DALLAS Cr 97 (449)

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
GRAPHICS	6	CM 97 (449)		1
	STATE	STATE DIST.	COUNTY	
CHECKED	TEXAS	DALLAS	DALLAS	
	CONT.	SECT.	JOB	HIGHWAY NO.
CHECKED	8050	18	034	BELT LINE RD.

STATE OF TEXAS
DEPARTMENT OF TRANSPORTATION

PLANS OF PROPOSED
STATE HIGHWAY IMPROVEMENT

CM 97 (449)
FEDERAL AID PROJECT
CSJ : 8050-18-034

NET LENGTH OF PROJECT : ROADWAY = 1757.94 FT = 0.333 MI

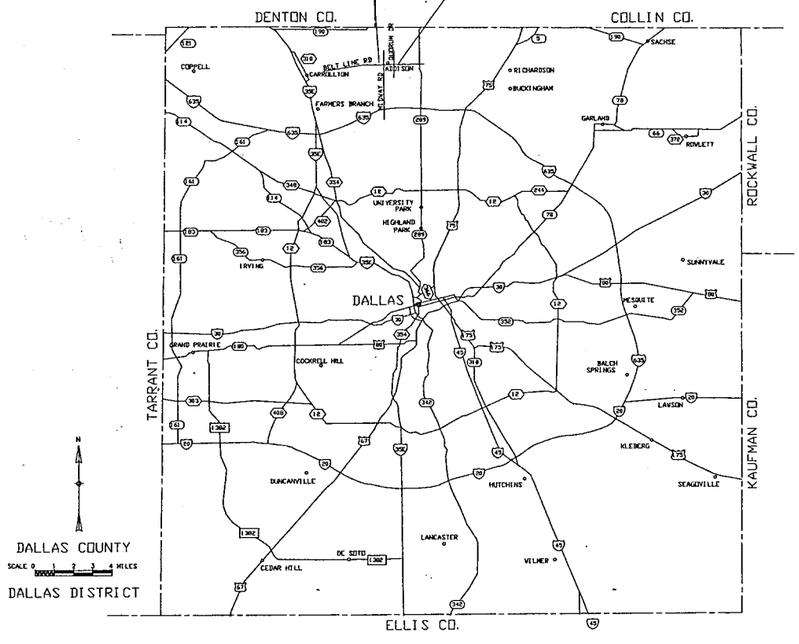
BELT LINE ROAD
DALLAS COUNTY

LIMITS : AT MIDWAY ROAD
AT QUORUM DRIVE

TYPE : MISCELLANEOUS WORK
CONSISTING OF : GRADING, DRAINAGE, CONCRETE PAVEMENT, SIDEWALK, SIGNALS, PAVEMENT MARKINGS AND SIGNS

BEGIN PROJECT
STA 47+55.63 (@ MIDWAY RD.)
STA 87+43.34 (@ QUORUM DR.)
(CSJ 8050-18-034)

END PROJECT
STA 56+81.18 (@ MIDWAY RD.)
STA 95+75.73 (@ QUORUM DR.)
(CSJ 8050-18-034)



NO EXCEPTIONS
NO EQUATIONS
NO RAILROAD CROSSINGS

INDEX OF SHEETS

DALLAS DISTRICT STANDARDS

SHEET NO.	DESCRIPTION
50	TRAFFIC SIGNAL HEAD IDENTIFICATION
51	PEDESTRIAN SIGNAL HEAD IDENTIFICATION
52	SERVICE POLE DETAILS
53	LOOP DETECTOR DETAILS
54	SIGNS
55	PAVEMENT MARKING DETAILS
55A	MA-D-96 (DAL)
55B	SMA-80(1)-96 (DAL)
55C	SMA-80(2)-96 (DAL)

STANDARD SHEETS

SHEET NO.	DESCRIPTION
56	CPCD-94
57	JS-94
58-60	W(1),(2),(3)-95
61	RPM(1)-92
62-71B	BC(1),(2),(3),(4),(5),(6),(7),(8),(9),(9A),(9B),(9C)-98
72	TCP(1-4)-98
73	EC(1)-93
74	ED(1)-98
75	ED(2)-98
76	ED(3)-98
77	ED(5)-98
78	TS-FD-96 (MOD)
79	TCP NOTES-98
80	SMD(1-5)-98
81	WZ(BD)-97
82	WZ(CD)-94
83-84	WZ(BTS-1),(BTS-2)-98
85	MA-C-96
86	RID(1)-98
87	RID(2)-98
88	RID(3)-98
89	OMIT
90	RW(CB)

THE STANDARD SHEETS SPECIFICALLY IDENTIFIED ABOVE HAVE BEEN SELECTED BY ME OR UNDER MY RESPONSIBLE SUPERVISION AS BEING APPLICABLE TO THIS PROJECT.

R. Craig Miser, P.E. 5/3/99
R. CRAIG MISER, P.E. DATE

NOTE:

SPECIFICATIONS ADOPTED BY THE TEXAS DEPARTMENT OF TRANSPORTATION, MARCH 1, 1993, AND THE CONTRACT PROVISIONS LISTED AND DATED AS FOLLOWS SHALL GOVERN ON THIS PROJECT : REQUIRED CONTRACT PROVISIONS FOR ALL FEDERAL-AID CONSTRUCTION CONTRACTS (FORM FHWA 1273, DECEMBER, 1993).

THE CONTRACTOR SHALL PROVIDE AND ERECT BARRICADES AND WARNING SIGNS IN ACCORDANCE WITH BC(1) THRU BC(9C)-1998 AT POINTS INDICATED AND AT OTHER POINTS AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL MAKE HIS OWN INVESTIGATION AND ARRANGEMENTS FOR RAIL DELIVERY POINTS AND TRACKAGE FACILITIES.

DESIGN SPEED = 40 MPH (BELT LINE RD. & MIDWAY RD.)
30 MPH (QUORUM DR.)

FINAL PLANS

CONTRACTOR NAME: _____

DATE OF LETTING: 08/03/1999

DATE CONTRACTOR BEGAN WORK : 01/25/2000

DATE WORK COMPLETED AND ACCEPTED: 10/18/2000

LIST OF APPROVED FIELD CHANGES: _____

TEXAS DEPARTMENT OF TRANSPORTATION

CONCURRENCE 4/30/99
For John Baumgartner
CITY ENGINEER
TOWN OF ADDISON

CONCURRENCE 4/30/99
PROJECT MANAGER
DALLAS AREA RAPID TRANSIT

SUBMITTED FOR LETTING 4/30/99
VICE PRESIDENT
BARTON-ASCHMAN ASSOCIATES, INC.

STATE OF TEXAS
RONALD A. YOUNG
36581
REGISTERED
PROFESSIONAL ENGINEER
4/30/99

SUBMITTED FOR LETTING 5-3-99
AREA ENGINEER

APPROVED FOR LETTING _____
DIRECTOR, TRAFFIC OPERATIONS DIVISION

RECOMMENDED FOR LETTING 5-5-99
DIR. OF TRANSP. PLANNING & DEVELOPMENT

RECOMMENDED FOR LETTING 5/6/99
DISTRICT ENGINEER

APPROVED FOR LETTING 6-7-99
for DIRECTOR, DESIGN DIVISION

FINAL PLANS

LETTING DATE: 08/03/99
DATE WORK BEGAN: 01/25/00
DATE OF COMPLETION: 10/13/00
DATE OF ACCEPTANCE: 10/18/00
CONTRACTOR:

CHANGE ORDERS:

CHANGE ORDER NO. 1	To add revised plan sheets correcting horizontal alignment errors.
CHANGE ORDER NO. 2	Deletes the field office requirement.
CHANGE ORDER NO. 3	To change the pavement marking skip line buttons from plastic to ceramic to match existing conditions.
CHANGE ORDER NO. 4	Compensate the contractor for abandoning an existing 8" water main and installing a new water hydrant due to conflict with new pavement.
CHANGE ORDER NO. 5	Add TxDOT standard sheet for curb inlet (Ty 1 Mod) due to water line conflict.
CHANGE ORDER NO. 6	Compensate the contractor for additional work relocating existing water meter.
CHANGE ORDER NO. 7	Add one month of barricades for time extensions due to utility conflicts.
CHANGE ORDER NO. 8	Compensation for removing and replacing pavement, curb and side walk to reduce the sharpness of curve.
CHANGE ORDER NO. 9	Compensation for staining the ADA ramps to meet the latest ADA standards.
CHANGE ORDER NO. 10	Compensation for delays and inefficiencies of work operations due to utility conflicts.

STATE OF TEXAS
LARRY D. TEGTMEYER
65504
REGISTERED
PROFESSIONAL ENGINEER

I CERTIFY THAT THE ENGINEERING PORTIONS OF THIS CONTRACT HAVE BEEN COMPLETED IN CONFORMANCE TO THE CONTRACT SPECIFICATIONS.

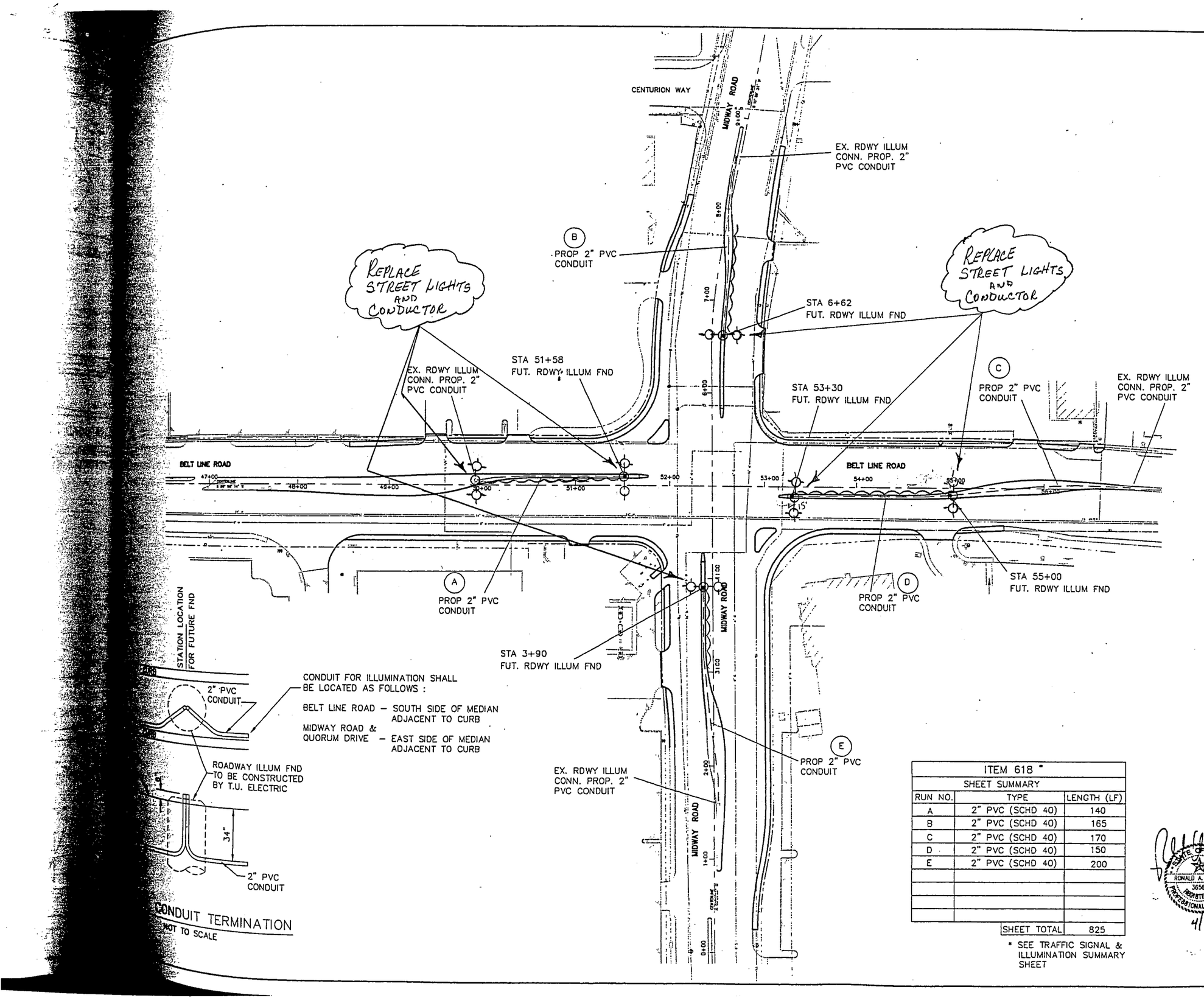
SIGNATURE

Larry D. Tegtmeyer, P.E.

2-8-01
DATE

Texas Department of Transportation

DESIGN	FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		HIGHWAY NO.
GRAPHICS	6	CM 97(449)		MH
	STATE	DISTRICT	COUNTY	SHEET NO.
CHECK	TEXAS	DALLAS	DALLAS	1A
CHECK	CONTROL	SECTION	JOB	
	8050	18	034	



N

GRAPHIC SCALE

20 0 20 50 100

1" = 50' HORIZ.

LEGEND :

♀	EXIST. RDWY ILLUMINATION (STREET LIGHT)
●	PROPOSED FOUNDATION FOR ROADWAY ILLUMINATION ASSEMBLY (TYPE A)(30" DRILL SHAFT)
— — — —	PROPOSED CONDUIT (PVC)(SCH 40)(2")

NOTES:

1. FUTURE ROADWAY ILLUMINATION FOUNDATIONS ARE TO BE CENTERED BETWEEN THE BACKS OF CURB EXCEPT AS NOTED HEREON.
2. TU ELECTRIC WILL REMOVE EXISTING ROADWAY ILLUMINATION POLES (STREET LIGHTS) WHERE NECESSARY. CONTACT TU ELECTRIC (888-1313) TO COORDINATE REMOVALS.
3. TU ELECTRIC WILL INSTALL ROADWAY ILLUMINATION POLES (STREET LIGHTS) ON FOUNDATIONS TO BE CONSTRUCTED BY TU ELECTRIC.
4. TU ELECTRIC WILL FURNISH AND INSTALL WIRING IN THE CONDUITS AND ENERGIZE THE CIRCUITS.
5. CONTRACTOR SHALL INSTALL 2" PVC CONDUIT IN LOCATIONS AS SHOWN HEREON AND SHALL TERMINATE CONDUIT AT FUTURE ILLUMINATION FOUNDATIONS AS SHOWN ON THE CONDUIT TERMINATION DETAIL AND AT THE STATIONS SHOWN HEREON.
6. ALL CONDUIT TO BE 2" PVC SCHEDULE 40 GRAY ELECTRICAL CONDUIT.
7. PULL STRINGS SHALL BE PROVIDED IN ALL CONDUITS.
8. CONDUIT EMBEDMENT SHALL BE 2" OF SAND WITH 6" OF SAND COVER, THEN SOIL BACKFILL.
9. TU ELECTRIC WILL DETERMINE THE LOCATIONS AND TYPE OF SERVICE FOR THE ROADWAY ILLUMINATION.
10. THE TOWN OF ADDISON WILL FURNISH AND INSTALL SMALL ROADSIDE SIGNS AND STREET NAME SIGNS.

ITEM 618 *		
SHEET SUMMARY		
RUN NO.	TYPE	LENGTH (LF)
A	2" PVC (SCHD 40)	140
B	2" PVC (SCHD 40)	165
C	2" PVC (SCHD 40)	170
D	2" PVC (SCHD 40)	150
E	2" PVC (SCHD 40)	200
	SHEET TOTAL	825

* SEE TRAFFIC SIGNAL & ILLUMINATION SUMMARY SHEET

STATE OF TEXAS
RONALD A. YOUNG
36561
REGISTERED
PROFESSIONAL ENGINEER
4/30/99

SHEET 1 OF 2

BARTON-ASCHMAN ASSOCIATES, INC.

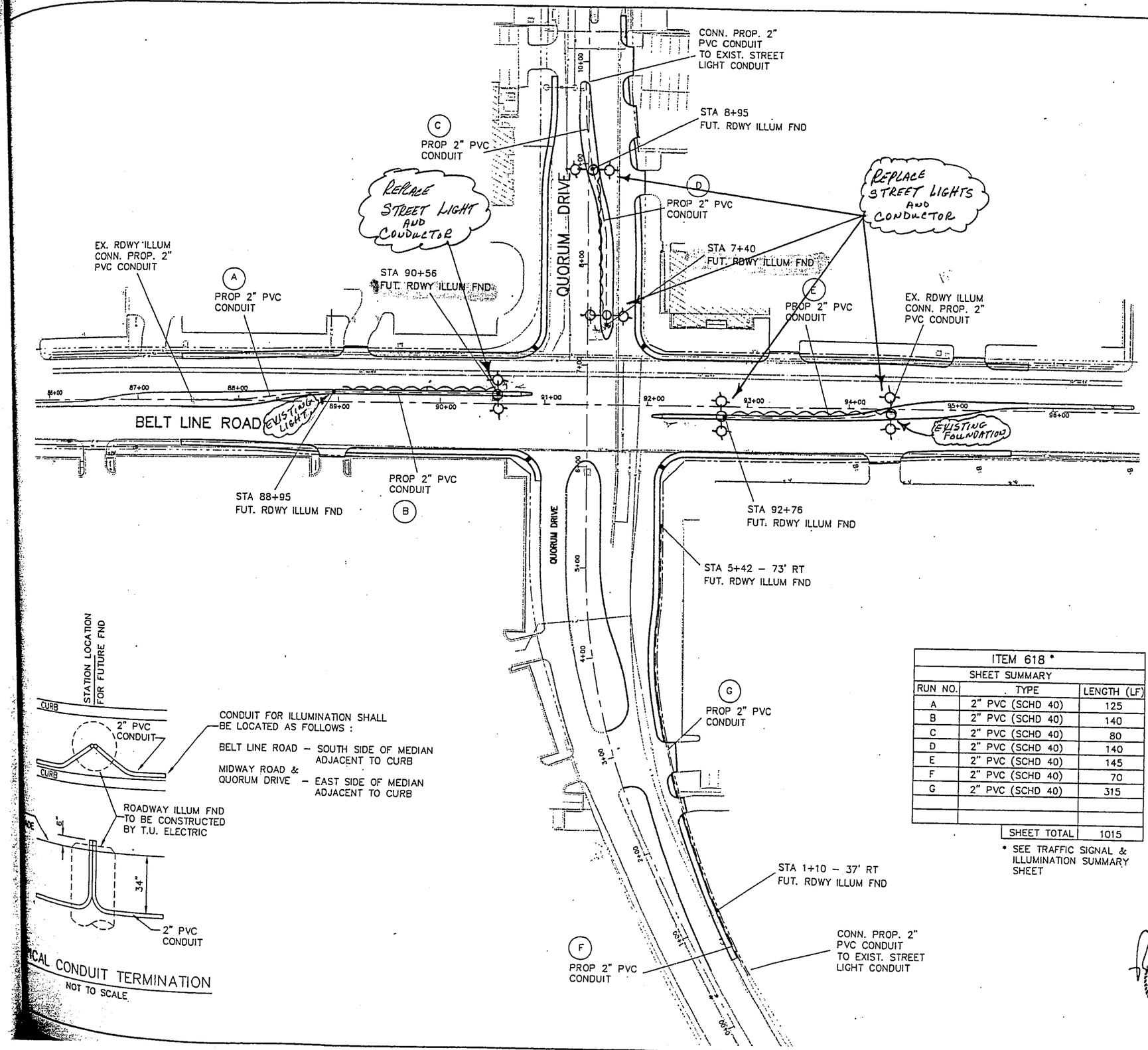
ROADWAY ILLUMINATION PLAN

BELT LINE ROAD
STA 47+55.63 TO 56+81.18
ADDISON TRANSIT PASS

Texas Department of Transportation © 1999

DART

REVISION	DATE	FED. ROAD DIV No.	FEDERAL AID PROJECT NO.		SHEET No.
		6	CM 97 (449)		39
		STATE	STATE DIST.	COUNTY	
		TEXAS	DALLAS	DALLAS	
		CONT.	SECT.	JOB	HIGHWAY No.
DESIGNED BY: R.A.Y.		8050	18	034	BELT LINE RD
DRAWN BY: B.A.A.		BA FILE NAME :			
CHECKED BY: L.M.P.					



ICAL CONDUIT TERMINATION
NOT TO SCALE

N

GRAPHIC SCALE
20 0 20 50 100
1" = 50' HORIZ.

LEGEND :

- EXIST. RDWY ILLUMINATION (STREET LIGHT)
- PROPOSED. FOUNDATION FOR ROADWAY ILLUMINATION ASSEMBLY (TYPE A)(30" DRILL SHAFT)
- PROPOSED CONDUIT (PVC)(SCH 40)(2")

NOTES:

1. FUTURE ROADWAY ILLUMINATION FOUNDATIONS ARE TO BE CENTERED BETWEEN THE BACKS OF CURB EXCEPT AS NOTED HEREON.
2. TU ELECTRIC WILL REMOVE EXISTING ROADWAY ILLUMINATION POLES (STREET LIGHTS) WHERE NECESSARY. CONTACT TU ELECTRIC (888-1313) TO COORDINATE REMOVALS.
3. TU ELECTRIC WILL INSTALL ROADWAY ILLUMINATION POLES (STREET LIGHTS) ON FOUNDATIONS TO BE CONSTRUCTED BY TU ELECTRIC.
4. TU ELECTRIC WILL FURNISH AND INSTALL WIRING IN THE CONDUITS AND ENERGIZE THE CIRCUITS.
5. CONTRACTOR SHALL INSTALL 2" PVC CONDUIT IN LOCATIONS AS SHOWN HEREON AND SHALL TERMINATE CONDUIT AT FUTURE ILLUMINATION FOUNDATIONS AS SHOWN ON THE CONDUIT TERMINATION DETAIL AND AT THE STATIONS SHOWN HEREON.
6. ALL CONDUIT TO BE 2" PVC SCHEDULE 40 GRAY ELECTRICAL CONDUIT.
7. PULL STRINGS SHALL BE PROVIDED IN ALL CONDUITS.
8. CONDUIT EMBEDMENT SHALL BE 2" OF SAND WITH 6" OF SAND COVER, THEN SOIL BACKFILL.
9. TU ELECTRIC WILL DETERMINE THE LOCATIONS AND TYPE OF SERVICE FOR THE ROADWAY ILLUMINATION.
10. THE TOWN OF ADDISON WILL FURNISH AND INSTALL SMALL ROADSIDE SIGNS AND STREET NAME SIGNS.

ITEM 618 *		
SHEET SUMMARY		
RUN NO.	TYPE	LENGTH (LF)
A	2" PVC (SCHD 40)	125
B	2" PVC (SCHD 40)	140
C	2" PVC (SCHD 40)	80
D	2" PVC (SCHD 40)	140
E	2" PVC (SCHD 40)	145
F	2" PVC (SCHD 40)	70
G	2" PVC (SCHD 40)	315
	SHEET TOTAL	1015

* SEE TRAFFIC SIGNAL & ILLUMINATION SUMMARY SHEET

STATE OF TEXAS
RONALD A. YOUNG
36561
REGISTERED
PROFESSIONAL ENGINEER
4/30/99

SHEET 2 OF 2

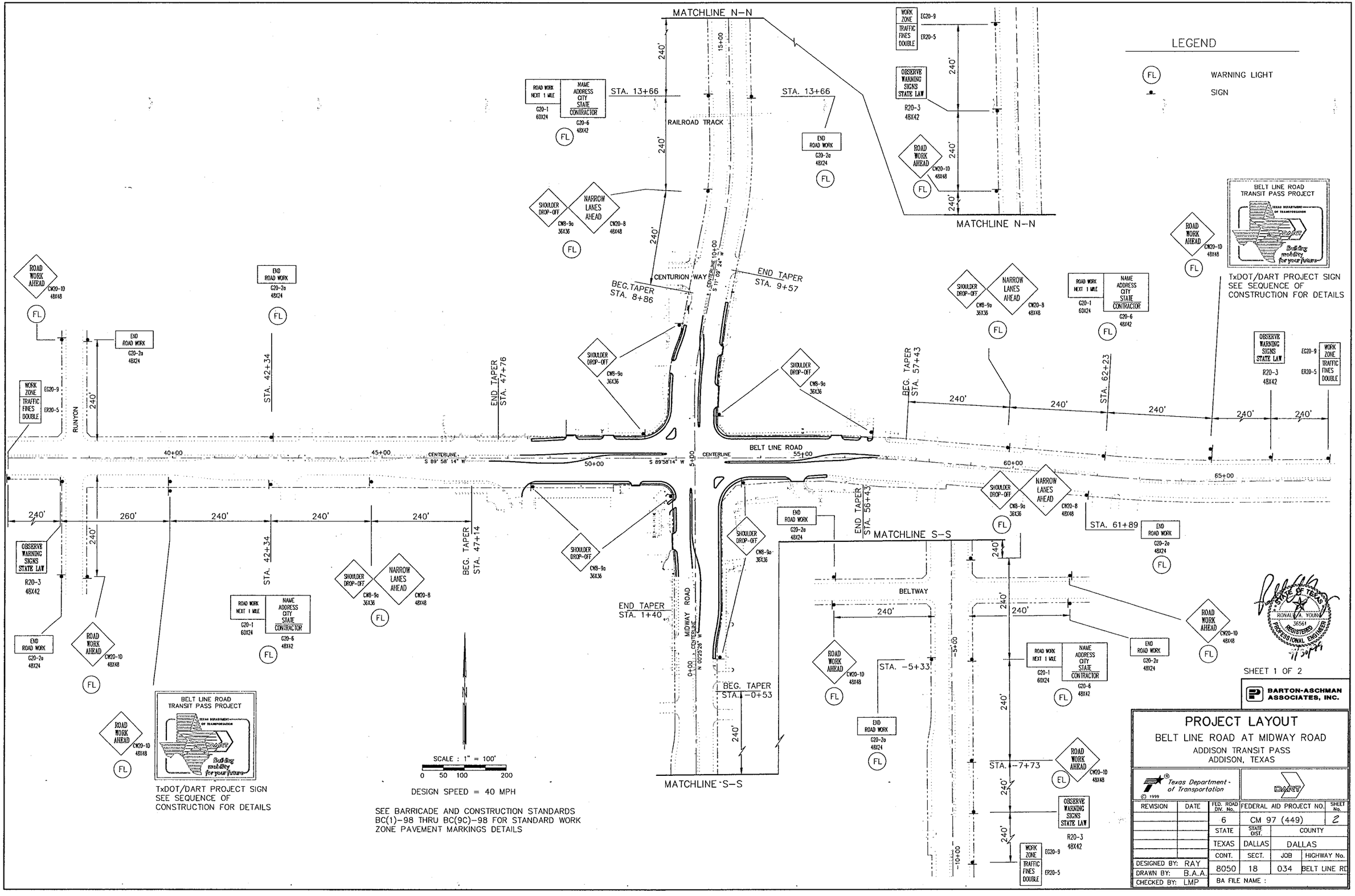
BARTON-ASCHMAN ASSOCIATES, INC.

ROADWAY ILLUMINATION PLAN

BELT LINE ROAD
STA 87+43.34 TO 95+75.73
ADDISON TRANSIT PASS

Texas Department of Transportation © 1999 | DART

REVISION	DATE	FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
		6	CM 97 (449)	40
		STATE	STATE DIST.	COUNTY
		TEXAS	DALLAS	DALLAS
		CONT.	SECT.	JOB	HIGHWAY No.
DESIGNED BY: R.A.Y.		8050	18	034	BELT LINE RD
DRAWN BY: B.A.A.		BA FILE NAME :			
CHECKED BY: L.M.P.					



PROJECT LAYOUT

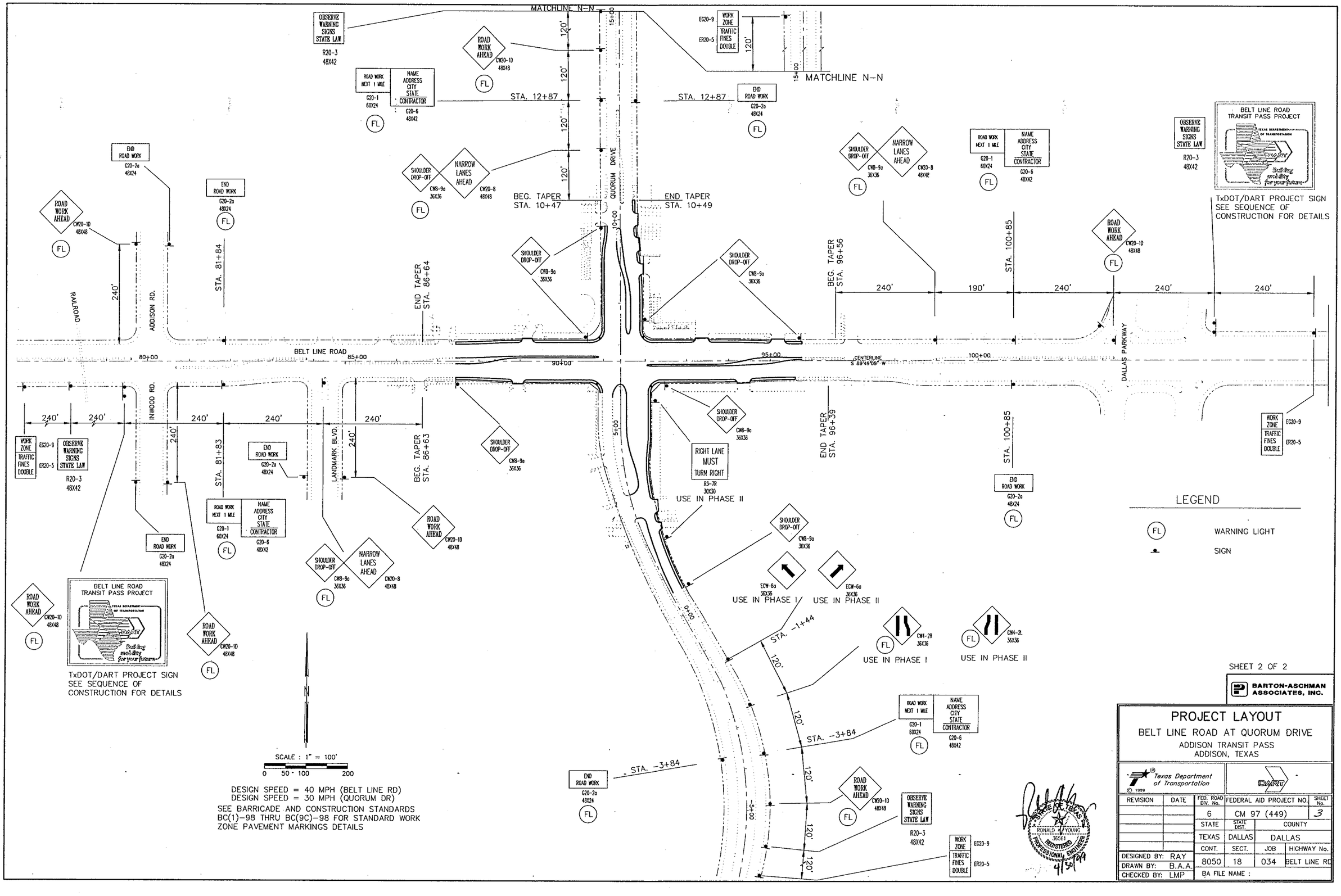
BELT LINE ROAD AT MIDWAY ROAD

ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation © 1999 — DART

REVISION	DATE
DESIGNED BY: RAY	
DRAWN BY: B.A.A.	
CHECKED BY: LMP	

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		2
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD
BA FILE NAME :			



SHEET 2 OF 2

BARTON-ASCHMAN ASSOCIATES, INC.

PROJECT LAYOUT

BELT LINE ROAD AT QUORUM DRIVE
ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation © 1999

DART

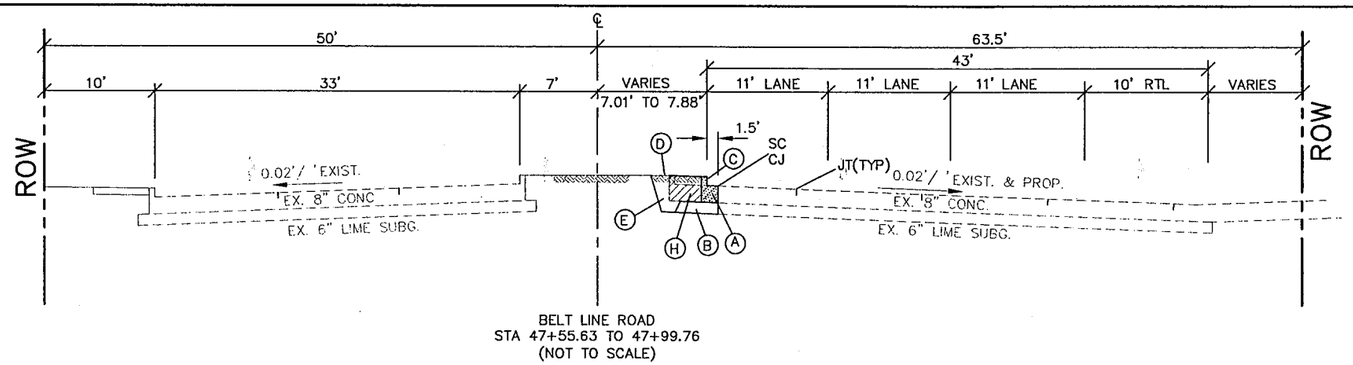
REVISION	DATE

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		3
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

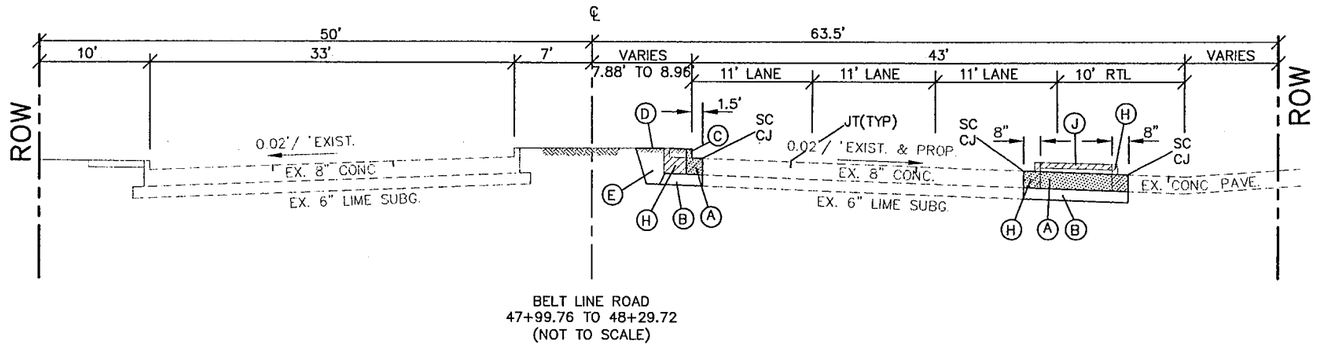
DESIGNED BY: RAY
DRAWN BY: B.A.A.
CHECKED BY: LMP

BA FILE NAME :

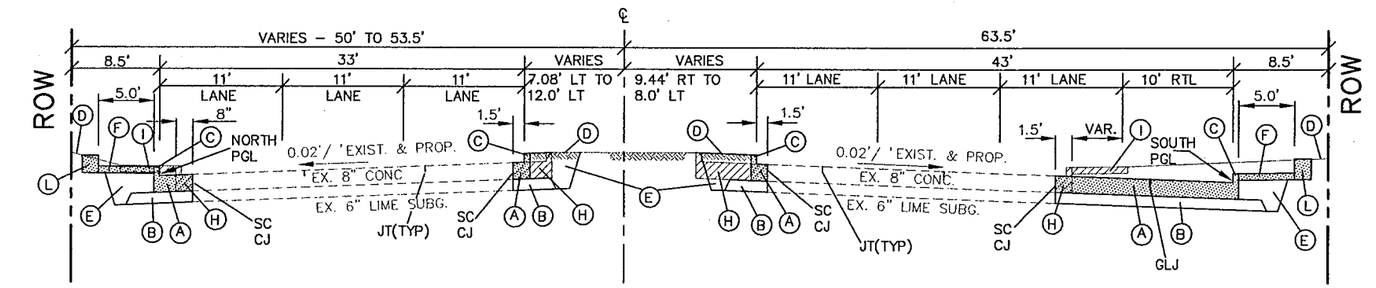
STATE OF TEXAS — RONALD A. YOUNG — 35561 — REGISTERED PROFESSIONAL ENGINEER — 4/30/99



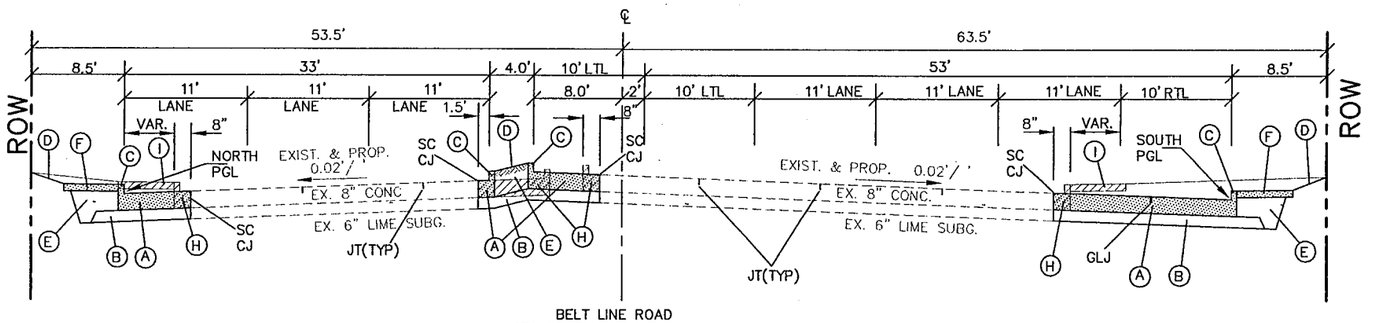
BELT LINE ROAD
STA 47+55.63 TO 47+99.76
(NOT TO SCALE)



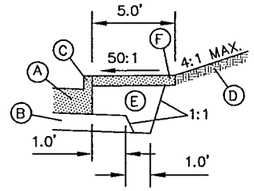
BELT LINE ROAD
47+99.76 TO 48+29.72
(NOT TO SCALE)



BELT LINE ROAD
STA 48+29.72 TO 50+57.04
(NOT TO SCALE)



BELT LINE ROAD
STA 50+57.04 TO 51+67.05
(NOT TO SCALE)



TYPICAL SLOPES
& DIMENSIONS
(NOT TO SCALE)

LEGEND

- ⚠Ⓐ 8" CONCRETE PAVEMENT OR CURB & GUTTER (SEE PLAN/PROFILE SHEETS) (TRANS. METAL TINE FIN.)
- Ⓑ 6" CEMENT TREATED BASE (STR-M)(CL 2)
- ⚠Ⓒ TYPE II CURB ON 8" CONCRETE PAVEMENT OR TYPE II CURB & GUTTER (SEE PLAN/PROFILE SHEETS)
- Ⓓ BLOCK SOD AND FURN AND PLACE TPSL(CL 2)(4")
- Ⓔ EMBANK (DC)(TY C)(CL 3)
- Ⓕ 4" REINFORCED CONCRETE SIDEWALK
- Ⓖ INTERLOCKING CONCRETE PAVERS (UNIT PAVERS) WITH EDGE RESTRAINT
- Ⓗ REMOVE EXIST. CONCRETE CURB AND PAVEMENT (SAW CUT FULL DEPTH)
- Ⓘ REMOVE EXIST. CONCRETE SIDEWALK
- Ⓙ REMOVE EXIST. INTERLOCKING CONCRETE PAVERS
- Ⓚ REMOVE EXISTING CONCRETE RETAINING WALL
- Ⓛ CONCRETE BLOCK RETAINING WALL (SEE DETAIL SHEETS)(SEE PLAN/PROFILE FOR LOCATIONS AND HEIGHTS)
- REMOVAL
- PROPOSED CONSTRUCTION

NOTES :

1 ABBREVIATIONS

PGL	PROFILE GRADE LINE		
EX	EXISTING		
℄	CENTERLINE	SC	SAW CUT (FULL DEPTH)
LT	LEFT		
RT	RIGHT	CJ	CONSTRUCTION JOINT
ROW	RIGHT-OF-WAY		
CONC	CONCRETE	GLJ	GROOVED LONGI-TIDINAL JOINT
RTL	RIGHT TURN LANE		
LTL	LEFT TURN LANE	JT	EXIST. JOINT

2 PAVEMENT CONSTRUCTED AT THE MEDIAN SHALL MATCH THE EXISTING SLOPE OF THE ADJOINING PAVEMENT.

3 PAVEMENT CONSTRUCTED ALONG OUTSIDE LANES SHALL HAVE A CROSS SLOPE THAT VARIES ACCORDING TO THE PROFILE GRADE LINE.

4 SEE PLAN/PROFILE SHEETS FOR THE LOCATIONS OF CURB & GUTTER AND 8" CONCRETE PAVEMENT.

5 SEE PLAN/PROFILE SHEETS FOR HORIZONTAL LAYOUT OF CURB LINES.

6 SEE REMOVAL PLAN SHEETS FOR LOCATIONS OF REMOVAL ITEMS.

SHEET 1 OF 4

⚠ Revised 9/2/97 jcf

BARTON-ASCHMAN ASSOCIATES, INC.

TYPICAL SECTIONS

ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation © 1999

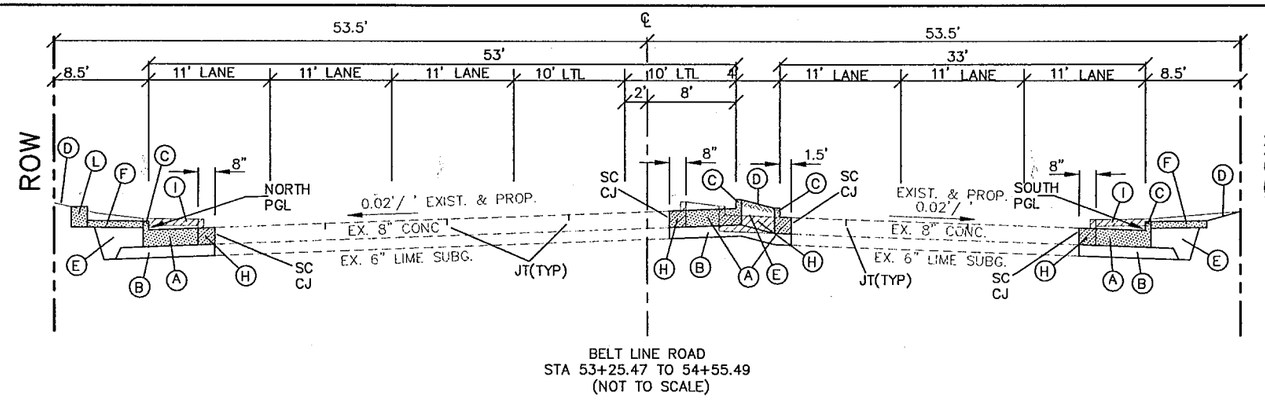
DART

REVISION	DATE

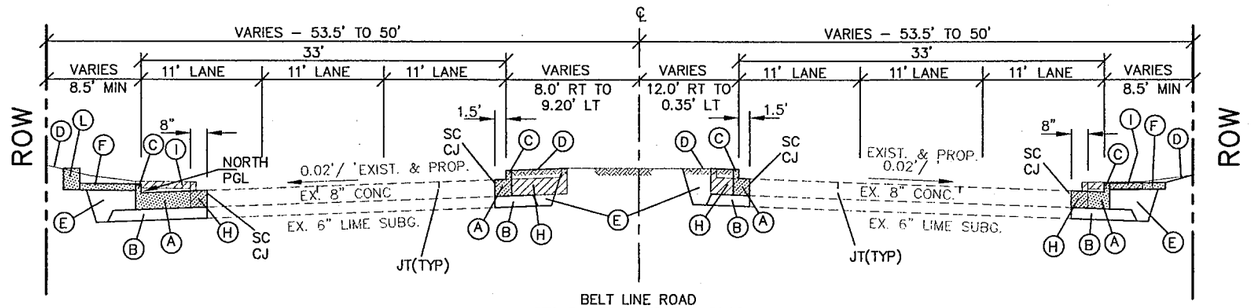
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		4
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD.

DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.
BA FILE NAME :

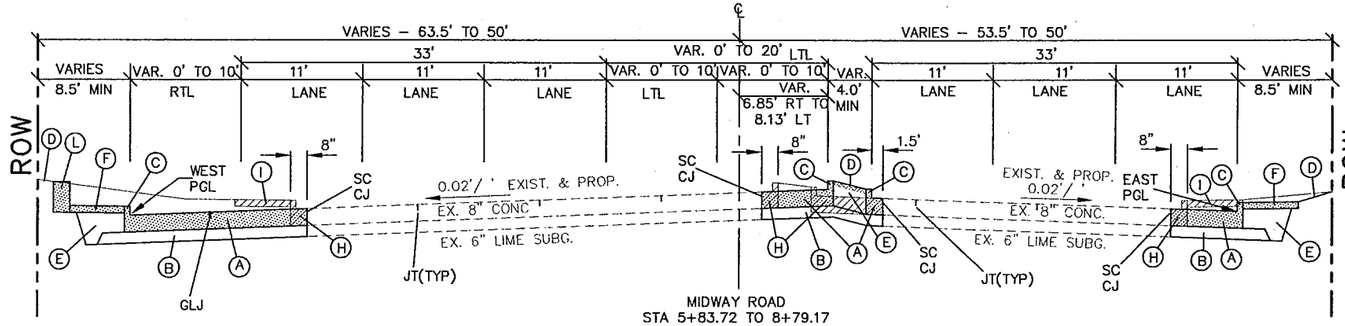
STATE OF TEXAS
RONALD A. YOUNG
(9551)
REGISTERED
PROFESSIONAL ENGINEER
4/23/97
9/2/97



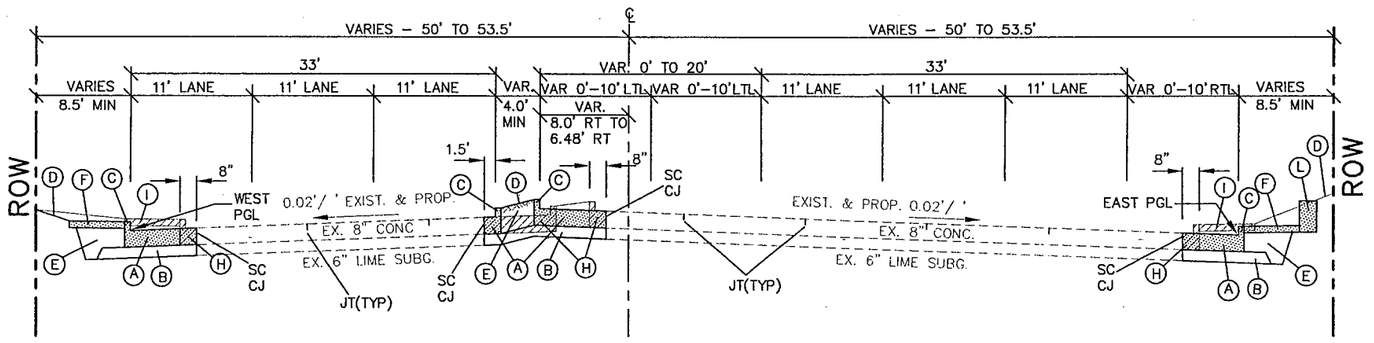
BELT LINE ROAD
STA 53+25.47 TO 54+55.49
(NOT TO SCALE)



BELT LINE ROAD
STA 54+55.49 TO 56+ 81.18
(NOT TO SCALE)



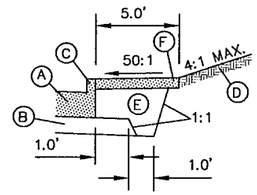
MIDWAY ROAD
STA 5+83.72 TO 8+79.17
(NOT TO SCALE)



MIDWAY ROAD
STA 0+24.89 TO 4+18.06
(NOT TO SCALE)

LEGEND

- ⚠ (A) 8" CONCRETE PAVEMENT OR CURB & GUTTER (SEE PLAN/PROFILE SHEETS) (TRANS. METAL TINE FIN.)
- (B) 6" CEMENT TREATED BASE (STR-M)(CL 2)
- ⚠ (C) TYPE II CURB ON 8" CONCRETE PAVEMENT OR TYPE II CURB & GUTTER (SEE PLAN/PROFILE SHEETS)
- (D) BLOCK SOD AND FURN AND PLACE TPSL(CL 2)(4")
- (E) EMBANK (DC)(TY C)(CL 3)
- (F) 4" REINFORCED CONCRETE SIDEWALK
- (G) INTERLOCKING CONCRETE PAVERS (UNIT PAVERS) WITH EDGE RESTRAINT
- (H) REMOVE EXIST. CONCRETE CURB AND PAVEMENT (SAW CUT FULL DEPTH)
- (I) REMOVE EXIST. CONCRETE SIDEWALK
- (J) REMOVE EXIST. INTERLOCKING CONCRETE PAVERS
- (K) REMOVE EXISTING CONCRETE RETAINING WALL
- (L) CONCRETE BLOCK RETAINING WALL (SEE DETAIL SHEETS)(SEE PLAN/PROFILE FOR LOCATIONS AND HEIGHTS)
- REMOVAL
- PROPOSED CONSTRUCTION



TYPICAL SLOPES & DIMENSIONS
(NOT TO SCALE)

NOTES :

1 ABBREVIATIONS

PGL	PROFILE GRADE LINE		
EX	EXISTING		
℄	CENTERLINE	SC	SAW CUT (FULL DEPTH)
LT	LEFT		
RT	RIGHT	CJ	CONSTRUCTION JOINT
ROW	RIGHT-OF-WAY		
CONC	CONCRETE	GLJ	GROOVED LONGI-TIDINAL JOINT
RTL	RIGHT TURN LANE		
LTL	LEFT TURN LANE	JT	EXIST. JOINT

2 PAVEMENT CONSTRUCTED AT THE MEDIAN SHALL MATCH THE EXISTING SLOPE OF THE ADJOINING PAVEMENT.

3 PAVEMENT CONSTRUCTED ALONG OUTSIDE LANES SHALL HAVE A CROSS SLOPE THAT VARIES ACCORDING TO THE PROFILE GRADE LINE.

4 SEE PLAN/PROFILE SHEETS FOR THE LOCATIONS OF CURB & GUTTER AND 8" CONCRETE PAVEMENT.

5 SEE PLAN/PROFILE SHEETS FOR HORIZONTAL LAYOUT OF CURB LINES.

6 SEE REMOVAL PLAN SHEETS FOR LOCATIONS OF REMOVAL ITEMS.

⚠1 REVISED 9/2/97 RF

BARTON-ASCHMAN ASSOCIATES, INC.

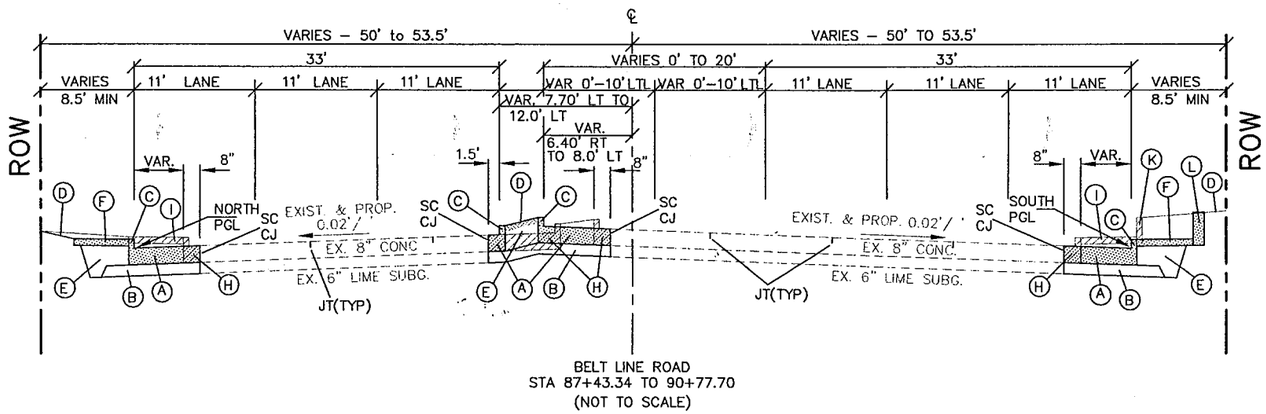
TYPICAL SECTIONS

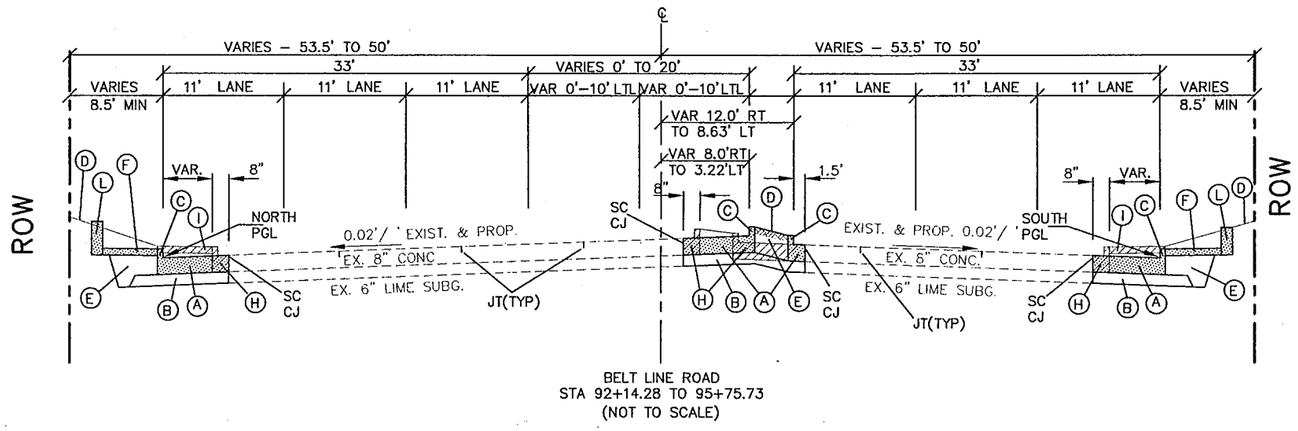
ADDISON TRANSIT PASS
ADDISON, TEXAS

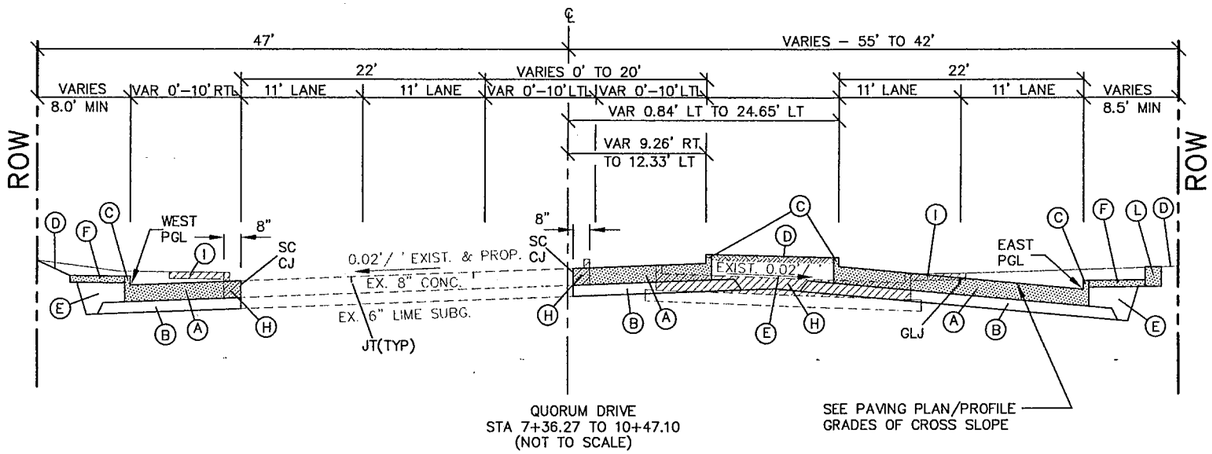
Texas Department of Transportation ©1999 | DART

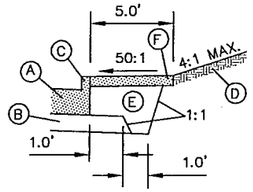
REVISION	DATE	FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
		6	CM 97 (449)		5
		STATE	STATE DIST.	COUNTY	
		TEXAS	DALLAS	DALLAS	
		CONT.	SECT.	JOB	HIGHWAY No.
DESIGNED BY: R.A.Y.		8050	18	034	BELT LINE RD
DRAWN BY: B.A.A.		BA FILE NAME :			
CHECKED BY: L.M.P.					

STATE OF TEXAS
RONALD A. YOUNG
#36561
REGISTERED
PROFESSIONAL ENGINEER
4/23/97
9/2/97









TYPICAL SLOPES & DIMENSIONS (NOT TO SCALE)

LEGEND

- ⚠Ⓐ 8" CONCRETE PAVEMENT OR CURB & GUTTER (SEE PLAN/PROFILE SHEETS) (TRANS. METAL TINE FIN)
- Ⓑ 6" CEMENT TREATED BASE (STR–M)(CL 2)
- ⚠Ⓒ TYPE II CURB ON 8" CONCRETE PAVEMENT OR TYPE II CURB & GUTTER (SEE PLAN/PROFILE SHEETS)
- Ⓓ BLOCK SOD AND FURN AND PLACE TPSL(CL 2)(4")
- Ⓔ EMBANK (DC)(TY C)(CL 3)
- Ⓕ 4" REINFORCED CONCRETE SIDEWALK
- Ⓖ INTERLOCKING CONCRETE PAVERS (UNIT PAVERS) WITH EDGE RESTRAINT
- Ⓗ REMOVE EXIST. CONCRETE CURB AND PAVEMENT (SAW CUT FULL DEPTH)
- Ⓘ REMOVE EXIST. CONCRETE SIDEWALK
- Ⓙ REMOVE EXIST. INTERLOCKING CONCRETE PAVERS
- Ⓚ REMOVE EXISTING CONCRETE RETAINING WALL
- Ⓛ CONCRETE BLOCK RETAINING WALL (SEE DETAIL SHEETS)(SEE PLAN/PROFILE FOR LOCATIONS AND HEIGHTS)
- REMOVAL
- PROPOSED CONSTRUCTION

NOTES :

1 ABBREVIATIONS

PGL	PROFILE GRADE LINE		
EX	EXISTING		
℄	CENTERLINE	SC	SAW CUT (FULL DEPTH)
LT	LEFT		
RT	RIGHT	CJ	CONSTRUCTION JOINT
ROW	RIGHT–OF–WAY		
CONC	CONCRETE	GLJ	GROOVED LONGI–TIDINAL JOINT
RTL	RIGHT TURN LANE		
LTL	LEFT TURN LANE	JT	EXIST. JOINT

2 PAVEMENT CONSTRUCTED AT THE MEDIAN SHALL MATCH THE EXISTING SLOPE OF THE ADJOINING PAVEMENT.

3 PAVEMENT CONSTRUCTED ALONG OUTSIDE LANES SHALL HAVE A CROSS SLOPE THAT VARIES ACCORDING TO THE PROFILE GRADE LINE.

4 SEE PLAN/PROFILE SHEETS FOR THE LOCATIONS OF CURB & GUTTER AND 8" CONCRETE PAVEMENT.

5 SEE PLAN/PROFILE SHEETS FOR HORIZONTAL LAYOUT OF CURB LINES.

6 SEE REMOVAL PLAN SHEETS FOR LOCATIONS OF REMOVAL ITEMS.

⚠1 REVISED 9/2/97 RT

BARTON-ASCHMAN ASSOCIATES, INC.

TYPICAL SECTIONS

ADDISON TRANSIT PASS
ADDISON, TEXAS

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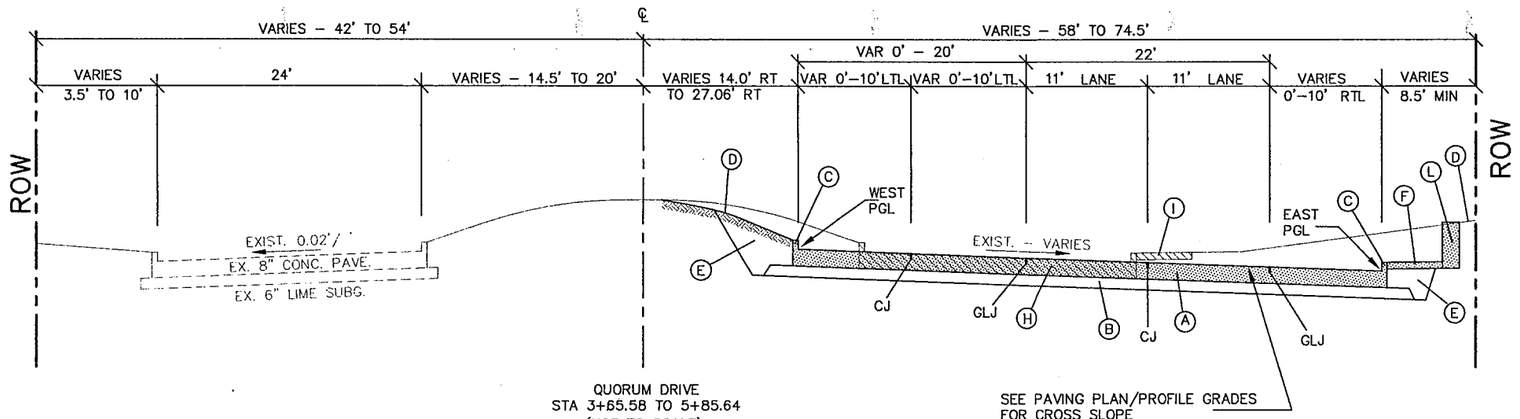
DART

REVISION	DATE
DESIGNED BY: R.A.Y.	
DRAWN BY: B.A.A.	
CHECKED BY: L.M.P.	

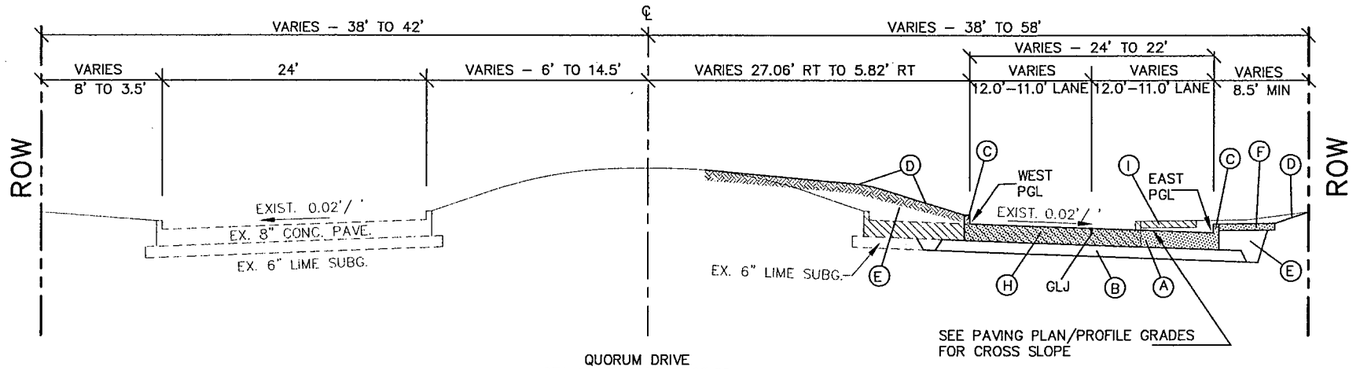
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		6
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD
BA FILE NAME :			

STATE OF TEXAS
RONALD A. YOUNG
38561
REGISTERED
PROFESSIONAL ENGINEER
4/23/97
9/2/97



QUORUM DRIVE
STA 3+65.58 TO 5+85.64
(NOT TO SCALE)

SEE PAVING PLAN/PROFILE GRADES FOR CROSS SLOPE



QUORUM DRIVE
STA 0+79.49 TO 3+65.58
(NOT TO SCALE)

SEE PAVING PLAN/PROFILE GRADES FOR CROSS SLOPE

LEGEND

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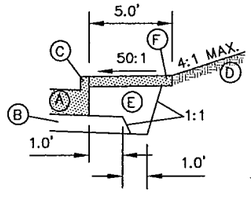
6 SEE REMOVAL PLAN SHEETS FOR LOCATIONS OF REMOVAL ITEMS.



TYPICAL SLOPES & DIMENSIONS
(NOT TO SCALE)

STATE OF TEXAS
RONALD A. YOUNG
36561
REGISTERED
PROFESSIONAL ENGINEER
4/23/97
9/2/97

SHEET 4 OF 4

⚠ REVISED 9/2/97 RT

BARTON-ASCHMAN ASSOCIATES, INC.

TYPICAL SECTIONS

ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation ©1999 | DART

REVISION	DATE
DESIGNED BY: R.A.Y.	
DRAWN BY: B.A.A.	
CHECKED BY: L.M.P.	

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		7
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD
BA FILE NAME :			

GENERAL NOTES :

ALL TRAFFIC CONTROL DEVICES SHALL BE IN ACCORDANCE WITH THE TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.

THE CONTRACTOR SHALL PROVIDE AND MAINTAIN TEMPORARY DRAINAGE AS REQUIRED DURING ALL PHASES OF CONSTRUCTION.

REFER TO THE TRAFFIC CONTROL PLAN SHEETS FOR BARRICADES SIGNS AND OTHER TYPES OF DEVICES REQUIRED IN HANDLING TRAFFIC FOR EACH OF THE PHASES.

THE CONTRACTOR MAY SUBMIT TO THE ENGINEER FOR APPROVAL AN ALTERNATE PLAN TO THE SEQUENCE OF CONSTRUCTION AND TRAFFIC CONTROL PLAN AS HEREIN SHOWN.

THE CONTRACTOR SHALL MAINTAIN ACCESS TO PRIVATE PROPERTY AT ALL TIMES. ANY CHANGES MUST BE APPROVED BY THE ENGINEER.

CONTRACTOR SHALL CUT AND CAP EXISTING IRRIGATION SYSTEMS IN THE AREA OF CONSTRUCTION.

THE CONTRACTOR SHALL PREPARE AND SUBMIT TO THE ENGINEER FOR APPROVAL, A PLAN TO PROVIDE WATERING ON A REGULAR SCHEDULE FOR EXISTING LANDSCAPING IN ALL AREAS WHERE EXISTING IRRIGATION SYSTEMS ARE CUT AND CAPPED.

DART WILL REMOVE BUS STOP BENCHES. CONTRACTOR SHALL SUBMIT A REQUEST WITH 30 DAYS NOTICE TO THE ENGINEER TO HAVE THE BENCHES REMOVED. THE ENGINEER SHALL CONTACT DWAYNE KELTNER, DART MANAGER OF PASSENGER AMENITIES, AT (214) 928-6247 TO COORDINATE THE TIMING OF THE REMOVALS. ENGINEER SHALL SUBMIT A WRITTEN REQUEST TO DART TO REINSTALL BUS STOP BENCHES.

ALL CONSTRUCTION ACTIVITIES SHALL BE CONDUCTED AT NIGHT IN ACCORDANCE WITH TOWN OF ADDISON ORDINANCES. WAIVER OR EXCEPTION REQUESTS SHALL BE SUBMITTED TO THE TOWN OF ADDISON FOR CONSIDERATION OF APPROVAL.

INTERFERENCE WITH TRAFFIC FLOW ON BELT LINE ROAD, QUORUM DRIVE AND MIDWAY ROAD WILL NOT BE PERMITTED DURING THE FOLLOWING HOURS :

6:00 a.m. TO 10:00 p.m. MONDAYS THROUGH THURSDAYS
6:00 a.m. FRIDAYS THROUGH 3:00 a.m. SATURDAYS
9:00 a.m. SATURDAYS THROUGH 3:00 a.m. SUNDAYS
9:00 a.m. SUNDAYS THROUGH 10:00 p.m. SUNDAYS

(TOWN OF ADDISON ORD. NO. 095-033)

PHASE I :

1. SET BARRICADES AND INSTALL WORK ZONE PAVEMENT MARKINGS FOR PHASE I.
2. THE TOWN OF ADDISON WILL PROVIDE SIGNAL POLES, MAST ARMS, TRANSFORMER BASES, SIGNAL HEADS, CONTROLLER CABINETS, CONTROLLERS, ANCHOR BOLTS FOR CONTROLLER CABINETS, TRAFFIC SIGNAL POLE ANCHOR BOLT ASSEMBLIES, PEDESTRIAN PUSH BUTTONS, OPTICOM CABLE AND OPTICOM HEADS AND THE CONTRACTOR SHALL PICK THE SAME UP AT :

   TOWN OF ADDISON
   SERVICE CENTER
   16801 WESTGROVE DR.
   ADDISON, TEXAS 75001

   CONTACT JEFF MARKIEWICZ AT (972) 450-2871 TO COORDINATE PICK UP. CONTRACTOR SHALL PROVIDE THE TOWN OF ADDISON 30 DAYS NOTICE PRIOR TO PICK UP.

   INSTALL NEW SIGNAL FOUNDATIONS, SIGNAL POLES, SIGNAL HEADS, GROUND BOXES, CONDUIT, CONTROLLER FOUNDATIONS, CONTROLLERS, ETC. PROVIDE WIRING TO OPERATE SIGNALS DURING ALL PHASES OF CONSTRUCTION. SOME GROUND BOXES AND CONDUIT WILL HAVE TO WAIT UNTIL PHASE III FOR INSTALLATION. COORDINATE WITH THE TOWN OF ADDISON. CONTACT MR. DAVID NIGHSWONGER (450-2879).

   EXISTING SIGNAL POLES, MAST ARMS, SIGNAL HEADS, PEDESTRIAN BUTTONS, TRANSFORMER BASES, CONTROLLERS AND SMALL ROADSIDE SIGNS SHALL BE REMOVED, SALVAGED AND PROTECTED AGAINST DAMAGE BY THE CONTRACTOR AND SHALL BE DELIVERED BY THE CONTRACTOR TO :

   TOWN OF ADDISON
   SERVICE CENTER
   16801 WESTGROVE DR.
   ADDISON, TEXAS 75001

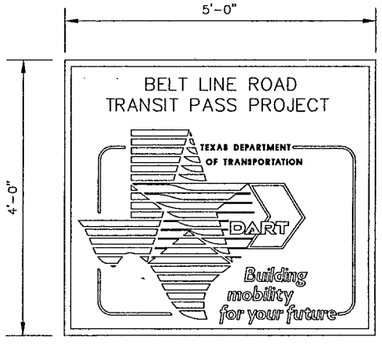
   CONTACT JEFF MARKIEWICZ AT (972) 450-2871 TO COORDINATE.
3. REMOVE EXISTING CURB ALONG THE NORTH AND SOUTH SIDE OF BELT LINE ROAD WITHIN THE LIMITS OF THIS PROJECT.
4. CONSTRUCT THE NEW PAVEMENT WIDENING ALONG THE NORTH AND SOUTH SIDE OF BELT LINE ROAD WITHIN THE LIMITS OF THIS PROJECT.
5. REMOVE THE EXISTING CURB ALONG THE EAST AND WEST SIDE OF MIDWAY ROAD WITHIN THE LIMITS OF THIS PROJECT.
6. CONSTRUCT THE NEW PAVEMENT WIDENING ALONG THE EAST AND WEST SIDE OF MIDWAY ROAD WITHIN THE LIMITS OF THIS PROJECT.
7. REMOVE THE EXISTING CURB ALONG THE WEST SIDE OF QUORUM DRIVE NORTH OF BELT LINE ROAD WITHIN THE LIMITS OF THIS PROJECT.
8. CONSTRUCT THE NEW PAVEMENT WIDENING ALONG THE WEST SIDE OF QUORUM DRIVE NORTH OF BELT LINE ROAD WITHIN THE LIMITS OF THIS PROJECT.
9. REMOVE A PORTION OF THE PAVEMENT ALONG THE EAST SIDE OF QUORUM DRIVE NORTH OF BELT LINE ROAD TO ALLOW CONSTRUCTION OF THE OUTSIDE LANE OF NEW PAVEMENT.
10. CONSTRUCT THE EAST LANE (11') OF NORTH BOUND QUORUM DRIVE NORTH OF BELT LINE ROAD WITHIN THE LIMITS OF THIS PROJECT.
11. REMOVE THE EXISTING PAVEMENT ALONG THE EAST SIDE OF NORTH BOUND QUORUM DRIVE SOUTH OF BELT LINE ROAD.
12. CONSTRUCT THE EAST LANE (11') AND THE RIGHT TURN LANE (10') ALONG NORTH BOUND QUORUM DRIVE SOUTH OF BELT LINE ROAD WITHIN THE LIMITS OF THIS PROJECT.

PHASE II :

1. REMOVE THE WORK ZONE PAVEMENT MARKINGS INSTALLED FOR PHASE I.
2. INSTALL WORK ZONE PAVEMENT MARKINGS FOR PHASE II.
3. REMOVE THE EXISTING CURBS AND PAVEMENT ALONG THE MEDIANS ON BELT LINE ROAD WITHIN THE LIMITS OF THIS PROJECT.
4. CONSTRUCT NEW PAVEMENT WIDENING ALONG THE MEDIAN ON BELT LINE ROAD WITHIN THE LIMITS OF THIS PROJECT.
5. REMOVE THE EXISTING MEDIAN CURBS AND PAVEMENT ALONG THE MEDIAN ALONG MIDWAY ROAD WITHIN THE LIMITS OF THIS PROJECT.
6. CONSTRUCT NEW PAVEMENT WIDENING ALONG THE MEDIAN ALONG MIDWAY ROAD WITHIN THE LIMITS OF THIS PROJECT.
7. REMOVE THE EXISTING CURB AND PAVEMENT ALONG THE MEDIAN ALONG QUORUM DRIVE NORTH OF BELT LINE ROAD WITHIN THE LIMITS OF THIS PROJECT.
8. CONSTRUCT NEW PAVEMENT ALONG THE MEDIAN ON QUORUM DRIVE NORTH OF BELT LINE ROAD WITHIN THE LIMITS OF THIS PROJECT.
9. REMOVE THE REMAINING EXISTING PAVEMENT ON NORTHBOUND QUORUM DRIVE SOUTH OF BELT LINE ROAD WITHIN THE LIMITS OF THIS PROJECT.
10. CONSTRUCT THE REMAINING PAVEMENT ON NORTHBOUND QUORUM DRIVE SOUTH OF BELT LINE ROAD WITHIN THE LIMITS OF THIS PROJECT.

PHASE III :

1. INSTALL REMAINING TRAFFIC SIGNAL GROUND BOXES AND CONDUIT THAT WAS NOT INSTALLED IN PHASE I. INSTALL LOOP DECTECTORS.
2. REMOVE THE WORK ZONE PAVEMENT MARKINGS INSTALLED IN PHASE II.
3. INSTALL PERMANENT STRIPING, PAVEMENT MARKINGS AND SIGNS.



NOTES :
1. CONTRACTOR SHALL PROVIDE FOUR (4) PROJECT SIGNS. ONE (1) SIGN SHALL BE PLACED AT EACH END OF BELT LINE ROAD CONSTRUCTION LIMITS.
2. THE COST FOR PROVIDING, INSTALLING, MAINTAINING AND REMOVING PROJECT SIGNS SHALL BE SUBSIDIARY TO PAY ITEM 502 – BARRICADES, SIGNS AND TRAFFIC HANDLING.
3. PROJECT MATERIALS SHALL BE :
   PLYWOOD FACE : HIGH-DENSITY OVERLAY TYPE, WITH OVERLAY EACH SIDE, 3/4" NOMINAL PLYWOOD THICKNESS
   PAINT : EXTERIOR, GLOSS, ALKYD ENAMEL. PROVIDE TWO COATS ON SIGN FACES, BACKS, AND EDGES, AND ONE COAT ON POSTS.
   WOOD POSTS : DOUGLAS FIR, S4S, NOMINAL 4" x 4" LENGTH AS REQUIRED. PAINT THE ENTIRE POST. POSTS SHALL BE EMBEDDED IN COMPACTED EARTH THREE FEET MIN. SIGN MAY BE MOUNTED OTHERWISE AS DIRECTED BY THE ENGINEER.
4. COLORS SHALL BE :
   BACKGROUND – WHITE
   TEXT & GRAPHICS – BLACK

TxDOT/DART PROJECT SIGN
NO SCALE

STATE OF TEXAS
RONALD A. YOUNG
30661
REGISTERED
PROFESSIONAL ENGINEER
4/30/99

BARTON-ASCHMAN ASSOCIATES, INC.

SEQUENCE OF CONSTRUCTION

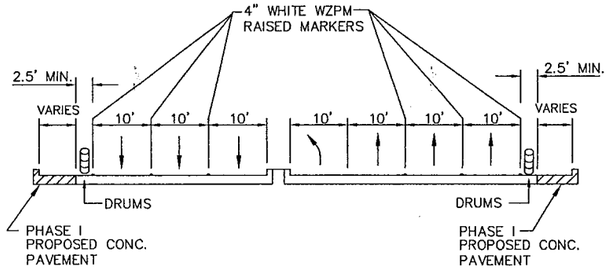
ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation
DART

REVISION	DATE

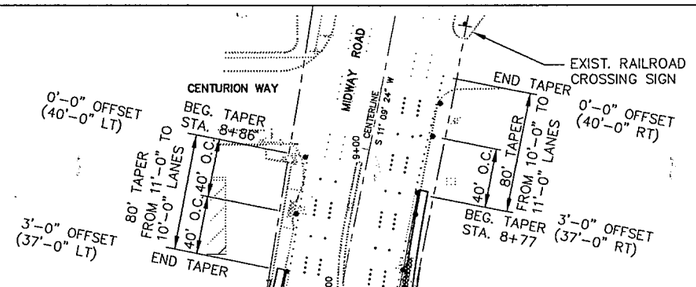
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		8
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.
BA FILE NAME :



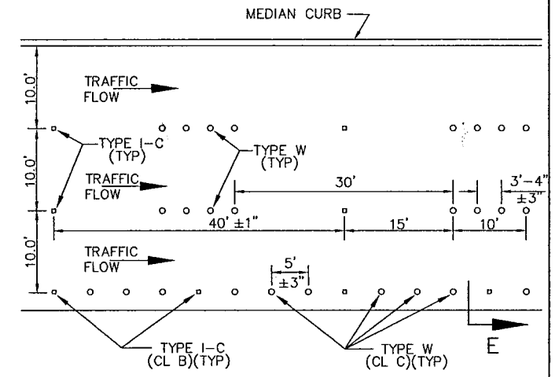
TYPICAL SECTION A – A

NOT TO SCALE



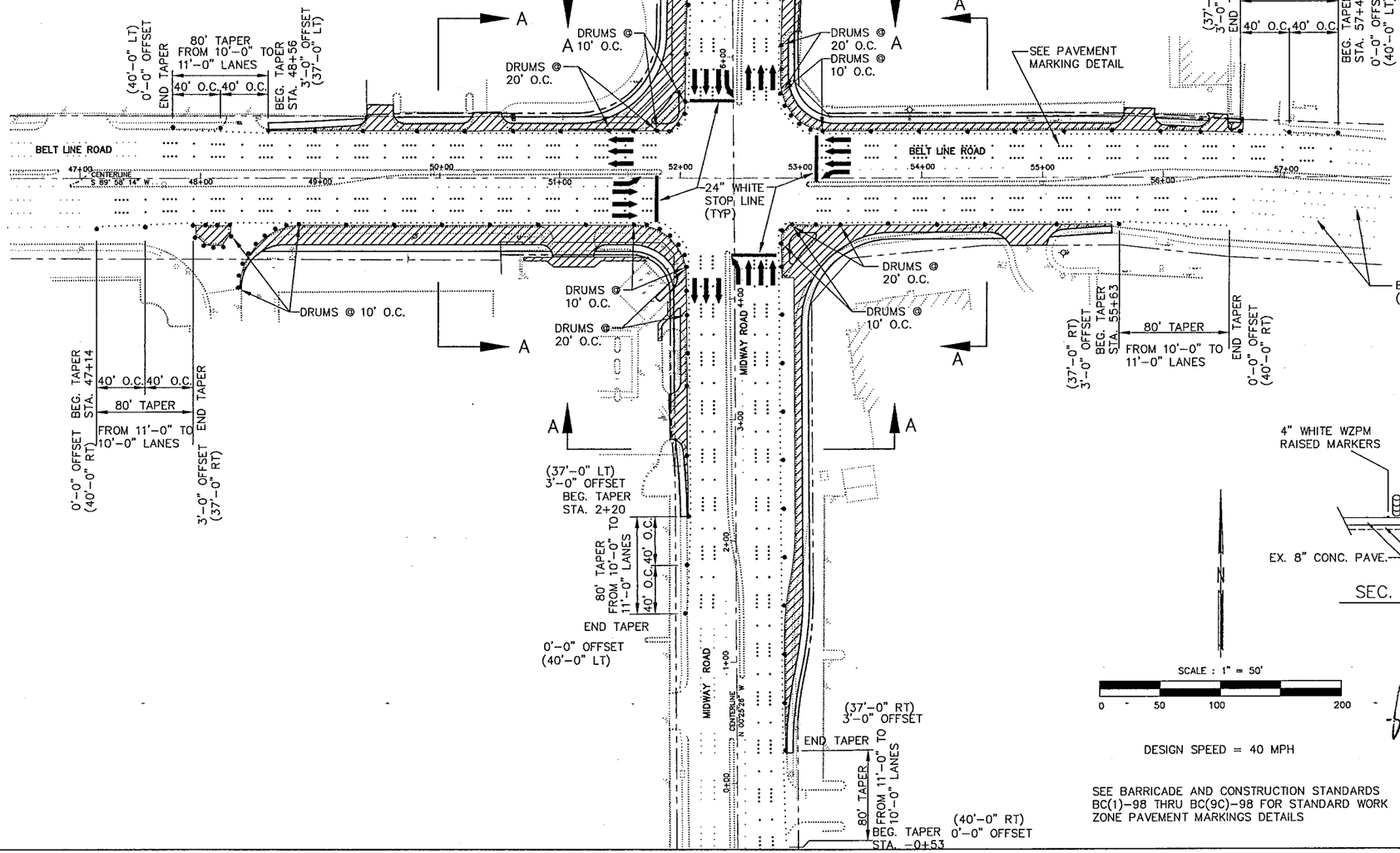
NOTES :

1. THE EXISTING BUTTONS FOR LEFT TURN LANES SHALL REMAIN IN PLACE DURING PHASE I.
2. THE NORTHBOUND MIDWAY ROAD RIGHT TURN LANE SHALL BE CLOSED DURING PHASE I. THE RIGHT TURN LANE SHALL BE RE-OPENED DURING PHASE II
3. PROVIDE TYPE A WARNING LIGHTS ON DRUMS AT 80' INTERVALS.



PAVEMENT MARKING DETAIL
(WZPM)(REMOVABLE)

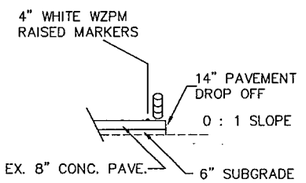
1/2 SECTION



SEE PROJECT LAYOUT
FOR ADVANCE WARNING
SIGNS (TYP)

LEGEND

	CONSTRUCTION AREA
WZPM	WORK ZONE PAVEMENT MARKINGS
CONC.	CONCRETE
EXIST.	EXISTING
O.C.	ON CENTER
•	DRUMS @ 40' O.C.
.....	PAVEMENT MARKERS



SEC. E

SCALE : 1" = 50'

0 50 100 200

DESIGN SPEED = 40 MPH

SEE BARRICADE AND CONSTRUCTION STANDARDS BC(1)–98 THRU BC(9C)–98 FOR STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

STATE OF TEXAS
RONALD A. YOUNG
36561
REGISTERED
PROFESSIONAL ENGINEER
3/15/99

SHEET 1 OF 4

BARTON-ASCHMAN ASSOCIATES, INC.

TRAFFIC CONTROL PLAN PHASE I

BELT LINE ROAD AT MIDWAY ROAD

ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation | DART

REVISION	DATE

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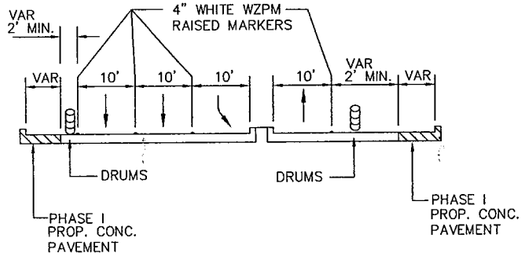
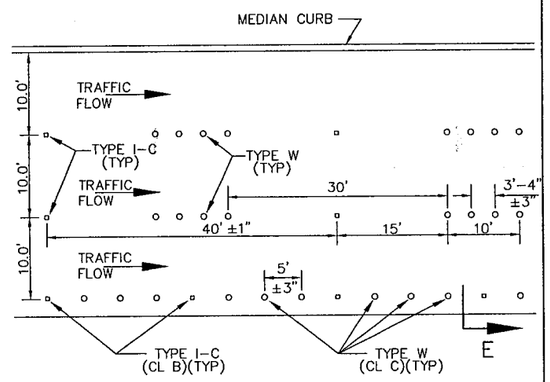


TYPICAL SECTION C – C

NOT TO SCALE

TYPICAL SECTION D – D

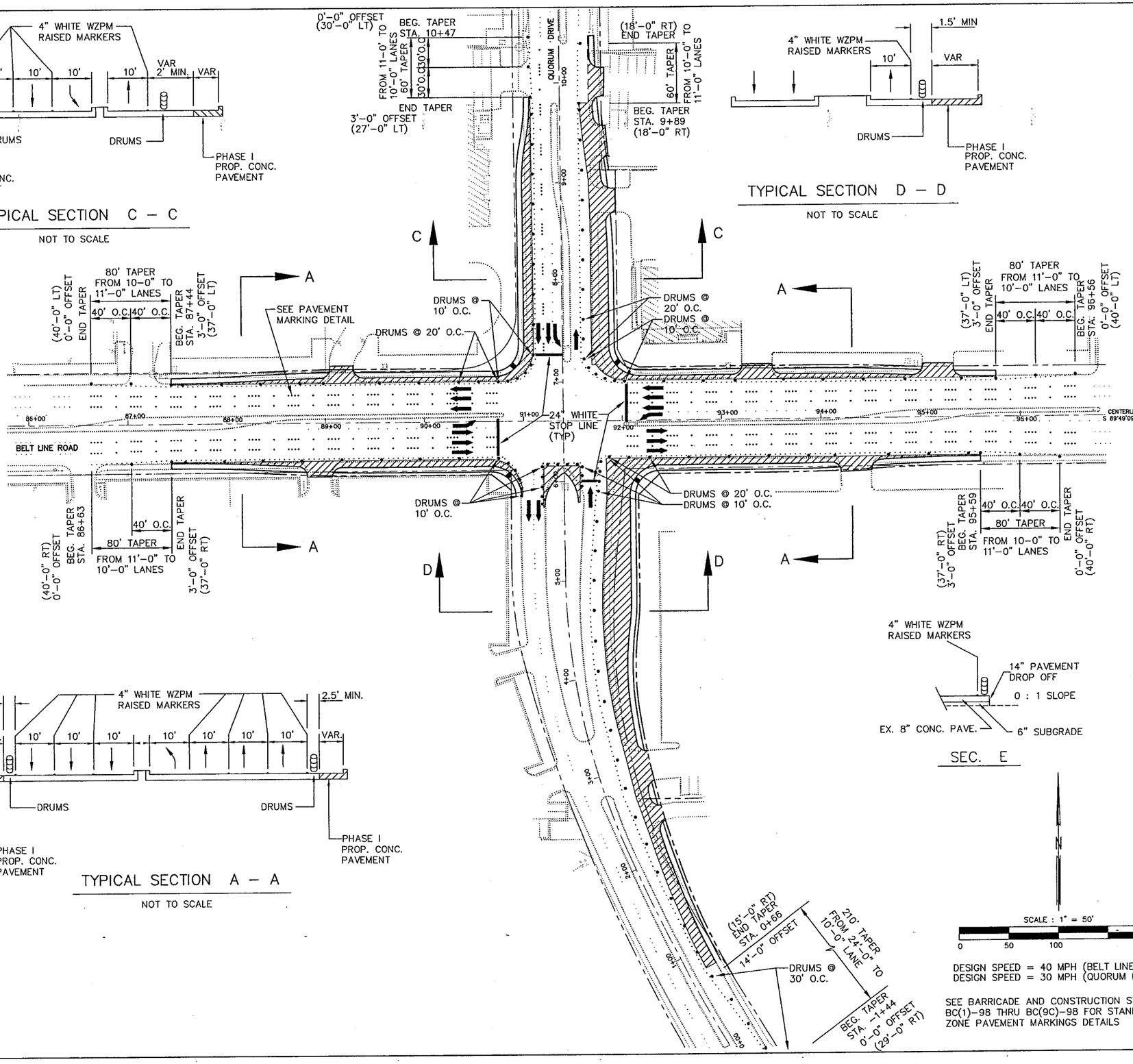
NOT TO SCALE

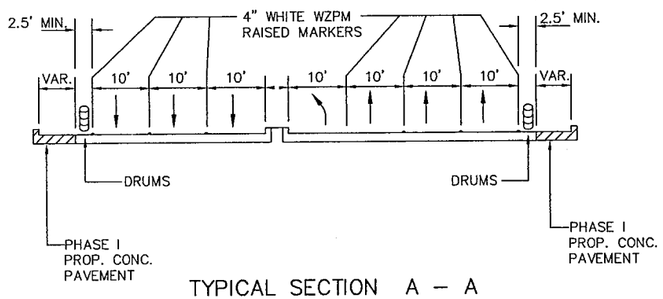


PAVEMENT MARKING DETAIL

(WZPM)(REMOVABLE)

1/2 SECTION

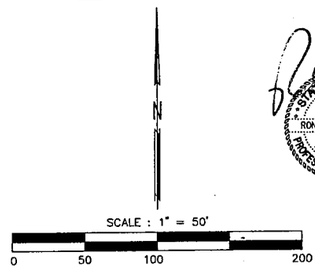




TYPICAL SECTION A – A

NOT TO SCALE

SEC. E



SEE PROJECT LAYOUT
FOR ADVANCE WARNING
SIGNS (TYP)

NOTES :

1. ON BELT LINE ROAD PROVIDE TYPE A WARNING LIGHTS ON DRUMS AT 80' INTERVALS.
2. ON QUORUM DRIVE PROVIDE TYPE A WARNING LIGHTS ON DRUMS AT 60' INTERVALS.

LEGEND

	CONSTRUCTION AREA
WZPM	WORK ZONE PAVEMENT MARKINGS
CONC.	CONCRETE
EXIST.	EXISTING
O.C.	ON CENTER
•	DRUMS @ 40' O.C.(BELT LINE RD) DRUMS @ 30' O.C.(QUORUM DR)
.....	PAVEMENT MARKERS

DESIGN SPEED = 40 MPH (BELT LINE RD.)
DESIGN SPEED = 30 MPH (QUORUM DR.)

SEE BARRICADE AND CONSTRUCTION STANDARDS BC(1)–98 THRU BC(9C)–98 FOR STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SHEET 2 OF 4

BARTON-ASCHMAN ASSOCIATES, INC.

TRAFFIC CONTROL PLAN PHASE I

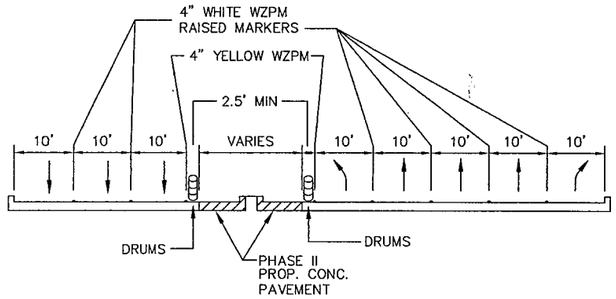
BELT LINE ROAD AT QUORUM DRIVE

ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation | DART

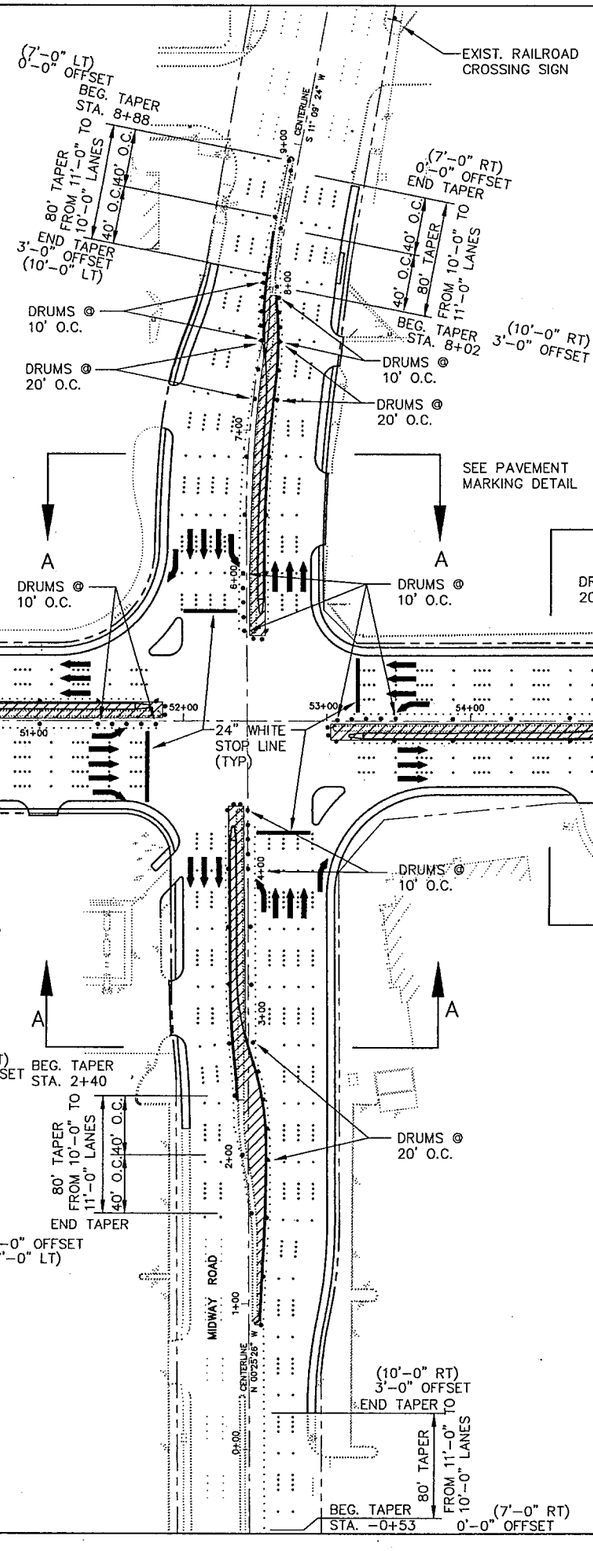
REVISION	DATE
DESIGNED BY:	R.A.Y.
DRAWN BY:	B.A.A.
CHECKED BY:	L.M.P.

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
6	CM 97 (449)	10
STATE	STATE DIST.	COUNTY
TEXAS	DALLAS	DALLAS
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD.
BA FILE NAME :		



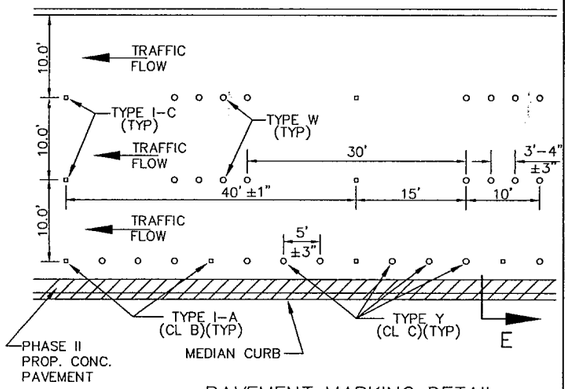
TYPICAL SECTION A – A

NOT TO SCALE



NOTES :

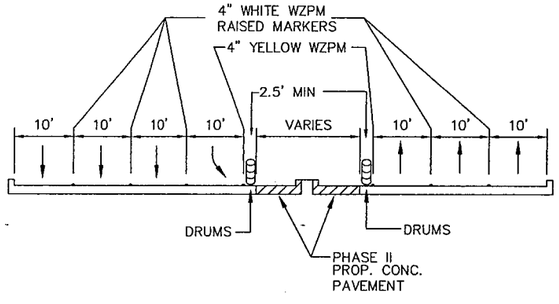
1. PROVIDE TYPE A WARNING LIGHTS ON DRUMS AT 80' INTERVALS.



PAVEMENT MARKING DETAIL
(WZPM)(REMOVABLE)

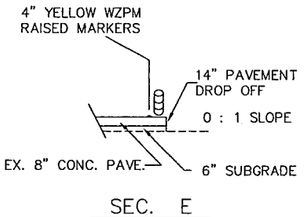
1/2 SECTION

SEE PROJECT LAYOUT FOR ADVANCE WARNING SIGNS (TYP)

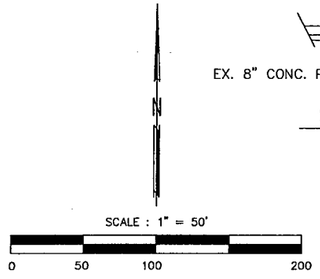


TYPICAL SECTION B – B

NOT TO SCALE



SEC. E



DESIGN SPEED = 40 MPH

SEE BARRICADE AND CONSTRUCTION STANDARDS BC(1)-98 THRU BC(9C)-98 FOR STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

LEGEND

	CONSTRUCTION AREA
WZPM	WORK ZONE PAVEMENT MARKINGS
CONC.	CONCRETE
EXIST.	EXISTING
O.C.	ON CENTER
•	DRUMS @ 40' O.C.
.....	PAVEMENT MARKERS

BARTON-ASCHMAN ASSOCIATES, INC.

TRAFFIC CONTROL PLAN PHASE II
BELT LINE ROAD AT MIDWAY ROAD
ADDISON TRANSIT PASS
ADDISON, TEXAS

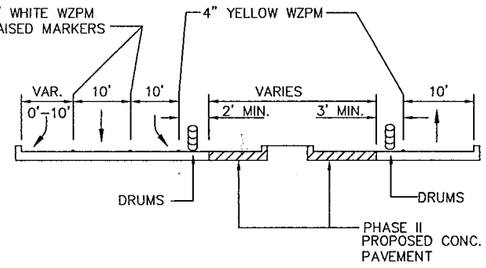
Texas Department of Transportation | DART

REVISION	DATE

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		//
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

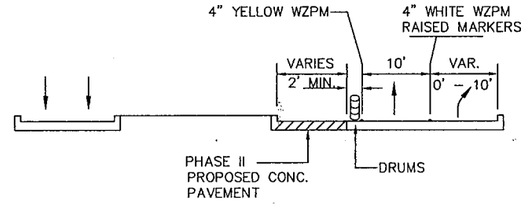
DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.
BA FILE NAME :

STATE OF TEXAS RONALD A. YOUNG 36561 REGISTERED PROFESSIONAL ENGINEER 3/15/29



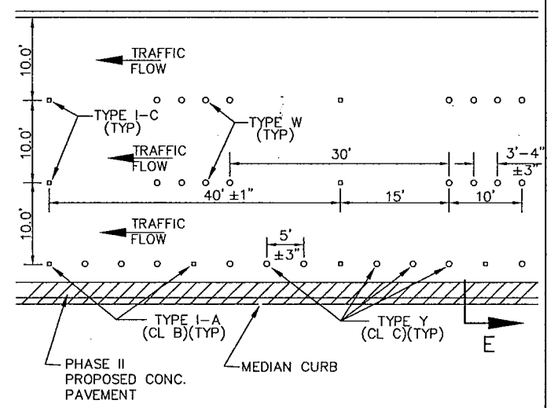
TYPICAL SECTION C – C

NOT TO SCALE



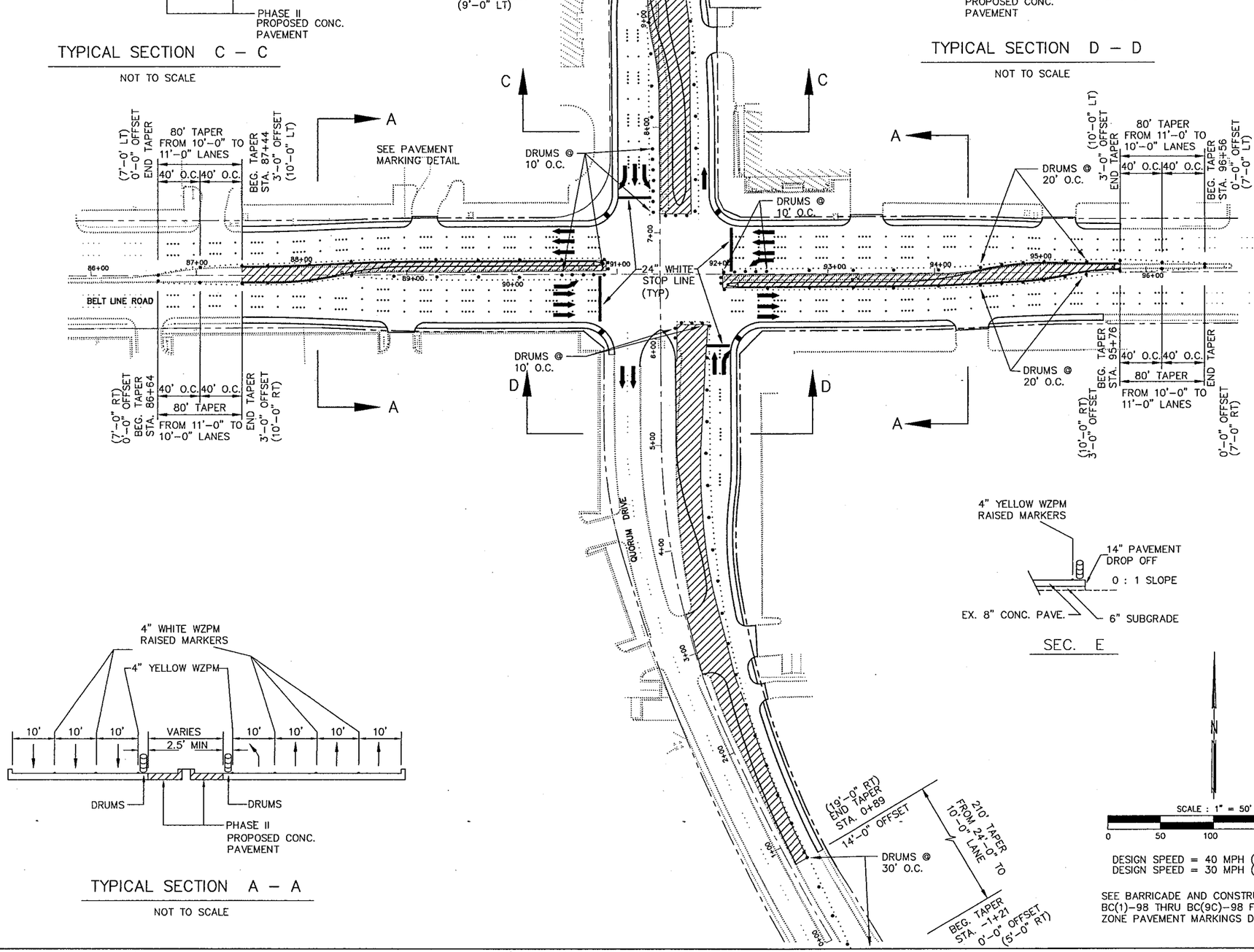
TYPICAL SECTION D – D

NOT TO SCALE



PAVEMENT MARKING DETAIL
(WZPM)(REMOVABLE)

1/2 SECTION



SEE PROJECT LAYOUT FOR ADVANCE WARNING SIGNS (TYP)

NOTES :

1. ON BELT LINE ROAD PROVIDE TYPE A WARNING LIGHTS ON DRUMS AT 80' INTERVALS.
2. ON QUORUM DRIVE PROVIDE TYPE A WARNING LIGHTS ON DRUMS AT 60' INTERVALS.

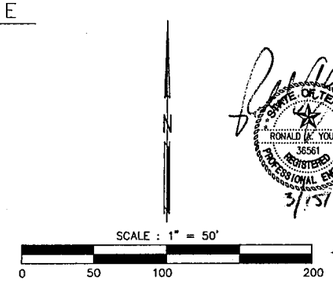
LEGEND

	CONSTRUCTION AREA
WZPM	WORK ZONE PAVEMENT MARKINGS
CONC.	CONCRETE
EXIST.	EXISTING
O.C.	ON CENTER
•	DRUMS @ 40' O.C. (BELT LINE RD) DRUMS @ 30' O.C. (QUORUM DR)
.....	PAVEMENT MARKERS

TYPICAL SECTION A – A

NOT TO SCALE

SEC. E



DESIGN SPEED = 40 MPH (BELT LINE RD)
DESIGN SPEED = 30 MPH (QUORUM DR)

SEE BARRICADE AND CONSTRUCTION STANDARDS BC(1)-98 THRU BC(9C)-98 FOR STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SHEET 4 OF 4

BARTON-ASCHMAN ASSOCIATES, INC.

TRAFFIC CONTROL PLAN PHASE II
BELT LINE ROAD AT QUORUM DRIVE
ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation — DART

REVISION	DATE	FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
		6	CM 97 (449)		12
		STATE	STATE DIST.	COUNTY	
		TEXAS	DALLAS	DALLAS	
		CONT.	SECT.	JOB	HIGHWAY No.
DESIGNED BY: R.A.Y.		8050	18	034	BELT LINE RD
DRAWN BY: B.A.A.					
CHECKED BY: L.M.P.		BA FILE NAME :			

ESTIMATE SUMMARY

EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	PROJECT CM 97(449) CONTROL 8050-18-034 MH (BELTLINE RD.) ALL BID ITEMS EST.	FINAL	ALT	ITEM-CODE ITEM NO	DESC CODE	SP NO	DESCRIPTION	UNIT	TOTAL EST.	FINAL
								17.579			100	0502		PREP ROW	STA	17.579	
								4329.400			104	0501		REMOV CONC (PAV)	SY	4329.400	
								49.000			104	0505		REMOV CONC (MED)	SY	49.000	
								18.000			104	0508		REMOV CONC (FND)	CY	18.000	
								2241.000			104	0509		REMOV CONC (SDWLK)	SY	2241.000	
								1105.700			104	0511		REMOV CONC (DRVWY)	SY	1105.700	
								40.000			104	0516		REMOV CONC (RETAIN WALL)	SY	40.000	
								4529.300			104	0521		REMOV CONC (CURB OR C&G)	LF	4529.300	
								1.600			104	0524		REMOV CONC (FLUME)	SY	1.600	
								220.400			105	0504		RMV STB BS AND/OR ASH PAV (CL 2) VAR DEP	SY	220.400	
								2293.300			110	0501		EXCAVATION (RDWY)	CY	2293.300	
								970.000			132	0509		EMBANK (DENS CONT) (TY C) (CL 3)	CY	970.000	
								4152.600			160	0506		FURN AND PLAC TPSL (CL 2) (4 ")	SY	4152.600	
								1020.300			162	0502	001	BLOCK SODDING	SY	1020.300	
								2.800			168	0501		VEGETATIVE WATERING	MG	2.800	
								2553.300			276	0624		CEM TRT BS (STR-M) (TY A GR 1) (CL 2)	TON	2553.300	
								7196.800			360	0524	028	CONC PAV (CPCD) (8")	SY	7196.800	
								5850.600			360	0526	028	MONO CURB (TY II)	LF	5850.600	
								5.000			402	0501		TRENCH EXCAV PROTECTION	LF	5.000	
								3592.000			423	0505		RETAINING WALL (CONC BLOCK)	SF	3592.000	
								1.600			432	0518		RIPRAP (CONC) (CL B) (FLUME)	CY	1.600	
								5.000			464	0505	003	RC PIPE (CL III) (24 ")	LF	5.000	
								1.000			465	0914		INLET (COMPL) (CURB) (20 FT) (SPL)	EA	1.000	
								1.000			496	0502		REMOV OLD STR (SMALL)	EA	1.000	
								1.000			500	0501		MOBILIZATION	LS	1.000	
								7.000			502	0501	018	BARRICADES, SIGNS AND TRAF HANDLE	MO	7.000	
								125.000			529	0535		CONC CURB (DOWEL) (TY II)	LF	125.000	
								3476.700			529	0554		CONC CURB AND GUTTER (TY II)	LF	3476.700	
								916.200			530	0501		DRVWYS (CONC) (6 ")	SY	916.200	
								253.500			531	0503		CONCRETE SIDEWALK (WHEELCHAIR RAMP)	SY	253.500	
								2283.100			531	0507		CONCRETE SIDEWALK (4 ")	SY	2283.100	
								44.000			536	0511		CONC MEDIAN (MONO NOSE) (VAR DEPTH)	SY	44.000	
								60.000			618	0504		CONDUIT (RM) (1 1/2")	LF	60.000	
								6510.000			618	0511		CONDUIT (PVC) (SCHD 40) (2 ")	LF	6510.000	
								80.000			618	0513		CONDUIT (PVC) (SCHD 40) (3 ")	LF	80.000	
								40.000			618	0514		CONDUIT (PVC) (SCHD 40) (4 ")	LF	40.000	
								1165.000			618	0535		CONDUIT (PVC) (SCHD 40) (4 ") (BORE)	LF	1165.000	
								320.000			618	0545		CONDUIT (PVC) (SCHD 40) (1 ")	LF	320.000	
								1070.000			620	0504		ELEC CONDUCTOR (NO. 6) BARE	LF	1070.000	
								220.000			620	0510		ELEC CONDUCTOR (NO. 6) INSULATED	LF	220.000	
								18.000			624	0501		GROUND BOX TY A (122311) W/APRON	EA	18.000	
								2.000			624	0503		GROUND BOX TY C (162911) W/APRON	EA	2.000	
								2.000			628	0622		ELEC SERV TYS (120/240) 000 (NS) GS (E) SP (U)	EA	2.000	
								7.000			649	0504		RELOC SMALL RDSD SGN ASSMS	EA	7.000	
								112.000			656	0512		FND FOR TRAF SIG (36 IN DRIL SHFT)	LF	112.000	
								2.200			656	0518		TRAF SIG CNTRL FND	CY	2.200	
								280.000			662	0511	003	WRK ZN PAV MRK REMOV (W) (24") (SLD)	LF	280.000	
								305.000			662	0541	003	WRK ZN PAV MRK REMOV (CL B) TY I-A	EA	305.000	
								627.000			662	0542	003	WRK ZN PAV MRK REMOV (CL B) TY I-C	EA	627.000	
								1997.000			662	0545	003	WRK ZN PAV MRK REMOV (CL C) TY W	EA	1997.000	

ESTIMATE & QUANTITY SHEET

STATE DIST. NO.	COUNTY	PROJECT NO.	SHEET NO.
18	DALLAS	CM 97(449)	/3

ESTIMATE SUMMARY

PROJECT CM 97(449)
CONTROL 8050-18-034
MH (BELTLINE RD.)
ALL BID ITEMS

EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	EST.	FINAL	ALT.	ITEM-CODE ITEM NO	DESC CODE	SP NO	DESCRIPTION	UNIT	TOTAL EST.	TOTAL FINAL
								914.000			662	0546	003	WRK ZN PAV MRK REMOV (CL C) TY Y	EA	914.000	
								362.000			666	0502	018	REFL PAV MRK TY I (W) (4") (BRK)	LF	362.000	
								1658.000			666	0509	018	REFL PAV MRK TY I (W) (12") (SLD)	LF	1658.000	
								432.000			666	0512	018	REFL PAV MRK TY I (W) (24") (SLD)	LF	432.000	
								43.000			666	0513	018	REFL PAV MRK TY I (W) (ARROW)	EA	43.000	
								43.000			666	0517	018	REFL PAV MRK TY I (W) (WORD)	EA	43.000	
								362.000			666	0536	018	REFL PAV MRK TY II (W) (4") (BRK)	LF	362.000	
								1658.000			666	0541	018	REFL PAV MRK TY II (W) (12") (SLD)	LF	1658.000	
								432.000			666	0544	018	REFL PAV MRK TY II (W) (24") (SLD)	LF	432.000	
								43.000			666	0545	018	REFL PAV MRK TY II (W) (ARROW)	EA	43.000	
								43.000			666	0549	018	REFL PAV MRK TY II (W) (WORD)	EA	43.000	
								284.000			672	0502	012	RAIS PAV MRKR CL A (JIGGLE) TY I-C	EA	284.000	
								574.000			672	0507	012	RAIS PAV MRKR CL B (REFL) TY I-C	EA	574.000	
								588.000			672	0516	012	RAIS PAV MRKR CL C (TRAF BTN) TY W	EA	588.000	
								290.000			677	0506		ELIM EXT PAV MRK & MRKR (24")	LF	290.000	
								1406.000			677	0518		ELIM EXT PAV MRK & MRKR (RAIS PAV MRKR)	EA	1406.000	
								362.000			678	0501		PAV SURF PREP FOR MRKS (4")	LF	362.000	
								1658.000			678	0504		PAV SURF PREP FOR MRKS (12")	LF	1658.000	
								432.000			678	0506		PAV SURF PREP FOR MRKS (24")	LF	432.000	
								43.000			678	0507		PAV SURF PREP FOR MRKS (ARROW)	EA	43.000	
								43.000			678	0508		PAV SURF PREP FOR MRKS (WORD)	EA	43.000	
								2.000			680	0502		INSTAL OF HWY TRAF SIG (SYSTEM)	EA	2.000	
								1280.000			684	0520		TRAF SIG CBL (TY A) (20 CONDR) (12 AWG)	LF	1280.000	
								5695.000			684	0546		TRAF SIG CBL (TY C) (2 CONDR) (18 AWG)	LF	5695.000	
								1945.000			684	0553		TRAF SIG CBL (TY A) (5 CONDR) (16 AWG)	LF	1945.000	
								50.000			684	0554		TRAF SIG CBL (TY A) (7 CONDR) (16 AWG)	LF	50.000	
								8470.000			688	0511		VEH DETECT (SAWCUT)	LF	8470.000	
								32.000			5007	0501		BALED HAY FOR EROSN & SEDMT CONT	EA	32.000	
								32.000			5007	0502		BL HAY FOR ERSN & SED CONT (RMV & REPL)	EA	32.000	
								32.000			5007	0503		BALED HAY FOR EROSN & SED CONT (REMOV)	EA	32.000	
								10.000			5012	0501		BKHOE WORK (EROSN CONT) (CL 1)	HR	10.000	
								74.500			5051	0501		INTRLOCK CONC PAV STONES	SY	74.500	
								4950.000			5249	0501		TEMP SEDMT CONT FENCE	LF	4950.000	
								4950.000			5249	0502		TEMP SEDMT CONT FENCE (REMOVE & REPLAC)	LF	4950.000	
								4950.000			5249	0503		TEMP SEDMT CONT FENCE (REMOV)	LF	4950.000	
								1.000			5509	0501		ADJ WASTEWATER LAT CLEANOUT	EA	1.000	
								3.000			5509	0502		ADJ WASTEWATER MAINLINE CLEANOUT	EA	3.000	
								6.000			5510	0501		ADJ OF FIRE HYDRANT	EA	6.000	
								17.000			5511	0501		RELOCATE EXIST METER & METER BOX	EA	17.000	
								16.000			5512	0501		VERT ADJ WTR VALVE COVER & VALVE STACK	EA	16.000	
								2.000			6010	0501		SALV TRAF SIGNALS	EA	2.000	
								3530.000			6031	0511		COMMUN CABLE (6 PAIR) (16 AWG)	LF	3530.000	
														CONTRACTOR FORCE ACCOUNT WORK (PART)			
														TRANSPOTABLE CELLULAR TELEPHONE	LS	1.000	

ESTIMATE & QUANTITY SHEET

STATE DIST. NO.	COUNTY	PROJECT NO.	SHEET NO.
18	DALLAS	CM 97(449)	13A

ROADWAY QUANTITIES

ITEM / LOCATION	100 PREP. R.O.W. STA.	276 CEM TRT BS (STR-M)(CL 2) TON	360 CONC PAVE (8") SY	360 MONO CURB (TY II) LF	423 RETAINING WALL(CONC BLOCK) SF	529 CONC CURB (DOWEL) (TY II) LF	529 CONC CURB AND GUTTER (TY II) LF	530 DRVWYS (CONC) (6") SY	531 CONCRETE SIDEWALK (WHEELCHAIR RAMP) SY	531 CONCRETE SIDEWALK (4") SY	536 CONC MEDIAN (MONO NOSE) (VAR DEPTH) SY	5051 INTRLOCK CONC PAV STONES SY
BELT LINE ROAD												
STA 47+55.63 TO STA 51+13.67	3.6	230.7	658.5	485.6	575	–	535.5	141.7	25.8	209.4		
STA 51+13.67 TO STA 56+81.18	5.7	443.6	1258.5	1216.6	504	40	951.5	187.8	76.9	394.0	29.3	74.5
MIDWAY ROAD												
STA 0+24.89 TO 3+79.10		149.3	401.5	486.8	467	–	473.1	45.2	8.3	310.6		
STA 6+19.71 TO STA 8+79.17		154.6	424.2	346.7	251	85	314.2	154.2	21.5	173.6		
BELT LINE ROAD												
STA 87+43.34 TO 90+67.34	3.2	157.1	401.2	621.5	466	–	591.1	69.1	17.8	315.3		
STA 90+67.34 TO 95+75.73	5.1	310.2	856.9	977.4	790	–	611.3	132.7	62.2	368.2	14.7	
QUORUM DRIVE												
STA 0+79.49 TO STA 5+85.77		685.7	1978.7	859.7	395	–	–	57.3	18.8	277.3		
STA 7+36.27 TO 10+47.10		422.1	1217.3	856.3	144	–	–	128.2	22.2	234.7		
TOTAL	17.6	2553.3	7196.8	5850.6	3592	125	3476.7	916.2	253.5	2283.1	44.0	74.5

DRAINAGE ITEMS

ITEM / LOCATION	402 TRENCH EXCAV PROTECTION L.F.	432 RIPRAP (CONC.) (CL B)(FLUME) CY	464 RC PIPE (SEWER) (CL III)(24") L.F.	465 INLET(COMPL) (CURB)(20 FT) (SPL) EA
MIDWAY ROAD STA 8+13.37, 47.51' RT		1.6		
MIDWAY ROAD STA 8+23.73, 43.56' RT				
MIDWAY ROAD STA 8+26.33, 39.99' RT	5		5	1
TOTAL	5	1.6	5	1

PAVEMENT SURFACE PREPARATION FOR MARKINGS

LOCATION	ITEM 678 STRIPING 4" LF	STRIPING 12" LF	STRIPING 24" LF	ARROW EA	WORD EA
MIDWAY ROAD AT BELT LINE ROAD	188	803	222	23	23
QUORUM DRIVE AT BELT LINE ROAD	174	855	210	20	20
TOTAL	362	1658	432	43	43

SUMMARY OF CONSTRUCTION PAVEMENT MARKINGS

LOCATION	ITEM 662 WORK ZONE PAVEMENT MARKINGS (REMOVABLE) CLASS B TY I–C (EA)	CLASS B TY I–A (EA)	CLASS C TY W (EA)	CLASS C TY Y (EA)	STRIPING (W) (24") (SLD) (LF)
MIDWAY ROAD AT BELT LINE ROAD	357	151	1136	452	140
QUORUM DRIVE AT BELT LINE ROAD	270	154	861	462	140
TOTAL	627	305	1997	914	280

SUMMARY OF REMOVAL ITEMS

ITEM / LOCATION	104 REMOVE CONC (PAV) SY	104 REMOVE CONC (MED.) SY	104 REMOVE CONC (FND) CY	104 REMOVE CONC (SDWLK) SY	104 REMOVE CONC (DRVWY) SY	104 REMOVE CONC (CURB OR C&G) LF	104 REMOVE CONC (RETAIN WALL) SY	104 REMOVE CONC (FLUME) SY	105 RMV STB BS AND /OR ASH PAV (CL 2)VAR DEP SY	496 REMOVE OLD STR (SMALL) EA	649 RELOC SMALL RDSD SGN ASSMS EA	677 ELIM EXT PAV MRK & MRKR (24") LF	677 ELIM EXT PAV MRK & MRKR (RAIS PAV MRKR) EA	** REMOVE CONC. PAVERS SY
MIDWAY ROAD AT BELT LINE ROAD	1490.4	24	8.7	1015.5	600.9	2405.3		1.6	144.4	1	4	160	966	112.8
QUORUM DRIVE AT BELT LINE ROAD	2839.0	25	9.3	1225.5	504.8	2124.0	40		76.0		3	130	440	28.3
TOTAL	4329.4	49	18.0	2241.0	1105.7	4529.3	40	1.6	220.4	1	7	290	1406	141.1

** FOR CONTRACTOR'S INFORMATION ONLY. SUBSIDIARY TO ITEM 100 – PREP R.O.W.

SUMMARY OF PAVEMENT MARKINGS

LOCATION	ITEM 666 REFLECTORIZED PAVEMENT MARKINGS (TYPE I) WHITE 4" BRK LF	12" SLD LF	24" SLD LF	ARROW EA	WORD EA	ITEM 672 RAISED PAVEMENT MARKERS CLASS A (JIGGLE) TY I–C EA	CLASS B (REFL) TY I–C EA	CLASS C (TRAF BTN) TY W EA
MIDWAY ROAD AT BELT LINE ROAD	188	803	222	23	23	157	350	364
QUORUM DRIVE AT BELT LINE ROAD	174	855	210	20	20	127	224	224
TOTAL	362	1658	432	43	43	284	574	588

LOCATION	ITEM 666 REFLECTORIZED PAVEMENT MARKINGS (TYPE II) WHITE 4" BRK LF	12" SLD LF	24" SLD LF	ARROW EA	WORD EA
MIDWAY ROAD AT BELT LINE ROAD	188	803	222	23	23
QUORUM DRIVE AT BELT LINE ROAD	174	855	210	20	20
TOTAL	362	1658	432	43	43

EARTHWORK QUANTITIES

ITEM / LOCATION	110 EXCAVATION (RDWY) CY	132 EMBANK (DC)(TY C) (CL 3) CY	160 FURN AND PLAC TPSL (CL 2)(4") SY	162 BLOCK SODDING SY
BELT LINE ROAD				
STA 47+55.63				
STA 51+13.67	393	121.3	661.8	74.3
STA 56+81.18	345.5	190.1	611.1	174.2
MIDWAY ROAD				
STA 0+24.89				
STA 3+79.10	175	105.7	292.0	190.7
STA 6+19.71				
STA 8+79.17	225.5	83.4	123.8	112.9
BELT LINE ROAD				
STA 87+43.34				
STA 90+67.34	153.5	127.1	339.4	135.9
STA 95+75.73	310.7	121.3	428.6	149.3
QUORUM DRIVE				
STA 0+79.49				
STA 5+85.77	410	106.7	1225.7	118.6
STA 7+36.27				
STA 10+47.10	280.1	114.4	470.2	64.4
TOTAL	2293.3	970.0	4152.6	1020.3

SUMMARY OF EROSION CONTROL

LOCATION	* ITEM 5007 BALED HAY FOR EROS. SED. CONT. EA	BALED HAY FOR EROS. SED. CONT. (REM/REPL) EA	BALED HAY FOR EROS. SED. CONT. (REM.) EA	* ITEM 5249 TEMP. SED. CONT FENCE L.F.	TEMP. SED. CONT FENCE (REM/REPL) L.F.	TEMP. SED. CONT FENCE (REM) L.F.
MIDWAY AT BELT LINE	16	16	16	2400	2400	2400
QUORUM AT BELT LINE	16	16	16	2550	2550	2550
TOTAL	32	32	32	4950	4950	4950

* USED AT LOCATIONS AS DIRECTED BY ENGINEER

⚠ WATER ADJUSTMENTS

LOCATION / ITEM	5511 - RELOC EXIST METER & EXIST METER BOX EA	5509 ADJ WSTWTR LAT & MNLN CLNOUT EA	5512 VERT ADJ WTR VALVE COV & STACK EA	- 5510 REMOVE AND RELOCATE FIREHYDRANT EA	
MIDWAY ROAD AT BELT LINE ROAD	9	3	7	2	
QUORUM DRIVE AT BELT LINE ROAD	8	1	9	4	
TOTAL	17	4	16	6	

STATE OF TEXAS · RONALD A. YOUNG · 76561 · REGISTERED · PROFESSIONAL ENGINEER
4/23/97

⚠ REVISED 9/2/97 RT

NOTES :

(1) SEE TRAFFIC SIGNAL & ILLUMINATION SUMMARY SHEET FOR ADDITIONAL ITEMS AND QUANTITIES.

