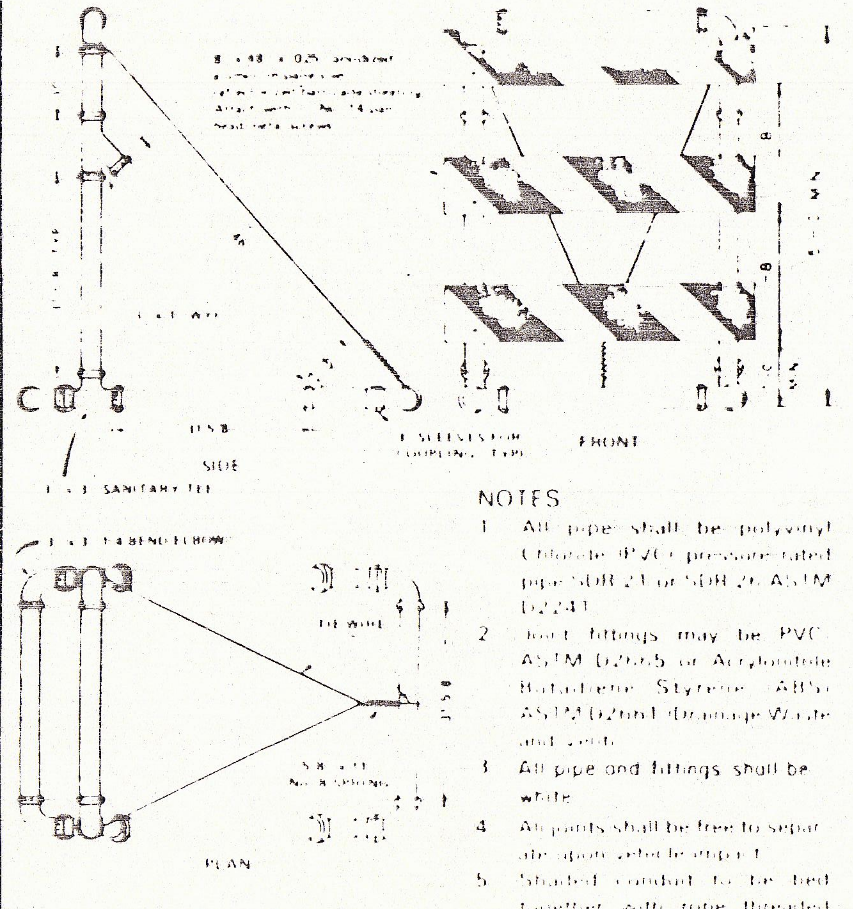


NOTES
1. All pipe shall be polyvinyl Chloride (PVC) pressure rated pipe SDR 21 or SDR 26 ASTM D2241
2. Joint fittings may be PVC ASTM D2665 or Acrylonitrile Butadiene Styrene (ABS) ASTM D2661 (Drainage Waste and Vent)
3. All pipe and fittings shall be white
4. All joints shall be free to separate upon vehicle impact
5. Shaded conduit to be tied together with rope threaded into pipe interior. Use 3/16 No. [illegible] solid braided nylon or equivalent
6. A fixed frangible pavement connection is preferred. Sand Bags may be substituted

OPTIONAL
TYPE III PVC BARRICADES
TYPICAL DESIGN DETAILS

May be used at the option of the Contractor

STRIPING FOR BARRICADE

Where a barricade extends entirely across a roadway, it is desirable that the stripes 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 should cover the full width of the rail. Striping of rails, panels and gates for the right side of the roadway is shown above. For the left side of the roadway, striping should slope downward to the right.

For all types of barricades with rails less than 3' 0" long, stripes 4" wide shall be used.

The 8" rail width is a nominal dimension for rails made of lumber.

Identification markings may be shown only on back side of barricade rails.

BARRICADE NOTES

Channelizing devices other than barricades should normally be used for channelization purposes.

Barricades should normally be placed perpendicular to the traffic flow. Other channelizing devices, such as drums, vertical panels or portable barriers, should be used where needed to separate traffic from the work area. In all cases, the barricades should be so located as to most advantageously warn and direct traffic.

Barricades may be designed and constructed from wood, PVC pipe or any other suitable material in a manner approved by the Engineer. The construction details shown hereon are typical and are suggested details for wood and PVC pipe support systems for barricades. The details of rail width and striping, number and spacing of rails, minimum length and height (above pavement) of rails must be adhered to when alternate designs are used.

When signs are placed on barricades, a maximum number of 2 signs should be visable to the motorist.

Barricades are to be constructed in a first class workmanship manner of clean sound material. All surfaces above ground, which are not striped, shall be white except the unpainted galvanized metal or aluminum components may be used. Components made of lumber shall be painted with a minimum of two coats of an approved brand of white paint to secure thorough coverage and a uniform white color.

The Contractor shall maintain each barricade in a clean and good condition.

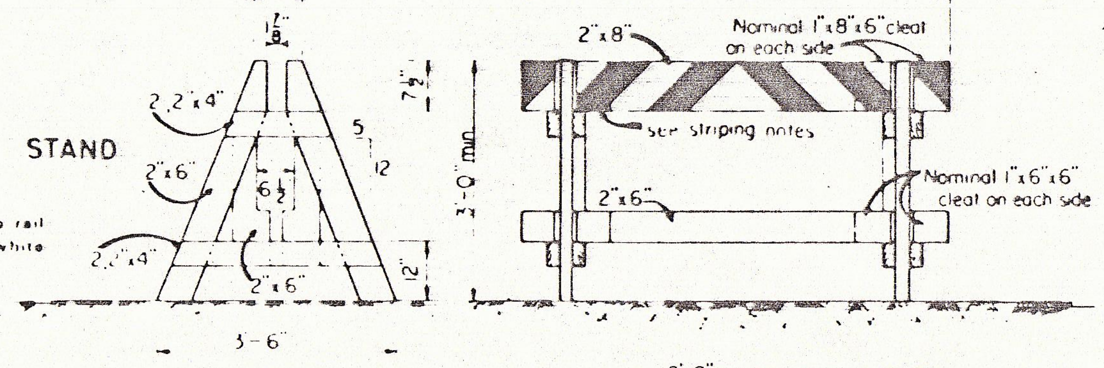
Barricades shall be removed upon completion of the work and/or the elimination of the hazard on any section.

BARRICADE DETAILS

All lumber sizes are nominal dimensions

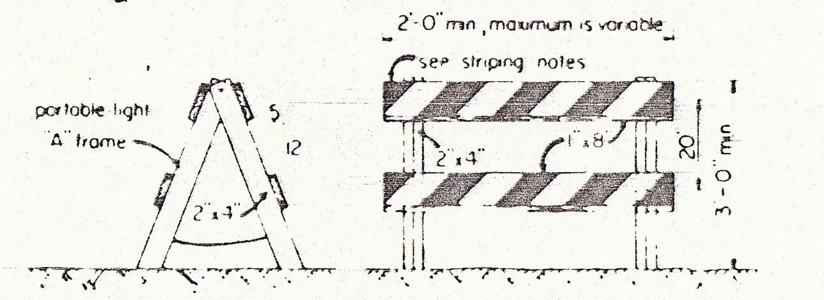
TYPE I BARRICADE

For Type I Barricades both sides of the top rail shall have reflective orange and reflective white striping



TYPE II BARRICADE

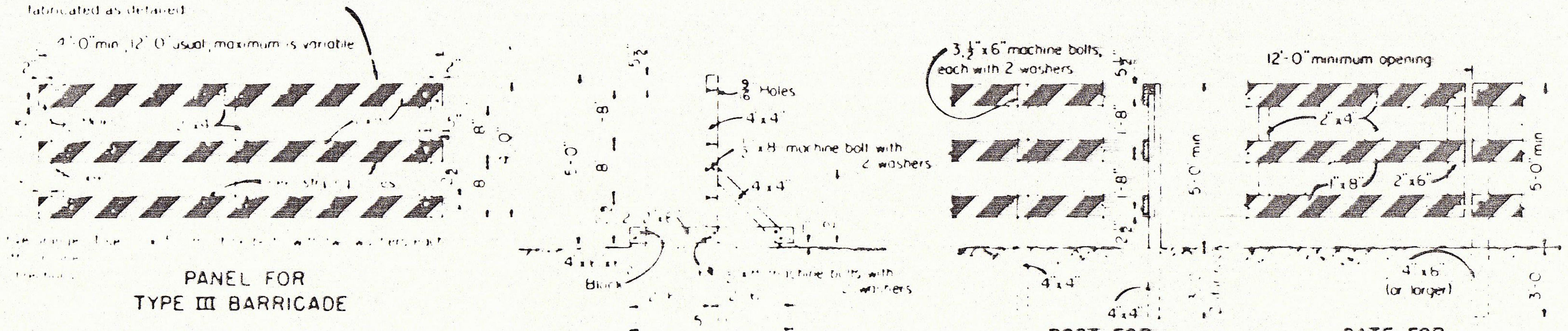
For Type II Barricades all four (4) rail faces shall have reflective orange and reflective white striping

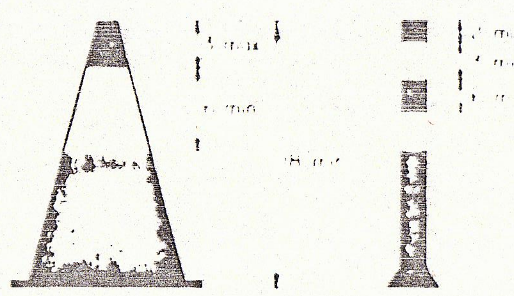


When Wood Barricades are used and when orange and white stripes are required on the back side, a 2"x8" rail may be used in lieu of the 1"x8" rail and 2"x4" stiffener. Otherwise the rail should be fabricated as detailed.

TYPE III BARRICADE

For Type III Barricades, the three (3) rails shall be reflective orange [illegible]



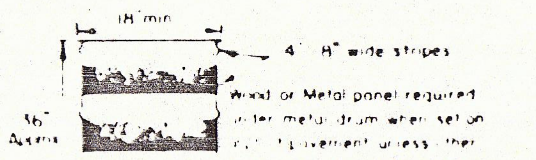


CONES

Traffic cones and tubular markers shall be a minimum of 18 inches in height [illegible]

Reflectorization of tubular markers shall be a minimum of two three-inch bands placed a maximum of 2" from the top with a maximum of 6" between the bands. Reflectorization of cones shall be provided by a minimum 6" band placed a maximum of 3" from the top.

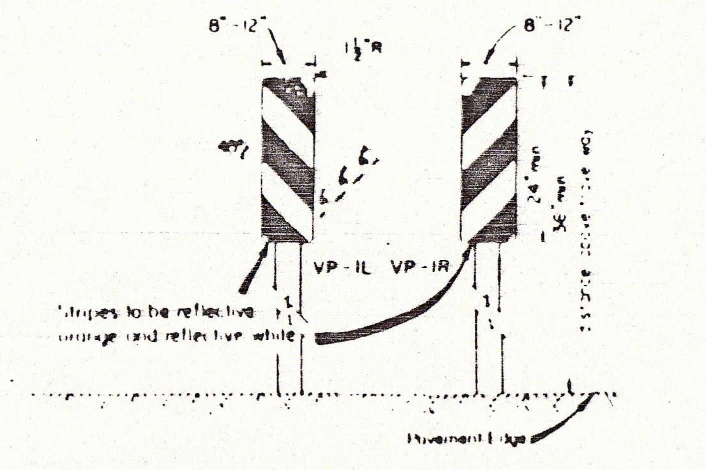
Cones or tubular markers are generally only suitable for temporary usage [illegible]



DRUMS

Drums, set on end and used for traffic warning or channelization shall be approximately 36" in height and a minimum of 18" in diameter. The Contractor at his option may use drums made from steel barrels or black polyethylene plastic drum liners weighing approximately eight pounds each. The 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 two (2) inches of the top of the drum. There shall be at least two orange and two white stripes on each drum. If there are nonreflectorized spaces between the horizontal orange and white stripes, they shall be no more than 2 inches wide. Metal drums shall be painted black or orange before reflectorized stripes are added. All drums on a project will be the same color. When drums are placed in the roadway, appropriate warning signs should be used. During hours of darkness, a flashing warning light should be placed on drums used singly as a warning device. [illegible]

CW1-8 CHEVRON signs, CW1-6A ARROW signs or VP-1 Vertical Panels mounted above drums may be used as supplements to delineation.

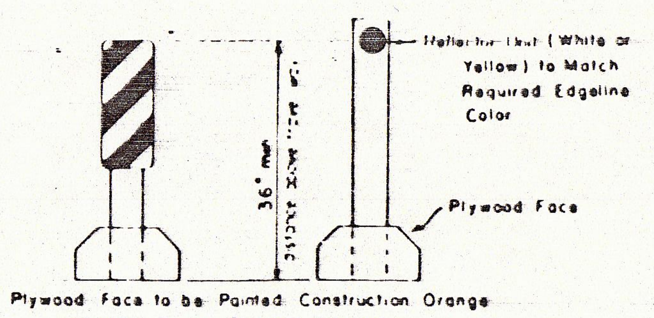


VERTICAL PANELS (VP)

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 the nighttime. In addition, vertical panels should be used at the edge of shoulder drop-offs and other areas such as lane transitions where positive day and night 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 should always slope downward toward the traveled way.

CHANNELIZING DEVICES

The Type or Types of Channelizing Devices used are to be as specified by the Engineer.



TYPICAL PORTABLE VERTICAL PANEL OR DELINEATOR

Other similar supports may be used when approved or directed by the Engineer

GENERAL NOTES

REFLECTORIZATION

The reflectorized white and reflectorized orange stripes for barricades, drums and vertical panels shall be constructed of retroreflective sheeting in conformance with project specifications and shall be maintained to meet the appearance, color, and reflectivity requirements of those specifications.

WARNING LIGHTS

Warning lights are portable lens directed, enclosed lights. The color of the light emitted shall be yellow. The lights should be mounted at a minimum height of 36 inches to the bottom of the lens.

Type A Low Intensity Flashing Warning Lights are commonly mounted on barricades, other channelization devices or advance warning signs and are intended to warn the driver that he is approaching a hazardous area. Their use shall be as specified elsewhere in the plans, on Sheets BC(1) and BC(2), or as directed by the Engineer.

Type B High Intensity Flashing Warning Lights are normally used at or approaching extremely hazardous site conditions within the construction area. They may be mounted on barricades, signs or other supports. As these lights are effective in daylight as well as dark, they are designed to operate 24 hours per day. Their use should be specified elsewhere in the plans or as directed by the Engineer. Flashing warning lights shall not be used in a series.

Type C Steady Burn Lights are intended to be used in a series for delineation to supplement other traffic control devices used to delineate the edge of the traveled way on detour curves, lane changes, lane closures, shoulder drop-offs and other similar conditions or hazards. The series of Steady Burn Lights should have a Type B High Intensity Flashing Warning Light at the beginning and end of the series to mark the hazard. Where Steady Burn Lights are to be used for delineation, the contractor may at his option, utilize delineators.

Contractors shall furnish a copy of a certification from the manufacturer of the lights that the warning lights meet the requirements of the ITE Standard For Flashing and Steady Burn Warning Lights as contained in the latest edition of the "Texas Manual on Uniform Traffic Control Devices for Streets and Highways".

DELINEATORS

Delineators are normally used to indicate roadway alignment where improved nighttime visibility is needed but other roadway features are sufficient for daytime alignment. They should generally be used on high fills and horizontal and vertical curves where only nighttime delineation is needed. Delineators, when required for temporary use to control traffic through construction areas, will be considered subsidiary to the item BARRICADES, SIGNS AND TRAFFIC HANDLING. Delineators shall meet the material requirements of the project specifications. When used, delineators on the right side of the roadway facing traffic shall be white. The color of delineators used along the left edge of divided streets and highways and one way roadways shall be yellow.

SPACING OF DELINEATORS

Spacing of Delineators on curves should be according to the Table below. Spacing of delineators on tangent sections should normally be between 100 and 200 feet with the closer spacing for lower speeds and greater spacing for higher speeds.

RADIUS OF CURVE (FEET)	50	150	200	250	300	400	500	600	700	800	900	1000
APPROX. SPACING ON CURVE (FEET)	20	30	35	40	50	55	65	70	75	80	85	90

STATE DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION

BARRICADE AND CONSTRUCTION STANDARDS

BARRICADE DETAILS
DELINEATORS & VERTICAL PANELS
DRUMS & CONES
REFLECTORIZATION
WARNING LIGHTS

BC(3)-82

ORIGINAL DRAWING DATE | REVISIONS | STATE DISTRICT | FEDERAL REGION | FEDERAL AID PROJECT | SHEET | COUNTY | CONTROL | SECTION | JOB | HIGHWAY

2-82

104

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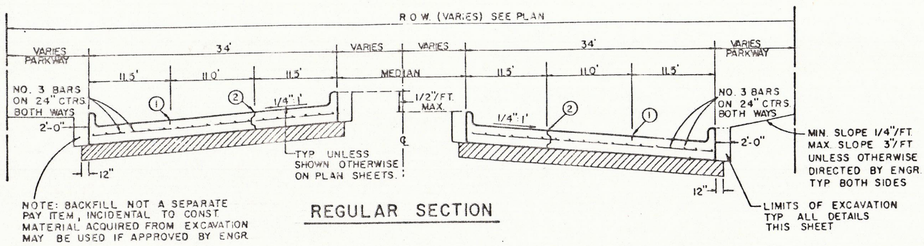
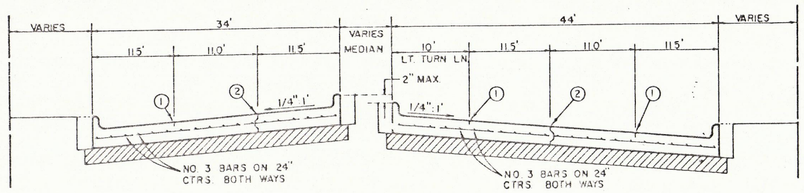


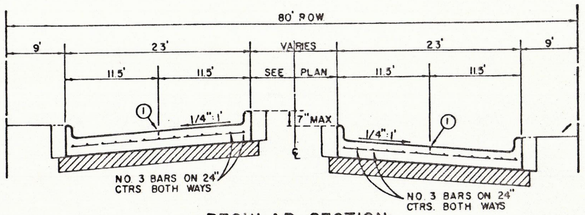
NOTE: BACKFILL, NOT A SEPARATE PAY ITEM, INCIDENTAL TO CONST. MATERIAL ACQUIRED FROM EXCAVATION MAY BE USED IF APPROVED BY ENGR.

