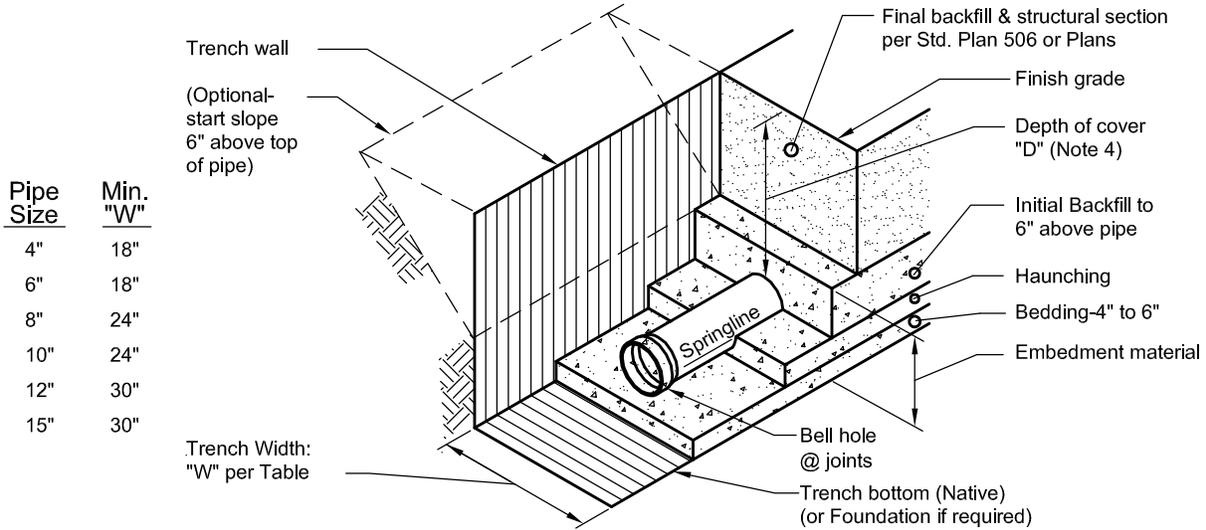




CITY OF LODI

PUBLIC WORKS DEPARTMENT

Pipe Bedding & Backfill- Flexible Pipe Trench Section



Pipe Size	Min. "W"
4"	18"
6"	18"
8"	24"
10"	24"
12"	30"
15"	30"

Notes:

1. This Std is for PVC SDR 35 (4" thru 15" dia), C900, & ductile iron pipe (up thru 14" dia) conforming to City Design Standards and Construction Specifications.
2. Class 1 embedment material shall be used unless specified otherwise on the plans.
3. This Std applicable only for stable trench walls where no standing water or groundwater is anticipated. Special details required for unstable soil identified in soils report. For minor occurrences of instability (sand pockets, etc), voids in the embedment zone shall be filled with the specified embedment material to at least two pipe diameters all around the pipe.
4. Minimum depth of cover for mains is 3 ft to finish grade; service laterals per plans.
5. For Water Pipes use native material for backfill.

EMBEDMENT MATERIAL

	CLASS I	CLASS II	CLASS III	CLASS IV	CLASS V
Description	Class II AB or Clean Sand	Coarse Sand & Gravel	Fine Sand Mixtures	Silt, Silty Clays	Organic Soils
USC Soil Type		GW, GP, SW, SP	GM, GC, SM, SC	MH, ML, CH, CL	OL, OH, PT
Foundation	If required, per special design to be shown on plans				
Bedding	Consolidate with vibrator or flat shovel "slicing" (See Note 5)	Compact to 85% Min. R.C.	Compact to 90% Min. R.C.	Special Design	Not Permitted
Haunching		Cut-off dam (per Note 5)	Compact to 90% Min. R.C. in <u>two lifts</u>		
Initial Backfill	Class II AB	Compact to 85% Min. R.C. in <u>two lifts</u>	Compact to 90% Min. R.C. in <u>two lifts</u>		
Maximum Depth of Cover "D" (without special design)	20 ft	20 ft	20 ft		