BARTON-ASCHMAN ASSOCIATES, INC.

QUANTITY SUMMARY

ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation ©1999 · DART

REVISION	DATE	FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
		6	CM 97 (449)		14
		STATE	STATE DIST.	COUNTY	
		TEXAS	DALLAS	DALLAS	
		CONT.	SECT.	JOB	HIGHWAY No.
DESIGNED BY: R.A.Y.		8050	18	034	BELT LINE RD
DRAWN BY: B–A		BA FILE NAME :			
CHECKED BY: L.M.P.					

GENERAL NOTES AND SPECIFICATION DATA--

ITEM	DESCRIPTION	GRADING REQUIREMENTS % RETAINED, SIEVES	CONSTANTS LL	PI	BALL MILL	NOTE
					MAX MAX	MIN
132	EMBK (DC) (TY C) (CL 3)			40 8		1

NOTE:
(1) BASE MATERIAL WEIGHT BASED ON 110 LB/CF (DRY-COMPACTED)

MINIMUM COMPACTION REQUIREMENTS FOR BASE COURSES
% DENSITY AS DETERMINED BY COMPACTION RATIO (TEX-115-E)

ITEM	MATERIAL	ROADWAY COURSE	ROADWAY DENSITY	RAMPS COURSE	RAMPS DENSITY
276	CEM TRT BS (STR-M)	ALL	95	N/A	N/A

BASIS OF ESTIMATE FOR PERMANENT CONSTRUCTION

ITEM	DESCRIPTION	RATE	UNIT	QUANTITY
166	* FERT (12-12-12)	400 #/AC	0.05 AC	0.01 TON
168	**VEGETATIVE WATERING	14 MG/AC	0.05 AC	0.7 MG
300	* ASPHALTS, OILS AND EMULSIONS	0.10 GAL/SY	8106 SY	810.6 GAL

BASIS OF ESTIMATE FOR TEMPORARY EROSION CONTROL ITEMS

SPECIFICATION DATA

GENERAL NOTES AND SPECIFICATION DATA--

ITEM	DESCRIPTION	RATE	UNIT	QUANTITY
5012	BACKHOE WORK	12 CY/HR	120.0 CY	10.0 HR

* FOR CONTRACTOR'S INFORMATION ONLY.
** PER APPLICATION--4 APPLICATIONS REQUIRED.

GENERAL:

BENCH MARKS AND ELEVATIONS ARE SHOWN ON THE PLANS.

PRIOR TO CONTRACT LETTING, REPRODUCIBLE EARTHWORK CROSS SECTIONS WILL BE AVAILABLE AT THE DISTRICT OFFICE FOR BORROWING BY COPYING-SERVICE COMPANIES FOR THE PURPOSE OF MAKING COPIES FOR THE PROSPECTIVE BIDDERS, AT THE PROSPECTIVE BIDDER'S EXPENSE.

THE CONSTRUCTION, OPERATION AND MAINTENANCE OF THIS PROPOSED PROJECT WILL BE CONSISTENT WITH THE STATE IMPLEMENTATION PLAN AS PREPARED BY THE TEXAS AIR CONTROL BOARD.

THE DETERMINATION OF THE LIQUID LIMIT OF SOILS SHALL BE IN ACCORDANCE WITH TEST METHOD TEX-104-E.

UPON REQUEST OF THE ENGINEER, THE CONTRACTOR SHALL FURNISH TO THE ENGINEER A NARRATIVE REPORT, SIGNED AND DATED BY THE CONTRACTOR, OUTLINING THE MANNER OF PROSECUTION OF WORK THAT HE INTENDS TO FOLLOW IN THE SUBSEQUENT SEVEN DAY PERIOD.

IF AT ANY TIME DURING THE CONSTRUCTION OF THIS PROJECT THE CONTRACTOR FALLS MORE THAN 30 DAYS BEHIND HIS SCHEDULE SUBMITTED UNDER THE PROVISIONS OF ARTICLE 8.2 HE SHALL FURNISH THE ENGINEER WITH AN UPDATED REALISTIC CONSTRUCTION SCHEDULE.

ERECTION OF POLES, LUMINARES AND STRUCTURES LOCATED NEAR ANY OVERHEAD OR UNDERGROUND UTILITIES SHALL BE ACCOMPLISHED USING ESTABLISHED INDUSTRY AND UTILITY SAFETY PRACTICES. THE CONTRACTOR SHALL CONSULT WITH THE APPROPRIATE UTILITY COMPANY PRIOR TO BEGINNING SUCH WORK.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING AN ACCURATE VERTICAL AND HORIZONTAL CONTROL THROUGHOUT THE CONTRACT. SURVEY MONUMENTS, FURNISHED BY THE DEPARTMENT, SHALL BE PLACED BY THE CONTRACTOR AT POINTS INDICATED AND AS DETAILED IN THE PLANS OR AS

SPECIFICATION DATA

GENERAL NOTES AND SPECIFICATION DATA--

GENERAL:, CONT'D
DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL FURNISH THE RESIDENT ENGINEER SURFACE CORRDINATES AND THE ELEVATION OF THE SET MONUMENT AND AN AZIMUTH FROM THE MONUMENT TO SOME PROMINENT PHYSICAL FEATURE, PREFERABLY ANOTHER SURVEY MONUMENT ON THE PROJECT. THIS WORK WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.

THE CONTRACTOR SHALL MAKE EVERY EFFORT TO PRESERVE EXISTING TREES DESIGNATED BY THE ENGINEER TO REMAIN FOLLOWING CONSTRUCTION. THE CONTRACTOR IS REQUESTED TO FOLLOW THE TEXAS DEPARTMENT OF TRANSPORTATION'S PRUNING GUIDELINES AND OBSERVE RECOGNIZED TREE SURGERY PRACTICES. ADDITIONALLY, CARE SHALL BE TAKEN TO MINIMIZE DISRUPTION OR DAMAGE TO THE ROOT SYSTEM OF THESE DESIGNATED TREES.

THE CONTRACTOR IS RESPONSIBLE FOR STABILIZING ALL UNPAVED AREAS OF THE PROJECT WITH A MINIMUM 70% DENSITY OF VEGETATIVE COVER. THIS IS TO BE ACCOMPLISHED UTILIZING THE ITEMS IN THIS CONTRACT.

THE CONTRACTOR SHALL LOCATE ALL UTILITIES, BOTH UNDERGROUND AND ABOVE GROUND, IN THE PROJECT AREA PRIOR TO BEGINNING WORK SO THAT CONFLICTS ARE AVOIDED.

THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE POSSIBLE PRESENCE OF UNDERGROUND UTILITIES OWNED BY THE THE TOWN OF ADDISON OR OTHER ENTITIES (IRRIGATION, SIGNAL, ILLUMINATION AND/OR SURVEILLANCE, COMMUNICATION AND CONTROL) ON THE RIGHT OF WAY ON THIS PROJECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO CALL JEFF MARKIEWICZ (972-450-2860) AT THE ADDISON PUBLIC WORKS DEPT. AT LEAST 48 HOURS IN ADVANCE OF EXCAVATION.

THE CONTRACTOR SHALL TAKE EXTREME CARE WHEN EXCAVATING IN THE VICINITY OF UTILITIES. THE CONTRACTOR MAY BE REQUIRED TO PROBE OR EXPOSE THESE FACILITIES. THE CONTRACTOR WILL BE RESPONSIBLE FOR DAMAGES TO ANY UTILITIES IF THE DAMAGE IS CAUSED BY NEGLIGENCE OR A FAILURE TO HAVE TXDOT LOCATES PERFORMED.

THE FOLLOWING STANDARD DETAIL SHEETS HAVE BEEN MODIFIED:

TS-FD-96

THE CONTRACTOR'S ATTENTION IS CALLED TO THE SEQUENCE OF CONSTRUCTION SHEET, THE PAVING AND DRAINAGE PLAN/PROFILE SHEETS, AND THE REMOVAL PLAN SHEETS FOR ADDITIONAL GENERAL NOTES.

SPECIFICATION DATA

GENERAL NOTES AND SPECIFICATION DATA--

GENERAL:, CONT'D
IF SWEEPING, PLANNING OR OTHER CLEANUP OPERATIONS RESULT IN DUST BECOMING AN ENVIRONMENTAL PROBLEM, THE ENGINEER MAY REQUIRE THE CONTRACTOR TO USE VACUUM-TYPE SWEEPER EQUIPMENT TO REPLACE CONVENTIONAL SWEEPERS.

ALL PRE-BID QUESTIONS RECEIVED, ALONG WITH TXDOT RESPONSE, CONCERNING THESE PLANS WILL BE RECORDED AND AVAILABLE FOR VIEWING AND/OR COPING BY ANY INTERESTED PARTY AT THE NORTHWEST AREA OFFICE, 12000 GREENVILLE AVE., DALLAS, TEXAS 75243-3506, TELEPHONE NUMBER 972/235-7797.

ANY NECESSARY PILOT MARKINGS FOR ANY STRIPING OPERATION SHALL BE THE SAME COLOR AS THE PROPOSED STRIPE. PILOT MARKINGS SHALL BE LIMITED TO ONE (1) 2 INCH DIAMETER MARK FOR EACH 100 FEET OF STRIPE. ALL PILOT MARKINGS SHALL BE TOTALLY OBLITERATED AFTER COMPLETION OF THE STRIPING OPERATION.

ITEM 6:

THE CONTRACTOR WILL BE REQUIRED TO FURNISH THE ENGINEER WITH A COPY OF CALCULATIONS AND MEASUREMENTS FOR ALL VEHICLES DESCRIBED IN ARTICLE 6.7 AS MAY BE NECESSARY TO ESTABLISH THE MAXIMUM LEGAL WEIGHT FOR EACH VEHICLE HAULING MATERIALS ON OR DELIVERING MATERIALS TO THE PROJECT. THESE WILL BE PROVIDED PRIOR TO THE UNLOADING OF THE VEHICLE INVOLVED AN WILL BE USED AS A BASIS FOR ENFORCING THE ACCEPTANCE PROVISIONS OF THIS ITEM FOR THE VEHICLE FOR THE DURATION OF THE PROJECT. THE MEASUREMENTS AND CALCULATIONS SHALL BE NEAT, LEGIBLE AND ON A GOOD GRADE OF PAPER SUITABLE FOR FILING FOR A PERMANENT RECORD. MEASURMENTS AND CALCULATIONS SHALL AS MINIMUM, CONSIST OF: THE DATES MEASURED AND CALCULATED, THE NAMES AND SIGNATURES OF THE PERSONS MAKING THEM, THE LICENSE NUMBER OR OTHER IDENTIFYING MARK ON THE VEHICLE, AND A SKETCH OR DESCRIPTION OF THE VEHICLE. VEHICLES NOT OWNED, LEASED, HIRED OR OTHERWISE UNDER THE CONTROL OF THE CONTRACTOR OR HIS SUBCONTRACTORS USED FOR THE DELIVERY OF MATERIALS FROM COMMERCIAL SOURCES MAY BE EXEMPTED FOR THIS REQUIREMENT PROVIDED THE CONTRACTOR MAKES USFFICIENT SPOT CHECKS OF VEHICLES FOR EACH SOURCE TO SATISFY THE ENGINEER THAT OVERLOADING IS NOT OCCURING. COPIES OF MEASUREMENTS AND CALCULATIONS WILL BE FURNISHED, AS DESCRIBED ABOVE AS EVIDENCE OF SPOT CHECKS. FURNISHING OF THE ABOVE DESCRIBED MATERIALS BY THE CONTRACTOR WILL CONSTITUTE CERTIFICATION BY HIM AS TO THE ACCURACY OF THE MEASURMENTS AND CALCULATIONS THEREON. FULFILLING OF THE ABOVE REQUIREMENTS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE SIBSIDIARY TO THE VARIOUS BID ITEMS.

SPECIFICATION DATA

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 100:

THE LIMITS OF PREPARING RIGHT-OF-WAY WILL BE MEASURED FROM STA. 47+55.63 TO STA. 56+81.18 AND FROM STA. 87+43.34 TO STA. 95+75.73 ALONG THE CENTERLINE OF CONSTRUCTION.

TIMBER SHALL BE CLEARED ONLY FROM THOSE AREAS DESIGNATED BY THE ENGINEER.

ITEM 104:

ALL OF THE EXISTING OLD CONCRETE TO BE REMOVED ON THIS PROJECT WILL BECOME THE PROPERTY OF THE CONTRACTOR AND BE DISPOSED OF BY HIM OUTSIDE THE LIMITS OF THE RIGHT-OF-WAY AT HIS OWN EXPENSE AND IN A MANNER APPROVED BY THE ENGINEER.

SAWING OF CONCRETE, WHERE PORTIONS ARE TO BE LEFT IN PLACE, WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THIS ITEM.

ITEMS 104 AND 496:

CONCRETE PAVEMENT REMOVED AS A RESULT OF REMOVING THE INLET WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED AS SUBSIDIARY TO ITEM 496.

ITEM 105:

EXISTING ASPHALT TO BE REMOVED SHALL BE SAWED ALONG NEAT LINES WHERE PORTIONS ARE TO BE LEFT IN PLACE TEMPORARILY OR PERMANENTLY. SAWING WILL BE CONSIDERED SUBSIDIARY TO THIS ITEM AND NO DIRECT PAYMENT WILL BE MADE.

ITEM 110:

EXCAVATION FOR DRIVEWAYS AND INTERSECTIONS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THIS ITEM.

SPECIFICATION DATA

GENERAL NOTES AND SPECIFICATION DATA--

ITEMS 110, 132 AND 276:

THE CONTRACTOR WILL BE RESPONSIBLE FOR THE FURNISHING, MAINTENANCE AND STORAGE OF ONE NUCLEAR DENSITY GAUGE ON THE PROJECT DURING THE PLACEMENT OF THE CEMENT TREATED BASE, ACP AND EMBANKMENT OR AT THE CONTRACTORS OPTION, USE THE SERVICES OF A COMMERCIAL TESTING LABORATORY.

ALL EQUIPMENT, STORAGE, REQUIRED LICENSES AND SAFETY FEES INCURRED BY THE CONTRACTOR (OR THE SERVICES OF A COMMERCIAL TESTING LABORATORY) WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.

ITEM 132:

THIS MATERIAL SHALL CONSIST OF SUITABLE EARTH MATERIAL SUCH AS LOAM, CLAY OR OTHER MATERIALS THAT WILL FORM A STABLE EMBANKMENT AND BE FREE FROM VEGETATION OR OTHER OBJECTIONABLE MATTER AND, WHEN TESTED BY TEXAS DEPARTMENT OF TRANSPORTATION METHODS, SHALL MEET THE SOIL CONSTANT REQUIREMENTS ON SHEET "A" IN ITS NATURAL STATE OR AFTER THE ADDITION OF A MAXIMUM OF 3% BY WEIGHT OF LIME. FURNISHING, APPLICATION AND MIXING OF LIME WILL NOT BE PAID FOR DIRECTLY, BUT WILL BE CONSIDERED SUBSIDIARY TO THIS ITEM.

WHEN THE MOISTURE CONTENT OF THE EMBANKMENT EXCEEDS THE SPECIFIED OPTIMUM CONTENT, AS DETERMINED BY THE ENGINEER, IT SHALL BE AERATED BY DISKING, HARROWING, BLADING OR OTHER MEANS SATISFACTORY TO THE ENGINEER, TO REDUCE THE MOISTURE CONTENT TO THE OPTIMUM CONDITION BEFORE ROLLING COMMENCES. THE CONTRACTOR WILL NOT BE PERMITTED TO AERATE WET MATERIAL WITH COMPACTION EQUIPMENT SUCH AS SHEEPSFOOT ROLLERS OR OTHER DEVICES THAT TEND TO OVER-COMPACT THE PREVIOUS LAYER OF MATERIAL. SUCH AERATION WILL BE CONSIDERED AS SUBSIDIARY TO THIS ITEM AND WILL NOT BE PAID FOR DIRECTLY.

SHALE WILL NOT BE CONSIDERED AS SUITABLE MATERIAL. SHALEY CLAYS MAY NOT BE USED IN EMBANKMENTS UNLESS APPROVED IN WRITING BY THE ENGINEER.

BORROW SOURCES SHALL BE LOCATED NO CLOSER THAN 300 FEET FROM THE ROADWAY RIGHT OF WAY. THE SOURCE OR SOURCES SHALL BE LOCATED SUCH THAT NATURAL SCREENING IS AFFORDED TO ELIMINATE UNSIGHTLY AREAS FROM THE TRAVELLED LANES.

SPECIFICATION DATA

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 160:

THE CONTRACTOR WILL BE REQUIRED, WHERE POSSIBLE, TO ARRANGE THE SEQUENCE OF HIS OPERATIONS IN SUCH A MANNER THAT TOPSOIL WILL BE SALVAGED FROM ONE LOCATION AND PLACED DIRECTLY ON NEARBY SLOPE AREAS TO RECEIVE THIS ITEM. STOCKPILING OF TOPSOIL AND GRASS SOD SHALL BE KEPT TO A MINIMUM AND SHALL BE AS APPROVED BY THE ENGINEER.

THE TOPSOIL REQUIRED FOR THIS ITEM SHALL BE SALVAGED FROM THE RIGHT OF WAY ON THIS PROJECT AS DIRECTED BY THE ENGINEER AND SHALL BE FERTILE LOAM OR CLAY FROM NOT MORE THAN 6 INCHES BELOW NATURAL GROUND.

ITEM 162 AND 166

BLOCK SOD AND FERTILIZER SHALL BE PLACED ON ALL UNSURFACED AREAS WITHIN THE LIMITS OF THE RIGHT-OF-WAY, AS DIRECTED BY THE ENGINEER.

ITEM 166:

THE MINIMUM RATE OF APPLICATION FOR FERTILIZER SHALL BE 400 LB/AC.

THE ANALYLIS OF THE FERTILIZER AS SPECIFIED IN ARTICLE 166.2 WILL BE (12-12-12) UNLESS OTHERWISE APPROVED BY THE ENGINEER.

ITEM 204:

SPRINKLING, AS ORDERED BY THE ENGINEER, TO CONTROL DUST ON THIS PROJECT, SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.

ITEM 360:

THE DOWEL SUPPORT ASSEMBLIES USED IN CONCRETE PAVEMENT SHALL BE CONSTRUCTED USING NO. 1/0 (0.306" DIAMETER) WIRE IN THE MAIN VERTICAL MEMBERS. DOWELS SHALL BE RIGIDLY SUPPORTED IN PARALLEL POSITIONS AND SHALL BE WELDED ON ONE END TO THE SUPPORT FRAME. THE WELD ATTACHMENT SHALL BE MADE ALTERNATELY ON OPPOSITE ENDS OF SUCCESSIVE DOWELS. THE SUPPORT ASSEMBLY SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

GENERAL NOTES AND SPECIFICATION DATA--

ITEMS 360 AND 421:, CONT'D

ITEMS 110, 400, 416 AND 656:

PRIOR TO ANY EXCAVATION OR DRILLING IN THE CLOSE VICINITY OF EXISTING UTILITIES OR SEWERS, THE CONTRACTOR SHALL BE REQUIRED TO PROBE OR EXPOSE THESE FACILITIES TO DETERMINE THEIR EXACT LOCATION. ALL COSTS INVOLVED WILL BE SUBSIDIARY TO THE RELATED BID ITEMS.

ITEM 421:

THE LOSS BY DECANTATION IN ACCORDANCE WITH TEST METHOD TEX-406-A PLUS THE ALLOWABLE WEIGHT OF CLAY LUMPS, SHALL NOT EXCEED 0.9%, OR THE VALUE SHOWN ON THE PLANS, WHICHEVER IS SMALLER. IN THE CASE OF AGGREGATES MADE PRIMARILY FORM THE CRUSHING OF STONE, IF THE MATERIAL PASSING THE 200 SIEVE IS DEFINITELY ESTABLISHED TO BE DUST FROM THE CRUSHING PROCESS, ESSENTIALLY FREE FROM SHALE OR CLAY, AS ESTABLISHED BY PART III OF TEST METHOD TEX-406-A, THE PERCENT CLAY MAY BE INCREASED TO 1.2%

FINE AGGREGATE WILL BE SUBJECT TO THE SAND EQUIVALENT TEST (TEST METHOD TEX-203-F). THE SAND EQUIVALENT SHALL NOT BE LESS THAN 85 UNLESS OTHERWISE SHOWN ON THE PLANS.

ITEM 423:

THE FACIA PATTERN MUST BE THE SAME THROUGHOUT THE ENTIRE PROJECT.

ANY DAMAGE TO THE PRECAST UNITS MUST BE REPLACED AT THE CONTRACTOR'S EXPENSE.

THE FOLLOWING COLOR SHALL BE THAT OF KEYSTONE'S "TERRA COTTA", VERSA-LOK'S "TERRA COTTA", PAVESTONE'S "OAKS BLEND", OR AN APPROVED EQUAL AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL SUPPLY SAMPLES SHOWING COLOR FOR APPROVAL BY THE ENGINEER PRIOR TO BEGINNING WORK. THE SAMPLES SHALL INDICATE THE FULL RANGE OF SPECIFIED COLORS. THIS WORK WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THIS ITEM.

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 360:, CONT'D

WHEN USED, THREADED CONNECTOR TIEBARS SHALL BE CHAIRED AND/OR TIED TO THE PAVEMENT REINFORCING STEEL.

ALL CURBS, EXCEPT DOWEL CURBS, SHALL BE CONSTRUCTED MONOLITHICALLY WITH THE CONCRETE PAVEMENT. IF CONTINUOUS MONOLITHIC CURB HAS TO BE TEMPORARILY OMITTED FOR ANY REASON, THE CONTRACTOR WILL BE REQUIRED TO DOWEL ON PROPOSED CURBS AS DETAILED IN THE PLANS. AN APPROVED EPOXY RESIN SHALL BE APPLIED TO THE PAVEMENT TO RECEIVE THE CURB AS DIRECTED BY THE ENGINEER. THIS WORK AND MATERIALS SHALL BE SUBSIDIARY TO THIS ITEM AND WILL NOT BE PAID FOR DIRECTLY.

THE DOWELED CURB SHALL HAVE SAWED JOINTS PLACED AT SAME INTERVALS AS CPCD AND 3/4-INCH EXPANSION JOINT MATERIAL PROVIDED AT THE SAME LOCATIONS AS ON THE EXISTING PAVEMENT.

CONCRETE AGGREGATES SHALL BE STOCKPILED AT THE PLANT SITE.

THE CURING MACHINE SHALL BE PROVIDED WITH RUBBER TIRES, OR ANOTHER ARRANGEMENT, APPROVED BY THE ENGINEER, SO THAT THE MACHINE WILL BRIDGE OVER OR SPAN THE PAVEMENT AND MONOLITHIC CURB OPERATIONS, IN A MANNER SATISFACTORY TO THE ENGINEER.

CURB TRANSITIONS WILL BE PAID FOR AS TYPE II CURB.

JOINTS 3/8" AND LESS IN WIDTH SHALL BE FILLED WITH RUBBER JOINT SEALING COMPOUND OR PREFORMED NEOPRENE COMPRESSION SEAL. JOINTS WIDER THAN 3/8" SHALL BE FILLED WITH TWO COMPONENT CLASS 1-A OR 1-B, SYNTHETIC POLYMER JOINT MATERIAL OR PREFORMED NEOPRENE COMPRESSION SEAL (CLASS 4).

THE INSTALLATION OF CURB OPENINGS SHALL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THIS ITEM.

THESE PLANS REQUIRE SAWED JOINTS. CONSTRUCTION, SAWED AND CONTRACTION JOINTS SHALL BE PLACED IN ACCORDANCE WITH THE PAVEMENT DETAIL SHEET AND AS DIRECTED BY THE ENGINEER. JOINT LOCATIONS, OTHER THAN AS SHOWN ON THE PLANS, SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.

THE CONTRACTOR WILL BE REQUIRED TO SAW TRANSVERSE JOINTS ACROSS PAVEMENT AND CURBS.

THE CONTRACTOR WILL BE ALLOWED TO USE A DOWEL INSERTOR OF A DESIGN THAT HAS PROVEN EFFECTIVE AND PERFORMS IN A MANNER ACCEPTABLE TO THE ENGINEER. THE CONTRACTOR, IF HE ELECTS TO USE SUCH A DOWEL INSERTOR,

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 423:, CONT'D
MIXING OF CONCRETE BLOCKS FROM DIFFERENT MANUFACTURERS WILL NOT BE PERMITTED.

NO SPACE IS AVAILABLE FOR EARTH REINFORCEMENTS BEHIND THE CONCRETE BLOCK RETAINING WALLS ON THIS PROJECT. THE CONCRETE BLOCK UNIT CHOSEN SHALL BE CAPABLE OF SATISFYING THE STABILITY CRITERIA WITH THE BLOCK UNIT ALONE. THE STABILITY REQUIREMENTS GIVEN FOR LANDSCAPE WALLS MAY BE USED.

THE FOLLOWING CONCRETE BLOCK RETAINING WALL SYSTEMS ARE APPROVED FOR THIS PROJECT:

KEYSTONE RETAINING WALLS JEWELL CONCRETE PRODUCTS, INC. P.O. BOX 7115 WACO, TEXAS 78716 (800) 792-3216

ANCHOR WALL SYSTEM PAVESTONE COMPANY P.O. BOX 1868 GRAPEVINE, TEXAS 76051 (817) 481-5802

VERSA-LOC RETAINING WALLS TEXAS INDUSTRIES 1341 W. MOCKINGBIRD LANE DALLAS, TEXAS 75247 (972) 647-3717

THE TOP BLOCK SHALL BE FASTENED TO THE WALL WITH A CONSTRUCTION ADHESIVE. THE ADHESIVE SHALL BE AS RECOMMENDED BY THE MANUFACTURER AN APPROVED BY THE ENGINEER.

ITEM 464:

ANY ABANDONED UTILITIES OR DRAINAGE STRUCTURES THAT ARE ENCOUNTERED BY THE CONTRACTOR SHALL BE REMOVED TO A MINIMUM OF ONE FOOT BELOW SUBGRADE AND PLUGGED WITH A CONCRETE PLUG OF A THICKNESS EQUAL TO 1-1/2 INCHES PER FOOT OF DIAMETER OF PIPE WITH A MINIMUM THICKNESS OF 3 INCHES. THE COST OF THE PLUGS SHALL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.

THE CONCRETE COLLARS AND THE CONNECTIONS OF PIPES TO EXISTING OR PROPOSED CONCRETE BOXES OR PIPE SHALL BE CONSTRUCTED AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. THIS WORK WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THE PRICE BID PER FOOT FOR "RC PIPE".

WHERE STORM SEWERS DEAD-END, THEY SHALL BE PLUGGED WITH A CONCRETE PLUG OF A THICKNESS EQUAL TO 1-1/2 INCHES PER FOOT OF DIAMETER OF PIPE WITH A MINIMUM THICKNESS OF 3 INCHES. THE COST OF THE PLUGS SHALL BE

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 360:, CONT'D
WILL PROVIDE A DEVICE TO MEASURE THE DEPTH OF THE INSERTED DOWEL IN PLACE.

PAVEMENT LEAVEOUTS WILL BE REQUIRED ON THIS PROJECT AS NECESSARY TO PROVIDE FOR TRAFFIC AT DRIVEWAYS AND SIDE STREETS AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. THE COST OF PROVIDING THESE LEAVEOUTS, INCLUDING THE CONSTRUCTION OF A SUITABLE CROSSOVER CONNECTION AT EACH SITE, WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO THIS ITEM.

IF A TRAVELING FORM PAVER IS USED, IT SHALL BE EQUIPPED WITH AN ELECTRONICALLY OPERATED HORIZONTAL CONTROL DEVICE.

TIEBARS USED IN LONGITUDINAL JOINTS SHALL NOT BE PLACED WITHIN 15 INCHES OF TRANSVERSE JOINTS.

ANY AREA IN EXCESS OF THREE SQUARE YARDS WITH GROOVES LESS THAN 1/8" DEEP WILL BE SAW GROOVED BY THE CONTRACTOR AT HIS OWN EXPENSE.

USE OF "MECHANICAL STEEL PLACING EQUIPMENT" WILL BE AT THE DISCRETION OF THE ENGINEER ON THIS PROJECT.

ITEMS 360 AND 421:

THE ACID INSOLUBLE RESIDUE OF THE FINE AGGREGATE USED IN SLAB CONCRETE SUBJECT TO DIRECT TRAFFIC SHALL BE NOT LESS THAN 60 PERCENT BY WEIGHT WHEN TESTED IN ACCORDANCE WITH TEST METHOD TEX-612-J.

ITEMS 416 AND 656:

THE TOP 2 INCHES OF ALL DRILLED SHAFTS FOR SIGNS, SIGNALS AND LIGHTS SHALL BE FORMED OR PROVIDED A SMOOTH FINISH SATISFACTORY TO THE ENGINEER. THE COST OF THIS WORK SHALL BE INCLUDED IN THE UNIT BID PRICE FOR THIS ITEM.

ITEMS 360 AND 421:

THE COARSE AGGREGATE FROM EACH SOURCE MUST COMPLY WITH THE SPECIFIED QUALITY TESTS.

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 464:, CONT'D
INCLUDED IN THE UNIT PRICE BID PER FOOT OF THE VARIOUS RC PIPES.

ITEM 471:

ALL INLET GRATES AND MANHOLE COVERS SHALL BE TACKWELDED TO THE FRAME WITH TWO 1-INCH WELDS. PAYMENT SHALL BE SUBSIDIARY TO ITEM 465. NO PAINTING WILL BE REQUIRED FOR THE CAST IRON INLET GRATE.

ITEM 496:

STRUCTURES LISTED ON THE PLANS WILL BE REMOVED UNDER THIS ITEM. ALL OTHER STRUCTURES ENCOUNTERED SHALL BE REMOVED UNDER ITEM 100.

EXCEPT AS OTHERWISE PROVIDED, EXISTING STRUCTURES OR PARTS OF THE EXISTING STRUCTURE TO BE REMOVED SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF BY HIM OUTSIDE THE LIMITS OF THE RIGHT-OF-WAY AT HIS OWN EXPENSE.

ITEM 502:

THE CONTRACTOR ON THIS PROJECT WILL BE REQUIRED TO CARRY ON A CONTINUOUS WIDENING OPERATION IN ORDER TO PROTECT THE TRAVELING PUBLIC FROM PAVEMENT DROP OFFS FOR AN EXTENDED PERIOD OF TIME. THE CONTRACTOR SHALL PROVIDE IN HIS SEQUENCE OF WORK A DETAILED LIST OF LOCATIONS (STATIONS, LANE DIRECTION AND SIDE OF ROADWAY) FOR EXCAVATION, INSTALLATION OF DRAINAGE FACILITIES, CEMENT TREATED BASE AND CONCRETE PAVEMENT PLACEMENT. THIS SEQUENCE OF WORK SHALL BE APPROVED BY THE ENGINEER BEFORE CONSTRUCTION BEGINS. THE LENGTH OF ROADWAY EXCAVATED SHALL BE A SERIES OF SHORT SECTIONS WITH THE PAVING OF EACH SECTION TO FOLLOW IMMEDIATELY TO FORM A CONTINUOUS WIDENING OPERATION. IF THE CONTRACTOR MOVES HIS EQUIPMENT OFF THE WIDENING OPERATION OR DOES NOT IN THE OPINION OF THE ENGINEER CARRY ON A CONTINOUS OPERATION, HE WILL BE REQUIRED TO BACKFILL THE EDGE OF THE EXISTING OR WIDENED PAVEMENT WITH CRUSHED STONE, FLEXIBLE BASE OR WHITE ROCK WITH 2% LIME TO CREATE A 3:1 SLOPE AT HIS OWN EXPENSE. THE WIDENING OPERATION SHALL NOT RESUME UNTIL HE HAS AGAIN COMPLIED WITH THIS PARAGRAPH.

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 502:, CONT'D
WHEN EXCAVATION IS REQUIRED NEXT TO A PAVEMENT LANE CARRYING TRAFFIC AND WIDENING IS NOT COMPLETED WITHIN FOURTY EIGHT (48) HOURS, SUFFICIENT BACKFILL SHALL BE PLACED AGAINST THE EDGE OF THE PAVEMENT TO PROVIDE A USUAL 3:1 SLOPE. THE BACKFILL USED BY THE CONTRACTOR SHALL BE A DURABLE CRUSHED STONE TYPE OF FLEXIBLE BASE. WHEN THE PAVEMENT IS TO BE CONSTRUCTED, THIS BACKFILL SHALL BE CAREFULLY REMOVED AND DISPOSED OF BY THE CONTRACTOR. MATERIALS AND LABOR FOR THIS WORK WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIIARY TO THIS ITEM.

BARRICADES AND WARNING SIGNS, AS APPROPRIATE, ARE TO BE PLACED AT STOCKPILES TO ADEQUATELY WARN MOTORISTS. AT ALL STOCKPILE SITES THAT ARE LESS THAN 30 FEET FROM THE EDGE OF ANY TRAVELLED LANE, A CLASS III BARRICADE SHALL BE ERECTED IMMEDIATELY IN FRONT OF OR AT EACH END IF REQUIRED. WHEN A STOCKPILE SITE EQUALS OR EXCEEDS 100 FEET IN LENGTH, ONE OBJECT MARKER (OM-2HP) PER 100 FEET SHALL BE PLACED ALONGSIDE THE STOCKPILE.

LANE CLOSURES ON THE ROADWAY, FRONTAGE ROADS, AND CROSS STREETS ARE RESTRICTED TO THE HOURS BETWEEN THE HOURS STATED ON THE SEQUENCE OF CONSTRUCTION SHEET. THIS TIME RESTRICTION DOES NOT PRECLUDE THE CONTRACTOR FROM PERFORMING WORK IN OTHER AREAS OF THE PROJECT.

THE CONTRACTOR SHALL PLAN HIS WORK SEQUENCE IN A MANNER THAT WILL CAUSE THE MINIMUM INTERFERENCE WITH TRAFFIC DURING CONSTRUCTION OPERATIONS. BEFORE BEGINNING WORK ON THIS PROJECT, THE CONTRACTOR SHALL SUBMIT, FOR APPROVAL BY THE ENGINEER, A PLAN OF CONSTRUCTION OPERATIONS OUTLINING IN DETAIL A SEQUENCE OF WORK TO BE FOLLOWED, SETTING OUT THE METHOD OF HANDLING TRAFFIC ALONG, ACROSS, AND ADJACENT TO THE WORK.

IF AT ANY TIME DURING CONSTRUCTION THE CONTRACTOR'S PROPOSED PLAN OF OPERATION FOR HANDLING TRAFFIC DOES NOT PROVIDE FOR SAFE, CONFORTABLE MOVEMENT, THE CONTRACTOR SHALL IMMEDIATELY CHANGE HIS OPERATIONS TO CORRECT THE UNSATISFACTORY CONDITION. THE SEQUENCE OF WORK AS OUTLINED IN THE PLANS AND BELOW IS A GUIDE ONLY AND MAY BE REVISED BY THE CONTRACTOR WITH THE APPROVAL OF THE ENGINEER.

SUBJECT TO THE APPROVAL OF THE ENGINEER, PORTIONS OF THIS PROJECT WHICH ARE NOT AFFECTED BY OR IN CONFLICT WITH THE PROPOSED METHOD OF HANDLING TRAFFIC OR UTILITY ADJUSTMENTS CAN BE CONSTRUCTED DURING ANY PHASE.

TEMPORARY SIGNS WILL BE REQUIRED DURING CONSTRUCTION FOR THE EXISTING SIGNING WHICH INTERFERES WITH THE CONSTRUCTION. THE EXISTING SIGN FACES ON TEMPORARY SUPPORTS MAY BE USED FOR THE TEMPORARY SIGNS AS LONG AS THEY ARE REMOVED AND ERECTED ON TEMPORARY MOUNTS ON THE SAME DAY. THE WARNING AND REGULATORY SIGNS MUST BE IN PLACE AT ALL TIMES.

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 502:, CONT'D

DURING CONSTRUCTION, THE CONTRACTOR WILL BE REQUIRED TO FURNISH, PLACE, AND MAINTAIN IN ACCORDANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" BARRELS ALONG THE EDGE OF PAVEMENTS AND FILLS. THE BARRELS SHALL BE SUPPLEMENTED WITH STEADY BURN LIGHTS AS DIRECTED BY THE ENGINEER.

BARRICADES AND SIGNS SHALL BE PLACED IN SUCH A MANNER AS NOT TO INTERFERE WITH THE SIGHT DISTANCE OF DRIVERS ENTERING THE ROADWAY FROM DRIVEWAYS OR SIDE STREETS. TO FACILITATE SHIFTING, BARRICADES AND SIGNS USED IN LANE CLOSURES OR TRAFFIC STAGING MAY BE ERECTED AND MOUNTED ON PORTABLE SUPPORTS. THE DESIGN OF THESE SUPPORTS ARE SUBJECT TO THE APPROVAL OF THE ENGINEER.

A TYPE "C" FLASHING ARROW PANEL SHALL BE USED IN CONNECTION WITH THE LANE CLOSURE SIGNING. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FURNISHING, MAINTAINING, AND OPERATING THESE DEVICES IN A MANNER ACCEPTABLE TO THE ENGINEER, AT HIS ENTIRE EXPENSE. REFER TO TCP (1-4)-98 FOR PLACEMENT OF THE FLASHING ARROW PANEL OR AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR WILL NOT BE PERMITTED TO COMMENCE WORK ON THE ROAD BEFORE SUNRISE AND SHALL ARRANGE HIS WORK SO THAT NO MACHINERY OR EQUIPMENT SHALL BE LEFT NEAR THE TRAVELED ROADWAY AFTER SUNSET EXCEPT AS AUTHORIZED BY THE ENGINEER.

THE CONTRACTOR SHALL KEEP TRAVELED SURFACES USED IN HIS HAULING OPERATION CLEAR AND FREE OF DIRT OR OTHER MATERIAL.

THE USE OF RUBBER-TIRED EQUIPMENT WILL BE REQUIRED FOR MOVING DIRT OR OTHER MATERIALS ALONG OR ACROSS PAVED SURFACES.

WHERE THE CONTRACTOR DESIRES TO MOVE ANY EQUIPMENT NOT LICENSED FOR OPERATION ON PUBLIC HIGHWAYS ON OR ACROSS ANY PAVEMENT, HE SHALL PROTECT THE PAVEMENT FROM ALL DAMAGE AS DIRECTED BY THE ENGINEER.

THE CONTRACTOR SHALL CONTINUOUSLY PROSECUTE THE WORK AFTER THE INITIATION OF ROADWAY EXCAVATION FOR EACH WORK LOCATION (RIGHT TURN LANE, MEDIAN WIDENING, ETC.) THE CONTRACTOR SHALL COMPLETE CONSTRUCTION AND OPEN TO TRAFFIC WITHIN 90 CALENDAR DAYS ANY WORK LOCATION.

ITEM 504:

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 504:, CONT'D
THE CONTRACTOR WILL FURNISH ONE FIELD LABORATORY (TYPE A) & ONE FIELD OFFICE (TYPE C) FOR THIS PROJECT.

AN ALL WEATHER PARKING AREA (HMACP) FOR STATE VEHICLES SHALL BE PROVIDED ADJACENT TO THE FIELD OFFICE. THE ENTIRE AREA SHALL BE ENCLOSED IN A 6-FOOT HIGH FENCE. A LOCKABLE VEHICLE GATE (S) SHALL BE PROVIDED AND SHALL BE KEYED ALIKE OR BE COMBINATION LOCKS. THIS PARKING AREA SHALL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED SUBSIDIARY TO THE VARIOUS BID ITEMS.

BEAM CURING TANKS FURNISHED BY THE CONTRACTOR SHALL BE ELEVATED, AS DIRECTED BY THE ENGINEER, TO A MAXIMUM HEIGHT OF ONE (1) FOOT.

THE CONTRACTOR SHALL NOT COMMENCE WORK UNTIL THE TEXAS DEPARTMENT OF TRANSPORTATION FIELD OFFICE AND ALL APPURTENANCES ARE FUNCTIONAL TO THE SATISFACTION OF THE ENGINEER.

THE TYPE (C) FIELD OFFICE SHALL BE FOR THE EXCLUSIVE USE OF THE ENGINEER, HAVE ADEQUATE HEATING/AIR CONDITIONING THERMOSTATICALLY CONTROLLED AND PROVIDE A MINIMUM OF EIGHT HUNDRED FORTY (840) SQUARE FEET OF CONTINUOUS GROSS FLOOR AREA, WITH A MINIMUM CEILING HEIGHT OF EIGHT (8) FEET. THE FLOOR AREA SHALL BE PARTITIONED INTO A MINIMUM OF THREE (3) OFFICES. TWO OF THE OFFICES SHALL BE A MINIMUM OF 170 SQUARE FEET. EACH OFFICE SHALL HAVE A DOOR, AND A MUNIMUM OF TWO (2) WINDOWS IN EACH ROOM. ALL OFFICE SPACE SHALL BE ADEQUATELY FURNISHED AND MAINTAINED TO FERFORM ALL OFFICE FUNCTIONS. THESE FURNISHINGS INCLUDE ONE FACSIMILE MACHINE, A COPIER CAPABLE OF REPRODUCING 11" BY 17" ORIGINALS AT A RATE ACCEPTABLE TO THE ENGINEER, ONE LETTER QUALITY PRINTER CAPABLE OF PRODUCING (11" BY 17") ORIGINALS.

THE OFFICE AND ITS CONTENTS WILL BE SUBJECTED TO APPROVAL BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE AND SUPPLIES (BOTH PERMANENT AND CONSUMABLE) FOR THE AFOREMENTIONED ELECTRONIC EQUIPMENT FOR THE DURATION OF THE PROJECT.

THE BUILDING SHALL HAVE TWO EXTERIOR DOORS. FURNITURE FOR THE FIELD OFFICE SHALL, AS A MINIMUM, CONSIST OF A DESK AND CHAIR FOR EACH OFFICE SPACE, TWO (2) METAL FIVE DRAWER FILE CABINETS, ONE (1) BUILT-IN OR PORTABLE REFERENCE TABLE WITH CHAIR, SIX (6) FOLDING TYPE CHAIRS AND HAVE THE FINAL APPROVAL OF THE ENGINEER. ALL OFFICES SHALL BE KEYED ALIKE. IF THE FIELD OFFICE IS OF PORTABLE NATURE, IT SHALL HAVE A COVERED PORCH AREA AT THE ENTRANCE WITH A MINIMUM OF ONE HUNDRED (100) SQUARE FEET OF GRATED OR PLANK FLOORING. ALL WINDOWS SHALL BE CLEAR FOR VISIBILITY AND ADJUSTABLE BLINDS SHALL BE PROVIDED INSIDE TO COVER THE WINDOWS FOR SECURITY. THE FIELD OFFICE SHALL HAVE ALL WINDOWS AND

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 504:, CONT'D
DOORS SECURED WITH BURGLAR BARS OR OTHER SECURITY SYSTEM ACCEPTABLE TO THE ENGINEER.

THE CONTRACTOR SHALL PROVIDE ONE PHONE LINE FOR THE FAX MACHINE AND TWO PHONE LINES FOR THE FIELD OFFICE. THE COST OF THE PHONE INSTALLATION AND VARIOUS MONTHLY PHONE SERVICE CHARGES FOR THE FAX LINE AND PHONE LINE SHALL BE THE CONTRACTOR'S RESPONSIBILITY.

ITEMS 520 AND 522

ALL PORTLAND CEMENT CONCRETE PLANTS INCLUDING PORTABLE PLANTS SHALL BE EQUIPPED TO PROPORTION BY WEIGHT, THE AGGREGATES, THE BULK CEMENT, THE FLYASH, THE ADMIXTURES, AND THE WATER BY MEANS OF APPROVED FULLY AUTOMATIC PROPORTIONING DEVICES. THE SCALES SHALL BE AUTOMATIC AS WELL.

ITEM 529:

THE CONTRACTOR WILL BE REQUIRED TO DOWEL THE PROPOSED CURBS AS DETAILED IN THE PLANS. AN APPROVED EPOXY RESIN SHALL BE APPLIED TO THE PAVEMENT TO RECEIVE THE CURB AS DIRECTED BY THE ENGINEER. THIS WORK AND MATERIALS WILL BE SUBSIDIARY TO THIS ITEM.

THE DOWELED CURB SHALL HAVE SAWED JOINTS PLACED AT SAME INERVALS AS CPCD AND 3/4-INCH EXPANSION JOINT MATERIAL PROVIDED AT THE SAME LOCATIONS AS ON THE EXISTING PAVEMENT.

TRANSITIONS FOR MONO CURB TY II, AND CURB AND GUTTER, AS SHOWN ON THE PLANS, SHALL BE PAID FOR AS TYPE II DOWLED CURB AND AS TYPE II CURB AND GUTTER. ALL EXTRA LABOR AND MATERIALS NECESSARY TO COMPLETE THESE TRANSITIONS WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED SUBSIDIARY TO THIS ITEM.

FOR TYPE II CURB AND GUTTER SECTIONS, JOINTS SHALL BE SAWED AT THE SAME LOCATION AS ON THE EXISTING PAVEMENT.

ITEM 530:

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 530:, CONT'D
CURBS FOR DRIVEWAYS, AS SHOWN ON MISCELLANEOUS DETAIL SHEETS, WILL NOT BE PAID FOR DIRECTLY BUT WILL BE CONSIDERED AS SUBSIDIARY TO THIS ITEM.

DRIVEWAY LOCATIONS SHOWN ARE SUBJECT TO CHANGE TO SUIT ACTUAL FIELD CONDITIONS AT THE TIME OF CONSTRUCTION AND MAY BE SHIFTED AS DIRECTED BY THE ENGINEER.

ITEM 531:

THE CONCRETE SURFACE FOR WHEELCHAIR RAMPS SHALL HAVE A ROUGH NON-SKID TYPE FINISH.

THE CONTRACTOR SHALL SUPPLY AND INSTALL APPROPRIATE SIZE ANCHOR BOLTS FOR THE RELOCATION OF THE DART BUS SHELTER. THE ANCHOR BOLTS WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED SUBSIDIARY TO THIS ITEM.

ITEM 618:

THE CONTRACTOR SHALL SECURE PERMISSION FROM THE PROPER AUTHORITY AND THE APPROVAL OF THE ENGINEER BEFORE CUTTING INTO OR REMOVING ANY SIDEWALKS OR CURBS, WHICH MIGHT BE REQUIRED IN MAKING THE INSTALLATION.

THE LOCATION OF CONDUITS AND GROUND BOXES ARE DIAGRAMMATIC ONLY AND MAY BE SHIFTED BY THE ENGINEER TO ACCOMMODATE FIELD CONDITIONS.

CONDUIT SHALL BE PLACED UNDER EXISTING PAVEMENT BY AN APPROVED BORING METHOD UNLESS OTHERWISE DIRECTED BY THE ENGINEER. PITS FOR BORING SHALL NOT BE CLOSER THAN 2 FEET FROM THE EDGE OF THE PAVEMENT UNLESS OTHERWISE DIRECTED BY THE ENGINEER. WATER JETTING WILL NOT BE PERMITTED.

WHEN BORING IS USED FOR UNDER PAVEMENT CONDUIT INSTALLATIONS, THE MAXIMUM ALLOWABLE OVERCUT SHALL BE 1" IN DIAMETER.

WHEN CONDUITS ARE BORED, THE VERTICAL AND HORIZONTAL TOLERANCES SHALL NOT EXCEED 18 IN AS MEASURED FROM THE INTENDED TARGET POINT.

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 618:, CONT'D
THE USE OF A PNEUMATICALLY DRIVEN DEVICE FOR PUNCHING HOLES BENEATH THE PAVEMENT (COMMONLY KNOWN AS A "MISSILE") WILL NOT BE PERMITTED ON THIS PROJECT.

THE SAW CUT TRENCH DETAIL SHOWN ON THE PLANS FOR INSTALLATION OF CONDUIT UNDER EXISTING PAVEMENT SHALL ONLY BE USED AT LOCATIONS WHERE CONDUIT CANNOT BE BORED. THE USE OF THE SAW CUT TRENCH SHALL ONLY BE MADE AT LOCATIONS APPROVED BY THE ENGINEER.

A CLEANER-PRIMER SHALL BE USED ON ALL PVC TO PVC JOINTS BEFORE APPLICATION OF PVC CEMENT.

CONDUIT INSTALLED FOR FUTURE USE SHALL HAVE NON-METALLIC PULL ROPES INSTALLED AND SHALL BE CAPPED USING STANDARD WEATHER TIGHT CONDUIT CAPS, AS APPROVED BY THE ENGINEER. THIS WORK SHALL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO THIS ITEM.

LIQUID-TIGHT FLEXIBLE METAL CONDUIT (L.T.F.M) SHALL BE USED WHERE THE PLANS REFER TO FLEXIBLE METAL CONDUIT. FLEXIBLE METAL SHALL NOT BE PERMITTED ON THIS PROJECT.

THE CONTRACTOR MAY, AT HIS/HER OPTION, SUBSTITUTE HDPE CONDUIT MEETING THE SPECIFICATIONS OF ITEM 622 FOR ALL BORES REQUIRING PVC SCHEDULE 40 CONDUIT AND, WHEN APPROVED BY THE ENGINEER MAY SUBSTITUTE HDPE FOR SCHEDULE 80 BORED CONDUIT. HDPE SHALL BE THE SAME SIZE AS THE PVC CONDUIT SHOWN ON THE PLANS. HDPE SHALL BE TERMINATED WITH UL LISTED FITTINGS. HDPE MAY BE THREADED AND USED WITH THREADED PVC CONNECTORS OR COUPLINGS. HDPE SHALL BE EXTENDED THROUGH THE BORE IN ONE CONTINUOUS PIECE AND SHALL BE COUPLED TO RMC ELBOWS OR TO PVC CONDUIT AT THE BORE PITS PRIOR TO ENTERING GROUND BOXES (IF GROUND BOXES ARE REQUIRED BY THE PLANS). HDPE SHALL NOT CONTAIN CONDUCTORS DURING INSTALLATION IN THIS MANNER. NO ADDITIONAL COMPENSATION WILL BE PAID TO THE CONTRACTOR WHEN HDPE IS SUBSTITUTED FOR THIS PURPOSE.

PVC CONDUIT SYSTEMS THAT SNAP OR LOCK TOGETHER WITHOUT GLUE THAT ARE DESIGNED AND UL LISTED TO BE USED FOR BORED PVC ELECTRICAL CONDUIT APPLICATIONS WILL BE ALLOWED FOR BORED PVC SCHEDULE 40, AND, WHEN APPROVED BY THE ENGINEER, WILL BE ALLOWED FOR BORED PVC SCHEDULE 80. NO ADDITIONAL COMPENSATION WILL BE PAID TO THE CONTRACTOR WHEN THESE SPECIFIC PURPOSE CONDUIT SYSTEMS ARE SUBSTITUTED FOR THIS PURPOSE.

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 620:

GROUNDING CONDUCTORS THAT SHARE THE SAME CONDUIT, JUNCTION BOX, GROUND BOX OR STRUCTURE SHALL BE BONDED TOGETHER AT EVERY ACCESSIBLE POINT IN ACCORDANCE WITH THE CURRENT EDITION OF THE NATIONAL ELECTRICAL CODE.

ITEM 628:

CONCRETE FOR SERVICE POLE FOUNDATIONS, WHEN REQUIRED, SHALL BE CLASS A AND SHALL BE IN ACCORDANCE WITH ITEM 421, "PORTLAND CEMENT CONCRETE", EXCEPT THAT CONCRETE WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO ITEM 628. REINFORCING STEEL FOR SERVICE POLE FOUNDATIONS, WHEN REQUIRED, SHALL BE IN ACCORDANCE WITH ITEM 440, "REINFORCING STEEL", EXCEPT THAT REINFORCING STEEL WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED SUBSIDIARY TO ITEM 628.

THE ELECTRICAL SERVICE FOR THIS PROJECT SHALL BE BILLED IN THE NAME OF THE TOWN OF ADDISON.

ITEM 656:

THE CONTRACTOR SHALL COORDINATE WITH THE TOWN OF ADDISON WHEN PLACING THE CONCRETE FOR THE CONTROLLER FOUNDATION TO ENSURE THE ANCHOR BOLT SPACING WILL MATCH THE ANCHOR BOLTS AND CABINET SUPPLIED BY THE TOWN.

ANCHOR BOLTS FOR TRAFFIC SIGNAL POLES SHALL BE FURNISHED BY THE TOWN.

THE TOP 2 INCHES OF DRILL SHAFTS SHALL BE FORMED OR PROVIDED A SMOOTH FINISH SATISFACTORY TO THE ENGINEER. THE COST OF THE WORK SHALL BE INCLUDED IN THE UNIT BID PRICE FOR THIS ITEM.

A 3/4 INCH CHAMFER SHALL BE FORMED ON THE TOP EDGE OF EACH SIGNAL POLE FOUNDATION.

THE CONTRACTOR SHALL PROBE BEFORE DRILLING FOUNDATIONS TO DETERMINE THE LOCATION OF UTILITIES AND STRUCTURES. FOUNDATIONS SHALL BE PAID FOR ONCE REGARDLESS OF EXTRA WORK CAUSED BY OBSTRUCTIONS.

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 680:. CONT'D

DESCRIPTION	UNIT	QUANTITY
SIGN R10-5	EA	8
SIGN R3-8LL	EA	8
SIGN SR3-4	EA	8

LIST OF MATERIAL
FURNISHED BY THE TOWN OF ADDISON

DESCRIPTION	UNIT	QUANTITY
OPTICOM CABLE	LF	1280
OPTICOM DETECTORS W/MOUNTING BRACKETS	EA	8
OPTICOM MODULES (2 CHANNEL)	EA	4
OPTICOM CARD RACK AND HARNESS	EA	2
VEHICLE SIGNAL SECTION (12 IN)	EA	125
BACKPLATE (12 IN) (3 SECTION)	EA	35
BACKPLATE (12 IN) (4 SECTION)	EA	5
PEDESTRIAN SIGNAL SECTION	EA	16
CONTROLLER ASSEMBLY COMPLETE WITH CABINET AND ACCESSORIES	EA	2
TRAFFIC SIGNAL POLE ASSY WITH ANCHOR BOLTS	EA	8
PEDESTRIAN PUSH BUTTON/SIGN	EA	16

A CONTINUOUS BARE OR GREEN INSULATED COPPER WIRE NO.8 OR LARGER SHALL BE INSTALLED IN EVERY PVC, RMC, AND LTFC THROUGHOUT THE ELECTRICAL SYSTEM IN ACCORDANCE WITH, THE ELECTRICAL DETAIL SHEETS, AND THE LATEST

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 666:

ALL MARKINGS SHALL BE APPLIED BY EXTRUSION.

ITEM 680:

THIS PROJECT SHALL CONSIST OF FURNISHING AND INSTALLING ALL MATERIALS AND EQUIPMENT NECESSARY FOR A COMPLETE SIGNAL SYSTEM AT THE PROPOSED LOCATION. IN ADDITION TO THESE ITEMS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE FOLLOWING:

1. FURNISHING AND INSTALLING ALL SIGNS FOR MOUNTING ON SIGNAL POLES AND MAST ARMS. THESE SIGNS SHALL BE FURNISHED IN ACCORDANCE WITH ITEM 636, WILL NOT BE PAID FOR DIRECTLY, AND SHALL BE CONSIDERED SUBSIDIARY TO ITEM 680. SIGNS SHALL BE MOUNTED WITH ASTRO-SIGN BRAC OR SIGNFIX ALUMINUM CHANNEL OR EQUAL AS APPROVED BY THE ENGINEER.
2. SUBMITTAL LITERATURE SHALL BE PROVIDED FOR ALL CONTRACTOR FURNISHED TRAFFIC SIGNAL EQUIPMENT PRIOR TO INSTALLATION.
3. THE CONTRACTOR SHALL COORDINATE WITH THE TOWN OF ADDISON TO HAVE A QUALIFIED TECHNICIAN ON THE PROJECT SITE TO PLACE THE TRAFFIC SIGNALS IN OPERATION.
4. DURING THE THIRTY DAY TEST PERIOD, THE CONTRACTOR SHALL UTILIZE QUALIFIED PERSONEL TO RESPOND TO AND DIAGNOSE ALL TROUBLE CALLS. HE SHALL REPAIR ANY MALFUNCTIONS TO SIGNAL EQUIPMENT HE SUPPLIED ON THE PROJECT. A LOCAL TELEPHONE NUMBER (NOT SUBJECT TO FREQUENT CHANGES) WHERE TROUBLE CALLS ARE TO BE RECEIVED ON A 24-HOUR BASIS SHALL BE PROVIDED TO THE ENGINEER BY THE CONTRACTOR. THE CONTRACTOR'S RESPONSE TIME TO REPORTED CALLS SHALL BE WITHIN A REASONABLE TRAVEL TIME FROM A DALLAS ADDRESS, BUT NOT MORE THAN TWO (2) HOURS MAXIMUM. APPROPRIATE REPAIRS SHALL BE MADE WITHIN 24 HOURS. THE CONTRACTOR SHALL PLACE A LOG BOOK IN EACH CONTROLLER CABINET AND KEEP A RECORD OF EACH TROUBLE CALL REPORTED. HE SHALL NOTIFY THE ENGINEER OF EACH TROUBLE CALL. IF, AFTER DIAGNOSING THE PROBLEM, THE QUALIFIED TECHNICIAN DETERMINES THE PROBLEM IS IN THE EQUIPMENT SUPPLIED BY OTHERS, THE CONTRACTOR SHALL NOTIFY THE PROJECT ENGINEER.
5. THE TOWN OF ADDISON WILL FURNISH THE TRAFFIC SIGNAL

GENERAL NOTES AND SPECIFICATION DATA--

DESCRIPTION	UNIT	QUANTITY,

CONT'D
EDITION OF THE NATIONAL ELECTRICAL CODE, EXCEPT FOR CONDUIT WITH LOOP DETECTORS ONLY.

ITEM 682:

ALL SIGNAL HEAD ATTACHMENTS SHALL BE DESIGNED SUCH THAT THE WIRING TO EACH SIGNAL HEAD SHALL PASS FROM THE MAST ARM THROUGH THE SIGNAL HEAD BRACING OR ATTACHMENT HARDWARE TO THE SIGNAL HEAD. NO EXPOSED CABLE OR WIRING WILL BE PERMITTED.

THE SIGNAL HEAD-TO-MAST ARM CONNECTION MUST ALLOW FOR ADJUSTMENT ABOUT THE HORIZONTAL AND VERTICAL AXIS.

ALL SIGNAL HEADS SHALL BE COVERED WITH BURLAP OR OTHER MATERIAL APPROVED BY THE ENGINEER UNTIL PLACED INTO OPERATION.

SIGNAL HEADS MOUNTED ON POLES AND MAST ARMS SHALL BE LEVEL AND PLUMB AND AIMED AS DIRECTED BY THE ENGINEER.

ITEM 684:

THE TYPE "C" CABLE FOR LOOP DETECTOR LEAD-IN SHALL BE NO. 18 AWG WIRE.

THE CONDUCTORS IN THE TRAFFIC SIGNAL CABLE SHALL BE STRANDED FOR THIS PROJECT. INDIVIDUAL CONDUCTORS SHALL BE NO. 12 AWG.

THE MULTICONDUCTOR SIGNAL CABLE SHOWN ON THE PLANS SHALL BE SPLICED TO INDIVIDUAL CABLES IN THE TRANSFORMER BASE. THESE SEPARATE MULTICONDUCTOR CABLES (16 AWG) SHALL BE USED INSIDE THE SIGNAL POLES FROM THE TRANSFORMER BASE TO EACH SIGNAL HEAD AS FOLLOWS:

HEAD TYPE	CONDUCTOR SIZE
V3/V3LT	5 CNDR
V4RT	7 CNDR
143C	5 CNDR (2 EA)

SPLICES IN THE CABLES FROM THE TRANSFORMER BASE TO THE SIGNAL HEADS WILL NOT BE PERMITTED IN THE POLE SHAFT OR IN THE MAST ARM.

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 680: CONT'D
CONTROLLER AND CABINET. THE CONTRACTOR SHALL CONNECT ALL FIELD WIRING TO THE CONTROLLER ASSEMBLY. THE TOWN WILL ASSIST IN DETERMINING HOW THE DETECTOR LOOP LEAD-IN CABLES ARE TO BE CONNECTED (I.E., SERIES OR PARALLEL). THE TOWN WILL PROGRAM THE CONTROLLER FOR OPERATION. HOOK UP THE CONFLICT MONITOR, DETECTOR UNITS, AND OTHER EQUIPMENT IN THE CONTROLLER CABINET AND TURN ON THE CONTROLLER. THE CONTRACTOR SHALL OBTAIN THE SIGNAL CABINET FROM THE TOWN OF ADDISON SERVICE CENTER.

6. THE CONTRACTOR SHALL PLACE DUCT SEAL AT THE ENDS OF ALL CONDUIT WHERE CONDUCTORS AND/OR CABLES ARE PRESENT AND REQUIRED FOR THE INTENDED OPERATION OF THE TRAFFIC SIGNALS.
7. THE CONTRACTOR SHALL INSTALL THE OPTICOM EQUIPMENT SUPPLIED BY OTHERS.
8. THE CONTRACTOR SHALL INSTALL THE TRAFFIC SIGNAL POLES SUPPLIED BY OTHERS.
9. THE CONTRACTOR SHALL INSTALL THE TRAFFIC SIGNAL HEADS, PEDESTRIAN SIGNAL HEADS, BACKPLATES, AND PEDESTRIAN PUSH BUTTONS/SIGNS SUPPLIED BY OTHERS.
10. THE CONTRACTOR SHALL FURNISH AND INSTALL ALL MOUNTING HARDWARE FOR TRAFFIC SIGNAL AND PEDESTRIAN SIGNAL HEADS FURNISHED BY OTHERS. THIS SHALL INCLUDE ALL MATERIAL NECESSARY TO COMPLETELY ASSEMBLE AND INSTALL THE HEADS.
11. FURNISHING AND INSTALLING ALL VIBRATION DAMPERS ON SIGNAL POLE MAST ARMS.

NO EXTRA COMPENSATION WILL BE ALLOWED FOR FULFILLING THE REQUIREMENTS STATED ABOVE. THIS SHALL INCLUDE PICKING UP AND DELIVERING THE TOWN-FURNISHED MATERIALS TO THE JOB SITE.

THE LIST OF MATERIAL BELOW IS FOR THE CONTRACTOR'S INFORMATION ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY ALL ITEMS AND QUANTITIES LISTED BELOW.

LIST OF MATERIAL/LABOR
SUBSIDIARY TO ITEM 680

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 684: CONT'D
EACH CABLE SHALL BE IDENTIFIED AS SHOWN ON THE PLANS (CABLE 1, ETC.) WITH PERMANENT MARKING LABELS (PANDUIT TYPE PLM STANDARD SINGLE MARKER TIE, THOMAS & BETTS TYPE 548M OR EQUIVALENT) AT EACH GROUND BOX, POLE BASE AND CONTROLLER.

ITEM 686:

ALL STEEL MAST ARMS OVER 24' IN LENGTH SHALL BE PROVIDED WITH VIBRATION DAMPERS. DAMPERS SHALL BE INSTALLED USING ASTRO-SIGN BRAC OR SIGNFIX ALUMINUM CHANNEL OR EQUAL, A MAXIMUM OF 3 FEET FROM THE END OF THE MAST ARM.

ITEM 688:

THIS PROJECT REQUIRES THAT SEVERAL LOOPS IN THE STREET SHARE THE SAME GROUND BOX FOR CONNECTIONS TO THE LOOP LEAD-IN CABLE. THE LEAD-IN SAW CUTS FROM THE STREET TO THE GROUND BOX SHALL MAINTAIN A MINUMUM SEPARATION FROM OTHER LOOPS OF 12 INCHES AND A MINIMUM SEPARATION OF 6 INCHES FROM OTHER LEAD-IN SAW CUTS.

ALL LOOP WIRE FROM THE LOOP IN THE STREET TO THE GROUND BOX SHALL BE TIGHTLY TWISTED A MINIMUM OF 5 TIMES PER FOOT AS IT IS PLACED IN THE LEAD-IN SAW CUT.

GROUNDED SHIELDS ARE REQUIRED ON THE DETECTOR LEAD-IN CABLE AT THE CONTROLLER ONLY. DETECTOR LEAD-IN CABLES SHALL BE RUN CONTINUOUSLY WITHOUT SPLICES FROM THE CURBSIDE GROUND BOX TO THE CONTROLLER WHERE POSSIBLE. IF SPLICES MUST BE MADE, THEY SHOULD BE MADE IN A POLE BASE, IF POSSIBLE. SPLICES SHALL BE SOLDER CONNECTED (INCLUDING THE GROUND WIRE) AND THE SPLICE CONNECTION SHALL BE INSULATED WITH THERMO-SETTING MATERIALS. SPLICES AT THE CURB SIDE GROUND BOXES SHALL ALSO BE MADE IN THE SAME MANNER.

DETECTOR LEAD-IN CABLES SHALL BE IDENTIFIED AS SHOWN ON THE PLANS (PHASE 1, ETC.) WITH PERMANENT MARKING LABELS (PANDUIT TYPE PLM, THOMAS & BETTS TYPE 548M STANDARD SINGLE MARKER TIE OR EQUIVALENT) AT EACH GROUND BOX, POLE BASE, AND CONTROLLER.

INSTALLATION OF THE LOOP DETECTORS SHALL BE MADE DURING OFF-PEAK TRAFFIC PERIODS.

GENERAL NOTES AND SPECIFICATION DATA--

ITEM 688: CONT'D
PEDESTRIAN PUSH BUTTONS SHALL BE IN COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT.

PEDESTRIAN PUSH BUTTONS SHALL BE MOUNTED AT A HEIGHT OF 3'-6" ABOVE THE SIDEWALK AND SHALL BE OF THE TYPE THAT HAVE PERMANENT-TYPE SIGNS WITHIN THE DETECTOR UNIT WHICH EXPLAINS THEIR PURPOSE AND INDICATES WHICH CROSSWALK SIGNAL IS ACTUATED.

THE PUSH BUTTON SHALL BE ACTIVATED BY A MINIMUM 2" DIA. CONVEX PLUNGER. A PROTECTIVE SHROUD SHALL ENCIRCLE THE PLUNGER TO DETER VANDALISM. THE SHROUD SHALL BE CAST AS PART OF THE HOUSING COVER. THE PLUNGER SHALL PROTRUDE BEYOND THE PROTECTIVE SHROUD A DISTANCE ADEQUATE TO ACCOMMODATE THE SWITCH TRAVEL.

WHILE STAKING THE POLE LOCATIONS, THE CONTRACTOR, ALONG WITH THE ENGINEER, SHALL VERIFY THE LOCATION OF THE PUSH BUTTONS AND THE DIRECTION OF THE ARROWS ON THE SIGNS PRIOR TO INSTALLATION.

TESTING:

PRIOR TO TERMINATION OF THE SHIELDED, TWISTED PAIR LOOP LEAD-IN CABLES AT THE CONTROLLER CABINET, INSULATION TESTS SHALL BE MADE WITH AN INSULATION TEST SET APPLYING NOT LESS THAN 500 VOLTS D.C. TO THE COMPLETED LOOP DETECTOR. A MINIMUM RESISTANCE OF 50 MEGAOHM SHALL BE OBTAINED.

AFTER THE ABOVE INSULATION TESTS ARE COMPLETED AND THE LOOP LEAD-IN CABLE HAS BEEN TERMINATED IN THE CABINET, THE CONTRACTOR SHALL ASSIST THE ENGINEER IN DETERMINING THE LOOP INDUCTANCE OF EACH LOOP DETECTOR INSTALLATION. THE CONTRACTOR SHALL FURNISH A LOOP DETECTOR ANALYZER WHICH SHALL DETERMINE THE TOTAL INDUCTANCE OF THE LOOP IN THE PAVEMENT AND THE ASSOCIATED LEAD-IN CABLE AND SHALL ALSO BE USED IN DETERMINING THE PERCENTAGE SHIFT IN LOOP INDUCTANCE FOR VARIOUS SIZE VEHICLES THAT MAY BE ACTUATING THE DETECTOR.

ALL SIGNAL CABLES AND POWER CONDUCTORS SHALL BE CHECKED FOR INSULATION RESISTANCE UPON INSTALLATION AND PRIOR TO TERMINATION. THE TESTS SHALL BE MADE WITH A TEST SET OPERATING AT A MINIMUM OF 500 VOLTS D.C. APPLIED TO THE CONDUCTORS.

EACH CONDUCTOR IN THE MULTICONDUCTOR SIGNAL CABLES SHALL BE TESTED FOR INSULATION RESISTANCE RELATIVE TO EACH OTHER AND TO THE OUTER COVERING OF THE CABLE. THE MINIMUM ACCEPTABLE VALUE FOR INSULATION RESISTANCE

F.R. DIV.6	TEXAS	CM 97(449)	SHEET 15D
DALLAS	COUNTY	HWY BELTLNE	CONT 8050-18-34

GENERAL NOTES AND SPECIFICATION DATA--

TESTING: CONT'D
SHALL BE 50 MEGAOHMS.

ITEM 5004:

THE SW3P (STORM WATER POLLUTION PREVENTION PLAN) FOR THIS PROJECT SHALL CONSIST OF USING THE FOLLOWING ITEMS AS DIRECTED BY THE ENGINEER:
TEMPORARY SEDIMENT CONTROL FENCE
BALED HAY FOR EROSION AND SEDIMENTATION CONTROL
THIS WORK SHALL BE PAID FOR UNDER THEIR RESPECTIVE BID ITEMS.

ITEM 5051:

MIXING OF PAVERS FROM DIFFERENT MANUFACTURERS WILL NOT BE PERMITTED.

THE SURFACE AREA MEASURED FOR PAYMENT SHALL BE OF THE PAVERS ONLY AND NOT INCLUDE THE AREAS OCCUPIED BY EDGE RESTRAINTS.

SAMPLES SHALL BE SUBMITTED TO THE ENGINEER, FOR APPROVAL, INDICATING THE FULL RANGE OF SPECIFIED COLORS.

THE CONTRACTOR SHALL SUPPLY 3' X 3' X 3-1/2" TEST SECTIONS SHOWING COLOR, PATTERN AND TEXTURE TO BE DUPLICATED IN THE FIELD FOR APPROVAL BY THE ENGINEER PRIOR TO BEGINNING WORK. THIS WORK WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE CONSIDERED TO THIS BID ITEM.

ITEM 5519:

THE CONTRACTOR SHALL PROVIDE TO THE ENGINEER ONE CELLULAR PHONE FOR USE BY THE STATE INSPECTION PERSONNEL FOR THIS PROJECT.

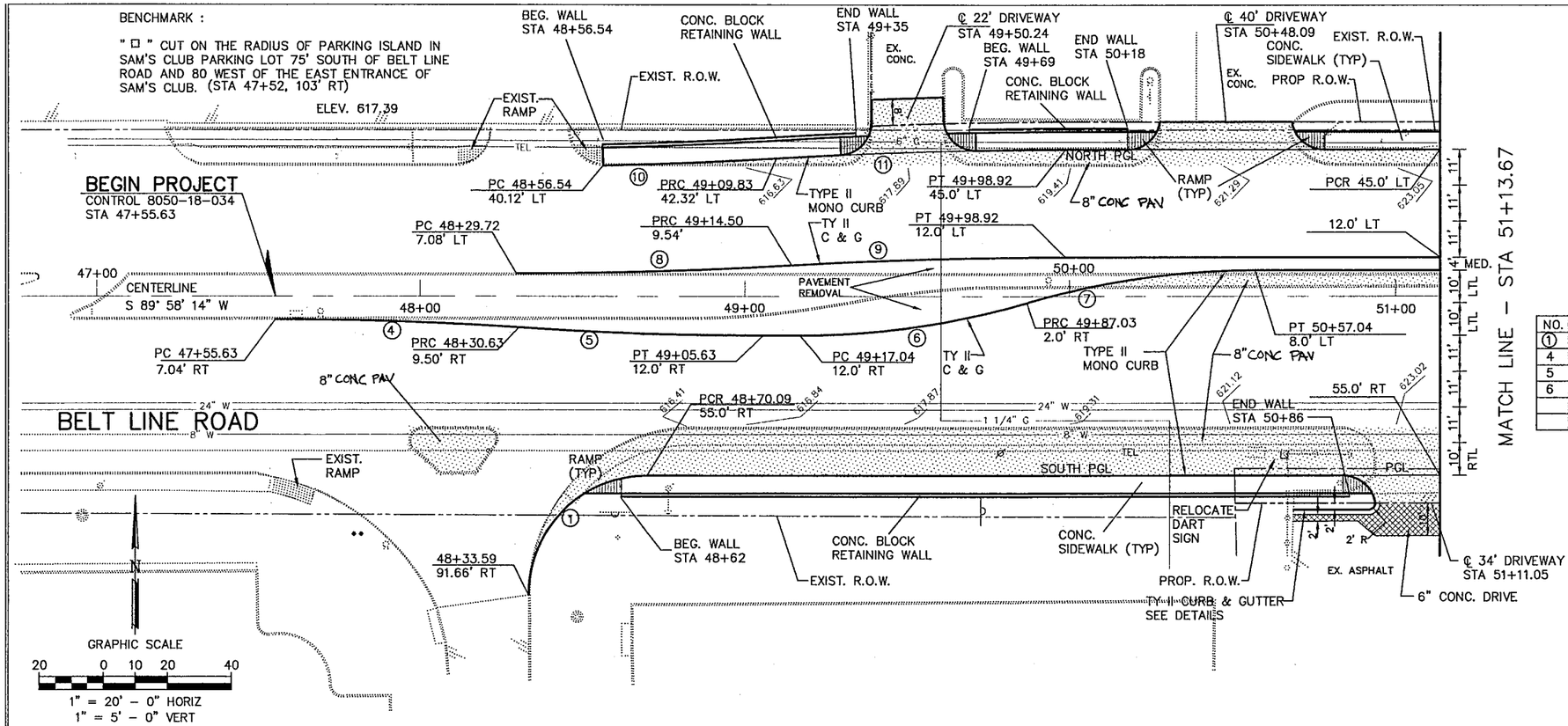
ITEM 6010:

THE EXISTING TRAFFIC SIGNALS AT MIDWAY AND QUORUM SHALL BE REMOVED AFTER THE PROPOSED SIGNALS ARE FULLY OPERATIONAL. THE EQUIPMENT SHALL BE SALVAGED AND REMAIN THE PROPERTY OF THE TOWN OF ADDISON AND SHALL BE STOCKPILED AT THE TOWN OF ADDISON SERVICE CENTER.

BENCHMARK :

" □ " CUT ON THE RADIUS OF PARKING ISLAND IN SAM'S CLUB PARKING LOT 75' SOUTH OF BELT LINE ROAD AND 80 WEST OF THE EAST ENTRANCE OF SAM'S CLUB. (STA 47+52, 103' RT)

ELEV. 617.39



LEGEND :

PGL	PROFILE GRADE LINE
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
PRC	POINT OF REVERSE CURVE
PCC	POINT OF COMPOUND CURVE
PCR	POINT OF CURB RETURN
EX	EXISTING
RT	RIGHT
LT	LEFT

BARRIER FREE RAMP

PROP. NEW PAVEMENT

612.3 EX. SPOT GUTTER ELEV.

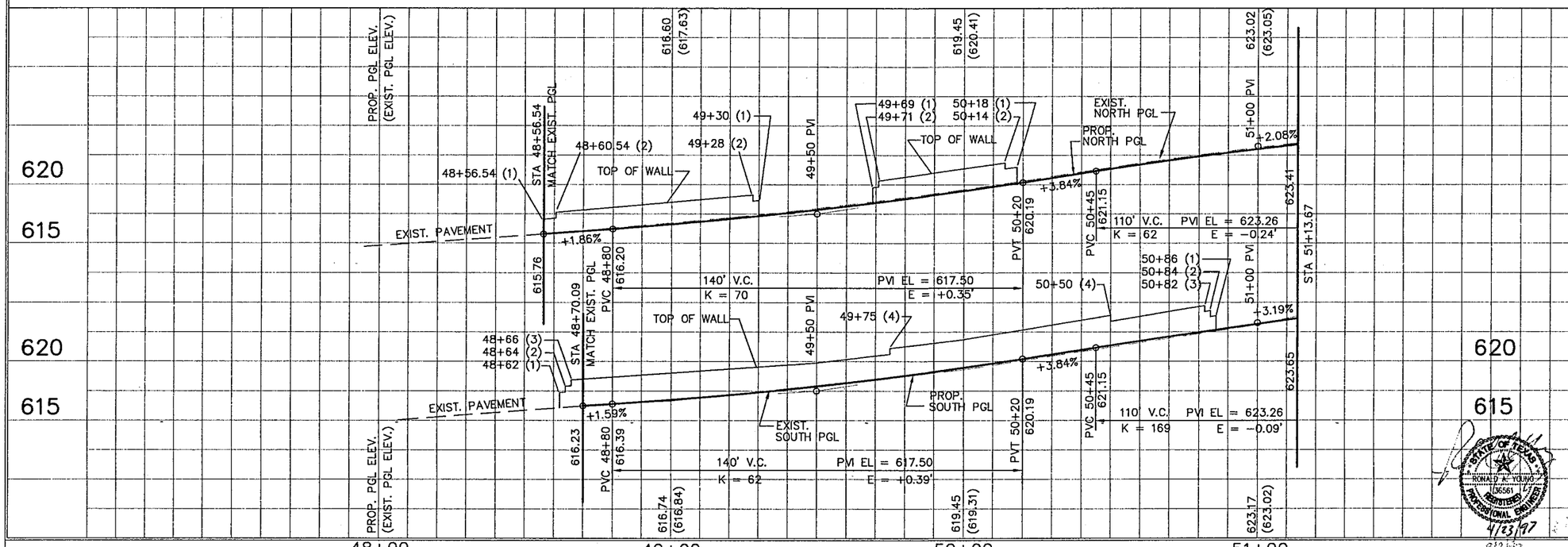
CURVE TABLE

NO.	DELTA	RADIUS	LENGTH
①	90° 14' 46"	36.5'	57.49'
4	03° 49' 06"	1126.25'	75.06'
5	03° 49' 06"	1126.25'	75.06'
6	16° 15' 37"	250.0'	70.95'

NO.	DELTA	RADIUS	LENGTH
7	16° 15' 37"	250.0'	70.95'
8	03° 21' 06"	1450.0'	84.82'
9	03° 20' 16"	1450.0'	84.47'
10	02° 09' 32"	1417.0'	53.39'
11	03° 26' 31"	1483.0'	89.09'

NOTES :

1. ALL DRIVEWAY RADII SHALL BE 15' UNLESS NOTED OTHERWISE.
2. BARRIER FREE RAMPS SHALL BE CONSTRUCTED AT ALL DRIVEWAYS AND STREET INTERSECTIONS. SEE PLANS FOR LOCATIONS.
3. SEE DRIVEWAY PROFILE PLAN FOR DRIVEWAY PROFILES.
4. FINAL LOCATIONS OF DART SIGNS SHALL BE AS DIRECTED BY THE ENGINEER AND SHALL BE PAID FOR UNDER ITEM 649.



⚠1 Revised 8" CMP to 8" conc pav 7/2/97 RT

SHEET 1 OF 8

BARTON-ASCHMAN ASSOCIATES, INC.

PAVING AND DRAINAGE PLAN/PROFILE SHEET

BELT LINE ROAD
STA 47+55.63 TO STA 51+13.67
ADDISON, TEXAS

Texas Department of Transportation ©1999

DART

REVISION	DATE
DESIGNED BY: R.A.Y.	
DRAWN BY: B.A.A.	
CHECKED BY: L.M.P.	

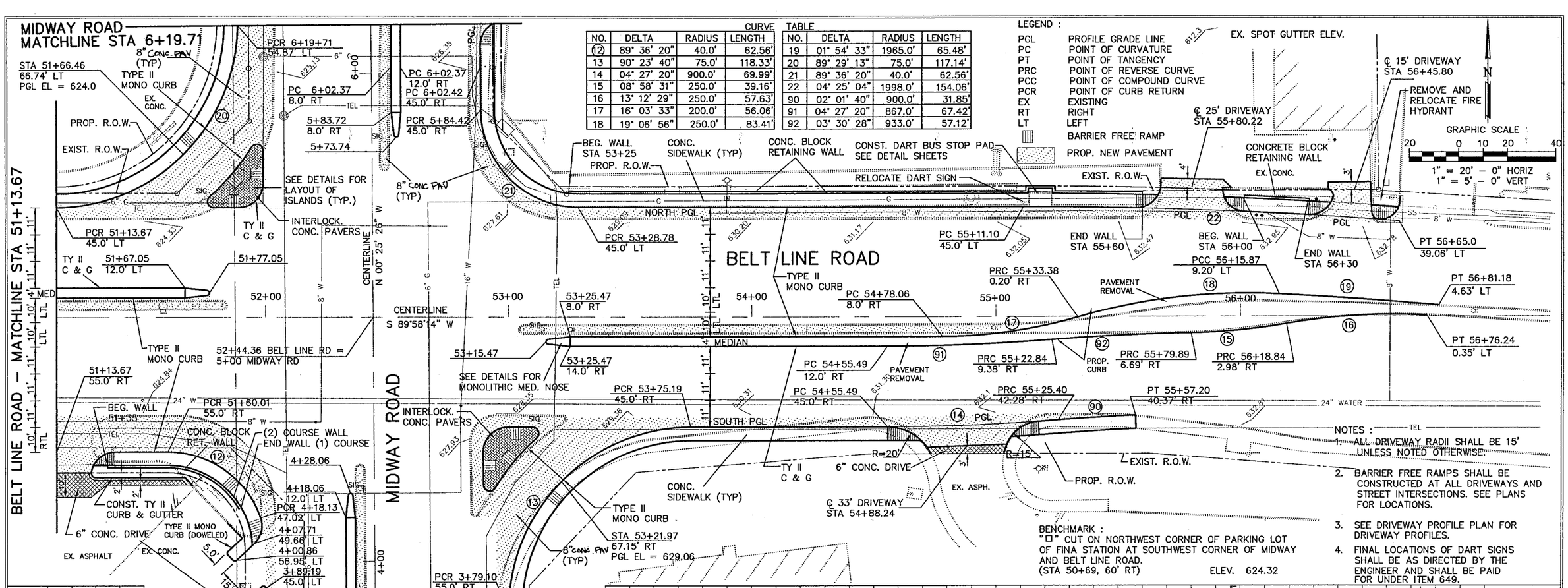
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
6	CM 97 (449)	16

STATE	STATE DIST.	COUNTY
TEXAS	DALLAS	DALLAS

CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

BA FILE NAME :

STATE OF TEXAS — RONALD A. YOUNG — 56561 — REGISTERED PROFESSIONAL ENGINEER — 4/23/97

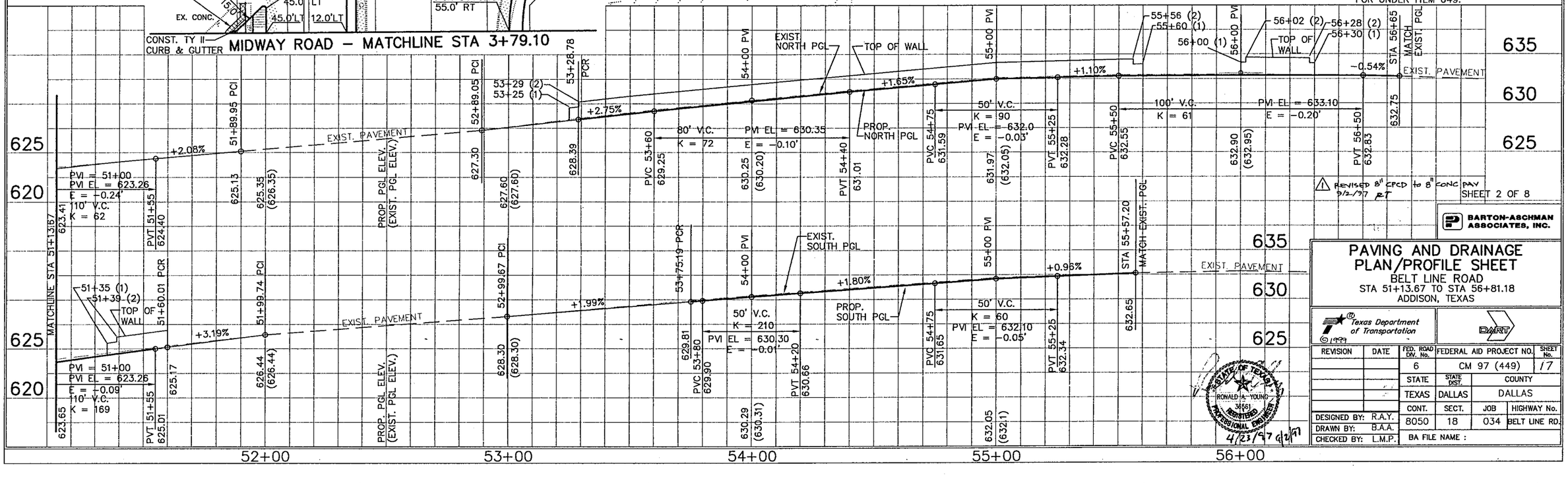


CURVE TABLE

NO.	DELTA	RADIUS	LENGTH
12	89° 36' 20"	40.0'	62.56'
13	90° 23' 40"	75.0'	118.33'
14	04° 27' 20"	900.0'	69.99'
15	08° 58' 31"	250.0'	39.16'
16	13° 12' 29"	250.0'	57.63'
17	16° 03' 33"	200.0'	56.06'
18	19° 06' 56"	250.0'	83.41'

CURVE TABLE

NO.	DELTA	RADIUS	LENGTH
19	01° 54' 33"	1965.0'	65.48'
20	89° 29' 13"	75.0'	117.14'
21	89° 36' 20"	40.0'	62.56'
22	04° 25' 04"	1998.0'	154.06'
90	02° 01' 40"	900.0'	31.85'
91	04° 27' 20"	867.0'	67.42'
92	03° 30' 28"	933.0'	57.12'



⚠ REVISED 8" CPCD to 8" CONC PAV 9/2/97 RT

SHEET 2 OF 8

BARTON-ASCHMAN ASSOCIATES, INC.

PAVING AND DRAINAGE PLAN/PROFILE SHEET

BELT LINE ROAD
STA 51+13.67 TO STA 56+81.18
ADDISON, TEXAS

Texas Department of Transportation ©1999

DART

REVISION	DATE

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
6	CM 97 (449)	17

STATE	STATE DIST.	COUNTY
TEXAS	DALLAS	DALLAS

CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD.

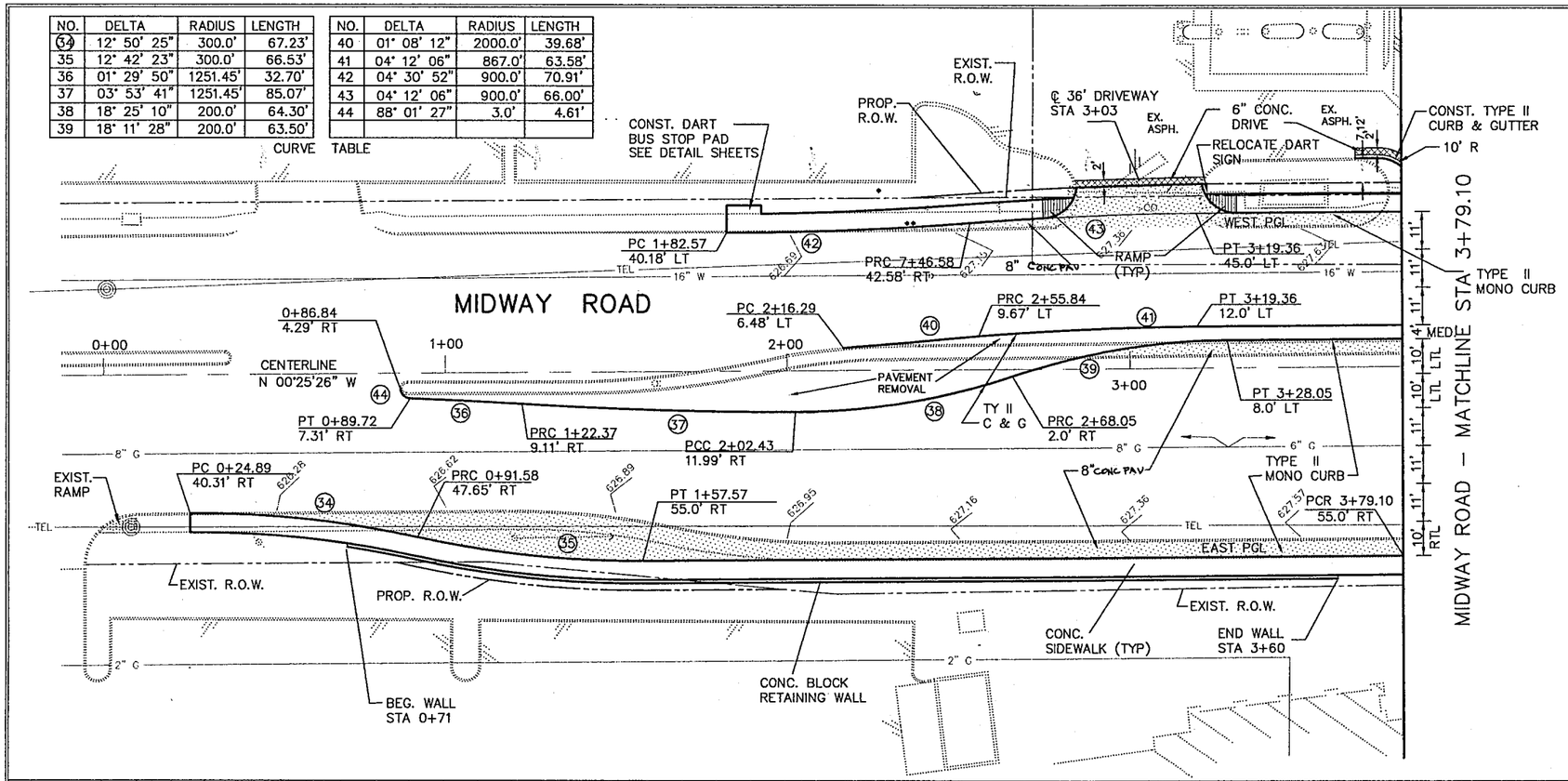
DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.
BA FILE NAME :

STATE OF TEXAS
RONALD A. YOUNG
36661
REGISTERED PROFESSIONAL ENGINEER
4/23/97

NO.	DELTA	RADIUS	LENGTH
34	12° 50' 25"	300.0'	67.23'
35	12° 42' 23"	300.0'	66.53'
36	01° 29' 50"	1251.45'	32.70'
37	03° 53' 41"	1251.45'	85.07'
38	18° 25' 10"	200.0'	64.30'
39	18° 11' 28"	200.0'	63.50'

CURVE TABLE

NO.	DELTA	RADIUS	LENGTH
40	01° 08' 12"	2000.0'	39.68'
41	04° 12' 06"	867.0'	63.58'
42	04° 30' 52"	900.0'	70.91'
43	04° 12' 06"	900.0'	66.00'
44	88° 01' 27"	3.0'	4.61'



GRAPHIC SCALE
20 0 10 20 40
1" = 20' – 0" HORIZ
1" = 5' – 0" VERT

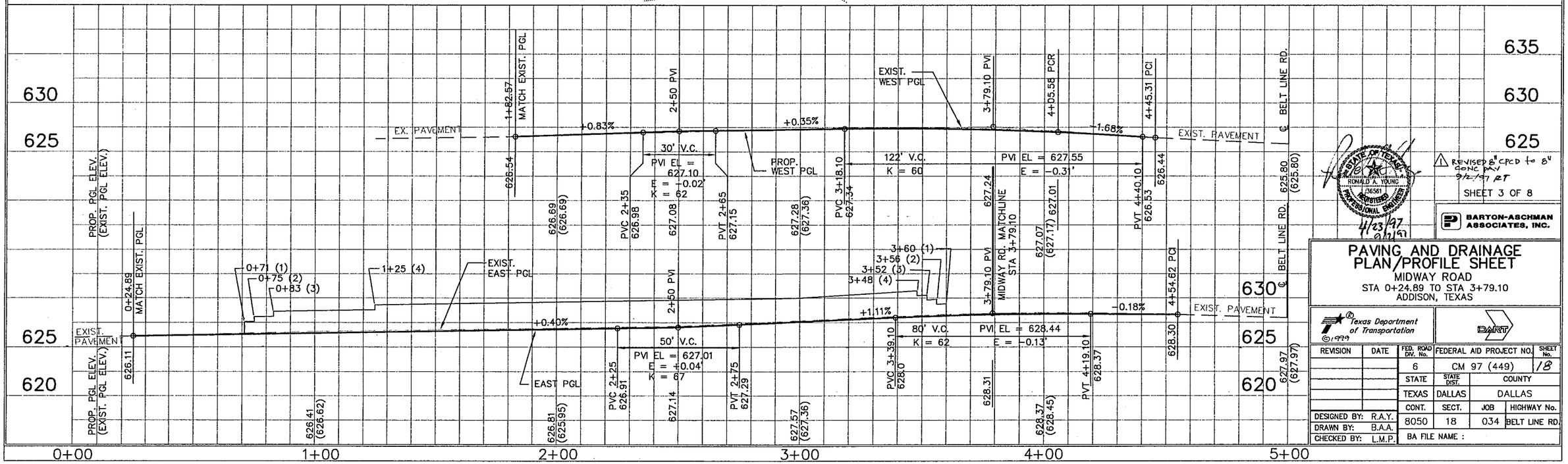
BENCHMARK :
"□" CUT ON NORTHWEST CORNER OF PARKING LOT OF FINA STATION AT SOUTHWEST CORNER OF MIDWAY AND BELT LINE ROAD.
ELEV. 624.32

LEGEND :

PGL	PROFILE GRADE LINE
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
PRC	POINT OF REVERSE CURVE
PCC	POINT OF COMPOUND CURVE
PCR	POINT OF CURB RETURN
EX	EXISTING
RT	RIGHT
LT	LEFT

BARRIER FREE RAMP
PROP. NEW PAVEMENT
612.3 EX. SPOT GUTTER ELEV.

NOTES :
1. ALL DRIVEWAY RADII SHALL BE 15' UNLESS NOTED OTHERWISE.
2. BARRIER FREE RAMPS SHALL BE CONSTRUCTED AT ALL DRIVEWAYS AND STREET INTERSECTIONS. SEE PLANS FOR LOCATIONS.
3. SEE DRIVEWAY PROFILE PLAN FOR DRIVEWAY PROFILES.
4. FINAL LOCATIONS OF DART SIGNS SHALL BE AS DIRECTED BY THE ENGINEER AND SHALL BE PAID FOR UNDER ITEM 649.



REVISED 8" CPCD to 8" CONC PV 9/2/97 RT

SHEET 3 OF 8

BARTON-ASCHMAN ASSOCIATES, INC.

PAVING AND DRAINAGE PLAN/PROFILE SHEET

MIDWAY ROAD
STA 0+24.89 TO STA 3+79.10
ADDISON, TEXAS

Texas Department of Transportation ©1999

DART

REVISION	DATE

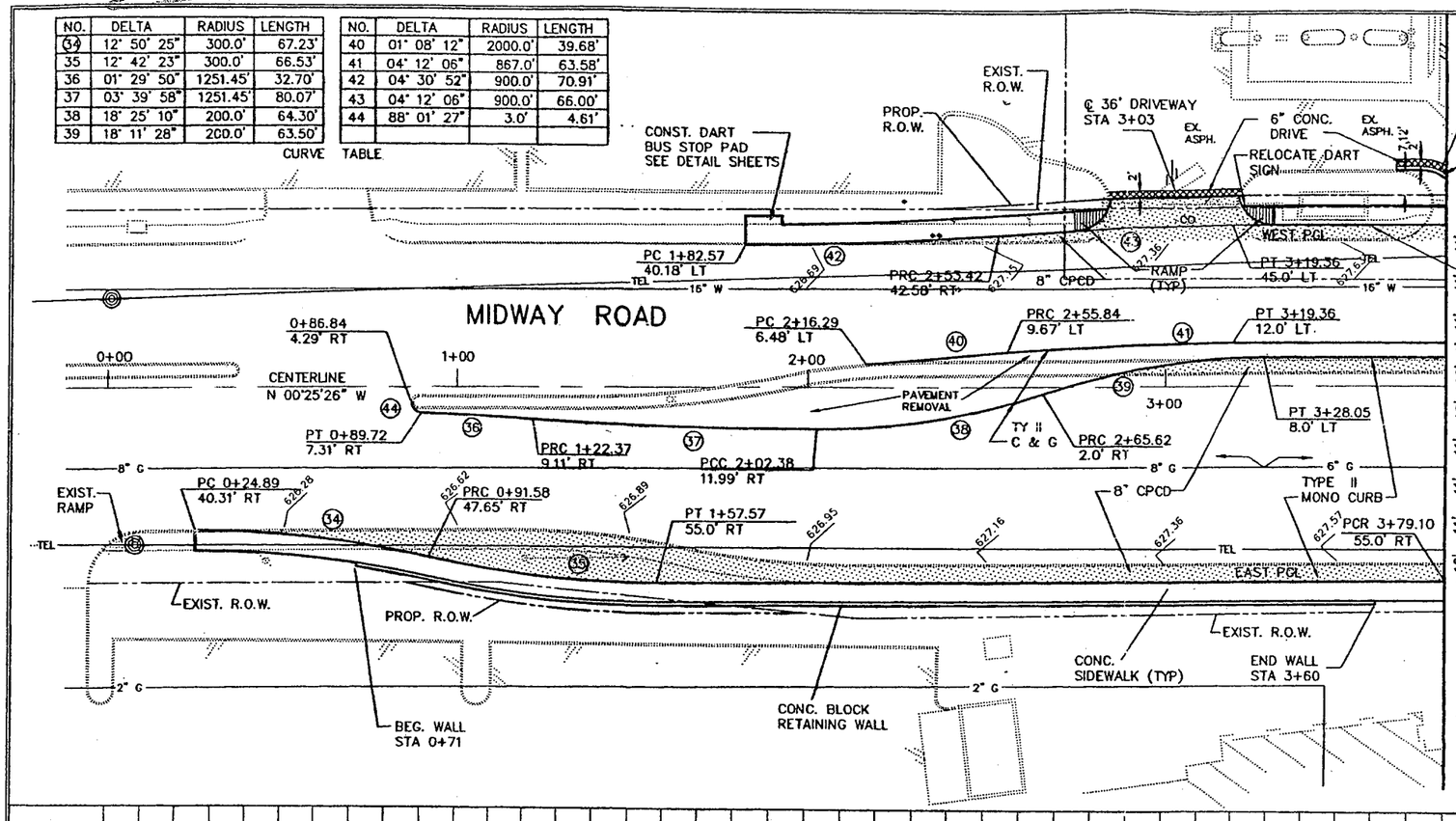
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		18
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD.

DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.
BA FILE NAME :

NO.	DELTA	RADIUS	LENGTH
34	12° 50' 25"	300.0'	67.23'
35	12° 42' 23"	300.0'	66.53'
36	01° 29' 50"	1251.45'	32.70'
37	03° 39' 58"	1251.45'	80.07'
38	18° 25' 10"	200.0'	64.30'
39	18° 11' 28"	200.0'	63.50'

CURVE TABLE

NO.	DELTA	RADIUS	LENGTH
40	01° 08' 12"	2000.0'	39.68'
41	04° 12' 06"	867.0'	63.58'
42	04° 30' 52"	900.0'	70.91'
43	04° 12' 06"	900.0'	66.00'
44	88° 01' 27"	3.0'	4.61'



GRAPHIC SCALE

20 0 10 20 40

1" = 20' – 0" HORIZ

1" = 5' – 0" VERT

BENCHMARK :
"□" CUT ON NORTHWEST CORNER OF PARKING LOT OF FINA STATION AT SOUTHWEST CORNER OF MIDWAY AND BELT LINE ROAD.

ELEV. 624.32

LEGEND :

PGL	PROFILE GRADE LINE
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
PRC	POINT OF REVERSE CURVE
PCC	POINT OF COMPOUND CURVE
PCR	POINT OF CURB RETURN
EX	EXISTING
RT	RIGHT
LT	LEFT

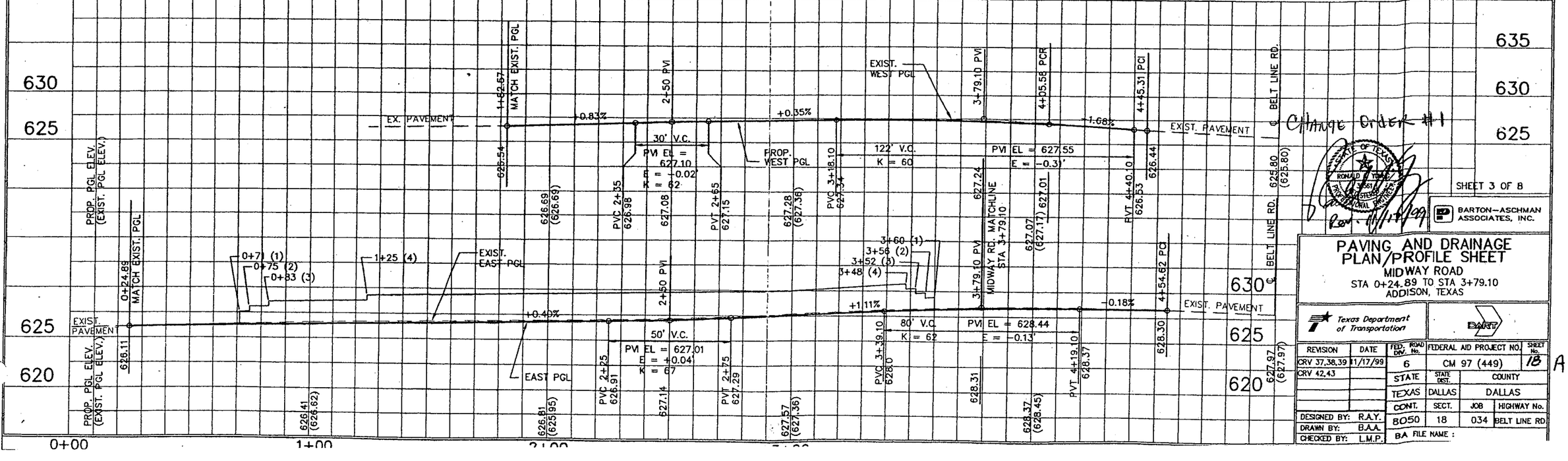
BARRIER FREE RAMP

PROP. NEW PAVEMENT

EX. SPOT GUTTER ELEV.

NOTES :

1. ALL DRIVEWAY RADII SHALL BE 15' UNLESS NOTED OTHERWISE.
2. BARRIER FREE RAMPS SHALL BE CONSTRUCTED AT ALL DRIVEWAYS AND STREET INTERSECTIONS. SEE PLANS FOR LOCATIONS.
3. SEE DRIVEWAY PROFILE PLAN FOR DRIVEWAY PROFILES.
4. FINAL LOCATIONS OF DART SIGNS SHALL BE AS DIRECTED BY THE ENGINEER AND SHALL BE PAID FOR UNDER ITEM 649.



SHEET 3 OF 8

BARTON–ASCHMAN ASSOCIATES, INC.

PAVING AND DRAINAGE PLAN/PROFILE SHEET

MIDWAY ROAD
STA 0+24.89 TO STA 3+79.10
ADDISON, TEXAS

Texas Department of Transportation

DART

REVISION	DATE
CRV 37,38,39	11/17/99
CRV 42,43	

FED. RD. DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
6	CM 97 (449)	18

STATE	STATE DIST.	COUNTY
TEXAS	DALLAS	DALLAS

CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.
BA FILE NAME :

A

BENCHMARK :
"□" CUT ON NORTHWEST CORNER OF PARKING LOT OF FINA STATION AT SOUTHWEST CORNER OF MIDWAY AND BELT LINE ROAD.
(BELT LINE STA 50+69, 60' RT) ELEV. 624.32

LEGEND :

PI	POINT OF INTERSECTION
PGL	PROFILE GRADE LINE
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
PRC	POINT OF REVERSE CURVE
PCC	POINT OF COMPOUND CURVE
PCR	POINT OF CURB RETURN
EX	EXISTING
RT	RIGHT
LT	LEFT

BARRIER FREE RAMP

PROP. NEW PAVEMENT

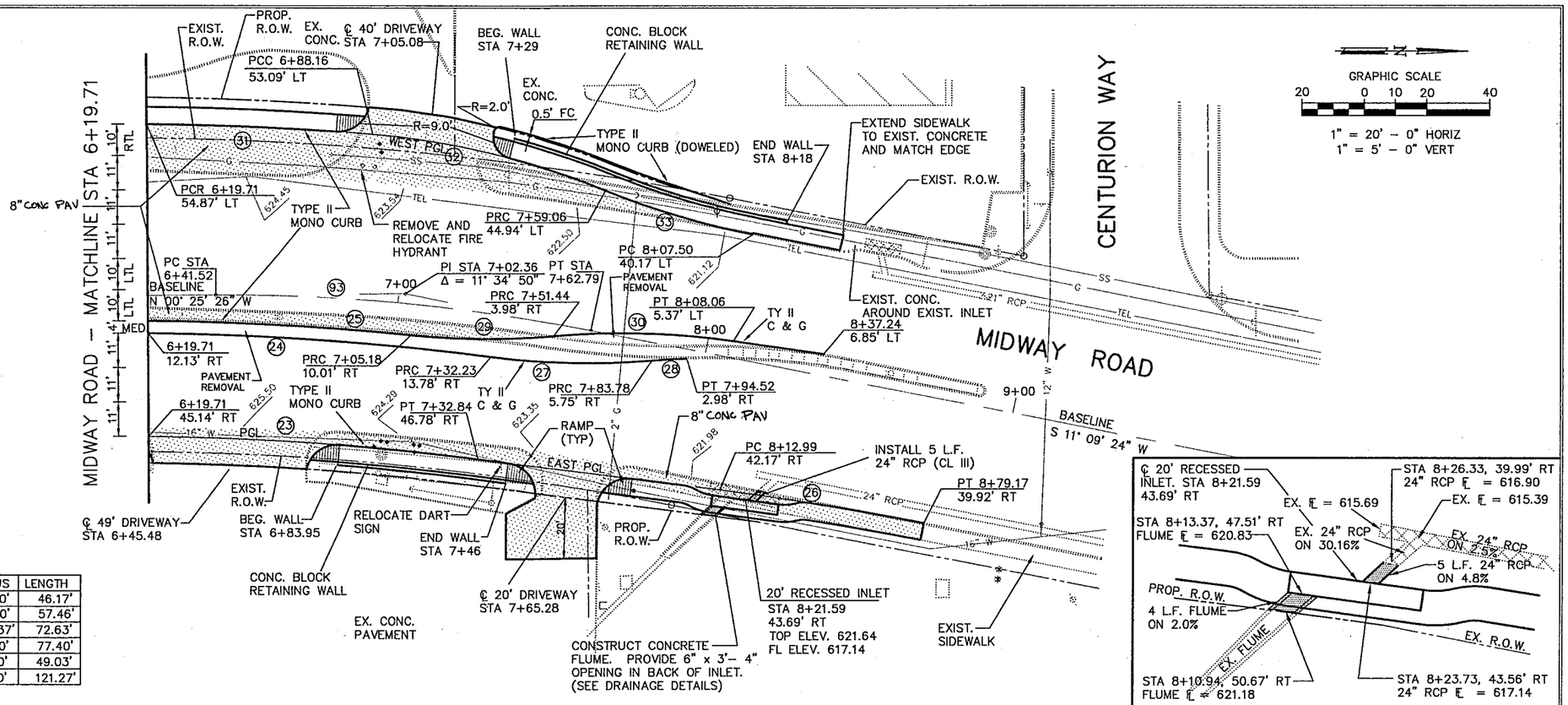
612.3 EX. SPOT GUTTER ELEV.

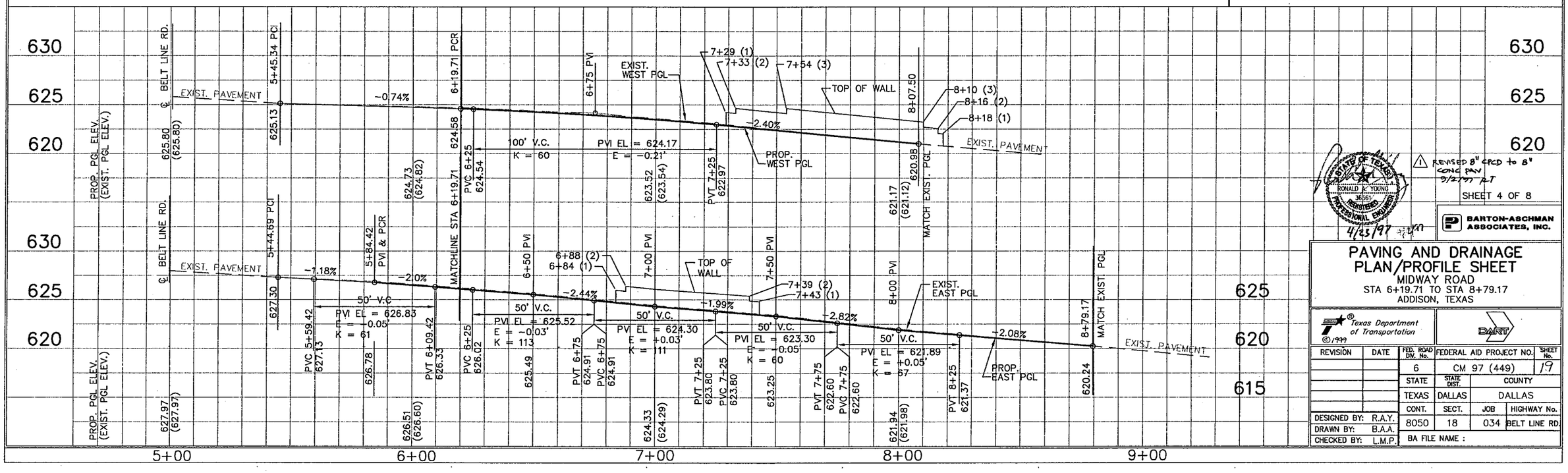
NOTES :
1. ALL DRIVEWAY RADII SHALL BE 15' UNLESS NOTED OTHERWISE.
2. BARRIER FREE RAMPS SHALL BE CONSTRUCTED AT ALL DRIVEWAYS AND STREET INTERSECTIONS. SEE PLANS FOR LOCATIONS.
3. SEE DRIVEWAY PROFILE PLAN FOR DRIVEWAY PROFILES.
4. FINAL LOCATIONS OF DART SIGNS SHALL BE AS DIRECTED BY THE ENGINEER AND SHALL BE PAID FOR UNDER ITEM 649.

CURVE TABLE

NO.	DELTA	RADIUS	LENGTH
23	07° 46' 17"	909.37'	123.34'
24	07° 46' 17"	942.37'	127.82'
25	06° 09' 52"	946.37'	101.82'
26	03° 53' 31"	975.0'	66.23'
27	11° 50' 38"	250.0'	51.68'
28	02° 32' 37"	250.0'	11.10'

NO.	DELTA	RADIUS	LENGTH
29	10° 34' 55"	250.0'	46.17'
30	13° 10' 08"	250.0'	57.46'
31	04° 07' 22"	1009.37'	72.63'
32	17° 44' 17"	250.0'	77.40'
33	11° 14' 16"	250.0'	49.03'
93	11° 34' 50"	600.0'	121.27'





1 REVISED 8" CRCP to 8" CONC PAV 9/2/97 RT

STATE OF TEXAS — RONALD K. YOUNG — 36561 — REGISTERED PROFESSIONAL ENGINEER
4/23/97

SHEET 4 OF 8

BARTON-ASCHMAN ASSOCIATES, INC.