REGULAR SECTION

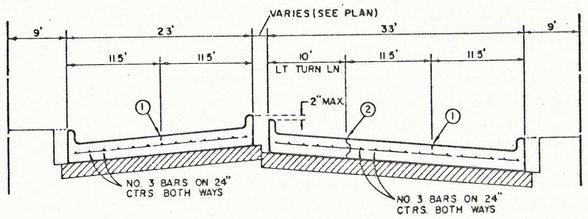


LEFT TURN SECTION

MAJOR ARTERIAL

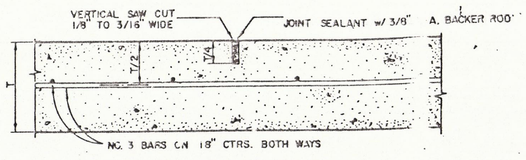


REGULAR SECTION

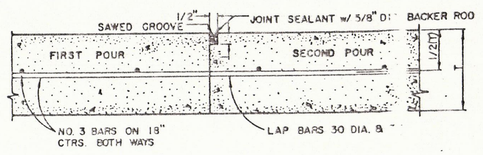


LEFT TURN SECTION

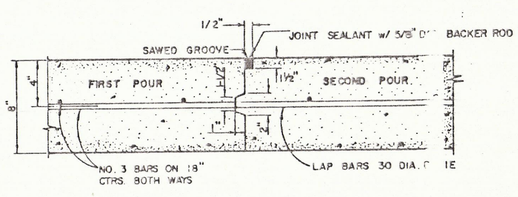
MINOR ARTERIAL



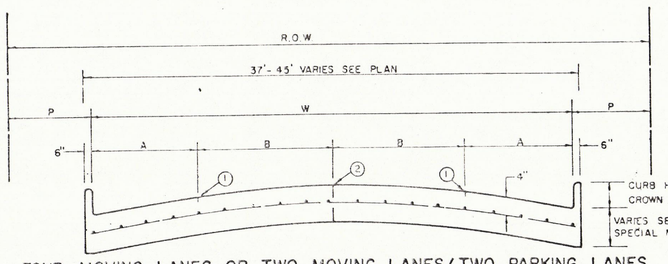
SAWED DUMMY JOINT



CONSTRUCTION JOINT FOR 6 INCH PAVEMENT



CONSTRUCTION JOINT FOR 8 INCH PAVEMENT

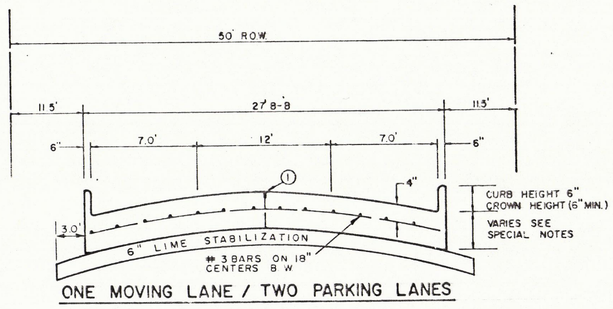


FOUR MOVING LANES OR TWO MOVING LANES/TWO PARKING LANES

STREET TYPE	STREET WIDTH (W)	A	B	ROW WIDTH	P
COLLECTOR	36'	8'	10'	60'	11.5'
COLLECTOR	40'	8' OR 10'	10' OR 12	60'	9.5'
COLLECTOR	44'	11'	11'	65'	10.0'

* FULL WIDTH PAVEMENT OF 36' WIDTH STREETS IS ALLOWED WHERE APPROVED BY THE ENGINEER

COLLECTOR STREET



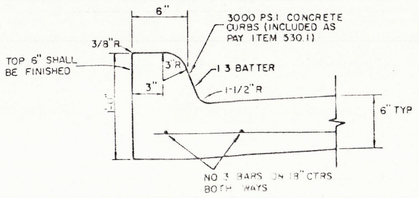
ONE MOVING LANE / TWO PARKING LANES

LOCAL STREET

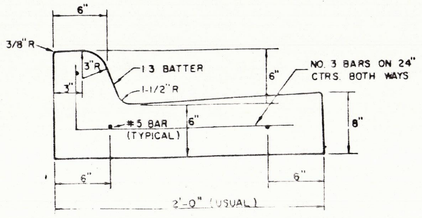
REINFORCED CONCRETE PAVEMENT

ALL REINFORCING BARS SHALL BE NO. 3 TRANSVERSE BARS TO BE SPACED ON 1'-6" CENTERS, LONGITUDINAL BARS TO BE SPACED ON 1'-6" EXCEPT WHERE NOTED.
UNDIVIDED STREETS - PROVIDE 4" DBL. - REF YELLOW ℄ BUTTON P-117-Y PATTERNS TO BE ESTABLISHED BY ENGINEER SEE DETAIL SHEET

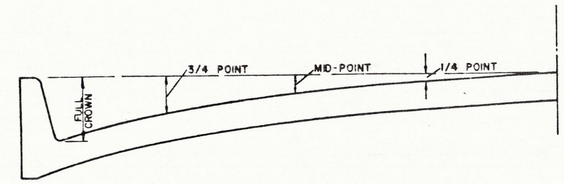
① SAWED LONGITUDINAL DUMMY JOINT
② CONSTRUCTION JOINT (FULL WIDTH PVMT IS ALLOWED WHERE APPROVED BY ENGINEER.
③ FINISH SHALL BE TRANSVERSE WITH TRAFFIC LANES AND SHALL BE STEEL TINED BROOM FINISH.



STANDARD CURB



SEPARATE CURB AND GUTTER



ROADWAY WIDTH (W)	TOTAL CROWN HEIGHT	3/4 POINT	MID-POINT	1/4 POINT
26'	6"	3 - 3/8"	1 - 1/2"	3/8"
36'	8"	3 - 3/8"	1 - 1/2"	3/8"
44'	8"	3 - 3/8"	1 - 1/2"	3/8"
48'	6"	3 - 3/8"	1 - 1/2"	3/8"

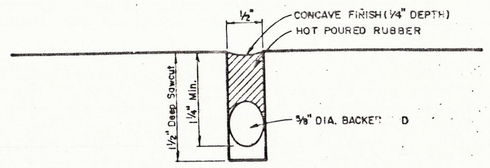
TABLE OF CROWN HEIGHTS AND ORDINATES FOR VARIOUS PARABOLIC SECTIONS

GENERAL NOTES

A. GENERAL
PAVEMENT THICKNESS FOR STREETS SHALL BE AS SPECIFIED BELOW IN SPECIAL NOTES.

B. STANDARD SPECIFICATIONS
REINFORCED CONCRETE PAVEMENTS
1. ALL CURBS SHALL BE PLACED INTEGRAL WITH PAVEMENT
2. CURBS SHALL MEET THE SAME COMPRESSIVE STRENGTH AS SPECIFIED FOR THE CONCRETE PAVEMENT.
3. DETAIL AND ARRANGEMENT OF JOINTS, ALL TYPES, SHALL BE AS SHOWN ON THE STANDARD CONSTRUCTION DETAILS, OR AS APPROVED BY ENGINEER.
4. BAR LAPS SHALL BE 30 DIAMETERS.

C. BAR CHAIRS OR AN APPROVED SUPPORTING DEVICE SHALL BE FURNISHED.



TYPICAL JOINT DETAIL

TOWN OF ADDISON, TEXAS
DEPARTMENT OF ENGINEERING

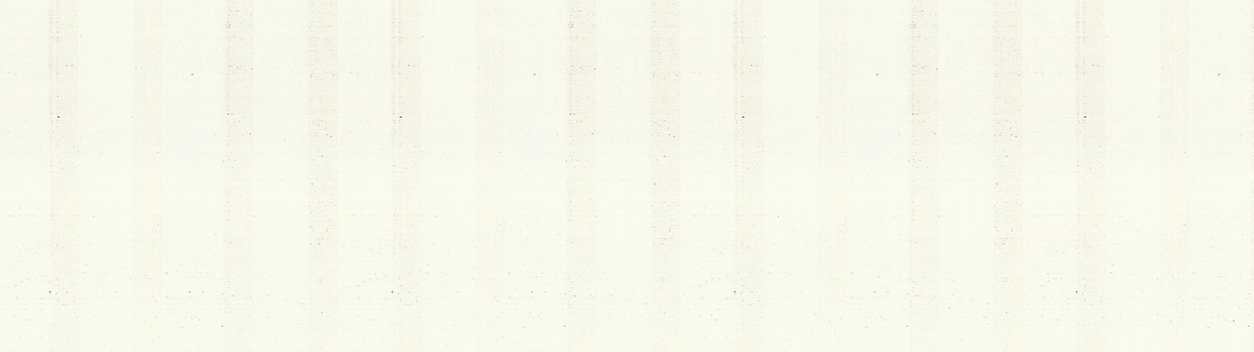
STANDARD CONSTRUCTION DETAILS
PAVING

STREET CROWNS & JOINTS

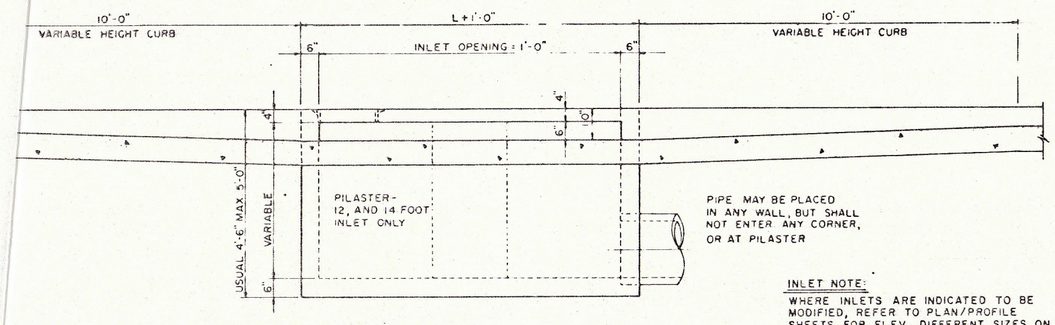
Designed -	Drawn -	Date - AUGUST, 1991	Job No. - 90025-5
Approved -	[illegible]	Scale -	Sheet D-1 Of

A

PLAN - RECESSED INLET



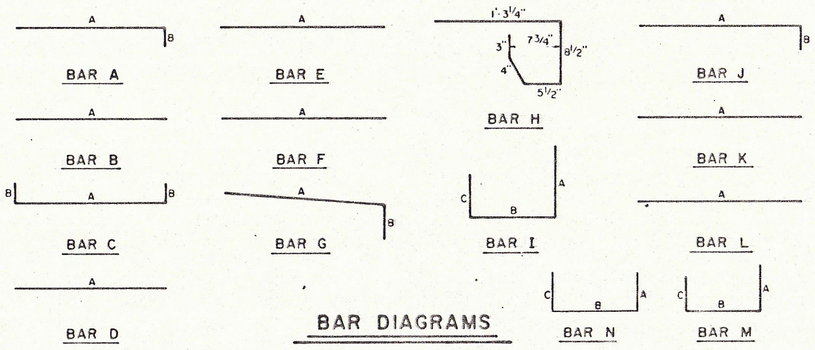
PLAN - STANDARD INLET



SECTION A-A-RECESSED AND STANDARD INLETS

4, 6, 8, 10, 12, AND 14 FOOT INLETS

INLET NOTE:
WHERE INLETS ARE INDICATED TO BE MODIFIED, REFER TO PLAN/PROFILE SHEETS FOR ELEV., DIFFERENT SIZES ON MODIFICATIONS. ALL OTHER ITEMS SHALL REMAIN AS SHOWN ON THIS STANDARD DETAIL SHEET.



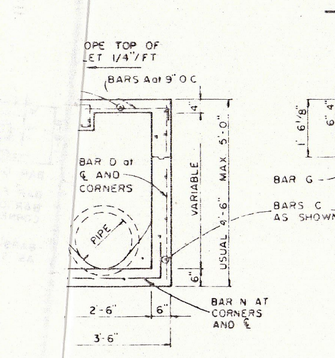
BAR DIAGRAMS

REINFORCING STEEL SCHEDULE

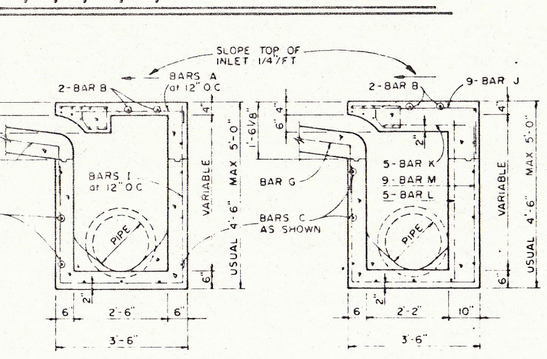
DIMENSIONS SHOWN ARE FOR MAXIMUM SIZE INLETS

INLET LENGTH	BAR TYPE	BAR DIA. (1/8 IN.)	NO. REQ'D	BAR DIMENSIONS A	B	C
4	A	3	6	3'-2"	0'-3"	–
	B	3	1	2'-10"	–	–
	C	4	13	4'-8"	0'-6"	–
	D	4	5	4'-8"	–	–
	F	4	1	3'-2"	–	–
	G	3	5	2'-0"	1'-3"	–
	H	3	4	*	*	*
	N	3	3	3'-2"	3'-2"	3'-2"
6	A	3	9	3'-2"	0'-3"	–
	B	3	1	4'-10"	–	–
	C	4	15	6'-8"	0'-6"	–
	D	4	5	4'-8"	–	–
	F	4	1	3'-2"	–	–
	G	3	5	2'-0"	1'-3"	–
	H	3	6	*	*	*
	N	3	3	3'-2"	3'-2"	3'-2"
8	A	3	12	3'-2"	0'-3"	–
	B	3	1	6'-10"	–	–
	C	4	15	8'-8"	0'-6"	–
	D	4	5	4'-8"	–	–
	F	4	1	3'-2"	–	–
	G	3	5	2'-0"	1'-3"	–
	H	3	8	*	*	*
	N	3	3	3'-2"	3'-2"	3'-2"
10	A	3	10	3'-2"	0'-3"	–
	B	3	2	8'-10"	–	–
	C	4	16	10'-8"	0'-6"	–
	D	4	4	4'-8"	–	–
	E	5	6	10'-8"	–	–
	G	3	5	2'-0"	1'-3"	–
	H	3	15	*	*	*
	I	4	8	4'-8"	3'-2"	3'-2"
	L	4	5	4'-3"		–
12	A	3	12	3'-2"	0'-3"	–
	B	3	2	10'-10"	–	–
	C	4	16	12'-8"	0'-6"	–
	D	4	4	4'-8"	–	–
	E	5	6	12'-8"	–	–
	G	3	5	2'-0"	1'-3"	–
	H	3	18	*	*	*
	I	4	10	4'-8"	3'-2"	3'-2"
	J	5	9	3'-2"	1'-3"	–
	K	4	5	2'-3"	–	–
	L	4	5	4'-3"	–	–
	M	5	9	4'-3"	3'-2"	3'-9"
14	A	3	14	3'-2"	0'-3"	–
	B	3	2	10'-10"	–	–
	C	4	16	14'-8"	0'-6"	–
	D	4	4	4'-8"	–	–
	E	5	6	14'-8"	–	–
	G	3	5	2'-0"	1'-3"	–
	H	3	21	*	*	*
	I	4	12	4'-8"	3'-2"	3'-2"
	J	5	9	3'-2"	1'-3"	–
	K	4	5	2'-3"	–	–
	L	4	5	4'-3"	–	–
	M	5	9	4'-3"	3'-2"	3'-9"

* SEE DIAGRAM FOR DIMENSIONS

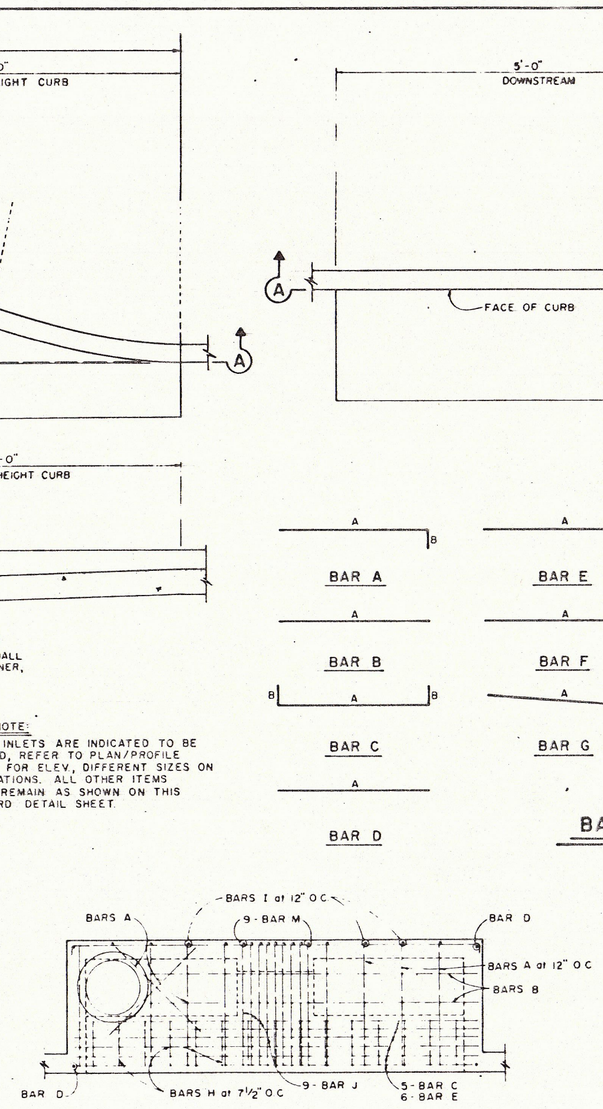


CTION B-B

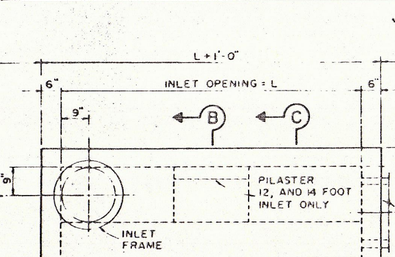


SECTION C-C

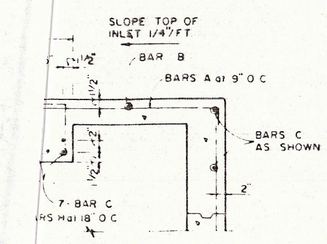
SECTION B-B



PLAN

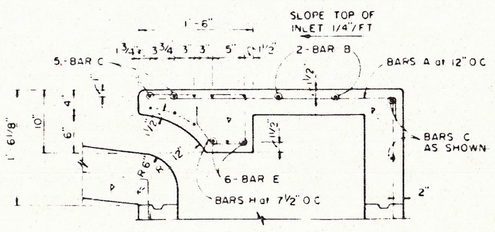


PLAN OF FRAME

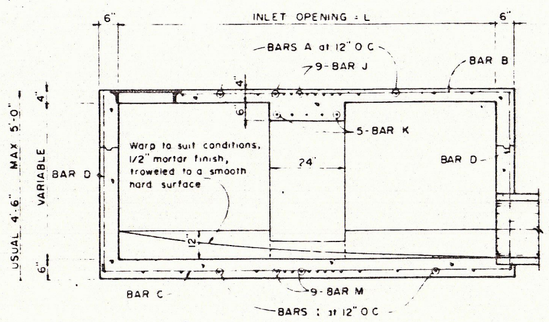


ECTION C-C

ND 8 FOOT INLETS

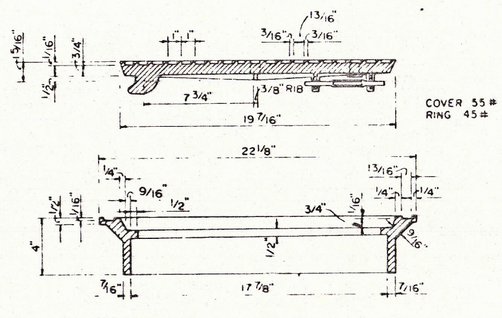


SECTION C-C



SECTION D-D
FOR 12' & 14' ONLY

10, 12, AND 14 FOOT INLETS



SECTION OF FRAME AND COVER

INLET FRAME AND COVER

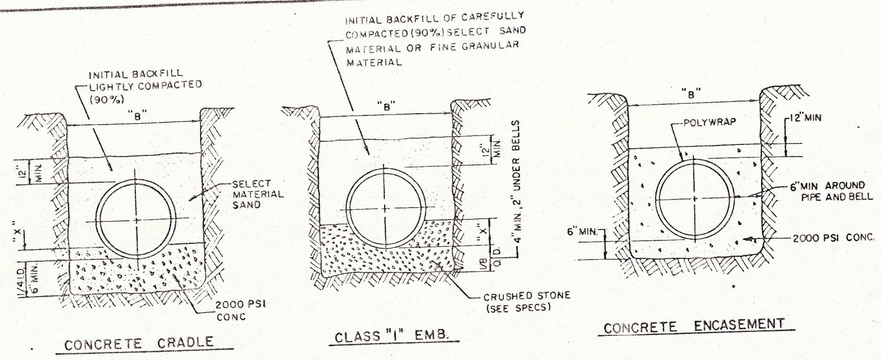
TOWN OF ADDISON, TEXAS
DEPARTMENT OF ENGINEERING

STANDARD CONSTRUCTION DETAILS
STORM DRAINAGE

CURB INLETS

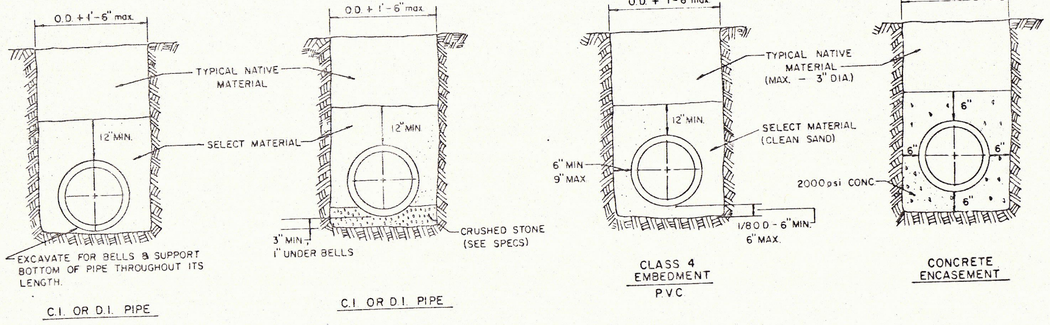
Designed -	Drawn -	Date - AUGUST, 1991	Job No. - 90025-3
Approved -	Checked -	Scale -	Sheet D-4 Of

G

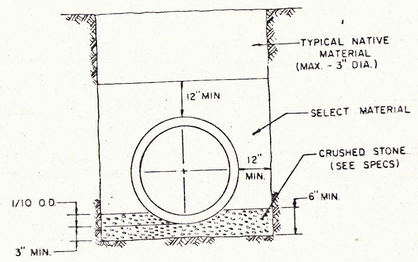


EMBEDMENT DETAILS FOR RCCP WATERLINE

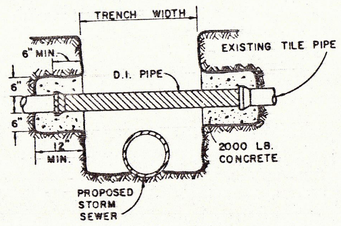
TABLE OF QUANTITIES OF MATERIALS IN CUBIC YARDS PER 100 LINEAR FEET						
INSIDE DIAMETER OF PIPE	APPROX. OUTSIDE DIAMETER OF PIPE	"X" IS A MINIMUM DEPTH	"B" TRENCH WIDTH FOR COMPUTATION OF QUANTITIES	CONCRETE FOR EMBEDMENT	CONCRETE FOR ENCASEMENT	CRUSHED STONE FOR CL."I" EMBEDMENT
REINFORCED CONCRETE CYLINDER PIPE						
14"	17.25"	2.53"	34"	6.91	16.07	5.16
16"	19.38"	2.84"	36"	7.30	17.76	5.64
18"	21.78"	3.19"	38"	8.11	19.52	6.16
24"	27.75"	4.06"	44"	9.97	2490	9.28



EMBEDMENT DETAILS FOR WATER MAIN

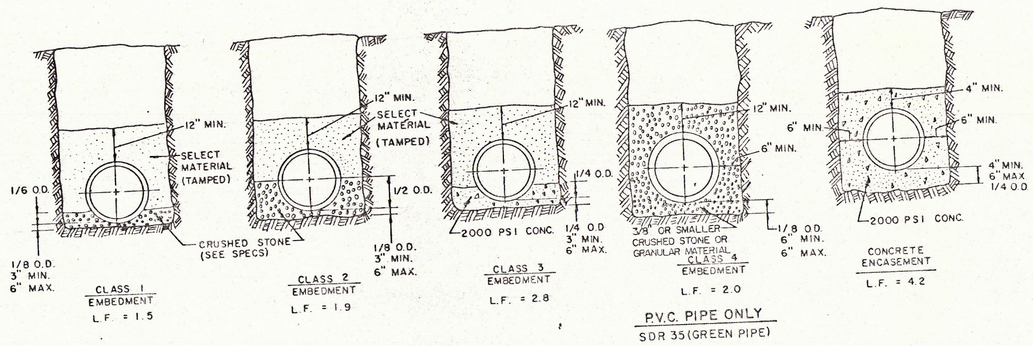


EMBEDMENT DETAIL FOR STORM SEWER



DETAIL OF UTILITY SUPPORT

TYPICAL NATIVE MATERIAL COMPACTED TO:
95% OPTIMUM MOISTURE 0 TO +3% UNDER PAVEMENT
95% OPTIMUM MOISTURE 0 TO +3% OUTSIDE CURB LINES
JETTING IS NOT ALLOWED
BACKFILL TO BE COMPACTED IN 6"± LIFTS
TYPICAL NATIVE MATERIAL (MAX. 3" DIA.)



