

Landscape Architecture PS & E Guide

SECTION 7

Irrigation Crossovers

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Irrigation Crossovers

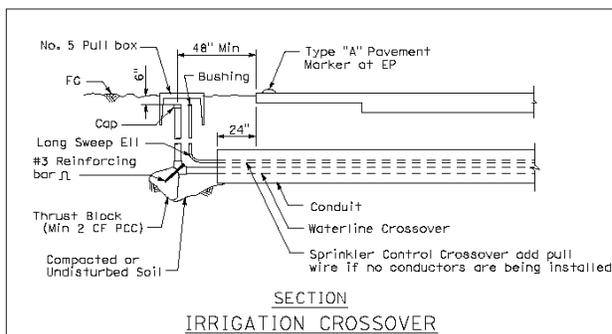
Definition

Irrigation crossovers are used to convey pipe supply line (waterline crossover) and/or electrical conduit (sprinkler control crossover) under existing or proposed paved surfaces.

Irrigation crossovers consist of a conduit for the pipe supply line, electrical conduit and appurtenances. Conduits can be installed by jacking, drilling, or the open trench method.

Components of an Irrigation Crossover

Below is the Standard Detail for an Irrigation Crossover and portions of the Standard Specifications that relate to the components of the detail. The Standard Detail provides a clearer understanding when developing an Irrigation Crossover.



20-5.024 IRRIGATION CROSSOVERS

Irrigation crossovers shall include conduits, water line crossovers, sprinkler control crossovers and appurtenances. Sizes of the conduits, water line crossovers and sprinkler control crossovers shall be as shown on the plans or as specified in the special provisions.

20-2.16 CONDUIT

Conduit for irrigation crossovers shall conform to the provisions in this Section 20-2.16.

Conduit placed by jacking or drilling shall be welded steel pipe conforming to the requirements in ASTM Designation: A 53. Welded steel pipe shall be either black or galvanized pipe and shall have welded or threaded joints.

Conduit placed in open trenches shall be corrugated high density polyethylene pipe (CHDPE), corrugated steel pipe, corrugated aluminum pipe or acrylonitrile-butadiene-styrene (ABS) composite pipe.

When alternative conduit is designated in the Engineer's Estimate or specified in the special provisions, the kind of conduit to be installed shall be selected by the Contractor from the allowable kinds of alternative conduit specified in the special provisions.

20-5.03B Conduit for Irrigation Crossovers

The installation of conduit for irrigation crossovers shall conform to the provisions in this Section 20-5.03B.

The location of each conduit shall be designated by cementing a Type A pavement marker to the paved shoulder near each end and over the center line of the conduit using a standard set type adhesive. Type A pavement markers and adhesive shall conform to the provisions in Section 85, "Pavement Markers."

20-5.03C Water Line Crossovers

Water line crossovers are supply line pipes installed in conduits.

The work of installing water line crossovers shall include furnishing and installing appurtenances shown on the plans or specified in these specifications or the special provisions.

Water line crossovers shall be polyvinyl chloride (PVC) plastic pipe with a minimum pressure rating (PR) of 315 and shall be of the sizes shown on the plans or specified in the special provisions.

After completing conduit backfill and prior to performing the pressure test on a water line crossover, the Contractor shall demonstrate that the water line crossover can be moved longitudinally within the conduit. The water line crossover shall then be positioned to extend at least 0.3-m beyond each end of the conduit.

Where water line crossovers are not to be connected to other supply lines, the ends of the crossovers shall be capped immediately after testing.

20-5.027D Sprinkler Control Crossovers

Sprinkler control crossover work shall consist of furnishing and installing electrical conduit, pull boxes and appurtenances as shown on the plans and as specified in these specifications and the special provisions.

Sprinkler control crossovers shall be any electrical conduit for sprinkler controls that is installed inside a larger conduit under a roadway or other facility.

Electrical conduit for sprinkler control crossovers shall be the rigid non-metallic type. The size of electrical conduit will be specified in the special provisions or shown on the plans.

