

UNIFORM STANDARD DETAILS **for** **PUBLIC WORKS** **CONSTRUCTION**

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2021 Revision to the
2020 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	2020	SAFETY RAIL
150	1998	PRECAST SAFETY CURB
160	2013	6' CHAIN LINK FENCE AND GATE

200 SERIES: STREET INFORMATION

Detail	Revised	Title
200-1	2020	TRENCH BACKFILL AND SURFACE REPLACEMENT
200-2	2020	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	2018	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 *	2021	CURB AND GUTTER TYPES A, B, C AND D
220-2	2007	CURB AND GUTTER TYPES E AND F
221	2018	CURB AND GUTTER TRANSITION AND 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
228 *	2021	PERVIOUS CONCRETE PAVEMENT
230	2014	SIDEWALKS
234	2012	CURB MODIFICATION AT DETECTABLE WARNING
236-1	2018	25'-35' R - RADIAL CURB RAMP - ATTACHED SIDEWALK
236-2	2018	25'-35' R - RADIAL CURB RAMP - DETACHED SIDEWALK
236-3	2019	20'-35' R - RADIAL CURB RAMP (COMPACT) ATTACHED SIDEWALK
236-4	2018	25'-35' R - RADIAL COMBINATION CURB RAMP
236-5	2018	25'-35' R - RADIAL PARALLEL CURB RAMP
237-1	2018	25'-35' R - DIRECTIONAL CURB RAMP - ATTACHED SIDEWALK
237-2	2018	25'-35' R - DIRECTIONAL CURB RAMP - DETACHED SIDEWALK
237-3	2019	20'-35' R - DIRECTIONAL CURB RAMP (COMPACT) ATTACHED SIDEWALK

200 SERIES: STREET INFORMATION (CONTINUED)

Detail	Revised	Title
238-1	2018	PERPENDICULAR CURB RAMP
238-2	2018	COMBINATION CURB RAMP
238-3	2018	PARALLEL CURB RAMP
238-4	2020	SINGLE CURB RAMP MID-BLOCK RESIDENTIAL STREET W/4" ROLL CURB
240	2010	VALLEY GUTTER
250-1	2014	DRIVEWAY ENTRANCES WITH DETACHED SIDEWALK
250-2	2013	DRIVEWAY ENTRANCES WITH SIDEWALK ATTACHED TO CURB
251 *	2021	RETURN TYPE DRIVEWAYS
252	2019	BUS BAYS
260	2018	RETROFIT DRIVEWAY OR ALLEY ENTRANCE (WITH 2" ROLL CURB AND GUTTER)
262	2020	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	2019	JOINT RESTRAINT FOR DUCTILE IRON AND POLYETHYLENE WRAPPED DUCTILE IRON AND PVC WATER PIPES (DRAWING)
303-2	2019	JOINT RESTRAINT FOR DUCTILE IRON AND POLYETHYLENE WRAPPED DUCTILE IRON AND PVC 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	2019	DRY BARREL FIRE HYDRANT INSTALLATION
360-2	2019	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	2018	CURB STOP WITH FLUSHING PIPE
391-1	2018	VALVE BOX INSTALLATION AND GRADE ADJUSTMENT
391-2	2017	VALVE BOX INSTALLATION AND GRADE ADJUSTMENT
392	2015	DEBRIS CAP INSTALLATION
393 *	2021	WATER VALVE EXTENSION

DETAIL NO.

100-1STANDARD DETAIL
ENGLISH**INDEX (PAGE 1 OF 2)*** NEWLY
REVISED.

REVISED

01-01-2021

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	2020	WATER AND SANITARY SEWER SEPARATION/PROTECTION
404-2	2006	WATER AND SANITARY SEWER SEPARATION/PROTECTION
404-3	2020	WATER AND SANITARY SEWER SEPARATION/PROTECTION
405	1998	BROKEN SEWER LINE REPLACEMENT
419-1	2020	POLYMER CONCRETE SANITARY SEWER MANHOLE
419-2	2020	PRE-CAST POLYMER CONCRETE MANHOLE BASE
419-3	2020	POLYMER CONCRETE MANHOLE BASE
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	2018	MANHOLE FRAME AND COVER ADJUSTMENT
423-1	2020	24" CAST IRON MANHOLE FRAME AND COVER
423-2	2020	30" CAST IRON MANHOLE FRAME AND COVER
424-1	2020	24" CAST IRON WATERTIGHT MANHOLE FRAME AND COVER
424-2	2020	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	2020	HEADWALL
501-2	2020	HEADWALL
501-3	2020	HEADWALL 42" TO 84" PIPE
501-4	2020	HEADWALL IRRIGATION 18" TO 60" PIPE
501-5	2020	HEADWALL DROP INLET
502-1	2020	TRASH RACK
502-2	2004	TRASH RACK
503	2018	IRRIGATION STANDPIPE
504	1998	CONCRETE BLOCK JUNCTION BOX
505 *	2021	CONCRETE COLLAR FOR PIPE
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 (CONT.)

