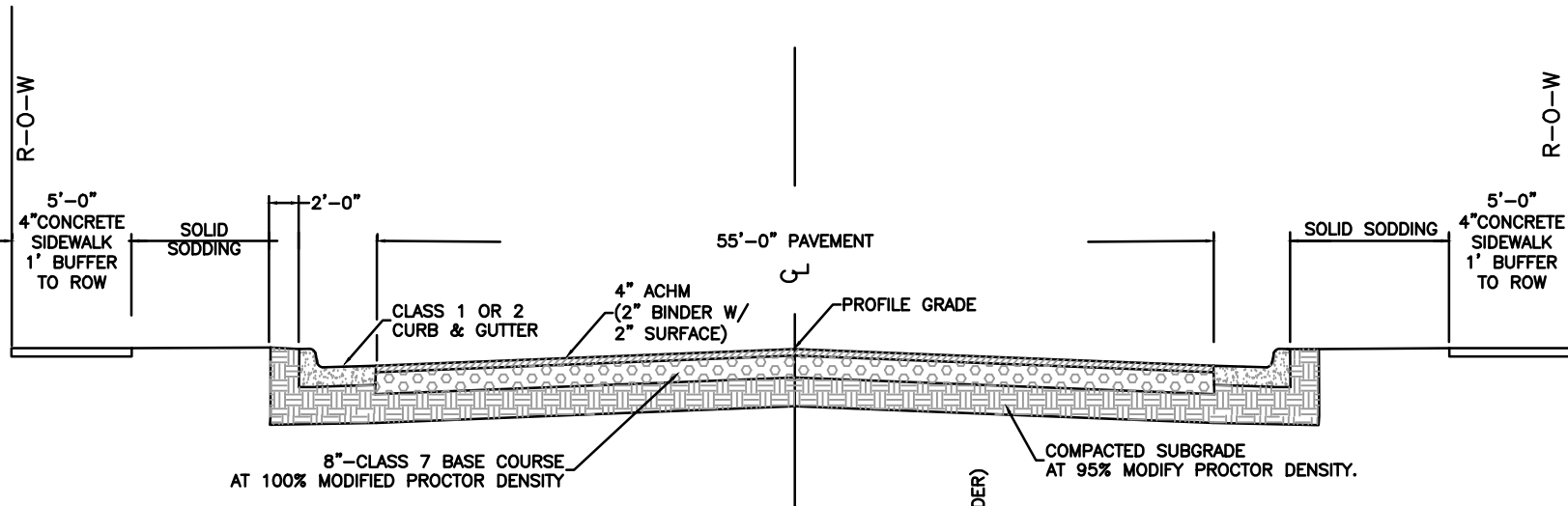
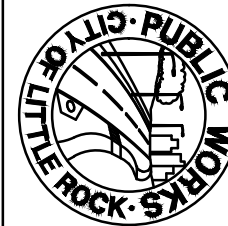
WIDENING EXISTING *

TITLE
TYPICAL SECTION
COLLECTOR OR COMMERCIAL
STREET

Issue Date
AUG, 2006

Revision Date
APR 2015

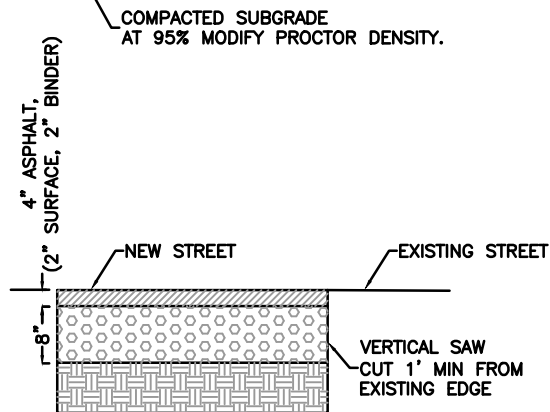
PW-23



TITLE
 TYPICAL SECTION
 MINOR ARTERIAL STREET

GENERAL NOTES

1. IN AREAS TO RECEIVE BITUMINOUS PAVING, CONCRETE DRIVEWAYS, OR CURB AND GUTTER, SUBGRADE SHALL BE COMPACTED TO A DENSITY NOT LESS THAN 95% OF MAXIMUM DENSITY OBTAINED AT OPTIMUM MOISTURE CONTENT. (AASHTO T-180)
2. FOR AREAS OF SUBGRADE PREPARATION TO RECEIVE CONCRETE SIDEWALKS, THE SUBGRADE SHALL BE COMPACTED TO A DENSITY OF 95% OF THE MAXIMUM. (AASHTO T-180).
3. CRUSHED STONE- DENSITY OF COMPACTED MATERIAL IN EACH COURSE SHALL BE COMPACTED TO A DENSITY 100% MAXIMUM (AASHTO T-191).
4. CENTERLINE PROFILE WILL REQUIRE HEIGHT GREATER THAN CURB FOR SOME STREETS TO MAINTAIN 2% CROSS-SLOPE.
5. WIDENING REQUIRES BUTT JOINTS SAW CUT WHERE NEW WIDENING ABUTS OLD.



WIDENING EXISTING *

ALL THICKNESS SHALL BE DETERMINED BY SOIL TEST AND PAVEMENT DESIGN IF REQUIRED BY DEPARTMENT OF PUBLIC WORKS.

NOTE:

- * 8" CONCRETE W/ 4" ACHM (2" BINDER/2" SURFACE) FOR AREA AS APPROVED BY PUBLIC WORKS AS SUBSTITUTE CONSTRUCTION. PAVEMENT RECONSTRUCTION TO CENTERLINE IS REQUIRED, IF EXISTING PAVEMENT DOES NOT CONFORM TO THESE STANDARDS.

Issue Date
 AUG, 2006

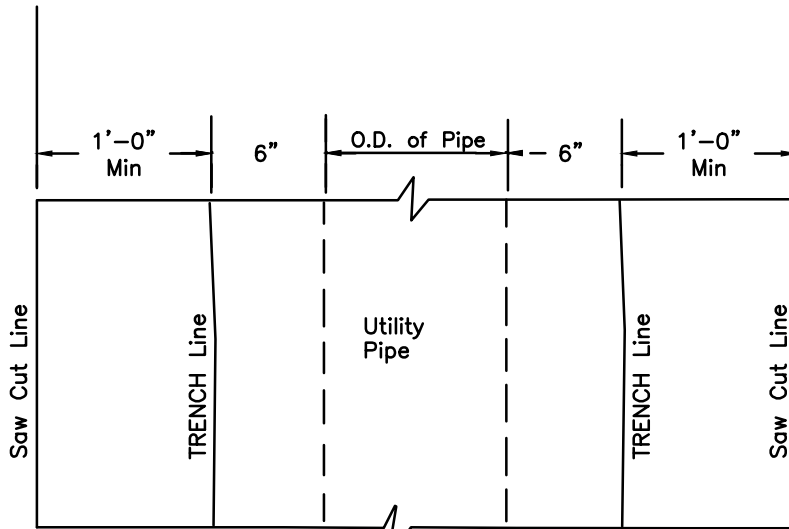
Revision Date
 PW-24
 APR 2015



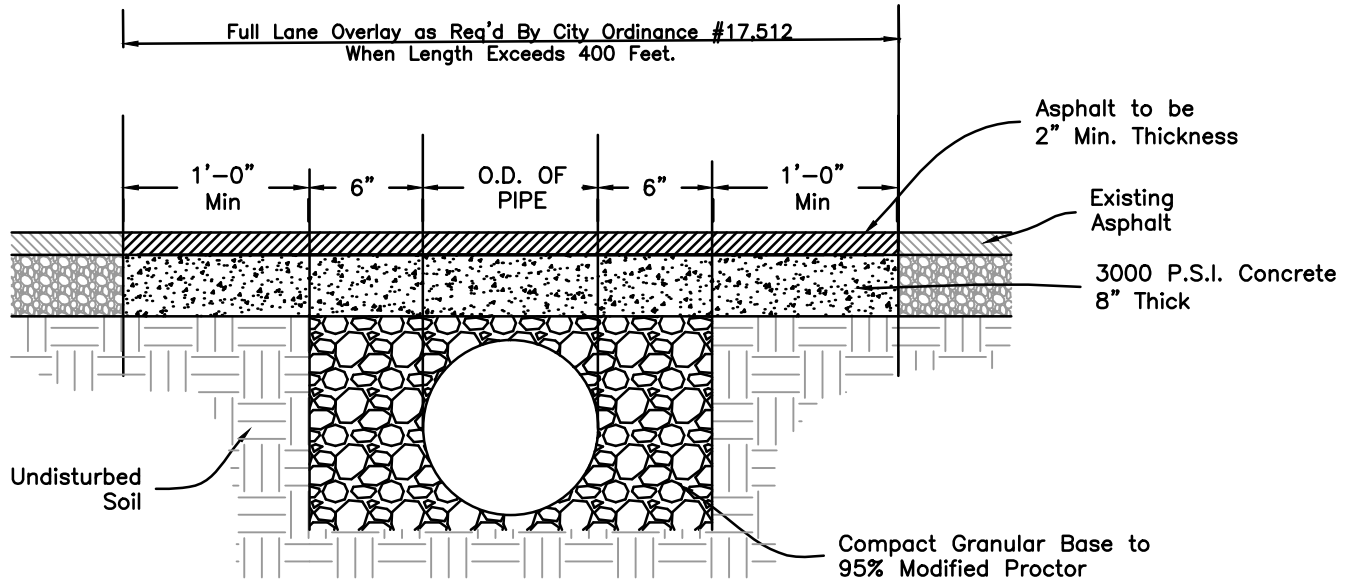
TITLE
UTILITY CUT-PAVEMENT
REPLACEMENT ON EXISTING
ASPHALT STREET

Issue Date
AUG, 2006

PW-25
Revision Date
APR 2015



PLAN



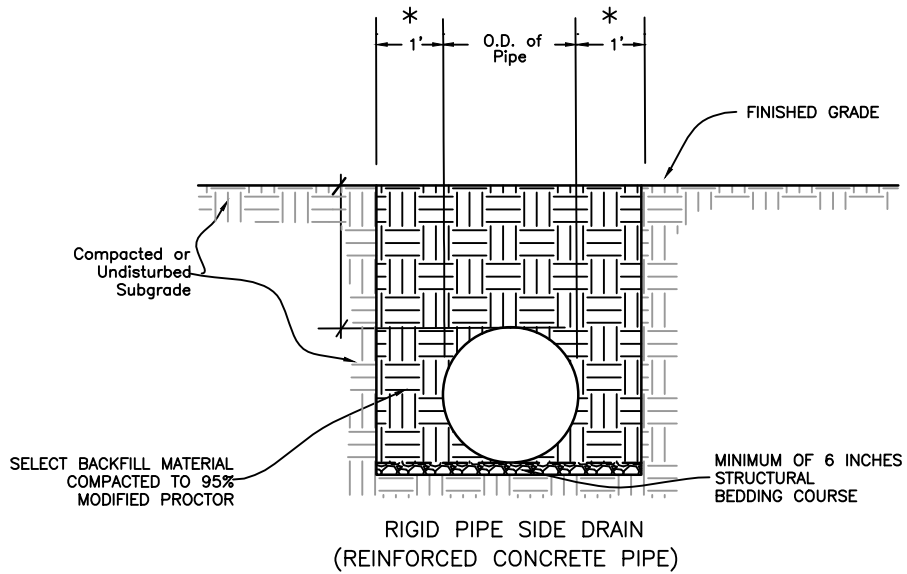
SECTION



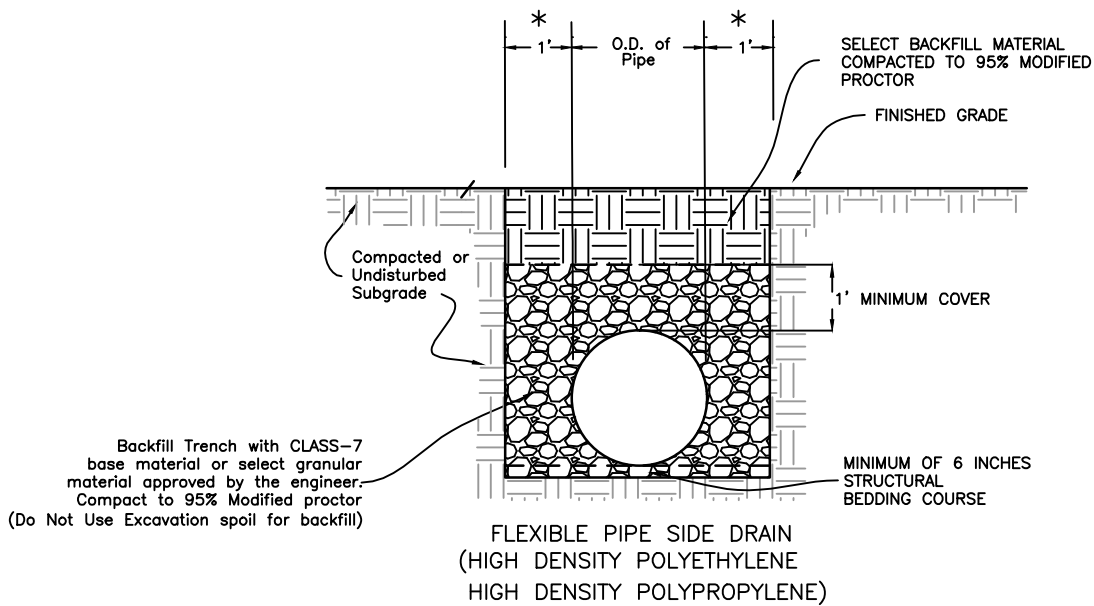
TITLE
DRAINAGE PIPE BACKFILL

Issue Date
AUG, 2006

PW-26
Revision Date
APR 2015

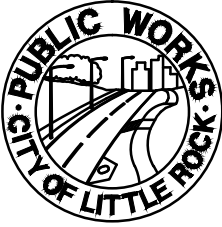


OUTSIDE ROADWAY / SIDE DRAIN BEDDING



OUTSIDE ROADWAY / SIDE DRAIN BEDDING

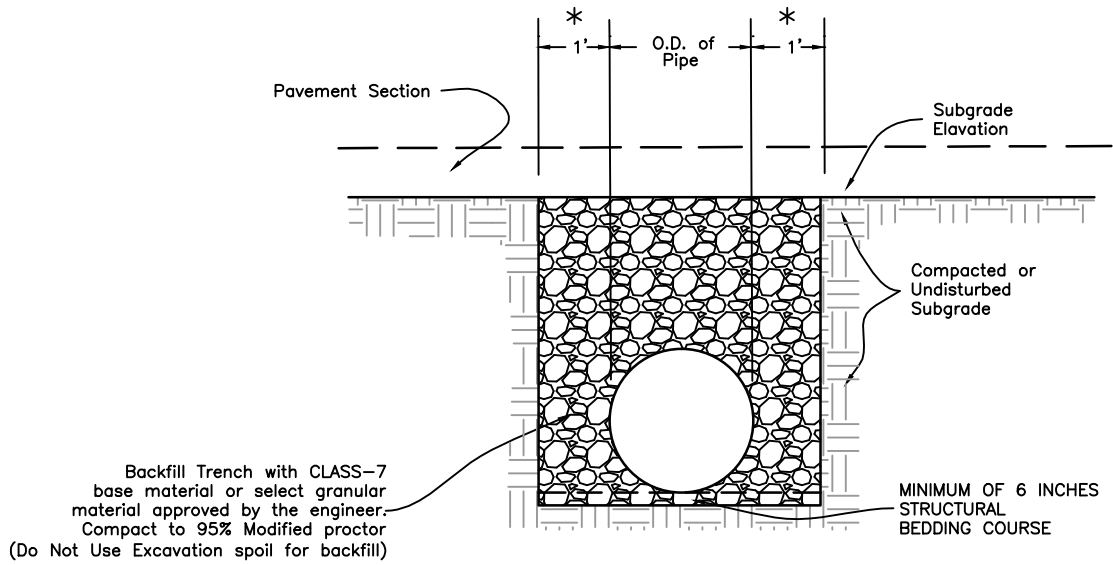
* SEE PUBLIC WORKS STANDARD SPECIFICATIONS FOR TRENCH WIDTH AND DEPTH REQUIRED FOR STORM DRAIN APPLICATIONS.



TITLE
DRAINAGE PIPE BACKFILL

Issue Date
AUG, 2006

PW-26
Revision Date
APR 2015



NOTE: Backfill above crown may be select backfill when approved by Public Works Department with density testing, two-year maintenance bond. See (PW-27)

UNDER ROADWAY / CROSS DRAIN BEDDING

* SEE PUBLIC WORKS STANDARD SPECIFICATIONS FOR TRENCH WIDTH AND DEPTH REQUIRED FOR STORM DRAIN APPLICATIONS.



TITLE

TRENCH BACKFILL REQUIREMENTS
(NEW STREETS)

Issue Date

JAN, 2003

PW-27

Revision Date

APR 2015

The City will allow Contractor to backfill utility and stormdrain installations under a planned new street with select material or approved borrow material providing Engineer of Record and Contractor comply with following:

* Engineer of Record must submit a request in writing to Department of Public Works. Letter must note agreement with conditions of this memorandum.

* Trench backfill with other than aggregate per current City standard is not allowed in cuts of existing street, on projects where street construction is a partial widening (boundary street widening), or a street extension less than 300 feet in length. Locations must be approved prior to start of construction.

* A one year maintenance bond shall be provided and shall cover all construction associated with project (curbs, base, ACHM surface, drainage inlets, storm drain, sidewalks, and other improvements in right-of-way).

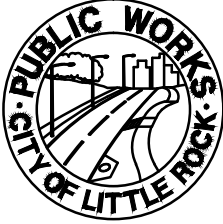
* Trenches shall be a minimum of eighteen inches in width to allow for proper compaction.

* Aggregate material (Class 7) shall be placed to subgrade elevation per PW-25.

* Material used for backfilling shall be free of frozen material, trash, lumber, broken concrete having a dimension larger than two inches, or other debris. Such material shall be capable of being compacted to a density of not less than ninety-five (95) percent of maximum density, at optimum moisture, obtained in laboratory in accordance with AASHTO-Designation T-180. All tests are to be at expense of Developer or Contractor.

* A letter certifying compaction of backfill in trenches shall be furnished for a minimum of every third lift with eight inch lifts maximum (one test per two feet of fill). Test locations shall be spaced no further than one hundred feet, one per street crossing, or as required by Engineer of Record or City staff.

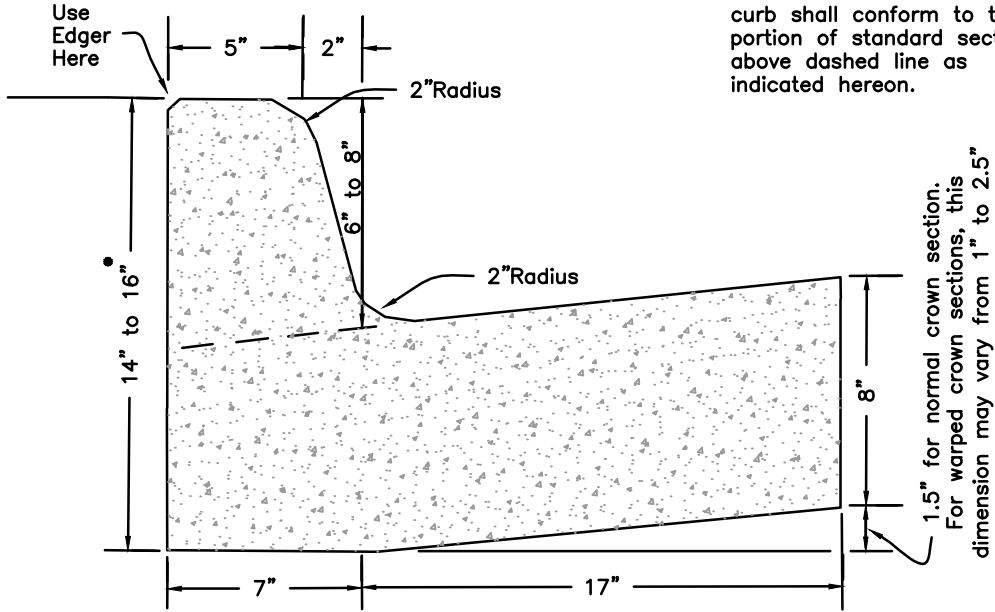
* Failure to provide satisfactory density testing of backfill for each trench will require one of three options of Contractor: A. Removal and re-compaction with certified testing. B. A maintenance bond for five (5) years shall be furnished for total project. C. A 3000 psi seven inch thick concrete cap two feet wider than trench may be installed below base course similar to Public Works Standard Detail PW-25.



TITLE
CURB & GUTTER SECTIONS
ARTERIAL STREETS

| | |
|------------|---------------|
| Issue Date | PW-28 |
| AUG, 2006 | Revision Date |
| | APR 2015 |

UPRIGHT
CLASS I



Standard section for integral curb shall conform to that portion of standard section above dashed line as indicated hereon.

• REQUIRED ON CHENAL PARKWAY

Standard section for integral curb shall conform to that portion of standard section above dashed line as indicated hereon.

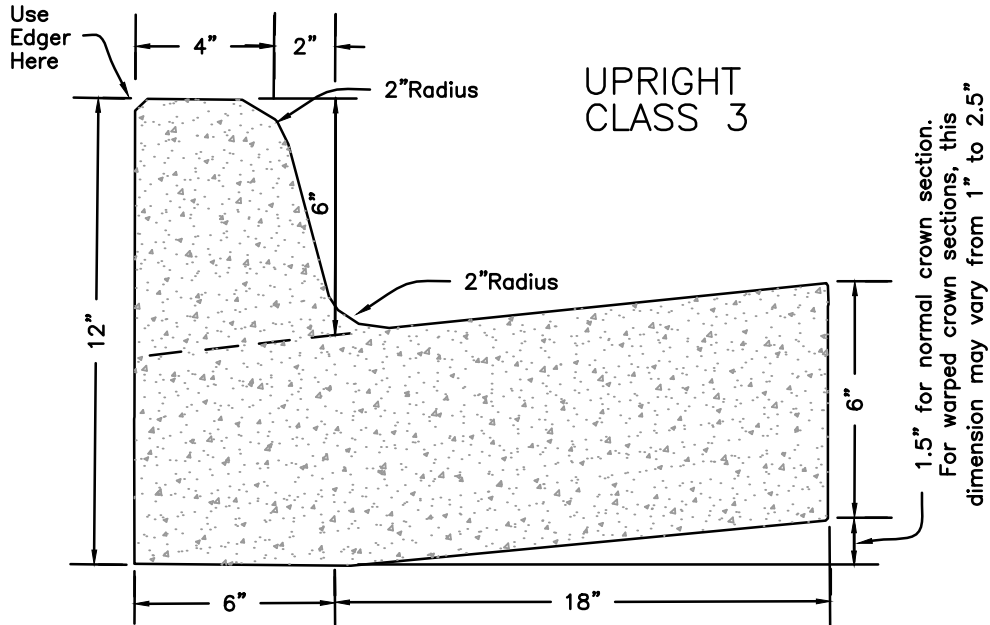
Install 1/2" Bituminous Expansion Joint Material
At 100' Max. Intervals Or At Tie Ins To Boxes,
Radius Returns Or Driveway Aprons. Control Joints
15' Max. O.C.

Joint Sealant Shall be Sonneborn SL2 Self Leveling Urethane
as Manufactured by Chemrex or Equivalent.



TITLE
CURB & GUTTER SECTIONS
RESIDENTIAL &
COLLECTOR STREETS

| | |
|------------|---------------|
| | PW-29 |
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |



Install 1/2" Bituminous Expansion Joint Material
At 100' Max. Intervals Or At Tie Ins To Boxes,
Radius Returns Or Driveway Aprons. Control Joints
15' Max. O.C.

