City Of Seattle

STANDARD

PLANS

for

Municipal Public Works

Construction

1991

Twelfth Edition

1991

STANDARD PLAN NUMBERS

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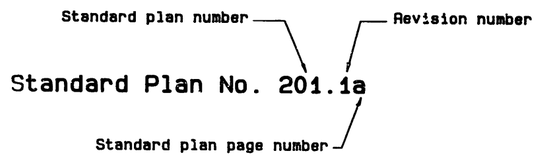
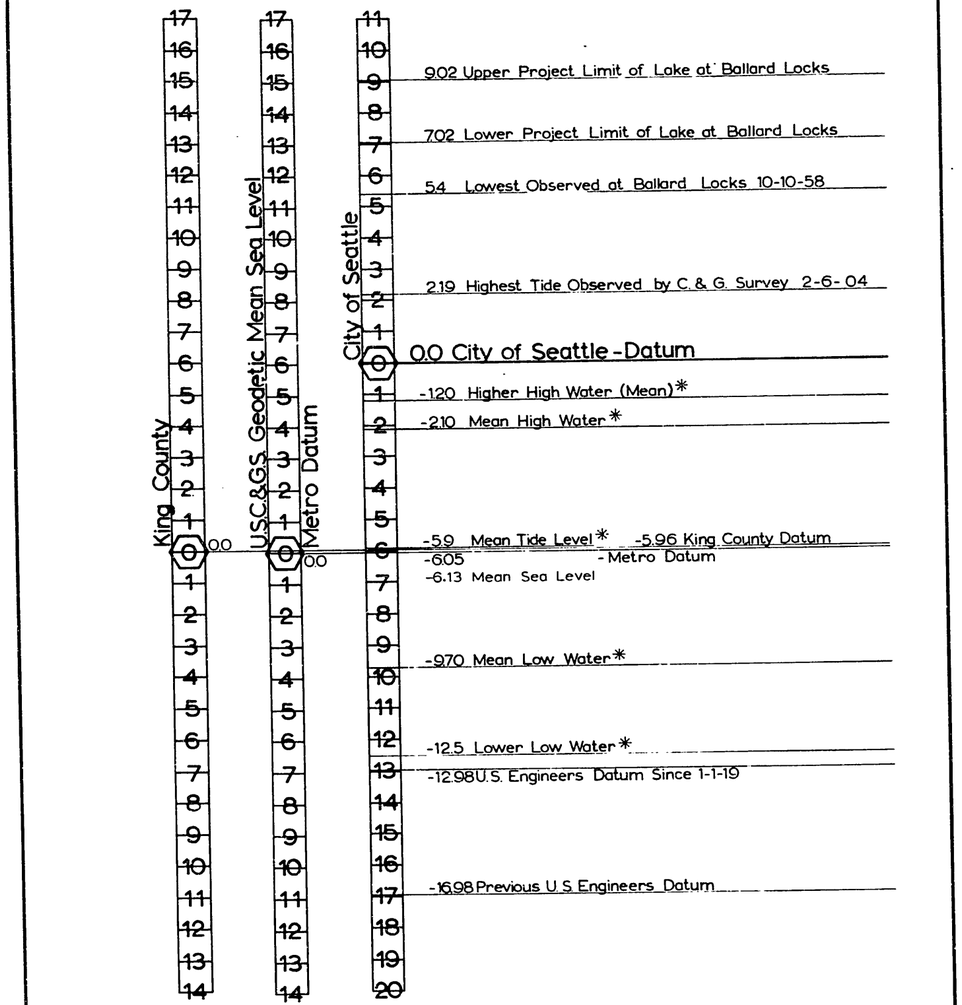
STANDARD PLAN NUMBERING SYSTEM



A standard plan number with a capital letter, such as type 201A Manhole, indicates a type of the item covered by the standard plan and not the standard plan page number.

Standard Plan No. 001



* These elevations vary according to tidal observation.
For the latest figures call the U.S.C.G.S. Office.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 10/6/ 1971 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Elevations and Datums 11-13-62

Standard Plan No. 002.1a

Aban	Abandon (ed)
ABW	Asphalt Bike Way
ACV	Automatic Control Valve
Adj	Adjust
Ahd	Ahead
AIC	Aerial Interconnect
Al	Aluminum
AP	Angle Point
Approx	Approximate
Asph	Asphalt
ATB	Asphalt Treated Base
AV	Air Valve
AVB	Automatic Vacuum Breaker
Ave	Avenue
Avg	Average
AW	Asphalt Walk
B&B	Ball & Burlap
BF	Bottom Face
BfV	Butterfly Valve
Bk	Back
Bldg	Building
Blkg	Blocking
Blkhd	Bulkhead
Blvd	Boulevard
BM	Bench Mark
BO	Blow Off
BOC	Beginning of Curb
BPW	Board of Public Works
BR	Bare Root
Br	Brick
Brg	Bearing
Brkn	Broken
Bsmt	Basement
Btw	Between
BV	Ball Valve
Cal	Caliper
Cb	Cable
CB	Catch Basin
CBW	Concrete Bike Way
C-C	Center to Center
CC	Concrete Culvert
Cd	Conduit
Cem	Cement
C&G	Curb & Gutter
CDF	Controlled Density Fill
Ch	Chamber
CIP	Cast Iron Pipe
℄	Center Line
Cl	Class
CLF	Chain Link Fence
Clr	Clearance
CMP	Corrugated Metal Pipe
CO	Clean Out
Conc	Concrete
Cond	Condition
Conn	Connect/Connection
Constr	Construction
Cont	Continuous
Cr	Cross
CR	Curb Radius
Cu Ft	Cubic Feet
Cu Yd	Cubic Yard
Culv	Culvert
CW	Concrete Walk
DB	Direct Burial Cable
DCV	Double Check Valve
Dept	Department
DGV	District Gate Valve
Dia	Diameter
DIP	Ductile Iron Pipe
DOPAR	Department of Parks and Recreation
Dr	Drive
DS	Downspout
Dwy	Driveway
E	East
Ea	Each
Ecc	Eccentric
ECd	Electrical Conduit
ED	Electrical Duct
El/Elev	Elevation
Elec	Electric/Electrical
EMH	Electrical Manhole
Encl	Enclosure
EOC	End of Curb
Eq	Equal
Esmt	Easement
EV	Electrical Vault
Ex	Existing
Exp	Expansion

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Abbreviations

FACb	Fire Alarm Cable
FAHH	Fire Alarm Handhole
FCS	Flow Control Structure
Fdn	Foundation
FF	Far Face
FF	Finished Floor
Fig	Figure
Flg	Flange
Flr	Floor
FM	Force Main
FO	Fiber Optics
Ft	Feet
Ftg	Footing
G	Gas
Ga	Gauge
Gal	Gallon
Galv	Galvanize/Galvanized
Gas V	Gas Valve
GIP	Galvanized Iron Pipe
GM	Gas Meter
Gnd	Ground
GP	Guy Pole
GPM	Gallons Per Minute
Gr	Grade
G Reg	Gas Regulator
GRHH	Ground Rod Handhole
GSP	Galvanized Steel Pipe
GV	Gate Valve
Gvl	Gravel
HB	Horizontal Bend
Hex	Hexagon/Hexagonal
HGL	Hydraulic Grade line
HH	Handhole
Hi	High
Horiz	Horizontal
HPG	High Pressure Gas
HPS	High Pressure Sodium
Hse	House
Hyd	Hydrant
ID	Inside Diameter/Dimension
IE	Invert Elevation
In	Inch(es)
Inl	Inlet
Inv	Invert(Line)
Int	Intersection
IP	Iron Pipe
IRC	Irrigation Controller
Irrg	Irrigation
JB	Junction Box
Jt	Joint
KV	Kilovolt
LBS	Pounds
LF	Lineal Foot
LID	Local Improvement District
LIT	Large Inlet Top (Catch Basin)
Loc	Locate/Location
Longit	Longitudinal
LP	Light Pole
Lt	Left
Lum	Luminaire
MA	Mast Arm
Max	Maximum
MCV	Manual Control Valve
MDV	Manual Drain Valve
MH	Manhole
Min	Minimum
Misc	Miscellaneous
MJ	Mechanical Joint
M	Monument Line
Mnrl Agg	Mineral Aggregate
Mod	Modify/Modified
Mon	Monument
MVL	Mercury Vapor Luminaire

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Abbreviations

N	North
NF	Near Face
NIC	Not In Contract
No.	Number
Nom	Nominal
NTS	Not To Scale
OC	On Center
OD	Outside Diameter/ Dimension
Pav	Pavement
PC	Point of Curvature
PCC	Point of Compound Curve
PDP	Perforated Drain Pipe
PE	Plain End
Ped	Pedestrian
PI	Point of Intersection
PL	Plate
Pl	Place
P	Property Line
POC	Point on Circular Curve
PP	Power Pole
PPB	Pedestrian Push Button
Pr	Pair
PRC	Point of Reverse Curve
Prop	Proposed
PRV	Pressure Reducing Valve
PS	Pipe Sewer Combined
PSD	Pipe Storm Drain
PSDD	Pipe Storm Drain Detention
PSI	Pounds Per Square Inch
PSS	Pipe Sewer Sanitary
PT	Point of Tangency
PVB	Pressure Vacuum Breaker
PVC	Polyvinyl Chloride
Pvt	Private
Qty	Quantity
R	Radius
RCP	Reinforced Concrete Pipe
RD	Roof Drain
Rdwy	Roadway
Reconn	Reconnect
Red	Reducer
Ref	Refer/Reference
Reinf	Reinforcing/Reinforcement
Reloc	Relocate
Rem	Remove
Repl	Replace
Req'd	Required
Ret	Retire/Retired
Ret Wall	Retaining Wall
RF	Rock Facing
RGS	Rigid Galvanized Steel
RIT	Round Inlet Top (Not Used)
Rlwy	Railway
RP	Rock Pocket
RR	Railroad
R&R	Remove & Replace
RS	Rigid Steel
Rt	Right
R/W	Right of Way
S	South
SB	Sandbox
SCL	Seattle City Light
SD	Service Drain
SDS	Street Designation Sign
Sec	Section
SED	Seattle Engineering Department
Shld	Shield
Sht	Sheet
Sl	Sleeve
SL	Street Light
$\mathbb{L}$	Survey Line
SLHH	Street Light Handhole
SNS	Street Name Sign
SP	Strain Pole
Spcs	Spaces
Spec	Specifications
Sq	Square
SS	Side Sewer - Combined
SSS	Side Sewer - Sanitary
St	Street
Sta	Station
Std	Standard
Stl	Steel
Stl P	Steel Pipe
Stm Log	Steam Log
Struct.	Structural/Structure
SWD	Seattle Water Department

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Abbreviations

T	Tee	WSP	Wood Stave Pipe
TB	Test Boring	WU	Western Union
TCb	Telephone Cable	WV	Water Valve
TCd	Telephone Conduit	WWF	Welded Wire Fabric
TCHH	Traffic Control Handhole		
TD	Telephone Duct	XP	Transmission Pole
TEB	Telephone Enclosure Box		
Tel	Telephone		
Temp	Temporary		
TF	Top Face		
TH	Test Hole		
THH	Telephone Handhole		
TJO	Transfer of Jurisdiction Ordinance		
TMH	Telephone Manhole		
Tr	Traffic		
TrCb	Traffic Signal Cable		
TrCd	Traffic Signal Conduit		
TrSB	Traffic Signal Box		
TrSP	Traffic Signal Pole		
TVCb	Television Cable		
TVHH	Television Handhole		
Typ	Typical		
UG	Underground		
UIC	Underground Interconnect		
V/Var	Variable/Varies		
VB	Vertical Bend		
V/C	Vertical Curve		
VCh	Valve Chamber		
Veh	Vehicle		
Vert	Vertical		
VO	Vacation Ordinance		
W	Water		
W	West		
w/	With		
WCR	Wheel Chair Ramp		
Wd	Wood/Wooden		
WIF	Wrought Iron Fence		
WM	Water Meter		
WMR	Watermain Radius		
WP	Wood Pole		

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1971 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Abbreviations

ITEM	EXISTING	CONSTRUCT	PEN SIZE	REMARKS
PAVING				
Cement Concrete Pavement	6" Conc	6" Conc Pav	1	7008 ①
Asphalt Concrete Pavement	2" Asph/6" Conc	8"-402B Pav	1	7044 ①
Asphalt Concrete Surfacing	2" Asph	2" Asph	1	7044 ①
Curb		Type 410C Curb	2½	
Cement Concrete Walk	CW	CW	1	7111 ①
Curb Ramp			1	7111 ①
Conc Dwy			1	7008 ①

① Formatt Stock Number

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CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

ITEM	EXISTING	PEN SIZE	CONSTRUCT	PEN SIZE	REMARKS
PAVING					
Cement Concrete Bike Way	3"CBW	00	3"CBW	1	7111 (1)
Asphalt Concrete Bike Way	3"ABW	00	3"ABW	1	7044 (1)
Grading	Graded	00	To Be Graded	1	
SEWERAGE & DRAINAGE					
* Manhole		0	MH-7	2	See pipe usage for shading.
Inlet - Type 268		0			
Inlet - Type 250A		0		1	
Inlet - Type 250B		0		1	
Inlet - Type 252		0		1	
* Catch Basin, (Round Inlet Top)		0			
* Private CB & Inlet					
* Catch Basin, Type151 (Pre 1986)		0			
* Catch Basin, Type 240	A B	0	A B	1	
* Catch Basin, Type 241		0		1	
* Catch Basin, Type 242A		0		1	
* Catch Basin, Type 242B		0		1	
* Sand Box	SB.	0			

* Draw to Actual Size

(1) Formatt Stock Number

Standard Plan No. 003.1b

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CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

ITEM	EXISTING	PEN SIZE	CONSTRUCT	PEN SIZE	REMARKS
SEWERAGE & DRAINAGE					
Concrete Culvert	12"CC	0	12"CC	2	
Pipe Sewer Combined < 12" Dia	8"PS	0	8"PS	3	
Pipe Sewer Combined ≥ 12" Dia	24"PS	0	24"PS	2	7044 (1)
Side Sewer Combined	6"SS	0	6"SS	3	
Pipe Sewer Sanitary < 12" Dia	8"PSS	0	8"PSS	3	
Pipe Sewer Sanitary ≥ 12" Dia	24"PSS	0	24"PSS	2	7060 (1)
Side Sewer Sanitary	6"SSS	0	6"SSS	3	
Pipe Storm Drain < 12" Dia	8"PSD	0	8"PSD	3	
Pipe Storm Drain ≥ 12" Dia	24"PSD	0	24"PSD	2	7063 (1)
Service Drain	8"SD	0	8"SD	3	
Inlet & CB Connection		0	8"	3	
Small Ditch or Stream	Ditch	00	Ditch	1	
Large Ditch or Stream	Ditch	00	4' Ditch	1	

(1) Formatt Stock Number

Standard Plan No. 003.1c

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CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

ITEM	EXISTING	PEN SIZE	CONSTRUCT	PEN SIZE	REMARKS
WATER					
Watermain <8" Dia	6" W	0	6" W	3	
Watermain <12" Dia	8" W	0	8" W	4	
Watermain ≥12" Dia	24" W	0	24" W	1	7044 (1)
Bend w/Conc Blocking		0	8"-11¼° HB or VB	1	▲ = Conc Blocking
Cross		0	8"x8"x6"x6"Cr	1	
Tee		0	8"x8"x6" T	1	
Plug w/Conc Blocking		0	or	1	▲=Conc Blocking
Hydrant		0		1	=Plug
Gate Valve w/Valve Box		0	4"GV w/V Box	1	
Gate Valve w/Chamber		0	8"GV w/Ch	2	
Gate Valve w/ Chamber		0	16"GV w/Ch	1&2	
Reducer	8" W 4" W	0	8"x4"Red		
Air Valve		0		2	
Blowoff		0	1½" BO	2	
* Water Meter	WM	0	WM	2	
Butterfly Valve w/ Valve Box		0	8" Bf V w/V Box	1	
Butterfly Valve w/ Chamber			8" Bf V w/Ch	1	

* Draw to Actual Size (1) Formatt Stock Number

Standard Plan No. 003.1d

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CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

ITEM	EXISTING	PEN SIZE	CONSTRUCT	PEN SIZE	REMARKS
ELECTRICAL					
Signal Controller Cabinet		00		1	
Transmission Pole (Steel W/Conc Base)	XP	00		1	
Strain Pole (Metal)	(Curb)	00	(Curb)		
Utility Wood Pole	PP	00		1	
City Wood Pole	PP	00			
Signal Pedestal		00			
Pedestrian Push Button Pedestal		00			
Pedestrian Push Button		00	PPB	1	
Utility Wood Pole w/(MVL)	PP	00			
(HPS)	PP	00		1	
City Wood Pole w/(MVL)	PP	00			
(HPS)	PP	00		1	
Utility Wood Pole w/Anchor	PP	00		1	
Utility Guy Pole	GP	00	GP	1	
Utility Guy Pole w/Anchor	GP	00	GP	1	
Light Pole (Wood)	LP	00			
Light Pole (Metal) w/(MVL)	LP	00			
(HPS)	LP	00		1	
		00			

Standard Plan No. 003.1e

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CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

ITEM	EXISTING	PEN SIZE	CONSTRUCT	PEN SIZE	REMARKS
WATER					
Watermain <8" Dia	6" W	0	6" W	3	
Watermain <12" Dia	8" W	0	8" W	4	
Watermain ≥12" Dia	24" W	0	24" W	1	7044 (1)
Bend w/Conc Blocking		0	8"-11¼° HB or VB	1	▲ = Conc Blocking
Cross		0	8"x8"x6"x6" Cr	1	
Tee		0	8"x8"x6" T	1	
Plug w/Conc Blocking		0	or	1	▲ = Conc Blocking
Hydrant		0		1	⊐ = Plug
Gate Valve w/Valve Box		0	4" GV w/V Box	1	
Gate Valve w/Chamber		0	8" GV w/Ch	2	
Gate Valve w/ Chamber		0	16" GV w/Ch	1&2	
Reducer	8" W 4" W	0	8"x4" Red		
Air Valve		0		2	
Blowoff		0	1½" BO	2	
* Water Meter	WM	0	WM	2	
Butterfly Valve w/ Valve Box		0	8" Bf V w/V Box	1	
Butterfly Valve w/ Chamber			8" Bf V w/Ch	1	

* Draw to Actual Size (1) Formatt Stock Number

Standard Plan No. 003.1d

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Standard Symbols

ITEM	EXISTING	PEN SIZE	CONSTRUCT	PEN SIZE	REMARKS
ELECTRICAL					
Signal Controller Cabinet		00		1	
Transmission Pole (Steel W/Conc Base)	XP	00		1	
Strain Pole (Metal)	(Curb)	00	(Curb)		
Utility Wood Pole	PP	00		1	
City Wood Pole	PP	00			
Signal Pedestal		00			
Pedestrian Push Button Pedestal		00			
Pedestrian Push Button		00	PPB	1	
Utility Wood Pole w/(MVL)	PP	00			
(HPS)	PP	00		1	
City Wood Pole w/(MVL)	PP	00			
(HPS)	PP	00		1	
Utility Wood Pole w/Anchor	PP	00		1	
Utility Guy Pole	GP	00	GP	1	
Utility Guy Pole w/Anchor	GP	00	GP	1	
Light Pole (Wood)	LP	00			
Light Pole (Metal) w/(MVL)	LP	00			
(HPS)	LP	00		1	
		00			

Standard Plan No. 003.1e

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CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

ITEM	EXISTING	PEN SIZE	CONSTRUCT	PEN SIZE	REMARKS
ELECTRICAL					
Combined Lighting Strain Pole (MVL)		00		1	
(HPS)		00		1	
Traffic Signal Mast Arm Pole		00	MA	3/10scale 2/20scale	
Traffic Signal Mast Arm Pole w/ Luminaire		00	MA	3/10scale 2/20scale	
Vehicle Signal		00		1	
Vehicle Signal w/ Backplate		00		1	
Vehicle Signal (Optically Programmed)		00		1	
Pedestrian Signal		00		1	
Pedestrian Signal (Optically Programmed)		00		1	
Illuminated Sign		00		1	
Non-Illuminated Sign		00		1	
Traffic Signal on Span Wire		00		1	
Multi-Directional Traffic Signal on Span Wire		00		1	
* Electrical Vault	EV	0	EV	2	

* Draw To Actual Size

Standard Plan No. 003.1f

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ATTEST:

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

ITEM	EXISTING	PEN SIZE	CONSTRUCT	PEN SIZE	REMARKS
ELECTRICAL					
Electrical Cable (Direct Burial)	ECb	0	ECb	2or3	
Electrical Conduit	1" ECd	0	1" ECd	2or3	
Electrical Duct	12"x12" ED	0	12"x12" ED	1or2	
Combined Electrical & Telephone Duct	12"x12" ED-TD	0	12"x12" ED-TD	1or2	
Traffic Signal Conduit	2" TrCd	0	2" TrCd	2or3	
Traffic Signal Cable	TrCb	0	TrCb	2or3	
*Detector Loop- Dipole (Loop Schedule)		00		1	
*Detector Loop Quadrapole (Loop Schedule)		00		1	
Pressure Detector		00			
Span Wire		00		2	
Aerial Interconnect Cable	AIC	00	AIC	2	
*Handhole	HH	00	HH		
*Traffic Control Handhole	HH	00	TCHH		
*Street Light Handhole	HH	00	SLHH		
*Ground Rod Handhole	HH	00	GRHH		

* Draw to Actual Size

Standard Plan No. 003.1g

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CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

ITEM	EXISTING	PEN SIZE	CONSTRUCT	PEN SIZE	REMARKS
UTILITIES					
Telephone Cable (Direct Burial)	TCb	0			
Telephone Conduit	3" TCd	0			
Telephone Duct	12"x12" TD	0			
Telephone Enclosure	Encl	0			
Television Cable (Direct Burial)	TVCb	0			
Steam Log	6" Stm 14"x14" Log	0			
* Steam Vault	Steam Vault	0			
Gas Main	12" G	0			
Gas Valve		0			
Gas Meter	GM	0			
Gas Regulator	G Reg	0			
Petroleum or Oil	Oil	0			
* Telephone Manhole	TMH	0			
* Telephone Handhole	THH	0			
* Television Handhole	TVHH	0			
* Telegraph Manhole	Teleg MH	0			

* Draw To Actual Size

Standard Plan No. 003.1h

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CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

SIGNALIZATION IDENTIFICATION SYMBOLS

Vehicle & Pedestrian Signal Head. (Identification Number)

Illuminated Traffic Sign (Identification Number)

Cable Runs (Run Number - per Wiring Schedule)

Removal / Relocation Item (Identification Number-per Removal / Relocation Plan)

Construction Item (Identification Number-per Signalization Plan)

Signal Poles, Signal Pedestals, Push Button Pedestals & Push Buttons Identified by Number on Signalization Plan.

Standard Plan No. 003.1i

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ATTEST: SEC. SECRETARY

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

ITEM	EXISTING	PEN SIZE	CONSTRUCT	PEN SIZE	REMARKS
TOPOGRAPHIC & MISCELLANEOUS					
Monument (Maynot be in Case)					P4050 (2)
Monument in Case		00			P4050 (2)
Brass Plug		00			
Tack		00			
Hub		00			
Center Line		00			
Monument Line		00			
Survey Line		00			
Permanent Easement Line					M 451 (1)
Temp Const Easement Line					M 451 (1)
Dimension Line		00		0	
Match Line		00		1	
Lot & Ownership Line		00			
Right of Way Line		2½			
State Highway LAL	State LAL	2½	LAL=Limited Access Line		P4050 (2)
Building					P4050 (2)
Chain Link Fence		00		1	
Wood Fence		00		1	
Ground, Grade Line		0		0	
Vacated Street or Alley		2½			

(1) Chartpak Stock Number (2) Prestype Stock Number

Standard Plan No. 003.1j

APPROVED BY THE BOARD OF PUBLIC WORKS
CHAIRMAN
ATTEST: SEC. SECRETARY

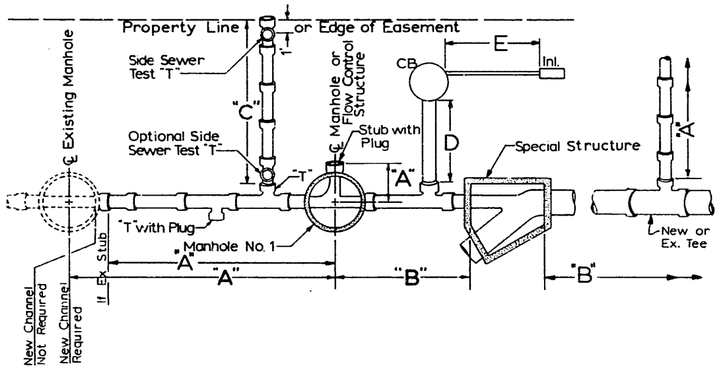
CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Standard Symbols

ITEM	EXISTING	PEN SIZE	CONSTRUCT	PEN SIZE	REMARKS
TOPOGRAPHIC & MISCELLANEOUS					
Contours	246	00	246	1	
Depression		00		1	
Top of Cut / Toe of Fill			Top of Cut / Toe of Fill	0	
Slope Line			Slope Line	1	
Grade (Arrow Downhill)	22.3%	00	22.3%	00	
Vertical Curve	V|C	00	V|C	00	
Tree <12" Dia	Deciduous, Conifer	00	Per Plan	1	(3)
✳ Tree ≥12" Dia	Deciduous, Conifer	00	Per Plan	1	(3)
Rock Facing		00		1	
Guardrail		00		1	
Abandon(ed)	2" ECd (Aban)	00	Aban 2" ECd	0	
Test Hole and Number (Test Boring)	(TB) TH-7	0			P4050 (2)
City of Seattle Datum	CITY of SEATTLE DATUM				P4050 (2)
North Arrow			N		P4050 (2)
✳ Draw to Actual Size					

(2) Prestype Stock Number (3) Symbols for trees and landscaping to be identified in legend for project

Standard Plan No. 003.1k



Payment Shall Be Made For :

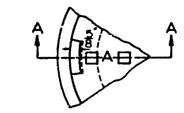
1 Pipe "A","B" or "C" - Per Linear Foot.
2 Tees or Wyes, including plug - Unit Price Each
3 Catch Basin connection "D" and Inlet connection "E" - Per Linear Foot.

Note:
All Pipe shall be measured on the slope along the ℄ of Pipe.

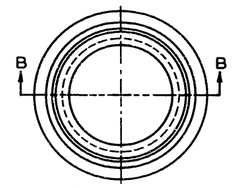
Ref. Std. Spec. Sec. 7-17.

Do Not Scale

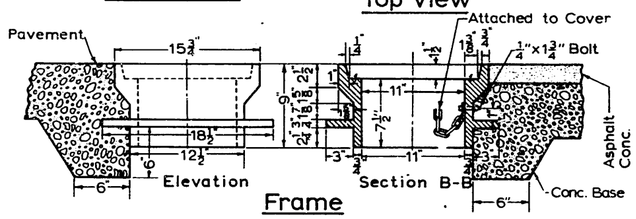
APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Sewer / Drainage Payment Diagram
10/21, 19[illegible] CHAIRMAN ATTEST: [illegible] EXEC SECRETARY	DEPARTMENT OF ENGINEERING	



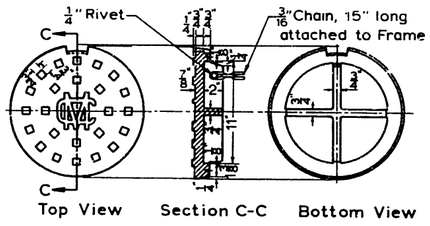
Section A-A



Top View



Frame



Top View Section C-C Bottom View

Cover

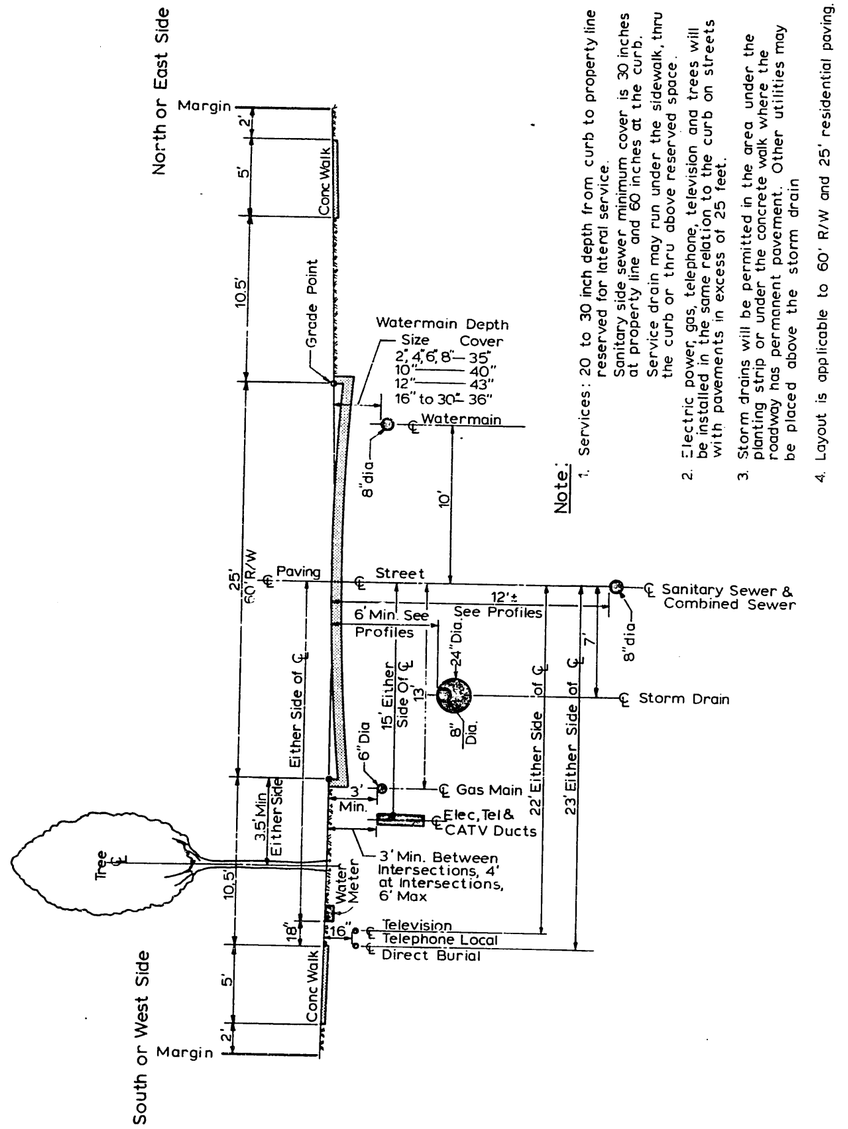
Notes:
1 Frame and Cover shall be tested for accuracy of fit and shall be marked in sets for delivery.
2 Frame and Cover shall be cast iron and have bituminous coating applied to all faces.

Ref. Std. Spec. Sec. 8-13.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Monument Frame and Cover
10/31, 19[illegible] CHAIRMAN ATTEST: [illegible] EXEC SECRETARY	DEPARTMENT OF ENGINEERING	

Standard Plan No. 030

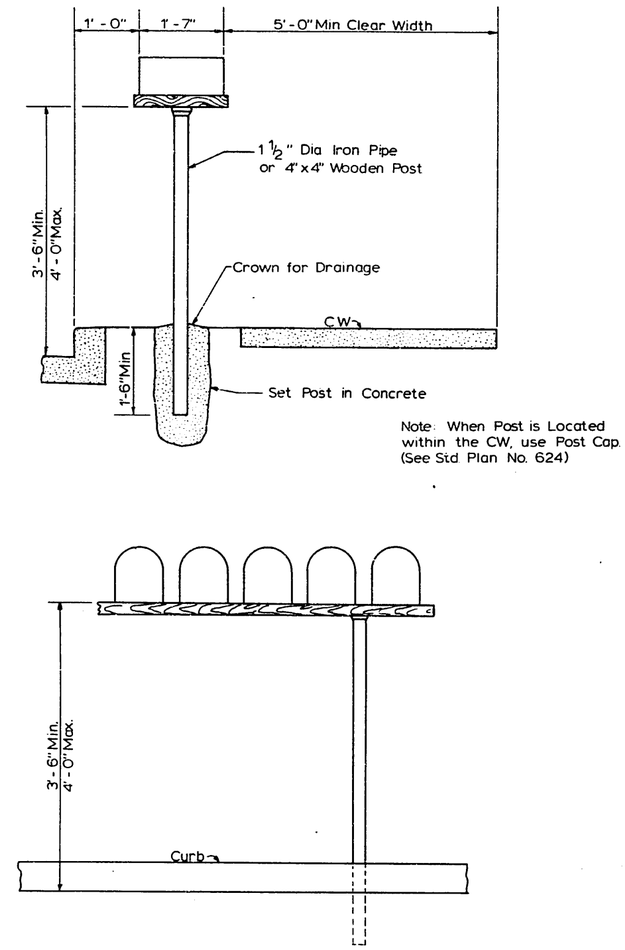


Note:

1. Services: 20 to 30 inch depth from curb to property line reserved for lateral service.
   Sanitary side sewer minimum cover is 30 inches at property line and 60 inches at the curb.
   Service drain may run under the sidewalk, thru the curb or thru above reserved space.
2. Electric power, gas, telephone, television and trees will be installed in the same relation to the curb on streets with pavements in excess of 25 feet.
3. Storm drains will be permitted in the area under the planting strip or under the concrete walk where the roadway has permanent pavement. Other utilities may be placed above the storm drain
4. Layout is applicable to 60' R/W and 25' residential paving.

APPROVED BY THE BOARD OF PUBLIC WORKS 19 ____ CHAIRMAN ATTEST: ____ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Standard Locations for Underground Utilities (Residential Street)

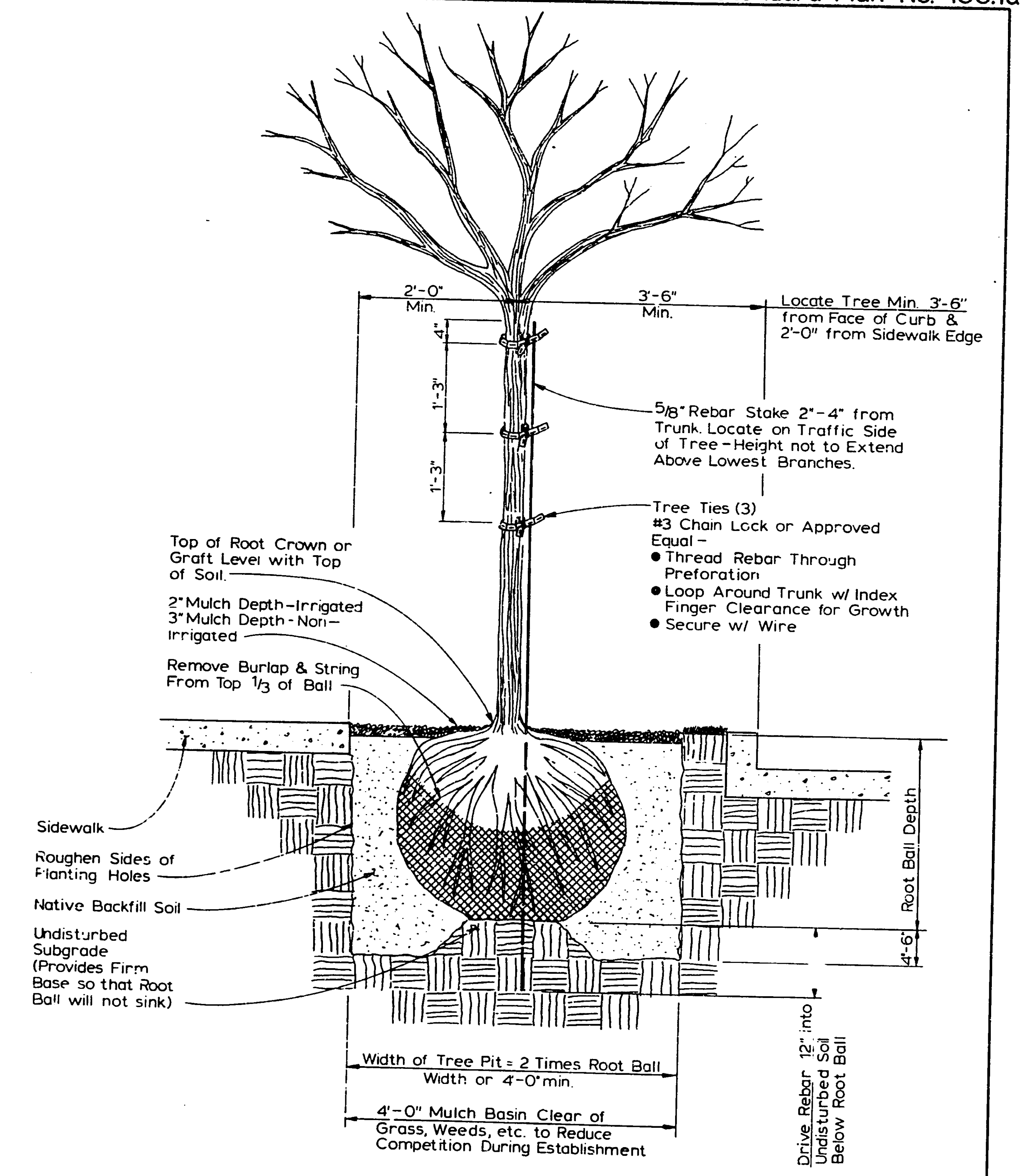
Standard Plan No. 031



Do Not Scale

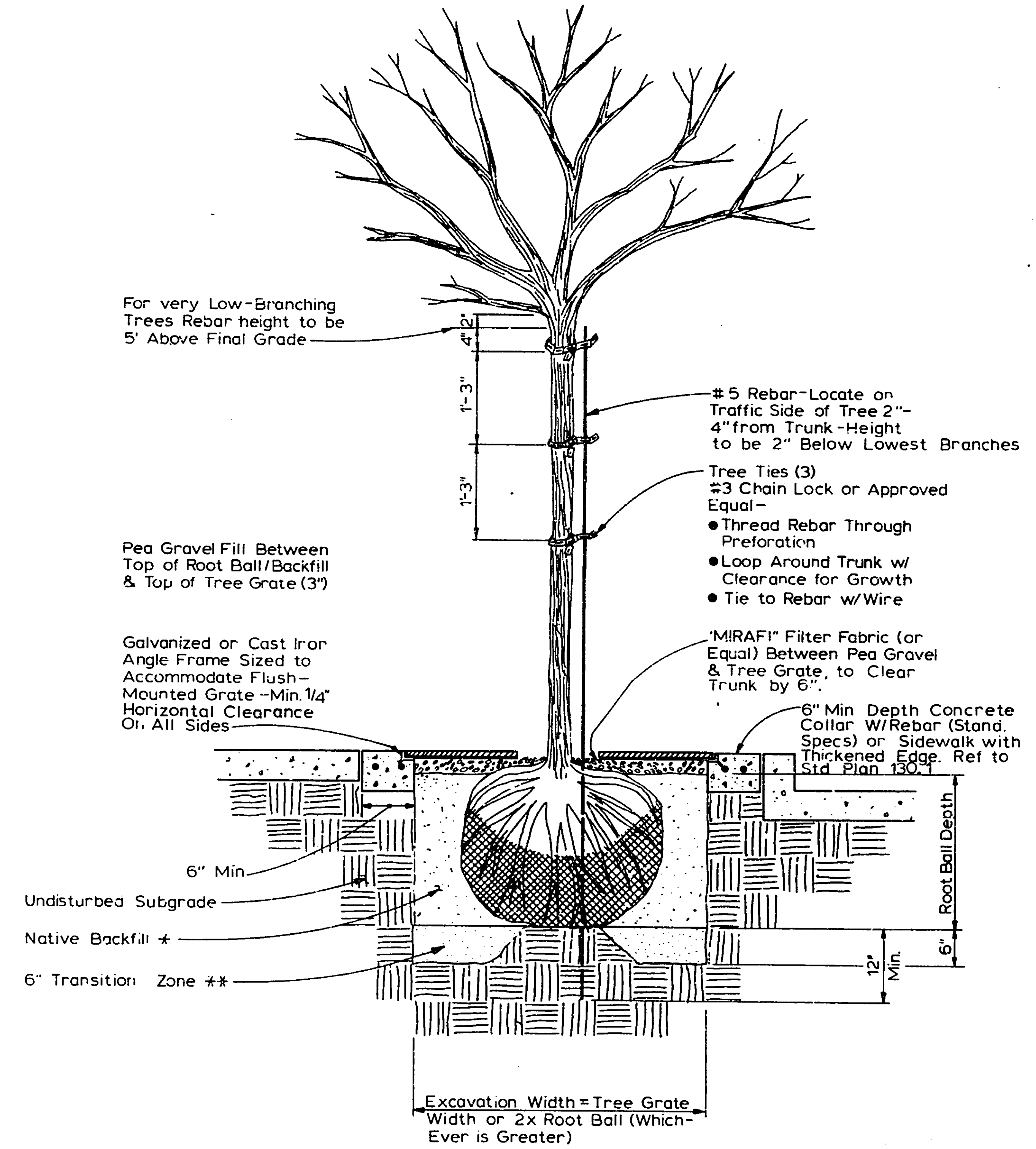
APPROVED BY THE BOARD OF PUBLIC WORKS 19 ____ CHAIRMAN ATTEST: ____ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Mailbox Mounting (Residential)

Standard Plan No. 100.1a



APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Deciduous Tree Planting In Planting Strip

Standard Plan No. 100.1b

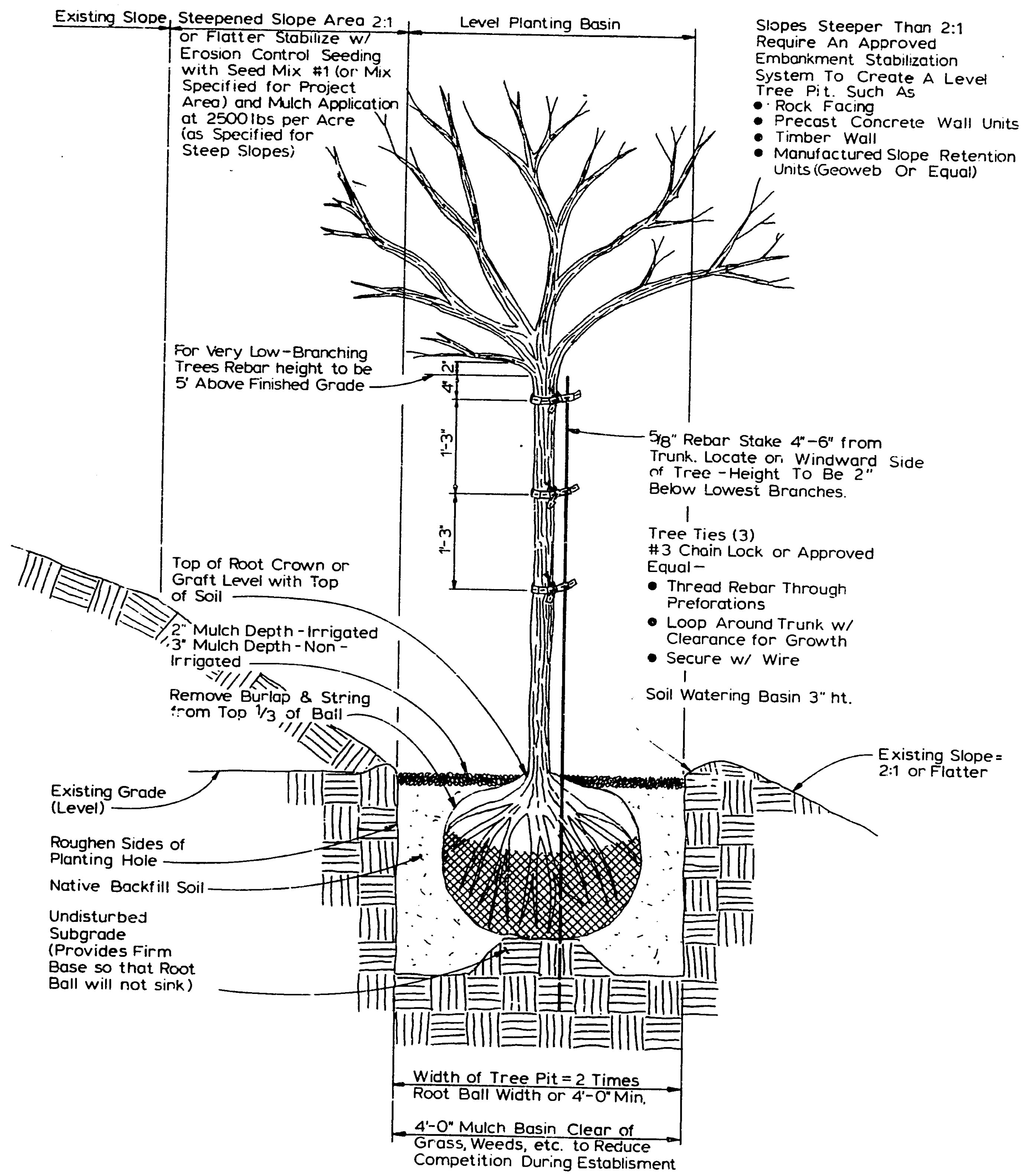


* Native Backfill High in fines or low in organic matter to be amended with 25% (@ 1/2 C.Y. per tree) Decomposed Organic Mulch (At the Request of the Engineer)

** Transition Zone Amended backfill soil mixed 50/50 w/subsoil or loosened subsoil (when native is used "as is")

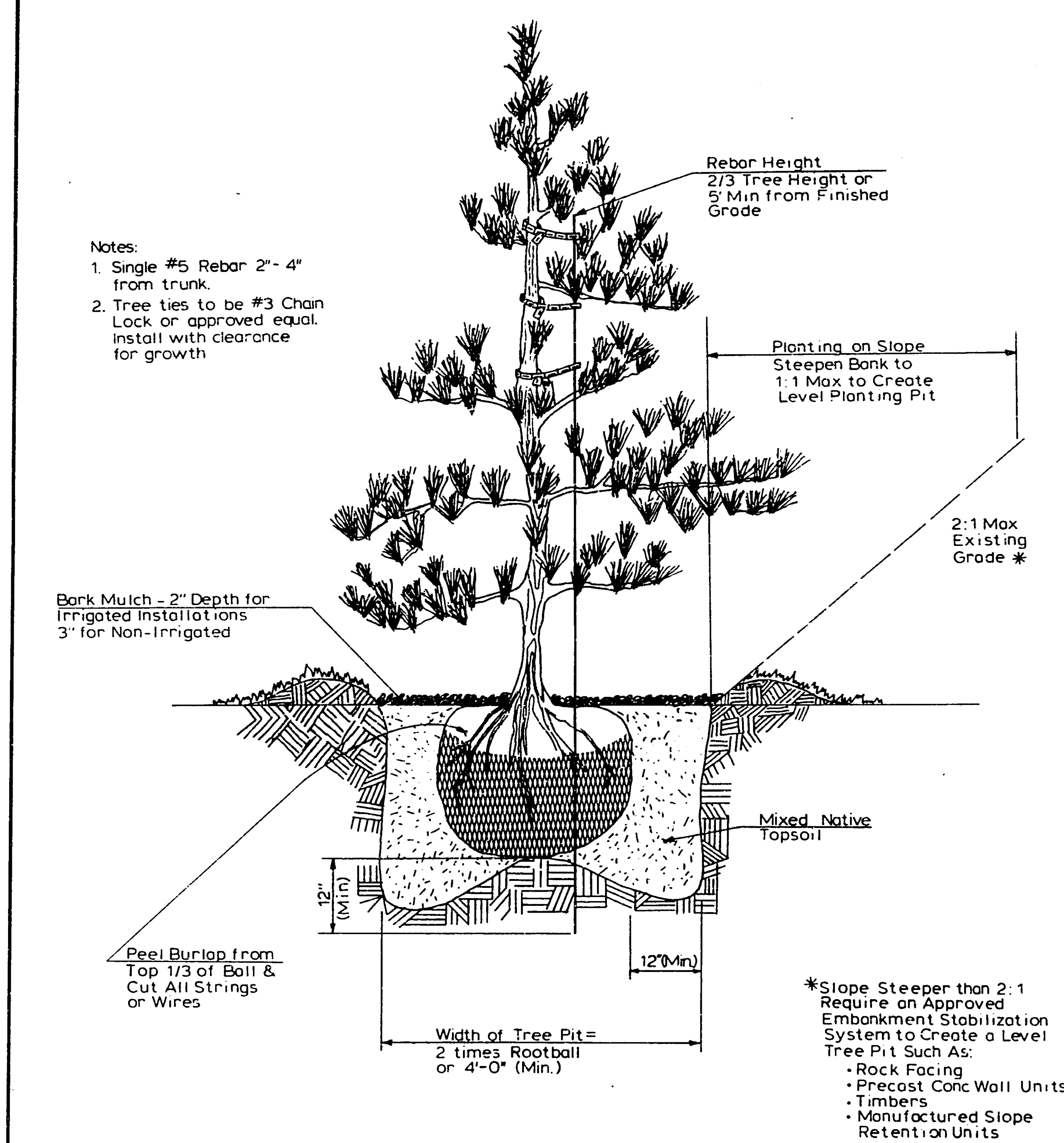
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Deciduous Tree Planting In Tree Pit

Standard Plan No. 100.1c



APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 ______ CHAIRMAN ATTEST: ______ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Deciduous Tree Planting In Open Lawn

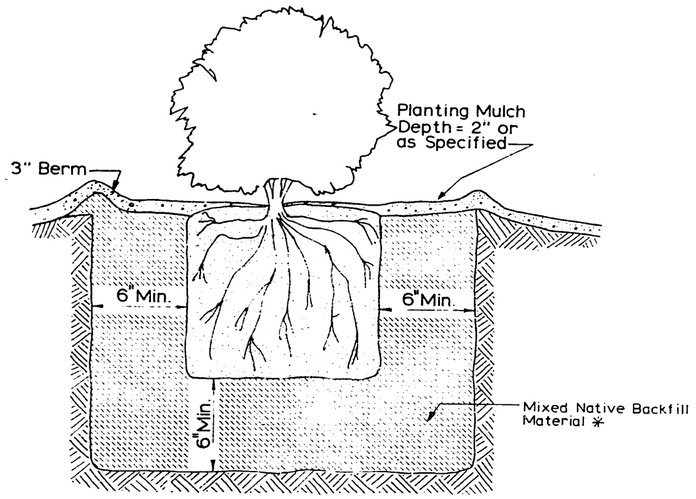
Standard Plan No. 101.1



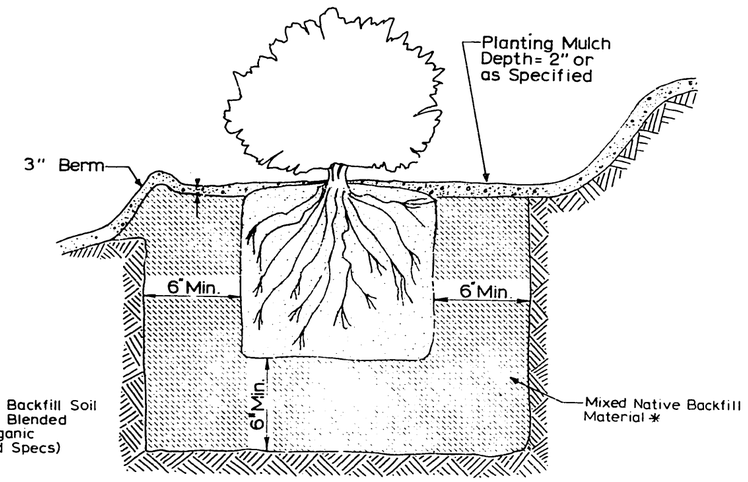
Ref. Std. Spec. Sec. 8-02

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 ______ CHAIRMAN ATTEST: ______ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Coniferous Tree Planting

Standard Plan No. 110.1



Planting On Level Grade



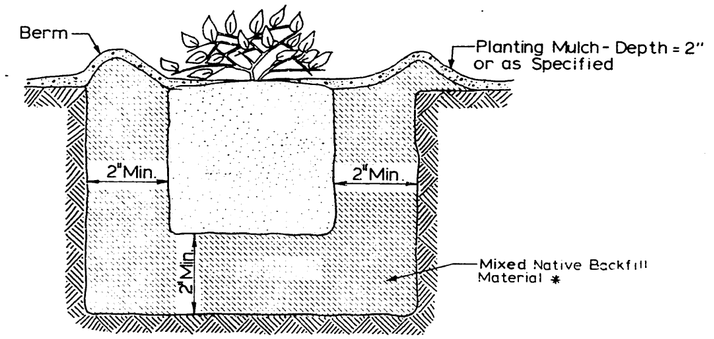
Planting On A Slope

* Mixed Native Backfill Soil is Native Soil Blended With 25% Organic Mulch (See Std Specs)

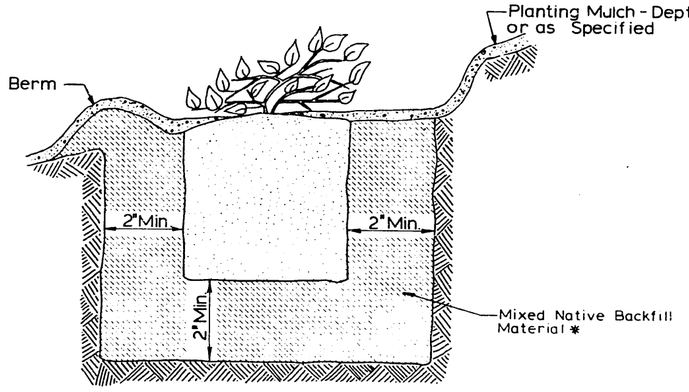
Ref. Std. Spec. Sec. 8-02.

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1971 Clay Larkin CHAIRMAN ATTEST: Barbara H. Tobin EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Shrub Planting

Standard Plan No. 111.1



Planting On Level Grade



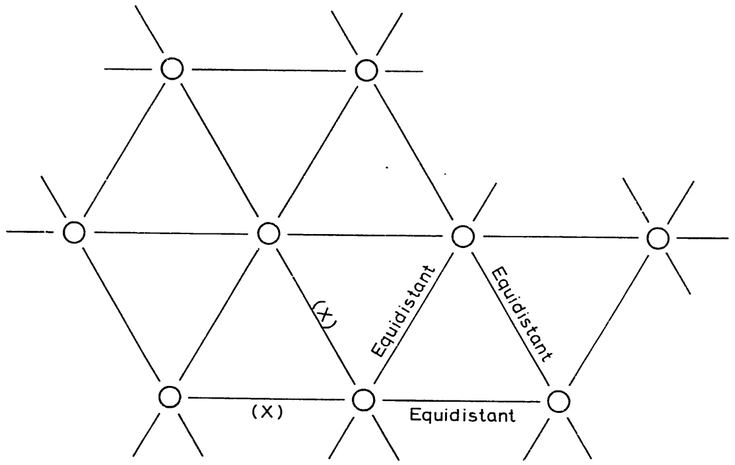
Planting On A Slope

* Mixed Native Backfill Soil is Native Soil Blended With 25% Decomposed Organic Mulch (See Std Specs)

Ref. Std. Spec. Sec. 8-02

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1971 Clay Larkin CHAIRMAN ATTEST: Barbara H. Tobin EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Ground Cover Planting

Standard Plan No. 112

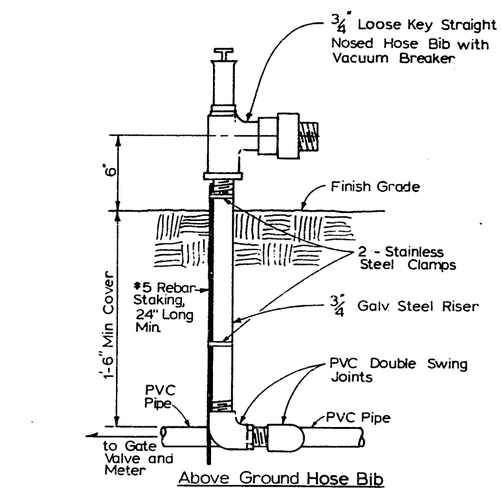


Distance (X) as specified on the plans

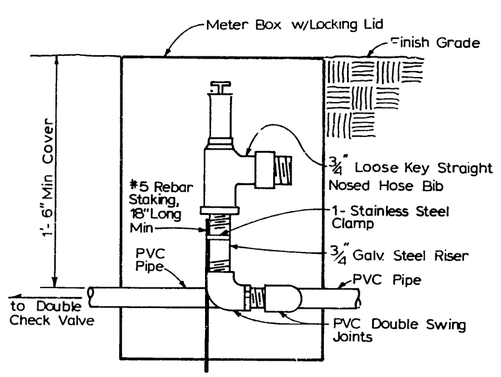
Ref. Std. Spec. Sec. 9-14.

APPROVED BY THE BOARD OF PUBLIC WORKS ..., 19... CHAIRMAN ATTEST: ... EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Planting Pattern

Standard Plan No. 121



Above Ground Hose Bib



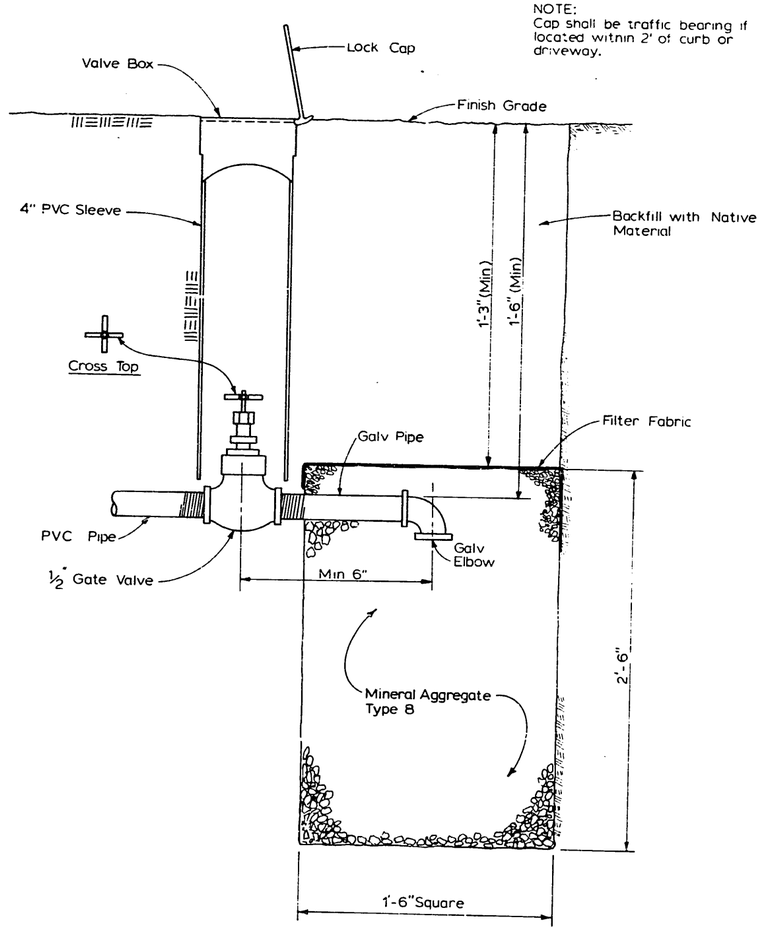
Below Ground Hose Bib

Ref. Std. Spec. Sec. 9-15.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS ..., 19... CHAIRMAN ATTEST: ... EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Hose Bib Assembly

Standard Plan No. 122.1

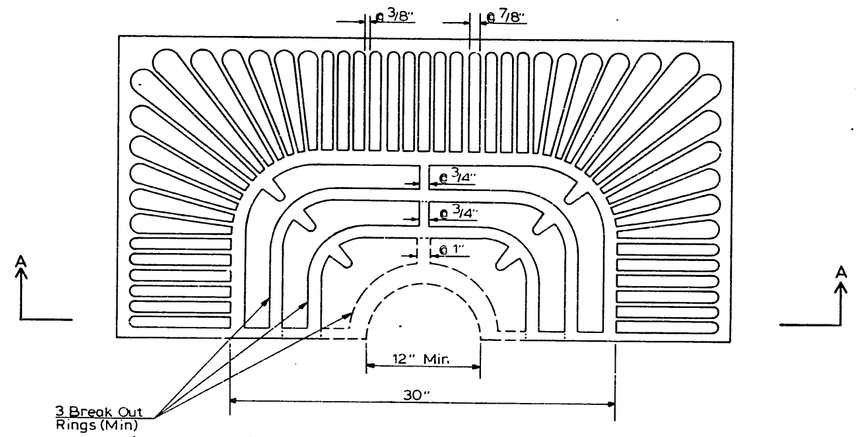


Ref Std Spec. Sec. 9-15.

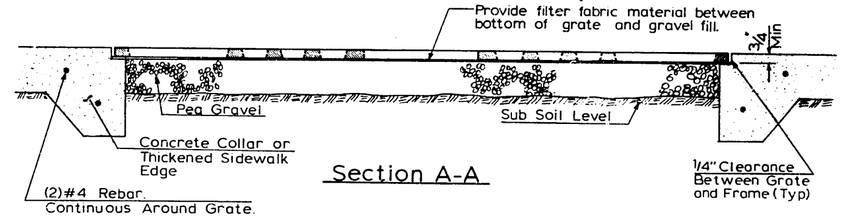
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 19 91 Cathy Lindow CHAIRMAN ATTEST: Barbara H. Tabor EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Drain Valve

Standard Plan No. 130.1



Plan
1 of 2 Pieces



Section A-A

Notes:

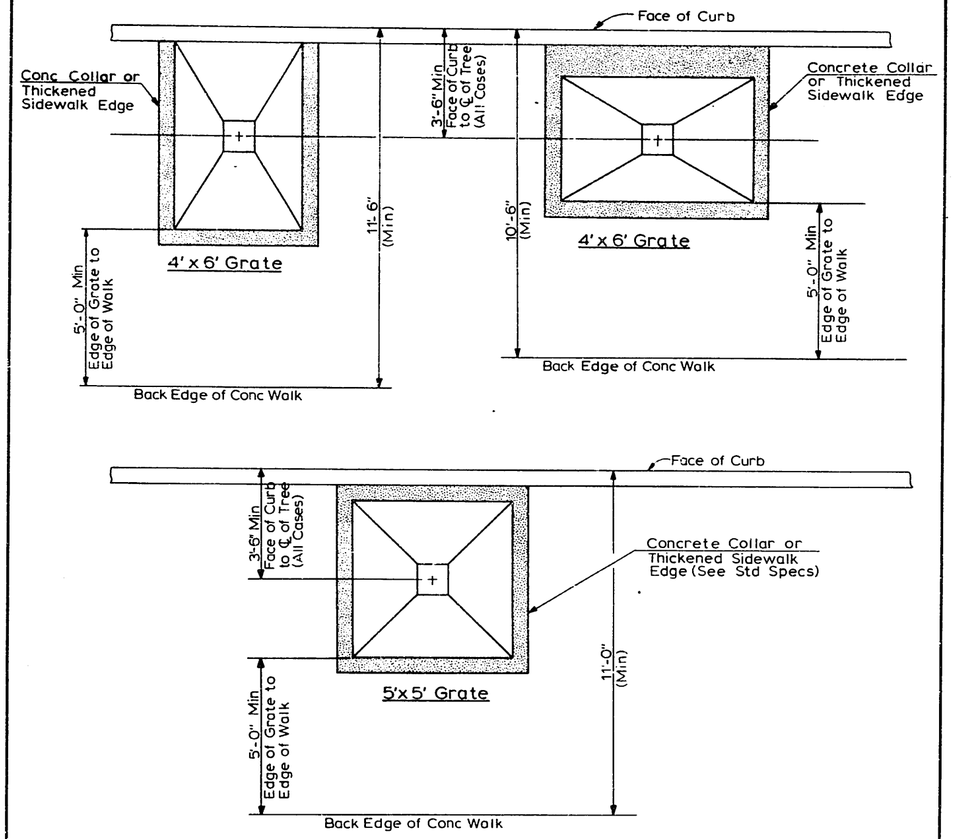
1. Maximum weight of each tree grate casting shall be 110 lbs.
2. Tree Grate consists of 2 pieces, min.
3. Tree grate shall be made of gray iron.

Ref. Std. Spec. Sec. 8-02.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS _____, 19__ Cathy Lindow CHAIRMAN ATTEST: _____ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	2 Piece Tree Grate

Standard Plan No. 131



Dimensional Requirements

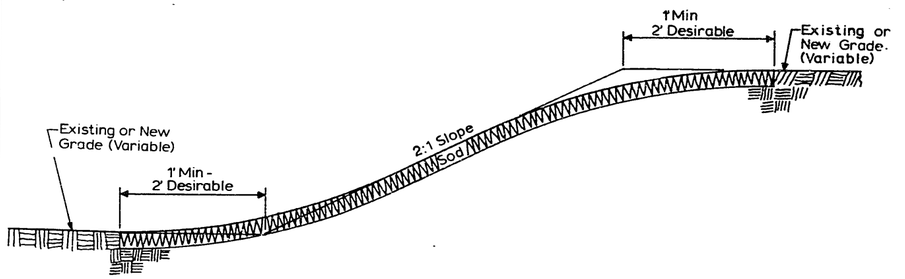
- 24 Sq' Min Tree Grate Size
- 3'-6" Min Req'd Between Tree ℄ & Face of Curb
- 2'-0" Min Req'd Between Tree ℄ & Conc Pavement (Sidewalk or Conc Collar)
- 5'-0" Min Conc Walking Surface
- 12" Min Center Grate Opening

Ref. Std. Spec. Sec. 8-02

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

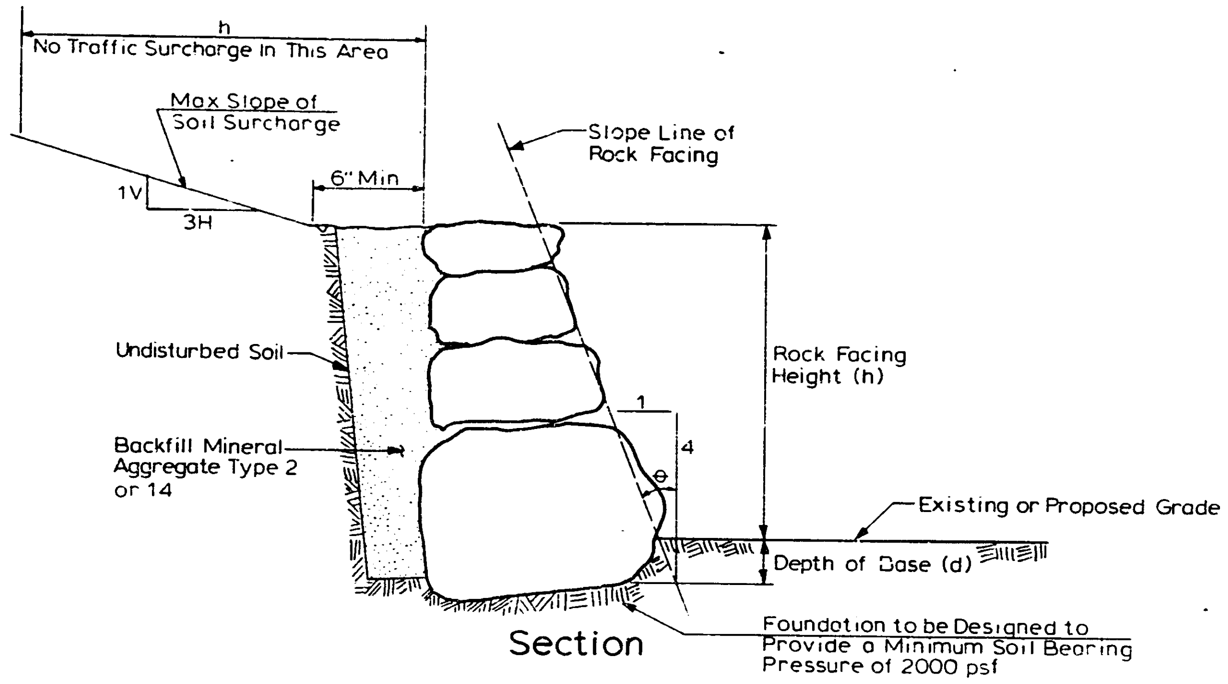
APPROVED BY THE BOARD OF PUBLIC WORKS 7/13, 1971 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Tree Grate

Standard Plan No. 140

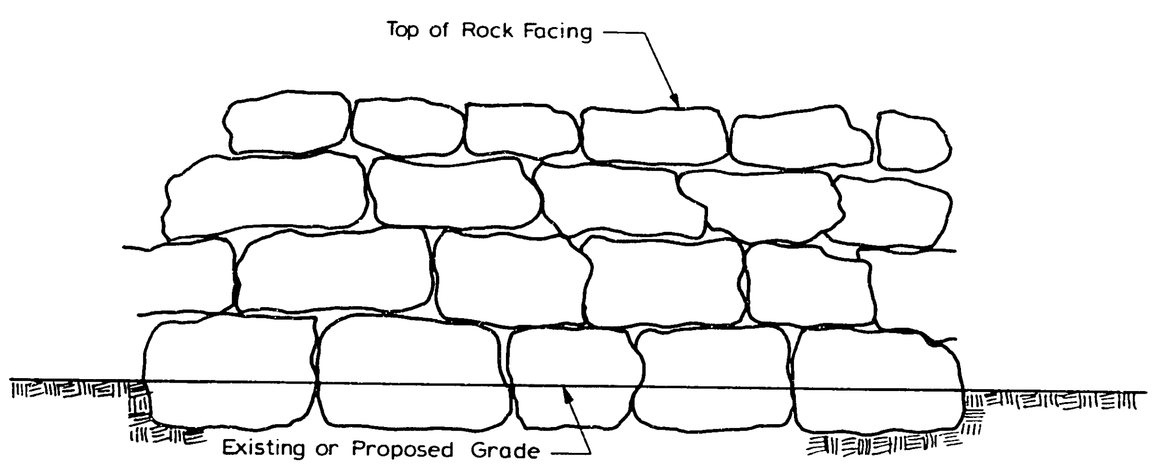


Ref. Std. Spec. Sec. 2-03.

APPROVED BY THE BOARD OF PUBLIC WORKS 12/1, 1972 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Slope Rounding



Section



Elevation

(h)	(d)	Minimum Rock Size (Base)	Minimum Rock Size (Top)
2 feet	3 inches	2-man	1-man
4 feet	6 inches	3-man	2-man
6 feet	9 inches	4-man	2-man
8 feet	12 inches	5-man	2-man

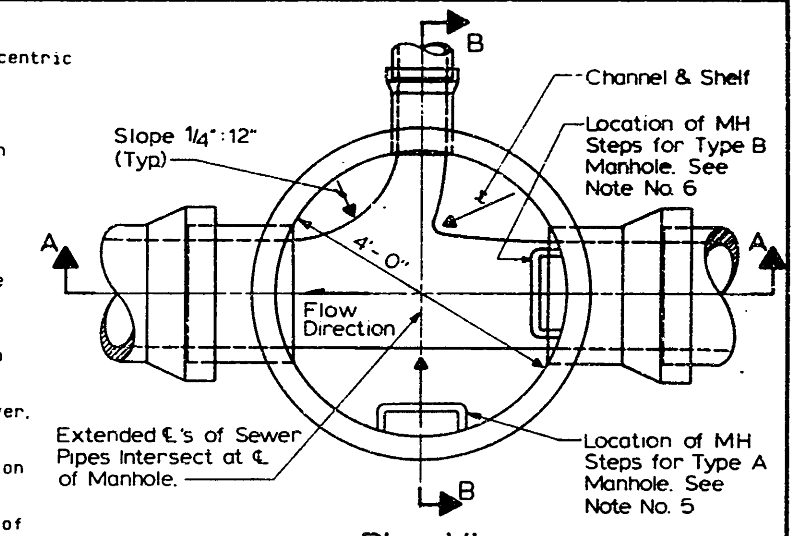
θ = 14° ± 1°

Ref. Std. Spec. Sec. 2-08

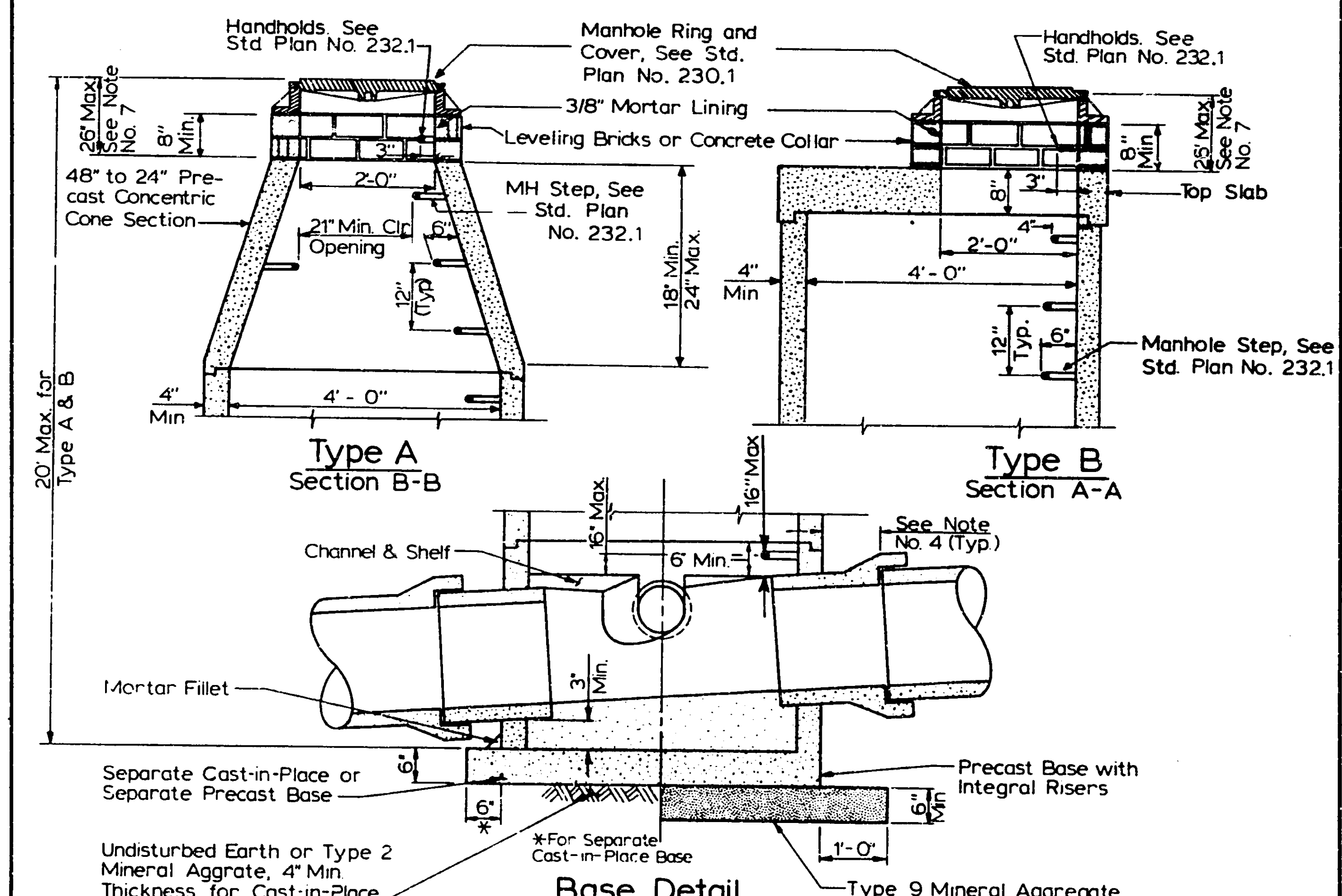
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Rock Facing

Notes:

1. Type A manhole designates manholes with precast concentric cone sections.
2. Type B manhole designates manholes with top slabs.
3. Top slab and base section details, see Standard Plan No. 200.1b
4. Maximum dimension from outside manhole wall to the first pipe joint. The greater of ½ inside pipe diameter or 12 inches.
5. For Type A manhole, locate manhole steps on the side perpendicular to the direction of the flow in the channel.
6. For Type B manhole, locate manhole steps opposite to the downstream opening.
7. Total height of ring extension, manhole ring and cover, and leveling bricks shall not exceed 26 inches.
8. Manhole base sections shown in section A-A and section B-B are typical for Type A and Type B manholes.
9. The maximum hole size shall be the outside diameter of the pipe plus the manhole wall thickness. The minimum hole size shall be the outside diameter of the pipe plus 4 inches. Minimum distance between holes is 8 inches.
10. Precast manhole components shall conform to ASTM C478. Joints between precast components shall be rubber gasketed conforming to ASTM C443.