A No. 5 pull box, conforming to the provisions in Section 20-2.31C, "Pull Boxes," shall be installed at each end of sprinkler control crossovers as shown on the plans.

20-5.05 PAYMENT

Full compensation for sprinkler control crossovers, water line crossovers, pavement markers, pull wires, pull boxes and appurtenances, and for pressure testing the water line crossover in the conduit shall be considered as included in the contract prices paid per linear foot for the various sizes and types of conduit for irrigation crossovers in which the sprinkler control crossovers and water line crossovers are installed and no separate payment will be made therefor.

The Various Aspects of Jacking or Drilling Conduit for Water Line and Sprinkler Control Crossovers

There are several key points to consider during design when finalizing locations for the conduits.

When designing for a roadway conduit location, it is imperative that the designer take into consideration the following: amount of right of way available for the jacking or drilling operation; the type of soil; the ultimate length of the conduit needed; and the degree of slope at the jack or drill location.

Typically, when a jacking or drilling operation is done, the Contractor must excavate a pit that accommodates the equipment and personnel required for the work. In order to provide sufficient workspace for a normal dry bore or jack, the size of the pit will be about 20' in length and 10' in width. The conduit is placed on rails in front of a hydraulic machine that pushes or jacks the conduit while the drilling auger bits, placed within the conduit, pulls soil back through the casing. Eventually the soil is deposited out the back end of the conduit into the pit for easy removal. Other methods and devices may be used depending upon the size of conduit needed and the existing conditions.

It is equally important to ascertain the type of soil involved, since the rockier the soil, the more potential for encountering obstructions to the conduit. Sometimes, specialized bits can be used to break up small rocks or the conduit can be sized to facilitate removal of some rocks by the auger out the back end of the casing, along with the soil. In the event that an obstruction is encountered under existing pavement, the Engineer is permitted to allow small holes be cut in the existing pavement to locate or remove obstructions. If the soil is extremely rocky, it may be better to pursue a new location, an open trench for placement of the conduit, a bridge attachment, or establishment of another water source on the opposite side of the freeway. There are potential problems associated with all the alternatives, but the one with the least amount of impact should be chosen.

The quantity and sizes of current and future facilities to be located within the conduit will usually dictate the size of the conduit to be placed. However, the length of the conduit run will also play a part in the ultimate size of the casing. On longer runs across the freeway, it may be advisable to use a

conduit sized 12" or more. The larger casing will provide more stability in a longer boring operation and will have less of a likelihood of being deflected during installation. It is important to prevent the opposite end of a bored casing extremely deep or shallow. On shorter runs, like those typically found across a ramp, casing sizes of 8" or less.

The state of the existing grade at the conduit location is very critical. With the exception of conduits installed in sidewalk areas; conduits are required to be placed not less than 40 inches below finished grade measured to the top of the pipe. Installations in cut areas could result in excavation pit walls being well over 5' or more in depth. This would require a Contractor's detailed plan for the protection of workers from the hazards of caving ground during the excavation of the pit. In fill areas, the Contractor may not have sufficient compacted soil to provide a suitable back wall for the hydraulic equipment to 'push off' from during the jacking or drilling. Additionally, large fill slopes can contain buried man-made objects and other debris that may adversely impact the installation. A site that is fairly level would be the best choice for a pit location. Remember too, that the pits are required to be kept at least 2' from the pavement edge wherever possible, to prevent undermining at the base and edge of pavement. Excessive use of water is not permitted for this very same reason, in addition to the fact that it softens the subgrade.

Conduit that is placed by jacking or drilling is required to be welded steel pipe that is either black or galvanized pipe, and has welded or threaded joints. Minimum wall thickness for the various sizes of conduit is specified in Section 20-2.16 (see **Conduit**, Section 20-2.16 on page 7-1) of the Standard Specifications. Occasionally, pipe conduit with wall thickness greater than those specified may be necessary in order to withstand the jacking or drilling operation. However, that decision is made by the Contractor since the additional wall thickness needed will be furnished at the Contractor's expense.