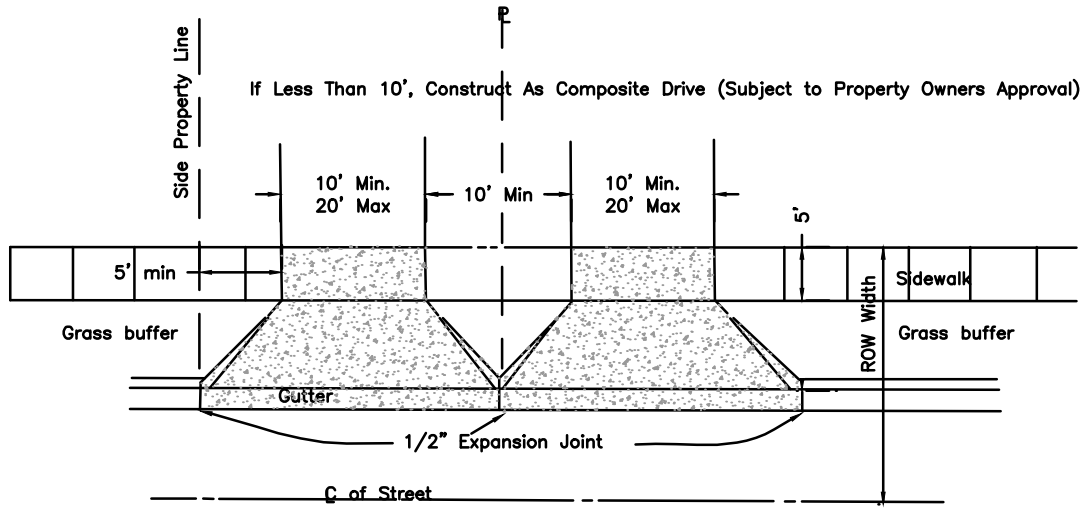
Joint Sealant Shall be Sonneborn SL2 Self Leveling Urethane
as Manufactured by Chemrex or Equivalent.



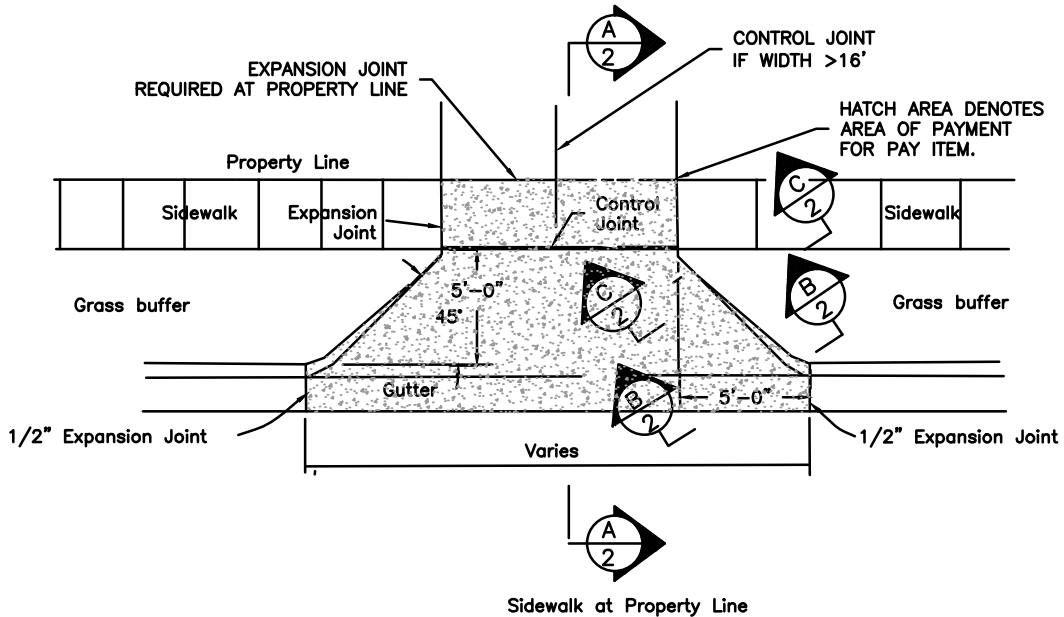
TITLE
RESIDENTIAL DRIVEWAY
DETAILS
(BUFFERED SIDEWALK)

Issue Date
AUG, 2006

PW-30
Revision Date
APR 2015



PLAN-PARALLEL DRIVE



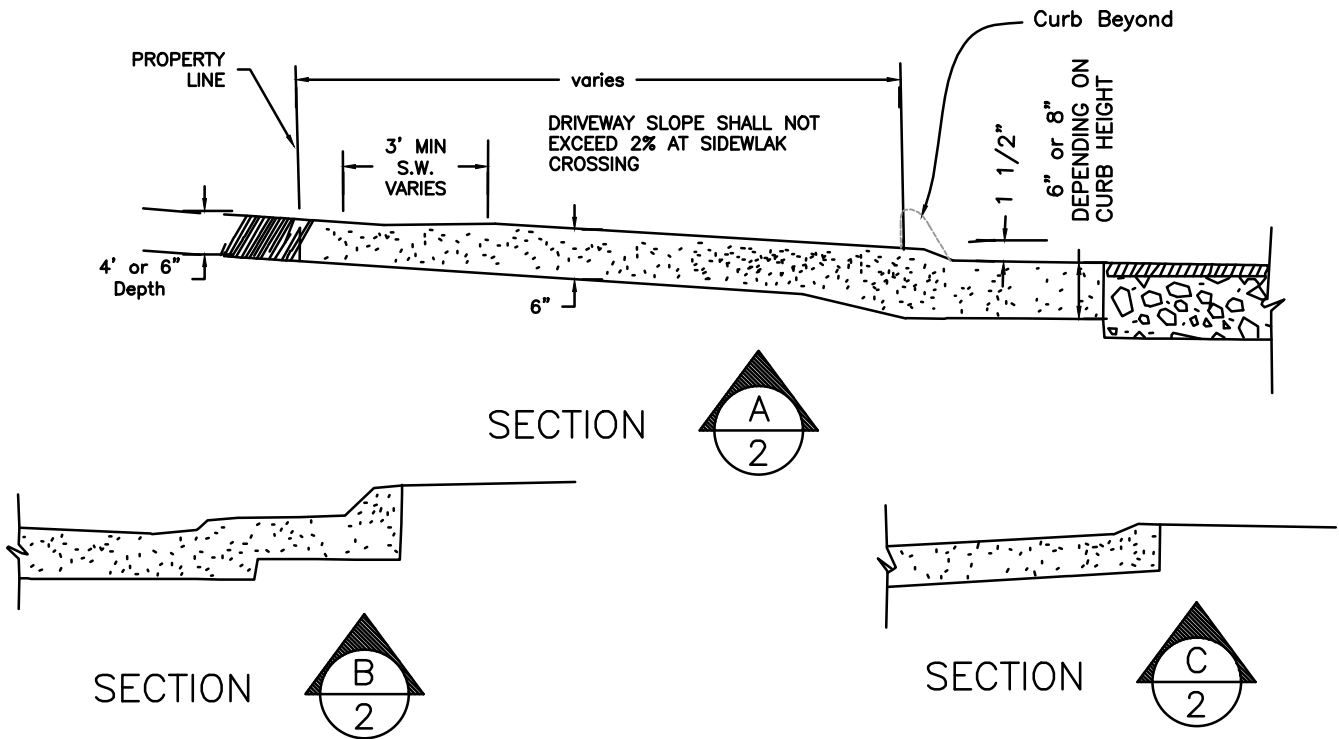
NOTE:

1. CONTROL JOINTS REQUIRED IN ALL DRIVEWAYS AT 12'-0" O.C. EACH WAY OR SPACED EQUAL TO THE WIDTH OF DRIVEWAY WHICHEVER IS LESS.
2. SECTIONS ARE ON PW-31.
3. GRASS BUFFER TO BE 5' WIDE UNLESS APPROVED BY CITY TO BE MODIFIED. GRASS BUFFER MAY BE REDUCED TO MINIMUM 36" WITH CITY APPROVAL.
4. DRIVEWAY GRADES SHALL BE DESIGNED BY ENGINEER TO KEEP STORMWATER IN STREET, 2% MINIMUM SLOPE AT SIDEWALK CROSSING, MAXIMUM % OF GRADE CHANGE IS 16.



TITLE
RESIDENTIAL DRIVEWAY
DETAILS AND NOTES

| | |
|------------|---------------|
| Issue Date | PW-31 |
| AUG, 2006 | Revision Date |
| | APR 2015 |



1. Driveway Grade Not To Exceed City Ordinance Requirements Stated in Section 31-210. Field Adjustment May Be Required At Certain Locations To Insure Proper Relation Between Driveway and Street Grades.

2. Driveways Shall Be Constructed To Property Line With Concrete Where Sidewalk Exists.

3. Driveway Apron Shall Be Constructed Monolithically With Gutter Section, Unless Dowled Into Gutter Section With 1/2" Dowels 18" Long at 12" on Center and Approved by Engineer.

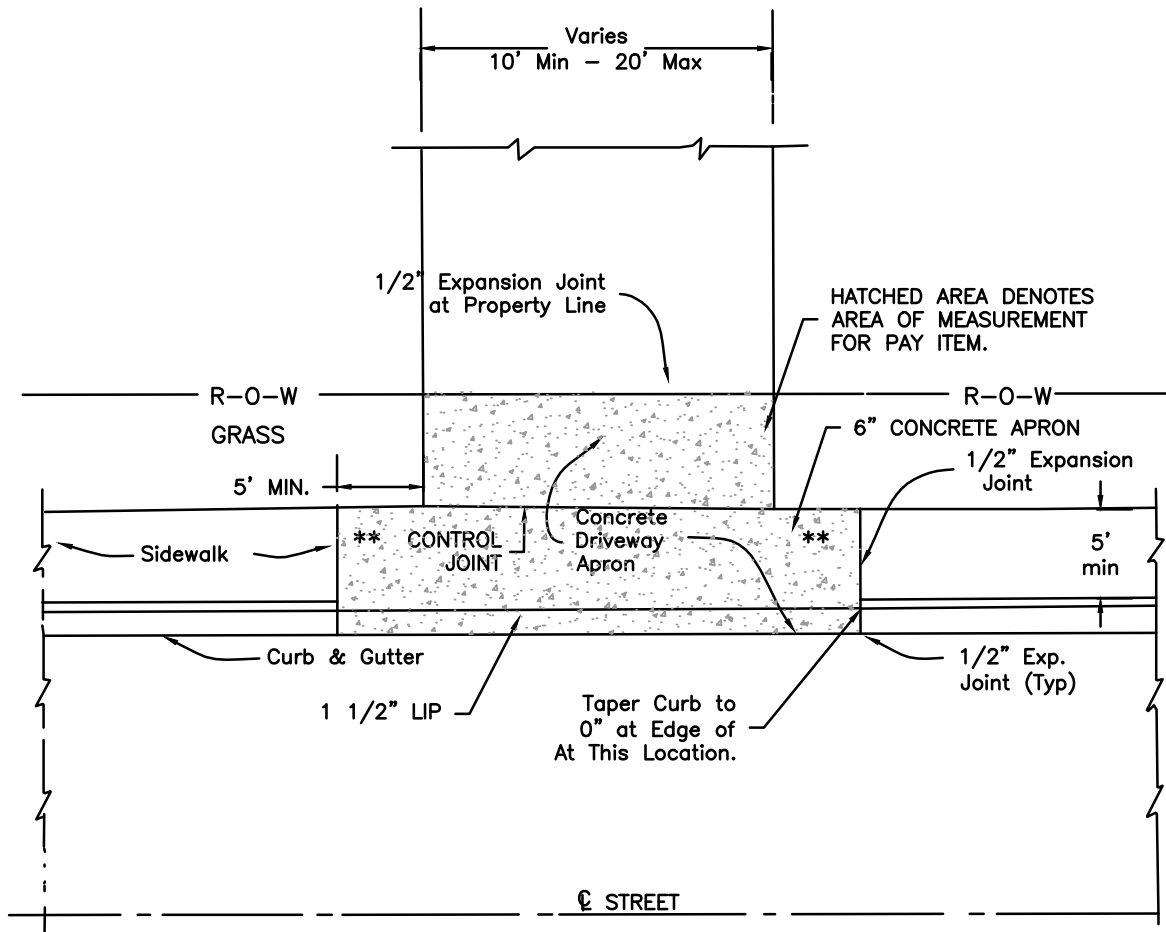
4. DRIVEWAY GRADES SHALL BE DESIGNED BY ENGINEER TO KEEP STORMWATER IN STREET, 2% MINIMUM SLOPE AT SIDEWALK CROSSING, MAXIMUM % OF GRADE CHANGE IS 16. SEE DETAILS PW-36-40 FOR TYPICAL GRADING DETAIL.



TITLE
 DRIVEWAY DETAIL
 FOR RESIDENTIAL DRIVEWAYS
 (SIDEWALK AT BACK OF CURB)

| | |
|------------|---------------|
| | PW-32 |
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |

Spacing Per City Ordinance 31-210



* Sidewalks at back of curb by permission of Department of Public Works (only when conditions dictate).

** Sidewalk area at driveway shall have cross slope of 1:50. See City Ordinance Section 31-210 for permissible driveway slopes.

Thickness and reinforcements are required for conditions & expected wheel loading - 6" minimum thickness.

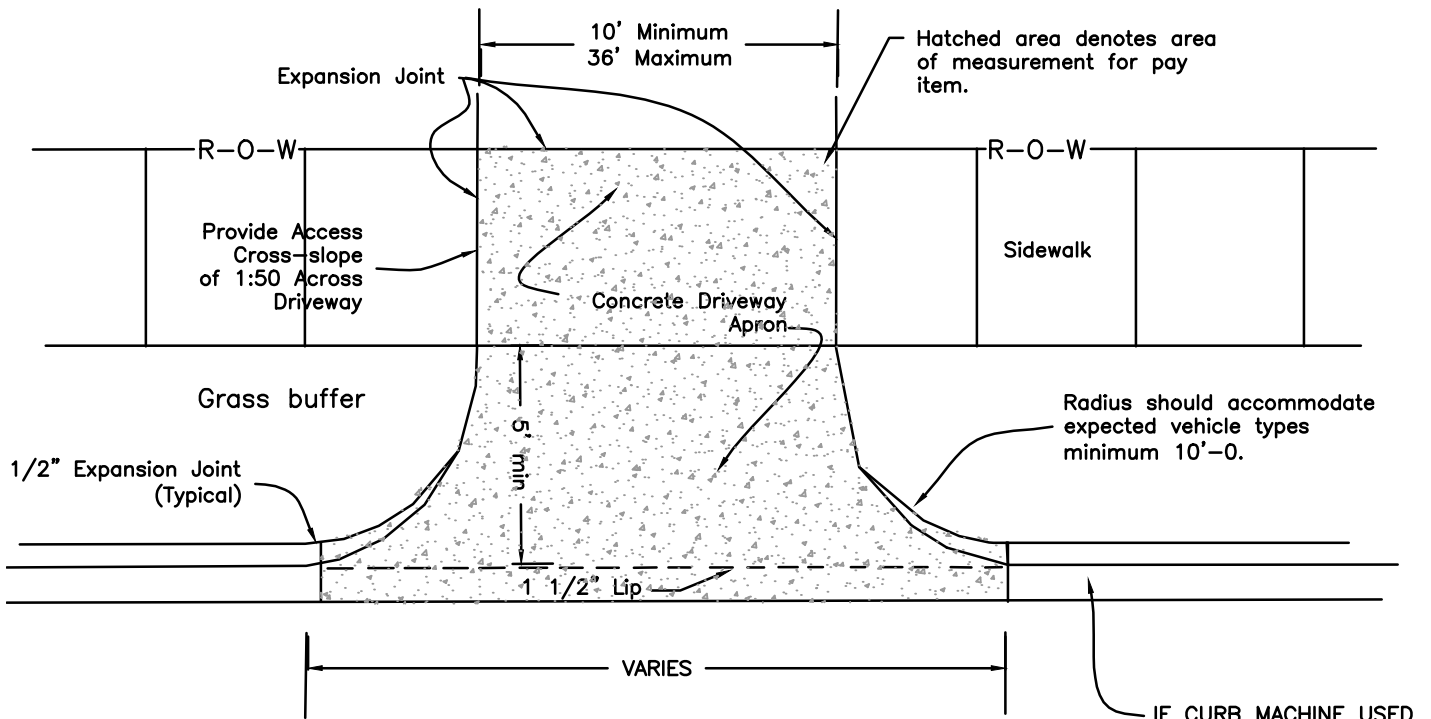
DRIVEWAY GRADES SHALL BE DESIGNED BY ENGINEER TO KEEP STORMWATER IN STREET, 2% MINIMUM SLOPE AT SIDEWALK CROSSING, MAXIMUM % OF GRADE CHANGE IS 16.



TITLE
 RADIUS DRIVEWAY DETAIL
 FOR COMMERCIAL DRIVEWAYS
 (SIDEWALK AWAY FROM CURB)

Issue Date
 AUG, 2006

PW-34
 Revision Date
 APR 2015



Thickness and reinforcements are required for conditions & expected wheel loading - 8" minimum thickness.

IF CURB MACHINE USED (MUST STOP AT JOINT)

NOTE: Chenal Parkway Design Standards Required for Commercial Drives on Chenal Parkway. (See Master Street Plan)

DRIVEWAY GRADES SHALL BE DESIGNED BY ENGINEER TO KEEP STORMWATER IN STREET, 2% MINIMUM SLOPE AT SIDEWALK CROSSING, MAXIMUM % OF GRADE CHANGE IS 16.



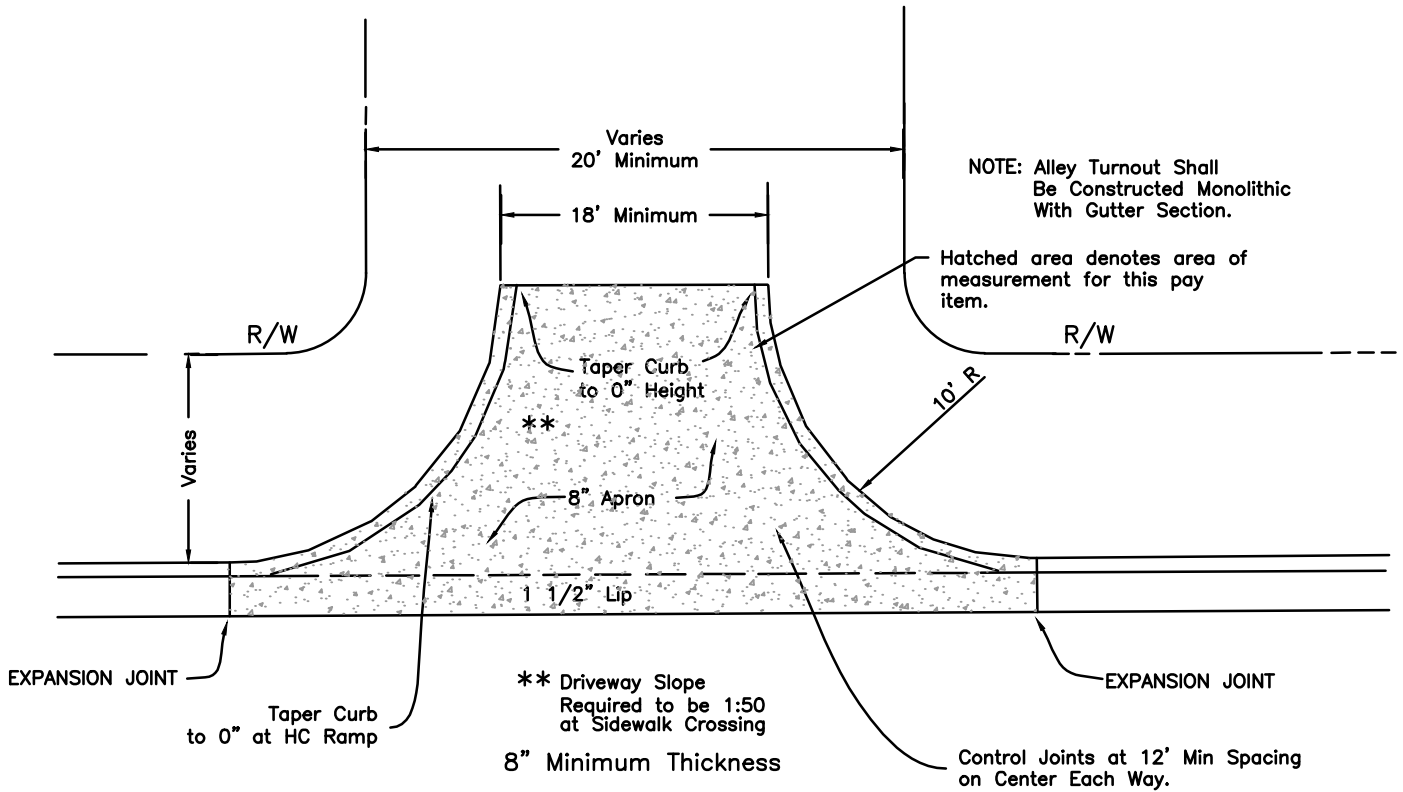
TITLE

ALLEY TURNOUT

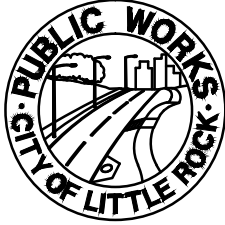
PW-35
Revision Date

AUG, 2006

APR 2015



DRIVEWAY GRADES SHALL BE DESIGNED BY ENGINEER TO KEEP STORMWATER IN STREET, 2% MINIMUM SLOPE AT SIDEWALK CROSSING, MAXIMUM % OF GRADE CHANGE IS 16.

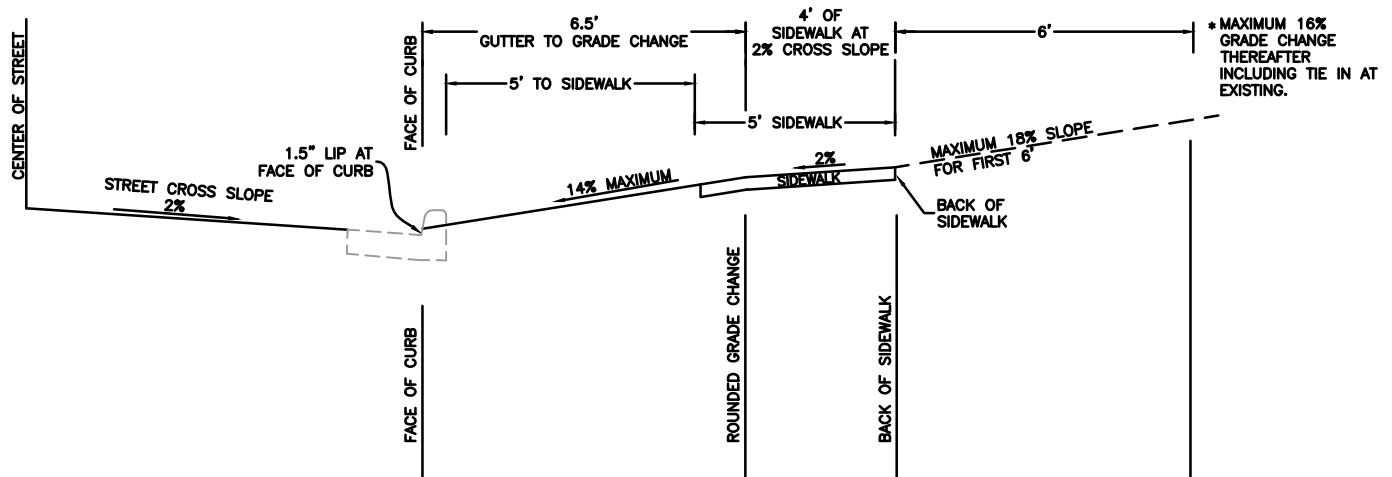


TITLE
DRIVEWAY
MAXIMUM GRADE
DETAIL A

Issue Date
AUG, 2006

PW-36
Revision Date
APR 2015

MAXIMUM GRADES FOR DRIVEWAY WITH 5'
SIDEWALK WHICH IS 5' OFF BACK OF CURB



- NOTE: 1. ALL GRADE CHANGES SHALL BE ROUNDED OFF WITH A 2' RADIUS.
2. THE MAXIMUM GRADE CHANGE SHALL NOT EXCEED 16%.
3. GRADES SHOWN ARE THE MAXIMUM ALLOWED TO AVOID DRAGGING A VEHICLE.
THE GRADES SHALL NOT BE DESIGNED OR USED EXCEPT IN EXTREME CONDITIONS.

