ENGINEERING CONSTRUCTION STANDARDS

Table of Contents - **General Notes**

GENERAL NOTES	PAGE	REVISED DATE
General Notes	1	Dec-09
General Notes	2	Dec-12
Wastewater, Light Pole Bases, Storm Water	3	Dec-12
Water	4	Dec-11
Water	5	Dec-09

ENGINEERING CONSTRUCTION STANDARDS

Table of Contents - **Paving**

PAVING SECTION	PAGE	REVISED DATE
Four Lane Divided Street	1	Sep-06
Four Lane Divided Street	2	
Four Lane Divided Street	3	Sep-06
Typical 27' B-B Paving Section	4	Sep-06
Typical 37', 45' & 61' B-B Paving Section	5	Sep-06
Spacing Diagram For Dowels At Expansion Joints	6	
Spacing Diagram For Joints	7	
Concrete To Asphalt Roadway Tee Intersection	8	
Integral, Separate, Mountable Monolithic Curb & Gutter	9	
Bridge Approach Slab	10	
Root Barrier Detail	11	
Wastewater Manhole Blockouts for All New Pavement	12	Sep-06
PAVEMENT REMOVAL & REPLACEMENT		
Pavement Removal And Replacement For Utilities	1	
Typical Concrete Street Removal / Replacement	2	
Typical Concrete Street Removal / Replacement	3	
Typical Concrete Street Removal / Replacement	4	
Typical Concrete Street Removal / Replacement	5	
Typical Concrete Alley Removal / Replacement	6	
ALLEYS		
Alley Without & With Curb	1	Sep-06
Typical 24' Non-Residential Driveway Approach	2	Jan-06
Alley Approach	3	Jan-06
Typical Alley Approach 15' ROW	4	Jan-06
Typical Alley Approach 20' ROW	5	Jan-06
Alley Angles / Intersections Details "A" & "B"	6	
Alley Angles / Intersections Details "C" & "D"	7	
Alley Angles / Intersections Details "E"	8	
Alley Angles / Intersections Details "F"	9	
Alley Angles / Intersections Details "G"	10	
Alley Angles / Intersections Details "H"	11	
Alley Angles / Intersections Details "I"	12	
Alley Angles / Intersections Details "J"	13	
SIDEWALKS		
Concrete Sidewalk	1	
Concrete Sidewalk	2	Jul-07
Concrete Sidewalk	3	Jul-07
Sidewalk, Driveway and Curb & Gutter - Private Development	3-1	Jan-12
ADA Sidewalk Ramp (Commercial) Type "E" & "F"	4	Feb-11
ADA Sidewalk Ramp (Commercial) Type "F" & "G"	5	Feb-11
Residential Existing Street & ROW (No Corner Clip)	6	Feb-11
Commercial Existing Street & ROW (No Corner Clip)	7	Feb-11
ADA Sidewalk Ramp 15' Alley ROW Or Driveway Intersection (Non-Res)	8	Feb-11
ADA Sidewalk Ramp 20' Alley ROW Or Driveway Intersection (Non-Res)	9	Feb-11