Installation of Irrigation Crossovers for Highway Planting Projects

On Highway Planting projects, irrigation crossover work is covered in the Standard Plans, Standard Specifications, estimate, and project plan sheets for locations.

Irrigation crossovers are either jacked or drilled under existing paved surfaces or installed by the open trench method.

See [Table 7-1](#) on page 7-4 for the standard symbol for conduit when specifying irrigation crossovers on Highway Planting projects.

Jacked or Drilled

Irrigation crossovers that are jacked or drilled under existing paved surfaces are welded steel pipe (WSP) conduits. Installation and payment for welded steel pipe conduits are covered in Section 20-5, "Irrigation Systems" of the Standard Specifications. The detail for the welded steel pipe conduit is included in [Standard Plan](#) on page 7-12. Include [Standard Plan A20A for the Type A Pavement Marker](#). Use SSP 20-150 "Irrigation Crossovers" which directs the Contractor to the Standard Specifications which cover what is required for materials and installation.

An Irrigation Crossovers table may be used on the plans if the number or complexity of conduits requires clarification. The **Irrigation Crossovers Table** shown on page 7-8 may be used. Modify the Conduit Type heading by removing the circle replacing it with WSP and deleting the Conduit Types shown below the table. Or add WSP to the list of conduit types and show the number under Conduit Type in the table.

Payment for jacked or drilled irrigation crossovers is covered in the Standard Specifications in Section 20-5.05 "Payment" which is shown below:

Full compensation for sprinkler control crossovers, water line crossovers, pavement markers, pull wires, pull boxes and appurtenances, and for pressure testing the water line crossover in the conduit shall be considered as included in the contract prices paid per linear foot for the various sizes and types of conduit for irrigation crossovers in which the sprinkler control crossovers and water line crossovers are installed and no separate payment will be made therefor.

Open Trench

In special cases where jacking or drilling a conduit would be difficult (primarily across city streets and driveways) and cutting across existing surfacing is permitted, crossovers for Highway Planting projects may be installed in an open trench (use SSP 20-680). Include a plan detail showing the structural section and depth of conduit, if different than 24 inches. Include Standard Plan A20A for the Type A pavement marker.

See [Table 7-1](#) on page 7-4 for the standard symbol for conduit when showing irrigation crossovers on Highway Planting projects.

Types of conduit materials used for open trench installations from Standard Special Provision 20-680, IRRIGATION CROSSOVERS (OPEN TRENCH) are:

- Corrugated steel pipe (CSP)
- Bituminous coated corrugated steel pipe (BIT CTD CSP)
- Corrugated high density polyethylene pipe (CHDPE)

When an option for alternative conduits is given to the Contractor, the Contractor may choose one of the following:

- Bituminous coated corrugated steel pipe (BIT CTD CSP)
- Corrugated aluminum pipe (CAP)
- Acrylonitrile-butadiene-styrene composite pipe (ABS)
- Corrugated high density polyethylene pipe (CHDPE)

There are two methods of payment to choose from. The pay clauses shown below are from Standard Special Provision 20-680, IRRIGATION CROSSOVERS (OPEN TRENCH):

1. Use when the cost of the work is included in the conduit and the conduit is paid for as a separate item.

Full compensation for water line crossover appurtenances, cutting, removing and disposing of existing surfacing; excavation and backfill; replacing existing asphalt concrete and Portland cement concrete facilities and surfacing; and checking and pressure testing supply line pipe in conduit shall be considered as included in the contract price paid per linear foot for the size of conduit involved and no separate payment will be made therefor.

Open Trench continued

- 2. Use when the cost of the work is included in the plastic pipe supply line and the plastic pipe supply line is paid for as a separate item.

Full compensation for water line crossover appurtenances, cutting, removing and disposing of existing surfacing; excavation and backfill; replacing existing asphalt concrete and Portland cement concrete facilities and surfacing; and checking and pressure testing supply line pipe in conduit shall be considered as included in the contract price paid per linear foot for the various sizes of plastic pipe supply line involved and no separate payment will be made therefor.

