Standard Drawings

Public Works Construction

The City of Fort Smith ARKANSAS ™

NOVEMBER 2012

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
Phone (479)784-2225 Fax (479)784-2245

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Drawn By:	RBR

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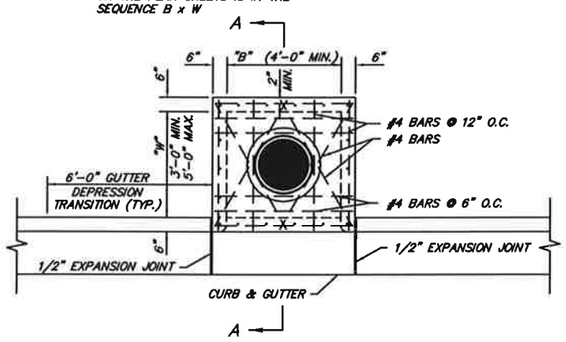
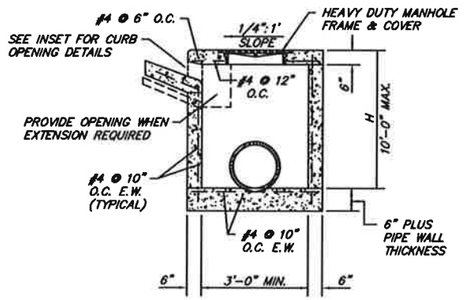
NOTE: REFERENCE TO INLET DIMENSIONS ON THE PLAN SHEETS IS IN THE SEQUENCE B x W

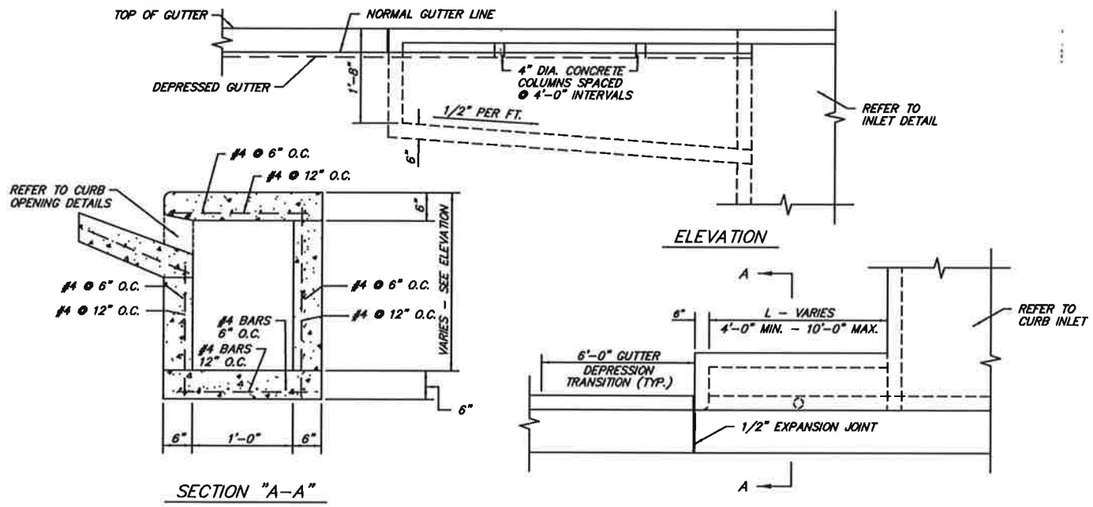


PLAN VIEW



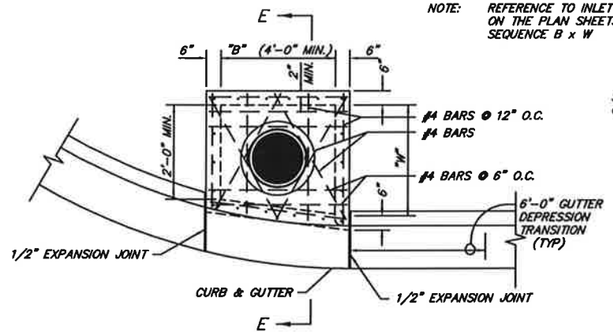
SECTION "A–A"

CURB INLET
TYPE "A"
N.T.S.
DR.1.1

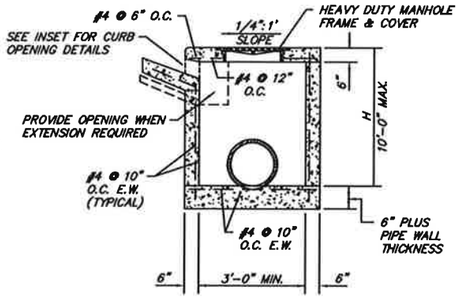


CURB INLET EXTENSION
N.T.S.
DR.1.2

NOTE: REFERENCE TO INLET DIMENSIONS ON THE PLAN SHEETS IS IN THE SEQUENCE B x W



PLAN VIEW



SECTION "E–E"

CURB INLET
TYPE "B"
N.T.S.
DR.1.3

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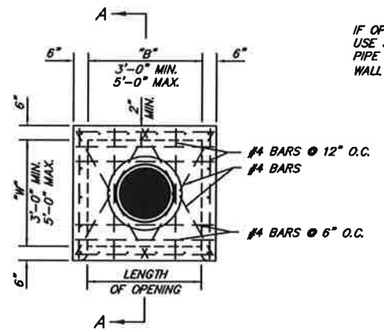
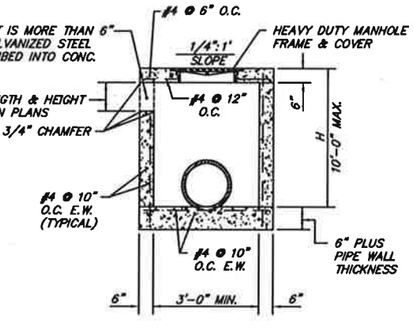


PLAN VIEW

IF OPENING HEIGHT IS MORE THAN 6" USE 3/4" DIA. GALVANIZED STEEL PIPE (SCH. 40) EMBED INTO CONC. WALL 2" MIN.

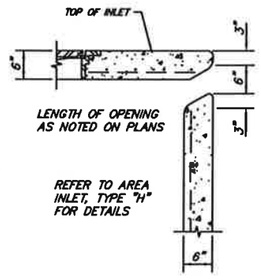
OPENING LENGTH & HEIGHT AS NOTED ON PLANS

3/4" CHAMFER

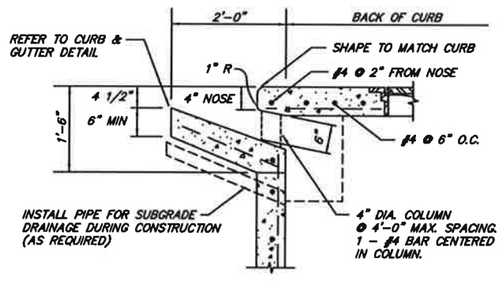


SECTION "A–A"

AREA INLET
TYPE "H"
N.T.S.
DR.1.4



SIDE OPENING
TYPE "K"
N.T.S.
DR.1.5



CURB OPENING
N.T.S.
DR.1.6

DRAINAGE DETAIL NOTES:

1. ALL CONCRETE SHALL BE CLASS "AAA" 4000 psi.
2. FORMED CONCRETE SURFACES EXPOSED TO VIEW SHALL BE GIVEN A CLASS 2 RUBBED FINISH. UNFORMED CONCRETE SURFACES EXPOSED TO VIEW SHALL BE GIVEN A CLASS 6 BROOMED FINISH.
3. ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER.
4. ALL REINFORCING BARS SHALL BE #4 AND HAVE A MINIMUM 1 1/2" COVER NEXT TO AIR, 3" NEXT TO GROUND UNLESS NOTED OTHERWISE.
5. 2" DIAMETER WEEP HOLES TO BE INSTALLED IN THE INLET WALLS AS DIRECTED BY THE ENGINEER. OUTSIDE ENDS OF WEEP HOLE PIPE SHALL BE WRAPPED WITH FILTER FABRIC TO PREVENT SOIL INTRUSION INTO THE PIPE.
6. CURB INLETS AND EXTENSIONS ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
7. DURING CONSTRUCTION OF THE ROADWAY, THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
8. PAYMENT FOR CURB AND GUTTER WITHIN THE LIMITS OF CURB INLETS AND EXTENSIONS WILL BE MEASURED AND PAID FOR SEPARATELY AS CURB AND GUTTER.
9. PRECAST UNITS MAY BE USED FOR INLET BOTTOMS AND WALLS ONLY WITH ENGINEERS APPROVAL. TOPS MUST BE CAST-IN-PLACE. ADJUSTMENTS TO BOXES DUE TO GRADE CHANGES WILL BE AT NO COST TO THE OWNER.

Revision	Date	BY

Standard Drawings

DRAINAGE IMPROVEMENTS – INLETS

Public Works Construction

The City of Fort Smith ARKANSAS

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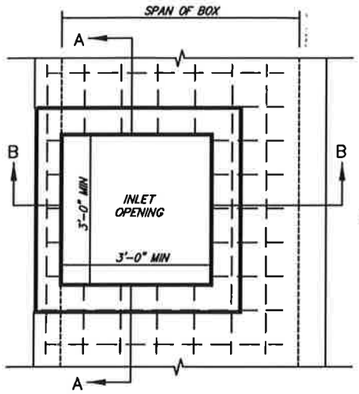
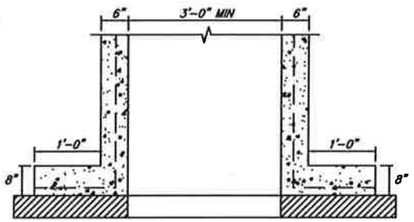
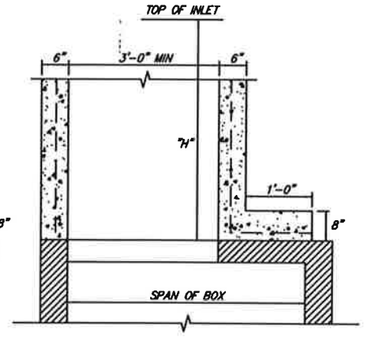
Sheet No:	2



PLAN



SECTION "A–A"



SECTION "B–B"

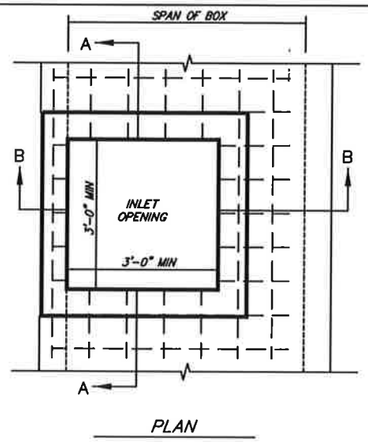
METHOD OF CONSTRUCTING INLET
ON EXISTING OR PRECAST R.C. BOX CULVERT

N.T.S.

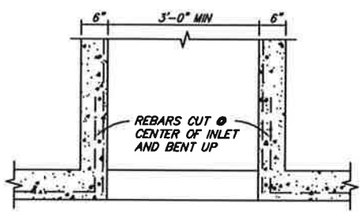
DR.2.1

NOTES:

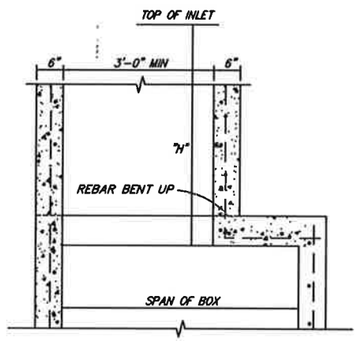
1. DIMENSIONS AND REINFORCING BAR SIZES SHALL CONFORM TO THOSE SHOWN ON STANDARD DRAWINGS FOR INLETS.
2. INLET LOCATIONS ON EXISTING RC BOX CULVERTS TO BE REVIEWED AND APPROVED BY ENGINEER.



PLAN



SECTION "A–A"



SECTION "B–B"

METHOD OF CONSTRUCTING INLET
ON NEW R.C. BOX CULVERT

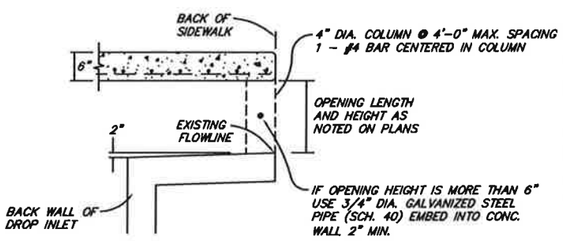
N.T.S.

DR.2.2

NOTE:
DIMENSIONS AND REINFORCING BAR SIZES SHALL CONFORM TO THOSE SHOWN ON STANDARD DRAWINGS FOR INLETS.

NOTE:

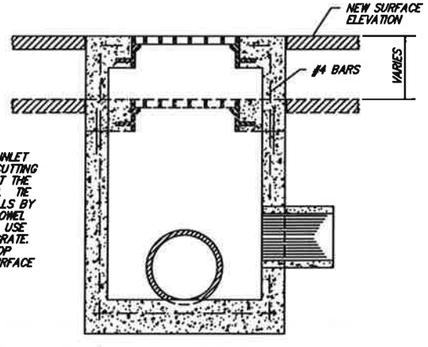
WHEN OPENING IN BACK IS CALLED FOR ON PLANS, EXTEND OPENING AS SHOWN IN DETAIL. PAYMENT TO BE INCLUDED IN PRICE BID FOR DROP INLET.



BACK OPENING
TYPE "L"

N.T.S.

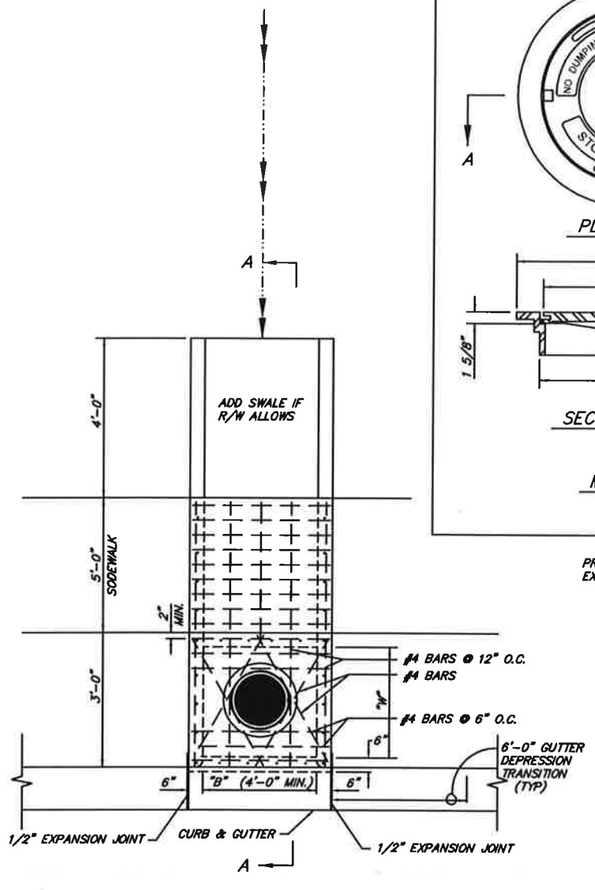
DR.2.3



DETAIL – INLET/ JUNCTION BOX
GRADE ADJUSTMENT

N.T.S.

DR.2.6

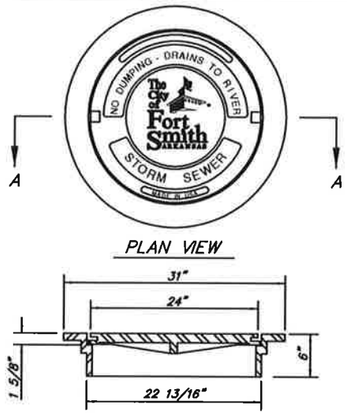


PLAN

CURB/AREA COMBO INLET

N.T.S.

DR.2.7



PLAN VIEW

SECTION "A–A"

H–20 LOADING
WEIGHT:

COVER: 140 LBS.
FRAME: 150 LBS.

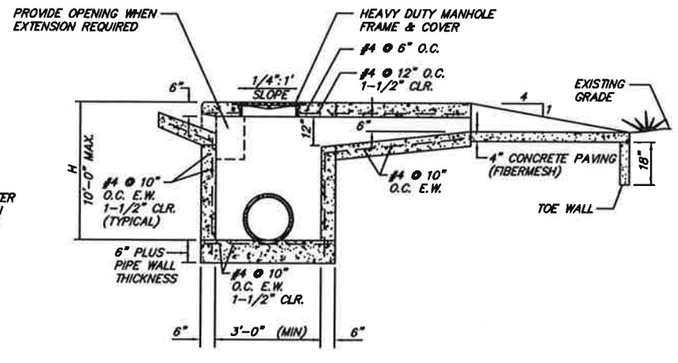
EAST JORDAN IRON WORKS (275–24) OR NEENAH (R–6041–A)

(V–1606 REVERSIBLE RING MAY BE USED AS ALTERNATE)

STORM DRAINAGE
MANHOLE FRAME & COVER

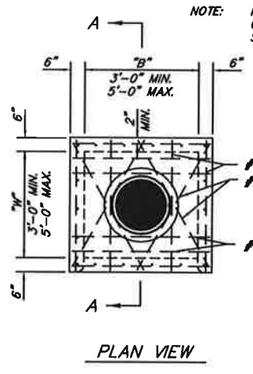
N.T.S.

DR.2.4

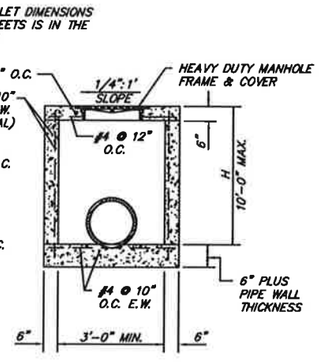


SECTION A–A

NOTE: REFERENCE TO INLET DIMENSIONS ON THE PLAN SHEETS IS IN THE SEQUENCE B x W



PLAN VIEW



SECTION "A–A"

JUNCTION BOX
TYPE "A"

N.T.S.

DR.2.5

DRAINAGE DETAIL NOTES:

1. ALL CONCRETE SHALL BE CLASS "AAA" 4000 psi.
2. FORMED CONCRETE SURFACES EXPOSED TO VIEW SHALL BE GIVEN A CLASS 2 RUBBED FINISH. UNFORMED CONCRETE SURFACES EXPOSED TO VIEW SHALL BE GIVEN A CLASS 6 BROOMED FINISH.
3. ALL EXPOSED CORNERS TO HAVE 3/4" CHAMFER.
4. ALL REINFORCING BARS SHALL BE #4 AND HAVE A MINIMUM 1 1/2" COVER NEXT TO AIR, 3" NEXT TO GROUND UNLESS NOTED OTHERWISE.
5. 2" DIAMETER WEEP HOLES TO BE INSTALLED IN THE INLET WALLS AS DIRECTED BY THE ENGINEER. OUTSIDE ENDS OF WEEP HOLE PIPE SHALL BE WRAPPED WITH FILTER FABRIC TO PREVENT SOIL INTRUSION INTO THE PIPE.
6. CURB INLETS AND EXTENSIONS ON CURVED SECTIONS SHALL CONFORM TO THE CURVATURE OF THE CURB.
7. DURING CONSTRUCTION OF THE ROADWAY, THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
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DRAINAGE IMPROVEMENTS – INLETS
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Drawn By:	RBR
Dwg. No.:	DR2
Sheet No:	3

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GENERAL NOTES

1. THE "D" DIMENSION SHALL MATCH THE FINAL LIFT OF ACHM SURFACE COURSE SHOWN IN THE PLANS WHEN ASPHALT PAVING SURROUNDS THE GRATE OR RING COVER, AND SHALL BE 0" AT OTHER INSTALLATIONS.
2. ALL EXPOSED CORNERS ARE TO HAVE A 3/4" CHAMFER.
3. ALL #4 & #5 REINFORCING BARS ARE TO HAVE A MIN 1-1/2" COVER. ALL LARGER SIZE BARS ARE TO HAVE A 2" MIN COVER.
4. ALL CONCRETE SHALL BE CLASS "AAA" 4000 psi.
5. FORMED CONCRETE SURFACES EXPOSED TO VIEW SHALL BE GIVEN A CLASS 2 RUBBED FINISH. UNFORMED CONCRETE SURFACES EXPOSED TO VIEW SHALL BE GIVEN A CLASS 6 BROOMED FINISH.
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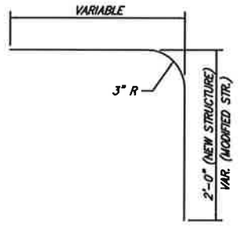
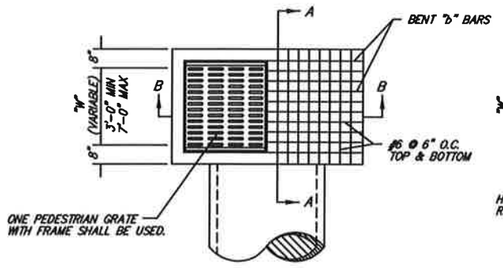
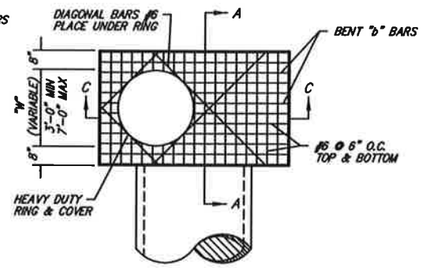
7. DURING CONSTRUCTION OF THE ROADWAY, THE CONTRACTOR SHALL MAINTAIN DRAINAGE INTO OR AROUND THE DROP INLET AS APPROVED BY THE ENGINEER.
8. PRECAST UNITS MAY BE USED FOR INLET BOTTOMS AND WALLS ONLY. TOPS MUST BE CAST-IN-PLACE. ADJUSTMENTS TO BOXES DUE TO GRADE CHANGES WILL BE AT NO ADDITIONAL COST TO THE OWNER.



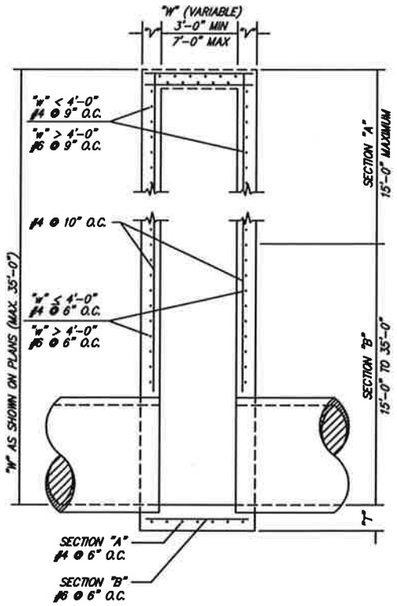
DETAIL OF BENT "b" BAR
NTS



PLAN
NTS

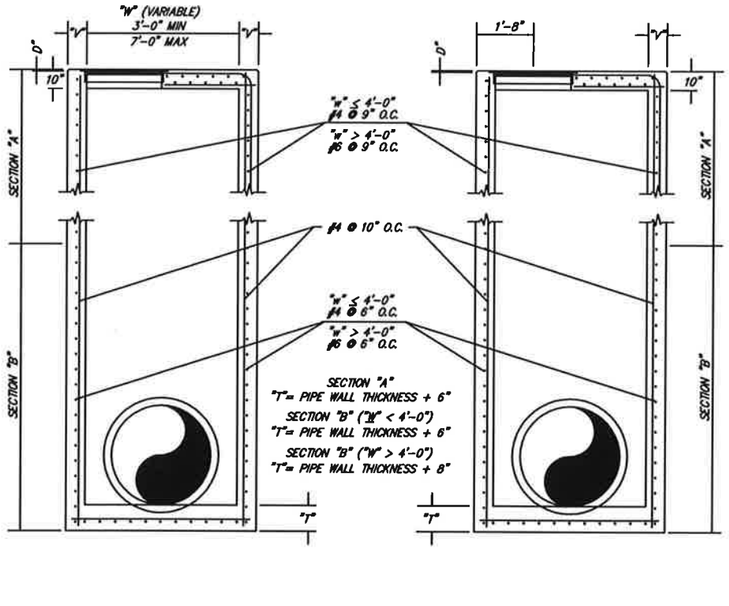


PLAN
NTS



SECTION A-A
NTS

SECTION "A"
"V" = 8"
SECTION "B" ("W" ≤ 4'-0")
"V" = 8"
SECTION "B" ("W" > 4'-0")
"V" = 10"



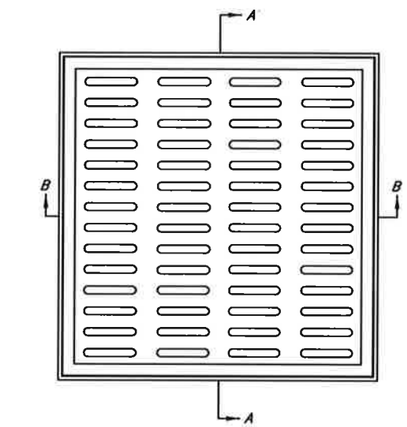
SECTION B-B
NTS

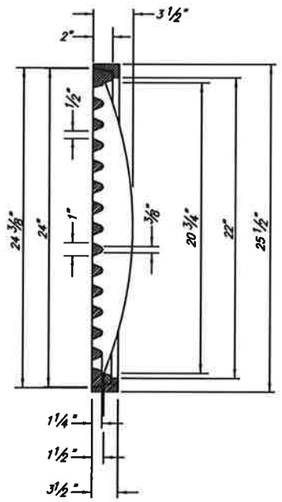
SECTION C-C
NTS

DETAILS OF DROP INLET
OR JUNCTION BOX (TYPE ST)
NTS
DR.3.1

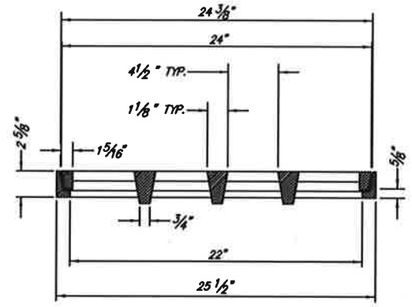
GENERAL NOTES

1. THE PEDESTRIAN GRATE SHALL BE ORIENTED IN THE TOP OF THE DROP INLET SO THAT THE 1/2" OPENINGS ARE PERPENDICULAR TO THE PATH OF PEDESTRIAN TRAVEL.
2. THE PEDESTRIAN GRATE AND FRAME SHALL BE CONSTRUCTED OF CAST IRON AND SHALL CONFORM TO THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS FOR GRAY IRON CASTINGS AASHTO M 105. CLASS 35B, & AASHTO M 306.
3. THE GRATE AND FRAME SHALL NOT BE PAINTED.
4. THE GRATE AND FRAME SHALL BE INSTALLED IN THE DROP INLET IN THE ASSEMBLED POSITION.
5. THE APPROXIMATE WEIGHT OF THE GRATE AND FRAME SHALL BE 211 LBS.
6. THE MINIMUM WATERWAY OPENING SHALL BE 122 SQ. IN.





SECTION A-A
NTS



SECTION B-B
NTS

DETAILS OF PEDESTRIAN
GRATE AND FRAME
NTS
DR.3.2

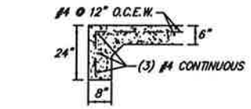
Revision	Date	BY

Standard Drawings
DRAINAGE IMPROVEMENTS – INLETS
Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
Phone (479)784-2225 Fax (479)784-2245

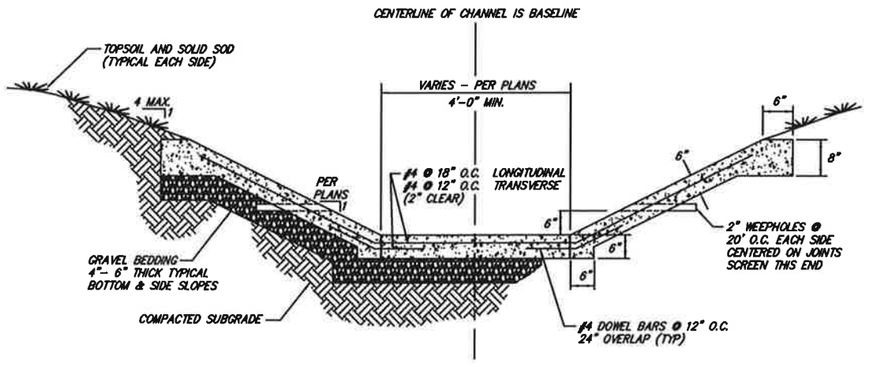
Project:	Details
Date:	NOV 2012
Scale:	As Shown
Drawn By:	RBR
Dwg. No.:	DR3
Sheet No:	4



TURNDOWN @ END OF DITCH

NOTES:

1. ALL CONCRETE SHALL BE CLASS "AAA" 4000 psi.
2. ALL EXPOSED CONCRETE SHALL HAVE A RUBBED OR BROOMED FINISH.
3. ALL EXPOSED EDGES TO BE CHAMFERED 3/4".
4. PROVIDE TRANSVERSE CONTROL JOINTS @ 10' O.C. AS SHOWN IN DR.4.4
5. PROVIDE EXPANSION JOINTS EVERY 100 FEET. AS SHOWN IN DR.4.5
6. ON CHANNEL BOTTOMS 8'-0" WIDE OR GREATER, SLOPE BOTTOM 1/4" PER FT. TO THE CENTER OF THE CHANNEL.



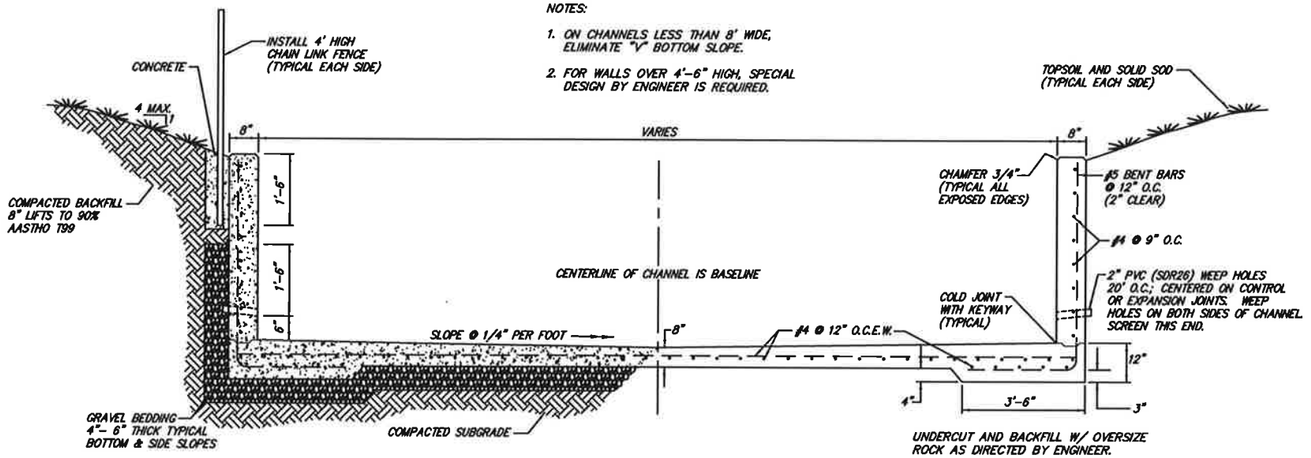
CONCRETE DITCH PAVING
N.T.S.
DR.4.1

NOTES:

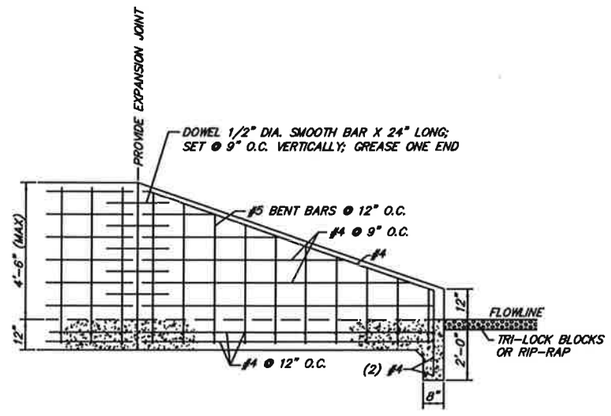
1. ALL CONCRETE SHALL BE CLASS "AAA" 4000 psi.
2. ALL EXPOSED CONCRETE SHALL HAVE A RUBBED OR BROOMED FINISH.
3. ALL EXPOSED EDGES TO BE CHAMFERED 3/4".
4. PROVIDE TRANSVERSE CONTROL JOINTS @ 10' O.C. AS SHOWN IN DR.4.4
5. PROVIDE EXPANSION JOINTS EVERY 100 FEET. AS SHOWN IN DR.4.5
6. ON CHANNEL BOTTOMS 8'-0" WIDE OR GREATER, SLOPE BOTTOM 1/4" PER FT. TO THE CENTER OF THE CHANNEL.

NOTES:

1. ON CHANNELS LESS THAN 8' WIDE, ELIMINATE "V" BOTTOM SLOPE.
2. FOR WALLS OVER 4'-6" HIGH, SPECIAL DESIGN BY ENGINEER IS REQUIRED.

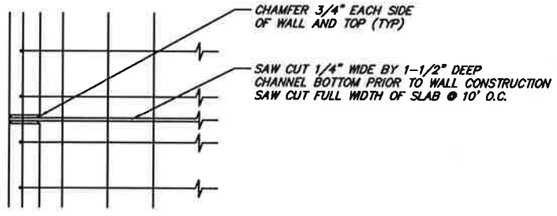


CONCRETE CHANNEL
N.T.S.
DR.4.2



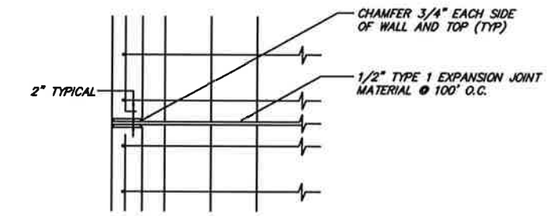
TRANSITION STRUCTURE
N.T.S.
DR.4.3

NOTE: REINFORCING CONTINUOUS THROUGH JOINT.



CONTROL JOINT
N.T.S.
DR.4.4

NOTE: REINFORCING IS NOT CONTINUOUS THROUGH JOINT.



EXPANSION JOINT
N.T.S.
DR.4.5

Revision	Date	BY
Revised Detail 4.4	OCT-2010	MM

Standard Drawings
DRAINAGE IMPROVEMENTS - CHANNELS
Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
Phone (479)784-2225 Fax (479)784-2245

Project:	Details
Date:	NOV 2012
Scale:	As Shown
Drawn By:	RBR
Dwg. No.:	DR4
Sheet No:	5

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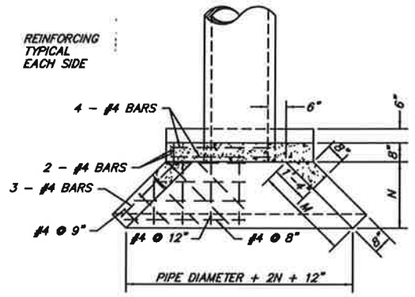
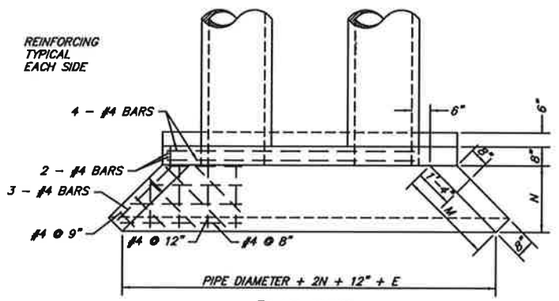
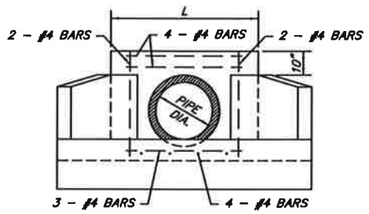


PLAN VIEW

HEADWALLS WITH 45° WINGWALLS		
DIAMETER	CONC. QTY CY	
	SINGLE PIPE	DOUBLE PIPE
18"	0.84	1.16
24"	1.19	1.65
30"	1.82	2.53
36"	2.29	3.26
42"	2.90	4.18
48"	4.02	5.86

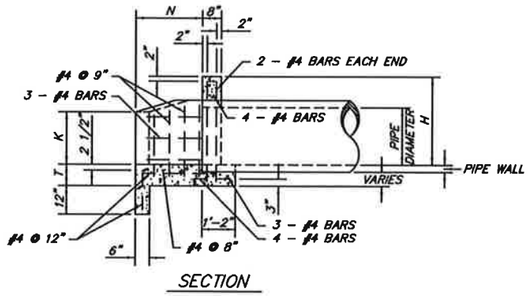


PLAN VIEW



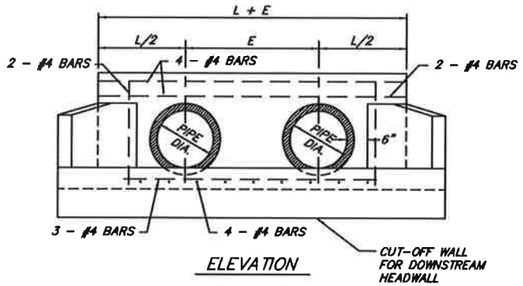
ELEVATION

HEADWALL SINGLE PIPE
N.T.S.



SECTION

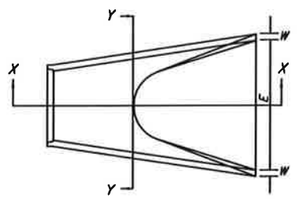
HEADWALL WITH 45° WINGWALLS
N.T.S.
DR.4.1



ELEVATION

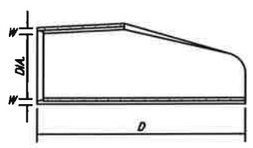
HEADWALL DOUBLE PIPE
N.T.S.

W= WALL THICKNESS OF PIPE		
DIA.	D	E
18"	6'–1"	3'–0"
24"	6'–1 1/2"	4'–0"
30"	6'–1 3/4"	5'–0"
36"	8'–1 3/4"	6'–0"
42"	8'–2"	6'–6"
48"	8'–2"	7'–0"
54"	8'–4"	7'–6"
60"	8'–4"	8'–0"
72"	8'–4"	9'–0"



PLAN

END VIEW



SECTION X–X

SECTION Y–Y

FLARED END SECTION
N.T.S.
DR.4.2

DIMENSIONS								
I.D.	E	L+E	T	H	K	L	M	N
18"	2'–6"	6'–6"	9"	2'–8"	1'–7"	4'–0"	2'–1 1/4"	1'–6"
24"	3'–0"	7'–6"	9"	3'–2"	1'–10"	4'–6"	2'–10"	2'–0"
30"	3'–9"	8'–10"	10"	3'–8"	2'–1"	5'–1"	3'–6 1/2"	2'–6"
36"	4'–6"	10'–4"	10"	4'–2"	2'–4"	5'–8"	4'–3"	3'–0"
42"	5'–3"	11'–6"	10"	4'–8"	2'–8"	6'–3"	4'–11 1/2"	3'–6"
48"	6'–0"	12'–10"	12"	5'–5"	3'–2"	6'–10"	5'–8"	4'–0"

NOTES:

1. ALL CONCRETE SHALL BE CLASS "AAA" 4000 psi.
2. ALL EXPOSED CONCRETE SHALL HAVE A CLASS 2, RUBBED FINISH.
4. ALL EXPOSED CORNERS TO BE CHAMFERED 3/4".
5. 2" DIAMETER WEEP HOLES SHALL BE INSTALLED 4'–0" O.C. AT BOTTOM OF HEADWALLS.
6. WHERE HANDRAIL IS SPECIFIED, THE SUPPORTS SHALL BE CENTERED IN THE WALL PER DETAILS ON DWG FC3.
7. HIGH POINT OF HEADWALL SHALL NOT PROJECT MORE THAN 3" ABOVE SLOPE.

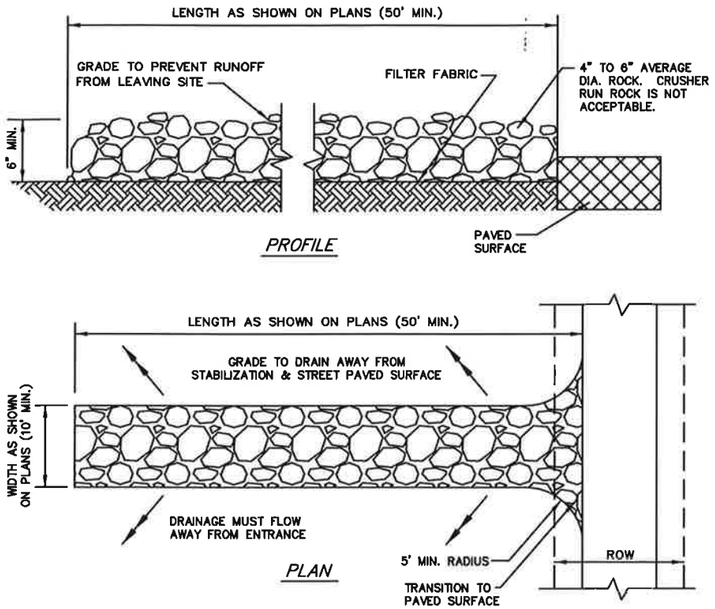
Revision	Date	By

Standard Drawings
DRAINAGE IMPROVEMENTS – HEADWALLS
Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
Phone (479)784-2225 Fax (479)784-2245

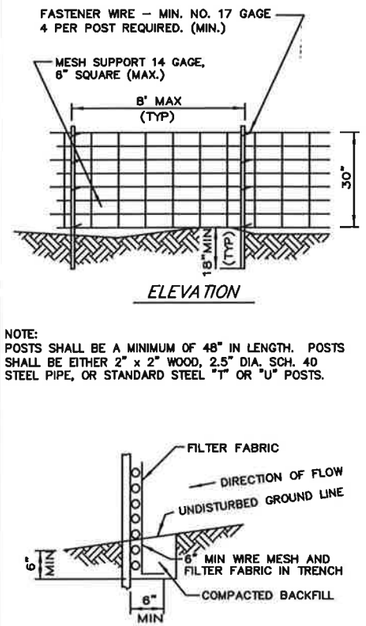
Project:	Details
Date:	NOV 2012
Scale:	As Shown
Drawn By:	RBR
Dwg. No.:	DR5
Sheet No:	6



STABILIZED CONSTRUCTION ENTRANCE

N.T.S.

