

STORM WATER MANAGEMENT EROSION AND SEDIMENT CONTROL NOTES

GENERAL NOTES

The following are requirements to be followed by the Contractor during all phases of the project. Please note that this construction will be accomplished under the provisions of the National Pollutant Discharge Elimination System (NPDES) of the U.S. Environmental Protection Agency (EPA). A Storm Water Pollution Prevention Plan (SWP3) must be prepared for this project in conformance with EPA regulations (Code of Federal Regulations (CFR) 40, Part 122) and Oklahoma Department of Environmental Quality (ODEQ) General Permit (OKR-10). The Contractor will be responsible for compliance with the NPDES permit and the SWP3, as well as with all provisions of the plans and specifications. It will also be the Contractor's responsibility to prevent soil or sediment loss from the construction site. The Contractor shall not leave the site until all erosion control, sediment control, and storm water management practices are in place; have been inspected and found satisfactory; and all temporary practices have been properly removed.

STORM WATER MANAGEMENT

The project must be designed to provide positive post-construction control of storm water runoff from the site [using gutters, curbs, inlets, piping, and outlets to the receiving stream]. The erosion and sediment control measures discussed below will also provide some temporary storm water controls. During the course of construction, the contractor will install and maintain storm water controls in the sequence specified herein to provide comprehensive management of storm water for a project of this nature.

EROSION AND SEDIMENT CONTROL

The project must be designed to minimize adverse off-site effects of soil erosion and resulting sediment loss through the use of proper construction techniques; and by installing both temporary and permanent management practices. All soil-disturbing activities performed by the Contractor will be accomplished in such manner as to prevent loss of sediment from the construction site during rainfall events. To accomplish this, the following specific steps will be taken during construction:

- 1 Immediately after mobilization but prior to initiation any soil-disturbing activities, the Contractor will install all specified perimeter controls on the site. These practices have been designed to trap all sediment produced during soil-disturbing activities, and to prevent off-site damage. It is recognized that some site preparation may be required to properly install these practices.
- 2 The recommended sequence for the installation and removal of erosion and sediment control measures is as follows:
perimeter control measures (silt barriers and fencing) installed at designated areas; cleaning of street during construction; site grading (including temporary slope stabilization) as needed; installation of utilities; building construction; paving; final grading; installation of sod or vegetative materials; building construction; paving; final grading; installation of sod or vegetative materials; removal of temporary practices and perimeter controls; and site cleanup.
- 3 During all soil-disturbing activities, the Contractor will take appropriate steps using accepted construction methods to minimize exposure of unprotected soil and other construction materials to rainfall. Particular care must be exercised when dealing with topsoil stockpiles, fill material, or soil on slopes. The Contractor will maintain a date log of all soil disturbance activities or major grading operations, and of all management practice or control measure installations.

4 If, during the course of construction, any area of soil (including stockpiles) remains exposed for more than fourteen calendar days without suitable erosion control, then temporary stabilization measures should be installed unless soil-disturbing activities are planned on such areas within an additional seven calendar days. Suitable temporary stabilization measures are perimeter controls and silt barriers (such as rock bags, sand bags, and silt fencing) along all side-slope and down-slope borders of the disturbed area. Note that perimeter controls alone may not be successful; movement of large amounts of sediment produced by heavy rain on exposed soil could overwhelm such measures.

5 At the Contractor's discretion, additional temporary erosion control practices (such as rock bags, sand bag barriers, and silt fences) may be installed along any down-slope of side-slope perimeter of a soil-disturbed area to prevent sediment movement. Anchored erosion control matting, mulches, or other acceptable methods may also be installed to stabilize any unprotected slopes during construction, and hold them to the appropriate grade.

As site conditions warrant, the Contractor may also choose to modify the type or arrangement of specified practices to improve their effectiveness. As with any other project changes, the Contractor must present all proposed modifications to the Project Engineer for approval prior to installation.

6 The Contractor will inspect all specified practices at least once every fourteen calendar days, and after all rainfall events to insure that each specified practice remains intact. Any damage noted during such inspections shall be repaired promptly to restore the practice to original specifications. The Contractor will be responsible for maintenance of all erosion and sediment control practices as specified in the plans, including periodic regrading, and final grading after removal of all such practices.

7 When water is used for dust control or to promote vegetation, the Contractor will prevent the escape of this water and any sediment it may carry from the construction site.

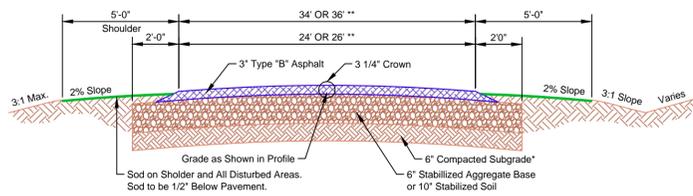
8 Care must be exercised to prevent excessive off-site tracking of mud or sediment by construction vehicles. In addition to the specified gravel entrance, properly graveled transition areas should be established at all temporary site exits to assist in mud removal from departing vehicles. The Contractor shall be responsible for cleaning the street daily, or as directed by the City, when mud is tracked onto the street from the construction site.

9 During the site cleanup prior to the possession date, each temporary practice will be completely removed and the area finished to the appropriate post-project condition. This involves final grading, and installation of sod or grass seed on all bare soil areas. A minimum vegetation density of seventy percent, or an equivalent sediment stabilization measure (geotextiles, mulches, or gabions), is required until vegetation is established.



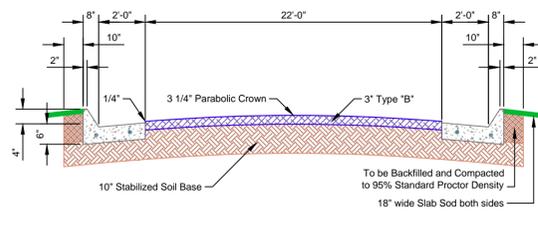
APPROVED BY:  ERIC J. WENGER, P.E. CITY ENGINEER	DATE: 01-29-13 VSC DATE: 01-29-13
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STORM WATER EROSION AND SEDIMENT CONTROL PROCEDURES

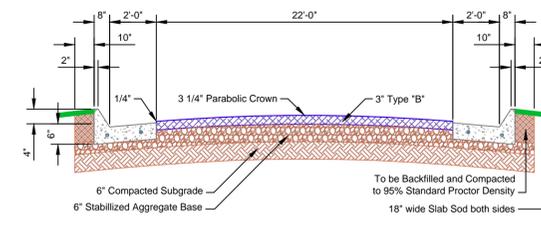


• TYPICAL SECTION •
PUBLIC OR PRIVATE RURAL ROADWAY
(STABILIZED SOIL BASE)
R-A and R-A2 ZONING DISTRICTS
• 102 •

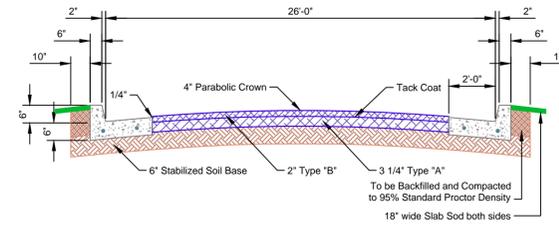
** To be used only with Aggregate Base
** As specified in the Subdivision Regulations - Design Standards for Rural Subdivisions;
lots with 2 acres or larger 24' and 34'; lots less than 2 acres 26' and 36'.



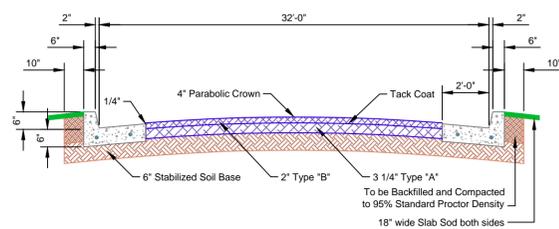
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26' ASPHALTIC CONCRETE PAVING
(STABILIZED SOIL BASE)
R-A & R-A2 ZONING DISTRICTS
• 104 •



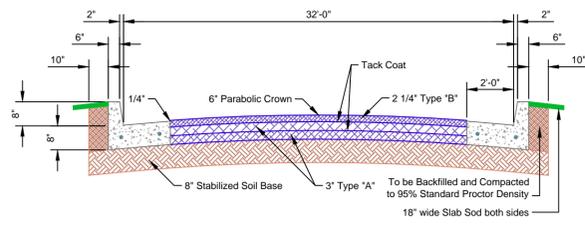
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26' ASPHALTIC CONCRETE PAVING
(STABILIZED SOIL BASE)
R-A & R-A2 ZONING DISTRICTS
• 105 •



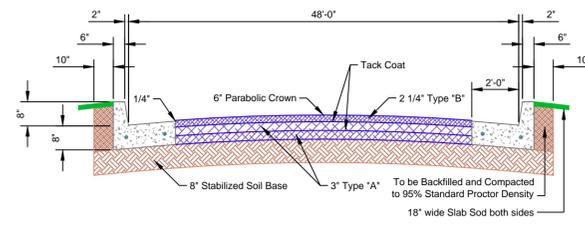
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26' ASPHALTIC CONCRETE PAVING
(STABILIZED SOIL BASE)
• 110 •



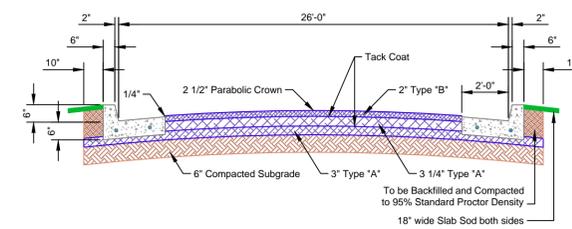
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32' ASPHALTIC CONCRETE PAVING
(STABILIZED SOIL BASE)
• 112 •



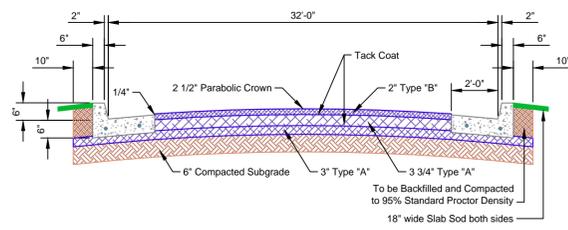
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32' ASPHALTIC CONCRETE PAVING
(STABILIZED SOIL BASE)
INDUSTRIAL ADDITIONS
• 114 •



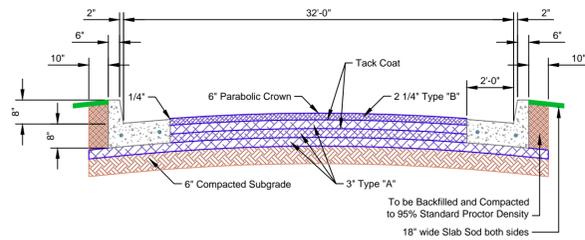
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48' ASPHALTIC CONCRETE PAVING
(STABILIZED SOIL BASE)
ARTERIAL STREET
• 116 •



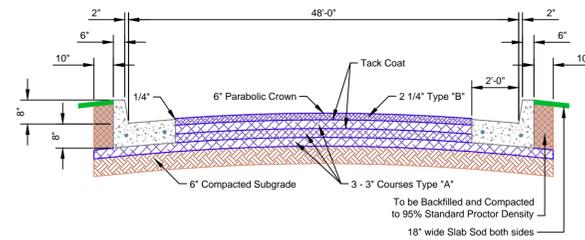
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26' ASPHALTIC CONCRETE PAVING
(ASPHALT BASE)
• 120 •



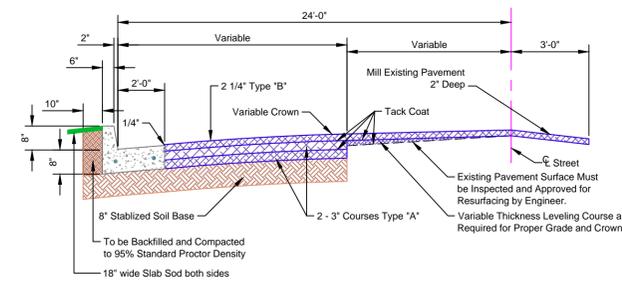
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32' ASPHALTIC CONCRETE PAVING
(ASPHALT BASE)
RESIDENTIAL COLLECTOR STREET
• 122 •