Extended Irrigation Crossovers

Extend Irrigation Crossovers are extensions of existing irrigation crossovers and are usually installed when a roadway is to be widened.

Irrigation Crossovers and Extend Irrigation Crossovers are paid for by the linear foot as described by the item description (e.g., 6" Bituminous Coated Corrugated Steel Pipe Conduit (.064" thick)) in the Engineer's Estimate. Waterline Crossovers and Sprinkler Control Crossovers are paid for by full compensation in the cost of the item description in the Engineer's estimate for the type of conduit involved (See Pay clause on page 218 of the May 2006 Standard Specifications).

Use SSP 20-100 for Irrigation Crossovers and use SSP 20-110 for Extend Irrigation Crossovers.

Table 7-1

Standard Symbol for Conduit Used on Different Types of Projects

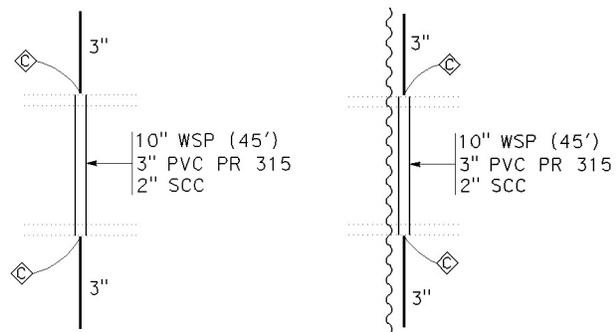
<i>Symbols For Existing</i>	<i>Symbols For Proposed</i>	<i>Item Description</i>	<i>Abbreviation On Plan</i>
-----	=====	Conduit See the next page for each type of project. DO NOT add "Jacked or Drilled" by the symbol on the plans.	

Highway Planting Projects

Conduit – Proposed

- Show proposed conduit symbol. AND provide an Irrigation Crossover table on the Landscape Detail sheet.
- OR
- Show proposed conduit symbol. AND callout on plan:
 1. Conduit size and type (abbreviation, e.g. WSP, CSP,ALT COND) & (Length)
 2. Water line crossover size and type
 3. Sprinkler Control Conduit (SSC) size and abbreviation

Examples of proposed conduit callout on Highway Planting projects without Irrigation Crossover Table:



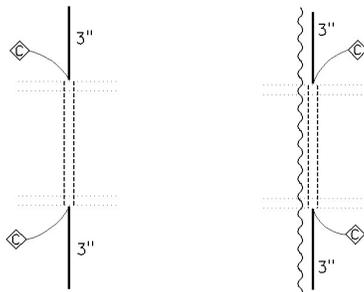
Show the point of connection symbol between conduit and proposed supply line for any proposed supply lines being connected to the water line crossover inside the conduit. Do not show the waterline crossover. (See example above).

Show the control and neutral conductors (CNC) if they are being shown on the plans. Show the CNCs to be installed in the SCC on the outside of the conduit as shown in second example above. This will let the Contractor know that he has to install the CNCs in the SCC.

Conduit – Existing

- Show existing conduit symbol.
- Existing Conduit Callout on plan: Conduit size and type (abbreviation, e.g. WSP, CSP, ALT COND) only if new water line crossover or SCC is being installed inside conduit.
- Callout size of water line crossover in conduit if supply lines are being directly attached to it. (See example below).
- Show the proposed and/or existing control and neutral conductors (CNC) if they are being shown on the plans.
 1. Show the proposed CNCs to be installed in the SCC on the outside of the conduit as shown in second example below. This will let the Contractor know that he has to install the CNCs in the SCC.
 2. Show the existing CNCs up to the end of the conduit on both sides.
- Show the point of connection symbol between conduit and proposed supply line for any proposed supply lines being connected to the water line crossover inside the conduit. Do not show the waterline crossover. (See examples below).
- Show the control and neutral conductors (CNC) if they are being shown on the plans. Show the CNCs to be installed in the SCC on the outside of the conduit as shown in second example above. This will let the Contractor know that he has to install the CNCs in the SCC.
- **Note:** If existing water line crossover or SCC is not of sufficient size be sure to replace it with a larger size. Cover removal, disposal and payment for in a non-standard special provision.