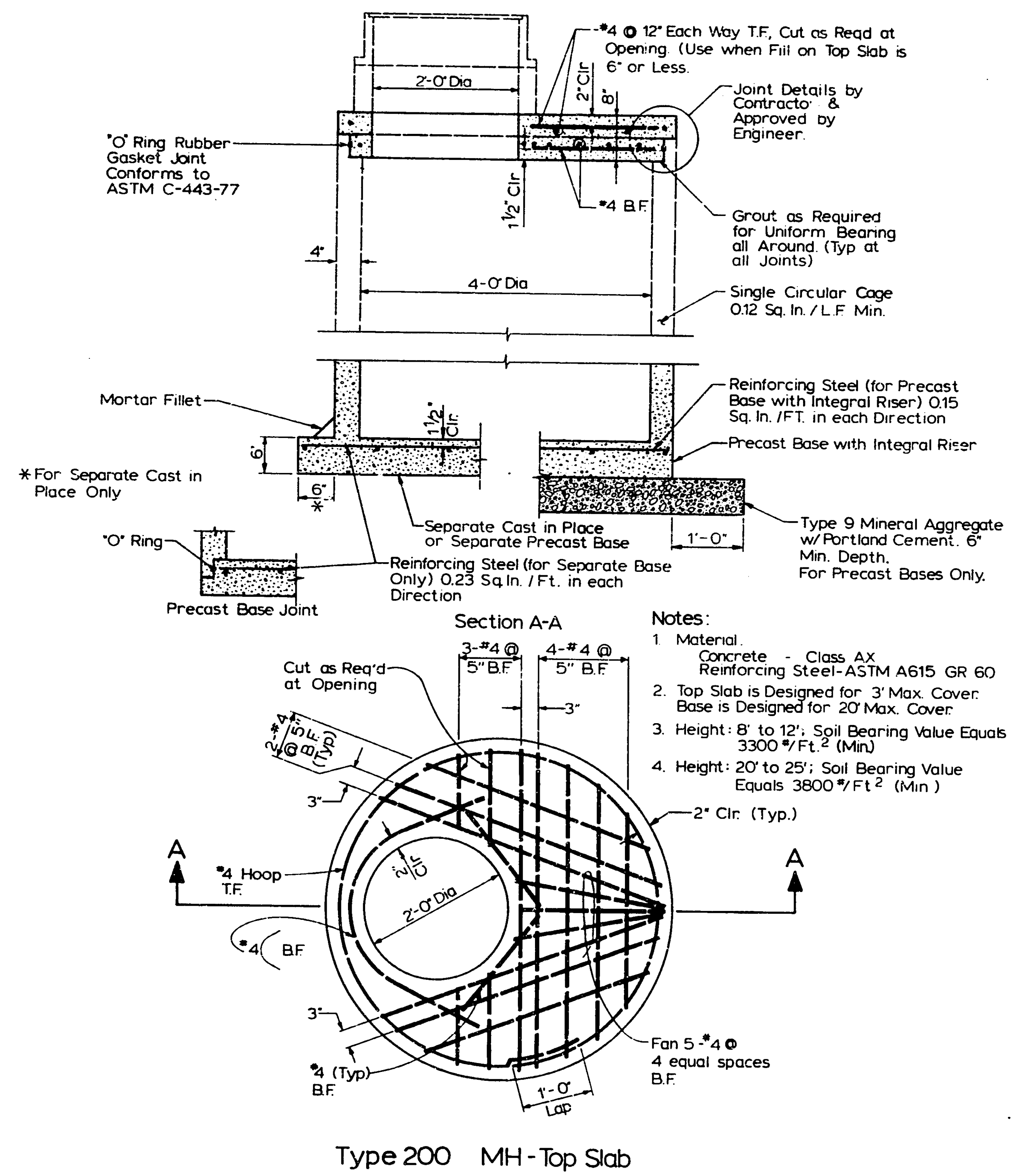


Plan View
(Top Removed)



Base Detail
Section A-A

APPROVED BY THE BOARD OF PUBLIC WORKS 7/ 19 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 200 Manhole



Notes:

1. Material.
   Concrete - Class AX
   Reinforcing Steel-ASTM A615 GR 60
2. Top Slab is Designed for 3' Max. Cover. Base is Designed for 20' Max. Cover.
3. Height: 8' to 12'; Soil Bearing Value Equals 3300 #/Ft.^{2} (Min)
4. Height: 20' to 25'; Soil Bearing Value Equals 3800 #/Ft^2 (Min)

Type 200 MH-Top Slab

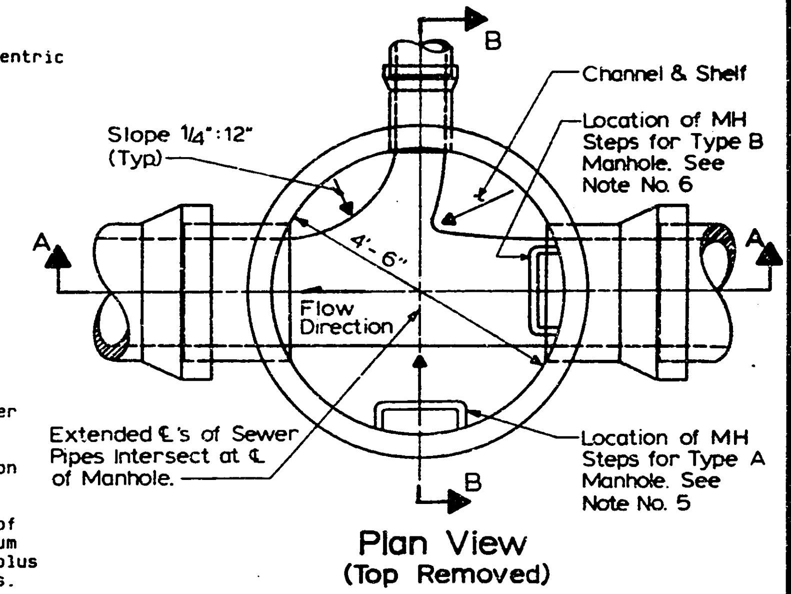
Ref. Std. Spec. Sec. 7-05

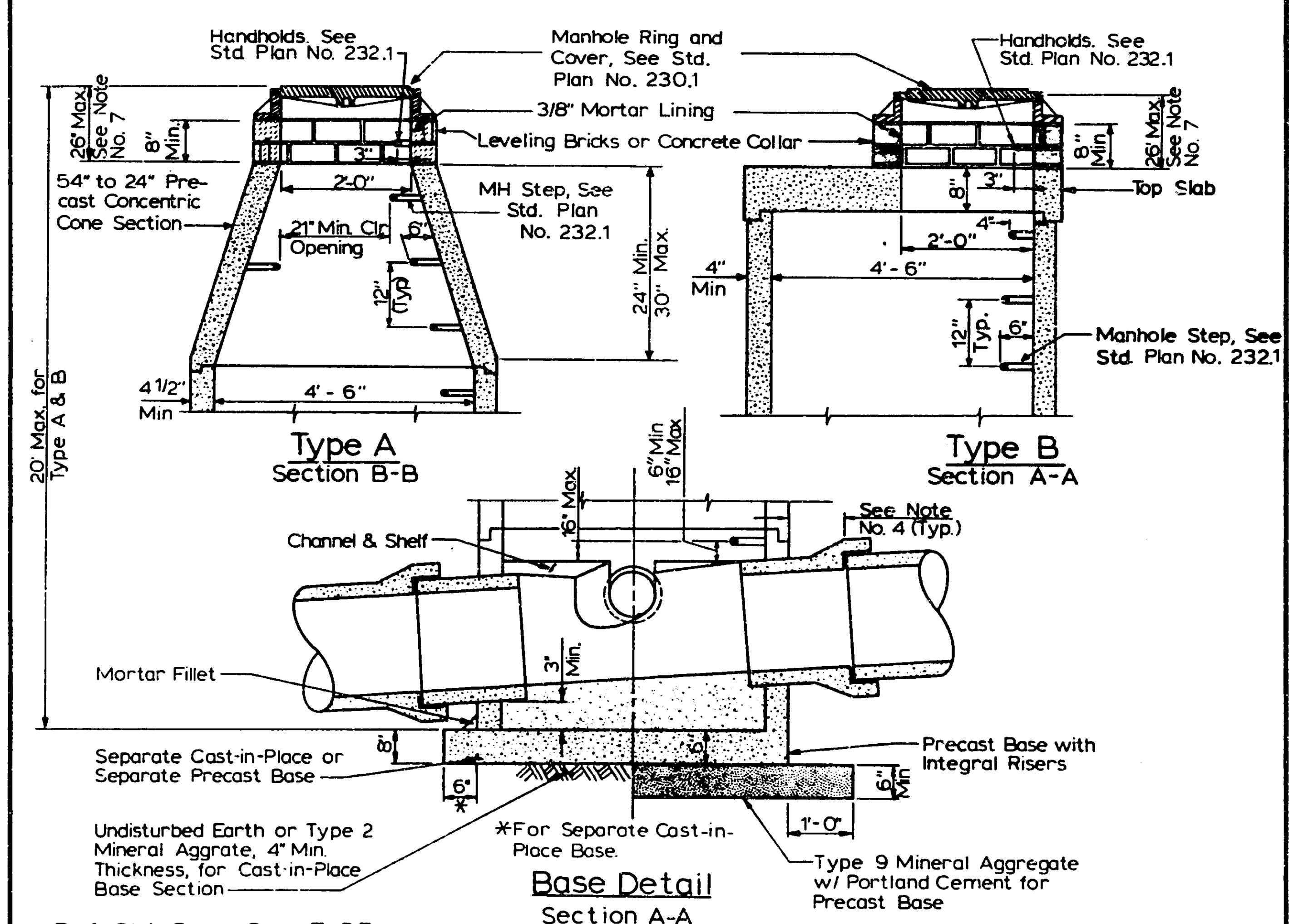
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1991 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 200 Manhole Top & Bottom Slabs

Notes:

1. Type A manhole designates manholes with precast concentric cone sections.
2. Type B manhole designates manholes with top slabs.
3. Top slab and base section details, see Standard Plan No. 201.1b
4. Maximum dimension from outside manhole wall to the first pipe joint. The greater of ½ inside pipe diameter or 12 inches.
5. For Type A manhole, locate manhole steps on the side perpendicular to the direction of the flow in the channel.
6. For Type B manhole, locate manhole steps opposite to the downstream opening.
7. Total height of ring extension, manhole ring and cover and leveling bricks shall not exceed 26 inches.
8. Manhole base sections shown in section A-A and section B-B are typical for Type A and Type B manholes.
9. The maximum hole size shall be the outside diameter of the pipe plus the manhole wall thickness. The minimum hole size shall be the outside diameter of the pipe plus 4 inches. Minimum distance between holes is 8 inches.
10. Precast manhole components shall conform to ASTM C478. Joints between precast components shall be rubber gasketed conforming to ASTM C443.





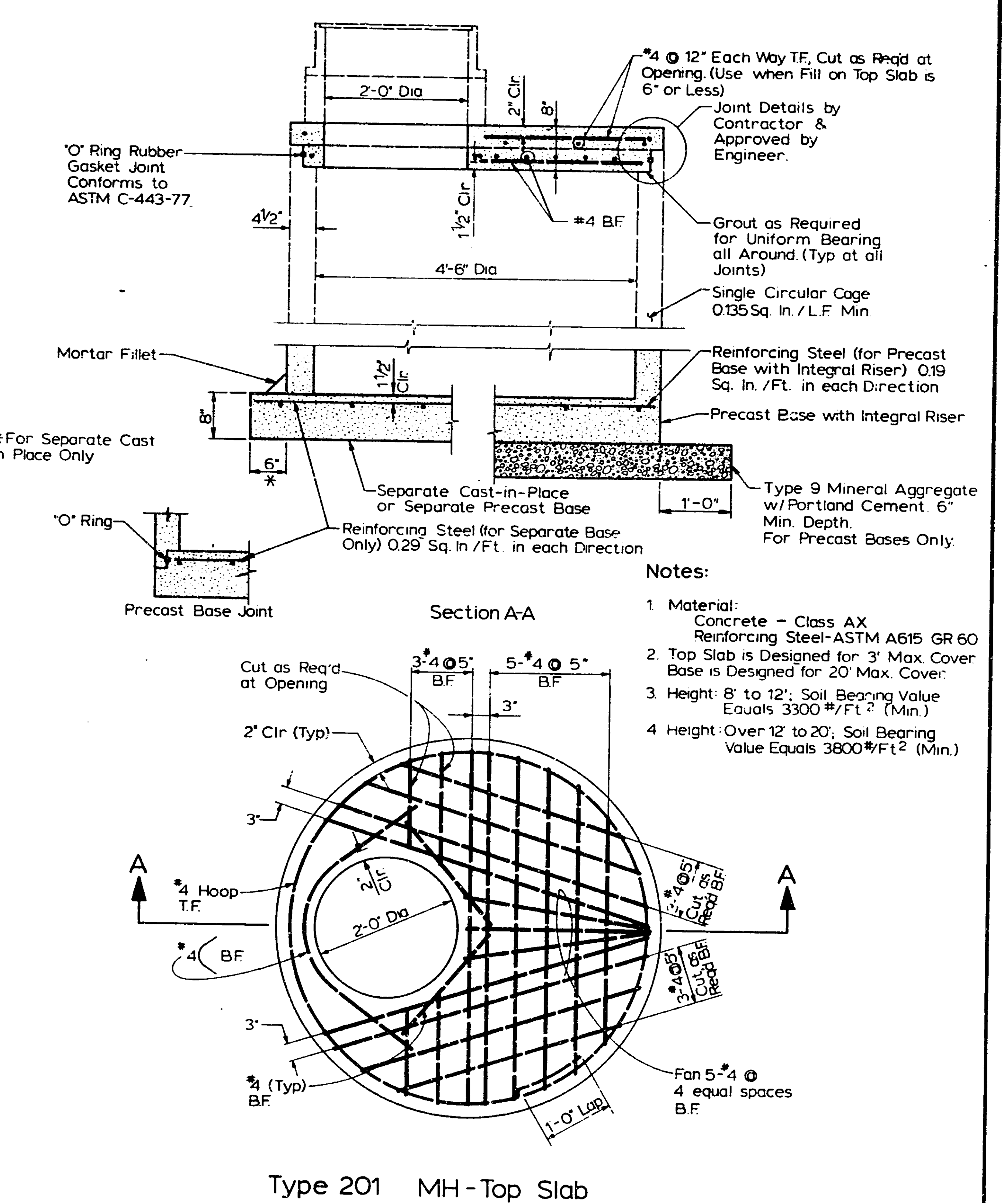
Base Detail

Section A-A

Ref. Std. Spec. Sec. 7-05

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1991 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 201 Manhole



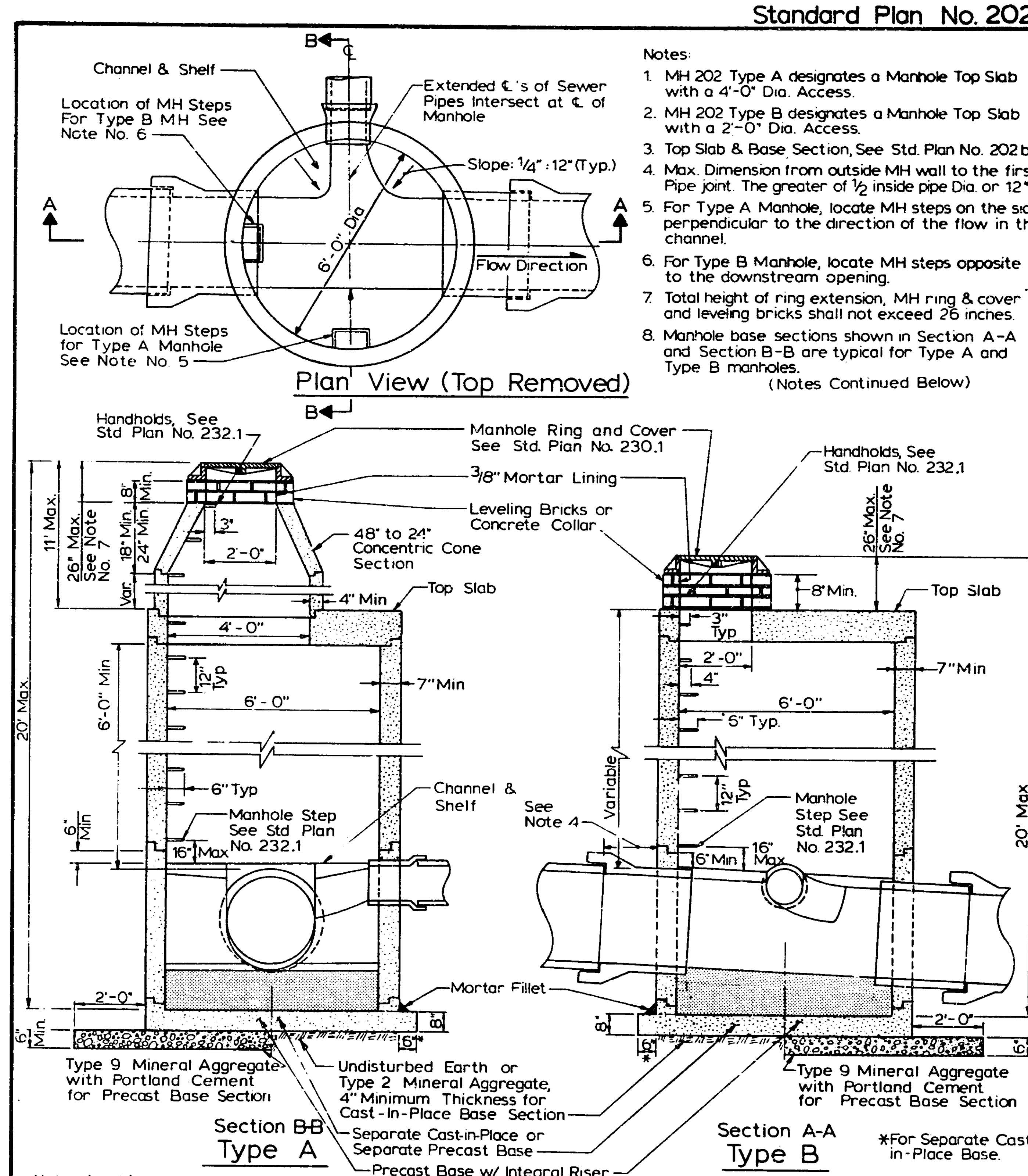
Notes:

1. Material:
   Concrete – Class AX
   Reinforcing Steel – ASTM A615 GR 60
2. Top Slab is Designed for 3' Max. Cover. Base is Designed for 20' Max. Cover.
3. Height: 8' to 12'; Soil Bearing Value Equals 3300 #/Ft² (Min.)
4. Height: Over 12' to 20'; Soil Bearing Value Equals 3800 #/Ft² (Min.)

Ref. Std. Spec. Sec. 7-05

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 19?? [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 201 Manhole Top & Bottom Slabs



Notes:

1. MH 202 Type A designates a Manhole Top Slab with a 4'-0" Dia. Access.
2. MH 202 Type B designates a Manhole Top Slab with a 2'-0" Dia. Access.
3. Top Slab & Base Section, See Std. Plan No. 202b.
4. Max. Dimension from outside MH wall to the first Pipe joint. The greater of ½ inside pipe Dia. or 12".
5. For Type A Manhole, locate MH steps on the side perpendicular to the direction of the flow in the channel.
6. For Type B Manhole, locate MH steps opposite to the downstream opening.
7. Total height of ring extension, MH ring & cover and leveling bricks shall not exceed 26 inches.
8. Manhole base sections shown in Section A-A and Section B-B are typical for Type A and Type B manholes.
   (Notes Continued Below)

Notes (cont.)

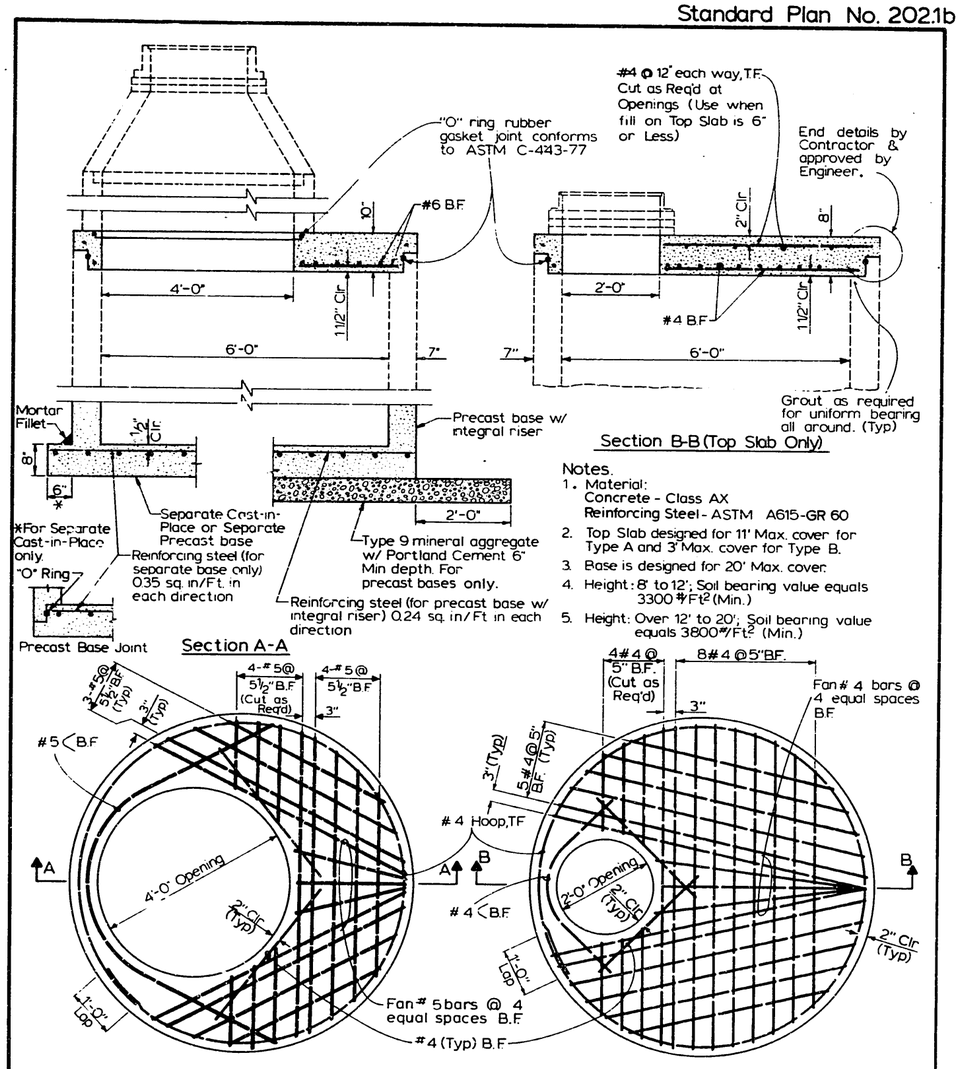
9. The maximum hole size shall be the outside diameter of the pipe plus the MH wall thickness. The minimum hole size shall be the outside diameter of the pipe plus 4 inches. Minimum distance between holes is 12 inches.
10. Precast MH components shall conform to ASTM C478. Joints between precast components shall be rubber gasketed conforming to ASTM C443.

Ref. Std. Spec. Sec. 7-05

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 19?? [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 202 Manhole

Standard Plan No. 202.1b



Section B-B (Top Slab Only)

Notes.

1. Material:
   Concrete - Class AX
   Reinforcing Steel - ASTM A615-GR 60
2. Top Slab designed for 11' Max. cover for Type A and 3' Max. cover for Type B.
3. Base is designed for 20' Max. cover.
4. Height: 8' to 12'; Soil bearing value equals 3300 #/Ft² (Min.)
5. Height: Over 12' to 20'; Soil bearing value equals 3800 #/Ft² (Min.)

Type A MH Top Slab

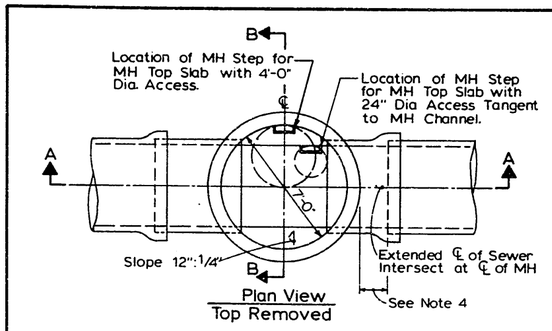
Type B MH Top Slab

Ref. Std. Spec. Sec. 7-05

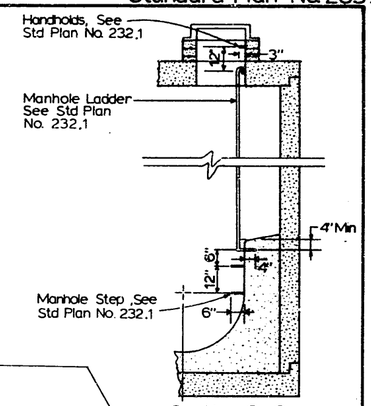
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 19 92 Chas Larkin CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 202 Manhole Top & Bottom Slabs

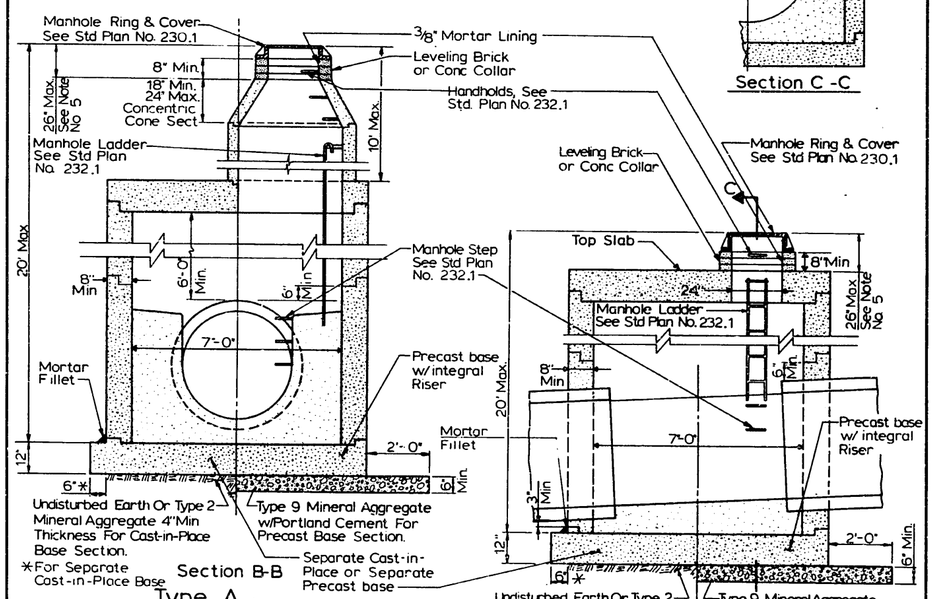
Standard Plan No. 203.1a



Plan View
Top Removed



Section C-C



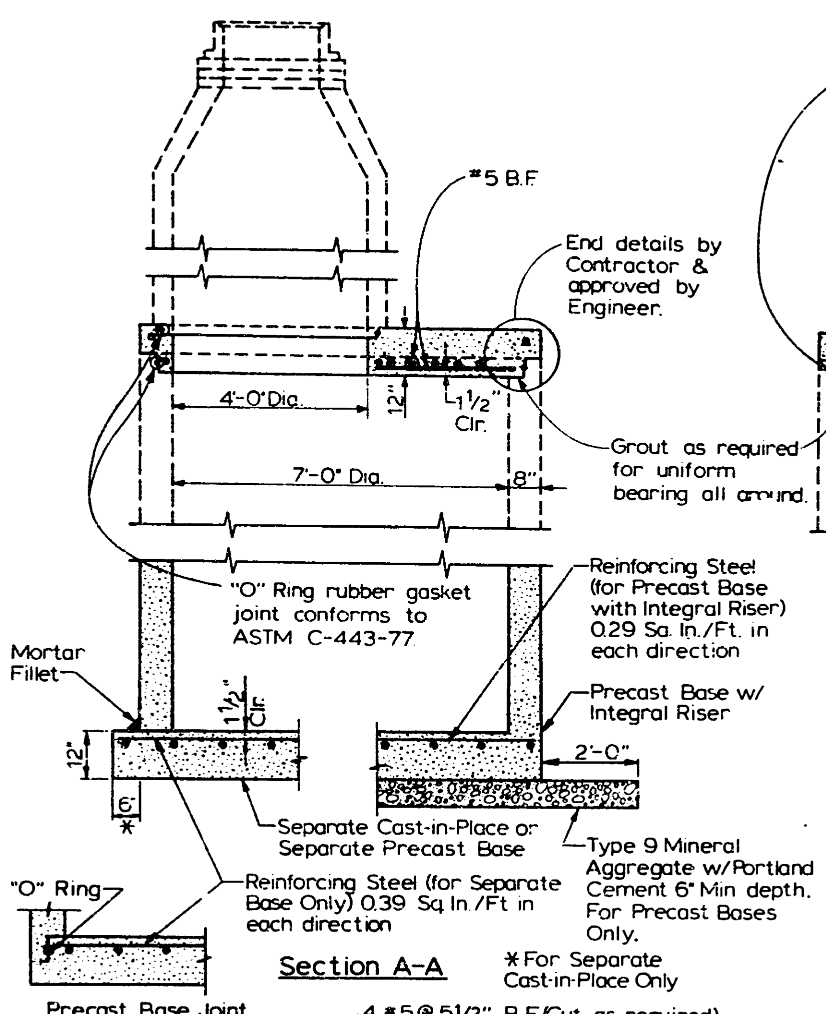
Notes:

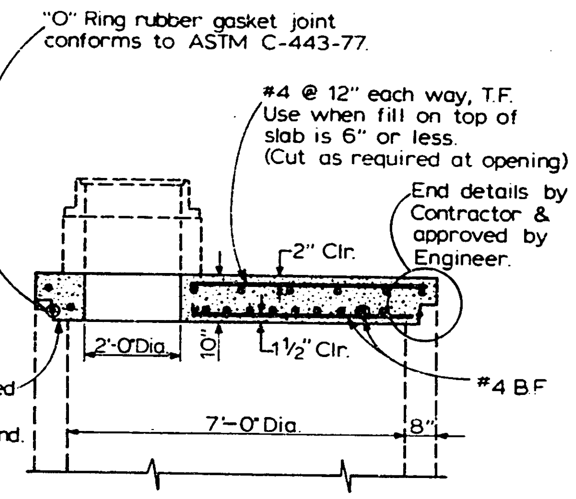
1. Type A MH designates a MH top slab with a 48" dia. access.
2. Type B MH designates a MH top slab with a 24" dia. access.
3. Top slab and base section details, see std. plan No. 203.1b
4. Max dimension from outside MH wall to the first pipe joint. The greater of ½ inside pipe diameter or 12".
5. Total height of ring extensions, MH ring and cover, and leveling bricks shall not exceed 26".
6. MH base sections shown in section A-A and section B-B are typical for Type A and Type B MH's.
7. Max hole size is equal to the outside diameter of the pipe plus the MH wall thickness. Min distance between holes is 12".
8. Precast MH components shall conform to ASTM C478. Joints between precast components shall be rubber gasketed conforming to ASTM C443.

Ref. Std Spec Sec 7-05

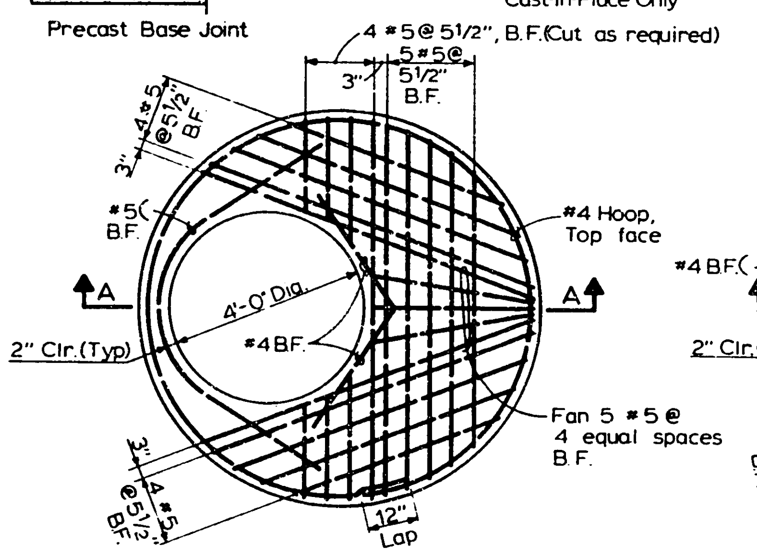
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 19 92 Chas Larkin CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 203 Manhole

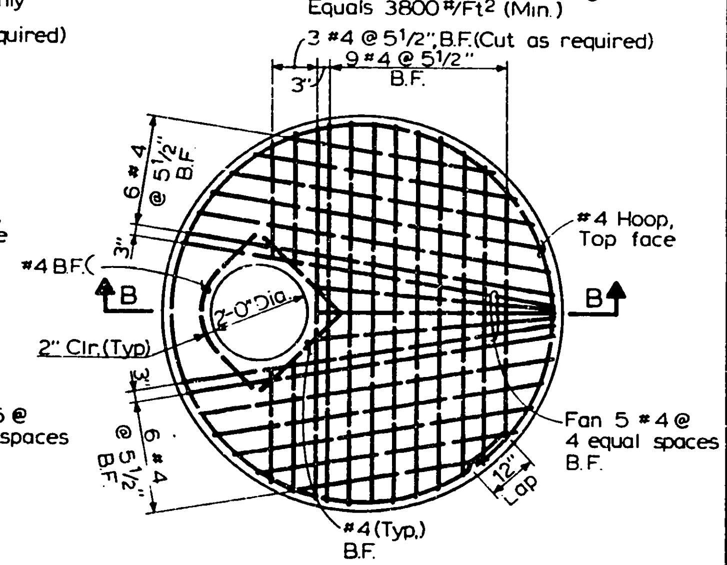




Notes:
1. Materials:
   Concrete - Class AX
   Reinforcing - ASTM A615-GR-60
2. Top Slab is Designed for 10' Max. Cover for Type A and 3' Max. Cover for Type B.
3. Base is Designed for 20' Max. Cover
4. Height; 8' to 12'; Soil Bearing Value Equals 3300 #/Ft² (Min.)
5. Height; Over 12' to 20', Soil Bearing Value Equals 3800 #/Ft² (Min.)



Type A MH Top Slab

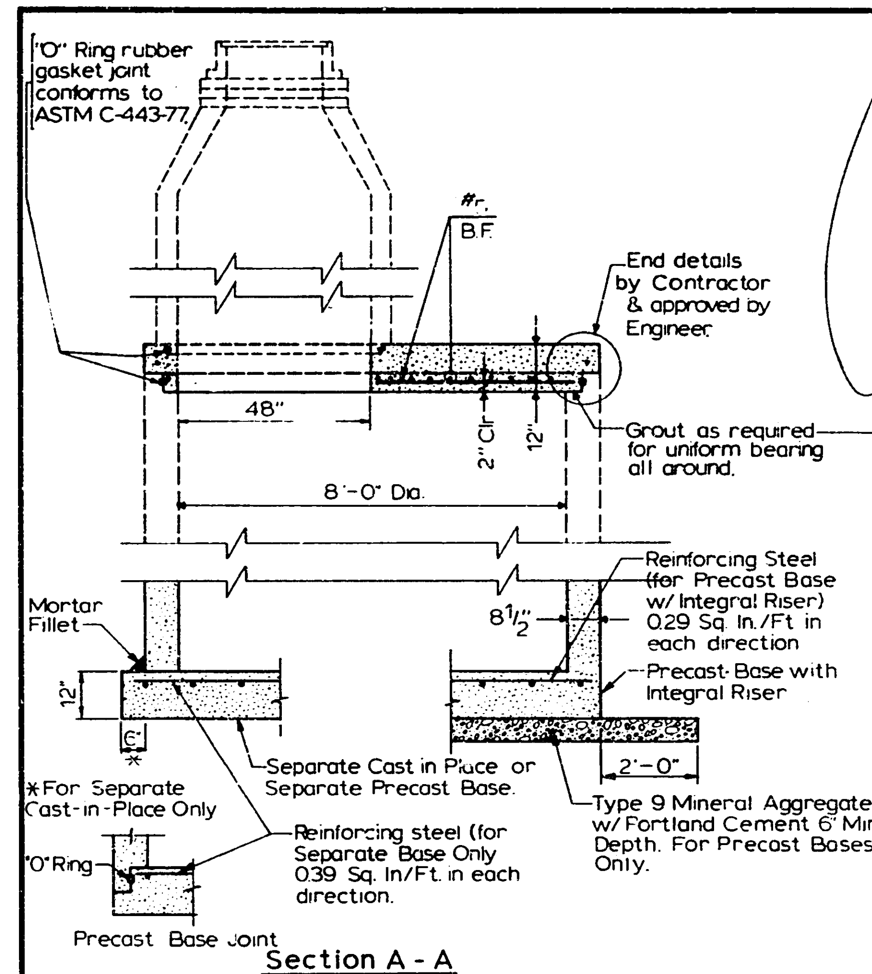


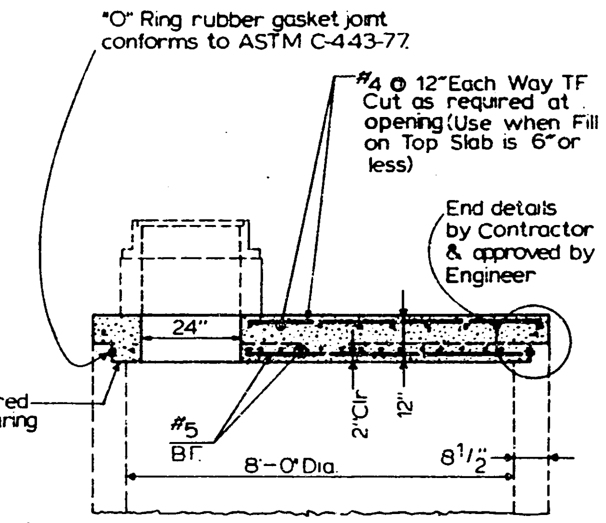
Type B MH Top Slab

Ref Std Spec Sec 7-05

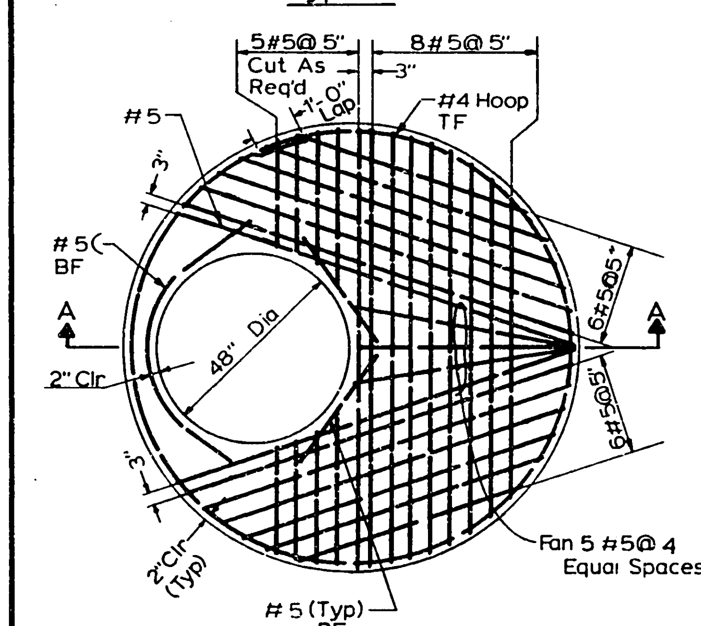
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1991 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 203 Manhole Top & Bottom Slabs

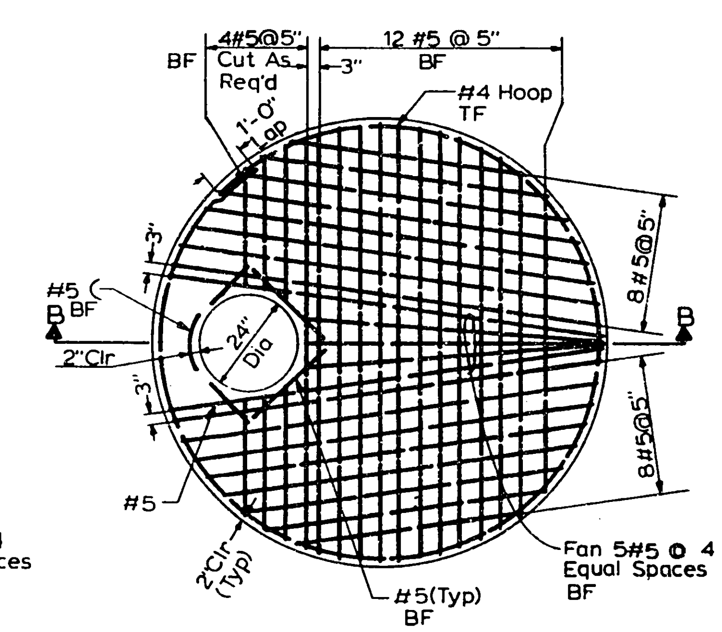




Notes:
1. Material
   Concrete - Class AX
   Reinforcing - ASTM A615-GR-60.
2. Top Slab is designed for 10' max. cover for Type A and 3' max. cover for Type B.
3. Base is designed for 20' max cover
4. Height: 8' to 12': Soil bearing value equals 3300#/Ft² (Min.)
5. Height: Over 12' to 20': Soil bearing value equals 3800#/Ft² (Min.)



Type A MH Top Slab

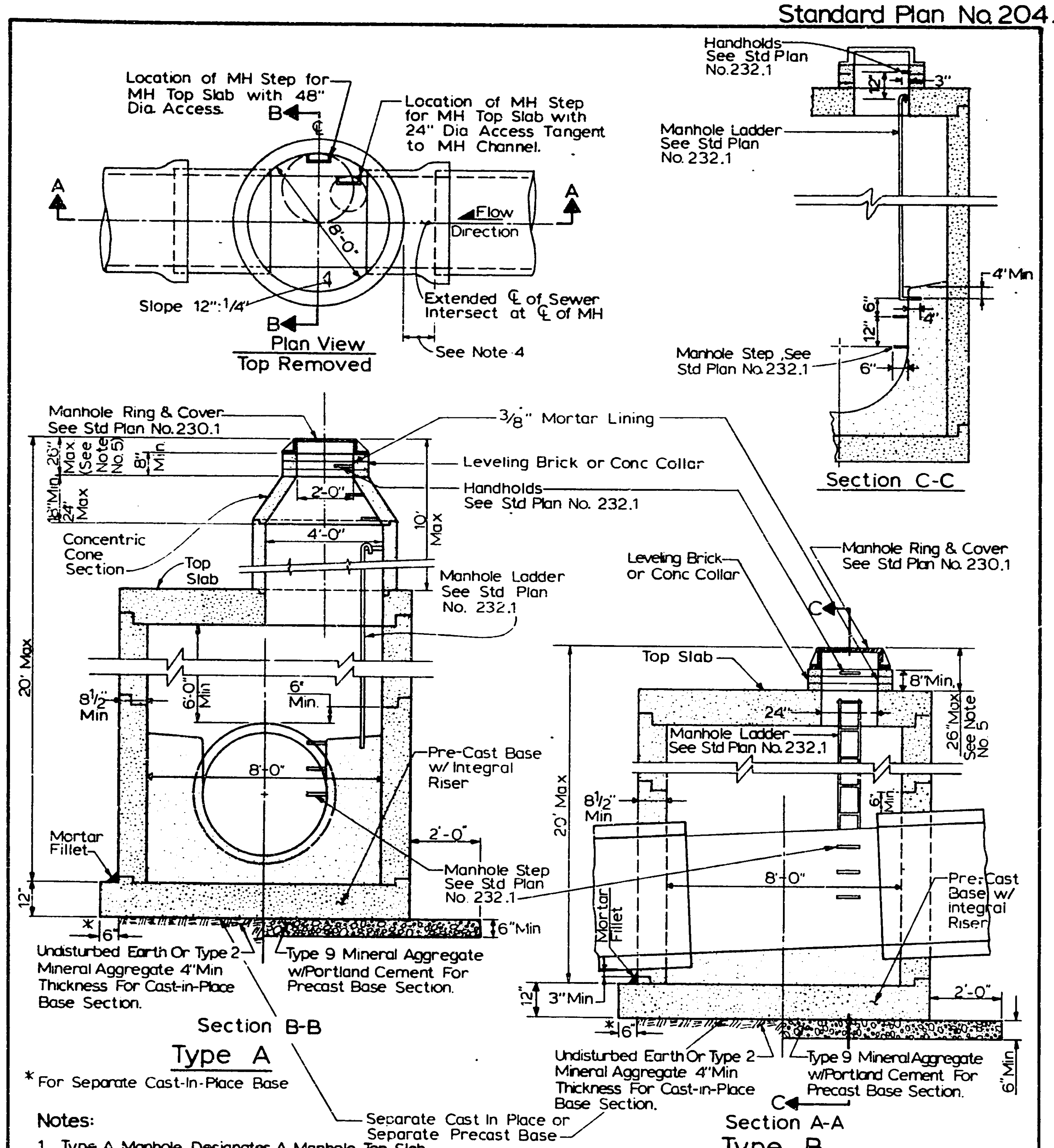


Type B MH Top Slab

Ref. Std. Spec. Sec. 7-05.

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1991 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 204 Manhole Top & Bottom Slabs

Standard Plan No. 204.1a



Notes:

1. Type A Manhole Designates A Manhole Top Slab With A 48" Dia. Access.
2. Type B Manhole Designates A Manhole Top Slab With A 24" Dia. Access.
3. Top Slab & Base Section Details, See Std. Plan No. 204b
4. Max Dimension From Outside Manhole Wall to the first Pipe Joint. The Greater of 1/2 Inside Pipe Diameter or 12"

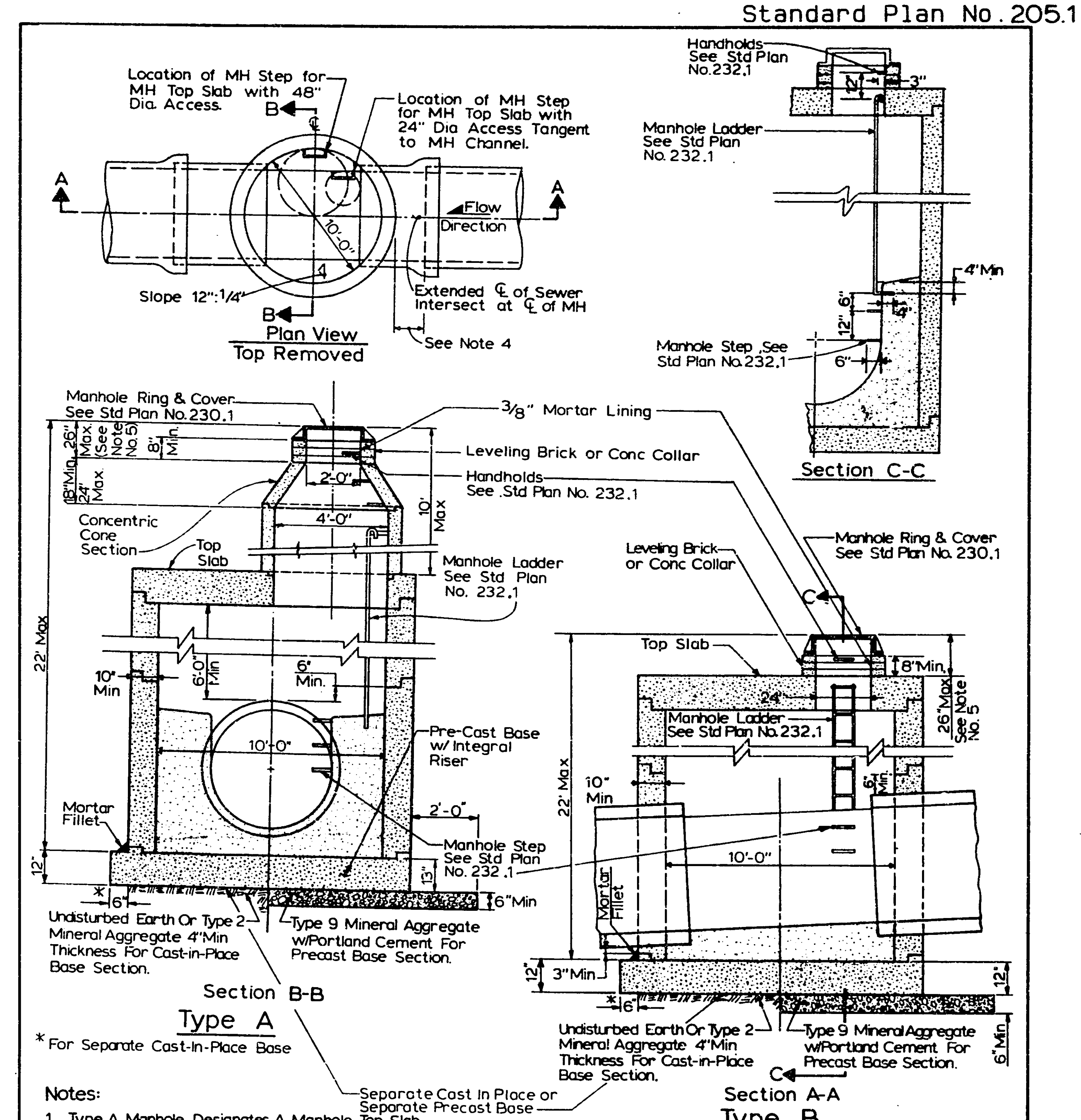
Note: Do Not Scale

5. Total Height of Ring Extensions, MH Ring and Cover and Leveling Bricks Shall Not Exceed 26"
6. Manhole Base Sections Shown in Section A-A and Section B-B are Typical for Type A and Type B MHs
7. Maximum Hole Size is Equal to the Outside Dia. of the Pipe Plus the Manhole Wall Thickness. Minimum Distance Between Holes is 12".

Ref. Std. Spec. Sec. 7.05

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 19__ CHAIRMAN; ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 204 Manhole

Standard Plan No. 205.1a



Notes:

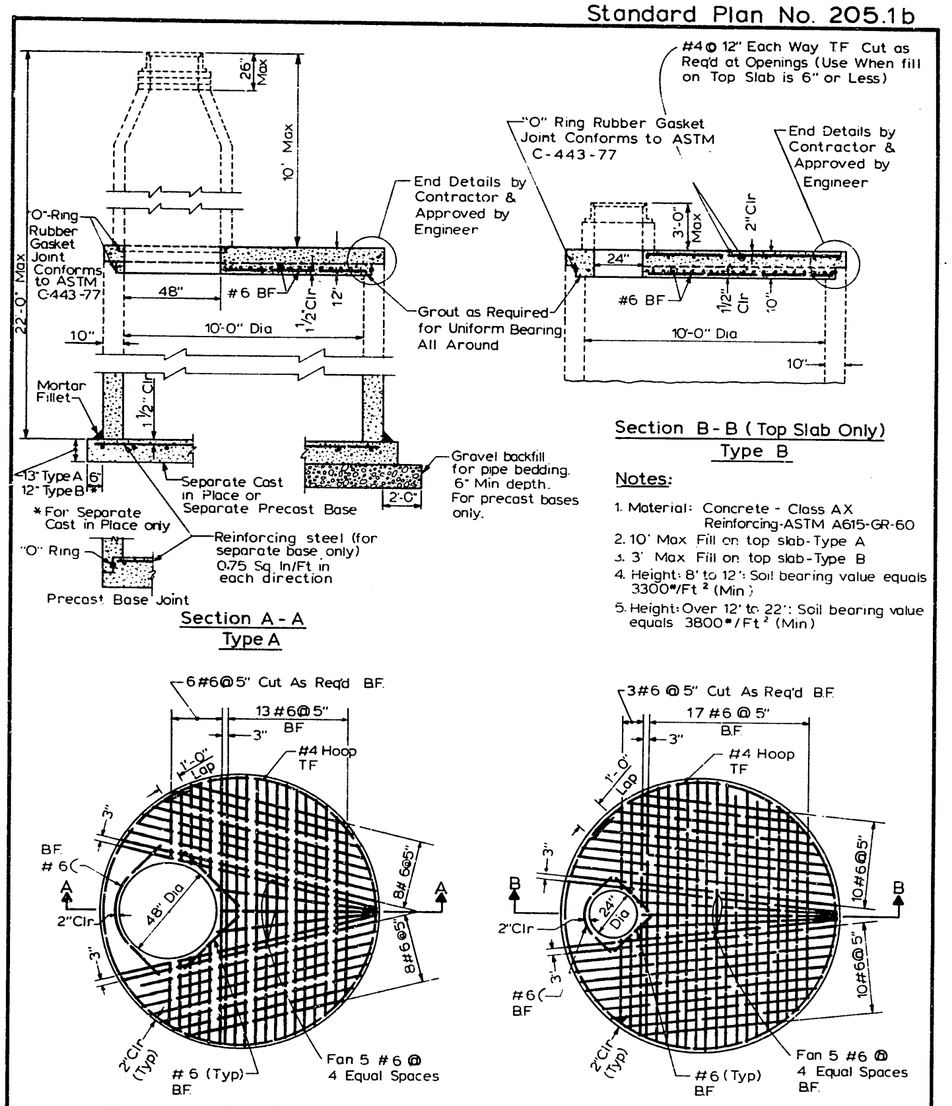
1. Type A Manhole Designates A Manhole Top Slab With A 48" Dia. Access.
2. Type B Manhole Designates A Manhole Top Slab With A 24" Dia. Access.
3. Top Slab & Base Section Details, See Std. Plan No. 205.1b
4. Max Dimension From Outside Manhole Wall to the first Pipe Joint. The Greater of 1/2 Inside Pipe Diameter or 12"

Note: Do Not Scale

5. Total Height of Ring Extensions, MH Ring and Cover and Leveling Bricks Shall Not Exceed 26".
6. Manhole Base Sections Shown in Section A-A and Section B-B are Typical for Type A and Type B MHs
7. Maximum Hole Size is Equal to the Outside Dia. of the Pipe Plus the Manhole Wall Thickness. Minimum Distance Between Holes is 12".

Ref. Std. Spec. Sec. 7.05

APPROVED BY THE BOARD OF PUBLIC WORKS 7/13 19__ CHAIRMAN; ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 205 Manhole



Section A - A
Type A

Section B - B (Top Slab Only)
Type B

Notes:

1. Material: Concrete - Class A X
   Reinforcing-ASTM A615-GR-60
2. 10' Max Fill on top slab-Type A
3. 3' Max Fill on top slab-Type B
4. Height: 8' to 12': Soil bearing value equals 3300#/Ft² (Min)
5. Height: Over 12' to 22': Soil bearing value equals 3800#/Ft² (Min)

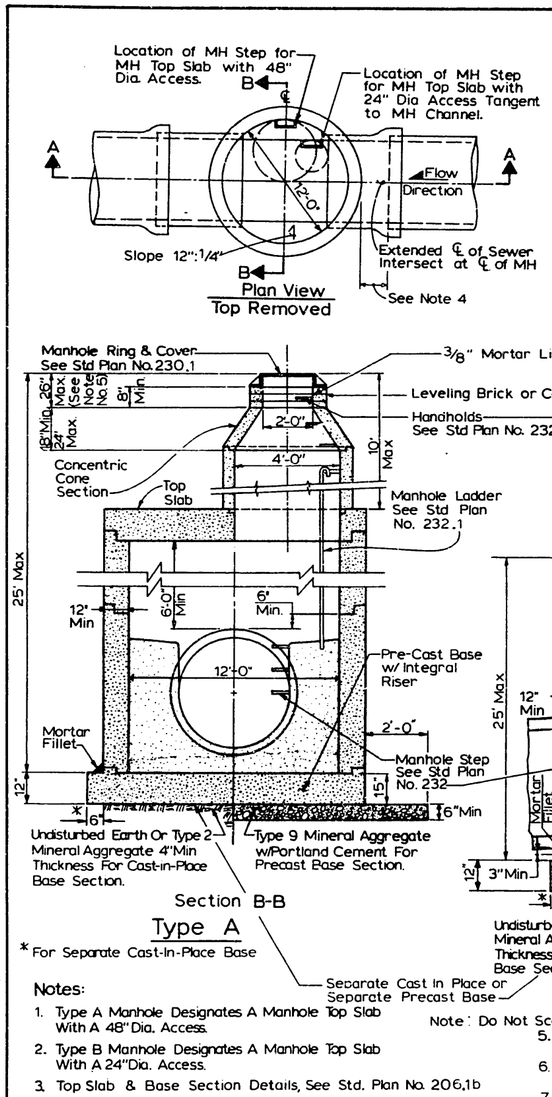
Type A MH Top Slab

Type B MH Top Slab

Ref. Std. Spec. Sec. 7-05.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Type 205 Manhole
7/12, 19 84 Chairman	DEPARTMENT OF ENGINEERING	Top & Bottom Slabs
ATTEST: Exec Secretary		



Notes:

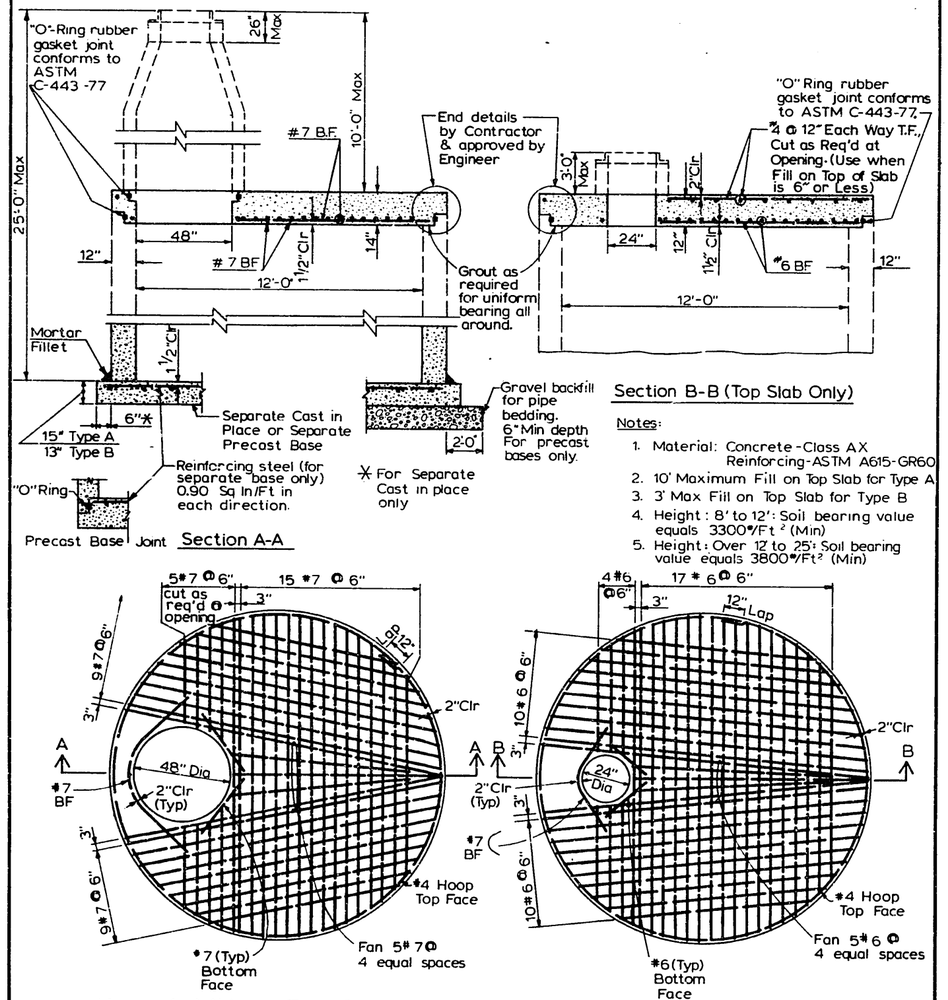
1. Type A Manhole Designates A Manhole Top Slab With A 48" Dia. Access.
2. Type B Manhole Designates A Manhole Top Slab With A 24"Dia. Access.
3. Top Slab & Base Section Details, See Std. Plan No. 206.1b
4. Max Dimension From Outside Manhole Wall to the first Pipe Joint. The Greater of ½ Inside Pipe Diameter or 12"

Note: Do Not Scale

5. Total Height of Ring Extensions, MH Ring and Cover and Leveling Bricks Shall Not Exceed 26"
6. Manhole Base Sections Shown in Section A-A and Section B-B are Typical for Type A and Type B MHs
7. Maximum Hole Size is Equal to the Outside Dia. of the Pipe Plus the Manhole Wall Thickness. Minimum Distance Between Holes is 12".

Ref. Std. Spec. Sec. 7-05.

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Type 206 Manhole
7/12, 19 84 Chairman	DEPARTMENT OF ENGINEERING	
ATTEST: Exec Secretary		



Section A-A

Section B-B (Top Slab Only)

Notes:

1. Material: Concrete - Class A X
   Reinforcing - ASTM A615-GR60
2. 10' Maximum Fill on Top Slab for Type A
3. 3' Max Fill on Top Slab for Type B
4. Height : 8' to 12' : Soil bearing value equals 3300#/Ft² (Min)
5. Height : Over 12' to 25' : Soil bearing value equals 3800#/Ft² (Min)

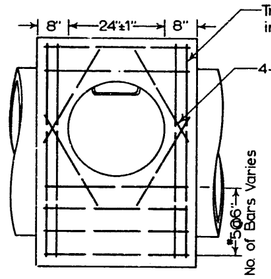
Type A MH Top Slab

Type B MH Top Slab

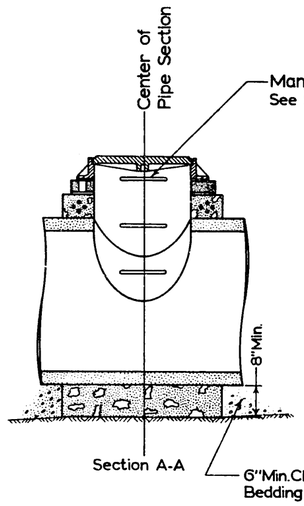
Ref. Std. Spec. Sec. 7-05.

Do Not Scale

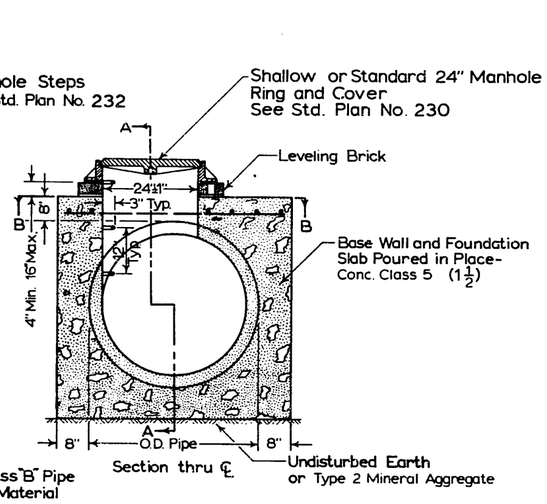
APPROVED BY THE BOARD OF PUBLIC WORKS 7-12-19?? CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 206 Manhole Top & Bottom Slabs



Section B-B



Section A-A



Section thru ℄

Note:

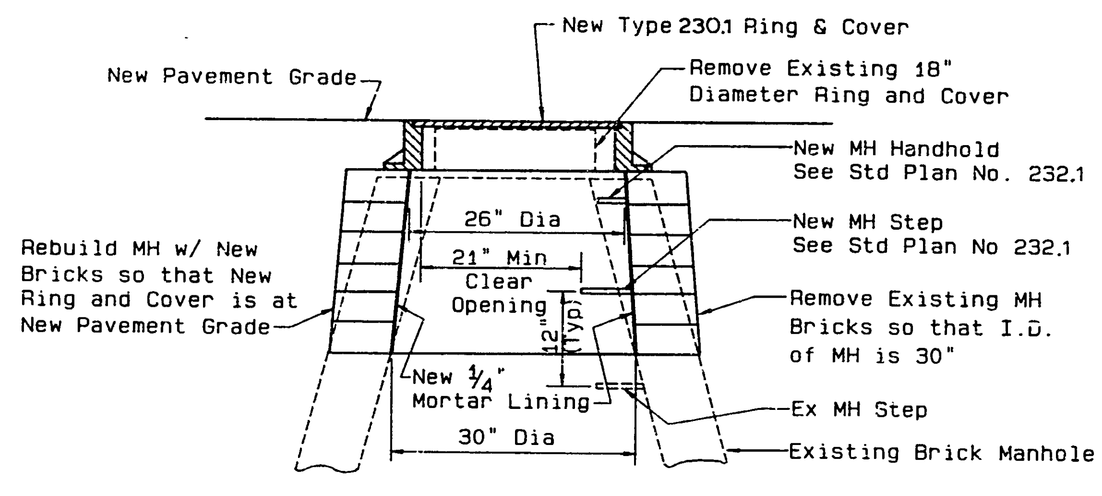
1. Reinforcing Steel shall be deformed bars conforming to ASTM A-15 and shall have a min. cover of 2".

Pipe Dia. 24" Min. - 42" Max.

Ref. Std. Spec. Sec. 7-05.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 10/31/86 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 207 Manhole



NOTE:

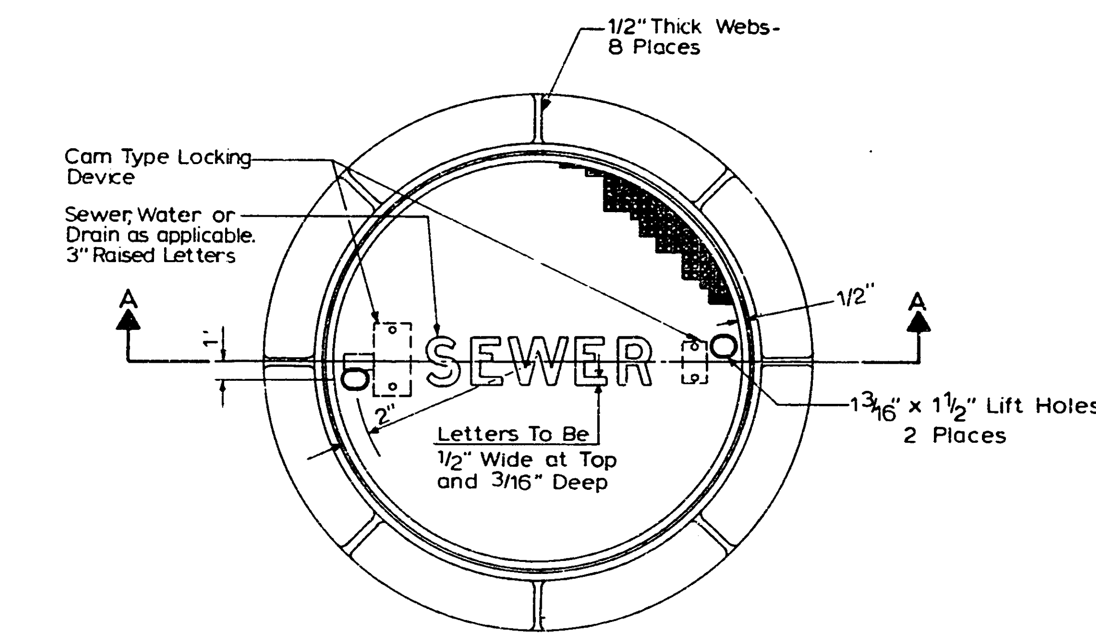
New manhole steps and handholds shall be installed and located 12" OC from the first existing step in the manhole. A minimum 21" clear opening shall be maintained.

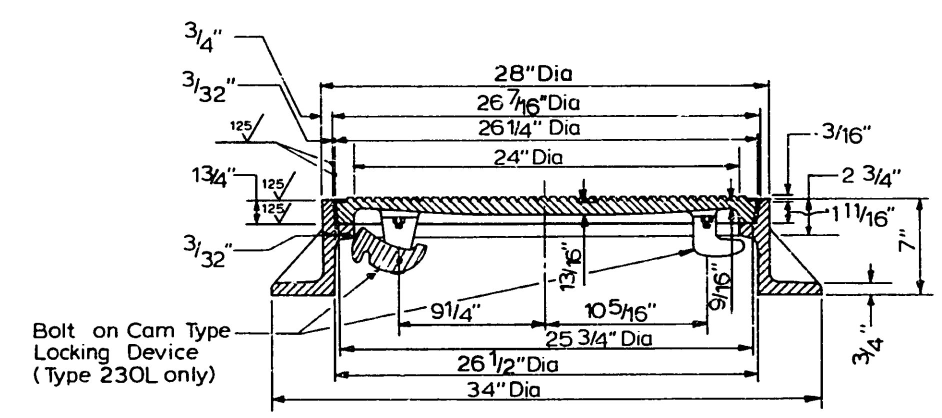
For pavement depth 7", the ring and cover shall be constructed to the finished grade of the pavement. Reinforcement shall be placed around the casting at mid-point between the finish grade of the pavement and the top of the flange. #4 reinforcing bars shall be used in the configuration of 2 separate squares off-rotated 45 degrees from each other and giving a clearance of 2" at the shortest distance with the frame.

For pavement depth greater than 7", use ring extension (s) as shown in Standard Plan No. 231.1 to bring the cover up to the level of the finished pavement without embedding bottom flange of the casting in the pavement.

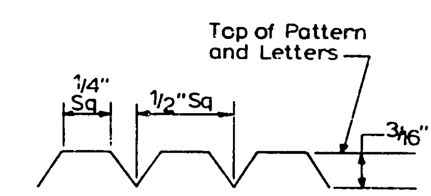
No Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 ____ CHAIRMAN ATTEST: ____ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Rebuild Existing Brick Manhole





Section A-A



Cover Detail Pattern

Notes:

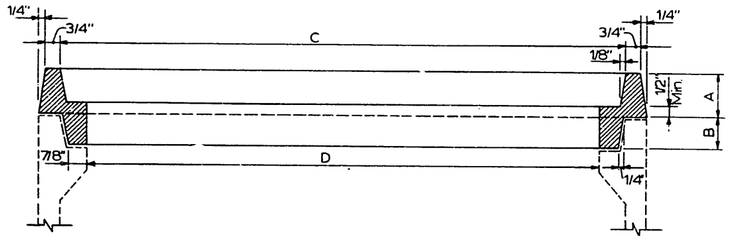
1. Designate locking cover as 230L.
2. For pavement depth 7", the frame and cover shall be constructed to the finished grade of the pavement. Reinforcement shall be placed around the casting at mid point between the finished grade of the pavement and the top of the flange. No. 4 reinforcing bars shall be used in the configuration of 2 separate squares off-rotated 45 degrees from each other and giving a clearance of 2 inches at the shortest distance with the frame.

   For pavement depth greater than 7 inches, use ring extension (s) - Standard Plan No.231.1 - to bring the cover up to the level of the finished pavement without embedding the bottom flange of the casting in the pavement.
3. Cover thickness is measured from the bottom of pattern.
4. Refer to Section 5-05 for other requirements for reinforcing bars.
5. Rings shall be manufactured from cast iron or ductile iron.
6. Covers shall be manufactured from ductile iron.

Ref: Std. Spec. Sec. 7-05 & 9-12

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS ____ 19__ ____ CHAIRMAN ATTEST: ____ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	24" Diameter Ring and Cover



Section of Ring Extension

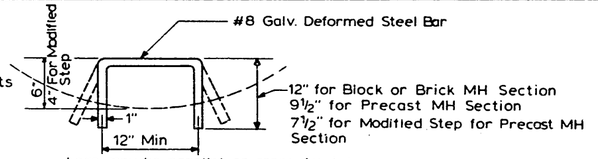
Notes

1. Dimension "A" refers to height of ring extension above the manhole ring.
2. Dimension "B","C", and "D" shall match the manhole ring and cover that the ring extension is to be used on.
3. When ring extensions are used on a new manhole ring and cover, the ring extension shall be permanently attached to the manhole ring at the factory, not in the field. Approval of attachment method is required.
4. Ring extensions shall be ductile or cast iron.

Ref. Std. Spec. Sec. 7-20,9-12

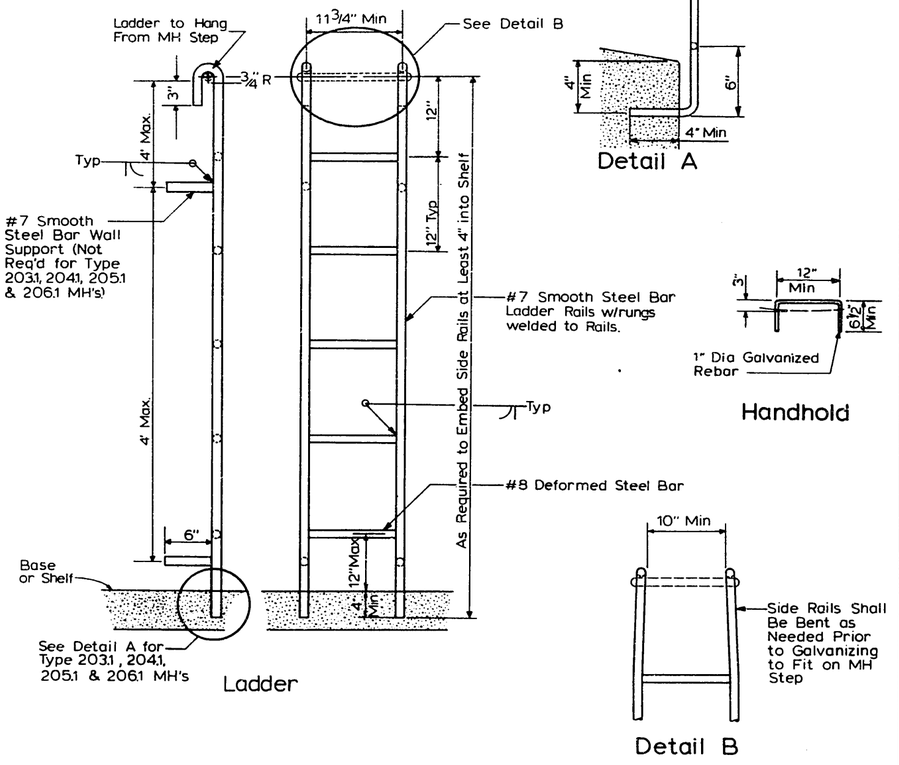
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 19 91 Gary Locke CHAIRMAN ATTEST: Barbara C. Tabor EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Ring Extensions

Note:
Dimensions For The MH Ladder And Step Are Minimum Requirements Only. The Ladder Shown Will Not Meet The 10" Min Clearance in Detail B When Installed on the Step Shown Below.



Legs may be parallel or approximately radial at option of manufacturer except that all steps in any MH shall be similar.

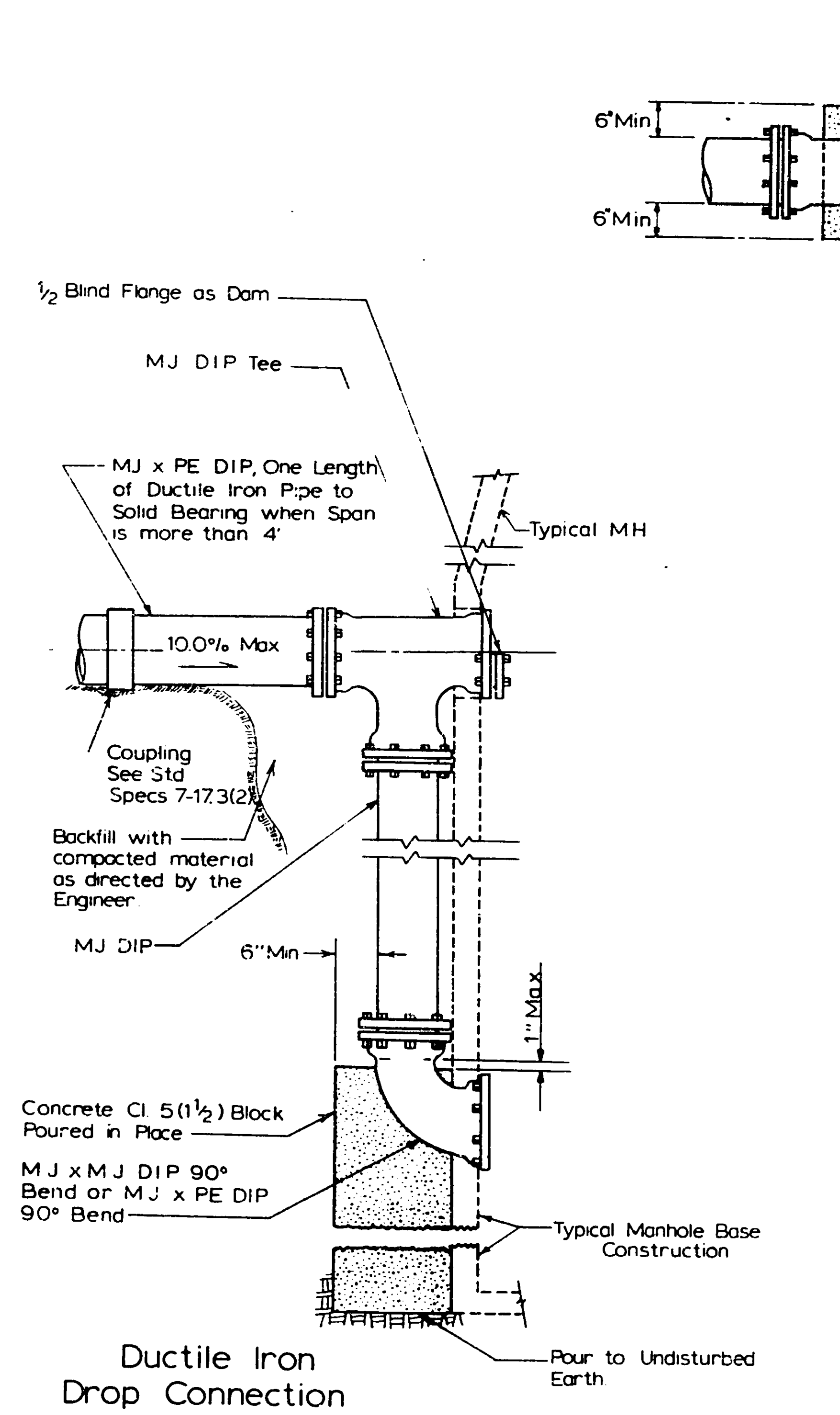
Step



Note:
Steps and Prefabricated ladders shall be galvanized after fabrication.