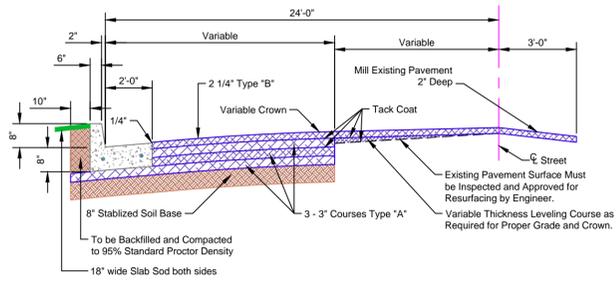
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32' ASPHALTIC CONCRETE PAVING
(ASPHALT BASE)
INDUSTRIAL ADDITIONS
• 124 •



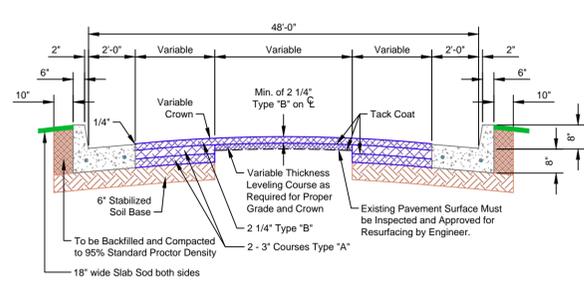
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48' ASPHALTIC CONCRETE PAVING
(ASPHALT BASE)
• 126 •



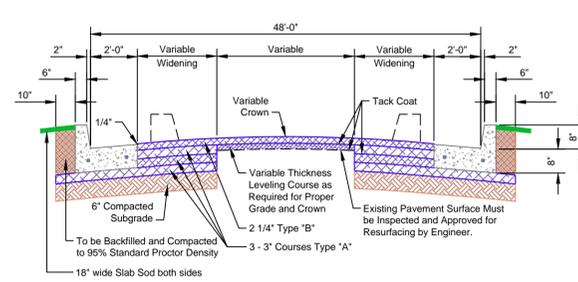
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VARIABLE WIDENING ASPHALTIC CONCRETE PAVING
(STABILIZED SOIL BASE)
• 150 •



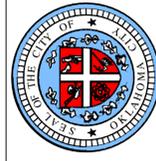
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VARIABLE WIDENING ASPHALTIC CONCRETE PAVING
(ASPHALT BASE)
• 152 •



• TYPICAL SECTION •
48' ASPHALT WIDENING AND RESURFACING
(STABILIZED SOIL BASE)
• 170 •

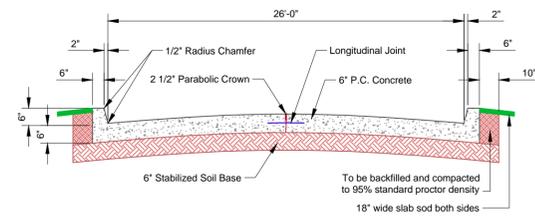


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48' ASPHALT WIDENING AND RESURFACING
(ASPHALT BASE)
• 172 •

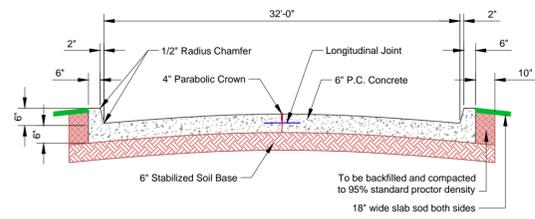


APPROVED BY: 
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DATE: 01-30-13

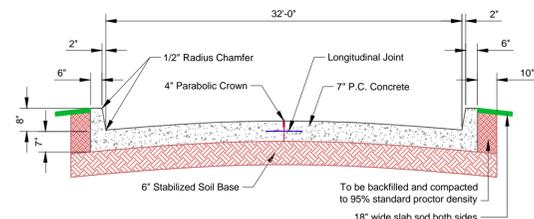
**STANDARD TYPICAL SECTIONS
ASPHALTIC PAVING**



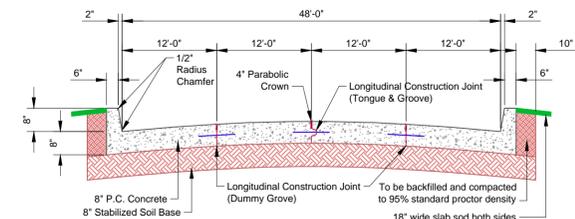
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26' P.C. CONCRETE PAVING
 (STABILIZED SOIL BASE)
 • 210 •



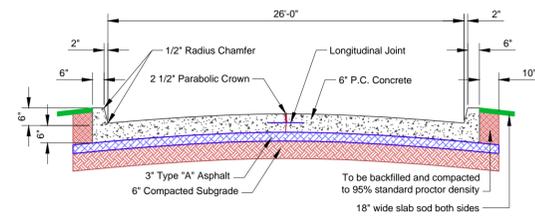
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 (STABILIZED SOIL BASE)
 RESIDENTIAL COLLECTOR STREET
 • 212 •



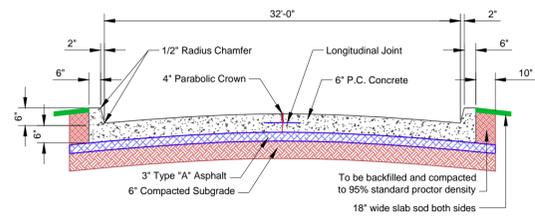
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 (STABILIZED SOIL BASE)
 INDUSTRIAL ADDITIONS
 • 214 •



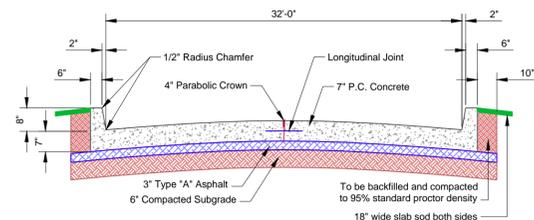
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48' P.C. CONCRETE PAVING
 (STABILIZED SOIL BASE)
 • 216 •



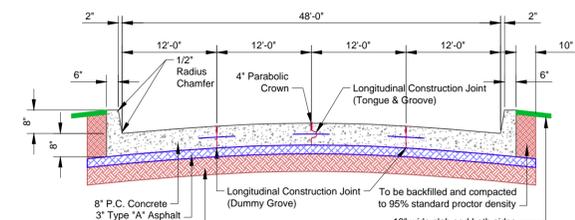
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26' P.C. CONCRETE PAVING
 (ASPHALT BASE)
 • 220 •



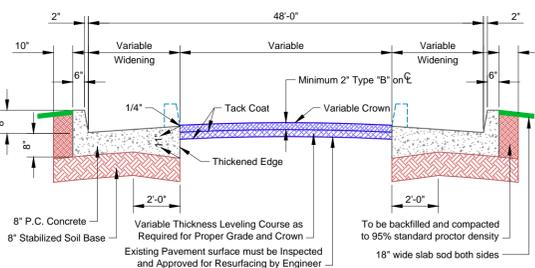
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 (ASPHALT BASE)
 RESIDENTIAL COLLECTOR STREET
 • 222 •



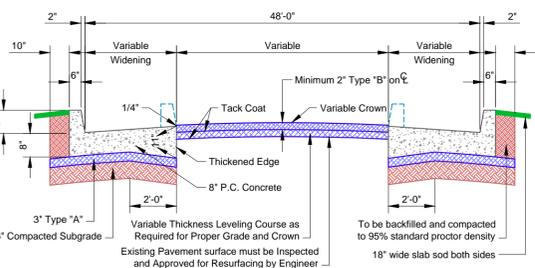
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32' P.C. CONCRETE PAVING
 (ASPHALT BASE)
 INDUSTRIAL ADDITIONS
 • 224 •



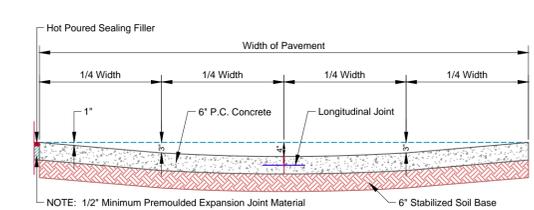
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48' P.C. CONCRETE PAVING
 (ASPHALT BASE)
 • 226 •



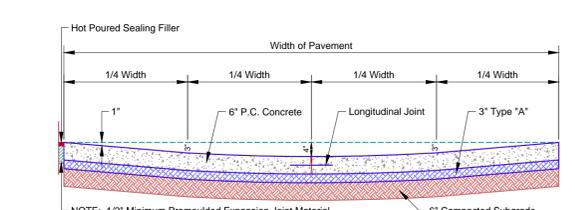
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48' CONCRETE WIDENING & RESURFACING
 (STABILIZED SOIL BASE)
 • 270 •



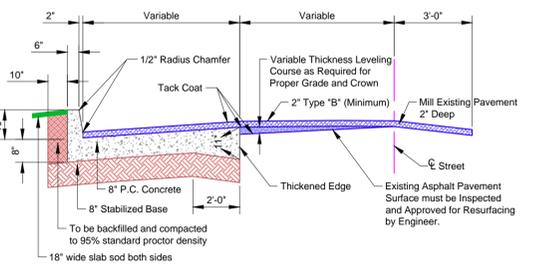
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48' CONCRETE WIDENING & RESURFACING
 (ASPHALT BASE)
 • 272 •



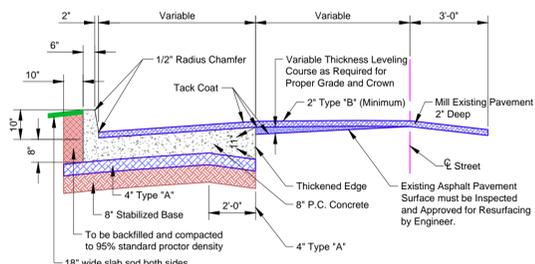
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P.C. CONCRETE ALLEY PAVING
 (STABILIZED SOIL BASE)
 • 280 •



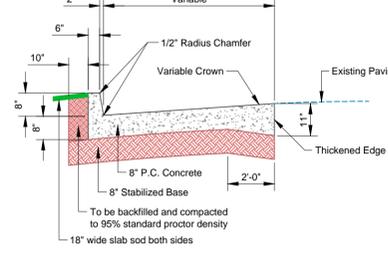
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P.C. CONCRETE ALLEY PAVING
 (ASPHALT BASE)
 • 284 •



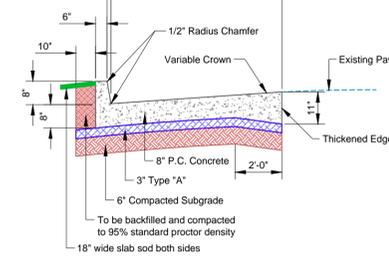
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WIDENING CONCRETE WITH ASPHALT OVERLAY
 (STABILIZED SOIL BASE)
 • 260 •



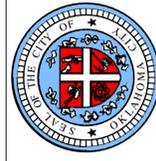
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WIDENING CONCRETE WITH ASPHALT OVERLAY
 (ASPHALT BASE)
 • 262 •



• TYPICAL SECTION •
WIDENING P.C. CONCRETE PAVING
 (STABILIZED SOIL BASE)
 ARTERIAL WIDENING
 • 250 •

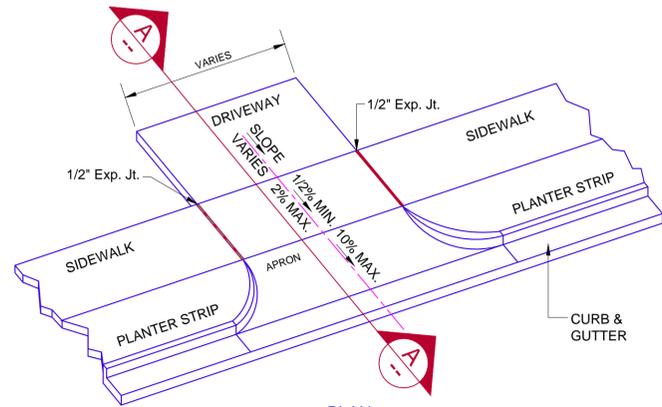


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WIDENING P.C. CONCRETE PAVING
 (ASPHALT BASE)
 ARTERIAL WIDENING
 • 252 •