Dr. JP	No. 1	Date 9/03	Revision ADDED C900 PIPE	Appr.	Approved By: <i>CSW</i> Charlie Swinley City Engineer / Deputy Public Works Director RCE NO. 52842	8/19/13	STD PLAN 501A
Ch. LC	No. 2	Date 8/13	Revision REMOVE CRUSHED ROCK MATERIAL				
Date 8/13							



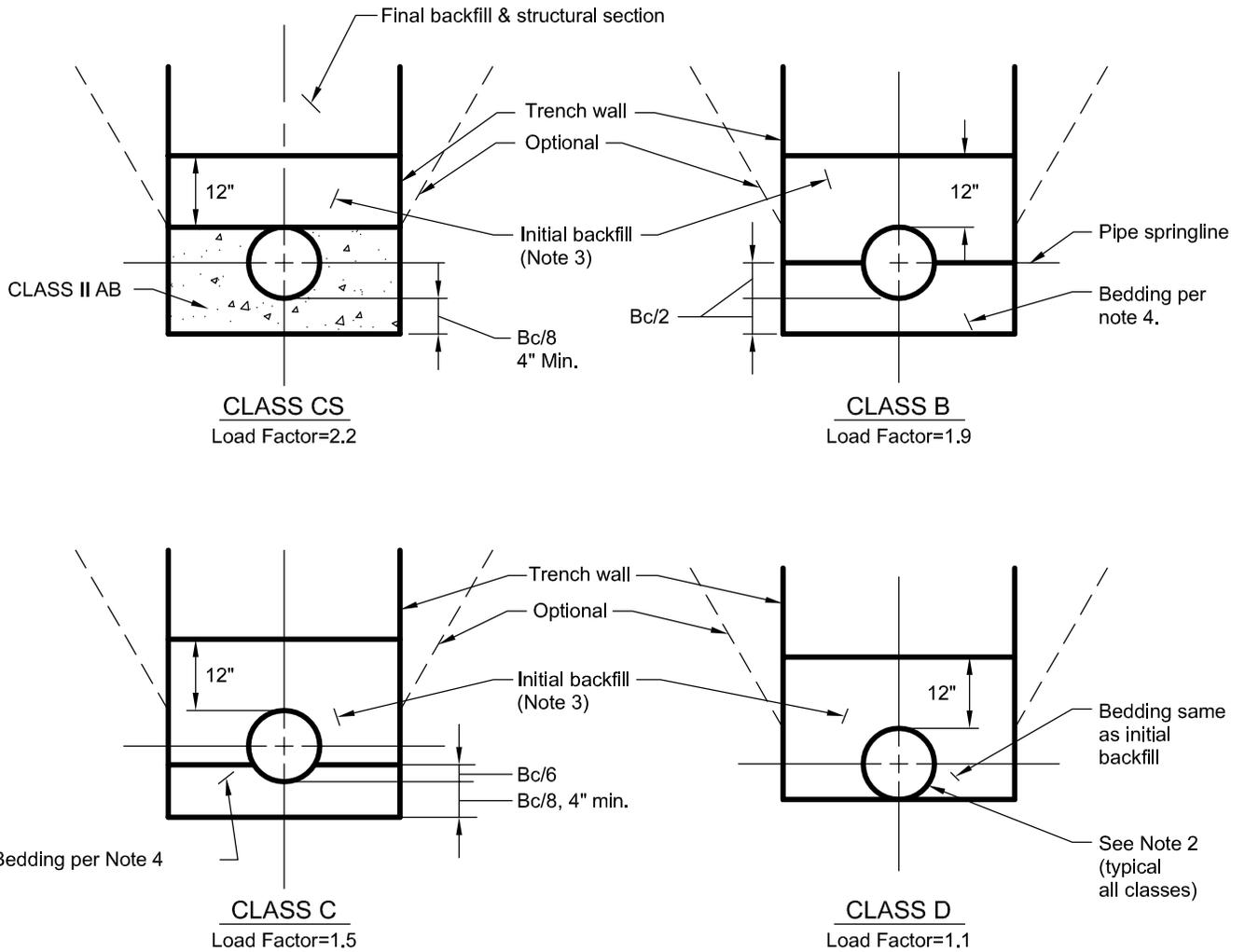
CITY OF LODI

PUBLIC WORKS DEPARTMENT

Pipe Bedding & Backfill- Rigid Pipe Trench Section

Legend:

- D=Nominal pipe inside diameter (in.)
- Bc=Pipe outside diameter (in.)
- Bd=Trench width @ top of pipe=Bc+8" min. each side (24" total minimum)



Notes:

1. This Standard is for rigid pipes 4" & larger; conforming to City Design Stds and Construction Specifications. Use Trench Class as shown on the plans; if not specified, use appropriate class per pipe material and depth of cover per Std Plan 501C.
2. Provide uniform & continuous support of pipe barrel between bell or coupling holes.
3. Initial backfill shall be selected sandy material per Construction Spec. Sect.6-19.02 @ 90% R.C. min.
4. Class B & C bedding material to be Class II AB or sand as specified on the plans.

Dr.	JP	No.	Date	Revision	Appr.	Approved By: <i>Charles Swinley</i> Charles Swinley City Engineer / Deputy Public Works Director RCE NO. 52842	8/19/13	Date	STD PLAN 501B
Ch.	LC	1	6/00	ADDED C900 PIPE					
Date	8/13	2	8/13	REMOVE CRUSHED ROCK MATERIAL					



CITY OF LODI

PUBLIC WORKS DEPARTMENT

Pipe Bedding & Backfill— Rigid Pipe Bedding Requirements

Pipe Material	Class	Size (in.)	Minimum Trench Class per Std Plan 501B Depth of Cover (ft.)							
			3	4	5	6	7	8	9	10
Asbestos Cement, AWWA C401	150	4 thru 14	D							
Non-Reinforced Concrete, ASTM C-14	2	12	D		C			B		
		15	D		C			B		
		18	D		C			B		
	3	21	D		C			B		
		24	D		C			B		
		24	D		C			B		
Reinforced Concrete, ASTM C-76	III	12	C			B			CS	
		15	C			B			CS	
		18	C			B			CS	
		21	D		C			B		
		24	D		C			B		
	IV	27	D		C			B		
		30	D		C			B		
		12	D			C				
		15	D			C				
		18	D			C				
V	21	D			C					
	24	D			C					
	27	D			C					
	30	D			C					
	30	D			C					
Vitrified Clay Pipe, ASTM C700 Extra Strength		4 6 8 10 12 15	D			C				

Dr. KT	No.	Date	Revision	Appr.	Approved By:	STD PLAN
Ch. WS					<i>F. Wally Sandelin</i>	501C
Date 7/08					F. Wally Sandelin City Engineer R.C.E. 39895	9/25/02 Date



CITY OF LODI

PUBLIC WORKS DEPARTMENT

Standard Abbreviations

Aggregate base	AB	Gas	G
American Society for Testing and Materials	ASTM	Galvanized	GALV
American Water Works Association	AWWA	Gallons per Minute	GPM
Approximately	APPROX	Gas valve	GV
Asbestos cement pipe	ACP	Global Positioning System	GPS
Asphalt concrete	AC	Grade Break	GB
		Guy pole	GP
Back of walk	BOW	High point	HP
Begin curb return	BCR	High pressure gas	HPG
Begin curve	BC	Horizontal	HOR
Begin vertical curve	BVC		
Bench mark monument	BM	Inch	IN.
Blow off	BO	Industrial waste	IW
		Inside diameter	ID
Cable Television	CATV	Invert	INV
Cast iron pipe	CIP		
Centerline	C/L	Joint use pole	JP
Center to Center	C-C		
Centimeter	cm	Kilometer	Km
Central angle	Δ		
Central California Traction Company	CCTC	Length	L
City of Lodi	COL	Lineal feet	LF
Class	CL	Low point	LP
Cleanout	CO	Low pressure gas	LPG
Commercial driveway	COMM DWY	Lump sum	LS
Compacted Original Ground	COG		
Concrete	CONC	Manhole	MH
Concrete pipe	CP	Maximum	MAX
Construct	CONST	Meter	M
Corrugated metal pipe	CMP	Millimeter	mm
Cubic feet per second	CFS	Minimum	MIN
Cubic yards	CY	Miscellaneous	MISC
Curb & gutter	C&G		
Curb, gutter & sidewalk	CG&S	North, South, East, West	N,S,E,W
		Northerly, etc.	N'LY
Diameter	DIA		
Distance	DIST	Original ground	OG
Driveway	DWY	Outside Diameter	OD
Drop inlet catch basin	DICB		
Ductile Iron	DIP	Parking meter	PM
		Pavement	PVMT
Each	EA	Pedestrian	PED
Edge of pavement	EP	Point of intersection	PI
Electric	ELEC	Point of reverse curve	PRC
Elevation	ELEV	Portland Cement Concrete	POC
End curb return	ECR	Point on tangent	POT
End curve	EC	Polyvinylchloride	PVC
End vertical curve	EVC	Pothole	PH
Existing	EX	Power poles	PP
		Property line	P/L
Feet per Second	FPS	Public utility easement	PUE
Finish grade	FG	Pull box	PB
Fire Hydrant	FH		
Flowline	FL		
Fire Service	FS		
Face of Curb	FOC		
Foot	FT		