ENGINEERING CONSTRUCTION STANDARDS		
Table of Contents - **Paving**		
SIDEWALK (CONT.)	**PAGE**	**REVISED DATE**
ADA Sidewalk Ramp Notes	10	Jul-11
MEDIANS / TURN LANES		
Conduit In Median Standard Layout	1	
Typical Right Turn Lane	2	Jun-11
Typical Right Turn Lane (Concrete Island)	3	Jun-11
Typical Right Turn Lane Section	3a	Nov-06
Monolithic Median Nose	4	Nov-10
13' Median (Eccentric Nose)	5	
15' Median (Eccentric Nose)	6	
31' Median (Eccentric Nose)	7	
Left Turn Lanes 13' - 35' Medians (Monolithic Nose)	8	
Left Turn Lanes 13' - 35' Medians (Monolithic Nose)	9	
Typical Left Turn Lane Section	9a	Jun-08
Hooded Left Turn Bay	10	Sep-06
One Way Median Openings	11	Sep-06
HEADERS / JOINTS		
Street Header At Railroad	1	
Street Header For Existing & Future Pavement	2	
False Header Detail Street Header	3	
Construction Joint / Sawed Contraction Joint	4	
Expansion Joint	5	
Butt Joint	6	
RETAINING WALLS		
Retaining Walls Details (Type 6)	1	
Retaining Walls Details (Type 6-A)	2	
Retaining Walls Details (Type 7)	3	
Standard Retaining Wall (Type A)	4	
Standard Retaining Wall (Type A)	5	
SCREENING WALLS / HANDRAILS		
Steel Fence Elevation	1	
Steel Fence Section & Plan View	2	
Column Top View (Double Wythe)	3	
Pier Cap & Mow Strip Details	4	Jul-07
Double Wythe Brick Wall Column Section	5	Jul-10
Double Wythe Brick Wall Section Standard	6	
Double Wythe Brick Wall Panel (Elevation w/Angle)	7	Jul-10
Double Wythe Brick Wall Plan View (Option 1)	8	
Column Top View (Single Wythe)	9	Jun-10
Pier Cap & Mow Strip Details	10	Jun-07
Single Wythe Brick Wall Column Section (Option 2)	11	Jun-10
Single Wythe Brick Wall Section (Option 2)	12	

ENGINEERING CONSTRUCTION STANDARDS

Table of Contents - **Paving**

SCREENING WALLS / HANDRAILS (CONT.)	**PAGE**	**REVISED DATE**
Single Wythe Brick Wall Section (Option 2)	13	
Single Wythe Brick Wall (Panel Elevation w/Angle)	14	
Single Wythe Brick Wall Plan View (Option 2)	15	Jun-10
Column Top View (Single Wythe)	16	Jun-10
Single Wythe Brick Wall Section w/Grade Beam (Standard)	17	Jun-10
Single Wythe Brick Wall Section w/Grade Beam	18	Jun-10
Single Wythe Brick Wall (Panel Elevation w/ Grade Beam)	19	
Single Wythe Brick Wall (Plan View)	20	Jun-10
Column Top View (Double Wythe)	21	
Double Wythe Brick Wall Section w/ Grade Beam Standard	22	
Double Wythe Brick Wall Column Section w/ Grade Beam	23	Jun-10
Double Wythe Brick Wall (Panel Elevation w/Grade Beam)	24	
Double Wythe Brick Wall (Plan View)	25	
Pier Cap & Mow Strip Details	26	Jul-07
Stone Veneer Wall Section with Grade Beam	27	
Stone Veneer Wall Section with Grade Beam	28	
CMU Wall With Grade Beam	29	
CMU Wall With Grade Beam	30	
Mow Strip Details	31	Jul-07
General Notes For Screen Walls	32	
Pedestrian Rail Adjacent To Public Spaces (Case 1)	33	
Pedestrian Rail Adjacent To Public Spaces (Case 2)	34	
Pedestrian Rail For Retaining Walls	35	
Handrail For Retaining Wall	36	
Handrail For Retaining Wall	37	
TXDOT Traffic Rail (Type C221)	38	Jan-08
TXDOT Traffic Rail (Type C221)	39	Jan-08
DRIVEWAYS		
Driveway Details (Private)	1	Jul-07
Typical Residential Driveway Approach	2	Jan-06
Typical 24' Non-Residential Driveway Approach	3	Jul-07
Typical Residential At Alley Approach	4	
SIGNAGE / BARRICADES		
Capital Improvements Sign	1	Sep-06
End Of Street Barricades	2	
End Of Street Barricades	3	
End Of Street Barricades	4	
End Of Street Barricades (General Notes)	5	
Removable Bollard Detail	6	