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 *	2021	SPILLWAY INLET AND OUTLET
552	2015	FORD CROSSING WITH CUT-OFF WALLS
555	2010	EROSION PROTECTION/GABIONS

DETAIL NO.

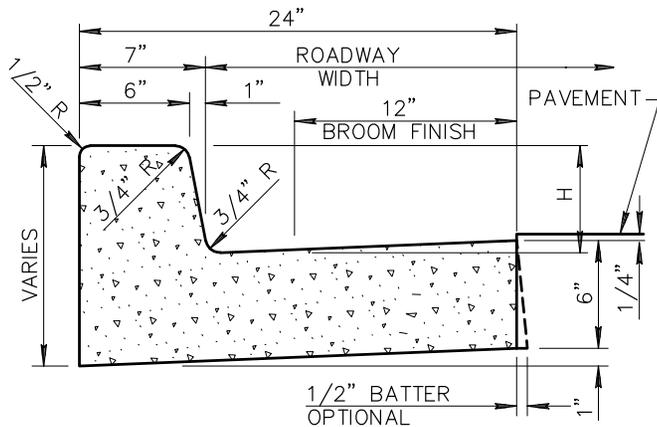
100-2STANDARD DETAIL
ENGLISH**INDEX (PAGE 2 OF 2)*** NEWLY
REVISED.

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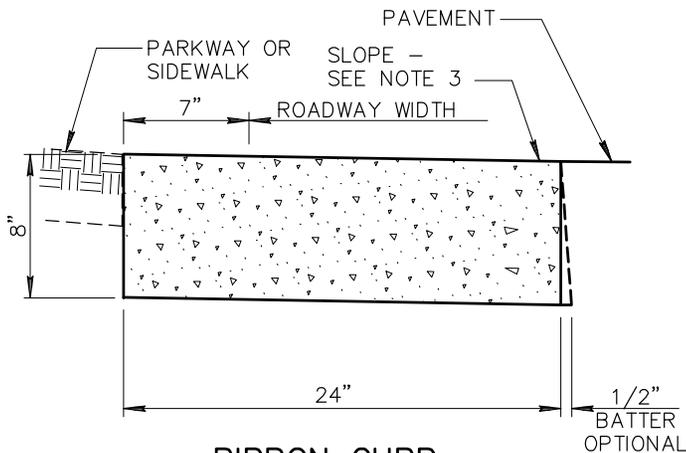
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DETAIL NO.

100-2



**VERTICAL CURB AND GUTTER
(TYPE A)**



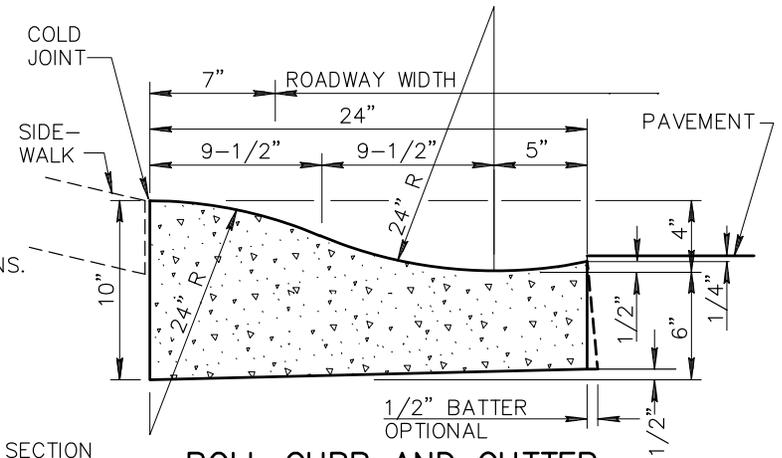
**RIBBON CURB
(TYPE B)**

NOTES: (TYPE A)