Sheet 1 of 2

Dr.	KT	No.	Date	Revision	Appr.	Approved By:	STD PLAN
Ch.	WS	1	6/03	ALL ABBREVIATIONS REVIEWED		<i>F. Wally Sandelin</i>	
Date	12/00					9/25/02	502
						Date	

F. Wally Sandelin
City Engineer
R.C.E. 39895



CITY OF LODI

PUBLIC WORKS DEPARTMENT

Standard Abbreviations

Radius	R
Rehabilitate	REHAB
Reinforce,(ed), (ing)	REINF
Reinforced concrete pipe	RCP
Relative compaction	RC
Remote control valve	RCV
Residential driveway	RES DWY
Right of way	R/W
Rubberized Hot Asphalt Concrete	RHAC
Sheet	SHT
Side inlet catch basin	SICB
Sidewalk	SWK
Southern Pacific Railroad	SPRR
Specification	SPEC
Sprinkler head	SH
Square feet	SF
Square type	SQ TYPE
Standard	STD
Station	STA
Storm Drain	SDMH
Storm Drain Manhole	SD
Street Name Sign	SNS
Street light conduit	SL
Subdivision	SUBD
Survey Monument	MON
Tangent	T
Telephone (underground)	TEL
Telephone pole	TP
Top of curb	TOC
Traffic signal conduit	TS
Tree well	TW
Typical	TYP
Underground Service Alert	USA
Underground Utility Vault	UUV
Union Pacific Railroad	UPRR
Vertical curve	VC
Vitrified clay pipe	VCP
Wastewater	WW
Wastewater Manhole	WWMH
Wastewater service	WWS
Water	W
Water service	WS
Water service box	WSB
Water valve	WV
Weakened plane joint	WPJ
Woodbridge Irrigation Dist	WID
Yard	YD

Sheet 2 of 2

Dr. KT	No. 1	Date 9/03	Revision ALL ABBREVIATIONS REVIEWED	Appr.	Approved By: <i>F. Wally Sandelin</i>	9/25/02	STD PLAN
Ch. WS					F. Wally Sandelin City Engineer R.C.E. 39895	Date	502
Date 12/00							



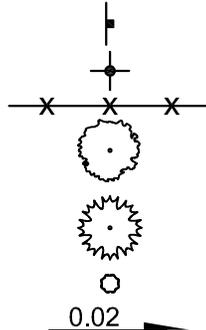
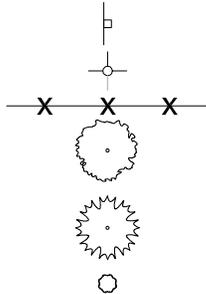
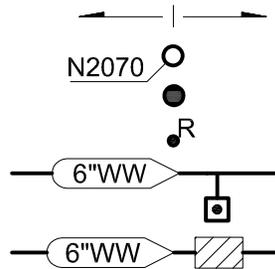
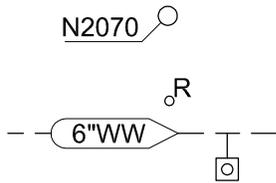
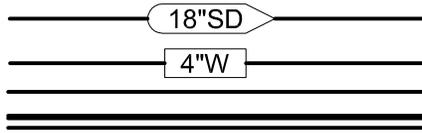
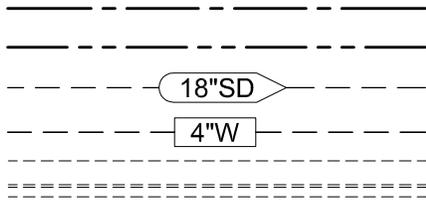
CITY OF LODI

