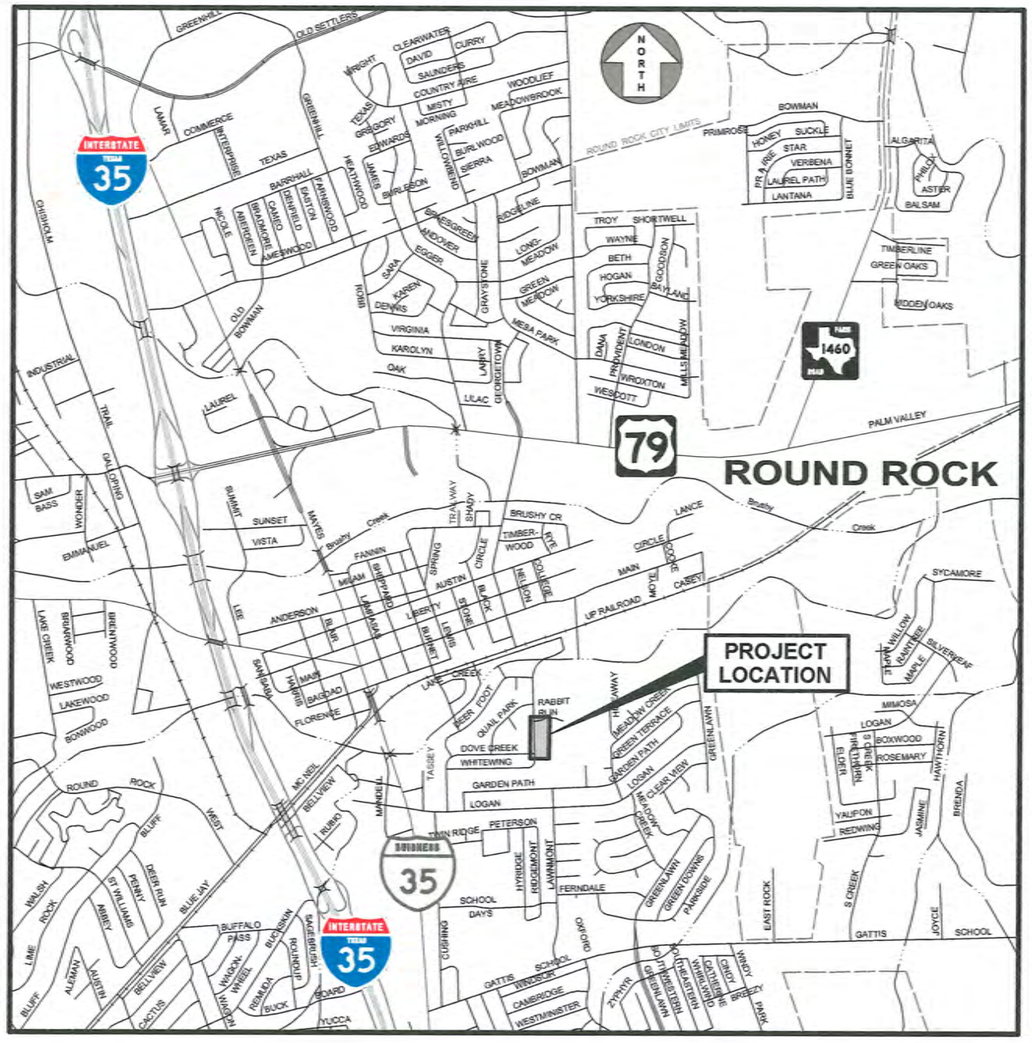
City of Round Rock, Texas

DOVE CREEK DRAINAGE IMPROVEMENTS



LOCATION MAP
SCALE: 1" = 1000'

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STATE OF TEXAS
MICHAEL CARY NEWMAN
84936
REGISTERED
PROFESSIONAL ENGINEER

4/16/2015

SUBMITTED FOR CONSTRUCTION:

_____ DATE

ACCEPTED FOR CONSTRUCTION:

Daniel Lynn Holden, P.E. 4/16/15
DATE

CITY OF ROUND ROCK, TEXAS
UTILITIES AND ENVIRONMENTAL SERVICES DEPARTMENT

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
TEMPLE, TEXAS
FIRM REGISTRATION NO. F-510

All responsibility for the adequacy of these plans remains with the engineer who prepared them. In accepting these plans, the City of Round Rock must rely upon the adequacy of the work of the design engineer.

 Plotted: Apr 16, 2015 - 4:17pm By: DLK

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City of Round Rock, Texas
DOVE CREEK DRAINAGE IMPROVEMENT

GENERAL NOTES:

1. All construction shall be in accordance with the City of Round Rock Standard Specifications Manual.
2. Any existing utilities, pavement, curbs, sidewalks, structures, trees, etc., not planned for destruction or removal that are damaged or removed shall be repaired or replaced at the Contractor's expense.
3. The Contractor shall verify all depths and locations of existing utilities prior to any construction. Any discrepancies with the construction plans found in the field shall be brought immediately to the attention of the Engineer who shall be responsible for revising the plans as appropriate.
4. Manhole frames, covers, valves, cleanouts, etc. shall be raised to finished grade prior to final paving construction or seeding/sodding.
5. The Contractor shall give the City of Round Rock 48 hours notice before beginning each phase of construction.
6. All areas disturbed or exposed during construction shall be revegetated in accordance with the plans and specifications. Revegetation of all disturbed or exposed areas shall consist of sodding. The type of revegetation must equal or exceed and be in kind with the type of vegetation present before construction.
7. Prior to any construction, the Contractor shall convene a pre-construction conference between the City of Round Rock, himself, other utility companies, any affected parties and any other entity the City may require.
8. The Contractor shall keep accurate records of all construction that deviates from the plans and shall furnish the City of Round Rock accurate "As-Built" drawings following completion of all construction. These "As-Built" drawings shall meet with the satisfaction of the City prior to final acceptance.
9. When construction is being carried out within easements, the Contractor shall confine his work to within the permanent and any temporary easements. Prior to final acceptance, the Contractor shall be responsible for removing all trash and debris within the permanent and temporary easements. Clean-up shall be to the satisfaction of the City.
10. Prior to any construction, the Contractor shall apply for and secure all proper permits from the appropriate authorities.
11. Available benchmarks (NAD 83 Datum) that may be utilized for the construction of this project are described as follows:

Station	Elevation	Description
T.B.M. "A"	740.95'	RR Spike in Power Pole
T.B.M. "B"	748.62'	Top of most Southern Bolt on Fire Hydrant
T.B.M. "C"	751.29'	Top of most Eastern Bolt on Fire Hydrant

TRENCH SAFETY NOTES:

1. In accordance with the Laws of the State of Texas and the U.S. Occupational Safety and Health Administration regulations, all trenches over 5 feet in depth in either hard and compact or soft and unstable soil shall be sloped, shored, sheeted, braced or otherwise supported. Furthermore, all trenches less than 5 feet in depth shall also be effectively protected when hazardous ground movement may be expected. Trench safety systems to be utilized for this project (shall be provided by the contractor).
2. In accordance with the U.S. Occupational Safety and Health Administration regulations, when persons are in trenches 4 feet deep or more, adequate means of exit, such as a ladder or steps, must be provided and located so as to require no more than 25 feet of lateral travel.
3. If trench safety system details were not provided in the plans because trenches were anticipated to be less than 5 feet in depth and during construction it is found that trenches are in fact 5 feet or more in depth or trenches less than 5 feet in depth are in an area where hazardous ground movement is expected, all construction shall cease, the trenched area shall be barricaded and the City notified immediately. Construction shall not resume until appropriate trench safety system details, as designed by a professional engineer, are retained and copies submitted to the City of Round Rock.

STREET AND DRAINAGE NOTES:

1. All testing shall be done by an independent laboratory at the Owner's expense. Any retesting shall be paid for by the Contractor. A City inspector shall be present during all tests. Testing shall be coordinated with the City inspector and he shall be given a minimum of 24 hours notice prior to any testing.
2. Backfill behind the curb shall be compacted to obtain a minimum of 95% maximum density to within 3" of top of curb. Material used shall be primarily granular with no rocks larger than 6" in the greatest dimension. The remaining 3" shall be clean topsoil free from all clods and suitable for sustaining plant life.
3. Depth of cover for all crossings under pavement including gas, electric, telephone, cable tv, water services, etc., shall be a minimum of 30" below subgrade unless otherwise approved by the City.
4. Street rights-of-way shall be graded at a slope of 1/4" per foot toward the curb unless otherwise indicated.
5. Barricades built to City of Round Rock standards shall be constructed on all dead-end streets and as necessary during construction to maintain job and public safety.
6. All R.C.P. shall be minimum class III.

WATER AND WASTEWATER:

1. Pipe material for water mains shall be PVC (AWWA C-900, min. class 200), or Ductile Iron (AWWA C-100, min. class 200). Water services (2" or less) shall be polyethylene tubing (black, 200 psi, DR 9).
2. Pipe material for pressure wastewater mains shall be PVC (AWWA C-900, min. class 150), or Ductile Iron (AWWA C-100, min. class 200). Pipe material for gravity wastewater mains shall be PVC (ASTM D2241 or D3034, max. DR-26), or Ductile Iron (AWWA C-100, min. class 200).
3. Unless otherwise accepted by the City, depth of cover for all lines out of the pavement shall be 42" min., and depth of cover for all lines under pavement shall be a min. of 30" below subgrade.
4. All fire hydrant leads shall be ductile iron pipe (AWWA C-100, min. class 200).
5. All iron pipe and fittings shall be wrapped with minimum 8-mil polyethylene and sealed with duct tape or equal accepted by the City Engineer.
6. The Contractor shall contact the City Inspector to coordinate utility tie-ins and notify him at least 48 hours prior to connecting to existing lines.
7. All manholes shall be concrete with cast iron ring and cover. All manholes located outside of the pavement shall have bolted covers. Tapping of fiberglass manholes shall not be allowed.
8. The Contractor must obtain a bulk water permit or purchase and install a water meter for all water used during construction. A copy of this permit must be carried at all times by all who use water.
9. Line flushing or any activity using a large quantity of water must be scheduled with the Water & Wastewater Superintendent through the Inspector.
10. The Contractor, at his expense, shall perform sterilization of all potable water lines constructed and shall provide all equipment (including test gauges), supplies (including concentrated chlorine dis-infecting material), and necessary labor required for the sterilization procedure. The sterilization procedure shall be monitored by City of Round Rock personnel. Water samples will be collected by the City of Round Rock to verify each treated line has attained an initial chlorine concentration of 50 ppm. Where means of flushing is necessary, the Contractor, at his expense, shall provide flushing devices and remove said devices prior to final acceptance by the City of Round Rock.
11. Sampling taps shall be brought up to 3 feet above grade and shall be easily accessible for City personnel. At the Contractor's request, and in his presence, samples for bacteriological testing will be collected by the City of Round Rock not less than 24 hours after the treated line has been flushed of the concentrated chlorine solution and charged with water approved by the City. The Contractor shall supply a check or money order, payable to the City of Round Rock, to cover the fee charged for testing each water sample. City of Round Rock fee amounts may be obtained by calling the Inspector.
12. The Contractor, at his expense, shall perform quality testing for all wastewater pipe installed and pressure pipe hydrostatic testing of all water lines constructed and shall provide all equipment (including pumps and gauges), supplies and labor necessary to perform the tests. Quality and pressure testing shall be monitored by City of Round Rock personnel.
13. The Contractor shall coordinate testing with the City Inspector and provide no less than 24 hours notice prior to performing sterilization, quality testing or pressure testing.
14. The Contractor shall not open or close any valves unless authorized by the City of Round Rock.
15. All valve boxes and covers shall be cast iron.
16. All water service, wastewater service and valve locations shall be appropriately marked as follows:

water service	"W" on top of curb
wastewater service	"S" on top of curb
valve	"V" on face of curb

Tools for marking the curb shall be provided by the Contractor. Other appropriate means of marking service and valve locations shall be provided in areas without curbs. Such means of marking shall be as specified by the Engineer and accepted by the City of Round Rock.

17. Contact DIG TESS @ (800) 344-8377 for existing utility locations.
18. Sand, as described in Specification Item 510 pipe, shall not be used as bedding for water and wastewater lines. Acceptable bedding materials are pipe bedding stone, pea gravel and in lieu of sand, a naturally occurring or manufactured stone material conforming to ASTM C33 for stone quality and meeting the following gradation specifications:

Sieve Size	Percent Retained by Weight
1/2"	0
3/8"	0 - 2
#4	40 - 85
#10	95 - 100

19. The Contractor is hereby notified that connecting to, shutting down, or terminating existing utility lines may have to occur at off-peak hours. Such hours are usually outside normal working hours and possibly between 12 a.m. and 6 a.m.
20. All wastewater construction shall be in accordance with the Texas Commission on Environmental Quality (TCEQ) Regulations. 30 TAC Chapter 213 and 317, as applicable. Whenever TCEQ and City of Round Rock Specifications conflict, the more stringent shall apply.

TRAFFIC MARKING NOTES:

1. Any methods, street makings and signage necessary for warning motorist, warning pedestrians or diverting traffic during construction shall conform to the Texas Manual of Uniform Traffic Control Devices for Streets and Highways, latest edition.
2. All pavement markings, markers, paint, traffic buttons, traffic controls and signs shall be installed in accordance with the Texas Department of Transportation Standard Specifications for Construction of Highways, Streets and Bridges and the Texas Manual of Uniform Traffic Control Devices for Streets and Highways, latest editions.

EROSION AND SEDIMENTATION CONTROL NOTES:

1. Erosion control measures, site work and restoration work shall be in accordance with the City of Round Rock Erosion and Sedimentation Control Ordinance.
2. All slopes shall be sodded with approved grass, grass mixtures or ground cover suitable to the area and season in which they are applied.
3. Silt fences, rock berms, sedimentation basins and similarly recognized techniques and materials shall be employed during construction to prevent point source sedimentation loading of downstream facilities. Such installation shall be regularly inspected by the City of Round Rock for effectiveness. Additional measures may be required if, in the opinion of the City, they are warranted.
4. All temporary erosion control measures shall not be removed until final inspection and approval of the project by the City. It shall be the responsibility of the Contractor to maintain all temporary erosion control structures and to remove each structure as approved by the City.
5. All mud, dirt, rocks, debris, etc., spilled, tracked or otherwise deposited on existing paved streets, drives and areas used by the public shall be cleaned up immediately.

LEGEND

8" WW	PROPOSED WASTEWATER LINE
8" WW / 8" WW	EXISTING WASTEWATER LINE (TO REMAIN)
8" W / 8" W	EXISTING WATER LINE (TO REMAIN)
8" WW / 8" WW	EXISTING WASTEWATER LINE (TO BE ABANDONED)
E	EXISTING UNDERGROUND ELECTRICAL CABLE
FO	EXISTING UNDERGROUND FIBER OPTIC CABLE
G	EXISTING GAS LINE
OHE	EXISTING OVERHEAD ELECTRICAL CABLE
T / T	EXISTING UNDERGROUND TELEPHONE CABLE
	EXISTING CREEK/DITCH FLOWLINE
	RIGHT-OF-WAY/PROPERTY LINE
	PUBLIC UTILITY EASEMENT LINE
	TEMPORARY CONSTRUCTION EASEMENT LINE
	EXISTING EDGE OF ASPHALT PAVEMENT
	EXISTING EDGE OF TREE DRIPLINE

PROPOSED MANHOLE	EXISTING LIGHT POLE
PROPOSED CLEAN-OUT	EXISTING MAIL BOX
BENCHMARK	EXISTING MANHOLE
EXISTING ELECTRICL BOX	TxDOT MONUMENT
EXISTING FIRE HYDRANT	EXISTING POWERPOLE
EXISTING FLAG POLE	EXISTING STREET SIGN
EXISTING GAS METER	EXISTING TELEPHONE RISER BOX
EXISTING GUY WIRE	EXISTING WATER METER
IRON PIN FOUND	EXISTING WATER VALVE

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:17:08 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS · MICHAEL CARY NEWMAN · 64936 · REGISTERED · PROFESSIONAL · ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

GENERAL NOTES

SHEET NO. **G-02** OF **07** SHEETS

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This document is realeased for the purpose of interim review under the authority of Michael C. Newman, P.E. 64936 on Jan 20, 2015 it is not to be used for construction, bidding or permit purposes.

NO.	DATE	REVISION	BY

Plot Date: ----
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS
MICHAEL CARY NEWMAN
64936
REGISTERED
PROFESSIONAL ENGINEER

KPA

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

DRAINAGE AREA MAP

SHEET NO. G-03 OF 07 SHEETS

Dove Creek - Existing Conditions		25-yr			100-yr		
Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
C	0.0432	83.8	02Dec2014, 12:34	5.74	112.4	02Dec2014, 12:34	7.8
Junction-4	0.0432	83.8	02Dec2014, 12:34	5.74	112.4	02Dec2014, 12:34	7.8
A2b	0.0048	18.2	02Dec2014, 12:08	6.37	23.8	02Dec2014, 12:08	8.48
A1b	0.0029	11.1	02Dec2014, 12:06	6.02	14.7	02Dec2014, 12:06	8.1
A1a	0.0018	6.4	02Dec2014, 12:08	5.84	8.5	02Dec2014, 12:08	7.91
White Wing	0.0018	6.4	02Dec2014, 12:13	5.83	8.5	02Dec2014, 12:13	7.9
Junction-3	0.0047	16.1	02Dec2014, 12:08	5.95	21.4	02Dec2014, 12:08	8.03
Dove Haven 1	0.0047	16.1	02Dec2014, 12:13	5.94	21.4	02Dec2014, 12:13	8.02
A2a	0.0027	10	02Dec2014, 12:09	6.37	13.1	02Dec2014, 12:08	8.48
Dove Creek	0.0027	10	02Dec2014, 12:14	6.36	13.1	02Dec2014, 12:13	8.47
Junction-2	0.0122	41.8	02Dec2014, 12:11	6.2	55.1	02Dec2014, 12:11	8.3
Dove Haven 2	0.0122	41.8	02Dec2014, 12:16	6.2	55.1	02Dec2014, 12:16	8.29
B1	0.0024	6.5	02Dec2014, 12:20	6.35	8.5	02Dec2014, 12:19	8.46
D1	0.0001	0.4	02Dec2014, 12:06	6.49	0.5	02Dec2014, 12:06	8.61
Rabbit Run	0.0147	48.3	02Dec2014, 12:25	6.21	63.6	02Dec2014, 12:25	8.31
Junction-1	0.0147	48.3	02Dec2014, 12:25	6.21	63.6	02Dec2014, 12:25	8.31
Junction-5	0.0579	127.4	02Dec2014, 12:28	5.86	170	02Dec2014, 12:28	7.93

Dove Creek - Proposed Condition		25-yr			100-yr		
Hydrologic Element	Drainage Area (MI2)	Peak Discharge (CFS)	Time of Peak	Volume (IN)	Peak Discharge (CFS)	Time of Peak	Volume (IN)
C	0.0432	83.8	02Dec2014, 12:34	5.74	112.4	02Dec2014, 12:34	7.8
Junction-4	0.0432	83.8	02Dec2014, 12:34	5.74	112.4	02Dec2014, 12:34	7.8
A2b	0.0048	18.2	02Dec2014, 12:08	6.37	23.8	02Dec2014, 12:08	8.48
A1b	0.0029	11.1	02Dec2014, 12:06	6.02	14.7	02Dec2014, 12:06	8.1
A1a	0.0018	6.4	02Dec2014, 12:08	5.84	8.5	02Dec2014, 12:08	7.91
White Wing	0.0018	6.4	02Dec2014, 12:13	5.83	8.5	02Dec2014, 12:13	7.9
Junction-3	0.0047	16.1	02Dec2014, 12:08	5.95	21.4	02Dec2014, 12:08	8.03
Dove Haven 1	0.0047	16.1	02Dec2014, 12:13	5.94	21.4	02Dec2014, 12:13	8.02
A2a	0.0027	10	02Dec2014, 12:09	6.37	13.1	02Dec2014, 12:08	8.48
Dove Creek	0.0027	10	02Dec2014, 12:14	6.36	13.1	02Dec2014, 12:13	8.47
Junction-2	0.0122	41.8	02Dec2014, 12:11	6.2	55.1	02Dec2014, 12:11	8.3
Dove Haven 2	0.0122	41.8	02Dec2014, 12:16	6.2	55.1	02Dec2014, 12:16	8.29
B1	0.0024	6.5	02Dec2014, 12:20	6.35	8.5	02Dec2014, 12:19	8.46
D1	0.0001	0.4	02Dec2014, 12:06	6.49	0.5	02Dec2014, 12:06	8.61
Rabbit Run	0.0147	48.3	02Dec2014, 12:21	6.22	63.6	02Dec2014, 12:21	8.32
Junction-1	0.0147	48.3	02Dec2014, 12:21	6.22	63.6	02Dec2014, 12:21	8.32
Junction-5	0.0579	122	02Dec2014, 12:25	5.86	163	02Dec2014, 12:25	7.93

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:17:11 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
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APPROVED BY
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STATE OF TEXAS · MICHAEL CARY NEWMAN · 64936 · REGISTERED · PROFESSIONAL · ENGINEER

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GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

DRAINAGE CALCULATIONS

SHEET NO. G-04 OF 07 SHEETS

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Round Rock - Dove Creek Existing Conditions

SCS Lag Time Equation

$$Tlag = \frac{L^{0.8} \times (S+1)^{0.7}}{1900 \times Y^{0.5}}, \text{ where: } S = (1000/CN)-10$$

Basin Area	Acres	Sq.Miles	L (ft)	H (ft)	Y (%)	Y (ft/ft)	CN	S	Tlag (hours)	Tlag(min)
A1a	1.13	0.0018	400	5	1.25	0.0125	82.5	2.121212	0.126	7.6
A1b	1.86	0.0029	400	10	2.50	0.0250	84	1.904762	0.085	5.1
A2a	1.7	0.0027	400	4	1.00	0.0100	87	1.494253	0.120	7.2
A2b	3.05	0.0048	400	5	1.25	0.0125	87	1.494253	0.108	6.5
B1	1.52	0.0024	1050	8	0.76	0.0076	86	1.627907	0.310	18.6
C dev			1000	10	1.00	0.0100	87	1.494253	0.251	15.0
C natural			1100	20	1.82	0.0182	79	2.658228	0.262	15.7
C combined	27.62	0.0432					82	2.195122	0.513	30.8
D1	0.08	0.0001					88	1.363636		5
Rabbit Run Routing										9

