

**UNIFORM STANDARD
DETAILS**

for

**PUBLIC WORKS
CONSTRUCTION**

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2017 REVISION TO THE 2015 EDITION

 ARIZONA

100 SERIES: GENERAL INFORMATION

Detail	Revised	Title
101	2011	GENERAL INFORMATION
110-1	2011	PLAN SYMBOLS (SYMBOLS)
110-2	2011	PLAN SYMBOLS (LINE TYPES)
112	1998	DIMENSIONING FOR ROAD IMPROVEMENT PLANS
120	2015	SURVEY MARKER
122	2011	PAVEMENT MARKER FOR FIRE HYDRANTS
130	2003	BARRICADES
131	1998	STREET SIGN BASE
140	2009	BOLLARD
141	2009	HAZARD MARKER
145	2016	SAFETY RAIL
150	1998	PRECAST SAFETY CURB
160	2013	6' CHAIN LINK FENCE AND GATE

200 SERIES: STREET INFORMATION

Detail	Revised	Title
200-1	2016	TRENCH BACKFILL AND SURFACE REPLACEMENT
200-2	2016	TRENCH BACKFILL AND SURFACE REPLACEMENT
201	2014	ASPHALT PAVEMENT EDGE DETAILS
202	1998	ALLEY DETAILS (PAVED AND UNPAVED)
203	1998	SCUPPERS
204	1998	EQUIPMENT CROSSING
205	2006	PAVED TURNOUTS
206-1	2007	CONCRETE SCUPPER
206-2	2007	CONCRETE SCUPPER
206-3	2007	CONCRETE SCUPPER (ISOMETRIC VIEW)
210	2012	RESIDENTIAL SPEED HUMP
211	1998	STANDARD TRENCH PLATING DETAIL
212	2015	UTILITY POTHOLE REPAIR
220-1	2007	CURB AND GUTTER TYPES A, B, C AND D
220-2	2007	CURB AND GUTTER TYPES E AND F
221	2014	CURB AND GUTTER TRANSITION TYPE A TO TYPE C, INTEGRAL ROLL CURB, GUTTER AND SIDEWALK
222	2008	SINGLE CURB - TYPES A, B AND TERMINATION
223	1998	MEDIAN NOSE TRANSITION
224	1998	JOINT FOR DRAINAGE INLETS AND MANHOLE COVERS
225	2016	CONCRETE PAVERS
230	2014	SIDEWALKS
234	2012	CURB MODIFICATION AT DETECTABLE WARNING
235-1	2012	CURB RAMPS (TYPE A)
235-2	2012	CURB RAMPS (TYPE B)
235-3	2012	CURB RAMPS (TYPE C)
235-4	2011	CURB RAMPS (TYPE D)
235-5	2011	CURB RAMPS (TYPE E)
236-1	2017*	DUAL CURB RAMP (RADIAL, 25'-35' R) ATTACHED SIDEWALK
236-2	2017*	DUAL CURB RAMP (RADIAL, 25'-35' R) DETTACHED SIDEWALK
236-3	2017*	DUAL CURB RAMP (RADIAL, 20' R) ATTACHED SIDEWALK

200 SERIES: STREET INFORMATION (CONTINUED)

Detail	Revised	Title
237-1	2017*	DUAL CURB RAMP (DIRECTIONAL, 25'-35' R) ATTACHED SIDEWALK
237-2	2017*	DUAL CURB RAMP (DIRECTIONAL, 25'-35' R) DETTACHED SIDEWALK
237-3	2017*	DUAL CURB RAMP (DIRECTIONAL, 20' R) ATTACHED SIDEWALK
240	2010	VALLEY GUTTER
250-1	2014	DRIVEWAY ENTRANCES WITH DETACHED SIDEWALK
250-2	2013	DRIVEWAY ENTRANCES WITH SIDEWALK ATTACHED TO CURB
251	2017*	RETURN TYPE DRIVEWAYS
252	2005	BUS BAYS
260	2013	ALLEY ENTRANCE (WITH VERTICAL CURB AND GUTTER)
262	2012	WING TYPE ALLEY ENTRANCE (W/ COMBINED CURB & GUTTER)
263	2002	WING TYPE ALLEY ENTRANCE (W/ ROLL TYPE CURB & GUTTER)
270	2017*	ROUND FRAME AND COVER (AND GRADE ADJUSTMENTS)
271	2017*	SQUARE FRAME AND COVER (AND GRADE ADJUSTMENTS)

300 SERIES: WATER INFORMATION

Detail	Revised	Title
301	1998	BLOCKING FOR WATER GATE AND BUTTERFLY VALVES
302-1	1998	JOINT RESTRAINT WITH TIE RODS (DRAWING)
302-2	1998	JOINT RESTRAINT WITH TIE RODS (NOTES)
303-1	1998	JOINT RESTRAINT FOR DUCTILE IRON AND POLYETHYLENE WRAPPED DUCTILE IRON WATER PIPES (DRAWING)
303-2	1998	JOINT RESTRAINT FOR DUCTILE IRON AND POLYETHYLENE WRAPPED DUCTILE IRON WATER PIPES (TABLES)
310	2017*	STEEL WATER METER BOX COVER
315	2017*	POLYMER CONCRETE WATER METER BOX COVER
319	2017*	TRAFFIC RATED BOX AND COVER
320	2017*	NON TRAFFIC RATED WATER METER BOXES
321	1998	STANDARD WATER METER VAULT
340	2002	INSTALLING TAPPING SLEEVES AND VALVES
342	1998	CONCRETE PRESSURE PIPE TAPPING SLEEVE
345-1	1998	3", 4", 6" WATER METER
345-2	1998	4", 6" WATER METER WITH ON-SITE HYDRANTS
346	1998	FIRE LINE DETECTOR CHECK VAULT
360-1	2013	DRY BARREL FIRE HYDRANT INSTALLATION
360-2	2013	WET BARREL FIRE HYDRANT INSTALLATION
360-3	2013	FIRE HYDRANT INSTALLATION DETAILS
362	1999	LOCATIONS FOR NEW FIRE HYDRANTS
370	1998	VERTICAL REALIGNMENT OF WATER MAINS
380	1998	THRUST BLOCKS FOR WATER LINES
381	1998	ANCHOR BLOCKS FOR VERTICAL BENDS
389	2001	CURB STOP WITH VALVE BOX AND COVER
390	1998	CURB STOP WITH FLUSHING PIPE
391-1	2017*	VALVE BOX INSTALLATION AND GRADE ADJUSTMENT
391-2	2017*	VALVE BOX INSTALLATION AND GRADE ADJUSTMENT
392	2015	DEBRIS CAP INSTALLATION
393	2017*	WATER VALVE EXTENSION

* NEWLY REVISED.

DETAIL NO.

100-1



STANDARD DETAIL
ENGLISH

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REVISED

01-01-2017

DETAIL NO.

100-1

400 SERIES: SEWER INFORMATION

Detail	Revised	Title
403-1	1998	PIPE SUPPORT ACROSS TRENCHES
403-2	1998	PIPE SUPPORT ACROSS TRENCHES
403-3	1998	ALTERNATIVE TO PIPE SUPPORT
404-1	2006	WATER AND SANITARY SEWER SEPARATION/PROTECTION
404-2	2006	WATER AND SANITARY SEWER SEPARATION/PROTECTION
404-3	2006	WATER AND SANITARY SEWER SEPARATION/PROTECTION
405	1998	BROKEN SEWER LINE REPLACEMENT
420-1	2015	CONCRETE SANITARY SEWER MANHOLE
420-2	2015	PRE-CAST CONCRETE MANHOLE BASE
420-3	2015	CONCRETE MANHOLE BASE
421	2015	OFFSET MANHOLE 8" TO 30" PIPE
422	2015	MANHOLE FRAME AND COVER ADJUSTMENT
423-1	2012	24" CAST IRON MANHOLE FRAME AND COVER
423-2	2012	30" CAST IRON MANHOLE FRAME AND COVER
424-1	2012	24" CAST IRON WATERTIGHT MANHOLE FRAME AND COVER
424-2	2012	30" CAST IRON WATERTIGHT MANHOLE FRAME AND COVER
425	1998	24" ALUMINUM MANHOLE FRAME AND COVER
426	2007	DROP SEWER CONNECTIONS
427	1998	STUB OUT AND PLUGS
429	2015	INDUSTRIAL WASTE CONTROL VAULT WITH MANHOLE
440-1	2007	TYPE 'A' SEWER BUILDING CONNECTION - ELECTRONIC BALL MARKERS (STANDARD)
440-2	2007	TYPE 'B' SEWER BUILDING CONNECTION - TWO-WAY CLEANOUT AND METER BOX AT R/W
440-3	2007	TYPE 'C' SEWER BUILDING CONNECTION - ONE-WAY CLEANOUT AND METER BOX
440-4	2006	SEWER SERVICE CURB CROSSING STAMP DETAIL
441	2001	SEWER CLEANOUT

500 SERIES: IRRIGATION AND STORM DRAIN INFORMATION

Detail	Revised	Title
501-1	2012	HEADWALL
501-2	2012	HEADWALL
501-3	1998	HEADWALL 42" TO 84" PIPE
501-4	1998	HEADWALL IRRIGATION 18" TO 60" PIPE
501-5	2014	HEADWALL DROP INLET
502-1	1998	TRASH RACK
502-2	2004	TRASH RACK
503	1998	IRRIGATION STANDPIPE
504	1998	CONCRETE BLOCK JUNCTION BOX
505	1998	CONCRETE PIPE COLLAR
506	1998	IRRIGATION VALVE INSTALLATION
507	2017*	ENCASED CONCRETE PIPE (FOR SHALLOW INSTALLATION)
510	1998	CORRUGATED METAL PIPE AND INSTALLATION

500 SERIES: IRRIGATION AND STORM DRAIN INFORMATION (CONTINUED)

Detail	Revised	Title
520	1998	STORM DRAIN MANHOLE BASE (48" AND SMALLER)
521	1998	STORM DRAIN MANHOLE BASE (51" OR LARGER)
522	2015	STORM DRAIN MANHOLE SHAFT
523-1	1998	PRESSURE MANHOLE
523-2	1998	PRESSURE MANHOLE
524	1998	STORM DRAIN LATERAL PIPE CONNECTIONS
530	1998	3'-6" CURB OPENING CATCH BASIN - TYPE 'A'
531	1998	5'-6" CURB OPENING CATCH BASIN - TYPE 'B'
532	1998	8'-0" CURB OPENING CATCH BASIN - TYPE 'C'
533-1	1998	CATCH BASIN TYPE 'D'
533-2	1999	APRON FOR TYPE 'D' CATCH BASIN
533-3	2007	FRAME AND GRATE FOR TYPE 'D' CATCH BASIN
533-4	2007	7'-0" CURB OPENING CATCH BASIN TYPE 'D' - GRATE DETAILS
534-1	1998	CATCH BASIN TYPE 'E'
534-2	1998	CATCH BASIN TYPE 'E' (DETAILS)
534-3	1998	CATCH BASIN TYPE 'E' (DETAILS)
534-4	1998	CATCH BASIN TYPE 'E' (DETAILS)
534-5	1998	ALTERNATE GRATE STYLES, SUMP LOCATION
535	2009	CATCH BASIN TYPE 'F' (FOR USE WITHOUT CURB)
536-1	1999	COMMON DETAILS AND SECTIONS FOR CURB OPENING CATCH BASINS
536-2	1998	ALTERNATIVE COVER FOR CURB OPENING CATCH BASINS
537	2002	CATCH BASIN TYPE 'G'
538	1998	CATCH BASIN TYPE 'H'
539	1998	GRATES FOR CATCH BASINS, TYPE G AND H
540-1	1998	CATCH BASIN GRATES
540-2	1998	CATCH BASIN GRATES
541	2005	CATCH BASIN SUBGRADE DRAIN
545	1998	END SECTION - REINFORCED CONCRETE PIPE
550	1998	SPILLWAY INLET AND OUTLET
552	2015	FORD CROSSING WITH CUT-OFF WALLS
555	2010	EROSION PROTECTION/GABIONS

* NEWLY REVISED.

DETAIL NO.