PUBLIC WORKS DEPARTMENT

DRAFTING SYMBOLS

EXISTING

CONSTRUCT



- Centerline
- Right-of-Way / Property Line
- SD, WW or IW (noted) with direction
- W or Other Underground Utilities
- C, G & S
- High Point in Flow Line
- Manhole W/ Manhole Number
- Rehab Ex Manhole
- Riser
- WW Cleanout
- Point Repair
- Side Inlet Catch Basin
- Drop Inlet Catch Basin
- Fire Hydrant
- Water Valve
- Blow-off
- Reducer
- Water Service Shutoff
- Cap & Blind Flange
- Centerline Survey Monument
- City of Lodi Bench Mark
- Traffic Signal Head
- Pedestrian Head
- Electrolier (mast. arm type)
- Electrolier (concrete standard)
- Utility Pole (type as noted)
- Guy Anchor
- Sign (type as noted)
- Street Name Sign
- Fence (type as noted)
- Deciduous & other Leafed Trees
- Pine, Fir or Cedar Trees
- Hedge or Bush
- Slope of Pipe

Dr.	No.	Date	Revision	Appr.
KT	1	7/01	UPDATE PER FIRST REVISION	
WS	2	9/03	REVISED SICB SYMBOL	
	3	11/08	REVISED WW CLEANOUT	

Approved By: *F. Wally Sandellin* 9/25/02
 F. Wally Sandellin
 City Engineer
 R.C.E. 39895
 Date

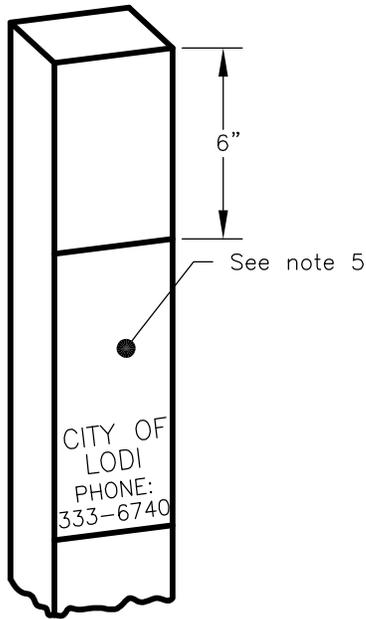
STD PLAN
503



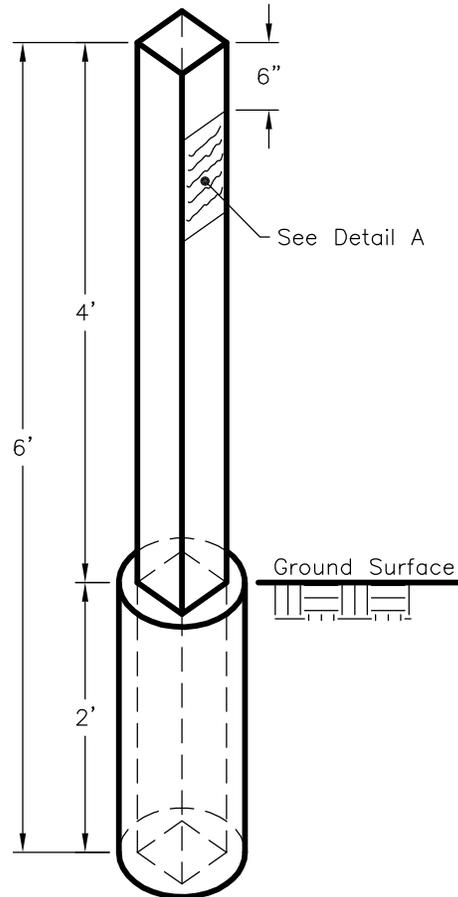
CITY OF LODI

PUBLIC WORKS DEPARTMENT

Pipe Marker



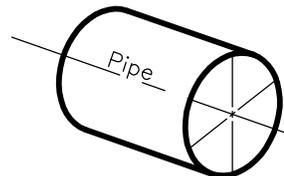
DETAIL A



Notes:

1. Posts to be 4"x4" foundation grade Redwood or pressure treated Douglas Fir
2. Posts to be encased in concrete – 8" diameter x 2' deep
3. Posts shall be painted white using 2 coats
4. Use 1/2" block black lettering on both sides of the post in line with the pipe
5. Posts shall state diameter and type of pipe as follows:

Examples: 1) 8-INCH WATER MAIN 2) 24-INCH WASTE WATER 3) 12-INCH STORM DRAIN



Dr.	No.	Date	Revision	Appr.	Approved By:	Date
KT					<i>F. Wally Sandelin</i>	12/28/00
Ch.	WS				F. Wally Sandelin City Engineer R.C.E. 39895	
Date		12/00				

STD PLAN

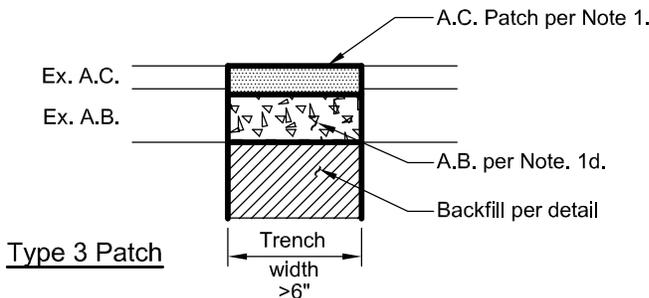
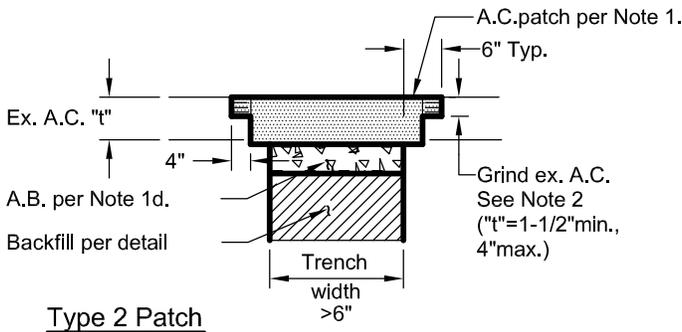
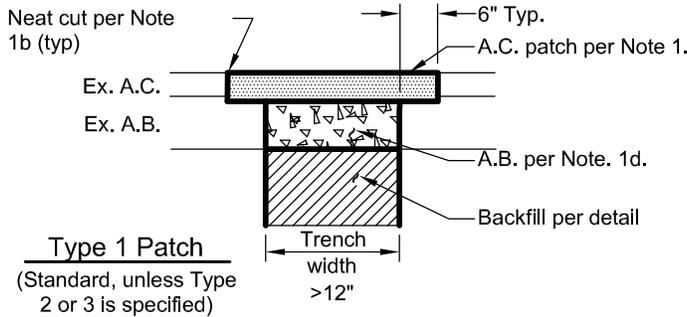
505



CITY OF LODI

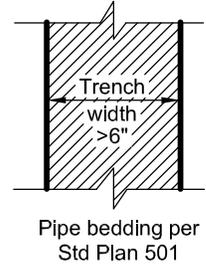
PUBLIC WORKS DEPARTMENT

Trench Structural Section Requirements

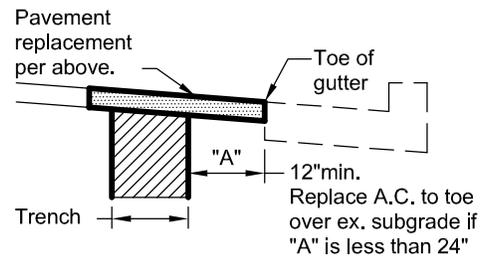
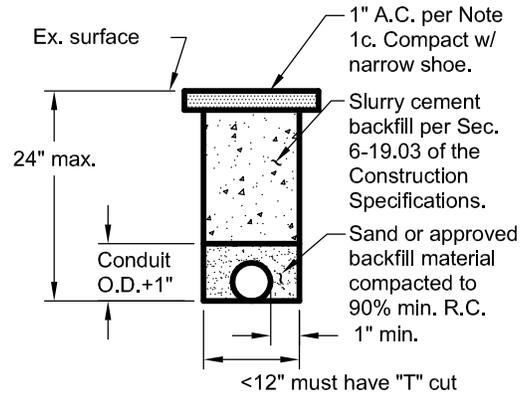