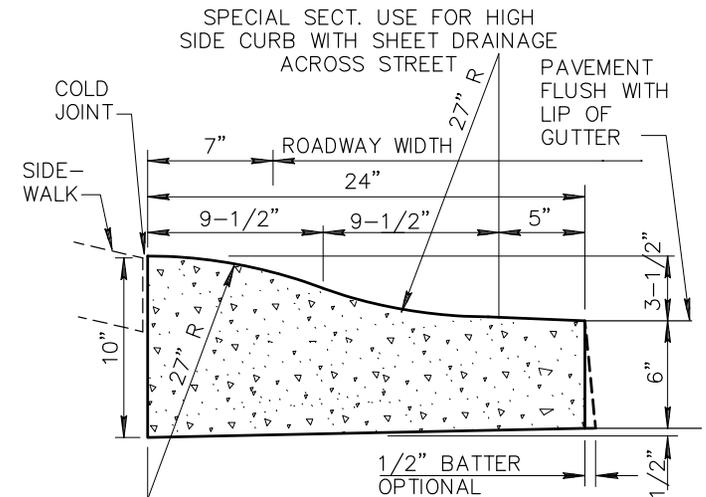
1. ALL EXPOSED SURFACES TO BE TROWEL FINISHED EXCEPT AS SHOWN. SEE SECT. 340.
2. H=6" OR AS SPECIFIED ON PLANS.
3. CONTRACTION JOINT SPACING 10' MAXIMUM.
4. EXPANSION JOINTS AS PER SECT. 340.
5. CLASS 'B' CONCRETE PER 725.
6. WHEN THE ADJACENT PAVEMENT SECTION SLOPES AWAY FROM THE GUTTER, THE SLOPE OF THE GUTTER PAN SHALL MATCH PAVEMENT CROSS SLOPE.

NOTES: (TYPE B)

1. CONSTRUCT CURB AND INSTALL 1/2" MASTIC EXPANSION JOINTS, A.S.T.M. D-1751. SECT. 340.
2. BROOM FINISH ALL SURFACES.
3. RIBBON CURB MAY SLOPE TOWARDS PAVEMENT OR PARKWAY AS INDICATED ON PLANS.
4. CONTRACTION JOINT SPACING 10' MAXIMUM.
5. CONCRETE SHALL BE CLASS 'B' PER SECT. 725 AND INSTALLED PER SECT. 505.



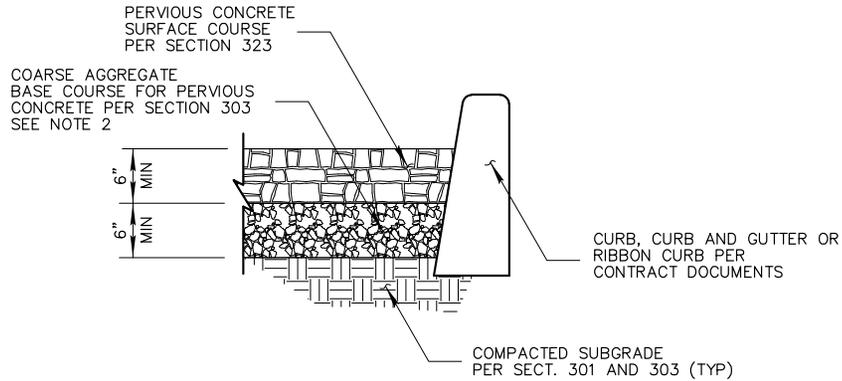
**ROLL CURB AND GUTTER
(TYPE C)**



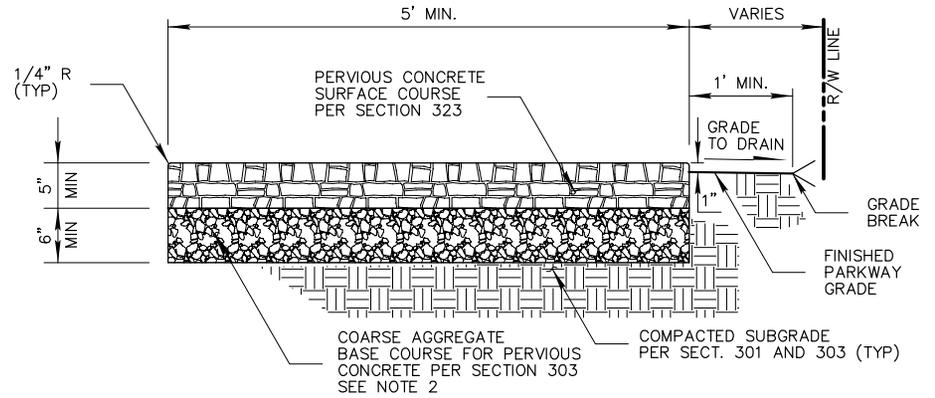
(TYPE D)