100-2



STANDARD DETAIL
ENGLISH

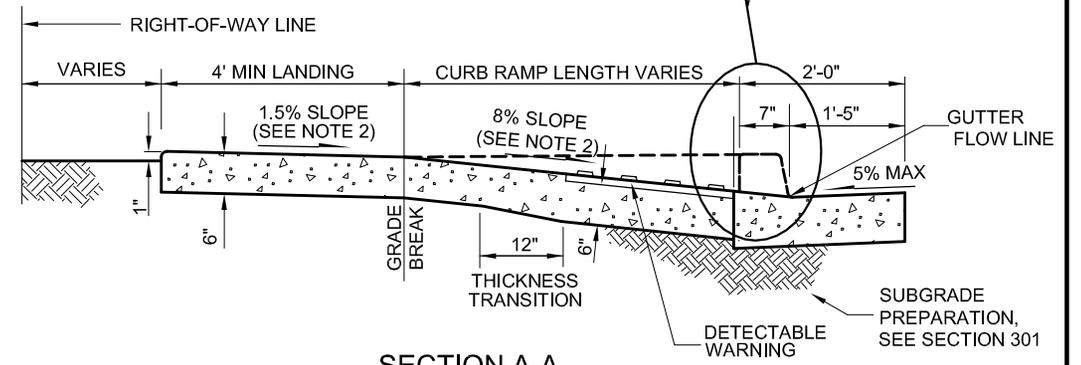
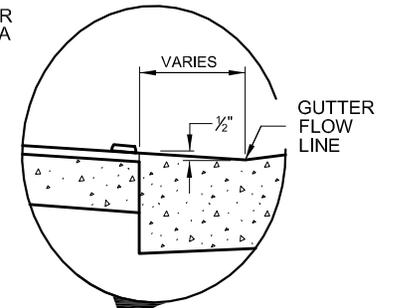
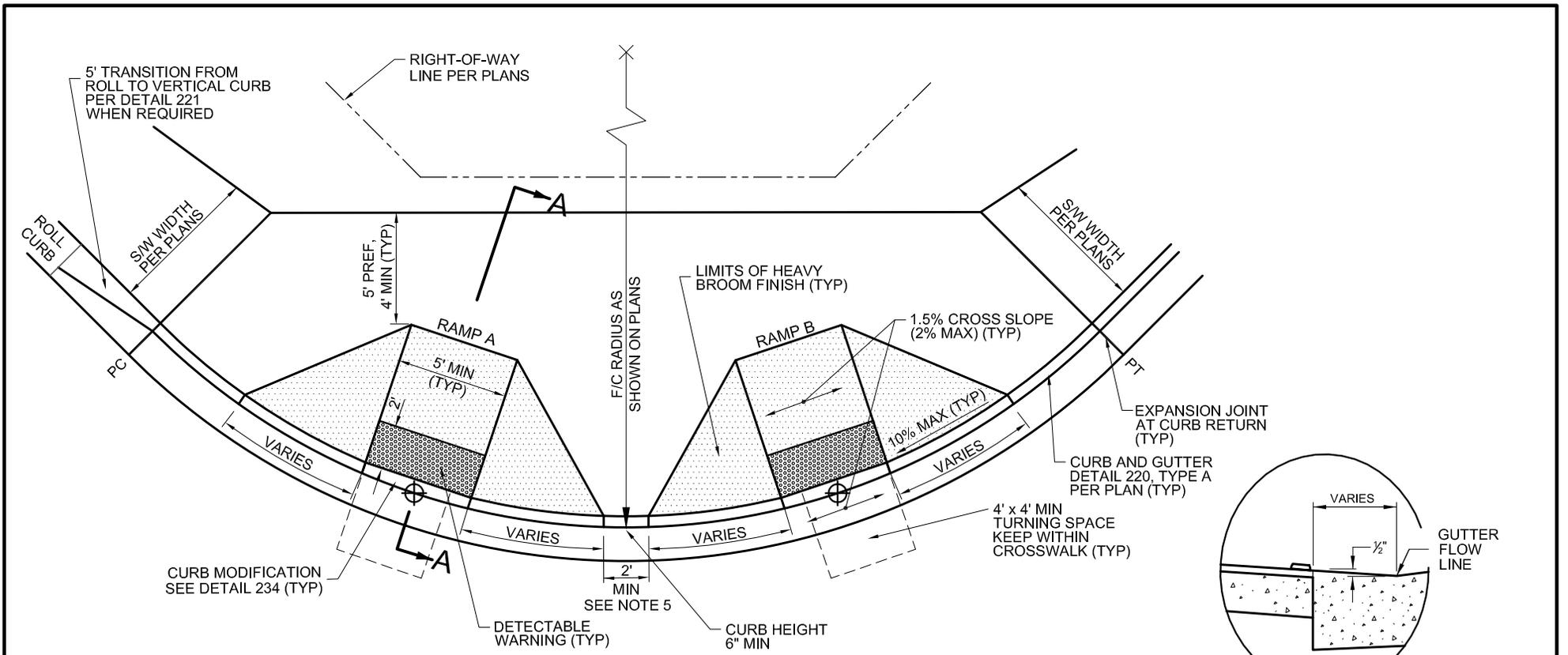
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REVISED

01-01-2017

DETAIL NO.

100-2



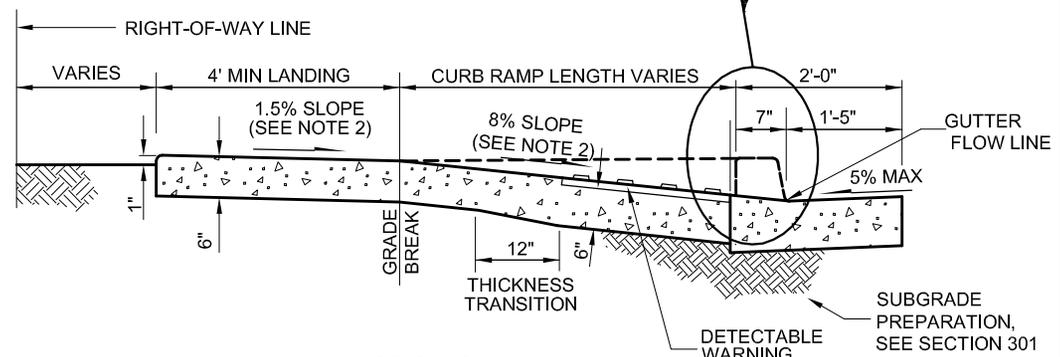
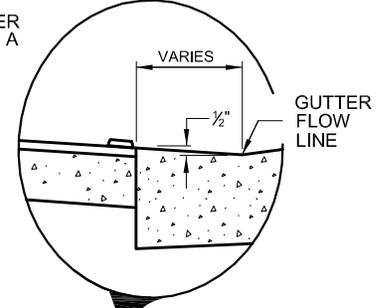
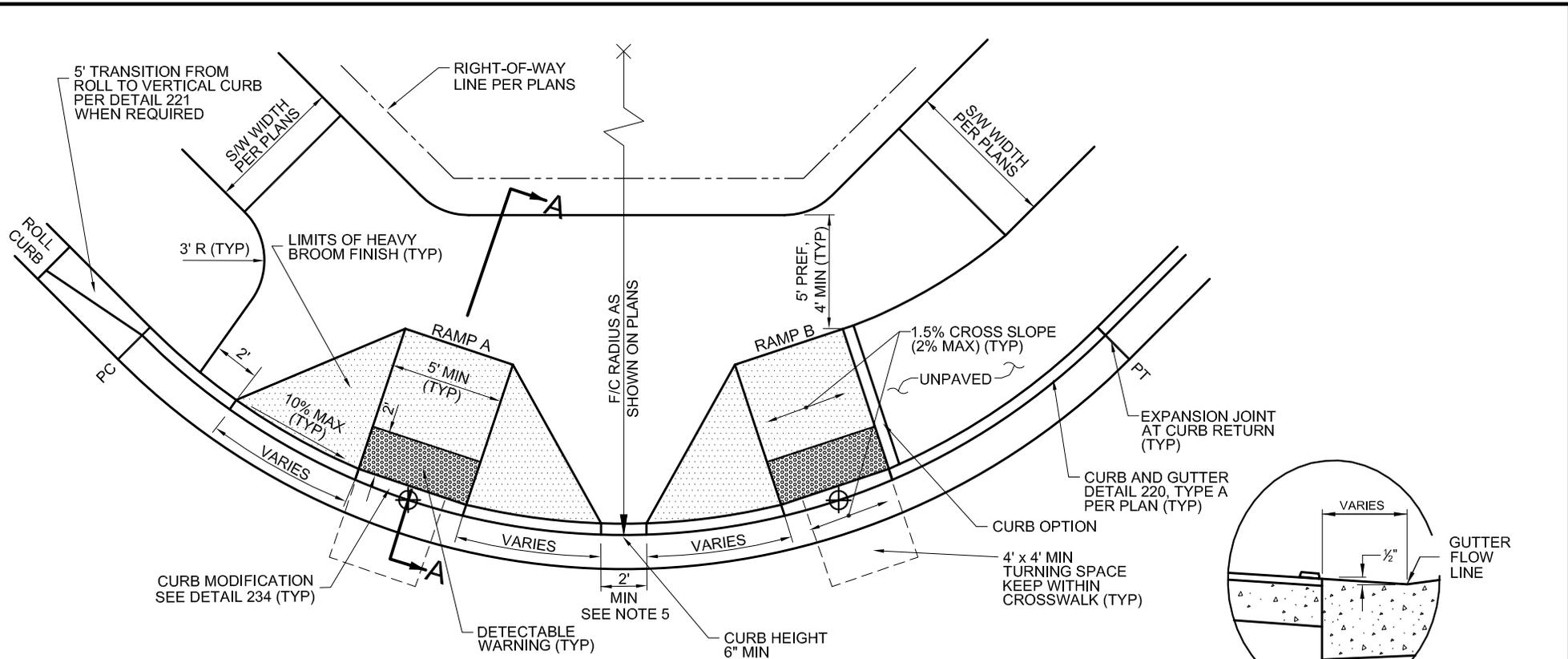
SECTION A-A

LEGEND

⊕ RAMP CONTROL POINT AT FACE-OF-CURB SEE PLANS (TYP)

NOTES:

1. CLASS 'A' CONCRETE PER SECTION 725, PC TO PT.
2. CONSTRUCTION INCLUDING EXPANSION JOINTS AND MAXIMUM SLOPES SHALL CONFORM TO SECTION 340.
3. WALKWAY SURFACE TO MATCH 1.5% SLOPE FROM TOP OF CURB.
4. DETECTABLE WARNING IS TO COMPLY WITH THE JURISDICTIONAL AGENCY'S REQUIREMENTS.
5. DISTANCE BETWEEN RAMPS MAY BE ADJUSTED TO IMPROVE ALIGNMENT WITH RECEIVING RAMP WHEN ALLOWED BY THE JURISDICTIONAL AGENCY.
6. SPECIAL DESIGN IS REQUIRED FOR GUTTER GRADES GREATER THAN 2%.



SECTION A-A

LEGEND

⊕ RAMP CONTROL POINT AT FACE-OF-CURB SEE PLANS (TYP)

NOTES:

1. CLASS 'A' CONCRETE PER SECTION 725, PC TO PT.
2. CONSTRUCTION INCLUDING EXPANSION JOINTS AND MAXIMUM SLOPES SHALL CONFORM TO SECTION 340.
3. WALKWAY SURFACE TO MATCH 1.5% SLOPE FROM TOP OF CURB.
4. DETECTABLE WARNING IS TO COMPLY WITH THE JURISDICTIONAL AGENCY'S REQUIREMENTS.
5. DISTANCE BETWEEN RAMPS MAY BE ADJUSTED TO IMPROVE ALIGNMENT WITH RECEIVING RAMP WHEN ALLOWED BY THE JURISDICTIONAL AGENCY.
6. SPECIAL DESIGN IS REQUIRED FOR GUTTER GRADES GREATER THAN 2%.

DETAIL NO.
236-2

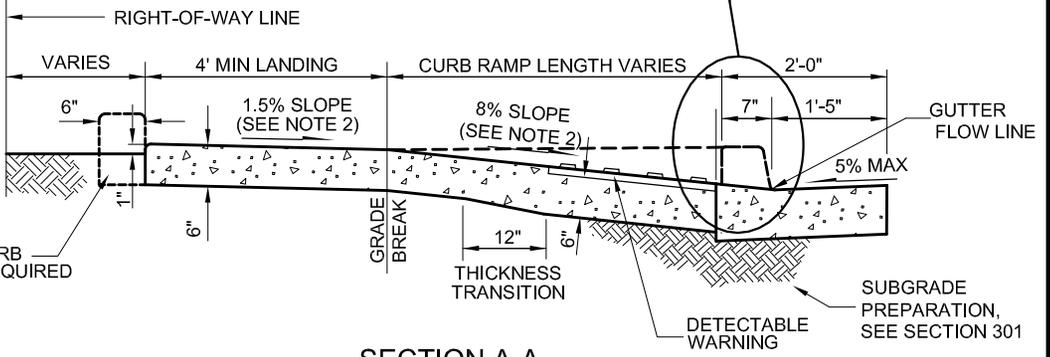
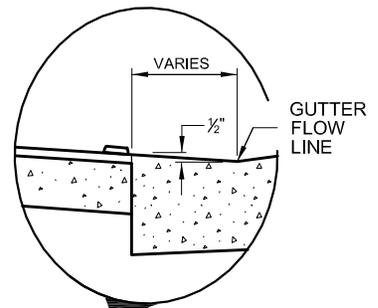
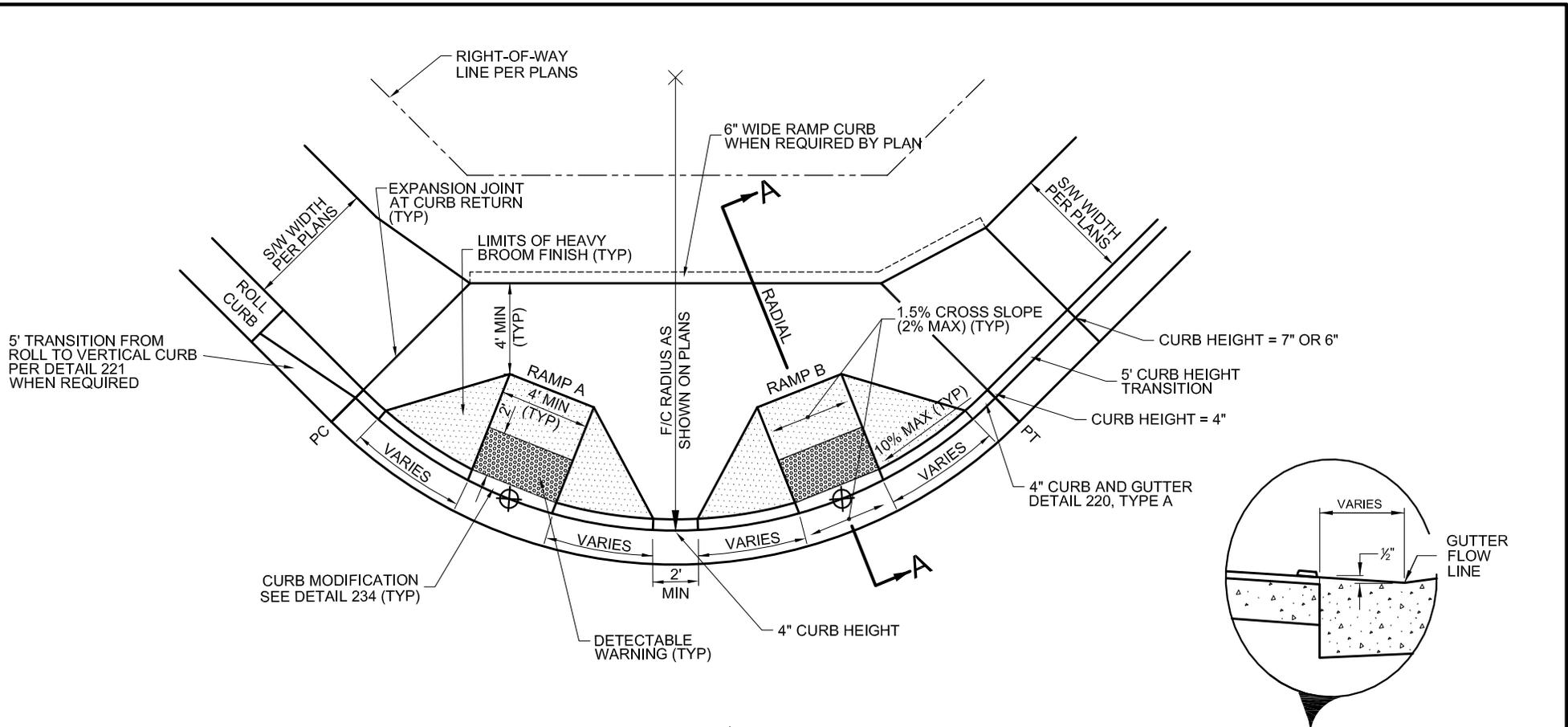


