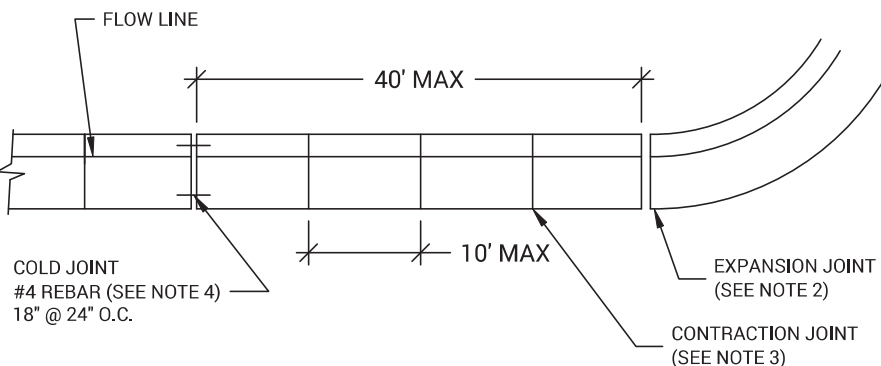
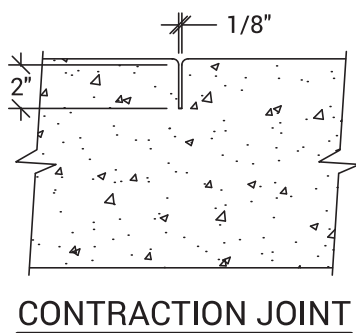
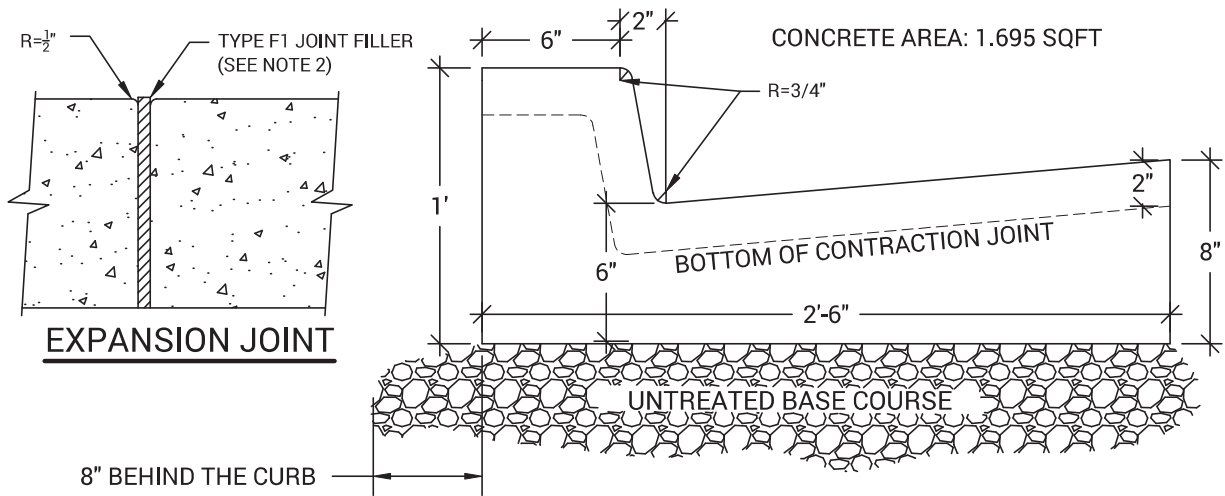




**Engineering Standards and
Drawings for**

Concrete Package



NOTES:

1. BASE COURSE SHALL BE PER APWA SECTION 32 11 23.
 - 1.1. EXTEND BASE 8" BEHIND THE CURB AND GUTTER.
 - 1.2. IF FLOW LINE IS GREATER THAN 0.5 PERCENT ($S=0.005$), PROVIDE 6" OF COMPACTED BASE COURSE. IF LESS, PROVIDE 8" OF COMPACTED BASE COURSE.
 - 1.3. COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS BEFORE COMPACTION IS 8" WHEN USING RIDING AND 6" WHEN USING HAND COMPACTION EQUIPMENT.
2. MAKE EXPANSION JOINTS VERTICAL, FULL DEPTH, 1/2" WIDE WITH TYPE F1 JOINT FILLER MATERIAL PER APWA SECTION 32 13 73.
 - 2.1. SET TOP OF FILLER FLUSH WITH THE CONCRETE.
 - 2.2. EXPANSION JOINTS ARE REQUIRED AT THE START OR END OF A STREET INTERSECTION CURB RETURN.
3. MAKE CONTRACTION JOINTS VERTICAL.
 - 3.1. 1/8" WIDE AND 2" DEEP OR 1/4 OF THE SLAB THICKNESS IF THE SLAB IS OVER 8" THICK.
4. USE REINFORCEMENT PER ASTM A 615, GRADE 60, GALVANIZED OR EPOXY COATED DEFORMED STEEL. SEE APWA SECTION 03 20 00 REQUIREMENTS.
5. BAG MIX: MARCH - NOVEMBER 6 1/2, DECEMBER - FEBRUARY 7 1/2.