ENGINEERING CONSTRUCTION STANDARDS

Table of Contents - **Water**

WATER LINE SERVICE	PAGE	REVISED DATE
Typical Residential Water & San. Sewer Connection Detail	1	Dec-06
Typical Non-Residential Water Service Connection Detail	2	Sep-06
Water Service Installations 3/4" OR 1" Line	3	Sep-06
Water Service Installations 2" Line	4	Sep-06
Box and Lid for 5/8" & 3/4" Meters	5	Jun-08
Box and Lid for 1" Meters	6	Jun-08
Box and Lid for 1-1/2" & 2" Meters	7	Dec-11
General Notes for Lid and Body Details	8	Aug-06
Water Mains with Water Service Supply Lines	9	Dec-11
Typical Meters Vault for 3", 4" & 6"	10	Sep-06
Typical Meters Vault for 3", 4" & 6"	11	Sep-06
Typical Meters Vault for 3", 4" & 6"	12	
Air and Vacuum Release Valve Assembly	13	Sep-06
Typical Spacing for Taps/Fittings	14	Sep-06
Water Service Lines	15	Dec-11
Repair of Water Service Mains	16	Jul-07
Valve and Tee Installation	17	Nov-09
Standard Water Main Lowering	18	Dec-09
DOUBLE CHECK ASSEMBLY		
Backflow Device Vault for 3", 4", 6" & 8" (Plan)	1	Mar-06
(For Fire Sprinkler Systems Only)		
Backflow Device Vault for 3", 4", 6" & 8" (Section "A-A")	2	Mar-06
Backflow Device Vault for 3", 4", 6" & 8" (Plan)	3	Mar-06
(For Fire Sprinkler Systems Only)		
Backflow Device Vault for 3", 4", 6" & 8" (Section "B-B")	4	Sep-06
Backflow Device Vault for 3", 4", 6" & 8" (Plan)	5	Sep-06
Backflow Device Vault for 3", 4", 6" & 8" (Section "A-A")	6	Mar-06
VAULT CONSTRUCTION		
Vault Construction Horizontal Gate Valve > 16" (Plan)	1	
Vault Construction Horizontal Gate Valve > 16" (Profile)	2	
Vault Construction Horizontal Gate Valve > 16" (Plan View)	3	
Vault Construction Horizontal Gate Valve > 16" (Section "A-A")	4	
Typical Butterfly Valve Installation > 16"	5	
Typical Gate Valve Installation	6	
Steel Valve Stem Extension	7	Dec-11
THRUST BLOCK		
Horizontal Thrust Block at Tees and Plugs	1	Dec-11
Vertical Thrust Block at Pipe Bend	2	Dec-11
Horizontal Thrust Block at Pipe Bend	3	Dec-11
Horizontal Thrust Block at Pipe Bend (Chart)	4	
Horizontal Thrust Block at Pipe Bend (Chart)	5	
Thrust Block General Notes	6	

ENGINEERING CONSTRUCTION STANDARDS

Table of Contents - **Water**

FIRE HYDRANT	**PAGE**	**REVISED DATE**
Fire Hydrant Installation	1	Dec-12
Typical Fire Hydrant Installation	2	Jul-06
Fire Hydrant Bollard Installation	3	
Fire Hydrant Reflector Installation	4	
Fire Hydrant Painting Details	5	
EMBEDMENT		
Water Embedment Details	1	Dec-12
Water Embedment Details	2	Dec-12