PAVING AND DRAINAGE PLAN/PROFILE SHEET
MIDWAY ROAD
STA 6+19.71 TO STA 8+79.17
ADDISON, TEXAS

Texas Department of Transportation © 1999

DART

REVISION	DATE

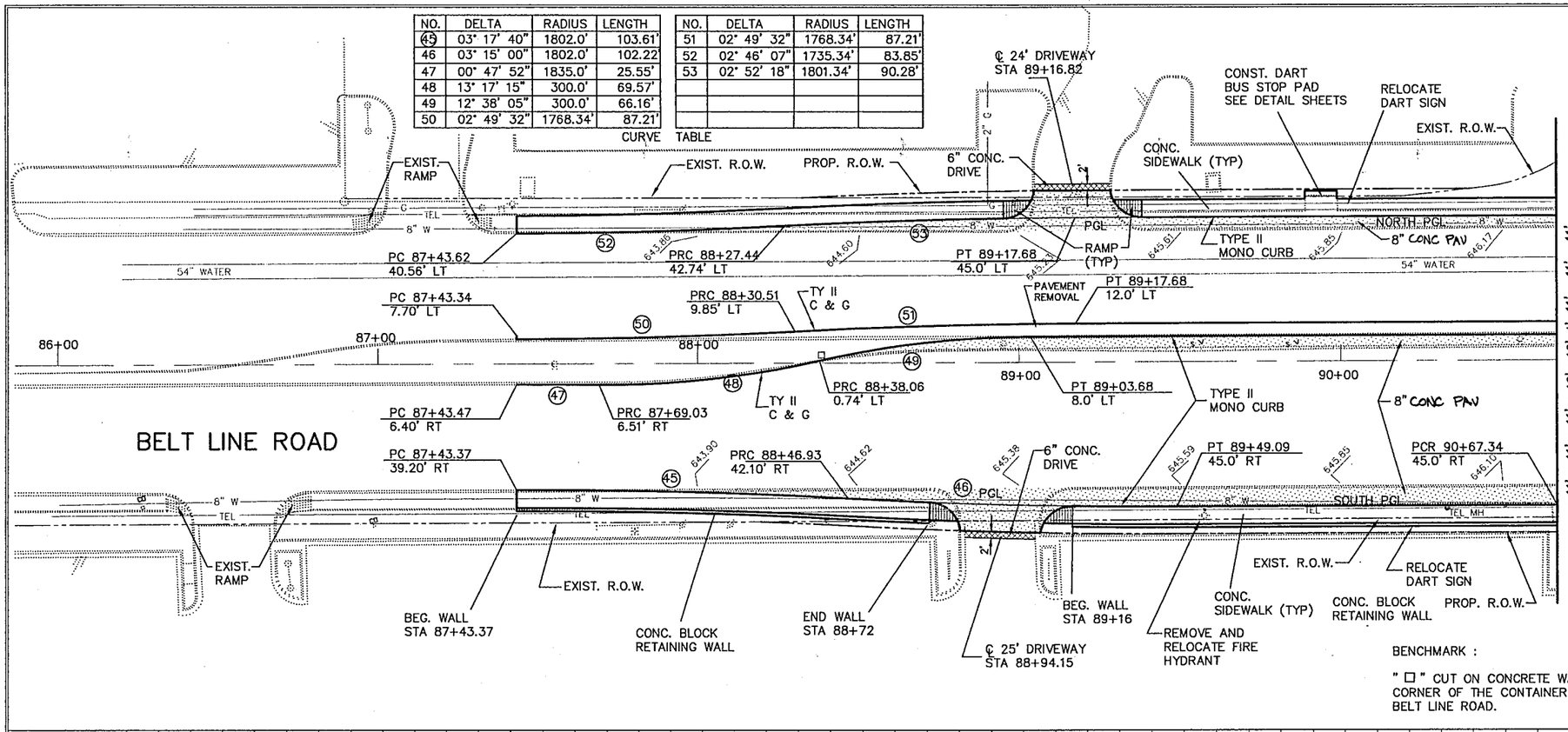
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		19
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD.

DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.
BA FILE NAME :

NO.	DELTA	RADIUS	LENGTH
45	03° 17' 40"	1802.0'	103.61'
46	03° 15' 00"	1802.0'	102.22'
47	00° 47' 52"	1835.0'	25.55'
48	13° 17' 15"	300.0'	69.57'
49	12° 38' 05"	300.0'	66.16'
50	02° 49' 32"	1768.34'	87.21'

CURVE TABLE

NO.	DELTA	RADIUS	LENGTH
51	02° 49' 32"	1768.34'	87.21'
52	02° 46' 07"	1735.34'	83.85'
53	02° 52' 18"	1801.34'	90.28'



GRAPHIC SCALE
20 0 10 20 40
1" = 20' – 0" HORIZ
1" = 5' – 0" VERT

LEGEND :

PGL	PROFILE GRADE LINE
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
PRC	POINT OF REVERSE CURVE
PCC	POINT OF COMPOUND CURVE
PCR	POINT OF CURB RETURN
EX	EXISTING
RT	RIGHT
LT	LEFT

BARRIER FREE RAMP

PROP. NEW PAVEMENT

EX. SPOT GUTTER ELEV.

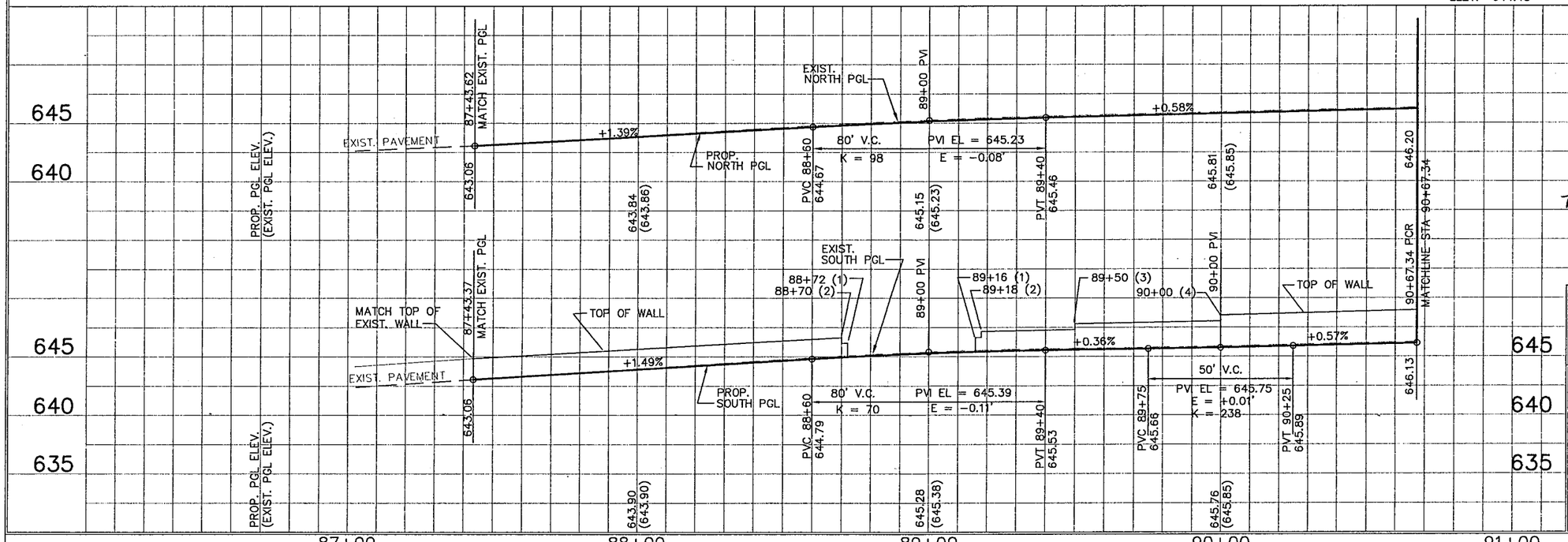
NOTES :

1. ALL DRIVEWAY RADII SHALL BE 15' UNLESS NOTED OTHERWISE.
2. BARRIER FREE RAMPS SHALL BE CONSTRUCTED AT ALL DRIVEWAYS AND STREET INTERSECTIONS. SEE PLANS FOR LOCATIONS.
3. SEE DRIVEWAY PROFILE PLAN FOR DRIVEWAY PROFILES.
4. FINAL LOCATIONS OF DART SIGNS SHALL BE AS DIRECTED BY THE ENGINEER AND SHALL BE PAID FOR UNDER ITEM 649.

BENCHMARK :

" □ " CUT ON CONCRETE WALK AT THE SOUTHEAST CORNER OF THE CONTAINER STORE AT 4939 BELT LINE ROAD.

ELEV. 644.48



STATE OF TEXAS
RONALD A. YOUNG
36561
REGISTERED
PROFESSIONAL ENGINEER
4/23/97
9/2/97

⚠ REVISED 8" CPCD to 8" CONC PAV. 9/2/97 RAY

SHEET 5 OF 8

BARTON-ASCHMAN ASSOCIATES, INC.

PAVING AND DRAINAGE PLAN/PROFILE SHEET

BELT LINE ROAD
STA 87+43.34 TO STA 90+67.34
ADDISON, TEXAS

Texas Department of Transportation © 1999

DART

REVISION	DATE

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		20
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD.

DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.

BA FILE NAME :

NO.	DELTA	RADIUS	LENGTH
54	90° 45' 54"	30.0'	47.52'
55	90° 13' 06"	30.0'	47.24'
56	03° 11' 27"	1802.0'	100.36'
57	03° 20' 05"	1802.0'	104.88'
58	03° 14' 31"	1768.20'	100.05'
59	00° 50' 33"	1768.20'	100.05'
60	09° 49' 03"	250.0'	42.84'

NO.	DELTA	RADIUS	LENGTH
61	12° 13' 10"	250.0'	53.32'
62	13° 34' 33"	300.0'	71.08'
63	15° 17' 15"	300.0'	80.05'
64	01° 54' 21"	1835.0'	61.04'
65	90° 13' 06"	30.0'	47.24'
66	89° 53' 10"	30.0'	47.06'
67	02° 51' 48"	1802.0'	90.05'
68	02° 51' 35"	1802.0'	89.94'

CURVE TABLE

LEGEND :

PGL	PROFILE GRADE LINE
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
PRC	POINT OF REVERSE CURVE
PCC	POINT OF COMPOUND CURVE
PCR	POINT OF CURB RETURN
EX	EXISTING
RT	RIGHT
LT	LEFT

BARRIER FREE RAMP

PROP. NEW PAVEMENT

NOTES :

1. ALL DRIVEWAY RADII SHALL BE 15' UNLESS NOTED OTHERWISE.
2. BARRIER FREE RAMPS SHALL BE CONSTRUCTED AT ALL DRIVEWAYS AND STREET INTERSECTIONS. SEE PLANS FOR LOCATIONS.
3. SEE DRIVEWAY PROFILE PLAN FOR DRIVEWAY PROFILES.
4. FINAL LOCATIONS OF DART SIGNS SHALL BE AS DIRECTED BY THE ENGINEER AND SHALL BE PAID FOR UNDER ITEM 649.

BENCHMARK :
"□" CUT ON THE NORTH END OF A CONCRETE RETAINING WALL ON THE EAST SIDE OF QUORUM DRIVE AT THE NORTHWEST CORNER OF THE MARRIOT HOTEL APPROX. 900' SOUTH OF THE INTERSECTION OF BELT LINE AND QUORUM DRIVE.

ELEV. 649.13

GRAPHIC SCALE
20 0 10 20 40
1" = 20' - 0" HORIZ
1" = 5' - 0" VERT

Change Order #1

SHEET 6 OF 8

BARTON-ASCHMAN ASSOCIATES, INC.

PAVING AND DRAINAGE PLAN/PROFILE SHEET
BELT LINE ROAD
STA 90+67.34 TO STA 95+75.73
ADDISON, TEXAS

Texas Department of Transportation

DART

REVISION	DATE
CRV 56	11/17/99

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
6	CM 97 (449)	21 A

STATE	STATE DIST.	COUNTY
TEXAS	DALLAS	DALLAS

CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD.

DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.
BA FILE NAME :

NO.	DELTA	RADIUS	LENGTH
54	90° 45' 54"	30.0'	47.52'
55	90° 13' 06"	30.0'	47.24'
56	03° 11' 27"	1802.0'	104.35'
57	03° 20' 05"	1802.0'	104.88'
58	03° 14' 31"	1768.20'	100.05'
59	00° 50' 33"	1768.20'	26.0'
60	09° 49' 03"	250.0'	42.84'

NO.	DELTA	RADIUS	LENGTH
61	12° 13' 10"	250.0'	53.32'
62	13° 34' 33"	300.0'	71.08'
63	15° 17' 15"	300.0'	80.05'
64	01° 54' 21"	1835.0'	61.04'
65	90° 13' 06"	30.0'	47.24'
66	89° 53' 10"	30.0'	47.06'
67	02° 51' 48"	1802.0'	90.05'
68	02° 51' 35"	1802.0'	89.94'

CURVE TABLE

LEGEND :

PGL	PROFILE GRADE LINE
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
PRC	POINT OF REVERSE CURVE
PCC	POINT OF COMPOUND CURVE
PCR	POINT OF CURB RETURN
EX	EXISTING
RT	RIGHT
LT	LEFT

BARRIER FREE RAMP

PROP. NEW PAVEMENT

QUORUM DRIVE – MATCHLINE STA 7+36.27

BELT LINE ROAD – MATCHLINE STA 90+67.34

QUORUM DRIVE – MATCHLINE STA 5+85.77

BELT LINE ROAD

QUORUM DRIVE

TYPE II MONO CURB

PCR 7+36.27 39.01' LT

PCR 7+35.76 46.53' RT

EXIST. R.O.W.

CONC. SIDEWALK (TYP)

RELOCATE AIR VALVE AS NEEDED

PROP. R.O.W.

℄ 30' DRIVEWAY STA 93+36.06

6" CONC. DRIVE

REMOVE AND RELOCATE FIRE HYDRANT

EX. ASPHALT

BEG. WALL STA 93+61

CONST. DART BUS STOP PAD SEE DETAIL SHEETS

CONC. BLOCK RETAINING WALL

END WALL STA 94+92

EX. SPOT GUTTER ELEV. 612.3

EX. ASPHALT

CONST. 18" CURB & GUTTER

℄ 31' DRIVEWAY STA 95+17.53

6" CONC. DRIVE

PCR 90+71.04 45.0' LT

8" CONC PAV (TYP)

PCR 92+17.25 45.0' LT

PC 93+95.81 45.0' LT

PRC 94+85.82 42.75' LT

PT 95+75.73 40.5' LT

54" WATER

90+77.70 12.0' LT

90+87.70

SEE DETAILS FOR MONOLITHIC MEDIAN NOSE

TYPE II MONO CURB

RELOCATE DART SIGN

PRC 94+35.21 0.38' LT

TY II C & G

PCC 95+14.59 8.63' LT

PT 95+75.63 7.82' LT

92+04.28

92+14.28 12.0' RT

PAVEMENT REMOVAL

SEE DETAILS FOR MED. NOSE LAYOUTS

4' MEDIAN

PC 93+64.79 8.0' RT

PC 93+54.29 12.0' RT

PRC 94+54.29 9.17' RT

PRC 94+80.26 7.89' RT

PRC 95+22.70 2.45' RT

PT 95+75.61 3.22' LT

STA 91+41 BELT LINE RD = STA 6+61 QUORUM DRIVE

CENTERLINE S 00°23'56" E

CENTERLINE S 89°49'09" W

END PROJECT

CONTROL 8050-18-034

STA 95+75.73

PCR 90+67.34 45.0' RT

PCR 92+37.29 45.0' RT

PC 93+54.29 45.0' RT

PRC 94+54.60 42.21' RT

PT 95+59.42 39.42' RT

PCR 5+85.77 43.95' LT

SOUTH PGL

PGL

CONC. BLOCK RETAINING WALL

CONC. SIDEWALK (TYP)

END WALL STA 94+10

EX. CONC.

℄ 31' DRIVEWAY STA 94+35.34

BEG. WALL STA 94+60

CONC. BLOCK RETAINING WALL

END WALL STA 95+59.42

END WALL (1) COURSE
WALL HT. (2) COURSES
WALL HT. (3) COURSES

CONC. BLOCK RETAINING WALL

TYPE II MONO CURB

REMOVE AND RELOCATE FIRE HYDRANT

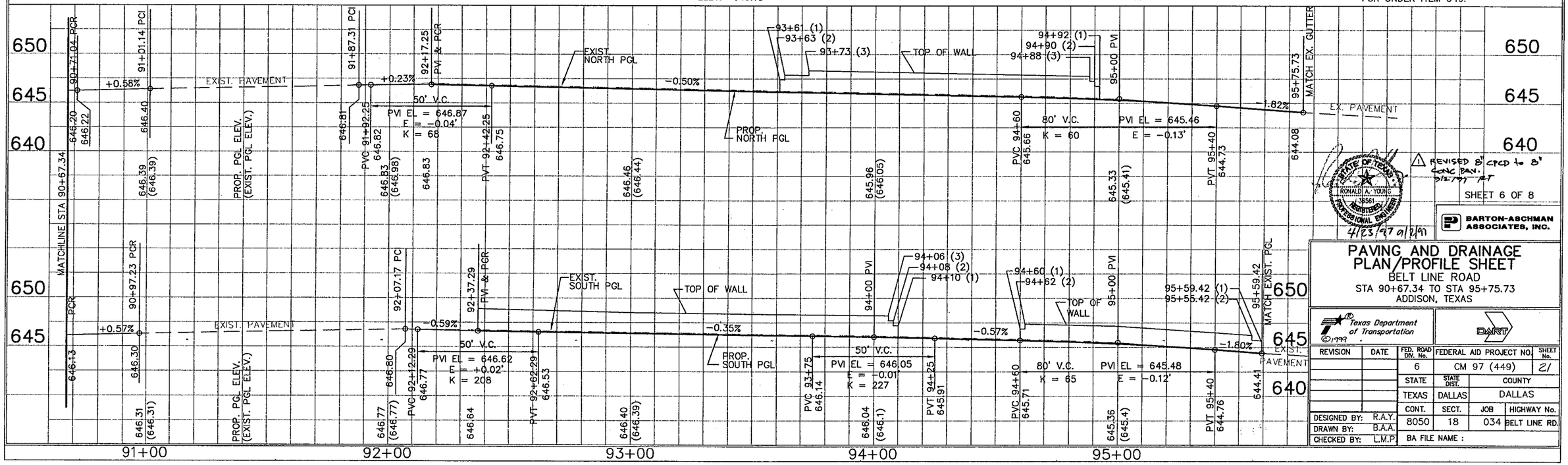
BENCHMARK :
"□" CUT ON THE NORTH END OF A CONCRETE RETAINING WALL ON THE EAST SIDE OF QUORUM DRIVE AT THE NORTHWEST CORNER OF THE MARRIOT HOTEL APPROX. 900' SOUTH OF THE INTERSECTION OF BELT LINE AND QUORUM DRIVE.

ELEV. 649.13

GRAPHIC SCALE
20 0 10 20 40
1" = 20' – 0" HORIZ
1" = 5' – 0" VERT

NOTES :

1. ALL DRIVEWAY RADII SHALL BE 15' UNLESS NOTED OTHERWISE.
2. BARRIER FREE RAMPS SHALL BE CONSTRUCTED AT ALL DRIVEWAYS AND STREET INTERSECTIONS. SEE PLANS FOR LOCATIONS.
3. SEE DRIVEWAY PROFILE PLAN FOR DRIVEWAY PROFILES.
4. FINAL LOCATIONS OF DART SIGNS SHALL BE AS DIRECTED BY THE ENGINEER AND SHALL BE PAID FOR UNDER ITEM 649.



REVISED 8' CPCD to 8' CONC PAV. 5/12/97 RAY

STATE OF TEXAS RONALD A. YOUNG 79561 REGISTERED PROFESSIONAL ENGINEER 4/23/97 9/2/97

SHEET 6 OF 8

BARTON-ASCHMAN ASSOCIATES, INC.

PAVING AND DRAINAGE PLAN/PROFILE SHEET

BELT LINE ROAD
STA 90+67.34 TO STA 95+75.73
ADDISON, TEXAS

Texas Department of Transportation ©1999

DART

REVISION	DATE

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
6	CM 97 (449)	21

STATE	STATE DIST.	COUNTY
TEXAS	DALLAS	DALLAS

CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD.

DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.

BA FILE NAME :

CURVE TABLE

NO.	DELTA	RADIUS	LENGTH
79	23° 46' 13"	700.0'	290.41'
80	4° 18' 29"	1875.55'	141.02'
81	19° 08' 56"	800.0'	267.37'
82	15° 50' 31"	300.0'	82.95'
83	07° 22' 04"	250.0'	32.15'

NO.	DELTA	RADIUS	LENGTH
84	12° 38' 33"	824.0'	181.82'
85	88° 58' 02"	15.0'	23.29'
86	79° 40' 11"	10.0'	13.90'
87	12° 40' 24"	250.0'	55.30'
88	16° 04' 55"	125.0'	35.09'
94	05° 44' 52"	686.0'	68.82'

SHEET NOTES :

1. THE EXIT DRIVEWAY AT STA. 17+68.29 RIGHT SHALL REMAIN OPEN TO TRAFFIC SURING ALL BUSINESS HOURS. THE CONTRACTOR, WITH THE APPROVAL OF THE ENGINEER, MAY USE HIGH EARLY STRENGTH CONCRETE AND MAY PERFORM THE CONSTRUCTION BETWEEN SATURDAY NOON AND MONDAY MORNING.

QUORUM DRIVE

CONST. DART BUS STOP PAD SEE DETAIL SHEETS

CONSTRUCT 5.0' CONCRETE SIDEWALK ADJACENT TO EXIST. CURB

EXIST. R.O.W.

STA 4+92

℄ PT 5+11.22

5+74.43 20.20' LT

CENTERLINE S 00° 23' 56" E

QUORUM DRIVE MATCHLINE STA 5+85.77

TYPE II MONO CURB

℄ PCC 2+20.81

MATCH EX. GUTTER

PAVEMENT REMOVAL

SAW CUT EX. CONC. FULL DEPTH

2+79.67 0.38' RT

3+38.22 1.20' RT

2+79.23 5.16' RT

3+39.38 13.40' RT

PCC 4+41.00 14.0' RT

PRC 4+05.44 18.01' RT

PT 5+11.22 14.0' RT

5+79.11 14.0' RT

PCR 5+85.64 66.0' RT

PC 0+79.79 5.82' RT

℄ POC 0+79.79

PC 0+79.49 29.50' RT

WEST PGL

EAST PGL

PGL

PT 2+62.74 18.54' RT

RAMP (TYP)

PCC 3+48.79 20.36' RT

PRC 4+45.8 61.15' RT

PT 4+80.81 65.40' RT

END WALL STA 3+22

PT PC 3+56.97 48.99' RT

CONC. SIDEWALK (TYP)

8" CPCD

℄ 15' DRIVEWAY STA 2+31.71

REMOVE AND RELOCATE FIRE HYDRANT

℄ 29' DRIVEWAY STA 2+82.46

CONC. BLOCK RETAINING WALL

EXIST. R.O.W.

PROP. R.O.W.

EXIST. DART BUS SHELTER SHALL BE REMOVED AND RELOCATED TO THE DART BUS STOP PAD TO BE CONSTRUCTED ON THE EAST SIDE OF QUORUM DRIVE AT STA. 8+32. REMOVAL AND RELOCATION SHALL BE SUBSIDIARY TO ITEM 100.

BENCHMARK :
" □ " CUT ON THE NORTH END OF A CONCRETE RETAINING WALL ON THE EAST SIDE OF QUORUM DRIVE AT THE NORTHWEST CORNER OF THE MARRIOT HOTEL APPROX. 900' SOUTH OF THE INTERSECTION OF BELT LINE AND QUORUM DRIVE.

ELEV. 649.13

GRAPHIC SCALE
20 0 10 20 40
1" = 20' – 0" HORIZ
1" = 5' – 0" VERT

NOTES :

1. ALL DRIVEWAY RADII SHALL BE 15' UNLESS NOTED OTHERWISE.
2. BARRIER FREE RAMPS SHALL BE CONSTRUCTED AT ALL DRIVEWAYS AND STREET INTERSECTIONS. SEE PLANS FOR LOCATIONS.
3. SEE DRIVEWAY PROFILE PLAN FOR DRIVEWAY PROFILES.
4. FINAL LOCATIONS OF DART SIGNS SHALL BE AS DIRECTED BY THE ENGINEER AND SHALL BE PAID FOR UNDER ITEM 649.

LEGEND :

PGL	PROFILE GRADE LINE
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
PRC	POINT OF REVERSE CURVE
PCC	POINT OF COMPOUND CURVE
PCR	POINT OF CURB RETURN
EX	EXISTING
RT	RIGHT
LT	LEFT
	BARRIER FREE RAMP
	PROP. NEW PAVEMENT
612.3	EX. SPOT GUTTER ELEV.

650
645
640

150' VC K = 68
PVI EL = 649.92 E = 0.41'
150' VC K = 64
PVI EL = 649.50 E = 0.44'
110' V.C. K = 62
PVI EL = 648.20 E = -0.24'

EXIST. PAVEMENT
PROP. PGL ELEV. (EXIST. PGL ELEV.)
EXIST. WEST PGL
PROP. WEST PGL
EXIST. EAST PGL
PROP. EAST PGL
TOP OF WALL
℄ BELT LINE RD.

+1.49%
-0.69%
-2.46%
-0.855%

3+22 (1)
3+24 (2)
3+26 (3)
3+75 (4)
4+75 (4)
5+85.64 (3)

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

BARTON–ASCHMAN ASSOCIATES, INC.

SHEET 7 OF 8

PAVING AND DRAINAGE PLAN/PROFILE SHEET

QUORUM DRIVE
STA 0+79.49 TO STA 5+85.77
ADDISON, TEXAS

Texas Department of Transportation

REVISION	DATE
CRV 80	11/17/99

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
6	CM 97 (449)	22

STATE	STATE DIST.	COUNTY
TEXAS	DALLAS	DALLAS

CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD.

DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.
BA FILE NAME :

Change Order #1

STATE OF TEXAS RONALD A. YOUNG REGISTERED PROFESSIONAL ENGINEER

Rev. 11/17/99

A

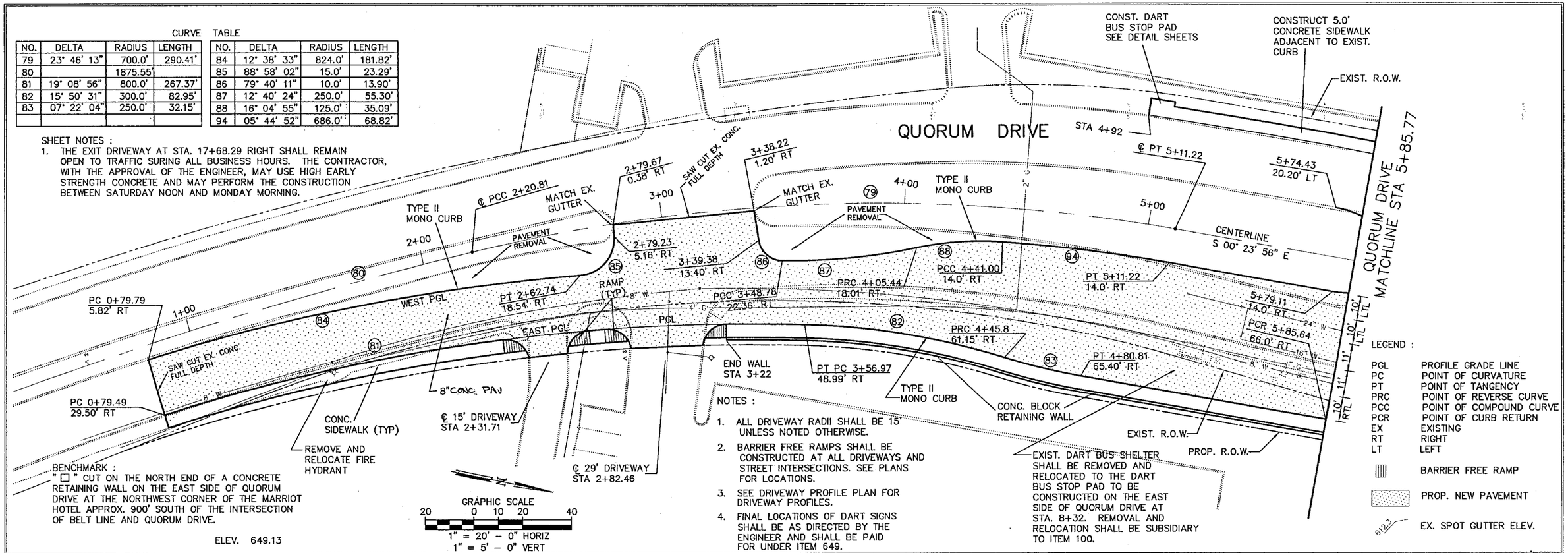
CURVE TABLE

NO.	DELTA	RADIUS	LENGTH
79	23° 46' 13"	700.0'	290.41'
80		1875.55'	
81	19° 08' 56"	800.0'	267.37'
82	15° 50' 31"	300.0'	82.95'
83	07° 22' 04"	250.0'	32.15'

NO.	DELTA	RADIUS	LENGTH
84	12° 38' 33"	824.0'	181.82'
85	88° 58' 02"	15.0'	23.29'
86	79° 40' 11"	10.0'	13.90'
87	12° 40' 24"	250.0'	55.30'
88	16° 04' 55"	125.0'	35.09'
94	05° 44' 52"	686.0'	68.82'

SHEET NOTES :

1. THE EXIT DRIVEWAY AT STA. 17+68.29 RIGHT SHALL REMAIN OPEN TO TRAFFIC SURING ALL BUSINESS HOURS. THE CONTRACTOR, WITH THE APPROVAL OF THE ENGINEER, MAY USE HIGH EARLY STRENGTH CONCRETE AND MAY PERFORM THE CONSTRUCTION BETWEEN SATURDAY NOON AND MONDAY MORNING.



BENCHMARK :
" □ " CUT ON THE NORTH END OF A CONCRETE RETAINING WALL ON THE EAST SIDE OF QUORUM DRIVE AT THE NORTHWEST CORNER OF THE MARRIOT HOTEL APPROX. 900' SOUTH OF THE INTERSECTION OF BELT LINE AND QUORUM DRIVE.

ELEV. 649.13

GRAPHIC SCALE
20 0 10 20 40
1" = 20' - 0" HORIZ
1" = 5' - 0" VERT

NOTES :

1. ALL DRIVEWAY RADII SHALL BE 15' UNLESS NOTED OTHERWISE.
2. BARRIER FREE RAMPS SHALL BE CONSTRUCTED AT ALL DRIVEWAYS AND STREET INTERSECTIONS. SEE PLANS FOR LOCATIONS.
3. SEE DRIVEWAY PROFILE PLAN FOR DRIVEWAY PROFILES.
4. FINAL LOCATIONS OF DART SIGNS SHALL BE AS DIRECTED BY THE ENGINEER AND SHALL BE PAID FOR UNDER ITEM 649.

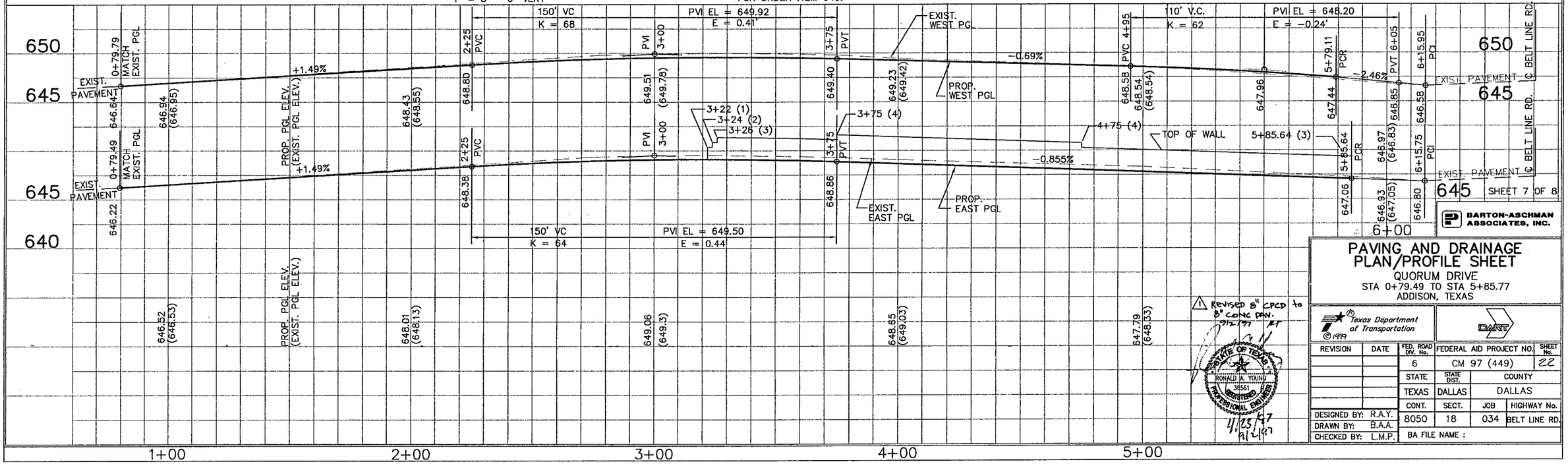
LEGEND :

PGL	PROFILE GRADE LINE
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
PRC	POINT OF REVERSE CURVE
PCC	POINT OF COMPOUND CURVE
PCR	POINT OF CURB RETURN
EX	EXISTING
RT	RIGHT
LT	LEFT

BARRIER FREE RAMP

PROP. NEW PAVEMENT

612.3 EX. SPOT GUTTER ELEV.



REVISED 8" CPCD to 8" CONC PAN. 9/2/97 RT

STATE OF TEXAS
RONALD A. YOUNG
38561
REGISTERED
PROFESSIONAL ENGINEER
4/23/97
9/2/97

BARTON-ASCHMAN ASSOCIATES, INC.

PAVING AND DRAINAGE PLAN/PROFILE SHEET

QUORUM DRIVE
STA 0+79.49 TO STA 5+85.77
ADDISON, TEXAS

Texas Department of Transportation ©1999

DART

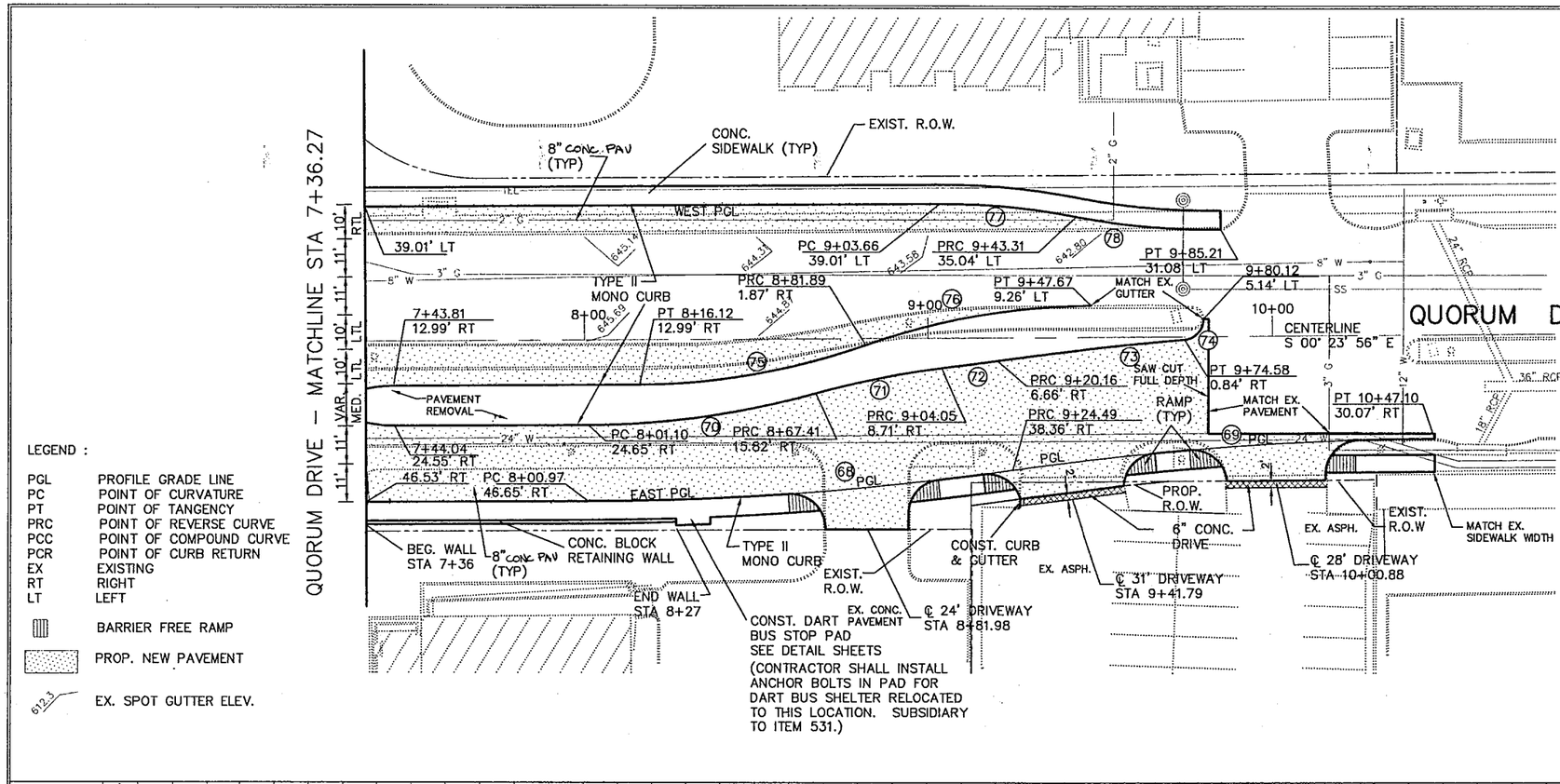
REVISION	DATE

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
6	CM 97 (449)	22

STATE	STATE DIST.	COUNTY
TEXAS	DALLAS	DALLAS

CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD.

DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.
BA FILE NAME :



LEGEND :

PGL	PROFILE GRADE LINE
PC	POINT OF CURVATURE
PT	POINT OF TANGENCY
PRC	POINT OF REVERSE CURVE
PCC	POINT OF COMPOUND CURVE
PCR	POINT OF CURB RETURN
EX	EXISTING
RT	RIGHT
LT	LEFT

BARRIER FREE RAMP

PROP. NEW PAVEMENT

612.3 EX. SPOT GUTTER ELEV.

CURVE TABLE

NO.	DELTA	RADIUS	LENGTH
68	07° 53' 15"	900.0'	123.90'
69	07° 49' 47"	900.0'	122.99'
70	15° 22' 42"	250.0'	67.10'
71	08° 33' 44"	250.0'	37.36'
72	01° 04' 17"	868.0'	16.23'
73	03° 21' 55"	932.0'	54.74'

NO.	DELTA	RADIUS	LENGTH
74	85° 34' 56"	6.0'	8.96'
75	19° 11' 59"	200.0'	67.02'
76	19° 12' 02"	200.0'	67.02'
77	11° 26' 06"	200.0'	39.92'
78	12° 04' 40"	200.0'	42.16'

BENCHMARK:

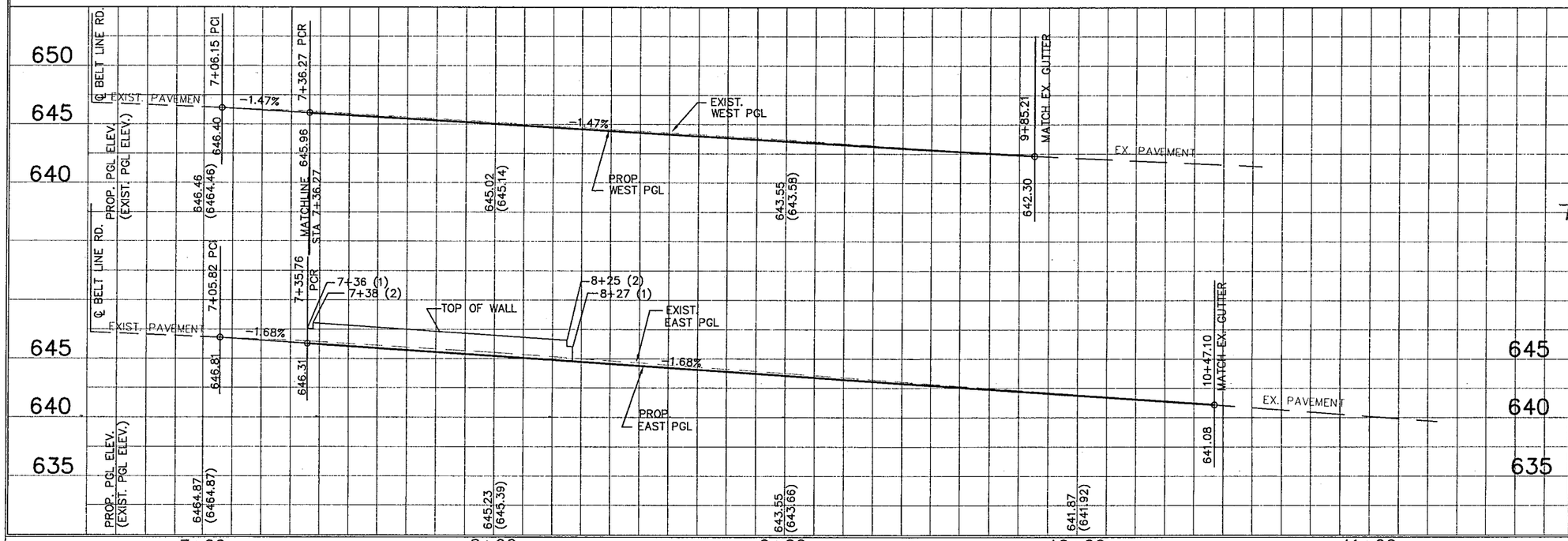
" □ " CUT ON THE BACK OF CURB ON THE SOUTH NOSE OF MEDIAN CENTERLINE OF QUORUM DRIVE APPROX. 275' SOUTH OF THE INTERSECTION OF ARAPAHO ROAD AND QUORUM DRIVE.

ELEV. 631.76

GRAPHIC SCALE
20 0 10 20 40
1" = 20' – 0" HORIZ
1" = 5' – 0" VERT

NOTES :

1. ALL DRIVEWAY RADII SHALL BE 15' UNLESS NOTED OTHERWISE.
2. BARRIER FREE RAMPS SHALL BE CONSTRUCTED AT ALL DRIVEWAYS AND STREET INTERSECTIONS. SEE PLANS FOR LOCATIONS.
3. SEE DRIVEWAY PROFILE PLAN FOR DRIVEWAY PROFILES.
4. FINAL LOCATIONS OF DART SIGNS SHALL BE AS DIRECTED BY THE ENGINEER AND SHALL BE PAID FOR UNDER ITEM 649.



⚠ REVISED 8" CRCP to 8" CONC PAV. 9/2/97 . RT

SHEET 8 OF 8

STATE OF TEXAS RONALD A. YOUNG 36561 REGISTERED PROFESSIONAL ENGINEER 4/23/97 9/2/97

BARTON-ASCHMAN ASSOCIATES, INC.

PAVING AND DRAINAGE PLAN/PROFILE SHEET

QUORUM DRIVE
STA 7+36.27 TO STA 10+47.10
ADDISON, TEXAS

Texas Department of Transportation ©1999

DART

REVISION	DATE

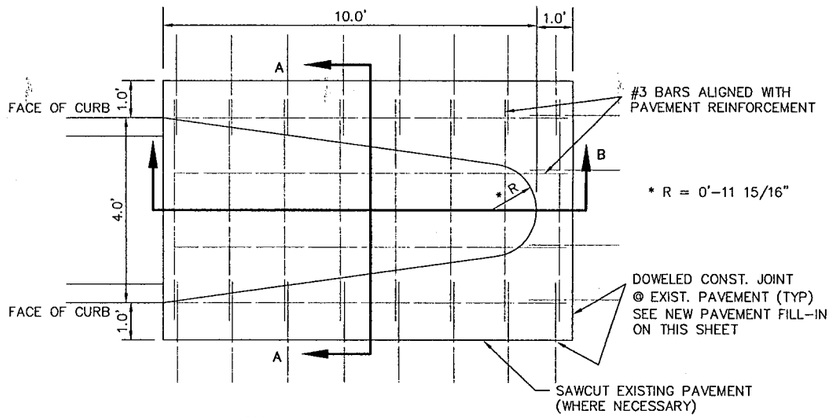
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
6	CM 97 (449)	23

STATE	STATE DIST.	COUNTY
TEXAS	DALLAS	DALLAS

CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD.

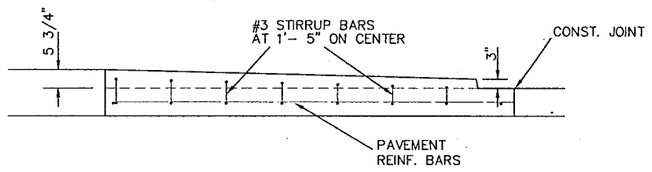
DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.

BA FILE NAME :



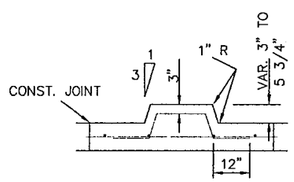
MONOLITHIC MEDIAN NOSE

NOT TO SCALE



SECTION B – B

NOT TO SCALE

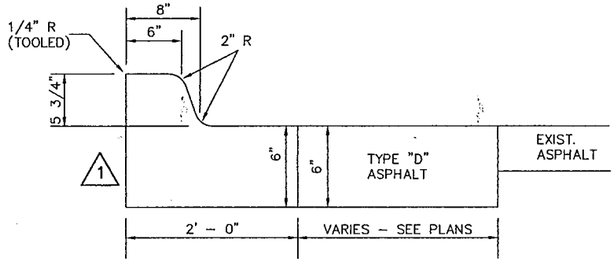


SECTION A – A

NOT TO SCALE

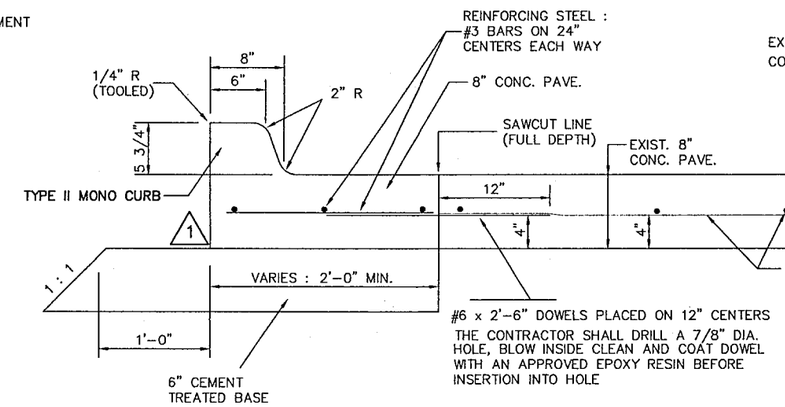
GENERAL NOTES :

1. REINFORCING BARS SHALL HAVE A MINIMUM LAP OF 15" (INCLUDING DOWELS).
2. PROVIDE 3/4" EXPANSION JOINT MATERIAL WHERE CURB IS ADJACENT TO SIDEWALK, RETAINING WALL, PLANTER OR RIPRAP.
3. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO THE CENTERS OF BARS.
4. EXPANSION AND/OR CONSTRUCTION JOINTS IN PAVING SHALL EXTEND UP TO AND THROUGH ALL CURBS AND CURB AND GUTTER SECTIONS.
5. CONCRETE SHALL BE CLASS A
6. PROVIDE EXPANSION AND DUMMY JOINTS TO MATCH EXISTING EXPANSION AND DUMMY JOINTS IN IN THE EXISTING PAVEMENT. SPACING SHALL COINCIDE WITH EXISITNG JOINTS.



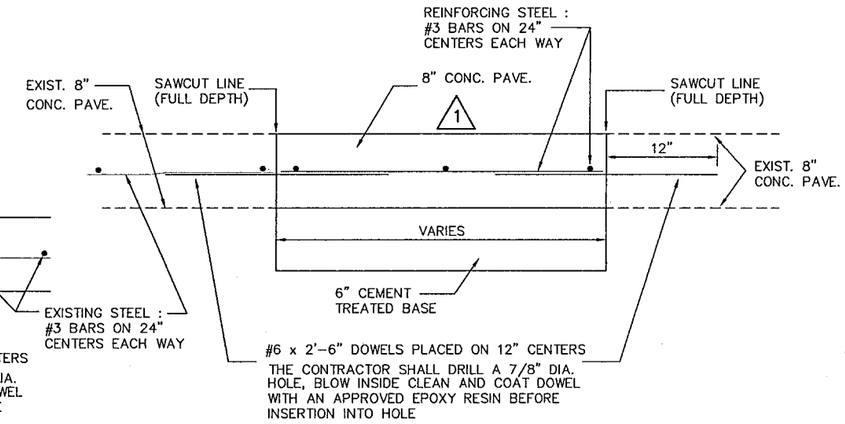
TYPE II CURB & GUTTER

NOT TO SCALE



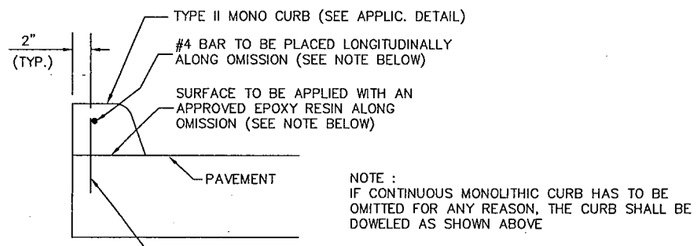
8" CONCRETE PAVEMENT
(2'–0" AND WIDER)
PLACED ADJACENT TO EXIST. CONC. PAVEMENT

NOT TO SCALE



NEW PAVEMENT "FILL–IN"

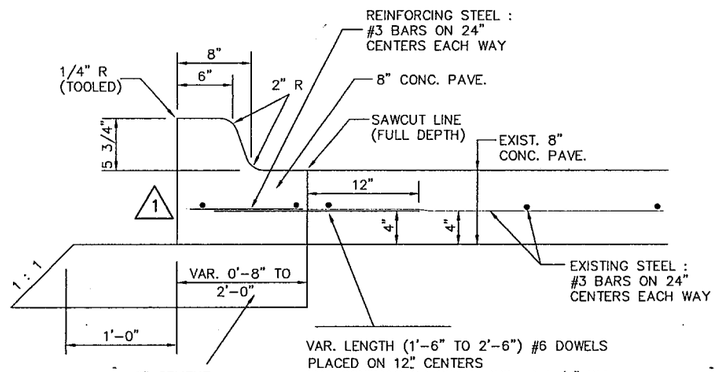
NOT TO SCALE



NOTE :
IF CONTINUOUS MONOLITHIC CURB HAS TO BE OMITTED FOR ANY REASON, THE CURB SHALL BE DOWELED AS SHOWN ABOVE

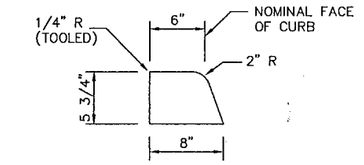
DOWEL CURB

NOT TO SCALE



TYPE II CURB AND GUTTER
(0'–8" TO 2'–0" WIDE)
PLACED ADJACENT TO EXIST. CONC. PAVEMENT

NOT TO SCALE



TYPE II MONO CURB

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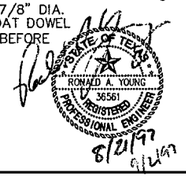

REVISED 9/2/97 RT

SHEET 1 OF 7

BARTON–ASCHMAN ASSOCIATES, INC.

MISCELLANEOUS DETAILS SHEET

ADDISON TRANSIT PASS
ADDISON, TEXAS

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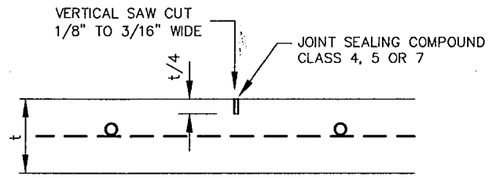
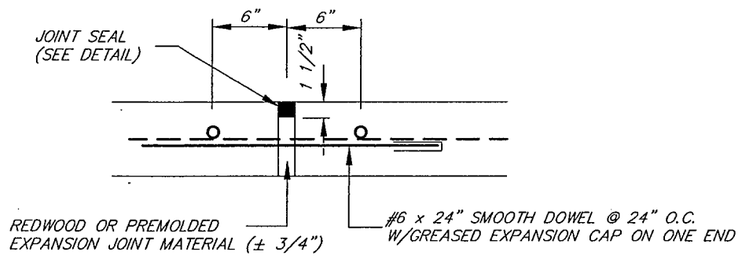
DART

REVISION	DATE
⚠ REVISE STEEL	7/7/97
	7/11/97
DESIGNED BY:	R.A.Y.
DRAWN BY:	B–A
CHECKED BY:	L.M.P.

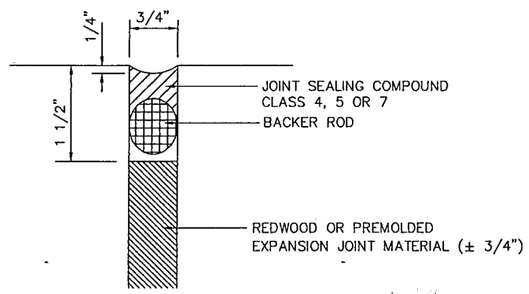
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		24
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD.
BA FILE NAME :			



DUMMY JOINT



TRANSVERSE EXPANSION JOINT



JOINT SEAL

STATE OF TEXAS
RONALD A. YOUNG
36561
REGISTERED
PROFESSIONAL ENGINEER
8/20/97
9/24/97

REVISED 9/2/97
(NEW SHEET) AT

SHEET 2 OF 7

BARTON-ASCHMAN ASSOCIATES, INC.

MISCELLANEOUS DETAILS SHEET
PAVEMENT JOINTS

ADDISON TRANSIT PASS
ADDISON, TEXAS

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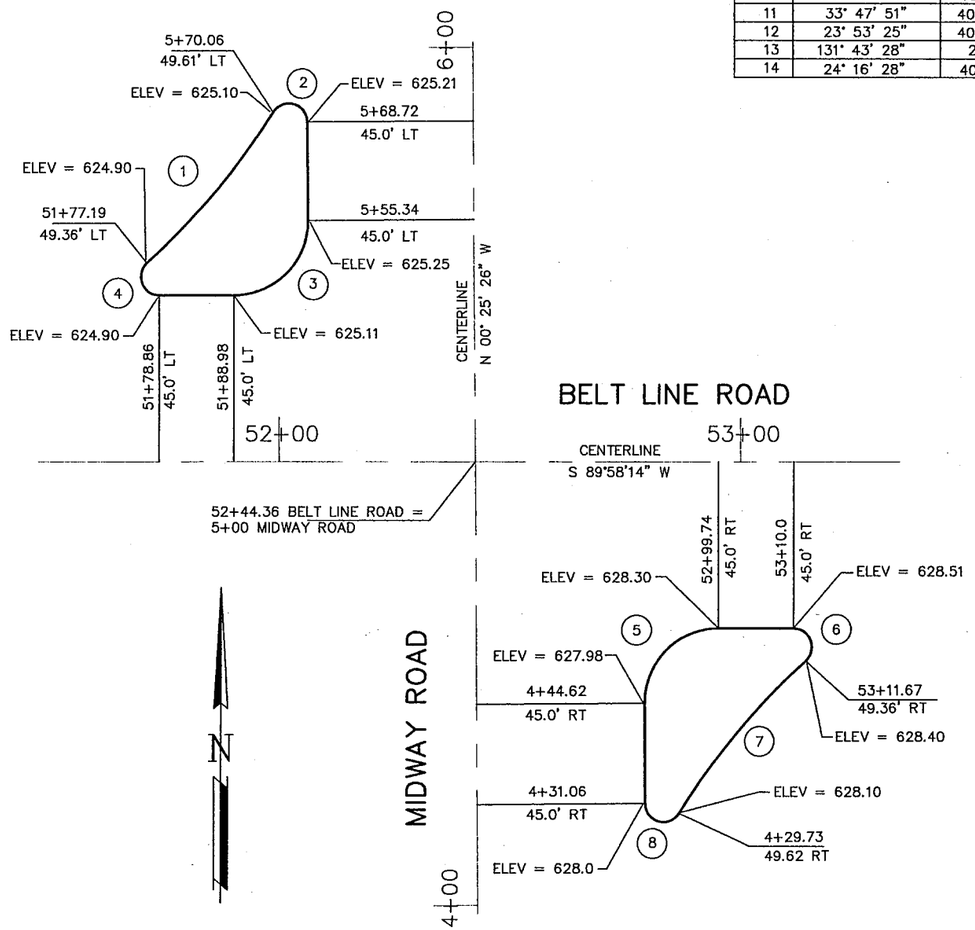
REVISION	DATE
DESIGNED BY: R.A.Y.	
DRAWN BY: B-A	
CHECKED BY: L.M.P.	

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		24a
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD
BA FILE NAME :			

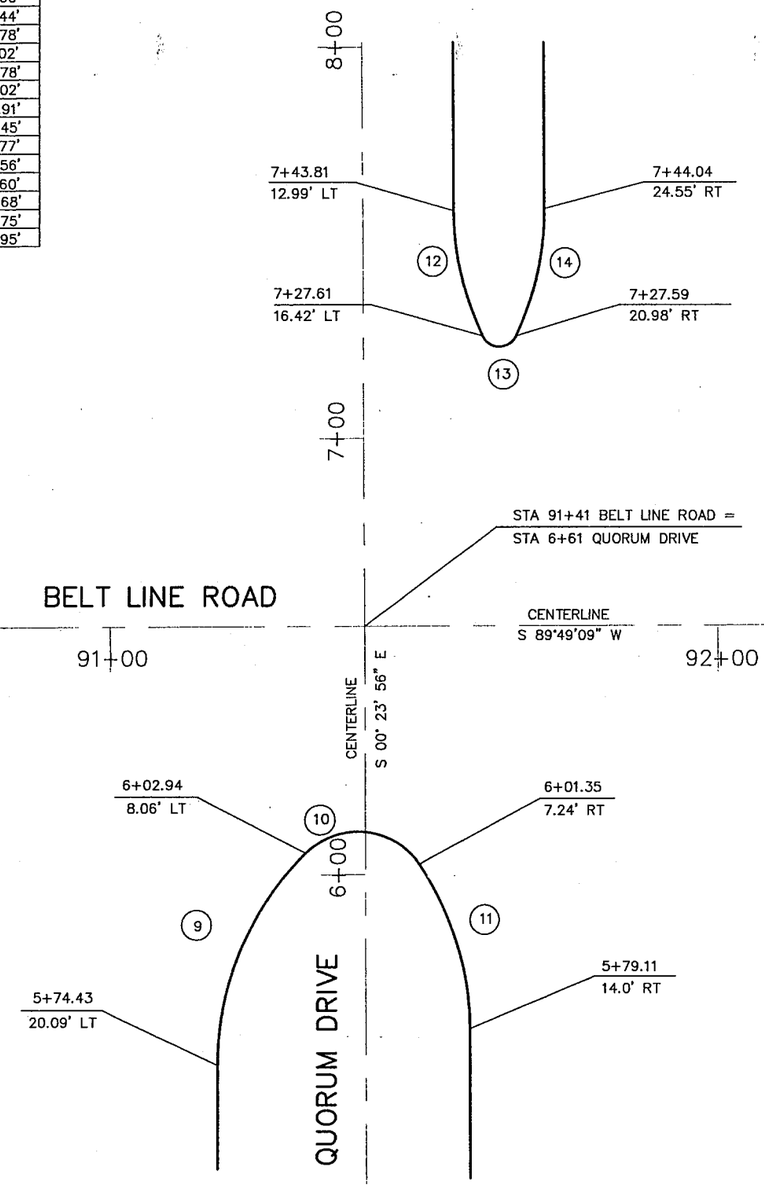
CURVE TABLE

CURVE NO.	ANGLE	RADIUS	LENGTH
1	16° 04' 49"	95.0'	26.66'
2	147° 38' 52"	2.5'	6.44'
3	90° 23' 40"	10.0'	15.78'
4	138° 02' 17"	2.5'	6.02'
5	90° 23' 40"	10.0'	15.78'
6	138° 02' 17"	2.5'	6.02'
7	16° 13' 42"	95.0'	26.91'
8	147° 47' 45"	2.5'	6.45'
9	45° 30' 07"	40.0'	31.77'
10	100° 35' 11"	10.0'	17.56'
11	33° 47' 51"	40.0'	23.60'
12	23° 53' 25"	40.0'	16.68'
13	131° 43' 28"	2.5'	5.75'
14	24° 16' 28"	40.0'	16.95'



MIDWAY ROAD ISLAND DETAILS

NOT TO SCALE



QUORUM DRIVE MEDIAN NOSE DETAILS

NOT TO SCALE

STATE OF TEXAS
RONALD A. YOUNG
36561
REGISTERED
PROFESSIONAL ENGINEER
4/23/97
4/24/97

SHEET 3 OF 7

BARTON-ASCHMAN ASSOCIATES, INC.

MISCELLANEOUS DETAILS SHEET

MEDIAN NOSE AND ISLAND DETAILS

ADDISON TRANSIT PASS

ADDISON, TEXAS

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DART

REVISION	DATE

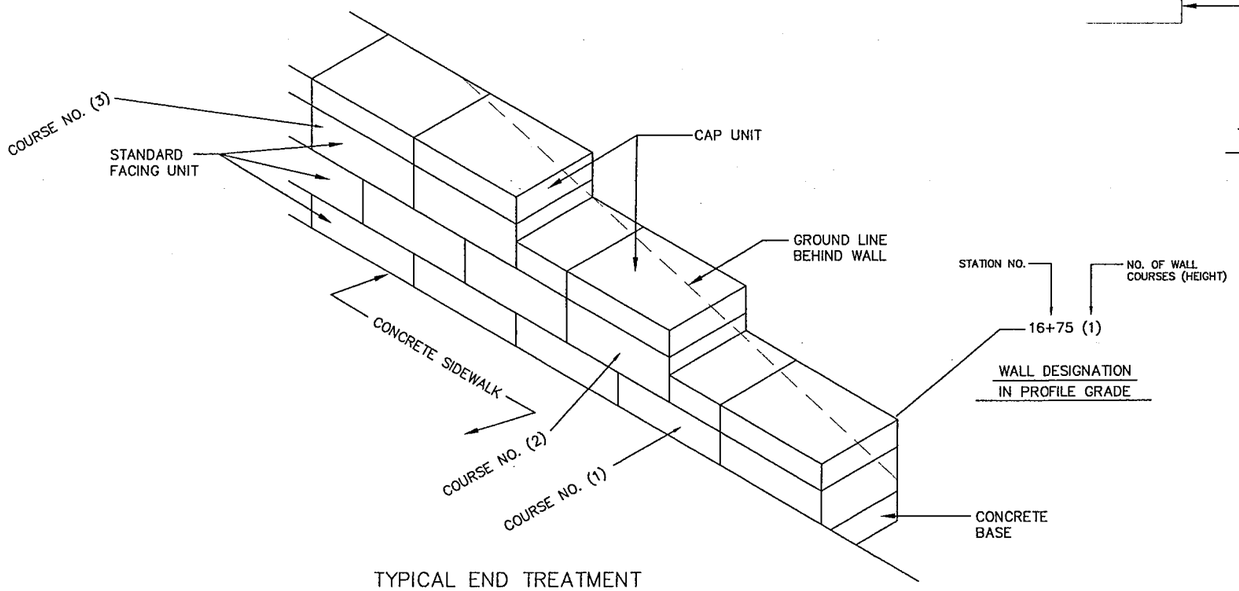
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
6	CM 97 (449)	25

STATE	STATE DIST.	COUNTY
TEXAS	DALLAS	DALLAS

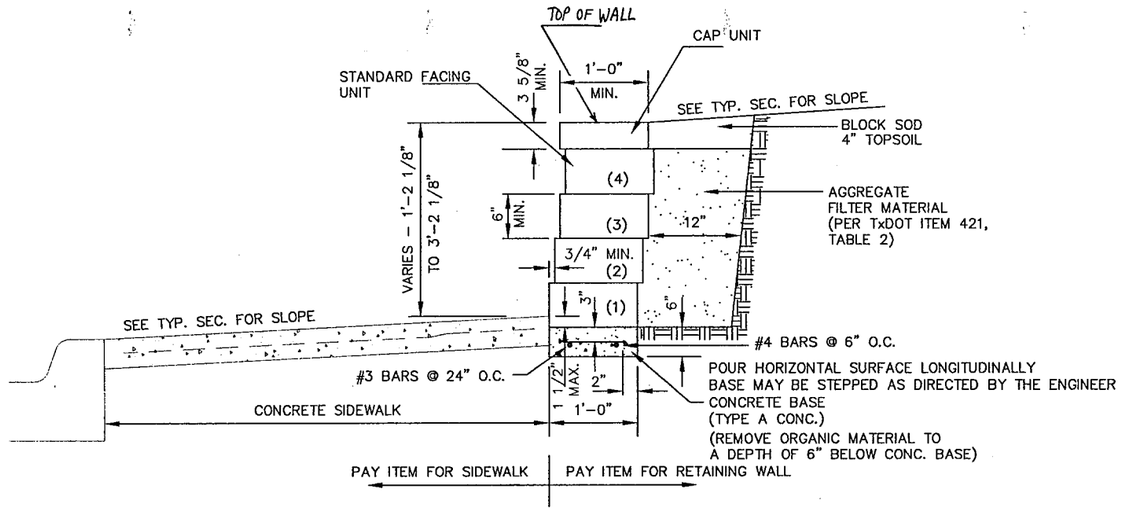
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD.

DESIGNED BY:	R.A.Y.
DRAWN BY:	B.A.A.
CHECKED BY:	L.M.P.

BA FILE NAME :



TYPICAL END TREATMENT



TYPICAL SECTION THRU WALL

CONCRETE BLOCK RETAINING WALL

RETAINING WALL NOTES :

1. RETAINING WALL SHALL BE A COMMERCIALLY AVAILABLE SYSTEM CONSISTING OF STACKABLE, INTERLOCKING CONCRETE UNITS AND SHALL BE APPROVED BY THE ENGINEER. THE INTERLOCKING CONCRETE UNITS SHALL HAVE A 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI (MIN.) AND A MAXIMUM WATER ABSORPTION OF 8.0 PERCENT.
2. INSTALLATION AND SPECIFICATIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
3. PROVIDE A 3/4" (MIN.) SETBACK AT EACH COURSE OF FACING UNITS.
4. PROVIDE CAP UNITS AT THE TOP OF THE WALL. USE MANUFACTURER RECOMMENDED CONCRETE ADHESIVE TO BOND CAPS TO TOP OF WALL.
5. THE COLOR OF FACING UNITS AND CAPS SHALL MATCH NEARBY CONCRETE BLOCK RETAINING WALLS AS DIRECTED BY THE ENGINEER.
6. THE COST OF AGGREGATE FILTER MATERIAL AND THE COST OF THE CONCRETE BASE SHALL BE INCLUDED IN THE COST FOR RETAINING WALL. (NO SEPARATE PAY ITEMS)
7. REMOVE ORGANIC MATERIALS TO A DEPTH OF 6" BELOW THE CONCRETE BASE.

STATE OF TEXAS
RONALD A. YOUNG
36561
REGISTERED PROFESSIONAL ENGINEER
9/2/97

SHEET 4 OF 7

BARTON-ASCHMAN ASSOCIATES, INC.

MISCELLANEOUS DETAILS SHEET
CONCRETE BLOCK RETAIN. WALL

ADDISON TRANSIT PASS
ADDISON, TEXAS

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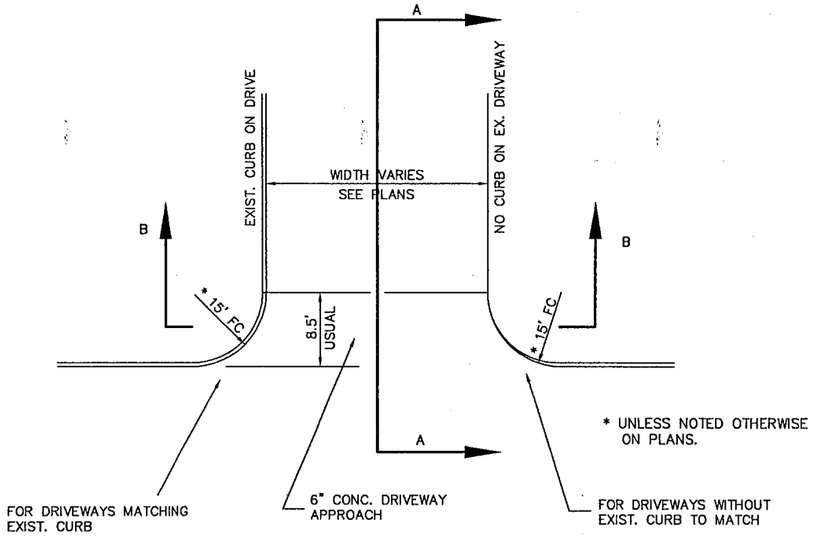
DART

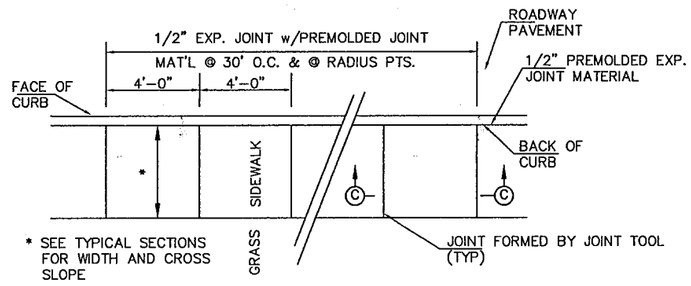
REVISION	DATE
DESIGNED BY:	R.A.Y.
DRAWN BY:	B-A
CHECKED BY:	L.M.P.

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		26
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD
BA FILE NAME :			



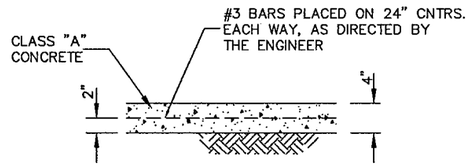
DRIVEWAY DETAIL

NOT TO SCALE



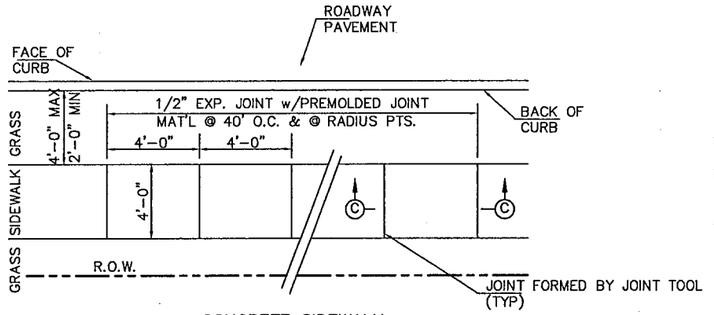
CONCRETE SIDEWALK ADJACENT TO CURB

NOT TO SCALE



SEC. C – C

NOT TO SCALE

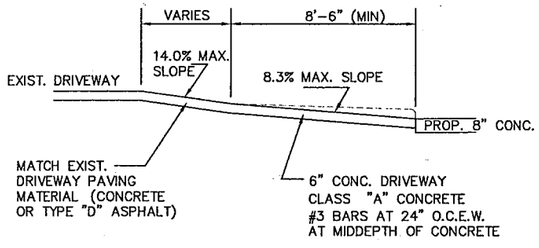


CONCRETE SIDEWALK

NOT TO SCALE

SIDEWALK NOTES :

1. THE CONTRACTOR SHALL PROVIDE TOOLED JOINTS USING A JOINTING TOOL APPROVED BY THE ENGINEER.
2. CONTRACTOR SHALL PROVIDE 1/2" PREMOLDED EXP. JOINT MATERIAL AT THE INTERFACE BETWEEN THE EDGE OF SIDEWALK AND ANY CURB OR WALL.



SECTION A – A

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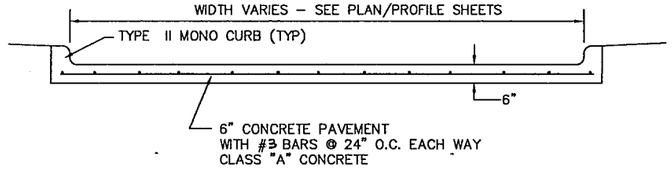

SECTION B – B

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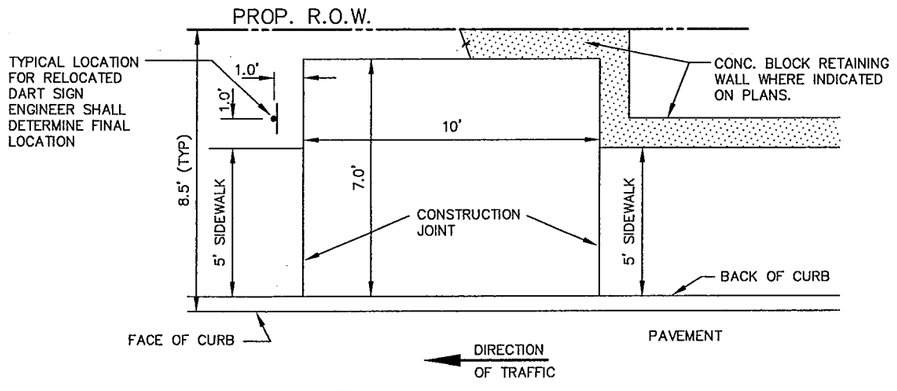

NOTES :

1. CONCRETE FOR DART BUS STOP PAD SHALL BE 4" THICK AND CLASS "A" CONCRETE.
2. SEE SIDEWALK DETAILS FOR JOINT SPACING, JOINTS, EXPANSION JOINT MATERIAL, AND REINFORCING.
3. DART BUS STOP PAD IS TO BE PAID FOR AS SIDEWALK (ITEM 531–507)

DART BUS STOP PAD

NO SCALE

STATE OF TEXAS
RONALD A. YOUNG
36561
REGISTERED
PROFESSIONAL ENGINEER
4/23/97
9/2/97

1 REVISED # BARS to # 3 BARS IN SECTION B-B 9/2/97 R-T

SHEET 5 OF 7

BARTON–ASCHMAN ASSOCIATES, INC.

MISCELLANEOUS DETAILS SHEET

ADDISON TRANSIT PASS
ADDISON, TEXAS

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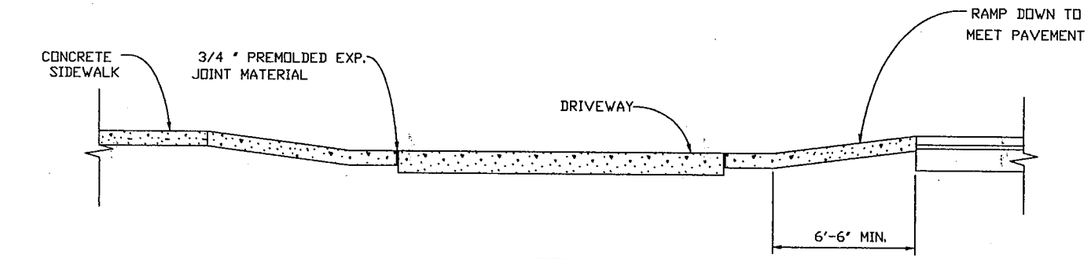
DART

REVISION	DATE

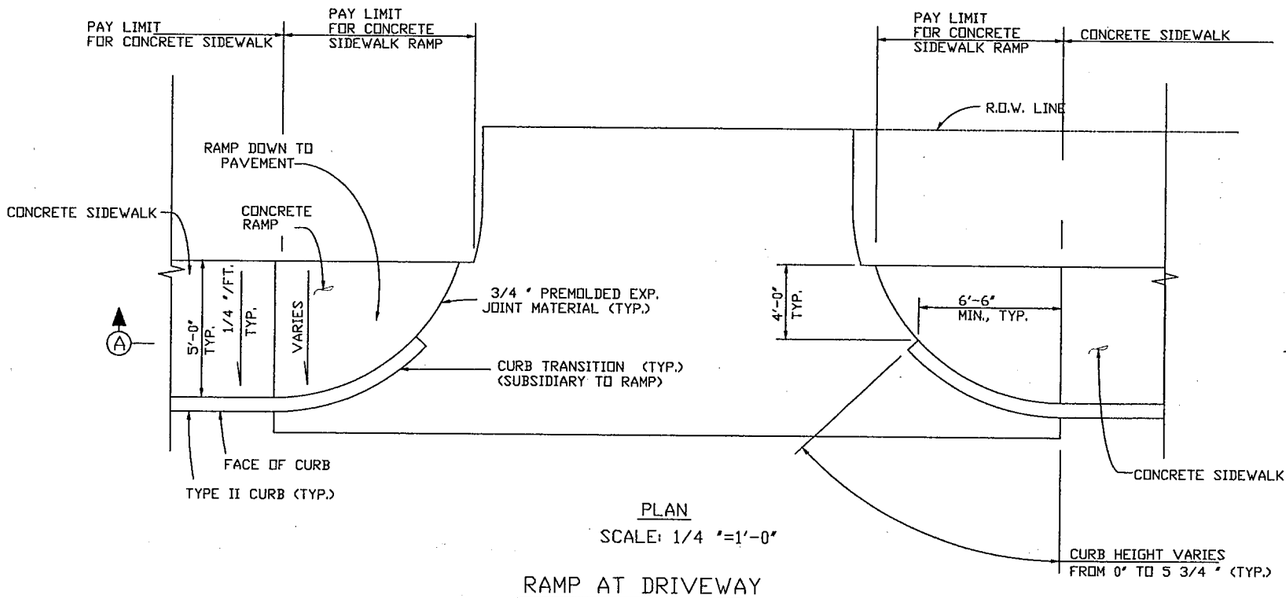
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		27
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

DESIGNED BY: R.A.Y.
DRAWN BY: B-A
CHECKED BY: L.M.P.

BA FILE NAME :



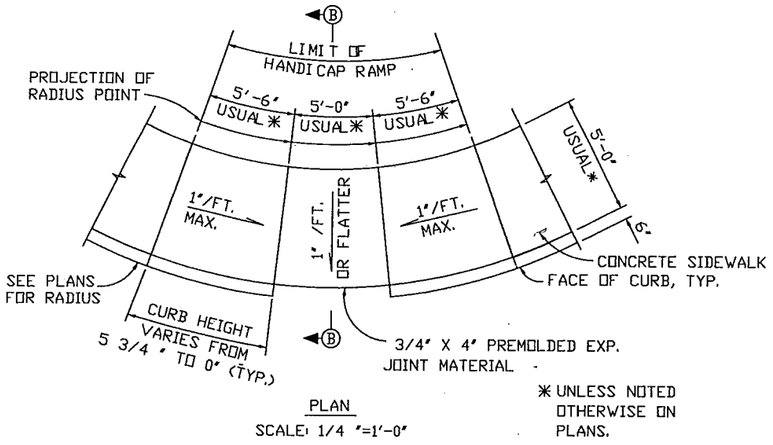
SECTION A-A



PLAN

SCALE: 1/4 "=1'-0"

RAMP AT DRIVEWAY



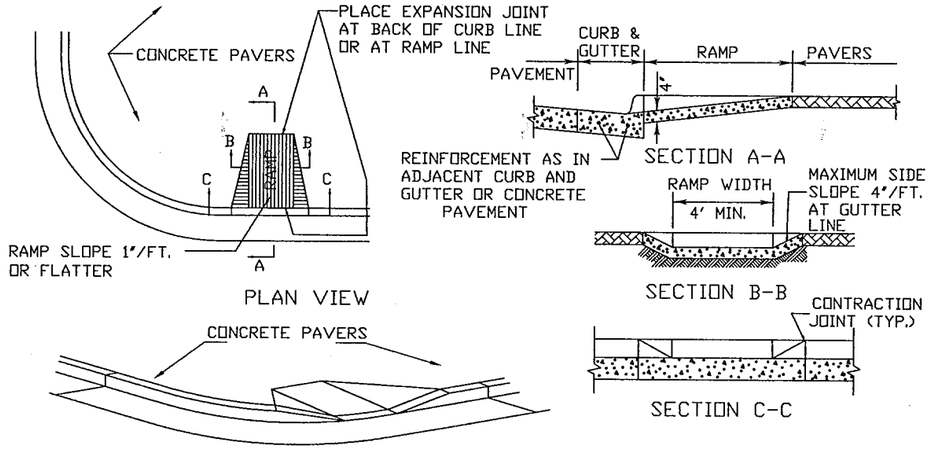
PLAN

SCALE: 1/4 "=1'-0"

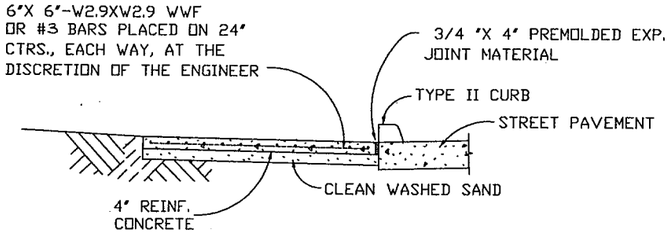
* UNLESS NOTED OTHERWISE ON PLANS.

CONCRETE HANDICAP RAMP AT STREET INTERSECTION

FOR LOCATION OF HANDICAP RAMPS, SEE PLANS.



SIDEWALK RAMP AT ISLANDS



SECTION B-B

SCALE: 1/2 "=1'-0"

NOTES:

1.) MAXIMUM SLOPE ON SIDEWALK RAMP MUST NOT EXCEED 1" PER FOOT IN ANY DIRECTION.

2.) LOCATION OF SIDEWALK RAMP MAY BE SHIFTED TO CLEAR OBSTRUCTIONS AS DIRECTED BY THE ENGINEER.

3.) PAYMENT FOR CONCRETE SIDEWALK RAMP WILL BE PAID UNDER ITEM 531-503.

4.) DIMENSIONS SHOWN ARE FOR 5 3/4" HIGH CURBS. FOR CURBS WITH HEIGHT GREATER THAN 5 3/4", DIMENSIONS MUST BE INCREASED ACCORDINGLY.

5.) REINFORCEMENT FOR ALL RAMPS SHALL BE THE THE SAME AS SPECIFIED FOR SIDEWALK.

STATE OF TEXAS
RONALD A. YOUNG
68561
REGISTERED
PROFESSIONAL ENGINEER
4/23/97
9/2/97

⚠1 REVISED #4 BARS TO #3 BARS IN SECTION B-B 9/2/97 RT

SHEET 6 OF 7

BARTON-ASCHMAN ASSOCIATES, INC.

MISCELLANEOUS DETAIL SHEET
HANDICAP RAMPS

ADDISON TRANSIT PASS
ADDISON, TEXAS

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DART

REVISION	DATE

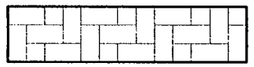
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
6	CM 97 (449)	28

STATE	STATE DIST.	COUNTY
TEXAS	DALLAS	DALLAS

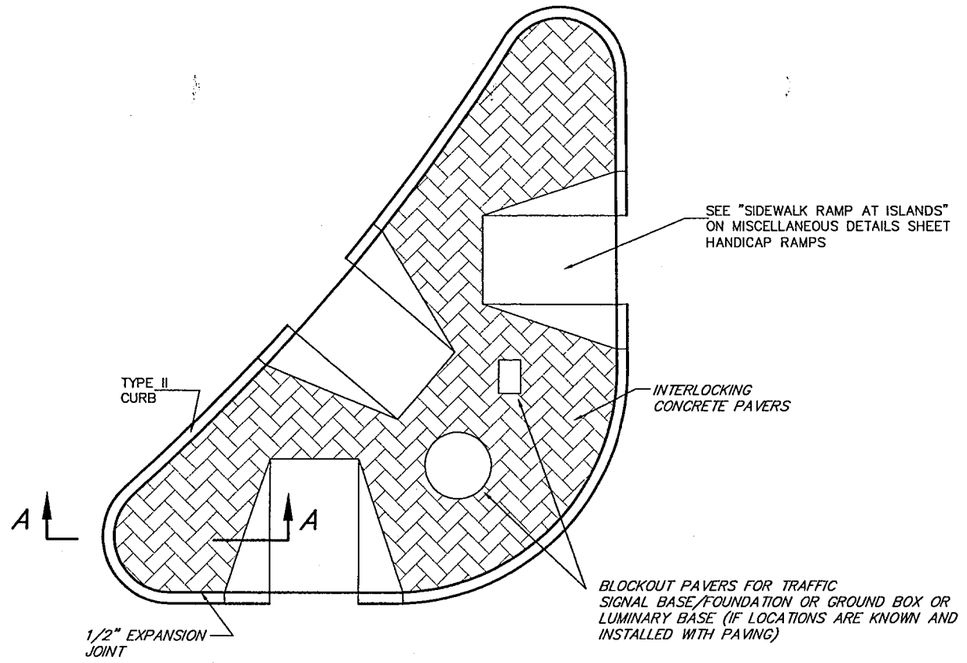
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

DESIGNED BY:	R.A.Y.
DRAWN BY:	B-A
CHECKED BY:	L.M.P.

BA FILE NAME :



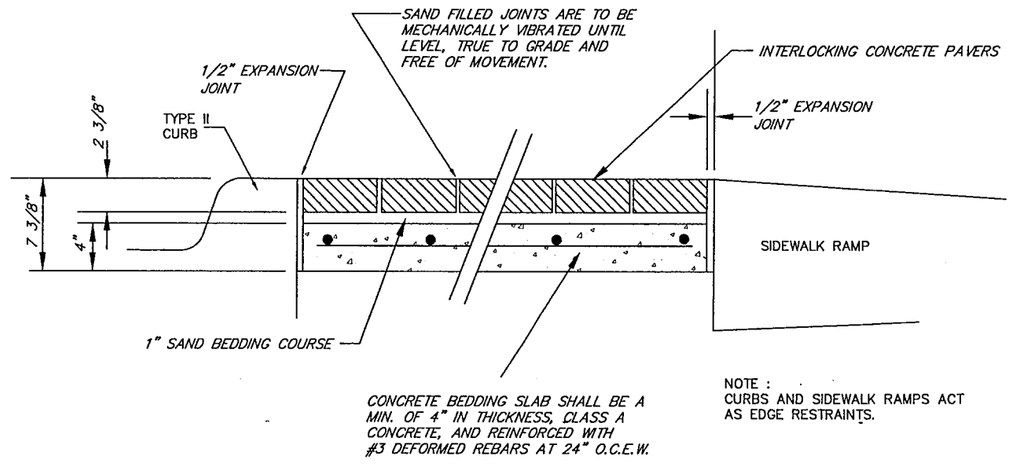
HERRINGBONE PATTERN



TYPICAL ISLAND LAYOUT

MIDWAY ROAD AT BELT LINE ROAD

(NOT TO SCALE)



NOTE :
CURBS AND SIDEWALK RAMPS ACT AS EDGE RESTRAINTS.

SECTION A – A

(NOT TO SCALE)

INTERLOCKING CONCRETE PAVER SPECIFICATIONS

PAVER DESCRIPTION :

A. PAVERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C936-82.

B. PAVERS THICKNESS SHALL BE 2 3/8". STANDARD COLOR SHALL BE DETERMINED BY THE ENGINEER

C. ALL PAVERS SHALL BE SOUND AND FREE OF DEFECTS THAT WOULD INTERFERE WITH THE PROPER PLACING OF UNITS OR IMPAIR THE STRENGTH OR PERMANENCE OF THE CONSTRUCTION.

CONCRETE BASE :

A. CONCRETE SHALL BE CLASS A.
B. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI @ 28 DAYS.
C. CONCRETE SHALL BE FREE OF RETARDERS OR ACCELERATORS, UNLESS APPROVED BY THE ENGINEER.
D. CONCRETE SHALL HAVE A SLUMP RANGE OF 2" TO 4".

SAND LAYING COURSE :

A. THE SAND LAYING COURSE SHALL BE WELL GRADED CLEAN WASHED SHARP AND GRADED WITH 100 PERCENT PASSING A 3/8" SIEVE AND A MAXIMUM OF 3 PERCENT PASSING A NO. 200 SIEVE SIZE. THE USE OF MASONRY SAND IS NOT PERMITTED.

EDGE RESTRAINT :

A. ALL EDGES OF THE INSTALLED PAVERS SHALL BE RESTRAINED. THE TYPE OF EDGE RESTRAINT SHALL BE DETAILED ON THE CONTRACT DRAWINGS.
B. IN THE EVENT THE PLANS DO NOT INDICATE AN EDGE RESTRAINT, THE FOLLOWING SHALL BE USED:
   1. A PRECAST PAVER EDGER, APPROVED BY THE ENGINEER
   2. A 6" WIDE CONCRETE MOW STRIP, MONOLITHICALLY PLACED WITH THE CONCRETE BASE.
   3. MASONRY SAW CUT BLOCKS WHICH MATCH INSIDE FACE SURFACE OF MEDIAN CURB.
   4. POURED PAVING BLOCKS WHICH MATCH INSIDE FACE SURFACE FACE OF MEDIAN CURB.

INSTALLATION :

A. A CONCRETE BASE MUST BE PREPARED AS DETAILED IN THE CONTRACT DRAWINGS.
B. THE BASE COURSE SHALL BE SHAPED TO GRADE AND CROSS SECTION WITH AN ALLOWABLE TOLERANCE OF 1/4".
C. THE COMPACTED SUBGRADE, COMPACTED TO 95 PERCENT STANDARD PROCTOR SHALL BE 6" BELOW THE STANDARD CURB CROSS SECTION.
D. THE FINISHED BASE SURFACE SHALL BE APPROVED BY THE ENGINEER OR HIS REPRESENTATIVE BEFORE THE PLACEMENT OF THE SAND BEDDING COURSE.
E. THE UNCOMPACTED SAND LAYING COURSE SHALL BE SPREAD EVENLY OVER THE AREA TO BE PAVED AND BE SCREEDED TO A LEVEL THAT WILL PRODUCE 1" THICKNESS, PLUS OR MINUS 1/4", WHEN THE PAVING STONES HAVE BEEN PLACED AND VIBRATED. PAVING STONES SHALL HAVE A FINAL GRADE SLIGHTLY HIGHER THAN THE STANDARD CURB/CONCRETE BEAM BORDER TO ALLOW FOR ANY MINOR SETTLING THAT MAY OCCUR WITHIN THE BASE.
F. ONCE SCREEDED AND LEVELED TO THE DESIRED ELEVATION, THE SAND LAYING COURSE SHALL NOT BE DISTURBED.
G. THE PAVERS SHALL BE IN THE PATTERN AS APPROVED BY THE ENGINEER.
H. THE PAVERS SHALL BE LAID IN SUCH A MANNER THAT THE DESIRED PATTERN IS MAINTAINED AND THE JOINTS BETWEEN THE PAVING STONES ARE AS TIGHT AS POSSIBLE. JOINTS BETWEEN PAVERS SHALL NOT EXCEED 1/8". JOINTS BETWEEN ENDS AND/OR EDGES AND EXPANSION JOINT MATERIAL SHALL NOT EXCEED 1/4".
I. STRING LINES SHALL BE USED TO HOLD ALL PATTERN LINES TRUE TO GRADE AND LINE.
J. PAVERS SHALL BE VIBRATED INTO THE SAND LAYING COURSE USING A VIBRATOR CAPABLE OF 3000 TO 5000 POUNDS COMPACTION FORCE WITH THE SURFACE CLEAN AND JOINTS OPEN.
K. AFTER VIBRATION, CLEAN MASONRY TYPE SAND CONTAINING AT LEAST 30 PERCENT OF 1/8" PARTICLES SHALL BE SPREAD OVER THE PAVER SURFACE ALLOWED TO DRY, AND VIBRATED INTO JOINTS WITH ADDITIONAL VIBRATOR PASSES AND BRUSHING SO AS TO COMPLETELY FILL ALL JOINTS.
L. SURPLUS MATERIAL SHALL THEN BE SWEPT FROM THE SURFACE AND DISPOSED OF OFFSITE.

BARTON-ASCHMAN ASSOCIATES, INC.

STATE OF TEXAS
RONALD A. YOUNG
36561
REGISTERED
PROFESSIONAL ENGINEER
9/2/97

MISCELLANEOUS DETAILS SHEET
INTERLOCKING CONCRETE PAVERS

ADDISON TRANSIT PASS
ADDISON, TEXAS

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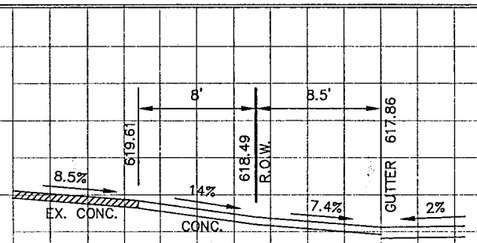
REVISION	DATE
DESIGNED BY:	R.A.Y.
DRAWN BY:	B.A.A.
CHECKED BY:	L.M.P.

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		29
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD
BA FILE NAME :			



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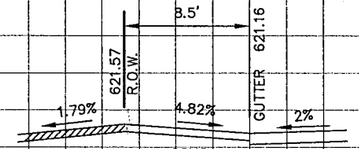

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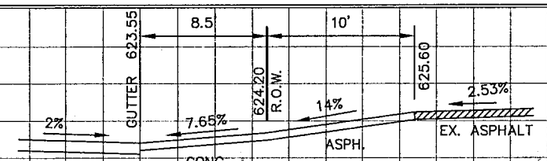
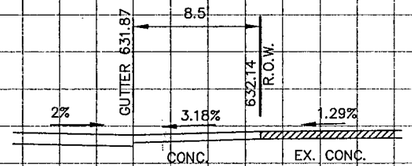
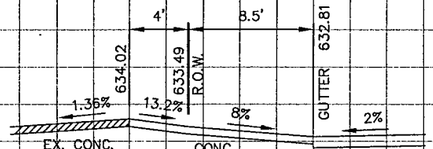


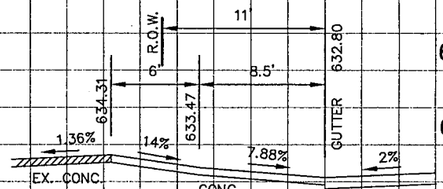
51+11.05 RIGHT
BELT LINE ROAD



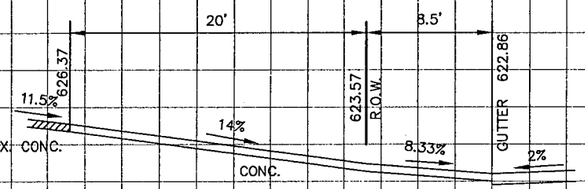
54+88.24 RIGHT
BELT LINE ROAD



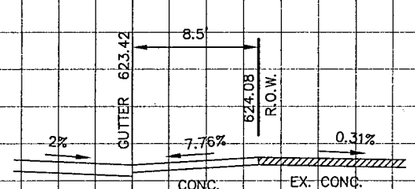
55+80.22 LEFT
BELT LINE ROAD



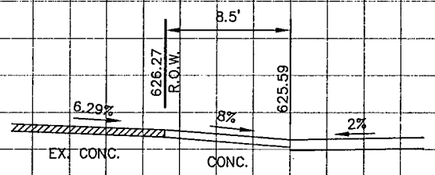
56+45.80 LEFT
BELT LINE ROAD



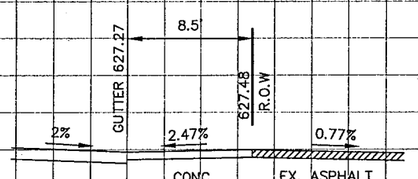
7+65.28 RIGHT
MIDWAY ROAD



7+05.08 LEFT
MIDWAY ROAD



6+45.48 RIGHT
MIDWAY ROAD



3+03 LEFT
MIDWAY ROAD

SHEET 1 OF 2

BARTON-ASCHMAN ASSOCIATES, INC.

SCALE : 1" = 5' VERT.
1" = 5' HOR.

0 5 10 15

DRIVEWAY PROFILES

MIDWAY ROAD AT BELT LINE ROAD

ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation

DART

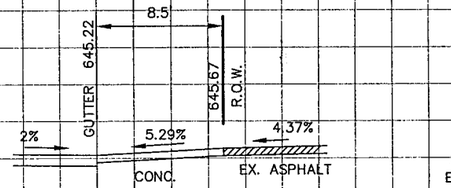
REVISION	DATE

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		30
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

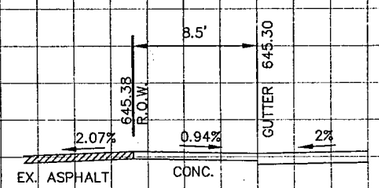
DESIGNED BY:	R.A.Y.
DRAWN BY:	B-A
CHECKED BY:	L.M.P.

BA FILE NAME :

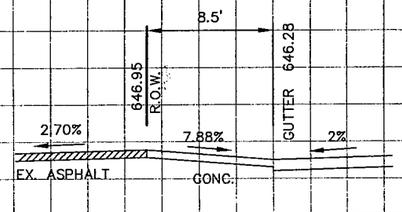
STATE OF TEXAS
RONALD A. YOUNG
35561
REGISTERED
PROFESSIONAL ENGINEER
4/28/97



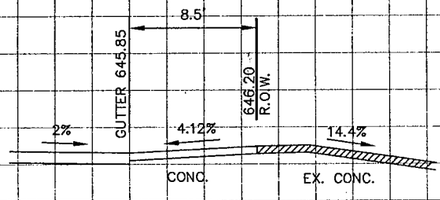
88+94.15 RIGHT
BELT LINE ROAD



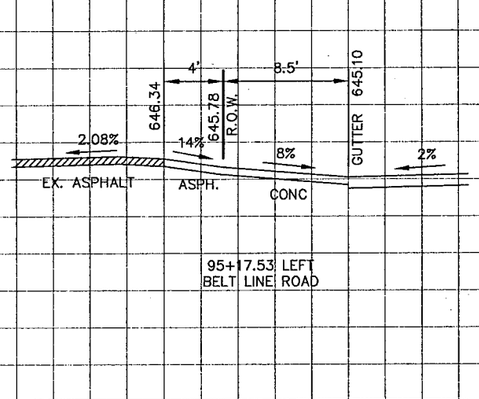
89+16.82 LEFT
BELT LINE ROAD



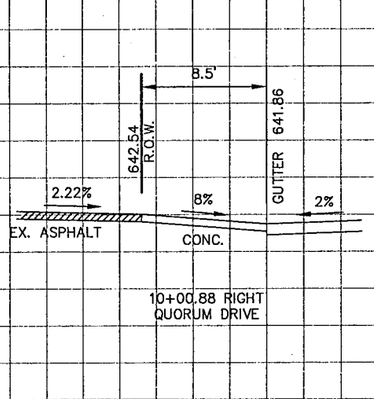
93+36.06 LEFT
BELT LINE ROAD



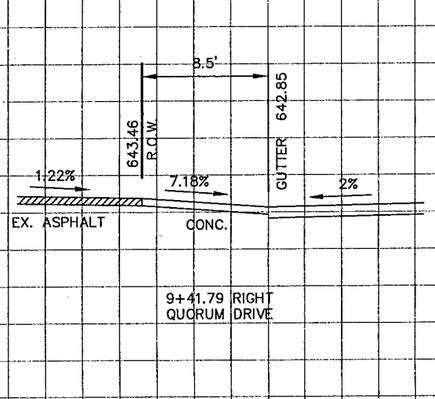
94+35.34 RIGHT
BELT LINE ROAD



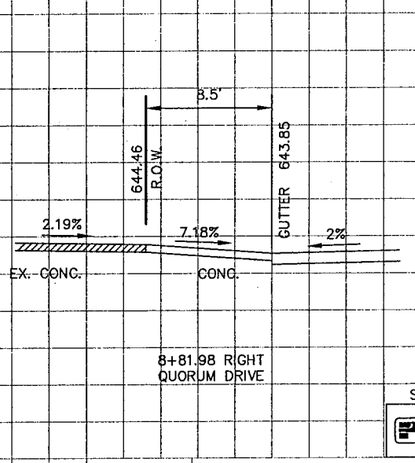
95+17.53 LEFT
BELT LINE ROAD



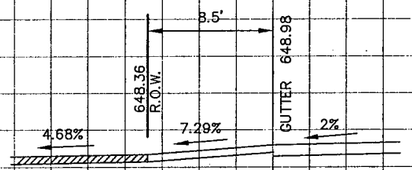
10+00.88 RIGHT
QUORUM DRIVE



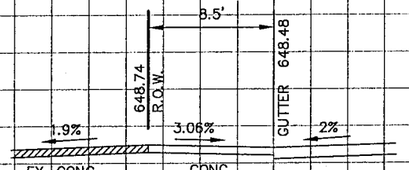
9+41.79 RIGHT
QUORUM DRIVE



8+81.98 RIGHT
QUORUM DRIVE



2+82.46 RIGHT
QUORUM DRIVE



2+31.71 RIGHT
QUORUM DRIVE

SHEET 2 OF 2

BARTON-ASCHMAN ASSOCIATES, INC.

SCALE : 1" = 5' VERT.
1" = 5' HOR.

0 5 10 15

DRIVEWAY PROFILES

QUORUM DRIVE AT BELT LINE ROAD

ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation

DART

REVISION	DATE
DESIGNED BY:	R.A.Y.
DRAWN BY:	B-A
CHECKED BY:	L.M.P.

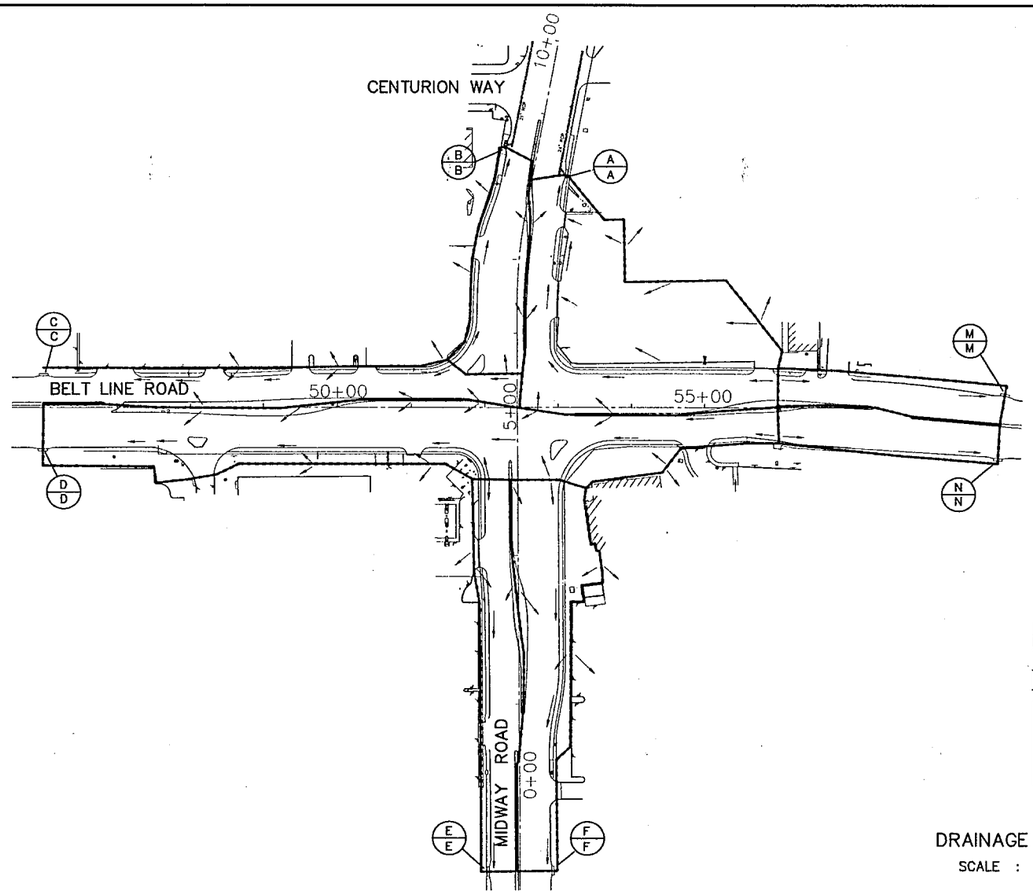
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
6	CM 97 (449)	31

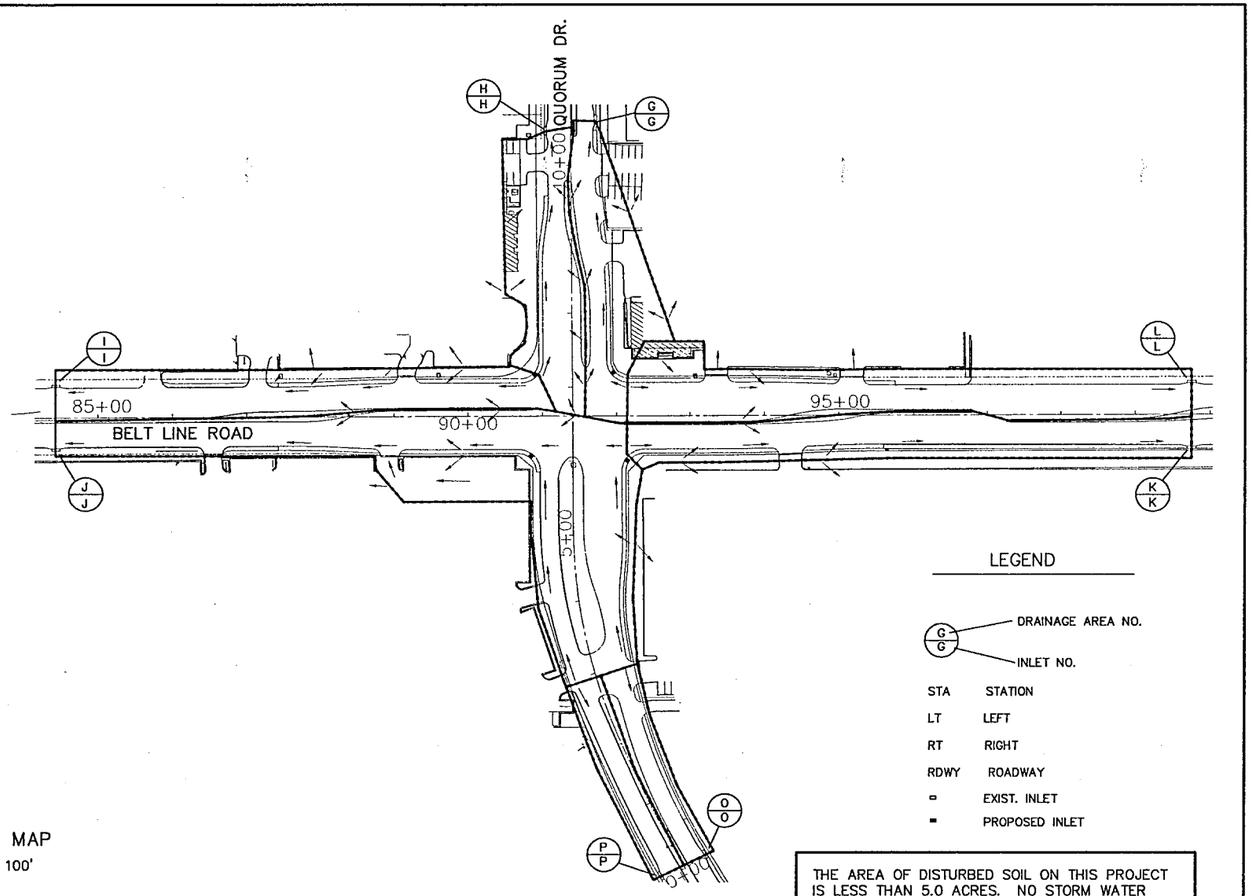
STATE	STATE DIST.	COUNTY
TEXAS	DALLAS	DALLAS

CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

BA FILE NAME :

STATE OF TEXAS
RONALD A. YOUNG
135871
REGISTERED
PROFESSIONAL ENGINEER
4-17





DRAINAGE AREA MAP
SCALE : 1" = 100'

LEGEND

- G/G — DRAINAGE AREA NO. / INLET NO.
- STA STATION
- LT LEFT
- RT RIGHT
- RDWY ROADWAY
- ▫ EXIST. INLET
- ▪ PROPOSED INLET

THE AREA OF DISTURBED SOIL ON THIS PROJECT IS LESS THAN 5.0 ACRES. NO STORM WATER POLLUTION PREVENTION PLAN HAS BEEN PREPARED. HAY BALES AND SILT FENCES WILL BE UTILIZED AT THE DIRECTION OF THE ENGINEER.

* NOTE : EXISTING DRAINAGE PATTERNS ARE NOT BEING CHANGED. THE EXISTING DRAINAGE SYSTEM OF THE TOWN OF ADDISON WILL NOT BE CHANGED. THE EXISTING INLETS AND STORM DRAINS ARE ADEQUATE TO HANDLE THE EXISTING RUNOFF.

TXDOT CRITERIA
C = 0.9 (COMMERCIAL)
t_c = 10 MIN.
I_5 = 6.89 (DALLAS COUNTY)

RUNOFF & INLET COMPUTATIONS

DRAINAGE AREA NO.	INLET NO.	LOCATION	TOTAL AREA	RDWY C 0.90				TOTAL CA	TIME OF CONCEN (min)	STORM YEAR	INTEN. I (iph)	Q_a (cfs)	ADDED CARRY OVER	TOTAL Q_a (cfs)	Z	Z/n	S (%)	DEPTH OF FLOW IN GUTTER Y (ft)	PONDED WIDTH Y*Z	GUTTER DROP AT INLET A (ft)	q_i (cfs/ft)	L_r (ft)	L_a (ft)	L_a/L_r	A/Y	Q_i/Q_a	Q CAPTURED BY INLET	CARRY OVER	REMARKS
A		MIDWAY 8+21.59 RT	1.65	0.9				1.49	10	5	6.89	10.2		10.2	48	3200	2.08	0.29	13.9	0.42	0.60	17.0	20	1.17	1.45	1.0	10.2		NEW 20' REC. INLET
B		MIDWAY 8+50 LT	0.50	|				0.45	10	5	|	3.1		3.1	48	3200	2.40	0.18	8.6	0.42	0.52	6.0	10	1.7	2.33	1.0	3.1		EX. 10' REC. INLET
C		BELT LINE RD.	0.80	|				0.72	10	5	|	5.0		5.0	48	3200	2.18	0.22	10.6	0.42	0.56	8.4	10	1.19	1.91	1.0	4.7	0.3	EX. 10' REC. INLET
D		BELT LINE RD.	1.85	|				1.67	10	5	|	11.5		11.5	48	3200	2.40	0.29	13.9	0.42	0.64	18.0	14	0.78	1.62	0.86	9.9	1.6	EX. 14' REC. INLET *
E		MIDWAY RD.	0.60	|				0.54	10	5	|	3.7		3.7	48	3200	0.83	0.24	11.5	0.42	0.58	6.4	10	1.56	1.75	1.0	3.7		EX. 10' REC. INLET
F		MIDWAY RD.	1.0	|				0.9	10	5	|	6.2		6.2	48	3200	0.83	0.26	12.4	0.42	0.64	9.7	10	1.03	1.62	1.0	6.2		EX. 10' REC. INLET
G		QUORUM 10+62 RT	0.70	|				0.63	10	5	|	4.3		4.3	48	3200	1.68	0.22	10.5	0.42	0.56	7.7	10	1.30	1.91	1.0	4.3		EX. 10' REC. INLET
H		QUORUM 10+45 LT	0.75	|				0.68	10	5	|	4.7		4.7	48	3200	1.47	0.23	11.0	0.42	0.60	7.8	10	1.28	1.68	1.0	4.7		EX. 10' REC. INLET
I		BELT LINE RD.	0.90	|				0.81	10	5	|	5.6		5.6	48	3200	1.50	0.25	12.0	0.42	0.60	9.3	14	1.08	1.68	1.0	5.6		EX. 10' REC. INLET
J		BELT LINE / QUORUM	1.80	|				1.62	10	5	|	11.2		11.2	48	3200	1.50	0.29	13.9	0.42	0.62	17.7	10	0.79	1.45	0.86	9.6	1.6	EX. 14' REC. INLET *
K		BELT LINE RD.	1.0	|				0.9	10	5	|	6.2		6.2	48	3200	1.25	0.26	12.4	0.42	0.64	9.7	10	1.03	1.62	1.0	6.2		EX. 10' REC. INLET
L		BELT LINE RD.	1.0	|				0.9	10	5	|	6.2		6.2	48	3200	1.25	0.26	12.4	0.42	0.64	9.7	10	1.03	1.62	1.0	6.2		EX. 10' REC. INLET
M		BELT LINE RD.	0.35	|				0.32	10	5	|	2.2		2.2	48	3200	0.7	0.22	10.5	0.42	0.56	3.9	10	2.56	1.91	1.0	2.2		EX. 10' REC. INLET
N		BELT LINE RD.	0.40	|				0.36	10	5	|	2.5		2.5	48	3200	0.7	0.22	10.5	0.42	0.56	4.5	10	2.22	1.91	1.0	2.5		EX. 10' REC. INLET
O		QUORUM	0.30	|				0.27	10	5	|	1.9		1.9	48	3200	1.49	0.17	8.2	0.42	0.56	3.4	10	2.94	2.21	1.0	1.9		EX. 10' REC. INLET
P		QUORUM	0.30	|				0.27	10	5	|	1.9		1.9	48	3200	1.46	0.17	8.2	0.42	0.56	3.4	10	2.94	2.21	1.0	1.9		EX. 10' REC. INLET

STATE OF TEXAS — RONALD Y. YOUNG — 75567 — REGISTERED PROFESSIONAL ENGINEER — 4/23/97

BARTON-ASCHMAN ASSOCIATES, INC.

DRAINAGE AREA MAP
RUNOFF & INLET COMPUTATIONS

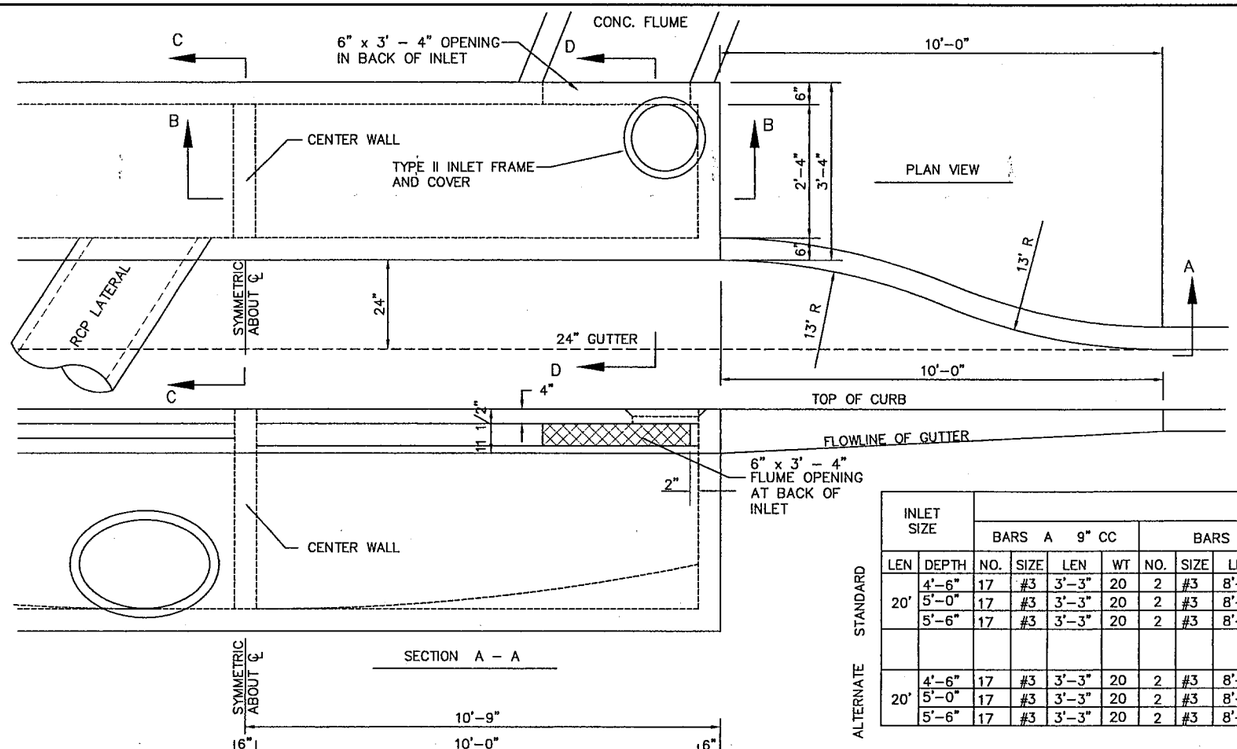
ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation © 1997 — DART

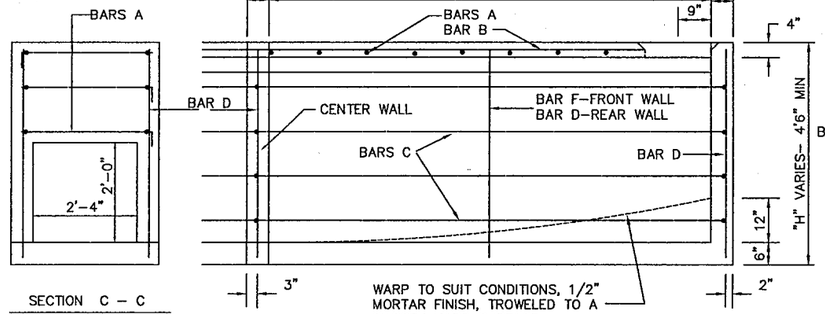
REVISION	DATE

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		32
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

DESIGNED BY: R.A.Y.
DRAWN BY: B-A
CHECKED BY: L.M.P.
BA FILE NAME :

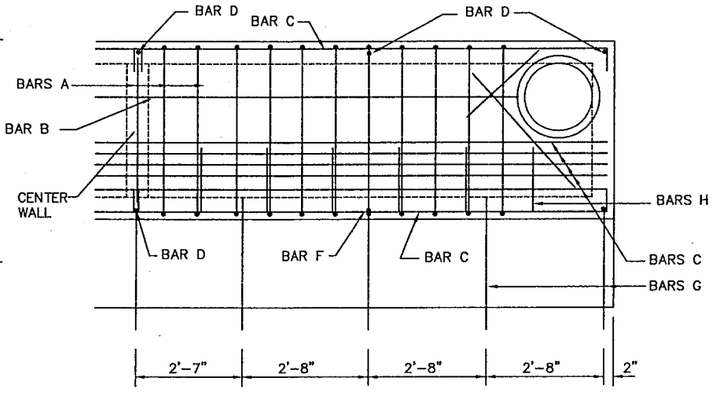


SECTION A – A

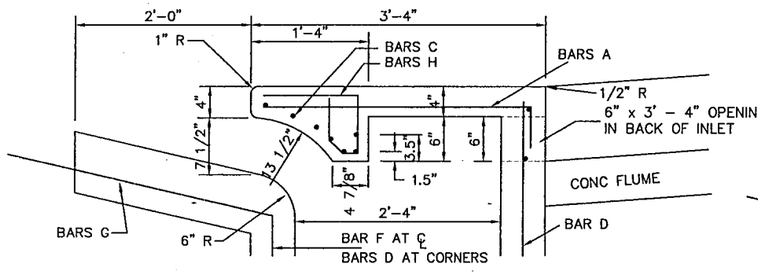


SECTION C – C
CENTER WALL (WITH OPENING)

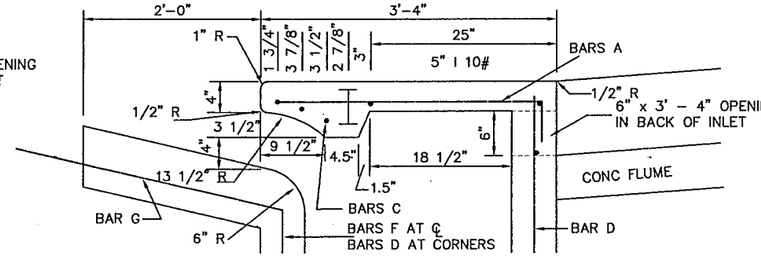
SECTION B – B



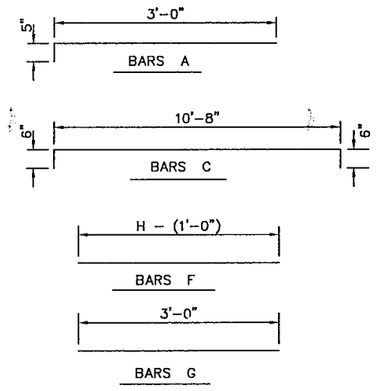
REINFORCING PLAN ALTERNATE



SECTION D – D ALTERNATE
SEE STANDARD SECTION D–D AT RIGHT



SECTION D – D
STANDARD INLET



REINFORCING STEEL AND CONCRETE (RECESSED CURB INLET)

	INLET SIZE		STEEL																												* TOTALS		
			BARS A 9" CC				BARS B				BARS C 12" CC				BARS D				BARS F				BARS G				BARS H 18" CC						
	LEN	DEPTH	NO.	SIZE	LEN	WT	NO.	SIZE	LEN	WT	NO.	SIZE	LEN	WT	NO.	SIZE	LEN	WT	NO.	SIZE	LEN	WT	NO.	SIZE	LEN	WT	NO.	SIZE	LEN	WT	REINF. (LBS)	CONC. (CY)	5" I 10#
STANDARD	20'	4'–6"	17	#3	3'–3"	20	2	#3	8'–10"	6	24	#4	11'–8"	188	8	#4	4'–8"	23	2	#4	3'–6"	4	10	#3	3'–0"	12					275	6.7	
		5'–0"	17	#3	3'–3"	20	2	#3	8'–10"	6	28	#4	11'–8"	218	8	#4	5'–2"	24	2	#4	4'–0"	6	10	#3	3'–0"	12					310	7.2	216#
		5'–6"	17	#3	3'–3"	20	2	#3	8'–10"	6	28	#4	11'–8"	218	8	#4	5'–8"	26	2	#4	4'–6"	6	10	#3	3'–0"	12					314	7.6	
ALTERNATE															8																		
	20'	4'–6"	17	#3	3'–3"	20	2	#3	8'–10"	6	30	#4	11'–8"	234	8	#4	4'–8"	23	2	#4	3'–6"	4	10	#3	3'–0"	12	12	#3	2'–7"	12	334	6.8	
		5'–0"	17	#3	3'–3"	20	2	#3	8'–10"	6	34	#4	11'–8"	264	8	#4	5'–2"	24	2	#4	4'–0"	6	10	#3	3'–0"	12	12	#3	2'–7"	12	368	7.2	
		5'–6"	17	#3	3'–3"	20	2	#3	8'–10"	6	34	#4	11'–8"	264	8	#4	5'–8"	26	2	#4	4'–6"	6	10	#3	3'–0"	12	12	#3	2'–7"	12	370	7.8	

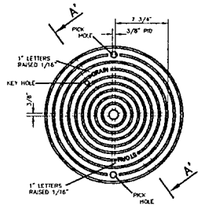
* FOR CONTRACTOR'S INFORMATION ONLY

CONCRETE TO BE DEDUCTED FOR PIPE

PIPE SIZE	CONC. CY
18"	0.05
21"	0.07
24"	0.09
27"	0.11
30"	0.14
36"	0.17

GENERAL NOTES :

1. ALL CONCRETE SHALL BE CLASS A.
2. LATERAL PIPE MAY ENTER THE INLET AT ANY LOCATION.
3. THE 24" GUTTER IN THE FRONT OF THE INLET IS CONSIDERED PART OF THE INLET AND SHALL BE CONSTRUCTED WITH THE INLET.
4. THE TOP OF INLET CROSS SLOPE SHALL CONFORM TO THE ADJACENT PARKWAY (1/4" PER FOOT NORMAL)
5. THE DIMENSIONS RELATING TO THE REINFORCING STEEL ARE TO THE CENTER OF THE BARS.
6. INLET FRAME AND COVER SHALL BE TYPE II.