OGDEN CITY ENGINEERING - STANDARD DRAWINGS

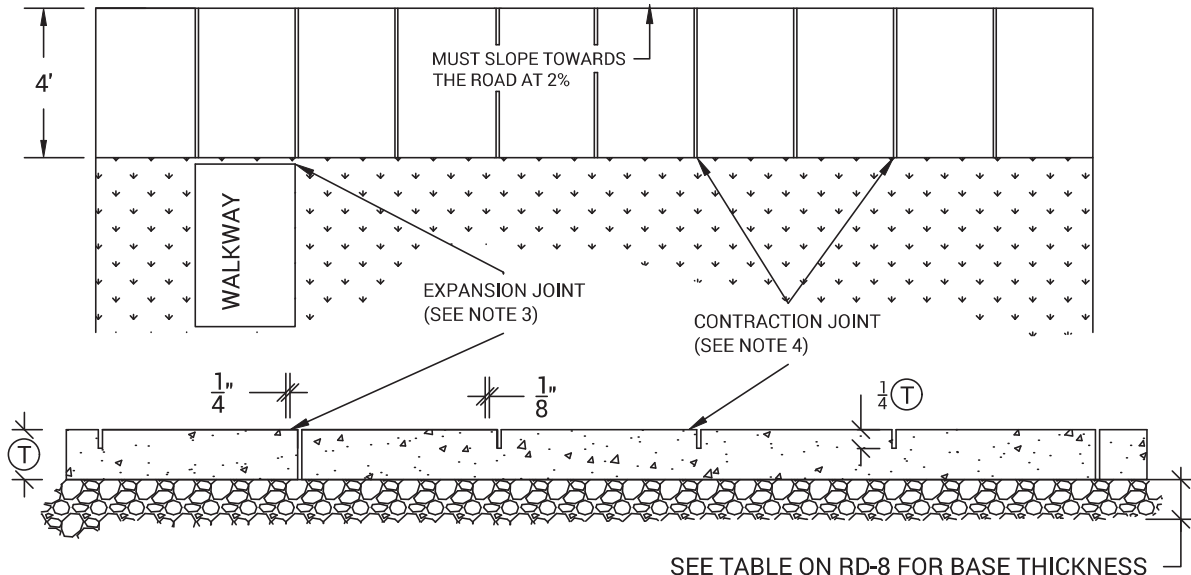


TYPE A CURB & GUTTER

RD-4

JUSTIN ANDERSON, CITY ENGINEER

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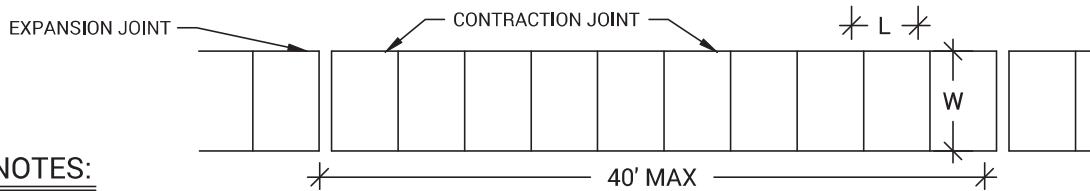
STREET TYPE		(T)
NOT SUBJECT TO VEHICULAR TRAFFIC		4"
SUBJECT TO VEHICULAR TRAFFIC		6"
COMMERCIAL SUBJECT TO VEHICULAR TRAFFIC		8"
REPLACEMENTS	MATCH EXISTING, 4" MIN.	

$$L_{MIN} = W$$

$$L_{MAX(IN FEET)} = 2.5 \times (T)(IN INCHES)$$

OR

$$= 15 \text{ FEET MAXIMUM}$$



NOTES:

1. BASE COURSE: PROVIDE MATERIAL SPECIFIED IN APWA SECTION 32 11 23.
 - 1.1. PLACE MATERIAL PER APWA SECTION 32 05 10.
 - 1.2. COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS BEFORE COMPACTION IS 8" WHEN USING RIDING EQUIPMENT AND 6" WHEN USING HAND COMPACTION EQUIPMENT.
2. CONCRETE: CLASS 4000 PER APWA SECTION 03 30 04.
 - 2.1. CONCRETE MUST INCREASE FROM 4" THICK TO 6" FOR RESIDENTIAL DRIVEWAYS AND TO 8" FOR COMMERCIAL DRIVEWAYS.
 - 2.2. PLACE CONCRETE PER APWA SECTION 03 30 10.
 - 2.3. PROVIDE 1/2" RADIUS ON CONCRETE EDGES EXPOSED TO PUBLIC VIEW.
3. EXPANSION JOINT: MAKE EXPANSION JOINTS VERTICAL, FULL DEPTH, 1/2" WIDE WITH TYPE F1 JOINT FILLER MATERIAL PER APWA SECTION 32 13 73.
 - 3.1. SET TOP OF FILLER FLUSH WITH SURFACE OF CONCRETE.
 - 3.2. EXPANSIONS JOINTS REQUIRED AT CURB RETURNS, APPROACHES, AND ADJOINING WALKWAYS.
4. CONTRACTION JOINT: MAKE CONTRACTION JOINTS VERTICAL. TYPICAL SLAB RATIO IS 1 TO 1.
 - 4.1. 1/8" WIDE AND 1" DEEP (OR 1/4 SLAB THICKNESS IF SLAB IS GREATER THAN 4" THICK).
 - 4.2. MAXIMUM LENGTH TO WIDTH RATIO FOR NON-SQUARE PANELS IS 1.5 TO 1.
5. BAG MIX: MARCH - NOVEMBER 6 1/2, DECEMBER - FEBRUARY 7 1/2.

