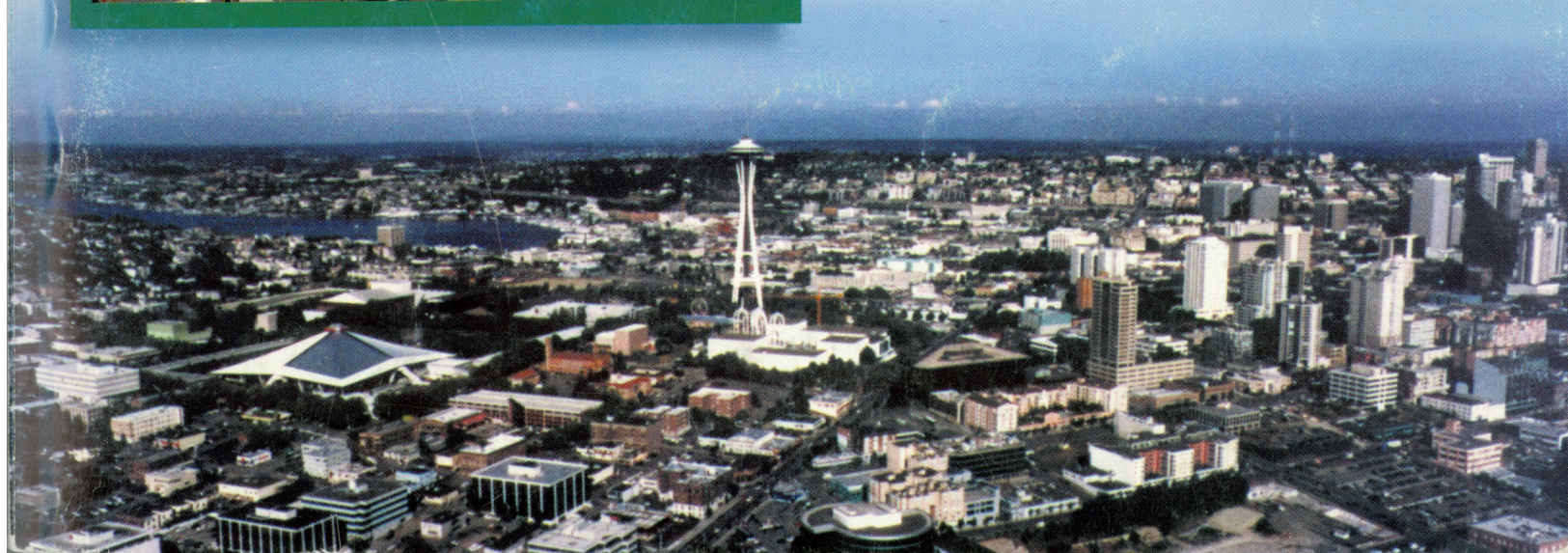


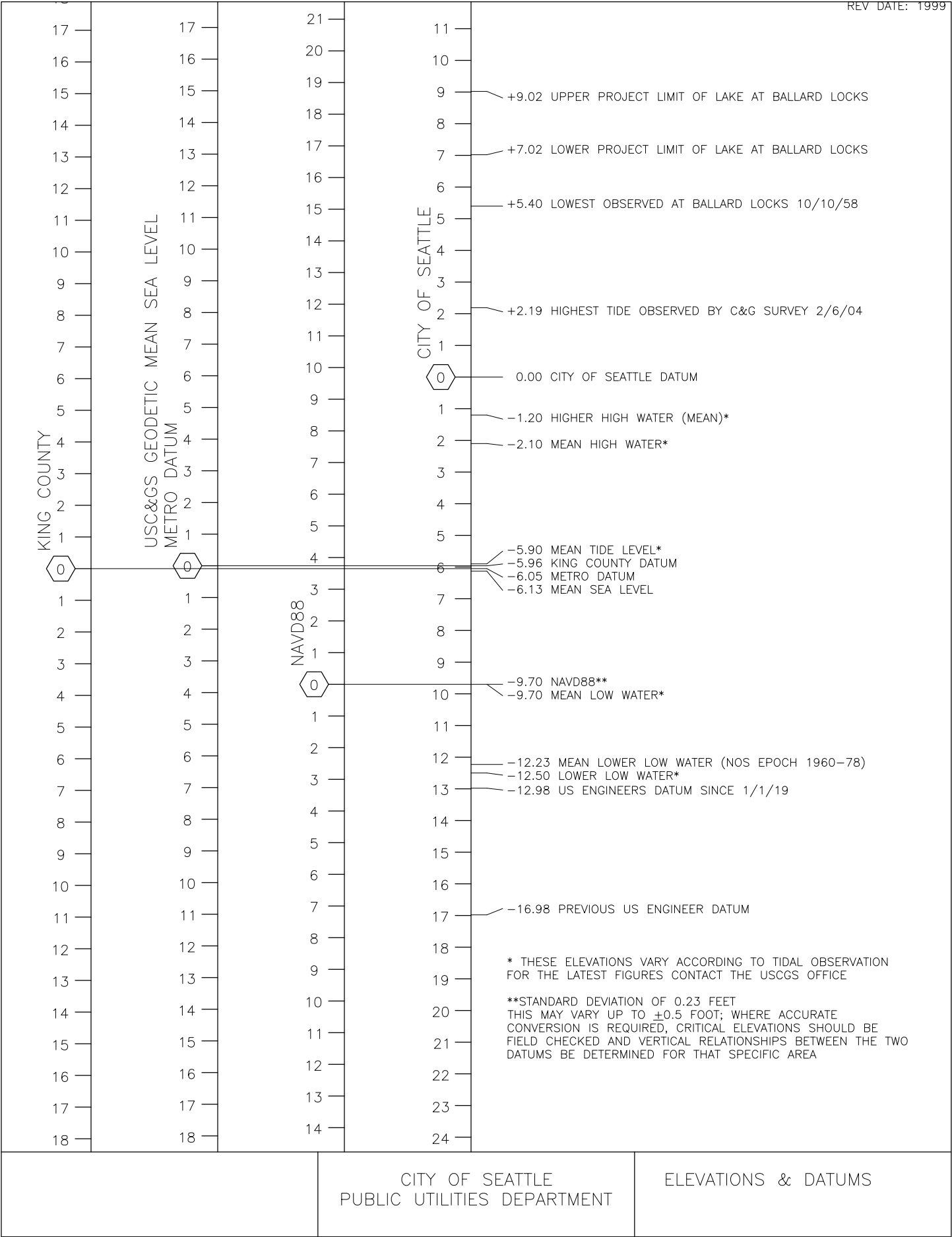


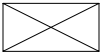







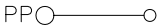
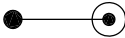
City of Seattle


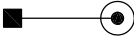








Standard Plans for Municipal Construction

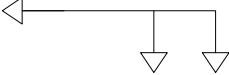
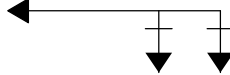
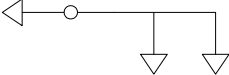
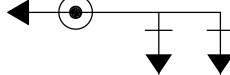
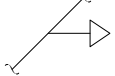
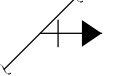
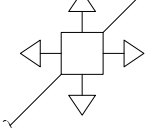
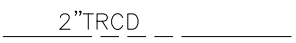


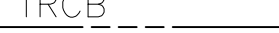
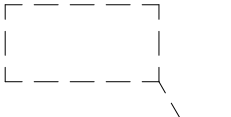
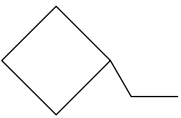
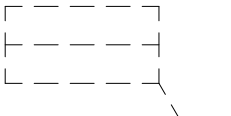

2000 Edition




































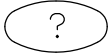
| ITEM ELECTRICAL | EXISTING | LINE WEIGHT | PROPOSED | LINE WEIGHT | NOTES |
|--|---|--|---|----------------------|--|
| Signal Controller Cabinet |  | .012 |  | .020 | ECAB PCABII or PCABIII user scaled to size |
| Electrical Vault |  | .014 |  | .024 | EEV / PEV user scaled to size |
| Electrical Cable (direct burial) | <u>ECB</u> | .014 | <u>ECB</u> | .024 or .031 | LT=ECd 6-1-1-1 |
| Electrical Conduit | <u>1"ECD</u> | .014 | <u>1"ECD</u> | .024 or .031 | LT=ECd 6-1-1-1 |
| Electrical Duct | <u>12"X12"ED</u> | .014 | <u>12"X12"ED</u> | .020 or .024 | LT=ECd 6-1-1-1 |
| Combined Electrical & Telephone Duct | <u>12"X12"ED-TD</u> | .014 | <u>12"X12"ED-TD</u> | .020 or .024 .024 | LT=ECd 6-1-1-1 |
| Span Wire | | .012 | | | |
| Aerial Interconnect Cable | <u>AIC</u> | .012 | <u>AIC</u> | .024 | |
| Transmission Pole (steel w/ conc base) |  | .012 |  | .020 | EXP PXP |
| City Wood Pole |  | .012 |  | | EPP PWP |
| City Wood Pole w/ HPS |  | .012 |  | .020 | EPPLT PWP+PBARM+PLUM |
| | | CITY OF SEATTLE PUBLIC UTILITIES DEPARTMENT | | STANDARD SYMBOLS | |

| ITEM ELECTRICAL | EXISTING | LINE WEIGHT | PROPOSED | LINE WEIGHT | NOTES |
|---|--|----------------|--|----------------|-------------------------|
| Light Pole (metal) w/ HPS | LP  | .012 |  | .020 | ELP PLP+PBARM+PLUM |
| Strain Pole (metal) |  (CURB) | .012 |  (CURB) | | ESP PSP |
| Combined Lighting Strain Pole HPS |  | .012 |  | .020 | ESPLT PSP+PBARM+PLUM |
| Utility Wood Pole | PPO | .012 |  | .020 | EPP PUP |
| Utility Guy Pole | GPO | .012 | GP  | .020 | EPP PUP |
| Anchor |  | .012 |  | .020 | EGUY PUPA |

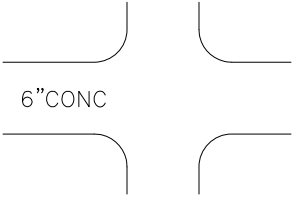
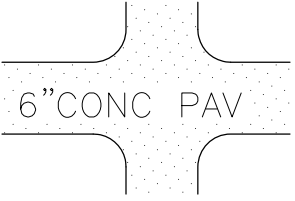
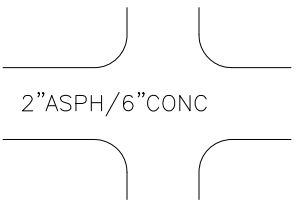
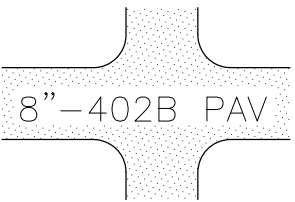
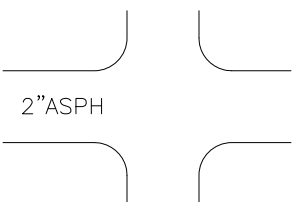
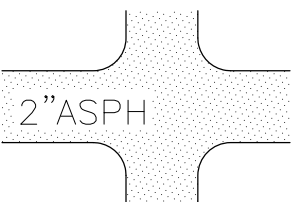


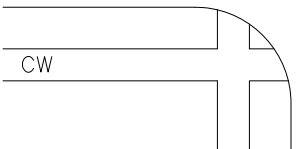
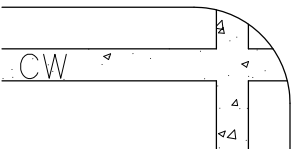
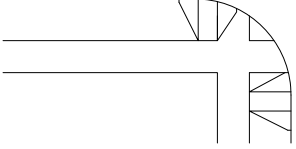
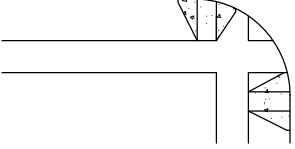
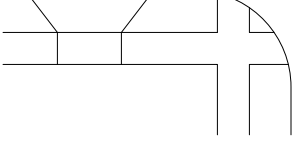
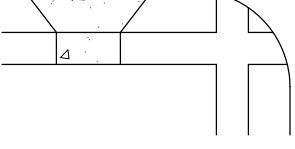

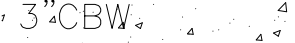


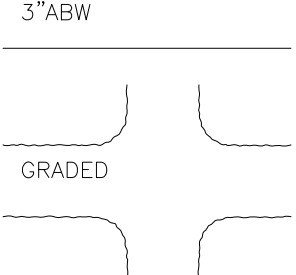
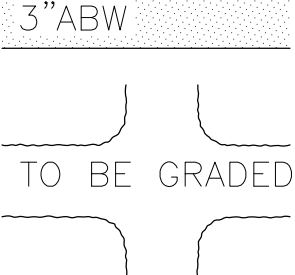
| ITEM ELECTRICAL | EXISTING | LINE WEIGHT | PROPOSED | LINE WEIGHT | NOTES |
|---|---|----------------|---|--------------------|--|
| Traffic Signal Mast Arm Pole |  | .012 |  | .031 (10 scale) | ESIG PMAP+PMAST#+PSIGV |
| Traffic Signal Mast Arm Pole w/ Luminaire |  | .012 |  | .024 (20 scale) | ESIG PMAP+PMAST#+ PLUM+PSIGV |
| Traffic Signal on Span Wire |  | .012 |  | .020 | ESIG PSIGV |
| Multi-Directional Traffic Signal on Span Wire |  | .012 | | .020 | ESIG |
| Traffic Signal Conduit |  | .014 |  | .024 or .031 | LT=ECd 6-1-1-1 |
| Traffic Signal Cable |  | .014 |  | .024 or .031 | LT=ECd 6-1-1-1 |
| Detector Loop, Dipole (loop schedule) |  | .012 |  | .020 | ELOOP1 PLOOP## user scaled to size |
| Detector Loop, Quadrapole (loop schedule) |  | .012 | | .020 | ELOOP2 |
| Pressure Detector |  | .012 | | | drawn to size |

| ITEM <u>ELECTRICAL</u> | EXISTING | LINE WEIGHT | PROPOSED | LINE WEIGHT | NOTES |
|--|---|--|--|------------------|----------------------|
| Signal Pedestal |  | .012 |  | | EPEDP PPED |
| Vehicle Signal |  | .012 | | | ESIG |
| Vehicle Signal w/ Backplate |  | .012 |  | .020 | ESIGNBK PSIGV |
| Vehicle Signal (optically programmed) |  | .012 |  | .020 | ESIGOP PSIGVOP |
| Pedestrian Signal |  | .012 |  | .020 | EPEDSIG PSIGP |
| Pedestrian Signal (optically programmed) |  | .012 |  | .020 | EPEDSGOP PSIGPOP |
| Pedestrian Push Button Pedestal |  | .012 |  | | EPPBP PPPBP |
| Pedestrian Push Button |  | .012 |  PPB | .020 | EPPB PPPB |
| Illuminated Sign |  | .012 |  | .020 | EILLSIGN PILLSIGN |
| Non-illuminated Sign |  | .012 |  | .020 | ENILSIGN PNILSIGN |
| Handhole |  | .012 |  | | EHH / PHH# |
| Traffic Control Handhole |  | .012 |  | | EHH PHH# |
| Street Light Handhole |  | .012 |  | | EHH PHH# |
| Ground Rod Handhole |  | .012 |  | | EHH PHH# |
| | | CITY OF SEATTLE PUBLIC UTILITIES DEPARTMENT | | STANDARD SYMBOLS | |

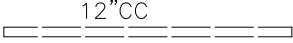
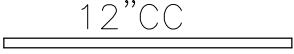
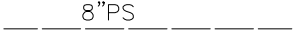



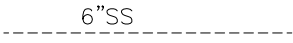

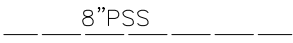



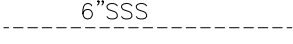

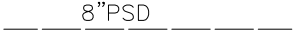


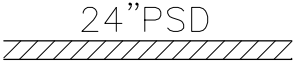
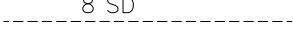


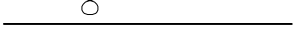
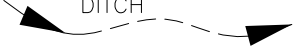
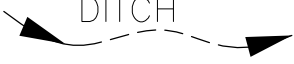


SIGNALIZATION IDENTIFICATION SYMBOLS



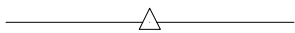

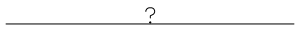
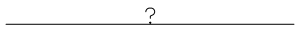
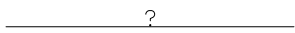














| | | |
|---|--|-------|
|  | Vehicle & Pedestrian Signal Head (?=Identification Number) | PHEX |
|  | Illuminated Traffic Sign (?=Identification Number) | PBOX |
|  | Cable Runs (?=Run Number per Wiring Schedule) | PTRI |
|  | Removal/Relocation Item (?=Identification Number per Removal/Relocation Plan) | PCIR |
|  | Construction Item (?=Identification Number per Signalization Plan) | POVAL |

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

| ITEM PAVING | EXISTING | LINE WEIGHT | PROPOSED | LINE WEIGHT | NOTES |
|----------------------------------|--|--|--|------------------|---|
| Cement Concrete Pavement |  6"CONC | .012 |  6"CONC PAV | .020 | DOTS Color 7 Suggested scale 12 Angle 45 |
| Asphalt Concrete Pavement |  2"ASPH/6"CONC | .012 |  8"-402B PAV | .020 | DOTS Color 14 Suggested scale 6 Angle 45 |
| Asphalt Concrete Surfacing |  2"ASPH | .012 |  2"ASPH | .020 | DOTS Color 14 Suggested scale 6 Angle 45 |
| Curb |  | .012 |  | .028 | |
| Cement Concrete Walk |  CW | .012 |  CW | .020 | AR-CONC Color 22 (typ) Suggested scale .5 (typ) Angle 45 (typ) |
| Curb Ramp |  | .012 |  | .020 | EWCR user modified PWCR user modified AR-CONC |
| Conc Dwy |  | .012 |  | .020 | AR-CONC |
| Cement Concrete Bike Way |  3"CBW | .012 |  3"CBW | .020 | AR-CONC |
| Asphalt Concrete Bike Way |  3"ABW | .012 |  3"ABW | .020 | DOTS Color 14 Suggested scale 6 Angle 45 |
| Grading |  GRADED | .012 |  TO BE GRADED | .020 | SPU Customized Command: ASPH |
| | | CITY OF SEATTLE PUBLIC UTILITIES DEPARTMENT | | STANDARD SYMBOLS | |


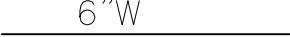

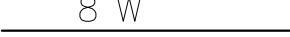
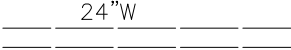

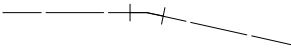
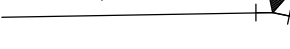
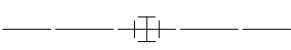
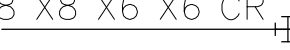
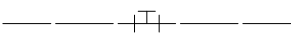
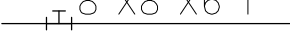

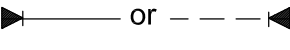
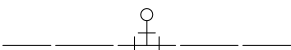
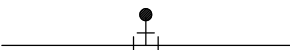


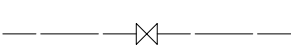





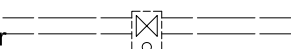
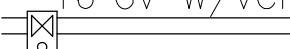
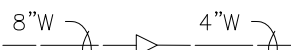
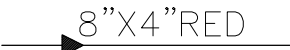
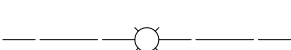
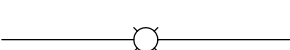
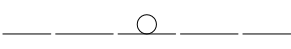

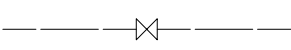

| ITEM SEWERAGE & DRAINAGE | EXISTING | LINE WEIGHT | PROPOSED | LINE WEIGHT | NOTES |
|------------------------------------|----------|--|----------|------------------|----------------------|
| Manhole | | .014 | MH-7 | .024 | EMH / PMH LT=MH |
| Inlet Type 250A | | .014 | | .020 | EINL250A PINL250A |
| Inlet Type 250B | | .014 | | .020 | EINL250B PINL250B |
| Inlet Type 252 | | .014 | | .020 | EINL252 PINL252 |
| Inlet Type 268 | | .014 | | | EINL250A |
| Catch Basin round inlet top | | .014 | | | ECB-RND |
| Private CB & Inlet | | .014 | | | ECB-PRIV |
| Catch Basin Type 151 (pre 1985) | | .014 | | | ECB151 |
| Catch Basin Type 240A | | .014 | | .020 | ECB240A PCB240A |
| Catch Basin Type 240B | | .014 | | .020 | ECB240B PCB240B |
| Catch Basin Type 240C | | .014 | | .020 | ECB240C PCB240C |
| Catch Basin Type 241 | | .014 | | .020 | ECB241 PCB241 |
| Catch Basin Type 242A | | .014 | | .020 | ECB242A PCB242A |
| Catch Basin Type 242B | | .014 | | .020 | ECB242B PCB242B |
| Catch Basin Type 277A | | .014 | | .020 | ECB277A PCB277A |
| Catch Basin Type 277B | | .014 | | .020 | ECB277B PCB277B |
| Sand Box | | .014 | | | ESB |
| | | CITY OF SEATTLE PUBLIC UTILITIES DEPARTMENT | | STANDARD SYMBOLS | |

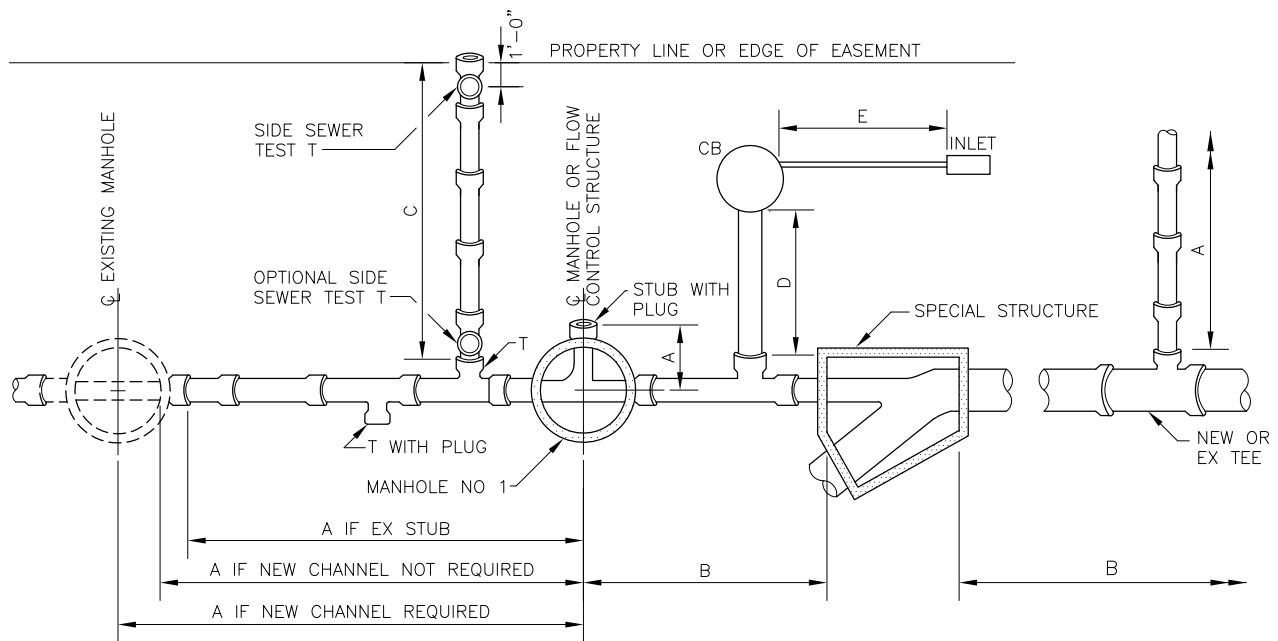
| ITEM SEWERAGE & DRAINAGE | EXISTING | LINE WEIGHT | PROPOSED | LINE WEIGHT | NOTES |
|-------------------------------|---|--|--|------------------|---|
| Concrete Culvert |  | .014 |  | .024 | LT=PSS |
| Pipe Sewer Combined <1'-0"Dia |  | .014 |  | .031 | LT=PSS |
| Pipe Sewer Combined ≥1'-0"Dia |  | .014 |  | .024 | LT=PSS DOTS scale 10 |
| Side Sewer Combined |  | .014 |  | .031 | LT=SS |
| Pipe Sewer Sanitary <1'-0"Dia |  | .014 |  | .031 | LT=PSS |
| Pipe Sewer Sanitary ≥1'-0"Dia |  | .014 |  | .024 | LT=PSS ANSI31 scale 20 / angle 90 |
| Side Sewer Sanitary |  | .014 |  | .031 | LT=SS |
| Pipe Storm Drain <1'-0"Dia |  | .014 |  | .031 | LT=SD |
| Pipe Storm Drain ≥1'-0"Dia |  | .014 |  | .024 | LT=SD ANSI31 scale 10 |
| Service Drain |  | .014 |  | .031 | LT=SS |
| Inlet & CB Connection |  | .014 |  | .031 | LT=SS |
| Small Ditch or Stream |  | .012 |  | .020 | LT=DITCH* |
| Large Ditch or Stream |  | .012 |  | .020 | LT=DITCH* |
| | | | | | *SPU Customized Command DITCH |
| | | CITY OF SEATTLE PUBLIC UTILITIES DEPARTMENT | | STANDARD SYMBOLS | |

| ITEM TOPOGRAPHIC & MISC | EXISTING | LINE WEIGHT | PROPOSED | LINE WEIGHT | NOTES |
|---|---|--|--|------------------|---------------------------------------|
| Monument (may not be in case) |  | .012 | | | EMON |
| Monument in Case |  | .012 | | | EMIC |
| Brass Plug |  | .012 | | | EBP |
| Tack Hub |  | .012 | | | EHUB |
| Center Line |  | .012 | | | |
| Monument Line |  | .012 | | | |
| Survey Line |  | .012 | | | |
| Right of Way Line |  | .031 | | | |
| Lot & Ownership Line |  | .012 | | | |
| Permanent Easement Line |  | |  | | LT=DOT2 |
| Temp Const Easement Line | | |  | | LT=DOT |
| Vacated Street or Alley |  | .031 | | | LT=PSS |
| State Highway Limited Access Line |  | .031 | | | SPU Customized Command BUILDING |
| Building |  | .012 | | | BUILDING |
| Chain Link Fence |  | .012 |  | .020 | WR-FENCE |
| Wood Fence |  | .012 |  | .020 | WD-FENCE |
| Guardrail |  | .012 |  | .020 | GD-RAIL |
| | | CITY OF SEATTLE PUBLIC UTILITIES DEPARTMENT | | STANDARD SYMBOLS | |

| ITEM TOPOGRAPHIC & MISC | EXISTING | LINE WEIGHT | PROPOSED | LINE WEIGHT | NOTES |
|--|----------------|--|----------|------------------|---|
| Rock Facing | | .012 | | .020 | EROCKERY PROCKERY |
| Tree <1'-0"Dia | Deciduous | .012 | Per Plan | .020 | EDECIDSM/ECONFISM PDECIDSM/PCONFISM |
| Tree ≥1'-0"Dia | Coniferous | .012 | Per Plan | .020 | EDECID / ECONF PDECID / PCONF user scaled to size |
| Ground, Grade Line | | .014 | | .014 | |
| Grade (arrow downhill) | | .012 | | .012 | |
| Slope Line | | .012 | | .020 | |
| Contours | | .012 | | .020 | |
| Vertical Curve | | .012 | | .012 | |
| Depression | | .012 | | .020 | |
| Top of Cut Toe of Fill | | .012 | | .014 | |
| Abandon(ed) | | .012 | | .014 | |
| Dimension Line | | .012 | | .020 | |
| Match Line | | .012 | | | |
| Test Hole & Number (test boring) | | .014 | | | XBP |
| City of Seattle Datum | | | | | DATUM |
| North Arrow horizontal | | | | | NORTHOR |
| North Arrow vertical | | | | | NORTHVER |
| | | CITY OF SEATTLE PUBLIC UTILITIES DEPARTMENT | | STANDARD SYMBOLS | |

| ITEM | EXISTING | LINE PROPOSED | LINE | NOTES |
|-------------------------------------|------------------|--|--------|---------------------------|
| PRIVATE UTILITIES | | WEIGHT | WEIGHT | |
| Telephone Cable (direct burial) | TCB | .014 | | LT=TEL 6-1-1 (typical) |
| Telephone Conduit | 3"TCdD | .014 | | |
| Telephone Duct | 12"X12"TD | .014 | | |
| Telephone Enclosure | ENCL | .014 | | ETEL ENCL |
| Telephone Manhole | TMH | .014 | | drawn to size |
| Telephone Handhole | THH | .014 | | EHH |
| Television Cable (direct Burial) | TVCB | .014 | | LT=TV 6-1-1-1 |
| Television Handhole | TVHH | .014 | | EHH |
| Telegraph Manhole | TELEG MH | .014 | | drawn to size |
| Steam Log | 6"STM 14"X14"LOG | .014 | | LT=STEAM 2-2 |
| Steam Vault | STEAM VAULT | .014 | | drawn to size |
| Gas Main | 12"G | .014 | | LT=GAS 6-1-6 (typical) |
| Gas Valve | | .014 | | EVALVE |
| Gas Meter | GM | .014 | | EGM |
| Gas Regulator | G REG | .014 | | EGREG |
| Petroleum or Oil | OIL | .014 | | |
| | | CITY OF SEATTLE PUBLIC UTILITIES DEPARTMENT | | |
| | | STANDARD SYMBOLS | | |

| ITEM WATER | EXISTING | LINE WEIGHT | PROPOSED | LINE WEIGHT | NOTES |
|---------------------------------|---|----------------|--|----------------|----------------------------|
| Watermain <8"Dia |  | .014 |  | .031 | LT=WATER 6-6 (typical) |
| Watermain ≤8"<1'-0"Dia |  | .014 |  | .047 | |
| Watermain ≥1'-0"Dia |  | .014 |  | .020 | DOTS scale 20 |
| Bend w/ Conc Blocking |  | .014 |  | .020 | EHB# PHB# + PCONCBLK |
| Cross |  | .014 |  | .020 | ECROSS / PCROSS |
| Tee |  | .014 |  | .020 | ETEE / PTEE |
| Plug w/ Conc Blocking |  | .014 |  | .020 | ETIC PTIC + PCONCBLK |
| Hydrant |  | .014 |  | .020 | EHYD + ETEE PHYD + PTEE |
| Water Meter |  | .014 |  | .024 | EWM / PWM |
| Gate Valve w/ Valve Box |  | .014 |  | .020 | EVALVE PVALVE |
| Gate Valve w/ Chamber |  | .014 |  | .024 | EWGV PWGV |
| Gate Valve w/ Vault Chamber |  | .014 |  | .020 & .024 | EWGVVCH PWGVVCH |
| Reducer |  | .014 |  | | ERED / PRED |
| Air Valve |  | .014 |  | .024 | EAV / PAV |
| Blowoff |  | .014 |  | .024 | EBO / PBO |
| Butterfly Valve w/ Valve Box |  | .014 |  | .020 | EVALVE PVALVE |
| Butterfly Valve w/ Chamber |  | .014 |  | .020 | EWGV PWGV |



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:

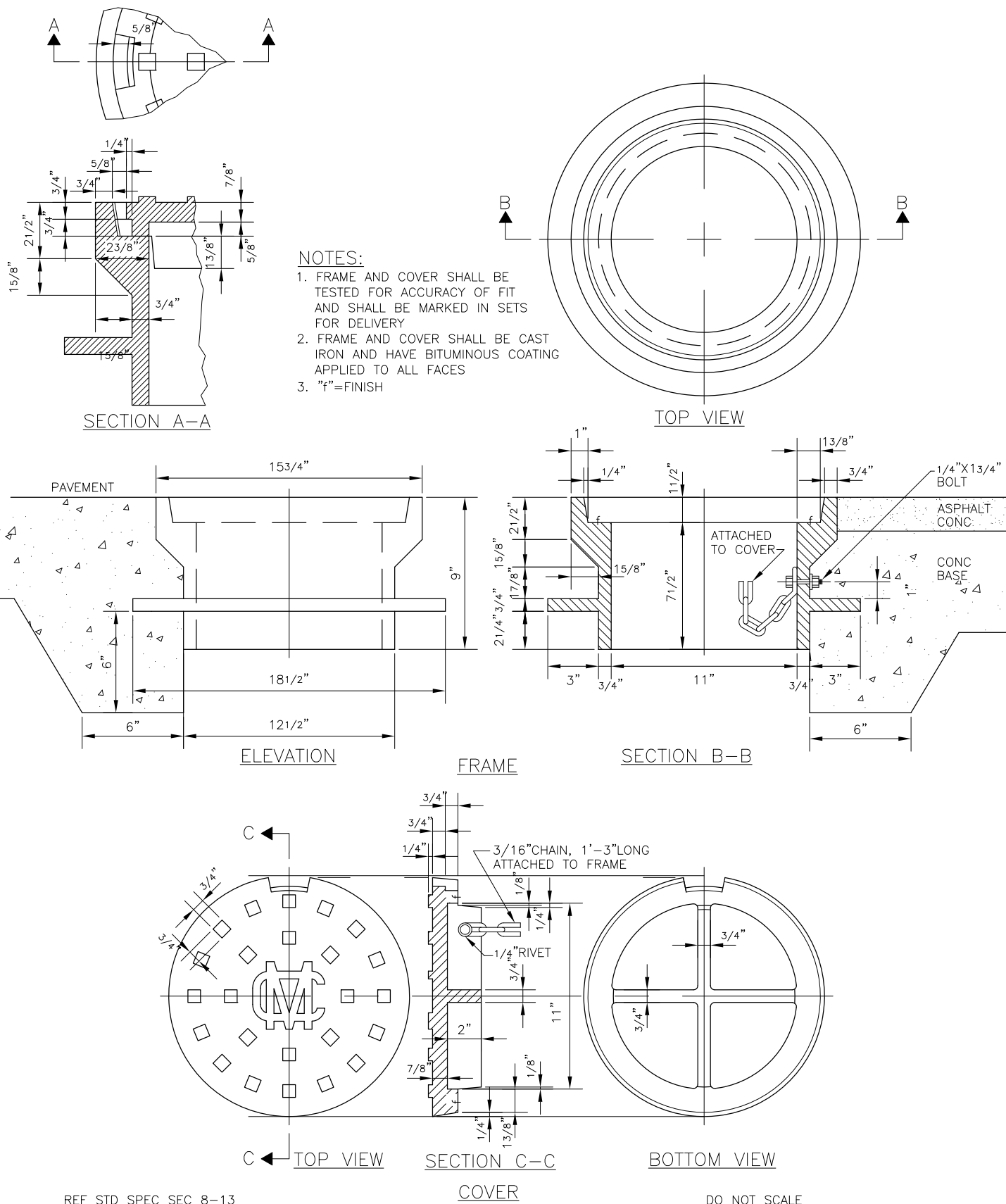
ALL PIPE SHALL BE MEASURED ON THE SLOPE ALONG THE CENTERLINE OF PIPE

NOT TO SCALE

REF STD SPEC SEC 7-17

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

SEWER/DRAINAGE
MEASUREMENT/PAYMENT
DIAGRAM



REF STD SPEC SEC 8-13

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

MONUMENT FRAME & COVER



1. SERVICES:
1'-8" TO 2'-6" DEPTH FROM CURB TO PROPERTY LINE RESERVED FOR LATERAL SERVICE
SANITARY SIDE SEWER MINIMUM COVER IS 2'-6" AT PROPERTY LINE AND 5'-0" AT THE CURB
SERVICE DRAIN MAY RUN UNDER THE SIDEWALK, THROUGH THE CURB OR THROUGH 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'-0"
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'-0" R/W AND 25'-0" RESIDENTIAL PAVING
5. IF PLANTING STRIP IS ANYTHING OTHER THAN 5'-6" IN WIDTH FROM FACE OF CURB TO EDGE OF SIDEWALK, STREET TREE PLANTING REQUIRES SITE SPECIFIC REVIEW AND APPROVAL FOR APPROPRIATE TREE PLACEMENT

* OMISSION OF STAKING
OR REDUCED STAKE LENGTH/
REDUCED TREE TIE WIDTH
MAY BE ALLOWED WHEN
APPROVED BY THE ENGINEER.

STAKE TREE WITH (2) TREATED
2"Ø LODGEPOLE PINE DOWELED
TREE STAKES (8'-0" LENGTH*)

"CHAINLOCK" OR EQUAL TREE
TIE MATERIAL (1" WIDTH*) NAIL
OR STAPLE TREE TIE MATERIAL
TO STAKE TO HOLD VERTICALLY

2"-3" MULCH DEPTH (TAPERED AT
TRUNK)
MULCH TREE PIT MIN 5'-0"
LENGTH X FULL PLANTING
STRIP WIDTH BETWEEN CURB
AND SIDEWALK (FOR PLANTING
STRIPS LESS THAN 6'-0"WIDE.)
PROVIDE 5'-0"Ø MULCH
RING FOR PLANTING STRIPS
WIDER THAN 6'-0"

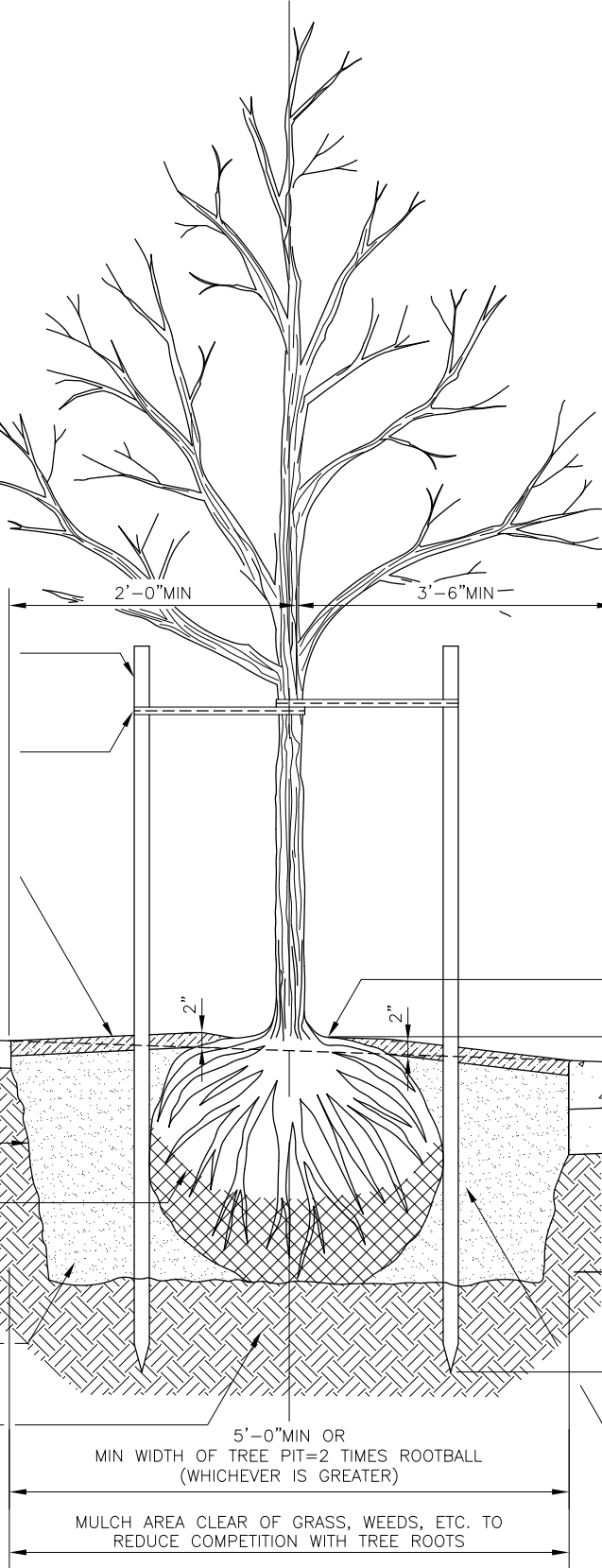
SIDEWALK

ROUGHEN SIDES OF PLANTING HOLE
MAXIMIZE EXCAVATED AREA WITHOUT
UNDERMINING ADJACENT
PAVING/CURB

REMOVE BURLAP, WIRE & STRING
FROM TOP 2/3 OF ROOTBALL

NATIVE BACKFILL SOIL AMENDED
WITH 25% (@1/3 CU YD)
DECOMPOSED ORGANIC MULCH
(COMPOST) FOR ENTIRE TREE PIT
AREA (@5'-0"X5'-0"X ROOTBALL
DEPTH)

UNDISTURBED SUBGRADE (PROVIDES
FIRM BASE SO THAT ROOTBALL
WILL NOT SINK)



- NOTES:
1. INSTALLATION INCLUDES
REMOVAL OF ROOTCROWN
SUCKERS AT THE TIME
OF PLANTING
 2. INSTALLATION INCLUDES
REMOVAL OF STAKES ONE
YEAR AFTER INSTALLATION
 3. 5'-0"MIN CLEARANCE FROM
WATER SERVICES, HYDRANTS
AND BLOW OFFS

UNLESS OTHERWISE DIRECTED,
LOCATE TREE MIN 3'-6"FROM
FACE OF CURB & 2'-0"FROM
SIDEWALK EDGE & CENTER
TREES IN PLANTING STRIPS
WIDER THAN 6'-0"

5'-0"MIN CLEARANCE FROM
WATER SERVICES, HYDRANTS
AND BLOW OFFS

-SET TOP OF ROOT CROWN 2"
ABOVE ADJACENT CURB &
SIDEWALK GRADE

TREE PIT DEPTH=
ROOTBALL DEPTH
(MEASURE BEFORE
DIGGING TO AVOID
OVEREXCAVATION)

DRIVE STAKES 6" TO
1'-0" INTO
UNDISTURBED SOIL
BELOW ROOTBALL

DRIVE STAKE AT
ROOTBALL EDGE
(TYP)

5'-0"MIN OR
MIN WIDTH OF TREE PIT=2 TIMES ROOTBALL
(WHICHEVER IS GREATER)

MULCH AREA CLEAR OF GRASS, WEEDS, ETC. TO
REDUCE COMPETITION WITH TREE ROOTS

NOTES:

1. INSTALLATION INCLUDES REMOVAL OF ROOT CROWN SUCKERS AT THE TIME OF PLANTING.
2. INSTALLATION INCLUDES REMOVAL OF STAKE(S) ONE YEAR AFTER INSTALLATION
3. 5'-0" MIN CLEARANCE FROM WATER SERVICES, HYDRANTS AND BLOW OFFS

1'-0" MIN CENTER OPENING IN GRATE AT TIME OF INSTALLATION

SET ROOT CROWN 1" BELOW GRATE

1 1/2"-2" MULCH OR PEA GRAVEL FILL (PER ENGINEER) BETWEEN TOP OF ROOTBALL/ BACKFILL & TOP OF TREE GRATE

GALVANIZED OR CAST IRON ANGLE FRAME SIZED TO ACCOMMODATE FLUSH-MOUNTED GRATE. MIN 1/4" HORIZONTAL CLEARANCE ON ALL SIDES

REMOVE BURLAP, WIRE & STRING FROM TOP 2/3 OF ROOTBALL

ROUGHEN SIDES OF PLANTING HOLE

NATIVE BACKFILL SOIL AMENDED WITH 25% (@ 1/3 CU YD) DECOMPOSED ORGANIC MULCH (COMPOST) FOR ENTIRE TREE PIT AREA (@ 5'-0" X 5'-0" OR 4'-0" X 6'-0" X ROOTBALL DEPTH)

UNDISTURBED SUBGRADE (PROVIDES FIRM BASE SO THAT ROOTBALL WILL NOT SINK)

FOR TREE PITS WITHOUT TREE GRATES SEE STD PLAN NO 100a (WITH DOWELED WOOD TREE STAKES)
STAKING PER STD PLAN 100a PREFERRED

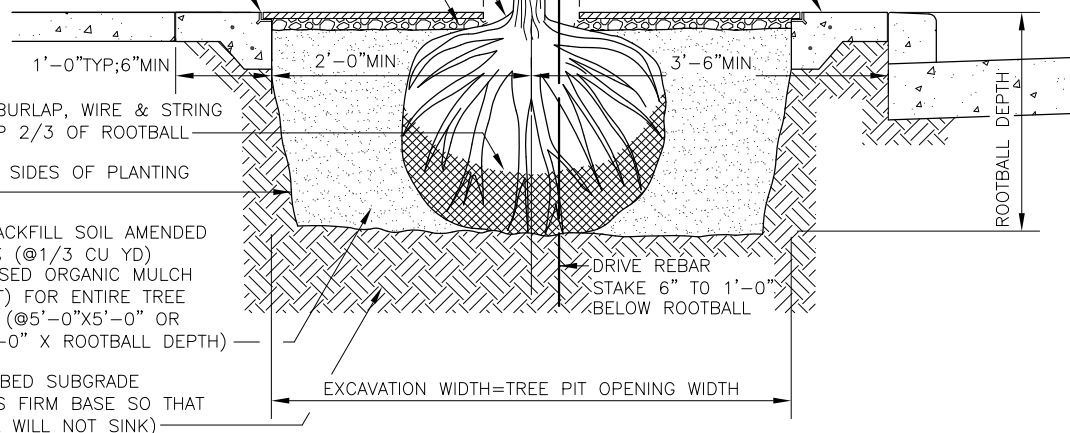
WHERE REBAR IS REQUIRED FOR COMPATABILITY WITH TREE GRATES (OR OTHERWISE REQUESTED BY THE ENGINEER) PROVIDE STAKING AS FOLLOWS:

1. #5 REBAR-LOCATE ON TRAFFIC SIDE OF TREE 2"-4" FROM TRUNK
2. FOR TYPICAL STREET TREES WITH CLEAR TRUNK, HEIGHT IS 2" BELOW LOWEST BRANCHES
3. FOR VERY LOW-BRANCHING TREES REBAR HEIGHT TO BE 5'-0" ABOVE FINAL GRADE

(3) TREE TIES #3 CHAINLOCK OR APPROVED EQUAL

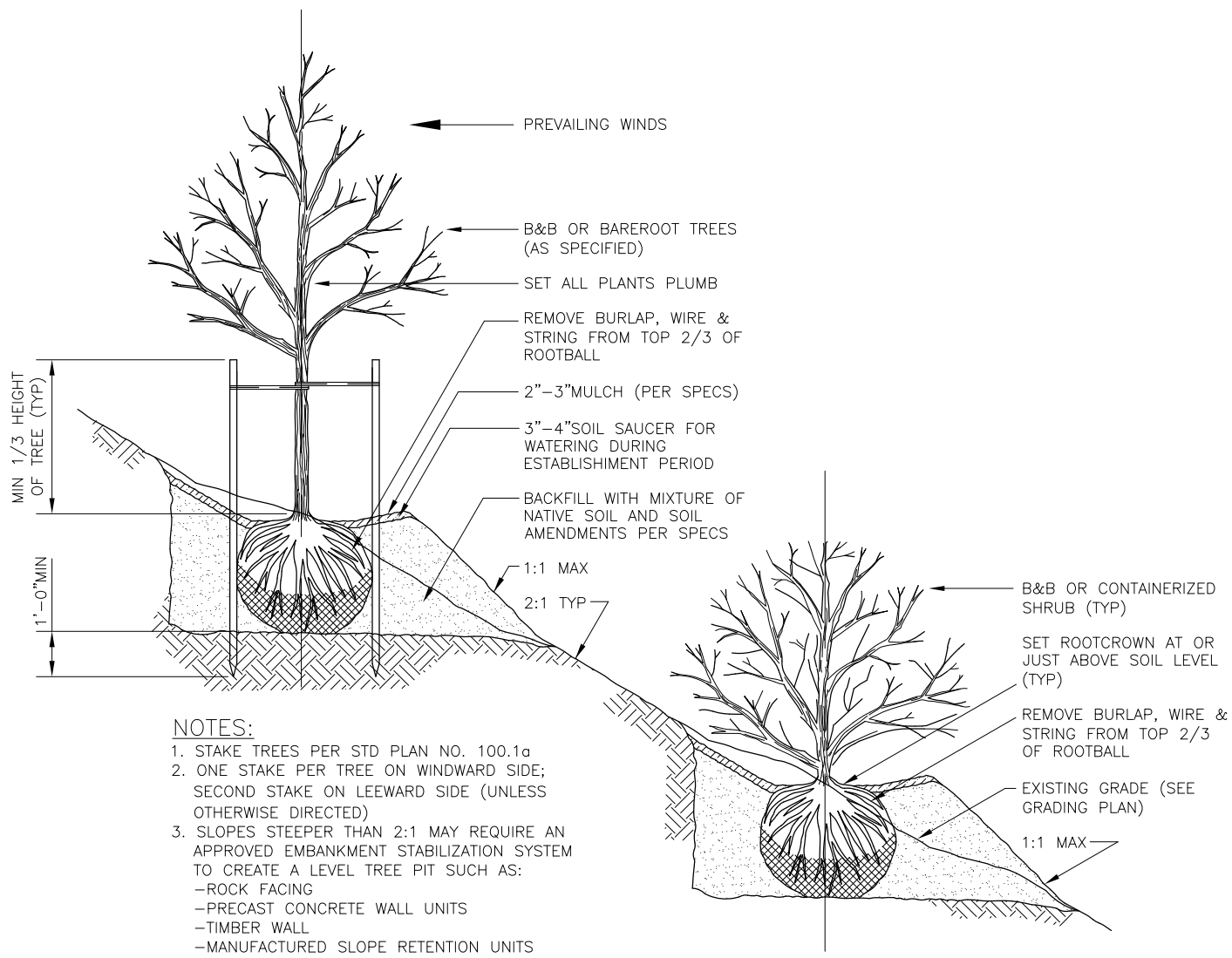
1. THREAD REBAR THROUGH PERFORATION
2. LOOP AROUND TRUNK W/ CLEARANCE FOR GROWTH
3. TIE TO REBAR WITH WIRE

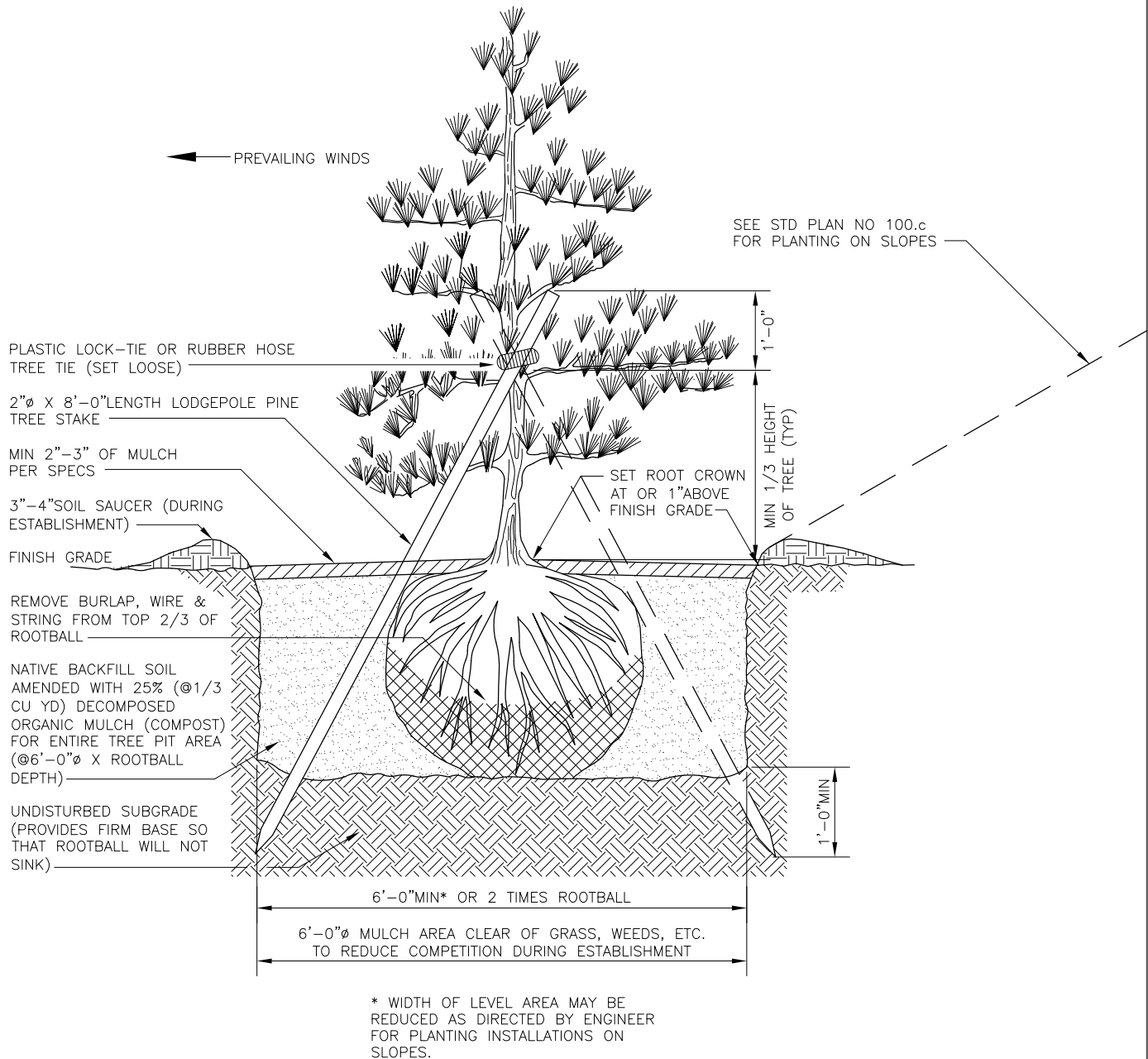
6" MIN DEPTH CONCRETE COLLAR W/ REBAR (STD SPECS) OR SIDEWALK WITH THICKENED EDGE. SEE STD PLAN NO 130.



CITY OF SEATTLE
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DECIDUOUS TREE PLANTING IN
TREE PIT WITH TREE GRATE

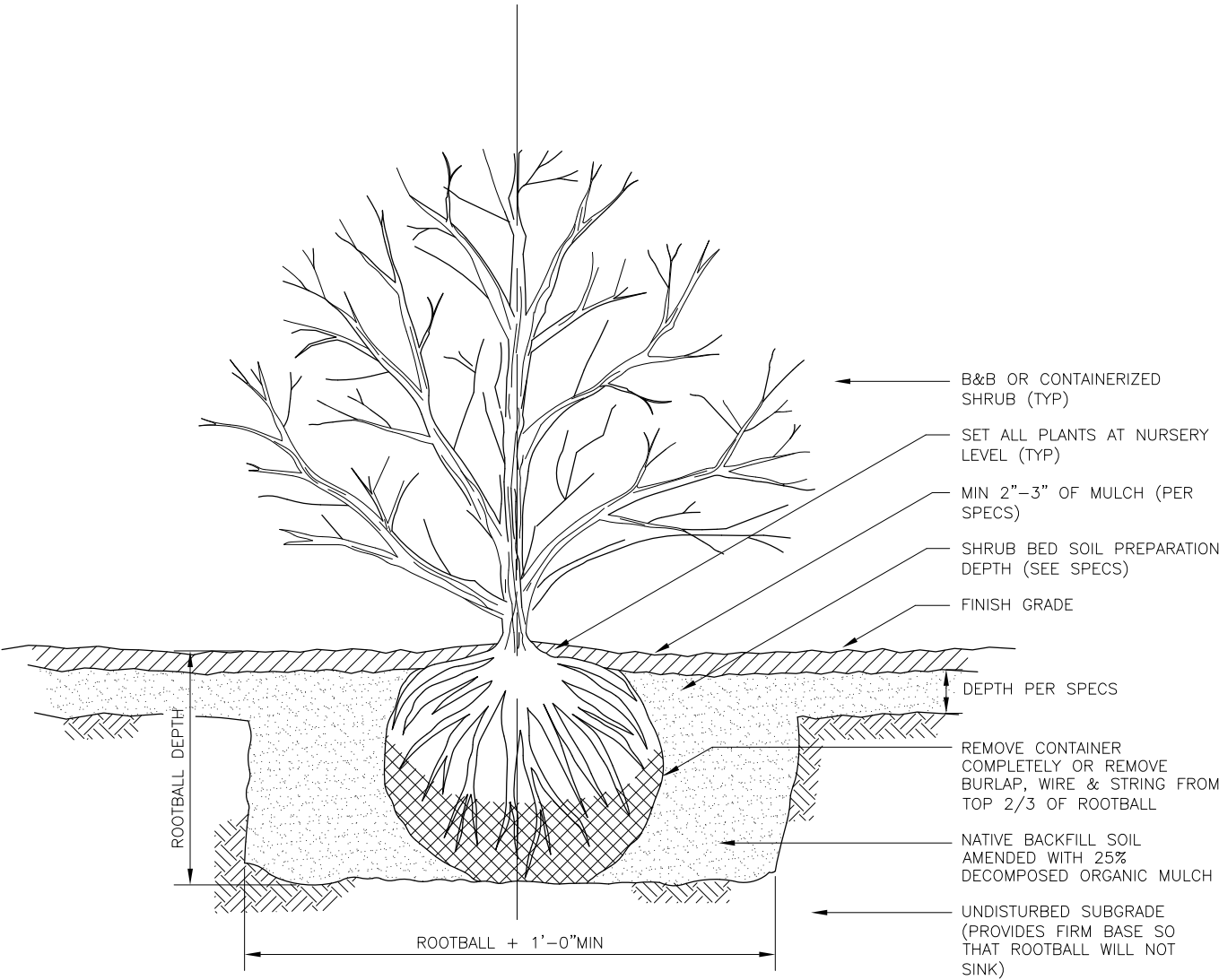




REF STD SPEC SEC 8-02

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

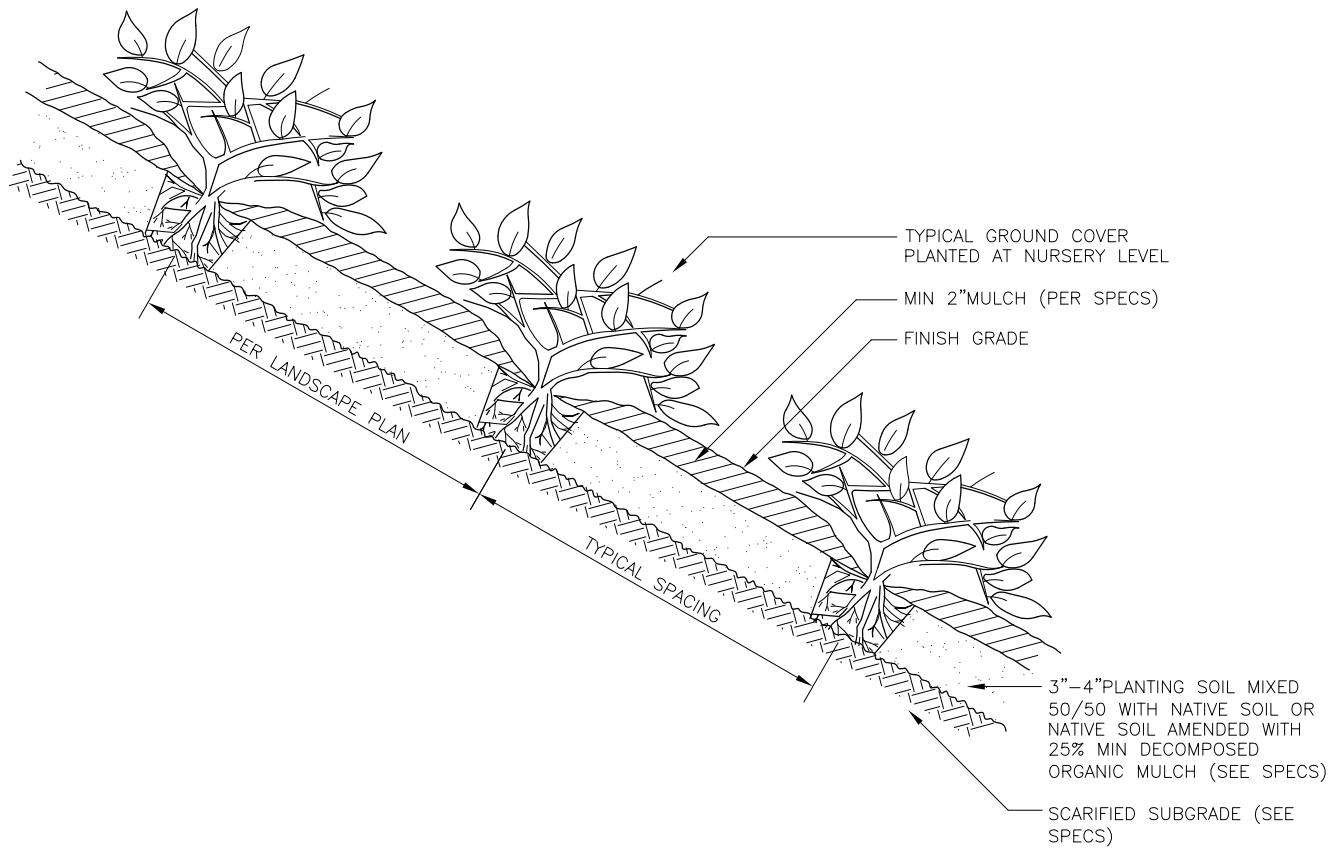
CONIFEROUS TREE PLANTING



REF STD SPEC SEC 8-02

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

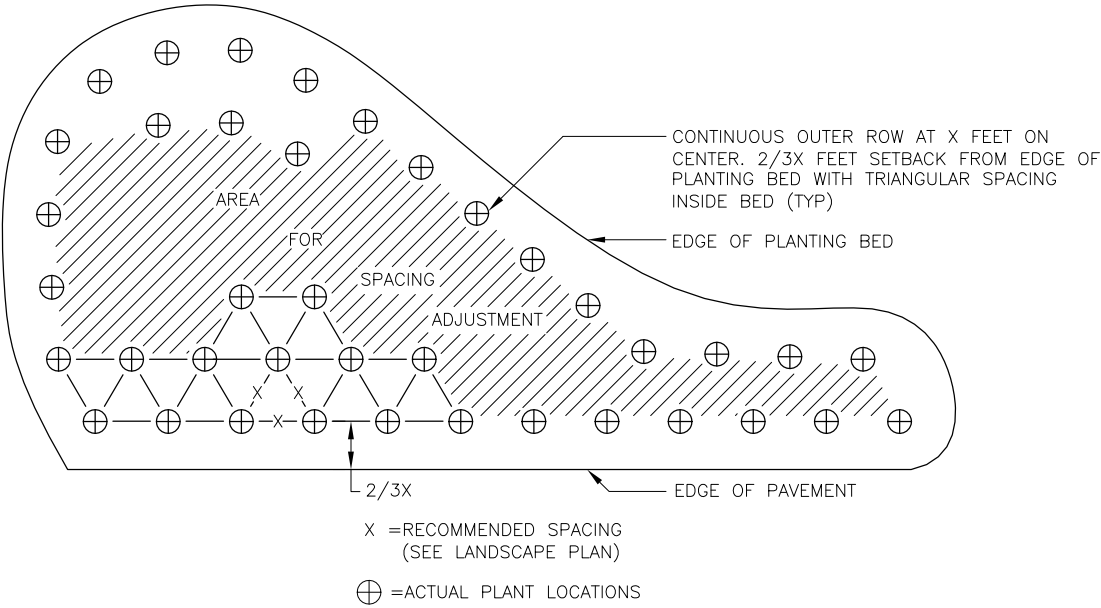
SHRUB PLANTING



REF STD SPEC SEC 8-02

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

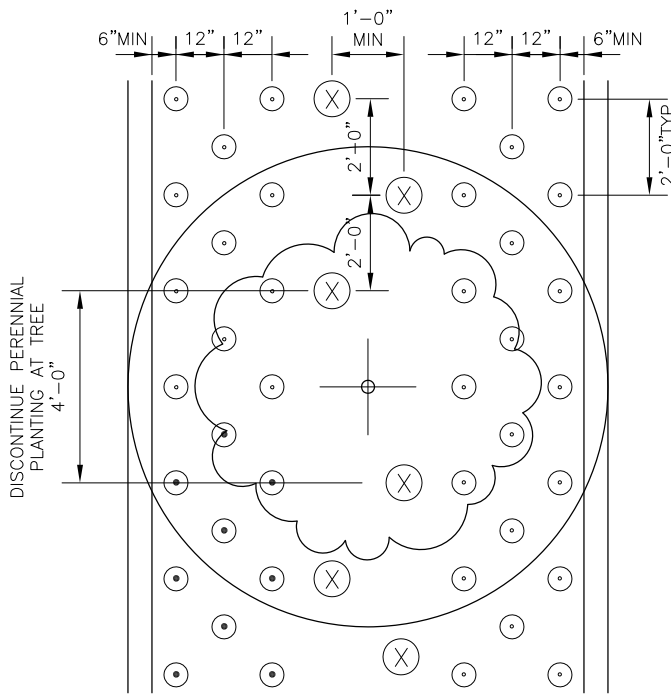
GROUND COVER PLANTING



REF STD SPEC SEC 9-14

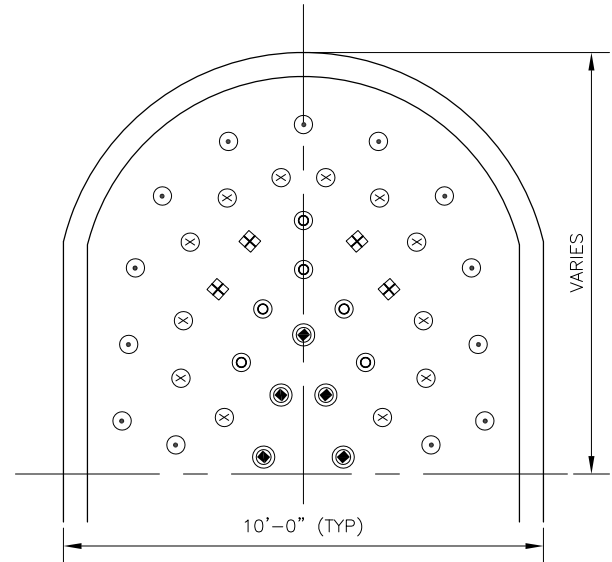
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

PLANTING PATTERN



| QUANT PER 10'-0" LF MEDIAN | |
|-------------------------------|----|
| ⊙ GROUND COVER | 30 |
| ⊗ SHRUB | 5 |

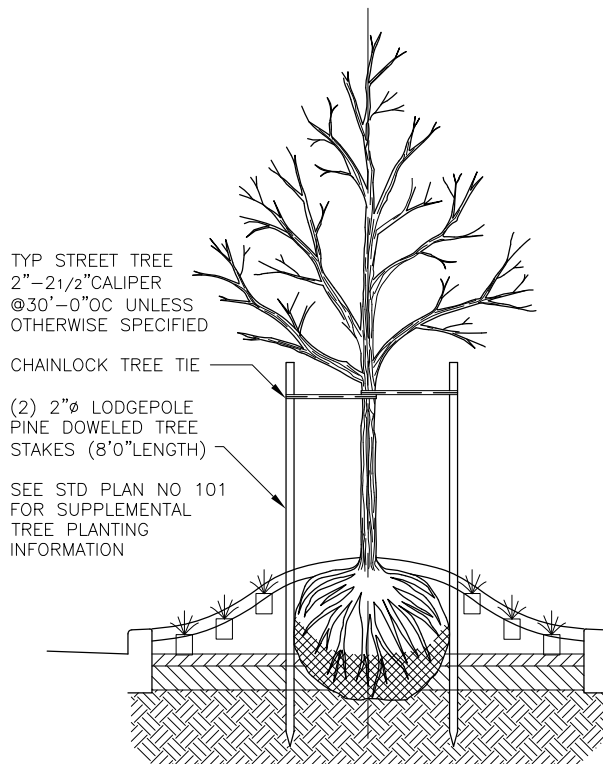
DETAIL AT TREE
PLAN



QUANT PER
END CAP

| | |
|--------------------------------|----|
| ❖ PERENNIAL TYPE 1 | 4 |
| ⊙ PERENNIAL TYPE 2 | 6 |
| ⦿ PERENNIAL TYPE 3 | 5 |
| ⊕ EVERGREEN GROUNDCOVER TYPE 1 | 13 |
| ⊗ EVERGREEN GROUNDCOVER TYPE 2 | 12 |

END CAP DETAIL

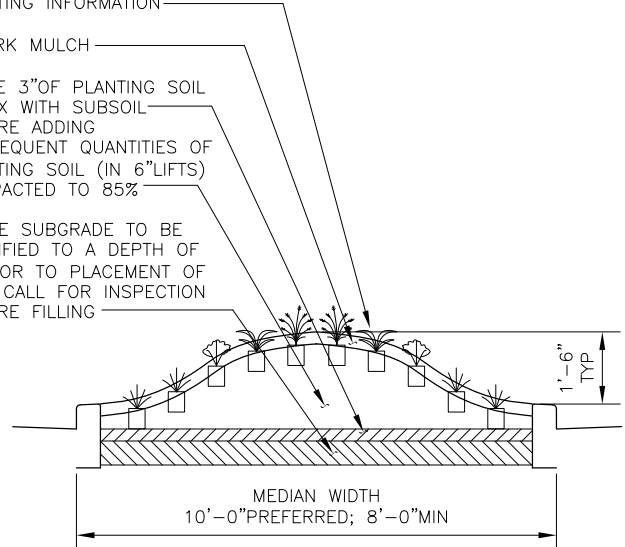
ELEVATION

SEE STD PLAN NO 110 &
111 FOR SUPPLEMENTAL
SHRUB AND GROUND COVER
PLANTING INFORMATION——

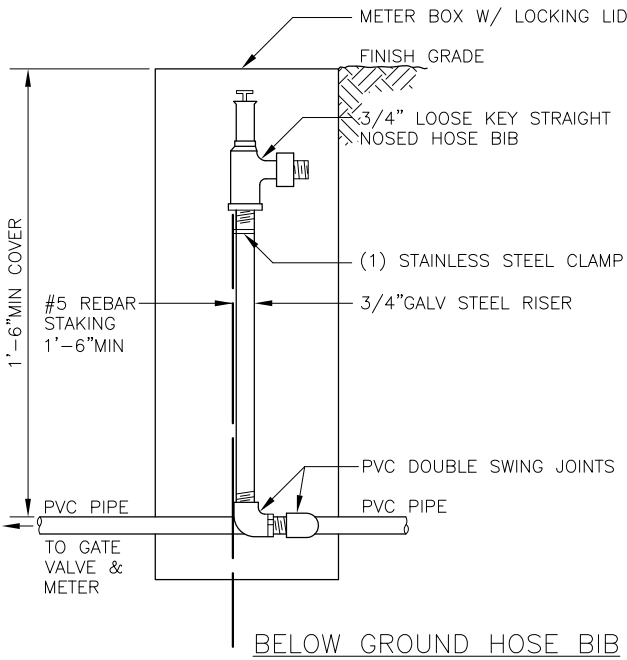
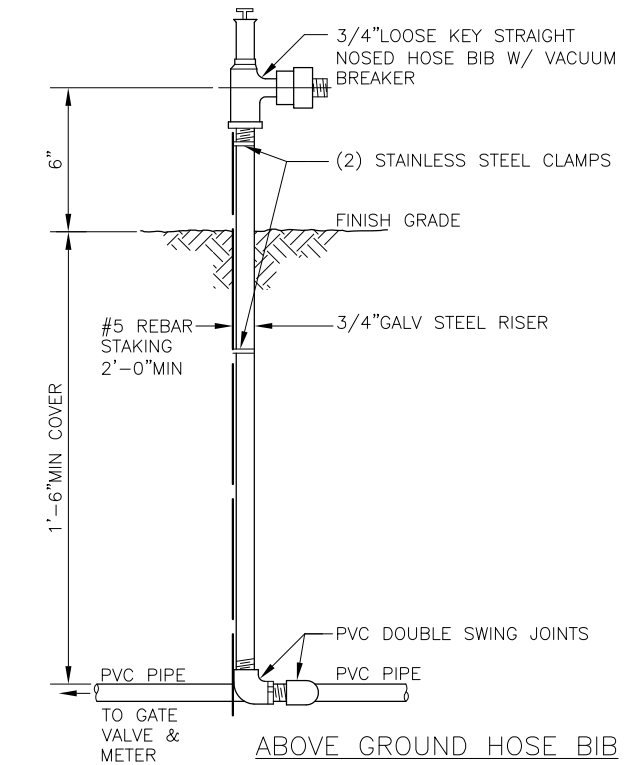
3" BARK MULCH —————

PLACE 3" OF PLANTING SOIL
& MIX WITH SUBSOIL —————
BEFORE ADDING
SUBSEQUENT QUANTITIES OF
PLANTING SOIL (IN 6" LIFTS)
COMPACTED TO 85% —————

NATIVE SUBGRADE TO BE
SCARIFIED TO A DEPTH OF
6" PRIOR TO PLACEMENT OF
FILL. CALL FOR INSPECTION
BEFORE FILLING

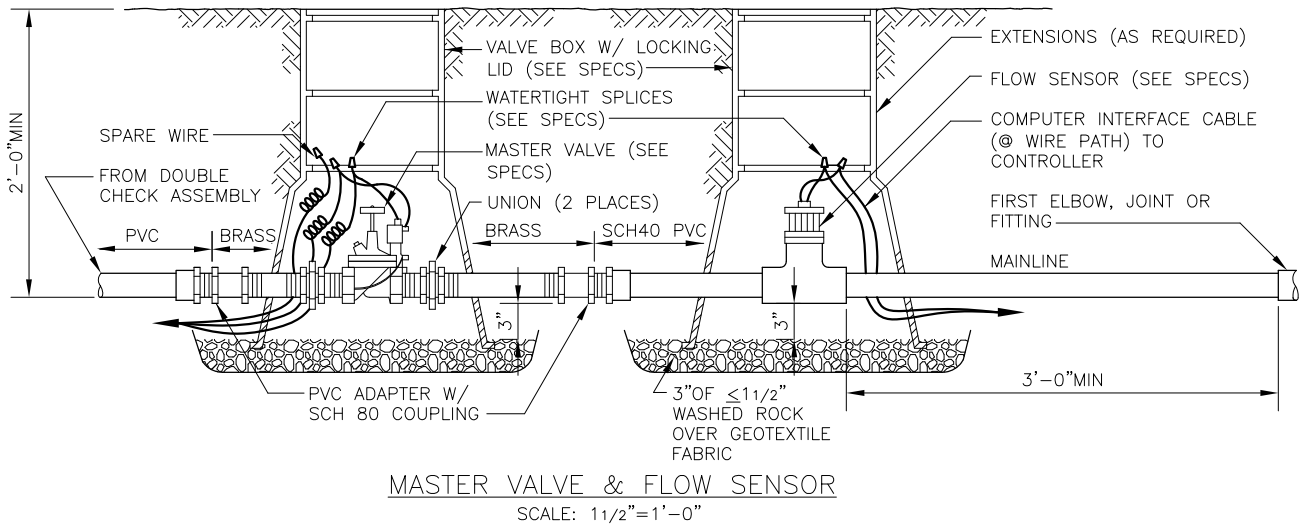


SOIL PREPARATION DETAIL



NOT TO SCALE

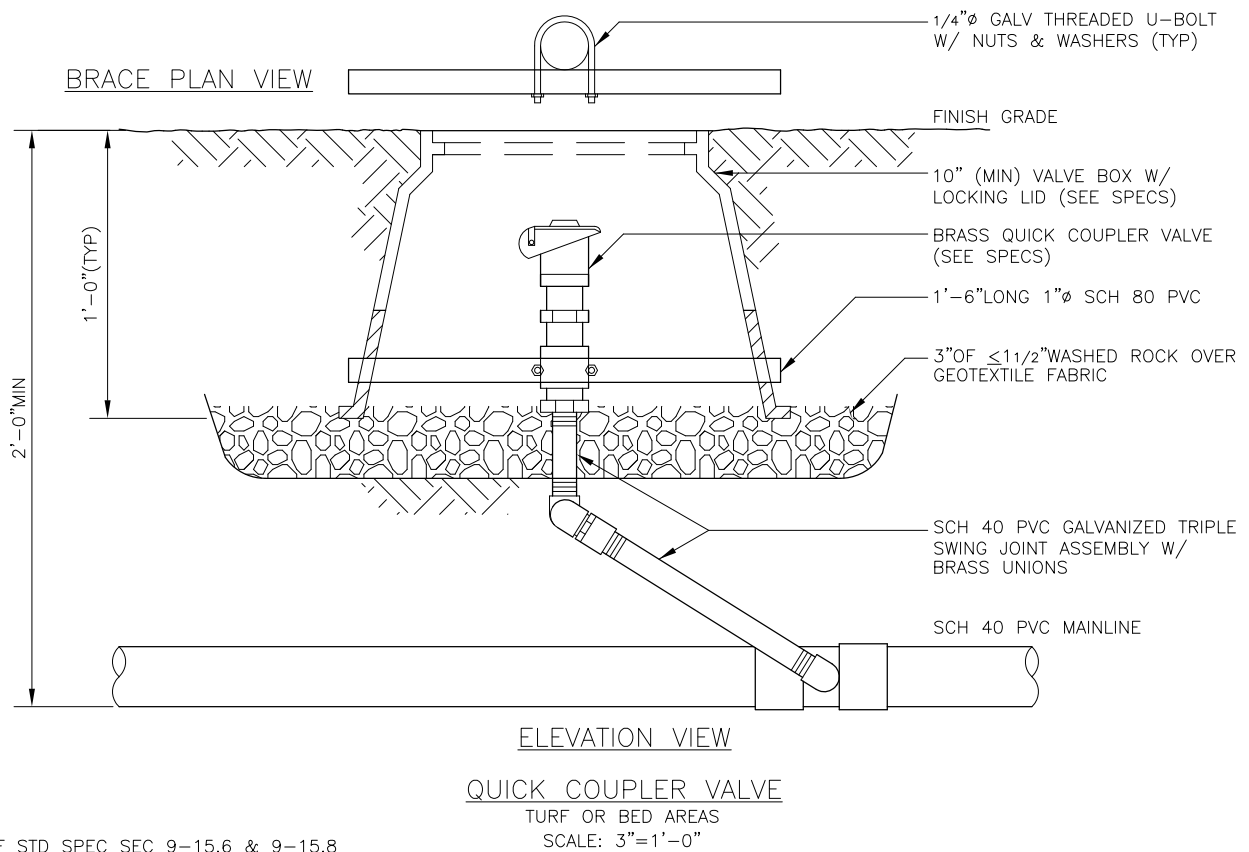
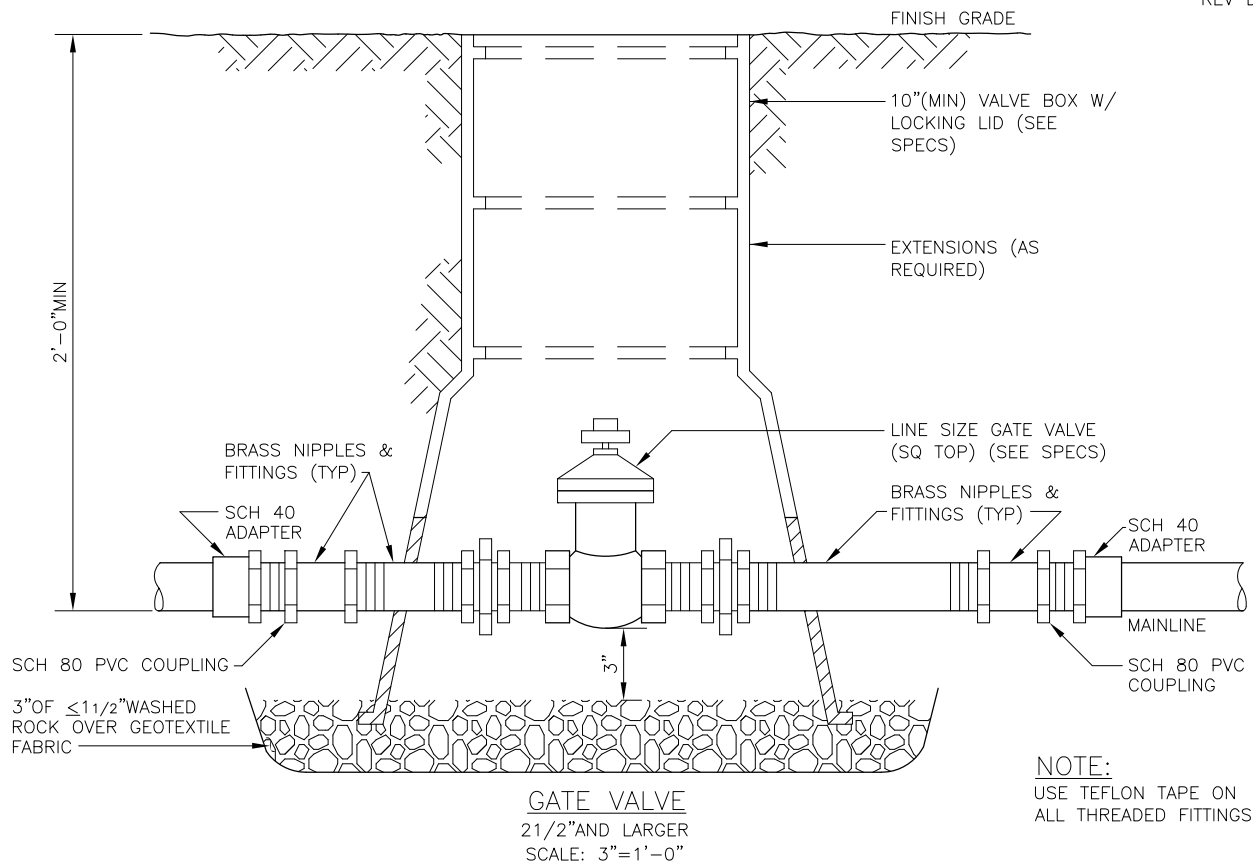




REF STD SPEC SEC 9-15

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

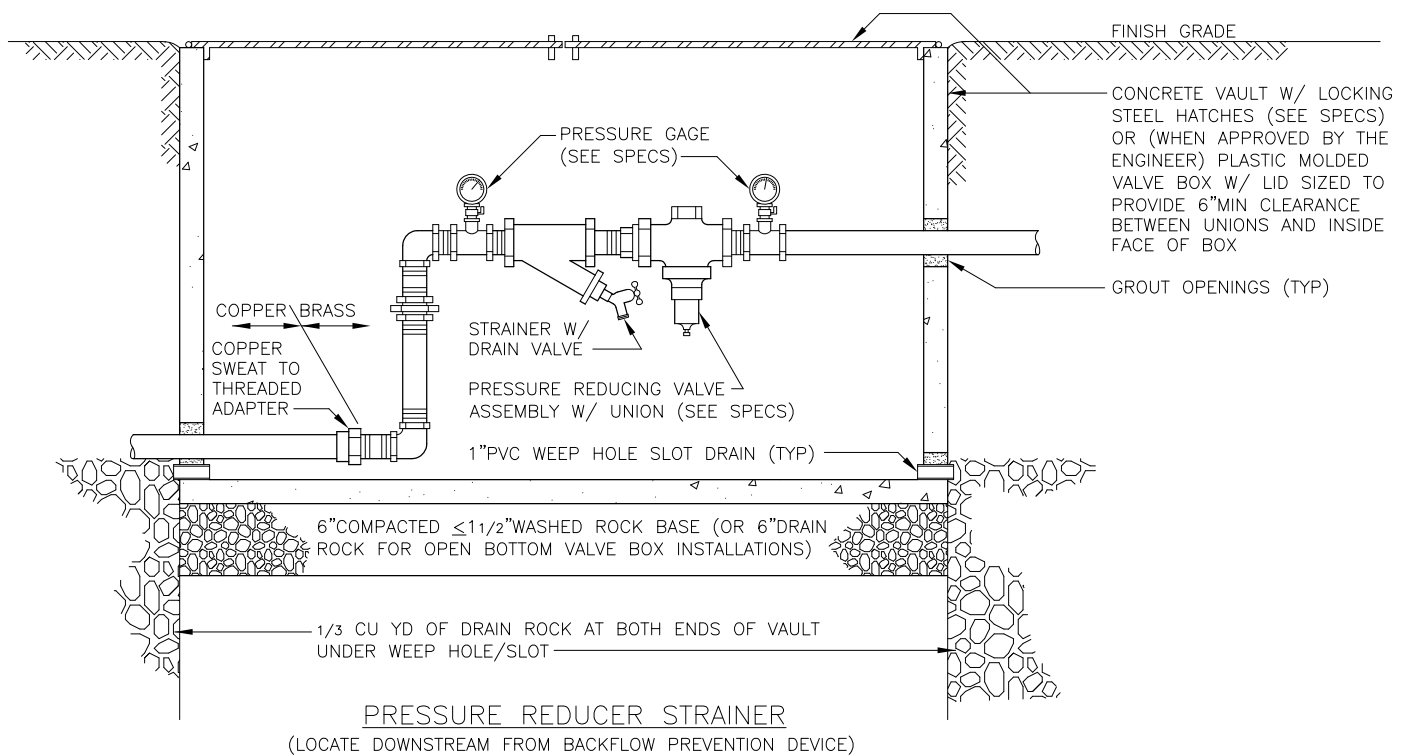
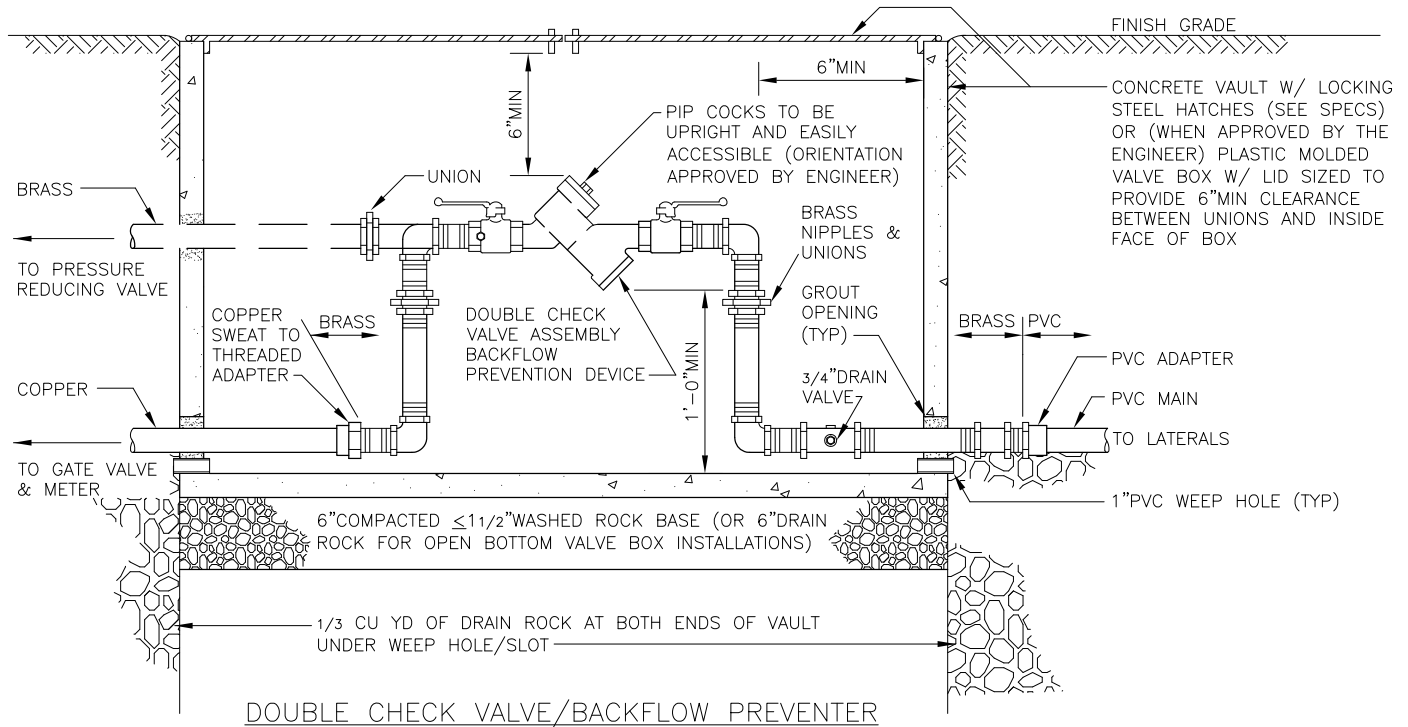
VALVES



REF STD SPEC SEC 9-15.6 & 9-15.8

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

VALVES



REF STD SPEC SEC 9-15.11

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

VALVES



ASPHALT, CONCRETE, MASONRY OR CRUSHED ROCK SURFACE

6" MAX

1/2" - 3/4"

VARIES

MULCH 1 1/2" - 2" AT SHRUB SPRAY

FINISH GRADE

BARK MULCH (SEE SPECS)

POP UP SHRUB SPRAY HEAD (SEE SPECS)

CLASS 315 PVC PREFABRICATED TRIPLE SWING JOINT ASSEMBLY (OR APPROVED ALTERNATE FLEX ASSEMBLY) (SEE SPECS)

DETECT-A-TAPE IN TRENCH

6" ABOVE PIPE

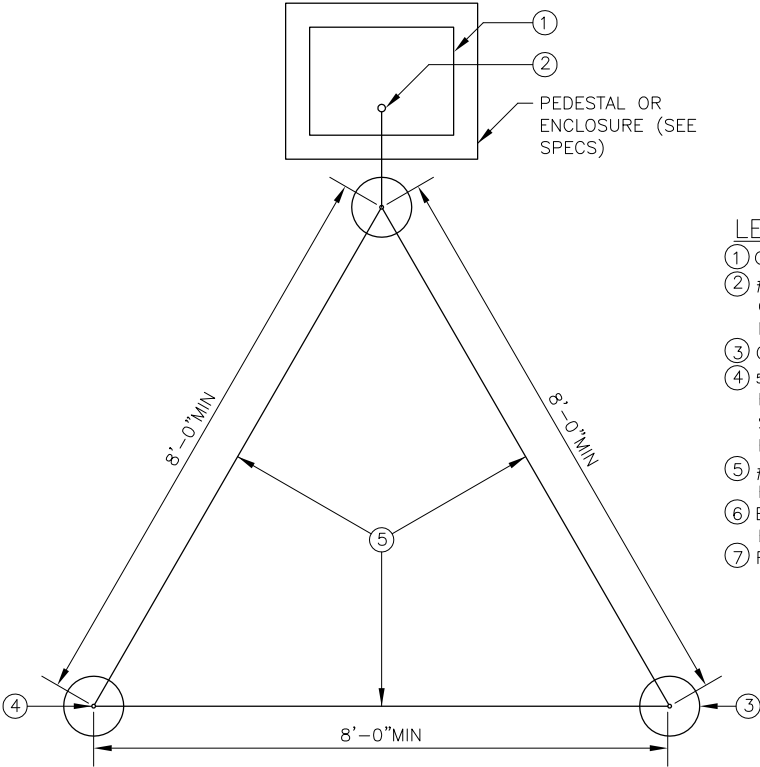
LATERAL LINE (SCH 40 PVC)

1' - 6" MIN

[illegible]

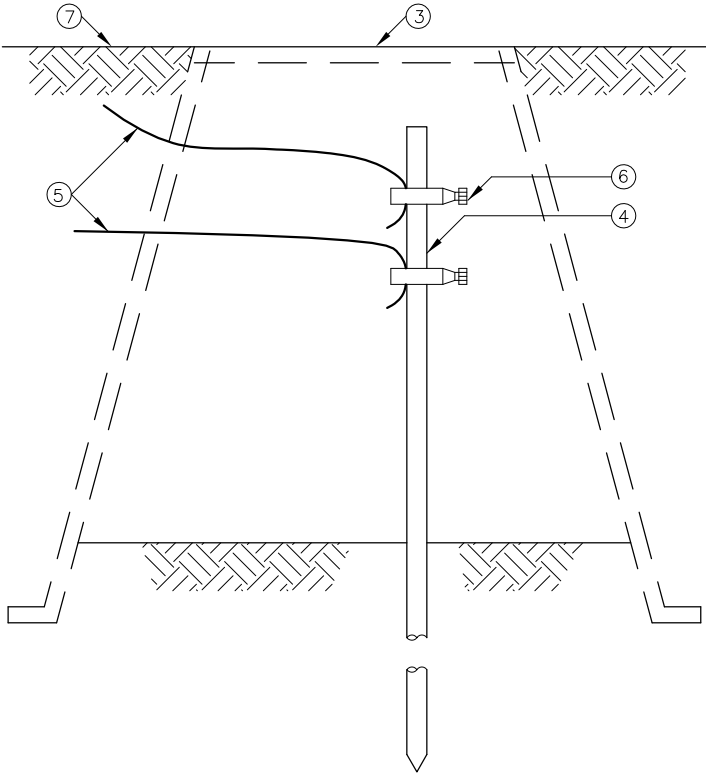
FIXED SHRUB RISER
SHRUB BED AREAS
SCALE: 3"=1'-0"

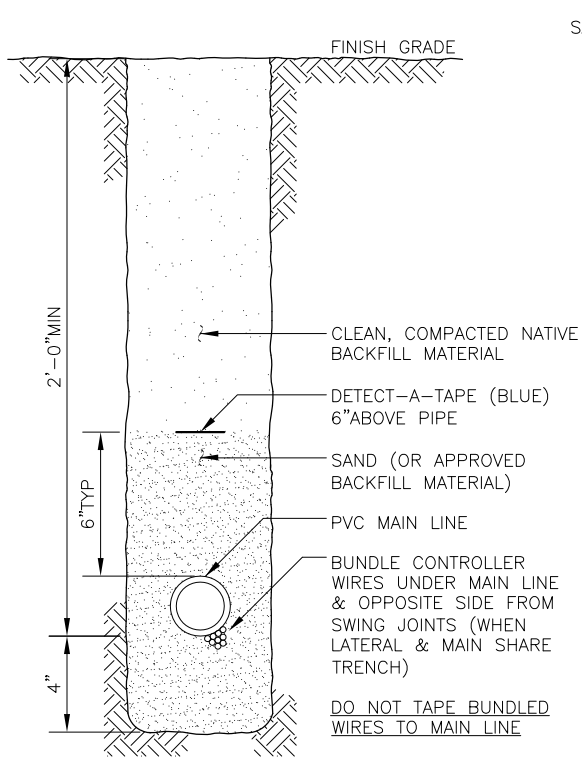
POP UP & FIXED IRRIGATION HEADS



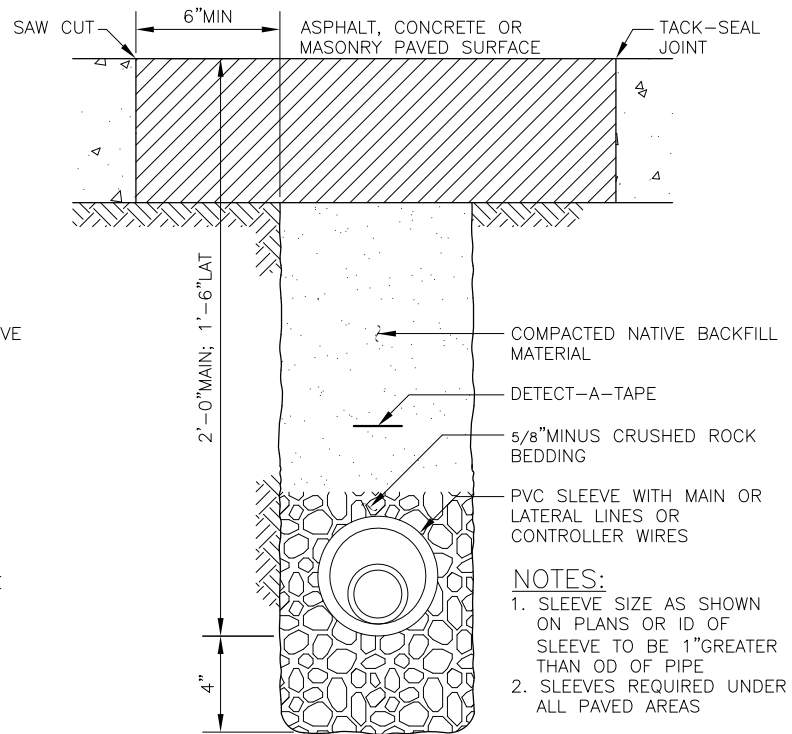
LEGEND

- ① CONTROLLER OR CLUSTER CONTROL UNIT (CCU)
- ② #10 AWG SOLID BARE COPPER WIRE FROM GROUNDING ROD TO CONTROLLER (OR CCU) MAKE WIRE AS SHORT AS POSSIBLE
- ③ COVER GROUNDING ROD WITH 10" ROUND VALVE BOX
- ④ 5/8"X8'-0"COPPER CLAD GROUNDING ROD. INSTALL RODS IN SOIL IN A TRIANGULAR PATTERN, SPACES 8'-0" MIN APART. GROUNDING GRID TO HAVE A RESISTANCE OF 10 OHMS OR LESS
- ⑤ #10 AWG BARE COPPER WIRE BETWEEN GROUNDING RODS
- ⑥ BRASS WIRE CLAMP. USE SEPARATE CLAMP FOR EACH WIRE
- ⑦ FINISH GRADE



MAIN LINE

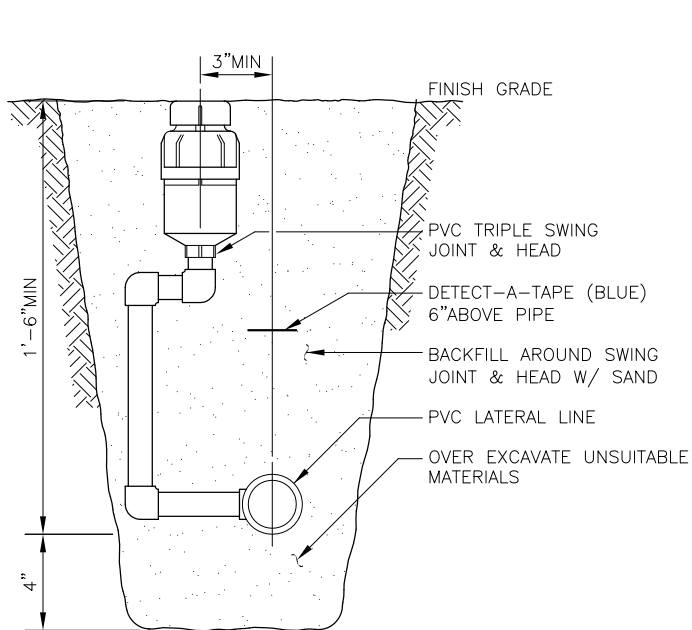
SCALE: 3"=1'-0"