Ref Std Spec Sec 7-05

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 19 91 Gary Locke CHAIRMAN ATTEST: Barbara C. Tabor EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Manhole Ladder Step, and Handhold



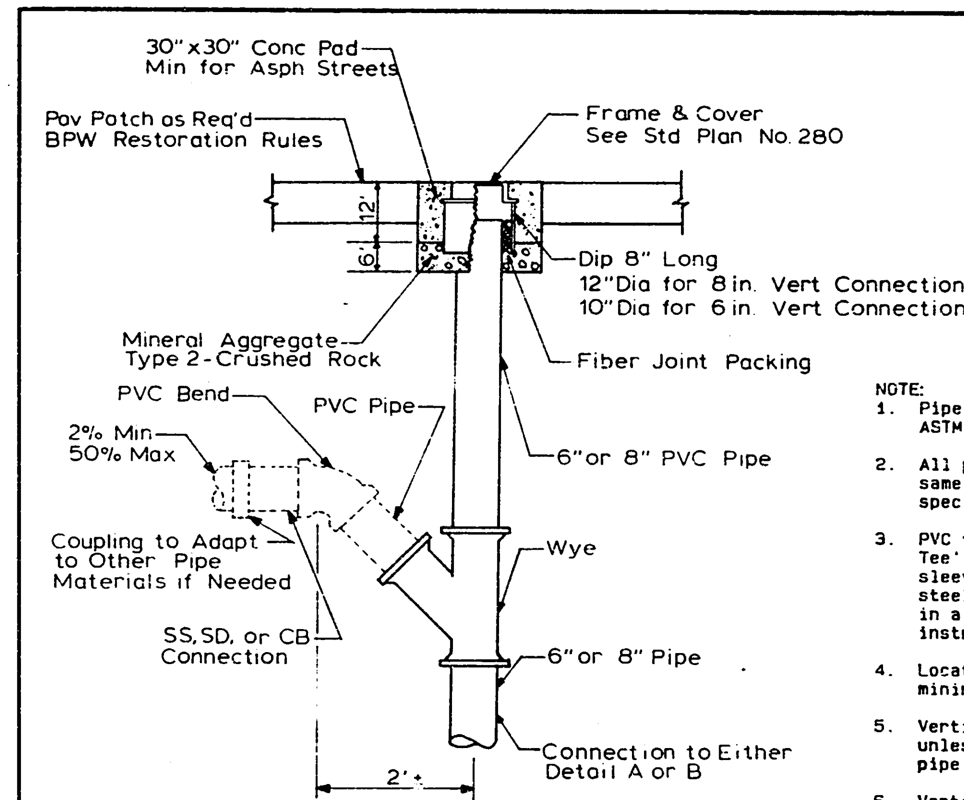
Ductile Iron
Drop Connection

Notes

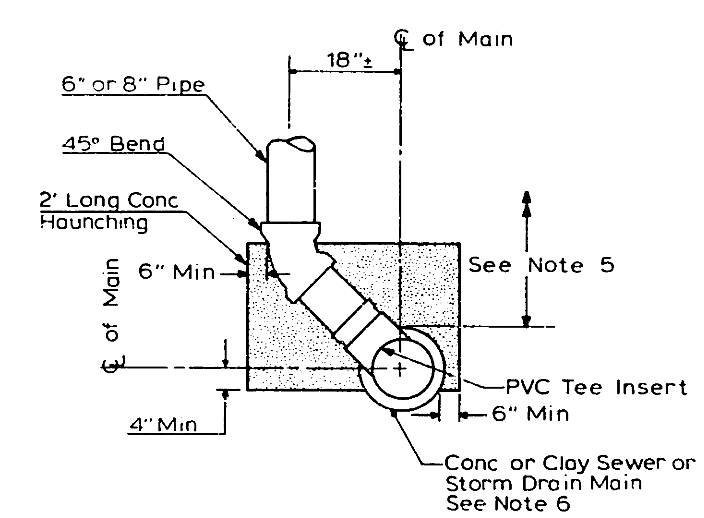
1. Concrete for Drop Connection Support shall be Cl 5(1 1/2)
2. Ductile Iron Pipe shall be ANSI/AWWA C151/A21.51 Cl 50 Ductile Iron Fittings shall be ANSI/AWWA C111/A21.11
3. Backfill and Compact Space Around Drop Connection with Select Material or Type 17 Mineral Aggregate
4. Drop Connections shall be used where Drop is not more than 20'.
5. Additional Pipes may be Required for Drop Connection to Enter Manhole Structure

Ref Std Spec Sec 7-08.

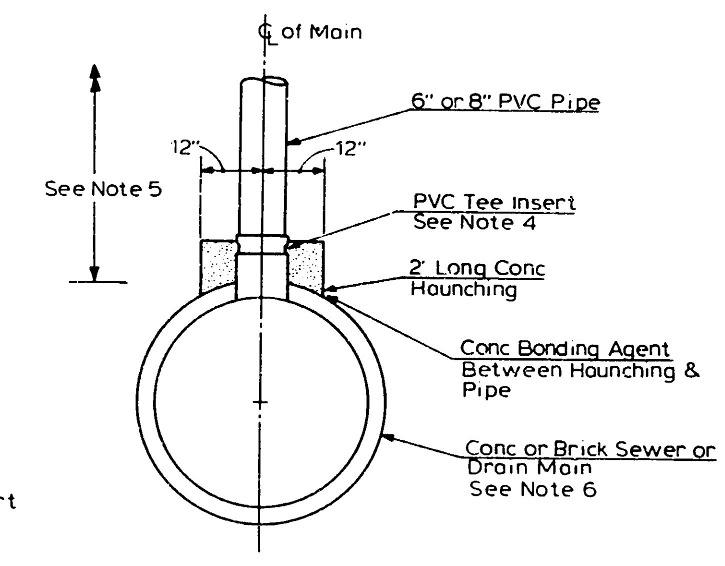
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Drop Connection



NOTE:
1. Pipe and fittings shall be PVC per ASTM D3034 SDR 35.
2. All pipes and fittings are to be the same diameter. The diameter is to be specified on the plans.
3. PVC tee inserts shall be by 'Inserta Tee' or equal and shall include rubber sleeve, PVC adapter hub, and stainless steel band. Insert shall be installed in a core drilled hole per manufacturers instructions.
4. Locate edge of core drilled hole 12" minimum from existing pipe joint.
5. Vertical connection shall not be used unless depth from surface to top of pipe is 20' or greater.
6. Vertical connections on mains other than concrete, clay or brick construction shall be by special design.
7. Concrete haunching is to be class 5(1½) concrete.



Detail A
For Main 36" Dia
And Smaller

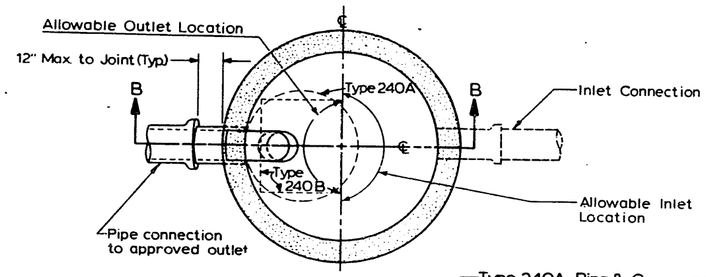


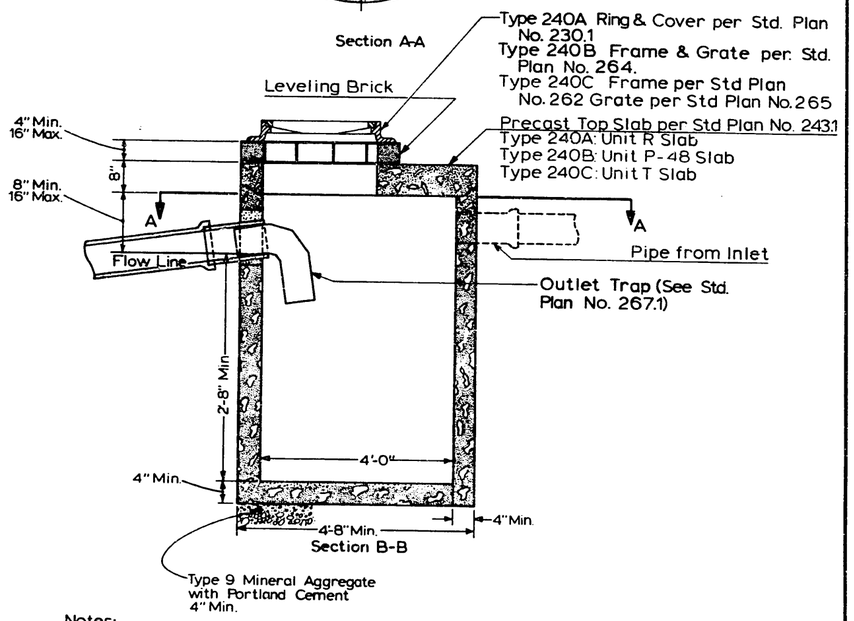
Detail B
For Main 42" Dia
And Larger

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	6" or 8" Vertical Connection

Standard Plan No. 240.1





Notes:

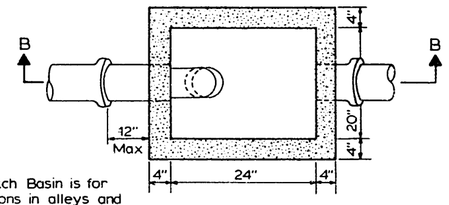
1. Frame & Grate or Ring and Cover shall be located over Trap.
2. Invert of Inlet Pipe shall be 0.2' Min. Above Invert of Outlet Pipe.

Ref. Std. Spec. Sec. 7-05.

Do Not Scale

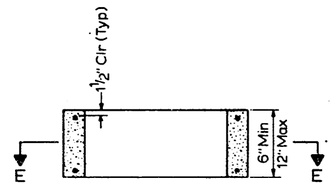
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 240 Catch Basin

Standard Plan No. 241.1a

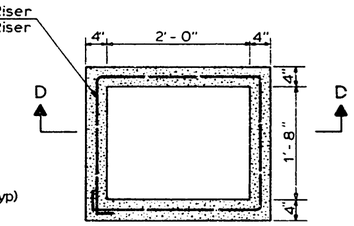


Note:
This Catch Basin is for installations in alleys and unpaved areas in the Right of Way. Any other use in the R/W will require approval of Operations division and Drainage Design section.

Section A - A

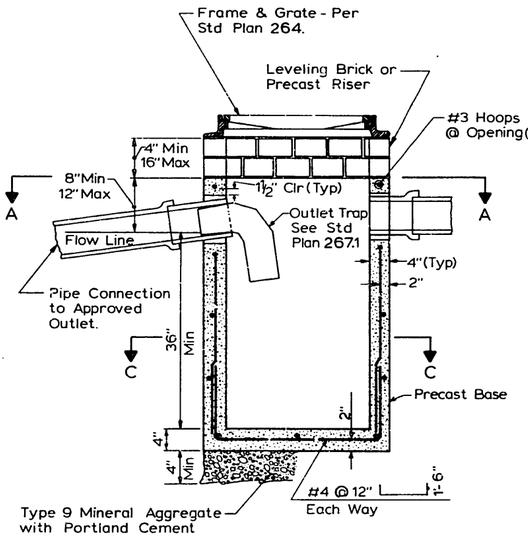


Section D - D

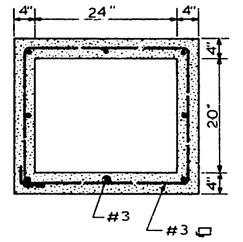


Section E - E

Precast Riser Reinforcing



Section B - B



Section C - C

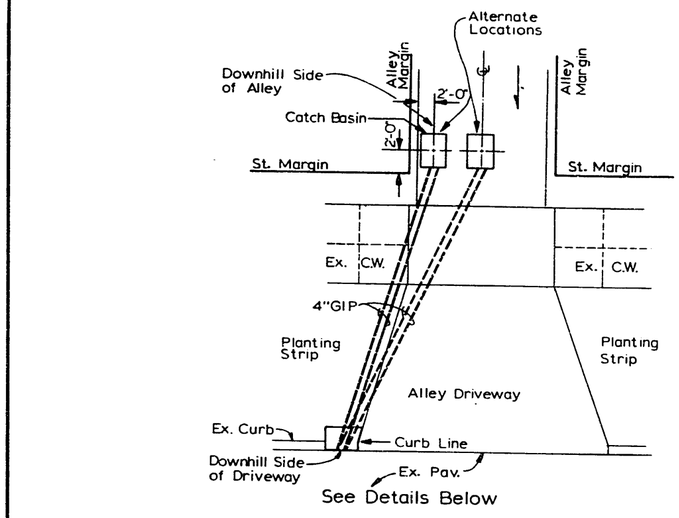
Notes:

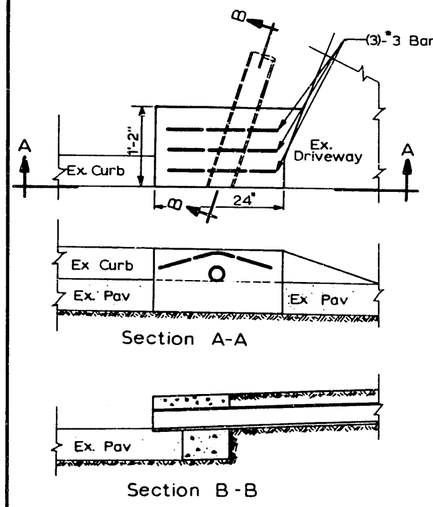
1. For Curb Discharge Installation See Std Plan No. 241b.
2. Install Per Standard Plan No. 261.1
3. Material: Concrete - f'c = 4000 psi
   Reinforcing Steel - ASTM A615 GR60

Ref. Std. Spec. Sec. 7-05.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Catch Basin Type 241

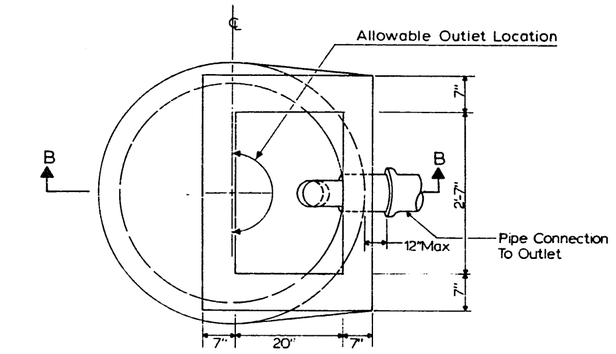




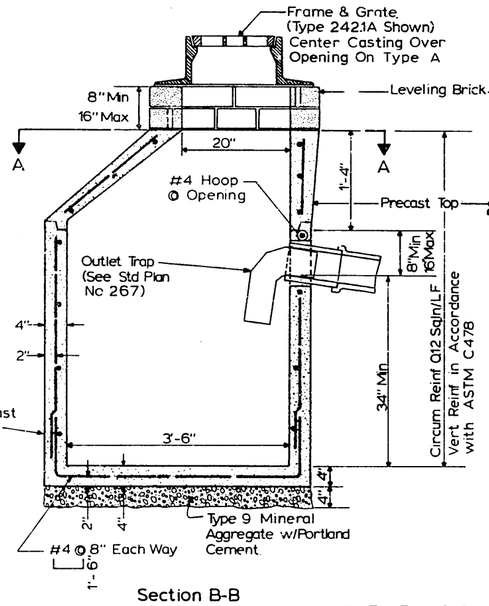
GIP Per ASTM A53
Schedule 40

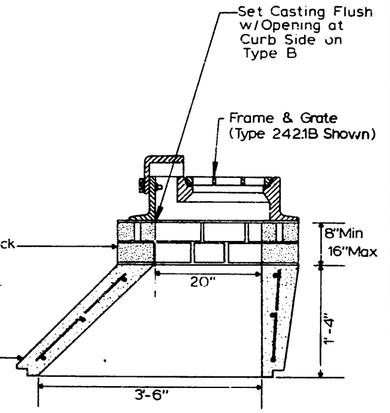
Ref. Std. Spec. Sec. 7-01

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12-1971 CHAIRMAN ATTEST: EXEC SECRETARY	**CITY OF SEATTLE DEPARTMENT OF ENGINEERING**	Type 241 Catch Basin Installations



Section A-A
No Scale





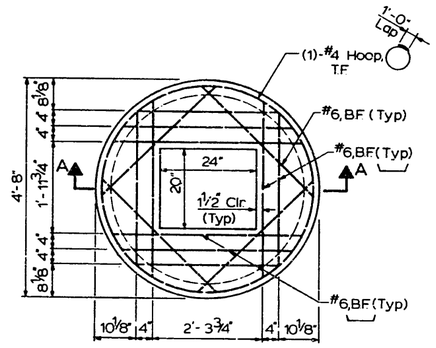
C B Type	Casting	
	Frame	Grate
A or A.1	No. 262	No. 265
B or B.1	No. 263	No. 265

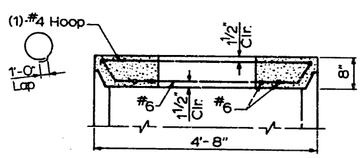
Notes
1. Material:
   Concrete - f'c = 4000 psi
   Reinforcing Steel - ASTM A615 GR 60
2. Install & Locate Per Std Plans No. 260.1a & No. 260.1b & 261.1
3. A.1 or B.1 can only be used when specified on contract plans or approved by Engineer.
4. For Type 242.1A or Type 242.1B: Rotate Catch Basin 180° from Standard. See Standard Plan No. 260.1b

Ref. Std. Spec. Sec. 7-05.

NTS

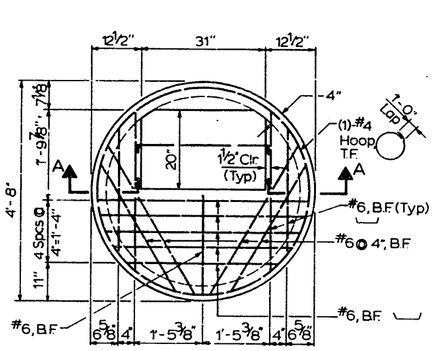
APPROVED BY THE BOARD OF PUBLIC WORKS 7-12, 1971 CHAIRMAN ATTEST: EXEC SECRETARY	**CITY OF SEATTLE DEPARTMENT OF ENGINEERING**	Catch Basin Type 242

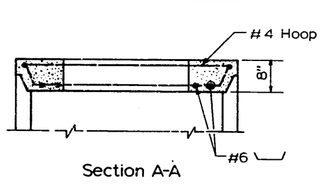




Section A-A

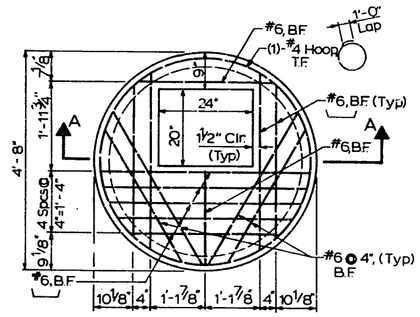
Unit N

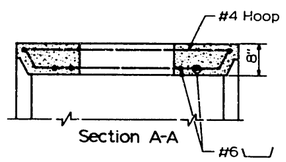




Section A-A

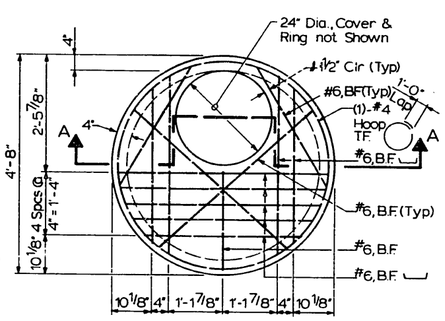
Unit T

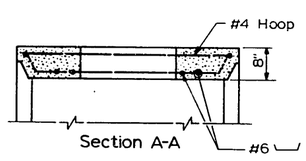




Section A-A

Unit P-48



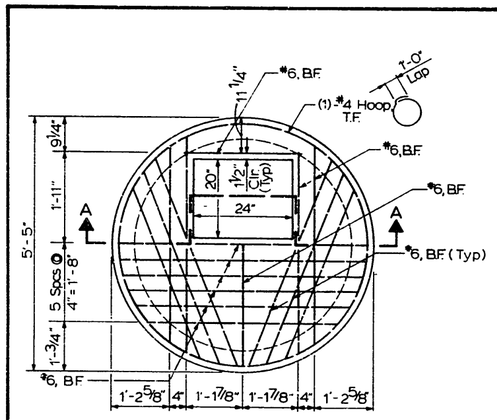


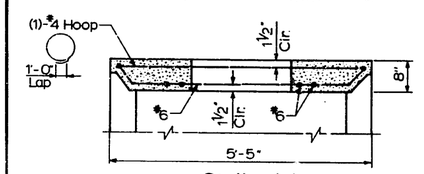
Section A-A

Unit R

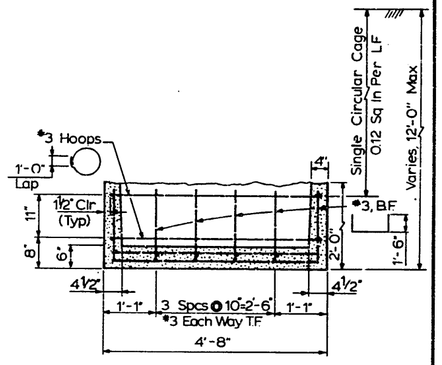
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Precast Catch Basin Top Slab
7-12, 19 7' CHAIRMAN ATTEST: EXEC SECRETARY	DEPARTMENT OF ENGINEERING	



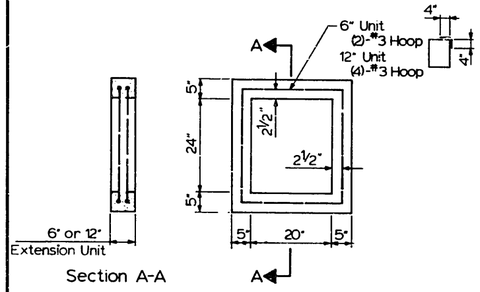


Section A-A



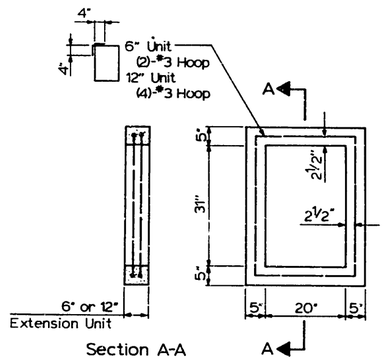
Unit M (Base for Unit P-48)
(Elevation)

Unit P-54
(For Base Detail, See Std Plan No. 201.1b)



Section A-A

Unit S



Section A-A

Unit U

Notes:

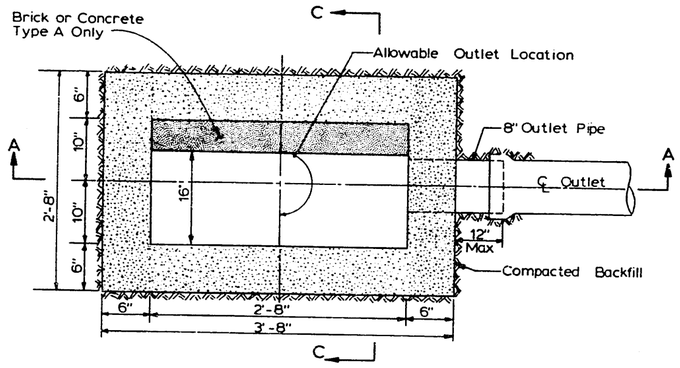
1 Concrete – Class AX

2. Reinforcing Steel – ASTM A615, GR. 60

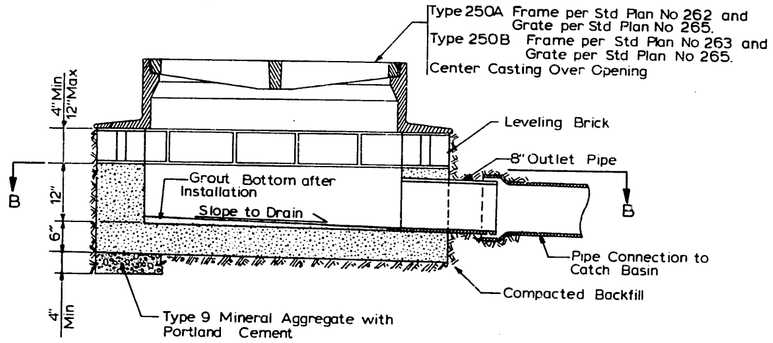
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Precast Catch Basin Top & Bottom Slab & Extension Units
7-12, 19 9' CHAIRMAN ATTEST: EXEC SECRETARY	DEPARTMENT OF ENGINEERING	

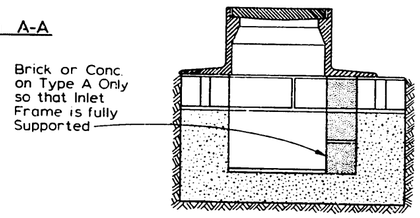
Standard Plan No. 250.1



Section B-B



Section A-A



Section C-C
Type A Only

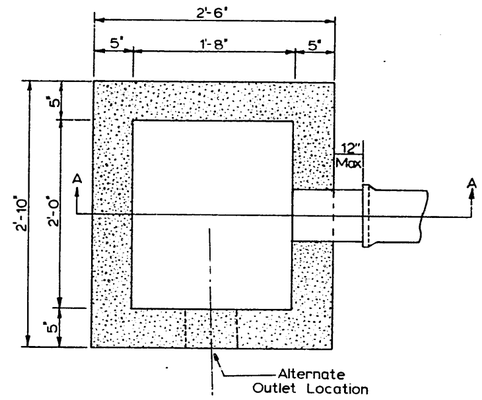
Install and locate per Std Plan No 260.1a and 260.1b

Ref. Std. Spec. Sec. 7-05.

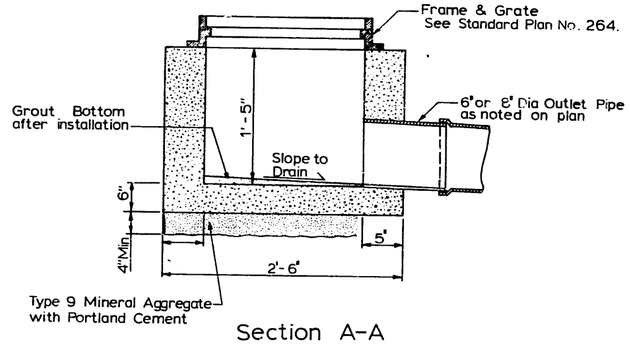
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7-2, 19 27 Guy Linker CHAIRMAN ATTEST: [illegible] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 250 Inlet

Standard Plan No. 252



Plan

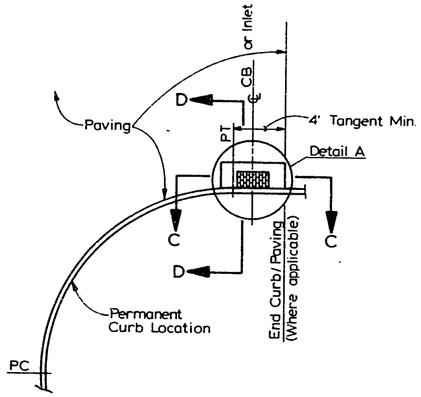


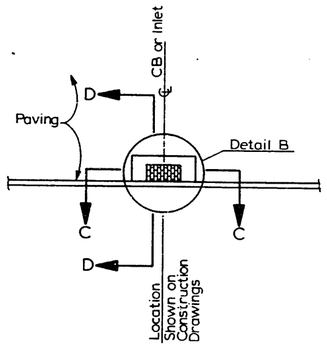
Section A-A

Ref. Std. Spec. Sec. 7-05

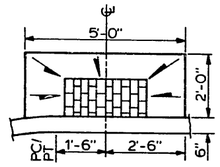
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS [illegible] 19 [illegible] CHAIRMAN ATTEST: [illegible] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 252 Inlet



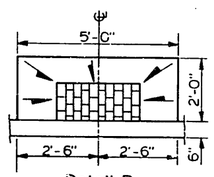


CB/Inlet Location at Curb Returns
No Scale

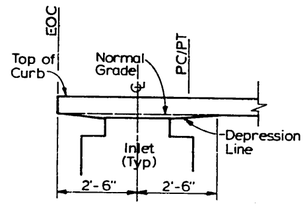


Detail A
No Scale

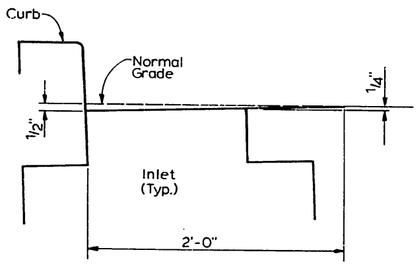
CB/Inlet Location Not at Curb Returns
No Scale



Detail B
No Scale

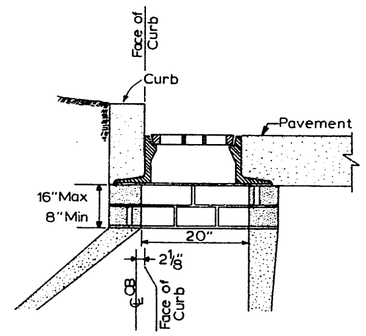


Section C-C
No Scale

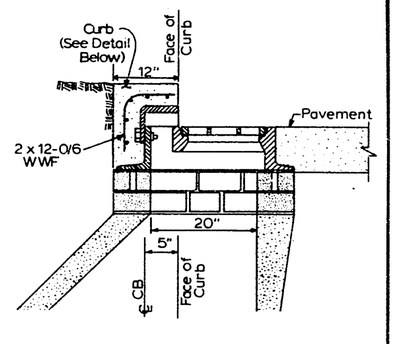


Section D-D
No Scale

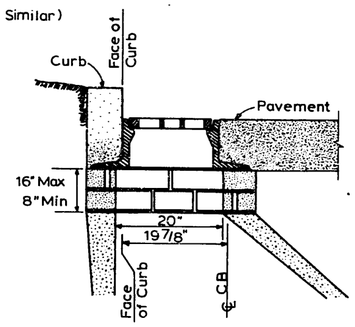
APPROVED BY THE BOARD OF PUBLIC WORKS 7/13 1971 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Inlet/CB Location and Installation



Type 242A CB
(Type 250 Inlet Similar)

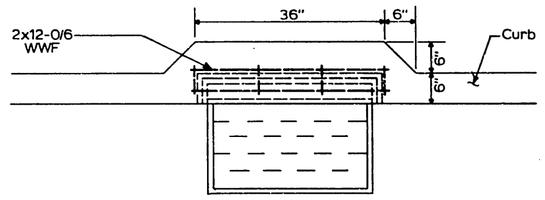


Type 242B CB
(Type 250 Inlet Similar)



Type 242 A.1 CB

Notes:
1. Type 242 A.1 or B.1 installation is rotated 180° from Type 242 A or 242 B.
2. A.1 is show, B.1 is similar.
3. A.1 or B.1 can only be used when specified on contract plans or approved by Engineer.

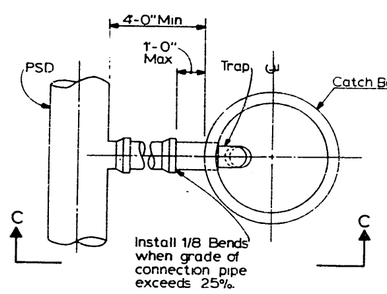


Curb Detail (Plan View) For
Type 242B CB & Type 250A Inlet.

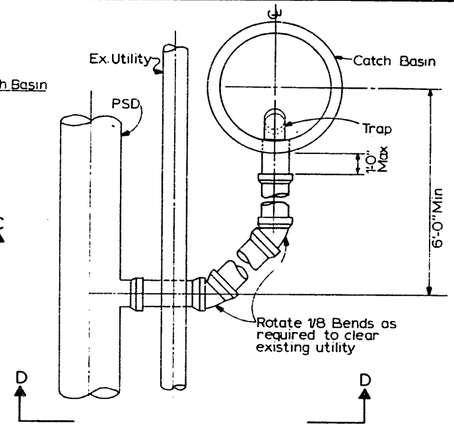
Ref. Std. Spec. Sec. 7-05.

NTS

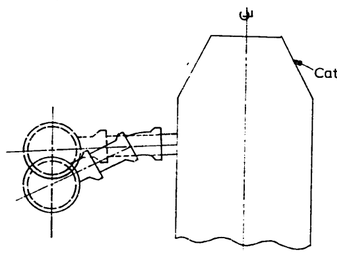
APPROVED BY THE BOARD OF PUBLIC WORKS 7/13 1971 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Catch Basin And Inlet Installation



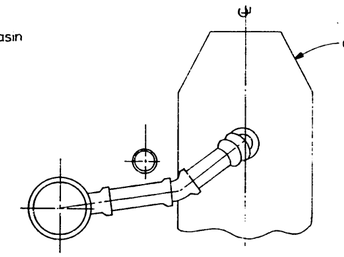
Type "A"
No Scale



Type "B"
No Scale



Section "C-C"
No Scale

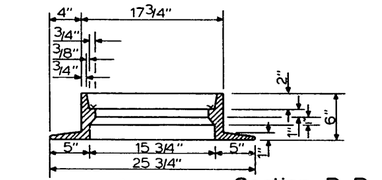


Section "D-D"
No Scale

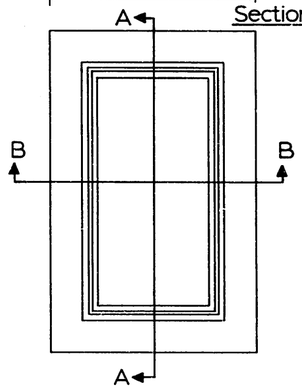
Notes:

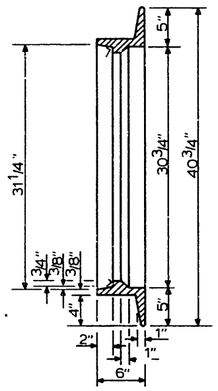
1. Connections shall maintain a minimum of 2% and a maximum of 50% grade.
2. Type "A" Connection may be used under the following circumstances:
   A. The maximum of 50% grade is not exceeded.
   B. There is no interference with existing or proposed utilities.

APPROVED BY THE BOARD OF PUBLIC WORKS 7/13 1971 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Typical Catch Basin Connection



Section B-B





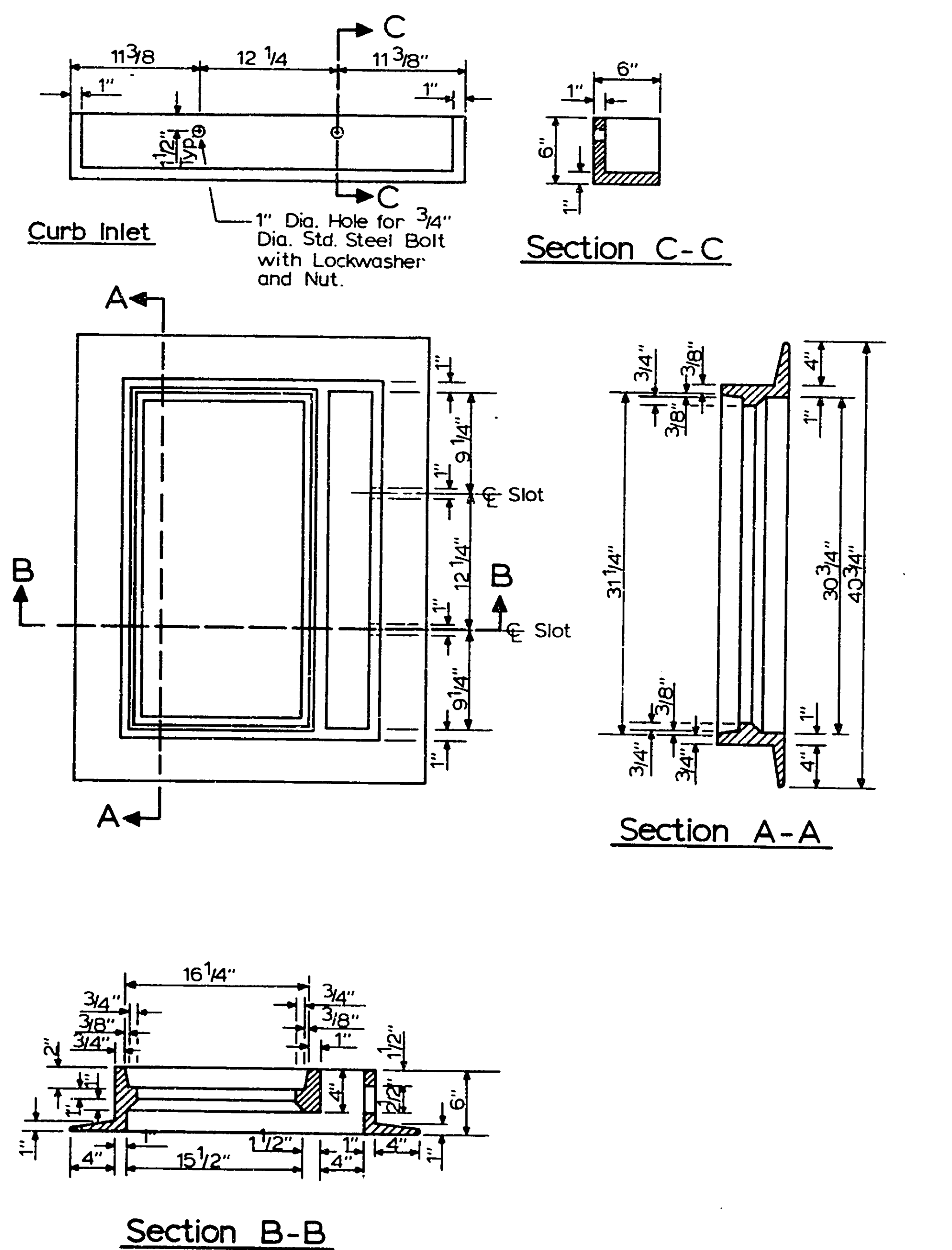
Section A-A

Not to Scale

Ref. Std. Spec. Sec. 9-05.

APPROVED BY THE BOARD OF PUBLIC WORKS 11-4, 19 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Inlet Frame Type 262

Standard Plan No. 263

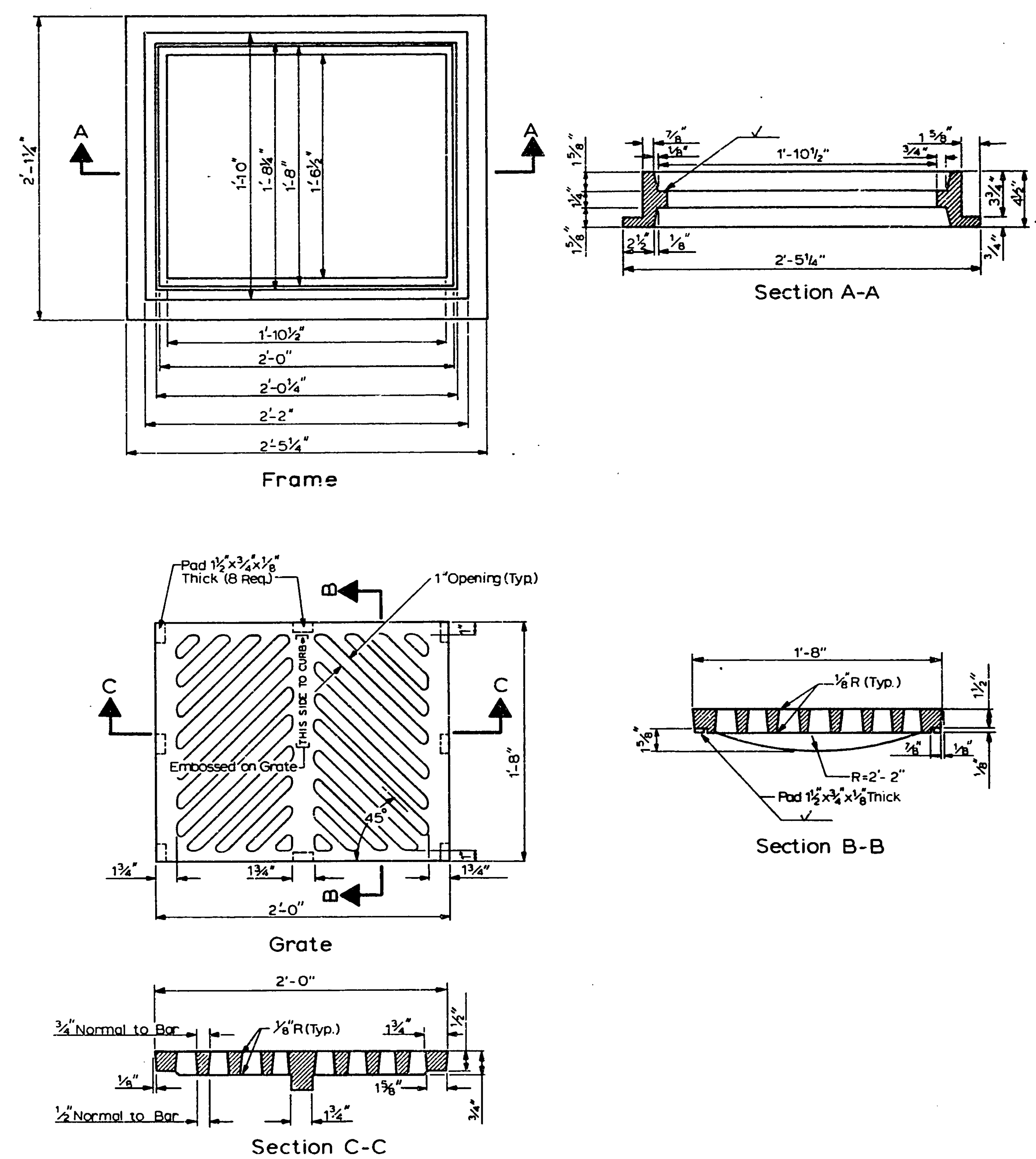


Not to Scale

Ref. Std. Spec. Sec. 9-05.

APPROVED BY THE BOARD OF PUBLIC WORKS ____ CHAIRMAN ATTEST: ____ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 263 Frame

Standard Plan No. 264



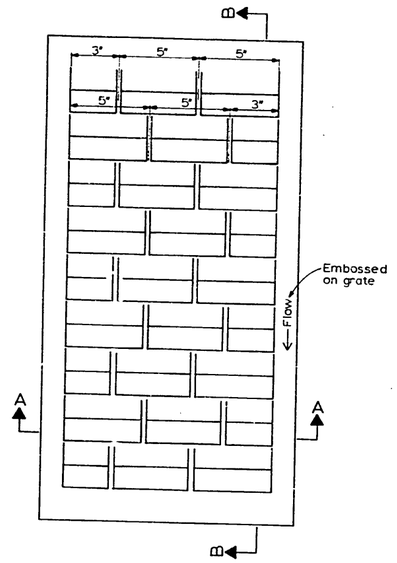
Grate Material: Ductile Iron

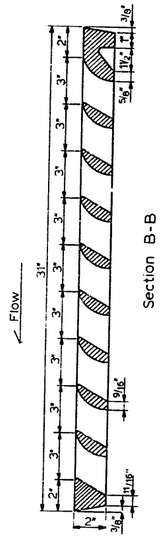
Ref. Std. Spec. Sec. 7-05, 9-05.

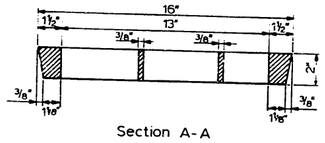
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS ____ CHAIRMAN ATTEST: ____ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Inlet Frame & Grate

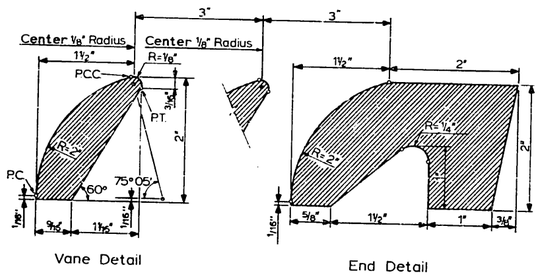
Standard Plan No. 265







Section A-A



Vane Detail

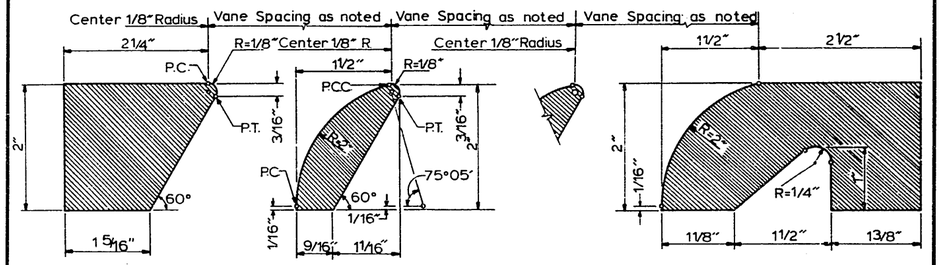
End Detail

Grate Material: Ductile Iron Ref. Std. Spec. Sec. 7-05, 9-05.

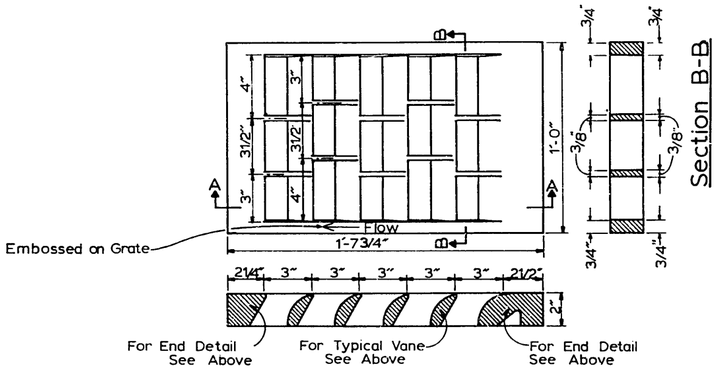
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 19 ... CHAIRMAN ATTEST: ... EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Vaned Grate

Standard Plan No 266



End Detail Typical Vane End Detail

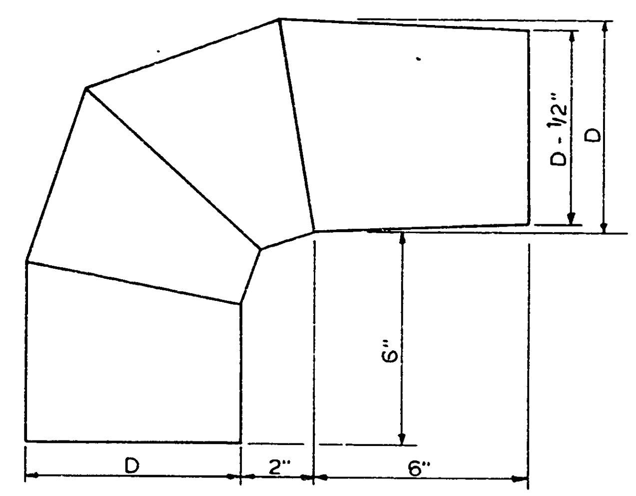


Section A-A

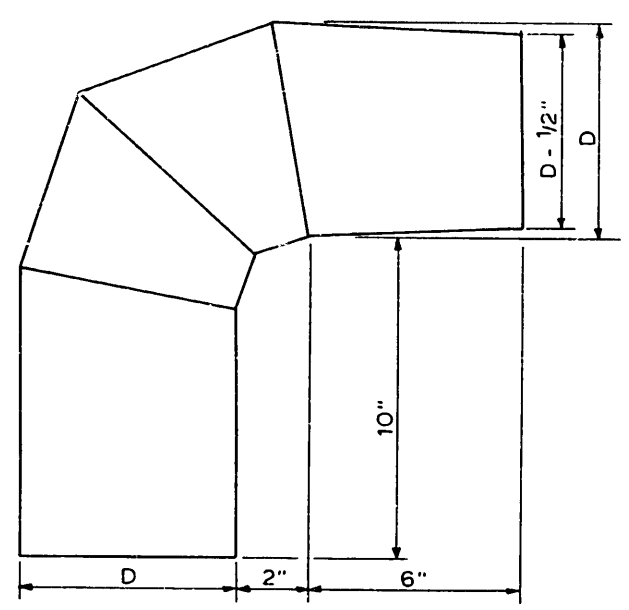
Grate Material: Ductile Iron Ref. Std. Spec. Sec. 9-05.

DO NOT SCALE

APPROVED BY THE BOARD OF PUBLIC WORKS 19 ... CHAIRMAN ATTEST: ... EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Vaned Grate



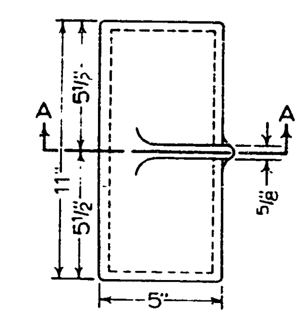
Type A For use with Outlet Pipe which Slopes 10% or Less



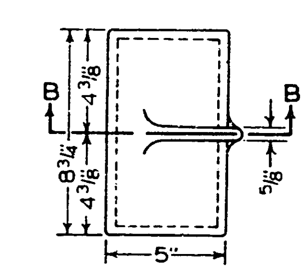
Type B For use with Outlet Pipe which Slopes More than 10%

Notes
1. Trap to be made of 22 Ga (0.0336") Galvanized Sheet Metal or 18 Ga (0.050") Aluminum
2. All Joints to be Seamed and Soldered, or Welded
3. All Longitudinal Joints to be Rivited, or Welded
4. Diameter "D" is nominal diameter of Outlet Pipe

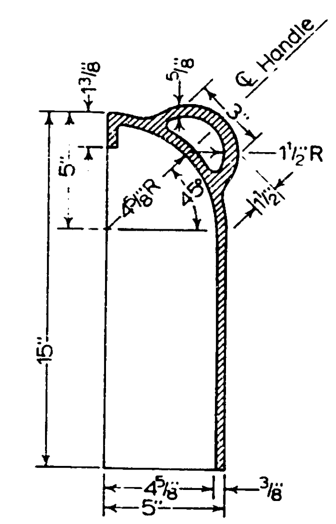
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 ____ CHAIRMAN ATTEST: ____ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Outlet Trap

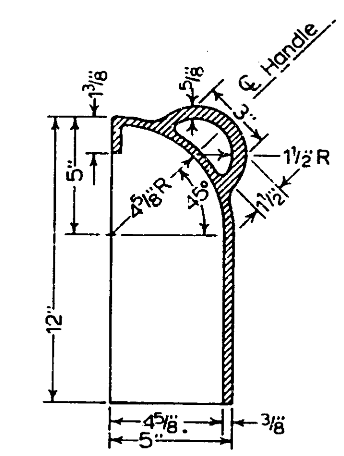


Plan Type C Trap

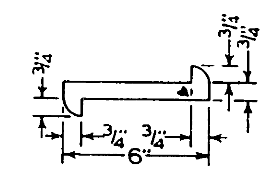


Plan Type D Trap

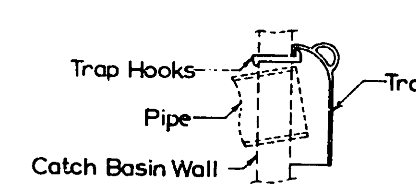




Section B-B



Trap Hook
Trap Hooks may be round or square in cross-section.



Trap Installation

Type 267C Trap to be used with 8" I.D. Outlet Pipe.

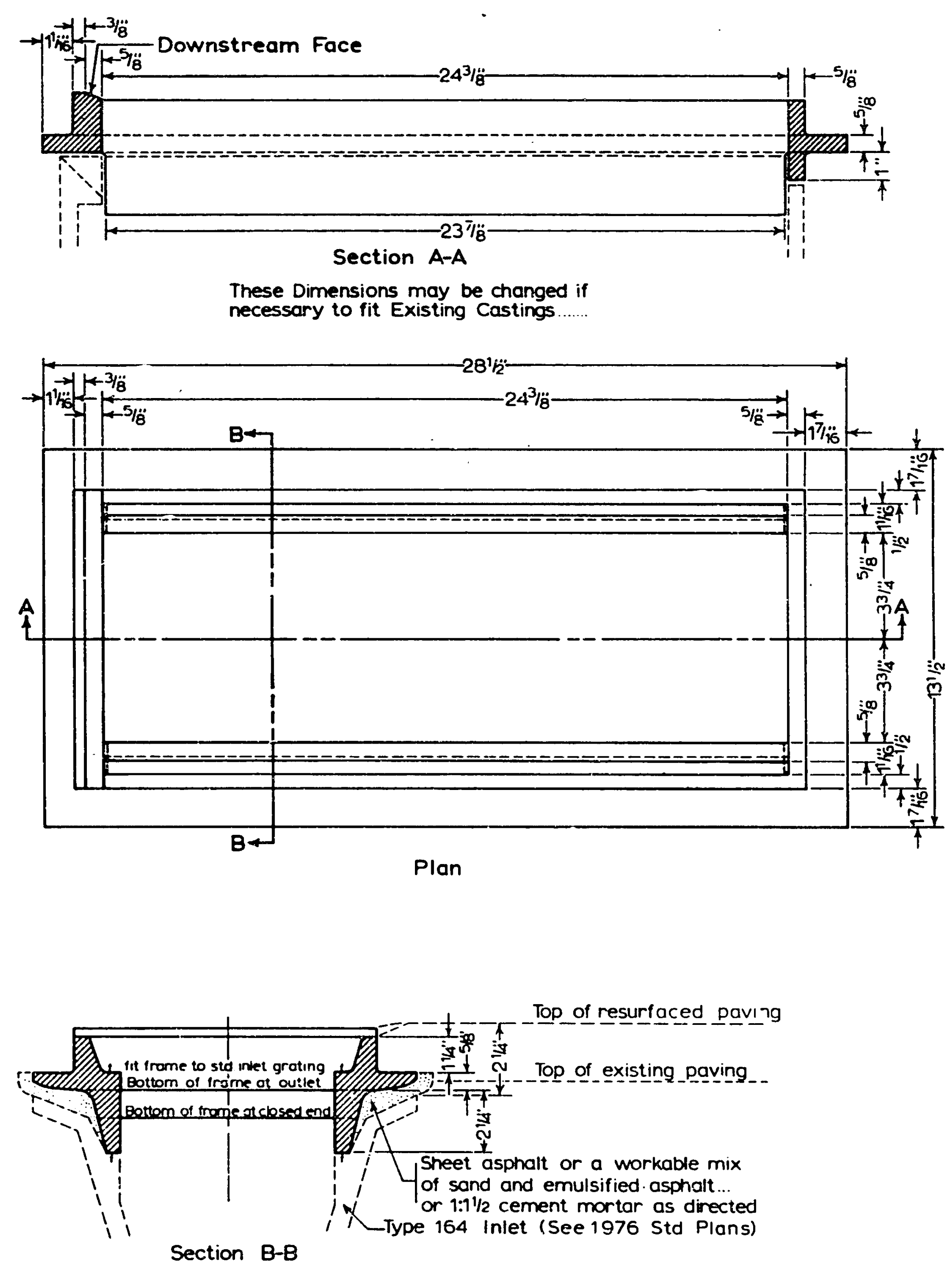
Type 267D Trap to be used with 4" or 6" I.D. Outlet Pipe.

Trap may be Cast Iron ASTM Designation A48 Class 25 or Cast Steel ASTM Designation A27 Grade 70-36.

Trap and trap hook to have a bituminous coating inside and out.

Do Not Scale

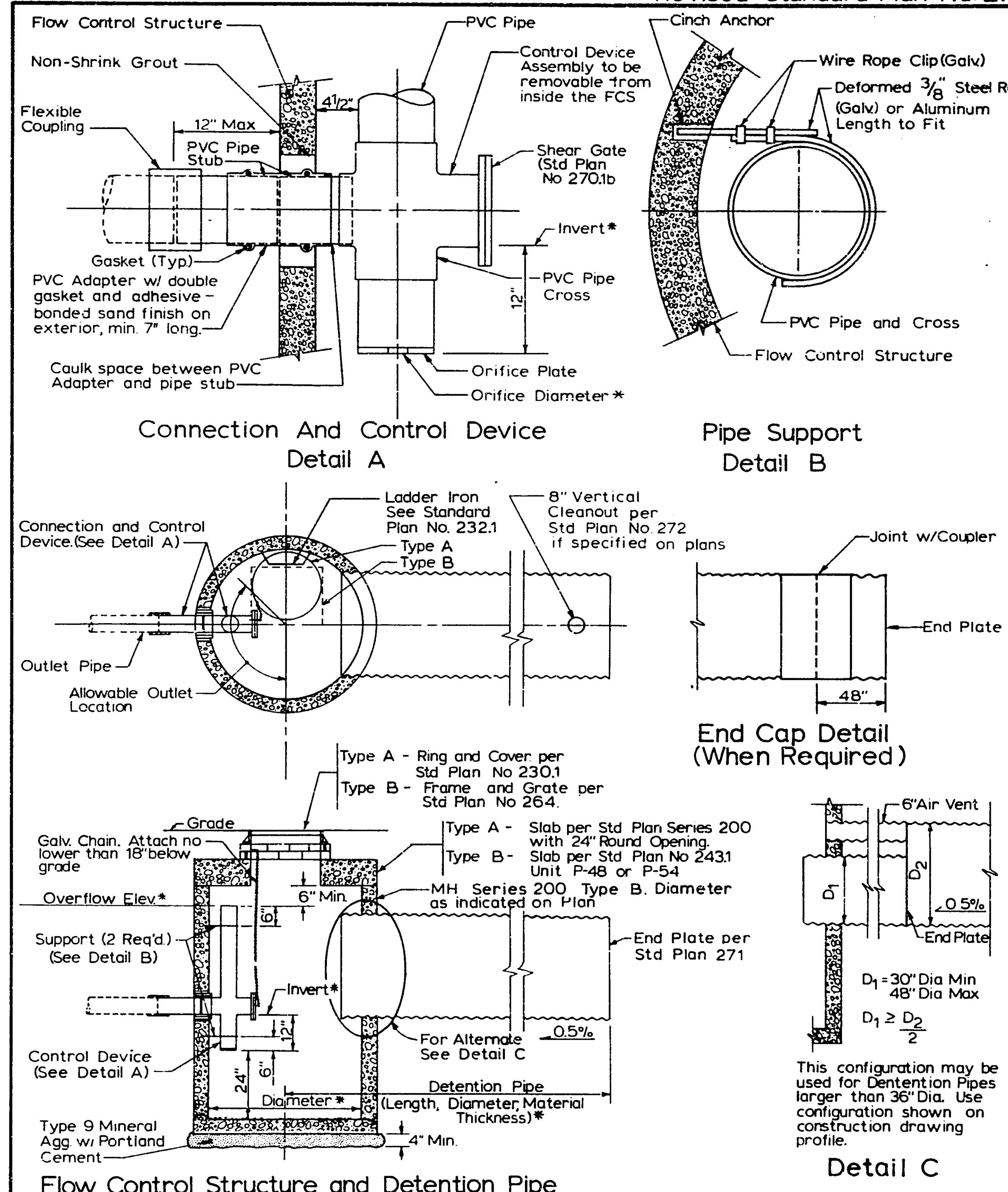
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 ____ CHAIRMAN ATTEST: ____ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Outlet Trap (For Park Dept Use Only)



Ref. Std. Spec. Sec. 9-05.

Do Not Scale

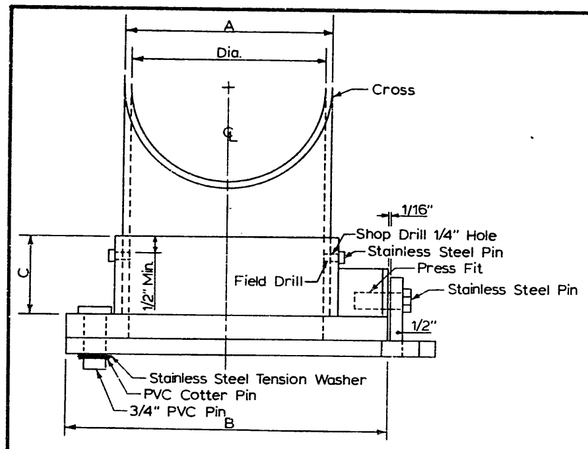
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Extension for Inlet



Note: *Means Specific Design Information as Indicated on Construction Drawings.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Flow Control Structure



Top View

Dia.	A	B*	C*
4"	4 1/2"	8"	2"
6"	6 5/8"	10"	2 1/2"
8"	8 5/8"	12"	3"
10"	10 3/4"	14"	3"
12"	12 3/4"	16"	3"

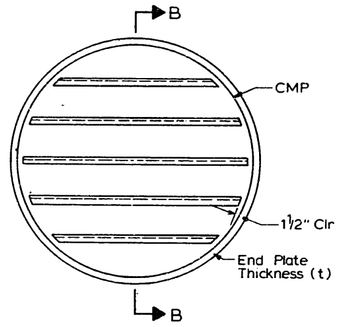
*Minimum

Note: Dia=Outlet Pipe Diameter.

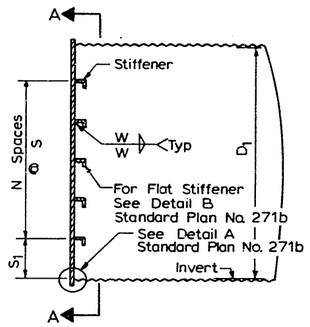
Front View

Side View

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	PVC Shear Gate
ATTEST: EXEC SECRETARY	DEPARTMENT OF ENGINEERING	



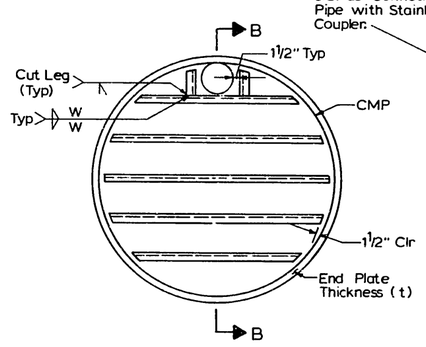
Section A-A



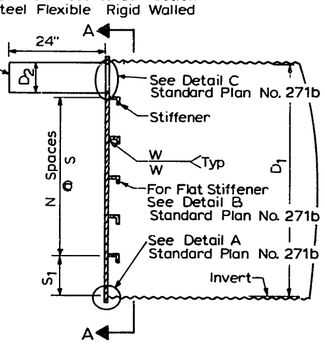
Section B-B

Type A

Non-Corrugated Pipe 0.135" Thick. Same O.D. as Connetion Pipe. Connect to Connection Pipe with Stainless Steel Flexible Rigid Walled Coupler.



Section A-A



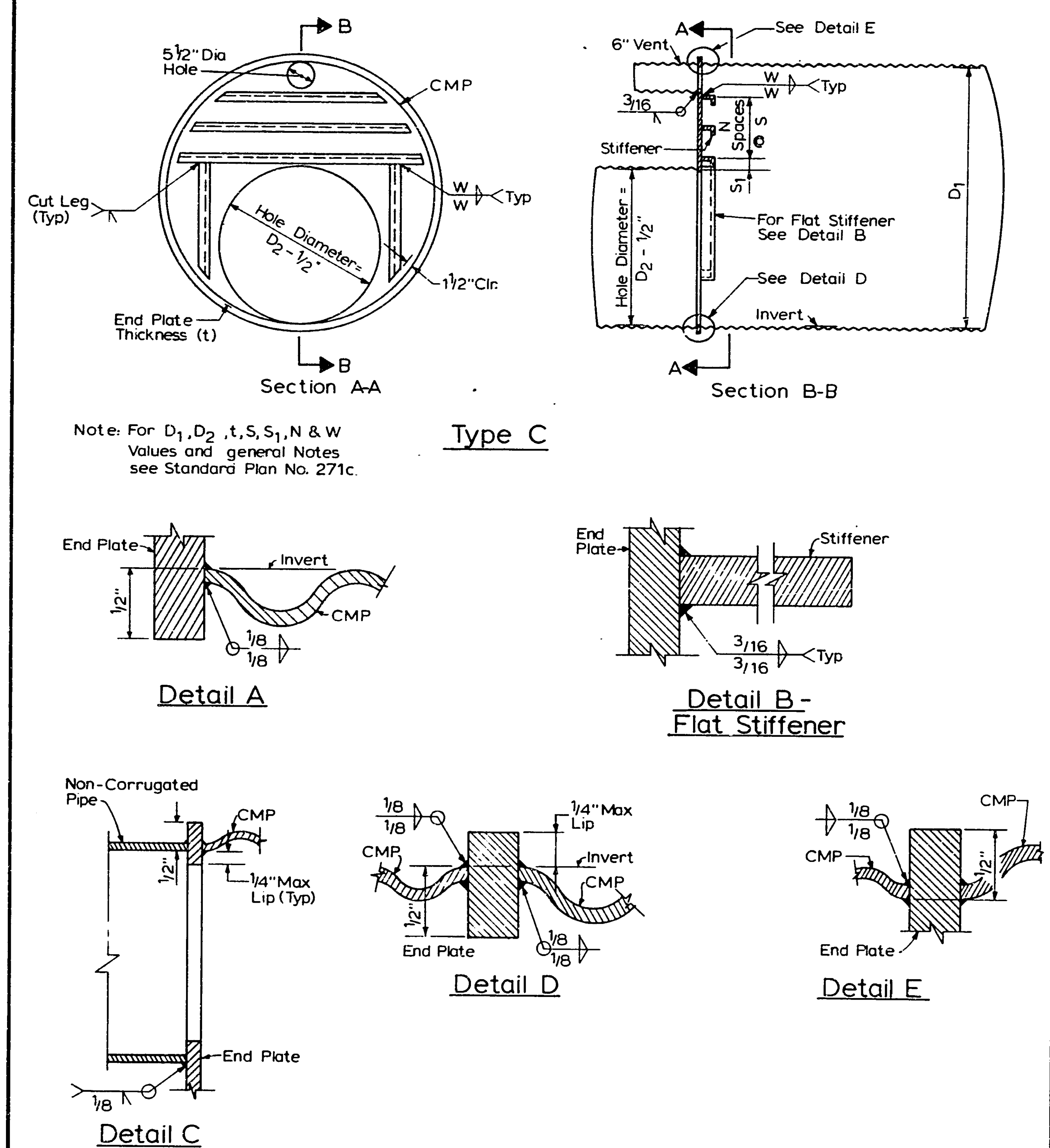
Section B-B

Type B

Note: For D_1, D_2, t, S, S_1, N & W Values and general Notes see Standard Plan No. 271c

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Detention Structure End Plate Details
ATTEST: EXEC SECRETARY	DEPARTMENT OF ENGINEERING	



Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS ... 19.. ... CHAIRMAN ATTEST: ... EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Detention Structure End Plate Details

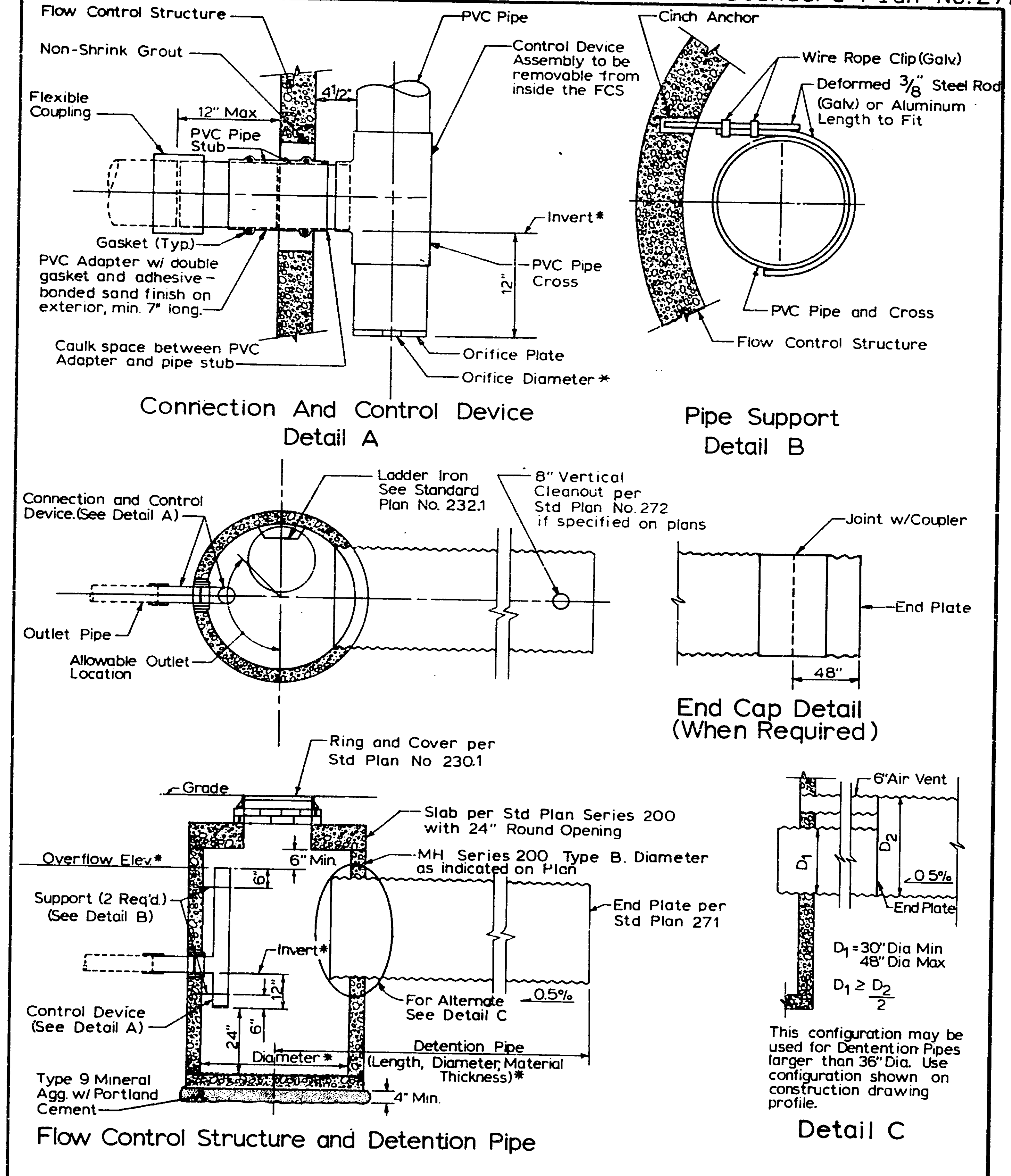
Pipe Diameter D1	Pipe Diameter D2	End Plate Thickness t	Stiffener Type & Size	Stiffener Spacing S1	Stiffener Spacing S	Stiffener Spacing N	Size W
Type A							
30"	—	1/4"	Flat 2 1/2" x 1/4"	6"	6"	3	3/16"
36"	—	1/4"	Flat 3" x 1/4"	6"	6"	4	3/16"
48"	—	1/4"	Flat 4 1/4" x 1/4"	8"	8"	4	3/16"
60"	—	3/8"	L 2 1/2" x 2" x 3/8	10"	10"	4	1/4"
72"	—	3/8"	L 3" x 3" x 3/8"	6"	10"	6	1/4"
Type B							
30"	6"	1/4"	Flat 2 1/2" x 1/4"	5 1/2"	5 1/2"	3	3/16"
	8"			5"	5"	3	
	12"			4"	6"	2	
36"	6"	1/4"	Flat 3" x 1/4"	6"	5 1/2"	4	3/16"
	8"			6"	5"	4	
	12"			5 1/2"	5 1/2"	3	
48"	6"	1/4"	Flat 4 1/4" x 1/4"	8"	8"	4	3/16"
	8"			6"	8"	4	
	12"			4"	7 1/2"	4	
60"	6"	3/8"	L 2 1/2" x 2" x 3/8"	7"	9"	5	1/4"
	8"			10"	10"	4	
	12"			6"	10"	4	
72"	6"	3/8"	L 3" x 3" x 3/8"	8"	8"	7	1/4"
	8"			8"	9"	6	
	12"			8"	10"	5	
Type C							
48"	30"	1/4"	Flat 4 1/4" x 1/4"	2"	8"	1	3/16"
60"	36"	3/8"	L 2 1/2" x 2" x 3/8"	2"	7"	2	1/4"
72"	36"	3/8"	L 2" x 3" x 3/8"	3"	8 1/2"	3	1/4"

Notes:

1. Designs valid for pipes installed with 6 ft. or less of cover from crown of pipe to grade. Maximum water surcharge 3 ft. above crown of pipe.
2. End Plate Material - Aluminum 6061-T6.
3. Designs shall be used only for Aluminum CMP.

APPROVED BY THE BOARD OF PUBLIC WORKS ... 19.. ... CHAIRMAN ATTEST: ... EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Detention Structure End Plate Details

Standard Plan No. 272

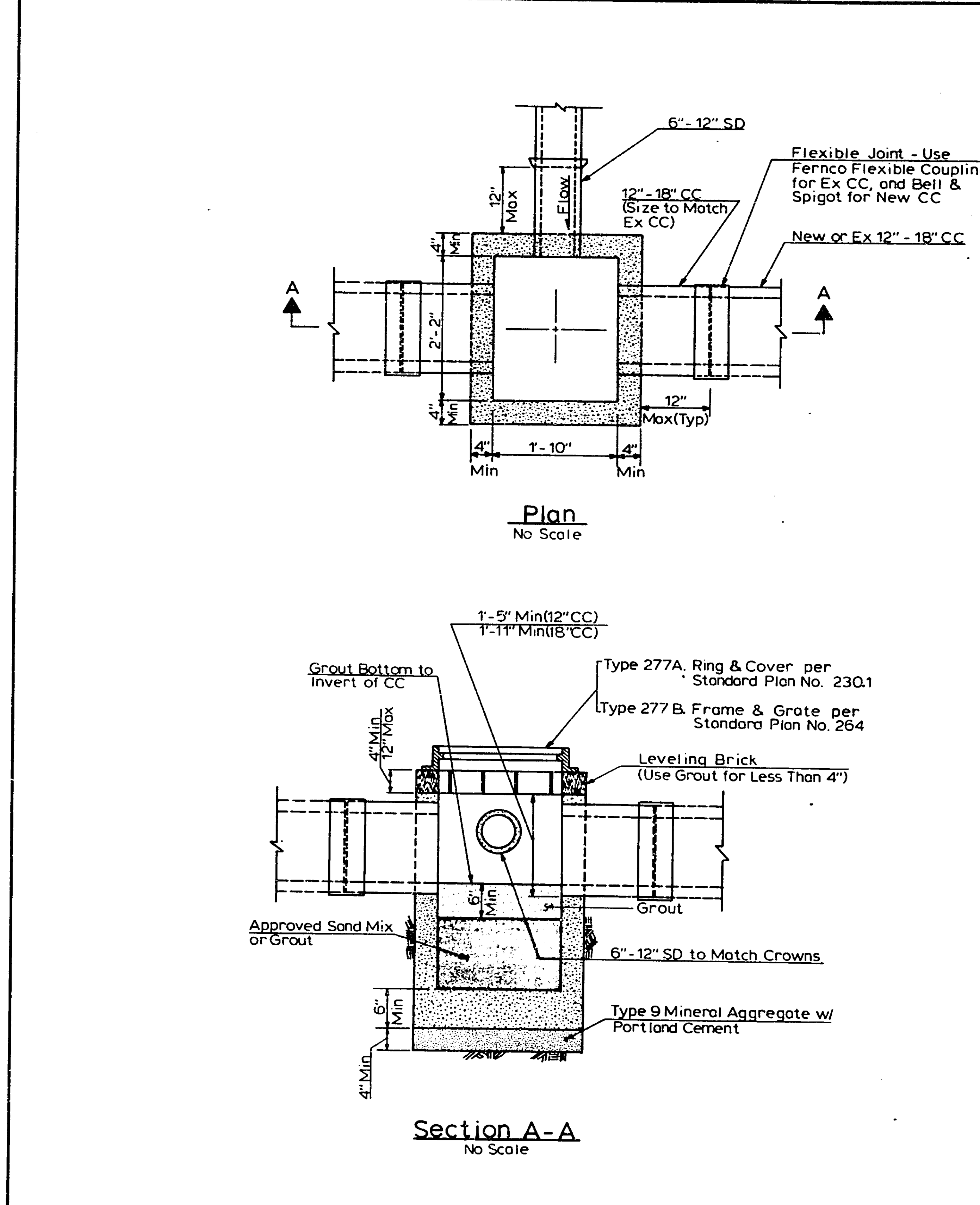


Note: * Means Specific Design Information as Indicated on Construction Drawings

Do Not Scale

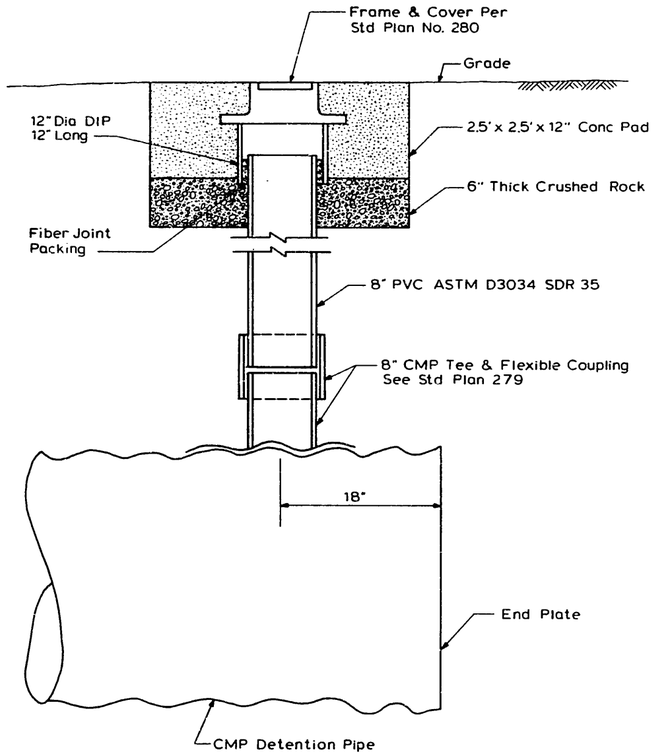
APPROVED BY THE BOARD OF PUBLIC WORKS 7/13 1991 ... CHAIRMAN ATTEST: ... EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Flow Control Structure

Standard Plan No. 277



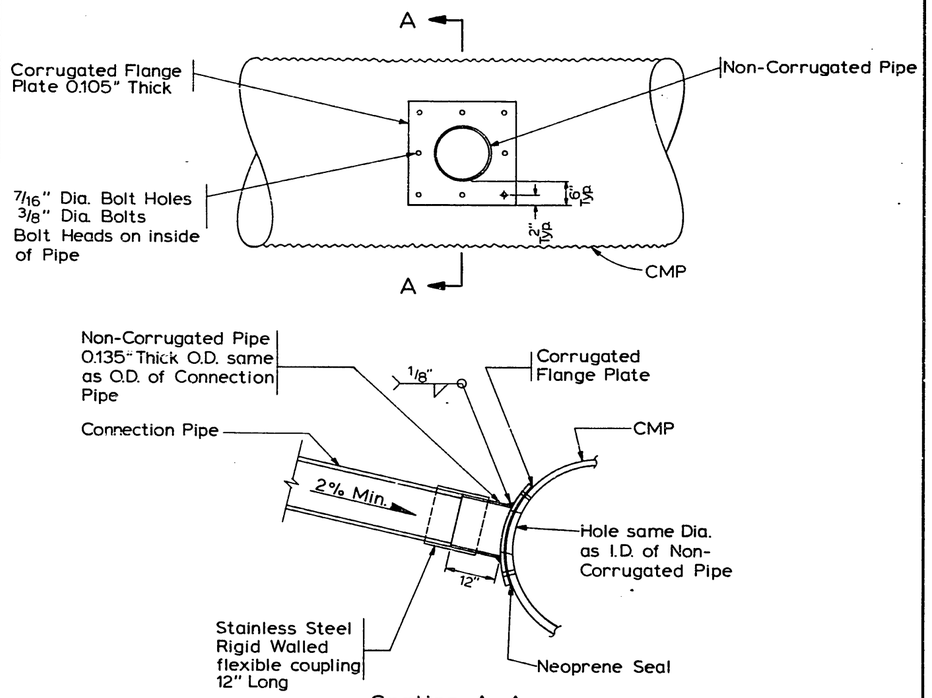
APPROVED BY THE BOARD OF PUBLIC WORKS 7/13 1991 ... CHAIRMAN ATTEST: ... EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 277 Junction Box and Installation

Standard Plan No. 278



APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Vertical Clean Out/ Corrugated Metal Pipe
7/12 19 71 CHAIRMAN ATTEST: EXEC SECRETARY	DEPARTMENT OF ENGINEERING	

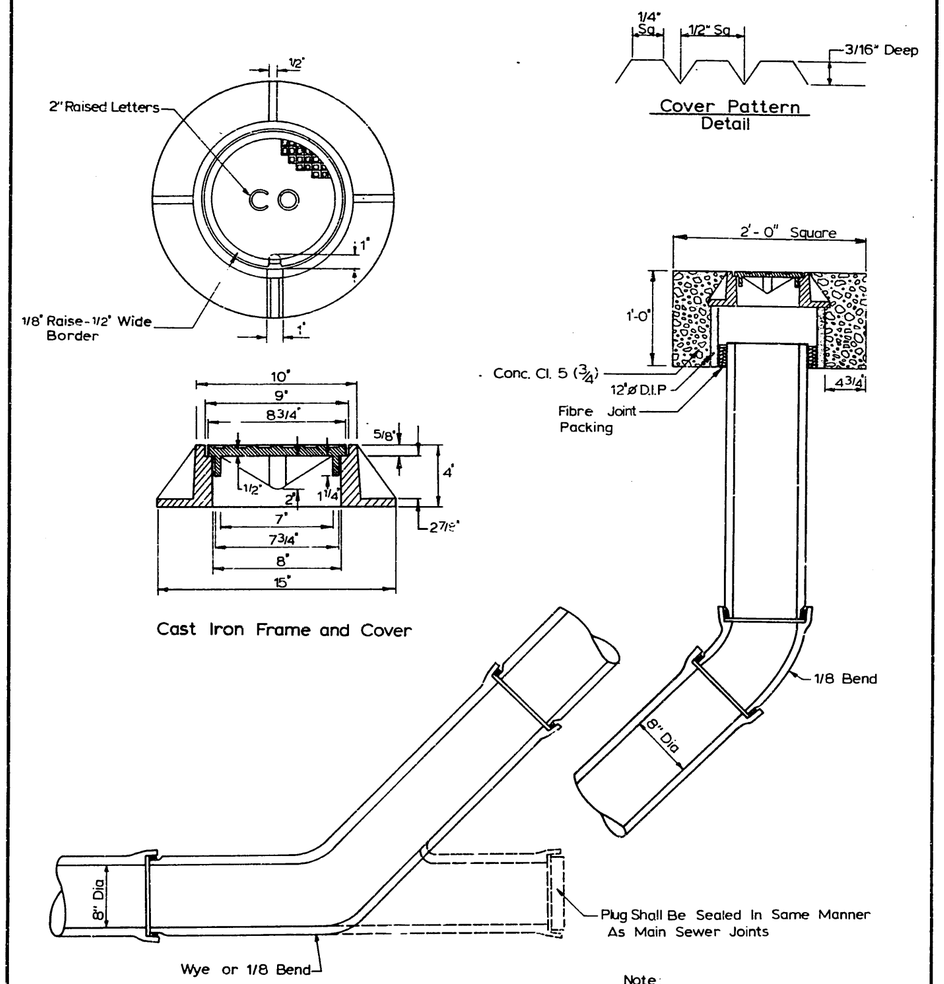
Standard Plan No. 279



Section A-A

Notes:
1. Corrugated Flange Plate and Non-Corrugated Pipe to be same material, and have same coating as CMP.
2. Bolts to be Galv. Steel meeting ASTM A-307 or Stainless Steel meeting ASTM A-193.