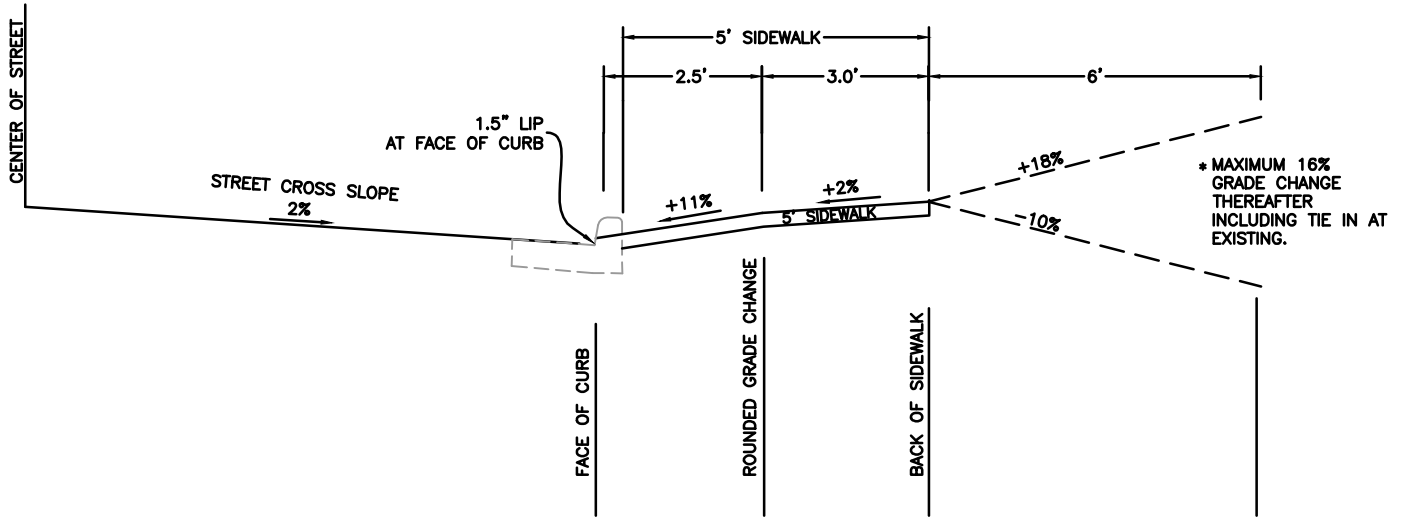


TITLE
DRIVEWAY
MAXIMUM GRADES
DETAIL B

Issue Date
AUG, 2006

PW-37
Revision Date
APR 2015

MAXIMUM GRADES FOR DRIVEWAY WITH 5'
SIDEWALK AT BACK OF CURB



- NOTE: 1. ALL GRADE CHANGES SHALL BE ROUNDED OFF WITH A 2' RADIUS.
2. THE MAXIMUM GRADE CHANGE SHALL NOT EXCEED 16%.
3. GRADES SHOWN ARE THE MAXIMUM ALLOWED TO AVOID DRAGGING A VEHICLE.
THE GRADES SHALL NOT BE DESIGNED OR USED EXCEPT IN EXTREME CONDITIONS.

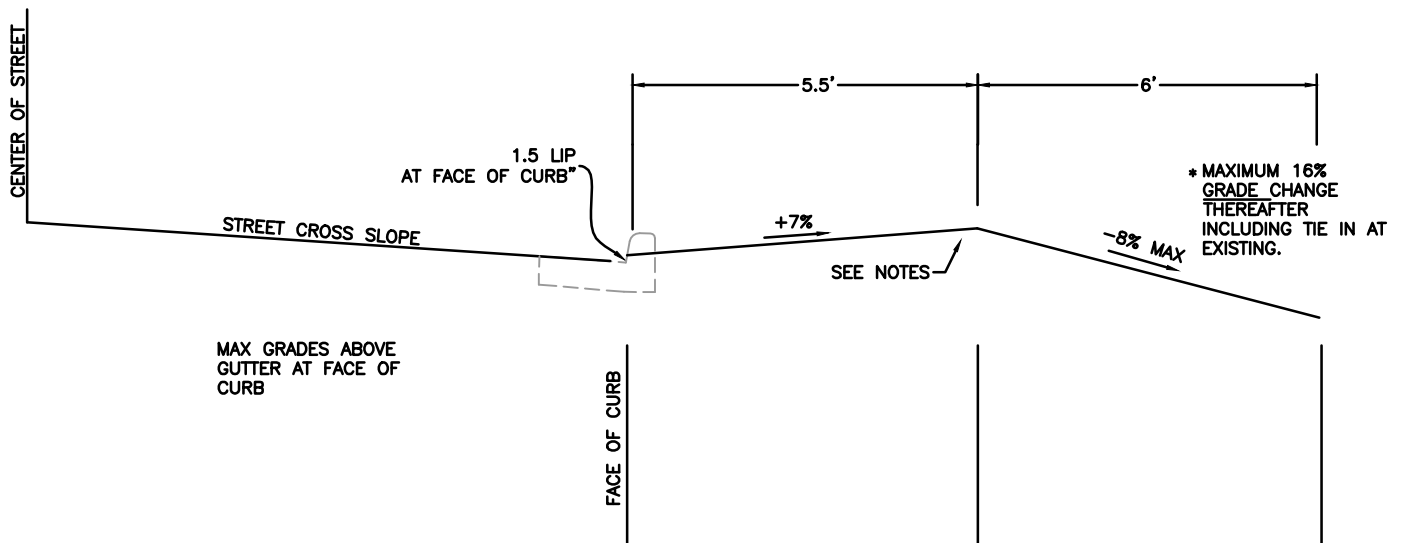


TITLE
DRIVEWAY
MAXIMUM GRADES
DETAIL C

Issue Date
AUG, 2006

PW-38
Revision Date
APR 2015

MAXIMUM GRADES FOR DRIVEWAY WHEN GROUND FALLS AWAY FROM STREET WITH NO SIDEWALK



- NOTE (1) DRIVEWAY AT 5.5' FROM FACE OF CURB SHALL BE LEVEL WITH TOP OF CURB TO KEEP WATER IN STREET. ANY VARIATION REQUIRES APPROVAL FROM ENGINEER.
- (2) ALL GRADE CHANGES SHALL BE ROUNDED OFF WITH A 2' RADIUS.
- (3). THE MAXIMUM GRADE CHANGE SHALL NOT EXCEED 16%.
- (4). GRADES SHOWN ARE THE MAXIMUM ALLOWED TO AVOID DRAGGING A VEHICLE. THE GRADES SHALL NOT BE DESIGNED OR USED EXCEPT IN EXTREME CONDITIONS.

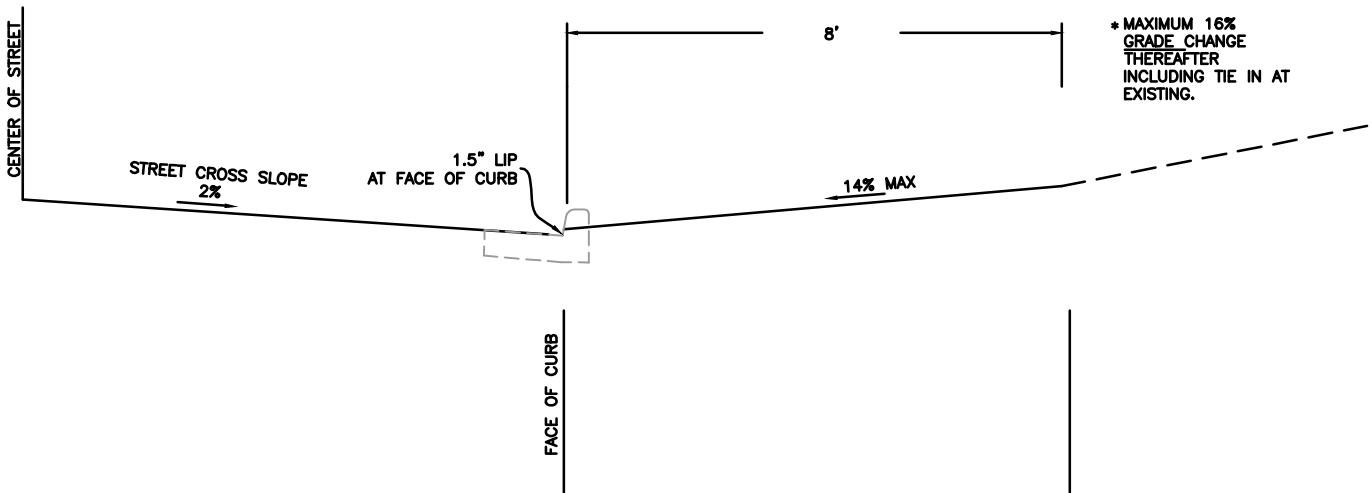


TITLE
DRIVEWAY
MAXIMUM GRADES
DETAIL D

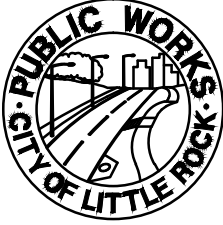
Issue Date
AUG, 2006

PW-39
Revision Date
APR 2015

MAXIMUM GRADES FOR DRIVEWAY WHEN GROUND RISES FROM STREET WITH NO SIDEWALK



- NOTE: 1. ALL GRADE CHANGES SHALL BE ROUNDED OFF WITH A 2' RADIUS.
2. THE MAXIMUM GRADE CHANGE SHALL NOT EXCEED 16%.
3. GRADES SHOWN ARE THE MAXIMUM ALLOWED TO AVOID DRAGGING A VEHICLE.
THE GRADES SHALL NOT BE DESIGNED OR USED EXCEPT IN EXTREME CONDITIONS.

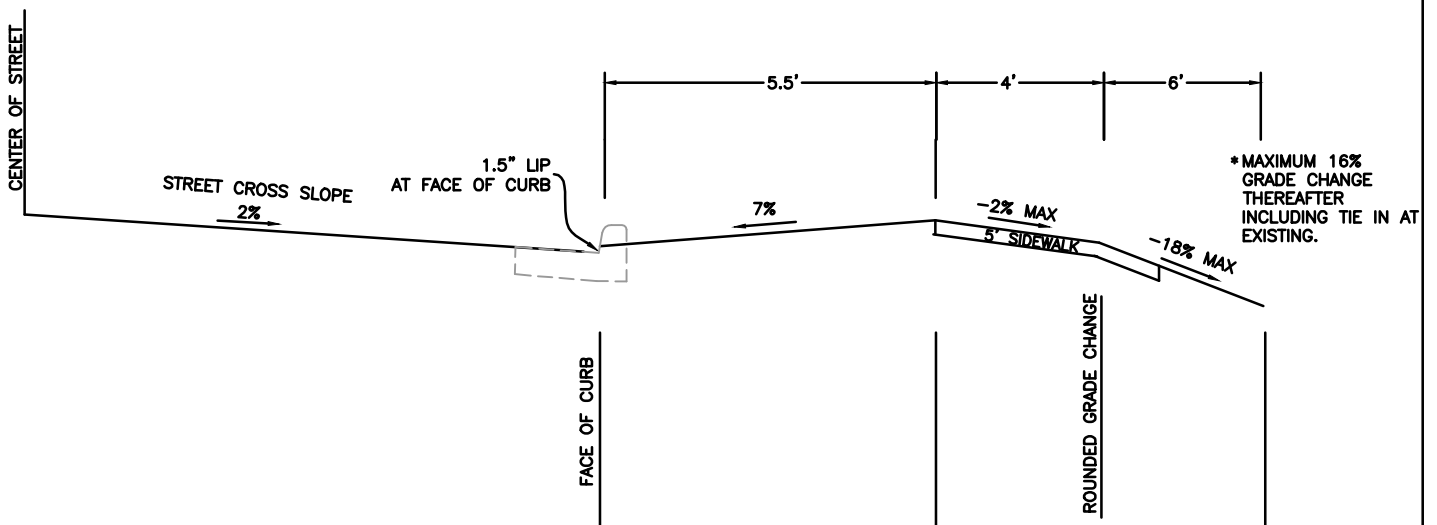


TITLE
DRIVEWAY
MAXIMUM GRADES
DETAIL E

Issue Date
AUG, 2006

PW-40
Revision Date
APR 2015

MAXIMUM GRADES FOR DRIVEWAY WHEN GROUND FALLS AWAY FROM STREET WITH 5' SIDEWALK 5' OFF BACK OF CURB



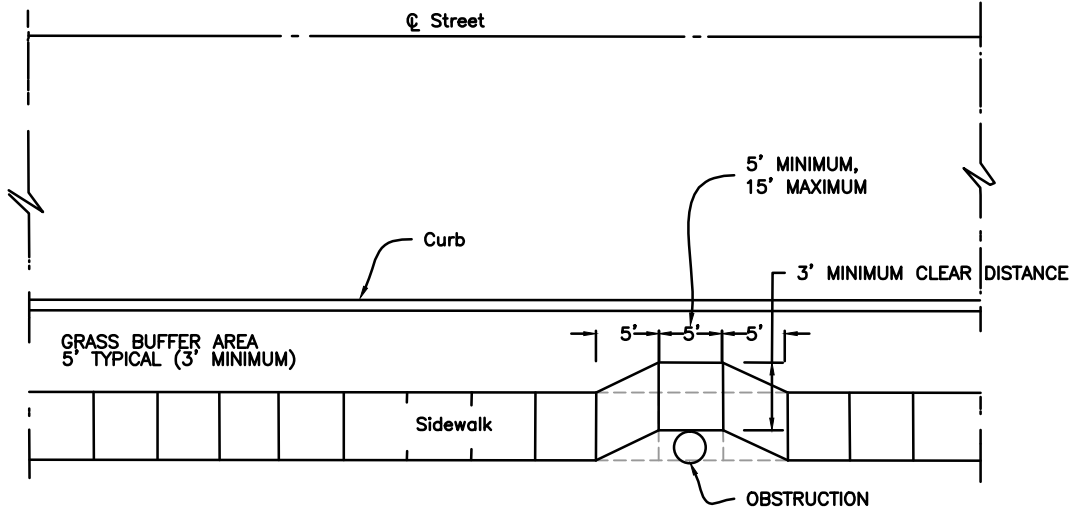
- NOTE (1) DRIVEWAY AT 5.5' FROM FACE OF CURB SHALL BE LEVEL WITH TOP OF CURB TO KEEP WATER IN STREET. ANY VARIATION REQUIRES APPROVAL FROM ENGINEER.
- (2) ALL GRADE CHANGES SHALL BE ROUNDED OFF WITH A 2' RADIUS.
- (3) THE MAXIMUM GRADE CHANGE SHALL NOT EXCEED 16%.
- (4) GRADES SHOWN ARE THE MAXIMUM ALLOWED TO AVOID DRAGGING A VEHICLE. THE GRADES SHALL NOT BE DESIGNED OR USED EXCEPT IN EXTREME CONDITIONS.



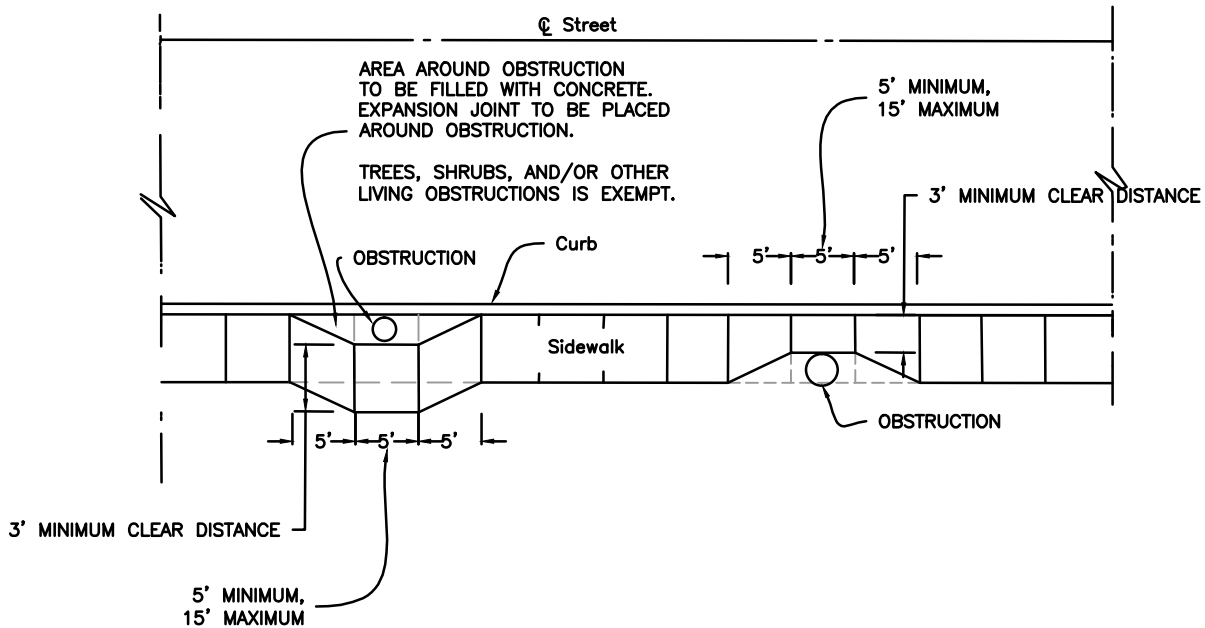
TITLE
SIDEWALK DETAILS

Issue Date
APR 2015

PW-41
Revision Date



SIDEWALK MEANDER WITH GRASS BUFFER



SIDEWALK MEANDER ADJACENT TO CURB

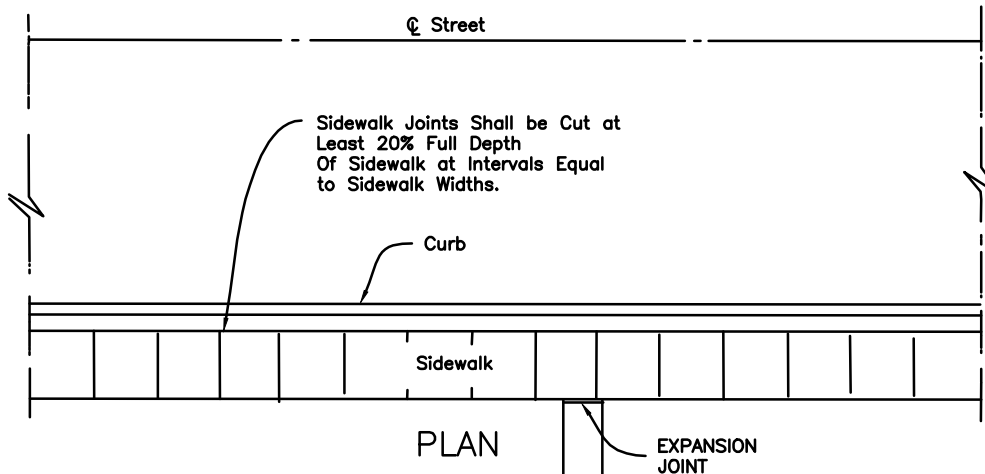
NOTES:

1. THE EFFECTIVE LENGTH OF THE SIDEWALK MEANDER IS TO BE CENTERED ON THE OBSTRUCTION.
2. THE MINIMUM CLEAR WIDTH PARALLEL TO THE PATH OF TRAVEL TO PASS THE OBSTRUCTION SHALL BE 3 FEET.



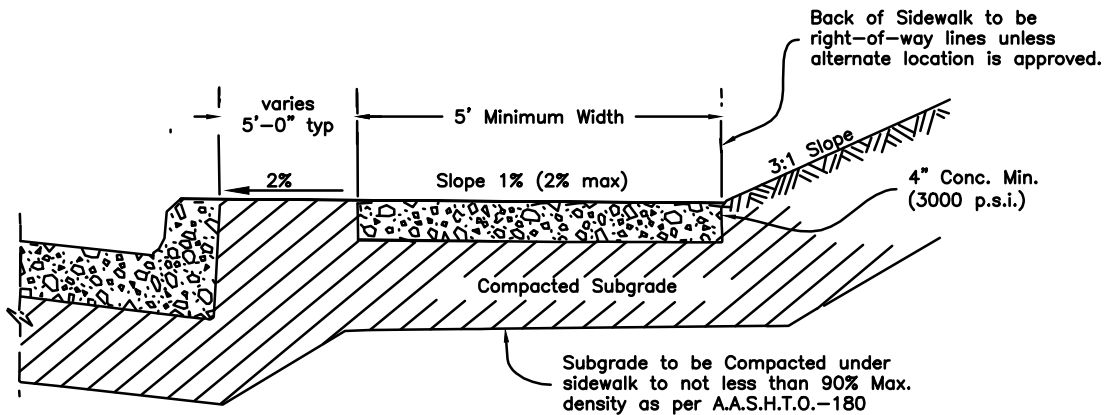
TITLE
SIDEWALK DETAILS

| | |
|------------|---------------|
| | PW-41 |
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |

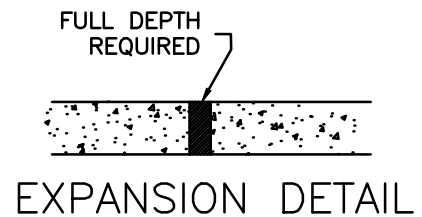


NOTE:

- (1). 1/2" Expansion Joint Spacing at 60' Or adjacent to Structures and Drives.
- (2). Sidewalk Expansion Material is Required Between Sidewalk and Curb.
- (3). Dowel bars with Expansion Joint Material required at inlets. See PW-42.



Expansion joint shall be installed between public and private sidewalk, buildings or driveways.

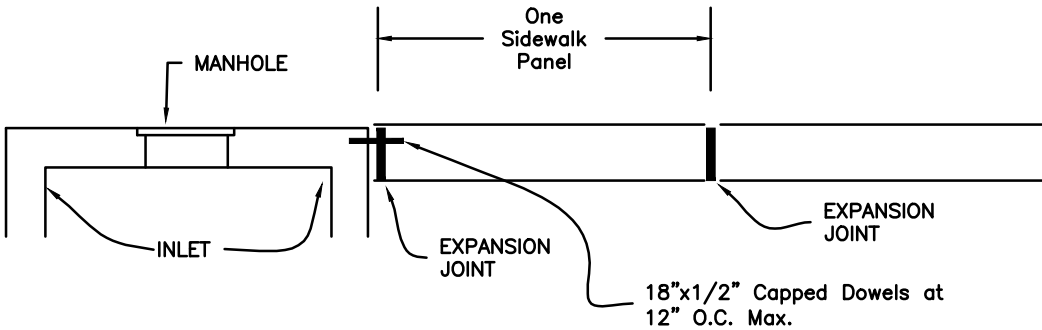




TITLE
 SIDEWALK ADJACENT TO CURB
 (AT-GRADE SECTION)

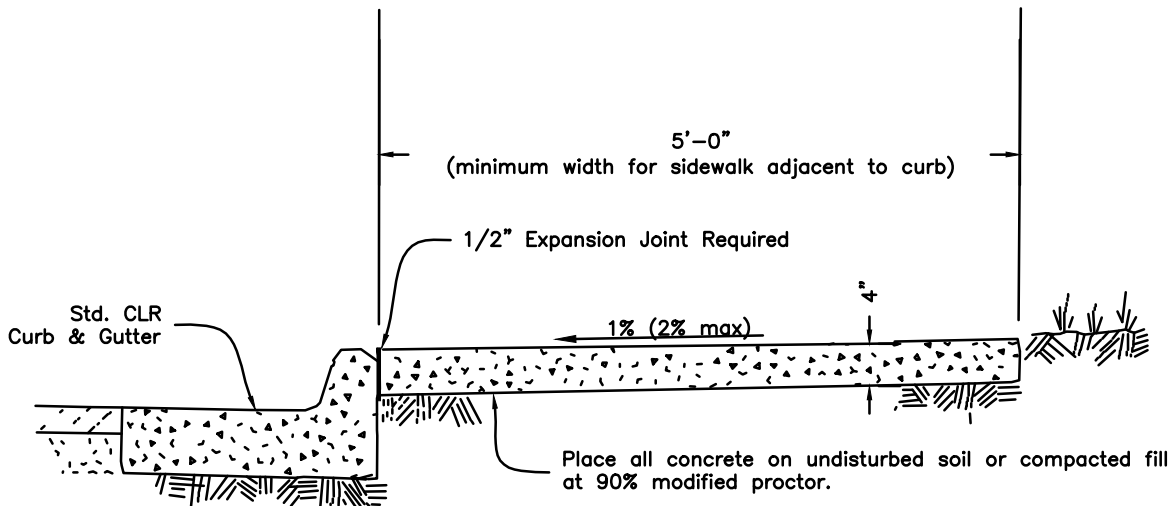
| | |
|------------|---------------|
| | PW-42 |
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |

GENERAL NOTE: PUBLIC SIDEWALK SHALL BE BUFFERED FROM STREET. SIDEWALK MAY BE INSTALLED ADJACENT TO CURB ONLY UPON RECEIVING WRITTEN AUTHORIZATION FROM PUBLIC WORKS.