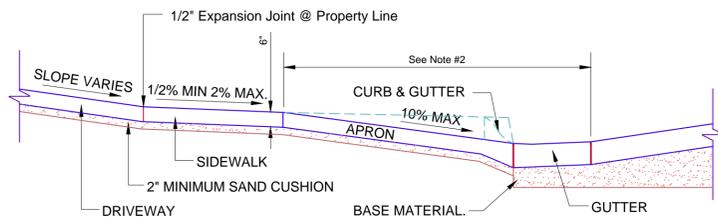


APPROVED BY: DATE: 02-04-13
 ERIC J. WENGER, P.E.
 CITY ENGINEER
 DRAWN: VSC
 DATE: 02-04-13

STANDARD TYPICAL SECTIONS
P.C. CONCRETE PAVING



PLAN



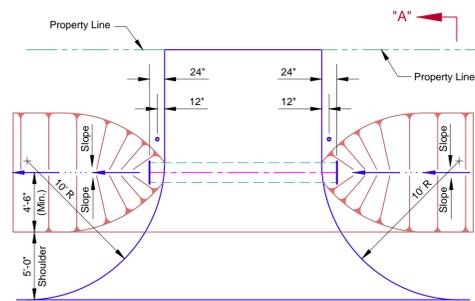
SECTION A-A

NOTES:

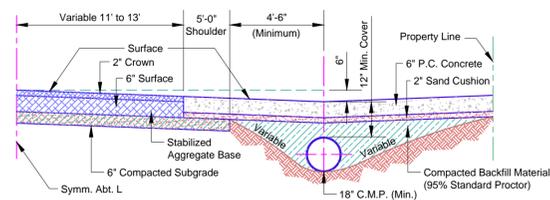
1. A 5' - 0" minimum radius is approved for one & two family residences not abutting a limited access or major street. All other Driveways will have a 10' 0" minimum radius.
2. The Driveway Contractor may saw cut & remove the complete Curb and Gutter section or remove the curb and the section of gutter directly under the curb. Saw cuts shall be 2" or 1/3 the depth of the gutter, whichever is greater. Saw cuts shall include the top & face of curb as well as the gutter. Saw cuts shall be made prior to the removal of concrete.
3. If a gutter holds water prior to any construction by driveway Contractor, he should notify the City Engineer of the situation before doing any work. The completed driveway work will not be accepted if the gutter holds water due to poor construction by the Contractor.
4. It is recognized that this driveway detail will not cover every possible situation encountered in construction. Additional expansion joints will be required as needed.
5. Clean and seal all joints and saw cuts in accordance with standard specifications.
6. Contraction Joint required for drives 20' wide & over. Saw cut 2" deep and fill with silicone sealant.
7. Do not turn radius in front of adjacent property without written permission from adjacent property owner.

DRIVEWAY DETAILS

• 310 •



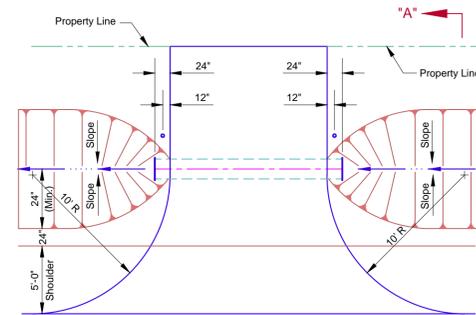
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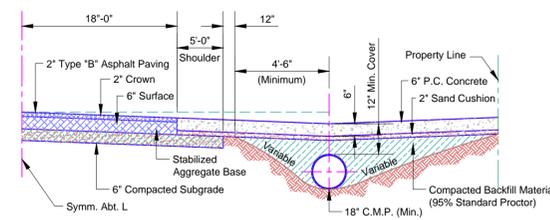
SECTION "A - A"

DRIVEWAY DETAILS FOR RURAL ESTATES DEVELOPMENT

• 320 •



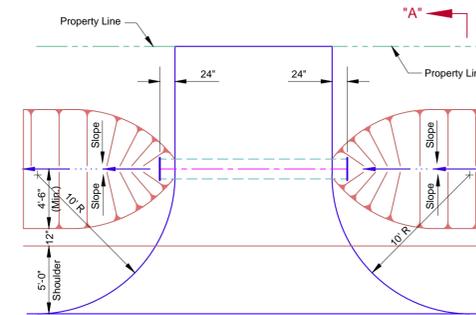
PLAN



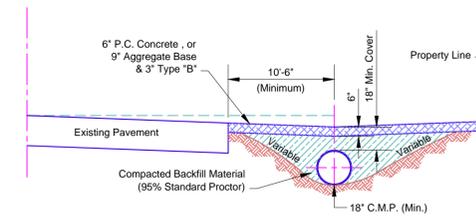
SECTION "A - A"

DRIVEWAY DETAILS FOR AGRICULTURAL ESTATES

R - 1 ZONING
• 330 •



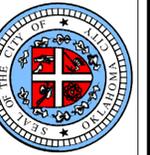
PLAN



SECTION "A - A"

TO BE REMOVED IMMEDIATELY UPON COMPLETION OF DRILLING OPERATIONS

TEMPORARY DRIVEWAY DETAILS
FOR OIL FIELD DEVELOPMENT ACCESS
• 340 •



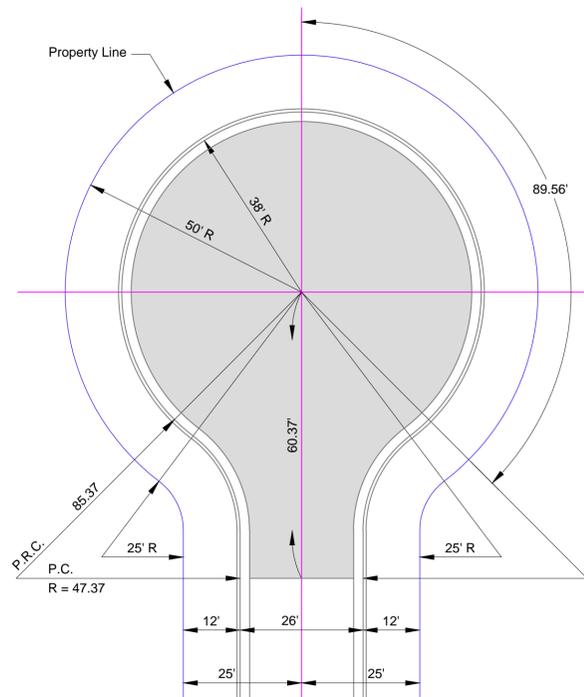
APPROVED BY: DATE: 02-05-13
ERIC J. WENGER, P.E.
CITY ENGINEER

DRAWN: VSC
DATE: 02-05-13

STANDARD TYPICAL SECTIONS
DRIVEWAY DETAILS

Drawing Number

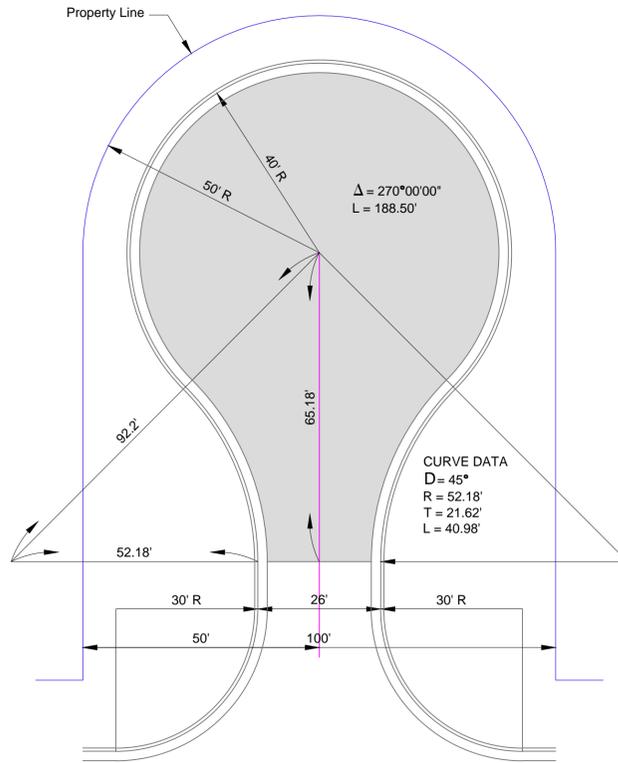
D-300



MATERIAL IN SAC BEYOND P.C.
 531.6 S.Y. ASPHALTIC CONCRETE
 587.9 S.Y. P.C. CONCRETE
 646.9 S.Y. BASE (10" Back of Curb)
 253.52 Lf. CURB

CURVE DATA
 $\Delta = 45^\circ$
 $R = 47.37'$
 $T = 19.62'$
 $L = 37.20'$

STANDARD CUL-DE-SAC -- 38' R

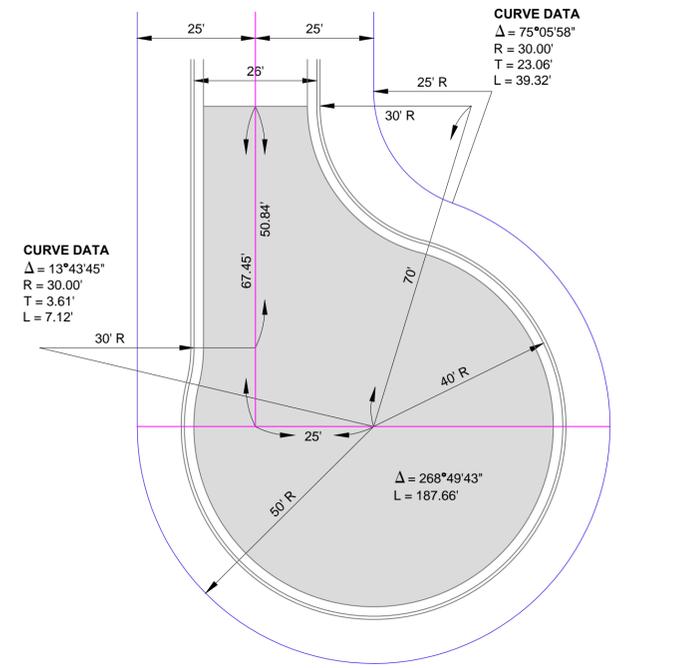


P.C. CONCRETE
 270.46 L.F. CONCRETE
 633.32 S.Y. P.C. CONCRETE
 702.10 S.Y. BASE (Includes to 10" Back of Curb)

ASPHALTIC CONCRETE
 270.46 L.F. CONCRETE & GUTTER
 593.92 S.Y. ASPHALTIC CONCRETE
 702.10 S.Y. BASE (Includes to 10" Back of Curb)

CURVE DATA
 $D = 45^\circ$
 $R = 52.18'$
 $T = 21.62'$
 $L = 40.98'$

STANDARD CUL-DE-SAC -- 40' R



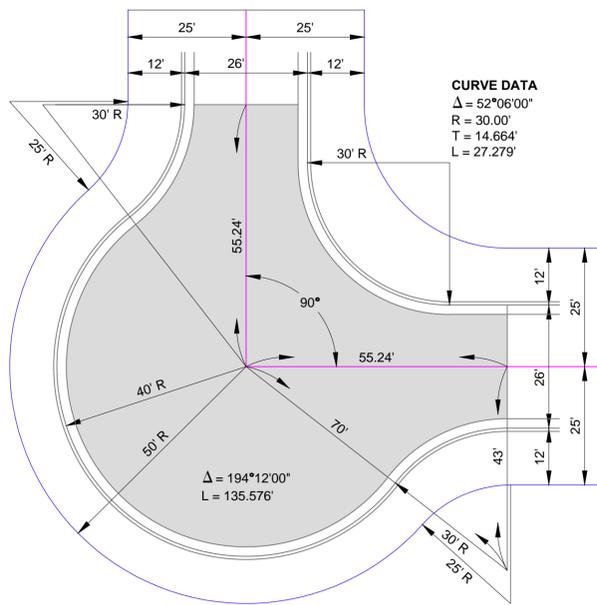
P.C. CONCRETE
 289.94 L.F. CONCRETE
 684.40 S.Y. P.C. CONCRETE
 735.75 S.Y. BASE (Includes to 10" Back of Curb)

ASPHALTIC CONCRETE
 289.94 L.F. CONCRETE & GUTTER
 621.77 S.Y. ASPHALTIC CONCRETE
 735.75 S.Y. BASE (Includes to 10" Back of Curb)

CURVE DATA
 $\Delta = 13^\circ 43' 45''$
 $R = 30.00'$
 $T = 3.61'$
 $L = 7.12'$

CURVE DATA
 $\Delta = 75^\circ 05' 58''$
 $R = 30.00'$
 $T = 23.06'$
 $L = 39.32'$