NOTES:

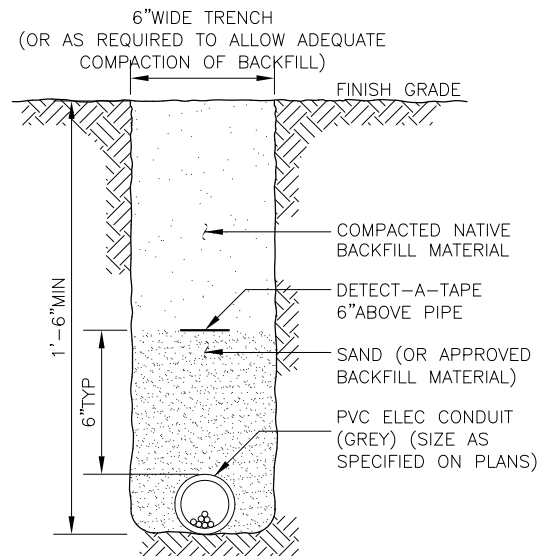
1. SLEEVE SIZE AS SHOWN ON PLANS OR ID OF SLEEVE TO BE 1" GREATER THAN OD OF PIPE
2. SLEEVES REQUIRED UNDER ALL PAVED AREAS

SLEEVE TRENCHING

SCALE: 3"=1'-0"

LATERAL LINE

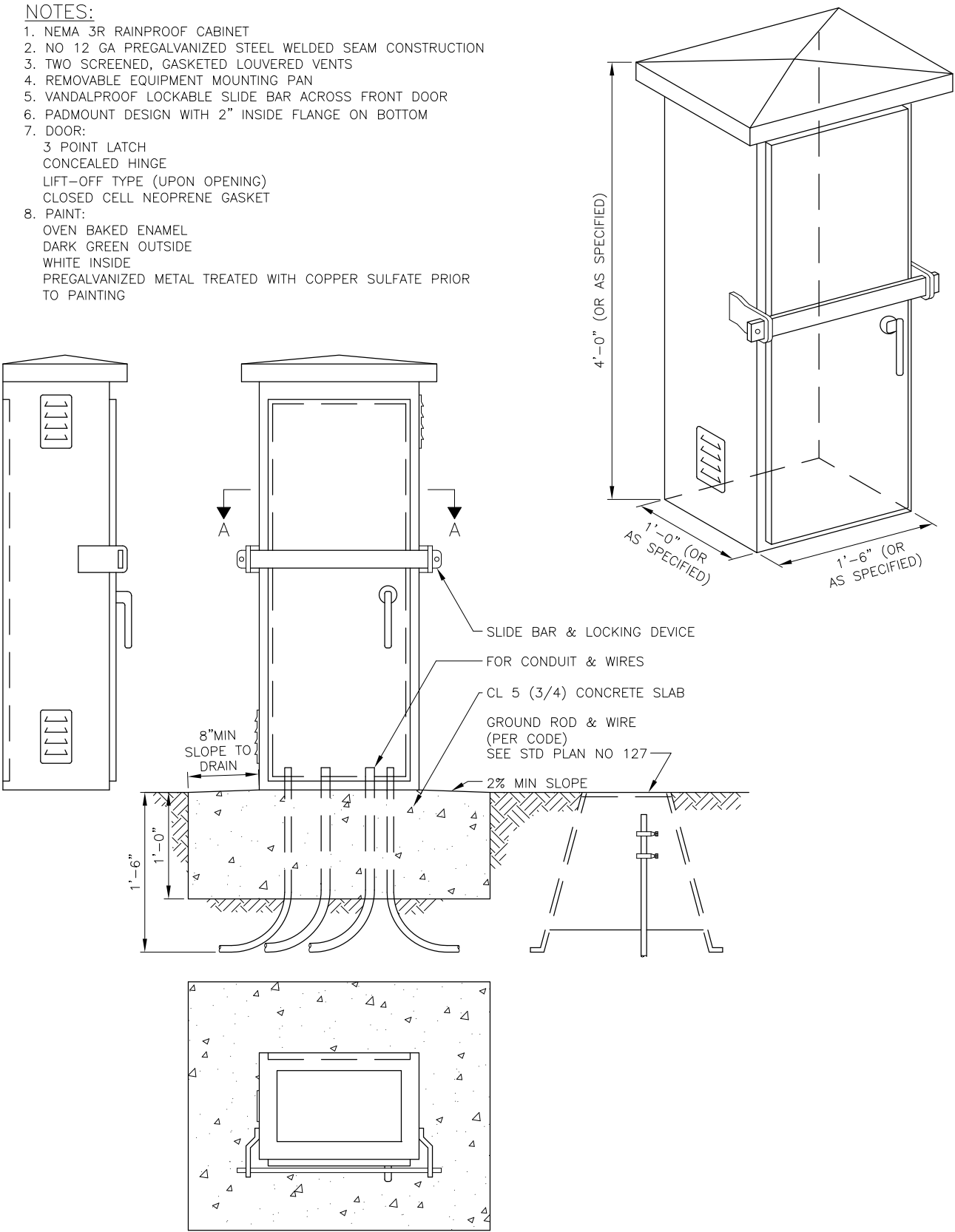
SCALE: 3"=1'-0"

POWER SUPPLY TRENCH

SCALE: 3"=1'-0"

NOTES:

1. NEMA 3R RAINPROOF CABINET
2. NO 12 GA PREGALVANIZED STEEL WELDED SEAM CONSTRUCTION
3. TWO SCREENED, GASKETED LOUVERED VENTS
4. REMOVABLE EQUIPMENT MOUNTING PAN
5. VANDALPROOF LOCKABLE SLIDE BAR ACROSS FRONT DOOR
6. PADMOUNT DESIGN WITH 2" INSIDE FLANGE ON BOTTOM
7. DOOR:
 - 3 POINT LATCH
 - CONCEALED HINGE
 - LIFT-OFF TYPE (UPON OPENING)
 - CLOSED CELL NEOPRENE GASKET
8. PAINT:
 - OVEN BAKED ENAMEL
 - DARK GREEN OUTSIDE
 - WHITE INSIDE
 - PREGALVANIZED METAL TREATED WITH COPPER SULFATE PRIOR TO PAINTING

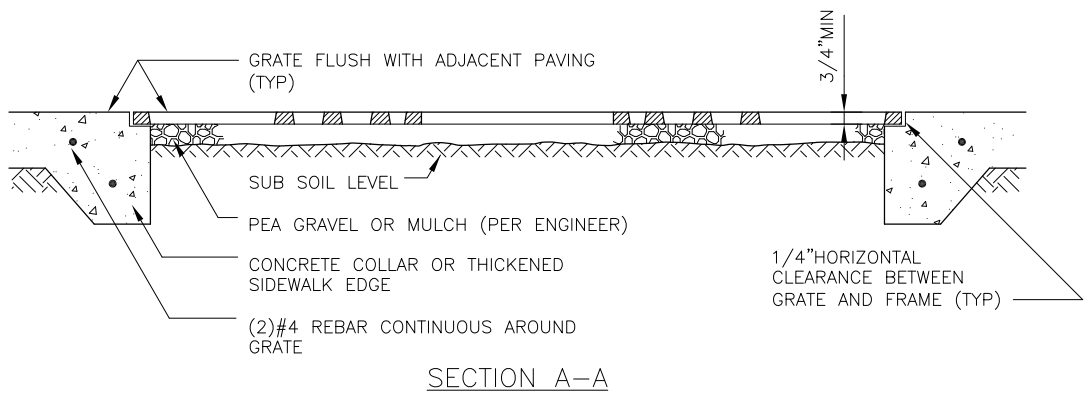
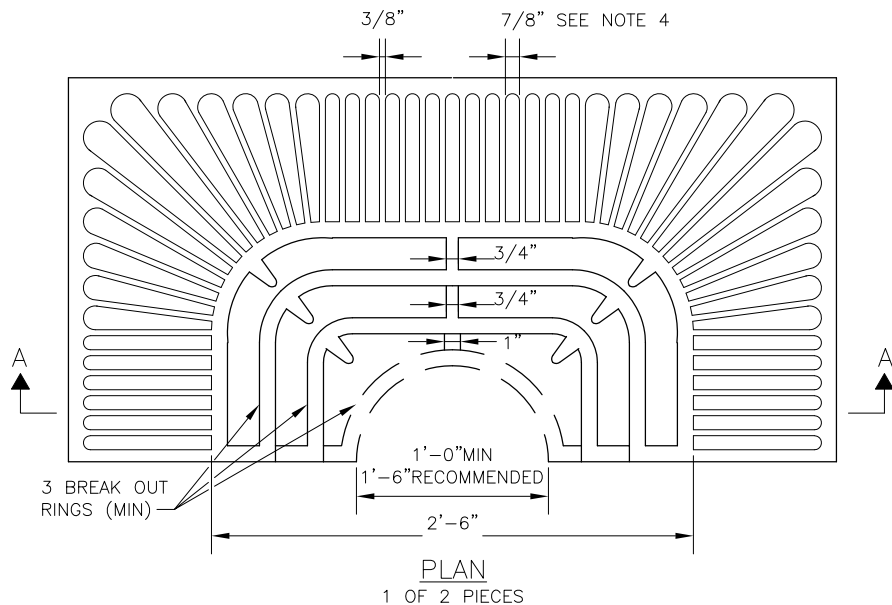


SECTION A-A

REF STD SPEC SEC 9-15.3

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

CONTROLLER CABINET

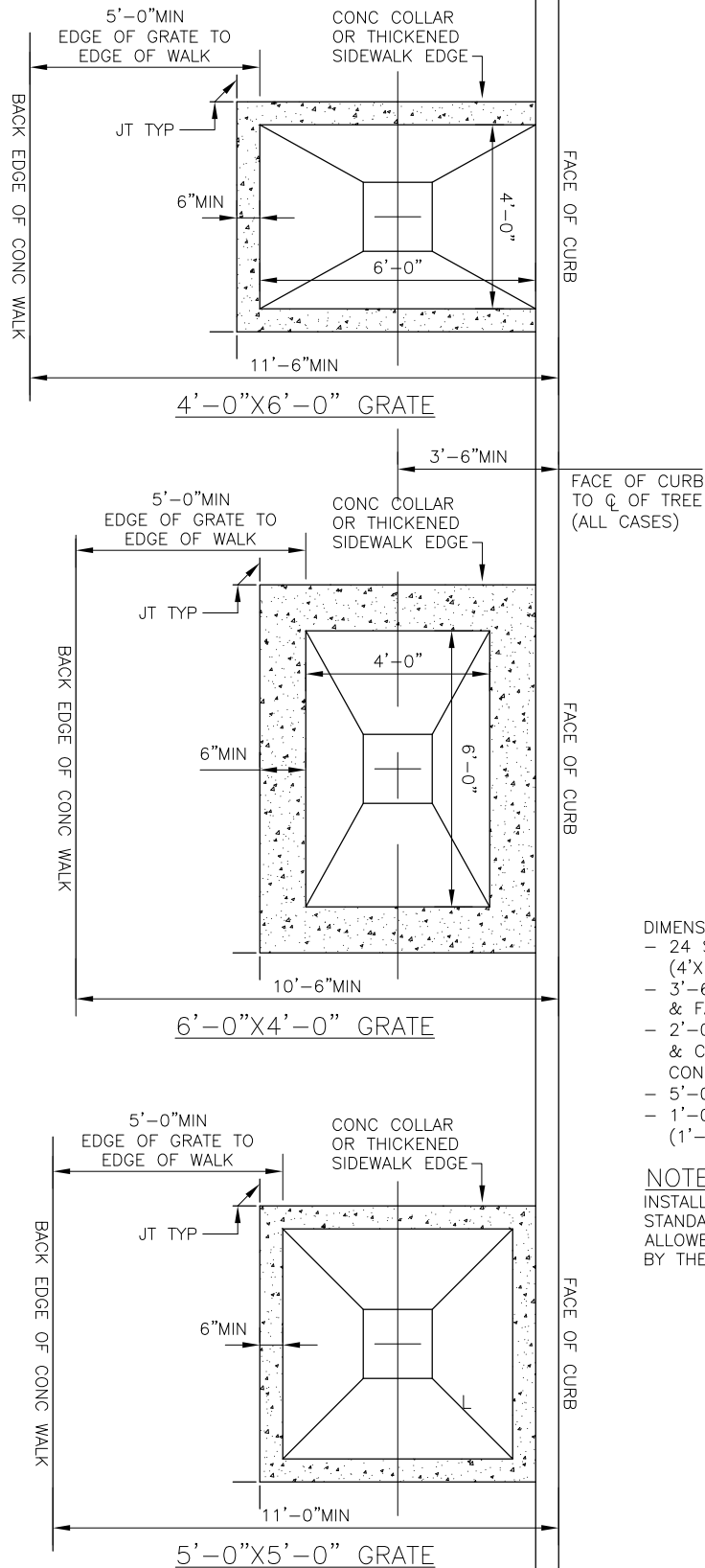


- NOTES:
1. MAXIMUM WEIGHT OF EACH TREE GRATE CASTING SHALL BE 110 LBS.
 2. TREE GRATE CONSISTS OF 2 PIECES MIN
 3. TREE GRATE SHALL BE MADE OF GRAY IRON
 4. GRATE DESIGN AS SHOWN IS NOT INTENDED TO MEET ADA ACCESSIBILITY REQUIREMENTS FOR INSTALLATION IN AREAS WITH LIMITED SIDEWALK WIDTH. INSTALLATIONS REQUIRING ADA APPROVED GRATES SHALL HAVE OPENINGS OF 3/8" OR LESS

REF STD SPEC SEC 8-02

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

2 PIECE TREE GRATE



DIMENSIONAL REQUIREMENTS:

- 24 SQ FT MIN TREE GRATE SIZE (4'X6' & 5'X5' TYP)
- 3'-6" MIN REQ'D BETWEEN TREE C & FACE OF CURB
- 2'-0" MIN REQ'D BETWEEN TREE C & CONC PAVEMENT (SIDEWALK OR CONC COLLAR)
- 5'-0" MIN CONC WALKING SURFACE
- 1'-0" MIN CENTER GRATE OPENING (1'-6" RECOMMENDED)

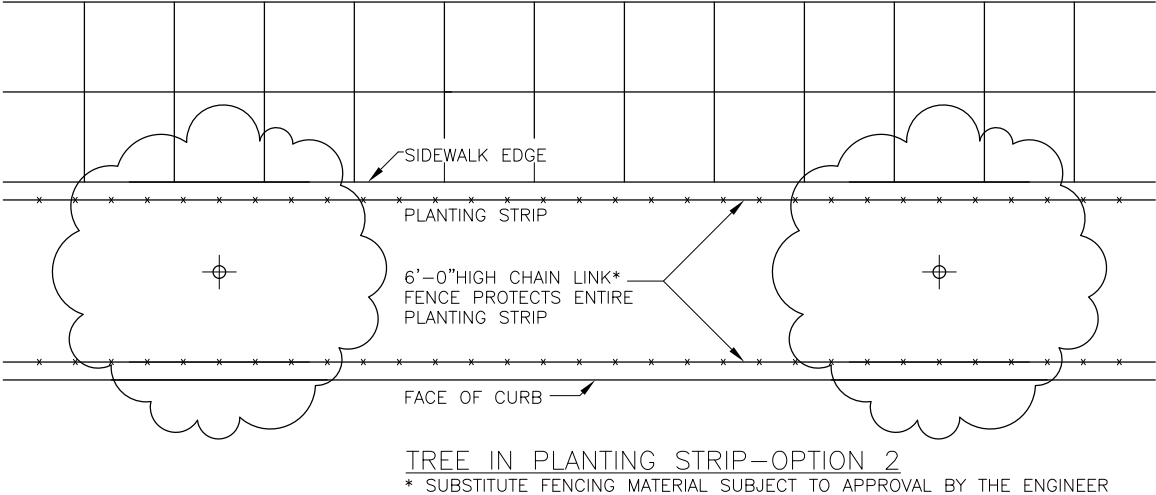
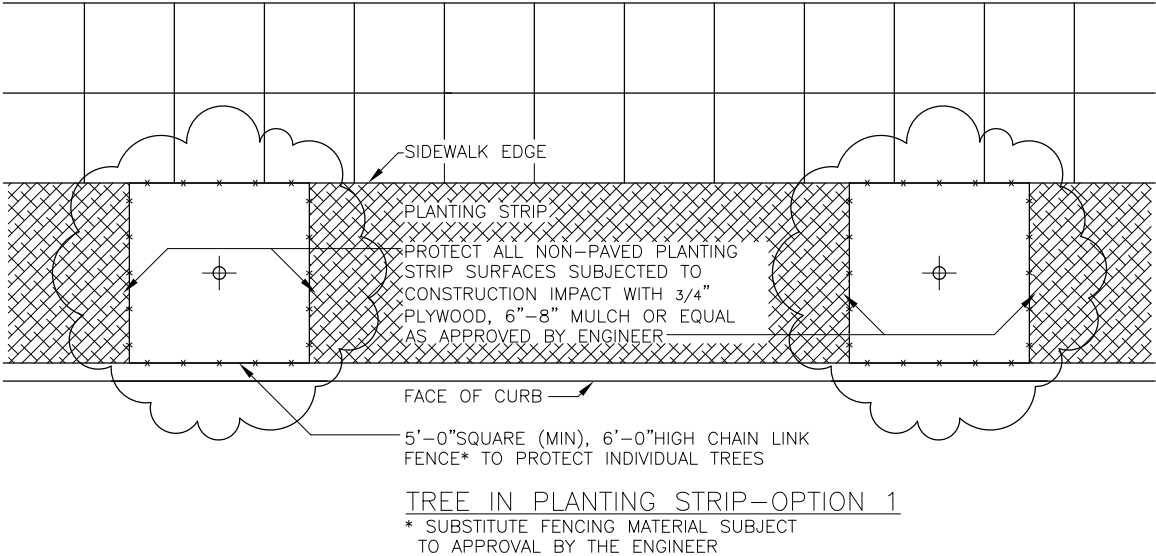
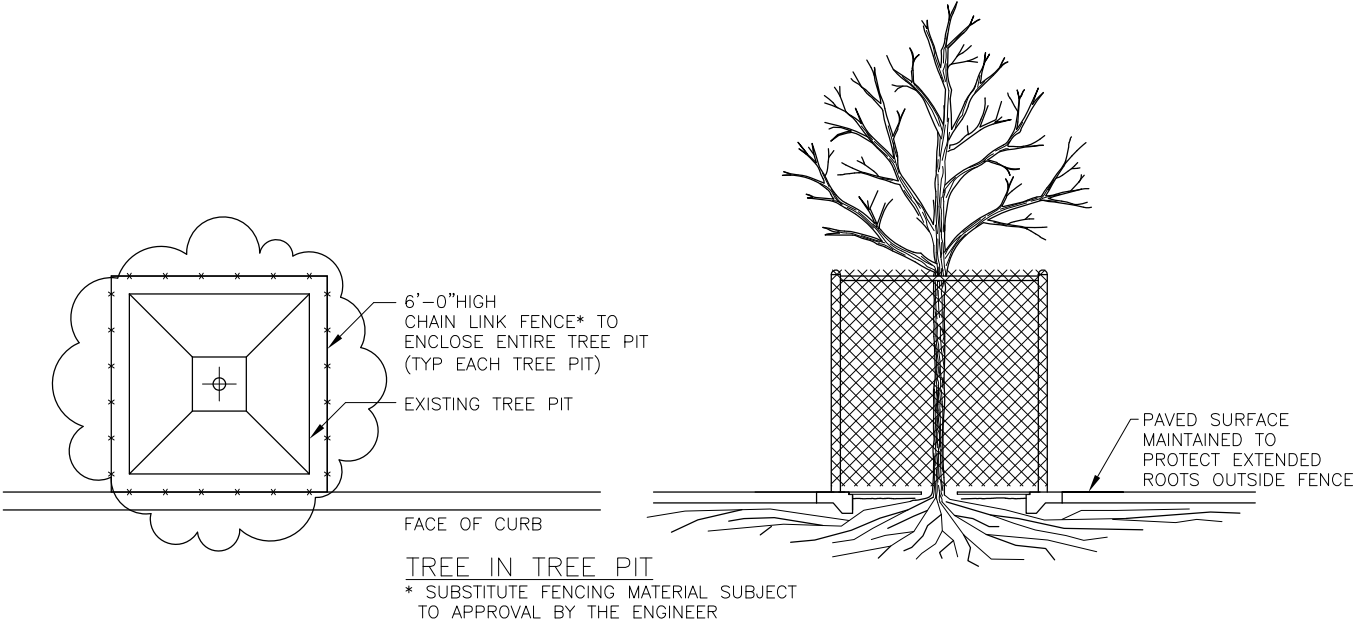
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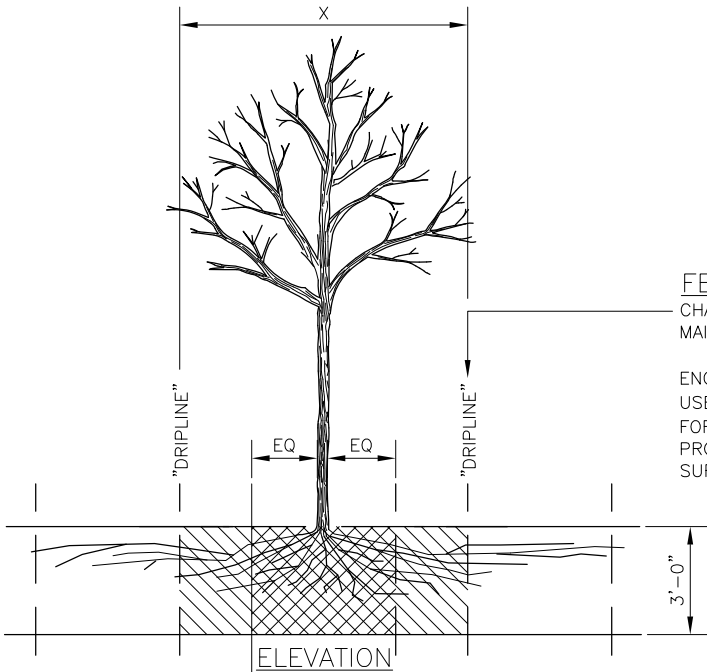
INSTALLATIONS REQUIRING LESS THAN STANDARD MIN CLEARANCES SHALL BE ALLOWED ONLY WITH SPECIFIC APPROVAL BY THE ENGINEER

REF STD SPEC 8-02

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TREE GRATE

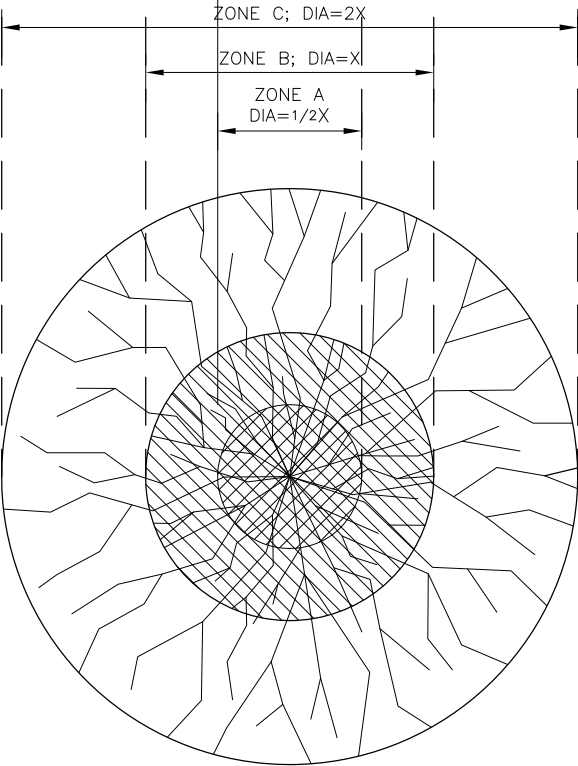




FENCING/ROOT PROTECTION

CHAIN LINK FENCING TO BE PROVIDED AND MAINTAINED AT DRIPLINE

ENGINEER'S APPROVAL REQUIRED FOR USE/ACCESS WITHIN ZONE B. PERMISSION FOR USE/ACCESS REQUIRES SURFACE PROTECTION* FOR ALL UNFENCED, UNPAVED SURFACES WITHIN ZONE B



TRENCHING/EXCAVATION

ZONE A (CRITICAL ROOT ZONE)

1. NO DISTURBANCE ALLOWED WITHOUT SITE-SPECIFIC INSPECTION AND APPROVAL OF METHODS TO MINIMIZE ROOT DAMAGE
2. SEVERANCE OF ROOTS LARGER THAN 2" DIA REQUIRES ENGINEER'S APPROVAL
3. TUNNELING REQUIRED TO INSTALL LINES 3'-0" BELOW GRADE OR DEEPER

ZONE B (DRIPLINE)

1. OPERATION OF HEAVY EQUIPMENT AND/OR STOCKPILING OF MATERIALS SUBJECT TO ENGINEERS APPROVAL. SURFACE PROTECTION* MEASURES REQUIRED
2. TRENCHING ALLOWED AS FOLLOWS:
 - EXCAVATION BY HAND OR WITH HAND-DRIVEN TRENCHER MAY BE REQUIRED
 - LIMIT TRENCH WIDTH. DO NOT DISTURB ZONE A MAINTAIN 2/3 OR MORE OF ZONE B IN UNDISTURBED CONDITION
3. TUNNELING MAY BE REQUIRED FOR TRENCHES DEEPER THAN 3'-0"

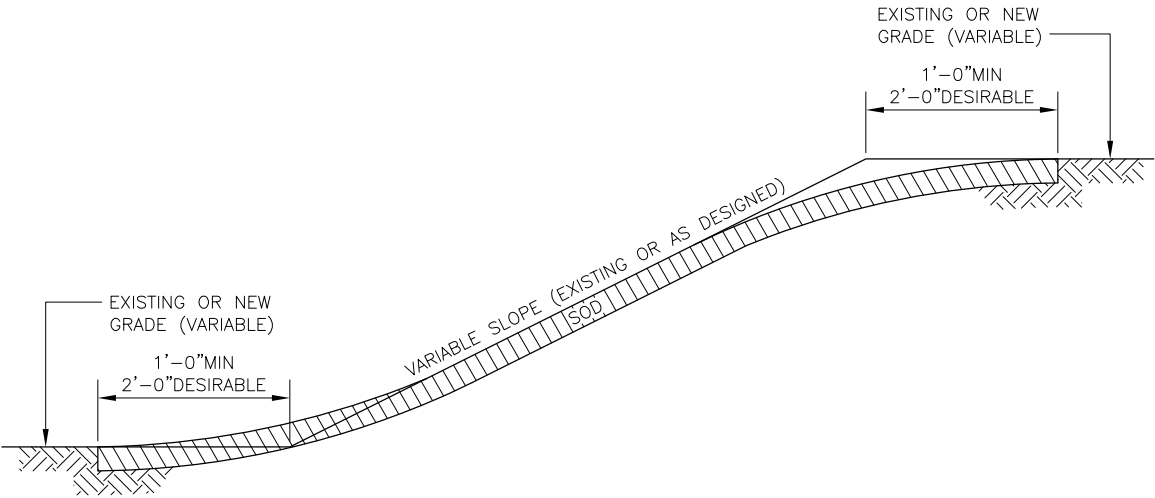
ZONE C (FEEDER ROOT ZONE)

1. OPERATION OF HEAVY EQUIPMENT AND/OR STOCKPILING OF MATERIALS SUBJECT TO ENGINEERS APPROVAL. SURFACE PROTECTION* MEASURES MAY BE REQUIRED
2. TRENCHING WITH HEAVY EQUIPMENT ALLOWED AS FOLLOWS:
 - MINIMIZE TRENCH WIDTH
 - MAINTAIN 2/3 OR MORE OF ZONE C IN UNDISTURBED CONDITION

* SURFACE PROTECTION MEASURES

1. MULCH LAYER, 6"-8" DEPTH
2. 3/4" PLYWOOD
3. STEEL PLATES

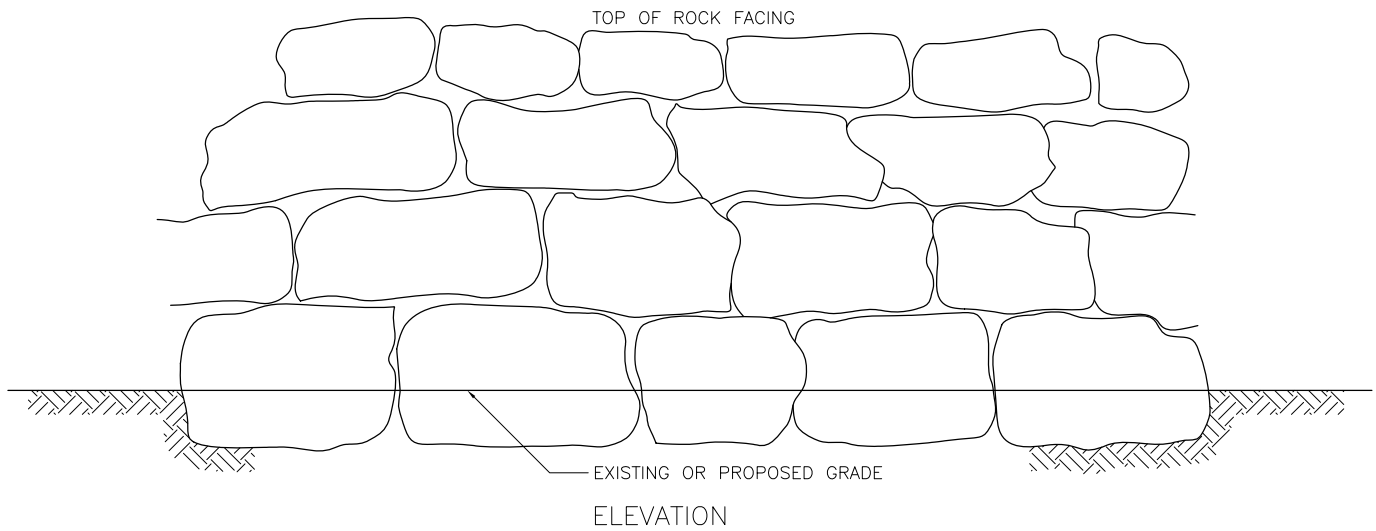
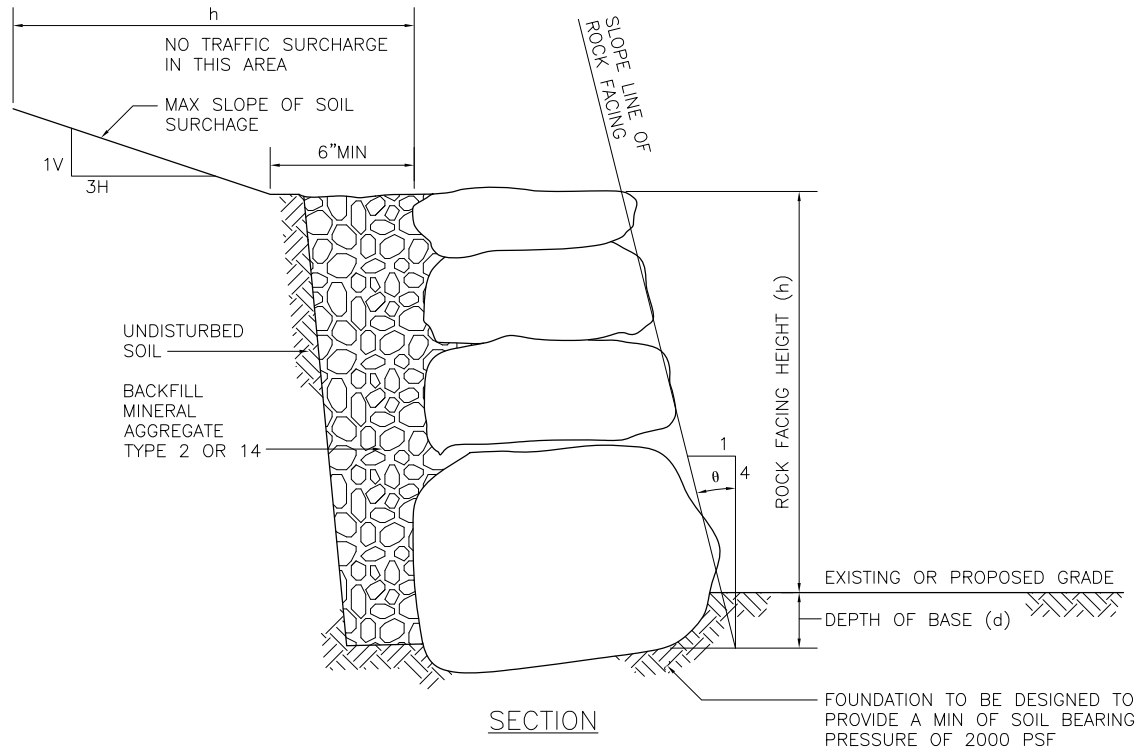
| | TREES IN PLANTING STRIPS | TREES IN TREE PITS |
|--|--|---|
| HEAVY EQUIPMENT OPERATION | <p>ROOT PROTECTION</p> <p>ALL NON-PAVED PLANTING STRIP SURFACES SUBJECT TO IMPACT (COMPACTION) BY CONSTRUCTION ACTIVITY SHALL BE PROTECTED WITH 6"-8" MULCH LAYER OR 3/4" PLYWOOD PANELS OR EQUAL AS AUTHORIZED BY SPU [REF STD SPEC SEC 1-07.16(2)]</p> <p>PROVIDE WOOD PLANKING OR STEEL PANELS UNDER BACKHOE STABILIZERS PLACED ANYWHERE IN THE PLANTING STRIP [1-07.16(2)]</p> <p>NO STORAGE OF MATERIALS OR EQUIPMENT IN THE PLANTING STRIP SHALL BE ALLOWED WITHOUT PROPER SURFACE PROTECTION <u>AND</u> SPECIFIC AUTHORIZATION FROM THE ENGINEER [1-07.16(2)]</p> | <p>RETAIN EXISTING PAVING DURING CONSTRUCTION [REF STD SPEC SEC 1-07.16(2)]</p> <p>SCHEDULE PAVEMENT REPLACEMENT TO MINIMIZE EXPOSURE OF SURFACE ROOTS TO DRYING, EQUIPMENT DAMAGE, COMPACTION, ETC. EXPOSURE FOR LONGER THAN 48 HOURS REQUIRES MULCH APPLICATION PER THE DIRECTION OF THE ENGINEER [1-07.16(2)]</p> |
| | <p>CANOPY PROTECTION</p> <p>OVERHEAD BRANCHING LIKELY TO BE DAMAGED BY EQUIPMENT OPERATION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER WITH PREVENTIVE MEASURES (PRUNING OR TIE-BACK OF BRANCHES) APPROVED BY THE ENGINEER AND PROPERLY EXECUTED BEFORE COMMENCEMENT OF THE WORK [1-07.16(2)]</p> | |
| | <p>TRUNK PROTECTION</p> <p>PROVIDE CHAIN LINK CONSTRUCTION FENCE IN INDIVIDUAL (5'-0"X5'-0"X 6'-0"MIN) FENCE INSTALLATIONS FOR EACH TREE OR THE LENGTH OF THE PLANTING STRIP. PROVIDE TRUNK WRAP WHEN REQUIRED [1-07.16(2)]</p> | <p>PROVIDE 5'-0"MIN HEIGHT FENCE INSTALLATIONS FOR EACH TREE TO ENCLOSE ENTIRE TREE PIT OPENING. PROVIDE TRUNK WRAP WHEN REQUIRED [1-07.16(2)]</p> |
| SIDEWALK RECONSTRUCTION | <p>ROOT PRUNE <u>ONLY</u> AS DIRECTED BY THE ENGINEER [8-02.3(23)]</p> <p>UNLESS OTHERWISE DIRECTED, MAINTAIN 2'-0"MIN CLEARANCE FROM FLARE OF TRUNK WHEN SETTING FORMS.</p> | <p>PROVIDE 5'-0"X5'-0" OR 4'-0"X6'-0" (24 SQ FT MIN) TREE PITS IN NEW SIDEWALK FOR <u>NEW</u> TREES. TREE PIT SIZE FOR EXISTING TREES SHALL BE AS DIRECTED BY THE ENGINEER. ELONGATED (8'-0"TO 12'-0"+) PITS MAY BE REQUIRED TO MINIMIZE ROOT IMPACTS WHILE MAINTAINING REQUIRED SIDEWALK WIDTH [SEE STD PLAN NO 131]</p> |
| TRENCH OR TUNNELING | <p>SEE STD PLAN NO 128 [8-02.3(24)]</p> | |
| CITY OF SEATTLE PUBLIC UTILITIES DEPARTMENT | | CONSTRUCTION AROUND EXISTING TREES |



REF STD SPEC SEC 2-03

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

SLOPE ROUNDING



REF STD SPEC SEC 2-08

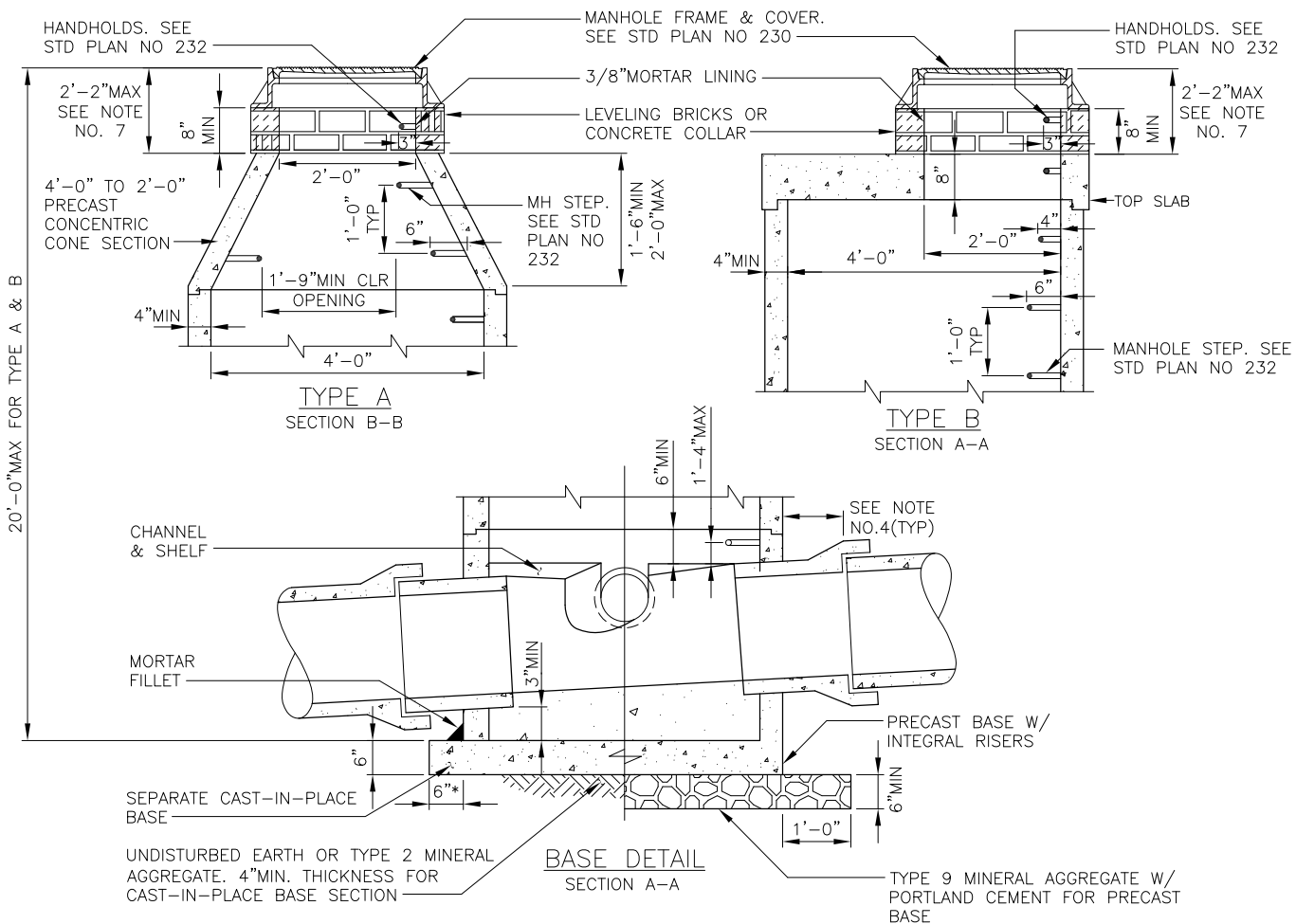
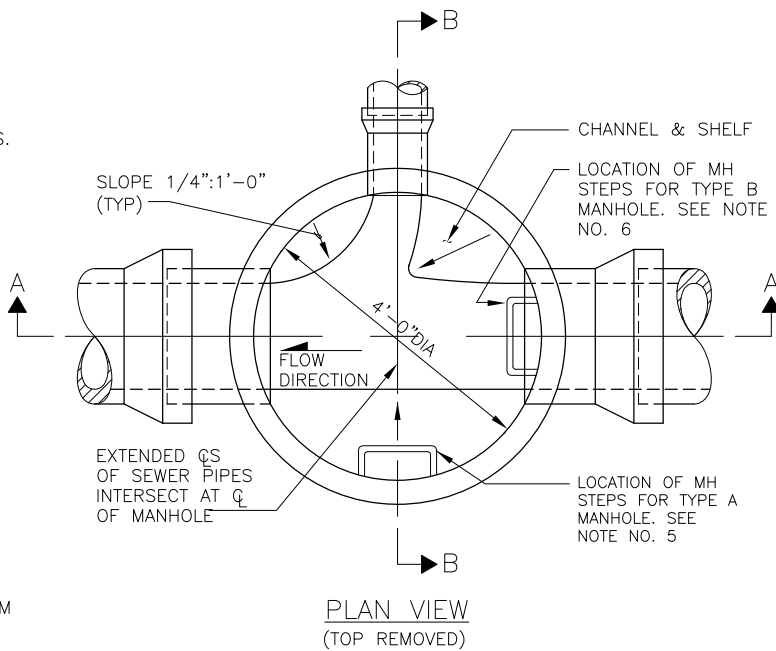
NOT TO SCALE

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

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 200b.
4. MAXIMUM DIMENSION FROM OUTSIDE MANHOLE WALL TO THE FIRST PIPE JOINT. THE GREATER OF 1/2 INSIDE PIPE DIAMETER OR 1'-0".
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 AN EXTENSION, MANHOLE FRAME AND LEVELING BRICKS SHALL NOT EXCEED 2'-2".
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.



REF STD SPEC SEC 7-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TYPE 200 MANHOLE

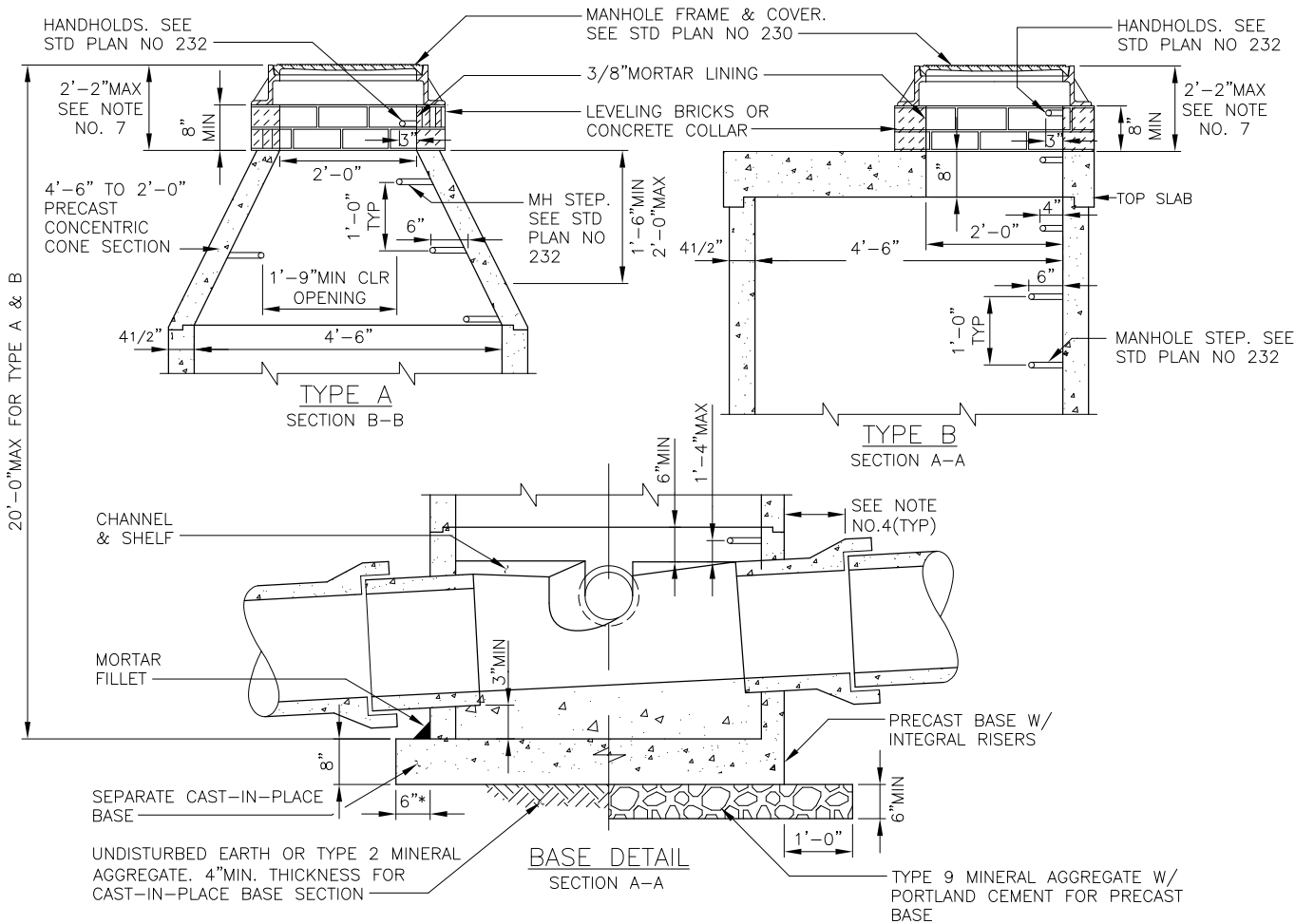
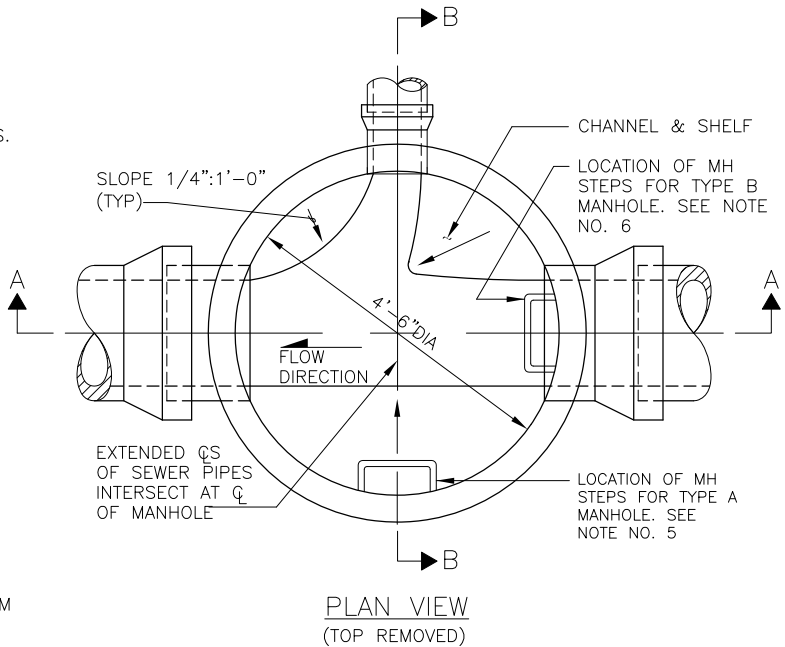


1. MATERIAL: CONCRETE—CLASS AX
REINFORCING STEEL—ASTM A615 GR 60
2. TOP SLAB IS DESIGNED FOR 3'-0" MAX COVER
BASE IS DESIGNED FOR 20'-0" MAX COVER
3. HEIGHT 8'-0" TO 12'-0":
SOIL BEARING VALUE EQUALS 3300#/SQ FT (MIN)
4. HEIGHT 12'-0" TO 20'-0":
SOIL BEARING VALUE EQUALS 3800#/SQ FT (MIN)

TYPE 200 MANHOLE
TOP & BOTTOM SLABS

NOTES:

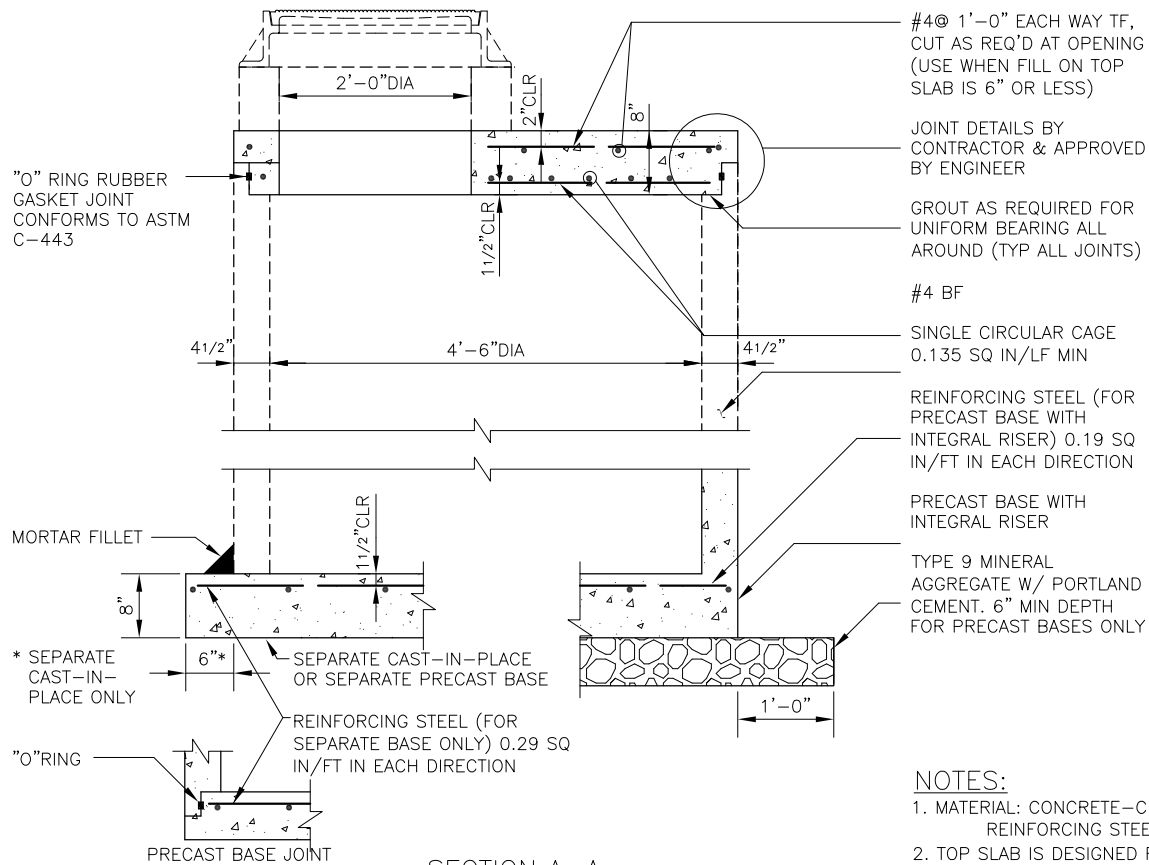
1. TYPE A MANHOLE DESIGNATES MANHOLES WITH PRECAST CONCENTRIC CONE SECTIONS.
2. TYPE B MANHOLE DESIGNATES MANHOLES WITH TOP SLABS.
3. TOP SLAB AND BASE SECTION DETAILS, SEE STANDARD PLAN NO 201.1b.
4. MAXIMUM DIMENSION FROM OUTSIDE MANHOLE WALL TO THE FIRST PIPE JOINT. THE GREATER OF 1/2 INSIDE PIPE DIAMETER OR 1'-0".
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 AN EXTENSION, MANHOLE FRAME AND LEVELING BRICKS SHALL NOT EXCEED 2'-2".
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.



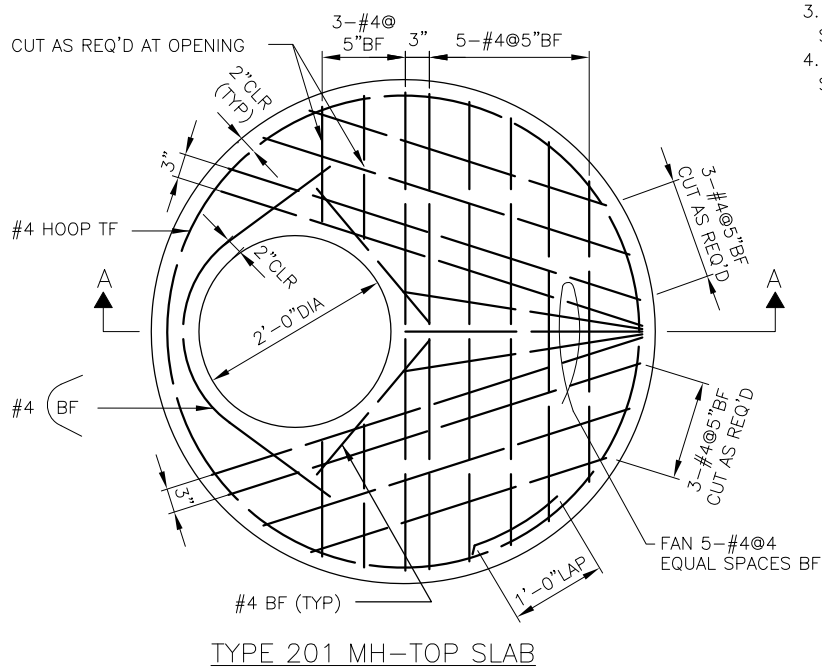
*FOR SEPARATE CAST-IN-PLACE BASE
REF STD SPEC SEC 7-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TYPE 201 MANHOLE

**NOTES:**

1. MATERIAL: CONCRETE—CLASS AX
REINFORCING STEEL—ASTM A615 GR 60
2. TOP SLAB IS DESIGNED FOR 3'-0" MAX COVER
BASE IS DESIGNED FOR 20'-0" MAX COVER
3. HEIGHT 8'-0" TO 12'-0":
SOIL BEARING VALUE EQUALS 3300#/SQ FT (MIN)
4. HEIGHT 12'-0" TO 20'-0":
SOIL BEARING VALUE EQUALS 3800#/SQ FT (MIN)



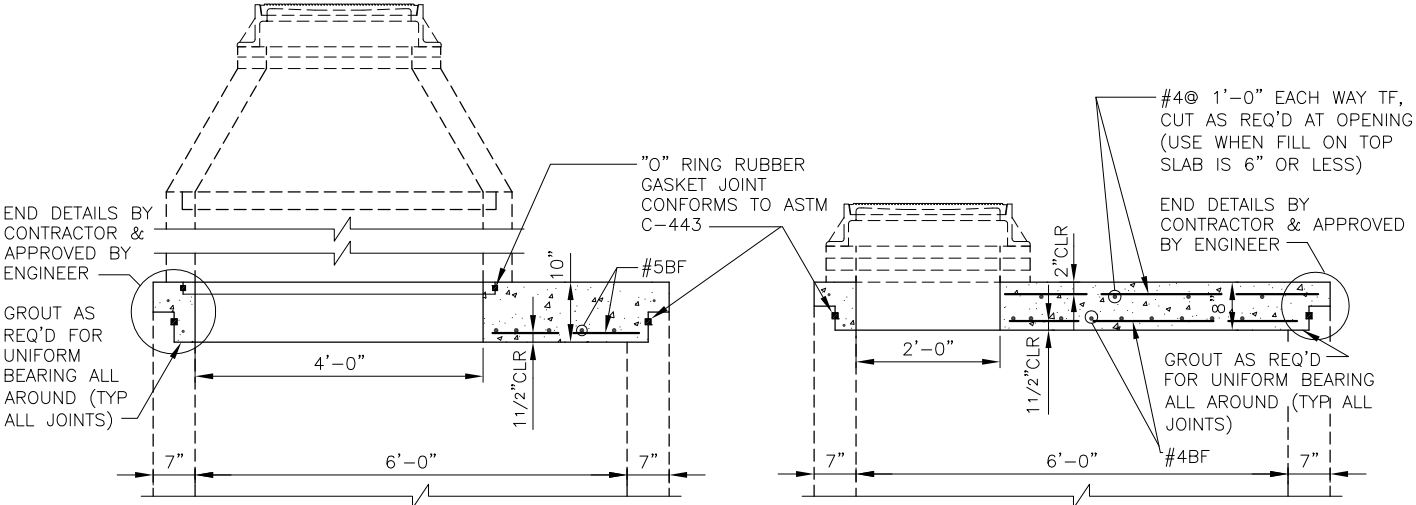
REF STD SPEC SEC 7-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENTTYPE 201 MANHOLE
TOP & BOTTOM SLABS

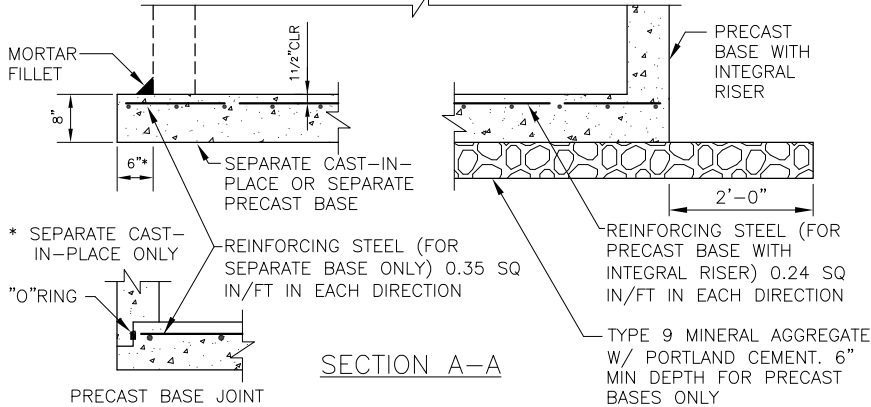


1. MH 202 TYPE A DESIGNATES A MANHOLE TOP SLAB WITH A 4'-0" DIA ACCESS.
2. MH 202 TYPE B DESIGNATES A MANHOLE TOP SLAB WITH A 2'-0" DIA ACCESS.
3. TOP SLAB AND BASE SECTION DETAILS, SEE STANDARD PLAN NO 202b.
4. MAXIMUM DIMENSION FROM OUTSIDE MANHOLE WALL TO THE FIRST PIPE JOINT. THE GREATER OF 1/2 INSIDE PIPE DIAMETER OR 1'-0".
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 AN EXTENSION, MANHOLE FRAME & COVER AND LEVELING BRICKS SHALL NOT EXCEED 2'-2".
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 1'-0" INCHES.
10. PRECAST MANHOLE COMPONENTS SHALL CONFORM TO ASTM C478.
JOINTS BETWEEN PRECAST COMPONENTS SHALL BE RUBBER GASKETED CONFORMING TO ASTM C443.



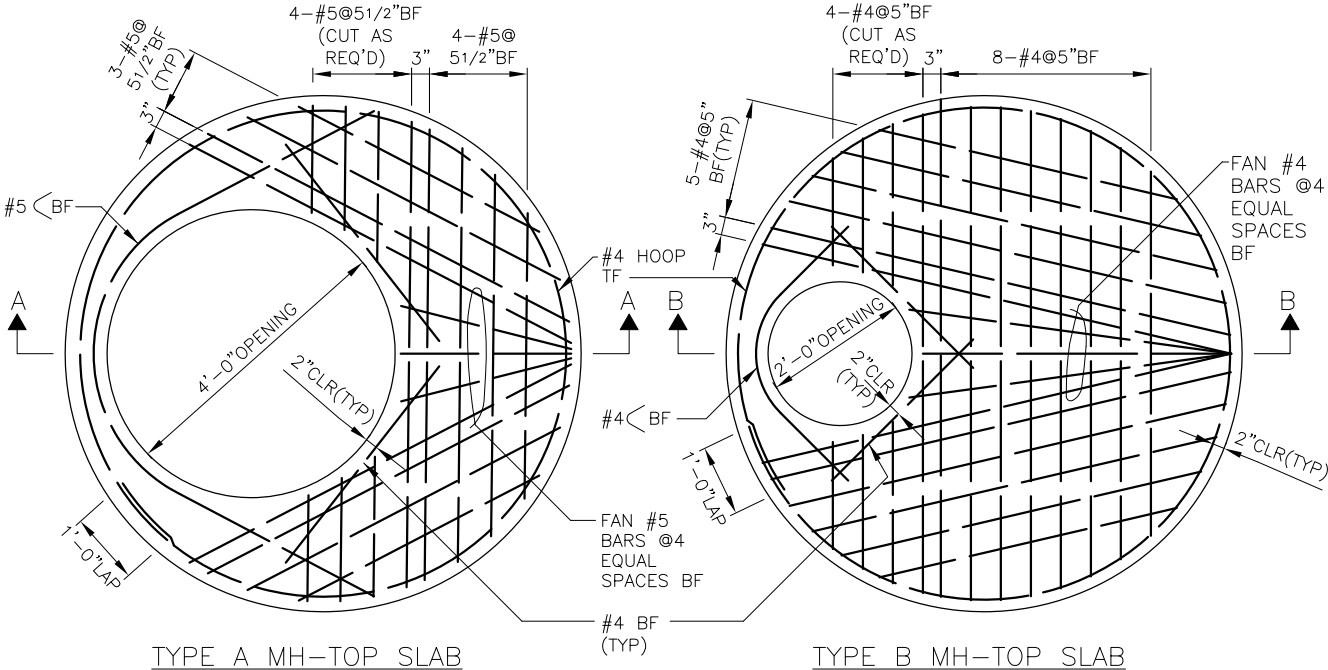


SECTION B-B
TOP SLAB ONLY



SECTION A-A

- NOTES:
1. MATERIAL: CONCRETE—CLASS AX
REINFORCING STEEL—ASTM A615 GR 60
 2. TOP SLAB IS DESIGNED FOR 11'-0" MAX COVER FOR TYPE A AND 3'-0" MAX COVER FOR TYPE B
 3. BASE IS DESIGNED FOR 20'-0" MAX COVER
 4. HEIGHT 8'-0" TO 12'-0":
SOIL BEARING VALUE EQUALS 3300#/SQ FT (MIN)
 5. HEIGHT 12'-0" TO 20'-0":
SOIL BEARING VALUE EQUALS 3800#/SQ FT (MIN)



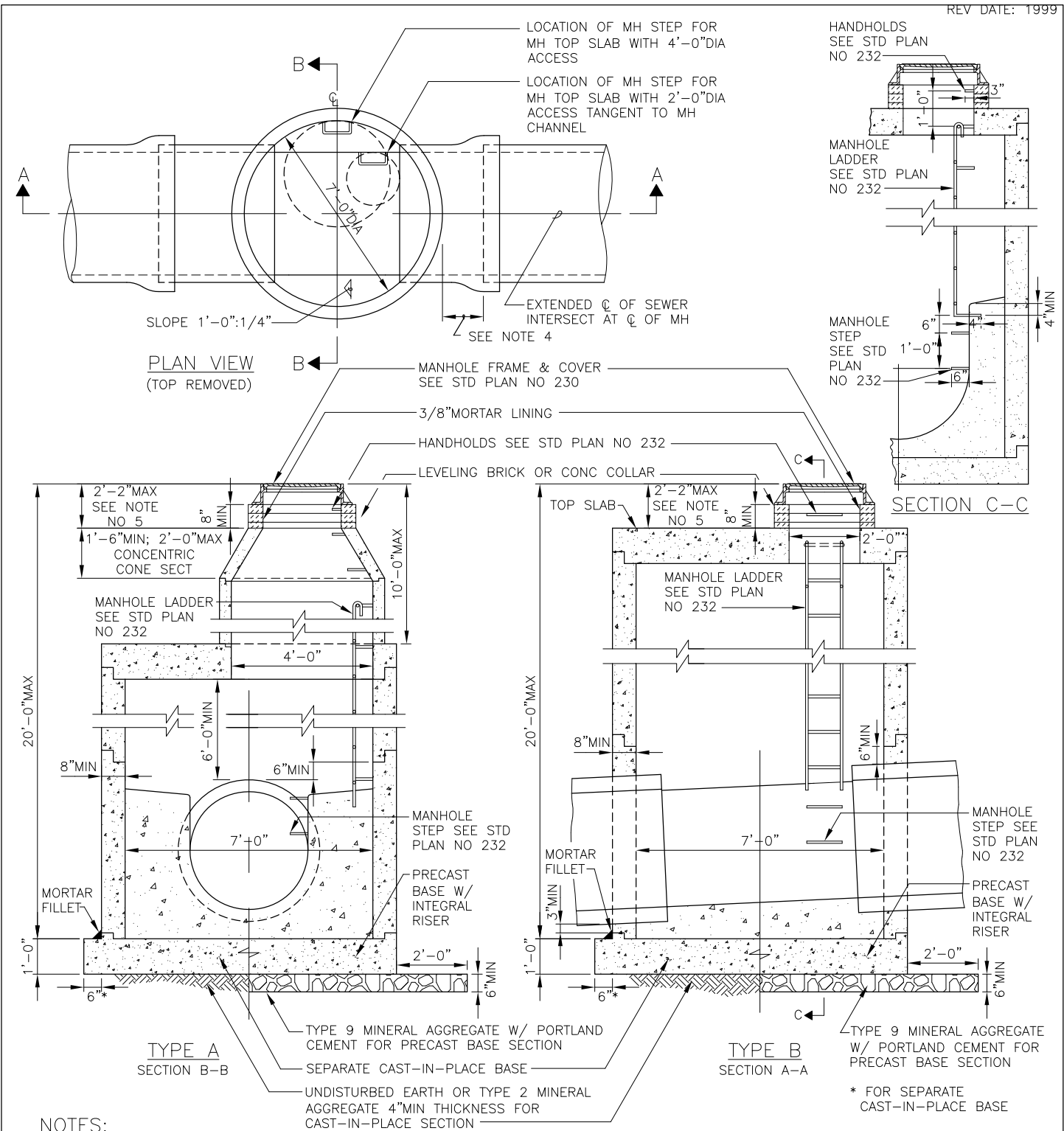
TYPE A MH-TOP SLAB

TYPE B MH-TOP SLAB

REF SED SPEC SEC 7-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TYPE 202 MANHOLE
TOP & BOTTOM SLABS



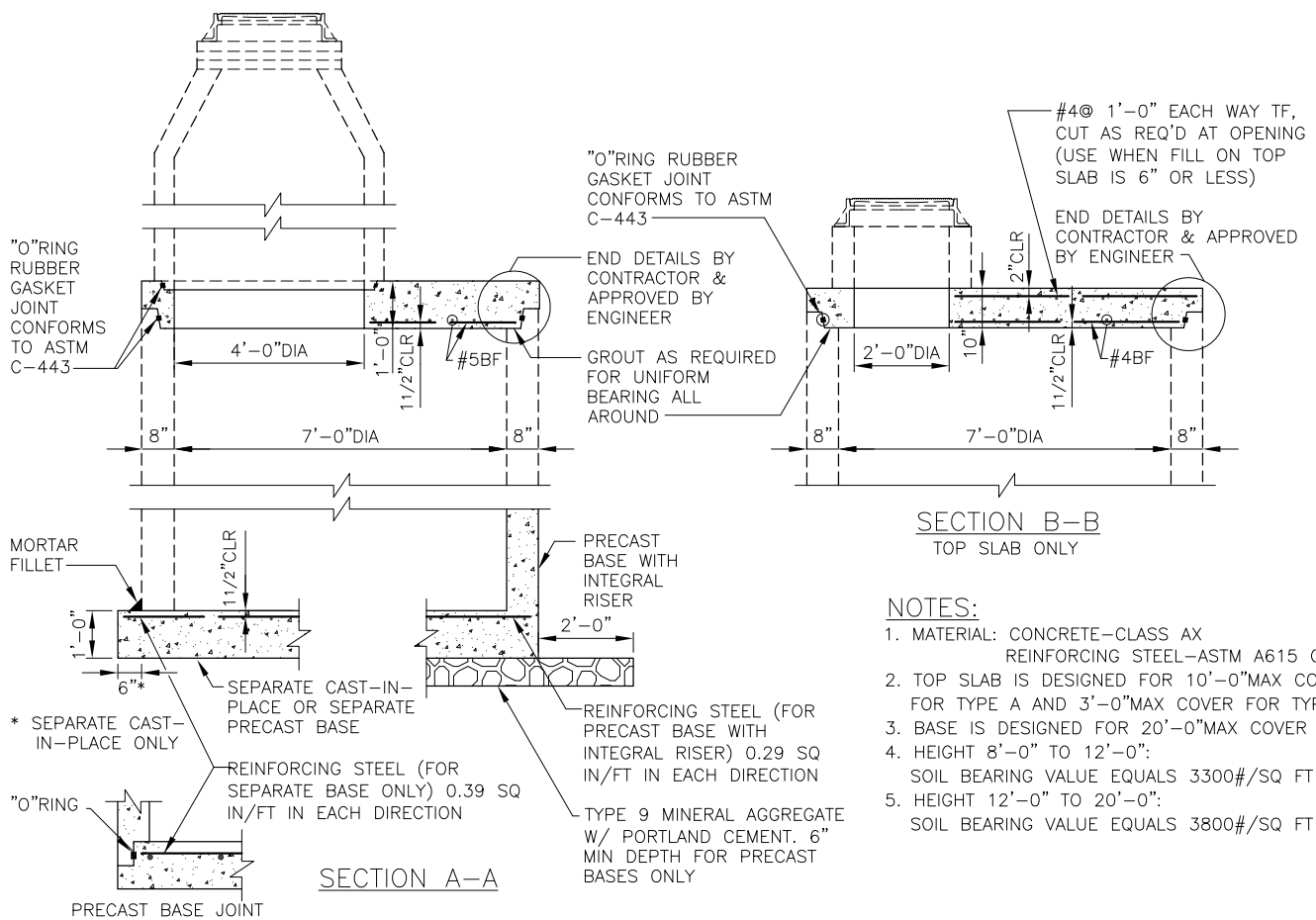
NOTES:

1. TYPE A MH DESIGNATES A MH TOP SLAB WITH A 4'-0" DIA ACCESS.
2. TYPE B MH DESIGNATES A MH TOP SLAB WITH A 2'-0" 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 1/2 INSIDE PIPE DIAMETER OR 1'-0".
5. TOTAL HEIGHT OF FRAME EXTENSIONS, MH FRAME AND COVER, AND LEVELING BRICKS SHALL NOT EXCEED 2'-2".
6. MH BASE SECTIONS SHOWN IN SECTION A-A AND SECTION B-B ARE TYPICAL FOR TYPE A AND TYPE B MHS.
7. MAX HOLE SIZE IS EQUAL TO THE OUTSIDE DIAMETER OF THE PIPE PLUS THE MH WALL THICKNESS. MIN DISTANCE BETWEEN HOLES IS 1'-0".
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

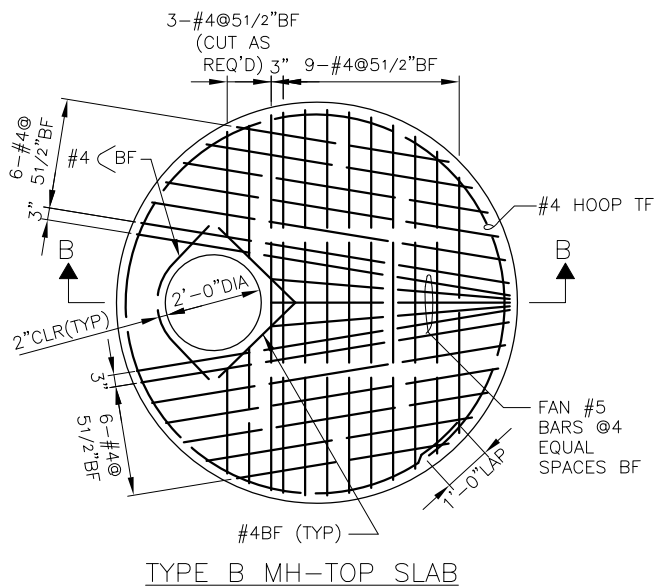
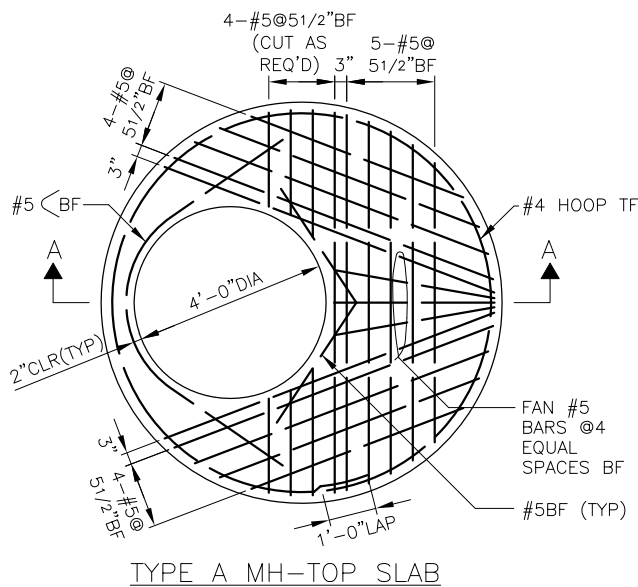
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TYPE 203 MANHOLE



NOTES:

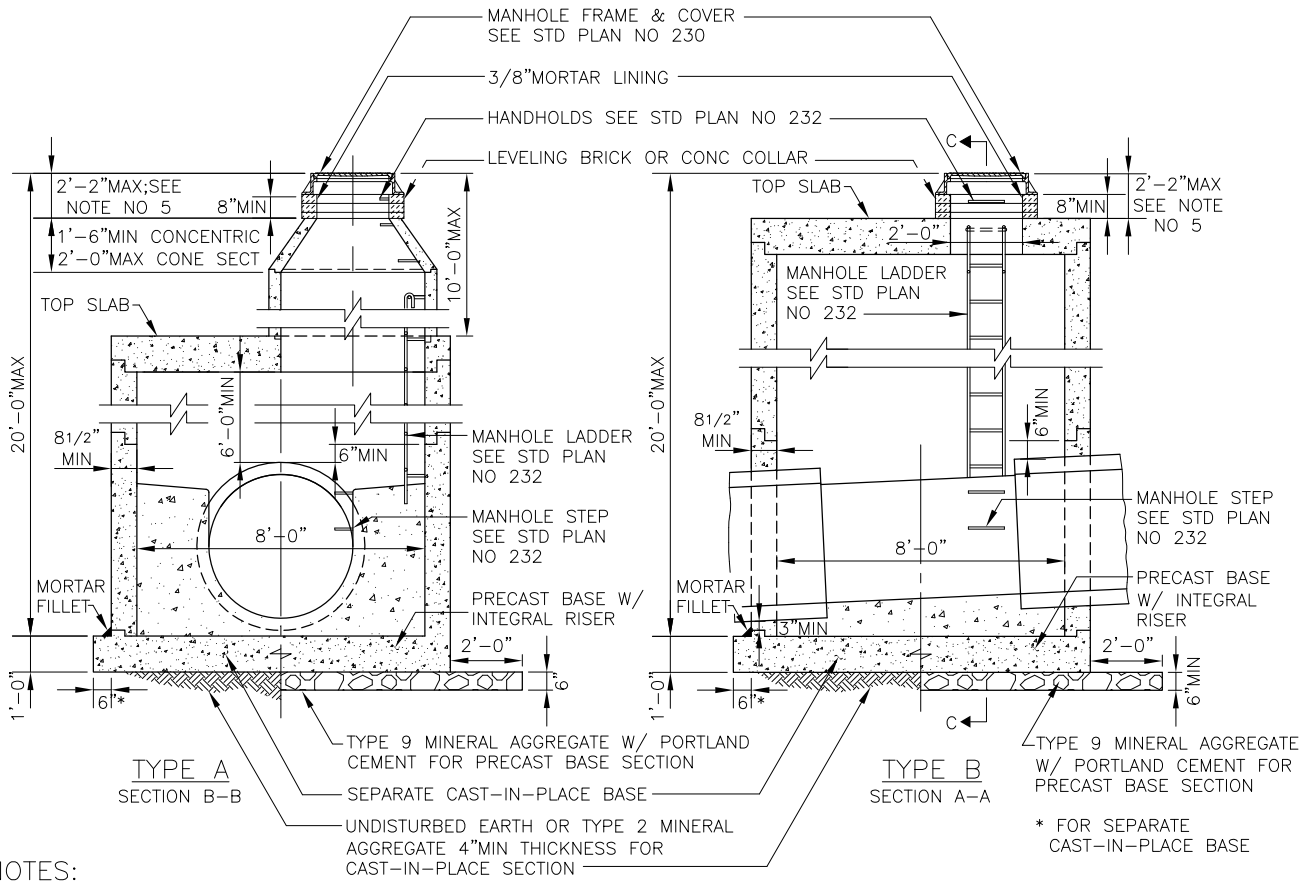
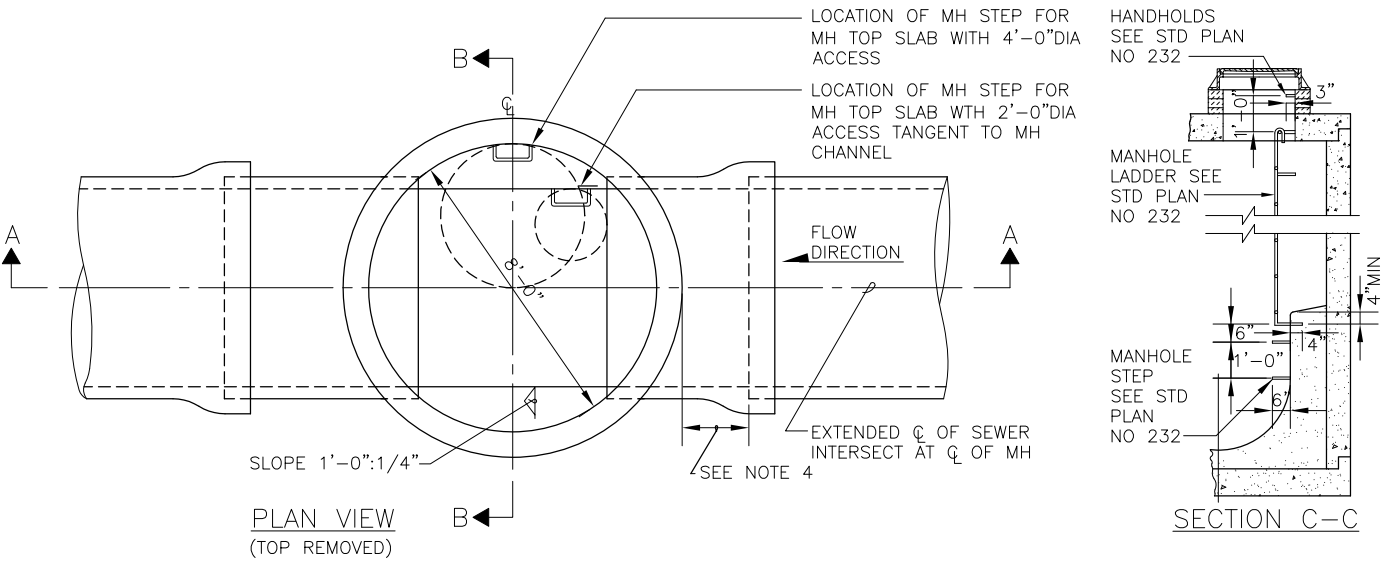
1. MATERIAL: CONCRETE-CLASS AX
2. TOP SLAB IS DESIGNED FOR 10'-0" MAX COVER FOR TYPE A AND 3'-0" MAX COVER FOR TYPE B
3. BASE IS DESIGNED FOR 20'-0" MAX COVER
4. HEIGHT 8'-0" TO 12'-0": SOIL BEARING VALUE EQUALS 3300#/SQ FT (MIN)
5. HEIGHT 12'-0" TO 20'-0": SOIL BEARING VALUE EQUALS 3800#/SQ FT (MIN)



REF STD SPEC SEC 7-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TYPE 203 MANHOLE
TOP & BOTTOM SLABS



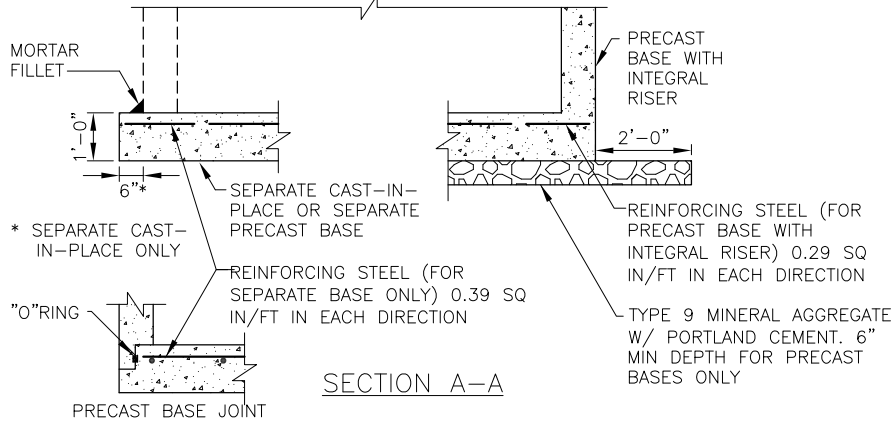
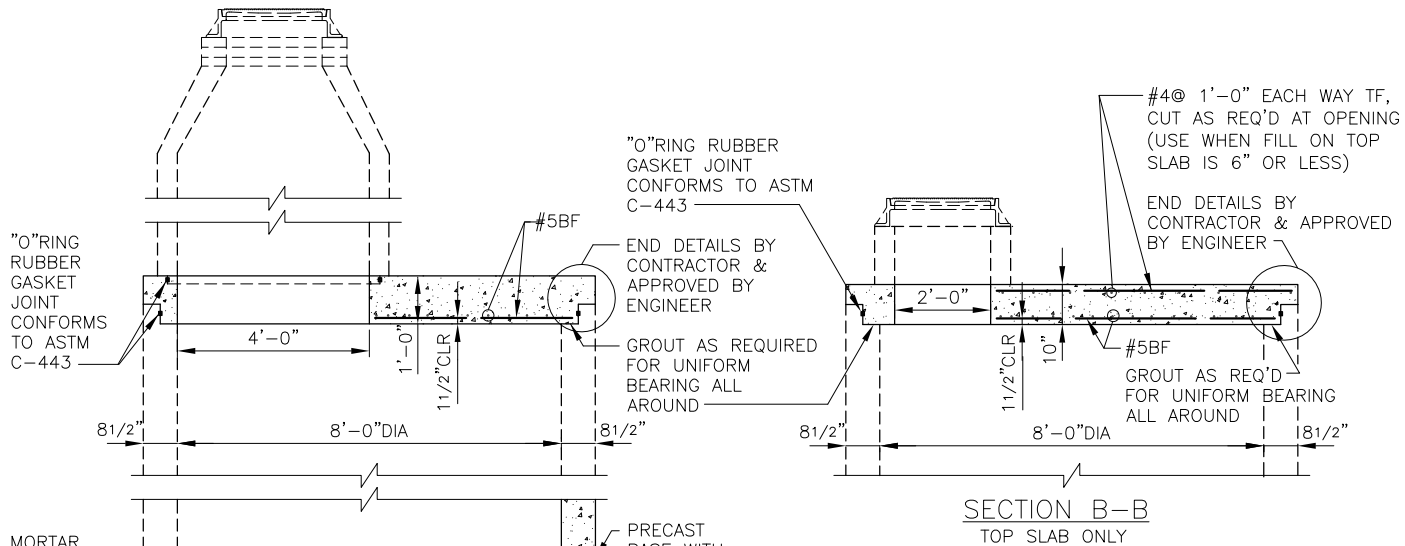
NOTES:

1. TYPE A MH DESIGNATES A MH TOP SLAB WITH A 4'-0" DIA ACCESS.
2. TYPE B MH DESIGNATES A MH TOP SLAB WITH A 2'-0" DIA ACCESS.
3. TOP SLAB AND BASE SECTION DETAILS, SEE STD PLAN NO 204.B.
4. MAX DIMENSION FROM OUTSIDE MH WALL TO THE FIRST PIPE JOINT, THE GREATER OF 1/2 INSIDE PIPE DIAMETER OR 1'-0".
5. TOTAL HEIGHT OF FRAME EXTENSIONS, MH FRAME AND COVER, AND LEVELING BRICKS SHALL NOT EXCEED 2'-2".
6. MH BASE SECTIONS SHOWN IN SECTION A-A AND SECTION B-B ARE TYPICAL FOR TYPE A AND TYPE B MHS.
7. MAX HOLE SIZE IS EQUAL TO THE OUTSIDE DIAMETER OF THE PIPE PLUS THE MH WALL THICKNESS. MIN DISTANCE BETWEEN HOLES IS 1'-0".

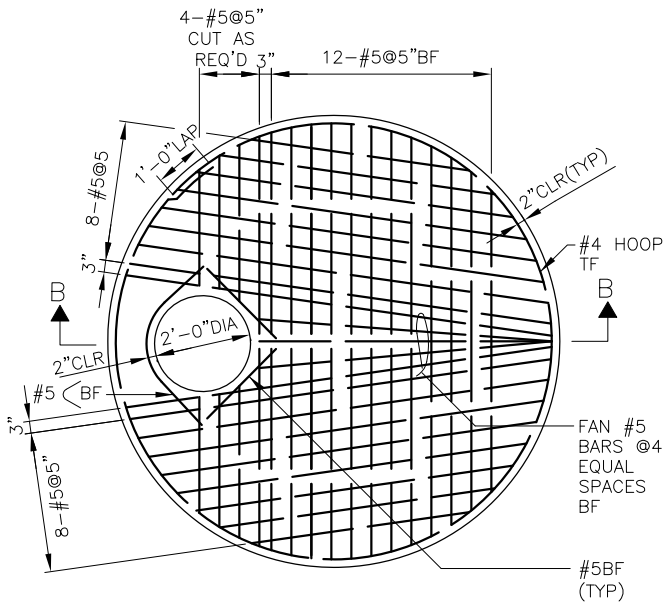
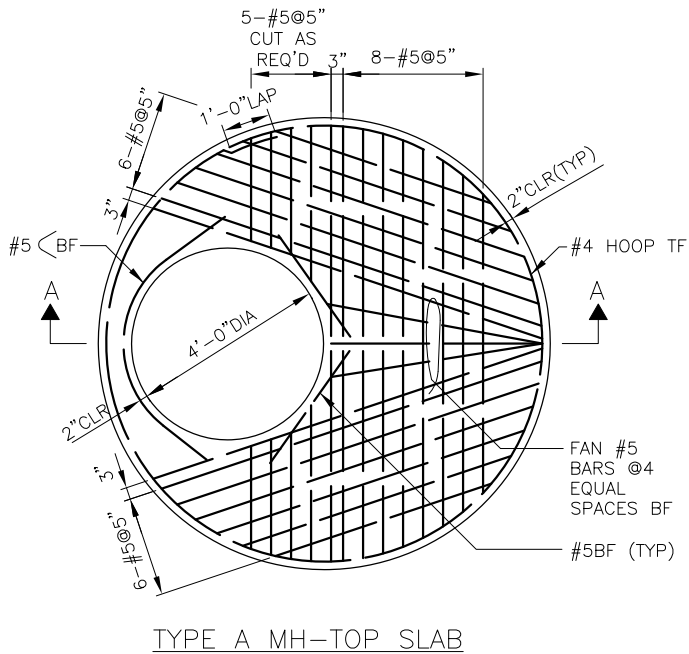
REF STD SPEC SEC 7-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TYPE 204 MANHOLE



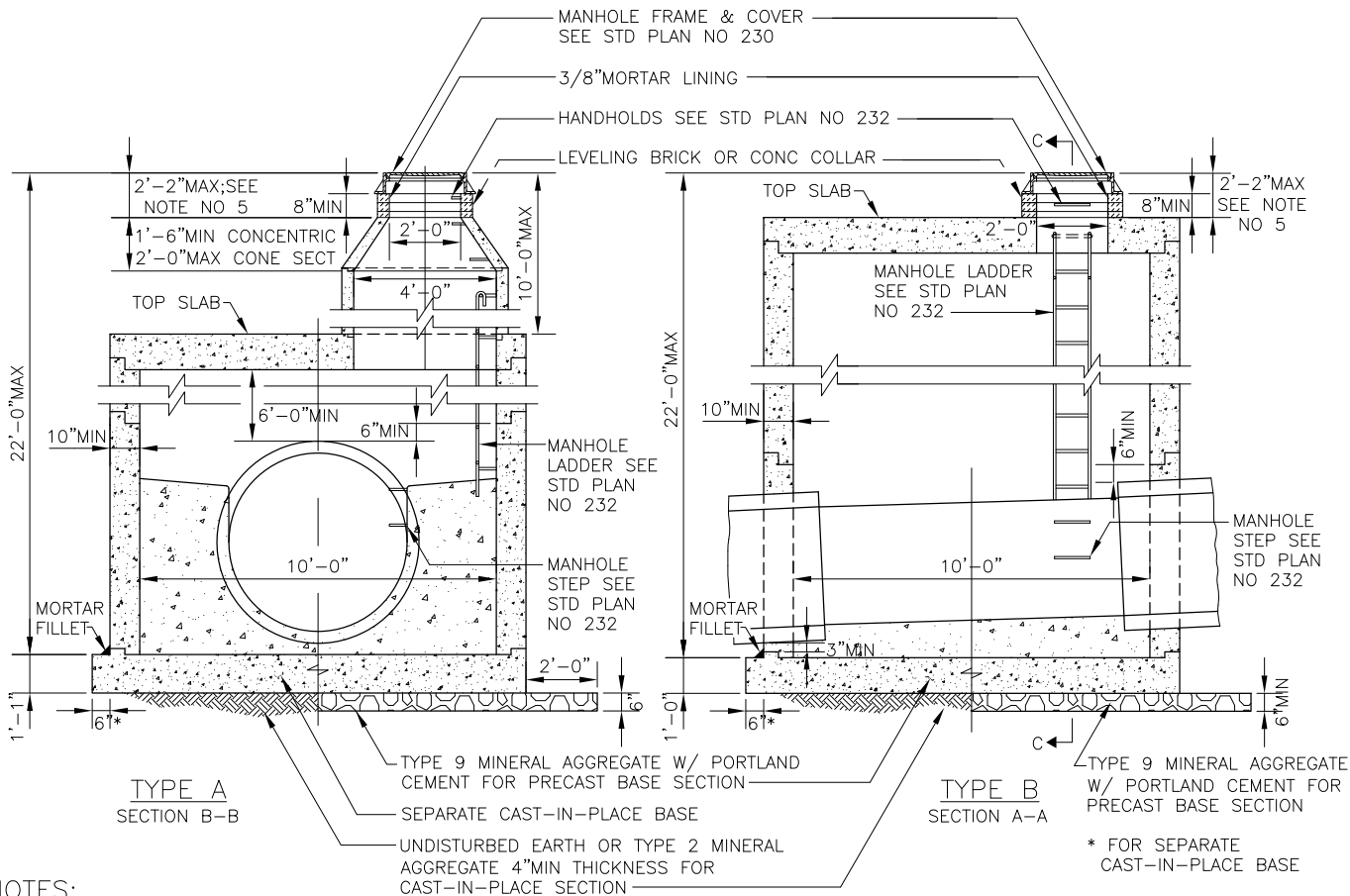
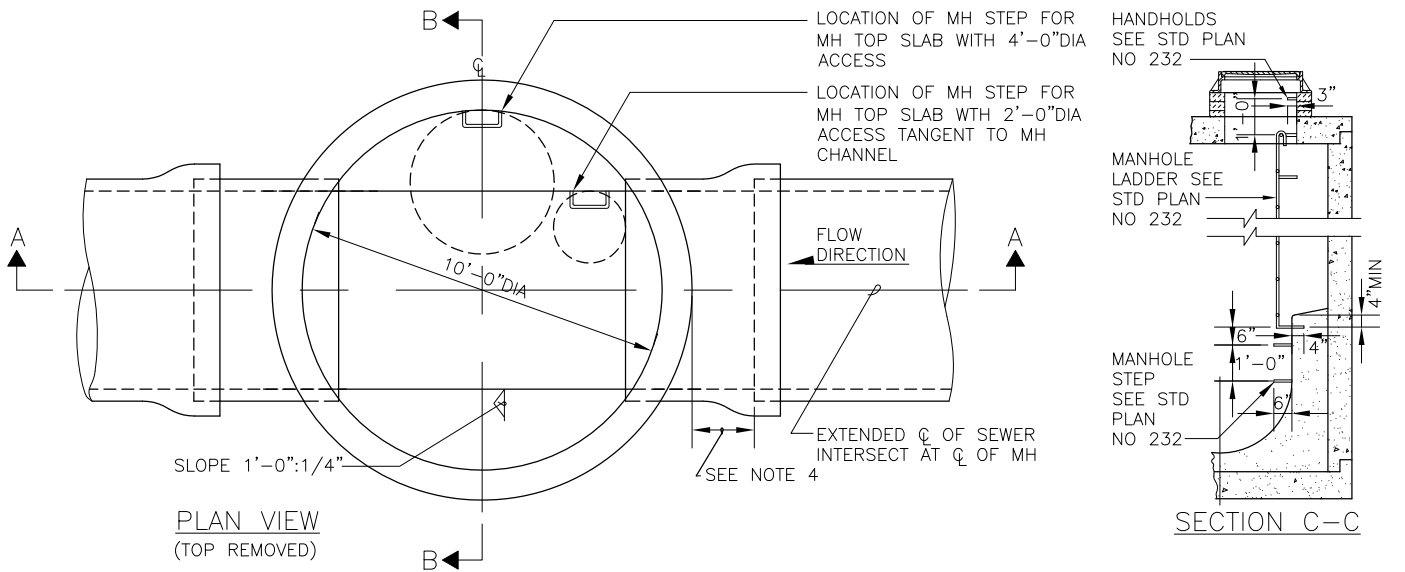
- NOTES:
1. MATERIAL: CONCRETE-CLASS AX
REINFORCING STEEL-ASTM A615 GR 60
 2. TOP SLAB IS DESIGNED FOR 10'-0" MAX COVER FOR TYPE A AND 3'-0" MAX COVER FOR TYPE B
 3. BASE IS DESIGNED FOR 20'-0" MAX COVER
 4. HEIGHT 8'-0" TO 12'-0":
SOIL BEARING VALUE EQUALS 3300#/SQ FT (MIN)
 5. HEIGHT 12'-0" TO 20'-0":
SOIL BEARING VALUE EQUALS 3800#/SQ FT (MIN)



REF STD SPEC SEC 7-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TYPE 204 MANHOLE
TOP & BOTTOM SLABS

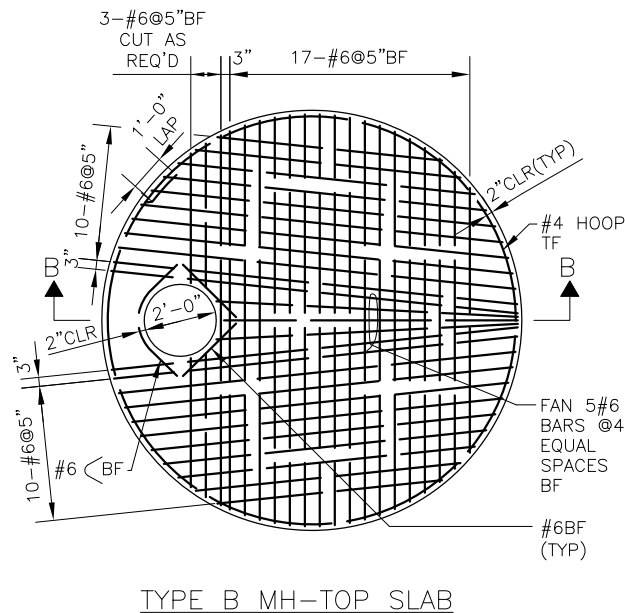
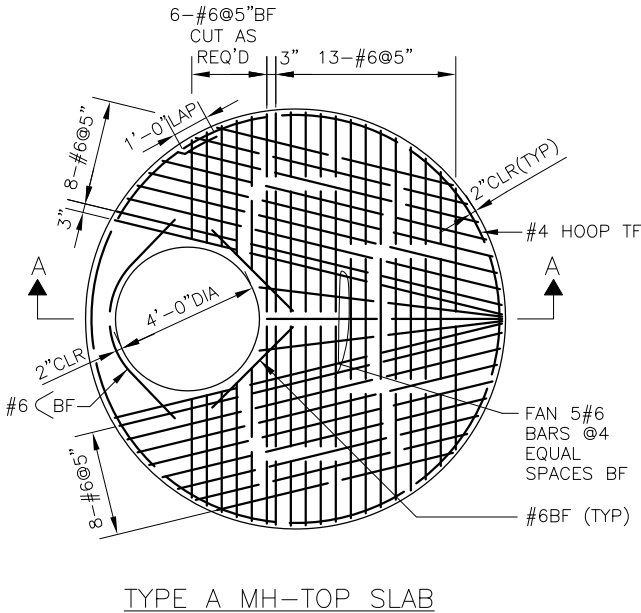
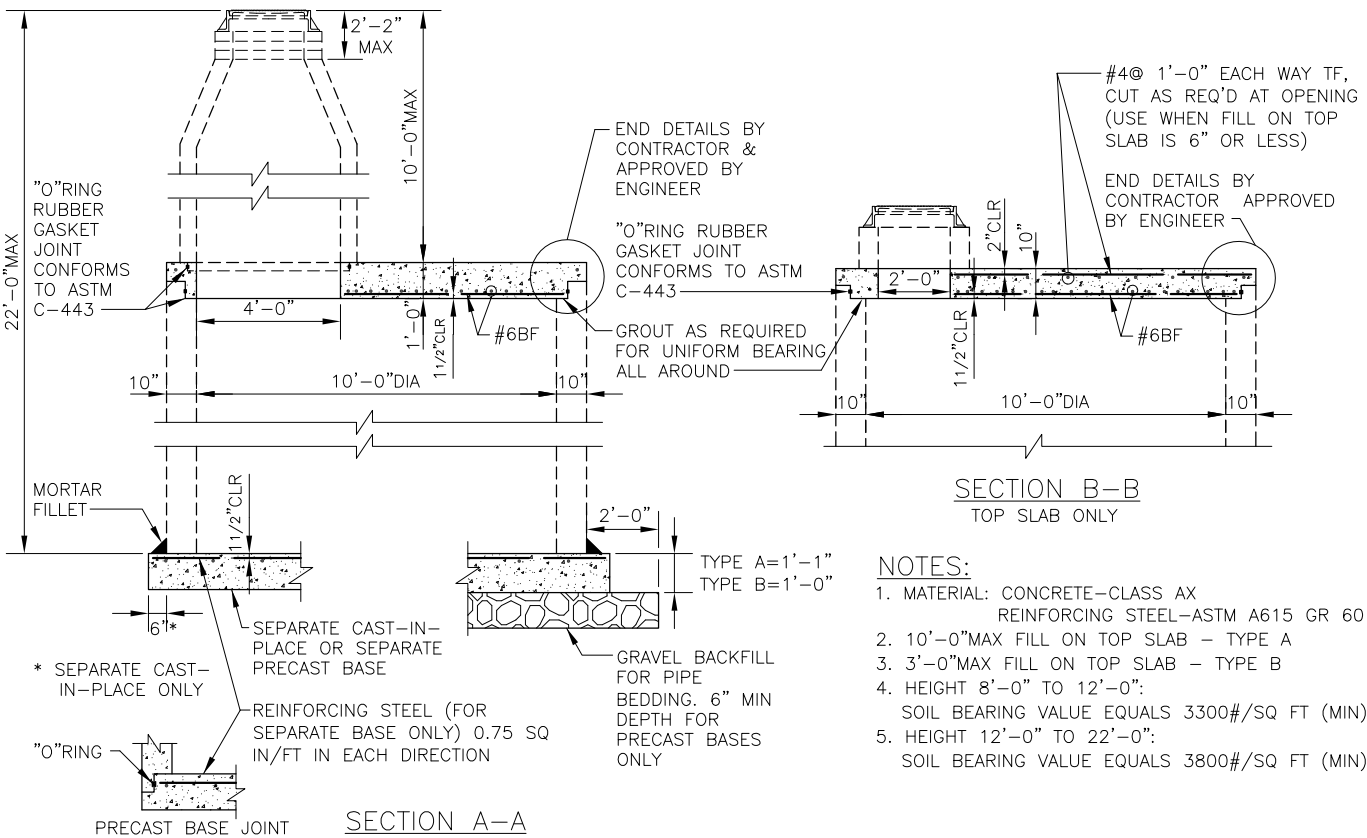


- NOTES:
1. TYPE A MH DESIGNATES A MH TOP SLAB WITH A 4'-0" DIA ACCESS.
 2. TYPE B MH DESIGNATES A MH TOP SLAB WITH A 2'-0" DIA ACCESS.
 3. TOP SLAB AND BASE SECTION DETAILS, SEE STD PLAN NO 205.1B.
 4. MAX DIMENSION FROM OUTSIDE MH WALL TO THE FIRST PIPE JOINT. THE GREATER OF 1/2 INSIDE PIPE DIAMETER OR 1'-0".
 5. TOTAL HEIGHT OF FRAME EXTENSIONS, MH FRAME AND COVER, AND LEVELING BRICKS SHALL NOT EXCEED 2'-2".
 6. MH BASE SECTIONS SHOWN IN SECTION A-A AND SECTION B-B ARE TYPICAL FOR TYPE A AND TYPE B MHS.
 7. MAX HOLE SIZE IS EQUAL TO THE OUTSIDE DIAMETER OF THE PIPE PLUS THE MH WALL THICKNESS. MIN DISTANCE BETWEEN HOLES IS 1'-0".