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Tee Installation Corrugated Metal Pipe
..., 19... CHAIRMAN ATTEST: EXEC SECRETARY	DEPARTMENT OF ENGINEERING	



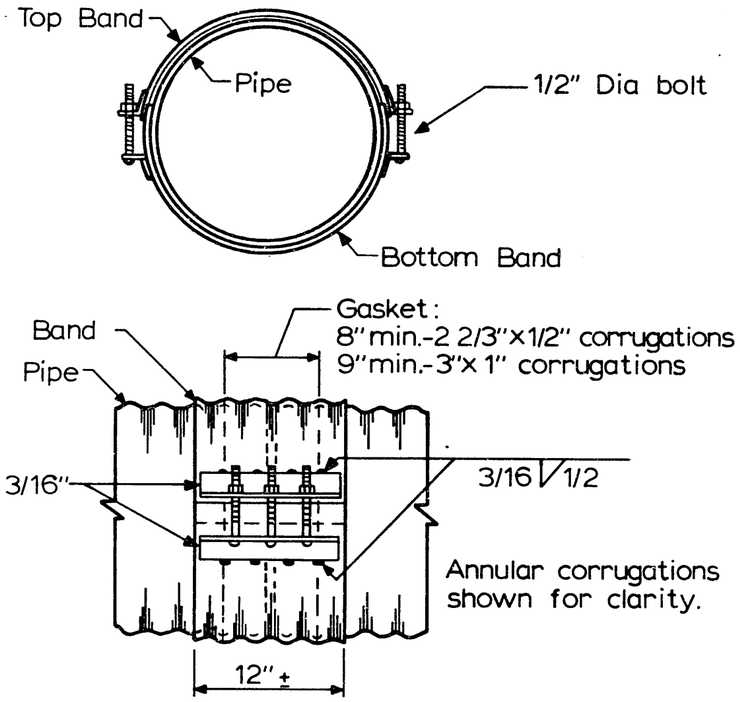
Note:

1 Use only for Side Sewer and Service Drains.

Ref. Std. Spec. Sec. 7-19

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS ..., 19..., CHAIRMAN ATTEST: ..., EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	8" Clean-out

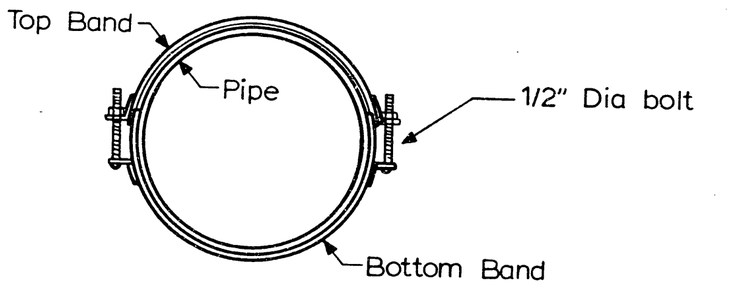


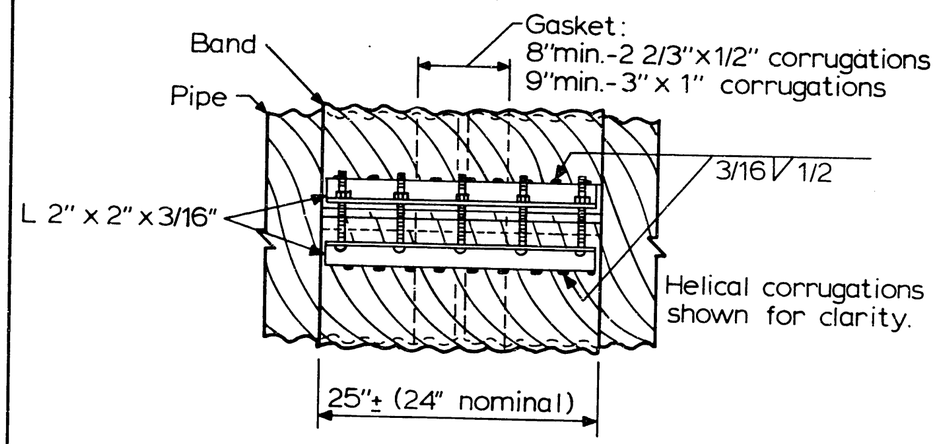
(Helical or Annular)

For Pipes Less Than 48" Diameter

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 10/31, 19 8..., CHAIRMAN ATTEST: ..., SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Corrugated Metal Pipe Coupling Bands



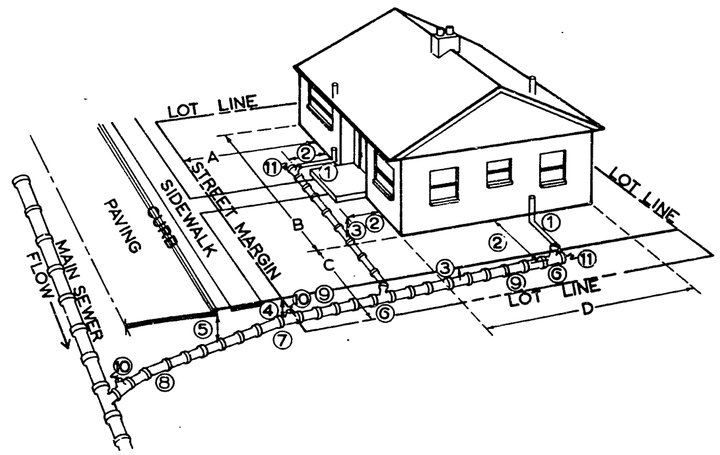


(Helical or Annular)

For Pipes 48" Diameter and Larger

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 10/31, 19 82 CHAIRMAN ATTEST: SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Corrugated Metal Pipe Coupling Bands



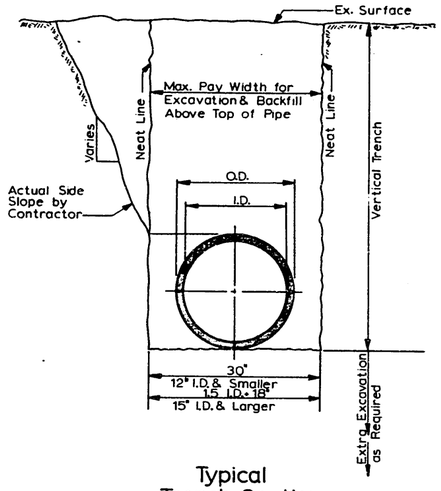
Complete legal description of property and dimensions A, B, C, and D that show the size and location of the house are mandatory for issuance of permit.

1. All house plumbing outlets must be connected to the sewer. No downspouts or storm drainage may be connected, except to a separate storm drainage system.
2. **30" min. distance from house,** except for soil pipe connection.
3. **18" min. coverage of pipe.**
4. **30" min coverage at property line.**
5. **60" min coverage at curb line.**
6. Lay pipe in straight line between bends. Make all changes in grade or line with 1/8 bend or wye. 90° change with wye and 1/8 bend.
7. Standard 4" to 6" increaser.
8. **6" sewer pipe--min. size in street, and elsewhere as directed.** 2% min. grade, 50% max.
9. 4" sewer pipe--min size on property. 2% min grade, 100% (45°) max.
10. Test "T" with plug.
11. Removable plug.
12. Construction in Street must be done by a registered sewer contractor.
13. All construction shall be in accordance with current side sewer ordinances.
14. All construction requires a permit and payment of fee. Complete legal description of property and dimensions A,B,C and D that show the size and location of the house are required for issuance of the permit.

Ref. Std. Spec. Sec. 7-18.

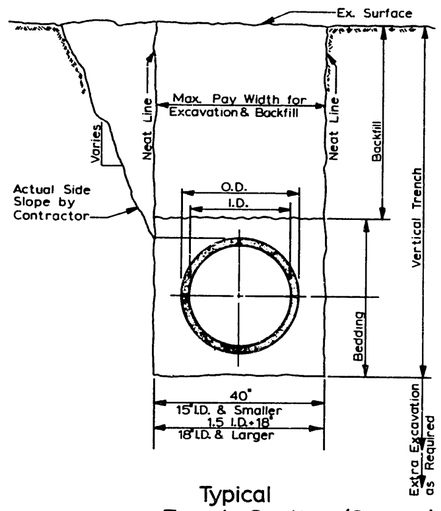
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 10/31, 19 82 CHAIRMAN ATTEST: SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Side Sewer Installation



Typical
Trench Section
(Watermain)

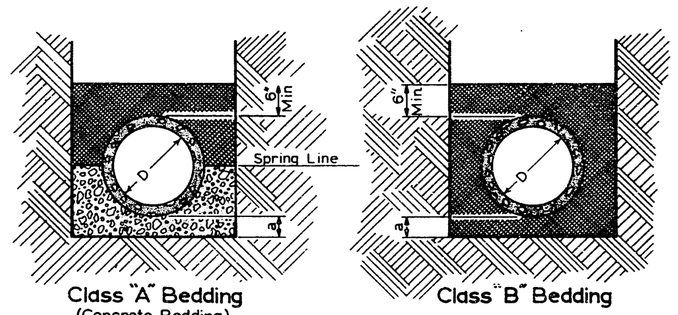
Ref. Std. Spec. Sec. 7-10.



Typical
Trench Section (Sewer)
Ref. Std. Spec. Sec. 7-17

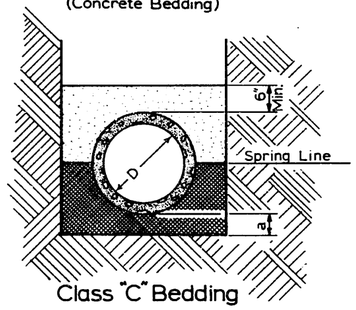
Note: For Pavement Removal and Restoration, See Std. Plan 404a.

APPROVED BY THE BOARD OF PUBLIC WORKS 10/31, 1976 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Typical Trench Section

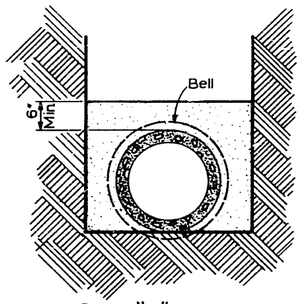


Class "A" Bedding
(Concrete Bedding)

Class "B" Bedding



Class "C" Bedding



Class "D" Bedding

Mineral Aggregate Per Std. Specs. 4-01
Type 9 for rigid pipe.
Type 22 for flexible pipe.

Concrete Class 4 ($1\frac{1}{2}$) (Min)
(4 Sack Min $1\frac{1}{2}$" Max Aggregate)

Selected Native Material

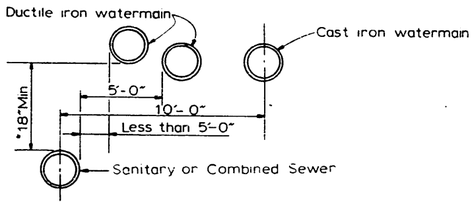
NOTES :

1. For Trench Width, See Std. Plan 284.
   a = 4" When "D" is less than 30"
   a = 6" When "D" is 30" or more.
2. For Class "D" Bedding, Excavate for Bell.
3. For Class "B" Bedding for Water Mains, See Special Provisions.

Ref. Std. Spec. Sec. 7-17.

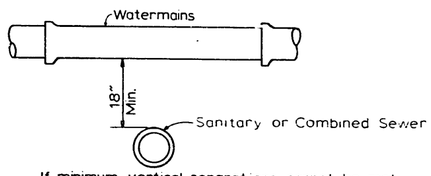
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Pipe Bedding



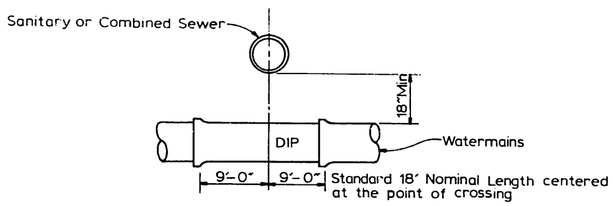
*If vertical separations cannot be obtained sewer pipe shall be constructed of ductile iron pipe, with standard watermain joints and pressure tested for watertightness prior to backfilling.

PARALLEL INSTALLATION



If minimum vertical separations cannot be met, watermain must be ductile iron pipe.

CROSSING WATER OVER SEWER



Provide adequate structural support for the sewer to prevent excessive deflection of joints and settling on and breaking the watermain

CROSSING WATER UNDER SEWER

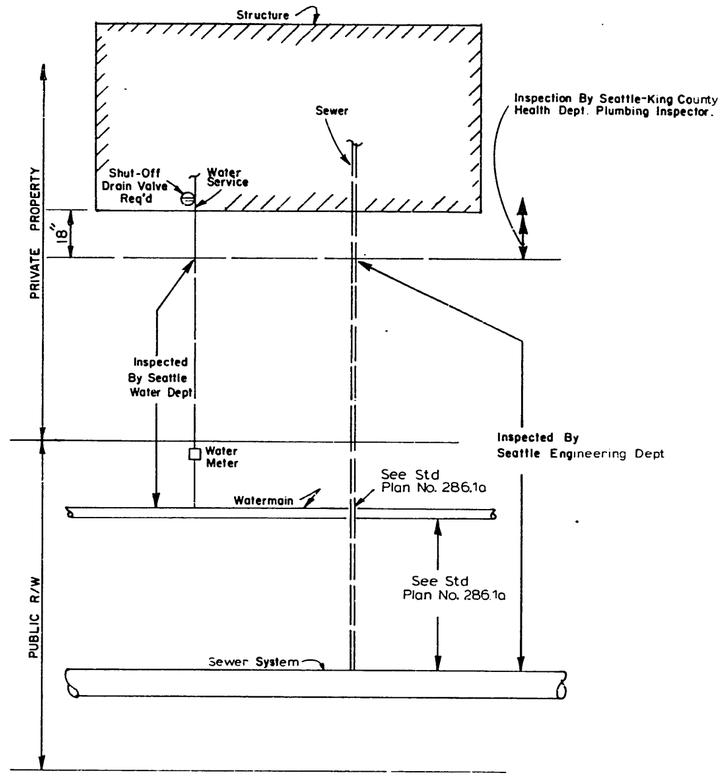
NOTES:

1. Exceptions to the above must be approved by the Seattle Water Department, Water Quality Division.
2. Ordinance 97016 applies to Installation of Side Sewers relative to the location of Watermains and Water Services.

Spacing & Clearances Between Sewers & Watermains

Do not Scale

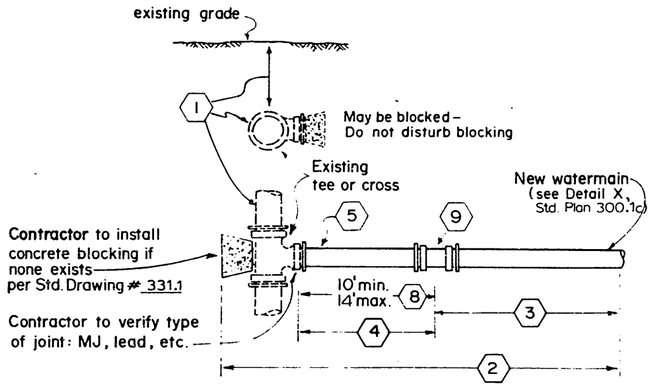
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1971 Tony Gordon CHAIRMAN ATTEST: Barbara J. Peters EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Sewer & Water Spacing & Clearances



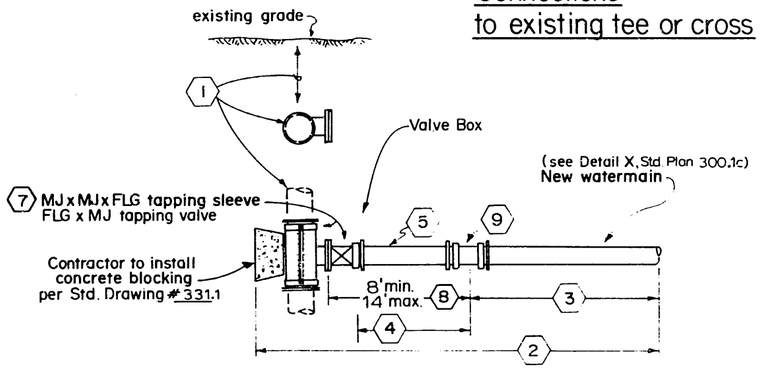
NOTES:

1. IF MINIMUMS ARE NOT ACHIEVABLE, SEWER MUST BE DUCTILE IRON PIPE.
2. EXCEPTIONS TO THE ABOVE MUST BE APPROVED BY THE SEATTLE WATER DEPT.
3. EXCEPTION – IN ANGLE CROSSINGS BETWEEN 45° AND 90° THIS DISTANCE MAY RANGE BETWEEN 6' AND 9'. SEE NOTE 2 FOR CROSSINGS AT LESS THAN 45°.

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 19 71 Tony Gordon CHAIRMAN ATTEST: Barbara J. Peters EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Sewer/Water Clearances



Connections to existing tee or cross

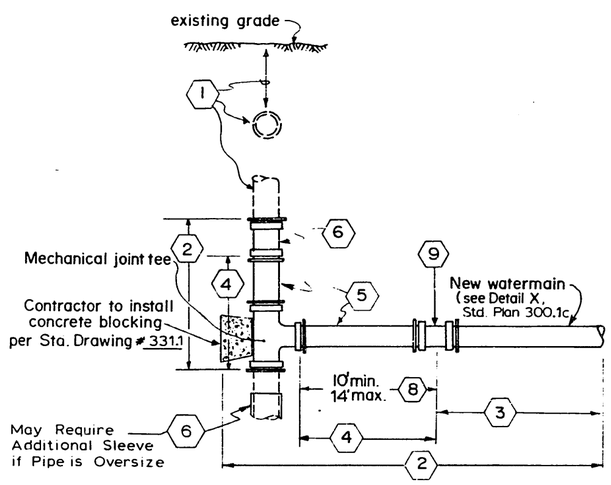


Connections to existing main, no tee or cross (tapping sleeve & tapping valve)

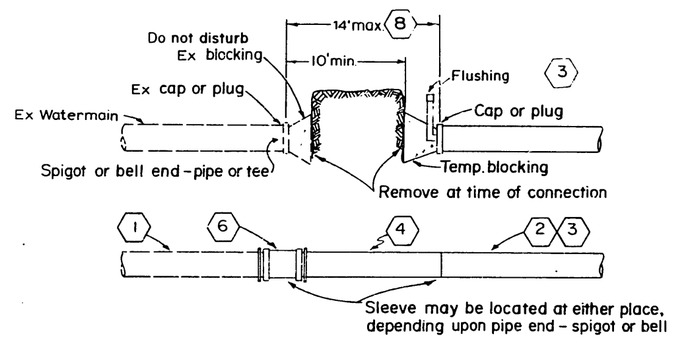
For Legend ⬡ and Notes See Standard Plan No. 300.1c
Ref. Std. Spec. Sec. 7-11

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Connections to
7/12, 1991 CHAIRMAN	DEPARTMENT OF ENGINEERING	Existing Watermains
ATTEST: EXEC SECRETARY		



Connections to existing main, no tee or cross (cut in new tee)

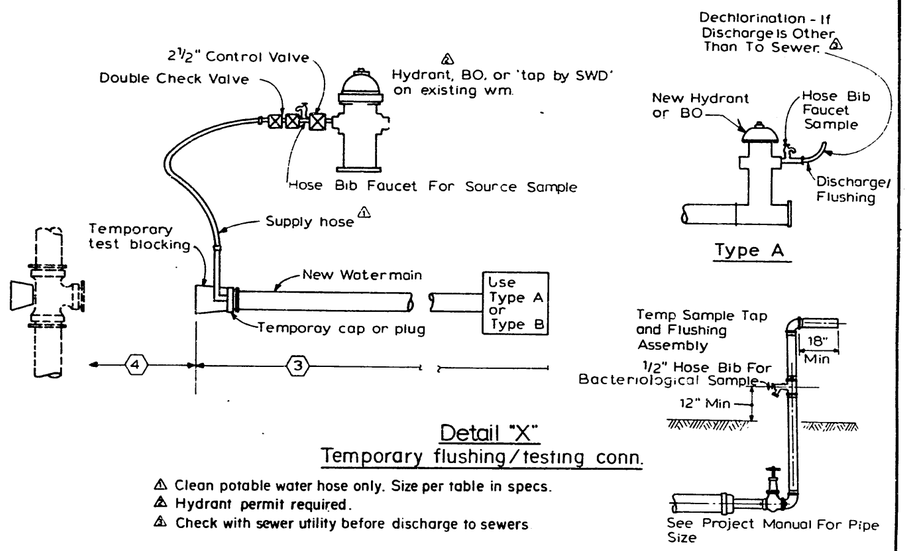


Connections to existing main, stub, or end outlet of tee or cross.

For Legend ⬡ and Notes See Standard Plan No. 300.1c
Ref. Std. Spec. Sec. 7-11

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Connections to
7/12, 1991 CHAIRMAN	DEPARTMENT OF ENGINEERING	Existing Watermains
ATTEST: EXEC SECRETARY		



Type A

Type B

Detail "X"
Temporary flushing/testing conn.

⚠ Clean potable water hose only. Size per table in specs.
⚠ Hydrant permit required.
⚠ Check with sewer utility before discharge to sewers

NOTES

All fittings to be ductile iron.
All excavation shall provide a minimum of 1' clear around pipe and fittings.
These plan for DIP and CIP watermains 12 inch or smaller dia.
Other sizes and types see project drawings.

(1) Contractor to determine alignment & grade of existing facility prior to installing new watermain. Seattle Water Department to determine outside diameter of existing facility at same time contractor excavates to determine alignment & grade.

(2) All excavation, pipe, fittings (except as noted below), other material, backfill, compaction, & street restoration by contractor. All materials to be on job site prior to shutdown of existing main.

(3) Installed by contractor

(4) Contractor Furnished, Installed by Seattle Water Department

(5) Watermain with plain ends

(6) Mechanical Joint Sleeve, with Spacer cut to fit gap - furnished and inserted at time of connection by Seattle Water Department.

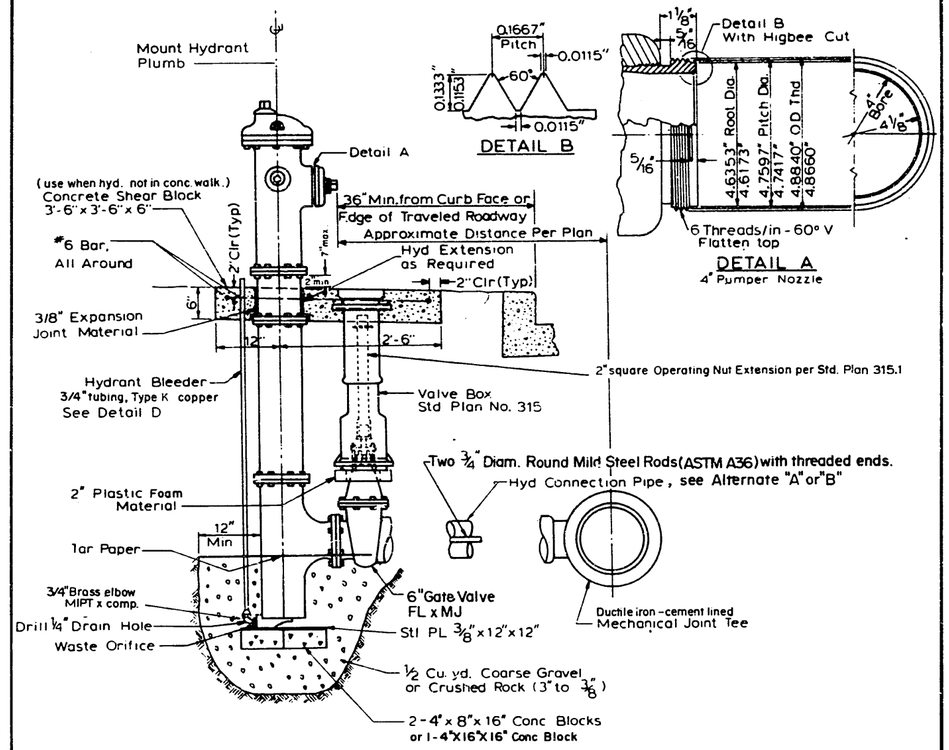
(7) Tapping sleeve & tapping valve furnished and installed by Seattle Water Dept.

(8) Applies to pipes 4" through 12". All larger sizes to be determined on a case by case basis.

(9) Mechanical Joint Sleeve. Furnished by Contractor and installed by Seattle Water Department. Spacers by Seattle Water Department where Required.

Ref: Std. Spec. Sec. 7-11

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Connections to Existing Watermains



Hydrant Detail

Scale 1" = 1'

6" Hydrant connection pipe shall be DIP, CL52

After backfilling, the outside of the hydrant (above the ground line) shall be thoroughly cleaned and painted with one coat of hydrant green paint — Farwest Paint Co., 40255 or approved equal.

The threaded nipple on the 4 in. pumper nozzle shall be equipped with the blunt start or Higbee Cut.

The 2½ in. nipples shall be in accordance with the National Fire Protection Association Bulletin No. 194, dated 1974

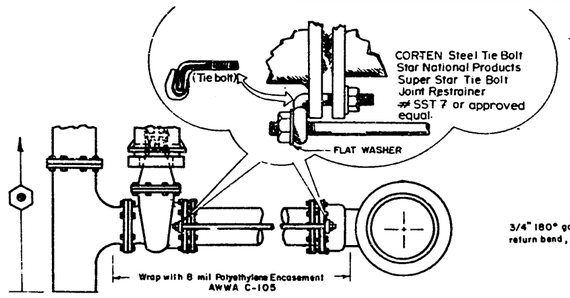
Hydrant tees shall be set horizontally.

After installation, all shackle bolts, nuts, mechanical joint glands, and shackle rods shall be cleaned and coated with two coats of asphalt, Royston Roskote # 612 XM or approved equal.

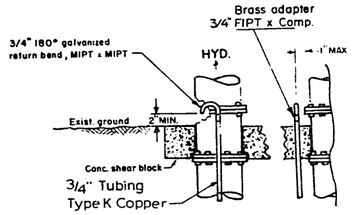
Pumper port to face curb, or as directed by the engineer.

Ref. Std. Spec. Sec. 7-14, 9-30

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Hydrant Setting Detail

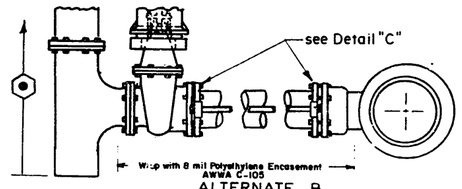


ALTERNATE A
Tie bolt Restraint



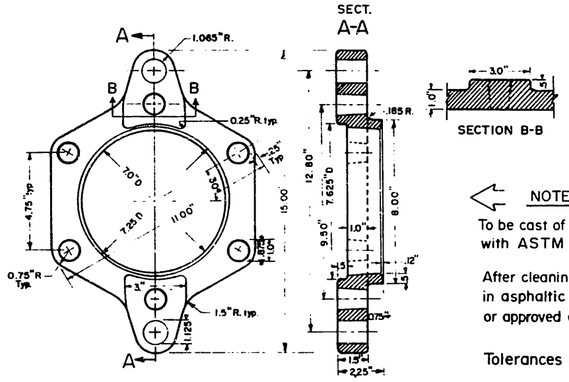
Hydrant Bleeder

DETAIL D



ALTERNATE B
Mechanical joint gland
w/lugs

⬢ Where watermains are installed with polyethylene encasement or tape coatings, the hydrant barrel and valve shall be similarly incased or coated.



DETAIL "C" — 6" Mechanical Joint Gland, w/lugs

NOTES

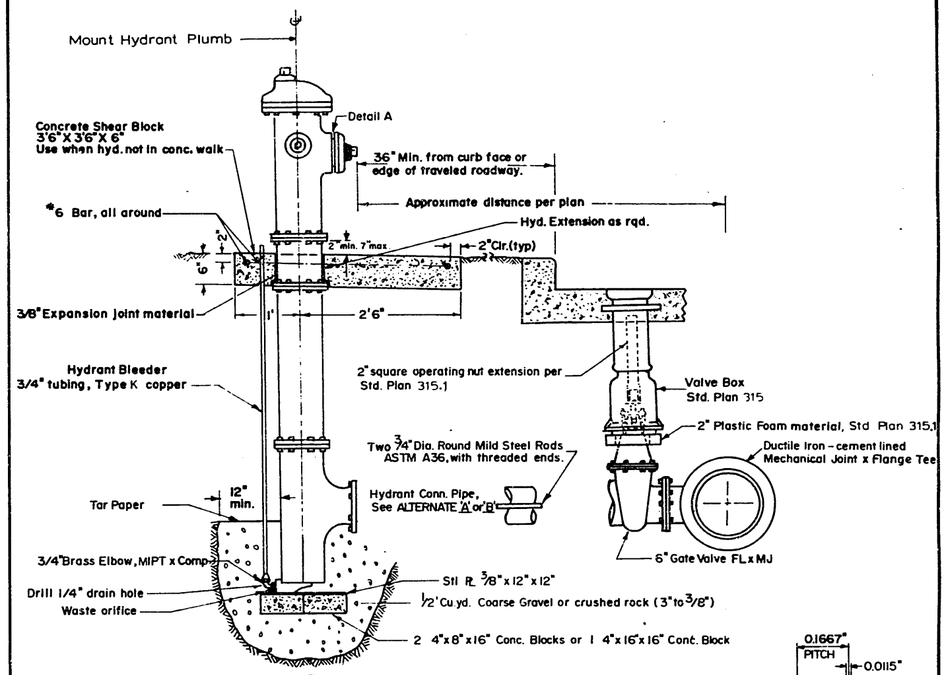
To be cast of Ductile Iron in conformance with ASTM specs A536-class 80-55-06

After cleaning, the casting shall be hot dipped in asphaltic varnish, Royston Roskote #612XM or approved equal.

Tolerances per CIPRA handbook.

Ref. Std. Spec. Sec. 7-14, 9-30

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1971 Chas Larkin CHAIRMAN ATTEST: Thelma J. Johnson EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Hydrant Setting Detail



Hydrant Detail
Scale: 1"=1'

6" Hydrant connection pipe shall be DIP, CL52

Hydrant tees shall be set horizontally.

The threaded nipple on the 4" pumper nozzle shall be equipped with the blunt start or Higbee Cut.

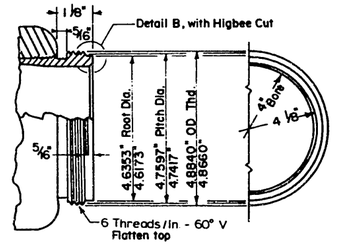
The 2 1/2" nipples shall be in accordance with the National Fire Protection Association Bulletin no. 194, dated 1974.

After installation, all shackle bolts, nuts, mechanical joint glands, and shackle rods shall be cleaned and coated with two coats of asphalt, Royston Roskote #612XM or approved equal.

After backfilling, the outside of the hydrant (above the ground line) shall be thoroughly cleaned and painted with one coat of hydrant paint — Farwest Paint Co., 40255 or approved equal.

Pumper port to face curb, or as directed by the engineer.

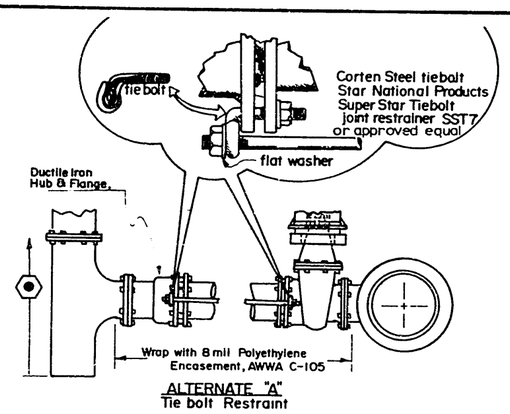
DETAIL B



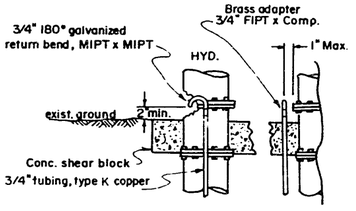
DETAIL A
4" Pumper Nozzle

Ref. Std. Spec. Sec. 7-14, 9-30

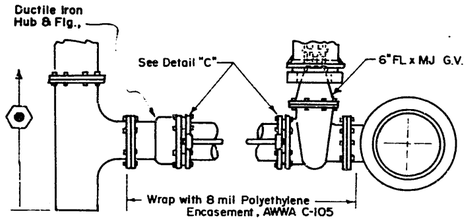
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1971 Chas Larkin CHAIRMAN ATTEST: Thelma J. Johnson EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Hydrant Setting Detail



ALTERNATE "A"
Tie bolt Restraint

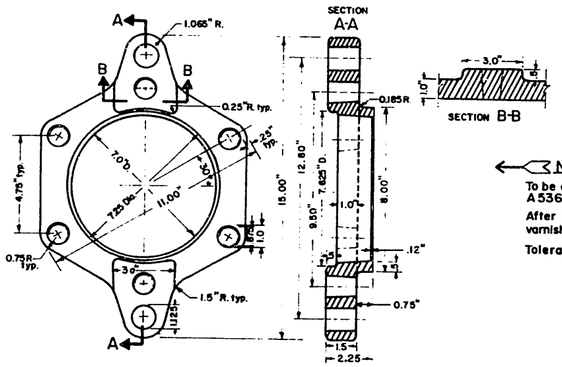


Hydrant Bleeder
DETAIL D



ALTERNATE "B"
Mechanical joint gland w/lugs

⬡ Where watermains are installed with polyethylene encasement or tape coatings, the hydrant barrel and valve shall be similarly incased or coated.



DETAIL C — 6" Mechanical Joint Gland, w/lugs

NOTES

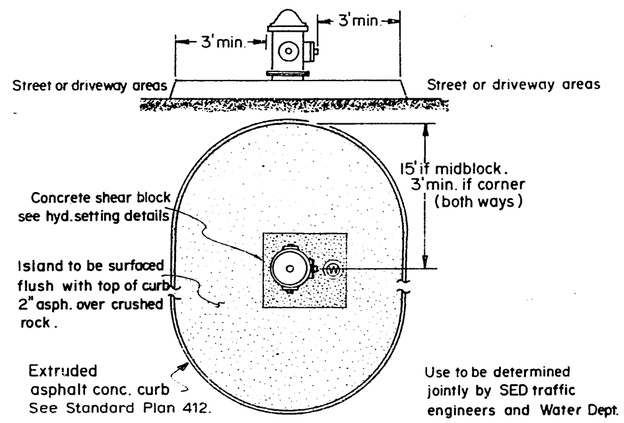
To be cast of ductile iron in conformance with ASTM specs A536-class 80-55-06

After cleaning, the casting shall be hot dipped in asphaltic varnish, Royston Roskote #612 XM or approved equal.

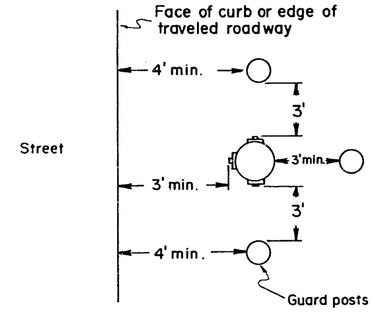
Tolerances per CIPRA handbook.

Ref. Std. Spec. Sec. 7-14, 9-30

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1971 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Hydrant Setting Detail



TRAFFIC ISLAND PROTECTION FOR FIRE HYDRANTS
IN PARKING AREAS



GUARD POST PROTECTION FOR HYD.
IN PARKING AREAS

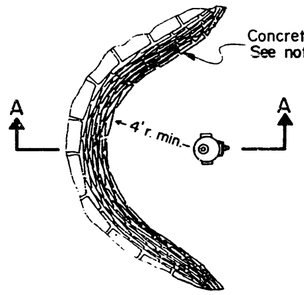
USE TO BE DETERMINED, AND POSTS TO BE FURNISHED & INSTALLED BY WATER DEPARTMENT.

Ref. Std. Spec. Sec. 7-14

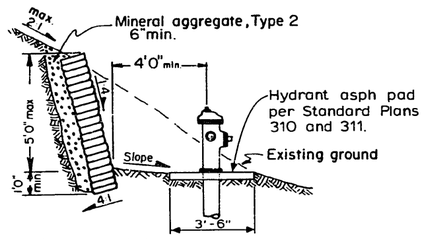
APPROVED BY THE BOARD OF PUBLIC WORKS , 19 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Fire Hydrant Protection

The broken concrete slabs shall be a minimum of 3 1/2 inches in thickness and not less than 3' x 18" in size. The slabs shall be set in level layers of the same thickness, and the exposed faces shall be as smooth as the shape and size of the slabs will permit.

The rockery rock shall be sound, quarried rock; durable, free of cracks, and the source of rock shall be approved by the engineer before placement.



Plan View

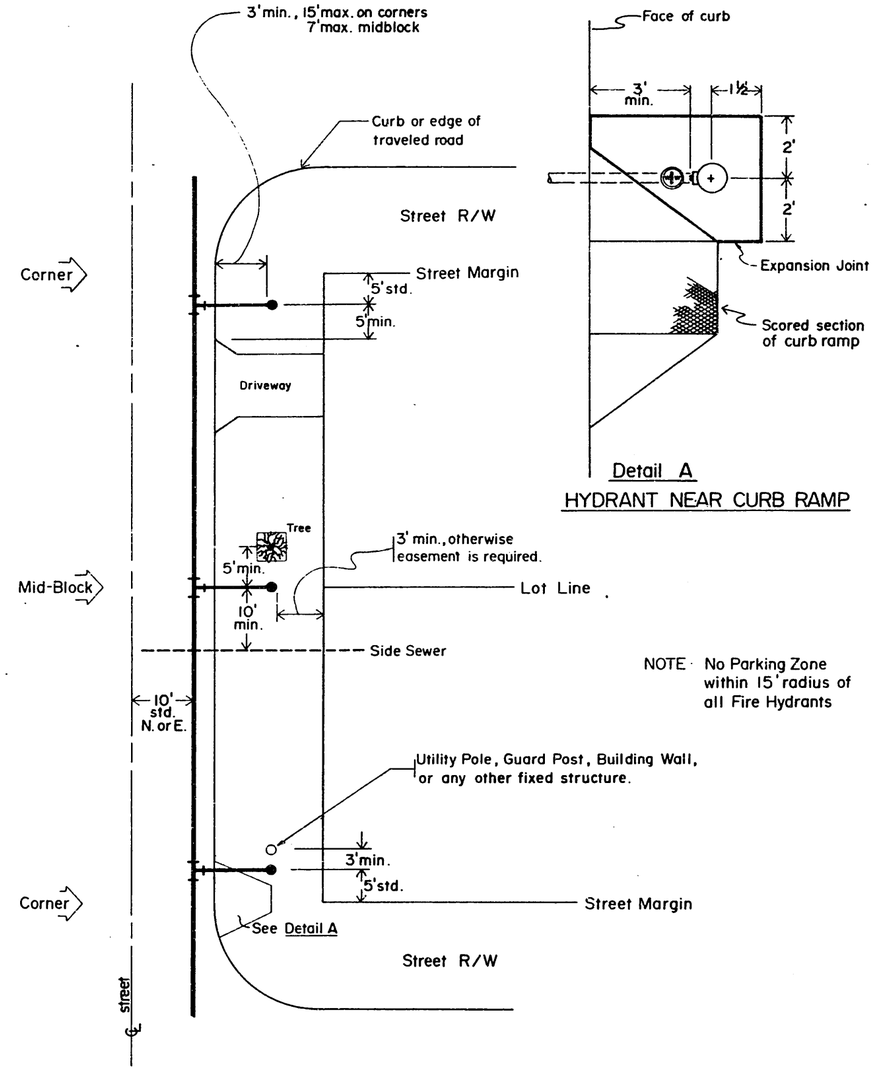


Section A-A

WALL FOR HYDRANTS

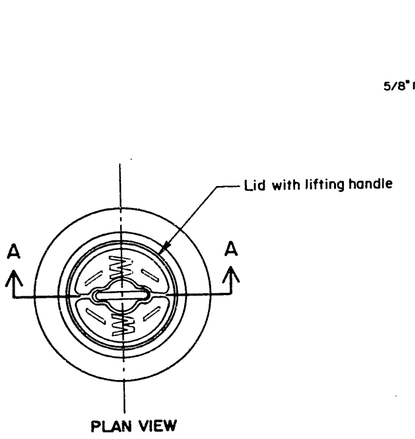
Ref. Std. Spec. Sec. 7-14

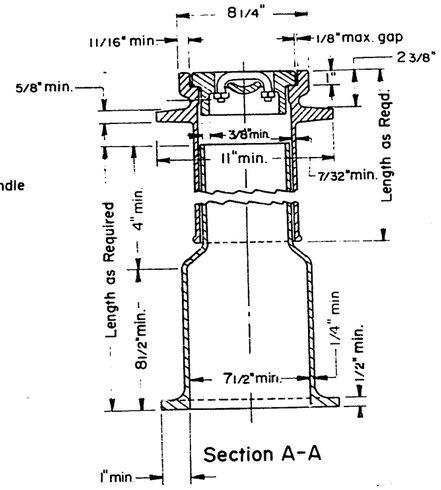
APPROVED BY THE BOARD OF PUBLIC WORKS 19 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Wall Requirements for Hydrants

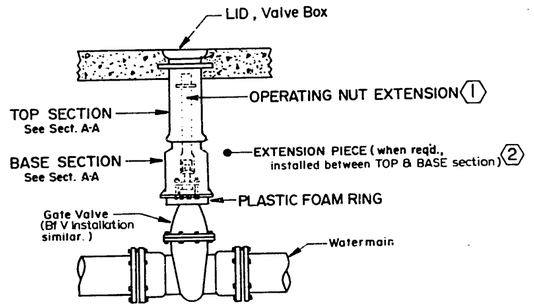


Ref. Std. Spec. Sec. 7-14

APPROVED BY THE BOARD OF PUBLIC WORKS 19 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Fire Hydrant Locations & Clearances





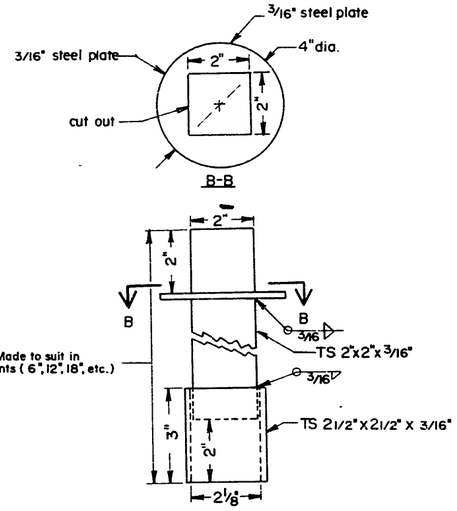


VALVE BOX ASSY.,
TYPICAL SETTING DETAIL

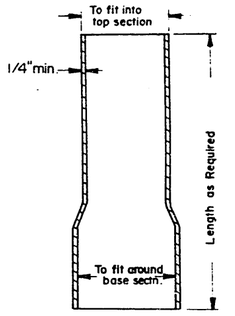
For Legend ⬡ and Notes See Std. Plan 315.1b
Ref. Std Spec Sec 7-12, 9-30

Do Not Scale

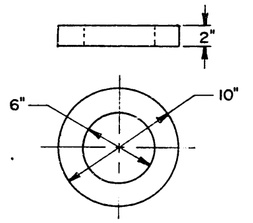
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1971 Chas Carlson CHAIRMAN ATTEST: Barbara M. Jahn EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Cast Iron Valve Box & Operating Nut Extensions



Operating Nut Extension Detail



Extension Piece (2)
(When Required)



Plastic Foam Ring Detail

NOTES

Frame and cover shall be tested for accuracy of fit and shall be marked in sets for delivery.

Castings and extensions shall be hot-dipped in asphaltic varnish, Royston Roskote # 612XM or approved equal.

Valve Boxes shall be Rich # 045, top section, lid, and base ; or Olympic Foundry – lid # 1908-33, top section # 1106-33, base section # 1301-33 ; or approved equal.

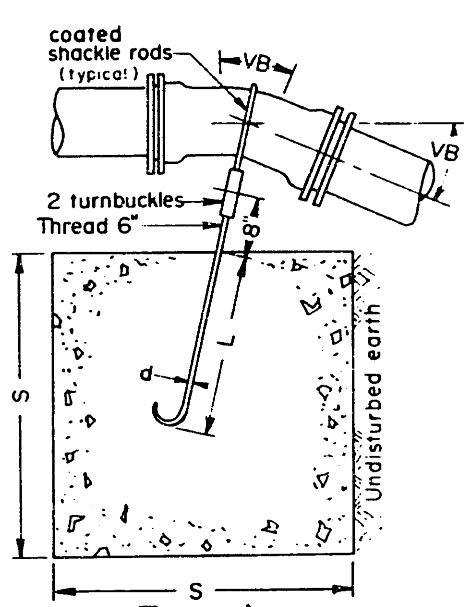
All castings shall be ductile or grey cast iron.

(1) An Operating Nut Extension shall be installed when the ground surface is more than 30" above the valve operating nut. The Operating Nut Extension shall extend into the top section of the Standard Valve Box and shall clear the bottom of the lid by a minimum of 6 inches.

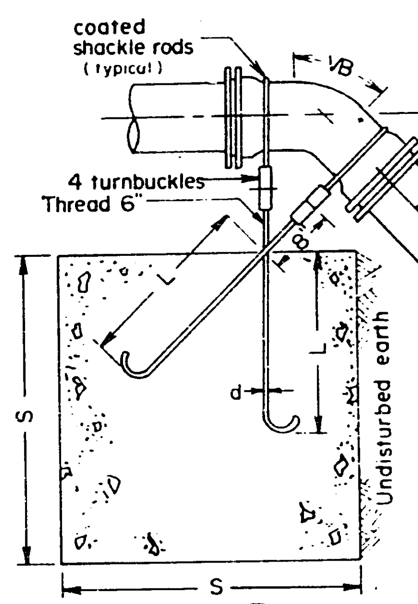
(2) Extension pieces (when used) shall conform to minimum thickness requirements and shall fit into the top section and over the bottom section.

Ref. Std. Spec. Sec. 7-12, 9-30

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1971 Chas Carlson CHAIRMAN ATTEST: Barbara M. Jahn EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Cast Iron Valve Box & Operating Nut Extensions



Type A
No Scale



Type B
No Scale

TYPE "A" BLOCKING
for 11¼° & 22½° Vertical Bends

		VB		S	d	L
Pipe size Nom. Diameter-inches	Test Pressure psi.	Vertical Bend Degrees	No. of cu. ft. of Conc. Blocking	Side of Cube feet	Diameter of Shackle Rods(2) inches	Depth of Rods in Concrete inches
4"	300	11¼	8	2	⅝"	18
		22½	12	2¼		24
6"	300	11¼	12	2¼	⅝"	24
		22½	27	3		
8"	300	11¼	16	2½	⅝"	24
		22½	43	3½		
12"	300	11¼	64	4	¾"	24
		22½	125	5	⅞"	36

TYPE "B" BLOCKING
for 45° Vertical Bends

		VB		S	d	L
Pipe size Nom. Diameter-inches	Test Pressure psi.	Vertical Bend Degrees	No. of cu. ft. of Conc. Blocking	Side of Cube feet	Diameter of Shackle Rods(4 inches	Depth of Rods in Concrete inches
4"	300	45	27	3	⅝"	20
6"			64	4		
8"			125	5		
12"	300		216	6	⅞"	30

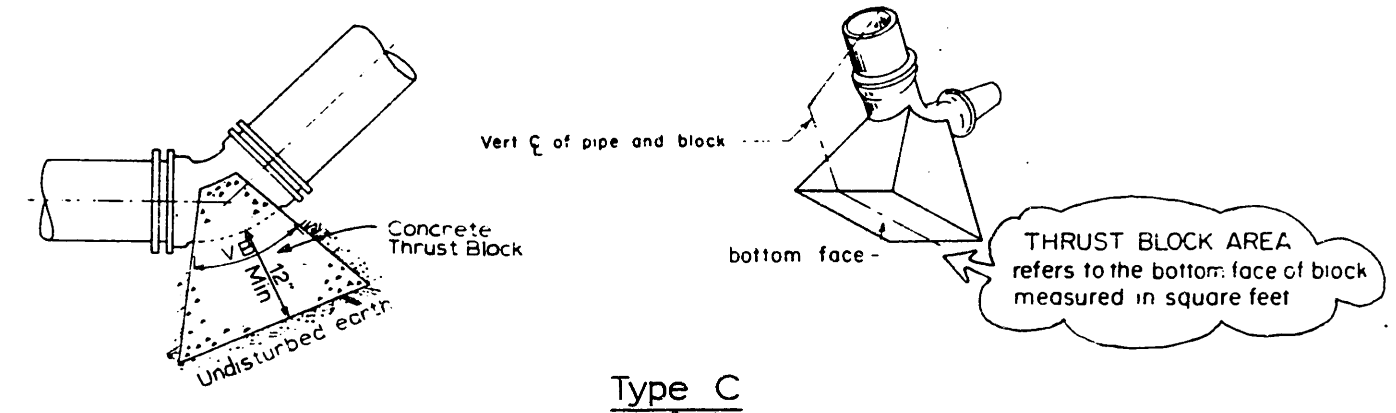
For Notes See Standard Plan 330.1b

Ref. Std. Spec. Sec. 7-11

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 [signature] CHAIRMAN
ATTEST: [signature] EXEC SECRETARY

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

Watermain Thrust Blocking
Vertical Fittings



Type C
No Scale

TYPE "C" BLOCKING
for 11¼°, 22½°, 45°, and 90° Vertical Bends

THRUST BLOCK AREA IN SQUARE FEET

SOIL	Firm silt or firm silty sand			Compact Sand			Compact Sand & Gravel		
FITTING ⟶	90° Bend	Tee 45° bend and Dead End	11¼° and 22½° bend	90° Bend	Tee 45° bend and Dead End	11¼° and 22½° bend	90° Bend	Tee 45° bend and Dead End	11¼° and 22½° bend
PIPE SIZE 4"	5.8	4.2	1.7	2.9	2.1	1.0	2.2	1.6	1.0
6"	13.3	9.4	3.8	6.7	4.7	1.9	5.0	3.5	1.4
8"	23.3	16.7	6.7	11.7	8.4	3.4	8.8	6.3	2.5
12"	53.0	37.5	15.0	26.5	18.8	7.5	20.0	14.0	5.6
Areas calculated on 300psi test pressure and 36" min. cover over w.m.									

w.m. = Watermain

Notes

Location and size of blocking for pipe larger than 12" and for soil types different than shown shall be determined by the engineer.

All blocking for vertical fittings (poured in place) shall bear against undisturbed native ground.

All poured Thrust Blocks shall be in place and sufficient time shall be allowed for the concrete to cure and trench shall be backfilled and compacted prior to pressure testing.

All blocking to be concrete Cl 5 (1-½).

After installation, shackle rods & turnbuckles shall be cleaned and coated with 2 coats of asphaltic varnish, Royston Roykote #612XM or approved equal.

Shackle rods shall be round mild steel, ASTM A-36 with threads on ends only.

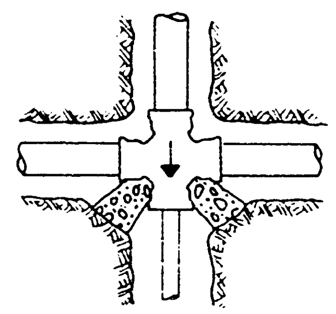
Blocking against fittings shall bear against the greatest fitting surface area possible, but shall not cover or enclose bell ends, joint bolts or glands

Ref Std Spec. Sec. 7-11

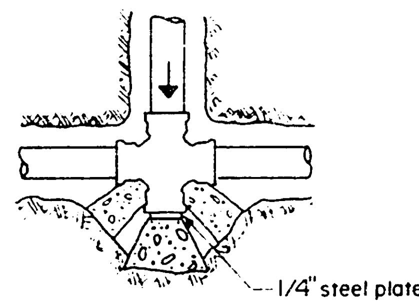
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 [signature] CHAIRMAN
ATTEST: [signature] EXEC SECRETARY

CITY OF SEATTLE
DEPARTMENT OF ENGINEERING

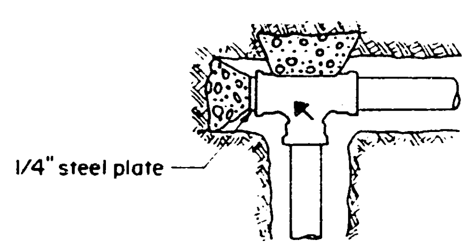
Watermain Thrust Blocking
Vertical Fittings



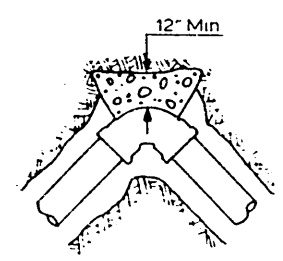
Unbalanced Cross



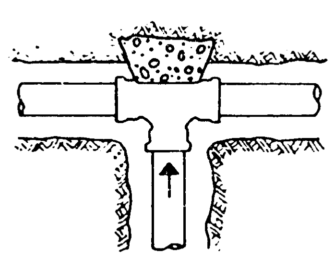
Cross with Plug



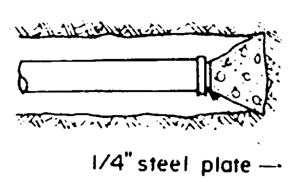
Plugged Tee



Horizontal Bend



Tee



Pipe & Cap

THRUST BLOCK AREA IN SQUARE FEET (See Standard Plan No 331b)									
SOIL	Firm silt or firm silty sand			Compact Sand			Compact Sand & Gravel		
FITTING ⟹ / PIPE SIZE	90° Bend	TEE, 45° bend, cap or plug	11 1/4° and 22 1/2° bnd	90° Bend	TEE, 45° bend, cap or plug	11 1/4° and 22 1/2° bnd	90° Bend	TEE, 45° bend, cap or plug	11 1/4° and 22 1/2° bnd
4"	7.0	4.2	1.7	2.9	2.1	1.0	2.2	1.6	1.0
6"	13.3	9.4	3.8	6.7	4.7	1.9	5.0	3.5	1.4
8"	23.3	16.7	6.7	11.7	8.4	3.4	8.8	6.3	2.5
12"	53.0	37.5	15.0	26.5	18.8	7.5	20.0	14.0	5.6
Areas calculated on 300psi test pressure and 36" min. cover over w.m.									

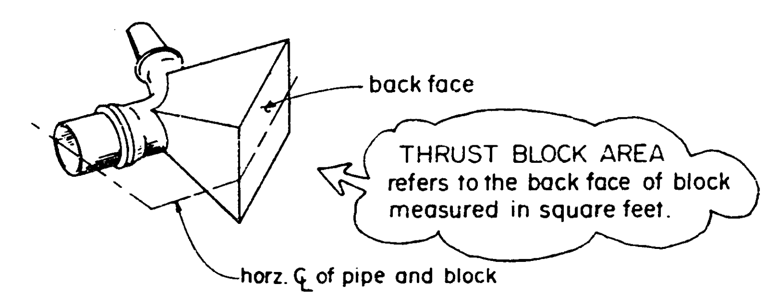
[shaded] Ecology Blocks, per Standard Plan 460 may be used in lieu of poured-in-place blocking for fittings in shaded portion of table.

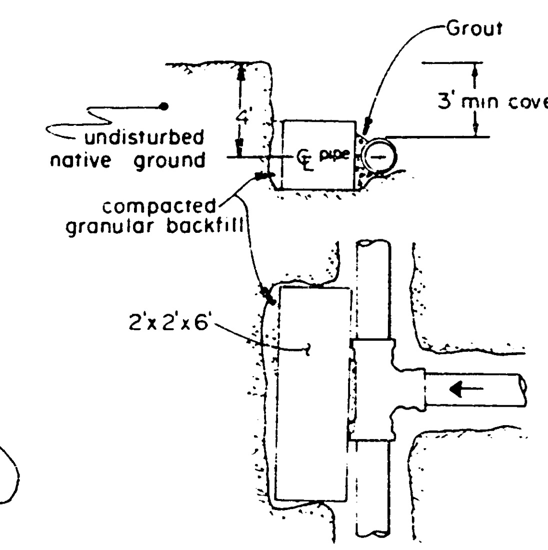
For Notes See Standard Plan 331b

Ref. Std. Spec. 7-11

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Watermain Thrust Blocking Horizontal Fittings





ECOLOGY BLOCK DETAIL

Notes

Location and size of blocking for pipe larger than 12" and for soil types different than shown shall be determined by the engineer.

All blocking for horizontal fittings (poured in place) shall bear against undisturbed native ground.

All poured Thrust Blocks shall be in place and sufficient time shall be allowed for the concrete to cure and trench shall be backfilled and compacted prior to pressure testing.

All blocking to be concrete Cl.5 (1-1/2)

Blocking against fittings shall bear against the greatest fitting surface area possible, but shall not cover or enclose bell ends, joint bolts or glands.

All horizontal blocking thrust areas shall be centered on pipe.

Where poured-in-place blocking is required at a point of connection to an existing watermain, the blocking shall be installed prior to connection, and space between fitting and blocking grouted, similar to Ecology Block detail.

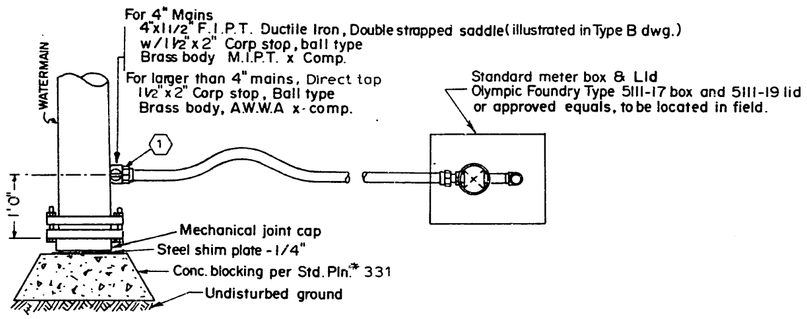
Temporary blocking, if used, shall be approved by the Engineer.

Ref. Std. Spec. Sec. 7-11

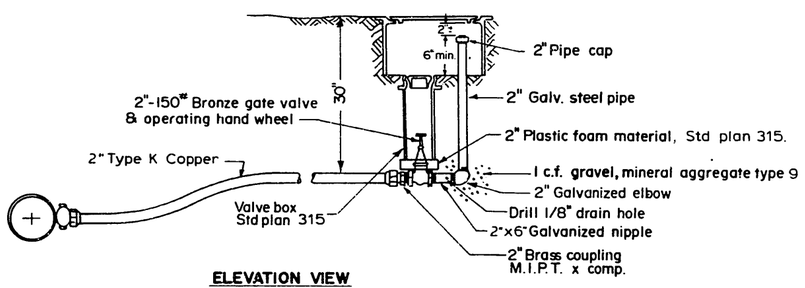
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Watermain Thrust Blocking Horizontal Fittings

Type A

NON-TRAFFIC INSTL.



PLAN VIEW



ELEVATION VIEW

2" BLOW OFF DETAIL

SCALE 1" = 1'

For Legend ⬡ and Notes See Std Plan 340.1b
Ref. Std. Spec. Sec. 7-11 and 9-30

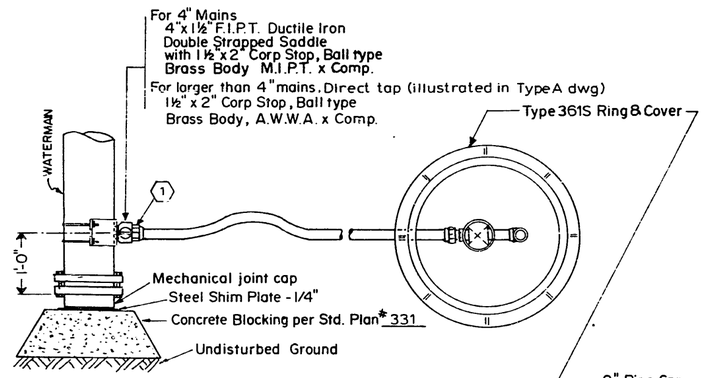
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	2" Blow Off Detail

NOTES

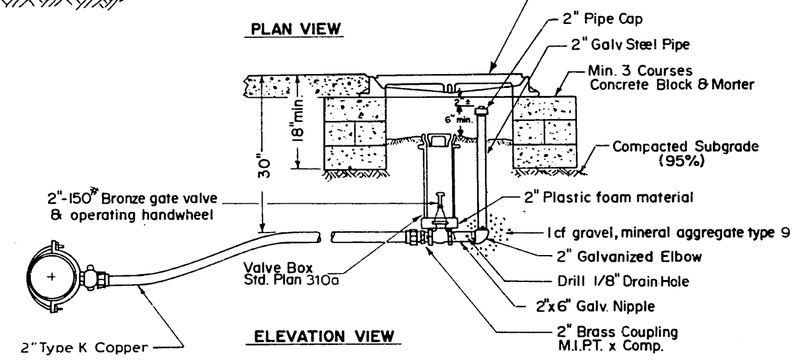
(1) Where tape-wrapped ductile iron pipe is used the mechanical joint cap, corp and saddle (if required) shall be wrapped per AWWA C214.

Type B

TRAFFIC INSTL.



PLAN VIEW



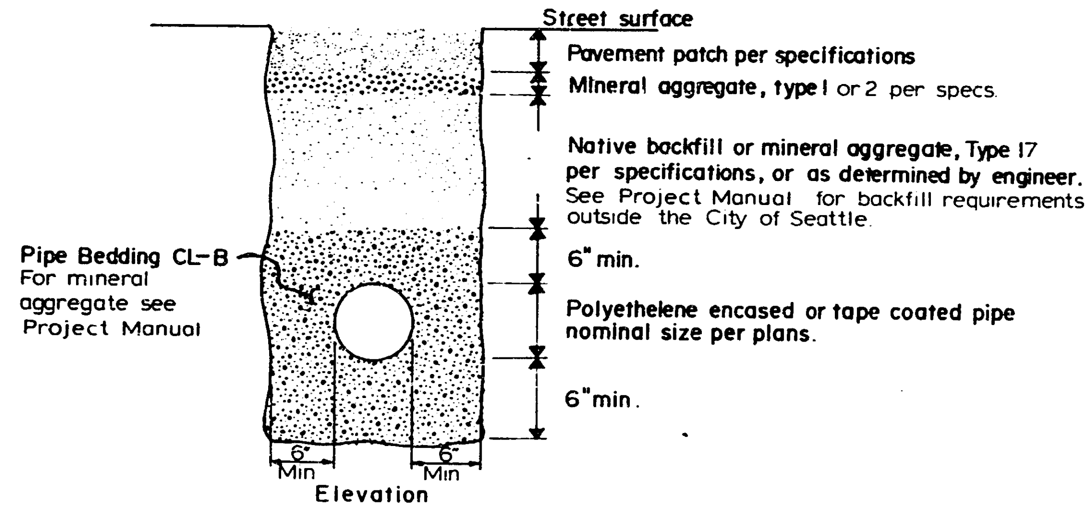
ELEVATION VIEW

2" BLOW OFF DETAIL

SCALE 1" = 1'

Ref Std Spec Sec 7-11 and 9-30

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	2" Blow Off Detail

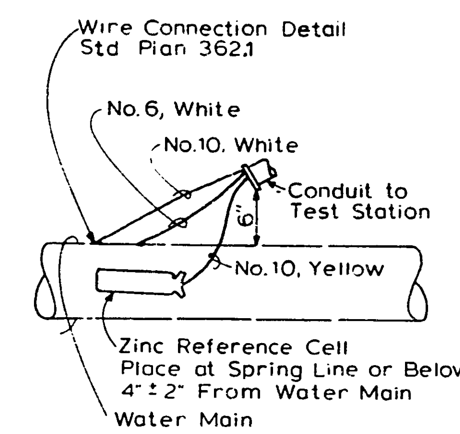


Trench backfill for pipe with protective tape coating or polyethelene encasement.

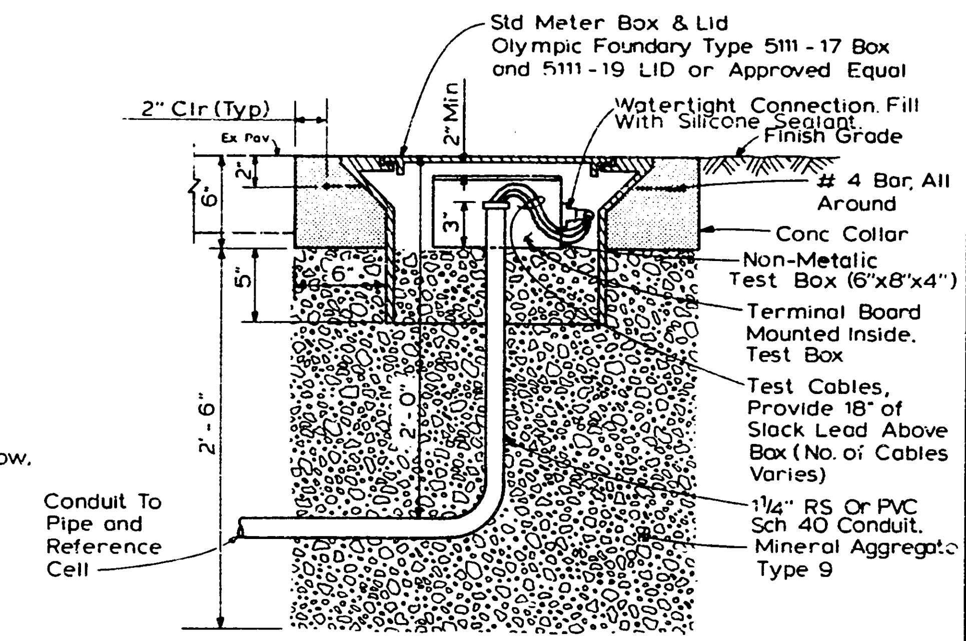
Trench width per std. plan 284.

Ref. Std. Spec. Sec. 7-10

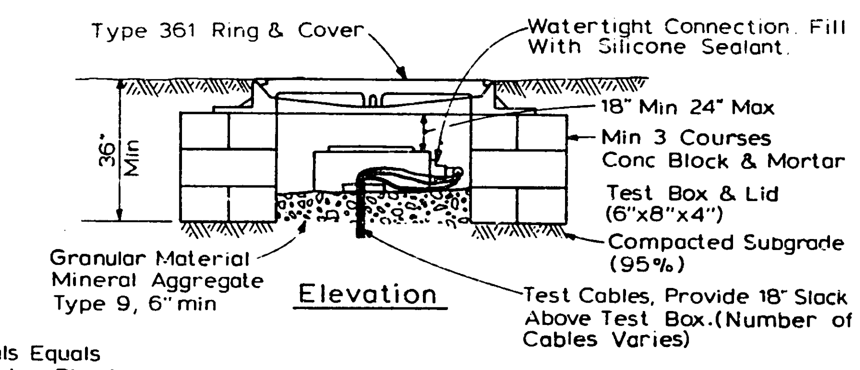
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 ___ CHAIRMAN ATTEST: ___ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Watermain Pipe Bedding (Special)



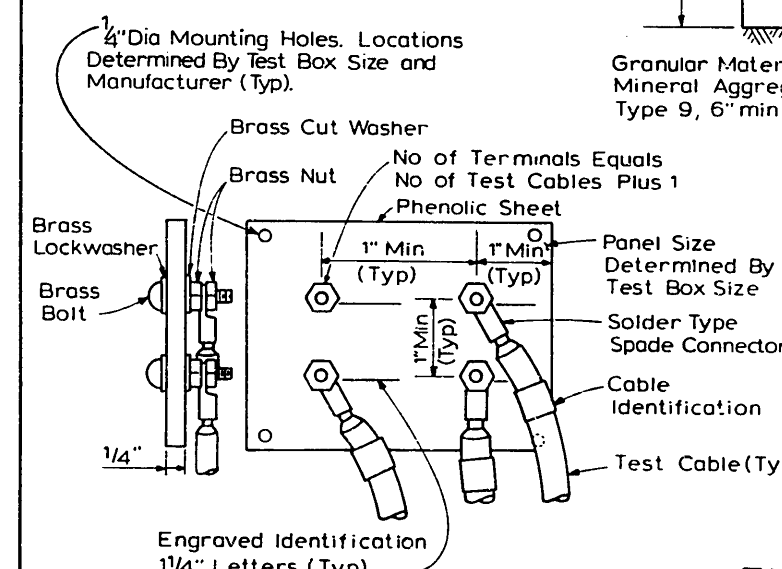
Reference Cell Installation



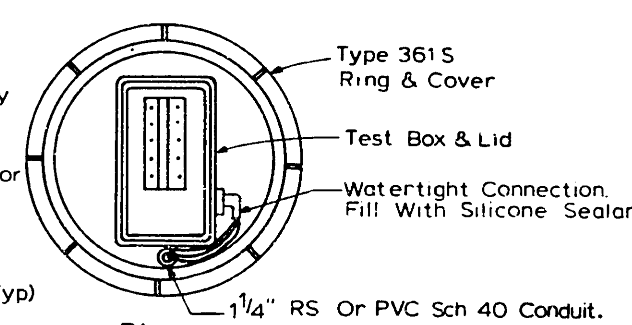
Electrolysis Test Station Non Traffic Area



Elevation



Test Station Terminal Board



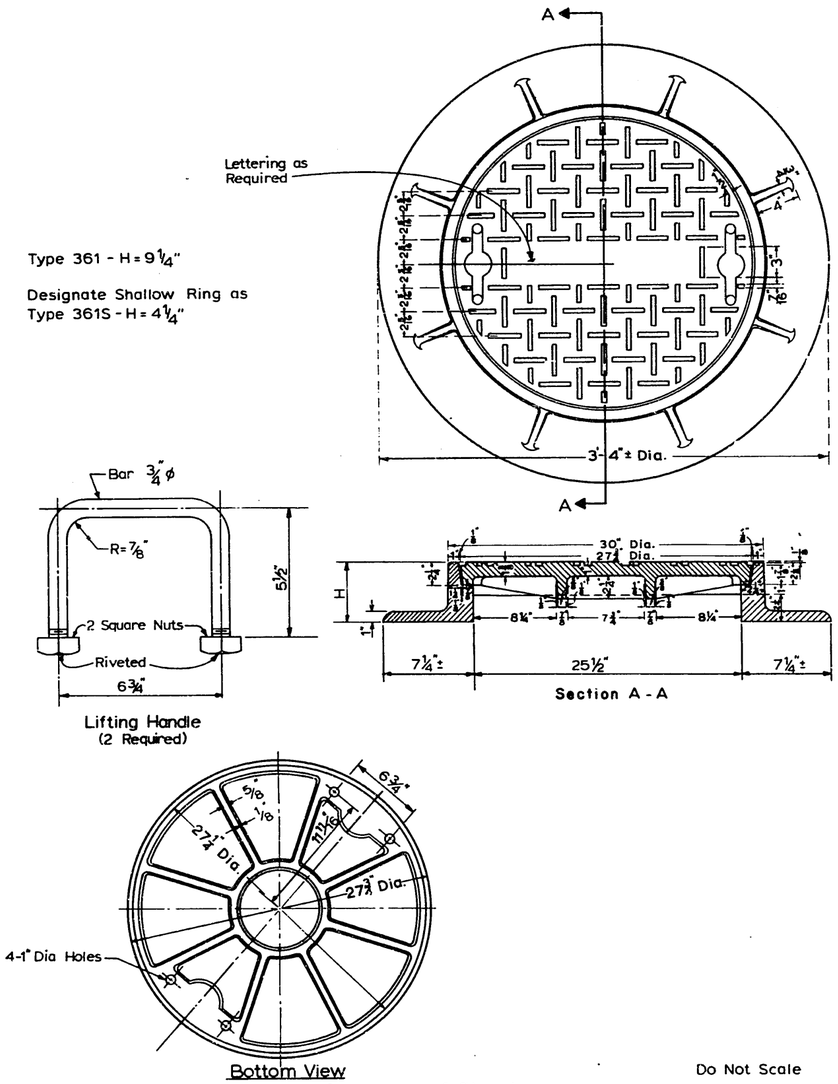
Plan

Electrolysis Test Station Traffic Area

Ref Std Spec Sec 7-11, 9-30

NTS

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 19 91 ___ CHAIRMAN ATTEST: ___ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Watermain Electrolysis Test Station

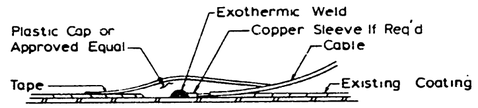


Ring and Cover shall be tested for accuracy of fit and shall be marked in sets for delivery.