STANDARD DETAIL
ENGLISH

**DUAL CURB RAMP (RADIAL, 25' - 35' R)
DETACHED SIDEWALK**

REVISED
01-01-2017

DETAIL NO.
236-2



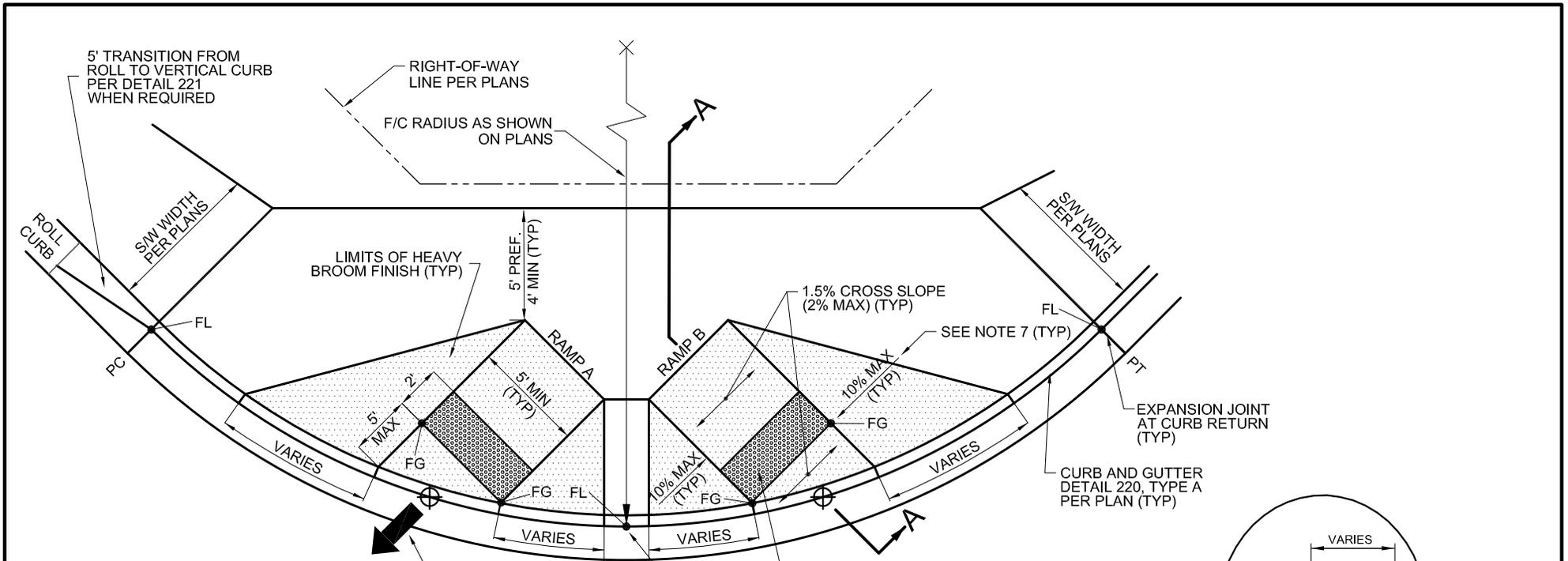
LEGEND

⊕ RAMP CONTROL POINT AT FACE-OF-CURB SEE PLANS (TYP)

NOTES:

1. CLASS 'A' CONCRETE PER SECTION 725, PC TO PT.
2. CONSTRUCTION INCLUDING EXPANSION JOINTS AND MAXIMUM SLOPES SHALL CONFORM TO SECTION 340.
3. WALKWAY SURFACE TO MATCH 1.5% SLOPE FROM TOP OF CURB.
4. DETECTABLE WARNING IS TO COMPLY WITH THE JURISDICTIONAL AGENCY'S REQUIREMENTS.
5. SPECIAL DESIGN IS REQUIRED FOR GUTTER GRADES GREATER THAN 2%.

DETAIL NO. 236-3	STANDARD DETAIL ENGLISH	DUAL CURB RAMP (RADIAL, 20' R) ATTACHED SIDEWALK	REVISED 01-01-2017	DETAIL NO. 236-3
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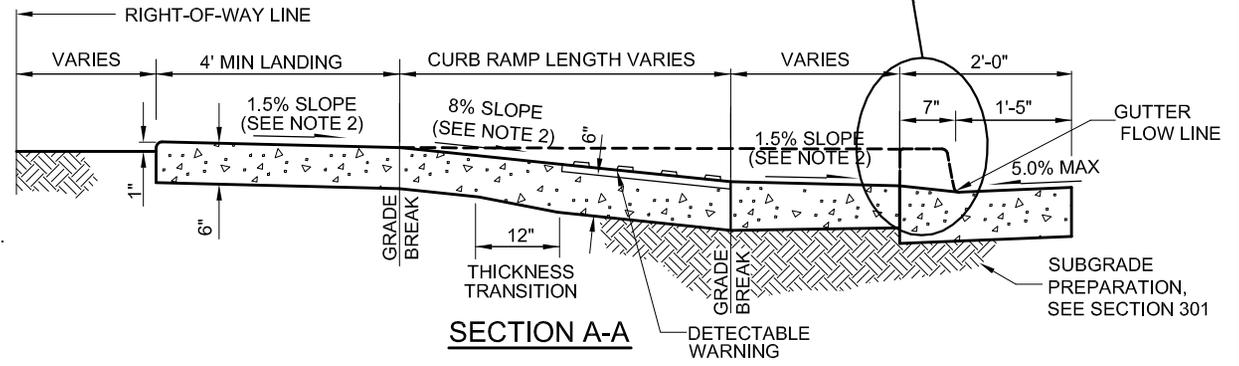
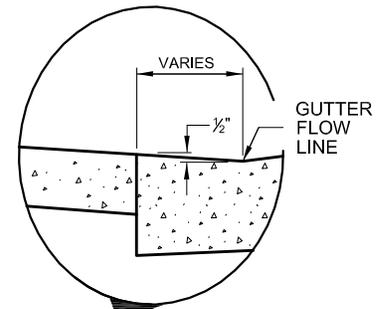


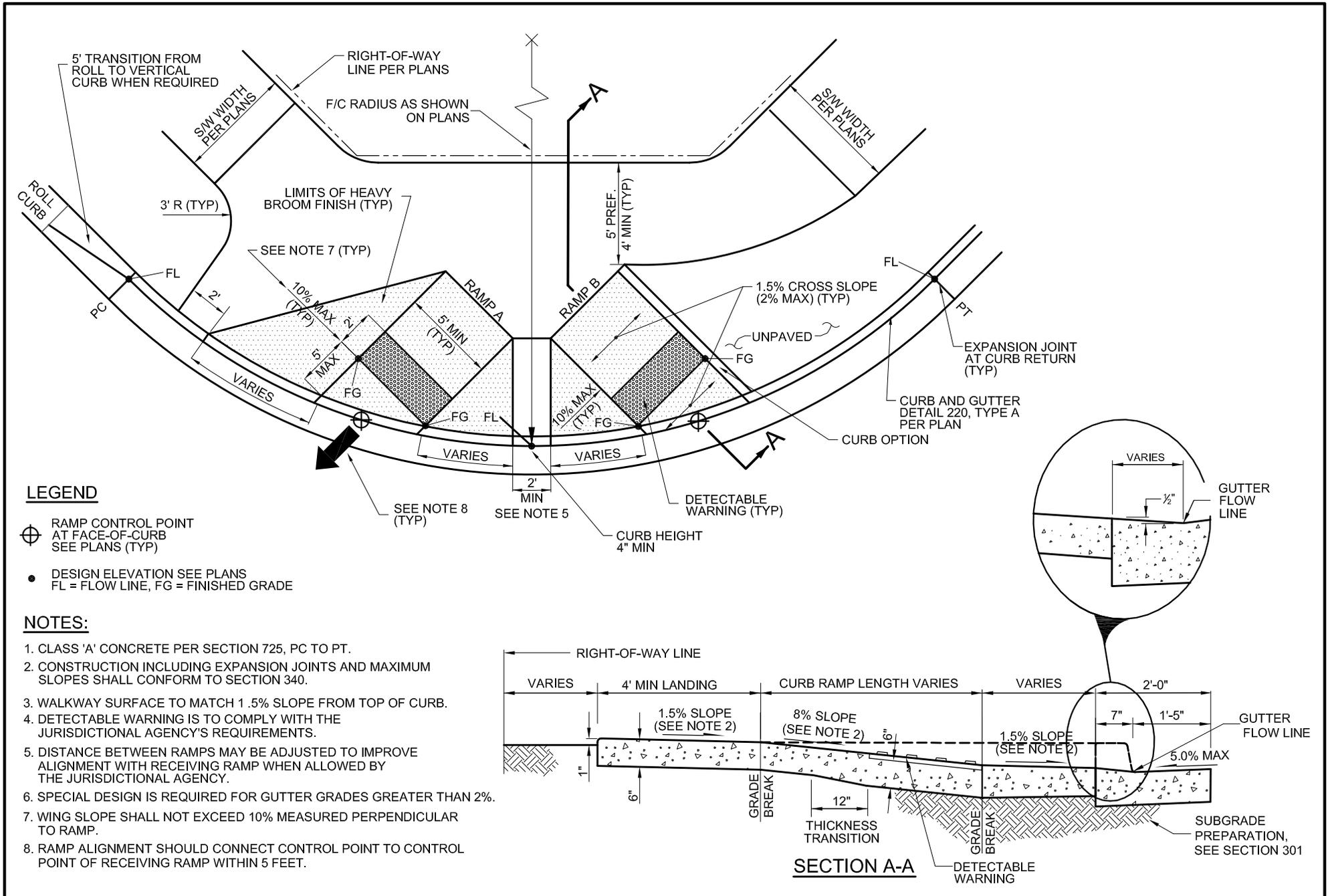
LEGEND

- ⊕ RAMP CONTROL POINT AT FACE-OF-CURB SEE PLANS (TYP)
- DESIGN ELEVATION SEE PLANS
FL = FLOW LINE, FG = FINISHED GRADE

NOTES:

1. CLASS 'A' CONCRETE PER SECTION 725, PC TO PT.
2. CONSTRUCTION INCLUDING EXPANSION JOINTS AND MAXIMUM SLOPES SHALL CONFORM TO SECTION 340.
3. WALKWAY SURFACE TO MATCH 1.5% SLOPE FROM TOP OF CURB.
4. DETECTABLE WARNING IS TO COMPLY WITH THE JURISDICTIONAL AGENCY'S REQUIREMENTS.
5. DISTANCE BETWEEN RAMPS MAY BE ADJUSTED TO IMPROVE ALIGNMENT WITH RECEIVING RAMP WHEN ALLOWED BY THE JURISDICTIONAL AGENCY.
6. SPECIAL DESIGN IS REQUIRED FOR GUTTER GRADES GREATER THAN 2%.
7. WING SLOPE SHALL NOT EXCEED 10% MEASURED PERPENDICULAR TO RAMP.
8. RAMP ALIGNMENT SHOULD CONNECT CONTROL POINT TO CONTROL POINT OF RECEIVING RAMP WITHIN 5 FEET.



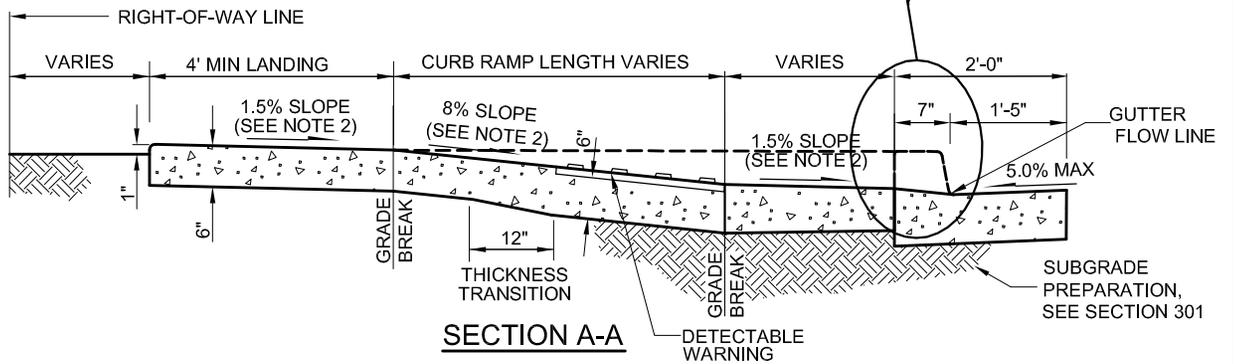


LEGEND

- ⊕ RAMP CONTROL POINT AT FACE-OF-CURB SEE PLANS (TYP)
- DESIGN ELEVATION SEE PLANS
FL = FLOW LINE, FG = FINISHED GRADE

NOTES:

1. CLASS 'A' CONCRETE PER SECTION 725, PC TO PT.
2. CONSTRUCTION INCLUDING EXPANSION JOINTS AND MAXIMUM SLOPES SHALL CONFORM TO SECTION 340.
3. WALKWAY SURFACE TO MATCH 1.5% SLOPE FROM TOP OF CURB.
4. DETECTABLE WARNING IS TO COMPLY WITH THE JURISDICTIONAL AGENCY'S REQUIREMENTS.
5. DISTANCE BETWEEN RAMPS MAY BE ADJUSTED TO IMPROVE ALIGNMENT WITH RECEIVING RAMP WHEN ALLOWED BY THE JURISDICTIONAL AGENCY.
6. SPECIAL DESIGN IS REQUIRED FOR GUTTER GRADES GREATER THAN 2%.
7. WING SLOPE SHALL NOT EXCEED 10% MEASURED PERPENDICULAR TO RAMP.
8. RAMP ALIGNMENT SHOULD CONNECT CONTROL POINT TO CONTROL POINT OF RECEIVING RAMP WITHIN 5 FEET.