REF STD SPEC SEC 7-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

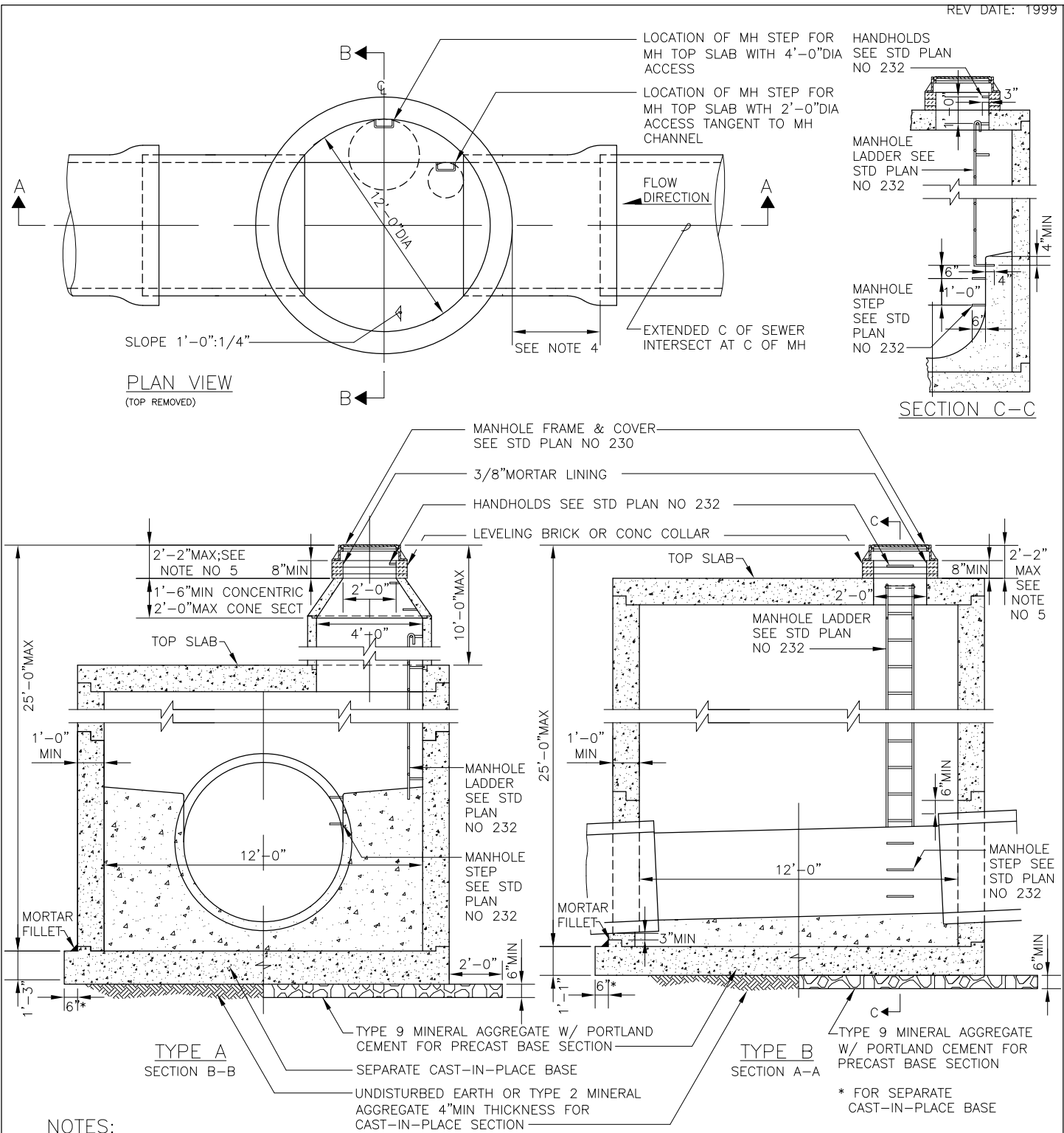
TYPE 205 MANHOLE



REF STD SPEC SEC 7-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TYPE 205 MANHOLE
TOP & BOTTOM SLABS



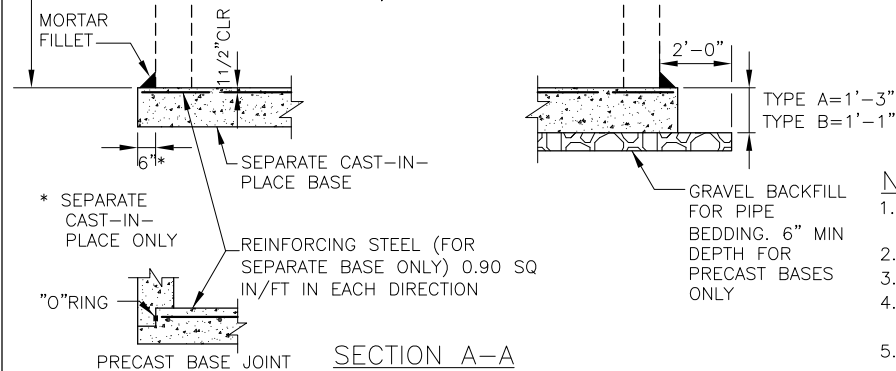
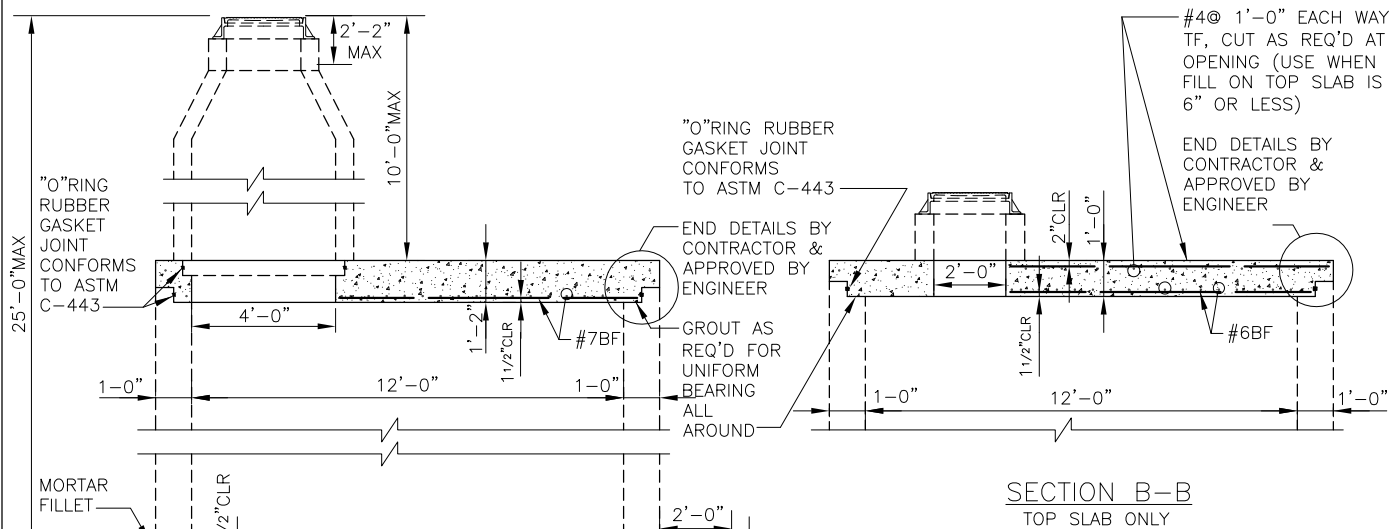
NOTES:

1. TYPE A MH DESIGNATES A MH TOP SLAB WITH A 4'-0" DIA ACCESS.
2. TYPE B MH DESIGNATES A MH TOP SLAB WITH A 2'-0" DIA ACCESS.
3. TOP SLAB AND BASE SECTION DETAILS, SEE STD PLAN NO 206.1B.
4. MAX DIMENSION FROM OUTSIDE MH WALL TO THE FIRST PIPE JOINT. THE GREATER OF 1/2 INSIDE PIPE DIAMETER OR 1'-0".
5. TOTAL HEIGHT OF FRAME EXTENSIONS, MH FRAME AND COVER, AND LEVELING BRICKS SHALL NOT EXCEED 2'-2".
6. MH BASE SECTIONS SHOWN IN SECTION A-A AND SECTION B-B ARE TYPICAL FOR TYPE A AND TYPE B MHS.
7. MAX HOLE SIZE IS EQUAL TO THE OUTSIDE DIAMETER OF THE PIPE PLUS THE MH WALL THICKNESS. MIN DISTANCE BETWEEN HOLES IS 1'-0".

REF STD SPEC SEC 7-05

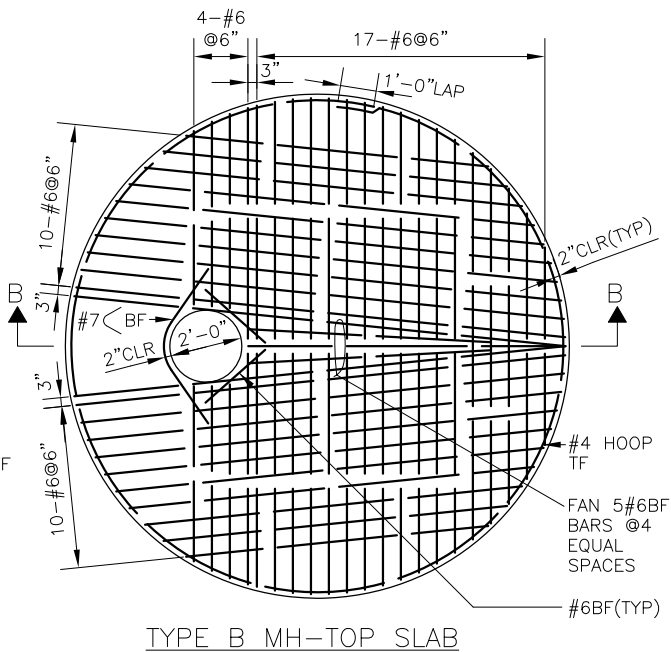
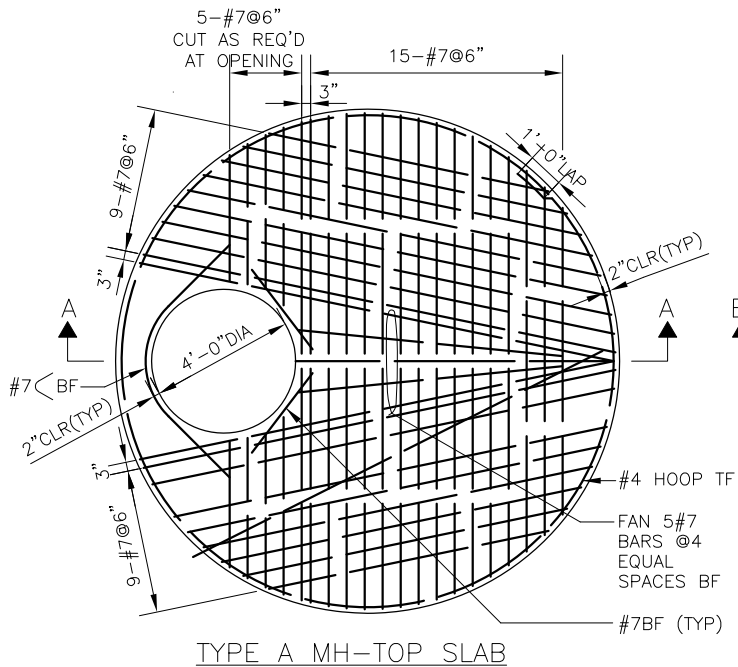
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TYPE 206 MANHOLE



NOTES:

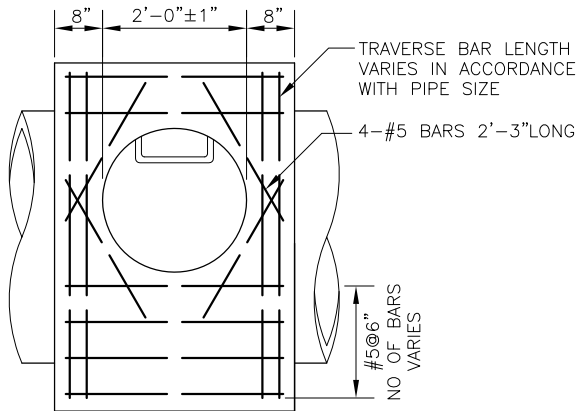
1. MATERIAL: CONCRETE-CLASS AX
REINFORCING STEEL-ASTM A615 GR 60
2. 10'-0" MAX FILL ON TOP SLAB - TYPE A
3. 3'-0" MAX FILL ON TOP SLAB - TYPE B
4. HEIGHT 8'-0" TO 12'-0":
SOIL BEARING VALUE EQUALS 3300#/SQ FT (MIN)
5. HEIGHT 12'-0" TO 25'-0":
SOIL BEARING VALUE EQUALS 3800#/SQ FT (MIN)



REF STD SPEC SEC 7-05

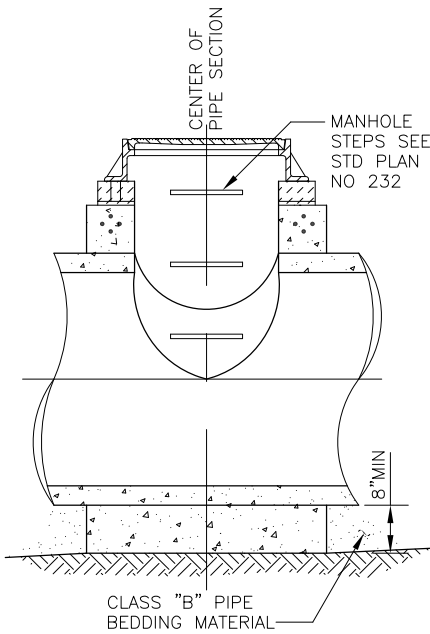
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TYPE 206 MANHOLE
TOP & BOTTOM SLABS

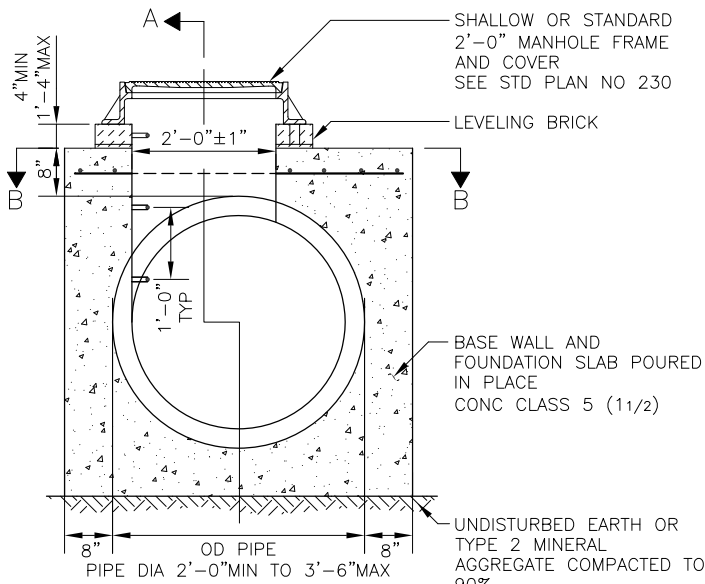


SECTION B-B

NOTE:
REINFORCING STEEL SHALL BE
DEFORMED BARS CONFORMING TO
ASTM A-615 GR 60 AND SHALL
HAVE A MIN COVER OF 2"



SECTION B-B

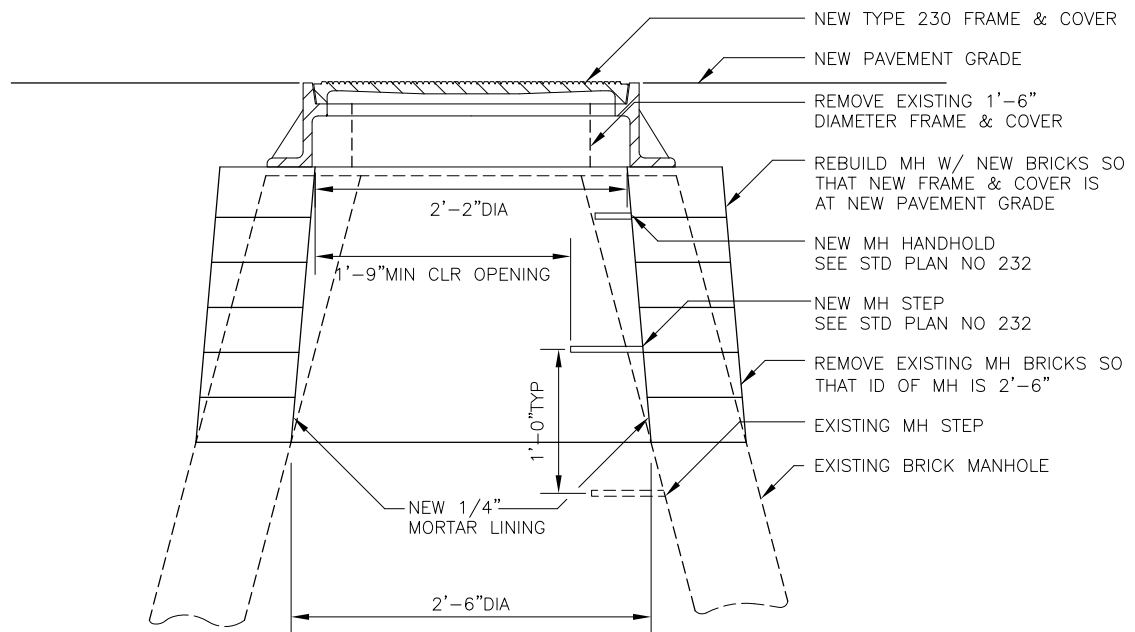


SECTION THRU CL

RED STD SPEC SEC 7-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TYPE 207 MANHOLE

NOTES:

1. NEW MANHOLE STEPS AND HANDHOLDS SHALL BE INSTALLED AND LOCATED 1'-0" OC FROM THE FIRST EXISTING STEP IN THE MANHOLE AND SHALL MATCH THE EXISTING TYPE OF STEP. ANY SUBSTITUTIONS SHALL BE APPROVED BY THE ENGINEER. A MINIMUM 1'-9" CLEAR OPENING SHALL BE MAINTAINED.
2. 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.
3. FOR PAVEMENT DEPTH GREATER THAN 7" USE FRAME EXTENSION(S) AS SHOWN IN STANDARD PLAN NO 231 TO BRING THE COVER UP TO THE LEVEL OF THE FINISHED PAVEMENT WITHOUT EMBEDDING BOTTOM FLANGE OF THE CASTING IN THE PAVEMENT.

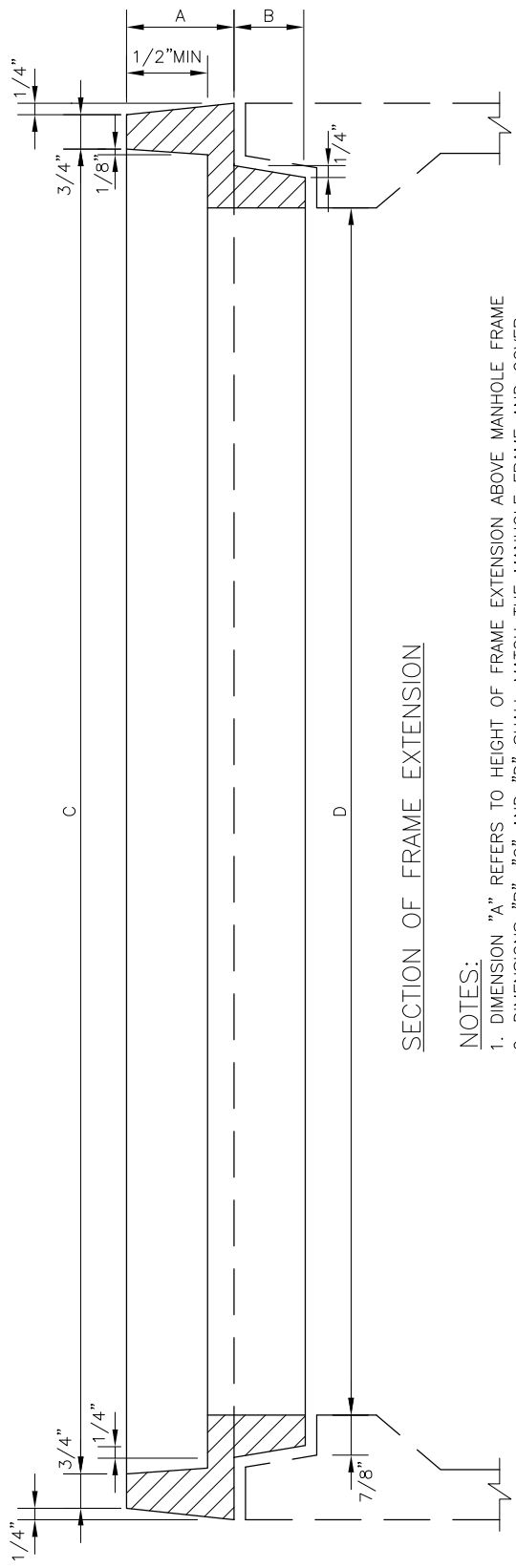
SCALE 1 1/2" = 1'-0"

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENTREBUILD EXISTING
BRICK MANHOLE



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. #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
3. FOR PAVEMENT DEPTH GREATER THAN 7" USE FRAME EXTENSION(S) (STANDARD PLAN NO 231) TO BRING THE COVER UP TO THE LEVEL OF THE FINISHED PAVEMENT WITHOUT EMBEDDING THE BOTTOM FLANGE OF THE CASTING IN THE PAVEMENT
4. COVER THICKNESS IS MEASURED FROM THE BOTTOM OF THE PATTERN
5. REFER TO SECTION 5-05 FOR OTHER REQUIREMENTS FOR REINFORCING BARS
6. FRAMES SHALL BE MANUFACTURED FROM CAST IRON OR DUCTILE IRON
7. COVERS SHALL BE MANUFACTURED FROM DUCTILE IRON

2'-0" DIAMETER
FRAME AND COVER



SECTION OF FRAME EXTENSION

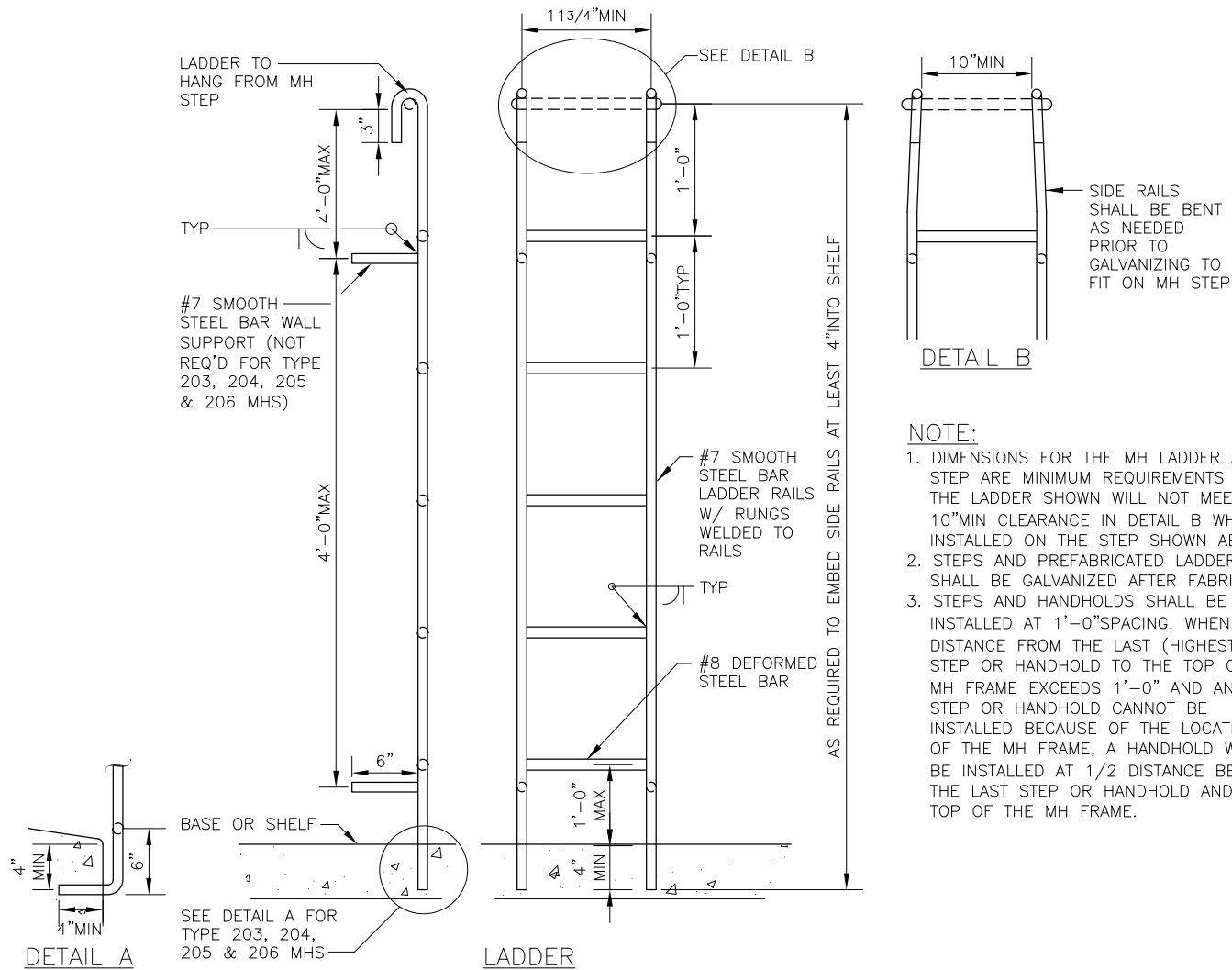
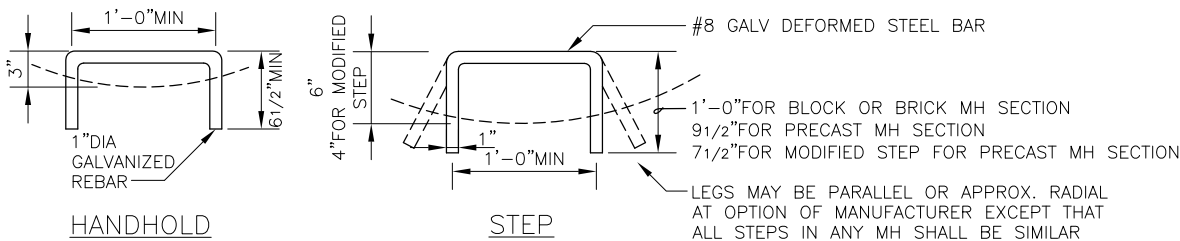
NOTES:

1. DIMENSION "A" REFERS TO HEIGHT OF FRAME EXTENSION ABOVE MANHOLE FRAME
2. DIMENSIONS "B", "C" AND "D" SHALL MATCH THE MANHOLE FRAME AND COVER THAT THE FRAME EXTENSION TO BE USED ON
3. WHEN FRAME EXTENSIONS ARE USED ON A NEW MANHOLE FRAME AND COVER, THE FRAME EXTENSION SHALL BE PERMANENTLY ATTACHED TO THE MANHOLE FRAME AT THE FACTORY, NOT IN THE FIELD. APPROVAL OF ATTACHMENT METHOD IS REQUIRED
4. FRAME EXTENSIONS SHALL BE DUCTILE OR CAST IRON

REF STD SPEC SEC 7-20 & 9-12

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

FRAME EXTENSIONS



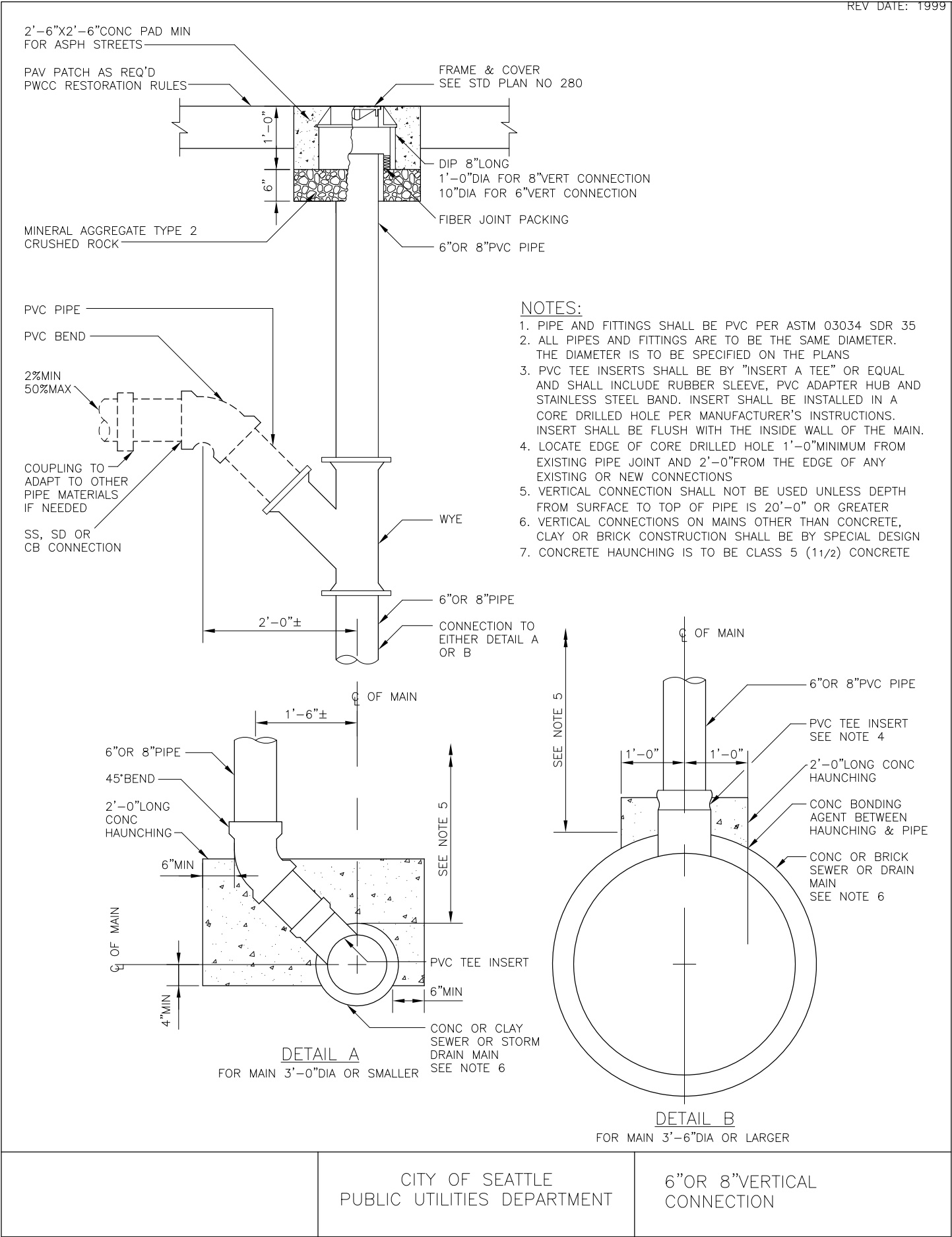
REF STD SPEC SEC 7-05

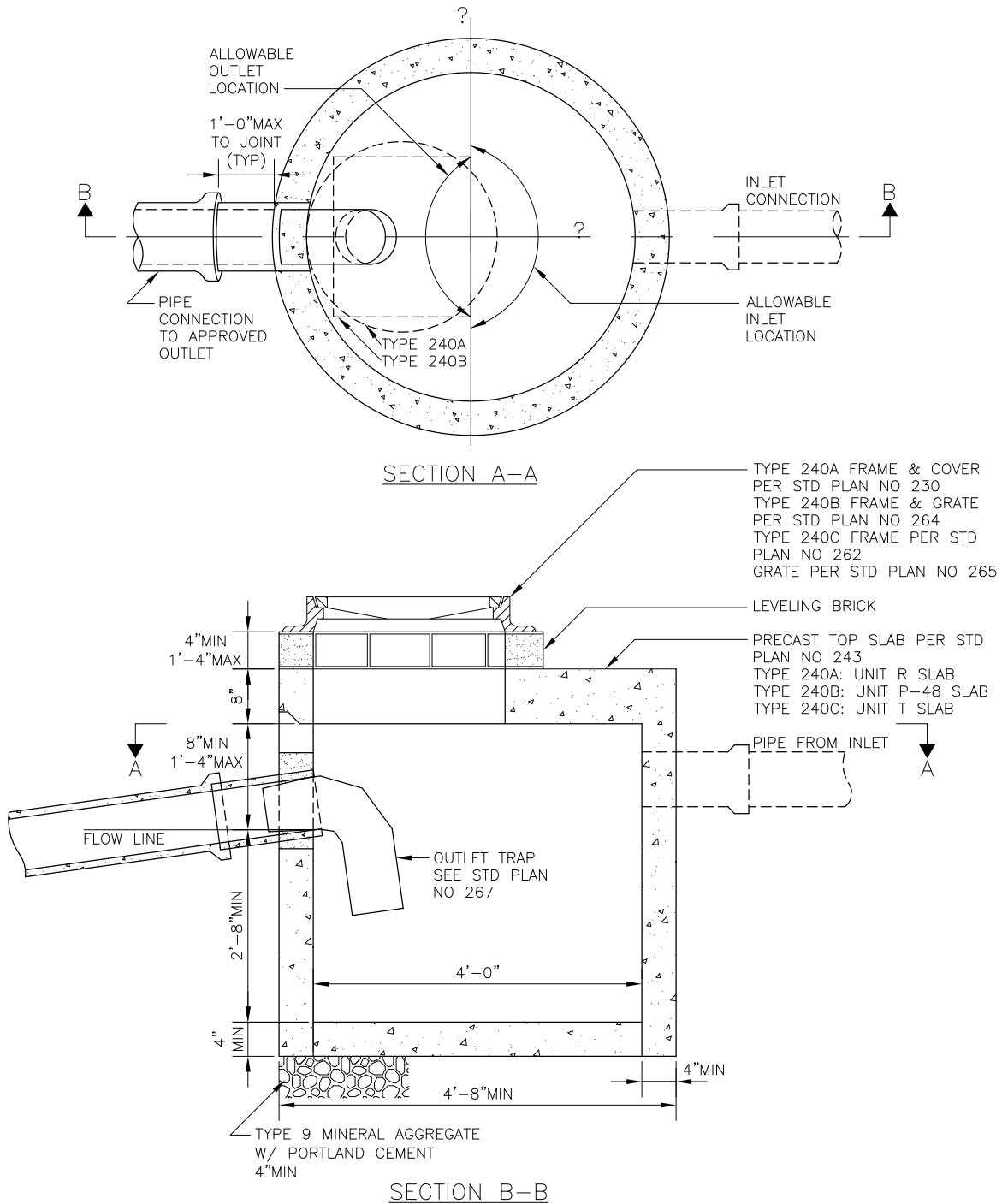
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

MANHOLE LADDER,
STEP AND HANDHOLD



OUTSIDE DROP CONNECTION



**NOTES:**

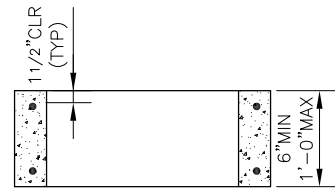
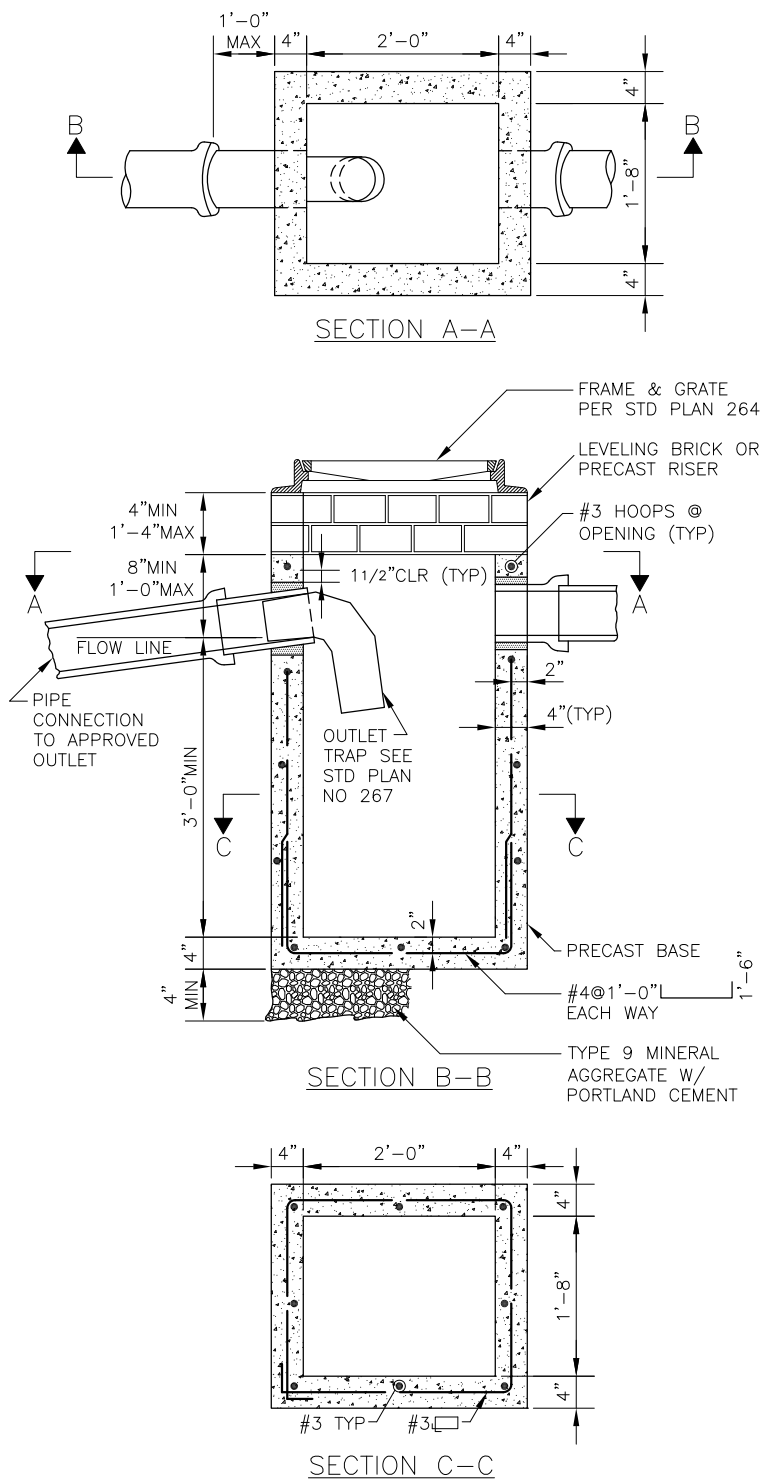
1. FRAME & GRATE OR FRAME & OVER SHALL BE LOCATED OVER TRAP
2. INVERT OF INLET PIPE SHALL BE 0.2' MIN ABOVE INVERT OF OUTLET PIPE

REF STD SPEC SEC 7-05

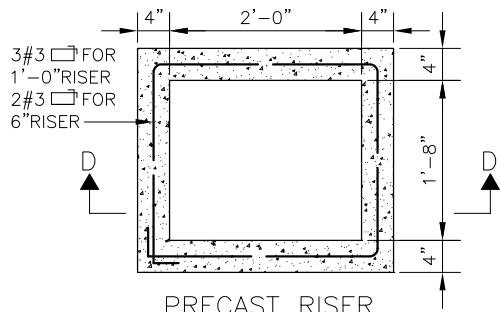
NOT TO SCALE

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TYPE 240 CATCH BASIN



SECTION D-D



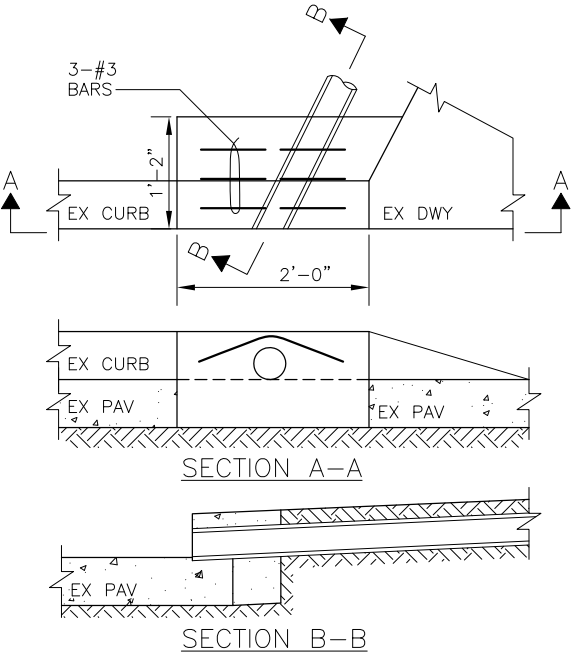
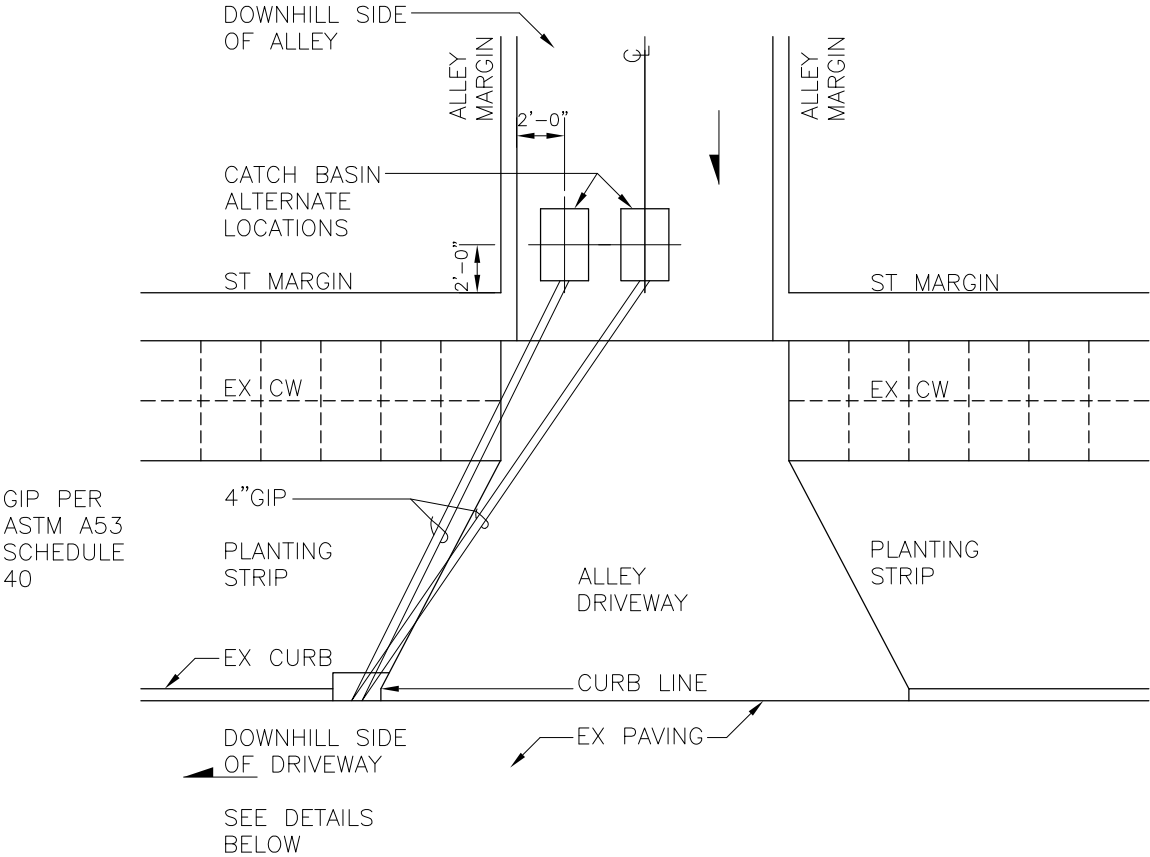
PRECAST RISER
REINFORCING

- NOTES:
1. 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 SPU
 2. FOR CURB DISCHARGE INSTALLATION SEE STD PLAN NO 241B
 3. INSTALL PER STD PLAN NO 261
 4. MATERIAL: CONCRETE F'C=4000PSI
REINFORCING STEEL ASTM A615 GR60

REF STD SPEC SEC 7-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

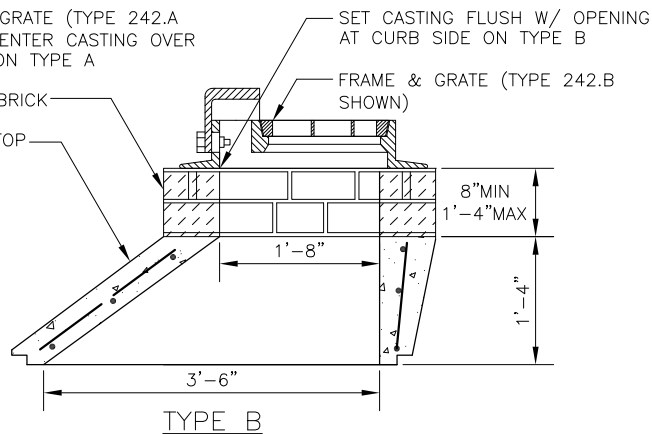
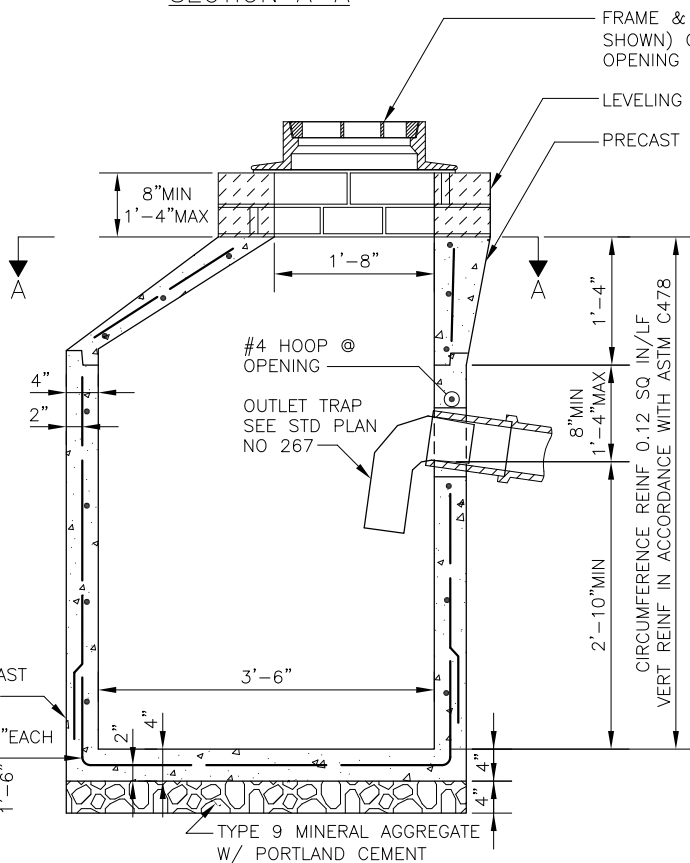
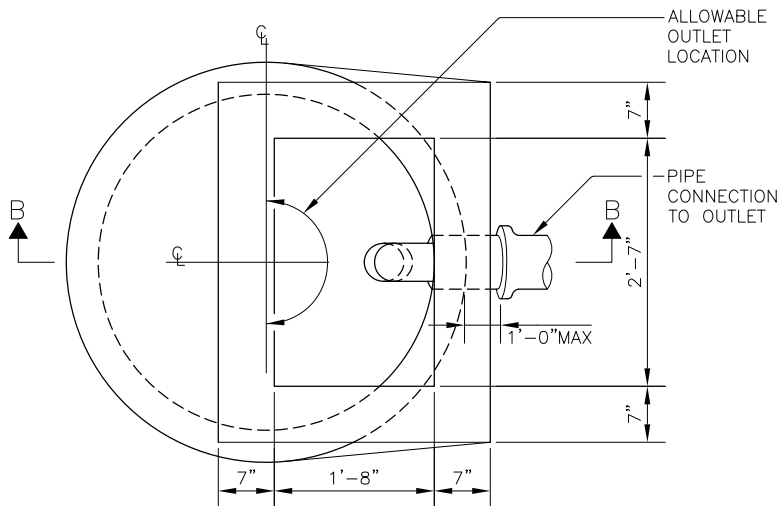
CATCH BASIN TYPE 241



REF STD SPEC SEC 7-01

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TYPE 241 CATCH BASIN
INSTALLATIONS



| CB TYPE | CASTING | |
|----------|---------|--------|
| | FRAME | GRATE |
| A OR A.1 | NO 262 | NO 265 |
| B OR B.1 | NO 263 | NO 265 |

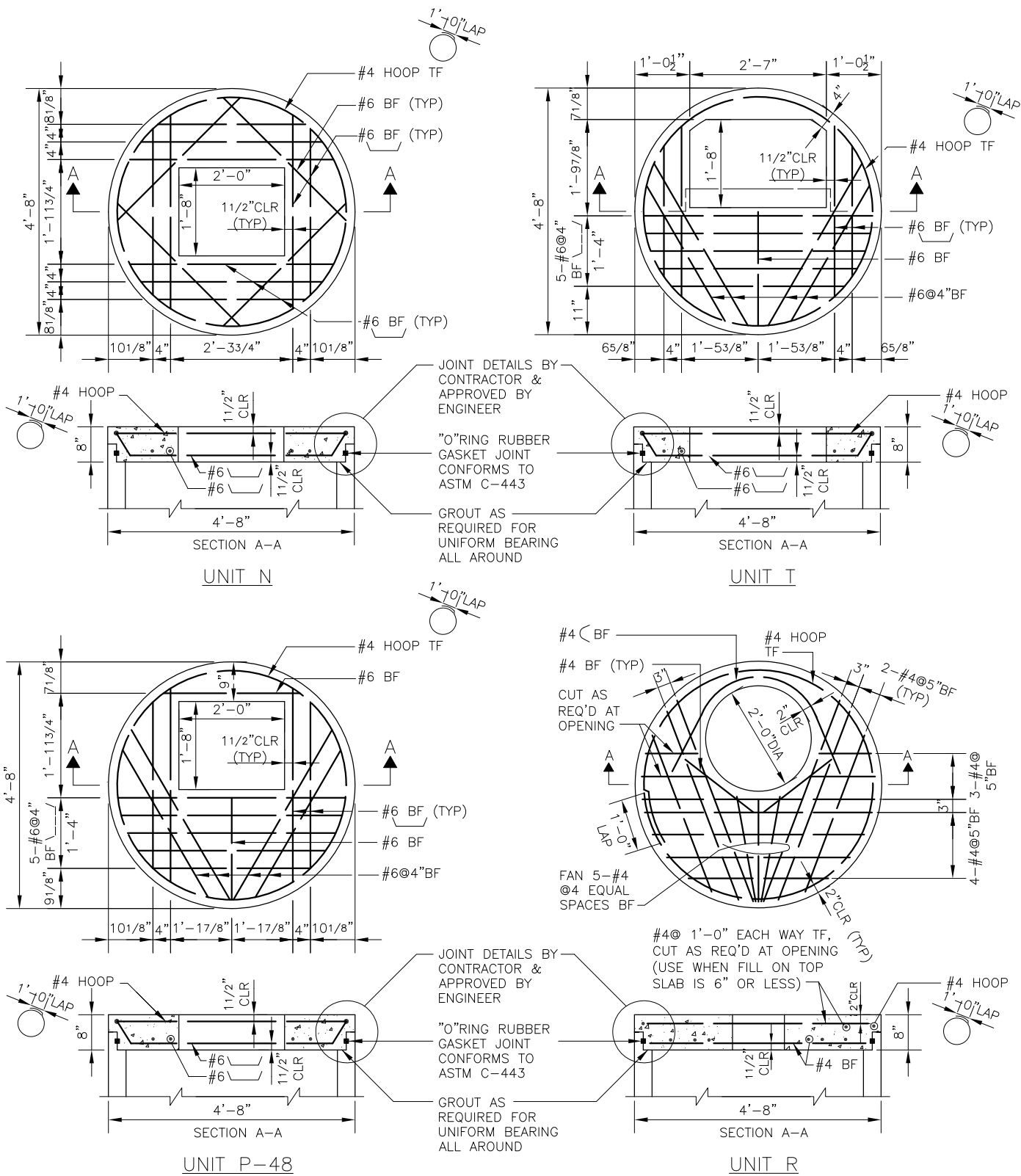
NOTES:

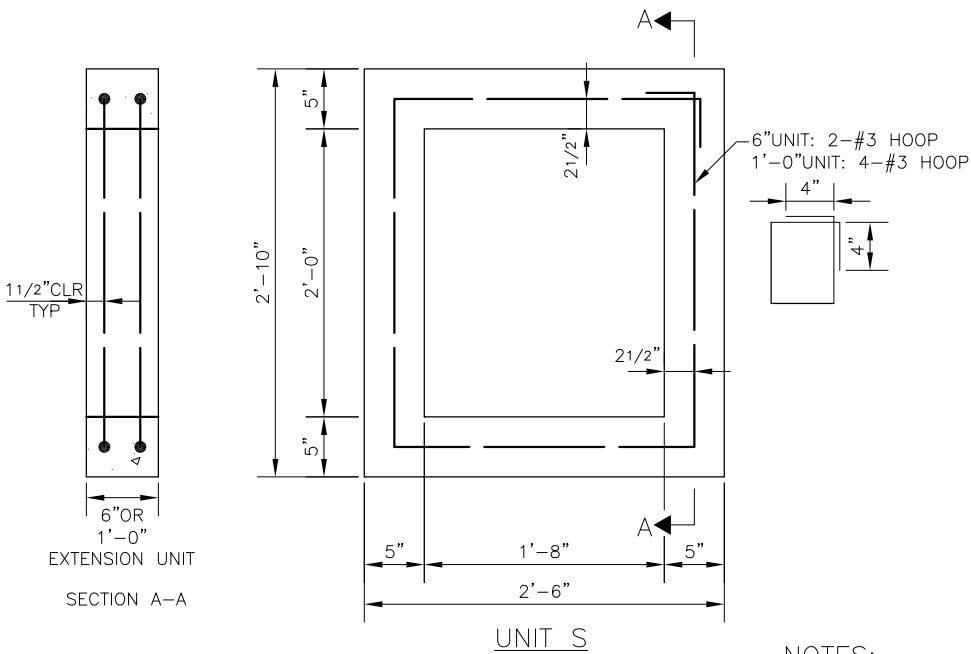
1. MATERIAL: CONCRETE: F'C=4000PSI
REINFORCING STEEL: ASTM A615 GR 60
2. INSTALL & LOCATE PER STD PLANS
NOS 260 & 261
3. A.1 OR B.1 CAN ONLY BE USED WHEN
SPECIFIED ON CONTRACT PLANS OR
APPROVED BY ENGINEER
4. FOR TYPE 242A.1 OR B.1 ROTATE
CATCH BASIN 180° FROM STANDARD.
SEE STD PLAN NO 260

RED STD SPEC SEC 7-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

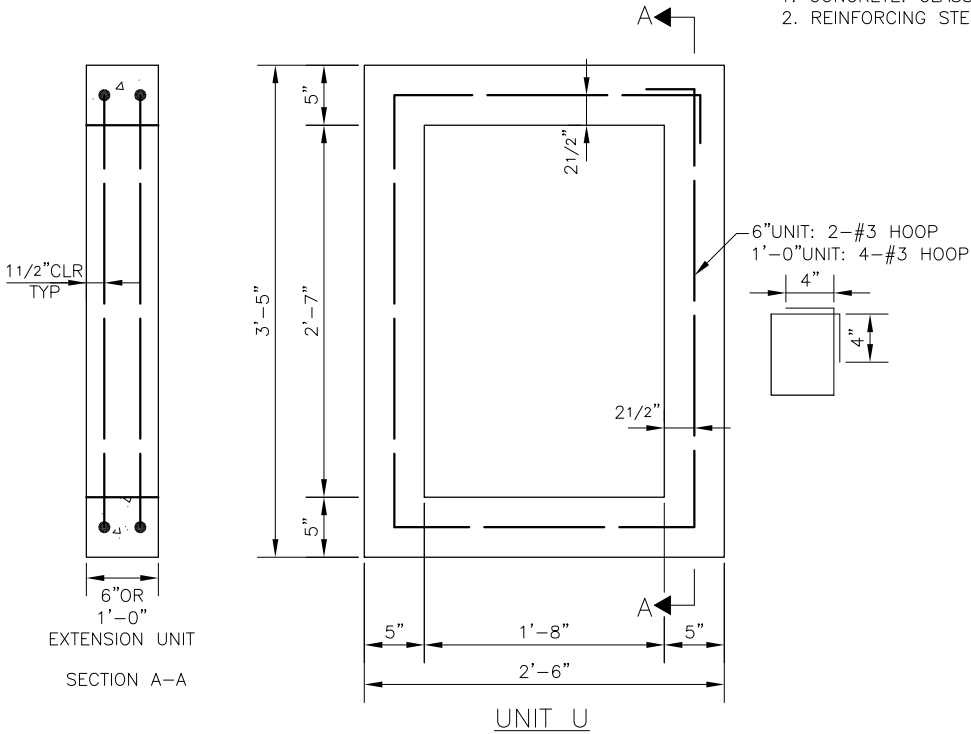
CATCH BASIN TYPE 242

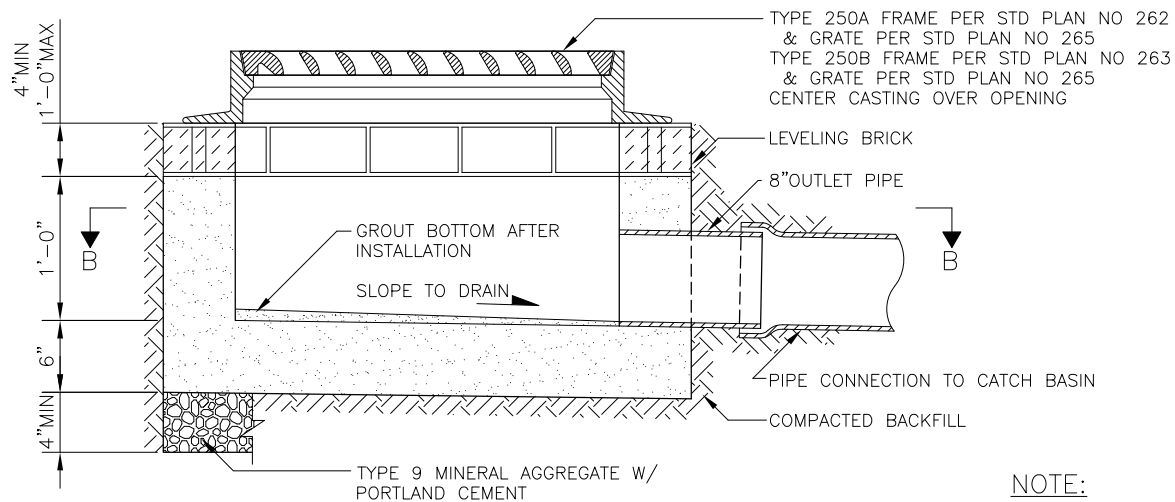




NOTES:

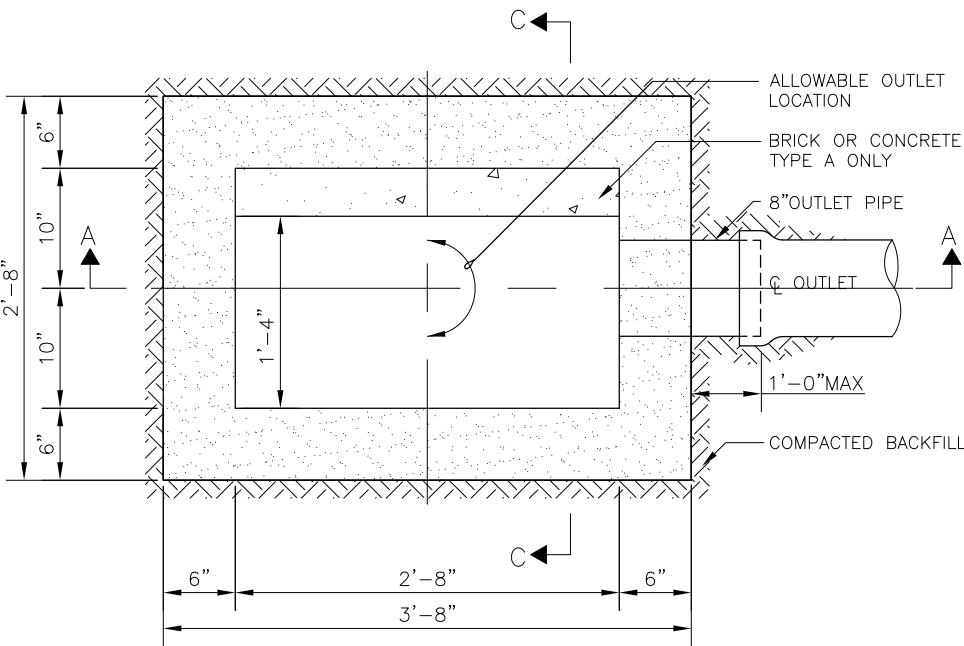
1. CONCRETE: CLASS AX
2. REINFORCING STEEL: ASTM A615 GR 60



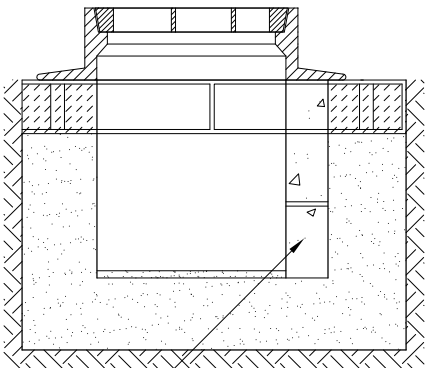


SECTION A-A

NOTE:
INSTALL AND LOCATE PER
STD PLAN NO 260



SECTION B-B

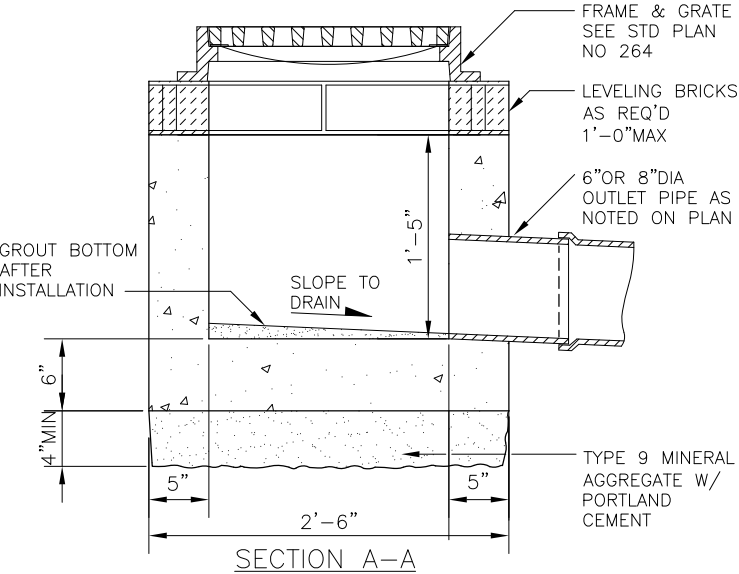
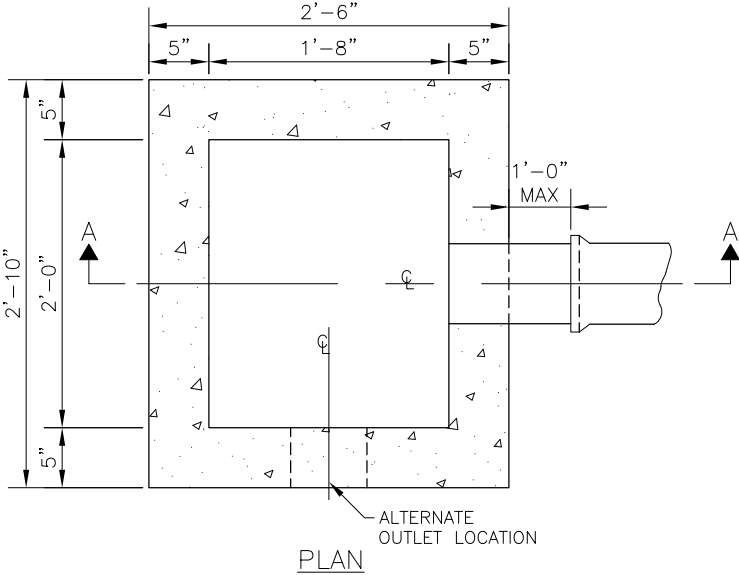


SECTION C-C
TYPE A ONLY

REF STD SPEC SEC 7-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

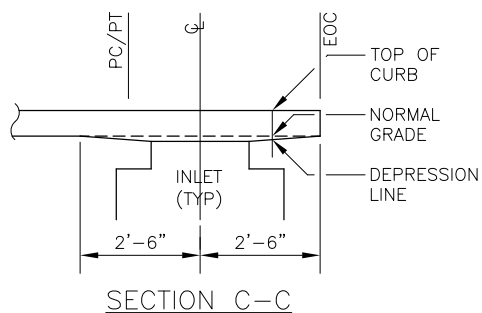
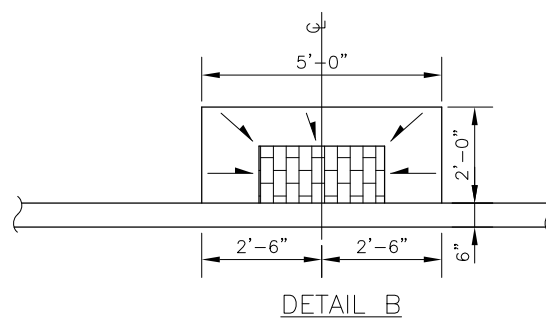
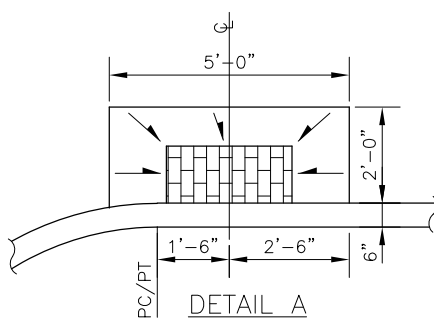
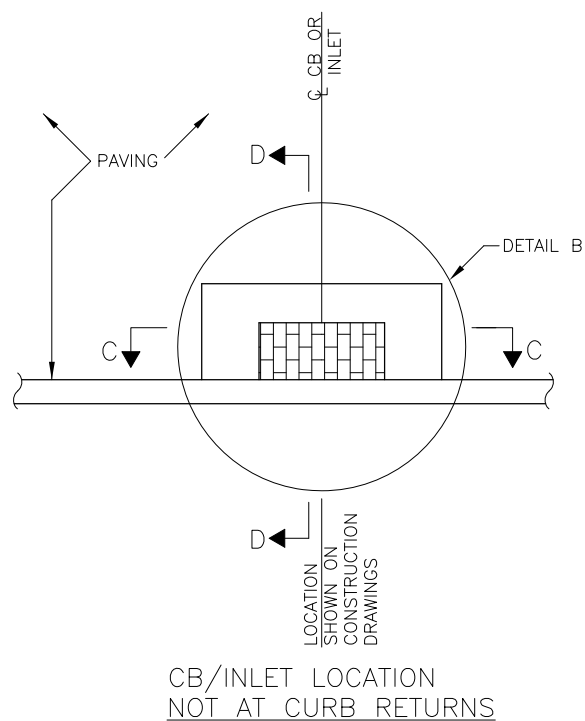
TYPE 250 INLET

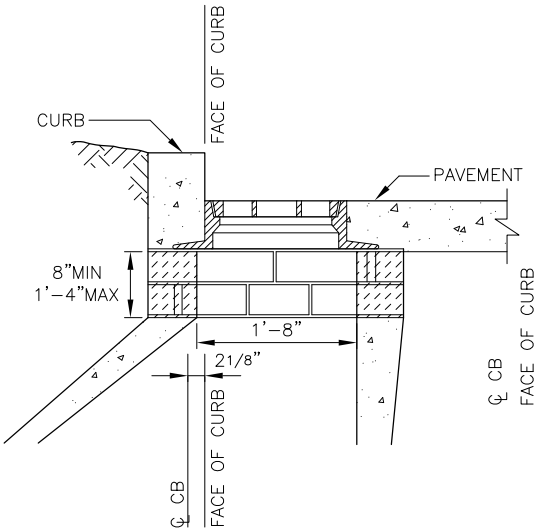


REF STD SPEC SEC 7-05

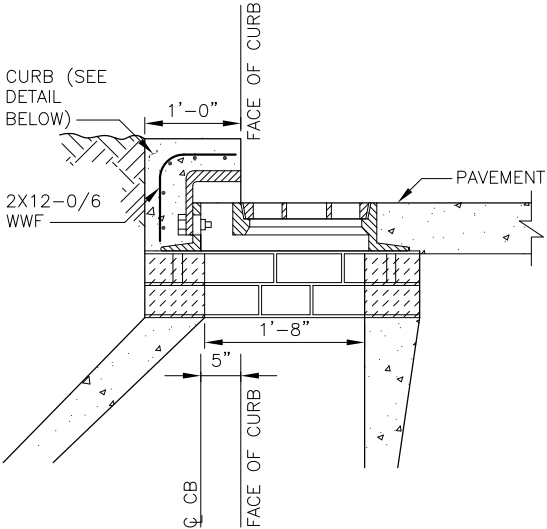
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TYPE 252 INLET



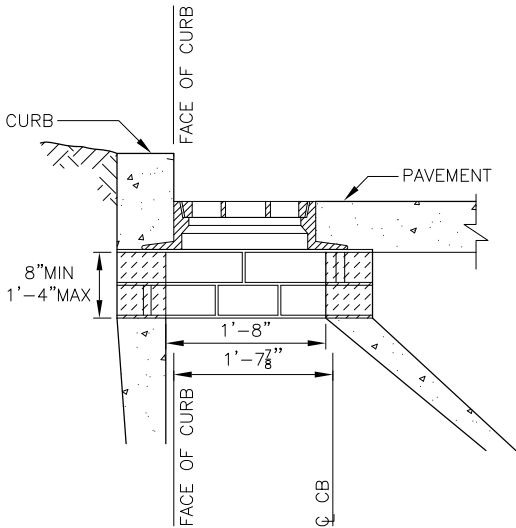


TYPE 242A CB
(TYPE 250 INLET SIMILAR)

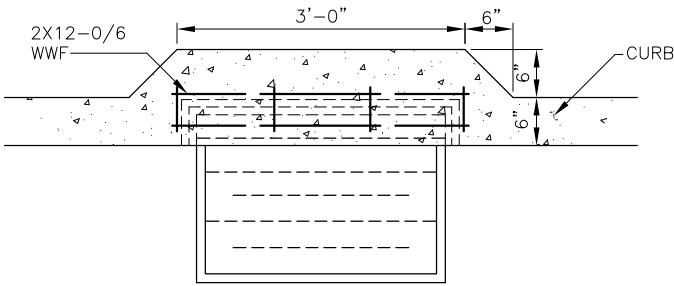


TYPE 242B CB
(TYPE 250 INLET SIMILAR)

- NOTES:
1. TYPE 242A.1 OR B.1 INSTALLATION IS ROTATED 180° FROM TYPE 242A OR 242B
 2. A.1 IS SHOWN, B.1 IS SIMILAR
 3. A.1 OR B.1 CAN ONLY BE USED WHEN SPECIFIED ON CONTRACT PLANS OR APPROVED BY ENGINEER



TYPE 242A.1 CB

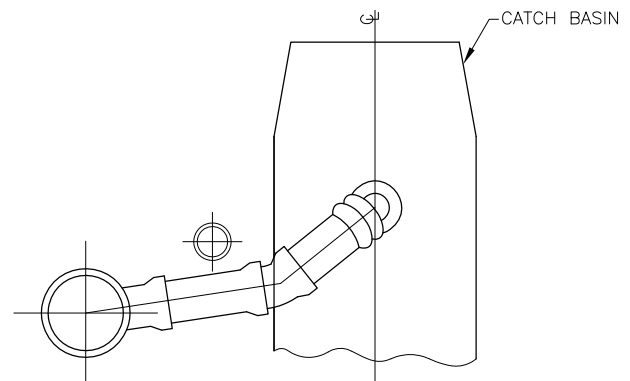
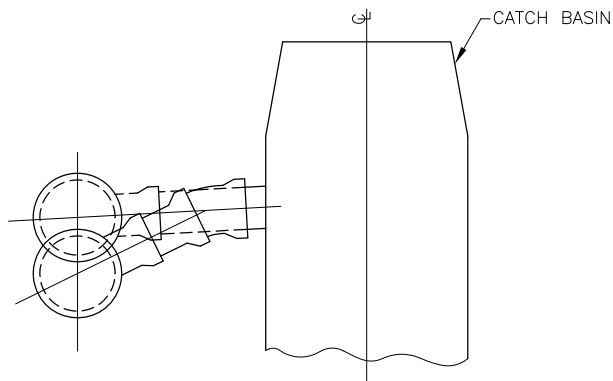
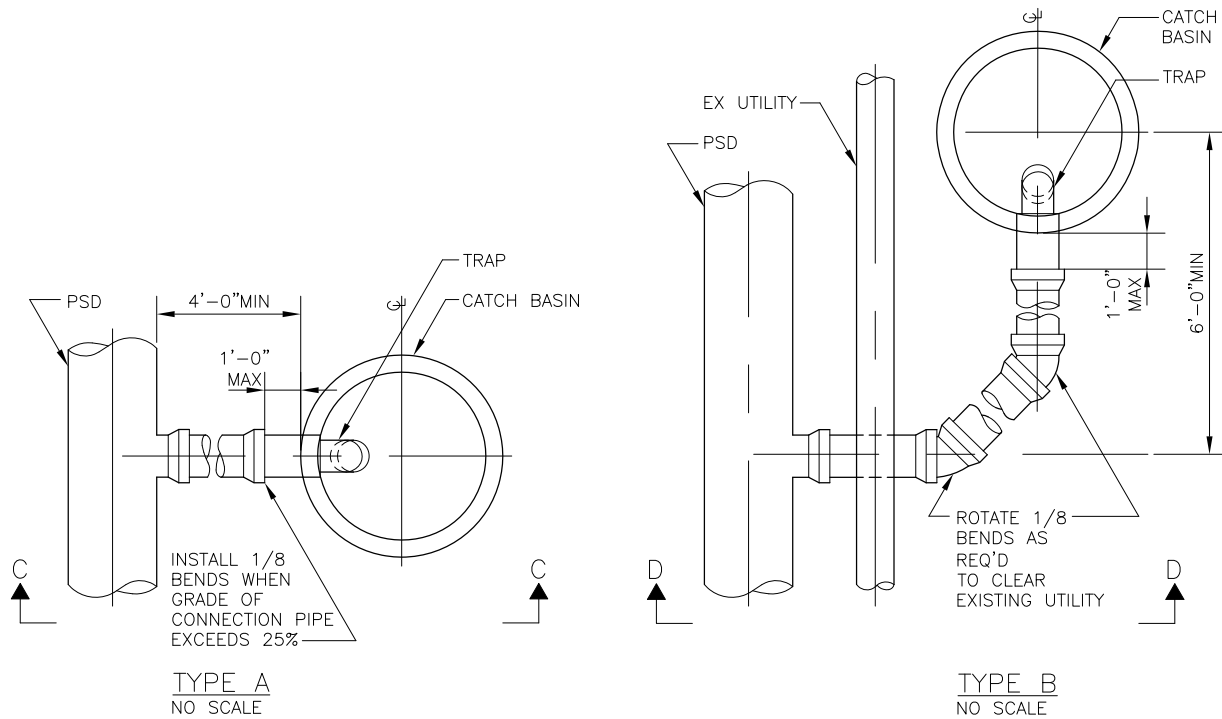


CURB DETAIL (PLAN VIEW) FOR
TYPE 242B CB & TYPE 250A INLET

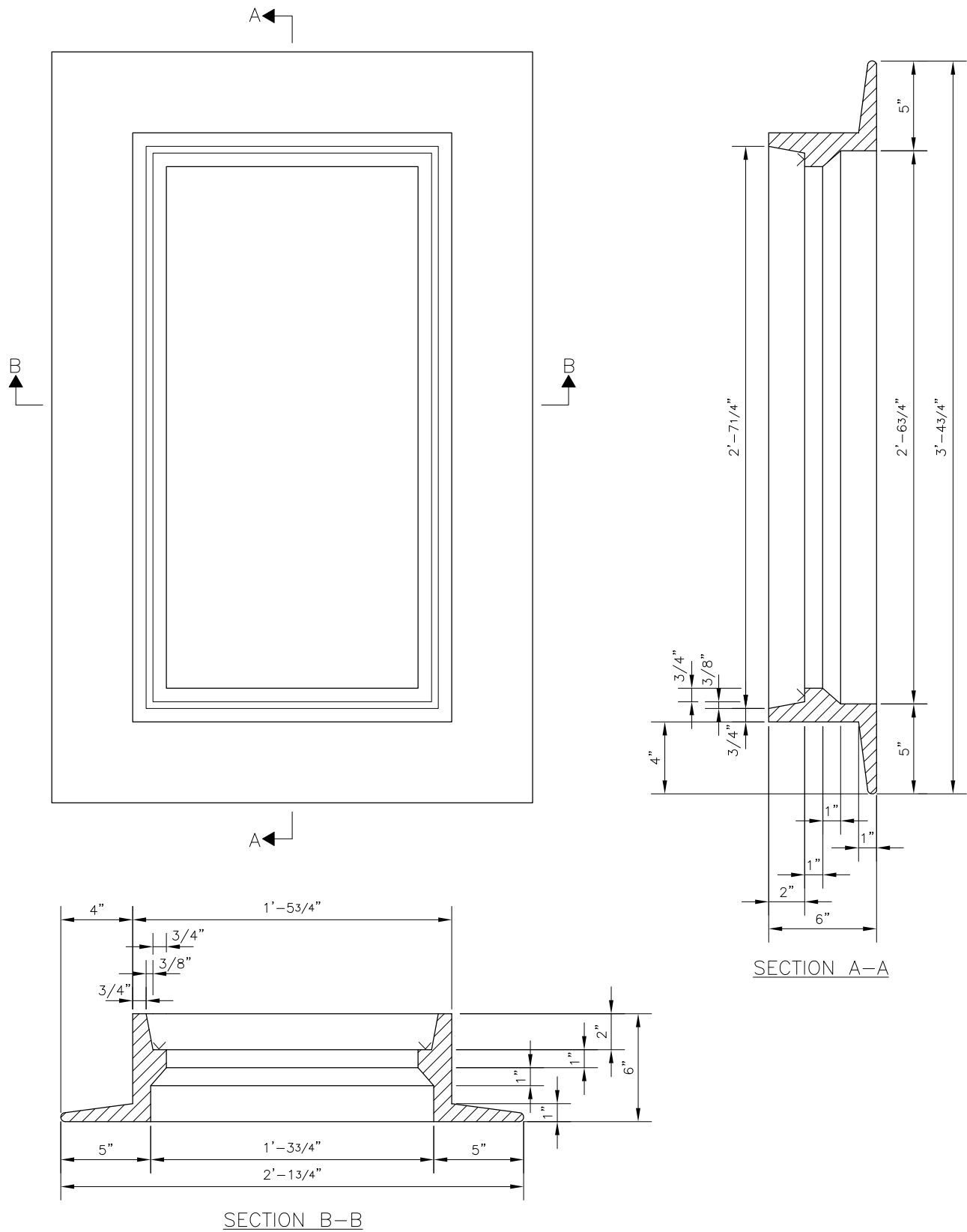
REF STD SPEC SEC 7-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

CATCH BASIN &
INLET INSTALLATION

**NOTES:**

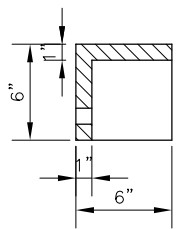
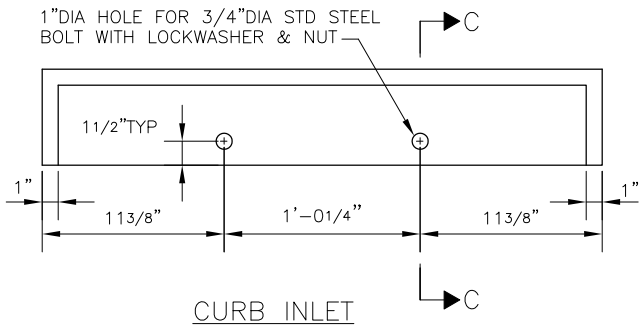
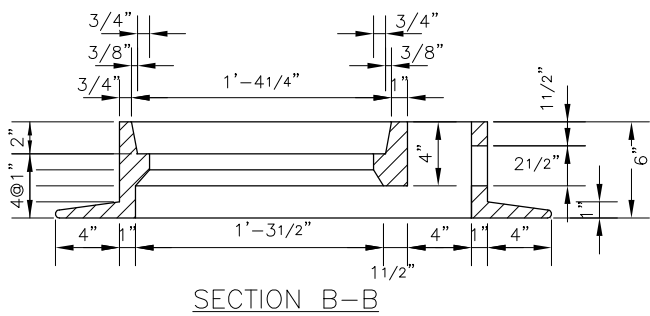
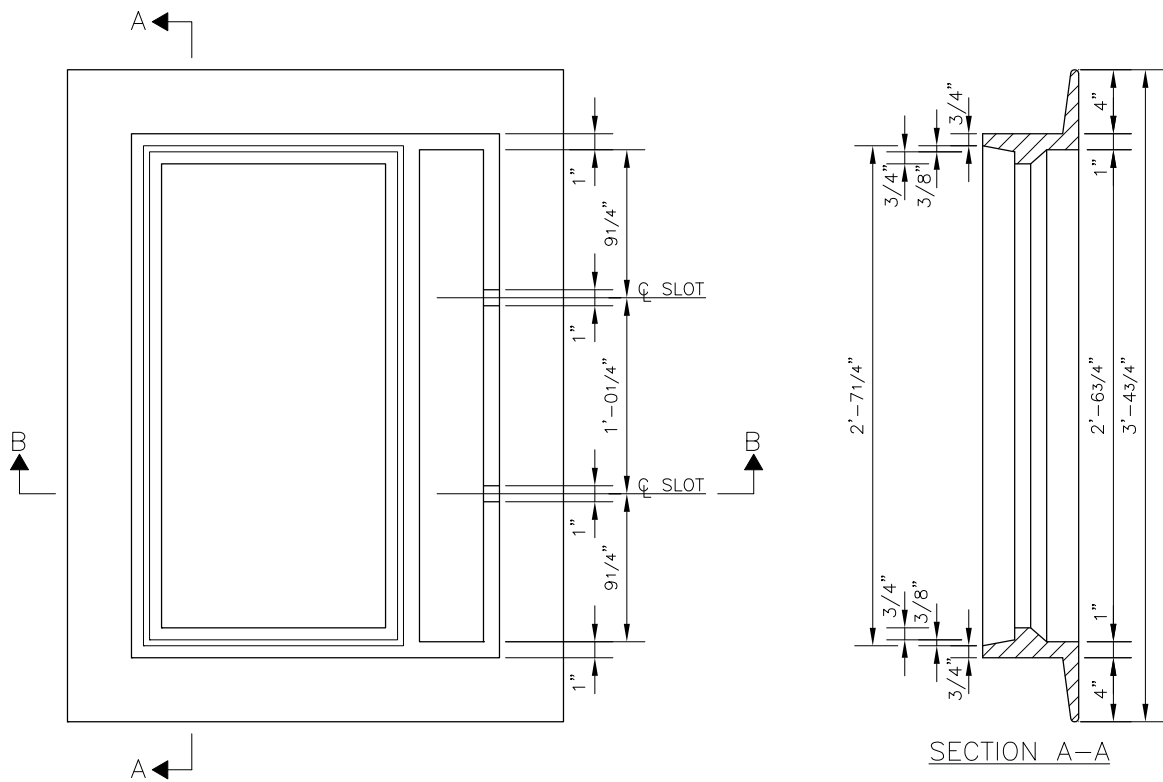
1. CONNECTIONS SHALL MAINTAIN A MINIMUM OF 2% AND A MAXIMUM OF 50% GRADE
2. TYPE A CONNECTION MAY BE USED UNDER THE FOLLOWING CIRCUMSTANCES:
 - A. THE MAXIMUM OF 50% GRADE IS NOT EXCEEDED
 - B. THERE IS NO INTERFERENCE WITH EXISTING OR PROPOSED UTILITIES



REF STD SPEC SEC 9-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

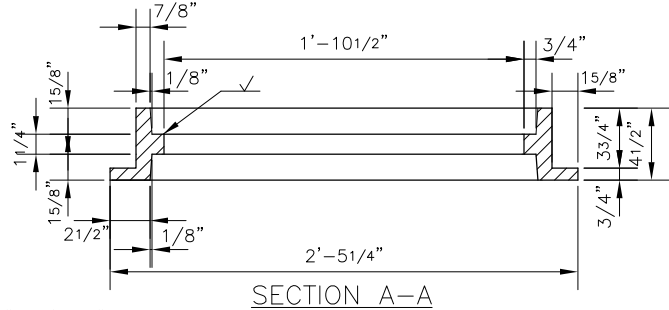
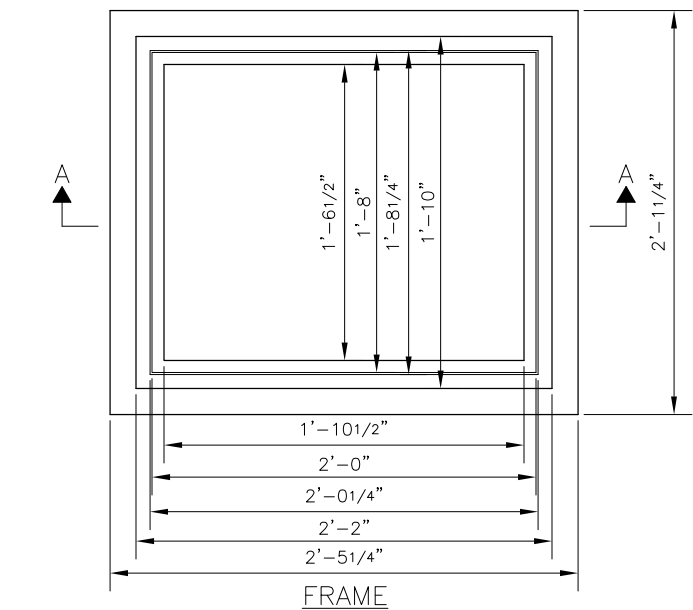
INLET FRAME TYPE 262



REF STD SPEC SEC 9-12

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

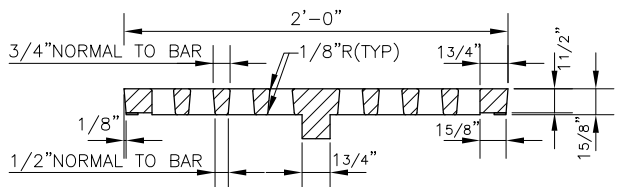
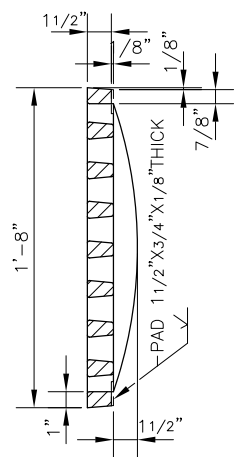
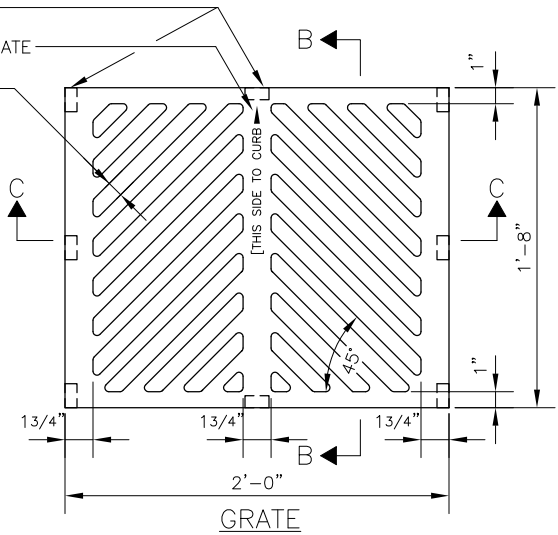
TYPE 263 FRAME



PAD 1 1/2"X3/4"X1/8"
THICK (8 REQ'D)

EMBOSSD ON GRATE

1" OPENING (TYP)



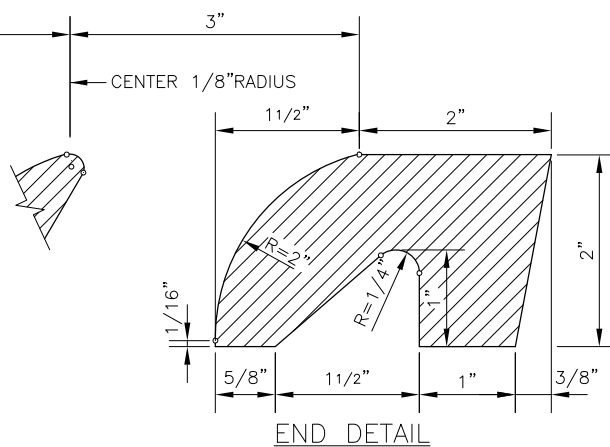
SECTION B-B

GRATE MATERIAL:
DUCTILE IRON

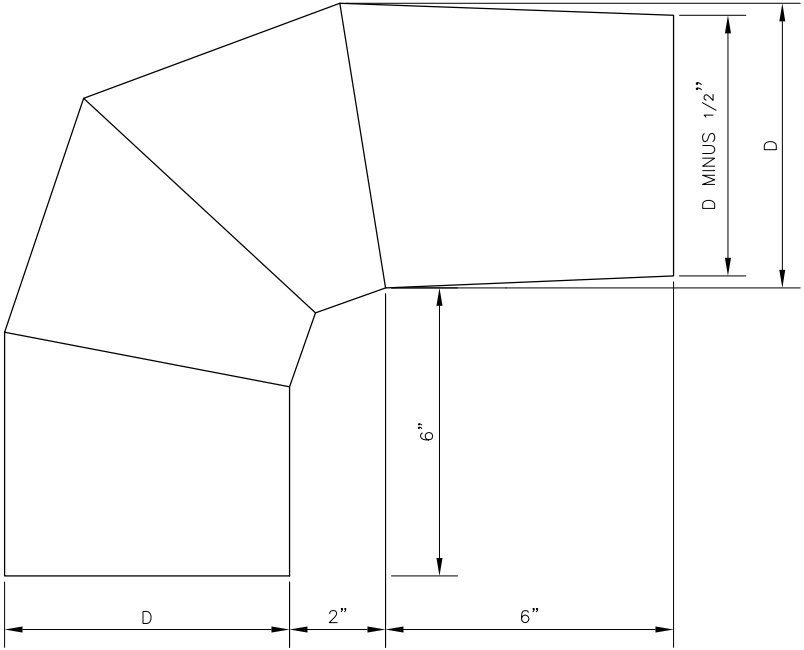
REF STD SPEC SEC 7-05 & 9-12

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

INLET FRAME & GRATE



VANED GRATE

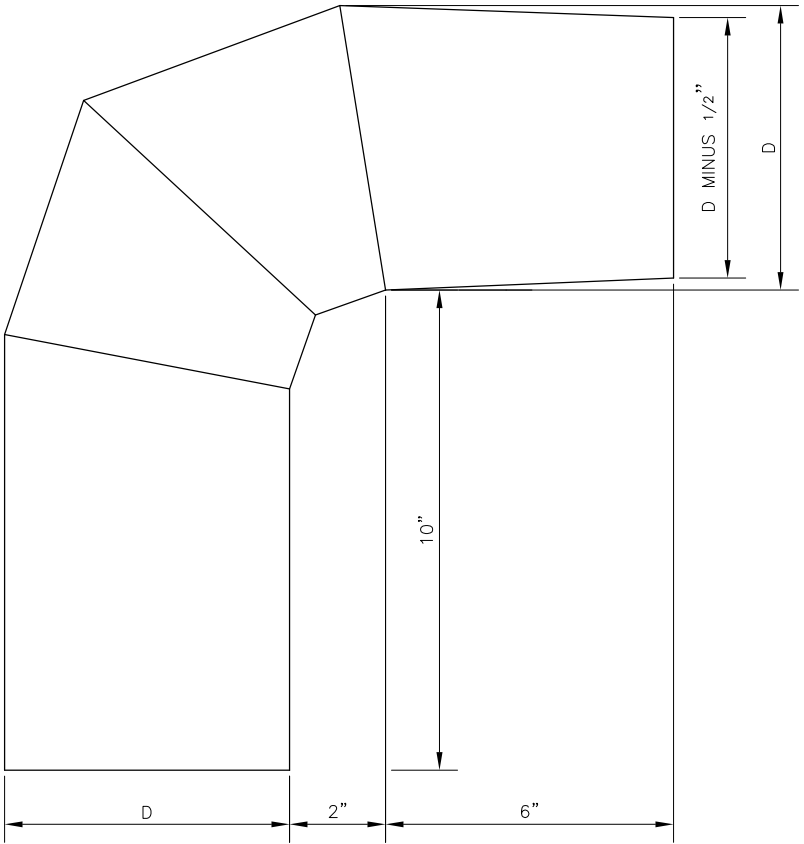


TYPE A

FOR USE WITH OUTLET PIPE WHICH SLOPES 10% OR LESS

NOTES:

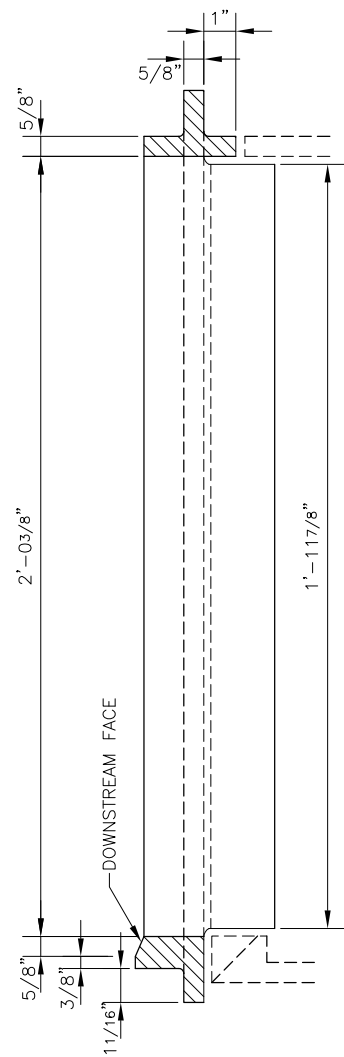
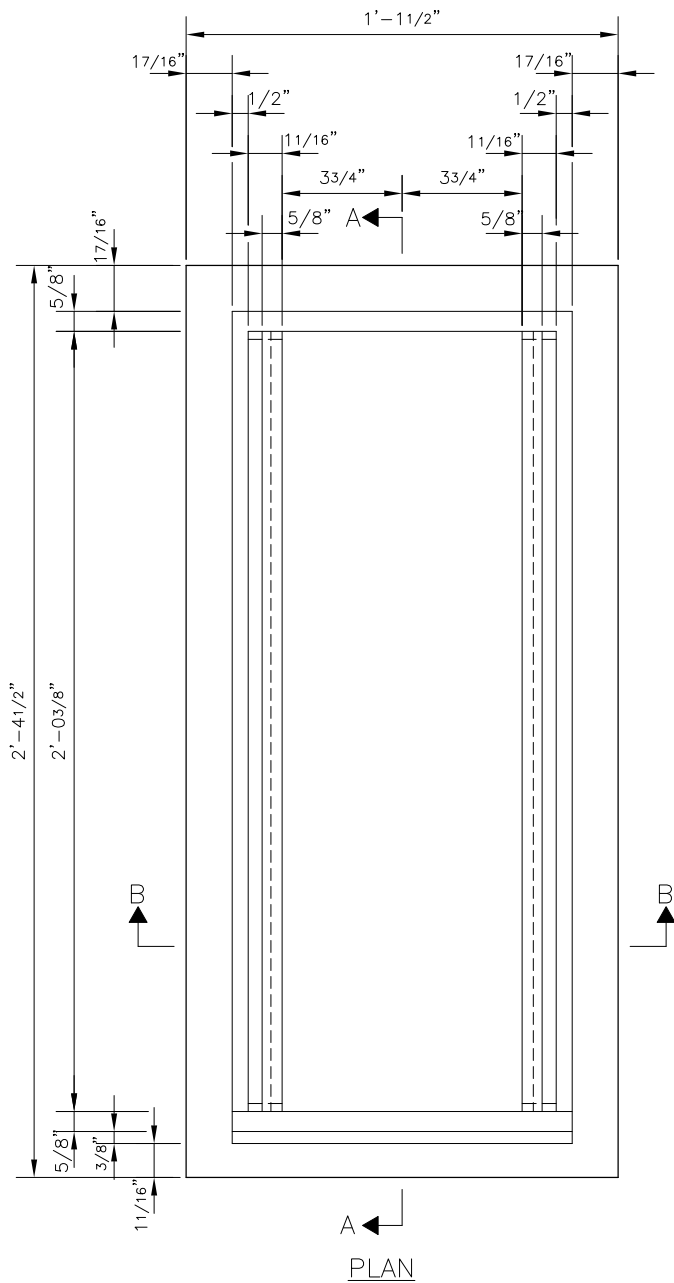
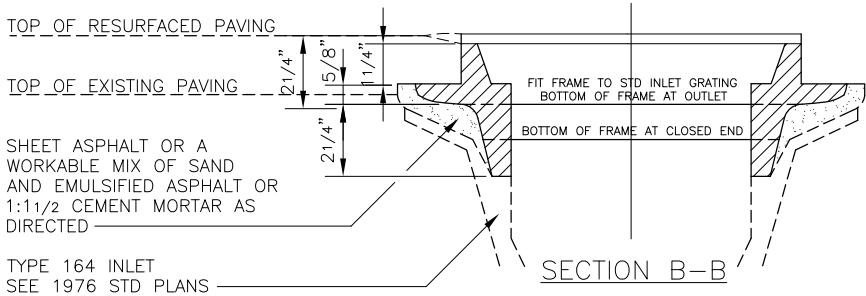
1. TRAP TO BE MADE OF 22 GA (0.0336") GALVANIZED SHEET METAL OR 10 GA (0.05") ALUMINUM
2. ALL JOINTS TO BE SEAMED AND SOLDERED, OR WELDED
3. ALL LONGITUDINAL JOINTS TO BE RIVETED OR WELDED
4. DIAMETER "D" IS NOMINAL DIAMETER OF OUTLET PIPE



TYPE B

FOR USE WITH OUTLET PIPE WHICH SLOPES MORE THAN 10%

OUTLET TRAP
(FOR DOPAR USE ONLY)

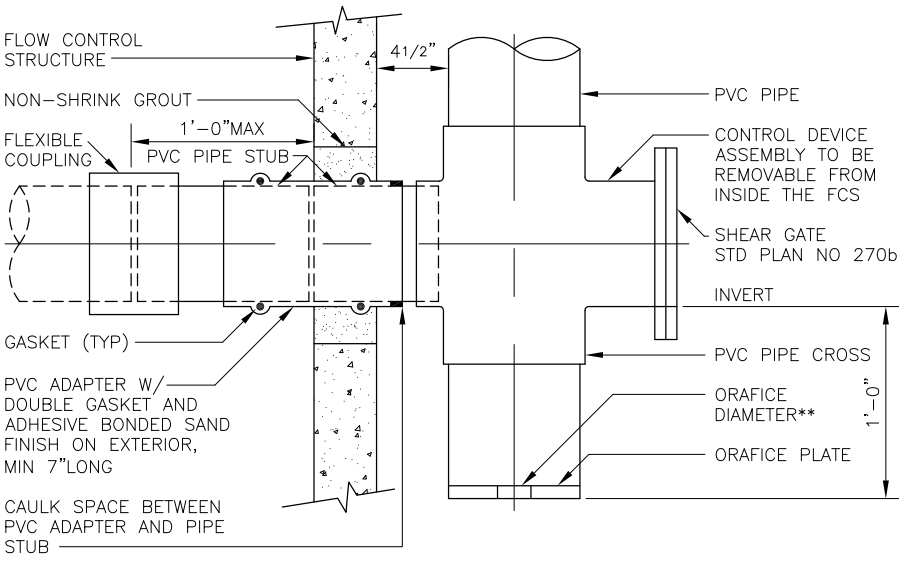


SECTION A-A
THESE DIMENSIONS MAY BE CHANGED IF NECESSARY TO FIT EXISTING CASTINGS

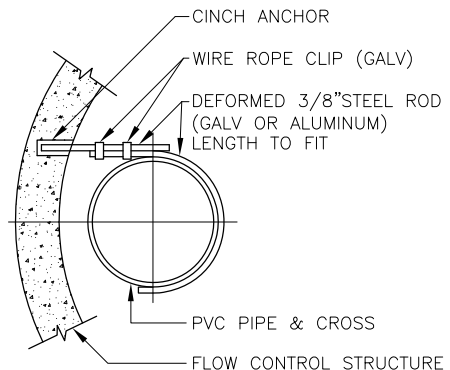
REF STD SPEC SEC 9-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

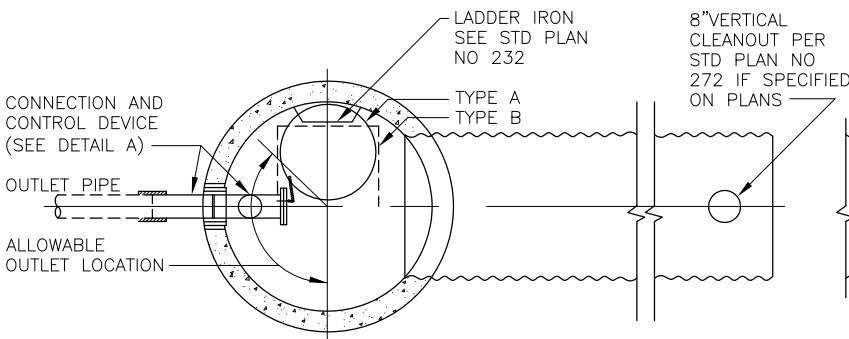
EXTENSION FOR INLET



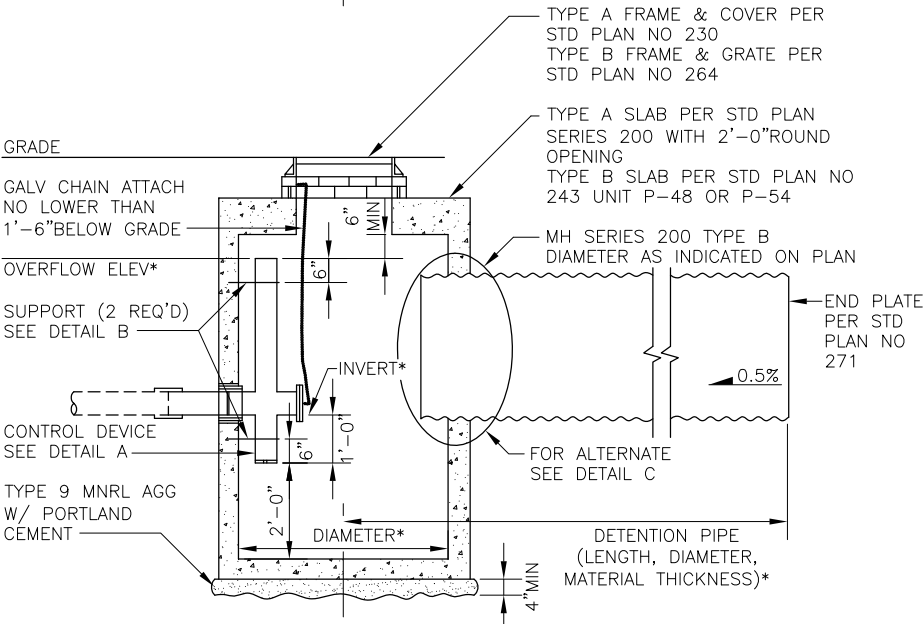
CONNECTION & CONTROL DEVICE
DETAIL A



PIPE SUPPORT
DETAIL B

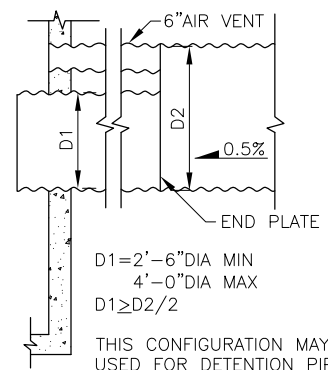


END CAP DETAIL
(WHEN REQUIRED)



FLOW CONTROL STRUCTURE & DETENTION PIPE

*SPECIFIC DESIGN INFORMATION AS INDICATED ON CONSTRUCTION DRAWINGS

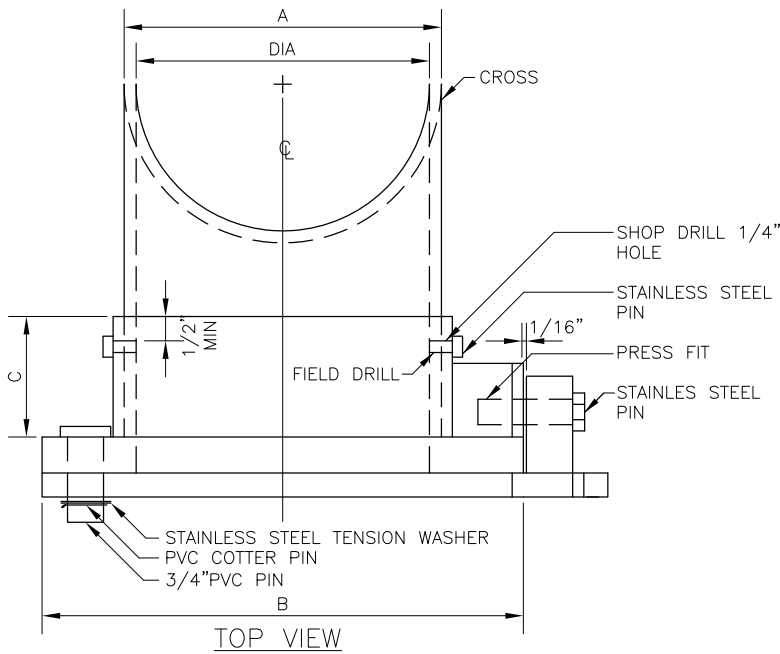


D1=2'-6"DIA MIN
4'-0"DIA MAX
D1 ≥ D2/2

THIS CONFIGURATION MAY BE
USED FOR DETENTION PIPES
LARGER THAN 3'-0"DIA. USE
CONFIGURATION SHOWN ON
CONSTRUCTION DRAWING
PROFILE

DETAIL C

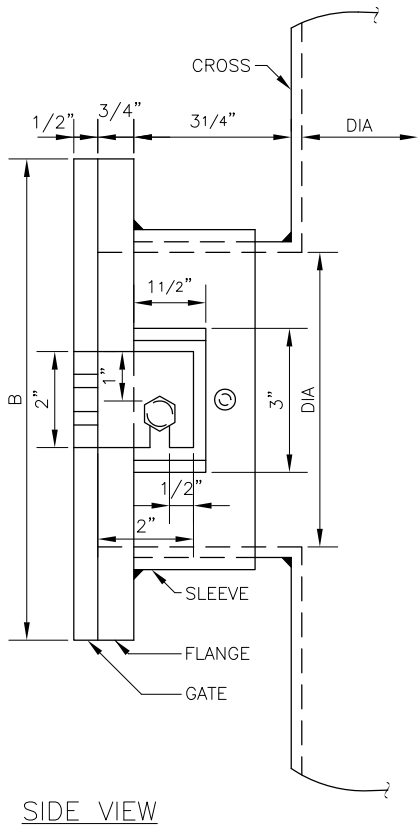
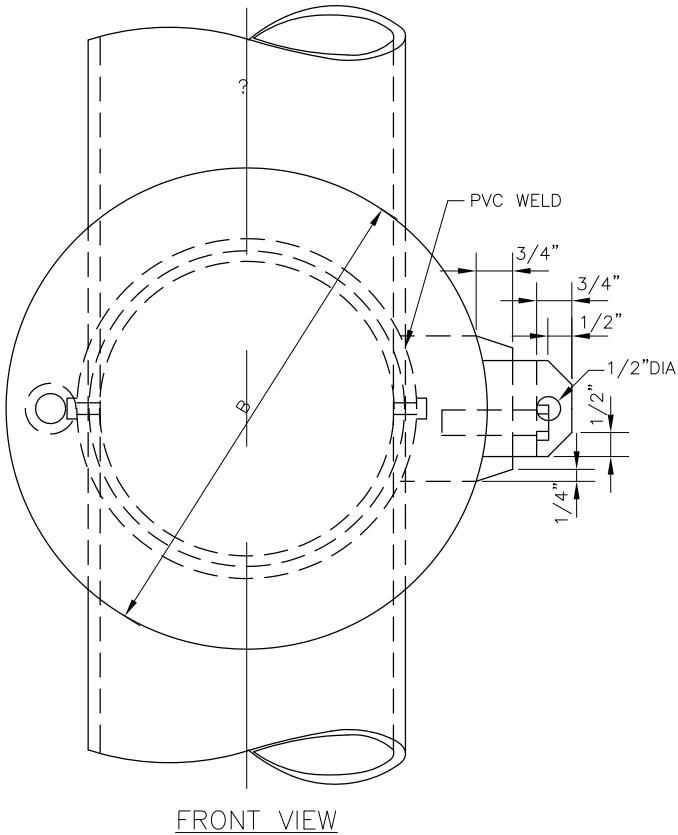
NOT TO SCALE

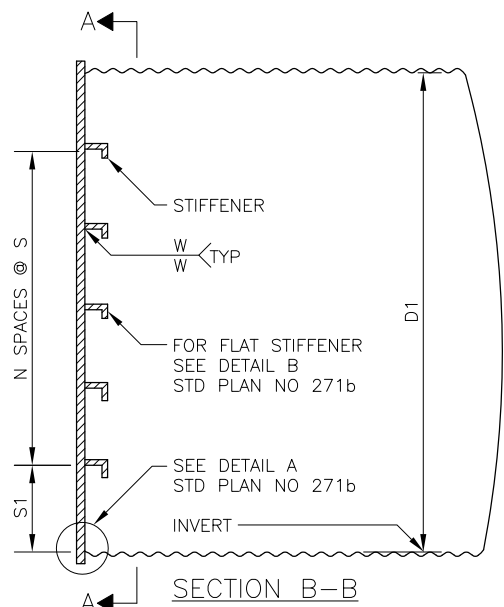
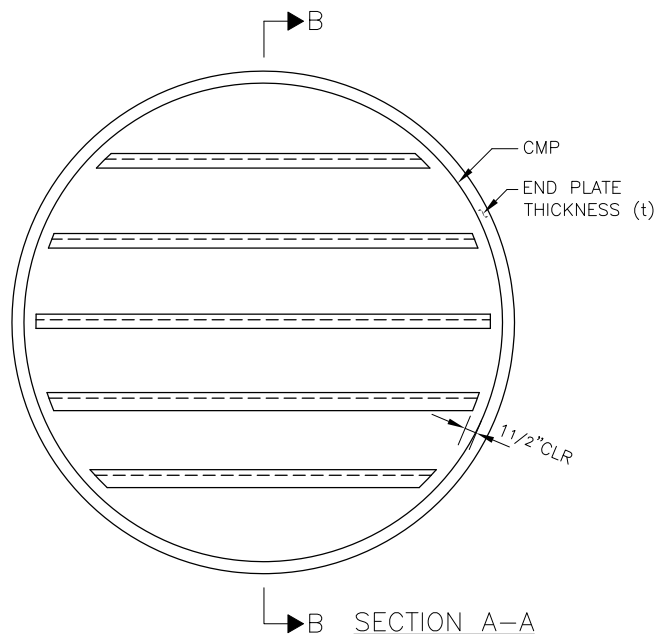


| DIA | A | B* | C* |
|-----|---------|-----|--------|
| 4" | 4 1/2" | 8" | 2" |
| 6" | 6 5/8" | 10" | 2 1/2" |
| 8" | 8 5/8" | 12" | 3" |
| 10" | 10 3/4" | 14" | 3" |
| 12" | 12 3/4" | 16" | 3" |

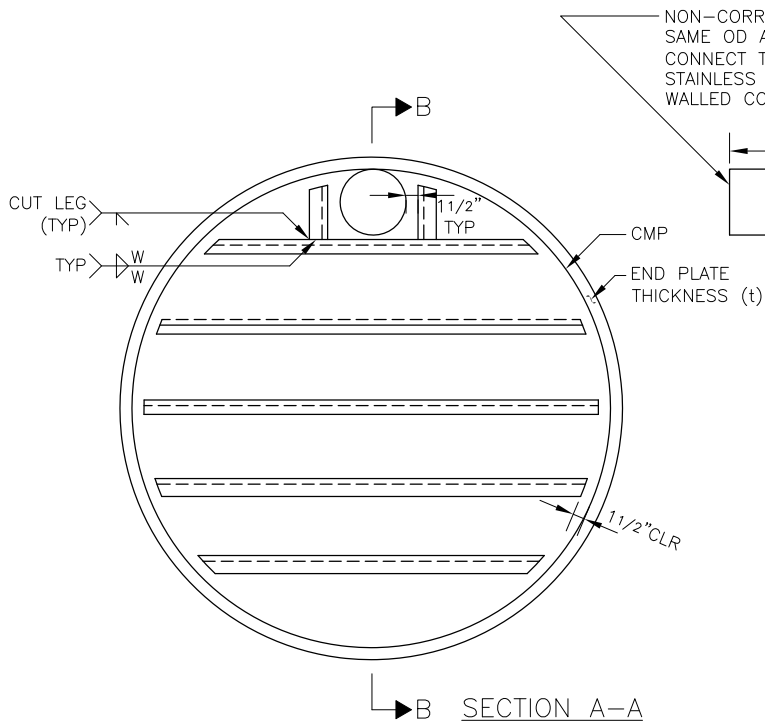
*MINIMUM

DIA=OUTLET PIPE DIAMETER

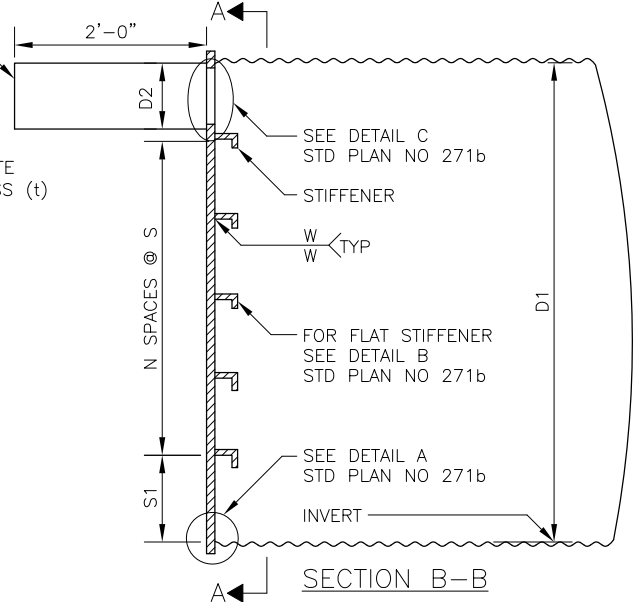




TYPE A



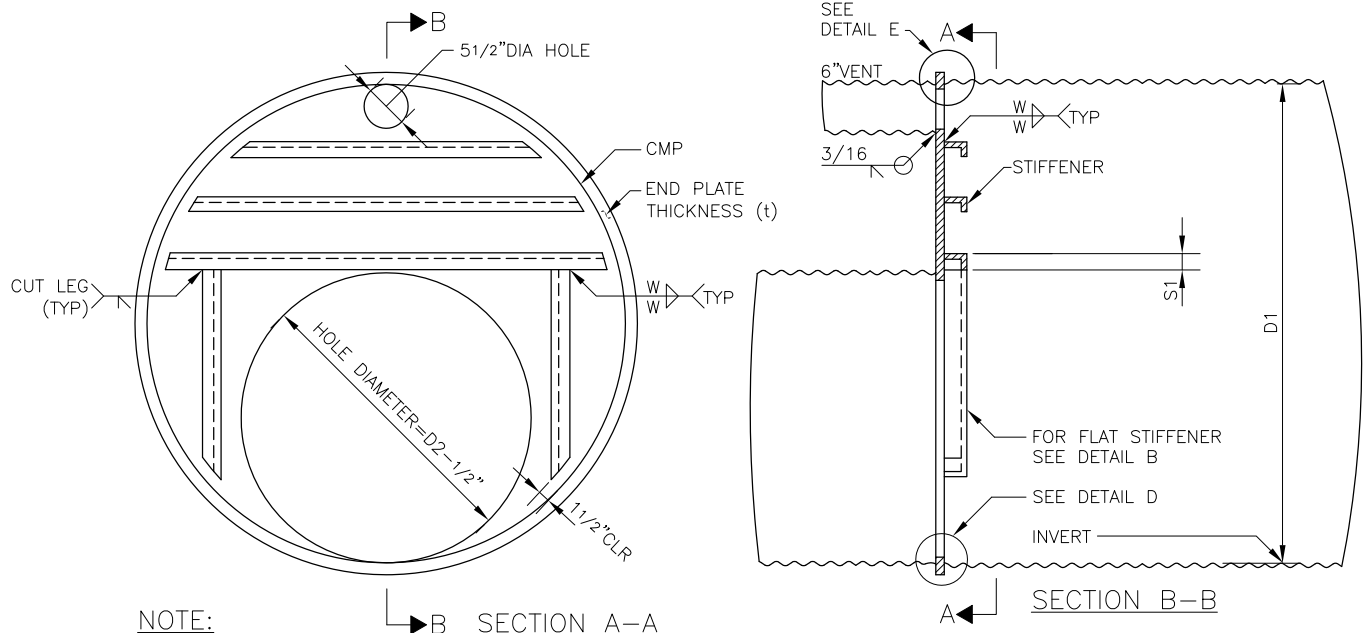
NON-CORRUGATED PIPE 0.135" THICK
SAME OD AS CONNECTION PIPE
CONNECT TO CONNECTION PIPE W/
STAINLESS STEEL FLEXIBLE RIGID
WALLED COUPLER



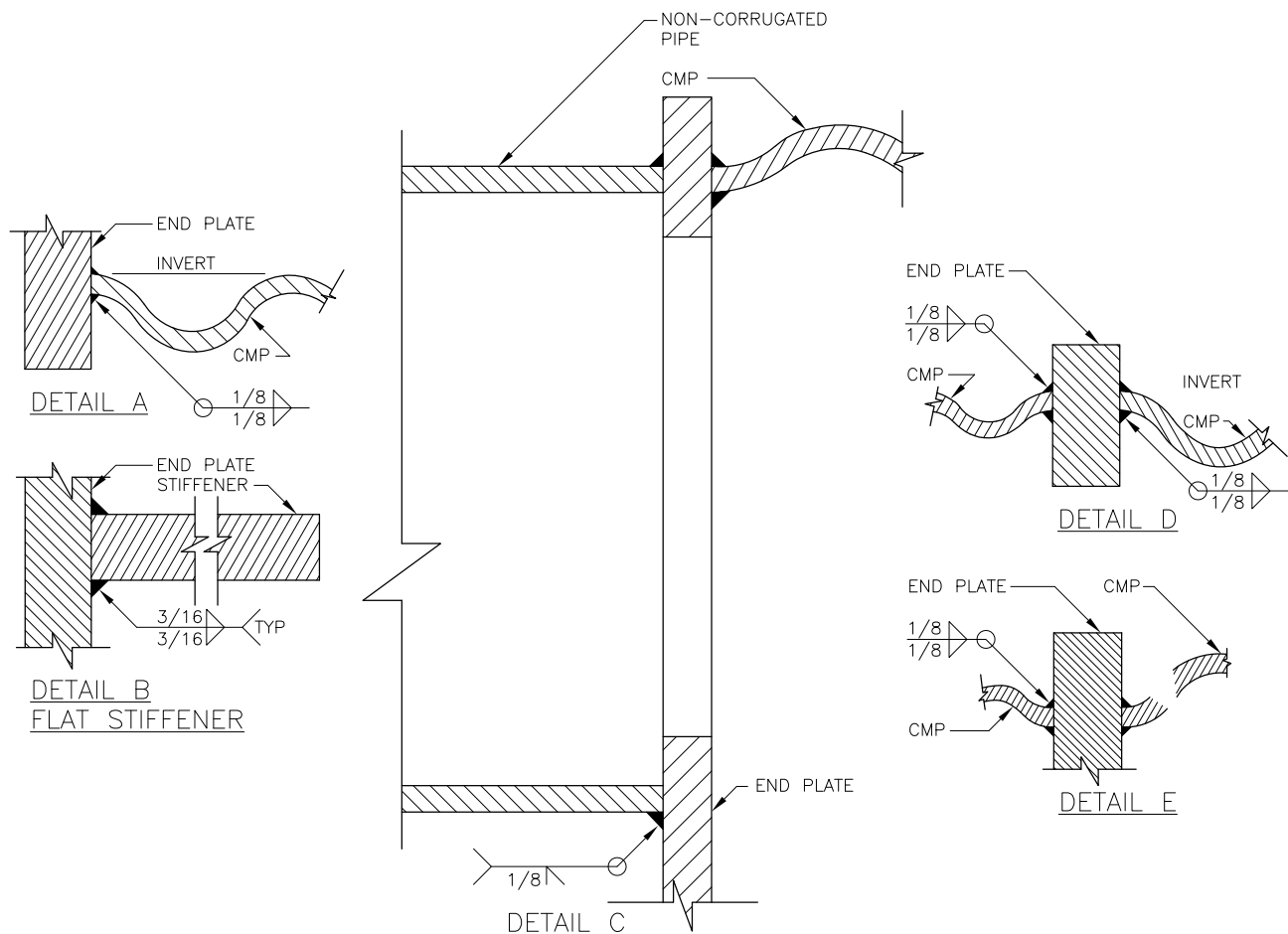
TYPE B

NOTE:
FOR D1, D2, t, S, S1, N & W
VALUES AND GENERAL NOTES SEE
STD PLAN NO 271c

NOT TO SCALE

**NOTE:**

FOR D1, D2, t, S, S1, N & W
VALUES AND GENERAL NOTES SEE
STD PLAN NO 271c

SECTION A-A**TYPE C**

NOT TO SCALE

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

DETENTION STRUCTURE END
PLATE DETAILS

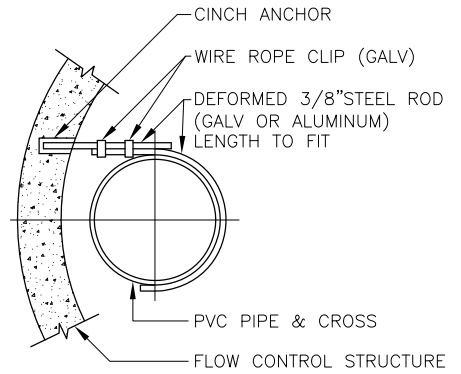
| PIPE DIAMETER | | END PLATE THICKNESS t | STIFFENER TYPE & SIZE | STIFFENER SPACING | | | SIZE W |
|---------------|-----|--------------------------|-----------------------|-------------------|--------|---|--------|
| D1 | D2 | | | S1 | S | N | |
| TYPE A | | | | | | | |
| 30" | — | 1/4" | FLAT 2 1/2"X1/4" | 6" | 6" | 3 | 3/16" |
| 36" | — | 1/4" | FLAT 3"X1/4" | 6" | 6" | 4 | 3/16" |
| 48" | — | 1/4" | FLAT 4 1/4"X1/4" | 8" | 8" | 4 | 3/16" |
| 60" | — | 3/8" | L 2 1/2"X2"X3/8" | 10" | 10" | 4 | 1/4" |
| 72" | — | 3/8" | L 3"X3"X3/8" | 6" | 10" | 6 | 1/4" |
| TYPE B | | | | | | | |
| 30" | 6" | 1/4" | FLAT 2 1/2"X1/4" | 5 1/2" | 5 1/2" | 3 | 3/16" |
| | 8" | | | 5" | 5" | 3 | |
| | 12" | | | 4" | 6" | 2 | |
| 36" | 6" | 1/4" | FLAT 3"X1/4" | 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"X1/4" | 8" | 8" | 4 | 3/16" |
| | 8" | | | 6" | 8" | 4 | |
| | 12" | | | 4" | 7 1/2" | 4 | |
| 60" | 6" | 3/8" | L 2 1/2"X2X3/8" | 7" | 9" | 5 | 1/4" |
| | 8" | | | 10" | 10" | 4 | |
| | 12" | | | 6" | 10" | 4 | |
| 72" | 6" | 3/8" | L 3"X3"X3/8" | 8" | 8" | 7 | 1/4" |
| | 8" | | | 8" | 9" | 6 | |
| | 12" | | | 8" | 10" | 5 | |
| TYPE C | | | | | | | |
| 48" | 30" | 1/4" | FLAT 4 1/4"X1/4" | 2" | 8" | 1 | 3/16" |
| 60" | 36" | 3/8" | L 2 1/2"X2"X3/8" | 2" | 7" | 2 | 1/4" |
| 72" | 36" | 3/8" | L 2"X3"X3/8" | 3" | 8 1/2" | 3 | 1/4" |

NOTES:

1. DESIGNS VALID FOR PIPE INSTALLED WITH 6'-0" OR LESS OF COVER FROM CROWN OF PIPE TO GRADE. MAXIMUM WATER SURCHARGE 3'-0" ABOVE CROWN OF PIPE
2. END PLATE MATERIAL: ALUMINUM 6061-T6
3. DESIGNS SHALL BE USED ONLY FOR ALUMINUM CMP

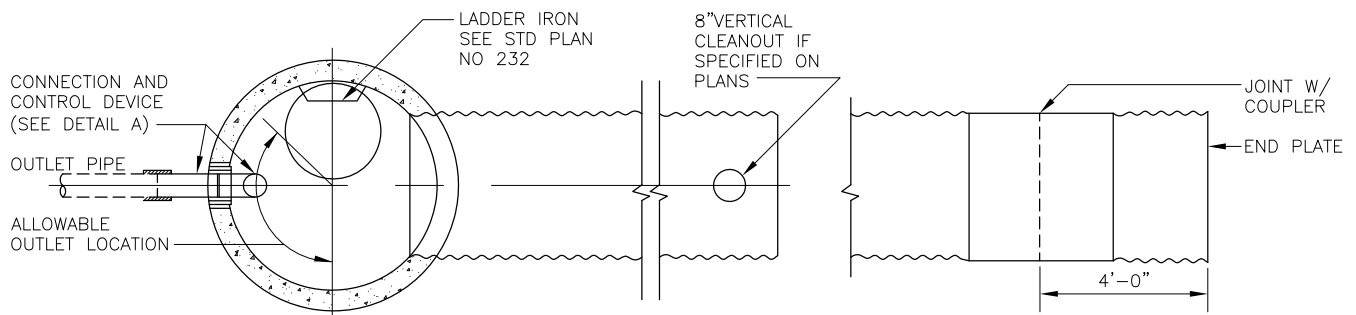
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

DETENTION STRUCTURE END
PLATE DETAILS

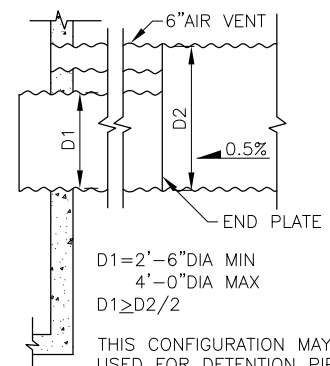
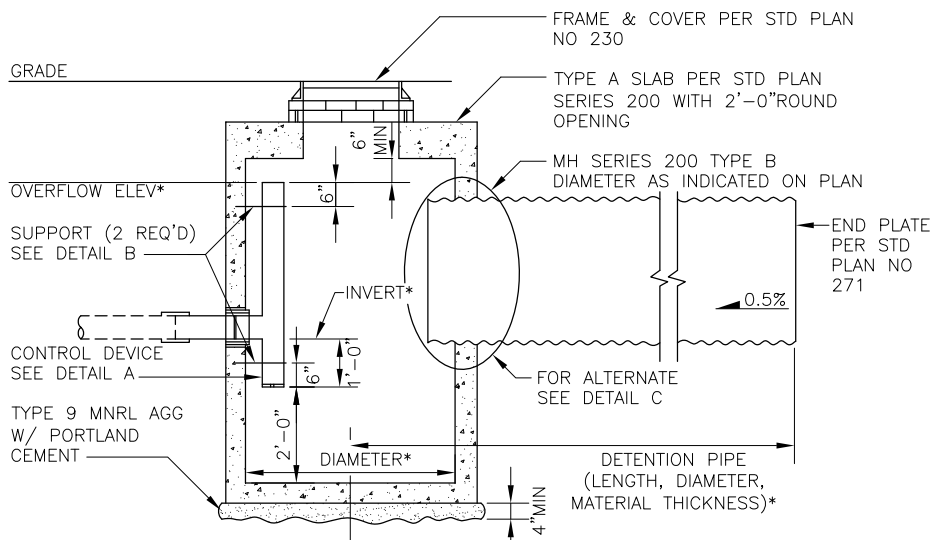


PIPE SUPPORT
DETAIL B

CONNECTION & CONTROL DEVICE
DETAIL A



END CAP DETAIL
(WHEN REQUIRED)



D1=2'-6"DIA MIN
4'-0"DIA MAX
 $D1 \geq D2/2$

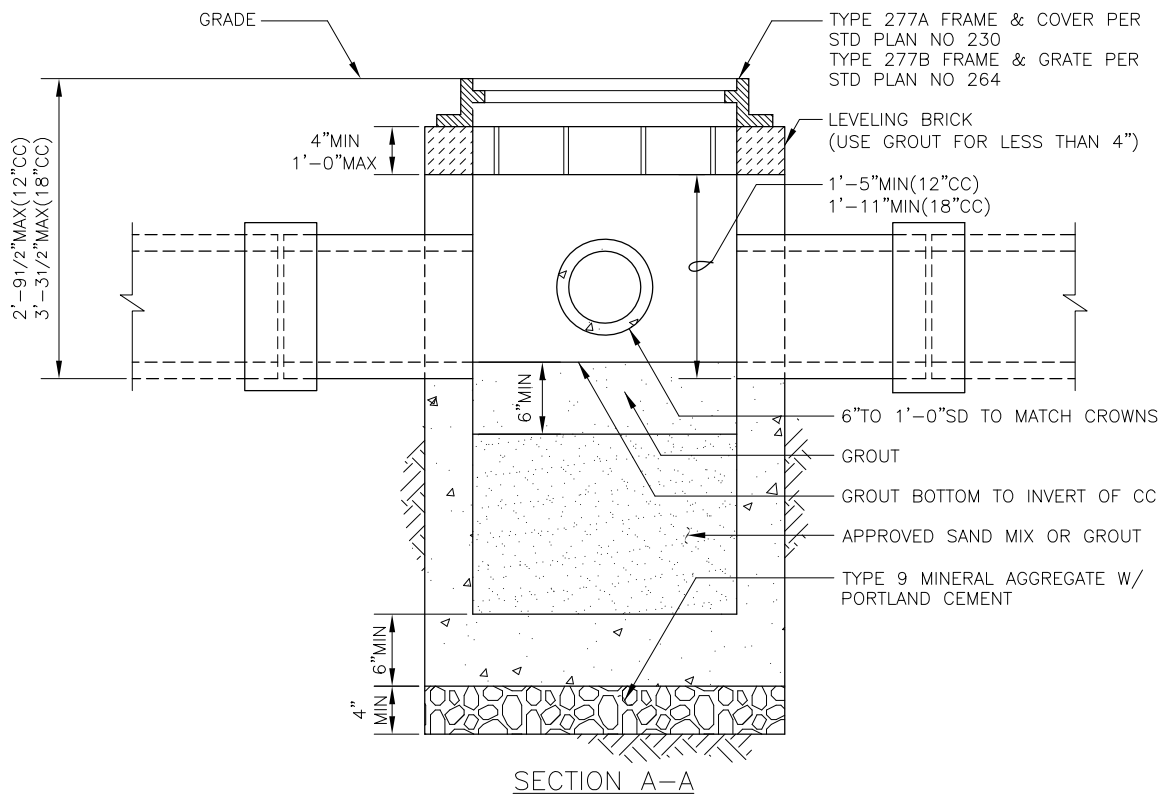
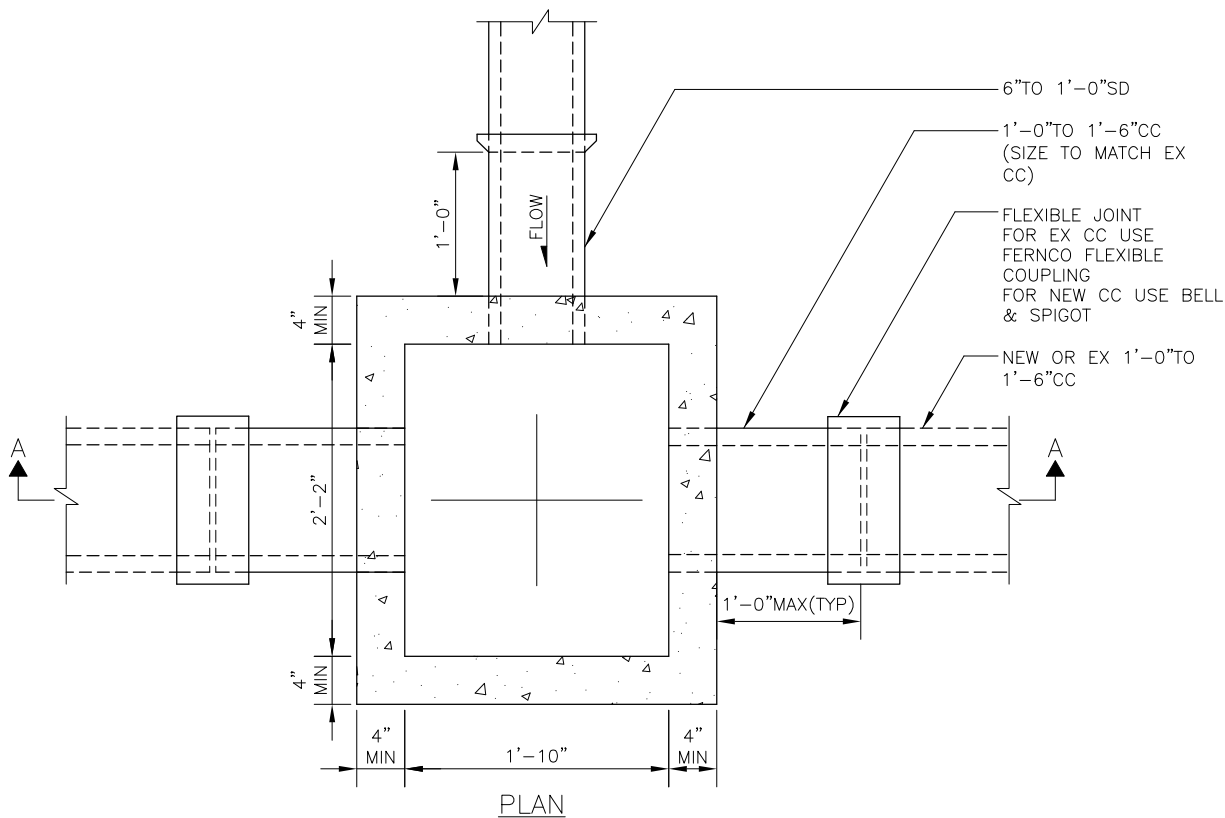
THIS CONFIGURATION MAY BE
USED FOR DETENTION PIPES
LARGER THAN 3'-0" DIA. USE
CONFIGURATION SHOWN ON
CONSTRUCTION DRAWING
PROFILE

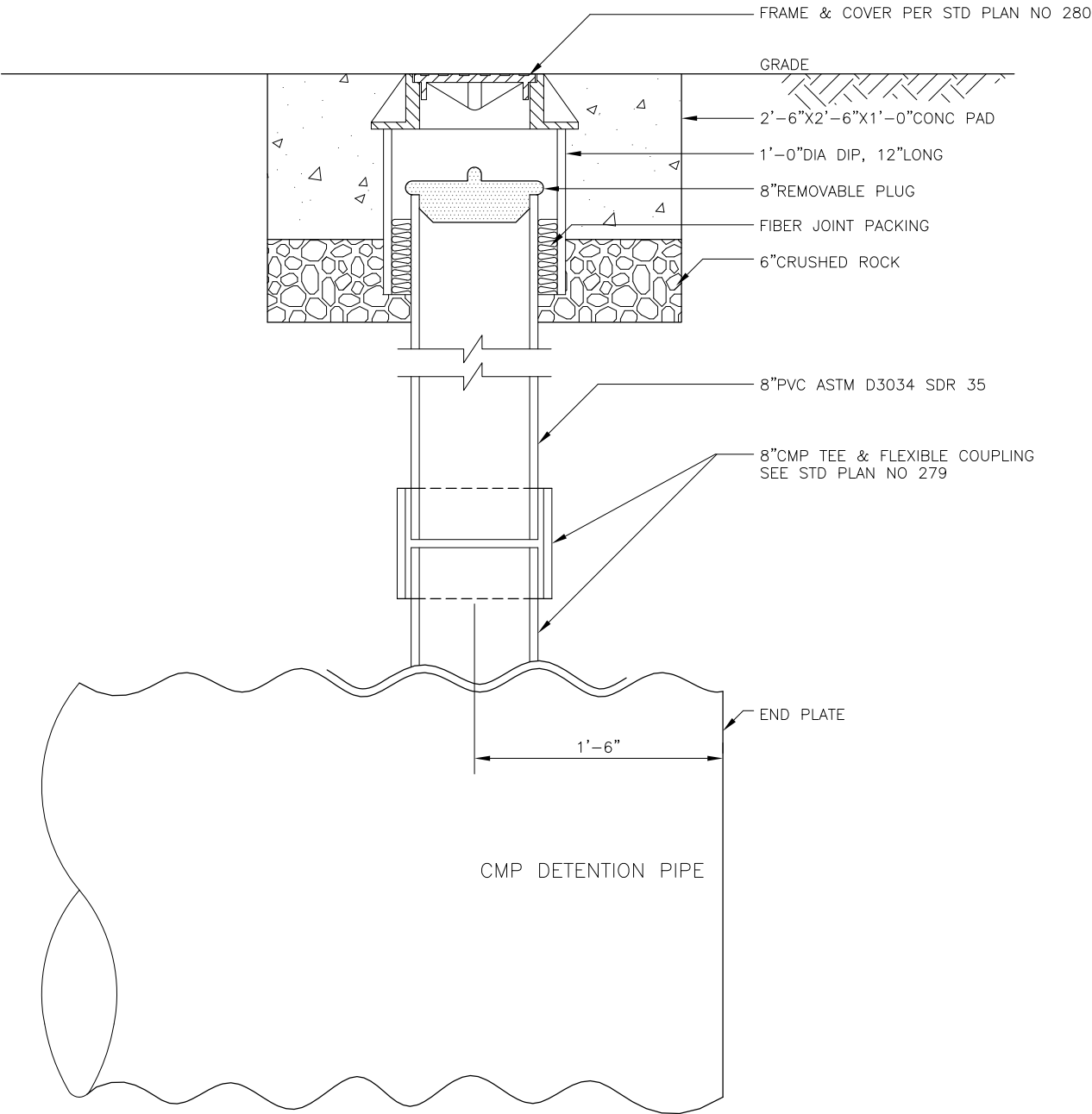
FLOW CONTROL STRUCTURE & DETENTION PIPE

*SPECIFIC DESIGN INFORMATION AS INDICATED ON CONSTRUCTION DRAWINGS

DETAIL C

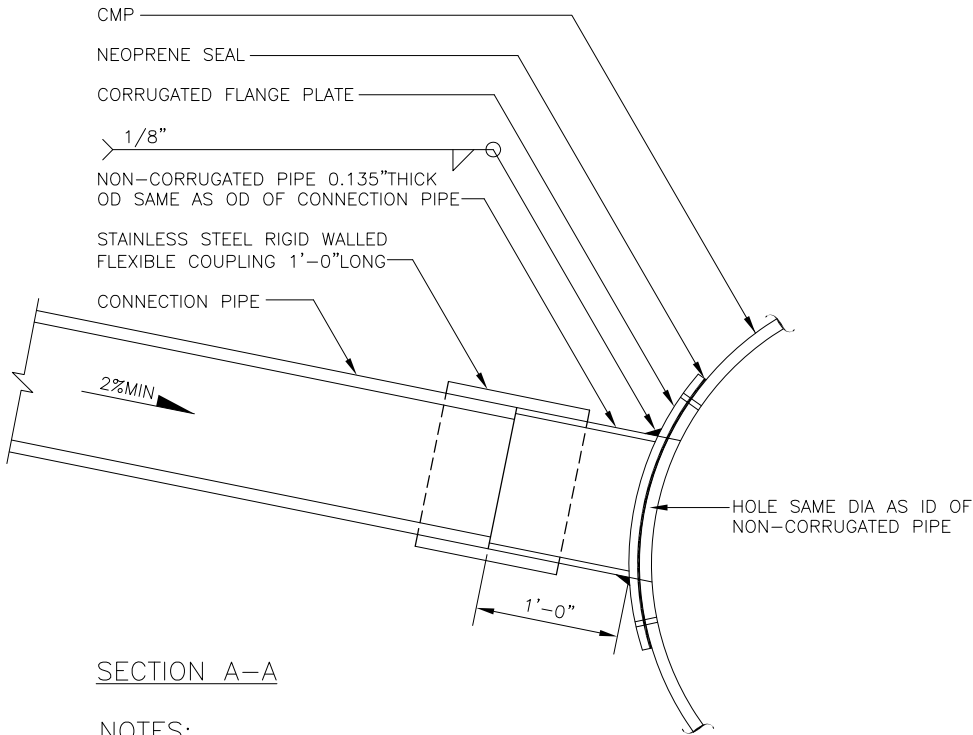
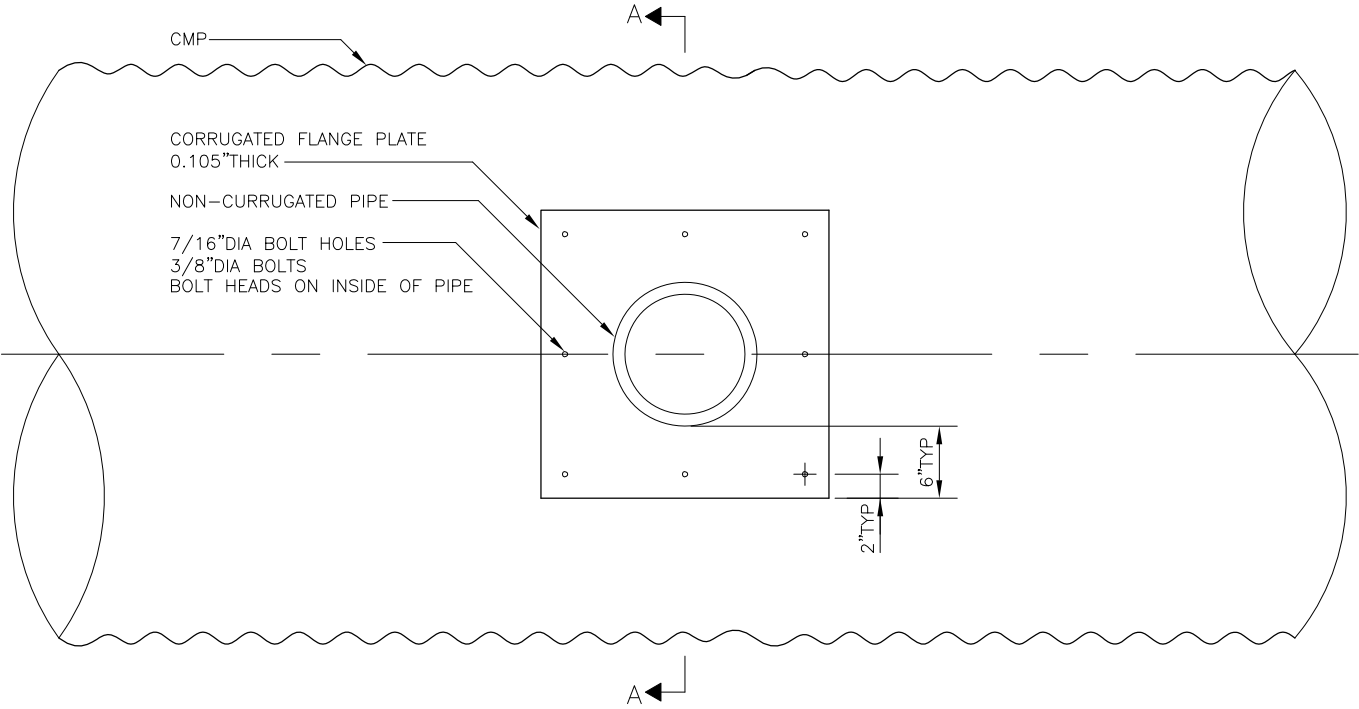
NOT TO SCALE





CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

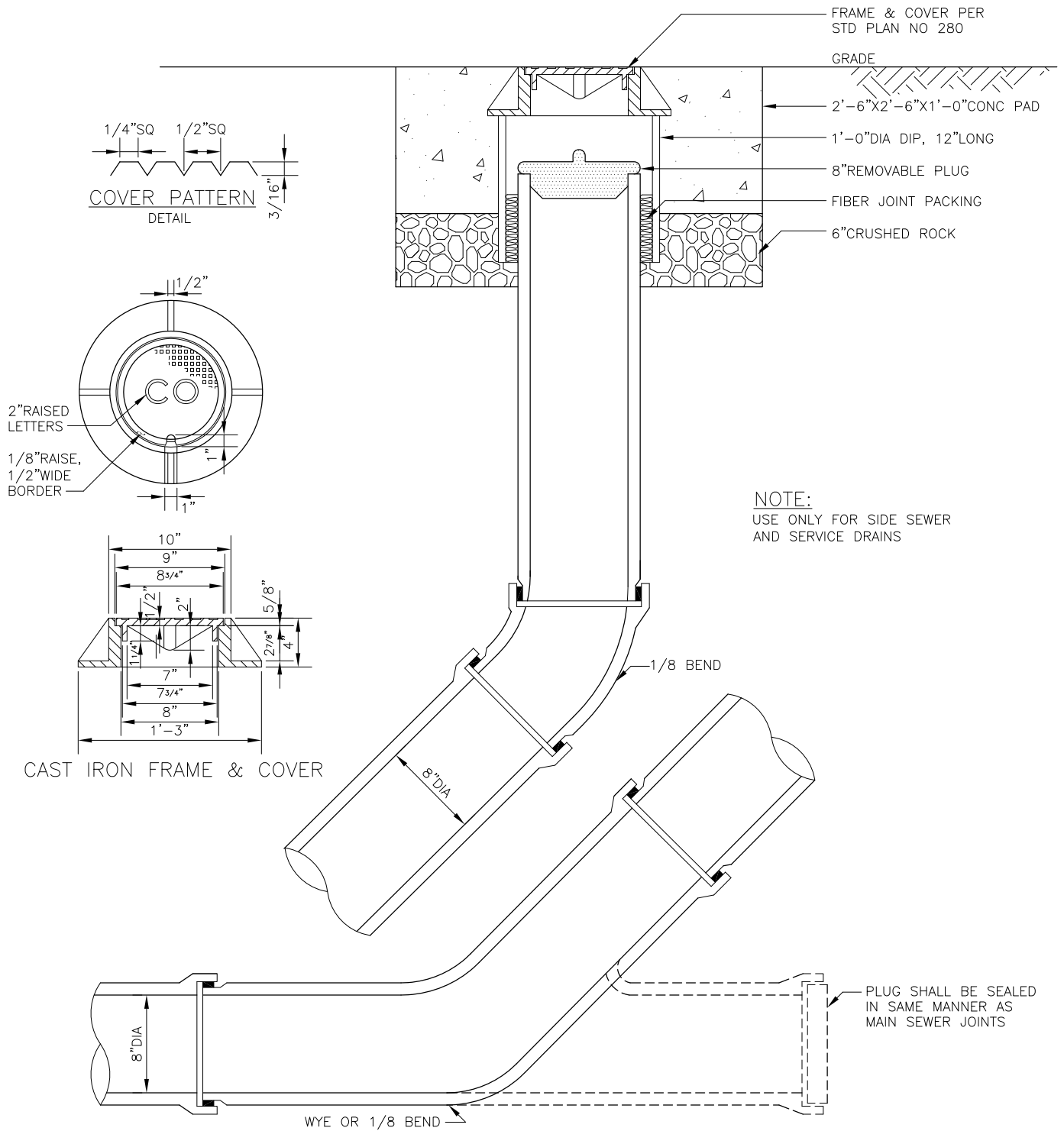
VERTICAL CLEAN OUT/
CORRUGATED METAL PIPE



SECTION A-A

NOTES:

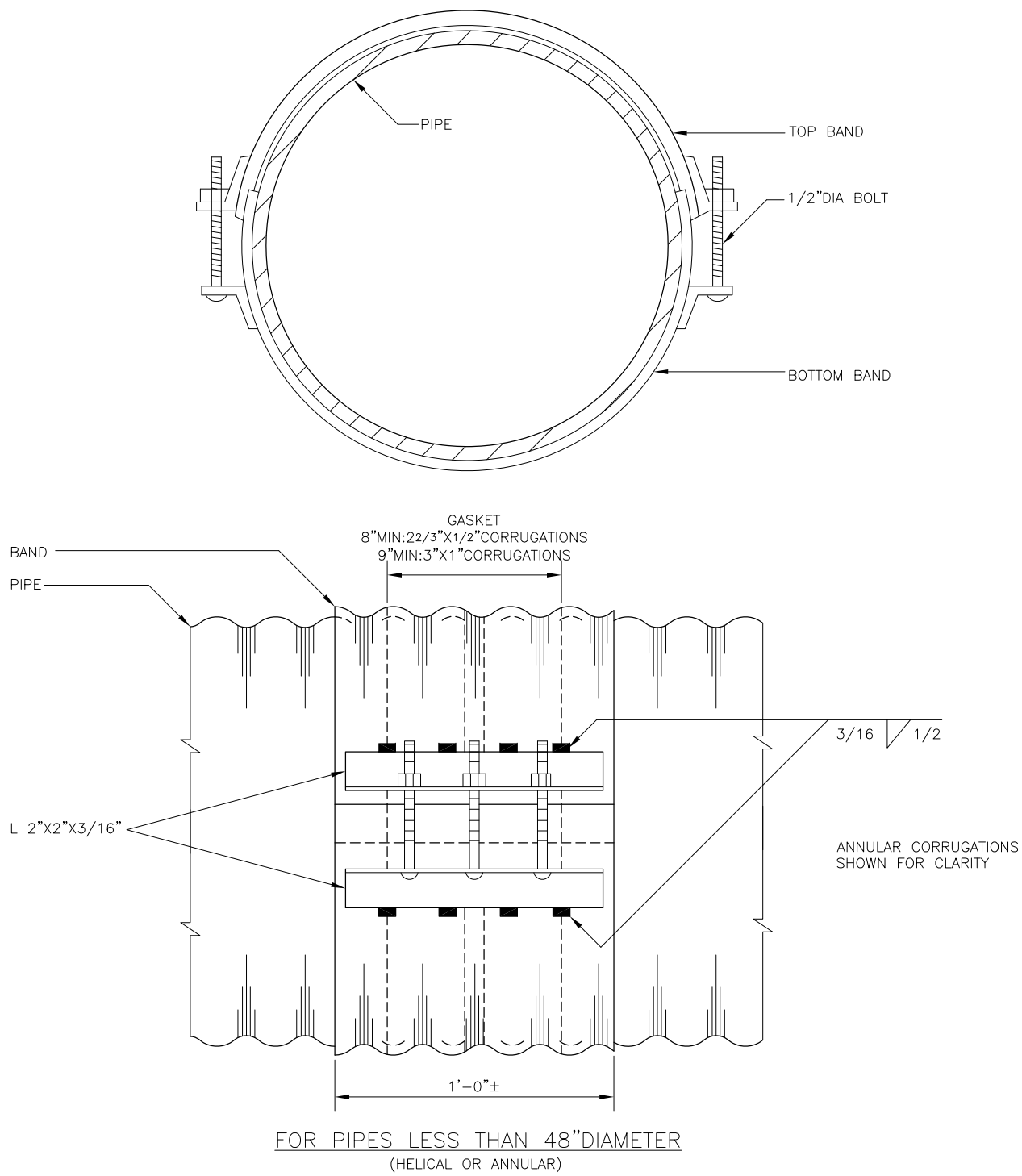
1. CORRUGATED FLANGE PLATE AND NON-CORRUGATED PIPE TO BE SAME MATERIAL AND HAVE SAME COATING AS CMP
2. BOLTS TO BE GALV STEEL MEETING ASTM A-307 OR STAINLESS STEEL MEETING ASTM A-193

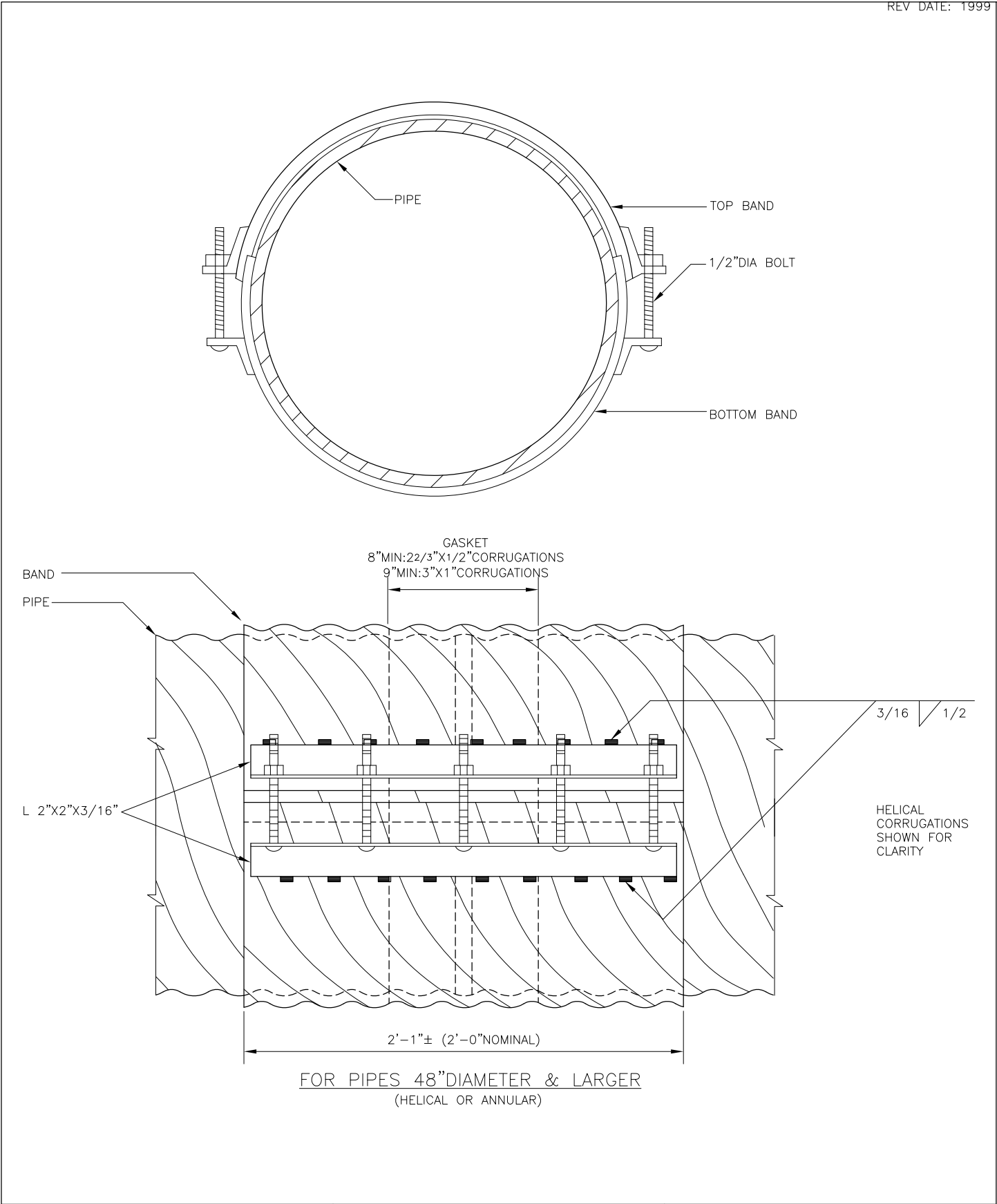


REF STD SPEC SEC 7-19

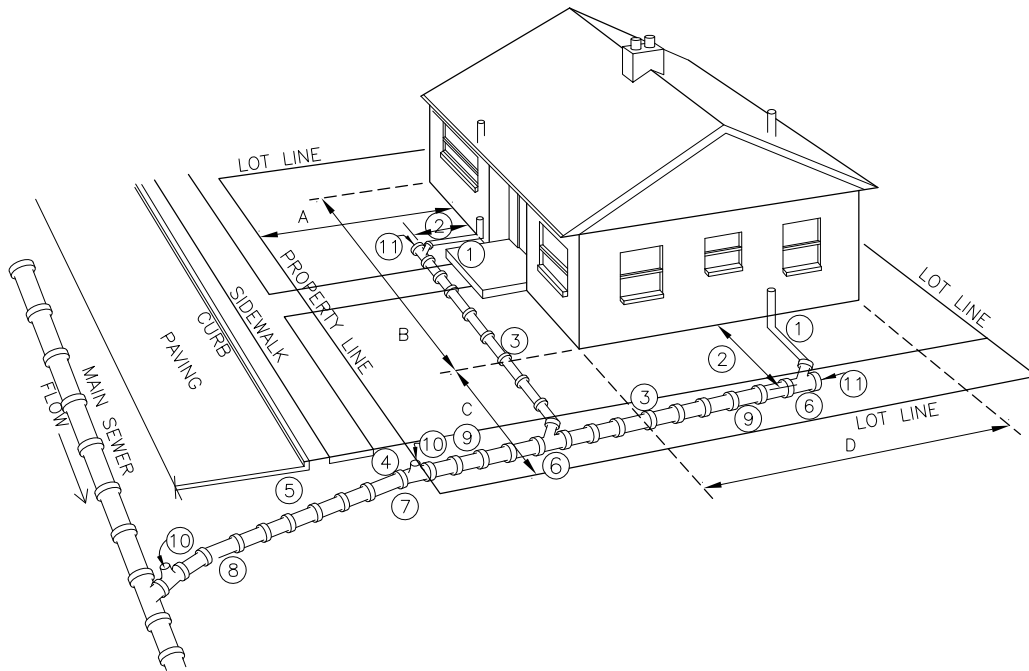
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

8" CLEAN-OUT





| | | |
|--|--|---|
| | CITY OF SEATTLE PUBLIC UTILITIES DEPARTMENT | CORRUGATED METAL PIPE COUPLING BANDS |
|--|--|---|

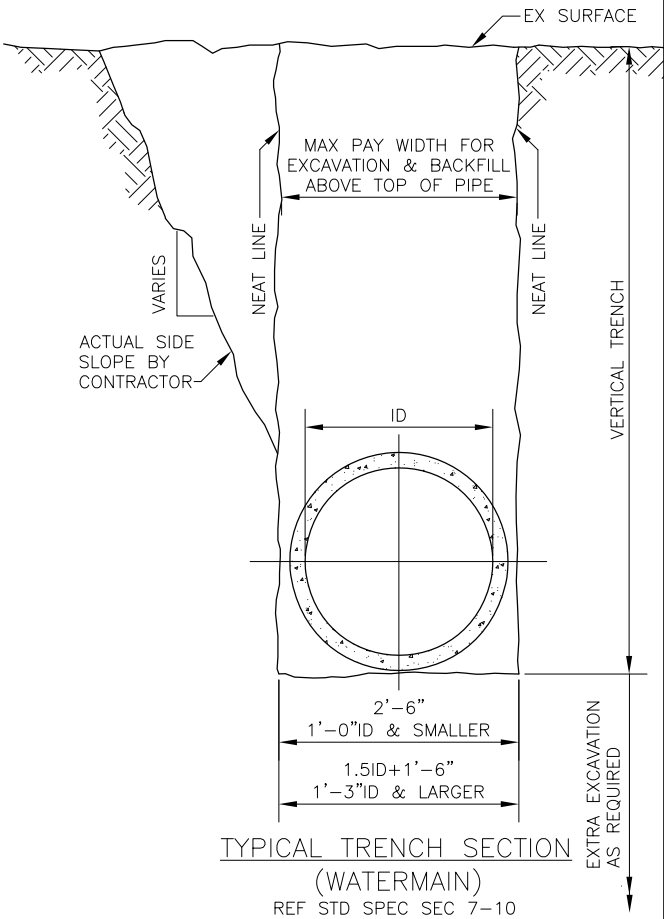
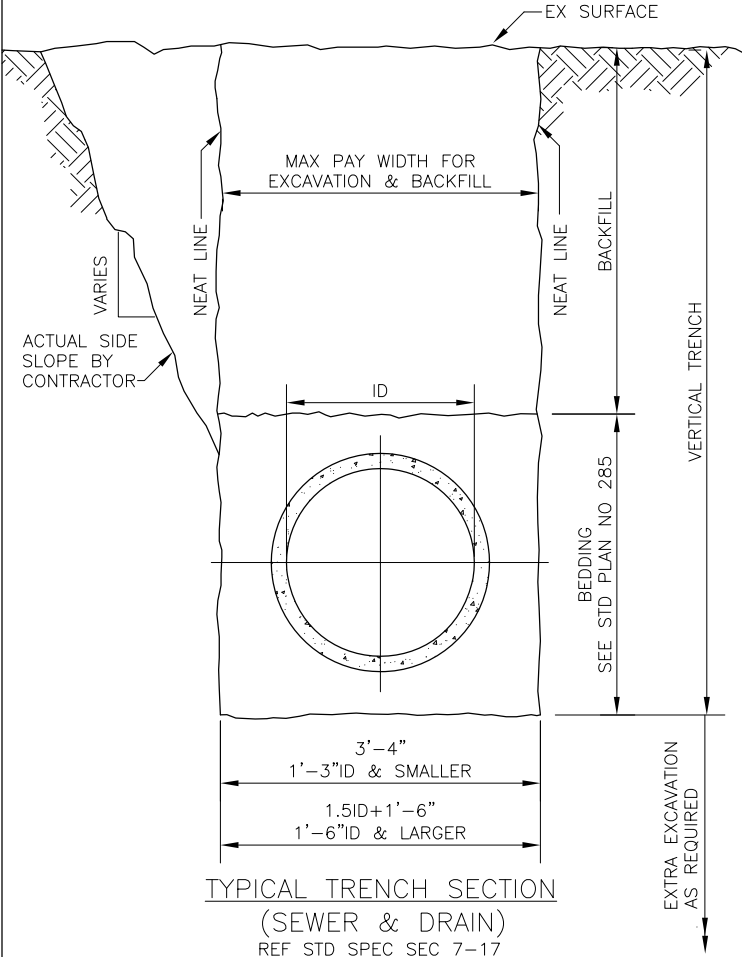
NOTES:

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. 2'-6" MIN DISTANCE FROM HOUSE, EXCEPT FOR SOIL PIPE CONNECTION.
 3. 1'-6" MIN COVERAGE OF PIPE.
 4. 2'-6" MIN COVERAGE AT PROPERTY LINE.
 5. 5'-0" MIN COVERAGE AT CURB LINE.
 6. LAY PIPE IN STRAIGHT LINE BETWEEN BENDS. MAKE ALL CHANGES IN GRADE OR LINE WITH BENDS OR WYES.
 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.
- A. CONSTRUCTION IN STREET MUST BE DONE BY A REGISTERED SEWER CONTRACTOR.
- B. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH CURRENT SIDE SEWER ORDINANCES.
- C. ALL CONSTRUCTION REQUIRES A PERMIT AND PAYMENT OF FEE. COMPLETE LEGAL DESCRIPTIONS 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.

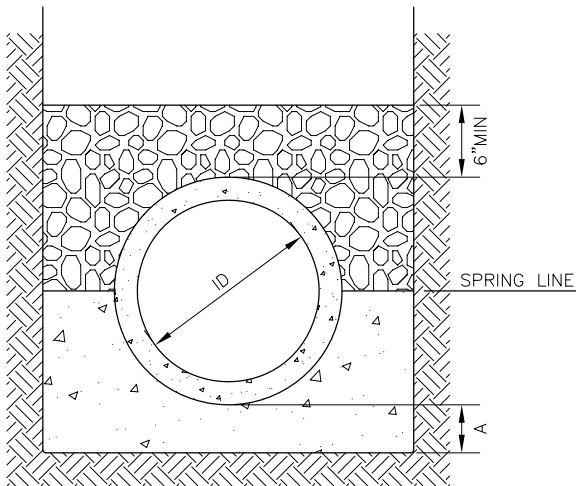
REF STD SPEC SEC 7-18

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

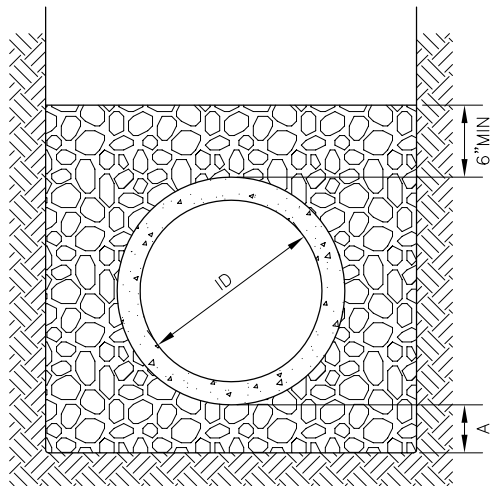
SIDE SEWER INSTALLATION



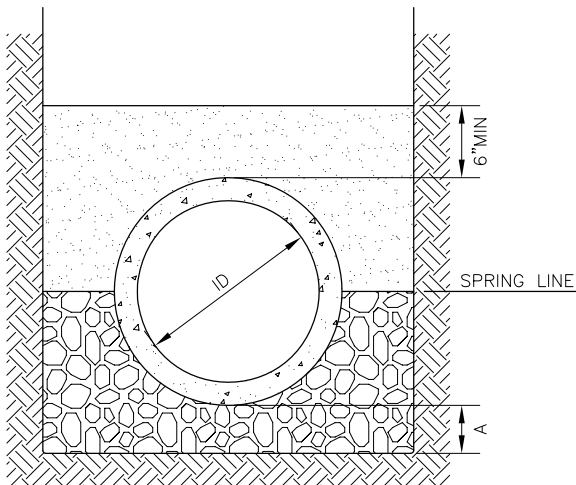
NOTE:
FOR PAVEMENT REMOVAL
AND RESTORATION SEE
STD PLAN 404



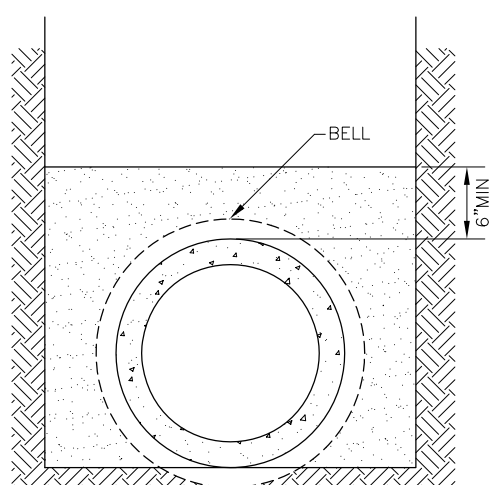
CLASS A BEDDING
(CONCRETE BEDDING)






CLASS B BEDDING



CLASS C BEDDING



CLASS D BEDDING

| | |
|---|---|
|  | MINERAL AGGREGATE PER STD SPEC 4-01 TYPE 9 FOR RIGID PIPE TYPE 22 FOR FLEXIBLE PIPE |
|  | CONCRETE CLASS 4 (1 1/2) (MIN) (4 SACK MIN 1 1/2" MAX AGGREGATE) |
|  | SELECTED NATIVE MATERIAL |

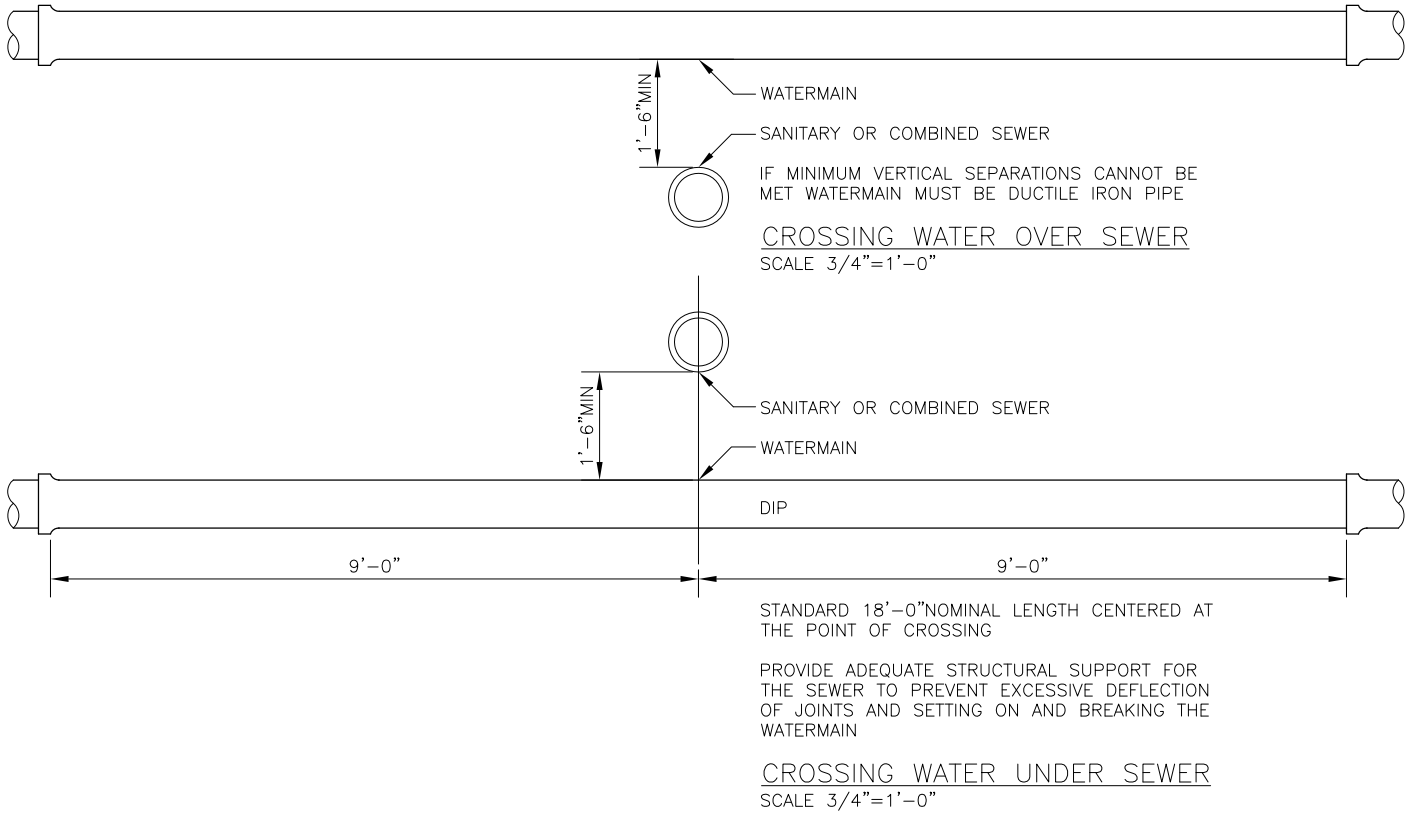
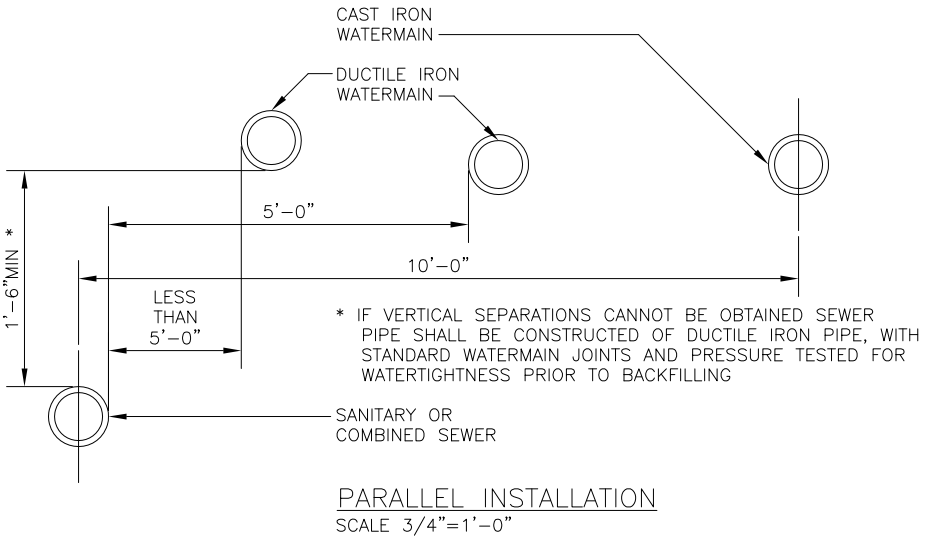
NOTES:

1. FOR TRENCH WIDTH SEE STD PLAN 284
2. A=4" WHEN ID IS LESS THAN 2'-6"
3. A=6" WHEN ID IS 2'-6" OR MORE
4. FOR CLASS D BEDDING EXCAVATE FOR BELL
4. FOR CLASS B BEDDING FOR WATERMAINS
SEE STD SPEC SEC 7.10.3(9)

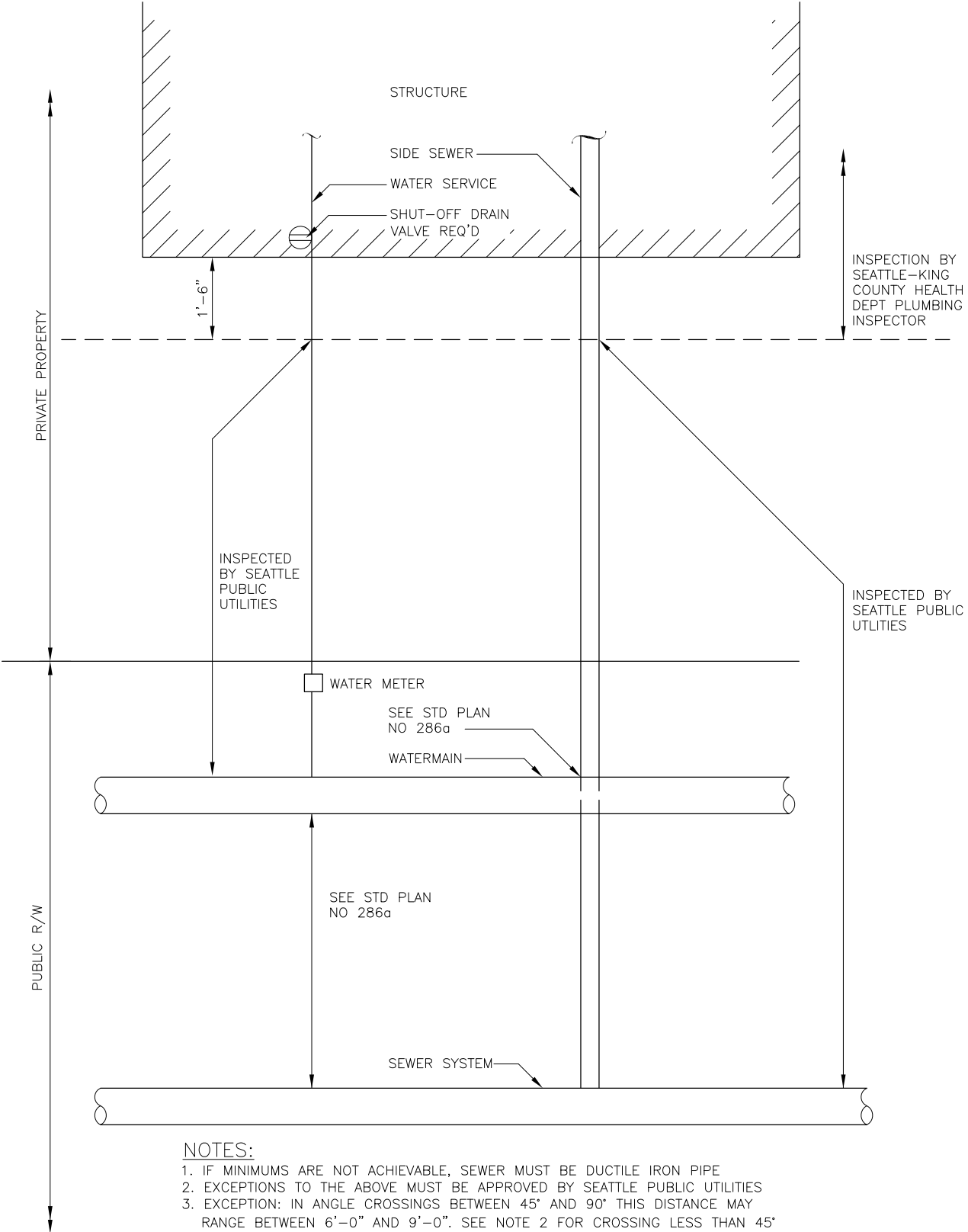
REF STD SPEC SEC 7-17

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

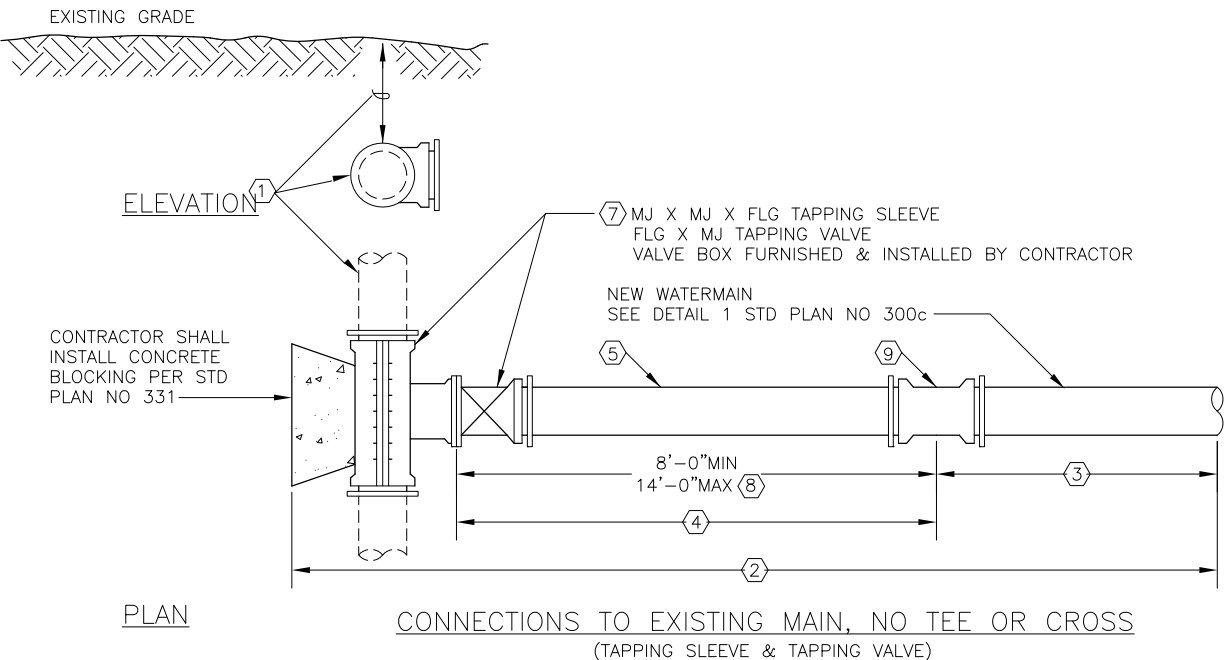
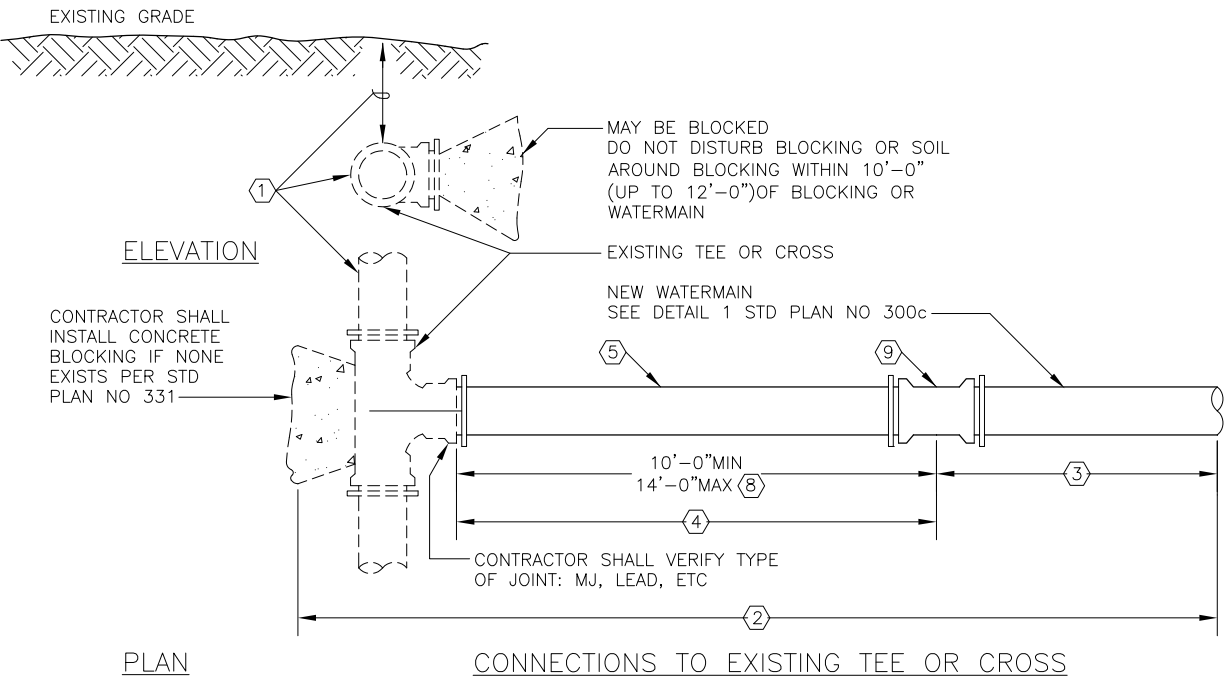
PIPE BEDDING



- NOTES:
1. EXCEPTIONS TO THE ABOVE MUST BE APPROVED BY THE SEATTLE PUBLIC UTILITIES, WATER QUALITY DIVISION
 2. ORDINANCE 97016 APPLIES TO INSTALLATION OF SIDE SEWERS RELATIVE TO THE LOCATION OF WATERMAINS AND WATER SERVICES



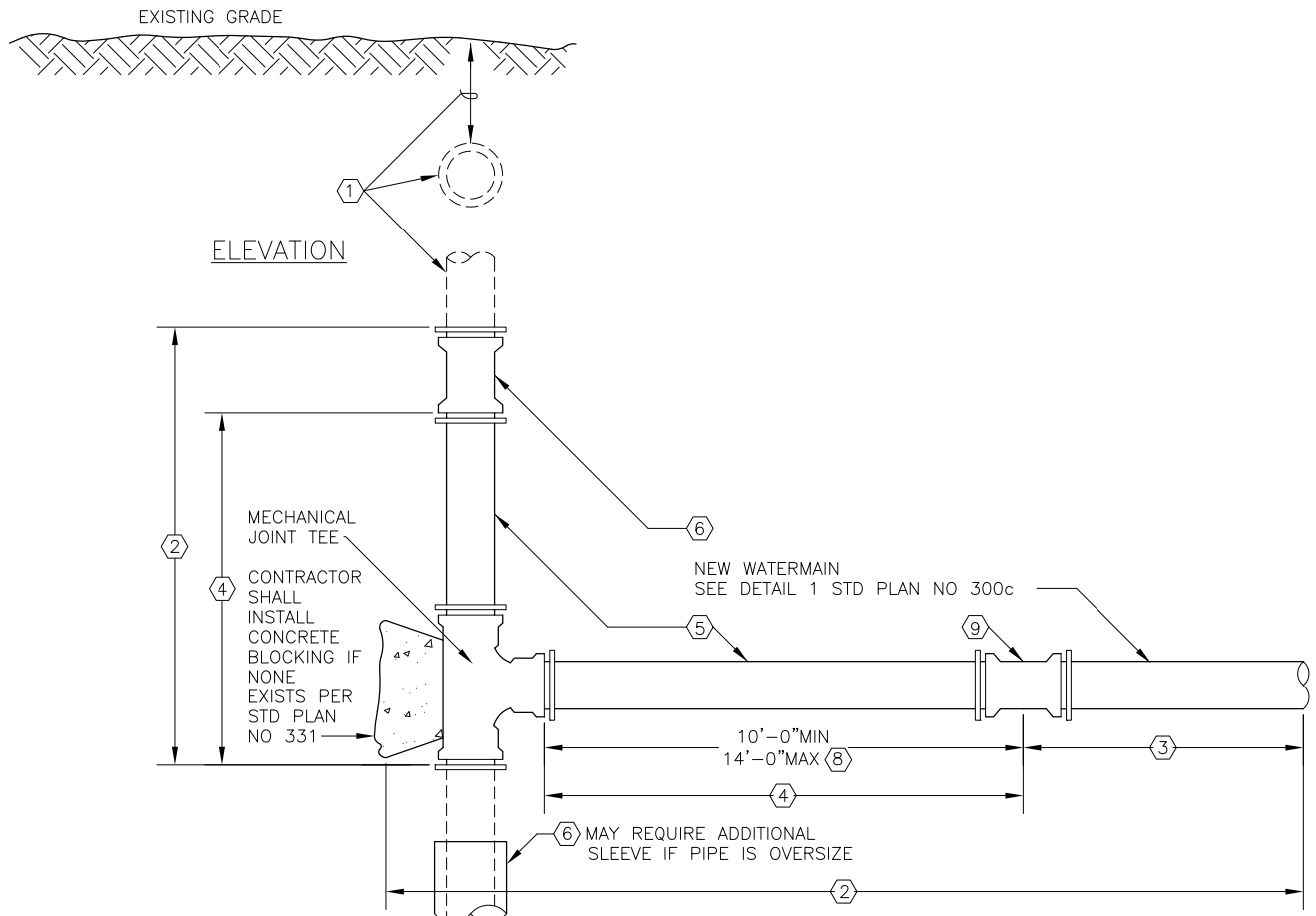
- NOTES:
- 1. IF MINIMUMS ARE NOT ACHIEVABLE, SEWER MUST BE DUCTILE IRON PIPE
 - 2. EXCEPTIONS TO THE ABOVE MUST BE APPROVED BY SEATTLE PUBLIC UTILITIES
 - 3. EXCEPTION: IN ANGLE CROSSINGS BETWEEN 45° AND 90° THIS DISTANCE MAY RANGE BETWEEN 6'-0" AND 9'-0". SEE NOTE 2 FOR CROSSING LESS THAN 45°



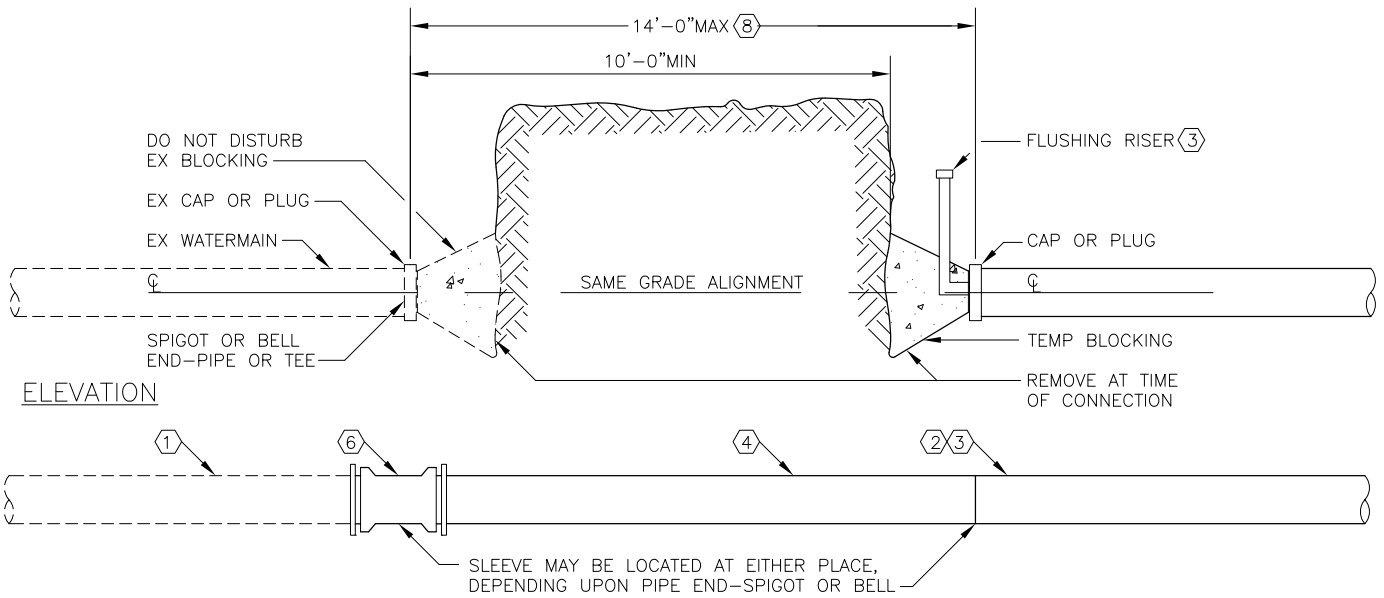
FOR LEGEND AND NOTES SEE STD PLAN NO 300c
REF STD SPEC SEC 7-11

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

CONNECTIONS TO
EXISTING WATERMAIN

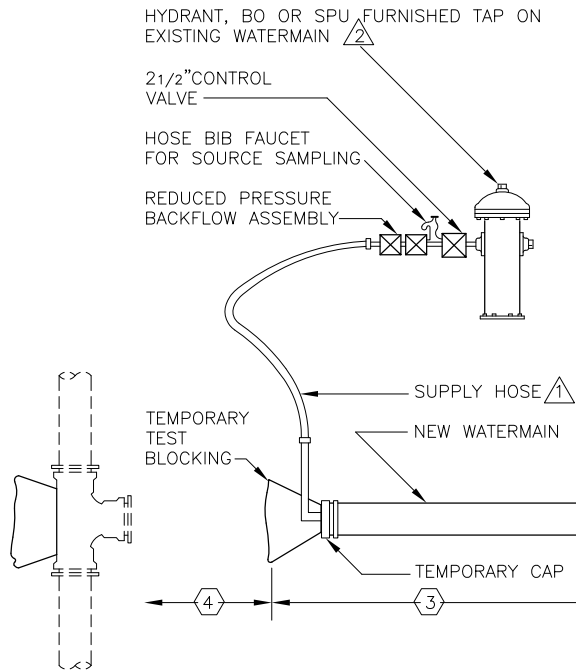


CONNECTIONS TO EXISTING MAIN, WITH A NEW TEE OR CROSS
(CUT IN NEW TEE)

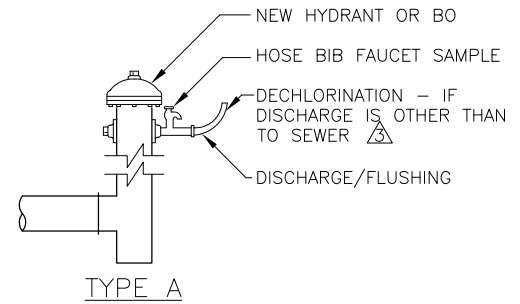


CONNECTIONS TO EXISTING MAIN, STUB
OR END OUTLET OF TEE OR CROSS

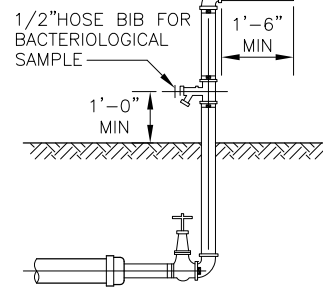
FOR LEGEND AND NOTES SEE STD PLAN NO 300c
REF STD SPEC SEC 7-11



DETAIL 1
TEMPORARY
FLUSHING/TESTING CONN



TEMP SAMPLE TAP AND
FLUSHING ASSEMBLY
(RESTRAINT OR
BLOCKING REQ'D)



TYPE B

NOTES:

1. ALL FITTINGS SHALL BE DUCTILE IRON
2. ALL EXCAVATION SHALL PROVIDE A MINIMUM OF 1'-0" CLEAR AROUND PIPE AND FITTINGS.
3. THESE PLANS ARE FOR DIP AND CIP WATERMAINS 12" OR SMALLER DIA OTHER SIZES AND TYPES SEE PROJECT DRAWINGS
4. REDUCED PRESSURE BACKFLOW ASSEMBLY (RPBA) SHALL BE INSTALLED AS A UNIT (TWO SHUT-OFF VALVES, RELIEF PORT, TWO CHECK VALVES AND FOUR TEST COCKS). WHEN RPBA IS CONNECTED TO HYDRANT AND THE HOSE BIB FAUCET SAMPLE THEY SHALL BE CAPPED WHEN NOT IN USE. ASSEMBLY SHALL BE TESTED WHEN INSTALLED BY A WASHINGTON STATE CERTIFIED BACKFLOW ASSEMBLY TESTER (BAT) AND A CURRENT TEST REPORT SHALL BE ON SITE. FOR INSTALLATION PROCEDURES CALL 684-3536.