Examples of existing conduit callout on Highway Planting projects:

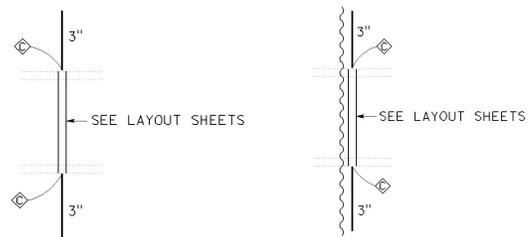


Road Construction Projects with Highway Planting Work

Conduit Proposed – Proposed Conduit to be installed under proposed or existing roadbed or ramp

- Show proposed conduit (only) on the engineers Layout sheets and place an Irrigation Crossover table on the engineers Summary of Quantities sheet.
- On the Irrigation Plans show conduit as proposed NOT existing and a note “See Layout sheet for conduit.”
- On the Irrigation Plans show the point of connection symbol between conduit and proposed supply line for any proposed supply lines being connected to the water line crossover inside the conduit. Do not show the waterline crossover. (See example below).
- Show the proposed and/or existing control and neutral conductors (CNC) if they are being shown on the plans.
 1. Show the proposed CNCs to be installed in the SCC on the outside of the conduit as shown in second example below. This will let the Contractor know that he has to install the CNCs in the SCC.
 2. Show the existing CNCs up to the end of the conduit on both sides.

Example of callout for proposed conduit on Irrigation Plans with road construction project:



Extending Existing Irrigation Crossover

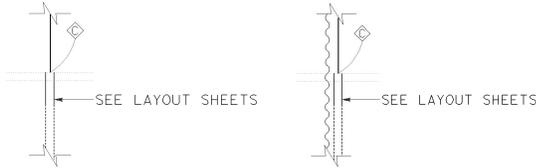
- On Layout sheets show proposed conduit extension and existing conduit. Place an Extend Irrigation Crossover table on the engineers Summary of Quantities sheet.



Show the above symbol and description in the Layout Legend or label each crossover extension individually.

Extending Existing Irrigation Crossover continued

- On the Irrigation Plans show the extended conduit as proposed, NOT existing and the callout “See Layout Sheets” at each location, or add a general note on the plans: “See Layout Sheets for Extend Irrigation Crossovers.”



Road Construction Projects with no Highway Planting Work

General

Irrigation crossovers normally consist of a conduit with a water line crossover and sprinkler control conduit with pull wire. Irrigation crossovers should be provided under new roadways and ramps when future highway planting is anticipated. The District Landscape Architect should be consulted to determine the need for such crossovers as well as size and location. Attention should also be given to extending existing conduits when widening or modifying roadways and ramps.

The following factors should be considered in sizing and locating crossovers:

1. A standard irrigation crossover consists of a minimum size of 8-inch diameter nominal (DN) conduit, with a 3-inch water supply line and a 2-inch sprinkler control conduit with pull wire. Sizes of irrigation crossovers and water supply lines are usually larger when nonpotable water is to be used.
2. Irrigation crossovers are typically spaced 1,000 feet apart on freeways where future highway planting is anticipated. Undercrossings may be considered alternative crossing opportunities.
3. Drainage facilities should not be used for water line crossings.

Standard details and special provisions for the irrigation crossover should be furnished by the District Landscape Architect to the Project Engineer for highway construction projects.

Proposed Conduit - Conduit to be installed in new roadbed

1. Show conduit symbol on the Layout sheet and place a Irrigation Crossover chart on one of the engineers Summary of Quantities sheet.
2. Use Standard Plans H2, H9 and A20A.