P.V.C. PIPE ONLY
SDR 35 (GREEN PIPE)

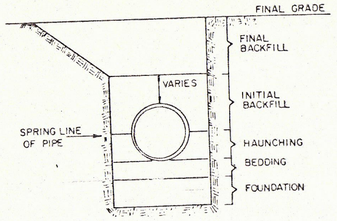
EMBEDMENT DETAILS FOR SANITARY SEWER

TABLE OF QUANTITIES OF 2000 PSI CONCRETE, GRAVEL OR CRUSHED STONE IN CUBIC YARDS PER 100 LINEAR FEET FOR EACH CLASS EMBEDMENT

TABLE OF QUANTITIES PER 100 LINEAR FEET REINFORCED CONCRETE PIPE							
SIZE OF PIPE IN INCHES I.D	O.D. OF PIPE IN INCHES	TRENCH WIDTH IN INCHES	TRENCH WIDTH IN FEET	CLASS 1 EMBEDMENT CRUSHED STONE	CLASS 2 EMBEDMENT CRUSHED STONE	CLASS 3 EMBEDMENT CONCRETE	CONCRETE ENCASEMENT
12	16.00	32	2.67	4.1	6.3	4.8	15.8
15	19.50	36	3.00	4.8	7.8	6.4	19.2
18	23.00	39	3.25	5.7	9.2	8.2	21.2
21	26.30	43	3.58	6.9	11.0	10.2	24.9
24	30.00	46	3.83	8.3	13.1	12.4	28.7
27	33.50	51	4.25	10.3	16.1	14.4	32.8
30	37.00	57	4.75	12.7	20.1	17.0	34.8
33	40.50	62	5.17	15.1	23.8	19.3	39.2
36	44.00	67	5.58	18.0	28.6	22.1	43.8

TABLE OF QUANTITIES PER 100 LINEAR FEET-PVC PIPE (IN CUBIC YARDS)					
SIZE OF PIPE IN INCHES	O.D. OF PIPE IN INCHES	TRENCH WIDTH IN INCHES	TRENCH WIDTH IN FEET	CLASS 4 EMBEDMENT CRUSHED STONE	CONCRETE ENCASEMENT
6	6.28	24	2.00	8.0	11.7
8	8.16	24	2.00	8.7	12.4
10	10.20	26	2.18	10.2	14.2
12	12.24	28	2.35	11.7	15.9
16	15.30	31	2.61	14.0	18.8
24		36	3.0		
30		42	3.5		

NOTE: ALL SANITARY SEWER LINES THIS PROJECT SHALL HAVE CLASS 4 EMBEDMENT UNLESS OTHERWIS NOTED.



EMBEDMENT ZONES

TOWN OF ADDISON, TEXAS
DEPARTMENT OF ENGINEERING

STANDARD CONSTRUCTION DETAILS

EMBEDMENT DETAILS

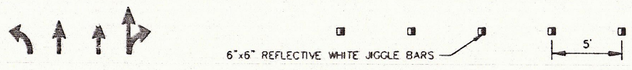
Designed -	Drawn -	Date - AUGUST, 1991	Job No. - 90125-5
Approved -	Checked -	Scale -	Sheet D-5 Of

H

SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY
1.	Mobilization	L.S.	1
2.	Remove Existing Concrete Curb and Curb/Gutter	L.F.	560
3.	Remove Existing Concrete Sidewalk and Retaining Wall	S.Y.	285
4.	Cement Treated Base (6")	S.Y.	790
5.	Remove Existing Concrete Driveway Pavement	S.Y.	135
6.	Reinforced Concrete Pavement (8"-3600 PSI)	S.Y.	710
7.	Reinforced Concrete Sidewalk (4"-3000 PSI)	S.F.	2450
8.	Barricading, Signing and Traffic Handling	L.S.	1
9.	Concrete Integral Curb (6"-3600 PSI)	L.F.	520
10.	Unclassified Street Excavation	C.Y.	670
11.	Sawed Breakout Groove	L.F.	615
12.	Remove Existing Curb Inlet	EA.	1
13.	14' Recessed Curb Inlet	EA.	1
14.	21" Reinforced Concrete Pipe (RCP) (w/Concrete Collar)	L.F.	7
15.	6"x6" Reflective Jiggle Bars	EA.	90
16.	Relocate Existing Signs	EA.	1
17.	Adjust Top of Existing Water Valves	EA.	5
18.	Relocate Existing Fire Hydrant	EA.	1
19.	Right Turn Traffic Movement Pavement Markings	EA.	2
20.	Concrete Sidewalk Barrier-Free Ramp	EA.	3
21.	Irrigation Removal, Replacement, and Relocation Work	L.S.	1
22.	Landscape Improvements Including Removal of Existing Trees and Shrubs	L.S.	1

PAVEMENT MARKING LEGEND



TRAFFIC MOVEMENT PAVEMENT MARKINGS; PLACED AT THE LOCATIONS AND STATIONS SHOWN ON PLAN

LEFT/RIGHT TURN LANE

NOTE:

1. ALL PAVEMENT MARKING ARROWS SHALL BE ALKYD THERMOPLASTIC.
2. ALL JIGGLE BARS SHALL BE CERAMIC.

CLARIFICATION OF PAY ITEMS

Item No. 2 - Remove existing concrete curb and curb/gutter:

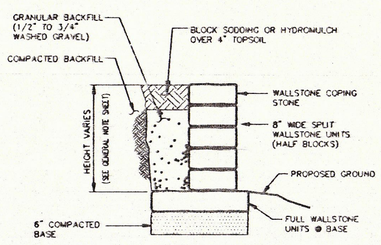
Removal of existing concrete gutter on Belt Line Road shall be subsidiary to concrete curb removal. Measurement of the work performed under this pay item shall be by the linear foot (L.F.) of curb removed.

Item No. 5 - Remove existing concrete sidewalk and retaining wall:

Removal of existing retaining wall shall be subsidiary to concrete sidewalk removal. Measurement of the work performed under this pay item shall be by the square yard (S.Y.) of sidewalk removed.

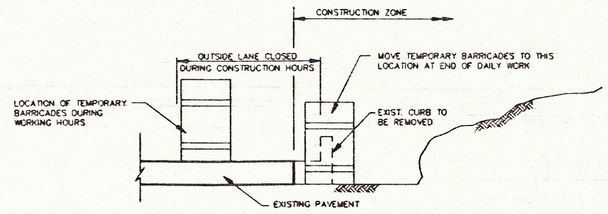
GENERAL NOTE:

Pay items provided are intended to be all-inclusive of the work required on this project. Work required by the plans or specifications but not provided with a specific pay item shall be considered incidental to other items of work.



TYPICAL RETAINING WALL SECTION
TO BE INSTALLED BY OTHERS
(NOT IN THIS CONTRACT)

N.T.S.



BARRICADING DETAIL

N.T.S.

GENERAL NOTES

1. All materials and workmanship shall conform to the Town of Addison Standards and Specifications and the North Central Texas Council of Government (NCTCOG) Standards and Specifications, except as noted. In the event of a conflict, the Town of Addison Standards and Specifications shall govern.
2. All locations of underground utility lines are approximate. Contractor shall notify all applicable utility companies 48 hours prior to construction so that underground lines can be marked.

Southwestern Bell Telephone	(214) 234-7085
Sharar Cable (TCI Cablevision of Dallas)	(214) 840-2588
Lone Star Gas	(214) 487-3885
TU Electric	(214) 325-8913
Dallas Water Utilities	(214) 670-5700

3. The Contractor shall be responsible for public safety during construction and will provide the necessary traffic barricades and warning signage to protect the construction site. Construction barricades shall be in conformance with the Texas Manual on Uniform Traffic Control Devices. In areas where long-term nighttime barricades are used, barricades should include high intensity reflective sheeting.
4. All concrete shall have a minimum compressive strength of 3,600 psi at 28 days (minimum 6 sacks of cement per cubic yard) unless otherwise noted. All reinforcing steel and dowel bars in pavement shall be supported and maintained at the correct clearances by the use of bar chairs or other approved support.
5. The Contractor is responsible for keeping streets, parking areas, sidewalks, etc., adjacent to the project free of mud and debris from construction.
6. Contractor shall assume responsibility for protection of public utilities in the construction of this project. All manholes, valve boxes, fire hydrants, etc., must be adjusted to proper line and grade by the Contractor prior to and/or after placing of permanent paving. The Contractor shall also be responsible for support of existing utility poles, street signs, etc., when excavating in the vicinity of such poles.
7. The Town of Addison Public Works Department is to be notified 48 hours (2 working days) prior to any construction of paving and utilities in rights-of-way, easements and alleys.
8. All disturbed earth areas are to be finish graded to original or proposed contours, fertilized and hydromulched with bermuda seed according to NCTCOG specifications immediately after construction. Backfill to be select material free of rock and other debris. Contractor shall thoroughly water the hydromulch immediately after placement. The Contractor shall also be responsible for continued maintenance and watering of the newly hydromulched areas until the entire project is completed and accepted by the Town of Addison. Watering of the Bermuda hydromulch shall be done in a manner and quantity as directed by Town of Addison Inspection Personnel. (No separate pay item.)
9. Arrangements for construction water shall be made through the Town of Addison. Contractor shall obtain a meter from the Town of Addison (deposit required), and pay for all water used for construction.
10. Contractor shall maintain adequate sanitary facilities for use by workers throughout construction.
11. Contractor shall dispose of all excess excavation and cleared material off site, including broken concrete, rock, trees and vegetation. Materials hauled off site may not be disposed of within the Town of Addison without written permission from the affected property owner.
12. No trees shall be cut except as noted on the plans.
13. Where street name signs will be relocated by the Contractor, the Contractor will be required to give 3 days notice in advance of the time a street sign must be relocated to clear construction operations.
14. The Contractor shall obtain all necessary permits at least 48 hours prior to start of any construction.
15. Contractor shall conform to the Occupational Safety and Health Administration's (OSHA) standards for trench safety that are in effect during the period of construction.
16. Contractor shall construct barrier-free ramps at all intersections and adjacent to all driveways.
17. The Contractor shall retain a licensed irrigator to remove, relocate or replace all existing sprinkler systems affected by construction. Existing irrigation facilities are not shown on these plans. Field verification of location and type of existing sprinkler systems is required prior to bidding. All irrigation work shall be directed by the Town of Addison.
18. Construction activities shall be limited to the following hours:

MONDAY - FRIDAY	9 A.M. - 5 P.M.
SATURDAY, SUNDAY	7 A.M. - 7 P.M.

Y. ADJACENT PROPERTIES: The Contractor shall meet the following requirements of the adjacent property owners:

a. The Contractor shall construct the pavement adjacent to the Quorum I Shopping Center prior to constructing the pavement adjacent to the Mobil Station.

b. The Contractor shall coordinate with Mobil regarding closure of their driveway so that Mobil has sufficient time to adjust its delivery schedules. It is anticipated that Mobil will fill their underground storage tanks early on a Monday morning; after which, the Contractor shall complete removal and replacement of the driveway prior to the end of work on the following Thursday. The Contractor shall furnish a concrete mix for the driveway that achieves a compressive strength of 3,600 psi in 48 hours or less. No other closure of the Mobil driveway shall be allowed other than during the sawcut of the driveway pavement.

c. No storage of materials or employee parking shall be allowed in the Quorum I Shopping center parking lot without prior permission from the Trammell Crow Company.

d. The Contractor shall restore the landscaping and irrigation system adjacent to the Mobil tract to a condition that equals or exceeds their existing conditions.

e. The Contractor shall relocate the Town of Addison irrigation controller that services the median in Belt Line Road. The remainder of the existing irrigation system that services the landscaping adjacent to the Quorum I Shopping center will be adjusted by others in order to maintain water during construction to landscaping and trees that are to be preserved. The disconnected portions of the existing irrigation system shall be removed by the Contractor. All new landscaping and irrigation systems adjacent to the Quorum I Shopping Center, including the retaining wall, shall be installed by others after the adjacent sidewalk has been constructed by the Contractor.

NO.	REVISION	BY	DATE

DESIGNED BY: M. RASTANDEH
DRAWN BY: EH&A
CHECKED BY: B. GRANTHAM
SCALE: AS NOTED
DATE: JANUARY, 1995
FILE: \ADDISON\TOLLWAY\QUANTITY

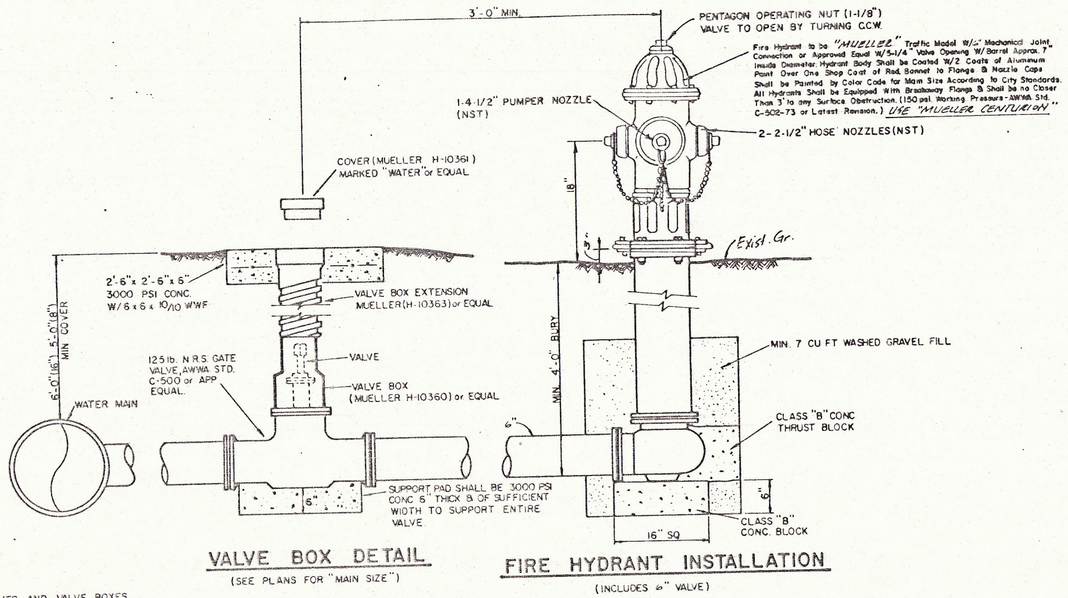
Espey, Huston & Associates, Inc.
Engineering & Environmental Consultants
13800 Montfort Drive, Suite 230
Dallas, Texas 75240 (214) 387-0771

STATE OF TEXAS
BRUCE R. TRANTHAM
92659
REGISTERED PROFESSIONAL ENGINEER
12-7-94

QUANTITIES AND GENERAL NOTES

PAVING AND DRAINAGE IMPROVEMENTS
BELT LINE ROAD AT DALLAS NORTH TOLLWAY
for
THE TOWN OF ADDISON

SHEET NO. 2
OF 13 SHEETS
JOB NO. 15224



VALVE BOX DETAIL

(SEE PLANS FOR "MAIN SIZE")

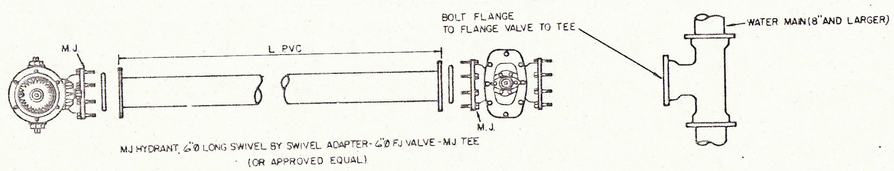
FIRE HYDRANT INSTALLATION

(INCLUDES 6" VALVE)

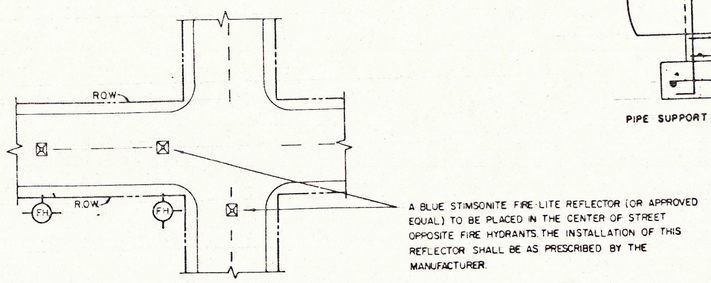
No Scale

GATE VALVES AND VALVE BOXES.

1. GATE VALVES SHALL BE IRON BODY, BRONZE OR BRASS MOUNTED, NON-RISING STEM, PARALLEL SEAT TYPE VALVES SHALL BE OF EQUAL OR GREATER PRESSURE CLASS THAN THE PIPING IN WHICH THEY ARE TO BE INSTALLED.
2. VALVE BOXES SHALL BE CAST IRON AND SHALL BE OF SUFFICIENT LENGTH AND DIAMETER TO OPERATE ALL VALVES BURIED IN THE GROUND COVERS SHALL BE MARKED "WATER." THE BOXES SHALL REST ON THE VALVE AND BE ADJUSTED SO THAT THE COVER MAY BE SET FLUSH WITH THE FINISHED GRADE.

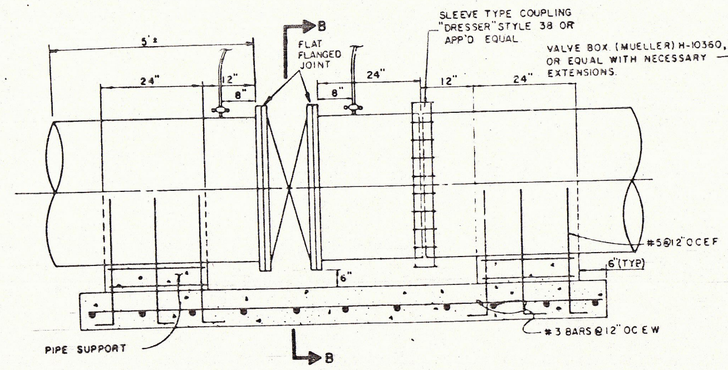


TYPICAL FIRE HYDRANT INSTALLATION

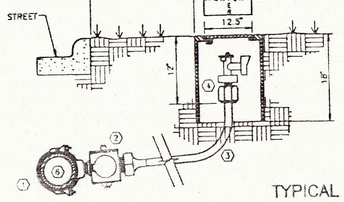


A BLUE STIMSONITE FIRE-LITE REFLECTOR (OR APPROVED EQUAL) TO BE PLACED IN THE CENTER OF STREET OPPOSITE FIRE HYDRANTS. THE INSTALLATION OF THIS REFLECTOR SHALL BE AS PRESCRIBED BY THE MANUFACTURER.