SIDEWALK AT INLETS

NOTE:
 1/2" Expansion Joint Spacing at 60' Or adjacent to Structures and Drives.
 Sidewalk Expansion Material is Required Between Sidewalks and Inlets.
 Dowel bars with Expansion Joint Material required at Inlets.



Expansion joint shall be installed between public sidewalks and private sidewalks, buildings or driveways.



TITLE

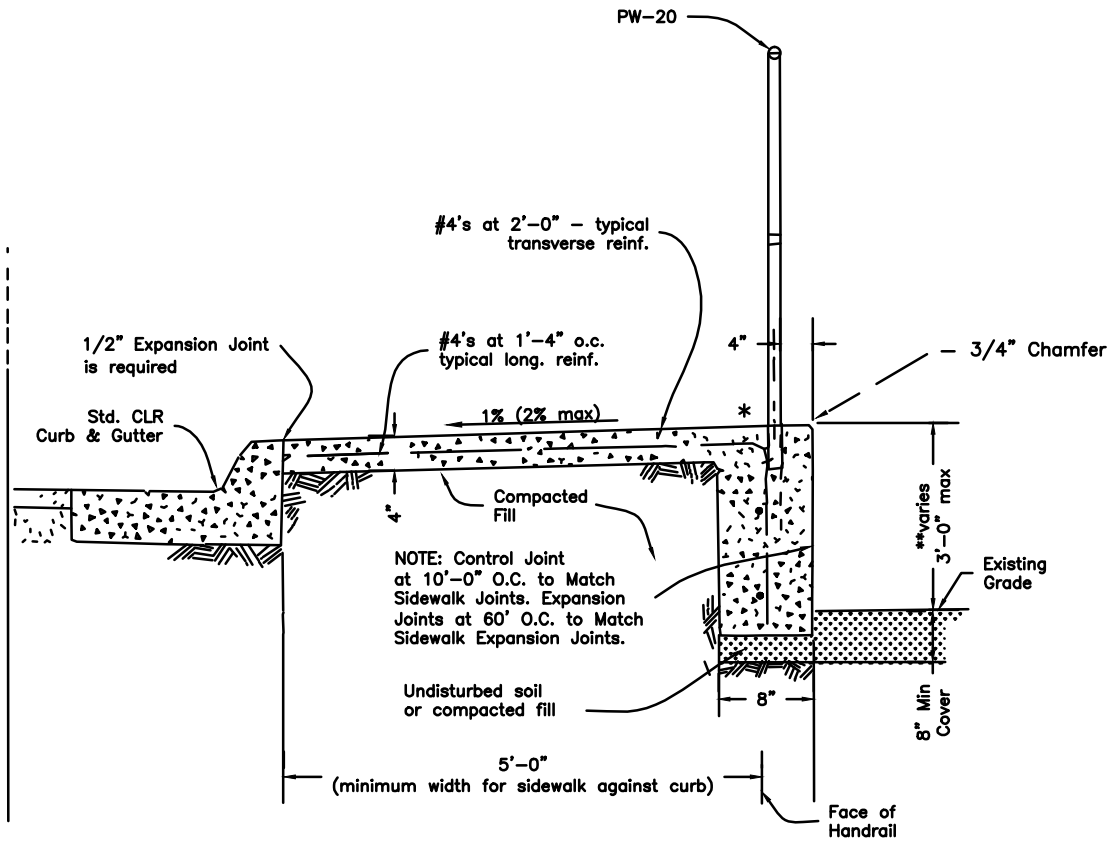
SIDEWALK ADJACENT
TO CURB
(FILL SECTION)

PW-43

Issue Date
AUG, 2006

Revision Date
APR 2015

GENERAL NOTE: PUBLIC SIDEWALK SHALL BE BUFFERED FROM STREET.
SIDEWALK MAY BE INSTALLED ADJACENT TO CURB ONLY
UPON RECEIVING WRITTEN AUTHORIZATION FROM PUBLIC
WORKS.



*NOTE: SUBSTITUTE 6" CURB FOR HANDRAIL WHEN HEIGHT IS
LESS THAN 24" ABOVE GRADE.

** INTERGRAL TURNDOWN WALL SHALL NOT EXCEED 3'-0" IN HEIGHT.
IF HEIGHTS EXCEEDS 3'-0" THEN RETAINING WALL WITH FOOTING SHALL BE PROVIDED



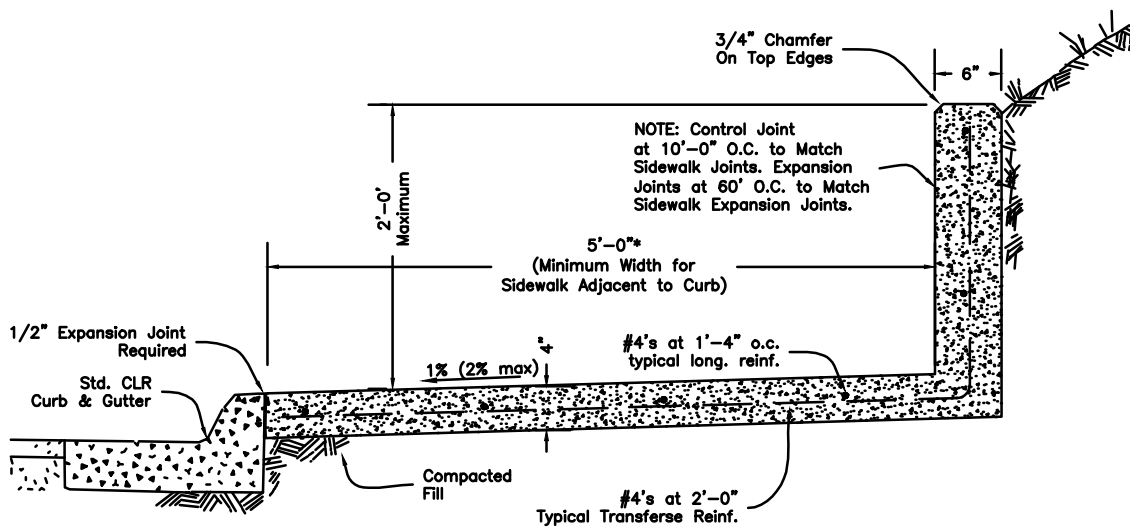
TITLE

SIDEWALK ADJACENT
(CUT SECTION)

PW-44

Issue Date
AUG, 2006

Revision Date
APR 2015



* Minimum Width For Sidewalk Adjacent to Curb On State Or U.S. Highway is 6'-0"

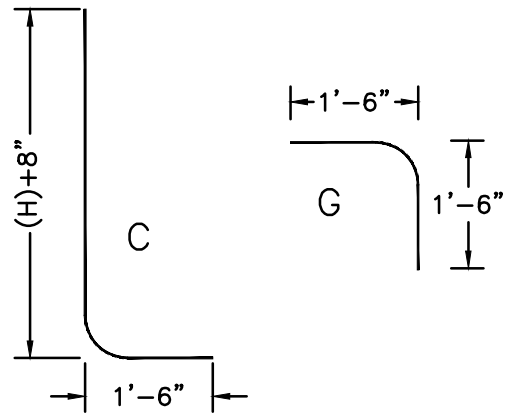
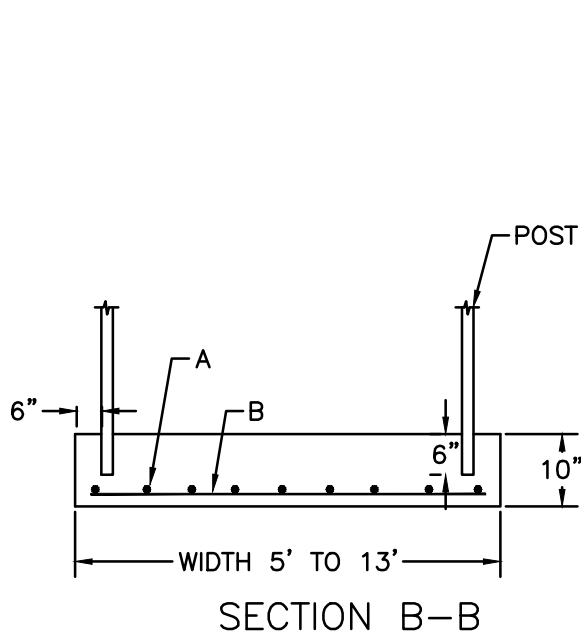
NOTES: Weep holes not required in turnout wall. If height exceeds 2'-0", then this detail is not used. Retaining walls with footing required where height of turnout exceeds 2'-0". Handrail or fencing required where height of turnout exceeds 2'-0".



TITLE
 SIDEWALK CROSSOVER BRIDGE
 DESIGNED FOR 500 L.B. VEHICLE LOAD

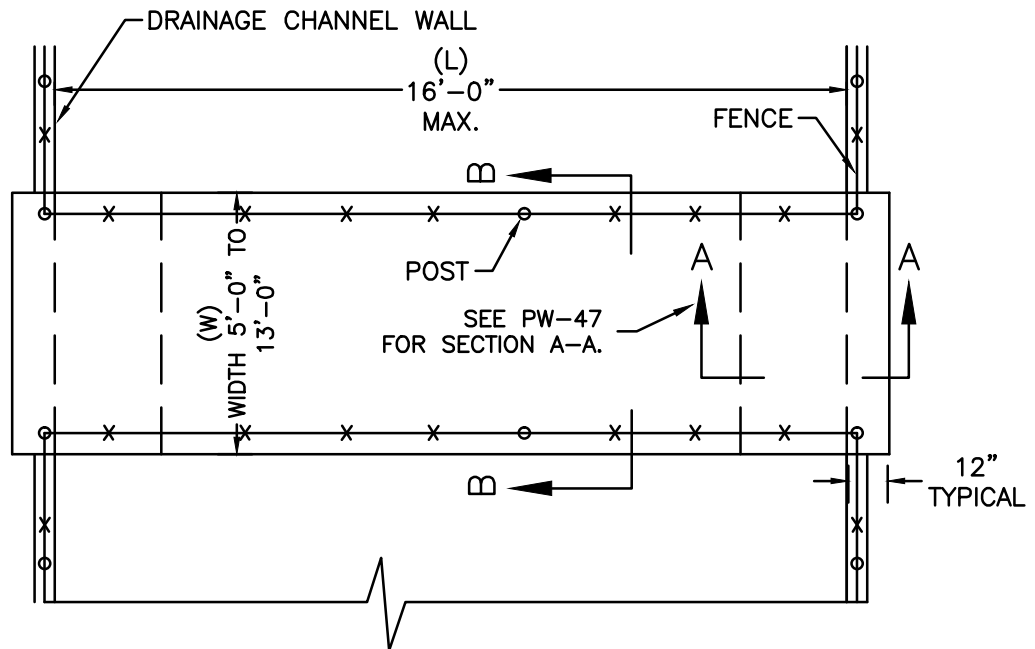
Issue Date
 AUG, 2006

PW-46
 Revision Date
 APR 2015



| BAR | L | No. |
|-----|-----------|--------|
| A | (L)+1'-6" | #7@4" |
| B | (W)-3" | #4@12" |
| C | (H)+2'-2" | #4@8" |
| D | (W)-2" | #4@10" |
| E | 3'-10" | #4@8" |
| F | (W)-3" | #4@12" |
| G | 3' | #4@8" |

L : LENGTH OF BRIDGE
 W : WIDTH OF BRIDGE

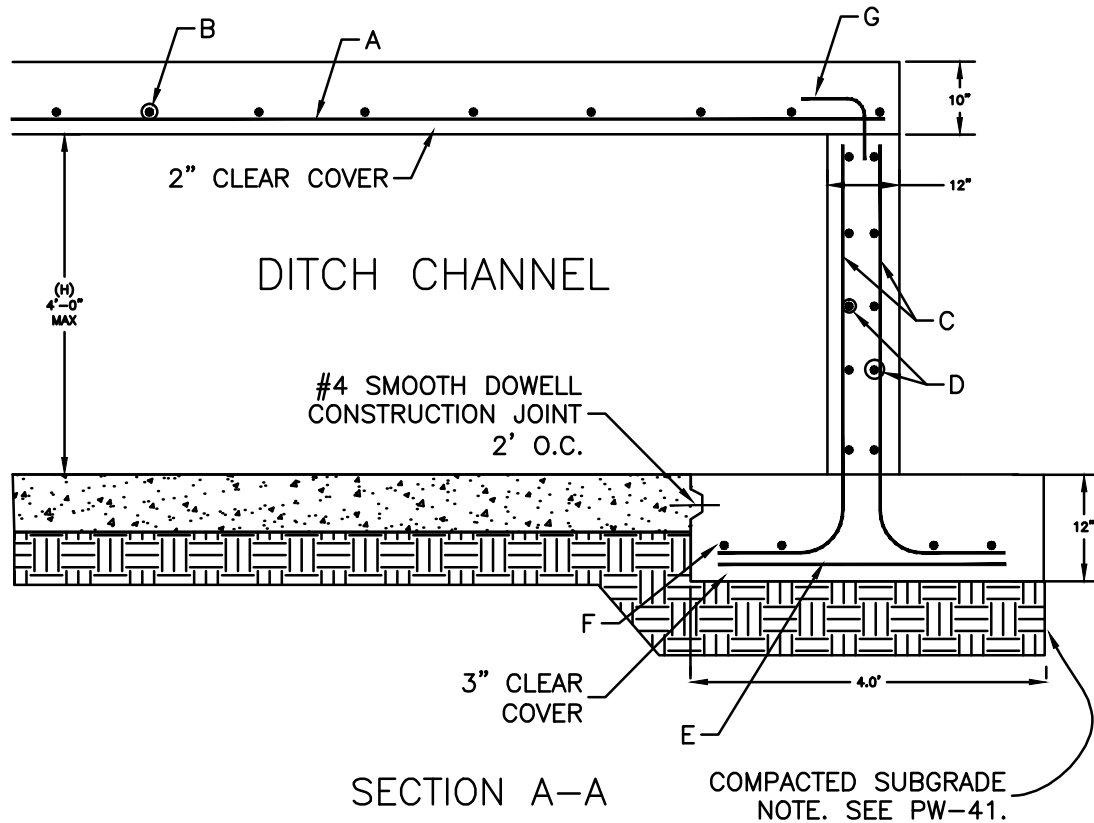


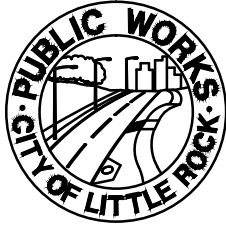


TITLE
 SIDEWALK CROSSOVER BRIDGE
 DESIGNED FOR 500 L.B. VEHICLE LOAD

| | |
|------------|---------------|
| | PW-47 |
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |

1. SPLICE LENGTH PERMITTED FOR "B", "D", AND "F" BARS ONLY AND SHALL BE 18".
2. COMPRESSIVE STRENGTH OF CONCRETE SHALL BE NOT LESS THAN
 4000 p.s.i. FOR BRIDGE SLAB
 3500 p.s.i. FOR BRIDGE FOOTINGS AT PIERS
3. USE DEFORMED BARS GRADE 60
4. ALLOWABLE SOIL BEARING PRESSURE SHALL BE NOT LESS THAN 1000 lb PER SQ.FT.
5. SEE PW-46 FOR REBAR INFORMATION





TITLE
ACCESS RAMP
(GENERAL NOTES & RAMP CRITERIA)

| | |
|------------|---------------|
| | PW-48 |
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |

- (A) THE SLOPE OF THE RAMP SHALL NOT EXCEED 1:12 (8.33%). CONTRACTORS SHOULD FORM RAMPS AT A GRADE LOWER THAN 8.33% TO ALLOW ROOM FOR CONSTRUCTION TOLERANCES. POURING AND FINISHING RAMPS WITHOUT THE AID OF A DIGITAL LEVEL IN CHECKING GRADES IS DISCOURAGED, BECAUSE CONTRACTORS WILL BE REQUIRED TO REMOVE ANY RAMP WITH GRADES EXCEEDING REQUIREMENTS SHOWN IN STANDARD DETAILS. RAMP SURFACE SHALL BE COURSE BROOMED TRANSVERSE TO THE SLOPE. GROOVES/JOINTS ARE NOT TO BE INSTALLED IN THE RAMP SURFACE.
- (B) THE MINIMUM THICKNESS OF RAMPS, SIDEWALKS AND LANDING AREAS SHALL BE 4 INCHES. CONCRETE TO BE MINIMUM 3000 p.s.i.. EXPOSED AGGREGATE CONCRETE SHALL NOT BE USED ON SURFACE RAMPS. WIRE REINFORCEMENT IS NOT REQUIRED IN RAMPS OR SIDEWALKS UNLESS SPECIFICALLY STATED IN DESIGN PLANS.
- (C) THE MAXIMUM RAMP AND LANDING CROSS-SLOPE SHALL BE 2.0% UNLESS THE STREET GRADE EXCEEDS 2.0%, THEN THE CROSS-SLOPE OF THE RAMP SHALL MATCH THE STREET RUNNING GRADE. DO NOT PROVIDE TRANSITIONAL WARPS IN THE GUTTER, RAMP SURFACE OR LANDING AREA. THE STREET RUNNING GRADE IS MEASURED DIRECTLY IN FRONT OF THE RAMP WITH A 4 FOOT DIGITAL LEVEL AND IS THE GRADE OF THE STREET PERPENDICULAR TO THE RAMP RUNNING SLOPE WHERE THE ASPHALT ABUTS THE GUTTER.
- (D) GUTTER SHALL NOT EXCEED 5.0% DIRECTLY IN FRONT OF A CURB RAMP. NO LIP OR VERTICLE SEPARATION SHALL BE INSTALLED BETWEEN THE GUTTER AND THE RAMP.
- (E) THE MINIMUM RAMP WIDTH SHALL BE 4 FEET. A THREE FOOT WIDE RAMP IS ACCEPTABLE ONLY IN THE CASE OF AN OBSTRUCTION AND WITH PUBLIC WORKS WRITTEN APPROVAL. CURB RAMPS, SIDEWALKS, MEDIAN CUTS AND CROSSWALKS SHALL BE ALIGNED UNLESS NOT POSSIBLE TO AID IMPAIRED USERS.
- (F) RAMP SIDE FLARES SHALL NOT EXCEED 10.0% RELATIVE TO THE STREET. (EXAMPLE: IF THE STREET SLOPE IS 5.0% THEN THE SIDE FLARE SLOPE MAY BE UP TO 15.0% ON THE LOW SIDE TO ALLOW THE FLARE TO MATCH CURB HEIGHT IN A REASONABLE DISTANCE. THE SIDE FLARE SLOPE ON THE HIGH SIDE OF THE RAMP WOULD REMAIN AT 10.0% OR LESS GRADE SINCE IT WILL MATCH CURB HEIGHT QUICKLY).
- (G) A MINIMUM 3 FOOT LONG SIDEWALK TRANSITION SHALL BE PROVIDED WHEN MATCHING CURB RAMP/LEVEL LANDING TO EXISTING SIDEWALKS WITH CROSS SLOPE EXCEEDING 2.0%. ADDITIONAL TRANSITION LENGTH MAY BE REQUIRED WHEN MATCHING TO EXISTING SIDEWALK WITH SEVERE CROSS SLOPE.
- (H) MEDIAN CUTS: SHALL BE 6 FEET WIDE FOR TWO-WAY PEDESTRIAN TRAFFIC ALIGNED WITH CROSSING. MEDIAN CUT CROSS SLOPE SHALL BE MAXIMUM 2.0% OR MATCH STREET GRADE WHEN ROADWAY SLOPE EXCEEDS 2.0%.
- (I) RAMP LENGTH IS LIMITED TO 15 FEET.

GENERAL NOTES FOR DETECTABLE WARNING DEVICES

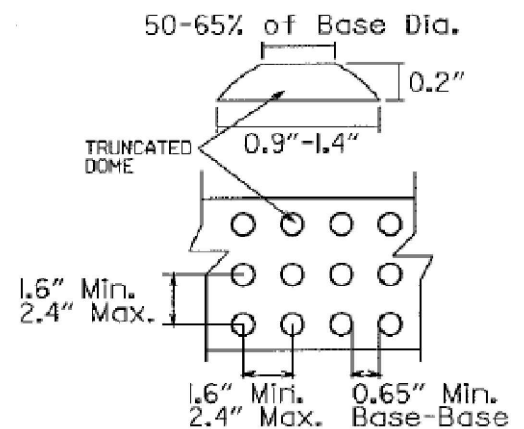
THE DETECTABLE WARNING DEVICE SHALL BE LOCATED SO THAT THE NEAREST EDGE OF THE DEVICE IS 6 TO 8 INCHES FROM THE FACE OF CURB.

TRUNCATED DOMES IN THE DETECTABLE WARNING SURFACE SHALL MEET THE REQUIREMENTS OF THE GEOMETRIC CONFIGURATION SHOWN.

DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT THE WHEELS TO ROLL BETWEEN DOMES.

DETECTABLE WARNING DEVICE SHALL BE 24 INCHES IN THE DIRECTION OF TRAVEL AND EXTEND THE FULL WIDTH OF THE CURB RAMP OR FLUSH SURFACE.

DETECTABLE WARNING DEVICE SHALL BE ON THE AHTD QUALIFIED PRODUCTS LIST FOR CAST-IN-PLACE TACTILE PANELS (ADA DETECTABLE WARNING).