OFF-SET CUL-DE-SAC

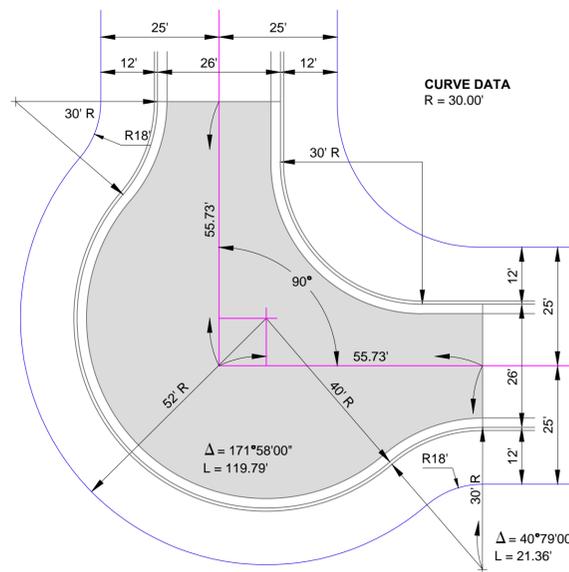


P.C. CONCRETE
 261.74 L.F. CONCRETE
 678.56 S.Y. P.C. CONCRETE
 683.10 S.Y. BASE (Includes to 10" Back of Curb)

ASPHALTIC CONCRETE
 261.74 L.F. CONCRETE & GUTTER
 578.40 S.Y. ASPHALTIC CONCRETE
 683.10 S.Y. BASE (Includes to 10" Back of Curb)

CURVE DATA
 $\Delta = 52^\circ 06' 00''$
 $R = 30.00'$
 $T = 14.664'$
 $L = 27.279'$

90° CUL-DE-SAC



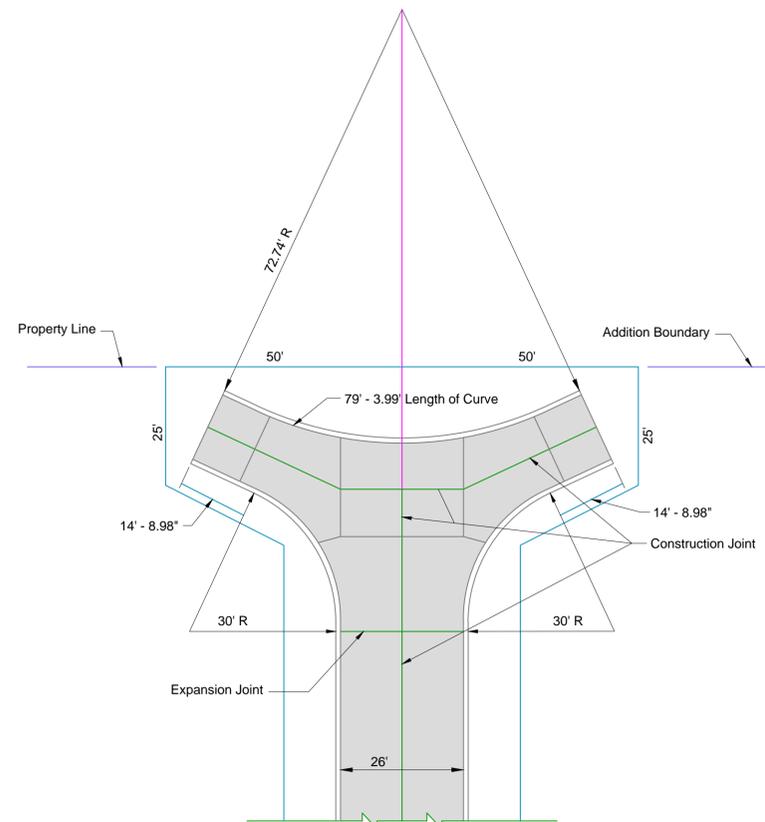
P.C. CONCRETE

ASPHALTIC CONCRETE
 234.97 L.F. CONCRETE & GUTTER

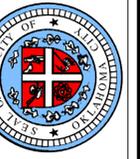
CURVE DATA
 $R = 30.00'$

27.64 LF curb shorter w/ 10" offset.
 Approx. 91 sq smaller area.

90° CUL-DE-SAC



STANDARD "T" TURN AROUND

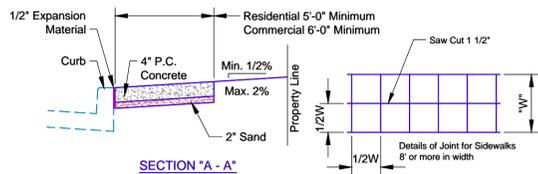
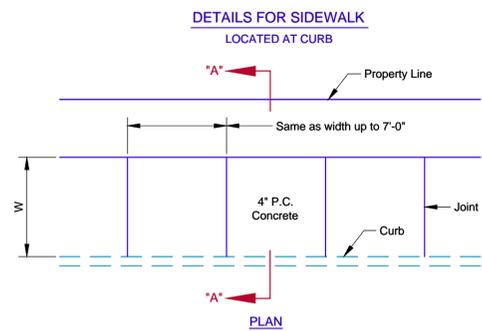


APPROVED BY:  DATE: 02-05-13
 ERIC J. WENGER, P.E.
 CITY ENGINEER

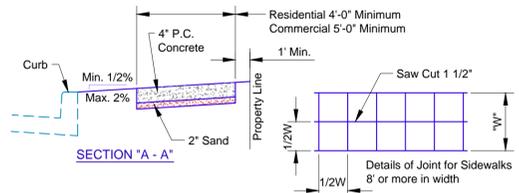
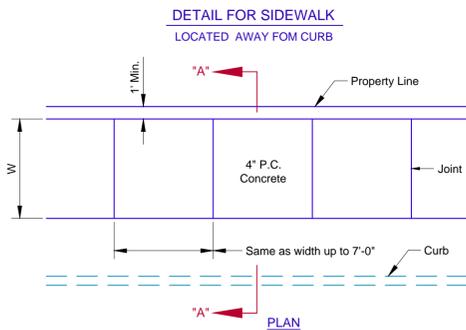
DRAWN: VSC
 DATE: 02-05-13

**STANDARD DETAILS FOR
 CUL-DE-SACS**

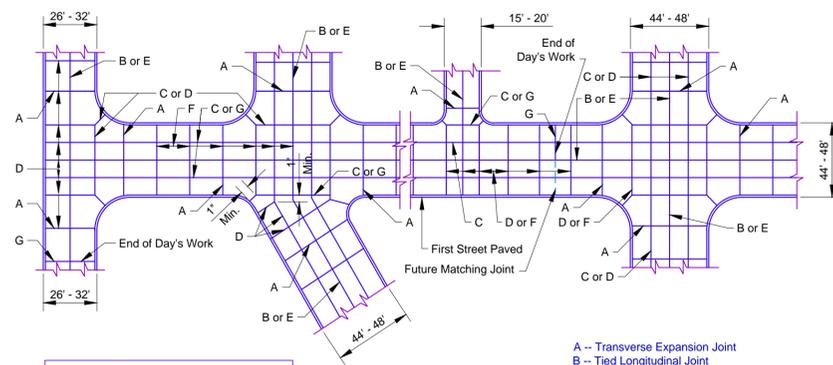
Drawing Number
 D-400



- NOTES:
1. 1/2" x 4" premolded expansion material around Power Poles or other structures in walk with at least 36" of clear travel space.
 2. Expansion Joints maximum distance = 100', use 1/2" x 4" premolded expansion material.
 3. Contraction Joints maximum distance = 7', saw cut 1 1/2" deep and fill with sealant.
 4. Saw cut joints within 24 hours.
 5. Use 1/2" x 4" premolded expansion joint at curb and at adjacent Property Lines.
 6. All joints to be sealed. Premolded expansion material to be removed to a depth of 1/2" prior to applying sealant.



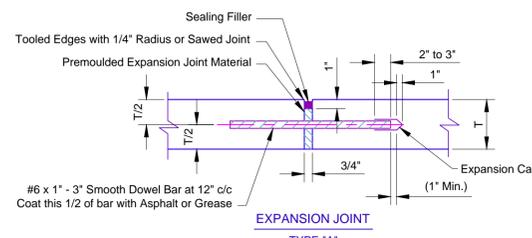
- NOTES:
1. 1/2" x 4" premolded expansion material around Power Poles or other structures in walk with at least 36" of clear travel space.
 2. Expansion Joints maximum distance = 100', use 1/2" x 4" premolded expansion material.
 3. Contraction Joints maximum distance = 7', saw cut 1 1/2" deep and fill with sealant.
 4. Saw cut joints within 24 hours.
 5. All joints to be sealed. Premolded expansion material to be removed to a depth of 1/2" prior to applying sealant.



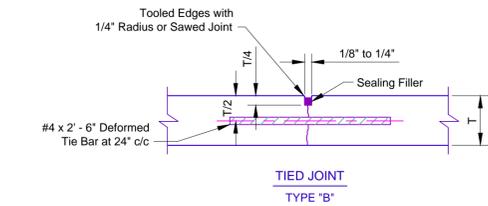
CROWN SCHEDULE		
FULL WIDTH	To 33' with 6" Curb	32' & over with 8" Curbs
	2 1/2"	4"

JOINT LAYOUT DETAILS

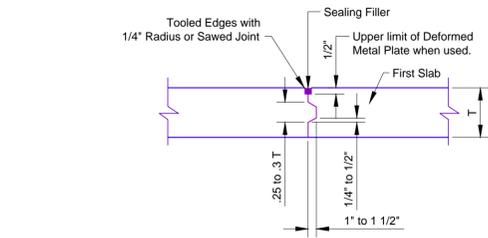
- A -- Transverse Expansion Joint
 B -- Tied Longitudinal Joint
 C -- Tongue & Groove Construction Joint
 D -- Contraction Joint
 E -- Longitudinal Construction Joint
 F -- Doweled Contraction Joint
 G -- Doweled Construction Joint



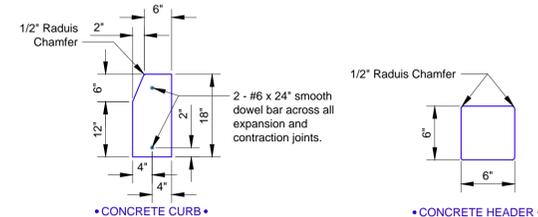
EXPANSION JOINT TYPE 'A'



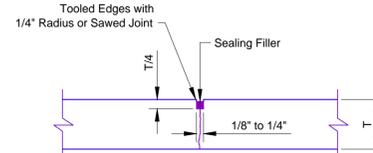
TIED JOINT TYPE 'B'



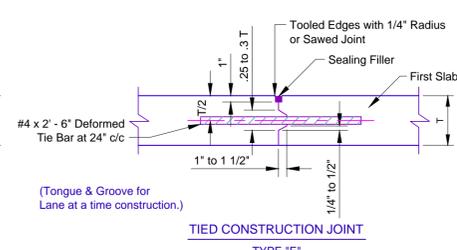
TONGUE & GROOVE CONSTRUCTION TYPE 'C'



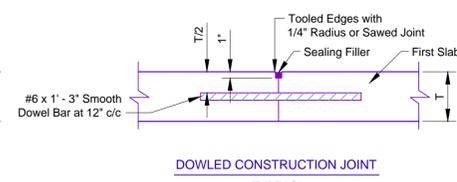
MISCELLANEOUS DETAILS



CONTRACTION JOINT TYPE 'D' (ALT. TYPE 'F')

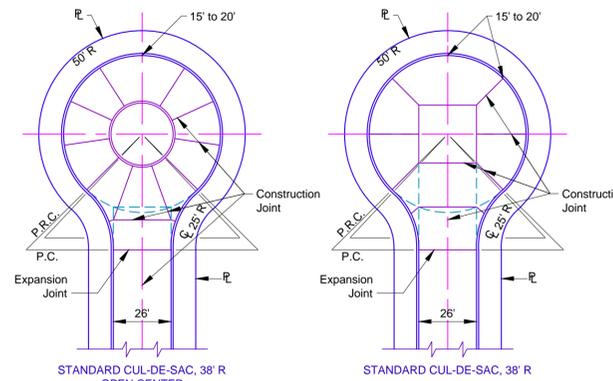


TIED CONSTRUCTION JOINT TYPE 'E'

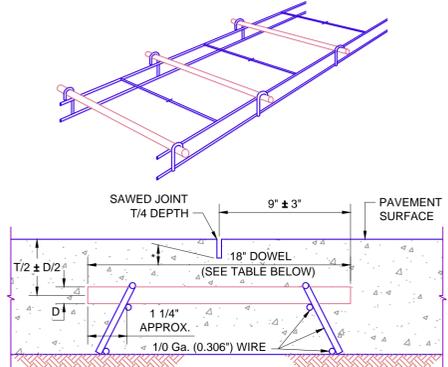


DOWLED CONSTRUCTION JOINT TYPE 'G'

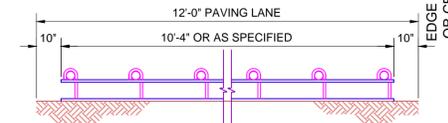
- NOTES:
- Smooth Dowel Bars across Expansion Joints shall be provided with Expansion Caps, and coated with Asphalt or Grease, (Type A & G).
- Grooves in Joints may be formed by: (1) temporary embedment of a suitable Mandrel, (2) installation of a thin strip of premolded Joint Filler Material, (3) sawing the Pavement after the Concrete has hardened.