Round Rock - Dove Creek Proposed Conditions

SCS Lag Time Equation

$$Tlag = \frac{L^{0.8} \times (S+1)^{0.7}}{1900 \times Y^{0.5}}, \text{ where: } S = (1000/CN)-10$$

Basin Area	Acres	Sq.Miles	L (ft)	H (ft)	Y (%)	Y (ft/ft)	CN	S	Tlag (hours)	Tlag(min)
A1a	1.13	0.0018	400	5	1.25	0.0125	82.5	2.121212	0.126	7.6
A1b	1.86	0.0029	400	10	2.50	0.0250	84	1.904762	0.085	5.1
A2a	1.7	0.0027	400	4	1.00	0.0100	87	1.494253	0.120	7.2
A2b	3.05	0.0048	400	5	1.25	0.0125	87	1.494253	0.108	6.5
B1	1.52	0.0024	1050	8	0.76	0.0076	86	1.627907	0.310	18.6
C dev			1000	10	1.00	0.0100	87	1.494253	0.251	15.0
C natural			1100	20	1.82	0.0182	79	2.658228	0.262	15.7
C combined	27.62	0.0432					82	2.195122	0.513	30.8
D1	0.08	0.0001					88	1.363636		5
Rabbit Run Routing										5

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:17:16 PM
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STATE OF TEXAS · MICHAEL CARY NEWMAN · 64936 · REGISTERED · PROFESSIONAL ENGINEER

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ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

DRAINAGE CALCULATIONS

SHEET NO. G-05 OF 07 SHEETS

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STORM INLET CALCULATIONS

PROJECT : Dove Creek Drainage Improvements

DESIGN STORM **100**

Inlet #	Drainage Area #	Q (cfs)	Qpass (cfs)	Qa Total (cfs)	Trans. Slope Sx (ft/ft)	Street slope So (ft/ft)	a (ft)	Yo (ft)	Inlet R.F. (%)	Qa/La	La (ft)	Inlet Length (ft)	L/La	a/Yo	Qi/Qa	Qi (cfs)	Qpass (cfs)	Remark
STM-INLET-03	A1a,b - West Side Street Flow (WW-DC)	18.30	0.00	18.30	0.04	0.0072	0.417	0.64	0.9	1.139	16.07	15	0.933	0.647	0.961	15.83	2.47	West Side Street Flow (WW-DC) = 4.9
DC-INLET-01	1/2 A2a,b	18.45	0.00	18.45	0.04	0.0123	0.417	0.58	0.9	1.067	17.29	15	0.868	0.713	0.921	15.29	3.16	
DC-INLET-02	1/2 A2a,b	18.45	0.00	18.45	0.04	0.0132	0.417	0.58	0.9	1.058	17.44	15	0.860	0.722	0.916	15.22	3.23	
STM-INLET-02	STM-INLET-03 Bypass	0.50	5.56	6.06	0.04	0.0095	0.417	0.40	0.9	0.863	7.02	10	1.424	1.031	1.124	6.14	0.00	West Side Street Flow (DC-RR) = 8.2, 3.1 Bypass Over Road
STM-INLET-01	B1 + DC INLETs Bypass + West Side Street Flow Bypass (WW-DC)	8.50	8.20	16.70	0.04	0.0091	0.417	0.60	0.9	1.080	15.46	15	0.970	0.699	0.981	14.75	1.95	

STORM SEWER CALCULATIONS

PROJECT : Dove Creek Drainage Improvements

DESIGN STORM **100**

n = 0.013

Manhole or Inlet			Pipe Information							If Flowing More Than Half Full — Use Goal Seek: Set Calculated Q = Discharge Q; Solve for Depth of Flow										Elevation of Invert @ Upstream point		Elevation of Invert @ Downstream point	
From (Upstream)	To (Downstream)	Slope of Pipe (%)	Dist Between Manhole or Inlet (ft.)	Discharge Q (cfs)	Selected Pipe Size (in)	Area Pipe (Ft^2)	Hydr. Rad. (Ft.)	Capacity of Pipe (cfs)	Calculated % Full (%)	Depth of Flow (ft)	Calculated Q (cfs) (Use IF Func)	Flow Cross Area (Ft^2)	Flow Hydr. Radius (Ft)	Actual % Full (%)	Slope of Frict. Gradient (Ft./Ft.) %	Frict. Slope < Pipe Slope? (Yes/No)	Velocity (Ft/sec)	Depth in Pipe (Ft.)	For Non-Pressure Condition, HGL approx. = WSEL	Incoming Pipe 1 (Ft. MSL)	Outgoing Pipe 1 (Ft. MSL)	Incoming Pipe 2 (Ft. MSL)	Outgoing Pipe 2 (Ft. MSL)
Main Line																							
STM-WYE-04	**STM-JUNC-02**	0.40%	108.81 Ft.	15.83 cfs	30 in	4.91 Ft^2	.63 Ft.	26.16 cfs	61%	1.57 Ft.	15.83 cfs	3.24 Ft^2	.71 Ft.	66.00%	0.287%	YES	4.88	1.6 Ft.	Non-Pressure Condition	742.74	741.74	741.30	740.80
STM-JUNC-02	**STM-WYE-03**	0.70%	36.10 Ft.	46.34 cfs	36 in	7.07 Ft^2	.75 Ft.	56.13 cfs	83%	2.28 Ft.	46.34 cfs	5.76 Ft^2	.91 Ft.	81.47%	0.561%	YES	8.05	2.3 Ft.	Non-Pressure Condition	741.30	740.80	740.54	740.54
STM-WYE-03	**STM-WYE-02**	1.09%	80.99 Ft.	52.47 cfs	36 in	7.07 Ft^2	.75 Ft.	69.96 cfs	75%	2.14 Ft.	52.47 cfs	5.39 Ft^2	.89 Ft.	76.29%	0.837%	YES	9.73	2.1 Ft.	Non-Pressure Condition	740.54	740.54	739.66	739.66
STM-WYE-02	**STM-WYE-01**	1.09%	115.03 Ft.	52.47 cfs	36 in	7.07 Ft^2	.75 Ft.	69.96 cfs	75%	2.14 Ft.	52.47 cfs	5.39 Ft^2	.89 Ft.	76.29%	0.837%	YES	9.73	2.1 Ft.	Non-Pressure Condition	739.66	739.66	738.40	738.40
STM-WYE-01	**STM-JUNC-01**	1.47%	78.36 Ft.	67.22 cfs	36 in	7.07 Ft^2	.75 Ft.	81.09 cfs	83%	2.28 Ft.	67.22 cfs	5.78 Ft^2	.91 Ft.	81.71%	1.173%	YES	11.64	2.3 Ft.	Non-Pressure Condition	738.40	738.40	737.24	737.14
STM-JUNC-01	**STM-BEND-04**	2.50%	145.65 Ft.	67.22 cfs	36 in	7.07 Ft^2	.75 Ft.	105.64 cfs	64%	1.94 Ft.	67.22 cfs	4.83 Ft^2	.86 Ft.	68.27%	1.800%	YES	13.93	1.9 Ft.	Non-Pressure Condition	737.24	737.14	733.51	733.51
STM-BEND-04	**STM-BEND-03**	2.50%	30.31 Ft.	67.22 cfs	36 in	7.07 Ft^2	.75 Ft.	105.74 cfs	64%	1.94 Ft.	67.22 cfs	4.82 Ft^2	.86 Ft.	68.23%	1.803%	YES	13.94	1.9 Ft.	Non-Pressure Condition	733.51	733.51	732.75	732.75
STM-BEND-03	**STM-BEND-02**	2.50%	160.04 Ft.	67.22 cfs	36 in	7.07 Ft^2	.75 Ft.	105.74 cfs	64%	1.94 Ft.	67.22 cfs	4.82 Ft^2	.86 Ft.	68.23%	1.803%	YES	13.94	1.9 Ft.	Non-Pressure Condition	732.75	732.75	728.75	728.75
STM-BEND-02	**STM-OUT-01**	1.47%	20.03 Ft.	67.22 cfs	36 in	7.07 Ft^2	.75 Ft.	81.09 cfs	83%	2.28 Ft.	67.22 cfs	5.78 Ft^2	.91 Ft.	81.71%	1.173%	YES	11.64	2.3 Ft.	Non-Pressure Condition	728.75	728.75	728.46	728.46
STM-BEND-01	**STM-OUT-01**	1.47%	69.51 Ft.	67.22 cfs	36 in	7.07 Ft^2	.75 Ft.	81.09 cfs	83%	2.28 Ft.	67.22 cfs	5.78 Ft^2	.91 Ft.	81.71%	1.173%	YES	11.64	2.3 Ft.	Non-Pressure Condition	728.46	728.46	727.44	727.44
Secondary Line																							
DC-WYE-02	**DC-WYE-01**	0.80%	11.54 Ft.	15.29 cfs	30 in	4.91 Ft^2	.63 Ft.	36.79 cfs	42%	1.28 Ft.	15.29 cfs	2.52 Ft^2	.63 Ft.	51.31%	0.516%	YES	6.07	1.3 Ft.	Non-Pressure Condition	742.72	741.72	741.63	741.63
DC-WYE-01	**STM-JUNC-02**	0.80%	41.11 Ft.	30.51 cfs	30 in	4.91 Ft^2	.63 Ft.	36.79 cfs	83%	1.90 Ft.	30.51 cfs	4.01 Ft^2	.76 Ft.	81.73%	0.639%	YES	7.60	1.9 Ft.	Non-Pressure Condition	741.63	741.63	741.30	740.80
PR-DH-LAT-03																							
STM-INLET-03	**STM-WYE-04**	3.30%	23.14 Ft.	15.83 cfs	18 in	1.77 Ft^2	.38 Ft.	19.13 cfs	83%	1.14 Ft.	15.83 cfs	1.44 Ft^2	.45 Ft.	81.58%	2.631%	YES	10.98	1.1 Ft.	Non-Pressure Condition	743.50	743.50	742.74	741.74
P-STM-MAIN-STUB-01																							
STM-STUB-01	**STM-WYE-02**	1.98%	18.38 Ft.		18 in	1.77 Ft^2	.38 Ft.	14.82 cfs	0%										Non-Pressure Condition	741.52	741.52	741.16	739.66
PR-DH-LAT-02																							
STM-INLET-02	**STM-WYE-03**	1.00%	24.62 Ft.	6.14 cfs	18 in	1.77 Ft^2	.38 Ft.	10.53 cfs	58%	.92 Ft.	6.14 cfs	1.14 Ft^2	.42 Ft.	64.35%	0.702%	YES	5.40	0.9 Ft.	Non-Pressure Condition	742.29	742.29	742.04	740.54
PR-DH-LAT-01																							
STM-INLET-01	**STM-WYE-01**	3.06%	17.97 Ft.	14.75 cfs	18 in	1.77 Ft^2	.38 Ft.	18.42 cfs	80%	1.12 Ft.	14.75 cfs	1.41 Ft^2	.45 Ft.	79.77%	2.405%	YES	10.46	1.1 Ft.	Non-Pressure Condition	740.45	740.45	739.90	738.40
PR-DC-LAT-01																							
DC-INLET-01	**DC-WYE-02**	3.10%	11.89 Ft.	15.29 cfs	18 in	1.77 Ft^2	.38 Ft.	18.54 cfs	82%	1.14 Ft.	15.29 cfs	1.44 Ft^2	.45 Ft.	81.41%	2.469%	YES	10.63	1.1 Ft.	Non-Pressure Condition	743.09	743.09	742.72	741.72
PR-DC-LAT-02																							
DC-INLET-02	**DC-WYE-01**	3.20%	34.58 Ft.	15.22 cfs	18 in	1.77 Ft^2	.38 Ft.	18.84 cfs	81%	1.12 Ft.	15.22 cfs	1.42 Ft^2	.45 Ft.	80.25%	2.524%	YES	10.73	1.1 Ft.	Non-Pressure Condition	743.74	743.74	742.63	741.63

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:17:22 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS — MICHAEL CARY NEWMAN — 64936 — REGISTERED — PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

GENERAL
DRAINAGE CALCULATIONS - INLET AND PIPE

SHEET NO. **G-06** OF **07** SHEETS

NORTH

0 100 200

HORIZONTAL SCALE IN FEET

A — W20-2a — DETOUR AHEAD

B — END DETOUR — M4-8a

C — ROAD CLOSED TO THRU TRAFFIC — R11-4

D — ROAD CLOSED AHEAD — CW20-3D

E — DETOUR — M4-10R

F — DETOUR — M4-10L

SIGN WITH TYPE III BARRICADE

SIGN

NOTE:
REFER TO SHEETS TX-01 THRU TX-05 FOR TXDOT STANDARDS FOR DETOUR PLAN

This document is realeased for the purpose of interim review under the authority of Michael C. Newman, P.E. 64936 on Jan 20, 2015 it is not to be used for construction, bidding or permit purposes.

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:26:14 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS — MICHAEL CARY NEWMAN — 64936 — REGISTERED PROFESSIONAL ENGINEER

KPA

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

DETOUR PLAN

SHEET NO. G-07 OF 07 SHEETS

FILE: P:\Round Rock\2014\14-xxx Dove Springs\CAD\Plans\working plan set\GENERAL\G08_DETOUR-PLAN.dwg LAST SAVED: 4/16/2015 4:17:01 PM LAYOUT: DETOUR PLAN

EXISTING 2 - 30" DIA. RCP
FL= 727.34 (OUT)

SAW CUT, REMOVE AND REPLACE CONCRETE RIPRAP TO MATCH EXISTING, INCLUDING TOE; DOWEL INTO EXISTING RIPRAP AROUND EDGES MITER PIPE TO SLOPE

25 LF ROCK BERM

15' ROCK RIPRAP
8"-12" MIN 12" DEEP

CONTRACTOR SHALL STAKE PROPOSED PIPE OUTFALL AND OBTAIN APPROVAL FROM THE CITY PRIOR TO EXCAVATION

69.51 LF OF
36" RCP @ 1.47%

STA 1+38.14
OFFSET 0.00'
STM-OUT-01
CONC. RIPRAP
N: 10158919.77
E: 3135939.03
36" FL= 727.44± (OUT)

MITER PIPE END TO MATCH EXISTING CONCRETE RIPRAP

STA 2+07.65
OFFSET 0.00'
STM-BEND-01
22.5° BEND
N: 10158928.41
E: 3135870.06
36" FL= 728.46± (OUT)
36" FL= 728.46± (IN)

20.03 LF OF
36" RCP @ 1.47%

STA 2+27.68
OFFSET 0.00'
STM-BEND-02
22.5° BEND
N: 10158923.11
E: 3135850.74
36" FL= 728.75± (OUT)
36" FL= 728.75± (IN)

160.04 LF OF
36" RCP @ 2.50%

STA 3+87.72
OFFSET 0.00'
STM-BEND-03
22.5° BEND
N: 10158824.89
E: 3135724.38
36" FL= 732.75± (OUT)
36" FL= 732.75± (IN)

STA 4+18.03
OFFSET 0.00'
STM-BEND-04
11.25° BEND
N: 10158817.64
E: 3135694.96
36" FL= 733.51± (OUT)
36" FL= 733.51± (IN)

TBM "A"

30.31 LF OF
36" RCP @ 2.50%

CONTRACTOR SHALL VERIFY DEPTH OF WATER AND WASTEWATER SERVICES; IF CONFLICT WITH PROPOSED STORM SEWER, SERVICES SHALL BE ADJUSTED

145.65 LF OF
36" RCP @ 2.50%

STA 5+66.18
OFFSET 0.00'
STM-JUNC-01
5' x 5' JUNCTION BOX
N: 10158817.28
E: 3135546.81
36" FL= 737.24± (IN)
36" FL= 737.14± (OUT)

1+00 2+00 3+00 4+00 5+00 6+00

RABBIT RUN

DOVE HAVEN

MATCH LINE STA. 6+14

6" ±

8" ±

EXISTING 8" WATER LINE

EXISTING 8" WASTEWATER LINE

Ⓐ CONTRACTOR SHALL VERIFY DEPTH AND/OR LOCATION OF WATER LINE PRIOR TO STORM SEWER CONSTRUCTION; IF CONFLICT WITH PROPOSED STORM SEWER, CONTRACTOR SHALL ADJUST IN ACCORDANCE WITH THE DETAILS IN THE DRAWINGS.

Ⓑ CONTRACTOR SHALL VERIFY DEPTH AND LOCATION OF WASTEWATER MAIN PRIOR TO CONSTRUCTION; IF CONFLICT WITH PROPOSED STORM SEWER, CONTRACTOR SHALL INFORM THE CITY AND OBTAIN DIRECTION FROM THE CITY PRIOR TO PROCEEDING WITH CONSTRUCTION.

NOTE:

THE BID FORM CONTAINS PROVISIONS FOR SUBSTITUTING POLYPROPYLENE PIPE, WYES AND BENDS IN LIEU OF REINFORCED CONCRETE PIPE (RCP), WYES AND BENDS. IF SELECTED BY THE CITY, POLYPROPYLENE PIPE, WYES AND BENDS SHALL BE HP STORM PIPE AS MANUFACTURED BY ADS, INC., OR APPROVED EQUAL. WHERE INTEGRAL BELL AND SPIGOT JOINTS ARE NOT PRESENT AT ONE OR BOTH ENDS OF A POLYPROPYLENE BEND OR WYE FITTING, MARMAC COUPLINGS SHALL BE PROVIEDED, OR APPROVED EQUAL. ALL POLYPROPYLENE PIPE AND FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

HORIZONTAL SCALE IN FEET
0 20 40

VERTICAL SCALE IN FEET
0 2 4

ALL STORMSEWER BENDS AND WYES SHALL BE PRE-FABRICATED

EXISTING GROUND

APPROX. EXIST. WATERLINE

69.51 LF OF
36" RCP @ 1.47%

160.04 LF OF
36" RCP @ 2.50%

20.03 LF OF
36" RCP @ 1.47%

MATCH POINT

145.65 LF OF
36" RCP @ 2.50%

78.36 LF OF
36" RCP @ 1.47%

30.31 LF OF
36" RCP @ 2.50%

MATCH LINE STA. 6+14

EXISTING 8" WASTEWATER LINE

736 732 728 724 722

744 740 736 732 730

1+00 2+00 3+00 4+00 5+00 6+00 6+75

FILE: P:\Round Rock\2014\14-xxx Dove Springs\CAD\Base\DoveSprings-DBase-OPT2.dwg LAST SAVED: 4/16/2015 3:58:31 PM LAYOUT: PR-DRNG-STM-1-OPT2

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NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:17:59 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS
MICHAEL CARY NEWMAN
64936
REGISTERED
PROFESSIONAL ENGINEER

KPA

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

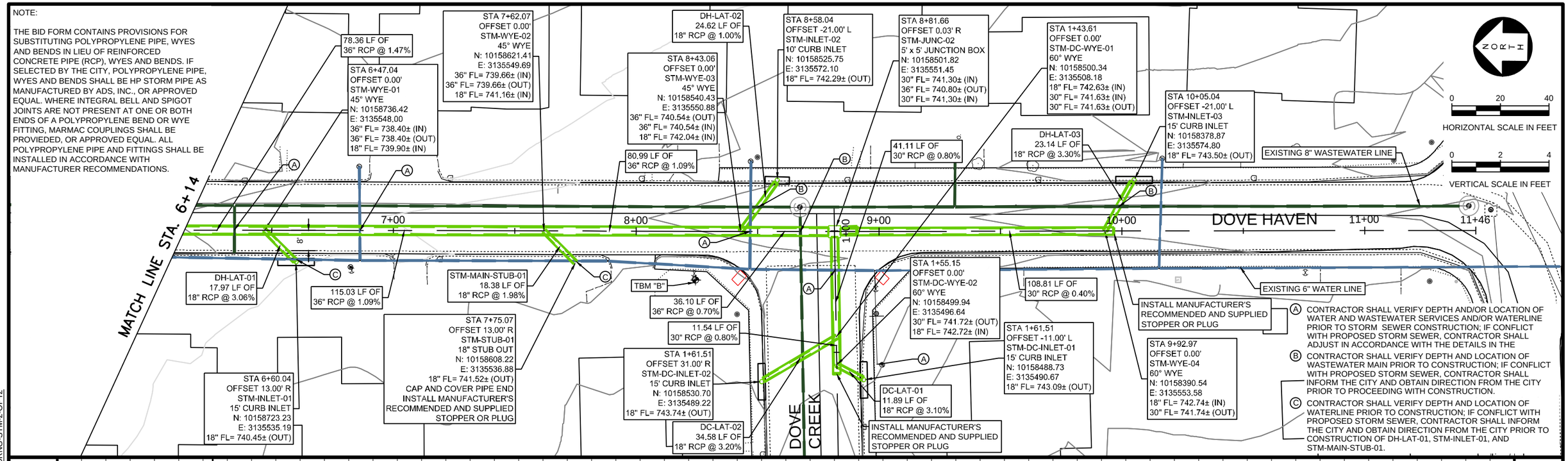
ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

STORMSEWER
STORMSEWER PLAN AND PROFILE - BEGIN TO STA 6+00

SHEET NO.
STM-01 OF
04 SHEETS

NOTE:

THE BID FORM CONTAINS PROVISIONS FOR SUBSTITUTING POLYPROPYLENE PIPE, WYES AND BENDS IN LIEU OF REINFORCED CONCRETE PIPE (RCP), WYES AND BENDS. IF SELECTED BY THE CITY, POLYPROPYLENE PIPE, WYES AND BENDS SHALL BE HP STORM PIPE AS MANUFACTURED BY ADS, INC., OR APPROVED EQUAL. WHERE INTEGRAL BELL AND SPIGOT JOINTS ARE NOT PRESENT AT ONE OR BOTH ENDS OF A POLYPROPYLENE BEND OR WYE FITTING, MARMAC COUPLINGS SHALL BE PROVIEDED, OR APPROVED EQUAL. ALL POLYPROPYLENE PIPE AND FITTINGS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

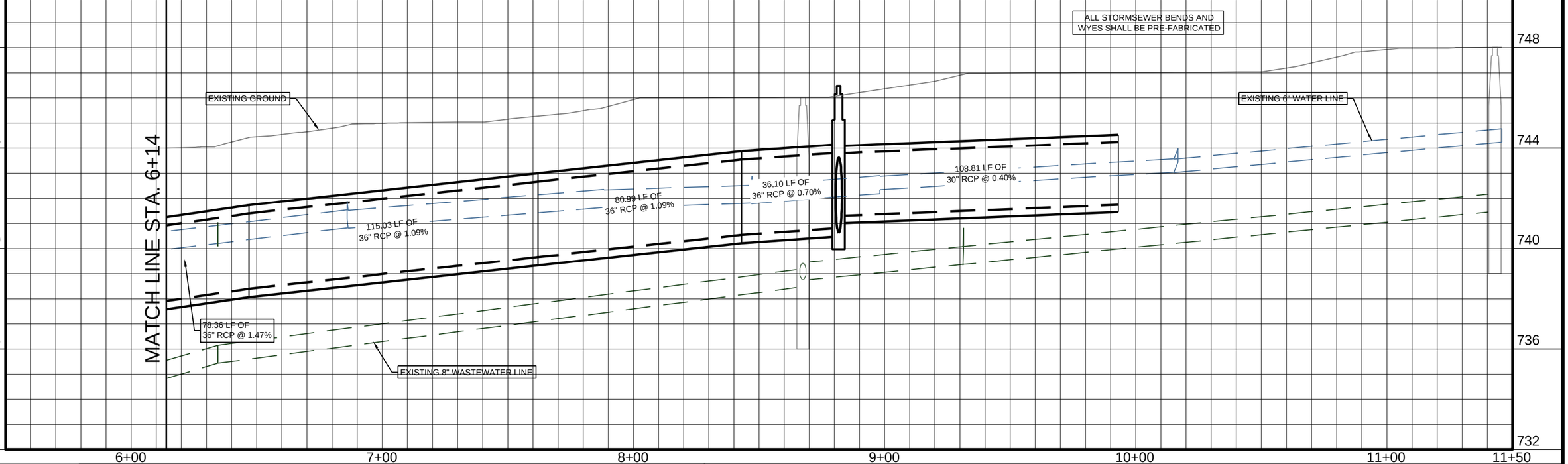


Ⓐ CONTRACTOR SHALL VERIFY DEPTH AND/OR LOCATION OF WATER AND WASTEWATER SERVICES AND/OR WATERLINE PRIOR TO STORM SEWER CONSTRUCTION; IF CONFLICT WITH PROPOSED STORM SEWER, CONTRACTOR SHALL ADJUST IN ACCORDANCE WITH THE DETAILS IN THE

Ⓑ CONTRACTOR SHALL VERIFY DEPTH AND LOCATION OF WASTEWATER MAIN PRIOR TO CONSTRUCTION; IF CONFLICT WITH PROPOSED STORM SEWER, CONTRACTOR SHALL INFORM THE CITY AND OBTAIN DIRECTION FROM THE CITY PRIOR TO PROCEEDING WITH CONSTRUCTION.