TYPICAL FIRE HYDRANT REFLECTOR INSTALLATION

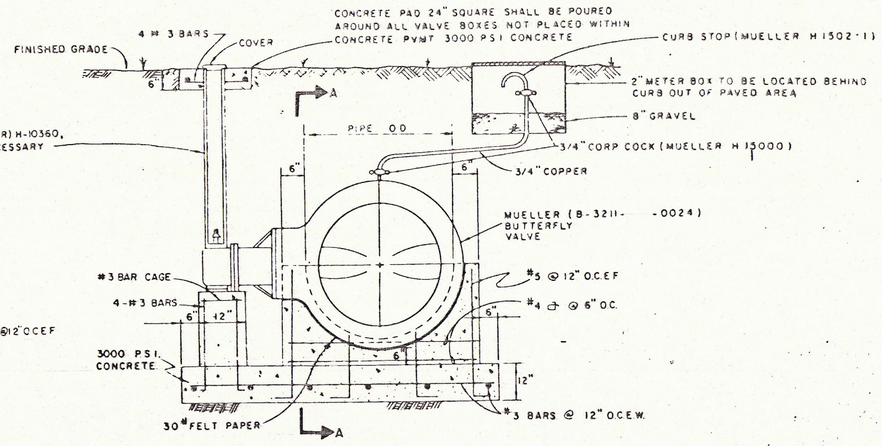


SECTION A-A



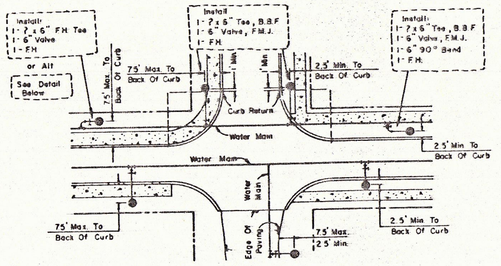
TYPICAL WATER SERVICE DETAIL

BUTTERFLY VALVE DETAIL

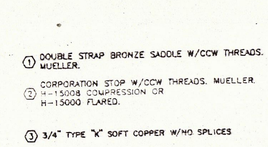


SECTION B-B

①	DOUBLE STRAP BRONZE SADDLE W/CCW THREADS. MUELLER.
②	CORPORATION STOP W/CCW THREADS. MUELLER. H-15008 COMPRESSION OR H-15000 FLARED.
③	3/4" TYPE "K" SOFT COPPER W/NO SPLICES
④	ANGLE STOP W/LOCK WING. MUELLER H-14258 COMPRESSION OR H-14253 FLARED.
⑤	WATER METER BOX (RECTANGULAR SHAPE ONLY) CONCRETE OR METAL SHELL CONSTRUCTION.
⑥	WATER MAIN PVC AWWA C900 SDR 14/18 INTEGRAL WALL BELL



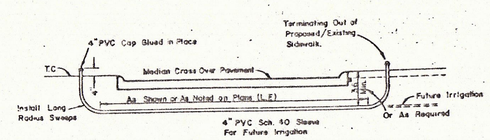
ELEVATION VIEW OF FIRE HYDRANT



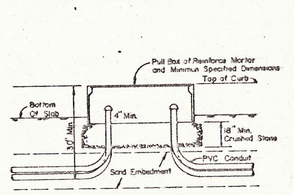
When No Curb Or Gutter Exists, Set F.H. On Front Slope Of Ditch With ℄ Of Nozzle Equal To The Crown Of The Road.

GENERAL NOTES

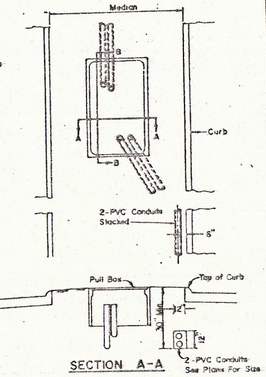
1. ℄ Of F.H. Barrel Shall Be Not Less Than 6.0' Or More Than 9.0' From Back Of Curb Or Edge Of Pavement.
2. Do Not Set F.H. In An Existing Or Proposed Sidewalk, Unless Otherwise Noted.
3. All F.H. Tees Shall Be M.J. With Anchoring On The Branch With M.J. Mat. & Valve.
4. Set F.H. On The Lot Line Extended When Possible.
5. On Private Contracts, The Developer's Engineer Will Stake Location & Grade.
6. Never Place F.H. Where Fire Truck Could Not Park Beside It.



PVC SLEEVE FOR FUTURE IRRIGATION



SECTION B-B



SECTION A-A

LOCATION OF CONDUIT PLACEMENT IN MEDIANS
Street Directions
North/South - West Side
East/West - South Side
9 Galvanized Pull Wire or Approved Equal.

PULL BOX DIMENSIONS (MINIMUM INSIDE)
12" Depth
14" Width
24" Length
2-3 "K.O." Knockouts, One On Each End

PULL BOX & CONDUIT DETAIL

TOWN OF ADDISON, TEXAS
DEPARTMENT OF ENGINEERING

STANDARD CONSTRUCTION DETAILS
WATER

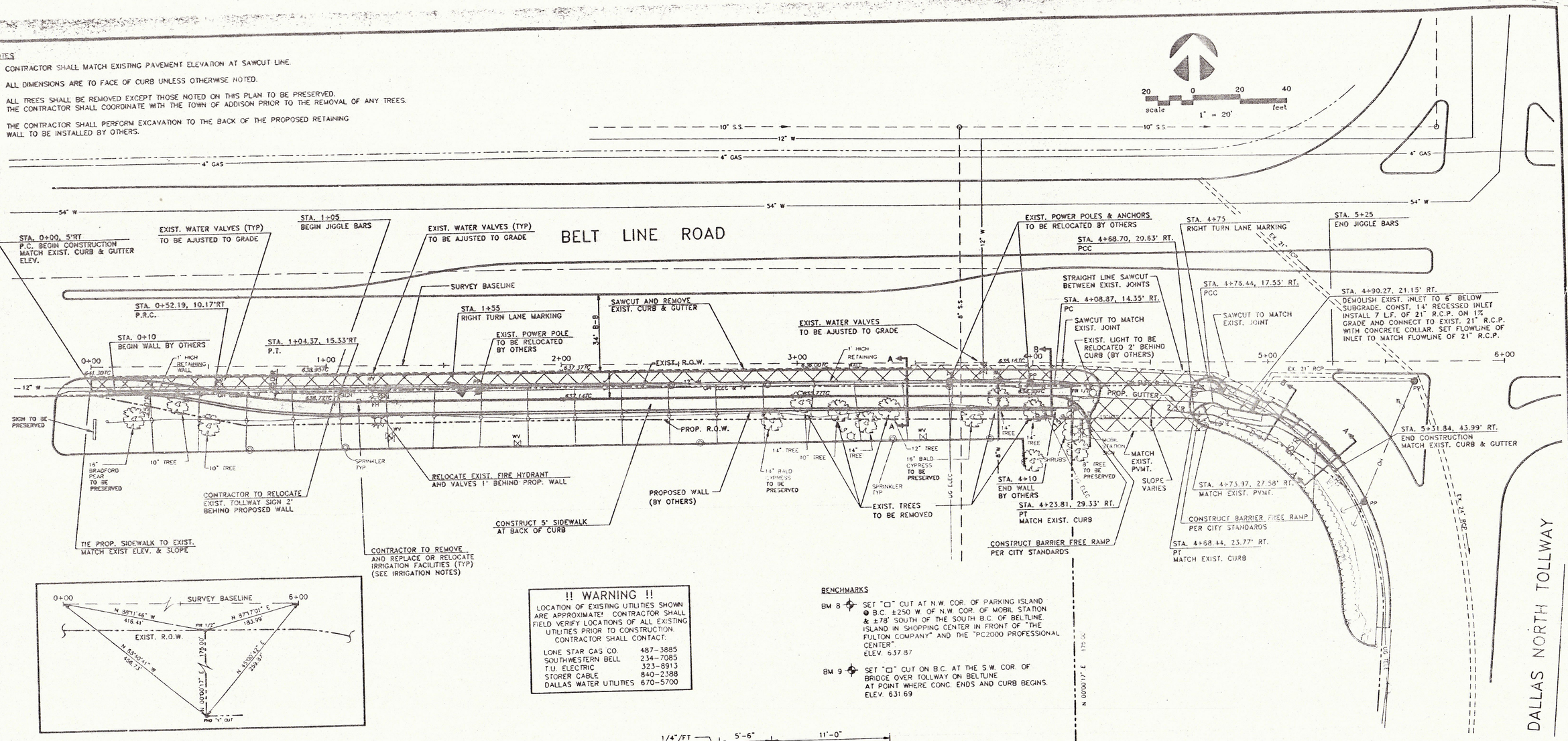
FIRE HYDRANTS, PULL BOXES AND VALVES

Designed -	Drawn -	Date - AUGUST, 1991	Job No. - 90025.5
Approved -	Checked -	Scale -	Sheet D-8 Of

C

NOTES

1. CONTRACTOR SHALL MATCH EXISTING PAVEMENT ELEVATION AT SAWCUT LINE.
2. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
3. ALL TREES SHALL BE REMOVED EXCEPT THOSE NOTED ON THIS PLAN TO BE PRESERVED. THE CONTRACTOR SHALL COORDINATE WITH THE TOWN OF ADDISON PRIOR TO THE REMOVAL OF ANY TREES.
4. THE CONTRACTOR SHALL PERFORM EXCAVATION TO THE BACK OF THE PROPOSED RETAINING WALL TO BE INSTALLED BY OTHERS.



!! WARNING !!

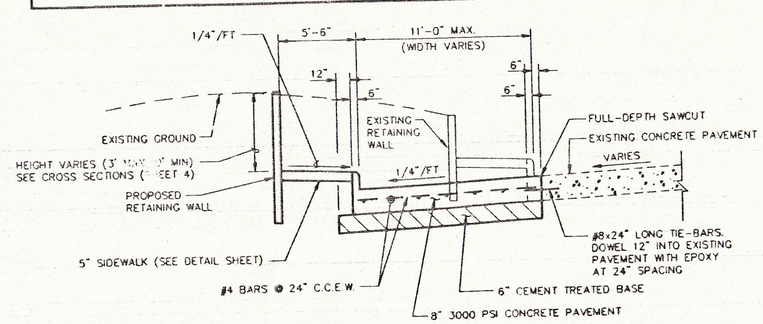
LOCATION OF EXISTING UTILITIES SHOWN ARE APPROXIMATE! CONTRACTOR SHALL FIELD VERIFY LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL CONTACT:

LONE STAR GAS CO.	487-3885
SOUTHWESTERN BELL	234-7085
T.U. ELECTRIC	323-8913
STORER CABLE	840-2588
DALLAS WATER UTILITIES	670-5700

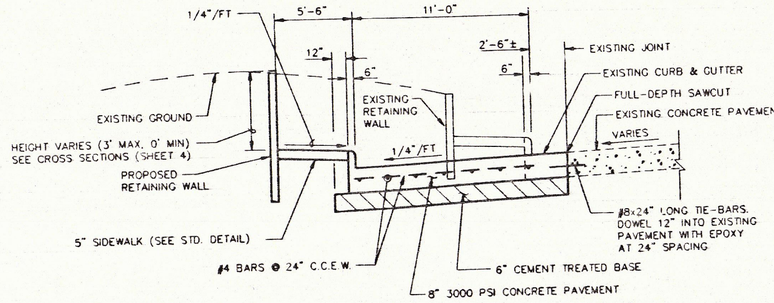
BENCHMARKS

BM 8 ⊕ SET "□" CUT AT N.W. COR. OF PARKING ISLAND @ B.C. ±250 W. OF N.W. COR. OF MOBIL STATION & ±78' SOUTH OF THE SOUTH B.C. OF BELTLINE ISLAND IN SHOPPING CENTER IN FRONT OF "THE FULTON COMPANY" AND THE "PC2000 PROFESSIONAL CENTER". ELEV. 637.87

BM 9 ⊕ SET "□" CUT ON B.C. AT THE S.W. COR. OF BRIDGE OVER TOLLWAY ON BELTLINE AT POINT WHERE CONC. ENDS AND CURB BEGINS. ELEV. 631.69



PAVEMENT WIDENING SECTION
A-A
NOT TO SCALE



PAVEMENT WIDENING SECTION
B-B
NOT TO SCALE

LEGEND

- REMOVE EXISTING PAVEMENT AND SIDEWALK
- CONSTRUCT NEW PAVEMENT
- CONSTRUCT NEW SIDEWALK
- EXISTING CURB
- PROPOSED CURB
- +636.23 PROPOSED ELEVATION
- +636.23 EXISTING ELEVATION
- 12"W WATER LINE (SIZE)
- 8"SS SANITARY SEWER LINE AND MANHOLE (SIZE)
- SWBT SOUTHWESTERN BELL TELEPHONE CABLE
- 6"G LONE STAR GAS LINE
- OH OVERHEAD POWER LINE AND POLE
- CURB LINE
- ELEC TU ELECTRIC UNDERGROUND CABLE

NO.	REVISION	BY	DATE

DESIGNED BY: P. HELMS
DRAWN BY: EH&A
CHECKED BY: M. RASTANDEH
SCALE: 1" = 20'
DATE: JANUARY, 1995
FILE: ...DDISON\TOLLWAY\PAVING

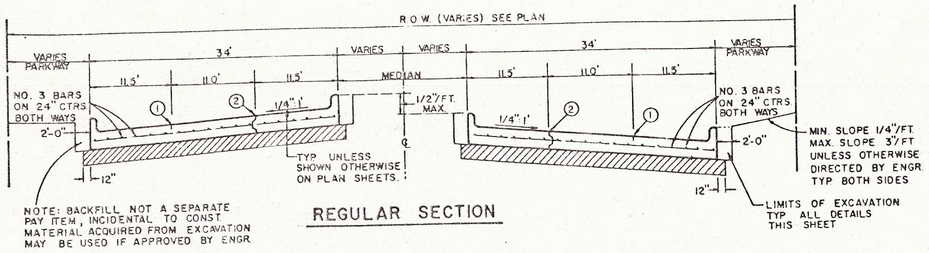
Espey, Huston & Associates, Inc.
Engineering & Environmental Consultants
13800 Montfort Drive, Suite 230
Dallas, Texas 75240 (214) 387-0771

STATE OF TEXAS · BRUCE R. GRANTHAM · 62959 · REGISTERED PROFESSIONAL ENGINEER

PAVING PLAN

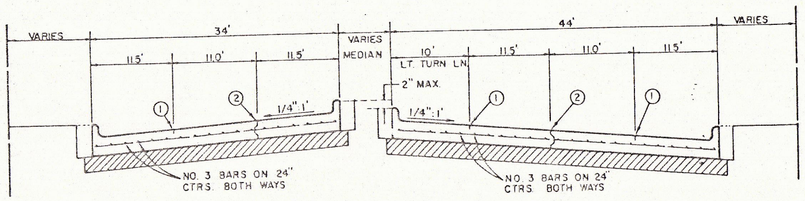
PAVING AND DRAINAGE IMPROVEMENTS
BELT LINE ROAD AT DALLAS NORTH TOLLWAY
for
THE TOWN OF ADDISON

SHEET NO. 3
OF 13 SHEETS
JOB NO. 15224



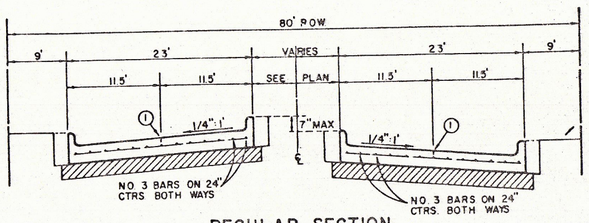
NOTE: BACKFILL NOT A SEPARATE PAY ITEM, INCIDENTAL TO CONST. MATERIAL ACQUIRED FROM EXCAVATION MAY BE USED IF APPROVED BY ENGR.

REGULAR SECTION

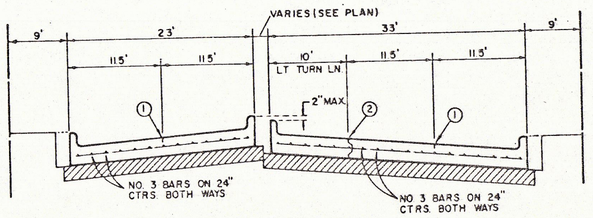


LEFT TURN SECTION

MAJOR ARTERIAL

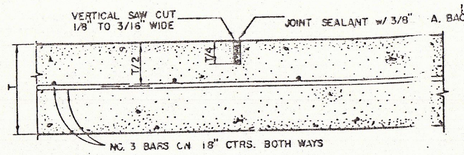


REGULAR SECTION

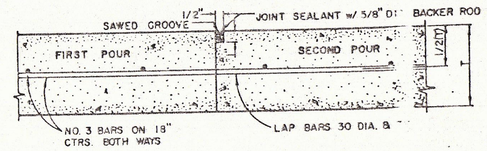


LEFT TURN SECTION

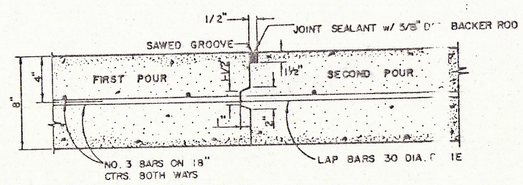
MINOR ARTERIAL



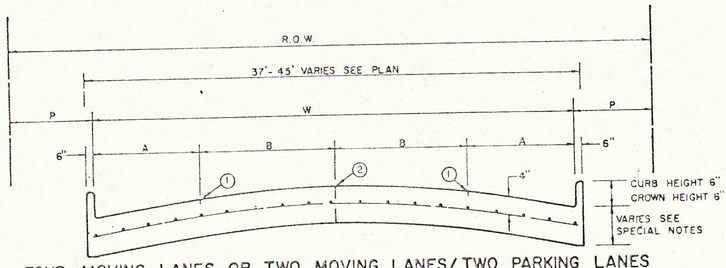
SAWED DUMMY JOINT



CONSTRUCTION JOINT FOR 6 INCH PAVEMENT



CONSTRUCTION JOINT FOR 8 INCH PAVEMENT

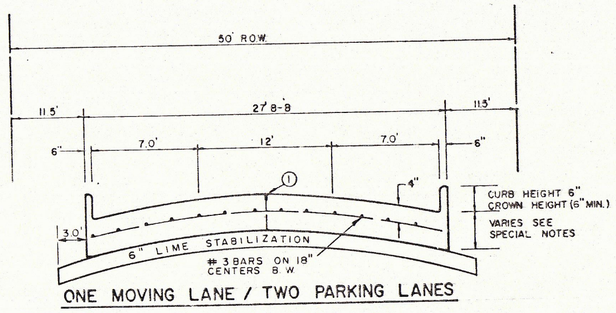


FOUR MOVING LANES OR TWO MOVING LANES/TWO PARKING LANES

STREET TYPE	STREET WIDTH (W)	A	B	ROW WIDTH	P
COLLECTOR	36'	8'	10'	60'	11.5'
COLLECTOR	40'	8' OR 10'	10' OR 12	60'	9.5'
COLLECTOR	44'	11'	11'	65'	10.0'

* FULL WIDTH PAVEMENT OF 36' WIDTH STREETS IS ALLOWED WHERE APPROVED BY THE ENGINEER

COLLECTOR STREET



ONE MOVING LANE / TWO PARKING LANES

LOCAL STREET

REINFORCED CONCRETE PAVEMENT

ALL REINFORCING BARS SHALL BE NO.3 TRANSVERSE BARS TO BE SPACED ON 1'-6" CENTERS, LONGITUDINAL BARS TO BE SPACED ON 1'-6" EXCEPT WHERE NOTED.
UNDIVIDED STREETS - PROVIDE 4" DBL. - REF YELLOW & BUTTON P-117-Y PATTERNS TO BE ESTABLISHED BY ENGINEER SEE DETAIL SHEET

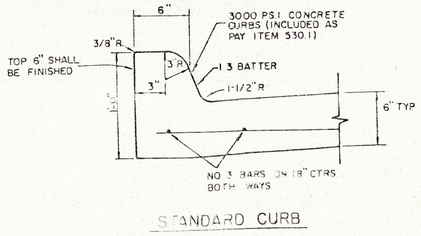
① SAWED LONGITUDINAL DUMMY JOINT.
② CONSTRUCTION JOINT (FULL WIDTH PVMT IS ALLOWED WHERE APPROVED BY ENGINEER.
③ FINISH SHALL BE TRANSVERSE WITH TRAFFIC LANES AND SHALL BE STEEL TINED BROOM FINISH.