EC.1.1

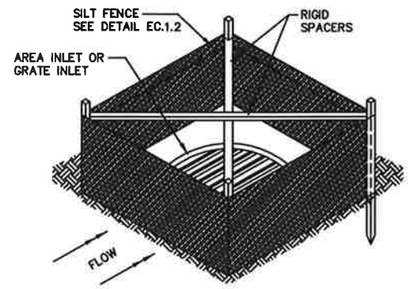


NOTE:
POSTS SHALL BE A MINIMUM OF 48" IN LENGTH. POSTS SHALL BE EITHER 2" x 2" WOOD, 2.5" DIA. SCH. 40 STEEL PIPE, OR STANDARD STEEL "T" OR "U" POSTS.

FABRIC ANCHOR DETAIL

N.T.S.

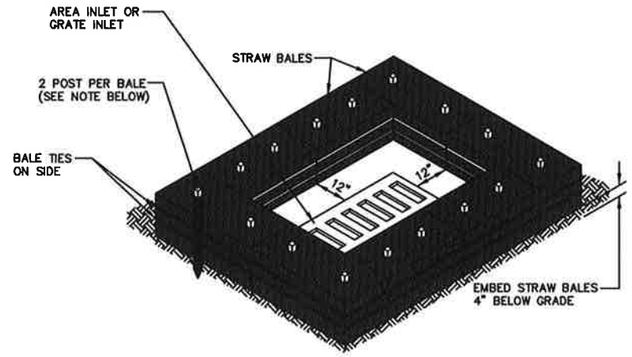
EC.1.2



SILT FENCE INLET BARRIER

N.T.S.

EC.1.3

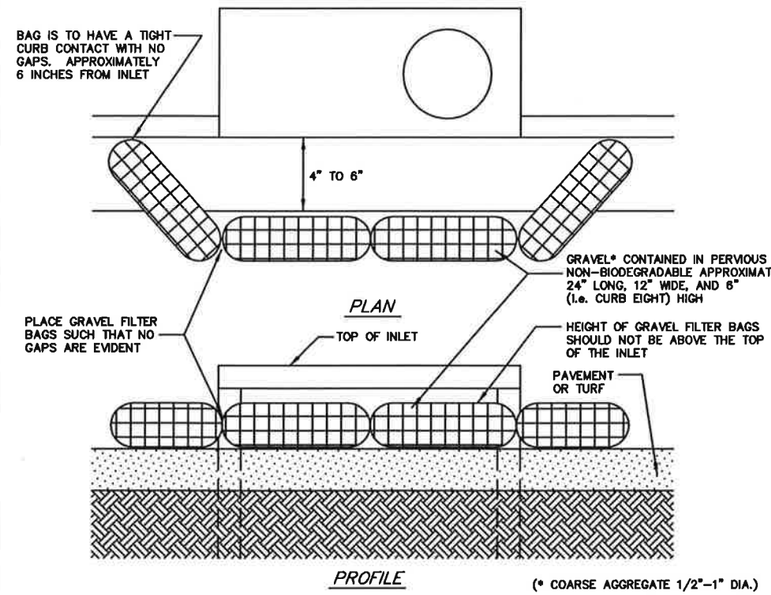


NOTE:
POSTS SHALL BE A MINIMUM OF 48" IN LENGTH. POSTS SHALL BE EITHER 2" x 2" WOOD, 2.5" DIA. SCH. 40 STEEL PIPE, OR STANDARD STEEL "T" OR "U" POSTS.

BALED STRAW INLET BARRIER

N.T.S.

EC.1.4

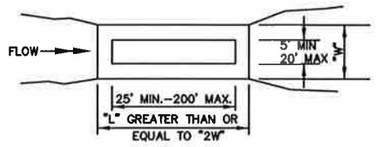


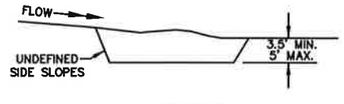
(* COARSE AGGREGATE 1/2"–1" DIA.)

SUMP INLET SEDIMENT FILTER

N.T.S.

EC.1.5

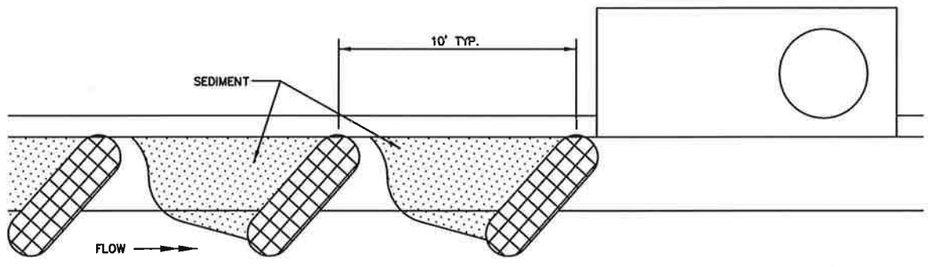




SEDIMENT BASIN

N.T.S.

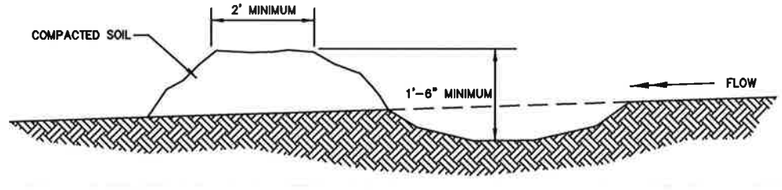
EC.1.6



ON GRADE CURB INLET SEDIMENT FILTER

N.T.S.

EC.1.7



DIVERSION DITCH

N.T.S.

EC.1.8

Revision	Date	BY

Standard Drawings
EROSION CONTROL – BARRIERS
Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
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Project:	Details
Date:	NOV 2012
Scale:	As Shown
Drawn By:	RBR
Dwg. No.:	EC1
Sheet No:	7

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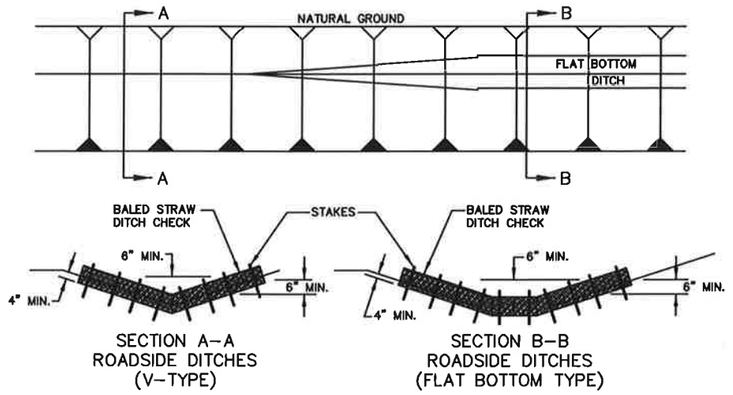
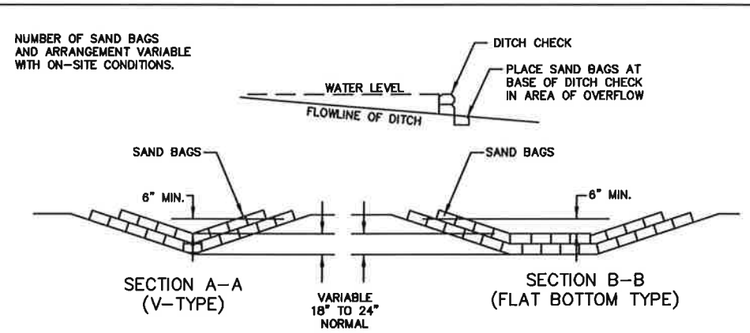
GENERAL NOTES

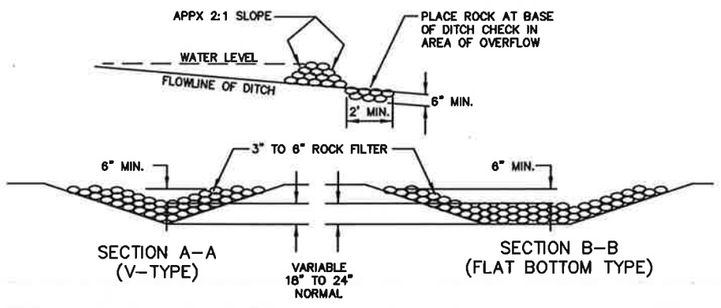
1. STRAW BALES SHALL BE INSTALLED SO THAT THE BINDINGS ARE ORIENTEDAROUND THE SIDES RATHER THAN ALONG THE TOPS AND BOTTOMS OF THE BALES. THE BALES SHALL BE A MINIMUM OF 36 INCHES IN LENGTH.
2. STRAW BALES SHALL BE KEYED INTO SOIL A MINIMUM OF 4" AND NO GAPS SHALL BE LEFT BETWEEN BALES.
3. STAKES SHALL BE A MINIMUM OF 48" IN LENGTH. STAKES SHALL BE EITHER 2" x 2" WOOD, 2.5" DIA. SCH. 40 STEEL POSTS, OR STANDARD STEEL "T" OR "U" POSTS.



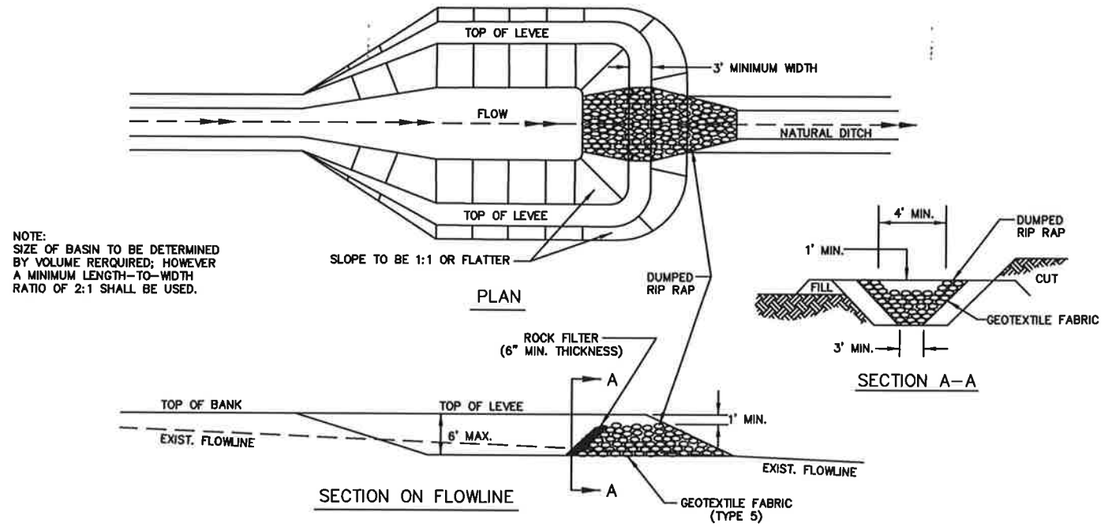
BALED STRAW DITCH CHECK
N.T.S.
EC.2.1



SAND BAG DITCH CHECK
N.T.S.
EC.2.2

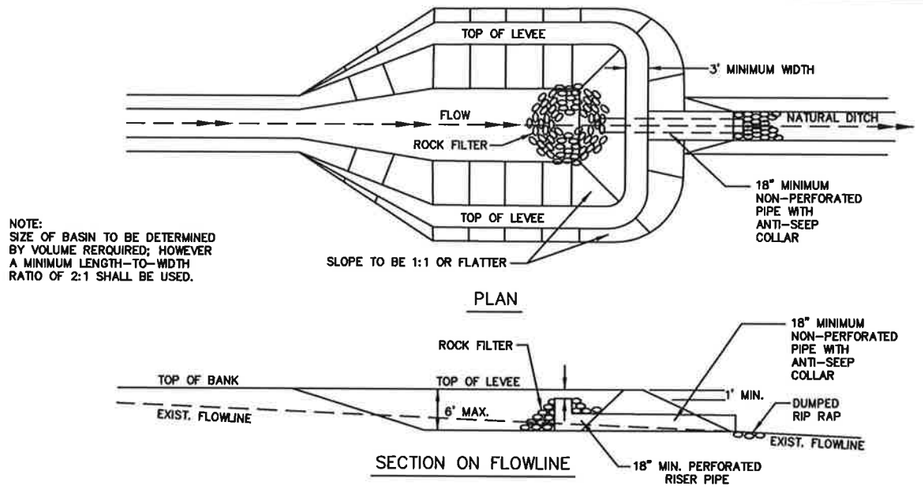


ROCK DITCH CHECK
N.T.S.
EC.2.3



NOTE:
SIZE OF BASIN TO BE DETERMINED BY VOLUME REQUIRED; HOWEVER A MINIMUM LENGTH–TO–WIDTH RATIO OF 2:1 SHALL BE USED.

SEDIMENT BASIN WITH RIP RAP OUTLET
N.T.S.
EC.2.4

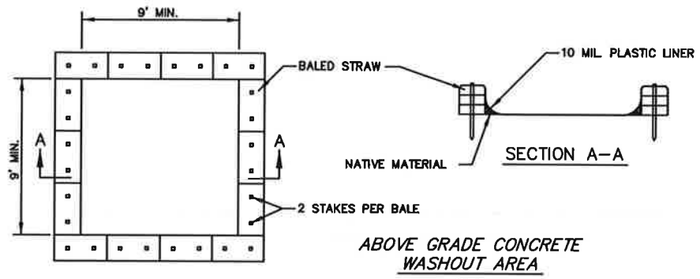


NOTE:
SIZE OF BASIN TO BE DETERMINED BY VOLUME REQUIRED; HOWEVER A MINIMUM LENGTH–TO–WIDTH RATIO OF 2:1 SHALL BE USED.

SEDIMENT BASIN WITH PIPE OUTLET
N.T.S.
EC.2.5

CONCRETE WASHOUT NOTES:

1. ACTUAL LAYOUT TO BE DETERMINED IN THE FIELD. CONCRETE WASHOUT AREA SHALL BE INSTALLED PRIOR TO ANY CONCRETE PLACEMENT ON SITE.
2. STAKES SHALL BE A MINIMUM OF 48" IN LENGTH. STAKES SHALL BE EITHER 2" x 2" WOOD, 2.5" DIA. SCH. 40 STEEL POSTS, OR STANDARD STEEL "T" OR "U" POSTS.
3. SIGNS SHALL BE PLACED AT THE CONSTRUCTION ENTRANCE, AT THE WASHOUT AREA, AND ELSWHERE AS NECESSARY TO CLEARLY INDICATE THE LOCATION OF THE CONCRETE WASHOUT AREA TO OPERATORS OF CONCRETE TRUCKS.
4. TEMPORARY CONCRETE WASHOUT FACILITIES SHALL BE MAINTAINED TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM FREEBOARD OF FOUR (4) INCHES.
5. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES CONSTRUCTED AND READY FOR USE ONCE THE WASHOUT AREA 75% FULL.
6. AT THE END OF CONSTRUCTION, THE CONCRETE WASHOUT AREA AND ALL WASTE CONCRETE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF AT AN ACCEPTED WASTE SITE. WHEN THE WASHOUT AREA IS REMOVED, THE DISTURBED AREA SHALL BE TOPSOILED AND SODDED OR OTHERWISE STABILIZED IN A MANNER ACCEPTED BY THE CITY.



ABOVE GRADE CONCRETE WASHOUT AREA
N.T.S.
EC.2.6

Revision	Date	BY

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EROSION CONTROL – BARRIERS
Public Works Construction

The City of Fort Smith ARKANSAS

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Project:	Details
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Dwg. No.:	EC2
Sheet No:	8

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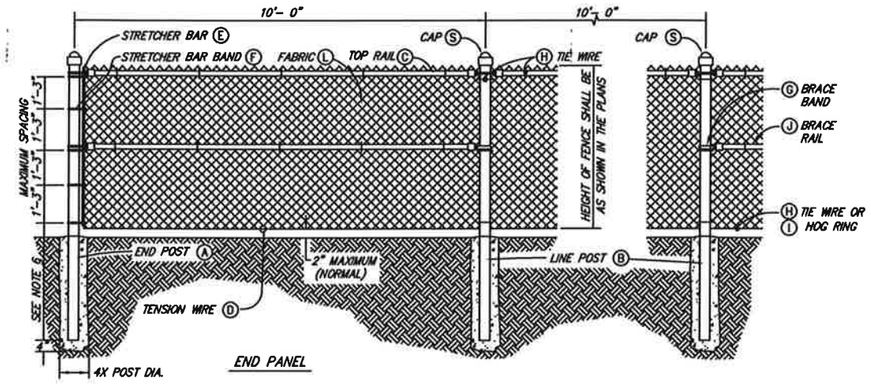


END PANEL

(D) *TENSION WIRES:* TENSION WIRES SHALL BE SECURED TO ALL TERMINAL, PULL, BRACE, OR CORNER POSTS WITH STRETCHER BANDS.

(J) *BRACE RAILS:* BRACE RAILS SHALL BE PROVIDED AT ALL TERMINAL, PULL, BRACE, OR CORNER POSTS HALFWAY BETWEEN THE TOP RAIL AND GROUND LEVEL, AND SHALL EXTEND FROM SUCH POST TO THE FIRST ADJACENT LINE POST.

(L) *FABRIC:* ALL CHAIN-LINK FENCE FABRIC SHALL CONSIST OF WOVEN WIRE IN THE FORM OF APPROXIMATELY UNIFORM SQUARE MESH, HAVING PARALLEL SIDES AND HORIZONTAL AND VERTICAL DIAGONALS OF APPROXIMATELY UNIFORM DIMENSIONS.

(M) *GATE FRAMES:* GATE FRAMES SHALL BE CONSTRUCTED OF TUBULAR MEMBERS ASSEMBLED BY USE OF HEAVY PRESSED STEEL, MALLEABLE FITTINGS OR BY WELDING. ALL GATES SHALL HAVE ONE HORIZONTAL SUPPORT EXTENDING THE WIDTH OF THE GATE AT THE MIDPOINTS OF VERTICAL FRAME MEMBERS. THE COMPLETE FRAME SHALL BE RIGID AND HAVE AMPLE STRENGTH TO BE FREE FROM SAG AND TWIST.

(O) *HINGES:* HINGES SHALL BE OF HEAVY PATTERN, OF ADEQUATE STRENGTH FOR GATE, AND WITH LARGE BEARING SURFACES FOR CLAMPING IN POSITION. THE HINGE SHALL BE OF THE PROPER TYPE TO ALLOW FOR A FULL 180 DEGREE OF SWING. THE HINGE SHALL NOT TWIST OR TURN UNDER THE ACTION OF THE GATE. THE GATES SHALL BE CAPABLE OF BEING OPENED AND CLOSED EASILY BY ONE PERSON.

(P) *LATCHES AND STOPS:* LATCHES AND STOPS SHALL BE PROVIDED FOR ALL GATES. DOUBLE GATES SHALL HAVE A DROP BAR LATCH. LATCHES SHALL BE ARRANGED FOR LOCKING. THE STOP FOR DROP BAR LATCHES SHALL BE SET IN CONCRETE AND ENGAGE THE PLUNGER OF THE BAR LATCH.

(S) *CAPS:* ALL POSTS, EXCEPT ROLL FORMED POSTS, SHALL BE CAPPED.

CLASS "B" CONCRETE: CLASS "B" CONCRETE REQUIRED FOR THE EMBEDMENT OF ALL POSTS SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE INCLUDED IN THE CONTRACT UNIT PRICE BID FOR CHAIN-LINK FENCE.

POSTS: POSTS SHALL BE SPACED EQUIDISTANT ON A MAXIMUM OF 10' CENTERS.

EXCAVATION FOR POSTS: EXCAVATION FOR POSTS IN OTHER THAN ROCK SHALL BE OF THE DIMENSIONS INDICATED. IF ROCK IS ENCOUNTERED BEFORE REACHING THE REQUIRED DEPTH, THE EXCAVATION SHALL BE CONTINUED TO THE DEPTH INDICATED OR 1'-6" INTO THE ROCK, WHICHEVER IS LESS, AND SHALL BE A MINIMUM OF 8" IN DIAMETER.

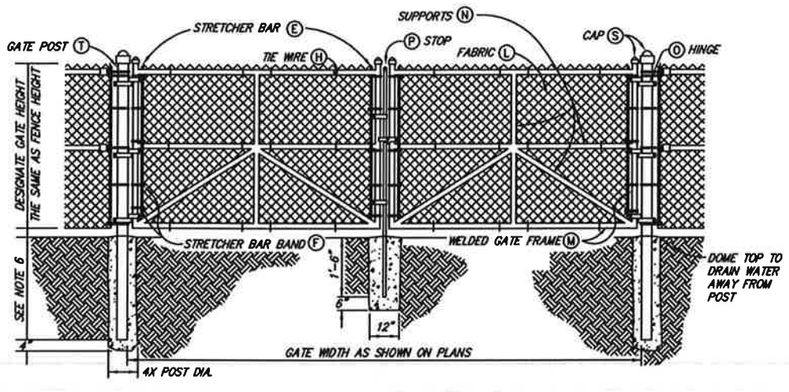
HEIGHT OF FENCE FABRIC	(A) END, PULL, CORNER OR BRACE POST	(B) LINE POST		(C) TOP RAIL			(D) TENSION WIRE		(E) STRETCHER BAR		(F) STRETCHER BAR BAND			(G) BRACE BAND	
	NOMINAL SIZE	NOMINAL SIZE	TIE SPACING	NOMINAL SIZE	TIE SPACING	MINIMUM LENGTH	SIZE	TIE SPACING	SIZE	LENGTH	SIZE	BOLT SIZE	SPACING	SIZE	BOLT SIZE
COMMERCIAL 6' AND LESS	2½" O.D. OR 3½" x 3½" R.F.	2" O.D. OR H-2.72#	1 TIE EVERY 1'-2" OF FABRIC HEIGHT	5/8" O.D. OR 1¼" x 1⅝" R.F.	1 TIE EVERY 2'-0"	10'-0"	7 GAGE	1 TIE EVERY 24"	¼" x ¾"	1" LESS COIL FABRIC HEIGHT	¾" x 0.781"	⅝" x 1¼"	1 BAND AT TOP AND BOTTOM; 15" MAXIMUM INTERVAL BETWEEN BANDS	¾" x 0.1093"	⅝" x 1¼"
COMMERCIAL OVER 6' TO 12' INCL.	3" O.D. OR 3½" x 3½" R.F.	2½" O.D. OR H-4.1#													
RESIDENTIAL TO 4' HIGH	2" O.D.	1⅞" O.D.		1⅞" O.D.			9 GAGE							SEE NOTE 5	
RESIDENTIAL 6' HIGH	2⅜" O.D.	2" O.D.		1⅞" O.D.											

HEIGHT OF FENCE FABRIC	(H) TIE WIRE	(I) HOG RING	(J) BRACE RAIL		(L) FABRIC			(M) GATE FRAME		(N) SUPPORTS		(O) HINGE TYPE	(T) GATE POST	
			NOMINAL SIZE	TIE SPACING	SIZE	MESH	SELVAGE	NOMINAL SIZE	TIE SPACING	NOMINAL SIZE	TIE SPACING	180° SWING	GATE LEAF WIDTH 12' & LESS	GATE LEAF WIDTH 12' TO 18'
													NOMINAL SIZE	
COMMERCIAL 6' AND LESS	12 GAGE STEEL OR 9 GAGE ALUM.	SAME GAGE AS FABRIC	1⅜" O.D.	1 TIE EVERY 2'-0"	9 GAGE	2"	SEE NOTE 8	2" O.D.	1 TIE EVERY 1'-0"	2" O.D.	1 TIE EVERY 1'-0"	OFFSET	2⅜" O.D. OR 3½" x 3½" R.F.	4" O.D.
COMMERCIAL OVER 6' TO 12' INCL.													4" O.D. OR 3½" x 3½" R.F.	6⅝" O.D.
RESIDENTIAL TO 4' HIGH			SEE NOTE 5		11½ GAGE	2¼"		1⅞" O.D.		1⅞" O.D. SEE NOTE 9			1⅞" O.D.	N/A
RESIDENTIAL 6' HIGH													2⅜" O.D.	

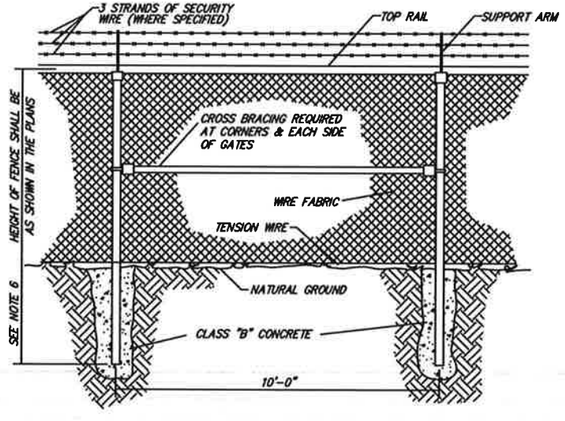
NOTES:

1. POST SIZES SHOWN ARE FOR STEEL. WHERE ALUMINUM IS PROVIDED, LINE POSTS SHALL HAVE A NOMINAL OUTSIDE DIAMETER OF 2" FOR FENCE HEIGHT 6' AND LESS; NOMINAL OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT 6' TO 12' INCLUDED. END, PULL, CORNER, OR BRACE POSTS SHALL HAVE A NOMINAL OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT 6' AND LESS; NOMINAL OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT 6' TO 12' INCLUDED. GATE POSTS WHERE GATE WIDTH IS 12' AND LESS SHALL HAVE A NOMINAL OUTSIDE DIAMETER OF 3" FOR FENCE HEIGHT 6' AND LESS. TENSION WIRE SHALL BE 0.192" IN DIAMETER. MINIMUM THICKNESS OF MATERIAL FROM WHICH EXPANSION SLEEVES SHALL BE MADE SHALL BE 0.078". ALL CONFORMING TO REQUIREMENTS OF AASHTO DESIGN M181.
2. OTHER DETAILS APPLY TO BOTH STEEL AND ALUMINUM FENCE.
3. ALL MISCELLANEOUS FITTINGS AND HARDWARE FURNISHED FOR USE IN CONJUNCTION WITH ZINC-COATED STEEL FABRIC AND ALUMINUM COATED STEEL FABRIC SHALL BE OF ZINC-COATED STEEL, AND THOSE FURNISHED FOR USE IN CONJUNCTION WITH ALUMINUM ALLOY FABRIC SHALL BE OF ALUMINUM ALLOY. 9 GAGE ALUMINUM WIRE SHALL BE ACCEPTABLE FOR TYING FABRIC TO TUBULAR AND ROLL FORMED MEMBERS OF STEEL FENCE.
4. DETAIL FC.3.2 SHALL BE USED FOR CONNECTION IF FENCE IS TO BE ATTACHED TO A CONCRETE WALL OR SLAB.
5. RESIDENTIAL FENCE SHALL BE INSTALLED USING 11 1/2 GAGE FABRIC. BRACE RAIL, AND BRACE BANDS ARE NOT REQUIRED IF RESIDENTIAL FENCE IS 6' HIGH OR LESS.
6. POST DEPTH IS A MINIMUM OF 3'-0" FOR COMMERCIAL AND 2'-0" FOR RESIDENTIAL. GATE POST DEPTH SHALL BE A MINIMUM OF 3'-0" FOR GATES LEAFS UP TO 12' WIDE AND 3'-6" FOR LEAFS UP TO 18' WIDE.
7. BRACE PANEL SHALL BE PLACED A MAXIMUM OF 500 FEET CENTER TO CENTER FROM END, CORNER, OR BRACE POSTS. ANY BREAKS IN HORIZONTAL ALIGNMENT OF MORE THAN 30" SHALL BE CONSIDERED A CORNER.
8. FABRIC LESS THAN 6 FEET HIGH SHALL BE KNUCKLED AT BOTH SELVAGES. FABRIC 6 FEET OR HIGHER SHALL BE KNUCKLED AT ONE SELVAGE, AND TWISTED AT THE OTHER. FABRIC TO BE INSTALLED AS DIRECTED BY THE ENGINEER.
9. RESIDENTIAL GATES LESS THAN 6 FEET HIGH DO NOT REQUIRE VERTICAL AND DIAGONAL SUPPORTS.

STANDARD FENCING
N.T.S.
FC.1.1



DOUBLE SWING GATE
N.T.S.
FC.1.2



NOTES:

1. BARB WIRE SHALL BE 12 1/2 GAGE MINIMUM OR 15 1/2 GAGE HIGH TENSILE, 4 POINT BARBS AT 5" CENTERS, AND SHALL CONFORM TO COMMERCIAL GALVANIZATION.
2. SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD" AS DESCRIBED AS FOLLOWS:

   THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED, THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND AND PROJECTING WIRES A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

SECURITY FENCING
N.T.S.
FC.1.3

Revision	Date	By

Standard Drawings
FENCING & HANDRAILS
Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
Phone (479)784-2225 Fax (479)784-2245

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Drawn By:	RBR
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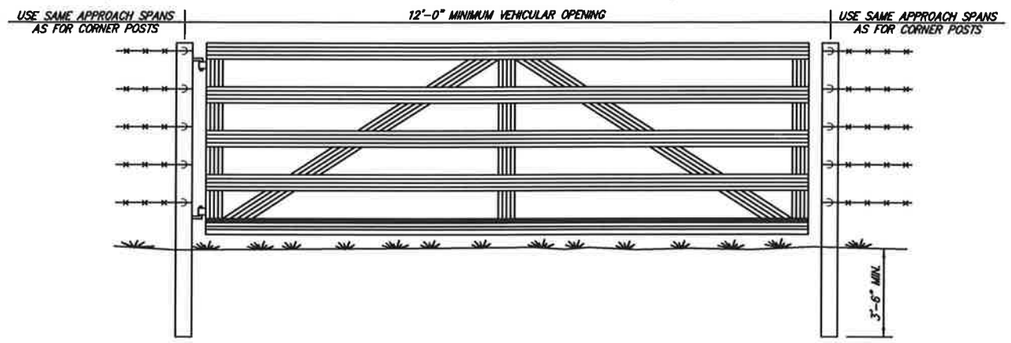
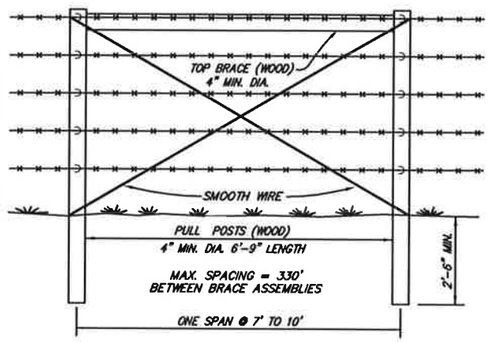


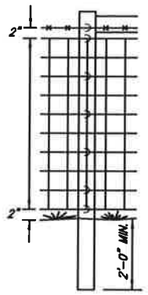
OTHER STYLE VEHICULAR GATES MAY BE USED WITH THE APPROVAL OF THE ENGINEER.
THE METHOD OF SECURING GATE (LATCH AND/OR LOCK) SHALL MEET THE APPROVAL OF THE ENGINEER.

TYPICAL VEHICULAR GATES
N.T.S.
FC.2.1

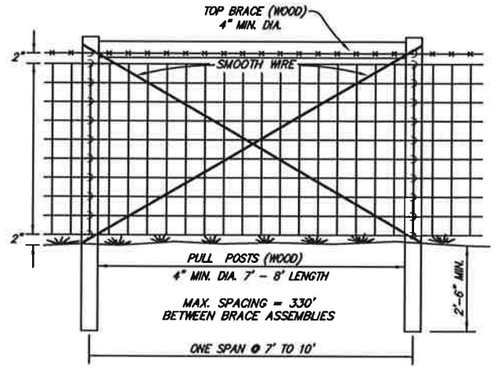


LINE BRACE ASSEMBLY
N.T.S.
FC.2.2

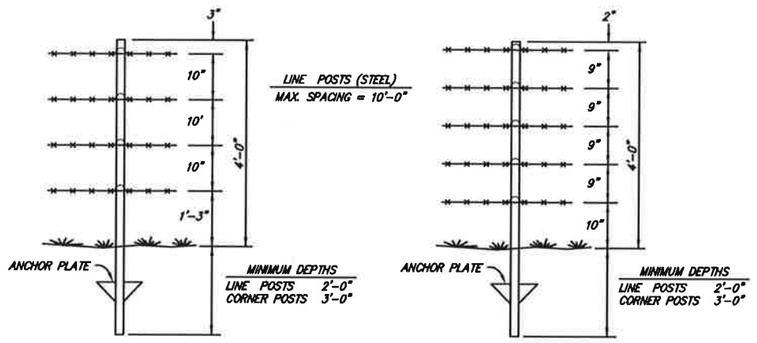
NOTE:
STAPLE AT LEAST TOP, BOTTOM, AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.



3 1/2" MIN. DIA. LINE POST (WOOD)
6 1/2' - 7'-0" LENGTH
MAX. SPACING TO BE 10'-0"

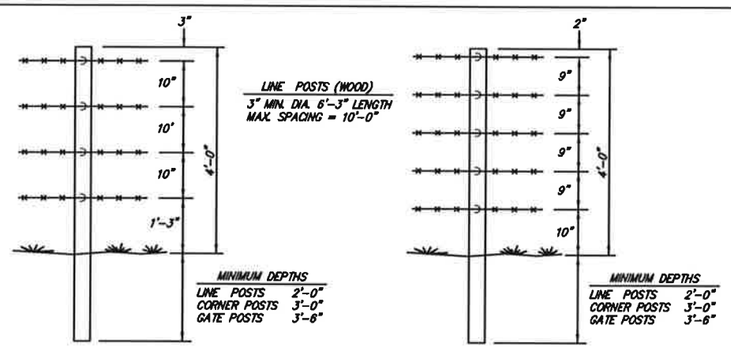


WOVEN WIRE FENCE (WOOD POSTS)
N.T.S.
FC.2.3



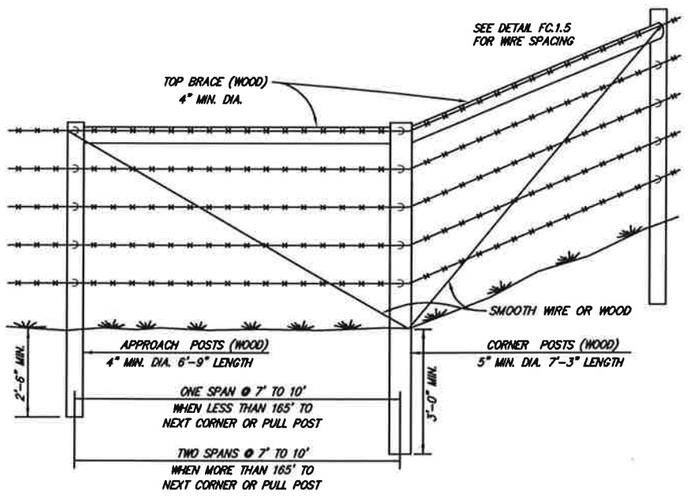
TYPE "D" 4 STRAND — STEEL POST BARBED WIRE FENCING — TYPE "D-1" 5 STRAND

N.T.S.
FC.2.5



TYPE "D" 4 STRAND — WOOD POST BARBED WIRE FENCING — TYPE "D-1" 5 STRAND

N.T.S.
FC.2.6



CORNER ASSEMBLY
N.T.S.
FC.2.4

NOTES:

1. FENCING ON THIS DRAWING TO BE USED ONLY WHEN REPLACING OR MATCHING EXISTING FENCE.
2. POSTS AND BRACING FOR WOVEN WIRE AND SMOOTH WIRE FENCING SHALL CONFORM TO BARBED WIRE FENCING DETAILS.
3. BARB WIRE SHALL BE 12 1/2 GAGE MINIMUM OR 15 1/2 GAGE HIGH TENSILE, 4 POINT BARBS AT 4"-5" CENTERS, AND SHALL CONFORM TO COMMERCIAL GALVANIZATION.
4. SMOOTH WIRE SHALL BE 9 GAGE AND CONFORM TO COMMERCIAL GALVANIZATION.
5. WOVEN WIRE FARM FENCE SHALL BE AASHTO DESIGN NO. 1047-6-11, GRADE 60, AND CONFORM TO COMMERCIAL GALVANIZATION.
6. STAPLES SHALL BE GALVANIZED, 9 GAGE, 1 1/2" LONG. STAPLE AT LEAST TOP, BOTTOM AND ALTERNATE WIRES OF WOVEN FABRIC FOR WOOD LINE POSTS.
7. HARDWARE AND FITTINGS SHALL CONFORM TO ASTM F626. ANY MISCELLANEOUS HARDWARE OR FITTINGS NOT PREVIOUSLY MENTIONED SHALL BE GALVANIZED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF AASHTO M 111 OR M 232.
8. STEEL LINE POSTS SHALL BE PAINTED OR GALVANIZED.
9. AN ACCEPTABLE TOLERANCE IN LENGTH OF TUBULAR OR WOODEN POSTS SHALL BE 1" TO +2".
10. TUBULAR POSTS MUST BE PAINTED OR GALVANIZED.
11. SPLICE FOR BARBED WIRE BETWEEN PULL POST ASSEMBLY SHALL BE BY THE "EYE METHOD" AS DESCRIBED AS FOLLOWS:

    THE ENDS OF THE BARBED WIRE SHALL BE BENT TO FORM A LOOP. THE LOOPS SHALL BE CONNECTED. AFTER THE LOOPS ARE CONNECTED, THE ENDS OF THE WIRE SHALL BE WRAPPED AROUND AND PROJECTING WIRES A MINIMUM OF 4 TIMES FOR EACH WIRE LOOP.

12. SPLICE FOR WOVEN WIRE BETWEEN PULL POST SHALL BE BY THE "WESTERN UNION METHOD" AS DESCRIBED AS FOLLOWS:

    THE VERTICAL WIRES FOR EACH END OF THE FENCE FABRIC SHALL BE PLACED SIDE BY SIDE AND THE PROJECTING HORIZONTAL WIRES SHALL BE WRAPPED A MINIMUM OF 4 TIMES AROUND THE HORIZONTAL WIRES OF THE FIRST WEB.

Revision	Date	By

Standard Drawings
FENCING & HANDRAILS
Public Works Construction

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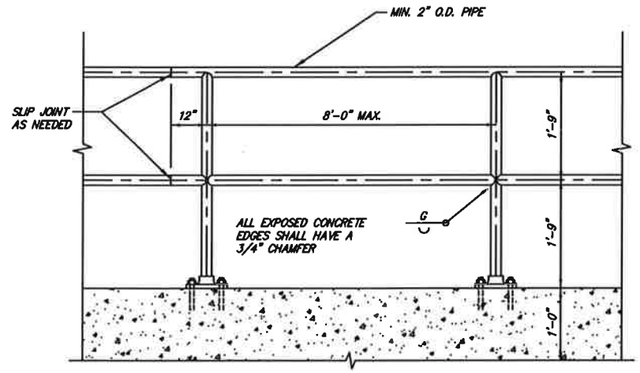
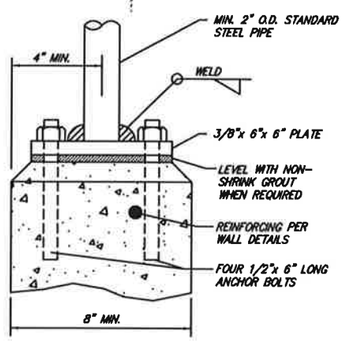
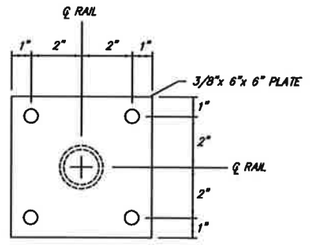


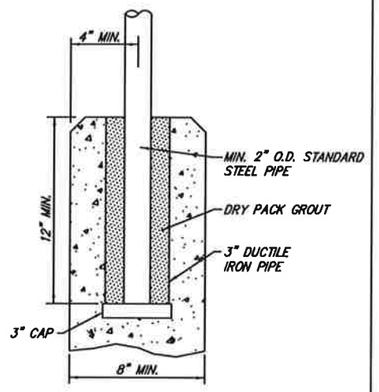
BARRIER RAIL
N.T.S.
FC.3.1



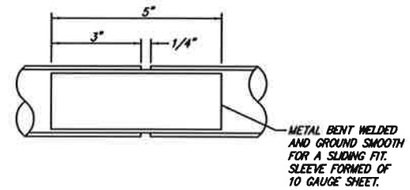
CONNECTION
N.T.S.