Ⓒ CONTRACTOR SHALL VERIFY DEPTH AND LOCATION OF WATERLINE PRIOR TO CONSTRUCTION; IF CONFLICT WITH PROPOSED STORM SEWER, CONTRACTOR SHALL INFORM THE CITY AND OBTAIN DIRECTION FROM THE CITY PRIOR TO CONSTRUCTION OF DH-LAT-01, STM-INLET-01, AND STM-MAIN-STUB-01.

ALL STORMSEWER BENDS AND WYES SHALL BE PRE-FABRICATED



NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:18:06 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS · MICHAEL CARY NEWMAN · 64936 · REGISTERED · PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

STORMSEWER
STORMSEWER PLAN AND PROFILE - STA 6+00 TO END

SHEET NO. **STM-02** OF **04** SHEETS

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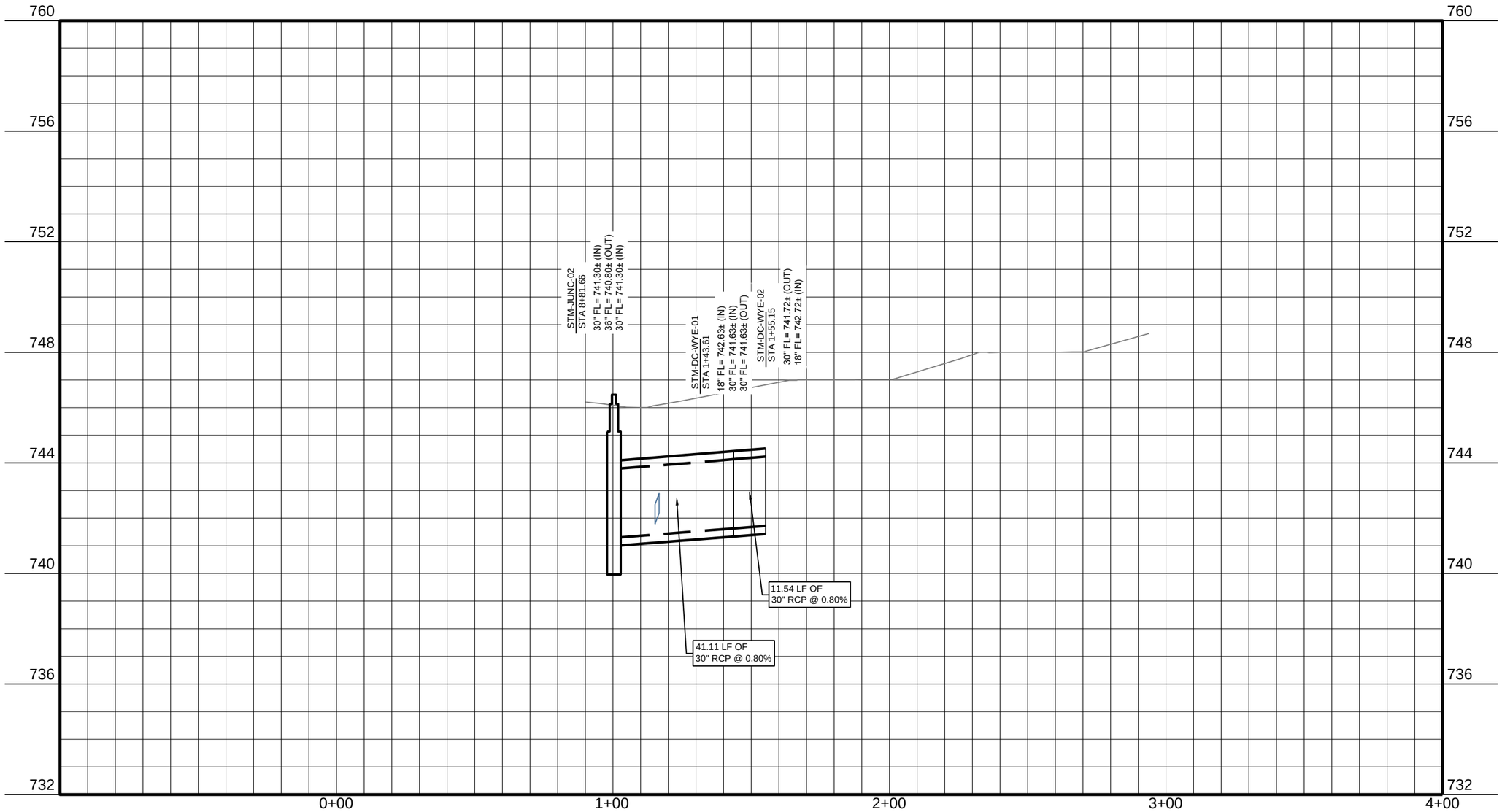

PROFILE VIEW
PR-DC-STM-MAIN

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:18:21 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS · MICHAEL CARY NEWMAN · 64936 · REGISTERED · PROFESSIONAL ENGINEER

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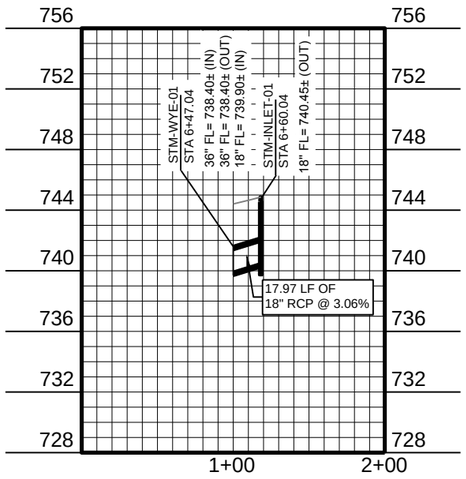
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

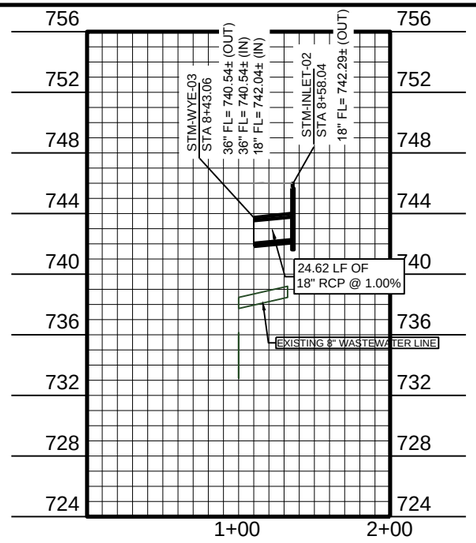
STORMSEWER
DOVE CREEK STORMSEWER PROFILE

SHEET NO.
STM-03 OF
04 SHEETS

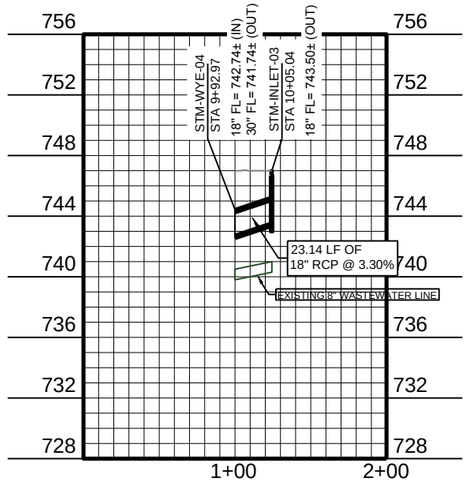
FILE: P:\Round Rock\2014\14-xxx Dove Springs\CAD\Plans\working plan set\STORMSEWER\PR-DC-STM-OP2-01.dwg LAST SAVED: 4/15/2015 2:18:23 PM LAYOUT: DC-STM-OP2



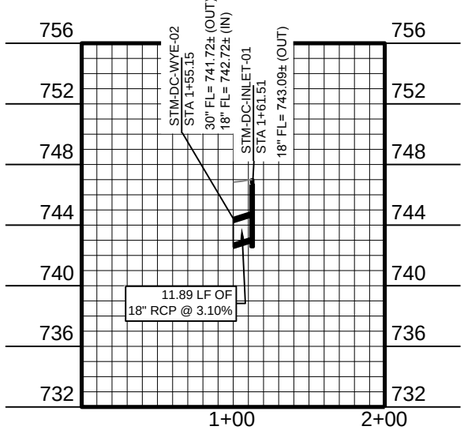
PROFILE VIEW
DH-LAT-01



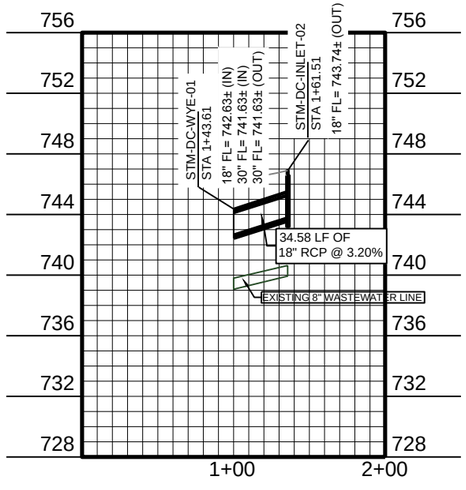
PROFILE VIEW
DH-LAT-02



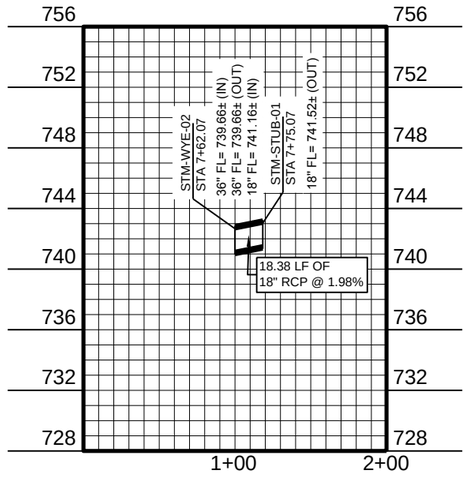
PROFILE VIEW
DH-LAT-03



PROFILE VIEW
DC-LAT-01



PROFILE VIEW
DC-LAT-02



PROFILE VIEW
STM-MAIN-STUB-01

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:18:35 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS
MICHAEL CARY NEWMAN
64936
REGISTERED
PROFESSIONAL ENGINEER

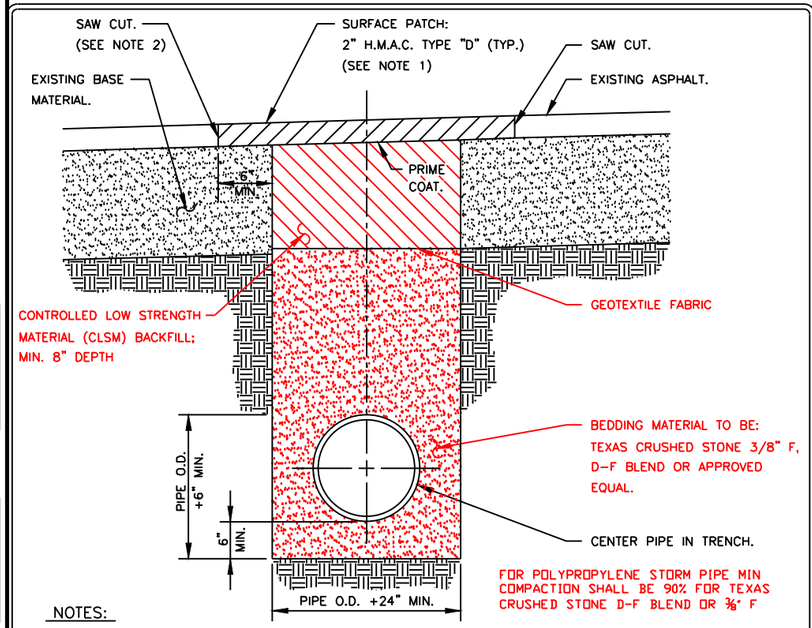
KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

STORMSEWER
STORMSEWER LATERAL PROFILES

SHEET NO.
STM-04 OF
04 SHEETS

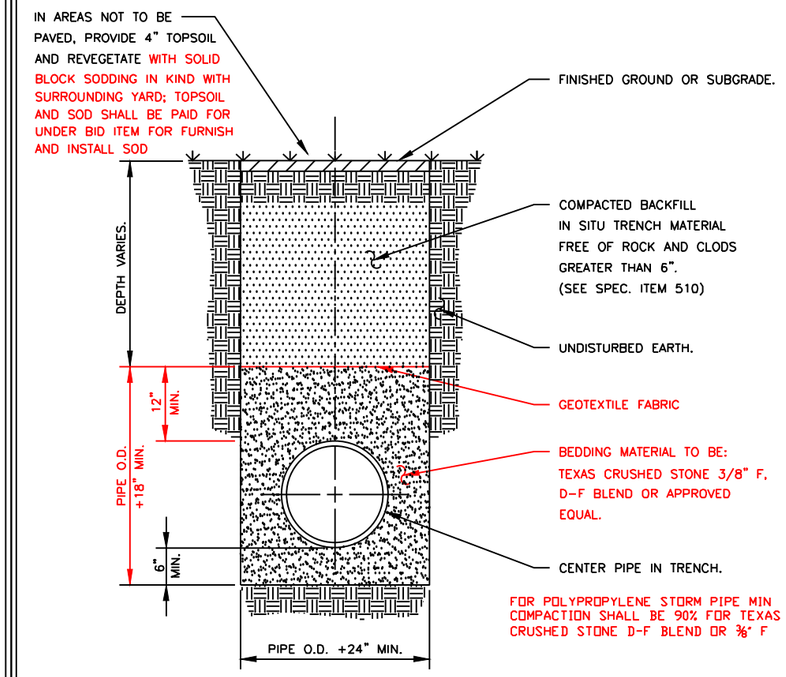
FILE: P:\Round Rock\2014\14-xxx Dove Springs\CAD\Plans\working plan set\STORMSEWER\PR-PF-LAT-OP2-01.dwg **LAST SAVED:** 4/15/2015 2:19:00 PM **LAYOUT:** LAT-01-OP2



NOTES:

1. H.M.A.C. SHOWN IN THIS DETAIL IS SEPARATE FROM ANY ADDITIONAL THICKNESS CREATED BY ANY OVERLAY ITEM IN CONTRACT. SURFACE PATCH SHALL BE PAID FOR SEPARATELY.
2. THE CONTRACTOR SHALL SAW CUT, REMOVE AND REPLACE EXISTING PAVEMENT A MINIMUM OF 6" BEYOND EITHER THE EDGE OF THE STORM SEWER TRENCH OR THE POINT WHERE EXISTING PAVEMENT IS DAMAGED DUE TO TRENCHING OPERATIONS, WHICHEVER IS GREATER. HOWEVER, ON NORTH SIDE OF RABBIT RUN, REMOVE AND REPLACE PAVEMENT TO GUTTER LIP OR PAVEMENT EDGE.
3. INSTALLATION OF INCREASED BEDDING DEPTH, GEOTEXTILE FABRIC, CLSM, SAW CUTTING AND REMOVAL OF EXISTING PAVEMENT SHALL NOT BE PAID FOR SEPARATELY. COSTS FOR THESE ITEMS SHALL BE INCLUDED IN UNIT PRICE BIDS FOR STORM SEWER PIPE, WATER MAIN, WATER SERVICE, OR WASTEWATER SERVICE ADJUSTMENT.
4. THE CONTRACTOR SHALL PROVIDE STEEL PLATES TO SPAN THE TRENCH AS NECESSARY OR TO ALLOW BACKFILL TO CURE. SUCH PLATES SHALL BE SUITABLE FOR VEHICLE PASSAGE OVER THE TRENCH AND SHALL BE SATISFACTORILY ANCHORED IN PLACE. COSTS FOR THIS ITEM SHALL BE INCLUDED IN UNIT PRICE BIDS FOR STORM SEWER PIPE, WATER MAIN, WATER SERVICE, OR WASTEWATER SERVICE ADJUSTMENT.
5. ALL TRENCHING AND TRENCH SAFETY SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
6. WATER MAIN, WATER SERVICE, AND WASTEWATER SERVICE ADJUSTMENTS UNDER PAVED AREAS SHALL FOLLOW THIS DETAIL EXCEPT THAT TRENCH WIDTH MAY BE REDUCED TO PIPE O.D. + 12" (MINIMUM).

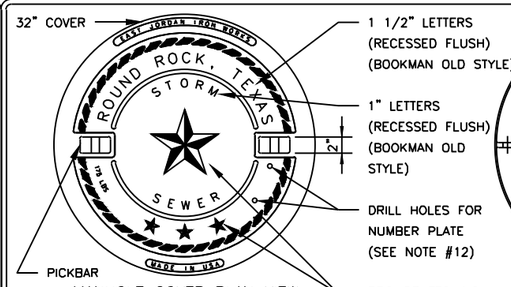
CITY OF ROUND ROCK	DRAWING NO: DR-01
PIPE INSTALLATION DETAIL (EXISTING PAVED SURFACE)	



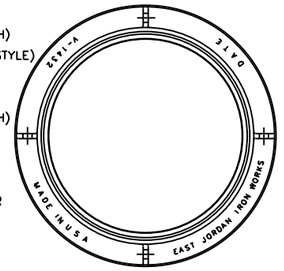
NOTE:

1. ALL TRENCHING AND TRENCH SAFETY SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL REGULATIONS.
2. INSTALLATION OF BEDDING, GEOTEXTILE FABRIC, AND BACKFILL SHALL BE INCLUDED IN UNIT PRICE BIDS FOR STORM SEWER PIPE, WATER MAIN, WATER SERVICE OR WASTEWATER SERVICE ADJUSTMENTS.
3. WATER MAIN, WATER SERVICE, AND WASTEWATER SERVICE ADJUSTMENTS UNDER NON-PAVED AREAS SHALL FOLLOW THIS DETAIL EXCEPT THAT TRENCH WIDTH MAY BE REDUCED TO PIPE O.D. + 12" (MINIMUM).