NOTES: (C & D)

1. ALL WORK AND MATERIALS SHALL CONFORM TO SECT. 340, 505 AND 725. BROOM FINISH TO EXPOSED SURFACE.
2. CONTRACTION JOINT SPACING 10' MAXIMUM.
3. EXPANSION JOINTS AS PER SECT. 340.
4. CLASS 'B' CONCRETE PER 725.



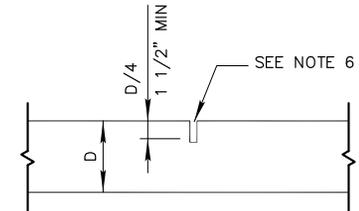
PERVIOUS CONCRETE PAVEMENT
(FOR LIGHT TRAFFIC AREAS ONLY)



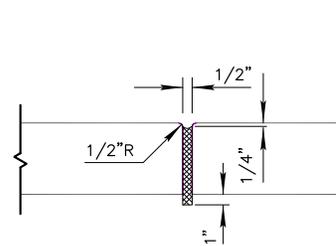
PERVIOUS CONCRETE PAVEMENT
(SIDEWALK)

NOTES:

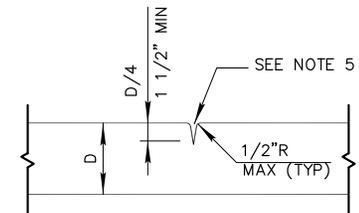
1. THIS USE OF PERVIOUS CONCRETE PAVEMENT IS INTENDED FOR LIGHT TRAFFIC AREAS AND PEDESTRIAN SURFACES ABOVE A SUBGRADE AS APPROVED BY THE ENGINEER.
2. PERVIOUS CONCRETE PAVEMENT AND COARSE AGGREGATE BASE COURSE SHALL BE CONSTRUCTED TO THE THICKNESS INDICATED IN THE CONTRACT DOCUMENTS.
3. FILTRATION AND SEPARATION GEOSYNTHETIC FABRIC SHALL ONLY BE USED WHEN SPECIFIED IN THE CONTRACT DOCUMENTS.
4. CONTRACTION JOINTS SHALL BE CONSTRUCTED AT REGULAR INTERVALS NOT TO EXCEED TWO TIMES THE PLACEMENT WIDTH OR 15 FEET ON CENTER, WHICHEVER IS LESS. CONTRACTION JOINTS SHALL BE CONSTRUCTED WITH A PERVIOUS CONCRETE JOINT CUTTER OR BY SAW CUTTING.
5. WHEN JOINTING A CONTRACTION JOINT USING A PERVIOUS JOINT ROLLER, THE JOINT SHALL BE PLACED IMMEDIATELY AFTER COMPACTION AND PRIOR TO CURING. DEPTH OF JOINT SHALL BE AT LEAST 1/4 THE PAVEMENT THICKNESS OR A MINIMUM OF 1-1/2" WHICHEVER IS GREATER.
6. SAW CUTTING SHALL CONFORM TO SECTION 323. DEPTH OF SAWCUT SHALL BE AT LEAST 1/4 THE PAVEMENT THICKNESS OR A MINIMUM OF 1-1/2" WHICHEVER IS GREATER.
7. EXPANSION JOINTS SHALL CONFORM TO SECTION 729, BE INSTALLED PRIOR TO CONCRETE PLACEMENT AND AT A MAXIMUM SPACING OF 75 FEET.



CONTRACTION JOINT
(SAWCUT JOINT)



EXPANSION JOINT



CONTRACTION JOINT
(USING PERVIOUS CONCRETE JOINT CUTTER)

DETAIL NO.