OGDEN CITY ENGINEERING - STANDARD DRAWINGS

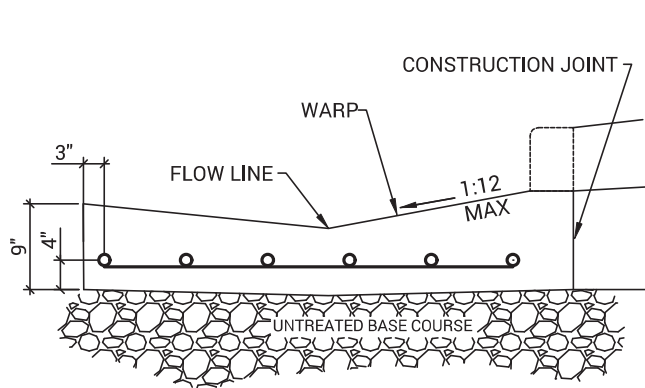
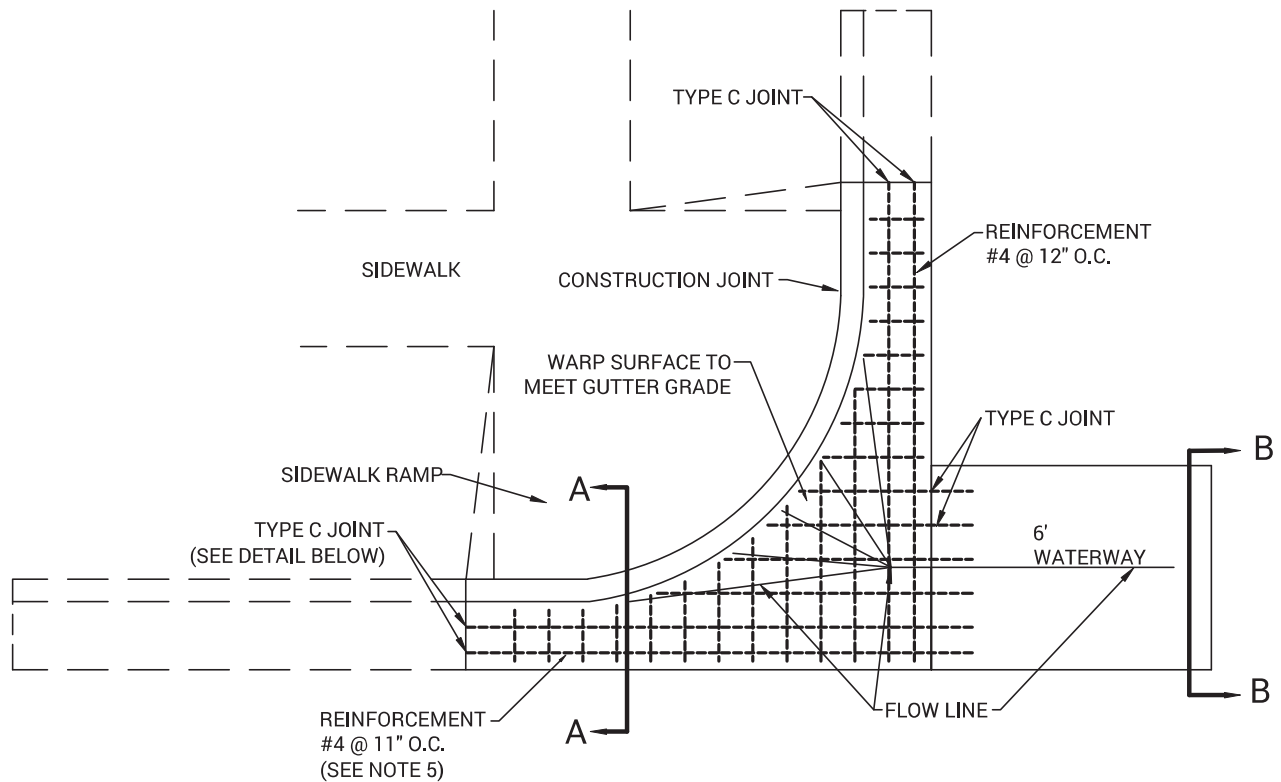


SIDEWALK DETAIL

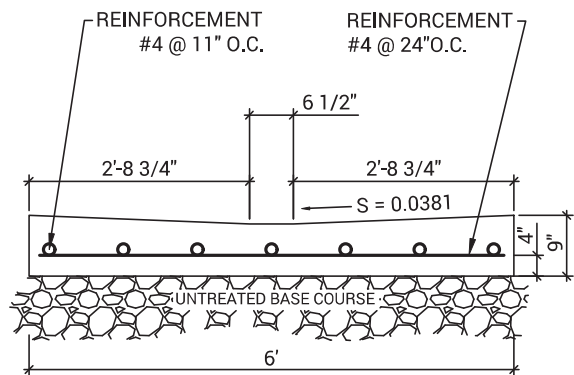
RD-5

JUSTIN ANDERSON, CITY ENGINEER

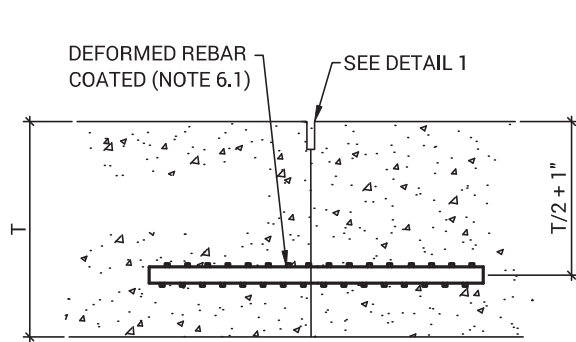
SHEET 1 OF 1 | 2020



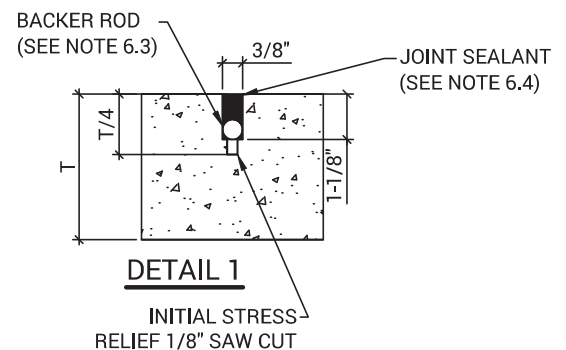
SECTION A-A



SECTION B-B



TYPE C JOINT



OGDEN CITY ENGINEERING - STANDARD DRAWINGS



WATERWAY TRANSITION STRUCTURES

RD-6

JUSTIN ANDERSON, CITY ENGINEER

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2020

NOTES:

1. UNTREATED BASE COURSE: PROVIDE MATERIAL AS PER APWA 32 11 23. REQUIRES 8" OF BASE FOR WATERWAYS SUBJECT TO ANY VEHICULAR TRAFFIC.
 - 1.1. PLACE MATERIAL PER APWA SECTION 32 05 10.
 - 1.2. COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS BEFORE COMPACTION IS 8" WHEN USING RIDING AND 6" WHEN USING HAND HELD COMPACTION EQUIPMENT.