Proposed Conduit – Conduit to be extended because of road or shoulder widening

- Show existing conduit and proposed extension of conduit on the Layout sheet and place a Extend Irrigation Crossover table on one of the engineers Summary of Quantities sheet.
- Extension of an Irrigation crossovers will consist of a conduit, water line crossover and sprinkler control conduit. Extension of an existing irrigation crossover already in use may require relocation of the main supply lines and control and neutral conductors.
- Use Standard Plans H2, H9 and A20A.

Guidelines for Filling out an Irrigation Crossovers Table

Column Headings

Column headings may be modified and additional columns may be added to the table as necessary.

NOTE: The column heading “CONDUIT TYPE” may be replaced with the actual type of conduit to be used.

Location

Line – Roadway line designation (i.e., “M LINE,” “R3 LINE,” etc.)

Station – Station number at crossover location.

Side

When applicable, indicate right or left side of station line or both by showing an X (denoting requirement) in the box(es), otherwise show a single dash. This applies to centerlines, not ramp lines. Show a single dash in each box for ramps.

See Figure 7–1

Figure 7–1



Conduit Type

Indicate the type of conduit to be installed in the column heading by using a circled number from one of the four conduit types listed below the irrigation crossover table. The type should be the same as shown in the estimate. Indicate SIZE(S) in the heading and show the LENGTH(S) below. Show a single dash in any blank box.

Pipe Sizes (NSP Inches)

2
2-1/2
3
4
6
8
10
12
14

Example of Blank Table

IRRIGATION CROSSOVERS							
LOCATION		SIDE		CONDUIT TYPE		(N) WATER LINE CROSSOVER SIZE (Inches)	(N) SPRINKLER CONTROL CROSSOVER SIZE (Inches)
LINE	STATION	Rt	Lt	<div style="text-align: center;">○</div> SIZE (INCH)			
				LENGTH (LF)			
TOTAL							

(N) - NOT A SEPARATE PAY ITEM FOR INFORMATION ONLY.
X - DENOTES REQUIREMENT

CONDUIT TYPE
(Applicable when circled below and shown under the 'CONDUIT TYPE' column heading)

- 1 BITUMINOUS COATED CORRUGATED STEEL PIPE (0.064 INCH THICK)
- 2 CORRUGATED STEEL PIPE (0.064 INCH THICK)
- 3 CORRUGATED HIGH DENSITY POLYETHYLENE PIPE
- 4 ALTERNATIVE CONDUIT

Example of Table Completed

IRRIGATION CROSSOVERS							
LOCATION		SIDE		CONDUIT TYPE		(N) WATER LINE CROSSOVER SIZE (Inches)	(N) SPRINKLER CONTROL CROSSOVER SIZE (Inches)
LINE	STATION	Rt	Lt	<div style="text-align: center;">①</div> SIZE (INCH)			
				LENGTH (LF)			
M	130+10	X	X	-	20	4	2
R3	135+90	-	-	18	-	2	2
TOTAL				18	20		

(N) - NOT A SEPARATE PAY ITEM FOR INFORMATION ONLY.
X - DENOTES REQUIREMENT

CONDUIT TYPE
(Applicable when the number is circled below and shown under the 'CONDUIT TYPE' column heading)

- ① BITUMINOUS COATED CORRUGATED STEEL PIPE (.064 INCH THICK)
- 2 CORRUGATED STEEL PIPE (.064 INCH THICK)
- 3 CORRUGATED HIGH DENSITY POLYETHYLENE PIPE
- 4 ALTERNATIVE CONDUIT

Guidelines for Filling Out an Extended Irrigation Crossovers Table

Column Headings

Column headings may be modified and additional columns may be added to table as necessary.

Location

Line – Roadway line designation (i.e., “M LINE,” “R3 LINE,” etc.)

Station – Station number at crossover location.