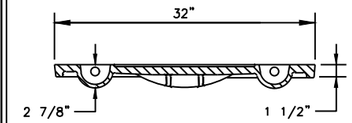
CITY OF ROUND ROCK	DRAWING NO: DR-02
PIPE INSTALLATION DETAIL (NON-PAVED SURFACE)	



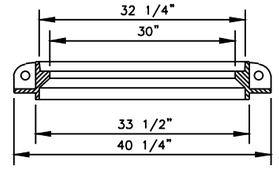
MANHOLE COVER PLAN VIEW



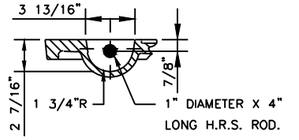
MANHOLE FRAME PLAN VIEW



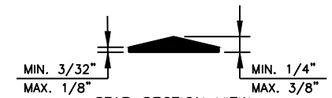
MANHOLE COVER SECTION VIEW



MANHOLE FRAME SECTION VIEW



PICKBAR DETAIL



STAR SECTION VIEW

NOTES:

1. COVER AND FRAME SHALL COMPLY WITH STANDARD SPECIFICATIONS FOR DRAINAGE, SEWER, UTILITY AND RELATED CASTINGS: AASHTO DESIGNATION M306-04.
2. MANHOLE COVER SHALL BE MODEL NUMBER: V-1432-3 (PRODUCT NUMBER: 41432058), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
3. MANHOLE FRAME SHALL BE MODEL NUMBER: V-1432 (PRODUCT NUMBER: 41432010), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
4. MANHOLE COVER AND FRAME ASSEMBLY, IF ORDERED AS A SET, SHALL BE MODEL NUMBER: V-1432 (PRODUCT NUMBER: 41432080), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
5. ALL CORNERS AND EDGES SHALL HAVE A 1/16" MINIMUM AND 1/8" MAXIMUM RADIUS.
6. MANHOLE COVERS SHALL BE CAST WITH TWO 1" DIAMETER STEEL PICKBARS.
7. MANHOLE COVER WEIGHT SHALL BE 175 LBS. FOR DUCTILE IRON. WEIGHT SHALL BE CAST ON BOTH TOP AND BOTTOM OF COVER.
8. MANUFACTURER SHALL CERTIFY THAT EACH MANHOLE COVER MEETS HS-20 LOADING.
9. FILLETS SHALL BE 1/4" RADIUS UNLESS OTHERWISE SPECIFIED.
10. MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.
11. COVER SHALL BE DIPPED IN A WATER-BASED ASPHALTIC COATING, PRIOR TO SHIPMENT FROM FOUNDRY.
12. MANUFACTURER SHALL DRILL 2-3/16"X1/2" DEEP HOLES FOR A MANHOLE NUMBER PLATE TO BE PROVIDED BY THE CITY OF ROUND ROCK. THE TOP HOLE SHALL BE DRILLED 1" O.C. FROM THE BOTTOM OF THE PICKBAR AND THE BOTTOM HOLE SHALL BE DRILLED 4" O.C. FROM THE TOP HOLE.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS APPROVED 08-09-05 DATE THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.	CITY OF ROUND ROCK	DRAWING NO: DR-06
	NON-BOLTED STORMSEWER MANHOLE COVER AND FRAME DETAIL	ROUND ROCK, TEXAS PURPOSE, VISION, PROSPERITY

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:27:00 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS · MICHAEL CARY NEWMAN · 64936 · REGISTERED · PROFESSIONAL ENGINEER

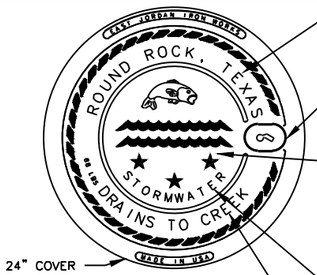
KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

CITY OF ROUND ROCK STANDARD DETAILS

SHEET NO. D-01 OF 07 SHEETS

FILE: P:\Round Rock\2014\14-xxx Dove Springs\CAD\Plans\working plan set\DETAILS - MISC\D-01_DRNG-DTLS.dwg LAST SAVED: 4/16/2015 4:22:48 PM LAYOUT: SS-BEDDING-PAVED



1" LETTERS (RECESSED FLUSH) (BOOKMAN OLD STYLE)

KEYED LOCKING MECHANISM

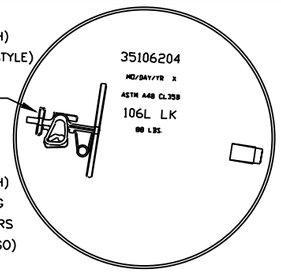
CUSTOM LOGO (RECESSED FLUSH) (PROVIDE ETCHING AROUND ALL STARS AND CUSTOM LOGO)

1/2" LETTERS (RECESSED FLUSH) (BOOKMAN OLD STYLE)

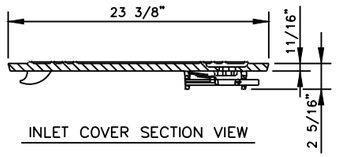
1" LETTERS (RECESSED FLUSH) (BOOKMAN OLD STYLE)

24" COVER

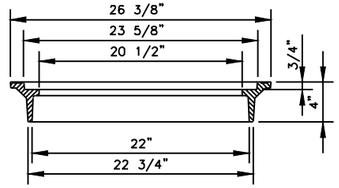
INLET COVER PLAN VIEW



INLET COVER BOTTOM VIEW



INLET COVER SECTION VIEW

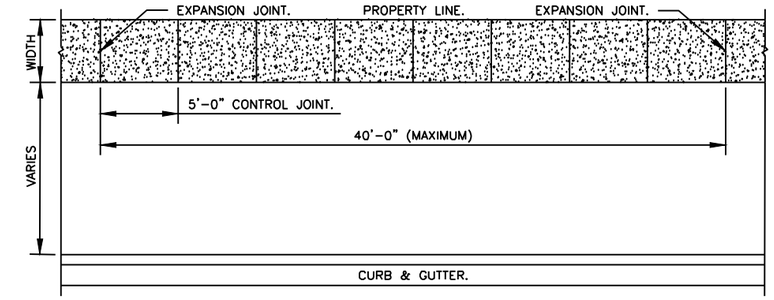


INLET FRAME SECTION VIEW

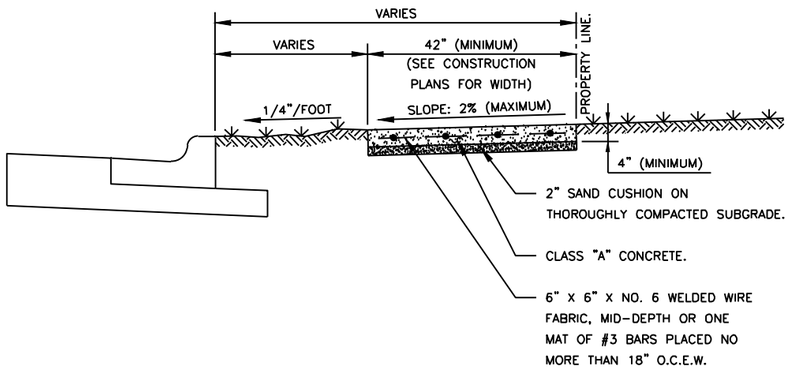
NOTES:

1. COVER AND FRAME SHALL COMPLY WITH STANDARD SPECIFICATIONS FOR DRAINAGE, SEWER, UTILITY AND RELATED CASTINGS: AASHTO DESIGNATION M306-04.
2. INLET COVER SHALL BE MODEL NUMBER: 106L LK (PRODUCT NUMBER: 35106204), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
3. INLET FRAME SHALL BE MODEL NUMBER: 106L LK (PRODUCT NUMBER: 35206004), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
4. INLET COVER AND FRAME ASSEMBLY, IF ORDERED AS A SET, SHALL BE MODEL NUMBER: 106L-4L LK (PRODUCT NUMBER: 35506204), AS MANUFACTURED BY EAST JORDAN IRON WORKS, INCORPORATED, OR APPROVED EQUAL.
5. ALL CORNERS AND EDGES SHALL HAVE A 1/16" MINIMUM AND 1/8" MAXIMUM RADIUS.
6. INLET COVER WEIGHT SHALL BE 88 LBS. FOR DUCTILE IRON. WEIGHT SHALL BE CAST ON BOTH TOP AND BOTTOM OF COVER.
7. FILLETS SHALL BE 1/4" RADIUS UNLESS OTHERWISE SPECIFIED.
8. MANUFACTURER SHALL REMOVE EXCESS IRON AND MACHINE FINISH SEATING SURFACES TO NOTED DIMENSIONS.
9. INLET COVER SHALL BE DIPPED IN A WATER-BASED ASPHALTIC COATING, PRIOR TO SHIPMENT FROM FOUNDRY.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO: DR-07
APPROVED 09-13-05 DATE	STORM SEWER INLET COVER AND FRAME DETAIL	ROUND ROCK, TEXAS PURSUIT, PERSEVERANCE, PROSPERITY
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.		

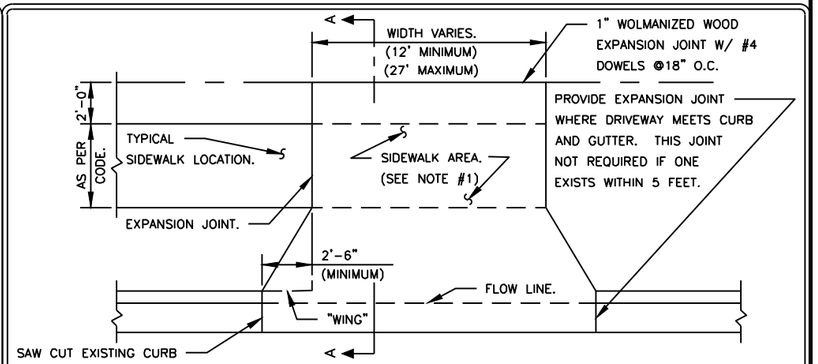


PLAN



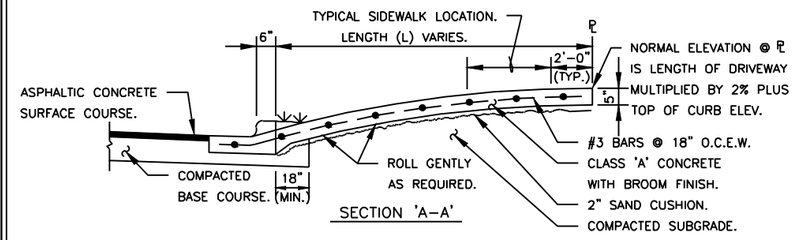
SECTION

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO: ST-01
APPROVED 07-11-06 DATE	SIDEWALK DETAIL	ROUND ROCK, TEXAS PURSUIT, PERSEVERANCE, PROSPERITY
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.		

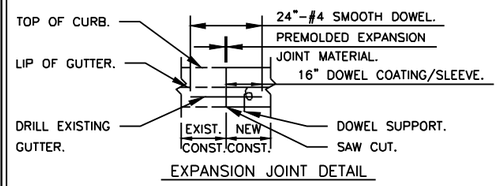


SAW CUT EXISTING CURB AND GUTTER SECTION AT PROPOSED DRIVEWAY. IF NEAREST EXPANSION JOINT IS 5 FEET OR LESS FROM DRIVEWAY WING, EXISTING CURB AND GUTTER SECTION SHALL BE REMOVED AND REPLACED TO THE NEAREST EXPANSION JOINT.

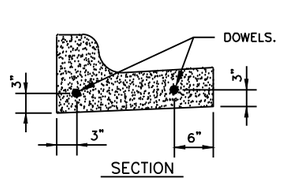
PLAN



SECTION 'A-A'



EXPANSION JOINT DETAIL



SECTION

NOTE:

1. THE SIDEWALK AREA OF THE DRIVEWAY SHALL SLOPE TOWARD THE STREET PAVING AT NO MORE THAN 2%.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO: ST-02
APPROVED 11-08-01 DATE	CONCRETE DRIVEWAY DETAIL (RESIDENTIAL)	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.		

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:18:47 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY Michael C Newman
DATE 4/16/2015

STATE OF TEXAS · MICHAEL CARY NEWMAN · 64936 · REGISTERED · PROFESSIONAL ENGINEER

KPA

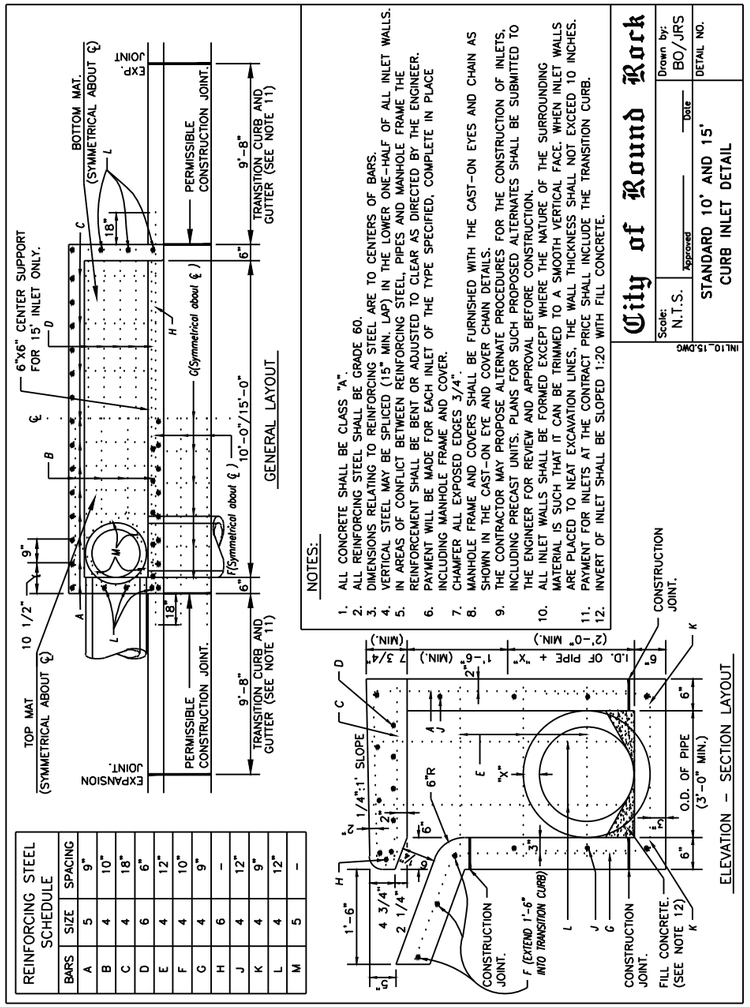
KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

CITY OF ROUND ROCK STANDARD DETAILS

SHEET NO. D-02 OF 07 SHEETS

FILE: P:\Round Rock\2014\14-xxx Dove Springs\CAD\Plans\working plan set\DETAILS - MISC\D-02_DRNG-DTLS.dwg LAST SAVED: 3/24/2015 2:14:19 PM LAYOUT: CITY OF ROUND ROCK STANDARD DETAIL



REINFORCING STEEL SCHEDULE		
BARS	SIZE	SPACING
A	5	9"
B	4	10"
C	4	18"
D	6	6"
E	4	12"
F	4	10"
G	4	9"
H	6	—
J	4	12"
K	4	9"
L	4	12"
M	5	—

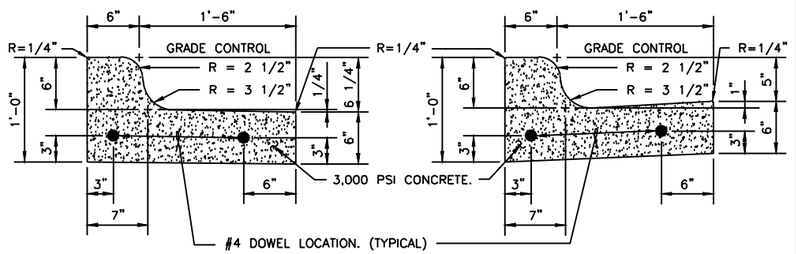
NOTES:

1. ALL CONCRETE SHALL BE CLASS "A".
2. ALL REINFORCING STEEL SHALL BE GRADE 60.
3. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
4. VERTICAL STEEL MAY BE SPLICED (15" MIN. LAP) IN THE LOWER ONE-HALF OF ALL INLET WALLS.
5. IN AREAS OF CONFLICT BETWEEN REINFORCING STEEL, PIPES AND MANHOLE FRAME THE REINFORCEMENT SHALL BE BENT OR ADJUSTED TO CLEAR AS DIRECTED BY THE ENGINEER. PAYMENT WILL BE MADE FOR EACH INLET OF THE TYPE SPECIFIED, COMPLETE IN PLACE INCLUDING MANHOLE FRAME AND COVER.
6. CHAMFER ALL EXPOSED EDGES 3/4".
7. MANHOLE FRAME AND COVERS SHALL BE FURNISHED WITH THE CAST-ON EYES AND CHAIN AS SHOWN IN THE CAST-ON EYE AND COVER CHAIN DETAILS.
8. THE CONTRACTOR MAY PROPOSE ALTERNATE PROCEDURES FOR THE CONSTRUCTION OF INLETS, INCLUDING PRECAST UNITS. PLANS FOR SUCH PROPOSED ALTERNATES SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL BEFORE CONSTRUCTION.
9. ALL INLET WALLS SHALL BE FORMED EXCEPT WHERE THE NATURE OF THE SURROUNDING MATERIAL IS SUCH THAT IT CAN BE TRIMMED TO A SMOOTH VERTICAL FACE. WHEN INLET WALLS ARE PLACED TO NEAT EXCAVATION LINES, THE WALL THICKNESS SHALL NOT EXCEED 10 INCHES.
10. PAYMENT FOR INLETS AT THE CONTRACT PRICE SHALL INCLUDE THE TRANSITION CURB.
11. INVERT OF INLET SHALL BE SLOPED 1:20 WITH FILL CONCRETE.
12. INL10_15.DWG

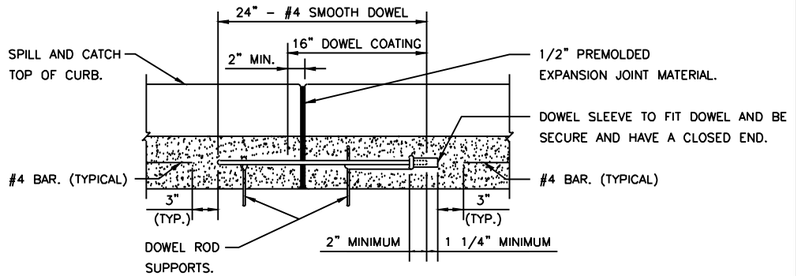
City of Round Rock

Scale: N.T.S. | Approved | Date | Drawn by: BO/JRS | DETAIL NO.

STANDARD 10' AND 15' CURB INLET DETAIL



SPILL CURB — CATCH CURB

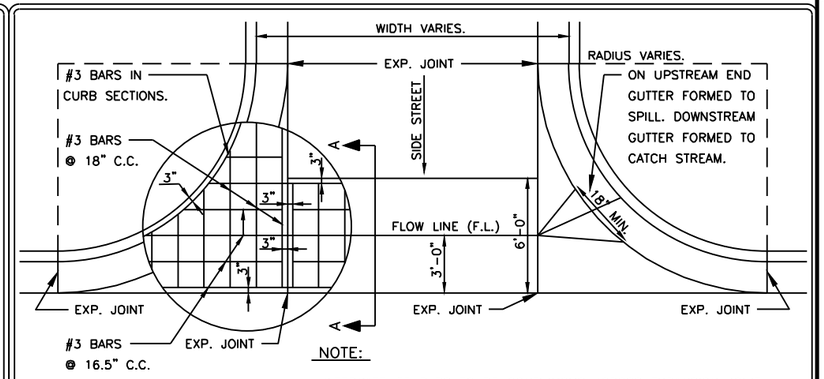


CURB EXPANSION JOINT DOWEL DETAIL

NOTES:

1. ALL WORK AND MATERIAL SHALL CONFORM TO ASTM A615, A615M, C309 AND D1752. BROOM FINISH EXPOSED SURFACE.
2. CONTROL JOINT SPACING SHALL NOT EXCEED 10'-0".
3. EXPANSION JOINTS AS PER STANDARD ASTM D-1752.
4. EXPANSION JOINT INTERVALS NOT TO EXCEED 40'-0" FOR ALL CURBS AND CONSTRUCTION METHODS.
5. ALL CURBS SHALL HAVE A MINIMUM OF 4" OF COMPACTED FLEXIBLE BASE BETWEEN BOTTOM OF CURB AND TOP SUBGRADE THAT SHALL EXTEND A MINIMUM OF 18" BEHIND BACK OF CURB. TOTAL DEPTH OF FLEXIBLE BASE UNDER AND BEHIND CURB SHALL BE: (TOTAL DEPTH OF FLEXIBLE BASE) LESS (6-INCHES).
6. ALL CURBS SHALL CONFORM TO THESE DETAILS INDEPENDANT OF THE CONSTRUCTION METHODS USED.

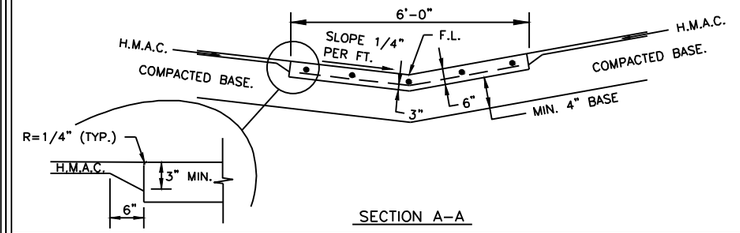
RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO:
APPROVED 08-21-03 DATE	SPILL AND CATCH CURB DETAIL (WITH CURB EXPANSION JOINT DOWEL DETAIL)	ST-05
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.		



NOTE:

ALTERNATE #3 BARS TO BE CONTINUOUS ACROSS EXPANSION JOINT. BREAK BOND 6" ON EACH SIDE OF EXPANSION JOINT.

PLAN



SECTION A-A

NOTES:

1. MATERIALS AND CONSTRUCTION METHODS SHALL CONFORM TO THE CITY OF AUSTIN STANDARD SPECIFICATIONS.
2. CONCRETE SHALL BE CLASS "A".
3. MONOLITHIC CURB & GUTTER SHALL BE MEASURED BY PLAN SQUARE FEET AND PAID AS VALLEY GUTTER.
4. THE UPSTREAM CURB MID POINT MUST BE AT OR LOWER THAN THE BEGINNING P.C. AND .5% (MIN.) HIGHER THAN THE OPPOSING MID POINT.
5. ALLOWABLE CONSTRUCTION JOINT AT ℄ WHEN TRAFFIC FLOW MUST BE MAINTAINED, CONSTRUCTED AS A CONTROL JOINT. PROVIDE EXPANSION JOINT @ ℄ FOR WIDTHS GREATER THAN 40 FEET.
6. ALL EXPANSION JOINTS SHALL BE CONSTRUCTED WITH 1/2" PREMOLDED EXPANSION JOINT MATERIAL AND DOWELS AND CAPS (SEE STANDARD CURB DOWEL DETAIL).

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO:
APPROVED 08-21-03 DATE	CONCRETE VALLEY GUTTER DETAIL	ST-06
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.		

This document is realeased for the purpose of interim review under the authority of Michael C. Newman, P.E. 64936 on Jan 20, 2015 it is not to be used for construction, bidding or permit purposes.