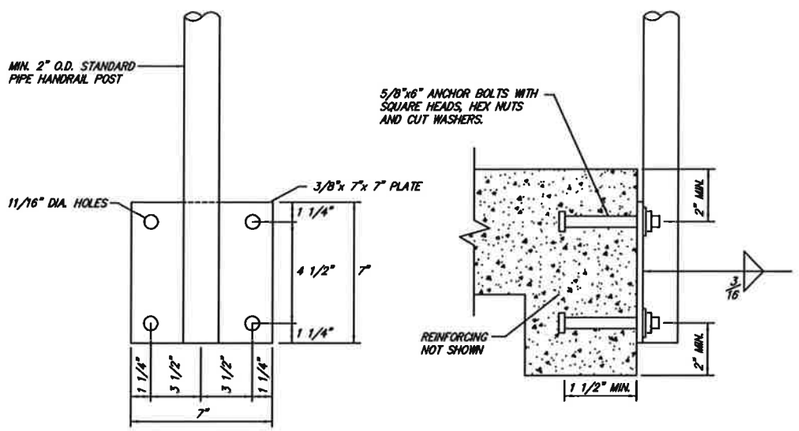
BASE PLATE
N.T.S.
FC.3.2



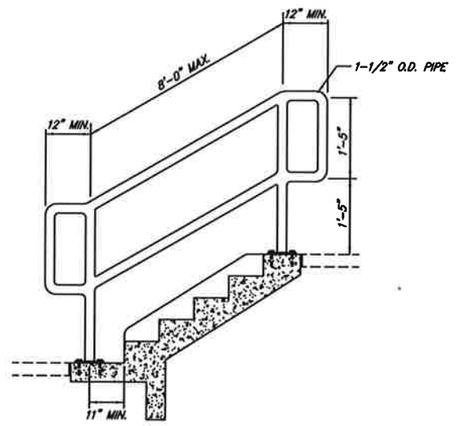
EMBEDMENT DETAIL
N.T.S.
FC.3.3



SLIP JOINT
N.T.S.
FC.3.4



EDGE MOUNT DETAIL
N.T.S.
FC.3.5



HANDRAILS FOR RAMPS AND STEPS
N.T.S.
FC.3.6

NOTES:

1. BARRIER RAILS TO BE PROVIDED WHERE THE VERTICAL DISTANCE BETWEEN ADJACENT LEVELS IS MORE THAN 24".
2. HANDRAILS SHALL BE PROVIDED ON BOTH SIDES OF STAIRS WITH 4 OR MORE RISERS AND ON RAMPS WITH A RISE OF GREATER THAN 6" OR A RUN GREATER THAN 72".
3. SLIP JOINTS SHALL BE INSTALLED IN SECTION OF RAIL SPANNING EXPANSION JOINTS IN STRUCTURE.
4. EMBEDDED HANDRAIL MOUNTING TO BE USED ONLY WITH PRIOR APPROVAL BY THE ENGINEER.

Revision	Date	By

Standard Drawings
FENCING AND HANDRAILS
Public Works Construction

The City of Fort Smith Arkansas

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
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Drawn By:	RBR
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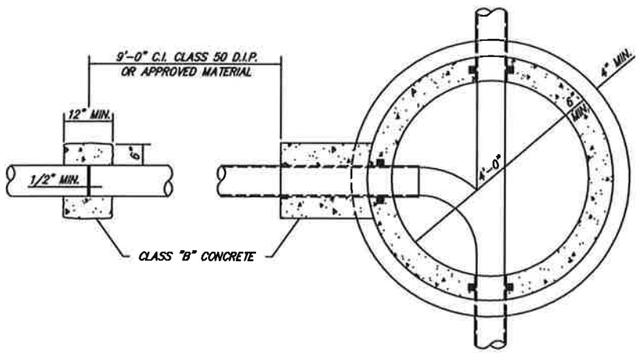
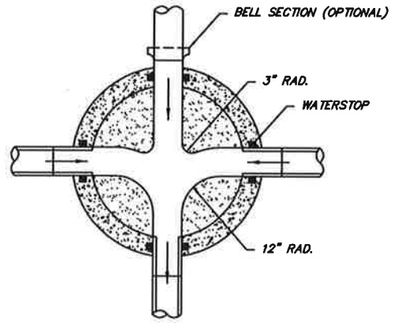
MANHOLE GENERAL NOTES:

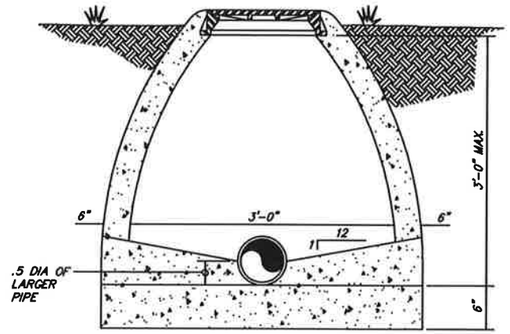
1. MANHOLES ARE TO BE CAST IN PLACE OR APPROVED PRECAST.
2. WATERSTOPS MUST BE USED WITH ALL TYPES OF PIPE AT MANHOLE CONNECTIONS.
3. RIM ELEVATION TO BE AS NOTED ON PLANS. IN PAVED AREAS, RIM SHALL BE FLUSH WITH PAVEMENT GRADE AND CROSS SLOPE.



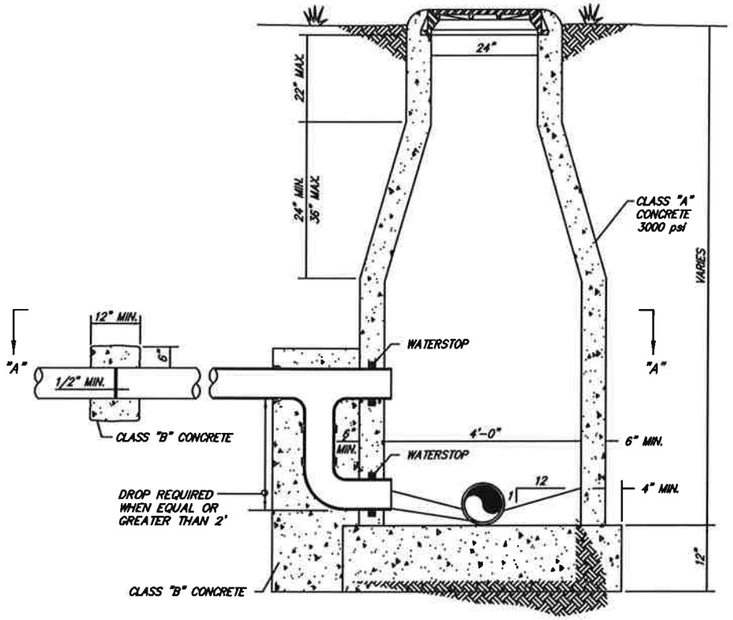
SECTION "A-A"



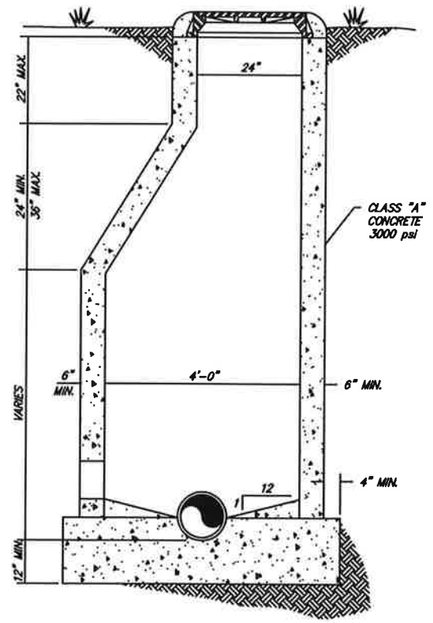
MANHOLE INVERT DETAIL
N.T.S.
SS.1.2



SECTION - TYPICAL
SANITARY SEWER SHALLOW MANHOLE
N.T.S.
SS.1.3

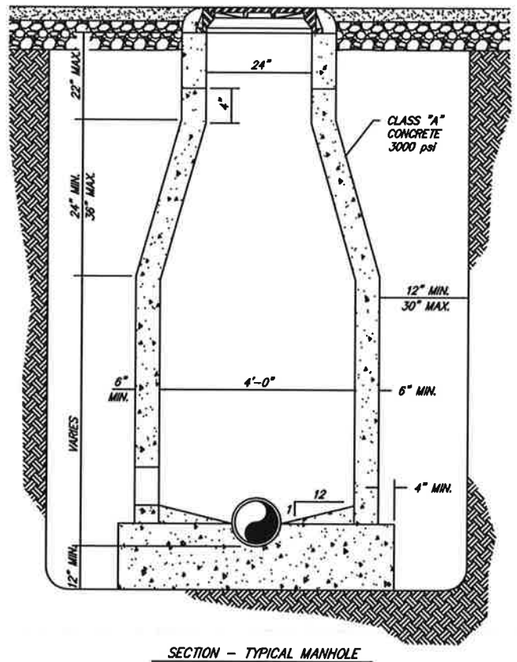


SECTION - TYPICAL DROP MANHOLE
N.T.S.
SS.1.1



SECTION - TYPICAL OFFSET MANHOLE
N.T.S.
SS.1.4

NOTE:
TRENCHING, BACKFILL AND SURFACE RESTORATION PER DRAWING ON TB1



SECTION - TYPICAL MANHOLE
N.T.S.
SS.1.5

Revision	Date	BY
Revised MH dimensions.	AUG-2011	MM

Standard Drawings
SANITARY SEWER IMPROVEMENTS
Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
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Phone (479)784-2225 Fax (479)784-2245

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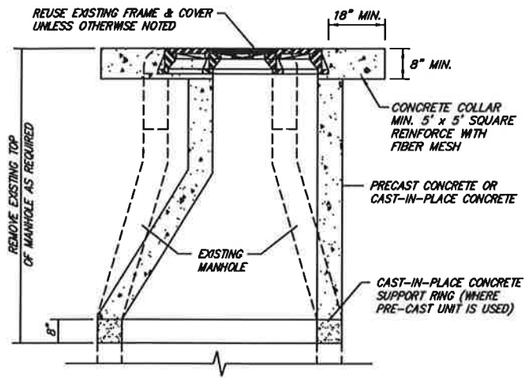
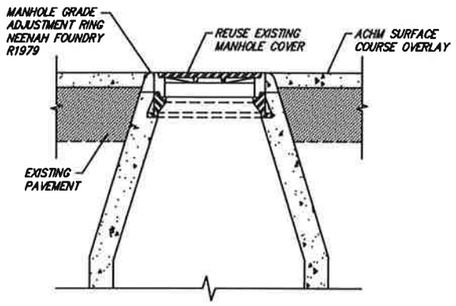
NOTE:
MANHOLE COVER SHALL BE INSTALLED FLUSH WITH PAVEMENT GRADE AND CROSS SLOPE.



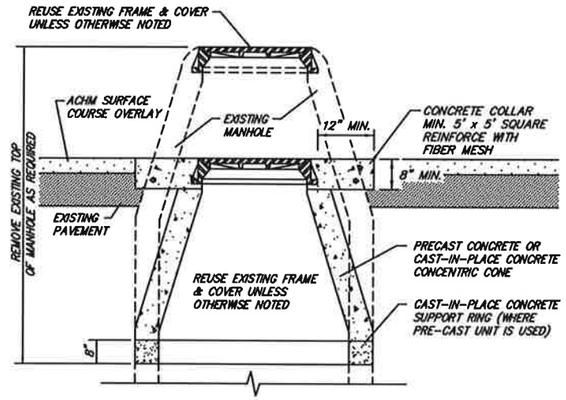
MANHOLE
OFFSET MODIFICATION
N.T.S.
SS.2.1

NOTE:
MANHOLE COVER SHALL BE INSTALLED FLUSH WITH PAVEMENT GRADE AND CROSS SLOPE.



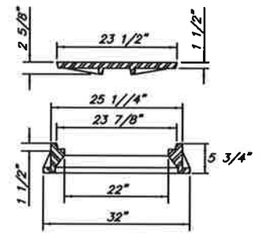
MANHOLE
GRADE ADJUSTMENT
N.T.S.
SS.2.2

NOTE:
MANHOLE COVER SHALL BE INSTALLED FLUSH WITH PAVEMENT GRADE AND CROSS SLOPE.



MANHOLE
GRADE MODIFICATION
N.T.S.
SS.2.3

PLAN VIEW

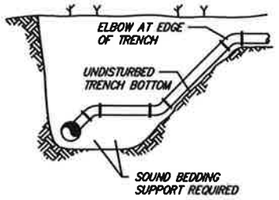


SECTION "A-A"

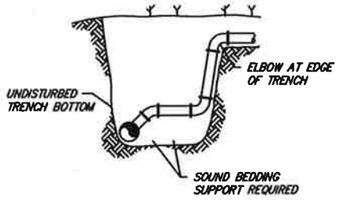
ASSEMBLED WEIGHT:
260 LBS.

EAST JORDAN IRON WORKS 1348-1 OR DEETER FOUNDRY 1286 FROM NEENAH

SANITARY SEWER
MANHOLE FRAME & COVER
N.T.S.
SS.2.4

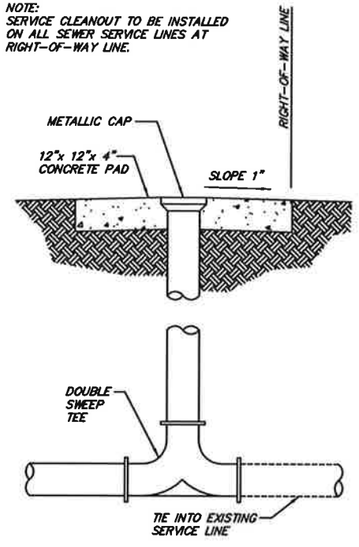


SEWER SERVICE
LATERAL CONNECTION
N.T.S.
SS.2.5

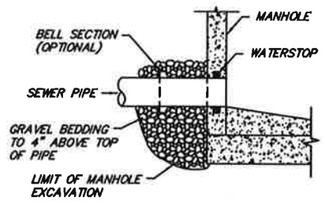


SEWER SERVICE
LATERAL CONNECTION
N.T.S.
SS.2.6

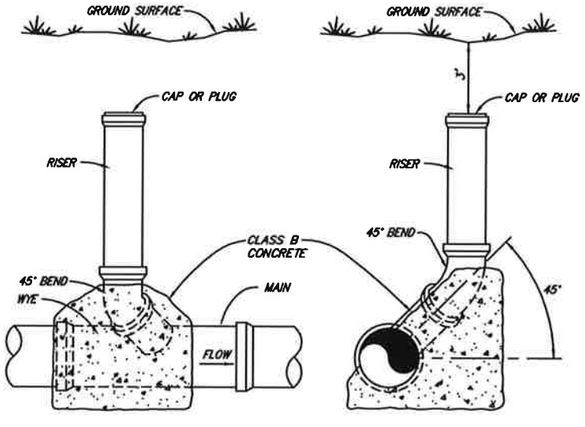
NOTE:
SERVICE CLEANOUT TO BE INSTALLED ON ALL SEWER SERVICE LINES AT RIGHT-OF-WAY LINE.



SEWER SERVICE CONNECTION
AND CLEANOUT COLLAR
N.T.S.
SS.2.7



PIPE CONNECTION DETAIL
N.T.S.
SS.2.8



SERVICE RISER DETAIL
N.T.S.
SS.2.9

Revision	Date	BY

Standard Drawings
SANITARY SEWER IMPROVEMENTS
Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
Phone (479)784-2225 Fax (479)784-2245

Project:	Details
Date:	NOV 2012
Scale:	As Shown
Drawn By:	RBR
Dwg. No.:	SS2
Sheet No:	13

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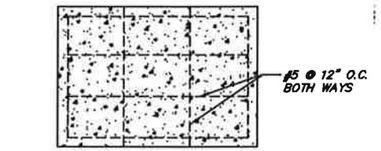
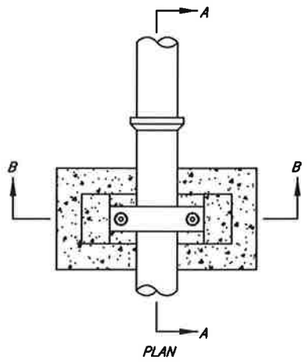
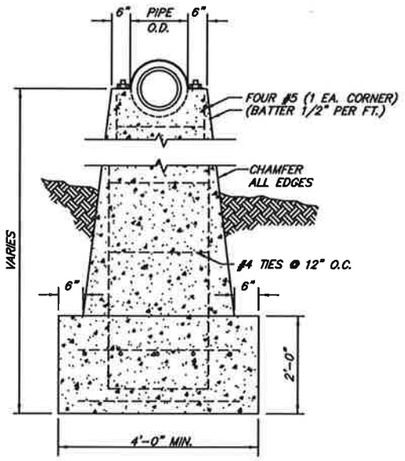


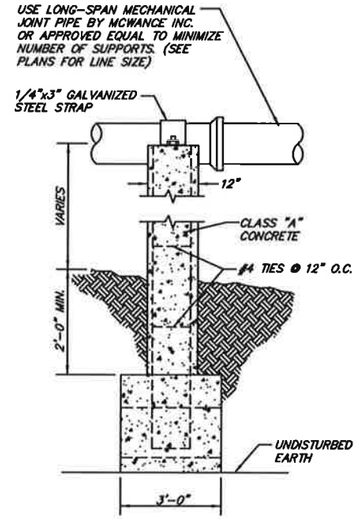
FOOTING



PLAN

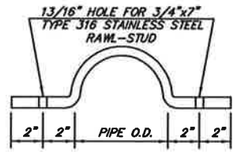


SECTION A-A

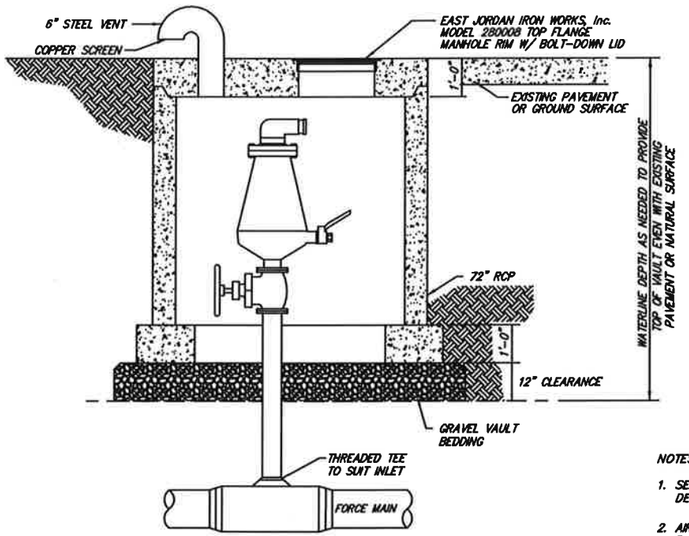


SECTION B-B

CONCRETE PIPE SUPPORT
N.T.S.
SS.3.1



STEEL STRAP



SELECTION CHART	
DIAMETER FORCE MAIN	AIR RELEASE VALVE
4" - 12"	2"
14" - 20"	3"
24" - 36"	4"

NOTES:

1. SEE DETAIL WA.3.6 FOR DIMENSIONS AND DETAILS FOR THE CONCRETE VAULT.
2. AIR RELEASE VALVE SHALL BE A.R.I. MODEL D-020 OR APPROVED EQUAL.

AIR RELEASE VALVE
N.T.S.
SS.3.2

Revision	Date	BY

Standard Drawings
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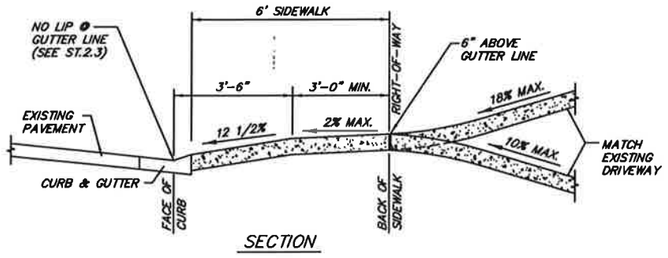

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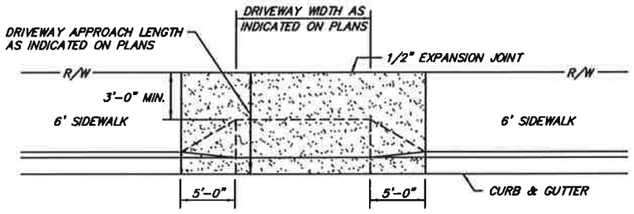
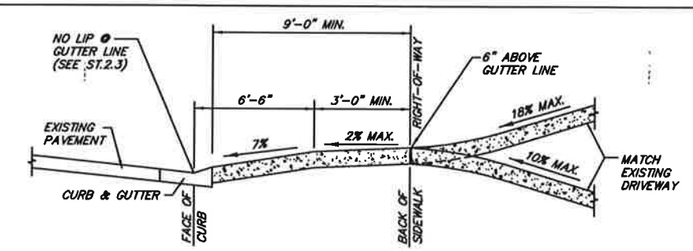


PLAN VIEW

DRIVEWAY APPROACH

(SIDEWALK AT BACK OF CURB)
(R/W AT BACK OF SIDEWALK)
N.T.S.

ST.1.1



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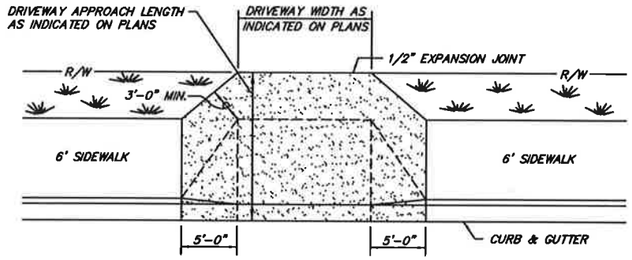
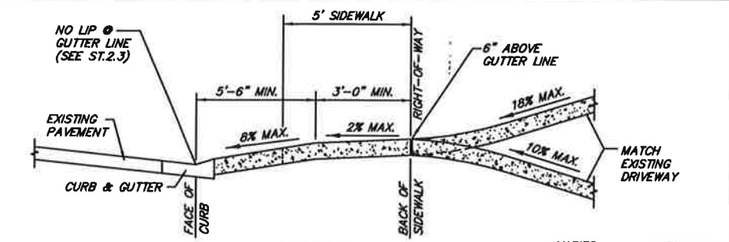


PLAN VIEW

DRIVEWAY APPROACH

(SIDEWALK AT BACK OF CURB)
(R/W BEHIND SIDEWALK MIN. 3')
N.T.S.

ST.1.2



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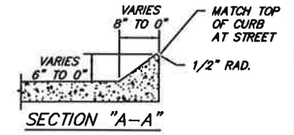
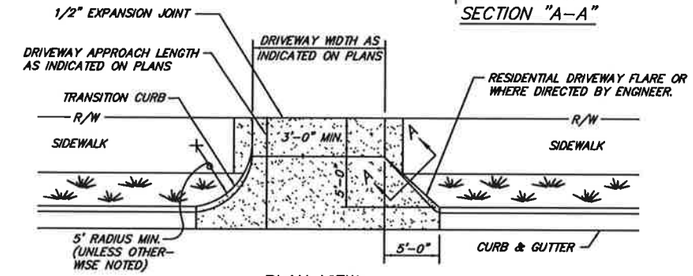


SECTION "A-A"

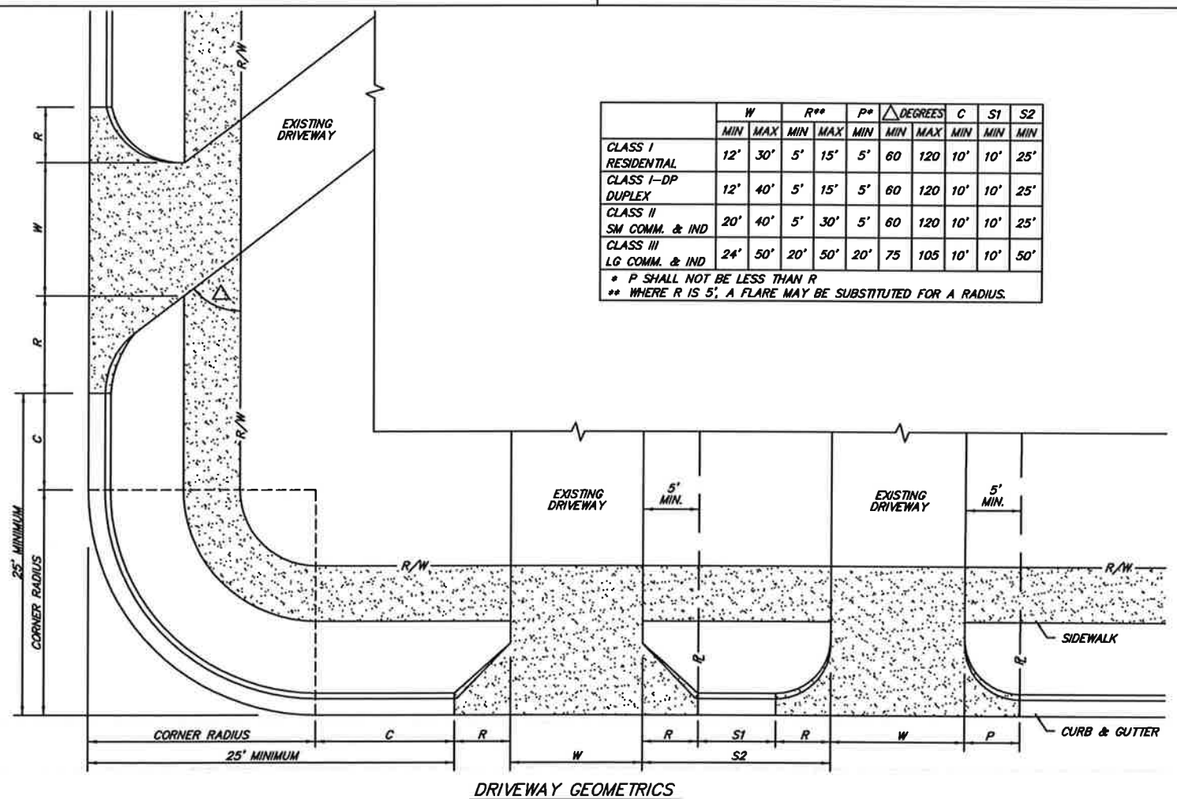


PLAN VIEW

DRIVEWAY APPROACH

(SIDEWALK SET BACK FROM CURB)
(BACK OF SIDEWALK AT R/W LINE)
N.T.S.

ST.1.3



	W		R**		P*	△ DEGREES		C	S1	S2
	MIN	MAX	MIN	MAX	MIN	MIN	MAX	MIN	MIN	MIN
CLASS I RESIDENTIAL	12'	30'	5'	15'	5'	60	120	10'	10'	25'
CLASS I-DP DUPLEX	12'	40'	5'	15'	5'	60	120	10'	10'	25'
CLASS II SM. COMM. & IND	20'	40'	5'	30'	5'	60	120	10'	10'	25'
CLASS III LG COMM. & IND	24'	50'	20'	50'	20'	75	105	10'	10'	50'

* P SHALL NOT BE LESS THAN R
** WHERE R IS 5', A FLARE MAY BE SUBSTITUTED FOR A RADIUS.

DRIVEWAY GEOMETRICS

N.T.S.

ST.1.4

DRIVEWAY APPROACHES SHALL BE P.C. CONCRETE

DRIVEWAY APPROACH THICKNESS

COMMERCIAL & INDUSTRIAL	6"
RESIDENTIAL - MULTIFAMILY	6"
- SINGLE FAMILY	5"

NOTES:

1. PROPERTIES WITH FRONTAGE OF 50 FEET OR LESS SHALL BE LIMITED TO ONE DRIVEWAY APPROACH. WHERE A PROPERTY HAS A FRONTAGE OF LESS THAN 26', ONE DRIVEWAY NOT TO EXCEED 16' IS PERMITTED.
2. ALL DRIVEWAY LOCATIONS SHALL BE SUBJECT TO REVIEW AND APPROVAL BY THE CITY.
3. GRADE CHANGES BEHIND RIGHT-OF-WAY TO BE ROUNDED OFF WITH A 2' RADIUS BEGINNING AT RIGHT-OF-WAY LINE.
4. CONTRACTION JOINT SPACING IN DRIVEWAY SHALL BE AT 12' MAX. (BOTH DIRECTIONS)
5. DETAIL ST.1.1 SHALL ONLY BE USED WHEN RIGHT-OF-WAY CONDITIONS PROHIBIT THE USE OF DETAILS ST.1.2 OR ST.1.3.
6. CLASS III DRIVEWAY DESIGN REQUIRES APPROVAL BY ENGINEER PRIOR TO INSTALLATION.
7. ANY EXISTING CURB & GUTTER SHALL BE COMPLETELY REMOVED TO THE TOE OF THE GUTTER LINE FOR INSTALLATION OF DRIVEWAY. EXISTING A.C. PAVEMENT SHALL BE SAWCUT TO A NEAT LINE WITH A.C. PATCH, MATCHING EXISTING PAVEMENT THICKNESS, PLACED ON TOP OF P.C. BASE.
8. CURB RADII THAT ARE INTEGRAL WITH DRIVEWAYS (DETAIL ST.1.3) ARE CONSIDERED INCIDENTAL TO DRIVEWAYS. CURB AND GUTTER ACROSS TOE OF DRIVEWAYS WILL BE MEASURED AND PAID FOR SEPARATELY AS CURB AND GUTTER.

Revision	Date	BY

Standard Drawings

STREET IMPROVEMENTS - DRIVEWAYS

Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
Phone (479)784-2225 Fax (479)784-2245

Project:	Details
Date:	NOV 2012
Scale:	As Shown
Drawn By:	RBR
Dwg. No.:	ST1
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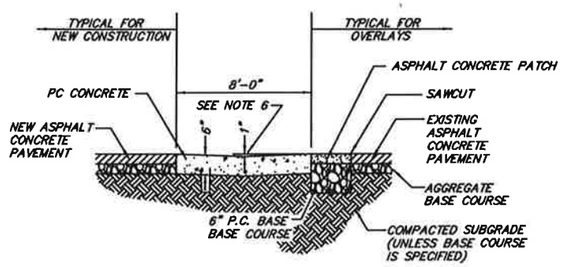
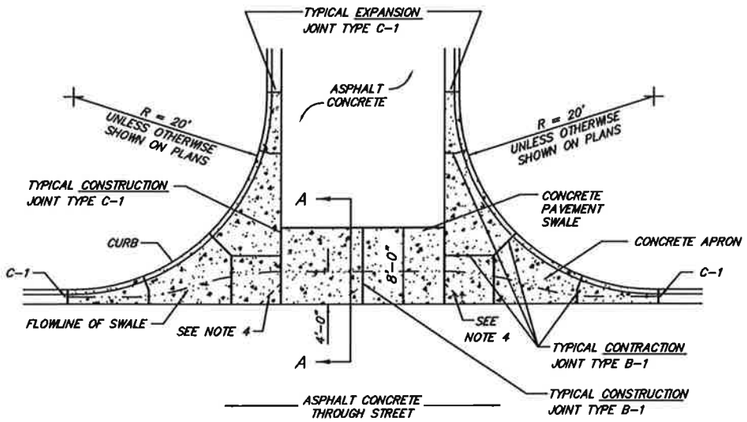


SECTION "A–A"



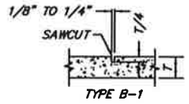
PLAN VIEW

CONCRETE APRON AND SWALE

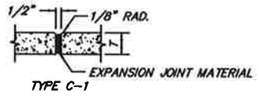
N.T.S.

ST.2.1

CONSTRUCTION JOINT



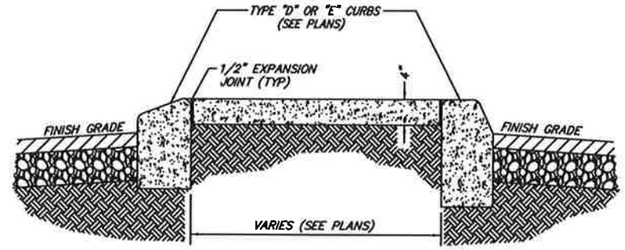
CONTRACTION JOINT



EXPANSION JOINT

NOTES:

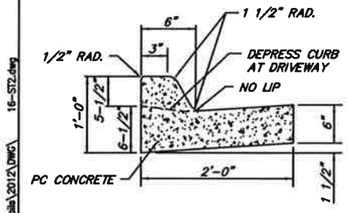
1. CONCRETE PAVEMENT APRONS AND SWALE SHALL BE P.C. CONCRETE, 6" THICK, UNLESS OTHERWISE NOTED.
2. SLOPE PAVEMENT FOR DRAINAGE. REFER TO ELEVATIONS SHOWN ON PLANS.
3. SWALE TO BE CONSTRUCTED ONLY WHEN DRAINAGE FLOWS ACROSS INTERSECTING STREET.
4. ROUND OFF CORNER OF APRON 12" WHEN APRONS ARE CONSTRUCTED WITHOUT A SWALE.
5. CONSTRUCTION AND PAYMENT OF CURB SHALL BE INCIDENTAL TO APRON. PAY LIMIT OF APRON IS MEASURED TO THE BACK OF CURB.
6. LOCATION OF SWALE MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.



CONCRETE ISLAND

N.T.S.

ST.2.2

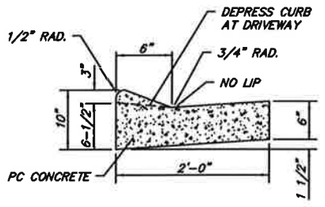


CURB & GUTTER

TYPE "A" (BARRIER)

N.T.S.

ST.2.3

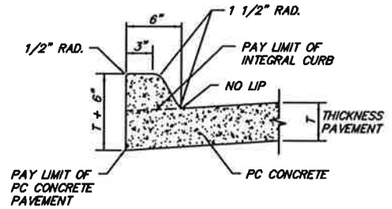


CURB & GUTTER

TYPE "B" (MOUNTABLE)

N.T.S.

ST.2.4

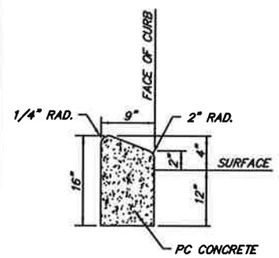


CURB & GUTTER

TYPE "C" (INTEGRAL)

N.T.S.

ST.2.5

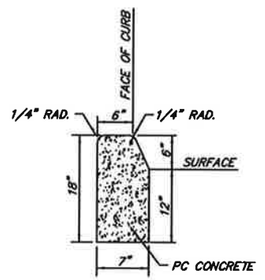


CURB & GUTTER

TYPE "D" (ISLAND MOUNTABLE)

N.T.S.

ST.2.6



CURB & GUTTER

TYPE "E" (ISLAND BARRIER)

N.T.S.

ST.2.7

NOTES:

1. CONCRETE FOR CURB AND GUTTER SHALL BE CLASS "AA" 3500 psi. CONCRETE FOR APRONS, SWALES, AND ISLAND SLABS ON GRADE SHALL BE CLASS "AA" 3500 psi.
2. ALL EXPOSED CONCRETE SHALL HAVE A CLASS B BROOMED FINISH.
3. CONTRACTION JOINTS FOR CURB AND GUTTER SHALL BE INSTALLED AT 20' O.C. WHERE CURBING IS CONSTRUCTED ADJACENT TO OR ON RIGID PAVEMENTS, THE LOCATIONS AND WIDTHS OF THE JOINTS SHALL COINCIDE WITH THOSE IN THE PAVEMENT. EXPANSION JOINTS SHALL BE INSTALLED AT STATIONARY STRUCTURES, AT BEGINNING AND END OF RETURNS, AND AT A MAX. OF 100' O.C.
4. CONTRACTION JOINTS FOR APRONS, SWALES, AND ISLAND SLABS SHALL BE INSTALLED AS SHOWN ON THE PLANS OR IF NOT SHOWN, AT 12' MAXIMUM SPACING. EXPANSION JOINTS SHALL BE PLACED AS SHOWN ON THE PLANS, AT ALL ADJACENT STRUCTURES, AND AT THE BEGINNING AND END OF CURB RETURNS.

Revision	Date	BY

STREET IMPROVEMENTS – CURBS & MISC.

Standard Drawings

Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
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Project:	Details
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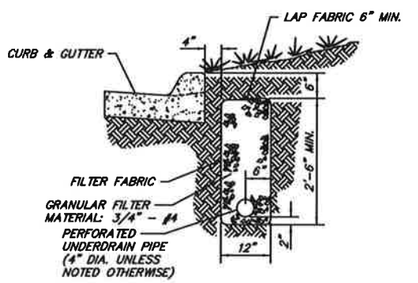
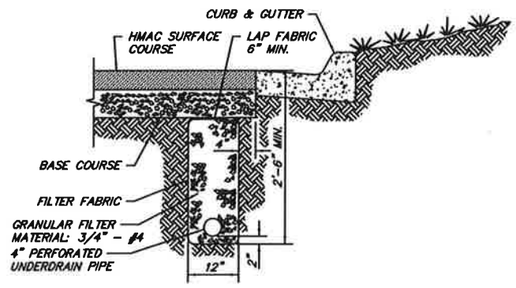
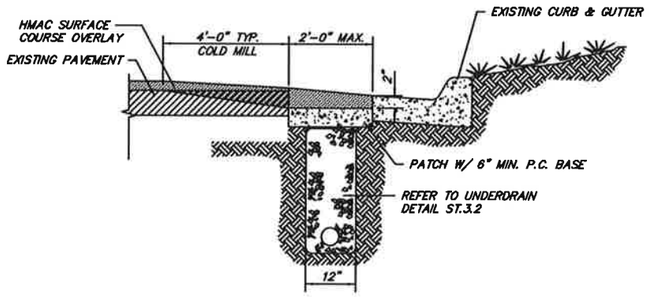


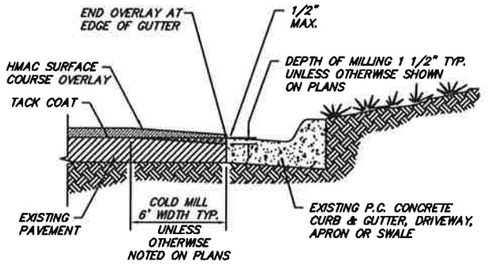
UNDERDRAIN
TYPE "A"
N.T.S.
ST.3.1



UNDERDRAIN
TYPE "B" (GUTTER EDGE)
(NEW CONSTRUCTION)
N.T.S.
ST.3.2



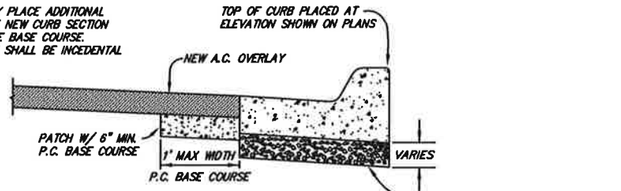
UNDERDRAIN
TYPE "C" (GUTTER EDGE)
(EXISTING CURB W/ OVERLAY)
N.T.S.
ST.3.3



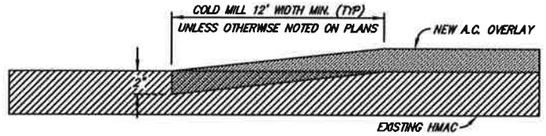
OVERLAY @ EXISTING CONCRETE
N.T.S.
ST.3.4

NOTES:

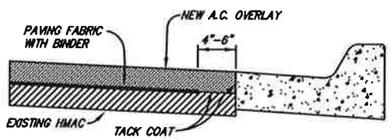
1. COMPACTED AGGREGATE BASE COURSE PLACED TO RAISE CURB TO PLAN ELEVATION SHALL BE INCEDENTAL TO CURB & GUTTER
2. THE CONTRACTOR MAY PLACE ADDITIONAL CONCRETE UNDER THE NEW CURB SECTION IN LIEU OF AGGREGATE BASE COURSE. ADDITIONAL CONCRETE SHALL BE INCEDENTAL TO CURB & GUTTER.