2. CONCRETE: CLASS 4000 AS PER APWA 03 30 04.
 - 2.1. PROVIDE 1/2" RADIUS ON CONCRETE EDGES EXPOSED TO VIEW.

3. EXPANSION JOINTS SHALL BE VERTICAL, FULL DEPTH 1/2" WIDE. USE TYPE F1 JOINT FILLER AS PER APWA 32 13 73. SET TOP OF FILLER FLUSH WITH CONCRETE SURFACE.

4. CONTRACTION JOINTS SHALL BE VERTICAL, 1/8" WIDE AND 2" DEEP (OR 1/4 SLAB THICKNESS IF SLAB IS OVER 8").
 - 4.1. MAXIMUM PANEL LENGTH OF WATERWAY IS 15'.

5. REINFORCEMENT SHALL BE PER ASTM A 615, GRADE 60 GALVANIZED OR EPOXY COATED DEFORMED STEEL. SEE APWA SECTION 03 20 00 REQUIREMENTS.

6. TYPE C JOINT:
 - 6.1. REINFORCEMENT: SPACE BARS 12" TO 15" ON CENTER. GREASE DOWELS TO PROVIDE MOVEMENT IN EXPANSION JOINTS.
 - 6.2. JOINTS: LAY OUT JOINTS TO AID CONSTRUCTION AND CONTROL RANDOM CRACKING.
 - 6.2.1. LONGITUDINAL JOINT SPACING IS 12' FOR CONCRETE PAVEMENT LESS THAN 9" THICK AND 15' FOR PAVEMENT OVER 9" THICK.
 - 6.2.2. TRANSVERSE JOINT SPACING IS 30xT (SLAB THICKNESS IN FEET) WHERE THE MAXIMUM SLAB LENGTH TO SLAB WIDTH RATION IS 1.5 TO 1.
 - 6.2.3. EXTEND TRAVERSE CONTRACTION JOINTS CONTINUOUSLY ACROSS THE FULL WIDTH OF THE CONCRETE. MATCH JOINTS WITH CURB AND GUTTER.
 - 6.3. BACKER ROD:TYPE 1 (ROUND ROD) APWA SECTION 32 13 73. IT MUST BE OVERSIZED APPROXIMATELY 25 PERCENT TO FIT TIGHTLY INTO EACH JOINT AND COMPATIBLE WITH HOT Poured SEALANT.
 - 6.4. JOINT SEALANT:HOT APPLIED, APWA SECTION 32 13 73. REMOVE DIRT, OIL AND CURING COMPOUNDS FROM JOINT RESERVOIR. SEAL JOINTS IMMEDIATELY AFTER CLEANING.

7. BAG MIX: MARCH - NOVEMBER 6 1/2, DECEMBER - FEBRUARY 7 1/2.

OGDEN CITY ENGINEERING - STANDARD DRAWINGS

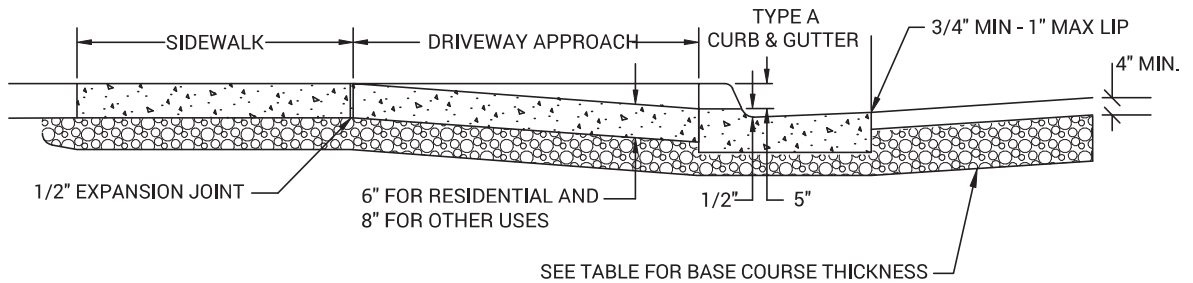
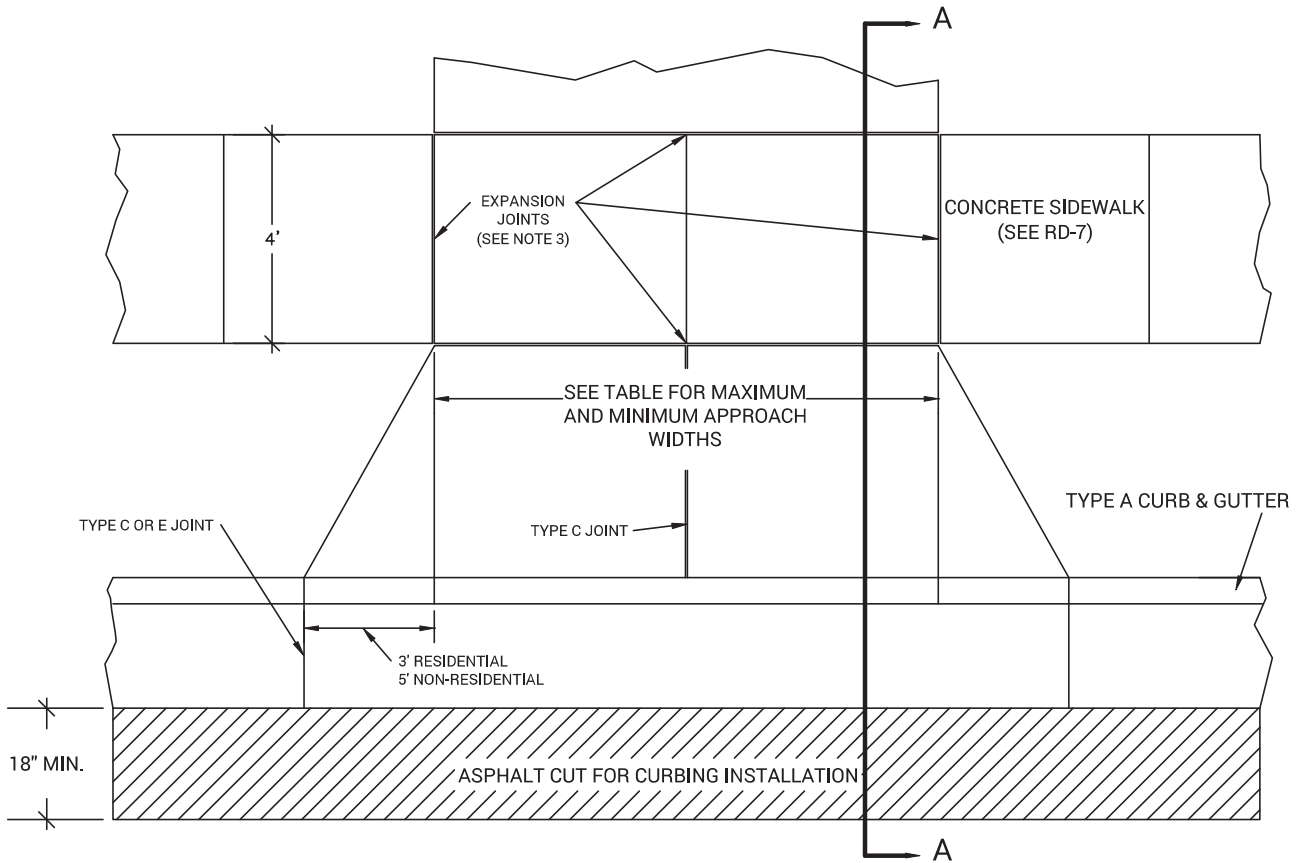