STATE OF TEXAS
RONALD A. YOUNG
86561
REGISTERED
PROFESSIONAL ENGINEER
4/23/97

SHEET 1 OF 2

BARTON-ASCHMAN ASSOCIATES, INC.

MISCELLANEOUS DRAINAGE DETAILS
RECESSED INLET DETAILS
ADDISON TRANSIT PASS
ADDISON, TEXAS

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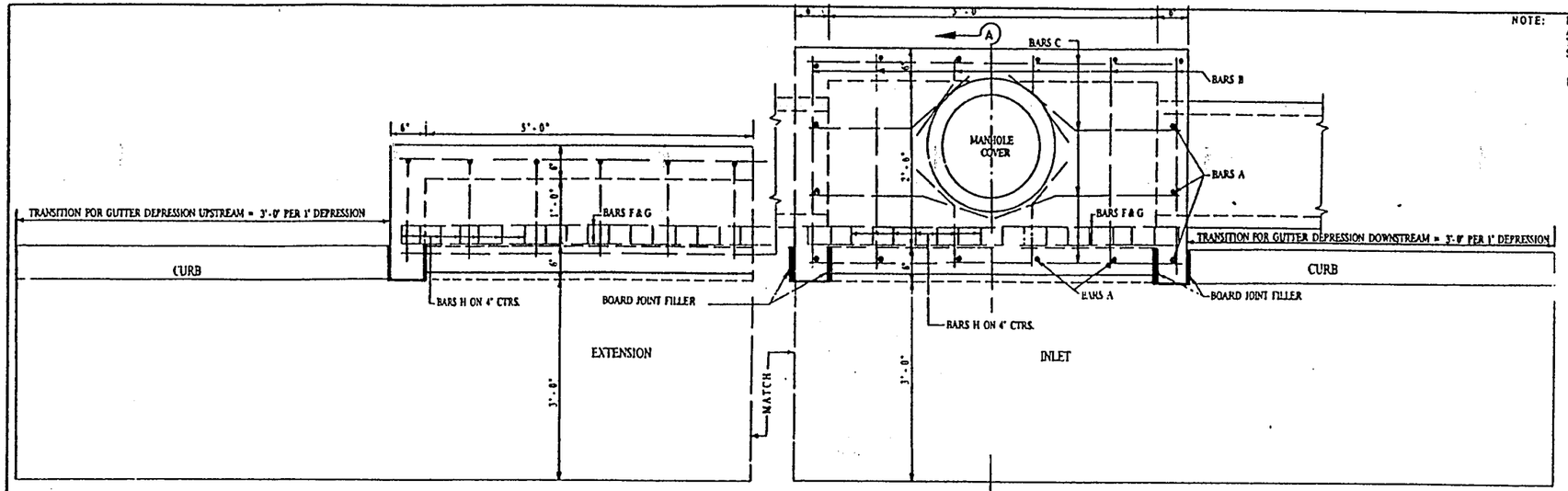
REVISION	DATE
DESIGNED BY:	R.A.Y.
DRAWN BY:	B–A
CHECKED BY:	L.M.P.

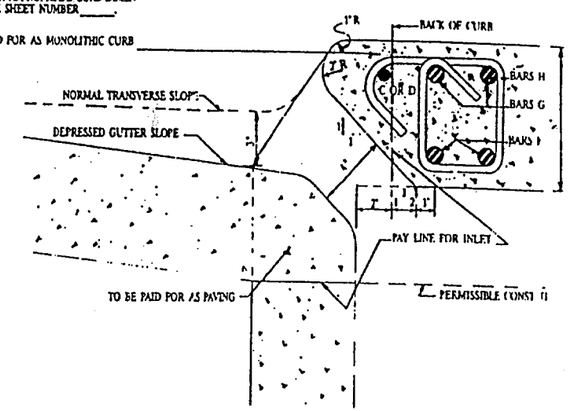
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		37
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD.
BA FILE NAME :			



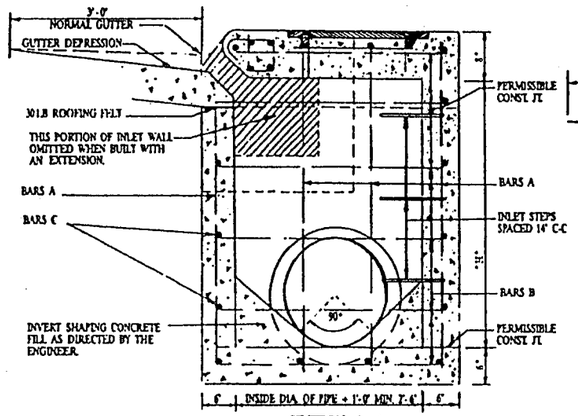
PLAN
SCALE 1"- 1'

NOTE: DIMENSIONS FOR CURB SECTIONS VARY ACCORDING TO LIMITS OF PROPOSED CURB TYPES. FOR APPROPRIATE CURB DIMENSIONS, SEE SHEET NUMBER ____.

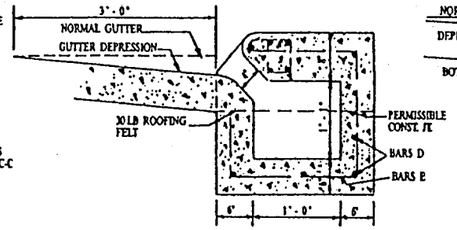
TO BE PAID FOR AS MONOLITHIC CURB



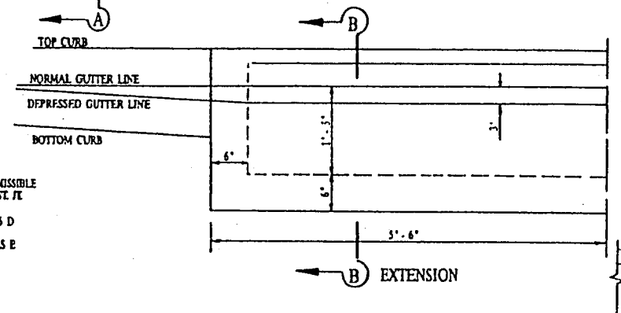
THROAT DETAIL
SCALE : 3" = 1'

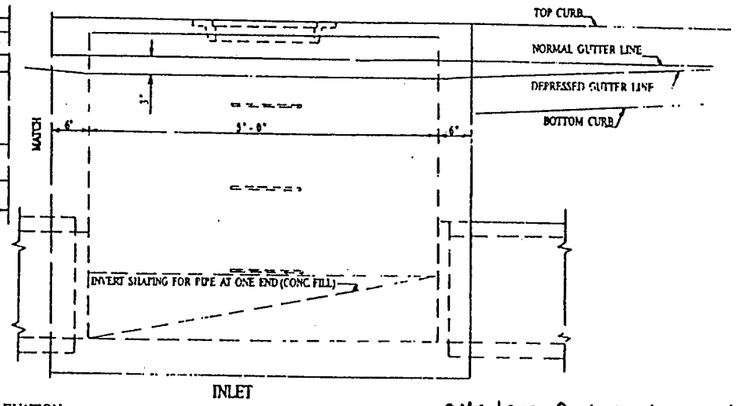


SECTION A-A
SCALE 1" = 1'



SECTION B-B
SCALE 1" = 1'

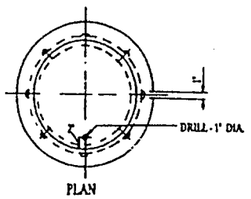




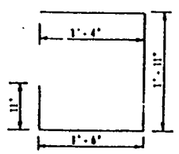
INLET

ELEVATION
SCALE : 1" = 1'

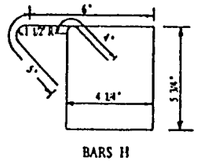
CHANGE ORDER Number 6



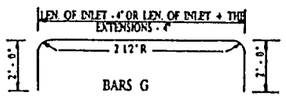
PLAN



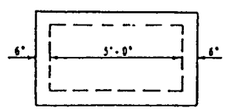
BARS E



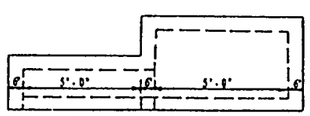
BARS H



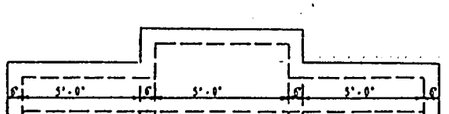
BARS G



REGULAR INLET

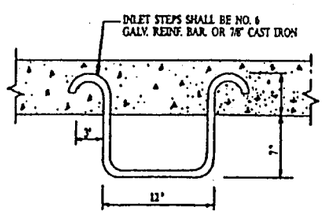


INLET WITH ONE EXTENSION

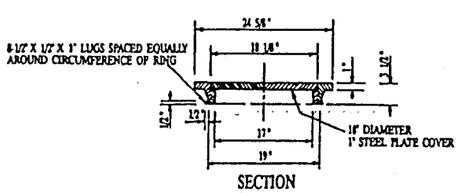


INLET WITH TWO EXTENSIONS

PLAN OF INLET AND EXTENSIONS



DETAIL
OF INLET STEPS



SECTION

18" C.I. MANHOLE RING & STEEL PLATE COVER
TY A

GENERAL NOTES:

1. ALL CONCRETE SHALL BE CLASS A. ALL EXPOSED CORNERS SHALL BE CHAMFERED 3/4".
2. CAST IRON STEPS, SPACED 14" AND LOCATED AS DIRECTED BY THE ENGINEER, SHALL BE PROVIDED AND INSTALLED IN ALL INLETS WHERE THE DEPTH EXCEEDS 4'- 0".
3. PAYMENT OF CURB INLETS AND EXTENSIONS THERETO AS SHOWN ON THE PLANS WILL BE MADE AT THE UNIT PRICE BID FOR "INLET (COMPLETE) (TYPE I)", "INLET EXTENSION".
4. DIMENSIONS RELATING TO REINFORCING STEEL ARE TO CENTERS OF BARS.
5. SEE SHEET NO. ____ FOR INLET SUMMARY OF CONCRETE AND REINFORCING STEEL.

CURB INLET TYPE I DETAILS

TxDOT
DISTRICT 18 STANDARD

SHEET 1 OF 2

FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	CM 97(449)		33A
STATE	STATE DIST.	COUNTY	
TEXAS	DAL	DALLAS	
CONTROL	SECTION	JOB	HIGHWAY NO.
8056	18	034	BELTLINE

CONCRETE TO BE DEDUCTED FOR PIPES

Pipe Size	Conc. C.Y.
15"	0.04
18"	0.05
21"	0.07
24"	0.09
27"	0.11
30"	0.14
33"	0.17
36"	0.19
42"	0.26
48"	0.34
54"	0.43

REINFORCING STEEL AND CONCRETE IN TYPE I - 5FT. INLETS

INLET SIZE		STEEL																										TOTALS	
		BARS A				BARS A'				BARS B				BARS C				BARS F				BARS G				BARS H				Reinf. Steel Lbs.	Conc. Cl A C.Y.*
H	W	No.	Size	Length	Weight	No.	Size	Length	Weight	No.	Size	Length	Weight	No.	Size	Length	Weight	No.	Size	Length	Weight	No.	Size	Length	Weight	No.	Size	Length	Weight		
3.0	2.5	12	4	3'-10"	31	4	4	2'-6"	7	18	4	3'-2"	38	13	4	5'-8"	49	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	194	1.64
3.5	2.5	12	4	4'-4"	35	4	4	3'-0"	8	18	4	3'-2"	38	13	4	5'-8"	49	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	199	1.80
4.0	2.5	12	4	4'-10"	39	4	4	3'-6"	9	20	4	3'-2"	42	15	4	5'-8"	57	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	216	1.96
4.5	2.5	12	4	5'-4"	43	4	4	4'-0"	11	20	4	3'-2"	42	15	4	5'-8"	57	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	222	2.11
5.0	2.5	12	4	5'-10"	47	4	4	4'-6"	12	22	4	3'-2"	47	17	4	5'-8"	64	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	239	2.27
5.5	2.5	12	4	6'-4"	51	4	4	5'-0"	13	22	4	3'-2"	47	17	4	5'-8"	64	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	244	2.42
6.0	2.5	12	4	6'-10"	55	4	4	5'-6"	15	24	4	3'-2"	51	19	4	5'-8"	72	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	262	2.59
6.5	2.5	12	4	7'-4"	59	4	4	6'-0"	16	24	4	3'-2"	51	19	4	5'-8"	72	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	267	2.74
8.0	2.5	12	4	8'-10"	71	4	4	7'-6"	20	28	4	3'-2"	59	23	4	5'-8"	87	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	306	3.22
8.5	2.5	12	4	9'-4"	75	4	4	8'-0"	21	28	4	3'-2"	59	23	4	5'-8"	87	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	311	3.37
10.0	2.5	12	4	10'-10"	87	4	4	9'-6"	25	32	4	3'-2"	68	27	4	5'-8"	102	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	351	3.84
10.5	2.5	12	4	11'-4"	91	4	4	10'-0"	27	32	4	3'-2"	68	27	4	5'-8"	102	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	357	4.00
4.0	3.0	12	4	4'-10"	39	4	4	3'-6"	9	20	4	3'-8"	49	15	4	5'-8"	57	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	223	2.16
4.5	3.5	14	4	5'-4"	50	4	4	4'-0"	11	20	4	4'-2"	56	17	4	5'-8"	64	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	250	2.54
5.5	3.5	14	4	6'-4"	59	4	4	5'-0"	13	22	4	4'-2"	61	19	4	5'-8"	72	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	274	2.89
7.5	4.0	16	4	8'-4"	89	4	4	7'-0"	19	26	4	4'-8"	81	25	4	5'-8"	95	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	353	3.87
10.0	5.0	18	4	10'-10"	130	4	4	9'-6"	25	32	4	5'-8"	121	33	4	5'-8"	125	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	470	5.42
7.5	5.0	18	4	8'-4"	100	4	4	7'-0"	19	26	4	5'-8"	98	29	4	5'-8"	110	2	7	5'-8"	23	2	6	9'-8"	29	18	3	2'-7"	17	406	4.09

NOTE: On inlets with extensions, Bars F & G shall run continuous thru inlet and extensions.
Where two or more extensions are together, Bars D shall run continuous thru the extensions.
** Does not include quantity for invert shaping.*

REINFORCING STEEL AND CONCRETE IN EXTENSIONS

5'-0" EXTN. No.	STEEL																TOTALS	
	BARS D				BARS E				BARS F				BARS G				BARS H				REINF. STEEL LBS.	CL. A CONC. C.Y.
	No.	Size	Length	Weight	No.	Size	Length	Weight	No.	Size	*Length	Weight	No.	Size	*Length	Weight	No.	Size	Length	Weight		
1	8	4	5'-8"	30	6	4	5'-4"	21	2	7	5'-6"	23	2	6	5'-6"	17	16	3	2'-7"	6	107	0.53
2	8	4	11'-2"	60	12	4	5'-4"	43	2	7	11'-0"	45	2	6	11'-0"	33	33	3	2'-7"	32	213	1.06
3	Reinf. Steel is as shown for 1 Extension and as shown for 2 Extensions																				320	1.59

** Length to be added to the length as shown in the above table for Ty. I - 5'-0" inlets.*

CHANGE ORDER Number 6

GENERAL NOTES:

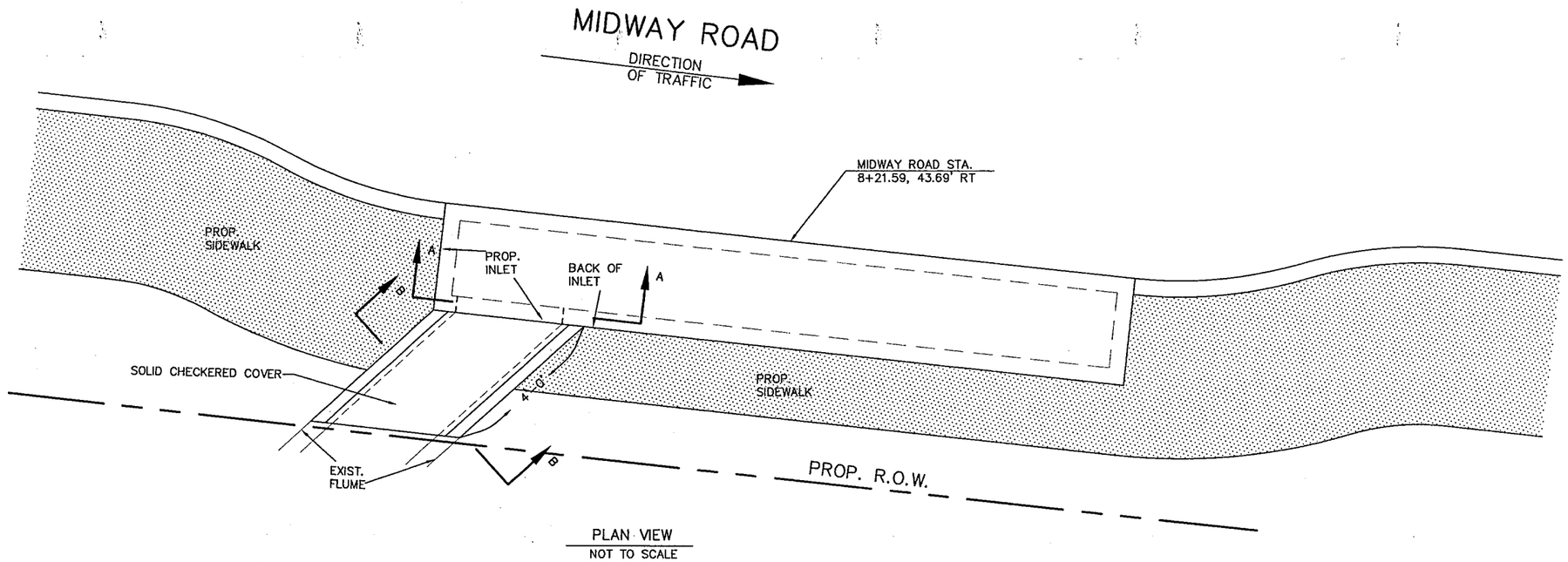
Reinforcing Steel and Concrete tables shown above are for information only. These tables are to be used with Inlet Type I, with 3" & 5" normal curb height and 8" concrete pavement.

CONC. AND REINF. STEEL TABLES FOR INLET TYPE I

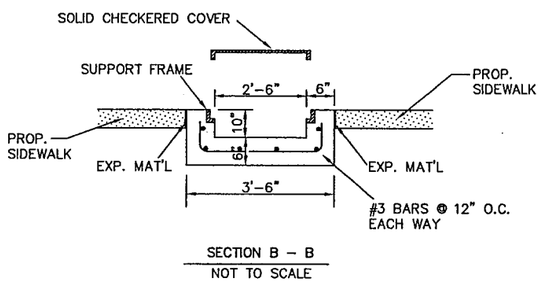
IMPORTANT NOTE:
UNITS ARE ENGLISH UNITS

DISTRICT 18 STANDARD

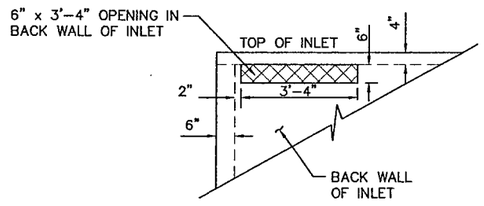
FED. RD. DIV. NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	CM97 (449)		358
STATE	STATE DIST. NO.	COUNTY	
TEXAS	DAL	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
8050	18	034	BELTLINE



PLAN VIEW
NOT TO SCALE



SECTION B – B
NOT TO SCALE



SECTION A – A
NOT TO SCALE

FLUME NOTES :
1. CONC. FOR FLUME SHALL BE CLASS A.
2. FRAME AND COVER FOR FLUME SHALL BE BASS & HAYES MODEL VTFG30LD OR NEENAH R-4991-KX OR EQUAL. COVER SHALL BE TYPE D (SOLID CHECKERED).
3. COST FOR FRAME AND COVER SHALL BE SUBSIDIARY TO VARIOUS BID ITEMS.
4. THE METAL COVER FOR THE FLUME SHALL MATCH THE LEVEL OF THE TOP OF INLET AND ADJACENT SIDEWALK.

CONCRETE FLUME DETAIL
NOT TO SCALE

STATE OF TEXAS
RONALD A. YOUNG
56081
REGISTERED
PROFESSIONAL ENGINEER
4/23/97

SHEET 2 OF 2

BARTON-ASCHMAN ASSOCIATES, INC.

MISCELLANEOUS DRAINAGE DETAILS
FLUME DETAILS
ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation ©1997 | DART

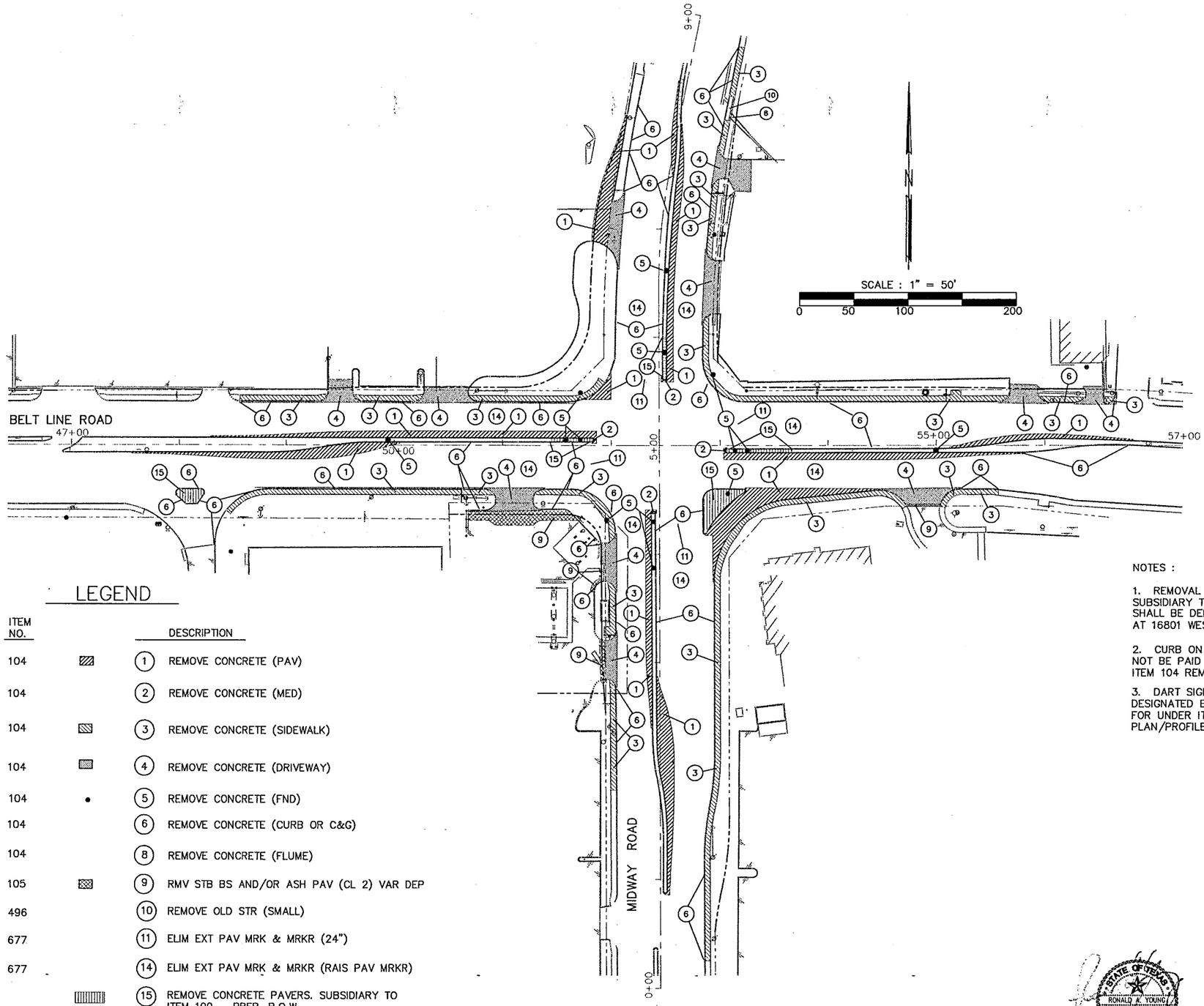
REVISION	DATE
DESIGNED BY:	R.A.Y.
DRAWN BY:	B-A
CHECKED BY:	L.M.P.

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
6	CM 97 (449)	34

STATE	STATE DIST.	COUNTY
TEXAS	DALLAS	DALLAS

CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD.

BA FILE NAME :



LEGEND

ITEM NO.			DESCRIPTION
104	▨	(1)	REMOVE CONCRETE (PAV)
104		(2)	REMOVE CONCRETE (MED)
104	▧	(3)	REMOVE CONCRETE (SIDEWALK)
104	▩	(4)	REMOVE CONCRETE (DRIVEWAY)
104	•	(5)	REMOVE CONCRETE (FND)
104		(6)	REMOVE CONCRETE (CURB OR C&G)
104		(8)	REMOVE CONCRETE (FLUME)
105	▩	(9)	RMV STB BS AND/OR ASH PAV (CL 2) VAR DEP
496		(10)	REMOVE OLD STR (SMALL)
677		(11)	ELIM EXT PAV MRK & MRKR (24")
677		(14)	ELIM EXT PAV MRK & MRKR (RAIS PAV MRKR)
	▥	(15)	REMOVE CONCRETE PAVERS. SUBSIDIARY TO ITEM 100 – PREP. R.O.W.

NOTES :

1. REMOVAL AND SALVAGE OF SMALL ROADSIDE SIGNS SHALL BE SUBSIDIARY TO ITEM 100 PREP R.O.W. SALVAGED SIGNS SHALL BE DELIVERED TO THE TOWN OF ADDISON SERVICE CENTER AT 16801 WESTGROVE ROAD, ADDISON, TEXAS.

2. CURB ON TOP OF CONCRETE PAVEMENT TO BE REMOVED WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE SUBSIDIARY TO ITEM 104 REMOVE CONCRETE (PAV).

3. DART SIGNS SHALL BE RELOCATED TO LOCATIONS DESIGNATED BY THE ENGINEER AND SHALL BE PAID FOR UNDER ITEM 649. SEE PAVING AND DRAINAGE PLAN/PROFILE SHEETS FOR LOCATION OF DART SIGNS.

BARTON-ASCHMAN ASSOCIATES, INC.

REMOVAL PLAN SHEET

BELT LINE ROAD AT MIDWAY ROAD
ADDISON TRANSIT PASS
ADDISON, TEXAS

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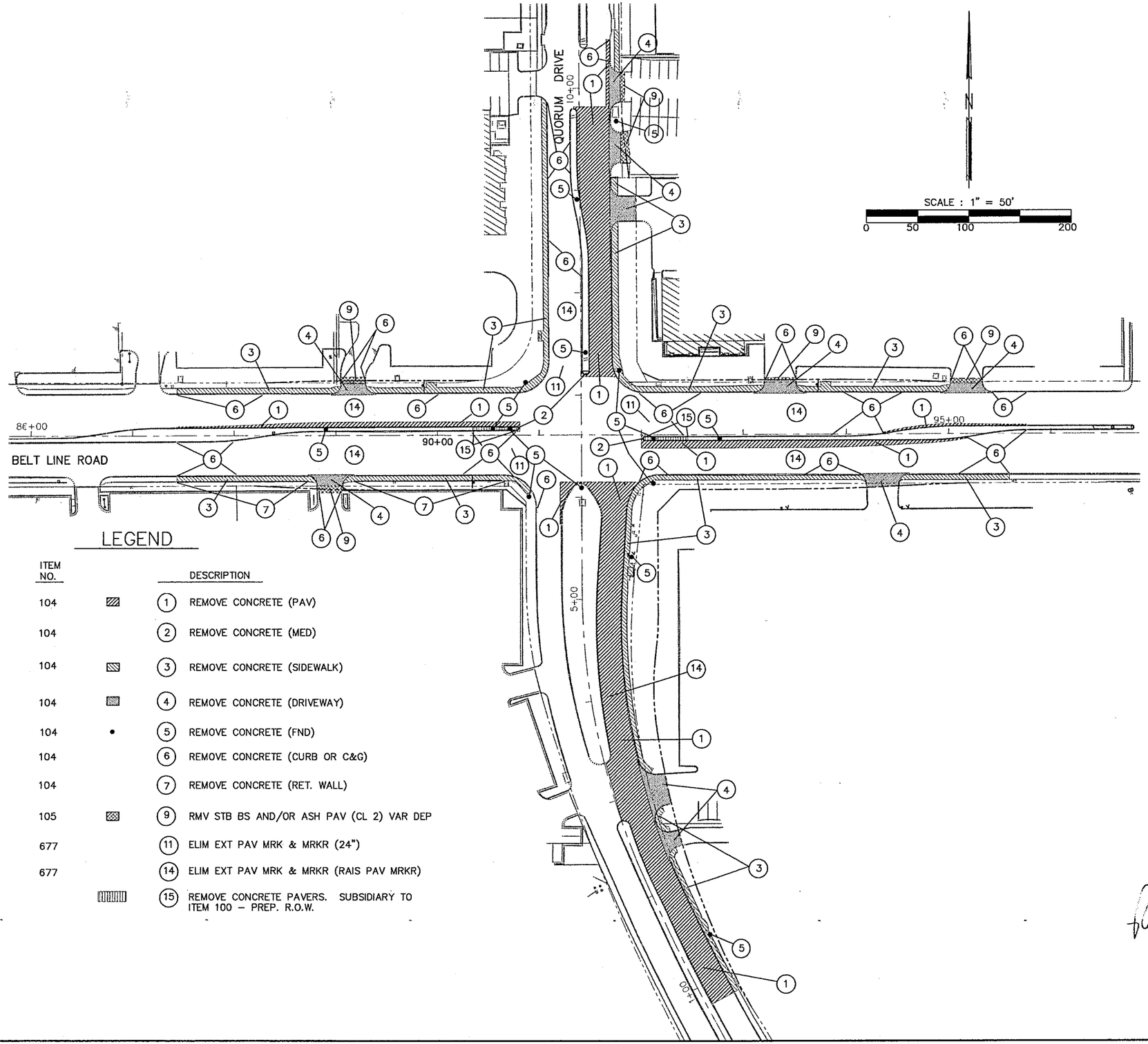
STATE OF TEXAS · RONALD A. YOUNG · 92561 · REGISTERED PROFESSIONAL ENGINEER · 4/23/97

REVISION	DATE

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		35
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.
BA FILE NAME :



LEGEND

ITEM NO.			DESCRIPTION
104	▨	(1)	REMOVE CONCRETE (PAV)
104		(2)	REMOVE CONCRETE (MED)
104	▧	(3)	REMOVE CONCRETE (SIDEWALK)
104	▩	(4)	REMOVE CONCRETE (DRIVEWAY)
104	•	(5)	REMOVE CONCRETE (FND)
104		(6)	REMOVE CONCRETE (CURB OR C&G)
104		(7)	REMOVE CONCRETE (RET. WALL)
105	▩	(9)	RMV STB BS AND/OR ASH PAV (CL 2) VAR DEP
677		(11)	ELIM EXT PAV MRK & MRKR (24")
677		(14)	ELIM EXT PAV MRK & MRKR (RAIS PAV MRKR)
	▥	(15)	REMOVE CONCRETE PAVERS. SUBSIDIARY TO ITEM 100 – PREP. R.O.W.

NOTES :

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2. CURB ON TOP OF CONCRETE PAVEMENT TO BE REMOVED WILL NOT BE PAID FOR DIRECTLY, BUT SHALL BE SUBSIDIARY TO ITEM 104 REMOVE CONCRETE (PAV).

3. DART SIGNS SHALL BE RELOCATED TO LOCATIONS DESIGNATED BY THE ENGINEER AND SHALL BE PAID FOR UNDER ITEM 649. SEE PAVING AND DRAINAGE PLAN/PROFILE SHEETS FOR LOCATION OF DART SIGNS.

STATE OF TEXAS
RONALD A. YOUNG
38561
REGISTERED
PROFESSIONAL ENGINEER
4/27/99

SHEET 2 OF 2

BARTON-ASCHMAN ASSOCIATES, INC.

REMOVAL PLAN SHEET

BELT LINE ROAD AT QUORUM DRIVE
ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation (©) 1999

DART

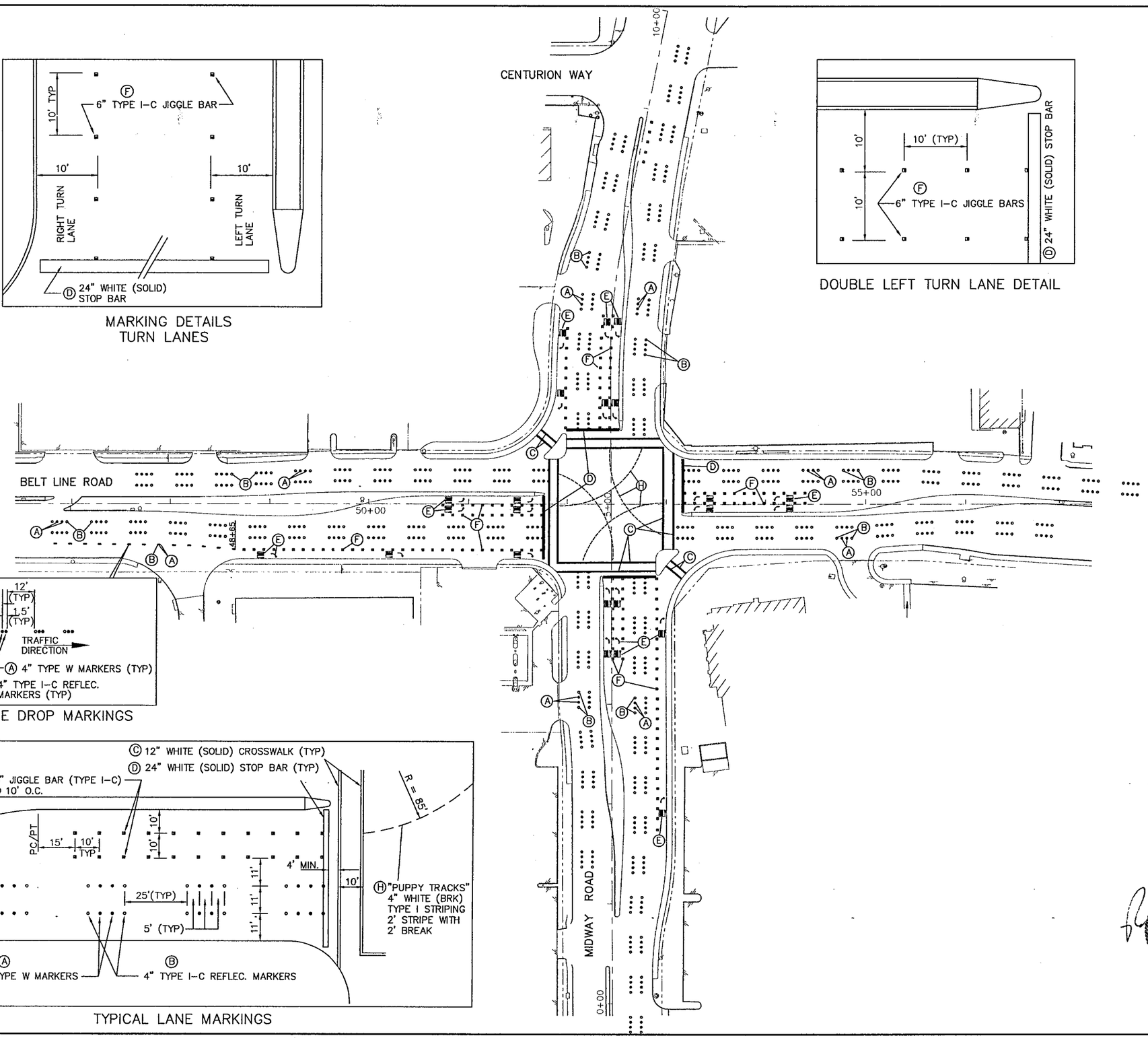
REVISION	DATE

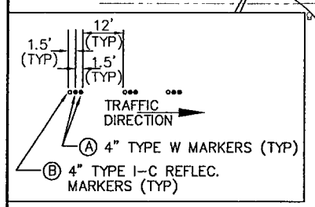
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		36
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.
BA FILE NAME :

MARKING DETAILS
TURN LANES

DOUBLE LEFT TURN LANE DETAIL





LANE DROP MARKINGS

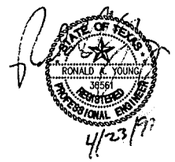
TYPICAL LANE MARKINGS

NOTES :

1. ALL STRIPING SHALL BE THERMOPLASTIC AND REFLECTIVE.
2. ALL MARKERS SHALL BE 4". JIGGLE BARS SHALL BE 6"
3. PROPOSED PAVEMENT MARKINGS SHALL MATCH EXISTING MARKINGS AT LIMITS OF CONSTRUCTION. ALL CONFLICTING MARKINGS SHALL BE COMPLETELY REMOVED.
4. THE TOWN OF ADDISON WILL PROVIDE SMALL ROADSIDE SIGNS UPON COMPLETION OF CONSTRUCTION.

PROPOSED PERMANENT PAVEMENT MARKINGS LEGEND

A	4" TYPE W MARKER (WHITE NON-REFLEC)(CL C)
B	4" TYPE I-C MARKER (WHITE REFLEC)(CL B)
C	12" WHITE (SOLID) STRIPING (TYPE I)
D	24" WHITE (SOLID) STRIPING (TYPE I)
E	LANE ASSIGNMENT MARKING
F	6" TYPE I-C JIGGLE BAR (WHITE REFLEC)(CL A)
H	4" TYPE I WHITE (BROKEN) STRIPING



SHEET 1 OF 2

BARTON-ASCHMAN ASSOCIATES, INC.

PERMANENT PAVEMENT MARKINGS SHEET

MIDWAY ROAD AT BELT LINE ROAD
ADDISON, TEXAS

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REVISION	DATE

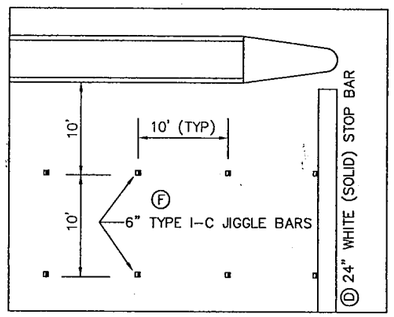
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
6	CM 97 (449)	37

STATE	STATE DIST.	COUNTY
TEXAS	DALLAS	DALLAS

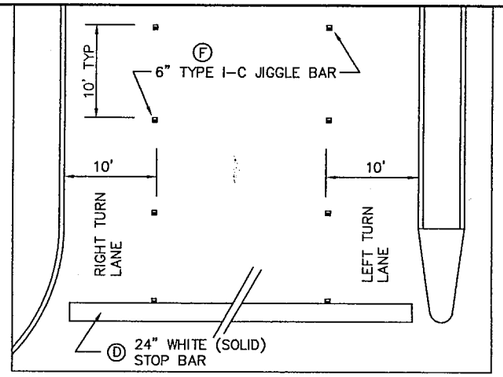
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.

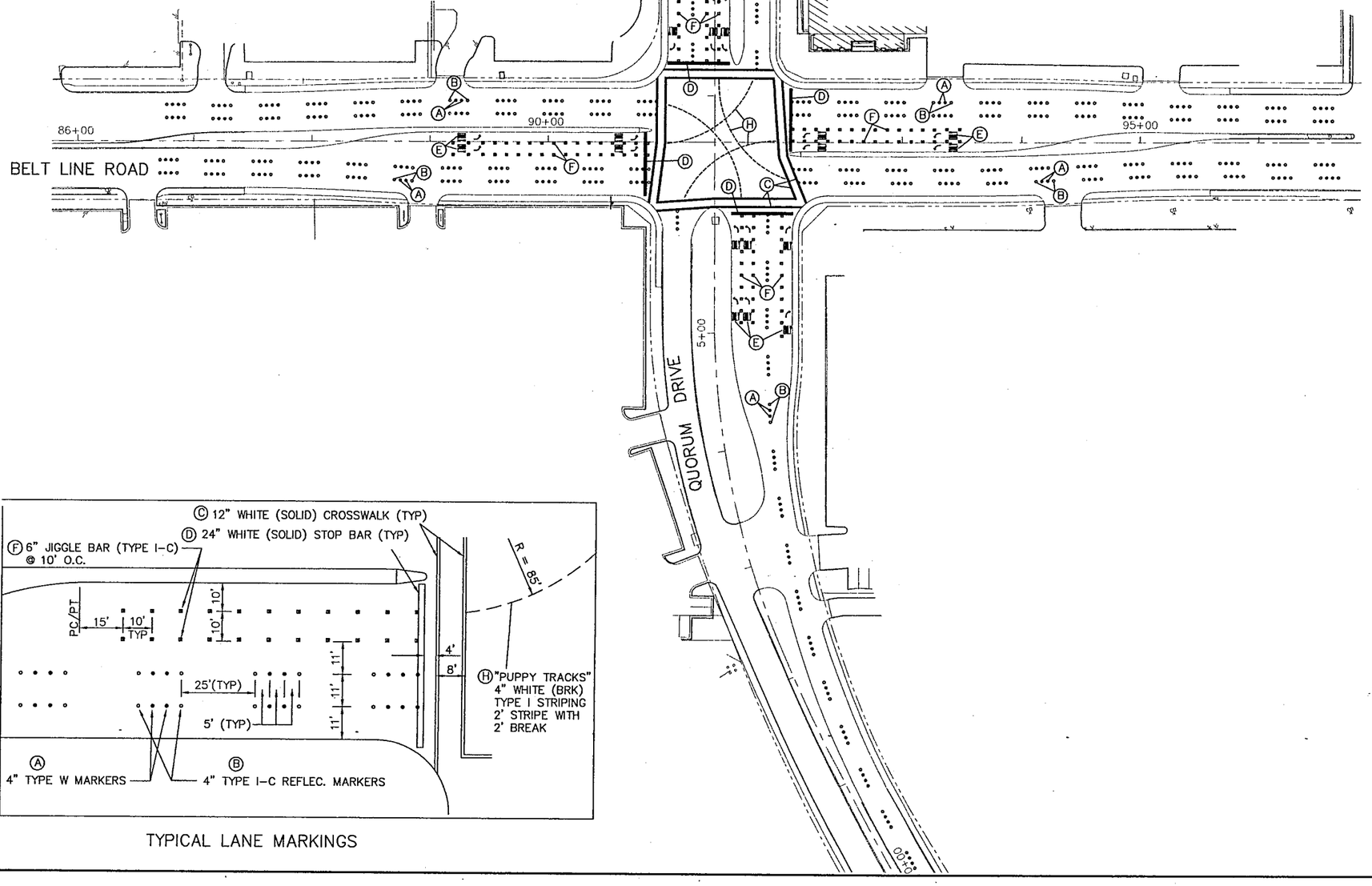
BA FILE NAME :



DOUBLE LEFT TURN LANE DETAIL



MARKING DETAILS
TURN LANES



NOTES :

1. ALL STRIPING SHALL BE THERMOPLASTIC AND REFLECTIVE.
2. ALL MARKERS SHALL BE 4". JIGGLE BARS SHALL BE 6"
3. PROPOSED PAVEMENT MARKINGS SHALL MATCH EXISTING MARKINGS AT LIMITS OF CONSTRUCTION. ALL CONFLICTING MARKINGS SHALL BE COMPLETELY REMOVED.
4. THE TOWN OF ADDISON WILL PROVIDE SMALL ROADSIDE SIGNS UPON COMPLETION OF CONSTRUCTION.

PROPOSED PERMANENT PAVEMENT MARKINGS LEGEND

A	4" TYPE W MARKER (WHITE NON-REFLEC)(CL C)
B	4" TYPE I-C MARKER (WHITE REFLEC)(CL B)
C	12" WHITE (SOLID) STRIPING (TYPE I)
D	24" WHITE (SOLID) STRIPING (TYPE I)
E	LANE ASSIGNMENT MARKING
F	6" TYPE I-C JIGGLE BAR (WHITE REFLEC)(CL A)
H	4" TYPE I WHITE (BROKEN) STRIPING

TYPICAL LANE MARKINGS

N

GRAPHIC SCALE

50 0 50 100

1" = 50' - 0" HORIZ

SHEET 2 OF 2

BARTON-ASCHMAN ASSOCIATES, INC.

PERMANENT PAVEMENT MARKINGS SHEET

QUORUM DRIVE AT BELT LINE ROAD
ADDISON, TEXAS

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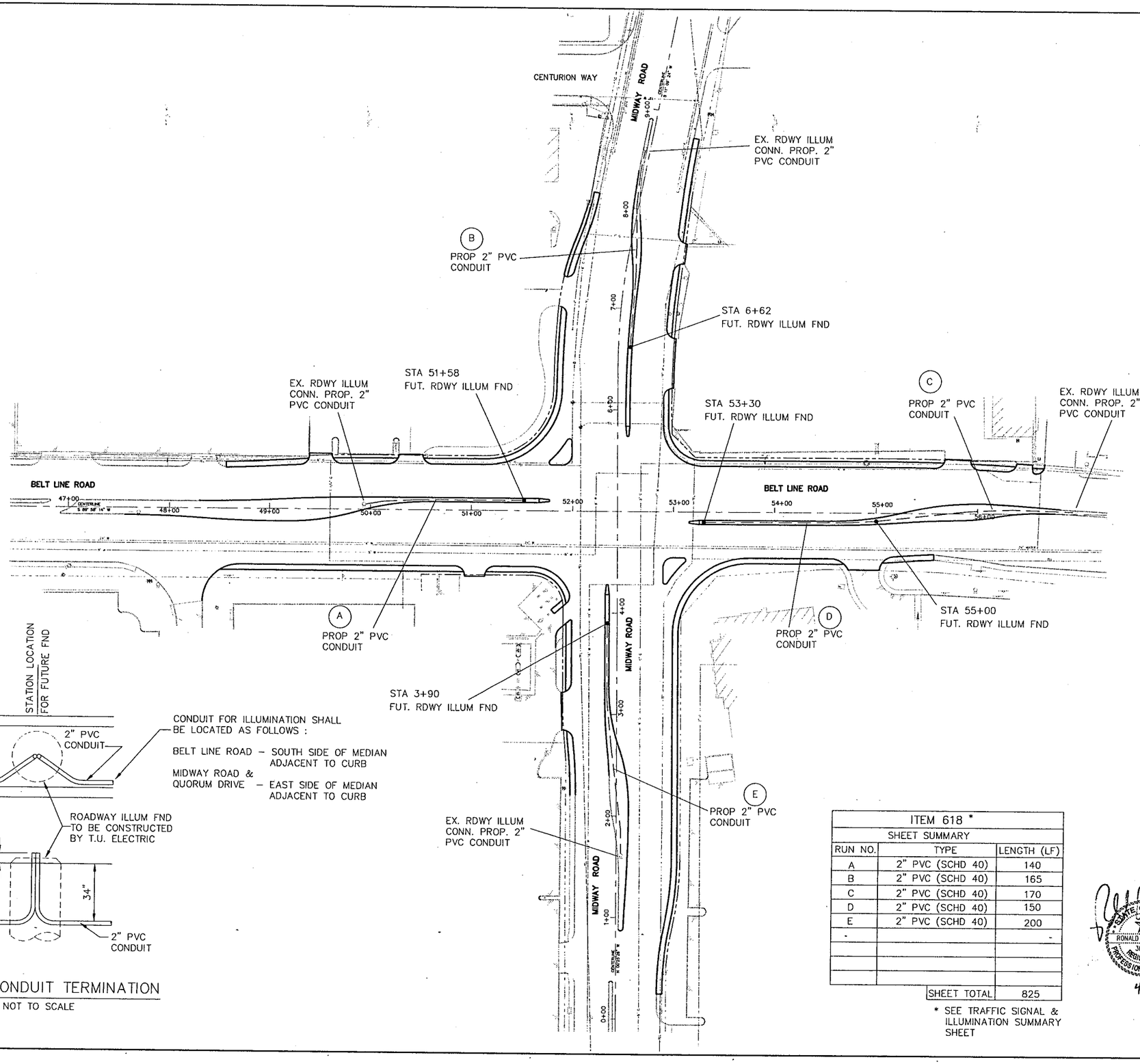
REVISION	DATE

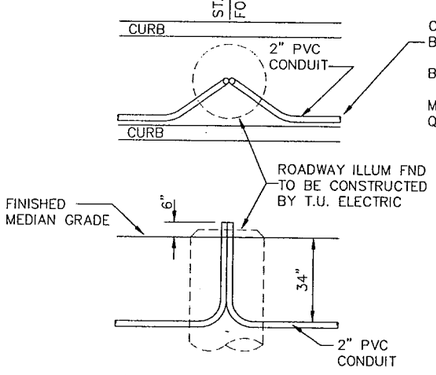
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		38
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

DESIGNED BY: R.A.Y.
DRAWN BY: B.A.A.
CHECKED BY: L.M.P.
BA FILE NAME :

STATE OF TEXAS · RONALD A. YOUNG · 86561 · REGISTERED · PROFESSIONAL ENGINEER

4/27/97





TYPICAL CONDUIT TERMINATION

NOT TO SCALE

LEGEND :

- EXIST. RDWY ILLUMINATION (STREET LIGHT)
- PROPOSED FOUNDATION FOR ROADWAY ILLUMINATION ASSEMBLY (TYPE A)(30" DRILL SHAFT)
- PROPOSED CONDUIT (PVC)(SCH 40)(2")

NOTES:

1. FUTURE ROADWAY ILLUMINATION FOUNDATIONS ARE TO BE CENTERED BETWEEN THE BACKS OF CURB EXCEPT AS NOTED HEREON.
2. TU ELECTRIC WILL REMOVE EXISTING ROADWAY ILLUMINATION POLES (STREET LIGHTS) WHERE NECESSARY. CONTACT TU ELECTRIC (888-1313) TO COORDINATE REMOVALS.
3. TU ELECTRIC WILL INSTALL ROADWAY ILLUMINATION POLES (STREET LIGHTS) ON FOUNDATIONS TO BE CONSTRUCTED BY TU ELECTRIC.
4. TU ELECTRIC WILL FURNISH AND INSTALL WIRING IN THE CONDUITS AND ENERGIZE THE CIRCUITS.
5. CONTRACTOR SHALL INSTALL 2" PVC CONDUIT IN LOCATIONS AS SHOWN HEREON AND SHALL TERMINATE CONDUIT AT FUTURE ILLUMINATION FOUNDATIONS AS SHOWN ON THE CONDUIT TERMINATION DETAIL AND AT THE STATIONS SHOWN HEREON.
6. ALL CONDUIT TO BE 2" PVC SCHEDULE 40 GRAY ELECTRICAL CONDUIT.
7. PULL STRINGS SHALL BE PROVIDED IN ALL CONDUITS.
8. CONDUIT EMBEDMENT SHALL BE 2" OF SAND WITH 6" OF SAND COVER, THEN SOIL BACKFILL.
9. TU ELECTRIC WILL DETERMINE THE LOCATIONS AND TYPE OF SERVICE FOR THE ROADWAY ILLUMINATION.
10. THE TOWN OF ADDISON WILL FURNISH AND INSTALL SMALL ROADSIDE SIGNS AND STREET NAME SIGNS.

ITEM 618 *		
SHEET SUMMARY		
RUN NO.	TYPE	LENGTH (LF)
A	2" PVC (SCHD 40)	140
B	2" PVC (SCHD 40)	165
C	2" PVC (SCHD 40)	170
D	2" PVC (SCHD 40)	150
E	2" PVC (SCHD 40)	200
-		-
	SHEET TOTAL	825

* SEE TRAFFIC SIGNAL & ILLUMINATION SUMMARY SHEET

STATE OF TEXAS
RONALD A. YOUNG
36561
REGISTERED
PROFESSIONAL ENGINEER
4/30/99

SHEET 1 OF 2

BARTON-ASCHMAN ASSOCIATES, INC.

ROADWAY ILLUMINATION PLAN

BELT LINE ROAD
STA 47+55.63 TO 56+81.18
ADDISON TRANSIT PASS

Texas Department of Transportation © 1999

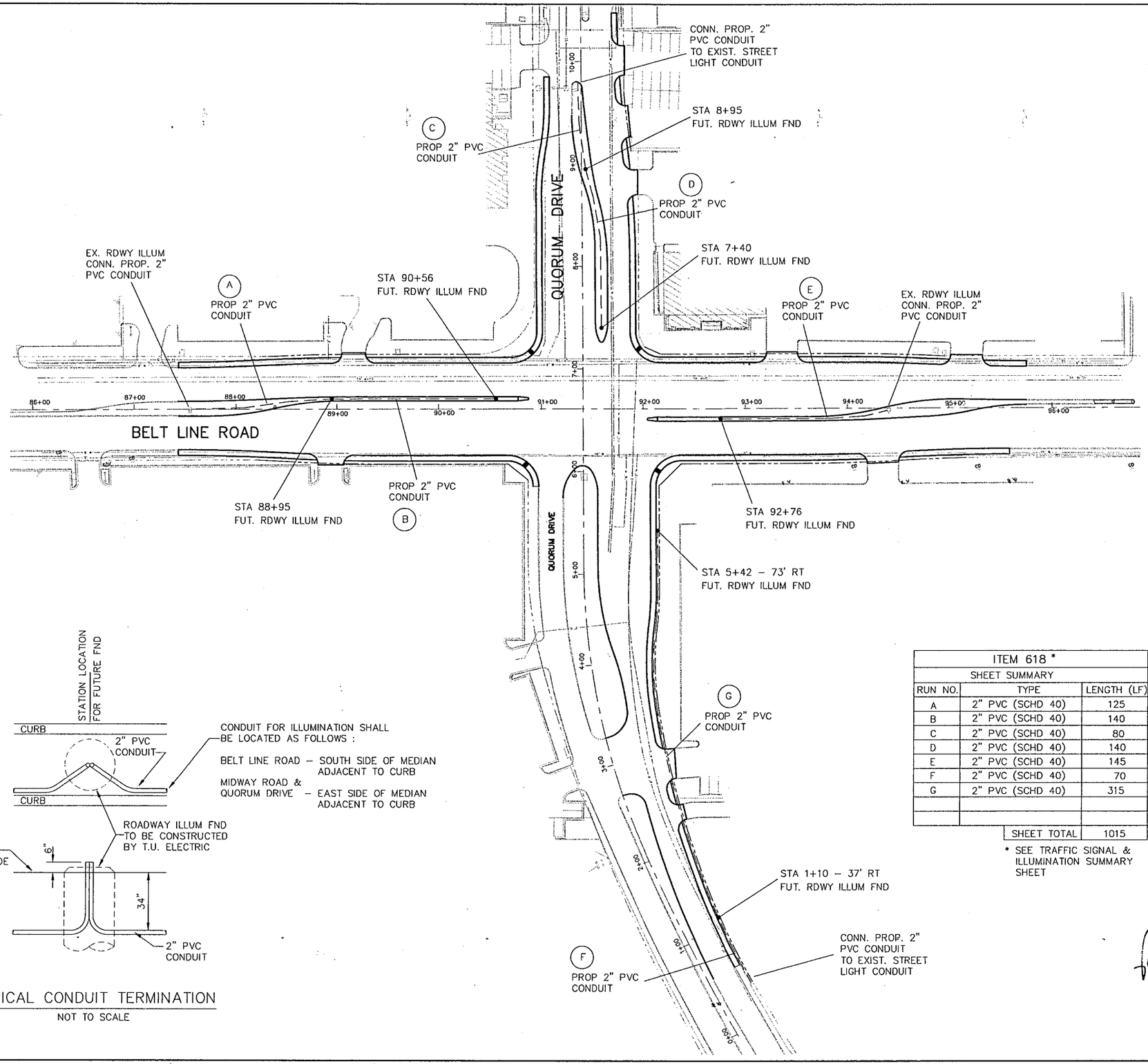
DART

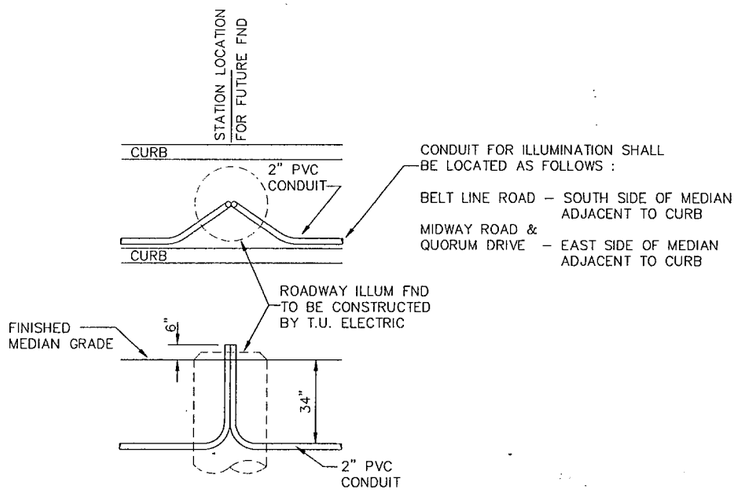
REVISION	DATE

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		39
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

DESIGNED BY:	R.A.Y.
DRAWN BY:	B.A.A.
CHECKED BY:	L.M.P.

BA FILE NAME :





TYPICAL CONDUIT TERMINATION

NOT TO SCALE

ITEM 618 *		
SHEET SUMMARY		
RUN NO.	TYPE	LENGTH (LF)
A	2" PVC (SCHD 40)	125
B	2" PVC (SCHD 40)	140
C	2" PVC (SCHD 40)	80
D	2" PVC (SCHD 40)	140
E	2" PVC (SCHD 40)	145
F	2" PVC (SCHD 40)	70
G	2" PVC (SCHD 40)	315
	SHEET TOTAL	1015

* SEE TRAFFIC SIGNAL & ILLUMINATION SUMMARY SHEET

GRAPHIC SCALE

20 0 20 50 100

1" = 50' HORIZ.

LEGEND :

- EXIST. RDWY ILLUMINATION (STREET LIGHT)
- PROPOSED FOUNDATION FOR ROADWAY ILLUMINATION ASSEMBLY (TYPE A)(30" DRILL SHAFT)
- PROPOSED CONDUIT (PVC)(SCH 40)(2")

NOTES:

1. FUTURE ROADWAY ILLUMINATION FOUNDATIONS ARE TO BE CENTERED BETWEEN THE BACKS OF CURB EXCEPT AS NOTED HEREON.
2. TU ELECTRIC WILL REMOVE EXISTING ROADWAY ILLUMINATION POLES (STREET LIGHTS) WHERE NECESSARY. CONTACT TU ELECTRIC (888-1313) TO COORDINATE REMOVALS.
3. TU ELECTRIC WILL INSTALL ROADWAY ILLUMINATION POLES (STREET LIGHTS) ON FOUNDATIONS TO BE CONSTRUCTED BY TU ELECTRIC.
4. TU ELECTRIC WILL FURNISH AND INSTALL WIRING IN THE CONDUITS AND ENERGIZE THE CIRCUITS.
5. CONTRACTOR SHALL INSTALL 2" PVC CONDUIT IN LOCATIONS AS SHOWN HEREON AND SHALL TERMINATE CONDUIT AT FUTURE ILLUMINATION FOUNDATIONS AS SHOWN ON THE CONDUIT TERMINATION DETAIL AND AT THE STATIONS SHOWN HEREON.
6. ALL CONDUIT TO BE 2" PVC SCHEDULE 40 GRAY ELECTRICAL CONDUIT.
7. PULL STRINGS SHALL BE PROVIDED IN ALL CONDUITS.
8. CONDUIT EMBEDMENT SHALL BE 2" OF SAND WITH 6" OF SAND COVER, THEN SOIL BACKFILL.
9. TU ELECTRIC WILL DETERMINE THE LOCATIONS AND TYPE OF SERVICE FOR THE ROADWAY ILLUMINATION.
10. THE TOWN OF ADDISON WILL FURNISH AND INSTALL SMALL ROADSIDE SIGNS AND STREET NAME SIGNS.

BARTON-ASCHMAN ASSOCIATES, INC.

ROADWAY ILLUMINATION PLAN

BELT LINE ROAD
STA 87+43.34 TO 95+75.73
ADDISON TRANSIT PASS

DART

REVISION	DATE

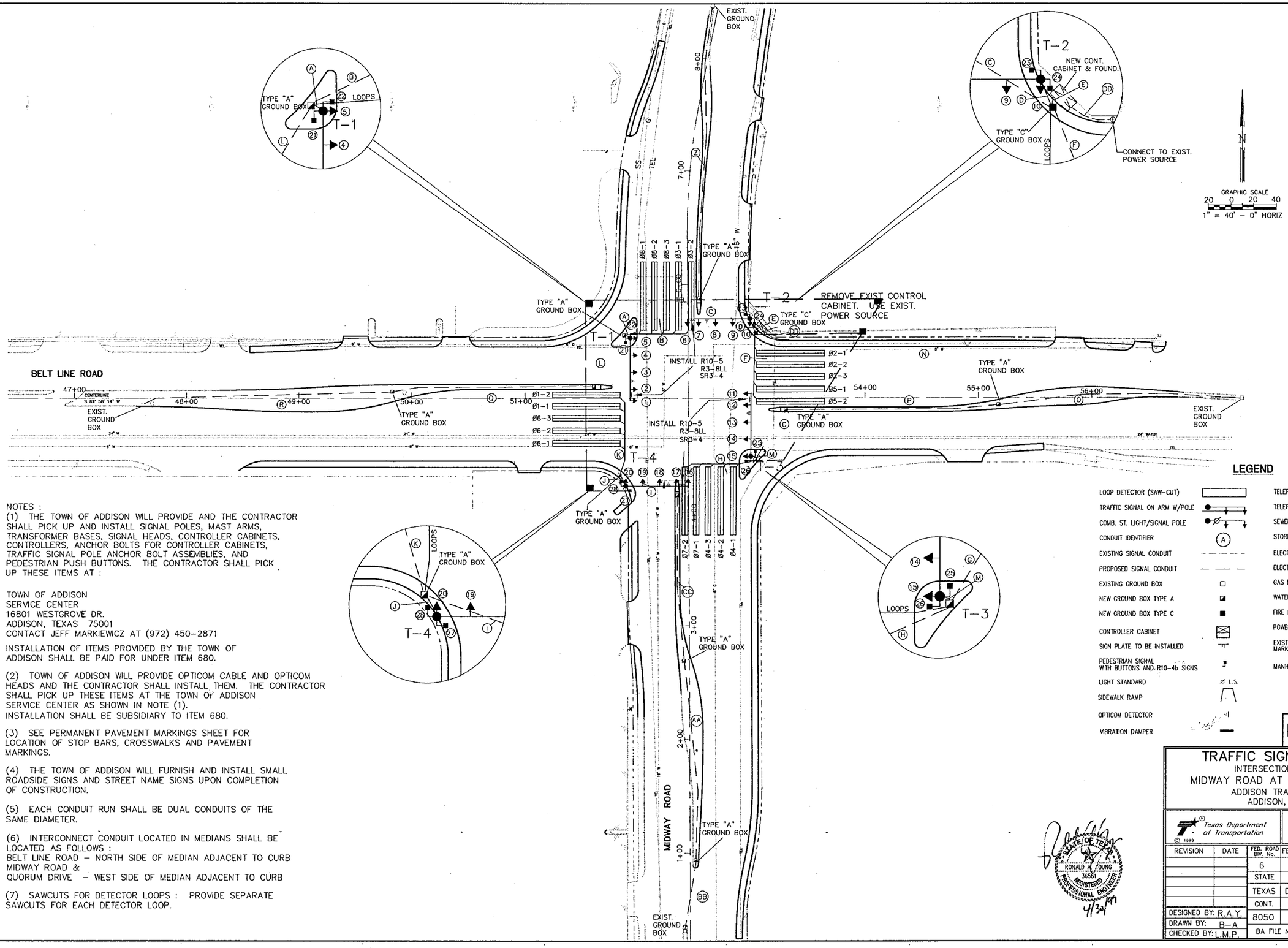
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		40
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

DESIGNED BY:	R.A.Y.
DRAWN BY:	B.A.A.
CHECKED BY:	L.M.P.

BA FILE NAME :

STATE OF TEXAS RONALD A. YOUNG 36561 REGISTERED PROFESSIONAL ENGINEER

4/30/97



NOTES :
(1) THE TOWN OF ADDISON WILL PROVIDE AND THE CONTRACTOR SHALL PICK UP AND INSTALL SIGNAL POLES, MAST ARMS, TRANSFORMER BASES, SIGNAL HEADS, CONTROLLER CABINETS, CONTROLLERS, ANCHOR BOLTS FOR CONTROLLER CABINETS, TRAFFIC SIGNAL POLE ANCHOR BOLT ASSEMBLIES, AND PEDESTRIAN PUSH BUTTONS. THE CONTRACTOR SHALL PICK UP THESE ITEMS AT :

TOWN OF ADDISON
SERVICE CENTER
16801 WESTGROVE DR.
ADDISON, TEXAS 75001
CONTACT JEFF MARKIEWICZ AT (972) 450-2871

INSTALLATION OF ITEMS PROVIDED BY THE TOWN OF ADDISON SHALL BE PAID FOR UNDER ITEM 680.

(2) TOWN OF ADDISON WILL PROVIDE OPTICOM CABLE AND OPTICOM HEADS AND THE CONTRACTOR SHALL INSTALL THEM. THE CONTRACTOR SHALL PICK UP THESE ITEMS AT THE TOWN OF ADDISON SERVICE CENTER AS SHOWN IN NOTE (1). INSTALLATION SHALL BE SUBSIDIARY TO ITEM 680.

(3) SEE PERMANENT PAVEMENT MARKINGS SHEET FOR LOCATION OF STOP BARS, CROSSWALKS AND PAVEMENT MARKINGS.

(4) THE TOWN OF ADDISON WILL FURNISH AND INSTALL SMALL ROADSIDE SIGNS AND STREET NAME SIGNS UPON COMPLETION OF CONSTRUCTION.

(5) EACH CONDUIT RUN SHALL BE DUAL CONDUITS OF THE SAME DIAMETER.

(6) INTERCONNECT CONDUIT LOCATED IN MEDIANS SHALL BE LOCATED AS FOLLOWS :
BELT LINE ROAD – NORTH SIDE OF MEDIAN ADJACENT TO CURB
MIDWAY ROAD &
QUORUM DRIVE – WEST SIDE OF MEDIAN ADJACENT TO CURB

(7) SAWCUTS FOR DETECTOR LOOPS : PROVIDE SEPARATE SAWCUTS FOR EACH DETECTOR LOOP.

LEGEND

LOOP DETECTOR (SAW-CUT)	TELEPHONE LINE U.G. —T—
TRAFFIC SIGNAL ON ARM W/POLE	TELEPHONE LINE O.H. —OH T—
COMB. ST. LIGHT/SIGNAL POLE	SEWER LINE —S—
CONDUIT IDENTIFIER (A)	STORM DRAIN LINE —SD—
EXISTING SIGNAL CONDUIT	ELECTRIC LINE U.G. —E—
PROPOSED SIGNAL CONDUIT	ELECTRIC LINE O.H. —OH E—
EXISTING GROUND BOX	GAS LINE —G—
NEW GROUND BOX TYPE A	WATER LINE —W—
NEW GROUND BOX TYPE C	FIRE HYDRANT
CONTROLLER CABINET	POWER POLE
SIGN PLATE TO BE INSTALLED "I"	EXISTING PAVEMENT MARKINGS
PEDESTRIAN SIGNAL WITH BUTTONS AND R10-4b SIGNS	MANHOLE
LIGHT STANDARD ℄ L.S.	
SIDEWALK RAMP	
OPTICOM DETECTOR	
VIBRATION DAMPER	

SHEET 1 OF 4

BARTON-ASCHMAN ASSOCIATES, INC.

TRAFFIC SIGNAL PLANS
INTERSECTION LAYOUT
MIDWAY ROAD AT BELT LINE ROAD
ADDISON TRANSIT PASS
ADDISON, TEXAS

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REVISION	DATE	FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
		6	CM 97 (449)		4/
		STATE	STATE DIST.	COUNTY	
		TEXAS	DALLAS	DALLAS	
		CONT.	SECT.	JOB	HIGHWAY No.
DESIGNED BY: R.A.Y.		8050	18	034	BELT LINE RD
DRAWN BY: B-A		BA FILE NAME :			
CHECKED BY: L.M.P.					

STATE OF TEXAS · RONALD A. YOUNG · 36581 · REGISTERED PROFESSIONAL ENGINEER · 4/30/97

CABLE TERMINATION CHART

CABLE CONDUCTOR	T-1		T-2		T-3		T-4	
	S.H. No.	INDICATION	S.H. No.	INDICATION	S.H. No.	INDICATION	S.H. No.	INDICATION
WHITE/BLACK	SPARE		SPARE		SPARE		SPARE	
WHITE	COMMON		COMMON		COMMON		COMMON	
RED	3-5	R	8-10	R	13-15	R	18-20	R
GREEN	3-5	G	8-10	G	13-15	G	18-20	G
ORANGE	3-5	Y	8-10	Y	13-15	Y	18-20	Y
GREEN/BLACK	SPARE		SPARE		SPARE		SPARE	
BLACK/WHITE	SPARE		10	→Y	15	→Y	20	→Y
BLUE/BLACK	SPARE		10	→G	15	→G	20	→G
BLACK	1-2	←Y	6-7	←Y	11-12	←Y	16-17	←Y
BLUE	1-2	←G	6-7	←G	11-12	←G	16-17	←G
BLACK/RED	SPARE		SPARE		SPARE		SPARE	
BLUE/RED	21	W	23	W	25	W	27	W
BLUE/WHITE	22	W	24	W	26	W	28	W
RED/BLACK	21	DW	23	DW	25	DW	27	DW
ORANGE/BLACK	22	DW	24	DW	26	DW	28	DW
RED/WHITE	PB-21	Ø8	PB-23	Ø2	PB-25	Ø4	PB-27	Ø6
ORANGE/RED	PB-22	Ø2	PB-24	Ø4	PB-26	Ø6	PB-28	Ø8
WHITE/RED	PBCOMMON		PBCOMMON		PBCOMMON		PBCOMMON	
GREEN/WHITE	SPARE		SPARE		SPARE		SPARE	
RED/GREEN	1-2	←R	6-7	←R	11-12	←R	16-17	←R

SIGNAL HEADS ** NOTE(1)

No.	TYPE	BACKPLATE (12") 3 SEC.	BACKPLATE (12") 4 SEC.	VEH SIG SEC (12")	PED. SIG. SEC.
1	V3LT	1		3	
2	V3LT	1		3	
3	V3	1		3	
4	V3	1		3	
5	V3	1		3	
6	V3LT	1		3	
7	V3LT	1		3	
8	V3	1		3	
9	V3	1		3	
10	V4RT		1	4	
11	V3LT	1		3	
12	V3LT	1		3	
13	V3	1		3	
14	V3	1		3	
15	V4RT		1	4	
16	V3LT	1		3	
17	V3LT	1		3	
18	V3	1		3	
19	V3	1		3	
20	V4RT		1	4	
21-22	143C				2
23-24	143C				2
25-26	143C				2
27-28	143C				2
TOTALS		17	3	63	8

** FOR CONTRACTOR INFORMATION

SMALL SIGN SUMMARY ****

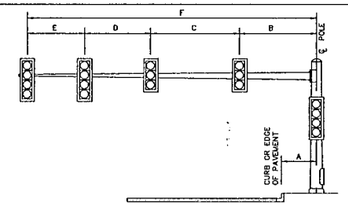
SHT. NO.	SIGN NO.	SIGN TYPE	SIGN TEXT	SIGN DIMEN.	REFLECT. SHEET.	PLYWOOD TYPE A	ALUM. TYPE A	TYPE OF MOUNT
41	X	R10-5 4 EA.	LEFT ON GREEN ARROW ONLY	24" x 30"	C		X	MOUNT ON MAST ARMS T-1, T-2, T-3, T-4
41	X	R3-8LL 4 EA.	ONLY ONLY	30" x 30"	C		X	MOUNT ON MAST ARMS T-1, T-2, T-3, T-4
41	X	SR3-4 4 EA.		30" x 30"	C		X	MOUNT ON MAST ARMS T-1, T-2, T-3, T-4

**** NO SEPARATE PAY ITEM. SUBSIDIARY TO BID ITEM 680.
FOR CONTRACTORS INFORMATION ONLY

REFLECTIVE SHEETING WILL BE DESIGNATED AS :

TYPE A – ENGINEER GRADE
TYPE B – SUPER ENGINEER GRADE
TYPE C – HIGH SPECIFIC INTENSITY

MAST ARM DIMENSION NOTE(1)

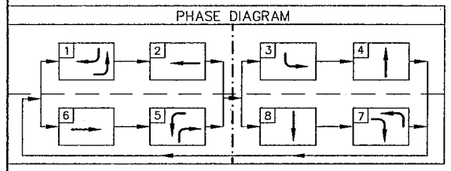


POLE No.	TYPE	A	B	C	D	E	F
T-1		8	15	15	15	10	55
T-2		9	15	15	15	10	55
T-3		6	15	15	15	10	55
T-4		10	15	15	15	10	55

ITEM 628 - ELECTRICAL SERVICE

LOCATION	TYPE	EA
N.E. CORNER OF MIDWAY RD AT BELT LINE RD.	TY S(120/240)000(NS)GS(E)SP(U)	1

PHASE DIAGRAM



FOUNDATIONS - ITEM 656

POLE No.	DRILL SHAFT 24" DIA LF	DRILL SHAFT 30" DIA LF	DRILL SHAFT 36" DIA LF	TRAF SIG CNTRL FND LOCATION	TRAF SIG CNTRL FND CY
T-1	–	–	14	N.E. CORNER MIDWAY RD/ BELT LINE RD	1.1
T-2	–	–	14		
T-3	–	–	14		
T-4	–	–	14		
TOTAL	–	–	56		1.1

DETECTOR DETAILS

LOOP	DIMEN. (FT.)	TURNS	DET. CTR.	DEL INH	EXTEND	DELAY
Ø1-1	5 x 60	1-2-1	PRESENCE		0.5	5
Ø1-2	5 x 60	1-2-1	PRESENCE		0.5	5
Ø2-1	5 x 60	1-2-1	PRESENCE		0.5	5
Ø2-2	5 x 60	1-2-1	PRESENCE		0.5	5
Ø2-3	5 x 60	1-2-1	PRESENCE		0.5	5
Ø2(PED)						
Ø3-1	5 x 60	1-2-1	PRESENCE		0.5	5
Ø3-2	5 x 60	1-2-1	PRESENCE		0.5	5
Ø4-1	5 x 60	1-2-1	PRESENCE		0.5	5
Ø4-2	5 x 60	1-2-1	PRESENCE		0.5	5
Ø4-3	5 x 60	1-2-1	PRESENCE		0.5	5
Ø4(PED)						
Ø5-1	5 x 60	1-2-1	PRESENCE		0.5	5
Ø5-2	5 x 60	1-2-1	PRESENCE		0.5	5
Ø6-1	5 x 60	1-2-1	PRESENCE		0.5	5
Ø6-2	5 x 60	1-2-1	PRESENCE		0.5	5
Ø6-3	5 x 60	1-2-1	PRESENCE		0.5	5
Ø6(PED)						
Ø7-1	5 x 60	1-2-1	PRESENCE		0.5	5
Ø7-2	5 x 60	1-2-1	PRESENCE		0.5	5
Ø8-1	5 x 60	1-2-1	PRESENCE		0.5	5
Ø8-2	5 x 60	1-2-1	PRESENCE		0.5	5
Ø8-3	5 x 60	1-2-1	PRESENCE		0.5	5
Ø8(PED)						
SUBTOTAL						

ITEM 688 - DETECTORS

LOOP	(14 AWG) LOOP WIRE COLOR (L.F.) ** BLU	BLK	ORNG	BRN	GRN		SAW CUT (L.F.)	PED DETECT** (PUSH BTN) NOTE(1) EA.
Ø1-1	315						245	
Ø1-2		325					250	
Ø2-1					280		200	
Ø2-2				290			210	
Ø2-3			300				220	
Ø2(PED)								2
Ø3-1	310						225	
Ø3-2		310					235	
Ø4-1					280		200	
Ø4-2				290			205	
Ø4-3			300				215	
Ø4(PED)								2
Ø5-1	315						230	
Ø5-2		325					245	
Ø6-1					290		210	
Ø6-2				300			225	
Ø6-3			310				235	
Ø6(PED)								2
Ø7-1	290						230	
Ø7-2		300					240	
Ø8-1					270		195	
Ø8-2				280			205	
Ø8-3			290				215	
Ø8(PED)								2
SUBTOTAL	1230	1260	1200	1160	1120		4435	8

** FOR CONTRACTOR INFORMATION

ITEM 618

CONDUIT SUMMARY

TYPE	LENGTH (LF)
4" PVC(BORE)	625
3" PVC(TRENCH)	40
2" PVC(TRENCH)	2770
1 1/2" RM	30
1" PVC *	150

* DETECTOR LEAD-IN PAIRS OR GROUP OF PAIRS VARIABLE LENGTH

ITEM 624

GROUND BOX SUMMARY

TYPE	EA
A	11
C	1

CNDRS INSIDE POLE

SIGNAL POLE	3 CNDR.(2) CABLE (LF)	ITEM 684 TYPE A 5 CNDR. CABLE (LF)	ITEM 684 TYPE A 7 CNDR. CABLE (LF)
T-1	55	255	0
T-2	55	245	10
T-3	55	245	10
T-4	55	245	10
TOTAL	220	990	30

(2) SEE NOTE (2)

CONDUIT RUNS (LF.)

RUN No.	SIZE/TYPE CONDUIT	ITEM 620 ELECTRICAL CONDUCTORS #6 XHHW WIRE	ITEM 620 ELECTRICAL CONDUCTORS #6 BARE WIRE	ITEM 6031 COMMUN CABLE (6 PAIR) (16 AWG)	ITEM 684 TYP. C 2 CONDR 18 AWG	ITEM 684 TYP. A 20 CNDR. CABLE	3 CNDR. OPTICOM CABLE (2)	LENGTH OF RUN
A	1-3"PVC (TRENCH)		1			1	1	10
B	1-4"PVC (BORE)		1	1	10	2	2	75
C	1-4"PVC (BORE)		1	2	10	2	2	65
D	1-3"PVC (TRENCH)		1			1	1	10
E	2-4"PVC (TRENCH)	2	1	4	20	4	4	10
F	1-4"PVC (BORE)		1	2	5	1	1	85
G	1-4" PVC (BORE)		1	1	5	1	1	55
H	1-4" PVC (BORE)			1				80
I	1-4" PVC (BORE)EMPTY							60
J	1-3"PVC (TRENCH)		1			1	1	10
K	1-4" PVC (BORE)		1		5	1	1	90
L	1-4" PVC (BORE)		1	1	5	1	1	55
M	1-3"PVC (TRENCH)		1			1	1	10
O	2-2" PVC (TRENCH)			1				220
P	2-2" PVC (TRENCH)			1				195
Q	2-2" PVC (TRENCH)			1				185
R	2-2" PVC (TRENCH)			1				230
Z	2-2" PVC (TRENCH)			1				225
AA	2-2" PVC (TRENCH)			1				180
BB	1-4" PVC (BORE)			1				60
CC	2-2" PVC (TRENCH)			1				150
DD	1 – 1 1/2" RM	3	1					30
TOTAL		110	505	2050	3025	645	645	

(2) SEE NOTE (2)

NOTES :
(1) THE TOWN OF ADDISON WILL PROVIDE AND THE CONTRACTOR SHALL PICK UP AND INSTALL SIGNAL POLES, MAST ARMS, TRANSFORMER BASES, SIGNAL HEADS, CONTROLLER CABINETS, CONTROLLERS, ANCHOR BOLTS FOR CONTROLLER CABINETS, TRAFFIC SIGNAL POLE ANCHOR BOLT ASSEMBLIES, AND PEDESTRIAN PUSH BUTTONS. THE CONTRACTOR SHALL PICK UP THESE ITEMS AT :

TOWN OF ADDISON
SERVICE CENTER
16801 WESTGROVE DR.
ADDISON, TEXAS 75001
CONTACT JEFF MARKIEWICZ AT (972) 450-2871

INSTALLATION OF ITEMS PROVIDED BY THE TOWN OF ADDISON SHALL BE PAID FOR UNDER ITEM 680.

(2) TOWN OF ADDISON WILL PROVIDE OPTICOM CABLE AND OPTICOM HEADS AND THE CONTRACTOR SHALL INSTALL THEM. THE CONTRACTOR SHALL PICK UP THESE ITEMS AT THE TOWN OF ADDISON SERVICE CENTER AS SHOWN IN NOTE (1). INSTALLATION SHALL BE SUBSIDIARY TO ITEM 680.

(3) ALL ITEMS AND QUANTITIES SHOWN ON THIS SHEET ARE FOR THE MIDWAY ROAD/BELT LINE ROAD INTERSECTION.

(4) THE TOWN OF ADDISON WILL PROVIDE AND INSTALL SMALL ROADSIDE SIGNS UPON COMPLETION OF CONSTRUCTION.

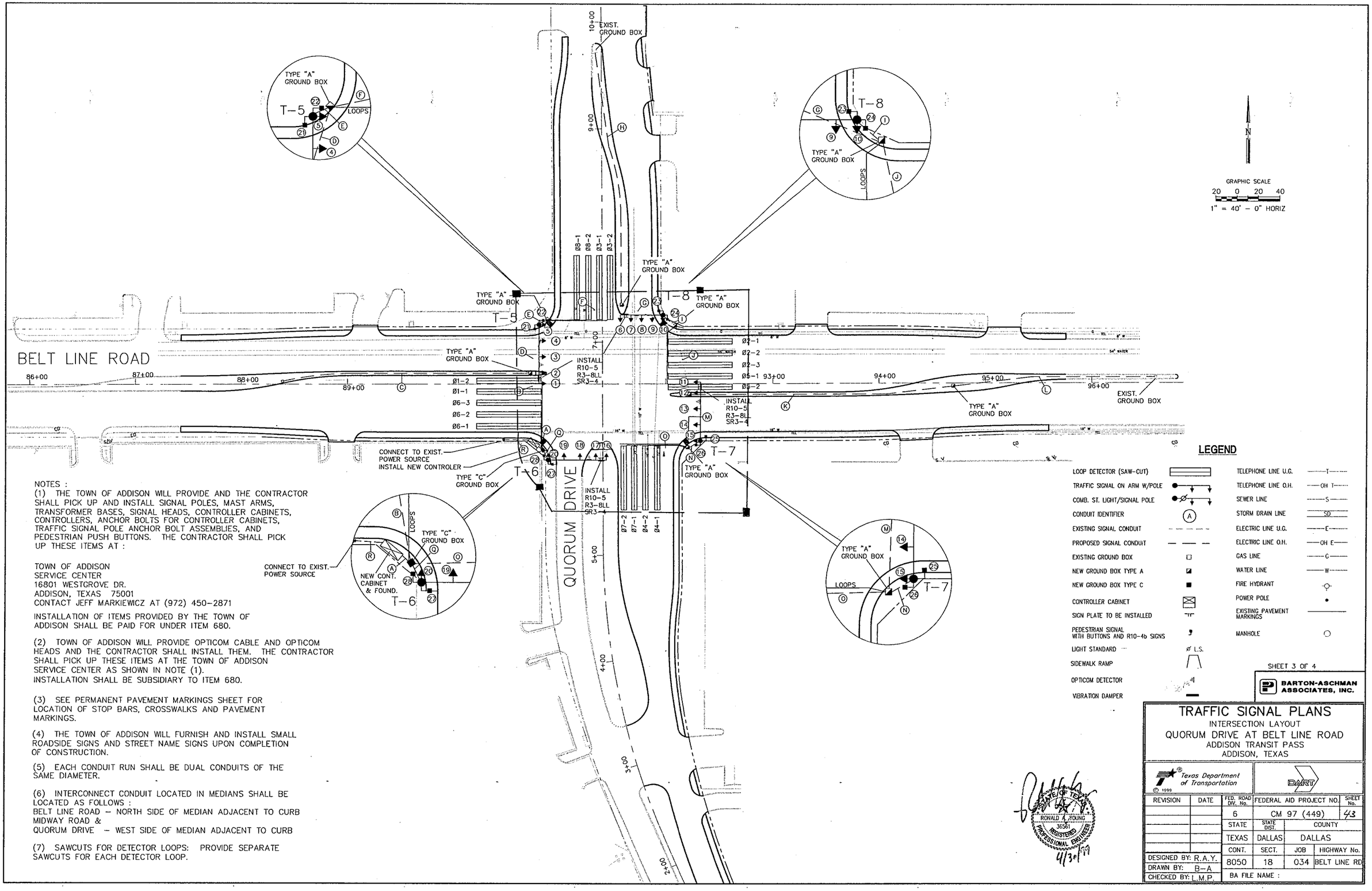
STATE OF TEXAS
RONALD K. YOUNG
36561
REGISTERED
PROFESSIONAL ENGINEER
4/3/99

BARTON-ASCHMAN ASSOCIATES, INC.

TRAFFIC SIGNAL PLANS
QUANTITY SUMMARY
MIDWAY ROAD AT BELT LINE ROAD
ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation © 1999 | DART

REVISION	DATE	FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
		6	CM 97 (449)		42
		STATE	STATE DIST.	COUNTY	
		TEXAS	DALLAS	DALLAS	
		CONT.	SECT.	JOB	HIGHWAY No.
DESIGNED BY: R.A.Y.		8050	18	034	BELT LINE RD
DRAWN BY: B-A					
CHECKED BY: L.M.P.		BA FILE NAME :			



NOTES :

(1) THE TOWN OF ADDISON WILL PROVIDE AND THE CONTRACTOR SHALL PICK UP AND INSTALL SIGNAL POLES, MAST ARMS, TRANSFORMER BASES, SIGNAL HEADS, CONTROLLER CABINETS, CONTROLLERS, ANCHOR BOLTS FOR CONTROLLER CABINETS, TRAFFIC SIGNAL POLE ANCHOR BOLT ASSEMBLIES, AND PEDESTRIAN PUSH BUTTONS. THE CONTRACTOR SHALL PICK UP THESE ITEMS AT :

TOWN OF ADDISON
SERVICE CENTER
16801 WESTGROVE DR.
ADDISON, TEXAS 75001
CONTACT JEFF MARKIEWICZ AT (972) 450-2871

INSTALLATION OF ITEMS PROVIDED BY THE TOWN OF ADDISON SHALL BE PAID FOR UNDER ITEM 680.

(2) TOWN OF ADDISON WILL PROVIDE OPTICOM CABLE AND OPTICOM HEADS AND THE CONTRACTOR SHALL INSTALL THEM. THE CONTRACTOR SHALL PICK UP THESE ITEMS AT THE TOWN OF ADDISON SERVICE CENTER AS SHOWN IN NOTE (1). INSTALLATION SHALL BE SUBSIDIARY TO ITEM 680.

(3) SEE PERMANENT PAVEMENT MARKINGS SHEET FOR LOCATION OF STOP BARS, CROSSWALKS AND PAVEMENT MARKINGS.

(4) THE TOWN OF ADDISON WILL FURNISH AND INSTALL SMALL ROADSIDE SIGNS AND STREET NAME SIGNS UPON COMPLETION OF CONSTRUCTION.

(5) EACH CONDUIT RUN SHALL BE DUAL CONDUITS OF THE SAME DIAMETER.

(6) INTERCONNECT CONDUIT LOCATED IN MEDIANS SHALL BE LOCATED AS FOLLOWS :
BELT LINE ROAD – NORTH SIDE OF MEDIAN ADJACENT TO CURB
MIDWAY ROAD &
QUORUM DRIVE – WEST SIDE OF MEDIAN ADJACENT TO CURB

(7) SAWCUTS FOR DETECTOR LOOPS: PROVIDE SEPARATE SAWCUTS FOR EACH DETECTOR LOOP.

LEGEND

LOOP DETECTOR (SAW-CUT)	TELEPHONE LINE U.G. —T—
TRAFFIC SIGNAL ON ARM W/POLE	TELEPHONE LINE O.H. —OH T—
COMB. ST. LIGHT/SIGNAL POLE	SEWER LINE —S—
CONDUIT IDENTIFIER (A)	STORM DRAIN LINE —SD—
EXISTING SIGNAL CONDUIT	ELECTRIC LINE U.G. —E—
PROPOSED SIGNAL CONDUIT	ELECTRIC LINE O.H. —OH E—
EXISTING GROUND BOX	GAS LINE —G—
NEW GROUND BOX TYPE A	WATER LINE —W—
NEW GROUND BOX TYPE C	FIRE HYDRANT
CONTROLLER CABINET	POWER POLE
SIGN PLATE TO BE INSTALLED	EXISTING PAVEMENT MARKINGS
PEDESTRIAN SIGNAL WITH BUTTONS AND R10-4b SIGNS	MANHOLE
LIGHT STANDARD ⌀ L.S.	
SIDEWALK RAMP	
OPTICOM DETECTOR	
VIBRATION DAMPER	

STATE OF TEXAS
RONALD A. YOUNG
76561
REGISTERED PROFESSIONAL ENGINEER
4/30/99

SHEET 3 OF 4

BARTON-ASCHMAN ASSOCIATES, INC.

TRAFFIC SIGNAL PLANS

INTERSECTION LAYOUT
QUORUM DRIVE AT BELT LINE ROAD
ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation © 1999 | DART

REVISION	DATE

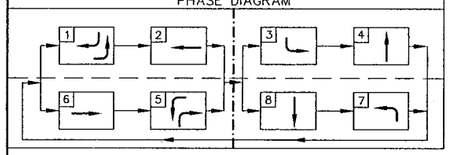
FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
6	CM 97 (449)		43
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

DESIGNED BY: R.A.Y.
DRAWN BY: B-A
CHECKED BY: L.M.P.
BA FILE NAME :

CABLE TERMINATION CHART

CABLE CONDUCTOR	T-5		T-6		T-7		T-8	
	S.H. No.	INDICATION	S.H. No.	INDICATION	S.H. No.	INDICATION	S.H. No.	INDICATION
WHITE/BLACK	SPARE		SPARE		SPARE		SPARE	
WHITE	COMMON		COMMON		COMMON		COMMON	
RED	3-5	R	18-20	R	13-15	R	8-10	R
GREEN	3-5	G	18-20	G	13-15	G	8-10	G
ORANGE	3-5	Y	18-20	Y	13-15	Y	8-10	Y
BLACK/WHITE	SPARE		20	→Y	SPARE		10	→Y
BLUE/BLACK	SPARE		20	→G	SPARE		10	→G
BLACK	1-2	→Y	16-17	→Y	11-12	→Y	6-7	→Y
BLUE	1-2	→G	16-17	→G	11-12	→G	6-7	→G
GREEN/BLACK	SPARE	SPARE	SPARE		SPARE		SPARE	
BLUE/RED	21	W	23	W	25	W	27	W
BLUE/WHITE	22	W	24	W	26	W	28	W
RED/BLACK	21	DW	23	DW	25	DW	27	DW
ORANGE/BLACK	22	DW	24	DW	26	DW	28	DW
RED/WHITE	PB-21	Ø8	PB-23	Ø6	PB-25	Ø4	PB-27	Ø2
ORANGE/RED	PB-22	Ø2	PB-24	Ø8	PB-26	Ø6	PB-28	Ø4
WHITE/RED	PBCOMMON		PBCOMMON		PBCOMMON		PBCOMMON	
BLACK/RED	SPARE		SPARE		SPARE		SPARE	
GREEN/WHITE	SPARE		SPARE		SPARE		SPARE	
RED/GREEN	1-2	→R	16-17	→R	11-12	→R	6-7	→R

PHASE DIAGRAM



SMALL SIGN SUMMARY ****

SHT. NO.	SIGN NO.	SIGN TYPE	SIGN TEXT	SIGN DIMEN.	REFLECT. SHEET.	PLYWOOD TYPE A	ALUM. TYPE A	TYPE OF MOUNT
43	X	R10-5	LEFT ON GREEN ARROW ONLY	24" x 30"	C		X	MOUNT ON MAST ARMS T-5, T-6, T-7, T-8
		4 EA.						
43	X	R3-8LL	ONLY ONLY	30" x 30"	C		X	MOUNT ON MAST ARMS T-5, T-6, T-7, T-8
		4 EA.						
43	X	SR3-4		30" x 30"	C		X	MOUNT ON MAST ARMS T-5, T-6, T-7, T-8
		4 EA.						

**** NO SEPARATE PAY ITEM. SUBSIDIARY TO BID ITEM 680.
FOR CONTRACTORS INFORMATION ONLY

REFLECTIVE SHEETING WILL BE DESIGNATED AS :

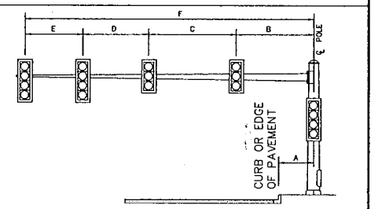
TYPE A - ENGINEER GRADE
TYPE B - SUPER ENGINEER GRADE
TYPE C - HIGH SPECIFIC INTENSITY

SIGNAL HEADS ** NOTE(1)

No.	TYPE	BACKPLATE (12") 3 SEC.	BACKPLATE (12") 4 SEC.	VEH SIG SEC (12")	PED. SIG. SEC.
1	V3LT	1		3	
2	V3LT	1		3	
3	V3	1		3	
4	V3	1		3	
5	V3	1		3	
6	V3LT	1		3	
7	V3LT	1		3	
8	V3	1		3	
9	V3	1		3	
10	V4RT		1	4	
11	V3LT	1		3	
12	V3LT	1		3	
13	V3	1		3	
14	V3	1		3	
15	V3	1		3	
16	V3LT	1		3	
17	V3LT	1		3	
18	V3	1		3	
19	V3	1		3	
20	V4RT		1	4	
21-22	143C				2
23-24	143C				2
25-26	143C				2
27-28	143C				2
TOTALS		18	2	62	8

** FOR CONTRACTOR INFORMATION

MAST ARM DIMENSION NOTE(1)



POLE No.	TYPE	A	B	C	D	E	F
T-5		8	15	15	15	10	55
T-6		8	15	15	15	10	55
T-7		9	15	15	15	10	55
T-8		8	10	10	10	10	40

ITEM 628 - ELECTRICAL SERVICE

LOCATION	TYPE	EA
S.W.. CORNER OF QUORUM DR AT BELT LINE RD.	TY S(120/240)000(NS)GS(E)SP(U)	1

CNDRS INSIDE POLE

SIGNAL POLE	ITEM 684 TYPE A 3 CNDR.(2) CABLE (LF)	5 CNDR. CABLE (LF)	7 CNDR. CABLE (LF)
T-5	55	255	0
T-6	55	245	10
T-7	55	255	0
T-8	55	200	10
TOTAL	220	955	20

(2) SEE NOTE (2)

FOUNDATIONS - ITEM 656

POLE No.	DRILL SHAFT 24" DIA LF	DRILL SHAFT 30" DIA LF	DRILL SHAFT 36" DIA LF	TRAF SIG CNTRL FND LOCATION	TRAF SIG CNTRL FND CY
T-5	-	-	14	S.W. CORNER QUORUM DR/ BELT LINE RD	1.1
T-6	-	-	14		
T-7	-	-	14		
T-8	-	-	14		
TOTAL	-	-	56		1.1

NOTES :
(1) THE TOWN OF ADDISON WILL PROVIDE AND THE CONTRACTOR SHALL PICK UP AND INSTALL SIGNAL POLES, MAST ARMS, TRANSFORMER BASES, SIGNAL HEADS, CONTROLLER CABINETS, CONTROLLERS, ANCHOR BOLTS FOR CONTROLLER CABINETS, TRAFFIC SIGNAL POLE ANCHOR BOLT ASSEMBLIES, AND PEDESTRIAN PUSH BUTTONS. THE CONTRACTOR SHALL PICK UP THESE ITEMS AT :

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16801 WESTGROVE DR.
ADDISON, TEXAS 75001
CONTACT JEFF MARKIEWICZ AT (972) 450-2871

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(3) ALL ITEMS AND QUANTITIES SHOWN ON THIS SHEET ARE FOR THE QUORUM DRIVE/BELT LINE ROAD INTERSECTION.

(4) THE TOWN OF ADDISON WILL PROVIDE AND INSTALL SMALL ROADSIDE SIGNS UPON COMPLETION OF CONSTRUCTION.

DETECTOR DETAILS

ITEM 688 - DETECTORS

LOOP	DIMEN.	TURNS	DET. CTR.	DEL INH	EXTEND	DELAY	(14 AWG) LOOP WIRE COLOR (LF)** BLU	BLK	ORNG	BRN	GRN		SAW CUT (LF)	PED DETECT** (PUSH BTN) NOTE(1) EA
Ø1-1	5 x 60	1-2-1	PRESENCE		0.5	5	325						230	
Ø1-2	5 x 60	1-2-1	PRESENCE		0.5	5		335					240	
Ø2-1	5 x 60	1-2-1	PRESENCE		0.5	5					300		205	
Ø2-2	5 x 60	1-2-1	PRESENCE		0.5	5				310			215	
Ø2-3	5 x 60	1-2-1	PRESENCE		0.5	5			320				225	
Ø2(PED)														2
Ø3-1	5 x 60	1-2-1	PRESENCE		0.5	5	340						230	
Ø3-2	5 x 60	1-2-1	PRESENCE		0.5	5		350					240	
Ø4-1	5 x 60	1-2-1	PRESENCE		0.5	5					360		210	
Ø4-2	5 x 60	1-2-1	PRESENCE		0.5	5				370			220	
Ø4(PED)														2
Ø5-1	5 x 60	1-2-1	PRESENCE		0.5	5	340						230	
Ø5-2	5 x 60	1-2-1	PRESENCE		0.5	5		350					240	
Ø6-1	5 x 60	1-2-1	PRESENCE		0.5	5					305		200	
Ø6-2	5 x 60	1-2-1	PRESENCE		0.5	5				310			220	
Ø6-3	5 x 60	1-2-1	PRESENCE		0.5	5			320				230	
Ø6(PED)														2
Ø7-1	5 x 60	1-2-1	PRESENCE		0.5	5	330						230	
Ø7-2	5 x 60	1-2-1	PRESENCE		0.5	5		340					240	
Ø8-1	5 x 60	1-2-1	PRESENCE		0.5	5					315		210	
Ø8-2	5 x 60	1-2-1	PRESENCE		0.5	5				325			220	
Ø8(PED)														2
					SUBTOTAL		1335	1375	640	1315	1280		4035	8

** FOR CONTRACTOR INFORMATION

ITEM 618

CONDUIT SUMMARY

TYPE	LENGTH (LF)
4" PVC(TRENCH)	20
4" PVC (BORE)	540
3" PVC (TRENCH)	40
2" PVC (TRENCH)	1900
1 1/2" RM	30
1" PVC *	170

* DETECTOR LEAD-IN PAIRS OR GROUP OF PAIRS VARIABLE LENGTH

ITEM 624

GROUND BOX SUMMARY

TYPE	EA
A	7
C	1

CONDUIT RUNS (LF)

RUN No.	SIZE/TYPE CONDUIT	ITEM 620 ELECTRICAL CONDUCTORS #6 XHHW WIRE	ITEM 620 ELECTRICAL CONDUCTORS #6 BARE WIRE	ITEM 6031 COMMUN CABLE (6 PAIR) (16 AWG)	ITEM 684 TYP. C 2 CONDR 18 AWG	ITEM 684 TYP. A 20 CNDR. CABLE	3 CNDR. OPTICOM CABLE (2)	LENGTH OF RUN
A	2-4" PVC (TRENCH)	2	1	3	18	4	4	10
B	1-4" PVC (BORE)		1	2	4	1	1	80
C	2-2" PVC (TRENCH)			1				240
D	1-4" PVC (BORED)		1	1	4	1	1	55
E	1-3" PVC (TRENCH)		1			1	1	10
F	1-4" PVC (BORED)		1	1				80
G	1-4" PVC (BORED)EMPTY							55
H	2-2" PVC (TRENCH)			1				250
I	1-3" PVC (TRENCH)		1			1	1	10
J	1-4" PVC (BORED)		1		5	1	1	65
K	2-2" PVC (TRENCH)			1				250
L	2-2" PVC (TRENCH)			1				210
M	1-4" PVC (BORED)		1	1	5	1	1	55
N	1-3" PVC (TRENCH)		1			1	1	10
O	1-4" PVC (BORED)		1	1	9	2	2	150
Q	1-3" PVC (TRENCH)		1			1	1	10
R	1 - 1 1/2" RM	3	1					30
	TOTAL	110	565	1480	2670	635	635	

(2) SEE NOTE (2)

STATE OF TEXAS
RONALD A. YOUNG
36561
REGISTERED PROFESSIONAL ENGINEER
4/30/99

SHEET 4 OF 4

BARTON-ASCHMAN ASSOCIATES, INC.

TRAFFIC SIGNAL PLANS
QUANTITY SUMMARY
QUORUM DRIVE AT BELT LINE ROAD
ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation © 1999 | DART

REVISION	DATE	FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
		6	CM 97 (449)	44
		STATE	STATE DIST.	COUNTY
		TEXAS	DALLAS	DALLAS
		CONT.	SECT.	JOB	HIGHWAY No.
DESIGNED BY: R.A.Y.		8050	18	034	BELT LINE RD
DRAWN BY: B-A		BA FILE NAME :			
CHECKED BY: L.M.P.					

ITEM 618 CONDUIT SUMMARY

LOCATION	CONDUIT (RM)(1 1/2")	CONDUIT (PVC) (SCHD 40)(1")	CONDUIT (PVC) (SCHD 40)(2")	CONDUIT (PVC) (SCHD 40)(3")	CONDUIT (PVC) (SCHD 40)(4")	CONDUIT (PVC) (SCHD 40)(4") (BORED)
	L.F.	L.F.	L.F.	L.F.	L.F.	L.F.
MIDWAY ROAD AT BELT LINE ROAD	30	150	2770	40	20	625
QUORUM DRIVE AT BELT LINE ROAD	30	170	1900	40	20	540
ROADWAY ILLUMINATION						
MIDWAY ROAD AT BELT LINE ROAD			825			
ROADWAY ILLUMINATION						
QUORUM DRIVE AT BELT LINE ROAD			1015			
TOTAL	60	320	6510	80	40	1165

ITEM 624 GROUND BOX SUMMARY

LOCATION	TYPE A	TYPE C
	EA	EA
MIDWAY ROAD AT BELT LINE ROAD	11	1
QUORUM DRIVE AT BELT LINE ROAD	7	1
TOTAL	18	2

ITEM 656 SIGNAL FOUNDATION SUMMARY

LOCATION	36" DIA (36-B)	CNTRL FND
	L.F.	C.Y.
MIDWAY ROAD AT BELT LINE ROAD	56	1.1
QUORUM DRIVE AT BELT LINE ROAD	56	1.1
TOTAL	112	2.2

ITEM 688 DETECTOR/SAWCUT SUMMARY

LOCATION		SAWCUT	
		L.F.	
MIDWAY ROAD AT BELT LINE ROAD		4435	
QUORUM DRIVE AT BELT LINE ROAD		4035	
TOTAL		8470	

ITEM 6010 SALV TRAF SIGNALS

LOCATION	
	EA
MIDWAY ROAD AT BELT LINE ROAD	1
QUORUM DRIVE AT BELT LINE ROAD	1
TOTAL	2

ITEM 620 CONDUCTOR SUMMARY

LOCATION	#6 BARE WIRE	#6 XHHW WIRE
	L.F.	L.F.
MIDWAY ROAD AT BELT LINE ROAD	505	110
QUORUM DRIVE AT BELT LINE ROAD	565	110
TOTAL	1070	220

ITEM 628 ELECTRICAL SERVICE SUMMARY

LOCATION	TY S(120/240)000(NS)GS(E)SP(U)
	EA
MIDWAY ROAD AT BELT LINE ROAD	1
QUORUM DRIVE AT BELT LINE ROAD	1
TOTAL	2

ITEM 680 INSTAL OF HWY TRAF SIG (SYSTEM)

LOCATION	
	EA
MIDWAY ROAD AT BELT LINE ROAD	1
QUORUM DRIVE AT BELT LINE ROAD	1
TOTAL	2

ITEM 684 SIGNAL CABLE SUMMARY

LOCATION	(TY A) (5 CONDR)(16 AWG)	(TY A) (7 CONDR)(16 AWG)	(TY A) (20 CONDR)(12 AWG)	(TY C) (2 CONDR)(18 AWG)
	L.F.	L.F.	L.F.	L.F.
MIDWAY ROAD AT BELT LINE ROAD	990	30	645	3025
QUORUM DRIVE AT BELT LINE ROAD	955	20	635	2670
TOTAL	1945	50	1280	5695

ITEM 6031 COMMUNICATIONS CABLE SUMMARY

LOCATION	COMMUN CABLE (6 PAIR)(16 AWG)
	L.F.
MIDWAY ROAD AT BELT LINE ROAD	2050
QUORUM DRIVE AT BELT LINE ROAD	1480
TOTAL	3530

STATE OF TEXAS
RONALD A. YOUNG
3858
REGISTERED
PROFESSIONAL ENGINEER
4/30/99

BARTON-ASCHMAN ASSOCIATES, INC.

TRAFFIC SIGNAL & ILLUMINATION SUMMARY SHEET

ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation © 1999

DART

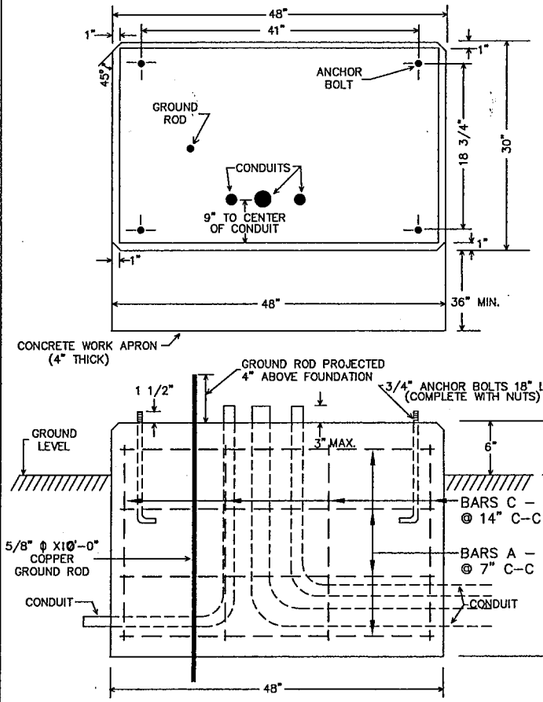
REVISION	DATE

FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.	SHEET No.
6	CM 97 (449)	45

STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	BELT LINE RD

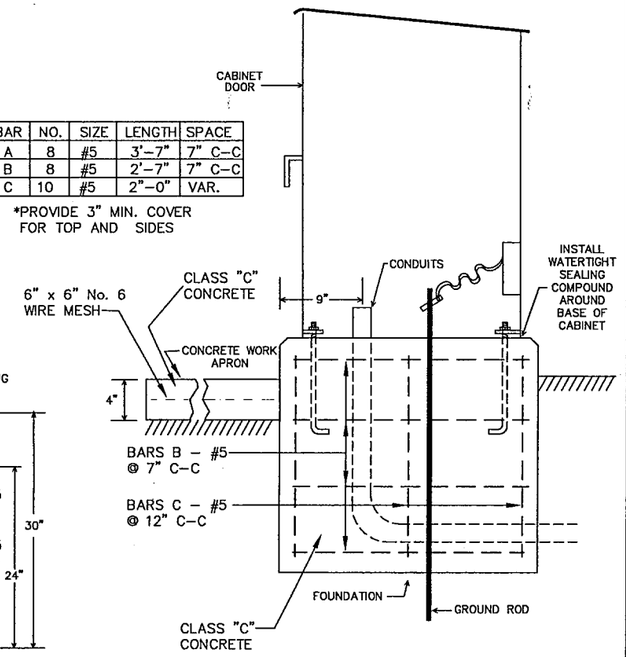
DESIGNED BY: R.A.Y.
DRAWN BY: B-A
CHECKED BY: L.M.P.
BA FILE NAME :

BASE MOUNTED CONTROLLER CABINET FOUNDATION DETAILS



BAR	NO.	SIZE	LENGTH	SPACE
A	8	#5	3'-7"	7" C-C
B	8	#5	2'-7"	7" C-C
C	10	#5	2"-0"	VAR.

*PROVIDE 3" MIN. COVER FOR TOP AND SIDES



BARTON-ASCHMAN ASSOCIATES, INC.

TRAFFIC SIGNAL DETAILS

ADDISON TRANSIT PASS
ADDISON, TEXAS

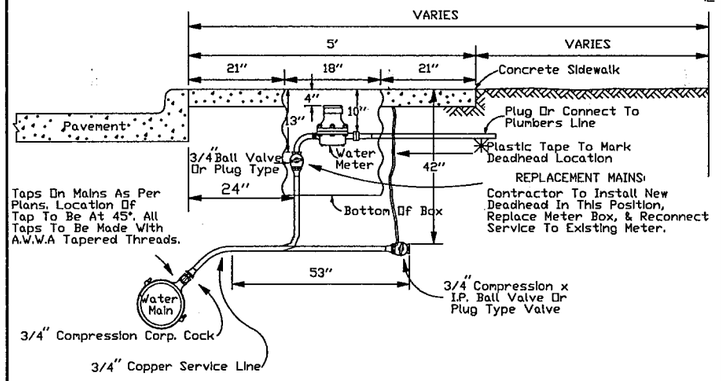
DART

REVISION	DATE

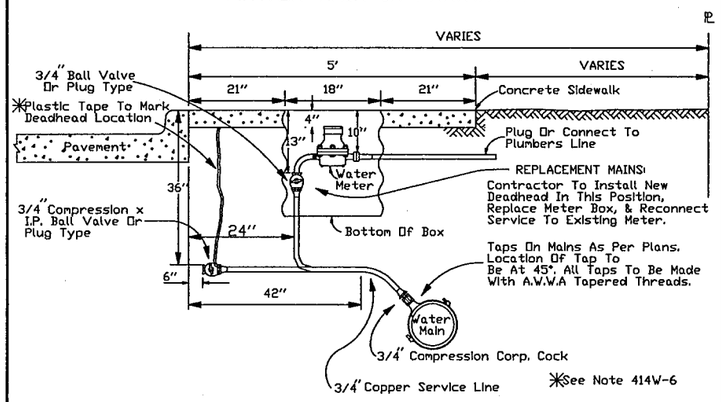
FED. ROAD DIV. No.	FEDERAL AID PROJECT No.		SHEET No.
6	CM 97 (449)		46
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY No.
8050	18	034	
BA FILE NAME :			

DESIGNED BY:	R.A.Y.
DRAWN BY:	B-A
CHECKED BY:	L.M.P.

WATER MAIN IN STREET



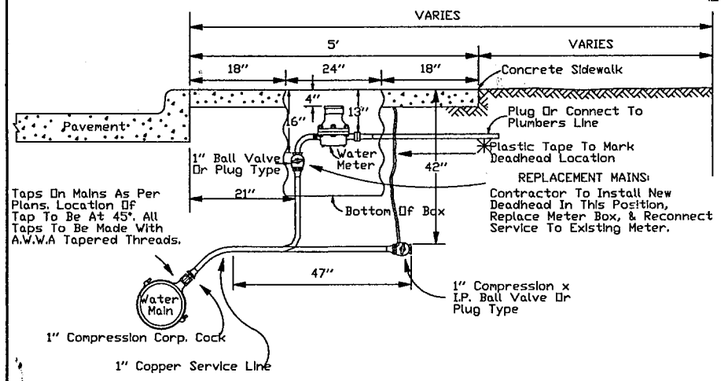
WATER MAIN IN PARKWAY



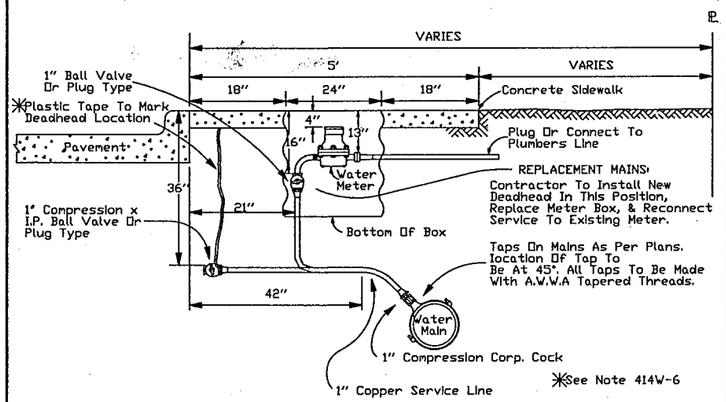
TOWN OF ADDISON

3/4" WATER SERVICE INSTALLATIONS (SIDEWALK ADJACENT TO CURB)

WATER MAIN IN STREET



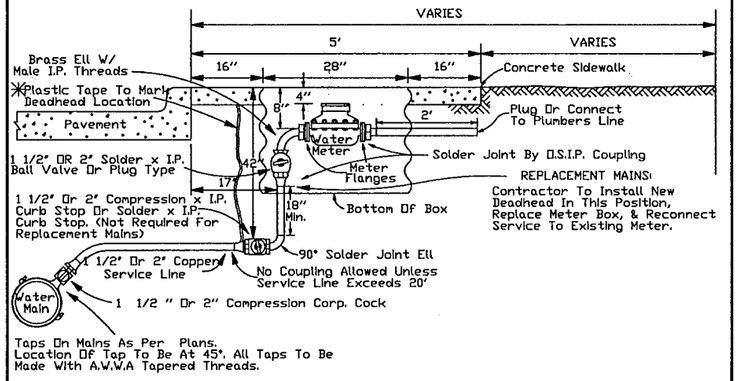
WATER MAIN IN PARKWAY



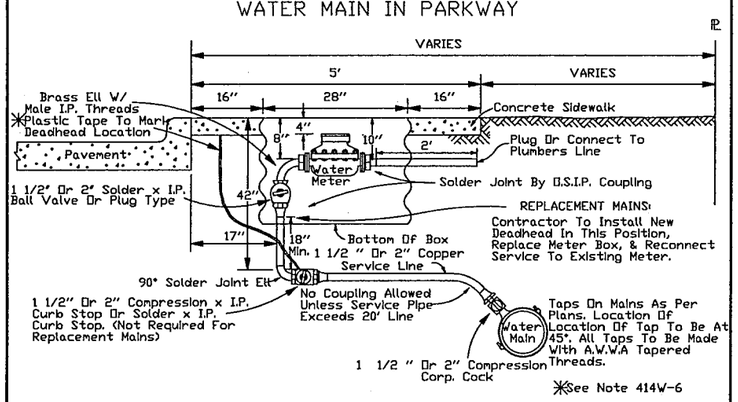
TOWN OF ADDISON

1" WATER SERVICE INSTALLATIONS (SIDEWALK ADJACENT TO CURB)

WATER MAIN IN STREET



WATER MAIN IN PARKWAY



TOWN OF ADDISON

1 1/2" OR 2" WATER SERVICE INSTALLATIONS (SIDEWALK ADJACENT TO CURB)

STATE OF TEXAS
RONALD A. YOUNG
36581
REGISTERED
PROFESSIONAL ENGINEER
4/23/97

SHEET 1 OF 3

BARTON—ASCHMAN ASSOCIATES, INC.