DETAIL NO.
237-2

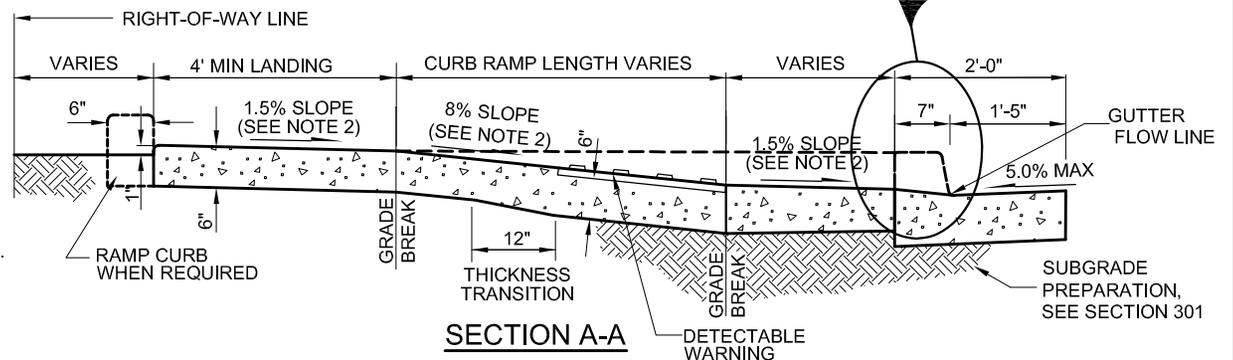
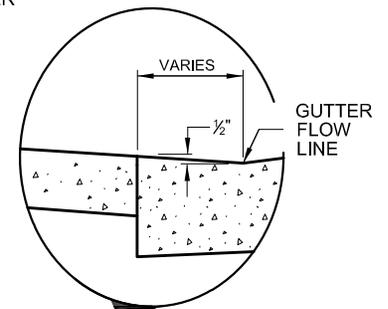
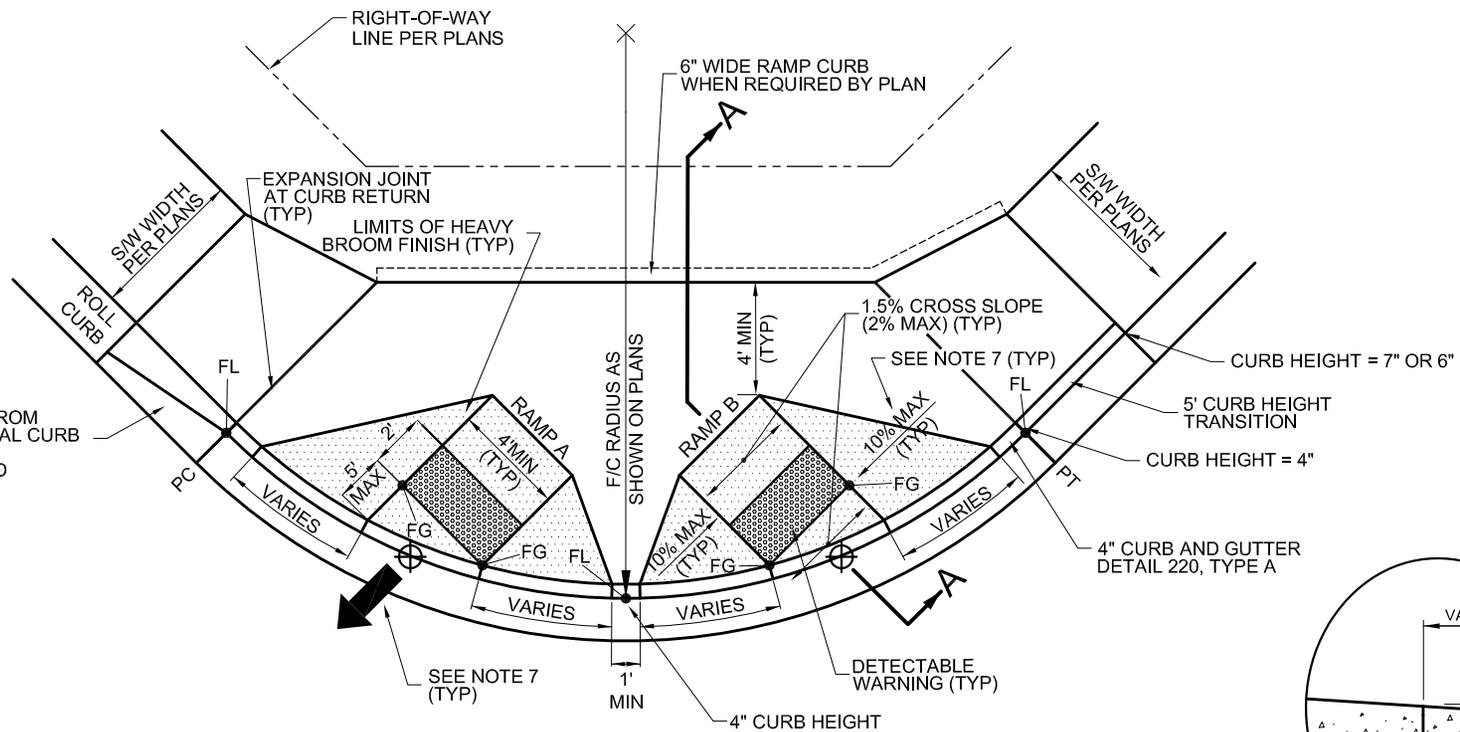


STANDARD DETAIL
ENGLISH

**DUAL CURB RAMP (DIRECTIONAL, 25' - 35'R)
DETACHED SIDEWALK**

PROPOSED
01-01-2017

DETAIL NO.
237-2



LEGEND

- ⊕ RAMP CONTROL POINT AT FACE-OF-CURB SEE PLANS (TYP)
- DESIGN ELEVATION SEE PLANS
FL = FLOW LINE, FG = FINISHED GRADE

NOTES:

1. CLASS 'A' CONCRETE PER SECTION 725, PC TO PT.
2. CONSTRUCTION INCLUDING EXPANSION JOINTS AND MAXIMUM SLOPES SHALL CONFORM TO SECTION 340.
3. WALKWAY SURFACE TO MATCH 1.5% SLOPE FROM TOP OF CURB.
4. DETECTABLE WARNING IS TO COMPLY WITH THE JURISDICTIONAL AGENCY'S REQUIREMENTS.
5. SPECIAL DESIGN IS REQUIRED FOR GUTTER GRADES GREATER THAN 2%.
6. WING SLOPE SHALL NOT EXCEED 10% MEASURED PERPENDICULAR TO RAMP.
7. RAMP ALIGNMENT SHOULD CONNECT CONTROL POINT TO CONTROL POINT OF RECEIVING RAMP WITHIN 5 FEET.

DETAIL NO.
237-3

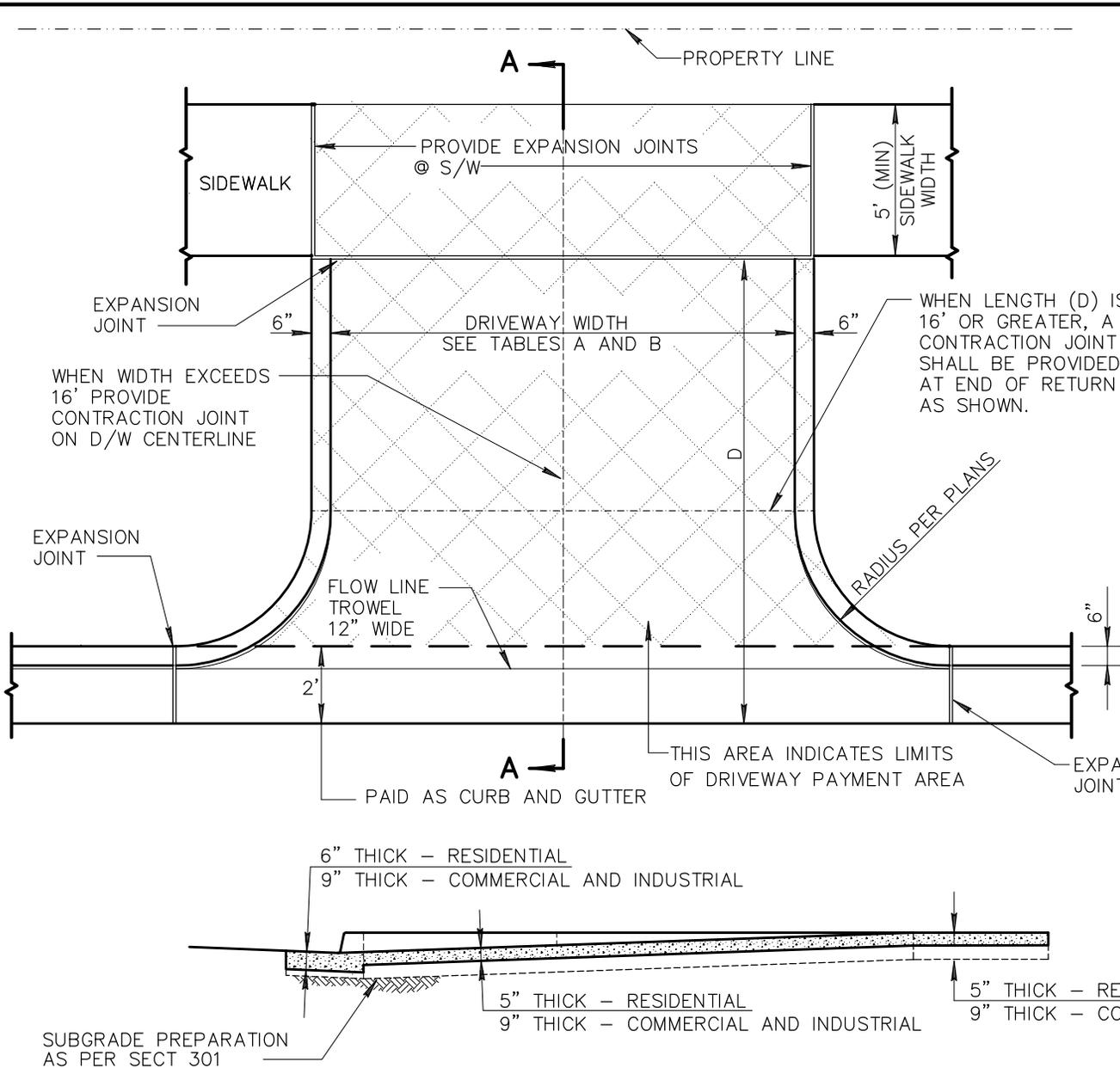


STANDARD DETAIL
ENGLISH

**DUAL CURB RAMP (DIRECTIONAL, 20' R)
ATTACHED SIDEWALK**

REVISED
01-01-2017

DETAIL NO.
237-3



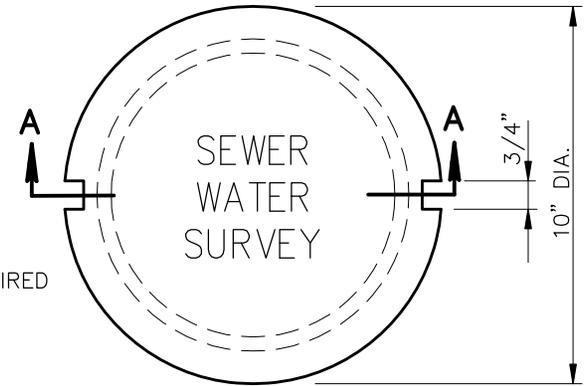
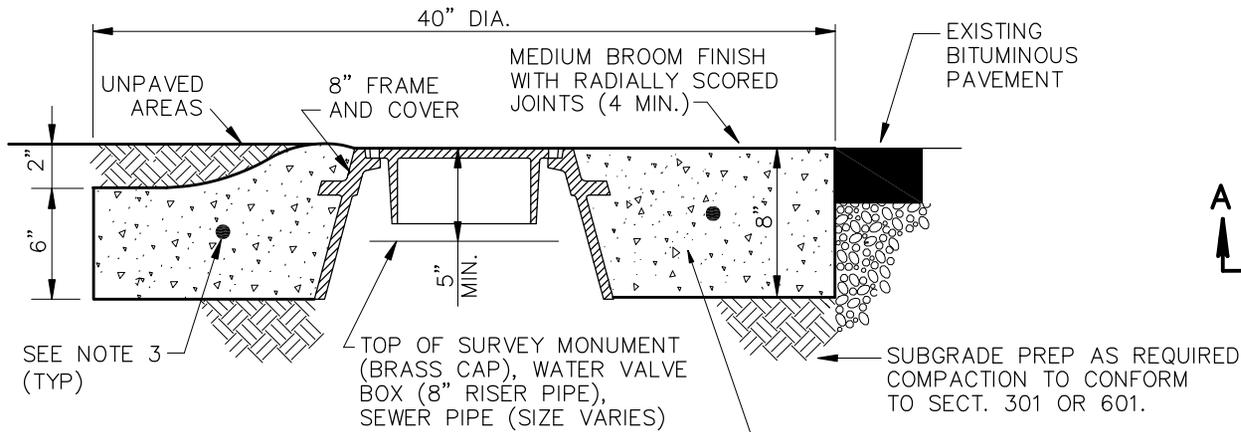
SECTION A-A