① CLEAN & DISINFECTED POTABLE WATER HOSE ONLY. SIZE FLUSHING RISER PER TABLE IN STD SPEC SEC 7-11.3(12)

② HYDRANT PERMIT REQUIRED

③ CHECK WITH SEWER UTILITY BEFORE DISCHARGE TO SEWERS

④ CONTRACTOR TO DETERMINE ALIGNMENT & GRADE OF EXISTING PIPE PRIOR TO INSTALLING NEW WATERMAIN. ENGINEER TO DETERMINE OUTSIDE DIAMETER OF EXISTING PIPE WHEN CONTRACTOR EXCAVATES TO DETERMINE ALIGNMENT & GRADE.

⑤ ALL EXCAVATION, PIPE, FITTINGS (EXCEPT AS NOTED BELOW), OTHER MATERIAL, BACKFILL, COMPACTION & STREET RESTORATION BY CONTRACTOR. ALL MATERIALS SHALL BE ON JOB SITE PRIOR TO SHUTDOWN OF EXISTING MAIN.

⑥ INSTALLED BY CONTRACTOR

⑦ CONNECTION PIPE: CONTRACTOR FURNISHED, INSTALLED BY SPU

⑧ WATERMAIN WITH PLAIN ENDS

⑨ MECHANICAL JOINT SLEEVE WITH SPACER CUT TO FIT GAP, FURNISHED AND INSERTED AT TIME OF CONNECTION BY SPU

⑩ TAPPING SLEEVE & TAPPING VALVE FURNISHED AND INSTALLED BY SPU

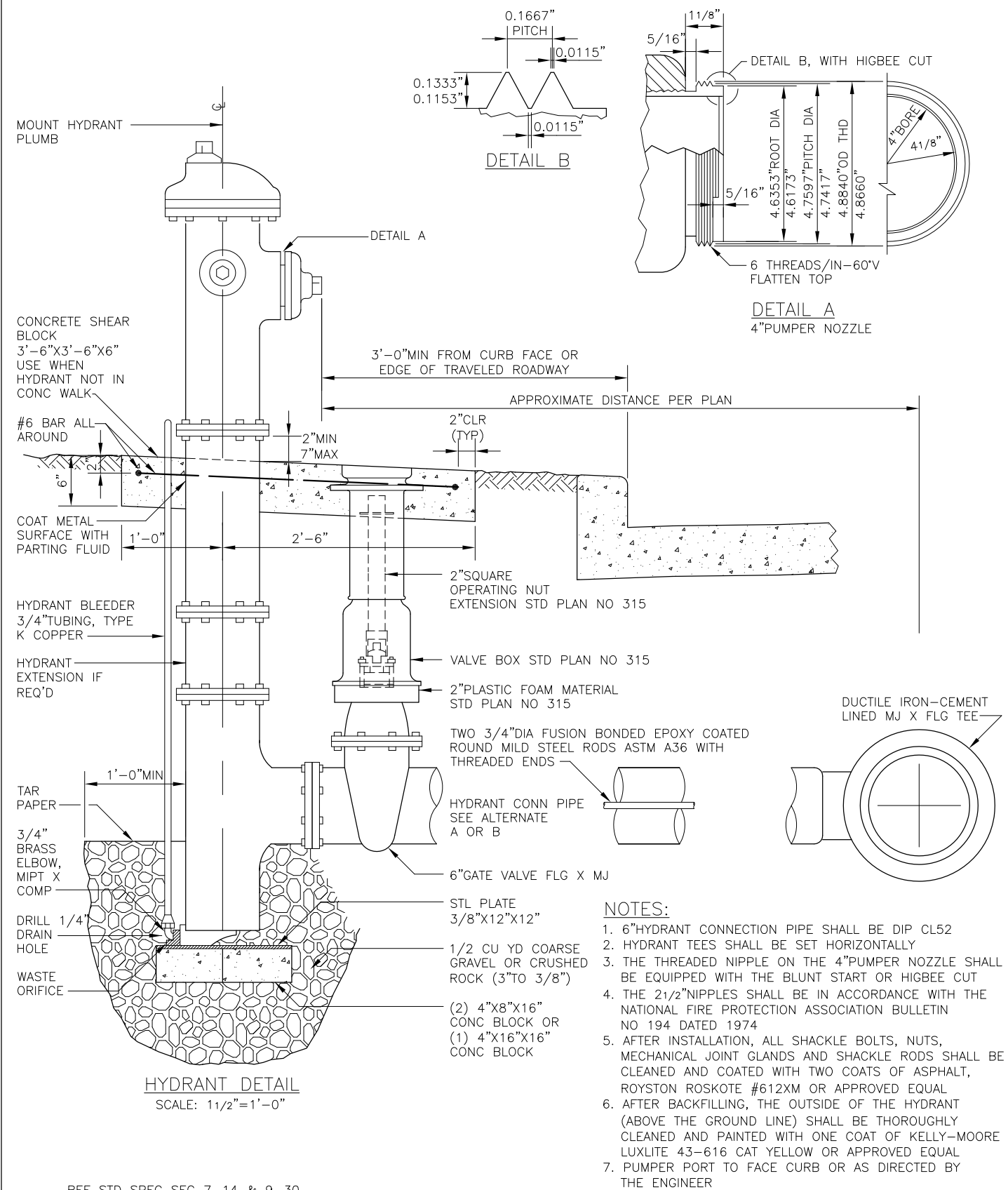
⑪ APPLIES TO PIPES 4" THROUGH 12". ALL LARGER SIZES TO BE DETERMINED ON A CASE BY CASE BASIS

⑫ MECHANICAL JOINT SLEEVE, FURNISHED BY CONTRACTOR AND INSTALLED BY SPU, SPACERS BY SPU WHERE REQUIRED

REF STD SPEC SEC 7-11

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

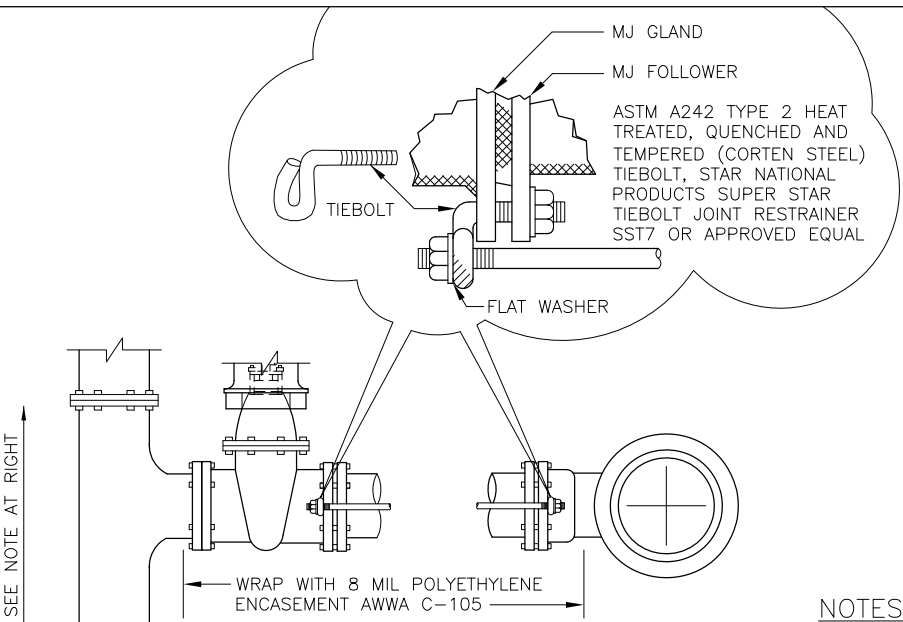
CONNECTIONS TO
EXISTING WATERMAINS



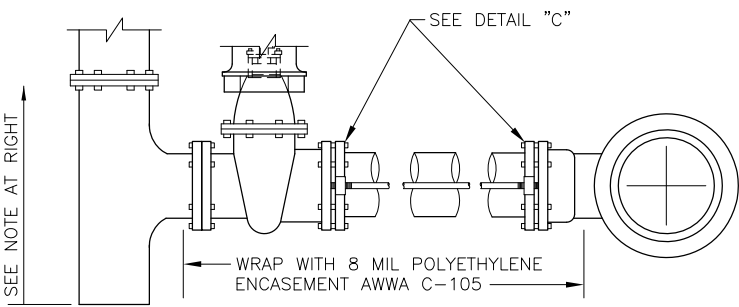
REF STD SPEC SEC 7-14 & 9-30

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

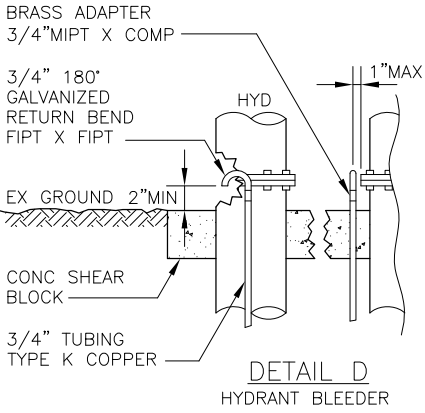
HYDRANT SETTING DETAIL



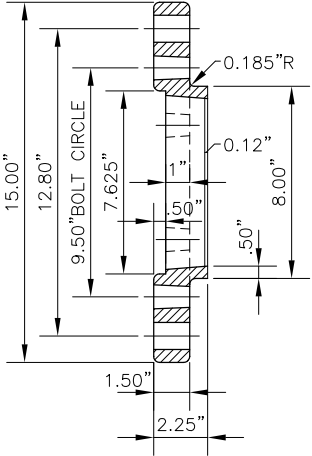
ALTERNATE A
TIEBOLT RESTRAINT



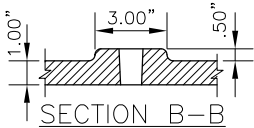
ALTERNATE B
MECHANICAL JOINT GLAND W/LUGS



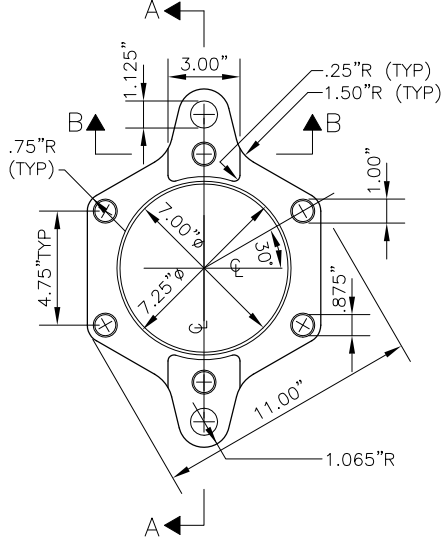
DETAIL D
HYDRANT BLEEDER



SECTION A-A



SECTION B-B



DETAIL C

6" MECHANICAL JOINT GLAND W/ LUGS

NOTES:

1. WHERE WATERMAINS ARE INSTALLED WITH POLYETHYLENE ENCASEMENT, TAPE COATINGS OR THERMOPLASTIC COATINGS, THE HYDRANT BARREL AND VALVE SHALL BE SIMILARLY ENCASED, COATED AND/OR JOINTS BONDED
2. WHERE 6" GATE VALVE IS TO BE LOCATED WITHIN A PARKING-PERMITTED AREA, A SECOND 6" GATE VALVE SHALL BE INSTALLED AT THE HYDRANT ASSEMBLY PER STD PLAN NO 310

NOTES:

1. TO BE CAST OF DUCTILE IRON IN CONFORMANCE WITH ASTM SPECS A 536 CLASS 80-55-06
2. AFTER CLEANING, THE CASTING SHALL BE HOT DIPPED IN ASPHALTIC VARNISH, ROYSTON ROSKOTE #612XM OR APPROVED EQUAL
3. TOLERANCES PER CIPRA HANDBOOK

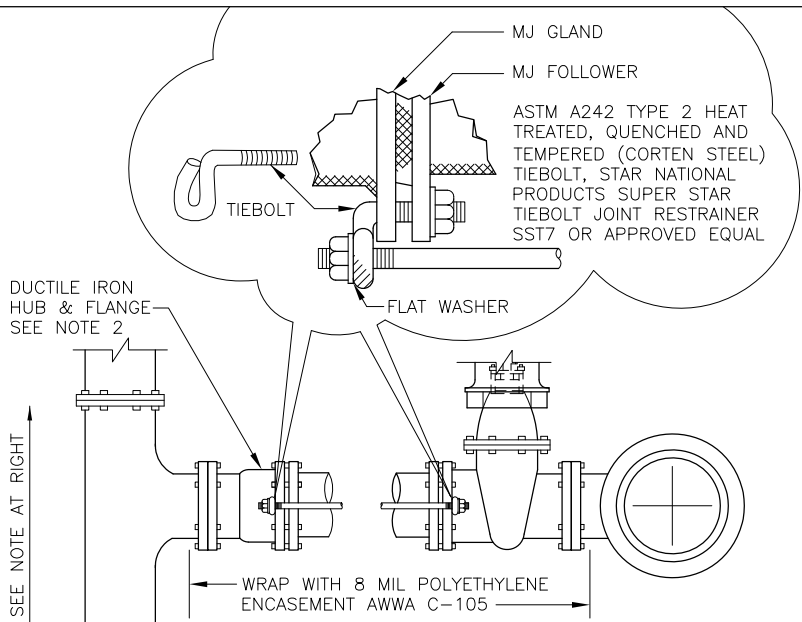
REF STD SPEC SEC 7-14 & 9-30

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

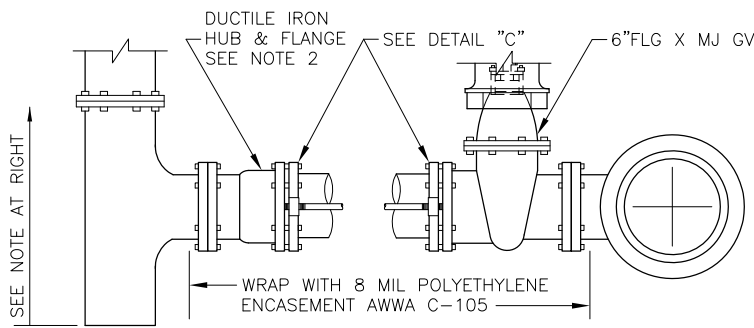
HYDRANT SETTING DETAIL



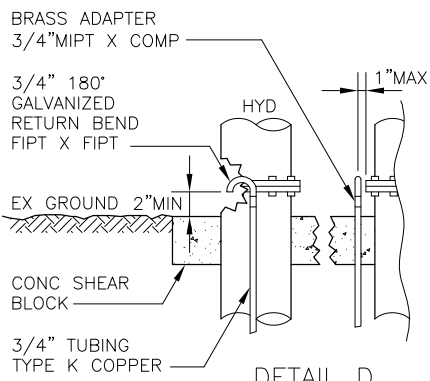
- NOTES:
1. 6"HYDRANT CONNECTION PIPE SHALL BE DIP CL52
 2. HYDRANT TEES SHALL BE SET HORIZONTALLY
 3. THE THREADED NIPPLE ON THE 4"PUMPER NOZZLE SHALL BE EQUIPPED WITH THE BLUNT START OR HIGBEE CUT
 4. THE 2 1/2"NIPPLES SHALL BE IN ACCORDANCE WITH THE NATIONAL FIRE PROTECTION ASSOCIATION BULLETIN NO 194 DATED 1974
 5. AFTER INSTALLATION, ALL SHACKLE BOLTS, NUTS, AND SHACKL RODS SHALL BE CLEANED AND COATED WITH TWO COATS OF ASPHALT, ROYSTON ROSKOTE #612XM OR APPROVED EQUAL
 6. AFTER BACKFILLING, THE OUTSIDE OF THE HYDRANT (ABOVE THE GROUND LINE) SHALL BE THOROUGHLY CLEANED AND PAINTED WITH TWO COATS OF KELLY-MOORE LUXLITE 43-616 CAT YELLOW OR APPROVED EQUAL
 7. PUMPER PORT TO FACE CURB OR AS DIRECTED BY THE ENGINEER
 8. PUMPER PORT TO BE FITTED WITH QUICK CONNECT ADAPTOR PER FIRE MARSHAL



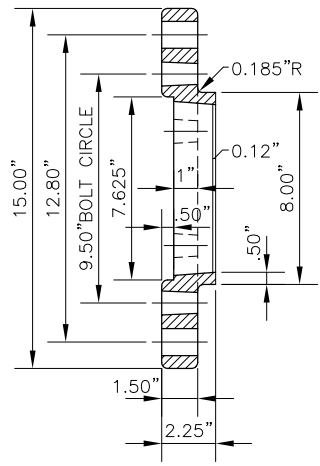
ALTERNATE A
TIEBOLT RESTRAINT



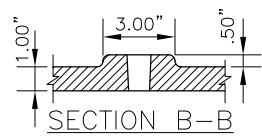
ALTERNATE B
MECHANICAL JOINT GLAND W/LUGS



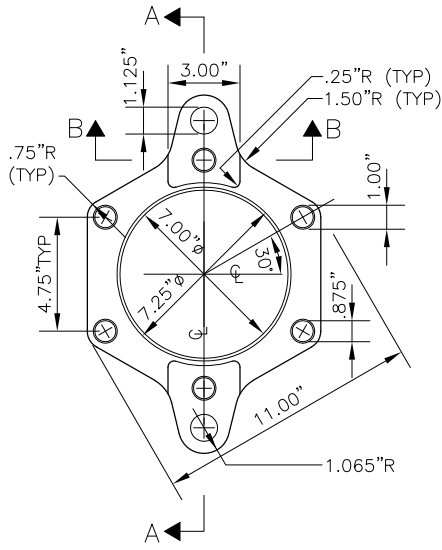
DETAIL D
HYDRANT BLEEDER



SECTION A-A



SECTION B-B



DETAIL C

6" MECHANICAL JOINT GLAND W/ LUGS

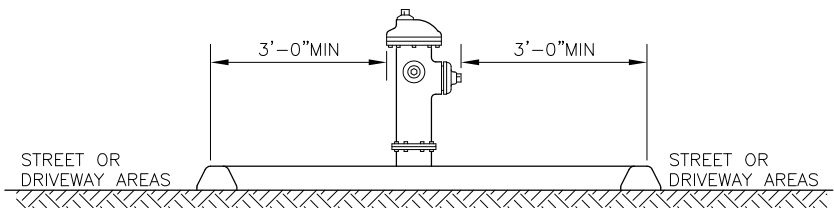
NOTES:

1. TO BE CAST OF DUCTILE IRON IN CONFORMANCE WITH ASTM SPECS A 536 CLASS 80-55-06
2. AFTER CLEANING, THE CASTING SHALL BE HOT DIPPED IN ASPHALTIC VARNISH, ROYSTON ROSKOTE #612XM OR APPROVED EQUAL
3. TOLERANCES PER CIPRA HANDBOOK

REF STD SPEC SEC 7-14 & 9-30

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

HYDRANT SETTING DETAIL



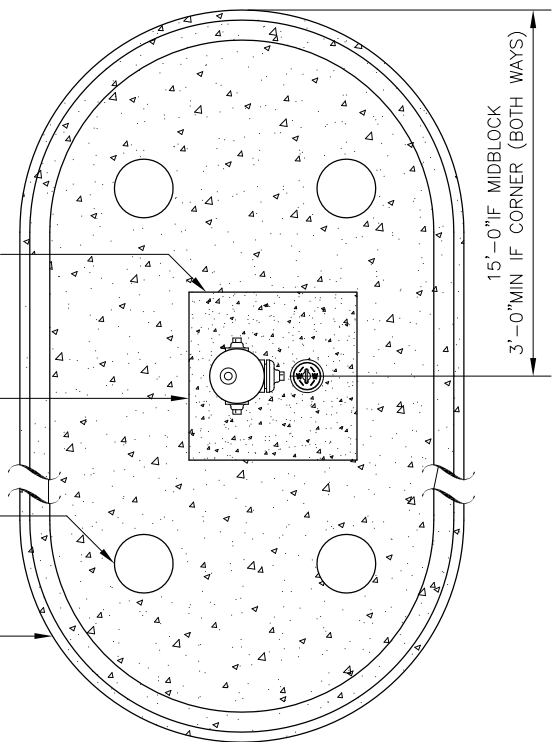
USE TO BE DETERMINED JOINTLY BY SEATRAN TRAFFIC ENGINEERS & SPU

CONCRETE SHEAR BLOCK SEE STD PLANS NOS 310 & 311

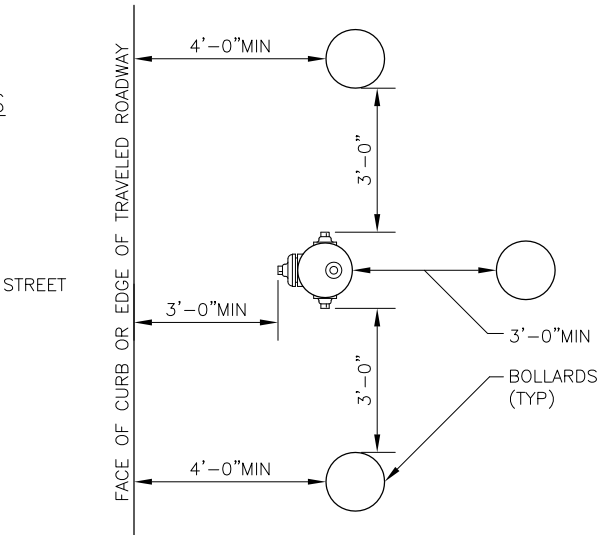
ISLAND SURFACE SHALL BE FLUSH WITH TOP OF CURB.
2"ASPH OVER CRUSHED ROCK

BOLLARDS UNLESS OTHERWISE DIRECTED BY ENGINEER

EXTRUDED ASPHALT CONC CURB SEE STD PLAN NO 412



TRAFFIC ISLAND PROTECTION FOR FIRE HYDRANTS IN PARKING AREAS

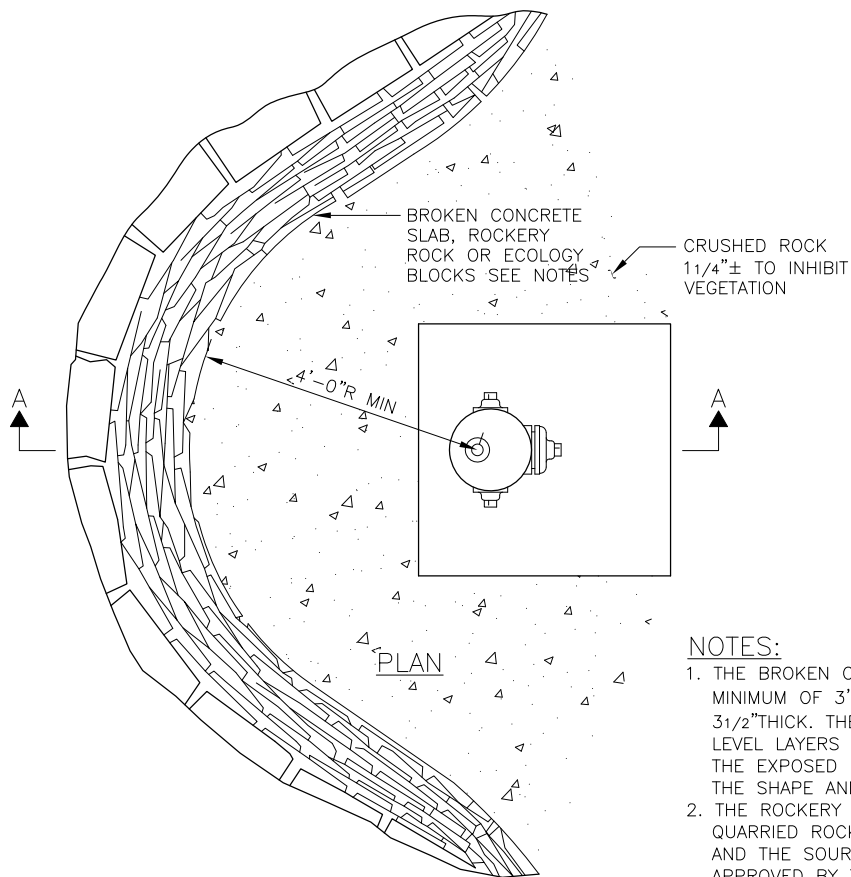


GUARD POST PROTECTION FOR FIRE HYDRANTS IN PARKING AREAS
LAYOUT SHALL BE DETERMINED AND BOLLARDS SHALL BE FURNISHED BY SPU

REF STD SPEC SEC 7-14

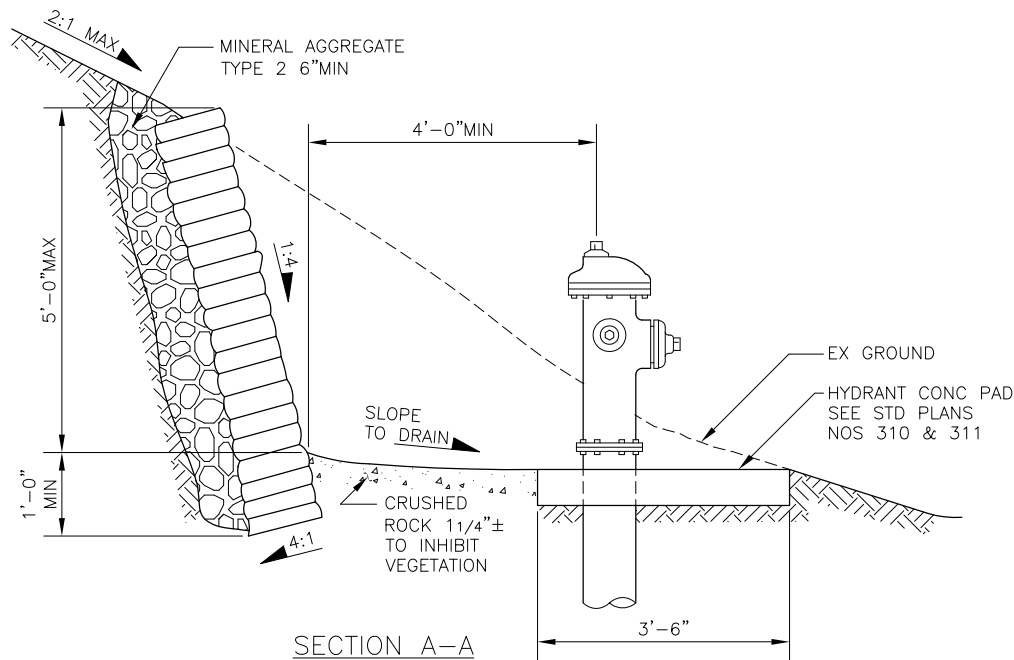
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

FIRE HYDRANT PROTECTION



NOTES:

1. THE BROKEN CONCRETE SLABS SHALL BE A MINIMUM OF 3'-0"X1'-6" AND NO LESS THAN 3 1/2" THICK. 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
2. THE ROCKERY ROCK SHALL BE SOUND, QUARRIED ROCK; DURABLE, FREE OF CRACKS AND THE SOURCE OF THE ROCK SHALL BE APPROVED BY THE ENGINEER BEFORE PLACEMENT

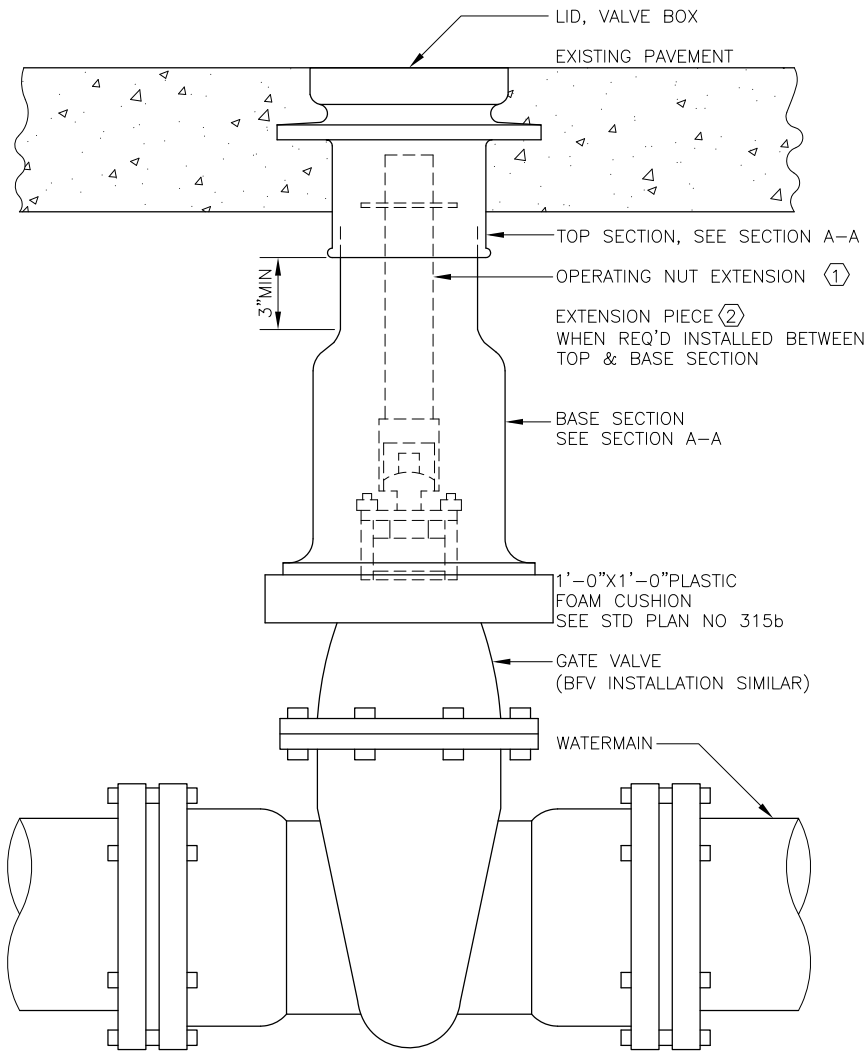


REF STD SPEC SEC 7-14

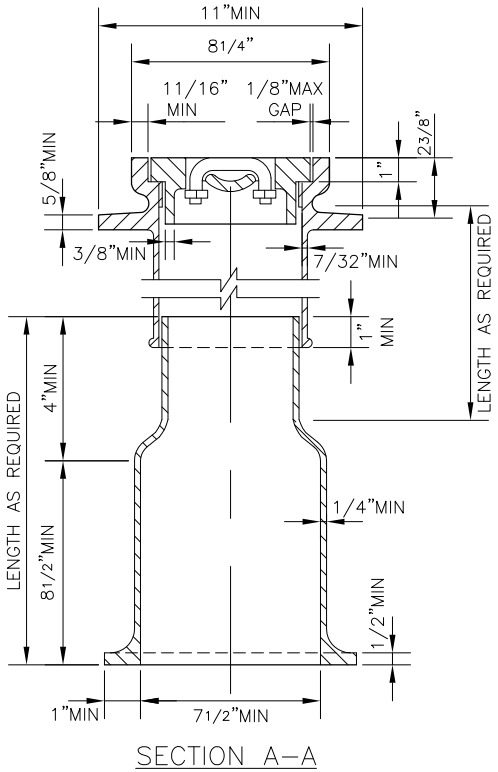
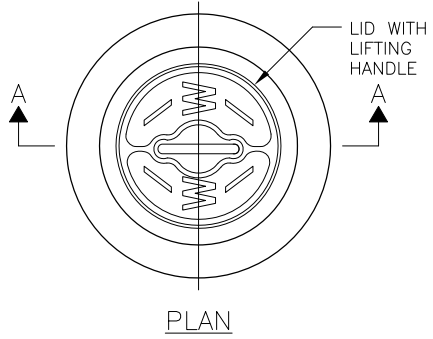
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

WALL REQUIREMENTS
FOR HYDRANTS



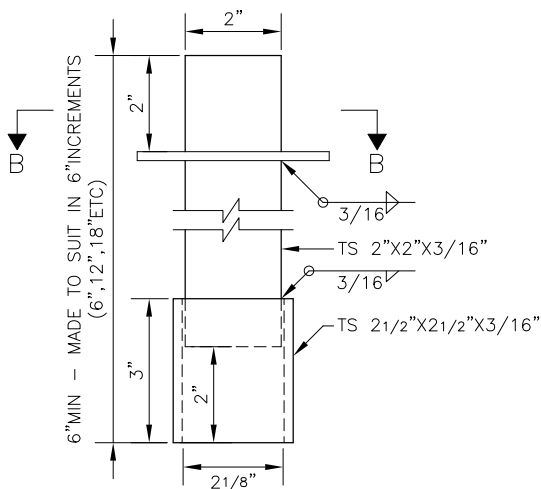


VALVE BOX ASSEMBLY
TYPICAL SETTING DETAIL

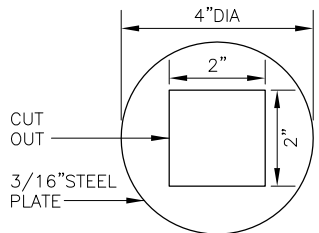


NOTE:
VALVE BOX FOR USE ON 12" OR
SMALLER VALVE INSTALLATIONS

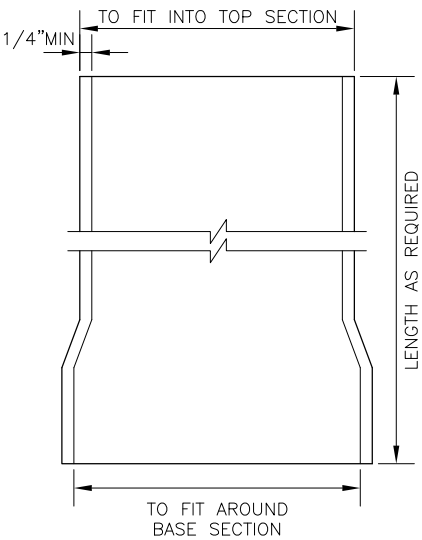
FOR LEGEND AND NOTES SEE STD PLAN 315.b
REF STD SPEC SEC 7-12 & 9-30



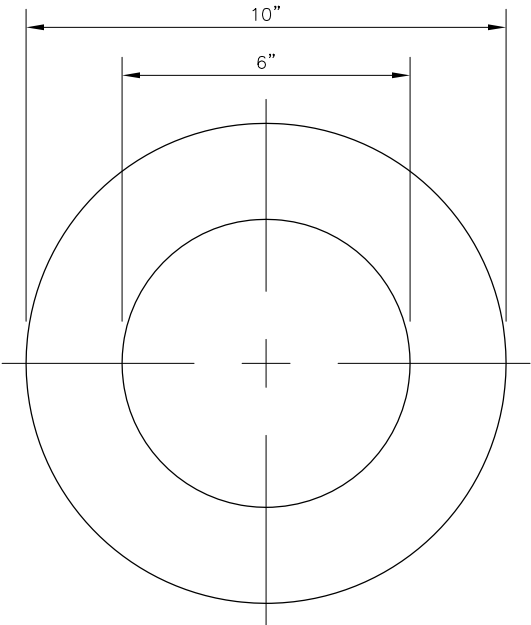
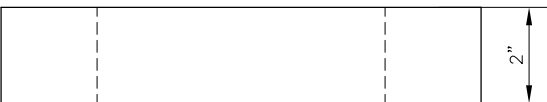
OPERATING NUT EXTENSION DETAIL 1



SECTION B-B



EXTENSION PIECE 2
WHEN REQUIRED



PLASTIC FOAM RING DETAIL

NOTES:

1. FRAME AND COVER SHALL BE TESTED FOR ACCURACY OF FIT AND SHALL BE MARKED IN SETS FOR DELIVERY
2. CASTINGS AND EXTENSIONS SHALL BE HOT-DIPPED IN ASPHALTIC VARNISH ROYSTON ROSKOTE #612XM OR 2 COATS OF MASTIC ROYSTON INSIDE AND OUT, OR APPROVED EQUAL
3. 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
4. ALL CASTINGS SHALL BE DUCTILE OR GREY CAST IRON

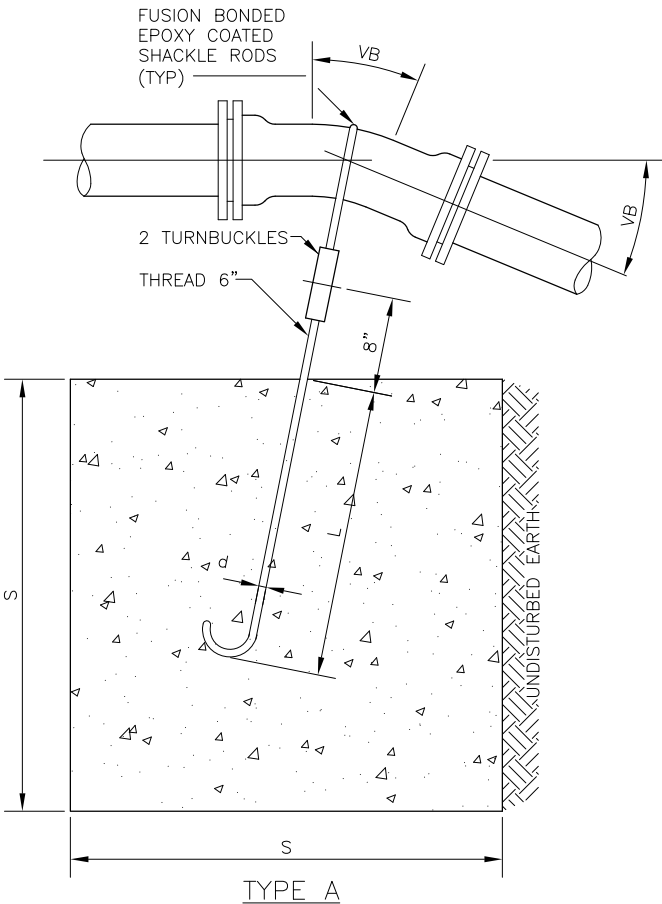
1 AN OPERATING NUT EXTENSION SHALL BE INSTALLED WHEN THE GROUND SURFACE IS MORE THAN 2'-6" ABOVE THE VALVE OPERATING NUT. THE OPERATING NUT EXTENSION SHALL EXTEND INTO THE TOP SECTION OF THE STANDARD VALVE BOX AND SHALL CLEAR THE BOTTOM OF THE LID BY 6" MIN

2 EXTENSION PIECES (WHEN USED) SHALL CONFORM TO MINIMUM THICKNESS REQUIREMENTS AND SHALL FIT INTO THE TOP SECTION AND OVER THE BOTTOM SECTION

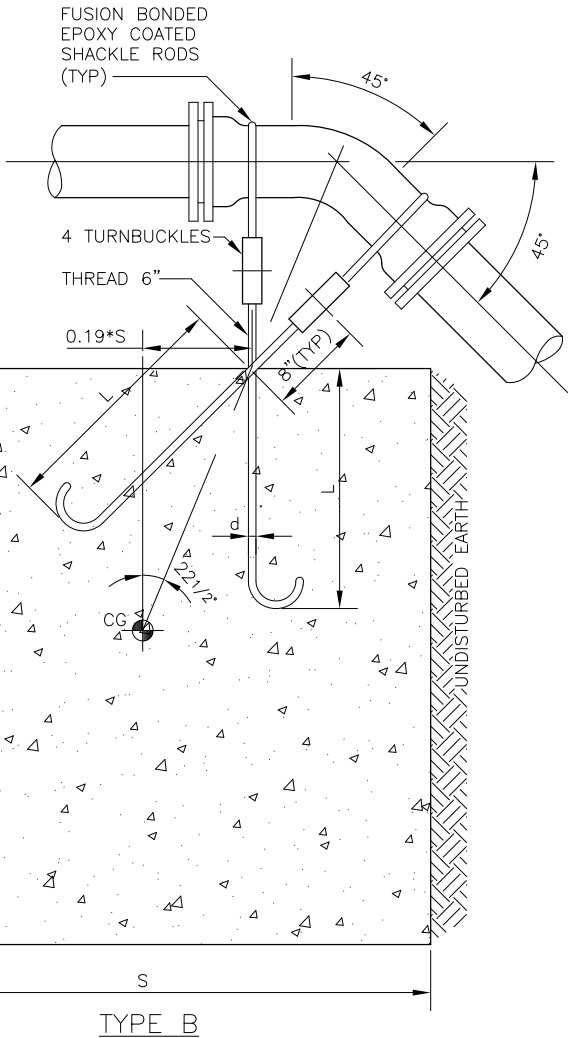
REF STD SPEC SEC 7-12 & 9-30

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

CAST IRON VALVE BOX &
OPERATING NUT EXTENSIONS



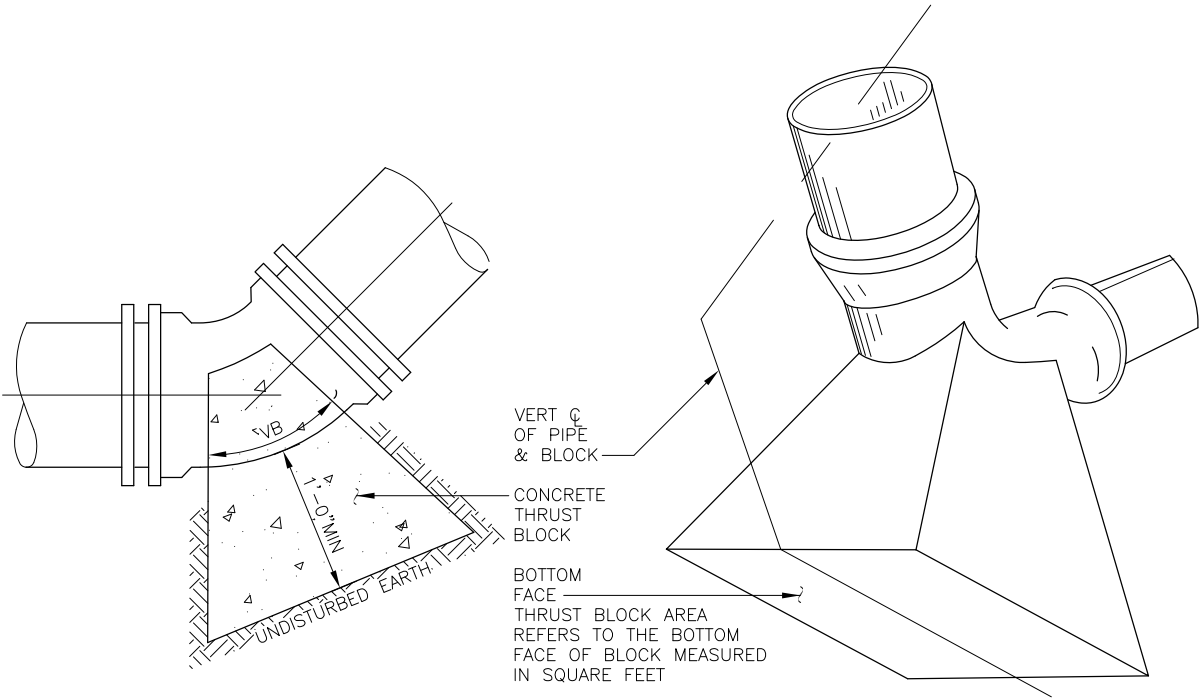
| TYPE A BLOCKING FOR 11 1/4° & 22 1/2° VERTICAL BENDS | | | | | | |
|---|----------------------|--------------------------------|---------------------------------|---------------------------|---|---|
| PIPE SIZE NOM DIA INCHES | TEST PRESSURE PSI | VB VERTICAL BEND DEGREES | NO OF CU FT OF CONC BLOCKING | S SIDE OF CUBE FEET | d DIA OF SHACKLE RODS (2) INCHES | L DEPTH OF RODS IN CONCRETE INCHES |
| 4" | 300 | 11 1/4 | 8 | 2 | 3/4 | 18 |
| | | 22 1/2 | 12 | 2 1/4 | | 24 |
| 6" | 300 | 11 1/4 | 12 | 2 1/4 | 3/4 | 24 |
| | | 22 1/2 | 27 | 3 | | 24 |
| 8" | 300 | 11 1/4 | 16 | 2 1/2 | 3/4 | 24 |
| | | 22 1/2 | 43 | 3 1/2 | | 24 |
| 12" | 300 | 11 1/4 | 64 | 4 | 1 | 24 |
| | | 22 1/2 | 125 | 5 | 1 | 36 |



| TYPE B BLOCKING FOR 45° VERTICAL BENDS | | | | | | |
|---|----------------------|--------------------------------|---------------------------------|---------------------------|---|---|
| PIPE SIZE NOM DIA INCHES | TEST PRESSURE PSI | VB VERTICAL BEND DEGREES | NO OF CU FT OF CONC BLOCKING | S SIDE OF CUBE FEET | d DIA OF SHACKLE RODS (4) INCHES | L DEPTH OF RODS IN CONCRETE INCHES |
| 4" | 300 | 45 | 27 | 3 | 3/4 | 20 |
| 6" | | | 64 | 4 | | |
| 8" | | | 125 | 5 | | |
| 12" | | | 216 | 6 | 1 | 30 |

FOR NOTES SEE STD PLAN 330b

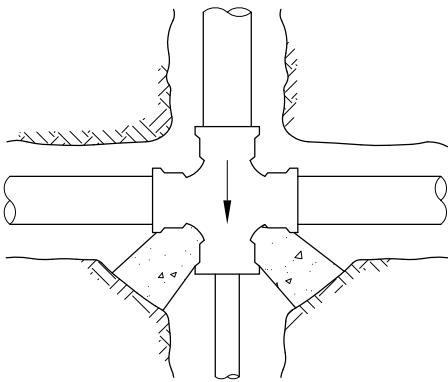
REF STD SPEC SEC 7-11



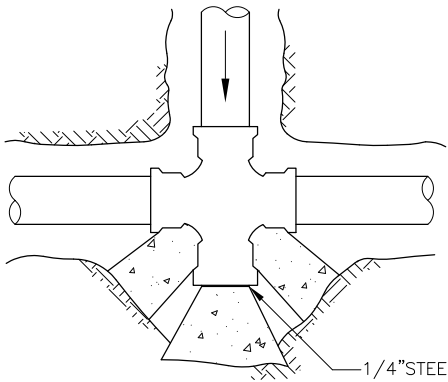
TYPE C
NO SCALE

| TYPE "C" BLOCKING FOR 11 1/4", 22 1/2", 45" AND 90" VERTICAL BENDS | | | | | | | | | |
|--|---------|------------------------------|-------------------------|------------------------|--------------|-------------------------|------------------------|-----------------------|-------------------------|
| THRUST BLOCK AREA IN SQUARE FEET | | | | | | | | | |
| PIPE SIZE | SOIL | FIRM SILT OR FIRM SILTY SAND | | | COMPACT SAND | | | COMPACT SAND & GRAVEL | |
| | FITTING | 90° BEND | TEE 45° BEND & DEAD END | 11 1/4" & 22 1/2" BEND | 90° BEND | TEE 45° BEND & DEAD END | 11 1/4" & 22 1/2" BEND | 90° BEND | TEE 45° BEND & DEAD END |
| | 4" | 5.8 | 4.2 | 1.7 | 2.9 | 2.1 | 1.0 | 2.2 | 1.6 |
| | 6" | 13.3 | 9.4 | 3.8 | 6.7 | 4.7 | 1.9 | 5.0 | 3.5 |
| | 8" | 23.3 | 16.7 | 6.7 | 11.7 | 8.4 | 3.4 | 8.8 | 6.3 |
| | 12" | 53.0 | 37.5 | 15.0 | 26.5 | 18.8 | 7.5 | 20.0 | 14.0 |
| AREAS CALCULATED ON 300 PSI TEST PRESSURE AND 3'-0" MIN COVER OVER WATERMAIN | | | | | | | | | |

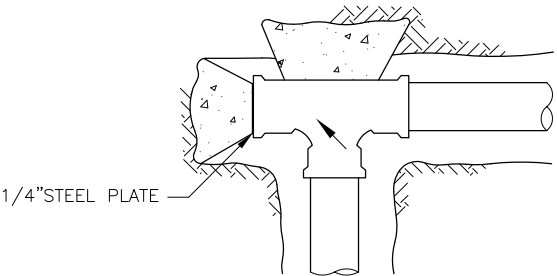
- NOTES:
1. LOCATION AND SIZE OF BLOCKING FOR PIPE LARGER THAN 12" DIAMETER AND FOR SOIL TYPES DIFFERENT THAN SHOWN SHALL BE DETERMINED BY THE ENGINEER UNLESS SPECIFIED OTHERWISE IN THE PROJECT MANUAL
 2. ALL BLOCKING FOR VERTICAL FITTINGS (POURED IN PLACE) SHALL BEAR AGAINST UNDISTURBED NATIVE GROUND
 3. 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
 4. ALL BLOCKING SHALL BE CONCRETE CL 5 (1 1/2)
 5. AFTER INSTALLATION, SHACKLE RODS & TURNBUCKLES SHALL BE CLEANED AND COATED WITH 2 COATS OF ASPHALTIC VARNISH, ROYSTON ROYKOTE #612M OR APPROVED EQUAL
 6. SHACKLE RODS SHALL BE FUSION BONDED EPOXY COATED ROUND MILD STEEL, ASTM A-36, WITH THREADS ON ENDS ONLY
 7. BLOCKING AGAINST FITTINGS SHALL BEAR AGAINST THE GREATEST FITTING SURFACE AREA POSSIBLE, BUT SHALL NOT COVER OR ENCLOSE BELL ENDS, JOINT BOLTS OR GLANDS



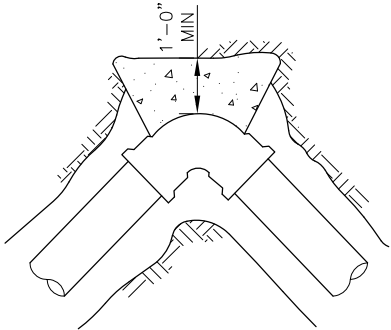
UNBALANCED CROSS



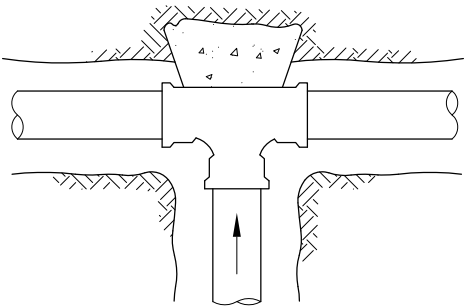
CROSS WITH PLUG



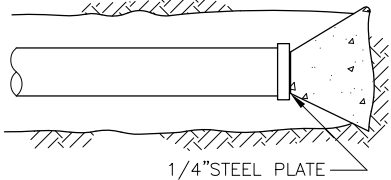
PLUGGED TEE



HORIZONTAL BEND



TEE



PIPE & CAP

| THRUST BLOCK AREA IN SQUARE FEET (SEE STD PLAN NO 331b) | | | | | | | | | |
|---|---------|----------|------|------------------------------|------|------------------------|--------------|------|------------------------|
| PIPE SIZE | SOIL | | | FIRM SILT OR FIRM SILTY SAND | | | COMPACT SAND | | |
| | FITTING | 90° BEND | TEE | 90° BEND | TEE | 11 1/4" & 22 1/2" BEND | 90° BEND | TEE | 11 1/4" & 22 1/2" BEND |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |
| 4" | | 7.0 | 4.2 | 1.7 | 2.9 | 2.1 | 1.0 | 2.2 | 1.6 |
| 6" | | 13.3 | 9.4 | 3.8 | 6.7 | 4.7 | 1.9 | 5.0 | 3.5 |
| 8" | | 23.3 | 16.7 | 6.7 | 11.7 | 8.4 | 3.4 | 8.8 | 6.3 |
| 12" | | 53.0 | 37.5 | 15.0 | 26.5 | 18.8 | 7.5 | 20.0 | 14.0 |

AREAS CALCULATED ON 300 PSI TEST PRESSURE AND 3'-0" MIN COVER OVER WATERMAIN

ECOLOGY BLOCKS, PER STD PLAN NO 460, MAY BE USED IN LIEU OF POURED-IN-PLACE BLOCKING FOR FITTINGS IN SHADED PORTION OF TABLE

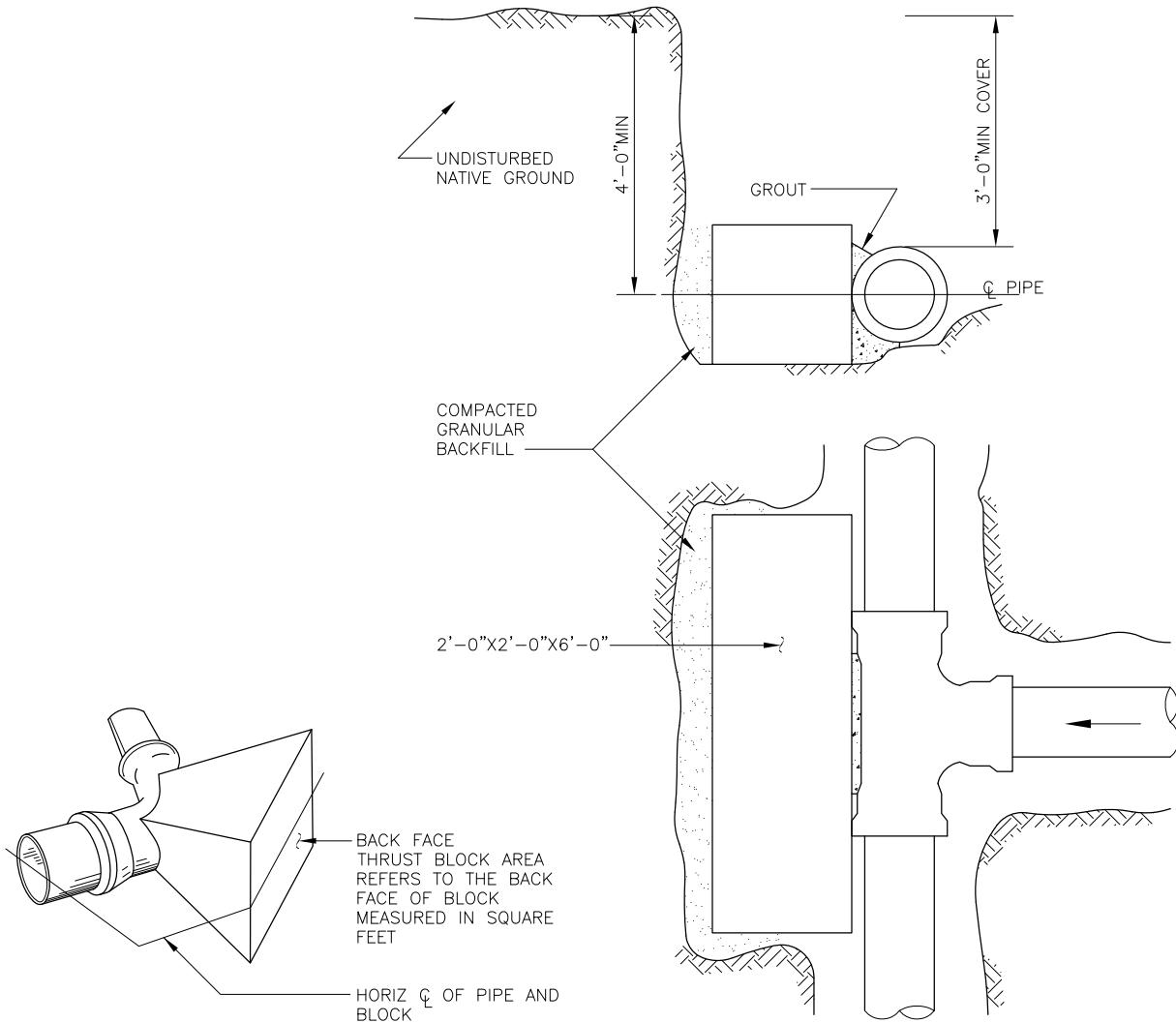
FOR NOTES SEE STD PLAN NO 331b

REF STD SPEC SEC 7-11

NO SCALE

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

WATERMAIN THRUST BLOCKING
HORIZONTAL FITTINGS



ECOLOGY BLOCK DETAIL
NO SCALE

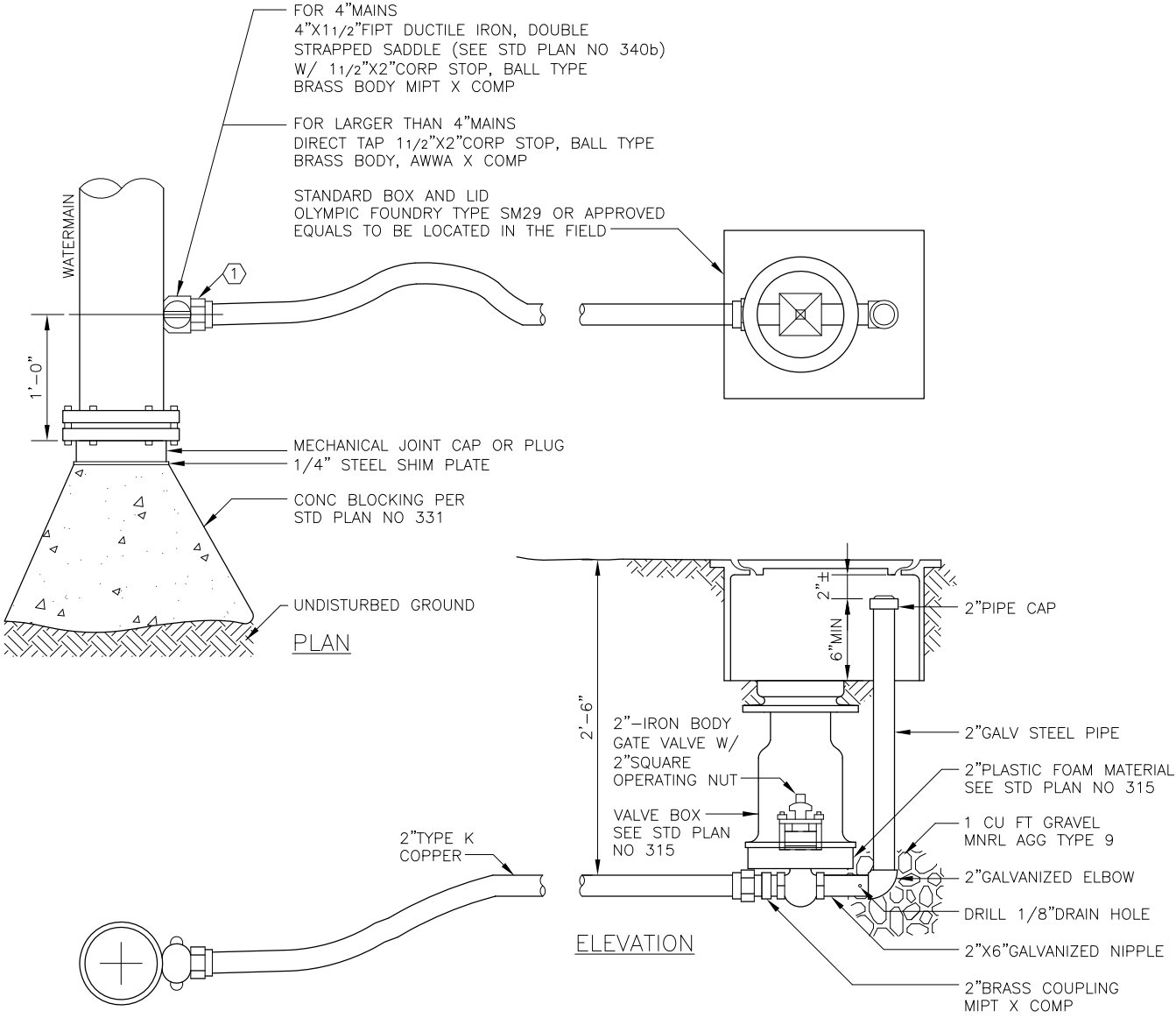
NOTES:

1. LOCATION AND SIZE OF BLOCKING FOR PIPE LARGER THAN 12" DIAMETER AND FOR SOIL TYPES DIFFERENT THAN SHOWN SHALL BE DETERMINED BY THE ENGINEER UNLESS SPECIFIED OTHERWISE IN THE PROJECT MANUAL
2. ALL BLOCKING FOR HORIZONTAL FITTINGS (POURED IN PLACE) SHALL BEAR AGAINST UNDISTURBED NATIVE GROUND
3. 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
4. ALL BLOCKING TO BE CONCRETE CL 5 (11/2)
5. BLOCKING AGAINST FITTINGS SHALL BEAR AGAINST THE GREATEST FITTING SURFACE AREA POSSIBLE, BUT SHALL NOT COVER OR ENCLOSE BELL ENDS, JOINT BOLTS OR GLANDS
6. ALL HORIZONTAL BLOCKING THRUST AREAS SHALL BE CENTERED ON PIPE
7. 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
8. TEMPORARY BLOCKING, IF USED, SHALL BE APPROVED BY ENGINEER

REF STD SPEC SEC 7-11

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

WATERMAIN THRUST BLOCKING
HORIZONTAL FITTINGS

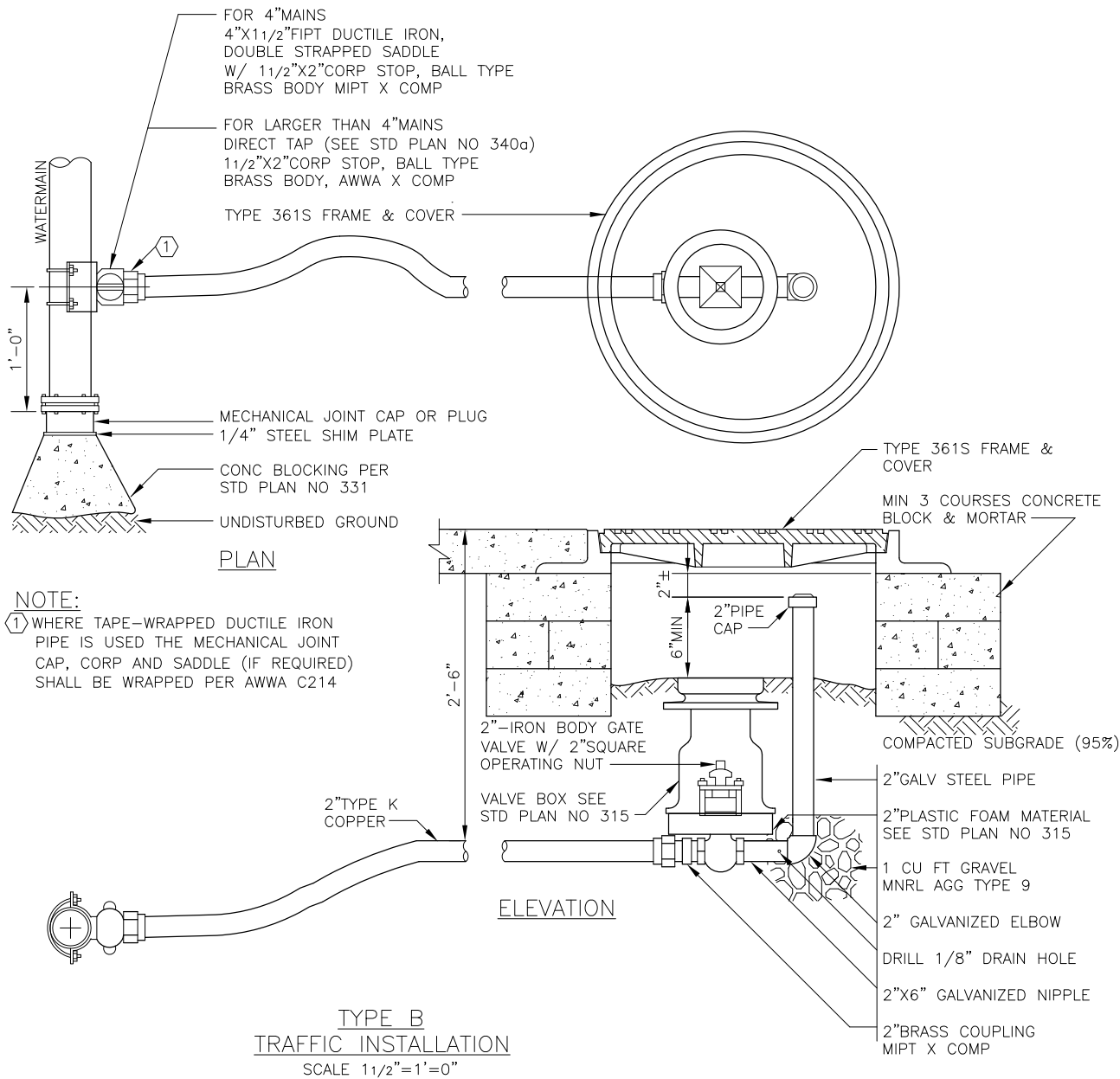


TYPE A
NON-TRAFFIC INSTALLATION
SCALE 1 1/2"=1'-0"

FOR LEGEND AND NOTES SEE STD PLAN NO 340b
REF STD SPEC SEC 7-11 & 9-30

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

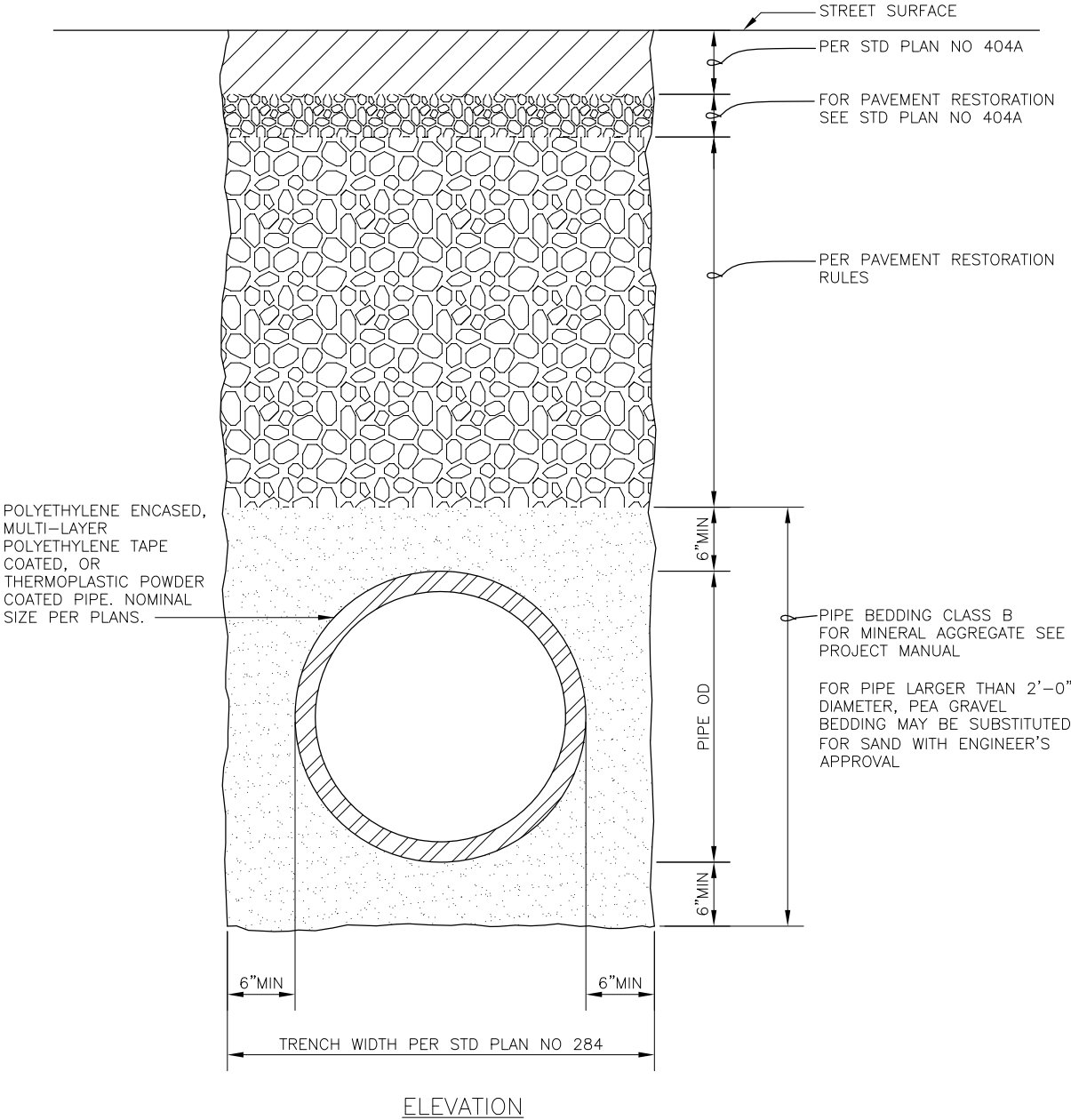
2" BLOW OFF DETAIL



REF STD SPEC SEC 7-11 & 9-30

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

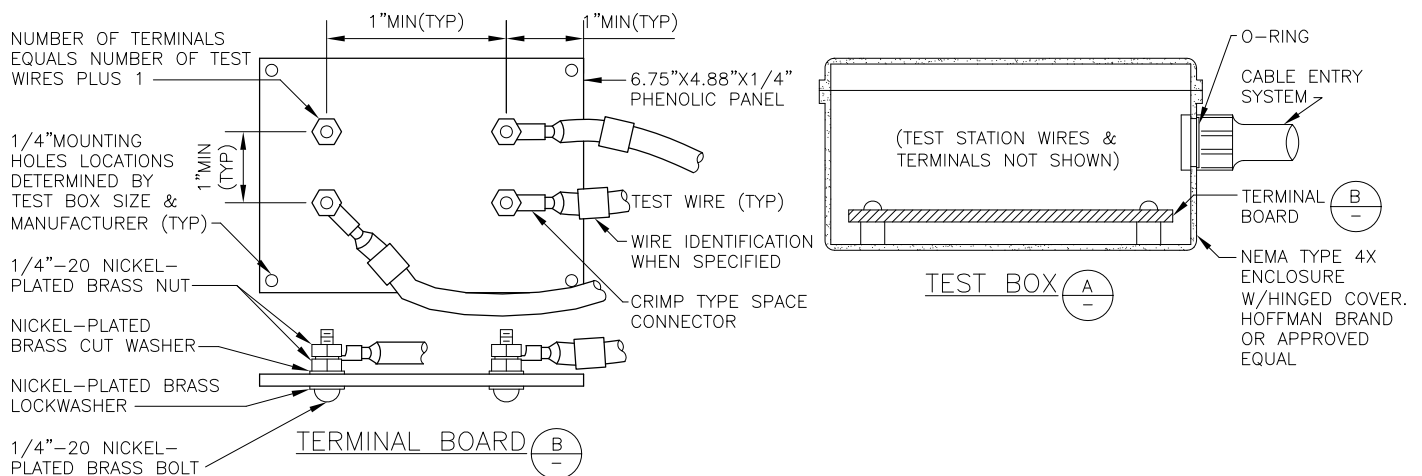
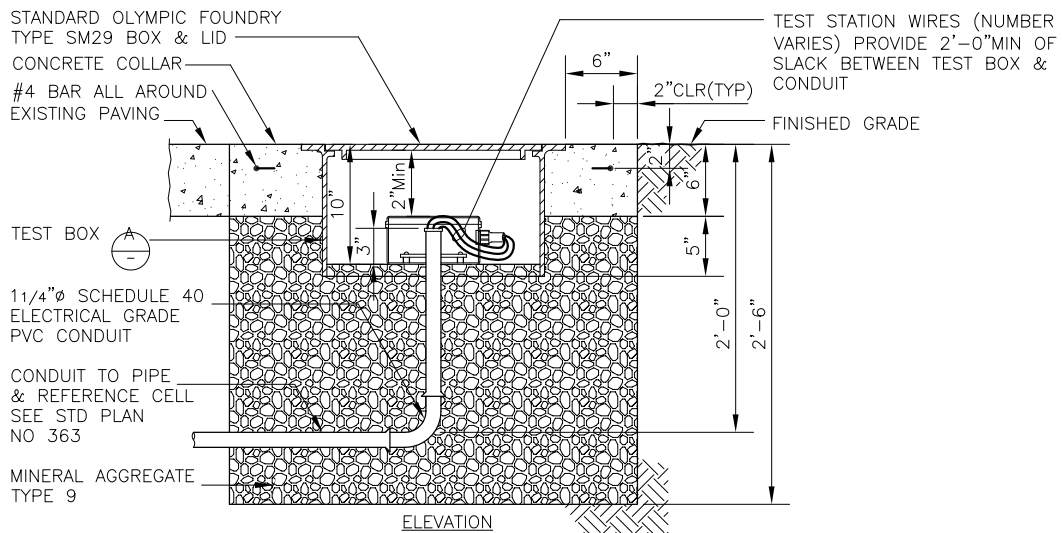
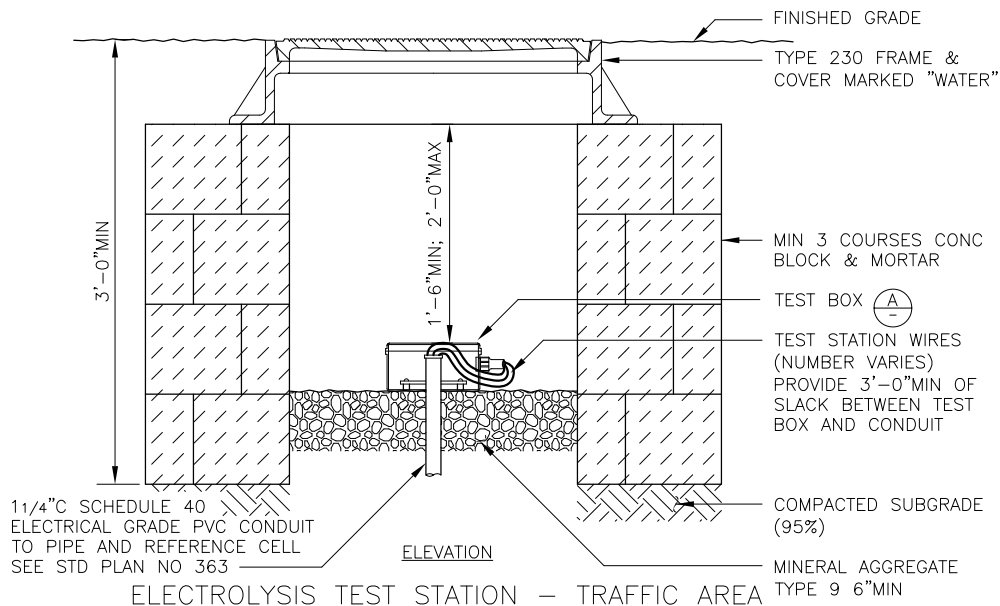
2" BLOW OFF DETAIL



REF STD SPEC SEC 7-10

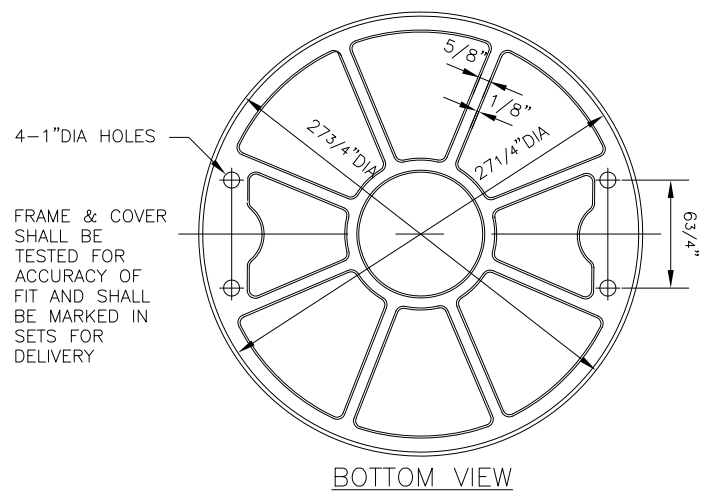
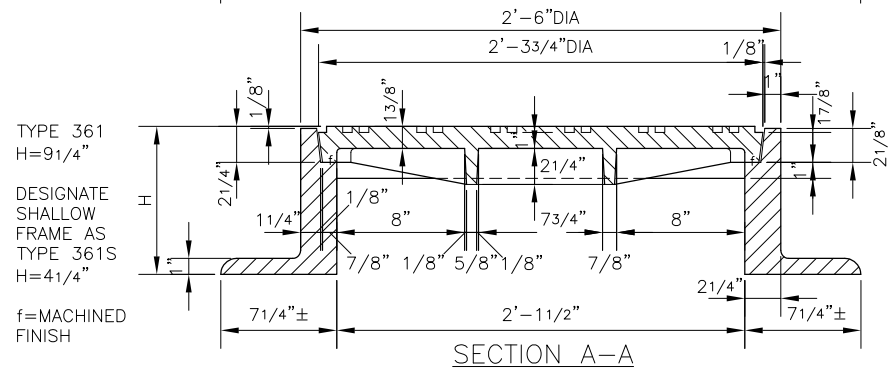
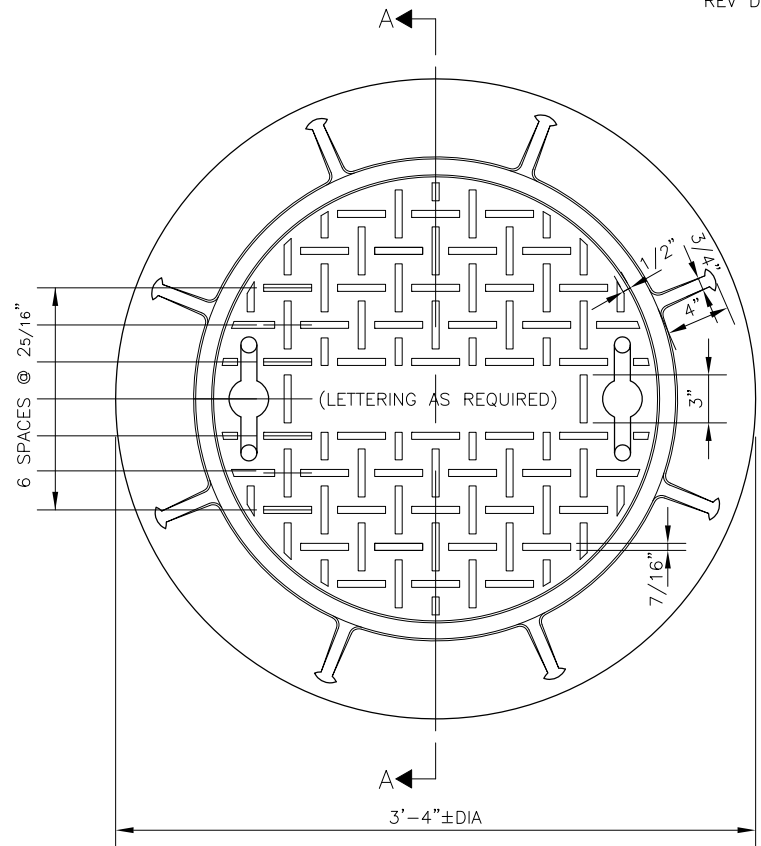
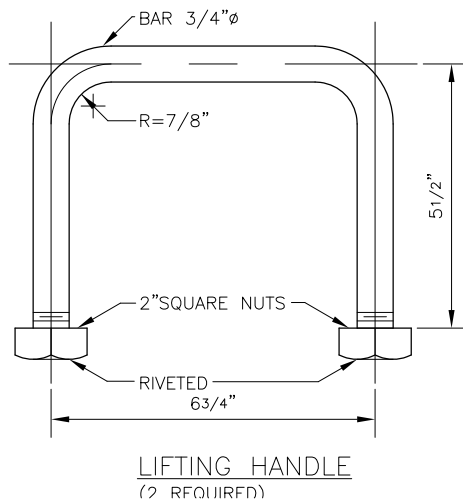
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

WATERMAIN PIPE BEDDING W/
PROTECTIVE COATING OR
POLYETHYLENE ENCASEMENT



REF STD SPEC SEC 7-11.3(15)c, 9-30.7 & 9-30.11

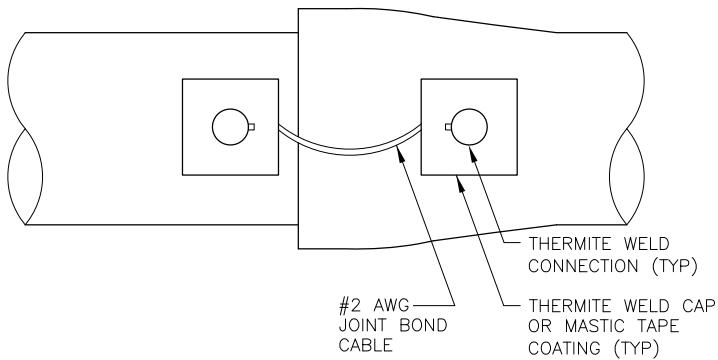
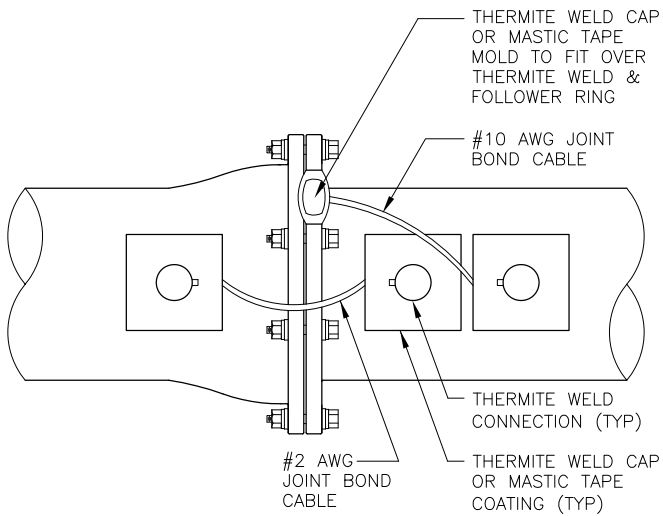
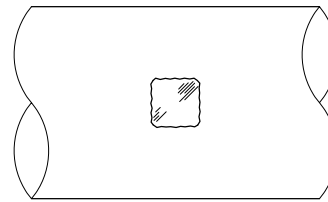
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENTWATERMAIN ELECTROLYSIS
TEST STATION



REF STD SPEC SEC 7-12

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

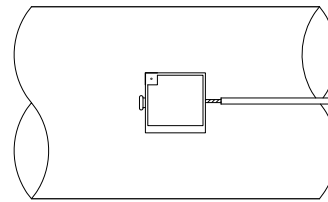
TYPE 361 VALVE CHAMBER
FRAME & COVER

SLIP JOINT BOND CONNECTIONMECHANICAL JOINT BOND CONNECTION

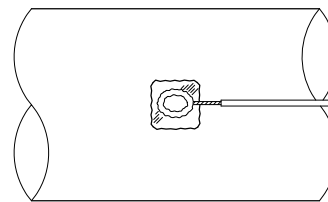
1. REMOVE PIPE COATING TO BRIGHT & CLEAN METAL



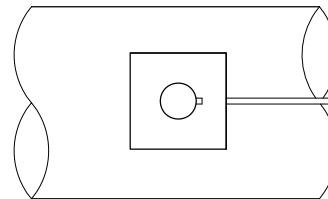
2. STRIP INSULATION FROM WIRE, INSTALL ADAPTER SLEEVE



3. HOLD MOLD FIRMLY WITH OPENING AWAY FROM OPERATOR AND IGNITE



4. REMOVE SLAG AND ALLOW TO COOL



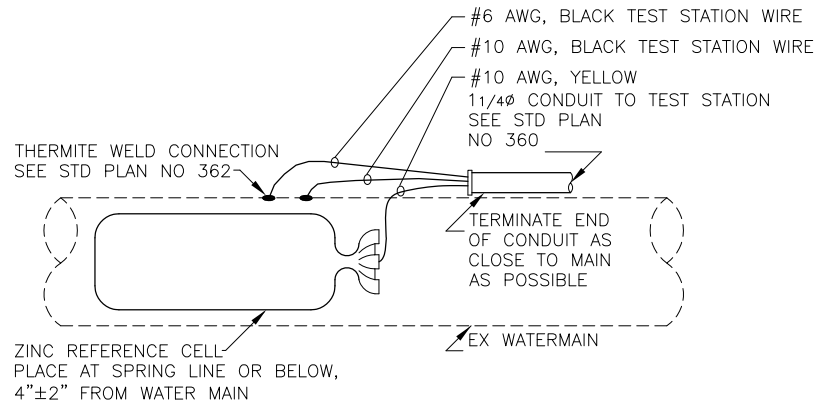
5. COVER ALL BARE METAL AREAS WITH APPROVED COATING

THERMITE WELD CONNECTION

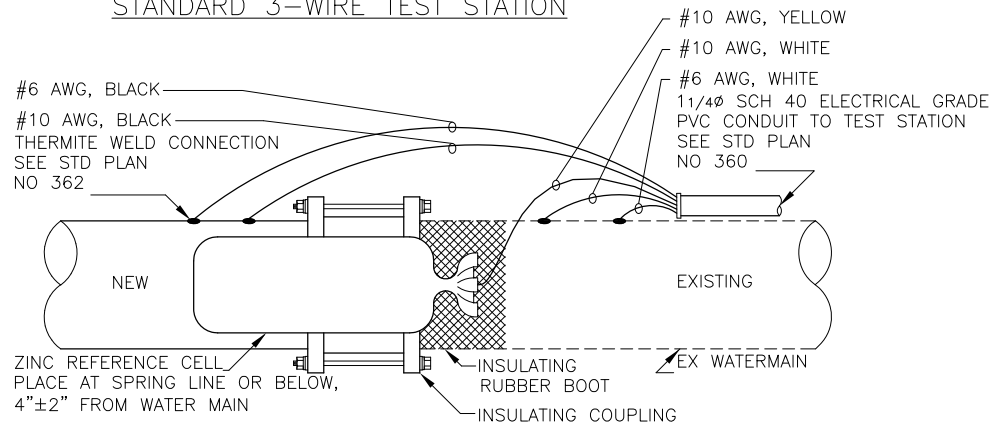
REF STD SPEC SEC 7-11 & 9-30

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

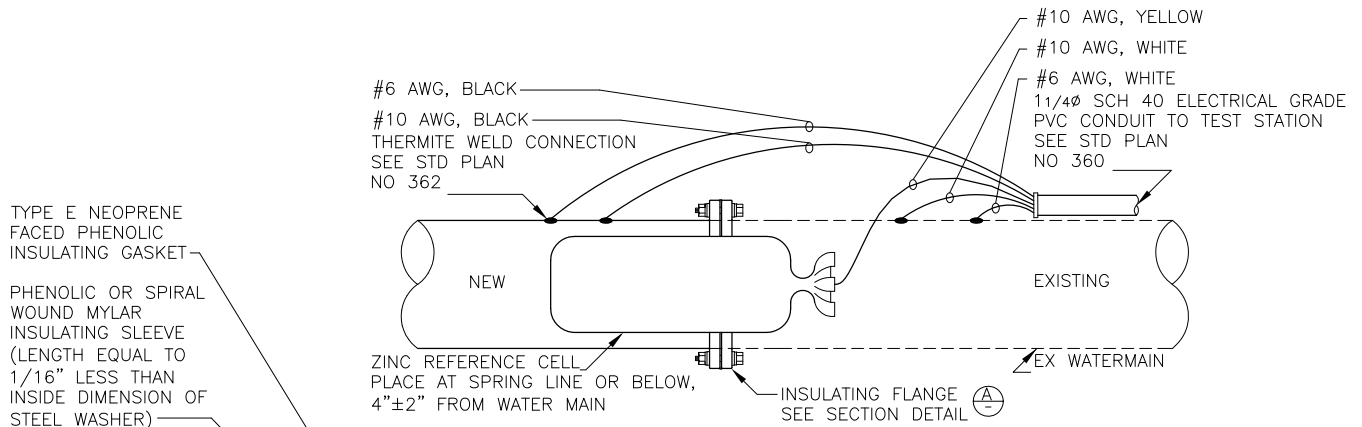
THERMITE WELD DETAIL &
JOINT BONDING FOR DIP
WATERMAINS



STANDARD 3-WIRE TEST STATION



INSULATING COUPLING 5-WIRE TEST STATION



INSULATING FLANGE 5-WIRE TEST STATION

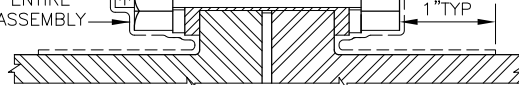
TYPE E NEOPRENE
FACED PHENOLIC
INSULATING GASKET

PHENOLIC OR SPIRAL
WOUND MYLAR
INSULATING SLEEVE
(LENGTH EQUAL TO
1/16" LESS THAN
INSIDE DIMENSION OF
STEEL WASHER)

PHENOLIC INSULATING
WASHER

STEEL WASHER

PETROLATUM TAPE
ENCLOSE ENTIRE
FLANGE ASSEMBLY

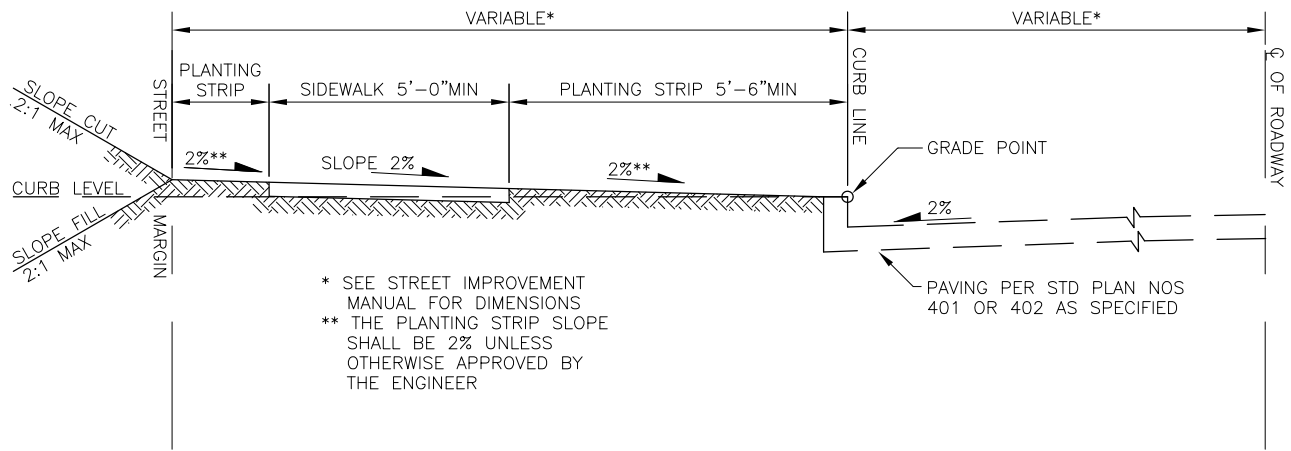


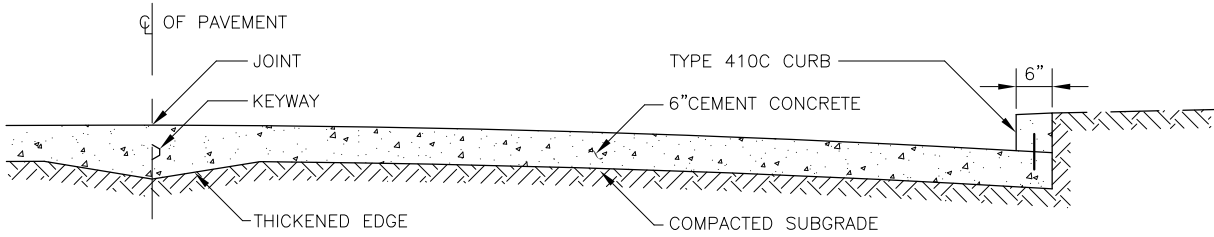
INSULATING FLANGE SECTION DETAIL

REF STD SPEC SEC 7-11.3(15)

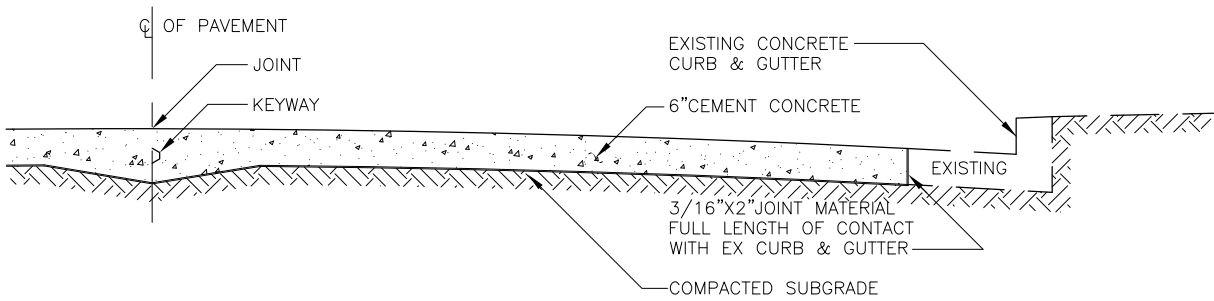
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

ELECTROLYSIS TEST STATION
CABLE INSTALLATION DETAILS

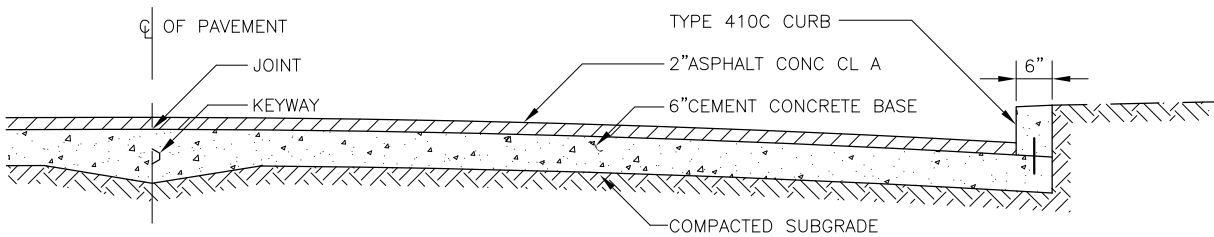




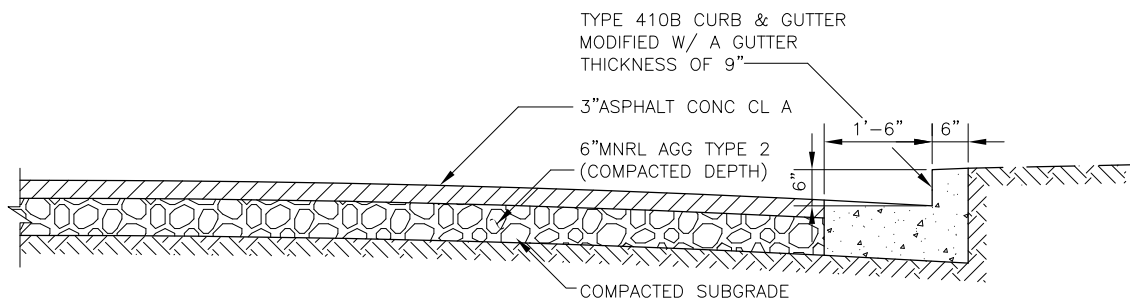
401A-CEMENT CONCRETE PAVEMENT WITH INTEGRAL CURB



401B-CEMENT CONCRETE PAVEMENT WITH EXISTING CURB & GUTTER



401C-ASPHALT CONCRETE ON CEMENT CONCRETE BASE



401D-ASPHALT CONCRETE OVER CRUSHED ROCK BASE

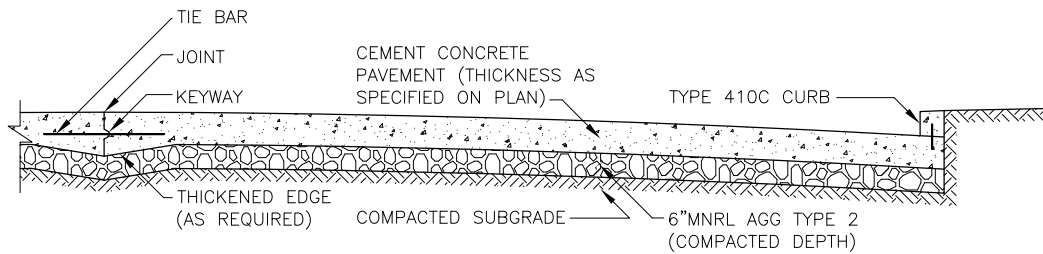
NOTE:

CONC CL 6 (1 1/2) UNLESS
OTHERWISE SPECIFIED ON PLAN

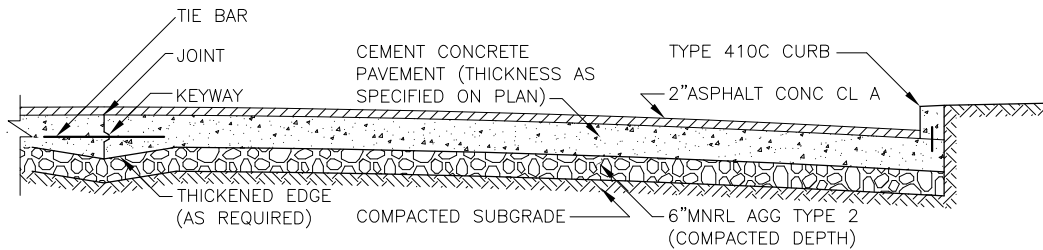
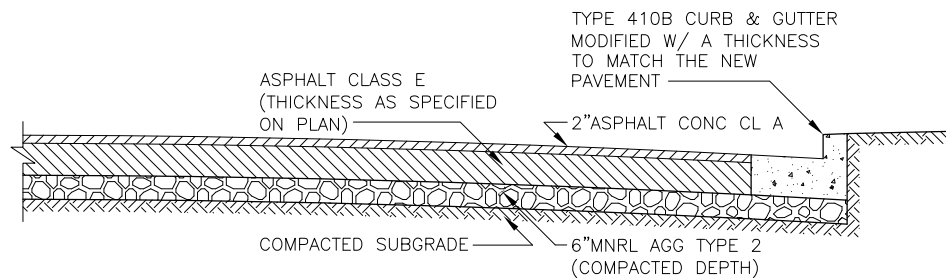
REF STD SPEC SEC 5-04, 5-05 & 8-04

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

RESIDENTIAL PAVEMENT
SECTIONS



402A-CEMENT CONCRETE PAVEMENT ON CRUSHED ROCK

402B-ASPHALT CONCRETE ON CEMENT CONCRETE
ON CRUSHED ROCK

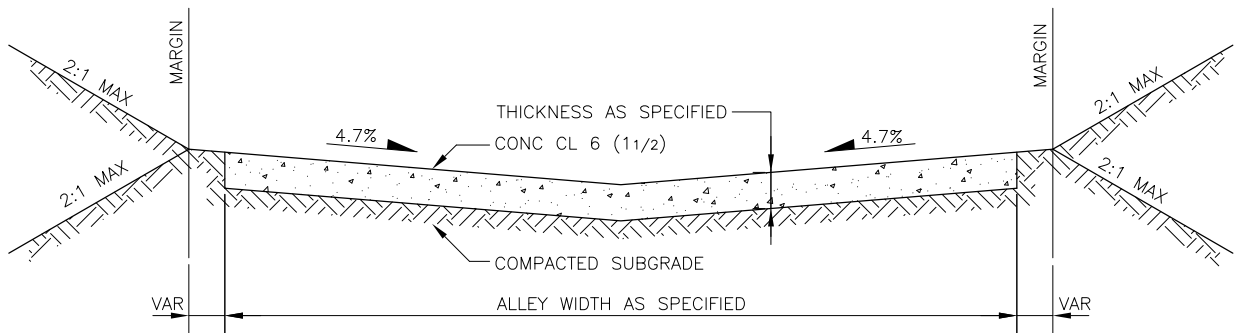
401D-ASPHALT CONCRETE ON CRUSHED ROCK BASE

NOTES:

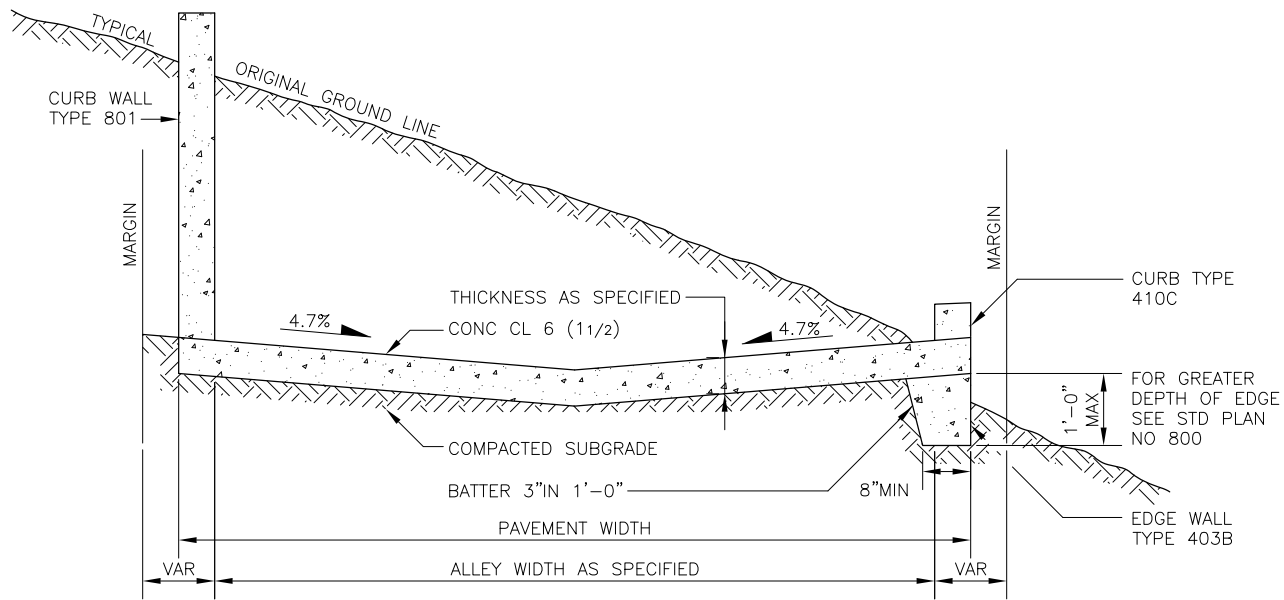
1. PAVEMENT WIDTH AND THICKNESS AS SPECIFIED ON PLAN
2. CONC CL 6.5 (1 1/2) UNLESS OTHERWISE SPECIFIED ON PLAN
3. TIE BARS AND DOWELL BARS ARE REQUIRED FOR CEMENT CONCRETE PAVEMENT AND BASE (SEE STD PLAN NO 405)

REF STD SPEC SEC 5-04, 5-05 & 8-04

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENTARTERIAL PAVEMENT
SECTIONS



403A-CEMENT CONCRETE ALLEY PAVEMENT



CEMENT CONCRETE ALLEY PAVEMENT
403B-FOR SHALLOW EMBANKMENT AREA

NOTE:
WHEN ALLEY PAVEMENT IS 18'-0" OR WIDER PLACE
CONTRACTION JOINT ALONG CENTERLINE OF ALLEY

REF STD SPEC SEC 5-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

CEMENT CONCRETE ALLEY
PAVEMENTS

HALF SECTION

RIGID PAVEMENT WITH
ASPHALT CONCRETE
SURFACE

REMOVE LOOSENED
ASPHALT
EXISTING ASPHALT
PAVEMENT

EXISTING RIGID BASE

TRIM VERTICALLY

COMPACTED SUBGRADE

MIN PAY WIDTH
PAVEMENT REMOVED & RESTORATION**

ASPHALT**
CONCRETE CL A
CONC CLASS 6.5
(1 1/2) HES**

12"

HALF SECTION

CEMENT CONCRETE
PAVEMENT

CUT SHALL BE VERTICAL
AND IN STRAIGHT LINES
AS DIRECTED

EXISTING CONCRETE
PAVEMENT

6" MIN

COMPACTED MINERAL
AGGREGATE TYPE 2 OR
FOR ARTERIAL AND
COMMERCIAL ACCESS
STREETS.