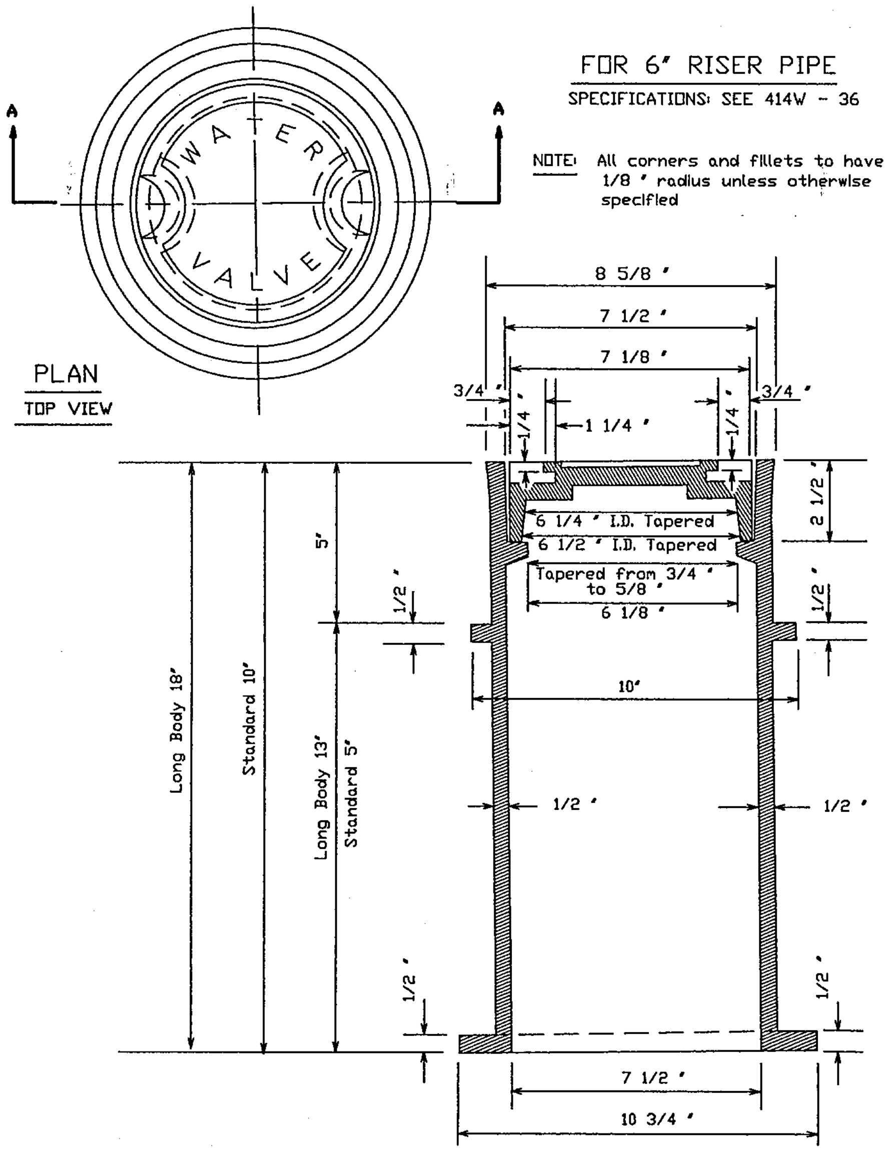
WATER ADJUSTMENT DETAILS

ADDISON TRANSIT PASS
ADDISON, TEXAS

Texas Department of Transportation ©1999

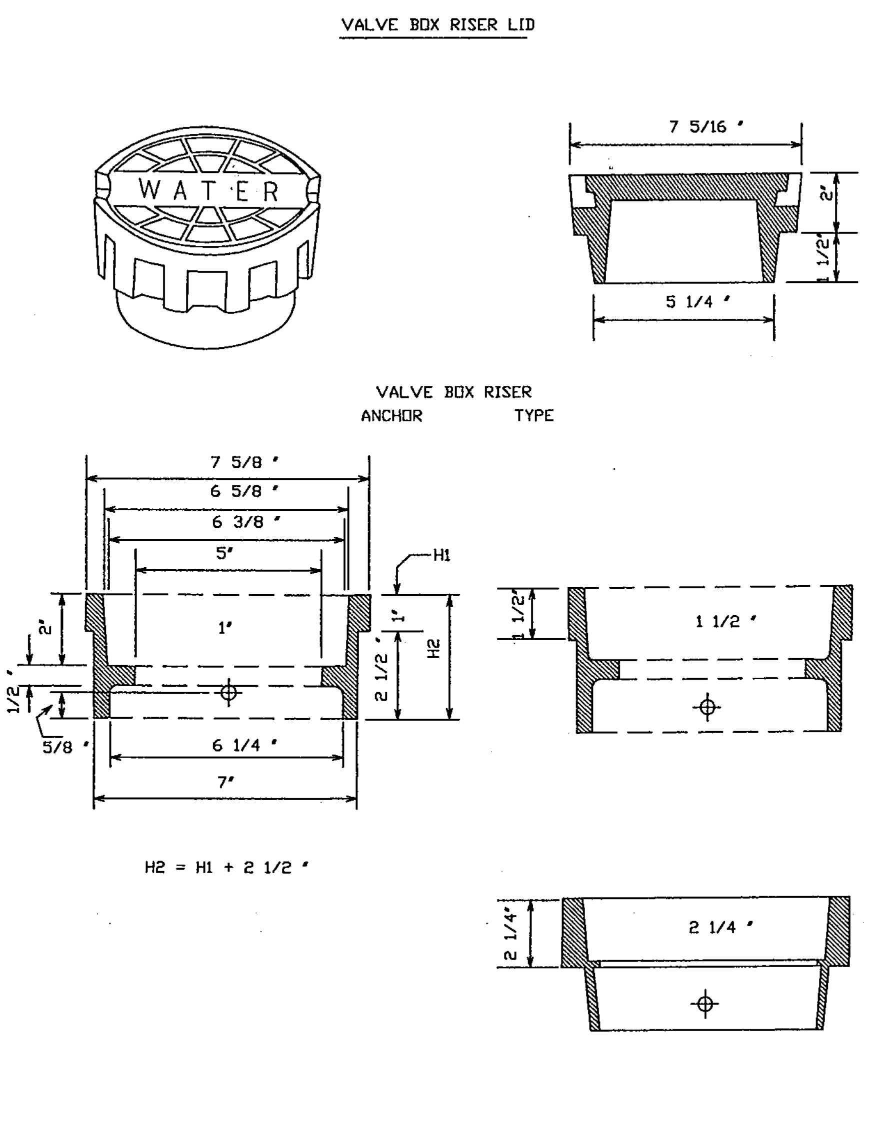
DART

REVISION	DATE	FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
		6	CM 97 (449)		47
		STATE	STATE DIST.	COUNTY	
		TEXAS	DALLAS	DALLAS	
		CONT.	SECT.	JOB	HIGHWAY No.
DESIGNED BY: R.A.Y.		8050	18	034	BELT LINE RD
DRAWN BY: B-A		BA FILE NAME :			
CHECKED BY: L.M.P.					



VALVE STACK COVER & LID

TOWN OF ADDISON



VALVE BOX RISER LID

VALVE BOX RISER

TOWN OF ADDISON

usr/remote/cecil/appurt/stdtapa2.dgn

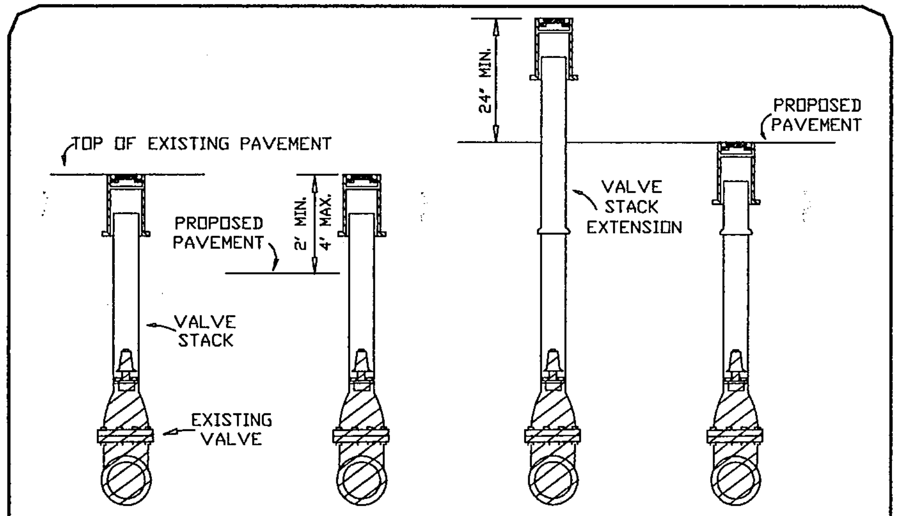


FIG. 1 FIG. 2 FIG. 3 FIG. 4

NOTE: The valve cover must always be exposed so the valve can be operated at any time. Exceptions must be approved by the engineer in advance.

The existing valve cover and lid may be reused if not damaged during removal. If the valve cover and/or lid is damaged at any time prior to final acceptance, it will be replaced by the contractor at no cost to the City.

FIGURE 1 EXISTING VALVE STACK AND COVER

FIGURE 2 PRE-GRADING

1. If the proposed paving is 2' to 4' below the top of the existing valve cover , the entire valve stack and cover may be left in place until final adjustment for paving.

FIGURE 3 PRE-GRADING

2. If the proposed paving is less than 2' below the top of the existing valve cover, the valve stack must be extended.
3. The cover is removed and an extension of cast iron pipe only is installed on the existing valve stack. The valve stack and extension must be properly aligned so that the valve can be operated properly. The extension must be connected to the existing valve stack with a bell and rubber gasket or a one piece rubber coupling secured and made water tight by two stainless steel bands approved by the engineer.

FIGURE 4 PRE-PAVING

4. The valve stack or extension is cut to a point not more than 3' below the proposed top of paving.
5. The valve cover is installed over the valve stack or extension to the top of the paving grade.

TOWN OF ADDISON

ADJUSTMENT OF VALVE STACK

DATE: MARCH 1991 FILE: 414A.4

SHEET 2 OF 3

BARTON-ASCHMAN ASSOCIATES, INC.

WATER ADJUSTMENT DETAILS

ADDISON TRANSIT PASS
ADDISON, TEXAS

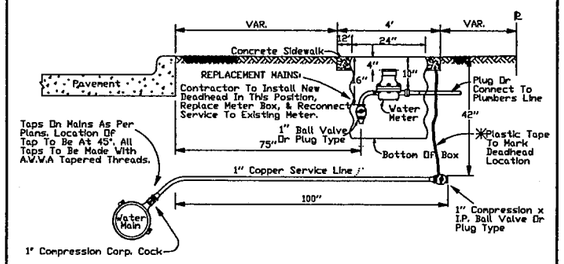
Texas Department of Transportation © 1999

DART

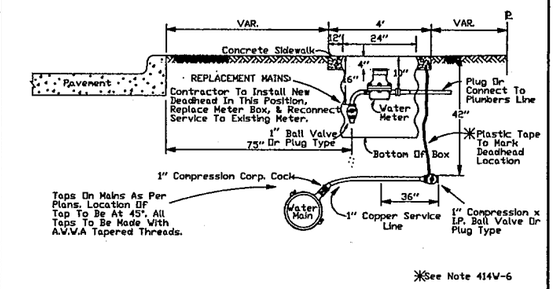
STATE OF TEXAS
RONALD A. YOUNG
36561
REGISTERED PROFESSIONAL ENGINEER
4/23/97

REVISION	DATE	FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
		6	CM 97 (449)		48
		STATE	STATE DIST.	COUNTY	
		TEXAS	DALLAS	DALLAS	
		CONT.	SECT.	JOB	HIGHWAY No.
DESIGNED BY: R.A.Y.		8050	18	034	BELT LINE RD
DRAWN BY: B-A					
CHECKED BY: L.M.P.		BA FILE NAME :			

WATER MAIN IN STREET



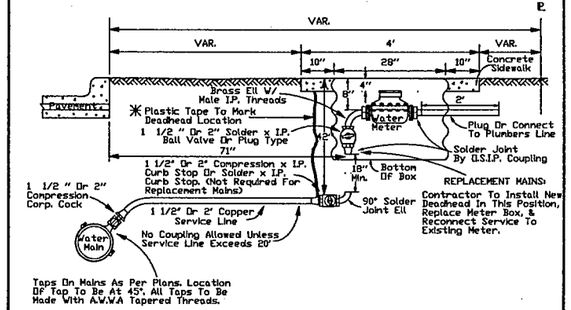
WATER MAIN IN PARKWAY



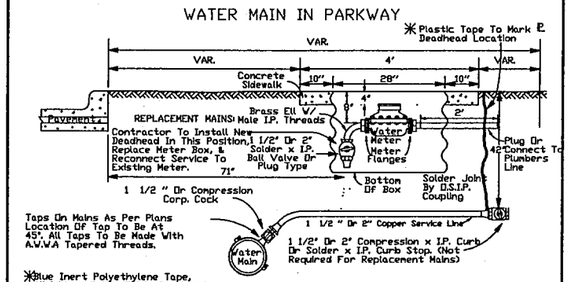
TOWN OF ADDISON

1" WATER SERVICE INSTALLATIONS
(SIDEWALK 5' FROM CURB)

WATER MAIN IN STREET

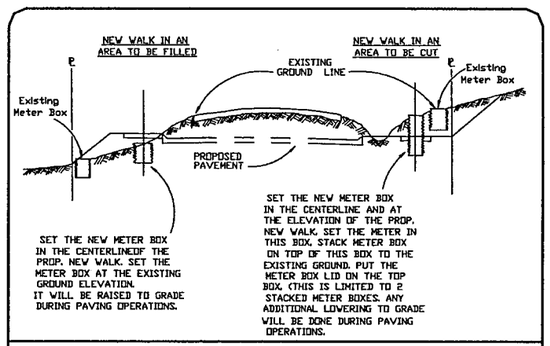


WATER MAIN IN PARKWAY

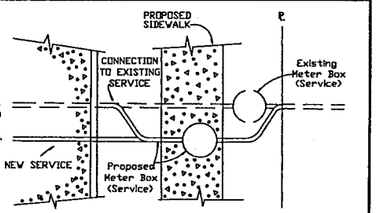


TOWN OF ADDISON

1 1/2" OR 2" WATER SERVICE INSTALLATIONS
(SIDEWALK 5' FROM CURB)



A NEW WATER SERVICE IS INSTALLED TO THE NEW BOX. A LINE IS RUN FROM THE NEW BOX TO THE PROPERTY LINE NEXT TO THE EXISTING HOUSE LINE AND TURNED UP WITH A CURB STOP. AFTER FLUSHING, THE NEW LINE IS CONNECTED TO THE EXISTING HOUSE LINE AT THE PROPERTY LINE.



If a new service is installed to replace an existing service to the existing main, the connection will be made as follows:

Existing Main Under Pressure. Connect the new copper pipe to the existing corporation cock on the main.

Existing Main Not Under Pressure. Tap the existing main a minimum of 1" from the existing tap and install a new corporation cock and service. Remove the existing corporation cock and plug the tap with a plug approved by the engineer.

If the new copper pipe is connected to the existing copper pipe, it shall be accomplished with the use of an approved compression type coupling.

If any existing water service is galvanized pipe, it must be replaced to the existing main with a new copper service.

TOWN OF ADDISON

METER BOX PLACEMENT

SHEET 3 OF 3

BARTON-ASCHMAN ASSOCIATES, INC.

WATER ADJUSTMENT DETAILS

ADDISON TRANSIT PASS
ADDISON, TEXAS

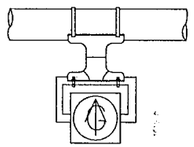
Texas Department of Transportation ©1999

DART

REVISION	DATE	FED. ROAD DIV. No.	FEDERAL AID PROJECT NO.		SHEET No.
		6	CM 97 (449)		49
		STATE	STATE DIST.	COUNTY	
		TEXAS	DALLAS	DALLAS	
		CONT.	SECT.	JOB	HIGHWAY No.
DESIGNED BY: R.A.Y.		8050	18	034	BELT LINE RD
DRAWN BY: B-A		BA FILE NAME :			
CHECKED BY: L.M.P.					

STATE OF TEXAS
RONALD A. YOUNG
36561
REGISTERED
PROFESSIONAL ENGINEER
4/23/97

FILE NAME: [322,153]SIGNALS.DGN



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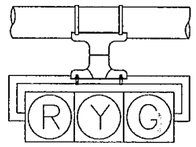

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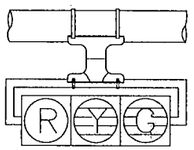

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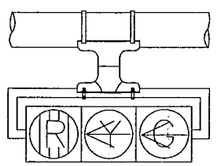

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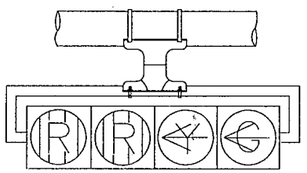

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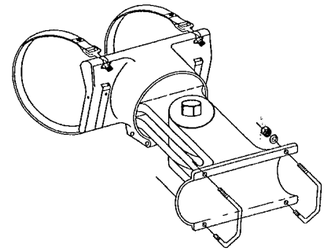
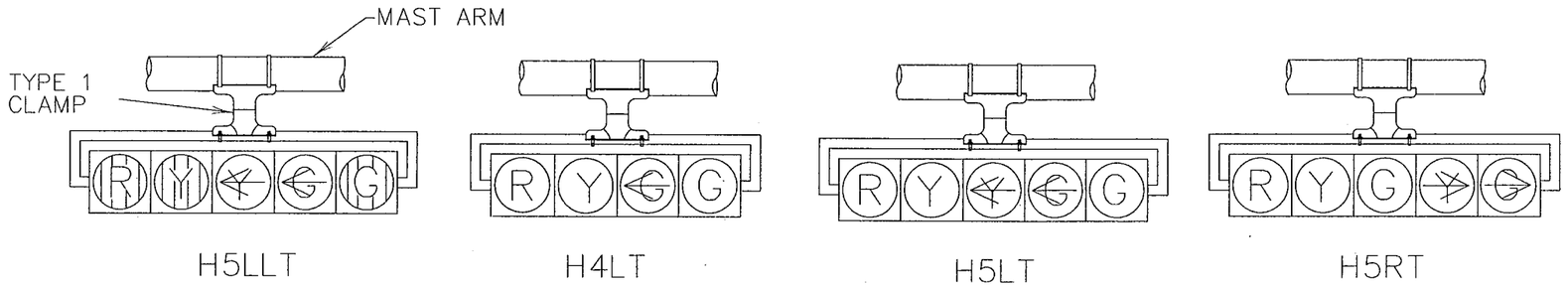


TYPE 2 CLAMP KIT

SHALL BE INSTALLED WHEN ROTATION ABOUT THE HORIZONTAL AND VERTICAL AXES ARE NEEDED.



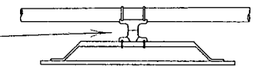
H5LLT

H4LT

H5LT

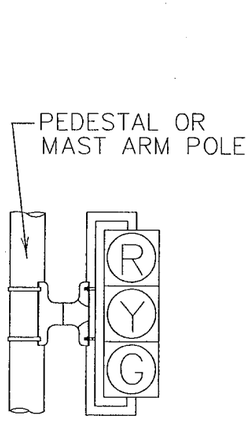
H5RT

TYPE 1 CLAMP



ONE (1) CLAMP SHALL BE USED ON SIGNS LESS THAN OR EQUAL TO 5'-0" IN LENGTH.

TWO (2) CLAMPS SHALL BE USED ON SIGNS GREATER THAN 5'-0" IN LENGTH.



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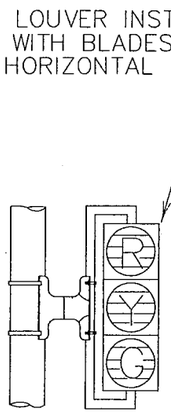

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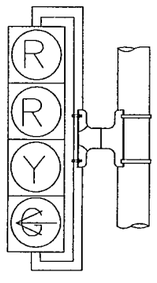

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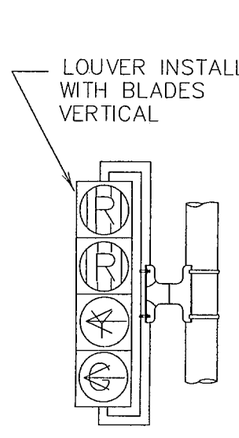

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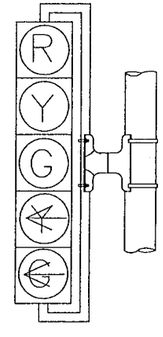
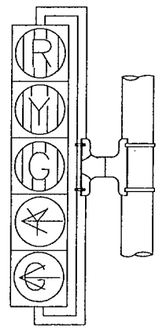


V5LT



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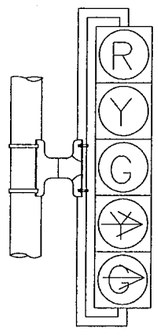

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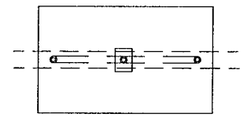
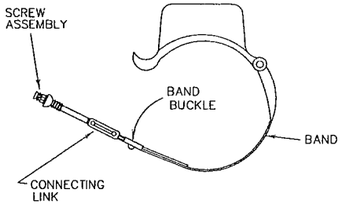


SIGN OR DAMPENING DEVICE ATTACHMENT FOR MAST ARMS



TYPE 1 AND 2 CLAMPS

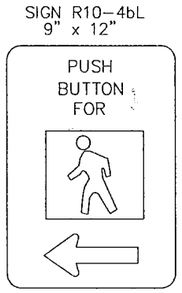
NOTES:

1. VEHICLE SIGNAL HEADS SHALL BE MOUNTED WITH TYPE 1 CLAMP AND APPROPRIATE TUBING.
2. ALL POLE MOUNTED VEHICLE HEADS SHALL BE INSTALLED ON THE AWAY-FROM-TRAFFIC SIDE OF THE PEDESTAL OR MAST ARM POLE.
3. ALL DAMPING DEVICES SHALL BE 18" TO 2' WIDE BY 4' IN LENGTH.

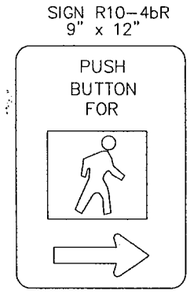
TRAFFIC SIGNAL HEAD IDENTIFICATION

DALLAS DISTRICT STANDARD

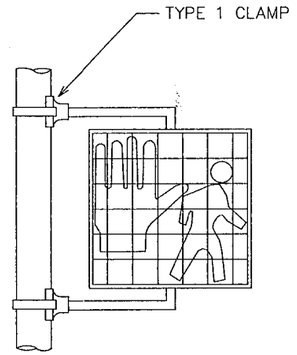
FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	CM 97 (449)		50
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
8050	18	034	BELT LINE



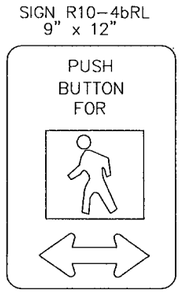
PEDESTRIAN PUSHBUTTON
SIGN DETAILS



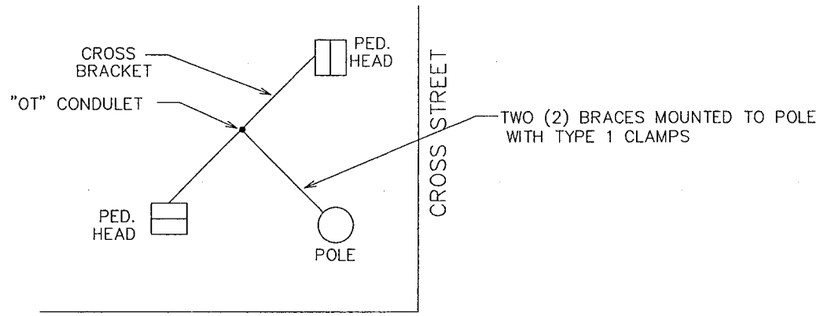
PEDESTRIAN PUSHBUTTON
SIGN DETAILS



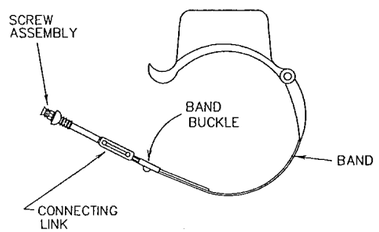
PEDESTRIAN SIGNAL HEAD MOUNTING
FOR ONE PEDESTRIAN SIGNAL HEAD
152A



PEDESTRIAN PUSHBUTTON
SIGN DETAILS



PEDESTRIAN SIGNAL HEAD MOUNTING
FOR TWO PEDESTRIAN SIGNAL HEADS
143C



TYPE 1 CLAMP

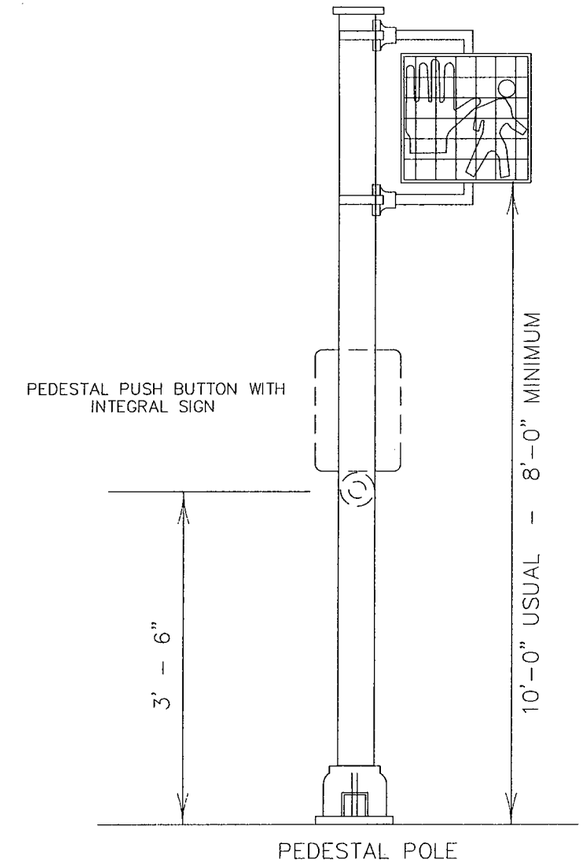
⚠1 NOTE: CLAM SHELL MOUNTING HARDWARE MAY BE USED INSTEAD OF MOUNTING HARDWARE SHOWN ABOVE, AS APPROVED BY THE ENGINEER.
ICC P/N 4805 OR McCAIN QUICKMOUNT OR APPROVED EQUAL.

NOTES:

1. PEDESTRIAN SIGNAL HEADS SHALL BE MOUNTED WITH TYPE 1 CLAMPS AND APPROPRIATE TUBING.
2. ALL PEDESTRIAN SIGNAL HEADS SHALL BE INSTALLED ON THE AWAY-FROM-TRAFFIC SIDE OF THE PEDESTAL OR MAST ARM POLE.
3. ALL WIRING FOR PEDESTRIAN SIGNALS SHALL BE TOTALLY ENCLOSED WITHIN THE SIGNAL MOUNTING HARDWARE.
4. ALL PEDESTRIAN SIGNAL HEADS AND PUSH BUTTON SIGNS SHALL DISPLAY THE SYMBOLIZED MESSAGES SHOWN ABOVE.

NOTE:

THE POLE ON THIS DRAWING IS SHOWN AS AN EXAMPLE ONLY. POLES OF SIMILAR DESIGN FOR ANY CROSS SECTION WHICH MEET THE SPECIFICATIONS AND REQUIREMENTS SHOWN ON THESE DRAWINGS AND ARE APPROVED BY THE ENGINEER WILL BE DEEMED ACCEPTABLE.



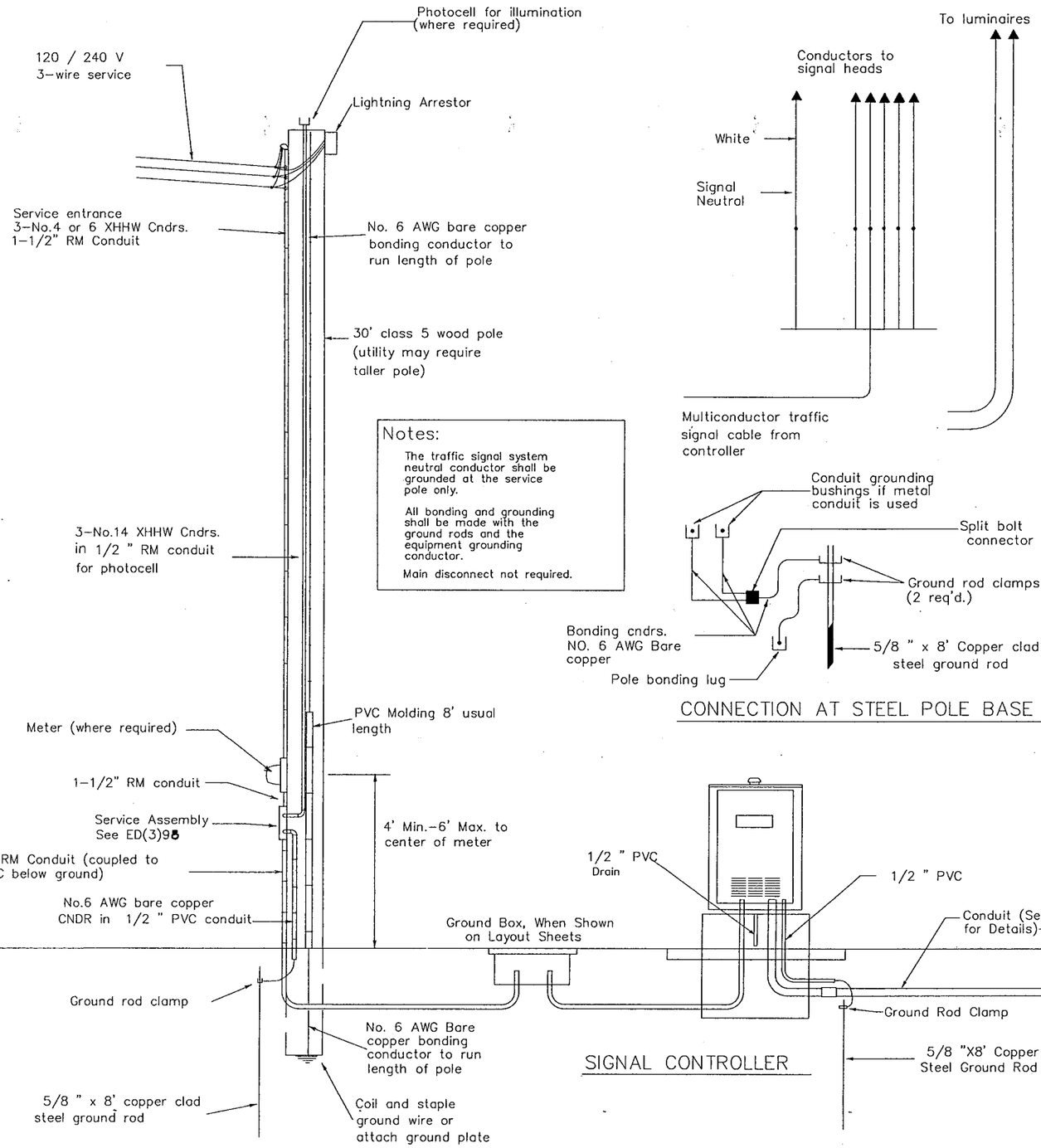
⚠1 ALTERNATIVE MOUNTING METHOD
revised 12-92

DALLAS DISTRICT STANDARD

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	CM 97 (449)		51
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
8050	18	034	BELT LINE

PEDESTRIAN SIGNAL HEAD IDENTIFICATION

FILE NAME: [322,153]SIGNALS.DGN



SERVICE POLE

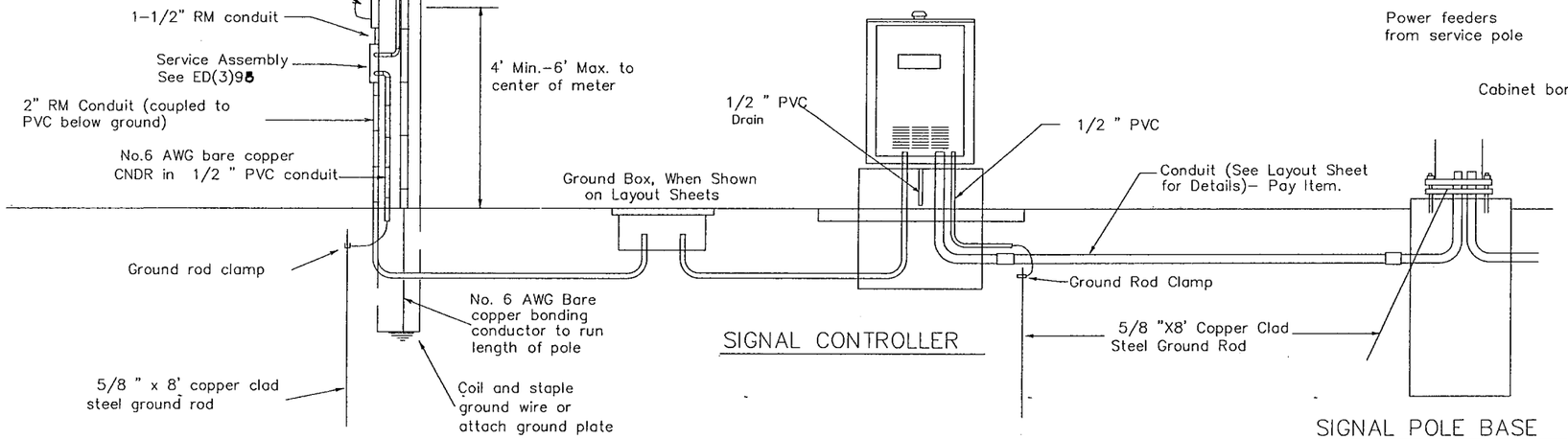
Notes:

The traffic signal system neutral conductor shall be grounded at the service pole only.

All bonding and grounding shall be made with the ground rods and the equipment grounding conductor.

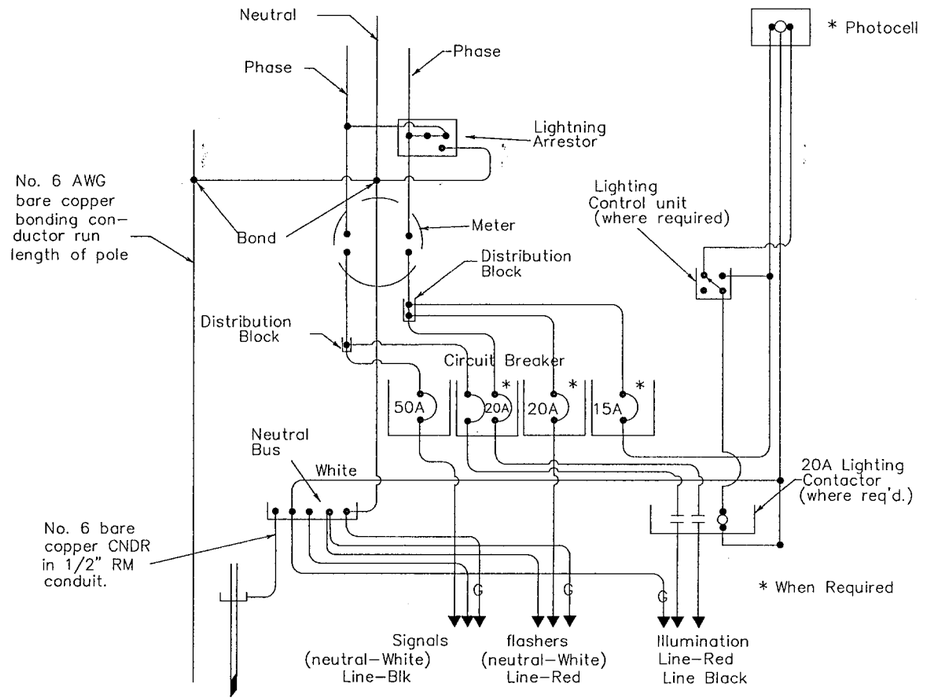
Main disconnect not required.

CONNECTION AT STEEL POLE BASE

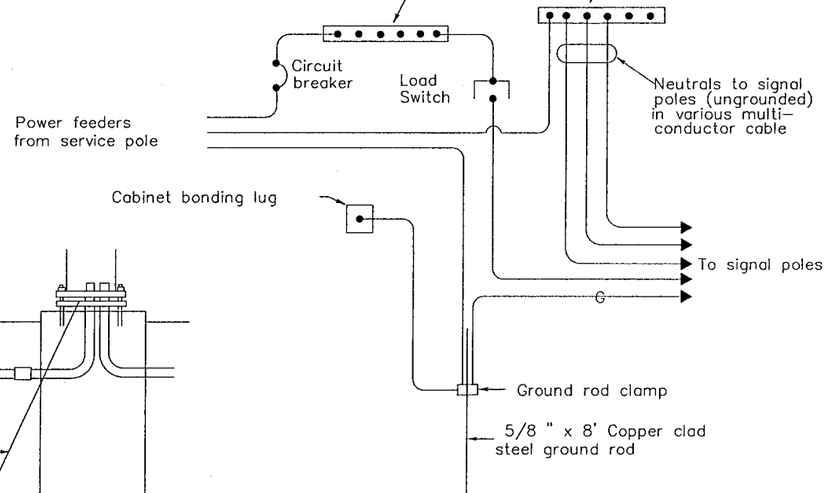


SIGNAL CONTROLLER

SIGNAL POLE BASE



CONNECTIONS AT SERVICE SCHEMATIC TY S
120/240 VOLT – THREE WIRE



CONNECTIONS AT SIGNAL CONTROLLERS

Elec. Serv. Ty. S(120/240)000(NS)GS(E)SP(U)

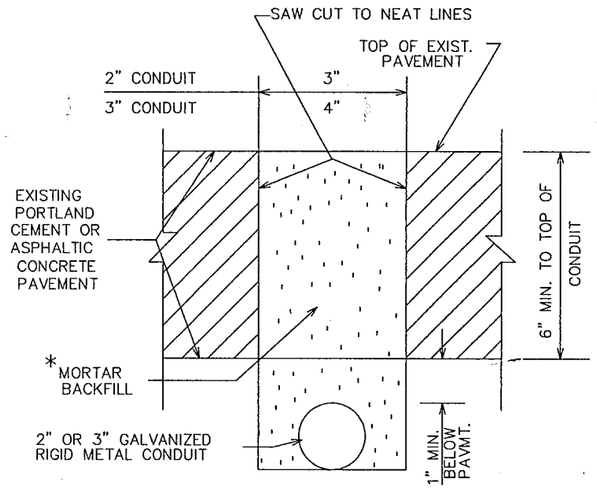
SERVICE POLE DETAILS

DALLAS DISTRICT STANDARD

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	CM 97 (449)		52
STATE	STATE DIST.NO.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
8050	18	034	BELT LINE

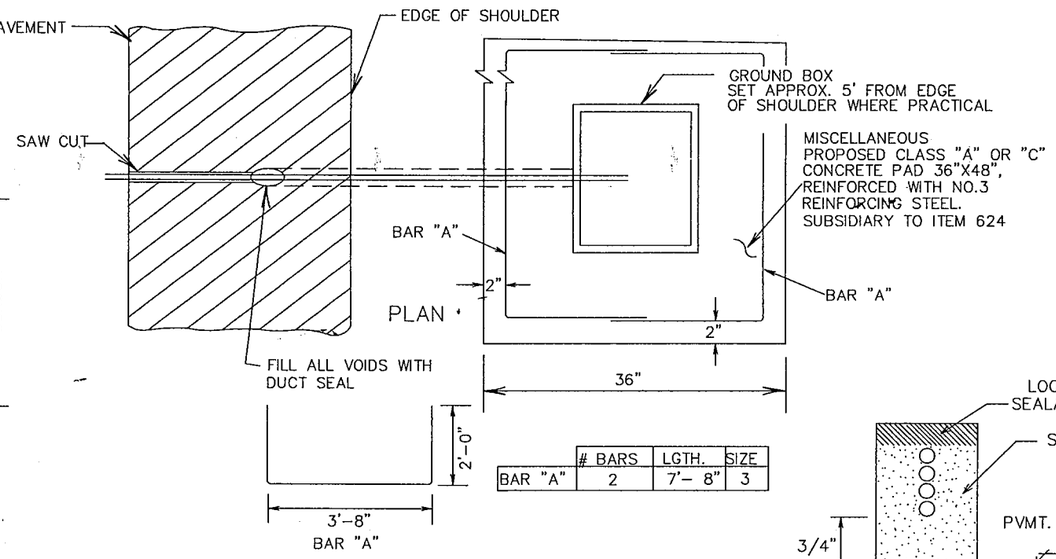
1993 Specifications 238D

FILE NAME [322,153]Service.dgn

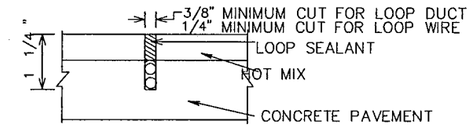


* MORTAR BACKFILL SHALL CONSIST OF 1 PART TYPE III PORTLAND CEMENT, 2 PARTS FINELY GRADED SAND (CLEAN,DURABLE,HARD GRAINS) AND WATER (MINIMUM AMOUNT TO MAKE MIX PLASTIC), OR COMPACTED ACP APPROVED BY THE ENGINEER.

SAW CUT TRENCH DETAILS FOR CONDUIT INSTALLATION



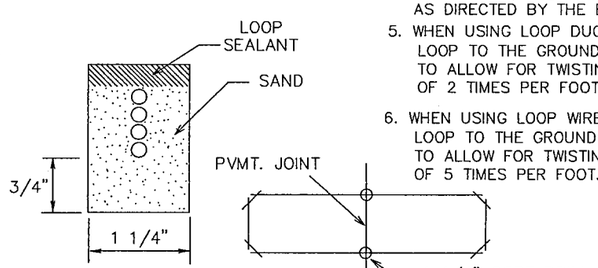
	# BARS	LGTH.	SIZE
BAR "A"	2	7'- 8"	3



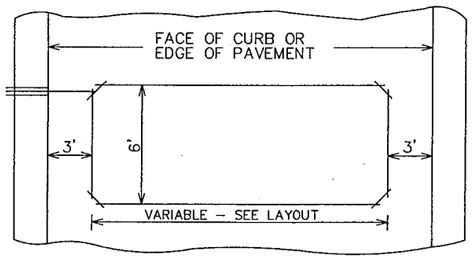
SAW CUT INSTALLATION

NOTES

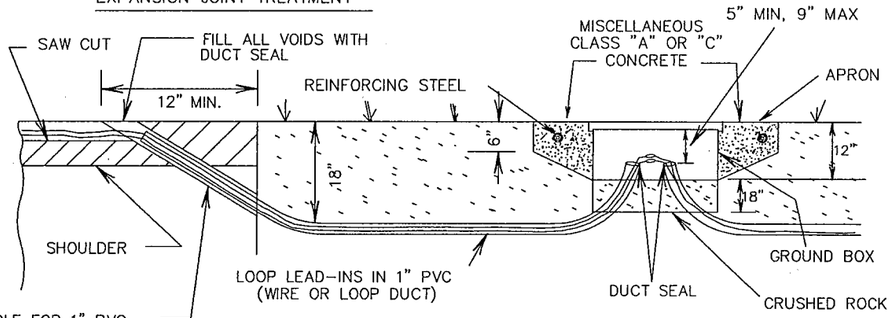
1. SAW CUT WILL INCREASE BY 1/4 " PER CABLE IN PLACE TO A MAXIMUM DEPTH (4 CABLES) OF 1 3/4 ". LIMIT SAW CUT DEPTH TO 1" MAXIMUM ON BRIDGE DECKS.
2. LOOSE MATERIAL SHALL BE REMOVED AND THE CUT DRIED PRIOR TO PLACEMENT OF SEALING COMPOUND.
3. DETECTORS WILL BE INSTALLED DURING OFF PEAK HOURS.
4. WHERE CONDITIONS WARRANT, SUCH AS PAVEMENT CONSISTING OF FLEXIBLE BASE WITH SEAL COAT OR HOT MIX, THE MINIMUM SAW CUT SHALL BE 3". AS DIRECTED BY THE ENGINEER.
5. WHEN USING LOOP DUCT, THE SAW CUT FROM THE LOOP LOOP TO THE GROUND BOX SHALL BE WIDE ENOUGH TO ALLOW FOR TWISTING THE LOOP A MINIMUM OF 2 TIMES PER FOOT.
6. WHEN USING LOOP WIRE, THE SAW CUT FROM THE LOOP LOOP TO THE GROUND BOX SHALL BE WIDE ENOUGH TO ALLOW FOR TWISTING THE LOOP A MINIMUM OF 5 TIMES PER FOOT.



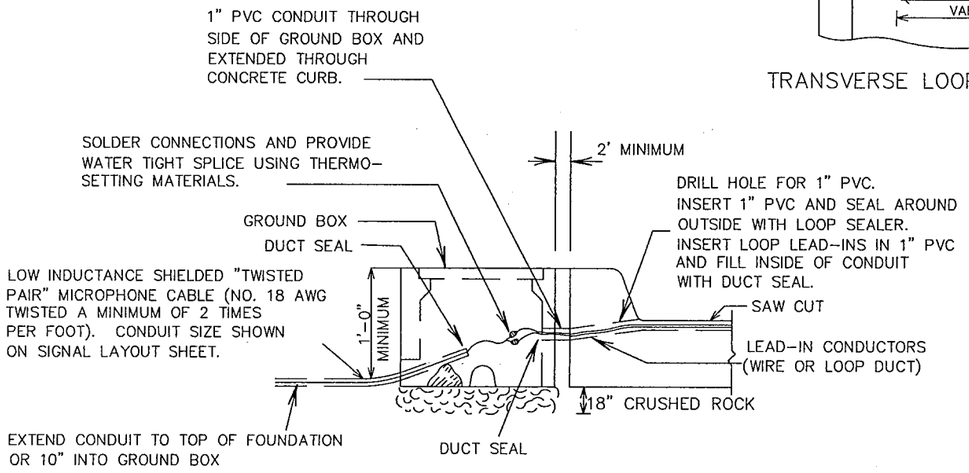
EXPANSION JOINT TREATMENT



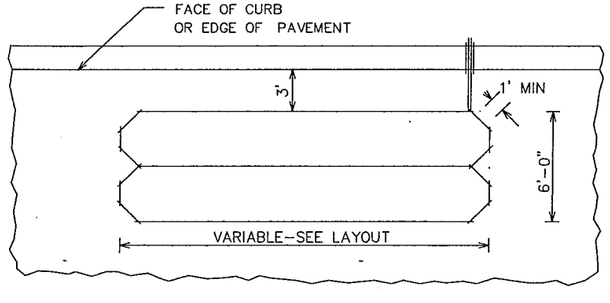
TRANSVERSE LOOP DETECTOR INSTALLATION DETAIL



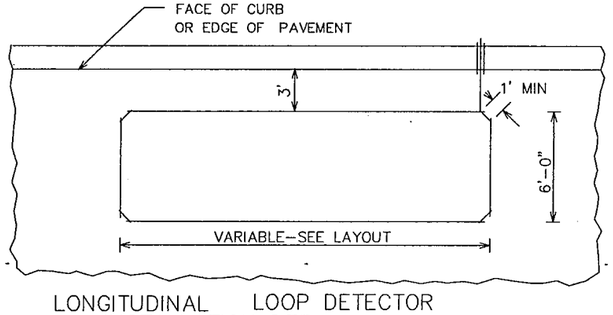
ELEVATION



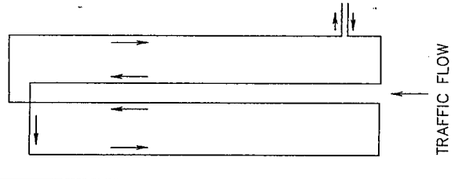
LOOP DETECTOR
PULL BOX INSTALLATION DETAIL FOR
CURBED SECTIONS



QUADRAPOLE LOOP DETECTOR
INSTALLATION DETAIL



LONGITUDINAL LOOP DETECTOR
INSTALLATION DETAIL



QUADRAPOLE LOOPS 6' X 20' & SMALLER SHALL HAVE 2 TURNS (2–4–2) OF LOOP DUCT OR WIRE. QUADRAPOLE LOOPS WITH NOMINAL LENGTHS OVER 20' WILL HAVE 1TURN (1–2–1) OF LOOP DUCT OR WIRE.

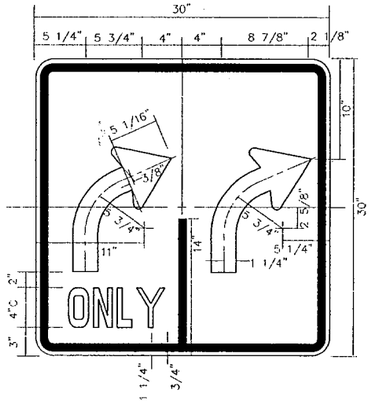
LOOP DETECTOR INSTALLATION DETAILS

DALLAS DISTRICT STANDARD

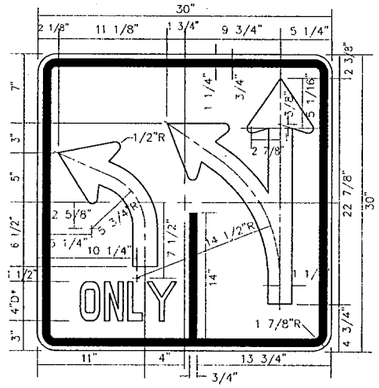
FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	CM 97 (449)		53
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
8050	18	034	BELT LINE

238d

FILE NAME: [322,153]LOOPDET.DGN

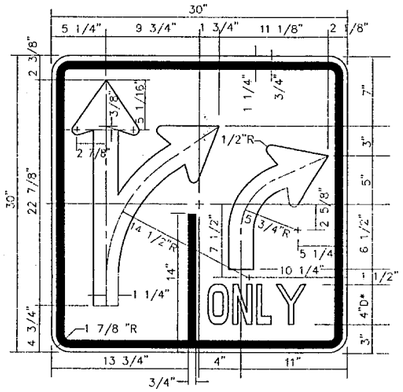


R3-8RR
30"x 30"

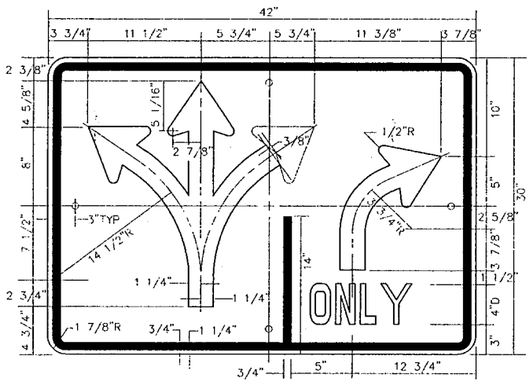


* SPACING REDUCED 50%

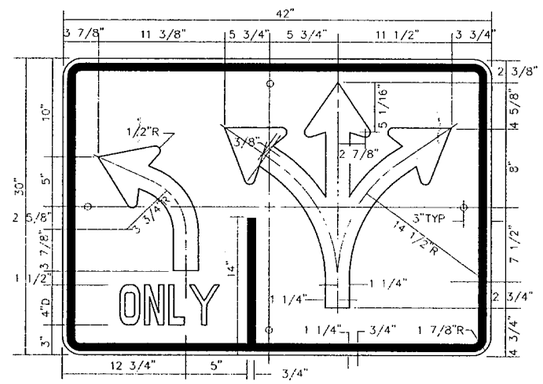
R3-8L
30"x 30"



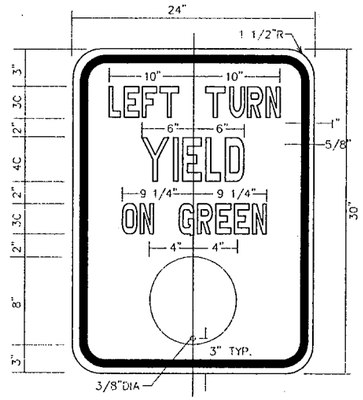
R3-8R
30"x 30"



R3-8R(SPL)
42"x 30"

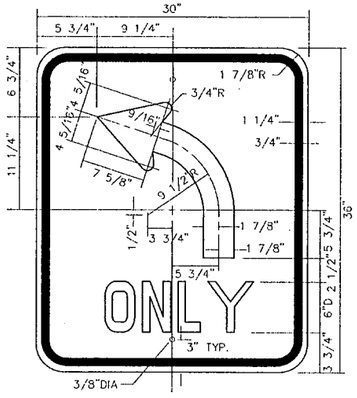


R3-8L(SPL)
42"x 30"

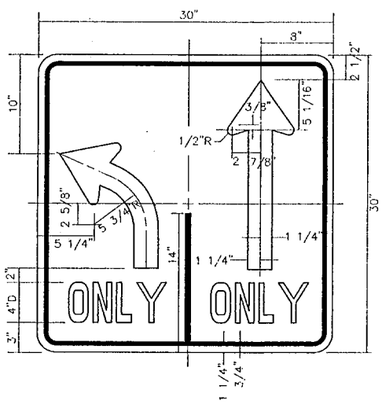


R10-12
24"x 30"

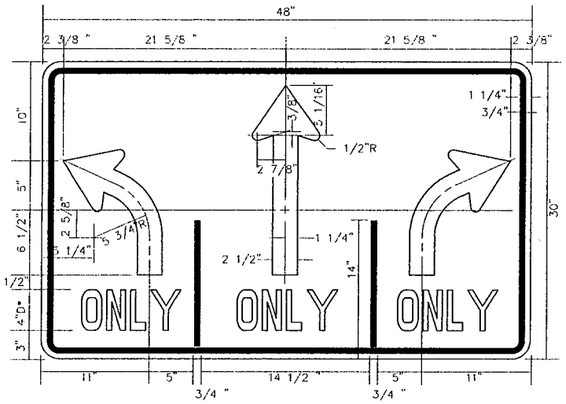
LEGEND BLACK(NON-REFLECTIVE)
BACKGROUND WHITE(REFLECTIVE)
CIRCULAR GREEN(REFLECTIVE)



R3-5L
R3-5R(RT. ARROW)
30"x 36"

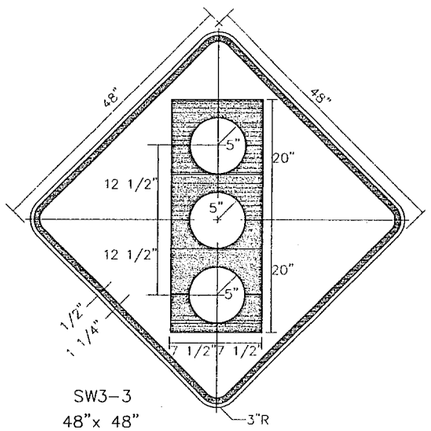


R3-8LS
30"x 30"



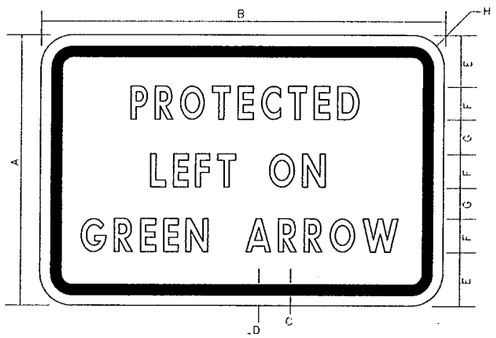
R3-8RSL
48"x 30"

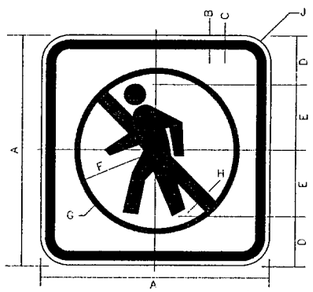
*SPACING REDUCED 50%



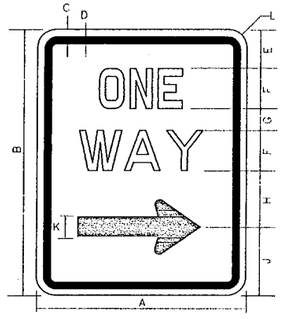
COLORS

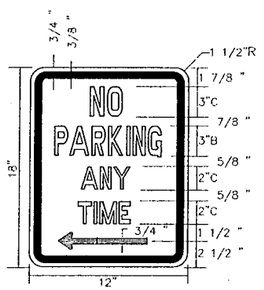
SYMBOL & LEGEND- BLACK (NON-REFL.)
TOP CIRCLE - RED (REFL.)
BOTTOM CIRCLE - GREEN (REFL.)
BACKGROUND - YELLOW (REFL.)
TYPE C REFLECTIVE SHEETING





CIRCLE AND DIAGONAL - RED
SYMBOL & BORDER - BLACK
BACKGROUND - WHITE





R7-1L
R7-1R(RT ARROW)
R7-1LR(DBL ARROW)
12"x 18"

GENERAL NOTES:

ALPHABETS AND LATERAL SPACING BETWEEN LETTERS AND NUMERALS SHALL CONFORM WITH THE FEDERAL HIGHWAY ADMINISTRATION'S "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS", LATEST EDITION AND ANY APPROVED CHANGES THERETO. LATERAL SPACING OF TEXT SHALL BE SUCH AS TO PROVIDE A BALANCED APPEARANCE.

SIGN BACKGROUNDS SHALL BE OF FLAT SURFACE REFLECTIVE SHEETING CONFORMING WITH THE SPECIFICATIONS (TYPE A) UNLESS OTHERWISE SPECIFIED IN THE PLANS.

SIGN LEGENDS SHALL BE APPLIED BY THE SCREENING PROCESS.

THE SIGN BLANKS SHALL BE ONE PIECE 5/8 INCH THICK PLYWOOD (TYPE A) CONFORMING TO THE SPECIFICATIONS UNLESS ATTACHED TO SIGNAL POLES.

THE SIGN BLANKS SHALL BE ONE PIECE SHEET ALUMINUM ALLOY 0.080 INCH THICK CONFORMING TO THE ITEM "ALUMINUM SIGNS (TYPE A)" WHEN ATTACHED TO SIGNAL POLES.

SIGN NO.	SIGN	DIMENSIONS (INCHES)							
		A	B	C	D	E	F	G	H
R10-9	STD.	12	18	3/8	3/4	2	2 C	1	1 1/2
SR10-9S	EXPWY.	18	30	3/8	3/4	3	3 C	1 1/2	1 1/2
SR10-9	FRWY.	24	36	5/8	1	4	4C*	2	1 1/2

* - REDUCE SPACING 40%

SIGN NO.	SIGN	DIMENSIONS (INCHES)								
		A	B	C	D	E	F	G	H	J
R9-3a	STD.	18	1	5/8	3 1/2	5 1/2	6 3/8	7 7/8	1 1/2	1 1/2
ER9-3a	EXPWY.	24	1	5/8	4 1/2	7 1/2	8 1/2	10 1/2	2	1 1/2
FR9-3a	FRWY.	30	1 1/4	3/4	5 3/4	9 1/4	10 5/8	13 1/8	2 1/2	1 7/8

SIGN NO.	SIGN	DIMENSIONS (INCHES)											
		A	B	C	D	E	F	G	H	J	K	L	
R6-2	STD.	18	24	1	5/8	2 1/2	5D	1 1/2	4 1/2	5 1/2	2 1/4	1 1/2	
SR6-2	SPEC.	24	30	1	5/8	3	6D	1 7/8	6 1/16	7 1/16	3	1 1/2	

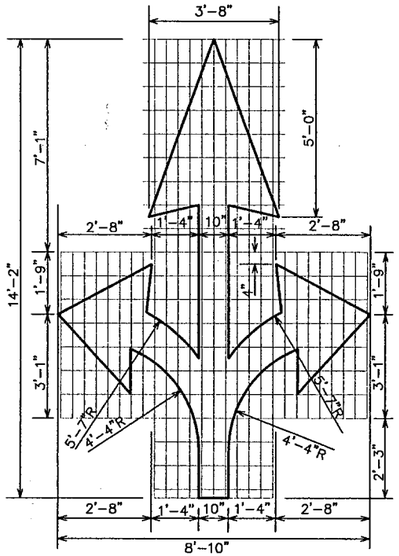
SIGNS

DALLAS DISTRICT STANDARD

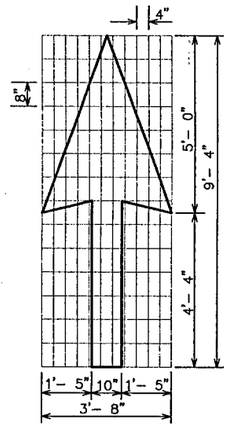
FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	CM 97 (449)		54
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
8050	18	034	BELT LINE

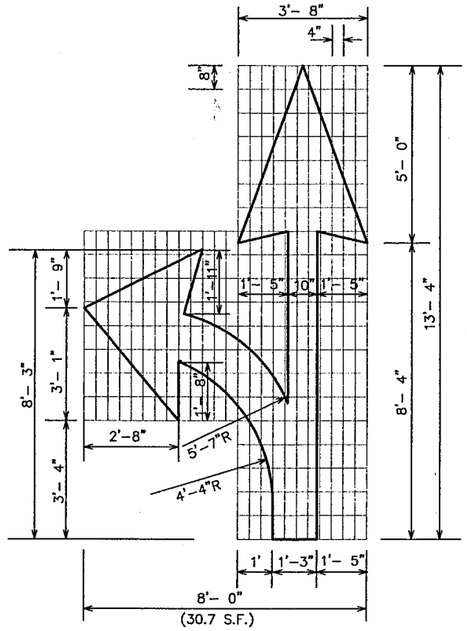
FILENAME: [32215J]SIGNS.DGN

621D

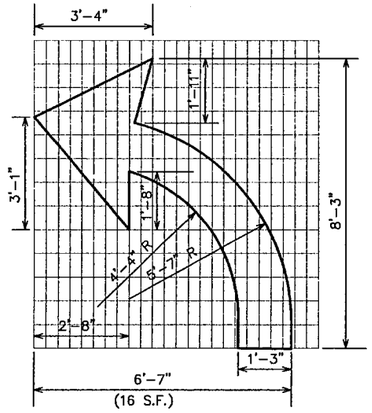


(38.5 S.F.)

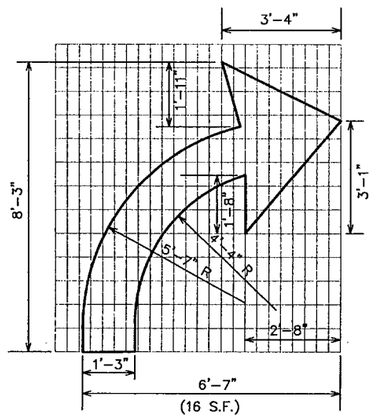




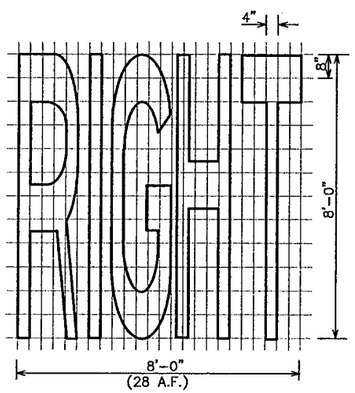
(30.7 S.F.)

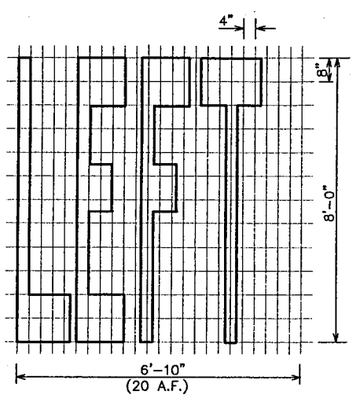


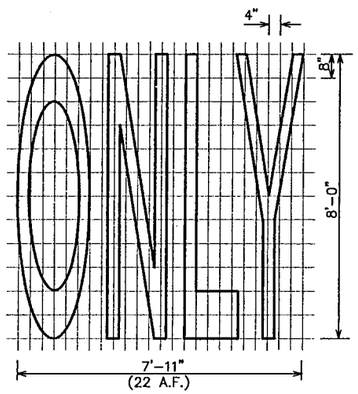
(16 S.F.)

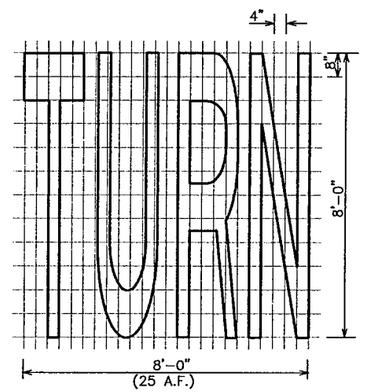


(16 S.F.)







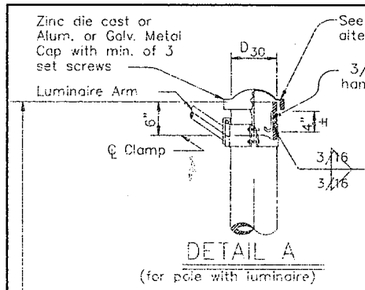


PAVEMENT MARKING DETAILS

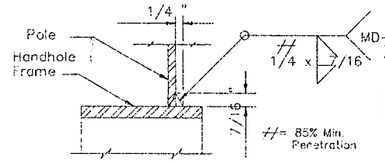
DALLAS DISTRICT STANDARD

FED.RD. DIV.NO.	FEDERAL AID PROJECT NO.		SHEET NO.
6	CM 8050-18-34		55
STATE	STATE DIST.	COUNTY	
TEXAS	DALLAS	DALLAS	
CONT.	SECT.	JOB	HIGHWAY NO.
8050	18	034	BELT LINE

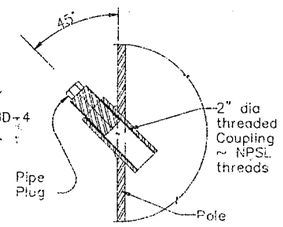
FILENAME: [322,153]PMARK.DGN



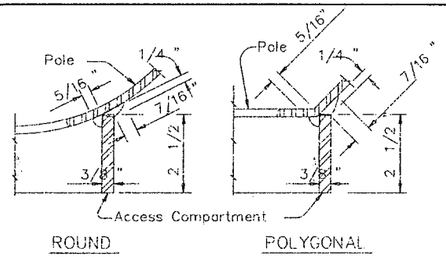
DETAIL A
(for pole with luminaire)



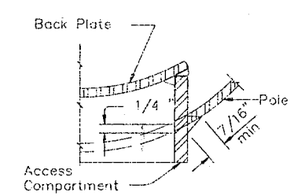
DETAIL E



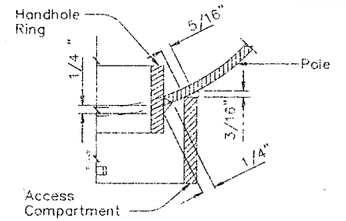
COUPLING DETAIL



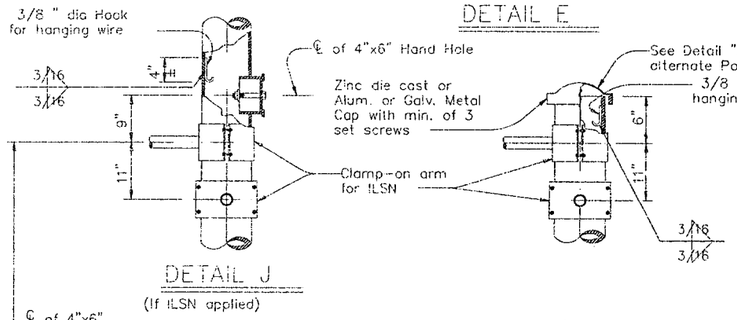
DETAIL H



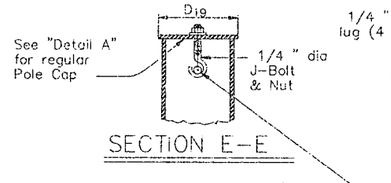
DETAIL G



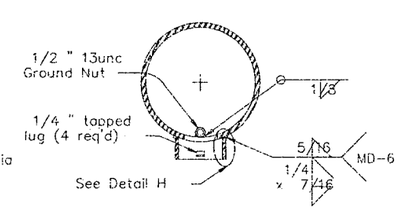
DETAIL F



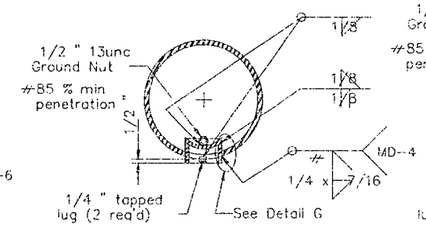
DETAIL J
(If ILSN applied)



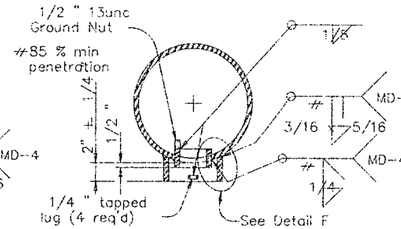
SECTION E-E



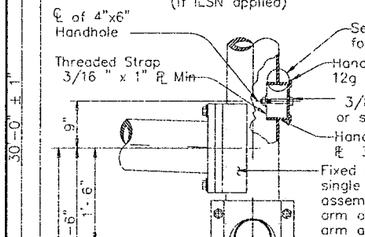
SECTION D-D



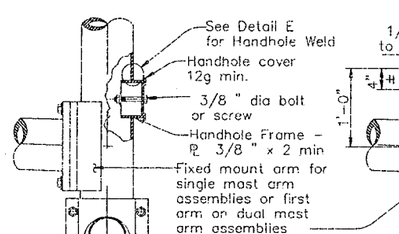
SECTION C-C



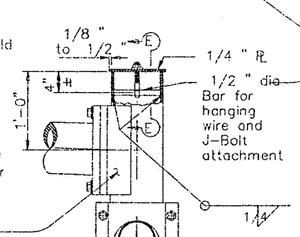
SECTION B-B



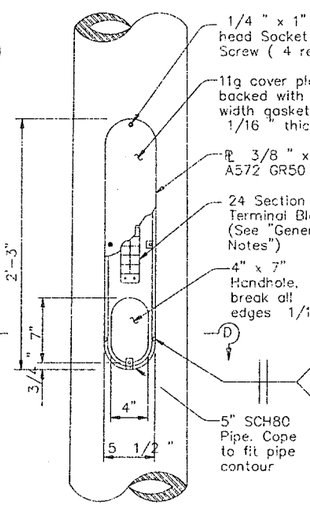
DETAIL B
(for pole with luminaire and ILSN sign)



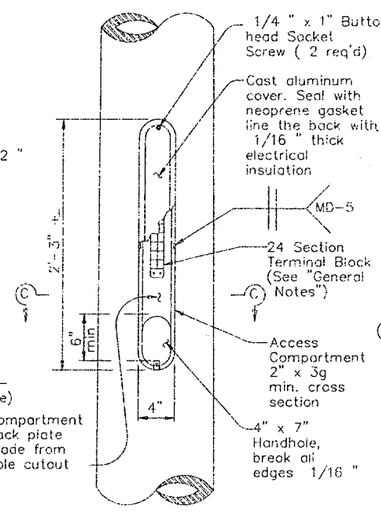
DETAIL K
(for pole with ILSN sign and no luminaire)



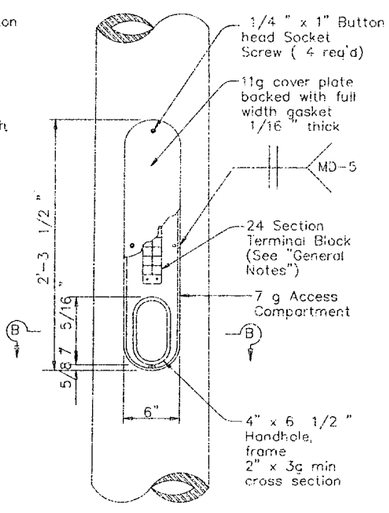
DETAIL C
(for pole with no ILSN sign and no luminaire)



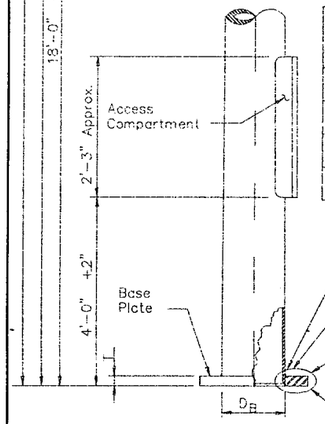
ACCESS COMPARTMENT
DETAIL 1



ACCESS COMPARTMENT
DETAIL 2



ACCESS COMPARTMENT
DETAIL 3

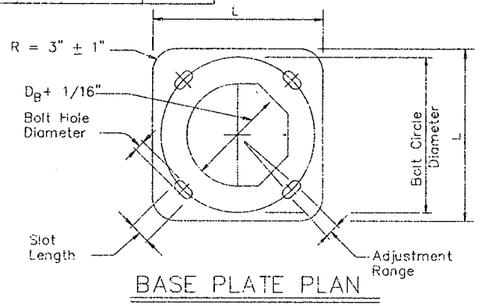


POLE ELEVATION

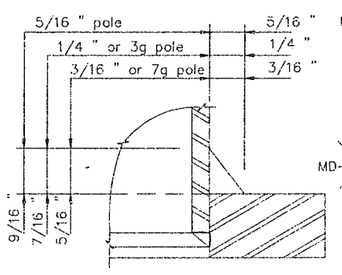
Anchor Bolt Diameter	Bolt Hole Diameter	Slot Length	Bolt Circle Diameter	Base ℞ Dim. L x T	Adjust. Range
1 1/2"	1 3/4"	3 1/2"	17"	18" x 1 1/2 "	13.4"
1 3/4"	2"	4"	19"	20" x 1 3/4 "	13.5"
2"	2 1/4"	4 1/2"	21"	22" x 2"	13.6"
2 1/4"	2 1/2"	5"	23"	24" x 2 1/4 "	13.7"

GENERAL NOTES:

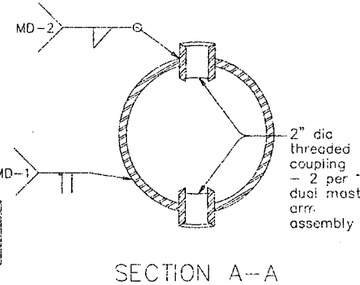
The Fabricator shall furnish each pole with a twelve position, double posted, molded phenolic Terminal Block with insulating strip as necessary. The Terminal Block shall be provided with size 8-32 nickel plated screws and shall be T.R.W. Cinch No. 12-142 or equal.



BASE PLATE PLAN



DETAIL D



SECTION A-A

MOD. ACCESS COMPARTMENT MT. HEIGHT

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES MAST ARM POLE DETAILS

MA-D-96 (DAL)

DALLAS DISTRICT STANDARD

DN: MS	CK: JSY	DW: MMF	CK: JSY	MSG MDL
REVISIONS	STATE STATISTICAL REVISION	FEDERAL AID PROJECT		SHEET
DALLAS	6	CM 97 (449)		55A
COUNTY	CONTROL	SECTION	JOB	HIGHWAY
DALLAS	8050	18	034	BELT LINE

127

ACC: d48rp1q:/usr/d48251/
LVs:1,2 for English 1,3 for Metric
LEVELS DISPLAYED: 1 2 3

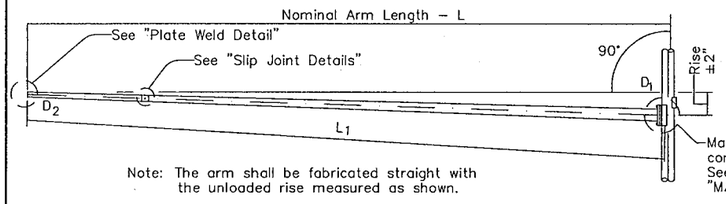
Arm Length	ROUND POLES					POLYGONAL POLES					Foundation Type
	D_B	D_{19}	D_{24}	D_{30}	① thk	D_B	D_{19}	D_{24}	D_{30}	① thk	
ft.	in.	in.	in.	in.	in.	in.	in.	in.	in.	in.	
20	10.5	7.8	7.1	6.3	.179	11.5	8.5	7.7	6.8	.179	30-A
24	11.0	8.3	7.6	6.8	.179	12.0	9.0	8.2	7.3	.179	30-A
28	11.5	8.8	8.1	7.3	.179	12.5	9.5	8.7	7.8	.179	30-A
32	12.5	9.8	9.1	8.3	.179	12.0	9.0	8.2	7.3	.239	30-A
36	11.5	8.8	8.1	7.3	.239	12.5	9.5	8.7	7.8	.239	30-A
40	12.0	9.3	8.6	7.8	.239	13.5	10.5	9.7	8.8	.239	36-A
44	12.5	9.8	9.1	8.3	.239	14.0	11.0	10.2	9.3	.239	36-A
48	13.0	10.3	9.6	8.8	.239	15.0	12.0	11.2	10.3	.239	36-A

Arm Length	ROUND ARMS					POLYGONAL ARMS				
	L_1	D_1	D_2	① thk	Rise	L_1	D_1	② D_2	① thk	Rise
ft.	ft.	in.	in.	in.		ft.	in.	in.	in.	
20	19.1	6.5	3.8	.179	1'-9"	19.1	7.0	3.5	.179	1'-8"
24	23.1	7.5	4.3	.179	1'-10"	23.1	7.5	3.5	.179	1'-9"
28	27.1	8.0	4.2	.179	1'-11"	27.1	8.0	3.5	.179	1'-10"
32	31.0	9.0	4.7	.179	2'-1"	31.0	9.0	3.5	.179	2'-0"
36	35.0	9.5	4.6	.179	2'-4"	35.0	10.0	3.5	.179	2'-1"
40	39.0	9.5	4.1	.239	2'-8"	39.0	9.5	3.5	.239	2'-3"
44	43.0	10.0	4.1	.239	2'-11"	43.0	10.0	3.5	.239	2'-6"
48	47.0	10.5	4.1	.239	3'-4"	47.0	11.0	3.5	.239	2'-9"

D_B = Pole Base O.D.
D_{19} = Pole Top O.D. with no Luminaire and no ILSN
D_{24} = Pole Top O.D. with ILSN w/out Luminaire
D_{30} = Pole Top O.D. with Luminaire
D_1 = Arm Base O.D.
D_2 = Arm End O.D.
L_1 = Shaft Length
L = Nominal Arm Length

① Thickness shown are minimums, thicker materials may be used.

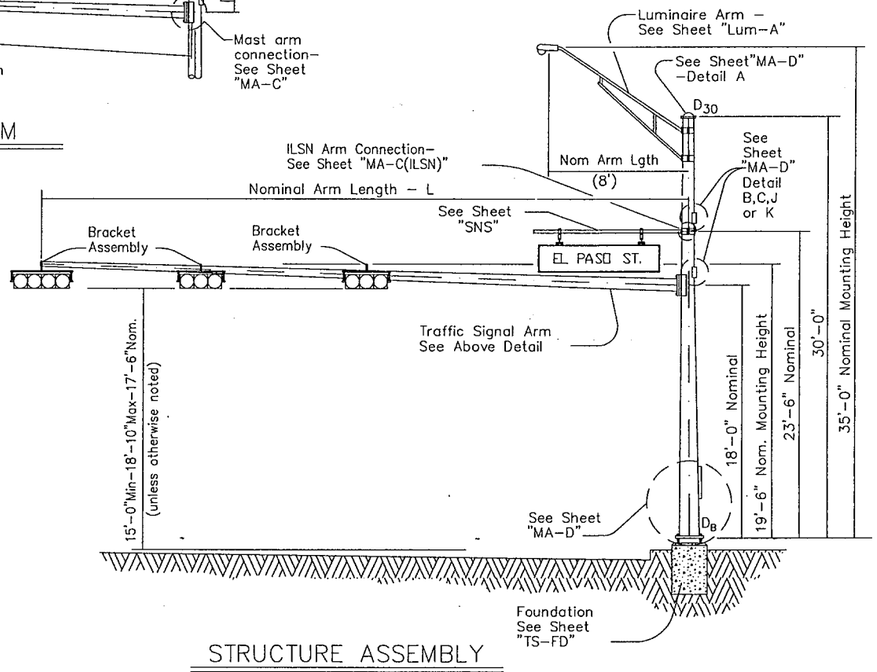
② D_2 may be increased by up to 1" for polygonal arms.



Note: The arm shall be fabricated straight with the unloaded rise measured as shown.

TRAFFIC SIGNAL ARM

(Fixed Mount)



STRUCTURE ASSEMBLY

VIBRATION WARNING

Mast Arms of approximately 40' or longer are subject to possible harmonic vertical vibrations in light wind conditions due to unusual combinations of signal numbers, weights or positions, arm–wind orientation, and arm–pole stiffness. Arms shall be visually inspected in 5 to 20 mph wind conditions after signal head installation and, if vertical movements with a total excursion (max positive to max negative) of more than approximately 8" are observed at arm tip, damping devices or other means shall be fitted to the arm(s). The necessary damping device(s) or other remedial measures shall be as recommended by the fabricator. Excessive vibrations shall not be allowed to continue for more than two days.

SHIPPING PARTS LIST

Ship each pole with the following attached: enlarged hand hole, pole cap, fixed–arm connection bolts and washers and any additional hardware listed in the table.

Nominal Arm Length	30' Poles With Luminaire: Above hardware plus: One (or two if ILSN attached) small hand hole, clamp–on simplex		24' Poles With ILSN: Above hardware plus one small hand hole		19' Poles With No Luminaire and No ILSN: See note above	
ft	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20L–80		20S–80		20–80	
24	24L–80		24S–80		24–80	
28	28L–80		28S–80		28–80	
32	32L–80		32S–80		32–80	
36	36L–80		36S–80		36–80	
40	40L–80		40S–80		40–80	
44	44L–80		44S–80		44–80	
48	48L–80		48S–80		48–80	

Traffic Signal Arms (1 per Pole) — Ship each arm with the listed equipment attached

Nominal Arm Length	Type I Arm (1 Signal): 1 Bracket Assembly		Type II Arm (2 Signals): 2 Bracket Assemblies		Type III Arm (3 Signals): 3 Bracket Assemblies	
ft	Designation	Quantity	Designation	Quantity	Designation	Quantity
20	20I–80					
24	24I–80		24II–80			
28	28I–80		28II–80			
32			32II–80		32III–80	
36			36II–80		36III–80	
40					40III–80	
44					44III–80	
48					48III–80	

Luminaire Arms (1 per 30' pole)

Nominal Arm Length	Quantity
8' Arm	

ILSN Arm (Max. 2 per pole) Ship with clamps, bolts and washers

Nominal Arm Length	Quantity
7' Arm	
9' Arm	

Anchor Bolt Assemblies (1 per pole)

Anchor Bolt Diameter	Anchor Bolt Length	Quantity
3/4 "	1'–6"	
1 1/2 "	3'–4"	
1 3/4 "	3'–10"	

Each anchor bolt assembly consists of the following: Top and Bottom templates, 4 anchor bolts, 8 nuts, 8 flat washers, 4 lock washers and 4 nut anchor devices (Type 2) per Standard Drawing "TS–FD".

Templates may be removed for shipment.

MODIFICATIONS

- (A) REMOVED BRACKET ASSEMBLY OPTIONS A AND B
- (B) REMOVED CGB CONNECTORS
- (C) REMOVED TENON DETAIL
- (D) REQUIRE MEASUREMENT OF POLE HEIGHT
- (E) MIN. AND MAX. SIGNAL HEAD HEIGHT DISTANCE

DALLAS DISTRICT STANDARD

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

TRAFFIC SIGNAL SUPPORT STRUCTURES
SINGLE MAST ARM ASSEMBLY (80 MPH WIND ZONE)

SMA–80(1)–96 (DAL)

FILE: SMA-80.DGN	DN: MS	CK: JSY	DW: MMF	CK: JSY
ORIG DATE: AUGUST, 1995	DISTRICT	FED REG	FEDERAL AID PROJECT	• SHEET
REVISIONS 6–96	DALLAS	6	CM 97 (449)	55B
	COUNTY	CONTROL	SECT JOB	HIGHWAY
	DALLAS	8050	18 034	BELT LINE

122A

LEVELS DISPLAYED
ACCESS
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

LV=1.2 for English 1.3 for Metric

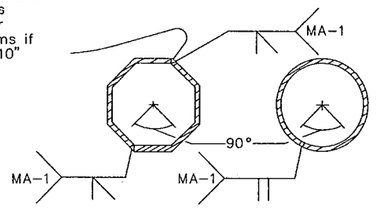
LEVELS DISPLAYED																
ACCESS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
2	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
3	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	

V=1.2 for English 1.3 for Metric

Stainless steel bands and cast bracket as in "Astro-Brac" with 1 1/2 " Dia Threaded Coupling.

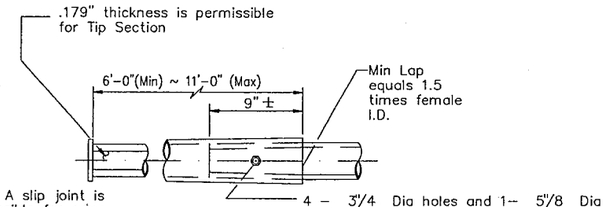
BRACKET ASSEMBLY OPTION C

Second longitudinal Seam Weld is permitted for polygonal arms if D_1 exceeds 10"



Longitudinal Seam Weld must be oriented within the lower 90° of the signal arm.

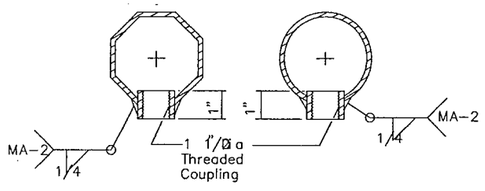
ARM WELD DETAIL



Note: A slip joint is permissible for arms 40' and greater in length. The slip joint shall be made in the shop, but may be match marked and shipped disassembled.

4 – 3/4 Dia holes and 1– 5/8 Dia galv A307 bolt. Tack weld nut to thread projection after making joint. Repair damaged galvanizing in accordance with the specifications.

SLIP JOINT DETAIL



COUPLING DETAILS

NOTE:

Pole manufacturer shall drill 1/2 " hole in bottom of mast arm at end plate. (for hot-dip galvanizing)

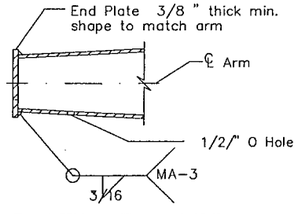


PLATE WELD DETAIL

GENERAL NOTES:

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals and Interim Specifications thereto. Design Wind Speed equals 80 mph plus a 1.3 gust factor.

Poles are designed to support one 8'-0" luminaire arm, one 9'-0" internally lighted street name sign and one traffic signal arm with a length as tabulated. The specified luminaire load applied at the end of the luminaire arm equals 75 lbs vertical dead load plus the horizontal wind load on an effective projected area of 1.5 sq ft. The specified internally lighted street name sign load applied 4.5 ft from the centerline of the pole equals 85 lbs vertical dead load plus horizontal wind load on an effective projected area of 11.5 sq ft. The specified signal load applied at the end of the traffic signal arm equals 180 lbs vertical dead load plus the horizontal wind load on an effective projected area of 32.4 sq ft (actual area times drag coefficient).

See Standard Sheet "MA-D" for pole details, "MA-C" for traffic signal arm connection details, "MA-C (ILSN)" for internally lighted street name sign arm connection details, "LUM-A" for luminaire arm and connection details, "SNS" for internally lighted street name sign details, and "TS-FD" for anchor bolt and foundation details. See "MA-C" for material specifications.

Fabrication shall be in accordance with the Specifications and with the details, dimensions, and weld procedures shown herein. Weld references call for preapproved weld procedures which the Fabricator must obtain prior to fabrication. Miscellaneous welds which do not call for preapproved weld procedures are nevertheless subject to rejection for poor workmanship. Materials, fabrication tolerances, and shipping practices shall meet the requirements of this sheet and the Specifications.

Unless otherwise noted, all parts shall be galvanized in accordance with the Specifications.

Special design require submission of shop drawings in accordance with the item "Steel Structures".

△ The pole heights are for bidding purposes only. Prior to fabrication, the Contractor in cooperation with the Engineer shall make field measurements to determine the actual pole height necessary to ensure a verticle clearance of 17'-6" min., 19' max.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

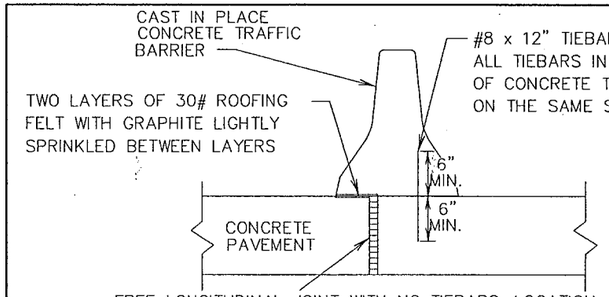
TRAFFIC SIGNAL SUPPORT STRUCTURES
SINGLE-MAST ARM ASSEMBLY (80 MPH WIND ZONE)

 SMA-80(2)-96 (DAL)

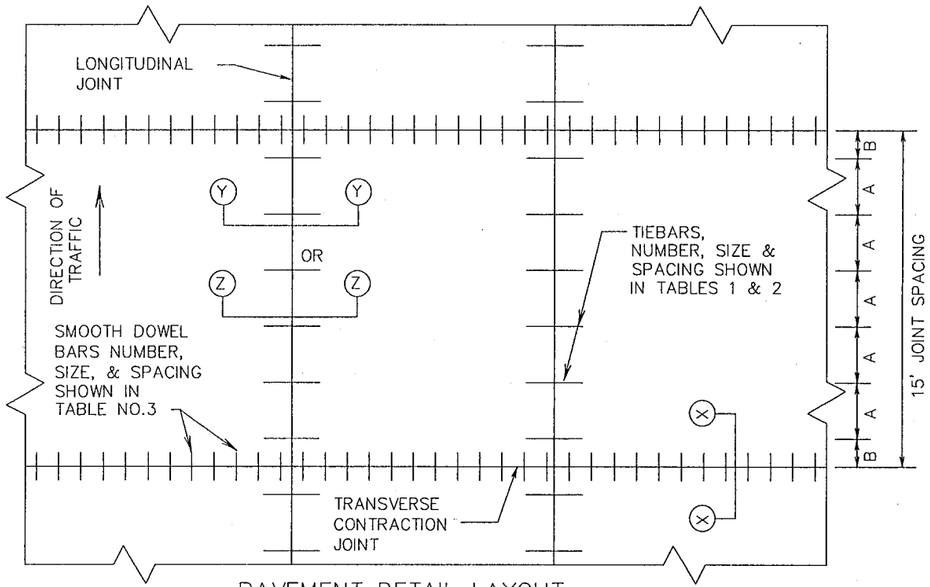
DALLAS DISTRICT STANDARD

FILE: SMA-80.DGN	DN: MS	CK: JSY	DW: MMF	CK: JSY
ORIG DATE: AUGUST, 1995	DIST	FED REC	FEDERAL AID PROJECT	SHEET
REVISIONS 6-96	DALLAS	6	CM 97 (449)	55C
	COUNTY	CONTROL	SECT	JOB	HIGHWAY
	DALLAS	8050	18	034	BELT LINE

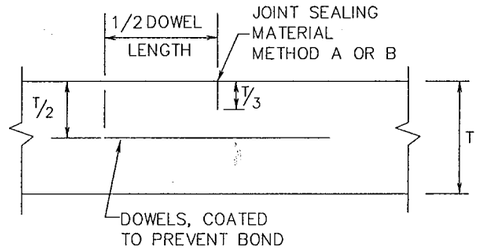
1228



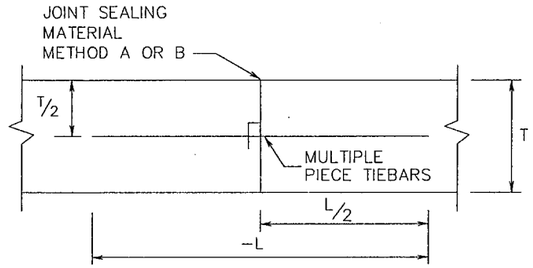
FREE LONGITUDINAL JOINT DETAIL



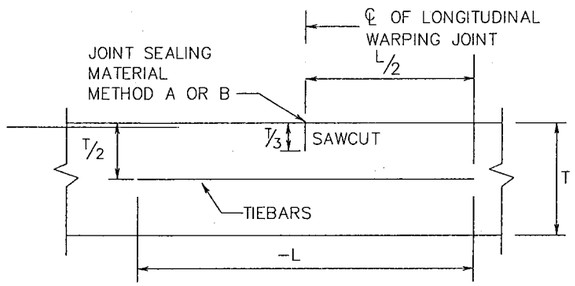
PAVEMENT DETAIL LAYOUT



TRANSVERSE CONTRACTION JOINT
SECTION X-X



LONGITUDINAL CONSTRUCTION JOINT
SECTION Y-Y



LONGITUDINAL WARPING JOINT
SECTION Z-Z

GENERAL NOTES

1. CONCRETE SLABS WIDER THAN 100' WITHOUT A FREE JOINT, ARE NOT COVERED BY THIS STANDARD.
2. FOR FURTHER INFORMATION REGARDING THE PLACEMENT OF CONCRETE AND LOAD TRANSFER DEVICES REFER TO THE GOVERNING SPECIFICATIONS FOR "CONCRETE PAVEMENT" AND "REINFORCING STEEL."
3. DETAILS FOR PAVEMENT WIDTH, PAVEMENT THICKNESS, AND CROWN CROSS SLOPE SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
4. THE DETAIL FOR THE JOINT SEALANT AND RESERVOIR WILL BE SHOWN IN CONCRETE PAVEMENT DETAIL, JOINT SEALANT STANDARD (JS-94).
5. PAVEMENT WIDTHS IN EXCESS OF 16' SHALL BE PROVIDED WITH A LONGITUDINAL JOINT (SECTION Z-Z OR Y-Y). THESE JOINTS SHALL BE LOCATED WITHIN 6" OF THE LANE LINES UNLESS SHOWN ELSEWHERE ON THE PLANS.
6. THE JOINT BETWEEN OUTSIDE LANE AND SHOULDER SHALL BE A LONGITUDINAL WARPING JOINT (SECTION Z-Z) UNLESS OTHERWISE SHOWN IN THE PLANS.
7. THE SPACING BETWEEN TRANSVERSE JOINTS SHALL BE 15 FEET UNLESS OTHERWISE SHOWN IN THE PLANS.
8. WHERE A MONOLITHIC CURB IS SPECIFIED, THE JOINT IN THE CURB SHALL COINCIDE WITH PAVEMENT JOINTS AND MAY BE FORMED BY ANY MEANS APPROVED BY THE ENGINEER.
9. TRANSVERSE CONSTRUCTION JOINTS MAY BE FORMED BY USE OF METAL OR WOOD FORMS EQUAL IN DEPTH TO THE NOMINAL DEPTH OF THE PAVEMENT, OR BY METHODS APPROVED BY THE ENGINEER.
10. THE ENGINEER WILL ADJUST THE REQUIRED NUMBER OF TIEBARS FOR SLABS SHORTER OR LONGER THAN 15'. SPACING "B" WILL BE ADJUSTED TO MAINTAIN A MINIMUM CLEARANCE OF 2" BETWEEN THE TIEBAR AND THE DOWEL BARS AT THE TRANSVERSE JOINT AND THE "A" SPACING WILL REMAIN AS REQUIRED FOR THE PAVEMENT SLAB WIDTH.
11. MULTIPLE PIECE TIEBARS SHALL BE USED AT LONGITUDINAL CONSTRUCTION JOINTS UNLESS OTHERWISE SPECIFIED IN THE PLANS.
12. THE SAW CUT FOR LONGITUDINAL WARPING AND THE TRANSVERSE CONSTRUCTION JOINTS MAY BE ONE FOURTH THE SLAB THICKNESS WHEN CRUSHED LIMESTONE IS USED AS THE COARSE AGGREGATE.

TABLE NO.1 TIEBARS REQUIRED FOR LONGITUDINAL JOINT
JOINTS FOR EACH 15' SLAB

ASTM A-616 OR A-615 (GRADE 60) STRAIGHT OR MULIPLE PIECE REINFORCING TIEBARS		CONCRETE SLAB THICKNESS	DISTANCE FROM THE LONGITUDINAL JOINT TO THE NEAREST LONGITUDINAL FREE EDGE			
			< OR =16'	< OR =24'	< OR =34'	< OR =50'
BAR LENGTH,"L" INCHES	BAR SIZE	"T" INCHES	REQUIRED NO.OF BARS	REQUIRED NO.OF BARS	REQUIRED NO.OF BARS	REQUIRED NO.OF BARS
42	#5 (5/8")	8	5	5	6	9
		9	5	5	7	10
		10	5	5	7	11
		11	5	6	8	12
		12	5	6	9	13
		13	5	7	9	13
		14	6	7	10	NA
		15	6	8	11	NA
50	#6 (3/4")	8	5	5	5	6
		9	5	5	5	7
		10	5	5	5	8
		11	5	5	6	8
		12	5	5	6	9
		13	5	5	7	10
		14	5	5	7	10
		15	5	6	8	11

THE DISTANCE TO THE FREE EDGE WILL BE DETERMINED BY THE ENGINEER AND THE DISTANCE WILL BE BASED ON THE NOMINAL WIDTHS OF THE LANES AND SHOULDERS PLUS ANY TIED RAMPS OR CONNECTING ROADWAYS.

TABLE NO.2 TIEBAR SPACINGS
SPACING REQUIREMENT FOR 15'SLAB FOR REQUIRED NUMBER OF BARS

REQUIRED NO.OF BARS	REGULAR SPACING "A" INCHES	FIRST AT JOINT "B" INCHES
5	36	18
6	30	15
7	25	15
8	21	16.5
9	18	18
10	16	18
11	15	15
12	13	18.5
13	12	18

TABLE NO.3 DOWELS REQUIEMENTS

T, IN.	DOWELS (SMOOTH BARS) SIZE AND LENGTH	AVERAGE SPACING (INCHES)
8	1" X 18"	12
9	1 1/8 " X 18"	12
10	1 1/4 " X 18"	12
11	1 3/8 " X 18"	12
12	1 1/2 " X 18"	12
13	1 5/8 " X 18"	12
14	1 3/4 " X 18"	12
15	1 7/8 " X 18"	12

REVISION HISTORY

Texas Department of Transportation
Design Division (Pavement)

CONCRETE PAVEMENT DETAILS

CONTRACTION DESIGN
T-8 THROUGH 15 INCHES

CPCD-94

ORIG DRAW DATE: SEPT. 1994	DR:- LJB	CK:- LJB	DW:- BGD	CK:- GLG	REV NO.: R0000
MODIFICATIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT NO.		SHEET
	DALLAS	6	CM 97 (449)		56
	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
	DALLAS		8050	18	034	BELT LINE

ACC: /usr/d481303
FILE: CPCD94.DGN
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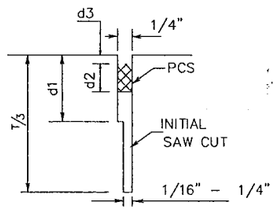
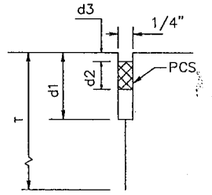
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

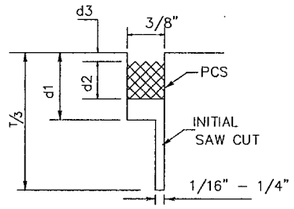


SAWED
LONGITUDINAL JOINT

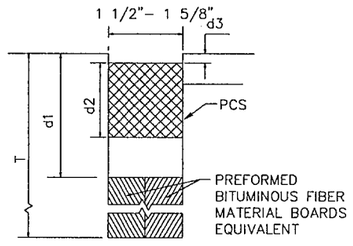


LONGITUDINAL
CONSTRUCTION JOINT

LONGITUDINAL JOINT SEALS



SAWED
CONTRACTION JOINT



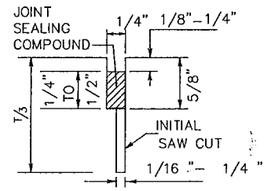
FORMED
FORMED EXPANSION JOINT

TRANSVERSE JOINT SEALS

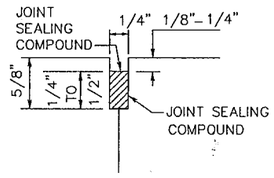
METHOD A: PREFORMED COMPRESSION SEALS (PCS)
(CLASS 6 PREFORMED JOINT SEALANT)

GENERAL NOTES FOR METHOD "A"

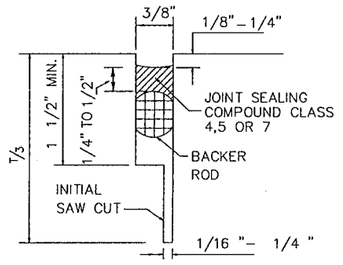
1. UNLESS OTHERWISE SHOWN IN THE PLANS, EITHER METHOD "A" OR METHOD "B" MAY BE USED.
2. THE LOCATION OF JOINTS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
3. DIMENSIONS d1, d2, AND d3 SHALL BE IN ACCORDANCE WITH THE PREFORMED COMPRESSION SEAL MANUFACTURES RECOMMENDATION.
4. THE JOINT RESERVOIR FOR SEALANT SHALL BE SAWED UNLESS OTHER-WISE SHOWN ON THE PLANS FOR THE LONGITUDINAL AND TRANSVERSE CONSTRUCTION AND THE TWO SAWED JOINTS.
5. THE JOINTS SHALL BE CLEANED IN ACCORDANCE WITH THE ITEM 438 AND PRIOR TO BEGINNING OPERATIONS, THE CONTRACTOR SHALL SUBMIT A STATEMENT FROM THE SEALANT MANUFACTURER SHOWING THE RECOMMENDED EQUIPMENT AND INSTALLATION PROCEDURES TO BE USED.
6. THE SAW CUT FOR THE LONGITUDINAL JOINT SHALL BE ONE FOURTH THE SLAB THICKNESS WHEN CRUSHED LIMESTONE IS USED AS THE COARSE AGGREGATE.



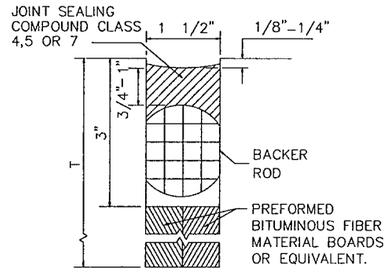
SAWED
LONGITUDINAL JOINT



LONGITUDINAL OR TRANSVERSE
CONSTRUCTION JOINT



TRANSVERSE SAWED
CONTRACTION JOINT



TRANSVERSE FORMED
EXPANSION JOINT

METHOD B: JOINT SEALING COMPOUND

GENERAL NOTES FOR METHOD "B"

1. UNLESS OTHERWISE SHOWN IN THE PLANS, EITHER METHOD "A" OR METHOD "B" MAY BE USED.
2. THE LOCATION OF JOINTS SHALL BE AS SHOWN ELSEWHERE IN THE PLANS.
3. THE ENGINEER SHALL SELECT A TARGET PLACEMENT THICKNESS FOR THE SEALANT DETAILS WHICH SHOW RANGES IN THICKNESS. THE TARGET THICKNESS WILL NORMALLY BE THE MIDPOINT OF THE RANGE.
4. THE JOINT RESERVOIR FOR SEALANT SHALL BE SAWED UNLESS OTHER-WISE SHOWN ON THE PLANS FOR THE LONGITUDINAL AND TRANSVERSE CONSTRUCTION AND THE TWO SAWED JOINTS.
5. THE JOINTS SHALL BE CLEANED IN ACCORDANCE WITH THE ITEM 438 AND PRIOR TO BEGINNING OPERATIONS, THE CONTRACTOR SHALL SUBMIT A STATEMENT FROM THE SEALANT MANUFACTURER SHOWING THE RECOMMENDED EQUIPMENT AND INSTALLATION PROCEDURES TO BE USED.
6. THE SAW CUT FOR THE LONGITUDINAL JOINT SHALL BE ONE FOURTH THE SLAB THICKNESS WHEN CRUSHED LIMESTONE IS USED AS THE COARSE AGGREGATE.

Texas Department of Transportation
Design Division (Pavement)

CONCRETE PAVING DETAILS
JOINT SEALS

JS–94

ORIG DRAW DATE: SEPT. 1994	DR:- LJB	CK:- LJB	DW:- BGD	CK:- CLG	NEG NO.: R0000
MODIFICATIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT NO.		SHEET
	DALLAS	6	CM 97 (449)		57
	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
	DALLAS		8050	18	034	BELT LINE

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
7 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
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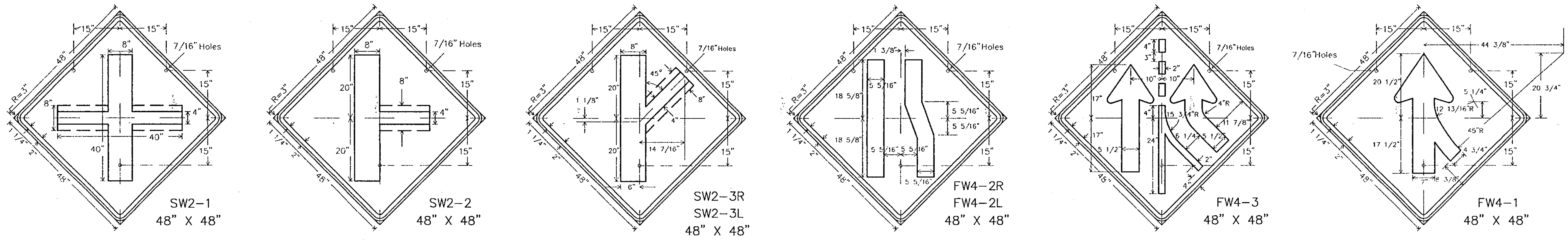
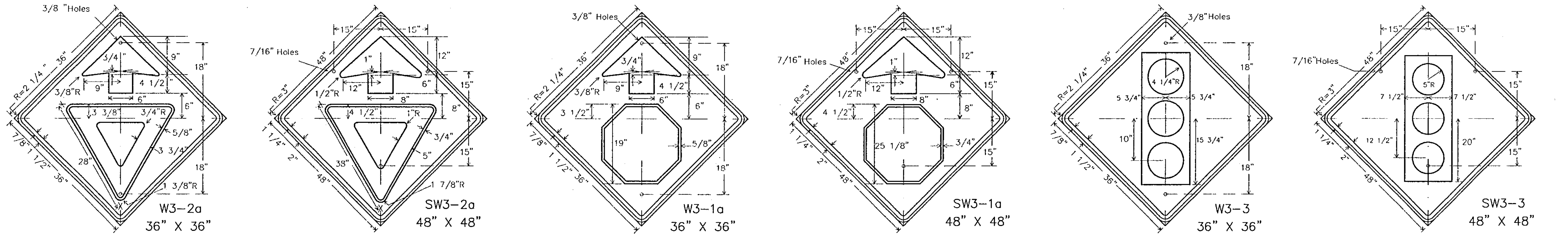




Border and Arrow – Black
Symbol – Red Border Band on White Background (Refl)
Background – Yellow Reflective

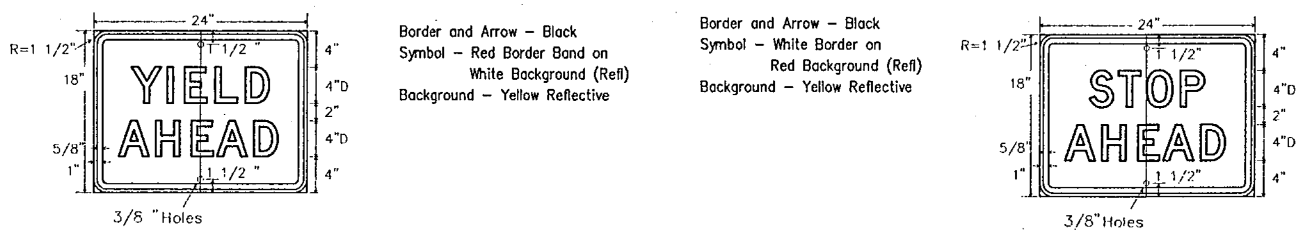
Border and Arrow – Black
Symbol – Red Border Band on White Background (Refl)
Background – Yellow Reflective

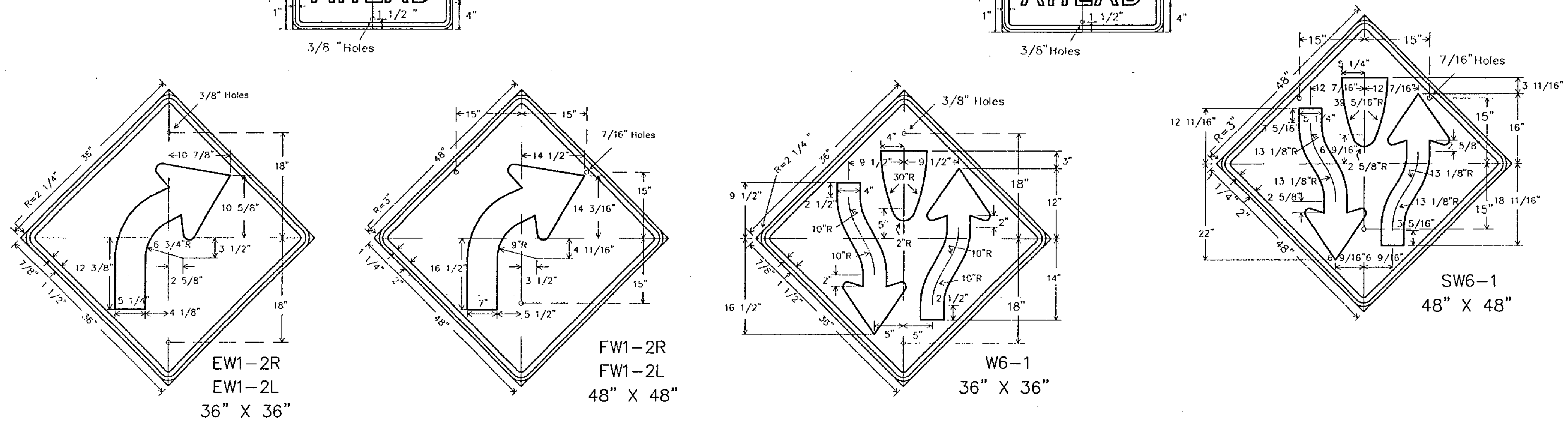
Border and Arrow – Black
Symbol – White Border on Red Background (Refl)
Background – Yellow Reflective

Border and Arrow – Black
Symbol – White Border on Red Background (Refl)
Background – Yellow Reflective

Symbol and Border – Black
Top Circle – Red Reflective
Bottom Circle – Green Reflective
Background – Yellow Reflective

Symbol and Border – Black
Top Circle – Red Reflective
Bottom Circle – Green Reflective
Background – Yellow Reflective





SPECIFICATION REFERENCE TABLE	
MATERIALS AND TESTS DIVISION SPECIFICATIONS	
PLYWOOD SIGN BLANKS	D-9-7100
REFLECTIVE SHEETING, TYPE C (HIGH SPECIFIC INTENSITY)	D-9-8300
VINYL NON-REFLECTIVE DECAL SHEETING	D-9-8320

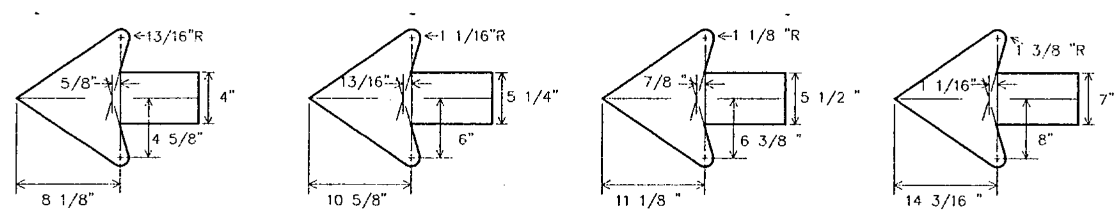
GENERAL NOTES:

The alphabets and lateral spacing between letters and numerals shall conform with the Texas "Manual on Uniform Traffic Control Devices for Streets and Highways", latest edition, and any approved changes thereto. Lateral spacing of text shall provide a balanced appearance. All materials shall conform to Department Specifications.

Legend (except where noted), shall be applied by screening process of black and/or transparent colored ink, cut-out black vinyl non-reflective decal sheeting and/or reflective sheeting or combination thereof. Background shall be yellow reflective sheeting (Type C).

Sign blanks shall be one piece 5/8 inch thick plywood (Type A), unless otherwise noted elsewhere in the plans.

ARROWHEAD DETAILS



STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

WARNING SIGNS

W(1)-95

ORIG DRAW DATE: JAN. 1981	DN:-LR	CK:-	DW:-DN	CK:-	NEG NO.:		
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT NO.				SHEET
1-85 7-90 8-95	DALLAS	6	CM 97 (449)				58
	COUNTY			CONTROL	SECTION	JOB	HIGHWAY
	DALLAS			8050	18	034	BELT LINE

9A

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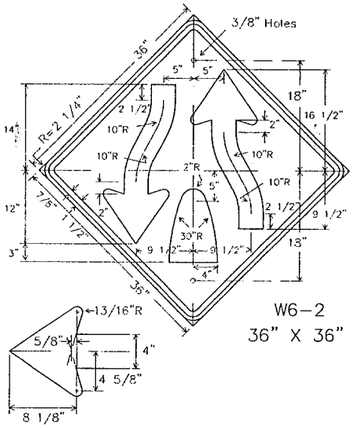

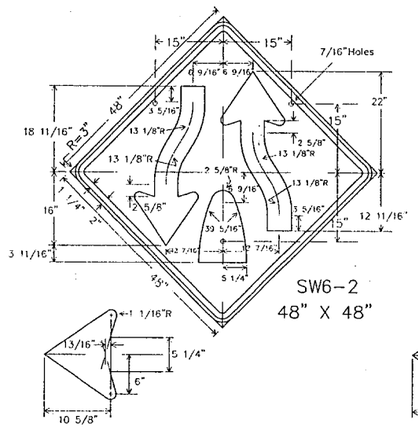

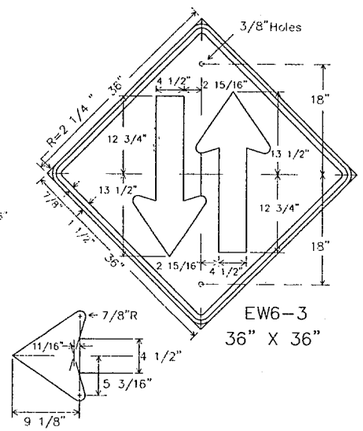

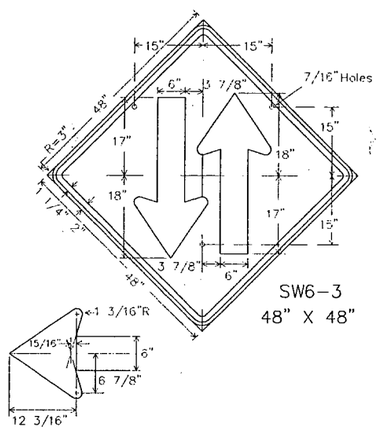

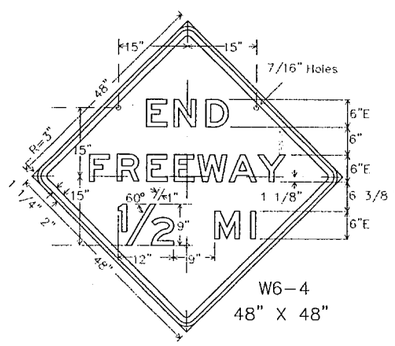

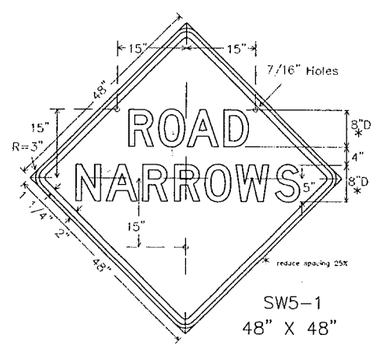

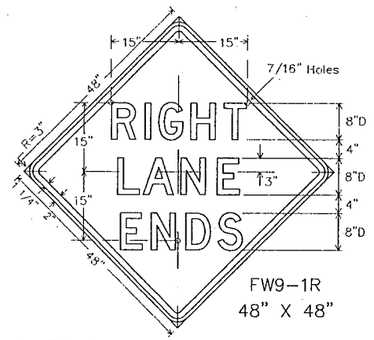

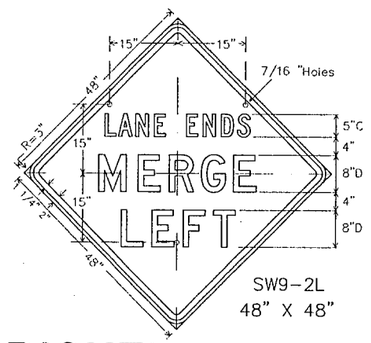

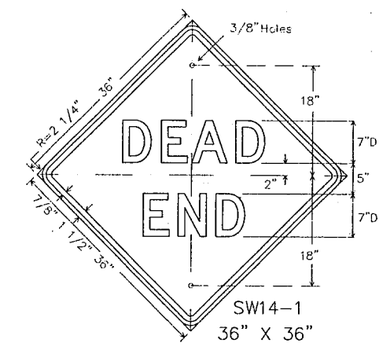

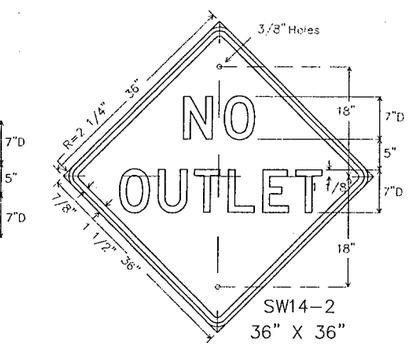

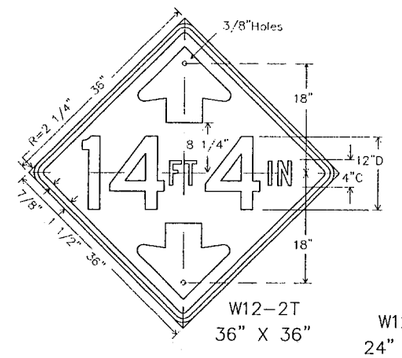

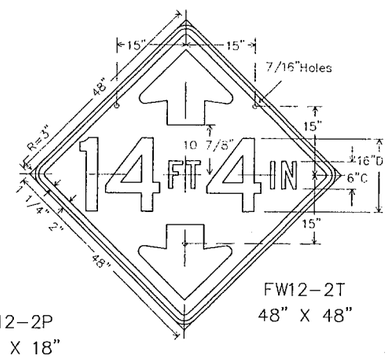

W12-2P
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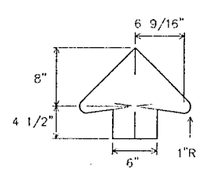

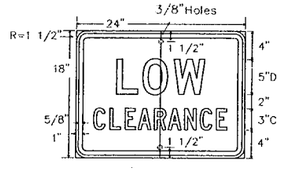

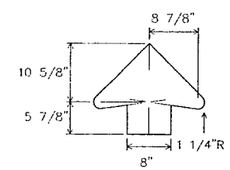

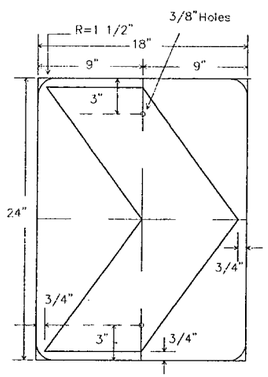

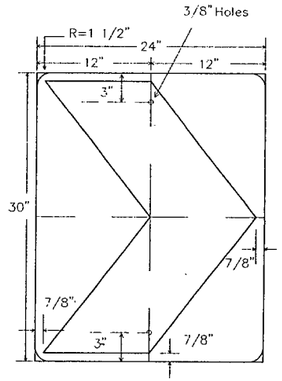

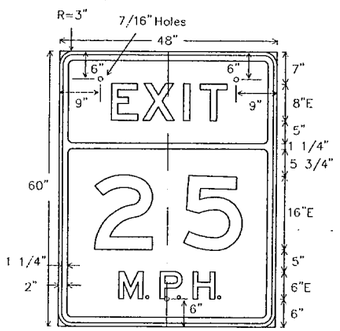

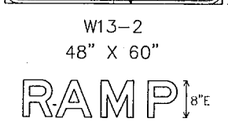

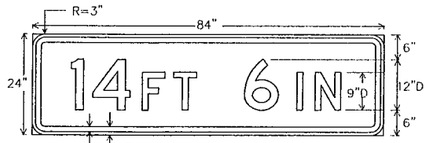

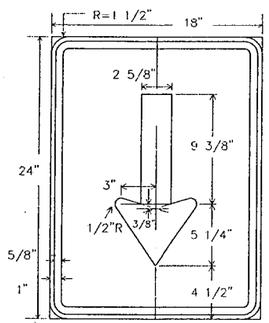

SPECIFICATION REFERENCE TABLE	
MATERIALS AND TESTS DIVISION SPECIFICATIONS	
PLYWOOD SIGN BLANKS	D-9-7100
REFLECTIVE SHEETING, TYPE C (HIGH SPECIFIC INTENSITY)	D-9-8300
VINYL NON-REFLECTIVE DECAL SHEETING	D-9-8320

GENERAL NOTES:

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Legend (except where noted), shall be black and applied by screening process, cut-out vinyl non-reflective decal sheeting or combination thereof. Background shall be yellow reflective sheeting (Type C).