TABLE A		
ZONING	DRIVEWAY WIDTH	
	MIN*	MAX
COMMERCIAL AND INDUSTRIAL		
COMMERCIAL	16'	40'
INDUSTRIAL	16'	40'
* 24' WHERE 2-WAY TRAFFIC IS ANTICIPATED		

TABLE B		
ZONING	DRIVEWAY WIDTH	
	MIN*	MAX
RESIDENTIAL		
MAJOR STREET	16'	30'
COLLECTOR STREET	12'	30'
LOCAL STREET	12'	30'
* 16' WIDTH IS DESIRABLE		

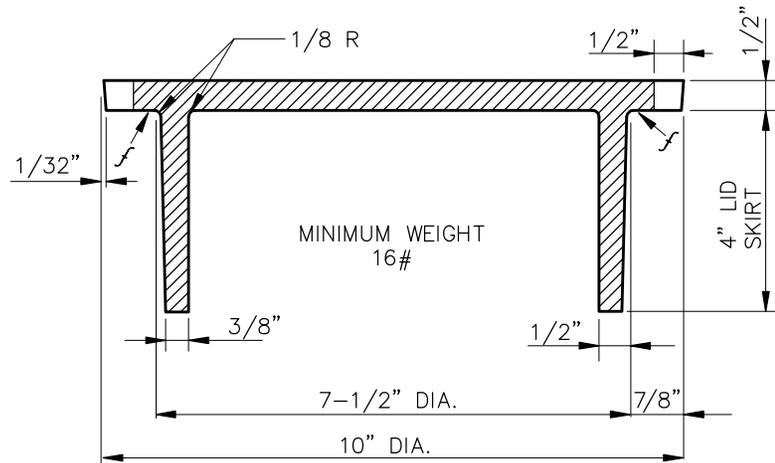
NOTES:

1. EXPANSION JOINT SHALL COMPLY TO SECTION 340.
2. THIS TYPE D/W TO BE USED ONLY UPON APPROVAL OF ENGINEER.
3. CONCRETE:
RESIDENTIAL CLASS B
COMMERCIAL AND INDUSTRIAL CLASS A

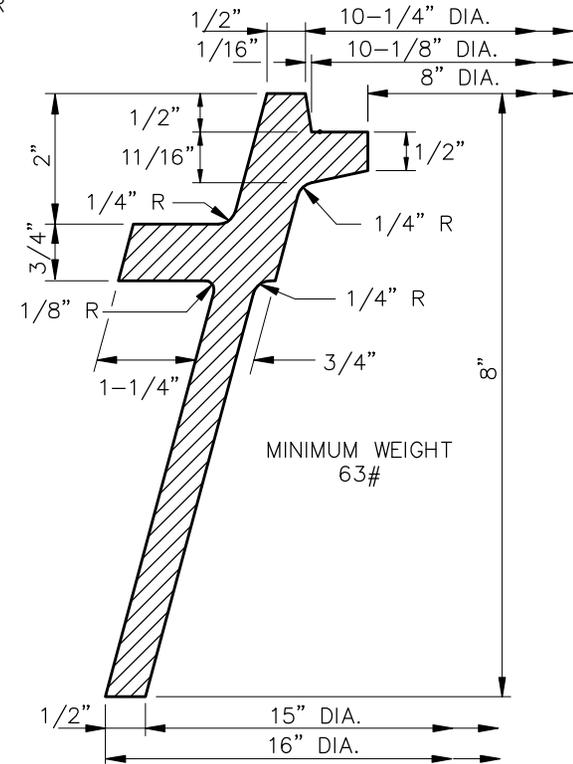


GRADE ADJUSTMENT FOR FRAME AND COVER

CLASS 'AA' CONC. ALL AROUND FRAME PER SECT. 725



COVER SECTION A-A



8" C.I. FRAME AND COVER

NOTES:

1. CASTING TO CONFORM TO SECT. 787.
2. LETTERS ON COVER TO BE AS FOLLOWS: "SEWER", "WATER", OR "SURVEY" AS DIRECTED. TOTAL WIDTH OF WORD "SEWER" OR "WATER" 3-3/4", TOTAL WIDTH OF THE WORD "SURVEY" 4-1/2". LETTER SIZE 5/8" X 3/4", RAISED 1/16" ABOVE THE LEVEL OF THE COVER.
3. #4 REINFORCING STEEL HOOP EQUALLY CENTERED HORIZONTALLY & VERTICALLY.
4. M INDICATES MACHINE FINISHED SURFACE.

DETAIL NO.

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STANDARD DETAIL
ENGLISH

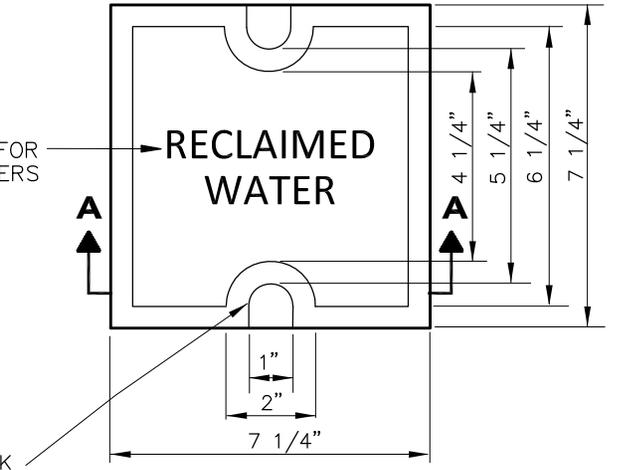
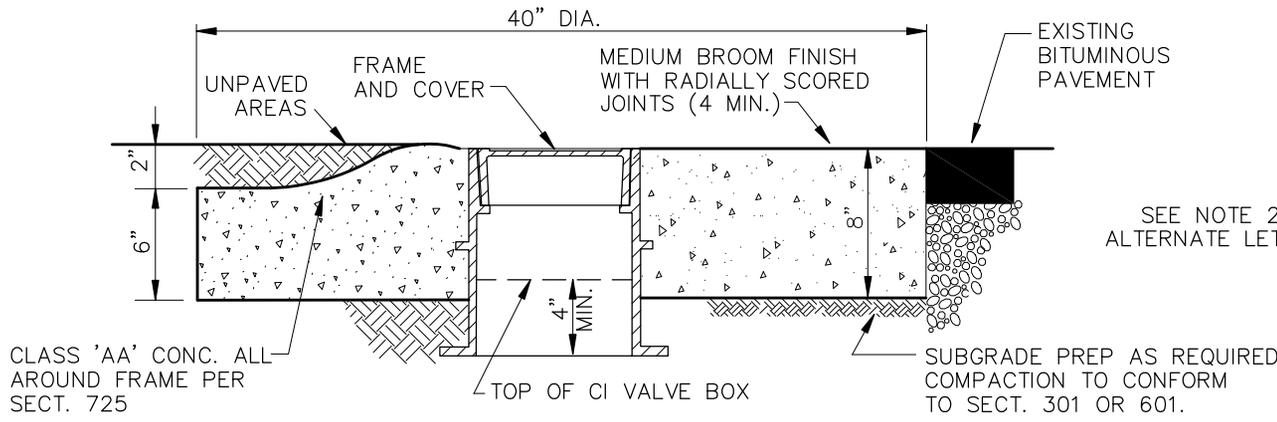
**ROUND FRAME AND COVER
AND GRADE ADJUSTMENT**

REVISED

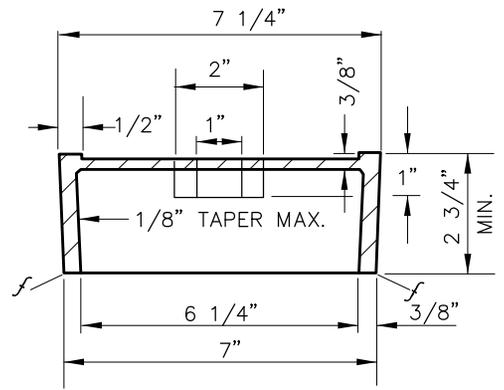
01-01-2017

DETAIL NO.

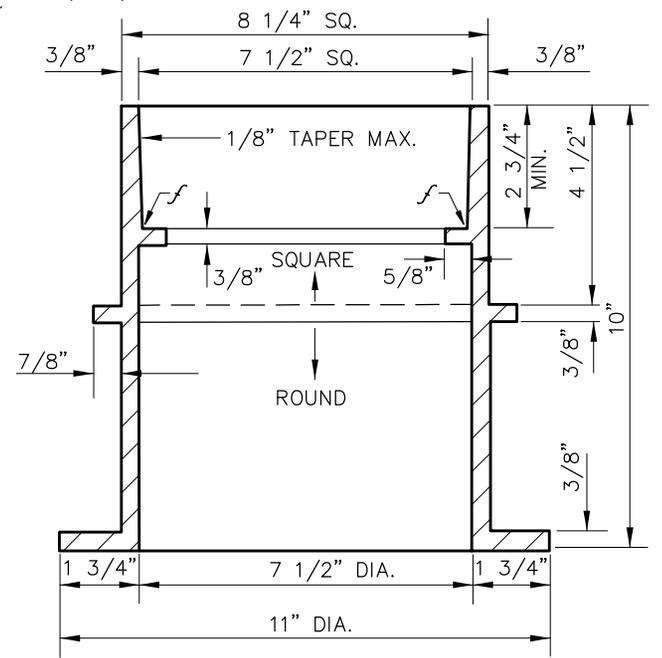
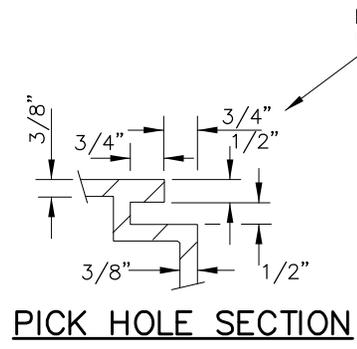
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GRADE ADJUSTMENT FOR FRAME AND COVER



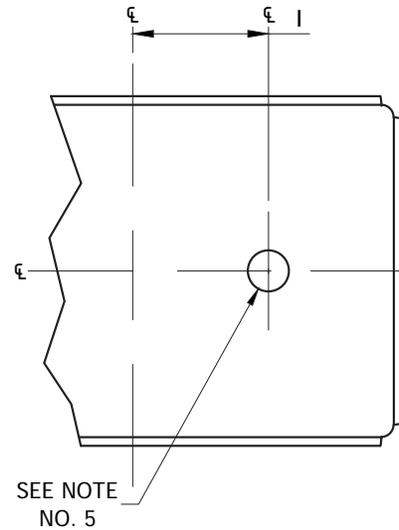
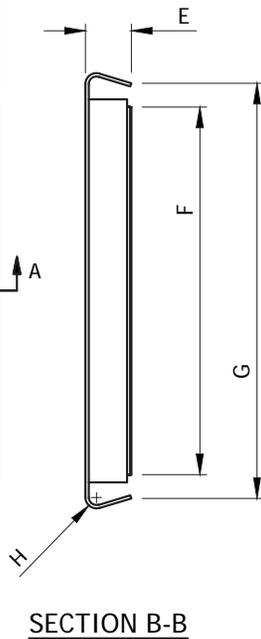
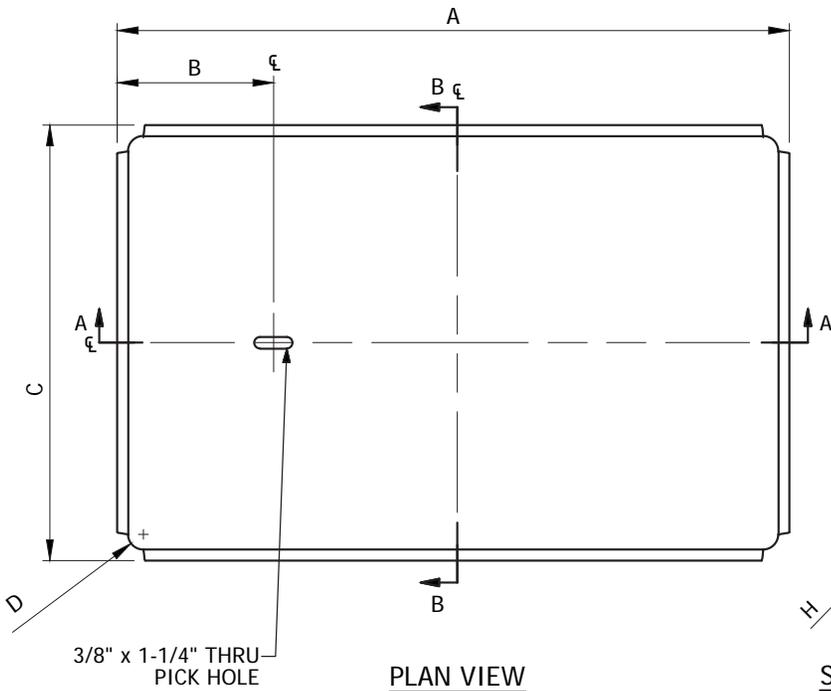
COVER SECTION A-A



C.I. FRAME AND COVER

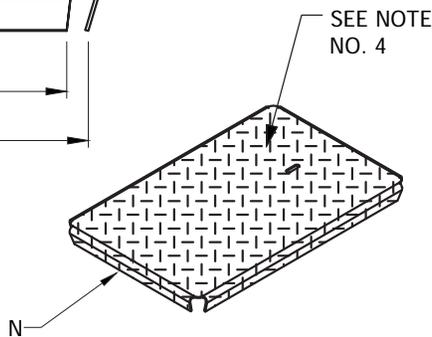
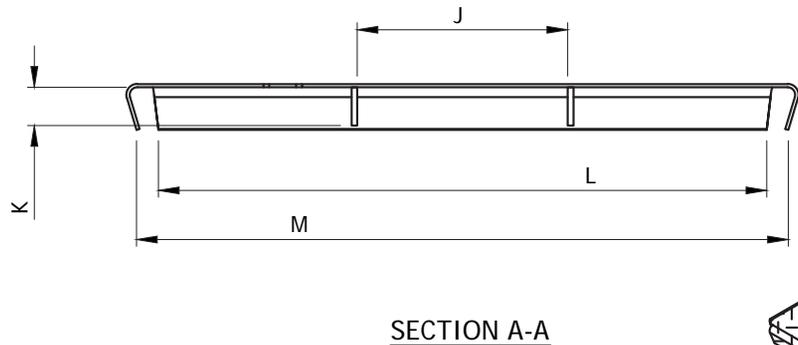
NOTES:

1. CASTING TO CONFORM TO SECT. 787.
2. LETTERS ON COVER TO BE AS FOLLOWS, PER AGENCY REQUIREMENTS:
3/4" HIGH "RECLAIMED WATER" OR 1/2" HIGH "NONPOTABLE WATER".
LETTERS TO BE RAISED 1/16".
3. f INDICATES MACHINE FINISHED SURFACE.
4. VALVE BOX SHALL HAVE A ROUND BOTTOM TO ACCOMMODATE RISER PIPE.