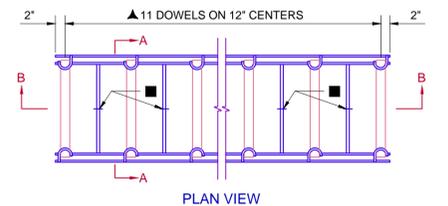
JOINT LAYOUT DETAILS



SECTION A-A



SECTION B-B



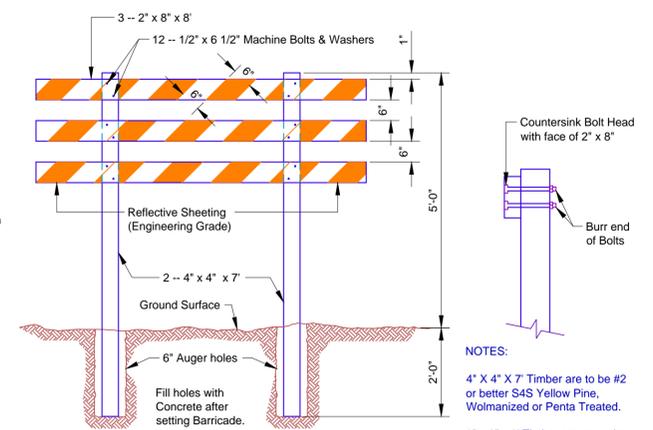
PLAN VIEW

DOWEL BARS			
▲ SPACING & SIZE DATA			
(T) SLAB DEPTH	DOWEL DIA.	TOTAL DOWEL LENGTH	C/C DOWEL SPACING
6" - 7"	3/4"	15"	12"
8" - 11"	1 1/4"	18"	12"
12" - 16"	1 1/2"	18"	12"

■ SPACER: FOUR EA. 7 GAGE (0.177") WIRES PER UNIT, NOTCHED @ MIDPOINT OF WIRE
 SPACER IN FIELD AFTER PLACEMENT
 REGULAR DOWELS GREASED

DOWLED CONTRACTION JOINT DETAILS TYPE 'F' (ALT. TYPE 'D')

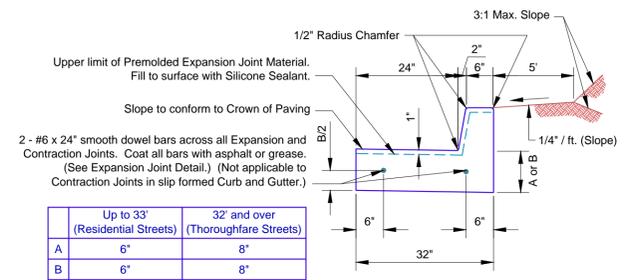
- NOTES:
- Type 'F' to be used for continuous pours only.
 Do not use for headers at days end stopping point.



STANDARD REFLECTOR TYPE BARRICADE

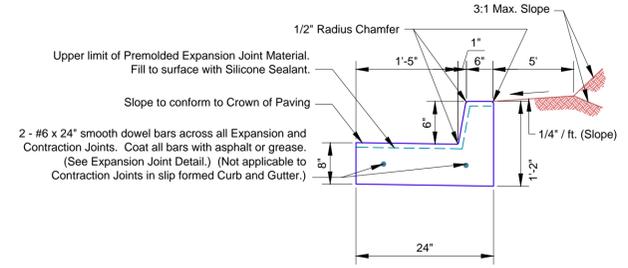
- NOTE: Markings for Barricade Rails are to be Orange and White. Markings are to be 6" wide and attached at 45° angles as set forth in the latest edition of the Uniform Traffic Control Devices Manual

STANDARD REFLECTOR TYPE BARRICADE



CONCRETE CURB & GUTTER DETAIL

- NOTE: Maximum spacing of 1/2" Expansion Joints to be 100' c/c with Contraction Joints 15' - 20' apart to match Driveway Returns. (Expansion Joint spacing, not applicable to slip formed Curb and Gutter.)



CONCRETE CURB & GUTTER DETAIL FOR DOWNTOWN

- NOTE: Maximum spacing of 1/2" Expansion Joints to be 100' c/c with Contraction Joints 15' - 20' apart to match Driveway Returns. (Expansion Joint spacing, not applicable to slip formed Curb and Gutter.)

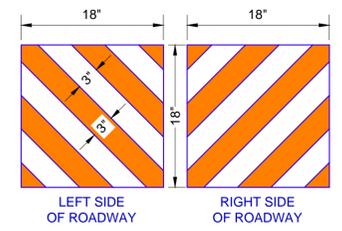
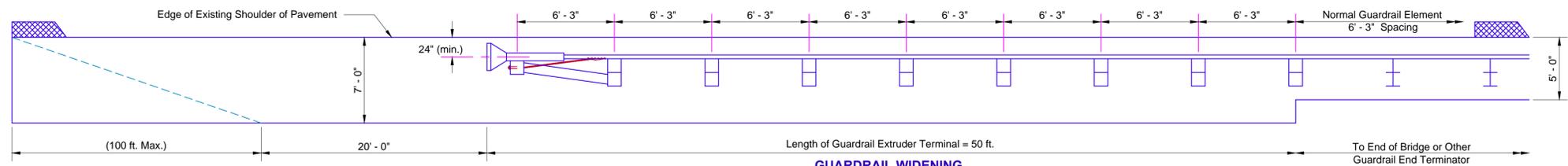


APPROVED BY: ERIC J. WENGER, P.E. CITY ENGINEER

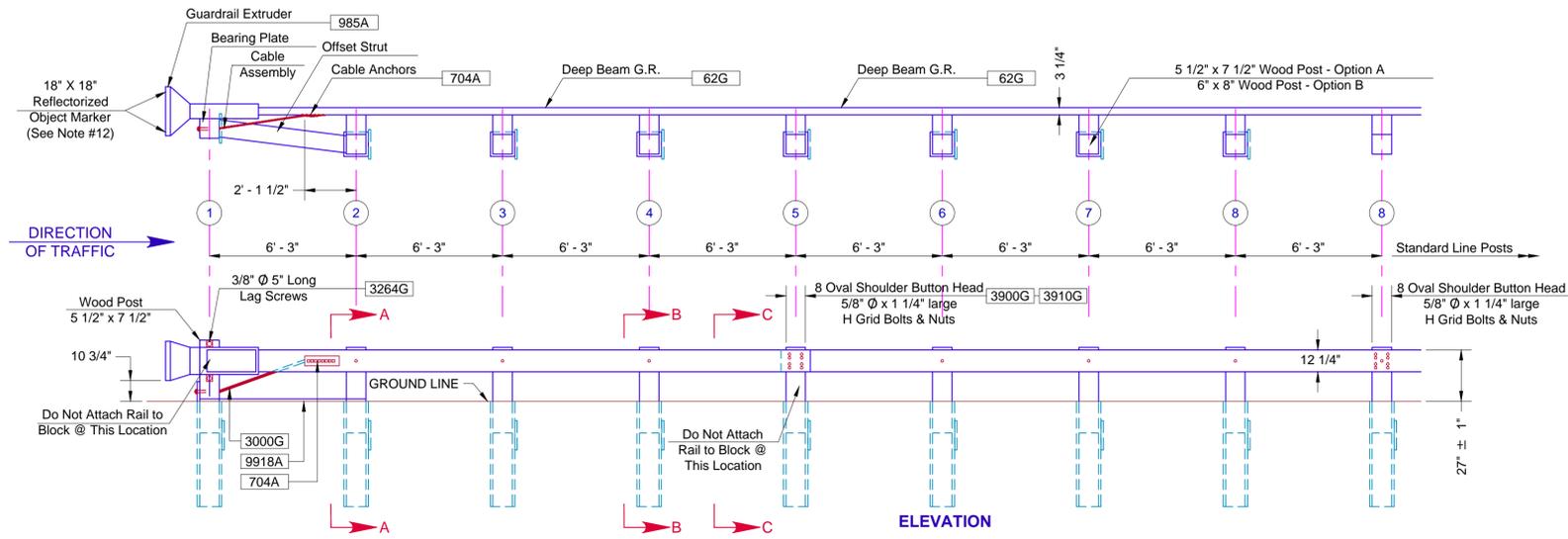
DATE: 02-07-13

VSC

DATE: 02-07-13



- DETAIL C
REFLECTIVE MARKER**
1. Reflective marker should be attached to the 18" x 18" end of the G. E. T. prior to installation.
 2. Attachment surface should be thoroughly cleaned and dry before attaching marker. (Stick-on sheeting).
 3. Attachment adhesive sheeting should be free of air bubbles with all edges free of air bubbles with all edges firmly bonded.