Sign blanks shall be one piece 5/8 inch thick plywood (Type A), unless otherwise noted elsewhere in the plans.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

WARNING SIGNS

W(2)-95

ORIG DRAW DATE: JAN. 1981	DR-LR	CK:-	DW-DN	CK:-	REQ NO.:

REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT NO.	SHEET
1-82	DALLAS	6	CM 97 (449)	59
1-85				
7-90	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
8-95	DALLAS		8050	18	034	BELT LINE

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

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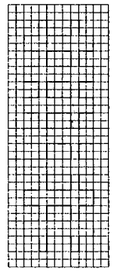
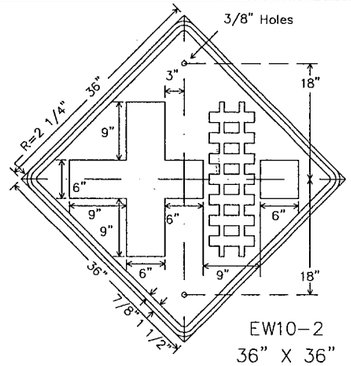
ACC: d58hp1c/usr/d580504
FILE:

DN: LR
CK: CW
DW: DN
CK: MT





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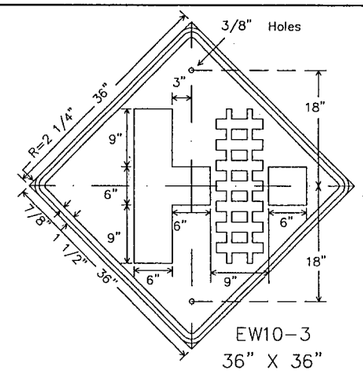

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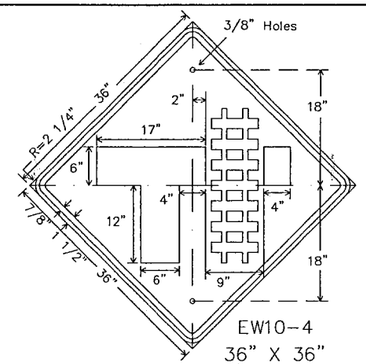

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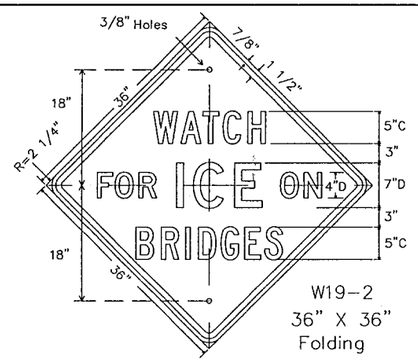

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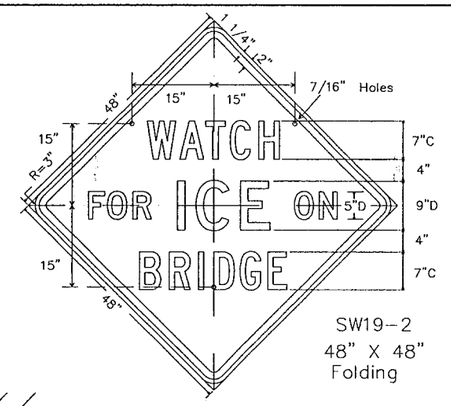
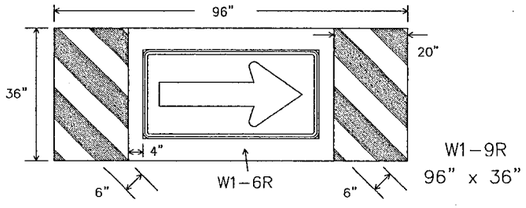
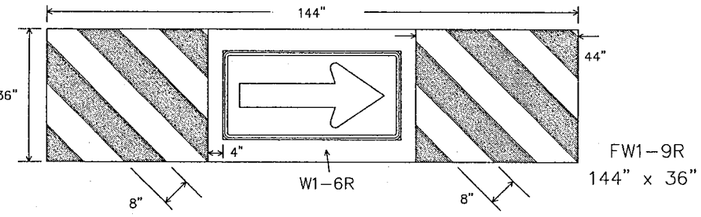
Folding



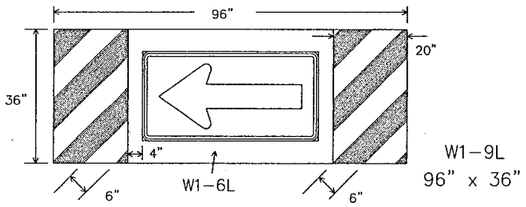
SW19-2
48" X 48"
Folding



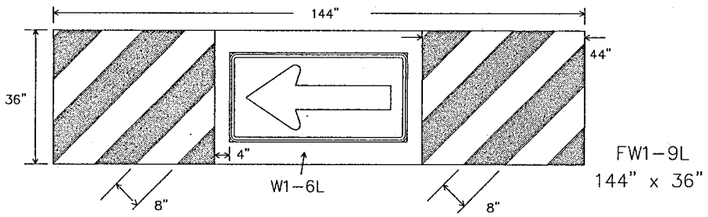
W1-9R
96" x 36"



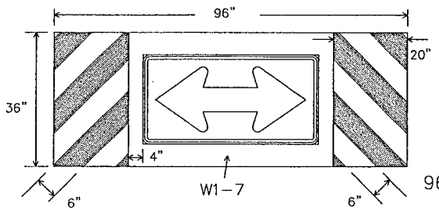
FW1-9R
144" x 36"



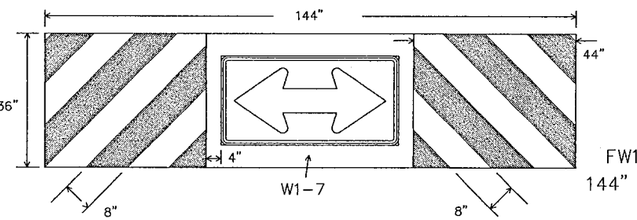
W1-9L
96" x 36"



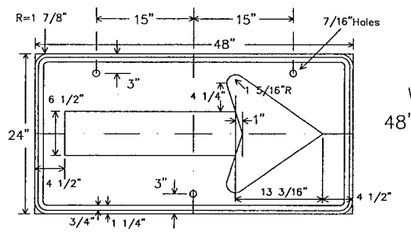
FW1-9L
144" x 36"



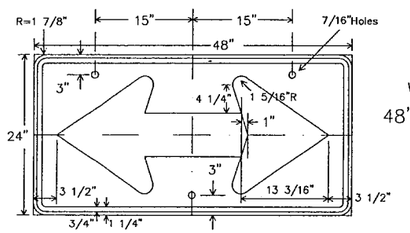
W1-10
96" x 36"



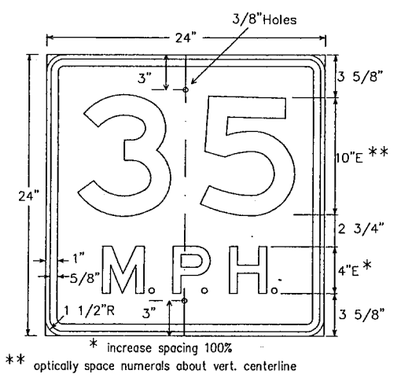
FW1-10
144" x 36"



W1-6
48" X 24"



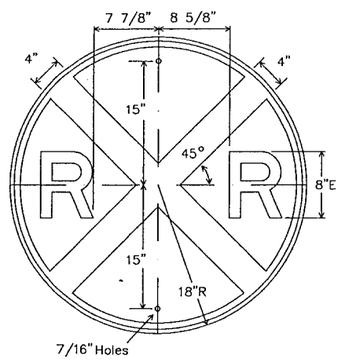
W1-7
48" X 24"



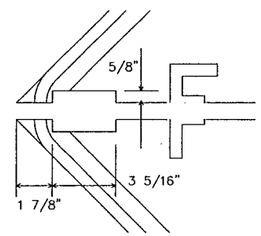
* increase spacing 100%
** optically space numerals about vert. centerline

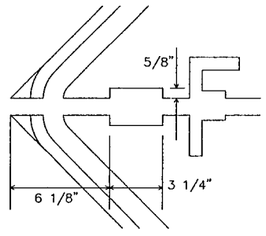
SW13-1
24" X 24"

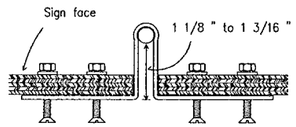
Speed value to be determined at the site by the Engineer.



W10-1
36" Diameter







Folding Sign Hinge Details

Aluminum folding signs shall use 3" flat hinges, three per sign. The hinge slot on each half of sign is 5/8" deep by 3 5/16" wide. The sign halves are seperated by 3/32" when hinges are installed to the back of the sign with four 3/16" pop rivets. Location of hinges on the sign are as shown on above detail.

Plywood folding signs shall use 6" strap hinges, three per sign. The hinge slot on each half of sign is 5/8" deep by 3 1/4" wide. The hinges are bent with tapered side of holes on the external side, and attached to the back of sign with pivot extending through to front of sign. Attachment of each hinge will be with four each of 10x24x1" flat head screws with a tapered head shank, 5/16"x 3/16" flat washers and 3/16" bolt x 7/16" wrench hex nuts. Hinge bending and location on sign are as shown on above details.

SPECIFICATION REFERENCE TABLE
MATERIALS AND TESTS DIVISION SPECIFICATIONS

PLYWOOD SIGN BLANKS	D-9-7100
ALUMINUM SIGN BLANKS	D-9-7110

Square Ft.	Min. Thickness
Less than 7.5	0.080
7.5 to 15	0.100
Greater than 15	0.125

REFLECTIVE SHEETING, TYPE C (HIGH SPECIFIC INTENSITY)	D-9-8300
VINYL NON-REFLECTIVE DECAL SHEETING	D-9-8320

GENERAL NOTES:

The alphabets and lateral spacing between letters and numerals shall conform with the Texas "Manual on Uniform Traffic Control Devices for Streets and Highways", latest edition, and any approved changes thereto. Lateral spacing of text shall provide a balanced appearance. All materials shall conform to Department Specifications.

Legend (except where noted), shall be black and applied by screening process, cut-out vinyl non-reflective decal sheeting or combination thereof. Background shall be yellow reflective sheeting (Type C).

Sign blanks shall be fabricated as specified in the plans of one piece 5/8 inch thick plywood (Type A) or one piece aluminum alloy (Type A) of the approved thickness.

Large arrow signs W1-9, W1-10, FW1-9 and FW1-10 shall be composed of a standard W1-6 or W1-7 sign attached directly to the background material.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

WARNING SIGNS

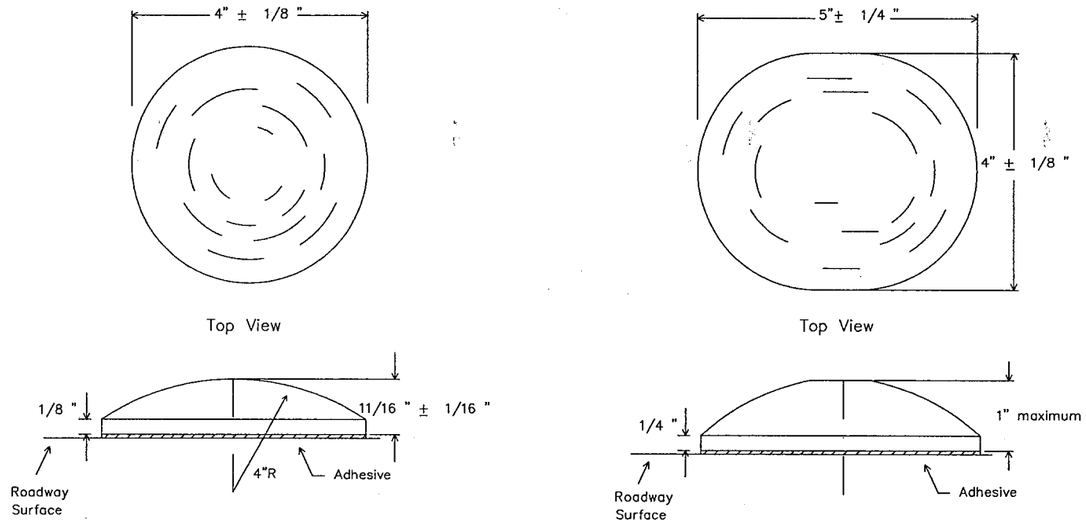
W(3)-95

ORIG DRAW DATE: JULY 1990	DR-LR	CK:-	DR-DN	CK:-	NEG NO.:
REVISIONS: 8-90, 8-95	STATE DISTRICT: DALLAS	FEDERAL REGION: 6	FEDERAL AID PROJECT NO.: CM 97 (449)		SHEET: 60
	COUNTY: DALLAS	CONTROL: 8050	SECTION: 18	JOB: 034	HIGHWAY: BELT LINE

DN: LR
CK: CW
DW: DN
CK: MT

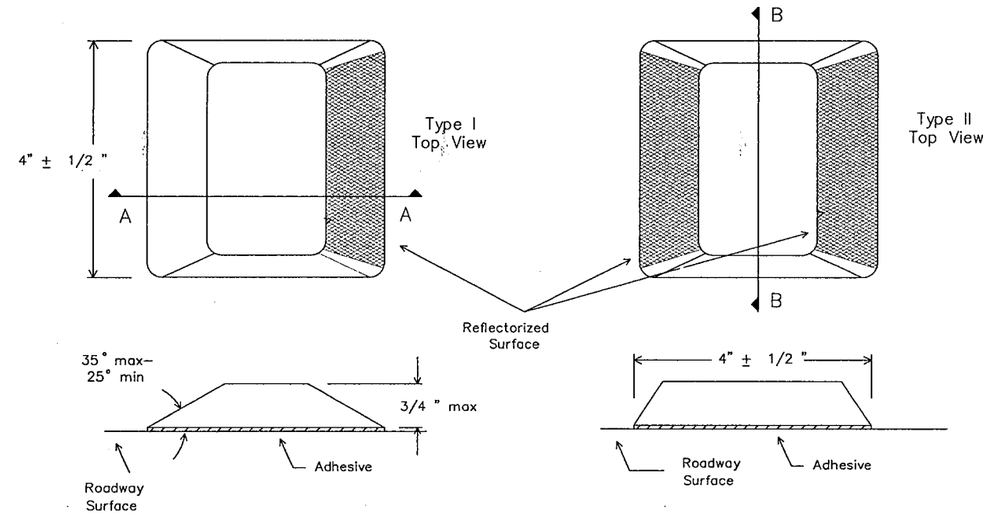
DATE:
FILE: d58np1c/usr/d580504

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

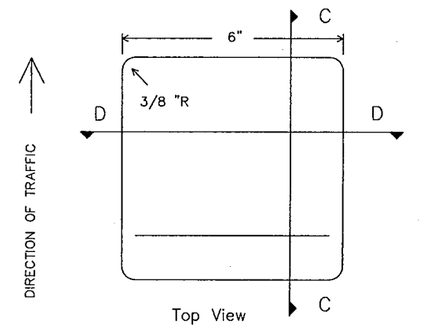


TRAFFIC BUTTONS
(NON–REFLECTORIZED)

NOTE: Minimum area of markers shall be not less than 12.5 square inches.
Either shape may be used but the same shape shall be used through out the project.

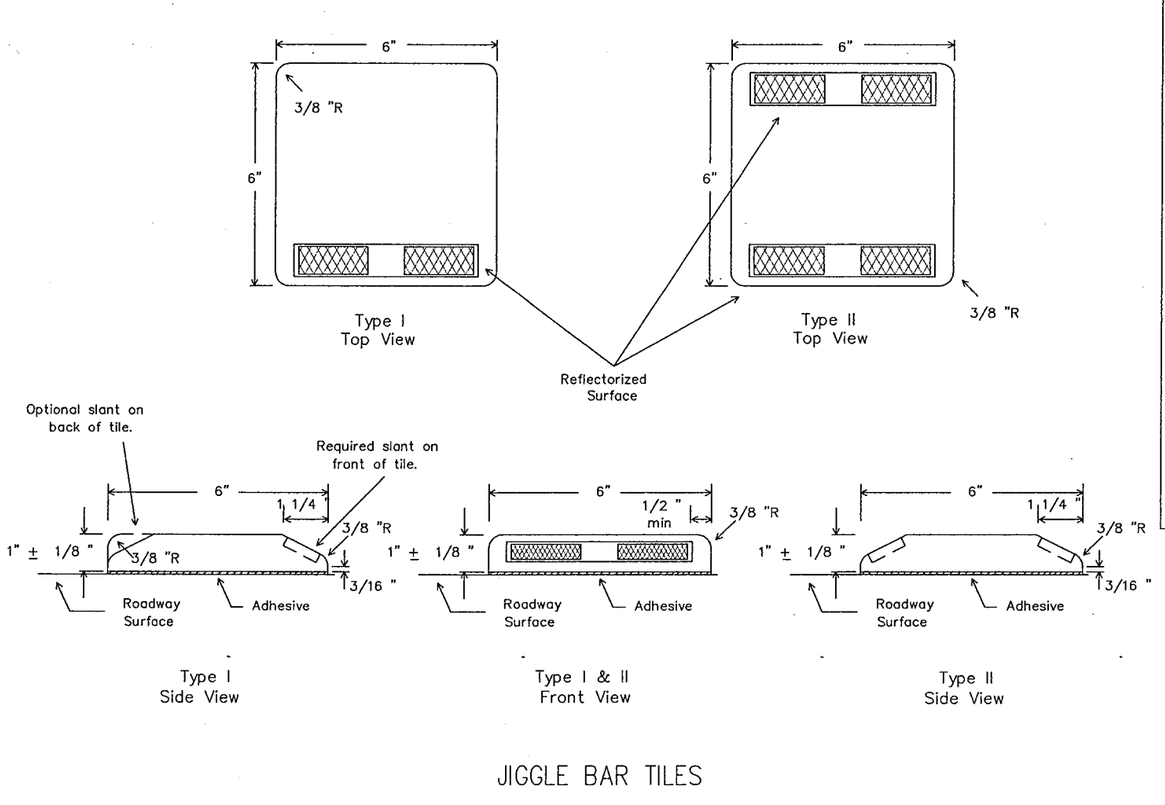


RAISED PAVEMENT MARKERS
(REFLECTORIZED)



JIGGLE BAR TILES
(NON–REFLECTORIZED)

"Jiggle Bars" consist of a number of Jiggle Bar Tiles placed in a linear configuration.



JIGGLE BAR TILES
(REFLECTORIZED)

SPECIFICATION REFERENCE TABLE	
MATERIALS AND TEST SPECIFICATIONS (D–9)	
JIGGLE BAR TILE	D–9–4100
PAVEMENT MARKERS (REFLECTORIZED)	D–9–4200
TRAFFIC BUTTONS	D–9–4300
BITUMINOUS ADHESIVE	D–9–6130

GENERAL NOTES:

RAISED PAVEMENT MARKERS (RPMs) MAY CONSIST OF TRAFFIC BUTTONS, PAVEMENT MARKERS AND/OR JIGGLE BAR TILES. PAVEMENT SURFACE SHALL BE PREPARED AND CLEANED SUBJECT TO APPROVAL OF THE ENGINEER BEFORE ADHESIVE AND RPMs ARE PLACED.

JIGGLE BARS SHALL BE ORIENTED PERPENDICULAR TO ROADWAY. JIGGLE BARS SHALL ALSO BE PLACED AT SUCH OTHER LOCATIONS AS SHOWN IN PLANS OR AS DIRECTED BY THE ENGINEER.

MARKERS, BUTTONS AND JIGGLE BAR TILES SHOWN ARE FOR ILLUSTRATION PURPOSES ONLY AND NOT INTENDED TO SPECIFY ANY PARTICULAR PRODUCT. ALL PAVEMENT MARKERS PROVIDED SHALL BE OF THE SAME MANUFACTURER.

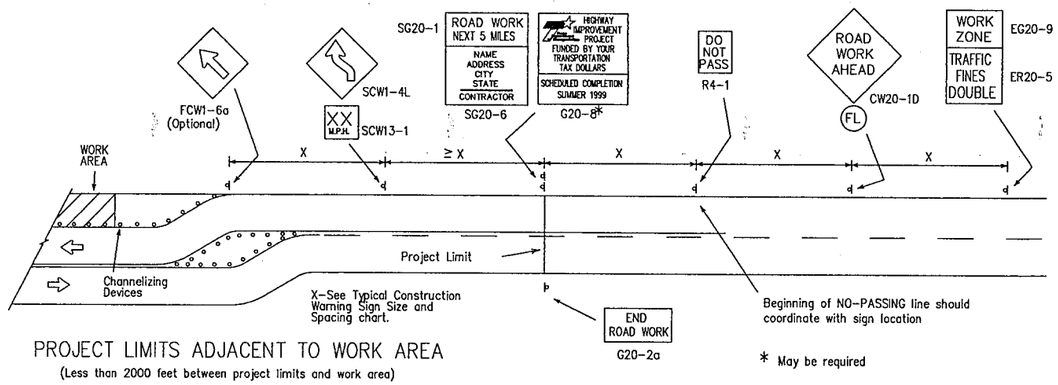
ALL DIMENSIONS ARE ± 1/8 " UNLESS OTHERWISE NOTED.

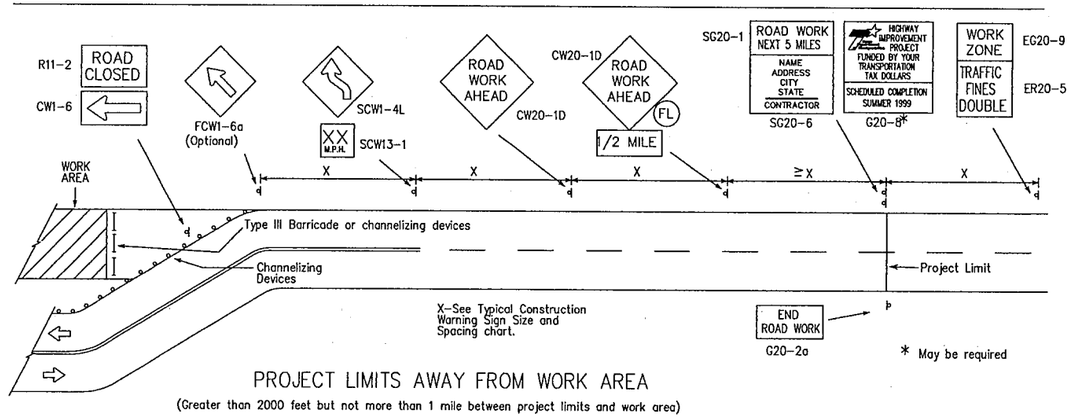
STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

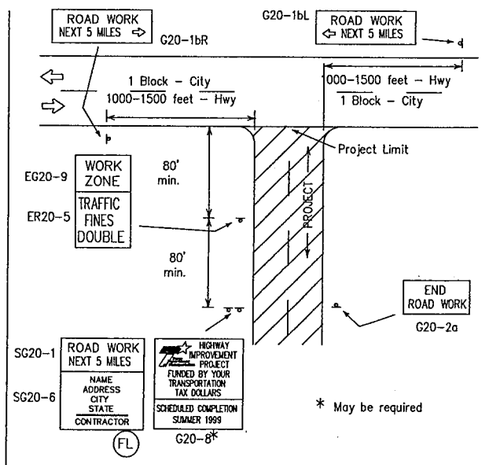
RAISED PAVEMENT MARKERS REFLECTIVE PAVEMENT MARKERS, TRAFFIC BUTTONS & JIGGLE BAR TILE

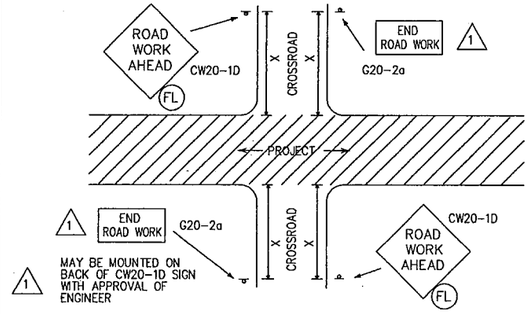
RPM(1)–92

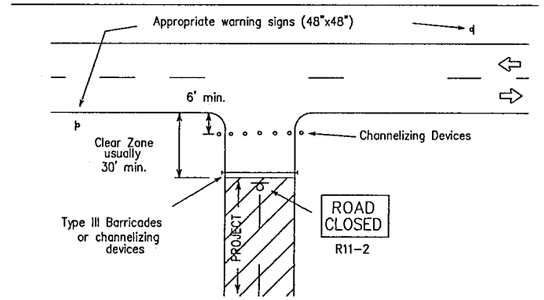
ORIG DRAW DATE: JANUARY 1981	DN:–LR	CK:–	DW:–DN	CK:–	MISC NO.:
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT NO.		SHEET
2–82 10–86	DALLAS	6	CM 97 (449)		61
7–85 12–90	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
11–85 4–92	DALLAS		8050	18	034	BELT LINE
7–86						21A

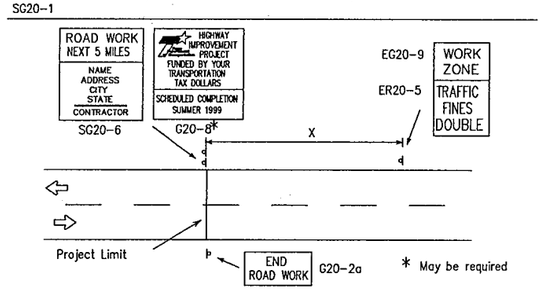


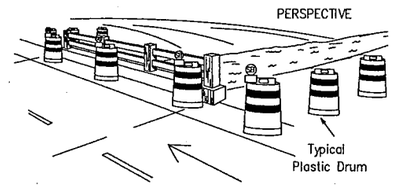


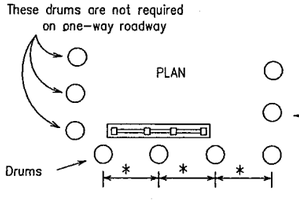












PROJECT LIMIT TRAFFIC CONTROL DEVICES

PROJECT LIMITS ADJACENT TO WORK AREA

(Less than 2000 feet between project limits and work area)

PROJECT LIMITS AWAY FROM WORK AREA

(Greater than 2000 feet but not more than 1 mile between project limits and work area)

PROJECT LIMIT GENERAL NOTES

SIGNS AND WARNING LIGHTS

1. When specified on this sheet or other sheets in the plans, warning lights for a sign shall be installed and maintained by the contractor. Warning lights shall be attached to the sign support using a 1/2" bolt (minimum) of sufficient length for three washers, lock washer and a nut.
2. Warning lights shall be maintained as directed by the Engineer.
3. Appropriate standard traffic control devices shall be used as required by the plans. Any variation in the plans shall be documented by written agreement between the Engineer and the contractor's responsible person.
4. As a general rule, additional traffic control devices in advance of the project limits should only be used in those cases where a work area, a detour, or a potentially hazardous location is less than 2000 feet inside the project limits.
5. The traffic control devices used in the above illustrations are examples only. Field conditions and engineering judgement should dictate the most appropriate traffic control devices to be used. Any variation in the plans shall be documented by written agreement between the Engineer and the contractor's responsible person.
6. As detailed above, the ROAD WORK NEXT X MILES, CONTRACTOR and END ROAD WORK signs shall be erected at or near the project limits and the WORK ZONE TRAFFIC FINES DOUBLE sign shall be erected in advance of the project limits. These signs should be adjusted to provide adequate spacing to other signs. The OBSERVE WARNING SIGNS STATE LAW sign shall be installed when required elsewhere in the plans.
7. With the agreement of an adjacent project Engineer, the Engineer(s) may allow the omission of 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 will erect the necessary warning signs as shown on these sheets, the TCP sheets or as directed by the Engineer. The ROAD WORK NEXT X MILES sign shall be revised to show appropriate work zone distance.
8. Duplicate construction warning signs should be erected on the median side of divided highways where median width will permit and traffic volumes justifies the signing.
9. Except for devices required by Note 6, traffic control devices should be in place only while work is actually in progress or a definite need exists.
10. Sign size should be based on the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways" (TMUTCD).
11. The Special Public Information sign (G20-8 shall be installed at the project limits when required elsewhere in the plans. Refer to SMD Standards for approved mounting details.

PROJECT LIMITS AT T-INTERSECTION

1. The ROAD WORK NEXT X MILES sign should be erected on the intersected highway as detailed above.
2. On the intersected roadway, additional traffic control devices, such as a flagger and accompanying signs or other signs, should be used when work is being performed at or near the intersection.

CROSSROAD SIGNING AND BARRICADING

PROJECT LIMITS FOR CLOSED ROADWAY

Barricades shall be erected completely across roadway. Channelizing Devices may be drums, vertical panels or cones as specified in the plans.

PROJECT LIMITS AWAY FROM WORK AREA

(Greater than 1 mile between project limits and work area)

CULVERT WIDENING OR OTHER ISOLATED WORK WITHIN THE PROJECT LIMITS

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 Panel on flexible support may be substituted for drums when shoulder width is less than 4'.

4). When shoulder width is greater than 12', steady-burn lights may be omitted, if drums are used.

Increase number of plastic drums on side of approaching traffic if crown width makes it necessary. (minimum of 2 and maximum of 4 drums)

* Approx. 8' to 10' (maximum) spacing between drums.

CROSSROAD SIGNING AND BARRICADING

1. Except as noted elsewhere in plans, the usual minimum signing on a crossroad approach should be one CW20-1D ROAD WORK AHEAD sign and G20-2a END ROAD WORK sign. Where speeds and volumes are relatively low, a smaller ROAD WORK AHEAD sign may be used.

When approved by the Engineer, on low volume crossroads, advance warning signs may be the reduced size 36" x 36" ROAD WORK AHEAD (CW20-1D) sign mounted back to back with the reduced size 24" x 18" END ROAD WORK (SG20-2a) sign. See the "STANDARD HIGHWAY SIGN DESIGNS for TEXAS" manual and BC(9) thru BC(9C) for sign design details. On low volume crossroads, advance signing may be omitted if approved by the Engineer.

Additional signs such as FLAGGER AHEAD, LOOSE GRAVEL, or other appropriate signs may be required. When additional signs are required, such signs will be considered part of the minimum requirements.

2. The G20-1a sign shall be required on major crossroads to advise motorists of the length of construction in either direction from the intersection.
3. On higher volume crossroads additional traffic control devices may be noted elsewhere in the plans.
4. When work occurs in the intersection area, appropriate traffic control devices shall be in place.

WARNING LIGHTS

Warning lights shall meet the requirements of the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways."

Flashing and Steady-Burn Warning Lights shall NOT be installed on barricades.

Type A-Low Intensity Flashing Warning Lights are commonly used with signs. They are intended to warn of an approaching potentially hazardous area. Their use shall be as indicated on this sheet and/or other sheets of the plans by the designation "(FL)".

Type-C 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)".

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING 1,5,6

Roadway Classi-fication	Posted Speed	Sign Spacing "X" Δ	Long-term Or Intermediate-term Stationary Approach Warning Signs CW20 Series And CW22-1 Sign		Short-term Stationary Or Short Duration Approach Warning Signs CW21 Series		Other Warning Signs
	MPH	Feet (Apprx.)	Standard inches	Minimum inches 4	Standard Inches 7	Minimum inches 7 4	Standard mm 7
Conven.	30	120	48 x 48	36 x 36	30 x 30 or 36 x 36	24 x 24 or 30 x 30	30 x 30 or 26 x 36
↓	35	160	↓	↓	↓	↓	↓
↓	40	240	↓	↓	↓	↓	↓
↓	45	320	↓	Use Standard Size	↓	Use Standard Size	↓
↓	50	400	↓	↓	↓	↓	↓
↓	55	500 2	↓	↓	↓	↓	↓
↓	60	600 2	↓	↓	48 x 48	↓	48 x 48
↓	65	700 2	↓	↓	↓	↓	↓
↓	70	800 2	↓	↓	↓	↓	↓
Exp or Frwy	*	* 3	↓	↓	**	**	**

* For typical sign spacings on expressways and freeways, see TMUTCD typical appilcation diagrams or TCP Standard Sheets.

Δ Minimum distance from work area to 1st Advance Warning sign and/or distance between each additional sign.

** Smaller sign sizes may be used where sign designs have not been included in the "Standard Highway Sign Designs for Texas" manual.

General Notes:
1. Special or larger size signs may be used as may be necessary.
2. Distance between signs should be increased as required to have 1500 feet advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. For use only on secondary roads or city streets where speeds are low.
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in TMUTCD, Appendix A for complete list of all available sign design sizes.
7. Where two sizes are listed, see sign size listing in TMUTCD, Appendix A for proper size.

Only pre-qualified products shall be used. A list of compliant products and their sources may be obtained by writing or faxing:
Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3335
Fax (512) 416-3161
E-mail TRF-STANDARD@mailgw.dot.state.tx.us

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

BARRICADE AND CONSTRUCTION STANDARDS

ADVANCE SIGNING
CROSSROAD SIGNING
WARNING LIGHTS

BC(1)-98

©TxDOT Feburary 1998	DN:-LR	CK:-DTN	DW:-DN	CK:-GB	NEG NO.:

REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT		SHEET
	DALLAS	6	CM 97 (449)		62
	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
	DALLAS		8050	18	034	BELT LINE

101

GENERAL NOTES

FOR TYPE III BARRICADES

Type III Barricades are to be used at each end of construction projects closed to all traffic.

CK: 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 for, the chevron striping may slope downward in both directions from the center of the barricade.

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 to the right.

Identification markings may be shown only on back side of barricade rails. Maximum height of letters shall be 1 inch.

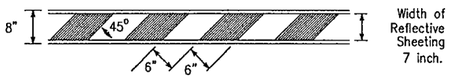
Barricades shall not be placed parallel to traffic unless an adequate clear zone is provided (see BC(1)).

Barricades shall be made using pre-qualified materials. A list of compliant products and their sources may be obtained by writing or faxing:

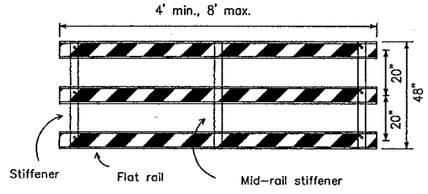
Standards Engineer
Traffic Operations Division – TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3335
Fax (512) 416-3161
E-mail TRF-STANDARD@mailgw.dot.state.tx.us

Barricades shall NOT be used as a sign support.

TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



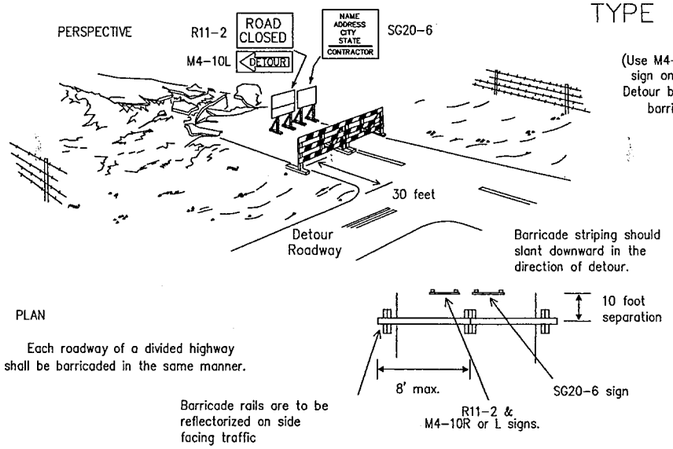
TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES



Stiffner may be inside or outside of support.

* For dimensions of components refer to TxDOT approved products list.

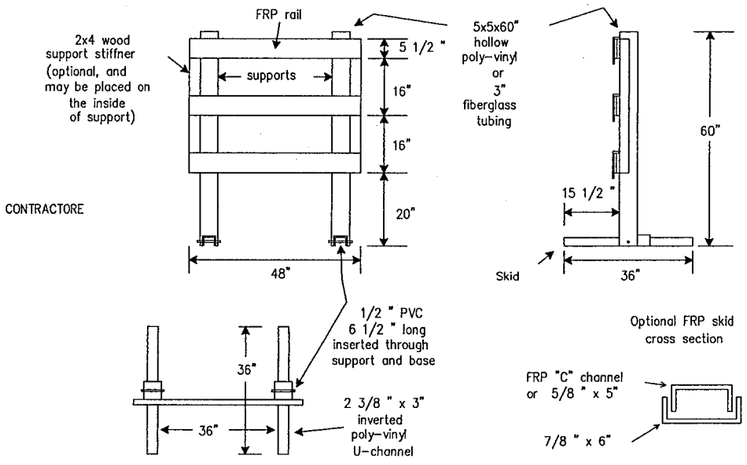
TYPE III BARRICADE (SKID)



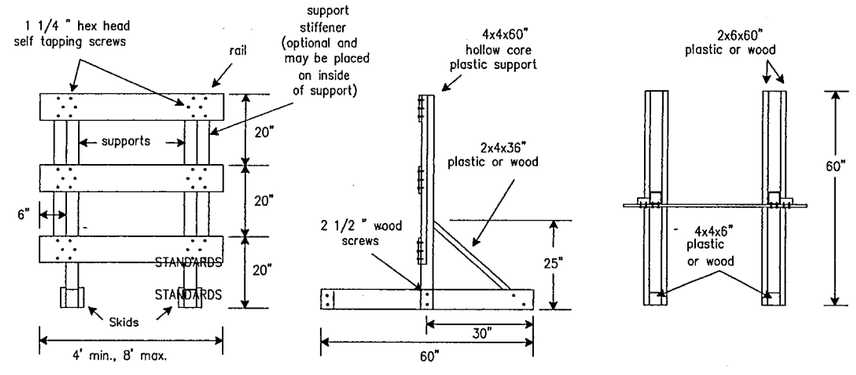
1). R11-2 and M4-10 signs should be mounted on independent supports at 7 foot mounting height in center of roadway.

2). Advance signing, including construction warning signs, and detour signing shall be as specified elsewhere in the plans.

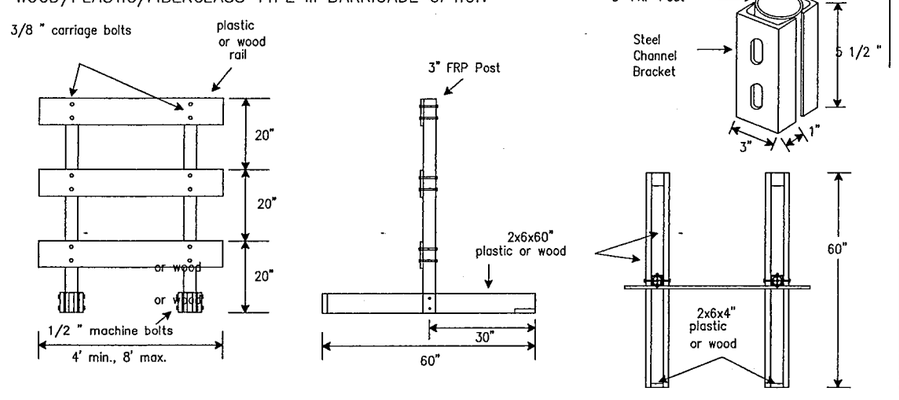
PLASTIC/FIBERGLASS TYPE III BARRICADE OPTION



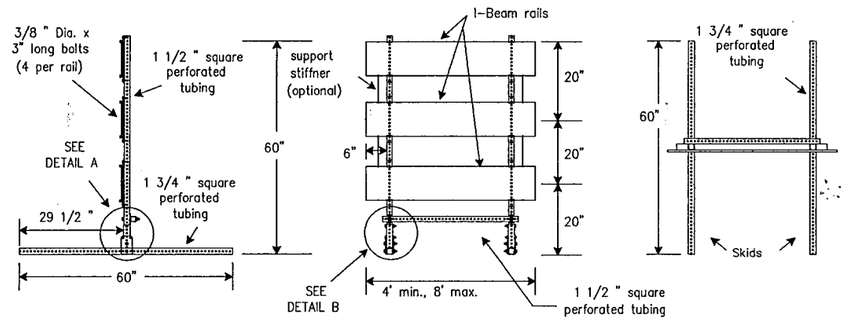
WOOD/PLASTIC TYPE III BARRICADE OPTION



WOOD/PLASTIC/FIBERGLASS TYPE III BARRICADE OPTION

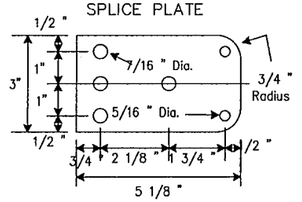


PERFORATED STEEL/WOOD/PLASTIC TYPE III BARRICADE OPTION

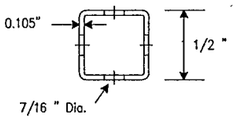


NOTE: If flat rails are used, refer to Wood/Plastic Option for vertical placement of rails

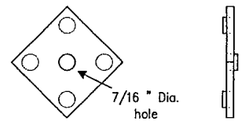
SPLICE PLATE



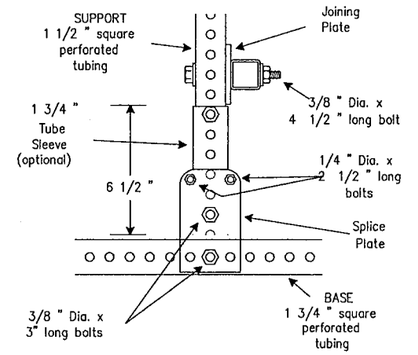
1 1/2 " PERFORATED SQUARE STEEL TUBE



JOINING PLATE

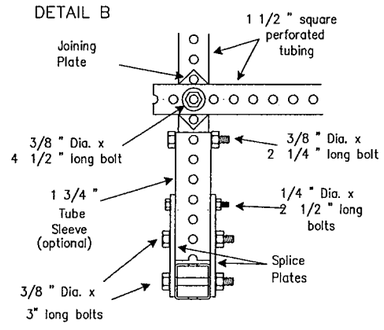


DETAIL A



(Option: tube sleeve and base may be welded)

DETAIL B



STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

BARRICADE AND CONSTRUCTION STANDARDS

BARRICADES (SKID MOUNT TYPE) — BC(2)-98

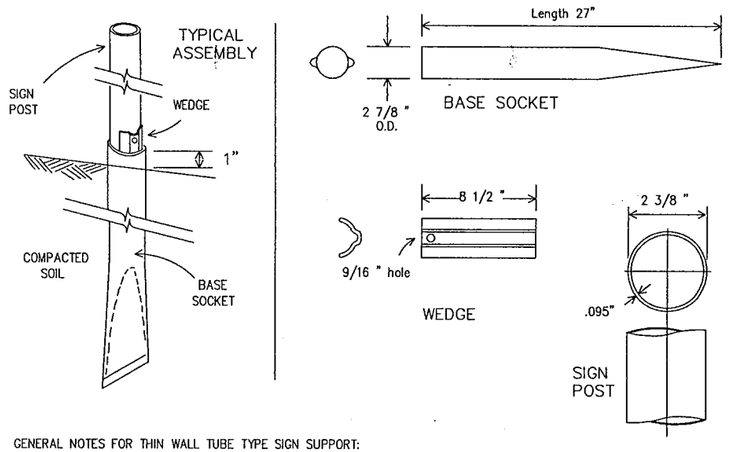
©TxDOT Feburary 1998	DN:-LR	CK:-DTN	DW:-DN	CK:-GB	MSG NO.:	
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT			SHEET
	DALLAS	6	CM 97 (449)			63
	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
	DALLAS		8050	18	034	BELT LINE

LEVELS DISPLAYED	DATE:	ACC:	FILE:
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63			

DN:
CK:
DW:
CK:

TYPE III BARRICADE (POST TYPE)

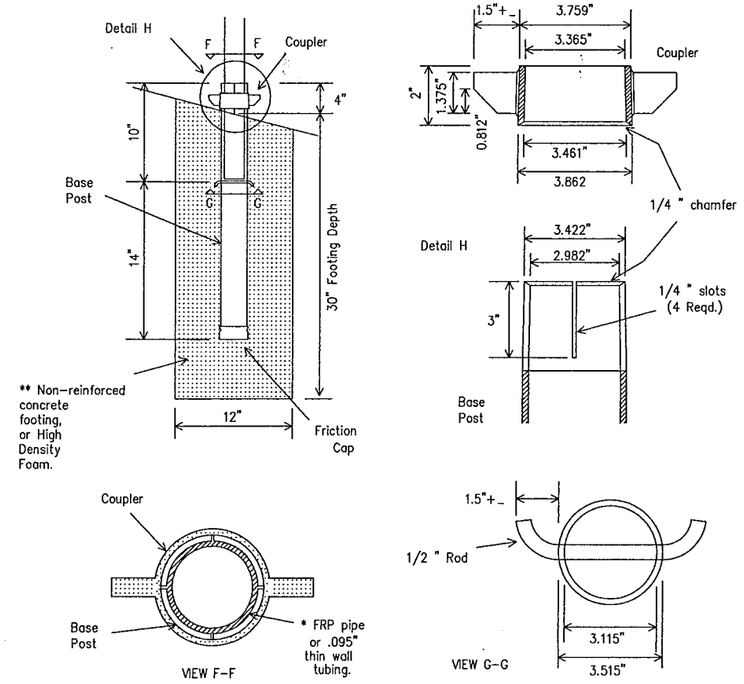
POZ-LOC (Driveable)



GENERAL NOTES FOR THIN WALL TUBE TYPE SIGN SUPPORT:

1. The BASE SOCKET is formed from 2 7/8 " O.D. x 12 gauge galvanized pipe.
2. The WEDGE is formed from 11 gauge steel galvanized per ASTM A525.
3. The SIGN POST is 2.375" O.D. x 0.095" thin wall steel tubing.
4. Steel Supports shall be made from new material and shall be corrosion resistant. Steel supports shall be galvanized in accordance with ASTM Designations A123 or A525 (G-90 or better).
5. Supports shall be straight within 1/4 " per 5 feet of length and shall have a smooth, uniform finish free from defects affecting strength or appearance. Any bolt holes and sheared ends shall be free from burrs. Bases of multisection supports shall not extend more than 5 inches above ground when installed.
6. Bolts, nuts, screws, washers and other miscellaneous hardware shall be galvanized in accordance to ASTM Designation: A153 Class C or D, or B695 Class 50.
7. Barricade supports systems used on this sheet may be suitable for only certain soil types. The contractor is responsible for selecting the appropriate support system for soil conditions on each project.

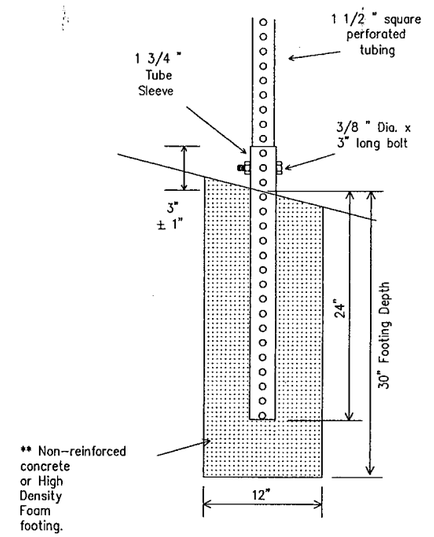
UNIVERSAL ANCHOR SYSTEM



* Plastic insert must be used with 1/16 " thin wall tubing.

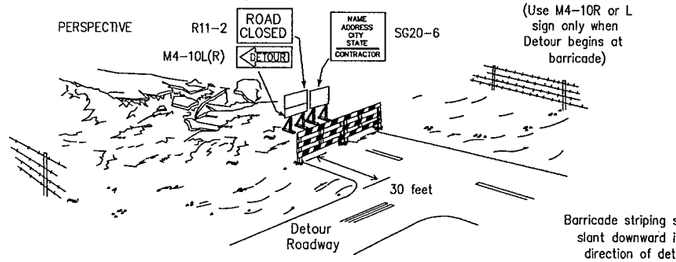
** Footing shall be removed and backfilled when barricade is removed.

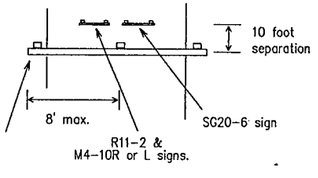
SQUARE TUBING



Barricades shall NOT be used as a sign support.

TYPE III BARRICADE (POST TYPE) TYPICAL APPLICATION





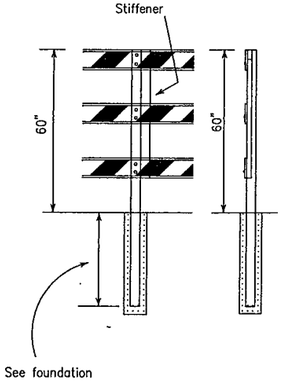
Each roadway of a divided highway shall be barricaded in the same manner.

Barricades rails are to be reflectorized on all sides that face traffic.

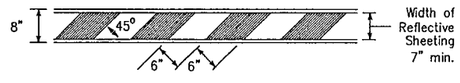
1). R11-2 and M4-10 signs should be mounted on independent supports at 7 foot mounting height in center of roadway.

2). Advance signing, including construction warning signs, and detour signing shall be as specified elsewhere in the plans.

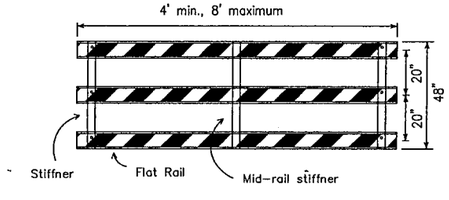
TYPE III BARRICADE (POST)



TYPICAL STRIPING DETAIL FOR BARRICADE RAIL



TYPICAL PANEL DETAIL FOR SKID OR POST TYPE BARRICADES



Stiffner may be inside or outside of support.

* For dimensions of components refer to TxDOT approved products list.

Barricades shall be made using pre-qualified materials. A list of compliant products and their sources may be obtained by writing or faxing:

Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3335
Fax (512) 416-3161
E-mail TRF-STANDARD@mailgw.dot.state.tx.us

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

BARRICADE AND CONSTRUCTION STANDARDS

BARRICADES (POST TYPE)

BC(3)-98

©TxDOT February 1998			DN-LR	CK-DTN	DW-DN	CK-GB	MSG NO:
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT				SHEET
	DALLAS	6	CM 97 (449)				64
	COUNTY		CONTROL	SECTION	JOB		HIGHWAY
	DALLAS		8050	18	034		BELT LINE

103

DN: CK: DW: CK:

DATE: ACC: FILE:

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

GENERAL NOTES:

1. Sign Supports detailed on this sheet have been crash tested and are approved breakaway systems. TxDOT acceptance of these breakaway systems does not cover the structural features of the sign support systems.
2. Sign support systems approved by FHWA may be used as approved fixed sign supports. The contractor shall provide documentation from FHWA approving sign support systems not shown on this sheet.
3. Sign support systems listed on this sheet may be suitable for only certain soil types. The contractor is responsible for selecting appropriate sign support systems for soil conditions on each project.
4. Barricades shall NOT be used as sign supports.

WORK ZONE SIGNS

GENERAL

Standard signs shall be used as required by the BC Standard sheets, the plans, or as directed by the Engineer to regulate, warn, and guide traffic. All sign usage and erection shall be in strict accordance with the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways" (TMUTCD). The Contractor shall maintain each sign as directed by the Engineer.

The Contractor may use either the sign designs shown on the BC Standard Sheets, or those sign designs shown in the "Standard Highway Sign Designs for Texas" (SHSD). All work zone signs provided for in the TMUTCD but not detailed in the plans may be used when directed by the Engineer.

SIZE OF SIGNS

On secondary roads or city streets where speeds are low, smaller size construction warning signs may be used with the written approval of the Engineer and if the sign size is in accordance with the "Typical Construction Warning Sign Size and Spacing Chart" shown on page 6C-11 of the TMUTCD, Part VI.

SPLICES

All wooden sign panels fabricated from 2 or more pieces shall have one or more plywood cleats, 1/2 inch thick by 6 inches wide, fastened to the back of the sign and extending fully across the sign.

Wood Sign posts shall not be spliced.

REFLECTIVE SHEETING

Reflectorized signs shall be constructed of retroreflective sheeting meeting the color and reflectivity requirements of Material Specification D-9-8300 or D-9-8310. Day only is defined as a device that is used only during daylight hours.

Type A, B or C sheeting may be used for all day only applications. Type A sheeting should be used for all white background regulatory signs. Type C sheeting shall be used for all other applications.

The above applications of sheeting grades to different type signs will apply unless otherwise specified in the plans.

TYPE A = Engineer Grade, TYPE B = Super Engineer Grade, TYPE C = High Specific Intensity

SIGN LETTERS

All sign lettering shall be clear, open rounded type capital letters as approved by and as published by the Federal Highway Administration (FHWA). Signs and lettering shall be of first class workmanship equivalent to that of the Department standard signs.

WORK DURATION TERMINOLOGY-(as defined by the "Texas Manual on Uniform Traffic Control Devices")

Long-term Stationary = occupies a location 3 or more days;
Intermediate-term Stationary = occupies a location from overnight to 3 days;
Short-term Stationary = daylight work that occupies a location from 1 to 12 hours;
Short Duration = occupies a location up to 1 hour.

SUPPORTS AND MOUNTING HEIGHT

The bottom of Long-term / Intermediate-term signs shall be at least 7 feet above the paved surface. The bottom of any supplementary plaques shall be at least 6 feet above the paved surface.

The bottom of Short-term / Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 2 feet above the ground. Long-term / Intermediate-term Signs may be used in lieu of Short-term / Short Duration signing. Short-term / Short Durations signs shall be used only during daylight and removed at the end of the workday.

Regulatory signs shall be mounted at least 7 feet above the paved surface regardless of work duration.

Wood sign supports shall be painted white.

SIGN SUPPORT WEIGHTS

Where sign supports require the use of weights to keep from turning over, the use of some type of sandbag is recommended. The use of pieces of rock, concrete, iron, steel or other solid objects will not be permitted.

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.

REMOVING OR COVERING

When sign messages may be confusing or no longer apply, the signs shall be removed or completely covered. When signs are covered the material used shall be opaque, such as heavy mil black plastic. Burlap shall not be used to cover signs. Signs shall be removed upon completion of the work.

Duct tape or other adhesive material shall not be affixed to sign face.

Only pre-qualified products shall be used. A list of compliant products and their sources may be obtained by writing or faxing:

Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3335
Fax (512) 416-3161
E-mail TRF-STANDARD@mailgw.dot.state.tx.us

DN:
CK:
DW:
CK:

DATE:
ACC:
FILE:

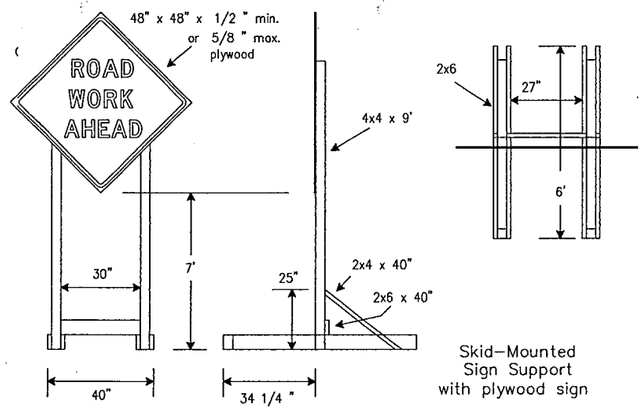
LEVELS DISPLAYED

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	

LONG/INTERMEDIATE TERM STATIONARY PORTABLE SIGN SUPPORTS

7 Foot Mounting Height

(SKID MOUNTED)

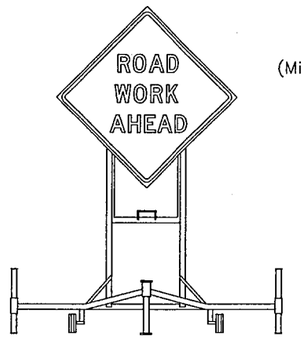


Skid-Mounted Sign Support with plywood sign

(POST TYPE)
Refer to acceptable products list.

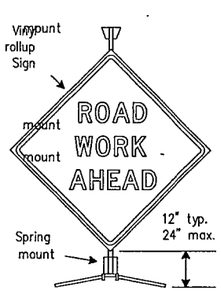
WHEELED PORTABLE SIGN SUPPORT

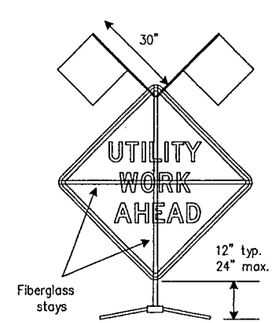
with plywood sign
(Minimum thickness 1/2 inch)
TxDOT Design



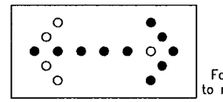
SHORT TERM STATIONARY/SHORT DURATION PORTABLE SIGN SUPPORTS

1 Foot Mounting Height





TYPICAL FLASHING ARROW PANEL



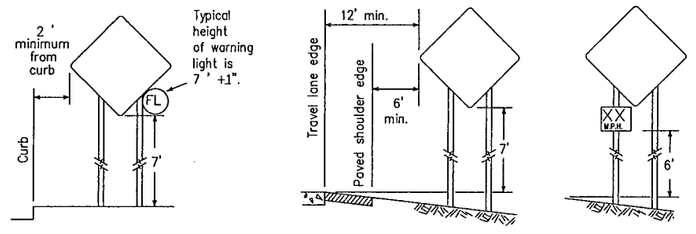
For traffic to move right.

ATTENTION: Arrow panels shall be equipped with automatic dimming devices.

1. The Advance Warning Flashing Arrow Panel should be used for all lane closures (multilane roadway), or slow moving maintenance or construction activities on the traveled way. Arrow panels should not be used on two-lane roadways, detours, diversions or work on shoulders unless the CAUTION mode is used.
2. Necessary signs, barricades or other traffic control devices should be used in conjunction with the Advance Warning Arrow Panel.
3. The Arrow panel should have the capability of the following display selections: LEFT ARROW, RIGHT ARROW, LEFT and RIGHT ARROW and CAUTION. The CAUTION mode consists of four corner lamps flashing simultaneously.
4. The Arrow panel shall be capable of minimum 50 percent dimming from rated lamp voltage. The flashing rate of the lamps shall not be less than 25 times per minute nor more than 40 flashes per minute. The Advance Warning Flashing Arrow Panel shall be mounted on a vehicle, trailer or other suitable support.
5. Minimum lamp "on time" shall be approximately 50 percent for the flashing arrow and 25 percent for the sequential chevron.
6. The TxDOT standard is the flashing arrow, however, the sequential chevron may be used during daylight operations. The sequential arrow should NOT be used.

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

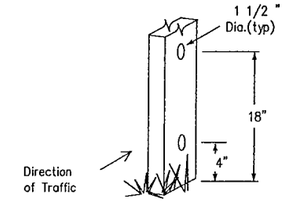
TYPICAL MINIMUM CLEARANCES FOR LONG/INTERMEDIATE TERM SIGNS



It is the intent of these plans to provide positive guidance to motorists throughout the project limits by the use of signs, pavement markings, delineation devices and/or channelizing devices. All traffic control devices shall conform with the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways."

WOOD POST SYSTEM FOR FIXED SIGN SUPPORTS

Nominal Post Size	No. of Posts	Maximum Sq. feet of Sign Face	Minimum Soil Embedment	Drilled Hole(s) Required
4 x 4	1	12	36"	no
4 x 4	2	21	36"	no
4 x 6	1	21	36	YES



STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

BARRICADE AND CONSTRUCTION STANDARDS

SIGN SUPPORTS

BC(4)-98

©TxDOT Feburary 1998	DR.-LR	CK.-DTN	DW.-DN	CK.-GB	MED NO.:
REVISIONS					

STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DALLAS	6	CM 97 (449)	65

COUNTY	CONTROL	SECTION	JOB	HIGHWAY
DALLAS	8050	18	034	BELT LINE

104

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

DATE:
ACC:
FILE:

DN:
CK:
DW:
CK:

GENERAL NOTES

Drums and all related items shall comply with the requirements of the current version of the "Texas Manual on Uniform Traffic Control Devices" (TMUTCD).

Only pre-qualified products shall be used. A list of compliant products and their sources may be obtained by writing or faxing:

Standards Engineer
Traffic Operations Division – TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3335
Fax (512) 416-3161
E-mail TRF-STANDARD@mailgw.dot.state.tx.us

Drums, bases, and related materials shall exhibit good workmanship and shall be free from objectionable marks or defects which would adversely affect their appearance or serviceability.

After drums and other traffic control devices are placed, the work zone should be driven through both during the day and after dark to be certain that these devices are functioning as intended.

PLASTIC DRUM – Prequalified plastic drums shall meet the following requirements.

GENERAL DESIGN REQUIREMENTS

Plastic drums shall be of a two-piece design; the "body" of the drum shall be the top portion of the drum and the "base" shall be the bottom of the drum.

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 35 km/h or greater but prevents accidental separation due to normal handling and/or air turbulence created by passing vehicles. Plastic drums that have been in use for more than two years generally do not have enough locking strength to prevent accidental separation. Plastic drums identified for replacement by the project engineer, inspector or their designee shall be replaced within 24 hours with an approved device.

Plastic drums shall be constructed of lightweight flexible, and deformable materials. Use of metal drums or single piece plastic drums as channelization devices or sign supports shall not be allowed.

Drums shall present a profile that is a minimum of 18 inches in width at the 36 inches 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.

Drums shall be tapered to allow nesting of a minimum of 5 drum bodies for ease in transport.

The top of 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 14mm diameter holes to allow attachment of a warning light, delineator reflector unit or sign.

The exterior of the drum body shall have a minimum of four alternating orange and white retroreflective circumferential stripes not less than 4 inches in width nor greater than 8 inches. Any non-reflectorized space between any two adjacent stripes shall not exceed 2 inches in width.
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.

Plastic drums shall be constructed of ultra-violet stabilized, orange, high-density polyethylene (HDPE) or other approved material.

Drum body shall have a minimum unballasted weight of 7.7 lbs. and maximum unballasted weight of 11 lbs. The wall of the drum body shall be a minimum of 0.07 inch in thickness. Weight of any drum supplied shall not vary more than 0.5 lb. from that of the prequalified sample.

Drum and base shall be marked with manufacture's name, model number, and year and month of construction.

RETROREFLECTIVE SHEETING

The retroreflective stripes used on drums shall be constructed of retroreflective sheeting meeting the color and reflectivity requirements of Departmental Materials Specification D-9-8300: Flat Surface Reflective Sheeting, Type C unless otherwise specified in the plans.

Drums used only during daylight hours may use any type of sheeting meeting the color and retroreflective color requirements of Departmental Materials Specification D-9-8300.

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, checking, cracking, or loss of reflectivity other than that loss due to abrasion of the sheeting surface.

BALLAST

Unballasted bases shall be large enough to hold up to 50 lbs. of sand. Bases with built-in ballast shall weigh between 40 lbs. and 50 lbs.

The ballasted base should weigh between 35 (minimum) and 75 lbs. (maximum). The ballast may be sand in one to three sand bags separate from the base, sand in a sand-filled plastic base, a integral crumb rubber base and ballast or other ballasting devices as approved by the Engineer. Stacking of sand bags will be allowed, however height of sand bags above pavement surface may not exceed 12 inches.

The ballasts 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. 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. Ballast shall not be placed on top of drums

Adhesives may be used to secure base of drums to pavement.

SIGNS, CHEVRONS, AND VERTICAL PANELS

Signs used on plastic drums shall be manufactured using substrates listed on the Compliant Products List.

Chevrons and other work zone signs with an orange background shall be manufactured with Type C (high intensity grade) retroreflective sheeting meeting the color and reflectivity requirements of "Departmental Materials Specification D-9-8300: Flat Surface Reflective Sheeting, Type C" unless otherwise specified in the plans.

Signs with white backgrounds, such as the KEEP RIGHT sign (R4-8 series), shall be manufactured with Type A (engineer grade) sheeting.

Approved sign messages for signs mounted on plastic drums are the Chevron (CW1-8), the KEEP RIGHT/LEFT sign (R4-7 or R4-8 series), the Vertical Panel, and the Opposing Lane Divider. 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. Refer to acceptable materials list for approved substrate materials. Diagonal stripes on Vertical Panels shall slope down toward the intended traveled way.

Signs shall be installed using one 1/2 inch bolt (nominal) and nut, two washers, and one locking washer for each connection. Mounting bolts and nuts shall be fully engaged and adequately torqued. Bolts should not extend more than 1/2 " beyond nuts. The hardware used for the mounting of signs onto plastic drums shall be of adequate quality for this use.

WARNING LIGHTS, WARNING REFLECTORS, AND DELINEATORS

Type A flashing warning lights are intended to warn drivers that they are approaching or are in a potentially hazardous area. Type A flashing warning lights are not intended for delineation and shall not be used in a series.

Type B warning lights shall not be attached to a drum.

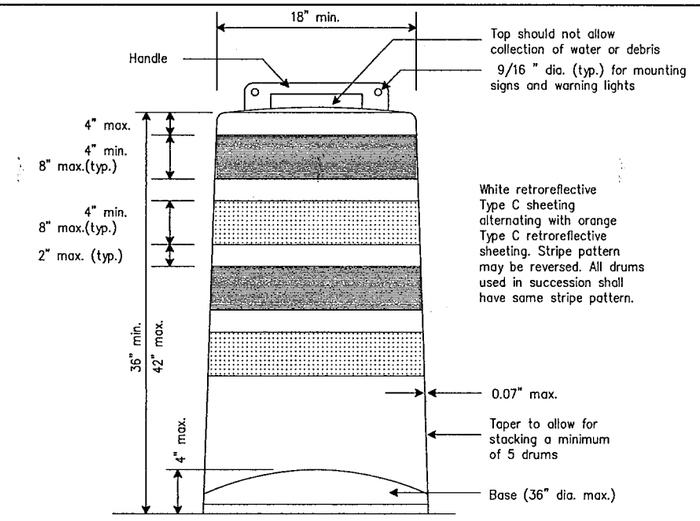
Type C steady-burn warning lights are intended to be used in a series to delineate the edge of the traveled way on detours, on lane changes, on lane closures, and on other similar conditions. Type A and Type C warning lights shall be installed at locations as detailed on other sheets in the plans.

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. The warning reflector shall be manufactured from a sign substrate from the approved list for use on plastic drums. The warning reflector shall have a retroreflective surface area (one-side) no less than 30 square inches.

The side of the warning reflector facing approaching traffic shall be fully reflectorized using retroreflective sheeting meeting the color and reflectivity requirements for ASTM Type 4 retroreflective sheeting as described in ASTM Design Standard 4956-93B. When used near two-way traffic, both sides of the warning reflector shall be fully reflectorized. The warning reflector should be mounted on the side of the handle that faces approaching traffic so that the maximum amount of reflective sheeting is visible to traffic approaching in the adjacent lane. Delineators may be used as directed by the Engineer. Delineators may not be used to substitute for warning lights. Warning lights shall not be installed on a drum that has a sign, chevron or vertical panel.

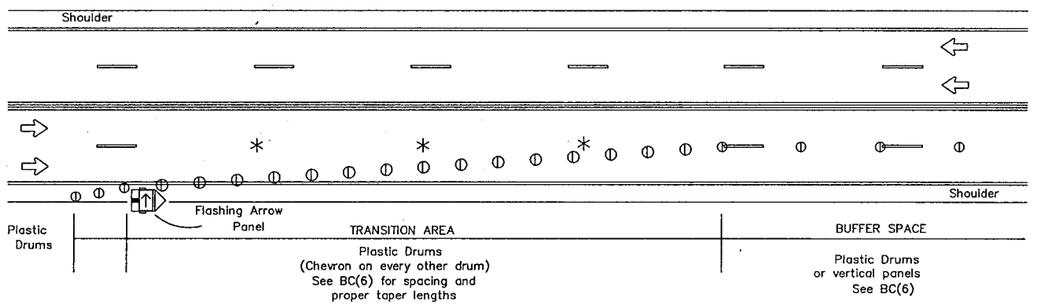
Type(A) Class(1), Type(A) Class(2), or Type(B) Reflector Units (D & OM Standard) may be attached to drums to delineate the intended vehicular path. The color of the reflector unit shall correspond to the marking it is supplementing or for which it is substituting. The reflective unit shall be attached to the handle of the drum using the mounting hole nearest the traveled way and shall be aligned perpendicular to approaching traffic.

Contractor shall provide, on request from project engineer, a letter from the drum manfacturer certifying the plastic drum model number, the year and month of construction and that it meets the specifications on this standard sheet.

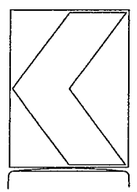


Color sequence of reflective sheeting may be reversed.

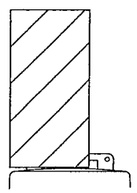
TYPICAL LANE CLOSURE



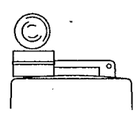
* NOTE: For Long Term Stationary Duration – Lane lines shall be removed.



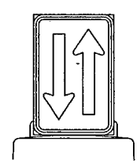
18" x 24" Sign
(Maximum Sign Dimension)
Chevron CW1-8,
Driveway sign D70a,
Keep Right R4 series
or other sign as approved
by Engineer



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



Warning Light or approved substitute
mount towards travel way



12" x 18" Sign
Opposing Lane Divider

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

BARRICADE AND CONSTRUCTION STANDARDS

PLASTIC DRUMS — BC(5)-98

©TxDOT Feburary 1998	DN-LR	CK-DTN	DW-DN	CK-DM	REQ NO.:
REVISIONS 4-98	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT		SHEET
	DALLAS	6	CM 97 (449)		66
	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
	DALLAS		8050	18	034	BELT LINE

DN:
CK:
DW:
CK:

DATE:
ACC:
FILE:

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

GENERAL NOTES:

SELF-RIGHTING SUPPORTS

1. Channelizing devices on self-righting supports may be a vertical panel, opposing lane divider or chevron.
2. Channelizing devices on self-righting supports shall be used at locations detailed elsewhere in the plans. These devices shall conform to the "Texas Manual on Uniform Traffic Control Devices". Type of base will be as directed by the Engineer.
3. Channelizing devices on self-righting supports should be used in work zone areas where channelizing devices are frequently impacted by errant vehicles. Work Zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. Devices should not be placed within 12 inches of the traveled way. Spacing and placement shall be uniform and in accordance with the "Texas MUTCD".
4. The contractor shall maintain devices in a clean condition and replace damaged, non-reflective, faded, or broken devices and bases as necessary.
5. Devices shall be erected by method shown on this sheet and as approved by the Engineer.
6. Portable bases shall be fabricated from virgin and/or recycled rubber. Approximate weight of portable bases shall be 35 lbs.
7. Pavement surfaces shall be prepared in a manner that will ensure proper bonding of adhesives and fixed mount bases to the pavement surfaces when required. Adhesives shall be prepared and applied as per manufacturers recommendations.
8. Application and removal of devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface intregity. Driveable bases shall not be permitted on final pavement surfaces. All application and removal procedures of fixed bases shall be approved by the Engineer.
9. These devices shall not be paid for directly but shall be considered subsidiary to the Item "Barricades, Signs, and Traffic Handling."

CONES

1. Traffic cones and tubular markers shall be a minimum of 28 inches in height when used on freeways or used at nighttime. Orange shall be the predominant color of cones and tubular markers. They should be kept clean and bright for maximum visibility. Cones shall have a minimum weight of 9 1/2 lbs.
2. For nighttime use, cones shall be reflectorized. Reflectorized material shall have a smooth, sealed outer surface which will display the same approximate color day and night. When used at night, appropriate personnel shall be present at all times to ensure cones and tubular markers remain in their proper location and in an upright position.
3. Reflectorization of cones shall be a minimum 6 inch band placed at least 3 inches but not more than 4 inches from the top, supplemented by a minimum 4 inch band spaced a minimum of 2 inches below the 6 inch band. Reflectorization of tubular markers shall be a minimum of two 3 inch bands placed a maximum of 2 inches from the top with a maximum of 6 inches between bands.
4. One-piece cones or tubular markers are generally suitable for temporary usage (up to 8 hours) with other channelization devices such as vertical panels, drums or two-piece cones for long term usage. Care should be taken to ensure that they remain in their proper location and in an upright position.
5. *-SPRAF (stacking/placement/removal assistance feature) may be designed as a handle, hook or other shape, fabricated from non-rigid materials similar to the cone material, and may extend up to a maximum of 8 inches above the top of cone. The length of the SPRAF shall not be considered with regard to the 28 inch minimum height.

DRUMS

Refer to BC(5).

SPECIFICATION REFERENCE TABLE
MATERIALS AND TEST SPECIFICATIONS (D-9)

FLAT SURFACE REFLECTIVE SHEETING, TYPE C
(HIGH SPECIFIC INTENSITY) D-9-8300

Only pre-qualified products shall be used. A List of compliant products and their sources may be obtained by writing, calling or faxing:

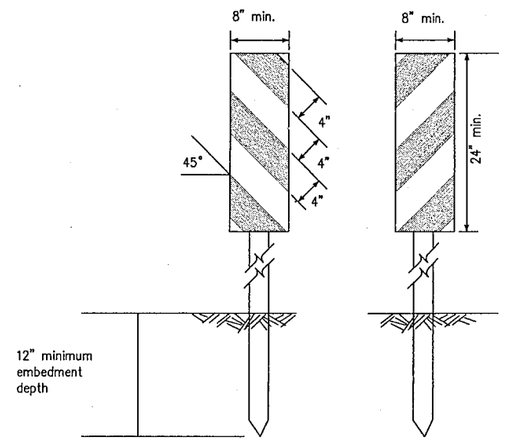
Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation (TxDOT)
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3335
Fax (512) 416-3161
E-mail TRF-STANDARD @ mailgw.dot.state.tx.us

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Device On a Taper	On a Tangent	Minimum Sign Spacing X Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'-75'	120'
35		205'	225'	245'	35'	70'-90'	160'
40		265'	295'	320'	40'	80'-100'	240'
45	L=WS	450'	495'	540'	45'	90'-110'	320'
50		500'	550'	600'	50'	100'-125'	400'
55		550'	605'	660'	55'	110'-140'	500'
60		600'	660'	720'	60'	120'-150'	* 600'
65		650'	715'	780'	65'	130'-165'	* 700'
70		700'	770'	840'	70'	140'-175'	* 800'

* Conventional Roads Only

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

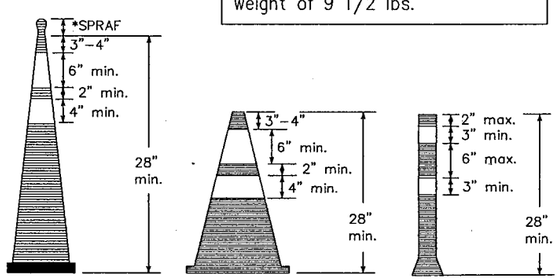
DRIVEABLE RIGID VERTICAL PANEL



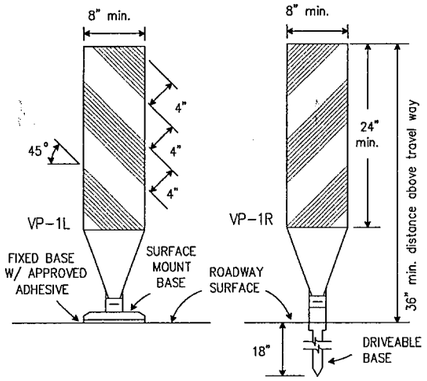
See Compliant Products List for supports and panel substrates

CONES

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



SELF-RIGHTING SUPPORTS



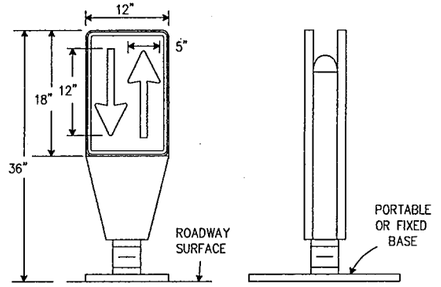
VERTICAL PANELS

Vertical Panels are normally used as channelizing devices to indicate tangent or nearly tangent roadway alignment where good target value of a device is needed in daytime as well as nighttime. In addition, vertical panels should be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive daytime and nighttime delineation may be required. Vertical panels should be mounted back to back if used at the edge of cuts adjacent to two-way two lane roadways. Stripes are to be reflective orange and reflective white and should always slope downward toward the traveled way. Vertical Panels used on expressways, freeways, and other high speed roadways shall have a minimum of 2 square feet of retroreflective area facing traffic.

Self-righting supports are available with portable base. See Compliant Products List.

OPPOSING LANE DIVIDER

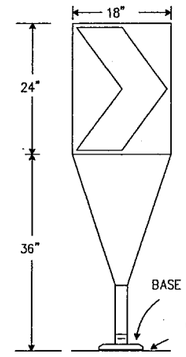
with Portable or Fixed Base Support



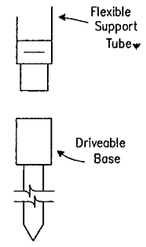
REFLECTIVE ORANGE BACKGROUND WITH BLACK ARROWS AND BORDER.

CHEVRON

with Flexible Support

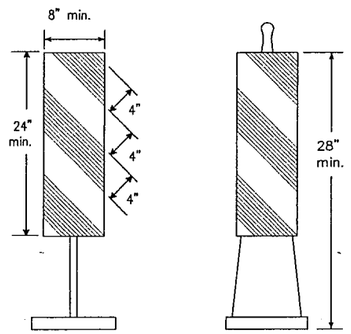


DRIVEABLE BASE



Driveable Support for Vertical Panel VP(F)-1 or Chevron CW1-8(F).

PORTABLE RIGID VERTICAL PANEL



See Compliant Products List for alternate designs.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

BARRICADE AND CONSTRUCTION STANDARDS

CHANNELIZING DEVICES
CONES

BC(6)-98

©TxDOT Feburary 1998	DN:-LR	CK:-DTN	DW:-DN	CK:-GB	MSG NO.:
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT		SHEET
	DALLAS	6	CM 97 (449)		67
	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
	DALLAS		8050	18	034	BELT LINE

106

WORK ZONE PAVEMENT MARKINGS

GENERAL

The Contractor shall be responsible for maintaining work zone and existing pavement markings on all roadways open to traffic within the projects limits unless otherwise stated in the plans. Color, patterns, and dimensions shall be in conformance with the Texas Manual on Uniform Traffic Control Devices (TMUTCD). Additional supplemental pavement marking details may be found in the plans or specifications.

Work zone pavement markings shall consist of guidemarks, short term markings and/or standard pavement markings. Unless otherwise shown in the plans, materials used for work zone pavement markings shall be thermoplastic, raised pavement markers, prefabricated pavement marking material, temporary flexible-reflective roadway marker tabs or other materials approved by the Engineer. Thermoplastic shall not be used for removable markings.

All roadways to be opened to traffic shall be marked with short term markings or standard markings as shown in the plans, at the end of each day's operation. Unless otherwise shown in the plans or approved in writing by the Engineer, all concrete surfaces shall have standard markings in place prior to opening to traffic.

Standard pavement markings shall be installed in accordance with the Texas Manual on Uniform Traffic Control Devices (TMUTCD) and as shown on the plans. When short term markings are required on the plans, short term markings shall conform with the TMUTCD, the plans and details as shown on the Standard WZ(STPM).

All asphaltic surfaces which are to be opened to traffic shall be marked with guidemarks immediately following placement and final rolling of any course. Guidemarks shall consist of a single temporary flexible-reflective roadway marker tab or a single temporary construction raised pavement marker at 40 foot spacing.

Guidemarks shall be placed in proper alignment with the final location of future pavement markings. Any guidemarks not in alignment with pavement markings shall be removed by the Contractor at the Contractor's expense. Guidemarks shall not be used to simulate edgelines.

When inclement weather prohibits the application of short term markings or standard markings as called for on the plans, upon approval of the Engineer, guidemarks may be considered as temporary short term markings for asphaltic surfaces. The placement of pavement markings as shown on the plans may be delayed until such time that weather permits application of pavement markings.

When standard pavement markings are not in place and the roadway is opened to traffic, DO NOT PASS signs shall be erected to mark the beginning of the sections where passing is prohibited and PASS WITH CARE signs shall be erected to mark the beginning of the sections where passing is permitted.

RAISED PAVEMENT MARKERS

Raised pavement markers are to be placed according to the patterns on BC(8). Raised pavement markers used as standard pavement markings or to supplement removable markings shall meet the requirements of Item "RAISED PAVEMENT MARKERS".

Unless otherwise shown on the plans, raised pavement markers will not be allowed for words, symbols, and shapes, diagonal or transverse lines.

PREFABRICATED PAVEMENT MARKINGS

Removable prefabricated pavement markings shall be a material of manufacture and product code or designation shown on the list of approved materials covered by the Department Materials Specification D-9-8241.

Non-removable prefabricated pavement markings (foil back) shall be a material of manufacture and product code or designation shown on the list of approved materials covered by the Specification TxDOT 550-74-01.

The lists of approved prefabricated work zone pavement marking materials may be obtained from TxDOT General Services Division.

MAINTENANCE

The Contractor will be responsible for maintaining work zone pavement markings within the project limits. Work Zone Pavement Markings shall be inspected in accordance with the frequency and reporting requirements of work zone traffic control device inspections. The markings should provide a visible reference for a minimum distance of 300 feet during normal daylight hours and 165 feet when illuminated by automobile low-beam headlights at night, unless sight distance is restricted by roadway geometrics. Markings failing to meet this criteria shall be replaced as required by the Engineer.

REMOVAL OF PAVEMENT MARKINGS

Removal of pavement markings includes centerline, channelizing lines, lane lines, edge lines, words, arrows, symbols and raised pavement markers.

Pavement markings that are no longer applicable and which may create confusion or direct a motorist toward or into the closed portion of the roadway, shall be removed or obliterated before the roadway is open to traffic. The above shall not apply to detours of a short duration of a few hours, where flaggers and/or sufficient channelizing devices are used in lieu of markings to outline the detour route and the detour is not to be maintained during nighttime.

Pavement markings shall be removed to the fullest extent possible, so as not to leave a discernible marking, by any method that does not materially damage the surface or texture of the pavement. The removal of pavement markings may require resurfacing or seal coating portions of the roadway, normally full lane widths. Subject to the approval of the Engineer, any method that proves to be successful on a particular type pavement may be used. Blast cleaning may be used but will not be required unless specifically shown in the plans. Over-painting of the markings SHALL NOT BE permitted. Removal of raised pavement markers shall be as directed by the Engineer.

Removal of existing pavement markings and markers will be paid for directly in accordance with the Item "ELIMINATING EXISTING PAVEMENT MARKINGS AND MARKERS" unless otherwise stated elsewhere in the plans.

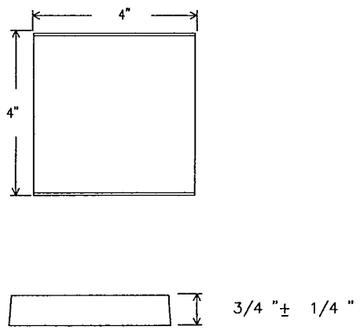
SPECIFICATION REFERENCE TABLE

MATERIALS AND TESTS DIVISION SPECIFICATIONS	
JIGGLE BAR TILE	D-9-4100
PAVEMENT MARKERS (REFLECTORIZED)	D-9-4200
TRAFFIC BUTTONS	D-9-4300
EPOXY	D-9-6100
BITUMINOUS ADHESIVE FOR PAVEMENT MARKERS	D-9-6130
PREFABRICATED PAVEMENT MARKINGS - REMOVABLE	D-9-8241
TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKER TABS	D-9-8242

PREQUALIFICATION PROCEDURES MAY BE OBTAINED BY WRITING:

GENERAL SERVICES DIVISION
TEXAS DEPARTMENT OF TRANSPORTATION (TxDOT)
125 EAST 11th STREET
AUSTIN, TX 78701-2483

Temporary Construction Raised Pavement Markers used as Guidemarks:



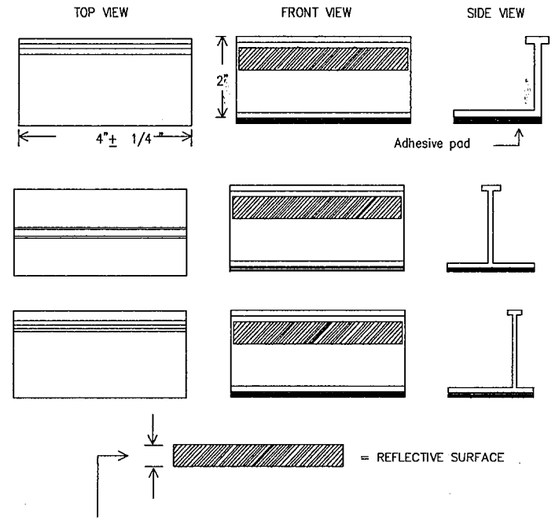
The above temporary construction raised pavement marker is shown for illustration purposes only and not intended to specify any particular product.

Temporary construction raised pavement markers used as guidemarks shall be of design and manufacture approved by the Engineer.

All temporary construction raised pavement markers provided on a project shall be of the same manufacturer.

Adhesive for guidemarks shall be bituminous material hot applied or butyl rubber pad for all surfaces, or thermoplastic for concrete surfaces.

Temporary Flexible-Reflective Roadway Marker Tabs



Height of sheeting will be determined by notes under MAINTENANCE.
(Usually more than 1/4 inch and less than 1 inch.)

STAPLES OR NAILS SHALL NOT BE USED TO SECURE TEMPORARY FLEXIBLE-REFLECTIVE ROADWAY MARKERS TABS TO THE PAVEMENT SURFACE

Temporary flexible-reflective roadway marker tabs used as guidemarks shall meet the requirements of Departmental Material Specification D-9-8242.

Tabs detailed on this sheet are to be inspected and accepted by the Engineer or designated representative. Sampling and testing is not normally required, however at the option of the Engineer, either "A" or "B" below may be imposed to assure quality before placement on the roadway.

A) Select five (5) or more tabs at random from each lot or shipment and submit to the Construction Division, Materials and Tests section to determine specification compliance.
B) Select five (5) tabs and submit to the following test. Affix five (5) tabs at 24 inch intervals on an asphaltic pavement in a straight line. Using a medium size passenger vehicle or pickup, run over the markers with front and rear wheels at a speed of 35 to 40 miles per hour, four times in each direction. No more than one (1) out of five reflective surfaces shall be lost or displaced as a result of this test.

Guidemarks shall be designated as:

YELLOW - (two amber reflective surfaces with yellow body).
WHITE - (one silver reflective surface with white body).

Dimensions indicated on this sheet are typical and approximate. Variations in size and height may occur between markers or devices made by manufacturers, by as much as 1/4 inch, unless otherwise noted.

DN: CK: DW: CK:
DATE: ACC: FILE:
LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

BARRICADE AND CONSTRUCTION STANDARDS

PAVEMENT MARKINGS BC(7)-98

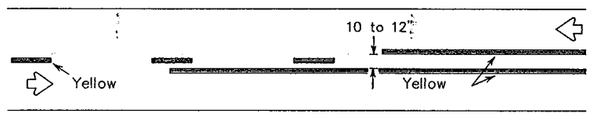
DW-LR	CK-DTN	DW-DN	CK-GB	MED NO.:

REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
2-94	DALLAS	6	CM 97 (449)	68
1-97				
2-98				

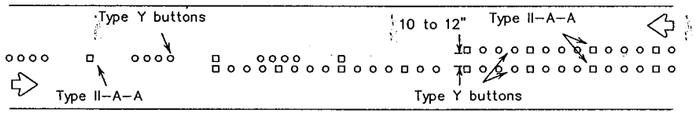
COUNTY	CONTROL	SECTION	JOB	HIGHWAY
DALLAS	8050	18	034	BELT LINE

PAVEMENT MARKING PATTERNS

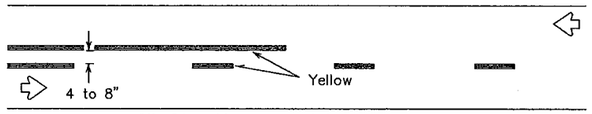
CENTER LINE & NO-PASSING ZONE BARRIER LINES FOR TWO LANE TWO-WAY HIGHWAYS



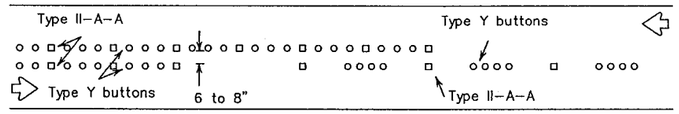
REFLECTORIZED PAVEMENT MARKINGS - PATTERN A



RAISED MARKERS - PATTERN A

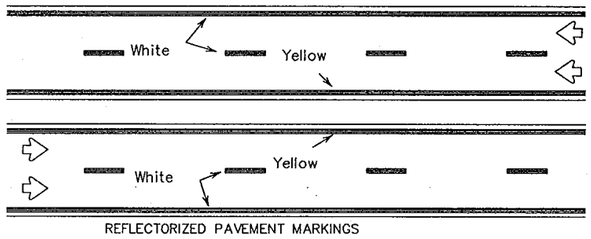


REFLECTORIZED PAVEMENT MARKINGS - PATTERN B

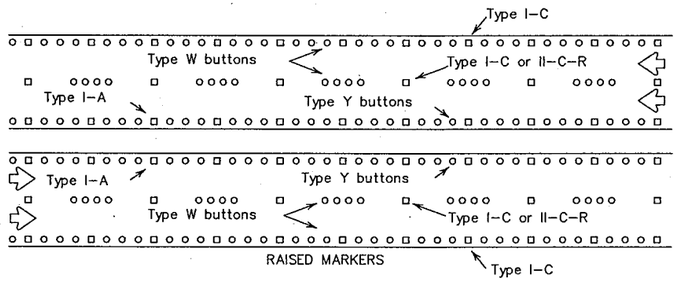


RAISED MARKERS - PATTERN B

EDGE & LANE LINES FOR DIVIDED HIGHWAY

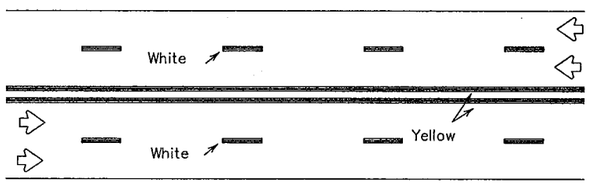


REFLECTORIZED PAVEMENT MARKINGS

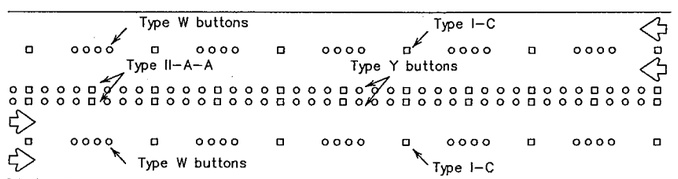


RAISED MARKERS

LANE & CENTER LINES FOR MULTILANE UNDIVIDED HIGHWAYS

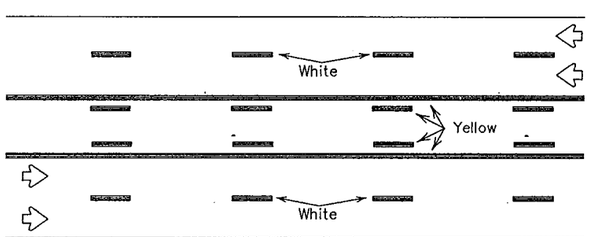


REFLECTORIZED PAVEMENT MARKINGS

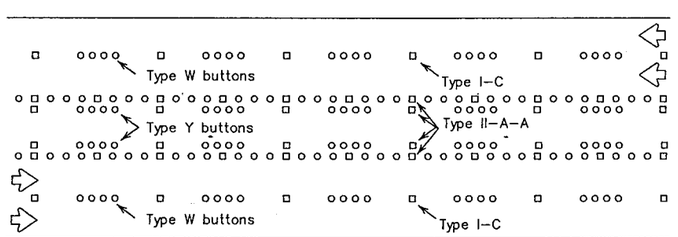


RAISED MARKERS

TWO-WAY LEFT TURN LANE



REFLECTORIZED PAVEMENT MARKINGS

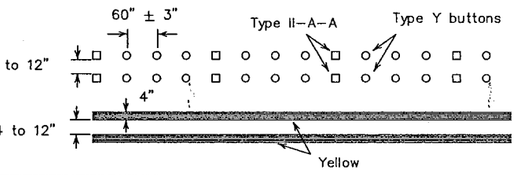


RAISED MARKERS

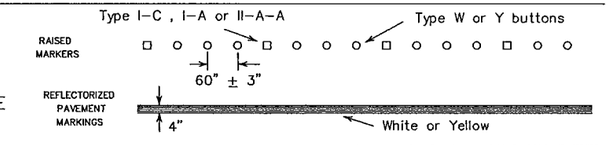
STANDARD WORK ZONE PAVEMENT MARKINGS DETAILS

SOLID LINES

DOUBLE NO-PASSING LINE

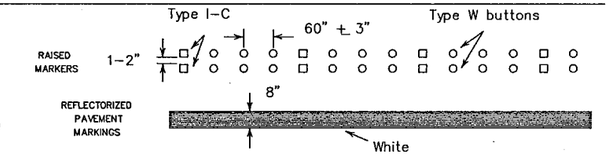


EDGE LINE OR SINGLE NO-PASSING LINE



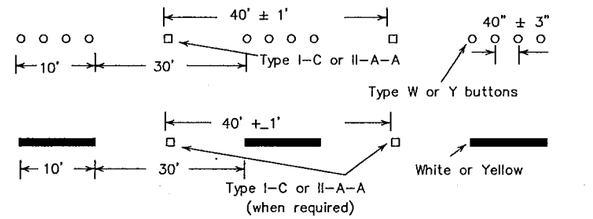
WIDE LINE

(FOR LEFT TURN CHANNELIZING LINE OR CHANNELIZING LINE USED TO DISCOURAGE LANE CHANGING.)



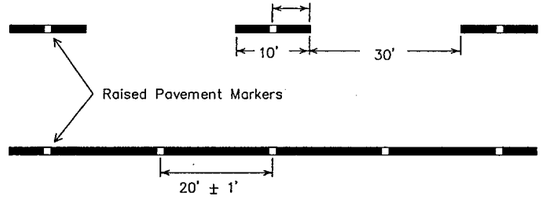
BROKEN LINE

(FOR CENTER LINE OR LANE LINE.)



REMOVABLE MARKINGS WITH RAISED PAVEMENT MARKERS

If raised pavement markers are used to supplement REMOVABLE markings, the markers shall be applied to the top of the tape at the approximate mid length of tape used for broken lines and at approximately 20 foot spacing for solid lines. This allows an easier removal of raised markers and tape.



NOTES:
Pattern A is the Department Standard, however Pattern B may be used if approved by the Engineer.
Prefabricated markings may be subsitituted for reflectorized pavement markings.

Raised pavement markers used as standard pavement markings shall meet the requirements of items "RAISED PAVEMENT MARKERS" and "EPOXY AND ADHESIVES."

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

BARRICADE AND CONSTRUCTION STANDARDS

PAVEMENT MARKINGS — BC(8)-98

©TxDOT Feburary 1998	DN-LR	CK:-DTN	DW-DN	CK:-GB	MSG NO:
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT		SHEET
2-94	DALLAS	6	CM 97 (449)		69
1-97	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
2-98	DALLAS		8050	18	034	BELT LINE

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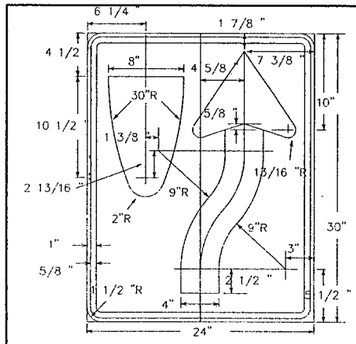
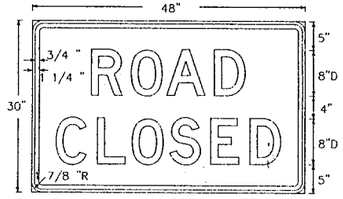
LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

DATE:
ACC:
FILE:
DN:
CK:
DW:
CK:



R4-7
(R4-8)
24" X 30"

Symbol – Black
Border – Black
Background – White Refl.

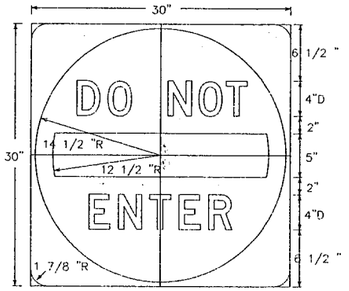


R11-2
48" X 30"

Letters – Black
Border – Black
Background – White Refl.

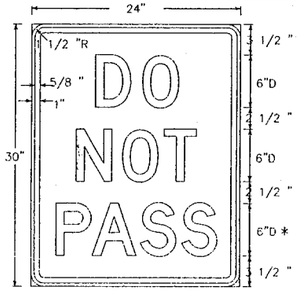
Alternate 1st line legend

STREET 8"D R11-2S
RAMP 8"D R11-2R
BRIDGE 8"D R11-2B



R5-1
30" X 30"

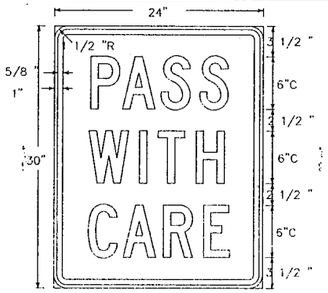
Letters – White Refl.
Bar – White Refl.
Border – White Refl.
Background – Red Refl.



* reduce spacing 40%

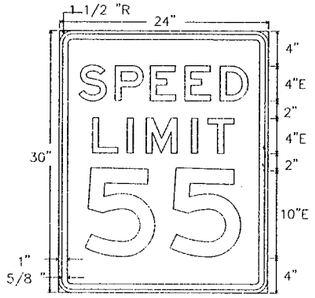
R4-1
24" X 30"

Letters – Black
Border – Black
Background – White Refl.



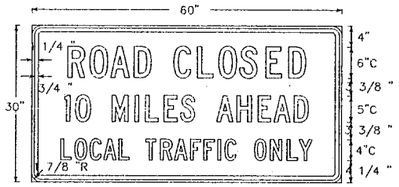
R4-2
24" X 30"

Letters – Black
Border – Black
Background – White Refl.



R2-1
24" X 30"

Letters – Black
Border – Black
Background – White Refl.

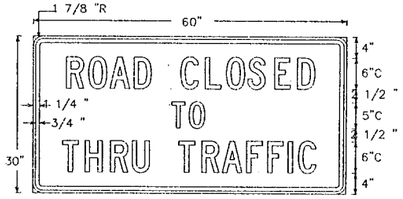


R11-3a
60" X 30"

Letters – Black
Numerals – Black
Border – Black
Background – White Refl.

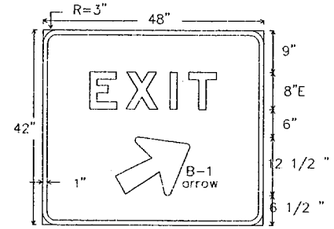
Alternate 1st line legend

BRIDGE OUT 6"C R11-3b



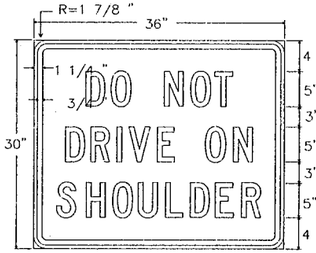
R11-4
60" X 30"

Letters – Black
Border – Black
Background – White Refl.



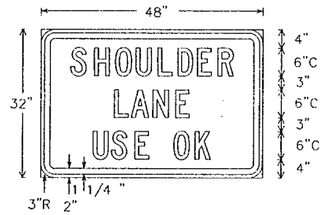
E5-1a
48" X 42"

Letters – White Refl.
Numerals – White Refl.
Symbol – White Refl.
Background – Green Refl.



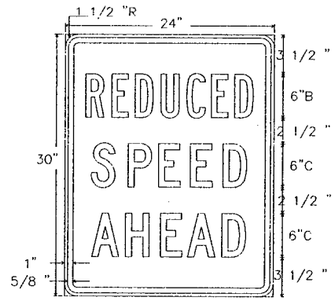
R4-3a
36" X 30"

Letters – Black
Border – Black
Background – White Refl.



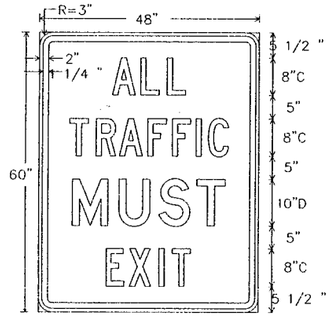
R4-3d
48" X 32"

Letters – Black
Border – Black
Background – White Refl.



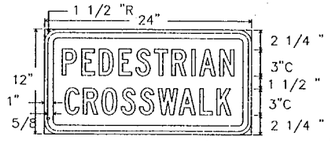
R2-5a
24" X 30"

Letters – Black
Border – Black
Background – White Refl.



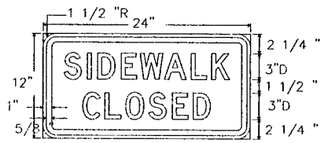
R3-22
48" X 60"

Letters – Black
Border – Black
Background – White Refl.



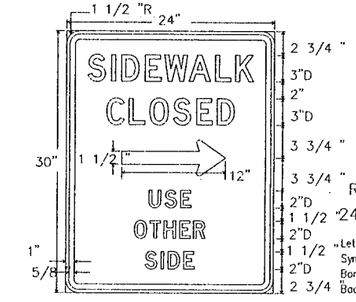
R5-7
24" X 12"

Letters – Black
Border – Black
Background – White Refl.



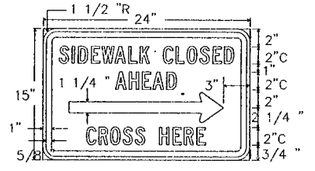
R5-8
24" X 12"

Letters – Black
Border – Black
Background – White Refl.



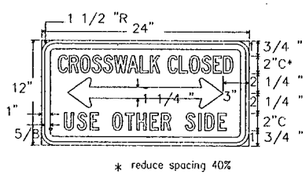
R5-8T
24" X 30"

Letters – Black
Symbol – Black
Border – Black
Background – White Refl.



R5-9a
24" X 15"

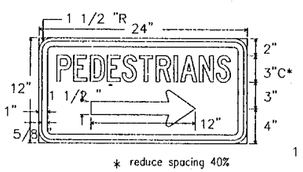
Letters – Black
Symbol – Black
Border – Black
Background – White Refl.



* reduce spacing 40%

R5-9
24" X 12"

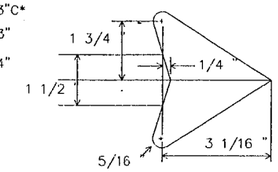
Letters – Black
Symbol – Black
Border – Black
Background – White Refl.

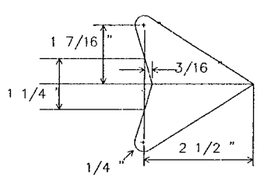


* reduce spacing 40%

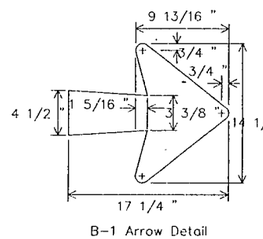
R5-7T
24" X 12"

Letters – Black
Symbol – Black
Border – Black
Background – White Refl.





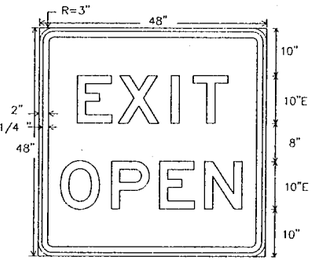
B-1 Arrow Detail



Signs E5-1a, E5-2 and R5-1 – letters, border and symbol may be fabricated from FLAT REFLECTIVE SHEETING, TYPE C.

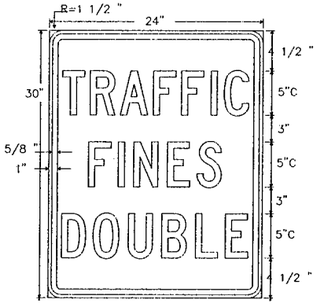
E5-2
48" X 48"

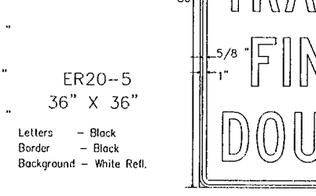
Letters – Black
Border – Black
Background – Orange Refl.



R20-5
24" X 30"

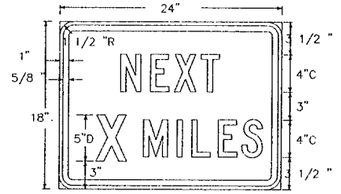
Letters – Black
Border – Black
Background – White Refl.





ER20-5
36" X 36"

Letters – Black
Border – Black
Background – White Refl.



R20-1
24" X 18"

Letters – Black
Border – Black
Background – White Refl.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

BARRICADE AND CONSTRUCTION STANDARDS

REGULATORY AND GUIDE SIGNS

BC(9)-98

©TxDOT Feburary 1998	DN-GB	CK-DTN	DW-DN	CK-GB	HGD NO:
REVISIONS	STATE DISTRICT: DALLAS	FEDERAL REGION: 6	FEDERAL AID PROJECT: CM 97 (449)		SHEET: 70
	COUNTY: DALLAS	CONTROL: 8050	SECTION: 18	JOB: 034	HIGHWAY: BELT LINE

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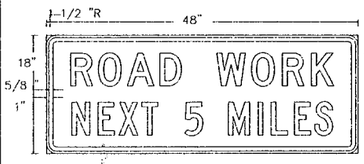
LEVELS DISPLAYED

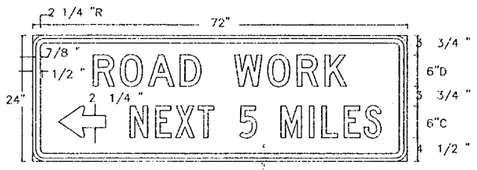
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63		

DN:
CK:
DW:
CK:
DATE:
ACC:
FILE:



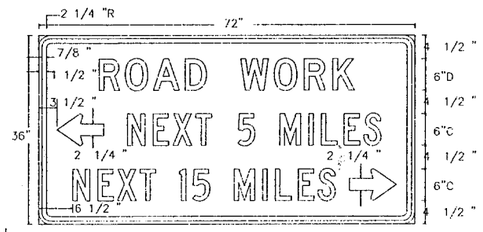
SG20-1
48" X 18"

Letters – Black
Numbers – Black
Border – Black
Background – Orange Refl.



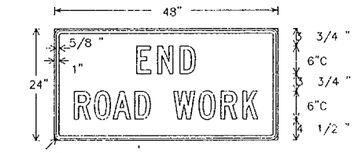
G20-1bL(R)
72" X 24"

Letters – Black
Numbers – Black
Border – Black
Background – Orange Refl.



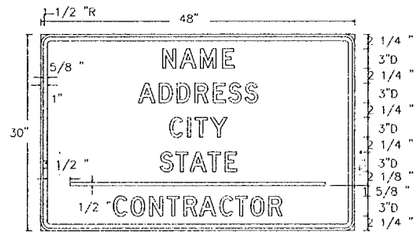
G20-1a
72" X 36"

Letters – Black
Numbers – Black
Border – Black
Background – Orange Refl.



G20-2a
48" X 24"

Letters – Black
Border – Black
Background – Orange Refl.

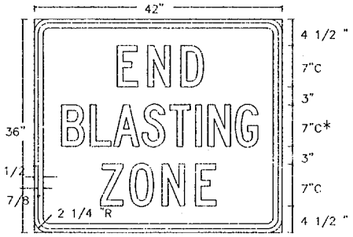


SG20-6
48" X 30"

Letters – Black
Border – Black
Background – Orange Refl. or White Refl. (optional)

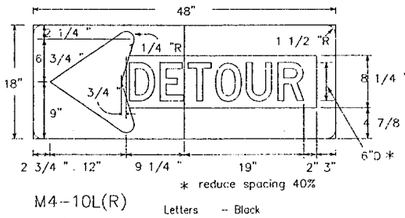
CW22-2a
60" X 36"

Letters – Black
Number – Black
Border – Black
Background – Orange Refl.



CW22-3
42" X 36"

Letters – Black
Border – Black
Background – Orange Refl.

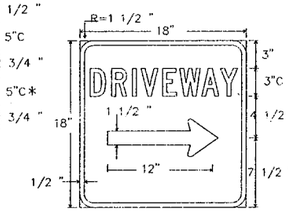


M4-10L(R)
48" X 18"

Letters – Black
Arrow – Orange Refl.
Background – Black

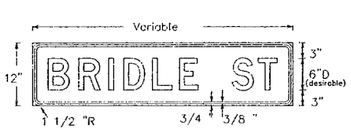
G20-4
36" X 18"

Letters – Black
Border – Black
Background – Orange (Refl. Optional)



D-70a
18" X 18"

Letters – White Refl.
Symbol – White Refl.
Border – White Refl.
Background – Blue Refl.



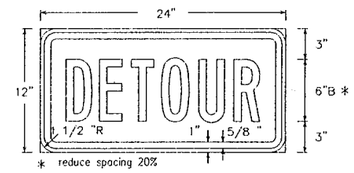
M4-9N
Variable X 12"

Letters – Black
Border – Black
Background – Orange Refl.

The M4-9R,L or S sign is to be used to detour local streets or roads that are not a State or Federal numbered highway; however, it should not be used in lieu of the M4-10 sign at the beginning of the de- tour or to detour State or Federal numbered routes.

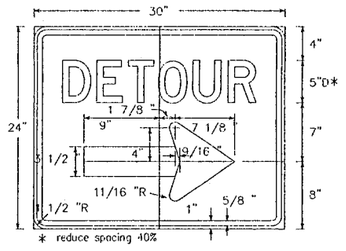
Also, when the M4-9R,L or S sign is used, a sign (M4-9N) with the name of the street being detoured may be mounted above it.

* Alternate first line legend for D-70S



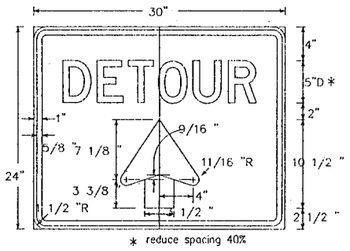
M4-8
24" X 12"

Letters – Black
Border – Black
Background – Orange Refl.



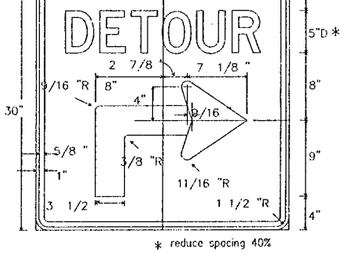
M4-9R(L)
30" X 24"

Letters – Black
Symbol – Black
Border – Black
Background – Orange Refl.



M4-9S
30" X 24"

Letters – Black
Symbol – Black
Border – Black
Background – Orange Refl.

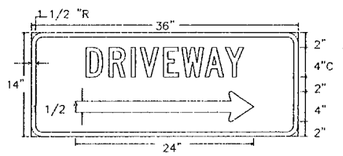


M4-9AR(L)
30" X 30"

Letters – Black
Symbol – Black
Border – Black
Background – Orange Refl.

D-70S
42" X 14"

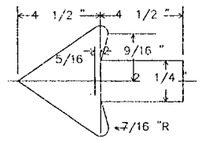
Letters – White Refl.
Symbol – White Refl.
Border – White Refl.
Background – Blue Refl.



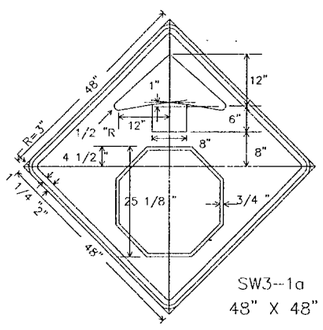
D-70
36" X 14"

Letters – White Refl.
Symbol – White Refl.
Border – White Refl.
Background – Blue Refl.

NOTE:
G20-1 Series signs shall show distances rounded to nearest whole mile. Fractions and decimal miles will not be used.

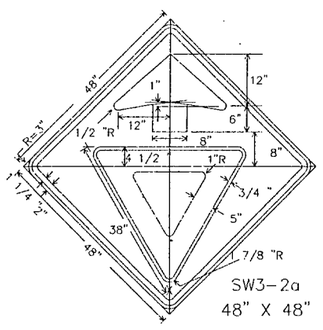


NOTE:
STOP, YIELD, and SIGNAL AHEAD symbol signs should be yellow background.



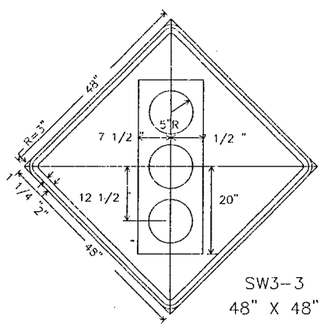
SW3-1a
48" X 48"

Border and Arrow – Black
Symbol – White Border on Red Background (Refl)
Background – Yellow Reflective



SW3-2a
48" X 48"

Border and Arrow – Black
Symbol – Red Border Band on White Background (Refl)
Background – Yellow Reflective

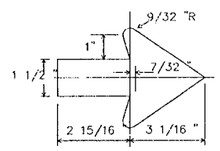


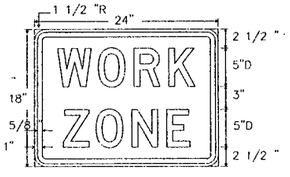
SW3-3
48" X 48"

Symbol and Border – Black
Top Circle – Red Reflective
Bottom Circle – Green Reflective
Background – Yellow Reflective

CW26-1T
96" X 24"

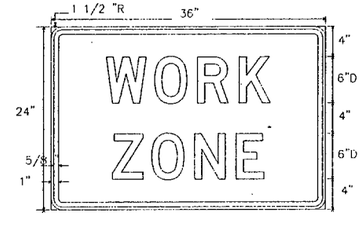
Letters – Black
Border – Black
Background – Orange Refl.





G20-9
24" X 18"

Letters – Black
Border – Black
Background – Orange Refl.