GENERAL NOTES

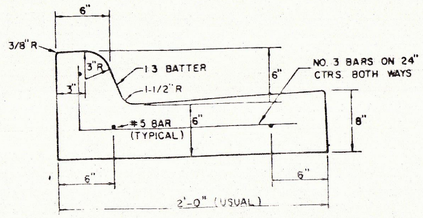
A. GENERAL
PAVEMENT THICKNESS FOR STREETS SHALL BE AS SPECIFIED BELOW IN SPECIAL NOTES.

B. STANDARD SPECIFICATIONS
REINFORCED CONCRETE PAVEMENTS
1. ALL CURBS SHALL BE PLACED INTEGRAL WITH PAVEMENT
2. CURBS SHALL MEET THE SAME COMPRESSIVE STRENGTH AS SPECIFIED FOR THE CONCRETE PAVEMENT.
3. DETAIL AND ARRANGEMENT OF JOINTS, ALL TYPES, SHALL BE AS SHOWN ON THE STANDARD CONSTRUCTION DETAILS, OR AS APPROVED BY ENGINEER.
4. BAR LAPS SHALL BE 30 DIAMETERS.

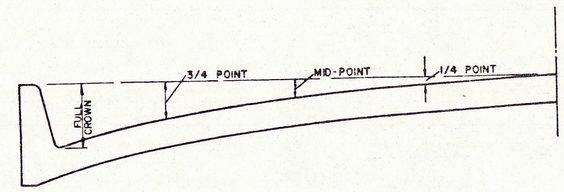
C. BAR CHAIRS OR AN APPROVED SUPPORTING DEVICE SHALL BE FURNISHED.



STANDARD CURB

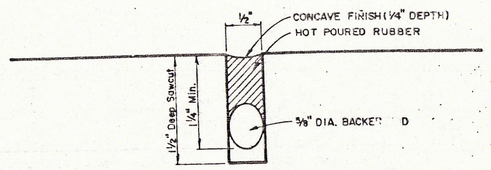


SEPARATE CURB AND GUTTER



ROADWAY WIDTH (W)	TOTAL CROWN HEIGHT	3/4 POINT	MID-POINT	1/4 POINT
26'	6"	3 - 3/8"	1 - 1/2"	3/8"
36'	8"	3 - 3/8"	1 - 1/2"	3/8"
44'	8"	3 - 3/8"	1 - 1/2"	3/8"
48'	6"	3 - 3/8"	1 - 1/2"	3/8"

TABLE OF CROWN HEIGHTS AND ORDINATES FOR VARIOUS PARABOLIC SECTIONS



TYPICAL JOINT DETAIL

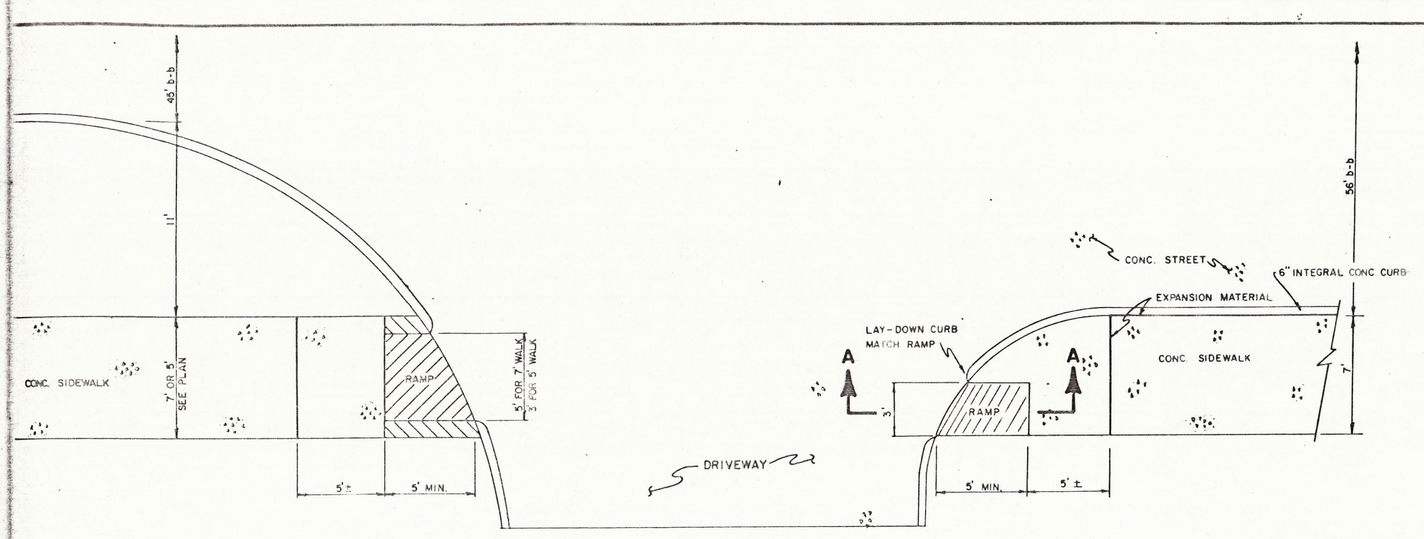
TOWN OF ADDISON, TEXAS
DEPARTMENT OF ENGINEERING

STANDARD CONSTRUCTION DETAILS
PAVING

STREET CROWNS & JOINTS

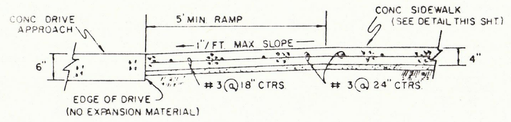
Designed -	Drawn -	Date - AUGUST, 1991	Job No. - 90025-5
Approved -	Checked -	Scale -	Sheet D-1 Of

A

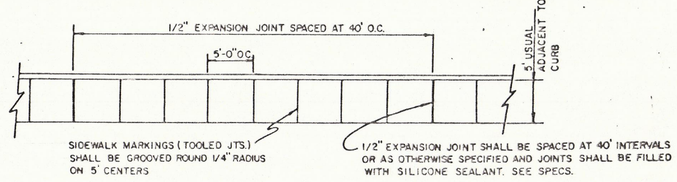


PLAN

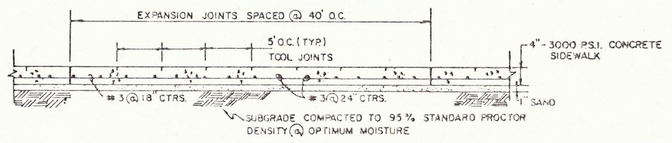
NOTE
MODIFY RAMP TO FIT DIFFERENT RADIUS



SECTION A-A

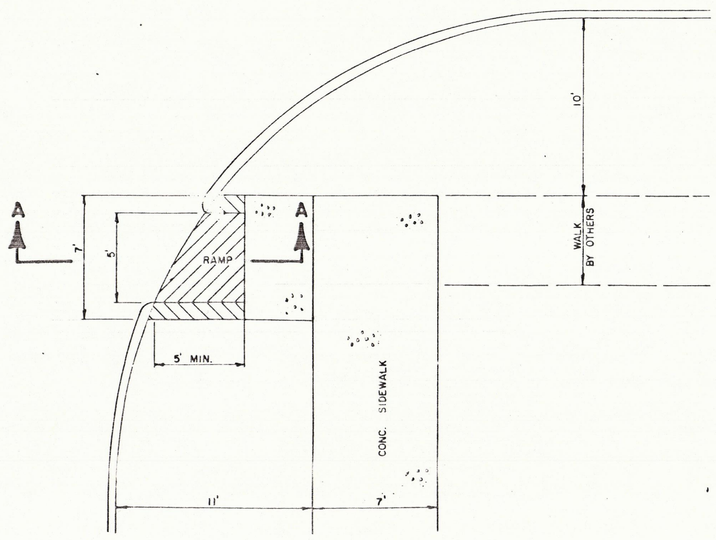


PLAN

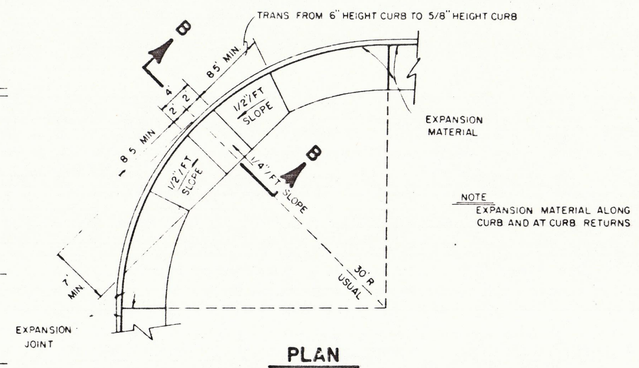


SIDE ELEVATION

BARRIER FREE RAMP DETAIL WITH WALK ADJACENT TO CURB

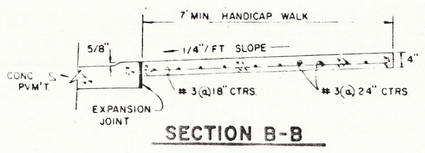


BARRIER FREE RAMP DETAIL WITH WALK SEPARATE FROM CURB



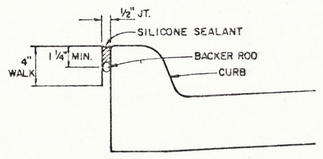
NOTE
EXPANSION MATERIAL ALONG CURB AND AT CURB RETURNS

PLAN

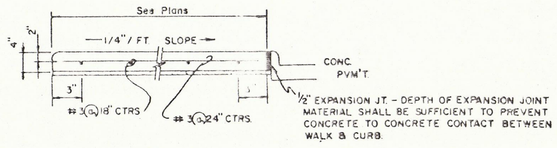


SECTION B-B

HANDICAP ROLL-DOWN CURB DETAIL



EXPANSION JOINT DETAIL



SECTION

CONCRETE SIDEWALK DETAIL

GENERAL NOTES

1. Reinforced concrete sidewalk shall be 5 or 7 feet wide, a minimum of four (4) inches thick and shall be 3000 psi at 28 days (5 sack mix). Unless noted otherwise.
2. Chamfer all exposed edges of concrete (1/4) inch.
3. All bar dimensions are given as center to center of bars and are located as shown.
4. All reinforcing steel shall be No. 3 on 18 inch centers logitudinally, 24 inch centers transversely and shall conform to the requirements of ASTM A-615, Grade 60.
5. 1" thick min. fine, washed sand cushion shall be free from organic materials or clays and shall be used for grade adjustment.
6. Subgrade shall be compacted to a density not less than 95% at optimum moisture.
7. Tooled joints (contraction joints) shall be on five (5) foot centers and shall be round one-fourth (1/4) inch radius.
8. A one-half (1/2) inch expansion joint shall be placed every eight (8) tooled joints, and where works abut old work, or where new work is constructed adjacent to other concrete, a one-half inch expansion joint shall be used where sidewalk is adjacent to curb, the expansion joint shall be made of pre-molded bituminous expansion joint filler or redwood with silicone sealant. See Specs.
9. Sidewalks shall be finished by lightly brooming surface transversely to direction of main traffic or where adjacent sidewalks differ from this standard, new sidewalks shall conform to adjacent sidewalk (e.g. exposed aggregate).
10. Cross slope walk one-fourth (1/4) inch per foot towards curb or as shown on the drawings to provide drainage.

NO.	REVISION	BY	DATE

TOWN OF ADDISON, TEXAS
DEPARTMENT OF ENGINEERING

STANDARD CONSTRUCTION DETAILS
PAVING

SIDEWALKS & RAMPS

APPROVED _____

DATE AUGUST, 1991 | SHEET D-1

90025-5
B

CONSTRUCTION SIGN NOTES

1. ALL SIGNS, SIGN COLOR, SIGN LETTERING AND SIGN REFLECTORIZATION SHALL CONFORM WITH THE TEXAS MANUAL ON TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS. THE CONTRACTOR SHALL MAINTAIN EACH SIGN IN A CLEAN AND GOOD CONDITION.

2. CONSTRUCTION SIGNS SHALL BE MADE FROM WOOD OR METAL. THE DESIGNATION OF METAL AND WOOD AS PRIMARY MATERIALS FOR SIGNS SHALL NOT BE INTERPRETED TO EXCLUDE OTHER SUITABLE RIGID MATERIALS NOW OR HEREAFTER AVAILABLE.

3. SIGNS SHALL BE REMOVED UPON COMPLETION OF THE WORK. INDIVIDUAL WARNING SIGNS SHALL BE REMOVED, TURNED AWAY FROM THE VIEW OF TRAFFIC, OR COVERED WHENEVER THE SPECIFIC DANGER OF WHICH THE PARTICULAR SIGN WARNS HAS CEASED TO EXIST, EITHER PERMANENTLY OR TEMPORARILY. THE SIGN MUST BE PROMPTLY REPLACED, TURNED INTO VIEW, OR UNCOVERED WHEN THE SITUATION AGAIN BECOMES A POTENTIAL DANGER.

4. SIGNS ERECTED ON PORTABLE SUPPORTS FOR USE ON CONSTRUCTION PROJECTS NORMALLY MEAN SIGNS WHICH ARE USED DURING THE DAY TO WARN OR GUIDE TRAFFIC THROUGH AND OR AROUND THE ACTUAL CONSTRUCTION AREA, BUT AT THE END OF THE WORKDAY SUCH SIGNS ARE EITHER REMOVED OR TURNED AWAY FROM THE VIEW OF TRAFFIC. PORTABLE SUPPORTS SHALL BE AS SHOWN OR AS APPROVED BY THE ENGINEER. THE BOTTOM OF THE SIGN SHALL BE A MINIMUM OF ONE (1) FOOT ABOVE THE PAVEMENT EDGE. SIGNS REQUIRED FOR NIGHTTIME USAGE SHOULD NOT NORMALLY BE MOUNTED ON PORTABLE SUPPORTS EXCEPT WHEN APPROVED BY THE ENGINEER.

5. SIGNS ERECTED ON FIXED SUPPORTS FOR USE ON CONSTRUCTION PROJECTS NORMALLY MEAN SIGNS THAT ARE TO REMAIN IN PLACE FOR BOTH DAY AND NIGHT USAGE TO REGULATE, WARN AND GUIDE TRAFFIC IN ADVANCE OF AND WITHIN THE LIMITS OF THE PROJECT INCLUDING THE CROSSROAD APPROACHES. HOWEVER, UNDER CERTAIN CONDITIONS, SUCH AS WHERE A SIGN MAY BE REQUIRED FOR A FEW DAYS' DURATION AND THEN IS NO LONGER NEEDED, OR WHERE A SIGN IS MOVED FROM LOCATION TO LOCATION EVERY FEW DAYS OR WHERE IT IS NOT PRACTICAL OR DESIRABLE TO PROVIDE A FIXED MOUNTING, SUCH SIGNS MAY BE ERECTED ON A TEMPORARY TYPE OF SUPPORT. TEMPORARY SUPPORTS SHALL BE AS SHOWN OR AS APPROVED BY THE ENGINEER. SIGNS ERECTED ON TEMPORARY SUPPORTS SHOULD BE AT A MINIMUM HEIGHT OF 3 FEET. SIGNS ERECTED ON FIXED SUPPORTS SHOULD BE AT A MINIMUM OF SEVEN (7) FEET. REGARDLESS OF THE TYPE OF SUPPORT USED, REGULATORY

SIGNS SHOULD NOT BE ERECTED AT HEIGHT LESS THAN 7-FOOT MINIMUM SPECIFIED ABOVE UNLESS A LOWER HEIGHT IS APPROVED BY THE ENGINEER. POSTS FOR FIXED SUPPORTS SHOULD BE SET IN THE GROUND WITHOUT CONCRETE FOOTINGS.

6. WHERE PORTABLE OR TEMPORARY SUPPORTS REQUIRE THE USE OF WEIGHTS TO KEEP A SIGN OR BARRICADE FROM TURNING OVER, THE USE OF SOME TYPE OF SANDBAG IS RECOMMENDED. THE USE OF PIECES OF CONCRETE, ROCKS, IRON, STEEL OR OTHER SOLID OBJECTS WILL NOT BE PERMITTED.

CONSTRUCTION PAVEMENT MARKINGS

1. WHEN REQUIRED ELSEWHERE IN THE PLANS, THE CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING PAVEMENT MARKINGS ON ALL ROADWAYS THAT ARE OPEN TO TRAFFIC WITHIN THE LIMITS OF THE PROJECT. ON PROJECTS INVOLVING ROADWAY SURFACING WHICH WILL REQUIRE PAVEMENT MARKING FOR CONTROL OF TRAFFIC DURING CONSTRUCTION, THE MARKINGS MAY INCLUDE BOTH STANDARD AND ABBREVIATED MARKINGS AS DEFINED BELOW:

   A. STANDARD PAVEMENT MARKINGS -- STANDARD MARKINGS PLACED IN CONFORMANCE WITH THE REQUIREMENTS OF THE TEXAS MUTCD. SUCH MARKINGS SHOULD BE PLACED ON ALL ROADWAYS OPEN TO TRAFFIC DURING CONSTRUCTION, INCLUDING NEW PAVEMENT, RESURFACING, DETOURS OR OTHER ROADWAYS WHERE CONSTRUCTION ACTIVITIES MAY HAVE COVERED OR OBLITERATED EXISTING MARKINGS. STANDARD MARKINGS SHOULD BE PLACED AS SOON AS POSSIBLE AND PRACTICAL. WHEN IT IS NOT PRACTICAL OR POSSIBLE TO PLACE STANDARD MARKINGS AT THE END OF EACH DAY'S WORK, ABBREVIATED MARKINGS MAY BE UTILIZED FOR SHORT PERIODS UNTIL STANDARD MARKINGS CAN BE PLACED.

   B. ABBREVIATED PAVEMENT MARKINGS -- ABBREVIATED PAVEMENT MARKINGS ARE SHORTER IN LENGTH THAN STANDARD MARKINGS. ABBREVIATED PAVEMENT MARKINGS MAY BE USED TO DELINEATE LANE CONTINUITY ONLY UNTIL SUCH TIME AS STANDARD MARKINGS CAN BE PLACED. THEY ARE NOT INTENDED TO SUBSTITUTE FOR STANDARD MARKINGS FOR PERIODS GREATER THAN TWO (2) WEEKS. TO SEPARATE TRAFFIC FLOWS IN OPPOSING DIRECTIONS, THE PAVEMENT MARKINGS SHALL BE YELLOW. WHITE PAVEMENT MARKINGS SHALL BE USED TO DELINEATE THE SEPARATION OF TRAFFIC FLOWS IN THE SAME DIRECTION.

   C. PAVEMENT MARKINGS, MATERIALS -- TEMPORARY PAVEMENT MARKING MAY BE ACCOMPLISHED BY USE OF STANDARD TRAFFIC PAVEMENT MARKING PAINT OR BY PAVEMENT MARKING TAPE (SCOTCHLANE OR STAMARK BRAND OR AS APPROVED BY THE ENGINEER). TEMPORARY PAVEMENT MARKINGS SHALL BE REMOVED IMMEDIATELY WHEN NO LONGER APPLICABLE.

2. WHEN ABBREVIATED PAVEMENT MARKINGS ARE USED, A DO NOT PASS SIGN SHALL BE USED TO MARK THE BEGINNING OF THE SECTION WHERE PASSING IS TO BE PROHIBITED AND A PASS WITH CARE SIGN SHALL BE USED TO MARK THE BEGINNING OF A SECTION WHERE PASSING IS PERMITTED.

REMOVAL OF PAVEMENT MARKINGS

1. REMOVAL OF PAVEMENT MARKINGS -- INCLUDES CENTERLINE, BARRIER LINES, LANE LINES, EDGE LINES, AND RAISED PAVEMENT MARKINGS.

2. IMMEDIATELY UPON OPENING A DETOUR TO TRAFFIC, ANY PAVEMENT MARKINGS ON THE EXISTING ORIGINAL ROADWAY IN THE DETOUR TRANSITION AREA 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. IN ADDITION, WHEN A DETOUR IS TO BE DISCONTINUED, ANY PAVEMENT MARKINGS USED TO TRANSITION TRAFFIC INTO THE DETOUR WHICH MAY CREATE CONFUSION OR DIRECT A MOTORIST INTO THE DISCONTINUED DETOUR SHALL LIKEWISE BE REMOVED OR OBLITERATED. THE ABOVE SHALL NOT APPLY TO DETOURS OF A SHORT TIME DURATION OF A FEW HOURS WHERE FLAGMEN OR SUFFICIENT CHANNELIZING DEVICES ARE USED TO OUTLINE THE DETOUR ROUTE AND THE DETOUR IS NOT TO BE MAINTAINED OVERNIGHT.