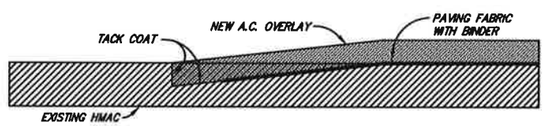


CURB & GUTTER REPLACEMENT
N.T.S.
ST.3.5

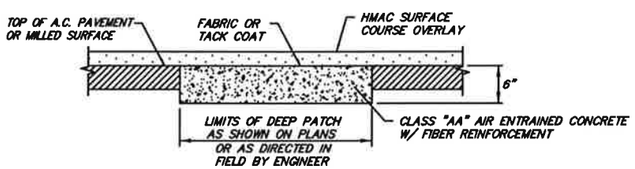


OVERLAY TRANSITION TO EXISTING HMAC
N.T.S.
ST.3.6

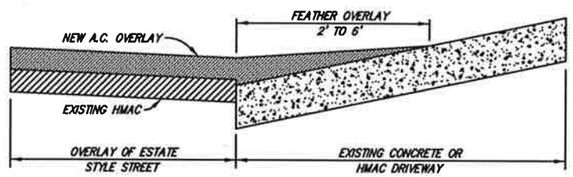




PAVING FABRIC LIMITS
N.T.S.
ST.3.7



DEEP PATCH
TYPE "X"
N.T.S.
ST.3.8



DRIVEWAY TRANSITION FOR OVERLAYS
ESTATE-STYLE STREET
N.T.S.
ST.3.9

Revision	Date	BY

Standard Drawings
STREET IMPROVEMENTS - OVERLAYS
Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
Phone (479)784-2225 Fax (479)784-2245

Project:	Details
Date:	NOV 2012
Scale:	As Shown
Drawn By:	RBR
Dwg. No.:	ST3
Sheet No:	17

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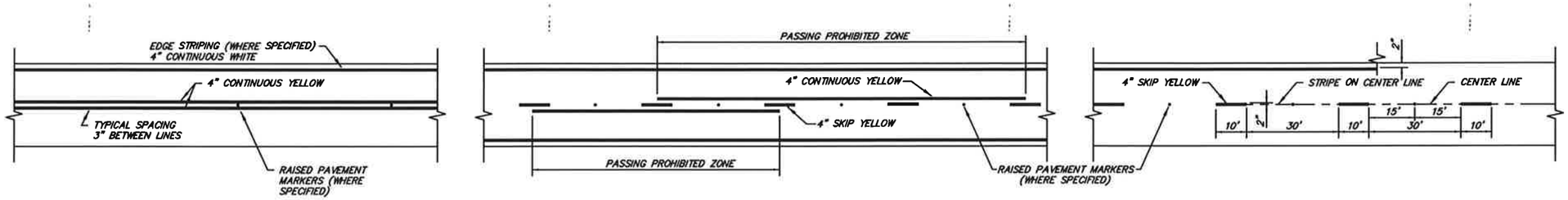


PASSING PROHIBITED

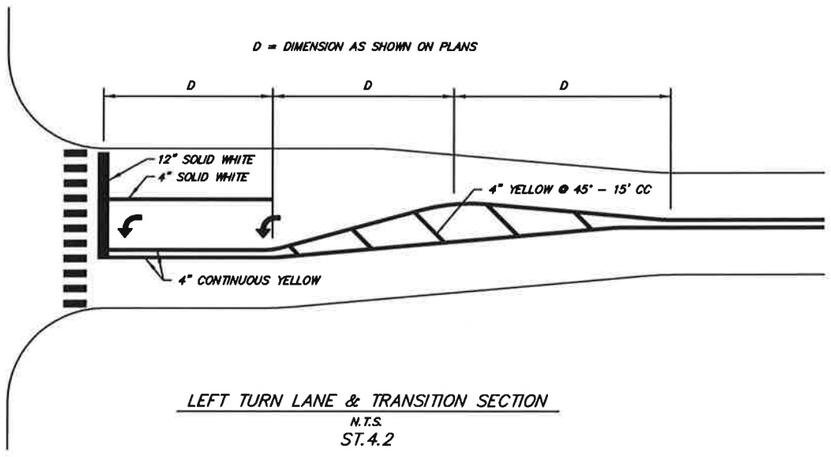
PASSING PROHIBITED

PASSING PERMITTED

TWO LANE TWO WAY MARKING

N.T.S.

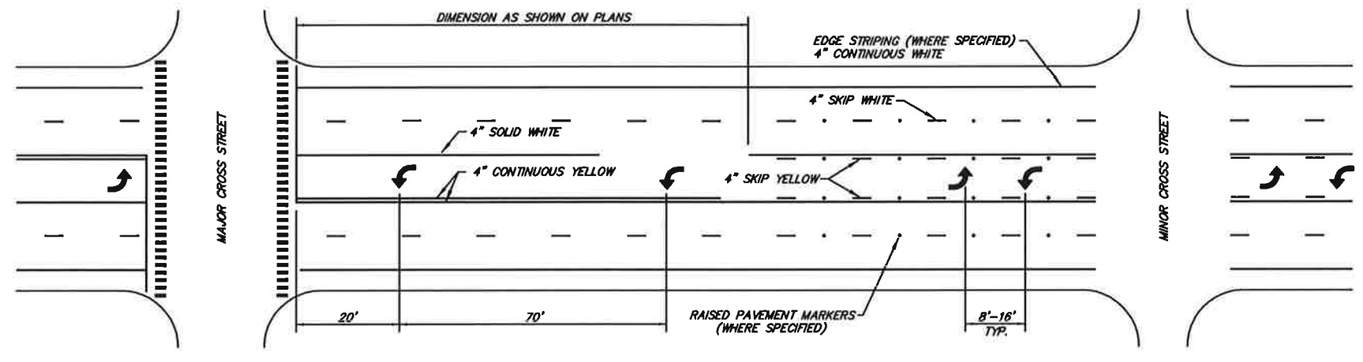
ST.4.1



LEFT TURN LANE & TRANSITION SECTION

N.T.S.

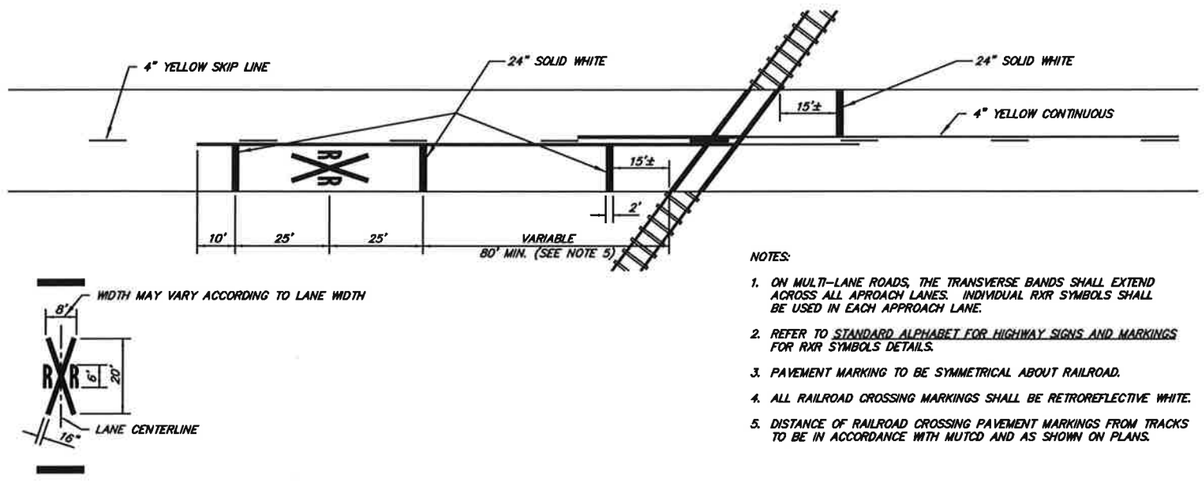
ST.4.2



MULTI-LANE W/ LEFT TURN CHANNELIZATION

N.T.S.

ST.4.3



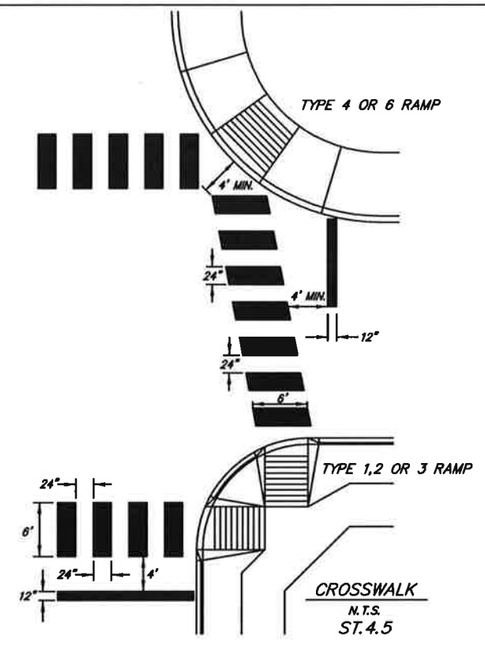
NOTES:

1. ON MULTI-LANE ROADS, THE TRANSVERSE BANDS SHALL EXTEND ACROSS ALL APROACH LANES. INDIVIDUAL RXR SYMBOLS SHALL BE USED IN EACH APPROACH LANE.
2. REFER TO STANDARD ALPHABET FOR HIGHWAY SIGNS AND MARKINGS FOR RXR SYMBOLS DETAILS.
3. PAVEMENT MARKING TO BE SYMMETRICAL ABOUT RAILROAD.
4. ALL RAILROAD CROSSING MARKINGS SHALL BE RETROREFLECTIVE WHITE.
5. DISTANCE OF RAILROAD CROSSING PAVEMENT MARKINGS FROM TRACKS TO BE IN ACCORDANCE WITH MUTCD AND AS SHOWN ON PLANS.

PAVEMENT MARKING FOR RAILROAD CROSSINGS

N.T.S.

ST.4.4



CROSSWALK

N.T.S.

ST.4.5

NOTES:

1. CONTRACTOR SHALL ESTABLISH PILOT LINING BY STRINGLINE OR OTHER METHOD TO PROVIDE STRIPING THAT WILL VARY LESS THAN 1/2" IN 50 FEET FROM THE SPECIFIED ALIGNMENT.
2. RAISED PAVEMENT MARKERS SHALL BE TYPE II (TWO-WAY) AND SHALL BE PLACED AS FOLLOWS:

   LONGITUDINAL SOLID OR SKIP YELLOW LINES - YELLOW / YELLOW @ 40' CC

   LONGITUDINAL SKIP WHITE LINES - CLEAR / CLEAR @ 40' CC

   SOLID WHITE STORAGE LINES - CLEAR / CLEAR @ 20' CC

3. STRIPING ON CONCRETE PAVEMENT SHALL BE OFFSET 1" FROM LONGITUDINAL JOINTS.
4. CROSSWALK BARS TO BE 24" WIDE AND PARALLEL TO VEHICULAR TRAVEL DIRECTION. CROSSWALK BAR COLOR TO BE WHITE.
5. CENTER CROSSWALK ON ACCESS RAMPS.
6. STOP BARS TO BE 12" WIDE AND INSTALLED ONLY AT SIGNALIZED INTERSECTIONS AND STOP SIGNS. STOP BAR COLOR TO BE WHITE.

Revision	Date	BY

Standard Drawings

STREET IMPROVEMENTS - STRIPING

Public Works Construction

The City of Fort Smith Arkansas

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
Phone (479)784-2225 Fax (479)784-2245

Project:	Details
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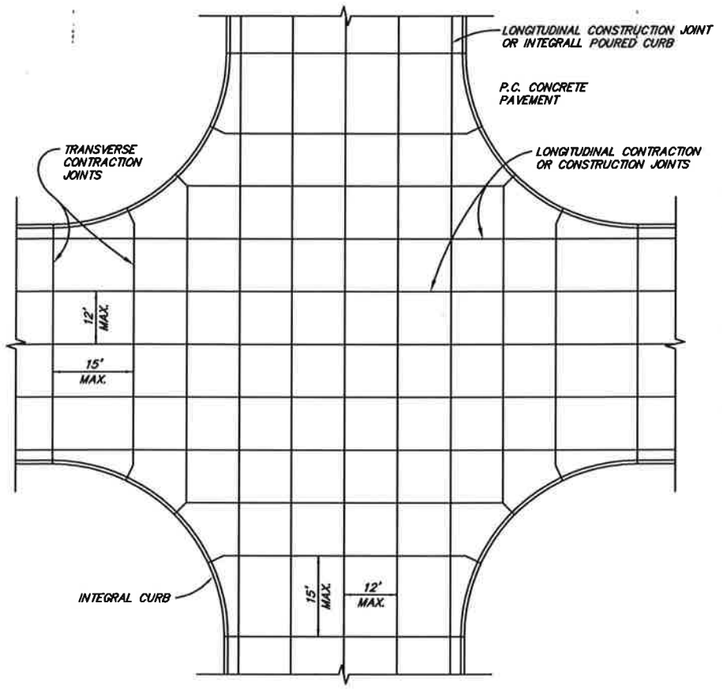


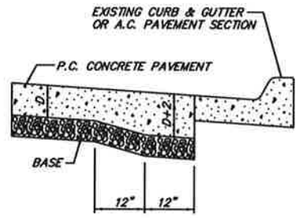
JOINTING LAYOUT FOR INTERSECTION

N.T.S.

ST.5.1

NOTES:

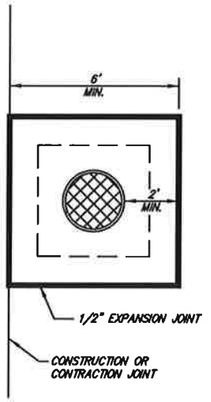
1. JOINTS SHALL BE UNIFORM AND NOT DEVIATE MORE THAN 1/2" FROM THE PLANNED ALIGNMENT WITHIN ANY 24 FOOT SEGMENT.
2. TRANSVERSE CONSTRUCTION JOINT SHALL NOT BE CONSTRUCTED WITHIN 10 FEET OF AN EXPANSION JOINT, CONTRACTION JOINT, OR PLACE OF WEAKNESS.
3. DOWEL AND TIE BARS SHALL BE ALIGNED VERTICALLY AND HORIZONTALLY WITHIN 3 DEGREES OF TRUE ALIGNMENT IN ALL DIRECTIONS, AND PROVIDE A MINIMUM EMBEDMENT LENGTH OF 6 INCHES ON EITHER SIDE OF THE JOINT.
4. ALL MANHOLES AND WATER VALVES SHALL BE BOXED OUT PER DETAILS UNLESS OTHERWISE APPROVED BY ENGINEER.
5. WHENEVER POSSIBLE, INTERSECTION OF JOINTS SHALL BE AT 90°; BUT NOT LESS THAN 60° OR GREATER THAN 140°. OFFSETTING OF JOINTS SHALL NOT BE ALLOWED.
6. CONCRETE PAVEMENT PLACED ALONG EXISTING CURB AND GUTTER OR A.C. PAVEMENT SECTION SHALL HAVE A THICKENED EDGE.
7. CONCRETE PAVEMENT PLACED ALONG PROPOSED CURB AND GUTTER SHALL HAVE A LONGITUDINAL CONSTRUCTION JOINT IF CURB IS NOT PLACED INTEGRALLY WITH PAVEMENT.
8. LOCATION OF JOINTS FOR PROPOSED CURB AND GUTTER SHALL COINCIDE WITH JOINTS IN CONCRETE PAVEMENT.
9. LANE MARKINGS SHALL NOT BE PLACED ON TOP OF ANY JOINT.
10. JOINTS IN INTEGRALLY PLACED CURB SHALL BE SAWCUT AND SEALED.



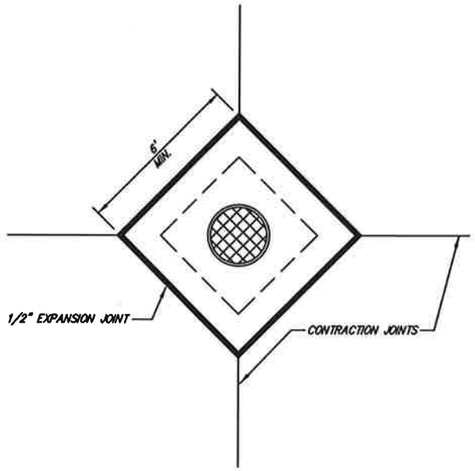
THICKENED EDGE

N.T.S.

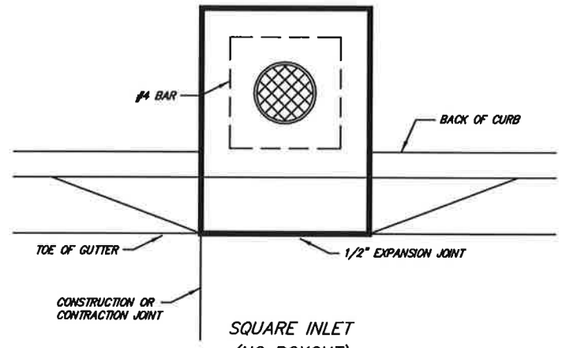
ST.5.2



SQUARE MANHOLE BOXOUT



DIAGONAL MANHOLE BOXOUT

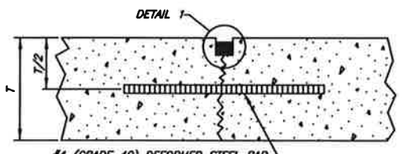


SQUARE INLET
(NO BOXOUT)

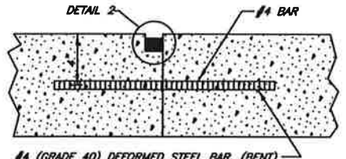
BOXOUTS

N.T.S.

ST.5.3



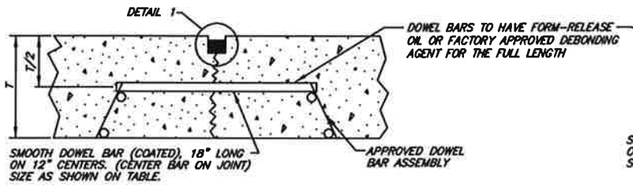
SECTION – LONGITUDINAL CONTRACTION JOINT



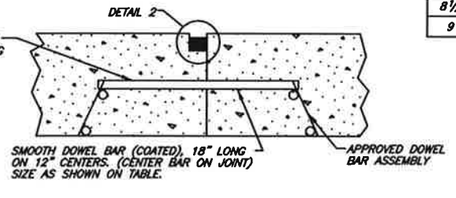
SECTION – LONGITUDINAL CONSTRUCTION JOINT

TIEBAR DIMENSIONS					
SLAB DEPTH INCH	TIEBAR SIZE INCH	TIEBAR SPACING			
		DISTANCE TO NEAREST FREE EDGE OR TO NEAREST JOINT WHERE MOVEMENT CAN OCCUR			
		10'	12'	14'	24'
6	½X24	30"	30"	30"	23"
6½	½X24	30"	30"	30"	21"
7	½X24	30"	30"	30"	20"
7½	½X24	30"	30"	30"	18"
8	½X24	30"	30"	30"	17"
8½	½X24	30"	30"	28"	16"
9	½X30	36"	36"	36"	24"

NOTE: DO NOT PLACE TIE-BAR WITHIN 15" OF A TRAVERSE JOINT.



SECTION – TRANSVERSE CONTRACTION JOINT



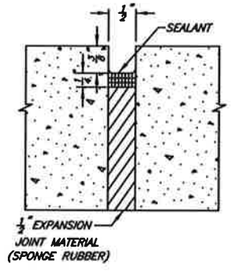
SECTION – TRANSVERSE CONSTRUCTION JOINT

DOWEL SIZE	
SLAB DEPTH INCH	DOWEL DIAMETER INCH
6	¾
7	⅞
8	1
9	1⅛

JOINTING DETAILS

N.T.S.

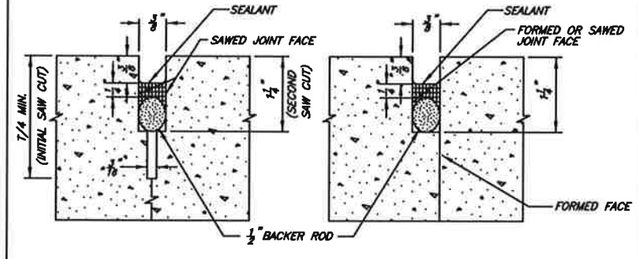
ST.5.4



EXPANSION JOINT DETAIL

N.T.S.

ST.5.5



DETAIL 1
CONTRACTION JOINT

DETAIL 2
CONSTRUCTION JOINT

LONGITUDINAL OR TRANVERSE JOINT DETAILS

N.T.S.

ST.5.6

Revision	Date	BY

Standard Drawings

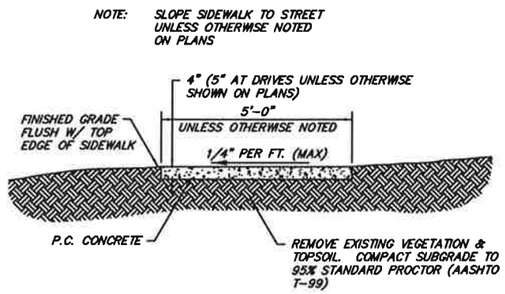
STREET IMPROVEMENTS – P.C. CONC. PAVEMENT

Public Works Construction

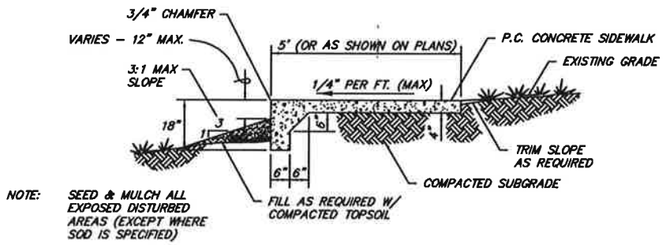
The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
Phone (479)784-2225 Fax (479)784-2245

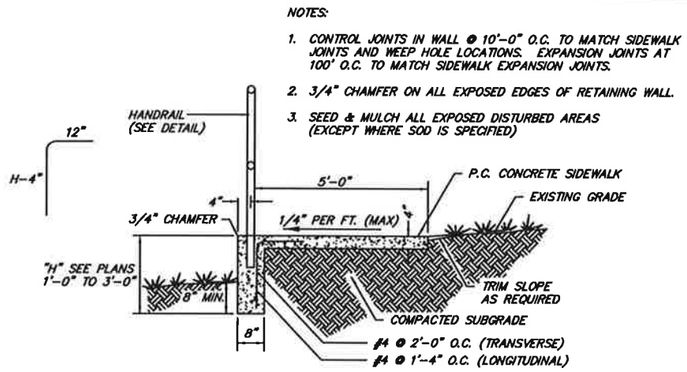
Project:	Details
Date:	NOV 2012
Scale:	As Shown
Drawn By:	RBR
Dwg. No.:	ST5
Sheet No:	19



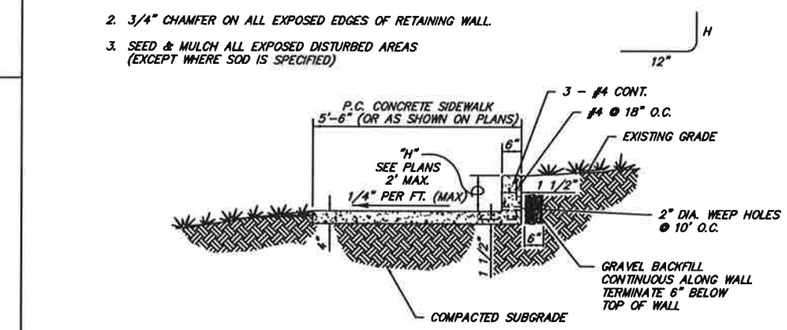
SIDEWALK
N.T.S.
SW.1.1



SIDEWALK
TURNED DOWN EDGE
N.T.S.
SW.1.2



SIDEWALK
TURNED DOWN EDGE
N.T.S.
SW.1.4

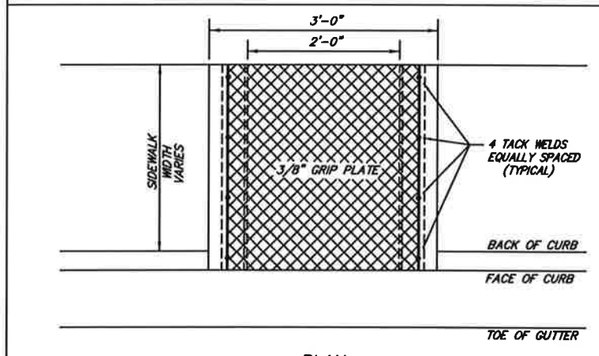


SIDEWALK
TURNED UP EDGE
N.T.S.
SW.1.3

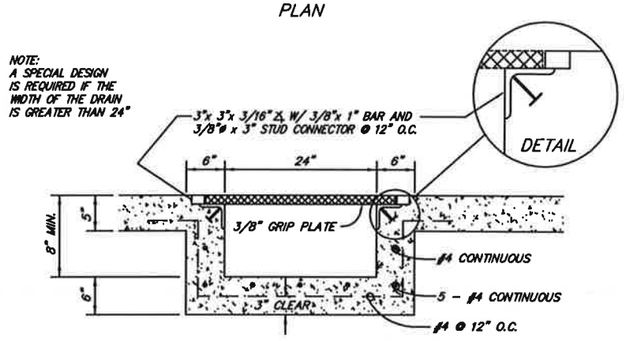
SECTION "A-A"

PLAN VIEW

STEPS
N.T.S.
SW.1.5



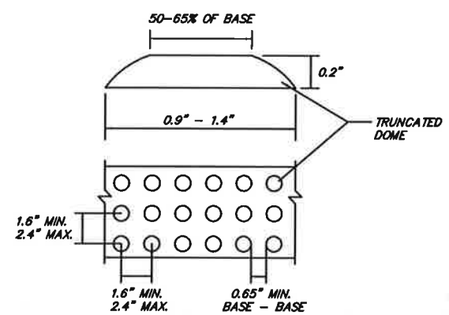
PLAN



SIDEWALK DRAIN DETAIL
N.T.S.
SW.1.6

GENERAL NOTES FOR DETECTABLE WARNING DEVICES

1. THE DETECTABLE WARNING DEVICE SHALL BE LOCATED SO THAT THE NEAREST EDGE OF THE DEVICE IS 6 TO 8 INCHES FROM THE FACE OF THE CURB.
2. TRUNCATED DOMES IN THE DETECTABLE WARNING SURFACE SHALL MEET THE REQUIREMENTS OF THE GEOMETRIC CONFIGURATION SHOWN.
3. DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.
4. 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
N.T.S.
SW.1.7

NOTES:

1. ALL CONCRETE SHALL BE CLASS "AA" 3500 psi, AIR-ENTRAINED, FIBER REINFORCED.
2. THE SUBGRADE FOR RAMP AND SIDEWALK CONSTRUCTION IS TO BE FIRM AND UNYIELDING SOIL, COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR.
3. 1/2" EXPANSION JOINT SHALL BE PLACED AT COLD JOINTS, AT BEGINNING AND END OF RETURN, AND AT MAXIMUM OF 100' INTERVALS.
4. CONTRACTION JOINTS SHALL BE CUT AT INTERVALS MATCHING THE SIDEWALK WIDTH WITH A MAXIMUM SPACING OF 6'. CONTRACTION JOINTS IN RAMP AREAS SHALL BE AT 5' MAX. SPACING. DEPTH OF JOINTS SHALL BE EQUAL TO T/4.
5. TYPE OF HANDICAP RAMP IDENTIFIED FOR EACH SITE MAY REQUIRE MODIFICATION TO FIT EXISTING FIELD CONDITIONS. DIMENSIONS, LOCATIONS, AND ORIENTATION OF RAMPS WILL VARY IN ORDER TO AVOID EXISTING OBSTACLES AND/OR TO OBTAIN REQUIRED GRADE FOR RAMP. CONTRACTOR TO INSTALL RAMPS AS DIRECTED IN THE FIELD BY THE ENGINEER.
6. TYPE 8 RAMP SHALL BE USED ONLY IF EXISTING CONDITIONS PROHIBIT USE OF TYPES 1 THROUGH TYPE 5 RAMPS.
7. ADDITIONAL REMOVALS OUTSIDE THE LIMITS SHOWN MAY BE REQUIRED IN ORDER TO OBTAIN THE GRADE FOR RAMPS OR PROVIDE LANDING AREAS.
8. THE LENGTH OF THE RAMP SHALL BE SUCH THAT THE SLOPE DOES NOT EXCEED 12:1. IF SITE CONSTRAINTS PREVENT THE CONSTRUCTION OF THE TYPES OF RAMPS SHOWN IN THE DETAILS, THEN AND ONLY THEN CAN THE 12:1 MAXIMUM SLOPE ON THE RAMP BE EXCEEDED TO PROVIDE ACCESS TO THE STREET LEVEL. THE SLOPE CAN BE STEEPENED TO A 10:1 MAXIMUM FOR A MAXIMUM LENGTH OF 5 FEET OR AN 8:1 MAXIMUM FOR A MAXIMUM LENGTH OF 2 FEET. SLOPES STEEPER THAN 8:1 ARE NOT ALLOWED UNDER ANY CIRCUMSTANCES.
9. THE MINIMUM WIDTH OF THE RAMPS SHALL BE THE EXISTING WALK WIDTH OR 36", WHICHEVER IS GREATER.
10. THE SURFACE TEXTURE OF ALL RAMPS SHALL BE BROOM FINISHED EXCEPT FOR AREAS WITH DETECTABLE WARNING DEVICE.
11. THE NORMAL GUTTER GRADE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.
12. A SAW-CUT TO A MINIMUM DEPTH OF 2 INCHES SHALL BE MADE PRIOR TO REMOVAL OR CONCRETE, ASPHALT, STONE OR BRICK.
13. FOR RECONSTRUCTION PROJECTS, IF EXISTING CURB & GUTTER IS IN GOOD CONDITION, CURB SHALL BE SAWCUT AT GUTTER FLOWLINE AND REMOVED.
14. FOR PAYMENT PURPOSES, SIDEWALKS WITHIN THE RAMP AREA WILL BE MEASURED AND PAID FOR BY THE SQUARE YARD (SY) AS SIDEWALK AND BY EACH (EA) AS HANDICAP RAMP. TYPE 1 AND TYPE 2 RAMPS WILL COUNT AS 2 RAMPS EACH.

Revision	Date	BY

Standard Drawings
SIDEWALK AND HANDICAP RAMPS
Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
Phone (479)784-2225 Fax (479)784-2245

Project:	Details
Date:	NOV 2012
Scale:	As Shown
Drawn By:	RBR
Dwg. No.:	SW1
Sheet No:	20

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NOTES:

1. ALL CONCRETE SHALL BE CLASS "AA" 3500 psi., AIR-ENTRAINED, FIBER REINFORCED.
2. THE SUBGRADE FOR RAMP AND SIDEWALK CONSTRUCTION IS TO BE FIRM AND UNYIELDING SOIL, COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR.
3. 1/2" EXPANSION JOINT SHALL BE PLACED AT COLD JOINTS, AT BEGINNING AND END OF RETURN, AND AT MAXIMUM OF 100' INTERVALS.
4. CONTRACTION JOINTS SHALL BE CUT AT INTERVALS MATCHING THE SIDEWALK WIDTH WITH A MAXIMUM SPACING OF 6'. CONTRACTION JOINTS IN RAMP AREAS SHALL BE AT 5' MAX. SPACING. DEPTH OF JOINTS SHALL BE EQUAL TO T/4.
5. TYPE OF HANDICAP RAMP IDENTIFIED FOR EACH SITE MAY REQUIRE MODIFICATION TO FIT EXISTING FIELD CONDITIONS. DIMENSIONS, LOCATIONS, AND ORIENTATION OF RAMPS WILL VARY IN ORDER TO AVOID EXISTING OBSTACLES AND/OR TO OBTAIN REQUIRED GRADE FOR RAMP. CONTRACTOR TO INSTALL RAMPS AS DIRECTED IN THE FIELD BY THE ENGINEER.
6. TYPE 6 RAMP SHALL BE USED ONLY IF EXISTING CONDITIONS PROHIBIT USE OF TYPES 1 THROUGH TYPE 5 RAMPS.
7. ADDITIONAL REMOVALS OUTSIDE THE LIMITS SHOWN MAY BE REQUIRED IN ORDER TO OBTAIN THE GRADE FOR RAMPS OR PROVIDE LANDING AREAS.
8. THE LENGTH OF THE RAMP SHALL BE SUCH THAT THE SLOPE DOES NOT EXCEEED 12:1. IF SITE CONSTRAINTS PREVENT THE CONSTRUCTION OF THE TYPES OF RAMPS SHOWN IN THE DETAILS, THEN AND ONLY THEN CAN THE 12:1 MAXIMUM SLOPE ON THE RAMP BE EXCEEDED TO PROVIDE ACCESS TO THE STREET LEVEL. THE SLOPE CAN BE STEEPENED TO A 10:1 MAXIMUM FOR A MAXIMUM LENGTH OF 5 FEET OR AN 8:1 MAXIMUM FOR A MAXIMUM LENGTH OF 2 FEET. SLOPES STEEPER THAN 8:1 ARE NOT ALLOWED UNDER ANY CIRCUMSTANCES.
9. THE MINIMUM WIDTH OF THE RAMPS SHALL BE THE EXISTING WALK WIDTH OR 36", WHICHEVER IS GREATER.
10. THE SURFACE TEXTURE OF ALL RAMPS SHALL BE BROOM FINISHED EXCEPT FOR AREAS WITH DETECTABLE WARNING DEVICE.
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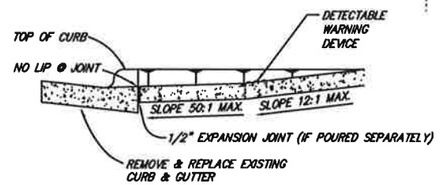
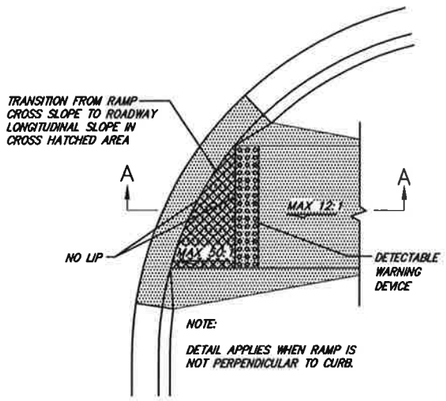
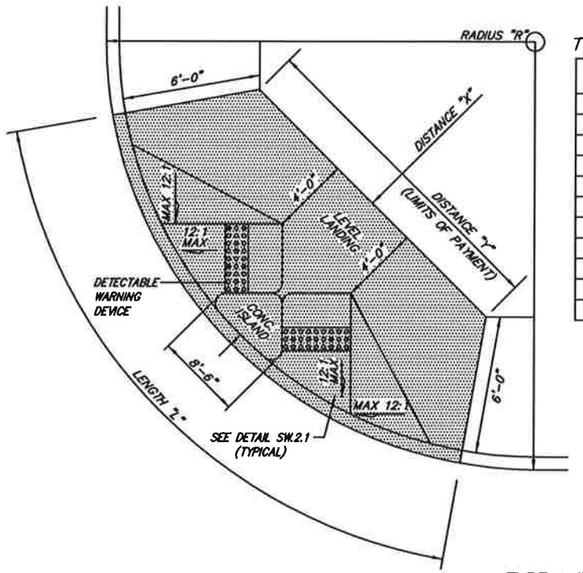
13. FOR RECONSTRUCTION PROJECTS, IF EXISTING CURB & GUTTER IS IN GOOD CONDITION, CURB SHALL BE SAWCUT AT GUTTER FLOWLINE AND REMOVED.
14. FOR PAYMENT PURPOSES, SIDEWALKS WITHIN THE RAMP AREA WILL BE MEASURED AND PAID FOR BY THE SQUARE YARD (SY) AS SIDEWALK AND BY EACH (EA) AS HANDICAP RAMP. TYPE 1 AND TYPE 2 RAMPS WILL COUNT AS 2 RAMPS EACH.



SECTION "A"-"A"



RAMP/GUTTER
N.T.S.
SW.2.1

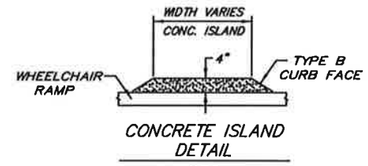


TYPE 1 RAMP
(WALK ADJACENT TO CURB)
N.T.S.
SW.2.2

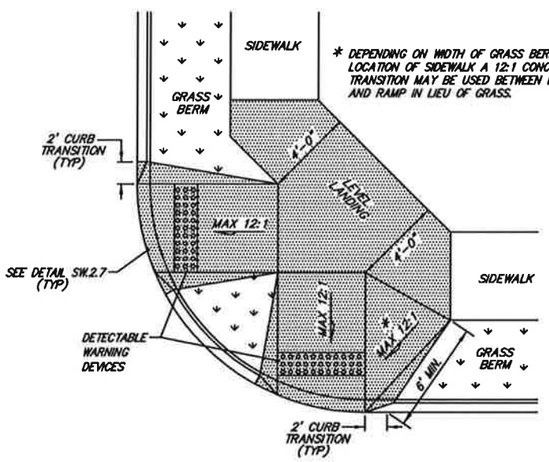
TYPE 1 RAMP DIMENSIONS AND QUANTITIES

RADIUS "R"	DISTANCE "X"	DISTANCE "Y"	LENGTH "L"	RAMP AREA "A"
FEET	FEET	FEET	FEET	SQ. YD.
15	11.67	18.82	32.18	26.21
20	11.52	22.28	35.46	30.07
25	11.43	26.60	38.77	33.80
30	11.37	30.26	40.93	36.90
35	11.33	33.51	43.11	39.77
40	11.30	36.45	45.26	42.45
45	11.27	39.16	47.34	44.97
50	11.25	41.69	49.36	47.35
55	11.24	44.07	51.31	49.63
60	11.22	46.33	53.21	51.80

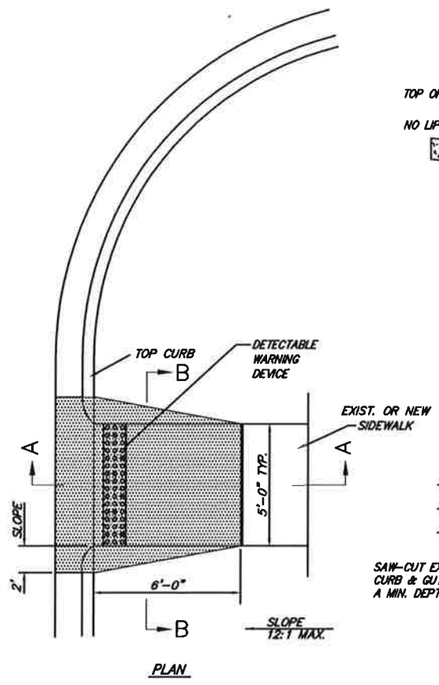
NOTE: HATCHED AREA "A" DENOTES CONCRETE REQ'D FOR ONE TYPE 1 RAMP (SQUARE YARDS)



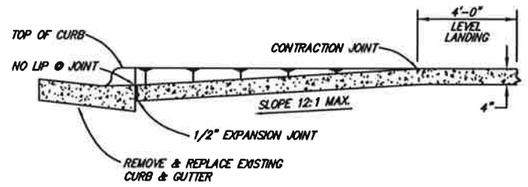
CONCRETE ISLAND DETAIL
N.T.S.



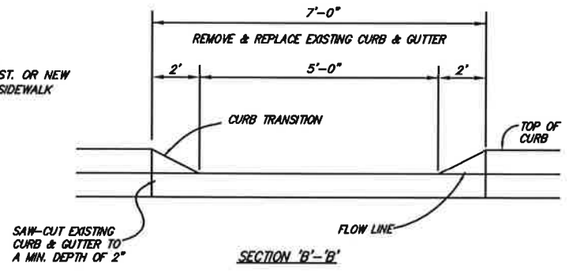
TYPE 2 RAMP
(WALK OFFSET FROM CURB)
(LANDING REQUIRED)
N.T.S.
SW.2.3



PLAN

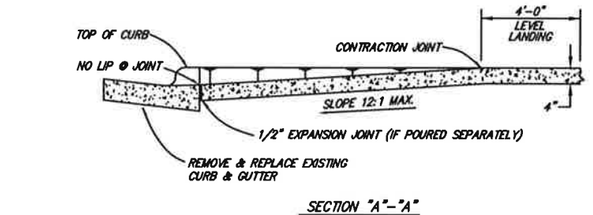


SECTION "A"-"A"

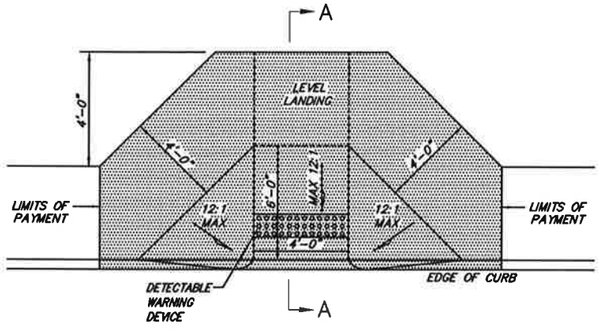


SECTION "B"-"B"

TYPE 3 RAMP
N.T.S.
SW.2.4



SECTION "A"-"A"



TYPE 4 RAMP
(WALK ADJACENT TO CURB)
N.T.S.
SW.2.5

Revision | Date | BY

Standard Drawings
SIDEWALK & HANDICAP RAMPS
Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
Phone (479)784-2225 Fax (479)784-2245

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Date:	NOV 2012
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Drawn By:	RBR
Dwg. No.:	SW2
Sheet No:	21

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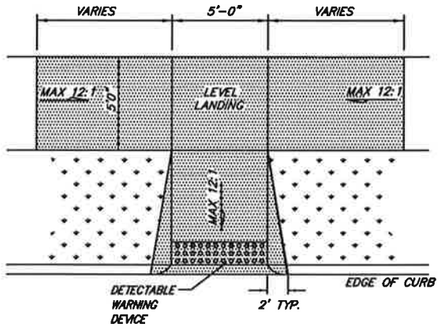
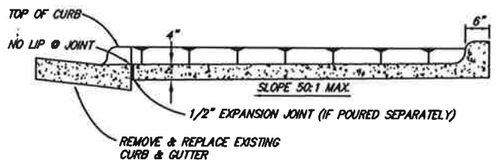
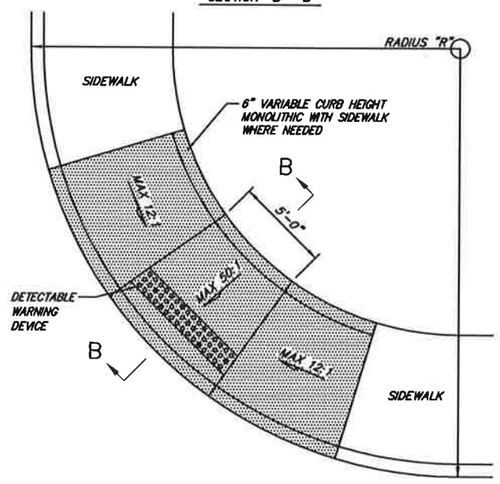
NOTE: IF HANDICAP RAMP SLOPE OF 12:1 CAN BE ACHIEVED FROM THE CURB TO THE EXISTING SIDEWALK, NO MODIFICATION TO THE EXISTING SIDEWALK IS NECESSARY.