ENGINEERING CONSTRUCTION STANDARDS

Table of Contents - **WasteWater**

TUNNELING & AERIAL CROSSING	**PAGE**	**REVISED DATE**
Bore Or Tunnel for Sewer or Water	1	Dec-11
Bore Or Tunnel for Sewer or Water	2	Dec-11
MANHOLES		
Standard Manhole	1	Jun-08
Cast-In-Place Manhole	2	Apr-12
Internal Drop WasteWater Manhole	3	Jun-08
WasteWater Manhole Line Intersection	4	Jan-09
Abandonment of Manhole	5	
Standard Manhole Frame & Cover	6	Sep-06
WasteWater Manhole Pressure Type	7	Sep-06
Pressure Type Manhole Frame & Cover	8	Sep-06
CLEANOUTS		
Typical Wastewater Cleanout For Existing Service Connection	1	Dec-11
Typical Wastewater Cleanout for New Service Connection	2	Dec-11
WasteWater Main Line Dead-End Cleanout	3	
Typical Residential Connection Detail	4	Dec-06
Typical Non-Residential Connection Detail	5	
Repair of Existing Wastewater Service Connection	6	Dec-11
CleanOu Frame & Cover	7	Dec-11
LATERALS		
Wastewater Service Connection	1	
Deep Cut Wastewater (Connection For 12' Or Deeper)	2	Jan-09
EMBEDMENT		
Wastewater Embedment Details (Class I)	1	Dec-12
Wastewater Embedment Details (Class II)	2	Nov-12

ENGINEERING CONSTRUCTION STANDARDS

Table of Contents - **Storm Sewer**

STORM SEWER EMBEDMENT DETAIL	**PAGE**	**REVISED DATE**
Storm Sewer Detail Concrete Pipe Installation	1	
CONCRETE PIPE		
Drainage Details Roadway Under drain	1	
Concrete Collar Installation	2	
HEADWALLS		
Type "A" Headwalls	1	Jul-07
Type "A" Headwalls Dimensions And Quantities Table	2	
Type "B" Headwall	3	Jul-07
Type "B" Headwall (Multiple)	4	Jul-07
Type "B" Headwall Dimensions And Quantities Table	5	
Pipe Culvert Parallel Drainage	6	
Pipe Culvert Parallel Drainage	7	
Pipe Culvert Parallel Drainage	8	
Pipe Culvert Parallel Drainage	9	
Pipe Culvert Parallel Drainage	10	
Pipe Culvert Parallel Drainage	11	
Pipe Culvert Parallel Drainage	12	
Pipe Culvert Parallel Drainage (General Notes)	13	Jul-07
"Y" Inlets		
Type I "Y" Inlet (Plan)	1	
Type I "Y" Inlet (Sections)	2	
Type I "Y" Inlet (Chart)	3	
Type II "Y" Inlet (Plan/Sections)	4	
Type II "Y" Inlet (Sections)	5	
Type II "Y" Inlet (Chart)	6	
Inlet Cover Details	7	
GRATE INLETS		
Two Grate Inlets	1	
Two Grate Inlets	2	
Combination Grate Inlet (Plan)	3	
Combination Grate Inlet (Section)	4	
Combination Grate Inlet (Section)	5	
Combination Grate Inlet Steel Detail	6	
STORM SEWER MANHOLES		
Manhole With Cast-In-Place Riser (Plan)	1	
Manhole With Cast-In-Place Riser (Elevation)	2	
Manhole With Cast-In-Place Riser (Section "A-A")	3	
Manhole With Cast-In-Place Riser (Steel Details)	4	
Manhole Cover Details	5	
Manhole With Cast-In-Place Riser (General Notes)	6	Jul-07