228



STANDARD DETAIL
ENGLISH

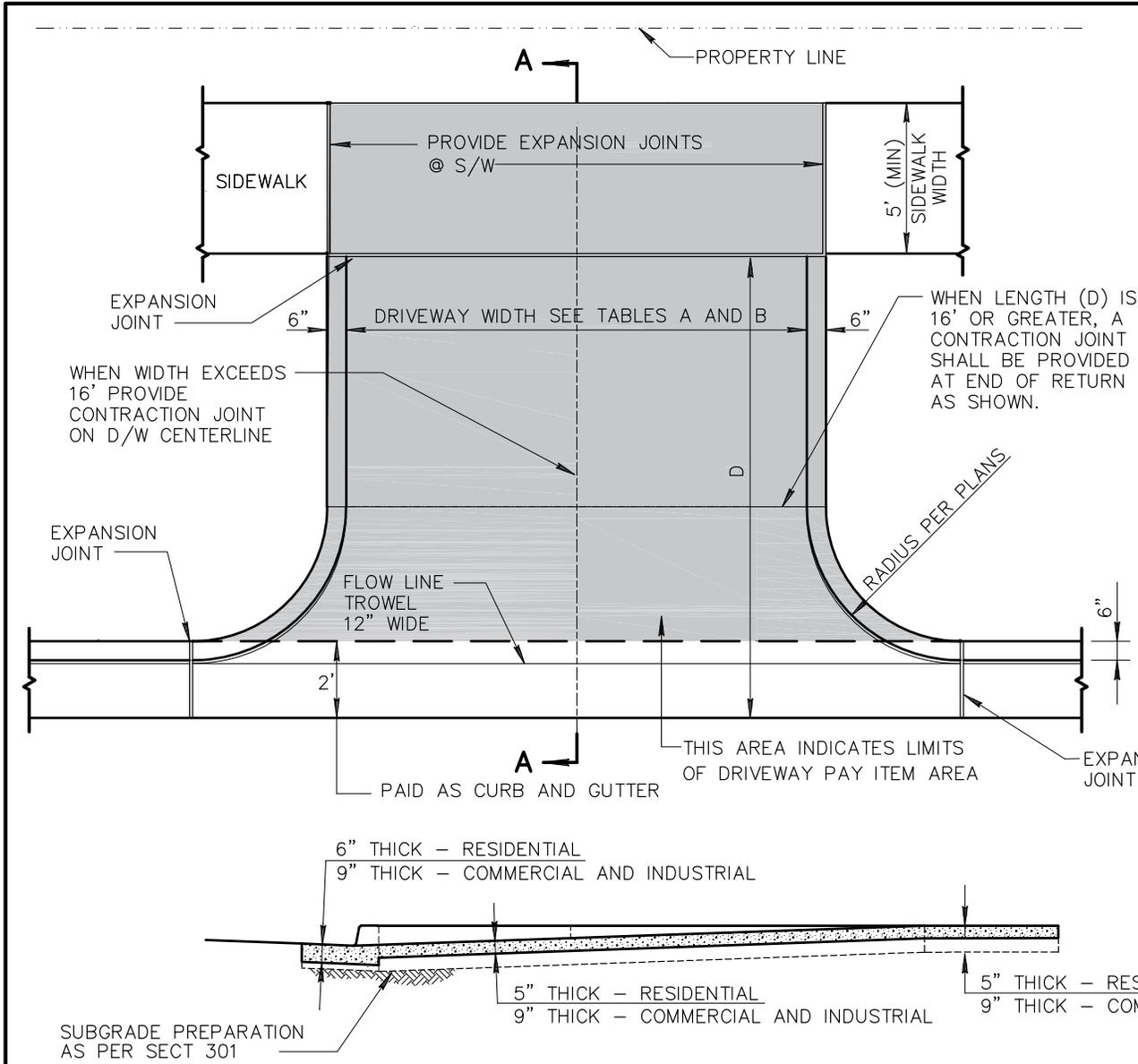
PERVIOUS CONCRETE PAVEMENT

REVISED

01-01-2021

DETAIL NO.