TYPE 5 RAMP
N.T.S.
SW.3.1



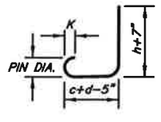
SECTION "B"–"B"



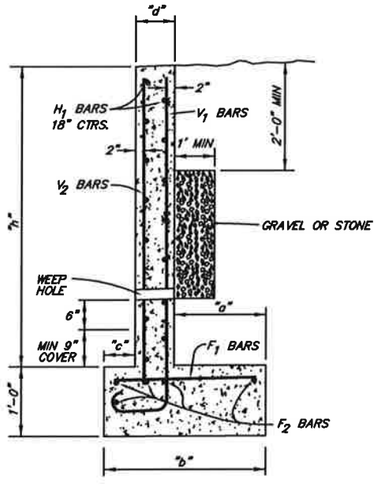
TYPE 6 RAMP
N.T.S.
SW.3.2

SIDEWALK NOTES:

1. ALL CONCRETE SHALL BE CLASS "AA" 3500 psi., AIR-ENTRAINED, FIBER REINFORCED.
2. THE SUBGRADE FOR RAMP AND SIDEWALK CONSTRUCTION IS TO BE FIRM AND UNYIELDING SOIL, COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR.
3. 1/2" EXPANSION JOINT SHALL BE PLACED AT COLD JOINTS, AT BEGINNING AND END OF RETURN, AND AT MAXIMUM OF 100' INTERVALS.
4. CONTRACTION JOINTS SHALL BE CUT AT INTERVALS MATCHING THE SIDEWALK WIDTH WITH A MAXIMUM SPACING OF 6'. CONTRACTION JOINTS IN RAMP AREAS SHALL BE AT 5' MAX. SPACING. DEPTH OF JOINTS SHALL BE EQUAL TO T/4.
5. TYPE OF HANDICAP RAMP IDENTIFIED FOR EACH SITE MAY REQUIRE MODIFICATION TO FIT EXISTING FIELD CONDITIONS. DIMENSIONS, LOCATIONS, AND ORIENTATION OF RAMPS WILL VARY IN ORDER TO AVOID EXISTING OBSTACLES AND/OR TO OBTAIN REQUIRED GRADE FOR RAMP. CONTRACTOR TO INSTALL RAMPS AS DIRECTED IN THE FIELD BY THE ENGINEER.
6. TYPE 6 RAMP SHALL BE USED ONLY IF EXISTING CONDITIONS PROHIBIT USE OF TYPES 1 THROUGH TYPE 5 RAMPS.
7. ADDITIONAL REMOVALS OUTSIDE THE LIMITS SHOWN MAY BE REQUIRED IN ORDER TO OBTAIN THE GRADE FOR RAMPS OR PROVIDE LANDING AREAS.
8. THE LENGTH OF THE RAMP SHALL BE SUCH THAT THE SLOPE DOES NOT EXCEEED 12:1. IF SITE CONSTRAINTS PREVENT THE CONSTRUCTION OF THE TYPES OF RAMPS SHOWN IN THE DETAILS, THEN AND ONLY THEN CAN THE 12:1 MAXIMUM SLOPE ON THE RAMP BE EXCEEDED TO PROVIDE ACCESS TO THE STREET LEVEL. THE SLOPE CAN BE STEEPENED TO A 10:1 MAXIMUM FOR A MAXIMUM LENGTH OF 5 FEET OR AN 8:1 MAXIMUM FOR A MAXIMUM LENGTH OF 2 FEET. SLOPES STEEPER THAN 8:1 ARE NOT ALLOWED UNDER ANY CIRCUMSTANCES.
9. THE MINIMUM WIDTH OF THE RAMPS SHALL BE THE EXISTING WALK WIDTH OR 36", WHICHEVER IS GREATER.
10. THE SURFACE TEXTURE OF ALL RAMPS SHALL BE BROOM FINISHED EXCEPT FOR AREAS WITH DETECTABLE WARNING DEVICE.
11. THE NORMAL GUTTER GRADE SHALL BE MAINTAINED THROUGH THE AREA OF THE RAMP.
12. A SAW-CUT TO A MINIMUM DEPTH OF 2 INCHES SHALL BE MADE PRIOR TO REMOVAL OR CONCRETE, ASPHALT, STONE OR BRICK.
13. FOR RECONSTRUCTION PROJECTS, IF EXISTING CURB & GUTTER IS IN GOOD CONDITION, CURB SHALL BE SAWCUT AT GUTTER FLOWLINE AND REMOVED.
14. FOR PAYMENT PURPOSES, SIDEWALKS WITHIN THE RAMP AREA WILL BE MEASURED AND PAID FOR BY THE SQUARE YARD (SY) AS SIDEWALK AND BY EACH (EA) AS HANDICAP RAMP. TYPE 1 AND TYPE 2 RAMPS WILL COUNT AS 2 RAMPS EACH.



V_1 BARS



STEEL SCHEDULE

BENDING DIAGRAM

BAR SIZE	K	PIN DIA.
#4	4 1/2"	2 1/2"

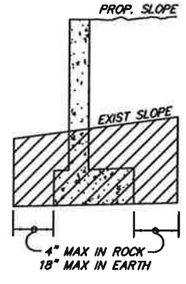
"c"	"d"	"h"	"a"	"b"	V_1 BARS SIZE	V_1 BARS SPACING	F_1 BARS SIZE	F_1 BARS SPACING	H_1 #4 BARS SPAC.	V_2 #4 BARS SPAC.	F_2 #4 BARS NO. REQ'D
8"	8"	1'-0"	8"	2'-0"	#4	12"	#4	18"	18"	18"	5
8"	8"	2'-0"	8"	2'-0"	#4	12"	#4	18"	18"	18"	5
8"	8"	3'-0"	8"	2'-0"	#4	12"	#4	18"	18"	18"	5
8"	8"	4'-0"	1'-2"	2'-6"	#4	12"	#4	12"	18"	18"	5
8"	8"	5'-0"	1'-8"	3'-0"	#4	9"	#4	9"	18"	18"	5
8"	8"	6'-0"	2'-2"	3'-6"	#4	6"	#4	6"	18"	18"	6

GENERAL NOTES:

1. CONCRETE SHALL BE CLASS "AAA" 4000 psi.
2. GRAVEL OR STONE (CONTINUOUS) TO BE PLACED 1'-0" IN WIDTH AND 1'-0" IN HEIGHT AS A INCIDENTAL ITEM TO THE VARIOUS PAY ITEMS.
3. 3" WEEP HOLES (MAX SPACING: 10'-0" CTRS) TO BE PLACED WHERE SPECIFIED BY THE ENGINEER. THE CONTRACTOR WILL BE REQUIRED TO PLACE CONTRACTION JOINTS ON 20' CENTERS AND EXPANSION JOINTS ON 60' CENTERS.
4. ALL EXPOSED CONCRETE EDGES TO BE CHAMFERED 3/4".

REINFORCED CONCRETE RETAINING WALL
N.T.S.
SW.3.3

NOTE:
HATCHED AREA DENOTES MAX. LIMITS OF EXCAVATION FOR STRUCTURES FOR RETAINING WALL.



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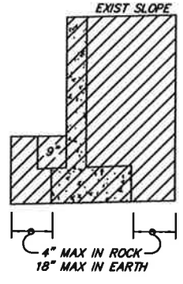

IN EXCAVATION

Revision	Date	By

Standard Drawings
SIDEWALK & HANDICAP RAMPS
Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
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Phone (479)784-2225 Fax (479)784-2245

Project:	Details
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Drawn By:	RBR
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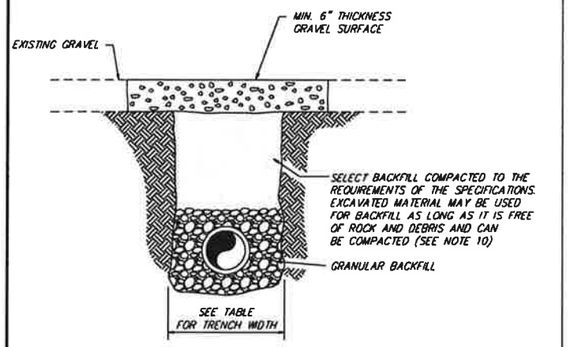
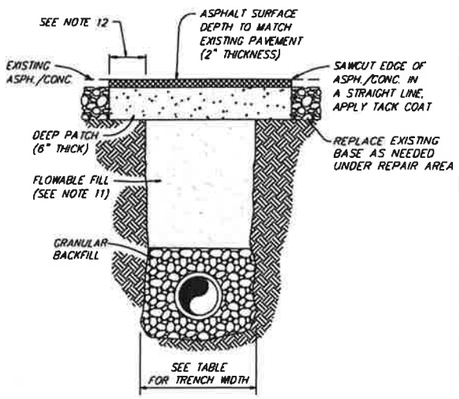
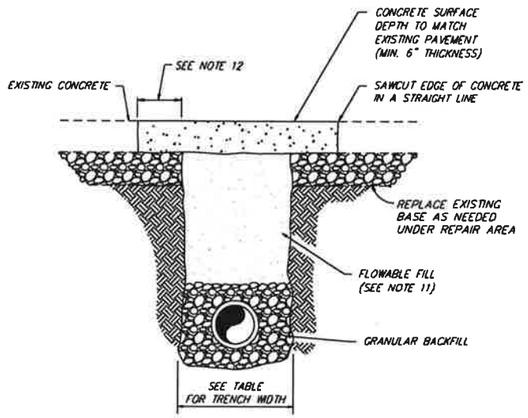


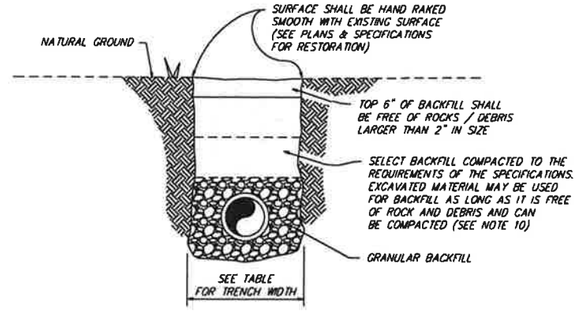
TRENCH BACKFILL & REPAIR
GRAVEL AREAS
N.T.S.
TB.1.1



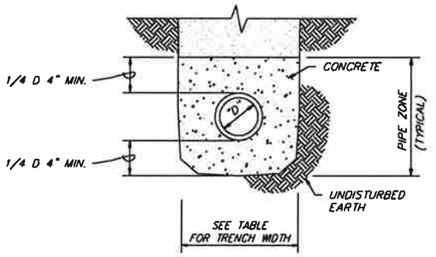
TRENCH BACKFILL & REPAIR
ASPHALT AREAS
N.T.S.
TB.1.2



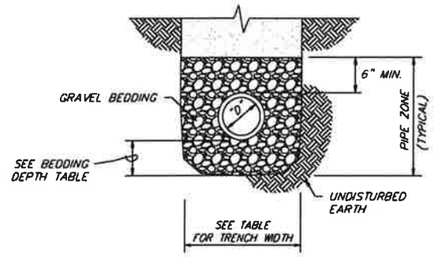
TRENCH BACKFILL & REPAIR
CONCRETE AREAS
N.T.S.
TB.1.3



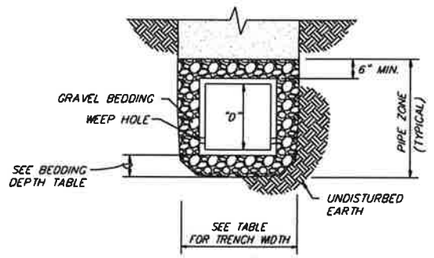
TRENCH BACKFILL & REPAIR
NATIVE AREAS
N.T.S.
TB.1.4



CONCRETE ENCASEMENT
BEDDING
N.T.S.
TB.1.5

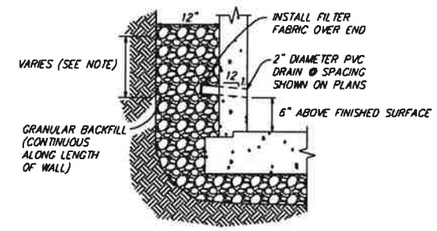


CLASS "B" COMPACTED
GRANULAR BEDDING
PIPE
N.T.S.
TB.1.6

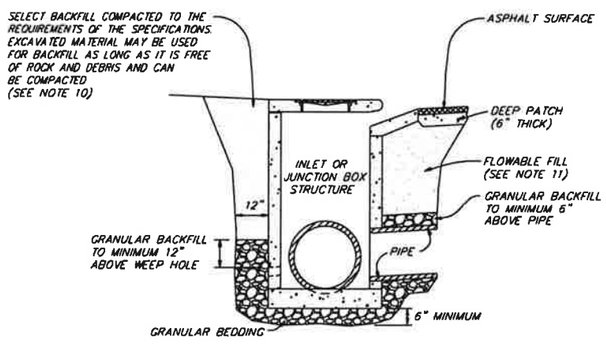


CLASS "B" COMPACTED
GRANULAR BEDDING
BOX CULVERTS
N.T.S.
TB.1.7

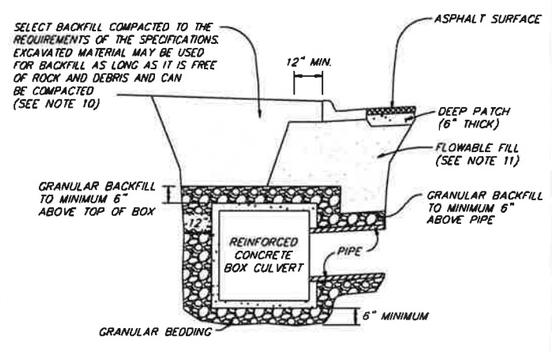
NOTE: DEPTH OF GRANULAR BACK FILL VARIES. SEE SPECIFIC DETAIL FOR DEPTH. IF NOT SPECIFIED, MINIMUM DEPTH OF GRANULAR BACKFILL SHALL BE 12" ABOVE THE WEEP HOLES.



BACKFILL @ DRAIN OPENINGS
N.T.S.
TB.1.8



INLET OR JUNCTION
BOX STRUCTURE TRENCH AND BACKFILL
N.T.S.
TB.1.9



REINFORCED CONCRETE BOX CULVERT
TRENCH AND BACKFILL
N.T.S.
TB.1.10

NOTES:

1. FLOWABLE FILL SHALL BE PROTECTED WITH BRIDGE PLATES OR A TEMPORARY SURFACE SEAL OF COLD MIX ASPHALT CONCRETE UNTIL HMAC FINAL REPAIR IS INSTALLED. COLD MIX ASPHALT CONCRETE IS NOT ACCEPTABLE FOR FINAL REPAIR.
2. FLOWABLE FILL SHALL BE ALLOWED TO CURE FOR A PERIOD OF NOT LESS THAN 24 HOURS PRIOR TO PLACEMENT OF SURFACE.
3. FLOWABLE FILL IS TO BE INSTALLED TO NEAT LINES. PAY LIMITS WILL NOT EXCEED THE MAXIMUM TRENCH WIDTH.
4. FLOWABLE FILL SHALL BE PROTECTED FROM FREEZING OR TOO RAPID CURING.
5. CONCRETE REPAIR SURFACE SHALL BE FINISHED WITH A ROUGH BROOMED TEXTURE, OR MATCHING EXISTING ADJACENT SURFACES.
6. CONCRETE REPAIRS SHALL NOT BE OPENED FOR TRAFFIC FOR A PERIOD OF NOT LESS THAN 72 HOURS FOLLOWING PLACEMENT. BRIDGE PLATES SHALL BE USED TO PROTECT CONCRETE ON ANY LANES REQUIRED TO BE OPENED.
7. NO STONES OR LUMPS GREATER THAN 3" PERMITTED IN TRENCH 2' OR LESS IN WIDTH.
8. BEDDING, BACKFILL AND COMPACTION WITH NATIVE MATERIALS IS CONSIDERED INCIDENTAL TO THE PIPE OR STRUCTURE ITEM. MATERIAL COSTS FOR SELECT AND FLOWABLE FILL WILL BE PAID SEPARATELY.
9. GRANULAR BACKFILL AND BEDDING SHALL BE 3/4" MAX. TO NO. 4 MATERIAL PER THE SPECIFICATIONS.
10. IF PIPE OR INLETS ARE LOCATED UNDER OR ADJACENT TO SIDEWALK, FLOWABLE FILL OR GRANULAR BACKFILL SHALL BE USED FOR BACKFILL TO WITHIN 2' OF FINISH GRADE.
11. FOR DEEP TRENCHES, DEPTH OF FLOWABLE FILL SHALL BE A MAXIMUM OF 4' DEEP, AS MEASURED DOWN FROM THE SUBGRADE, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. GRANULAR BACKFILL MATERIAL SHALL BE USED FROM BOTTOM OF FLOWABLE FILL TO THE TOP OF PIPE ZONE.
12. SURFACE PATCH AND DEEP PATCH SHALL EXTEND A MINIMUM OF 18" OUTSIDE EDGE OF EXCAVATION. FOR CONCRETE PAVEMENT AND APRONS, SAWCUTS WITHIN 5 FEET OF AN EXISTING JOINT SHALL BE REMOVED AND REPLACED TO THE EXISTING JOINT. FOR ALL ASPHALT STREETS, IF THE SAWCUT IS WITHIN 3 FEET OF THE EDGE OF THE EXISTING ASPHALT CONCRETE SURFACE OR OTHER PATCH, THE EXISTING ASPHALT SHALL BE REMOVED TO THAT EDGE AND THE ENTIRE SECTION REPLACED. LONGITUDINAL SAWCUTS SHALL NOT FALL WITHIN 12 INCHES OF THE TIRE PATH.

BEDDING DEPTH TABLE

STORM DRAIN
.10 X PIPE I.D. (4" MIN)
WATER LINE
.25 X PIPE I.D. (4" MIN)
SEWER LINE
6" MIN.

TRENCH WIDTH TABLE

STORM DRAIN
OD + 18" MIN. OD + 36" MAX.
WATER LINE
MINIMUM 18" OR OD + 12" OD + 24" MAX.
SEWER LINE
OD + 18" MIN. OD + 30" MAX.

Revision	Date	BY
Asphalt Thickness Revised, TB1.2	8/30/17	MAM

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TRENCHING, BEDDING, & BACKFILL
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Project:	Details
Date:	NOV 2012
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Dwg. No.:	TB1
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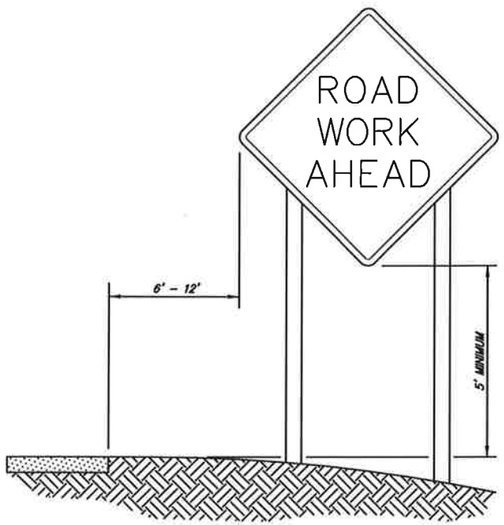
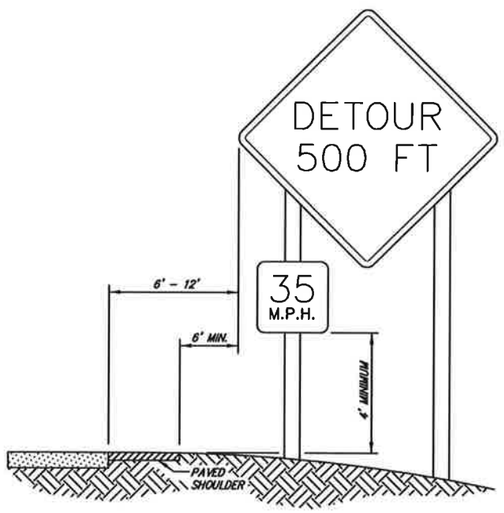


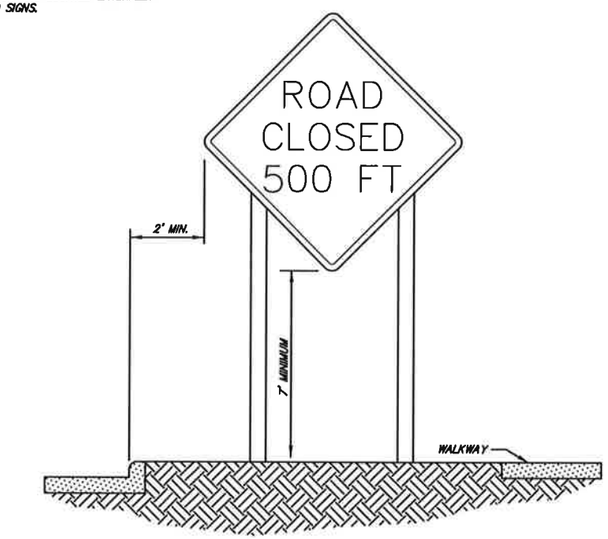
RURAL DISTRICT



RURAL DISTRICT WITH
ADVISORY SPEED PLATE

NOTE:

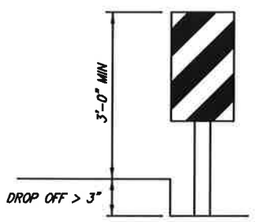
1. TEMPORARY SIGNS MAY BE GROUND MOUNTED ON BARRICADES FOR SHORT-TERM, SHORT DURATION AND MOBILE OPERATIONS. THEY SHOULD NOT BE USED FOR MORE THAN 3 DAYS EXCEPT AS NOTED IN THE MUTCD. PORTABLE SUPPORTS SHALL NOT BE USED.
2. BARRICADE MOUNTED SIGNS SHALL BE MOUNTED A MINIMUM OF 1 FT ABOVE PAVEMENT EDGE AND LOCATED LATERALLY THE SAME AS POST MOUNTED SIGNS.



URBAN DISTRICT

SIGN HEIGHT AND
LATERAL LOCATION
N.T.S.
TC.1.1

SPACING = 2 x POSTED SPEED
LIMIT OR AS NOTED ON PLANS



VERTICAL PANEL PLACEMENT

48"x30"
RSP-1

VERTICAL DIFFERENTIAL	LOCATIONS	TRAFFIC CONTROL
1" TO 3"	CENTERLINE, LANE LINES	WB-11
1" TO 3"	EDGE OF SHOULDER,	WB-9
GREATER THAN 3"	LANE LINES	STANDARD LANE CLOSURE REQUIRED
GREATER THAN 3"	EDGE OF TRAVELED LANE	RSP-1 AND VERTICAL PANELS, DRUMS OR CONCRETE BARRIER
GREATER THAN 3"	EDGE OF SHOULDER,	VERTICAL PANELS, DRUMS OR CONCRETE BARRIER

TRAFFIC CONTROL DEVICES FOR
VERTICAL PAVEMENT DIFFERENTIALS
N.T.S.
TC.1.2

GENERAL NOTES:

1. TEMPORARY TRAFFIC CONTROL PLANS SHOW ON THESE SHEETS REFLECT TYPICAL SITUATIONS ENCOUNTERED FOR CITY OF FORT SMITH PROJECTS. FOR SITUATIONS WHICH MAY DEVIATE FROM THESE TYPICAL PLANS SHOWN, CONTRACTOR SHALL SUBMIT A TRAFFIC CONTROL PLAN FOR REVIEW BY THE ENGINEER.
2. ALL TRAFFIC CONTROL DEVICES USED SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, AND TO STANDARD HIGHWAY SIGNS, LATEST EDITION AS APPROVED BY THE FEDERAL HIGHWAY ADMINISTRATION AND AS NOTED ON THESE DRAWINGS.
3. TRAFFIC CONTROL DEVICES SHALL BE SET UP PRIOR TO THE START OF CONSTRUCTION OPERATIONS AND SHALL BE PROPERLY MAINTAINED AT ALL TIMES. ALL TEMPORARY TRAFFIC CONTROL DEVICES SHALL BE REMOVED AS SOON AS PRACTICAL WHEN THEY ARE NO LONGER NEEDED. WHEN WORK IS SUSPENDED FOR SHORT PERIODS OF TIME, TEMPORARY TRAFFIC CONTROL DEVICES THAT ARE NO LONGER APPROPRIATE SHALL BE REMOVED OR COVERED.
4. SIGNS SHALL BE KEPT IN PROPER POSITION, CLEAN AND LEGIBLE AT ALL TIMES. SIGNS THAT DO NOT APPLY TO EXISTING CONDITIONS SHALL BE REMOVED. DAMAGED, DEFACED OR DIRTY SIGNS SHALL BE CLEANED, REPAIRED OR REPLACED.
5. SIGNS ARE USUALLY MOUNTED ON A SINGLE POST, ALTHOUGH THOSE WIDER THAN 36" OR LARGER THAN 10 S.F. SHALL BE MOUNTED ON TWO POSTS OR ABOVE A TYPE III OR WING BARRICADE.
6. ALL MOUNTING POSTS SHALL BE 4"X4" WOOD, BE PAINTED WHITE, BE NEATLY CONSTRUCTED, BE CLEANED OR REPAINTED AS NEEDED AND KEPT IN GOOD REPAIR FOR THE DURATION OF THE JOB. A 2 LB. CHANNEL POST ASSEMBLY MAY BE USED IN LIEU OF THE 4"X4" POST. IF 2 LB. CHANNEL POSTS ARE USED, THERE SHALL NOT BE MORE THAN 3 POSTS IN AN 8' PATH, AND ANY POST SPLICE SHALL HAVE A MINIMUM DISTANCE OF 30"BETWEEN THE BOTTOM OF THE SPLICE AND THE GROUND. PORTABLE SIGN SUPPORTS (SKIDS) MAY BE CONSTRUCTED OF 2" X 4" WOOD PROVIDED SUFFICIENT BRACING IS USED.
7. SIGN SHEETING MATERIAL SHALL COMPLY WITH AASHTO M268 TYPE IX (VIP GRADE) RETROREFLECTION SHEETING. SIGN MATERIAL (SUBSTRATE) SHALL BE STEEL, ALUMINUM OR PLYWOOD OF SUFFICIENT THICKNESS AND STABILITY TO MAINTAIN A SUBSTANTIAL, EFFECTIVE SIGN FOR THE DURATION OF THE PROJECT. LETTERS, BORDERS AND SPACING FOR SIGNS SHALL CONFORM TO THE REQUIREMENTS IN STANDARD HIGHWAY SIGNS, LATEST REVISION.
8. ADVANCE WARNING SIGNS SHALL HAVE BLACK LEGEND AND BORDER ON ORANGE REFLECTORIZED BACKGROUND. REGULATORY SIGNS SHALL HAVE BLACK LEGEND AND BORDER ON WHITE REFLECTORIZED BACKGROUND. GUIDE SIGNS SHALL HAVE A WHITE LEGEND ON A GREEN REFLECTORIZED BACKGROUND.

Revision	Date	By

Standard Drawings
TRAFFIC CONTROL
Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
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Project:	Details
Date:	NOV 2012
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Drawn By:	RBR
Dwg. No.:	TC1
Sheet No:	24

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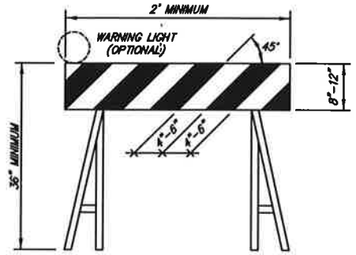
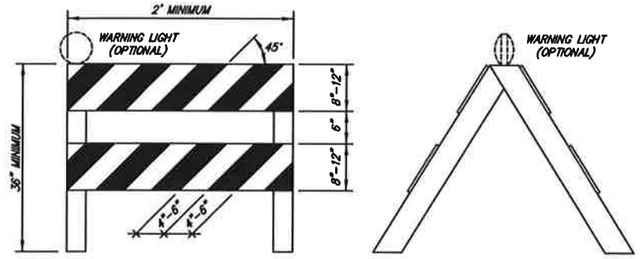
BARRICADE NOTES:

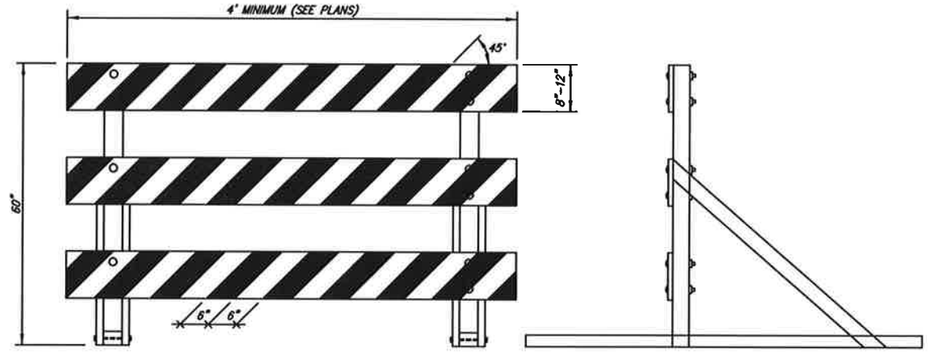
1. BARRICADES MAY BE WEIGHTED WITH SANDBAGS, BUT SUCH SANDBAGS SHALL NOT BE PLACED SO AS TO OBSCURE ANY RETRO REFLECTIVE SURFACE, NOR SHALL THEY BE LOCATED HIGHER THAN 24" ABOVE THE PAVEMENT.
2. WARNING LIGHTS MAY BE PLACED ON ALL BARRICADES WHEN USED DURING NIGHTTIME HOURS.
3. NAME AND PHONE NUMBER OF OWNER OF BARRICADE MAY BE SHOWN ON NON-REFECTIVE SURFACE; MUST BE OF ONE COLOR, NON-REFLECTIVE, WITH MAXIMUM 1" LETTERS ON THE FACE.
4. TYPE I AND II BARRICADES TO HAVE REFLECTORIZED RAIL FACES ON BOTH SIDES OF BARRICADE. TYPE III BARRICADE SHALL HAVE REFLECTORIZED RAIL FACES ON ONE SIDE IF FACING TRAFFIC IN ONLY ONE DIRECTION, OR ON BOTH SIDES OF BARRICADE IF FACING TRAFFIC FROM BOTH DIRECTIONS.
5. WARNING LIGHTS SHALL FLASH WHEN USED TO WARN OF A CONDITION. THEY SHALL BE STEADY-BURN WHEN USED IN A SERIES TO CHANNELIZE ROAD USERS.
6. DEVICES THAT ARE DAMAGED OR HAVE LOST A SIGNIFICANT AMOUNT OF THEIR REFLECTIVITY AND EFFECTIVENESS SHALL BE REPLACED.
7. FOR ALL ROAD CLOSURES, THE TYPE III BARRICADES SHALL BE OF SUFFICIENT LENGTH TO EXTEND ACROSS ENTIRE ROADWAY.
8. CONES, DRUMS, AND VERTICAL PANEL POST SHALL HAVE WEIGHTED BASES; HOWEVER, IF THE CONTRACTOR WISHES IN LIEU OF WEIGHTED BASES, THE DEVICES MAY BE NAILED OR EPOXIED IN PLACE. DO NOT NAIL OR EPOXY TO FINAL PAVEMENT.
9. WARNING LIGHTS SHALL FLASH WHEN USED TO WARN OF A CONDITION. THEY WILL BE STEADY-BURN WHEN USED IN A SERIES TO CHANNELIZE ROAD USERS.
10. BARRICADE RAILS, DRUMS AND VERTICAL PANELS SHALL HAVE ALTERNATE ORANGE AND WHITE REFLECTORIZED MARKINGS.



TYPE I BARRICADE
N.T.S.
TC.2.1



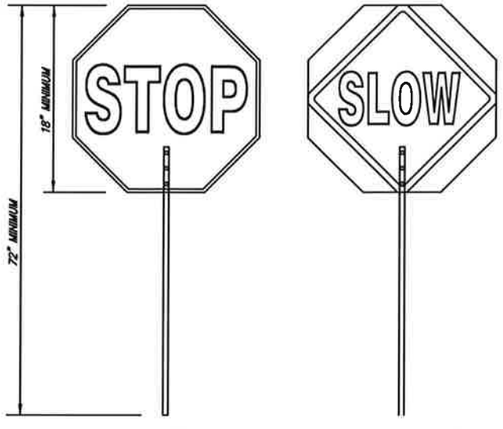
TYPE II BARRICADE
N.T.S.
TC.2.2



TYPE IIIA BARRICADE
N.T.S.
TC.2.3

NOTES:

1. FLAGGERS SHALL USE REFLECTORIZED STOP-SLOW PADDLES. FLAGS MAY BE USED ONLY FOR EMERGENCY SITUATIONS.
2. THE STOP FACE SHALL CONSIST OF WHITE LETTERS AND BORDER ON A RED REFECTORIZED BACKGROUND.
3. THE SLOW FACE SHALL CONSIST OF BLACK LETTERS AND BORDER ON AN ORANGE REFLECTORIZED BACKGROUND.
4. BOTH FACES SHALL BE MADE OF MATERIALS CONFORMING TO MUTCD REQUIREMENTS.
5. AREAS OUTSIDE SIGN BORDERS SHALL BE BLACK.
6. THE SIGN BLANK SHALL BE OCTAGONAL.
7. THE PORTION OF THE STAFF WITHIN THE SIGN FACE SHALL MATCH THE SIGN COLORS.
8. ALL COLORS AND LETTERS SHALL MEET APPLICABLE FEDERAL STANDARDS.
9. THIS SIGN SHALL BE FURNISHED BY THE CONTRACTOR AND SHALL BE USED BY THE FLAGGER IN LIEU OF FLAGS OR OTHER SIGNALING DEVICES. USE OF FLAGS SHALL BE LIMITED TO EMERGENCY SITUATIONS.
10. PADDLES SHALL CONFORM TO SECTION 6E-3 OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
11. THE PADDLE MAY BE SUPPLEMENTED BY ONE OR TWO SYMMETRICALLY POSITIONED ALTERNATELY FLASHING WHITE HIGH INTENSITY LAMPS ON EACH SIDE.

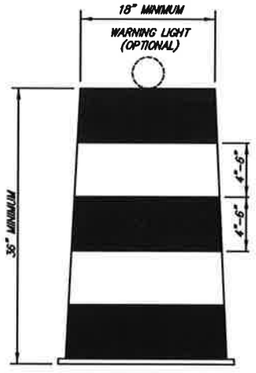


FRONT SIDE REVERSE SIDE

FLAGGER SIGN
N.T.S.
TC.2.4

NOTES:

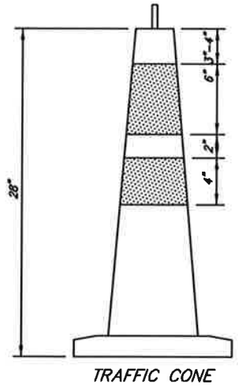
1. MARKINGS ON DRUMS SHALL BE HORIZONTAL, CIRCUMFERENTIAL, ORANGE AND WHITE REFLECTORIZED STRIPES. THERE SHALL BE AT LEAST TWO ORANGE AND TWO WHITE STRIPES ON EACH DRUM. ANY NONRELECTORIZED SPACES BETWEEN THE HORIZONTAL ORANGE AND WHITE STRIPES SHALL BE NO MORE THAN 2" WIDE AND MAY BE PAINTED BLACK OR ANOTHER SUITABLE COLOR. TRAFFIC DRUMS SHALL BE CONSTRUCTED OF PLASTIC.
2. DRUMS SHALL HAVE CLOSED TOPS THAT WILL NOT ALLOW COLLECTION OF DEBRIS.
3. BALLAST SHALL NOT BE PLACED ON TOP OF A DRUM.



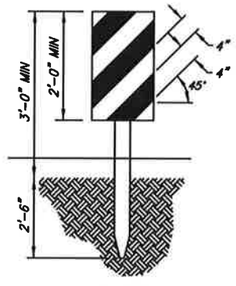
TRAFFIC DRUM
N.T.S.
TC.2.5

NOTES:

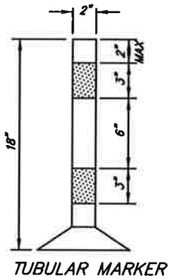
1. CONES TO BE PREDOMINATELY ORANGE. CONES TO BE USED DURING HOURS OF DARKNESS SHALL BE REFLECTORIZED AS SHOWN BELOW.
2. 28 " HIGH CONE SHALL BE USED FOR NIGHT OR HIGH SPEED ROADWAY OPERATIONS.
3. TUBULAR MARKERS SHOULD ONLY BE USED WHERE SPACE RESTRICTIONS DO NOT ALLOW FOR THE USE OF CONES.



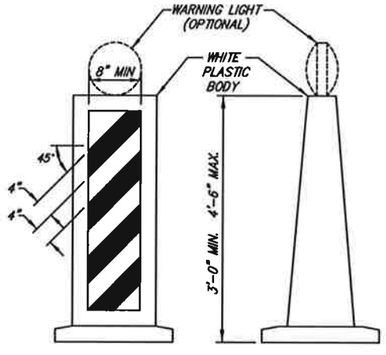
TRAFFIC CONE



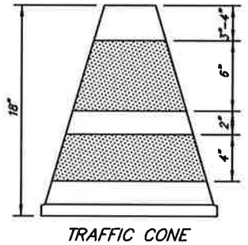
VERTICAL PANEL



TUBULAR MARKER



VERTICAL PANEL POST



TRAFFIC CONE

TRAFFIC MARKERS
N.T.S.
TC.2.6

Revision	Date	By
ISSUED FOR USE	12/19/03	LP

Standard Drawings
TRAFFIC CONTROL
Public Works Construction

The City of Fort Smith ARKANSAS

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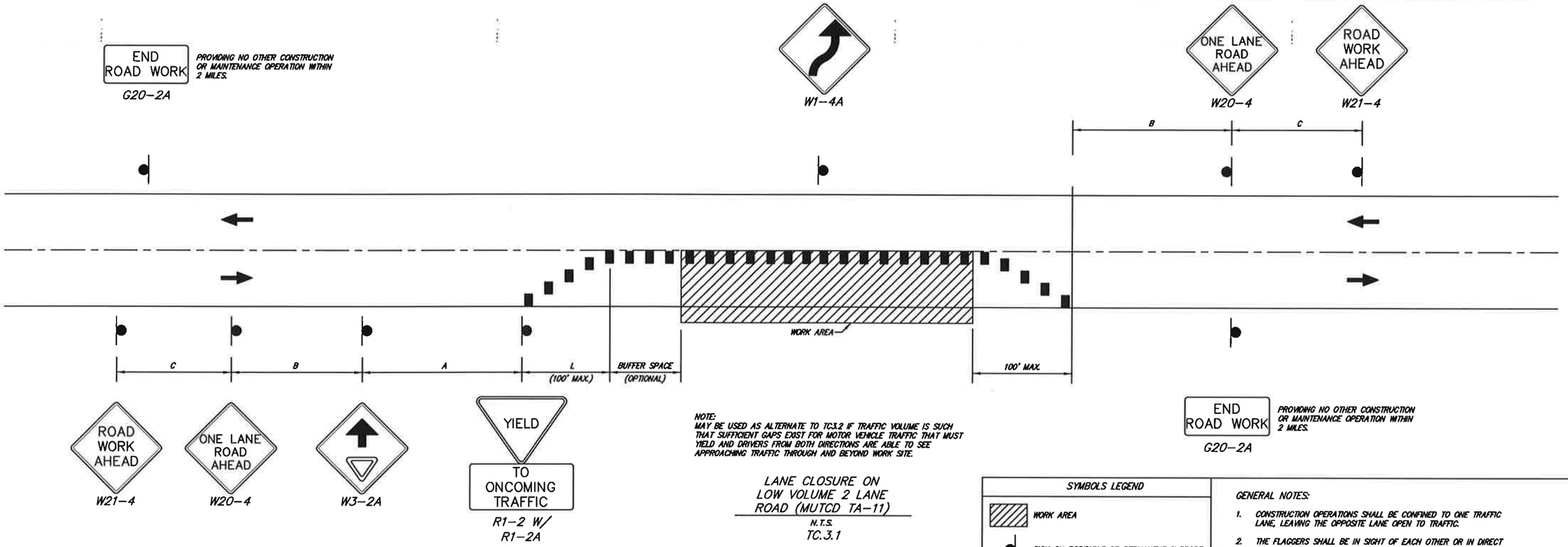


NOTE:
MAY BE USED AS ALTERNATE TO TC3.2 IF TRAFFIC VOLUME IS SUCH THAT SUFFICIENT GAPS EXIST FOR MOTOR VEHICLE TRAFFIC THAT MUST YIELD AND DRIVERS FROM BOTH DIRECTIONS ARE ABLE TO SEE APPROACHING TRAFFIC THROUGH AND BEYOND WORK SITE.