WATERWAY TRANSITION STRUCTURES

RD-6

JUSTIN ANDERSON, CITY ENGINEER

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SIDEWALK, APPROACH, CURB AND GUTTER
SECTION A-A

OGDEN CITY ENGINEERING - STANDARD DRAWINGS



DRIVEWAY APPROACH

RD-7

JUSTIN ANDERSON, CITY ENGINEER

SHEET 1 OF 2 | 2020

NOTES:

1. BASE COURSE: PROVIDE MATERIAL AS PER APWA 32 11 23.
 - 1.1. PLACE MATERIAL PER APWA SECTION 32 05 10.
 - 1.2. COMPACT PER APWA SECTION 31 23 26 TO A DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS BEFORE COMPACTION IS 8" WHEN USING RIDING AND 6" WHEN USING HAND HELD COMPACTION EQUIPMENT.
2. CONCRETE SHALL BE CLASS 4000 AS PER APWA 03 30 04.
 - 2.1. PROVIDE 1/2" RADIUS ON CONCRETE EDGES EXPOSED TO VIEW.
3. EXPANSION JOINT SHALL BE VERTICAL, FULL DEPTH 1/2" WIDE. USE TYPE F1 JOINT FILLER AS PER APWA 32 13 73. SET TOP OF FILLER FLUSH WITH CONCRETE SURFACE.
4. CONTRACTION JOINTS SHALL BE VERTICAL.
 - 4.1. 1/8" WIDE AND 1" DEEP (OR 1/4 SLAB THICKNESS IF SLAB IS OVER 4").
 - 4.1. MAXIMUM LENGTH TO WIDTH RATIO FOR NON-SQUARE PANELS IS 1.5 TO 1.
 - 4.2. MAXIMUM PANEL LENGTH (IN FEET) IS 2.5 TIMES THE SLAB THICKNESS (IN INCHES) TO A MAXIMUM OF 15'
5. REINFORCEMENT SHALL BE PER ASTM A 615, GRADE 60 GALVANIZED OR EPOXY COATED DEFORMED STEEL. SEE APWA SECTION 03 20 00 REQUIREMENTS.
6. BAG MIX: MARCH - NOVEMBER 6 1/2, DECEMBER - FEBRUARY 7 1/2.

	LOTS WITH 1-2 UNITS	LOTS WITH 3-4 UNITS	LOTS WITH OVER 5 UNITS
MINIMUM WIDTH	10'	16'	24'
MAXIMUM WIDTH	32'	32'	35'
	* OR 50% OF LOT FRONTAGE (WHICHEVER IS LESS)		
MINIMUM CONCRETE THICKNESS	6"	6"	6"
MINIMUM BASE	6"	6"	6"

	COMMERCIAL/MANUFACTURING (TRACTOR/TRAILER USE ONLY)	COMMERCIAL/MANUFACTURING (GENERAL USE)
MINIMUM WIDTH	35'	24'
MAXIMUM WIDTH	50'	35'
	*SEE SECTION 15-12-11 OF THE OGDEN CITY CODE FOR EXCEPTIONS	
MINIMUM CONCRETE THICKNESS	8"	8"
MINIMUM BASE	8"	8"