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:18:53 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS — MICHAEL CARY NEWMAN — 64936 — REGISTERED PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

CITY OF ROUND ROCK STANDARD DETAILS

SHEET NO. **D-03** OF **07** SHEETS

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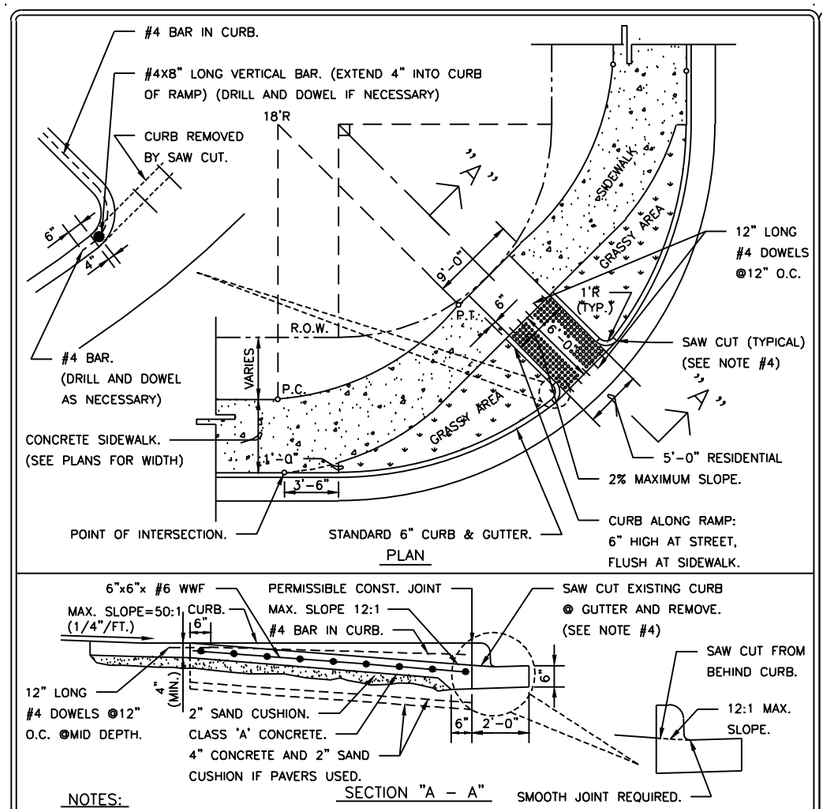


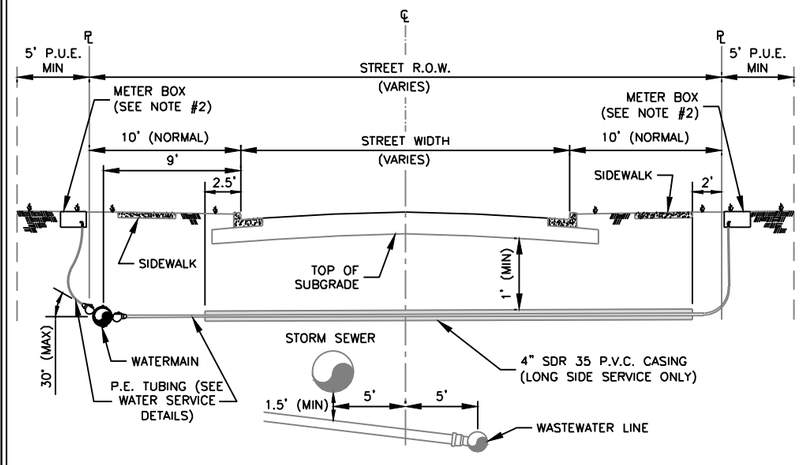
PLAN

SECTION "A – A"

NOTES:

1. SIDEWALKS SHALL BE A MINIMUM OF 4'-0" WIDE.
2. THE RAMP SHALL HAVE A DETECTABLE WARNING AND CONTRASTING COLORED SURFACE. THE RAMP SHALL BE STAMPED AND DYED CONCRETE OR APPROVED EQUAL.
3. THE POSITION OF THE RAMP MAY BE ALTERED IN THE FIELD BY THE ENGINEER, BUT ONLY WITH THE PUBLIC WORKS DEPARTMENT APPROVAL.
4. SAW CUTTING IS APPLICABLE FOR INSTALLATION WHERE THE CURB LAYDOWN FOR THE RAMP IS NOT PROVIDED.
5. THE SIDEWALK PEDESTRIAN RAMP SHALL MEET ALL APPLICABLE A.D.A. REQUIREMENTS.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO: ST-08
APPROVED 08-21-03 DATE	SIDEWALK PEDESTRIAN RAMP DETAIL (TYPE 2)	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL.		



NOTES:

1. REFER TO "STANDARD INSTALLATION DETAIL FOR ONE OR TWO METERS" FOR SERVICE SPECIFICS.
2. METER BOXES SHALL BE SET AS CLOSE TO R.O.W. (℄) AS POSSIBLE, WITH NO PART OF BOX WITHIN R.O.W. METER BOXES SHALL BE LEVEL FROM SIDE TO SIDE AND NO MORE THAN 1/4"/FT. SLOPE FROM FRONT TO BACK (OR BACK TO FRONT). GRADING IN P.U.E. AROUND METER BOX SHALL BE 3:1 MAXIMUM AND SHALL BLEND TO OTHER UTILITY APPURTENANCES WITHOUT ABRUPT ELEVATION CHANGES.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO: WT-01
APPROVED 04-01-10 DATE	WATER SERVICE CASING DETAIL	
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		

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NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:18:57 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS — MICHAEL CARY NEWMAN — 64936 — REGISTERED PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

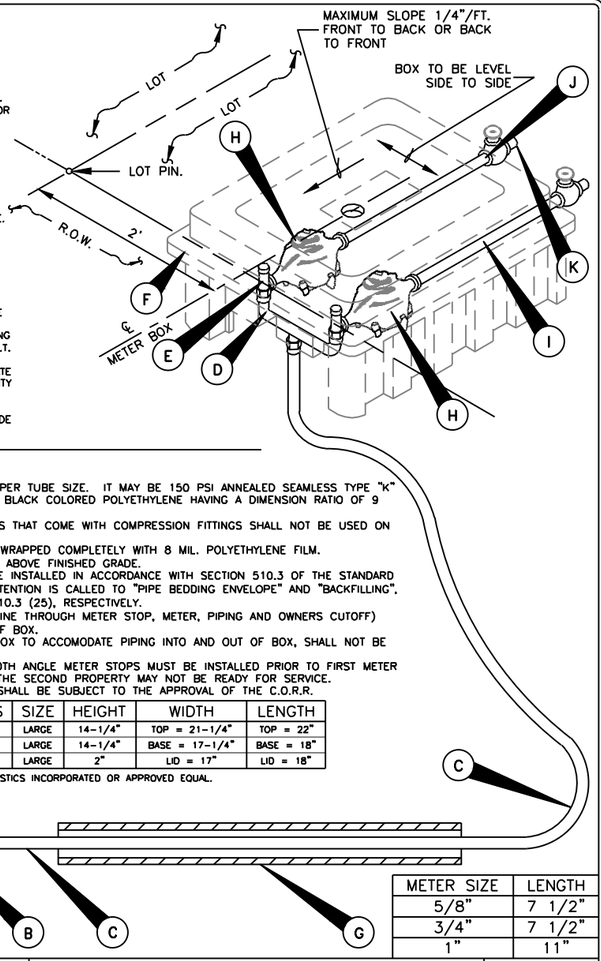
CITY OF ROUND ROCK STANDARD DETAILS

SHEET NO. **D-04** OF **07** SHEETS

FILE: P:\Round Rock\2014\14-xxx Dove Springs\CAD\Plans\working plan set\DETAILS - MISC\D-04_DRNG-DTLS.dwg LAST SAVED: 4/15/2015 8:50:24 AM LAYOUT: CITY OF ROUND ROCK STANDARD DETAIL

MATERIAL LIST:

A. SERVICE CLAMP REQUIRED.
B. 1 1/2" CORPORATION STOP (TYPICAL) – SERVICE PIPE OUTLET. (SEE NOTE #2)
C. 1 1/2" SERVICE PIPE (TYPICAL).
D. BRANCH CONNECTION: 1 1/2" OR 2" SERVICE PIPE INLET AND 2 3/4" MALE I.P.T. OUTLETS 7 1/2" O.C. (SEE NOTE #2)
E. 3/4" LOCKING ANGLE METER STOP: FEMALE I.P.T. INLET AND SWIVEL COUPLING NUT OUTLET.
F. PLASTIC RECTANGULAR METER BOX. (SEE TABLE BELOW)
G. PIPE CASING WHERE APPLICABLE. (AS PER DETAIL WT-01)
H. WATER METERS, CENTERED IN BOX. (SEE TABLE BELOW)
I. WATER METER COUPLING: MALE I.P.T. X SWIVEL COUPLING NUT.
• LENGTH OF PIPE TO BE DETERMINED BY CONTRACTOR.
• EXTEND PIPE TO 4"-6" OUTSIDE OF METER BOX.
J. BRONZE GATE VALVE: NON-RISING STEM (3/4" OR 1") FEMALE I.P.T. (PROPERTY OWNERS CUT-OFF OUTSIDE METER BOX IN SEPARATE VALVE CAN WITH LID AS PER CITY OF ROUND ROCK STANDARDS).
K. 3/4" OR 1" PIPE MEETING CITY OF ROUND ROCK PLUMBING CODE REQUIREMENTS.



NOTES:

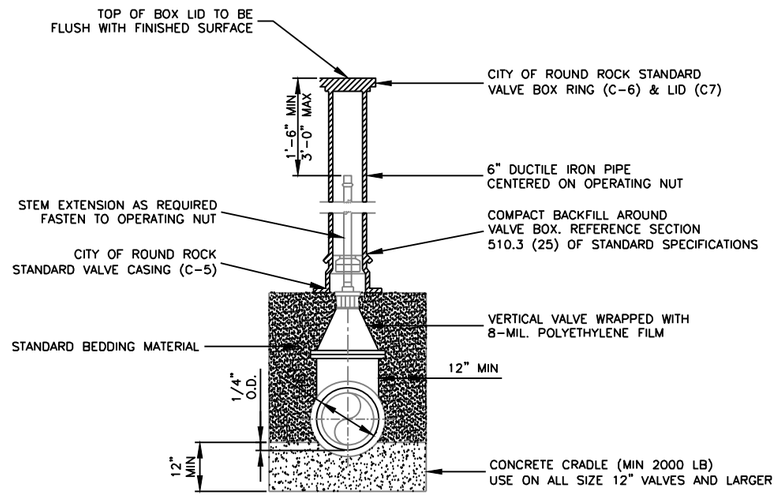
1. SERVICE PIPE SHALL BE COPPER TUBE SIZE. IT MAY BE 150 PSI ANNEALED SEAMLESS TYPE "K" COPPER TUBING OR 200 PSI BLACK COLORED POLYETHYLENE HAVING A DIMENSION RATIO OF 9 (DR9).
2. ALL STAINLESS STEEL INSERTS THAT COME WITH COMPRESSION FITTINGS SHALL NOT BE USED ON ANY CONNECTIONS.
3. SERVICE SADDLES SHALL BE WRAPPED COMPLETELY WITH 8 MIL. POLYETHYLENE FILM.
4. TOP OF BOXES SHALL BE 1" ABOVE FINISHED GRADE.
5. PIPING AND TUBING SHALL BE INSTALLED IN ACCORDANCE WITH SECTION 510.3 OF THE STANDARD SPECIFICATIONS. SPECIAL ATTENTION IS CALLED TO "PIPE BEDDING ENVELOPE" AND "BACKFILLING", SECTIONS 510.3 (14) AND 510.3 (25), RESPECTIVELY.
6. AXIS OF METER ASSEMBLY (LINE THROUGH METER STOP, METER, PIPING AND OWNERS CUTOFF) SHALL BE 10" BELOW TOP OF BOX.
7. SLOTS PROVIDED IN METER BOX TO ACCOMODATE PIPING INTO AND OUT OF BOX, SHALL NOT BE MODIFIED.
8. BRANCH CONNECTION AND BOTH ANGLE METER STOPS MUST BE INSTALLED PRIOR TO FIRST METER INSTALLATION EVEN THOUGH THE SECOND PROPERTY MAY NOT BE READY FOR SERVICE.
9. LOCATION OF METER BOXES SHALL BE SUBJECT TO THE APPROVAL OF THE C.O.R.R.

PART NUMBER	SERIES	SIZE	HEIGHT	WIDTH	LENGTH
DFW38C-14-BODY*	38C	LARGE	14-1/4"	TOP = 21-1/4"	TOP = 22"
DFW38C-14-SBSM*	38C	LARGE	14-1/4"	BASE = 17-1/4"	BASE = 18"
DFW38C-SBSM-LID*	38C	LARGE	2"	LID = 17"	LID = 18"

* ROTEC BY DFW PLASTICS INCORPORATED OR APPROVED EQUAL.

METER SIZE	LENGTH
5/8"	7 1/2"
3/4"	7 1/2"
1"	11"

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO: WT-04
APPROVED 10-20-11 DATE	DUAL 5/8", 3/4" OR 1" WATER METERS DETAIL	ROUND ROCK, TEXAS PURPOSE, PERSON, PROSPERITY
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO: WT-11
APPROVED 04-01-10 DATE	VERTICAL VALVE INSTALLATION DETAIL	ROUND ROCK, TEXAS PURPOSE, PERSON, PROSPERITY
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:19:03 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

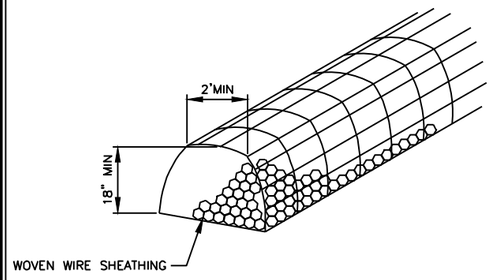
STATE OF TEXAS MICHAEL CARY NEWMAN 64936 REGISTERED PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

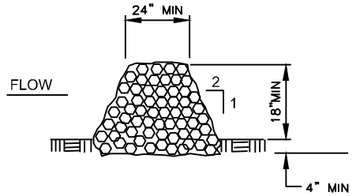
ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

CITY OF ROUND ROCK STANDARD DETAILS

SHEET NO. D-05 OF 07 SHEETS



ISOMETRIC

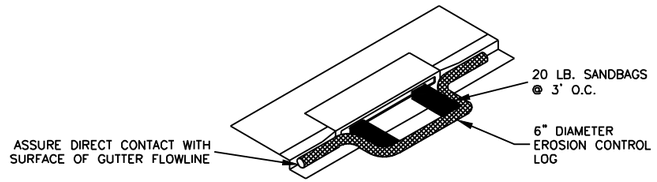


CROSS SECTION

NOTES:

1. USE ONLY OPEN GRADED ROCK (3 to 5") DIAMETER FOR ALL CONDITIONS.
2. THE ROCK BERM SHALL BE SECURED WITH A WOVEN WIRE SHEATHING HAVING MAXIMUM 1" OPENING AND MINIMUM WIRE DIAMETER OF 20 GAUGE.
3. THE ROCK BERM SHALL BE INSPECTED DAILY OR AFTER EACH RAIN, AND THE STONE AND/ OR FABRIC CORE-WOVEN SHEATHING SHALL BE REPLACED WHEN THE STRUCTURE CEASES TO FUNCTION AS INTENDED, DUE TO SEDIMENT ACCUMULATION AMONG THE ROCKS, WASHOUT, CONSTRUCTION TRAFFIC DAMAGE, ETC.
4. IF SEDIMENT REACHES A DEPTH OF 6", THE SEDIMENT SHALL BE REMOVED AND DISPOSED OF ON AN APPROVED SITE AND IN A MANNER THAT WILL NOT CREATE A SEDIMENTATION PROBLEM.
5. WHEN THE SITE IS COMPLETELY STABILIZED, THE BERM AND ACCUMULATED SEDIMENT SHALL BE REMOVED AND DISPOSED OF IN AN APPROVED MANNER.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO: EC-12
APPROVED 03-25-11 DATE	ROCK BERM DETAIL	ROUND ROCK, TEXAS PLYMOUTH, THOMAS, PROPERTY
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



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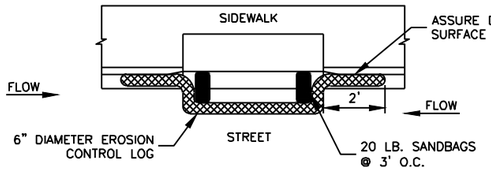
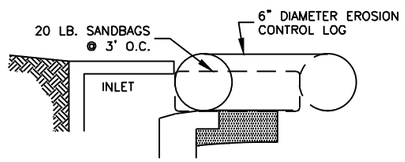


PLAN

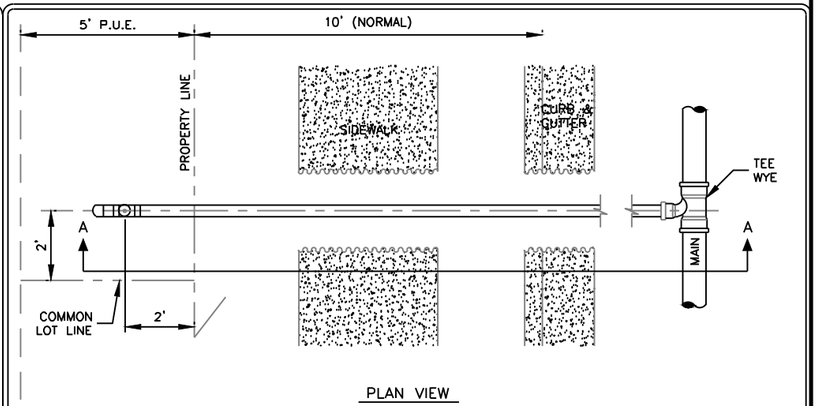


CROSS SECTION

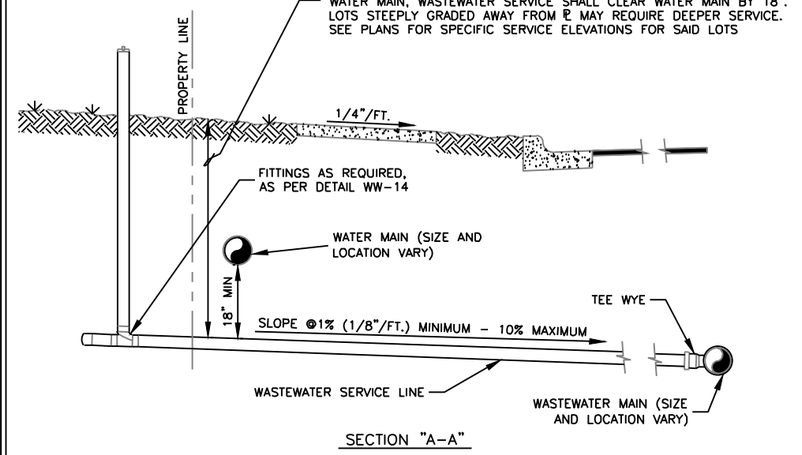
NOTES:

1. EROSION CONTROL LOG CONTAINMENT MESH SHALL BE 100% BIODEGRADABLE, PHOTODEGRADABLE OR RECYCLABLE; AND FILL MATERIAL SHALL CONSIST OF MULCH, ASPEN EXCELSIOR FIBERS, CHIPPED SITE VEGETATION, COCONUT FIBERS, 100% RECYCLABLE FIBERS, OR ANY OTHER ACCEPTABLE MATERIAL EXCLUDING STRAW AND HAY.
2. DAILY INSPECTION SHALL BE MADE BY THE CONTRACTOR AND SILT ACCUMULATION MUST BE REMOVED WHEN DEPTH REACHES 2".
3. CONTRACTOR SHALL MONITOR THE PERFORMANCE OF INLET PROTECTION DURING EACH RAINFALL EVENT AND IMMEDIATELY REMOVE THE INLET PROTECTIONS IF THE STORM WATER BEGINS TO OVERTOP THE CURB.
4. INLET PROTECTIONS SHALL BE REMOVED AS SOON AS THE SOURCE OF SEDIMENT IS STABILIZED.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO: EC-13
APPROVED 03-25-11 DATE	CURB INLET PROTECTION WITH EROSION CONTROL LOG DETAIL	ROUND ROCK, TEXAS PLYMOUTH, THOMAS, PROPERTY
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		



PLAN VIEW



SECTION "A-A"

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS	CITY OF ROUND ROCK	DRAWING NO: WW-12
APPROVED 04-01-10 DATE	WASTEWATER SERVICE DETAIL	ROUND ROCK, TEXAS PLYMOUTH, THOMAS, PROPERTY
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)		

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NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:19:07 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS · MICHAEL CARY NEWMAN · 64936 · REGISTERED · PROFESSIONAL · ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

CITY OF ROUND ROCK STANDARD DETAILS

SHEET NO. D-06 OF 07 SHEETS

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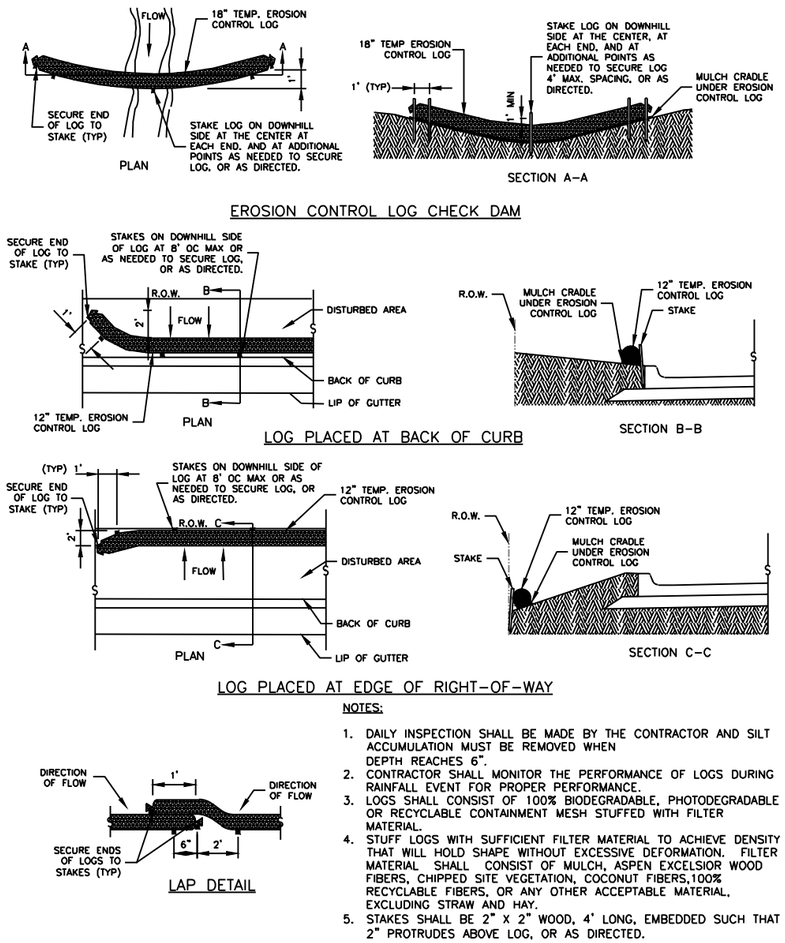


NOTES:

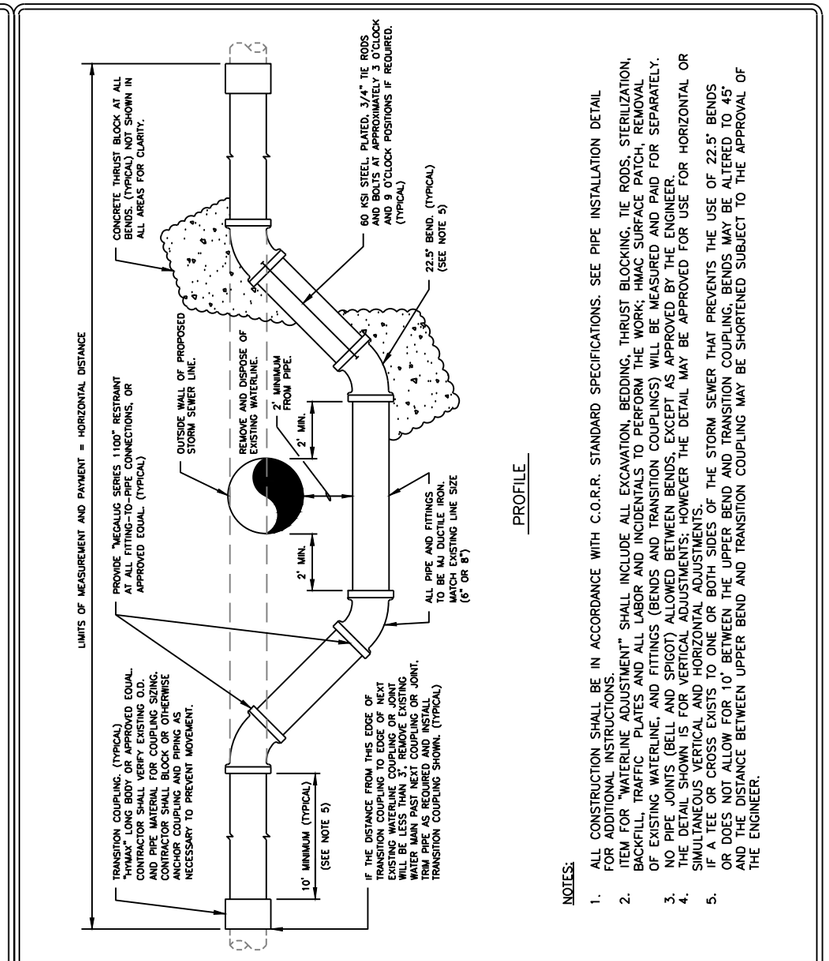
1. DAILY INSPECTION SHALL BE MADE BY THE CONTRACTOR AND SILT ACCUMULATION MUST BE REMOVED WHEN DEPTH REACHES 6".
2. CONTRACTOR SHALL MONITOR THE PERFORMANCE OF LOGS DURING RAINFALL EVENT FOR PROPER PERFORMANCE.
3. LOGS SHALL CONSIST OF 100% BIODEGRADABLE, PHOTODEGRADABLE OR RECYCLABLE CONTAINMENT MESH STUFFED WITH FILTER MATERIAL.
4. STUFF LOGS WITH SUFFICIENT FILTER MATERIAL TO ACHIEVE DENSITY THAT WILL HOLD SHAPE WITHOUT EXCESSIVE DEFORMATION. FILTER MATERIAL SHALL CONSIST OF MULCH, ASPEN EXCELSIOR WOOD FIBERS, CHIPPED SITE VEGETATION, COCONUT FIBERS,100% RECYCLABLE FIBERS, OR ANY OTHER ACCEPTABLE MATERIAL, EXCLUDING STRAW AND HAY.
5. STAKES SHALL BE 2" X 2" WOOD, 4' LONG, EMBEDDED SUCH THAT 2" PROTRUDES ABOVE LOG, OR AS DIRECTED.