Side – When applicable, indicate right or left side of station line or both by showing an X in the box(es). This applies to main lines (centerlines), not ramp lines. Show a single dash in each box for ramps. See Figure 7-2

OL (Overlap)

If conduit extension is to overlap the existing conduit, show an X (denoting requirement) in the box and a single dash in the CB box. When conduits are overlapped, the new conduit used to extend the existing conduit shall be one size larger. Length of overlap (12” minimum as shown on detail) shall not be included in the length of the extension shown in the “Extend Conduit” column.

Figure 7-2



Extend Conduit

Length – Indicate size(s) in inches in the heading and show the length(s) in feet below.

Size – Show a single dash in any blank box.

Waterline Crossover

Indicate size in inches in the appropriate box(es) when required. If not required show a single dash.

CB (Coupling Band)

If a coupling band is to be used when extending conduit, show an X (denoting requirement) in the box and a single dash in the OL box. When coupling bands are used, the size of the new conduit to be extended is the same size as the existing conduit.

Sprinkler Control Crossover

Indicate size in inches in the appropriate box(es) when required. If not required show a single dash.

Example of Blank Table

EXTENDED IRRIGATION CROSSOVERS									
LOCATION		SIDE		EXTENDED CONDUIT		CB	OL	(N) WATER LINE CROSSOVER SIZE (Inches)	(N) SPRINKLER CONTROL CROSSOVER SIZE (Inches)
LINE	STATION	Rt	Lt	SIZE (INCH)					
				8	12				
				LENGTH (LF)					
TOTAL									

(N) Not a separate pay item, for information only.
 DN - Diameter Nominal
 X - Denotes Requirement

CB - Coupling Band
 OL - Overlap

Example of Table Completed

EXTENDED IRRIGATION CROSSOVERS									
LOCATION		SIDE		EXTENDED CONDUIT		CB	OL	(N) WATER LINE CROSSOVER SIZE (Inches)	(N) SPRINKLER CONTROL CROSSOVER SIZE (Inches)
LINE	STATION	Rt	Lt	SIZE (INCH)					
				8	12				
				LENGTH (LF)					
M	130+50	X	X	-	40	X	-	4	2
R2	135+75	-	-	18	-	-	X	3	2
R5	155+00	-	-	18	-	-	X	3	2
TOTAL				36	40				

(N) Not a separate pay item, for information only.
 DN - Diameter Nominal
 X - Denotes Requirement