OGDEN CITY ENGINEERING - STANDARD DRAWINGS

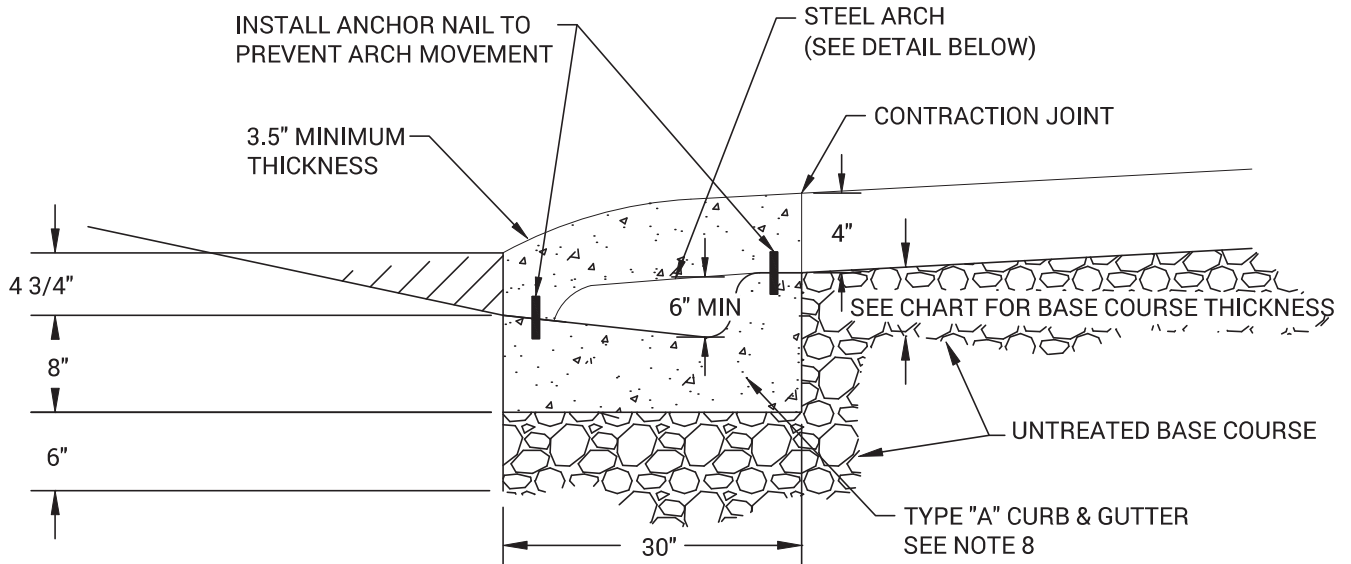
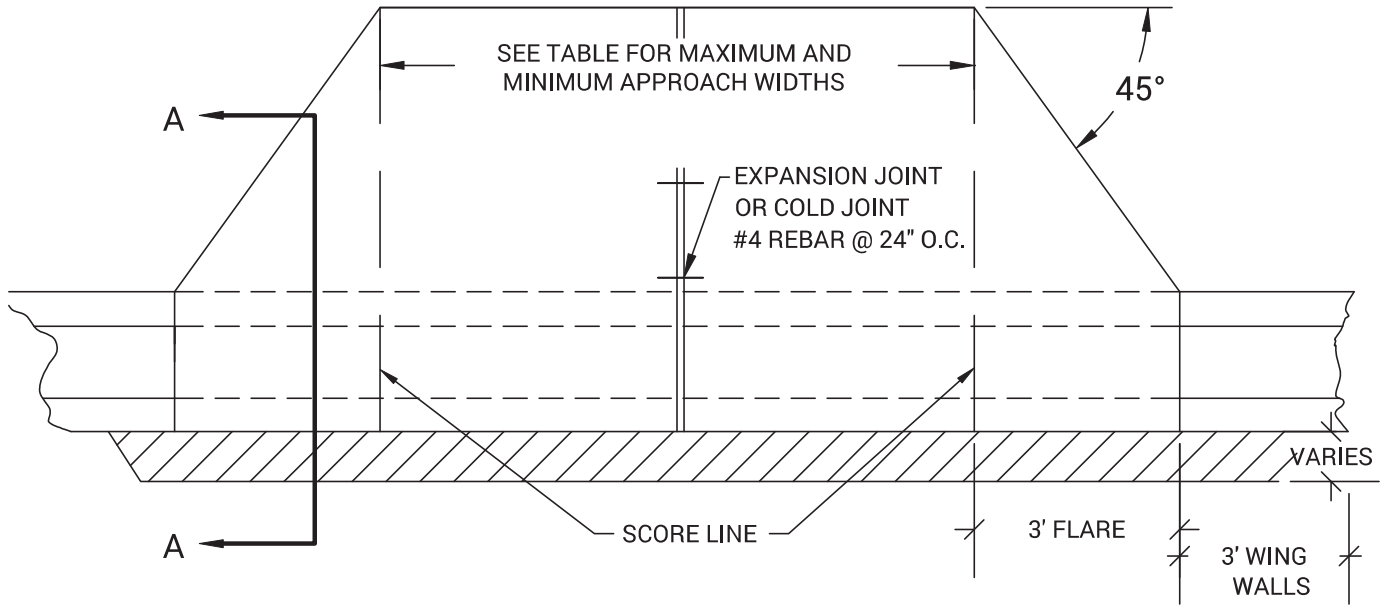