RECORD SIGNED COPY ON FILE AT PUBLIC WORKS
APPROVED
03-25-11
DATE
THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)

CITY OF ROUND ROCK

EROSION CONTROL LOG DETAIL

DRAWING NO: EC-17



NOTES:

1. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH C.O.R.R. STANDARD SPECIFICATIONS. SEE PIPE INSTALLATION DETAIL FOR ADDITIONAL INSTRUCTIONS.
2. ITEM FOR "WATERLINE ADJUSTMENT" SHALL INCLUDE ALL EXCAVATION, BEDDING, THRUST BLOCKING, TIE RODS, STERILIZATION, BACKFILL, TRAFFIC PLATES AND ALL LABOR AND INCIDENTALS TO PERFORM THE WORK; HMAC SURFACE PATCH, REMOVAL OF EXISTING WATERLINE, AND FITTINGS (BENDS AND TRANSITION COUPLINGS) WILL BE MEASURED AND PAID FOR SEPARATELY.
3. NO PIPE JOINTS (BELL AND SPIGOT) ALLOWED BETWEEN BENDS, EXCEPT AS APPROVED BY THE ENGINEER.
4. THE DETAIL SHOWN IS FOR VERTICAL AND HORIZONTAL ADJUSTMENTS. HOWEVER THE DETAIL MAY BE APPROVED FOR USE FOR HORIZONTAL OR SIMULTANEOUS VERTICAL AND HORIZONTAL ADJUSTMENTS TO ONE OR BOTH SIDES OF THE STORM SEWER THAT PREVENTS THE USE OF 22.5° BENDS IF A TEE OR CROSS EXISTS TO ONE OR BOTH SIDES OF THE STORM SEWER OR DOES NOT ALLOW FOR 10' BETWEEN BENDS. IF THE DISTANCE BETWEEN UPPER BEND AND TRANSITION COUPLING BENDS MAY BE ALTERED TO 45° AND THE DISTANCE BETWEEN UPPER BEND AND TRANSITION COUPLING MAY BE SHORTENED SUBJECT TO THE APPROVAL OF THE ENGINEER.
5.

THE ARCHITECT/ENGINEER ASSUMES RESPONSIBILITY FOR THE APPROPRIATE USE OF THIS DETAIL. (NOT TO SCALE)

CITY OF ROUND ROCK

6" OR 8"
WATERLINE ADJUSTMENT DETAIL
N.T.S.

AC Pipe Removal and Disposal

The following notes are guidelines provided for any Bid Item related to the removal and disposal of asbestos cement (AC) pipe; but shall not be considered as specifications for removal:

The removal and/or disturbance of AC pipe and other asbestos containing materials (ACM) related to the AC pipe removal is governed by the National Emissions Standards for Hazardous Air Pollutants (NESHAP) and the Occupational Safety and Health Administration (OSHA). NESHAP regulations apply to projects when at least 260 linear feet or 35 cubic feet or 160 square feet of AC material becomes or will become "regulated asbestos containing material" or RACM.

It is the intent of this project that the quantity of AC pipe removal and disposal remain below the 260 linear foot threshold and that AC pipe be removed at the nearest joint and intact so that the quantity and character of disturbance to ACM is below the threshold amount of RACM.

Removal, Handling, and Disposal Notes:

- The Contractor shall remove, seal, transport and dispose of all impacted ACM in compliance with all current Federal, State, and local regulations, laws, ordinances, rules, standards and regulatory agency requirements. Asbestos disturbance and/or removal activities shall be conducted by properly trained, accredited, and licensed personnel using proper personal protective equipment. Any required notifications and payment of fees shall be the responsibility of the Contractor.
- Removal and handling shall be accomplished by an abatement contractor accredited with the Texas Department of Health (TDH) and the Contractor shall remove ACM with methods approved by the TDH, EPA and OSHA, as applicable.
- The Contractor has sole and primary responsibility for the "means and/or methods" of the work, for the inspection of the work at all stages, and for the supervision of the performance of the work.
- The Contractor shall notify the City at least 72 hours prior to beginning removal and/or disturbance of AC pipe.
- No overnight or unsecured on-site storage of removed AC pipe shall be permitted.
- The Contractor shall be responsible for the transport and disposal of ACM to a duly licensed landfill facility permitted to accept asbestos containing waste material (ACWM). The Contractor shall be responsible for obtaining and coordinating waste disposal authorization. Waste manifests shall be used to transport the AC pipe from the project site to the final landfill disposal site. Transport shall be performed by a registered transporter. The Contractor shall sign manifests as the generator of the AC pipe and shall provide copies to the city prior to request for final payment for the related Bid Item.

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:19:15 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS · MICHAEL CARY NEWMAN · 64936 · REGISTERED · PROFESSIONAL · ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

CITY OF ROUND ROCK STANDARD DETAILS

SHEET NO. D-07 OF 07 SHEETS

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DATE:
FILE:

BARRICADE AND CONSTRUCTION (BC) STANDARD SHEETS GENERAL NOTES:

1. The Barricade and Construction Standard Sheets (BC sheets) are intended to show typical examples for placement of temporary traffic control devices, construction pavement markings, and typical work zone signs. The information contained in these sheets meet or exceed the requirements shown in the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).

2. The development and design of the Traffic Control Plan (TCP)is the responsibility of the Engineer.

3. The Contractor may propose changes to the TCP that are signed and sealed by a licensed professional engineer for approval. The Engineer may develop, sign and seal Contractor proposed changes.

4. The Contractor is responsible for installing and maintaining the traffic control devices as shown in the plans. The Contractor may not move or change the approximate location of any device without the approval of the Engineer.

5. Geometric design of lane shifts and detours should, when possible, meet the applicable design criteria contained in manuals such as the American Association of State Highway and Transportation Officials (AASHTO), "A Policy on Geometric Design of Highways and Streets", the TxDOT "Roadway Design Manual" or engineering judgment.

6. When projects abut, the Engineer(s) may omit the END ROAD WORK, TRAFFIC FINES DOUBLE, and other advance warning signs if the signing would be redundant and the work areas appear continuous to the motorists. If the adjacent project is completed first, the Contractor shall erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The BEGIN ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.

7. The Engineer may require duplicate warning signs on the median side of divided highways where median width will permit and traffic volumes justify the signing.

8. All signs shall be constructed in accordance with the details found in the "Standard Highway Sign Designs for Texas," latest edition. Sign details not shown in this manual shall be shown in the plans or the Engineer shall provide a detail to the Contractor before the sign is manufactured.

9. The temporary traffic control devices shown in the illustrations of the BC sheets are examples. As necessary, the Engineer will determine the most appropriate traffic control devices to be used.

10. As shown on BC(2), the OBEY WARNING SIGNS STATE LAW sign and the WORK ZONE TRAFFIC FINES DOUBLE sign with plaque shall be erected in advance of the CSJ limits. However, the TRAFFIC FINES DOUBLE sign will not be required on projects consisting solely of mobile operation work, such as striping or milling edgeline rumble strips. The BEGIN ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the CSJ limits.

11. Except for devices required by Note 10, traffic control devices should be in place only while work is actually in progress or a definite need exists.

12. The Engineer has the final decision on the location of all traffic control devices.

13. Inactive equipment and work vehicles, including workers' private vehicles must be parked away from travel lanes. They should be as close to the right-of-way line as possible, or located behind a barrier or guardrail, or as approved by the Engineer.

WORKER SAFETY APPAREL NOTES:

1. Workers on foot who are exposed to traffic or to construction equipment within the right-of-way shall wear high-visibility safety apparel meeting the requirements of ISEA "American National Standard for High-Visibility Apparel" labeled as ANSI 107-2004 standard performance for Class 2 or 3 risk exposure. Class 3 garments should be considered for high traffic volume work areas or night time work.

Only pre-qualified products shall be used. The "Compliant Work Zone Traffic Control Devices List" (CWZTCD) describes pre-qualified products and their sources and may be found on-line at the web address given below or by contacting:

Texas Department of Transportation
Traffic Operations Division - TE
Phone (512) 416-3118

THE DOCUMENTS BELOW CAN BE FOUND ON-LINE AT http://www.txdot.gov
COMPLIANT WORK ZONE TRAFFIC CONTROL DEVICES LIST (CWZTCD)
DEPARTMENTAL MATERIAL SPECIFICATIONS (DMS)
MATERIAL PRODUCER LIST (MPL)
ROADWAY DESIGN MANUAL - SEE "MANUALS (ONLINE MANUALS)"
STANDARD HIGHWAY SIGN DESIGNS FOR TEXAS (SHSD)
TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (TMUTCD)
TRAFFIC ENGINEERING STANDARD SHEETS

SHEET 1 OF 12

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION GENERAL NOTES AND REQUIREMENTS

BC(1)-13

FILE: bc-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
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REVISIONS				
4-03 5-10	DIST	COUNTY		SHEET NO.
9-07 7-13				

95

NO.	DATE	REVISION	BY

This document is realeased for the purpose of interim review under the authority of Michael C. Newman, P.E. 64936 on Jan 20, 2015 it is not to be used for construction, bidding or permit purposes.

Plot Date: 4/16/2015 4:19:25 PM
Plotted By: BRICHARDSON

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DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS · MICHAEL CARY NEWMAN · 64936 · REGISTERED · PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
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ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

TXDOT BARRICADE STANDARDS

SHEET NO.
TX-01 OF
07 SHEETS

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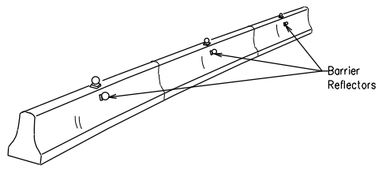
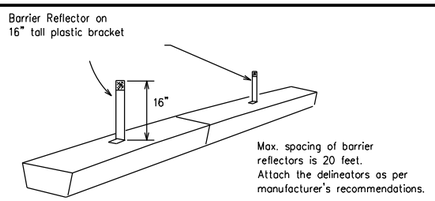
1. Barrier Reflectors shall be pre-qualified, and conform to the color and reflectivity requirements of DMS-8600. A list of prequalified Barrier Reflectors can be found at the Material Producer List web address shown on BC(1).
2. Color of Barrier Reflectors shall be as specified in the TMUTCD. The cost of the reflectors shall be considered subsidiary to Item 512.

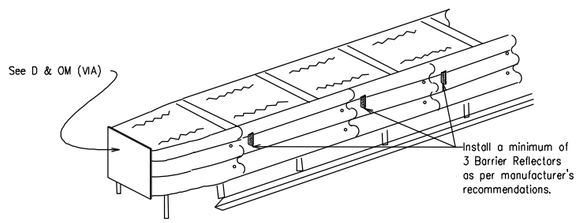


CONCRETE TRAFFIC BARRIER (CTB)

3. Where traffic is on one side of the CTB, two (2) Barrier Reflectors shall be mounted in approximately the midsection of each section of CTB. An alternate mounting location is uniformly spaced at one end of each CTB. This will allow for attachment of a barrier grapple without damaging the reflector. The Barrier Reflector mounted on the side of the CTB shall be located directly below the reflector mounted on top of the barrier, as shown in the detail above.
4. Where CTB separates two-way traffic, three barrier reflectors shall be mounted on each section of CTB. The reflector unit on top shall have two yellow reflective faces (Bi-Directional)while the reflectors on each side of the barrier shall have one yellow reflective face, as shown in the detail above.
5. When CTB separates traffic traveling in the same direction, no barrier reflectors will be required on top of the CTB.
6. Barrier Reflector units shall be yellow or white in color to match the edgeline being supplemented.
7. Maximum spacing of Barrier Reflectors is forty (40) feet.
8. Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as CTB delineation.
9. Attachment of Barrier Reflectors to CTB shall be per manufacturer's recommendations.
10. Missing or damaged Barrier Reflectors shall be replaced as directed by the Engineer.
11. Single slope barriers shall be delineated as shown on the above detail.



LOW PROFILE CONCRETE BARRIER (LPCB)

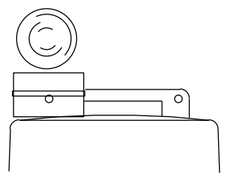


DELINEATION OF END TREATMENTS

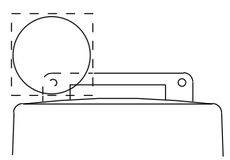
END TREATMENTS FOR CTB'S USED IN WORK ZONES

End treatments used on CTB's in work zones shall meet crashworthy standards as defined in the National Cooperative Highway Research Report 350. Refer to the CWZTCD List for approved end treatments and manufacturers.

BARRIER REFLECTORS FOR CONCRETE TRAFFIC BARRIER AND ATTENUATORS



Type C Warning Light or approved substitute mounted on a drum adjacent to the travel way.



Warning reflector may be round or square.Must have a yellow reflective surface of at least 30 square inches

WARNING LIGHTS

1. Warning lights shall meet the requirements of the TMUTCD.
2. Warning lights shall NOT be installed on barricades.
3. Type A-Low Intensity Flashing Warning Lights are commonly used with drums. They are intended to warn of or mark a potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "FL". The Type A Warning Lights shall not be used with signs manufactured with Type B or C Sheeting meeting the requirements of Departmental Material Specification DMS-8300.
4. Type-C and Type D 360 degree Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "SB".
5. The Engineer/Inspector or the plans shall specify the location and type of warning lights to be installed on the traffic control devices.
6. When required by the Engineer, the Contractor shall furnish a copy of the warning lights certification. The warning light manufacturer will certify the warning lights meet the requirements of the latest ITE Purchase Specifications for Flashing and Steady-Burn Warning Lights.
7. When used to delineate curves, Type-C and Type D Steady Burn Lights should only be placed on the outside of the curve, not the inside.
8. The location of warning lights and warning reflectors on drums shall be as shown elsewhere in the plans.

WARNING LIGHTS MOUNTED ON PLASTIC DRUMS

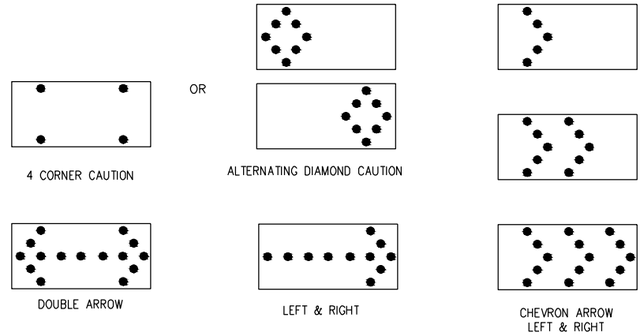
1. Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area.
2. Type A random flashing warning lights are not intended for delineation and shall not be used in a series.
3. A series of sequential flashing warning lights placed on channelizing devices to form a merging taper may be used for delineation. If used, the successive flashing of the sequential warning lights should occur from the beginning of the taper to the end of the merging taper in order to identify the desired vehicle path. The rate of flashing for each light shall be 65 flashes per minute, plus or minus 10 flashes.
4. Type C and D steady-burn warning lights are intended to be used in a series to delineate the edge of the travel lane on detours, on lane changes, on lane closures, and on other similar conditions.
5. Type A, Type C and Type D warning lights shall be installed at locations as detailed on other sheets in the plans.
6. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.
7. The maximum spacing for warning lights on drums should be identical to the channelizing device spacing.

WARNING REFLECTORS MOUNTED ON PLASTIC DRUMS AS A SUBSTITUTE FOR TYPE C (STEADY BURN) WARNING LIGHTS

1. A warning reflector or approved substitute may be mounted on a plastic drum as a substitute for a Type C, steady burn warning light at the discretion of the Contractor unless otherwise noted in the plans.
2. The warning reflector shall be yellow in color and shall be manufactured using a sign substrate approved for use with plastic drums listed on the CWZTCD.
3. The warning reflector shall have a minimum retroreflective surface area (one-side) of 30 square inches.
4. Round reflectors shall be fully reflectorized, including the area where attached to the drum.
5. Square substrates must have a minimum of 30 square inches of reflectorized sheeting. They do not have to be reflectorized where it attaches to the drum.
6. The side of the warning reflector facing approaching traffic shall have sheeting meeting the color and retroreflectivity requirements for DMS 8300-Type B or Type C.
7. When used near two-way traffic, both sides of the warning reflector shall be reflectorized.
8. The warning reflector should be mounted on the side of the handle nearest approaching traffic.
9. The maximum spacing for warning reflectors should be identical to the channelizing device spacing requirements.

Arrow Boards may be located behind channelizing devices in place for a shoulder taper or merging taper, otherwise they shall be delineated with four (4) channelizing devices placed perpendicular to traffic on the upstream side of traffic.

1. The Flashing Arrow Board should be used for all lane closures on multi-lane roadways, or slow moving maintenance or construction activities on the travel lanes.
2. Flashing Arrow Boards should not be used on two-lane, two-way roadways, detours, diversions or work on shoulders unless the "CAUTION" display (see detail below) is used.
3. The Engineer/Inspector shall choose all appropriate signs, barricades and/or other traffic control devices that should be used in conjunction with the Flashing Arrow Board.4. The Flashing Arrow Board should be able to display the following symbols:



5. The "CAUTION" display consists of four corner lamps flashing simultaneously, or the Alternating Diamond Caution mode as shown.
6. The straight line caution display is NOT ALLOWED.7. The Flashing Arrow Board shall be capable of minimum 50 percent dimming from rated lamp voltage.
   The flashing rate of the lamps shall not be less than 25 nor more than 40 flashes per minute.
8. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and equal intervals of 25 percent for each sequential phase of the flashing chevron.
9. The sequential arrow display is NOT ALLOWED.
10. The flashing arrow display is the TxDOT standard; however, the sequential Chevron display may be used during daylight operations.11. The Flashing Arrow Board shall be mounted on a vehicle, trailer or other suitable support.
12. A Flashing Arrow Board SHALL NOT BE USED to laterally shift traffic.
13. A full matrix PCMS may be used to simulate a Flashing Arrow Board provided it meets visibility, flash rate and dimming requirements on this sheet for the same size arrow.14. Minimum mounting height of trailer mounted Arrow Boards should be 7 feet from roadway to bottom of panel.

REQUIREMENTS			
TYPE	MINIMUM SIZE	MINIMUM NUMBER OF PANEL LAMPS	MINIMUM VISIBILITY DISTANCE
B	30 x 60	13	3/4 mile
C	48 x 96	15	1 mile

ATTENTION

Flashing Arrow Boards shall be equipped with automatic dimming devices.

WHEN NOT IN USE, REMOVE THE ARROW BOARD FROM THE RIGHT-OF-WAY OR PLACE THE ARROW BOARD BEHIND CONCRETE TRAFFIC BARRIER OR GUARDRAIL.

FLASHING ARROW BOARDS

SHEET 7 OF 12

TRUCK-MOUNTED ATTENUATORS

1. Truck-mounted attenuators (TMA) used on TxDOT facilities must meet the requirements outlined in the National Cooperative Highway Research Report No. 350 (NCHRP 350) or the Manual for Assessing Safety Hardware (MASH).
2. Refer to the CWZTCD for the requirements of Level 2 or Level 3 TMAs.
3. Refer to the CWZTCD for a list of approved TMAs.
4. TMAs are required on freeways unless otherwise noted in the plans.
5. A TMA should be used anytime that it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the work performance.
6. The only reason a TMA should not be required is when a work area is spread down the roadway and the work crew is an extended distance from the TMA.