TRENCH WIDTH* PLUS ZONE OF INFLUENCE**

TYPICAL PATCH FOR RIGID PAVEMENT

HALF SECTION

FLEXIBLE PAVEMENT
RESTORATION FOR
RESIDENTIAL STREETS

EXISTING OIL MAT

EXISTING EARTH OR
GRANULAR BASE

COMPACTED MINERAL
AGGREGATE TYPE 2

COMPACTED
SUBGRADE

MIN PAY WIDTH FOR RESTORATION**

ASPHALT**
CONCRETE CL A

4"

6" MIN

HALF SECTION

FLEXIBLE PAVEMENT
RESTORATION FOR
ARTERIAL AND
COMMERCIAL ACCESS
STREET

EXISTING ASPHALT
CONCRETE SURFACE

EXISTING FLEXIBLE BASE

ASPHALT CL E**

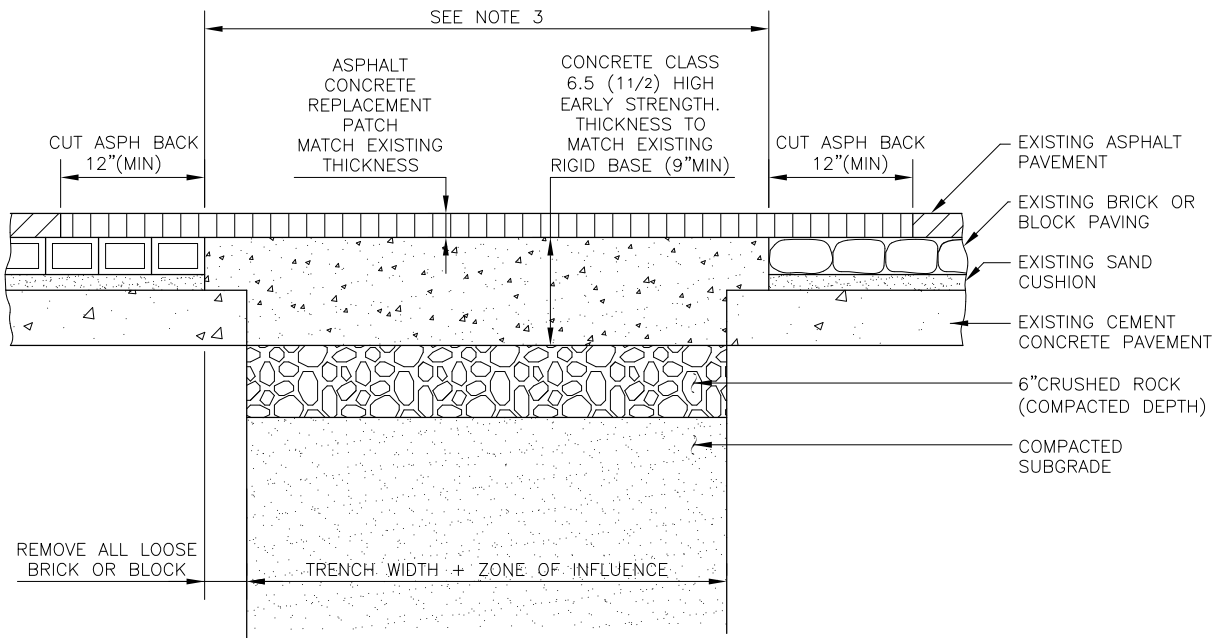
COMPACTED MINERAL
AGGREGATE TYPE 2

TRENCH WIDTH* PLUS ZONE OF INFLUENCE**

TYPICAL PATCH FOR FLEXIBLE PAVEMENT

* TRENCH WIDTH REFERS TO MAX TRENCH PAY
WIDTH AS CALLED OUT ON STD PLAN NO 284

** ACTUAL WIDTH AND DEPTH OF RESTORATION MAY BE
INCREASED TO MEET REQUIREMENTS OF "STREET
AND SIDEWALK OPENING AND RESTORATION RULES"



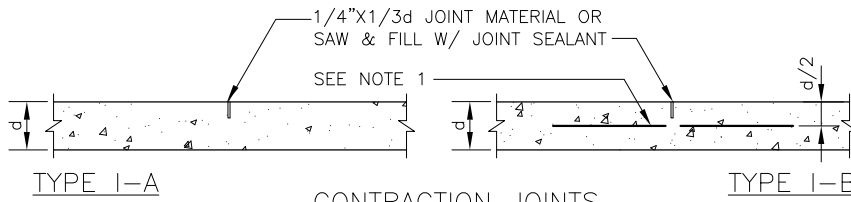
ASPHALT OVER RIGID BASE OF BRICK OR STONE BLOCK PAVEMENT

- 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 STD PLAN NO 404a, THE "STREET AND SIDEWALK PAVEMENT OPENING AND RESTORATION RULES," AND THE SPECS FOR APPLICABLE DETAILS & REQUIREMENTS

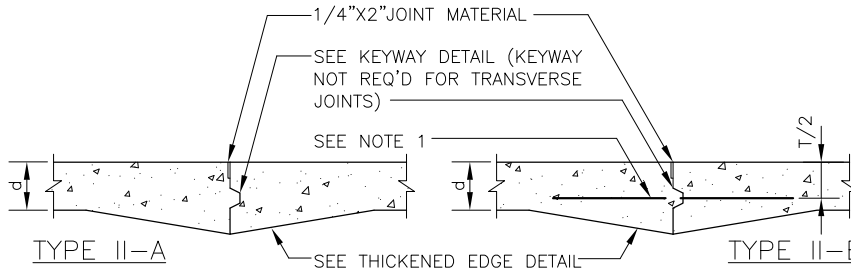
REF STD SPEC SEC 2-02

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

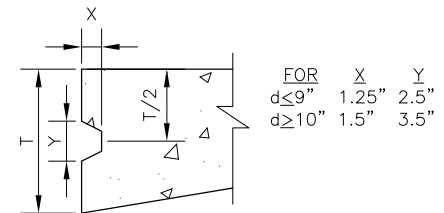
PAVEMENT PATCHING



CONTRACTION JOINTS

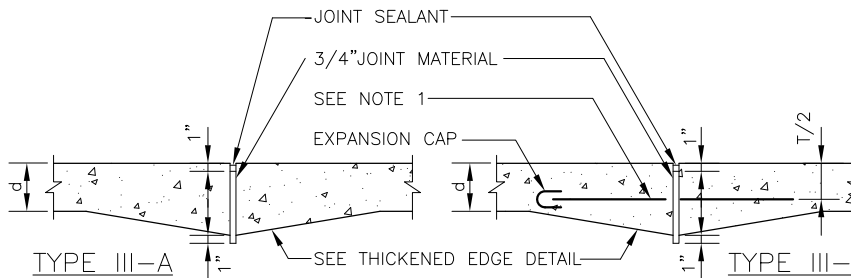


CONSTRUCTION JOINTS

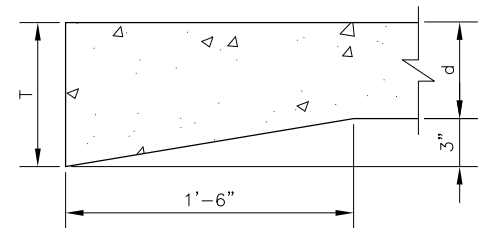


KEYWAY DETAIL

FOR JOINTS WITH THICKENED EDGE $T=d+3"$
OTHERWISE $T=d$

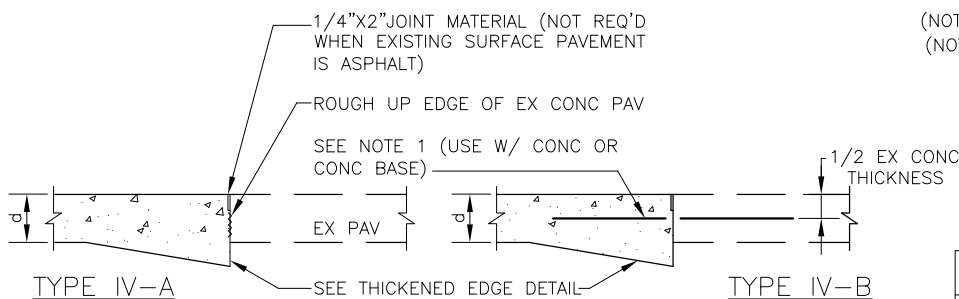


THROUGH JOINTS



THICKENED EDGE DETAIL

(NOT NEEDED FOR TYPE A JOINTS WIDTH $d \geq 10"$)
(NOT NEEDED FOR TYPE B JOINTS WIDTH $d \geq 9"$)



NEW TO OLD JOINTS

| PAVEMENT THICKNESS | DOWEL BAR SIZE |
|--------------------|-----------------|
| 6" TO 8" | 1"X18" @12" |
| 9" TO 11" | 1 1/4"X18" @12" |
| 12" & OVER | 1 1/2"X18" @12" |

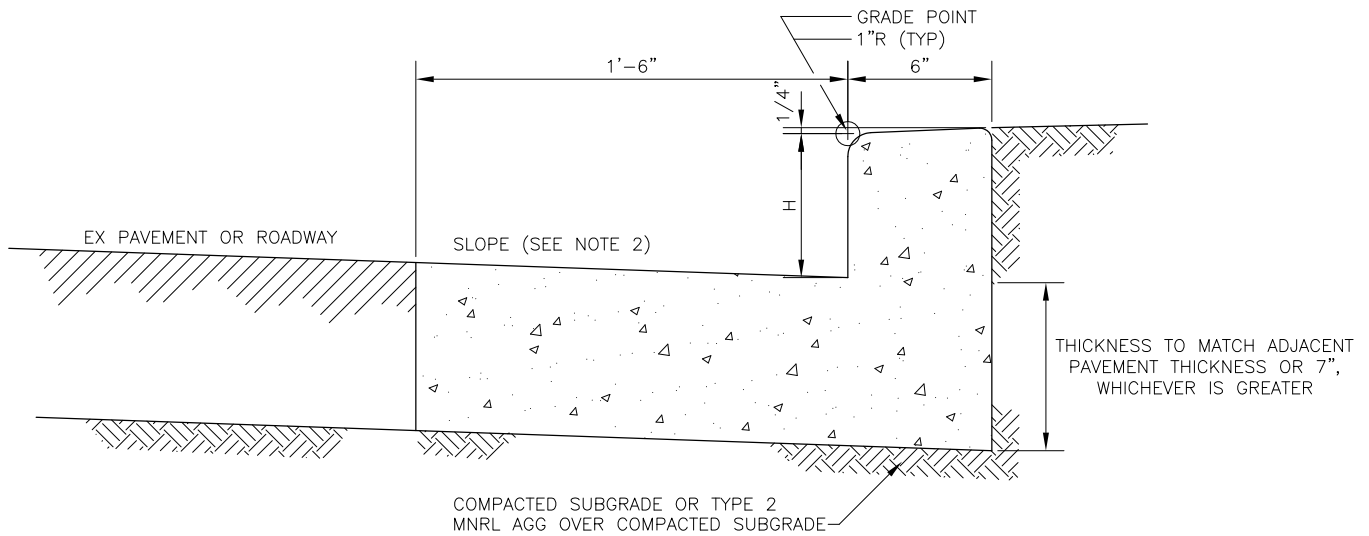
NOTES:

- WHERE REQUIRED AT LONGITUDINAL JOINTS, TIE BARS SHALL BE 5/8"X2'-6" @ 3'-0", 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
- LONGITUDINAL JOINT SPACING SHOULD NOT EXCEED 15'-6" (TO BACK OF CURB). TRANSVERSE JOINT SPACE SHALL NOT EXCEED 15'-0". THE AREA OF THE PANEL SHALL NOT EXCEED 225 SQUARE FEET
- JOINT OFFSETS AT RADIUS POINTS SHOULD BE AT LEAST 1'-6" LONG
- JOINT INTERSECTION ANGLES OF LESS THAN 60 DEGREES SHOULD BE AVOIDED
- WHEN A JOINT IS CLOSER THAN 1'-0" 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° OR NORMAL TO THE CASTING.
- WHERE POSSIBLE, LONGITUDINAL JOINTS SHOULD MATCH LANE LINES
- LONGITUDINAL JOINTS ARE TO BE CONSTRUCTION JOINTS UNLESS PAVED BY MACHINE CAPABLE OF PLACING AND FINISHING CONCRETE FOR TWO OR MORE PANEL WIDTHS (IN WHICH CASE A CONTRACTION JOINT CAN BE USED)
- DOWEL BARS SHALL NOT BE PLACED WITHIN 1'-0" OF THE EDGE OF PAVEMENT OR A PARALLEL JOINT
- AS A MINIMUM, PROJECTS MUST INCLUDE INTERSECTION JOINT LAYOUTS

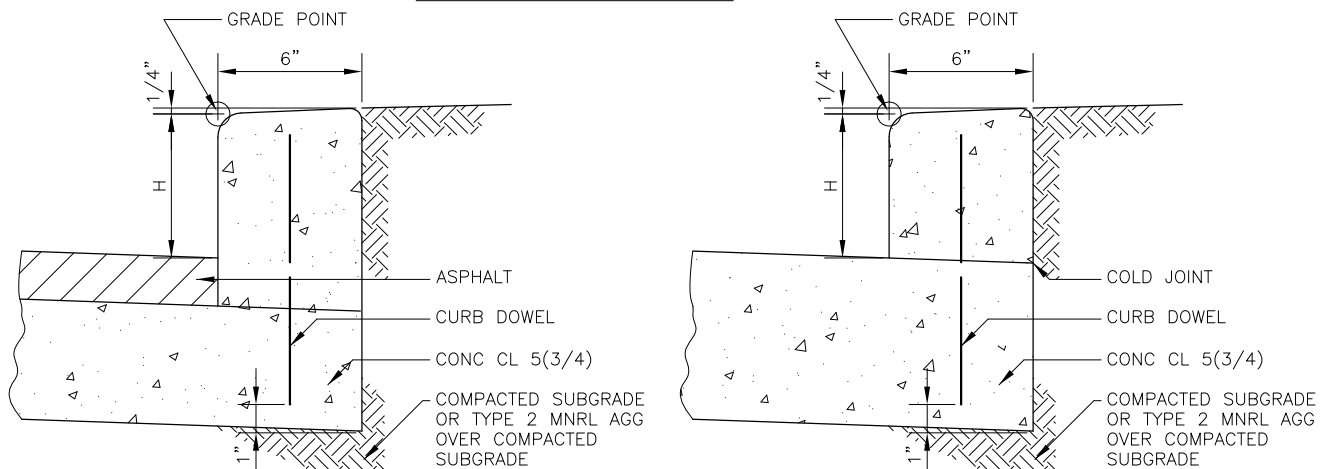
REF STD SPEC SEC 5-05

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TYPES OF JOINTS FOR
CONCRETE PAVEMENT



410B CURB & GUTTER



410C CURB

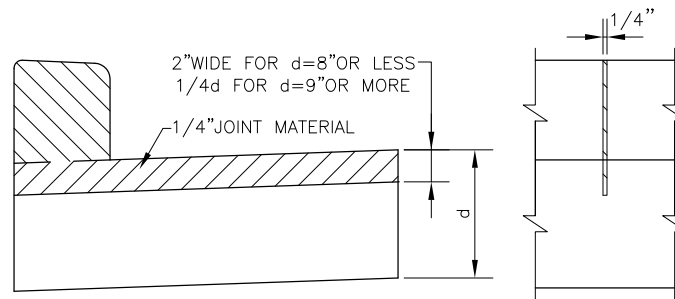
NOTES:

1. "H" SHALL BE 6" FROM FINISHED ROADWAY GRADE UNLESS OTHERWISE SPECIFIED
2. GUTTER SHALL BE SLOPED THE SAME AS ADJACENT PAVEMENT OR 2% MIN, WHICHEVER IS GREATER.
3. SEE STD PLAN NO 411 FOR CURB DOWELS

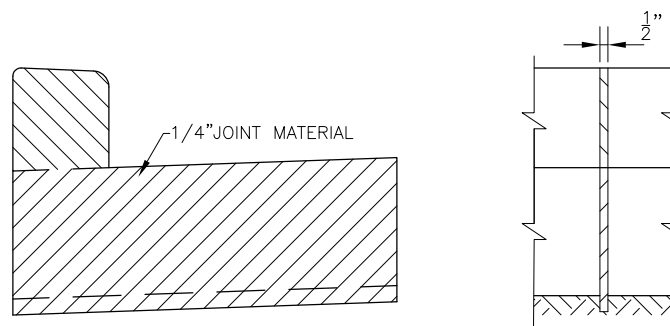
REF STD SPEC SEC 8-04

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

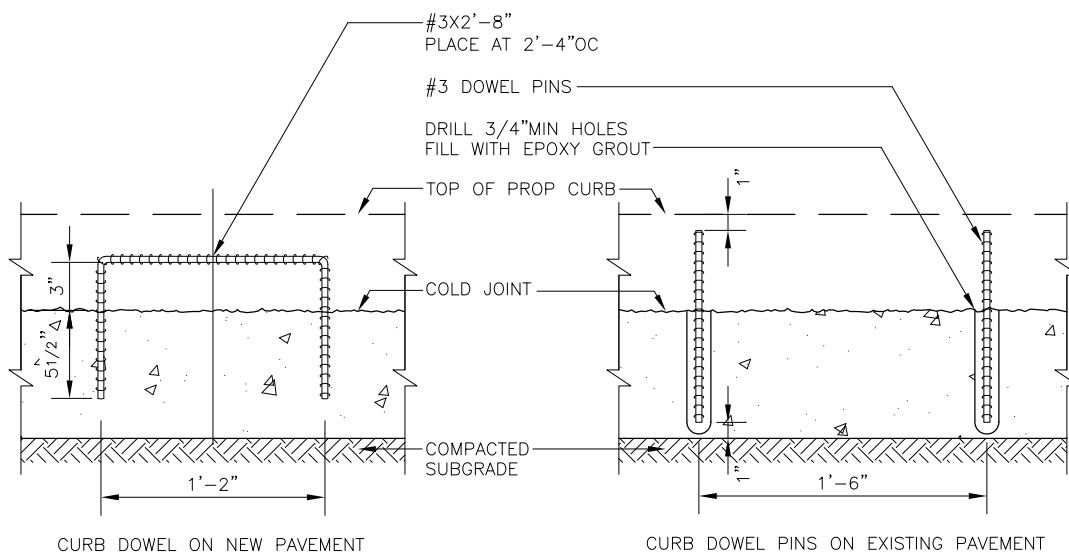
TYPE 410 CURB



CONTRACTION JOINT FOR
 CURB OR CURB & GUTTER



THROUGH JOINT FOR
 CURB OR CURB & GUTTER

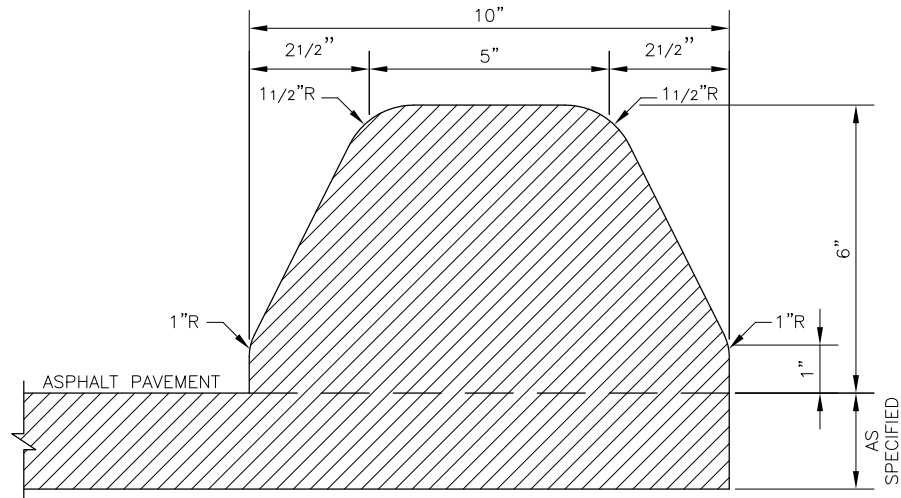


DOWELS FOR DOWELLED CURB CONSTRUCTION

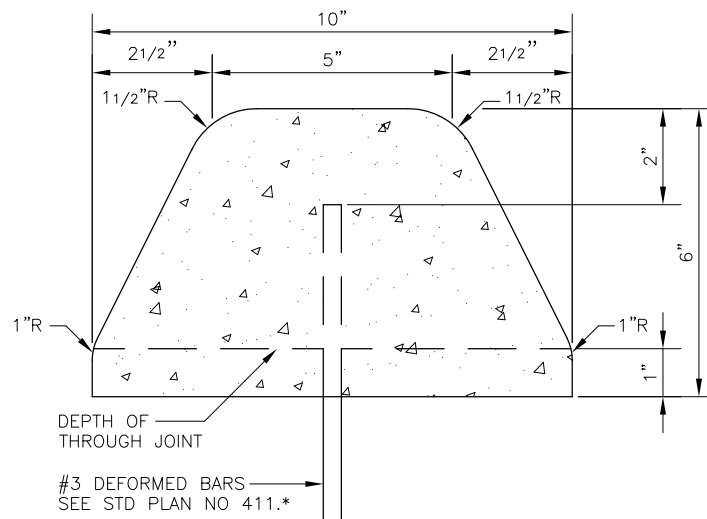
REF STD SPEC SEC 8-04

CITY OF SEATTLE
 PUBLIC UTILITIES DEPARTMENT

CURB JOINTS & DOWELS



EXTRUDED ASPHALT CONCRETE CURB



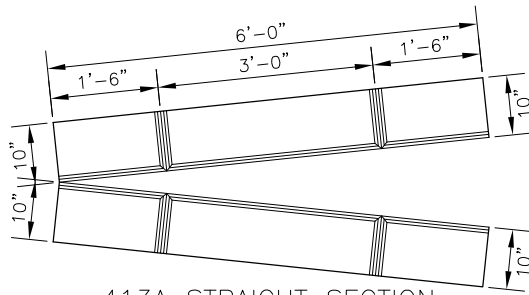
EXTRUDED CEMENT CONCRETE CURB

* ALTERNATELY, THE USE OF EPOXY BONDING AGENT,
IN PLACE OF #3 DEFORMED BARS, SHALL BE ALLOWED.
TYPE OF BONDING AGENT AND METHOD OF CONSTRUCTION
SHALL BE APPROVED BY THE ENGINEER

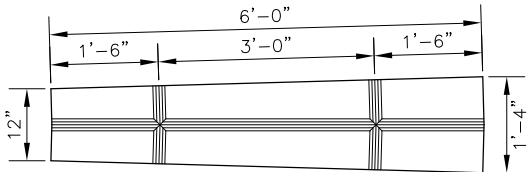
REF STD SPEC SEC 8-08

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

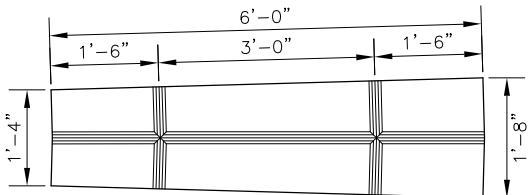
EXTRUDED CURB



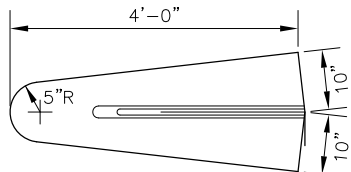
413A STRAIGHT SECTION



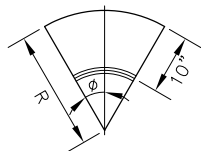
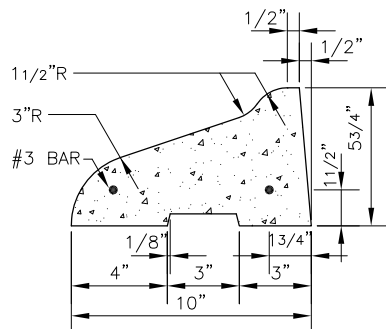
413A-1 CONNECTING DIVIDER



413A-2 CONNECTING DIVIDER

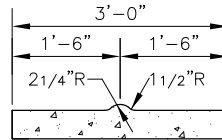
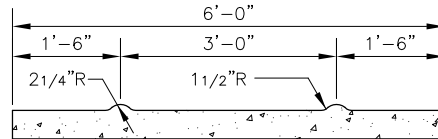
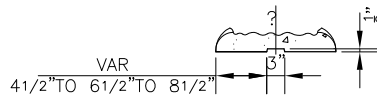


413A NOSING

413A RADIAL CURB
SEE TABLE BELOW

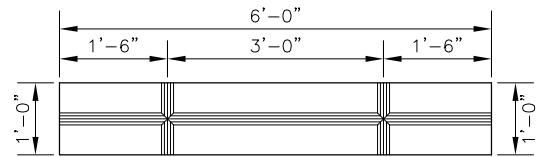
SECTION A RADIAL CURB

REF STD SPEC SEC 8-07

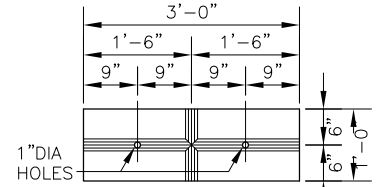
LONGITUDINAL SECTION THRU
TRANSVERSE RIBS 3'-0" SECTIONLONGITUDINAL SECTION THRU
TRANSVERSE RIBS 6'-0" SECTION

SECTION A CONNECTING DIVIDERS

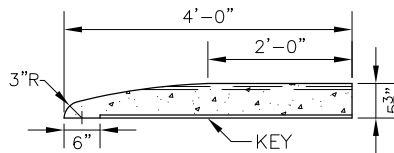
THE MAIN BODY OF THE CURB AND THE
LONGITUDINAL RIB SHALL FORM A UNIFORM
TRANSITION FROM A TYPE C SECTION TO A
TYPE A (BACK TO BACK) SECTION



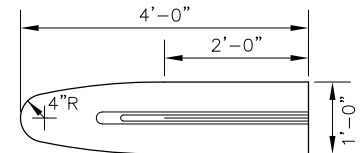
413C CURB 6'-0" SECTION



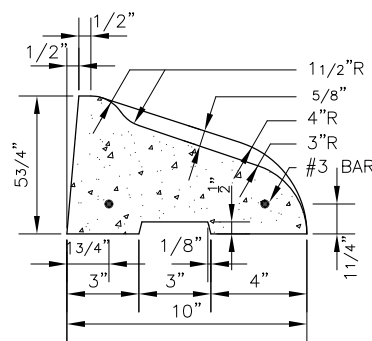
413C CURB 3'-0" SECTION



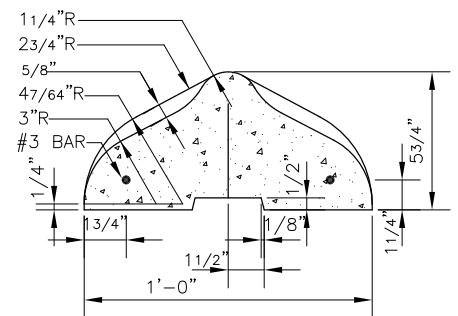
SECTION A & C NOSING



413C NOSING



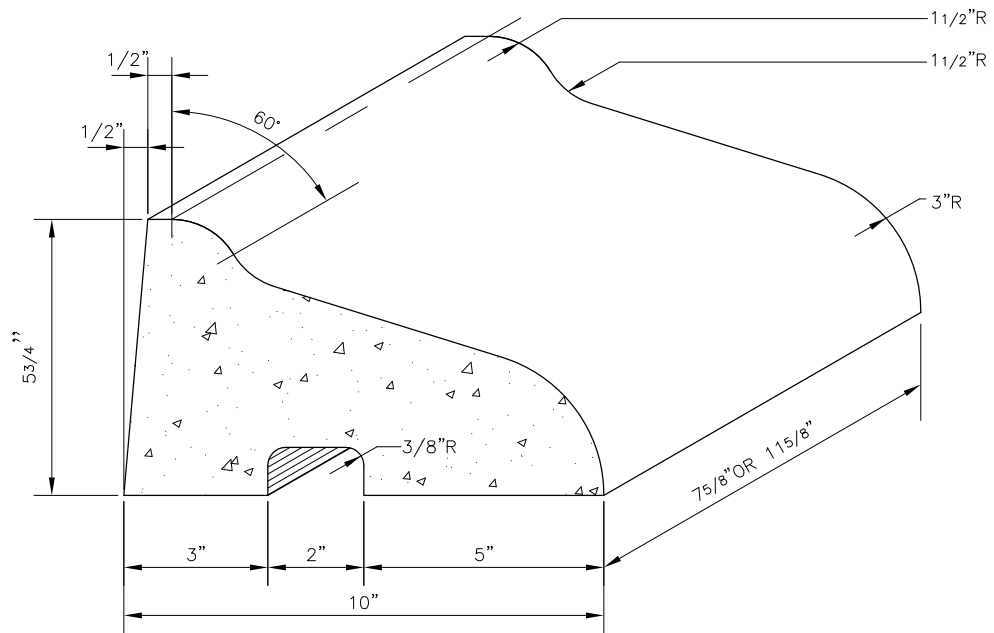
SECTION A STRAIGHT CURB



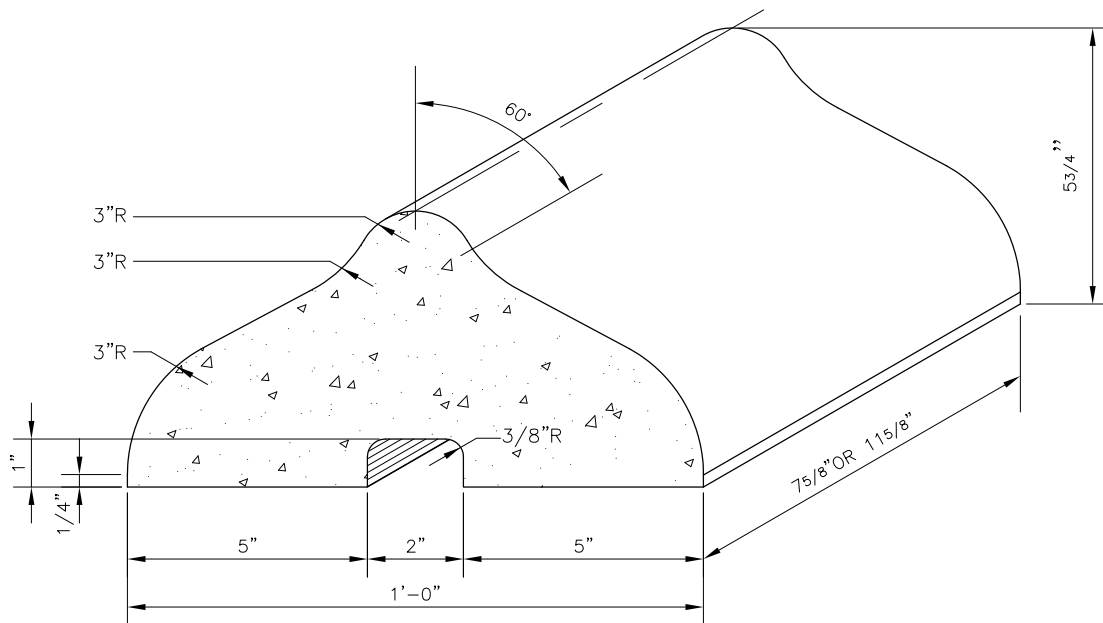
SECTION C CURB

| 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'-0" USE SEGMENTS OF STRAIGHT CURB | | |

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENTTRAFFIC CURB PRECAST
CEMENT CONCRETE



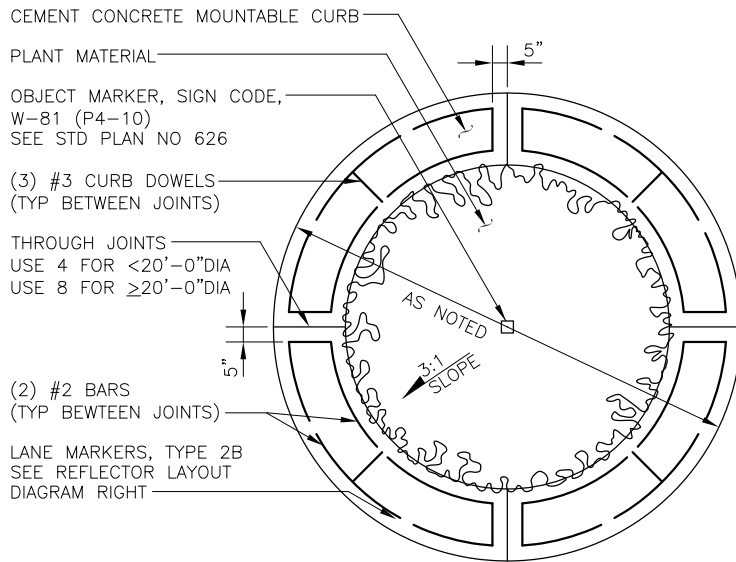
414 A BLOCK



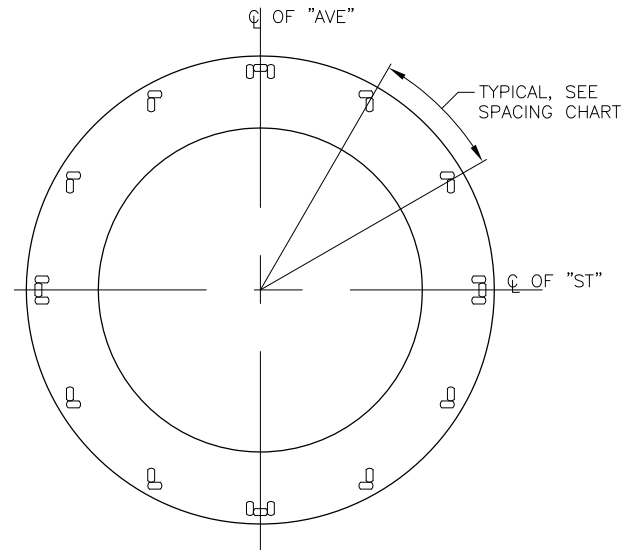
414 C BLOCK

REF STD SPEC SEC 8-07

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENTTRAFFIC CURBS BLOCK
PRECAST CEMENT CONCRETE

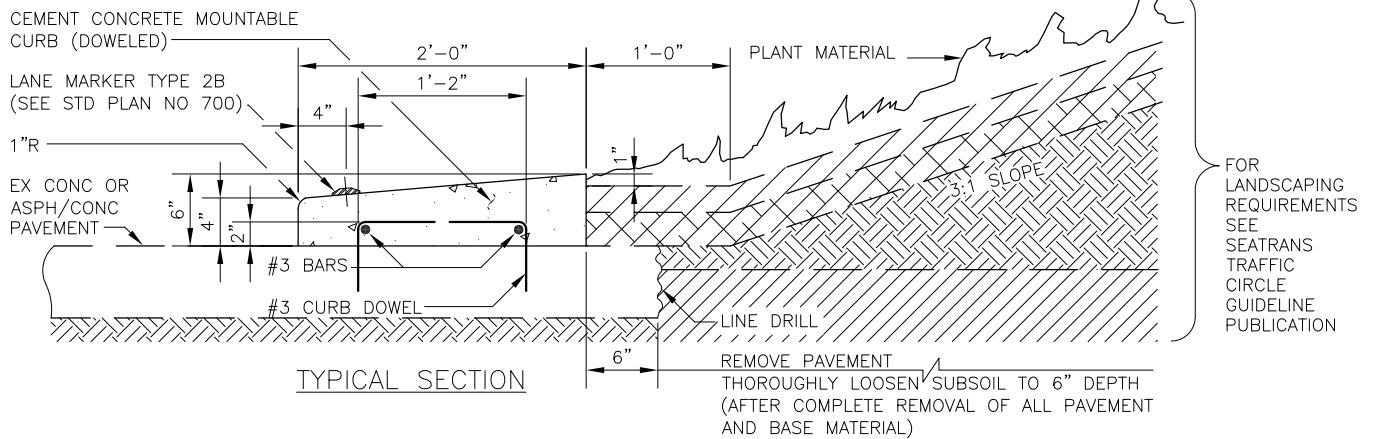


TYPICAL TRAFFIC CIRCLE

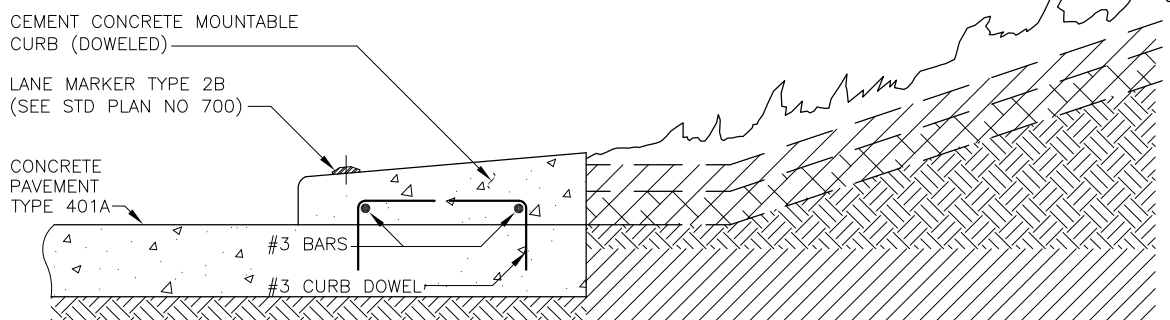
TRAFFIC CIRCLE
STIMSONITE REFLECTOR LAYOUT

| DIAMETER OF CIRCLE | DEGREE OF SPACING |
|--------------------|-------------------|
| <12'-0" | EVERY 45° |
| <20'-0" | EVERY 30° |
| >20'-0" | EVERY 22 1/2° |

(FACING VEHICLE APPROACHES)



TYPICAL SECTION



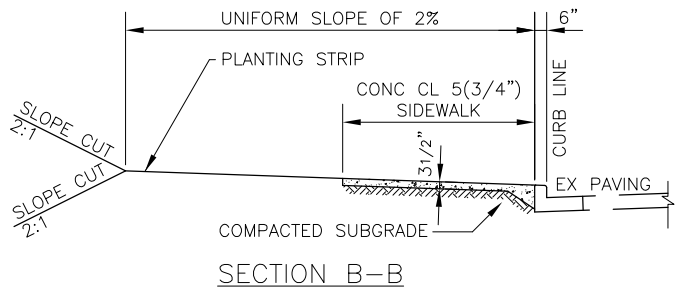
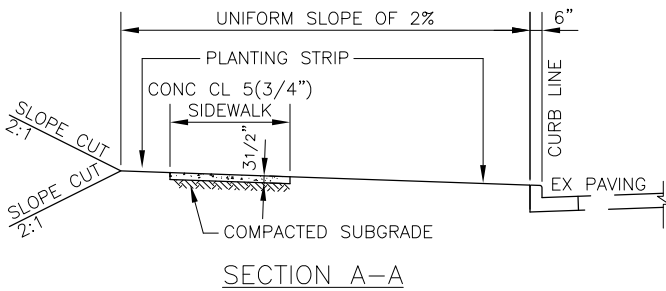
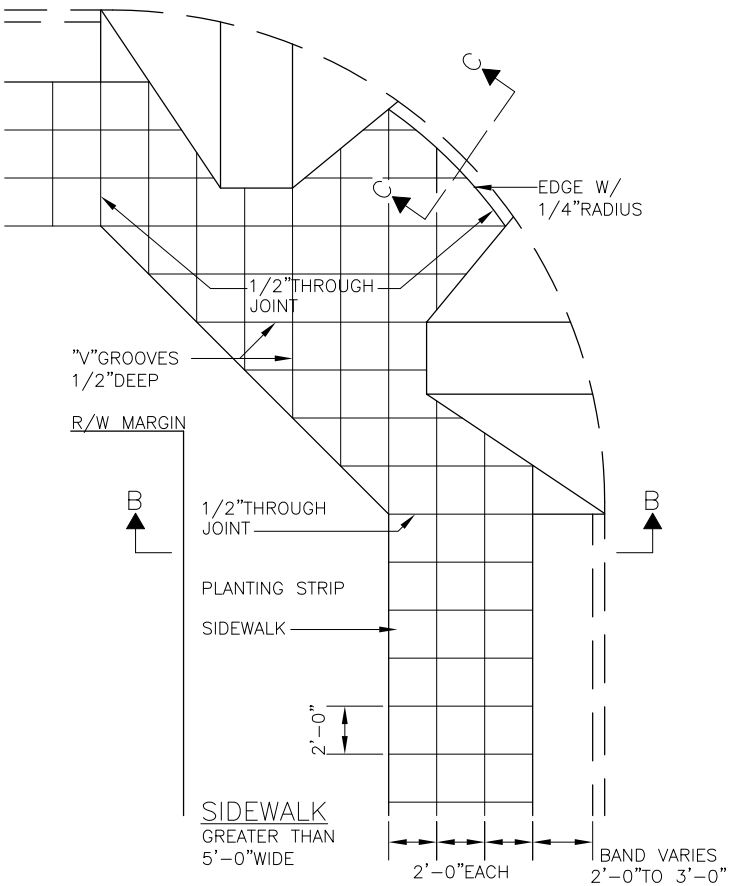
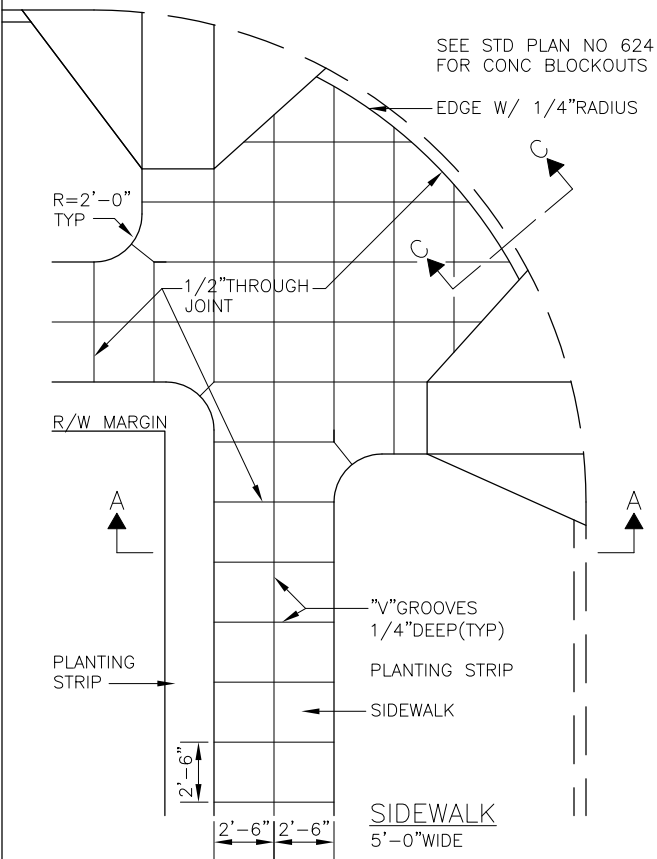
TYPICAL SECTION

SEE TYP SECTION ABOVE
FOR DIMENSIONS

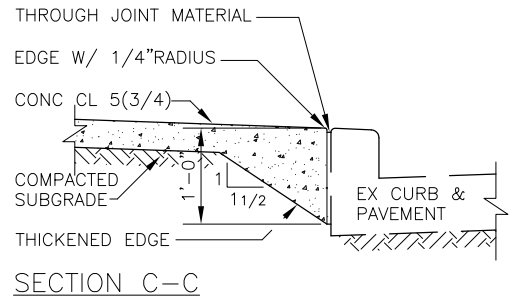
REF STD SPEC SEC 8-02 & 8-04

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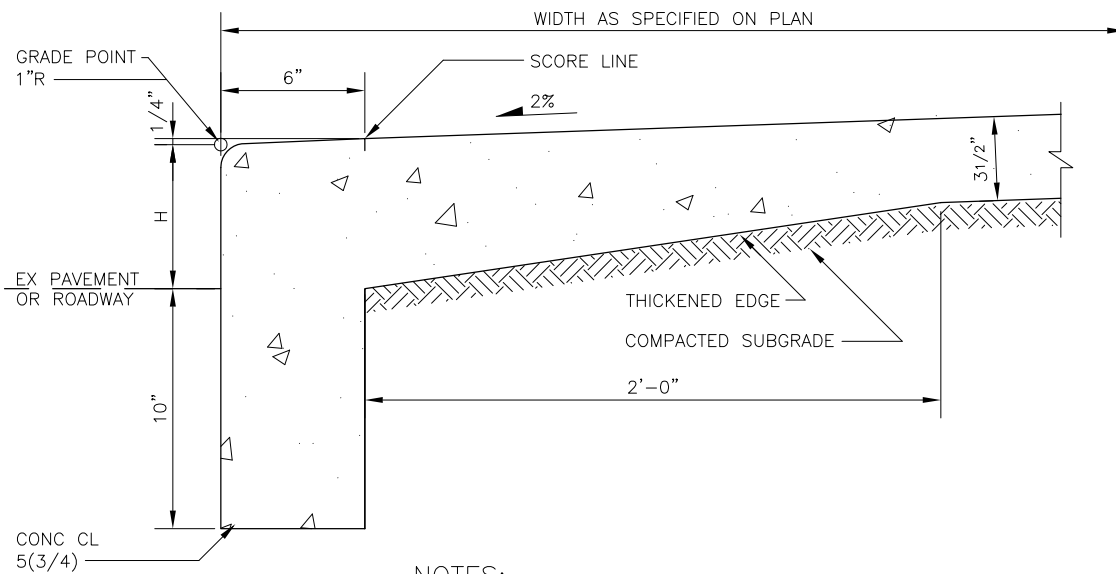
TRAFFIC CIRCLE DETAILS



- NOTES:
- 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 SEATTLE TRANSPORTATION A MINIMUM OF 2 WORKING DAYS PRIOR TO SCHEDULED WORK TO COORDINATE REMOVAL OF METER HEADS



REF STD SPEC SEC 8-14

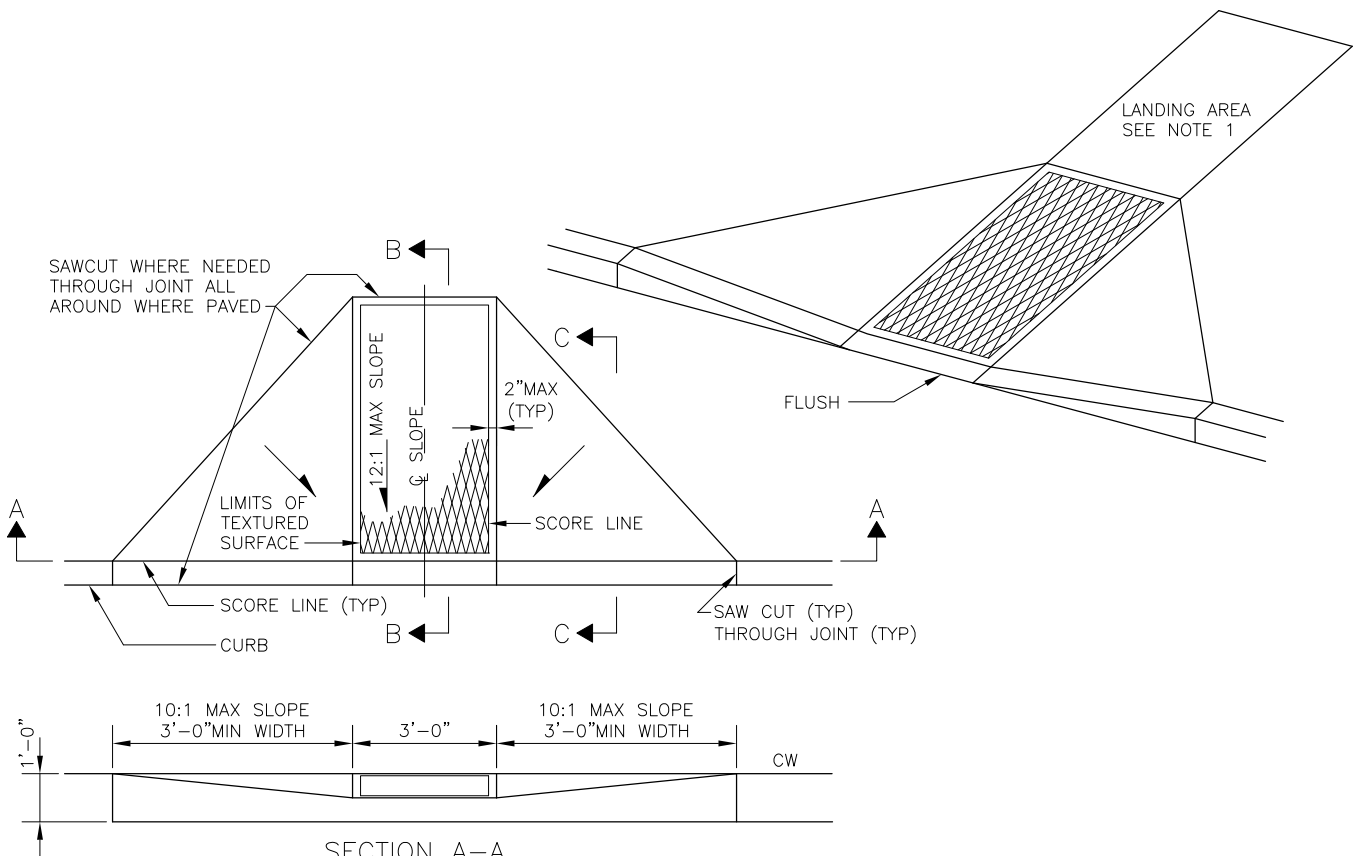
NOTES:

1. "H" SHALL BE 6" FROM FINISHED GRADE
UNLESS OTHERWISE SPECIFIED
2. VERTICAL BACKFACE OF CURB SHALL BE
FORMED AGAINST NATIVE EARTH WHERE PRACTICAL,
OTHERWISE BY BACKFORM LEFT IN PLACE

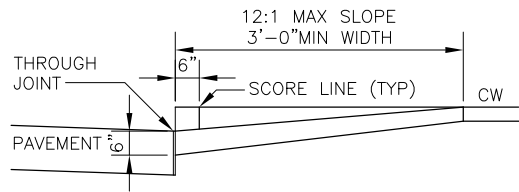
REF STD SPEC SEC 8-14

CITY OF SEATTLE
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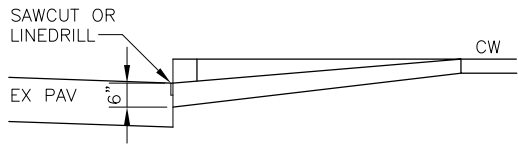
SIDEWALK WITH
MONOLITHIC CURB



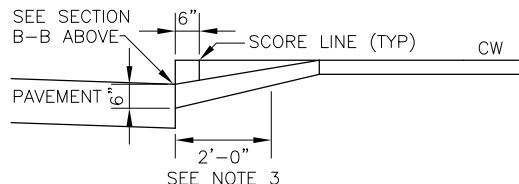
SECTION A-A



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

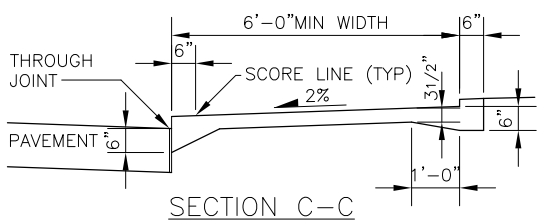
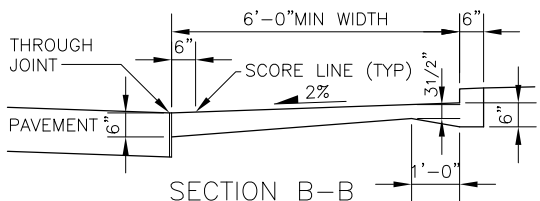
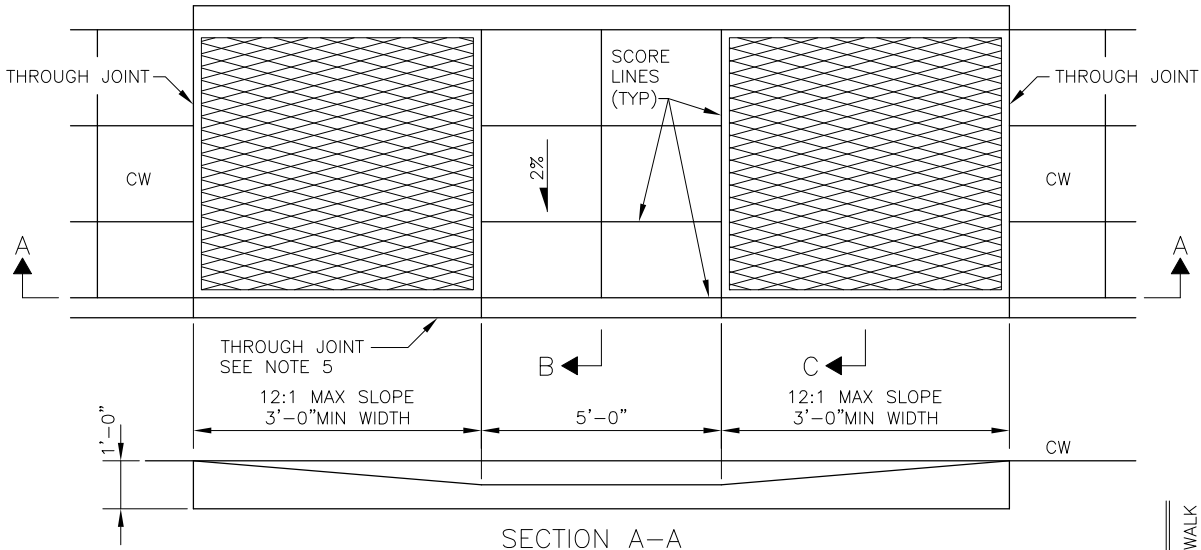
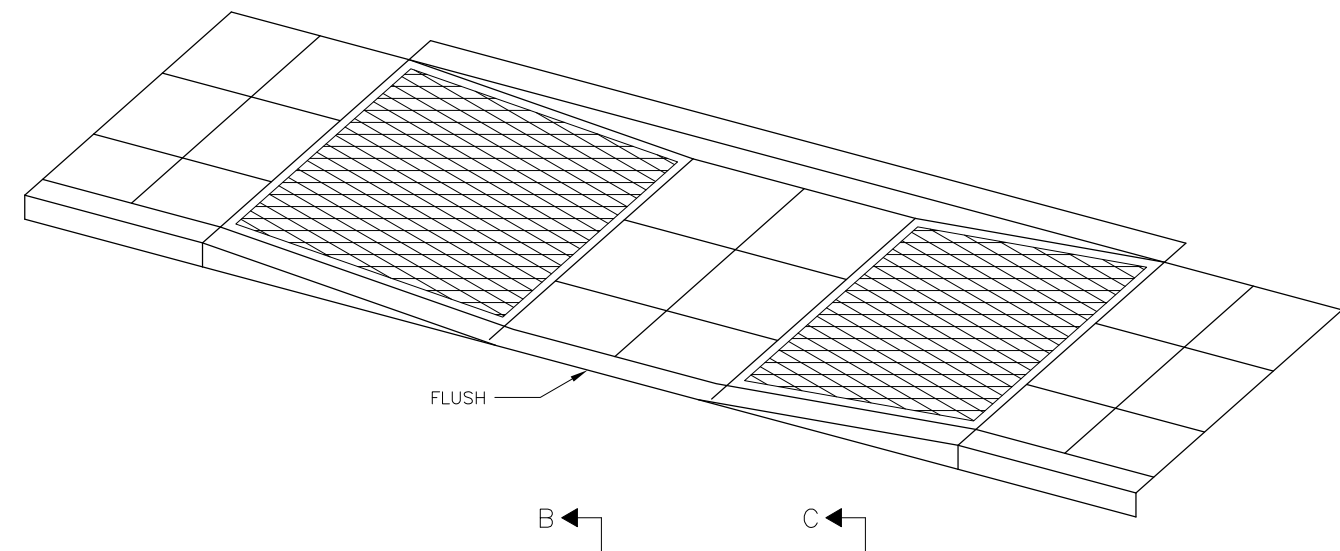


SECTION C-C

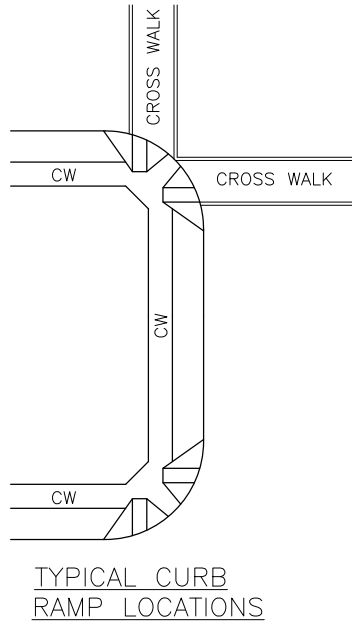
NOTES:

1. SIDEWALK PAVING IN THE PLANTING STRIP OR AT THE BACK OF 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'-0"X5'-0"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. THR SIDEWALK'S 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 CONCETE. 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. MIN DISTANCE BETWEEN ADJACENT CURB RAMPS SHALL BE 3'-0"
6. INLETS SHALL BE SO LOCATED THAT RUNOFF DOES NOT FLOW PAST THE CURB RAMP
7. MIN LATERAL CLEARANCE FROM INLETS, POLES, HYDRANTS AND OTHER ABOVE GROUND OBSTACLES SHALL BE 1'-0" TO THE SCORED PORTION OF THE RAMP
8. FOR ADDITIONAL REQUIREMENTS AND CONDITIONS REFER TO STD PLAN NO 422b AND THE AMERICAN WITH DISABILITIES ACT

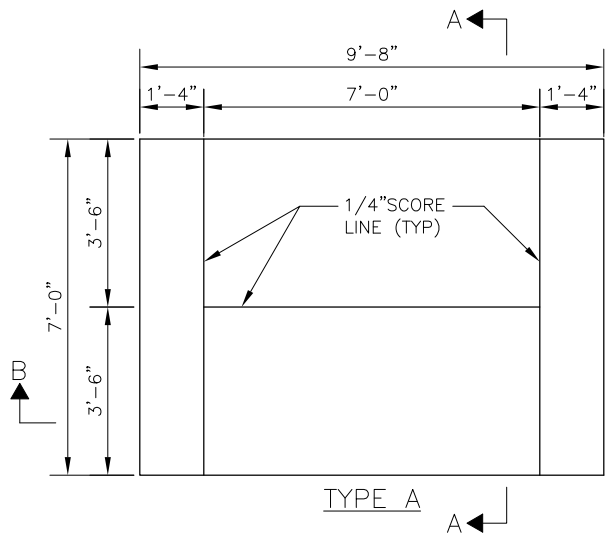
REF STD SPEC SEC 8-14



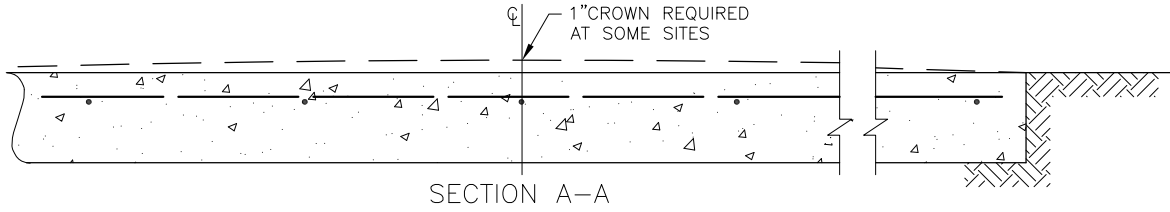
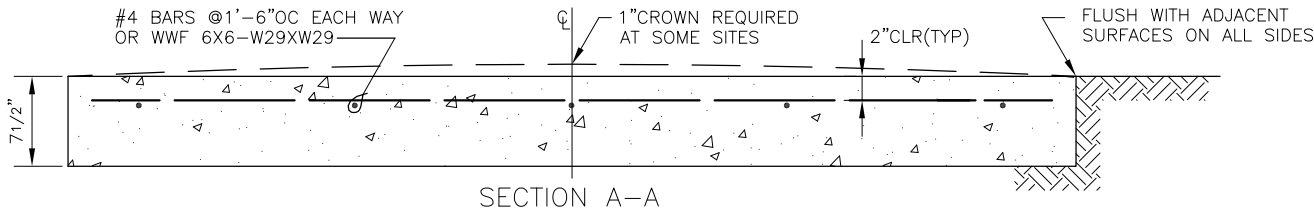
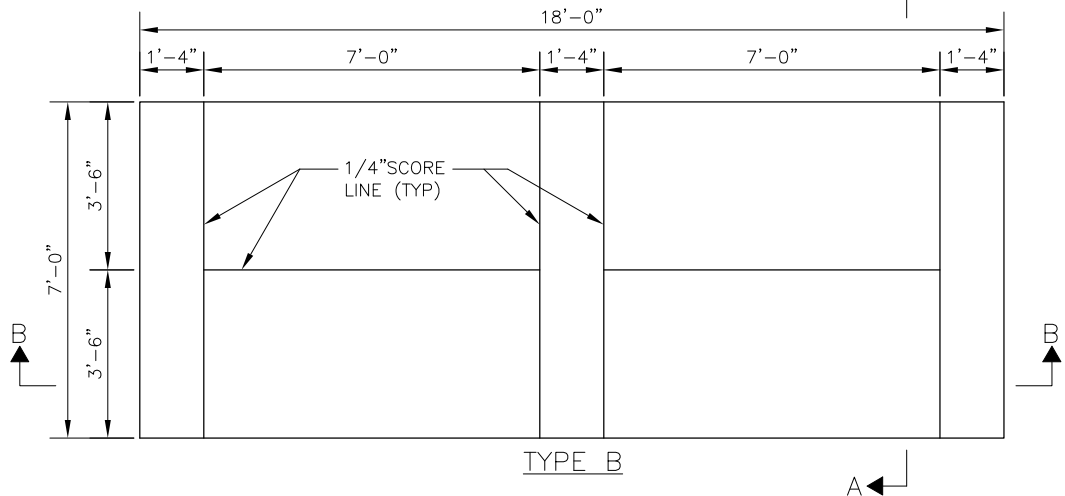
- NOTES:**
1. TWO CURB RAMPS SHALL BE INSTALLED AT EACH CORNER UNLESS OTHERWISE DIRECTED BY SEATTLE TRANSPORTATION
 2. CURB RAMPS SHALL BE INSTALLED ON THE OPPOSITE SIDE OF THE STREET FROM ANY RAMP BEING CONSTRUCTED
 3. CURBS SHALL BE DEPRESSED FOR FUTURE CURB RAMPS WHERE CURBS ARE INSTALLED WITH NO SIDEWALKS
 4. THE DESIGNER SHALL USE TYPE 422a CURB RAMPS. IF NOT FEASIBLE, THEN ALTERNATE CURB RAMP TYPE 422a MAY BE INSTALLED WITH THE APPROVAL OF SEATTLE TRANSPORTATION
 5. NEW PAVEMENT SHALL BE BLOCKED OUT FULL DEPTH. EXISTING PAVEMENT SHALL BE REMOVED AT THE FACE OF THE CURB
 6. THE SIDEWALK THICKENED EDGE SHALL BE CONTINUED THROUGH THE RAMPS OF TYPE 422a CURB RAMPS
 7. FOR ADDITIONAL REQUIREMENTS AND CONDITIONS REFER TO STD PLAN NO 422a AND THE AMERICAN WITH DISABILITIES ACT



REF STD SPEC SEC 8-14



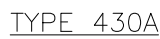
NOTE:
CONCRETE SHALL
BE 3000 PSI MIN
@28 DAYS. STEEL
TROWEL SURFACE
W/ BROOM FINISH



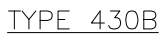
REF STD SPEC SEC 8-14

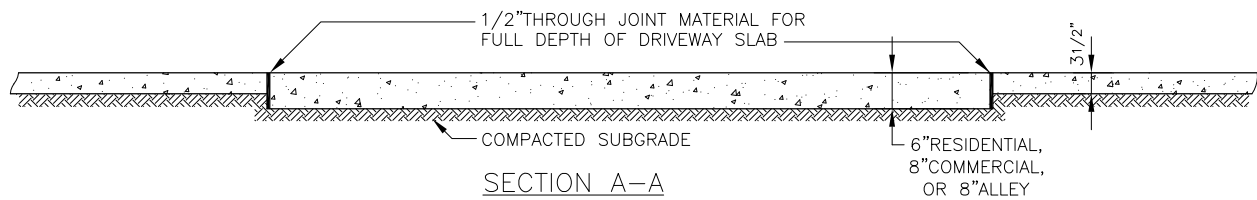
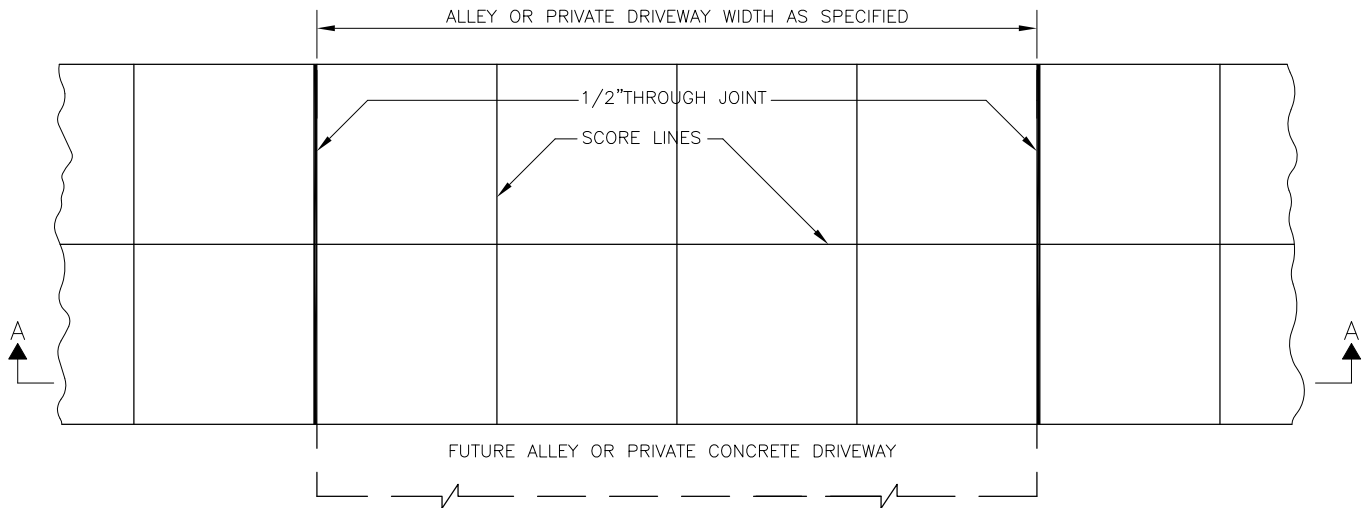
CITY OF SEATTLE
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BUS SHELTER FOOTING



1. CONCRETE SHALL BE CL 6 (1 1/2) OR CL 6 (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 SEATTLE TRANSPORTATION A MINIMUM OF 2 WORKING DAYS PRIOR TO SCHEDULED WORK TO COORDINATE REMOVAL OF METER HEADS
4. REF STD PLAN NO 431 FOR CONCRETE DRIVEWAY PLACES WITH SIDEWALK CONSTRUCTION
5. THE 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 SHORT AXIS OF THE DIAMOND PATTERN SHALL BE PERPENDICULAR TO THE CURB



NOTES:

1. DRIVEWAY WIDTH GREATER THAN 16'-0" SHALL HAVE TRANSVERSE CONTRACTION JOINT AT ITS CENTER
2. CONCRETE SHALL BE CLASS 6(3/4) OR 6(1 1/2) AT CONTRACTOR'S OPTION

REF STD SPEC SEC 8-19

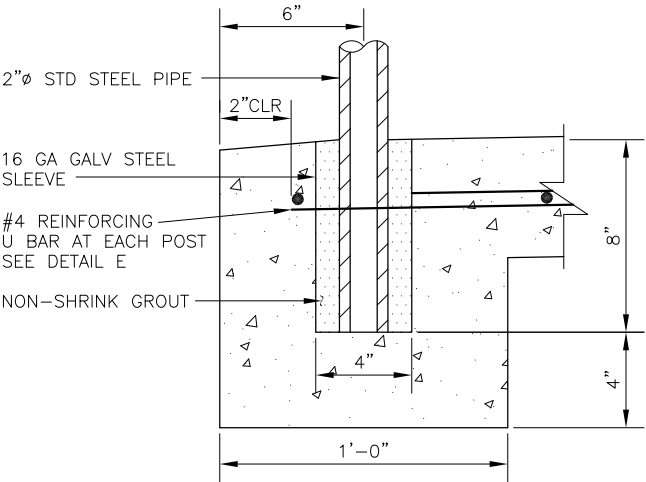
CITY OF SEATTLE
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CONCRETE DRIVEWAY PLACED
WITH SIDEWALK CONSTRUCTION

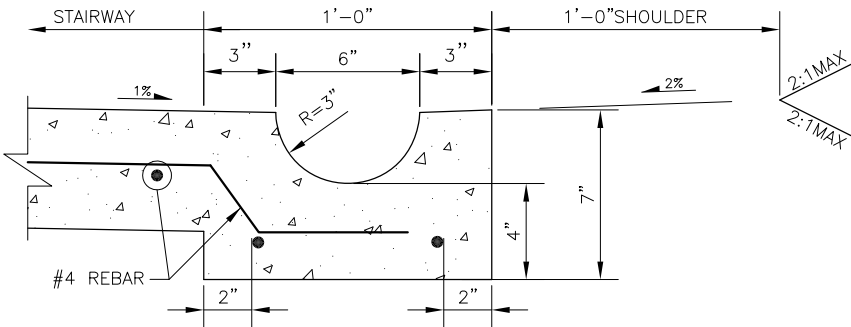


1. FLIGHTS OF STAIRS SHOULD BE SHORT (MAX 20 STEPS PER FLIGHT BEFORE A LANDING IS REQUIRED)
2. AVOID FEWER THAN 2 STEPS PER FLIGHT
3. STEPS IN FLIGHT MUST HAVE UNIFORM TREAD RUNS AND UNIFORM RISER HEIGHTS WITH TOLERANCE OF $\pm 1/8"$
4. TREADS SHALL BE 11"MIN, 12"MAX. RISERS SHALL BE 5"MIN, 7"MAX
5. LANDINGS BETWEEN FLIGHTS OF STEPS MUST HAVE SAME WIDTH AS STEPS AND A MIN LENGTH OF 4'-0"
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 A53
10. REINFORCING STEEL SHALL BE ASTM A615 GR 60
11. FOR FORMAL DRAINAGE PICK-UP SEE DETAIL B (THIS IS OPTIONAL AND MUST BE CALLED OUT WHERE REQUIRED)
12. PIPE DIAMETERS SHOWN ARE "NOMINAL" DIAMETERS AS GIVEN IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL

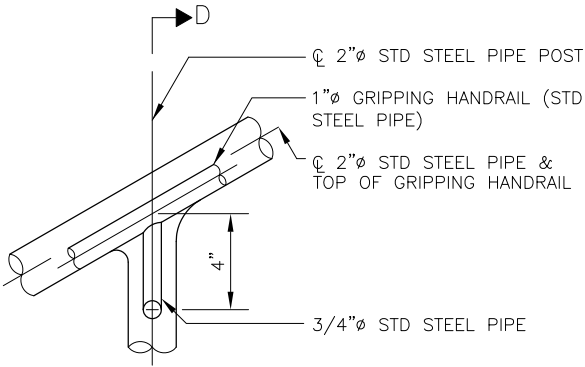
CEMENT CONCRETE
STAIRWAY & HANDRAIL



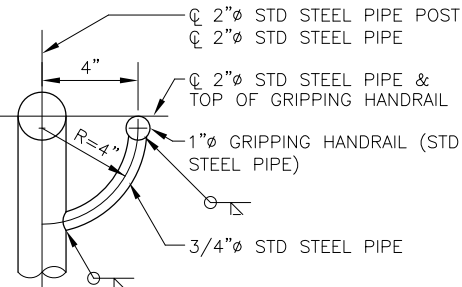
DETAIL A



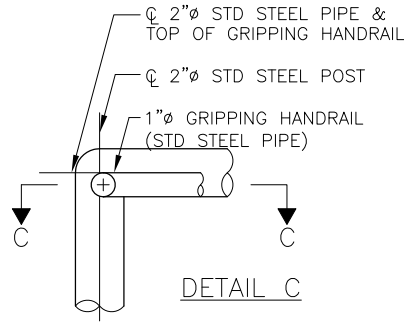
DETAIL B
SEE NOTE 11



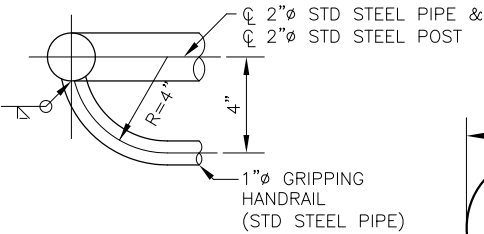
DETAIL D



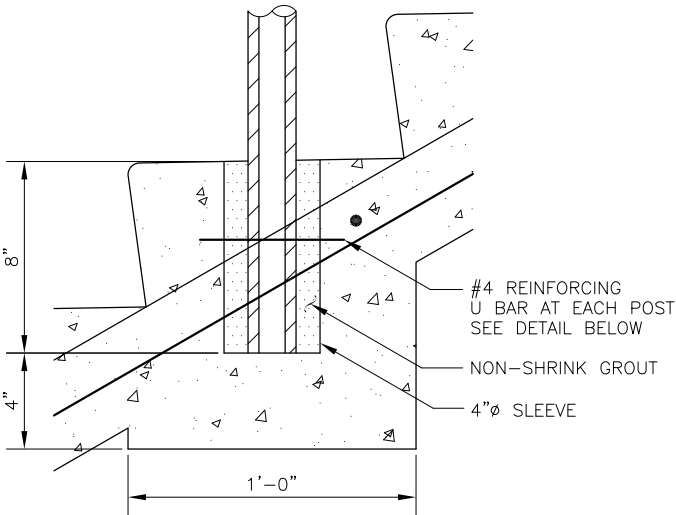
SECTION D-D



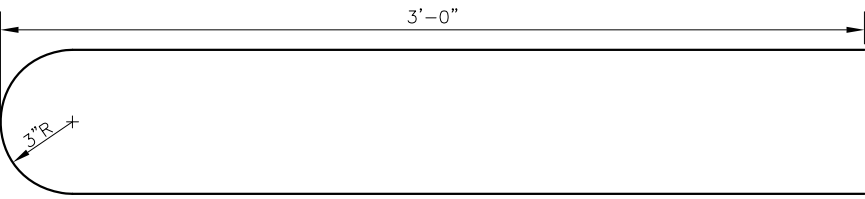
DETAIL C

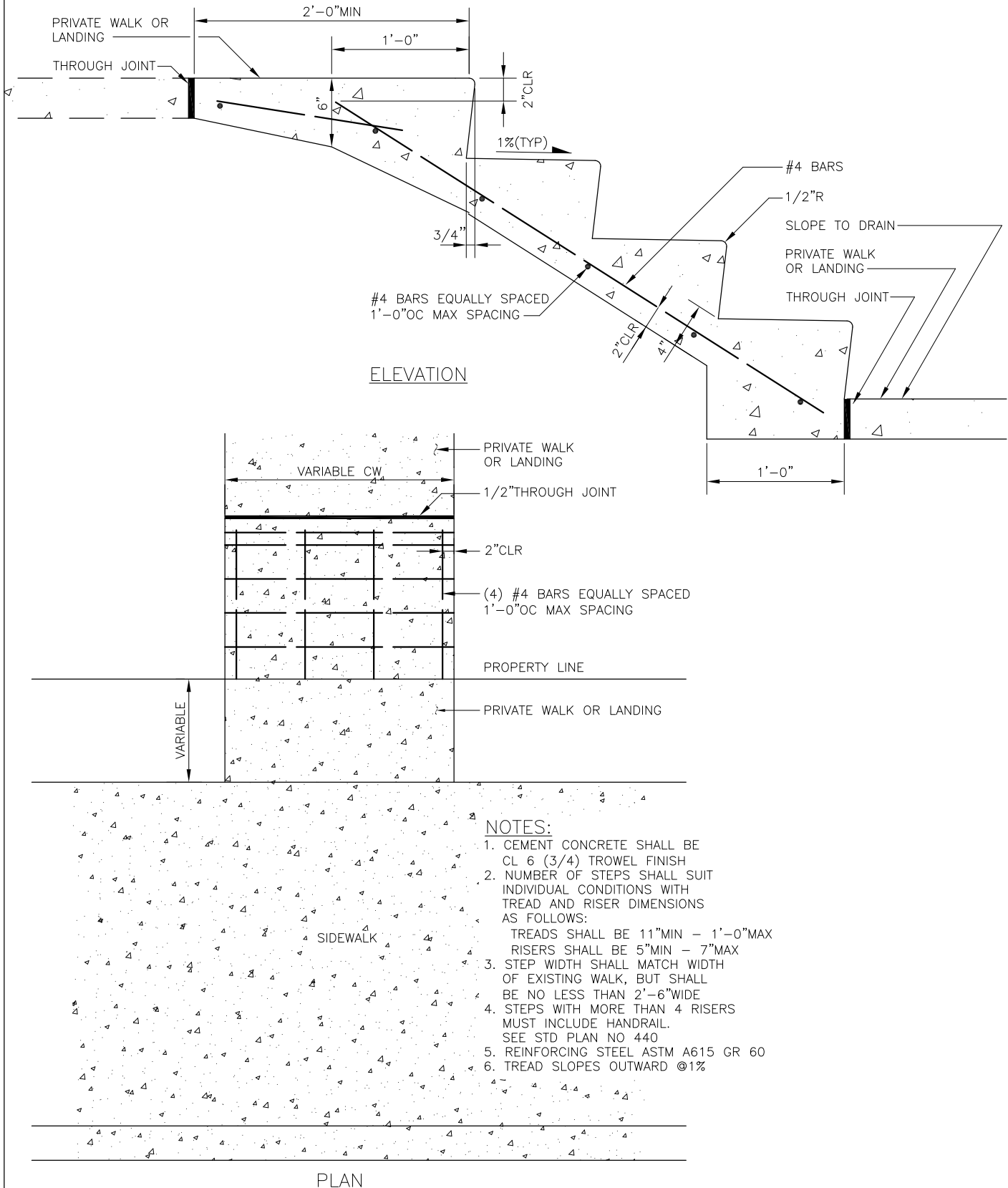


SECTION C-C



DETAIL E

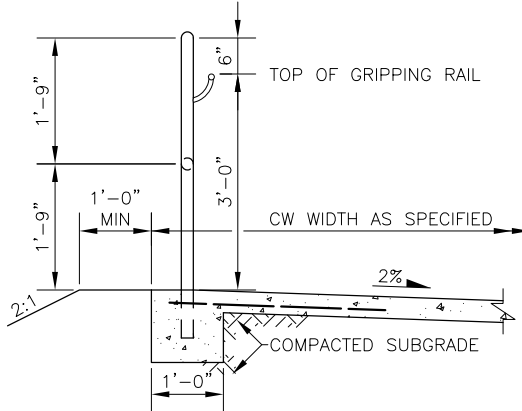
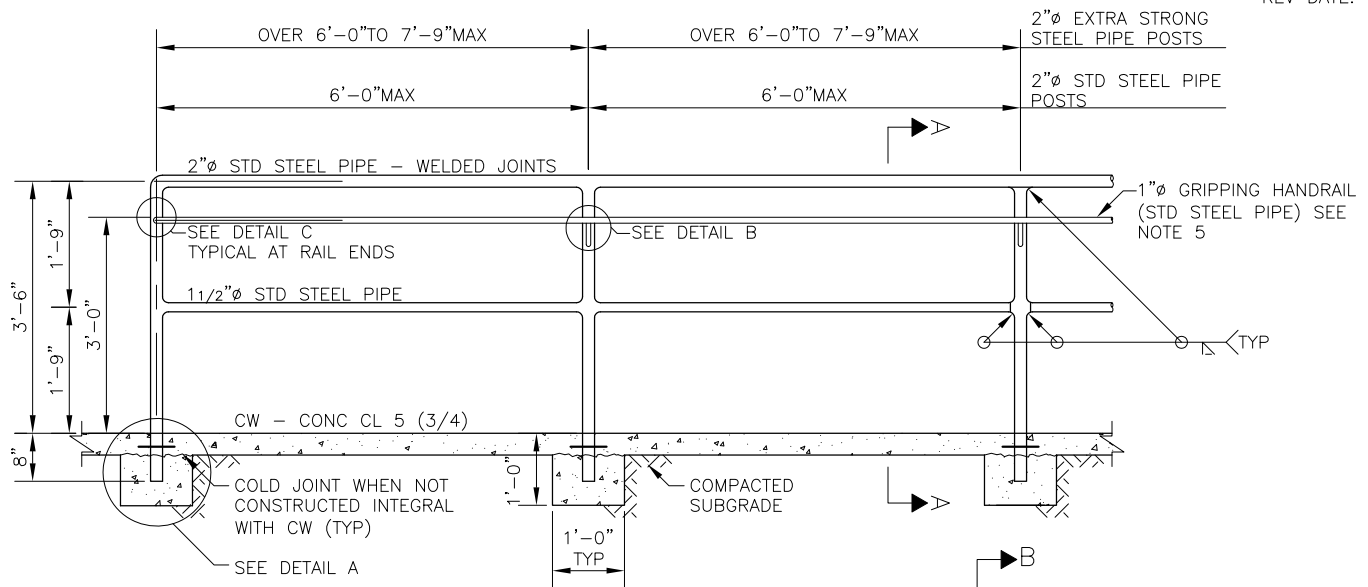




REF STD SPEC SEC 8-18

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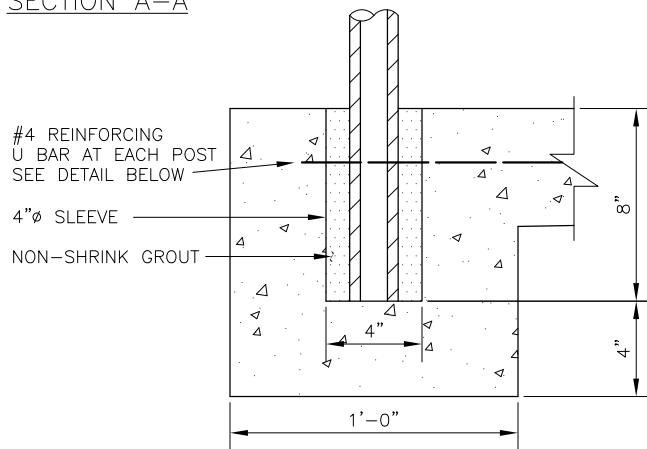
CEMENT CONCRETE STEPS



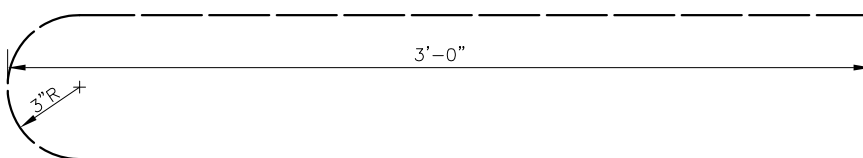
SECTION A-A

NOTES:

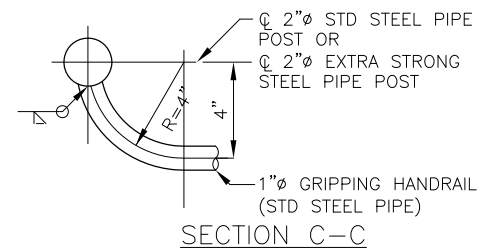
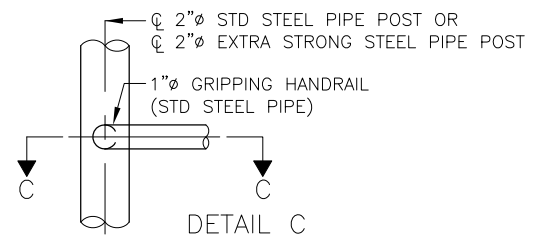
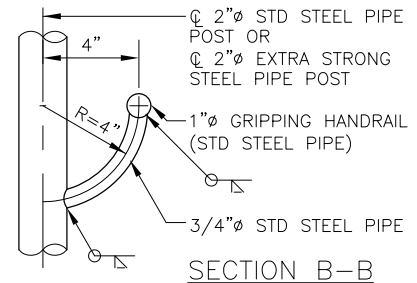
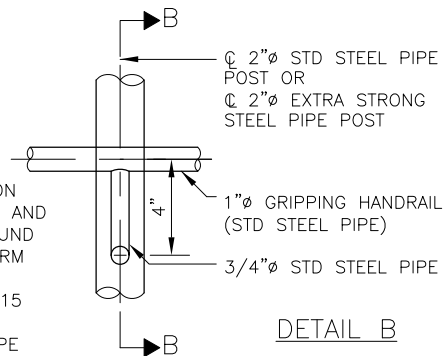
1. RAILING SHALL BE HOT DIP GALVANIZED AFTER FABRICATION
2. ALL POSTS SHALL BE PLUMB AND RAILS PARALLEL TO THE GROUND
3. PIPE MATERIAL SHALL CONFORM TO ASTM A53
4. REINFORCING STEEL ASTM A615 GR 60
5. IF THE CONCRETE WALK SLOPE IS 5% OR GREATER A GRIPPING HANDRAIL IS REQUIRED
6. PIPE DIAMETERS SHOWN ARE "NOMINAL" DIAMETERS AS GIVEN IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL



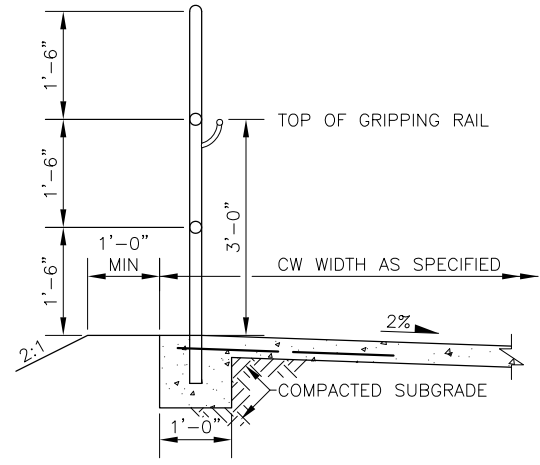
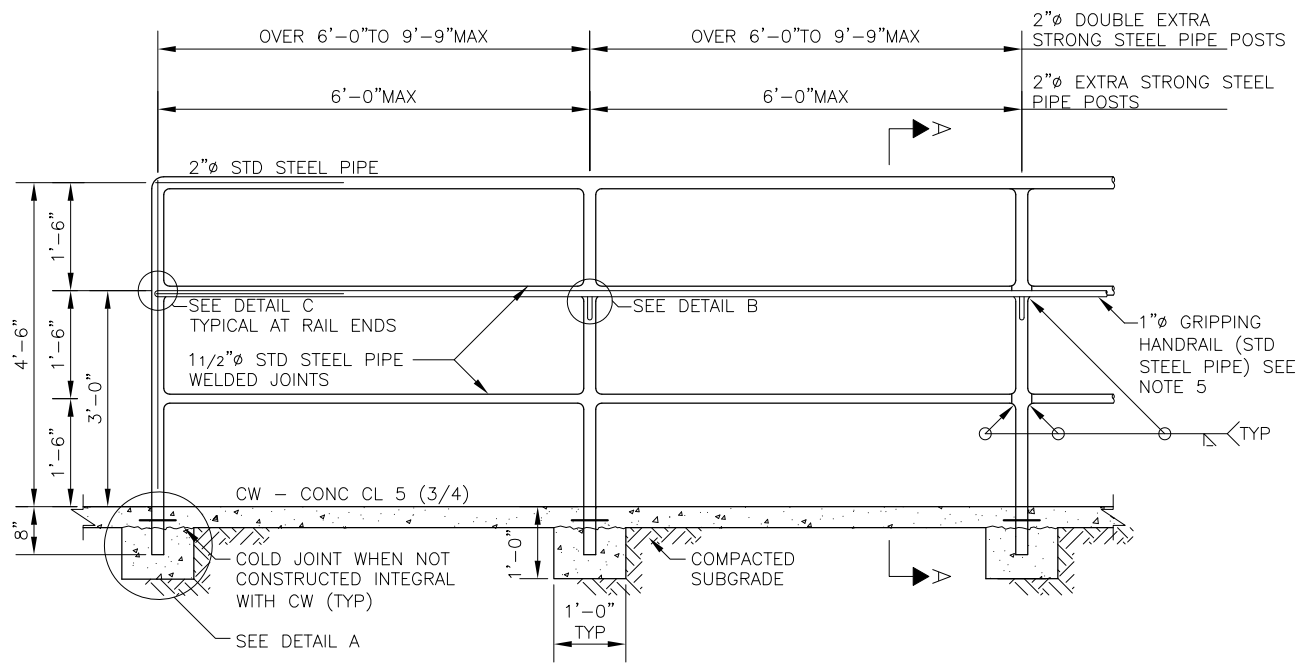
DETAIL A