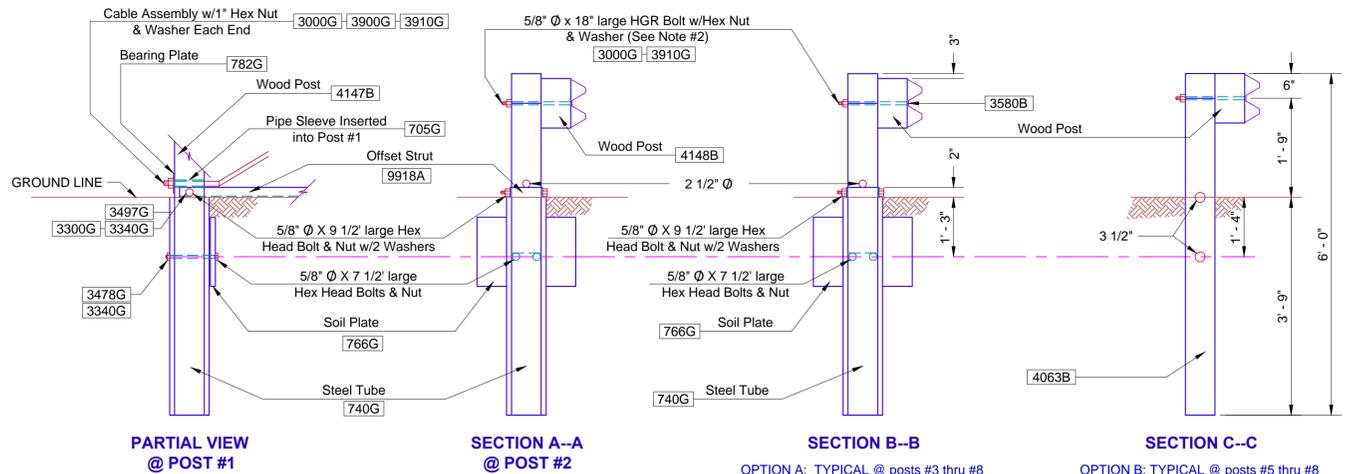


GENERAL NOTES

1. All construction and material requirements shall be in accordance with the Oklahoma Department of Transportation 1988 Standard Specifications and applicable Special provisions covering Guardrail Extruder Terminal.
2. All bolts, nuts, cable anchors, groundline cables and bearing plates shall be galvanized in accordance with section 732 of the Standard Specifications for Highway Construction, 1988 edition.
3. Guardrail components shall meet the applicable standards of "A Guide to Standardized Highway Rail Hardware", prepared and approved by the AASHTO-ARTBA-AGC Joint Cooperative Committee, Technical Bulletin Number 2688.
4. The steel tubes shall not protrude more than 4" above the ground (measured along a 5 foot chord.) Site grading may be necessary to meet this requirement.
5. The steel tubes may be driven with an approved driving head. they shall not be driven with the wood post in the tube. If the steel tubes are placed in drilled holes, the backfill material must be compacted to insure no settlement of tube.
6. When rock excavation is encountered, a 12" diameter post hole, 20 inches deep, may be used if approved by the Engineer. Granular material will be placed in the bottom of the hole approximately 2 1/2" deep to provide drainage. The steel tube sleeves may be field cut to 20 inches in length, placed in the hole and backfilled with adequately compacted material excavated from the hole.
7. The breakaway cable assembly must be taut. A locking device, (vice grips or channel lock pliers) should be used to prevent the cable from twisting when tightening nuts.
8. The wood blockouts shall be "toe nailed" into the rectangular wood posts to prevent them from turning when the wood shrinks.
9. For curb installations, the soil tubes and posts shall be installed at the proper ground elevation behind the curb. The posts will then require pre holes to be field drilled to accommodate the "rail to post" connection bolt to maintain the proper height of the rail above the gutter pan. The excess post length above the rail will be removed if directed by the Engineer.
10. When the guardrail extruder terminal is specified as the end treatment for the MBGF installation, the MBGF will be tapered at a rate of 50 to 1, over the 50 foot GET system, to prevent the extruder head from encroaching on the shoulder. The taper may be decreased or eliminated for specific installations if directed by the Engineer. A 25 to 1 taper rate will be used at curb sections, beginning at post number one (recommended for curb sections no greater than 4 inches in height.) See Details A & B.
11. Extruder type terminals shall be installed when adjacent driving lanes are within 25 feet (horizontally) of extension side on the extruder terminal.
12. Extruder approach end (18" x 18" face) shall be covered by a Type I Object Marker of simulated Type III Object Marker (adhesive reflector sheeting,) with cost to be included in the price of extruder terminal. See Detail C.
13. The 5/8 inch flat washer is used under the nut behind the post only. No washer is used at the rail.
14. The breakaway posts at locations #5, 6, 7 & 8 may be as shown in Option B without foundation tubes. Posts at locations #1, 2, 3 & 4 must use foundation tubes.
15. Wood posts are required with the guardrail extruder terminal (GET.)
16. For additional information on the widening typical section. See Standard GRAU-3 LATEST REVISION.

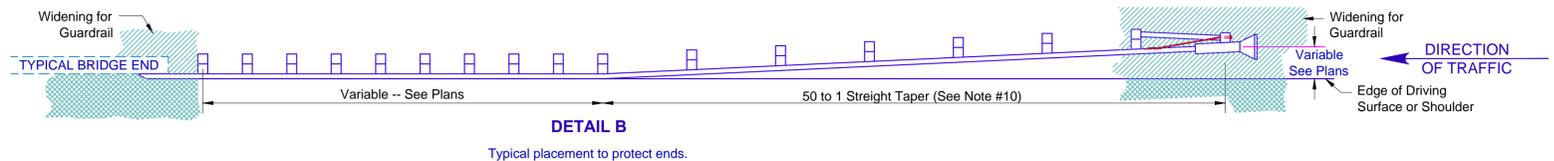
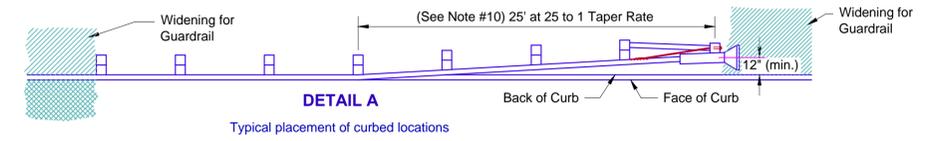
G. E. T. BILL OF MATERIALS			
Code #	OPTION		DESCRIPTION
	A	B	
62G	1	1	* 1 Deep Beam Guardrail (12 Ga.)
60G	1	1	* 2 Deep Beam Guardrail (12 Ga.)
740G	8	4	Steel Tube -- 6" x 8" x 54" x 3/16"
766G	8	4	Soil Plate -- 18" x 24" x 1/4"
4147B	8	4	Wood Posts -- 5 1/2" x 7 1/2" x 45"
4148B	7	7	Wood Block -- 5 1/2" x 6 1/2" x 14"
705G	1	1	Pipe Sleeve -- 2" standard pipe x 5 1/2"
782G	1	1	Bearing Plate -- 8" x 8" x 5/8"
704A	1	1	Cable Anchor
3000G	1	1	Cable Assembly
9918A	1	1	Offset Strut
985A	1	1	Guardrail Extruder
4063B	--	4	Wood Posts -- 6" x 8" x 72"
HARDWARE			
3478G	16	8	5/8" x 7 1/2" Hex Head Bolt (Soil Plates)
3497G	8	4	5/8" x 9 1/2" Hex Head Bolt (Top of tubes)
3300G	11	11	5/8" Washer (2 each at Tubes 1 & 2 + 7 Posts)
3580G	7	7	5/8" x 18" H. G. R. Post Blot (Posts 2 thru 8)
3360G	16	16	5/8" x 1 1/4" H. G. R. Splice Bolt
3340G	47	35	5/8" H.G.R. Nut (SPL --16. Tubes--12, GR--16)
3364G	2	2	3/8" x 5" Lag Screw
3910G	2	2	1" hex Nut (Anchor Cable)
3900G	2	2	1" Washer (Anchor Cable)
3117B	1	1	Reflectorized Object Marker (18" x 18")

BASIS OF PAYMENT		
ITEM #	ITEM	UNIT
623.06 (H)	G. E. T. GUARDRAIL END SECTIN	EACH



OPTION A: TYPICAL @ posts #3 thru #8 (Except Rail is NOT attached @ post #5)
OPTION B: TYPICAL @ posts #3 & #4

OPTION B: TYPICAL @ posts #5 thru #8 (Except Rail is NOT attached @ post #5)



\\ai.okc.local\pwworking\Section\CITYACAD-STDSD-600 VSC 02-07-13

The City of
Oklahoma City
Public Works Department
Engineering Division



APPROVED BY:  DATE: 02-07-13
ERIC J. WENGER, P.E.
CITY ENGINEER

DRAWN: VSC
DATE: 02-07-13

GUARDRAIL EXTRUDER TERMINAL

Drawing Number
D-600

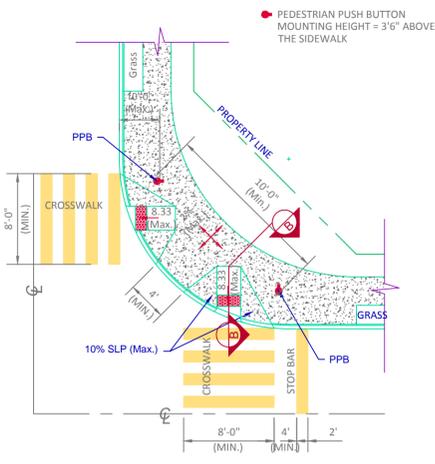


APPROVED BY: DATE: 10-14-14
ERIC J. WENGER, P.E.
CITY ENGINEER

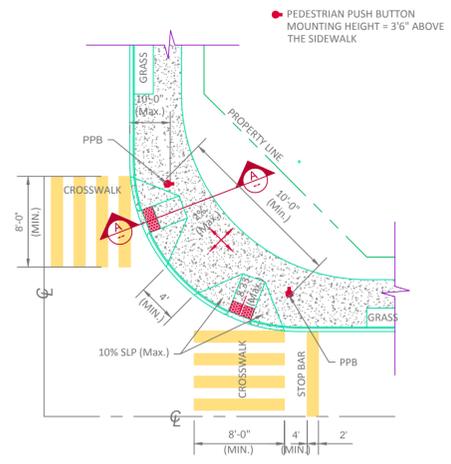
DRAWN: VSC
DATE:

ADA CURB RAMP DETAILS

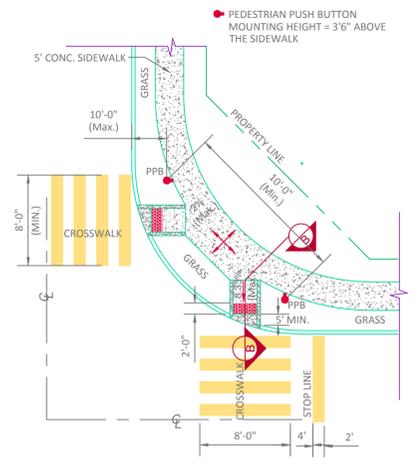
Drawing Number
D-700
A



CURB RAMP TYPE "A"

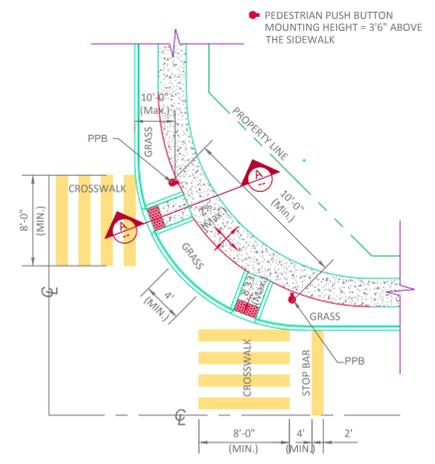


CURB RAMP TYPE "A-1"

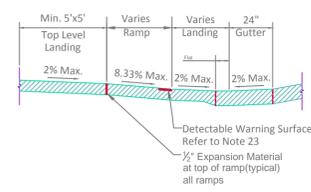


CURB RAMP TYPE "B"

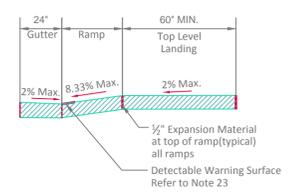
See Detail 1 & 2



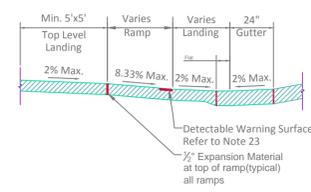
CURB RAMP TYPE "B-1"



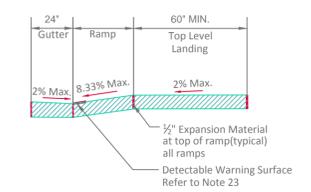
SECTION B-B



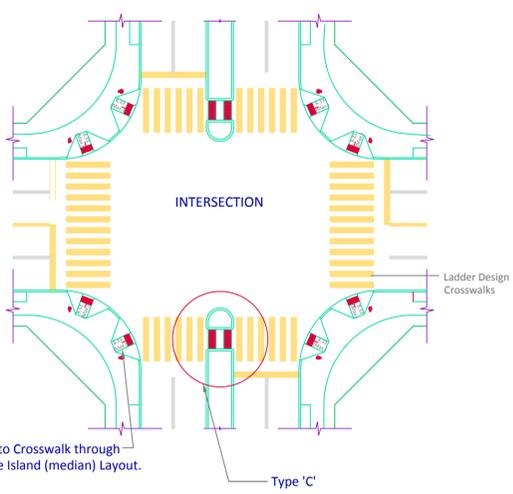
SECTION A-A



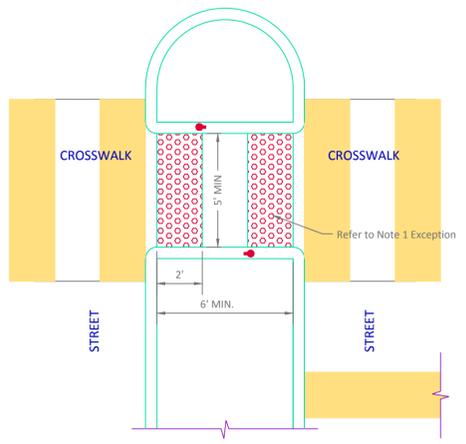
SECTION B-B



SECTION A-A

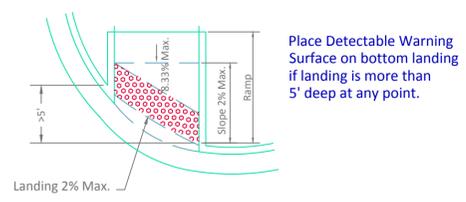


INTERSECTION WITH REFUGE ISLANDS LAYOUT

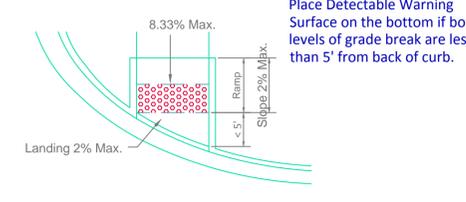


STANDARD CROSSWALK THROUGH REFUGE ISLAND (MEDIAN) LAYOUT TYPE "C"

NOTE 1: Exception
Detectable Warning Surface shall not be required on cut through islands where the crossing is controlled by timed signals and is timed for full crossing.