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION ARROW PANEL, REFLECTORS, WARNING LIGHTS & ATTENUATOR

BC(7)-13

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NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:19:34 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS — MICHAEL CARY NEWMAN — 64936 — REGISTERED PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

TXDOT BARRICADE STANDARDS

SHEET NO.
TX-02 OF
07 SHEETS

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GENERAL NOTES

1. For long term stationary work zones on freeways, drums shall be used as the primary channelizing device.
2. For intermediate term stationary work zones on freeways, drums should be used as the primary channelizing device but may be replaced in tangent sections by vertical panels, or 42" two-piece cones. In tangent sections one-piece cones may be used with the approval of the Engineer but only if personnel are present on the project at all times to maintain the cones in proper position and location.
3. For short term stationary work zones on freeways, drums are the preferred channelizing device but may be replaced in tapers, transitions and tangent sections by vertical panels, two-piece cones or one-piece cones as approved by the Engineer.
4. Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD) and the "Compliant Work Zone Traffic Control Devices List" (CWZTCD).
5. Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects that would adversely affect their appearance or serviceability.
6. The Contractor shall have a maximum of 24 hours to replace any plastic drums identified for replacement by the Engineer/Inspector. The replacement device must be an approved device.

GENERAL DESIGN REQUIREMENTS

Pre-qualified plastic drums shall meet the following requirements:

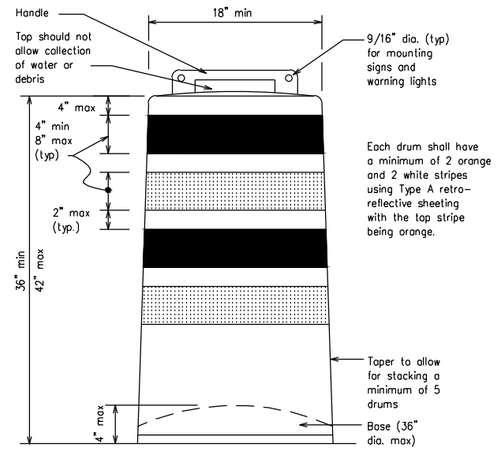
1. Plastic drums shall be a two-piece design; the "body" of the drum shall be the top portion and the "base" shall be the bottom.
2. The body and base shall lock together in such a manner that the body separates from the base when impacted by a vehicle traveling at a speed of 20 MPH or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles.
3. Plastic drums shall be constructed of lightweight flexible, and deformable materials. The Contractor shall NOT use metal drums or single piece plastic drums as channelization devices or sign supports.
4. Drums shall present a profile that is a minimum of 18 inches in width at the 36 inch height when viewed from any direction. The height of drum unit (body installed on base) shall be a minimum of 36 inches and a maximum of 42 inches.
5. The top of the drum shall have a built-in handle for easy pickup and shall be designed to drain water and not collect debris. The handle shall have a minimum of two widely spaced 9/16 inch diameter holes to allow attachment of a warning light, warning reflector unit or approved compliant sign.
6. The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches nor greater than 8 inches in width. Any non-reflectorized space between any two adjacent stripes shall not exceed 2 inches in width.
7. Bases shall have a maximum width of 36 inches, a maximum height of 4 inches, and a minimum of two footholds of sufficient size to allow base to be held down while separating the drum body from the base.
8. Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.
9. Drum body shall have a maximum unballasted weight of 11 lbs.
10. Drum and base shall be marked with manufacturer's name and model number.

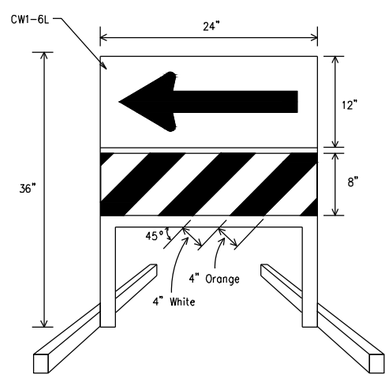
RETROREFLECTIVE SHEETING

1. The stripes used on drums shall be constructed of sheeting meeting the color and retroreflectivity requirements of Departmental Materials Specification DMS-8300, "Sign Face Materials." Type A reflective sheeting shall be supplied unless otherwise specified in the plans.
2. The sheeting shall be suitable for use on and shall adhere to the drum surface such that, upon vehicular impact, the sheeting shall remain adhered in-place and exhibit no delaminating, cracking, or loss of retroreflectivity other than that loss due to abrasion of the sheeting surface.

BALLAST

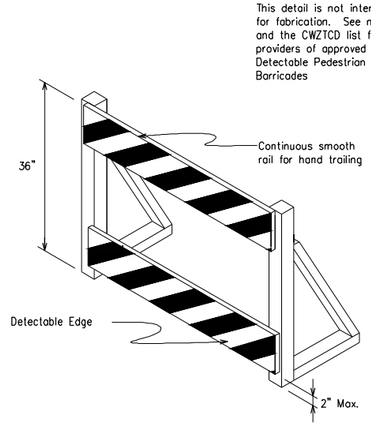
1. Unballasted bases shall be large enough to hold up to 50 lbs. of sand. This base, when filled with the ballast material, should weigh between 35 lbs (minimum) and 50 lbs (maximum). The ballast may be sand in one to three sandbags separate from the base, sand in a sand-filled plastic base, or other ballasting devices as approved by the Engineer. Stacking of sandbags will be allowed, however height of sandbags above pavement surface may not exceed 12 inches.
2. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs. Built-in ballast can be constructed of an integral crumb rubber base or a solid rubber base.
3. Recycled truck tire sidewalls may be used for ballast on drums approved for this type of ballast on the CWZTCD list.
4. The ballast shall not be heavy objects, water, or any material that would become hazardous to motorists, pedestrians, or workers when the drum is struck by a vehicle.
5. When used in regions susceptible to freezing, drums shall have drainage holes in the bottoms so that water will not collect and freeze becoming a hazard when struck by a vehicle.
6. Ballast shall not be placed on top of drums.
7. Adhesives may be used to secure base of drums to pavement.





DIRECTION INDICATOR BARRICADE

1. The Direction Indicator Barricade may be used in tapers, transitions, and other areas where specific directional guidance to drivers is necessary.
2. If used, the Direction Indicator Barricade should be used in series to direct the driver through the transition and into the intended travel lane.
3. The Direction Indicator Barricade shall consist of One-Direction Large Arrow (CW1-6) sign in the size shown with a black arrow on a background of Type B or $_{FL}$Type C Orange retroreflective sheeting above a rail with Type A retroreflective sheeting in alternating 4" white and orange stripes sloping downward at an angle of 45 degrees in the direction road users are to pass. Sheeting types shall be as per DMS 8300.
4. Double arrows on the Direction Indicator Barricade will not be allowed.
5. Approved manufacturers are shown on the CWZTCD List. Ballast shall be as approved by the manufacturers instructions.

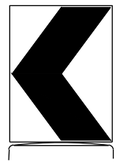


DETECTABLE PEDESTRIAN BARRICADES

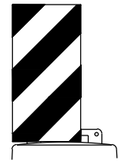
1. When existing pedestrian facilities are disrupted, closed, or relocated in a TTC zone, the temporary facilities shall be detectable and include accessibility features consistent with the features present in the existing pedestrian facility.
2. Where pedestrians with visual disabilities normally use the closed sidewalk, a device that is detectable by a person with a visual disability traveling with the aid of a long cane shall be placed across the full width of the closed sidewalk..3.

Detectable pedestrian barricades similar to the one pictured above, longitudinal channelizing devices, some concrete barriers, and wood or chain link fencing with a continuous detectable edging can satisfactorily delineate a pedestrian path.4. Tape, rope, or plastic chain strung between devices are not detectable, do not comply with the design standards in the "Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG)" and should not be used as a control for pedestrian movements.5. Warning lights shall not be attached to detectable pedestrian barricades.

6. Detectable pedestrian barricades may use 8" nominal barricade rails as shown on BC(10) provided that the top rail provides a smooth continuous rail suitable for hand trailing with no splinters, burrs, or sharp edges.



18" x 24" Sign
(Maximum Sign Dimension)
Chevron CW1-8, Opposing Traffic Lane Divider, Driveway sign D70a, Keep Right R4 series or other signs as approved by Engineer



12" x 24"
Vertical Panel
mount with diagonals sloping down towards travel way

Plywood, Aluminum or Metal sign substrates shall NOT be used on plastic drums

SIGNS, CHEVRONS, AND VERTICAL PANELS MOUNTED ON PLASTIC DRUMS

1. Signs used on plastic drums shall be manufactured using substrates listed on the CWZTCD.
2. Chevrons and other work zone signs with an orange background shall be manufactured with Type B or Type C Orange$_{FL}$ sheeting meeting the color and retroreflectivity requirements of DMS-8300, "Sign Face Material," unless otherwise specified in the plans.
3. Vertical Panels shall be manufactured with orange and white sheeting meeting the requirements of DMS-8300 Type A Diagonal stripes on Vertical Panels shall slope down toward the intended traveled lane.
4. Other sign messages (text or symbolic) may be used as approved by the Engineer. Sign dimensions shall not exceed 18 inches in width or 24 inches in height, except for the R9 series signs discussed in note 8 below.
5. Signs shall be installed using a 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection.
6. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 inch beyond nuts.
7. Chevrons may be placed on drums on the outside of curves, on merging tapers or on shifting tapers. When used in these locations they may be placed on every drum or spaced not more than on every third drum. A minimum of three (3) should be used at each location called for in the plans.
8. R9-9, R9-10, R9-11 and R9-11a Sidewalk Closed signs which are 24 inches wide may be mounted on plastic drums, with approval of the Engineer.

SHEET 8 OF 12

Texas Department of Transportation | *Traffic Operations Division Standard*

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(8)-13

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FILE: P:\Round Rock\2014\14-xxx Dove Springs\CAD\Plans\working plan set\DRAINAGE\STANDARDS\TX-03.dwg LAST SAVED: 2/17/2015 5:51:34 PM LAYOUT: TxDOT BARRICADE STANDARDS

This document is realeased for the purpose of interim review under the authority of Michael C. Newman, P.E. 64936 on Jan 20, 2015 it is not to be used for construction, bidding or permit purposes.

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:19:44 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS · MICHAEL CARY NEWMAN · 64936 · REGISTERED · PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

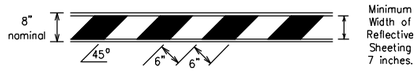
TXDOT BARRICADE STANDARDS

SHEET NO.
TX-03 OF
07 SHEETS

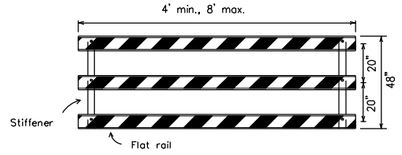
TYPE 3 BARRICADES

1. Refer to the Compliant Work Zone Traffic Control Devices List (CWZTCD) for details of the Type 3 Barricades and a list of all materials used in the construction of Type 3 Barricades.
2. Type 3 Barricades shall be used at each end of construction projects closed to all traffic.
3. Barricades extending across a roadway should have stripes that slope downward in the direction toward which traffic must turn in detouring. When both right and left turns are provided, the chevron striping may slope downward in both directions from the center of the barricade. Where no turns are provided at a closed road striping should slope downward in both directions toward the center of roadway.
4. Striping of rails, for the right side of the roadway, should slope downward to the left. For the left side of the roadway, striping should slope downward to the right.
5. Identification markings may be shown only on the back of the barricade rails. The maximum height of letters and/or company logos used for identification shall be 1".
6. Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided.
7. Warning lights shall NOT be installed on barricades.
8. Where barricades require the use of weights to keep from turning over, the use of sandbags with dry, cohesionless sand is recommended. The sandbags will be tied shut to keep the sand from spilling and to maintain a constant weight. Sand bags shall not be stacked in a manner that covers any portion of a barricade rails reflective sheeting. Rock, concrete, iron, steel or other solid objects will NOT be permitted. Sandbags should weigh a minimum of 35 lbs and a maximum of 50 lbs. Sandbags shall be made of a durable material that tears upon vehicular impact. Rubber (such as tire inner tubes) shall not be used for sandbags. Sandbags shall only be placed along or upon the base supports of the device and shall not be suspended above ground level or hung with rope, wire, chains or other fasteners.
9. Sheeting for barricades shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300 unless otherwise noted.

Barricades shall NOT be used as a sign support.



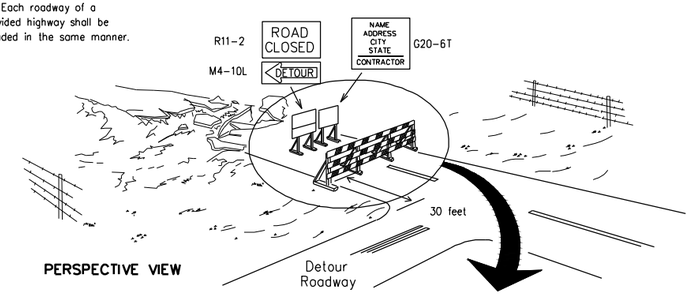
TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



Stiffener may be inside or outside of support, but no more than 2 stiffeners shall be allowed on one barricade.

TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES

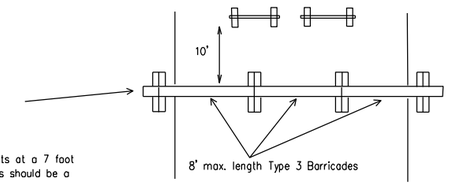
Each roadway of a divided highway shall be barricaded in the same manner.



PERSPECTIVE VIEW

The three rails on Type 3 barricades shall be reflectorized orange and reflective white stripes on one side facing one-way traffic and both sides for two-way traffic.

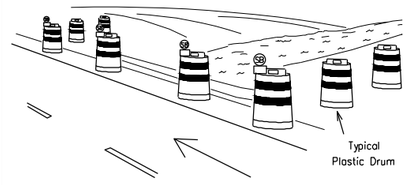
Barricade striping should slant downward in the direction of detour.



PLAN VIEW

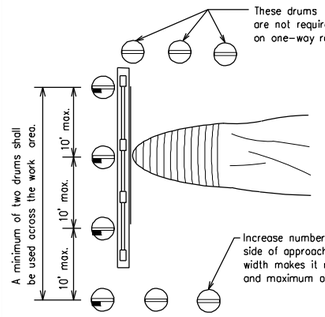
1. Signs should be mounted on independent supports at a 7 foot mounting height in center of roadway. The signs should be a minimum of 10 feet behind Type 3 Barricades.
2. Advance signing shall be as specified elsewhere in the plans.

TYPE 3 BARRICADE (POST AND SKID) TYPICAL APPLICATION



PERSPECTIVE VIEW

1. Where positive redirectional capability is provided, drums may be omitted.
2. Plastic construction fencing may be used with drums for safety as required in the plans.
3. Vertical Panels on flexible support may be substituted for drums when the shoulder width is less than 4 feet.
4. When the shoulder width is greater than 12 feet, steady-burn lights may be omitted if drums are used.
5. Drums must extend the length of the culvert widening.



LEGEND	
	Plastic drum
	Plastic drum with steady burn light or yellow warning reflector
SB	Steady burn warning light or yellow warning reflector

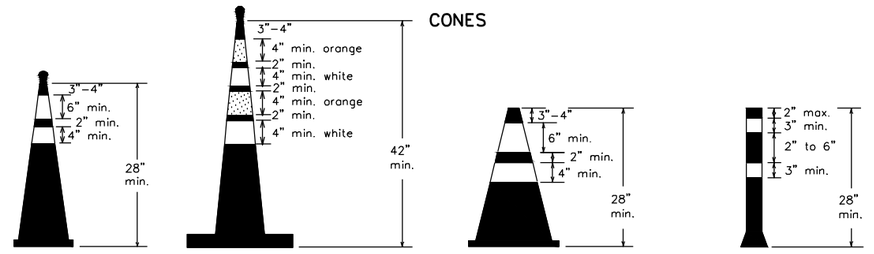
PLAN VIEW

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

TRAFFIC CONTROL FOR MATERIAL STOCKPILES

DATE:
FILE:

CONES

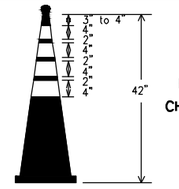


28" Cones shall have a minimum weight of 9 1/2 lbs.

42" 2-piece cones shall have a minimum weight of 30 lbs. including base.

1. Traffic cones and tubular markers shall be predominantly orange, and meet the height and weight requirements shown above.
2. One-piece cones have the body and base of the cone molded in one consolidated unit. Two-piece cones have a cone shaped body and a separate rubber base, or ballast, that is added to keep the device upright and in place.
3. Two-piece cones may have a handle or loop extending up to 8" above the minimum height shown, in order to aid in retrieving the device.
4. Cones or tubular markers used at night shall have white or white and orange reflective bands as shown above. The reflective bands shall have a smooth, sealed outer surface and meet the requirements of Departmental Material Specification DMS-8300 Type A.
5. 28" cones and tubular markers are generally suitable for short duration and short-term stationary work as defined on BC(4). These should not be used for intermediate-term or long-term stationary work unless personnel is on-site to maintain them in their proper upright position.
6. 42" two-piece cones, vertical panels or drums are suitable for all work zone durations.
7. Cones or tubular markers used on each project should be of the same size and shape.

THIS DEVICE SHALL NOT BE USED ON PROJECTS LET AFTER MARCH 2014.



EDGELINE CHANNELIZER

1. This device is intended only for use in place of a vertical panel to channelize traffic by indicating the edge of the travel lane. It is not intended to be used in transitions or tapers.
2. This device shall not be used to separate lanes of traffic (opposing or otherwise) or warn of objects.
3. This device is based on a 42 inch, two-piece cone with an alternate striping pattern: four 4 inch retroreflective bands, with an approximate 2 inch gap between bands. The color of the band should correspond to the color of the edgeline (yellow for left edgeline, white for right edgeline) for which the device is substituted or for which it supplements. The reflectorized bands shall be retroreflective Type A conforming to Departmental Material Specification DMS-8300, unless otherwise noted.
4. The base must weigh a minimum of 30 lbs.

SHEET 10 OF 12

Texas Department of Transportation — Traffic Operations Division Standard

BARRICADE AND CONSTRUCTION CHANNELIZING DEVICES

BC(10)-13

FILE: bc-13.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT November 2002	CONT	SECT	JOB	HIGHWAY
REVISIONS 9-07 7-13	DIST	COUNTY		SHEET NO.

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FILE: P:\Round Rock\2014\14-xxx Dove Springs\CAD\Plans\working plan set\DRAINAGE\STANDARDS\TX-04.dwg LAST SAVED: 2/17/2015 5:50:34 PM LAYOUT: TxDOT BARRICADE STANDARDS

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:19:54 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS — MICHAEL CARY NEWMAN — 64936 — REGISTERED — PROFESSIONAL ENGINEER

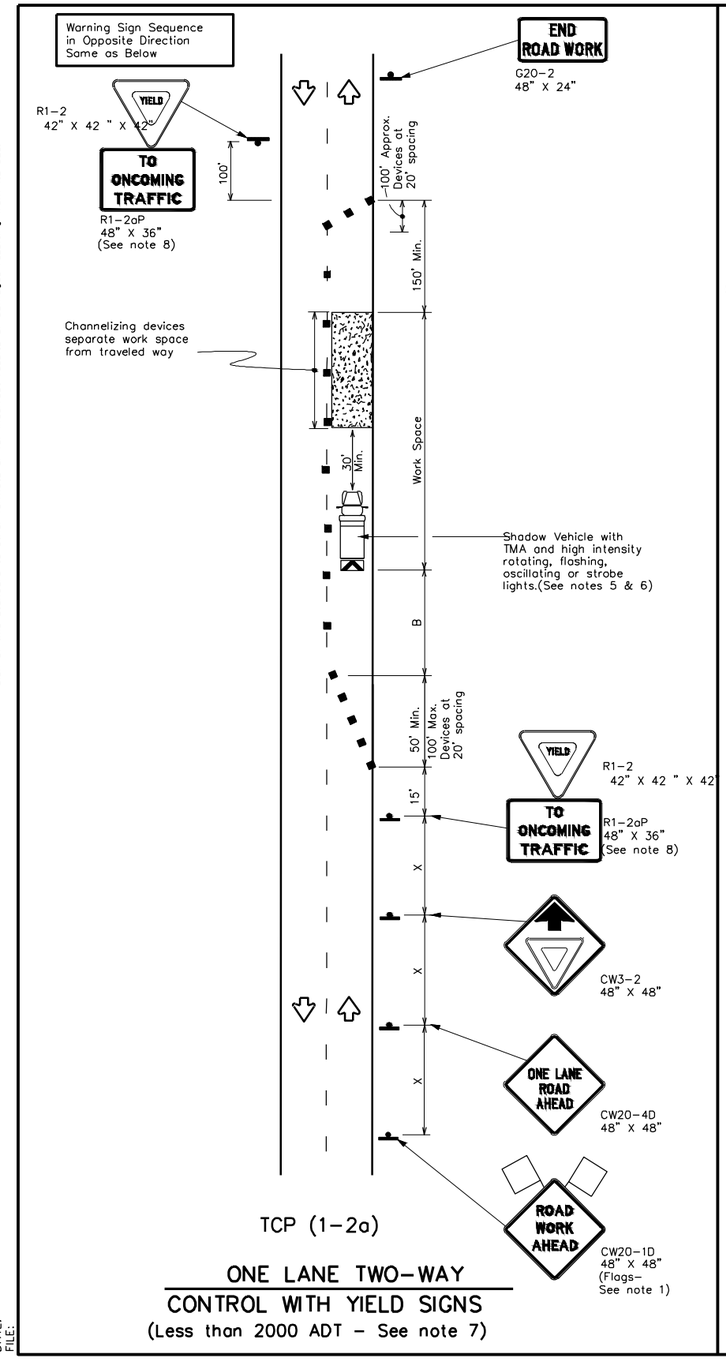
KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