PAVEMENT REPLACEMENT

Backfill:
Native material @ 90% R.C. except approved select material or A.B. Cl. 2 @ 95% required for:
a.) Type 2 patch
b.) Excavation smaller than 3'x3'



BACKFILL



Adjacent to Gutter

SPECIAL CASES

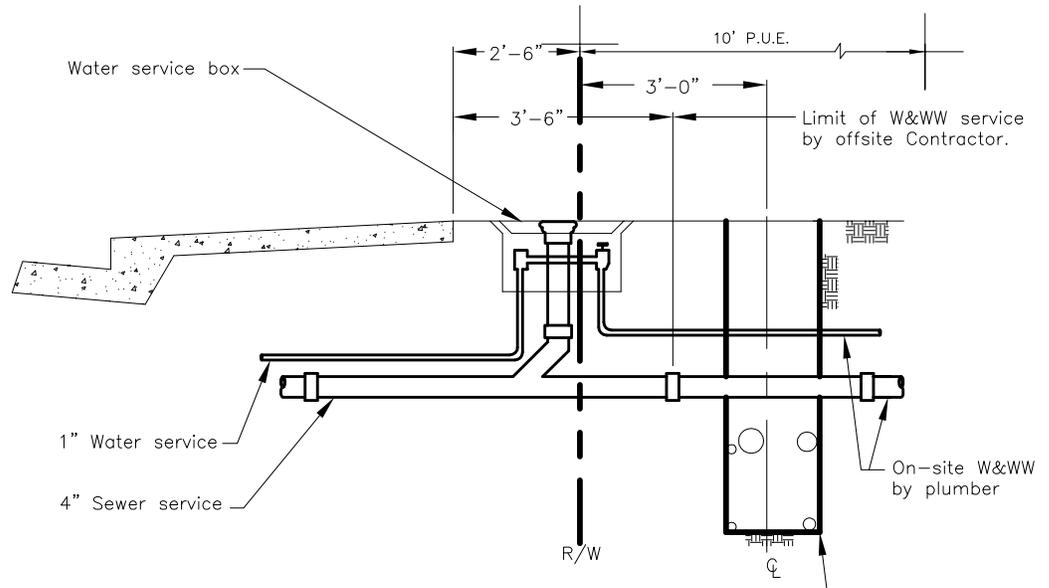
Notes:

- Type 1 Patch:
 - Total AC thickness to match existing plus 1", 4" minimum applied in two lifts.
 - Drop hammer or other rough cut allowed for initial cut along trench wall. Final AC removal per Sec. 6-15.02 "Removal Method" of the Construction Specification.
 - AC replacement per Sec. 6-39.04 "Trench Replacement and Shoulder Paving" of the Construction Specifications.
 - AB thickness per Plans. AB may be replaced by additional AC (50% of req'd AB thickness).
- Type 2 patch optional, except when required by the City. Grind depth "t" shall be adjusted to match existing overlay thickness.
- Type 3 Patch to be used when shown on the plans or as approved by the Engineer, generally on streets to be overlaid.
- Controlled density fill (CDF) may be used for backfill with the prior approval of the Engineer.