DETAIL 1



DETAIL 2



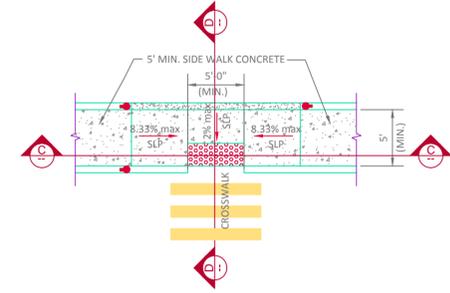
PLAN (Enlarged) ELEVATION (Enlarged)

DETECTABLE WARNING SURFACE PATTERN LAYOUT

- Detectable Warning Surface Specifications:**
- Must provide a Visual Contrast.
 - Raised Tactile surfaces used for way finding.
 - Detectable Warning Surface shall be installed in a manner such that the domes are parallel to the direction of pedestrian travel.
 - Install the Detectable Warning Surface beginning at back of curb.

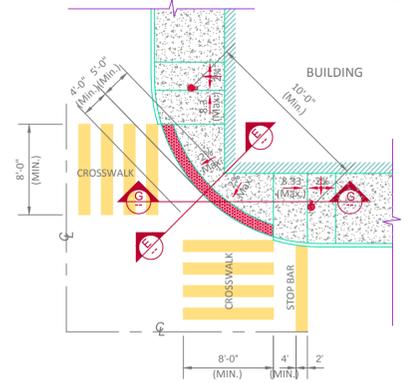
PEDESTRIAN PUSH BUTTON MOUNTING HEIGHT = 3'6" ABOVE THE SIDEWALK

Curb-Ramp shall be used on narrow sidewalk at mid block locations when standard curb ramp lay-out is not feasible. The 6" curb shall be installed along the edge of the back of sidewalk.



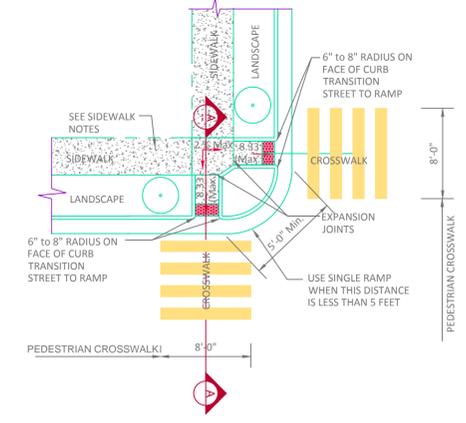
PARALLEL CURB RAMP TYPE "D"

PEDESTRIAN PUSH BUTTON MOUNTING HEIGHT = 3'6" ABOVE THE SIDEWALK

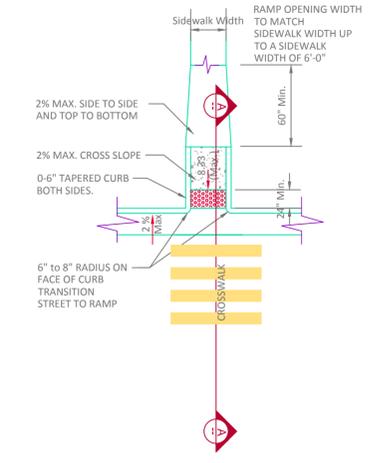


RADIUS CURB RAMP TYPE "E"

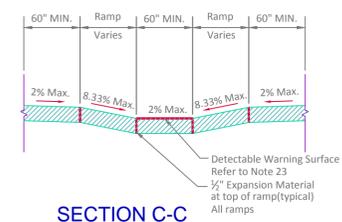
See Detail 3 for Isometric View
Written approval by the City Engineer is required.



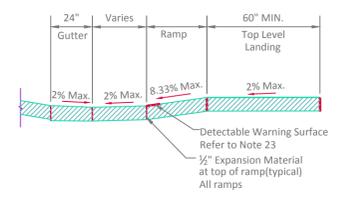
RESIDENTIAL CURB RAMP TYPE "F"



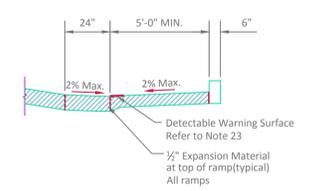
METHOD OF TRANSITIONING A RAMP WITH DIE OUT CURBS



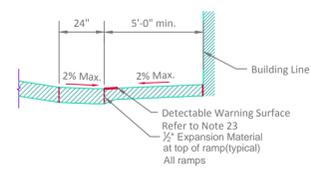
SECTION C-C



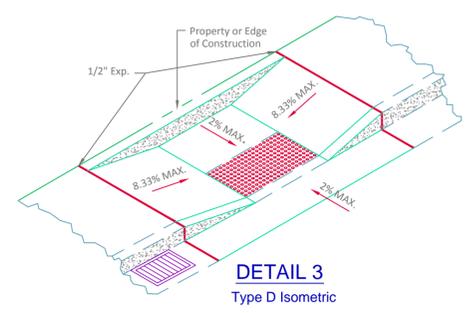
SECTION G-G TYPE "E"



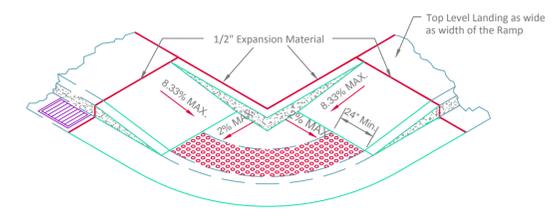
SECTION D-D
See Detail 3 for Isometric View



SECTION E-E TYPE "E"
See Detail 4 for Isometric View



DETAIL 3
Type D Isometric



DETAIL 4
Type E Isometric

Sidewalk Notes:

- All work must meet current Americans with Disabilities Act (ADA) requirements.
- Minimum sidewalk width shall be as follows: residential, 5'-0" at curb, 4'-0" at property line; commercial, 6'-0" at curb, 5'-0" at property line.
- Sidewalk cross slope shall be a maximum of 2% and a minimum of 1/2% cross slope.
- Whenever the width of the sidewalk is less than 5'-0", a 5' x 5' passing area with a maximum 2% slope and minimum 1/2% slope in any direction at intervals of 200' shall be installed.
- Whenever changing direction in a sidewalk, install a 5' x 5' passing area with maximum 2% slope and minimum 1/2% slope in any direction.
- Objects such as tree branches, signs, water fountains, etc. shall not protrude into the sidewalk more than 4" at the heights between 27" and 80"
- Sidewalk shall be constructed of 4" thick concrete on top of 2" of 1 1/2" crusher run, 3/8" rock screenings, 1 1/2" clean recycled concrete or approved equal.
- All obstructions into the walk, such as power poles, hydrants, sign posts, etc. must have at least 48" of clear travel space around the obstruction.
- Sidewalk running grade shall not exceed 5% unless the sidewalk is contained in the R-O-W and then cannot exceed the general grade established for the adjacent street.

General Notes:

- The non-alternate curb-ramp layout shall be used whenever possible. Any deviation from the standard curb-ramp plans shall be approved by the City Engineer or his designee on a case by case basis.
- The standard curb-ramp drawings supersede all previous drawings and shall be a part of the new curb ramp standard drawings.
- All alternate ramps shall be approved by the City Engineer or his designee prior to construction.
- Seal all joints on sidewalks, landings and ramps. Width of expansion joint shall be 1/2"

Curb Ramp Notes:

- A curb ramp is defined as the entire concrete surface which includes the ramp and flared sides. The minimum 4" wide center portion, including the Detectable Warning Surface, shall have a sloped plane of 8.33% (1:12) maximum, and cross slope, not to exceed 2%. The "flared side" of the ramp shall lie on a slope of 10% (1:10) maximum measured along the curb. The curb ramp shall have a surface tolerance of 1/8" per 10 foot straight edge maximum.
- The ramp center line and path of travel should be parallel to the sidewalk whenever possible. The full width of the ramp shall lie within the crosswalk area. It is desirable that the location of the ramp be as close as possible to the center of the crosswalk.
- Curb Ramps shall not exceed 15' in length.
- Existing utility boxes and covers shall be adjusted flush with the curb ramp surface and shall not straddle any change in plane or material. Existing utility box frames and covers shall have matching surface finish on the entire frame and cover. New utility boxes shall not be placed within the accessible pathway.
- The surface of the curb ramp and Detectable Warning Surface material shall be stable, firm and slip resistant. The concrete curb ramp surface shall be broom finished transverse to the axis of the ramp and shall be slightly rougher than the finish of the adjacent sidewalk surface.
- A level landing 5'-0" deep, with a 2% maximum slope in each direction shall be provided at the upper end of each curb ramp to allow safe egress from the ramp surfaces. The width of the level landing shall be at least as wide as the width of the ramp. A level landing of a minimum of 30" wide x 48" deep shall be provided at pedestrian push buttons at signalized crossings.
- Existing vertical utility poles or street light poles may be incorporated into the flared sides, if necessary. The vertical obstruction shall be a minimum of 6" away from edge of the ramp. Pedestrian crosswalks push button poles, fire department call boxes and other poles with activated devices, may not be placed in the curb-ramp at any time. No new vertical obstructions may be located in the curb ramp or the accessible pathway.
- Ramp opening shall be the same width as the sidewalk up to 6'-0" wide.
- Curb Ramp shall be constructed with 8" thick concrete at collector and arterial streets; and with 6" thick concrete at residential streets. All on top of 2" of 1 1/2" crusher run, 3/8" rock screenings, 1 1/2" recycled concrete or approved equal. The 8" or 6" thick concrete will extend a maximum of 8'-8" (maximum) behind the face of curb. The remainder of the ramp will be constructed of 4" thick concrete and paid as sidewalk. All landings and incidental connections will be paid as sidewalk and will be constructed of 4" thick concrete.
- For new construction all Detectable Warning Surfaces are to be set in concrete. Surface applied domes require special written approval by the City Engineer or his designee

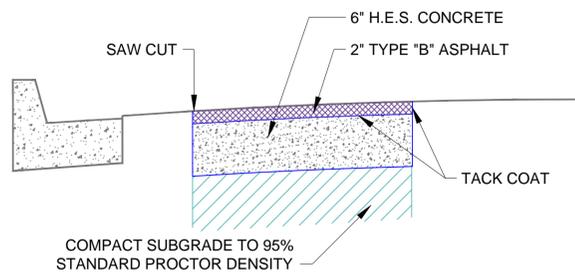


APPROVED BY: *[Signature]* DATE: 10-14-14
ERIC J. WENGER, P.E. CITY ENGINEER
DRAWN: VSC
DATE:

ADA CURB RAMP DETAILS

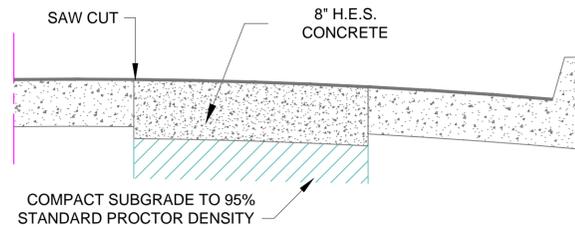
PAVEMENT REPAIR DETAILS

ASPHALT CONCRETE PAVING



REMOVE 8" OF EXISTING FLEXIBLE PAVEMENT SECTION AND REPLACE WITH 8" TYPE "B" ASPHALT CONCRETE, OR REPLACE WITH 2" AC TYPE "B" ASPHALT ON 6" H.E.S. P.C. CONCRETE.

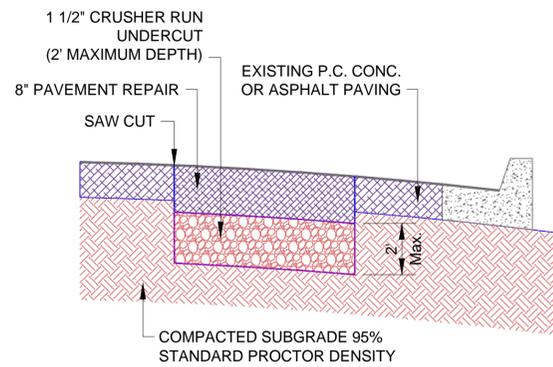
P.C. CONCRETE PAVING



REMOVE 8" OF EXISTING CONCRETE PAVING. REPLACE WITH 8" H.E.S. CONCRETE TO FINISH GRADE.