3. THE REMOVAL OF PAVEMENT MARKINGS SHALL BE AN INTEGRAL PART OF ESTABLISHING THE DETOUR. DETOURS SHALL BE PLANNED AND SCHEDULED WELL ENOUGH IN ADVANCE TO ALLOW ADEQUATE TIME TO COMPLETE ALL PHASES OF THE OPERATION PRIOR TO DARKNESS. IF INCLEMENT WEATHER OR DARKNESS BECOMES A FACTOR, IT WILL BE THE CONTRACTORS DECISION TO CONTINUE WITH THE DETOUR OPERATION OR RETAIN THE EXISTING TRAVELWAY OPEN TO TRAFFIC WHEN ANY OR ALL OF THE REQUIREMENTS OF THE DETOUR CANNOT BE ACCOMPLISHED.

4. 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. SUBJECT TO THE APPROVAL OF THE ENGINEER, ANY METHOD THAT PROVES TO BE SUCCESSFUL ON A PARTICULAR TYPE PAVEMENT MAY BE USED. OVERPAINTING OF THE MARKING WILL NOT BE PERMITTED. REMOVAL OF RAISED PAVEMENT MARKINGS SHALL BE AS DIRECTED BY THE ENGINEER.

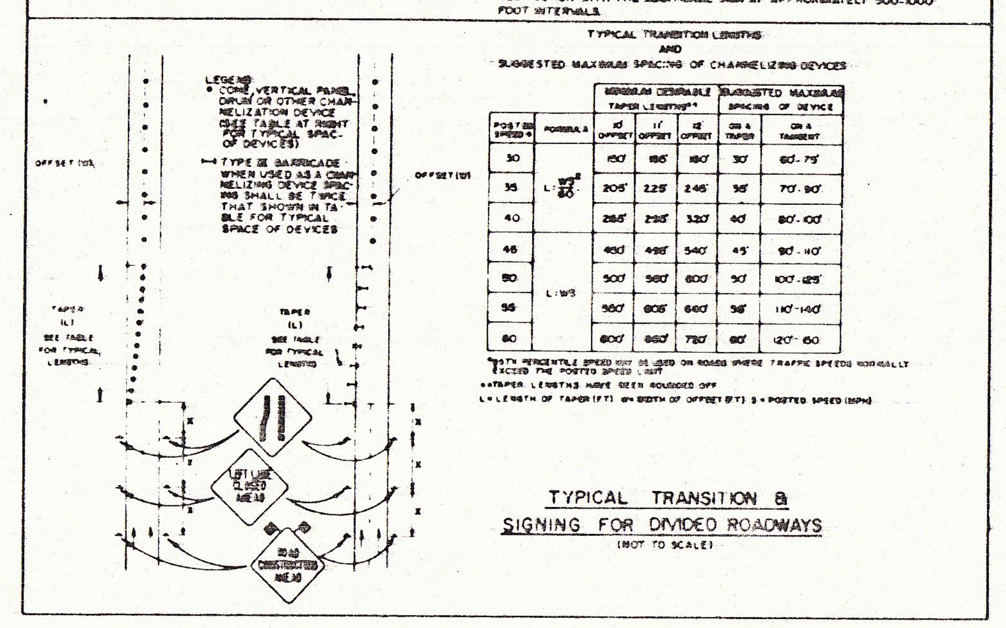
5. WHERE MECHANICAL MEANS OF MARKING REMOVAL HAVE BEEN EMPLOYED TO COMPLETELY REMOVE THE MARKING AND ITS REFLECTIVITY, PAINT OF A COLOR MATCHING THE PAVEMENT SURFACE OR USED CRANKCASE OIL MAY BE EMPLOYED IF NECESSARY AS A MEANS OF COVERING CONTRASTING PAVEMENT TEXTURE. NIGHTTIME INSPECTIONS ARE NEEDED TO VERIFY THE CONTINUED EFFECTIVENESS OF THE CHANGE.

6. PAVEMENT MARKINGS TO BE REMOVED SHALL BE AS SHOWN IN THE PLANS OR AS DIRECTED BY THE ENGINEER. REMOVAL OF PAVEMENT MARKINGS WILL BE CONSIDERED SUBSIDIARY TO THE ITEM BARRICADES, SIGNS AND TRAFFIC HANDLING.

MINIMUM CONSTRUCTION WARNING SIGN SPACING

POSTED SPEED OR 85% SPEED	30	35	40	45	50	55*
X MINIMUM DISTANCE (FT)	80	120	160	240	320	500

* FOR ROADS WITH A 55 MPH POSTED SPEED LIMIT, ADVANCE WARNING SIGNS SHOULD BE PLACED APPROXIMATELY 1,500 FEET IN ADVANCE OF THE CONDITION TO WHICH THEY ARE CALLING ATTENTION. WHERE A SERIES OF ADVANCE WARNING SIGNS ARE USED, THE WARNING SIGN NEAREST THE WORK SITE SHOULD BE PLACED APPROXIMATELY 500 FEET FROM THE POINT OF RESTRICTION WITH THE ADDITIONAL SIGN AT APPROXIMATELY 500-1000 FOOT INTERVALS.



TYPICAL TRANSITION LENGTHS AND SUGGESTED MAXIMUM SPACING OF CHANNELIZING DEVICES

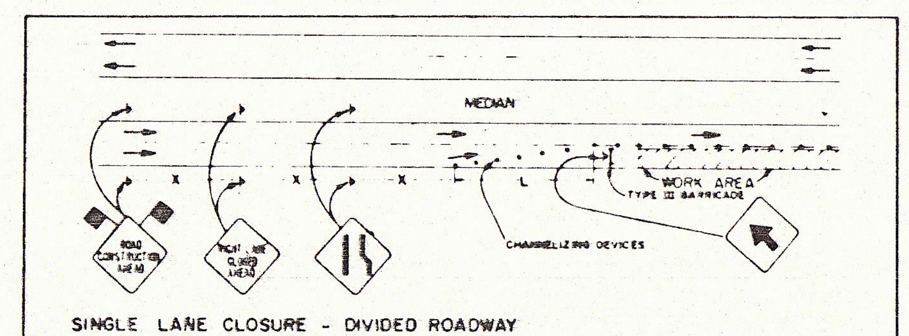
POSTED SPEED *	FORMULA	MINIMUM DESIRABLE TAPER LENGTHS** 10' OFFSET	11' OFFSET	12' OFFSET	SUGGESTED MAXIMUM SPACING OF DEVICE ON A TAPER	ON A TANGENT
30	$L = \frac{WS^2}{60}$	150'	165'	180'	30'	60'-75'
35		205'	225'	245'	35'	70'-90'
40		265'	295'	320'	40'	80'-100'
45	L = WS	450'	495'	540'	45'	90'-110'
50		500'	550'	600'	50'	100'-125'
55		550'	605'	660'	55'	110'-140'
60		600'	660'	720'	60'	120'-150'

* 85TH PERCENTILE SPEED MAY BE USED ON ROADS WHERE TRAFFIC SPEEDS NORMALLY EXCEED THE POSTED SPEED LIMIT

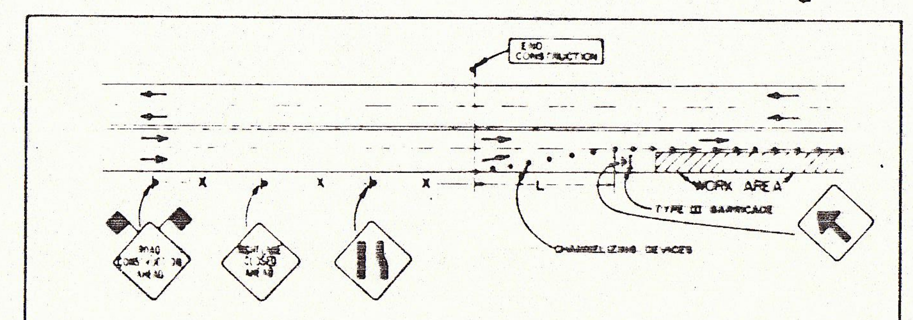
** TAPER LENGTHS HAVE BEEN ROUNDED OFF

L = LENGTH OF TAPER (FT) W = WIDTH OF OFFSET (FT) S = POSTED SPEED (MPH)

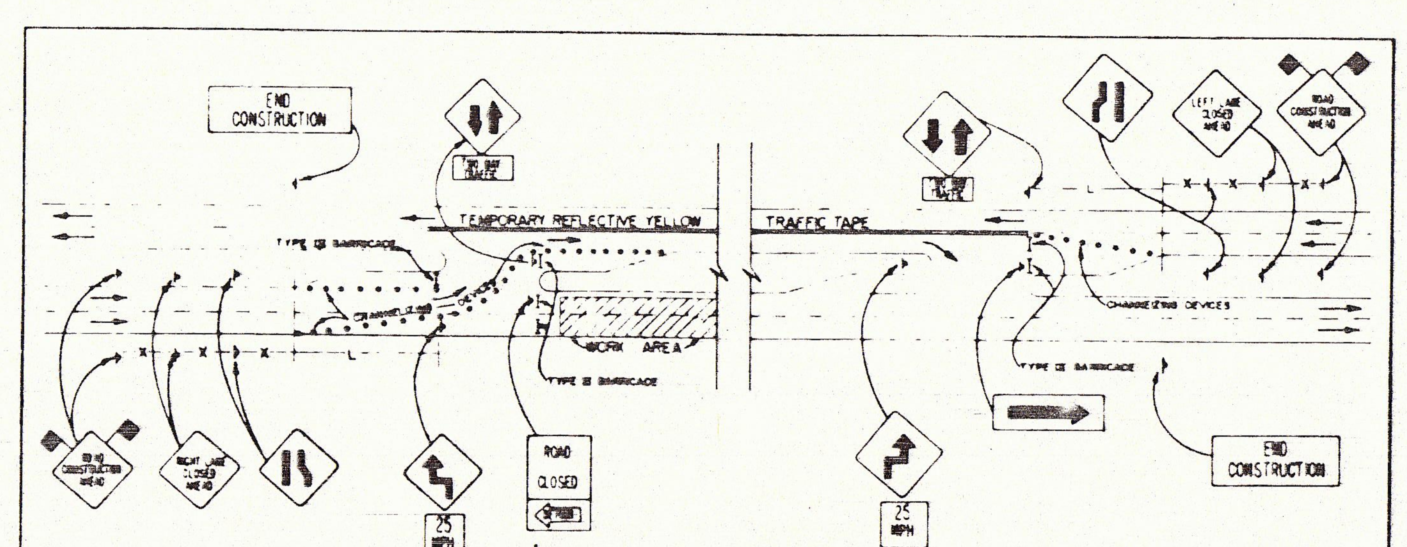
TYPICAL TRANSITION & SIGNING FOR DIVIDED ROADWAYS (NOT TO SCALE)



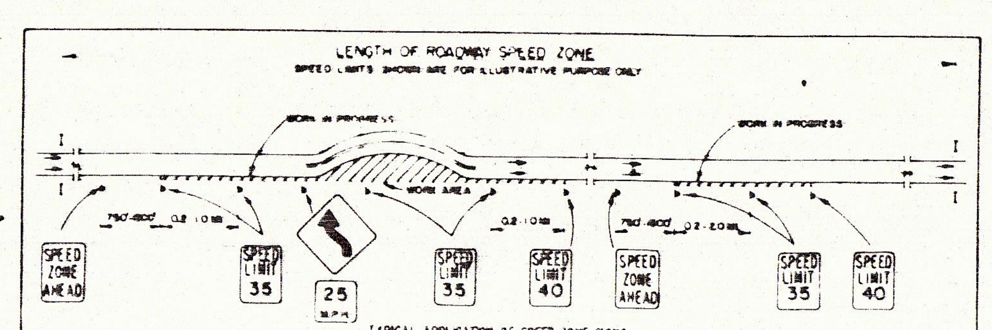
SINGLE LANE CLOSURE - DIVIDED ROADWAY (NOT TO SCALE)



SINGLE LANE CLOSURE - UNDIVIDED ROADWAY (NOT TO SCALE)



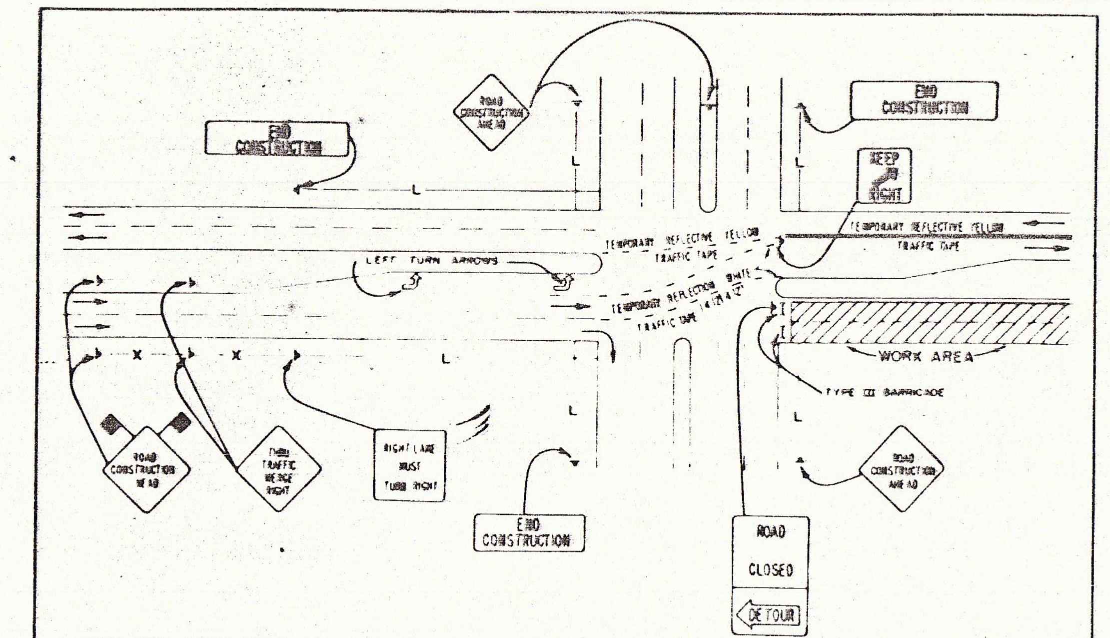
SINGLE DIRECTION CLOSURE - 4 LANE DIVIDED ROADWAY (NOT TO SCALE)



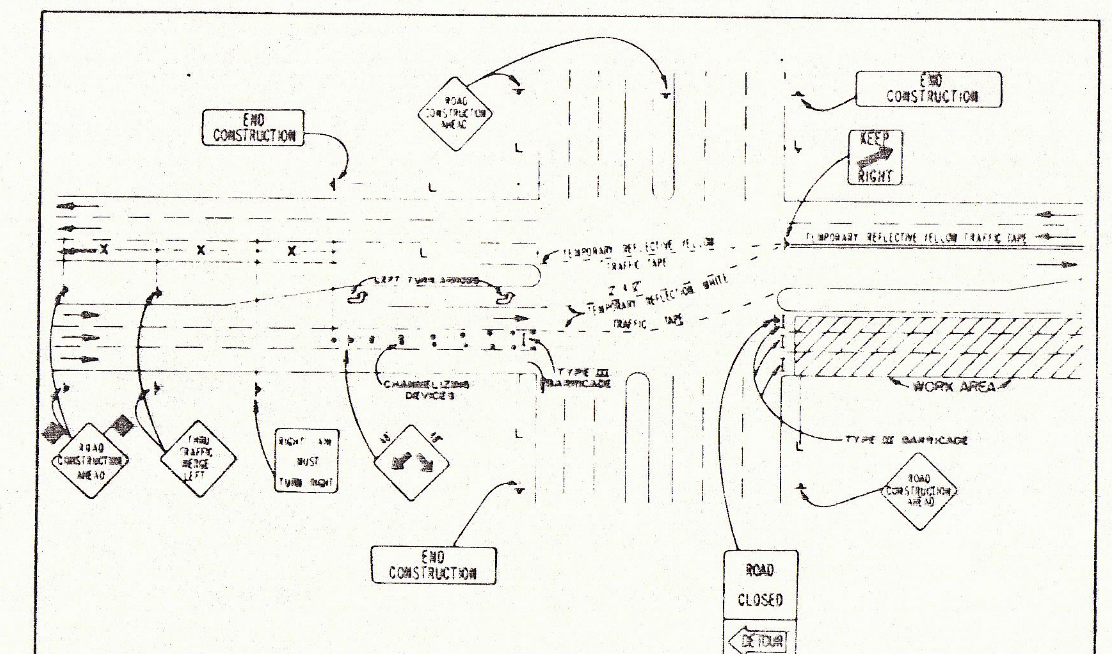
LENGTH OF ROADWAY SPEED ZONE (SPEED LIMITS SHOWN ARE FOR ILLUSTRATIVE PURPOSE ONLY)

TYPICAL APPLICATION OF SPEED ZONE SIGNS

NOTES
1. FREQUENCY OF SPEED SIGNS SHOULD BE EVERY 0.2 TO 2.0 MILES FOR SPEEDS 45 MPH AND ABOVE AND 0.2 TO 1.0 MILES FOR SPEEDS 35 MPH AND BELOW.
2. REDUCED SPEED SIGNS WHEN REQUIRED SHOULD ONLY BE POSTED IN THE VICINITY OF WORK BEING PERFORMED OR OTHER AREAS WHEN NEEDED RATHER THAN THROUGHOUT THE ENTIRE PROJECT.
3. SPEED ZONE SIGNS ARE ILLUSTRATED FOR ONE DIRECTION OF TRAVEL ONLY AND ARE NORMALLY POSTED FOR EACH DIRECTION OF TRAVEL.
4. REGULATORY CLASS SPEED ZONE SIGNS SHALL HAVE BLACK LEGEND ON A WHITE REFLECTIVE BACKGROUND.



FAR SIDE LANE CLOSURE - 4 LANE DIVIDED ROADWAY (NOT TO SCALE)



FAR SIDE LANE CLOSURE - 6 LANE DIVIDED ROADWAY (NOT TO SCALE)

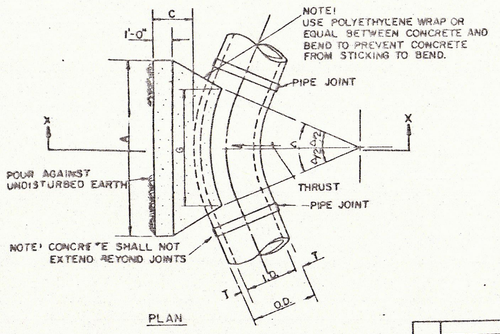
29

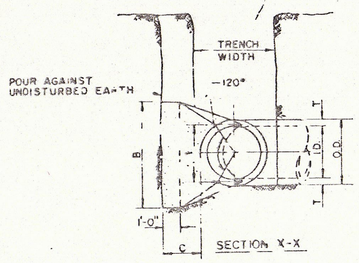
THE TOWN OF ADDISON

CONSTRUCTION SIGNING AND BARRICADING DETAILS

DESIGN	DRAWN	DATE	SCALE	NOTES	FILE	NO.
[illegible]	[illegible]	[illegible]	NONE			

E





I.D. (IN.)	T IN.	C 11.25° FT.	C 22.50° FT.	E FT.
4,6,8	0.4	1.5	1.5	0.9
10,12	0.5	1.5	1.5	1.2
16,18	0.6	1.5	1.5	1.8
20	0.7	1.5	1.5	1.8
24	0.9	1.5	1.5	2.1
30	2.9	1.5	1.9	2.6
36	4.5	1.5	2.3	3.3
42	5.0	1.8	2.6	3.8
48	3.5	2.0	3.0	4.3
54	6.0	2.3	3.4	4.8
60	6.5	2.5	3.8	5.3
66	6.8	2.8	4.1	5.7
72	7.3	3.0	4.5	6.3
78	7.5	3.3	4.9	6.7
84	8.0	3.5	5.3	7.2
90	8.3	3.8	5.6	7.7
96	9.0	4.0	6.0	8.2

I.D. (IN.)	G FT.	THRUST TONS	Δ = 11.25° EARTH A FT.	EARTH B FT.	EARTH VOL. C.Y.	ROCK A FT.	ROCK B FT.	ROCK VOL. C.Y.
4,6,8	0.4	1.0	1.0	1.5	0.1	1.0	1.0	0.1
10,12	0.6	2.2	1.5	1.5	0.1	1.0	1.5	0.1
16,18	0.8	5.0	2.0	2.5	0.3	1.5	2.0	0.2
20	0.9	6.2	2.0	3.5	0.4	1.5	3.0	0.3
24	1.1	8.9	3.0	3.0	0.5	1.5	3.0	0.3
30	1.4	10.4	3.0	3.5	0.6	2.0	3.5	0.4
36	1.7	13.0	3.5	4.5	0.9	2.0	4.0	0.5
42	1.9	20.4	4.5	5.0	1.3	2.5	5.0	0.6
48	2.2	26.6	4.5	6.0	2.0	2.5	6.0	1.1
54	2.5	33.7	6.0	6.0	3.0	3.0	6.0	1.4
60	2.7	41.6	6.0	7.0	3.8	3.0	7.0	1.8
66	3.0	50.3	6.5	8.0	5.1	3.5	8.0	2.7
72	3.3	59.9	7.5	8.0	6.3	4.0	8.0	3.3
78	3.6	70.2	8.0	9.0	8.1	4.0	9.0	3.9
84	3.8	81.5	8.5	10.0	10.3	4.5	10.0	5.3
90	4.1	93.5	9.5	10.0	12.2	5.0	10.0	6.3
96	4.4	106.4	10.0	11.0	15.0	5.0	11.0	7.4