CB - Coupling Band
 OL - Overlap

Irrigation Crossover Table

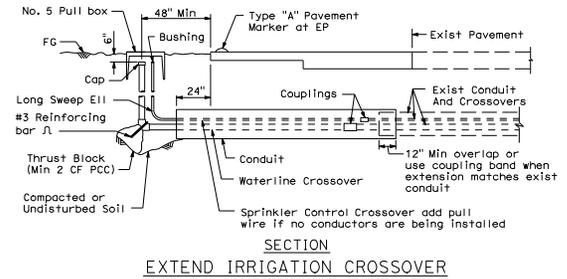
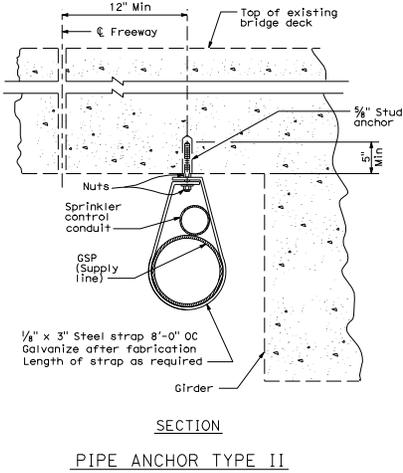
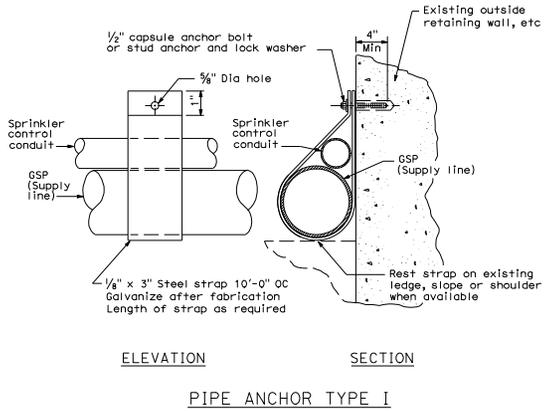
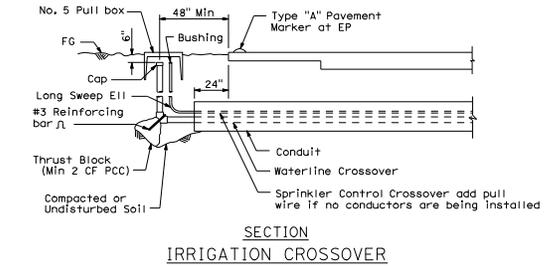
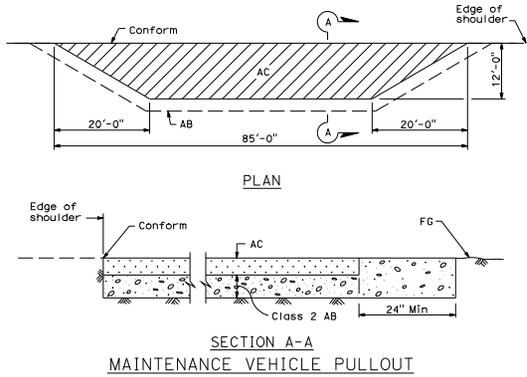
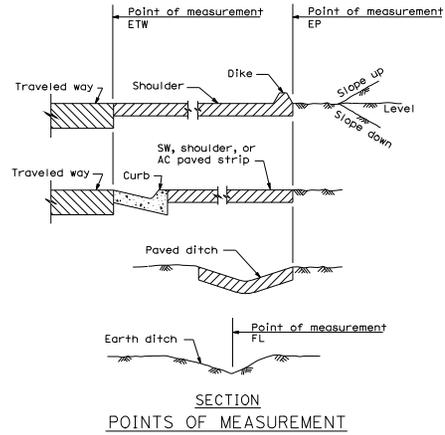
CT Cell Library: CTCELLIB.cel Cell Name: IRXSCH

IRRIGATION CROSSOVERS							CONTROL	
LOCATION		SIDE		CONDUIT TYPE		(N)	(N)	
LINE	STATION	R+	L+	SIZE (INCH)		WATER LINE CROSSOVER SIZE (INCH)	SPRINKLER CROSSOVER SIZE (INCH)	
				LENGTH (LF)				
TOTAL								
(N) - NOT A SEPARATE PAY ITEM FOR INFORMATION ONLY x - DENOTES REQUIREMENT				CONDUIT TYPE (Applicable when circled below and shown under the 'CONDUIT TYPE' column heading)				
				1 BITUMINOUS COATED CORRUGATED STEEL PIPE (0.064 INCH THICK)				
				2 CORRUGATED STEEL PIPE (0.064 INCH THICK)				
				3 CORRUGATED HIGH DENSITY POLYETHYLENE PIPE				
				4 ALTERNATIVE CONDUIT				

Extended Irrigation Crossover Table

CT Cell Library: CTCELLIB.cel Cell Name: IRXEXT

EXTEND IRRIGATION CROSSOVERS							
LOCATION		SIDE		EXTEND CONDUIT		(N)	
LINE	STATION	R+	L+	SIZE (INCH)		WATER LINE CROSSOVER SIZE (INCH)	SPRINKLER CONTROL CROSSOVER SIZE (INCH)
				LENGTH (LF)			
				CB	OL		
TOTAL							
(N) - NOT A SEPARATE PAY ITEM FOR INFORMATION ONLY x - DENOTES REQUIREMENT				CB - COUPLING BAND OL - OVERLAP			



STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
**PLANTING AND IRRIGATION
DETAILS**
NO SCALE

H9

7-12-08