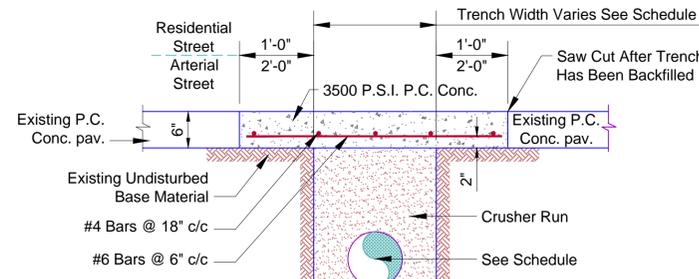
NOTE: WHEN UTILITY TRENCH IS THE REASON FOR PAVEMENT REPAIR, SEE TYPICAL PERMANENT REPAIR SECTION FOR DETAILS ON REINFORCING STEEL, BACKFILL MATERIAL, AND TRENCH WIDTH, ETS.

BASE REPAIR DETAIL



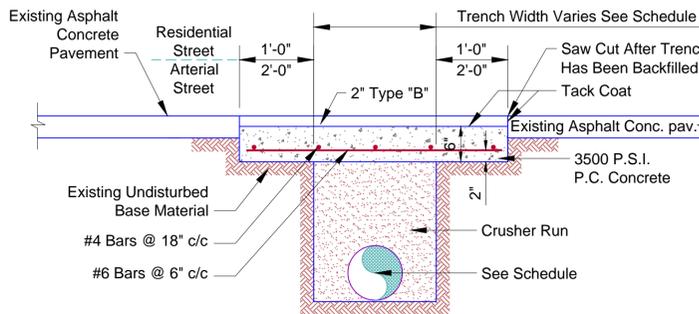
- NOTE:
- EXCAVATION AND AGGREGATE BASE MATERIAL FOR UNDERCUT MATERIAL BEGINNING EIGHT INCHES (8") BELOW THE SURFACE OF THE EXISTING PAVEMENT AND EXTENDING DOWNWARD A MAXIMUM DEPTH OF 2 FEET.
 - THE CONTRACTOR SHALL NOT BEGIN THE FILL OPERATION UNTIL MEASUREMENT OF THE EXCAVATION HAS BEEN MADE AND AGREED UPON BY THE ENGINEER AND THE CONTRACTOR.
 - THIS MATERIAL WILL BE PLACED IN LIFTS NOT TO EXCEED SIX INCHES (6") AND COMPACTED TO 95% PROCTOR DENSITY AND SHALL BE PLACED IMMEDIATELY BELOW THE BINDER MATERIAL I.E., TYPE "A" ASPHALT OR SPECIFIED BY THE TYPICAL PAVING SECTION SHOWN ON THE PLANS.

PAVING CUT & REPAIR DETAIL



NOTES: Street less than 30' in width shall be repaired with a 6" min. thickness of P.C. concrete. Street over 30' in width shall be repaired with 8" min. thickness of P.C. concrete. Full Panel Replacement Downtown.

TYPICAL PERMANENT REPAIR SECTION FOR P.C. CONC. PAVING

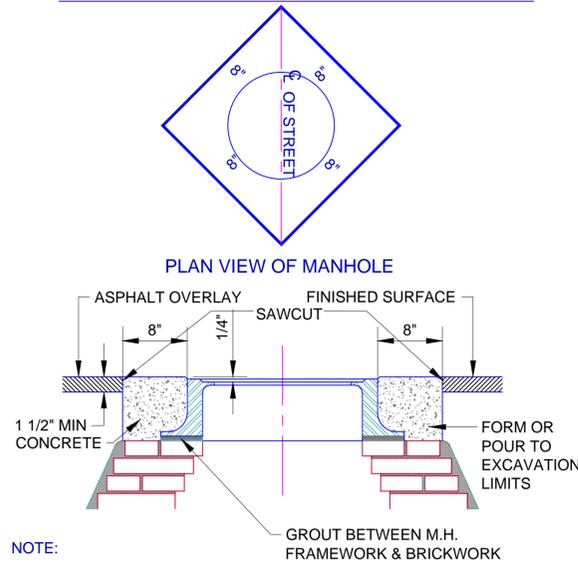


NOTES: All construction and materials shall be in accordance with Oklahoma City's Standard Specification or Pavements and Appurtenances.

TYPICAL PERMANENT REPAIR SECTION FOR ASPHALT CONC. PAVING

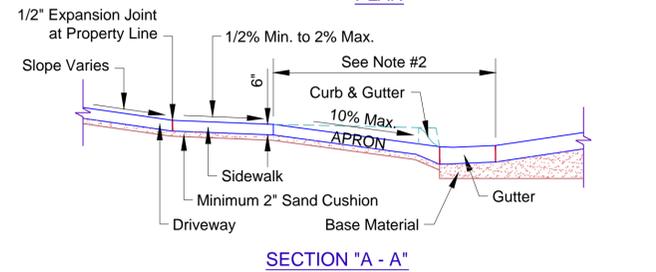
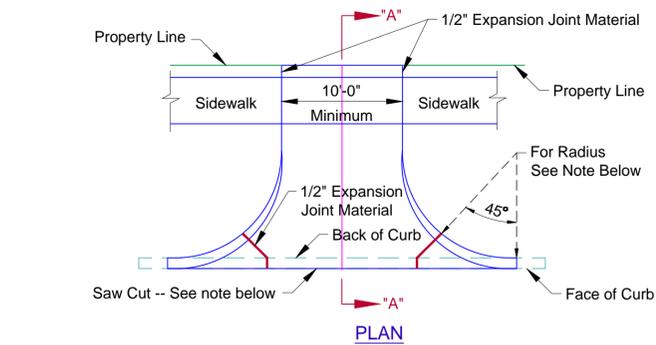
	TRENCH WIDTH SCHEDULE				
PIPE SIZE I.D.	12" & LESS	15" TO 21"	24" TO 30"	33" TO 54"	60" & OVER
TRENCH WIDTH (W/O SHORING)	24"	O.D. + 12"	O.D. + 18"	O.D. + 15"	O.D. + 15"
TRENCH WIDTH (W SHORING)	36"	O.D. + 24"	O.D. + 30"	O.D. + 30"	O.D. + 36"

ADJUSTMENT OF MANHOLE TO GRADE



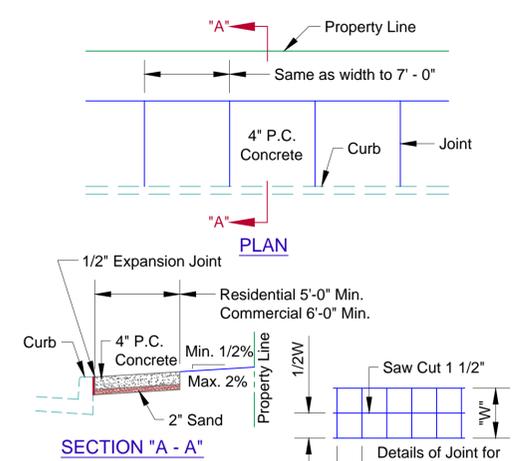
- NOTE:
- THE MANHOLE FRAME SHALL BE SET TO GRADE AND CONCRETE BASE POURED AHEAD OF RESURFACING OPERATIONS.
 - CONCRETE BASE SHALL BE H.E.S. 3500 PSI CONCRETE (3000 PSI IN 72 HOURS)
 - THE WORK SHALL BE PROTECTED BY BARRIERS AND LIGHTS, ETC AND SHALL NOT BE REMOVED FOR A PERIOD OF 72 HOURS AFTER THE POUR IS MADE.

DRIVEWAY DETAIL



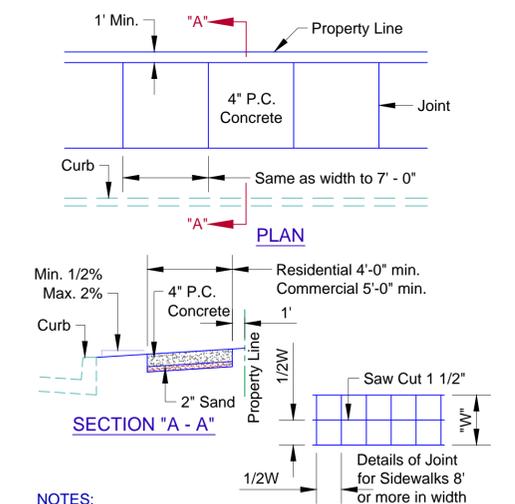
- NOTES:
- A 5' - 0" minimum radius is approved for one & two family residences not abutting a limited access or major street. All other Driveways will have a 10' 0" minimum radius.
 - The Driveway Contractor may saw cut & remove the complete Curb and Gutter section or remove the curb and the section of gutter directly under the curb. Saw cuts shall be 2" or 1/3 the depth of the gutter, whichever is greater. Saw cuts shall include the top & face of curb as well as the gutter. Saw cuts shall be made prior to the removal of concrete.
 - If a gutter holds water prior to any construction by driveway Contractor, he should notify the City Engineer of the situation before doing any work. The completed driveway work will not be accepted if the gutter holds water due to poor construction by the Contractor.
 - It is recognized that this driveway detail will not cover every possible situation encountered in construction. Additional expansion joints will be required as needed.
 - Clean and seal all joints and saw cuts in accordance with standard specifications.
 - Contraction Joint required for drives 20' wide & over. Saw cut 2" deep and fill with silicone sealant.
 - Do not turn radius in front of adjacent property without written permission from adjacent property owner.

DETAILS FOR SIDEWALK LOCATED AT CURB



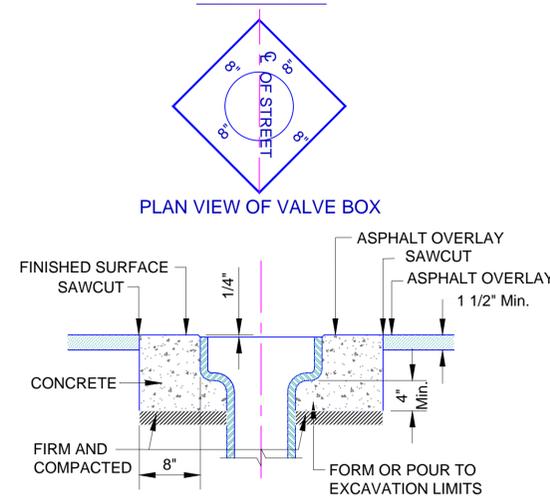
- NOTES:
- 1/2" 4" preformed expansion material around Power Poles or other structures in walk, with at least 36" of clear travel space.
 - Expansion joints maximum distance = 100', used 1/2" x 4" preformed expansion material.
 - Contraction joints maximum distance = 7', saw cut 1 1/2" deep and fill with sealant.
 - Saw cut joints within 24 hours.
 - Use 1/2" x 4" preformed expansion joint at curb.
 - All joints to be sealed. Preformed expansion material to be removed to a depth of 1/2" prior to applying sealant.

DETAILS FOR SIDEWALK LOCATED AWAY FROM CURB



- NOTES:
- 1/2" 4" preformed expansion material around Power Poles or other structures in walk, with at least 36" of clear travel space.
 - Expansion joints maximum distance = 100', used 1/2" x 4" preformed expansion material.
 - Contraction joints maximum distance = 7', saw cut 1 1/2" deep and fill with sealant.
 - Saw cut joints within 24 hours.
 - All joints to be sealed. Pre-molded expansion material to be removed to a depth of 1/2" prior to applying sealant.

ADJUSTMENT OF VALVE BOX TO GRADE



- NOTES:
- THE VALVE BOX FRAME SHALL BE SET TO GRADE AND CONCRETE BASE POURED AHEAD OF RESURFACING OPERATIONS.
 - CONCRETE BASE SHALL BE H.E.S. 3500 PSI AT 3 DAYS (3000 PSI IN 72 HOURS)
 - THE WORK SHALL BE PROTECTED BY BARRICADES AND LIGHTS, ETC AND SHALL NOT BE REMOVED FOR A PERIOD OF 72 HOURS AFTER THE POUR IS MADE.



APPROVED BY: DATE: 04-18-14
 ERIC J. WENGER, P.E. CITY ENGINEER
 DRAWN: MM
 DATE: 04-18-14

STANDARD REPAIR DETAILS