I.D. (IN.)	G FT.	THRUST TONS	Δ = 22.50° EARTH A FT.	EARTH B FT.	EARTH VOL. C.Y.	ROCK A FT.	ROCK B FT.	ROCK VOL. C.Y.
4,6,8	0.8	2.0	1.5	1.5	0.1	1.0	1.0	0.1
10,12	1.1	4.4	2.0	2.5	0.3	1.5	1.5	0.2
16,18	1.6	9.3	3.0	3.5	0.6	2.0	2.5	0.3
20	1.8	12.3	3.5	3.5	0.7	2.0	3.5	0.4
24	2.2	17.7	4.0	4.5	1.0	3.0	3.0	0.5
30	2.7	20.7	5.0	4.5	1.3	3.0	4.0	0.8
36	3.3	29.8	5.5	5.5	2.3	4.0	4.0	1.3
42	3.8	40.3	7.0	6.0	3.9	4.5	5.0	2.1
48	4.4	52.9	8.0	7.0	5.7	4.5	8.0	2.8
54	5.0	67.0	9.0	8.0	8.0	6.0	6.0	4.1
60	5.5	82.7	9.5	9.0	10.6	6.0	7.0	5.3
66	6.0	100.1	10.5	10.0	14.1	6.5	8.0	7.2
72	6.6	119.1	11.0	11.0	17.6	7.5	8.0	9.1
78	7.1	139.8	12.0	12.0	22.5	8.0	9.0	11.7
84	7.6	162.1	13.0	12.5	27.2	8.5	10.0	14.8
90	8.2	186.1	14.0	13.5	33.7	9.5	10.0	17.7
96	8.7	211.7	15.0	14.5	41.2	10.0	11.0	21.8

HORIZONTAL BEND THRUST BLOCK

I.D. (IN.)	G FT.	THRUST TONS	Δ = 30° EARTH A FT.	EARTH B FT.	EARTH VOL. C.Y.	ROCK A FT.	ROCK B FT.	ROCK VOL. C.Y.
4,6,8	1.0	2.6	2.0	1.5	0.2	1.0	1.5	0.1
10,12	1.5	5.9	2.5	2.5	0.3	2.0	1.5	0.2
16,18	2.2	13.2	3.5	4.0	0.8	2.5	3.0	0.8
20	2.4	16.3	4.5	4.0	1.0	3.0	3.0	0.5
24	2.9	23.4	6.0	4.0	1.4	3.5	3.5	0.7
30	3.6	27.3	5.5	5.0	1.9	3.5	4.0	0.9
36	4.4	39.5	7.0	6.0	3.4	4.5	4.5	1.6
42	5.1	53.8	8.0	7.0	5.1	5.5	5.0	2.5
48	5.8	70.3	9.0	8.0	7.4	6.0	6.0	3.7
54	6.3	89.0	10.0	9.0	10.3	7.0	6.5	5.3
60	7.3	110.0	11.0	10.0	13.9	7.5	7.5	7.3
66	8.0	132.9	12.5	11.0	18.9	8.5	8.0	9.6
72	8.7	158.2	13.5	12.0	24.0	9.0	9.0	12.3
78	9.4	185.6	14.5	13.0	30.0	10.0	9.5	15.6
84	10.1	215.3	15.5	14.0	37.1	10.5	10.5	19.5
90	10.9	247.1	16.5	15.0	45.0	11.5	11.0	23.9
96	11.6	281.2	18.0	16.0	55.5	12.5	11.5	28.9

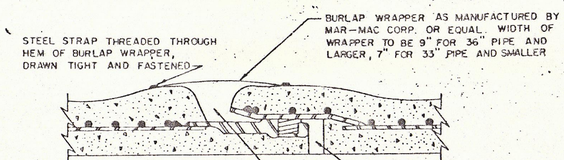
I.D. (IN.)	G FT.	THRUST TONS	Δ = 45° EARTH A FT.	EARTH B FT.	EARTH VOL. C.Y.	ROCK A FT.	ROCK B FT.	ROCK VOL. C.Y.
4,6,8	1.5	3.9	2.0	2.0	0.2	1.5	1.5	0.1
10,12	2.2	8.7	3.5	2.5	0.3	2.0	2.5	0.3
16,18	3.2	19.5	4.5	4.5	1.2	3.0	3.5	0.8
20	3.6	24.1	5.5	4.5	1.5	3.5	3.5	0.7
24	4.3	34.6	8.0	4.5	2.3	4.5	4.0	1.1
30	5.4	40.6	8.5	5.0	3.2	5.5	4.0	1.6
36	6.5	58.5	10.0	6.0	5.3	6.5	4.5	2.6
42	7.5	79.6	11.5	7.0	8.1	8.0	5.0	4.2
48	8.6	104.0	13.0	8.0	11.9	9.0	6.0	6.3
54	9.7	131.5	15.0	9.0	17.1	10.5	6.5	8.9
60	10.7	162.4	16.5	10.0	23.1	11.0	7.5	12.0
66	11.8	196.5	18.0	11.0	30.1	12.0	8.5	16.2
72	12.9	233.9	19.5	12.0	38.6	14.0	8.5	20.7
78	13.9	274.5	21.5	13.0	49.8	14.5	9.5	25.9
84	15.0	318.4	23.0	14.0	61.2	15.5	10.5	32.8
90	16.1	365.5	24.5	15.0	74.5	17.5	10.5	39.6
96	17.1	415.6	26.0	16.0	89.5	18.5	11.5	48.5

I.D. (IN.)	G FT.	THRUST TONS	Δ = 67.50° EARTH A FT.	EARTH B FT.	EARTH VOL. C.Y.	ROCK A FT.	ROCK B FT.	ROCK VOL. C.Y.
4,6,8	2.1	5.6	3.0	2.0	0.3	2.0	1.5	0.2
10,12	3.1	12.6	5.5	2.5	0.8	3.5	2.0	0.4
16,18	4.7	28.3	7.5	4.0	1.9	5.0	3.0	0.9
20	5.2	34.9	9.0	4.0	2.3	5.5	3.5	1.2
24	6.2	50.3	11.5	4.5	3.5	6.5	4.0	1.6
30	7.8	58.9	12.0	5.0	4.8	7.5	4.0	2.2
36	9.4	84.9	14.5	6.0	6.2	9.5	4.5	3.8
42	10.9	115.5	17.0	7.0	12.8	11.0	5.5	6.3
48	12.5	150.9	19.0	8.0	18.4	13.0	6.0	9.2
54	14.0	191.0	21.5	9.0	26.0	15.0	6.5	12.9
60	15.6	235.8	24.0	10.0	36.6	16.0	7.5	17.6
66	17.1	285.3	26.0	11.0	46.0	18.0	8.0	23.0
72	18.7	339.5	28.5	12.0	57.8	19.0	9.0	28.4
78	20.2	398.5	31.0	13.0	73.7	21.0	9.5	37.4
84	21.8	462.1	33.5	14.0	94.7	22.0	10.5	46.5
90	23.3	530.3	35.5	15.0	114.4	24.5	11.0	58.2
96	24.9	603.6	38.0	16.0	138.9	25.5	12.0	70.0

I.D. (IN.)	G FT.	THRUST TONS	Δ = 90° EARTH A FT.	EARTH B FT.	EARTH VOL. C.Y.	ROCK A FT.	ROCK B FT.	ROCK VOL. C.Y.
4,6,8	2.7	7.1	3.0	1.5	0.4	2.0	2.0	0.2
10,12	4.0	16.0	6.5	2.5	1.0	3.5	2.5	0.5
16,18	6.0	36.0	9.0	4.0	2.4	4.5	4.0	1.0
20	6.6	44.6	10.0	4.5	3.1	6.0	4.0	1.5
24	7.9	64.0	14.5	4.5	5.0	8.0	4.0	2.1
30	9.9	75.0	13.0	5.0	6.7	10.0	4.0	3.3
36	11.9	108.0	18.0	6.0	11.4	12.0	4.5	5.3
42	13.9	147.0	21.0	7.0	17.8	14.0	5.5	8.7
48	15.9	192.0	24.0	8.0	26.2	16.0	6.0	12.4
54	17.9	243.0	27.0	9.0	36.9	18.0	7.0	18.1
60	19.9	299.8	30.0	10.0	50.3	20.0	7.5	24.0
66	21.8	362.8	33.0	11.0	68.2	22.0	8.5	32.3
72	23.8	431.8	36.0	12.0	85.6	24.0	9.0	41.0
78	25.7	506.7	39.0	13.0	104.8	26.0	10.0	53.2
84	27.7	587.7	42.0	14.0	134.6	28.0	10.5	64.8
90	29.0	674.6	45.0	15.0	164.9	30.0	11.5	81.2
96	31.6	767.5	48.0	16.0	199.0	32.0	12.0	95.1

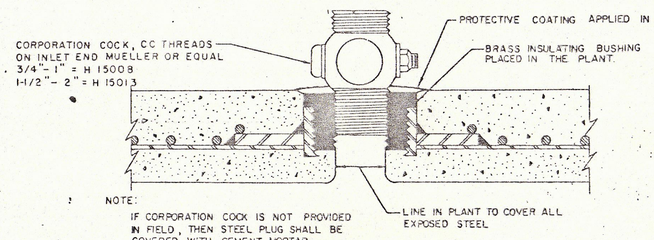
NOTE:

PROVIDE 1" MINIMUM THICKNESS CONCRETE OR CEMENT MORTAR COATING IN THE FIELD FOR THE PROTECTION OF ALL EXPOSED STEEL SUCH AS FLANGES, CAULKED-JOINTS, THREADED OUTLETS, CLOSURES, ETC. THE CEMENT MORTAR USED SHALL CONSIST OF ONE PART PORTLAND CEMENT TO TWO AND ONE-HALF PARTS OF FINE, SHARP (PLASTER) SAND. WHERE SHOWN, COATING IS TO BE REINFORCED WITH WIRE MESH.

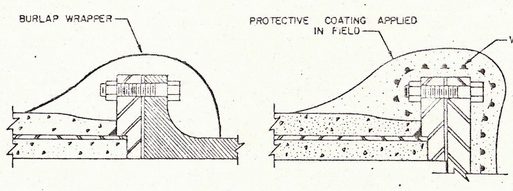


STANDARD RUBBER GASKET JOINT

NOTE: ALL CLOSURE SECTIONS SHALL BE FABRICATED WITH HAND HOLES TO ALLOW WIPING INSIDE OF JOINTS AFTER CLOSURE IS IN PLACE

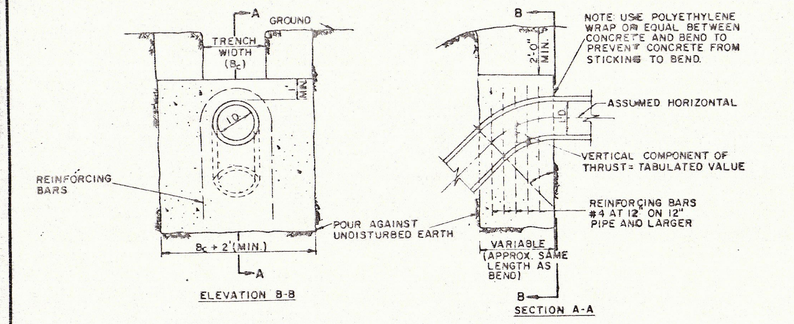


THREADED CONNECTION



FLANGED CONNECTIONS

PEINFORCED CONCRETE CYLINDER PIPE DETAILS

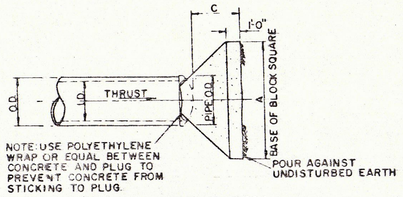


Δ =	11.25° I.D. (IN.)	THRUST TONS	VOL. C.Y.	22.50° THRUST TONS	VOL. C.Y.	30° THRUST TONS	VOL. C.Y.	45° THRUST TONS	VOL. C.Y.	67.50° THRUST TONS	VOL. C.Y.	90° THRUST TONS	VOL. C.Y.	Δ = I.D. (IN.)
	4,6,8	1.0	0.5	2.0	1.0	2.5	1.3	3.6	1.8	4.6	2.3	5.0	2.5	4,6,8
	10,12	2.2	1.1	4.3	2.2	5.7	2.8	8.0	4.0	10.5	5.2	11.3	5.7	10,12
	16,18	5.0	2.5	9.7	4.9	12.7	6.4	18.0	9.0	23.5	11.8	25.5	12.7	16,18
	20	6.1	3.1	12.0	6.0	15.7	7.9	22.2	11.1	29.2	14.5	31.4	15.7	20
	24	8.2	4.1	16.3	8.1	22.6	11.3	32.0	16.0	41.8	20.9	45.2	22.6	24
	30	10.5	5.2	21.3	10.1	26.5	13.3	37.5	18.8	49.0	24.5	53.1	26.5	30
	36	14.9	7.5	29.2	14.6	38.2	19.1	54.0	27.0	70.5	35.3	76.4	38.2	36
	42	20.3	10.1	39.8	19.9	52.0	26.0	73.5	36.7	96.0	48.0	104.0	52.0	42
	48	26.5	13.2	51.9	26.0	67.9	33.9	96.0	48.0	126.0	62.7	136.0	67.9	48
	54	33.5	16.8	65.7	32.9	85.9	42.9	122.0	60.7	159.0	79.4	172.0	85.9	54
	60	41.4	20.7	81.2	40.6	106.0	53.0	150.0	75.0	196.0	98.0	212.0	105.0	60
	66	50.1	25.0	98.2	49.1	128.0	64.2	182.0	90.7	237.0	119.0	257.0	128.0	66
	72	59.6	29.8	117.0	58.4	153.0	76.3	216.0	108.0	282.0	141.0	305.0	153.0	72
	78	69.9	35.0	137.0	68.6	179.0	90.0	254.0	127.0	331.0	166.0	358.0	179.0	78
	84	81.1	40.5	159.0	79.3	208.0	104.0	294.0	147.0	384.0	192.0	416.0	208.0	84
	90	93.1	46.5	183.0	91.3	239.0	119.0	337.0	169.0	441.0	221.0	477.0	239.0	90
	96	106.0	53.0	208.0	104.0	272.0	136.0	384.0	192.0	502.0	251.0	543.0	272.0	96

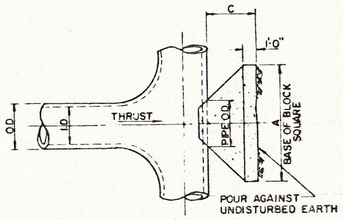
GENERAL NOTES- FOR ALL THRUST BLOCKS

1. All Calculations Are Based On Internal Pressure Of 200 P.S.I. For 24" I.D. Pipe And Smaller And 150 P.S.I. On 30" I.D. And Larger.
2. Volumes Of Vertical Bend Thrust Blocks Are Net Volumes Of Concrete To Be Furnished. The Corresponding Weight Of The Concrete (Class F) Is Equal To Or Greater Than The Vertical Component Of Thrust On The Vertical Bend.
3. Wall Thickness (T) Assumed Here For Estimating Purposes Only.
4. Concrete For Blocking Shall Be Class B Concrete.
5. Dimensions May Be Varied As Required By Field Conditions Where And As Directed By The Engineer. The Volume Of Concrete Blocking Shall Not Be Less Than Shown Here.

VERTICAL BEND THRUST BLOCK



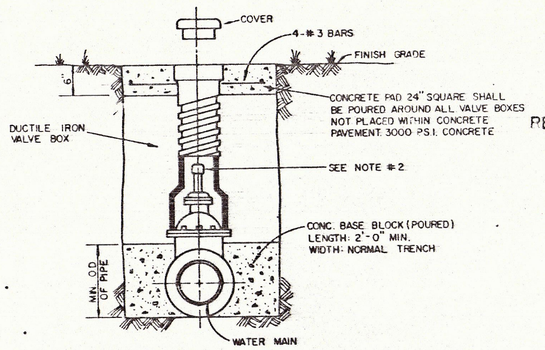
PLAN OF PLUG THRUST BLOCK



PLAN OF TEE THRUST BLOCK

I.D. (IN.)	THRUST TONS	C FT.	EARTH A FT.	EARTH VOL. C.Y.	ROCK A FT.	ROCK VOL. C.Y.
4,6,8	3.1	1.5	2.5	0.3	2.0	0.2
10,12	11.3	1.5	3.5	0.6	2.5	0.3
16,18	23.5	2.0	5.5	1.6	4.0	0.9
20	31.5	2.0	6.0	1.9	4.0	0.9
24	45.2	2.5	7.0	3.1	5.0	1.7
30	53.0	3.0	7.5	4.1	5.5	2.4
36	76.3	4.0	9.0	7.3	6.5	4.2
42	104.0	4.5	10.5	11.0	7.5	6.2
48	136.0	5.0	12.0	15.6	8.5	8.7
54	172.0	5.5	13.5	21.4	9.5	11.9
60	212.0	6.0	15.0	28.4	10.5	15.7
66	257.0	6.5	16.5	36.8	11.5	20.5
72	303.0	7.5	17.5	47.2	12.5	27.2
78	358.0	8.0	19.0	58.9	13.5	33.7
84	416.0	8.5	20.5	72.3	14.5	41.2
90	477.0	9.0	22.0	87.7	15.5	49.7
96	543.0	9.5	23.5	104.8	16.5	61.0

PLUG & TEE THRUST BLOCK



NOTE:

1. GATE VALVES SHALL BE IN ACCORDANCE WITH AWWA STANDARD C-509-80 OR LATEST THEREOF ALL VALVES SHALL BE "MUELLER" OR APPROVED EQUAL.
2. A PERMANENTLY ATTACHED VALVE EXTENSION STEM SHALL BE REQUIRED FOR ANY VALVE THATS OPERATING NUT IS LOCATED IN EXCESS OF 4 FEET BELOW THE TOP OF VALVE BOX. THIS EXTENSION SHALL BE OF SUFFICIENT LENGTH TO INSURE THAT ITS TOP IS WITHIN 4' OF VALVE BOX LID. MANUFACTURED VALVE STACK DUCTILE IRON PIPE TO BE USED FOR EXTENSION GREATER THAN 4'-0 BELL END OF STACK TO BE FITTED OVER VALVE. VALVE AND VALVE STACK IS TO BE POLY WRAPED.
3. VALVES SHALL BE OF DUCTILE IRON W/RUBBER ENCAPSULATED DISK BODY BOLTS SHALL BE STAINLESS STEEL OF SAME SIZE ON EACH VALVE.