NOTES:

1. STEEL COVER MATERIAL TO BE PER ASTM A786
2. POTABLE WATER COVER PAINTED BLACK AND RECLAIMED WATER COVER PAINTED PANTONE PURPLE 512. USE OIL BASED PAINT ALKALI RESIN PER SECTION 790
3. DIMENSIONS SHOWN SHALL NOT VARY MORE THAN A 1/16 OF AN INCH
4. ALL COVERS MADE OUT OF DIAMOND CHECKER PLATE
5. STANDARD AUTOMATIC METER READER (AMR) HOLE 2" PER AGENCY OR STANDARD SPECIFICATION
6. REFER TO DETAIL 320 FOR VERTICAL LOAD RATING



STEEL WATER METER COVER DIMENSIONS				
DIMS	COVER NUMBER			
	1	2	3	4
A	15-3/4"	21-7/8"	26"	30-3/8"
B	3-7/8"	4-1/2"	2-1/8"	4-5/8"
C	9"	14"	15"	19-1/2"
D	1/2"	1/2"	1/2"	1/2"
E	1-1/2"	1-1/2"	2-1/4"	1-1/2"
F	7-1/8"	12"	13"	17-3/4"
G	8-1/4"	13-12"	14-1/8"	19-1/4"
H	1/8"	1/4"	1/8"	1/4"
I	3-3/4"	6-5/8"	9"	12-1/4"
J	NA	6-7/8"	8-1/2"	7-3/8"
K	NA	1-1/4"	1-1/4"	1-1/4"
L	13-7/8"	19-7/8"	24"	28-1/8"
M	15"	21-1/4"	25-1/8"	29-3/4"
N	14 GAUGE	12 GAUGE	12 GAUGE	12 GAUGE

DETAIL NO.
310



STANDARD DETAIL
ENGLISH

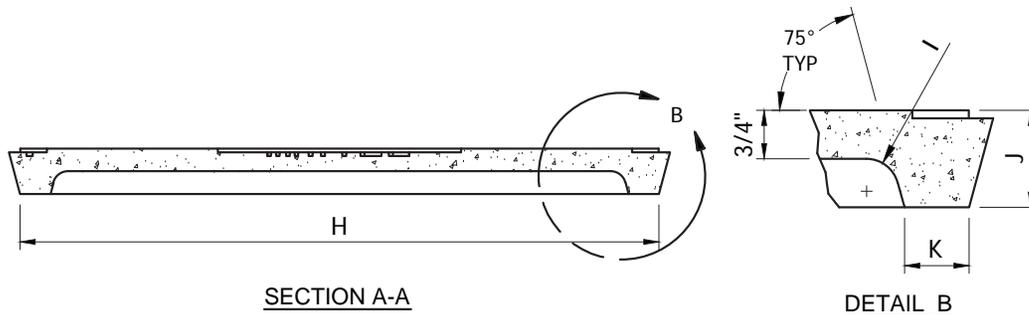
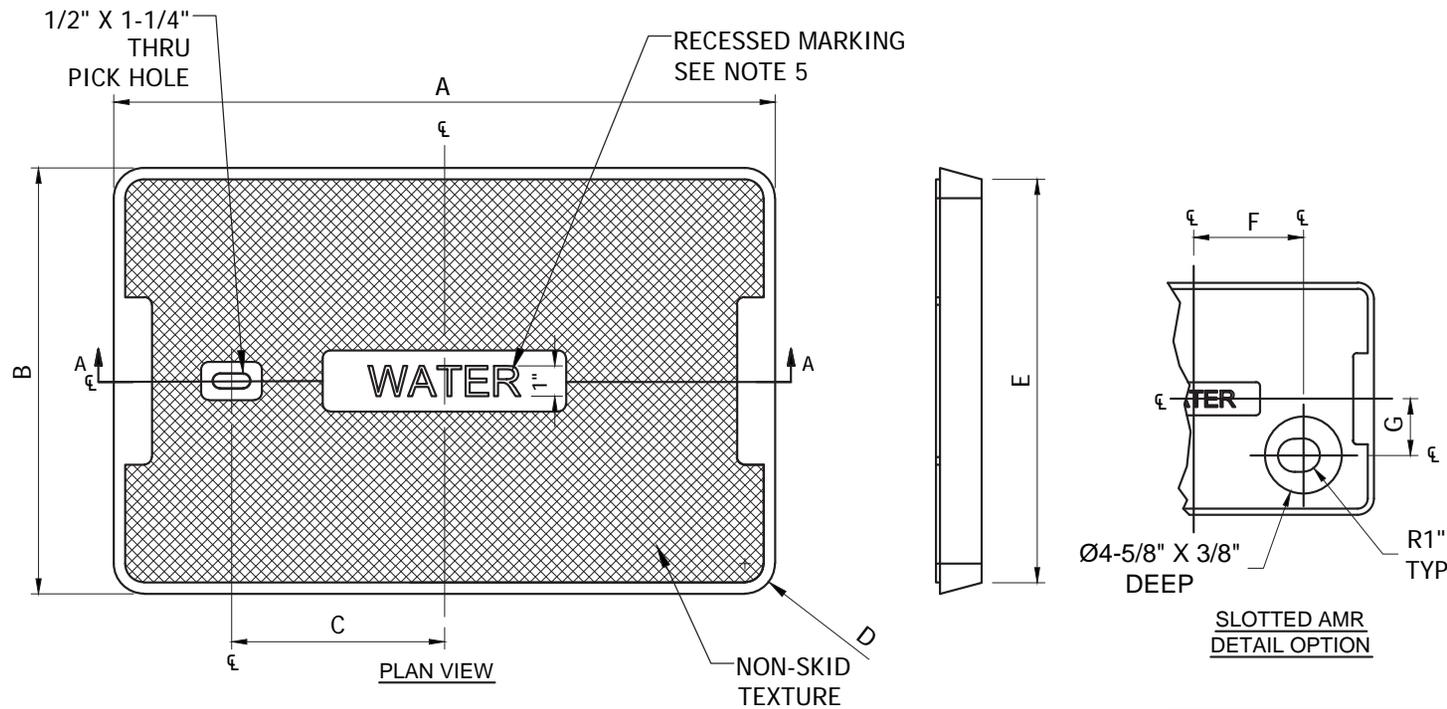
STEEL WATER METER BOX COVER

REVISED
01-01-2017

DETAIL NO.
310

NOTES:

1. POTABLE WATER COVER TINTED GRAY AND RECLAIMED WATER COVER TINTED PANTONE PURPLE 512
2. DIMENSIONS SHOWN SHALL NOT VARY MORE THAN A 1/16 OF AN INCH
3. ACCEPTABLE ALTERNATIVES INCLUDE "SHEET MOLDED COMPOUND" (SMC), AND "BULK MOLDED COMPOUND" (BMC). PLASTICS ARE NOT ACCEPTABLE MATERIALS
4. SLOTTED AUTOMATIC METER READING (AMR) HOLE PER AGENCY OR STANDARD SPECIFICATION
5. MARKING PER AGENCY AND/OR UTILITY
6. REFER TO DETAIL 320 FOR VERTICAL LOAD RATING



POLYMER CONCRETE COVER DIMENSIONS				
DIMS	COVER NUMBER			
	1	2	3	4
A	15-3/4"	21-7/8"	26"	30-3/8"
B	9"	14"	15"	19-1/2"
C	5"	7"	9"	10"
D	3/4"	1"	3/8"	3/8"
E	8-1/2"	13-1/4"	14-1/8"	19"
F	4-3/8"	6-5/8"	8"	10-3/4"
G	3/4"	3-3/8"	3-3/4"	6-1/4"
H	15-3/8"	21"	25-1/8"	29-1/2"
I	3/8"	1/2"	1"	1/4"
J	1-1/2"	1-1/2"	2-1/4"	1-1/2"
K	3/4"	1"	1"	1"

DETAIL NO.
315

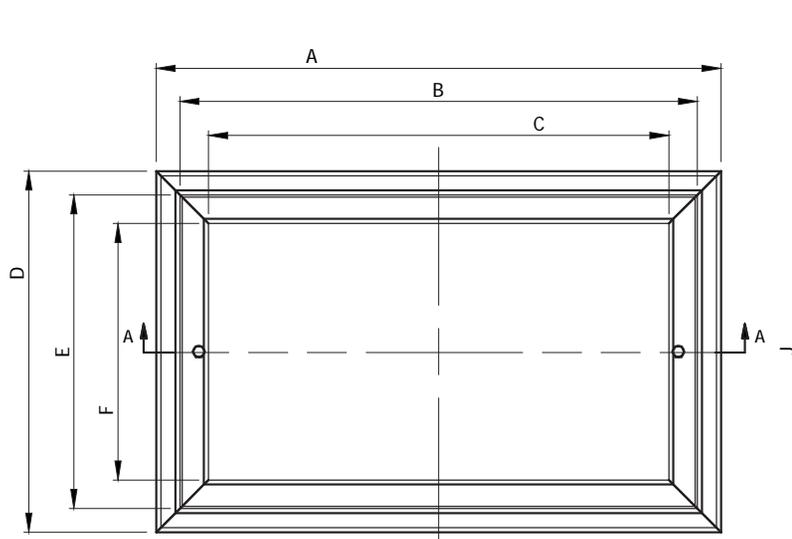


STANDARD DETAIL
ENGLISH

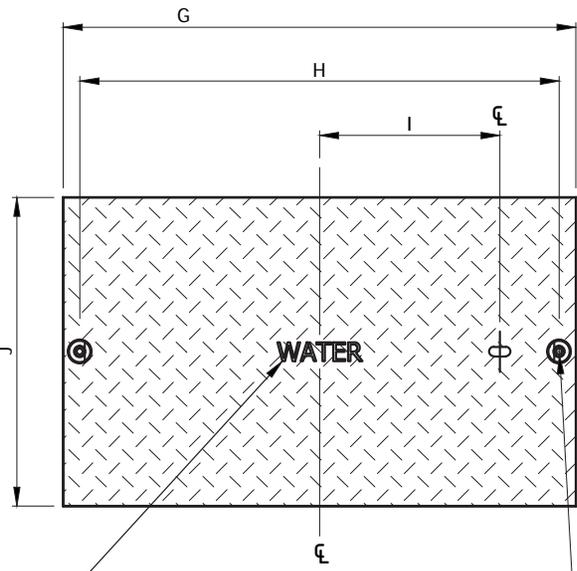
**POLYMER CONCRETE
WATER METER BOX COVER**

REVISED
01-01-2017

DETAIL NO.
315



BOX ONLY - TOP VIEW



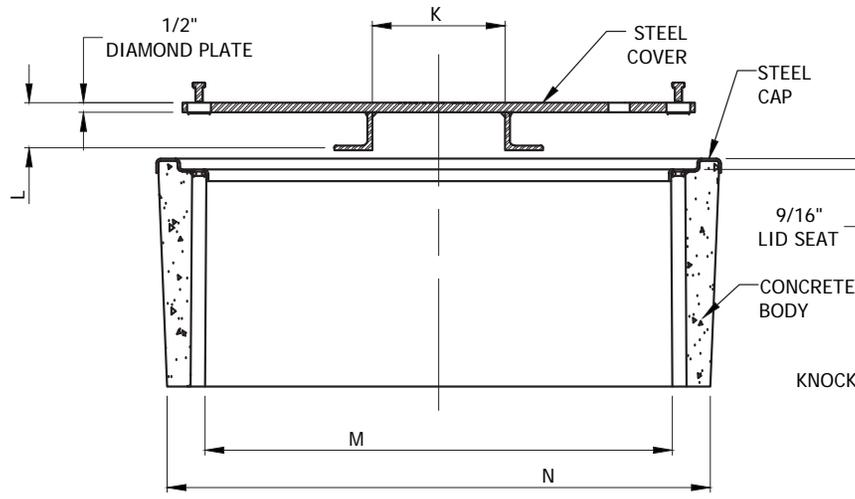
COVER ONLY - TOP VIEW

SEE NOTE NO. 3

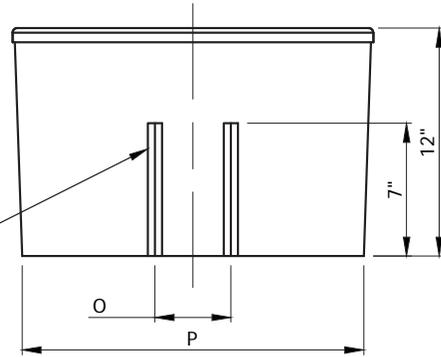
Ø1-1/8" X 1/2" DEEP
Ø5/16" THRU
2 PLACES

NOTES:

1. COVER AND BOX COMBINATION SHALL MEET AASHTO H20
2. DIMENSIONS SHOWN SHALL NOT VARY MORE THAN A 1/16 OF AN INCH
3. MARKINGS PER AGENCY AND/OR UTILITY
4. STACKABLE EXTENSION AVAILABLE TO ACHIEVE DEPTH DESIRED
5. GROUND BELOW THE BOX TO BE COMPACTED TO 95% MAXIMUM DENSITY
6. 6" CONCRETE COLLAR IF REQUIRED BY AGENCY