Do Not Scale

Ref. Std. Spec. Sec. 7-12

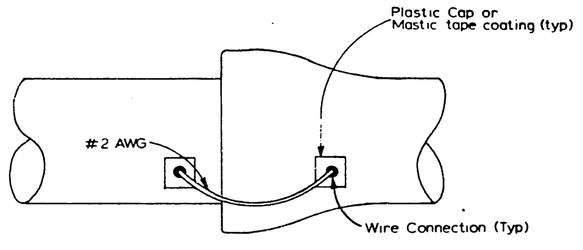
APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Type 361 - Valve Chamber Ring and Cover
10/21, 1971 CHAIRMAN ATTEST: SECRETARY	DEPARTMENT OF ENGINEERING	



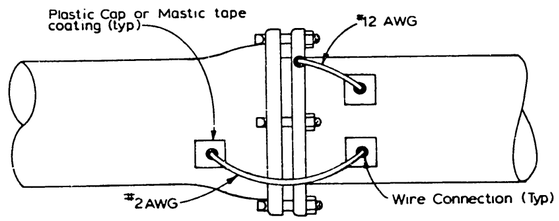
Notes

1. Clean Weld Area to Bright Metal.
2. Weld Cable to Pipe using "Cadweld", or Approved Equal, Exothermic Weld.
3. Adapter Sleeve Required for Exothermic Welding of #6 AWG Wire & Smaller.
4. Clean Slag from Weld Area and Test for Adhesion.
5. Insulate Weld with Royston Handy Cap or Approved Equal.
6. All Cleaned Area not Covered by Handy Cap Shall be Covered with 125 Mil Royston Tac Tape or Approved Equal.

Wire Connection



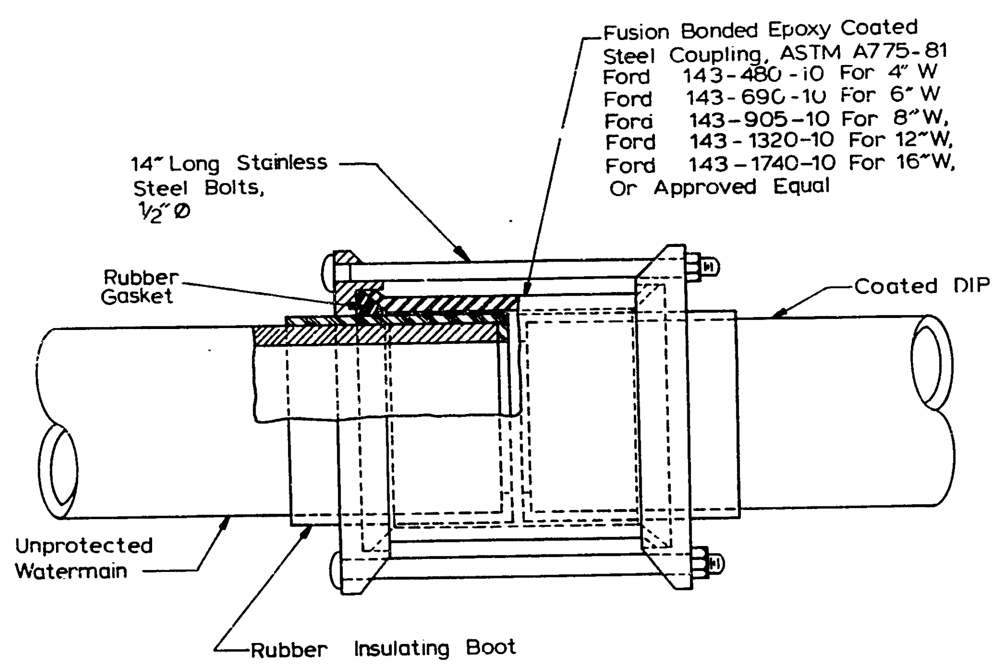
Slip Joint Bonding Connection



Mechanical Joint Bonding Connection

Ref. Std. Spec. Sec. 7-11, 9-30

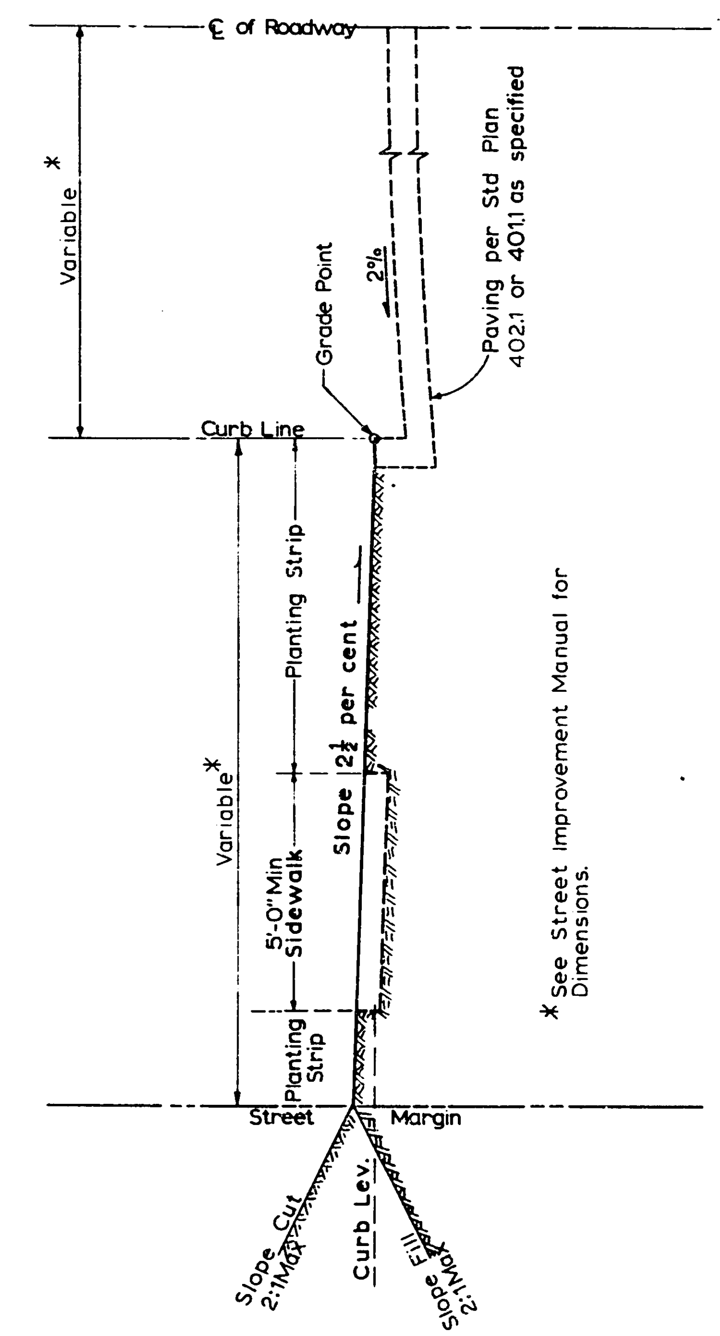
APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Joint Bonding for DIP Watermains
7/12, 1971 CHAIRMAN ATTEST: SECRETARY	DEPARTMENT OF ENGINEERING	



Ref. Std. Spec. Sec. 9-30

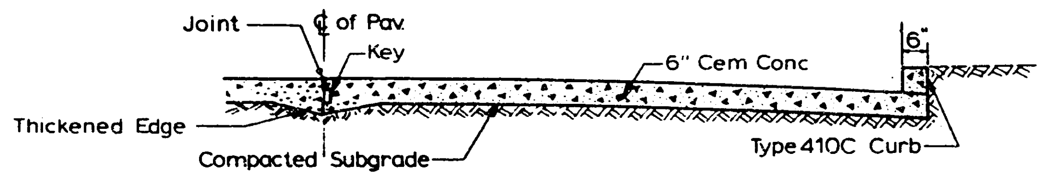
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS ___ 19__ ___ CHAIRMAN ATTEST ___ EXEC SECRETARY	**CITY OF SEATTLE** **DEPARTMENT OF ENGINEERING**	Isolating Coupling

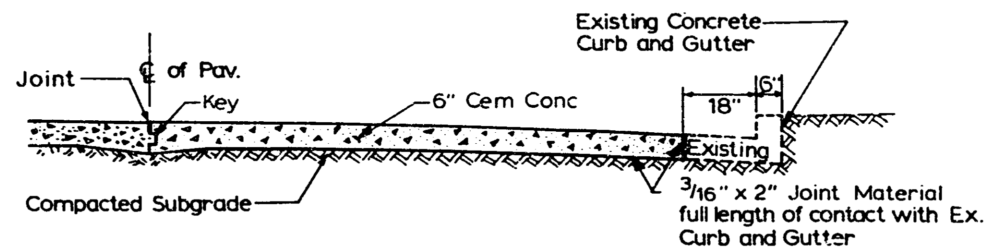


Do Not Scale

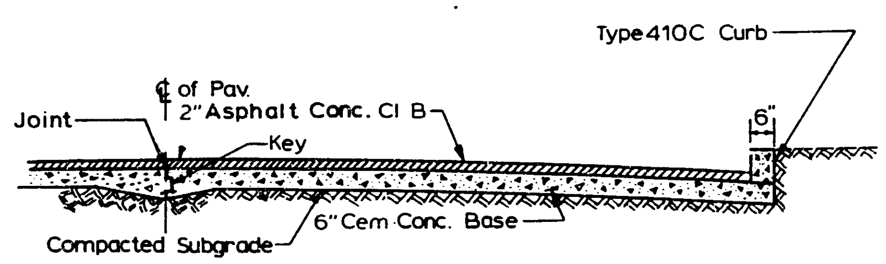
APPROVED BY THE BOARD OF PUBLIC WORKS 7/3 1991 ___ CHAIRMAN ATTEST: ___ EXEC SECRETARY	**CITY OF SEATTLE** **DEPARTMENT OF ENGINEERING**	Half Section, Grading



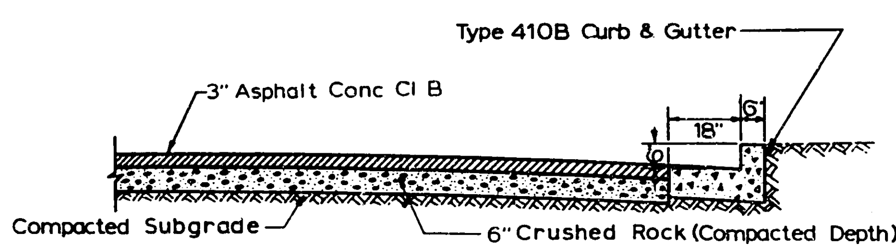
401 A-Cement Concrete Pavement with Integral Curb



401 B-Cement Concrete Pavement with Existing Curb & Gutter



401 C-Asphalt Concrete on Cement Concrete Base



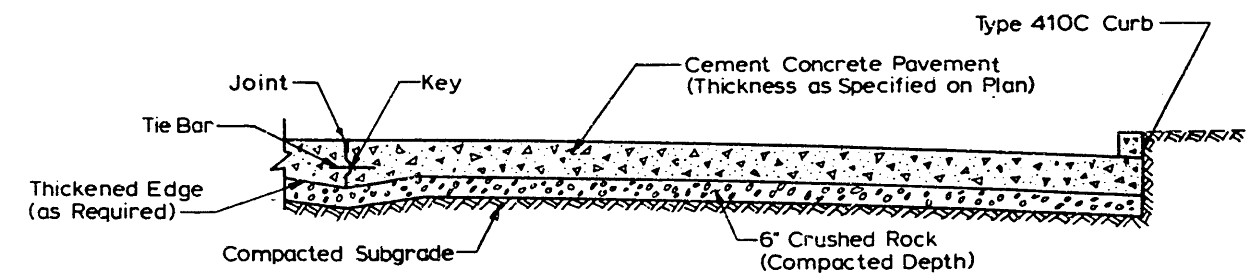
401 D-Asphalt Concrete on Crushed Rock Base

NOTE
Conc Cl 6(1½) unless otherwise specified on plan.

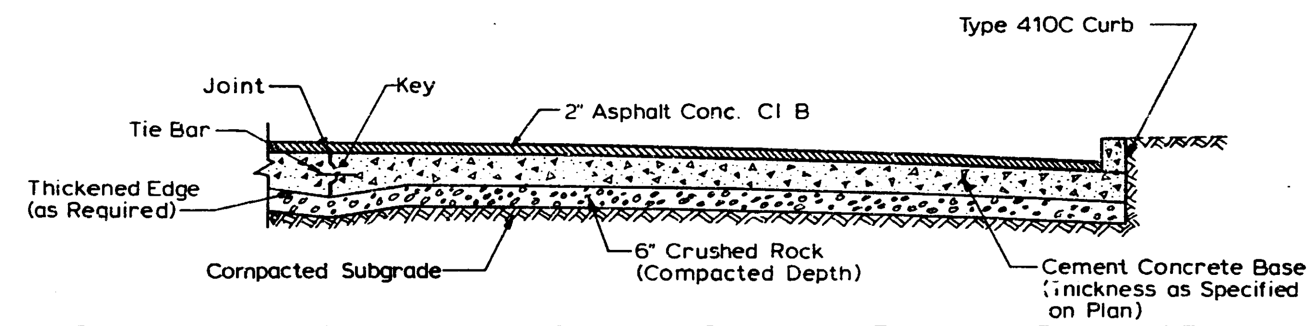
Ref. Std. Spec. Sec. 5-04, 5-05, 8-04.

Do Not Scale

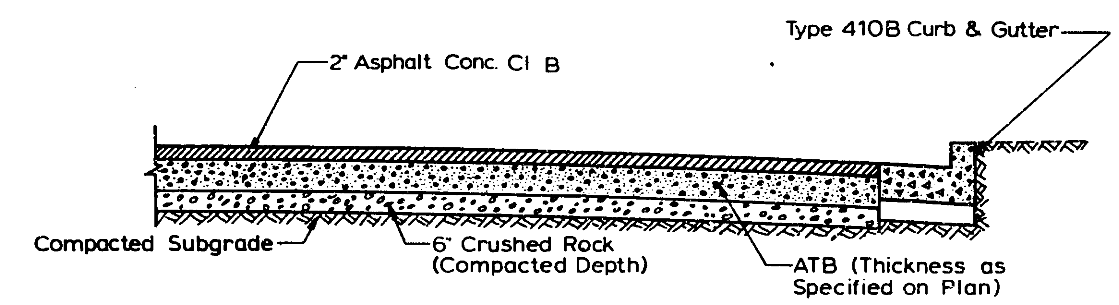
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	**CITY OF SEATTLE DEPARTMENT OF ENGINEERING**	Residential Pavement Sections



402 A-Cement Concrete Pavement on Crushed Rock



402 B-Asphalt Concrete on Cement Concrete Base on Crushed Rock



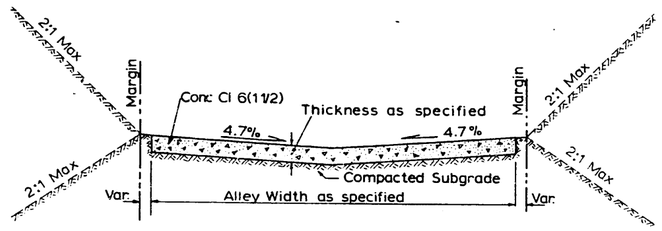
402 C-Asphalt Concrete on ATB on Crushed Rock

Notes:
1. Pavement Width and Thickness as Specified on Plan.
2. Conc Cl 6.5(1½) Unless Otherwise Specified on Plan.
3. Tie Bars and Dowel Bars are Required for Cement Concrete Pavement and Base. (See Standard Plan No. 405.1)

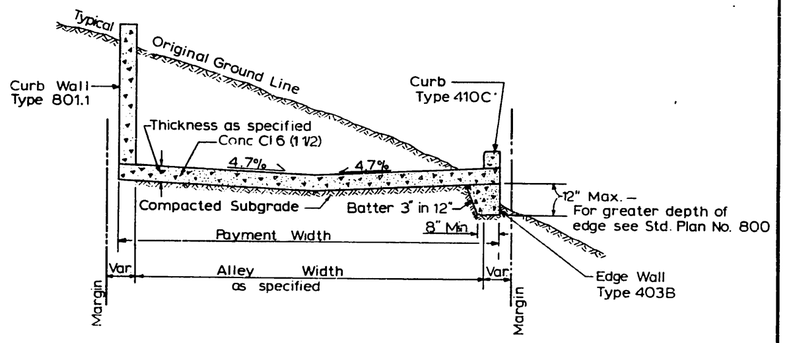
Ref. Std. Spec. Sec. 5-04, 5-05 & 8-04.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	**CITY OF SEATTLE DEPARTMENT OF ENGINEERING**	Arterial Pavement Sections



403 A - Cement Concrete Alley Pavement



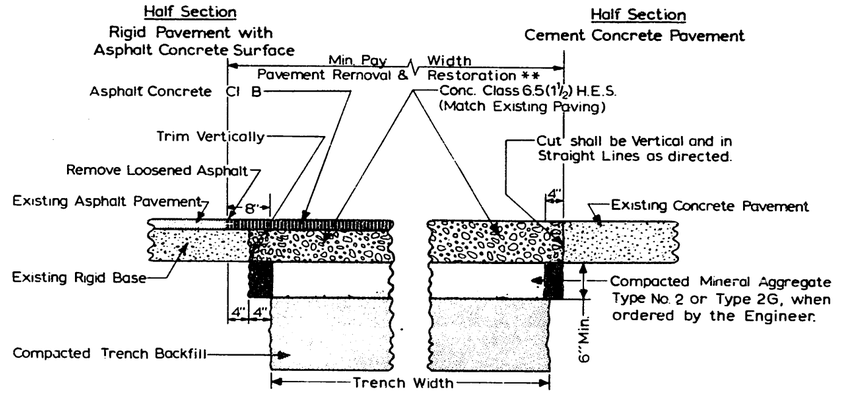
Cement Concrete Alley Pavement
403B-For Shallow Embankment Area

Note:
When alley pavement is 18' or wider place contraction joint along centerline of alley.

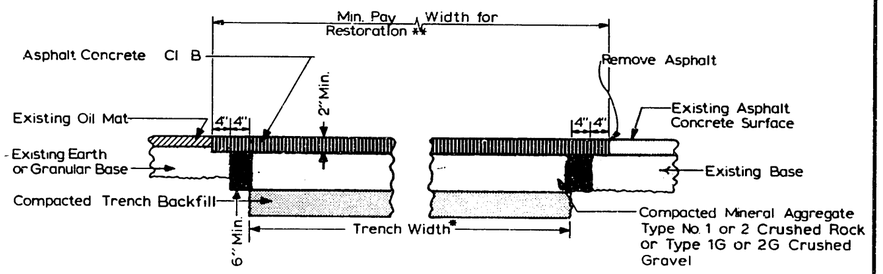
Ref. Std. Spec. Sec. 5-06

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 Chas Forbes CHAIRMAN ATTEST: Barbara M Tatum SEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Cement Concrete Alley Pavements



Typical Patch for Rigid Pavement



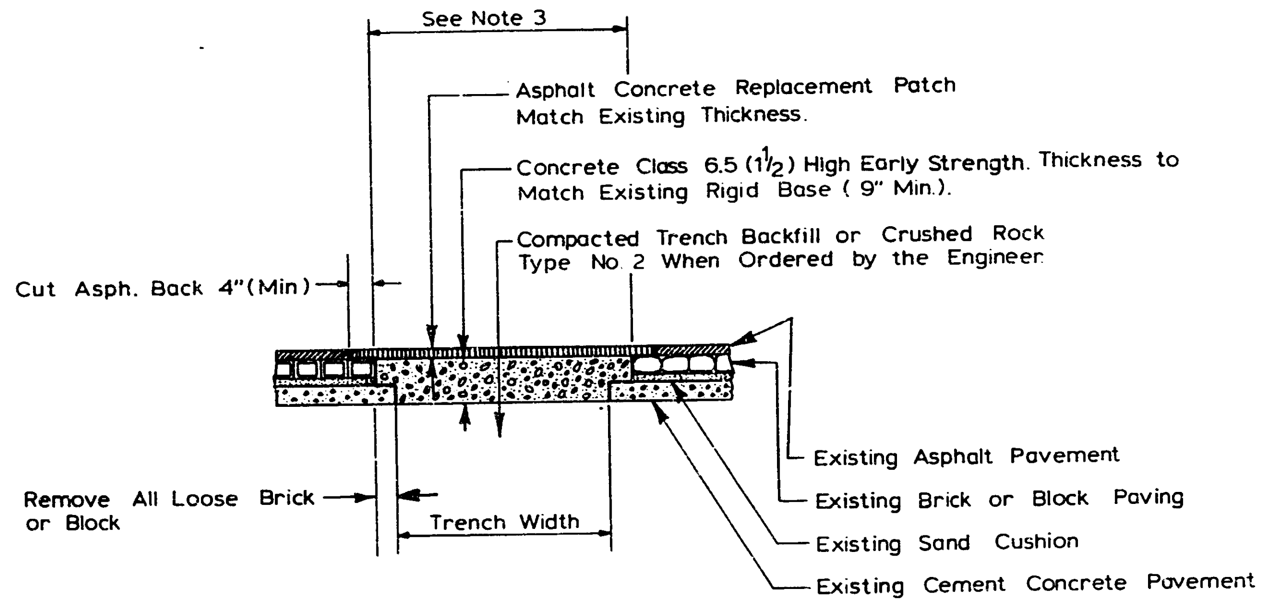
Typical Patch for Flexible Pavement

*Trench width refers to Max. Trench Pay width as called out on Std. Plan No. 284.

**Actual width of restoration may be increased to meet requirements of Zone of Influence and other BPW "Street and Sidewalk Opening and Restoration Rules".

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 Chas Forbes CHAIRMAN ATTEST: Barbara M Tatum SEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Pavement Patching



Asphalt over Rigid Base of Brick or Stone Block Pavement

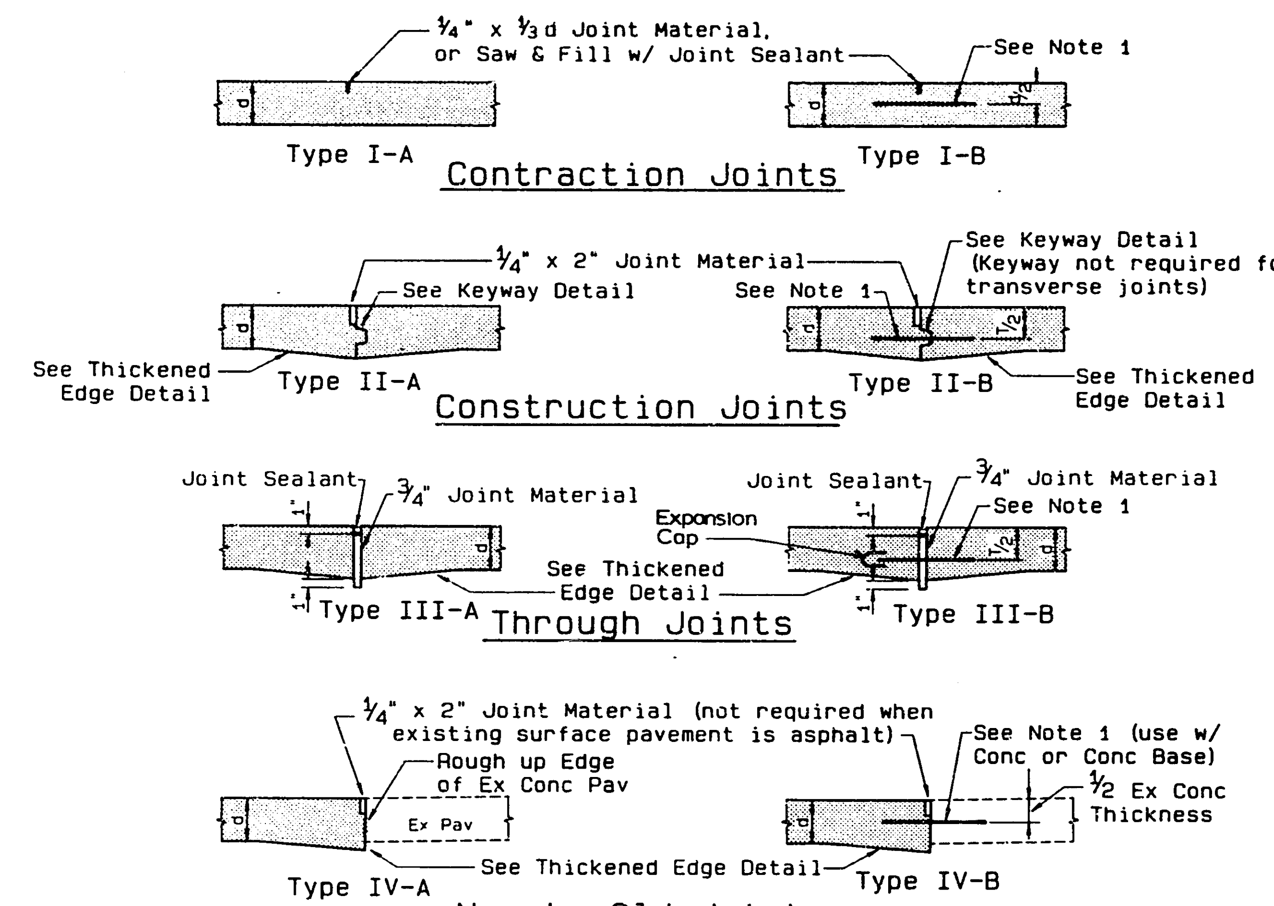
Notes:

1. When a Stone or Brick Pavement is Overlayed with Asphalt, The Street Surface Pavement Becomes an Asphalt Street over Rigid Base.
2. If a Stone or Brick Pavement is Not Overlayed, the Method of Restoration is in Kind.
3. Refer to Standard Plan No. 404.1a, the BPW "Street and Sidewalk Pavement Opening and Restoration Rules", and the Specs for Applicable Details & Requirements.

Ref. Std. Spec. Sec. 2-02

Do Not Scale

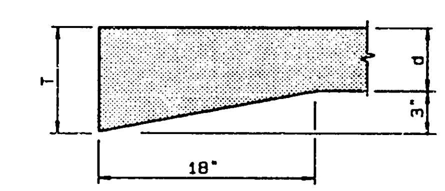
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Pavement Patching



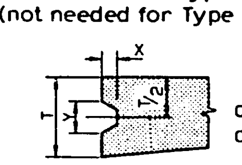
Notes:

1. Where required at longitudinal joints, tie bars shall be ⅝" x 30" @ 36", deformed grade 40 or better, epoxy coated. Where required at transverse joints, dowel bars shall be sized as shown in the Table to right, smooth round grade 60 or better, epoxy coated and greased.
2. Longitudinal joint spacing should not exceed 15.5' (to back of curb). Transverse joint spacing shall not exceed 15'. The area of the panel shall not exceed 225 square feet.
3. Joint offsets at radius points should be at least 1.5' long.
4. Joint intersection angles of less than 60 degrees should be avoided.
5. When a joint is closer than 1' to a casting, then a minor adjustment in the joint location should be made by skewing or shifting the joint alignment to meet the casting at 90 degrees or normal to the casting.
6. Where possible, longitudinal joints should match lane lines.
7. Longitudinal joints are to be construction joints unless paved by a machine capable of placing and finishing concrete for two or more panel widths (in which case a contraction joint can be used).
8. As a minimum, projects must include intersection joint layouts.

Pavement Thickness	Dowel Bar Size
6" to 8"	1" x 18" @ 12"
9" to 11"	1¼" x 18" @ 12"
12" & over	1½" x 18" @ 12"



Thickened Edge Detail
(not needed for Type A Joints with d ≥ 10")
(not needed for Type B Joints with d ≥ 9")

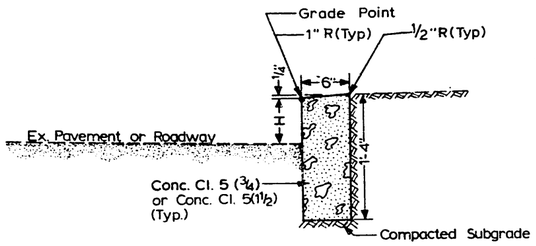


For	X	Y
d ≤ 9"	1.25"	2.5"
d ≥ 10"	1.5"	3.5"

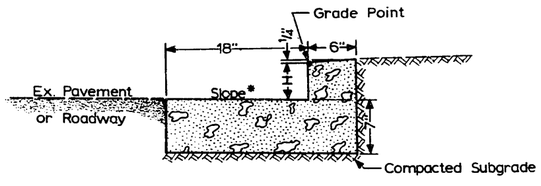
Keyway Detail
(T = d + 3")

Do Not Scale

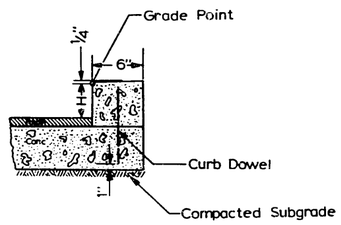
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Types of Joints for Concrete Pavement

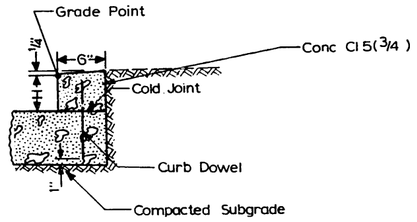


410 A Curb



410 B-Curb and Gutter





410 C Curb

"H" shall be 6" from finished roadway grade unless otherwise specified.

For Type 410A Curb, install 1/2" Through Joints full depth to match joints of existing pavement.

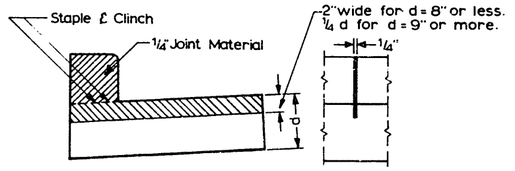
*Gutter shall be sloped the same as adjacent pavement or 2% min., whichever is greater.

See Std. Plan No. 411 for Curb Dowels.

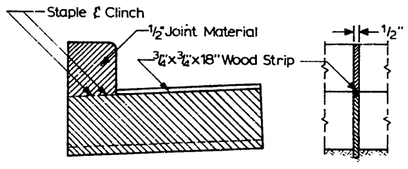
Do Not Scale

Ref. Std. Spec. Sec. 8-04.

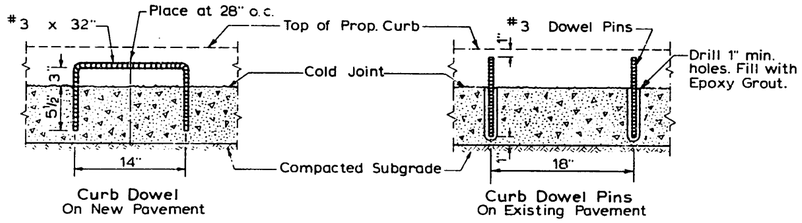
APPROVED BY THE BOARD OF PUBLIC WORKS 10/31, 1978 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 410 Curb



Contraction Joint For
Curb or Curb & Gutter



Through Joint For
Curb or Curb & Gutter

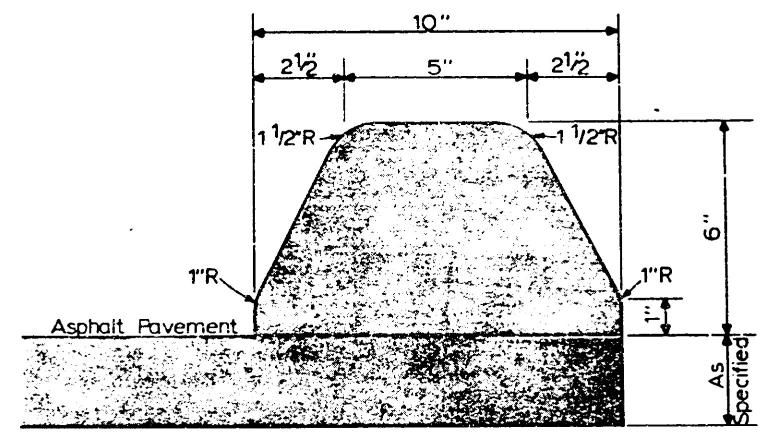


Dowels For Dowelled Curb Construction

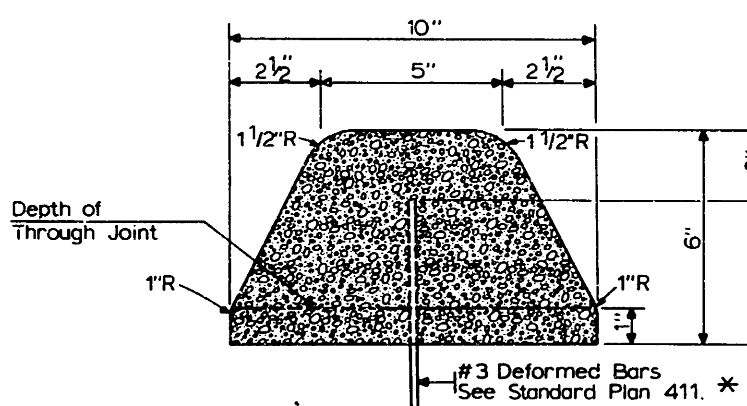
Ref. Std. Spec. Sec. 8-04

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1976 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Curb Joints & Dowels



Extruded Asphalt Concrete Curb

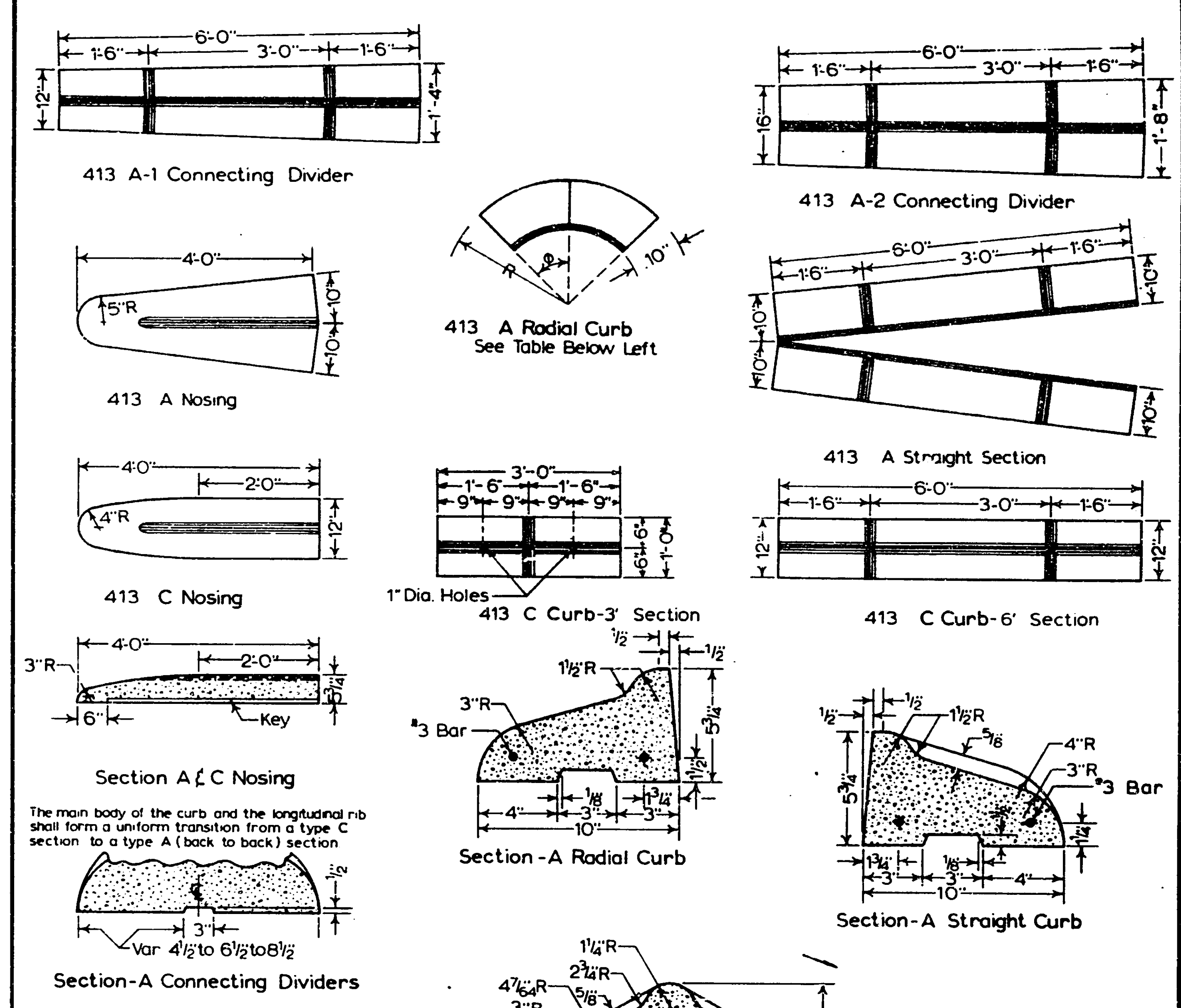


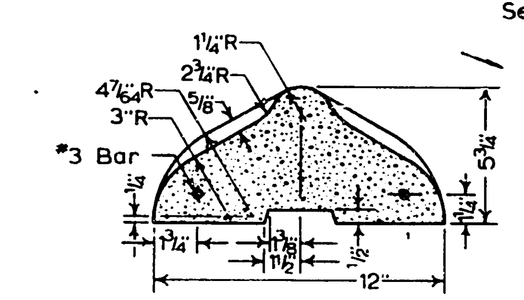
Extruded Cement Concrete Curb

* Alternately, the use of epoxy bonding agent, in place of #3 deformed bars, shall be allowed. Type of epoxy bonding agent and method of construction shall be approved by the Engineer.

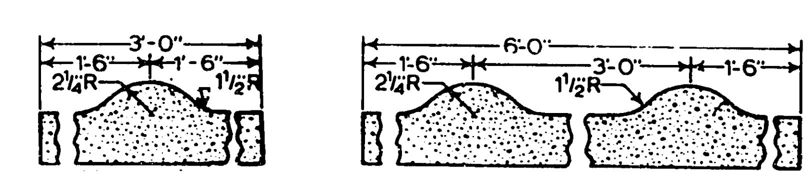
Ref. Std. Spec. Sec. 8-06

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1921 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Extruded Curb





413 A Radial Curb		
Unit	Radius	Curb Return Angle (φ) Multiple
R1	1'-3"	45°00'
R2	1'-10"	30°00'
R3	2'-6"	22°30'
R4	5'-0"	11°27.54'
R5	10'-0"	5°43.77'
For Radii greater than 10' use segments of straight curb.		



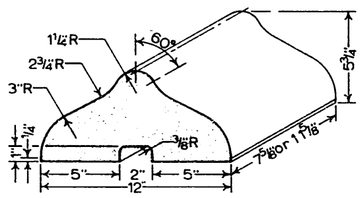
Longitudinal Section Thru Transverse Ribs-3' Section

Longitudinal Section Thru Transverse Ribs-6' Section

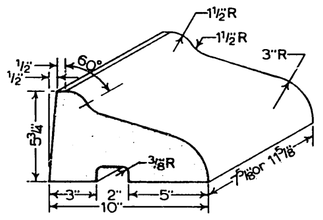
NTS

Ref. Std. Spec. Sec. 8-07

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1921 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Traffic Curb Precast Cement Concrete



414 C-Block

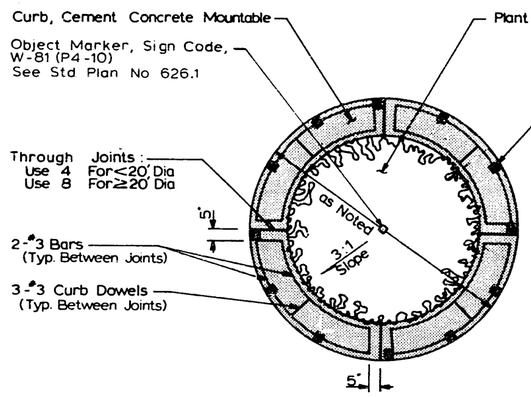


414 A-Block

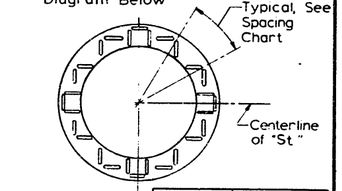
Ref. Std. Spec. Sec. 8-07.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Traffic Curbs Block-Precast Cement Concrete
10/31, 1988 CHAIRMAN ATTEST: EXEC SECRETARY	DEPARTMENT OF ENGINEERING	



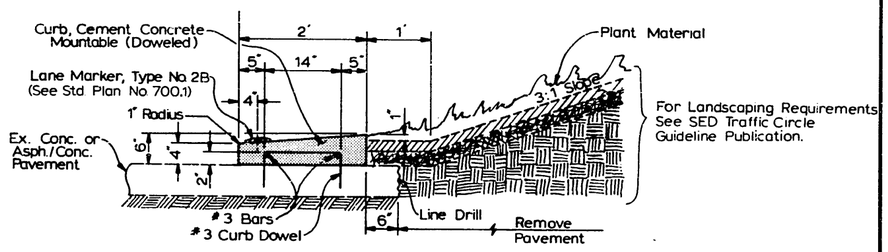
Typical Traffic Circle



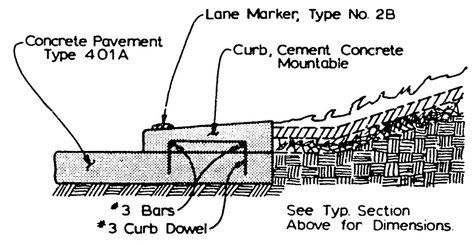
Diameter of Circle	Degree of Spacing
≤ 12'	Every 45°
≤ 20'	Every 30°
> 20'	Every 22½°

(Facing Vehicle Approaches)

Traffic Circle
Stimsonite Reflector Layout



Typical Section

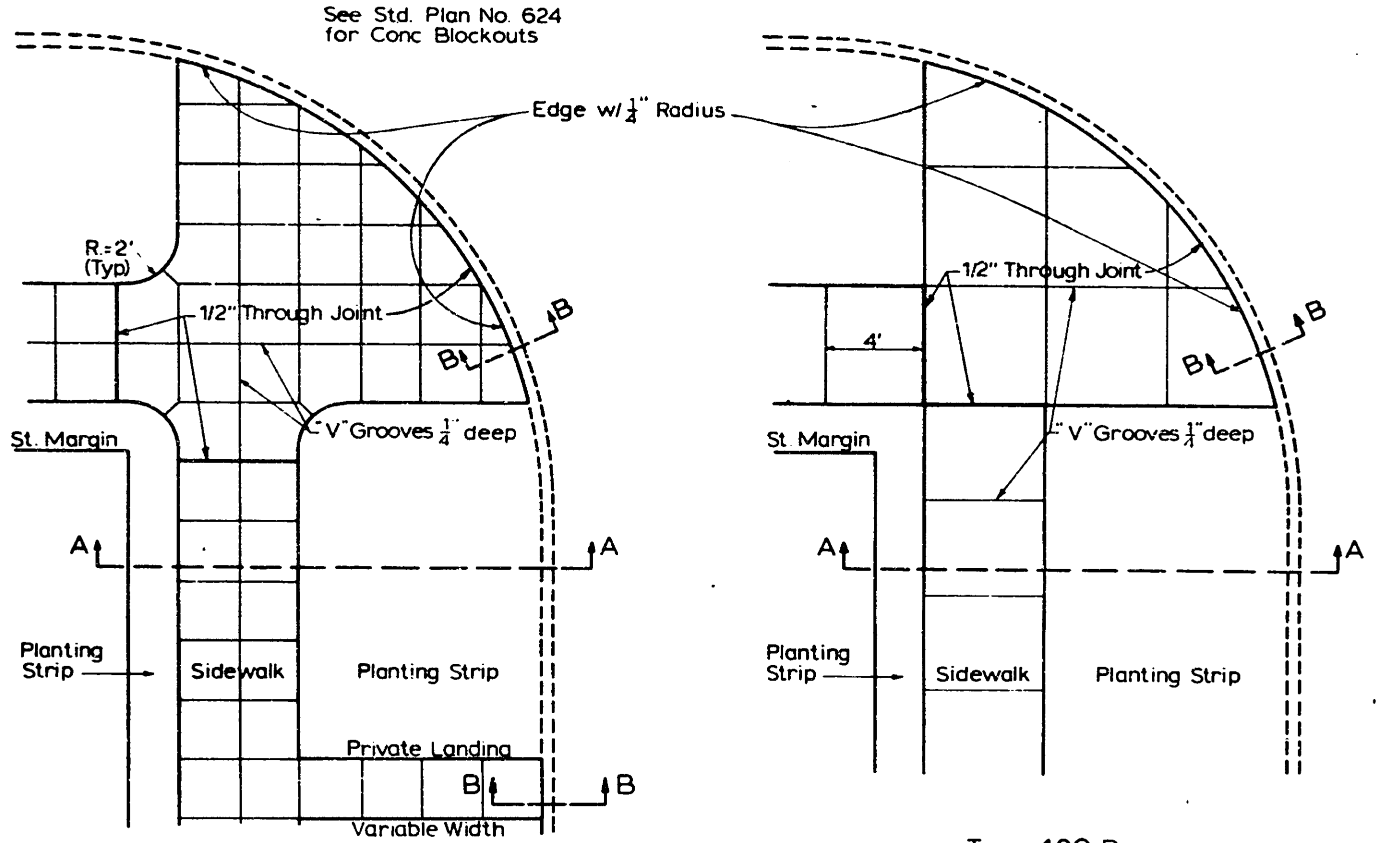


Typical Section

Ref. Std. Spec. Sec. 8-02, 8-04

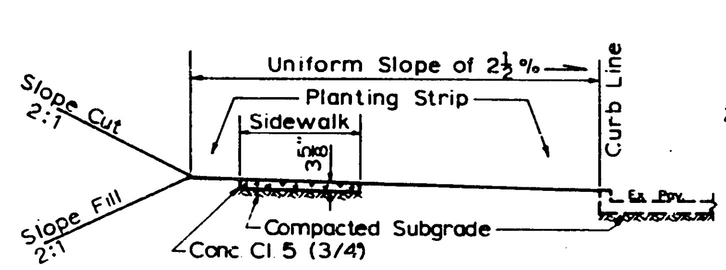
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Traffic Circle Details
7/23, 1991 CHAIRMAN ATTEST: EXEC SECRETARY	DEPARTMENT OF ENGINEERING	



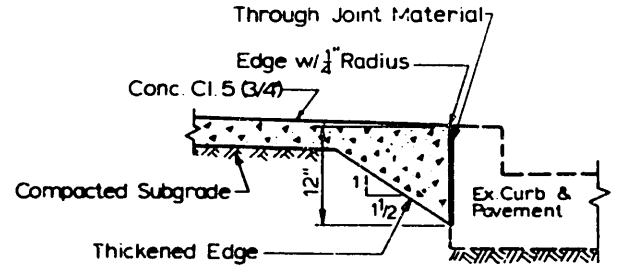
Type 420A

Type 420 B



Section A-A

1. When planting strip pavement is approved, joint material will be required at the perimeter of the planting strip pavement.
2. When existing parking meters are to be removed for New sidewalk construction, contact Transportation Division a minimum of 2 working days prior to scheduled work to coordinate removal of meter heads.

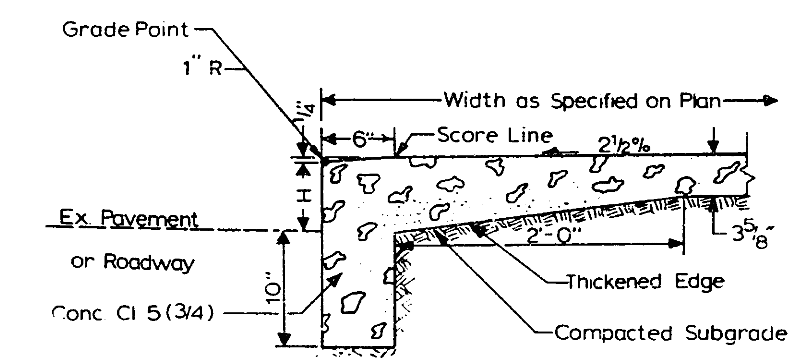


Section B-B

Do Not Scale

Ref. Std. Spec. Sec. 8-14.

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 ______ CHAIRMAN ATTEST: ______ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Concrete Sidewalk Details



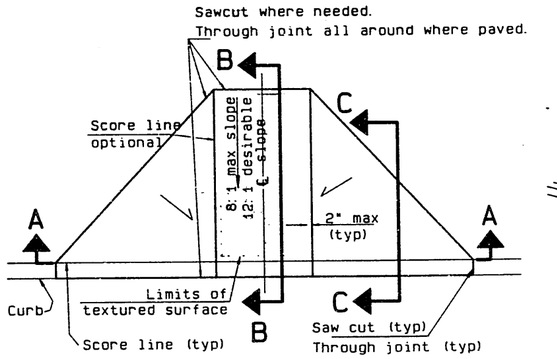
"H" Shall be 6" from finished grade unless otherwise specified.

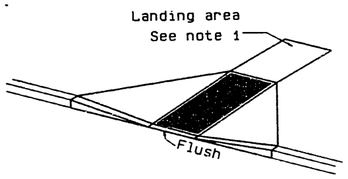
Vertical Backface of Curb shall be formed against native earth where practical, otherwise by Backform left in place.

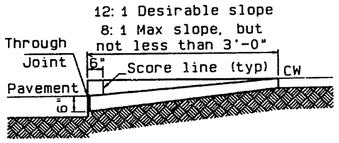
Ref. Std. Spec. Sec. 8-14.

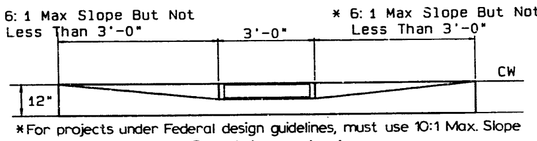
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 ______ CHAIRMAN ATTEST: ______ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Sidewalk with Monolithic Curb









*For projects under Federal design guidelines, must use 10:1 Max. Slope

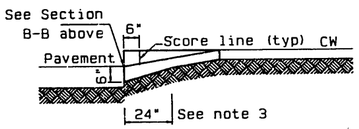
Section A-A

Section B-B
INSTALL WITH NEW PAVEMENT

Curb monolithic with ramp. New pavement blocked out full depth

Section B-B
INSTALL IN EXISTING PAVED AREAS

Curb monolithic with ramp. Existing pavement removed at face of curb



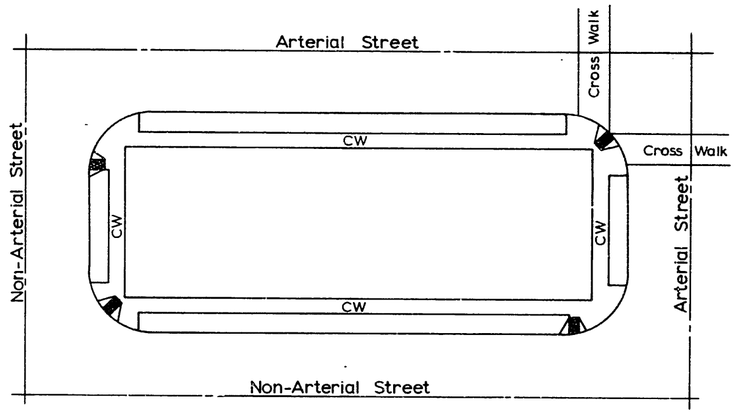
Section C-C

Ref. Std. Spec. Sec. 8-14

1. Sidewalk paving in the planting strip or at the back of the sidewalk shall be installed as necessary to make the ramp accessible to CW landing and provide a flat landing area at the top of the ramp (3'x 4'min).
2. The curb ramp shall not be poured integral with the sidewalk or pavement and shall be isolated by through joint material on all sides.
3. The sidewalks thickened edge shall be continued through the wing of the curb ramp.
4. The center ramp section concrete shall have a coarse textured surface obtained by a 3/4" 9-11 flattened expanded metal mesh being pressed into the still fresh concrete. The long axis of the diamond pattern shall be perpendicular to the curb. The triangular wing sections shall have a slightly brushed finish, parallel to the curb.
5. Minimum distance between adjacent curb ramps shall be 6 feet.
6. Inlets shall be so located that runoff does not flow past the curb ramp.
7. Minimum lateral clearance from inlets, poles, hydrants, and other above ground obstacles shall be 1 foot to the scored portion of the ramp.
8. For additional requirements and conditions refer to the Seattle Board of Public Works Curb Ramp Placement Policy adopted June 25, 1980 and Standard Plan 422.1b

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1991 Gary Locke CHAIRMAN ATTEST: Barbara J. Tabler EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Curb Ramp Construction Detail

Typical Curb Ramp Locations



Curb Ramp Location Priorities

Arterial Intersections and Business Districts	Non-Arterial Intersections
Priority 1	
Priority 2	
Priority 3	
Priority 4	

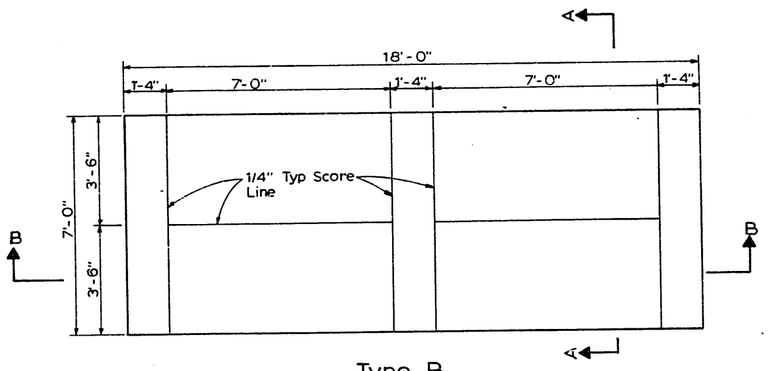
Note:

1. All signalized intersections and 4-way stop intersections shall be treated as arterial-arterial. When two arterials intersect and the major arterial does not stop, then the street that does stop (the minor arterial) shall be treated as a non-arterial and only one ramp shall face the minor street.
2. Curb ramps shall be installed on the opposite side of the street from any ramp being constructed.
3. Curb shall be depressed for future curb ramps where curbs are installed with no sidewalks.
4. Designer/ Installer shall locate ramp in priority 1 location. If not feasible, then an alternate location shall be chosen in descending order (75.1 BPW Policy)
5. For additional requirements and conditions refer to Seattle Board of Public Works Curb Ramp Placement Policy adopted June 25, 1980 and Standard Plan No. 422.1a

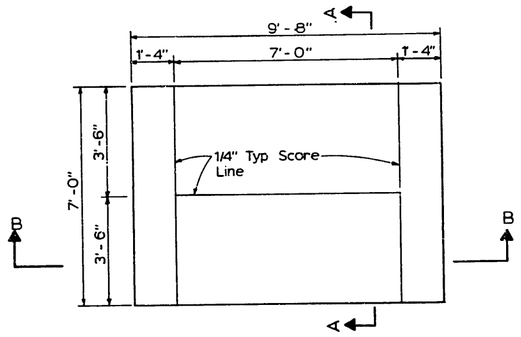
Ref. Std. Spec. Sec. 8-14

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1991 Gary Locke CHAIRMAN ATTEST: Barbara J. Tabler EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Curb Ramp Location Details

Standard Plan No. 423

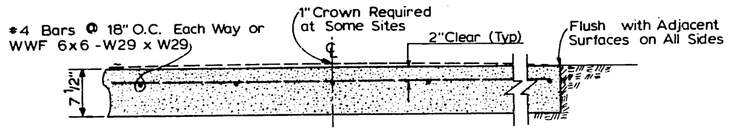


Type B

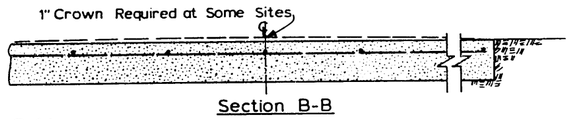


Type A

Note:
Concrete Shall be 3000 PSI Min @ 28 Days. Steel Trowel Surface w/ Broom Finish.



Section A-A

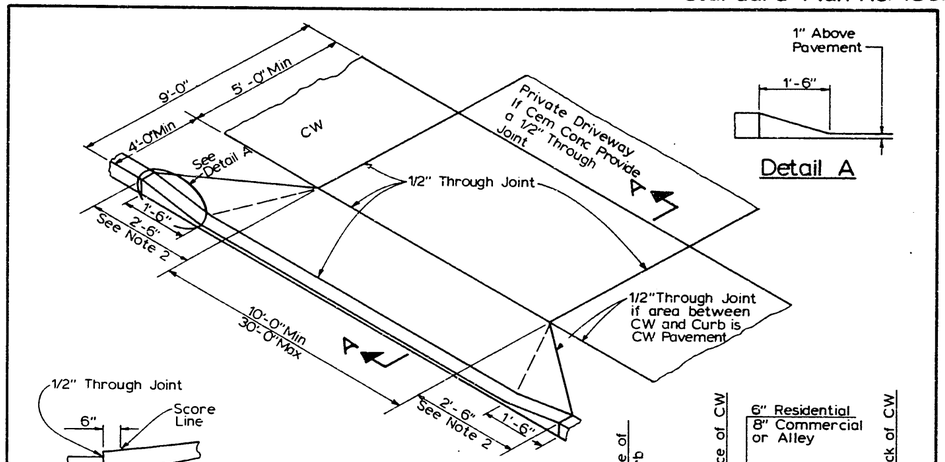


Section B-B

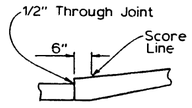
Ref. Std. Spec. Sec. 8-14

APPROVED BY THE BOARD OF PUBLIC WORKS 12/31, 19 86 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Bus Shelter Footing

Standard Plan No. 430.1

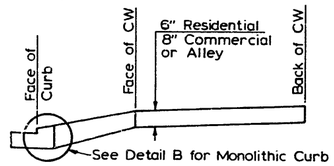


Type 430A

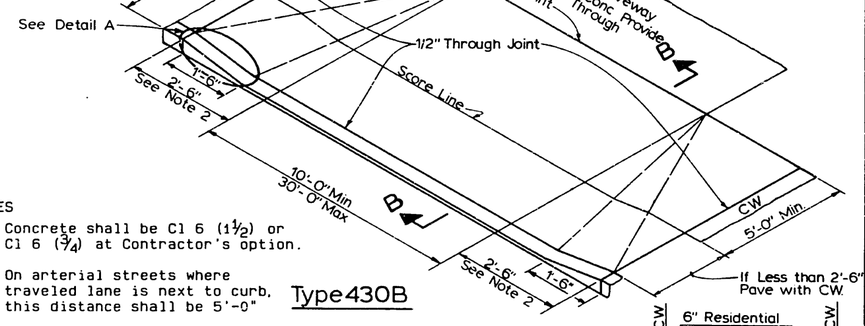


Detail B
Driveway with Monolithic Curb and Approach

Detail A



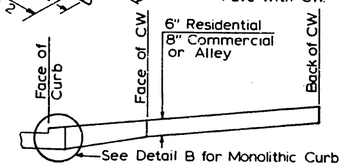
Section A-A



Type 430B

NOTES

1. Concrete shall be Cl 6 ($1\frac{1}{2}$) or Cl 6 ($\frac{3}{4}$) at Contractor's option.
2. On arterial streets where traveled lane is next to curb, this distance shall be 5'-0"
3. When existing parking meters are to be removed for new driveway construction, contact Transportation Division a minimum of 2 working days prior to scheduled work to coordinate removal of meter heads.
4. Reference standard plan No. 431 for concrete driveway placed with sidewalk construction.

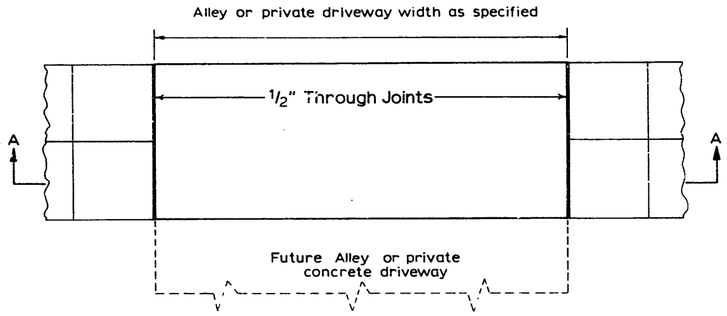


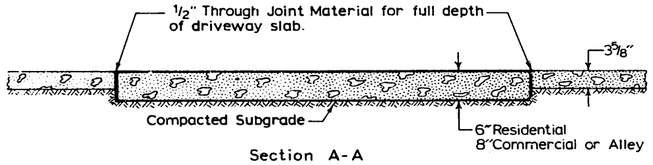
Section B-B

Ref. Std. Spec. Sec. 8-19

APPROVED BY THE BOARD OF PUBLIC WORKS 2/12, 19 91 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type 430 Driveway

Standard Plan No. 431





Section A-A

Driveway width greater than 16' shall have Transverse Contraction Joint at its center.

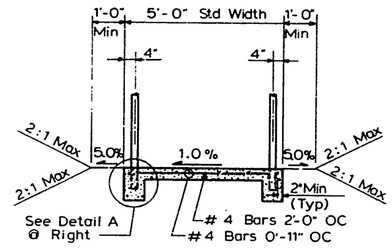
Concrete shall be Class 6(3/4) or Cl. 6(1 1/2) at contractor's option.

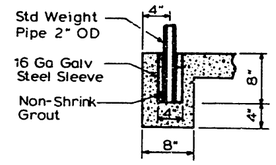
Ref. Std. Spec. Sec. 8-19

Do Not Scale

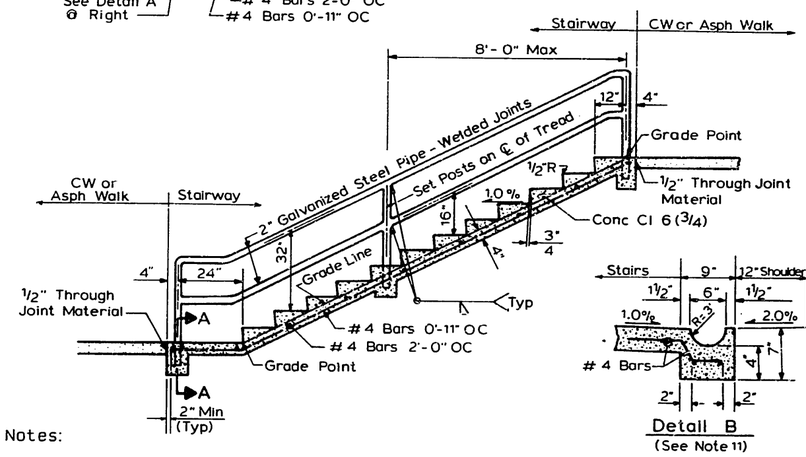
APPROVED BY THE BOARD OF PUBLIC WORKS 10/31/86 CHAIRMAN ATTEST: EXEC SECRETARY	**CITY OF SEATTLE DEPARTMENT OF ENGINEERING**	Concrete Driveway Placed With Sidewalk Construction

Standard Plan No. 440.1





Detail A



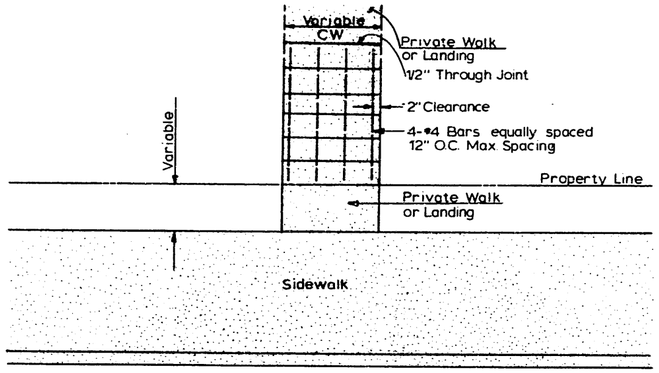
Detail B
(See Note 11)

Notes:

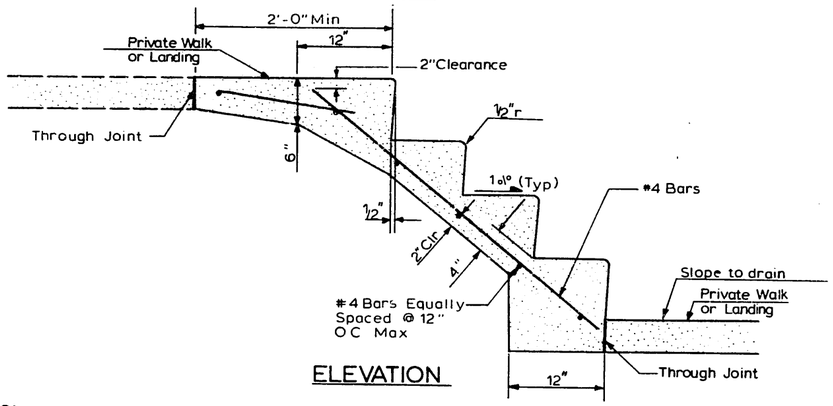
1. Flights of stairs should be short (maximum 20 steps per flight before a landing is required).
2. Avoid fewer than 2 steps per flight.
3. Steps in flight must have uniform tread depths and uniform riser heights with tolerance of ±1/8".
4. Treads shall be 11" minimum, 12" maximum. Risers shall be 5" minimum, 7" maximum.
5. Landings between flights of steps must have same width as steps and a minimum length of 4 feet.
6. Flights of 4 or more steps shall have handrails on both sides.
7. Handrails shall be continuous across landings between flights of steps.
8. Handrails shall be galvanized after fabrication.
9. Pipe material shall be ASTM Specifications A53.
10. Reinforcing steel shall be ASTM A615, Grade 60.
11. For formal drainage pick-up see Detail B (This is optional and must be called out where required).

APPROVED BY THE BOARD OF PUBLIC WORKS 7/1/19 71 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Cement Concrete Stairway and Handrail

Standard Plan No. 441.1



PLAN



ELEVATION

Notes:

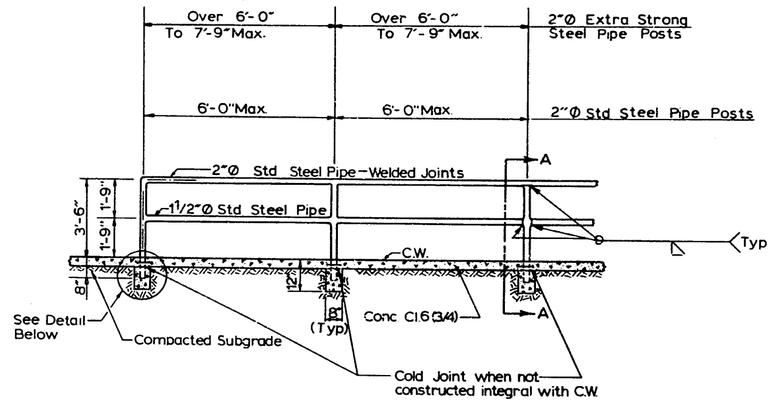
1. Cement concrete shall be class 6 (3/4) trowel finish.
2. Number of steps shall suit individual conditions, with tread and riser dimensions as follows:
   Treads shall be 11"Min - 12"Max.
   Risers shall be 5"Min - 7"Max.
3. Step width shall match width of existing walk, but shall be no less than 30" wide.
4. Steps with more than 4 risers must include handrail. See Standard Plan No 440.
5. Reinforcing steel, ASTM A615, GR. 60.
6. Tread Slopes Outward @ 1%.

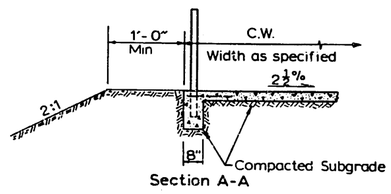
Ref. Std. Spec. Sec. 8-18

Do Not Scale

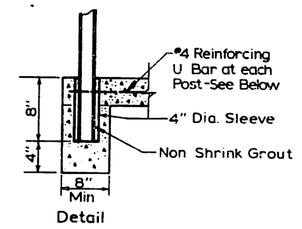
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1971 Chas Larkin CHAIRMAN ATTEST: Barbara M Tate EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Cement Concrete Steps

Standard Plan No. 442.1





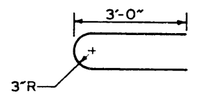
Section A-A



Detail

Notes:

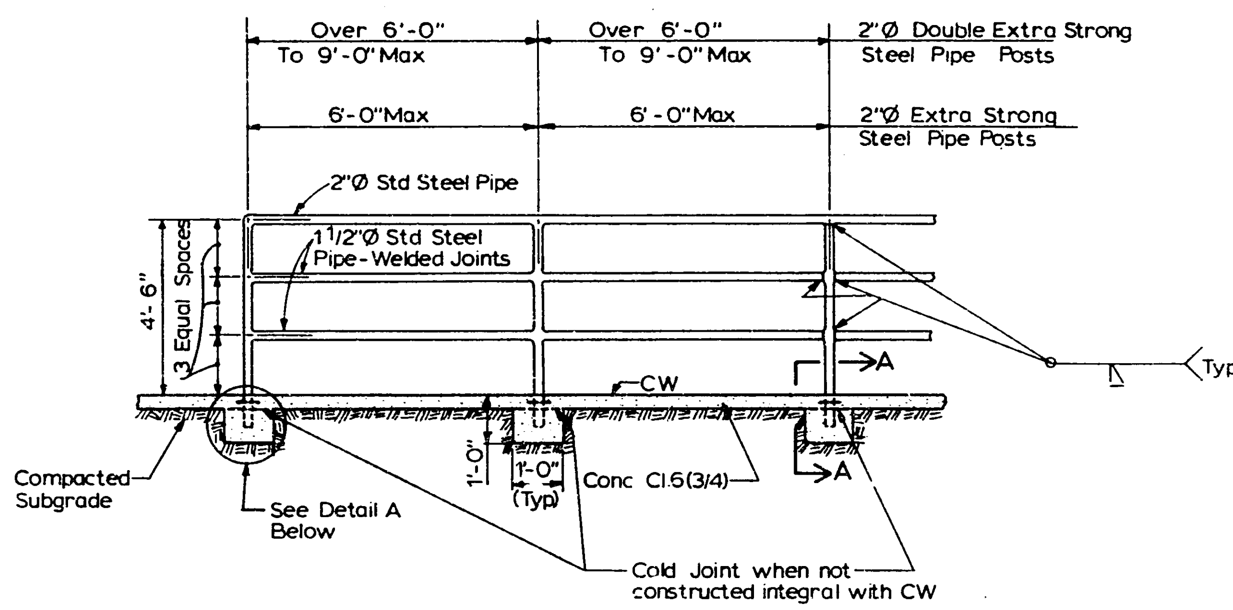
1. Railing shall be Hot Dip Galvanized after Fabrication.
2. All Posts shall be Plumb and Rails Parallel to Grade.
3. Pipe Material shall Conform to ASTM A53.
4. Reinforcing Steel ASTM A615, Grade 60

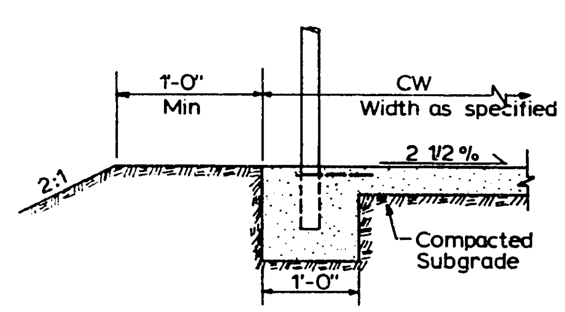


Ref. Std. Spec. Sec. 8-18.

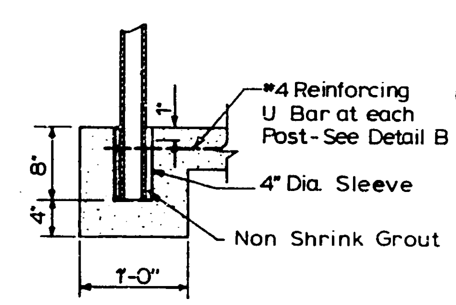
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1971 Chas Larkin CHAIRMAN ATTEST: Barbara M Tate EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Steel Pipe Handrail

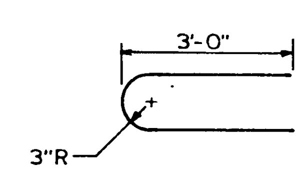




Section A-A



Detail A



Detail B

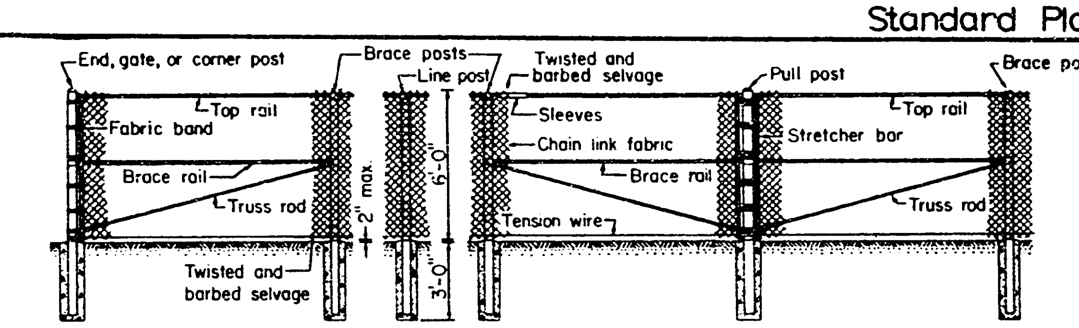
Notes:

1. Railing shall be Hot Dip Galvanized after Fabrication.
2. All Posts shall be Plumb and Rails Parallel to Grade.
3. Pipe Material shall Conform to ASTM A53.
4. Reinforcing steel, ASTM A615, GR 60.

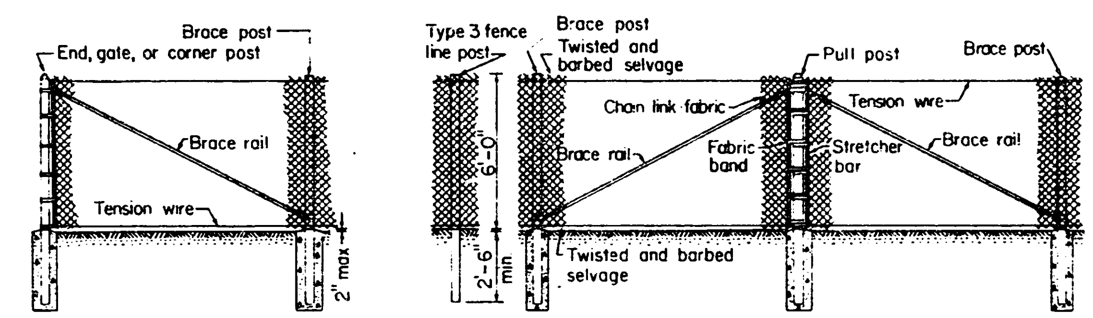
Ref. Std. Spec. Sec. 8-18

Do Not Scale

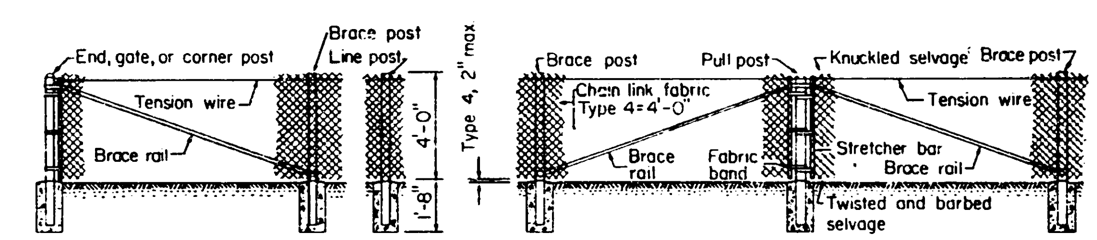
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 19 91 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Steel Pipe Railing For Bike Path



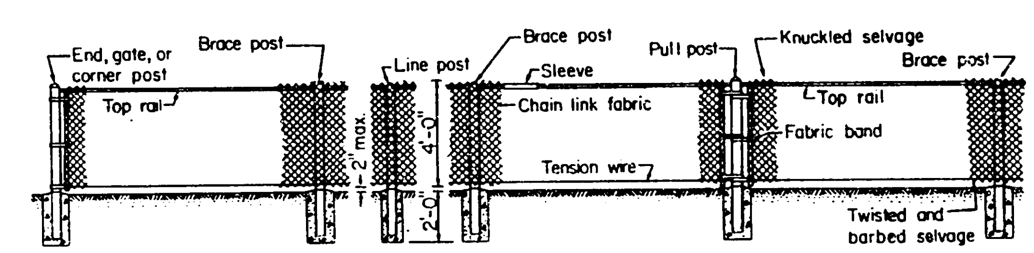
CHAIN LINK FENCE TYPE I



CHAIN LINK FENCE TYPE 3



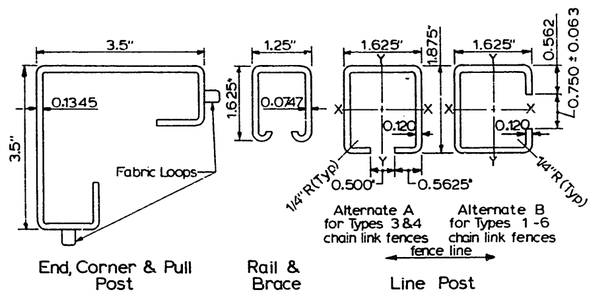
CHAIN LINK FENCE TYPE 4



CHAIN LINK FENCE TYPE 6

Ref Std Spec Sec 8-12

APPROVED BY THE BOARD OF PUBLIC WORKS ____ 19__ [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Chain Link Fence



Roll Formed Sections

Type	Member											
	Brace Rail & Top Rail						Line & Brace Post					
	Round		H-Column		Roll Formed		Round		H-Column		Roll Formed	
	I.D. Pipe, Inches	Weight Per Ft, Pounds	Size, Inches	Weight Per Ft, Pounds	Size, Inches	Weight Per Ft, Pounds	I.D. Pipe, Inches	Weight Per Ft, Pounds	Size, Inches	Weight Per Ft, Pounds	Size, Inches	Weight Per Ft, Pounds
1	1 1/4	2.27	1.25x1.62	1.35	1 5/8x1 1/4	1.35	2	3.65	2 1/4	4.0		
3	1 1/4	2.27			1 5/8x1 1/4	1.35	1 1/2	2.72	1 7/8	2.72	1 5/8x1 7/8	2.34
4	1 1/4	2.27			1 5/8x1 1/4	1.35	1 1/2	2.72	1 7/8	2.72	1 5/8x1 7/8	2.34
6	1 1/4	2.27	1.25x1.62	1.35	1 5/8x1 1/4	1.35	2	3.65	2 1/4	4.0		

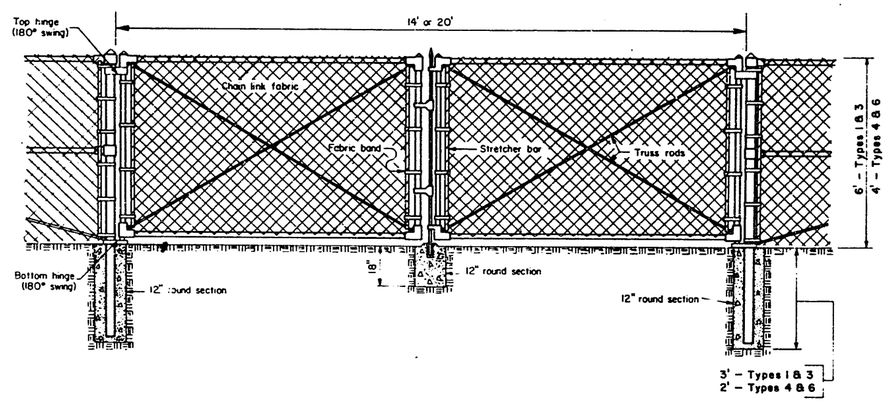
Type	Member						
	End, Corner & Pull Post				Gate Post		All Posts
	Round		Roll Formed		Round		
	I D Pipe, Inches	Weight Per Ft, Pounds	Size, inches	Weight Per Ft, Pounds	I D Pipe, Inches	Weight Per Ft, Pounds	Length
1	2 1/2	5.79	3 1/2x3 1/2	5.14	3 1/2	9.1	8'-8"
3	2	3.65	3 1/2x3 1/2	5.14	3 1/2	9.1	8'-8"
4	2	3.65	3 1/2x3 1/2	5.14	3 1/2	9.1	5'-6"
6	2 1/2	5.79	3 1/2x3 1/2	5.14	3 1/2	9.1	5'-6"

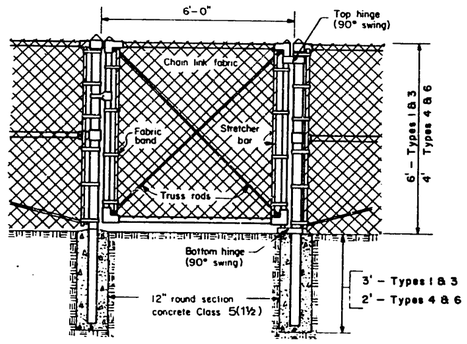
Notes:

1. All concrete post bases shall be 10" minimum diameter, Class 5(1½)
2. Posts shall be spaced at 10' maximum intervals unless otherwise directed by the Engineer.
3. Top or bottom tension wires shall be placed within the limits of the first full fabric weave.
4. The illustrative details shown hereon shall not be construed as limiting to hardware design or post selection for any particular fence type.