ENGINEERING CONSTRUCTION STANDARDS

Table of Contents - **Storm Sewer**

LINED CHANNELS	**PAGE**	**REVISED DATE**
Pilot Channel Lining	1	
Sloped Lined Channel (Normal)	2	Jun-08
Joint Detail And General Notes	3	
CURB AND INLET RECESSED		
5' & 10' Standard And Recessed Inlet	1	Jul-07
5' & 10' Standard And Recessed Inlet	2	Jan-06
5' & 10' Standard And Recessed Inlet	3	
5' & 10' Standard And Recessed Inlet	4	Dec-12
5' & 10' Standard And Recessed Inlet	5	
5' & 10' Standard And Recessed Inlet	6	
5' & 10' Standard And Recessed Inlet	7	
15' Standard And 15' Recessed Inlet	8	Dec-12
15' Standard And 15' Recessed Inlet	9	Jan-06
15' Standard And 15' Recessed Inlet	10	
15' Standard And 15' Recessed Inlet	11	Dec-12
15' Standard And 15' Recessed Inlet	12	
15' Standard And 15' Recessed Inlet	13	
15' Standard And 15' Recessed Inlet	14	
FLUME DETAILS		
Overflow Flume Street To Alley	1	
Overflow Flume Alley to Street	2	
Overflow Flume At Inlet Street To Alley	3	
Overflow Flume at Inlet Alley To Street	4	
Typical Flume Detail	5	
CURB DRAIN DETAIL		
Curb Drain Detail	1	Mar-06
JUNCTION BOX		
Type I Junction Box Plan/ Section	1	
Type I Junction Box Structural Plan	2	
Type I Junction Box Sections	3	
Type I Junction Box Rebar Chart	4	
Type I Junction Box Frame And Cover	5	
Type II Junction Box Plan	6	
Type II Junction Box Section A-A & B-B	7	
Type II junction Box Structural Plan/ Section	8	
Type II Junction Box Sections D-D & E-E	9	
Type II Junction Box Rebar Chart	10	

ENGINEERING CONSTRUCTION STANDARDS

Table of Contents - **Traffic**

TRAFFIC	PAGE	REVISED DATE
Electric Precast Concrete Pullbox	1	
Pullbox Notes And Street Light Base Relocation	2	
Traffic Sign Support Base	3	
Street Light Conduit Riser Cable Installation	4	
Traffic Signal Bases	5	
Traffic Signal Bases	6	
Traffic Signal Bases	7	
Traffic Signal Bases	8	
Traffic Button Details (Type 1& 2)	9	
Traffic Button Details (Type 3 & 4)	10	Jun-11
Traffic Button Details (Type 5 & 6)	11	
Traffic Button Details (Type 7 & A)	12	
Traffic Button Details (Type B & C)	13	
Traffic Button Details (Type D & E)	14	Jan-12
Traffic Button Details (Type F & G)	15	
Traffic Button Details (General Notes)	16	
Traffic Signal Support Structures (Option "A")	17	Removed Jan-12
Traffic Signal Support Structures (Option "B" & "C")	18	Removed Jan-12
Traffic Signal Support Structures	19	Removed Jan-12
Traffic Signal Support Structures	20	Removed Jan-12
Traffic Signal Support Structures	21	Removed Jan-12
Traffic Signal Support Structures	22	Removed Jan-12
Traffic Signal Pole Foundation	23	Replaced w/ TxDOT TS-FD-12 Jan-12
Traffic Signal Pole Foundation	24	Replaced w/ TxDOT TS-FD-12 Jan-12
Traffic Signal Pole Foundation	25	Replaced w/ TxDOT TS-FD-12 Jan-12
Traffic Signal Pole Foundation	26	Replaced w/ TxDOT TS-FD-12 Jan-12
Traffic Signal Pole Foundation (General Notes)	27	Replaced w/ TxDOT TS-FD-12 Jan-12
Traffic Signal Pole Foundation TxDOT TS-FD-12		Replaced Pages 23 thru 27 Jan-12
Mast Arm Damping Plate TxDOT MA-DPD-12		Added Jan-12
Construction Signing And Barricading	28	
Construction Signing And Barricading	29	
Construction Signing And Barricading	30	
Construction Signing And Barricading	31	
Construction Signing And Barricading	32	
Construction Signing And Barricading	33	
Construction Signing And Barricading	34	
Construction Signing And Barricading Details	35	
Construction Signing And Barricading Details	36	
Construction Signing And Barricading Details	37	
Construction Signing And Barricading Details	38	
Construction Signing And Barricading Details	39	
Construction Signing And Barricading Details	40	
Construction Signing And Barricading Notes	41	
Construction Signing And Barricading Notes	42	
Capital Improvement Sign	43	Sep-06
End Of Street Barricade	44	
End Of Street Barricade	45	