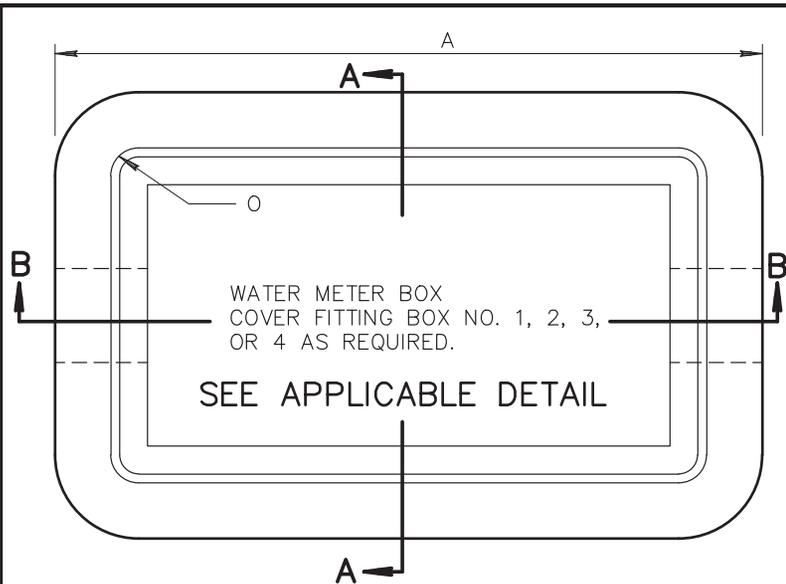


SECTION A-A BODY AND COVER

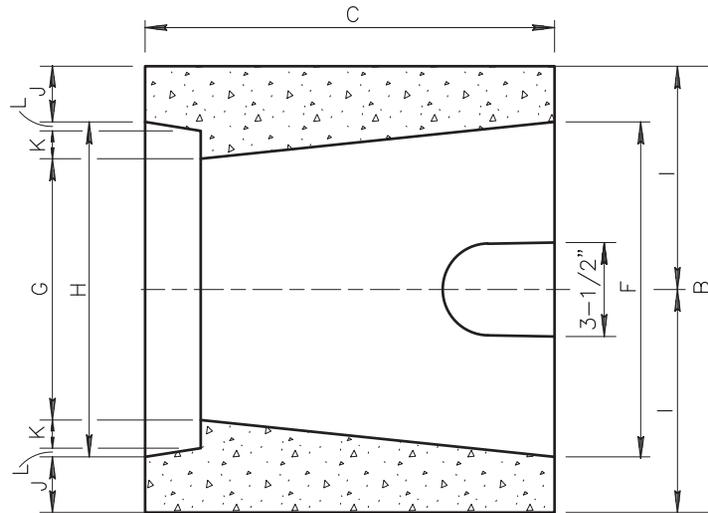


END VIEW

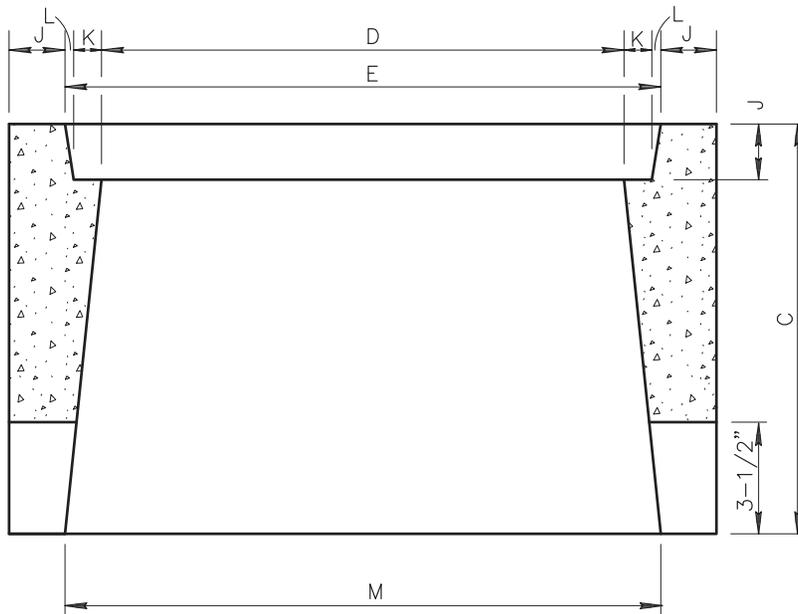
DIMS	BOX NUMBER	
	(1324)	(1730)
A	29-3/4"	36-7/8"
B	27-1/4"	33-1/2"
C	24-1/4"	30"
D	19"	23-3/4"
E	16-1/2"	20-1/2"
F	13-1/2"	17"
G	27"	33-1/4"
H	25-1/4"	31-1/4"
I	9-1/2"	12-1/8"
J	16-1/4"	20-1/4"
K	7"	10-3/4"
L	2-1/2"	3-1/2"
M	24-5/8"	30-5/8"
N	28-5/8"	35-7/8"
O	4"	5-3/4"
P	18"	22-5/8"



PLAN VIEW



SECTION A-A



SECTION B-B

NOTES:

1. THE METER BOXES SHALL CONFORM TO DIMENSIONS AS SHOWN AND SHALL NOT VARY MORE THAN A 1/16 OF AN INCH
2. THE METER BOXES SHALL BE MADE OF CLASS 'AA' CONCRETE PER SECT. 725. ACCEPTABLE ALTERNATIVE MATERIALS INCLUDE "POLYMER CONCRETE", "SHEET MOLDED COMPOUND" (SMC), "BULK MOLDED COMPOUND" (BMC), AND POLYETHYLENE WITH POLYMER CONCRETE FRAME
3. MINIMUM VERTICAL LOAD RATING PER TIER 5 ANSI/SCTE77 TESTING STANDARD FOR GRADE LEVEL ENCLOSURES AND COVERS
4. FOR LOAD REQUIREMENTS ABOVE 5,000 POUNDS USE DETAIL 319, TRAFFIC RATED BOX AND COVER

METER BOX DIMENSIONS				
DIMS	BOX NUMBER			
	1	2	3	4
A	18-1/2"	25"	28-3/8"	33-1/8"
B	11-3/4"	17-1/4"	17-5/8"	22-3/8"
C	12"	12"	12"	12"
D	14"	20"	24"	27-3/4"
E	16"	22-1/8"	26-1/4"	30-5/8"
F	9-1/4"	14-1/2"	15-1/8"	19-3/4"
G	7"	12-1/2"	13"	17"
H	9-1/4"	14-1/4"	15-1/4"	19-3/4"
I	5-7/8"	8-5/8"	8-7/8"	11-1/8"
J	1-1/2"	1-1/2"	2-1/4"	1-1/2"
K	3/4"	1/2"	3/4"	5/8"
L	1/4"	1/2"	1/2"	5/8"
M	16"	21-7/8"	26"	30-1/2"
O	1/2"	1/2"	1/2"	5/8"
	5/8" OR 3/4" METER	1" METER	1-1/2" METER	2" METER

DETAIL NO.
320

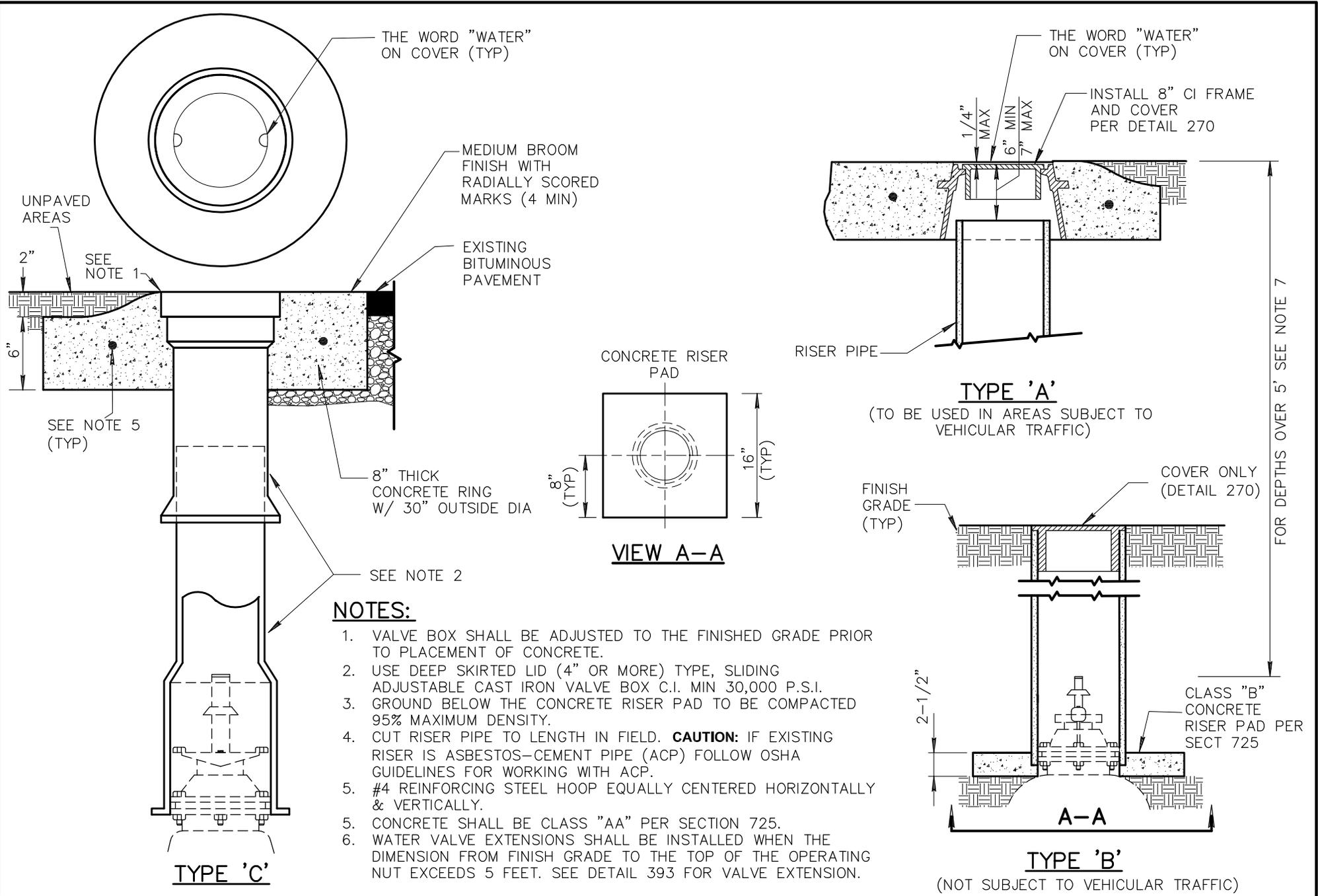


STANDARD DETAIL
ENGLISH

**NON TRAFFIC RATED
WATER METER BOXES**

REVISED
01-01-2017

DETAIL NO.
320



NOTES:

1. VALVE BOX SHALL BE ADJUSTED TO THE FINISHED GRADE PRIOR TO PLACEMENT OF CONCRETE.
2. USE DEEP SKIRTED LID (4" OR MORE) TYPE, SLIDING ADJUSTABLE CAST IRON VALVE BOX C.I. MIN 30,000 P.S.I.
3. GROUND BELOW THE CONCRETE RISER PAD TO BE COMPACTED 95% MAXIMUM DENSITY.
4. CUT RISER PIPE TO LENGTH IN FIELD. **CAUTION:** IF EXISTING RISER IS ASBESTOS-CEMENT PIPE (ACP) FOLLOW OSHA GUIDELINES FOR WORKING WITH ACP.
5. #4 REINFORCING STEEL HOOP EQUALLY CENTERED HORIZONTALLY & VERTICALLY.
5. CONCRETE SHALL BE CLASS "AA" PER SECTION 725.
6. WATER VALVE EXTENSIONS SHALL BE INSTALLED WHEN THE DIMENSION FROM FINISH GRADE TO THE TOP OF THE OPERATING NUT EXCEEDS 5 FEET. SEE DETAIL 393 FOR VALVE EXTENSION.