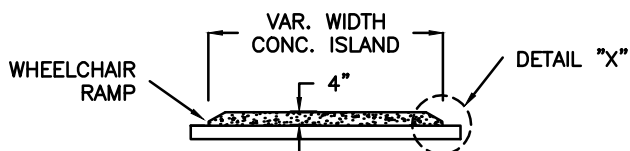


| | | |
|--------------|--------|--|
| FIRST CHOICE | TYPE 1 | CORNER LOCATIONS WITH WALK ADJACENT TO CURB BOTH NEW CONSTRUCTION AND ALTERATIONS |
| | TYPE 2 | CORNER LOCATIONS WITH WALK OFFSET FROM CURB A DISTANCE INSUFFICIENT TO ALLOW REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS) |
| | TYPE 3 | CORNER LOCATIONS WITH WALK OFFSET FROM CURB A DISTANCE SUFFICIENT TO ALLOW REQUIRED RAMP SLOPE (BOTH NEW CONSTRUCTION AND ALTERATIONS) |
| | TYPE 4 | TANGENT LOCATIONS (BOTH NEW CONSTRUCTION AND ALTERATIONS) |
| SECOND | TYPE 5 | TANGENT LOCATIONS (ALTERATIONS ONLY) |

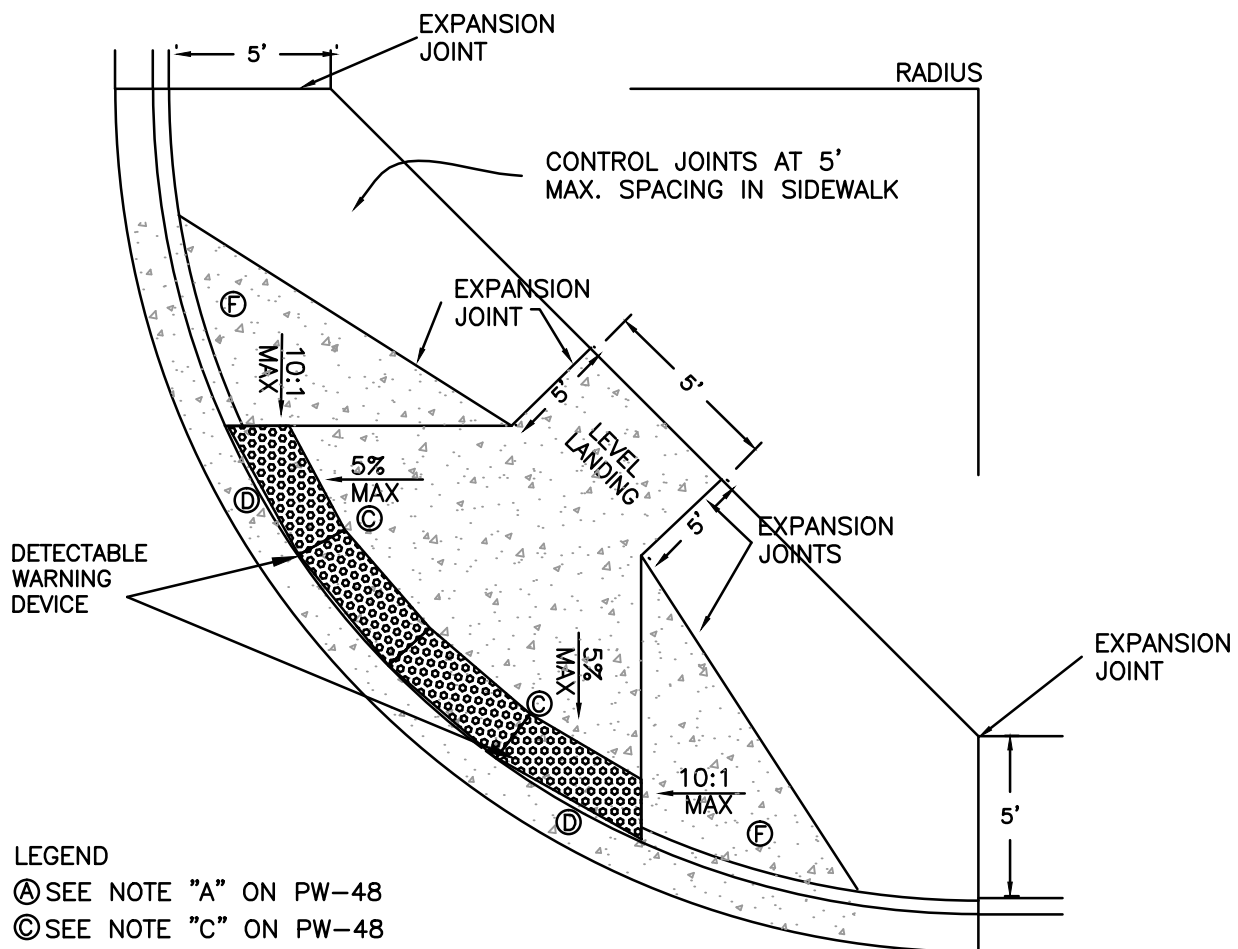
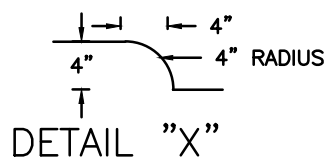


TITLE
ACCESS RAMP
TYPE 1

| | |
|------------|---------------|
| Issue Date | PW-49 |
| AUG, 2006 | Revision Date |
| | APR 2015 |



CONCRETE ISLAND DETAIL



TYPE 1 RAMP
(WALK ADJACENT TO CURB)

LEGEND

- Ⓐ SEE NOTE "A" ON PW-48
- Ⓒ SEE NOTE "C" ON PW-48
- Ⓓ SEE NOTE "D" ON PW-48
- Ⓕ SEE NOTE "F" ON PW-48



DENOTES ACCESS RAMP UNIT PAY AREA

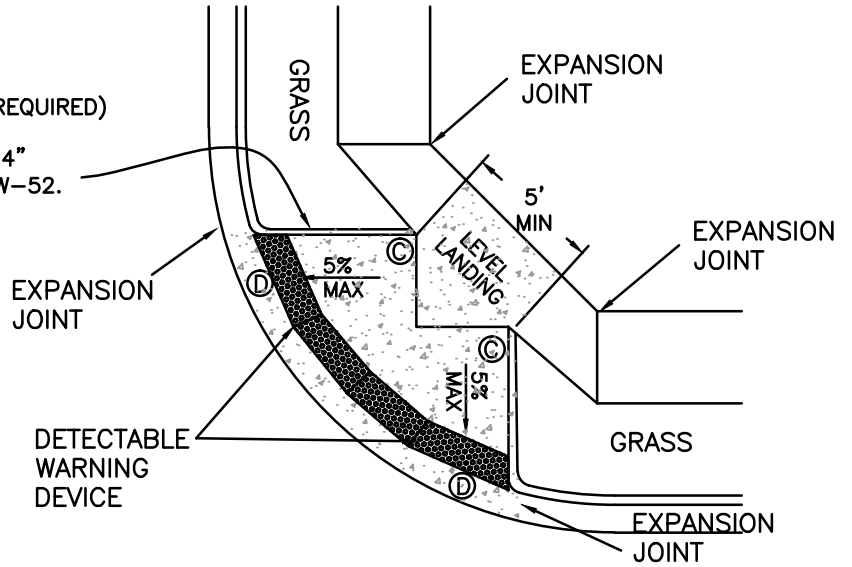


TITLE
ACCESS RAMP
TYPE 2 & TYPE 4

| | |
|------------|---------------|
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |

TYPE 2 RAMP
(WALK OFFSET FROM CURB-LANDING REQUIRED)

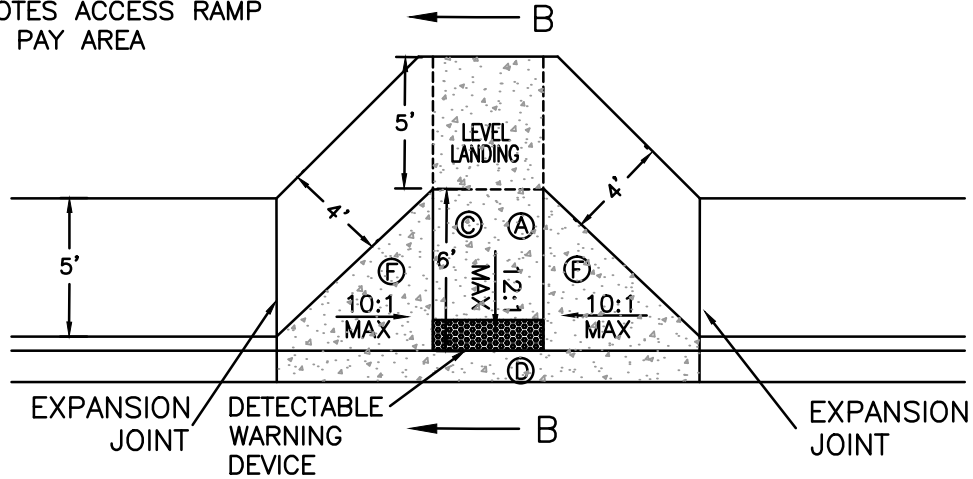
RAMPS ADJACENT TO GRASS REQUIRE 4" CURB OR 1' FLARE PER PW-51 & PW-52.



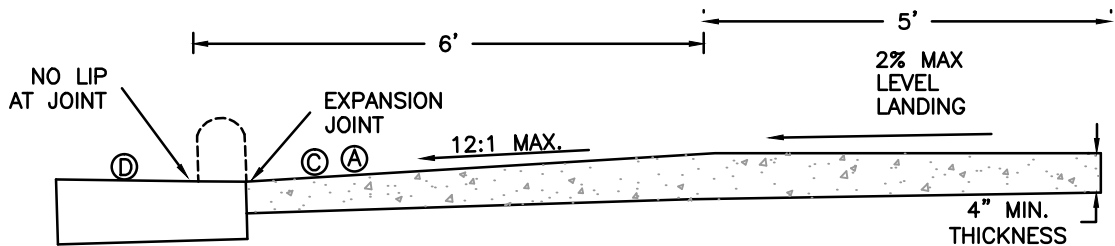
LEGEND

- Ⓐ SEE NOTE "A" ON PW-48
- Ⓒ SEE NOTE "C" ON PW-48
- Ⓓ SEE NOTE "D" ON PW-48
- Ⓕ SEE NOTE "F" ON PW-48

DENOTES ACCESS RAMP UNIT PAY AREA



TYPE 4 RAMP
(WALK ADJACENT TO CURB)



SECTION B-B

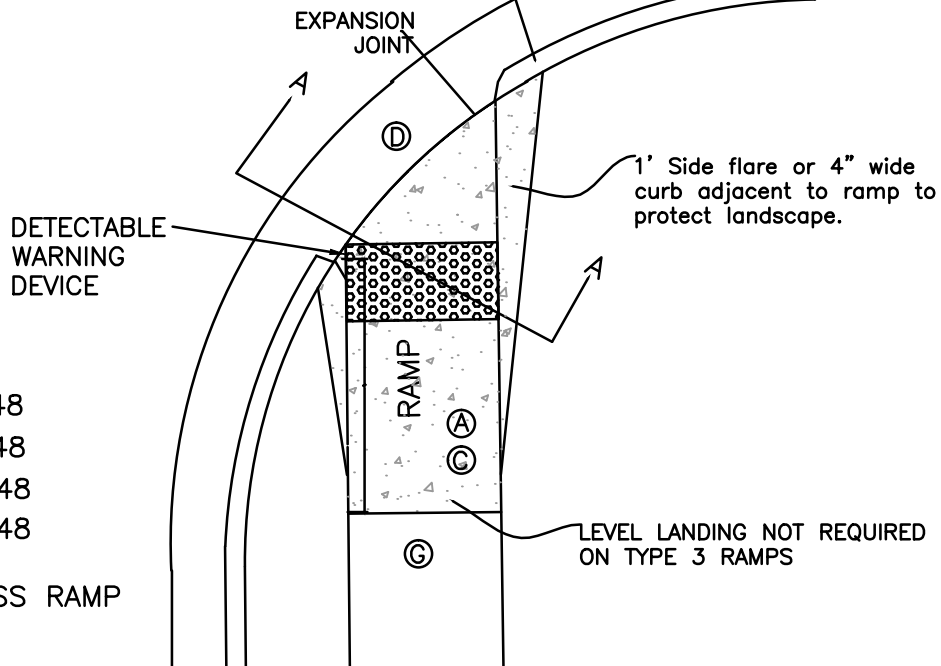


TITLE
 ACCESS RAMP
 TYPE 3 EXPANSION JOINT
 ALTERNATE 1

| | |
|------------|---------------|
| Issue Date | PW-51 |
| AUG, 2006 | Revision Date |
| | APR 2015 |

Ramp must cross street perpendicular to center line unless otherwise approved by the Public Works Department.

CURB THIS LOCATION MUST BE POURED WITH GUTTER AS MONOLITHIC UNIT.



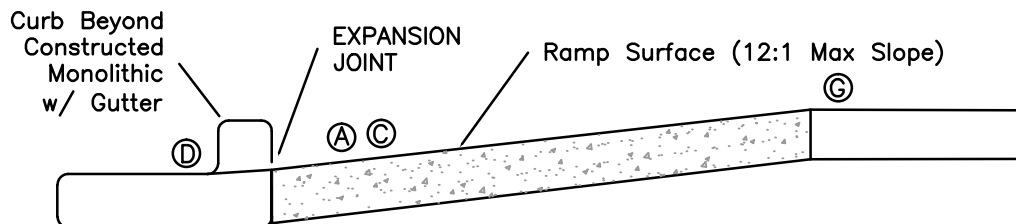
LEGEND

- Ⓐ SEE NOTE "A" ON PW-48
- Ⓒ SEE NOTE "C" ON PW-48
- Ⓓ SEE NOTE "D" ON PW-48
- Ⓔ SEE NOTE "G" ON PW-48

 DENOTES ACCESS RAMP UNIT PAY AREA

TYPE 3 RAMP
 PLAN

EXPANSION JOINT
 ALTERNATE 1



SECTION A-A

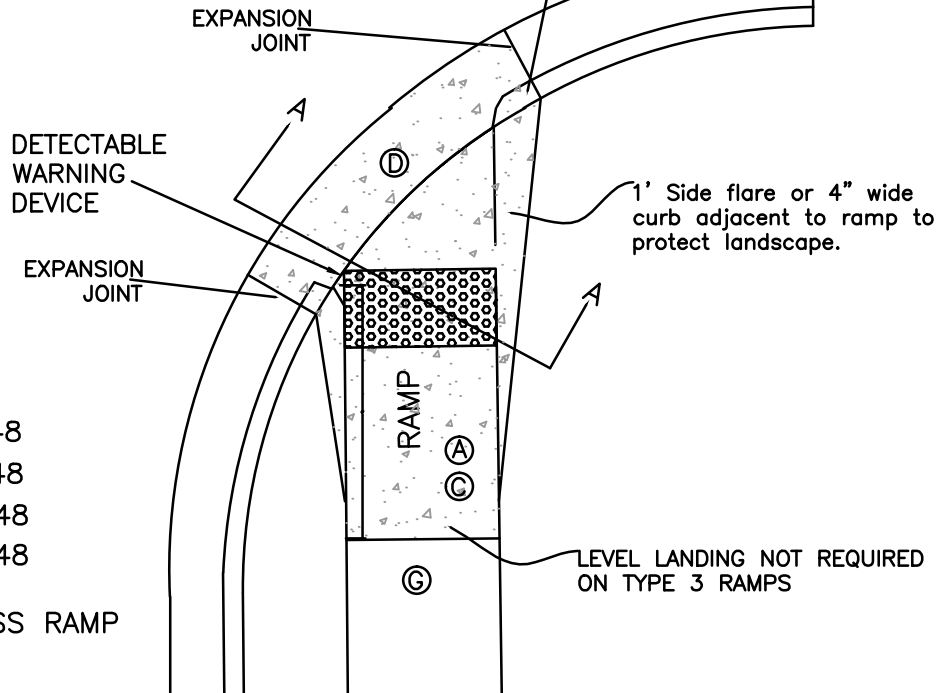


TITLE
 ACCESS RAMP
 TYPE 3 EXPANSION JOINT
 ALTERNATE 2

| | |
|------------|---------------|
| Issue Date | PW-52 |
| AUG, 2006 | Revision Date |
| | APR 2015 |

Ramp must cross street perpendicular to center line unless otherwise approved by the Public Works Department.

CURB THIS LOCATION MUST BE POURED WITH GUTTER AS MONLOTHIC UNIT.



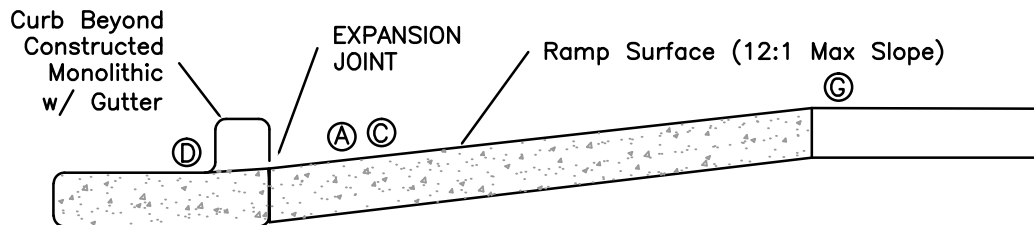
LEGEND

- Ⓐ SEE NOTE "A" ON PW-48
- Ⓒ SEE NOTE "C" ON PW-48
- Ⓓ SEE NOTE "D" ON PW-48
- Ⓔ SEE NOTE "G" ON PW-48

 DENOTES ACCESS RAMP UNIT PAY AREA

TYPE 3 RAMP
 PLAN

EXPANSION JOINT
 ALTERNATE 2

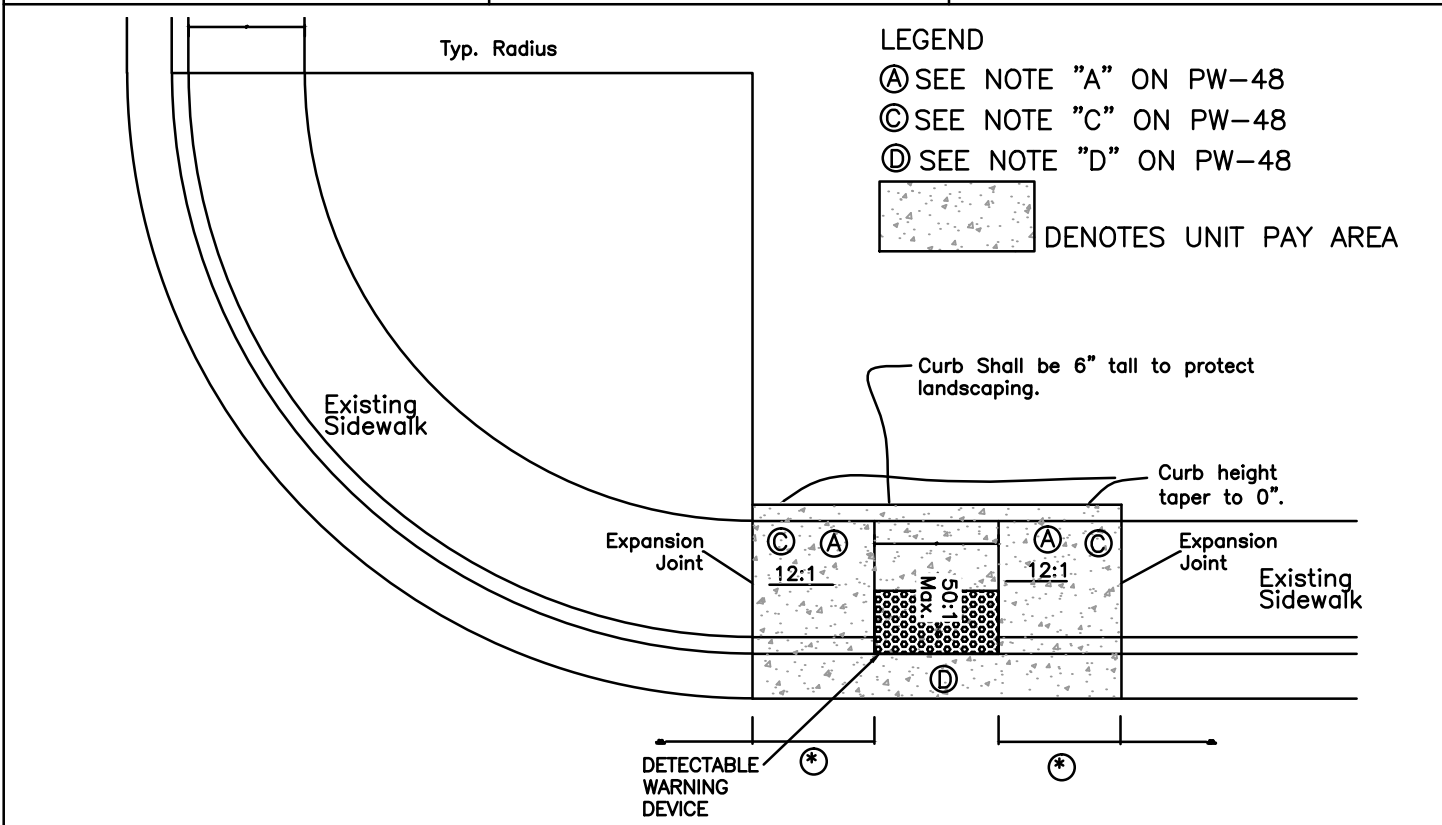


SECTION A-A



TITLE
ACCESS RAMP
TYPE 5

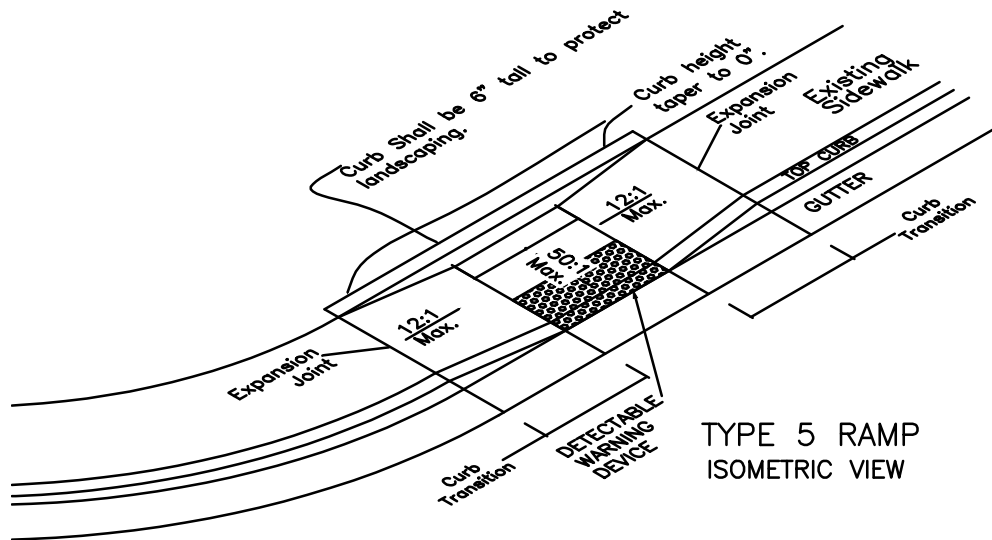
| | |
|------------|---------------|
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |



TYPE 5 RAMP

THIS RAMP REQUIRES APPROVAL FROM PUBLIC WORKS DEPARTMENT.

⊛ RAMP LENGTH IS NEEDED TO OBTAIN GRADE LESS THAN 12:1 SLOPE, BUT MAXIMUM LENGTH SHALL BE 15 FEET.





TITLE

RETAINING WALL DETAILS
(8' MAXIMUM HEIGHT)

PW-54

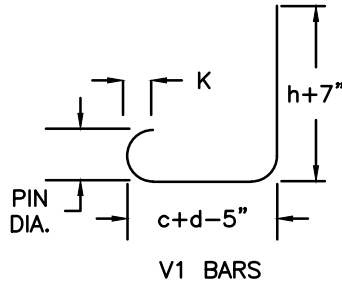
Issue Date

Revision Date

AUG, 2006

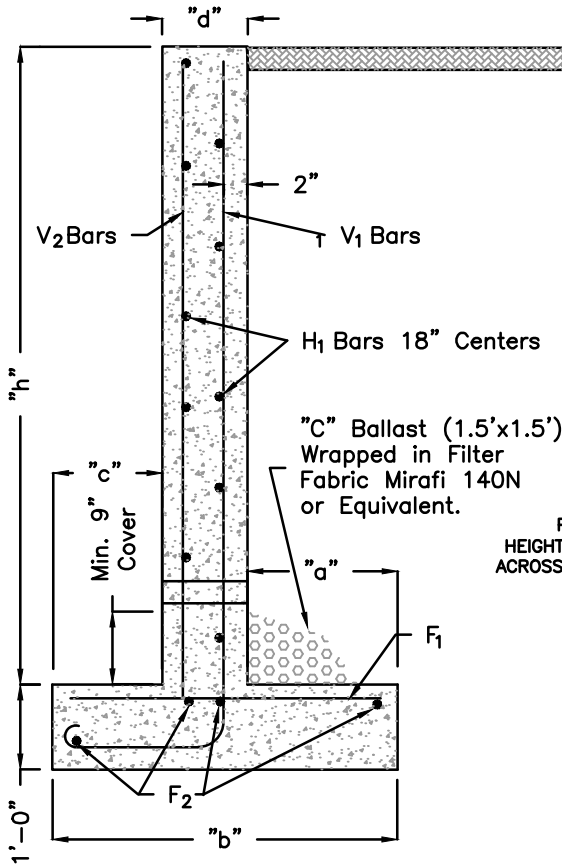
APR 2015

NOTE: IF WALL HEIGHT EXCEEDS 8' OR IF RETAINED EARTH SLOPES UP EXCEEDING 10% GRADE, THE WALL SHALL BE DESIGNED BY PROFESSIONAL ENGINEER WITH GEOTECHNICAL STUDY.