228



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		

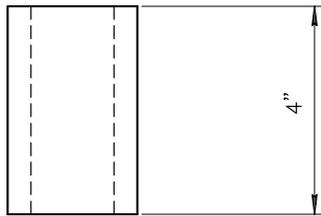
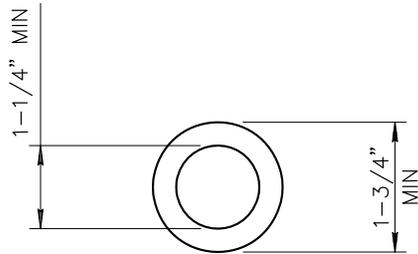
TABLE B		
ZONING	DRIVEWAY WIDTH	
	MIN*	MAX
RESIDENTIAL		
MAJOR STREET	16'	30'
COLLECTOR STREET	12'	30'
LOCAL STREET	12'	30'
* 16' WIDTH IS DESIRABLE		

NOTES:

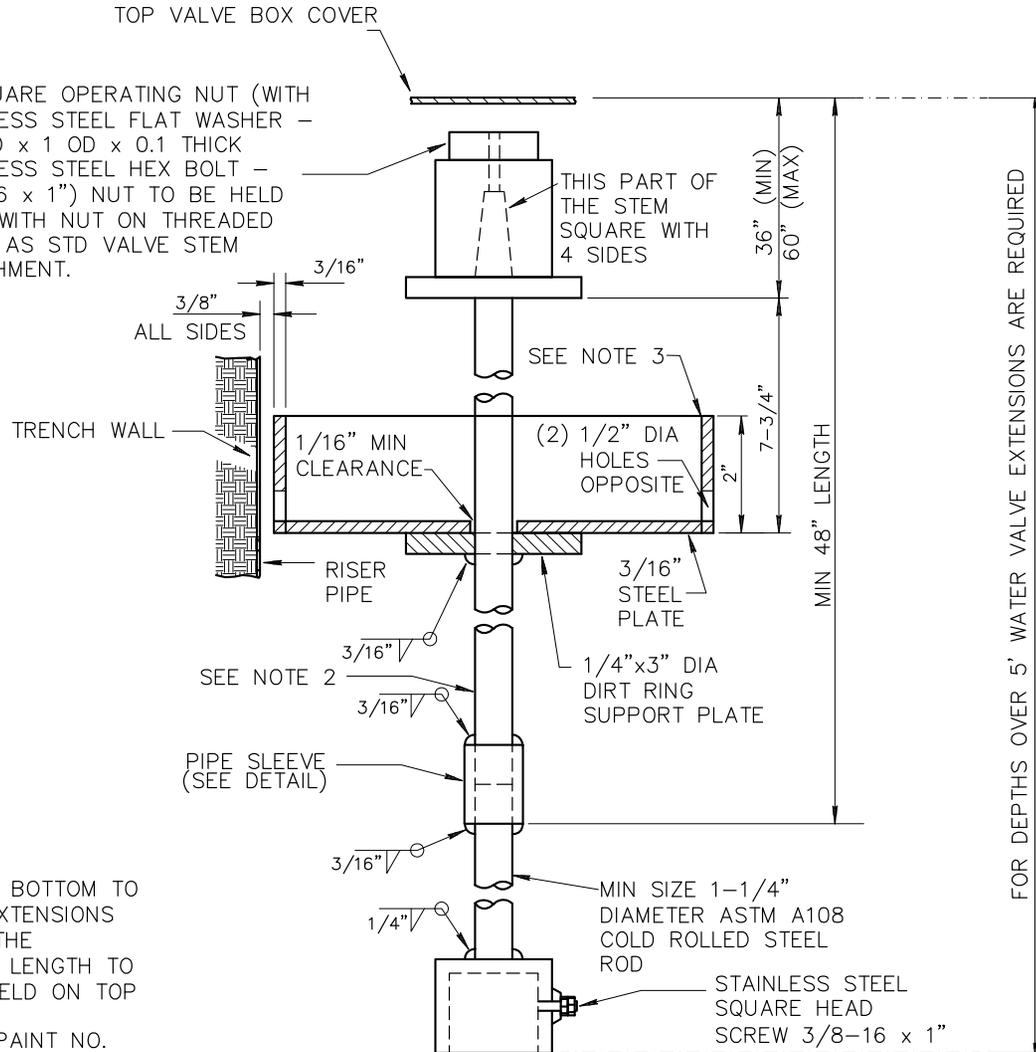
1. EXPANSION JOINT SHALL COMPLY TO SECTION 340.
2. THIS TYPE D/W TO BE USED ONLY UPON APPROVAL OF ENGINEER.
3. CONCRETE:
RESIDENTIAL CLASS B
COMMERCIAL AND INDUSTRIAL CLASS A

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 SECTION 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.