DETAIL NO.
391-1

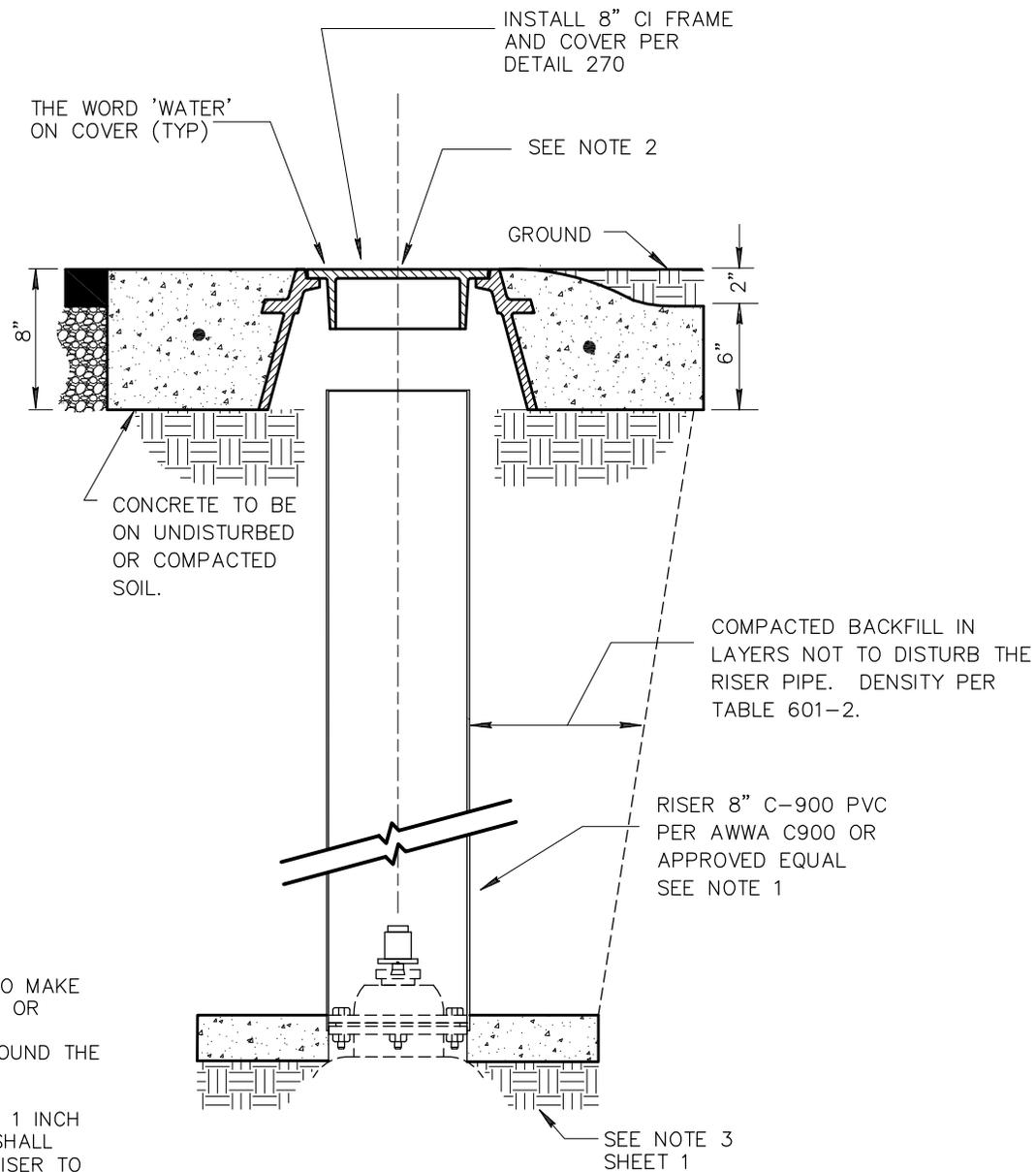


STANDARD DETAIL
ENGLISH

VALVE BOX INSTALLATION AND GRADE ADJUSTMENT

REVISED
01-01-2017

DETAIL NO.
391-1



NOTES:

1. IF TWO OR MORE SECTIONS OF PIPE ARE USED TO MAKE THE VALVE BOX RISER, THEY SHALL BE COUPLED OR BONDED TO FORM DEBRIS-TIGHT JOINTS.
2. VALVE BOX SHALL BE PLUMB AND CENTERED AROUND THE OPERATING NUT.
3. THE TOP OF THE VALVE SHALL BE KEPT CLEAN.
4. THE TOP OF THE RISER SHALL BE A MINIMUM OF 1 INCH ABOVE UNDISTURBED OR COMPACTED SOIL AND SHALL HAVE A MINIMUM CLEARANCE OF 2" FROM THE RISER TO THE LID SKIRT.

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391-2



STANDARD DETAIL
ENGLISH

**VALVE BOX INSTALLATION
AND GRADE ADJUSTMENT**

REVISED

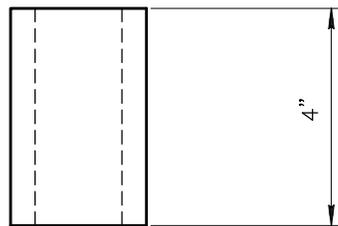
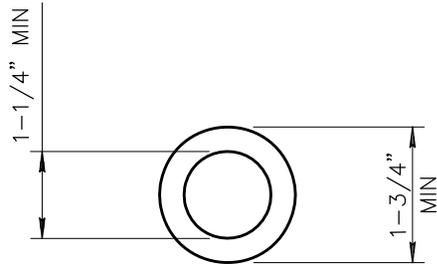
01-01-2017

DETAIL NO.

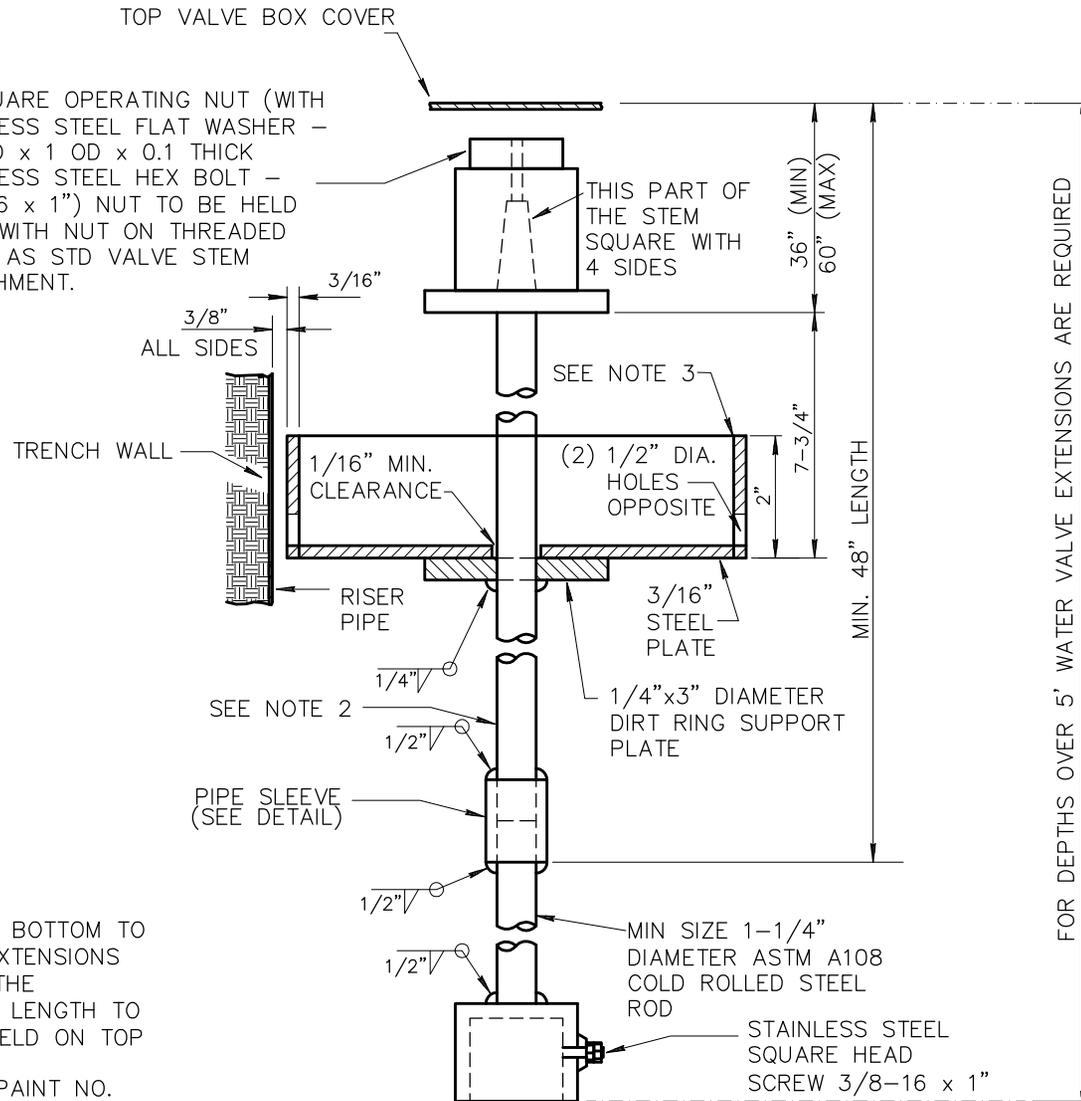
391-2

PIPE SLEEVE DETAIL

MATERIAL: STEEL PER ASTM A513



2" SQUARE OPERATING NUT (WITH STAINLESS STEEL FLAT WASHER - 0.43 ID x 1 OD x 0.1 THICK STAINLESS STEEL HEX BOLT - 3/8-16 x 1") NUT TO BE HELD DOWN WITH NUT ON THREADED SHAFT AS STD VALVE STEM ATTACHMENT.



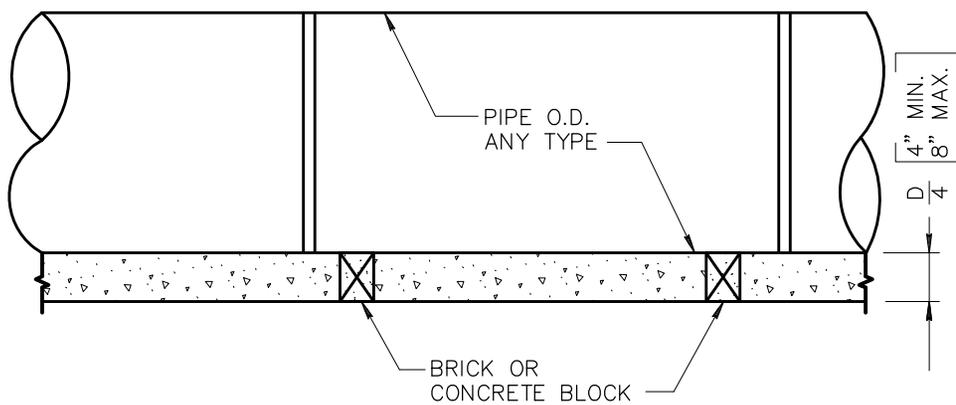
NOTES:

1. EXTENSION STEM: WITH A SQUARE SOCKET ON THE BOTTOM TO FIT A 2" SQUARE VALVE OPERATING NUT. VALVE EXTENSIONS ARE REQUIRED ON ALL VALVES INSTALLED WHERE THE OPERATING NUT IS OVER 5' BELOW THE SURFACE. LENGTH TO FIT EACH INSTALLATION. OPERATING NUT TO BE HELD ON TOP OF EXTENSION WITH STOP NUT.
2. PAINTING: ALL STEEL TO HAVE A PRIME COAT OF PAINT NO. 1-D AND ONE HEAVY APPLICATION (FINISH COAT) OF PAINT NO. 9 AS PER SECT. 790.
3. DIRT RING TO FLOAT FREELY ON THE TOP OF THE SUPPORT PLATE.
4. PIPE SLEEVE SHALL BE SECURELY WELDED TO THE UPPER AND LOWER PORTION OF THE 1-1/4" EXTENSION ROD.

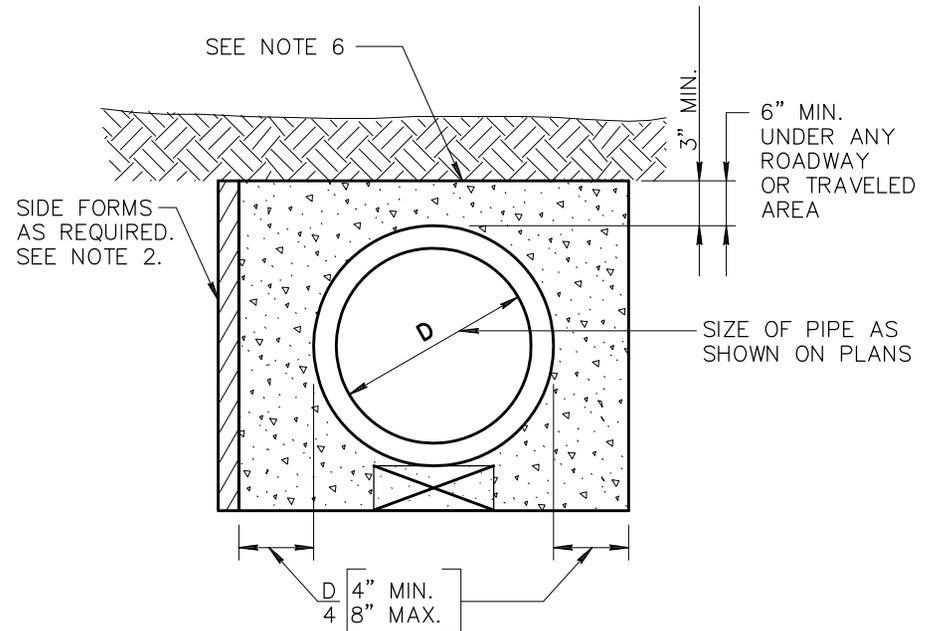
FOR DEPTHS OVER 5' WATER VALVE EXTENSIONS ARE REQUIRED

NOTES:

1. THIS DETAIL SHALL BE REQUIRED WHEN NEW OR EXISTING PIPE INSTALLATIONS WILL BE SUBJECT TO DAMAGE ANYTIME IN THE FUTURE DUE TO LACK OF PROPER COVER, AS DETERMINED BY THE ENGINEER.
2. FOR PIPE OVER 18" I.D. WOOD, METAL OR GYPSUM BOARD FORMS MUST BE USED TO FORM THE SIDES OF THE ENCASEMENT. GYPSUM BOARD FORMS MAY BE LEFT IN THE GROUND BELOW THE TOP OF THE ENCASEMENT. THIS SHALL BE OPTIONAL WITH POURING AGAINST TRENCH WALLS FOR ENCASEMENT OF 18" AND SMALLER PIPE.
3. FOR ALL SITUATIONS WHERE SIDE FORMS ARE USED, TRENCH WALLS SHALL BE OVER-EXCAVATED TO ALLOW SUFFICIENT ROOM TO OPERATE PROPER MECHANICAL COMPACTION EQUIPMENT.
4. CONCRETE WHICH SPILLS BEYOND 12" FROM THE SIDES OF THE PIPE FOR ANY REASON SHALL BE REMOVED BACK TO THE PROPER LINE PRIOR TO BACKFILLING.
5. SEE SECTION 601 FOR TRENCH PREPARATION.
6. CONCRETE TO BE CLASS 'A' PER SECT. 725.
7. COVER TO BE APPROVED BY ENGINEER.



LONGITUDINAL SECTION



END SECTION

DETAIL NO.

507



STANDARD DETAIL
ENGLISH

**ENCASED CONCRETE PIPE
(FOR SHALLOW INSTALLATION)**

REVISED

01-01-2017

DETAIL NO.

507