Ref. Std. Spec. Sec. 8-12

APPROVED BY THE BOARD OF PUBLIC WORKS 10/21 19 86 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Chain Link Fence





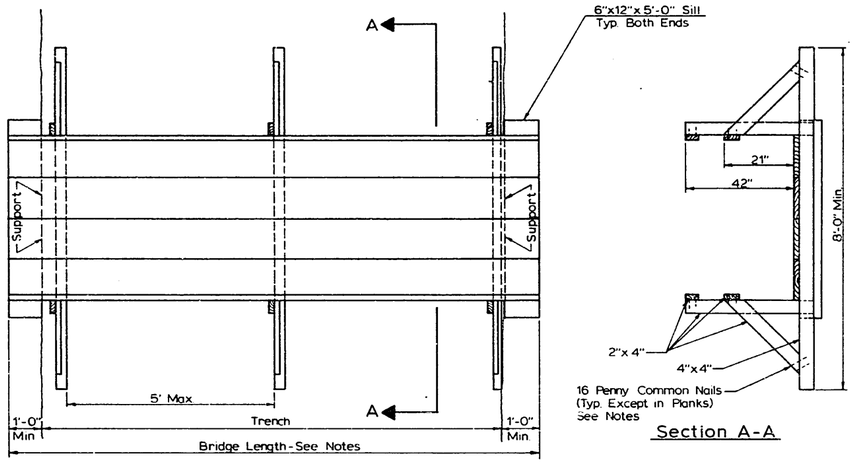
Notes:

1. Fence fabric shall be secured to gate frames with knuckled selvage along top edge for Types 4 & 6 chain link fence installations.
2. Minimum post length:
   Types 1 &3 - 8'-8"
   Types 4 &6 - 5'-6"

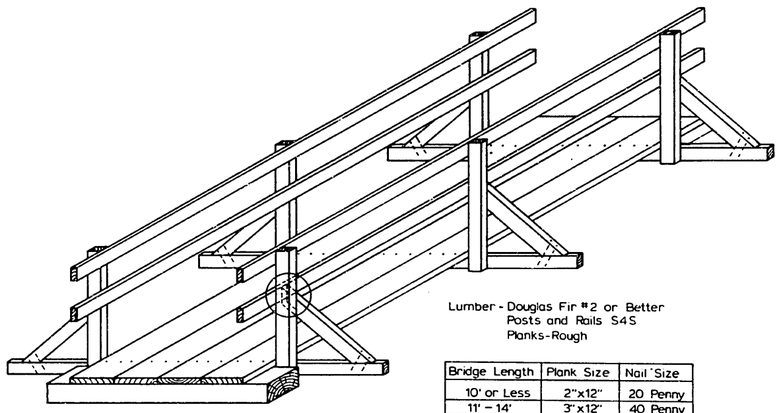
Ref. Std. Spec. Sec. 8-12

APPROVED BY THE BOARD OF PUBLIC WORKS 19 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Chain Link Gates

Standard Plan No.456



Section A-A

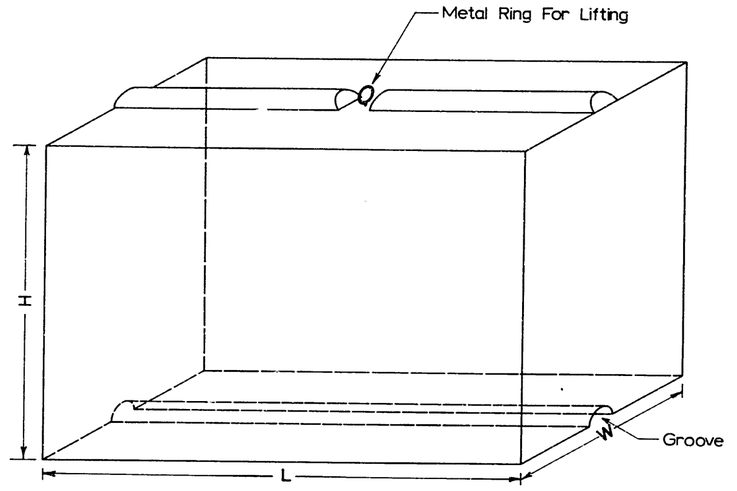


Lumber - Douglas Fir #2 or Better
Posts and Rails S4S
Planks - Rough

Bridge Length	Plank Size	Nail Size
10' or Less	2"x12"	20 Penny
11' – 14'	3"x12"	40 Penny
15' – 20'	4"x12"	60 Penny

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 19 21 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Temporary Pedestrian Crossing

Standard Plan No.460



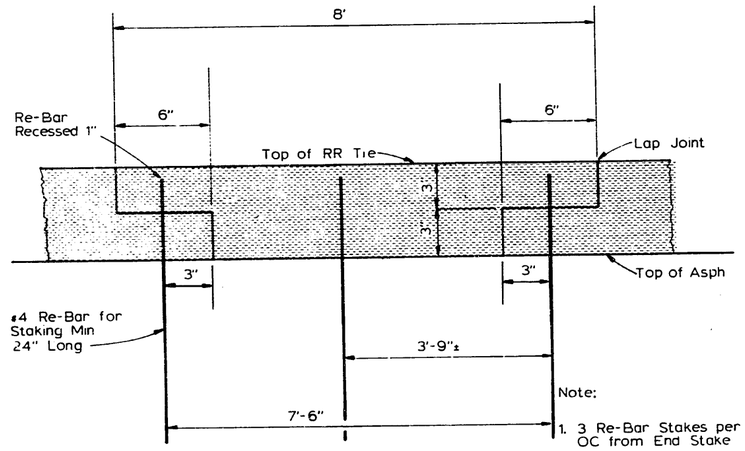
Concrete Tongue and Groove Block

Note:

	H	L	W
Sizes Are :	2'-0" x	3'-0" x	2'-0"
Or	2'-0" x	6'-0" x	2'-0"

APPROVED BY THE BOARD OF PUBLIC WORKS 11-1 19 23 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Ecology Block, Concrete

Standard Plan No.461



Note:

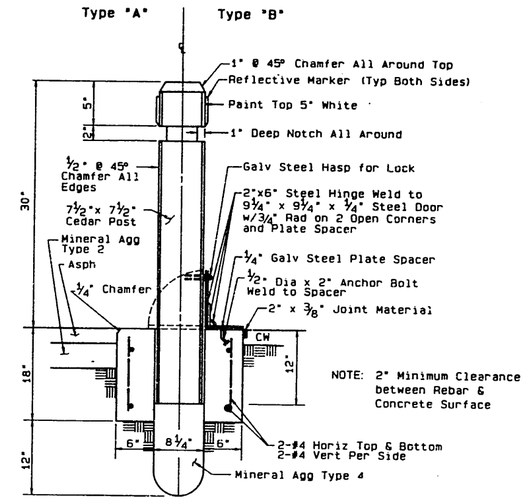
1. 3 Re-Bar Stakes per Tie. Space 3'-9" OC from End Stake

2. Provide 4' Min of Type 2 Gravel as Sub-Base for RR Tie in Non-Asphalted Area

APPROVED BY THE BOARD OF PUBLIC WORKS 7/13 19 97 CHAIRMAN ATTEST: SEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	RR Tie Curb Detail

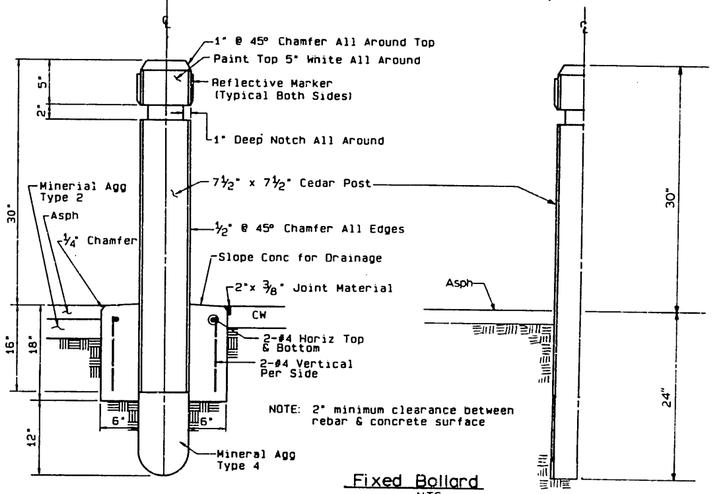
Standard Plan No.463

Type "A" Type "B"



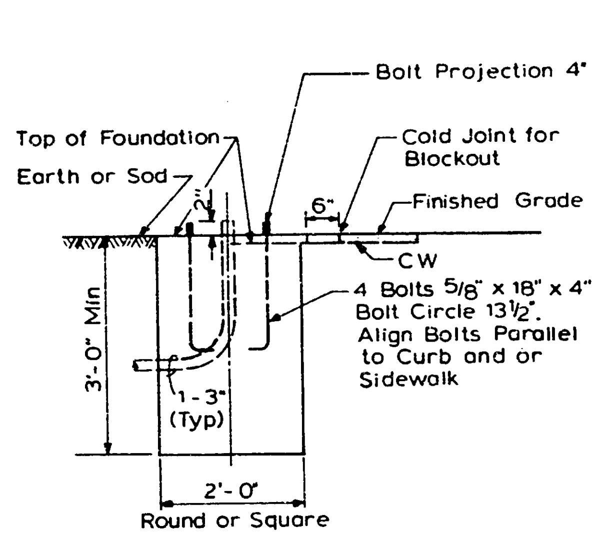
Removable Bollard
NTS

Type "A" Type "B" Type "C"

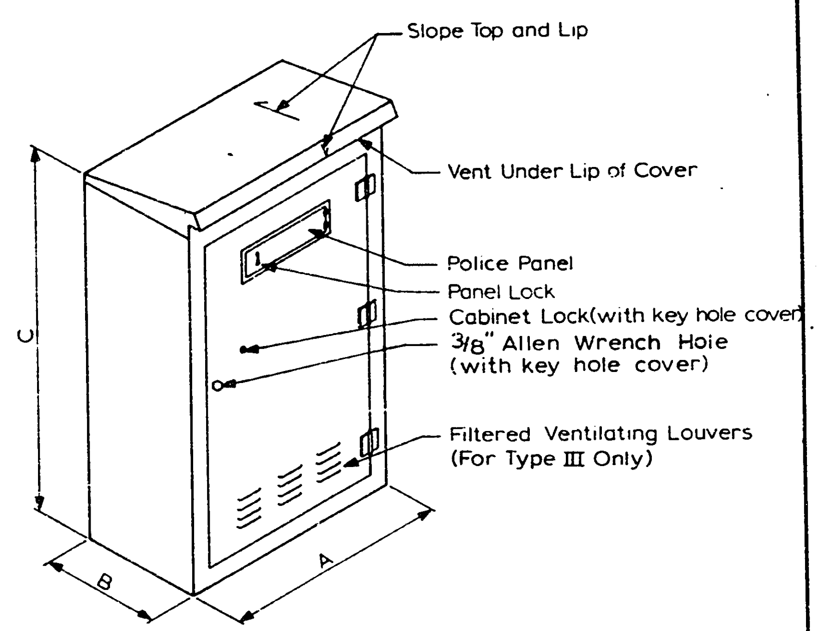


Fixed Bollard
NTS

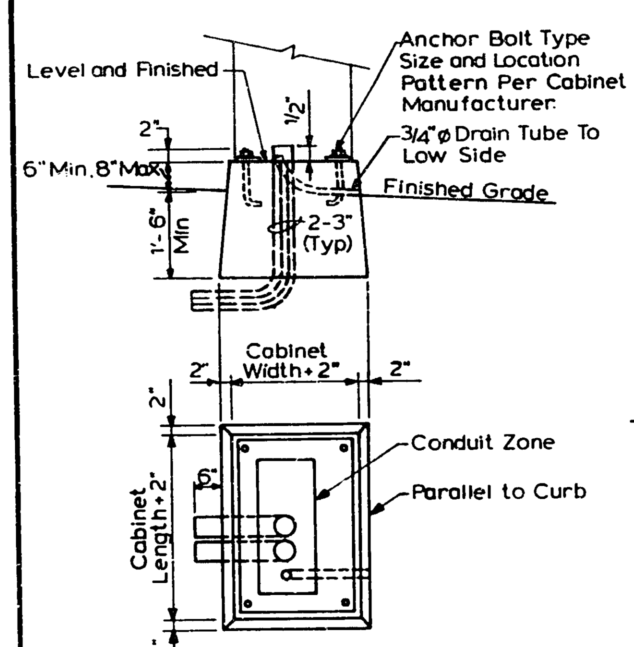
APPROVED BY THE BOARD OF PUBLIC WORKS 7/13 19 97 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Fixed & Removable Wood Bollard



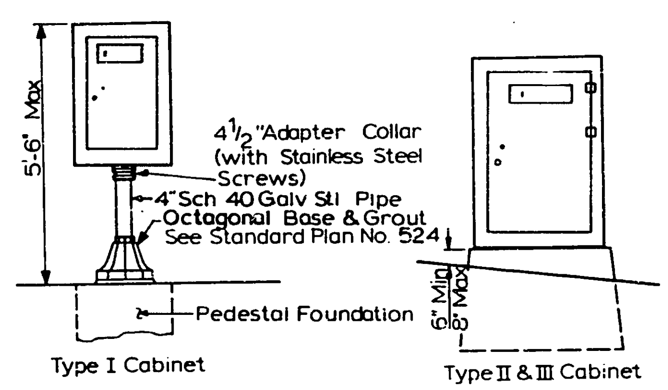
Pedestal Foundation



Cabinet (Typ)



Signal Controller Cabinet(Type II & III) Foundation



Mounting Detail

Cabinet Dimension

Nominal Dimension	Type I	Type II	Type III
A	18" to 24"	28" to 34"	36" to 46"
B	12" to 18"	16" to 20"	20" to 28"
C	26" to 40"	38" to 52"	50" to 58"

Notes:

Conduit shall enter into conduit zone as indicated by manufacturer's template or cabinet detail.

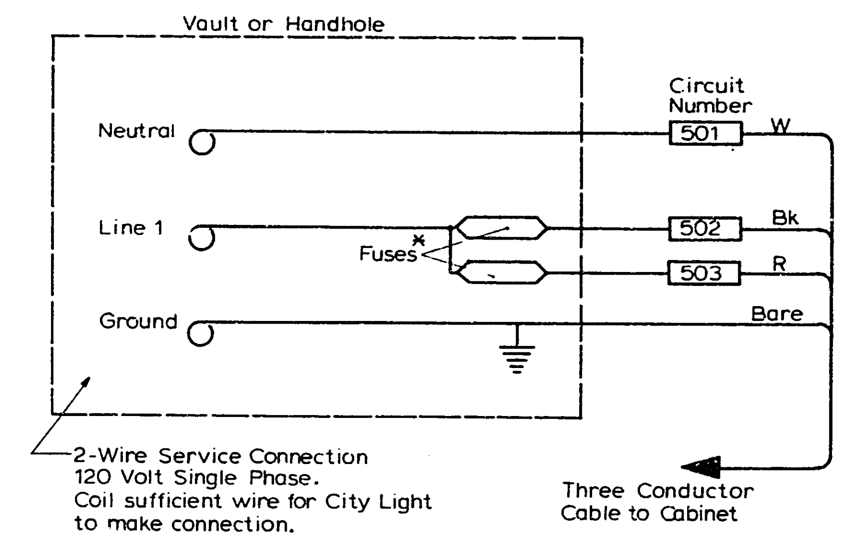
Wrap top of anchor bolts with corrosion protection tape per special provisions.

Place cabinet door on sidewalk side of foundation.

Cabinets are shown diagramatically. Actual appearance may differ according to Manufacturer. Seal cabinet to foundation with grey or clear silicon to prevent moisture from entering the cabinet. The enclosure shall be NEMA 3R labeled.

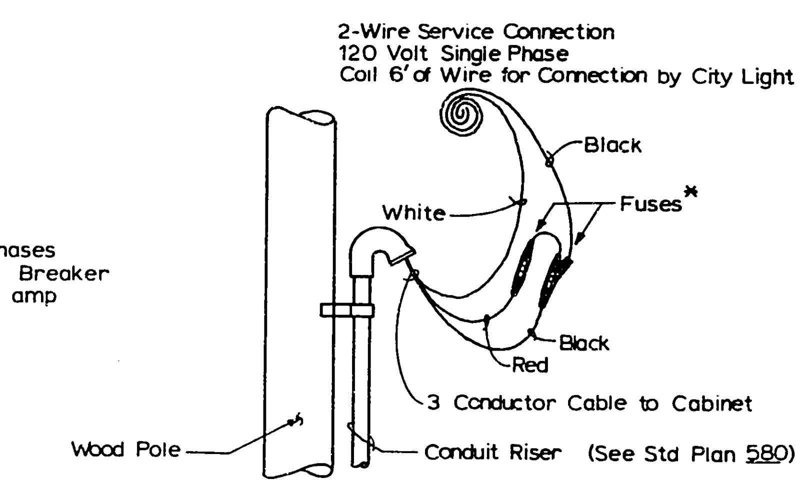
Ref. Std. Spec. Sec. 8-31

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12-1991 ____ CHAIRMAN ATTEST: ____ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Signal Controller Cabinet & Foundation



Vault or Handhole Service Connection

* Whenever Five or More Vehicle Phases are Provided, The Primary Circuit Breaker Shall be 45 amps. Otherwise 30 amp Circuit Breakers Shall be Used.

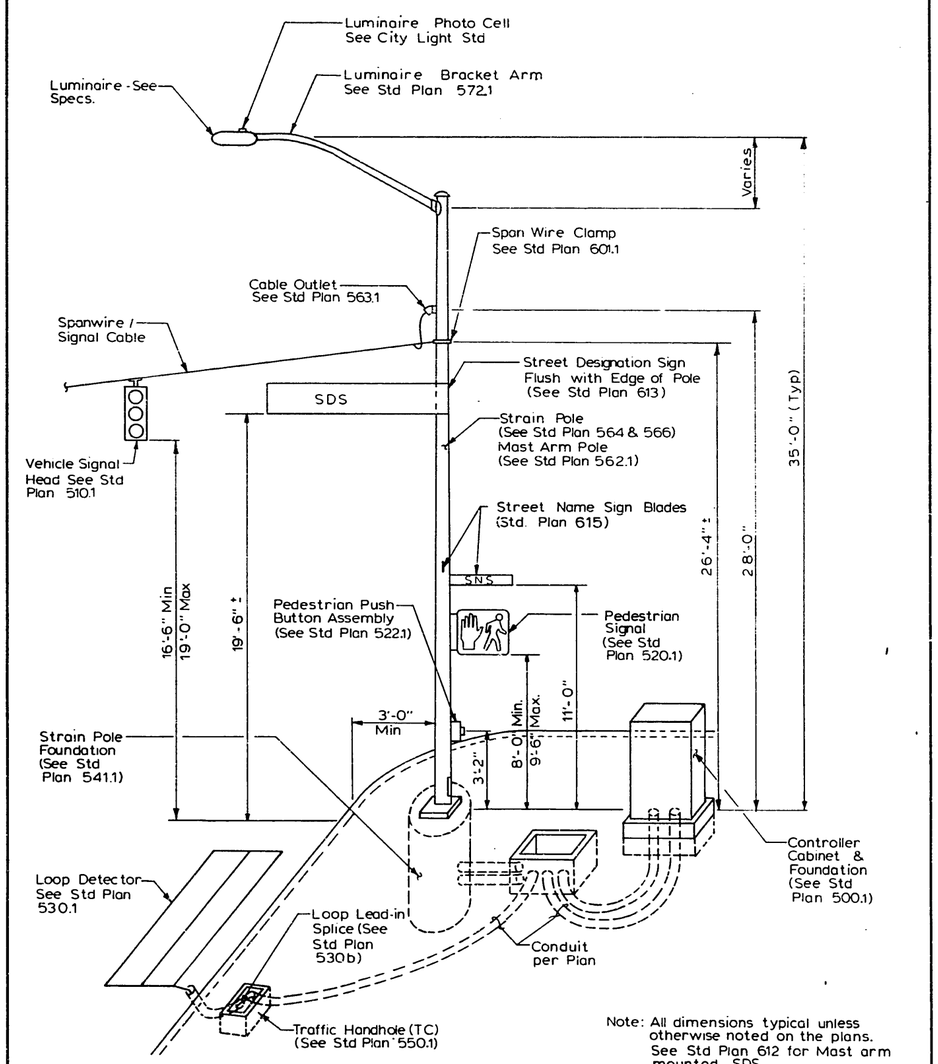


Signal Overhead Service Connection

Ref. Std. Spec. Sec. 8-31

APPROVED BY THE BOARD OF PUBLIC WORKS ____ CHAIRMAN ATTEST: ____ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Signal Controller Service Connection

Standard Plan No. 502

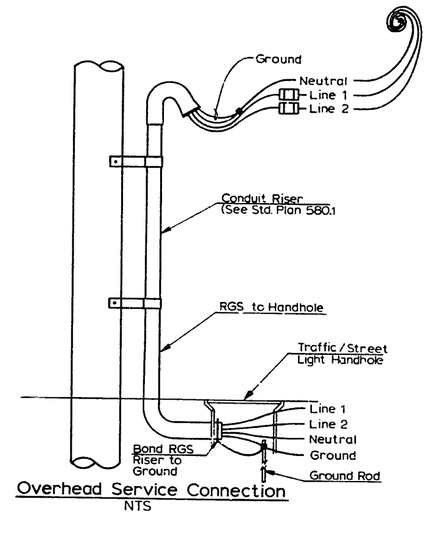


Note: All dimensions typical unless otherwise noted on the plans. See Std Plan 612 for Mast arm mounted SDS. This is a schematic only. Build per plan. Do Not Scale

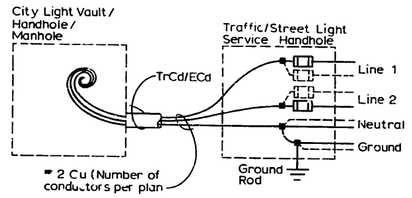
Ref. Std. Spec. Sec. 8-21.

APPROVED BY THE BOARD OF PUBLIC WORKS 7/13 19 91 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Signalized Intersection Span Wire Type Configuration

Standard Plan No. 505



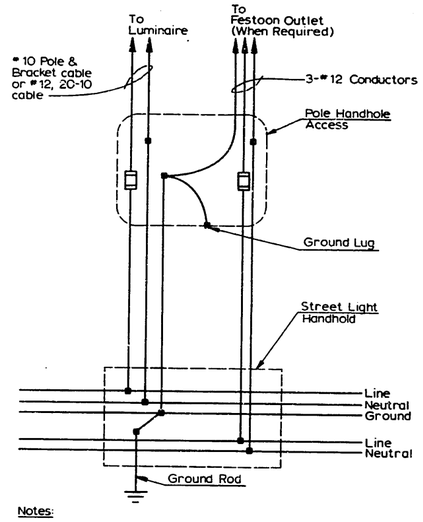
Overhead Service Connection
NTS



Underground Service Connection
NTS

Notes:

1. Service connection by Seattle City Light.
2. Coil sufficient wire for S.C.L. to make Connection.
3. Number of conductors, type & size per plan / spec.
4. Bond neutral to ground at top of pole.
5. Conductors shall be color coded per phase & system
6. Signal service shall have two hot taps off Line 1 or Line 2.
7. Fuse per plan / spec.
8. Use insulated & submersible rated multiple connectors. (Type UB756 ITE Black Burn or equal) in service handhole.
9. A minimum of one spare connector tap shall be provided on Line 1, Line 2 & Neutral in service handhole.

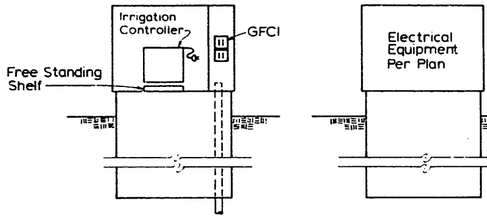


Notes:

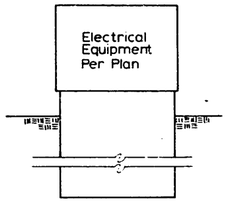
1. Fuse luminaire at 10A except for 400W fuse at 15A.
2. Fuse Festoon outlet at 15A.
3. For an overhead feed, conductors shall enter pole through cable outlet.
4. Conductors shall be color coded per phases & system.

Metal Street Light Pole Wiring Detail (Typ)

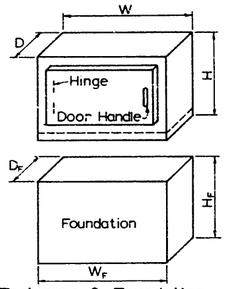
APPROVED BY THE BOARD OF PUBLIC WORKS 7/13 19 91 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Service Connection & Metal Street Light Pole Wiring Detail



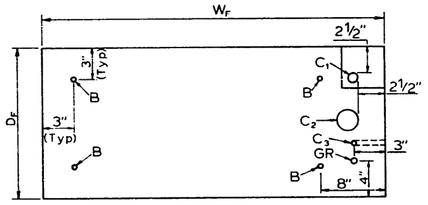
Type IR
Electrical Enclosure
No Scale



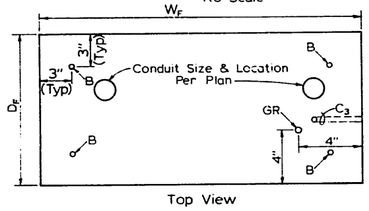
Type P
Electrical Enclosure
No Scale



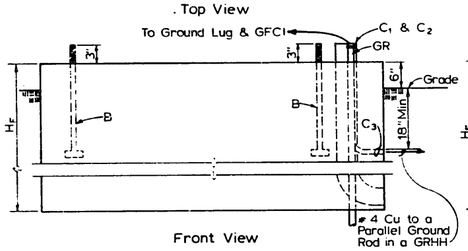
Enclosure & Foundation
No Scale



Top View

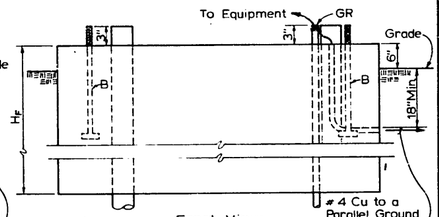


Top View



Front View

Type IR Electrical Enclosure Foundation
No Scale



Front View

Type P Electrical Enclosure Foundation
No Scale

Abbreviations:

B: ½"x12" Hex Head Anchor Bolt with Nut & (2)-4" Square Washers. All items Galvanized per ASTM A153.

C1: 120 Volt Service Entrance Conduit. Conduit shall be 1" Sch 80 PVC.

C2: 24 Volt Control Wire Conduit. Stub out 24" Deep, 6" out from Foundation. Conduit shall be 2" Sch 80 PVC Unless Otherwise Noted.

C3: ½" PVC Conduit for Ground Wire.

GR: ⅝"x10' Copper Clad Ground Rod & Clamp.

GFCI: Ground Fault Circuit Interrupter Receptacle 20Amp Rated, Install in-line Fuse Holder and 15Amp Fuse Ahead of Outlet.

GRHH: Ground Rod Handhole. Ground Rods shall be a Minimum of 6' Apart.

Enclosure Schedule

Electical Enclosure Type	Foundation Dimensions			Enclosure Dimensions			Door Latch Type	No. of Hinges	Door Reinforcement
	H_F	W_F	D_F	H	W	D			
IA1		Per		Plan					
IA2	30"	19½"	14½"	18"	20"	15"	Single Point	2	
IA3	30"	32½"	14½"	25"	33"	15"	Three Point	3	
IA4			14½"			15"			
IA5									
P1			14½"			15"			
P2		Per		Plan					
P3	30"	32½"	14½"	25"	33"	15"	Three Point	3	Yes
P4	36"	49½"	14½"	48"	50"	15"	Three Point	3	Yes
P5			14½"			15"			
P6									

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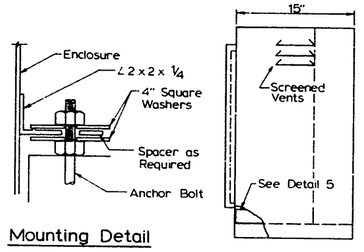
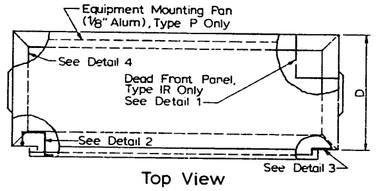
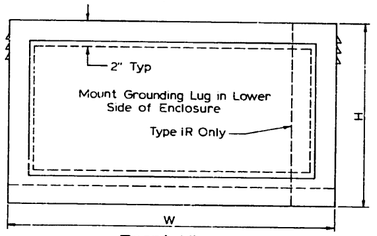


Mounting Detail

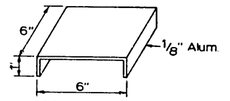
Side View



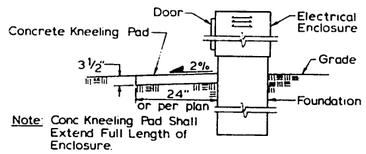
Top View



Front View

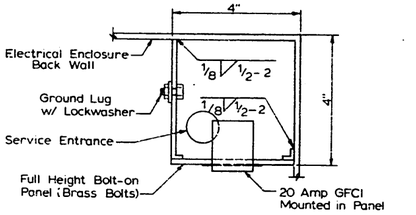


Free Standing Shelf
Install on Foundation, Type IR Only

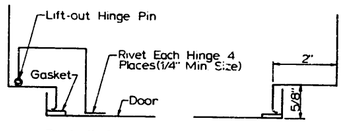


Note: Conc Kneeling Pad Shall Extend Full Length of Enclosure.

Concrete Kneeling Pad Detail
Side View

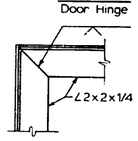


Detail 1
Dead Front Panel
Type IR Only

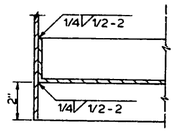


Detail 2
Door Hinge

Detail 3



Detail 4
Mounting Lip



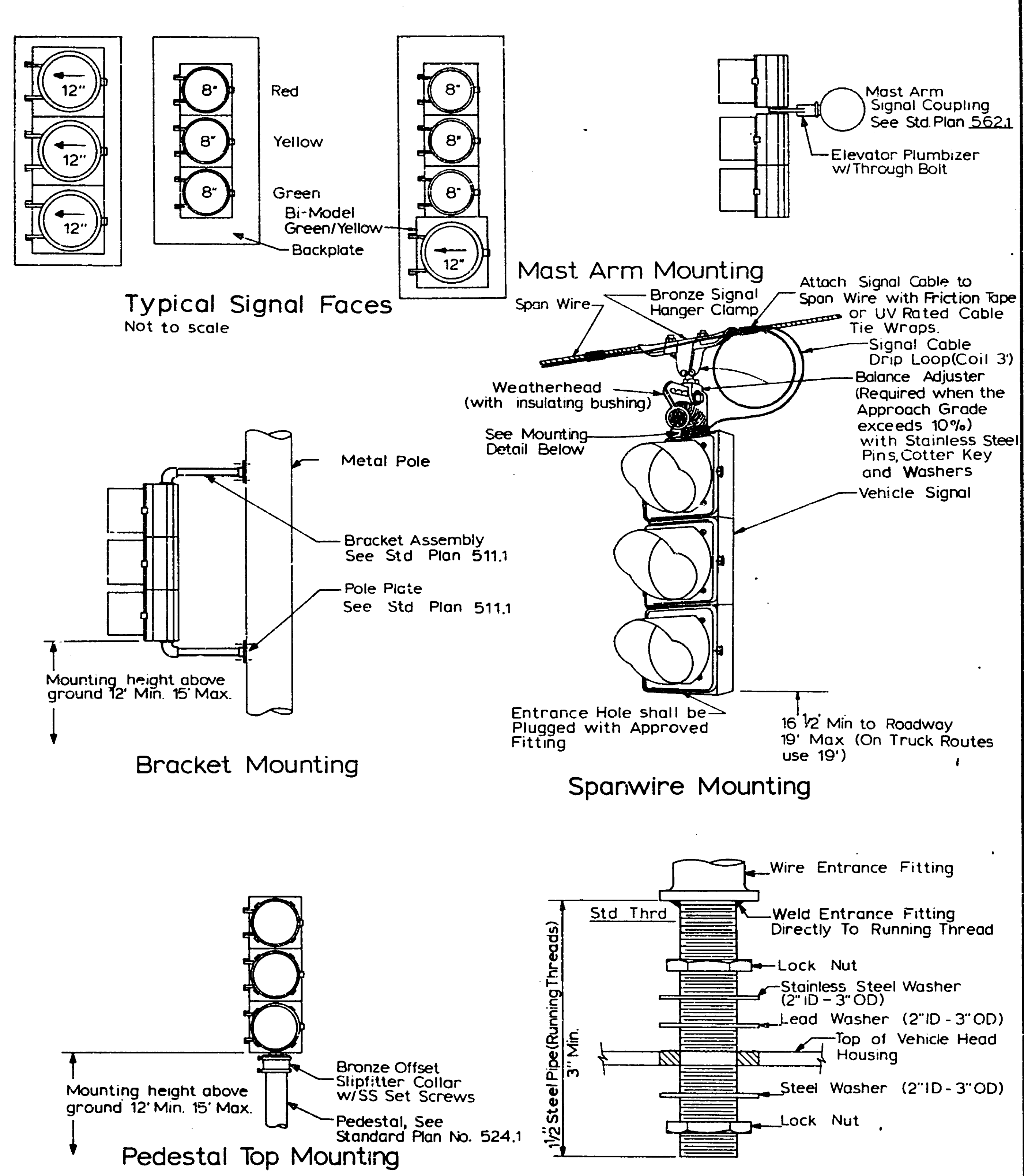
Detail 5
Attachment Lip

Notes:

1. The enclosure shall be constructed of 3003-3 aluminum, ⅛" minimum.
2. The door shall be hinged, removable and have an internal latch.
3. The door shall have a gasket. The gasket shall close against a "rain gutter" type face.
4. The door handle shall have provisions for a padlock.
5. The foundation shall be ½" less than the enclosure in depth and width dimensions.
6. The enclosure shall be NEMA Type 3R.
7. The ground wire between the ground rods and the neutral ground buss shall be continuous.
8. The top 6" of the anchor bolts shall be taped with corrosion protection tape.
9. Provide slope on top of foundation to eliminate ponding of water.
10. All steel shall be stainless or hot dipped galvanized after fabrication.

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 19 91 Tony Zarker CHAIRMAN ATTEST: Barbara J. Walker EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Electrical Enclosure

Standard Plan No. 510.1

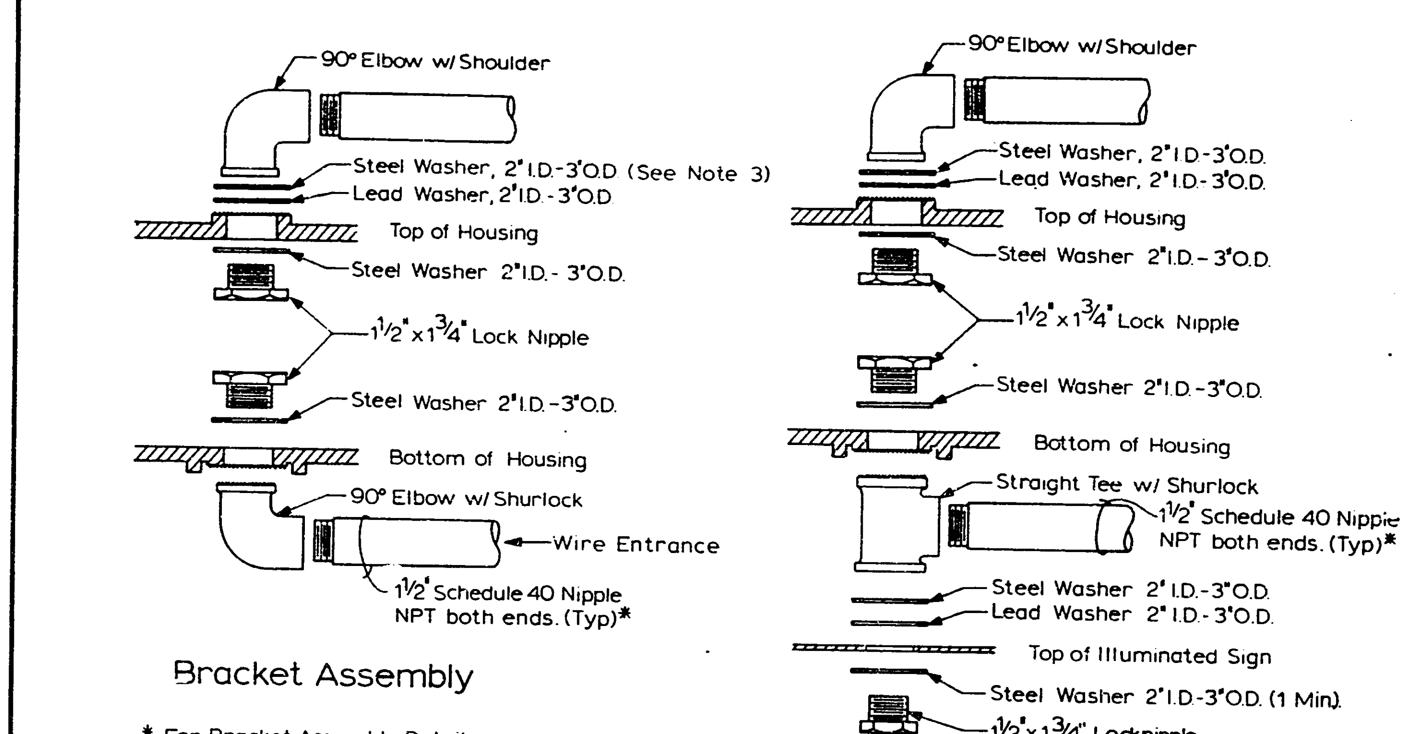


NOTE:
Backplates have been omitted from various views for clarity

Ref. Std. Spec. Sec. 8-31

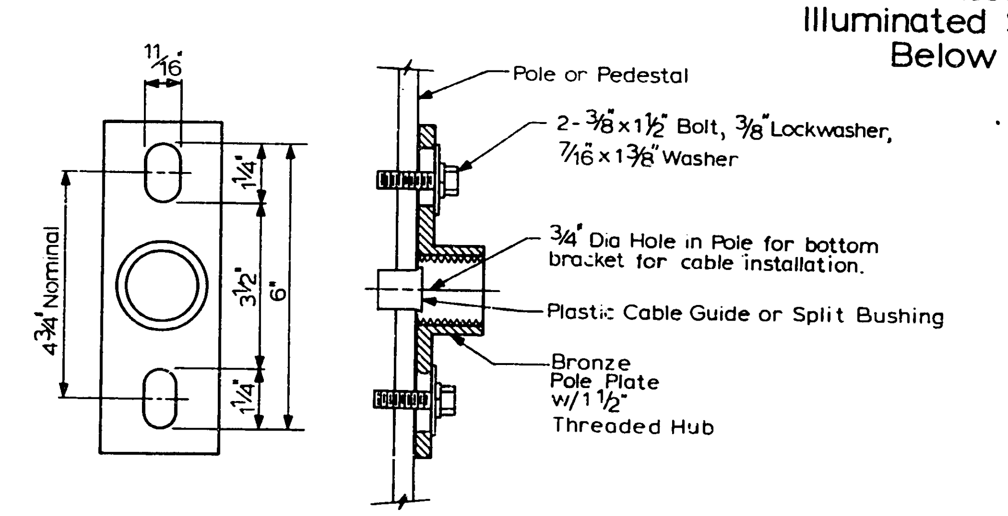
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1971 CHAIRMAN ATTEST: EXEC SECRETARY	**CITY OF SEATTLE DEPARTMENT OF ENGINEERING**	Vehicular Signal Mounting

Standard Plan No. 511.1



* For Bracket Assembly Details:
11" Long for 8" vehicle signals
14" Long for 12" vehicle signals and pedestrian signals

Bracket Assembly with Illuminated Sign Mounted Below Signal

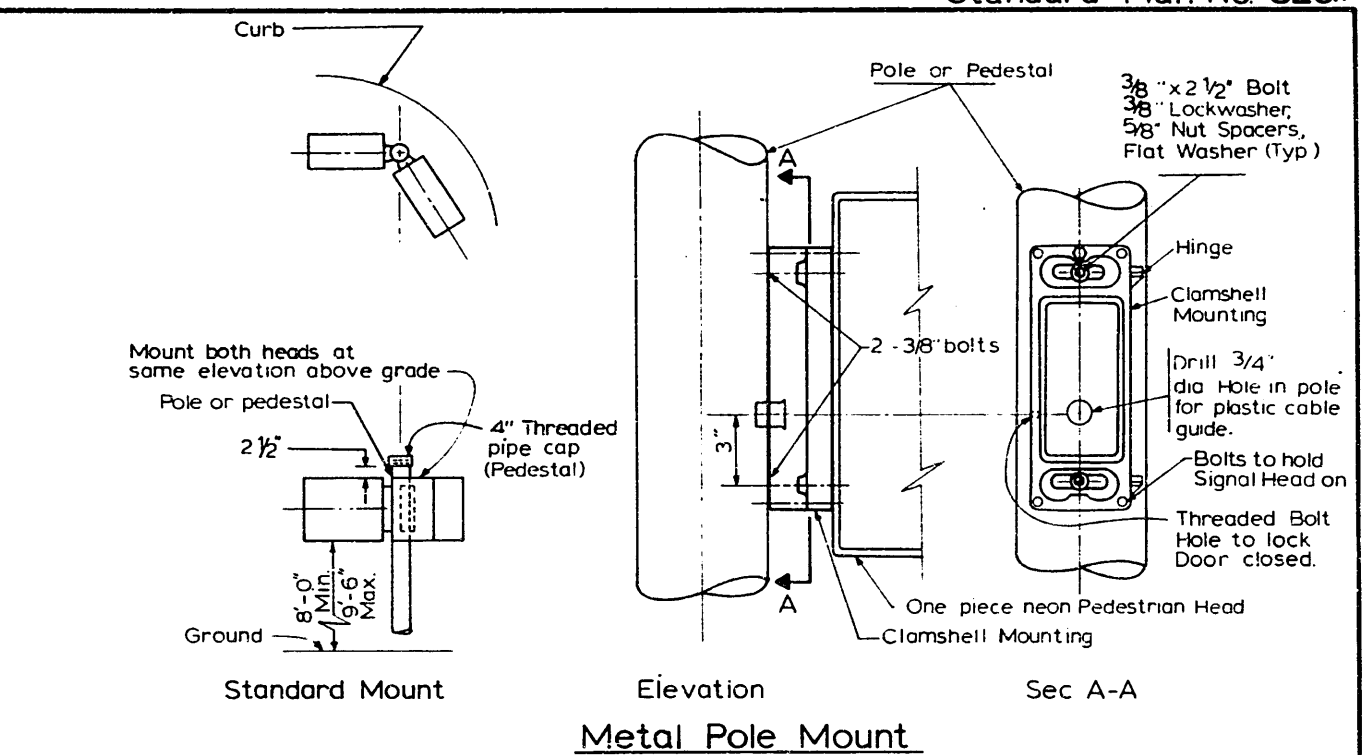


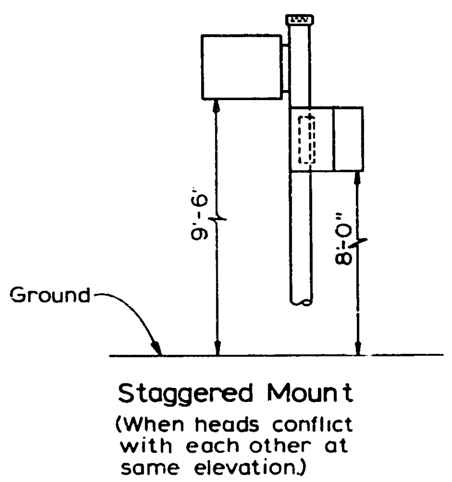
1. All Bolts and washers shall be stainless steel.
2. Mounting of pole plates shall be as follows:
   - On metal poles thinner than 7 gauge, use 3/8" stainless steel rivnuts.
   - On metal poles 7 gauge or thicker, drill and tap for 3/8" bolt (SS rivnuts optional)
   - On poles filled with or made of concrete, use 3/8" x 2 1/2" min stud bolt anchors, sleeve type.
3. Omit the Steel Washer if the 90° Elbow has Shur Lock Serrations

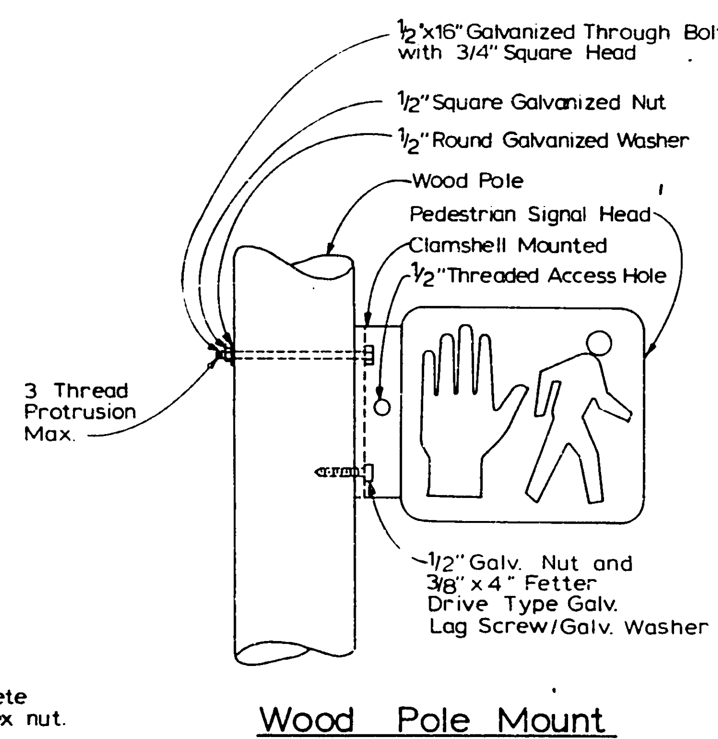
Pole Plate Mounting Bracket Installation

Ref. Std. Spec. Sec. 8-31

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1971 CHAIRMAN ATTEST: EXEC SECRETARY	**CITY OF SEATTLE DEPARTMENT OF ENGINEERING**	Vehicle Signal Head Bracket Assemblies







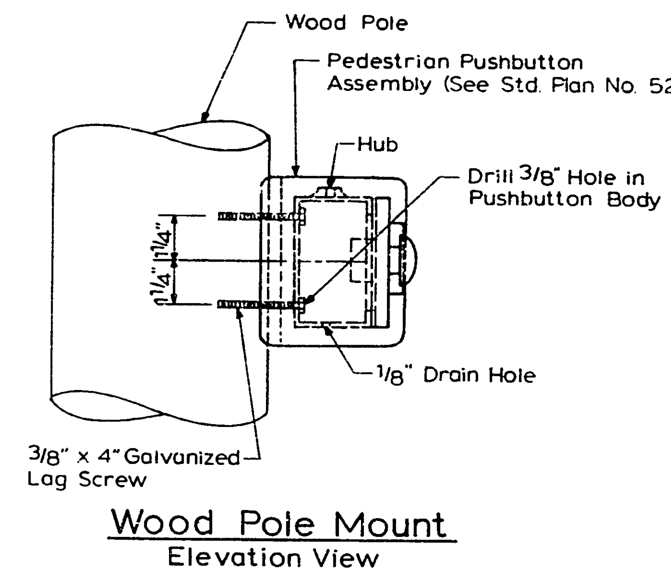
Notes

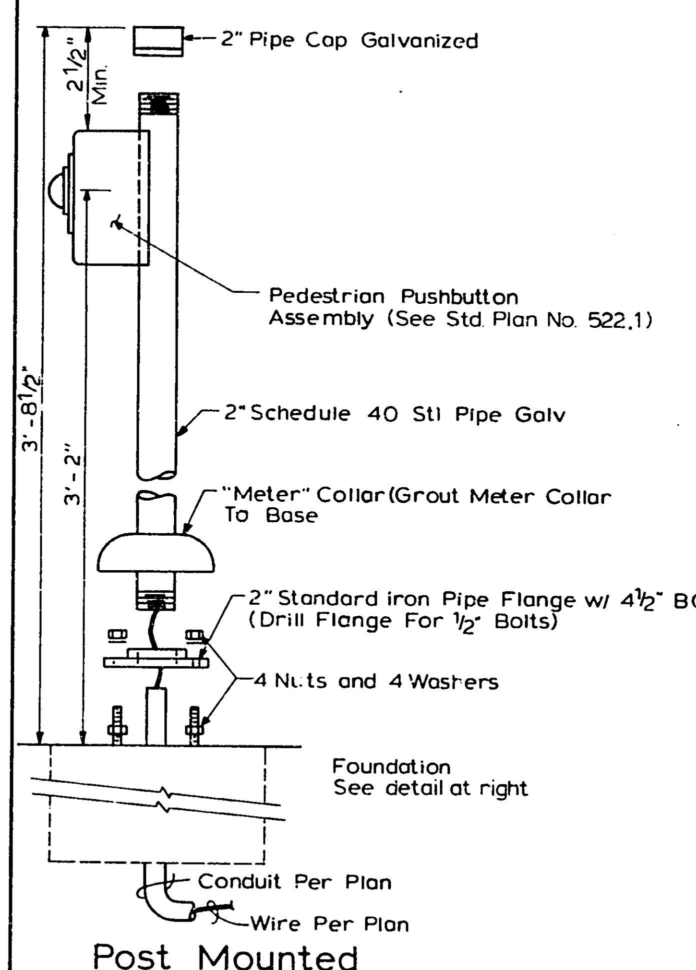
1. Bolts and washers shall be stainless steel.
2. Mounting shall be as follows:
   - On metal poles thinner than 7 gauge, use 3/8" stainless steel rivnuts.
   - On metal poles 7 gauge or thicker, drill and tap for 3/8" bolt. (Stainless steel rivnuts optional)
   - On poles filled with or made from concrete use 3/8" x 2½" stud bolt anchors with hex nut.
3. For Street Name signs mounted on top of pedestal see std. plan 623

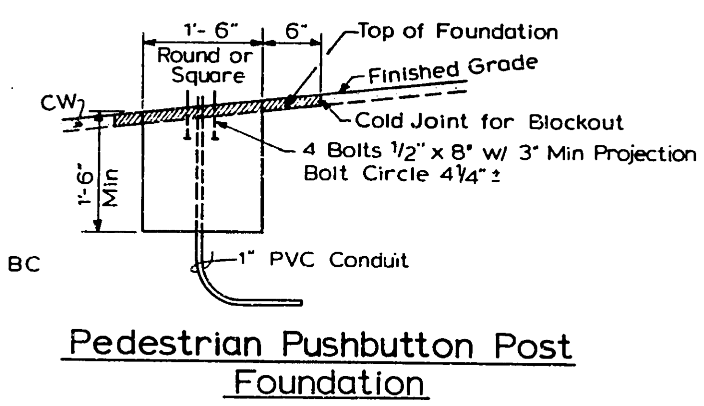
Ref. Std. Spec. Sec. 8-31

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/15 1991 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Pedestrian Signal Clamshell Mounting







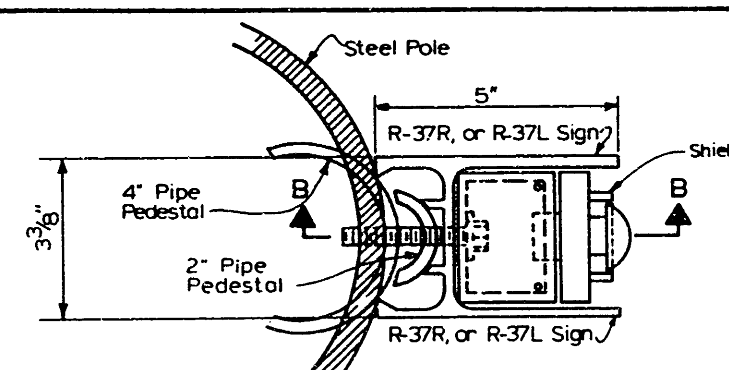
Notes:

Wrap top of anchor bolts with corrosion protection tape.

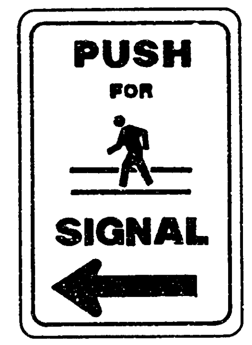
Ref Std Spec Sec 8-31

NTS

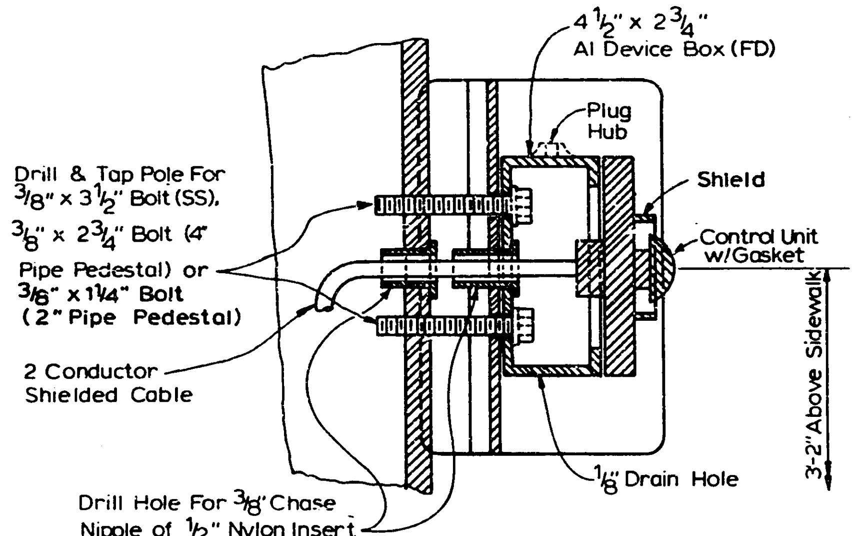
APPROVED BY THE BOARD OF PUBLIC WORKS 7/15 1991 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Pedestrian Pushbutton



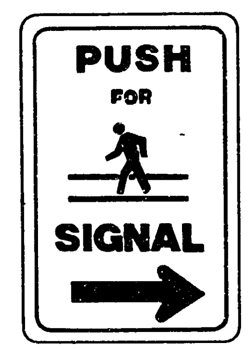
Plan
No Scale



Part No. H 3
(R-37L Modified)

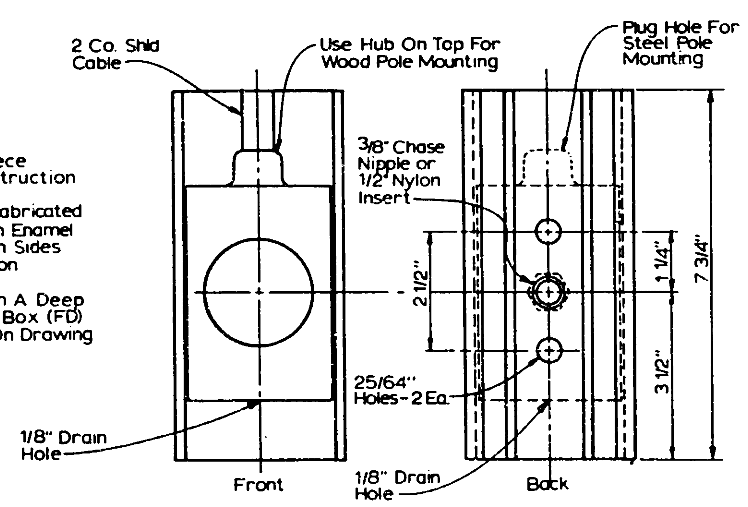


Section B-B
No Scale



Part No. H-3 (R)
(R-37R Modified)

PPB Assembly on Metal Pole



NOTES:

1. Moulded One-Piece Aluminum Construction
2. Signs Shall Be Fabricated From Baked-On Enamel Directly On Both Sides Of The Extrusion
3. Assembled with A Deep Cast Aluminum Box (FD) Per Dimension On Drawing

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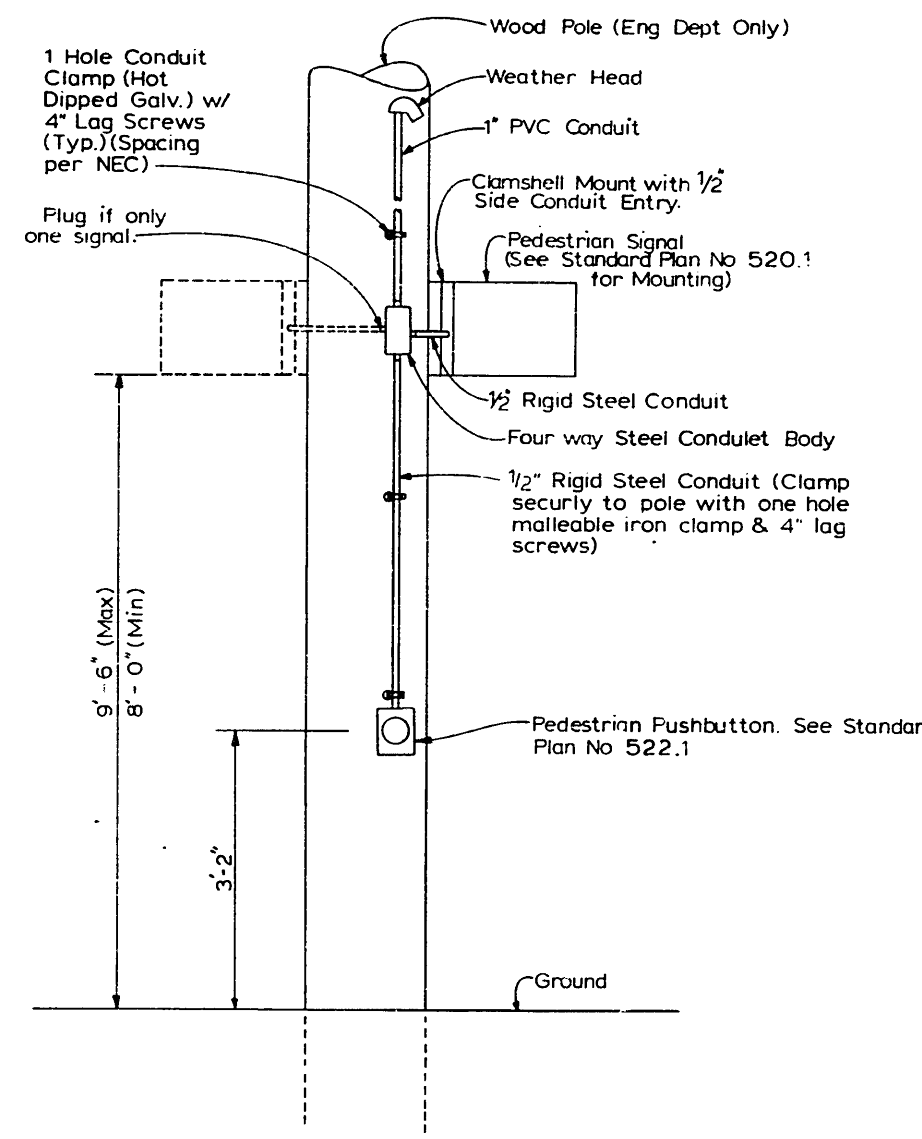


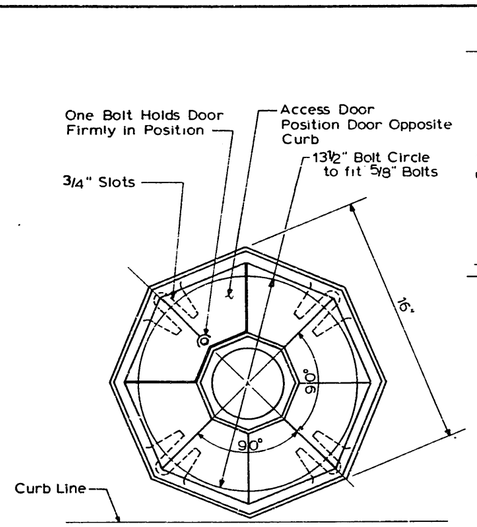
Notes:

1. Ground all pedestrian signals and pushbuttons with green insulated #8 copper wire.
2. All steel hardware shall be hot dipped galv. or stainless steel unless otherwise specified.

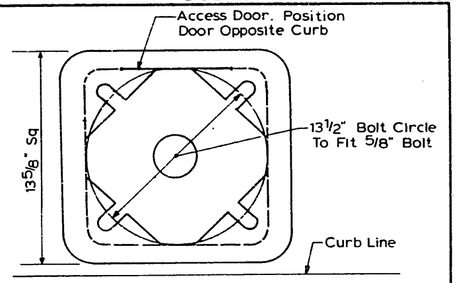
Ref. Std. Spec. Sec. 8-31.

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1991 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Pedestrian Signal & Pushbutton Mounted on Wood Pole

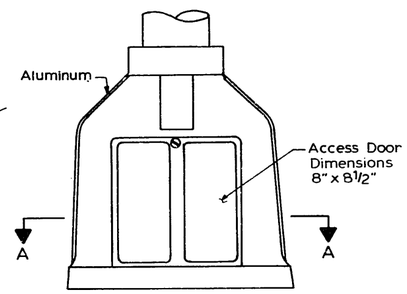
Standard Plan No. 524.1



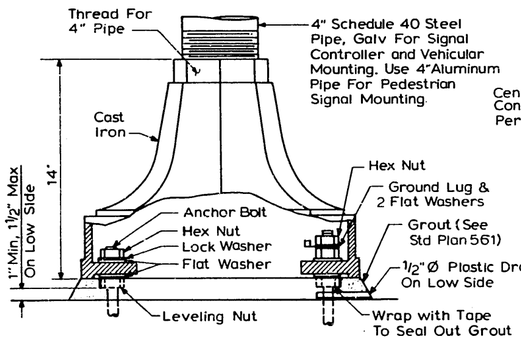
Octagonal Base



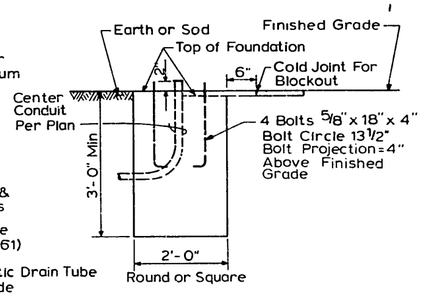
Section A - A



Square Base Pedestal



Pedestal Mounting



Pedestal Foundation

Note:

Conduit shall extend 3" above foundation.

Ref Std Spec Sec 8-32

NTS

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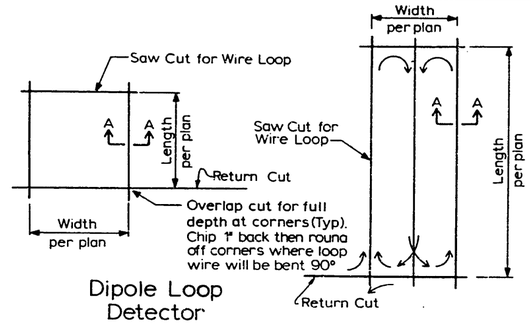
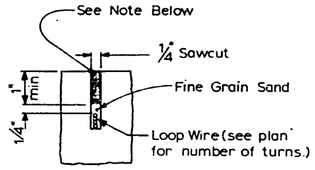
Standard Plan No. 530.1a

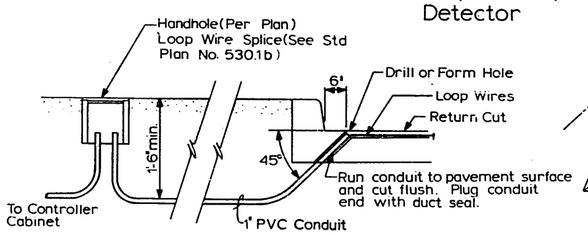


Dipole Loop Detector

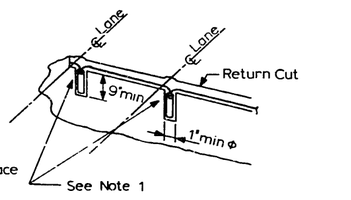
Quadrapole Loop Detector



Section A-A



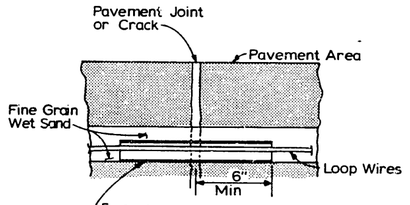
Curb / Pavement Entrance For Detector Loop Wires



Magnetometer Detector

Notes:

1. Fill cut after vertical placement and testing with hot paving grade liquid asphalt ASTM D 312 Type III or high strength highway concrete as specified.
2. Sharp edge tools shall not be used in placing conductors in saw cuts.
3. Each pair of loop wires in the return cut shall be twisted a minimum of 3 turns per foot and may share common return cuts with other twisted pairs.
4. Tape loop wire a minimum of 2 turns at each corner
5. Remove sharp corner edges in saw cuts where loop wire will be bent around.
6. Perform resistance and continuity tests prior to sealing loop wires.
7. Coil 5' of loop wire in handhole.



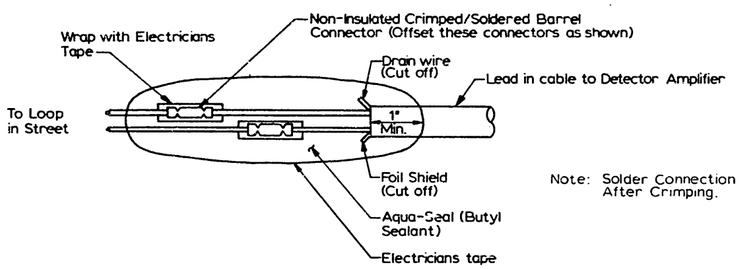
Note:
1. Cut a 1/2" wide slot 6" long on each side of joint or crack
2. Wrap ends and entire length of tubing with two layers of electrical tape to prevent asphalt or concrete from entering the tubing.

Pavement Joint or Crack Detail

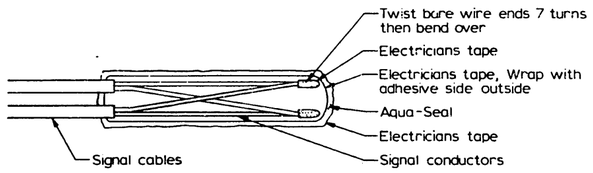
Ref. Std. Spec. Sec. 8-31

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Loop Detectors



Detector Lead-in Wire Splice Detail

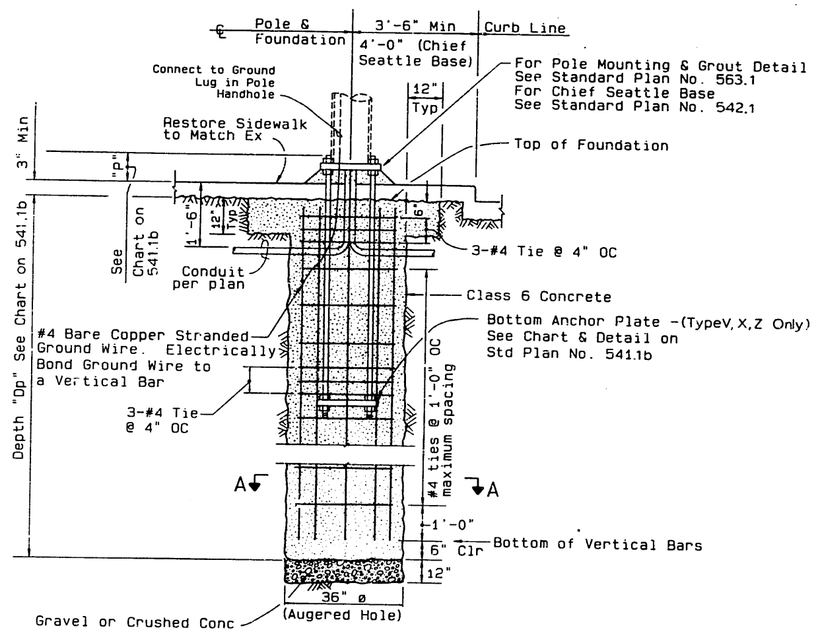


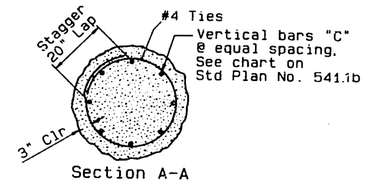
Signal Cable Splice

Ref. Std. Spec. Sec. 8-31

No Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 19 71 Gary Larkin CHAIRMAN ATTEST: Barbara L. Hahn EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Detector / Loop Lead-in & Signal Cable Wire Splice





Section A-A

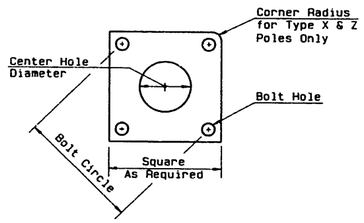
Strain Pole Foundation in Sidewalk

No Scale

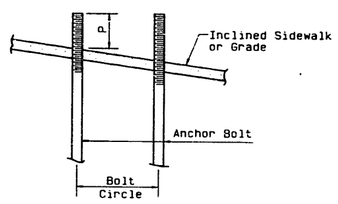
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 19 71 Gary Larkin CHAIRMAN ATTEST: Barbara L. Hahn EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Strain Pole Foundation Detail

Foundation Details											
Pole Type	Projection P	Projection P * (Chief Seattle Base)	Vertical Reinforcing "C"	Depth "D_p" (Lateral Bearing) 1000#/SF/FT	Depth "D_p" (Lateral Bearing) 1500#/SF/FT	Anchor Bolts (Total 4 Per Pole)	Bottom Anchor Plate Dimensions Size	Bolt Circle Dia	Bolt Hole	Center Hole	Corner Radius
T	7½"	8"	8 #7	8'-0"	7'-6"	1½" Dia x 54" x 6"		14½"			-
V	9"	9"	8 #8	9'-6"	8'-6"	1¾" Dia x 72"	½" x 16½" x 16½"	18"	1 15/16"	10"	-
X	10"	10"	12 #8	12'-6"	10'-6"	2" Dia x 72"	½" x 18½" x 18½"	20"	2 3/16"	11"	2"
Z	11½"	11½"	12 #8	15'-0"	13'-0"	2½" Dia x 72"	½" x 20½" x 20½"	22"	2 11/16"	12"	2½"

* See Std Plan 542.1



Bottom Anchor Plate



Inclined Condition
No Scale

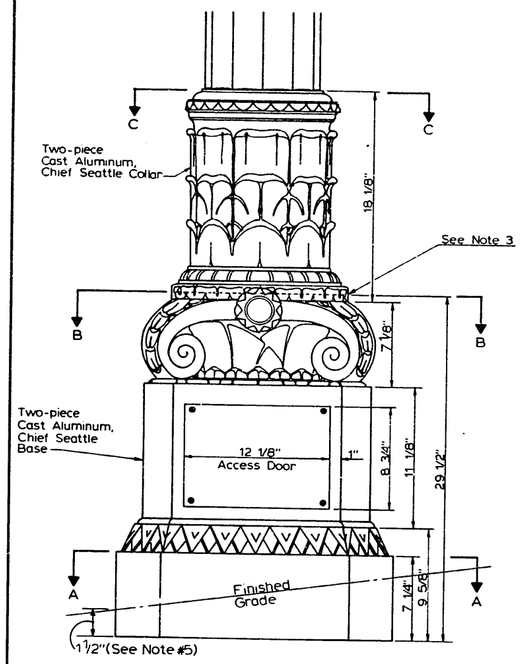
Pole Foundation Notes

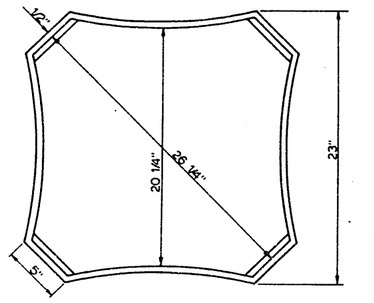
Unless Otherwise Noted:

See Section 8-32, 9-33 of Standard Specifications.

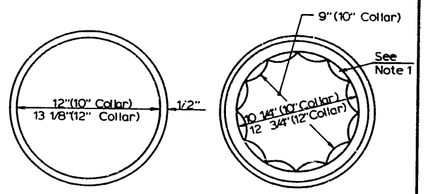
1. Concrete strength shall be Class 6(1½) f'c = 3000 PSI @ 28 days.
2. Anchor bolts for Type V, X, Z: ASTM A354 Grade BC or A687.
   Anchor bolts for Type T : ASTM A576 (Type 1040 or 1045)
   Fy = 55 KSI min., ASTM A675 Grade 90 or ASTM A36 Mod Fy = 55 KSI.
   Nuts: ASTM A563 heavy hex Grade DH. Hardened steel washers: ASTM F436.
3. Bottom anchor plate: ASTM A36. Hot Dip Galvanized.
4. Vertical reinforcing bar and ties shall be ASTM Class A615, Grade 60.
5. Grout shall be premixed, non-shrink, and non-metallic.
6. Anchor bolts shall be hot dip galvanized ASTM A153 including nuts & washers (full length) with a minimum of 18" of threads on top & 12" on bottom. (Type V, X, Z only)
7. Lateral bearing is based on the soil classification used in the 1988 Uniform Building Code under Table 29-B.
8. Tape the top of anchor bolts with corrosion protection tape per Specifications Section 8-32, 3 (2) A prior to pouring concrete.