DRIVEWAY APPROACH

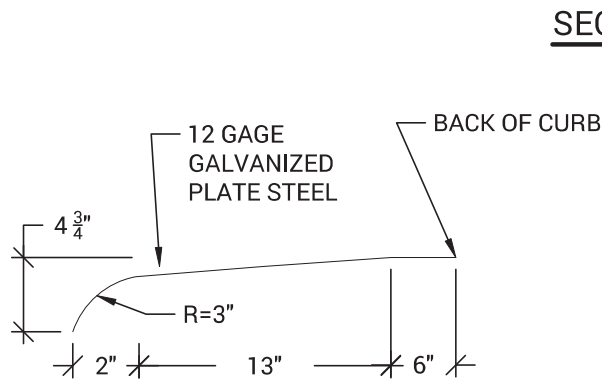
RD-7

JUSTIN ANDERSON, CITY ENGINEER

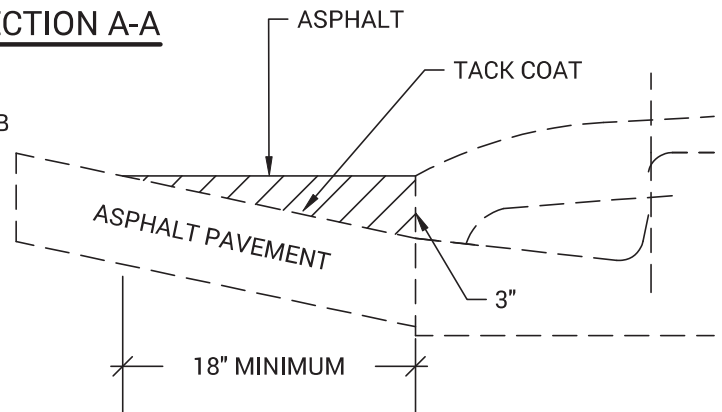
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SECTION A-A



ARCH DETAIL



ASPHALT TIE-IN DETAIL

OGDEN CITY ENGINEERING - STANDARD DRAWINGS



OVERHEAD DRIVEWAY

RD-8

JUSTIN ANDERSON, CITY ENGINEER

SHEET 1 OF 2 | 2020

NOTES:

1. OVERHEAD APPROACHES MUST BE APPROVED BY THE CITY ENGINEER.
2. BASE COURSE: PROVIDE MATERIAL AS PER APWA 32 11 23.
 - 2.1. PLACE MATERIAL PER APWA SECTION 32 05 10.
 - 2.2. COMPACT PER APWA SECTION 31 23 26 TO A MODIFIED PROCTOR DENSITY OF 95 PERCENT OR GREATER. MAXIMUM LIFT THICKNESS BEFORE COMPACTION IS 8" WHEN USING RIDING AND 6" WHEN USING HAND HELD COMPACTION EQUIPMENT.
3. CONCRETE: CLASS 4000 AS PER APWA 03 30 04.
 - 3.1. PROVIDE 1/2" RADIUS ON CONCRETE EDGES EXPOSED TO VIEW.
4. EXPANSION JOINT: MAKE JOINTS VERTICAL, FULL DEPTH 1/2" WIDE. USE TYPE F1 JOINT FILLER AS PER APWA 32 13 73. SET TOP OF FILLER FLUSH WITH CONCRETE SURFACE.
5. CONTRACTION JOINT: MAKE CONTRACTION JOINTS VERTICAL.
 - 5.1. 1/8" WIDE AND 1" DEEP (OR 1/4 SLAB THICKNESS IF SLAB IS OVER 4").
 - 5.1. MAXIMUM LENGTH TO WIDTH RATIO FOR NON-SQUARE PANELS IS 1.5 TO 1.
 - 5.2. MAXIMUM PANEL LENGTH (IN FEET) IS 2.5 TIMES THE SLAB THICKNESS (IN INCHES) TO A MAXIMUM OF 15'.
6. REINFORCEMENT: ASTM A 615, GRADE 60 GALVANIZED OR EPOXY COATED DEFORMED STEEL. SEE APWA SECTION 03 20 00 REQUIREMENTS. NOT REQUIRED IF DRIVEWAY RAMP IS CONSTRUCTED WITHOUT A COLD JOINT.
7. BAG MIX: MARCH - NOVEMBER 6 1/2, DECEMBER - FEBRUARY 7 1/2.
8. CURB AND GUTTER: SEE STANDARD DRAWING RD - 3.
 - 8.1. MINIMUM 6" HEIGHT FROM FLOW LINE TO BOTTOM OF ARCH.
 - 8.2. CURB HEIGHT MAY BE INCREASED TO 8" IF NECESSARY FOR CLEARANCE WITH APPROVAL FROM THE CITY ENGINEER.

	LOTS WITH 1-2 UNITS	LOTS WITH 3-4 UNITS	LOTS WITH OVER 5 UNITS
MINIMUM WIDTH	10'	16'	24'
MAXIMUM WIDTH	32'	32'	35'
	* OR 50% OF LOT FRONTAGE (WHICHEVER IS LESS)		
MINIMUM CONCRETE THICKNESS	6"	6"	6"
MINIMUM BASE	6"	6"	6"

	COMMERCIAL/MANUFACTURING (TRACTOR/TRAILER USE ONLY)	COMMERCIAL/MANUFACTURING (GENERAL USE)
MINIMUM WIDTH	35'	24'
MAXIMUM WIDTH	50'	35'
	*SEE SECTION 15-12-II OF THE OGDEN CITY CODE FOR EXCEPTIONS	
MINIMUM CONCRETE THICKNESS	8"	8"
MINIMUM BASE	8"	8"

OGDEN CITY ENGINEERING - STANDARD DRAWINGS

	OVERHEAD DRIVEWAY	RD-8
	JUSTIN ANDERSON, CITY ENGINEER	SHEET 2 OF 2

2-3 Sidewalks, Curb and Gutter, ADA Ramps, Approaches

1. Any section of curb, gutter, sidewalk, ADA ramp, waterway, and/or approach improperly installed or damaged during construction shall be removed and replaced at the Contractor's expense.
 - a. The City will decide the extent of removal, replacement, and/or repair.
 - b. Concrete removal shall be removed from joint to joint.
2. A concrete curing compound shall be applied to all new and finished concrete.
 - a. Curing compound must meet specifications ASTM C-309, Type 1 or 2, Class A