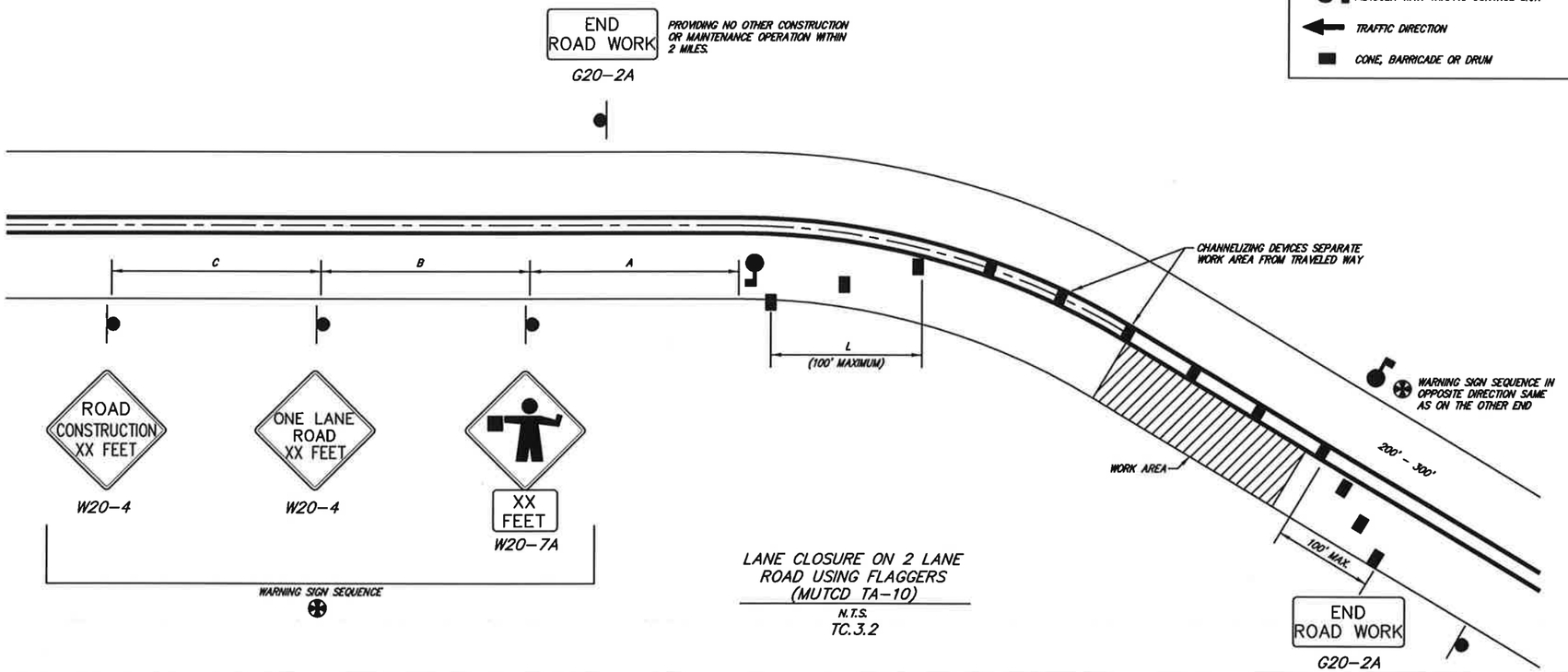
LANE CLOSURE ON LOW VOLUME 2 LANE ROAD (MUTCD TA-11)

N.T.S.

TC.3.1

SYMBOLS LEGEND

- WORK AREA
- SIGN ON PORTABLE OR PERMANENT SUPPORT
- FLAGGER WITH TRAFFIC CONTROL SIGN
- TRAFFIC DIRECTION
- CONE, BARRICADE OR DRUM



LANE CLOSURE ON 2 LANE ROAD USING FLAGGERS (MUTCD TA-10)

N.T.S.

TC.3.2

GENERAL NOTES:

1. CONSTRUCTION OPERATIONS SHALL BE CONFINED TO ONE TRAFFIC LANE, LEAVING THE OPPOSITE LANE OPEN TO TRAFFIC.
2. THE FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
3. A SINGLE FLAGGER MAY BE USED FOR LOW VOLUME SITUATIONS WITH SHORT WORK ZONES WITH STRAIGHT ROADWAYS WHERE THE FLAGGER IS VISIBLE TO APPROACHING ROADWAY USERS FROM BOTH DIRECTIONS.
4. BARRICADES OR DRUMS WITH STEADY BURN LIGHTS SHALL BE USED DURING NIGHTTIME OPERATIONS.
5. FLOODLIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.
6. ALL DEVICES ESTABLISHING A TAPER OR TANGENT LINE SHALL BE OF ONE TYPE; DEVICES SHALL NOT BE MIXED BY TYPE.
7. ALL VEHICLES, EQUIPMENT, WORKERS (EXCEPT FLAGGERS) AND THEIR ACTIVITIES ARE RESTRICTED AT ALL TIMES TO ONE SIDE OF THE PAVEMENT UNLESS OTHERWISE AUTHORIZED BY THE TRAFFIC ENGINEER.
8. WHEN THE DISTANCE BETWEEN SUCCESSIVE WORK AREAS IS LESS THAN 2,000 FEET, THE ENTIRE OPERATION MAY BE CONSIDERED AS ONE WORK AREA FOR SIGNING PURPOSES. WHEN SINGLE SIGNING SETUP IS USED FOR WORK SITES UP TO 2,000 FEET APART, LANE CLOSURE SHOULD BE CONTINUED THROUGH ENTIRE WORK. WHEN THE DISTANCE BETWEEN SUCCESSIVE WORK AREAS EXCEEDS 2,000 FEET, ADDITIONAL WARNING SIGNS AND TAPER SHALL BE PLACED AS REQUIRED BY THE ENGINEER.
9. LONGITUDINAL DIMENSIONS MAY BE ADJUSTED BY THE ENGINEER IN THE FIELD.
10. TABLE FOR SPACING OF ADVANCE WARNING SIGNS.

TABLE FOR SPACING OF ADVANCE WARNING SIGNS.			
ROAD TYPE	DISTANCE BETWEEN SIGNS (FT)		
	A	B	C
URBAN (LESS THAN 35 MPH)	200	200	200
URBAN (35 MPH OR GREATER)	350	350	350
RURAL	500	500	500
EXPRESSWAY / FREEWAY	1000	1600	2600

11. TABLE FOR TAPER LENGTHS FOR LANE CLOSURES.

TAPER LENGTHS FOR LANE CLOSURES – DISTANCE L					
SPEED MILES PER HOUR 85TH PERCENTILE	TAPER LENGTH LANE WIDTH IN FEET			NUMBER OF CHANNELIZING DEVICES FOR TAPER	MAX. SPACING OF DEVICES ALONG TAPER IN FEET
	10	11	12		
20	70	75	80	5	20
25	105	115	125	6	25
30	150	165	180	7	30
35	205	225	245	8	35
40	270	295	320	9	40
45	450	495	540	13	45

Revision	Date	By

Standard Drawings
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The City of Fort Smith ARKANSAS

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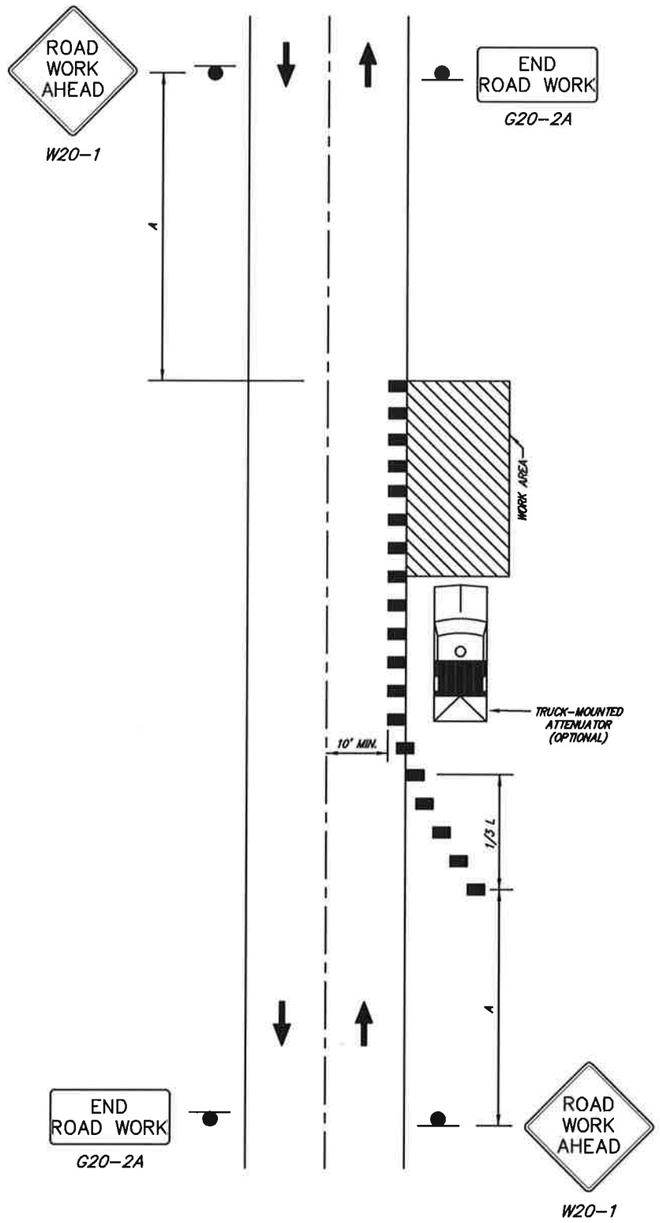
NOTES:

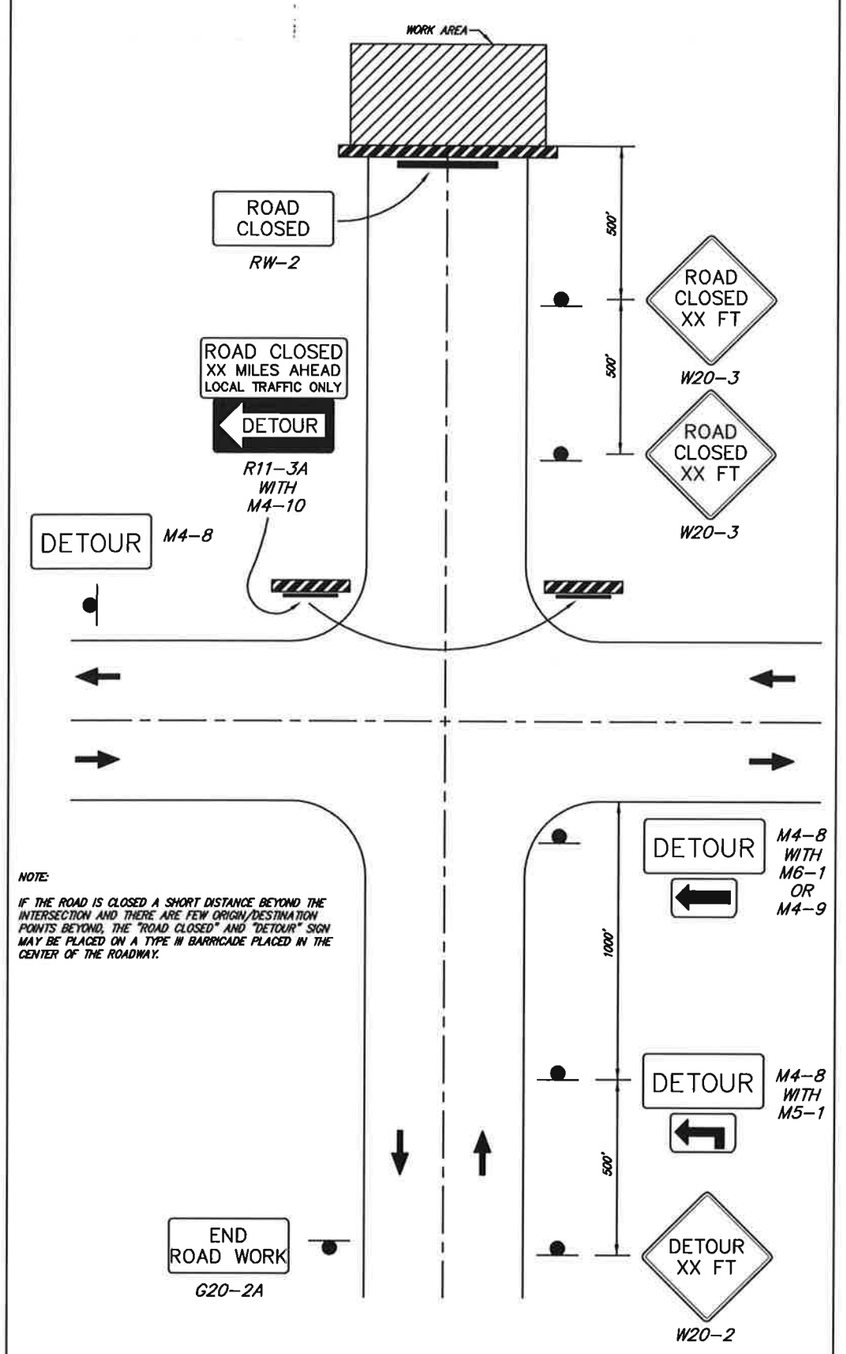
1. WHERE THE OPPOSITE SHOULDER IS SUITABLE FOR CARRYING MOTOR VEHICLE TRAFFIC AND OF ADEQUATE WIDTH, LANES MAY BE SHIFTED BY USE OF CLOSELY SPACED CHANNELIZING DEVICES, PROVIDED THAT THE MINIMUM LANE WIDTH OF 10' IS MAINTAINED.
2. FOR SHORT DURATION WORK, THE TAPER AND CHANNELIZING DEVICES MAY BE OMITTED IF A SHADOW VEHICLE WITH ACTIVATED ROTATING OR STROBE LIGHTS IS USED.



SHOULDER WORK WITH MINOR ENCROACHMENT ON LOW SPEED ROADWAY (MUTCD TA-6)

N.T.S.

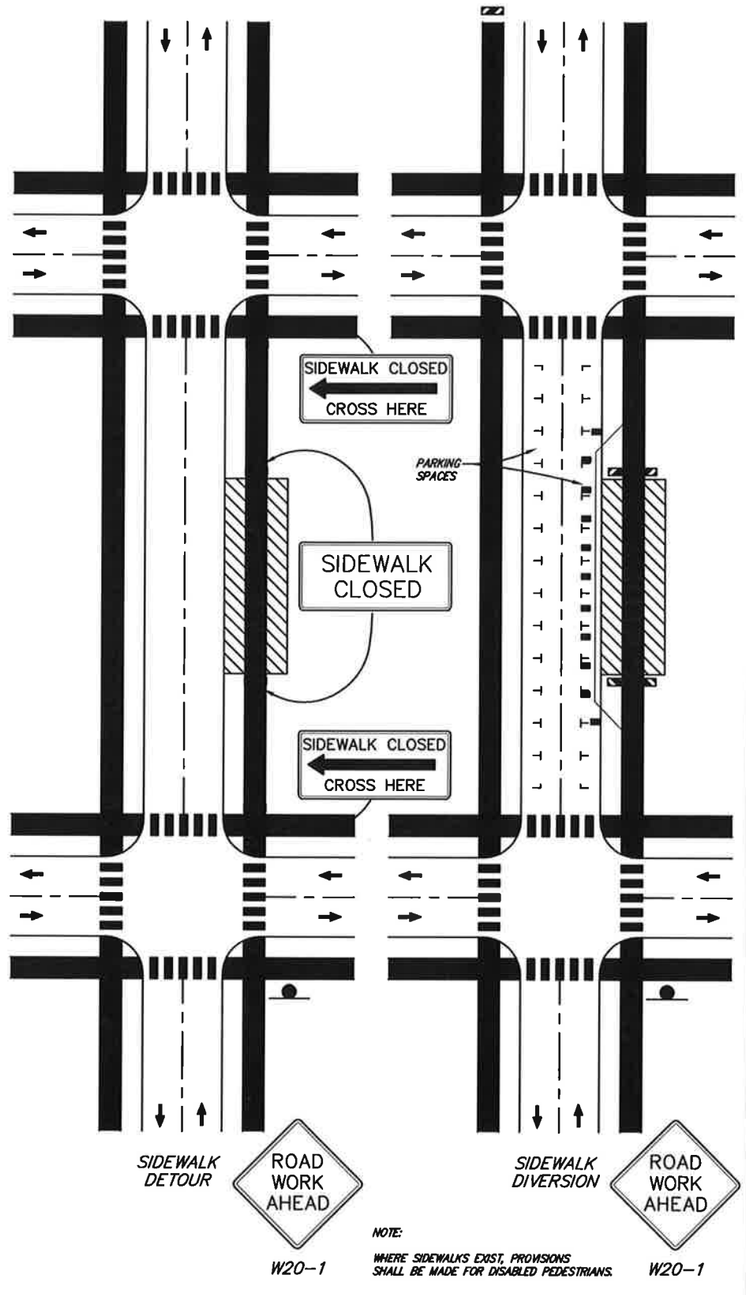
TC.4.1



ROAD CLOSURE WITH OFF-SITE DETOUR (MUTCD TA-8)

N.T.S.

TC.4.2



SIDEWALK DETOUR OR DIVERSION (MUTCD TA-28)

N.T.S.

TC.4.3

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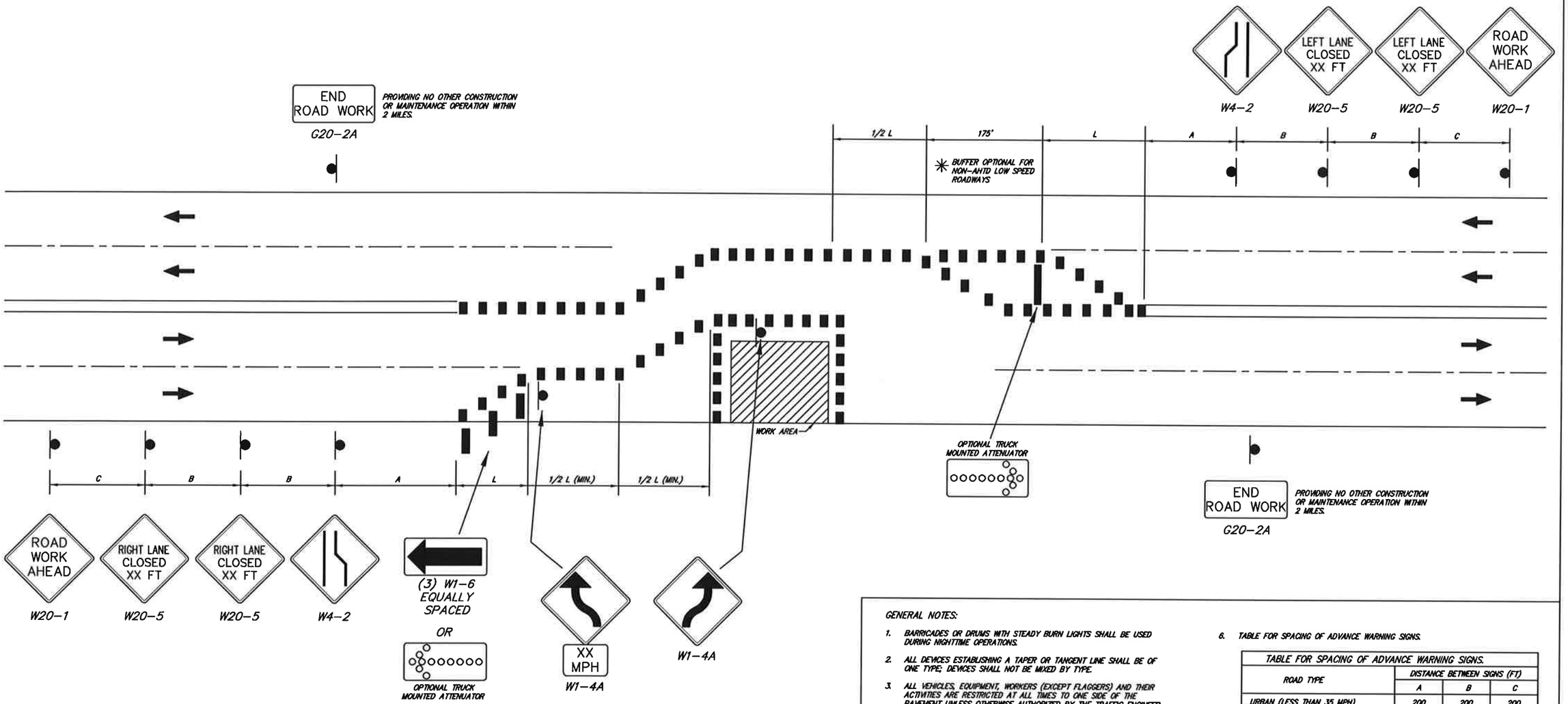

SYMBOLS LEGEND

- WORK AREA
- SIGN ON PORTABLE OR PERMANENT SUPPORT
- FLAGGER WITH TRAFFIC CONTROL SIGN
- TRAFFIC DIRECTION
- CONE, BARRICADE OR DRUM

LANE CLOSURE ON UNDIVIDED 4 LANE ROADWAY WHERE HALF IS CLOSED (MUTCD TA-32)

N.T.S.

TC.5.1

GENERAL NOTES:

1. BARRICADES OR DRUMS WITH STEADY BURN LIGHTS SHALL BE USED DURING NIGHTTIME OPERATIONS.
2. ALL DEVICES ESTABLISHING A TAPER OR TANGENT LINE SHALL BE OF ONE TYPE; DEVICES SHALL NOT BE MIXED BY TYPE.
3. ALL VEHICLES, EQUIPMENT, WORKERS (EXCEPT FLAGGERS) AND THEIR ACTIVITIES ARE RESTRICTED AT ALL TIMES TO ONE SIDE OF THE PAVEMENT UNLESS OTHERWISE AUTHORIZED BY THE TRAFFIC ENGINEER.
4. WHEN THE DISTANCE BETWEEN SUCCESSIVE WORK AREAS IS LESS THAN 2,000 FEET, THE ENTIRE OPERATION MAY BE CONSIDERED AS ONE WORK AREA FOR SIGNING PURPOSES. WHEN SINGLE SIGNING SETUP IS USED FOR WORK SITES UP TO 2,000 FEET APART, LANE CLOSURE SHOULD BE CONTINUED THROUGH ENTIRE WORK. WHEN THE DISTANCE BETWEEN SUCCESSIVE WORK AREAS EXCEEDS 2,000 FEET, ADDITIONAL WARNING SIGNS AND TAPER SHALL BE PLACED AS REQUIRED BY THE ENGINEER.
5. LONGITUDINAL DIMENSIONS MAY BE ADJUSTED BY THE ENGINEER IN THE FIELD.
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TABLE FOR SPACING OF ADVANCE WARNING SIGNS.			
ROAD TYPE	DISTANCE BETWEEN SIGNS (FT)		
	A	B	C
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URBAN (35 MPH OR GREATER)	350	350	350
RURAL	500	500	500
EXPRESSWAY / FREEWAY	1000	1600	2600

7. TABLE FOR TAPER LENGTHS FOR LANE CLOSURES.

TAPER LENGTHS FOR LANE CLOSURES - DISTANCE L					
SPEED	TAPER LENGTH			NUMBER OF CHANNELIZING DEVICES FOR TAPER	MAX. SPACING OF DEVICES ALONG TAPER IN FEET
MILES PER HOUR 85TH PERCENTILE	LANE WIDTH IN FEET				
	10	11	12		
20	70	75	80	5	20
25	105	115	125	6	25
30	150	165	180	7	30
35	205	225	245	8	35
40	270	295	320	9	40
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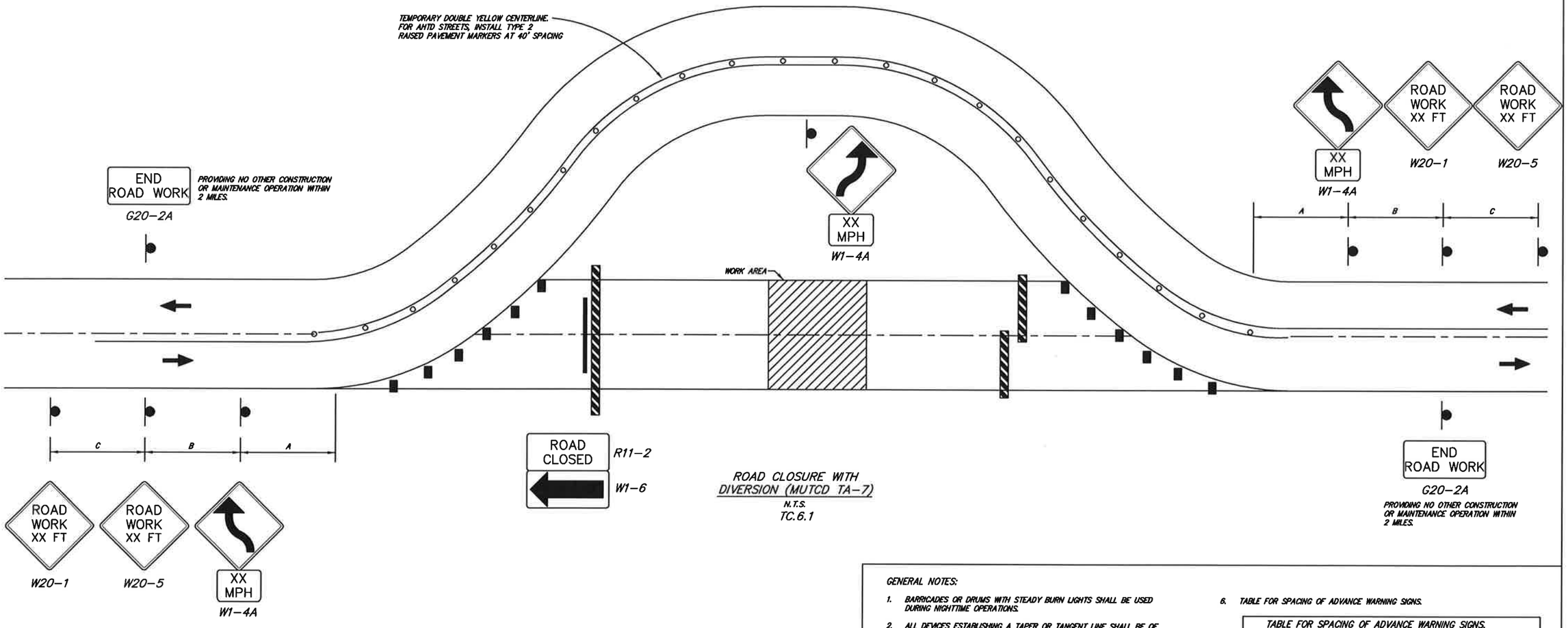

ROAD CLOSURE WITH DIVERSION (MUTCD TA-7)

N.T.S.

TC.6.1

SYMBOLS LEGEND

- WORK AREA
- SIGN ON PORTABLE OR PERMANENT SUPPORT
- FLAGGER WITH TRAFFIC CONTROL SIGN
- TRAFFIC DIRECTION
- CONE, BARRICADE OR DRUM

GENERAL NOTES:

1. BARRICADES OR DRUMS WITH STEADY BURN LIGHTS SHALL BE USED DURING NIGHTTIME OPERATIONS.
2. ALL DEVICES ESTABLISHING A TAPER OR TANGENT LINE SHALL BE OF ONE TYPE; DEVICES SHALL NOT BE MIXED BY TYPE.
3. ALL VEHICLES, EQUIPMENT, WORKERS (EXCEPT FLAGGERS) AND THEIR ACTIVITIES ARE RESTRICTED AT ALL TIMES TO ONE SIDE OF THE PAVEMENT UNLESS OTHERWISE AUTHORIZED BY THE TRAFFIC ENGINEER.
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URBAN (35 MPH OR GREATER)	350	350	350
RURAL	500	500	500
EXPRESSWAY / FREEWAY	1000	1600	2600

7. TABLE FOR TAPER LENGTHS FOR LANE CLOSURES.

TAPER LENGTHS FOR LANE CLOSURES - DISTANCE L					
SPEED	TAPER LENGTH			NUMBER OF	MAX. SPACING OF
MILES PER HOUR	LANE WIDTH IN FEET			CHANNELIZING	DEVICES ALONG
85TH PERCENTILE	10	11	12	DEVICES FOR TAPER	TAPER IN FEET
20	70	75	80	5	20
25	105	115	125	6	25
30	150	165	180	7	30
35	205	225	245	8	35
40	270	295	320	9	40
45	450	495	540	13	45

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	Revised Detail Number	DEC-2010	MM

Standard Drawings
TRAFFIC CONTROL
Public Works Construction

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
Phone (479)784-2225 Fax (479)784-2245

Project:	Details
Date:	NOV 2012
Scale:	As Shown
Drawn By:	RBR
Dwg. No.:	TC6
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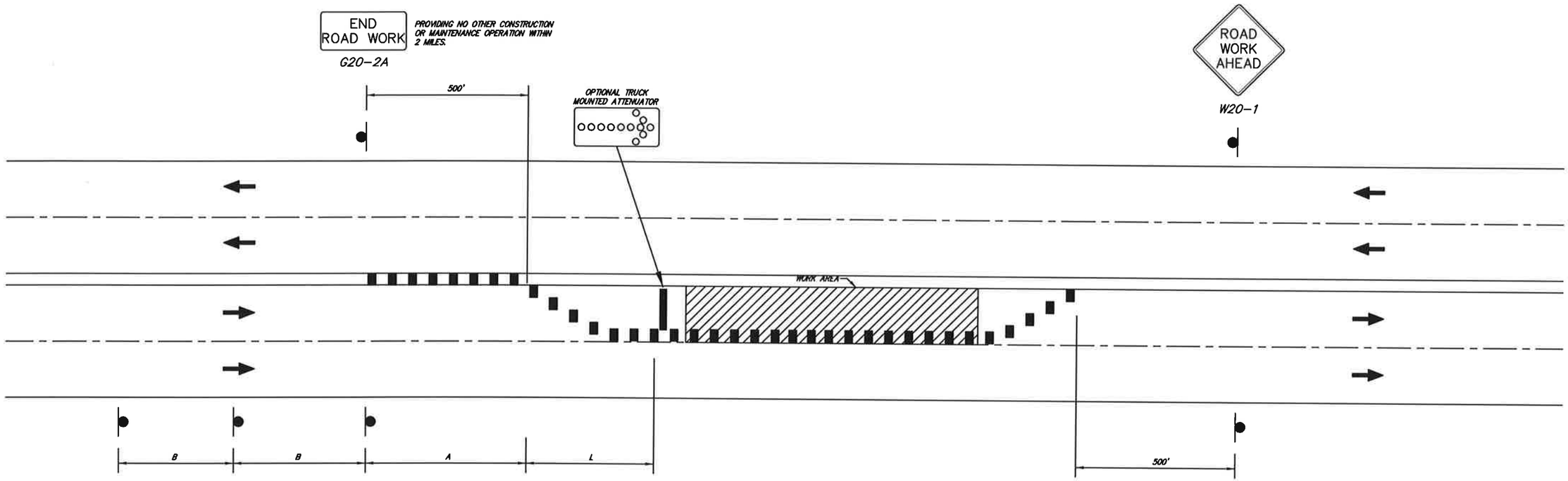
✳ OPTIONAL FOR SHORT DURATION OPERATIONS



LANE CLOSURE ON UNDIVIDED 4 LANE ROADWAY W/ INSIDE LANE CLOSED (MUTCD TA-30)

N.T.S.

TC.7.1

SYMBOLS LEGEND
WORK AREA
SIGN ON PORTABLE OR PERMANENT SUPPORT
FLAGGER WITH TRAFFIC CONTROL SIGN
TRAFFIC DIRECTION
CONE, BARRICADE OR DRUM

GENERAL NOTES:

1. BARRICADES OR DRUMS WITH STEADY BURN LIGHTS SHALL BE USED DURING NIGHTTIME OPERATIONS.
2. ALL DEVICES ESTABLISHING A TAPER OR TANGENT LINE SHALL BE OF ONE TYPE; DEVICES SHALL NOT BE MIXED BY TYPE.
3. WHEN THE DISTANCE BETWEEN SUCCESSIVE WORK AREAS IS LESS THAN 2,000 FEET, THE ENTIRE OPERATION MAY BE CONSIDERED AS ONE WORK AREA FOR SIGNING PURPOSES. WHEN SINGLE SIGNING SETUP IS USED FOR WORK SITES UP TO 2,000 FEET APART, LANE CLOSURE SHOULD BE CONTINUED THROUGH ENTIRE WORK. WHEN THE DISTANCE BETWEEN SUCCESSIVE WORK AREAS EXCEEDS 2,000 FEET, ADDITIONAL WARNING SIGNS AND TAPER SHALL BE PLACED AS REQUIRED BY THE ENGINEER.
4. LONGITUDINAL DIMENSIONS MAY BE ADJUSTED BY THE ENGINEER IN THE FIELD.
5. TABLE FOR SPACING OF ADVANCE WARNING SIGNS.

TABLE FOR SPACING OF ADVANCE WARNING SIGNS.			
ROAD TYPE	DISTANCE BETWEEN SIGNS (FT)		
	A	B	C
URBAN (LESS THAN 35 MPH)	200	200	200
URBAN (35 MPH OR GREATER)	350	350	350
RURAL	500	500	500
EXPRESSWAY / FREEWAY	1000	1600	2600

6. TABLE FOR TAPER LENGTHS FOR LANE CLOSURES.

TAPER LENGTHS FOR LANE CLOSURES - DISTANCE L					
SPEED	TAPER LENGTH LANE WIDTH IN FEET			NUMBER OF CHANNELIZING DEVICES FOR TAPER	MAX. SPACING OF DEVICES ALONG TAPER IN FEET
MILES PER HOUR 85TH PERCENTILE	10	11	12		
20	70	75	80	5	20
25	105	115	125	6	25
30	150	165	180	7	30
35	205	225	245	8	35
40	270	295	320	9	40
45	450	495	540	13	45

Revision	Date	By

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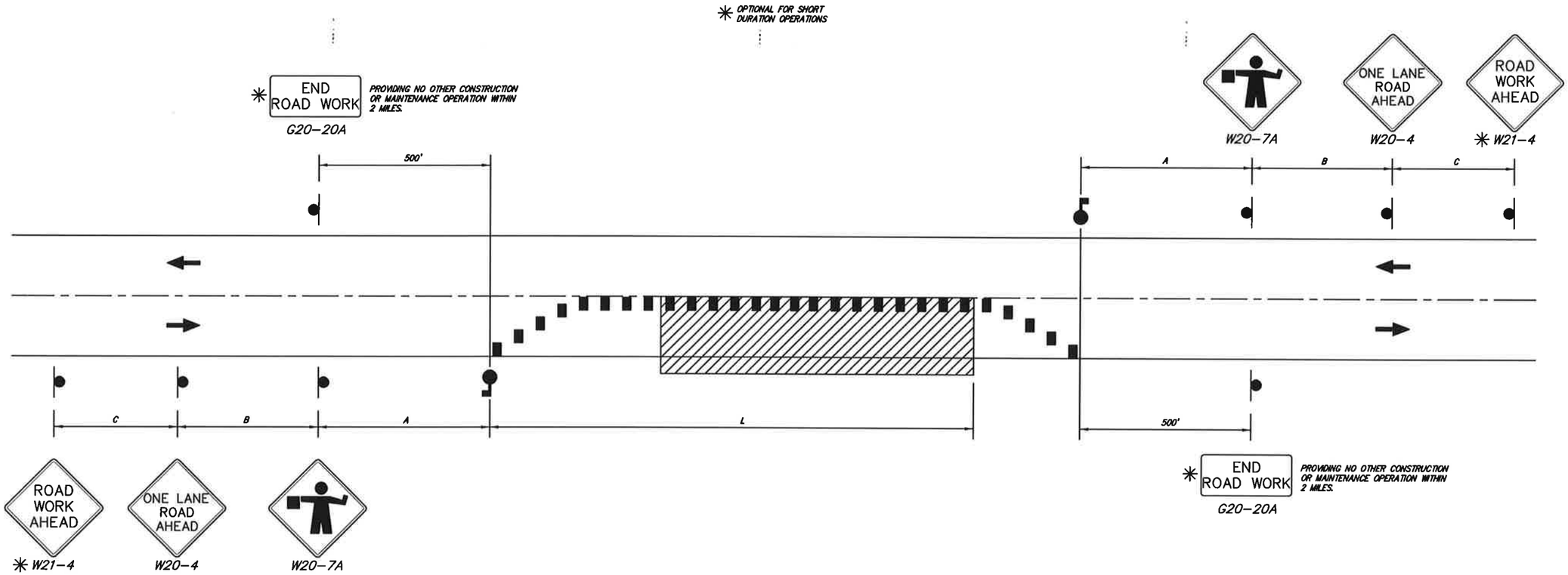

LANE CLOSURE ON 2 LANE ROAD USING FLAGGERS

N.T.S.

TC.8.1

GENERAL NOTES:

1. CONSTRUCTION OPERATIONS SHALL BE CONFINED TO ONE TRAFFIC LANE, LEAVING THE OPPOSITE LANE OPEN TO TRAFFIC.
2. A SINGLE FLAGGER MAY BE USD FOR LOW VOLUME SITUATIONS WITH SHORT WORK ZONES WITH STRAIGHT ROADWAYS WHERE THE FLAGGER IS VISIBLE TO APPROACHING ROADWAY USERS FROM BOTH DIRECTIONS.
3. THE FLAGGERS SHALL BE IN SIGHT OF EACH OTHER OR IN DIRECT COMMUNICATION AT ALL TIMES.
4. BARRICADES OR DRUMS WITH STEADY BURN LIGHTS SHALL BE USED DURING NIGHTTIME OPERATIONS.
5. ALL DEVICES ESTABLISHING A TAPER OR TANGENT LINE SHALL BE OF ONE TYPE; DEVICES SHALL NOT BE MIXED BY TYPE.
6. ALL VEHICLES, EQUIPMENT, WORKERS (EXCEPT FLAGGERS) AND THEIR ACTIVITIES ARE RESTRICTED AT ALL TIMES TO ONE SIDE OF THE PAVEMENT UNLESS OTHERWISE AUTHORIZED BY THE TRAFFIC ENGINEER.
7. WHEN THE DISTANCE BETWEEN SUCCESSIVE WORK AREAS IS LESS THAN 2,000 FEET, THE ENTIRE OPERATION MAY BE CONSIDERED AS ONE WORK AREA FOR SIGNING PURPOSES. WHEN SINGLE SIGNING SETUP IS USED FOR WORK SITES UP TO 2,000 FEET APART, LANE CLOSURE SHOULD BE CONTINUED THROUGH ENTIRE WORK. WHEN THE DISTANCE BETWEEN SUCCESSIVE WORK AREAS EXCEEDS 2,000 FEET, ADDITIONAL WARNING SIGNS AND TAPER SHALL BE PLACED AS REQUIRED BY THE ENGINEER.
8. FLOODLIGHTS SHOULD BE PROVIDED TO MARK FLAGGER STATIONS AT NIGHT AS NEEDED.
9. TABLE FOR SPACING OF ADVANCE WARNING SIGNS.

TABLE FOR SPACING OF ADVANCE WARNING SIGNS.			
ROAD TYPE	DISTANCE BETWEEN SIGNS (FT)		
	A	B	C
URBAN (LESS THAN 35 MPH)	200	200	200
URBAN (35 MPH OR GREATER)	350	350	350
RURAL	500	500	500
EXPRESSWAY / FREEWAY	1000	1600	2600

10. TABLE FOR TAPER LENGTHS FOR LANE CLOSURES.

TAPER LENGTHS FOR LANE CLOSURES – DISTANCE L					
SPEED	TAPER LENGTH LANE WIDTH IN FEET			NUMBER OF CHANNELIZING DEVICES FOR TAPER	MAX. SPACING OF DEVICES ALONG TAPER IN FEET
MILES PER HOUR 85TH PERCENTILE	10	11	12		
20	70	75	80	5	20
25	105	115	125	6	25
30	150	165	180	7	30
35	205	225	245	8	35
40	270	295	320	9	40
45	450	495	540	13	45
50	500	550	600	13	50
55	550	605	660	13	55
60	600	660	720	13	60
65	650	715	780	13	65
70	700	770	840	13	70

SYMBOLS LEGEND

- WORK AREA
- SIGN ON PORTABLE OR PERMANENT SUPPORT
- FLAGGER WITH TRAFFIC CONTROL SIGN
- TRAFFIC DIRECTION
- CONE, BARRICADE OR DRUM

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GENERAL NOTES:

1. CONTRACTOR SHALL SUBMIT DETAILED SHOP DRAWINGS OF THE MAST ARM POLE ASSEMBLY AND MANUFACTURERS SPECIFICATIONS FOR CONTROLLERS AND TRAFFIC SIGNAL HEADS FOR APPROVAL BY THE ENGINEER PRIOR TO ORDERING ANY EQUIPMENT OR BEFORE ANY WORK HAS BEGUN.