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Strain Pole Foundation Details
7/1-1991 Gary Locke CHAIRMAN ATTEST: Barbara L. Tate EXEC SECRETARY	DEPARTMENT OF ENGINEERING	





Section A-A
Plan View (Bottom)



Section B-B
Plan View (Top)

Section C-C
Plan View

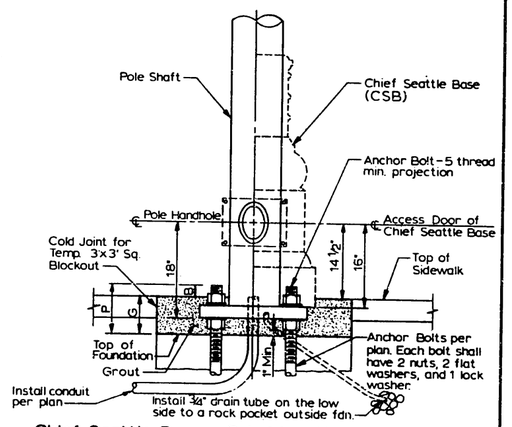
Notes:

1. For poles greater than 9½" but not more than 10" O.D. at the base a 10" collar shall be used & the flutes on the top of the two piece collar (on the Chief Seattle Base) may have to be ground off to allow a snug fit against the pole.
2. For poles greater than 10" but not more than 12½" O.D. at the base, a 12" collar shall be used.
3. For poles in excess of 12½" but not more than 13" O.D. at the base the two piece collar (on the Chief Seattle Base) shall not be used. Some grinding may be required to allow the two piece cast base to fit snugly around the pole.
4. See Std. Plan No. 542b for light pole foundation details and Std. Plan No. 541a & 541b for strain pole foundation details
5. Base shall be embedded 1½" at low point of sidewalk grade

B+G=P

Pole Type	B	G	P
T	1½"	6½"	8"
V	2½"	6½"	9"
X	3"	7"	10"
* Z	0"	11½"	11½"

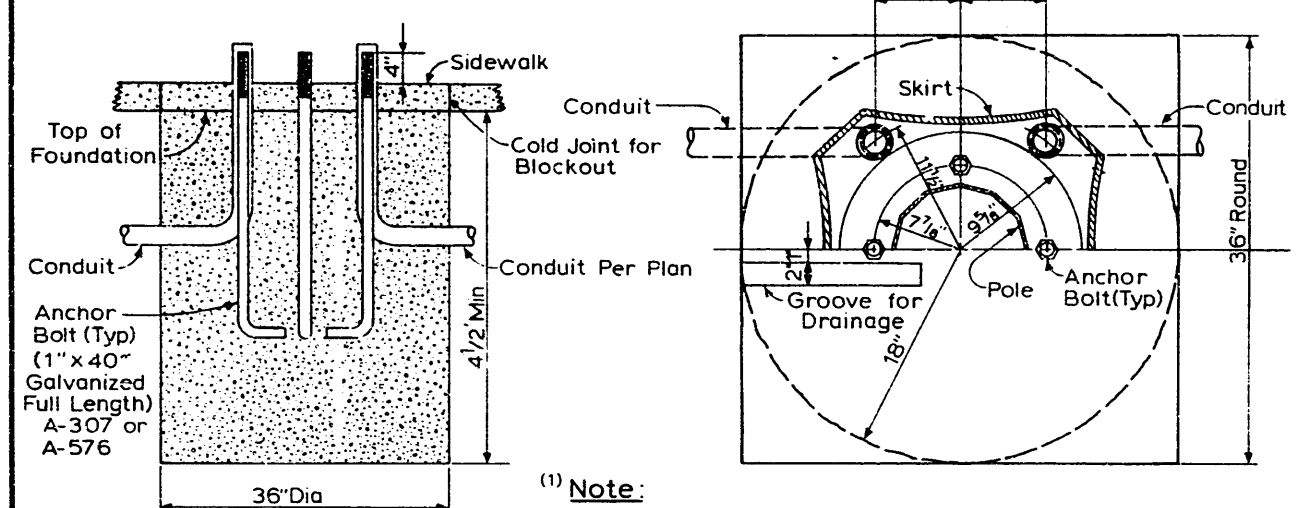
* CSB will not fit over anchor bolt nuts, therefore bolts must be set below sidewalk



Chief Seattle Base -- Pole Mounting & Grout Detail
Not To Scale

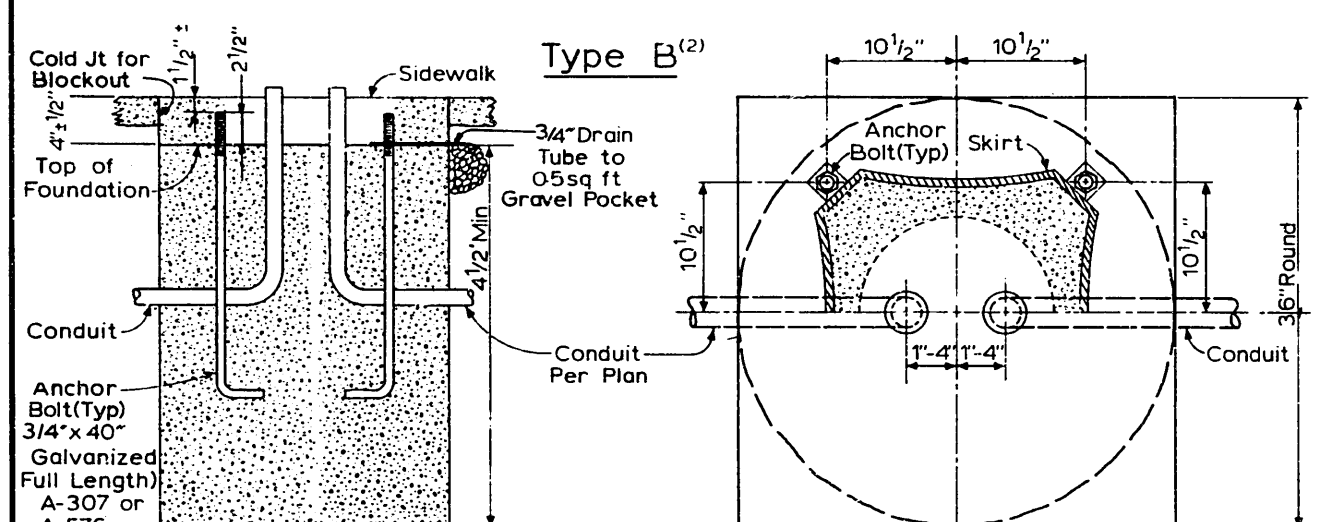
APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Chief Seattle Base
7/1-1991 Gary Locke CHAIRMAN ATTEST: Barbara L. Tate EXEC SECRETARY	DEPARTMENT OF ENGINEERING	

Type A[(1)]



(1) Note:
Bolt Pattern must be Diamond Shape to Curb. Conduit is outside Bolt Circle.

Type B[(2)]

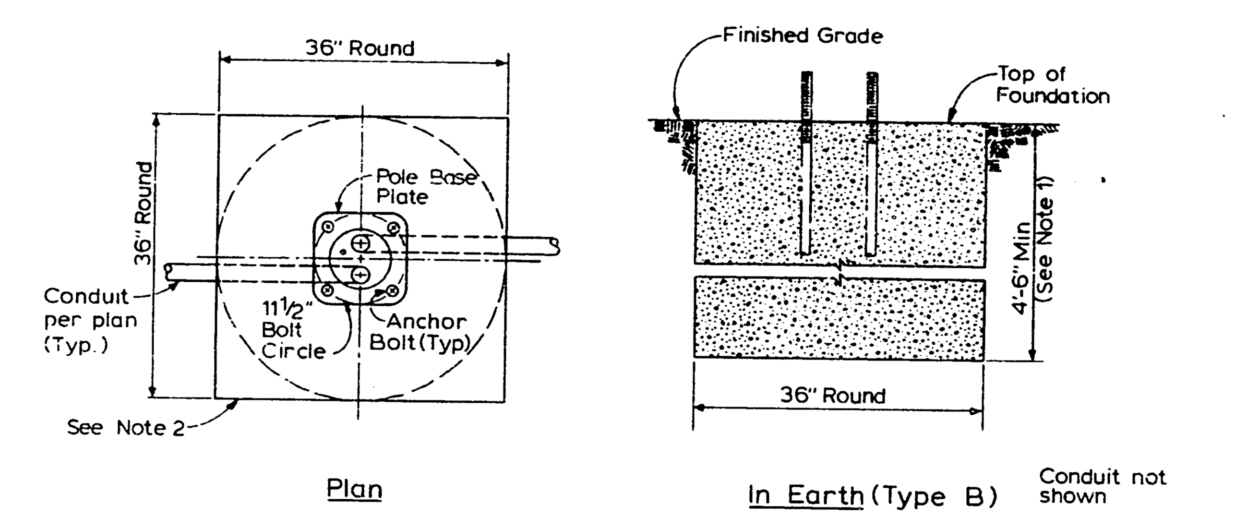


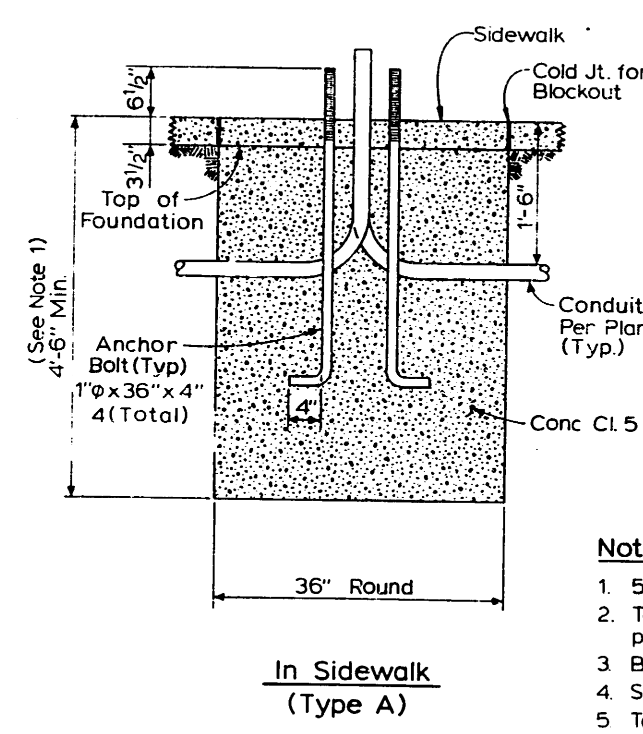
(2) Note:
To be used for Concrete Filled Pole. Bolts are Parallel to Curb. Conduit is inside Bolt Circle.

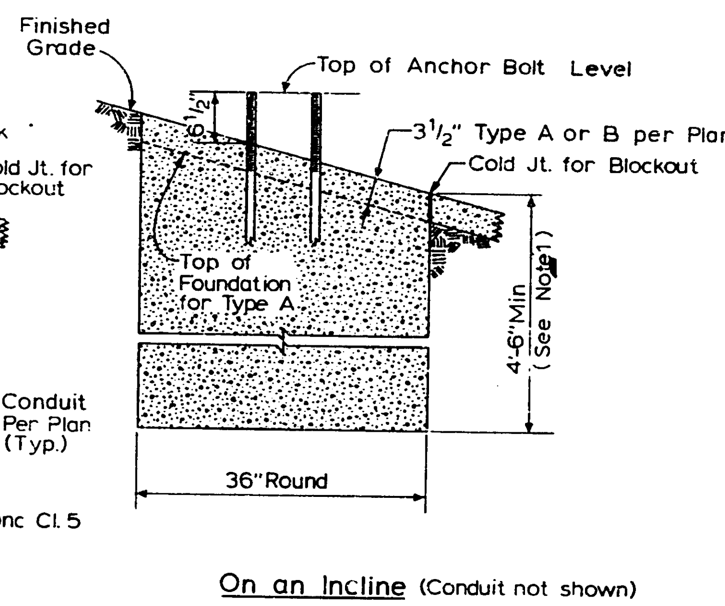
Notes:
1. For Type "A" Foundations align the Bronze Base Access Cover on the same side with The Pole Handhole, and Conduits.
2. Tape Top of Anchor Bolts with Corrosion Protection Tape per Specs.
3. For Type "A" Poles, The top 3 1/2" shall be formed into a Square and poured prior to setting Poles.
4. For Type "B" Poles, The top 5 1/2" shall be formed into a Square and Poured after setting the Pole.

Ref Std Spec Sec 8-32

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 19 71 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Chief Seattle Ornamental Street Light Foundation







Notes:
1. 5' where located on fill or where slope is 3:1 or steeper.
2. Top 3 1/2" to be formed into a 36" square blockout and poured separately in Type A and in one piece in Type B.
3. Bolt Circle–11 1/2" Typ (Transformer base–15" Typ.)
4. See Std Plan No. 561 for Pole Mounting and Grout Detail.
5. Tape top of Anchor Bolts w/ corrosion protection tape per Specs 8-32.3(2)A
6. See Std Plan 572.1 for Steel Light Pole Detail and City Light Std. Plan 5739.8 for Aluminum Light Pole Detail.
7. Anchor bolts shall be hot dipped galvanized (ASTM A153) full length and fabricated from ASTM A307 or A 576.

Ref Std Spec Sec 8-30

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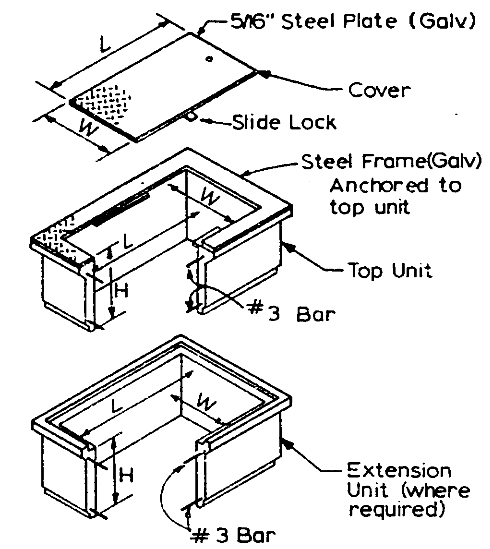
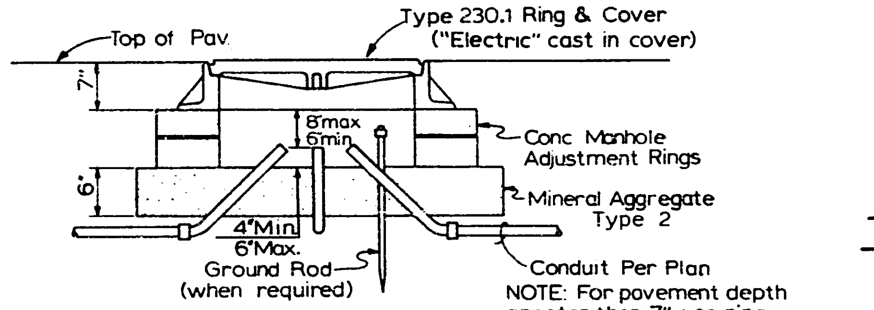
Handhole Schedule

HANDHOLE Type	TOP UNIT Inside Dimensions L W H	EXTENSION UNIT (E) H	LID Dimensions L	LID Dimensions W
1	19" 14" 12"	12"	17¾"	13"
2	28" 17" 12"	12"	26⅝"	17⅛"
3	36" 24" 12"	12"	38½"	26"
4	24" Diameter	NA		
5	36" 24" 30"	NA		
GRHH	8" Diameter	NA		

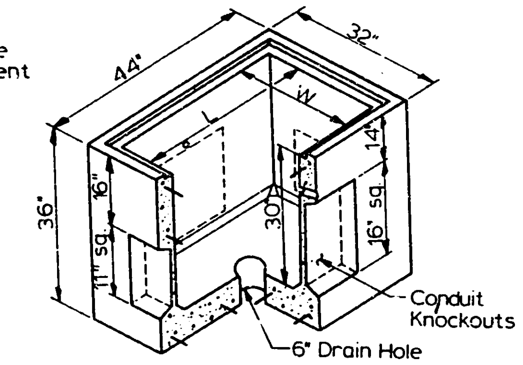


Type 1 & 2 Handhole with Extension
No Scale

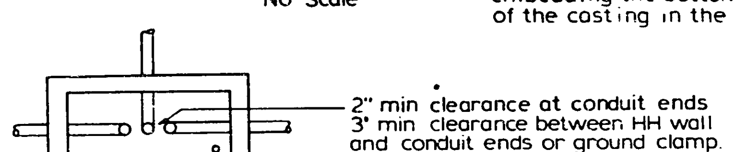


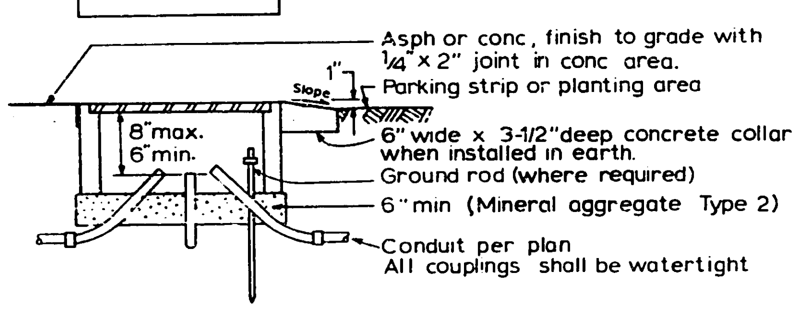
Type 4 Handhole Traffic Bearing
No Scale

NOTE: For pavement depth greater than 7", use ring extensions - Standard Plan No. 231.1 - to bring the cover up to the level of the finished pavement without embedding the bottom flange of the casting in the pavement

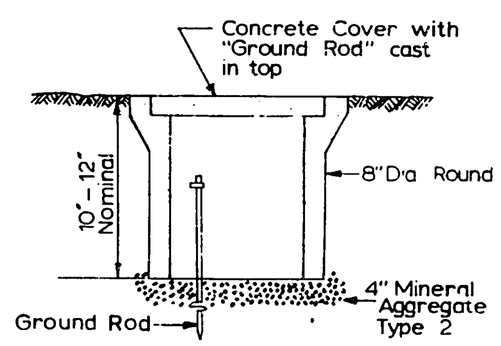


Type 5 Handhole
No Scale
Cover Same as Type 1,2 & 3





Handhole Installation Detail



Ground Rod Handhole (GRHH)

Notes:

1. The cover shall have 1/16" to ⅛" clearance on each edge within the frame after galvanizing.
2. The ground rod shall extend a minimum of 3" above the bottom of the handhole a maximum of 6".
3. Type 1,2,3, and 5 handhole covers shall have "TC" or "SL" on them, as appropriate.
4. Type 4 handhole shall be installed in roadways, parking lots, etc.
5. A 4'-#8 braided copper wire shall be secured to the handhole lid & frame with a 4' length from frame that can be hooked up to a ground rod.
6. Bundle cable in handholes to provide orderly grouping of cables.

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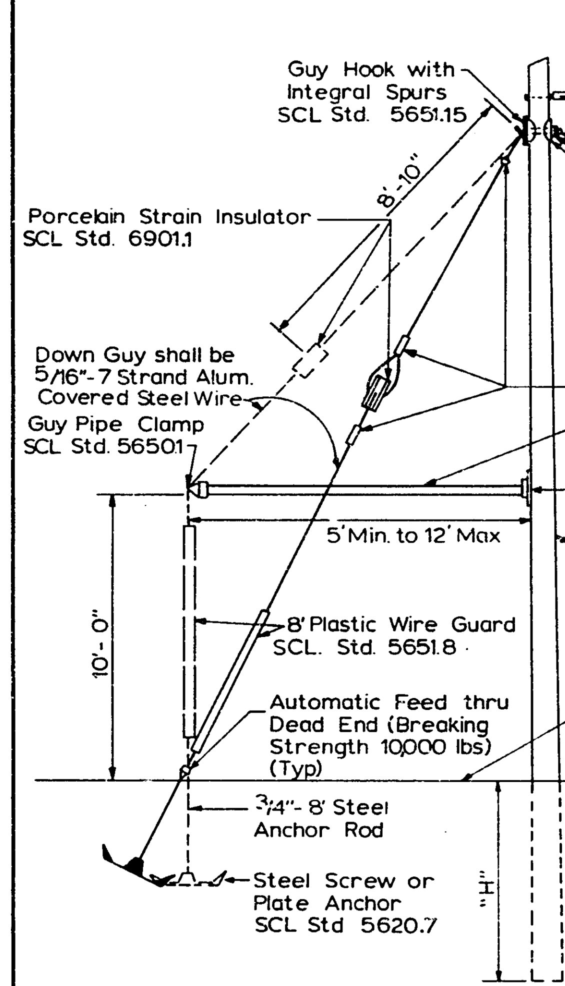
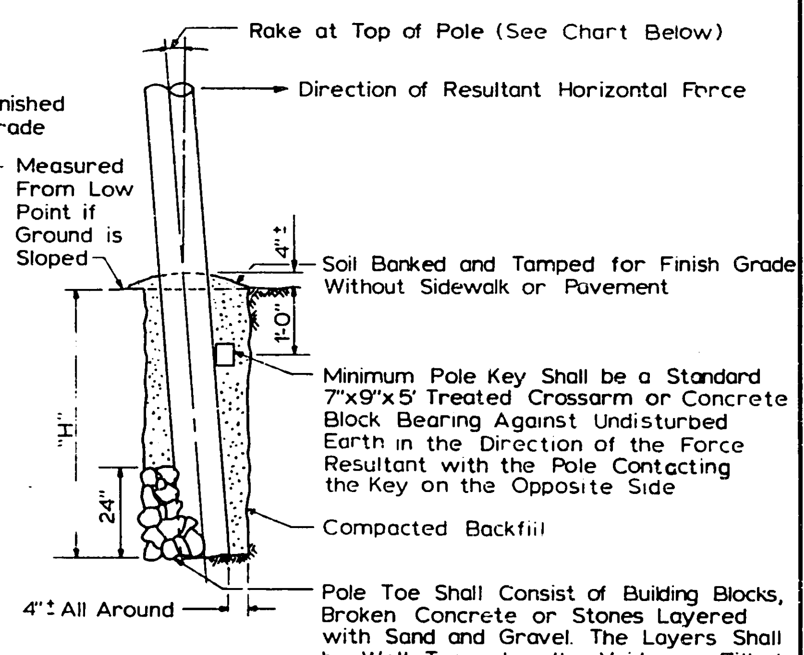


Wood Pole Down and Sidewalk Guy

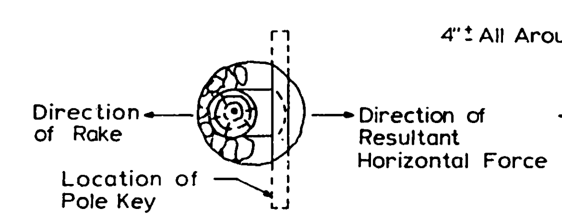
Length of Pole	"H"
20' & 25'	5'-0"
30'	5'-6"
35' & 40'	6'-0"

Poles Shall be Marked (Branded) by Manufacturer with the Following Information:

1. Class
2. Length
3. Manufacturer
4. Type of Preservative



Elevation



Plan

Wood Pole Keying Standard

Rake Schedule	
Length Ft.	Rake in Inches
30	18
35	20
40	22

Ref. Std. Spec. Sec. 8-32.3(1)C and 9.33.4

Do Not Scale

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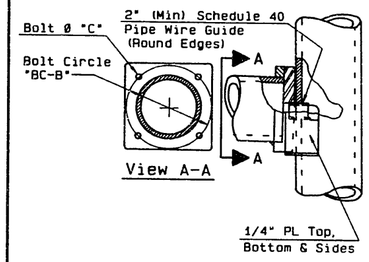
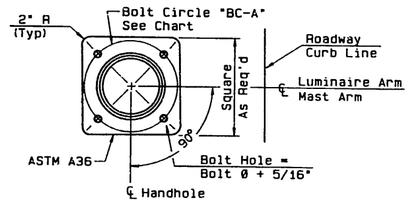
Mast Arm Length	"BC-A"	"BC-B"	Bolt Ø "C"
15'-30'	14-1/2"	11"	1"-8NC
31'-40'	16-1/2"	12"	1-1/4"-7NC
41'-45'	18"	13-1/8"	1-1/4"-7NC

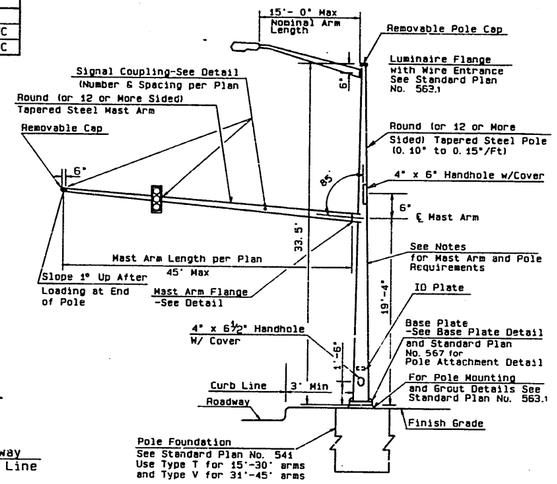


View A-A

Mast Arm Flange Detail

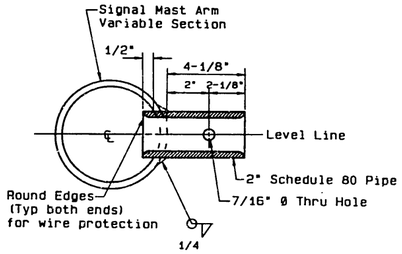


Base Plate Detail



Mast Arm Pole

No Scale



Signal Coupling Detail

Coupling to be fabricated & installed before galvanizing.

Ref Std Spec Sec 8-32, 9-33

Notes:

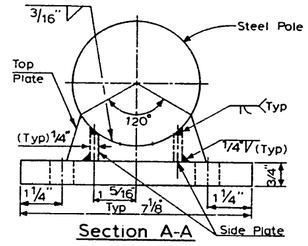
Pole and mast arm design shall conform to "AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals" (latest edition).

Each signal coupling location shall support the following:
- for 3 section signal head - wind load area = 9 Sq. Ft. design weight = 60 Lbs.
- for 4 section signal head - wind load area = 12 Sq. Ft. design weight = 80 Lbs.

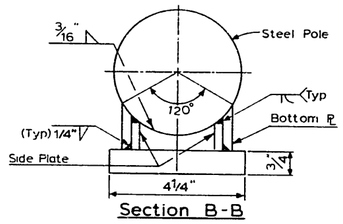
The pole shall be designed for a luminaire mounted at a nominal 35' mounting height with a wind load area of 3.2 Sq. Ft. and a design weight of 75 Lbs. Any proposed sign shall be accomodated in the pole design per plan. For luminaire arm design, see Standard Plan No. 572. Mast arm and luminaire arm flange plates shall have ASTM A325 bolts w/lockwashers.
Pole shaft and mast arm shall be fabricated from the following: ASTM A572 Grade 50, 60 or 65 or ASTM A595 Grade A or B.

Anchor bolts shall be 1½"x 54" x 6" for 15'-30' Mast arms and 1¾"x 60" x6" for 31'-45' mast arms. (Fy = 55ksi min.) All plates & handhole reinforcing rim shall be fabricated from ASTM A36

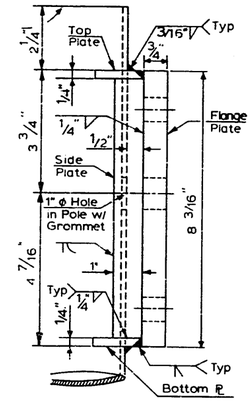
APPROVED BY THE BOARD OF PUBLIC WORKS 7/2 1971 Chas Carlson CHAIRMAN ATTEST: Barbara J. Yates EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Steel Mast Arm Pole



Section A-A

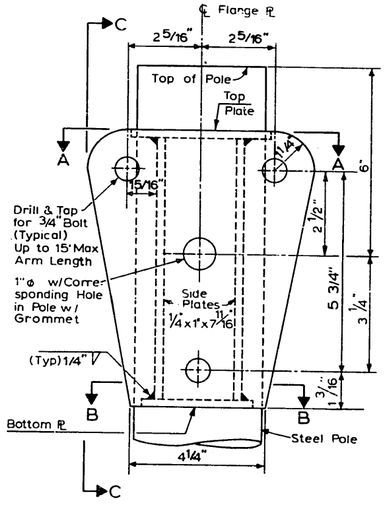


Section B-B

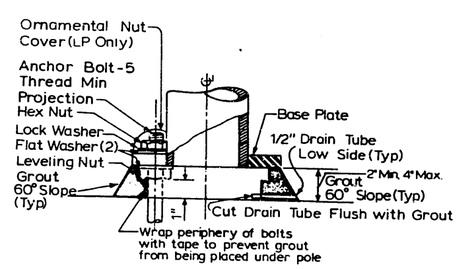


Section C-C

Structural Carbon Steel Plates shall be ASTM A36



Luminaire Flange Plate on Pole

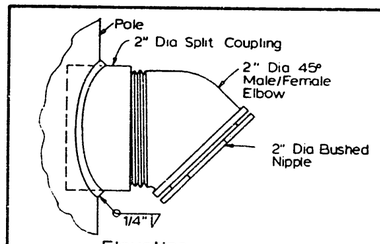


Pole Mounting and Grout Detail

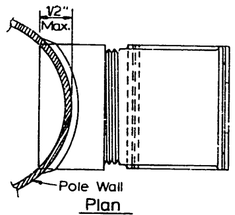
(Except for poles w/Chief Seattle Base)

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/2 1971 Chas Carlson CHAIRMAN ATTEST: Barbara J. Yates EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Miscellaneous Steel Pole Details

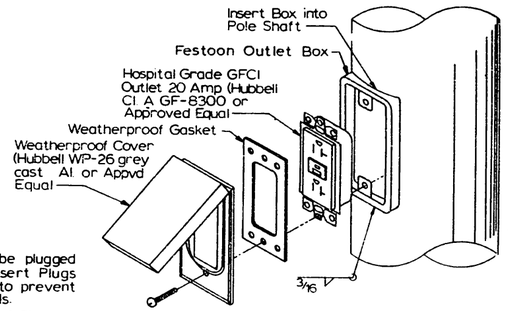


Elevation



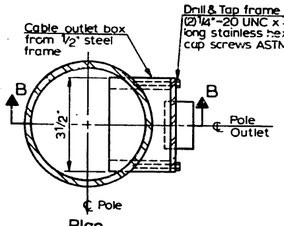
Plan

Notes:
1 All Outlets shall be plugged with Threaded Insert Plugs during shipment to prevent damage to threads.
2 Remove Burrs and Sharp Edges to prevent damage to Electrical Cable.
3 Split Coupling shall Extend into the Pole a Maximum of 1/2" as shown.

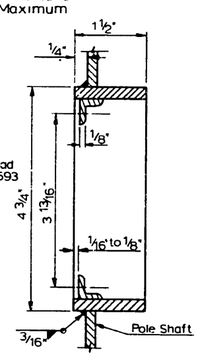


Festoon Outlet Detail
(Metal Poles)

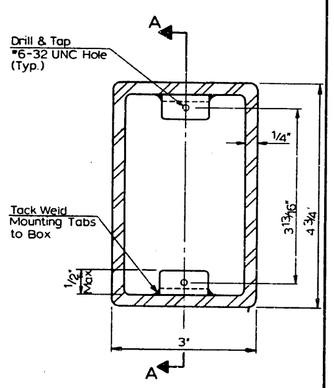
Cable Outlet Detail



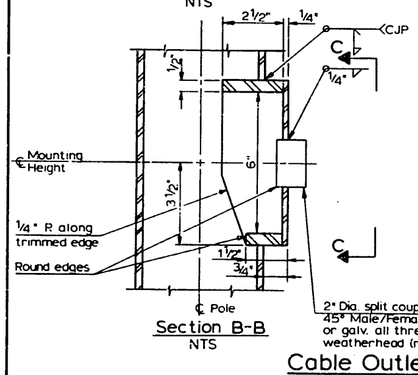
Plan
NTS



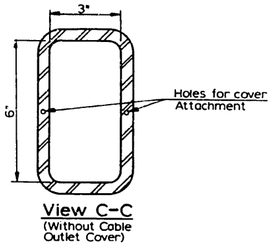
Section A-A



Festoon Outlet Box



Section B-B
NTS



View C-C
(Without Cable Outlet Cover)

Note:
Remove burrs and sharp edges to prevent damage to electrical cable

Cable Outlet Detail
(Alternate)

Do Not Scale

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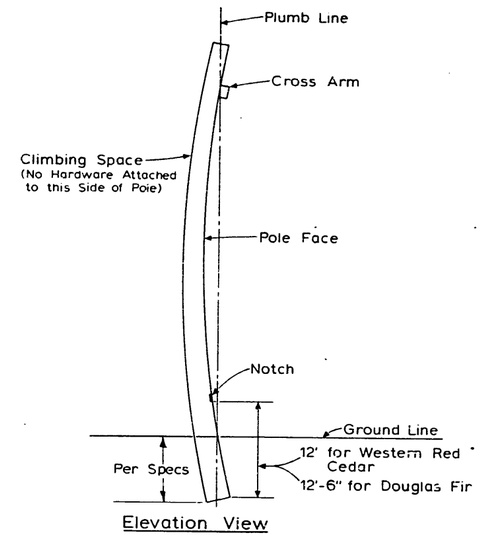
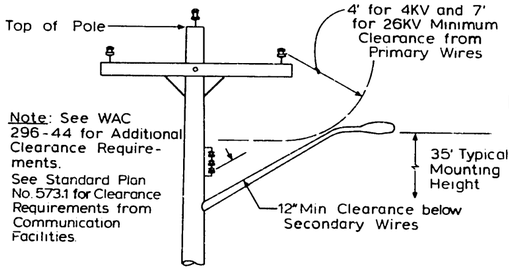


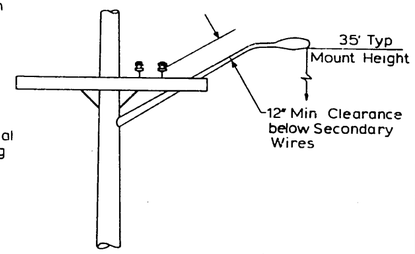
Elevation View

Notes
1. When New Poles are installed Along a Roadway, the Face Shall be Parallel with the Roadway on the Downstream Side of Traffic (See Std Plan 581)
2. Where there is an Existing Riser on the Pole, all New Risers shall be on Stand-off Brackets and the Utility Notified to Relocate the Existing Riser
3. Poles shall be installed so as to be plumb after loading

Wood Pole Installation



Primary Wires



Secondary Wires

Ref. Std. Spec. Sec. 8-32

Clearances From Utility Wires

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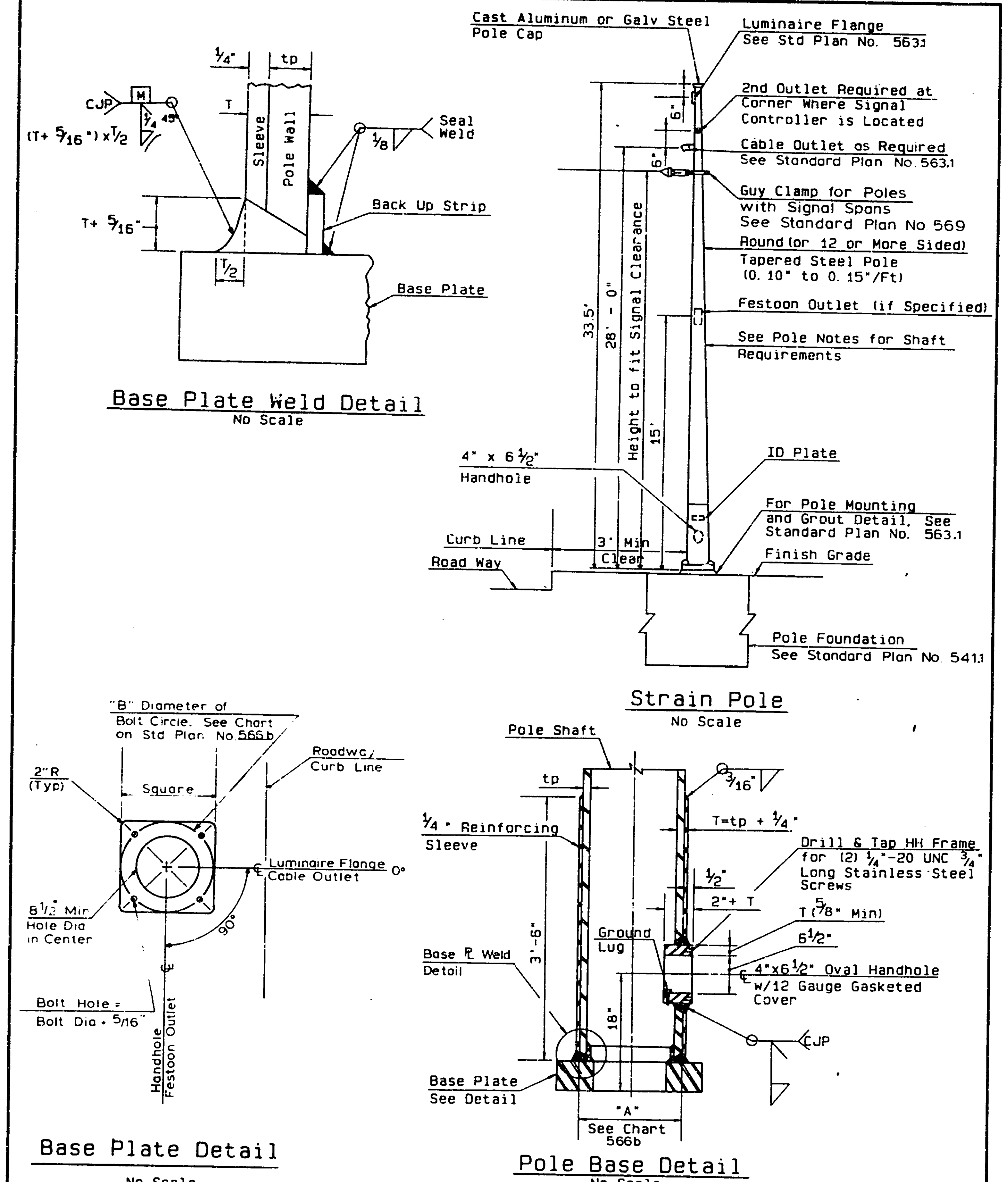


APPROVED BY THE BOARD OF PUBLIC WORKS 7/1/1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Combined Use Metro Strain Pole Details (Type V,X,Z Poles)

Pole Type	Dead Load Moment K-Ft (at Ground Line)	Pole Details				
		Ground Line Dia. "A"	Base Plate Size	Bolt Circle Dia. "B"	Bolt Hole	Anchor Bolts
V	51	12" ± ½"	1 ¾" x 18" x 18"	18"	2 1/16"	1 ¾" Dia. x 72"
X	93	13" ± 1"	2 ¼" x 20" x 20"	20"	2 5/16"	2" Dia. x 72"
Z	164	14" ± 1"	2 ¾" x 23" x 23"	22"	2 13/16"	2 ½" Dia. x 72"

Pole Notes

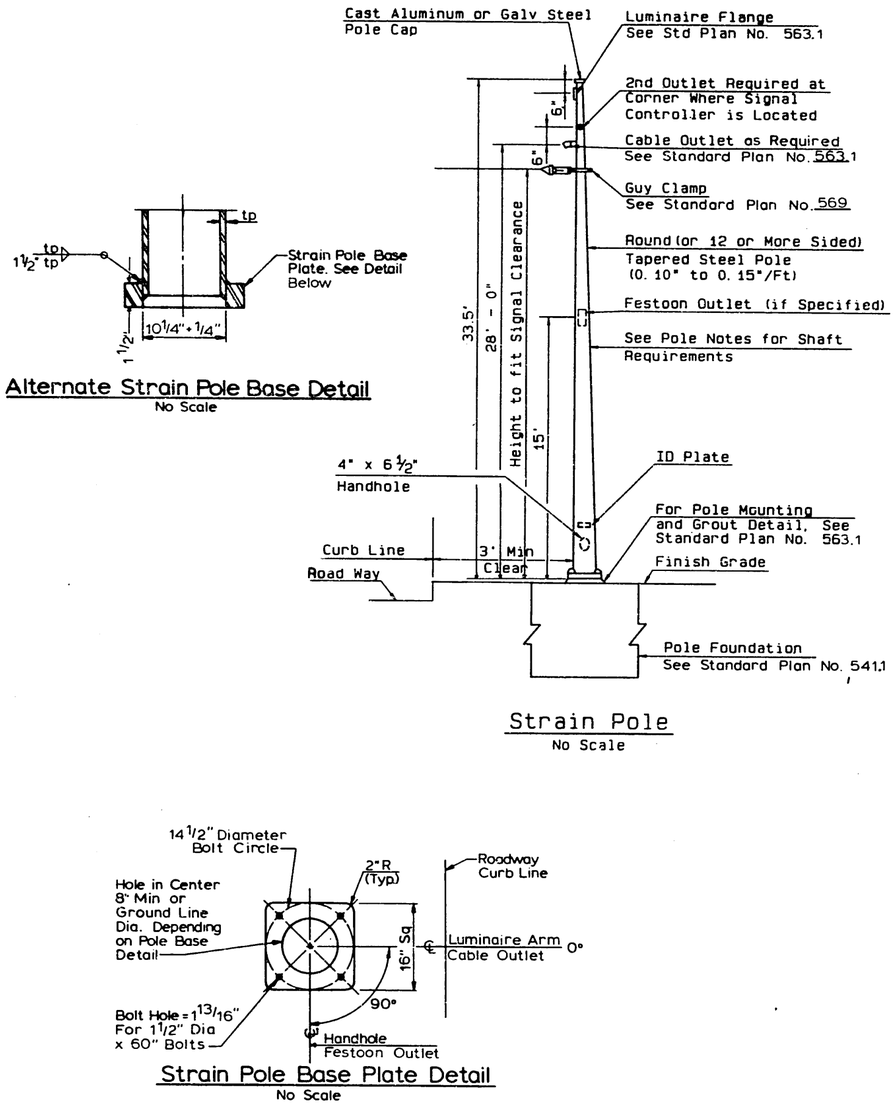
Unless Otherwise Noted:

See Section 8-32, 9-33 of Standard Specifications.

1. The yield moment shall be 2x the dead load moment. The ultimate plastic moment shall be 2.5 x the dead load moment.
2. Pole shaft and reinforcing sleeve. ASTM A572 Grade 50, 60 or 65 (Fy = 50, 60 or 65 KSI respectively), or ASTM A595 Grade A or B (Fy = 55 or 60 KSI respectively).
3. Base Plate and handhole reinforcing rim: ASTM A36 or ASTM A572 Grade 42. Base Plate Fy ≥ 0.65 pole shaft Fy. The base plate thickness may be reduced by ¼" if ASTM A572 Grade 42 steel is used.
4. Reinforcing sleeve shall be fabricated from the same material type and yield strength as the pole shaft.
5. Pole shafts shall have no more than two longitudinal welds in each ply.
6. Minimum shaft wall thickness of each ply shall be 0.239". (3 gauge) Pole shall have a maximum of two plys not including the ¼" reinforcing sleeve.
7. Maximum silicon content in steel shall be 0.04%. See Section 9-33.1(3) of the Standard Specifications for general galvanizing reqirements.
8. Pole diameter for 12 or more sided poles shall be measured from the flat to flat dimension.
9. Poles shall meet deflection criteria stated in Specification, Section 9-33.2(2) with the dead load applied at 25' above groundline.
10. All welding and steel shall be in accordance with ANSI/AWS D1.1-88 Structural Welding Code - Steel, Section 10 Tubular Structures.

APPROVED BY THE BOARD OF PUBLIC WORKS 7/1/1991 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Combined Use Metro Strain Pole Details (Type V,X,Z Poles)

Standard Plan No. 567a



Alternate Strain Pole Base Detail
No Scale

Strain Pole
No Scale

Strain Pole Base Plate Detail
No Scale

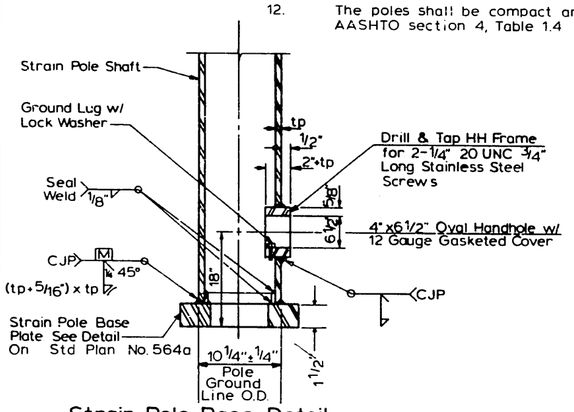
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 19 97 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type T Strain Pole Details Traffic Signal Only

Standard Plan No. 567b

Pole Notes

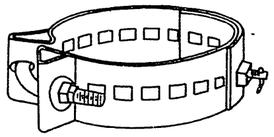
Unless Otherwise Noted:

1. See Section 8-32, 9-33 of Standard Specifications.
2. The dead load moment at the groudline shall be 40 Kip-ft. The yield moment shall be 2 x dead load moment.
3. Pole strength shall meet requirements of AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. (most current edition)
4. Pole shaft: ASTM A572 Grade 50, 60, or 65 (Fy=50, 60, or 65 KSI respectively), or ASTM A595 Grade A or B (Fy=55 or 60 KSI respectively).
5. Base Plate and handhole reinforcing rim: ASTM A36 or ASTM A572 Grade 42. Base plate Fy ≥ 0.65 pole shaft Fy. The base plate thickness may be reduced by 1/4" if ASTM A572 Grade 42 steel is used.
6. Pole shafts shall have no more than 2 longitudinal welds in each ply.
7. Minimum shaft wall thickness of each ply shall be 0.239" (3 gauge). The pole shall have a maximum of 2 plys.
8. Maximum silicon content in steel shall be 0.04%. See Section 9-33.1(3) of the Standard Specifications for general galvanizing requirements.
9. Pole diameter for 12 or more sided poles shall be measured from the flat to flat dimension.
10. Poles shall meet deflection criteria stated in the Standard Specifications Section 9-33.2(2) with the dead load applied at 27' above groundline.
11. All steel and welding shall be in accordance with ANSI/AWS D1.1 (most current edition) Structural Welding Code-- Steel. See Section 10 Tubular Structures.
12. The poles shall be compact and must meet requirements in AASHTO section 4, Table 1.4 1B (1).



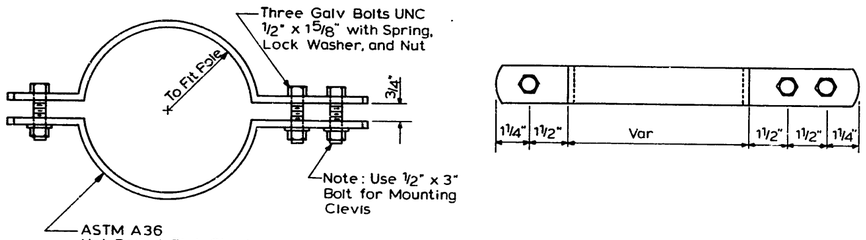
Strain Pole Base Detail
No Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 19 97 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Type T Strain Pole Details Traffic Signal Only

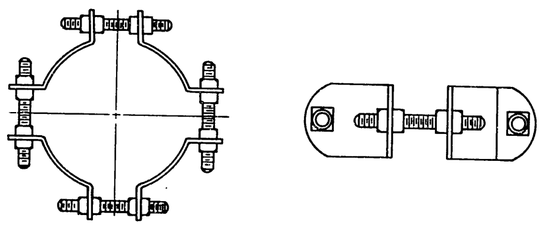


- Joslyn, Universal Pole Band #J6270, #J6280
- Chance, Heavy Style Pole Band #6276, #6277
- Or Equivalent

Adjustable 1-Way Guy Clamp



1 - Way Guy Clamp

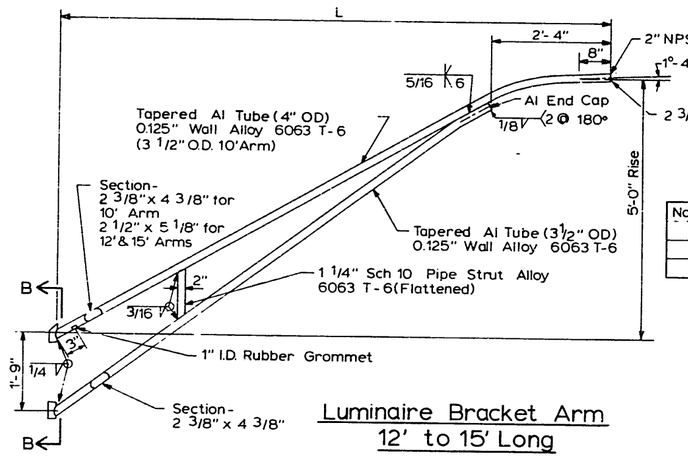


Joslyn Heavy Pole Band #J6643
or Equivalent

Adjustable 4 - Way Guy Clamp

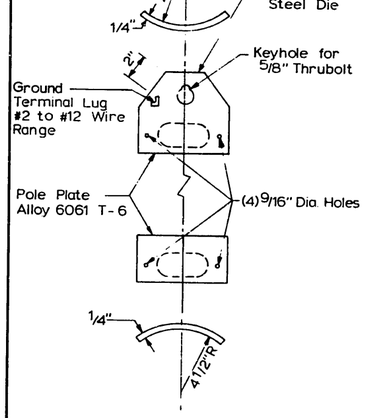
NTS

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1971 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Guy Clamps



Nominal Arm Length	L
12'	11' - 6"
15'	14' - 6"

Luminaire Bracket Arm 12' to 15' Long



Section B-B

Notes:

1. Brackets Shall be Designed and Manufactured per 1975 AASHTO to Support a Maximum Luminaire of 50 lbs, 1.2 ft² EPA for a Maximum 80 mph Wind and a Coefficient of Height of 1.10.
2. Tubing Used for Arm Members Shall be Seamless, Strut Shall be per ASTM B429.
3. Brackets Shall be Heat Treated After Welding.
4. Luminaire Support Brackets, for Wood Pole Mounting Shall Meet the Applicable Requirements of EEI-NEMA-TDJ-135 Standards for Street Lighting Poles, and TDJ-139 Standards for Materials, Finishes and Performance Tests for Equipment, and Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. (AASHTO)
5. Low Rise (LR) Bracket Arms Shall be Constructed per This Detail with the Revisions Noted Below. Low Rise Bracket Arms Shall be Utilized Only When Specifically Called for on the Plans.

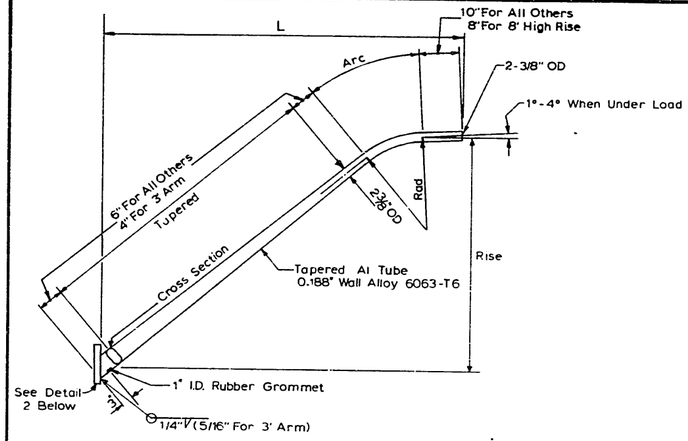
Nominal Length	Member Size		Rise
	Upper Tube	Lower Tube	
12' LR	3 1/2"	1 1/2"	3'- 3"
15' LR	4"	2"	3'- 3"

Ref. Std. Spec. Sec. 8-30

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1971 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Luminaire Bracket Arm 12' & 15' (Wood Pole Mount)

Standard Plan No. 571



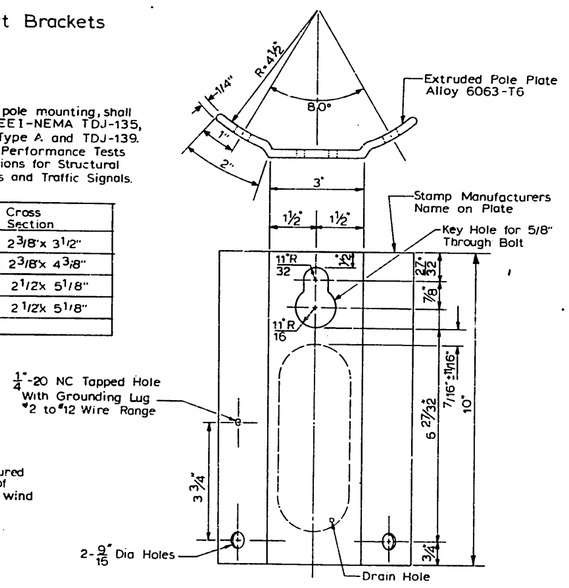
Luminaire Support Brackets

Note:

1. Luminaire Support Brackets, for wood pole mounting, shall meet the applicable requirements of EEI-NEMA TDJ-135, Standards for Street Lighting Poles, Type A. and TDJ-139. Standards for Materials, Finishes and Performance Tests for Equipment and Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals. (A.A.S.H.T.O.)

Nominal Arm Length	L	Rise	Rad	OD	Cross Section
3'	3'-2.5"	1'-0"	1'-0"	3"	2 3/8" x 3 1/2"
6'	5'-6"	2'-6"	2'-0"	3 1/2"	2 3/8" x 4 3/8"
8' (Low Rise)	7'-6"	2'-6"	2'-0"	4"	2 1/2" x 5 1/8"
8' (High Rise)	7'-6"	5'-0"	2'-0"	4"	2 1/2" x 5 1/8"

2. 8' Low Rise Arms shall be utilized only when specifically called out on the plan.
3. All Tubing used for Arm Members shall be Seamless.
4. The Bracket shall be Heat Treated to temper after welding.
5. Brackets shall be Designed and Manufactured per A.A.S.H.T.O. to support a Luminaire of 50 lbs., a 1.2 Ft^2 EPA for a 80 M.P.H. wind and a coefficient of height of 1.10.



Extruded Pole Plate

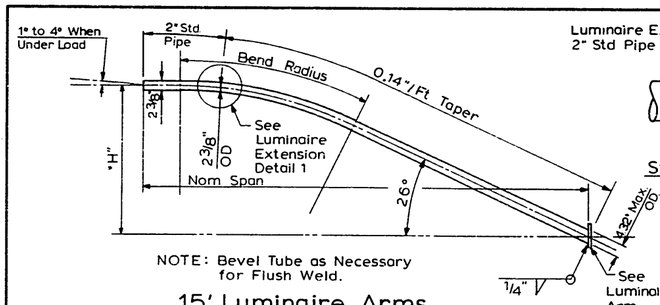
Detail 2

Bracket Arm Length: 3', 6', 8'

Ref. Std. Spec. Sec. 8-30.

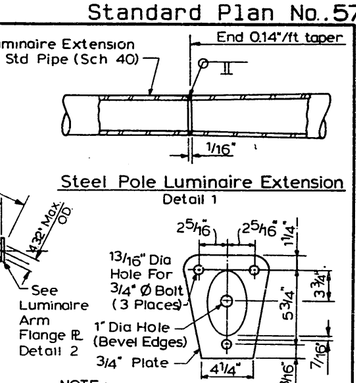
APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Luminaire Bracket Arm
19 CHAIRMAN ATTEST: EXEC SECRETARY	DEPARTMENT OF ENGINEERING	(Wood Pole Mount)

Standard Plan No. 572.1



NOTE: Bevel Tube as Necessary for Flush Weld.

15' Luminaire Arms



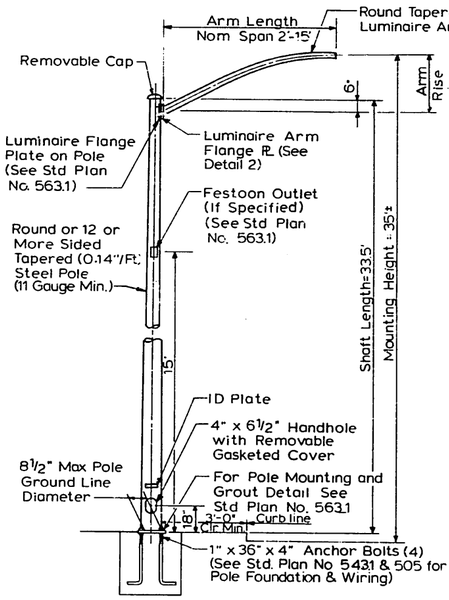
Steel Pole Luminaire Extension

Detail 1

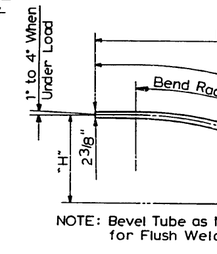
NOTE:
Flange dimensions and hole locations must match those on pole flange plate. (See Std. Plan No. 563.1)

Luminaire Arm Flange Pl.

Detail 2



Steel Street Light Pole



NOTE: Bevel Tube as Necessary for Flush Weld

2' Thru 12' Luminaire Arms

Nom. Span	H*	Bend Radius	Tube Requirement
2'	5 1/4"	—	2" Std. Pipe
4'	12"	6'	11 Gauge
6'	18"	9'	11 Gauge
8'	24"	13'	11 Gauge
10'	30"	15'	11 Gauge
12'	33"	17'	11 Gauge
15'	36"	17	11 Gauge

MATERIAL SPECIFICATION

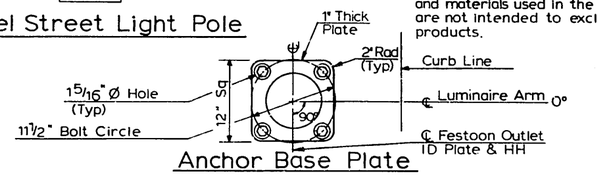
Plate and Shapes ASTM A36

Pole Shafts ASTM A570 Gr 40 Min.

Anchor Bolts ASTM A307

Arm Flange Plate Bolt ASTM A325

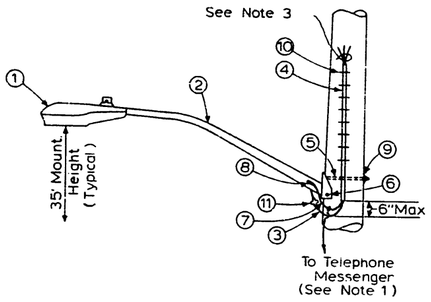
* These dimensions are only illustrative of the general outline and materials used in the construction of these arms and are not intended to exclude manufacturers standard products.



Anchor Base Plate

NTS

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Steel Street Lighting
7/12 19 21 CHAIRMAN ATTEST: EXEC SECRETARY	DEPARTMENT OF ENGINEERING	Pole With Bracket Arm



Item	Quant	Description	Size
1	1	Luminaire	Per Plan
2	1	Bracket, Aluminum	Per Plan
3	*	Wire, Copper (Pole & Bracket)**	#10**
4	*	Molding, Plastic	1/2"
5	1	Thru Bolt, Galvanized Machine	5/8"x *
6	2	Screws, Galvanized Lag, Fettered Drive, Pilot Point	1/2" x 4"
7	*	Wire, THWN #6 Awg Copper	#6
8	1	Grounding Lug Terminal	#12 to #2
9	1	Washer, Square, Curved	2 1/4" x 2 1/4"
10	*	Molding Staples 12" Max Spcs	3/4" x 2 3/4"
11	1	In-Line Fuse	Per Specs

* Length/Quantity As Required
** See Specs for allowable substitutions

Notes:

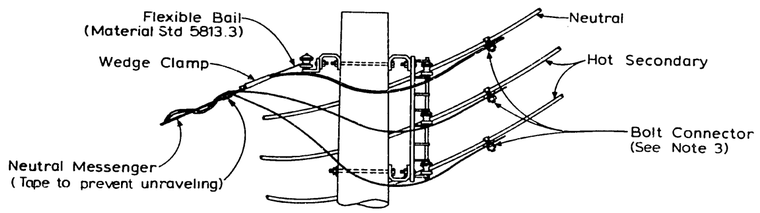
1 Ground the bracket arm to the telephone messenger (where present) if it has less than the following clearances:
- 20" above or 24" below telephone wires.
- 12" from telephone cables or terminal.
- 2" from telephone service.

2 Arm to be 90 degrees to curb unless otherwise noted on plan.

3. The actual service connection to existing power shall be made by others and the contractor shall coil 8' of wire attached to the pole at the service point. Use molding when the distance from the thru bolt to the service connection is over 12".

4. Bolt Projection on Item No.5 shall be no more than 3 Threads.

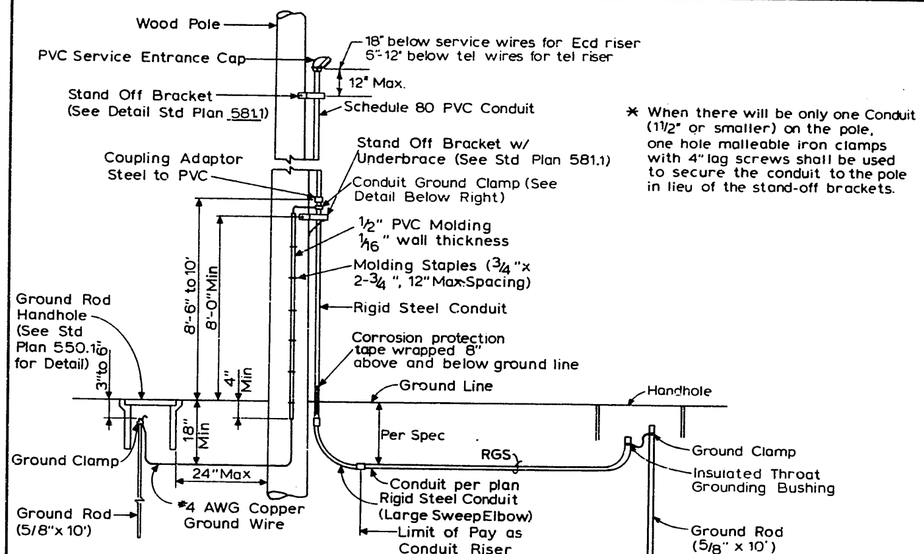
Luminaire and Bracket
(For Wood Poles Only)



Secondary Service Attachment

Ref Std Spec Sec 8-31

APPROVED BY THE BOARD OF PUBLIC WORKS 7/13 1971 CHAIRMAN ATTEST: SEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Luminaire & Bracket Secondary Wiring

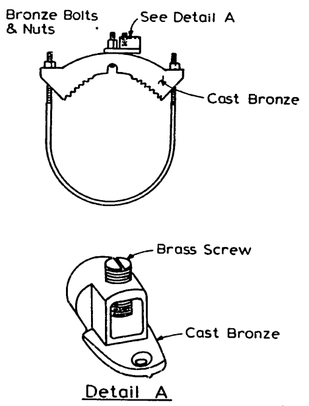


* When there will be only one Conduit (1 1/2" or smaller) on the pole, one hole malleable iron clamps with 4" lag screws shall be used to secure the conduit to the pole in lieu of the stand-off brackets.

Conduit Riser (with Stand-Off Bracket*)

Notes:

1. On poles with existing conduits, new conduits shall be installed in accordance with this specification.
2. Rigid steel conduit shall be grounded just below coupling, approximately 8' to 10' above ground, as shown.
3. When 2 or more rigid steel conduits are installed on one pole, one conduit shall be grounded as shown. The conduit supports & straps shall serve as a bonding device between the steel conduits.
4. The ground wire shall be one continuous length. Insert the ground wire from the bottom of the ground clamp & bend over the clamp before tightening.
5. Place ground wire in quadrant between pole face & secondary neutral. (Fig 5)
6. All steel hardware shall be hot dipped galvanized after fabrication per ASTM A123.
7. Conduit clamp spacing shall be per the NEC with a minimum of one clamp per 10' length of conduit.
8. Where PVC coated RGS conduit is specified it shall be stripped of PVC coating to install the grounding clamp, then touched up with approved PVC touch-up compound to cover all exposed metal.



Detail A

Conduit Ground Clamp Detail

NTS

Ref Std Spec Sec 8-33

APPROVED BY THE BOARD OF PUBLIC WORKS 7/13 1971 CHAIRMAN ATTEST: SEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Conduit Riser

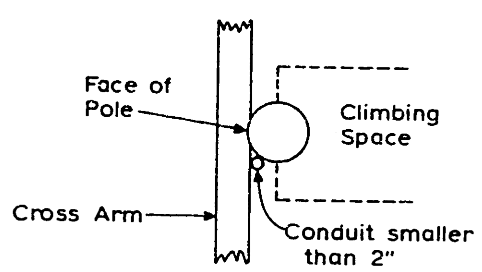


Figure 1

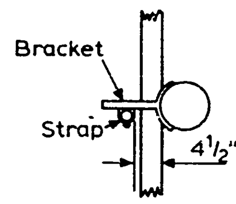


Figure 2

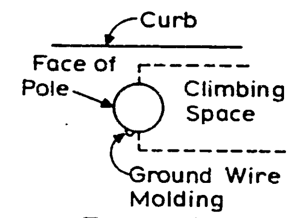


Figure 5

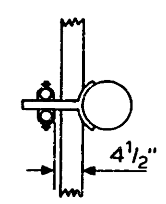


Figure 3

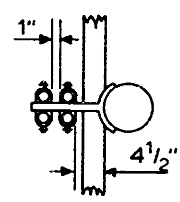


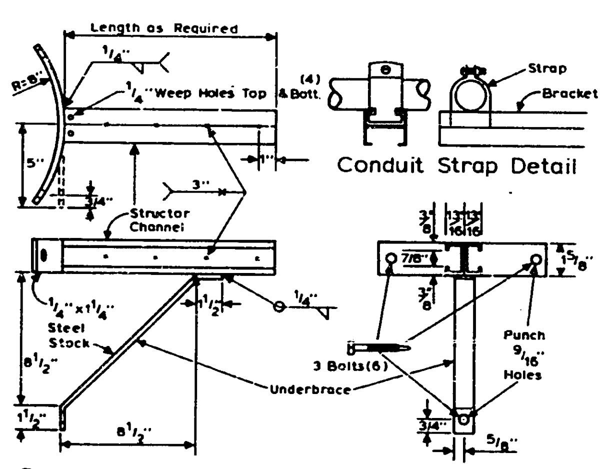
Figure 4

Notes:

1. A single Conduit smaller than 2" with conductors of less than 750 Volts potential may be placed directly on the pole in the crotch of the crossarm. See Figure 1 above.

Notes:

1. A single conduit 2" & larger or one with conductors of 750 volts or more, shall be spaced out from the pole face 4 1/2" & offset to give 1" clear space between the conduit & the center line of the pole lead. (Fig. 2)
2. When 2 conduits are installed, they shall be spaced out 4 1/2" from the face of pole & separate 2", providing a clear space of 1" on each side of ctr line of pole lead. (Fig. 3)
3. If more than 2 conduits are required they shall be installed as in Fig 4. If 2 voltages are involved, the higher voltage shall be placed next to the pole.



Bracket Notes:

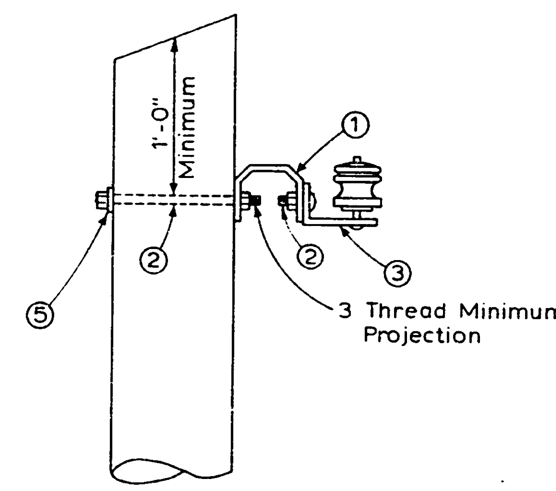
1. Bracket shall be of the configuration and dimensions shown, free of rough or uneven surface and edges.
2. Structor Channel shall be made of cold rolled steel strip, 14ga min, in accordance with ASTM A109.
3. Installation of bracket with brace shall be at the first or lower position only on pole. Use standard bracket without brace for conduit support the balance of the distance up pole.
4. Weep holes not req'd if a notch or gap is provided at the intersection of the channel and the pole mounting bracket.
5. "L" = 10 1/2", 1'-0 1/2" or 1'-6"
6. Bolts shall be 1/2" x 4" Pilot point Fetter drive.

Stand-off Bracket Detail

Ref. Std. Spec. Sec. 8-33.

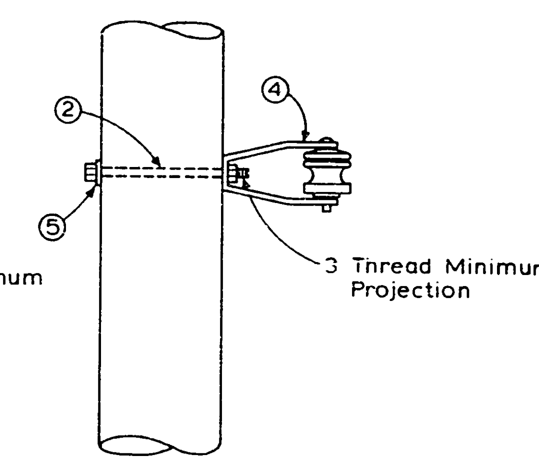
NTS

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 19 91 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Conduit Riser



Angle Type

(for Construction to Another Pole)



Clevis Type

(for Dead-End Construction)

Secondary Spool Insulator Bracket

Material List

Item	Quantity	Description	Size	City Light Material Standards Number
1	1	Bracket Extension		5805.1
2	2	Bolt, Galv. Machine & Nut	5/8" x *	7807.1
3	1	Bracket, Secondary Spool Insulation		6904.2
4	1	Clevis & Insulation		6904.1
5	1	Washer, Square	2 1/4" x 2 1/4"	5847.1

* Length as Required

Notes

1. Secondary Spool Bracket Shall be on a Separate Thru Bolt (i.e. Not the Same as the Bracket Arm.)
2. 3'-4" Minimum Distance from Thru Bolt to Telephone Company Equipment.
3. All Hardware Shall be Galvanized.
4. Item 1 may be Purchased from S.E.D.

Ref Std Spec Sec 8-30

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 19 91 [signature] CHAIRMAN ATTEST: [signature] EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Insulator Brackets

Orient the luminaire on the support so that the light beams strike the pavement equidistant from the luminaire.

Bracket arm shall be perpendicular to the projected curb line.

Align Luminaire Axis Perpendicular to the Pavement.

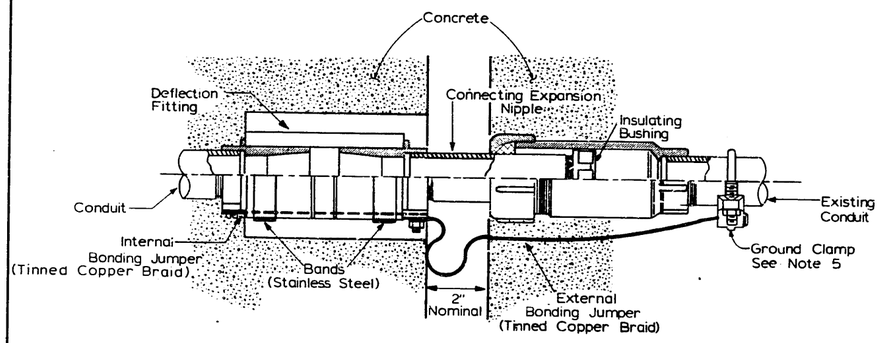
Pavement

Ref Std Spec Sec 8-30

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1971 ATTEST: CHAIRMAN EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Luminaire Alignment

Deflection Fitting

Expansion Fitting



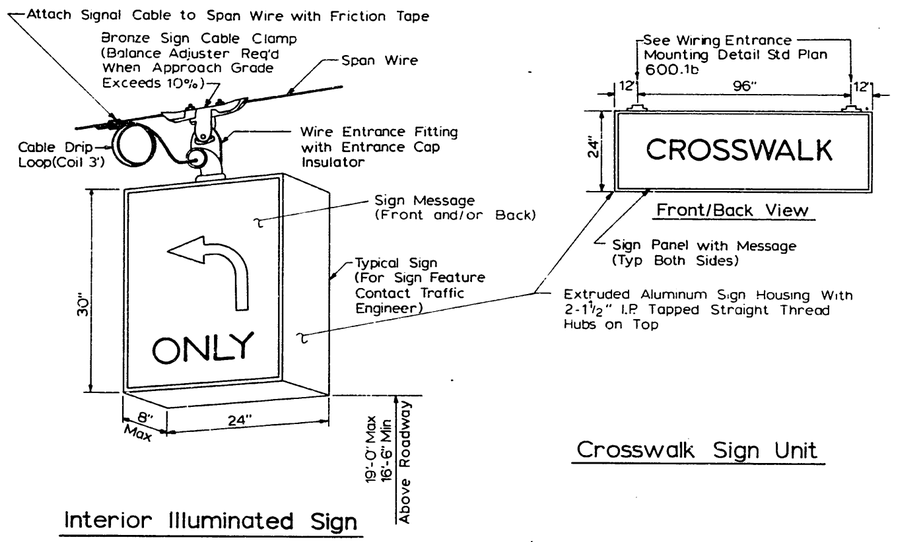
Notes:

1) Deflection fittings shall be raintight, concrete tight & watertight (NEMA 4).
2) Expansion fitting shall be weatherproof.
3) End couplings shall be bronze.
4) Insulating Bushings shall be utilized throughout to provide a smooth continuous wire way.
5) The entire fitting shall comply with the NEC requirement for an electrically continuous raceway.
6) Where PVC coated rigid steel is specified, remove PVC coating, install ground clamp and bonding jumper. Recoat with PVC by hand.
7) Connecting nipple shall not be PVC coated.

Ref. Std. Spec. Sec. 8-33, 9-34

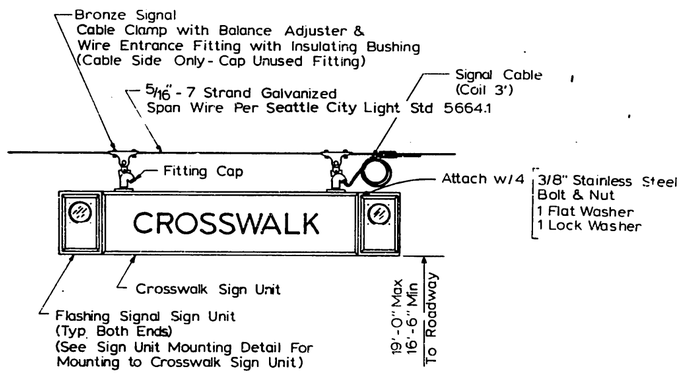
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 19 9 ATTEST: CHAIRMAN EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Combination Expansion/Deflection Fitting

Standard Plan No. 600.1a



Crosswalk Sign Unit

Interior Illuminated Sign

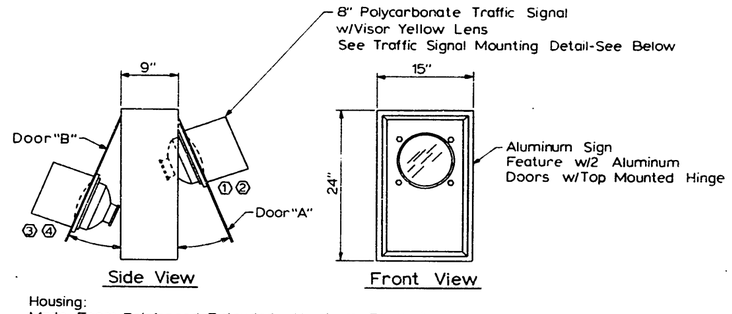


Double Faced Interior Illuminated Crosswalk Sign with Flashing Signals (Sign Unit)

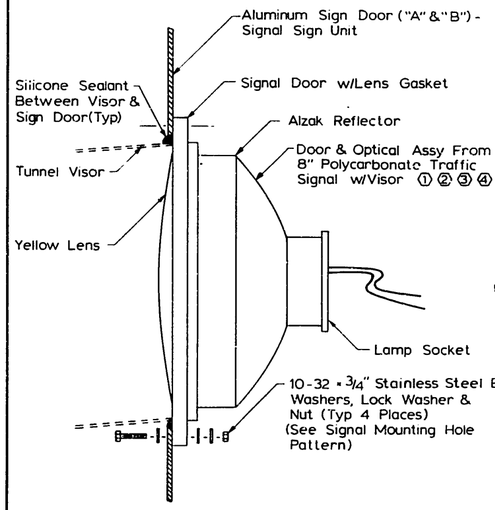
Ref. Std. Spec. Sec. 8-21.

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1971 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Overhead Interior Illuminated Signs

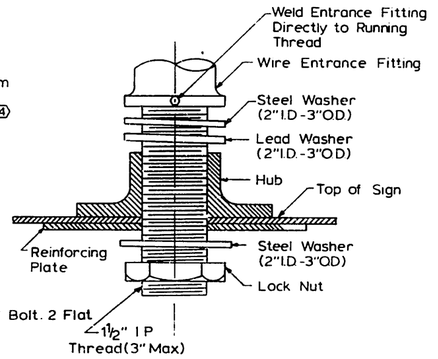
Standard Plan No. 600.1b



Flashing Signal Sign Unit



Flashing Signal Mounting Detail

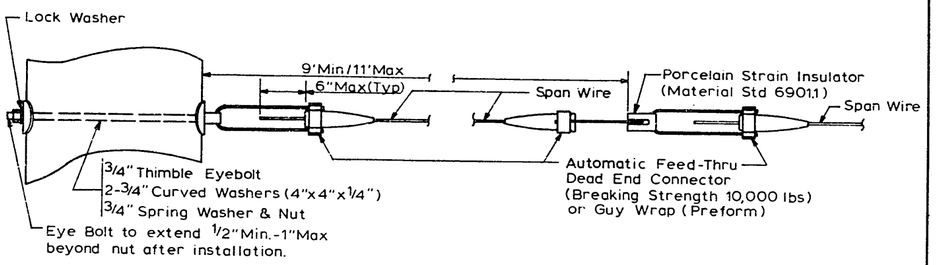


Wiring Entrance Mounting Detail

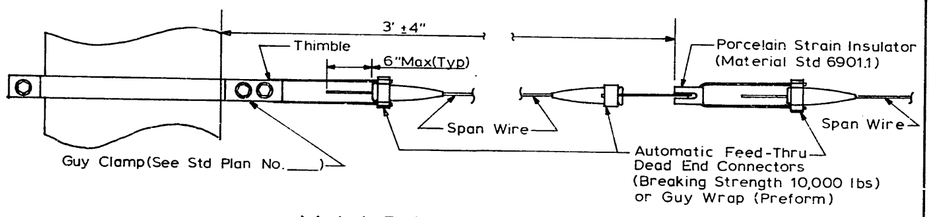
Ref. Std. Spec. Sec. 8-21.