BENDING DIAGRAM

| BAR SIZE | BAR | PIN DIA. |
|----------|--------|----------|
| #4 | 4 1/2" | 2 1/2" |
| #5 | 5" | 3" |

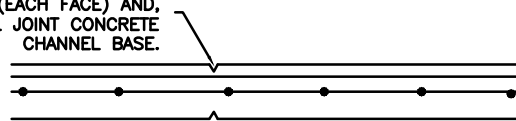


PROVIDE KEYWAY AT BASE OF WALL. KEYWAY NOT REQUIRED ON WALLS LESS THAN 4'.

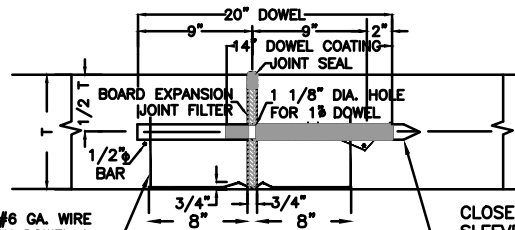
STEEL SCHEDULE

| "h" | "c" | "d" | "a" | "b" | V ₁ bars | | F ₁ bars | | H ₁ | V ₂ | F ₂ |
|-------|-----|-----|--------|-------|---------------------|---------|---------------------|---------|----------------|----------------|----------------|
| | | | | | Size | Spacing | Size | Spacing | #4 bars Spac. | #4 bars Spac. | #4 bars Spac. |
| 1'-0" | 8" | 8" | 8" | 2'-0" | #4 | 12" | #4 | 18" | 18" | 18" | 5 |
| 2'-0" | 8" | 8" | 8" | 2'-0" | #4 | 12" | #4 | 18" | 18" | 18" | 5 |
| 3'-0" | 8" | 8" | 8" | 2'-0" | #4 | 12" | #4 | 18" | 18" | 18" | 5 |
| 4'-0" | 8" | 8" | 1'-2" | 2'-6" | #4 | 12" | #4 | 12" | 18" | 18" | 5 |
| 5'-0" | 8" | 8" | 1'-8" | 3'-0" | #4 | 9" | #4 | 9" | 18" | 18" | 5 |
| 6'-0" | 8" | 8" | 2'-2" | 3'-6" | #4 | 6" | #4 | 6" | 18" | 18" | 6 |
| 7'-0" | 12" | 8" | 2'-4" | 4'-0" | #4 | 6" | #4 | 6" | 18" | 18" | 6 |
| 8'-0" | 12" | 8" | 2'-10" | 4'-6" | #4 | 6" | #4 | 6" | 18" | 18" | 6 |

PROVIDE 3/4" CHAMFER FULL HEIGHT OF WALL (EACH FACE) AND, ACROSS TOP. TOOL JOINT CONCRETE CHANNEL BASE.



CONTROL JOINT
USED AT 10' O.C. EACH SIDE
(TO ALIGN WITH FENCE POSTS)



DOWEL BAR CONSISTING OF MIN. #6 GA. WIRE CHAIR & DOWEL WOLDER AT EACH DOWEL & TWO 1/2" STEEL BARS AT EACH CHAIR. 3/4" EXPANSION JOINT AT 80' O.C.

EXPANSION JOINT
(DOWEL BARS TO BE 12" ON CENTER)

CLOSED END DOWEL BAR SLEEVE TO FIT DOWEL AND BE SECURED BY BAR TIE OR WELDING.

REINFORCED CONCRETE RETAINING WALL

2" WEEP HOLES (MAX. SPACING 10'-0" CTRS.) TO BE PLACED TO ALIGN WITH CONTROL JOINTS. ALL EXPOSED EDGES TO BE CHAMFERED 3/4".

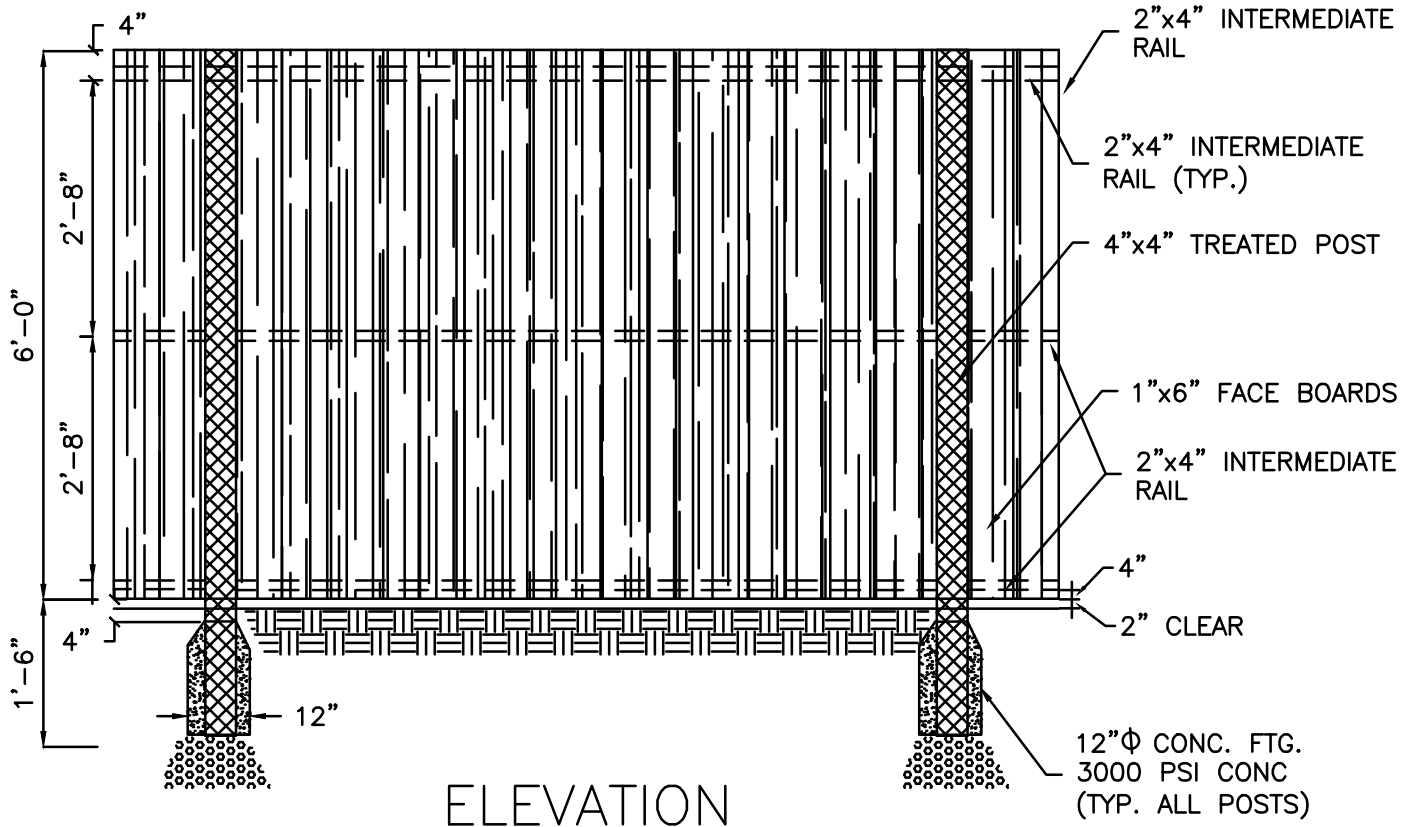
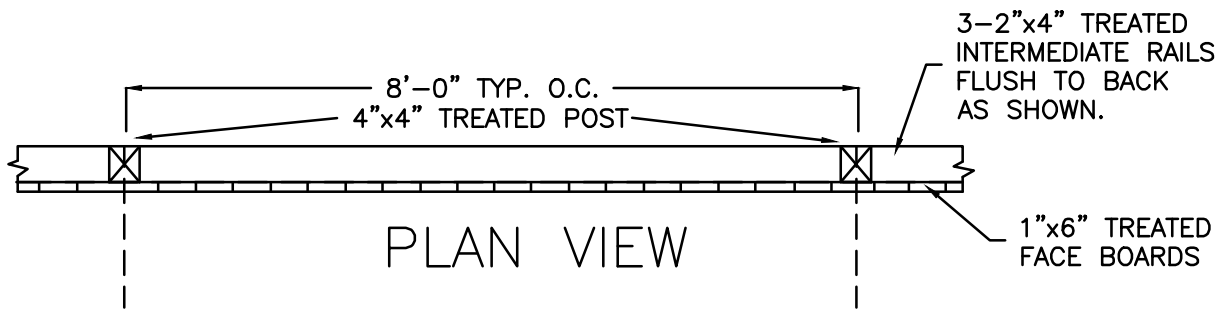


TITLE
WOOD FENCE DETAIL
(WITH WOOD POST)

| | |
|------------|---------------|
| Issue Date | PW-57 |
| AUG, 2006 | Revision Date |
| | APR 2015 |

NOTES:

- *ALL FASTENING HARDWARE TO BE NON-CORROSIVE
- *CONTRACTOR SHALL USE 8p. GALVANIZED SIDING NAILS OR 2" GALVANIZED SCREWS THROUGHOUT.
- *ALL WOOD MEMBERS SHALL BE TREATED.



N.T.S.



TITLE

WOOD FENCE DETAIL
(WITH METAL POST)

Issue Date
AUG, 2006

PW-58
Revision Date
APR 2015

NOTES:

- *ALL FASTENING HARDWARE TO BE NON-CORROSIVE
- *CONTRACTOR SHALL USE 8p. GALVANIZED SIDING NAILS OR 2" GALVANIZED SCREWS THROUGHOUT.
- *ALL WOOD MEMBERS SHALL BE TREATED.

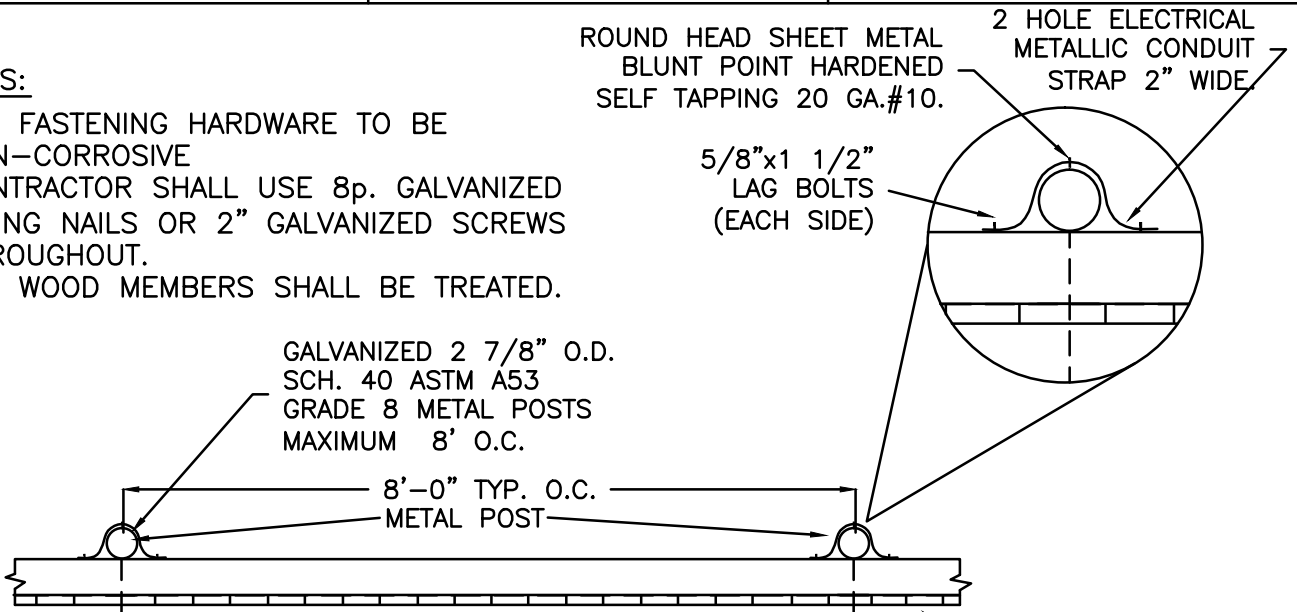
ROUND HEAD SHEET METAL BLUNT POINT HARDENED SELF TAPPING 20 GA.#10.

2 HOLE ELECTRICAL METALLIC CONDUIT STRAP 2" WIDE

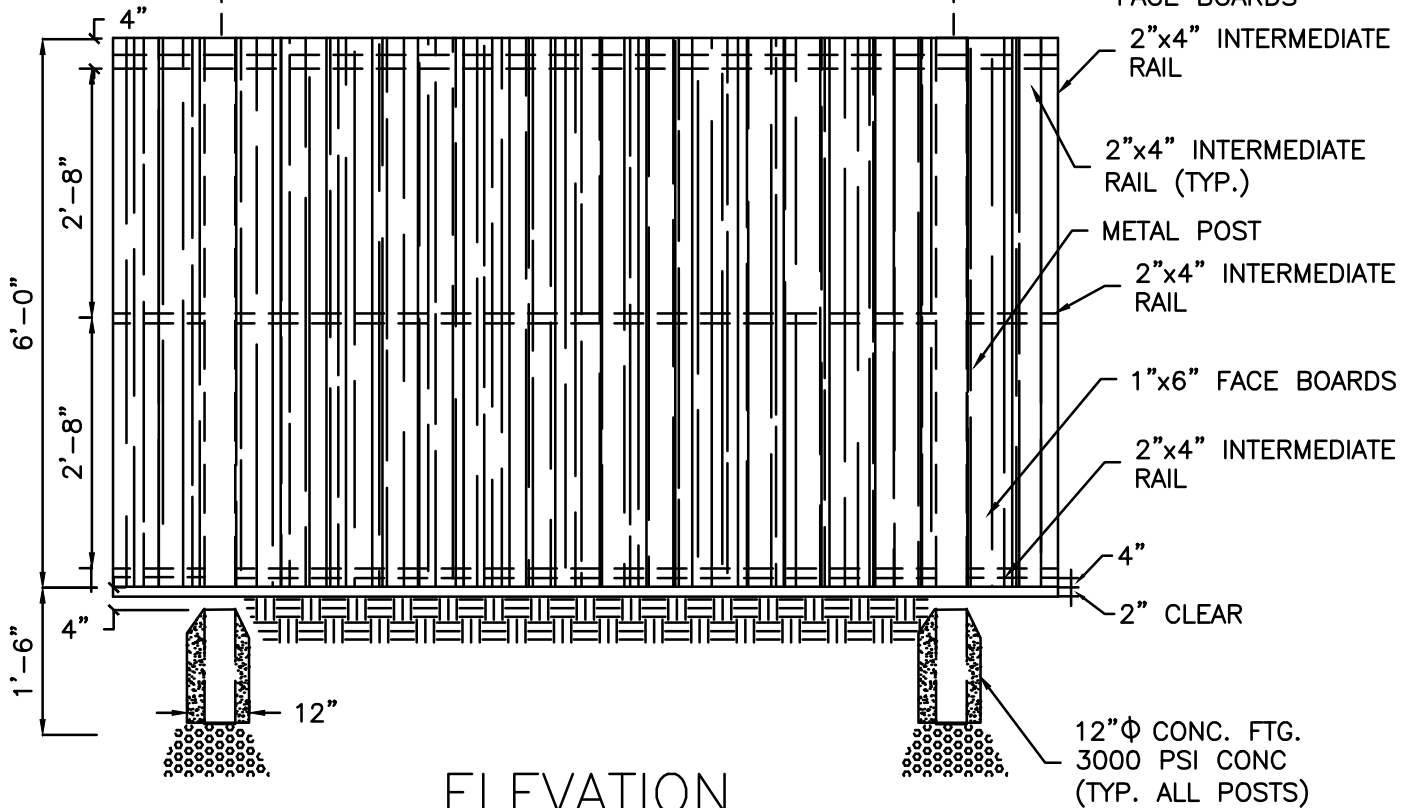
5/8"x1 1/2" LAG BOLTS (EACH SIDE)

GALVANIZED 2 7/8" O.D. SCH. 40 ASTM A53 GRADE 8 METAL POSTS MAXIMUM 8' O.C.

8'-0" TYP. O.C. METAL POST



PLAN VIEW



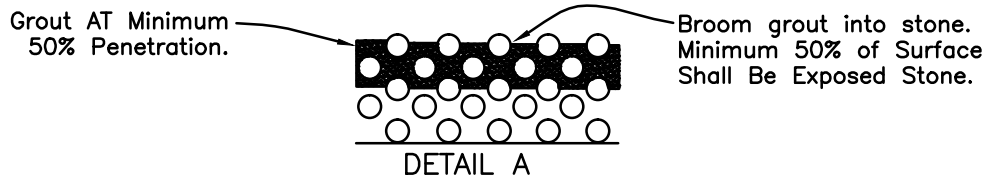
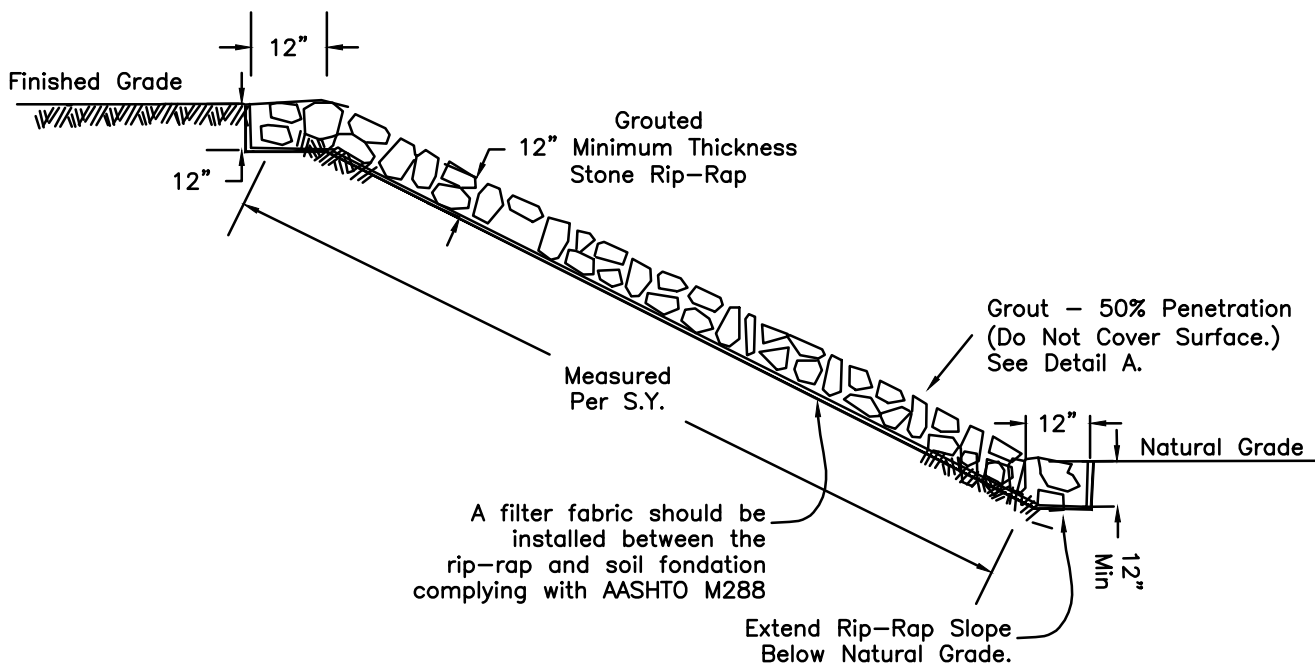
ELEVATION

N.T.S.



TITLE
GROUTED RIP-RAP
EMBANKMENT DETAILS

| | |
|------------|---------------|
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |



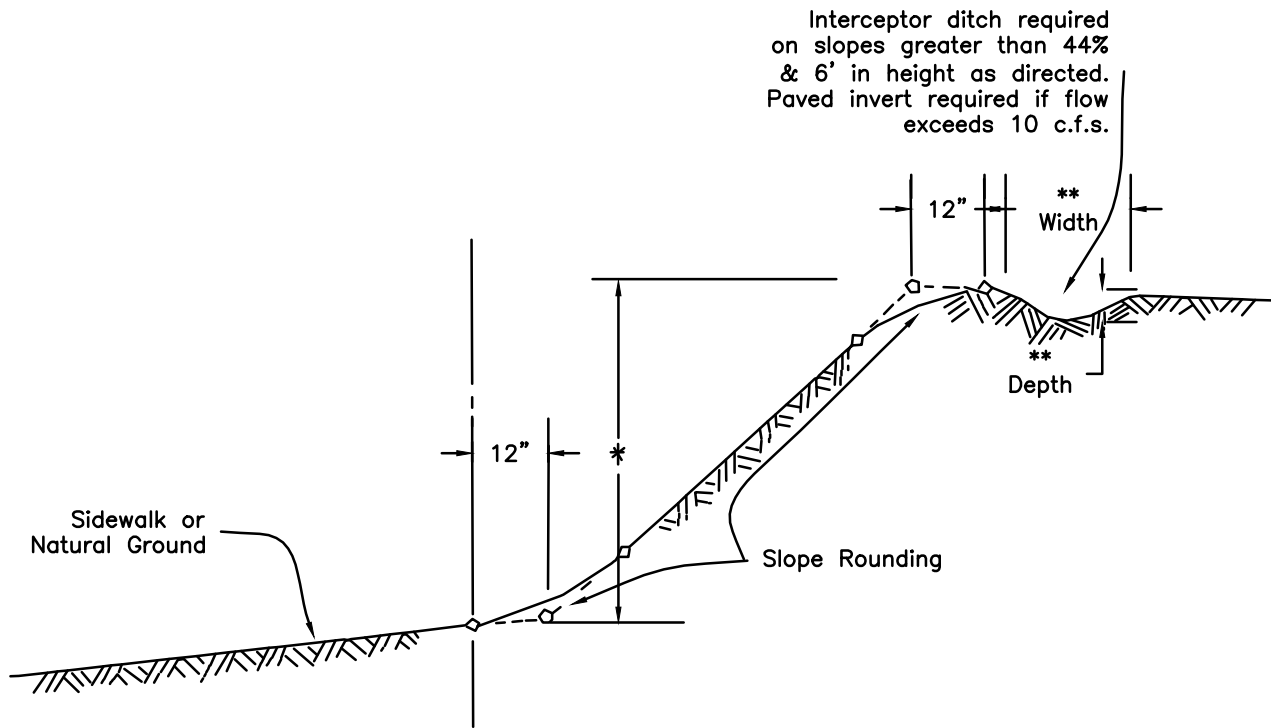
| % STONE | WEIGHT OF PIECES IN POUNDS |
|------------------|----------------------------|
| NOT MORE THAN 15 | 75-150 |
| 40-45 | 25-75 |
| 30-35 | 6-25 |
| NOT MORE THAN 15 | LESS THAN 6 |



TITLE
SLOPE ROUNDING
DETAIL

Issue Date
AUG, 2006

PW-61
Revision Date
APR 2015



SLOPE ROUNDING
(TYPICAL ON ALL CUT OR FILL SLOPES)

* Maximum height 15'-0" unless midheight 10' terraces utilized according to Section 29 of Little Rock Code of Ordinances.