REF STD SPEC SEC 8-18

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

STEEL PIPE HANDRAIL



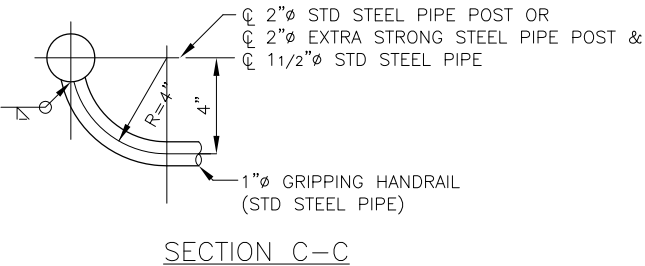
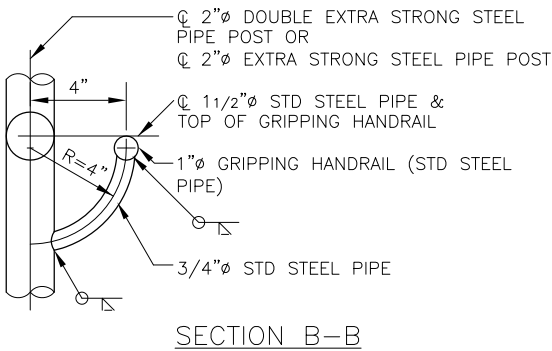
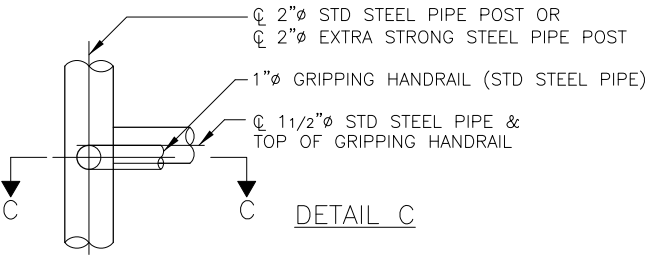
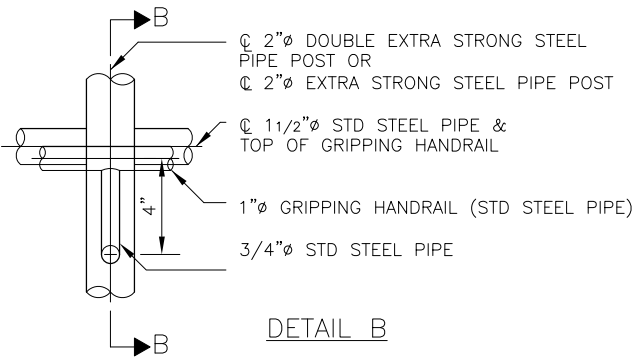
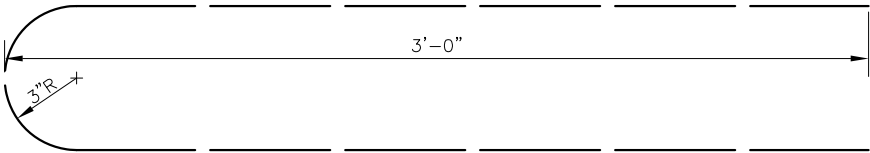
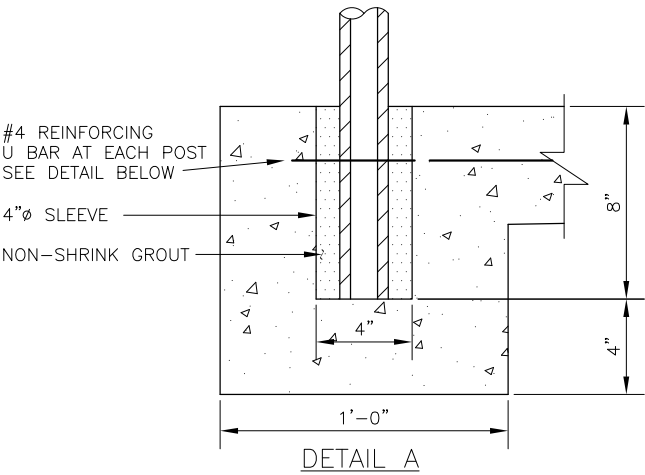
SECTION A-A

- 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
 - 5. IF THE CONCRETE WALK SLOPE IS 5% OR GREATER A GRIPPING HANDRAIL IS REQUIRED
 - 6. PIPE DIAMETERS SHOWN ARE "NOMINAL" DIAMETERS AS GIVEN IN AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL

REF STD SPEC SEC 8-18

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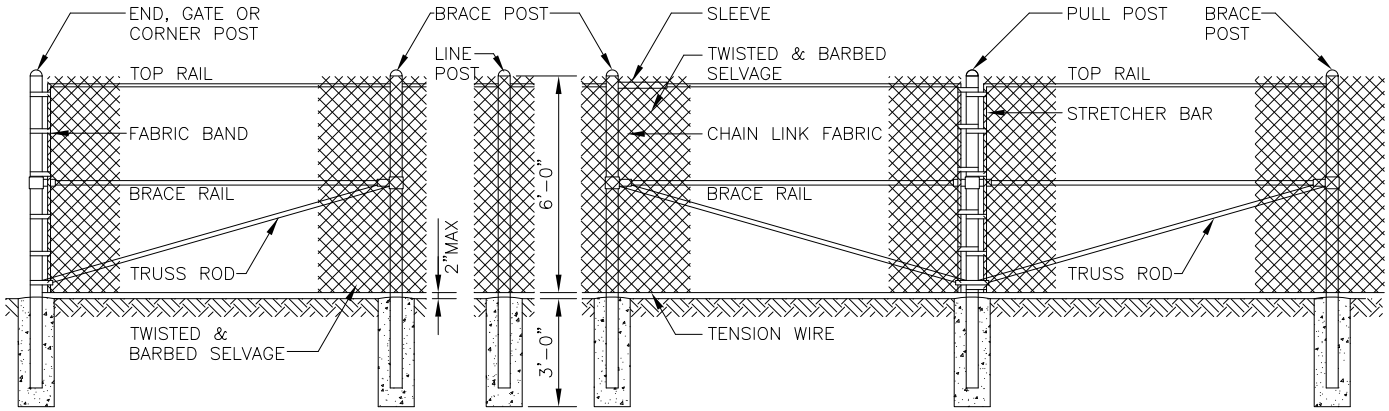
STEEL PIPE RAILING
FOR BIKE PATH



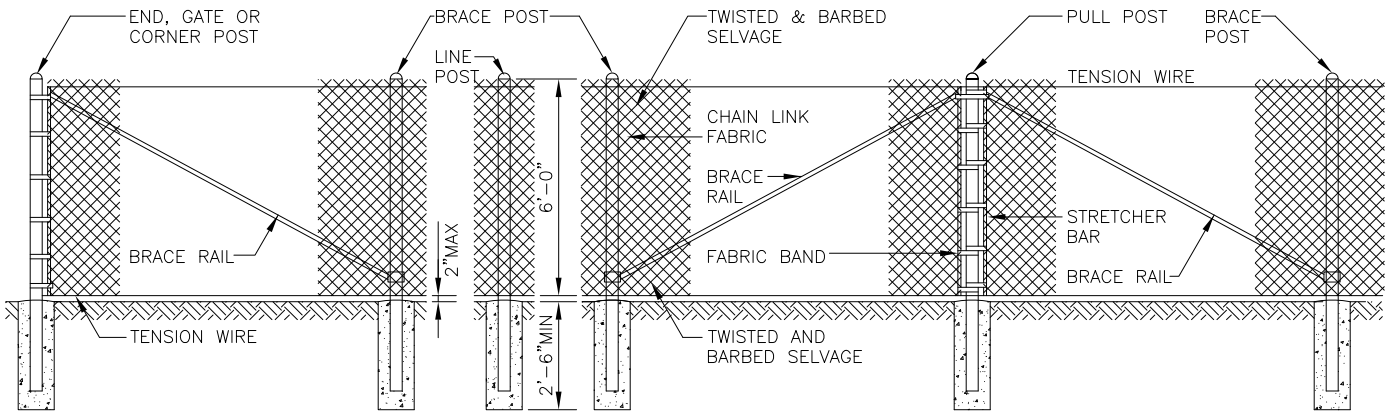
REF STD SPEC SEC 8-18

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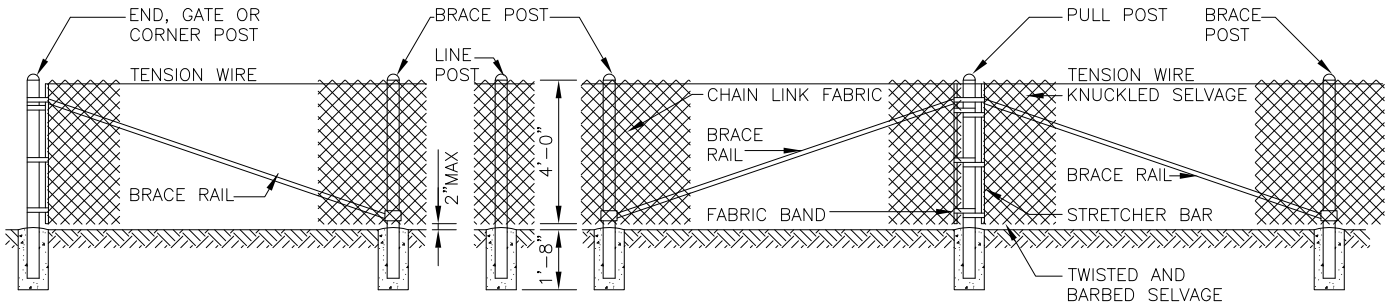
STEEL PIPE RAILING
FOR BIKE PATH



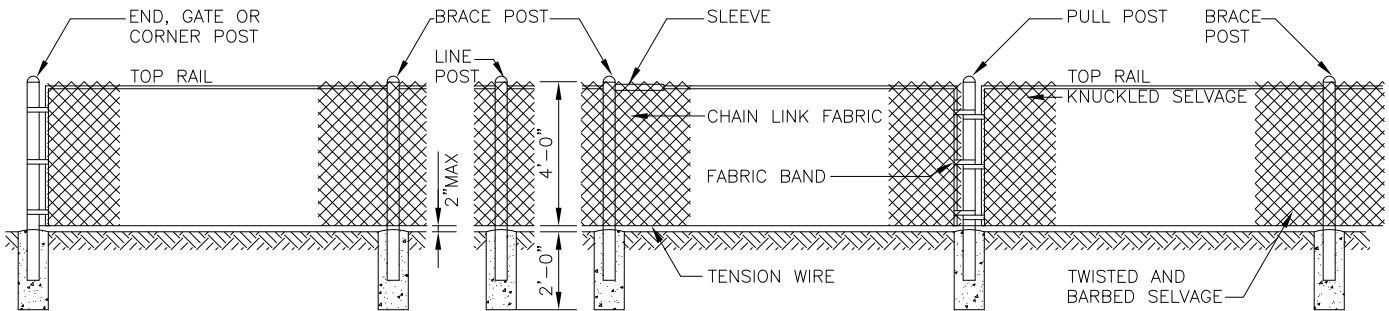
CHAIN LINK FENCE TYPE 1



CHAIN LINK FENCE TYPE 3



CHAIN LINK FENCE TYPE 4

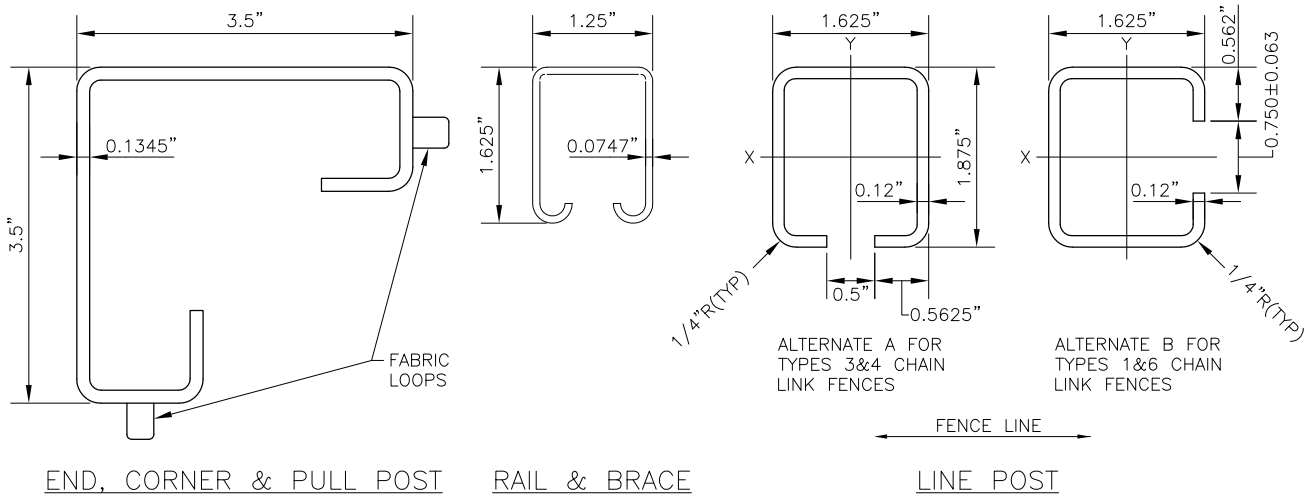


CHAIN LINK FENCE TYPE 6

REF STD SPEC SEC 8-12

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

CHAIN LINK FENCE

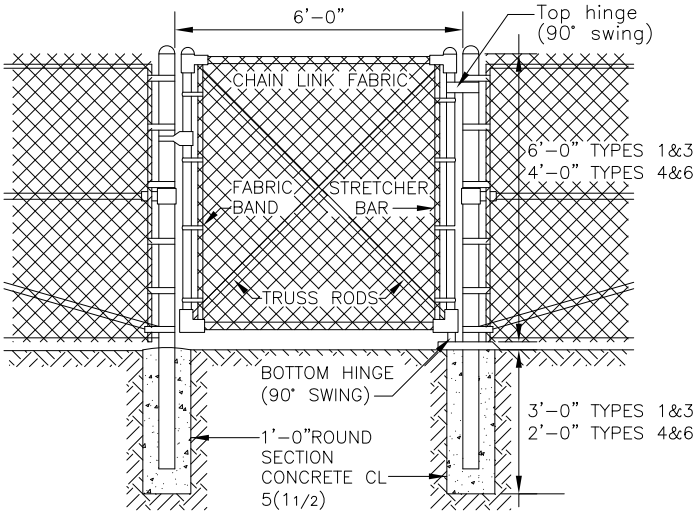
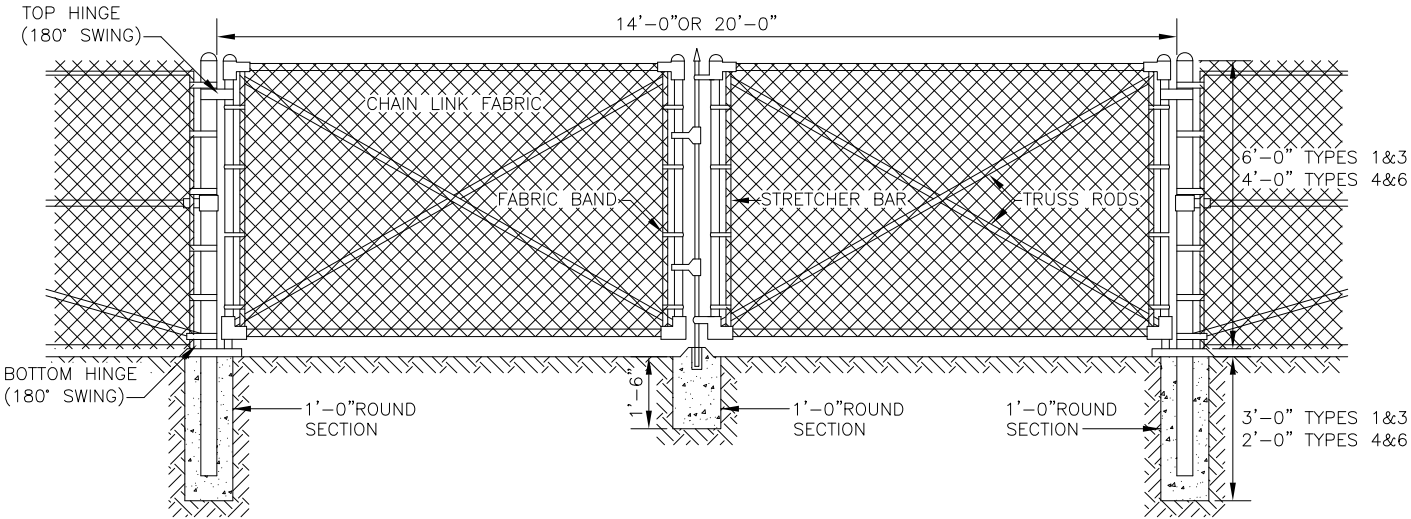


ROLL FORMED SECTIONS

| TYPE | MEMBER | | | | | | | | | | | |
|------|-----------------------|----------------------|-------------|----------------------|-------------|----------------------|-------------------|----------------------|-------------|----------------------|-------------|----------------------|
| | BRACE RAIL & TOP RAIL | | | | | | LINE & BRACE POST | | | | | |
| | ROUND | | H-COLUMN | | ROLL FORMED | | ROUND | | H-COLUMN | | ROLL FORMED | |
| | ID PIPE INCHES | WEIGHT PER FT POUNDS | SIZE INCHES | WEIGHT PER FT POUNDS | SIZE INCHES | WEIGHT PER FT POUNDS | ID PIPE INCHES | WEIGHT PER FT POUNDS | SIZE INCHES | WEIGHT PER FT POUNDS | SIZE INCHES | WEIGHT PER FT POUNDS |
| 1 | 1/4 | 2.27 | 1.25X1.62 | 1.35 | 15/8X11/4 | 1.35 | 2 | 3.65 | 21/4 | 4.0 | | |
| 3 | | | | | | | 11/2 | 2.72 | 17/8 | 2.72 | 15/8X17/8 | 2.34 |
| 4 | | | | | | | 11/2 | 2.72 | 17/8 | 2.72 | 15/8X17/8 | 2.34 |
| 6 | | | 1.25X1.62 | 1.35 | | | 2 | 3.65 | 21/4 | 4.0 | | |

| TYPE | MEMBER | | | | | | | |
|------|--------------------------|----------------------|---------------|----------------------|----------------|----------------------|-----------|--|
| | END, CORNER & PULL POSTS | | | | GATE POST | | ALL POSTS | |
| | ROUND | | ROLL FORMED | | ROUND | | LENGTH | |
| | ID PIPE INCHES | WEIGHT PER FT POUNDS | SIZE INCHES | WEIGHT PER FT POUNDS | ID PIPE INCHES | WEIGHT PER FT POUNDS | | |
| 1 | 2 1/2 | 5.79 | 3 1/2 X 3 1/2 | 5.14 | 3 1/2 | 9.1 | 8'-8" | |
| 3 | 2 | 3.65 | | | | | 8'-8" | |
| 4 | 2 | 3.65 | | | | | 5'-6" | |
| 6 | 2 1/2 | 3.65 | | | | | 5'-6" | |

- NOTES:
1. ALL CONCRETE POST BASES SHALL BE 10"MINIMUM DIAMETER, CL 5 (1 1/2)
 2. POSTS SHALL BE SPACED AT 10'-0"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 DETAIL SHOWN HEREON SHALL NOT BE CONSTRUED AS LIMITING TO HARDWARE DESIGN OR POST SELECTION FOR ANY PARTICULAR FENCE TYPE

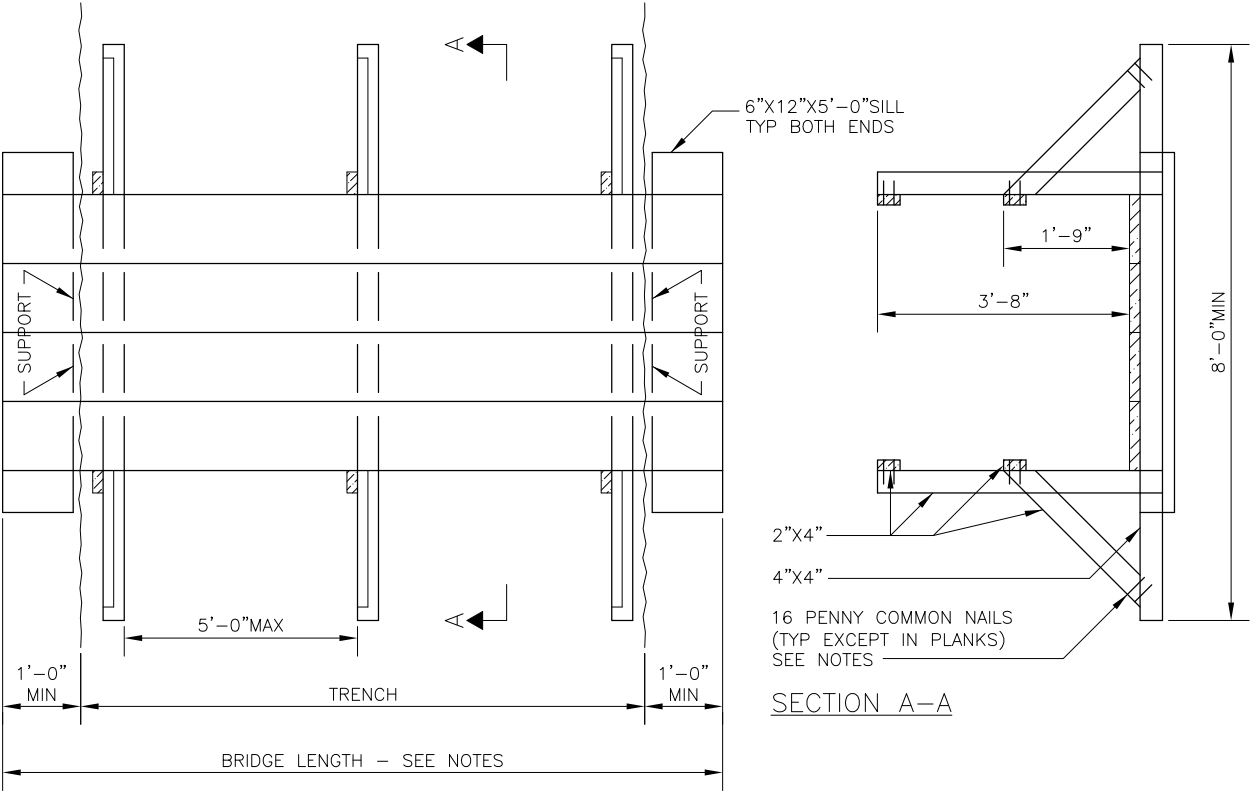


- NOTES:
1. FENCE FABRIC SHALL BE SECURED TO GATE FRAMES WITH KNUCKLED SELVAGE ALONG TOP EDGE FOR TYPES 4&6 CHAIN LINK FENCE INSTALLATIONS
 2. MINIMUM POST LENGTH:
TYPES 1&3: 8'-8"
TYPES 4&6: 5'-6"

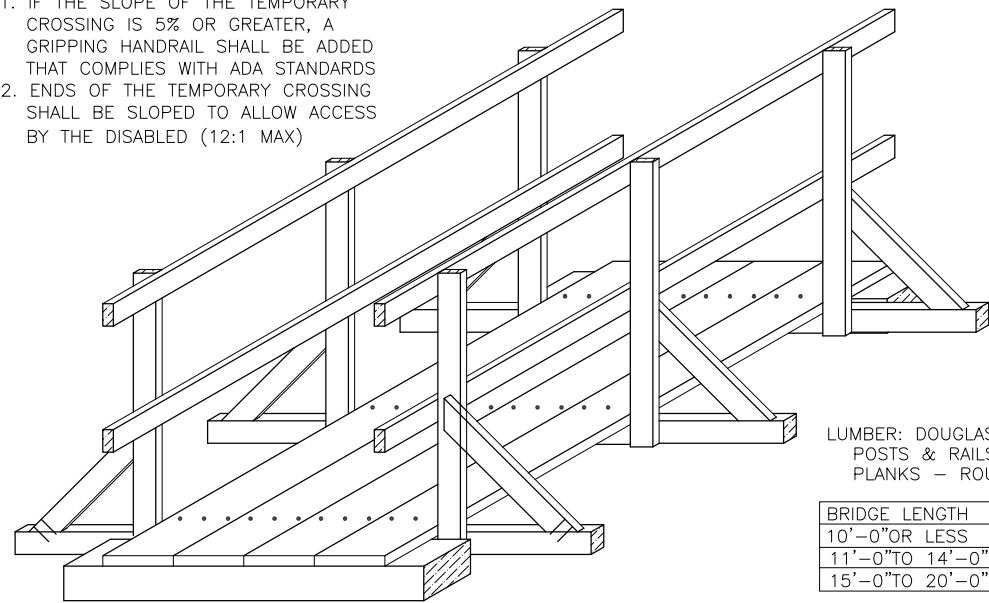
REF STD SPEC SEC 8-12

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

CHAIN LINK GATES

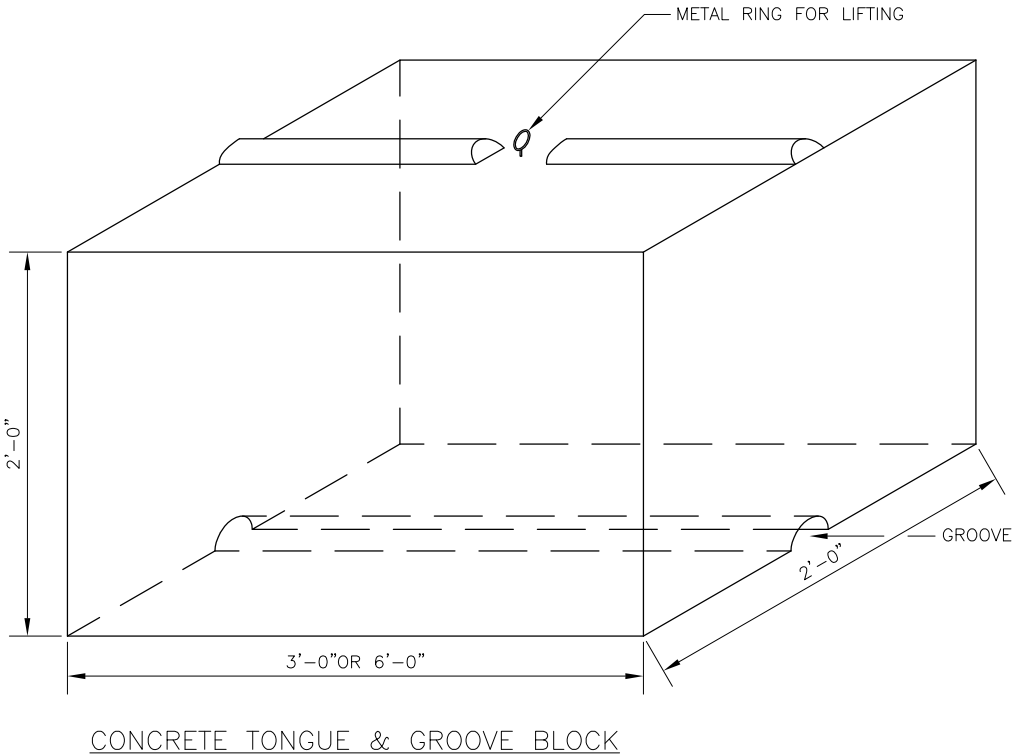


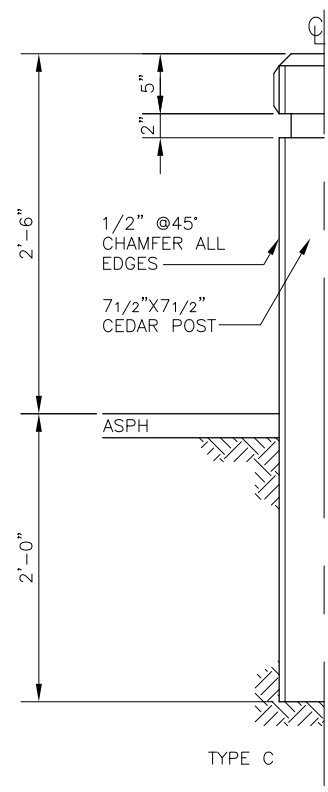
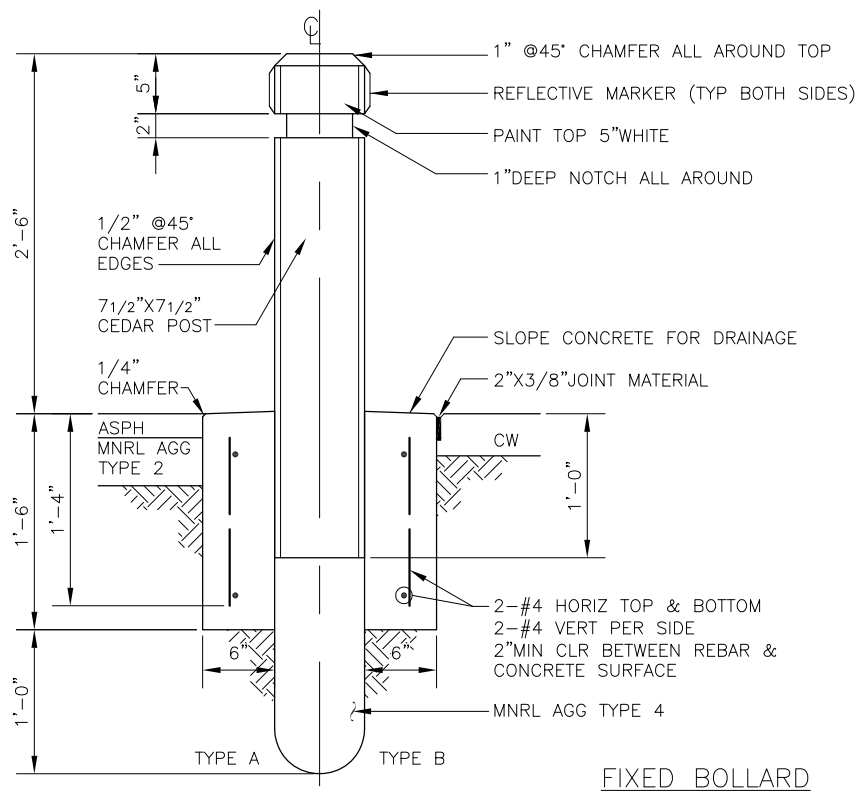
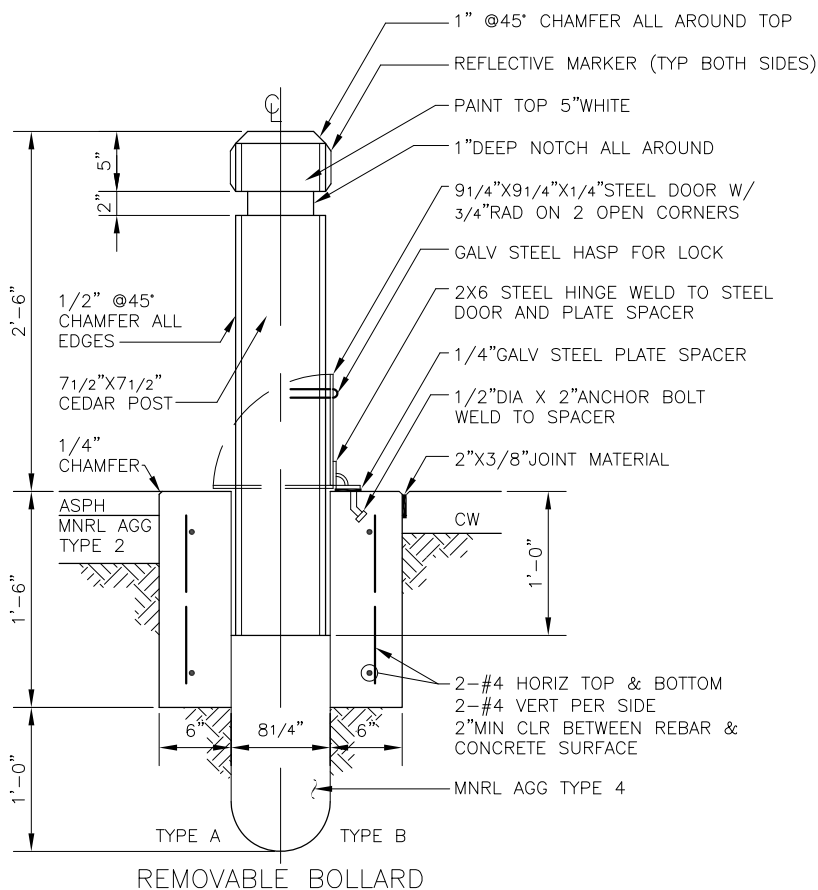
- NOTE:
1. IF THE SLOPE OF THE TEMPORARY CROSSING IS 5% OR GREATER, A GRIPPING HANDRAIL SHALL BE ADDED THAT COMPLIES WITH ADA STANDARDS
 2. ENDS OF THE TEMPORARY CROSSING SHALL BE SLOPED TO ALLOW ACCESS BY THE DISABLED (12:1 MAX)

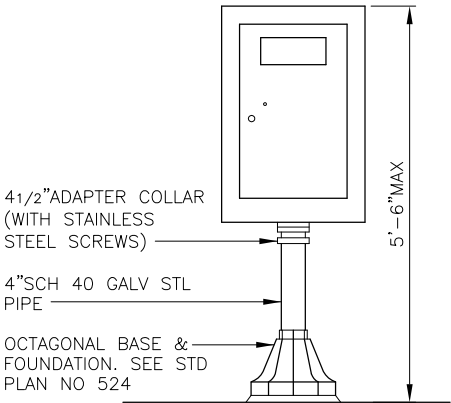


LUMBER: DOUGLAS FIR #2 OR BETTER
POSTS & RAILS S4S
PLANKS - ROUGH

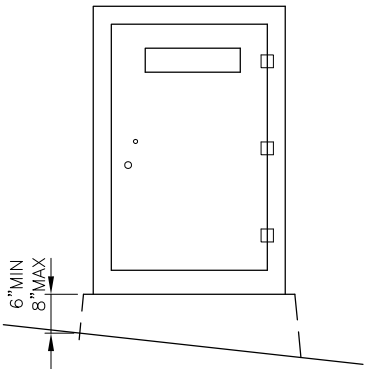
| BRIDGE LENGTH | PLANK SIZE | NAIL SIZE |
|------------------|------------|-----------|
| 10'-0" OR LESS | 2"X12" | 20 PENNY |
| 11'-0" TO 14'-0" | 3"X12" | 40 PENNY |
| 15'-0" TO 20'-0" | 4"X12" | 60 PENNY |



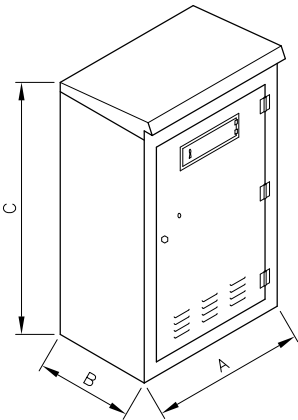




TYPE I CABINET



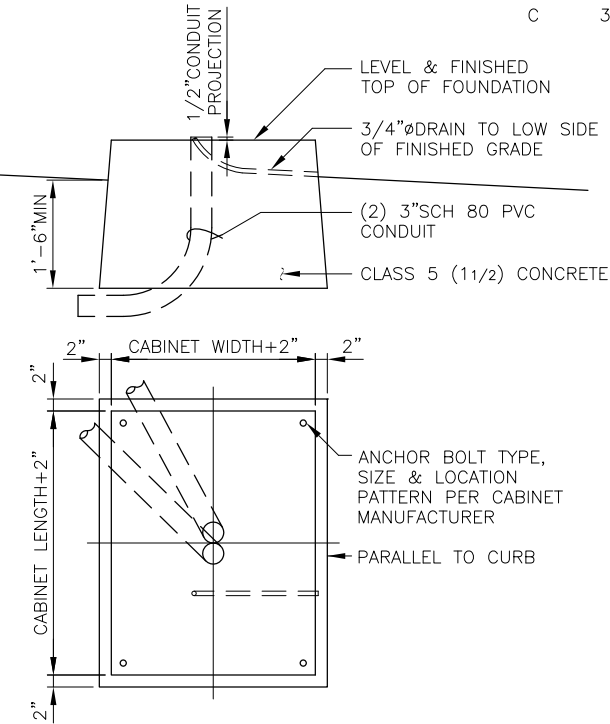
TYPE II&III CABINET



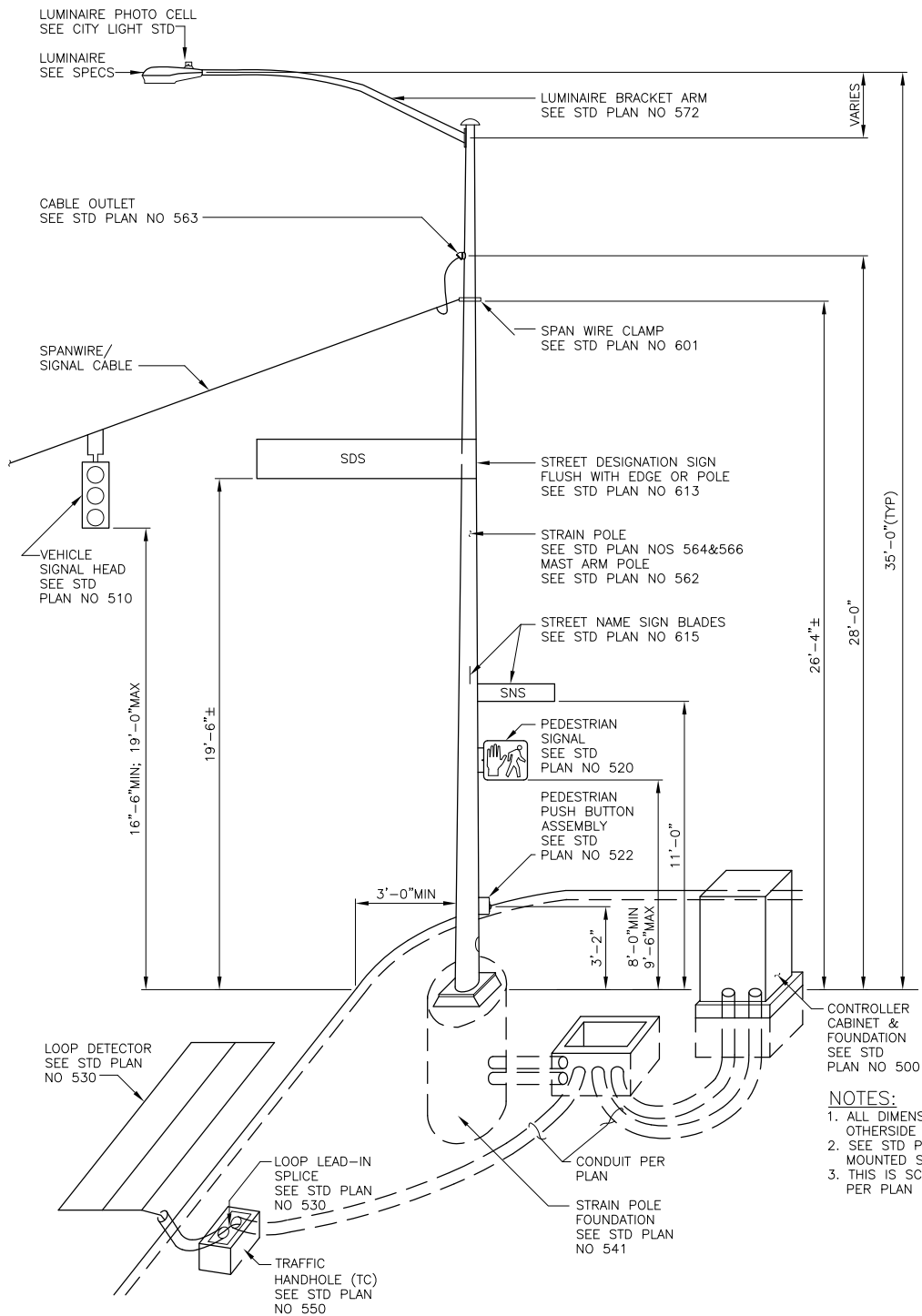
CABINET DIMENSIONS

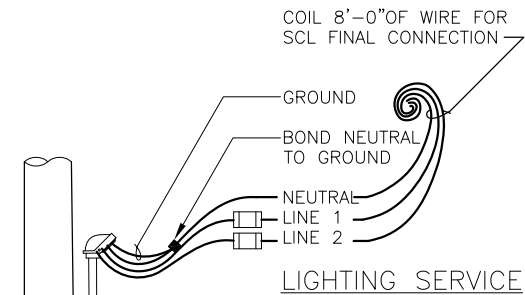
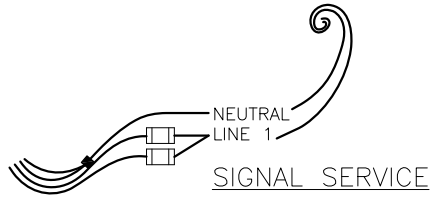
| DIMENSION | TYPE II | TYPE III |
|-----------|-----------|-----------|
| A | 28" T034" | 36" T048" |
| B | 16" T020" | 20" T028" |
| C | 38" T052" | 50" T058" |

- NOTES:
1. TRAFFIC SIGNAL CONTROLLER CABINET SHALL BE FURNISHED BY THE CITY
 2. EXACT CABINET DIMENSIONS & ANCHOR BOLT LOCATIONS SHALL BE PROVIDED BY THE TRAFFIC SIGNAL SHOPS
 3. PLACE CABINET DOOR ON SIDEWALK SIDE OF FOUNDATION
 4. SEAL CABINET TO FOUNDATION WITH GREY OR CLEAR SILICON TO PREVENT MOISTURE FROM ENTERING THE CABINET

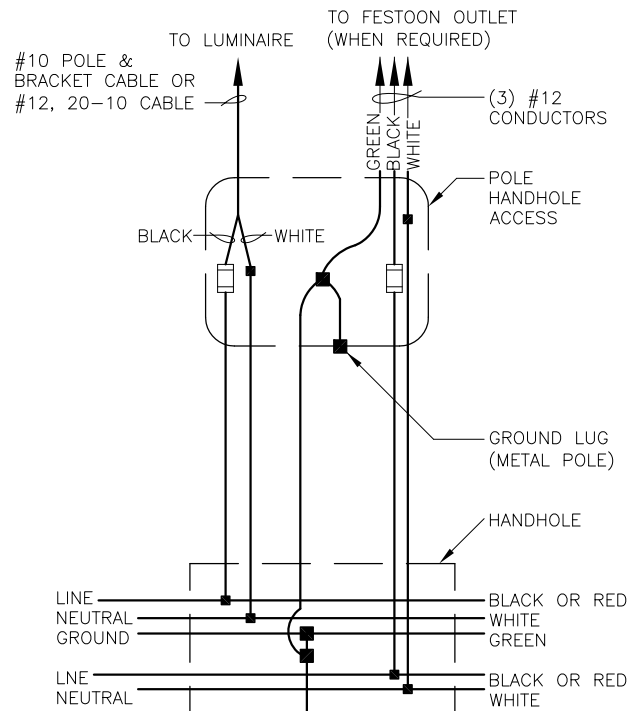
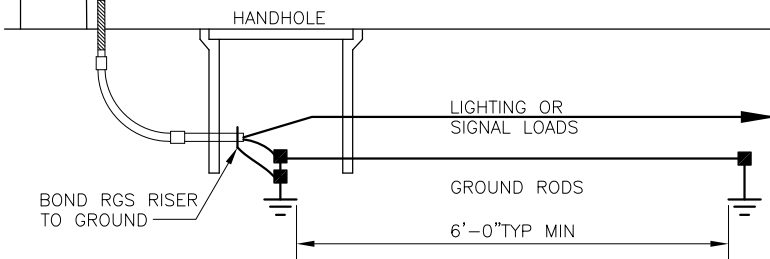
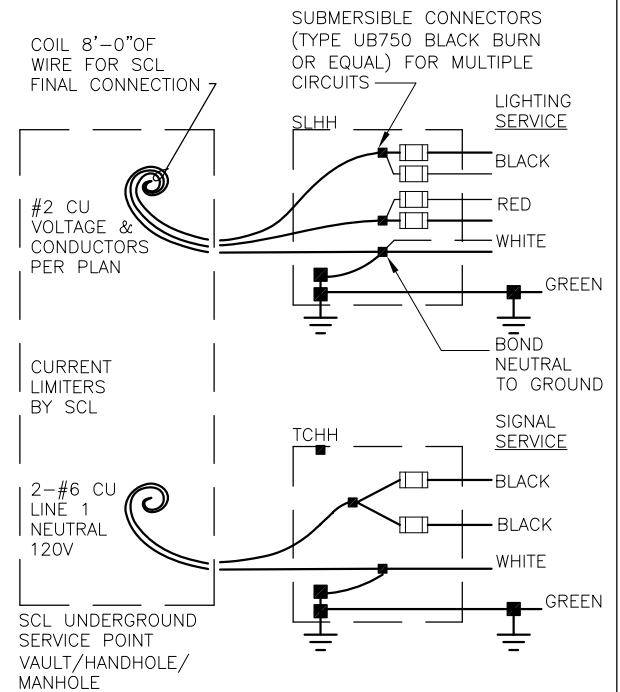


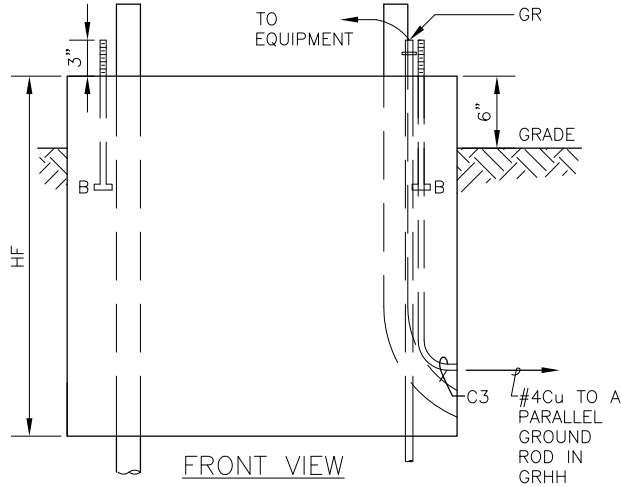
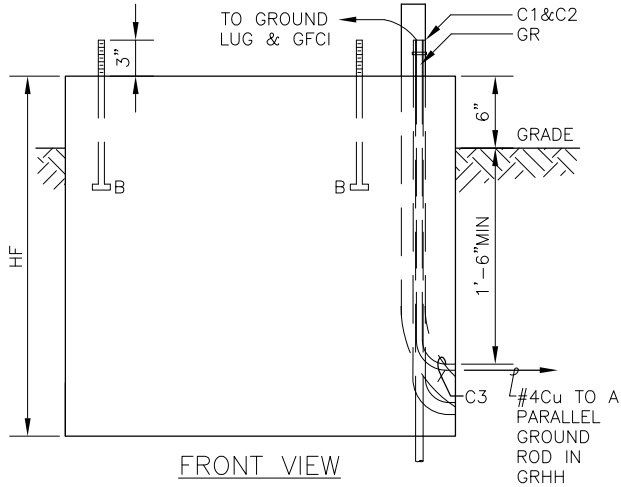
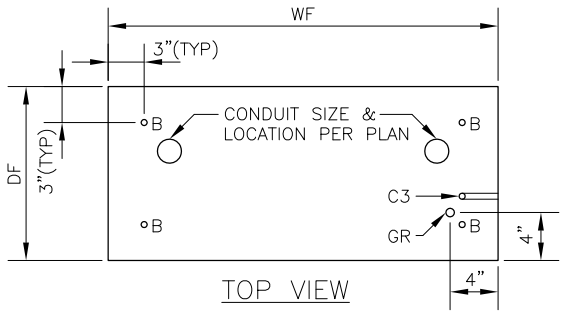
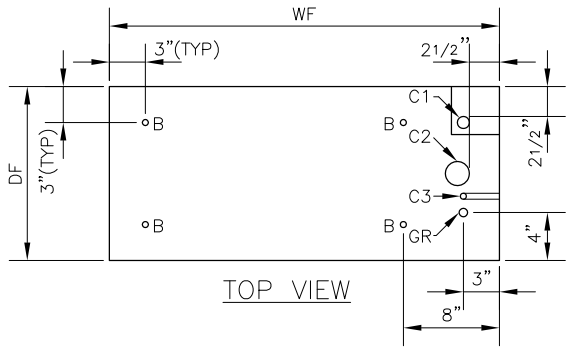
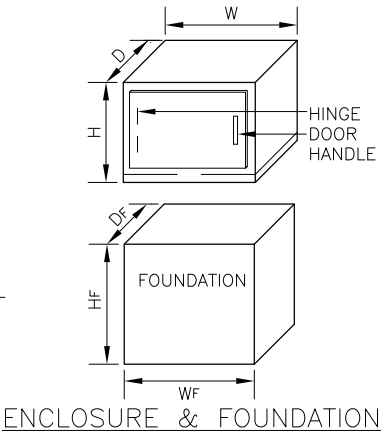
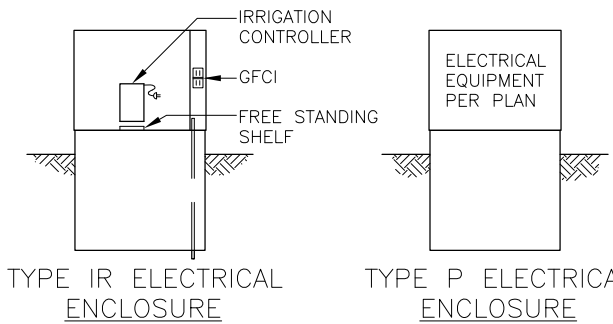
SIGNAL CONTROLLER FOUNDATION
(TYPE II&III)



**NOTES:**

1. FUSE LUMINAIRE AT 10A EXCEPT FOR 400W FUSE AT 15A
2. FUSE FESTOON OUTLET AT 15A
3. FOR METAL POLES WITH ONLY OVERHEAD ACCESS, CONDUCTORS SHALL ENTER POLE THROUGH CABLE OUTLETS
4. CONDUCTORS SHALL BE CONTINUOUSLY COLOR CODED
LINE 1 = BLACK
LINE 2 = RED
LINE 3 = BLUE
NEUTRAL = WHITE
GROUND = GREEN

POLE WIRING DETAILUNDERGROUND SERVICE CONNECTION



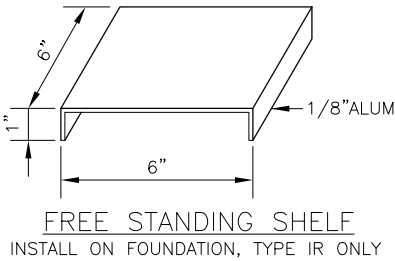
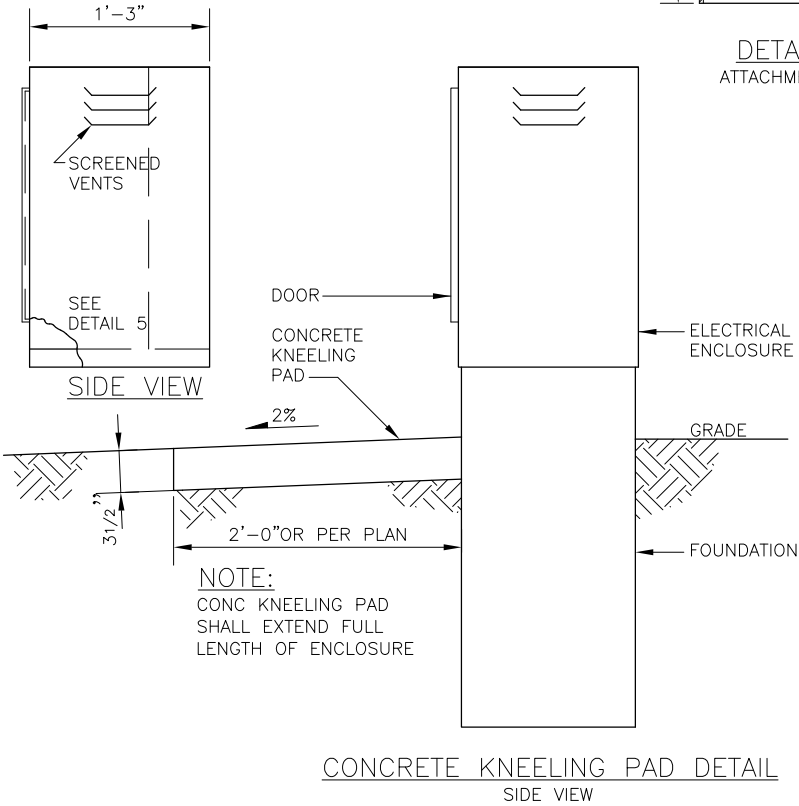
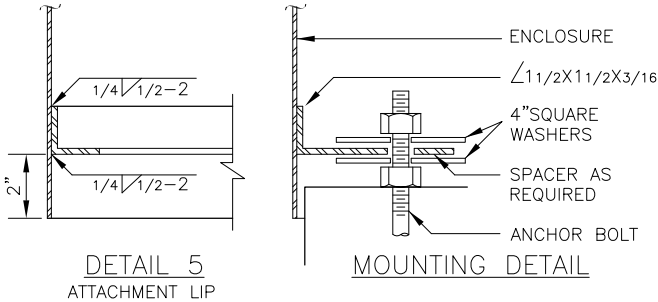
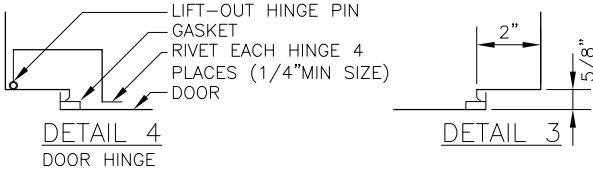
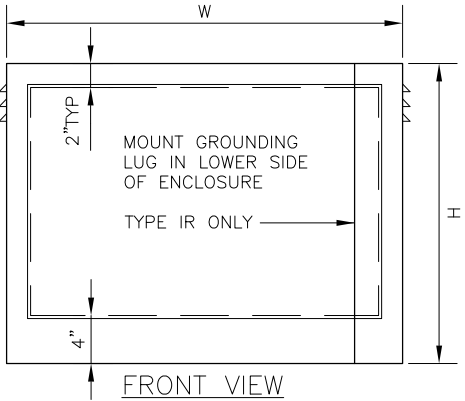
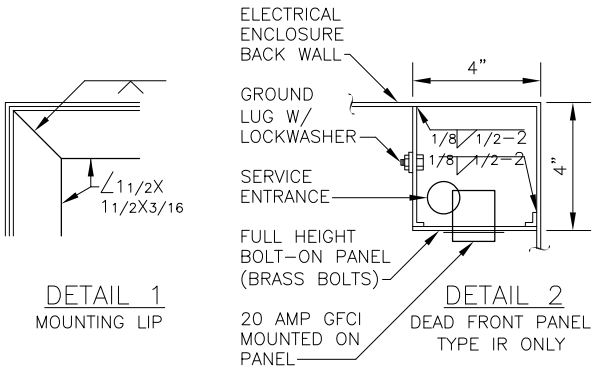
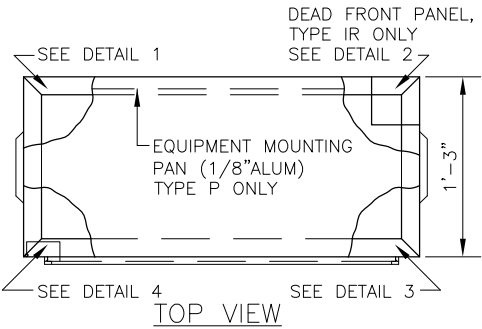
TYPE IR ELECTRICAL ENCLOSURE FOUNDATION

TYPE P ELECTRICAL ENCLOSURE FOUNDATION

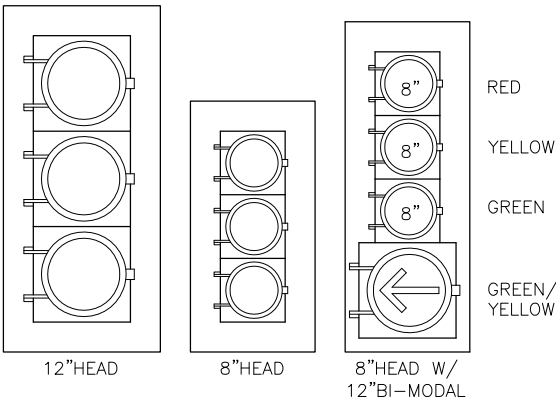
ABBREVIATIONS:

- B: 1/2"x1'-0"HEX HEAD ANCHOR BOLT WITH (2) NUTS & (2) 4"SQUARE WASHERS. ALL ITEMS GLAVANIZED PER ASTM A153
- C1: 120 VOLT SERVICE ENTRANCE CONDUIT. CONDUIT SHALL BE 1" SCH 80 PVC
- C2: 24 VOLT CONTROL WIRE CONDUIT. STUB OUT 2'-0"DEEP, 6"OUT FROM FOUNDATION, CONDUIT SHALL BE 2"SCH 80 PVC UNLESS OTHERWISE NOTED
- C3: 1/2"PVC CONDUIT FOR GROUND WIRE
- GR: 5/8"x10'-0"COPPER CLAD GROUND ROD & CLAMP
- GFCI: GROUND FAULT CIRCUIT INTERRUPTER RECEPTACLE 20 AMP RATED, INSTALL IN-LINE FUSE HOLDER & 15 AMP FUSE AHEAD OF OUTLET
- GRHH: GROUND ROD HANDHOLE. GROUND RODS SHALL BE A MINIMUM OF 6"-0"APART

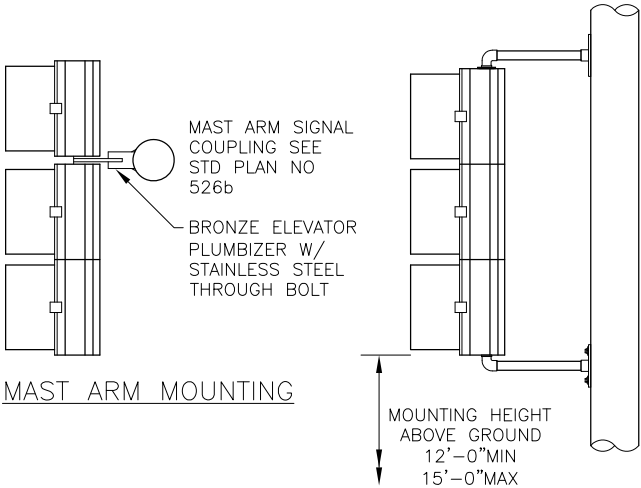
| ENCLOSURE SCHEDULE | | | | | | | | | |
|---------------------------|-----------------------|---------|----------|----------------------|-----|-----|-----------------|--------------|--------------------|
| ELECTRICAL ENCLOSURE TYPE | FOUNDATION DIMENSIONS | | | ENCLOSURE DIMENSIONS | | | DOOR LATCH TYPE | NO OF HINGES | DOOR REINFORCEMENT |
| | HF | WF | DF | H | W | D | | | |
| IR1 | | | PER PLAN | | | | | | |
| IR2 | 30" | 19 1/2" | 14 1/2" | 18" | 20" | 15" | SINGLE POINT | 2 | |
| IR3 | 30" | 32 1/2" | 14 1/2" | | | 15" | THREE POINT | 3 | |
| P1 | | | 14 1/2" | | | 15" | | | |
| P2 | | | PER PLAN | | | | | | |
| P3 | 30" | 32 1/2" | 14 1/2" | 25" | 33" | 15" | THREE POINT | 3 | YES |
| P4 | 36" | 49 1/2" | 14 1/2" | 48" | 50" | 15" | THREE POINT | 3 | YES |
| P5 | | | 14 1/2" | | | 15" | | | |



- NOTES:
1. THE ENCLOSURE SHALL BE CONSTRUCTED OF 3003-3 ALUMINUM, 1/8" 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 A PROVISION FOR A PADLOCK
 5. THE FOUNDATION SHALL BE 1/2" 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



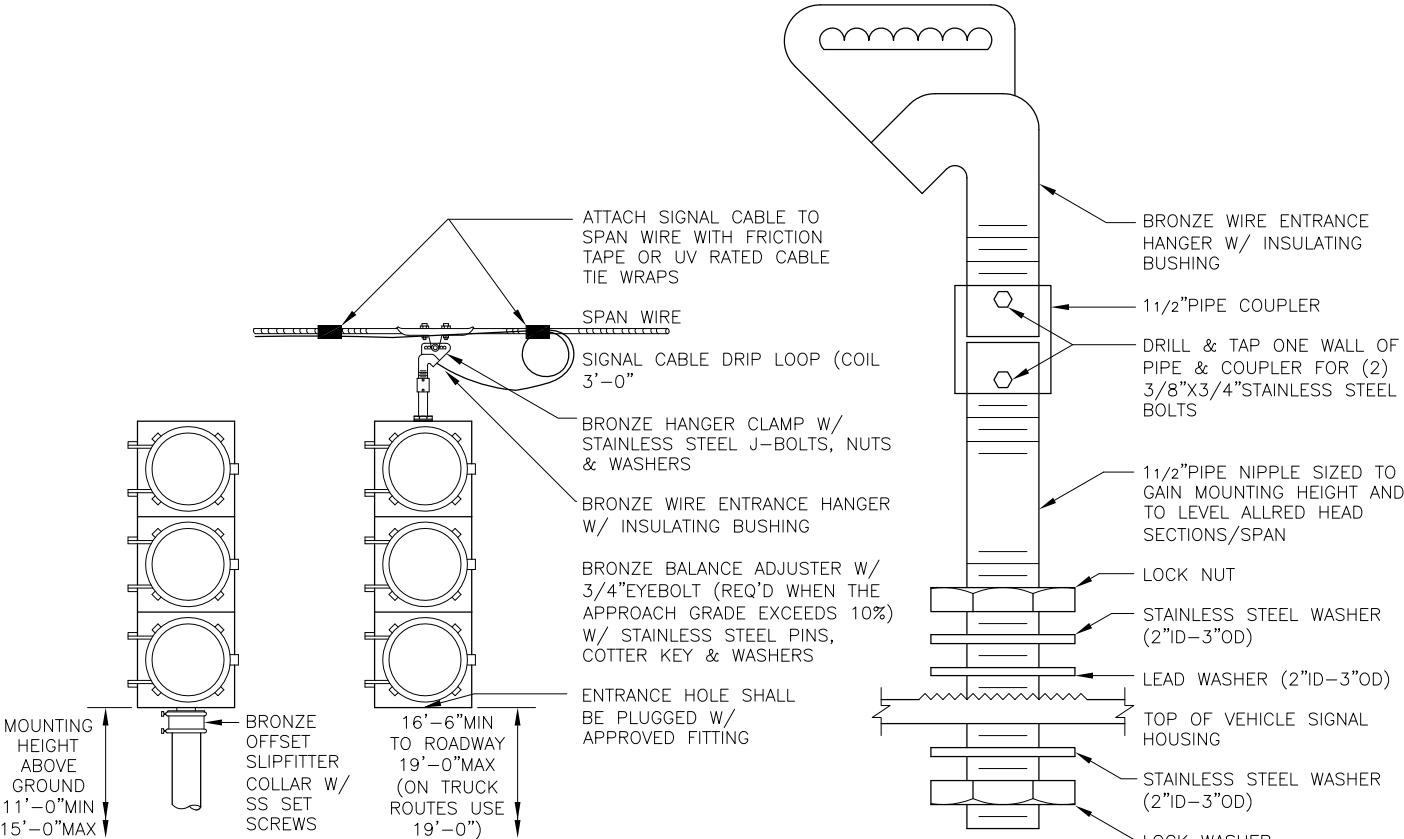
TYPICAL SIGNAL FACES
W/ TUNNEL VISORS &
5"BACKPLATE (LOUVERED)



MAST ARM MOUNTING

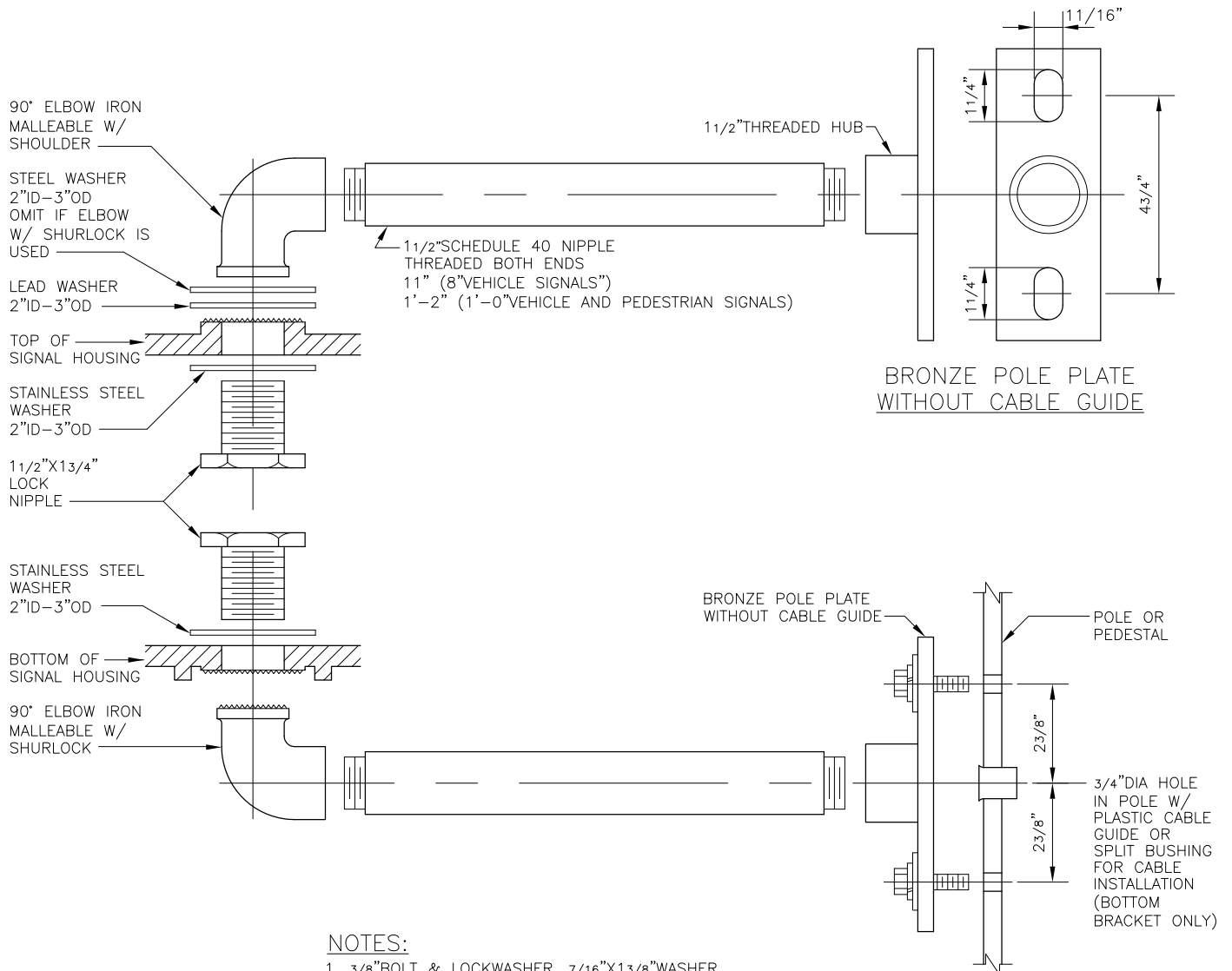
NOTE:
BACKPLATES HAVE
BEEN OMITTED
FROM VARIOUS
VIEWS FOR CLARITY

BRACKET MOUNTING
FOR BRACKET ASSEMBLY
SEE STD PLAN NO 511



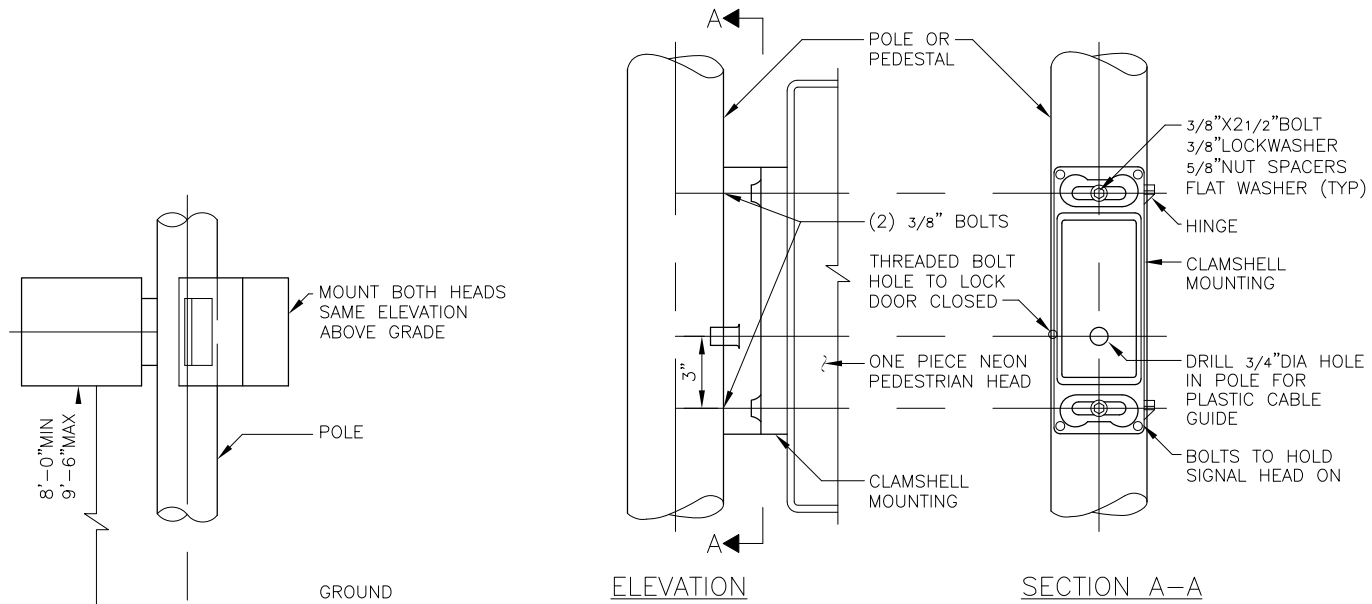
PEDESTAL TOP MOUNTING
FOR PEDESTAL SEE STD PLAN NO 524

SUSPENDED SIGNAL MOUNTING DETAIL

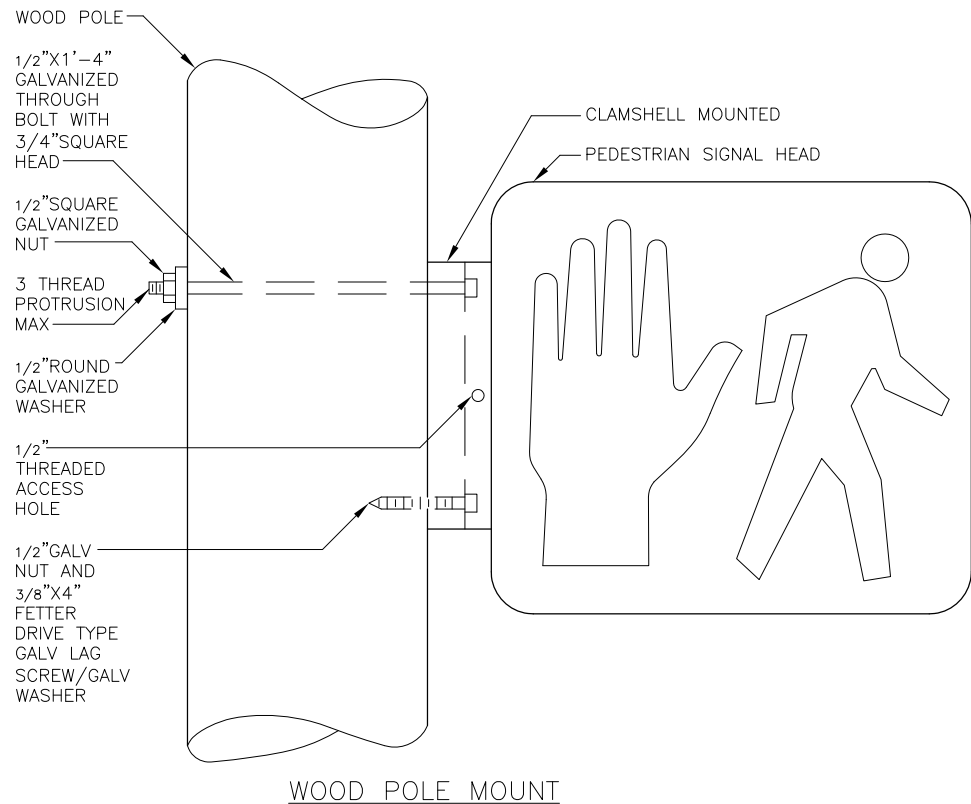
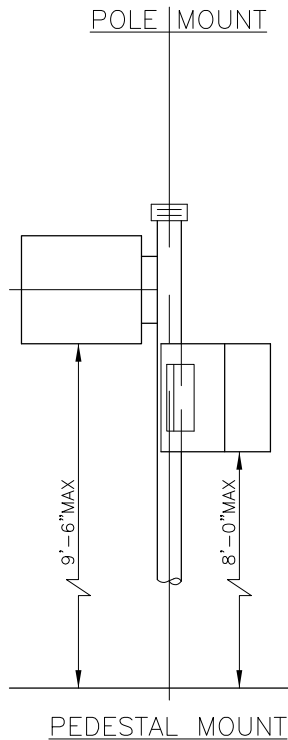


CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

SIGNAL HEAD BRACKET
ASSEMBLY

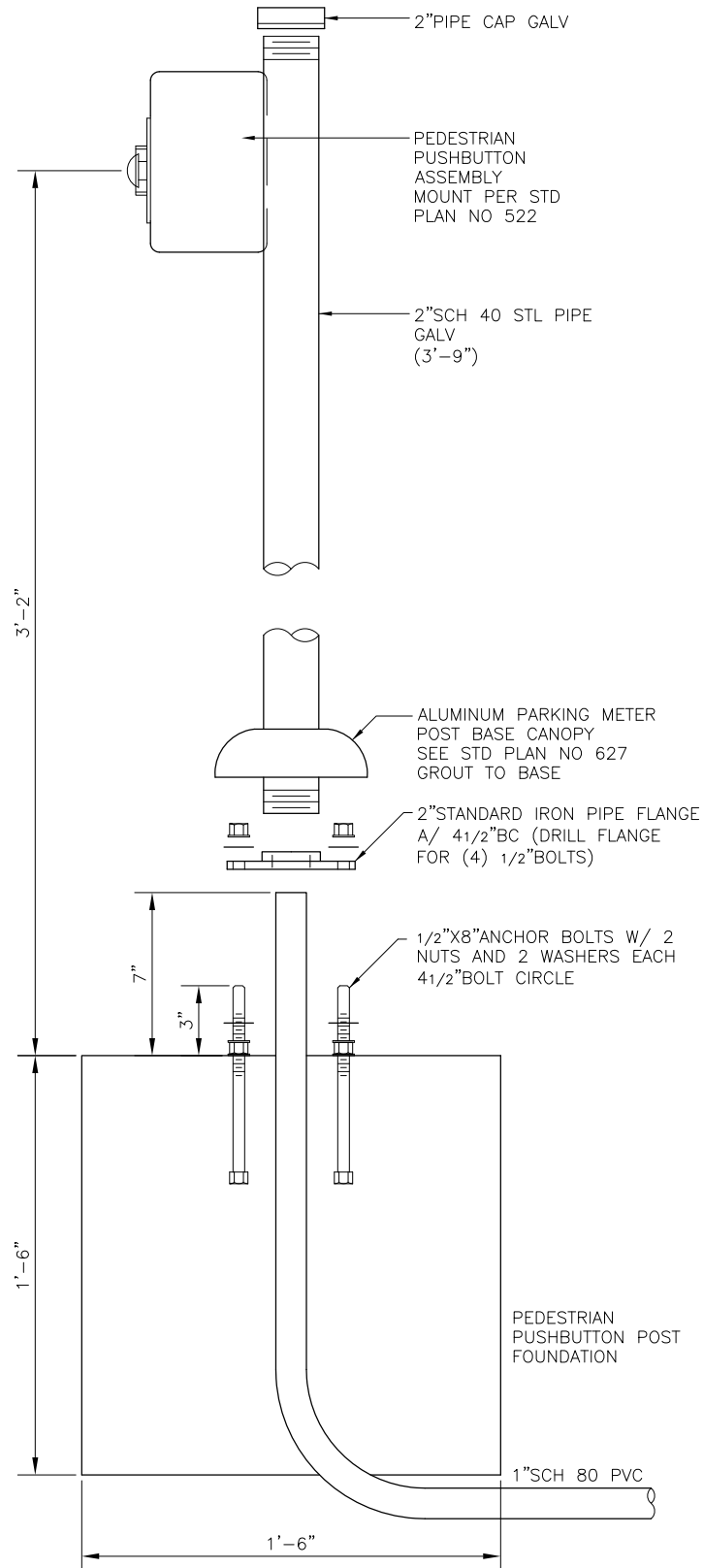


METAL POLE MOUNT

**NOTES:**

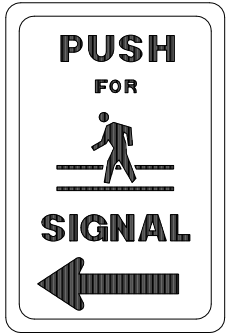
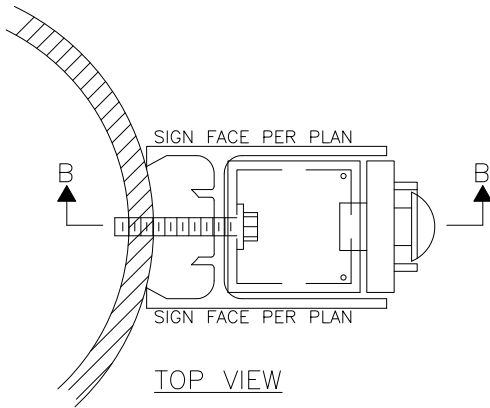
1. BOLT AND WASHERS SHALL BE STAINLESS STEEL
 2. MOUNTING SHALL BE AS FOLLOWS:
ON METAL POLES THINNER THAN 7 GAUGE, USE 3/8" STAINLESS STEEL RIVNUTS
ON METAL POLES 7 GAUGE OR THICKER, DRILL AND TAP FOR 3/8" BOLT (STAINLESS STEEL RIVNUTS OPTIONAL)
ON POLES FILLED WITH OR MADE FROM CONCRETE USE 3/8"x21/2" STUD BOLT ANCHORS WITH HEX NUT
 3. FOR STREET NAME SIGNS MOUNTED ON TOP OF PEDESTAL SEE STD PLAN NO 623
- REF STD SPEC SEC 8-31

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENTPEDESTRIAN SIGNAL
CLAMSHELL MOUNTING



REF STD SPEC SEC 8-31

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENTPEDESTRIAN PUSHBUTTON
POST & FOUNDATION

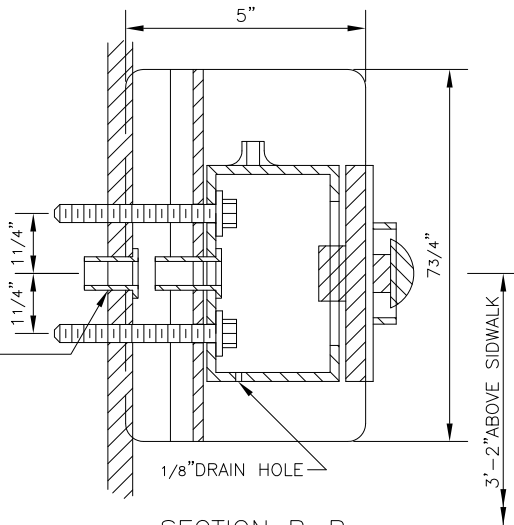


PART NO H3
(R-37L MODIFIED)

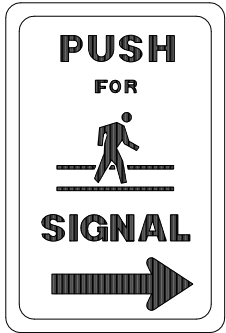
FOR WOOD POLE
USE 3/8"X4" GALV LAG BOLT & WASHER

FOR METAL POLE
DRILL & TAP FOR 3/8" STAINLESS
STEEL BOLTS & WASHER
USE 3/8"X1 1/4" BOLT FOR 2" POST
USE 3/8"X2 3/4" BOLT FOR
4" PEDESTAL
USE 3/8"X3 1/2" BOLT FOR STEEL
POLE

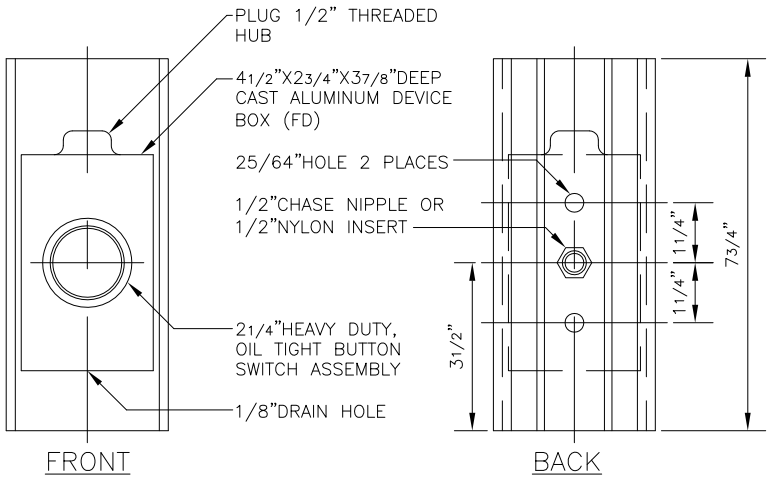
DRILL HOLE FOR 3/8" CHASE NIPPLE
OF 1/2" NYLON INSERT



SECTION B-B

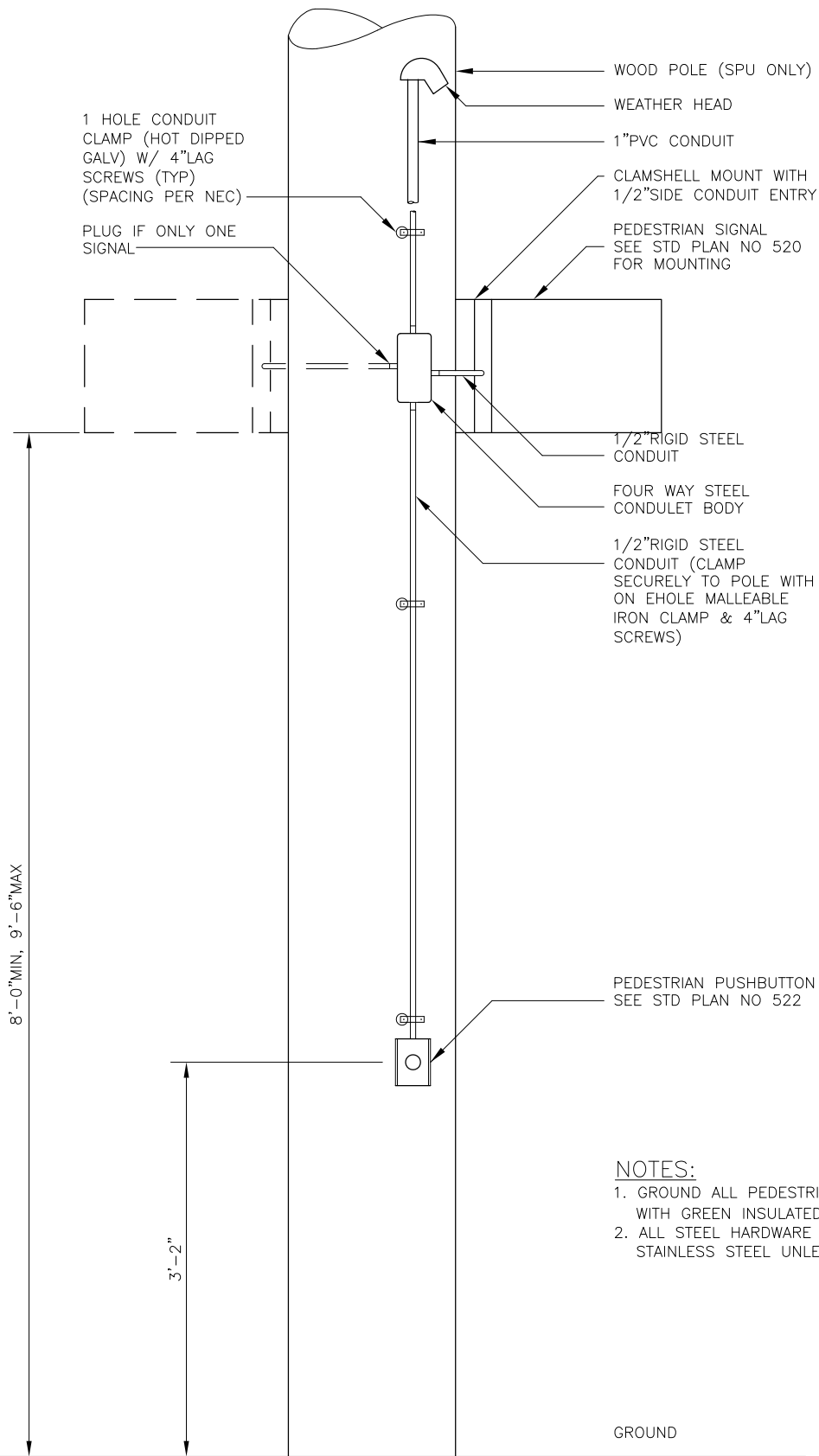


PART NO H3(R)
(R-37R MODIFIED)



PPB ASSEMBLY

- NOTES:
1. MOLDED ONE-PIECE ALUMINUM CONSTRUCTION
 2. SIGNS SHALL BE FABRICATED FROM BAKED-ON ENAMEL DIRECTLY ON BOTH SIDES OF THE EXTRUSION



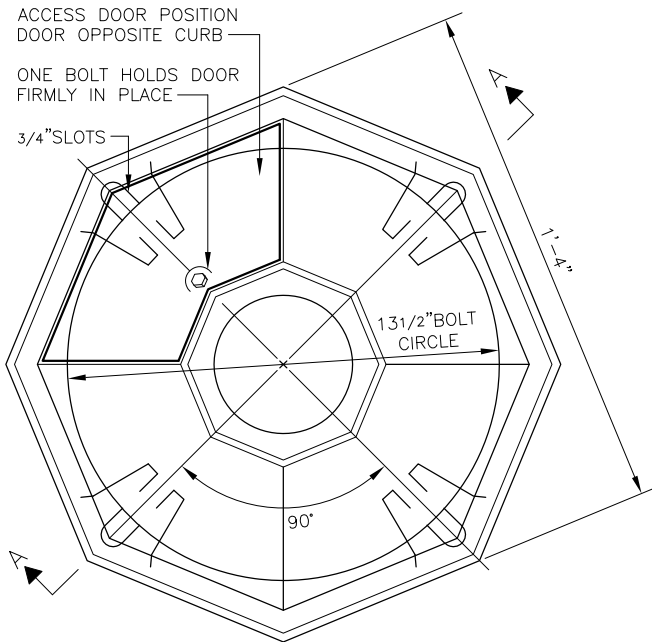
NOTES:

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

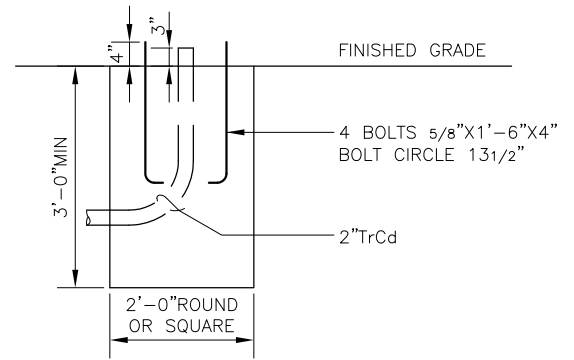
GROUND

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

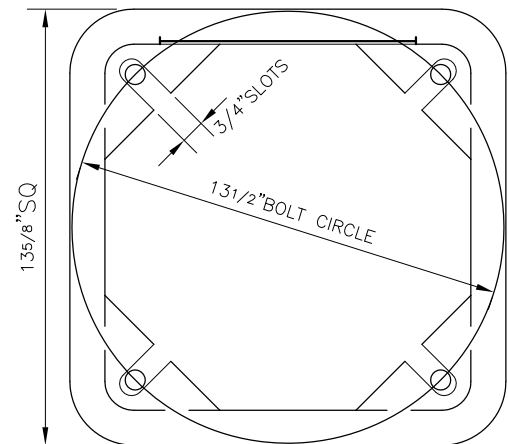
PEDESTRIAN SIGNAL &
PUSHBUTTON MOUNTED ON
WOOD POLE



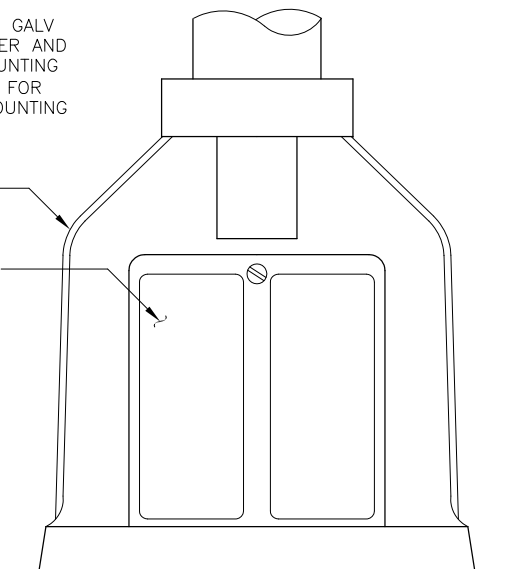
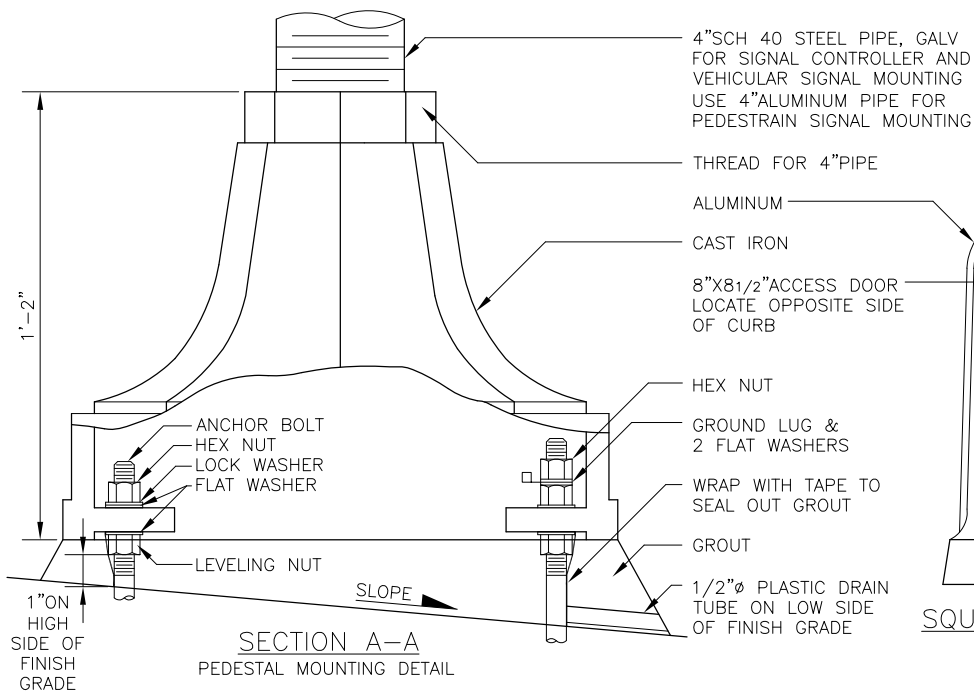
OCTAGONAL CAST IRON BASE



PEDESTAL FOUNDATION



BOTTOM VIEW

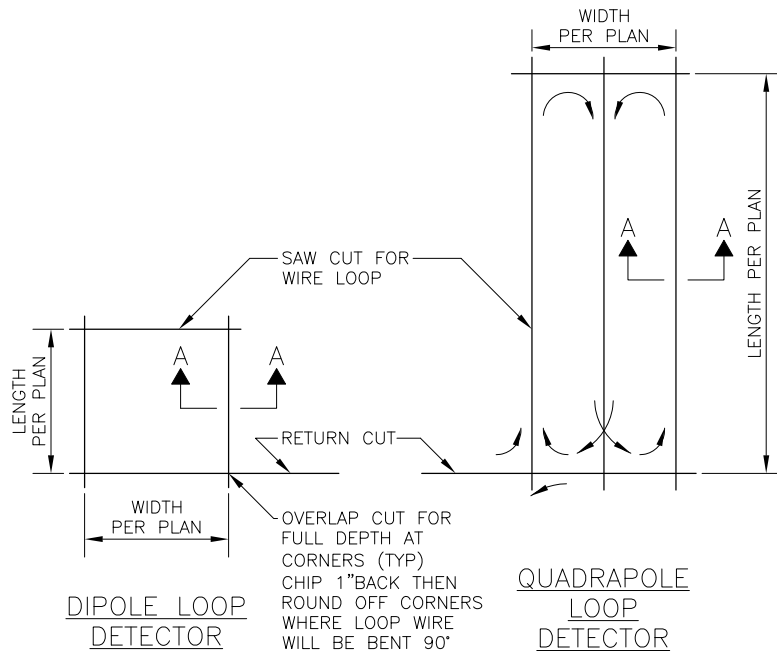


SQUARE ALUMINUM BASE PEDESTAL

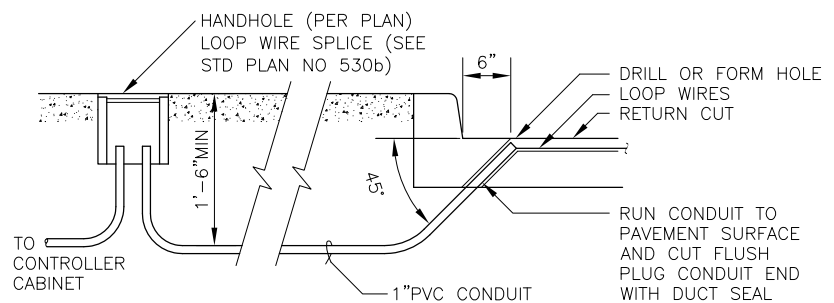
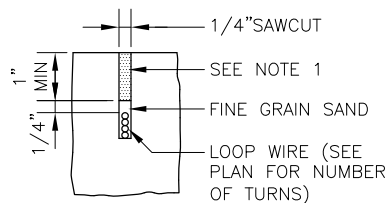
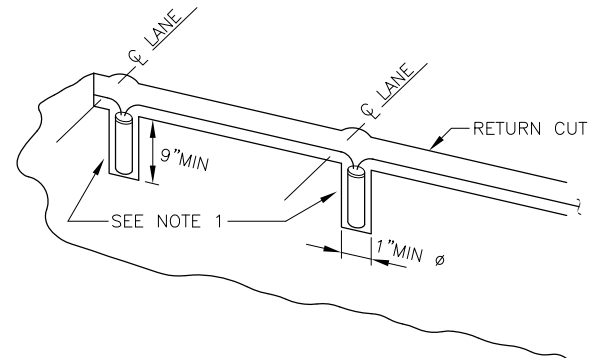
REF STD SPEC SEC 8-32

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

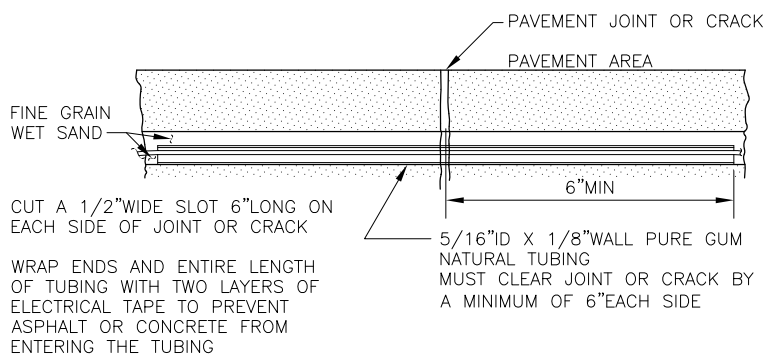
PEDESTAL & FOUNDATION



QUADRAPOLE LOOP DETECTOR



CURB/PAVEMENT ENTRANCE FOR DETECTOR LOOP WIRES



PAVEMENT JOINT CRACK DETAIL

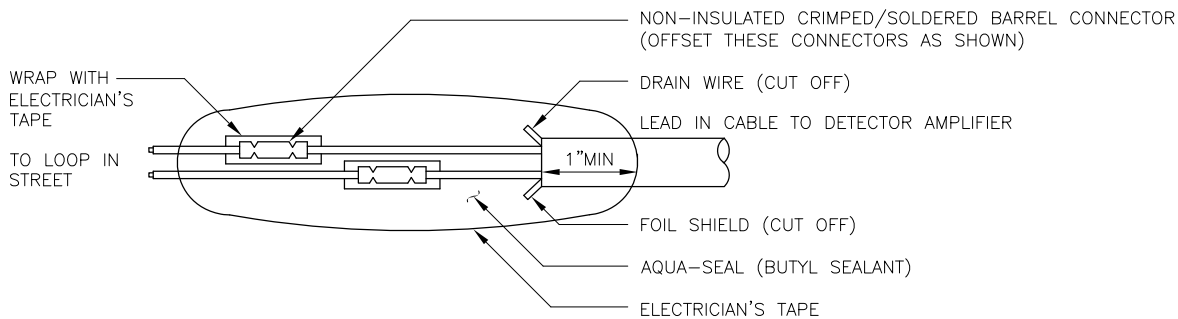
NOTES:

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'-0" OF LOOP WIRE IN HANDHOLE

REF STD SPEC SEC 8-31

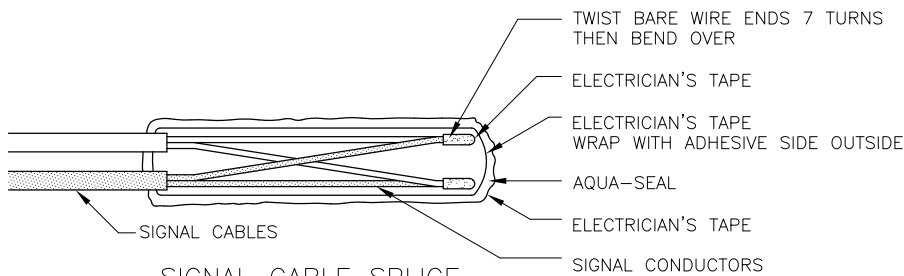
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