2. SIGNAL POLES, MAST ARMS AND ANCHOR BOLTS TO BE GALVANIZED STEEL.

3. MINIMUM STRUCTURAL REQUIREMENTS:

   DESIGN SPECIFICATIONS: AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS, 4TH EDITION (2001) WITH 2003 AND 2006 INTERIMS.

   USE FATIGUE CATEGORY I FOR ALL STRUCTURES ON ROUTES WHERE THE SPEED LIMIT IS 65 MPH AND GREATER AT THE STRUCTURE LOCATION AND ON ROUTES WHERE SPEED LIMIT IS GREATER THAN 45 MPH WITH AN ARM 60' OR LONGER.

   USE FATIGUE CATEGORY II FOR STRUCTURES ON ROUTES WITH A SPEED LIMIT LESS THAN 65 MPH AND GREATER THAN 45 MPH WITH ARMS LESS THAN 60' AND ROUTES WITH SPEED LIMITS OF 45 MPH AND LESS WITH AN ARM 60' OR LONGER.

   USE FATIGUE CATEGORY III FOR ALL STRUCTURES WHERE SPEED LIMIT IS 45 MPH AND LESS AND ARMS LESS THAN 60'.

   BASE WIND SPEED: 90 MPH.

   STEEL MEMBERS CONSIDERED MAIN LOAD CARRYING MEMBERS WITH A THICKNESS GREATER THAN 1/2" SHALL MEET THE LONGITUDINAL CHARPY V-NOTCH TEST SPECIFIED IN SUBSECTION 807.05 OF THE AHTD STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION.

   DEAD LOAD: AS A MINIMUM, DESIGN SHALL BE BASED ON THE FIXED ATTACHMENTS SHOWN OR AS MODIFIED IN THE PLANS.

   IN LIEU OF DESIGNING THE STRUCTURE TO RESIST PERIODIC GALLOPING, A VIBRATORY MITIGATION DEVICE MAY BE PROVIDED BY THE POLE MANUFACTURER. THE VIBRATORY MITIGATION DEVICE SHALL BE AN ANTI-GALLOPING PANEL CONSISTING OF A 60"X16"X0.125" SIGN BLANK MOUNTED NEAR THE END OF THE MAST ARM WITH THE LONG AXIS OF THE PANEL COLLINEAR WITH THE LONG AXIS OF THE MAST ARM. THE PANEL SHOULD BE MOUNTED AT SUCH A HEIGHT AS TO PROVIDE AT LEAST 6" CLEAR FROM THE TOP OF ANY SIGNAL ASSEMBLY OR SIGN PANEL LOCATED ON THE MAST ARM WITHIN THE LENGTH OF THE ANTI-GALLOPING PANEL.

   TRUCK-INDUCED GUST LOADS SHALL BE EXCLUDED FOR FATIGUE DESIGN FOR ALL STRUCTURES EXCEPT MAST ARMS MOUNTED OVER FACILITIES WITH POSTED SPEEDS OF 65 MPH OF GREATER AT THE LOCATION OF THE STRUCTURE.

   ALL SIGNAL HEADS TO BE ONE WAY, 12 INCH, AND HAVE 5 INCH, VACUUM FORMED PLASTIC, BACK PLATES.

   HEADS AT END OF ARM - ONE - 5 SECTION, 85 LB., 16.0 SQ. FT.

   ONE SIGN MOUNTED 3 FT. FROM SIGNAL - 2'-0"x 2'-6"; 20 LB.

   REMAINING HEADS SPACED AT 8 FT. - 3 SECTION, 56 LB. 14.4 SQ. FT. DESIGN TO ACCOMODATE (INCLUDING TWO 5 SECTIONS):

   2 HEADS FOR ARMS 10 TO 16 FT.
   3 HEADS FOR ARMS 18 TO 24 FT.
   4 HEADS FOR ARMS OVER 26 FT.

   STREET NAME SIGN - 72"x 24", 36 LB., MOUNTED SUCH THAT OUTSIDE EDGE IS NOT GREATER THAN 12 FT. FROM POLE. DEPENDING UPON POSITION OF SIGNAL HEAD ADJACENT TO POLE, SIGN MAY OVERLAP POLE SHAFT UP TO 12".

   ROADWAY LUMINARIES (WHERE REQUIRED ON PLAN SHEETS) - 10 FT. ARM LENGTH (MAX.), 3.3 SQ. FT., 75 LB.

   PEDESTRIAN SIGNALS - TWO 2 SECTION, 12" MOUNTED 8 FT. FROM BASE OF POLE.

   POLE MOUNT 3 SECTION SIGNAL HEAD AT 10 FT. ON SIDE OF POLE.

4. MAST ARM POLES SHALL BE MOUNTED A MINIMUM OF 4 FT. BEHIND CURB OR SHOULDER, UNLESS OTHERWISE APPROVED BY THE ENGINEER. OCTAGONAL POLES AND ARMS MEETING THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS CAN BE INSTALLED IN LIEU OF ROUND POLES. ALL POLES AND MAST ARMS IN A JOB MUST BE OF THE SAME SHAPE.

5. POLE AND MAST ARM CAPS SHALL BE PROVIDED, FABRICATED OF GALVANIZED STEEL OR CAST ALUMINUM.

6. AVERAGE TAPER OF SIGNAL ARMS AND POLE SHALL BE 0.125 TO 0.15 INCHES PER FT. MAST ARM CENTERLINE ANGLE AT ATTACHMENT POINT SHALL MAINTAIN NOT LESS THAN 0.5 DEGREES OR MORE THAN 4 DEGREES POSITIVE SLOPE WITH A LINE PERPENDICULAR TO THE POLE CENTERLINE. THE ARM SHALL MAINTAIN A POSITIVE SLOPE AFTER IT IS PLACED UNDER LOAD.

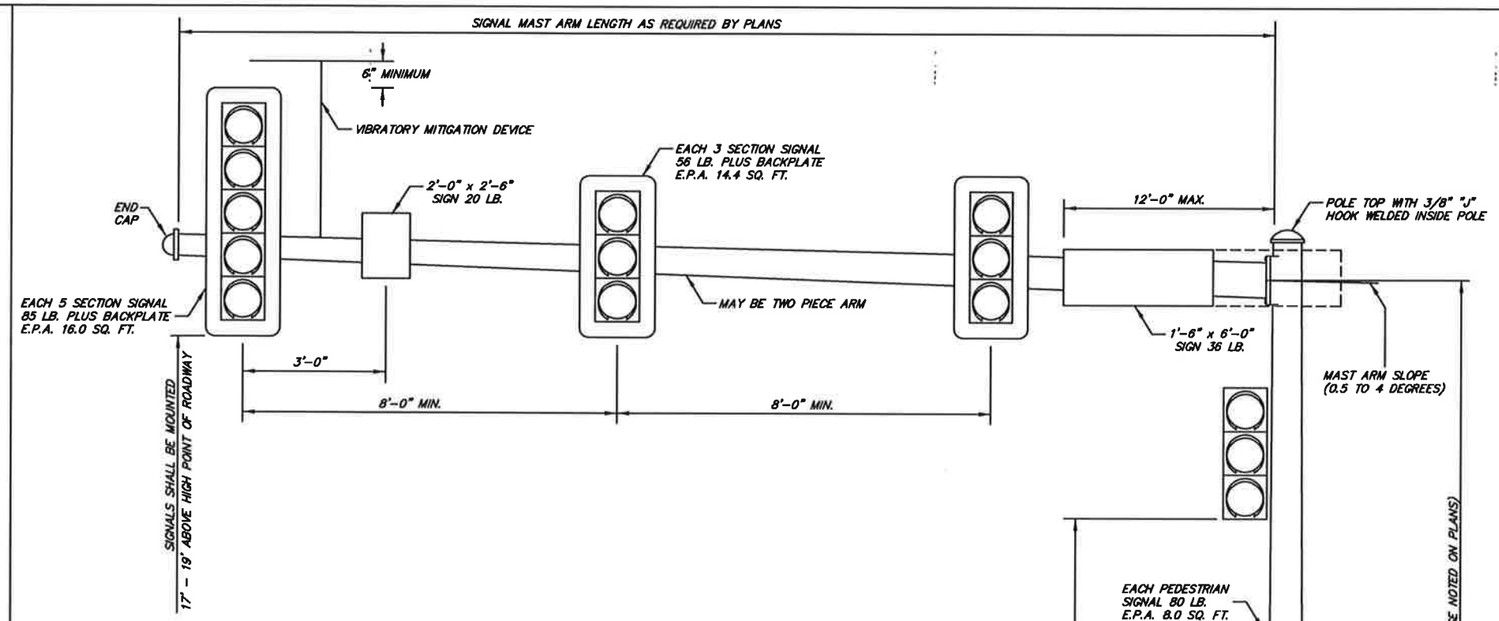
7. EACH POLE SHALL INCLUDE A BOLT DOWN NUT COVER FOR EACH ANCHOR BOLT.

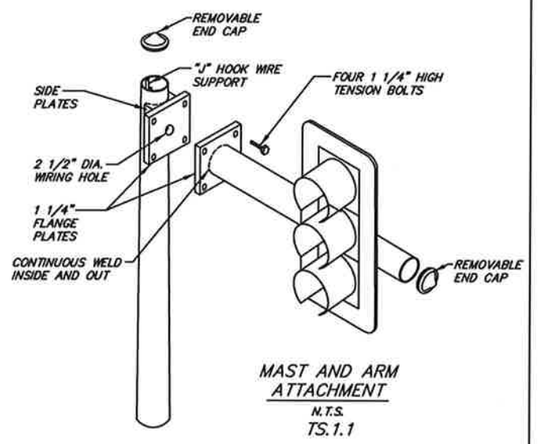
8. EACH POLE BASE SHALL INCLUDE A 10' x 5/8" COPPER-WELD GROUND ROD WHICH EXTENDS A MINIMUM OF 8 FT. OUTSIDE BASE. GROUND ROD SHALL BE SECURELY BONDED TO POLE WITH A #8 AWG SOLID GROUND WIRE. (SEE DETAILS ON SHEET TS2)

9. CONCRETE FOR CONTROLLER CABINET SHALL BE CLASS "AA" 3500 psi, OR GREATER. CONCRETE FOR POLE FOUNDATIONS SHALL BE CLASS "AAA" 4000 psi, OR GREATER.

10. PEDESTRIAN MOVEMENTS SHALL BE PUSH BUTTON ACTUATED AND CONCURRENTLY TIMED, UNLESS OTHERWISE INDICATED ON THE PLANS. FURNISHING AND INSTALLING PEDESTRIAN PUSH SWITCH SHALL BE CONSIDERED INCEDENTAL TO THE ITEM PEDESTRIAN SIGNAL HEAD.

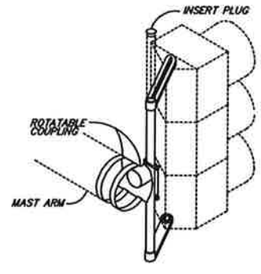
11. PRIOR TO NORMAL OPERATION, SIGNAL SHALL BE FLASHED FOR A PERIOD OF 5 WORK DAYS OR AS DIRECTED BY THE ENGINEER. THE CONTRACTOR MAY BE REQUIRED TO ALTER THE FLASHING DISPLAY DURING THE TEMPORARY FLASH PERIOD. AT THE TIME INTERSECTION IS PLACED IN PERMANENT OPERATION, THE FLASH SEQUENCE SHALL THEN BE RETURNED TO THAT INDICATED ON THE PLANS. NO ADDITIONAL COMPENSATION SHALL BE ALLOWED FOR THESE ALTERATIONS IN FLASH SEQUENCE. SIGNAL HEADS SHALL REMAIN COVERED UNTIL PLACED INTO OPERATION.



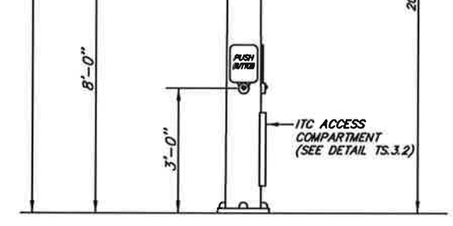


MAST AND ARM ATTACHMENT
N.T.S.
TS.1.1

NOTE:
THE SIGNAL SHALL BE CONNECTED TO THE MAST ARM BY APPROVED BAND BRACKETING ASSEMBLY.

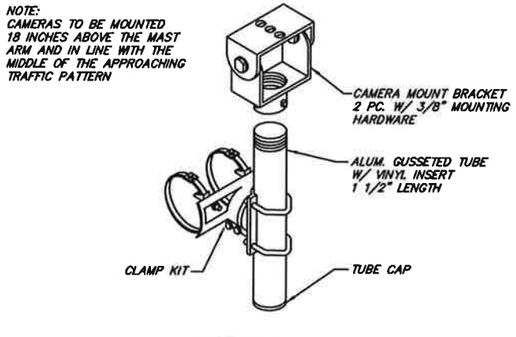


SIGNAL ATTACHMENT
N.T.S.
TS.1.2



SIGNAL POLE
N.T.S.
TS.1.3

NOTE:
CAMERAS TO BE MOUNTED 18 INCHES ABOVE THE MAST ARM AND IN LINE WITH THE MIDDLE OF THE APPROACHING TRAFFIC PATTERN



VIDEO DETECTION CAMERA ATTACHMENT
N.T.S.
TS.1.4

NOTES:

1. EACH ITEM "TRAFFIC SIGNAL HEAD (5 SEC., 1-WAY)" SHALL INCLUDE A SIGN (R10-12) AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD.
2. EACH ITEM "TRAFFIC SIGNAL HEAD (4 SEC., 1-WAY)" SHALL INCLUDE A SIGN (R10-12M) AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD.
3. EACH ITEM "TRAFFIC SIGNAL HEAD (3 SEC., 1-WAY)" TO BE USED AS A LEFT TURN INDICATION ONLY SHALL INCLUDE A SIGN (R10-10) AS SHOWN, ATTACHED TO THE MAST ARM OR SPAN ASSEMBLY 12" TO THE RIGHT OF THE SIGNAL HEAD.
4. EACH PEDESTRIAN PUSHBUTTON SHALL HAVE ONE R10-4b SIGN ATTACHED TO THE POLE ABOVE THE BUTTON.
5. ALL SIGN FACES SHALL BE CONSTRUCTED OF DIAMOND VIP GRADE SHEETING WITH SILKSCREEN LEGEND AND BORDER.
6. ALL SIGN BLANKS SHALL BE CONSTRUCTED OF ALLUMINUM ALLOY (ASTM DESIGNATION B-209, ALLOY 5052-H38) WITH A THICKNESS OF 0.100 INCH.

Revision	Date	By
Revised General Notes 3 & 8.	AUG-2011	MM
Added Note 3 to the Sign Notes.	AUG-2011	MM
Revised Dimensions & Notes for TS.1.3	AUG-2011	MM

Standard Drawings
TRAFFIC SIGNALS
Public Works Construction

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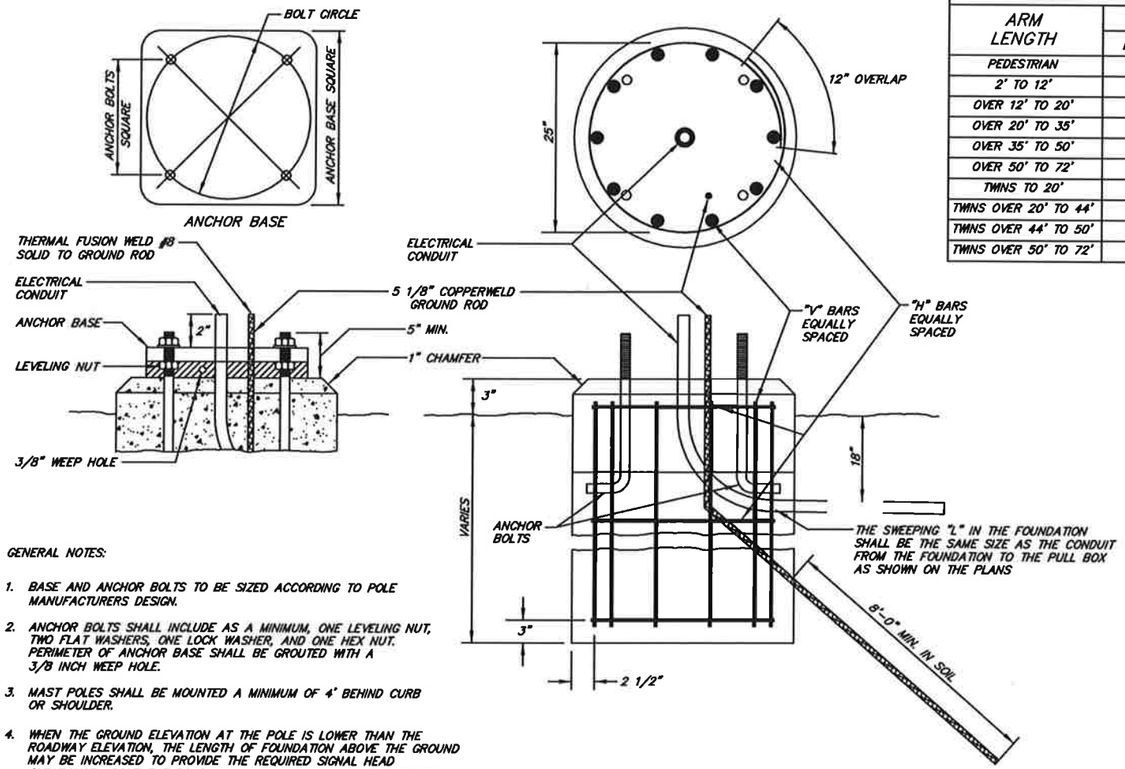


GENERAL NOTES:

1. BASE AND ANCHOR BOLTS TO BE SIZED ACCORDING TO POLE MANUFACTURERS DESIGN.
2. ANCHOR BOLTS SHALL INCLUDE AS A MINIMUM, ONE LEVELING NUT, TWO FLAT WASHERS, ONE LOCK WASHER, AND ONE HEX NUT. PERIMETER OF ANCHOR BASE SHALL BE GROUTED WITH A 3/8 INCH WEEP HOLE.
3. MAST POLES SHALL BE MOUNTED A MINIMUM OF 4' BEHIND CURB OR SHOULDER.
4. WHEN THE GROUND ELEVATION AT THE POLE IS LOWER THAN THE ROADWAY ELEVATION, THE LENGTH OF FOUNDATION ABOVE THE GROUND MAY BE INCREASED TO PROVIDE THE REQUIRED SIGNAL HEAD CLEARANCE ABOVE THE ROADWAY. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 18" OR LESS, NO INCREASE IN DEPTH WILL BE REQUIRED. WHEN THE REQUIRED LENGTH OF FOUNDATION ABOVE THE GROUND IS 5'-6" OR LESS, INCREASE DEPTH BY 1'-0". FOR LENGTHS GREATER THAN 5'-6", DEPTH SHALL BE ADJUSTED AS DIRECTED BY THE ENGINEER. LONGITUDINAL REINFORCING, AS SHOWN IN THE TABLE, SHALL BE PROVIDED FOR THE LENGTH OF THE EXTENDED SHAFT AND #4 TIES SHALL BE PROVIDED AT A SPACING NOT TO EXCEED 9" ON CENTERS.

TYPICAL FOUNDATION

N.T.S.

TS.2.1

POLE FOUNDATION MINIMUM DIMENSIONS AND STEEL REINFORCING
(ALL REINFORCING STEEL SHALL BE GRADE 40 MINIMUM)

ARM LENGTH	FOUNDATION		STEEL		
	DIAMETER	DEPTH	VERTICAL	HORIZONTAL	O.C.
PEDESTRIAN	30"	7'-0"	12-#7 (6'-6")	10-#4	8.44"
2' TO 12'	30"	10'-6"	12-#7 (10'-0")	15-#4	8.42"
OVER 12' TO 20'	30"	11'-6"	12-#7 (11'-0")	16-#4	8.66"
OVER 20' TO 35'	36"	12'-6"	13-#8 (12'-0")	17-#4	8.88"
OVER 35' TO 50'	36"	13'-6"	13-#8 (13'-0")	19-#4	8.56"
OVER 50' TO 72'	42"	14'-6"	18-#8 (14'-0")	20-#4	8.74"
TWINS TO 20'	30"	16'-0"	12-#6 (15'-6")	22-#4	8.76"
TWINS OVER 20' TO 44'	36"	16'-0"	13-#8 (15'-6")	22-#4	8.76"
TWINS OVER 44' TO 50'	42"	16'-0"	18-#8 (15'-6")	22-#4	8.76"
TWINS OVER 50' TO 72'	42"	16'-6"	18-#8 (16'-0")	23-#4	8.64"

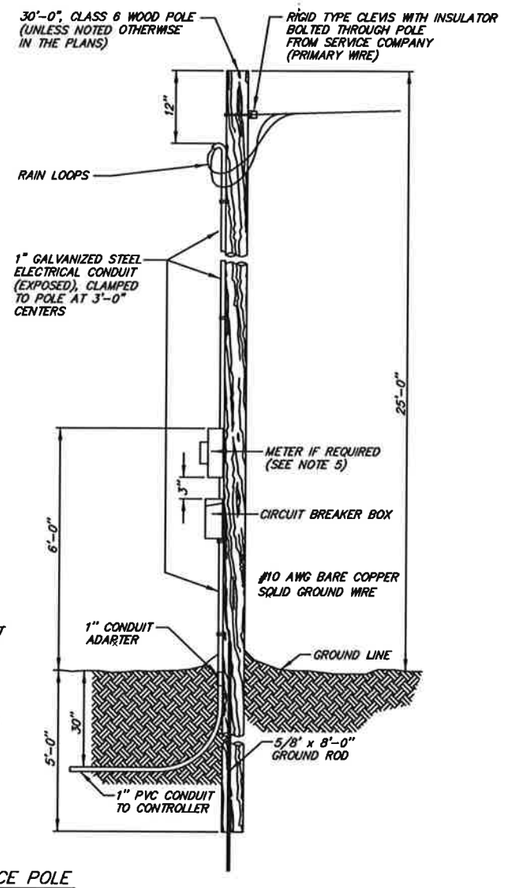
GENERAL NOTES

1. SERVICE POLE:

   PRIMARY SERVICE SHALL BE FURNISHED TO A SERVICE POLE OR TO A TRAFFIC SIGNAL POLE. THE INSTALLATION SHALL INCLUDE GROUND ROD, METER BASE, INSULATORS, CABLES, CONDUIT, SERVICE HEAD, SERVICE BRACKET, CIRCUIT BREAKERS, AND ALL OTHER ITEMS NECESSARY TO COMPLETE THE WORK. THE CONTRACTOR SHALL COORDINATE WITH THE POWER COMPANY TO GET THE CONNECTION AT THE PROPER TIME.

   THE EQUIPMENT, CONSTRUCTION AND INSTALLATION ON THE SERVICE POLE, AND SERVICE SHALL BE SUBJECT TO THE APPROVAL OF THE POWER COMPANY.

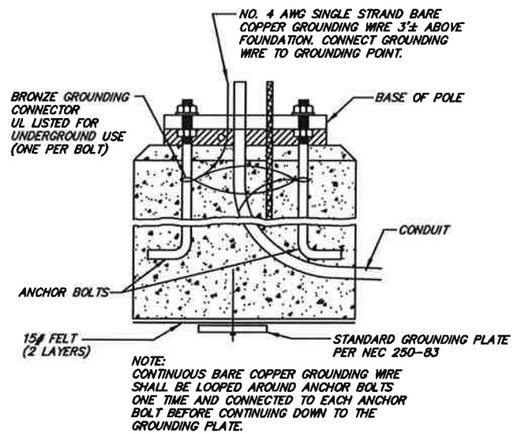
2. ON PROJECTS WHERE SERVICE POLES ARE INSTALLED, THE SERVICE POLE SHALL BE INSTALLED AS CLOSE TO THE RIGHT-OF-WAY AS POSSIBLE. LOCATION SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
3. INSTALL A CONDUIT COUPLING ADAPTOR, OR COMPRESSION COUPLING IF NECESSARY TO CONNECT CONDUITS OF DISSIMILAR MATERIALS.
4. THE PRIMARY WIRING SHALL BE PROVIDED BY THE LOCAL UTILITY CO., UNLESS OTHERWISE SPECIFIED.
5. THE CONTRACTOR SHALL INSTALL THE REQUIRED METERING EQUIPMENT FURNISHED BY THE LOCAL UTILITY CO., UNLESS OTHERWISE SPECIFIED.
6. COSTS ASSOCIATED WITH PROVIDING AND INSTALLING THE PRIMARY SERVICE, EXCEPT FOR THE SERVICE POLE COST, SHALL BE CONSIDERED INCIDENTAL TO THE AMOUNT BID FOR TRAFFIC SIGNAL POLES.



OVERHEAD SERVICE TO SERVICE POLE

N.T.S.

TS.2.2



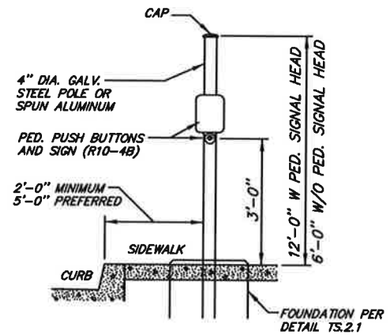
NOTE:
CONTINUOUS BARE COPPER GROUNDING WIRE SHALL BE LOOPED AROUND ANCHOR BOLTS ONE TIME AND CONNECTED TO EACH ANCHOR BOLT BEFORE CONTINUING DOWN TO THE GROUNDING PLATE.

ALTERNATE GROUNDING DETAIL

N.T.S.

TS.2.3

NOTE:
ALL PEDESTRIAN PUSH BUTTONS SHALL BE ADA COMPLIANT. PUSH BUTTONS SHALL BE ADJACENT TO THE SIDEWALK, OR AS DIRECTED BY THE ENGINEER.



PEDESTRIAN PUSH BUTTON POLE

N.T.S.

TS.2.4

Revision	Date	By
Revised Table, Detail TS.2.1	AUG-2011	MM
Added Note 4, Detail TS.2.1	AUG-2011	MM

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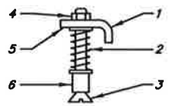
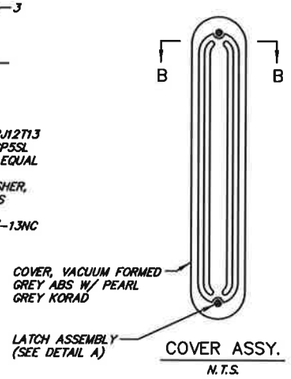
ITEM	DESCRIPTION	QTY
1	COVER LATCH, ALUM.	2
2	SPRING	2
3	FLAT SOC. HD. SCREW 1/4"-20 x 2 1/4", STAINLESS	2
4	HEX, LOCKNUT, 1/4" - 20, SS	2
5	SAE FLATWASHER, 1/4", 22	4
6	PVC SPACER, 1/2" x 1/2"	2



DETAIL A
N.T.S.

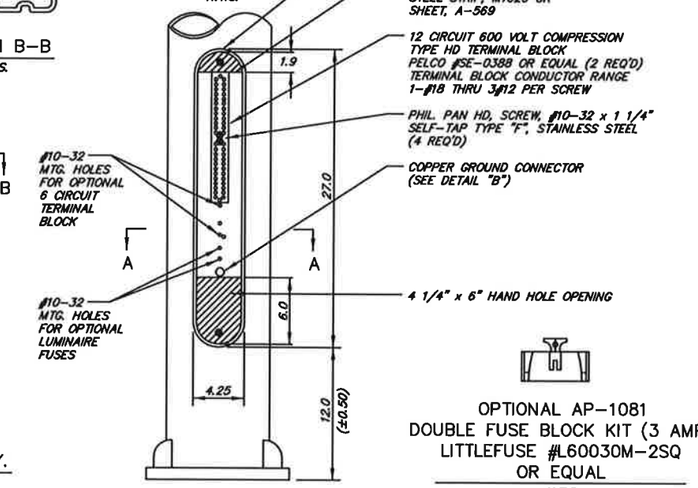
DETAIL B
N.T.S.



COVER ASSY.
N.T.S.

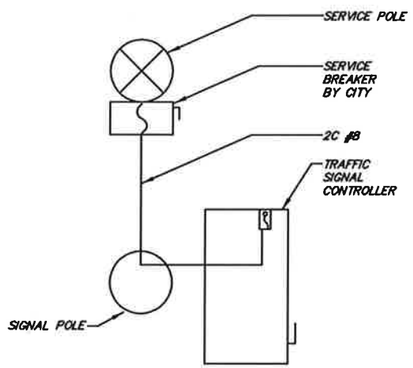
SECTION A-A
N.T.S.

SECTION B-B
N.T.S.

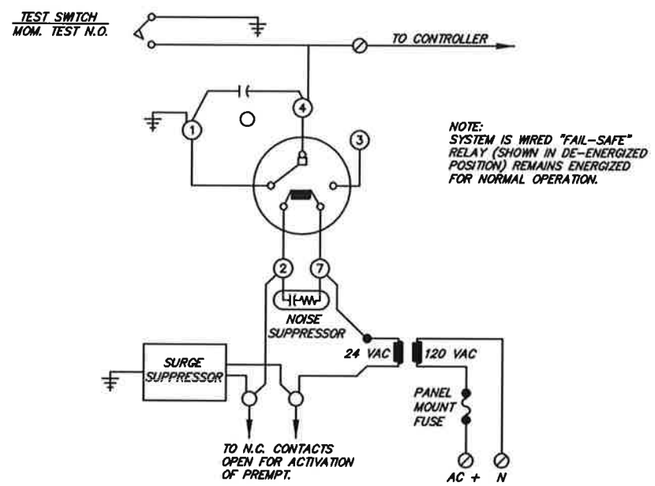


OPTIONAL AP-1081
DOUBLE FUSE BLOCK KIT (3 AMP)
LITTLEFUSE #L60030M-2SQ
OR EQUAL
N.T.S.

ITC ACCESS COMPARTMENT
3/8" x 4 3/4" x 27"
W/ PELCO COMPRESSION TYPE TERMINAL BLOCKS
N.T.S.
TS.3.1



SIGNAL DISCONNECT
N.T.S.
TS.3.2



TRAFFIC SIGNAL PRE-EMPTION
INTERFACE WIRING DIAGRAM
N.T.S.
TS.3.3

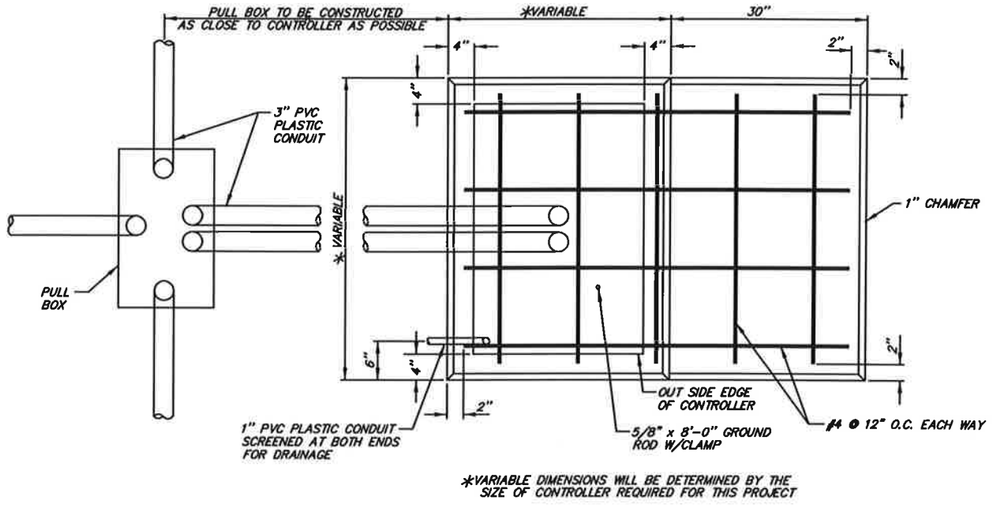
Revision	Date	By

Standard Drawings
TRAFFIC SIGNALS
Public Works Construction

The City of Fort Smith ARKANSAS

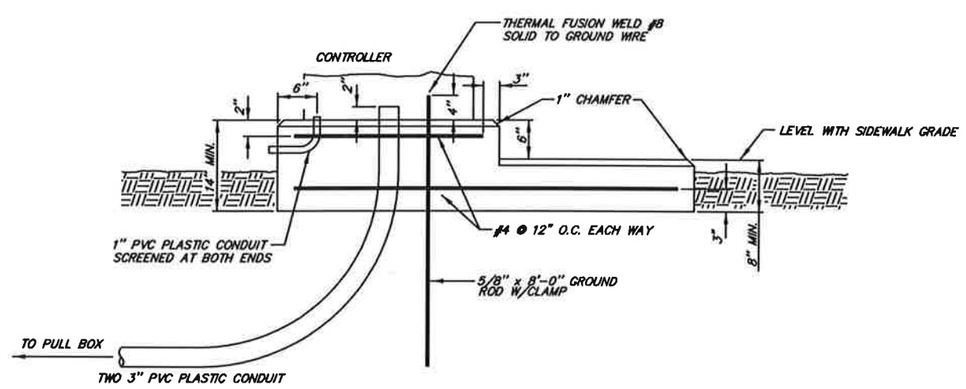
CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
Phone (479)784-2225 Fax (479)784-2245

Project:	Details
Date:	NOV 2012
Scale:	As Shown
Drawn By:	RBR
Dwg. No.:	TS3
Sheet No:	34



*VARIABLE DIMENSIONS WILL BE DETERMINED BY THE SIZE OF CONTROLLER REQUIRED FOR THIS PROJECT

TOP VIEW

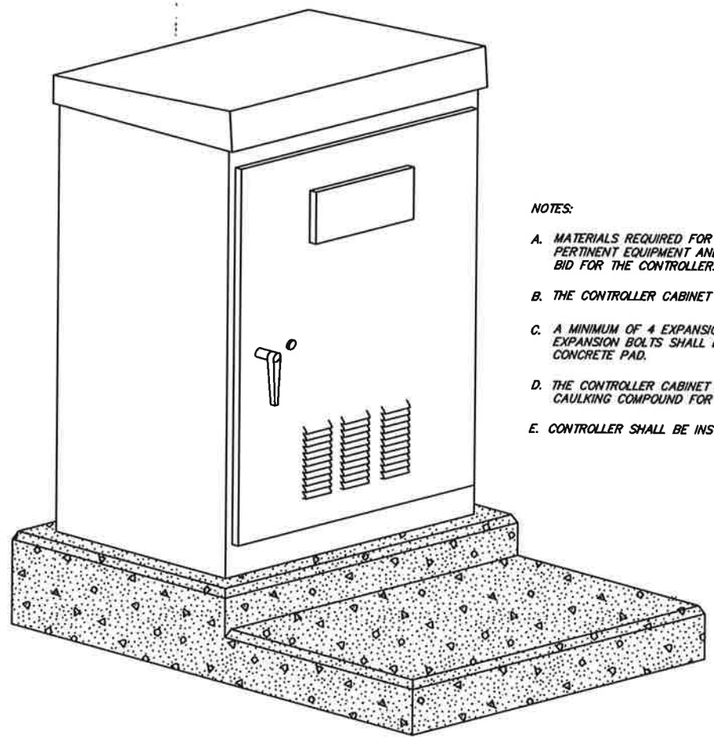


SIDE VIEW

CONCRETE CONTROLLER PAD

N.T.S.

TS.4.1



NOTES:

A. MATERIALS REQUIRED FOR THE CONTROLLER CABINET FOUNDATION, AND ALL PERTINENT EQUIPMENT AND ASSEMBLY SHALL BE INCLUDED IN THE PRICE BID FOR THE CONTROLLER.

B. THE CONTROLLER CABINET FOUNDATION SHALL BE CLASS "AA", 3500 psi. CONCRETE.

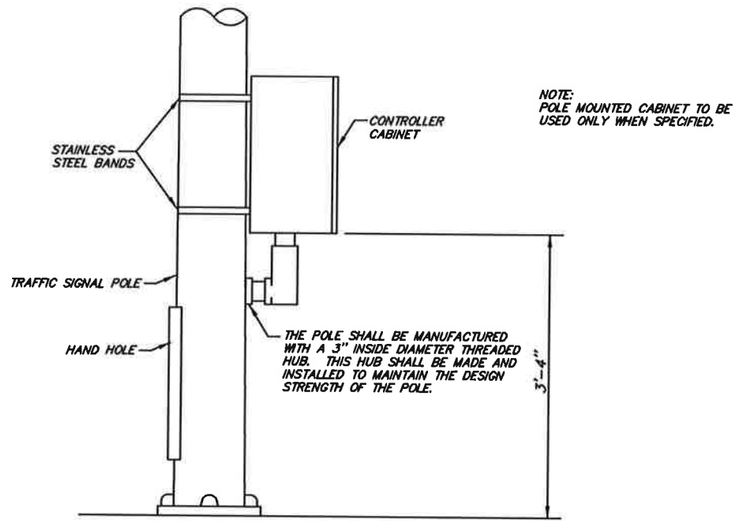
C. A MINIMUM OF 4 EXPANSION BOLTS ARE REQUIRED, 1/2" x 3-3/4" STAINLESS STEEL EXPANSION BOLTS SHALL BE USED TO MOUNT THE CONTROLLER CABINET TO THE CONCRETE PAD.

D. THE CONTROLLER CABINET SHALL BE INSTALLED ON TOP OF SILICANT RUBBER CAULKING COMPOUND FOR WEATHERPROOFING OF THE CABINET.

E. CONTROLLER SHALL BE INSTALLED OUTSIDE OF SIDEWALK AND AT THE R/W LINE.

TYPICAL CONTROLLER CABINET INSTALLATION

N.T.S.



NOTE:
POLE MOUNTED CABINET TO BE USED ONLY WHEN SPECIFIED.

POLE MOUNTED CONTROLLER CABINET

N.T.S.

TS.4.2

Revision	Date	By

Standard Drawings
TRAFFIC SIGNALS
Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
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Project:	Details
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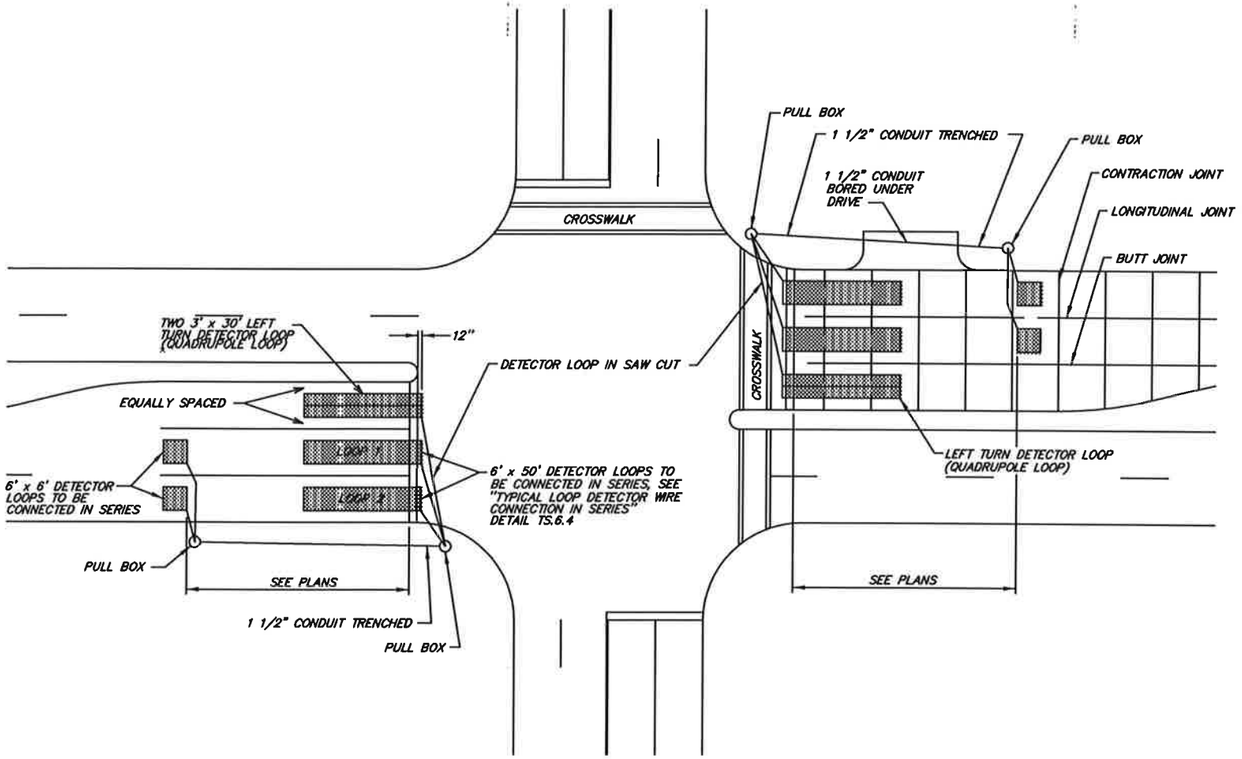
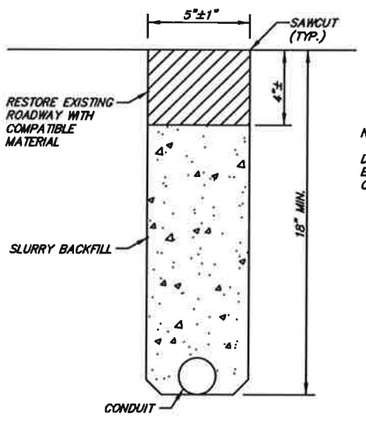
Sheet No:	35



TYPICAL DETECTOR WIRE AND LOOP PLACEMENT

N.T.S.