** INTERCEPTOR DITCH SIZE SHALL BE DETERMINED BY ENGINEER

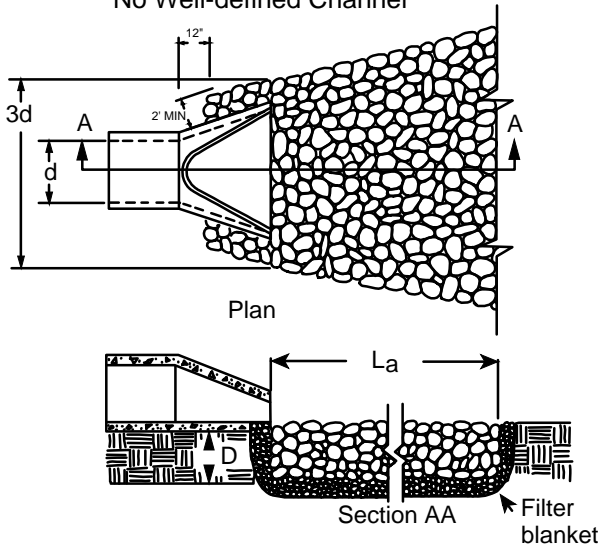


TITLE
END SECTION
RIP RAP PLACEMENT

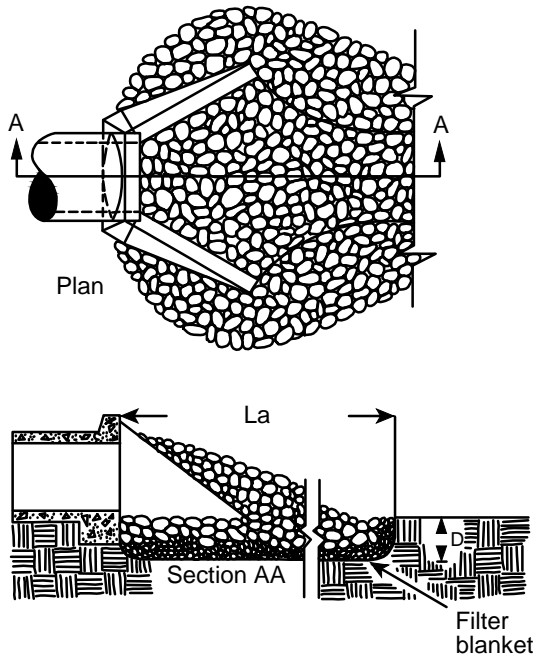
Issue Date
AUG, 2006

PW-62
Revision Date
APR 2015

Pipe Outlet to Flat Area-
No Well-defined Channel



Pipe Outlet to Well-defined
Channel



Notes

1. L_a is the length of the riprap apron. Please see design plans for length.
2. $D = 1.5$ times the maximum stone diameter but not less than 6".
3. In a well-defined channel extend the apron up the channel banks to an elevation of 6" above the maximum tailwater depth of to the top of the bank, whichever is less.
4. A filter blanket or filter fabric should be installed between the riprap and soil foundation complying with AASHTO M288.
5. Please see detail PW-60 for grouting.



TITLE
SILT FENCE

Issue Date
AUG, 2006

PW-63
Revision Date
APR 2015

NOTES:

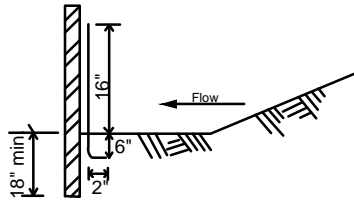
1. GEOTEXTILE FABRIC (TYPE 4) IN ACCORDANCE WITH SECTION 625 (AHTD SPECS).
2. TYPE A - USE ON SMALL DEVELOPMENTS WHERE THE LIFE OF THE PROJECT IS LESS THAN SIX MONTHS AND THE SLOPE GRADIENT IS LESS THAN 3:1.
3. TYPE B - USE ON DEVELOPMENTS WHERE THE LIFE OF THE PROJECT IS GREATER THAN SIX MONTHS AND WHERE THE SLOPE GRADIENT IS 3:1 OR GREATER.
4. TYPE C - USE WHERE SLOPES EXCEED A VERTICAL HEIGHT OF 20 FEET AND THE SLOPE GRADIENT IS STEEPER THEN 3:1.
5. INSPECT BARRIERS AT THE END OF EACH WORKING DAY, OR AFTER EACH RAIN, AND REPAIR OR CLEAN AS NECESSARY.
6. REMOVE SEDIMENT FROM BARRIER WHEN ONE HALF FULL.
7. DISPOSE OF SEDIMENT AND STABILIZE IT WITH VEGETATION.
8. REPLACE FILTER FABRIC WHEN DETERIORATED.
9. DESIGN LIFE OF A SYNTHETIC SILT FENCE IS APPROXIMATELY 6 MONTHS.
10. MAINTAIN UNTIL THE PROJECT IS VEGETATED OR OTHERWISE STABILIZED.
11. REMOVE BARRIERS AND ACCUMULATED SEDIMENT AND STABILIZE THE EXPOSED AREA WHEN THE PROJECT IS STABILIZED.
12. SILT FENCE SHALL BE INSTALLED ALONG THE CONTOUR, NEVER UP OR DOWN A SLOPE.
13. THE MAXIMUM DRAINAGE AREA FOR A CONTINUOUS FENCE WITHOUT BACKING SHALL BE 1/4 ACRE PER 100 LINEAR FEET OF FENCE LENGTH, UP TO A MAXIMUM AREA OF 2 ACRES. THE MAXIMUM SLOPE LENGTH BEHIND THE FENCE ON THE UPSLOPE SIDE SHOULD BE 110 FEET (AS MEASURED ALONG THE GROUND SURFACE).
14. THE MAXIMUM DRAINAGE AREA FOR A CONTINUOUS SILT FENCE WITH BACKING SHALL BE 1 ACRE PER 150 LINEAR FEET OF FENCE LENGTH. THE SLOPE LENGTH ABOVE THE SILT FENCE WITH BACKING SHOULD BE NO MORE THAN 300 FEET.



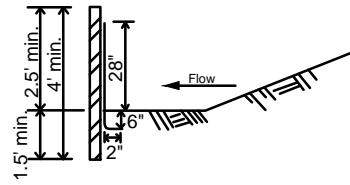
TITLE
SILT FENCE

Issue Date
AUG, 2006

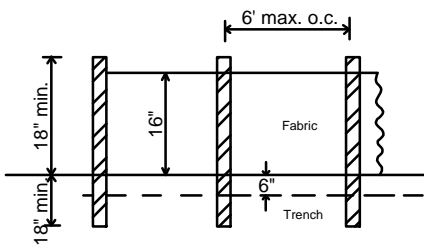
PW-63
Revision Date
APR 2015



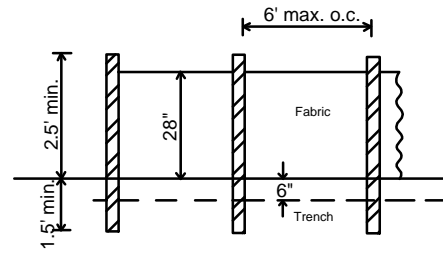
SIDE VIEW



SIDE VIEW



FRONT VIEW



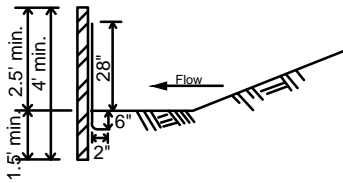
FRONT VIEW

NOTE:
Use wood or steel posts

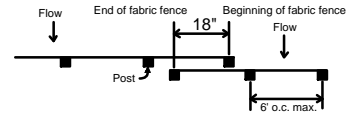
NOTE:
Use wood or steel posts

SF-A SILT FENCE (TYPE A)
NTS

SF-B SILT FENCE (TYPE B)
NTS

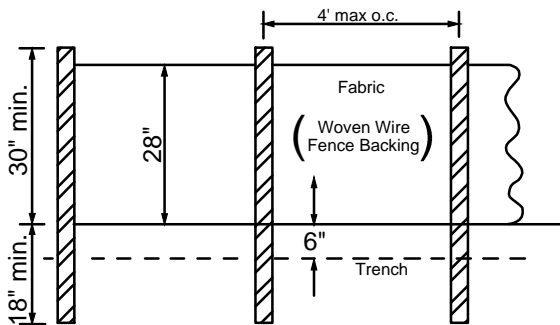


SIDE VIEW

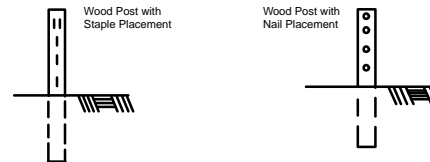


TOP VIEW - (Not to scale)

OVERLAP AT FABRIC ENDS



FRONT VIEW



FRONT VIEWS

FASTENERS FOR SILT FENCES

NOTE:
Use steel posts - only

SF-C SILT FENCE (TYPE C)
NTS

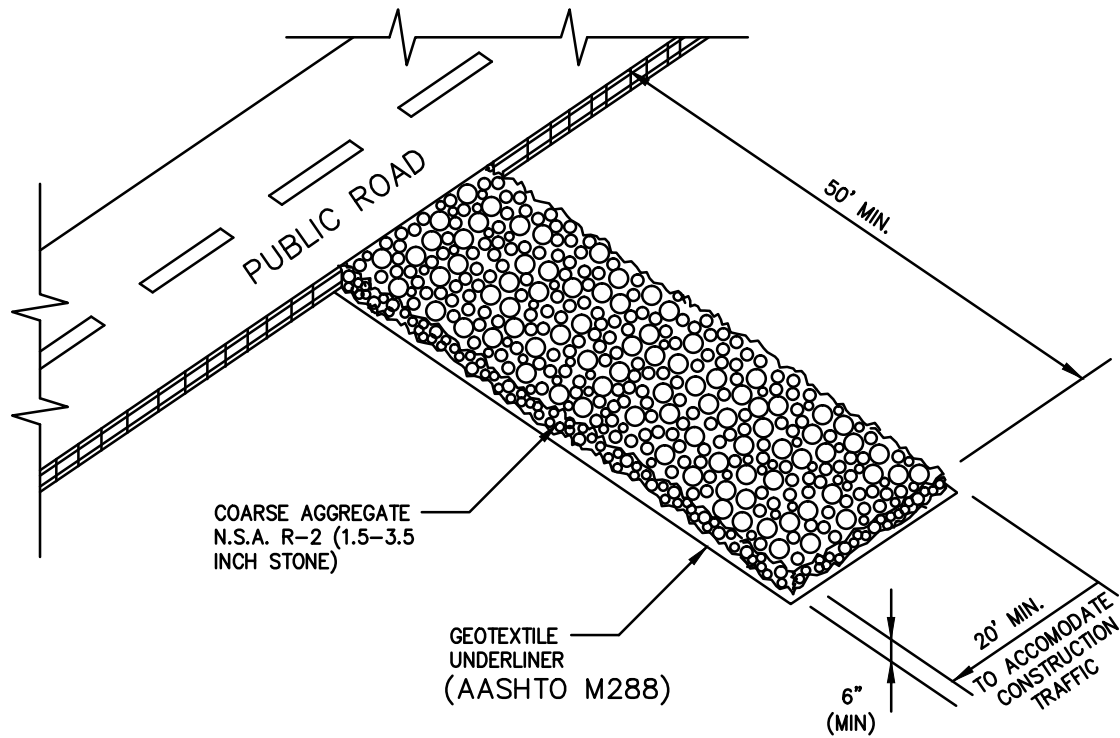


TITLE
CONSTRUCTION
EXIT

Issue Date
AUG, 2006

PW-64
Revision Date
APR 2015

1. LOCATE STONE STABILIZED PAD AT ANY POINT WHERE VEHICULAR TRAFFIC WILL BE LEAVING THE CONSTRUCTION SITE ONTO A PUBLIC RIGHT-OF-WAY, STREET, ALLEY, SIDEWALK, OR PARKING AREA OR ANY OTHER AREA WHERE THERE IS A TRANSITION FROM BARE SOIL TO A PAVED AREA.
2. WIDTH - 20'-0" MINIMUM BUT NOT LESS THAN FULL WIDTH OF ALL POINTS OF VEHICULAR EGRESS. LENGTH - 50'-0" MINIMUM
3. MAINTAIN THE EXIT TO PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS- OF-WAY. PROVIDE PERIODIC TOP DRESSING WITH 1.5 - 3.5" STONE, AS CONDITIONS DEMAND. IMMEDIATELY REMOVE ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLE OR SITE ONTO ROADWAY OR INTO STORM DRAINS. CLEAN WHEELS TO REMOVE MUD PRIOR TO ENTRANCE ON TO PUBLIC RIGHTS-OF-WAY.
4. WHEN WASHING IS REQUIRED, DO SO ON AREAS STABILIZED WITH CRUSHED STONE DRAINING INTO AN APPROVED SEDIMENT TRAP OR SEDIMENT BASIN.

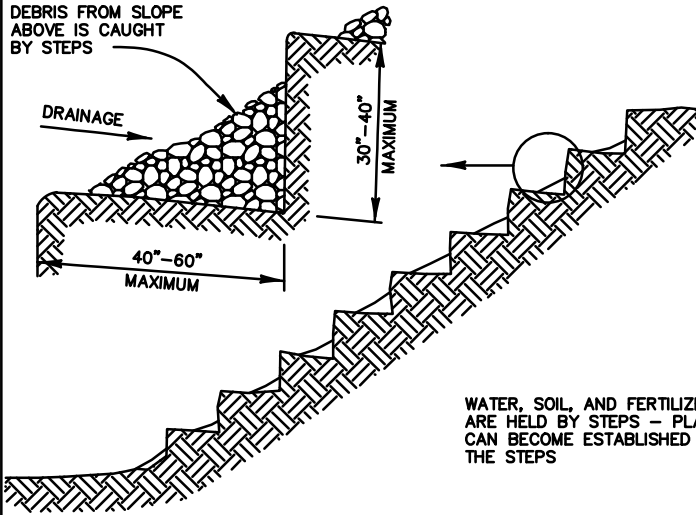


CO CONSTRUCTION EXIT
NTS

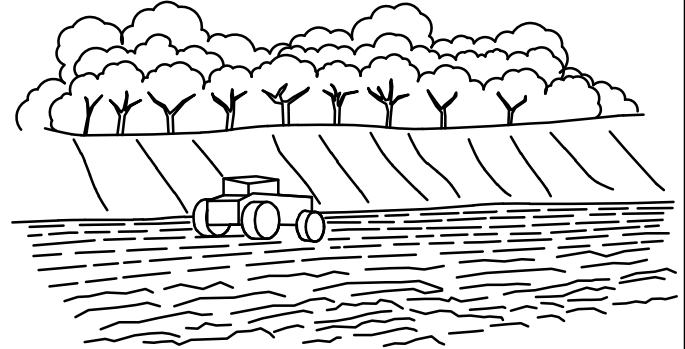


TITLE
SURFACE
ROUGHENING

| | |
|------------|---------------|
| | PW-65 |
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |

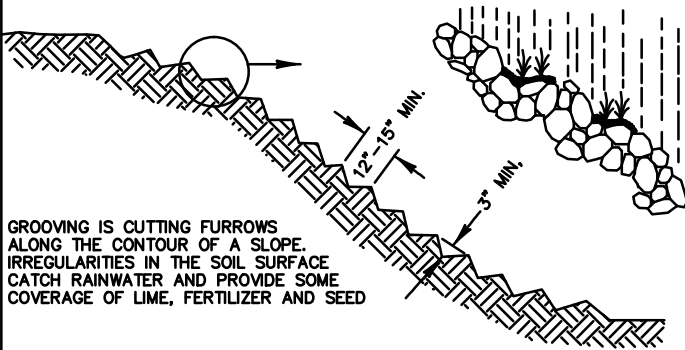


STAIR STEPPING CUT SLOPES



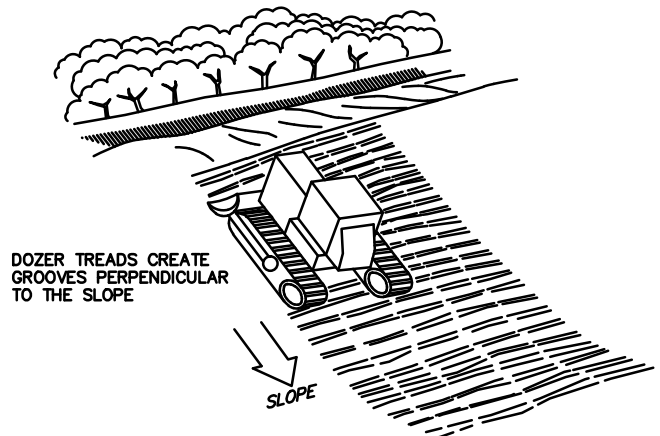
EACH LIFT OF THE FILL IS COMPACTED, BUT THE OUTER FACE OF THE SLOPE IS ALLOWED TO REMAIN LOOSE SO THAT THE ROCKS, CLODS, ETC. REACH THE NATURAL ANGLE OF REPOSE

FILL SLOPE TREATMENT



GROOVING IS CUTTING FURROWS ALONG THE CONTOUR OF A SLOPE. IRREGULARITIES IN THE SOIL SURFACE CATCH RAINWATER AND PROVIDE SOME COVERAGE OF LIME, FERTILIZER AND SEED

GROOVING SLOPES



TRACKING

SU SURFACE ROUGHENING
NTS



TITLE
 TEMPORARY STABILIZATION
 TEMPORARY GRASSING
 PERMANENT GRASSING

| | |
|-------------------------|---------------------------|
| | PW-66 |
| Issue Date AUG, 2006 | Revision Date APR 2015 |

Ts1

TEMPORARY STABILIZATION

| SPECIES | RATE / 1000 SF. | PLANTING DATES |
|-------------|--------------------|-------------------------------|
| STRAW MULCH | 92 LB. | ANY TIME FOR TEMPORARY COVER. |

Ts2

TEMPORARY GRASSING

| SPECIES | RATE / ACRE | PLANTING DATES | FERTILIZER | RATE / ACRE | MULCH RATE |
|---------|----------------|------------------|------------|----------------|------------------|
| MILLET | 50 LB | JAN 21 TO AUG 14 | 10-20-10 | 500 LB | REFER TO TS-1 |
| RYE | 100 LB | AUG 15 TO JAN 20 | 10-20-10 | 500 LB | |

Ts3

PERMANENT GRASSING

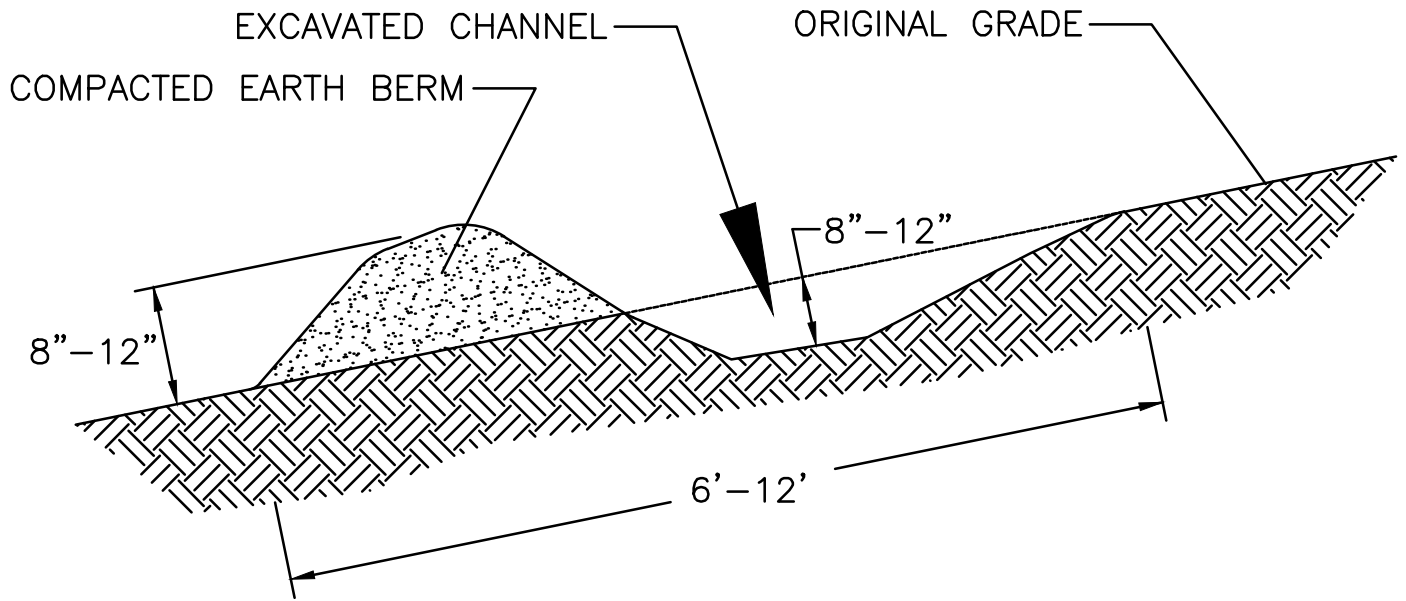
| SPECIES | RATE / ACRE | PLANTING DATES | FERTILIZER | RATE / ACRE | MULCH RATE |
|---|---------------------------|----------------------------------|------------|----------------|------------------|
| BERMUDA GRASS (UNHULLED) BERMUDA GRASS (HULLLED) LESPEDEZA (KOBE) | 5 LB. 10 LB. 10 LB. | MARCH 1 TO JUNE 15 | 10-20-10 | 800 LB. | REFER TO TS-1 |
| BERMUDA GRASS (UNHULLED) BERMUDA GRASS (HULLLED) | 5 LB. 10 LB. | JUNE 16 TO AUGUST 31 | 10-20-10 | 800 LB. | |
| BERMUDA GRASS (UNHULLED) WHEAT | 20 LB. 15 LB. | SEPTEMBER 1 TO FEBRUARY 29 | 10-20-10 | 800 LB. | |



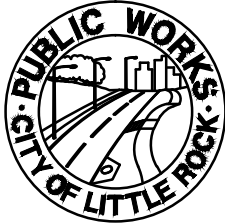
TITLE
DIVERSION BERM

Issue Date
AUG, 2006

PW-67
Revision Date
APR 2015



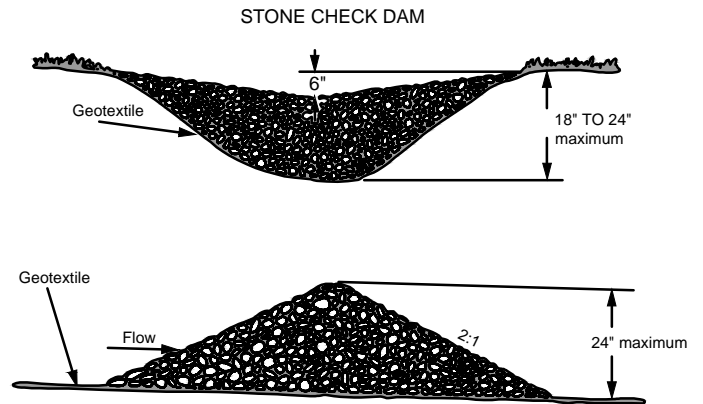
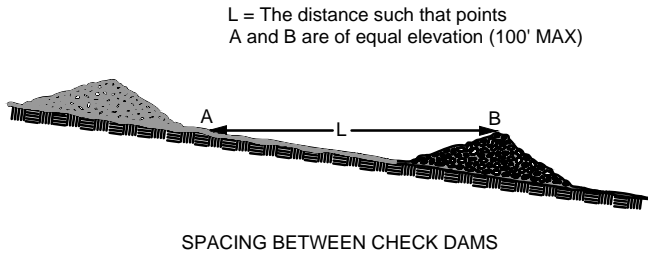
DI DIVERSION BERM
NTS



TITLE
CHECK DAM

Issue Date
AUG, 2006

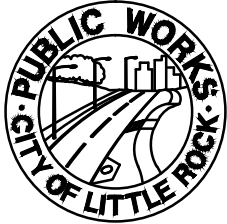
PW-68
Revision Date
APR 2015



NOTES:

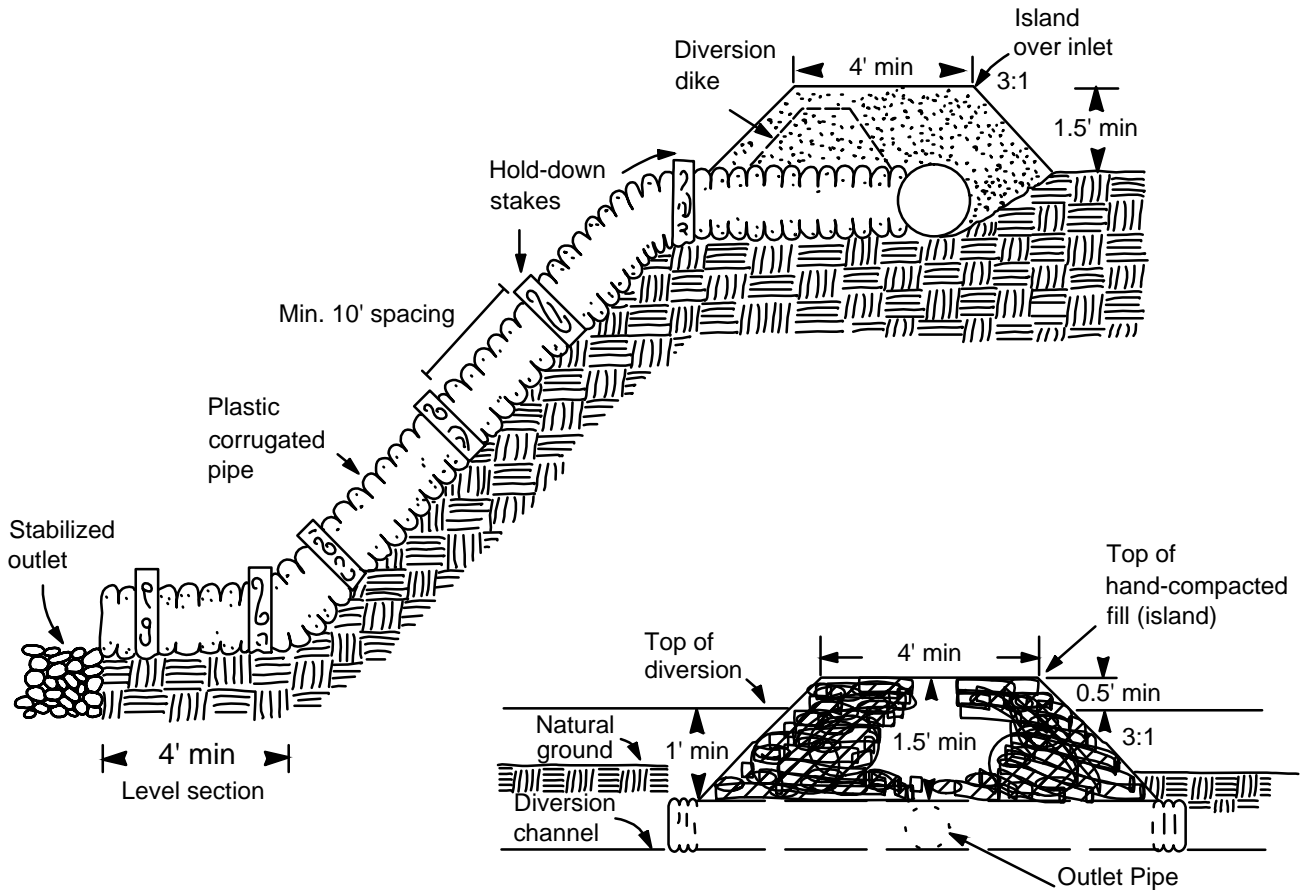
1. PLACE IN SMALL, OPEN CHANNELS, NOT IN LIVE STREAMS.
2. CONSTRUCT CENTER AT LEAST 6 INCHES LOWER THAN OUTER EDGES.
3. EXTEND ACROSS ENTIRE WIDTH OF DITCH OR SWALE.
4. MAKE SIDE SLOPES 2:1 OR FLATTER.
5. DRAINAGE AREA NOT TO EXCEED 2 ACRES.
6. CONSTRUCTED OF GRADED SIZE 2 IN-10 IN STONE.
7. PERIODIC INSPECTION AND MAINTENANCE REQUIRED.
8. REMOVE SEDIMENT WHEN IT REACHES A DEPTH OF ONE-HALF THE ORIGINAL DAM HEIGHT.
9. SAND BAGS MAY BE USED AS AN ALTERNATE. GEOTEXTILE MAY BE OMITTED WHEN USING SAND BAGS

CD CHECK DAM
NTS



TITLE
 TEMPORARY
 DOWN DRAIN

| | |
|------------|---------------|
| | PW-69 |
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |



Inlet Detail

NOTES:

1. PLACE ON UNDISTURBED SOIL OR WELL-COMPACTED FILL.
2. INSTALL TEE, "L" OR FLARED END SECTION INLET AT THE TOP OF THE SLOPE.
3. ENTRANCE SLOPED 1/2" PER FOOT TOWARD INLET.
4. COMPACT A DIKE RIDGE NO LESS THAN ONE FOOT ABOVE THE TOP OF THE PIPE.
5. ANCHOR WITH HOLD-DOWN GROMMETS OR STAKES AT INTERVALS NOT TO EXCEED 10 FEET.
6. ENSURE CONNECTIONS ARE WATERTIGHT.
7. EXTEND PIPE BEYOND THE TOE OF THE SLOPE.
8. DIRECT OUTLET UPHILL.
9. STABILIZE OUTLET WITH TEE, RIPRAP OR OTHER SUITABLE MATERIAL.

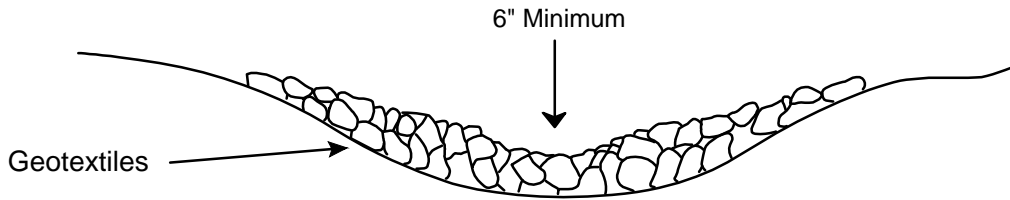
| MAXIMUM DRAINAGE PIPE DIAMETER (ACRES) | AREA PER PIPE (INCHES) |
|--|------------------------|
| 0.3 | 10 |
| 0.5 | 12 |
| 1.0 | 18 |

DN DOWN DRAIN
 NTS

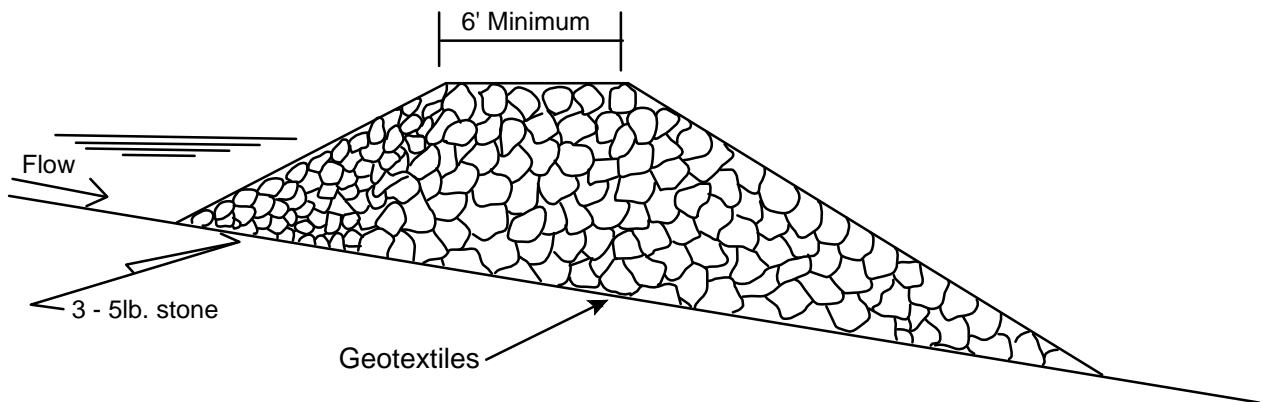


TITLE
ROCK DAM

| | |
|------------|---------------|
| | PW-70 |
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |



NOTE: Sediment Trap is to be cleaned out when volume becomes half full.



| Flow Velocity (ft./sec.) | N.S.A. No. ¹ | Size Inches (Sq. Opening) Avg. ² | | | Filter Stone N.S.A. No. ¹ |
|--------------------------|-------------------------|---|-------|-------|--------------------------------------|
| | | Max. | | Min. | |
| 2.5 | R-1 | 1 1/2 | 3/4 | No. 8 | FS-1 |
| 4.5 | R-2 | 3 | 1 1/2 | 1 | FS-1 |
| 6.5 | R-3 | 6 | 3 | 2 | FS-2 |
| 9.0 | R-4 | 12 | 6 | 3 | FS-2 |
| 11.5 | R-5 | 18 | 9 | 5 | FS-2 |
| 13.0 | R-6 | 24 | 12 | 7 | FS-3 |
| 14.5 | R-7 | 30 | 15 | 12 | FS-3 |

¹ National Stone Association

² At least 50% of the individual stone particles must be equal or larger than this listed size

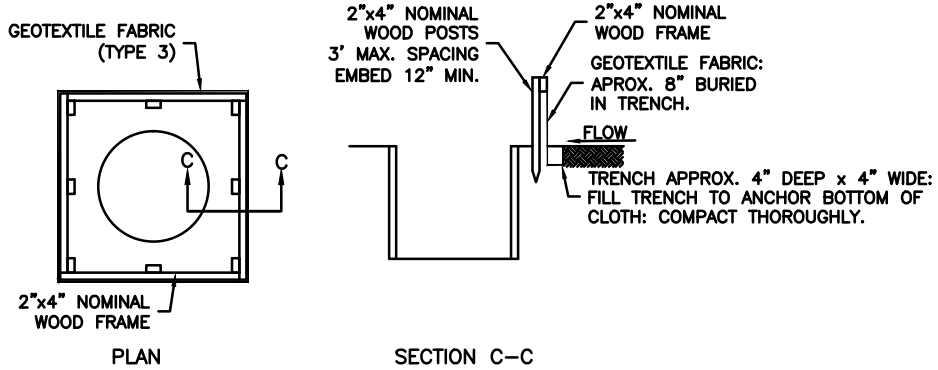
NOTES:

- FOR USE IN SMALL CHANNELS WITH DRAINAGE AREAS OF 50 ACRES OR LESS.
- MUST BE USED IN CONJUNCTION WITH OTHER APPROPRIATE SEDIMENT CONTROL MEASURES.
- USE BELOW CULVERT INSTALLATIONS, DAM CONSTRUCTION, OR ANY PROJECT THAT MAY INVOLVE GRADING ACTIVITY DIRECTLY IN A STREAM.
- NOT INTENDED TO SUBSTANTIALLY IMPOUND WATER.
- USE AT THE UPSTREAM END OF PONDS OR LAKES.
- EDGES SHOULD NOT BE HIGHER THAN THE CHANNEL BANKS.
- CENTER SHOULD BE AT LEAST 6 INCHES LOWER THAN THE OUTER EDGES OF THE DAM AT THE CHANNEL BANKS.
- HEIGHT SHOULD NOT EXCEED ELEVATION OF UPSTREAM PROPERTY LINE.
- SIDE SLOPES SHOULD BE 2:1 OR FLATTER.
- TOP WIDTH SHOULD BE GREATER THAN 6 FEET.
- EXTEND COMPLETELY ACROSS THE CHANNEL AND SECURELY TIE INTO BOTH CHANNEL BANKS
- REQUIRES PERIODIC INSPECTION AND MAINTENANCE.
- SEDIMENT REMOVED WHEN IT REACHES ONE-HALF OF THE ORIGINAL DAM HEIGHT

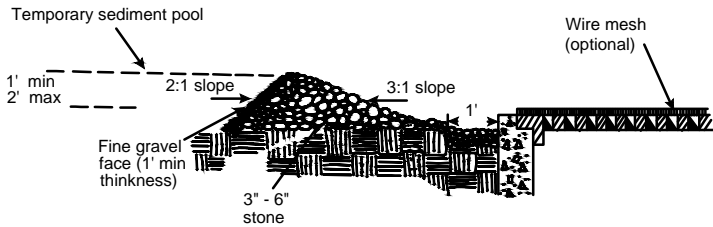


TITLE
INLET PROTECTION

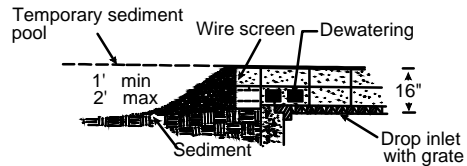
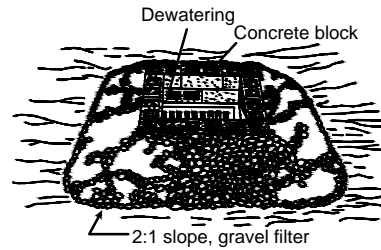
| | |
|------------|---------------|
| | PW-71 |
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |



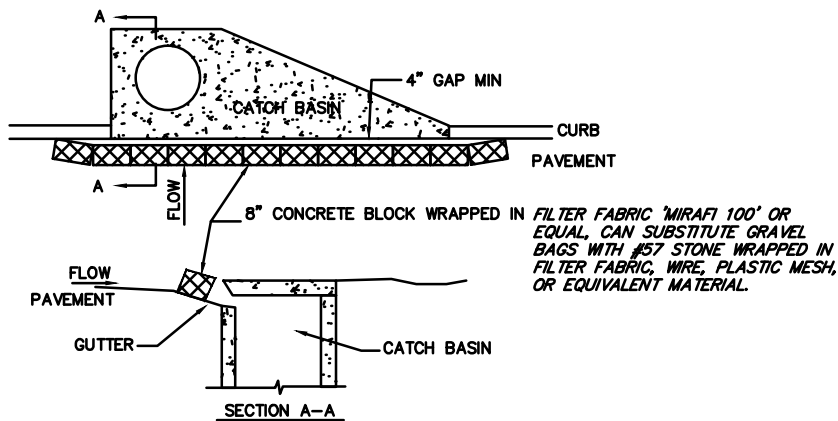
SD-1 SILT FENCE
NTS



SD-2 GRATE INLET - GRAVEL RING
NTS



SD-3 GRATE INLET - BLOCK & GRAVEL
NTS



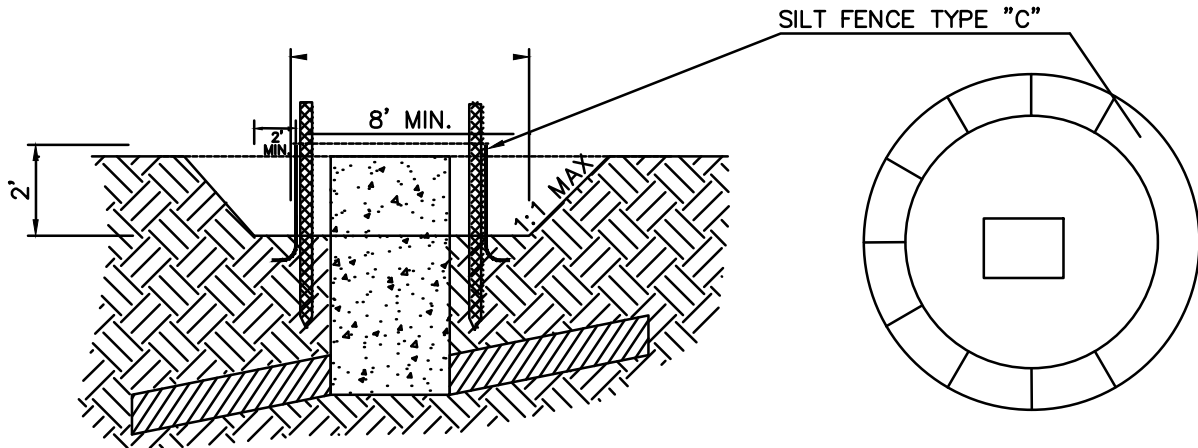
NOTE: INSTALL FILTER AFTER ANY ASPHALT PAVING

SD-4 CURB INLET - BLOCK
NTS



TITLE
SEDIMENT BASIN

| | |
|------------|---------------|
| | PW-72 |
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |



PROTECT INLETS DURING CONSTRUCTION. KEEP SEDIMENT OUT OF STORM DRAINAGE SYSTEM. USE HALF CIRCLE BEHIND CURB INLETS DURING STREET CONSTRUCTION. CIRCULAR SHAPE IS NOT ESSENTIAL - VARY SHAPE TO FIT DRAINAGE AREA AND TERRAIN. OBSERVE TO CHECK TRAP EFFICIENCY AND MODIFY AS NECESSARY TO TRAP SEDIMENT.

CLEAN WHEN SEDIMENT IS 6" BELOW RIM ELEVATION.

SB-2 INLET SEDIMENT TRAP
NTS

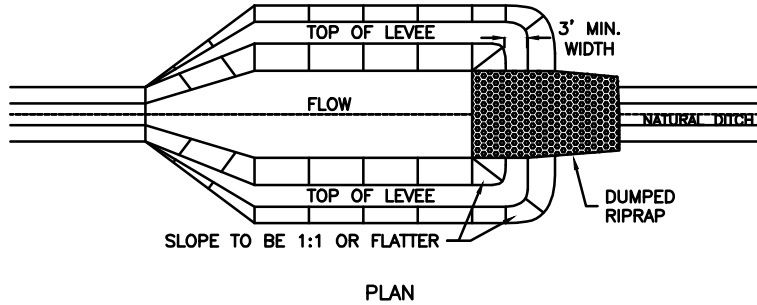
NOTES:

THE SEDIMENT STORAGE VOLUME OF THE BASIN, AS MEASURED TO THE ELEVATION OF THE CREST OF THE SPILLWAY, SHALL BE AT LEAST 67 CUBIC YARDS PER ACRE FOR THE DISTURBED AREA DRAINING INTO THE BASIN (67 CUBIC YARDS IS EQUIVALENT TO 1/2 INCH OF SEDIMENT PER ACRE OF DRAINAGE AREA). THE ENTIRE DRAINAGE BASIN AREA SHOULD BE USED FOR THIS COMPUTATION, RATHER THAN THE DISTURBED AREA ALONE, TO HELP ENSURE ADEQUATE TRAPPING EFFICIENCY. SEDIMENT SHALL BE REMOVED FROM THE BASIN WHEN APPROXIMATELY ONE-THIRD OF THE STORAGE VOLUME HAS BEEN LOST TO SEDIMENT ACCUMULATION. THIS VOLUME SHALL BE MARKED ON THE RISER OR BY SETTING A MARKED POST NEAR THE RISER.

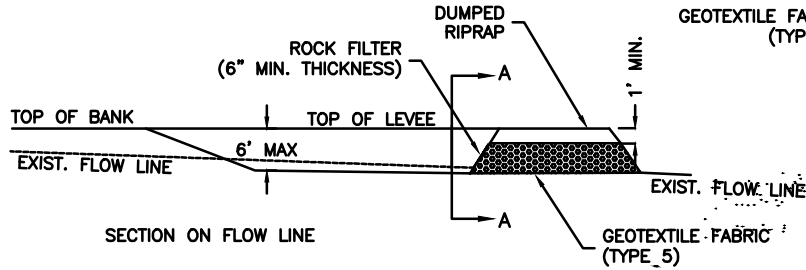
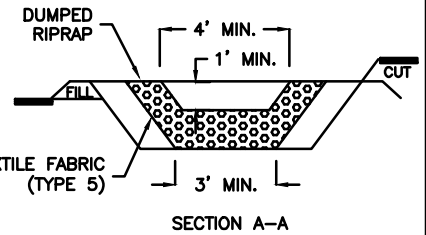


TITLE
SEDIMENT BASIN

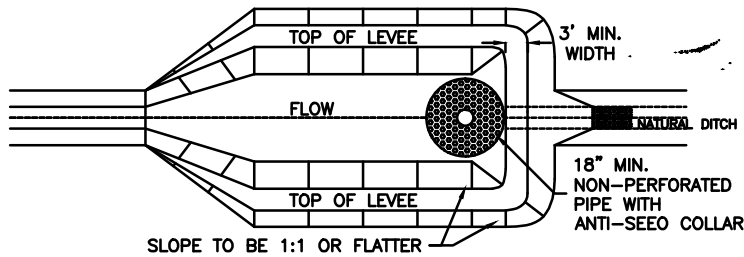
| | |
|------------|---------------|
| | PW-72 |
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |



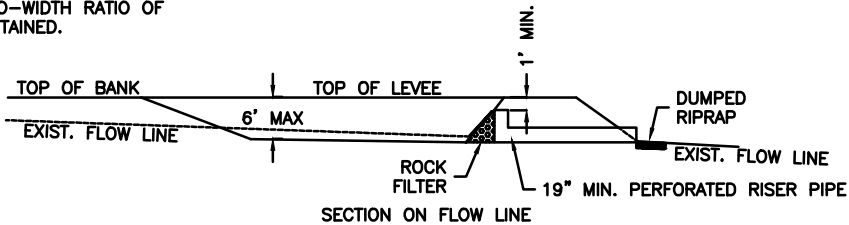
NOTE:
SIZE OF BASIN TO BE DETERMINED
BY VOLUME REQUIRED, HOWEVER, A
MINIMUM LENGTH-TO-WIDTH RATIO OF
2:1 SHALL BE MAINTAINED.



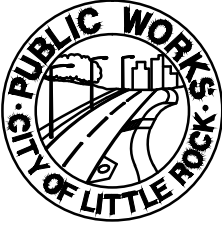
SEDIMENT BASIN WITH RIPRAP OUTLET



NOTE:
SIZE OF BASIN TO BE DETERMINED
BY VOLUME REQUIRED, HOWEVER, A
MINIMUM LENGTH-TO-WIDTH RATIO OF
2:1 SHALL BE MAINTAINED.

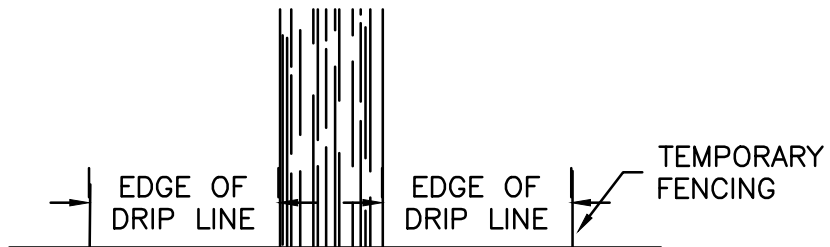
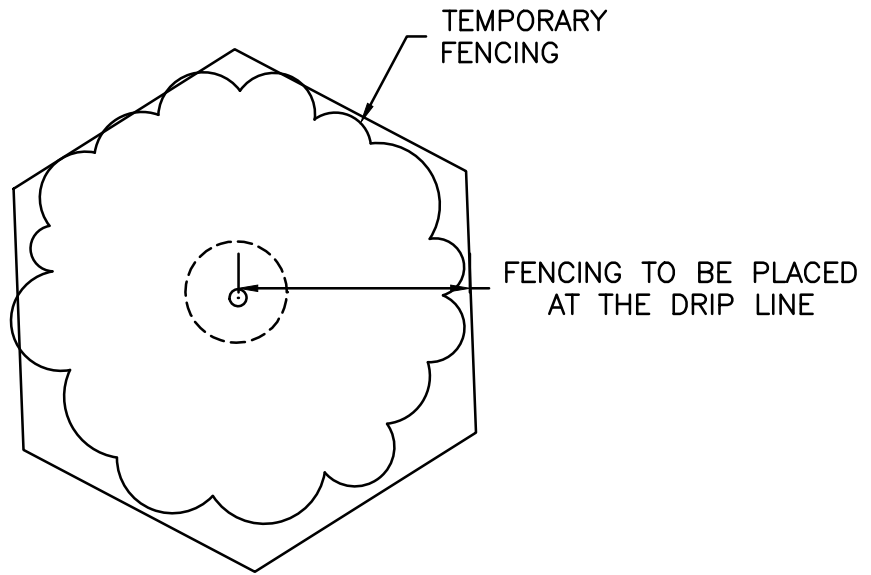


SEDIMENT BASIN WITH PIPE OUTLET



TITLE
TREE PROTECTION

| | |
|------------|---------------|
| | PW-73 |
| Issue Date | Revision Date |
| AUG, 2006 | APR 2015 |



NOTE: TEMPORARY FENCING SHALL BE PLACED PRIOR TO CONSTRUCTION IN AREA.



TITLE

FRAME BARRICADE TYPE 3
PERMANENT INSTALLATION

Issue Date
AUG, 2006

PW-74
Revision Date
APR 2015

NOTE:
FASTEN TREATED LUMBER WITH $\frac{3}{8}$ "x6" LAG
SCREWS, WITH WASHERS 2 EACH SIDES

BARRICADE SHALL CONFORM TO THE
MANUAL ON UNIFORM TRAFFIC CONTROL
DEVICES. SECTION 3F.01