TXDOT BARRICADE STANDARDS

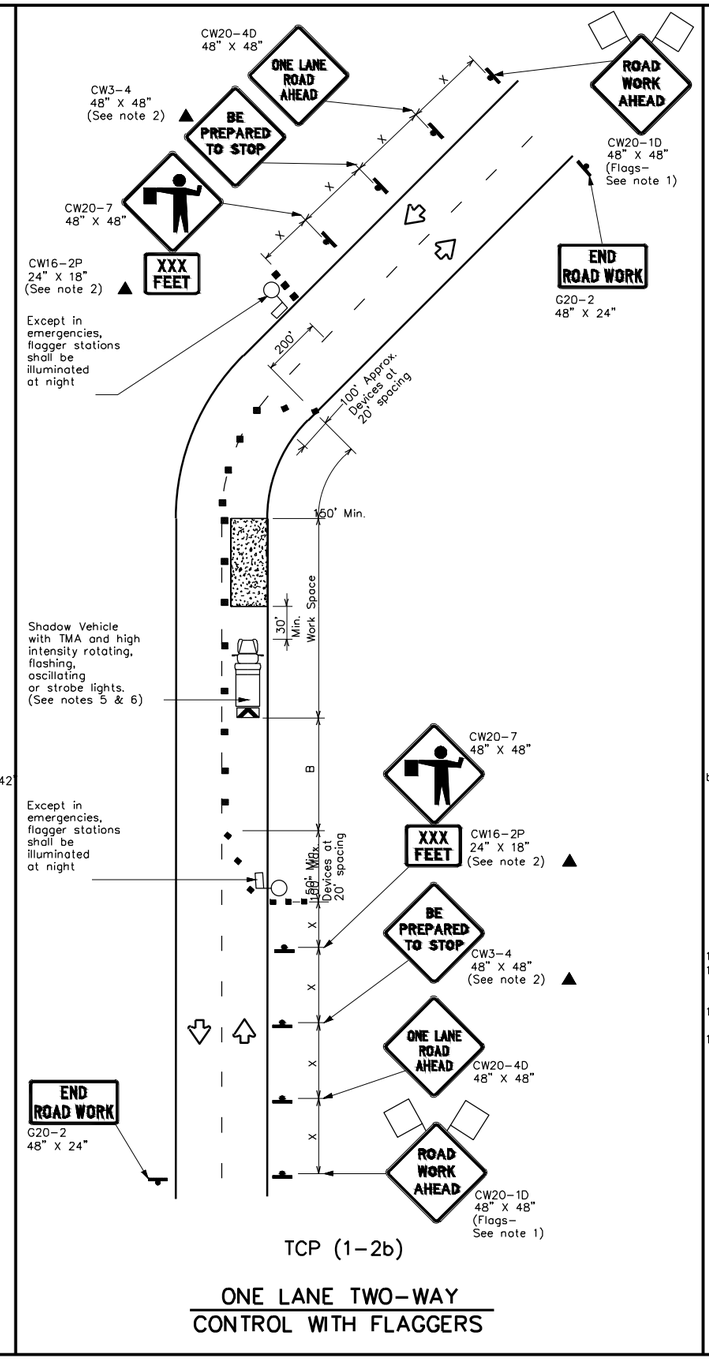
SHEET NO. TX-04 OF 07 SHEETS

DATE:
FILE:



TCP (1-2a)

ONE LANE TWO-WAY
CONTROL WITH YIELD SIGNS
(Less than 2000 ADT - See note 7)



TCP (1-2b)

ONE LANE TWO-WAY
CONTROL WITH FLAGGERS

LEGEND

	Type 3 Barricade		Channelizing Devices
	Heavy Work Vehicle		Truck Mounted Attenuator (TMA)
	Trailer Mounted Flashing Arrow Board	M	Portable Changeable Message Sign (PCMS)
	Sign		Traffic Flow
	Flag		Flagger

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Channelizing Devices On a Taper	On a Tangent	Minimum Sign Spacing "X" Distance	Suggested Longitudinal Buffer Space "B"	Stopping Sight Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'	120'	90'	200'
35		205'	225'	245'	35'	70'	160'	120'	250'
40		265'	295'	320'	40'	80'	240'	155'	305'
45	L=WS	450'	495'	540'	45'	90'	320'	195'	360'
50		500'	550'	600'	50'	100'	400'	240'	425'
55		550'	605'	660'	55'	110'	500'	295'	495'
60		600'	660'	720'	60'	120'	600'	350'	570'
65		650'	715'	780'	65'	130'	700'	410'	645'
70		700'	770'	840'	70'	140'	800'	475'	730'
75		750'	825'	900'	75'	150'	900'	540'	820'

* Conventional Roads Only

** Taper lengths have been rounded off.
L=Length of Taper(FT) W=Width of Offset(FT) S=Posted Speed(MPH)

TYPICAL USAGE				
MOBILE	SHORT DURATION	SHORT TERM STATIONARY	INTERMEDIATE TERM STATIONARY	LONG TERM STATIONARY
	✓	✓		

GENERAL NOTES

1. Flags attached to signs where shown are REQUIRED.
2. All traffic control devices illustrated are REQUIRED, except those denoted with the triangle symbol may be omitted when stated elsewhere in the plans, or for routine maintenance work, when approved by the Engineer.
3. The CW3-4 "BE PREPARED TO STOP" sign may be installed after the CW20-4D "ONE LANE ROAD AHEAD" sign, but proper sign spacing shall be maintained.
4. Sign spacing may be increased or an additional CW20-1D "ROAD WORK AHEAD" sign may be used if advance warning ahead of the flagger or R1-2 "YIELD" sign is less than 1500 feet.
5. A Shadow Vehicle with a TMA should be used anytime it can be positioned 30 to 100 feet in advance of the area of crew exposure without adversely affecting the performance or quality of the work. If workers are no longer present but road or work conditions require the traffic control to remain in place, Type 3 Barricades or other channelizing devices may be substituted for the Shadow Vehicle and TMA. 6. Additional Shadow Vehicles with TMAs may be positioned off the paved surface, next to those shown in order to protect wider work spaces.

TCP (1-2a)

7. R1-2 "YIELD" sign traffic control may be used on projects with approaches that have adequate sight distance. For projects in urban areas, work spaces should be no longer than one half city block. In rural areas on roadways with less than 2000 ADT, work spaces should be no longer than 400 feet.
8. R1-2 "YIELD" sign with R1-2aP "TO ONCOMING TRAFFIC" plaque shall be placed on a support at a 7 foot minimum mounting height.

TCP (1-2b)

9. Flaggers should use two-way radios or other methods of communication to control traffic.
10. Length of work space should be based on the ability of flaggers to communicate.
11. If the work space is located near a horizontal or vertical curve, the buffer distances should be increased in order to maintain adequate stopping sight distance to the flagger and a queue of stopped vehicles (see table above).
12. Channelizing devices on the center-line may be omitted when a pilot car is leading traffic and approved by the Engineer.
13. Flaggers should use 24" STOP/SLOW paddles to control traffic. Flags should be limited to emergency situations.

For construction or maintenance contract work, specific project requirements for shadow vehicles can be found in the project GENERAL NOTES for Item 502, Barricades, Signs and Traffic Handling.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC CONTROL PLAN ONE-LANE TWO-WAY TRAFFIC CONTROL

TCP(1-2)-12

DN: TXDOT	CK: TXDOT	DW: TXDOT	CK: TXDOT

REVISIONS	CONT	SECT	JOB	HIGHWAY
4-90 2-12				
2-94				
1-97	DIST	COUNTY		SHEET NO.
4-98				

152

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:20:03 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

STATE OF TEXAS
MICHAEL CARY NEWMAN
64936
REGISTERED
PROFESSIONAL ENGINEER

KPA

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

TXDOT TCP STANDARDS

SHEET NO.
TX-05 OF
07 SHEETS

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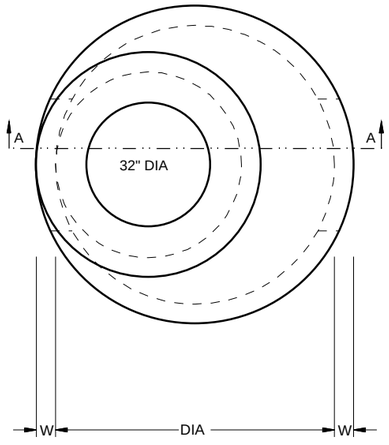
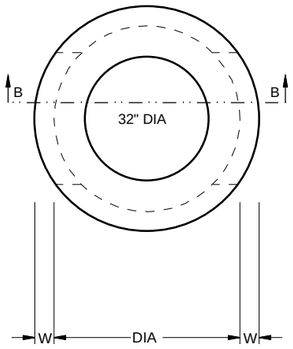


PLAN VIEW "A"



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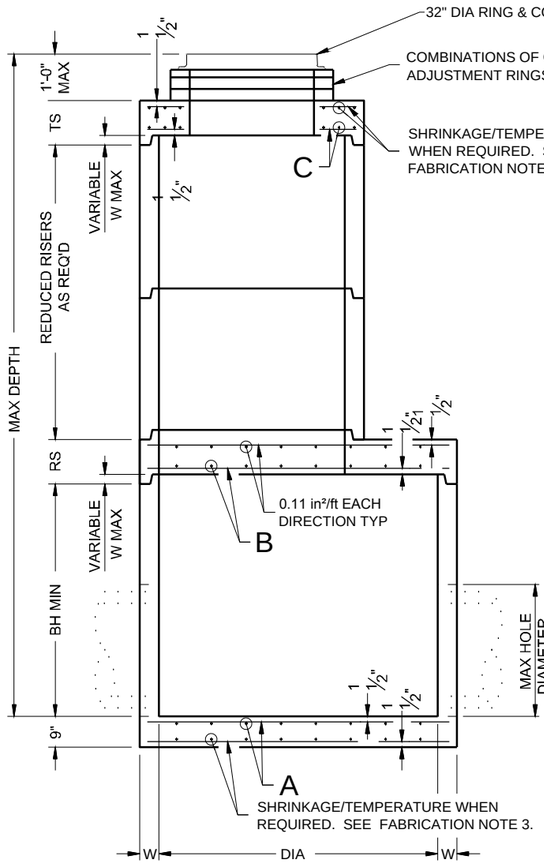
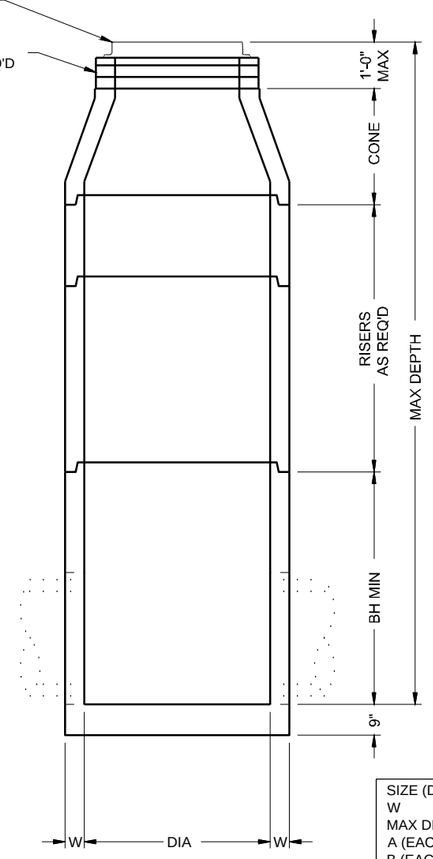


SECTION

ROUND REDUCED RISER OPTION
SHOWING FLAT SLAB TOP

A-A



SECTION B-B

ROUND RISER OPTION
SHOWING CONE

FABRICATION NOTES:

1. Provide Class "H" concrete in accordance with Item 421 and having a minimum compressive strength of 5,000 psi.
2. Provide Grade 60 reinforcing steel or equivalent area of WWR. Provide circumferential reinforcing steel in vertical walls of base, riser and cone in accordance with ASTM C478.
3. Slabs with a thickness of 8" or greater require shrinkage and temperature reinforcing steel. Provide steel area = 0.11 in²/ft each way.
4. Manufacture base and risers to nearest 3" increment.
5. Design tongue and groove joints for full closure on both shoulders. Minimum spigot depth is ¾".
6. Provide lifting devices in conformance with Manufacturer's recommendations.
7. Provide cast iron solid cover, unless noted otherwise elsewhere in the plans.

INSTALLATION NOTES:

1. Cones may be concentric or eccentric. Reduction cones are acceptable. See Manufacturer for cone dimensions.
2. Inverts (benching) to be provided by Contractor. Concrete or mortar used for invert is subsidiary to this item.
3. Seal tongue and groove joints with preformed or bulk mastic in conformance with Manufacturer's recommendations. Tongue and groove joints may be grouted no more than 1" between each section, or ½ the joint depth, whichever is greater.
4. Do not grout rubber gasket joints without Manufacturer's recommendation.
5. Initial installation of grade adjustment rings is limited to 1'-0" Max as shown.
6. Grade adjustment rings may be increased to 2'-0" Max when future construction affects final grade of structure. Make adjustments greater than 2'-0" with additional risers. Adjustments may be made up to the Max depth shown. Structure must be evaluated if Max depth will be exceeded.

GENERAL NOTES:

1. Designed according to ASTM C478.
2. Payment for manhole is per Item 465, "Junction Boxes, Manholes, and Inlets" by type and size.
3. Pipe OD + placement tolerance must be equal or less than Max hole diameter. For rigid pipe, placement tolerance is 4" Max, 2" Min. For flexible pipe, consult boot/seal manufacturer's specification for placement tolerance.

Cover dimensions are clear dimensions, unless noted otherwise.

SIZE (DIA)	48 in	60 in	72 in
W	5 in	6 in	7 in
MAX DEPTH	25 ft	25 ft	25 ft
A (EACH WAY)	0.22 in²/ft	0.30 in²/ft	0.45 in²/ft
B (EACH WAY)	N/A	0.37 in²/ft	0.62 in²/ft
C (EACH WAY)	0.24 in²/ft	0.46 in²/ft	0.46 in²/ft
BH MIN	12 in	36 in	36 in
TS	9 in	9 in	9 in
RS	N/A	9 in	12 in
REDUCED RISER DIA	N/A	48 in	48/60 in
MAX HOLE DIA	32 in	40 in	54 in

HL93 LOADING

Texas Department of Transportation — Bridge Division Standard

PRECAST ROUND MANHOLE

PRM

FILE: prestd02.dgn	DN: TxDOT	CK: TxDOT	DW: TxDOT	CK: TxDOT
©TxDOT January 2015	CONT	SECT	JOB	HIGHWAY
REVISIONS				
	DIST	COUNTY		SHEET NO.

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This document is realeased for the purpose of interim review under the authority of Michael C. Newman, P.E. 64936 on Jan 20, 2015 it is not to be used for construction, bidding or permit purposes.

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:20:08 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

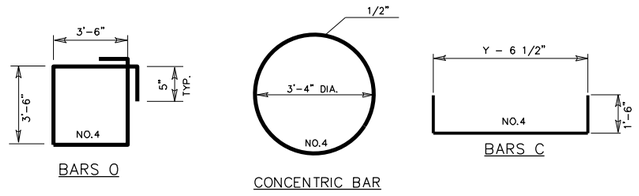
STATE OF TEXAS — MICHAEL CARY NEWMAN — 64936 — REGISTERED PROFESSIONAL ENGINEER

KASBERG, PATRICK & ASSOCIATES, LP
CONSULTING ENGINEERS
GEORGETOWN, TEXAS 78626

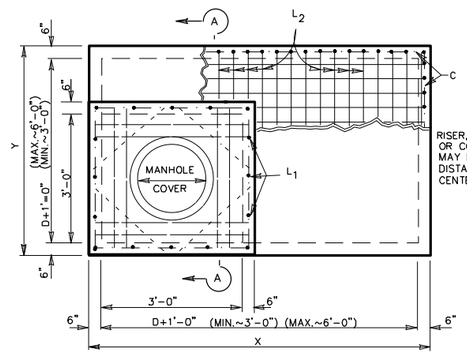
ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

TXDOT PRM STANDARD

SHEET NO.
TX-06 OF
07 SHEETS

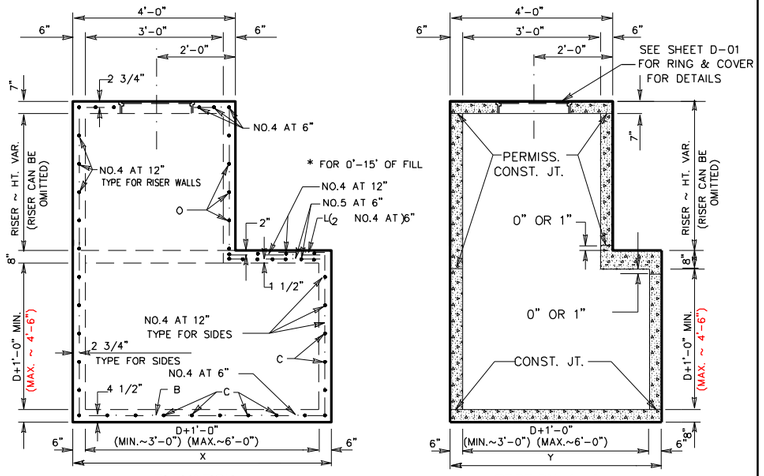


NOTE 1:
MAXIMUM 18" RISER HEIGHT BELOW COVER FRAME; CONCRETE GRADE RINGS MAY BE USED IN LIEU OF RISER. RISERS OVER 18" HEIGHT SHALL BE 4' DIA. X 32" DIA. CONCRETE MANHOLE CONCENTRIC CONE SECTIONS WITH 4' DIA. CONCRETE MANHOLE RISER SECTIONS BELOW AS REQUIRED. OPENING DIA. IN TOP OF BOX SHALL BE MIN. 32" IF RISER HEIGHT IS 18" OR LESS; OTHERWISE IT SHALL BE MIN. 48".

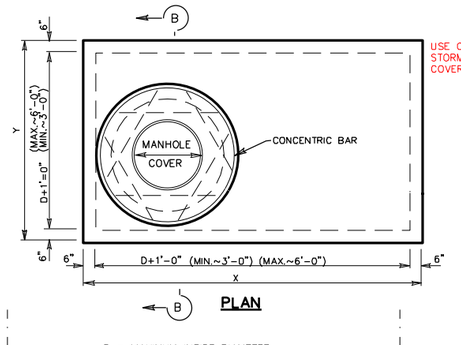


NOTE:
RISER, EITHER CAST-IN-PLACE OR CONCRETE PIPE. MAY BE LOCATED IN ANY CORNER. DISTANCE TO ROAD C_1 IS FROM CENTER OF STRUCTURE.

PLAN

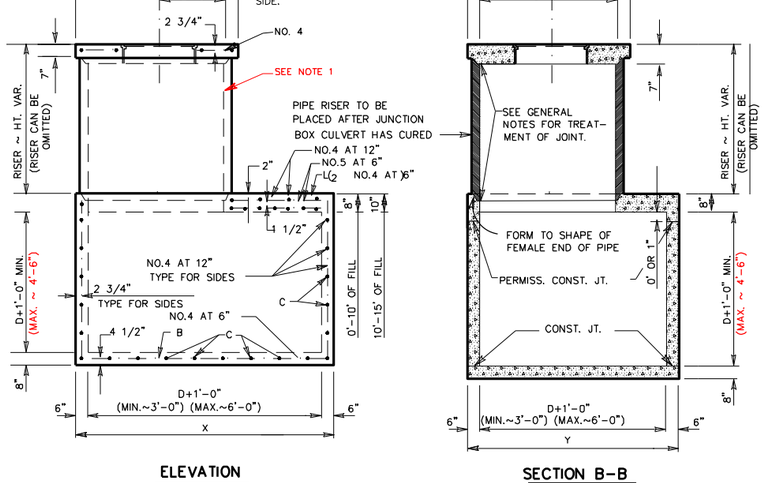


MANHOLE WITH CAST-IN-PLACE RISER



USE CITY OF ROUND ROCK STORM SEWER MANHOLE COVER AND FRAME

PLAN



D = MAXIMUM INSIDE DIAMETER OF ANY PIPE ENTERING THE SIDE SHOWN OR THE OPPOSITE SIDE.

OPTIONAL MANHOLE WITH PIPE RISER

N.T.S.

GENERAL NOTES

UNLESS OTHERWISE SHOWN IN THE PLANS. PAYMENT WILL BE MADE FOR EACH MANHOLE OF THE TYPE M.
EXPOSED EDGES SHALL BE CHAMFERED 3/4".
ALTERNATE DESIGN DRAWINGS BEARING THE SEAL OF A REGISTERED PROFESSIONAL ENGINEER WILL BE ACCEPTABLE FOR PRECAST CONSTRUCTION OF MANHOLES

SHOP DRAWINGS WILL NOT BE REQUIRED.

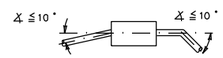
ALL MANHOLES LOCATED ON PAVED SURFACES WILL BE CONSTRUCTED WITH A COVER OF THE TYPE THAT WILL ENABLE IT TO BE BOLTED TO THE RING.

THE CONTRACTOR MAY WITH THE APPROVAL OF THE ENGINEER FURNISH MANHOLES OF EQUIVALENT STRUCTURAL DESIGN.

IN AREAS OF CONFLICT BETWEEN REINFORCING STEEL. BLOCK-OUTS PIPES, ANCHOR BOLTS OR OTHER REINFORCING STEEL. THE REINFORCEMENT SHALL BE BENT OR ADJUSTED TO CLEAR AS DIRECTED BY THE ENGINEER.

THE RISER MAY BE CONSTRUCTED OF REINFORCED CONCRETE AS SHOWN OR OF REINFORCED CONCRETE PIPE, CLASS III, IN ACCORDANCE WITH ASTM DESIGNATION C-76. IF PIPE IS USED, JOINTS SHALL CONFORM TO THE ITEM "REINFORCED CONCRETE PIPE CULVERTS". PRECAST CONCRETE LIFT OFF COVER MAY BE SUBSTITUTED FOR "RING AND COVER".

CONNECTING PIPES SHOULD WITHIN 10 DEG. OF NORMAL TO INLET GRATE IF NECESSARY. PIPE ELBOW OR CURBED APPROACH ALIGNMENT SHOULD BE USED TO STAY WITHIN THIS LIMIT.



PIPES MAY ENTER ALL WALLS. THE MAXIMUM LEGTH OF PIPE THAT CAN BE ACCOMODATED IS 60". MORE THAN ONE PIPE MAY ENTER A SIDE SUBJECT TO THE MAXIMUM BOX DIMENSIONS SHOWN. THE CLEAR DISTANCE BETWEEN ADJACEMENT PIPES SHOULD BE 9" MINIMUM.

PHARR DISTRICT STANDARD

TEXAS DEPARTMENT OF TRANSPORTATION

TYPE "M" MANHOLE (JUNCTION BOX WITH ACCESS)

REV. 08/13 MANHOLE2.DGN

FED.RD. DIV.NO.	PROJECT NO.	FILE NO.	SHEET NO.
6			

STATE	STATE DIST.NO.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
TEXAS	21					

AD-76-0

NO.	DATE	REVISION	BY

Plot Date: 4/16/2015 4:20:18 PM
Plotted By: BRICHARDSON

PROJECT NO. 14-140
DRAWN BY Bruce Richardson
DESIGNED BY Michael Cary Newman, P.E.
APPROVED BY
DATE 4/16/2015

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ROUND ROCK, TEXAS
DOVE CREEK DRAINAGE IMPROVEMENT

TXDOT JUNCTION BOX WITH MANHOLE ACCESS STANDARD

SHEET NO. TX-07 OF 07 SHEETS