NOTES:

1. A CONCRETE COLLAR IS REQUIRED WHERE PIPES OF DIFFERENT DIAMETERS OR MATERIALS ARE JOINED, OR WHERE THE CHANGE IN ALIGNMENT OR GRADE EXCEEDS THAT ALLOWED FOR ON ORDINARY JOINTS.
2. WHERE PIPES OF DIFFERENT DIAMETERS ARE JOINED WITH A CONCRETE COLLAR, L AND T SHOULD BE THOSE OF THE LARGER PIPE. $D=D-1$, OR $D-2$ WHICHEVER IS GREATER.
3. OMIT REINFORCING ON PIPE 24" OR LESS IN DIAMETER.
4. WHERE REINFORCING IS REQUIRED, THE DIAMETER OF THE CIRCULAR TIES SHALL BE THE OUTSIDE DIAMETER OF PIPE+T.
5. FIELD CLOSURES OF PIPE OF THE SAME DIAMETER AND WITHOUT CHANGE IN GRADE OR ALIGNMENT SHALL BE MADE WITH A CONCRETE COLLAR.
6. CONCRETE SHALL BE CLASS B PER SECT. 725.
7. ALL REBAR SHALL HAVE 3" MINIMUM CLEAR COVER.
8. PIPE ENDS TO BE TRIMMED SUCH THAT THE MAXIMUM DISTANCE BETWEEN PIPES AT ANY POINT IS 2".
9. AN ENGINEER APPROVED WATER STOP IS REQUIRED ON ALL PIPES EXCEPT CONCRETE PIPE.

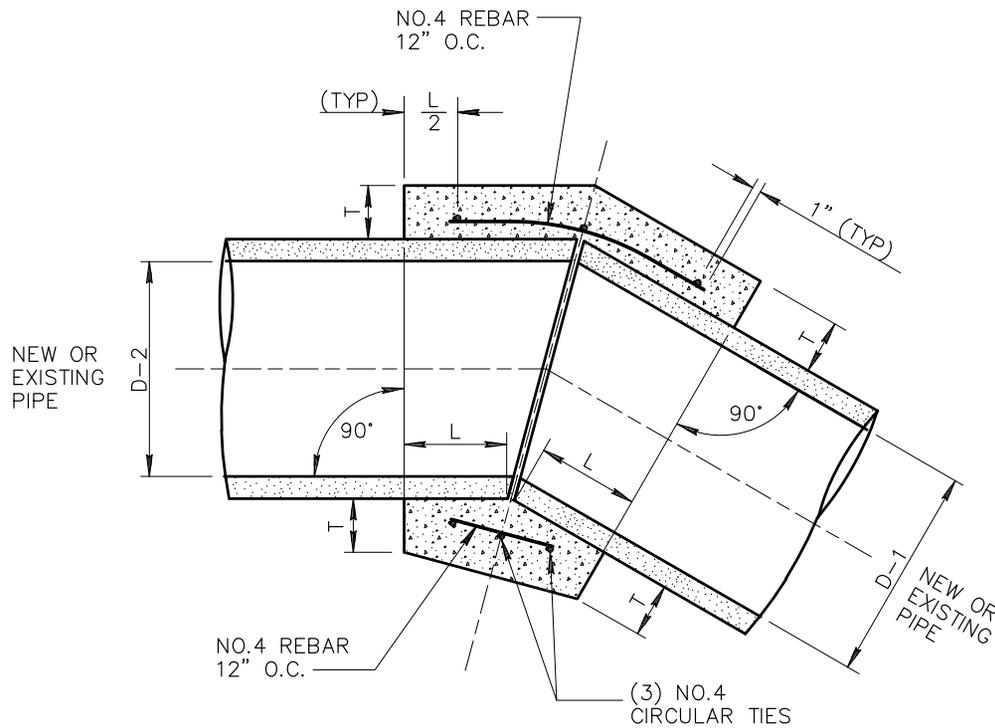


TABLE		
D	L	T
18"	1.0'	5"
24"	1.0'	6"
36"	1.5'	8"
57"	1.5'	10"
66"	1.75'	11"

FOR PIPE SIZES NOT LISTED AND LESS THAN 66" USE THE NEXT SIZE LARGER.

DETAIL NO.