TS.5.1



NOTE:

DETAIL TO BE USED ONLY WHERE BORING OF CONDUIT UNDER ROADWAY OR DRIVEWAY IS NOT FEASIBLE.

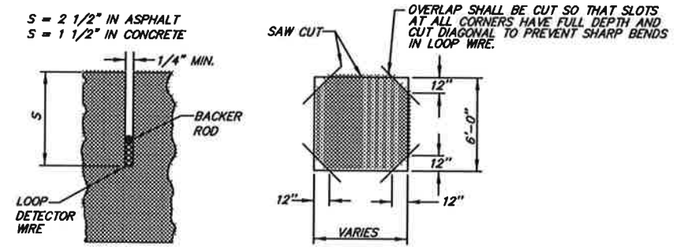
CONDUIT TRENCH IN ROADWAY

N.T.S.

TS.5.3

GENERAL NOTES

1. ALL SAW CUTS AND HOLES ON DETECTOR SYSTEMS SHALL BE SEALED WITH 3M, DLS 5000 PLYPACK SEALANT
2. ALL DETECTORS SHALL BE FURNISHED WITH DELAY OUTPUTS AND EXTEND OUTPUTS ACCORDING TO SECTION 828 OF THE "STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION".



TYPICAL LOOP SAW CUT

N.T.S.

TS.5.2

GENERAL NOTES:

1. LOOPS WITH A PERIMETER LESS THAN OR EQUAL TO 40' SHALL HAVE THREE TURNS, UNLESS OTHERWISE NOTED ON THE PLANS. ALL OTHER LOOPS TO HAVE 2 TURNS.
2. LOOP AND FEEDER WIRE SHALL BE CONTINUOUS WITHOUT SPLICES EXCEPT AT THE LOOP / FEEDER WIRE SPLICE AS SHOWN ON DETAIL TS.6.1. SPLICE SHALL BE ROSIN SOLDERED AND WATERPROOFED WITH AN ACCEPTED SPLICE KIT. DRAIN WIRE SHALL BE GROUNDED IN CABINET AND INSULATED AT LOOP FEEDER SPLICE.
3. THE LOOP FEEDER SPLICE, FEEDER JACKET AND JACKET OF LOOP WIRE IN DUCT SHALL BE COMPLETELY SEALED AND WATERPROOFED.
4. EACH LOOP SHALL HAVE A SEPARATE "FEEDER WIRE" UNLESS OTHERWISE NOTED. ALL FEEDER WIRES SHALL BE LABELED AS TO LOOP NUMBER AS DESIGNATED ON THE PLANS.
5. ALL LOOP WIRE ENTERING PULL BOXES SHALL BE ENCLOSED IN CONDUIT. EACH LOOP WIRE SHALL ENTER PULL BOX OR POLE BASE THROUGH A SEPARATE PIECE OF 1 INCH DIAMETER CONDUIT.
6. LOOP WIRE FROM LOOP TO CONDUIT IS NOT TWISTED. LOOP WIRE IN THE CONDUIT MUST BE TWISTED TWO TO FIVE TURNS PER FOOT.
7. WARRANTY PERIOD FOR LOOPS SHALL NOT COMMENCE UNTIL ACCEPTED BY THE ENGINEER.

Revision	Date	By

Standard Drawings
LOOP DETECTORS
Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
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Project:	Details
Date:	NOV 2012
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Drawn By:	RBR
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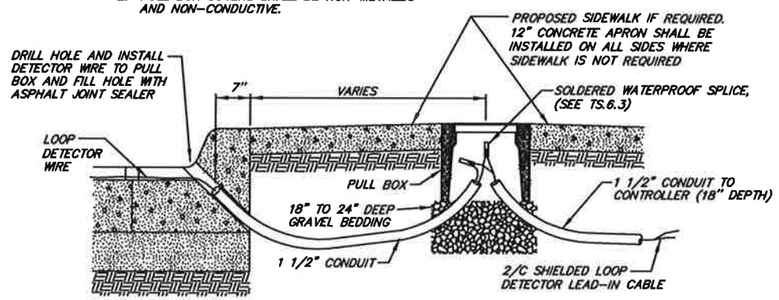
Sheet No:	36

GENERAL NOTES

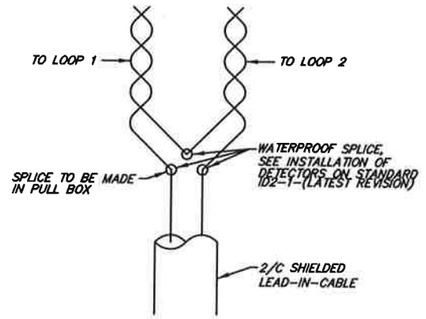
1. EACH SPLICE SHALL HAVE ITS OWN INDIVIDUAL ELECTRICAL INSULATING TUBE OR RESIN PACKAGE.
2. PULL BOX COVERS SHALL BE NON-METALLIC AND NON-CONDUCTIVE.



DETECTOR WIRE THROUGH EXISTING CURB TO PULL BOX

N.T.S.

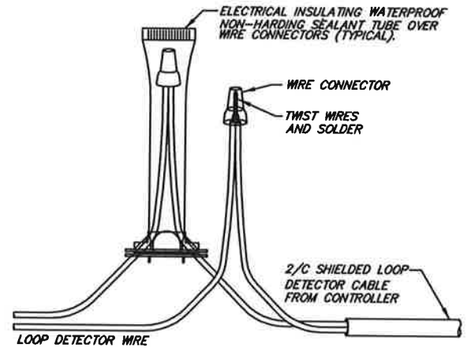
TS.6.1



TYPICAL LOOP DETECTOR WIRE CONNECTION IN SERIES

N.T.S.

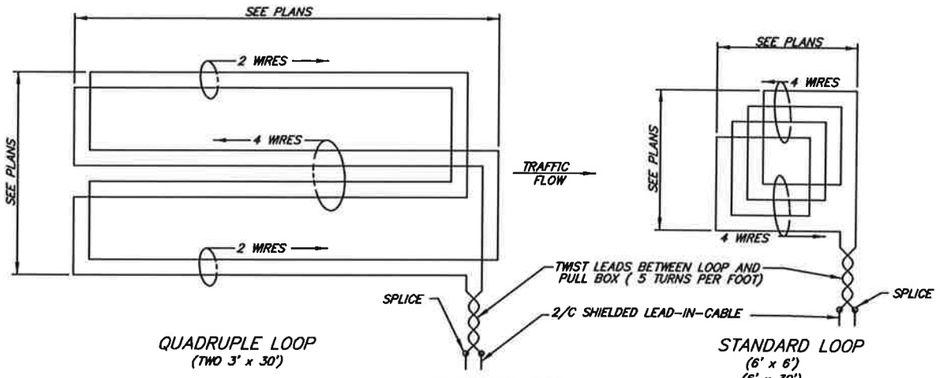
TS.6.2



TYPICAL LOOP DETECTOR WIRE CONNECTION

N.T.S.

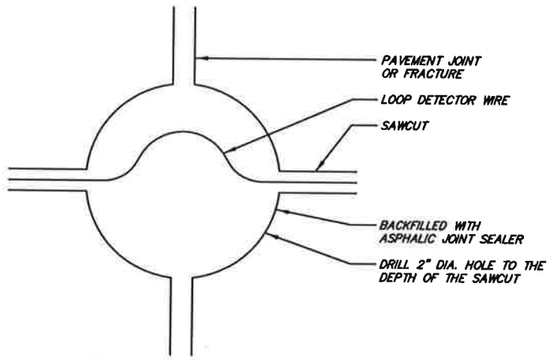
TS.6.3



DETECTOR LOOP WIRE CONFIGURATION

N.T.S.

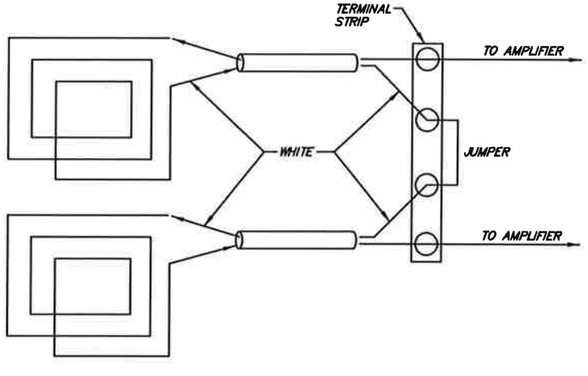
TS.6.4



LOOP WIRE CROSSING AT CONC. CONTRACTION JOINT

N.T.S.

TS.6.6



SERIES CONNECTED LOOPS

N.T.S.

TS.6.9

Standard Drawings
LOOP DETECTORS
Public Works Construction

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The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
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Project:	Details
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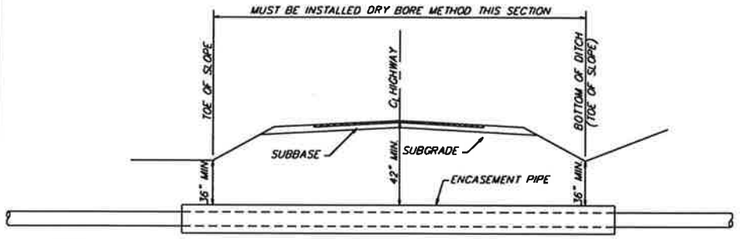
Sheet No:	37



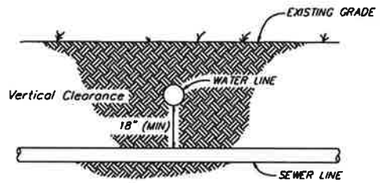
NOTES:

1. CASINGS SHALL HAVE A MINIMUM OF 3 FEET (36") COVER TO THE TOP OF THE PIPE BELOW THE PARALLEL DITCH LINES OR 3 1/2 FEET (42") BELOW THE TOP OF THE HIGHWAY SUBGRADE, WHICHEVER GIVES THE GREATER COVER. CASING SHOULD EXTEND THE FULL WIDTH OF THE RIGHT-OF-WAY BUT AS A MINIMUM MUST EXTEND SIX FEET BEYOND THE FLOWLINE OF THE PARALLEL DITCHES, TOE OF THE FORESLOPE, OR BACK OF CURBS AS APPLICABLE FOR THE ROADWAY SECTION.
3. BORES SHALL BE PAID FOR PER UNIT FOOT OF BORE WITH LINE INSIDE ENCASEMENT BEING PAID FOR SEPARATELY.
4. INSTALL STAINLESS STEEL BAND CASING INSULATORS (MODEL NO. 59 BY J-FOUR PIPELINE PRODUCTS) OR APPROVED EQUAL IN ACCORDANCE WITH MANUFACTURERS RECOMENDATIONS.
5. SEAL EACH END WITH ZIPPER END SEALS.
6. WATERLINE SHALL BE PLACED ON PVC SKIDS WITHIN ENCASEMENT PIPE.

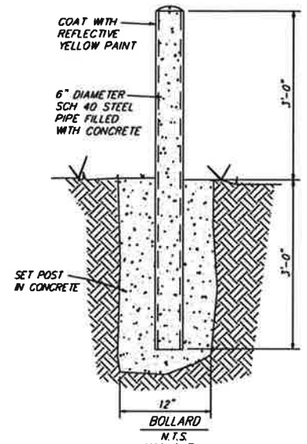
STANDARD ROADWAY CROSSING DETAIL
N.T.S.
WA.1.1

NOTES:

1. ALL WATER & SANITARY SEWER TRENCHES WHICH ARE UNDER THE PROPOSED STREETS MUST BE BACKFILLED AS SHOWN ON THE TRENCHING, BEDDING, AND BACKFILL STANDARD DETAIL DRAWINGS.
2. WATER AND SEWER LINES SHALL MAINTAIN A MINIMUM OF HORIZONTAL SEPARATION DISTANCE OF 10 FEET AT ALL TIMES. ANY DEVIATION SHALL BE CONSIDERED ON A CASE-BY-CASE BASIS. ANY WATER LINE CONSTRUCTED WITHIN 10 FEET HORIZONTALLY FROM SEWER LINES SHALL BE DUCTILE IRON.
3. WATER AND SEWER LINES SHALL MAINTAIN A MINIMUM VERTICAL SEPARATION OF 18 INCHES WITH THE WATER LINE CROSSING ABOVE THE SEWER LINE. ANY DEVIATION FROM THIS REQUIREMENT WILL BE CONSIDERED BY THE STATE HEALTH DEPARTMENT ON A CASE-BY-CASE BASIS, AND IF APPROVED, BOTH WATER AND SEWER LINES SHALL BE DUCTILE IRON FOR A 20 FOOT SECTION, TO BE CENTERED AT THE VERTICAL CROSSING.
4. WHERE A WATERLINE MUST UNAVOIDABLY PASS BENEATH A SEWER LINE, AT LEAST 18 INCHES OF SEPARATION MUST BE MAINTAINED AND BOTH WATER AND SEWER LINES SHALL BE DUCTILE IRON FOR A 20 FOOT SECTION, TO BE CENTERED AT THE VERTICAL CROSSING POINT.



DETAIL - WATER/SEWER LINE SEPARATION
N.T.S.
WA.1.2



N.T.S.
WA.1.3

CONCRETE BLOCKING DATA
THRUST PER LB. OF WATER PRESSURE
(COEFFICIENT)

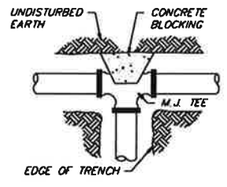
PIPE SIZE	DEAD END OR TEE	90° BEND	45° BEND	22 1/2° BEND	11 1/4° BEND
2	4	5	3	2	1
3	7	10	6	3	2
4	13	18	10	5	3
6	21	40	22	11	6
8	39	84	39	20	10
10	79	113	61	31	16
12	112	160	87	45	23
14	154	219	119	61	31
16	200	285	155	79	40
18	253	361	196	100	51
20	313	446	242	123	62
22	378	539	292	149	75
24	450	642	348	177	90

BEARING STRENGTH OF SOILS

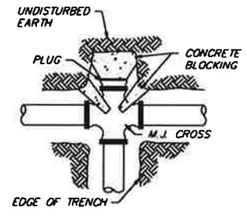
SOIL TYPE	SAFE BEARING LOAD, LBS./SQ. FT.
MUCK	0
SOFT CLAY	1,000
MEDIUM CLAY OR SAND	2,500
COMPACTED SAND	3,000
HARD CLAY	6,000
SHALE	10,000

NOTES:

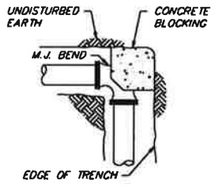
1. A PROPERLY DESIGNED RESTRAINT SYSTEM USING MEGA-LUG BY EBAA IRON OR APPROVED EQUAL MAY BE USED IN LIEU OF CONCRETE BLOCKING.
2. NO CONCRETE BLOCKING SHALL BE USED IF A RESTRAINT SYSTEM IS SHOWN ON THE PLANS.
3. AN ALLOWANCE FOR WATER HAMMER OF 50% OF THE PRESSURE CONDITION SHALL BE MADE IN SIZING ALL THRUST BLOCKS UNLESS OTHERWISE DIRECTED. FOR BENDS IN WHICH THE RESULTANT THRUST IS HORIZONTAL OR DOWNWARD, THE AREA OF UNDISTURBED TRENCH BACKING FOR THRUST BLOCKS SHALL BE IN ACCORDANCE WITH THE FOLLOWING FORMULA:
   SQ.FT. OF UNDISTURBED TRENCH BACKING = PRESSURE CONDITION X 1.5 COEFFICIENT / SAFE BEARING LOAD OF SOIL
4. THE MINIMUM AREA OF TRENCH BACKING FOR THRUST BLOCKS SHALL BE 1.0 SQ. FT. REGARDLESS OF SIZE GIVEN BY FORMULA.
   EXAMPLE: 90° BEND, 8" LINE, 100 PSI LINE PRESSURE, MEDIUM CLAY
   SQ. FT. OF TRENCH BACKING= 100 X 1.5 X 84 = 5.0 SQ. FT.
5. FOR VERTICAL BENDS IN WHICH THE RESULTANT THRUST IS UPWARD, THE THRUST BLOCK SHALL BE SIZED IN ACCORDANCE WITH THE FOLLOWING FORMULA:
   SIZE OF BLOCK(CU. FT.)= PRESSURE CONDITION X 1.5 COEFFICIENT
   EXAMPLE: 11-1/4" VERTICAL BEND WITH UPWARD THRUST, 16" PIPE 100 PSI, TYPE SOIL IS NOT CONSIDERED.
   SIZE OF BLOCK = 100 X 1.5 X 40 = 40 CU. FT.
6. THE STRAPS FOR VERTICAL BENDS SHALL BE OF GALVANIZED STEEL WITH MIN. DIMENSIONS OF 3/16" X 2-1/2". THE LENGTH OF THE STRAPS SHALL BE SUFFICIENT TO PROVIDE FOR 12" OF EMBEDMENT OF EACH END INTO THE CONCRETE BLOCK. THE END 2" OF THE STRAP SHALL BE BENT AT 90 DEGREES TO THE AXIS OF THE STRAP TO PROVIDE FOR ANCHORAGE. COSTS OF STRAPS IS TO BE INCLUDED IN THE UNIT PRICE FOR CONCRETE BLOCKING.



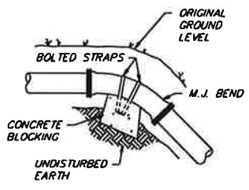
BLOCKING FOR TEES
N.T.S.
WA.1.4



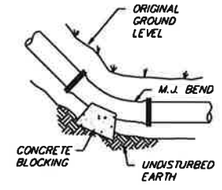
BLOCKING FOR CROSSES
N.T.S.
WA.1.5



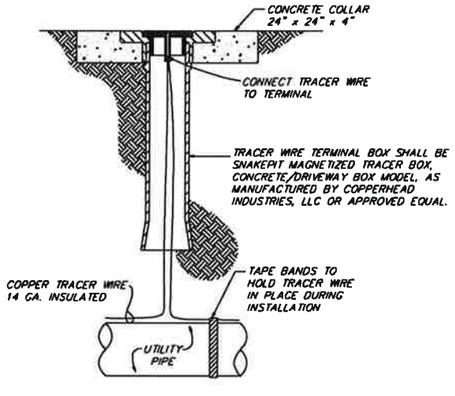
BLOCKING FOR BENDS
N.T.S.
WA.1.6



BLOCKING FOR BENDS
N.T.S.
WA.1.7



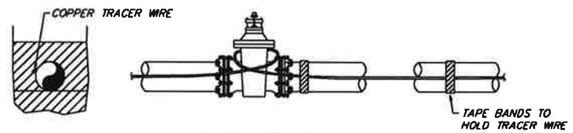
BLOCKING FOR BENDS
N.T.S.
WA.1.8



NOTES:

1. WIRE SHALL BE SPLICED USING 3M DIRECT BURY SPLICE KIT DBR/Y-6 OR APPROVED EQUAL.
2. TERMINAL BOXES SHALL BE LOCATED AT APPROX. INTERVALS OF 500' AT LOCATIONS DETERMINED BY THE ENGINEER AND AT EACH END OF THE PIPING INSTALLATION. A CONCRETE COLLAR SHALL BE PLACED ON EACH TERMINAL BOX LOCATED OUTSIDE OF PAVEMENT SURFACES OR SIDEWALKS.
3. TAPE BANDS SHALL BE PLACED EVERY FOUR FEET TO HOLD TRACER WIRE IN PLACE DURING INSTALLATION.
4. THE CONTRACTOR SHALL PROVIDE AN INSTRUMENT AND DEMONSTRATE THE ELECTRICAL CONTINUITY OF ALL TRACER WIRES PRIOR TO THE FINAL ACCEPTANCE BY THE OWNER.
5. TRACER WIRE SHALL BE INSTALLED ON ALL WATERLINES AND INSTALLED IN THE LOCATION DIRECTED BY THE ENGINEER BUT SHALL GENERALLY BE LOCATED IMMEDIATELY ADJACENT TO THE PIPE AND AT THE SAME DEPTH. TRACER WIRE SHALL ALSO BE INSTALLED ON SERVICE LINES BETWEEN THE WATERLINE AND THE WATER METER. TRACER WIRE SHALL EXTEND AT LEAST ONE FOOT INTO METER BOX.

TRACER WIRE TERMINAL
N.T.S.
WA.1.9



TRACER WIRE DETAIL
N.T.S.
WA.1.10

STATE OF ARKANSAS
3-30-16
REGISTERED PROFESSIONAL ENGINEER
MATTHEW AARON MEEKER
No. 12741

Revision	Date	BY
Replaced Detail WA.1.9	MAR-2016	MM
Deleted Detail WA.1.11	MAR-2016	MM

Standard Drawings
WATER SYSTEM IMPROVEMENTS
Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
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Project:	Details
Date:	NOV 2012
Scale:	As Shown
Drawn By:	RBR
Dwg. No.:	WA1
Sheet No:	38

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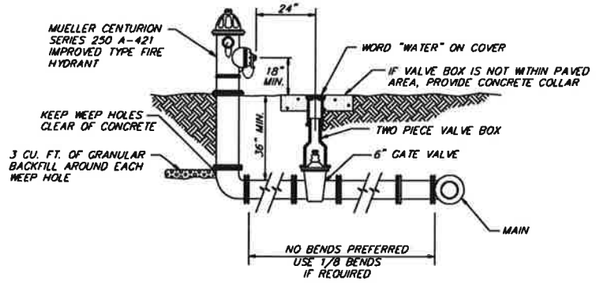
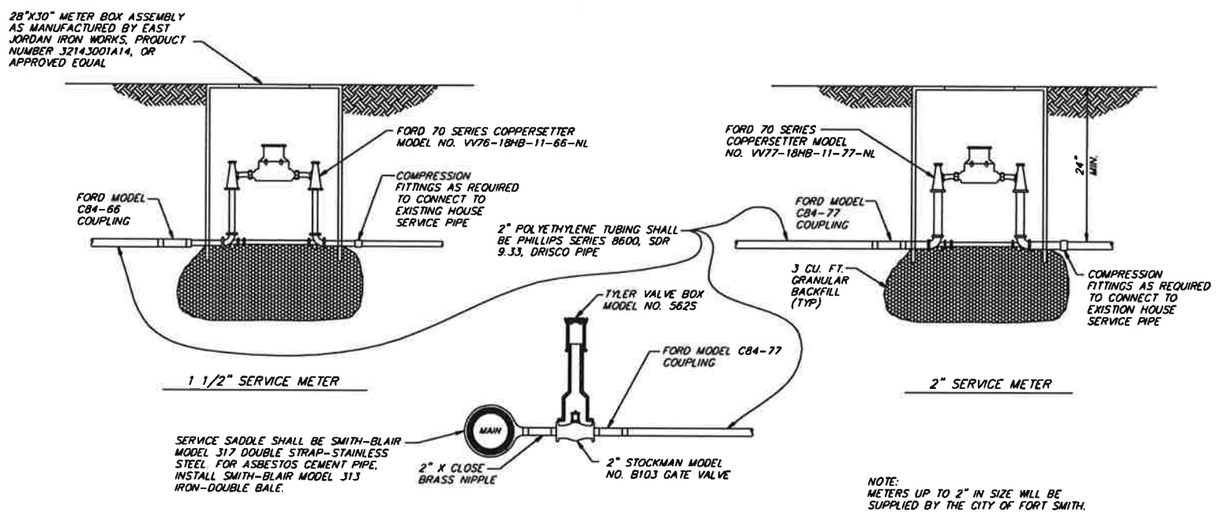


NOTES:

1. ALL VALVES AND HYDRANTS SHALL BE SET IN TRUE VERTICAL POSITION.
2. FIRE HYDRANT ASSEMBLY INCLUDES HYDRANT, ALL FITTINGS, VALVE, VALVE BOX, PIPE TO MAIN LINE, AND CONCRETE FOR COLLAR AND BLOCKING.
3. ALL PIPE TO BE 6" DUCTILE IRON FROM MAIN TO HYDRANT WITH SWIVEL OR RESTRAINED MECHANICAL JOINTS.
4. HYDRANT SHALL BE OF THE DRY BARREL TYPE AND SHALL HAVE 2 2-1/2" HOSE NOZZLES AND 1 4-1/2" PUMPER NOZZLE.
5. LATERAL PIPE AND VALVE TO BE INCLUDED IN FIRE HYDRANT BID ITEM.

FIRE HYDRANT ASSEMBLY
N.T.S.
WA.2.1



NOTE:
METERS UP TO 2" IN SIZE WILL BE SUPPLIED BY THE CITY OF FORT SMITH.

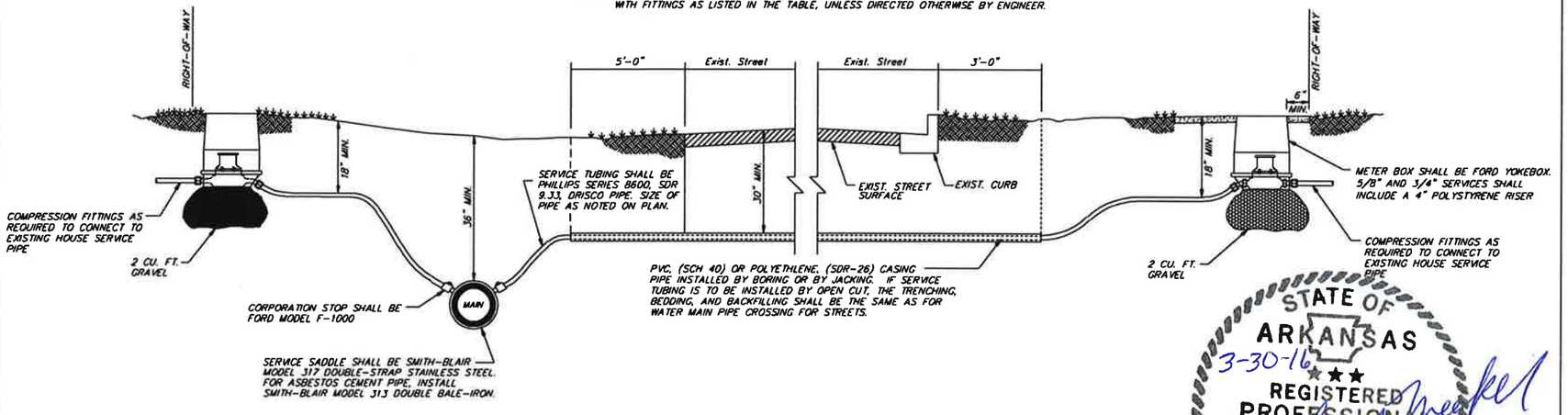
1 1/2" AND 2" SERVICE METER
N.T.S.
WA.2.2

Revision	Date	BY
Revised Detail WA.2.2	MAR-2016	MM
Revised Detail WA.2.3	MAR-2016	MM

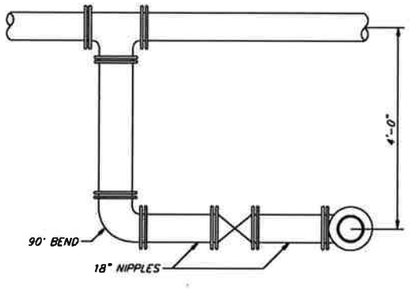
Standard Drawings
WATER SYSTEM IMPROVEMENTS
Public Works Construction

5/8", 3/4", AND 1" SERVICE METER SCHEDULE					
SERVICE SIZE	SERVICE SADDLE TAP SIZE	CORPORATION STOP (FORD MODEL NO.)	SERVICE TUBING (PHILLIPS SERIES 8600, SDR 9.33, DRISCO PIPE)	METER BOX (FORD YOKEBOX MODEL NO.)	PVC, SDR-26 ENCASEMENT PIPE SIZE
5/8" SERVICE	1"	F-1000-4-G	1"	LYLBB144-C13745-004-NL* W/ A14 FITTING	2"
3/4" SERVICE	1"	F-1000-4-G	1"	LYLBB144-C13745-004-NL* W/ A34 FITTING	2"
1" SERVICE	1"	F-1000-4-G	1"	LYLBB144-C13745-004-NL*	2"

* NOTE: FOR AN EXISTING SERVICE, METER BOX SHALL BE FORD LYLBB144-C13745-003-NL, WITH FITTINGS AS LISTED IN THE TABLE, UNLESS DIRECTED OTHERWISE BY ENGINEER.



5/8", 3/4", AND 1" SERVICE METER
N.T.S.
WA.2.3



NOTES:

1. ALL FITTINGS SHALL BE RESTRAINED JOINTS.
2. SEE DETAIL W.2.1 FOR FIRE HYDRANT AND VALVE CONNECTION DETAIL INFORMATION.

PARALLEL HYDRANT LAYOUT
N.T.S.
WA.2.4

STATE OF ARKANSAS
3-30-16
REGISTERED PROFESSIONAL ENGINEER
No. 12741
MATTHEW AARON MEEKER

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
Phone (479)784-2225 Fax (479)784-2245

Project:	Details
Date:	NOV 2012
Scale:	As Shown
Drawn By:	RBR
Dwg. No.:	WA2
Sheet No:	39

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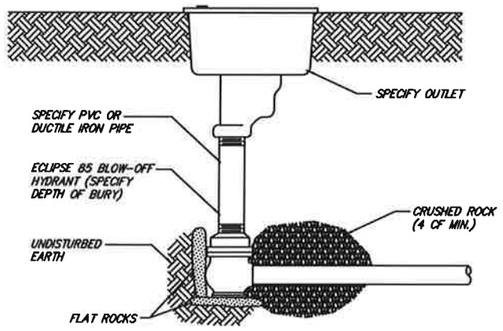
NOTES:

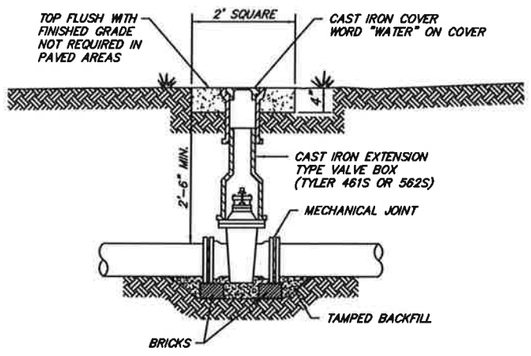
1. BLOW-OFF HYDRANTS SHALL BE ECLIPSE NO. 85 BOX HYDRANT AS MANUFACTURED BY JOHN C. KUPFERLE FOUNDRY COMPANY, ST. LOUIS, MO.
2. HYDRANTS SHALL BE SELF-DRAINING, NON-FREEZING, COMPRESSION TYPE WITH 2-3/16" MAIN VALVE OPENING. INLET CONNECTION SHALL BE (1-1/4" IP, 1-1/2" IP, 2" IP, 2-1/2" IP, 3" IP, 2" MJ, OR 3" MJ). OUTLET SIZE SHALL BE (ANY SIZE UP TO 2-1/2" NST).
3. HYDRANT SHALL HAVE CAST IRON BOX, LOCKING LID, AND 3" SCHEDULE 80 PVC RISER PIPE (3" DUCTILE IRON PIPE ALSO AVAILABLE). pRINCIPAL INTERIOR OPERATING PARTS SHALL BE BRASS AND REMOVABLE FROM THE HYDRANT FOR SERVICING WITHOUT EXCAVATING THE HYDRANT.
4. HYDRANTS SHALL BE SET IN 4 CUBIC FEET OF CRUSHED STONE TO ALLOW FOR PROPER DRAINAGE OF THE HYDRANT. RECOMMENDATIONS OF THE AWWA SHOULD BE FOLLOWED FOR INSTALLATION OF THE HYDRANTS.



ECLIPSE BLOW-OFF HYDRANT

N.T.S.

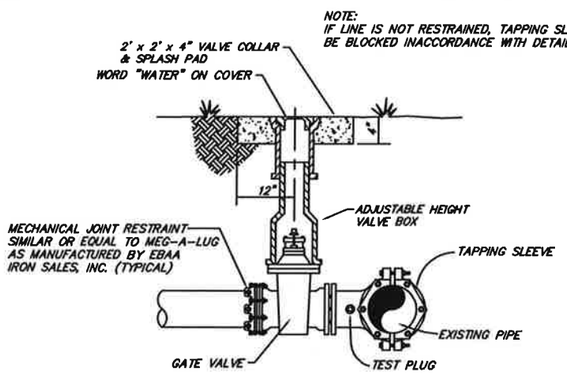
WA.3.1



TYPICAL GATE VALVE

N.T.S.

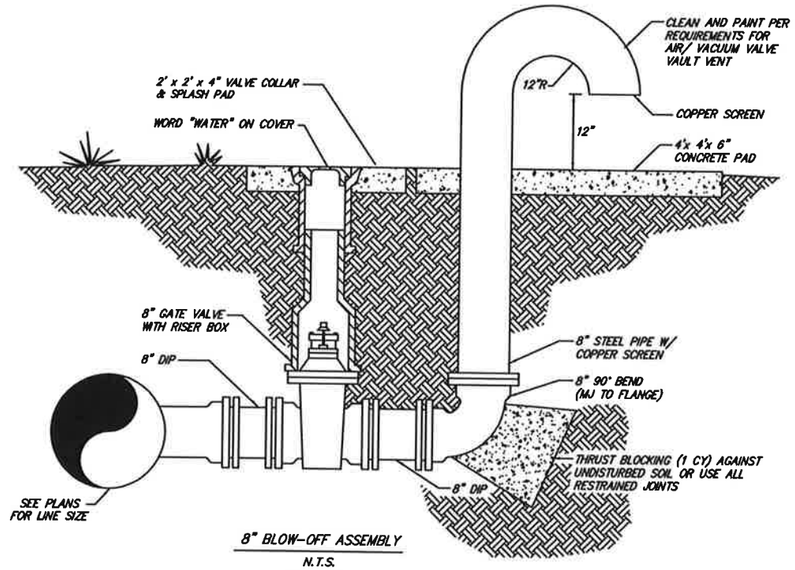
WA.3.2



TAPPING SLEEVE & VALVE

N.T.S.

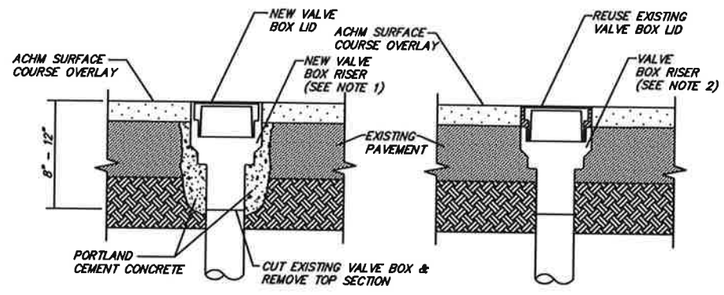
WA.3.3



8" BLOW-OFF ASSEMBLY

N.T.S.

WA.3.4



NOTES

1. VALVE BOX RISER FOR TYPE "A" ADJUSTMENT SHALL BE SLIP TYPE RISER FOR 5-1/4" SHAFT VALVE BOX & SHALL BE SIMILAR AND EQUAL TO TYLER MODEL 68-A. RISER SHALL BE CUT TO LENGTH AS REQUIRED.
2. VALVE BOX RISER FOR TYPE "B" ADJUSTMENT SHALL BE SIMILAR AND EQUAL TO TYLER 2-1/4" RISER FOR 5-1/4" SHAFT VALVE BOXES.
3. VALVE BOX LIDS SHALL BE STANDARD DROP LIDS WITH "WATER" INSCRIBED ON THE TOP.

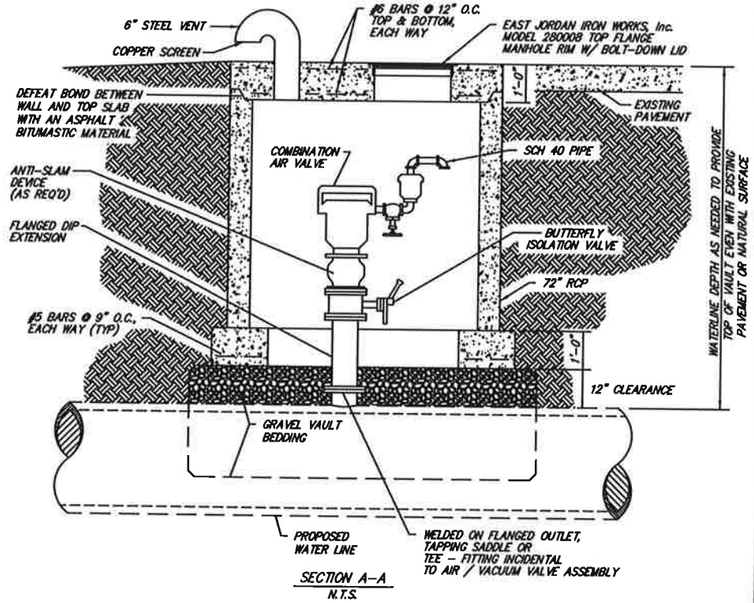
VALVE BOX ADJUSTMENT

N.T.S.

WA.3.5

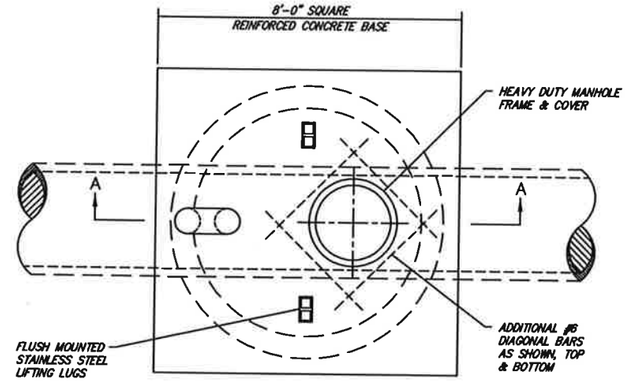
AIR/VACUUM VALVE ASSEMBLY NOTES

1. CONTRACTOR SHALL BACKFILL OVER THE WATER LINE WITH GRAVEL TO A POINT 12-INCHES (MINIMUM) ABOVE THE TOP OF PIPE. A CONCRETE FOUNDATION PAD AND VAULT SHALL THEN BE CONSTRUCTED OVER THE WATER LINE. THE VAULT SHALL CONSIST OF A SECTION OF 72-INCH REINFORCED CONCRETE PIPE (RCP), CLASS 3 WITH A FIELD CONSTRUCTED TOP SLAB. THE TOP SLAB SHALL INCLUDE LIFTING EYES, AN 6-INCH STEEL VENT, AND A 24-INCH HEAVY DUTY MANHOLE RIM WITH BOLT-DOWN LID. THE 6 INCH STEEL VENT PIPE SHALL BE CLEANED AND PAINTED WITH SHERWIN-WILLIAMS, RUST-OLEUM OR EQUIVALENT PAINT. PAINT SHALL BE EPOXY SUITABLE FOR EXTERIOR USAGE, AND APPLIED IN A MINIMUM OF (2) COATS, 4-MILS DRY EACH.
2. FOR EACH AIR/VACUUM VALVE VAULT, THE CONTRACTOR SHALL TAP THE WATER LINE, PROVIDE A FACTORY INSTALLED WELDED FLANGE OUTLET, OR INSTALL A RESTRAINED JOINT TEE. A FLANGED DUCTILE IRON PIPE EXTENSION SHALL BE INSTALLED ON THE TAP TO RAISE THE ISOLATION VALVE ABOVE THE LEVEL OF THE VAULT'S BOTTOM SLAB. THE TAPPING SADDLE, FACTORY WELDED FLANGE OUTLET, OR TEE SHALL BE CONSIDERED INCIDENTAL TO THE COST OF THE VAULT AND WILL NOT BE PAID FOR SEPARATELY.
3. CONTRACTOR SHALL INSTALL A COMBINATION AIR VALVE OF THE SIZE AND TYPE SHOWN ON THE PLANS. THE VALVE SHALL INCLUDE AN ISOLATION BUTTERFLY VALVE AND ANTI-SLAM DEVICE WHERE REQUIRED.
4. IF VAULT IS INSTALLED IN PAVED AREA, VENT SHALL BE INSTALLED THRU WALL OF VAULT AND RUN AT A 2% SLOPE OUT A MINIMUM OF 3' BEYOND THE PAVED AREA.



SECTION A-A

N.T.S.



AIR/VACUUM VALVE ASSEMBLY

N.T.S.

WA.3.6

Revision	Date	BY

Standard Drawings
WATER SYSTEM IMPROVEMENTS
Public Works Construction

The City of Fort Smith ARKANSAS

CITY OF FORT SMITH
Engineering Department
623 Garrison Avenue, Room 409
Fort Smith, Arkansas 72901
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Project:	Details
Date:	NOV 2012
Scale:	As Shown
Drawn By:	RBR
Dwg. No.:	WA3
Sheet No:	40

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