ENGINEERING CONSTRUCTION STANDARDS

Table of Contents - **Traffic**

TRAFFIC (CONT.)	PAGE	REVISED DATE
End Of Street Barricade	46	
End Of Street Barricade	47	
End Of Street Barricade (General Notes)	48	
Loop Wire / Loop Lead-In Detail	49	
Loop Wire / Loop Lead-In Detail	50	
Loop Wire / Loop Lead-In Detail	51	
OverHead Detector Run Detail	52	
OverHead Detector Run Detail	53	
General Loop Location And Layout	54	
Loop Detector Installation Detail	55	
Loop Detector Installation (Notes)	56	
General Detector Loop Notes	57	
Detail Of Traffic Pull Box	58	Mar-06
Standard Pull Box Installation	59	Mar-06
Conduit Installation	60	Mar-06
Conduit Installation Notes	61	Mar-06
Concrete Cabinet Foundation	62	
Concrete Cabinet Foundation (Notes)	63	
Break-In Type Pull Box Installation	64	
Break-In Type Pull Box Installation	65	
OverHead Interconnect Continuation Detail	66	
OverHead Interconnect Continuation Detail	67	
OverHead Interconnect Splicing	68	
Conduit Riser Installation	69	
OverHead Cable Installation On Existing Span	70	
General Cable Notes	71	
Construction Barricading (Two Lane Roadway)	72	
Construction Barricading (Two Lane Roadway)	73	
Construction Barricading (Two Lane Roadway)	74	
Construction Barricading (Two Lane Roadway)	75	
Construction Barricading (Two Lane Roadway)	76	
Construction Barricading (Two Lane Roadway)	77	
Construction Barricading (Four Lane Roadway)	78	
Construction Barricading (Four Lane Roadway)	79	
Construction Barricading (Four Lane Roadway)	80	
Construction Barricading (Four Lane Roadway)	81	
Construction Barricading (Six Lane Roadway)	82	
Construction Barricading (Six Lane Roadway)	83	
Construction Barricading (Six Lane Roadway)	84	
Construction Barricading (Six Lane Roadway)	85	
Construction Barricading (Six Lane Roadway)	86	
Construction Barricading (Six Lane Roadway)	87	

ENGINEERING CONSTRUCTION STANDARDS

Table of Contents - **Erosion**

EROSION & SEDIMENT	**PAGE**	**REVISED DATE**
Interceptor Swale	1-3	
Diversion Dike	4-6	
Pipe Slope Drain	7-9	
Vegetation	10-12	
Mulching	13-15	
Erosion Control Blankets	16-18	
Channel Protection	19-20	
Dust Control	21	
Silt Fence	22-23	
Silt Fence & Stone Overflow Structure	24	
Organic Filter Berm	25-26	
Triangular Sediment Filter Dike	27-29	
Inlet Protection	30-36	
Stone Outlet Sediment Trap	37-39	
Sediment Basin	40-42	
Check Dams	43-45	
Temporary Sediment Tank	46-47	
Stabilized Construction Entrance	48-50	
Wheel Wash	51-52	
HOUSEKEEPING DETAILS		
Debris and Trash Management	1-2	
Chemical Management	3-4	
Concrete Waste Management	5-6	
Concrete Sawcutting Waste Management	7	
Sandblasting Waste Management	8-9	
Lime Stabilization Management	10	
Sanitary Facilities	11	

ENGINEERING CONSTRUCTION STANDARDS

Table of Contents - **GP&L**

GP&L	PAGE	REVISED DATE
Street Light Base for 30' Standard	1	
Power Pedestal (Subsurface Box with Cover)	2	
Median Street Light Base (Precast)	3	
Typical Residential Transformer Layout - Front Service	4	
Typical Residential Transformer Layout - Alley Service	5	
Typical Street Light Location	6	
Typical Residential Street and Alley Conduit Crossing	7	
Typical Residential Street Light Pole Installation Profile	8	
Typical Residential Transformer Profile	9	
for Front and Alley Services		
Pad Detail for Single Phase Transformer	10	
Typical Residential Electric Service Easements	11	