505



STANDARD DETAIL
ENGLISH

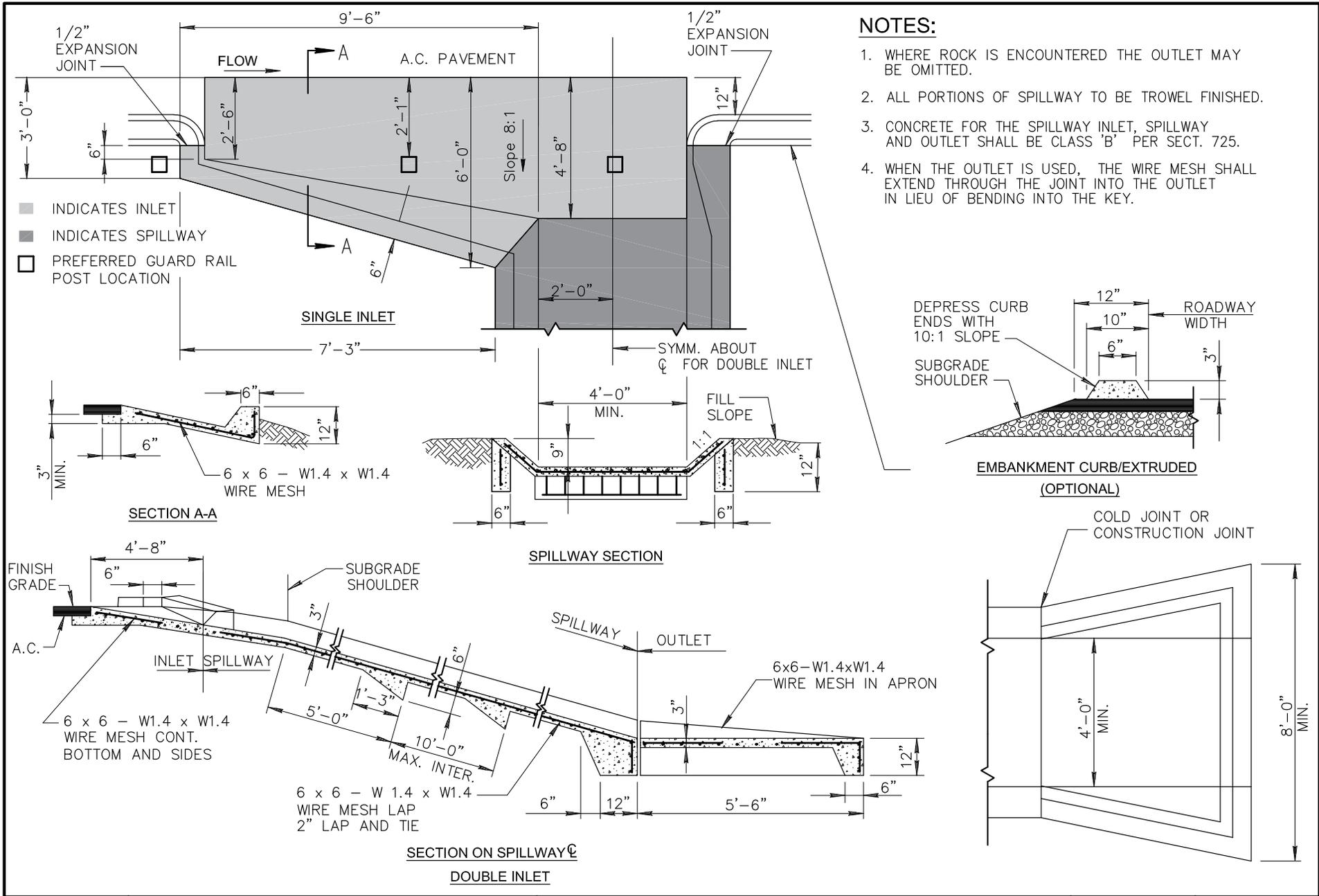
CONCRETE COLLAR FOR PIPE

REVISED

01-01-2018

DETAIL NO.

505



- NOTES:**
1. WHERE ROCK IS ENCOUNTERED THE OUTLET MAY BE OMITTED.
 2. ALL PORTIONS OF SPILLWAY TO BE TROWEL FINISHED.
 3. CONCRETE FOR THE SPILLWAY INLET, SPILLWAY AND OUTLET SHALL BE CLASS 'B' PER SECT. 725.
 4. WHEN THE OUTLET IS USED, THE WIRE MESH SHALL EXTEND THROUGH THE JOINT INTO THE OUTLET IN LIEU OF BENDING INTO THE KEY.