EG20-9
36" X 24"

Letters – Black
Border – Black
Background – Orange Refl.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

BARRICADE AND CONSTRUCTION STANDARDS

CONTRACTOR INFORMATION, DETOURS & WARNING SIGNS

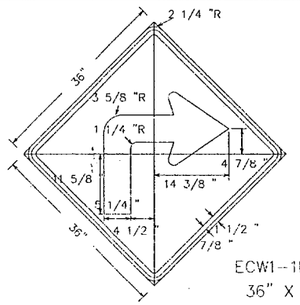
BC(9A)-98

©TxDOT Feburary 1998	DN: GB	CK: DTN	DW: DN	CK: GB	MEG NO.:
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT		SHEET
	DALLAS	6	CM 97 (449)		71
	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
	DALLAS		8050	18	034	BELT LINE

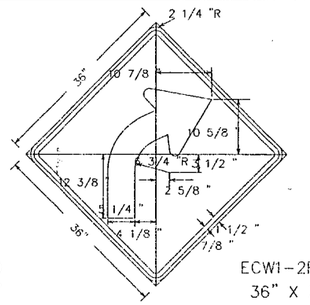
109A

DN:	
CK:	
DW:	
CK:	
DATE:	
ACC:	
FILE:	

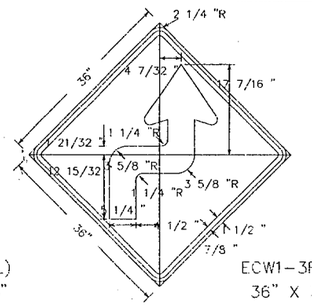
LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63



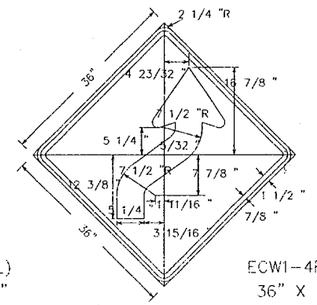
ECW1-1R(L)
36" X 36"



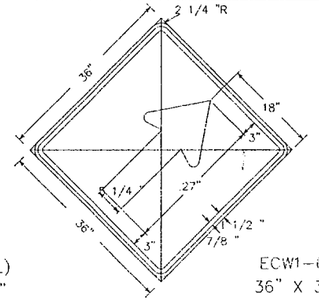
ECW1-2R(L)
36" X 36"



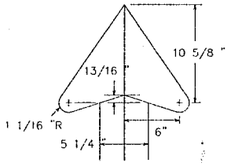
ECW1-3R(L)
36" X 36"



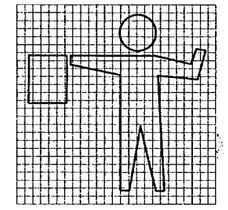
ECW1-4R(L)
36" X 36"

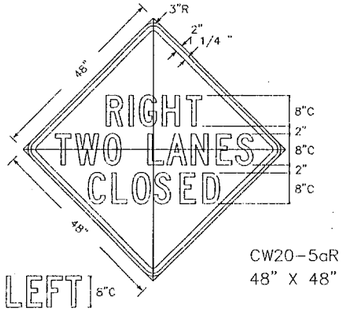


ECW1-6a
36" X 36"



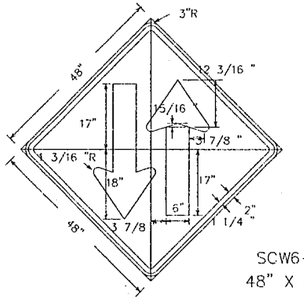
ARROW DETAIL FOR
ECW1-1, ECW1-2, ECW1-3,
ECW1-4 AND ECW1-6a.



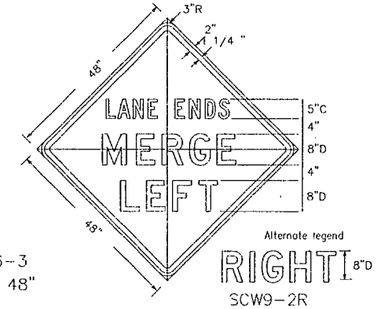


CW20-5aR
48" X 48"

LEFT 5"C
CW20-5aL



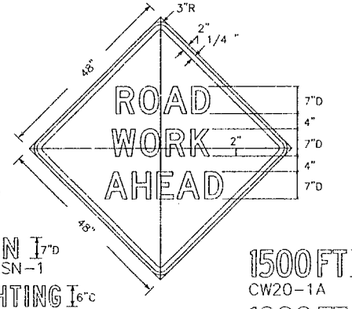
SCW6-3
48" X 48"



Alternate legend
RIGHT 8"D

SCW9-2R

SCW9-2L
48" X 48"



Alternate
1st line
legend

SIGN 7"D
CW20SN-1

LIGHTING 6"C
CW20LT-1

BRIDGE 6"C
CW20BR-1

RAMP 7"D
CW20RP-1

SIGNAL 6"C
CW20SG-1

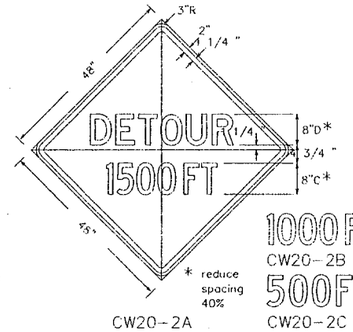
STREET 7"D
CW20ST-1

CW20-1D
48" X 48"

1500FT 7"C*
CW20-1A

1000FT 7"C*
CW20-1B

500FT 7"C
CW20-1C



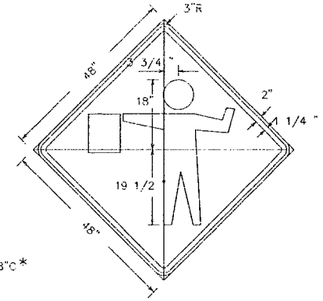
* reduce spacing 40%

CW20-2A
48" X 48"

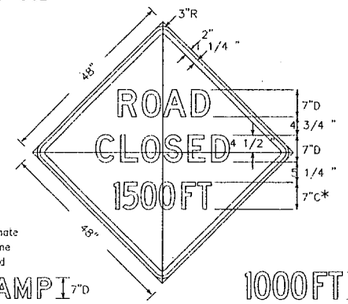
1000FT 8"C*
CW20-2B

500FT 8"C
CW20-2C

AHEAD 8"D
CW20-2D



FCW20-7a
48" X 48"



Alternate
1st line
legend

RAMP 7"D
CW20RP-3

FRWY 7"D
CW20FY-3

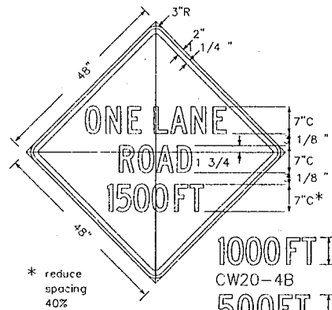
STREET 7"C
CW20ST-3

CW20-3A
48" X 48"

1000FT 7"C*
CW20-3B

500FT 7"C
CW20-3C

AHEAD 7"D
CW20-3D



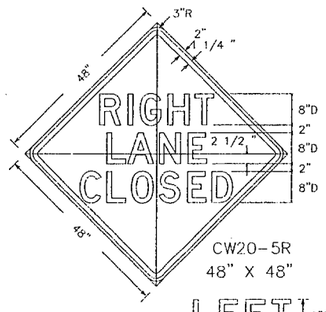
* reduce spacing 40%

CW20-4A
48" X 48"

1000FT 7"C*
CW20-4B

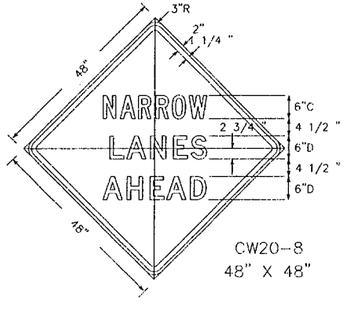
500FT 7"C
CW20-4C

AHEAD 7"C
CW20-4D

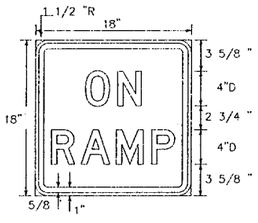


CW20-5R
48" X 48"

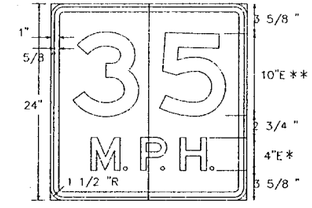
LEFT 8"D
CW20-5L



CW20-8
48" X 48"



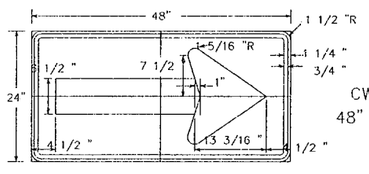
CW13-4
18" X 18"



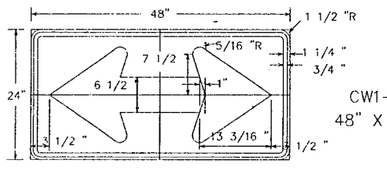
* increase spacing 100%
** optically space numerals about vert. centerline

SCW13-1
24" X 24"

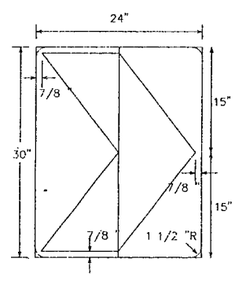
Speed value to be determined at the site by the Engineer.



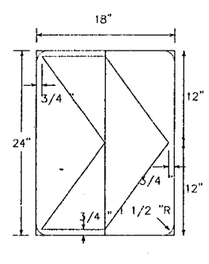
CW1-6
48" X 24"



CW1-7
48" X 24"

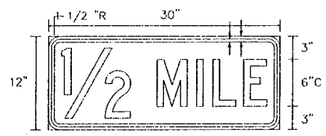


SCW1-8
24" X 30"



CW1-8
18" X 24"

GENERAL NOTES:
All signs detailed on this sheet shall have Black border, legend and/or symbol on an orange Type C reflective background.



Distance Plaque
30" X 12"

Alternate legends

1 MILE 6"C
1000 FT 6"C
1500 FT 6"C
500 FT 6"C

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

BARRICADE AND CONSTRUCTION STANDARDS

CONSTRUCTION WARNING SIGNS BC(9B)-98

©TxDOT Feburary 1998	DN:-GB	CK:-DTN	DW:-DN	CK:-GB	MSG NO.:
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT		SHEET
	DALLAS	6	CM 97 (449)		7/A
	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
	DALLAS		8050	18	034	BELT LINE

109B

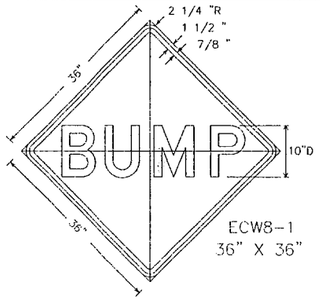
DN:	
CK:	
DW:	
CK:	

DATE:
ACC:
FILE:

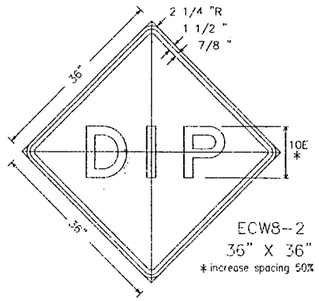
LEVELS DISPLAYED

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	

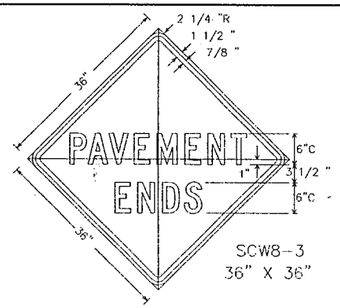
DISCLAIMER
The use of this standard is governed by the "Texas Engineering Practice Act". No warranty of any kind is made by TxDOT assumes no responsibility for the conversion of this standard to other formats or for incorrect results or damages resulting from its use.



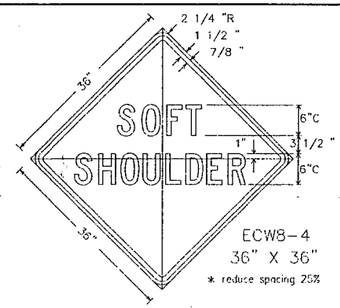
ECW8-1
36" X 36"



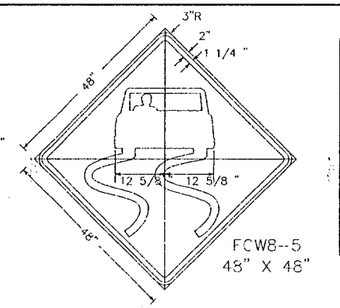
ECW8--2
36" X 36"
* increase spacing 50%



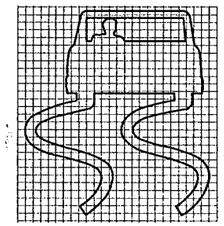
SCW8-3
36" X 36"

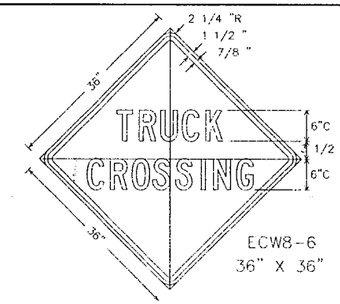


ECW8-4
36" X 36"
* reduce spacing 25%

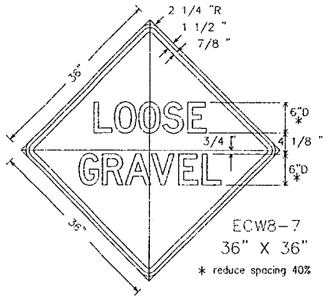


FCW8--5
48" X 48"

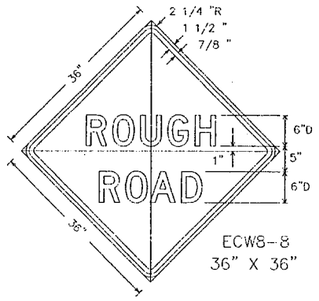




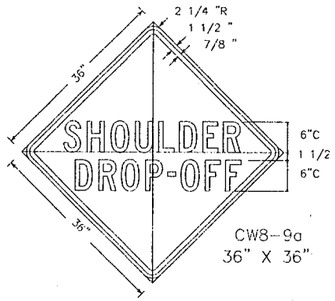
ECW8-6
36" X 36"



ECW8-7
36" X 36"
* reduce spacing 40%



ECW8-8
36" X 36"



CW8-9a
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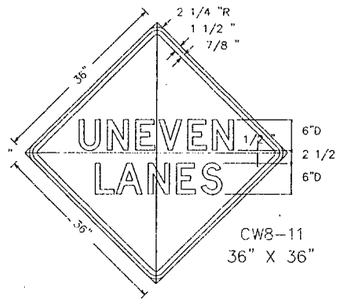

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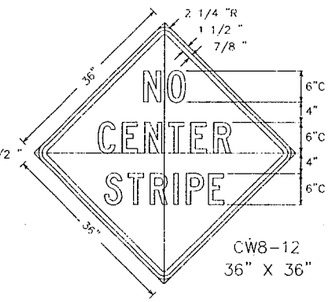

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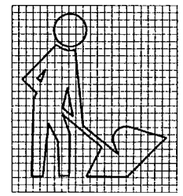

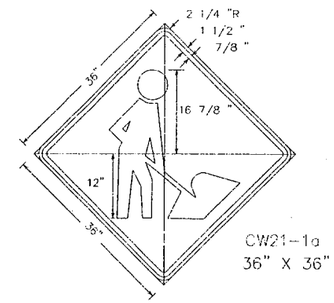

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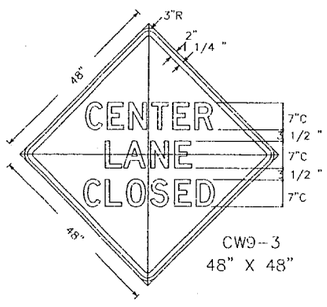

CW9-3
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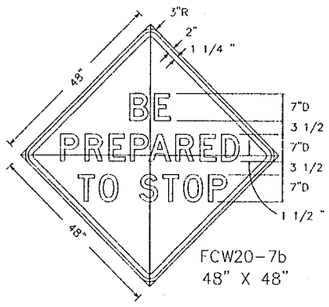

FCW20-7b
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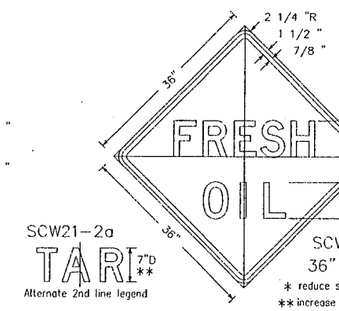
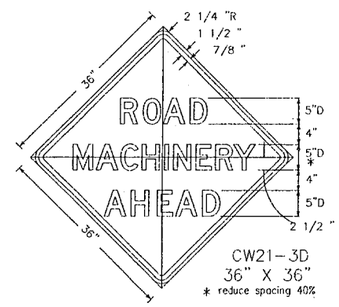


SCW21-2
36" X 36"
* reduce spacing 20%
** increase spacing 50%



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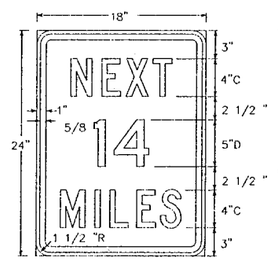
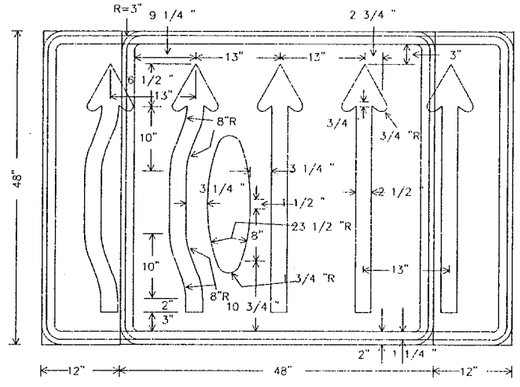
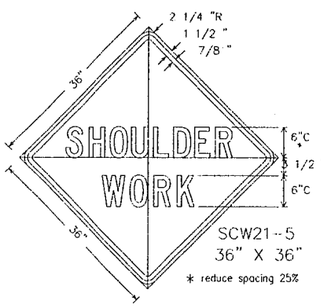
36" X 36"
* reduce spacing 40%



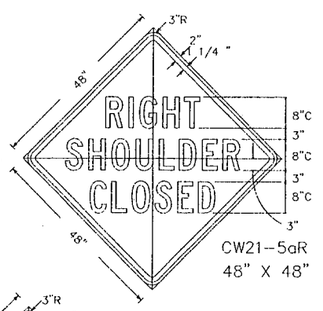
CW21-16
18" X 24"



CW24-2
Var. X 48"
A mirror image may be used to show proper lane alignment.

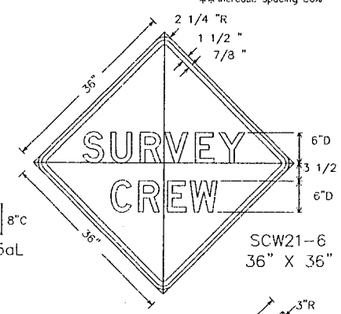


SCW21-5
36" X 36"
* reduce spacing 25%



CW21-5aR
48" X 48"

LEFT 8"C
CW21-5aL



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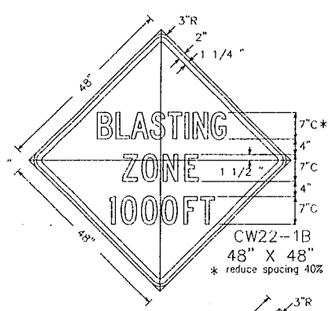
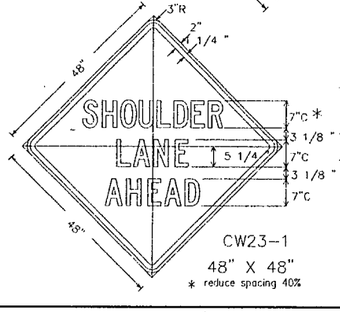
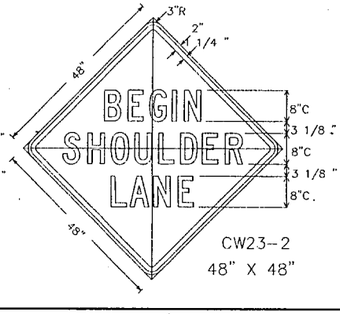


CW22-1B
48" X 48"
* reduce spacing 40%



CW23-1
48" X 48"
* reduce spacing 40%



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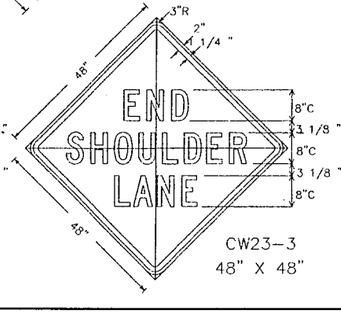
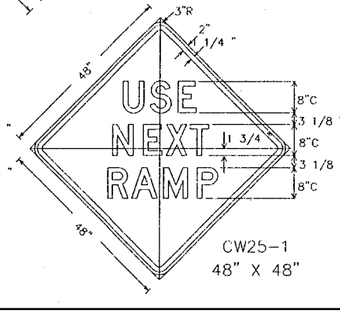


CW23-3
48" X 48"



CW25-1
48" X 48"

GENERAL NOTES:
All signs detailed on this sheet shall have Black border, legend and/or symbol on an orange Type C reflective background.

LEVELS DISPLAYED																DATE:
1		4	5	6	7	8	9	10	11	12	13	14	15	16		ACC:
17	18	19	20	21	22	23	24	25	26	27	28	29	D0	51	52	
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	FILE:
49	50	51	52	53	54	55	56	57	58	59	60	61	B2	B3		

DN:
CK:
DW:
CK:

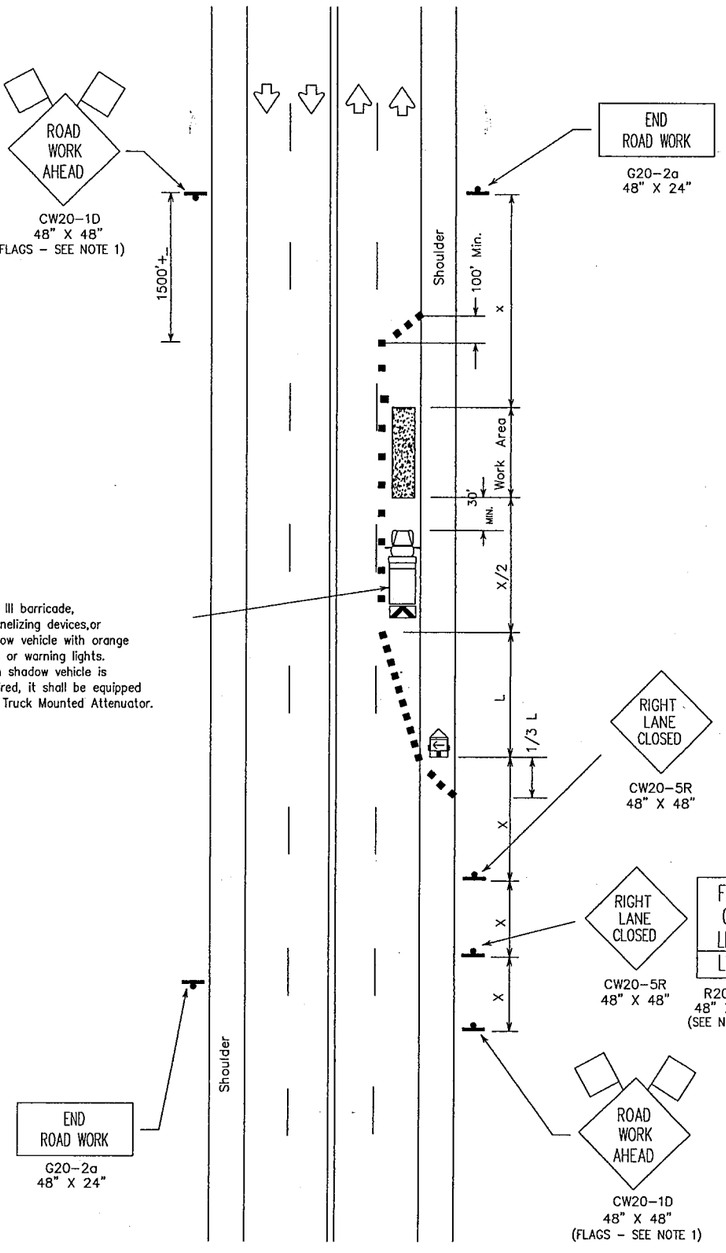
STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

BARRICADE AND CONSTRUCTION STANDARDS

CONSTRUCTION WARNING SIGNS BC(9C)-98

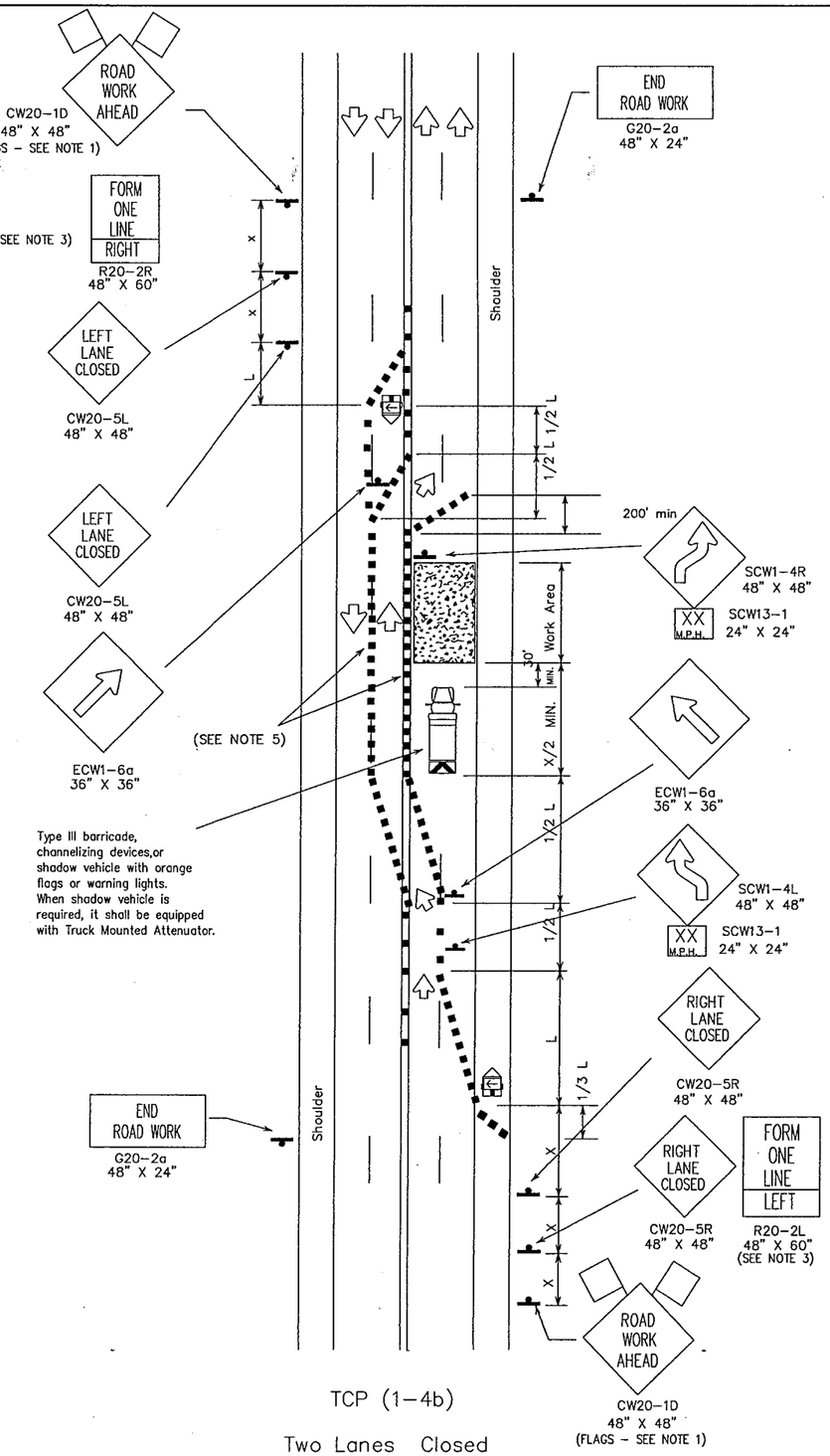
©TxDOT Feburary 1998			DW-GB	CK-DTN	DW-DN	CK-GB	MSG NO.:
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT				SHEET
	DALLAS	6	CM 97 (449)				718
	COUNTY		CONTROL	SECTION	JOB		HIGHWAY
	DALLAS		8050	18	034		BELT LINE

109C



TCP (1-4a)

One Lane Closed



TCP (1-4b)

Two Lanes Closed

LEGEND

Type III Barricade | Channelizing Devices | Flag
Heavy Work Vehicle | Truck Mounted Attenuator
Trailer Mounted Flashing Arrow Panel | Portable Changeable Message Sign
Flagger | Sign Post

Posted Speed *	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Device On a Taper	On a Tangent	Minimum Sign Spacing X Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'-75'	120'
35		205'	225'	245'	35'	70'-90'	160'
40		265'	295'	320'	40'	80'-100'	240'
45	L=WS	450'	495'	540'	45'	90'-110'	320'
50		500'	550'	600'	50'	100'-125'	400'
55		550'	605'	660'	55'	110'-140'	500'
60		600'	660'	720'	60'	120'-150'	* 600'
65		650'	715'	780'	65'	130'-165'	* 700'
70		700'	770'	840'	70'	140'-175'	* 800'

* 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. Unless otherwise stated in the plans, flags attached to the signs 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.
3. The FORM ONE LANE LEFT sign may be used following the RIGHT LANE CLOSED sign. Spacing distance between signs should be the minimum distance indicated.
4. ROAD WORK AHEAD sign may be repeated if the visibility of the work zone is less than 1500'.
5. If pavement markings are not removed and traffic is directed over a double yellow centerline, the maximum spacing of channelizing devices in a tangent section should be no greater than 10 feet.

Only pre-qualified products shall be used. A list of compliant products and their sources may be obtained by writing or faxing:

Standards Engineer
Traffic Operations Division - TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3335
Fax (512) 416-3161
E-mail TRF-STANDARD@mailgw.dot.state.tx.us

The requirement for shadow vehicles will be listed in the project GENERAL NOTES, Item 502, Barricades, Signs and Traffic Handling.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

TRAFFIC CONTROL PLAN

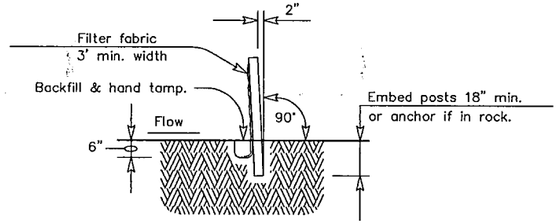
TCP(1-4)-98

©TxDOT December 1985	DN-LR	CK-MT	DW-DN	CK-MT	HCG NO.:

REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
2-94	DALLAS	6	CM 97 (449)	72
8-95				
1-97	COUNTY		CONTROL / SECTION / JOB	HIGHWAY
4-98	DALLAS		8050 / 18 / 034	BELT LINE

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
7 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

DATE:
ACC:
FILE:
DN:
CK:
DW:
CK:



SECTION A–A

SEDIMENT CONTROL FENCE USAGE GUIDELINES

A sediment control fence may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A 2 year storm frequency may be used to calculate the flow rate to be filtered.

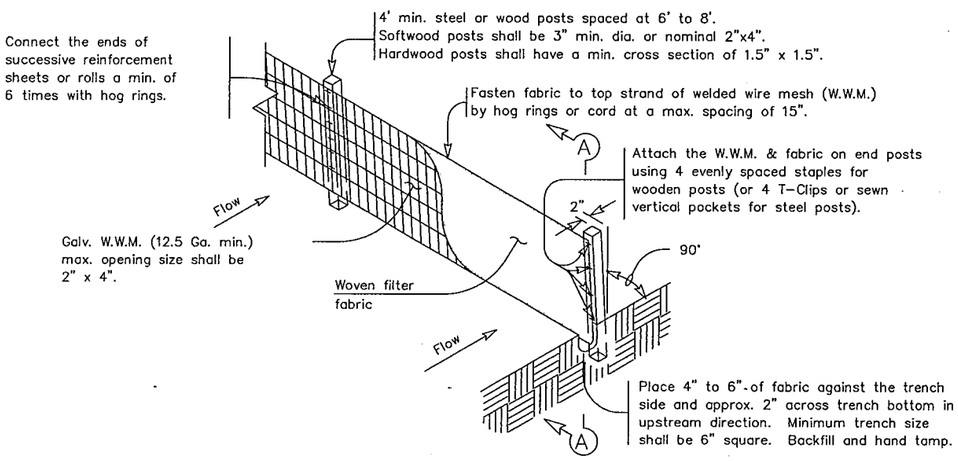
Sediment control fence should be sized to filter a max. flow through rate of 100 GPM/FT^2. Sediment control fence is not recommended to control erosion from a drainage area larger than 2 acres.

PLAN SHEET LEGEND

Sediment Control Fence —— SCF ——

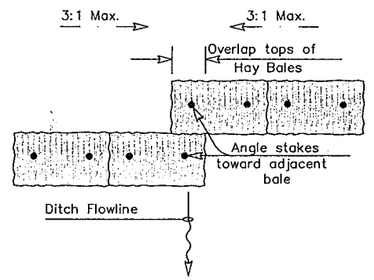
GENERAL NOTES

1. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

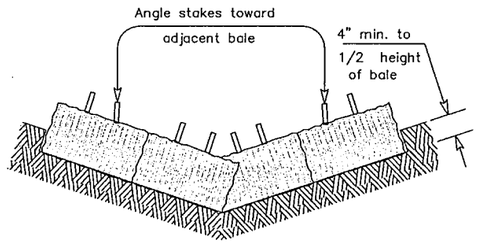


TEMPORARY SEDIMENT CONTROL FENCE

—— SCF ——



PLAN VIEW



PROFILE VIEW

PLANS SHEET LEGEND

Baled Hay —— BH ——

BALED HAY USAGE GUIDELINES

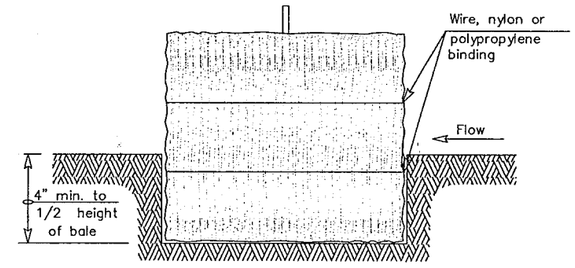
A Baled Hay installation may be constructed near the downstream perimeter of a disturbed area along a contour to intercept sediment from overland runoff. A two year storm frequency may be used to calculate the flow rate to be filtered. The installation should be sized to filter a maximum flow thru rate of 5 GPM/FT^2 of cross sectional area. Baled hay may be used at the following locations:

1. Where the runoff approaching the baled hay flows over disturbed soil for less than 100'. If the slope of the disturbed soil exceeds 10%, the length of slope upstream the baled hay should be less than 50'.
2. Where the installation will be required for less than 3 months.
3. Where the contributing drainage area is less than 1/2 acre.

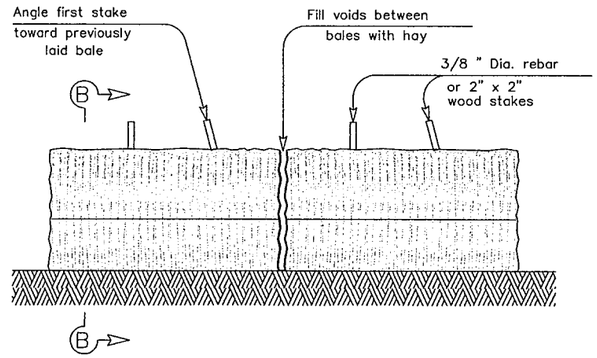
For Baled Hay installations in small ditches, the additional following considerations apply:

1. The ditch sideslopes should be graded as flat as possible to maximize the drainage flowrate thru the hay.
2. The ditch should be graded large enough to contain the overtopping drainage when sediment has filled to the top of the baled hay.

Bales should be replaced usually every 2 months or more often during wet weather when loss of structural integrity is accelerated.



SECTION B–B



BALED HAY FOR EROSION CONTROL

—— BH ——

GENERAL NOTES

1. Hay bales shall be a minimum of 30" in length and weigh a minimum of 50 Lbs.
2. Hay bales shall be bound by either wire or nylon or polypropylene string. The bales shall be composed entirely of vegetable matter.
3. Hay bales shall be embedded in the soil a minimum of 4" and where possible 1/2 the height of the bale.
4. Hay bales shall be placed in a row with ends tightly abutting the adjacent bales. The bales shall be placed with bindings parallel to the ground.
5. Hay bales shall be securely anchored in place with 3/8 " Dia. rebar or 2" x 2" wood stakes, driven through the bales. The first stake shall be angled towards the previously laid bale to force the bales together.
6. The guidelines shown hereon are suggestions only and may be modified by the Engineer.

TEXAS DEPARTMENT OF TRANSPORTATION

TEMPORARY EROSION, SEDIMENT AND WATER POLLUTION CONTROL MEASURES

FENCE & BALED HAY

EC(1)–93

MODIFICATIONS	FED.RD. DIV.NO.	STATE	FEDERAL AID PROJECT NO.			SHEET NO.
	6	TEXAS	CM 97 (449)			73
	STATE DIST.	COUNTY	CONT.	SECT.	JOB	HIGHWAY NO.
	DALLAS	DALLAS	8050	18	034	BELT LINE

HIGHWAY DESIGN DIVISION (D–8)

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
7 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

DATE:
ACC:
FILE:
DN:
CK:
DW:
CK:

I. GENERAL REQUIREMENTS FOR ALL ELECTRICAL WORK

The location of all conductors, conduits, junction boxes, ground boxes, electrical services and transformer stations is diagrammatic only and may be shifted by the Engineer to accommodate local conditions.

Materials shall be new and unused, and materials and installation shall comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards and be Underwriters Laboratories (UL) Listed. Faulty fabrication or poor workmanship in any material, equipment or installation shall be justification for rejection.

SUBMITTALS:

The contractor shall submit for approval no less than five (5) copies of catalog cut sheets on electrical services, ground boxes, including loading capicity certification, breakaway disconnects, heat shrink tubing and heat shrink filler tape, photocells, and, when required, verification of available fault current. Submittals shall be legible and shall be marked to indicate which product on a cut-sheet is to be supplied. Where manufacturers provide warranties and guarantees as a customary trade practice, Contractor shall furnish to the State such warranties or guarantees.

Grounding shall be as shown on the plans and in accordance with the NEC. Metallic conduit, lighting poles and luminaires on bridge structures shall be bonded to the system grounding conductor and to a ground rod in each ground box or junction box at the bridge ends, and in each ground box installed for underpass lighting. The grounding conductor shall be bare or, if insulated, shall be green. Ground rods, connectors, and bonding jumpers will not be paid for separately, but will be subsidiary to the various bid items.

II. CONDUIT

A. MATERIALS

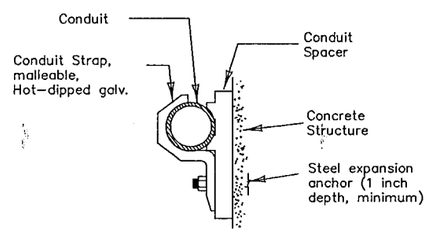
1. Conduit and fittings shall be UL Listed for the intended use shown on plan sheets.
2. Neither aluminum conduit, electrical metallic tubing (EMT), nor intermediate metal conduit (IMC) shall be permitted as a substitute for rigid metal conduit (RMC).
3. All exposed conduits shall be (RMC), unless otherwise specifically shown on the plans.
4. Fittings for RMC shall be steel or malleable iron, threaded, or threadless compression type, rain-tight, and shall be UL Listed for the intended use.
5. Expansion joints for metallic conduit shall be Appleton UNYL 50 Series, OZ/Gedney AX Series, or equal.
6. Junction box minimum sizes shall be in accordance with the following table which applies to the greatest number of conductors entering the box through one conduit with no more than four conduits per box. When a mixture of conductor sizes is present, the conductors shall be counted as if all are of the larger size. Situations not applicable to the table shall be sized in accordance with NEC 370-28.

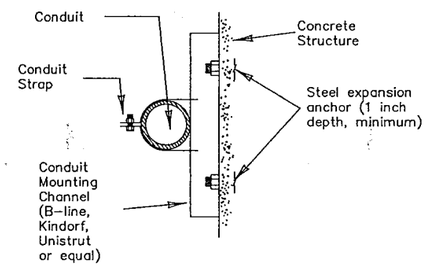
AWG	3 CONDUCTORS	5 CONDUCTORS	7 CONDUCTORS
#1	10" x 10" x 4"	12" x 12" x 4"	16" x 16" x 4"
#2	8" x 8" x 4"	10" x 10" x 4"	12" x 12" x 4"
#4	8" x 8" x 4"	10" x 10" x 4"	10" x 10" x 4"
#6	8" x 8" x 4"	8" x 8" x 4"	10" x 10" x 4"
#8	8" x 8" x 4"	8" x 8" x 4"	8" x 8" x 4"

7. RMC system junction boxes surface mounted and containing conductors #8 or larger, shall be hot dipped galvanized cast iron, or aluminum, minimum wall thickness shall be 3/16 inch, and shall have mounting lugs, (Crouse Type WAB, OZ/Gedney Type YS, Adalet Type 3R, or approved equal).
8. Junction boxes containing only #10 and #12 AWG conductors shall be Crouse Hinds Type GRFX, Appleton Type JBOX, two-gang FD, or similar approved cast iron. Boxes shall be sized according to NEC Table 370-16(a).
9. Junction boxes in EMT conduit systems shall be made from galvanized sheeting and shall be UL Listed as approved for outdoor use, unless otherwise noted on the plans. Sheet metal junction boxes shall be sized in accordance with the NEC.
10. Junction boxes in PVC conduit systems shall be PVC, UL Listed for outdoor use, unless otherwise noted on the plans.
11. Elbows in PVC conduit systems one inch and larger shall be rigid metal. Rigid metal elbows buried less than 18 inches underground shall be grounded. Elbows installed at ground boxes and foundations shall be extended with rigid metal conduit to the inside of the ground box or the top of the foundation. At that point a grounding bushing shall be installed.

B. CONSTRUCTION METHODS

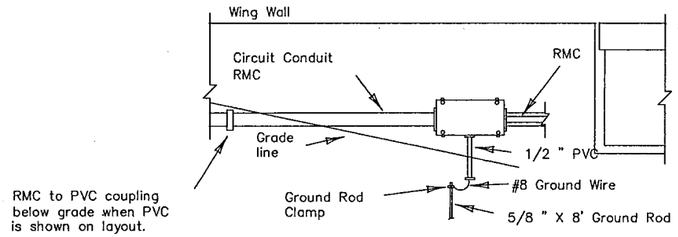
1. Conduit in structures shall have expansion fittings at structure expansion joints.
2. Conduit supports shall be spaced at maximum intervals of 5 feet. Conduit spacers shall be used with metal conduit placed on surfaces of concrete structures (See conduit mounting options).
3. Conduit supports shall not be attached directly to prestressed concrete beams except as shown specifically in the plans and approved by the Engineer.
4. Unless otherwise shown on the plans, conduit placed beneath existing roadways, driveways, or sidewalks, or after the base or surfacing operation has begun, shall be accomplished by jacking or boring. The Contractor shall back fill and compact the bore pits to the bottom of the conduit prior to installing connecting conduit or duct cable to prevent bending of the connection.
5. Conduit trenched in the subgrade of new roadways shall be back filled with excavated material, unless otherwise noted on the plans. Conduit trenched in the sub-base of new roadways shall be back filled with cement-stabilized base.
6. Open ends of all conduit and raceways shall be fitted with temporary caps or plugs to prevent entry of dirt, debris and rodents during construction. The temporary cap may be constructed of duct tape, but in all cases shall be tightly fixed to the conduit and shall be durable. The contractor shall clean out the conduit and prove it clear in accordance with Standard Specifications Item 618.3 prior to installing any conductors.
7. Conduit entry into the top of junction boxes and enclosures shall be made weathertight using threaded hubs.
8. A bonding jumper shall be installed from each grounding bushing to the nearest grounding rod, grounding lug, and/or system grounding conductor. At electrical services, grounding electrode conductor shall be #6 AWG. All other jumpers shall be the same size as supply conductors. Conduit used as casing under roadways for duct cable need not be grounded if duct extends full length through the casing.
9. Metal junction boxes shall be bonded to the grounding conductor in accordance with the NEC.
10. Conduits entering ground boxes shall be placed so that the conduit ends shall be not less that 5 inches nor more than 9 inches from the box cover (See ground box detail on sheet ED(2)).
11. Conduit ends shall be sealed with heat shrink boots with sealant, silicone caulking, urethane foam, or by other methods approved by the Engineer. Sealing shall be done after completion of any required pull tests. Duct tape shall not be used as a permanent conduit sealant.





CONDUIT MOUNTING OPTIONS

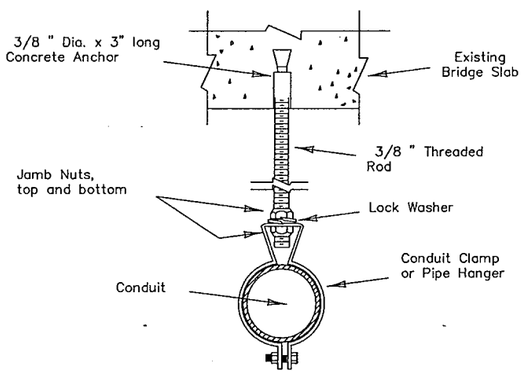
(Attachment to concrete surfaces)
(See para. II.B.2)



NOTES

1. Conduit shall be 2" RMC for duct cable entry to junction box.
2. Ground rod clamp to be Blackburn GG 5/8H, Weaver W5/8 or equal.
3. Surface mounting shown, for conduit to be placed in structure use flush-mounted box.
4. Bond junction box to grounding conductor.

TYPICAL CONDUIT ENTRY TO BRIDGE STRUCTURE DETAIL



CONDUIT HANGER DETAIL

(Attachment to horizontal surfaces)
(See para. II.B.2)

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

ELECTRICAL DETAILS-CONDUIT

ED(1)-98

©TxDOT January 1992	DN-KB	CK:-JM	DW-DN	CK:-KB	MSS NO.:
REVISIONS 5-93 10-93 4-98	STATE DISTRICT: DALLAS	FEDERAL REGION: 6	FEDERAL AID PROJECT: CM 97 (449)		SHEET: 74
COUNTY: DALLAS	CONTROL: 8050	SECTION: 18	JOB: 034	HIGHWAY: BELT LINE	

71A

I. ELECTRICAL CONDUCTORS

A. MATERIALS

1. Insulated conductors shall be NEC Type XHHW. Conductors shall be color coded in accordance with the NEC, articles 200, 250, and 310; i.e. Grounded conductors (neutrals) shall be white, Grounding conductors (ground wires) shall be bare or green, Ungrounded conductors (hots) shall be any color except green, white, or grey. Identification of conductors #10 AWG and smaller shall be by continuous jacket color. Color coding of electrical conductors #8 AWG and larger shall be either by continuous color jacket or by colored tape. Colored tape marker shall consist of a half-lap of tape covering a 6 inch length of conductor.

2. Where two or more circuits are present in one conduit or enclosure, the conductors of each circuit shall be identified by a permanent non-metallic tag at each accessible location. The tag shall be fastened to the conductors by plastic straps.

3. Grounding electrode conductors #6 AWG or smaller, for bonding to ground rods at electrical services, shall be solid. Connection of conductors to ground rods shall be made using UL Listed connectors designed for such purposes.

4. Heat Shrink Tape filler shall be used to seal the ends of heat shrink tubing around two or more conductors that are insulated with heat shrink tubing. Tape material shall have a minimum dielectric strength of 225 volts per mil and may be either cross-linked butyl rubber or silicone gel strip. Tape shall be supplied in rolls and shall have a backing (release paper) to prevent the tape from sticking to itself.

B. CONSTRUCTION METHODS

1. After conductors have been installed in conduit, a pull test will be made on conductors. When any length of conductor cannot be freely pulled, the Contractor shall make any needed alterations or repairs at no expense to the State.

2. Conductors in illumination poles shall be supported by a J-hook in the top of the pole.

3. A sufficient length of conductor for making up connections shall be left in ground boxes (2 feet minimum to point of splice, 3 feet minimum when conductor is pulled through with no splice), enclosures, and pole bases (1 foot minimum and typical).

4. Splices shall be made only in junction boxes, ground boxes, pole bases, or electrical enclosures and shall be made with approved compression sleeves or split bolt connectors. Splices shall be insulated with heavy wall heat shrink tubing containing factory applied sealant and shall be watertight. Heat shrink sleeve shall overlap conductor insulation a minimum of 2 inches on both sides of the splice. Heat shrink tape filler is required where two or more conductors enter one heat shrink tube to ensure watertight splice. Heat shrink tape shall be either butyl rubber or silicone gel strip.

5. Wire nuts may be used for #8 AWG and smaller conductors in above-ground junction boxes, but not in pole bases or ground boxes. Wire nuts shall be positioned upright to prevent the accumulation of water.

II. GROUND BOX

A. MATERIALS

1. Ground boxes shall be concrete or polymer concrete, as required by the descriptive code shown elsewhere.

2. All precast ground boxes and covers shall be permanently marked either by impress or by permanent ink, with manufacturer's model number, name or logo.

3. Covers shall be bolted down, and bolt holes in the box shall be arranged to drain dirt.

4. Ground box Types A, B, C, D & E shall be Polymer Concrete and shall meet the following requirements:

   a. Boxes shall be manufactured from Reinforced Polymer Concrete (RPM) composed of borosilicate glass fiber, a catalyzed polyester resin and an aggregate. Side walls may be fiber reinforced polymer.

   b. Minimum inside dimensions shall be as follows (width x length x depth):

      Type A shall be 11.5 inches x 21 inches x 10 inches , (122311)
      Type B shall be 11.5 inches x 21 inches x 20 inches , (122322)
      Type C shall be 15.25 inches x 28.25 inches x 10 inches , (162911)
      Type D shall be 15.25 inches x 28.25 inches x 20 inches , (162922)
      Type E shall be 11.5 inches x 21 inches x 16 inches , (122317)

   c. Bottom edge of box or extension shall be footed with a minimum 1 1/4 inch flange.

   d. Ground boxes shall withstand a test loading of 20,000 lbs. over a 10 in. by 10 in. area centered on the lid and 600 lbs. per sq. ft. applied over the entire side wall. The model of ground box proposed shall have been tested by a laboratory independent of the manufacturer to meet loading requirements. Certification of such tests shall be submitted to the Engineer for approval.

   e. Covers shall be 2 inch (nominal) thick polymer concrete. Cover shall be secured with two 1/2 inch stainless steel bolts. Bolts shall be captive and shall withstand a minimum of 70 ft-lbs torque and shall have a minimum 750 lbs straight pull out strength. Nuts shall be floating. Covers shall be skid resistant, minimum 0.5 coefficient of friction. Covers shall be interchangeable between manufacturers and shall conform to the dimensions shown below. Cover shall be legibly imprinted with the words "Danger High Voltage" in minimum 1 inch letters. When required, other cover lettering shall be as shown elsewhere on the plans.

5. Cast in place and precast concrete boxes shall be as shown elsewhere in the plans.

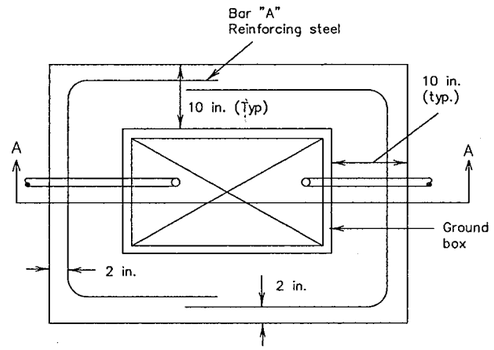
B. CONSTRUCTION METHODS

1. Ground boxes shall be set on a 9 inch (minimum) bed of course No. 1 aggregate as defined by item 421. Gravel shall be in place prior to setting box and conduits shall be capped. Any gravel or dirt in conduit shall be removed.

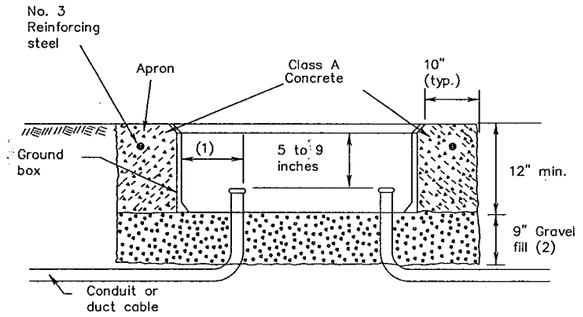
2. When required by Item descriptive code, construction of an apron encasing a ground box including concrete and reinforcing steel shall not be paid for directly but shall be subsidiary to the ground box. Reinforcing steel may be field bent. Concrete for aprons shall be considered miscellaneous concrete for testing purposes.

3. Conduit holes may be cut into the walls of deep boxes at least 18 inches beneath the cover.

4. Steel covers shall be bonded to grounding conductor with a 3 feet long flexible jumper.



PLAN VIEW



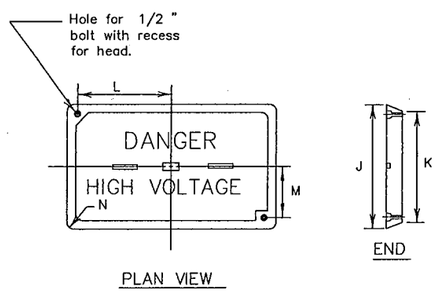
SECTION A – A

(1) Final position of end of conduit shall not exceed one-half of the distance to the side of the box opposite of the conduit entry.

(2) Place gravel "under" the box, not "in" the box. Gravel should not encroach on the interior volume of the box.

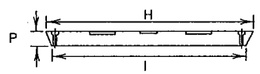
APRON FOR GROUND BOXES

(Where required)



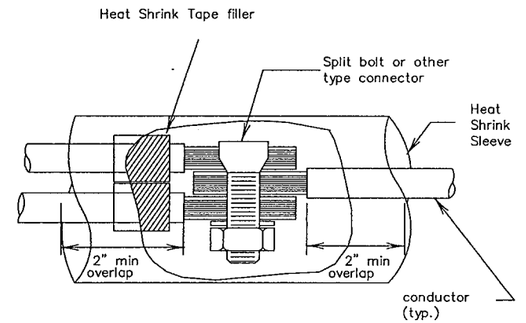
PLAN VIEW

END



SIDE

GROUND BOX COVER



SPLICE DETAIL

GROUND BOX COVER DIMENSIONS								
BOX	DIMENSIONS (INCHES)							
SIZE (WXL)	H	I	J	K	L	M	N	P
12 x 23	23 1/4	23	13 3/4	13 1/2	9 7/8	5 1/8	1 3/8	2
16 x 29	30 1/2	30 1/4	17 1/2	17 1/4	13 1/4	6 3/4	1 3/8	2

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

ELECTRICAL DETAILS– CONDUCTORS, GROUND BOXES

ED(2)–98

©TxDOT January 1992	DN:- JM	CK:- KB	DW:- DN	CK:- JM	MSG NO.:
REVISIONS 5-93 10-93 4-98	STATE DISTRICT: DALLAS	FEDERAL REGION: 6	FEDERAL AID PROJECT: CM 97 (449)		SHEET: 75
	COUNTY: DALLAS	CONTROL: 8050	SECTION: 18	JOB: 034	HIGHWAY: BELT LINE

LEVELS DISPLAYED: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

DATE: ACC: FILE:

DN: CK: DW: CK:

71B

ELECTRICAL SERVICES NOTES

All work, materials, services, and incidentals, whether or not specifically shown on the plans, which may be necessary for a complete and proper electrical service installation as specified in the plans to obtain electrical power (except extending primary lines to electrical service) shall be paid for, performed, furnished and installed by the Contractor. The Contractor shall contact the Utility for metering and shall comply with all Utility requirements.

Primary line extensions, when required, shall be paid for under Force Account work. The Contractor shall consult with the appropriate Utility to determine costs and requirements, and shall coordinate the Utility's work as approved by the Engineer. The contractor shall be reimbursed only the amount billed by the Utility. No additional amount for supervision of the Utility's work will be paid.

Materials shall be new and unused, and materials and installation shall comply with the applicable provisions of the National Electrical Code (NEC) and National Electrical Manufacturers Association (NEMA) standards and shall be Underwriters Laboratories (UL) Listed. Electrical Service conduits, conductors, disconnects, contactors, circuit breaker panel sizes, and branch circuit breakers, shall be as shown in the Electrical Service Data elsewhere in the plans. Faulty fabrication or poor workmanship in any material, equipment, or installation shall be justification for rejection.

The Contractor shall submit for approval no less than five (5) copies of catalog cut sheets on electrical service materials. Submittals shall be legible and shall be marked to incicate which product on a cut-sheet is to be supplied. Where manufacturers provide warranties and guarantees as a customary trade practice, Contractor shall furnish to the State such warranties or guarantees.

I. Safety Switch. A safety switch, placed ahead of the meter, shall only be used when specified by the Utility and is shown on the Electrical Service Data. The switch shall be UL Listed, heavy duty type, 600 volt, unfused, with a UL type 3R enclosure and equipped with a solid neutral (s/n) assembly. The switch shall be padlockable in the "on" position.

II. Service Type. Electrical service types A, C, D, and T shall be as schematically detailed on ED(4). Other service types shall be as detailed elsewhere on the plans.

III. Branch Circuit Breakers. Circuit breakers shall be thermal magnetic and have a minimum interrupting capacity of 10,000 amps and a voltage rating compatible with their use. Circuit breakers shall be sized as shown on electrical service data table. Circuit breakers in panelboards and load centers shall be full size and designed exclusively for the panelboard or load center in use. Tandem and half-width breakers shall not be used. All circuit breakers shall be permanently and clearly marked identifying the circuit or device attached. Circuit breakers shall be UL Listed to UL489. Circuit breakers shall beswitch duty.

IV. Circuit Breaker Panelboard. Panelboards shall be UL Listed and shall meet Federal Specification W-P-115b, Type 1, Class 1 requirements. Panelboards shall have copper busses, a minimum of 12 one-pole spaces, and shall be rated for service equipment. Enclosure shall meet UL type 3R classification. Panelboards shall have a threaded hub conduit entry for conduit entering the top of the enclosure. Circuit breakers shall be bolt-in type only.

V. Circuit Breaker Load Center. Load centers shall be UL Listed, and shall meet Federal Specification W-P-115c, Type 1, Class 2 requirements. Load centers shall have copper busses, a minimum of 4 one-pole spaces, and shall be rated for service equipment. Enclosure shall meet UL type 3R classification. Load centers shall have a threaded hub conduit entry for conduit entering the top of the enclosure. Circuit breakers shall be plug-in type only. Load centers for type T services shall accomodate a maximum of 6 one-pole breakers.

EXPLANATION OF ELECTRICAL SERVICE DESCRIPTIVE CODE

ELEC SERV TY X (XXX/XXX) XXX (XX) XX (X) XX (X) __

Schematic Type

Service Voltage (V / V)

Main Disconnect Amp Rating
(000 indicates none)

SS= Safety switch ahead of meter
NS= No switch ahead of meter and/or no meter required

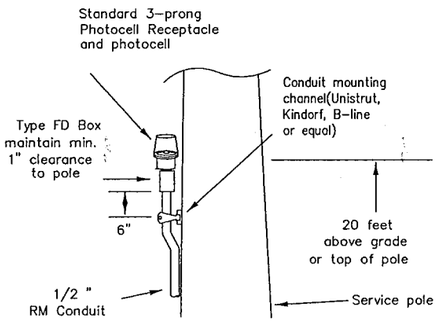
Enclosure Type
GS= Galvanized steel
SS= Stainless steel
⚠1 PS= Pedestal Service

Photocell Location
T= Top of pole
E= Enclosure mounted
L= Luminaire mounted
N= None

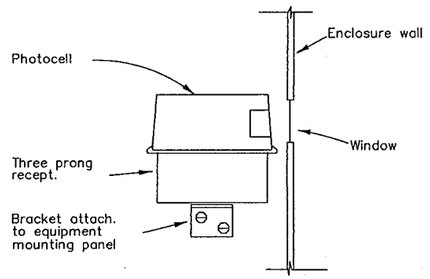
Service Support Type
GC= Granite concrete
OC= Other concrete
TP= Timber pole
SP= Steel pole
SF= Steel frame
OT= Pole by others or paid for separately
EX= Existing pole
TS= Switch gear to be placed on traffic signal pole
RT= Rectangular structural tubing
PS= Pedestal Service

O= Overhead service
U= Underground service

Example: ELEC SERV TY D(120/240)070(NS)GS(T)TP(O)

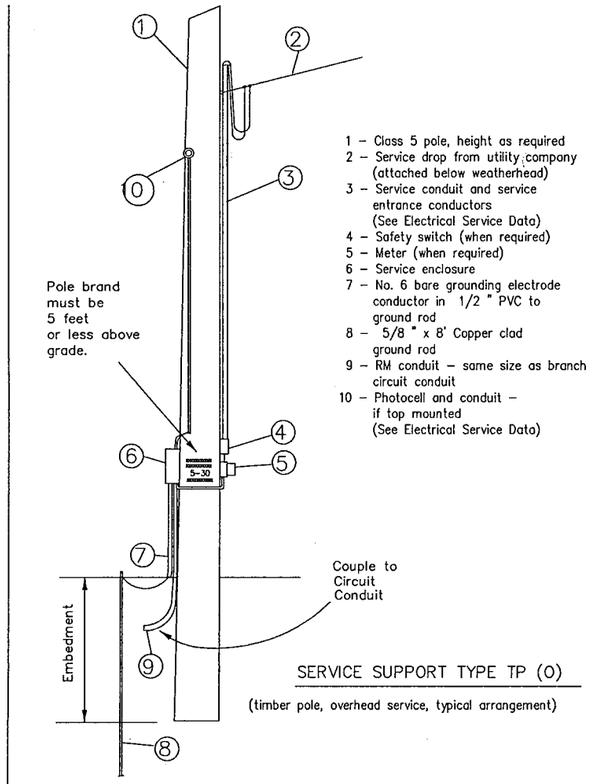


TOP MOUNTED PHOTOCELL



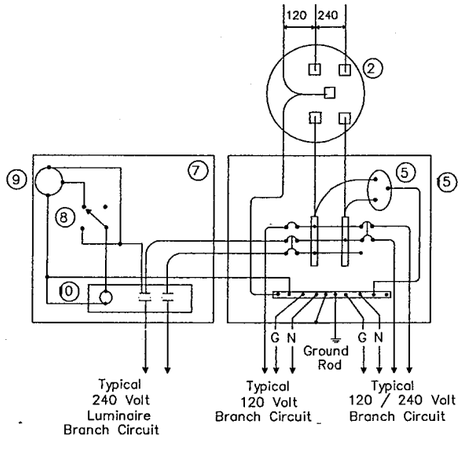
ENCLOSURE MOUNTED PHOTOCELL

For photocell specifications see ED(4),XII.



SERVICE SUPPORT TYPE TP (O)

(timber pole, overhead service, typical arrangement)



SCHEMATIC TYPE T

120/240 VOLTS –THREE WIRE

[Install photocell and lighting contactor when shown on Electrical Service Data.]

SCHEMATIC LEGEND

1
1 – Safety Switch (when required)
2 – Meter (when required)
3 – Service Assembly Enclosure
4 – Main Disconnect (Switch or Breaker, See Electrical Service Data)
5 – Lightning Arrestor
6 – Circuit Breaker, 15A
7 – Auxiliary Enclosure
8 – Control Station ("H-O-A" Switch)
9 – Photo Electric Control (enclosure-mounted shown)
10 – Lighting Contactor
11 – Power Distribution Terminal Blocks
12 – Neutral/Ground Bus
13 – Branch Circuit Breaker (See Electrical Service Data)
14 – Circuit Breaker Panelboard (See Electrical Service Data)
15 – Load Center
1 (See Electrical Service Data)

———— Power Wiring
———— Control Wiring
—— N —— Neutral Conductor (when required)
—— G —— Grounding Conductor

⚠1 Added pedestal service

TIMBER POLE NOTES

1. Conduit and conductors attached to service pole and underground within 12 inches of service pole shall not be paid for directly but shall be subsidiary to the service pole.
2. Install photo electric control on north side of pole or in service enclosure as required. See Electrical Service Data.
3. Attach service enclosure with galvanized channel (Unistrut, Kindorf, or equal). Gain pole two places to provide flat surfaces. Paint ends of channel with zinc rich paint.
4. Embedment depth shall be as required in Item 627 Treated Timber Poles.
5. Poles trimmed for excess length shall be trimmed from the top end only.

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

DATE:
ACC:
FILE:
DN:
CK:
DW:
CK:

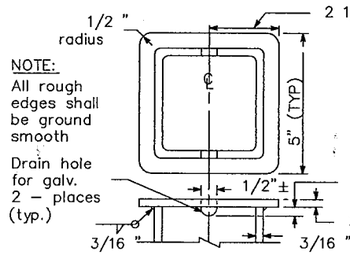
STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

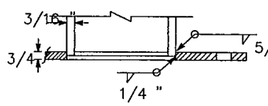
ELECTRICAL DETAILS– SERVICE SCHEMATICS AND SUPPORT–TYPE TP (OVERHEAD)

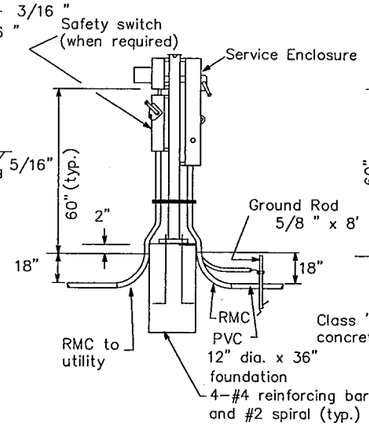
ED(3)–98

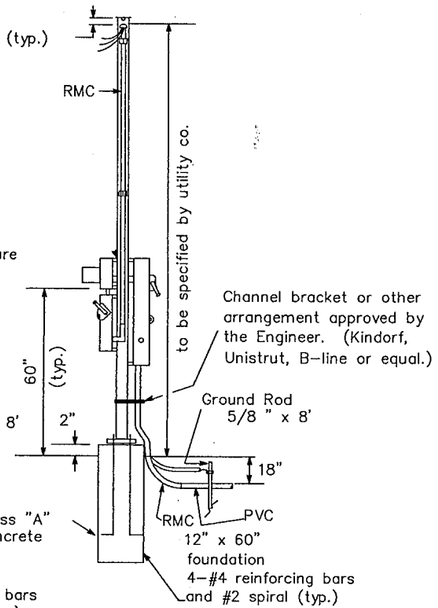
©TxDOT April 1998			DR:- KB	CK:- TB	DW:- DN	CK:- JM	MEG NO.:
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT				SHEET
	DALLAS	6	CM 97 (449)				76
	COUNTY		CONTROL	SECTION	JOB		HIGHWAY
	DALLAS		8050	18	034		BELT LINE

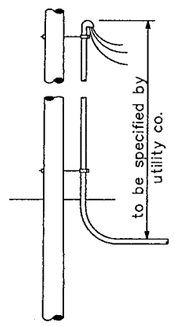
71C

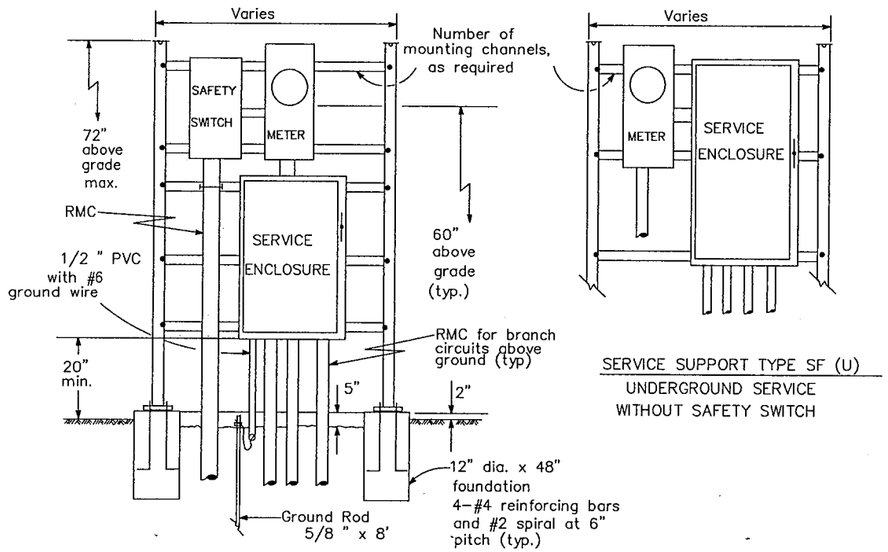


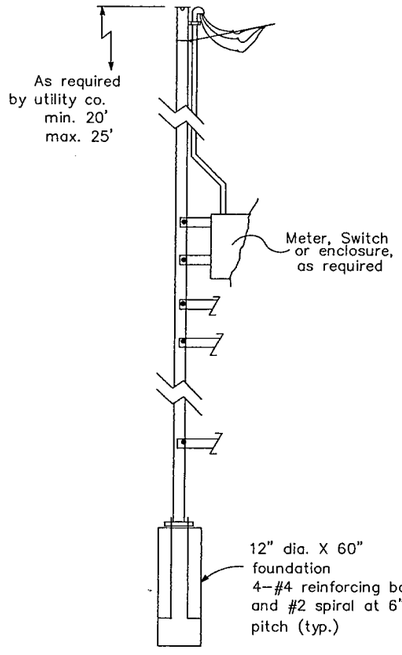


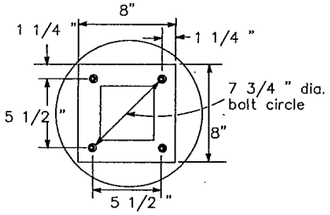


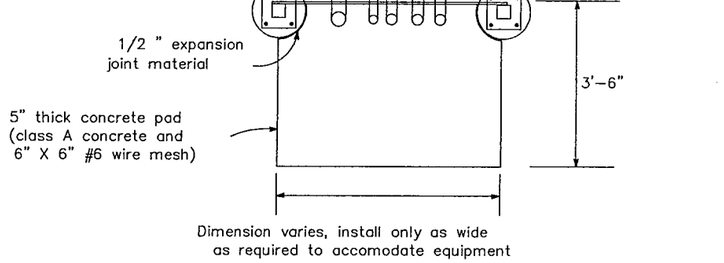












DN: LR
CK: CW
DW: DN
CK: MT

DATE:
ACC: d58hp1c/usr/d580504
FILE:

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

TOP OF POLE
TYPE SF & SP

BOTTOM OF POLE
TYPE SF & SP

SERVICE SUPPORT
TYPE SP (U)
UNDERGROUND SERVICE
WITH SAFETY SWITCH

SERVICE SUPPORT
TYPE SP (O)
OVERHEAD SERVICE
WITH SAFETY SWITCH

UNDERGROUND RISER
AT UTILITY POLE
(for underground service)

NOTES:

1. Support type SP and SF: Fabricated from 4" x 4" x 3/16 " square structural tubing, ASTM A500 Grade A or G or equal. Base plate shall be 3/4 " plate, ASTM A36 or equal. All equipment and conduit shall be mounted on galvanized channel strut, 1 1/2 " x 1 5/8 " x 12 guage galvanized steel channel (Unistrut, Kindorf, B-line or equal) clamped with channel hardware, bolted or welded to vertical member as approved by the Engineer.

2. Paint end of all channels with zinc-rich paint.

3. All Steel Poles (SP and Sf) shall be hot-dip galvanized after fabrication. Poles for overhead service shall be fitted with eyebolt or similar fitting, as approved by the utility company, for attachment of sevice drop to the pole.

4. All conduit and conductors attached to the electrical service and within 12 inches of the electrical service will not be paid for directly, but shall be subsidiary to the electrical service. All conduit and conductors from the utility company pole to the point 12 inches from the electrical service, including conduit and conductors required for the utility pole riser when furnished by the Contractor, will be paid for separately.

5. All mounting hardware and installation details of services shall be in accordance with utility company specifications.

6. Anchor bolts for underground service supports shall be 3/4 " x 18" x 4" (dia. x length x hook length). Anchor bolts for overhead services shall be 3/4 " x 56" x 4". Anchor bolts shall be provided with leveling nuts.

7. Conduit for grounding electrode conductor (ground rod wire) shall be 1/2 " PVC all other conduit on electrical services shall be rigid metal conduit. Service entrance conduit size shall be as shown elsewhere. Conduit for branch circuit entry to enclosure shall be the same size as that shown on the layout cheets for branch circuit conduit. Rigid metal conduit shall extend to the rigid metal elbow and then be coupled to the type conduit shown on the layout for that particular branch circuit. RMC shall have grounding bushings in enclosures.

8. If pole is painted, each separate painted piece shall have a bonding jumper attached to a drill and tapped hole.

SERVICE SUPPORT TY SF (O) & SF (U)
TOP VIEW

SERVICE SUPPORT TYPE SF (U)
UNDERGROUND SERVICE
WITH SAFETY SWITCH
(Typical Arrangement)

SERVICE SUPPORT TYPE SF (U)
UNDERGROUND SERVICE
WITHOUT SAFETY SWITCH

SERVICE SUPPORT TYPE SF (O)
OVERHEAD SERVICE

BASE PLATE DETAIL
TYPE SF & SP

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

ELECTRICAL DETAILS-
SERVICE SUPPORT
TYPES SF & SP

ED(5)-98

©TxDOT January 1992	DN: - KB	CK: - TB	DW: - RS	CK: - TB	NEG NO.:
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT		SHEET
10-93 4-98	DALLAS	6	CM 97 (449)		77
	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
	DALLAS		8050	18	034	BELT LINE

71E

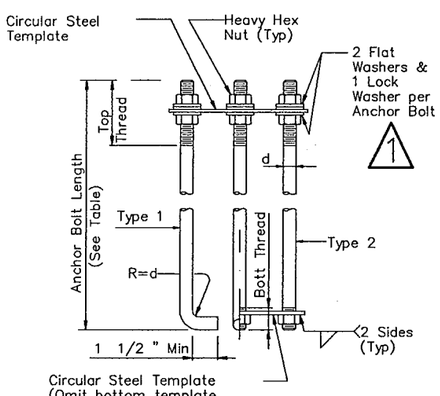
FOUNDATION DESIGN TABLE

FDN TYPE	DRILLED SHAFT DIA	REINFORCING STEEL		DRILLED SHAFT LENGTH–ft (4), (5), (6)			ANCHOR BOLT DESIGN (1)				FOUNDATION DESIGN LOAD (2)		TYPICAL APPLICATION
		VERT BARS	SPIRAL & PITCH	TEXAS CONE PENETROMETER N blows/ft 10	15	40	ANCHOR BOLT DIA	Fy (ksi)	BOLT CIR DIA	ANCHOR TYPE	MOMENT K–ft	SHEAR Kips	
24–A	24"	4– #5	#2 at 12"	5.7	5.3	4.5	3/4"	36	12 3/4"	1	10	1	Pedestal pole, pedestal mounted controller.
30–A	30"	8– #9	#3 at 6"	11.3	10.3	8.0	1 1/2"	55	17"	2	87	3	Mast arm assembly. (see Selection Table)
36–A	36"	10– #9	#3 at 6"	13.2	12.0	9.4	1 3/4"	55	19"	2	131	5	Mast arm assembly. (see Selection Table) 30' strain pole with or without luminaire.
36–B	36"	12– #9	#3 at 6"	15.2	13.6	10.4	2"	55	21"	2	190	7	Mast arm assembly. (see Selection Table) Strain pole taller than 30' & strain pole with mast arm
42–A	42"	14– #9	#3 at 6"	17.4	15.6	11.9	2 1/4"	55	23"	2	271	9	Mast arm assembly. (see Selection Table)

FOUNDATION SELECTION TABLE FOR STANDARD MAST ARM PLUS ILSN SUPPORT ASSEMBLIES (ft)

		FDN 30–A	FDN 36–A	FDN 36–B	FDN 42–A
80 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	36'	48'		
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS	24' X 24'			
		28' X 28'			
		32' X 28'	32' X 32'		
			36' X 36'		
			40' X 36'		
			44' X 28'	44' X 36'	
100 MPH DESIGN WIND SPEED	MAX SINGLE ARM LENGTH	24'	36'	44'	
	MAXIMUM DOUBLE ARM LENGTH COMBINATIONS		24' X 24'		
			28' X 28'		
			32' X 24'	32' X 32'	
				36' X 36'	
				40' x24'	40' X 36'
					44' x 36'

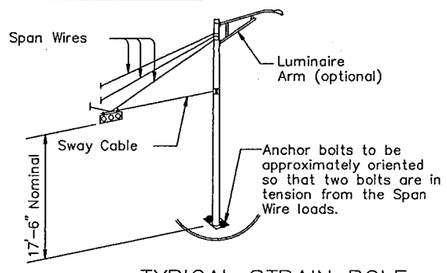
EXAMPLE:
1. For 80mph design wind speed, foundation 30–A can support up to a 32' arm with another arm up to 28'
2. For 100mph design wind speed, foundation 36–A can support a single 36' mast arm.



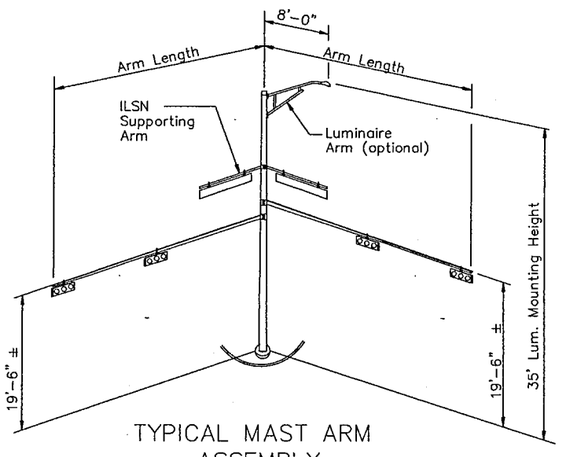
HOOKED ANCHOR (TYPE 1) NUT ANCHOR (TYPE 2)

ANCHOR BOLT ASSEMBLY 1

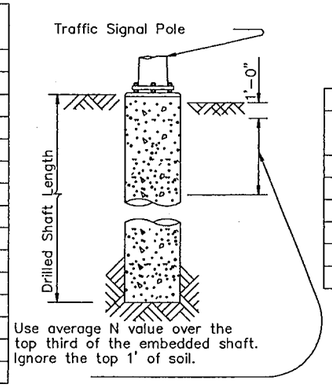
INSTALLATION PROCEDURE :
Threads of anchor bolts shall be coated with pipe joint compound prior to installation of upper nuts when erecting pole. After pole is plumbed and in permanent alignment, the exposed threads of painted bolts shall be cleaned and an additional coating of zinc–rich paint applied to seal the bolt thread–nut joint.



TYPICAL STRAIN POLE ASSEMBLY



TYPICAL MAST ARM ASSEMBLY



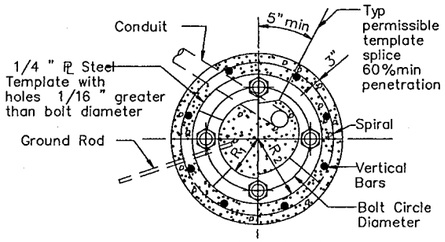
NOTES:
1. Anchor bolt design develops the foundation capacity given under Foundation Design Loads.
2. Foundation Design Loads are the allowable moments and shears at the base of the structure.
3. Foundations may be listed separately or grouped according to similarity of location and type. Quantities are for the Contractor's information only.
4. Field Penetrometer readings at a depth of approximately 3 to 5 feet may be used to adjust shaft lengths.
5. If rock is encountered, the Drilled Shaft shall extend a minimum of two diameters into solid rock.
6. Decimal lengths in Design Table are to allow interpolation for other penetrometer values. Round to nearest foot for entry into Summary Table.

1

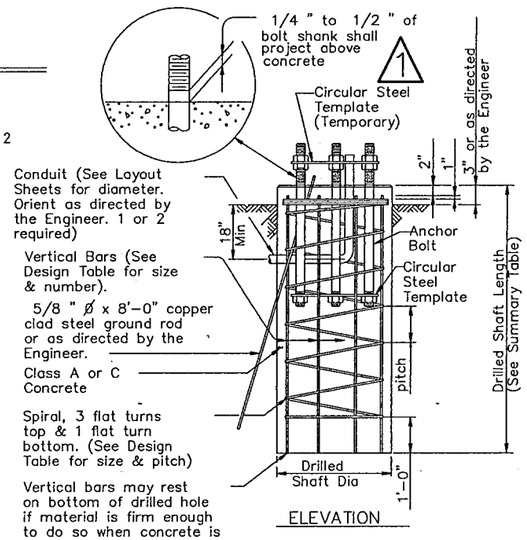
ANCHOR BOLT & TEMPLATE SIZES

BOLT DIA IN.	(7) BOLT LENGTH	TOP THREAD	BOTT THREAD	BOLT CIRCLE	R2	R1
3/4"	1'–6"	3"	—	12 3/4"	7 1/8"	5 5/8"
1 1/2"	3'–4"	6"	2"	17"	10"	7"
1 3/4"	3'–10"	7"	2 1/4"	19"	11 1/4"	7 3/4"
2"	4'–3"	8"	2 1/2"	21"	12 1/2"	8 1/2"
2 1/4"	4'–9"	9"	3"	23"	13 3/4"	9 1/4"

(7) Min dimensions given, longer bolts are acceptable.



TOP VIEW



ELEVATION

FOUNDATION DETAILS

1 Anchor Bolt Assemblies will be furnished by the Town of Addison

STATE OF TEXAS RONALD W YOUNG 36561 REGISTERED PROFESSIONAL ENGINEER 4/23/97

FOR MODIFICATION ONLY

FOUNDATION SUMMARY TABLE (3)

LOCATION IDENTIFICATION	AVG. N BLOW /ft.	FDN TYPE	NO. EA	DRILLED SHAFT LENGTH (6) (FEET) 24–A	30–A	36–A	36–B	42–A
MIDWAY ROAD								
AT BELT LINE								
T–1							14	
T–2							14	
T–3							14	
T–4							14	
QUORUM DRIVE								
AT BELT LINE								
T–5							14	
T–6							14	
T–7							14	
T–8							14	
TOTAL DRILLED SHAFT LENGTHS							112	

GENERAL NOTES :

Design conforms to 1994 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals and interim revisions thereto.

Reinforcing steel shall conform to Item 440. Concrete shall be Class A or C.

Threads for anchor bolts and nuts shall be rolled or cut threads of unified national coarse thread series except for A193B7 bolts which shall have 8 pitch thread series. Bolts and nuts shall have Class 2A and 2B fit tolerances. Galvanized nuts shall be tapped after galvanizing.

Anchor bolts that are 1" in diameter or less shall conform to ASTM A36. Anchor bolts larger than 1" in diameter shall conform to A36M55 in accordance with the Item, "Anchor Bolts" or ASTM A193B7 or A687. Galvanize or coat with zinc–rich paint a minimum of the upper 14 inches of all anchor bolts unless otherwise noted. Exposed nuts shall be galvanized or coated with zinc–rich paint. Washers shall be galvanized. Templates and embeded nuts need not be galvanized.

Texas Department of Transportation
Traffic Operations Division

TRAFFIC SIGNAL POLE FOUNDATION

TS–FD–96 (MOD)

FILE: TS–FD.DGN	DN: MS	CK: JSY	DW: MAO/MMF	CK: JSY/TEB
ORIG DATE: AUGUST, 1995	DIST	FED REG	FEDERAL AID PROJECT NO.	SHEET
REVISIONS 5–96	DALLAS	6	CM 97 (449)	78
	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	DALLAS		8050	18	034	BELT LINE

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GENERAL NOTES

1. Additional details may be provided in the plans concerning sign size, type of channelization devices, sequence of work details, and required measures needed to control traffic during changes in the sequence of work.
2. All traffic control devices shall conform with the Texas "Manual on Uniform Traffic Control Devices for Streets and Highways" (TMUTCD), and shall be maintained as directed by the Engineer. Additional guidelines for traffic control devices may be found in the TMUTCD.
3. All distance and spacing shown on the TCP Standards are approximate.
4. All traffic control devices used during nighttime shall be reflectorized, illuminated from within or externally illuminated.
5. Additional information for fabrication, erection and usage of the following traffic control devices is found in the (TMUTCD) and Barricade and Construction (BC) Standards:

BARRICADES	BC(2) and BC(3)
CONES	BC(6)
BARRIER DELINEATION	WZ(BD)
DRUMS	BC(5)
PAVEMENT MARKINGS	BC(5), BC(7) and BC(8) WZ(STPM) or TCP(7-1) if applicable
SIGNS	BC(1), BC(2), BC(3), BC(4), BC(9), BC(9A), BC(9B) and BC(9C)

6. Work area operations are defined as follows:
   Long-term stationary – Work that occupies a location more than 3 days.
   Intermediate-term stationary – Work that occupies a location overnight to 3 days.
   Short-term stationary – Daytime work that occupies a location from 1 to 12 hours.
   Short Duration – Work that occupies a location up to 1 hour.
   Mobile – Work that moves intermittently or continuously.

SIGNS

1. Selection of sign size should be based on Table 1.
2. Flashing warning lights, channelizing devices and/or flags may be required to call attention to the advance warning signs.
3. The words UTILITY, SIGNAL, BRIDGE, LIGHTING, SIGN, STREET or RAMP may be substituted for ROAD in all signs where applicable.
4. Advisory speed plaques, if used in conjunction with warning signs, speeds shall be determined in the field by the Engineer.
5. Regulatory signs shall be mounted at 7 foot minimum mounting height.
6. Warning signs may be mounted on the approved types of supports at the minimum mounting heights as stated on BC(4):

CHANNELIZING DEVICES

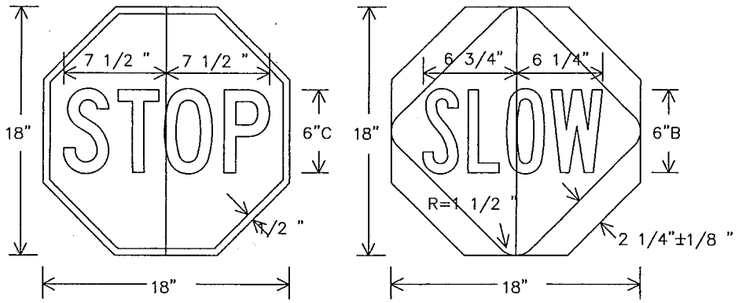
1. The maximum spacing between channelizing devices in a taper should be approximately equal in feet to the speed limit (S).
2. For intermediate term situations, when it is not feasible to remove and restore pavement markings, the channelization must be made dominant by using a very close spacing. This is especially important in locations of conflicting information, such as where traffic is directed over a double yellow centerline. In such locations a maximum channelizing device spacing of 10 feet is recommended. The 10 foot channelizing device spacing recommendation is intended for the area of conflicting information and not the entire work zone.
3. Channelizing device spacing should be reduced when placed on curves, hills or next to potential hazards. At least three channelizing devices should be in view at all times.
4. MERGING taper (lane closure with merging traffic) =L
   SHIFTING taper (traffic diverted to adjacent lane) =1/2 L
   SHOULDER taper (shoulder closed to traffic) =1/3 L
5. DOWNSTREAM taper usage is optional. When used it should be 100 foot minimum length per lane. Devices should be spaced at approximately 20 foot intervals.
6. ONE LANE, TWO-WAY taper is intended for a portion of the road controlled by STOP, YIELD traffic signals or flagger and used alternately by traffic in each direction. It should be 50-100 foot length with devices spaced at approximately 20 foot intervals.
7. Arrow panels used on two-way, two-lane roadways should flash in the four corner CAUTION display.

WORKER SAFETY

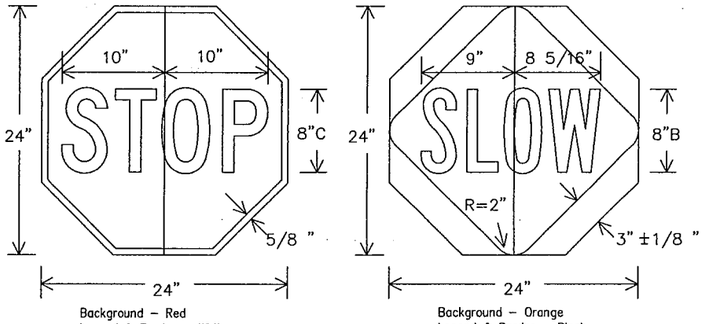
1. Workers exposed to traffic should wear orange safety vests.
2. Work vehicles within 30 feet of the traveled way should have strobe lights or rotating beacons in use.
3. When work vehicles are used to shadow the work area, the vehicle should be parked 30 feet or more from the work area, transmission in gear (or set in PARK), emergency brake set on, and front wheels turned away from work area. Shadow vehicles shall be equipped with truck mounted atteuators. display.
4. Inactive work vehicles, including workers' private vehicles, should be parked away from the work area and as close to the right-of-way line as possible.

FLAGGER CONTROL

1. Flagger shall wear orange safety vests. Flaggers should wear saftey hats to provide a professional image to the motorist and to protect the head from flying objects.
2. STOP/SLOW paddles shall be used as the primary method to control traffic by flaggers. The STOP/SLOW paddle minimum size is 18" x 18". Paddles may be attached to a 60 inch staff for easier handling. The larger size (24" x 24") should be attached to a 60 inch staff.
3. The 24" paddle should be used when the posted speed is 45 MPH or greater.
4. Flags are only used to control traffic for emergency situations and the STOP/SLOW paddles are not available. Flags shall be 24" square and securely fastened to a staff approximately 3 feet long.
5. Flaggers may carry hand held air horns to alert workers of an emergency condition.
6. For one lane two-way traffic control, one or more flaggers should be used where traffic density, road conditions or motorists sight distance justify their use. If flaggers are used, the taper should be reduced to 50-100 feet. When flaggers are used to control traffic, the FLAGGER symbol sign (FCW20-7a) shall be used. When flaggers are used, the BE PREPARED TO STOP sign (CW20-7b) should be used. Proper spacing between signs should be maintained.
7. When flaggers are used to draw attention to traffic control devices, the FLAGGER symbol sign should be used. Proper spacing should be maintained.
8. When more than one flagger is used, a chief flagger should be assigned the responsibility of making decisions concerning traffic control.
9. The contractor has the option to use a flashing Stop/Slow Paddle conforming to Departmental Materials Specification D-9-8620.



18" STOP-SLOW PADDLE



24" STOP-SLOW PADDLE

Only pre-qualified products shall be used. A list of compliant products and their sources may be obtained by writing or faxing:

Standards Engineer
Traffic Operations Division – TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3335
Fax (512) 416-3161
E-mail TRF-STANDARD@mailgw.dot.state.tx.us

Table I

TYPICAL CONSTRUCTION WARNING SIGN SIZE AND SPACING 1,5,6

Roadway Classification	Posted Speed	Sign Spacing "X" ▲	Long-term Stationary Or Intermediate-term Stationary Approach Warning Signs CW20 Series And CW22-1 Sign		Short-term Stationary Or Short Duration Approach Warning Signs CW21 Series		Other Warning Signs
	MPH	Ft. (Apprx.)	Standard Inches	Minimum [4] Inches	Standard Inches [7]	Minimum [4] Inches [7]	Standard Inches [7]
Conven.	30	120	48X48	36X36	30X30 or 36x36	24X24 or 30x30	30X30 or 36x36
	35	160					
	40	240					
	45	320		Use Standard Size		Use Standard Size	
	50	400					
	55	500 [2]					
	60	600 [2]			48x48		48x48
	65	700 [2]					
	70	800 [2]					
Exp or Frwy	*	* [3]			**	**	**

* For typical sign spacings on expressways and freeways, see TMUTCD typical application diagrams or TCP Standard Sheets.

▲ Minimum distance from work area to 1st Advance Warning sign and/or distance between each additional sign.

** Smaller sign sizes may be used where sign designs have not been included in the "Standard Highway Sign Design for Texas" manual.

General Notes:

1. Special or larger size signs may be used as may be necessary.
2. Distance between signs should be increased as required to have 1500' advance warning.
3. Distance between signs should be increased as required to have 1/2 mile or more advance warning.
4. For use only on secondary roads or city streets where speeds are low.
5. Only diamond shaped warning sign sizes are indicated.
6. See sign size listing in TMUTCD, Appendix A for complete list of all available sign design sizes.
7. Where two sizes are listed, see sign size listing in TMUTCD, Appendix A for proper size.

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
7 8 9 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

DATE:
ACC:
FILE:
DN:
CK:
DW:
CK:

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

TRAFFIC CONTROL PLAN

TCP NOTES-98

©TxDOT Feburary 1994			DIR-MT	CK:	DIR-DN	CK: DM	REQ NO.:
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT				SHEET
8-95	DALLAS	6	CM 97 (449)				79
1-97	COUNTY		CONTROL	SECTION	JOB		HIGHWAY
4-98	DALLAS		8050	18	034		BELT LINE

150

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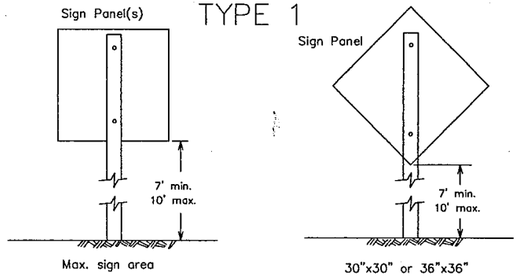
LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

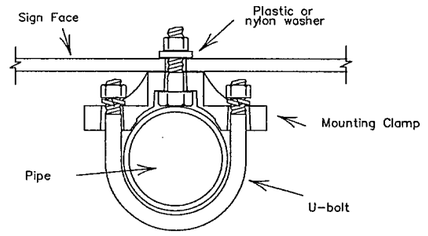
DATE:
ACC:
FILE:

DN:
CK:
DW:
CK:

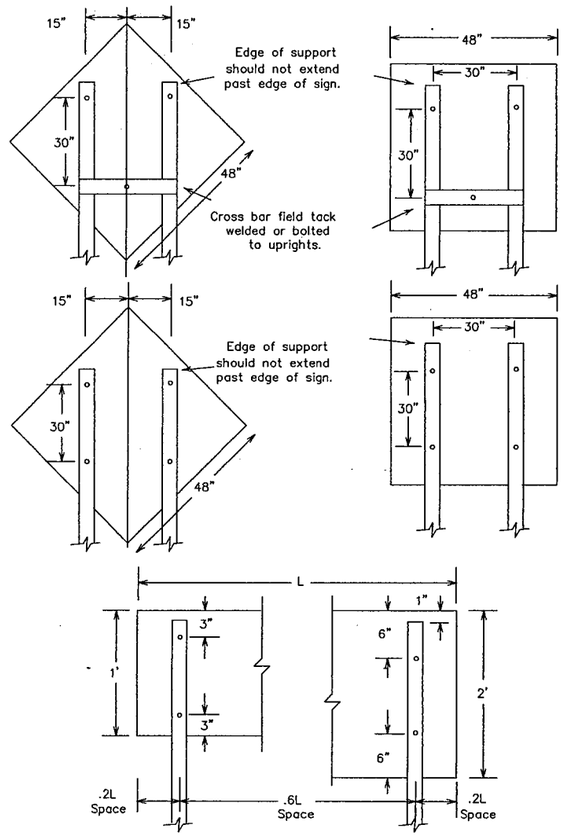
SINGLE POST INSTALLATION TYPE 1



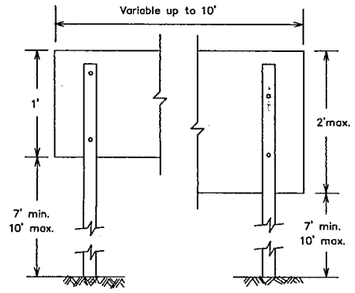
TYPICAL CLAMP DETAIL

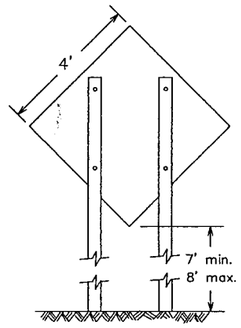


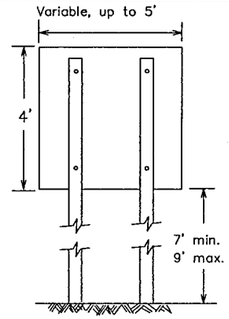
SIGN ATTACHMENT DETAILS



DOUBLE POST INSTALLATION TYPE II

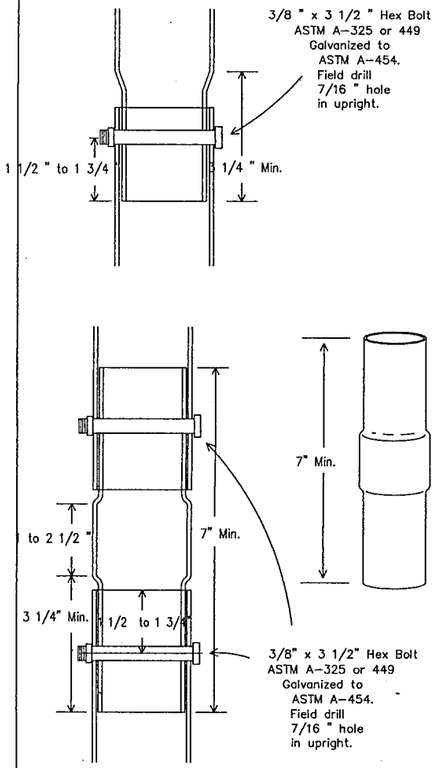






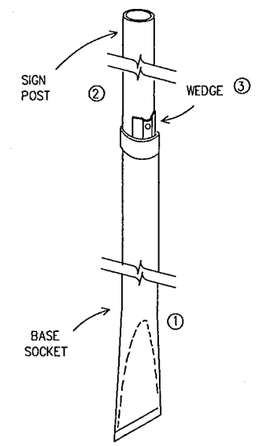
1. This sheet should be used with SMD(1-2) and SMD(1-4).
2. See standard sheet SMD(1-2) and TMUTCD for horizontal and vertical clearances.
3. Type I or Type II supports may be used for various sign combinations and or shapes not to exceed the specified maximum sign area.
4. A cross bar between supports and/or behind sign may be used to prevent supports from leaning in areas of soft soils.
5. Cross bars may be made of winged channel post 1.12#/ft., 2.0#/ft., 2" perforated square metal tubing (12 ga) or other similar material.
6. Educational plaques may be installed below parent signs or single supports for sign areas up to 9 square feet.

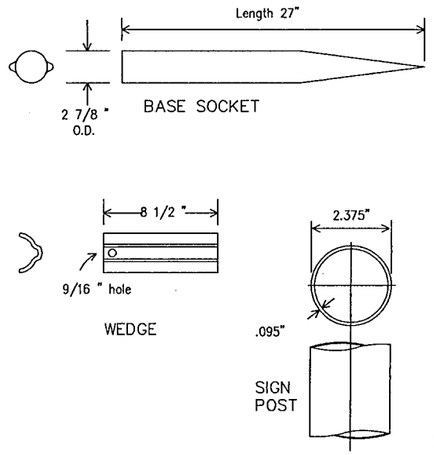
SPLICE TECHNEQUES THIN WALL TUBE



NOTE:
1. 2 3/8 " OD x .095" wall tubing swaged to 2 1/16 " OD.
2. Splices will only be allowed behind the sign substrate.

TYPICAL ASSEMBLY





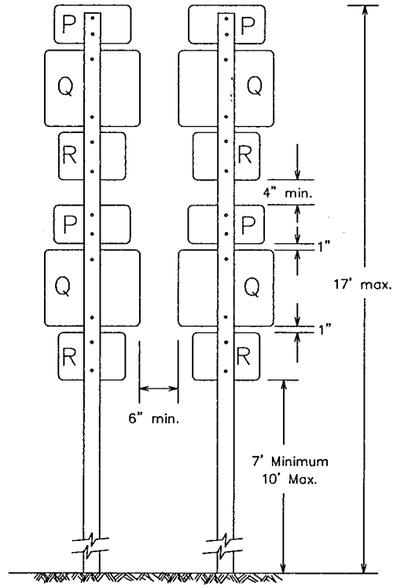
GENERAL NOTES FOR WEDGE ANCHOR THIN WALL TUBE SIGN SUPPORT:

1. The BASE SOCKET is formed from 2 7/8 " O.D. x 12 gauge galvanized pipe.
2. The WEDGE is formed from 11 gauge steel galvanized per ASTM A525.
3. The SIGN POST is 2.375" O.D. x .095" thin wall steel tubing.
4. Steel Supports shall be made from new material and shall be corrosion resistant. Steel supports shall be galvanized in accordance with ASTM Designations A123 or A525 (G-90 or better).
5. Supports shall be straight within 1/4 inch per 5 feet of length and shall have a smooth, uniform finish free from defects affecting strength or appearance. Any bolt holes and sheared ends shall be free from burrs. Bases of multisection supports shall not extend more than 5 inches above ground when installed.
6. Bolts, nuts, screws, washers and other miscellaneous hardware shall be galvanized in accordance to ASTM Designation: A153 Class C or D, or B695 Class 50.

RECOMMENDED ASSEMBLY PROCEDURE

① Drive the BASE SOCKET into the ground until the top of BASE SOCKET is approximately flush with ground level. A flanged tool placed on top of the BASE SOCKET may be helpful. BASE SOCKET MUST be driven plumb.
② Insert SIGN POST into BASE SOCKET and align the sign face with the roadway.
③ Drive the WEDGE between the BASE SOCKET and SIGN POST, thereby locking the SIGN POST inside the BASE SOCKET.

ROUTE MARKER ASSEMBLY FOR TWO POST SUPPORT



P1 = 24"x12" Cardinal Direction Marker
Q1 = 24"x24" Interstate, U.S. or State Route Marker
Q2 = 30"x24" Interstate or U.S. Route Marker
R = 21"x15" Direction Arrow
P2 = 30"x15" Cardinal Direction Marker
Q3 = 36"x36" (2) digit Interstate Route Marker
Q4 = 45"x36" (3) digit Interstate Route Marker

EQUIV. SIGN AREA SQ.FT.		EQUIV. SIGN AREA SQ.FT.	
P1	= 1	P2	= 3
Q1	= 3	Q3	= 6
Q2	= 4	Q4	= 7
R	= 1		

TYPICAL MARKER COMBINATIONS FOR EACH SUPPORT	EQUIV. AREA
2P1 + 2Q1 + 2R	10 sq.ft.
P1 + 2Q1 + 2R	9 sq.ft.
2Q1 + 2P1	8 sq.ft.
Q1 + R	4 sq.ft.
P2 + Q3	9 sq.ft.
P1 + Q1 + R	5 sq.ft.
P2 + Q4	10 sq.ft.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

SIGN MOUNTING DETAILS SMALL ROADSIDE SIGNS

SMD(1-5)-98

DN: LR	CK: JDM	DW: FDN	CK: DTN	MSG NO.:

REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
1-97	DALLAS	6	CM 97 (449)	80
12-98	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
1-99	DALLAS		8050	18	034	BELT LINE

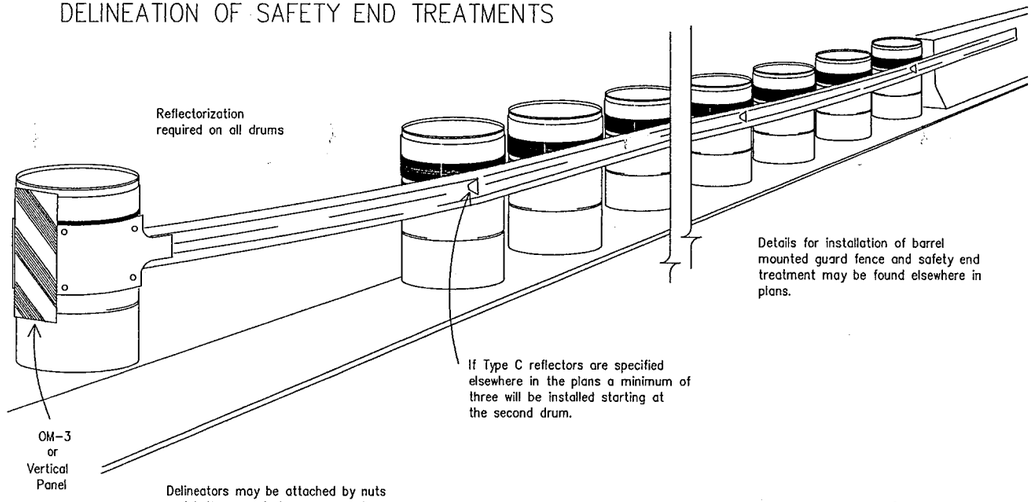
26E

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

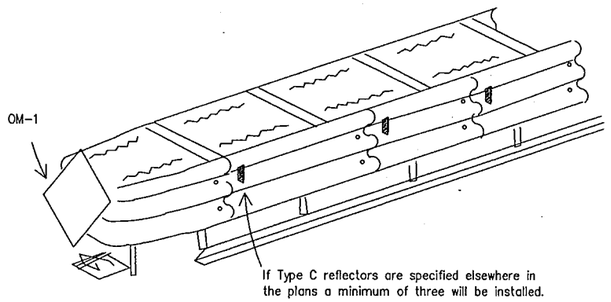
DN:
CK:
DW:
CK:

DATE:
ACC:
FILE:

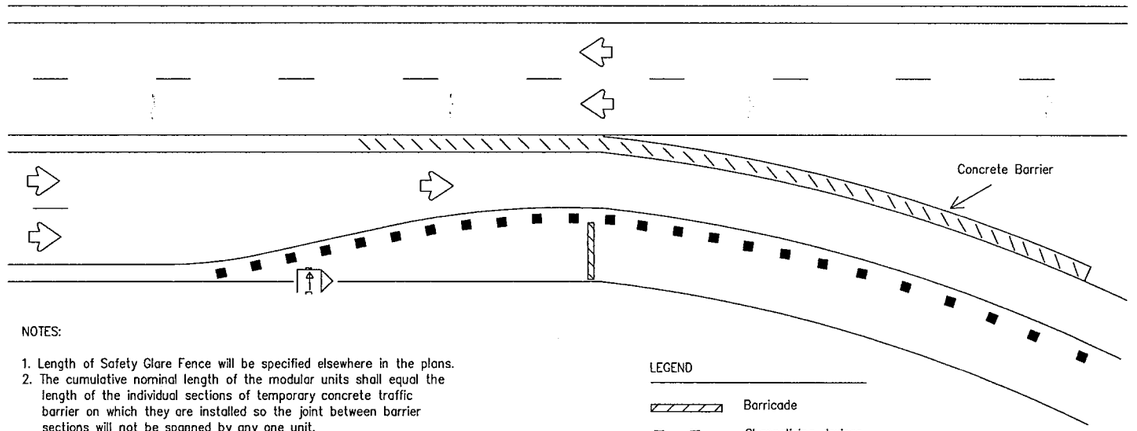
DELINEATION OF SAFETY END TREATMENTS



	APPROACHING TRAFFIC	
	BOTH SIDES	ONE SIDE
DELINEATION	OM-1	OM-3 or Vertical Panel



BARRIER DELINEATION WITH SAFETY GLARE FENCE



NOTES:

1. Length of Safety Glare Fence will be specified elsewhere in the plans.
2. The cumulative nominal length of the modular units shall equal the length of the individual sections of temporary concrete traffic barrier on which they are installed so the joint between barrier sections will not be spanned by any one unit.
3. Panel/blades will be designed such that reflective sheeting conforming with Departmental Specification D-9-8300, Type C, minimum size of 2 inches by 12 inches can be attached to the edge of the panel/blade. The sheeting shall be attached to one panel/blade per section of concrete barrier not to exceed a spacing of 30 feet. Barrier reflectors are not necessary when panel/blades are installed.

LEGEND

- Barricade
- Channelizing devices
- Trailer mounted flashing arrow panel
- Safety glare fence

REFLECTORS FOR CONCRETE TRAFFIC BARRIER, BARREL MOUNTED GUARD FENCE, AND ATTENUATORS

Type C reflectors may be installed using pop rivets, nuts and bolts, construction adhesive or butyl rubber adhesive.

Type C reflectors shall be prequalified and shall conform to the color and reflectivity requirements of Specification D-9-8600.

Color of Type C reflector will be the same as the nearest edge line, gore pavement marking or as directed by the Engineer.

Unless stated elsewhere in the plans, reflectorization of metal drums, delineation and reflectors shown on this standard shall be considered subsidiary to the various bid items.

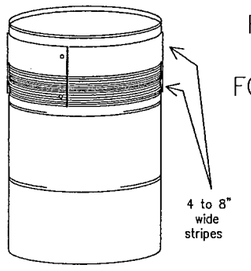
PREQUALIFICATION PROCEDURES ARE OBTAINED FROM:

MATERIALS AND TESTS DIVISION
TEXAS DEPARTMENT OF TRANSPORTATION (TxDOT)
125 EAST 11th STREET
AUSTIN, TX 78701-2483

SPECIFICATION REFERENCE TABLE

MATERIALS AND TESTS DIVISION SPECIFICATIONS	
EPOXY	D-9-6100
BITUMINOUS ADHESIVE	D-9-6130
ALUMINUM SIGN BLANKS	D-9-7110
FLAT SURFACE REFLECTIVE SHEETING, TYPE C (HIGH SPECIFIC INTENSITY)	D-9-8300
DELINEATOR AND OBJECT MARKER	D-9-8600

REFLECTORIZATION OF METAL DRUMS FOR BARREL MOUNTED GUARD FENCE

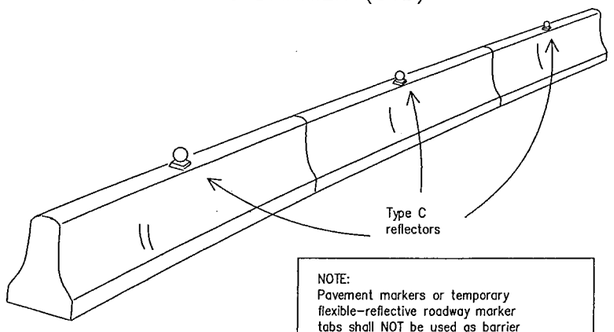


The following specification is intended to detail the reflectorization of metal drums used to support barrel mounted guard fence. Metal drums shall not be used as a standalone channelizing device or sign support.

Markings on drums shall be horizontal, circumferential, reflectorized orange and reflectorized white stripes, 4 to 8 inches wide. The first reflectorized stripe should start within four inches of the top of the drum. There shall be at least one orange and one white stripe on each drum. If there is a non-reflectorized space between the horizontal orange and white stripes, it shall be no more than 2 inches wide. Reflectorized material shall conform with Specification D-9-8300 Type C (High Specific Intensity).

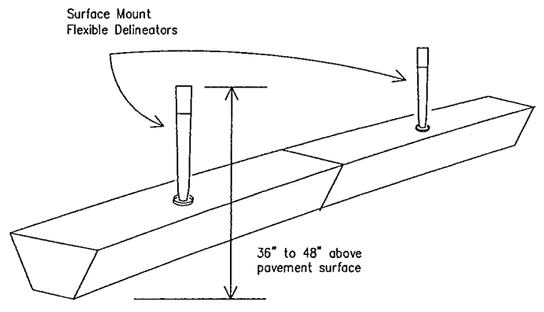
All drums on project will be orange.

CONCRETE TRAFFIC BARRIER (CTB)



NOTE:
Pavement markers or temporary flexible-reflective roadway marker tabs shall NOT be used as barrier delineation.

LOW PROFILE CONCRETE BARRIER (LPCB)



Barrier reflectors will be installed only on barriers designated for reflectorization as required elsewhere in the plans.

Reflectors should be mounted one reflector per section of barrier, preferably in the center.

Maximum spacing of reflectors is 40 feet for CTB and 20 feet for LPCB. Mount reflectors to barrier with construction adhesive or butyl rubber adhesive.

Color of barrier reflectors will conform to the Texas "Manual on Uniform Traffic Control Devices", (TMUTCD).

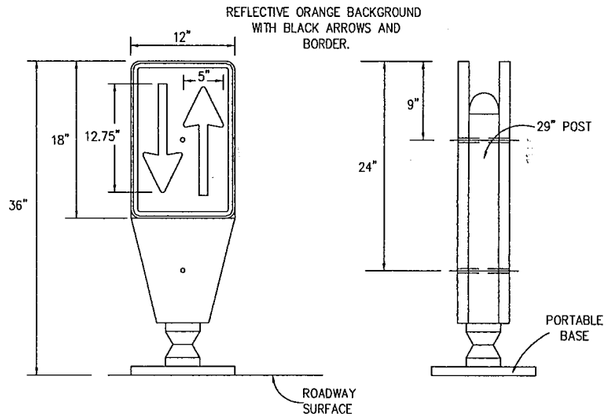
STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

WORK ZONE BARRIER DELINEATION

WZ(BD)-97

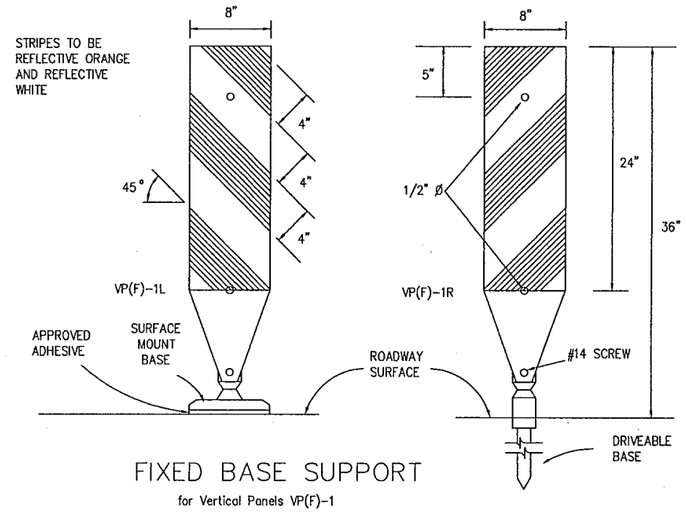
ORIG DRAW DATE: APRIL 1992	DR-LR/MT	CK:-	DR-DN	CK:-MT	MEG NO.:
REVISIONS: 8-95, 1-97	STATE DISTRICT: DALLAS	FEDERAL REGION: 6	FEDERAL AID PROJECT NO.: CM 97 (449)		SHEET: 9 of 11
	COUNTY: DALLAS	CONTROL: 8050	SECTION: 18	JOB: 034	HIGHWAY: BELT LINE

113



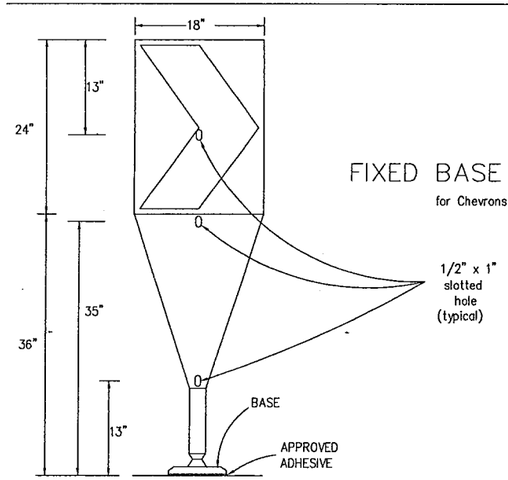
PORTABLE BASE SUPPORT

for Opposing Lane Divider



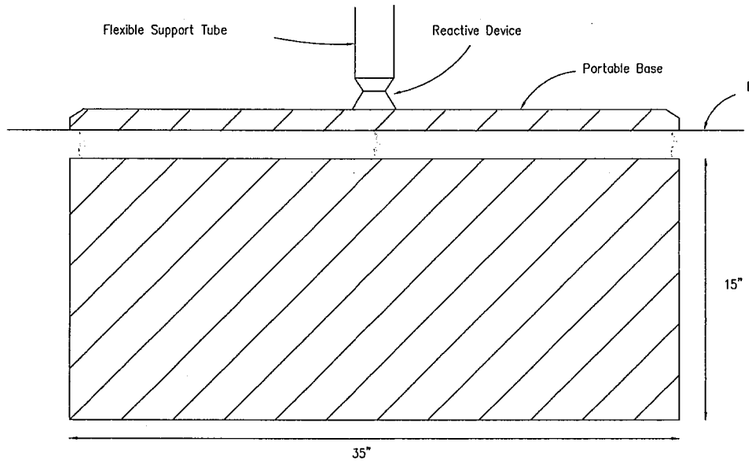
FIXED BASE SUPPORT

for Vertical Panels VP(F)-1



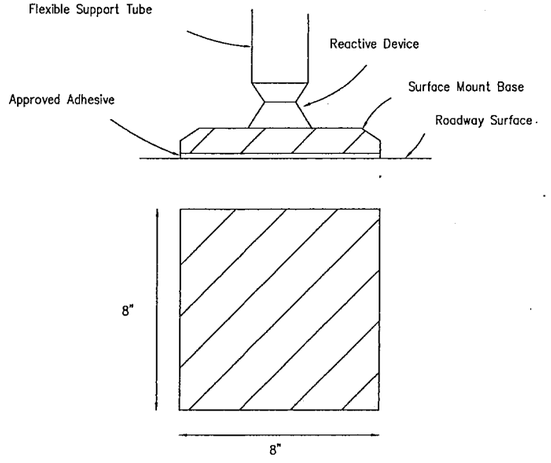
FIXED BASE SUPPORT

for Chevrons CW1-8(F)



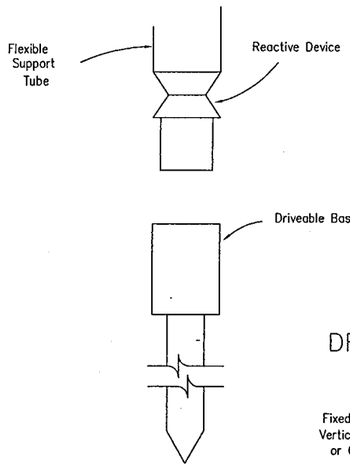
PORTABLE BASE

Base Support for Opposing Lane Divider or Vertical Panel (VP(F)-1). See Note 5.



SURFACE MOUNT BASE

Fixed Base Support for Chevron CW1-8(F), Vertical Panels VP(F)-1 or Opposing Lane Divider.



DRIVEABLE BASE

Fixed Base Support for Vertical Panel VP(F)-1 or Chevron CW1-8(F).