A. Curb and Gutter Design

1. Minimum slope allowed is 0.5% (this applies to all gutter grades).
2. Curbs and gutters shall be installed on existing and proposed streets.
 - a. Allowable curb section within the right of way shall be 30-inch (30") Type 'A' per APWA Standards.
 - 1) Other types of curb and gutter must be approved by the City Engineer.
 - b. Expansion Joints shall be:
 - 1) Spaced a maximum of 40 feet (40') for all curb and gutter regardless of installation type.
 - 2) Placed at any location where the curb and gutter changes direction.
 - 3) When work stops and begins at a different time.
 - c. Base course thickness under curb and gutter shall be eight inches (8").
 - d. Insert dowelled cold joint when connecting new curb and gutter to existing curb and gutter (See 2017 APWA Standard Plan 206)

B. Sidewalks

1. All new projects require the installation of sidewalks along the roadway.
 - a. New sidewalk shall be located within the public Right-of-Way.
 - 1) Unless the City Engineer accepts the sidewalk with a Public Access Easement.
2. Sidewalks within the Right-of-Way shall be a minimum of four feet (4') wide.
 - a. Sidewalks directly adjacent of the back of curb must be a minimum of six feet (6') wide and will only be allowed with approval from the City Engineer.
 - b. Sidewalks shall slope at two percent (2%) towards the street.
3. Sidewalks shall be installed with a landscaped park strip and be located a minimum of:
 - a. Arterial streets: six feet (6') behind the back of curb
 - b. Collector and Minor streets: seven feet (7') behind the back of curb
 - c. Cul-De-Sac: five feet (5') behind the back of curb
 - 1) All trees planted in the city Right-of-Way shall be approved by the City Urban Forester
 - 2) No small or medium tree shall be planted in a park strip that is less than five feet (5') wide, or no large tree shall be planted in a park strip that is less than eight feet (8') wide, unless approved by the City Urban Forester. Tree sizes are designated by the City Urban Forester
4. Sidewalk concrete thickness shall be:
 - a. Eight inches (8") when located directly behind a commercial, industrial, non-single family dwelling approach.
 - b. Six inches (6") when located directly behind a single-family residential approach or along all

- commercial and industrial areas.
 - c. Four inches (4") for all other residential areas.
5. When a drive approach intersects the sidewalk, the drive approach shall match the level of the sidewalk. See APWA standard plans for driveway approached for additional slope information for all approach connections.
 6. When installing Stamped Concrete, the stamp pattern shall closely resemble the pattern of adjacent brick pavers.
 - a. The concrete dye color shall be the color brown, unless stated otherwise by the Engineer. All concrete shall receive medium broom finish. The sealant finish shall be evenly applied and shall be the color charcoal, unless stated otherwise by the Engineer.

C. ADA Ramps

1. Handicap ramps shall be constructed at legal pedestrian crossings or a marked crosswalk.
 - a. Ramp running slope shall not exceed 8.33%. Side flare slopes shall not exceed 10%.
2. The bottom of diagonal or corner type curb ramps shall have a clear space of four feet (4') minimum outside active traffic lanes of the roadway
3. Tactile warning pads shall be Gray unless otherwise approved by the City Engineer.
 - a. Pad shall extend the full width of the curb ramp (exclusive of flared sides) and extend a minimum of two feet (2') deep in the direction of pedestrian travel.
 - b. Pad shall be anchored.

D. Waterways

1. Waterways in a public Right-of-Way shall be a minimum of six feet (6') wide.
2. Waterways cannot be installed within 500 feet (500') of a storm drain system. Connections to the storm drain system will be required. Waterways within this distance must be approved by the City Engineer.

E. Driveway Approaches

1. Driveways shall be set back from the nearest intersection face of curb (see Ogden Municipal Code 15-12-11):
 - a. A minimum of 80 feet (80') from the intersection of two streets when both are not local streets.
 - b. A minimum of 50 feet (50') from the intersection of any local to local street connection.
 - c. Any approach set within 300 feet of another roadway must have approval from the Traffic Engineer. A traffic study may be required.
 - d. Approaches near a major street will have additional requirements based on site related factors.
2. Overhead approaches shall not be allowed in Ogden City unless approved by the City Engineer.

3. Residential Approaches

Driveway Width - Residential			
	Lots with 1-2 Units	Lots with 3-4 Units	Lots with 5 or more Units
Minimum Width	10 feet	16 feet	24 feet
Maximum Width	32 feet or 50% of lot frontage (whichever is less)	32 feet or 50% of lot frontage (whichever is less)	35 feet or 50% of lot frontage (whichever is less)
Minimum Concrete Thickness	6 inches	6 inches	6 inches

- a. All single-family residential driveways shall be offset from other driveways by no less than six feet (6').
- b. Single-family homes shall be allowed one access-way onto the public street for each lot
 - 1) One additional access may be permitted for single-family homes if the access meets the additional City municipal code requirements.
 - a) Additional accesses must be approved by the City prior to installation.
 - b) This approach shall be used to service a circular driveway or accessory vehicle parking slab.
- c. Corner lots with more than 250 feet (250') of combined street frontage can request a third access for circular drives.

4. Commercial/Industrial Approaches

Driveway Width - Commercial/Industrial		
	Tractor/Trailer Use Only	General Use
Minimum Width	35 feet	24 feet
Maximum Width	50 feet	35 feet
Minimum Concrete Thickness	8 inches	8 inches

- a. All Commercial/Industrial driveways shall be offset from driveways on other properties by 20 feet (20').
 - 1) Approaches shall not be within eight feet (8') of an interior property line.
- b. A maximum of two (2) approaches will be permitted per parcel. Additional approaches will require the approval of the City Engineer and a traffic study be completed. Other approach restrictions are as follows:
 - 1) The driveway width and separation on State maintained roadways shall be as required by the Utah Department of Transportation.
 - 2) In parcels accommodating twenty (20) or more parking spaces, driveways must be separated by at least 250 feet (250'). Any requested reduction will require a traffic study and approval from the City Engineer.
 - 3) In parcels with less than twenty (20) parking spaces, driveways must be separated by at least 100 feet (100'). Any requested reduction will require a traffic study and approval from the City Engineer.