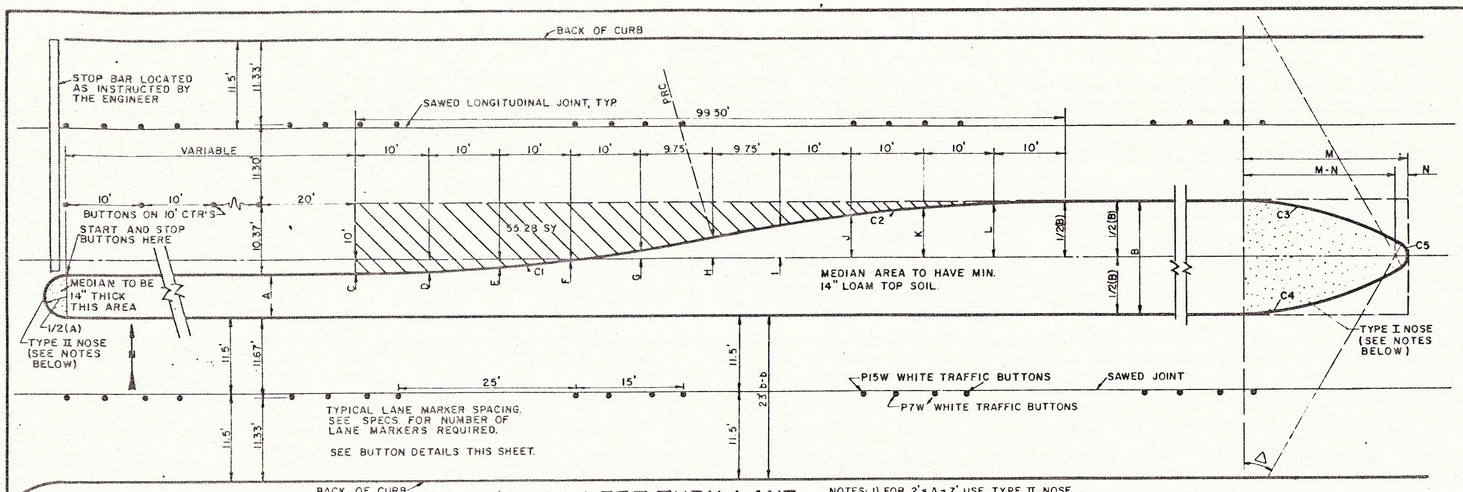
TYPICAL VALVE SETTING AND BOX

TOWN OF ADDISON, TEXAS
DEPARTMENT OF ENGINEERING

STANDARD CONSTRUCTION DETAILS
WATER

THRUST BLOCKS

Designed -	Drawn -	Date - AUGUST, 1991	Job No. - 90025-5
Approved -	Checked -	Scale -	Sheet D-9 Of



LEFT TURN LANE

(AS APPLICABLE)

NOTES: 1) FOR 2' ≤ A ≤ 7' USE TYPE II NOSE
2) FOR 7' ≤ A ≤ 14' USE TYPE I NOSE
3) FOR 12' ≤ B ≤ 24' USE TYPE I NOSE

MEDIAN DIMENSION CHART

B	C	D	E	F	G	H	I	J	K	L	M	N
12'	4.00'S	3.80'S	3.20'S	2.19'S	0.78'S	1.00'N	2.78'N	4.19'N	5.20'N	5.80'N	22.56'	1.00'
13'	3.50'S	3.30'S	2.70'S	1.69'S	0.28'S	1.50'N	3.28'N	4.69'N	5.70'N	6.30'N	23.56'	1.00'
14'	3.00'S	2.80'S	2.20'S	1.19'S	0.22'N	2.00'N	3.78'N	5.19'N	6.20'N	6.80'N	22.68'	2.50'
15'	2.50'S	2.30'S	1.70'S	0.69'S	0.72'N	2.50'N	4.28'N	5.69'N	6.70'N	7.30'N	23.71'	2.50'
16'	2.00'S	1.80'S	1.20'S	0.19'S	1.22'N	3.00'N	4.78'N	6.19'N	7.20'N	7.80'N	23.46'	3.50'
17'	1.50'S	1.30'S	0.70'S	0.31'N	1.72'N	3.50'N	5.28'N	6.69'N	7.70'N	8.30'N	24.48'	3.50'
18'	1.00'S	0.80'S	0.20'S	0.81'N	2.22'N	4.00'N	5.79'N	7.19'N	8.20'N	8.80'N	25.44'	3.50'
19'	0.50'S	0.30'S	0.30'N	1.31'N	2.72'N	4.50'N	6.28'N	7.69'N	8.70'N	9.30'N	26.34'	3.50'
20'	0.00'	0.20'N	0.80'N	1.81'N	3.22'N	5.00'N	6.78'N	8.19'N	9.20'N	9.80'N	26.72'	4.00'
21'	0.50'N	0.70'N	1.30'N	2.31'N	3.72'N	5.50'N	7.28'N	8.69'N	9.70'N	10.30'N	27.57'	4.00'
22'	1.00'N	1.20'N	1.80'N	2.81'N	4.22'N	6.00'N	7.78'N	9.19'N	10.20'N	10.80'N	28.39'	4.00'
23'	1.50'N	1.70'N	2.30'N	3.31'N	4.72'N	6.50'N	8.28'N	9.69'N	10.70'N	11.30'N	29.17'	4.00'
24'	2.00'N	2.30'N	2.80'N	3.81'N	5.22'N	7.00'N	8.78'N	10.19'N	11.20'N	11.80'N	29.92'	4.00'

N = NORTH OF CENTERLINE
S = SOUTH OF CENTERLINE

CURVE DATA C3 & C4 FOR 7' ≤ A ≤ 14'

A	△	R	T	L	M	N
7'	18°22'52"	50'	8.09'	16.04'	15.45'	1.00'
8'	20°09'11"		8.89'	17.59'	17.88'	1.00'
9'	21°47'12"		9.62'	19.01'	19.19'	1.00'
10'	23°18'41"		10.31'	20.34'	20.39'	1.00'
11'	24°44'50"		10.97'	21.60'	21.51'	1.00'
12'	26°06'32"		11.59'	22.78'	22.56'	1.00'
13'	27°24'27"		12.19'	23.92'	23.56'	1.00'
14'	25°08'28"		11.15'	21.94'	22.68'	2.50'

CURVE DATA C1 C2
△ = 11°28'40"
R = 250'
T = 25.13'
L = 50.08'

CURVE DATA C3 & C4 FOR 12' ≤ B ≤ 24'

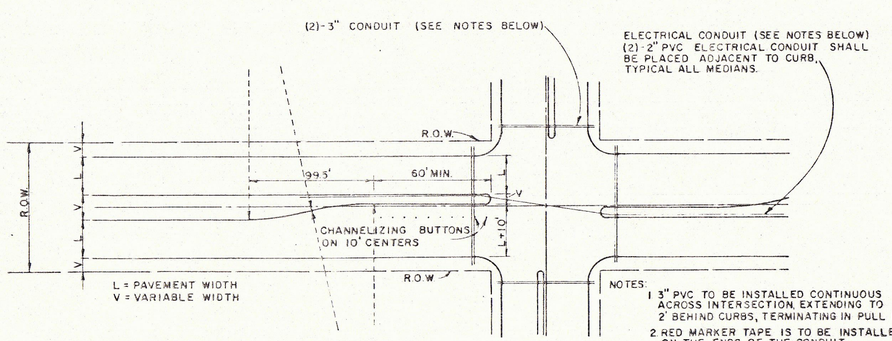
B	△	R	T	L
12'	26°06'32"	50.00'	11.59'	22.78'
13'	27°24'27"		12.19'	23.92'
14'	25°08'28"		11.15'	21.94'
15'	26°31'32"		11.79'	23.15'
16'	25°24'53"		11.27'	22.18'
17'	26°48'51"		11.92'	23.40'
18'	28°08'58"		12.54'	24.57'
19'	29°25'43"		13.13'	25.68'
20'	29°35'30"		13.21'	25.82'
21'	30°49'46"		13.79'	26.90'
22'	32°01'26"		14.35'	27.95'
23'	33°10'48"		14.90'	28.96'
24'	34°18'05"		15.43'	29.93'

CURVE DATA C5 FOR 12' ≤ B ≤ 24'

B	△	R	T	L
12'	127°47'32"	1.00'	2.04'	2.23'
13'	125°12'48"	1.00'	1.93'	2.19'
14'	129°43'08"	2.50'	5.33'	5.66'
15'	126°57'31"	2.50'	5.01'	5.54'
16'	129°09'33"	3.50'	7.36'	7.89'
17'	126°21'44"	3.50'	6.92'	7.72'
18'	123°41'38"	3.50'	6.54'	7.56'
19'	120°52'03"	3.50'	6.17'	7.38'
20'	120°48'56"	4.00'	7.04'	8.43'
21'	118°21'08"	4.00'	6.70'	8.26'
22'	115°57'07"	4.00'	6.40'	8.10'
23'	113°38'22"	4.00'	6.12'	7.93'
24'	111°23'48"	4.00'	5.86'	7.78'

CURVE DATA C5 FOR 7' ≤ A ≤ 14'

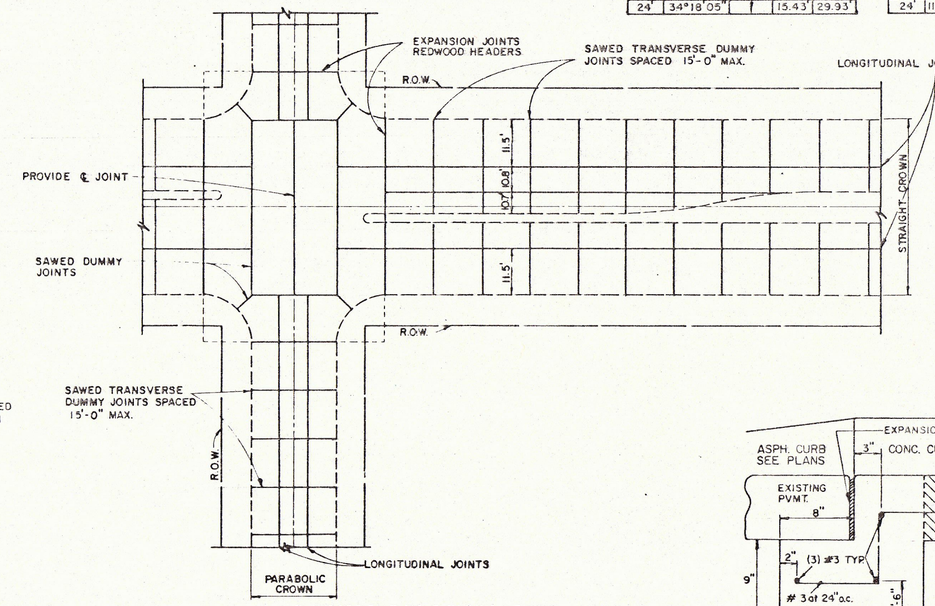
A	△	R	T	L
7'	143°14'15"	1.00'	3.01'	2.50'
8'	139°41'38"	1.00'	2.72'	2.44'
9'	136°25'35"	1.00'	2.50'	2.38'
10'	133°22'38"	1.00'	2.32'	2.33'
11'	130°30'20"	1.00'	2.17'	2.28'
12'	127°47'32"	1.00'	2.04'	2.23'
13'	125°12'48"	1.00'	1.93'	2.19'
14'	129°43'08"	2.50'	5.33'	3.66'



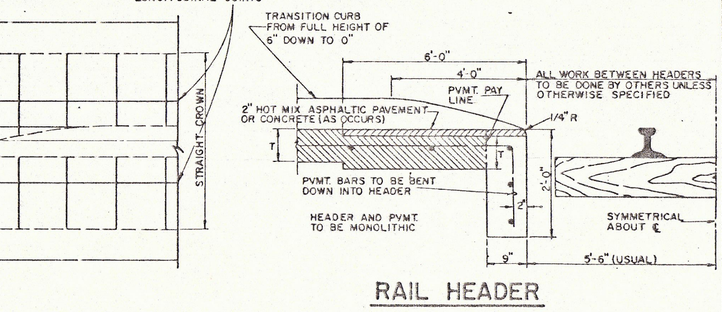
CONDUIT

FOR EXACT LOCATIONS, THIS PROJECT SEE PLANS

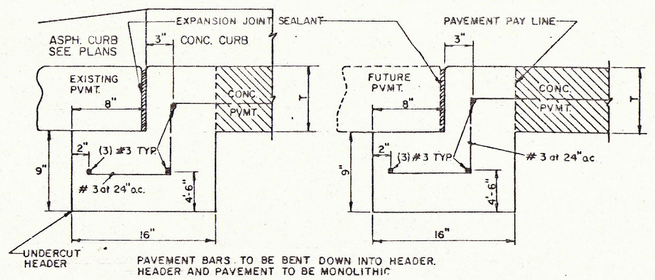
NOTES:
1. 3" PVC TO BE INSTALLED CONTINUOUS ACROSS INTERSECTION, EXTENDING TO 2' BEHIND CURBS, TERMINATING IN PULL BOX.
2. RED MARKER TAPE IS TO BE INSTALLED ON THE ENDS OF THE CONDUIT.
3. THE EXACT LOCATIONS WHERE THE CONDUIT CROSSES UNDER THE PAVING ARE TO BE CHISELED WITH AN "X" AND PAINTED WITH RED PAINT, ON THE CURB OR PAVING.
4. A NYLON CORD SHALL BE PLACED IN ALL CONDUIT UNDER PAVEMENT. THIS CORD SHALL EXTEND A MINIMUM OF 1' FROM THE END OF THE CONDUIT.



SPACING DIAGRAM FOR TRANSVERSE JOINTS

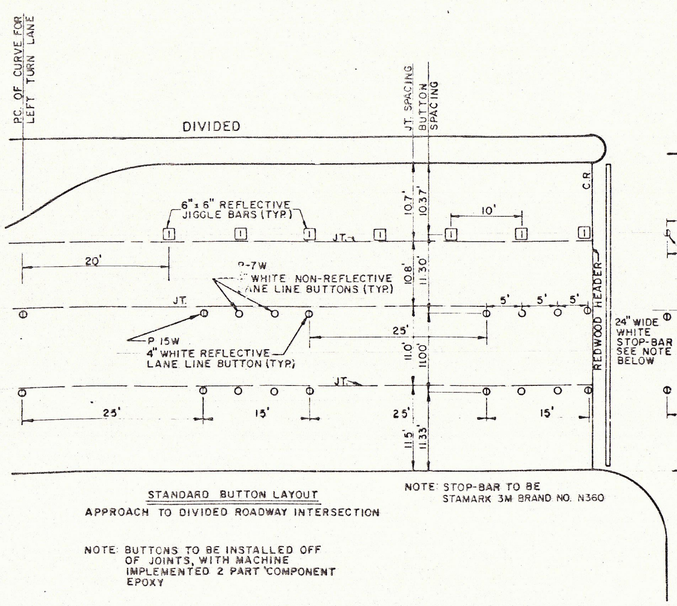


RAIL HEADER



PAVEMENT BARS TO BE BENT DOWN INTO HEADER. HEADER AND PAVEMENT TO BE MONOLITHIC

STREET HEADER

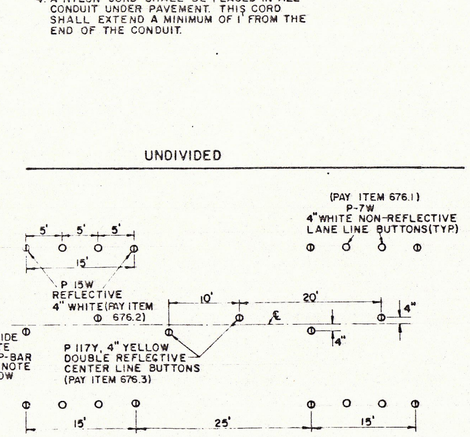


STANDARD BUTTON LAYOUT

APPROACH TO DIVIDED ROADWAY INTERSECTION

NOTE: BUTTONS TO BE INSTALLED OFF OF JOINTS, WITH MACHINE IMPLEMENTED 2 PART COMPONENT EPOXY

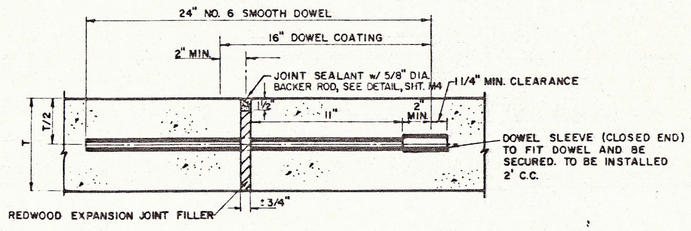
NOTE: STOP-BAR TO BE STAMARK 3M BRAND NO. N360



STANDARD BUTTON LAYOUT

TWO WAY UNDIVIDED ROADWAY W/ DOUBLE YELLOW CENTER LINE

BUTTON DETAILS



TRANSVERSE EXPANSION JOINT

(SPACED 600 FT. MAXIMUM; LOCATE AT INTERSECTIONS)

NOTE: DOWELS AND REINFORCING BARS SHALL BE SUPPORTED BY AN APPROVED DEVICE.

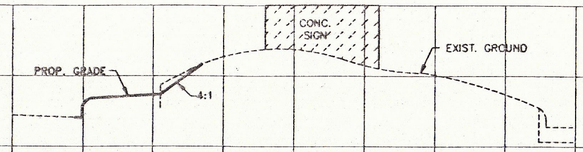
TOWN OF ADDISON, TEXAS
DEPARTMENT OF ENGINEERING

STANDARD CONSTRUCTION DETAILS
PAVING

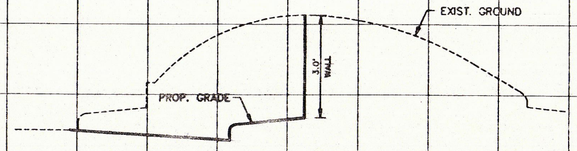
TURN LANES & JOINTS

Designed -	Drawn -	Date - AUGUST, 1991	Job No. - 90025.5
Approved -	Checked -	Scale -	Sheet D 10 Of

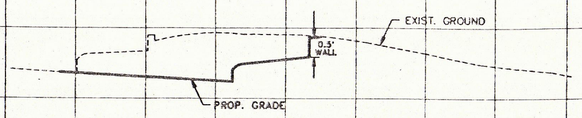
D



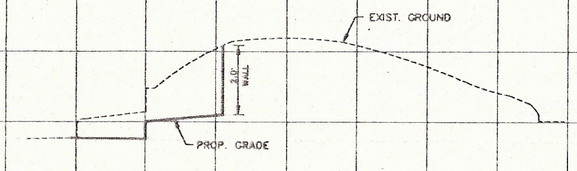
STA. 0+00



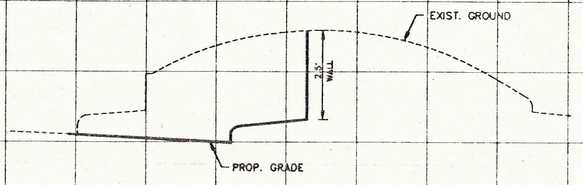
STA. 2+00



STA. 4+00

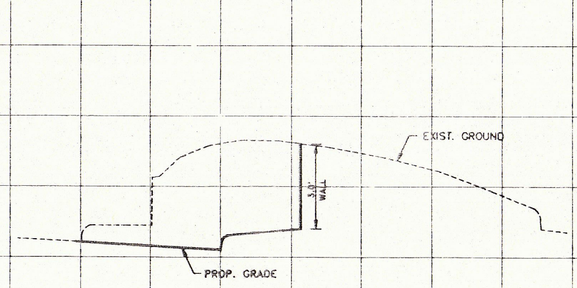


STA. 0+50

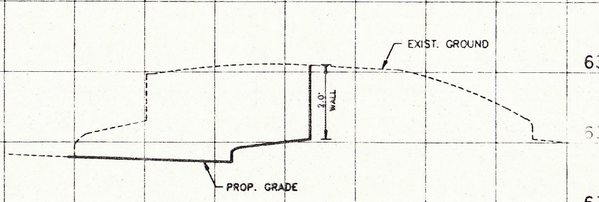


STA. 2+50

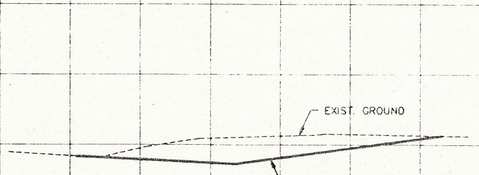
STA. 4+25



STA. 1+00



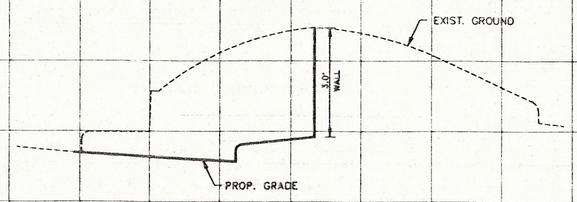
STA. 3+00



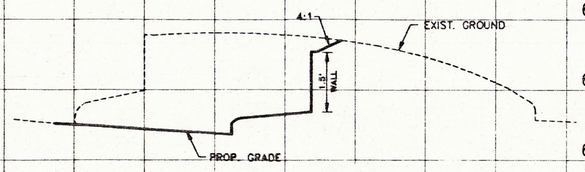
STA. 4+70

WALL HEIGHT (EXPOSED)	
*STATION	HEIGHT
0+10	0.5'
0+50	2.0'
1+50	3.0'
2+00	3.0'
3+50	1.5'
4+00	0.5'

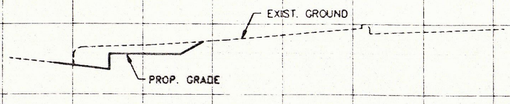
* NOTE: TOP OF WALL SHALL TAPER IN A STRAIGHT LINE BETWEEN STATIONS SHOWN. WALL TO BE INSTALLED BY OTHERS.



STA. 1+50



STA. 3+50



STA. 5+00

NO.	REVISION	BY	DATE

DESIGNED BY: EH&A
DRAWN BY: EH&A
CHECKED BY: B. GRANTHAM
SCALE: 1" = 50' H, 1" = 2' V
DATE: JANUARY, 1995
FILE: \ADDISON\TOLLWAY\CROSS

Espey, Huston & Associates, Inc.
Engineering & Environmental Consultants
13800 Montfort Drive, Suite 230
Dallas, Texas 75240 (214) 387-0771

STATE OF TEXAS — BRUCE B. GRANTHAM — 67559 — REGISTERED PROFESSIONAL ENGINEER

CROSS SECTIONS

PAVING AND DRAINAGE IMPROVEMENTS
BELT LINE ROAD AT DALLAS NORTH TOLLWAY
for
THE TOWN OF ADDISON

SHEET NO. 4
OF 13 SHEETS
JOB NO. 15224