Dr. KT	No. 1	Date 9/03	Revision REVISED AB PATTERN	Appr.	Approved By: <i>F. Wally Sandele</i>	9/25/02	STD PLAN
Ch. WS					F. Wally Sandele City Engineer R.C.E. 39895	Date	506
Date 12/00							

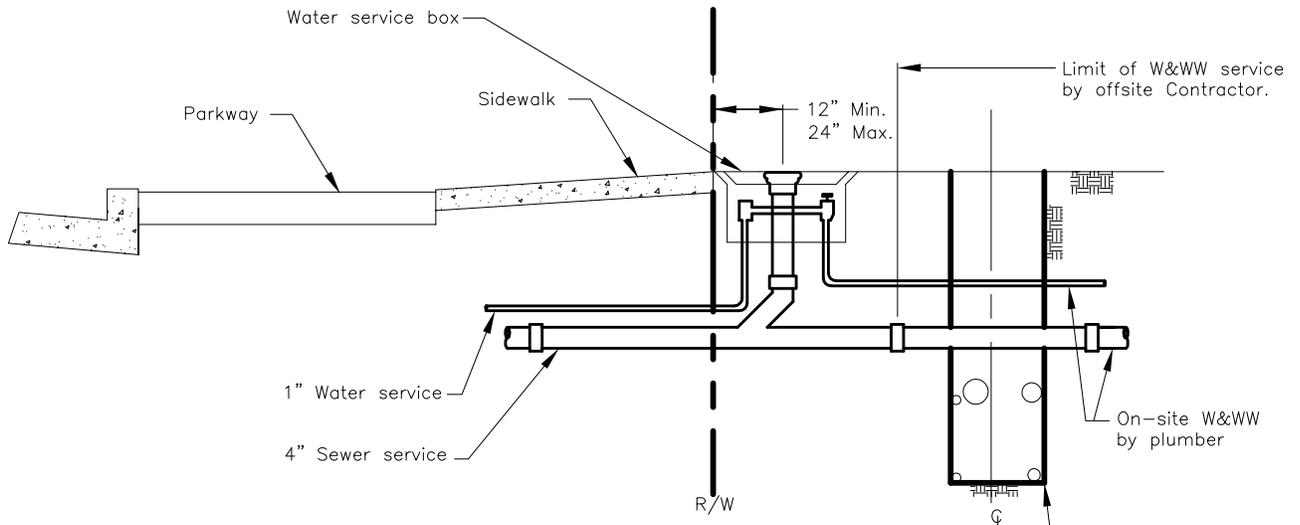


Joint Trenching Details



**Typical Trench Section
No Parkway**

See Sheet
507 2 of 2
For Details



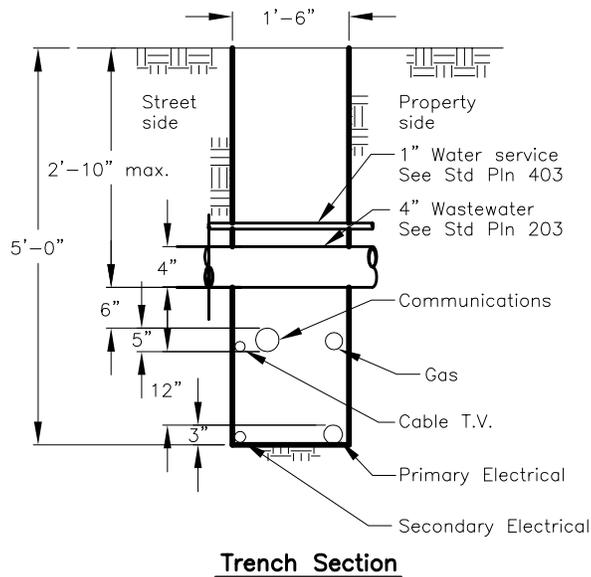
**Typical Trench Section
Parkway**

See Sheet
507 2 of 2
For Details

Note:
1. Also See Std Plans 201, 203, 403, & 414.

Dr.	KT	No.	Date	Revision	Appr.	Approved By:
Ch.	WS	1	9/03	ADDED PARKWAY LAYOUT		<i>F. Wally Sandelin</i> 9/25/02
Date	12/00					F. Wally Sandelin City Engineer R.C.E. 39895

STD PLAN
507



Electric, telephone, and cable T.V. boxes to be set as determined by each agency in the 10' P.U.E.

Dr. KT	No. 1	Date 9/03	Revision ADDED PARKWAY LAYOUT	Appr.	Approved By: <i>F. Wally Sandelin</i>	STD PLAN 507
Ch. WS					F. Wally Sandelin City Engineer R.C.E. 39895	
Date 12/00					9/25/02 Date	