GENERAL NOTES:

1. Channelizing devices on flexible supports shall be used at locations detailed elsewhere in the plans. These devices shall conform to the Texas MUTCD.
2. Channelizing devices on flexible supports may be used in work zone areas where channelizing devices are frequently impacted by errant vehicles. Work zone channelizing devices illustrated on this sheet may be installed in close proximity to traffic and are suitable for use on high or low speed roadways. Spacing and placement shall be uniform and in accordance with the Texas MUTCD.
3. The contractor shall maintain devices in a clean condition and replace damaged, non-reflective, faded, or broken devices and bases as necessary.
4. Devices shall be fabricated to withstand repeated impacts with minimal maintenance to devices and damage to vehicles. When devices are impacted, they should not adversely affect worker or vehicle safety.
5. Devices shall be erected on a fixed, portable, or driveable base as approved by the Engineer.
6. Portable bases shall be fabricated from a flexible material such as virgin and/or recycled rubber. Approximate weight of portable bases should be 35 pounds.
7. Fixed bases may be surface mount or driveable type.
8. Pavement surfaces shall be prepared in a manner that will insure proper bonding of adhesives and surface mount bases to the pavement surfaces. Adhesives shall be prepared and applied as per manufacturer's recommendations.
9. Application and removal of devices shall not cause detrimental effects to the final pavement surfaces, including pavement surface discoloration or surface intregity. Driveable bases shall not be permitted on final pavement surfaces. All application and removal procedures of fixed bases shall be approved by the Engineer.
10. These devices shall not be paid for directly but shall be considered subsidiary to the Item "Barricades, Signs, and Traffic Handling."

PREQUALIFICATION PROCEDURES MAY BE OBTAINED BY WRITING:

TRAFFIC OPERATIONS DIVISION
TEXAS DEPARTMENT OF TRANSPORTATION (TxDOT)
125 EAST 11th STREET
AUSTIN, TX 78701-2483

SPECIFICATION REFERENCE TABLE
MATERIALS AND TEST DIVISION SPECIFICATIONS

FLAT SURFACE REFLECTIVE SHEETING, TYPE C (HIGH SPECIFIC INTENSITY)	D-9-8300

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

WORK ZONE CHANNELIZING DEVICES ON FLEXIBLE SUPPORTS

WZ(CD)-94

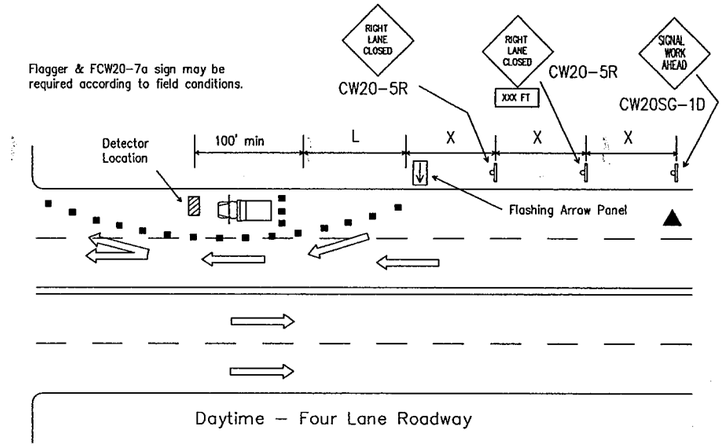
ORIG DRAW DATE:	Jan 1992	DN-LR	CK:-	DW-DN	CK:-	MEG NO:	
REVISIONS		STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT NO.			SHEET
9-94		DALLAS	6	CM 97 (449)			82
		COUNTY		CONTROL	SECTION	JOB	HIGHWAY
		DALLAS		8050	18	034	BELT LINE

115

DN: LR CK: CW DW: DN CK: MT

LEVELS DISPLAYED 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

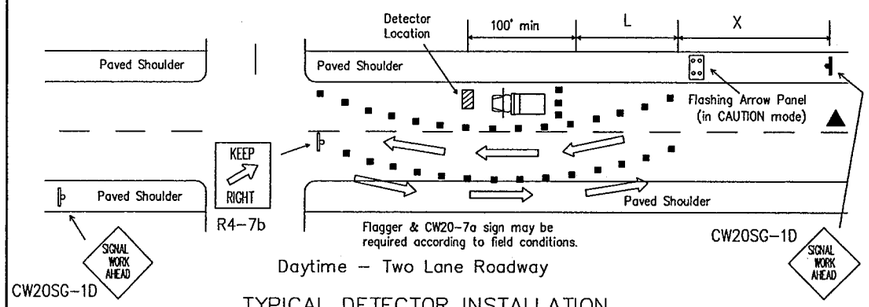
DA: .
ACC: d58hp1c/usr/d580504.tp2
FILE:



Posted Speed*	Formula	Minimum Desirable Taper Lengths ** 10' Offset	11' Offset	12' Offset	Suggested Maximum Spacing of Device On a Taper	On a Tangent	Minimum Sign Spacing X Distance
30	$L=\frac{WS^2}{60}$	150'	165'	180'	30'	60'–75'	120'
35		205'	225'	245'	35'	70'–90'	160'
40		265'	295'	320'	40'	80'–100'	240'
45	L=WS	450'	495'	540'	45'	90'–110'	320'
50		500'	550'	600'	50'	100'–125'	400'
55		550'	605'	660'	55'	110'–140'	500'
60		600'	660'	720'	60'	120'–150'	* 600'
65		650'	715'	780'	65'	130'–165'	* 700'
70		700'	770'	840'	70'	140'–175'	* 800'

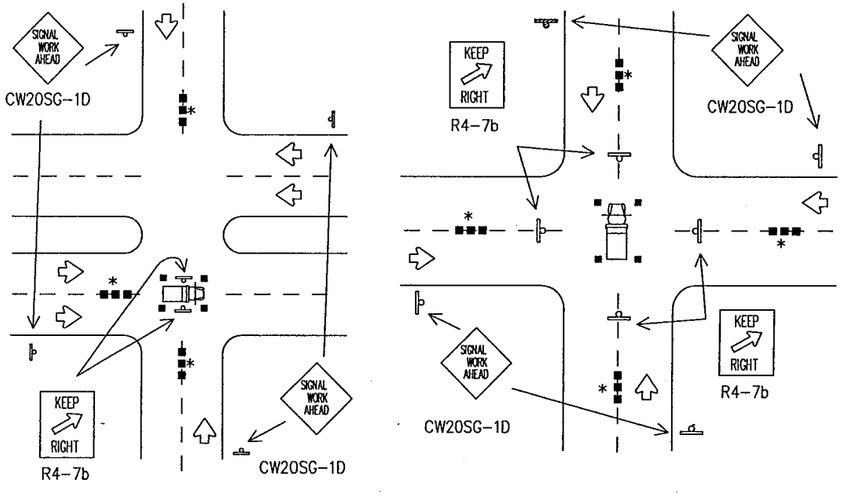
* Conventional Roads Only

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



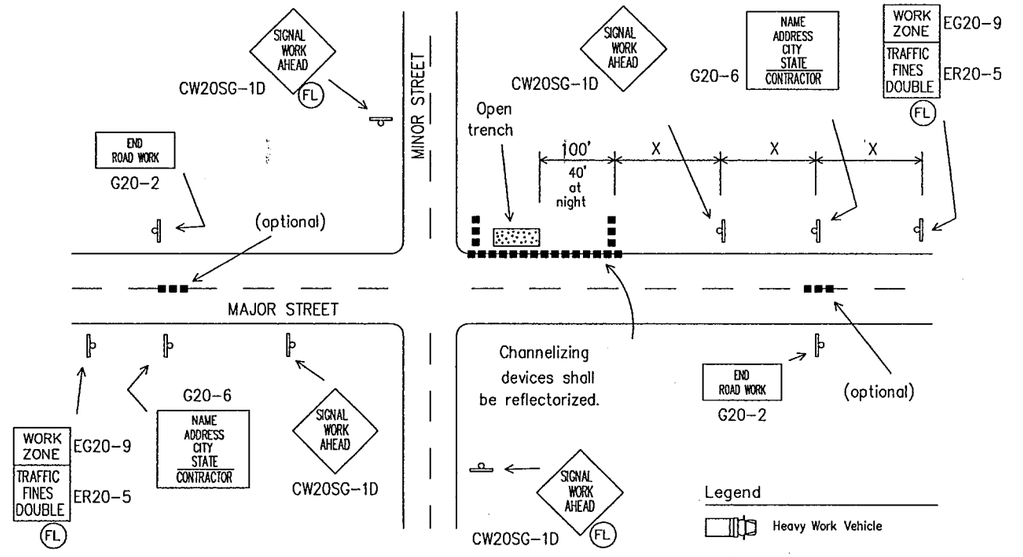
TYPICAL DETECTOR INSTALLATION
OR OTHER WORK OPERATIONS THAT ARE SHORT TERM OR SHORT DURATION

Nighttime Channelizing Devices shall be reflectorized.



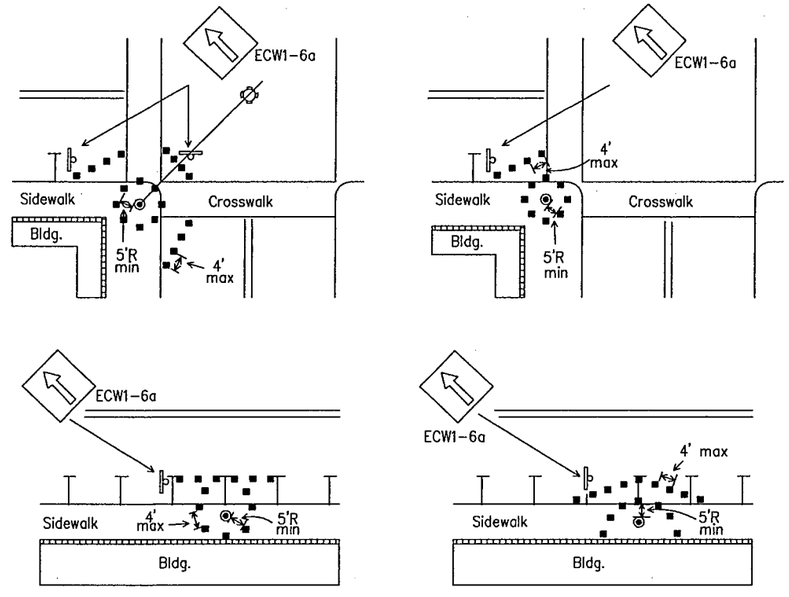
TYPICAL HANGING SIGNAL INSTALLATIONS
OR OTHER WORK OPERATIONS THAT ARE SHORT TERM OR SHORT DURATION

* Advance warning channelizing devices are optional.



TYPICAL ADVANCE SIGNING
FOR LONG TERM and INTERMEDIATE-TERM STATIONARY WORK OPERATIONS

Observe Warning Signs State Law (R20-3) may be required if called for elsewhere in the plans.
Location will be as directed by the Engineer.



Channelizing devices should not be placed closer than 5 foot radius (minimum) to signal poles.
Parking may be eliminated by placing channelizing devices in spaces.
If pedestrian walkways are blocked, refer to TMUTCD.

TYPICAL RESTRICTED PEDESTRIAN MOVEMENTS
FOR ALL WORK OPERATIONS REGARLESS OF WORK DURATION

▲ The arrow panel may be omitted when stated elsewhere in the plans.

Typical channelizing device is the 28" cone. Plastic drums or vertical panels may be used if approved by the Engineer. Metal drums shall NOT be used as a channelizing device or sign support.

For several closely adjoining projects, advance signing may not be required in advance of each intersection, but only in advance of the intersections at the project limits. See details elsewhere in the plans for advance signing requirements.

Advance signs shall be in place when signal construction operations are in progress. The contractor shall remove advance signs when no construction operations are underway. Obstructions or hazards at the work area shall be clearly marked and delineated at all times.

All holes, trenches or other hazardous areas shall be adequately protected by lights or other protective devices. Trenches shall be covered or surrounded with orange plastic construction fence as directed by the Engineer.

Flagger and FCW20-7a sign may be required according to field conditions. Vehicles parked in roadway shall be equipped with two strobes. High level flags at corners of vehicle may also be used. Work operations that require work vehicle in traveled way 20 minutes or less may use cones, high level flags and strobes as advance warning devices. Cones should only be placed around vehicle. Flaggers may be used on high speed rural intersections.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

TRAFFIC SIGNAL INSTALLATION TYPICAL DETAILS

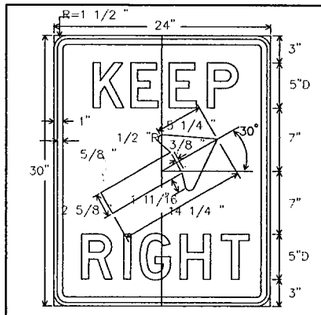
SHEET 1 OF 2 WZ(BTS-1)-98

©TxDOT April 1992			DN:-LR	CK:-DTN	DW:-DN	CK:-GB	MSG NO.:
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT				SHEET
2-94	DALLAS	6	CM 97 (449)				8.3
1-97	COUNTY		CONTROL	SECTION	JOB		HIGHWAY
2-98	DALLAS		8050	18	034		BELT LINE
4-98							

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
7 8 9 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

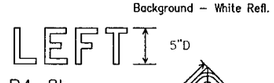
DATE:
FILE:
DN: LR
CK: CW
DW: DN
CK: MT

116A

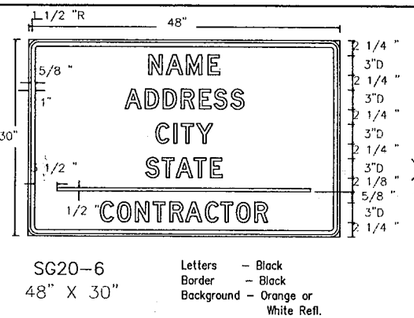


R4-7b
24" X 30"

Letters – Black
Symbol – Black
Border – Black
Background – White Refl.

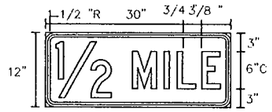


R4-8b



SG20-6
48" X 30"

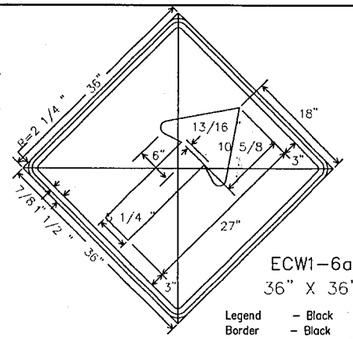
Letters – Black
Border – Black
Background – Orange or White Refl.



Distance Plaque
30" X 12"

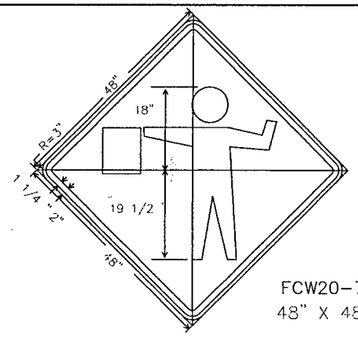
Alternate legends

1500 FT 6"C
1000 FT 6"C
500 FT 6"C
1 MILE 6"C



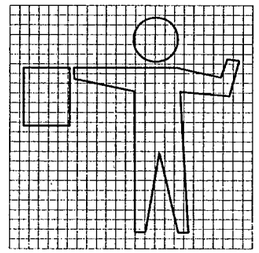
ECW1-6a
36" X 36"

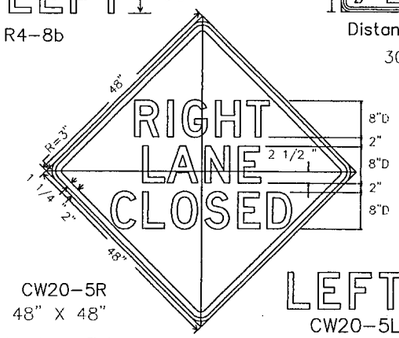
Legend – Black
Border – Black
Background – Orange Refl.



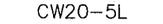
FCW20-7a
48" X 48"

Legend – Black
Border – Black
Background – Orange Refl.



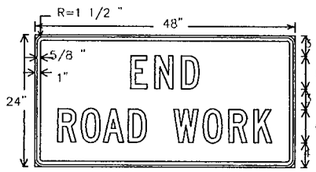


CW20-5R
48" X 48"



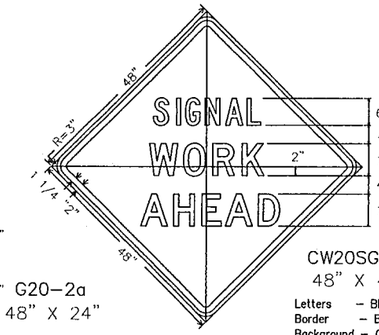
CW20-5L

Legend – Black
Border – Black
Background – Orange Refl.



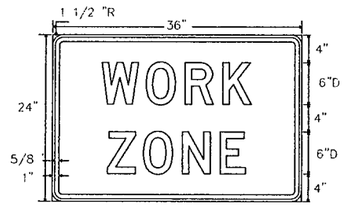
G20-2a
48" X 24"

Letters – Black
Border – Black
Background – Orange Refl.



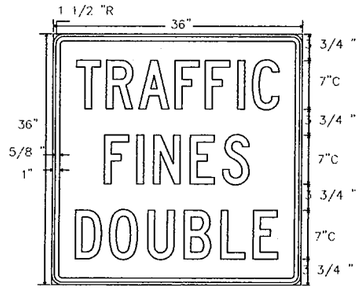
CW20SG-1D
48" X 48"

Letters – Black
Border – Black
Background – Orange Refl.



EG20-9
36" X 24"

Letters – Black
Border – Black
Background – Orange Refl.



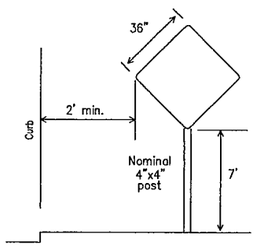
ER20-5
36" X 36"

Letters – Black
Border – Black
Background – White Refl.

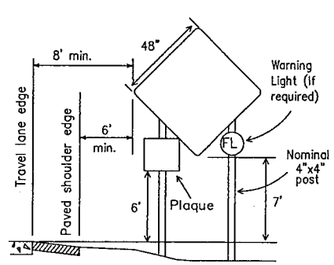
TYPICAL SIGNS USED IN TRAFFIC SIGNAL CONSTRUCTION AREAS

TYPICAL SIGN SUPPORTS

FIXED SUPPORTS

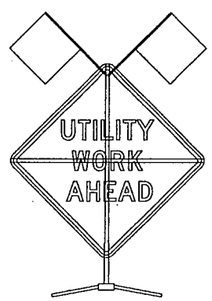


WOOD POST SIGN SUPPORT: for 36" x 36" and smaller warning signs, and other signs having an area not exceeding 10 sq.ft.



WOOD POST SIGN SUPPORT: for 48" x 48" warning sign.

PORTABLE SUPPORTS



Signs erected on fixed supports shall be at a minimum height of 7 feet.
Embedment depth for wood sign supports and post type barricades should be 3 feet minimum, unless specified elsewhere in the plans.
Driveable sign supports may be used and shall be installed in accordance with the manufacturer's recommendations.

Only pre-qualified products shall be used. A list of compliant products and their sources may be obtained by writing, calling or faxing:

Standards Engineer
Traffic Operations Division – TE
Texas Department of Transportation
125 East 11th Street
Austin, Texas 78701-2483
Phone (512) 416-3335
Fax (512) 416-3161
E-mail TRF-STANDARD@mailgw.dot.state.tx.us

SPECIFICATION REFERENCE TABLE	
MATERIALS AND TESTS DIVISION SPECIFICATIONS	
PLYWOOD SIGN BLANKS	D-9-7100
ALUMINUM SIGN BLANKS	D-9-7110
FLAT SURFACE REFLECTIVE SHEETING, TYPE A (ENGINEER GRADE)	D-9-8300
FLAT SURFACE REFLECTIVE SHEETING, TYPE B (SUPER ENGINEER GRADE)	D-9-8300
FLAT SURFACE REFLECTIVE SHEETING, TYPE C (HIGH SPECIFIC INTENSITY)	D-9-8300

GENERAL

Standard signs shall be used as required by the BC Standard sheets, the plans, or as directed by the Engineer to regulate, warn, and guide traffic. All sign usage and erection shall be in strict accordance with the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways" (TMUTCD). The Contractor shall maintain each sign as directed by the Engineer.

The Contractor may use either the sign designs shown on the BC Standard Sheets, or those sign designs shown in the "Standard Highway Sign Designs for Texas " (SHSD). All work zone signs provided for in the TMUTCD but not detailed in the plans may be used when directed by the Engineer.

REFLECTIVE SHEETING

Reflectorized signs shall be constructed of retroreflective sheeting meeting the color and reflectivity requirements of Material Specification, D-9-8300 or D-9-8310. Day only is defined as a device that is used only during daylight hours.

Type A, B or C sheeting may be used for all, day only, applications.
Type A sheeting should be used for all, white background, regulatory signs.
Type C sheeting shall be used for all other applications.

The above applications of sheeting grades to different type signs will apply unless otherwise specified in the plans.

TYPE A = Engineer Grade
TYPE B = Super Engineer Grade
TYPE C = High Specific Intensity

WORK DURATION TERMINOLOGY-(as defined by the "Texas Manual on Uniform Traffic Control Devices")

Long-term Stationary = occupies a location 3 or more days;
Intermediate-term Stationary = occupies a location from overnight to 3 days;
Short-term Stationary = daylight work that occupies a location from 1 to 12 hours;
Short Duration = occupies a location up to 1 hour.

SUPPORTS AND MOUNTING HEIGHT

The bottom of Long-term / Intermediate-term signs shall be at least 7 feet above the paved surface. The bottom of any supplementary plaques shall be at least 6 feet above the paved surface.

The bottom of Short-term / Short Duration signs shall be a minimum of 1 foot above the pavement surface but no more than 600 mm above the ground. Long-term / Intermediate-term Signs may be used in lieu of Short-term / Short Duration signing. Short-term / Short Durations signs shall be used only during daylight and removed at the end of the workday.

Regulatory signs shall be mounted at least 7 feet above the paved surface regardless of work duration.

SIGN SUPPORT WEIGHTS

Where sign supports require the use of weights to keep from turning over, the use of some type of sandbag is recommended. The use of pieces of rock, concrete, iron, steel or other solid objects will not be permitted. 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.

REMOVING OR COVERING

When sign messages may be confusing or no longer apply, the signs and supports shall be removed from roadway and shoulder, or the signs shall be completely covered. Turning signs from motorists view will not be allowed. When signs are covered the material used shall be opaque, such as heavy mil black plastic. Burlap shall not be used to cover signs. Signs shall be removed upon completion of the work.

Duct tape or other adhesive material shall not be affixed to sign face.

DN: LR
CK: CW
DW: DN
CK: MT

DATE:

FILE:

LEVELS DISPLAYED
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32
33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48
49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

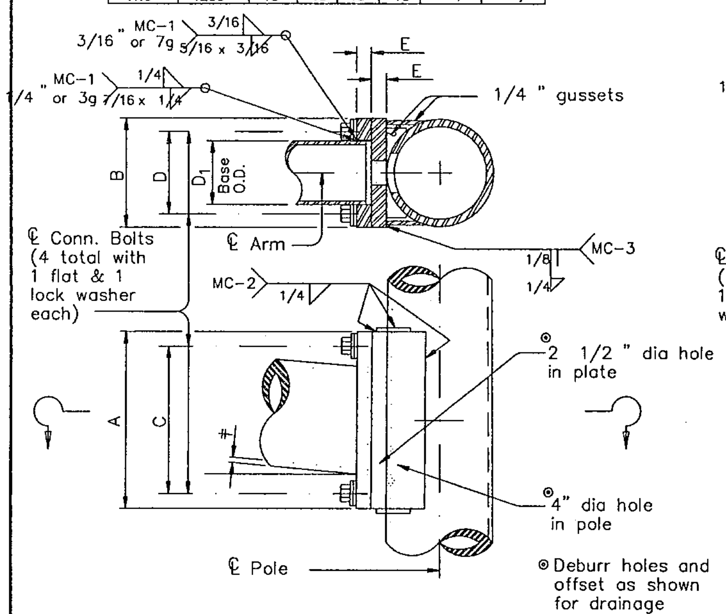
TRAFFIC SIGNAL INSTALLATION BARRICADES AND SIGNS

SHEET 2 OF 2 WZ(BTS-2)-98

©TxDOT April 1992			DN:-LR	CK:-DTN	DW:-DN	CK:-GB	MSG NO.:
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT				SHEET
2-94	DALLAS	6	CM 97 (449)				84
1-97							
2-98	COUNTY		CONTROL	SECTION	JOB		HIGHWAY
4-98	DALLAS		8050	18	034		BELT LINE

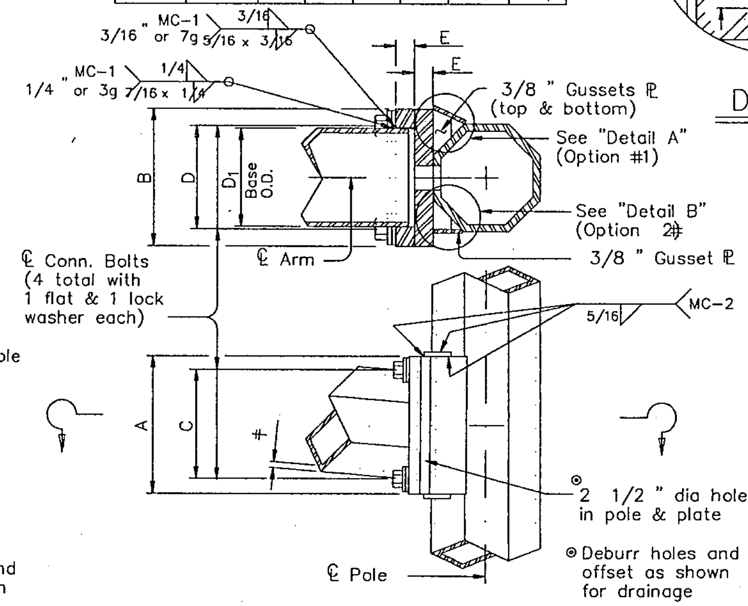
116B

ARM SIZE		A	B	C	D	E	CONN BOLT DIA
D_1	ǂ						
in.	in.	in.	in.	in.	in.	in.	in.
6.5	.179	12	9	9	6	1	1
7.5	.179	13	9	10	6	1	1
8.0	.179	14	10	11	7	1 1/4	1 1/4
9.0	.179	16	11	13	8	1 1/4	1 1/4
9.5	.179	17	12	14	9	1 1/4	1 1/4
9.5	.239	18	12	15	9	1 1/4	1 1/4
10.0	.239	18	12	15	9	1 1/4	1 1/4
10.5	.239	18	13	15	10	1 1/2	1 1/2
11.0	.239	18	13	15	10	1 1/2	1 1/2

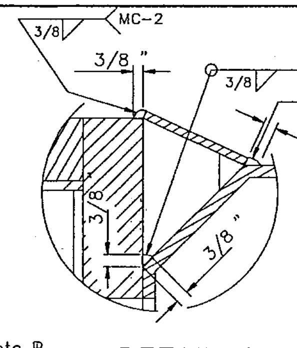


FIXED MOUNT DETAIL 1

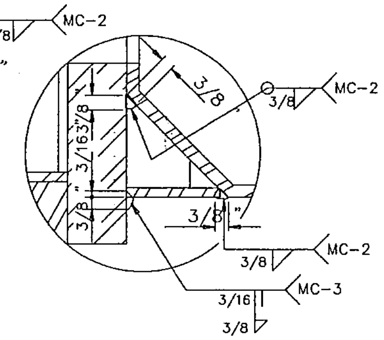
ARM SIZE		A	B	C	D	E	CONN BOLT DIA
D_1	ǂ						
in.	in.	in.	in.	in.	in.	in.	in.
7.0	.179	11	11	8	8	1 1/4	1 1/4
7.5	.179	11	11	8	8	1 1/4	1 1/4
8.0	.179	11	11	8	8	1 1/4	1 1/4
9.0	.179	13	13	10	10	1 1/4	1 1/4
10.0	.179	13	13	10	10	1 1/4	1 1/4
9.5	.239	13	13	10	10	1 1/4	1 1/4
10.0	.239	14	14	11	11	1 1/2	1 1/2
11.0	.239	14	14	11	11	1 1/2	1 1/2
11.5	.239	14	14	11	11	1 1/2	1 1/2



FIXED MOUNT DETAIL 2



DETAIL A

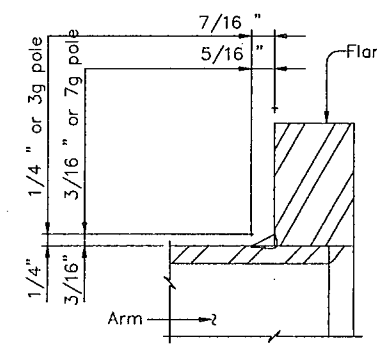


DETAIL B

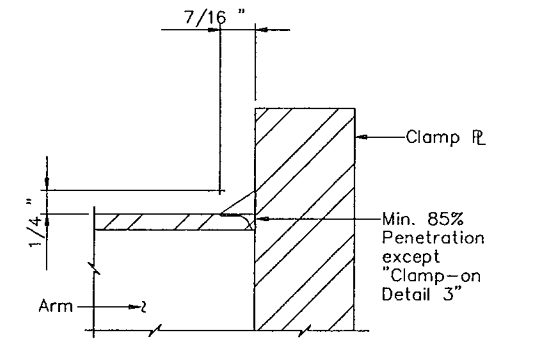
MATERIALS	
Round Shafts or Polygonal Shafts	ASTM A595 GR A, ASTM A570 GR 50, ASTM A607 GR 50, ASTM A572 GR 50 or A36M50
Plates (1)	ASTM A36 OR A572 GR 50 or A595 (2) or A36M50
Connection Bolts	ASTM A325 except where noted
Pin Bolts	ASTM A325
Pipe	ASTM A53 GR A or B, or A501
Misc. Hardware	Galvanized steel or stainless steel or as noted

(1) Any of the materials listed for plates may be used where the drawings do not specify a particular Grade designation.

(2) If A595 material is used, it need not be cold worked to A595 requirments, but material must have 40 ksi minimum yield prior to fabrication.



FIXED MOUNT ARM



CLAMP-ON ARM

ARM BASE WELD DETAILS

GENERAL NOTES:

Clamp-on details are used for the second arm on dual mast arm assemblies. A Maximum 1 1/2" wide vertical slotted hole may be cut in the front clamp plate to facilitate drainage during galvanizing. The slot shall be centered behind the arm and shall be no longer than the arm diameter minus 1"

Fixed mount details are used for single mast arm assemblies and for the first arm on dual mast arm assemblies.

Where duplicate parts occur on a detail, welds shown for one part shall apply to all similar parts on the detail.

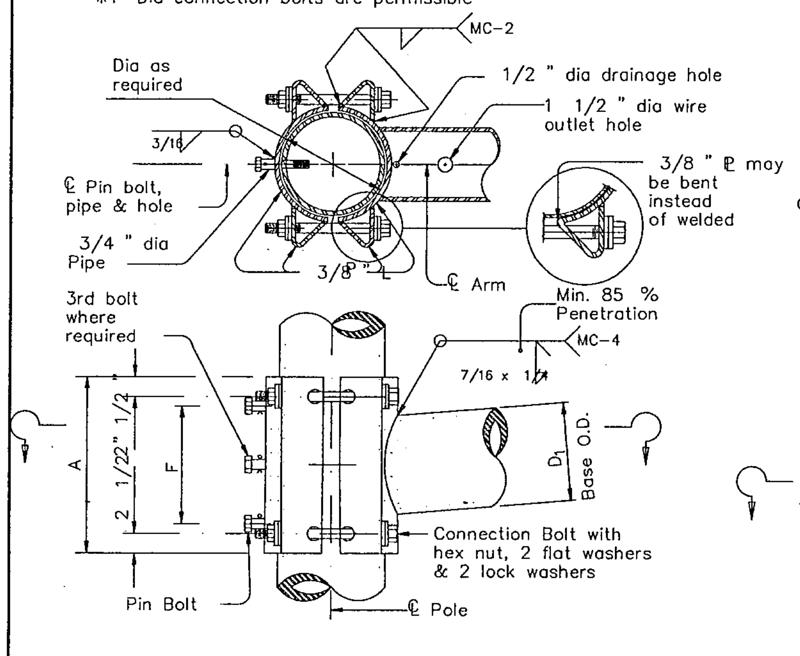
Pin bolts are required to prevent rotation of clamp-on arms under design wind forces.

NOTE:

Pin bolts shall be A325 with threads excluded from the shear plane. Pin bolt and 3/4" dia pipe shall have 3/16" dia holes for a 1/8" dia galvanized cotter pin. Back clamp plate shall be furnished with a 3/4" dia hole for each pin bolt. An 11/16" dia hole for each pin bolt shall be field drilled through the pole after arm orientations have been approved by the Engineer.

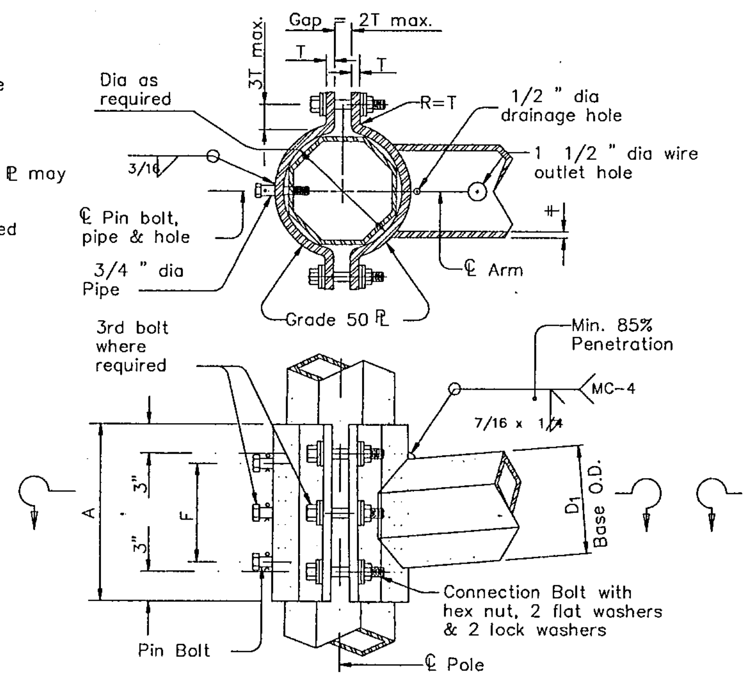
ARM SIZE		A	F	CONN. BOLTS		PIN BOLTS	
D_1	ǂ			No.	Dia	No.	Dia
in.	in.	in.	in.	ea.	in.	ea.	in.
6.5	.179	12	8	4	* 7/8	2	5/8
7.5	.179	14	8	4	1	2	5/8
8.0	.179	14	8	4	1	2	5/8
9.0	.179	16	10	4	1	2	5/8
9.5	.179	18	12	4	1 1/4	3	5/8
9.5	.239	18	12	4	1 1/4	3	5/8
10.0	.239	18	12	4	1 1/4	3	5/8

*1" Dia connection bolts are permissible



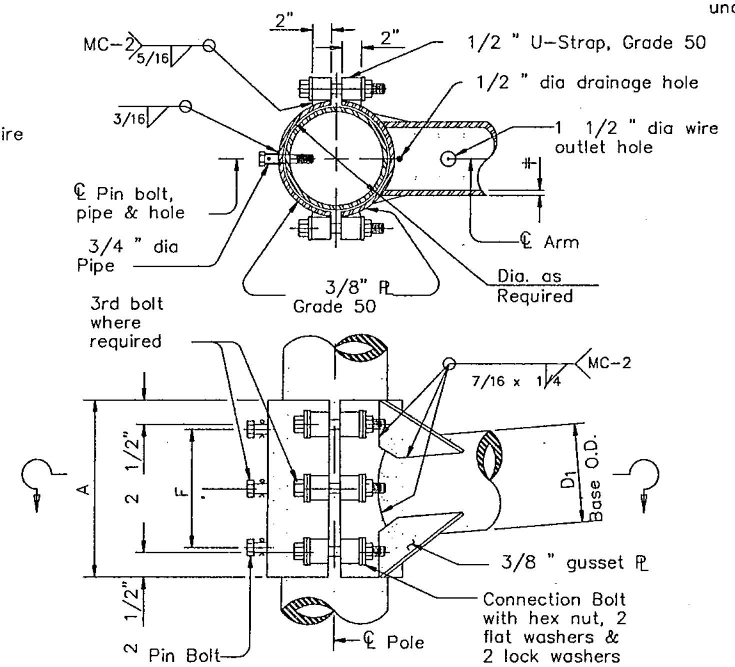
CLAMP-ON DETAIL 1

ARM SIZE		A	F	T	CONN. BOLTS		PIN BOLTS	
D_1	ǂ				No.	Dia	No.	Dia
in.	in.	in.	in.	in.	ea.	in.	ea.	in.
7.0	.179	12	8	3/4	4	3/4	2	5/8
7.5	.179	14	8	3/4	4	3/4	2	5/8
8.0	.179	14	8	3/4	4	3/4	2	5/8
9.0	.179	16	10	7/8	4	1	2	5/8
10.0	.179	18	10	7/8	4	1	2	5/8
9.5	.239	18	10	1	6	1	3	5/8
10.0	.239	18	10	1	6	1	3	5/8



CLAMP-ON DETAIL 2

ARM SIZE		A	F	CONN. BOLTS		PIN BOLTS	
D_1	ǂ			No.	Dia	No.	Dia
in.	in.	in.	in.	ea.	in.	ea.	in.
6.5	.179	12	8	4	1	2	5/8
7.5	.179	14	8	4	1	2	5/8
8.0	.179	14	8	4	1	2	5/8
9.0	.179	16	10	4	1	2	5/8
9.5	.179	18	12	6	1	3	5/8
9.5	.239	18	12	6	1	3	5/8
10.0	.239	18	12	6	1	3	5/8



CLAMP-ON DETAIL 3

DISCLAIMER:
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ACC: d48hp1q: /usr/d482517
LV=1,2 for English 1,3 for Metric

LEVELS DISPLAYED: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

STANDARD ASSEMBLY FOR TRAFFIC SIGNAL SUPPORT STRUCTURES

MAST ARM CONNECTIONS

MA-C-96

FILE: MA-C.DGN	DN: MS	CK: JSY	DW: MMF	CK: JSY
©TxDOT August 1995	DIST 6	FED REG	FEDERAL AID PROJECT CM 97 (449)	SHEET 85
REVISIONS 5-96	DALLAS	COUNTY DALLAS	CONTROL 8050	SECT 18 / JOB 034 / HIGHWAY BELT LINE

126A

GENERAL:

I. SCOPE

Details herein apply to roadway lighting installations bid under the following Specification Items: Roadway Illumination Assemblies, Relocate Roadway Illumination Assemblies, Foundations for Signs, Traffic Signals and Roadway Illumination Assemblies, and Special Specifications relating to roadway lighting. All work, materials and services not shown on the plans which may be necessary for complete and proper construction shall be performed, furnished and installed by the Contractor. Faulty fabrication or poor workmanship in any material, equipment or installation will be considered justification for rejection. Material and installation shall comply with the applicable provisions of the National Electrical Code, National Electrical Manufacturers Association and, when required, Underwriters Laboratories standards. Where manufacturer's provide warranties or guarantees as a customary trade practice, Contractor shall furnish to the State such warranties or guarantees.

The location of poles and fixtures are diagrammatic only and may be shifted by the Engineer to accommodate local conditions. Erection and/or removal of poles and luminaires located near overhead electrical lines shall be accomplished using established industry and utility safety practices and in accordance with laws governing such work. The Contractor shall consult with the appropriate utility company prior to beginning such work.

II. ROADWAY ILLUMINATION ASSEMBLIES

A. General

1. Structural Support Design for Luminaires. Lighting standards shall be designed in accordance with the latest issue of the AASHTO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals." All poles shall be designed for 80 mph wind loads. An additional 1.3 gust factor shall be applied to the wind loads. For transformer base poles, fabricator shall include transformer base and connecting hardware in design calculations and shop drawing submittals. Manufacturer's shop drawings shall include the ASTM designations for all material to be used. See paragraph II. B. for additional requirements for the transformer base.

2. Slip Joint Poles. Poles may be fabricated in two sections and field-assembled by the lap-joint method. The two sections shall telescope together with a lap length of not less than 1-1/2 times the shaft diameter at the lap joint. The longitudinal seam weld on the outer shaft at the slip joint end shall be a full penetration weld for a minimum of the slip joint length plus 6 inches.

3. Mast Arm Attachments. All poles and attachments shall be structurally designed to support two 12-foot mast arms and luminaires. Poles shall be supplied with mast arm combinations as shown in the plans. All mast arms shall be designed for a 55-pound luminaire having an effective projected area of 1.4 square feet.

4. Minor Damage Repair. The finished pole shall have a smooth, uniform finish free of pits, blisters, or other defects. Scratched, chipped, or damaged areas on galvanized poles and mast arms shall be thoroughly cleaned by wire brushing. The cleaned area shall be painted with two coats of zinc rich paint containing a minimum of 84% metallic zinc.

5. Pole Bonding Means. All shoe base poles, including poles on concrete traffic barriers, shall have a grounding lug with 1/2-13 NC female threads inside the pole near the hand hole, minimum of 3 full threads.

6. Hand Holes. All shoe base poles shall have hand holes with reinforcing frames and covers. The openings on all poles shall be approximately 4 inches x 10 inches located approximately 10 inches from the bottom of the pole and, except for poles mounted on concrete traffic barrier, shall be placed 90 degrees to mast arm unless otherwise noted on the plans. For poles mounted on concrete median barrier, all hand holes shall be on the same side of the median.

7. CTB Poles. Poles installed on concrete traffic barrier shall also meet the requirements of CTB details.

8. J-Hooks. All poles shall be equipped with a J-hook inside the pole, near the top for supporting vertical conductors.

9. Base Plate Bolt Circle. Bolt circles for poles mounted on CTB, see CTBI (4) or SSCB (4). Poles placed on existing bridge brackets or existing foundations, bolt circle shall be coordinated with anchor bolts in place. For other bolt circles, See RID (3).

10. Steel Poles.

a. Steel poles shall be fabricated in accordance with the Item "Steel Structures." Longitudinal seam welds for pole sections shall have 60% minimum penetration, except that weld shall be full penetration within 6 inches of circumferential base plate welds. All welding shall be in accordance with the ANSI/AWS Structural Code D1.1. Two-section poles joined by circumferential welds will not be permitted, unless otherwise shown on the plans. Unless otherwise shown on the plans, poles and hardware shall be galvanized in accordance with Item 445, "Galvanizing".

b. Pole components shall be constructed using the following materials:

Shaft: ASTM A-572 Grade 50 or ASTM A-595 Grade A (50 KSI min. yield) or ASTM A36M50.

Base Plate: ASTM A-27 Grade 65-35 or ASTM A-36.

Mast Arm Connector: ASTM A-27 Grade 65-35.

Mast Arms: Steel pipe ASTM A-53 Grade A or B or ASTM A-501 with 20% elongation in 2 inches or A-513 TY I with minimum 30 KSI yield and 15% elongation in 2 inches.

Pole Cap: Pole cap shall be zinc die-cast, aluminum, or galvanized metal, secured by three stainless steel or galvanized screws.

Pole Hardware: All bolts except mast arm connection bolts shall be stainless steel or standard steel galvanized ASTM A-153 Class C or D, or B-695 Class 50. Mast arm connection bolts shall be ASTM A-325, ASTM A-321 or ASTM A-193 Grade B-7, galvanized as above. Nuts and washers shall be compatible with the bolts and shall be stainless steel or steel, galvanized as above. Lock washers shall be provided on all bolted connections.

11. Aluminum Poles.

a. Aluminum poles shall be fabricated in accordance with "Structural Welding, Aluminum" ANSI/AWS D1.2.

b. Pole components shall be constructed using the following material:

Shaft: ASTM B-221 or B-241 Alloy 6063-T6, ASTM B-209 Alloy 5086-H34, ASTM B-221 Alloy 6005-T5.

Base Flange: ASTM B-26 Alloy 356.0-T6 or ASTM B-108 Alloy A356.0-T6 (Structural strength test required).

Mast Arm Fitting: ASTM B-209 Alloy 6061-T6 or ASTM B-221 Alloy 6005-T5.

Mast Arms: ASTM B-241 Alloy 6061-T6 or Alloy 6063-T6.

Pole Cap: ASTM B-209 Alloy 5086-H32 or ASTM B-108 or B-26 Alloy 356.0-T6.

Bolts: Stainless Steel AISI 300. Bolts threading into aluminum threads shall be treated with anti-seize compound, Never-Seez Compound, Permatex 133K or equal.

12. Alternate material equal to or better than material specified may be substituted with the approval of the Engineer.

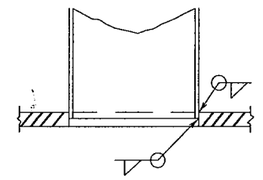
13. Installation of high strength bolts. The tightening of nuts on high strength bolts shall be in accordance with the Item "Structural Bolting."

△1 14. Roadway Illumination Assembly poles shall be erected plumb and true. Top of foundation shall be struck level so the pole will be plumb. Shoe base poles may use leveling nuts to plumb pole. Shims and leveling nuts shall not be used under transformer bases. Grout shall not be placed between base plate or flange and the foundation.

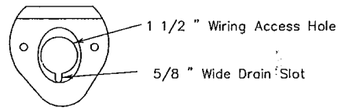
15. In each pole, continuous color-coded stranded No. 12 AWG copper Type XHHW or other approved XLP conductors shall be connected to the line side of each ballast.

16. Acorn nuts will not be allowed for attaching pole to transformer base or foundation. Nut covers will not be allowed.

17. Fabrication tolerances shall be as shown on Fabrication Tolerances Table.

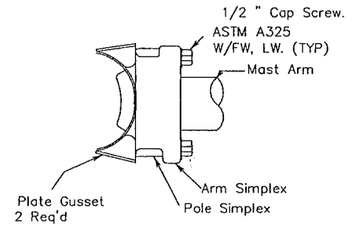


SECTION
POLE SHAFT TO BASE PLATE

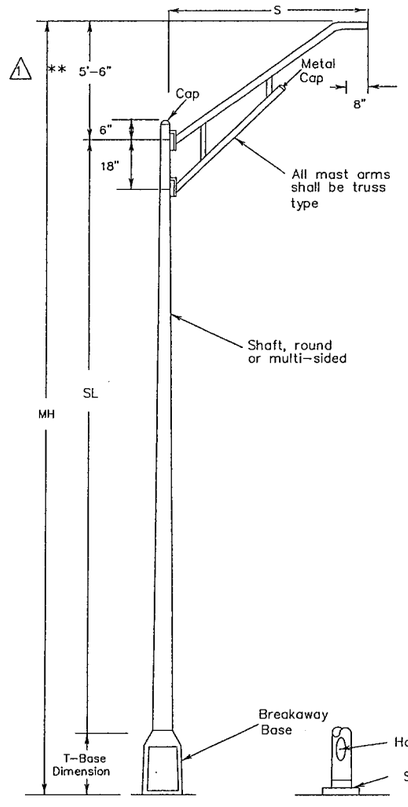


MAST ARM CONNECTOR

Steel Poles Only
Aluminum Pole Connector
Shall Be Clamp-on Type



MAST ARM TO POLE
SHAFT CONNECTION



ROADWAY ILLUMINATION ASSEMBLY

△1 10-98: change mast arm rise, rearrange notes; shims not allowed under T-base

EXPLANATION OF ROADWAY ILLUMINAION
ASSEMBLY DESIGNATIONS

(TYPE SA 50 T - 8 - 8) (.4KW) S

SA: Pole and mast arm may be steel or aluminum.
ST: Pole and mast arm must be steel.
AL: Pole and mast arm must be aluminum.
SP: Special (ovalized) steel pole for installing on CTB. See standard sheet CTBI (4).

Two numerical digits denote mounting height in feet.

Next letter denotes type of base, (S- Shoe Base, T-Transformer Base or X-Base, B-Shoe Base Bridge Mount)

First number denotes length of mast arm in feet.

Use of second mast arm is indicated by second dashed number which denotes length in feet.

Next three figures indicate luminaire rating (1 KW= 1000 watts, .4 KW= 400 watts, etc.)

Last letter indicates the type of lamp (M- Mercury, S- High Pressure Sodium, L- Low Pressure Sodium).

** 2.5' for poles with 4' mast arms.

MH = Mounting Height
SL = Shaft Length
S = Spread (Mast arm length)
MH = SL + 5' + (T-Base dimension)
MH = SL + 5' (Shoe Base)

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

ROADWAY ILLUMINATION DETAILS

RID(1)-98

©TxDOT January 1992	DN:-RS	CK:-KB	DW:-FDN	CK:-RS	MEG NO.:	
REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT			SHEET
5-93	DALLAS	6	CM 97 (449)			86
10-93	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
10-98	DALLAS		8050	18	034	BELT LINE

72A

II. ROADWAY ILLUMINATION ASSEMBLIES (cont.)

B. Transformer Base

△1 1. Transformer base shall be cast from aluminum, ASTM B-108 or B-26 Alloy 356.0-T6, or other material approved by the Engineer, and shall be furnished with eight 1/2 inch flat washers as recommended by the manufacturer. Transformer base bolt circles (Top and Bottom) shall match bolt circles for poles and foundations shown on RID (3).

2. Transformer base shall be approximately 15-20 inches high and shall have a door approximately 13 inches x 8 inches x 9 1/4 inches or as otherwise approved by the Engineer. Screw or bolts for attachment of door to base shall be stainless steel. Four machine bolts with four nuts, eight 1/2 inch flat washers and four lock washer, galvanized ASTM A-153 Class C or D, or B-695 Class 50, shall be provided with each transformer base for connecting the pole. Bolts shall be ASTM A325 or approved equal. Nuts shall be ASTM A-563 grade DH galvanized. A 1/2-13 NC female threaded grounding lug shall be provided inside the transformer base near the bottom.

3. The X-base shall be made from extruded aluminum channel and aluminum plate. The base breakaway features shall rely on bolt shear and not on bolt torque. Bolt shall have torque controlled break-off hex-head. Bolt shall be Aluminum Association type 2024-T4 aluminum. X-base channel shall be connected with aluminum bolts. Bolt shall be left hand thread and shall not be interchangeable with any other bolt not designed specifically for use with the X-base.

4. All breakaway bases shall meet the breakaway requirements of the AASTHO "Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals," latest edition, and shall have been tested by FHWA-approved methods. All bases shall have been structurally tested to meet or exceed the full designed plastic moment capacity of the pole. Certification of the plastic moment load test and FHWA breakaway requirement test of the model of base being furnished shall be submitted with shop drawings. Shop drawings shall show breakaway base model number and manufacturer's name or logo.

5. Bases shall be stamped, incised or by other approved permanent means, marked to show fabricator's name or logo, and model number. Such information shall be placed in a readily seen location, inside or outside the base, but shall not be placed on the door.

6. Doors for transformer bases shall be made of plastic, fiberglass or other non-aluminum material approved by the Engineer. Transformer bases shall be cleaned by grit blast cleaning after heat treatment. Certification by the manufacturer of heat treatment shall be furnished with transformer bases. The certification shall show the metal alloy and temper and that the base meets those requirements, chemical and physical. The certification shall also show the material ASTM specification. Transformer bases shall be cast with a removable tab bar for material testing. Some bars may have been removed by the manufacturer for testing.

C. All Luminaires.

1. The luminaire housing shall be cast or drawn from a non-ferrous alloy and shall be free of cracks and excessive porosity. All nuts, screws, clips, washers and attaching hardware shall be made of stainless steel; steel electro-zinc-plated, minimum thickness 0.0002 inches with olive green drab or yellow chromate conversion coating; steel coated with an acidic chromate-phosphate-binder system primer, top coated with a polytetrafluoroethylene modified silicon primer, bright metallic in color, meeting the requirements of General Motors automotive specification GM 164M; or other approved conversion coatings except that brackets may be made from pre-galvanized steel. All threaded surfaces used in the housing shall be lubricated with a silicone grease.

2. The slipfitter shall securely clamp the luminaire to the mast arm. A positive means of vertical adjustments shall be provided. The refractor or lens shall be clear glass. The optic assembly shall be provided with resilient gaskets and so constructed that a positive seal against weather and other contaminants will be maintained. The latch shall provide a positive means of maintaining closure of the luminaire. The socket shell shall be nickel plated and shall be rigidly attached to a high grade porcelain mogul base which shall extend and enclose the metal shell. A locking means shall be incorporated in the shell of the socket to positively resist the removal of the lamp. Reflectors shall be polished aluminum with Alzak or equal coating and shall not be painted.

3. Mast-arm mounted luminaires shall be provided with a leveling indicator which is clearly visible from the ground. Leveling indicator shall be sensitive to one (1) degree (maximum) changes in position at any point within five (5) degrees (minimum) level position. Unless otherwise directed by the Engineer, mast-arm mounted luminaires will be installed in the level position.

4. Underpass luminaires shall be fused internally. Fuses shall be 10 amp time-delay type.

△1 5. The Contractor may be responsible for fixture testing costs. See Materials and Tests Section test method TEX-1110-T.

6. The Contractor shall furnish six (6) sets of submittals of the luminaire fixture to the Engineer at the project address. These submittals shall be approved by the Engineer before the Contractor begins work.

△1 D. High Pressure Sodium Vapor Luminaires

1. Photometrics

a. The U/P (SPL-CO) (.15KW)S (TY 1) and (TY 2) underpass luminaires shall be 150 watt high pressure sodium, IES TYPE M-C with flat tempered glass lens. The fixtures shall provide a minimum measured intensity of 0.2 footcandle in a rectangular area measuring 120 feet x 30 feet, when mounted 20 feet above the midpoint of either long side of the surface area.

The maximum to minimum horizontal illuminance uniformity ratio shall not exceed 25:1 within the above mentioned rectangular area.

b. The 250-watt mast arm mounted luminaire shall be IES Type full cutoff and, when mounted 40 feet above the midpoint of either long side of a rectangular area 190 feet by 45 feet, shall provide a measured minimum intensity of 0.2 footcandle at any point on the surface of this area. Light intensities measured in footcandles along a line parallel to and 20 feet in from the long side of the previously defined rectangular area above which the luminaire is mounted shall decrease at a rate not to exceed 0.5 footcandle in any 10 foot interval along the aforementioned line from 10 to 90 feet on both sides of the luminaire and shall not be less than 0.3 footcandle at any point along such line.

The maximum to minimum horizontal illuminance uniformity ratio shall not exceed 15:1 within the above mentioned rectangular area.

c. The 400-watt mast arm mounted luminaire shall be IES Type full cutoff and, when mounted 50 foot above the midpoint of either long side of a rectangular area 220 feet by 60 feet, shall provide a measured minimum intensity of 0.2 footcandle at any point on the surface of this area. Light intensities measured in footcandles along a line parallel to and 30 feet in from the long side of the previously defined rectangular area above which the luminaire is mounted shall decrease at a rate not to exceed 0.5 footcandle in any 10 foot interval along the aforementioned line from 10 to 90 feet on both sides of the luminaire and shall not be less than 0.3 footcandle at any point along such line.

The maximum to minimum horizontal illuminance uniformity ratio shall not exceed 15:1 within the above mentioned rectangular area.

d. The luminaires shall meet the photometric requirements shown above, when energized at 100 percent of rated line voltage. Test will be run with the fixture in the level position as indicated on leveling indicator.

Fabrication Tolerances Table

Part	Dimension	Tolerance
Pole Asssembly	Shaft length	± 1"
	I.D. of outside piece of slip fitting pieces	+ 1/8 " − 1/16 "
	O.D. of inside piece of slip fitting pieces	+ 1/32 " − 1/8 "
	Shaft diameter: other	+ 3/16 "
	Out of "round"	1/4 "
	Straightness of shaft	± 1/4 " in 10 ft
	Twist in shaft	4° in 50 ft
	Perpendicular to baseplate	1/8 " in 24"
	Pole centered on baseplate	± 1/4 "
	Location of Attachments	± 1/4 "
Arm Assembly	Arm Length	± 3"
	Arm Rise	± 1 3/4 " in 10 ft
	Arm Diameter	± 3/16 "
	Overall length or width	± 1/4 "
	Thickness	+ 1/4 " − 1/16 "
	Deviation from flat	1/8 " in 12"
	Spacing between holes	± 3/32 "
	Anchor bolt hole size	± 1/16 "
Anchor Bolt	Length	+ 1" − 1/4 "
	Threaded length	+ 1 1/2 " − 1/8 "
	Galvanized length (if required)	+ 8" − 1/4 "
Miscellaneous	Bolt hole spacing	± 1/16 "
	Strut location in truss arms	± 1 1/2 "

△1

FOR THREE-WIRE CIRCUIT-CENTER GROUNDED

LUMINAIRES SERVED AT 480V ON 240 480 VOLT SERVICE OR LUMINAIRES SERVED AT 240V FOR FOR 120 240 VOLT SERVICE.

FOUR-WIRE CIRCUIT-CENTER GROUNDED

LUMINAIRES SERVED AT 240V
(240/480 VOLT SERVICE)

NOTES:

① Pole Bonding Connector Blackburn TTC3 or Weaver TGC3 or equal.
② Fused Connector-All electrical connectors for breakaway poles shall be watertight and shall be designed as breakaway (Buchannan 65U, Bussmann HEBW, Littelfuse LEB or equal). All fuses shall be time-delay types. 10 Amp (Littelfuse FLQ, Bussman FNQ or equal).
* ③ Un-fused Connector-All electrical connections for neutrals shall be watertight. For breakaway poles, connections shall be designed as breakaway, shall have a white color marking, and shall have a permanently installed solid neutral (Buchannan 20U, Bussmann HET, Littelfuse LET or equal). Dummy/Neutral fuse shall be Bussman NTS-R-3 or. equal.
④ Split Bolt or other connector.
⑤ Ground Rod Clamp – Blackburn GG58H, Burndy GKP635, or equal.

*For Transformer Base Poles. On Shoe Base Poles omit un-fused connector for neutral conductor.

△1 10-98: clarified T-base washers; mod. fixture requirements; removed two wire diagram; revised breakaway connectors requirements

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

ROADWAY
ILLUMINATION
DETAILS

RID(2)-98

©TxDOT January 1992	DN:-RS	CK:-KB	DW:-FDN	CK:-RS	NEG NO.:

REVISIONS	STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT			SHEET
5-93 10-93 10-98	DALLAS	6	CM 97 (449)			87
	COUNTY		CONTROL	SECTION	JOB	HIGHWAY
	DALLAS		8050	18	034	BELT LINE

72B

LEVELS DISPLAYED

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	

DATE:
ACC: d58hp1c/usr/d580504
FILE:

DN: LR
CK: CW
DW: DN
CK: MT

II. ROADWAY ILLUMINATION ASSEMBLIES (cont.)

D. High pressure Sodium Vapor Luminaires (cont.)

2. Ballasts

a. All ballasts shall be isolated–winding lag–type magnetic regulators designed to operate high pressure sodium lamps unless otherwise shown on the plans.

b. When the circuit voltage indicated on the plans is applied, the ballast input wattage during fluctuations of the test voltage of +10 and –10 percent shall not exceed the following;

Nominal Lamp Rating, Watts	Maximum Wattage Input
150	220
250	440
400	552

c. During fluctuation of the test voltage of +10 and –10 percent, the lamp wattage fluctuation shall no exceed a total of 20 percent and ballast shall maintain lamp wattage within the following limits:

Nominal Lamp Watts	Minimum Lamp Watts	Maximum Lamp Watts
150	110	180
250	175	370
400	280	475

d. The power factor of any ballast when tested at the circuit voltage indicated in the plans shall be not less than 90 percent.

e. The electronic starting aid shall provide a starting pulse with an amplitude of 2500 volts minimum, 4000 volts maximum. The pulse width shall be a minimum of 0.8 microseconds at 2250 volts. The pulse shall occur when the open–circuit voltage is equal to or greater than 90 percent of peak open–circuit voltage. Pulse repetition rate shall be a minimum of one per cycle and pulse current shall be a minimum of 0.18 amperes. Electronic staring aids for mast–arm mounted poles shall be replaceable without the use of tools. The starting aid shall discontinue to pulse when the lamp starts.

f. Luminaires will be tested for satisfactory operation of the starter board under open–circuit (lamp–out) condition for a minimum of 72 hours. Any failures of starter boards will be considered grounds for rejection of the model starter board being supplied.

g. Ballasts shall permanently and clearly indicate the following: lamp type, catalog number, voltage rating, connection diagram, and manufacturer. Capacitors in all luminaires shall be non–PCB type.

3. Lamps

a. All lamps shall be new and shall be of recent manufacture.

b. 150 watt lamps shall be rated for 55 volts.

c. High pressure sodium lamps shall meet ANSI C78 requirements and shall be the type that extinguishes at the end of usable lamp life and remains extinguished without cycling. 400 watt lamps shall contain less than 4.0 mg of mercury, 250 watt lamps shall contain less than 3.0 mg of mercury. Lamps shall be lead free and shall pass the Federal Toxic Characteristic Leachate Procedure (TCLP).

4. Testing

a. Ballasts and luminaires will be tested using a lamp furnished for the same project.

b. Luminaires, ballasts, and lamps will be sampled and tested in accordance with the TXDOT Materials and Test Section's Manual of Testing Procedures.

III. ROADWAY ILLUMINATION ASSEMBLY FOUNDATIONS

A. Foundations will be paid for under the Item "Foundations for Signs, Traffic Signals and Roadway Illumination Assemblies", unless otherwise shown on the plans. Top 6 inches of foundation shall be formed and struck level.

B. Anchor bolts for all poles, except CTB–mounted poles, shall be A–36M55 Anchor Bolts. Anchor bolts for CTB mounted poles shall be steel, ASTM A–325 or A–321 threaded rod. Nuts for CTB anchor bolts shall be ASTM A–563 Grade D heavy hex, galvanized. The top 8 inches of all anchor bolts shall be galvanized per ASTM A–153. Anchor bolts in foundations shall be 1 1/4 inches x 30 inches for mounting heights 40 feet and greater, 1 inch x 30 inches for mounting heights less than 40 feet.* Anchor bolts shall have top end threaded not less than 5 inches and furnished with galvanized hex nuts, 1/2 inch flat washers (T–base), lock washers (shoe base) and template. The lower end of the bolt shall be threaded and furnished with nut and template. When bolts with rolled threads are furnished, bolt body need not be full size. See CTB and SSCB details for anchor bolts in concrete traffic barriers. Anchor bolts and nuts shall have Class 2A and 2B fit. Nuts shall be tapped and chased after galvanizing.

C. Concrete shall be Class A or C.

D. A minimum of two conduits shall be installed in each foundation. See lighting layout sheets for locations of foundations with more than two conduits. Any unused conduits in foundations shall be capped on both ends.

E. Unless otherwise dimensioned on the plans, breakaway roadway illumination assemblies should be located as shown in the placement table. Non–breakaway illumination assemblies should be protected from vehicular impact (i.e. 2 feet behind guard rail or mounted atop traffic barrier) or located outside the clear zone, except that 2.5 feet from curb face is minimum desired for light poles on city streets, 45 mph or less, see design guidelines for further information.

F. Anchor bolt template shall not be supplied with flat washers. Transformer base shall be held with 1/2 inch thick washers and nuts supplied with base. No washers or shims shall be used under transformer base.

G. Riprap shall be placed around the foundtion when called for elsewhere in the plans.

H. Conduit location in foundation is critical for new style breakaway devices. Conduits shall be placed 2 inches apart on centerline as shown in foundation details.

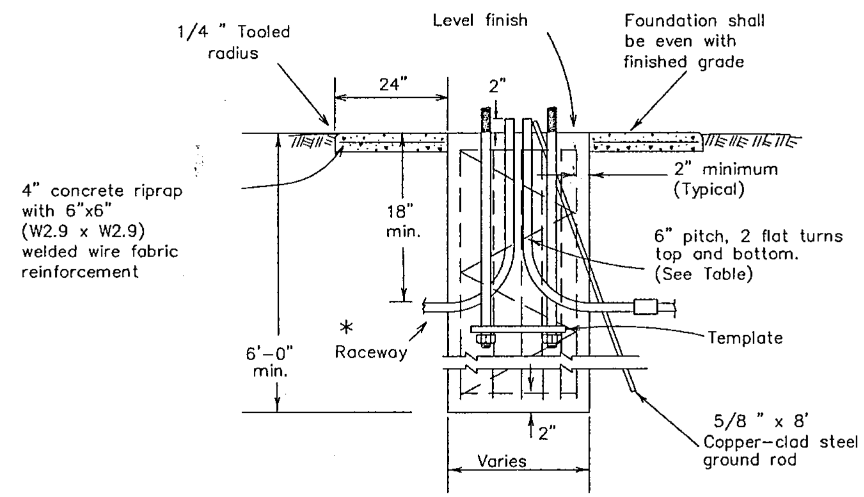
* Except that anchor bolts shall be 1 inch x 30 inches for all X–base poles.

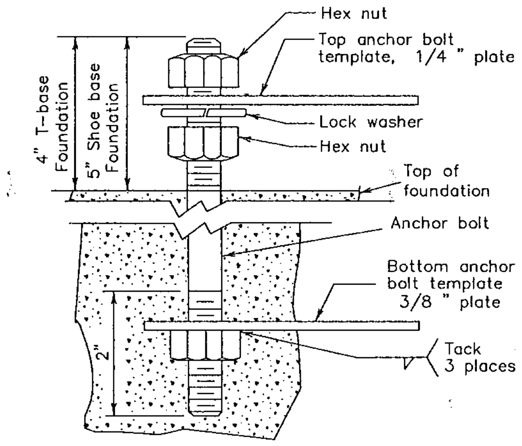
Breakaway Pole Placement, see Para. III. E.	
Roadway Functional Classification	** Pole Offset (distance to transformer base, tolerance + 6in.–0in.)
Freeway mainlanes (roadways with full control of access)	15 ft (minimum and typical) from lane edge
All curbed, 45 mph or less design speed	2.5 ft minimum (15 ft desirable) from curb face
All others	10 ft minimum* (15 ft desirable) from lane edge

*or as close to ROW line as is practicable

**all breakaway poles should have 2/5 of the luminaire mounting height behind the pole for "falling area" to prevent encroachment on other travel lanes. See design guidelines.

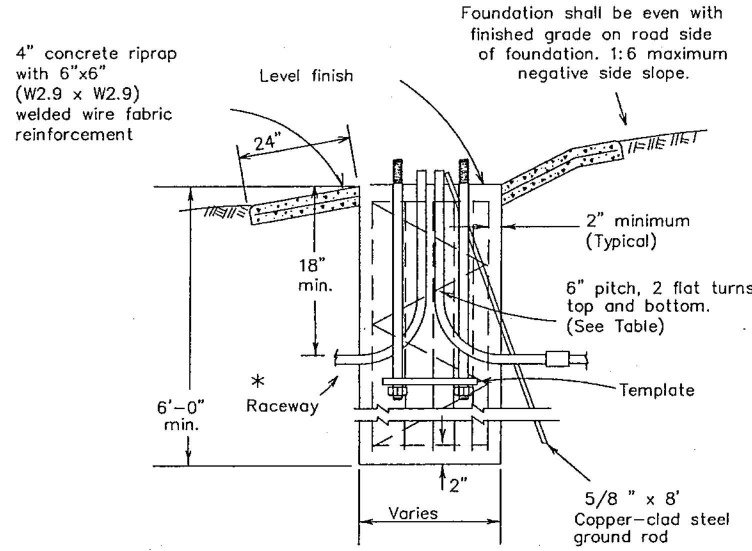
PAY QUANTITY OF RIPRAP PER FOUNDATION		
FOUNDATION DIAMETER	RIPRAP DIAMETER	RIPRAP (CONC)(CL A)
30 in.	78 in.	0.35 CY





ANCHOR BOLT DETAIL

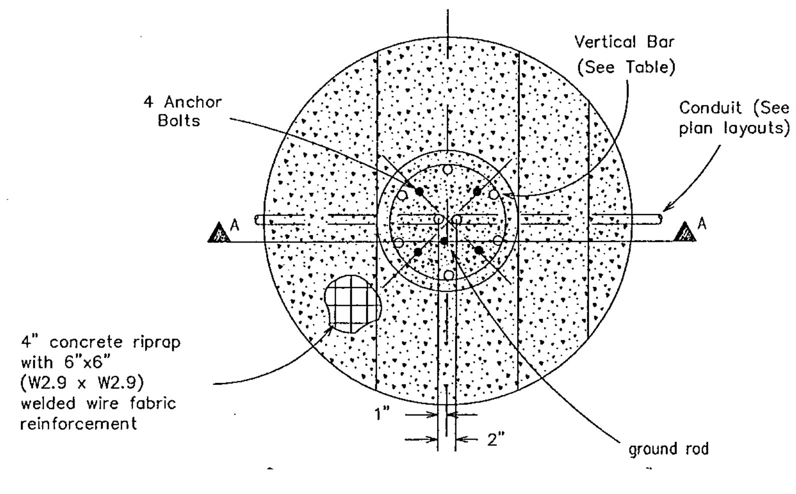
FOUNDATIONS				
FND. TYPE	DRILL SHAFT		REINFORCING	
	DIA.	LENGTH	BAR	SPIRAL
A	30 in	6 ft	6–#4	#2
B	30 in	8 ft	6–#5	#2
C	30 in	10 ft	6–#6	#3



SECTION A–A

BOLT CIRCLES AND ANCHOR BOLTS				
MOUNTING HEIGHT	POLE BASE PLATE	BOLT CIRCLE		BOLT SIZE
		SHOE BASE	*T–BASE	
LESS THAN 40 ft	13 in	13 in	14 in	1 in. X 30 in.
40 ft OR GREATER	15 in	15 in	17 1/4 in	** 1 1/4 in X 30 in.

* AND X–BASE
** 1" FOR X–BASE



FOUNDATION DETAIL

* For duct cable, match duct size, see ED(10). For conductor in conduit system, same size as system conduit with standard radius bends.

STANDARD PLANS
TEXAS DEPARTMENT OF TRANSPORTATION
Traffic Operations Division

ROADWAY ILLUMINATION DETAILS

RID(3)–98

DN: RS	CK: KB	DW: FDN	CK: RS	NEG NO.

REVISIONS: 5–93, 10–93, 2–94, 10–98

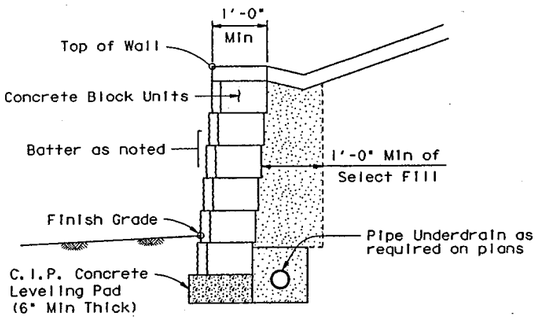
STATE DISTRICT	FEDERAL REGION	FEDERAL AID PROJECT	SHEET
DALLAS	6	CM 97 (449)	88

COUNTY	CONTROL	SECTION	JOB	HIGHWAY
DALLAS	8050	18	034	BELT LINE

72C

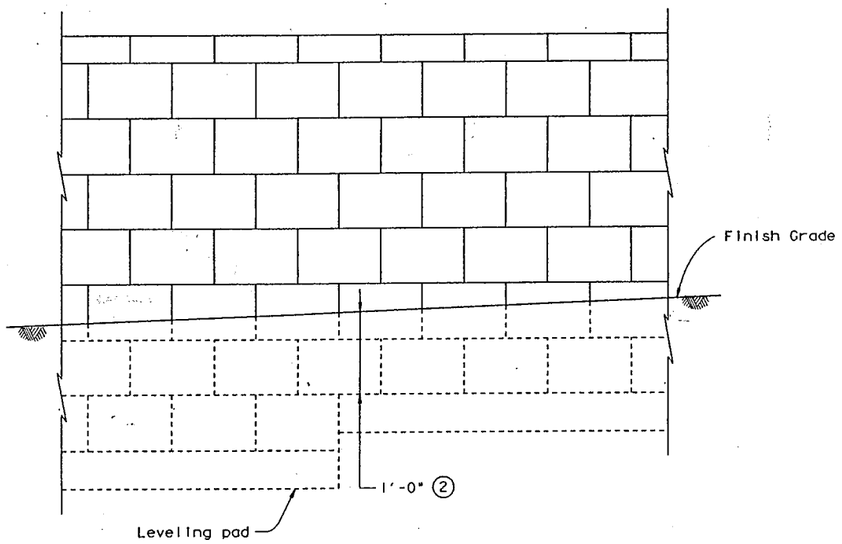
DN: LR
CK: CW
DW: DN
CK: MT

FILE: d58hplc/usr/d580504

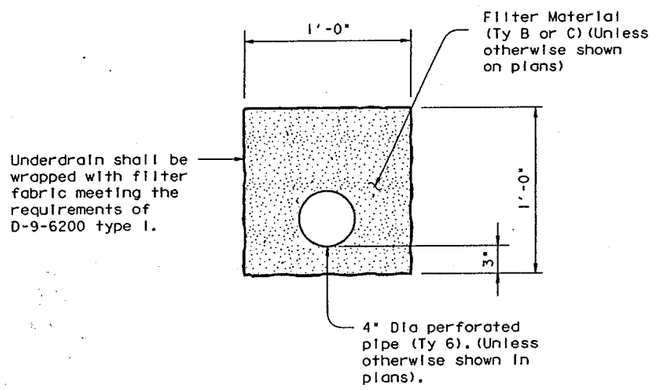


SECTION

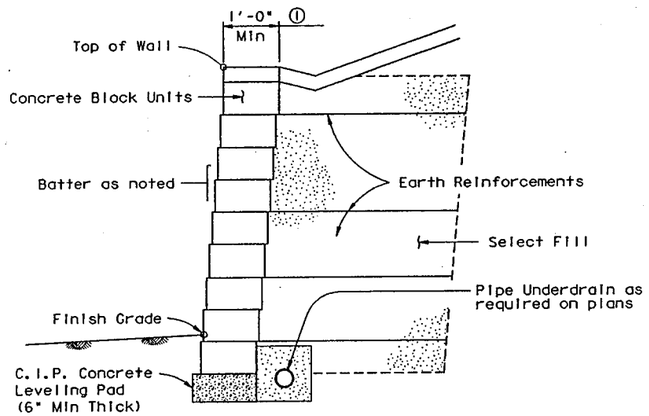
(No Earth Reinforcements)



TYPICAL ELEVATION



UNDERDRAIN DETAIL



SECTION

(With Earth Reinforcements)

① For systems utilizing continuous structural pins passing thru a minimum of 3 block layers, the minimum block depth shall be 8". The maximum vertical spacing of primary reinforcement on these systems shall be 24", and intermediate reinforcement will not be required.

② Unless noted elsewhere in the plans, 1'-0" minimum cover shall be provided from the top of leveling pad to finish grade.

③ For walls which are designated as landscape walls and are less than 6' tall, the following modifications to the design criteria will be allowed:

Factor of safety in sliding > 1.2.
Factor of safety in overturning > 1.5.
Connection strength factor of safety of 1.0 at 3/4" strain.
Minimum earth reinforcement length of 4'.

The above modified criteria does not apply to walls over 6' tall regardless of designation.

EARTH REINFORCEMENTS:

Walls may be constructed without earth reinforcements if all stability criteria are met with the blocks alone. If all stability criteria are not satisfied, earth reinforcements shall be provided.

The long term design strength (LTDS) of earth reinforcement shall be calculated in accordance with AASHTO 1992 Standard and current Interim Specifications.

Soil-geogrid pullout coefficient values shall be determined in accordance with Geosynthetics Research Institute (GRI) Method GG-5, "Guidelines for Evaluating Geogrid Pullout".

For the combination of concrete block and geogrid chosen, connection strength data shall be provided. The allowable connection load shall be limited to the connection strength developed at 1/4" displacement, divided by a 1.5 safety factor. ③

For internal stability calculations, the failure plane will be assumed to originate at the back of the concrete blocks.

The factor of safety against pullout of the earth reinforcements shall be determined from test data evaluated at 1/4" strain.

The maximum vertical spacing of primary earth reinforcement layers shall be 40 inches. ①
The minimum length of primary earth reinforcements shall be 8 feet, measured from the front of the blocks. ③

A layer of intermediate reinforcement shall be provided between primary reinforcements when the spacing between primary layers exceeds twice the horizontal depth of the concrete block unit. Intermediate reinforcement shall have a minimum length of 4 feet, and shall provide local stability for the concrete block units. ①

STABILITY CRITERIA:

Factor of safety in sliding along the base of the structure shall be greater than or equal to 1.5. ③

Factor of safety in overturning shall be greater than or equal to 2.0. ③

The base pressure resultant shall fall within the middle third of the retaining wall.

DESIGN PARAMETERS:

Structure shall be based on the following design parameters:

Random Backfill: Unit weight = 120 pcf.
(Embankment or Existing Soils) ø = 30° c = 0 psf
Select Backfill: Unit weight = 120 pcf
ø = 34° c = 0 psf

GENERAL NOTES:

Sections and Typical Elevation shown are for informational purposes only. Specific geometry is to be determined based on wall layouts and other plan information.

Unless otherwise shown in the plans, wall batter shall be a maximum of 3" per foot. Blocks shall be placed horizontally, and a positive means of obtaining batter such as pins, keyways, or concrete lips shall be provided.

Texas Department of Transportation
Design Division (Bridge)

CONCRETE BLOCK RETAINING WALL

RW(CB)

FILE: rwestdll.dgn	DN: MPM	CK: JGG	DW: KOK	CK: LDS	STD: B480	
ORIG DATE: MARCH 1996	DIST	FED REG	FEDERAL AID PROJECT #			SHEET
REVISIONS	18	6	CM97(449)			90
	COUNTY		CONTROL	SECT	JOB	HIGHWAY
	DALLAS		8050	18	34	CS

LEVELS DISPLAYED
1 2
(LV=1,2 for English)

C1 CURVE DATA
Δ = 11°08'29"
R = 770.00'
T = 75.10'
L = 149.73'

C2 CURVE DATA
Δ = 10°30'19"
R = 450.00'
T = 41.37'
L = 82.51'

C3 CURVE DATA
Δ = 11°28'46"
R = 250.00'
T = 25.13'
L = 50.09'

C4 CURVE DATA
Δ = 11°15'40"
R = 250.00'
T = 24.65'
L = 49.14'

CENTER LINE CURVE DATA
Δ = 23°46'13"
R = 700.00'
T = 147.32'
L = 290.41'

HORIZONTAL 0 20 40 60
SCALE IN FEET

TRAVERSE #1
1/2" I.R.S. W/CAP "SJF"
N 5000.0000
E 5000.0000
ELEV. 645.64

TRAVERSE #2
1/2" I.R.S. W/CAP "SJF"
N 5273.6128
E 4842.0154
ELEV. 650.25

P.C.C. STA. 2+20.81
N 5256.0954
E 4897.1150

P.C. STA. 3+42.46
4.39' RT.
N 5370.7402
E 4857.8167

P.C. STA. 3+25.08
35.18' RT.
N 5363.4289
E 4892.1533

STA. 3+12.72
32.25' RT.
N 5351.3301
E 4892.9937

QUORUM DRIVE

STA. 3+33.56
33.86' RT.
N 5370.7460
E 4888.5249

P.T. STA. 4+11.95
44.42' RT.
N 5445.1247
E 4881.4673

P.C. STA. 4+74.58
50.11' RT.
N 5503.7361
E 4879.2162

P.T. STA. 4+93.68
9.78' RT.
N 5518.8614, E 4837.6050

P.R.C. STA. 5+26.97
56.00' RT.
N 5553.6452, E 4882.3039

BEGIN WALL
STA. 4+70

℄ PT. 5+11.22
N 5535.7569
E 4826.9487

CONC. BLOCK
RETAINING WALL

STA. 5+79.03
10.00' RT.
N 5603.9068
E 4834.3386

END WALL
STA. 5+95.6

STA. 6+05.79
END NOSE
4.84' LT.
N 5630.0767
E 4818.4805

MATCH LINE STA. 90+67.34

1/2" I.R.F.
N 5389.5600
E 4906.0899

BEGIN WALL
STA. 4+00

1/2" ABA
N 5477.8865
E 4901.6385

1/2" ABA
N 5511.0798
E 4902.4515

4' PROPOSED SIDEWALK

CONC. BLOCK
RETAINING WALL

END WALL
STA. 5+55

P.T. STA. 5+75.77
61.00' RT.
N 5602.6026
E 4885.4263

P.C. STA. 5+58.65
61.00' RT.
N 5612.4811
E 4885.0469

BELT LINE ROAD

T.S.L.(NEW)
T.S.L.(OLD)
P.P./U.G.C.
R30'

LEGEND

PROPOSED NEW PAVEMENT

BARRIER FREE RAMP

TREE REMOVAL

BENCHMARK:
"□" CUT ON THE NORTH END OF A CONCRETE RETAINING WALL ON THE EAST SIDE OF QUORUM DRIVE AT THE NORTHWEST CORNER OF THE MARTIOT HOTEL APPROX. 900' SOUTH OF THE INTERSECTION ON BELT LINE AND QUORUM DRIVE.
ELEV. 649.13

THESE DOCUMENTS ARE FOR BIDDING, CONSTRUCTION, AND PERMIT PURPOSES.
John W Birkhoff
DATE: 6/9/00

STATE OF TEXAS
JOHN W. BIRKHOFF
54137
REGISTERED PROFESSIONAL ENGINEER

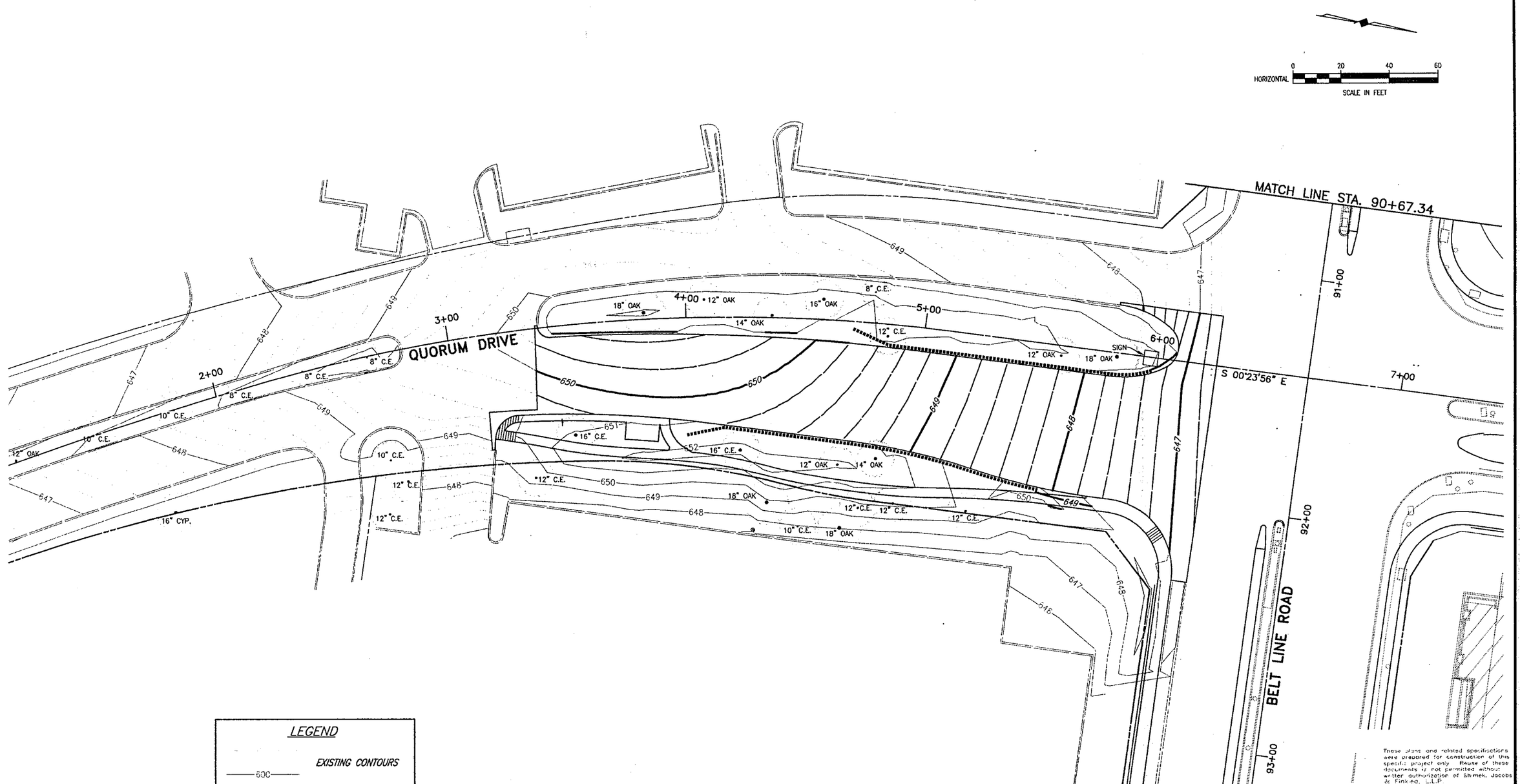
CITY OF ADDISON, TEXAS

QUORUM DRIVE / BELT LINE ROAD
PAVING PLAN

SHIMEK, JACOBS & FINKLEA, L.L.P.
CONSULTING ENGINEERS
Dallas, Texas

DESIGNED BY:	J.W.B.	PROJECT:	2000-131	SHEET NO. 49A
DRAWN BY:	E.W.H.	DATE:	MAY 2000	OF 7 SHEETS

XREF: PAVEMENT-BAS
2000131-01.DWG
/08/00 EWH



LEGEND

EXISTING CONTOURS

500

CONTOURS (PAVEMENT SURFACES THIS CONTRACT)

600.2

600

BENCHMARK:
"□" CUT ON THE NORTH END OF A CONCRETE RETAINING WALL ON THE EAST SIDE OF QUORUM DRIVE AT THE NORTHWEST CORNER OF THE MARTIOT HOTEL APPROX. 900' SOUTH OF THE INTERSECTION ON BELT LINE AND QUORUM DRIVE.
ELEV. 649.13

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John W Birkhoff

DATE: 6/9/00

STATE OF TEXAS
JOHN W. BIRKHOFF
54137
REGISTERED PROFESSIONAL ENGINEER

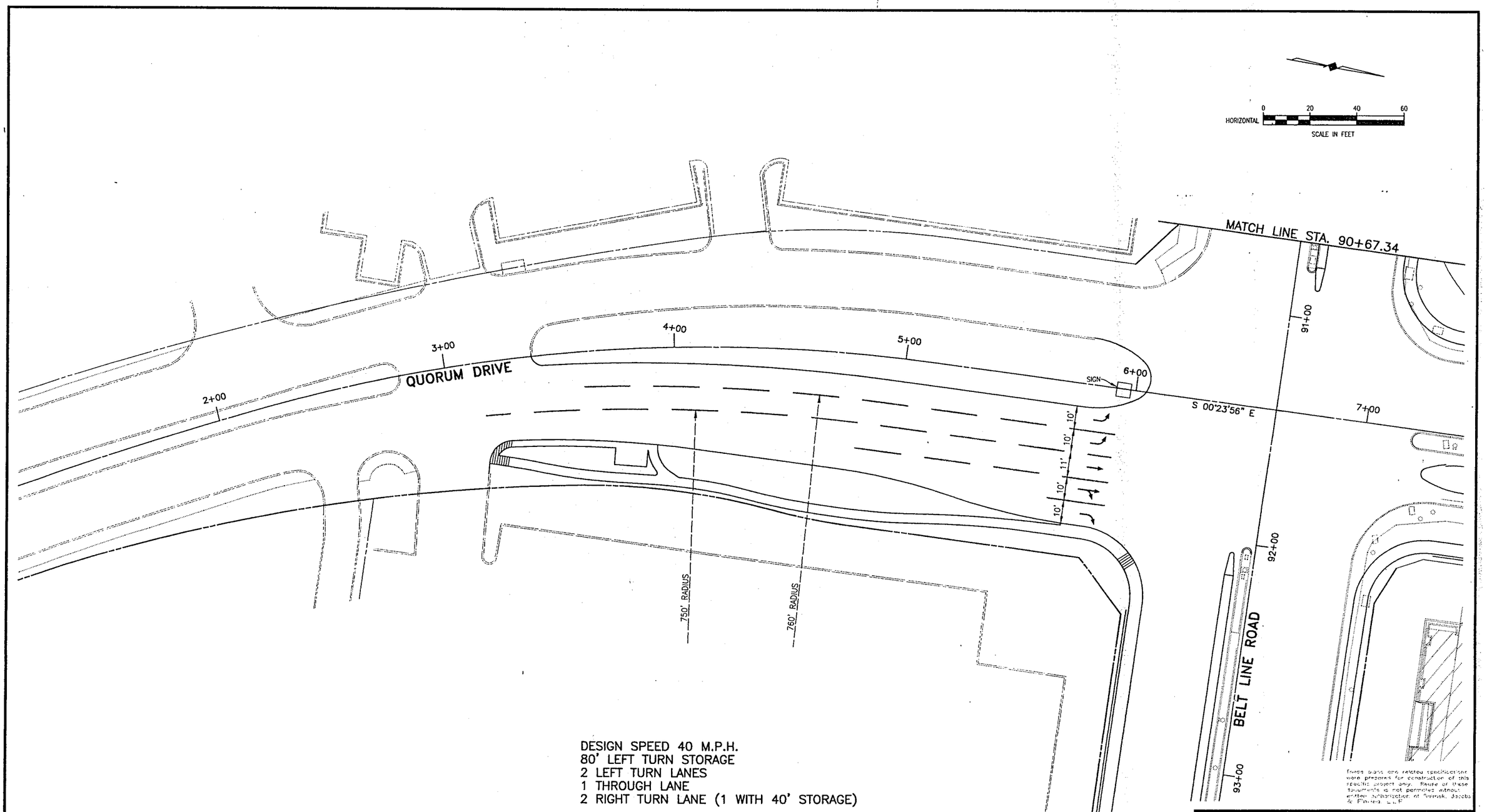
CITY OF ADDISON, TEXAS

QUORUM DRIVE / BELT LINE ROAD
PAVING CONTOURS

SHIMEK, JACOBS & FINKLEA, L.L.P.
CONSULTING ENGINEERS
Dallas, Texas

DESIGNED BY: J.W.B.	PROJECT: 2000-131	SHEET NO. 49B
DRAWN BY: E.W.H.	DATE: MAY 2000	OF 7 SHEETS

XREF: CONTOUR-BAS
2000131-02.DWG
06/08/00 EWH



DESIGN SPEED 40 M.P.H.
80' LEFT TURN STORAGE
2 LEFT TURN LANES
1 THROUGH LANE
2 RIGHT TURN LANE (1 WITH 40' STORAGE)

THESE DOCUMENTS ARE FOR BIDDING, CONSTRUCTION, AND PERMIT PURPOSES.

John W Birkhoff

DATE: 5/31/00

STATE OF TEXAS
JOHN W. BIRKHOFF
54137
REGISTERED PROFESSIONAL ENGINEER

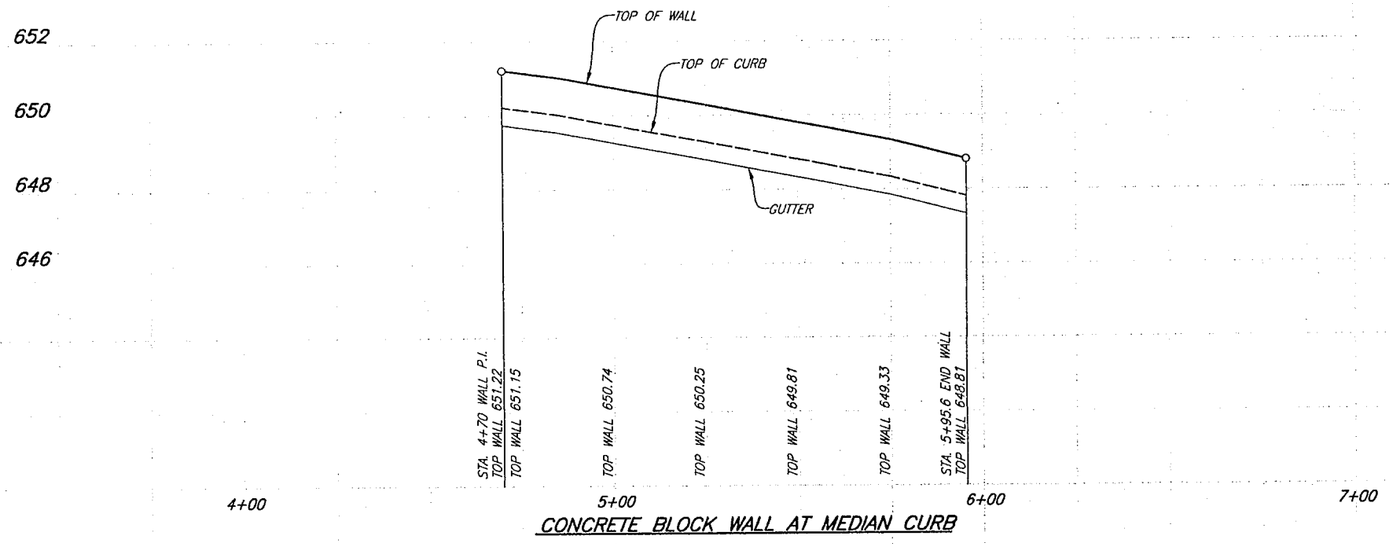
CITY OF ADDISON, TEXAS

QUORUM DRIVE / BELT LINE ROAD
MARKING LAYOUT PLAN

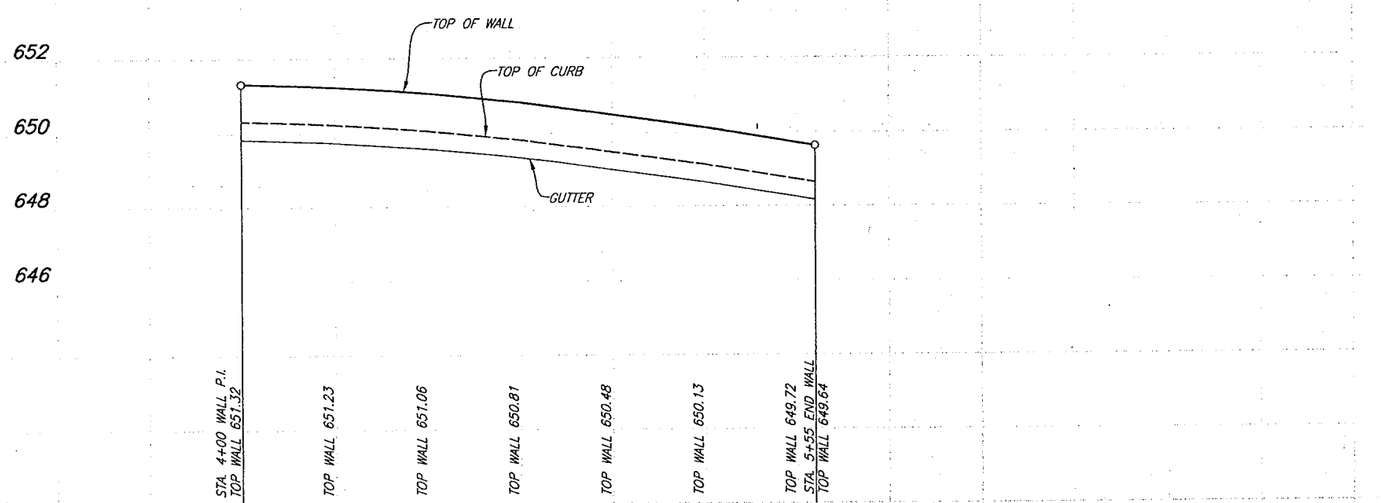
SHIMEK, JACOBS & FINKLEA, L.L.P.
CONSULTING ENGINEERS
Dallas, Texas

DESIGNED BY:	J.W.B.	PROJECT:	2000-131	SHEET NO. 49C
DRAWN BY:	E.W.H.	DATE:	MAY 2000	OF 7 SHEETS

XREF: MARKING-BAS
2000131-03.DWG
05/30/00 EWH



CONCRETE BLOCK WALL AT MEDIAN CURB



CONCRETE BLOCK WALL AT NORTHBOUND CURB

BENCHMARK:
"□" CUT ON THE NORTH END OF A CONCRETE RETAINING WALL ON THE EAST SIDE OF QUORUM DRIVE AT THE NORTHWEST CORNER OF THE MARTIOT HOTEL APPROX. 900' SOUTH OF THE INTERSECTION ON BELT LINE AND QUORUM DRIVE.
ELEV. 649.13

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DATE: 5/31/00

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JOHN W. BIRKHOFF
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REGISTERED
PROFESSIONAL ENGINEER

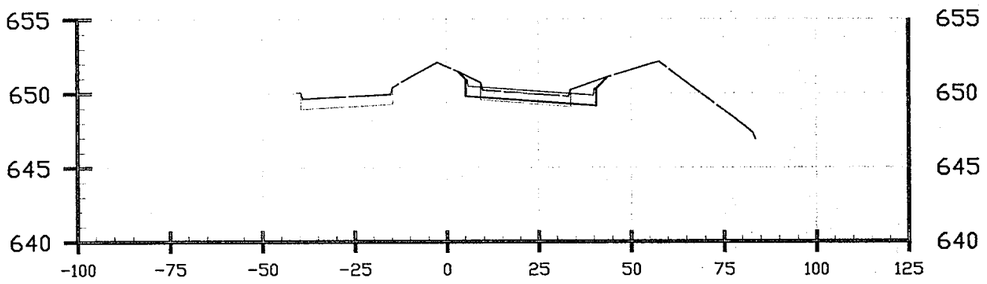
CITY OF ADDISON, TEXAS

QUORUM DRIVE / BELT LINE ROAD
CONCRETE BLOCK RETAINING WALL PROFILES

SHIMEK, JACOBS & FINKLEA, L.L.P.
CONSULTING ENGINEERS
Dallas, Texas

DESIGNED BY: J.W.B.	PROJECT: 2000-131	SHEET NO. 49D
DRAWN BY: E.W.H.	DATE: MAY 2000	OF 7 SHEETS

5/30/00 EWH 2000131-04.DWG



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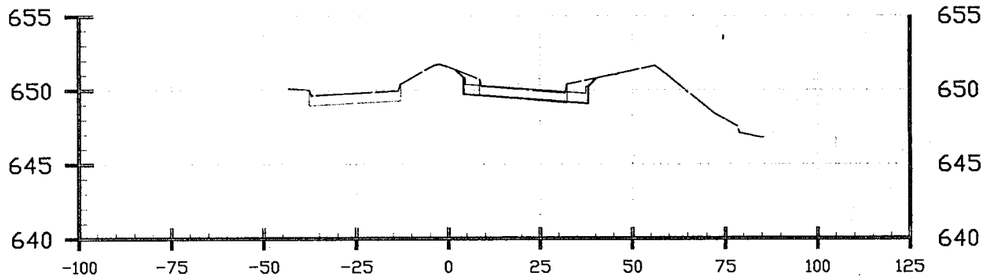

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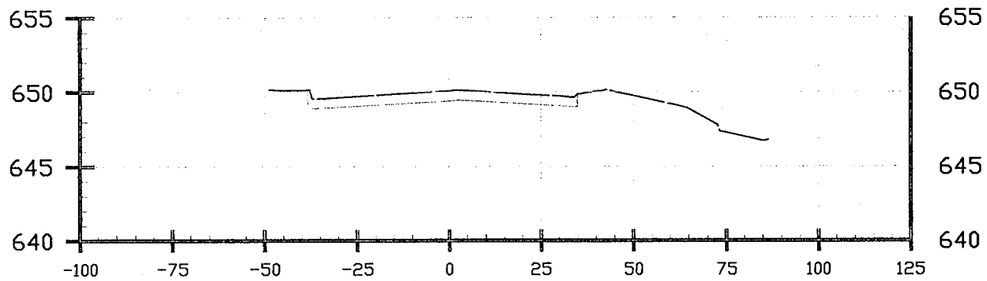

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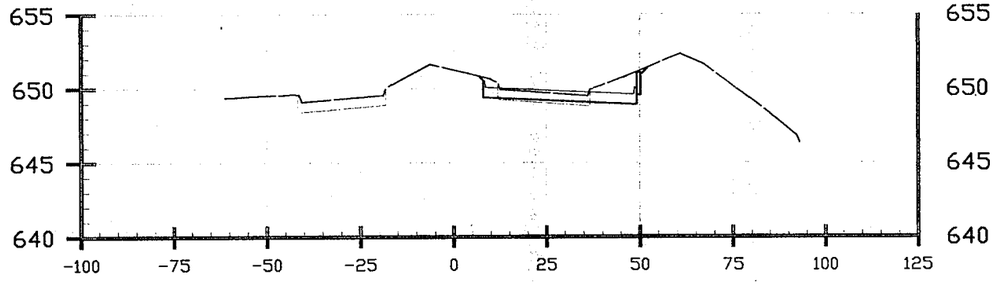

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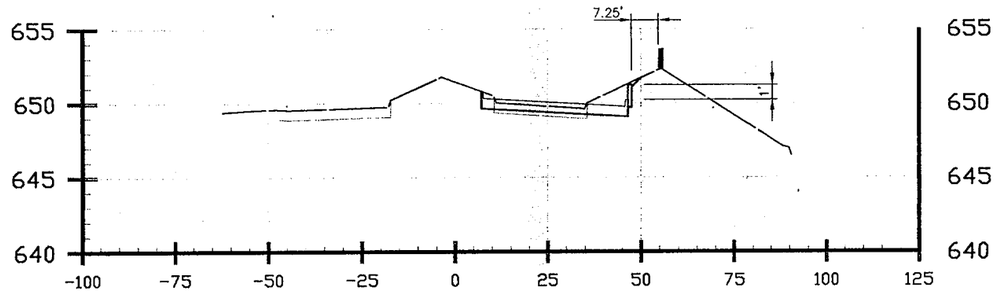

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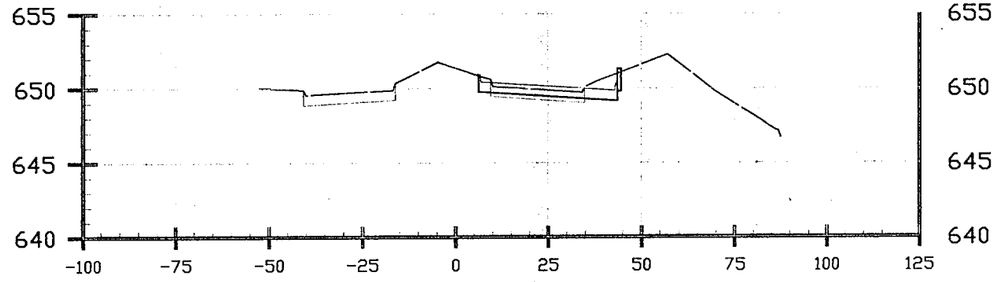

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DATE: 5/31/00

STATE OF TEXAS
JOHN W. BIRKHOFF
54137
REGISTERED PROFESSIONAL ENGINEER

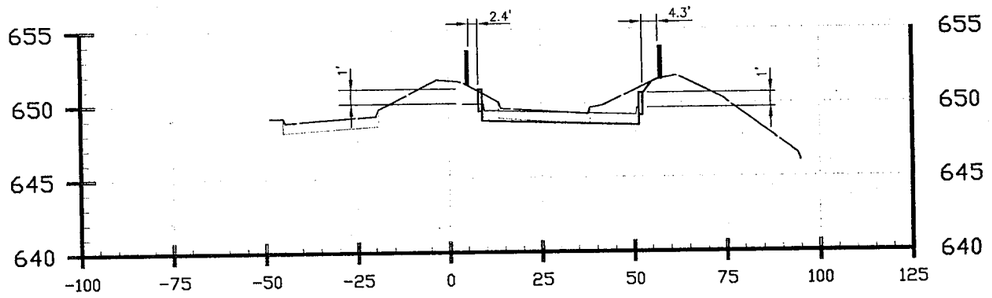
CITY OF ADDISON, TEXAS

QUORUM DRIVE / BELT LINE ROAD
PAVING CROSS SECTIONS

SHIMEK, JACOBS & FINKLEA, L.L.P.
CONSULTING ENGINEERS
Dallas, Texas

DESIGNED BY:	J.W.B.	PROJECT:	2000-131	SHEET NO. 4.9E
DRAWN BY:	E.W.H.	DATE:	MAY 2000	OF 7 SHEETS

05/30/00 EWH 2000131-05.DWG



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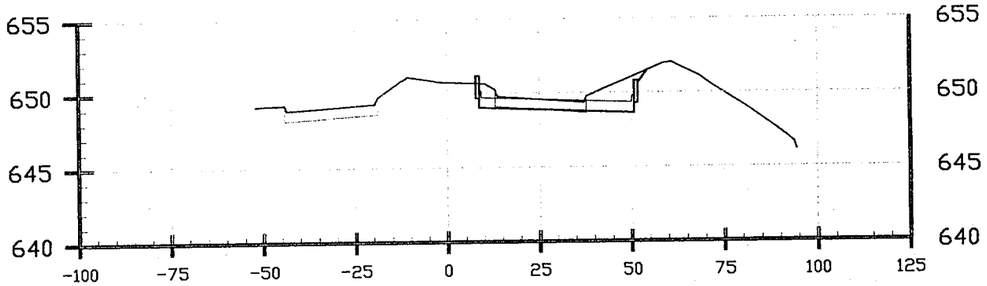

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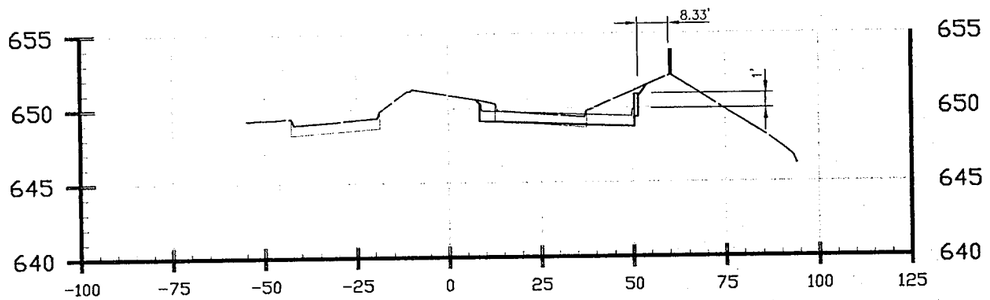

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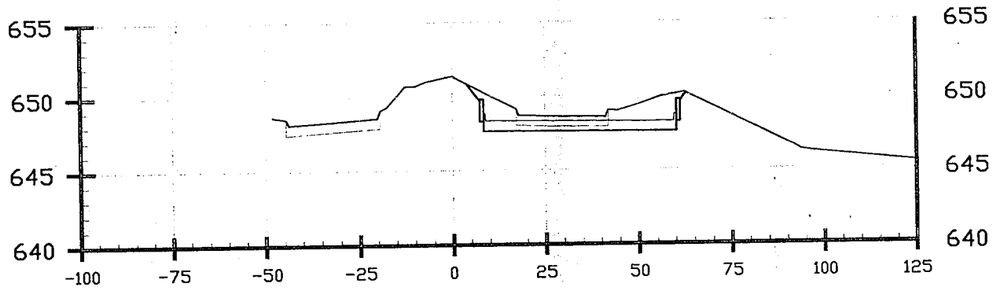

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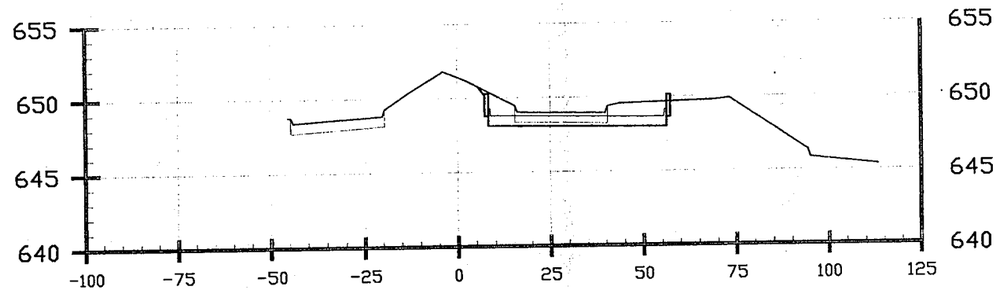

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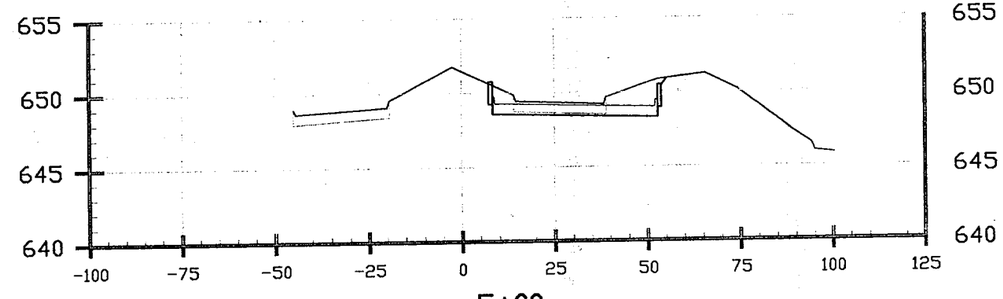

5+00

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DATE: 5/31/00

STATE OF TEXAS
JOHN W. BIRKHOFF
54137
REGISTERED
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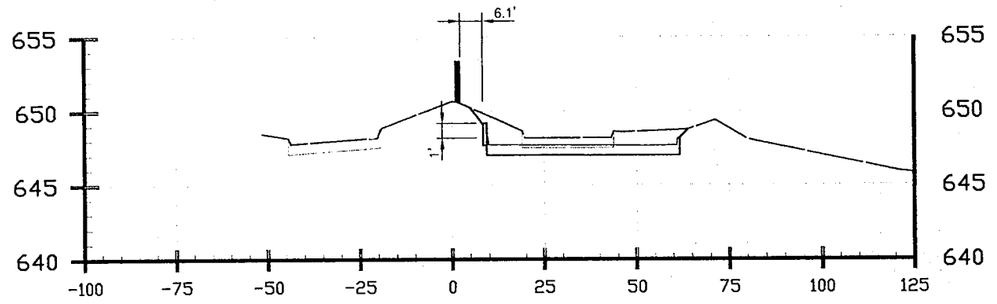
CITY OF ADDISON, TEXAS

QUORUM DRIVE / BELT LINE ROAD
PAVING CROSS SECTIONS

SHIMEK, JACOBS & FINKLEA, L.L.P.
CONSULTING ENGINEERS
Dallas, Texas

DESIGNED BY: J.W.B.	PROJECT: 2000-131	SHEET NO. 49F
DRAWN BY: E.W.H.	DATE: MAY 2000	OF 7 SHEETS

5/30/00 EWH 20000131-06.DWG



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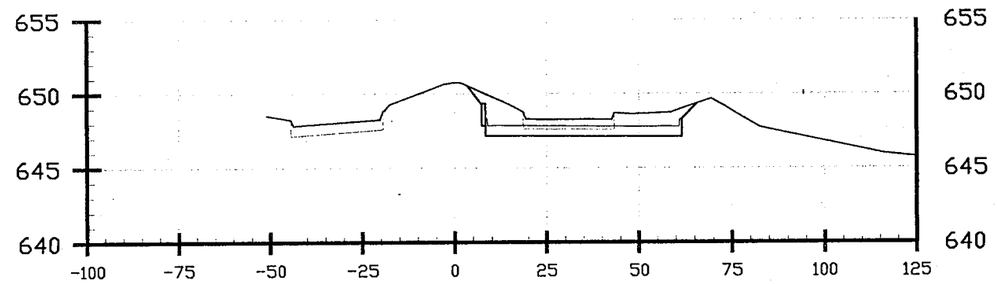

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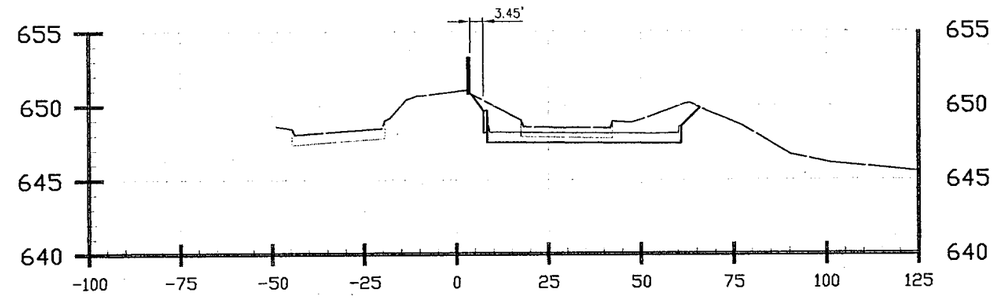

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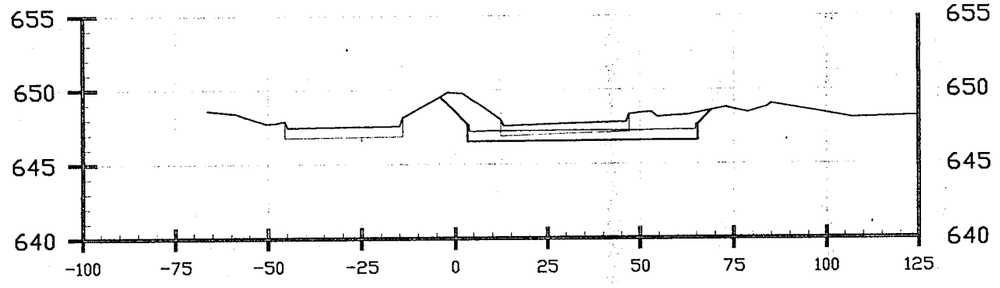

6+00

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DATE: 5/31/00

STATE OF TEXAS
JOHN W. BIRKHOFF
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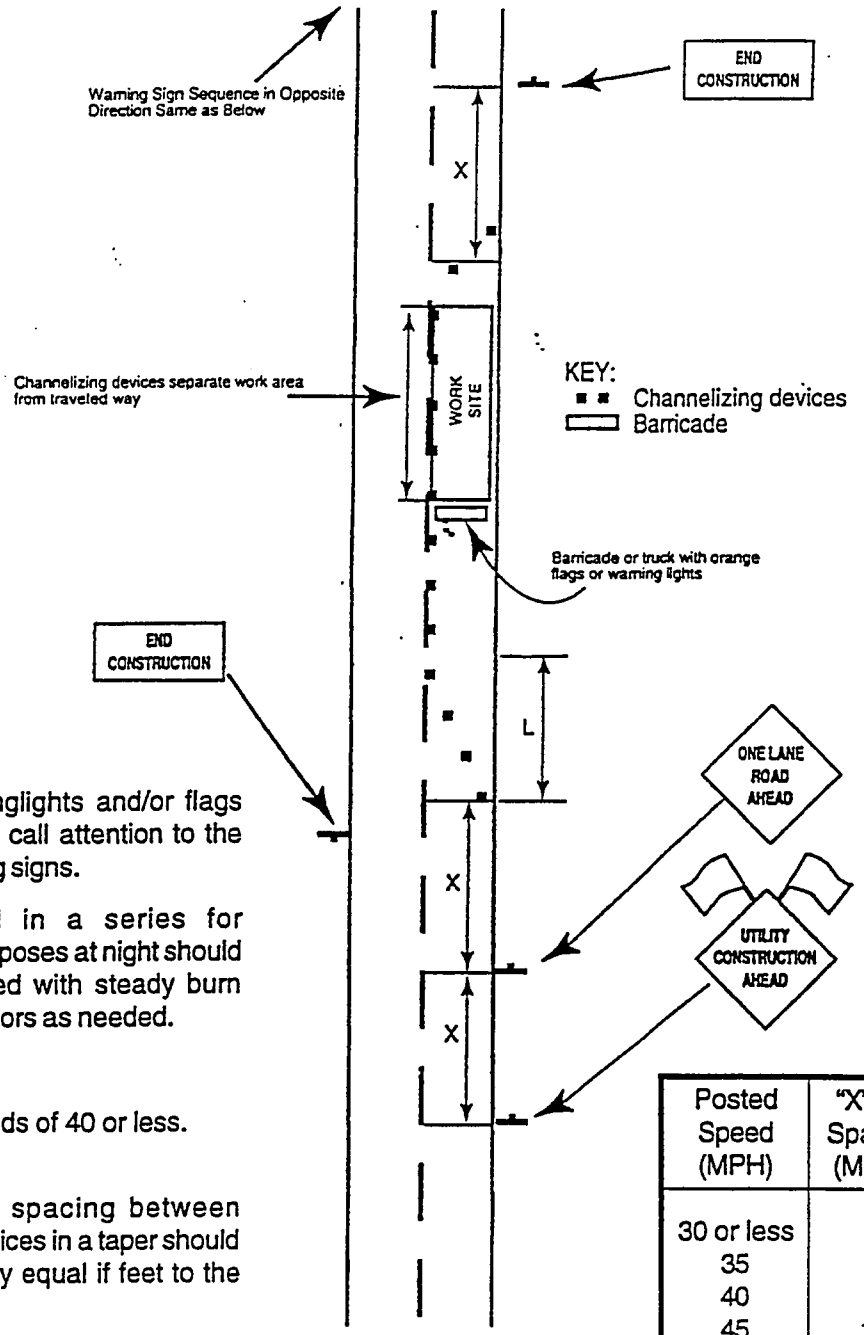
CITY OF ADDISON, TEXAS

QUORUM DRIVE / BELT LINE ROAD
PAVING CROSS SECTIONS

SHIMEK, JACOBS & FINKLEA, L.L.P.
CONSULTING ENGINEERS
Dallas, Texas

DESIGNED BY:	J.W.B.	PROJECT:	2000-131	SHEET NO. 49G OF 7 SHEETS
DRAWN BY:	E.W.H.	DATE:	MAY 2000	

2000131-07.DWG
05/30/00 EWH



NOTES:

1. Flashing warninglights and/or flags may be used to call attention to the advance warning signs.
2. Devices used in a series for channelizing purposes at night should be supplemented with steady burn lights or delineators as needed.
3. Taper Formula:

   $L = \frac{WS^2}{60}$ for speeds of 40 or less.
4. The maximum spacing between channelizing devices in a taper should be approximately equal if feet to the speed limit.
5. One or more flaggers to be used where traffic, road conditions, or terrain warrant their use. If flagger is used, taper may be reduced to 50' minimum.

Posted Speed (MPH)	"X" Sign Spacings (Meters)	"X" Sign Spacing (Feet)
30 or less	40	120
35	50	160
40	75	240
45	100	320
50	120	400
55	150	500
60	180	600
65	210	700
70	240	800

Typical Application
Minor Operation on 2-Lane Low Volume Low Speed Urban Street Where One Lane Is Closed

Figure 9-9