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1971 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Overhead Interior Illuminated Signs

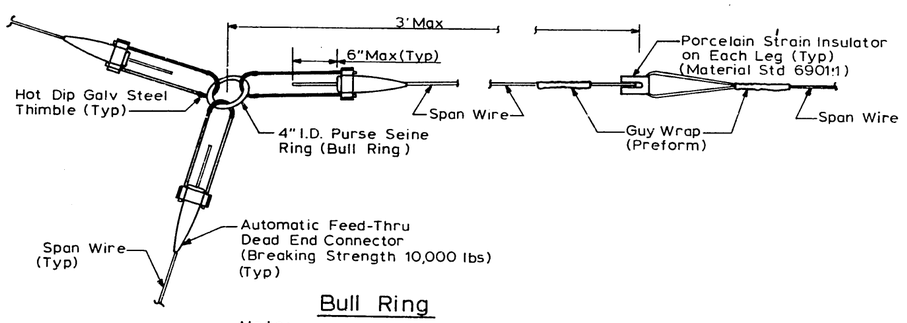
Standard Plan No. 601.1a



Wood Pole



Metal Pole



Bull Ring

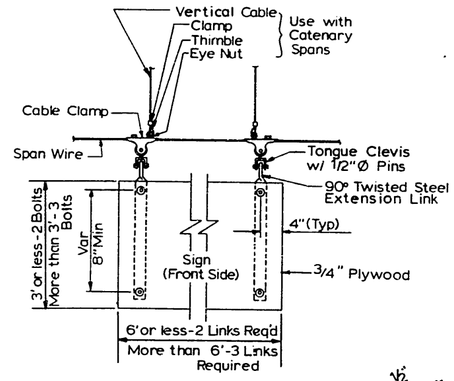
Note:

1) All Steel Hardware to be Hot Dip Galvanized or Stainless Steel unless otherwise stipulated in the Specifications or Plans.
2) Span Wire shall be Aluminum Coated Steel.
3) Spread Thimble to fit the bail of the Automatic Dead End.

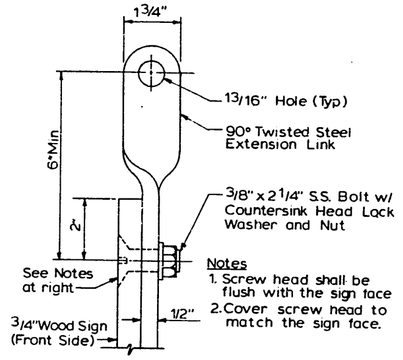
Ref. Std. Spec. Sec. 8-21.

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Span Wire Installation
7/12 1971 CHAIRMAN ATTEST: EXEC SECRETARY	DEPARTMENT OF ENGINEERING	

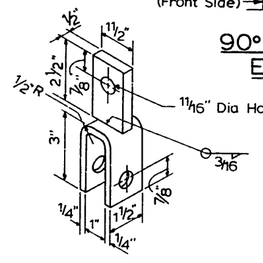
Standard Plan No. 601.1 b



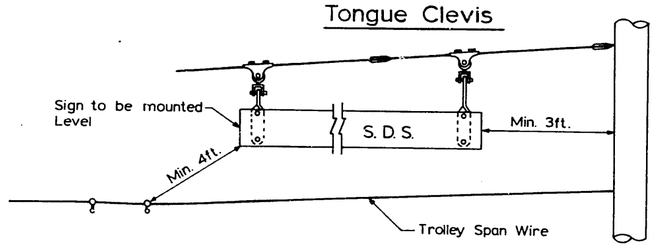
Span Wire Mounted Wood Sign



90° Twisted Steel Extension Link



Tongue Clevis

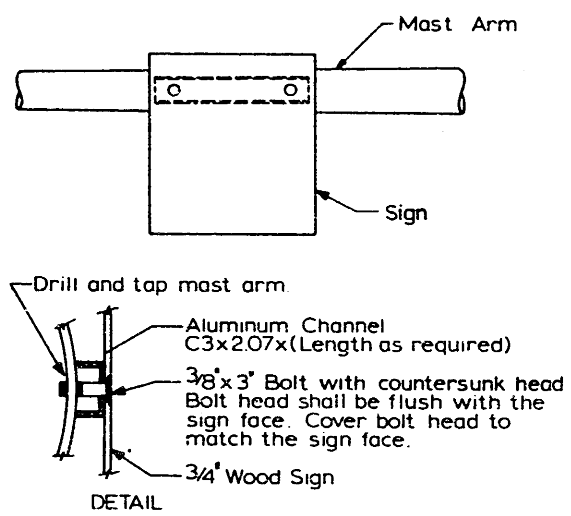


Street Designation Sign
Wood Signs Only

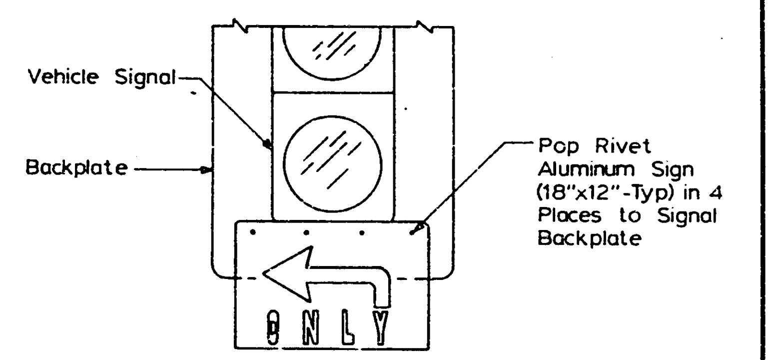
Ref. Std. Spec. Sec. 8-21

Do Not Scale

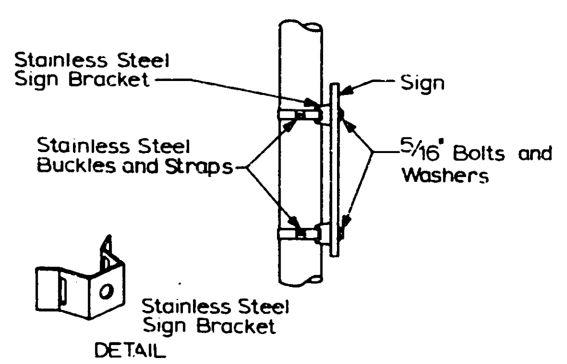
APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Overhead Wood Signs Spanwire Mounted
7/12 1971 CHAIRMAN ATTEST: EXEC SECRETARY	DEPARTMENT OF ENGINEERING	



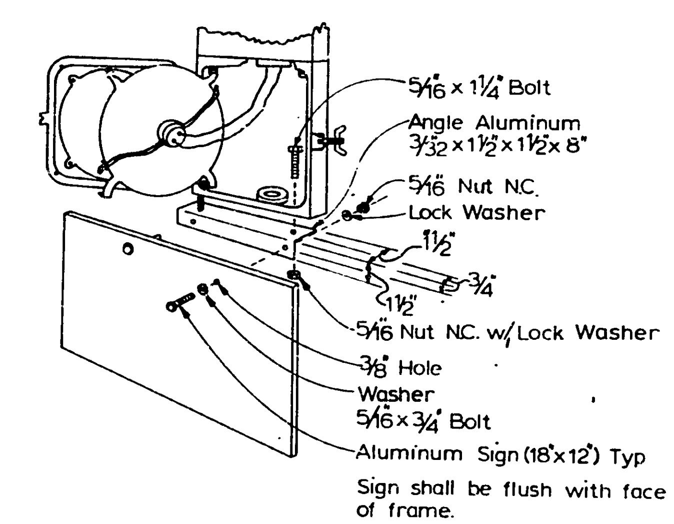
Sign Mounting on Mast Arm



Sign Mounting on Signal Backplate



Temporary Sign Mounting on Metal Pole



Sign Mounting on Bottom of Signal

Notes:

1. Bolts shall be stainless steel.
2. Mounting of traffic signs shall be as follows:

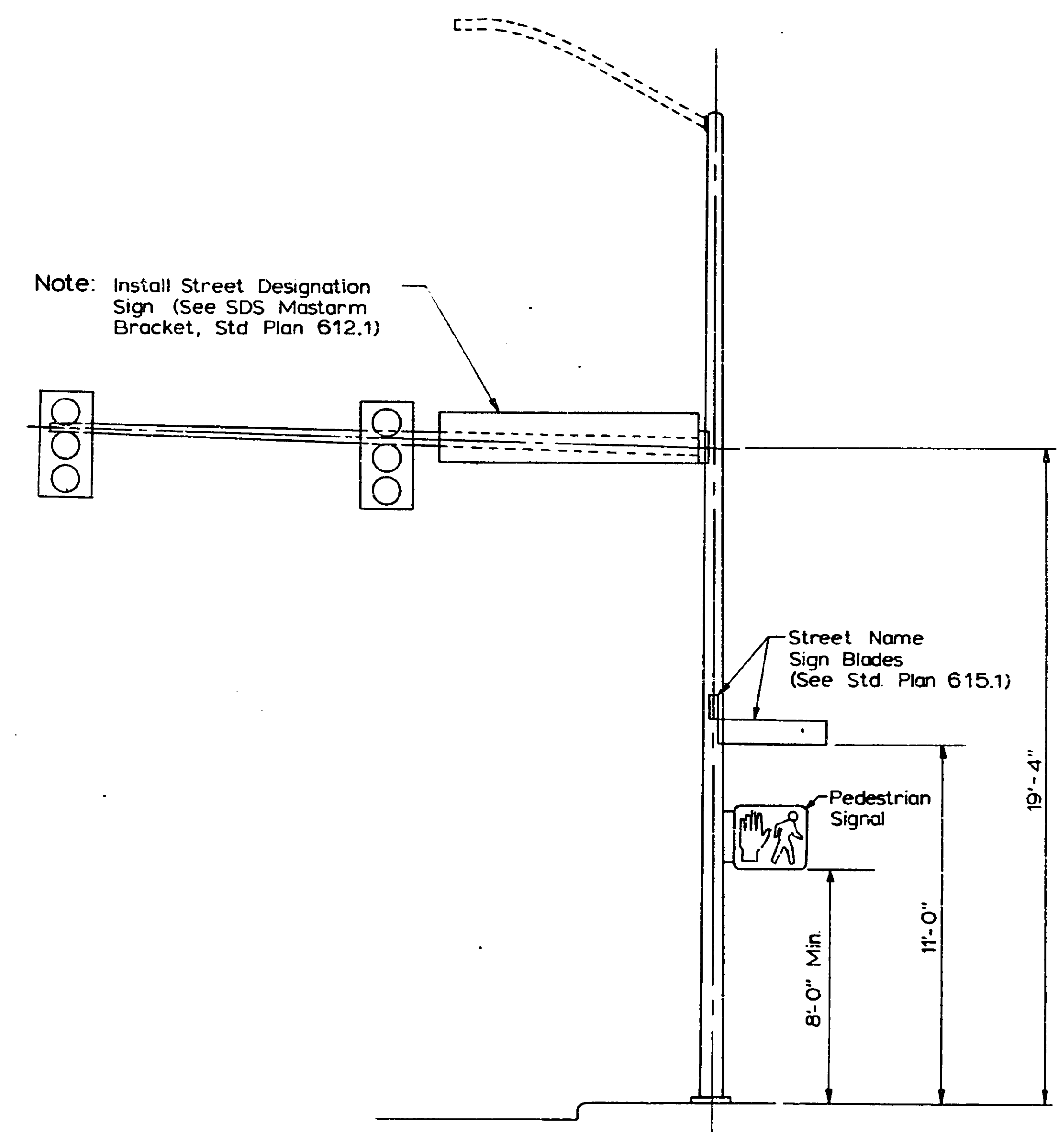
   On metal poles thinner than 7 gauge, use 3/8" stainless steel rivnuts.

   On metal poles 7 gauge or thicker, drill and tap for 3/8" bolt. (stainless steel rivnuts optional)

   On poles filled with or made from concrete, use 3/8" × 2 1/2" min. stud bolt anchors with hex nut.
3. For Sign Feature contact Traffic Engineer.

Ref. Std. Spec. Sec. 8-21

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 ___ CHAIRMAN ATTEST: ___ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Sign Installation (Non-Spanwire Mounting)

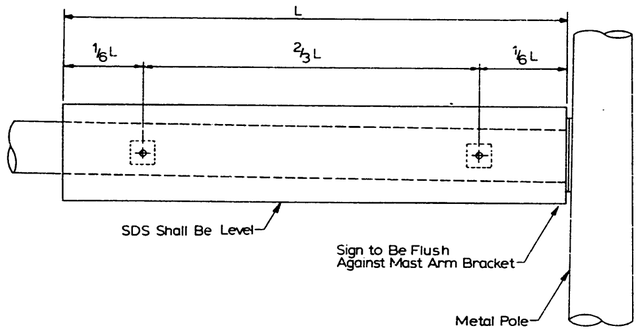


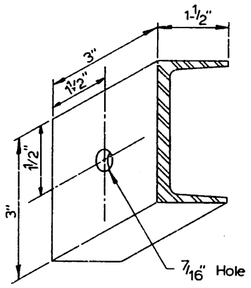
Ref. Std. Spec. Sec. 8-21.

Do Not Scale

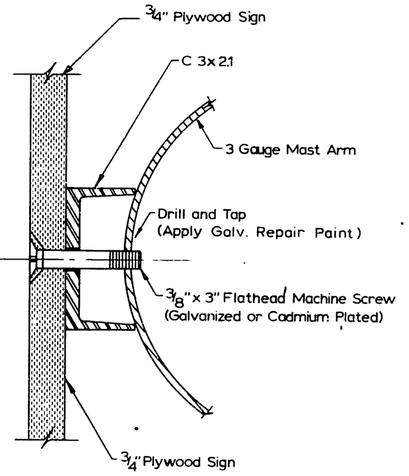
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1991 ___ CHAIRMAN ATTEST: ___ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Standard Sign Installation Steel Poles

Standard Plan No. 612.1





C 3x2.1
Extruded Al



Notes:

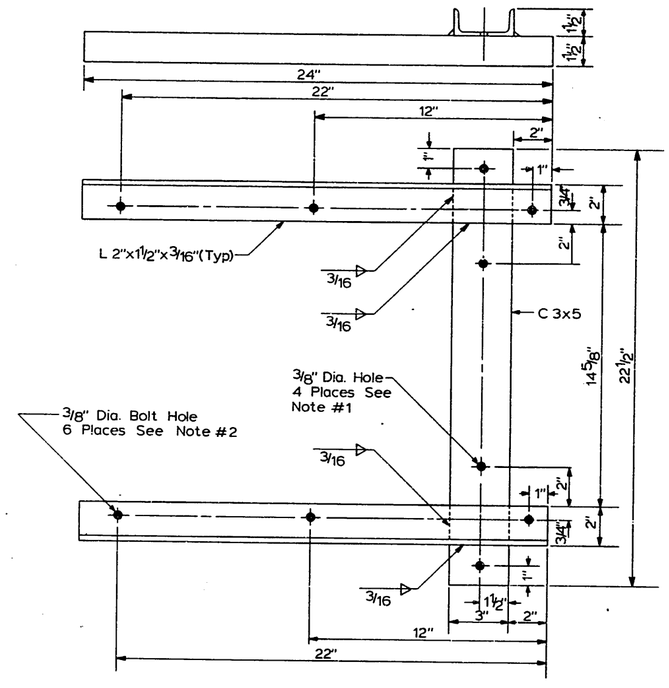
1. Screw Head Shall Be Flush with the Sign Face.
2. Cover Screw Head to Match Sign Face.

Ref. Std. Spec. Sec. 8-21.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 19 21 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	SDS Bracket for Steel Mast Arm Poles

Standard Plan No. 613



Notes:

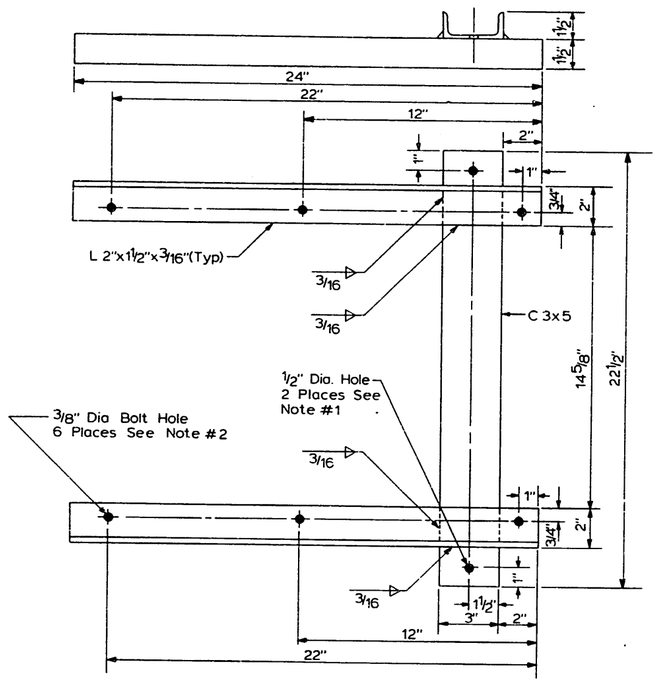
1. When Installing Bracket Onto Strain Pole Use Four(4) 3/8" Dia. x 2 1/2" Long Bolt with 3/8" I.D. x 1" O.D. Nylon Washer. Drill and Tap Pole As Follows; For Steel Poles Less Than Seven(7) Gauge Use 3/8" Stainless Steel Rivnuts, On Aluminum Poles Use 3/8" Aluminum Rivnuts. Rivnuts Optional On Heavier Gauge Steel Poles.
2. When Installing Sign Board Onto Bracket, Use Six(6) 3/8" Dia. x 1 1/2" Long Flathead Machine Screws with Lockwasher. Screw Head shall be Flush w/Sign Face. Cover Screw Head to Match the Sign Face.
3. Bracket To Be Steel, Painted International Green.
4. All Bolts, Nuts, and Steel Washer To Be Cadmium Plated or Stainless Steel.

Ref. Std. Spec. Sec. 8-21.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 19 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	SDS Bracket for Steel Strain Poles

Standard Plan No. 614.1



Notes:

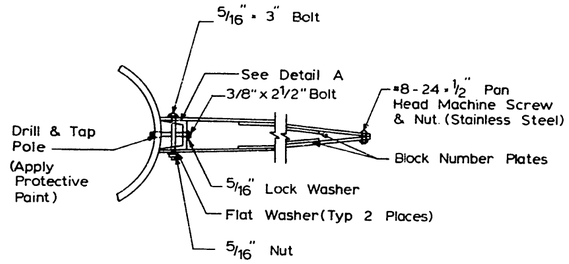
1. When Installing Bracket Onto Wood Pole Use Two(2) ½" Dia. x Var. Long Bolt (All Metal Hot Dipped Galvanized or Stainless Steel) With ½" I.D. x 1½" O.D. Steel Washer. Drill Through Pole and Install ½" I.D. x 1 ½" O.D. Steel Washer and Nut.
2. When Installing Sign Board Onto Bracket, Use Six(6) ⅜" Dia. x 1½" Long Flathead Machine Screws with Lockwasher. Use (1) Flat Washer Under the Head of Each Bolt. Screw Head shall be Flushed with the Sign Face. Cover Screw Head to Match the Sign Face.
3. Bracket to be Aluminum, Painted International Green.
4. All Bolt, Nut, and Steel Washer to be Stainless Steel.

Ref. Std. Spec. Sec. 8-21.

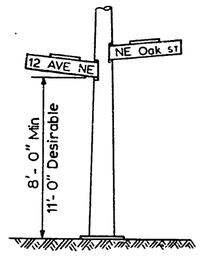
Do Not Scale

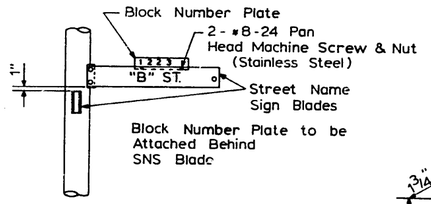
APPROVED BY THE BOARD OF PUBLIC WORKS 7/13/19 91 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	SDS Bracket for Wood Utility Poles

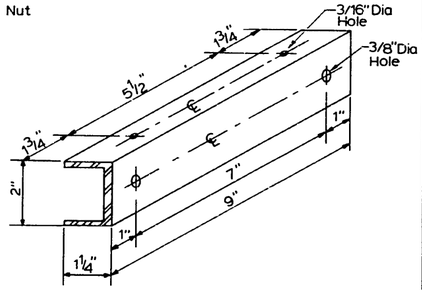
Standard Plan No. 615.1



For Steel Poles Less Than Seven(7) Gauge Use 5/16" Stainless Steel Rivnuts.
On Aluminum Poles Use 5/16" Aluminum Rivnuts.
(Rivnuts Optional on Heavier Gauge Steel Poles.)







Detail A
Aluminum Mounting Bracket

Notes:

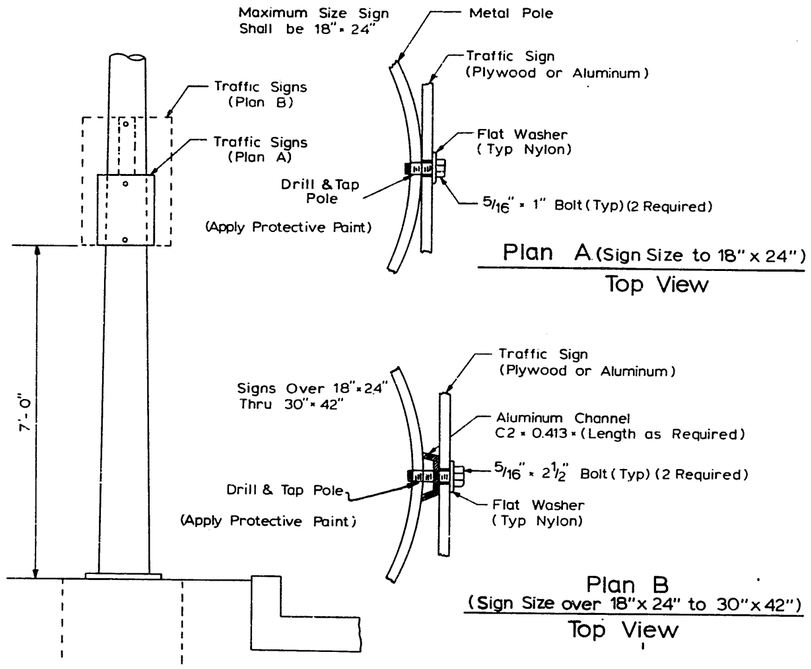
1. Stagger S.N.S Blades with the "Avenue" Designation Below the "Street" Designation Blade
2. S.N.S. Shall be Installed Parallel to Corresponding Street.
3. All Nuts, Bolts, and Steel Washers to be Cadmium Plated or Stainless Steel.

Ref. Std. Spec. Sec. 8-21.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12/19 91 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	SNS Bracket For Steel Poles

Standard Plan No. 616.1

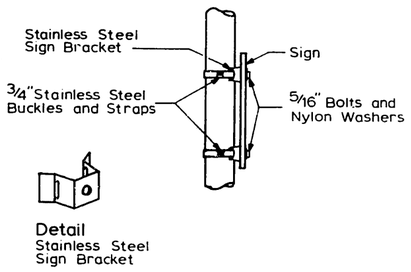


Plan A (Sign Size to 18" x 24")
Top View

Plan B
(Sign Size over 18"x 24" to 30"x 42")
Top View

Notes:

1. For Steel Poles Less Than Seven(7) Gauge, Use 5/16" Stainless Steel Rivnuts.
2. On Aluminum Poles, Use 5/16" Aluminum. Stainless Steel Rivnuts Optional on Heavier-Guage Steel Poles.
3. On Poles Filled With or Made From Concrete, Use 5/16"x 2 1/2" Min. Stud Bolt Anchors with Hex Nut.
4. For Signs Over 30"x 42", Use Std Plan No. 612, Mount Sign Vertically on Strain Pole with Minimum of Three (3) Fasteners.
5. For Dark Colored Poles Paint Band to Match Pole.



Detail
Stainless Steel
Sign Bracket

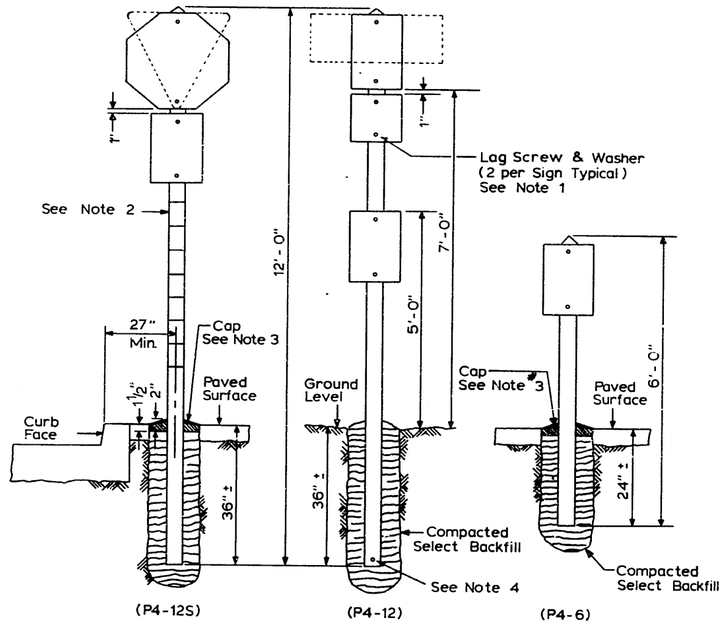
Plan C (Sign Size to 18"x 24")
Side View

Ref. Std. Spec. Sec. 8-21.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1991 Chas Carlson CHAIRMAN ATTEST: Barbara J. Tabor EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Traffic Sign Mounting on Metal Poles

Standard Plan No. 620.1



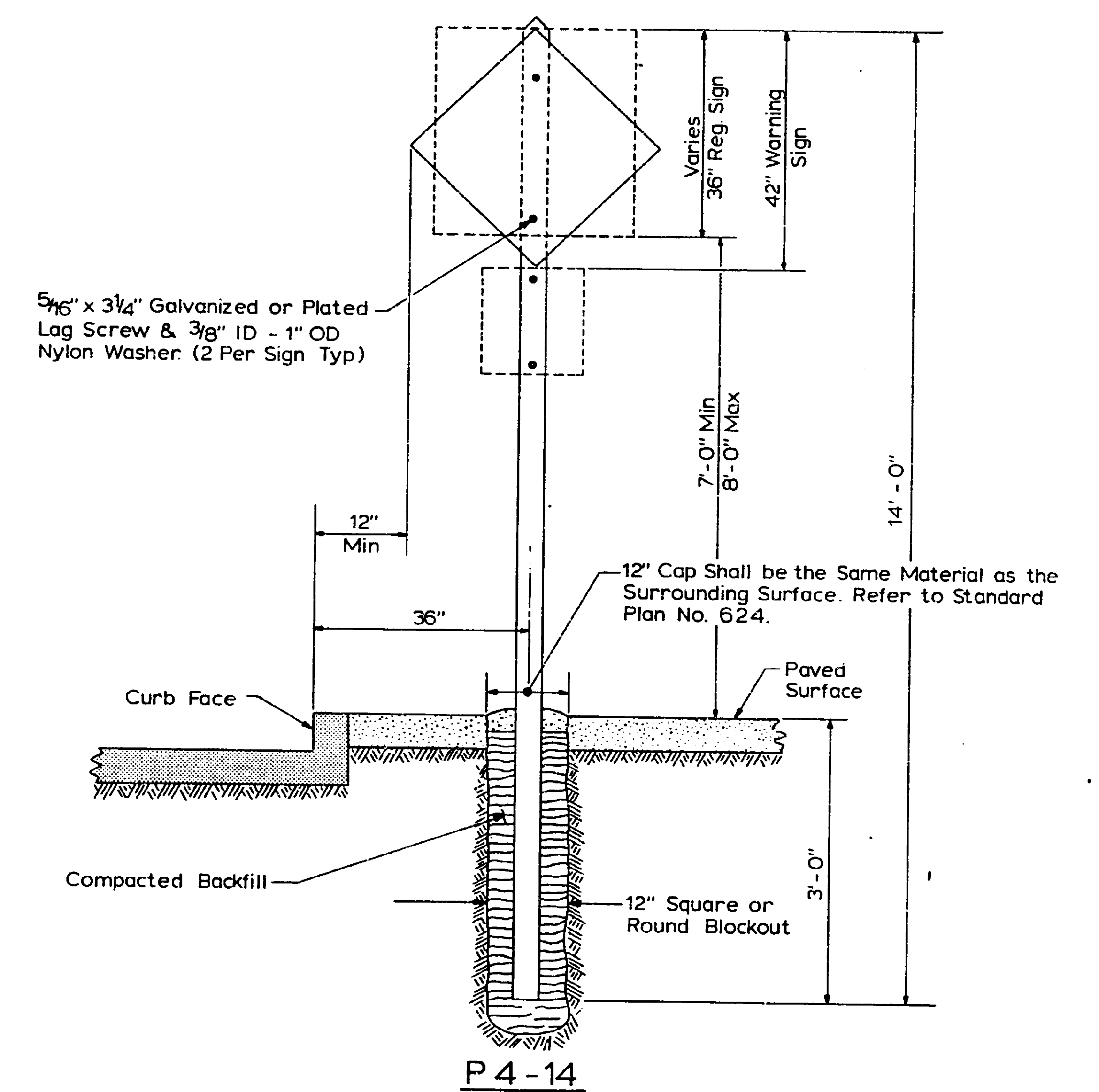
Notes:

1. 3 1/4 x 5/16" Galvanized or Plated Lag Screw & 3/8" I.D. x 1" O.D. Nylon Washer.
2. For "Yield" Signs: Painted Stripes Shall Face Toward the Approaching Traffic. (Refer to Std Plan No. 625.1.
3. Cap shall be the Same Material as the Surrounding Surface. Refer to Standard Plan No. 624.
4. Install 30D Galv. Common Spike on the Face Side of Post Except When Concrete Paving Exists. Spike shall be 8" Above Bottom of Post and Shall Protrude 2" from Post.
5. Contact the Transportation Div. (684-5087) for Details Reguarding Sign Message and Fabrication.

Ref. Std. Spec. Sec. 8-21.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 1991 Chas Carlson CHAIRMAN ATTEST: Barbara J. Tabor EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Traffic Sign & Wood Post Installation



P4-14

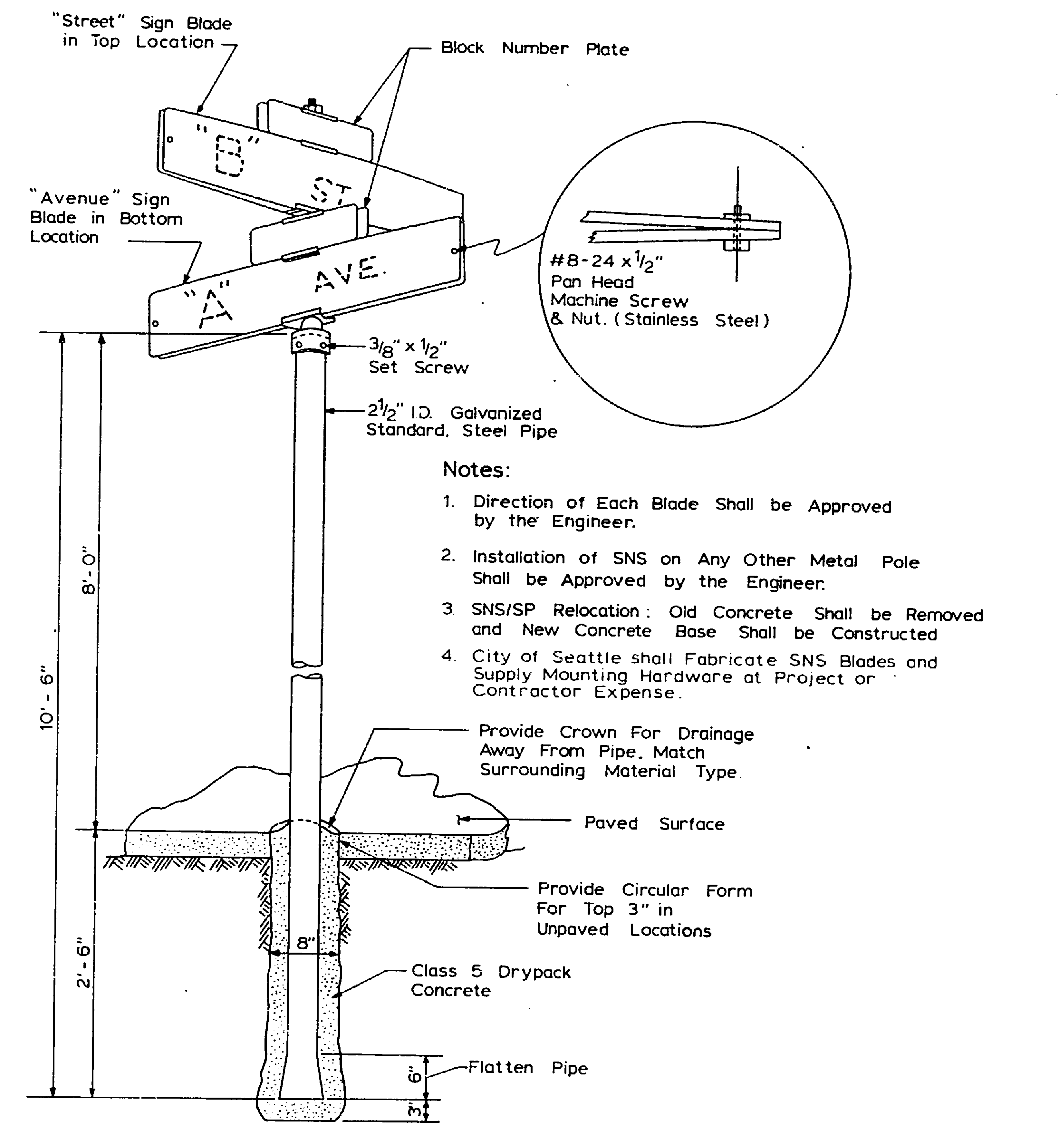
Note:

Sign Shall be Attached With Top Edge of Sign Flush With Top of Square Section of Post.

Ref Std Spec Sec 8-21.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS ___ CHAIRMAN ATTEST: ___ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Traffic Sign & Wood Post Installation



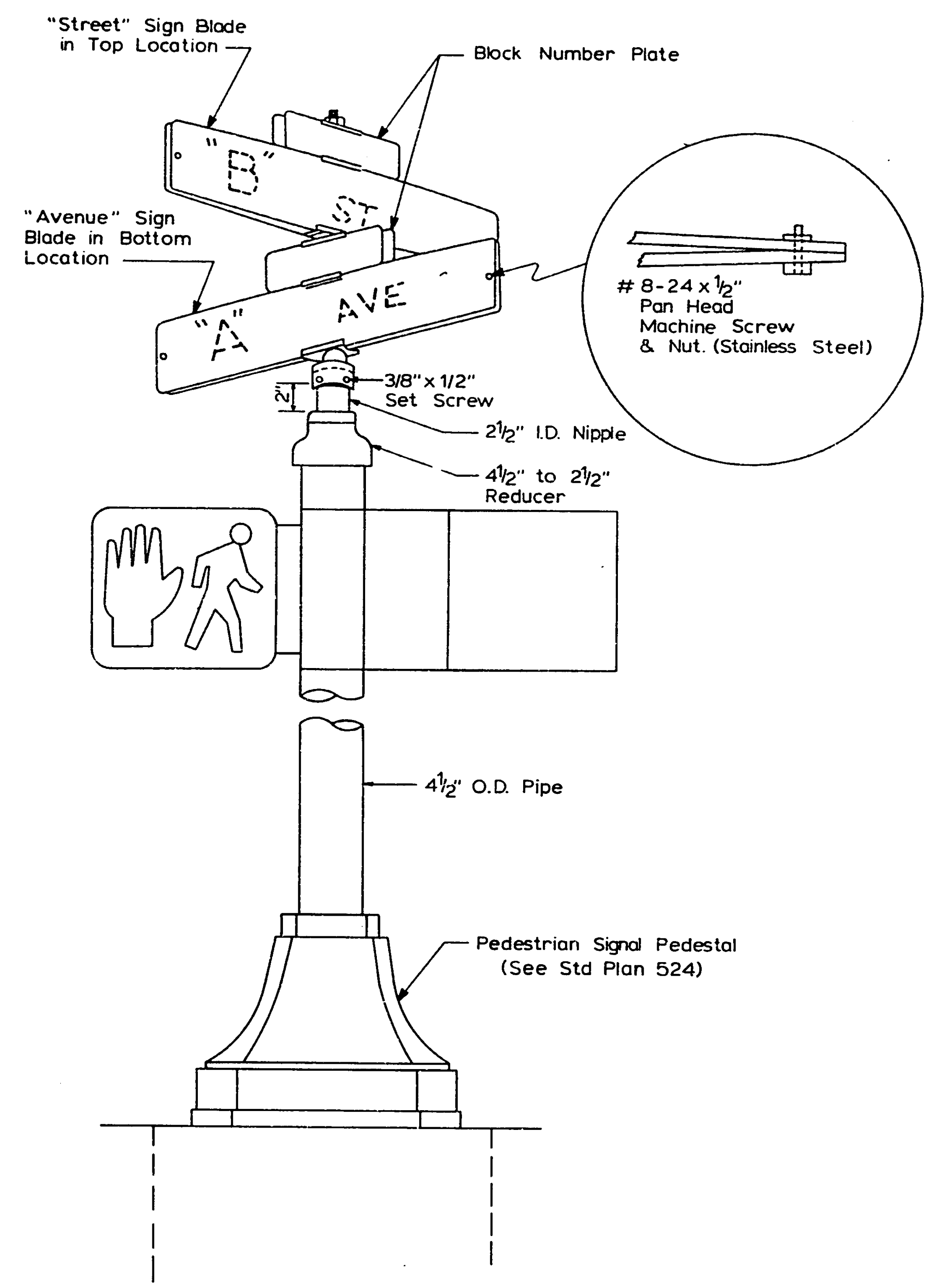
Notes:

1. Direction of Each Blade Shall be Approved by the Engineer.
2. Installation of SNS on Any Other Metal Pole Shall be Approved by the Engineer.
3. SNS/SP Relocation: Old Concrete Shall be Removed and New Concrete Base Shall be Constructed
4. City of Seattle shall Fabricate SNS Blades and Supply Mounting Hardware at Project or Contractor Expense.

Ref. Std. Spec. Sec. 8-21.

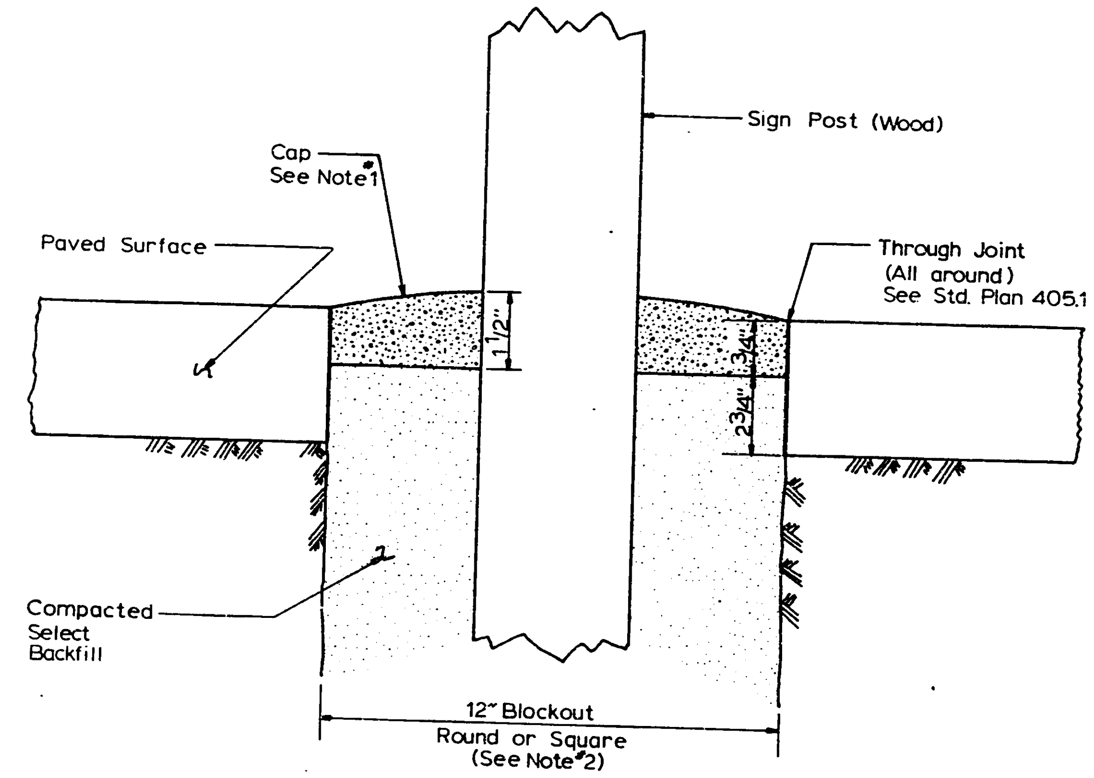
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 19 91 ___ CHAIRMAN ATTEST: ___ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Street Name Sign Installation



Ref. Std. Spec. Sec. 8-21.

APPROVED BY THE BOARD OF PUBLIC WORKS ___ 19__ ___ CHAIRMAN ATTEST: ___ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Street Name Sign Pedestal Installation



Notes:

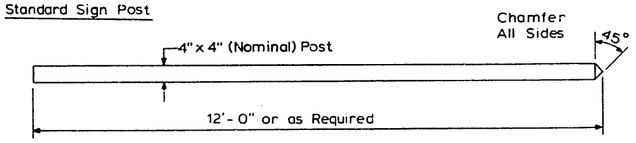
1. Cap shall be Made of the Same Material as the Surrounding Paved Surface.
2. Blockouts shall be Provided for Post Locations where New Concrete Pavement (Sidewalk, Roadway, etc.) is being Installed.
3. Where Post is Being Installed in Existing Paved Areas, Hole in Paved Surface shall Not Exceed 12" Nominal Diameter.

Ref. Std. Spec. Sec. 8-21.

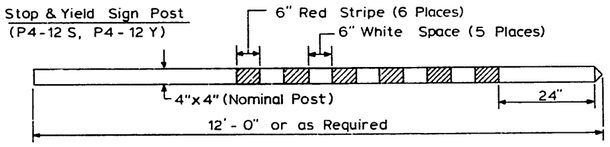
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/1 1991 ___ CHAIRMAN ATTEST: ___ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Post Cap

Standard Sign Post



Stop & Yield Sign Post
(P4-12 S, P4-12 Y)

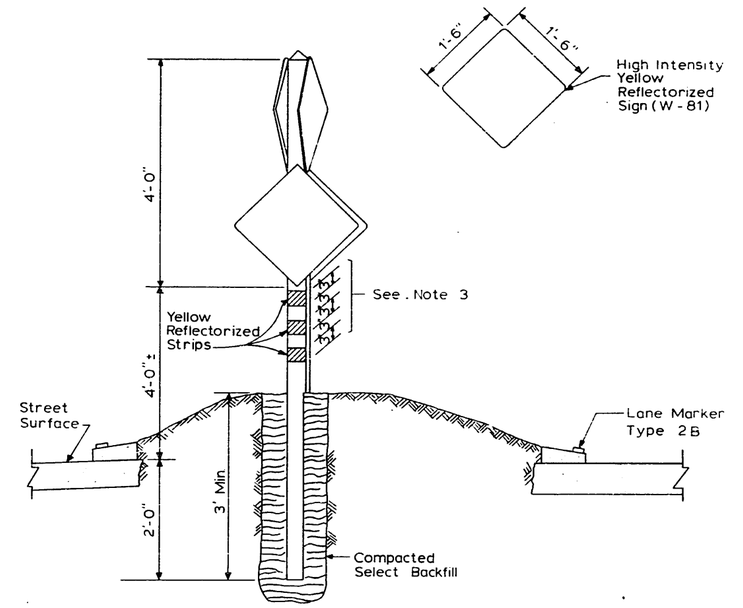


Note:

1. Paint Red Stripes On All Four Sides For "STOP" Sign Installation. One Side Only For "YIELD" Sign Installations.
2. For "YIELD" Sign Installation, Striped Side Shall Be Facing Approaching Traffic.
3. Refer to Standard Plan No. 620.1

Ref. Std. Spec. Sec. 8-21. Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12-1971 Gary Locke CHAIRMAN ATTEST: Thelma J. Jones EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Wood Traffic Sign Posts



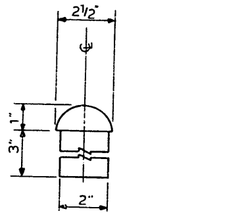
(P4-10)

Notes:

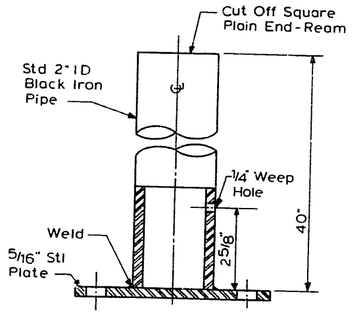
1. In the Case Where All Approaches of the Intersection Are Primarily at the Same Level, with Respect to Grades (Less Then 3%); The Lower Set of Signs Will Face the Higher Volume Street.
2. In the Case Where An Approach Has A Grade Larger Then 3%, The Higher Signs Will Face the Approach with the Highest Grade to Allow Better Sight Distance.
3. Place Three(3) or Four(4) - (3" x 3") Yellow Reflectorized Strips on the 4 Post Faces.

Ref. Std. Spec. Sec. 8-21. Do Not Scale

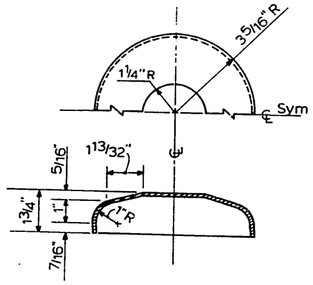
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12-1971 Gary Locke CHAIRMAN ATTEST: Thelma J. Jones EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Object Marker Installation



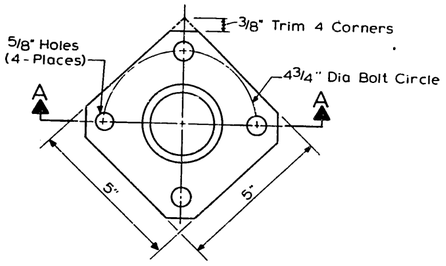
Meter Post
Wood Finial
(To Be Used w/ Sign Installation)



Section A - A



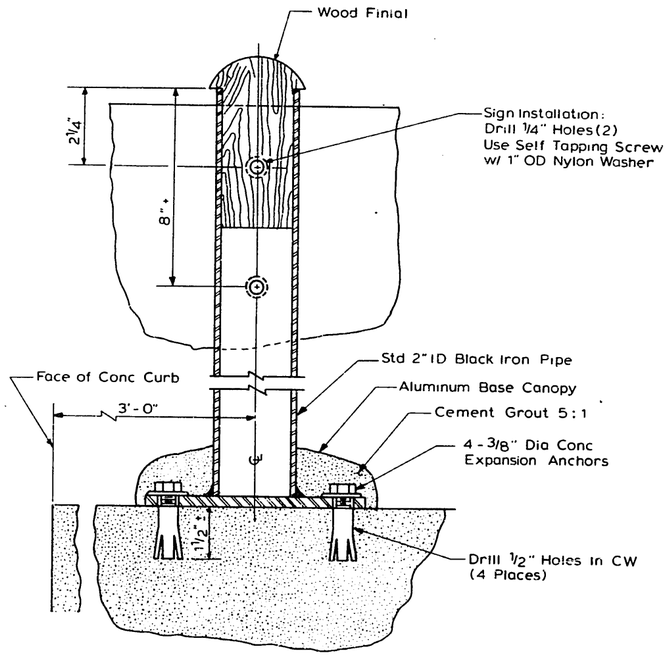
Meter Post
Base Canopy
Material: 0.062" 2-5-0 Alum



Meter Post
Prime with "Rustoleum" or Approved Equal and Paint with Two(2) Coats at Aluminum

Ref Std Spec Sec 8-21

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 19 97 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Parking Meter Post & Accessories

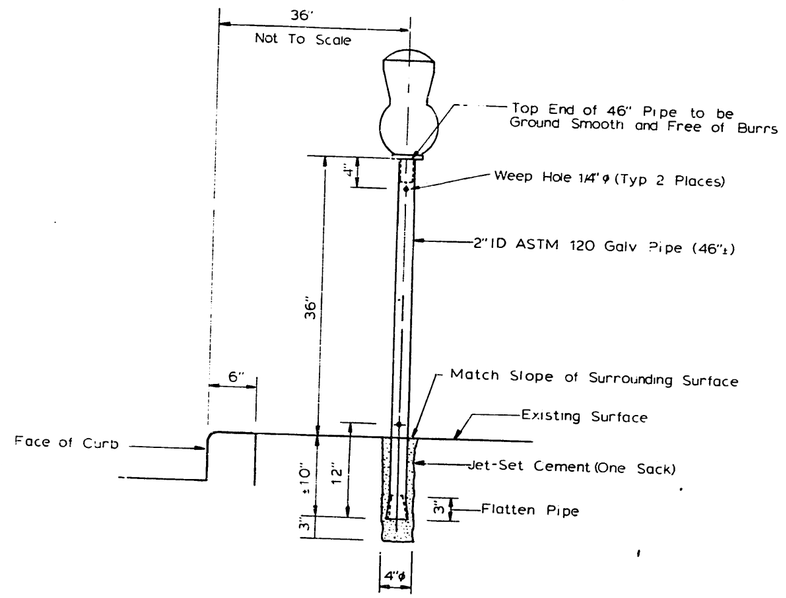


Ref. Std. Spec. Sec. 8-21

NTS

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 19 97 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Surface Mount Meter Post Installation Detail

Standard Plan No. 629



Note:

1. Post to be plumb.
2. Notify the Transportation Division (684-5087) for removal of existing parking meter heads prior to disturbing existing posts.
3. When new posts have been set, notify Transporation Division to reinstall meters.

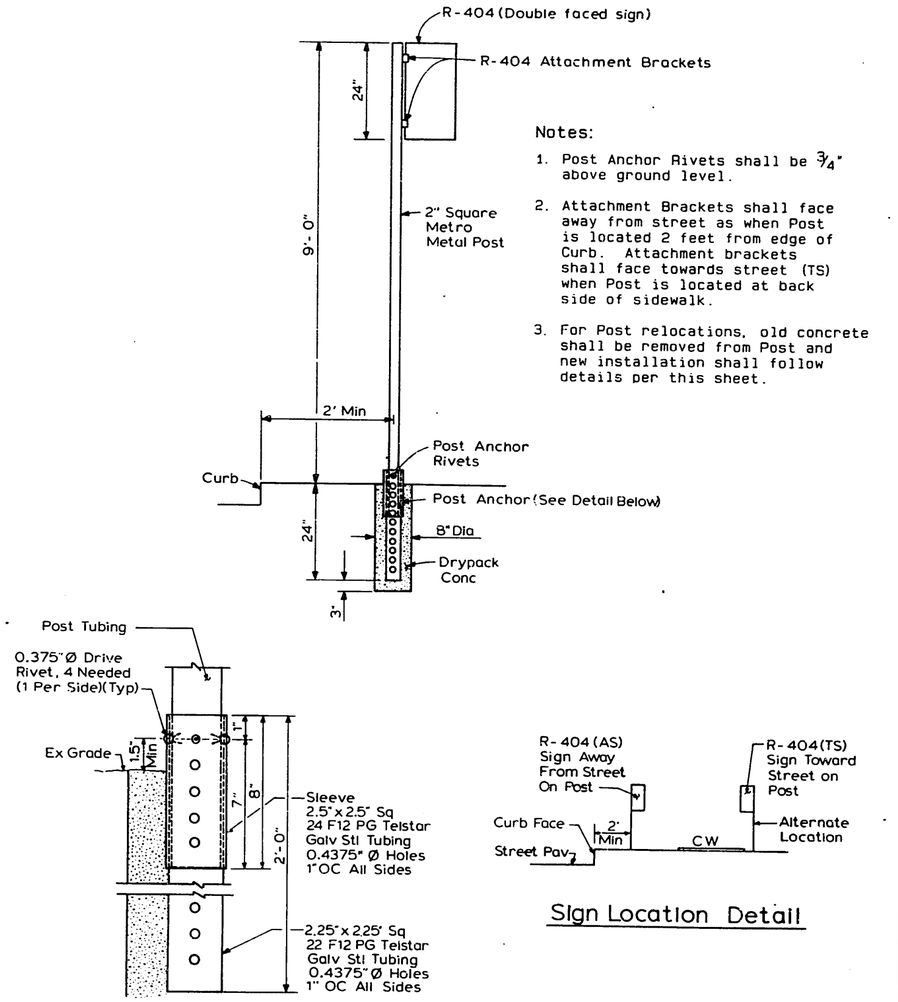
Ref. Std. Spec. Sec. 8-21

NTS

APPROVED BY THE BOARD OF PUBLIC WORKS 7/13 19 91 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Direct Burial Meter Post Installation Detail

212

Standard Plan No.630



Post Anchor Detail

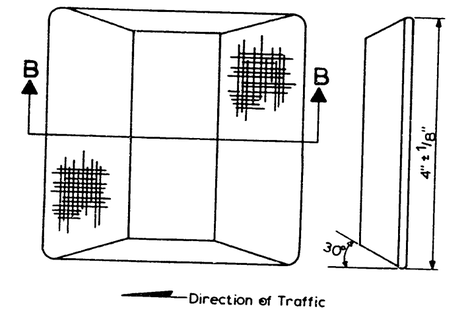
Notes:

1. Post Anchor Rivets shall be 3/4" above ground level.
2. Attachment Brackets shall face away from street as when Post is located 2 feet from edge of Curb. Attachment brackets shall face towards street (TS) when Post is located at back side of sidewalk.
3. For Post relocations, old concrete shall be removed from Post and new installation shall follow details per this sheet.

Sign Location Detail

APPROVED BY THE BOARD OF PUBLIC WORKS 7/13 19 91 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Metro Bus Zone Sign Installation

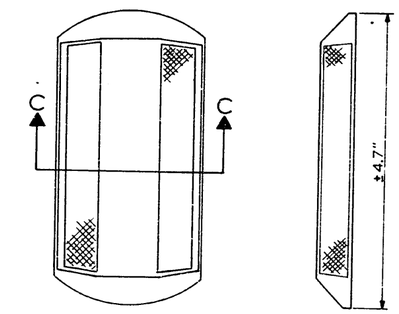
213



Section B-B

4" Prismatic Reflective Marker

LANE MARKER-TYPE 2A

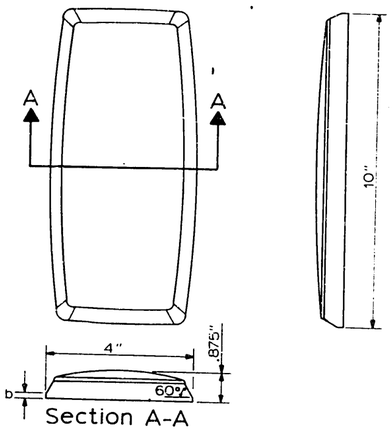


Section C-C

LANE MARKER-TYPE 2B

LANE MARKER-TYPE 1

a=5/8" ± 1/8"
b=1/8" ± 1/16"



Section A-A

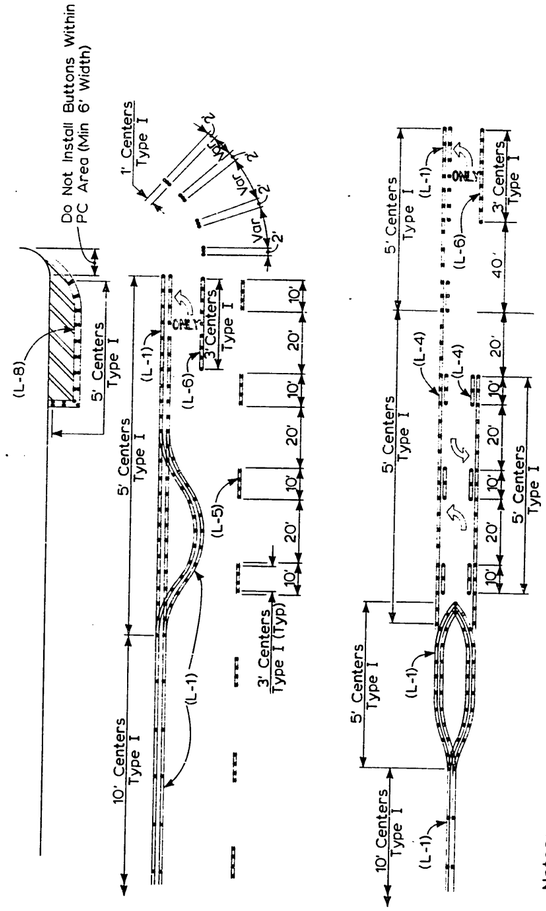
Plastic Traffic Button

TYPE 700C

Ref. Std. Spec. Sec. 9-21

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/2 1971 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Traffic Buttons and Lane Markers



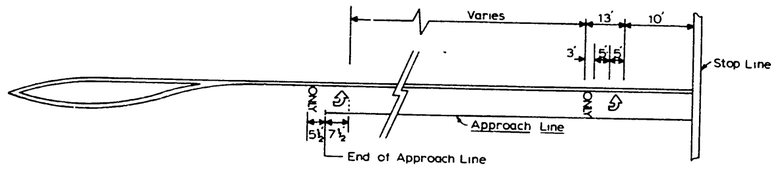
Notes:
Traffic Buttons Shall Be Installed To Conform With Type Of Pavement Marking (Designated As L-1, L-4, L-5, Etc.), And Are To Be Arranged And Spaced As Shown On This Drawing. Color Of Traffic Buttons Is To Match Color Of Pavement Markings. Existing Channelization in Conflict With New or Revised Channelization Shall be Removed by Machine Grinding Prior To Any Paint Line Installation.

Typical Type I Traffic Button (4" Traffic Button) Installation Details

Ref. Std. Spec. Sec. 8-08.

Do Not Scale

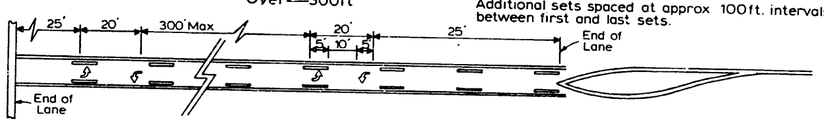
APPROVED BY THE BOARD OF PUBLIC WORKS 7/2 1971 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Channelization Standard



Typical Left Turn Channelization

Number of Legend Sets Required Based on the Length of Approach Lines.

Approach Line Length	Legend Sets
Less Than 50ft.	1 Set at X-walk end of pocket
50ft — 125ft	2 Sets
125ft — 300ft	3 Sets (Second Legend located midway between first and last Legends)
Over — 300ft	Additional sets spaced at approx 100ft. intervals between first and last sets.

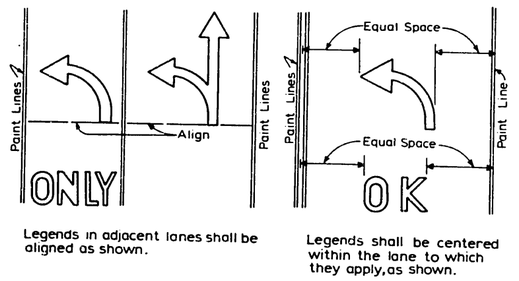


Typical Two Way Left Turn Lanes

Number of Legend Sets Required is Based Upon the Length of Typical Two Way Left Turn Lanes

Less Than 50ft.	1 Set (Centered between both ends of lane)
50ft — 300ft.	2 Sets
Over — 300ft.	3 Sets (Second Legend located midway between first and last Legends)
	Additional sets spaced at approx. 300ft. intervals.

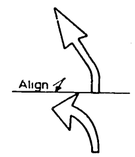
Legend Placement



Legends in adjacent lanes shall be aligned as shown.

Legends shall be centered within the lane to which they apply, as shown.

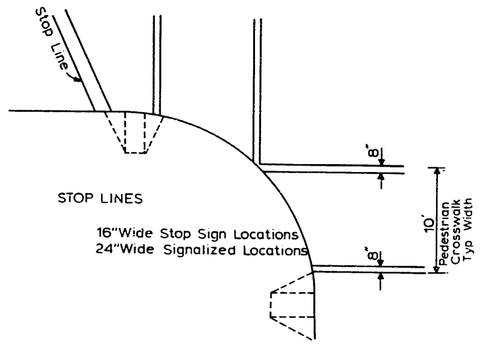
Legend Combinations



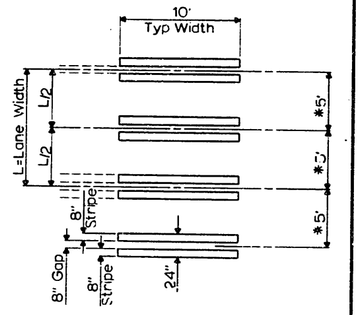
Oblique Left and 90° Left Legends and Oblique Right and 90° Right Legends May Be Combined as Shown.

Ref. Std. Spec. Sec. 8-22.

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1971 CHAIRMAN ATTEST: EXEC SECRETARY	**CITY OF SEATTLE DEPARTMENT OF ENGINEERING**	Typical Left Turn Channelization and Legend Placement



TYPICAL PEDESTRIAN CROSSWALKS & STOP LINES

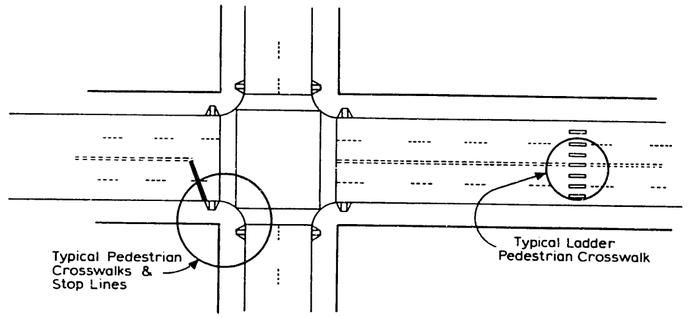


TYPICAL LADDER PEDESTRIAN CROSSWALK

* Where Traffic Lane Lines are not used Ladder Bars Shall be 5' center to center, Beginning at the marked centerline of the roadway.

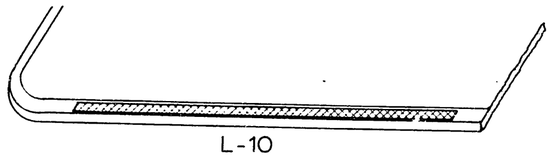
Note:
1. Exact Location of Crosswalk Lines and Stop Lines Shall be Designated by the Engineer.
2. Exsisting Crosswalks in Conflict With New or Revised Crosswalks Shall be Removed by Machine Grinding.

TYPICAL CROSSWALK & STOP LINE INSTALLATION DETAILS.

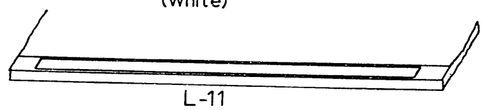


Ref. Std. Spec. Sec. 8-22

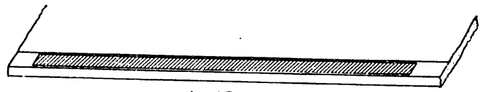
APPROVED BY THE BOARD OF PUBLIC WORKS 7/12 1971 CHAIRMAN ATTEST: EXEC SECRETARY	**CITY OF SEATTLE DEPARTMENT OF ENGINEERING**	Typical Crosswalk And Stop Line Installation Details



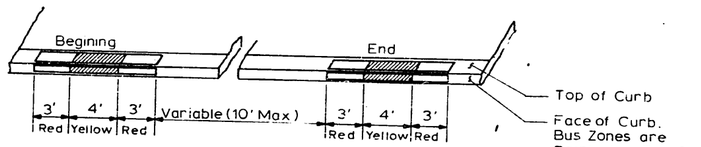
L-10
Passenger Load Zone, Etc.
(White)



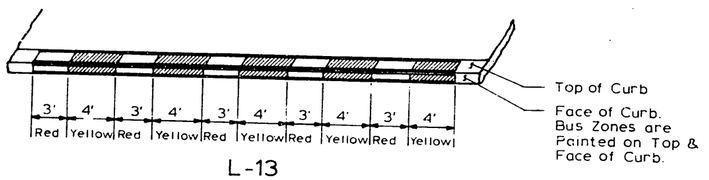
L-11
Tow-Away Zone
(Red)



L-12
Commercial Load, Truck Load, Load & Unload Zone, Etc.
(Yellow)



L-13
Bus Zone (Non Parking Metered Areas)



L-13
Bus Zone (Parking Metered Areas)

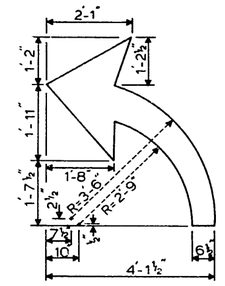
Notes:

1. Distances of curb markings shall be as shown on plans or as directed by the Engineer.
2. Paint shall be applied neatly on the curb and all paint smears on adjacent surfaces shall be removed.

Ref Std Spec Sec 8-22

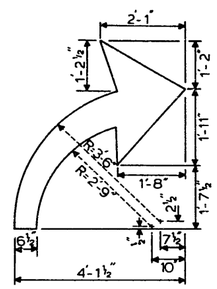
Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 7/3 19 97 ATTEST: CHAIRMAN EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Curb Space Marking Details



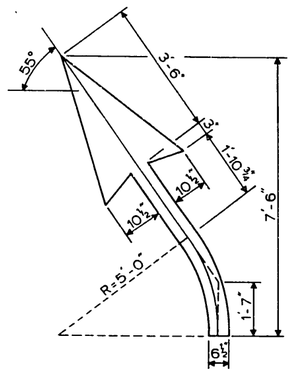
Left Arrow

L-20



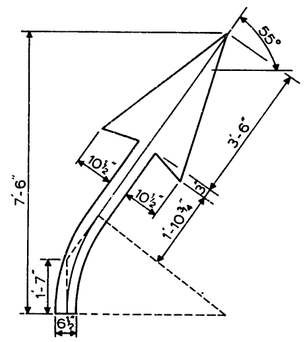
Right Arrow

L-21



Oblique Left Arrow

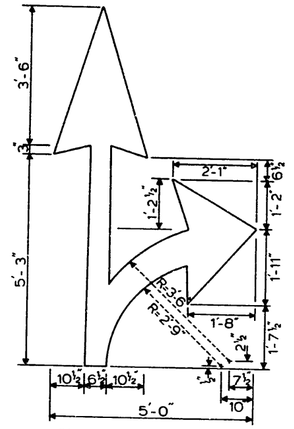
L-18



Oblique Right Arrow
L-19

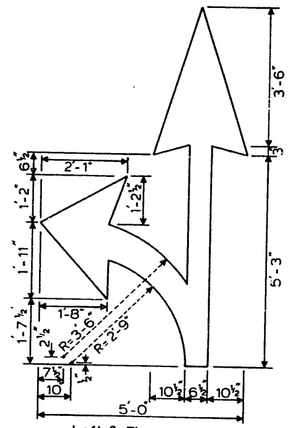
Ref. Std. Spec. Sec. 8-22.

APPROVED BY THE BOARD OF PUBLIC WORKS 10/7/ 19 82 ATTEST: CHAIRMAN EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Pavement Markings Legends/Symbols



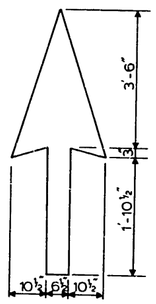
Right & Through Arrows

L-24



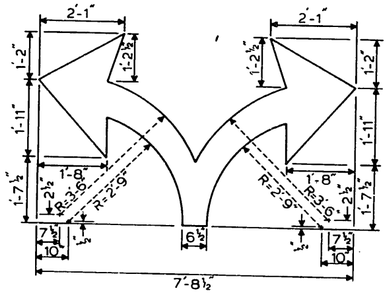
Left & Through Arrows

L-23



Through Arrow

L-22

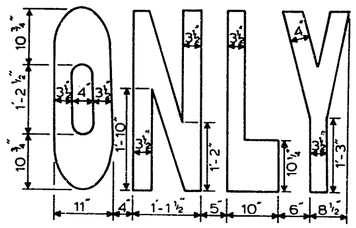


Left & Right Arrows

L-17

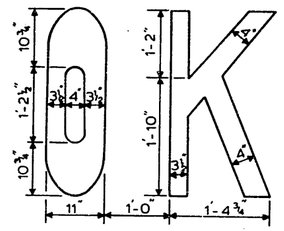
Ref. Std. Spec. Sec. 8-22.

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Pavement Markings
10/31, 19 82 CHAIRMAN	DEPARTMENT OF ENGINEERING	Legends / Symbols
ATTEST: EXEC SECRETARY		



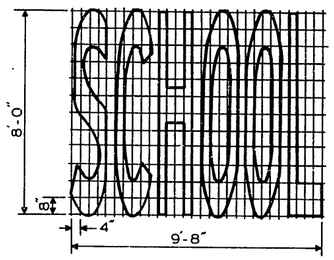
"ONLY" Legend

L-25



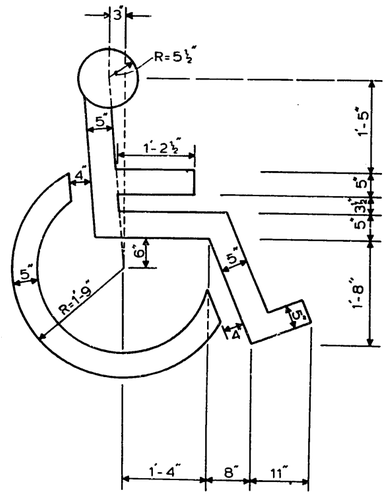
"OK" Legend

L-26



"SCHOOL" Legend

L-35



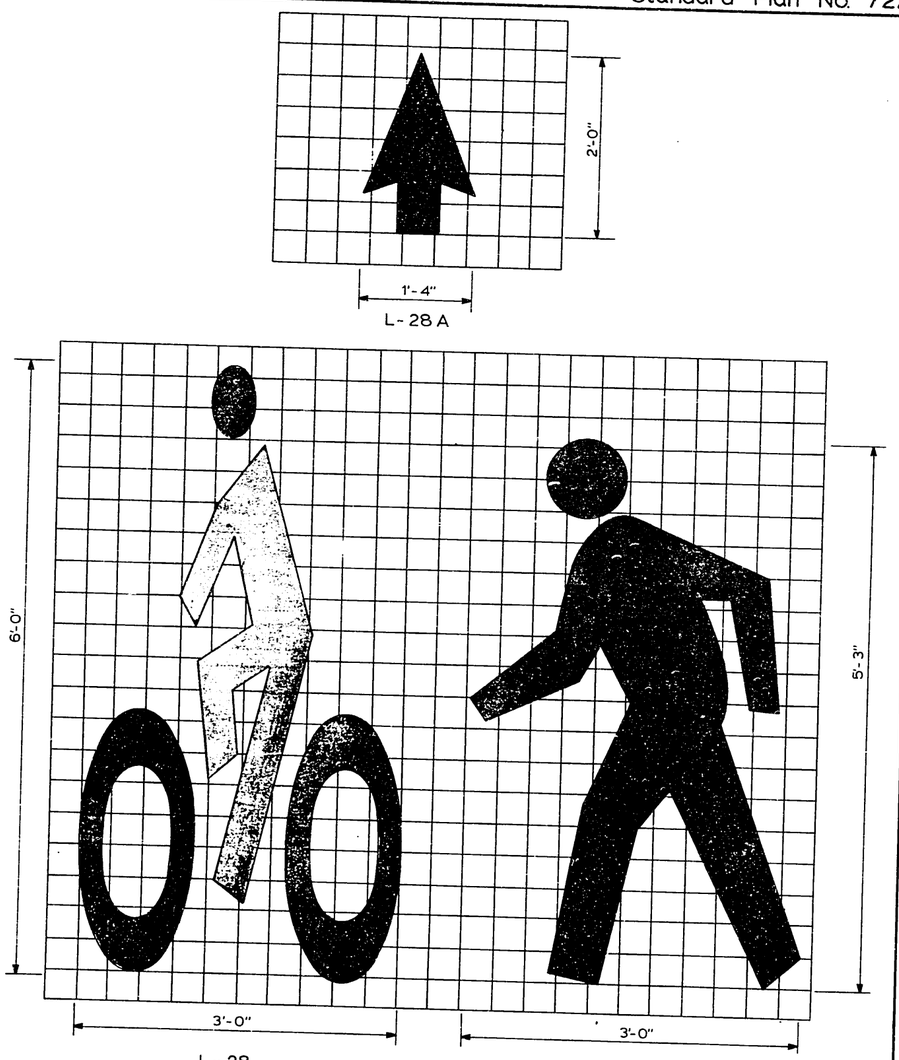
Disabled Person Symbol

L-29

Ref. Std. Spec. Sec. 8-22

APPROVED BY THE BOARD OF PUBLIC WORKS	CITY OF SEATTLE	Pavement Markings
10/31, 19 82 CHAIRMAN	DEPARTMENT OF ENGINEERING	Legends / Symbols
ATTEST: EXEC SECRETARY		

Standard Plan No. 722



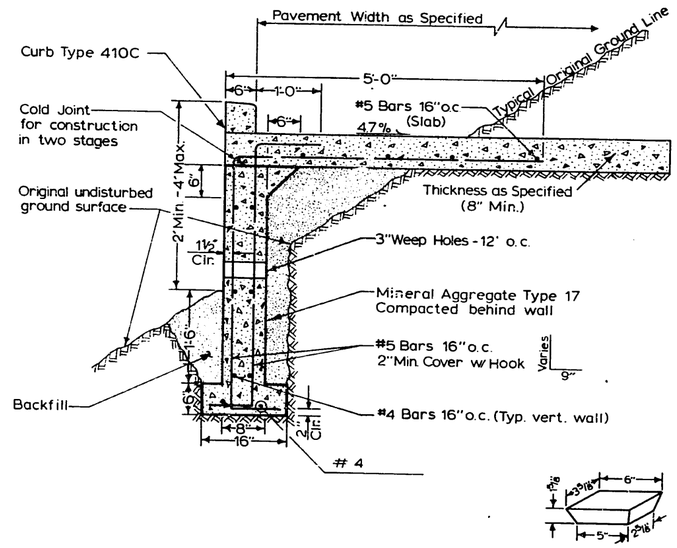
L - 28
(Includes L - 28 A)

L - 27

Ref. Std. Spec. Sec. 8-21.

APPROVED BY THE BOARD OF PUBLIC WORKS 19 ____ CHAIRMAN ATTEST: ____ EXEC. SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Bicyclist & Pedestrian Symbols

Standard Plan No. 800



Notes:

1. Base of Support Wall to be bearing on firm undisturbed earth.
2. Back form for Support Wall may be omitted and concrete placed against native earth when ground conditions permit.
3. When construction of alley pavement is not integral with Support Wall, Shear Keys shall be installed 18" on centers.
4. Concrete for Support Wall shall be Class 6(1½).
5. Reinforcing steel ASTM A615, Grade 60.

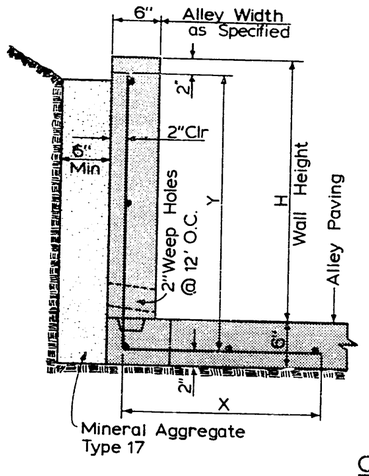
Beveled block for forming Shear Key in wall section to be made from standard 2"x4"x6" wood or other suitable material.
(See Note 3)

Ref. Std. Spec. Sec. 5-06.

Do Not Scale

APPROVED BY THE BOARD OF PUBLIC WORKS 10/31, 19 ____ CHAIRMAN ATTEST: ____ EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Support Wall

Standard Plan No. 801.1

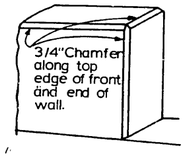


Curb Wall
No Scale

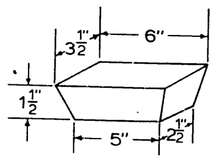
Bar List			
H	X	Y	Diagram
2'	2'-6"	2'-2"	4 Ties - #4, #4 @ 18"O.C.
3'	2'-6"	3'-2"	5 Ties - #4, #4 @ 18"O.C.
4'	4'-4"	4'-2"	7 Ties - #4, #4 @ 12"O.C.

Notes:

1. Match Wall Through Joints with Pavement Through Joints.
2. Conc Class 6(1 1/2) For Curb Wall.
3. Max Height 4' (Min Pavement width is 12' for Walls higher than 3').
4. Back Form for Curb Wall may be omitted and Conc placed against Native Earth when ground conditions permit.
5. When construction of Wall is not integral with Alley Pavement, Shear Key indentations spaced 18" O C shall be installed in the Pavement Slab.
6. Reinf. steel, ASTM A615, GR. 60.



Curb Wall Detail
No Scale



Beveled Block for Forming Shear Key in Wall Section to be Made From Std 2"x4"x6" Wood or Other Suitable Material See Note 5.

Shear Key Form
No Scale

Ref. Std. Spec. Sec. 5-06

APPROVED BY THE BOARD OF PUBLIC WORKS 7/12, 19 21 CHAIRMAN ATTEST: EXEC SECRETARY	CITY OF SEATTLE DEPARTMENT OF ENGINEERING	Curb Wall