LOOP DETECTORS



DETECTOR LED-IN WIRE SPLICE DETAIL

NOTE:
SOLDER CONNECTION AFTER CRIMPING



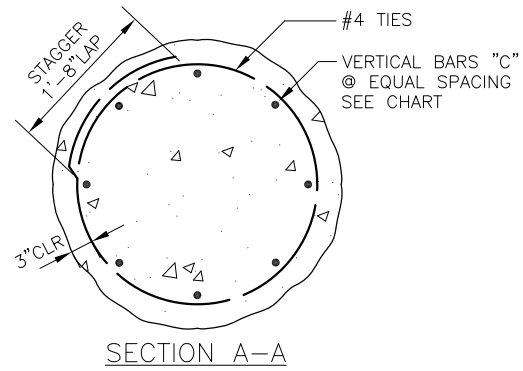
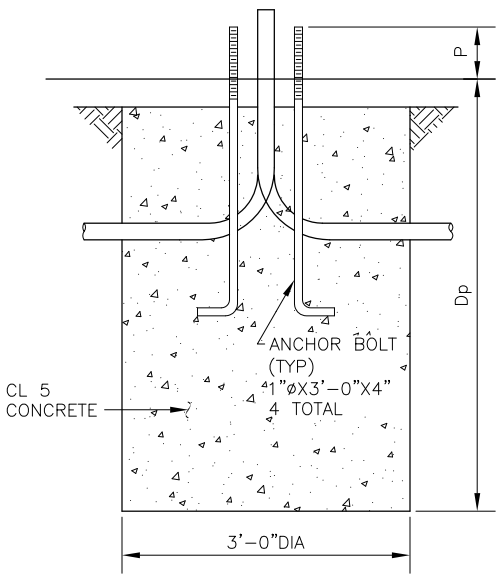
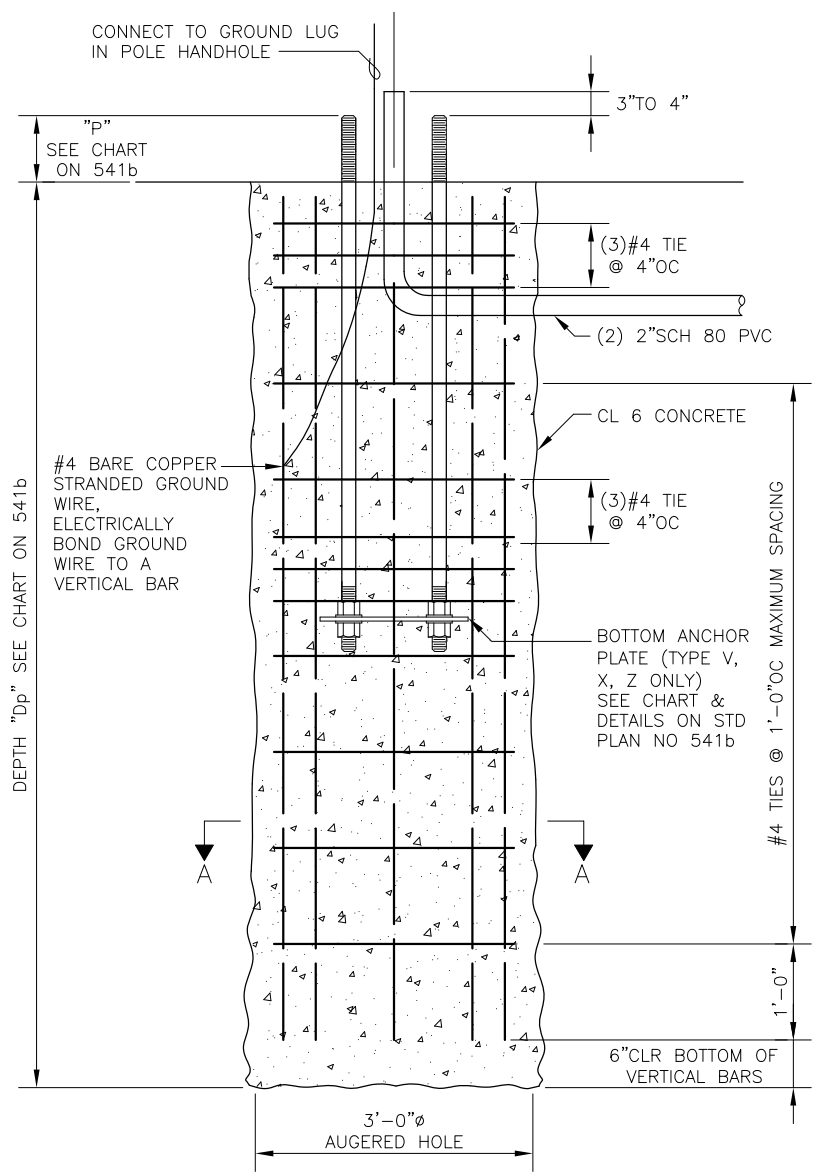
SIGNAL CABLE SPLICE

REF STD SPEC SEC 8-31

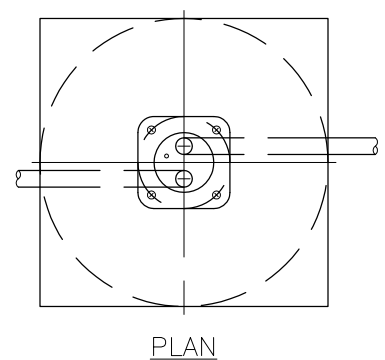
NO SCALE

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

DETECTOR / LOOP LEAD-IN
& SIGNAL CABLE WIRE SPLICE

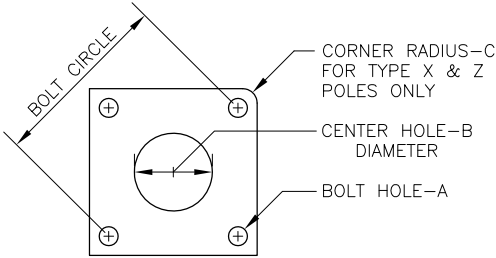
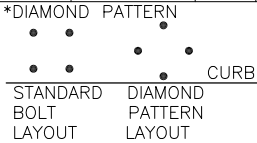


STEEL STRAIN / MAST
ARM POLE FOUNDATION



LIGHTING POLE
FOUNDATION

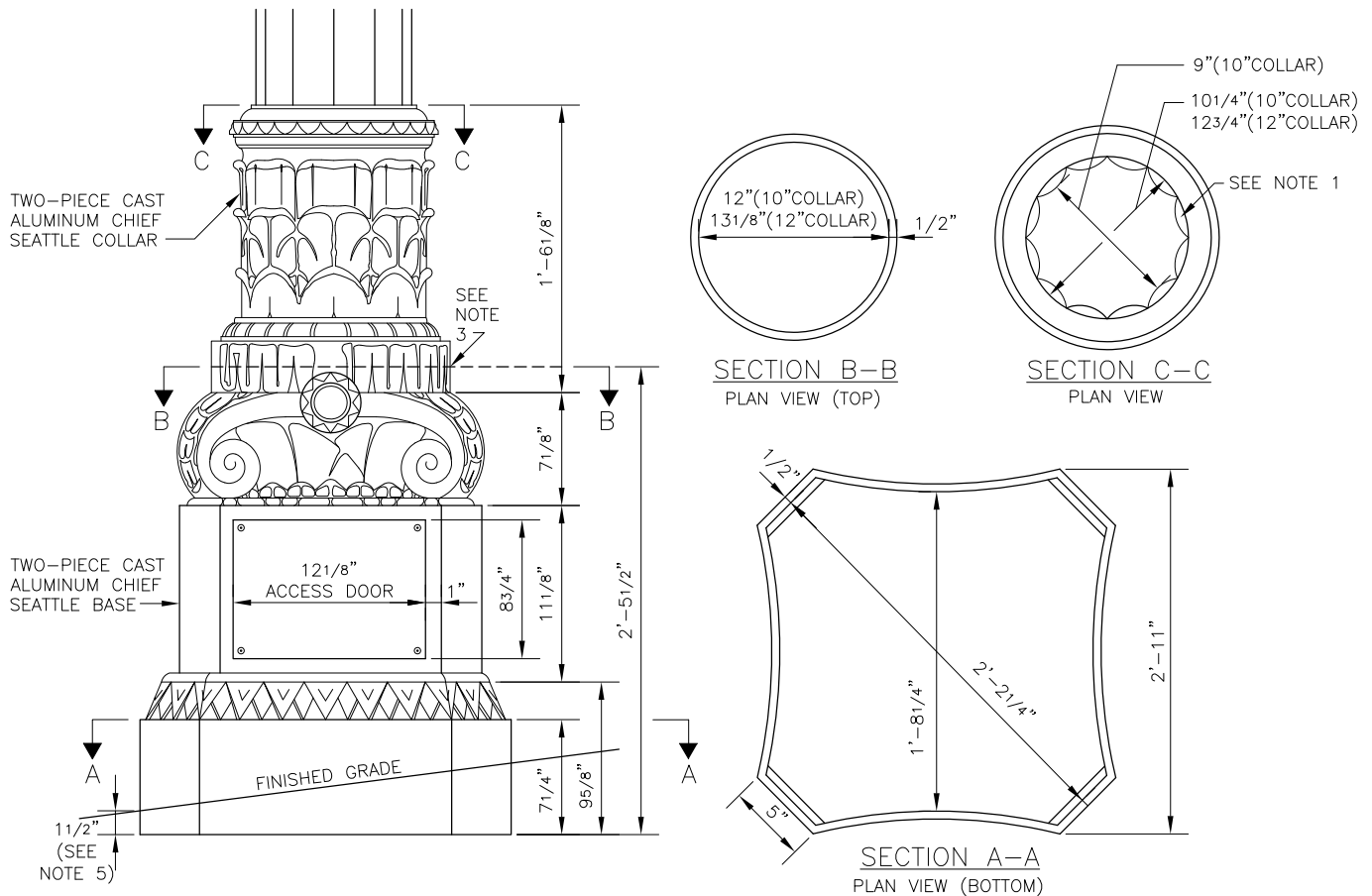
| FOUNDATION SCHEDULE | | | | | | | | | | | | |
|---------------------|-----------|-----------------------|------------------|---------------|--------------------------------|-------------|----------------|------|----------------------|-------------|---------------|-----------------|
| POLE | TYPE | FOUNDATION DEPTH (Dp) | ANCHOR BOLTS | VERTICAL BARS | BOTTOM ANCHOR PLATE DIMENSIONS | | | | | | | |
| | | (LATERAL BEARING) | | | SIZE | BOLT CIRCLE | PROJECTION (P) | CSB | SIZE | A BOLT HOLE | B CENTER HOLE | C CORNER RADIUS |
| | | 150#/SF/FT NORMAL | 100#/SF/FT WORST | | | | | | | | | |
| LIGHTING | SL | 4'-6" | 5'-0" | 1"x36"x4" | 11 1/2" | 6 1/2" | 8" | - | - | - | - | - |
| | SL/T | | | | 15" | 6 1/2" | 8" | - | - | - | - | - |
| | CSB | | | | 15 3/4"* | 4" | 4" | - | - | - | - | - |
| STEEL STRAIN | T | 7'-6" | 8'-0" | 1 1/2"x54"x6" | 14 1/2" | 7 1/2" | 8" | 8#7 | - | - | - | - |
| | V | 8'-6" | 9'-6" | 1 3/4"x72" | 18" | 9" | 9" | 8#8 | 1/2"x16 1/2"x16 1/2" | 1 15/16" | 10" | - |
| | X | 10'-6" | 12'-6" | 2" X72" | 20" | 10" | 10" | 12#8 | 1/2"x18 1/2"x18 1/2" | 2 3/16" | 11" | 2" |
| | Z | 13'-0" | 15'-0" | 2 1/2"x72" | 22" | 11 1/2" | 11 1/2" | 12#8 | 1/2"x20 1/2"x20 1/2" | 2 11/16" | 12" | 2 1/2" |
| STEEL MAST ARM | 15'TO 30' | 7'-6" | 8'-0" | 1 1/2"x54"x6" | 14 1/2" | 7 1/2" | 8" | 8#7 | - | - | - | - |
| | 31'TO 40' | 8'-6" | 9'-6" | 1 3/4"x72" | 16 1/2" | 9" | 9" | 8#8 | 1/2"x16 1/2"x16 1/2" | 1 15/16" | 10" | - |
| | 41'TO 45' | 8'-6" | 9'-6" | 1 3/4"x72" | 16 1/2" | 9" | 9" | 8#8 | 1/2"x16 1/2"x16 1/2" | 1 15/16" | 10" | - |
| | 46'TO 60' | 10'-0" | 12'-6" | 2" X72" | 18" | 10" | 10" | 12#8 | 1/2"x18 1/2"x18 1/2" | 2 3/16" | 11" | 2" |



BOTTOM ANCHOR PLATE

POLE FOUNDATION NOTES:

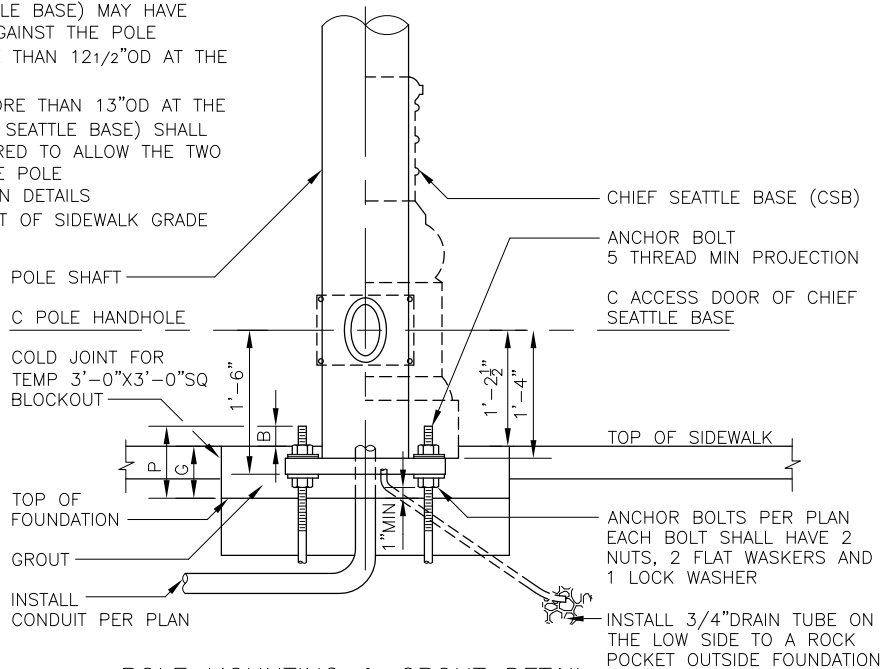
1. CONCRETE STRENGTH SHALL BE CL 6 (11/2) $f'_c=3000$ PSI @ 28 DAYS
2. ANCHOR BOLTS FOR TYPE SL: ASTM A307 OR A576
ANCHOR BOLTS FOR TYPE T AND MAST ARM: ASTM A576 (TYPE 1040 OR 1045)
ASTM A675 GRADE 90 OR ASTM A36 MOD $F_y=55$ KSI
ANCHOR BOLTS FOR TYPE V, X, Z: ASTM A354 GRADE BC OR A687
NUTS: ASTM A563 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 CL A615 GRADE 60
5. ANCHOR BOLTS SHALL BE HOT DIP GALVANIZED ASTM A153 FULL LENGTH
INCLUDING NUTS & WASHERS WITH A MINIMUM OF 18" OF THREADS ON TOP
AND 12" ON BOTTOM (TYPE V, X, Z ONLY)

**NOTES:**

1. FOR POLES GREATER THAN 9 1/2" BUT NOT MORE THAN 10" OD 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 12 1/2" OD AT THE BASE A 12" COLLAR SHALL BE USED
2. FOR POLES IN EXCESS OF 12 1/2" BUT NOT MORE THAN 13" OD 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 541 FOR POLE FOUNDATION DETAILS
5. BASE SHALL BE EMBEDDED 1 1/2" AT LOW POINT OF SIDEWALK GRADE

| B+G+P | | | |
|-----------|--------|---------|---------|
| POLE TYPE | B | G | P |
| T | 1 1/2" | 6 1/2" | 8" |
| V | 2 1/2" | 6 1/2" | 9" |
| X | 3" | 7" | 10" |
| *Z | 0" | 11 1/2" | 11 1/2" |

*CSB WILL NOT FIT OVER ANCHOR BOLT NUTS THEREFORE BOLTS MUST BE SET BELOW SIDEWALK

**POLE MOUNTING & GROUT DETAIL**

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

CHIEF SEATTLE BASE

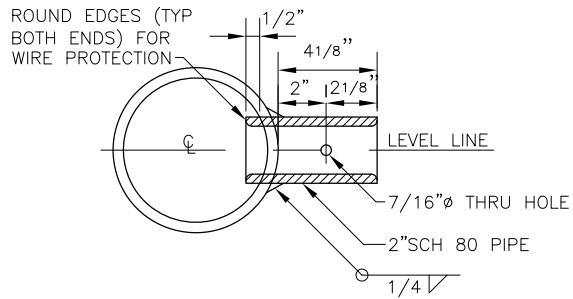
| HANDHOLE TYPE | TOP UNIT INSIDE | | | EXTENSION UNIT(E) | LID DIMENSIONS | | |
|------------------|--------------------|-----|-----|----------------------|-------------------|--------|---|
| | DIMENSIONS | | | | H | L | W |
| | L | W | H | | | | |
| 1 | 19" | 14" | 12" | 12" | 173/4" | 13" | |
| 2 | 28" | 17" | 12" | 12" | 265/8" | 171/8" | |
| 3 | 36" | 24" | 12" | 12" | 381/2" | 26" | |
| 4 | 24"DIAMETER | | | NA | | | |
| 5 | 26" 24" 30" | | | NA | | | |
| GRHH | 8"DIAMETER | | | NA | | | |

1. THE COVER SHALL HAVE 1/16" TO 1/8" CLEARANCE ON EACH EDGE WITHIN THE FRAME AFTER GALVANIZING
2. THE GROUND ROD SHALL EXTEND A 3" MIN AND 6" MAX ABOVE THE BOTTOM OF THE HANDHOLE
3. TYPE 1, 2, 3 & 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. FOR PAVEMENT DEPTH GREATER THAN 7" USE FRAME EXTENSIONS (SEE STD PLAN NO 231) TO BRING THE COVER UP TO THE LEVEL OF THE FINISHED PAVEMENT WITHOUT EMBEDDING THE BOTTOM FLANGE OF THE CASTING IN THE PAVEMENT
6. A 4'-8" BRAIDED COPPER WIRE SHALL BE SECURED TO THE HANDHOLE LID & FRAME WITH A 4'-0" LENGTH FROM FRAME THAT CAN BE HOOKED UP TO A GROUND ROD
7. BUNDLE CABLE IN HANDHOLES TO PROVIDE ORDERLY GROUPING OF CABLES

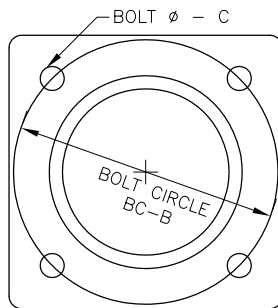
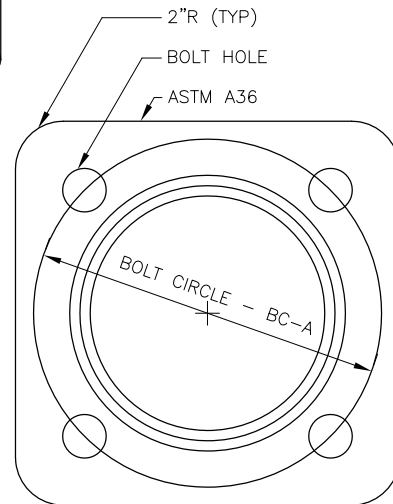
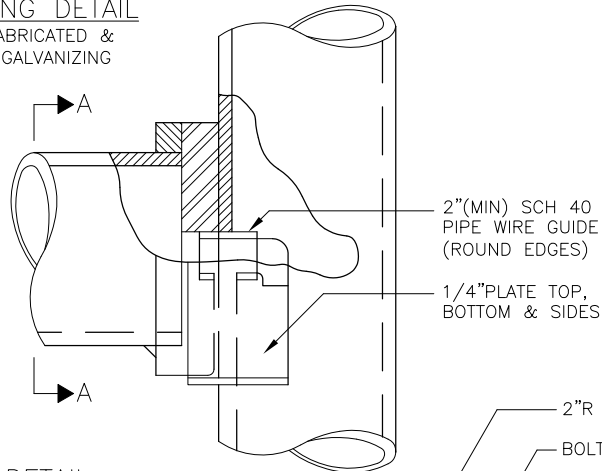






SIGNAL COUPLING DETAIL

COUPLING TO BE FABRICATED & INSTALLED BEFORE GALVANIZING

SECTION A-AMAST ARM FLANGE DETAILBASE PLATE DETAILNOTES:

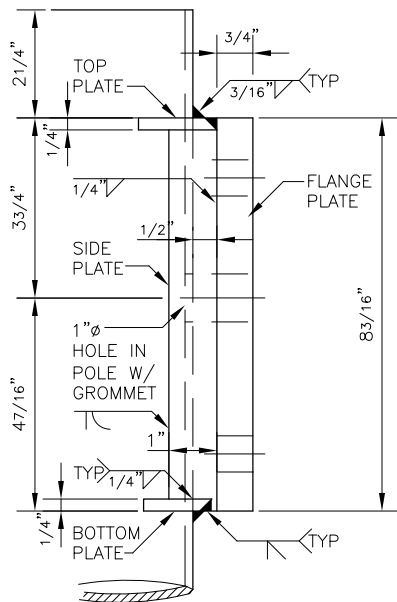
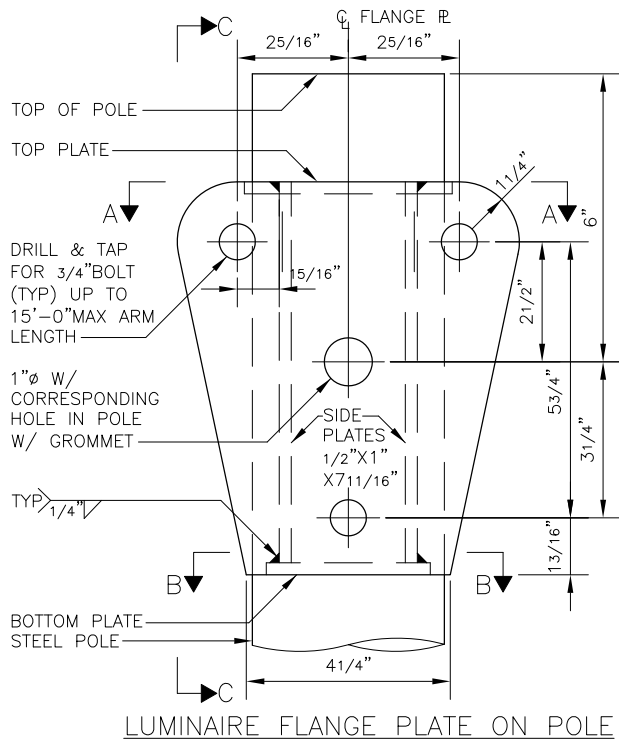
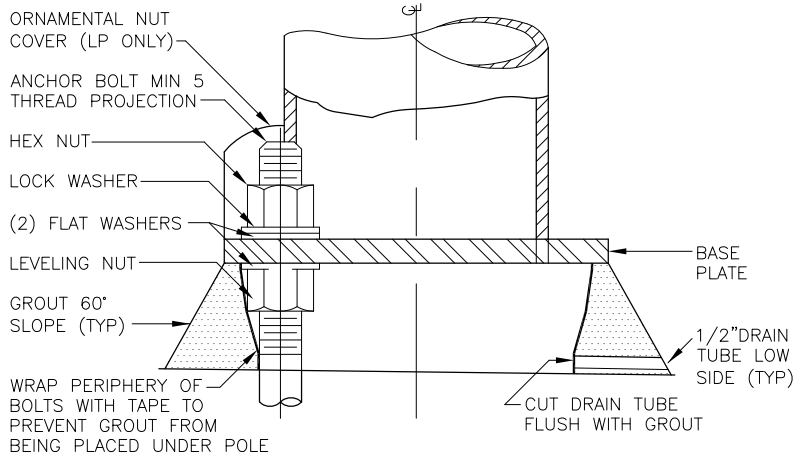
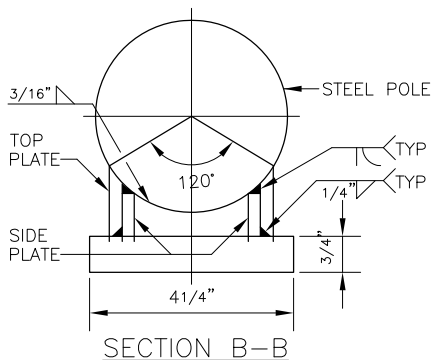
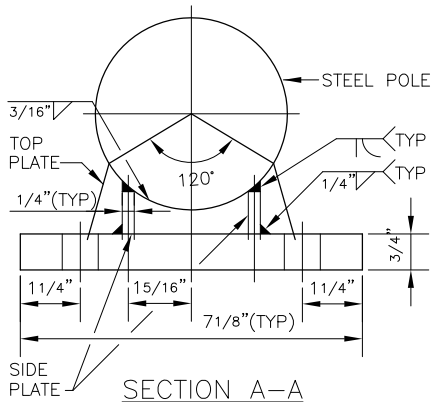
- POLE AND MAST ARM DESIGN SHALL CONFORM TO AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS (LATEST EDITION)
- EACH SIGNAL COUPLING LOCATION SHALL SUPPORT THE FOLLOWING:
FOR 3 SECTION SIGNAL HEAD:
WIND LOAD AREA=9 SQ FT, DESIGN WEIGHT=60 LBS
FOR 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'-0" MOUNTING HEIGHT WITH A WIND LOAD AREA OF 3.2 SQ FT AND A DESIGN WEIGHT OF 75 LBS. ANY PROPOSED SIGN SHALL BE ACCOMMODATED IN THE POLE DESIGN PER PLAN. MAST ARM AND LUMINAIRE ARM FLANGE PLATES SHALL HAVE ASTM A325 BOLTS W/ LOCKWASHERS
- POLE SHAFT AND MAST ARM SHALL BE FABRICATED FROM ASTM A572 GR 50, 60 OR 65 OR ASTM A595 GR A OR B
- ALL PLATES & HANDHOLE REINFORCING RIM SHALL BE FABRICATED FROM ASTM A36

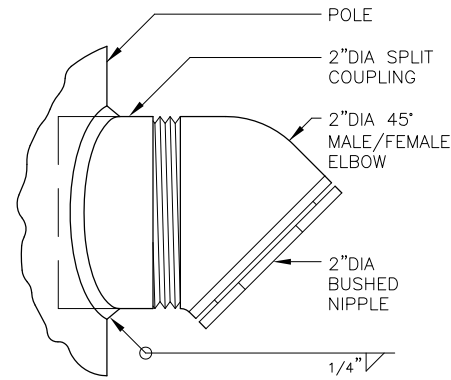
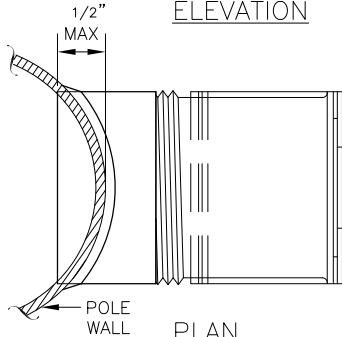
| MAST ARM LENGTH | DEAD LOAD MOMENT K-FT (AT GROUND LINE) | POLE DETAILS | | | | | FLANGE DETAILS | |
|------------------|--|-------------------|--------------------|---------|-----------|-------------------|----------------|--------------|
| | | GROUND LINE DIA A | BASE PLATE SIZE | BC-A | BOLT HOLE | ANCHOR BOLTS | BC-B | BOLT Ø C |
| 15'-0" TO 30'-0" | 40 | 10" ± 1/4" | 1 1/2" X 16" X 16" | 14 1/2" | 1 13/16" | 1 1/2" X 54" X 6" | 11" | 1" - 8NC |
| 31'-0" TO 40'-0" | 51 | 12" ± 1/2" | 13/4" X 18" X 18" | 16 1/2" | 2 1/16" | 13/4" X 72" | 12" | 1 1/4" - 7NC |
| 41'-0" TO 45'-0" | 51 | 12" ± 1/2" | 13/4" X 18" X 18" | 18" | 2 1/16" | 13/4" X 72" | 13 1/8" | 1 1/4" - 7NC |
| 46'-0" TO 60'-0" | 93 | 13" ± 1" | 2 1/4" X 20" X 20" | 20" | 2 5/16" | 2" X 72" | 14" | 1 1/2" - 6NC |

REF STD SPEC SEC 8-32 & 9-33

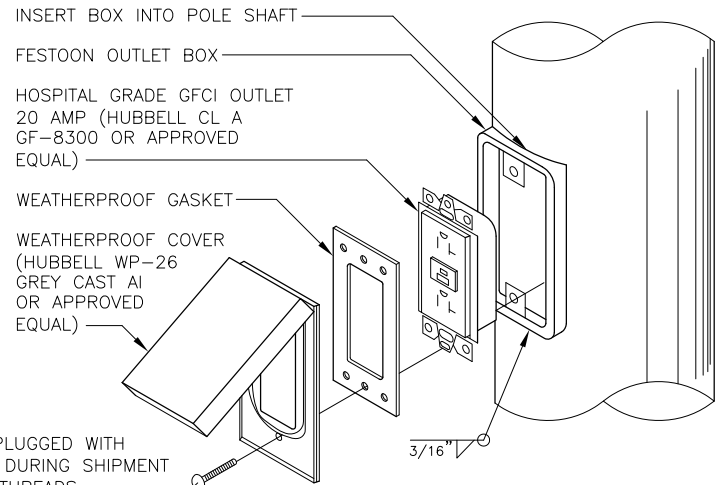
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

STEEL MAST ARM POLE



ELEVATIONWALL PLAN

CABLE OUTLET DETAIL

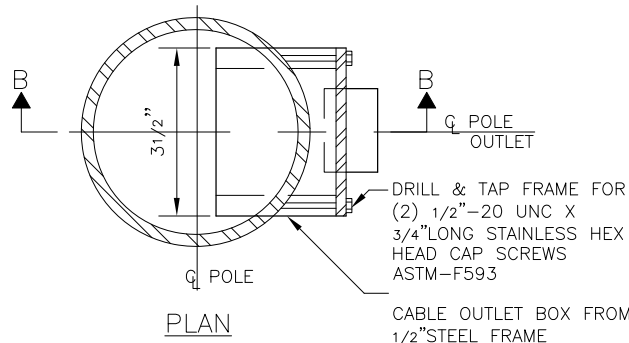


FESTOON OUTLET DETAIL

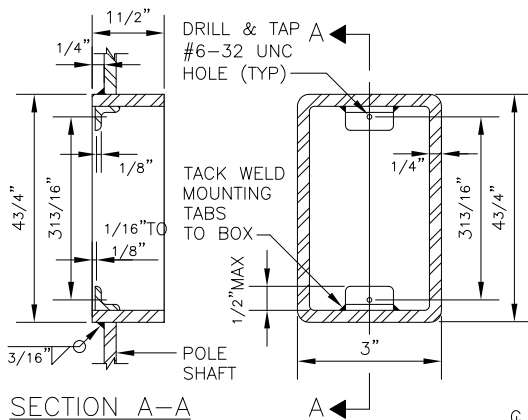
(METAL POLES)

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 1/2" MAX AS SHOWN

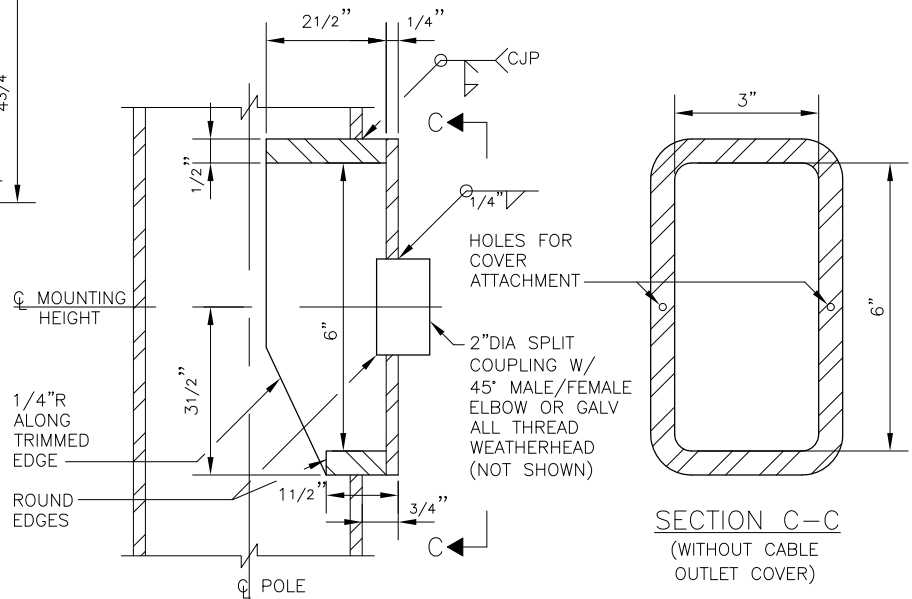


PLAN



SECTION A-A

FESTOON OUTLET BOX



SECTION C-C

(WITHOUT CABLE
OUTLET COVER)

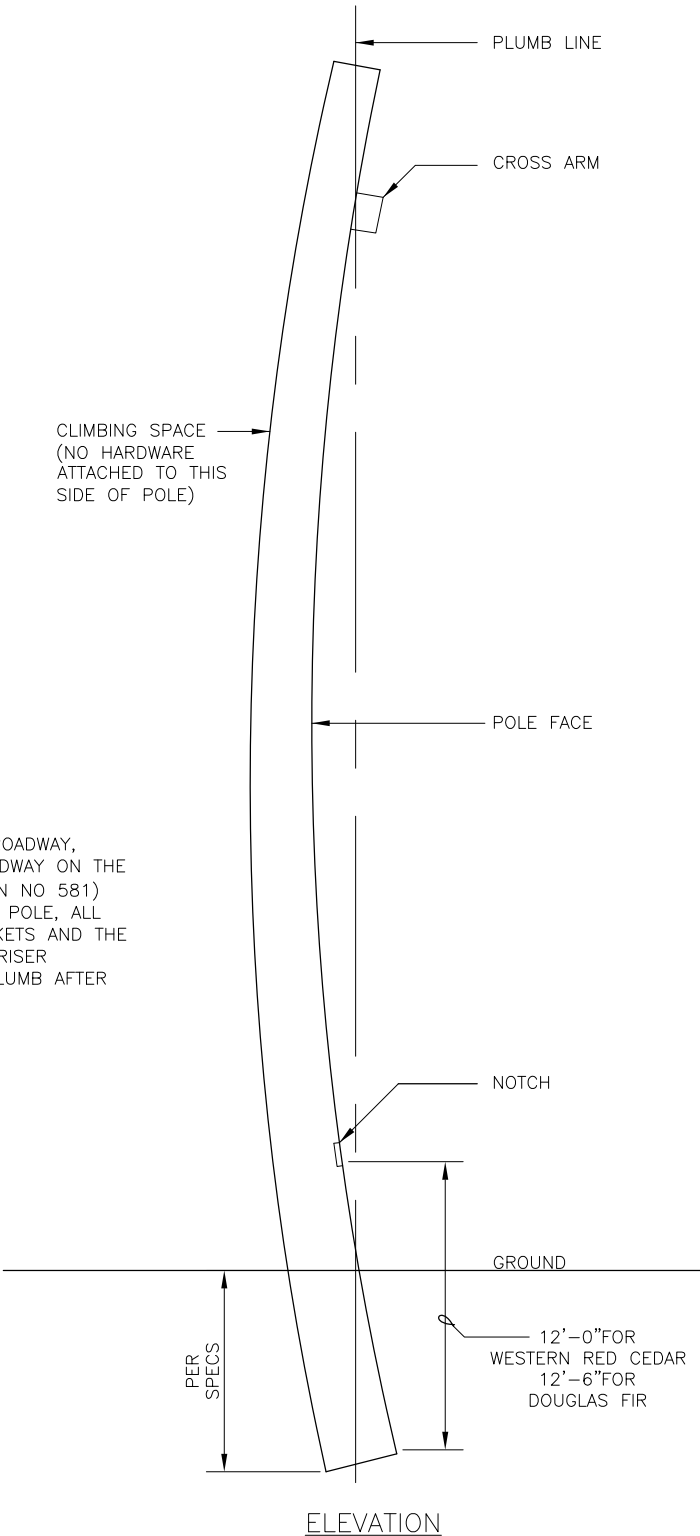
SECTION B-B

CABLE OUTLET DETAIL

(ALTERNATE)

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 NO 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

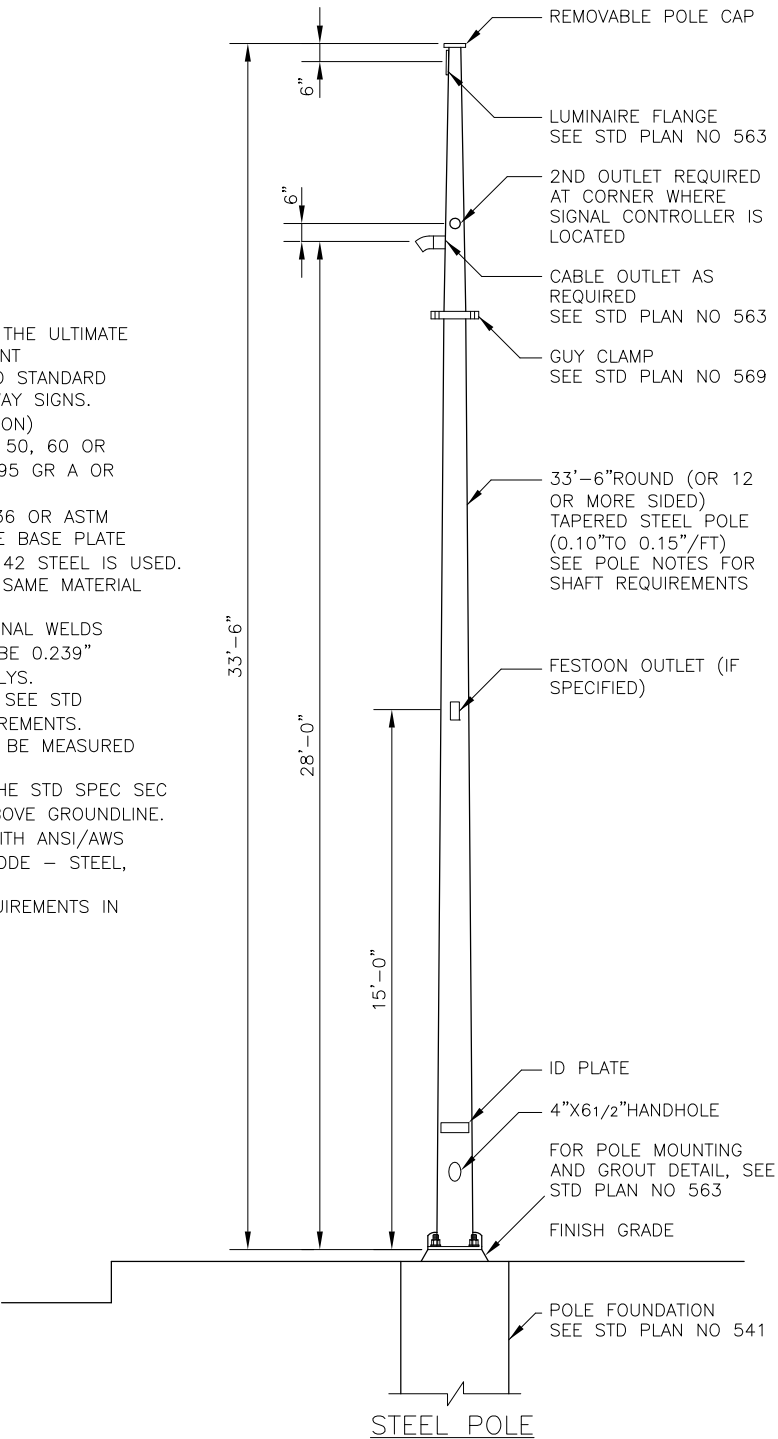
REF STD SPEC SEC 8-32

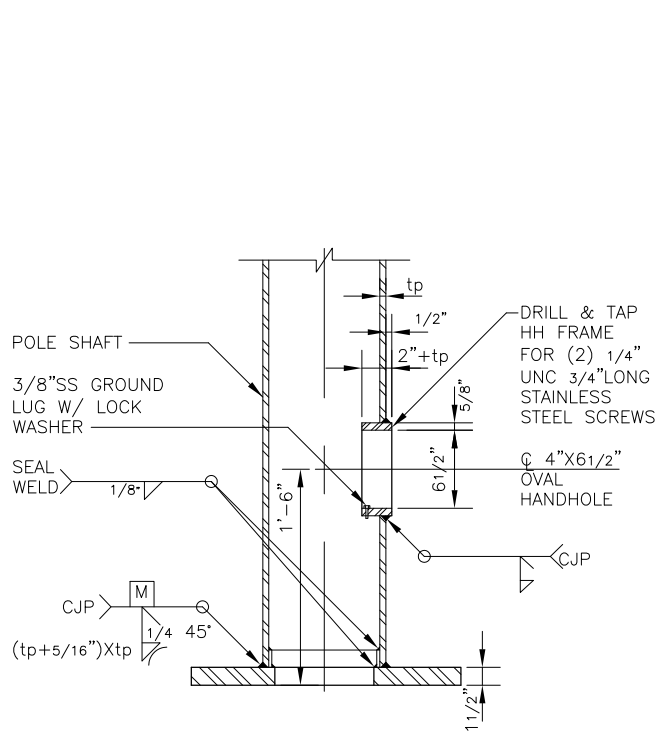
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

UTILITY POLE DETAILS

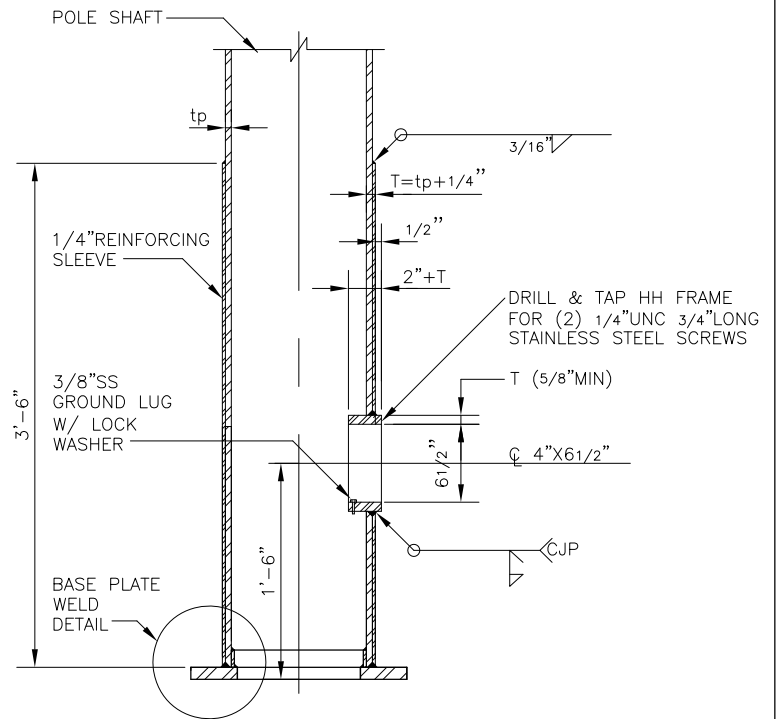
NOTES:

1. THE YIELD MOMENT SHALL BE 2X DEAD LOAD MOMENT. THE ULTIMATE PLASTIC MOMENT SHALL BE 2.5X THE DEAD LOAD MOMENT
2. POLE STRENGTH SHALL MEET REQUIREMENTS OF AASHTO STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS. LUMINAIRES AND TRAFFIC SIGNALS (MOST CURRENT EDITION)
3. POLE SHAFT AND REINFORCING SLEEVE: ASTM A572 GR 50, 60 OR 65 (Fy=50, 60 OR 65 KSI RESPECTIVELY) OR ASTM A595 GR A OR B (Fy=55 OR 60 KSI RESPECTIVELY)
4. BASE PLATE AND HANDHOLE REINFORCING RIM: ASTM A36 OR ASTM A572 GR 42. BASE PLATE $F_y \geq 0.65$ POLE SHAFT F_y . THE BASE PLATE THICKNESS MAY BE REDUCED BY $\frac{1}{4}$ " IF ASTM A572 GR 42 STEEL IS USED.
5. REINFORCING SLEEVE SHALL BE FABRICATED FROM THE SAME MATERIAL TYPE AND YIELD STRENGTH AS THE POLE SHAFT
6. POLE SHAFTS SHALL HAVE NO MORE THAN 2 LONGITUDINAL WELDS
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 STD SPEC SEC 9-33.1(3) 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 STD SPEC SEC 9-33.2(2) WITH THE DEAD LOAD APPLIED AT 27'-0" ABOVE GROUNDLINE.
11. ALL STEEL AND WELDING SHALL BE IN ACCORDANCE WITH ANSI/AWS D1.1 (MOST CURRENT EDITION) STRUCTURAL WELDING CODE - STEEL, SECTION 10 TUBULAR STRUCTURES.
12. THE POLES SHALL BE COMPACT AND MUST MEET REQUIREMENTS IN AASHTO SECTION 4, TABLE 1.4 1B(1).

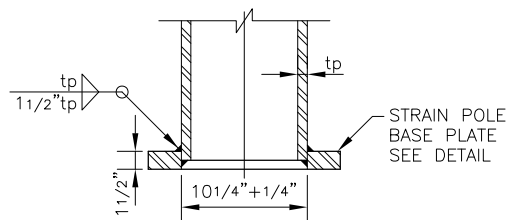




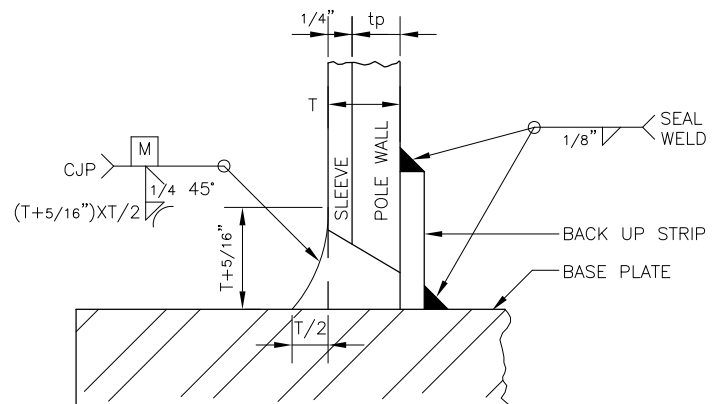
T POLE BASE DETAIL



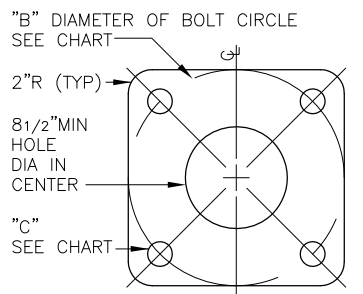
V, X & Z POLE BASE DETAIL



ALTERNATE T POLE BASE DETAIL

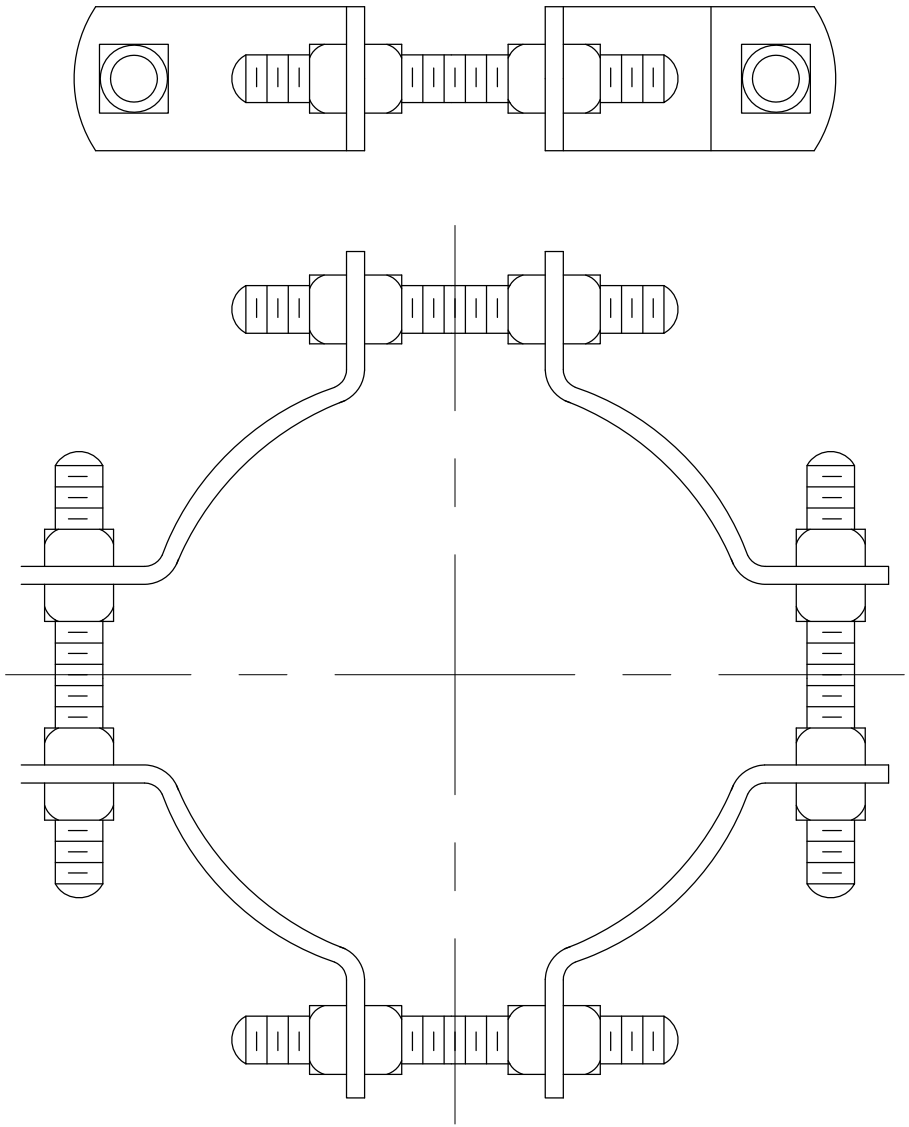


WELD DETAIL



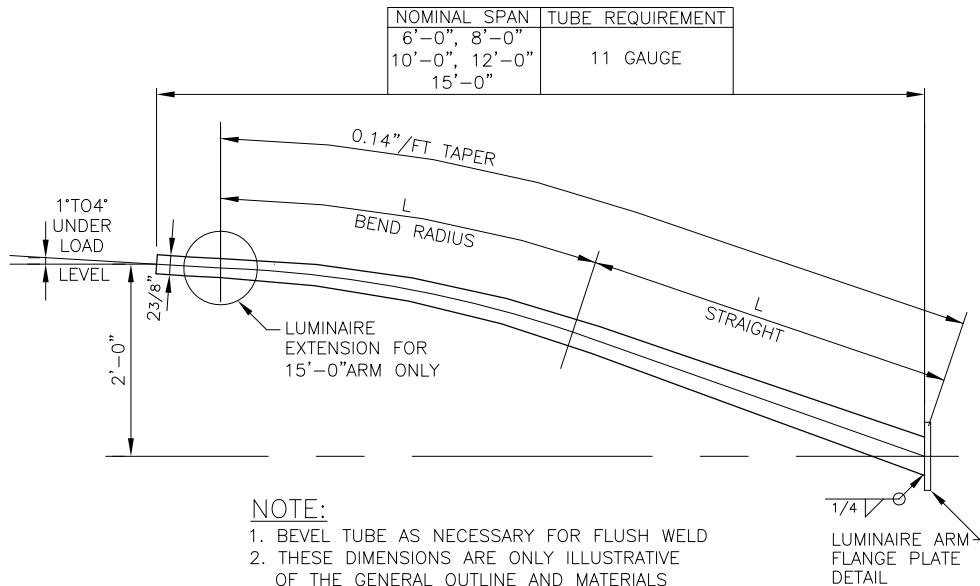
BASE PLATE DETAIL

| POLE TYPE | DEAD LOAD MOMENT K-FT (AT GROUND LINE) | POLE DETAILS | | | | |
|-----------|--|---------------------------|-----------------|---------------------|-------------------|-----------------|
| | | GROUND LINE OD POLE SHAFT | BASE PLATE SIZE | BOLT CIRCLE DIA "B" | BOLT HOLE DIA "C" | ANCHOR BOLTS |
| SL | - | 8 1/2" | 1"X12"X12" | 11 1/2" | 15/16" | 1"X36"X4" |
| T | 40 | 10"±1/4" | 1 1/2"X16"X16" | 14 1/2" | 1 13/16" | 1 1/2"X54"X6" |
| V | 51 | 12"±1/2" | 1 3/4"X18"X18" | 18" | 2 1/16" | 1 3/4"DIA X 72" |
| X | 93 | 13"±1" | 2 1/4"X20"X20" | 20" | 2 5/16" | 2" DIA X 72" |
| Z | 164 | 14"±1" | 2 3/4"X23"X23" | 22" | 2 13/16" | 2 1/2"DIA X 72" |



JOSLYN HEAVY POLE BAND #J6643 OR EQUIVALENT
ADJUSTABLE 4-WAY GUY CLAMP

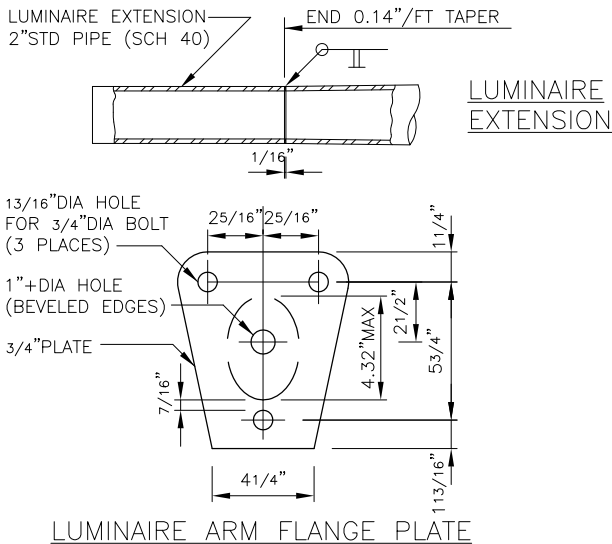
| | | |
|--|--|------------|
| | CITY OF SEATTLE PUBLIC UTILITIES DEPARTMENT | GUY CLAMPS |
|--|--|------------|



- NOTE:
- 1. BEVEL TUBE AS NECESSARY FOR FLUSH WELD
 - 2. 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
 - 3. STANDARD PLAN DOES NOT APPLY TO PRE-APPROVED BRACKET ARMS
 - 4. FLANGE DIMENSIONS AND HOLE LOCATIONS MUST MATCH THOSE ON POLE FLANGE PLATE SEE STD PLAN NO 563

LUMINAIRE ARM

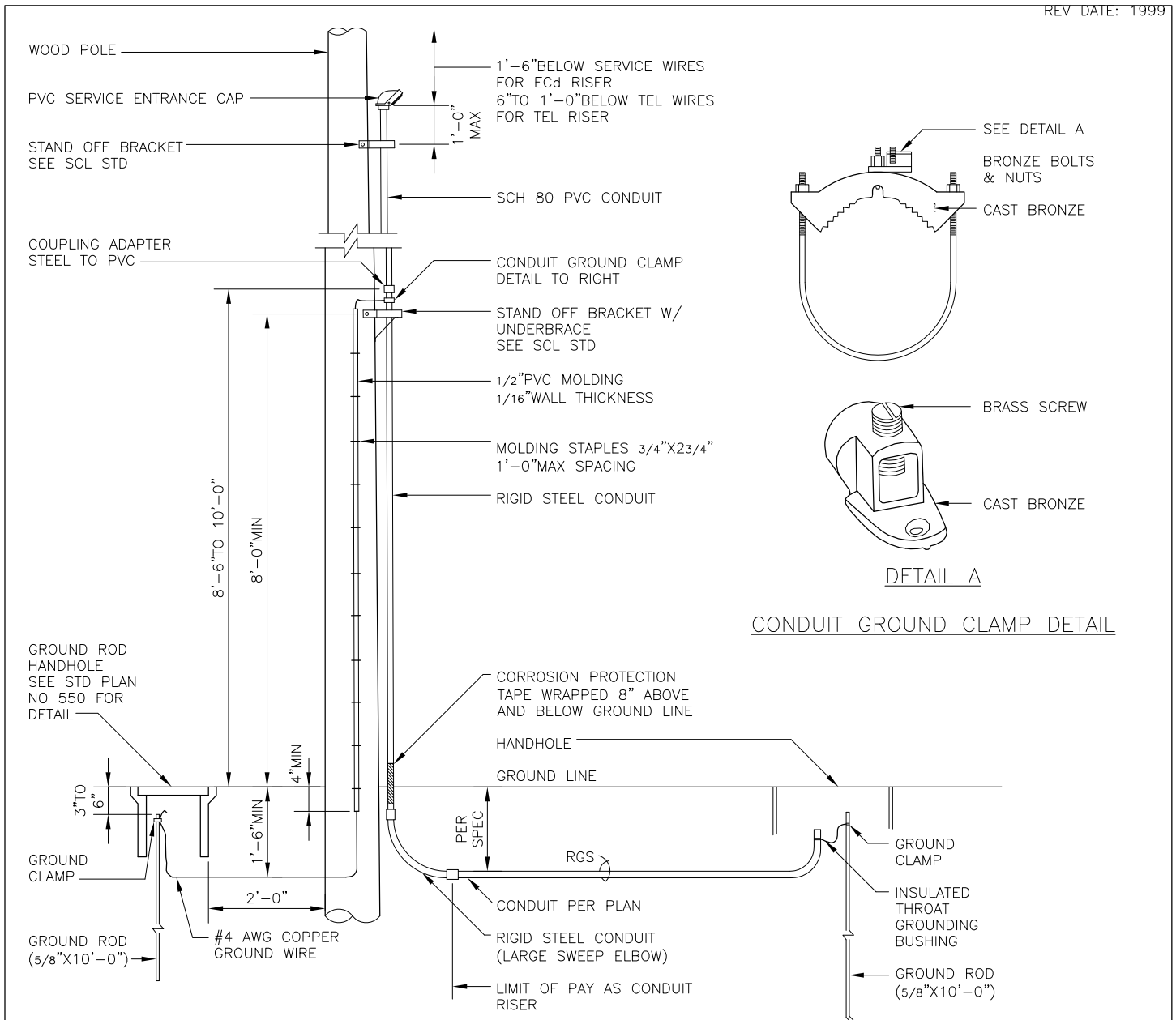
| MATERIAL SPECIFICATION | |
|------------------------|-----------|
| PLATE & SHAPES | ASTM A36 |
| POLE SHAFTS | ASTM A570 |
| | GR 40 MIN |
| ANCHOR BOLTS | ASTM A307 |
| ARM FLANGE | ASTM A325 |
| PLATE BOLT | |



REF STD SPEC SEC 9-33

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

STEEL BRACKET ARM

CONDUIT RISER (WITH STAND-OFF BRACKET*)

*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

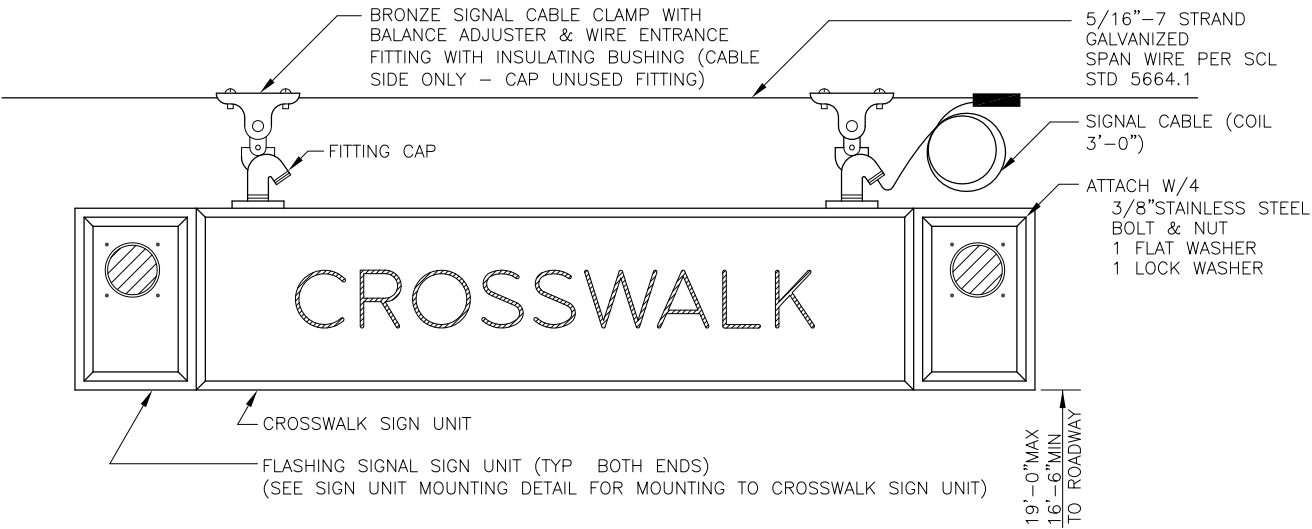
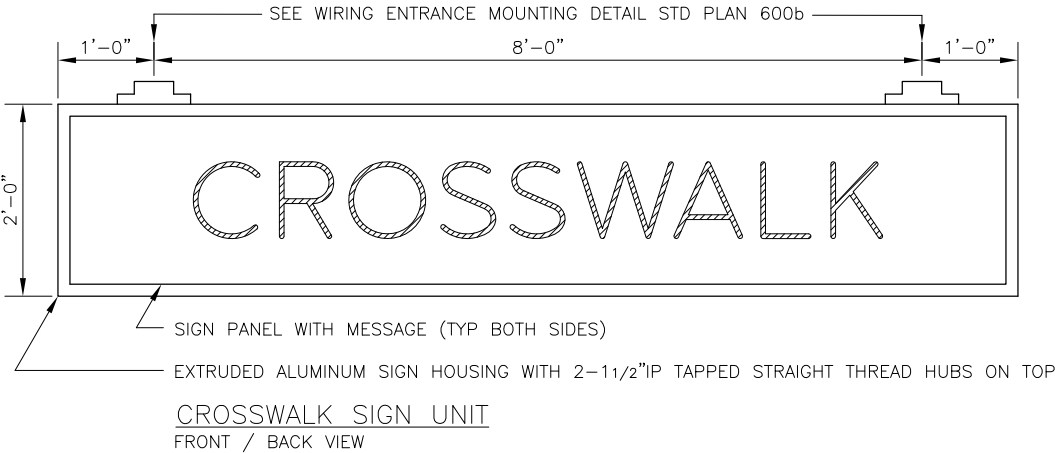
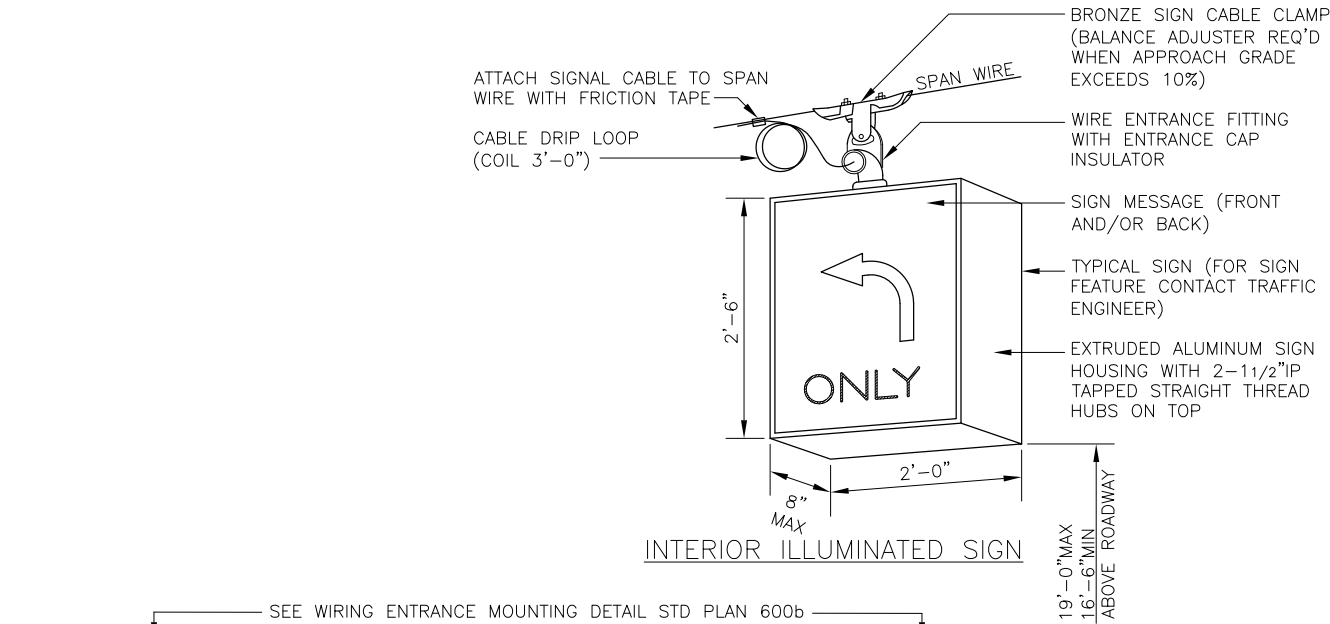
NOTES:

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'-0" TO 10'-0" 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
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 TWO CLAMP PER 10'-0" 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

REF STD SPEC SEC 8-33

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

CONDUIT RISER

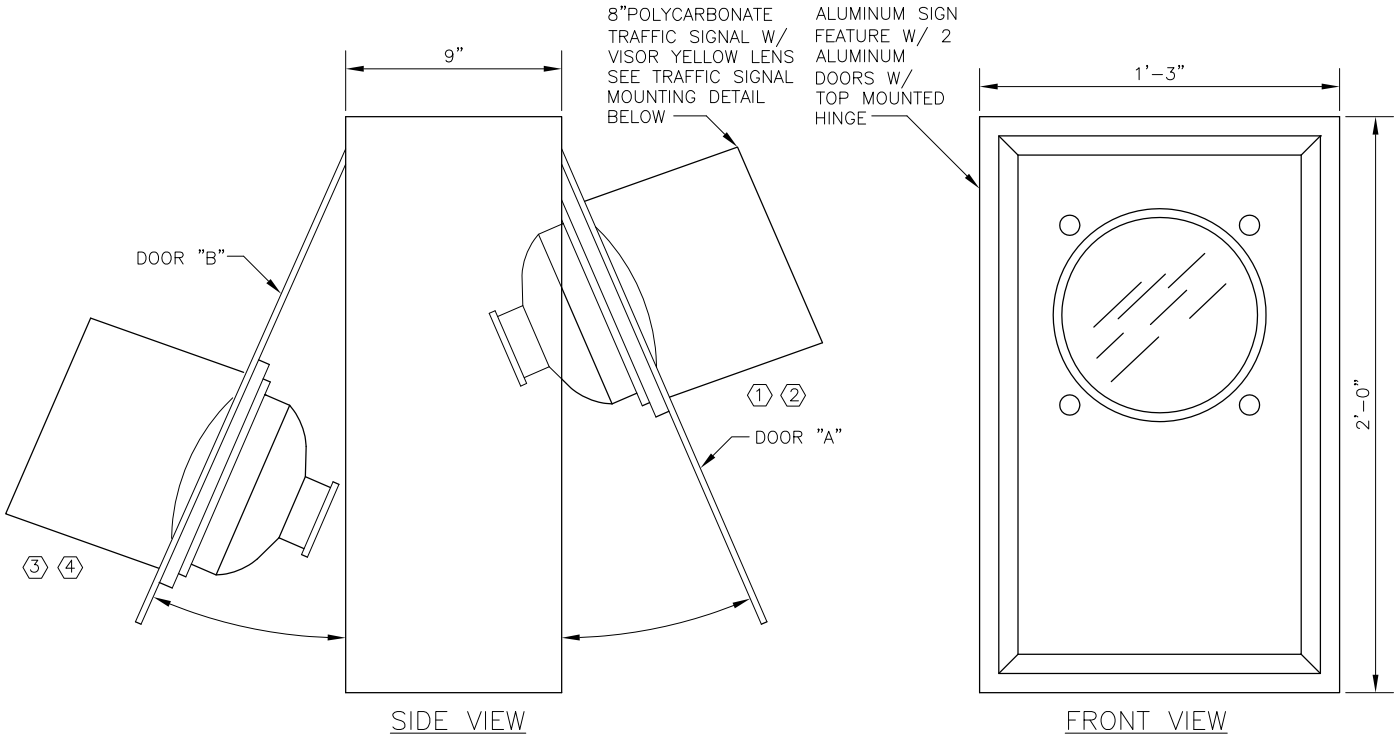


DOUBLE FACED INTERIOR ILLUMINATED CROSSWALK SIGN WITH FLASHING SIGNALS (SIGN UNIT)

REF STD SPEC SEC 8-21

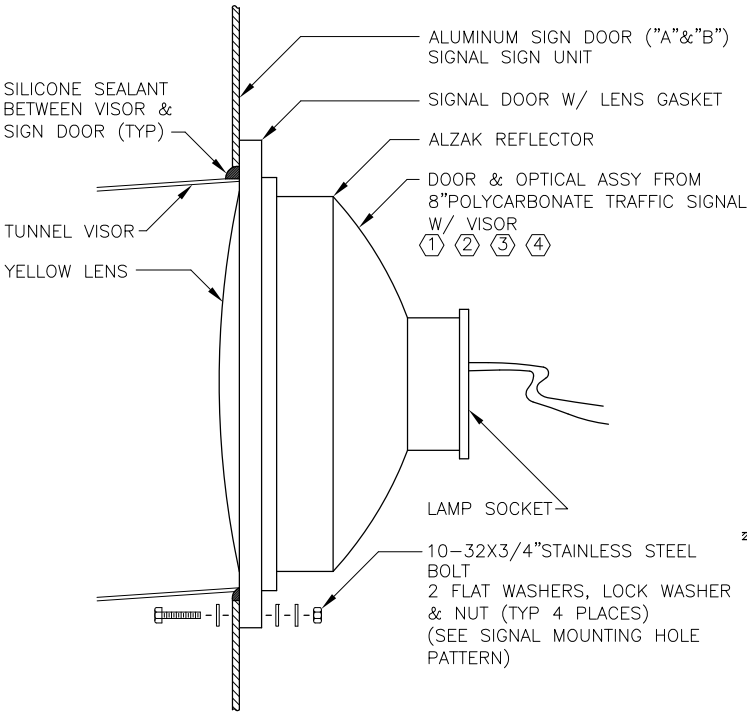
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

OVERHEAD INTERIOR
ILLUMINATED SIGNS

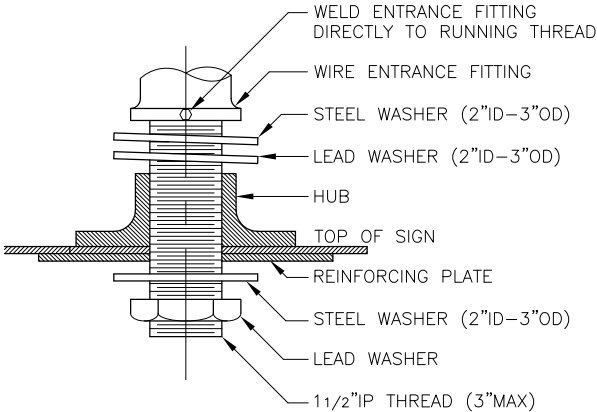


HOUSING: MADE FROM REINFORCING EXTRUDED ALUMINUM FORMED INTO RIGID AND CORROSION RESISTANT HOUSING

FLASHING SIGNAL UNIT



FLASHING SIGNAL MOUNTING DETAIL



WIRING ENTRANCE MOUNTING DETAIL

REF STD SPEC SEC 8-21

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

OVERHEAD INTERIOR
ILLUMINATED SIGNS

LOCK WASHER

9'-0"MIN, 12'-0"MAX

6"MAX(TYP)

SPAN WIRE

PORCELAIN STRAIN INSULATOR
(MATERIAL STD 6901.1)

SPAN WIRE

AUTOMATIC FEED-THRU DEAD END CONNECTOR (BREAKING STRENGTH 10,000 LBS) OR GUY WRAP (PREFORM)

$\frac{5}{8}$ " THIMBLE EYEBOLT
(2) $\frac{5}{8}$ " CURVED WASHERS ($4 \times 4 \times \frac{1}{4}$)
 $\frac{5}{8}$ " SPRING WASHER & NUT

EYE BOLT TO EXTEND $\frac{1}{2}$ " MIN TO 1" MAX BEYOND NUT AFTER INSTALLATION

WOOD POLE

Diagram illustrating the components and dimensions of a guy wire assembly:

- 3'-0" ± 4"**: Dimension for the length of the guy wire between the clamp and the strain insulator.
- 6" MAX (TYP)**: Dimension for the length of the guy wire between the clamp and the strain insulator.
- GUY CLAMP SEE STD PLAN NO 569**: Component used to secure the guy wire to the structure.
- THIMBLE**: Component used to protect the guy wire from damage at the connection point.
- PORCELAIN STRAIN INSULATOR (MATERIAL STD 6901.1)**: Component used to isolate the guy wire from the structure.
- SPAN WIRE**: Component used to connect the guy wire to the structure.
- AUTOMATIC FEED-THRU DEAD END CONNECTOR (BREAKING STRENGTH 10,000 LBS) OR GUY WRAP (PREFORM)**: Component used to secure the guy wire at the end of the span.

3'-0"MAX

6"MAX(TYP)

PORCELAIN STRAIN INSULATOR ON EACH LEG (TYP) (MATERIAL STD 6901.1)

SPAN WIRE

GUY WRAP (PREFORM)

HOT DIP GALV STEEL THIMBLE (TYP)

4"ID PURSE SEINE RING (BULL RING)

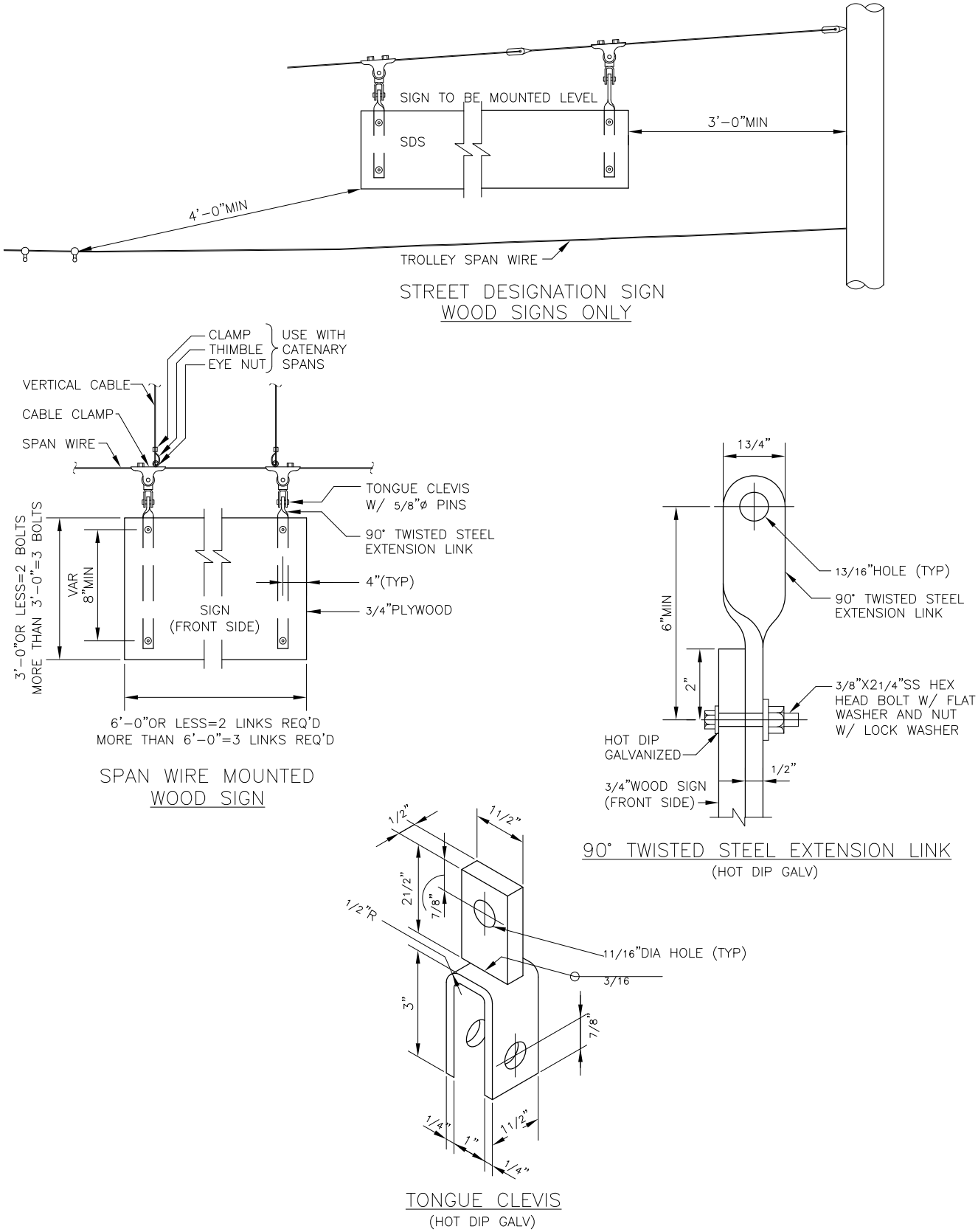
AUTOMATIC FEED-THRU DEAD END CONNECTOR (BREAKING STRENGTH 10,000 LBS) (TYP)

SPAN WIRE (TYP)

BULL RING

NOTES:

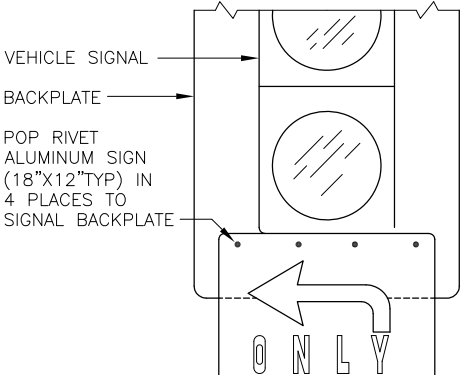
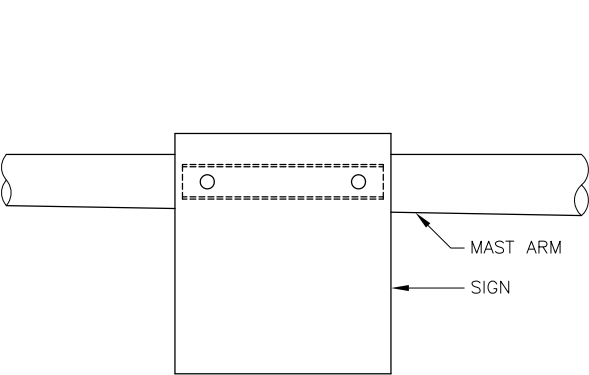
1. ALL STEEL HARDWARE TO BE HOT DIP GALVANIZED OR STAINLESS STEEL UNLESS OTHERWISE STIPULATED IN THE SPECIFICATIONS OR PLANS
2. SPAN WIRE SHALL BE ALUMINUM COATED STEEL
3. SPREAD THIMBLE TO FIT THE BAIL OF THE AUTOMATIC DEAD END



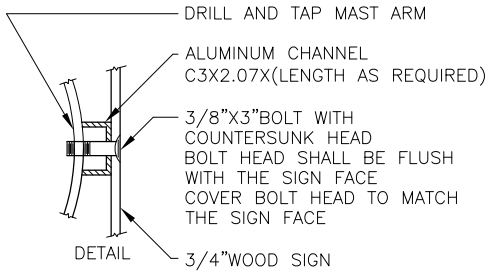
REF STD SPEC SEC 8-21

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

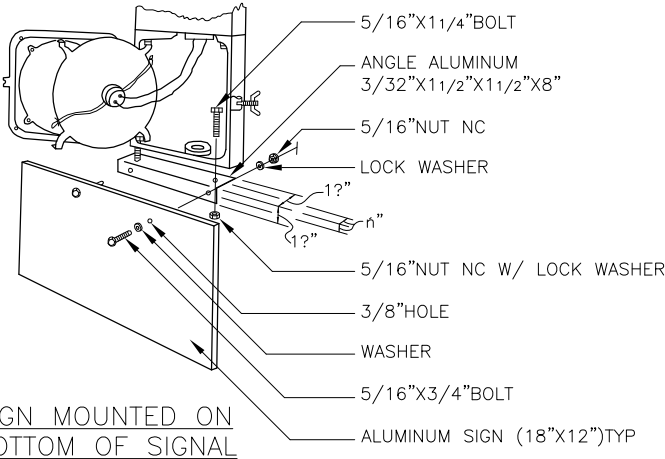
OVERHEAD WOOD SIGNS
SPANWIRE MOUNTED



SIGN MOUNTING ON SIGNAL BACKPLATE

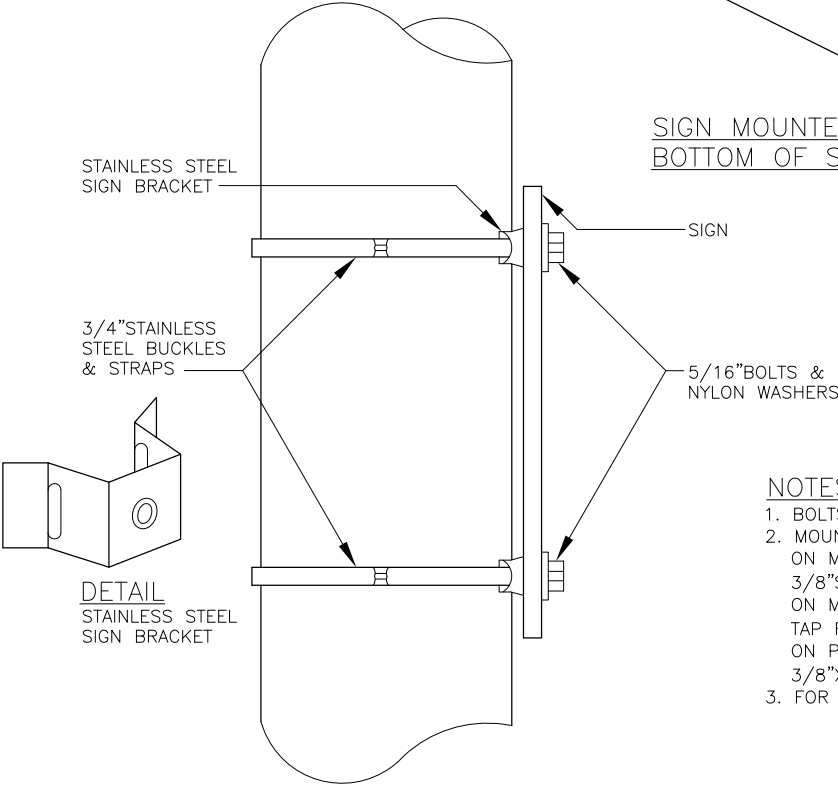


SIGN MOUNTING ON MAST ARM



SIGN MOUNTED ON BOTTOM OF SIGNAL

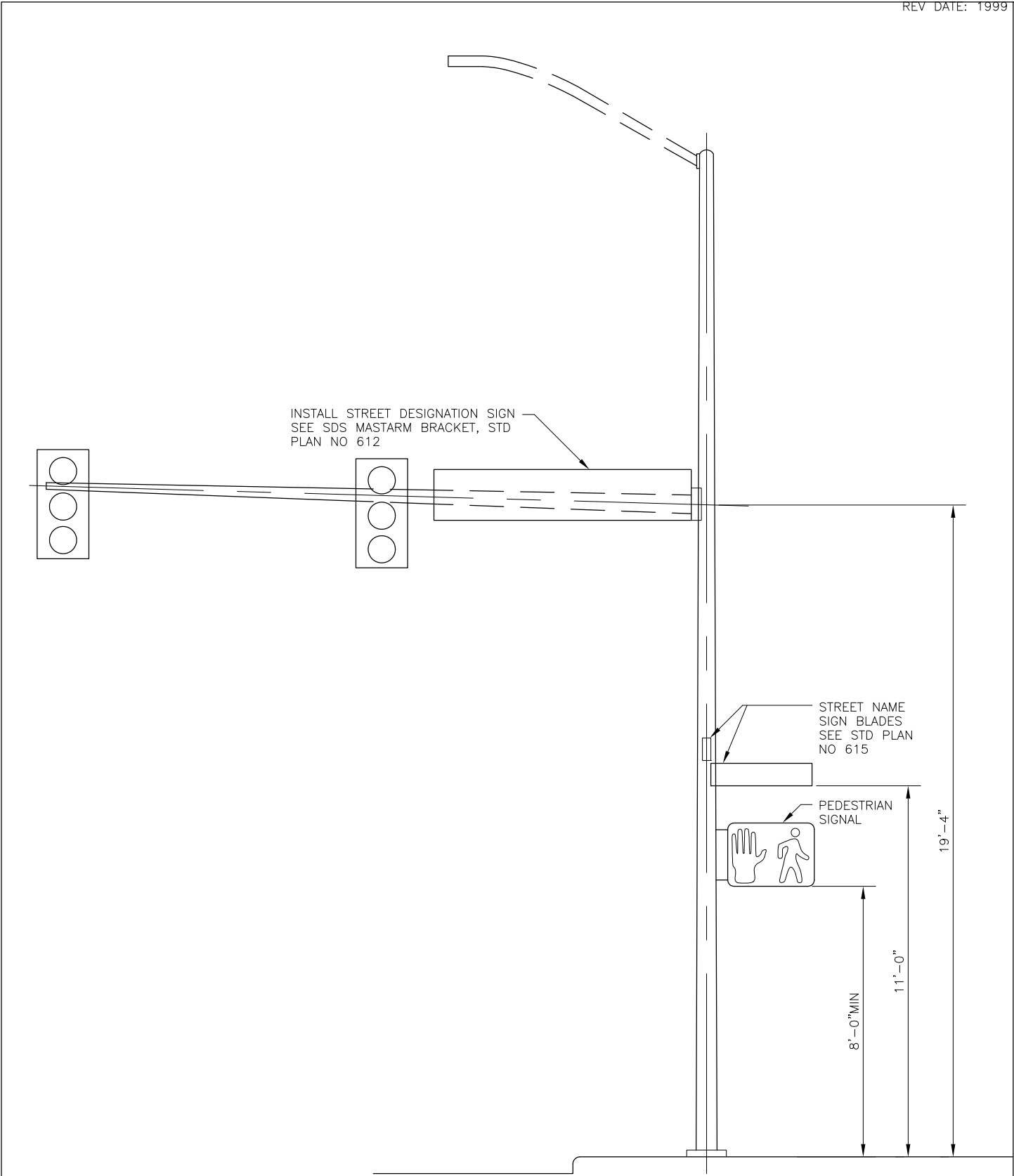
SIGN SHALL BE FLUSH WITH FACE OF FRAME



TEMPORARY SIGN MOUNTING ON METAL POLE

REF STD SPEC SEC 8-12

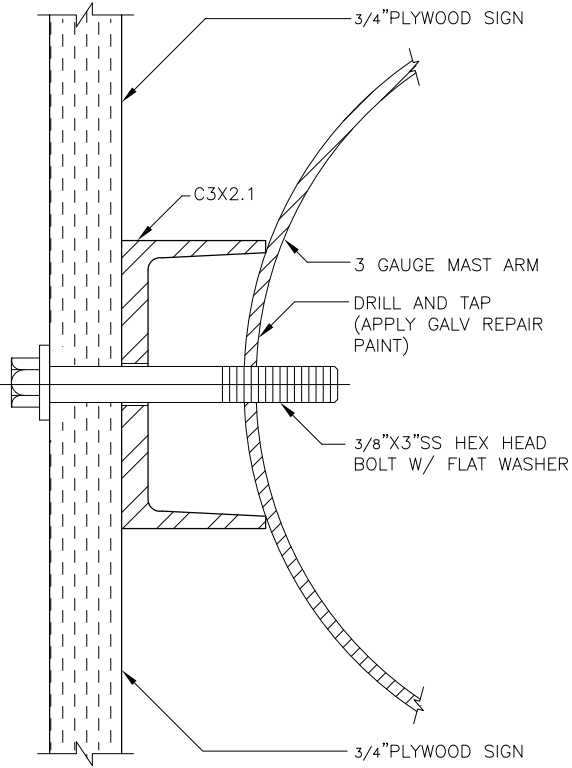
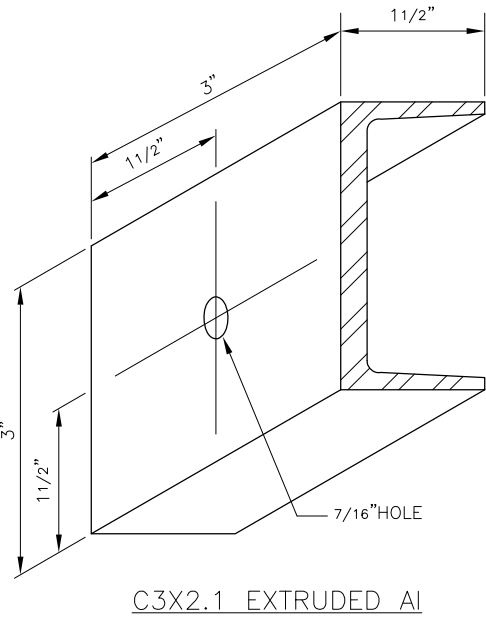
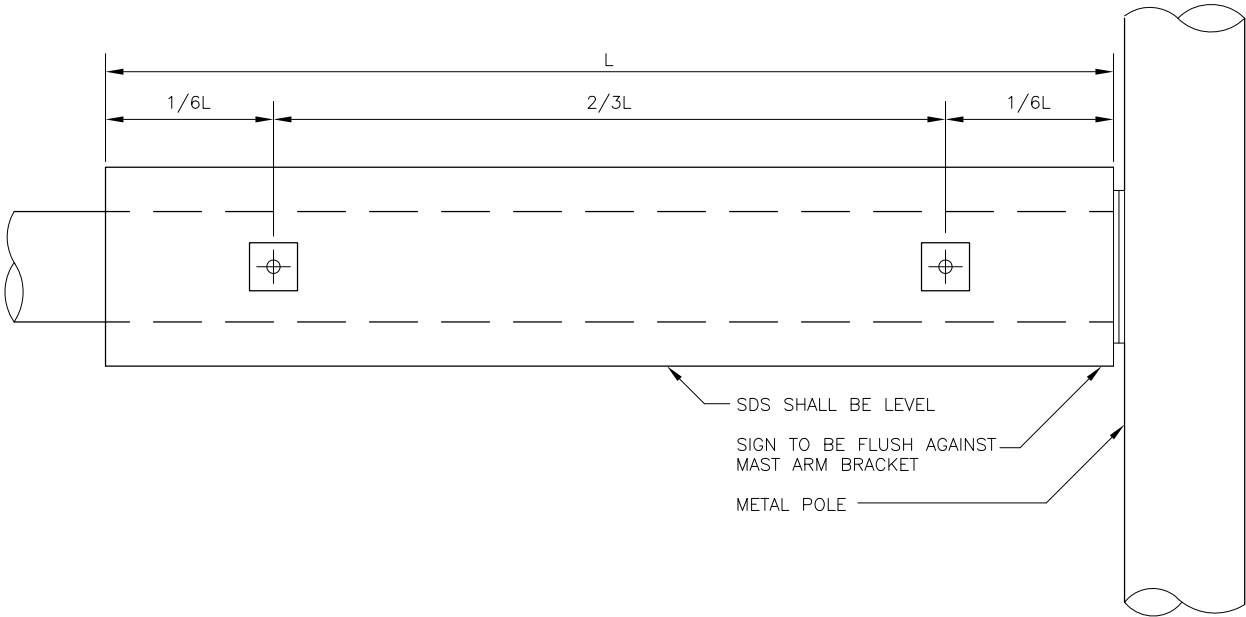
- NOTES:
1. BOLTS SHALL BE STAINLESS STEEL
 2. MOUNTING OF TRAFFIC SIGNS SHALL BE AS FOLLOWS:
ON METAL POLE THINNER THAN 7 GAUGE, USE 3/8"STAINLESS STEEL RIVNUTS
ON METAL POLES 7 GAUGE OR THICKER, DRILL AND TAP FOR 3/8" BOLT (STAINLESS STEEL RIVNUT OPTIONAL)
ON POLES FILLED WITH OR MADE FORM CONCRETE, USE 3/8"X2 1/2"MIN STUD BOLT ANCHORS WITH HEX NUT
 3. FOR SIGN FEATURE CONTACT TRAFFIC ENGINEER



REF STD SPEC SEC 8-21

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

STANDARD SIGN INSTALLATION
STEEL POLES



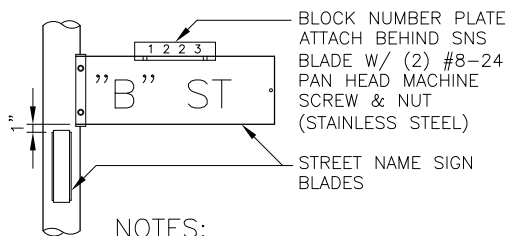
REF STD SPEC SEC 8-21

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

SDS BRACKET FOR STEEL
MAST ARM POLES

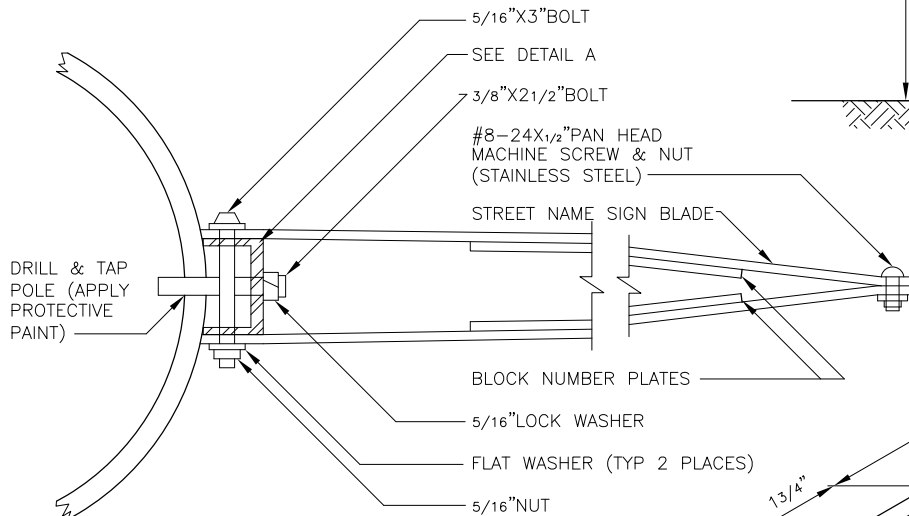
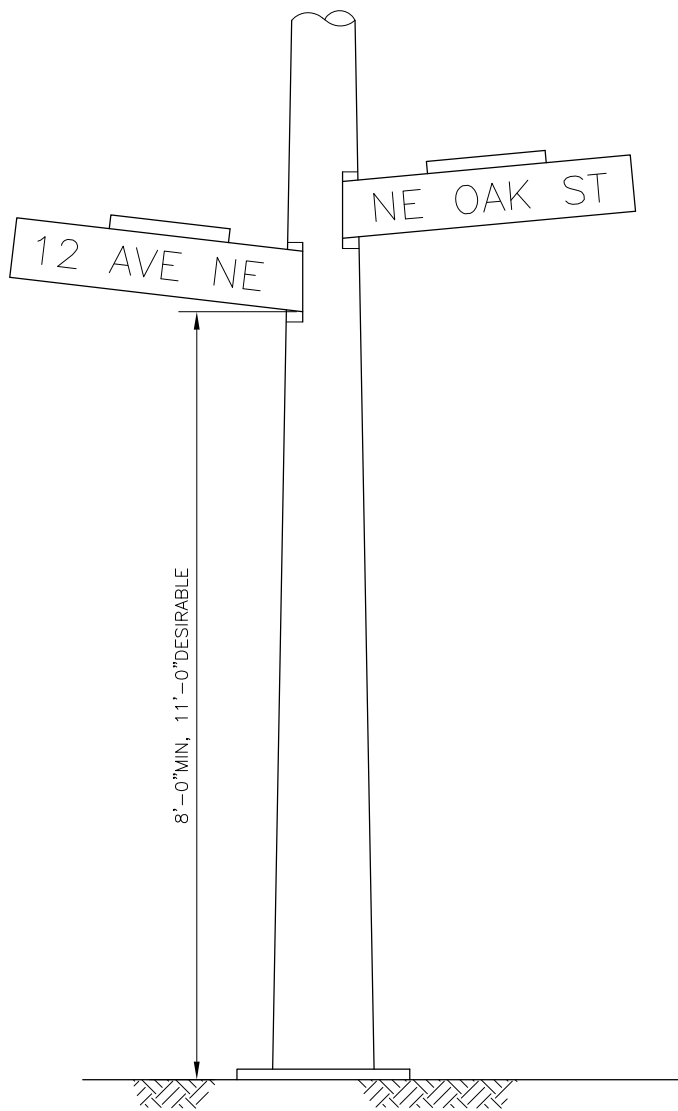


SDS BRACKET FOR STEEL
OR WOOD POLES

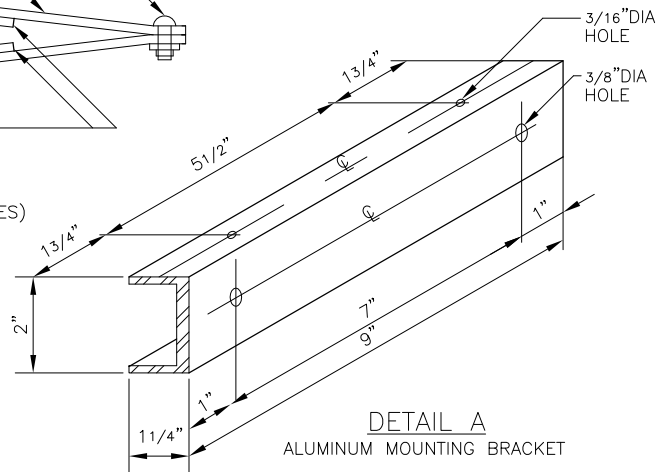


NOTES:

1. STAGGER SNS BLADES WITH THE "AVENUE" DESIGNATION BELOW THE "STREET" DESIGNATION BLADE
2. SNS SHALL BE INSTALLED PARALLEL TO CORRESPONDING STREET
3. ALL NUTS, BOLTS & STEEL WASHERS TO BE CADMIUM PLATED OR STAINLESS STEEL



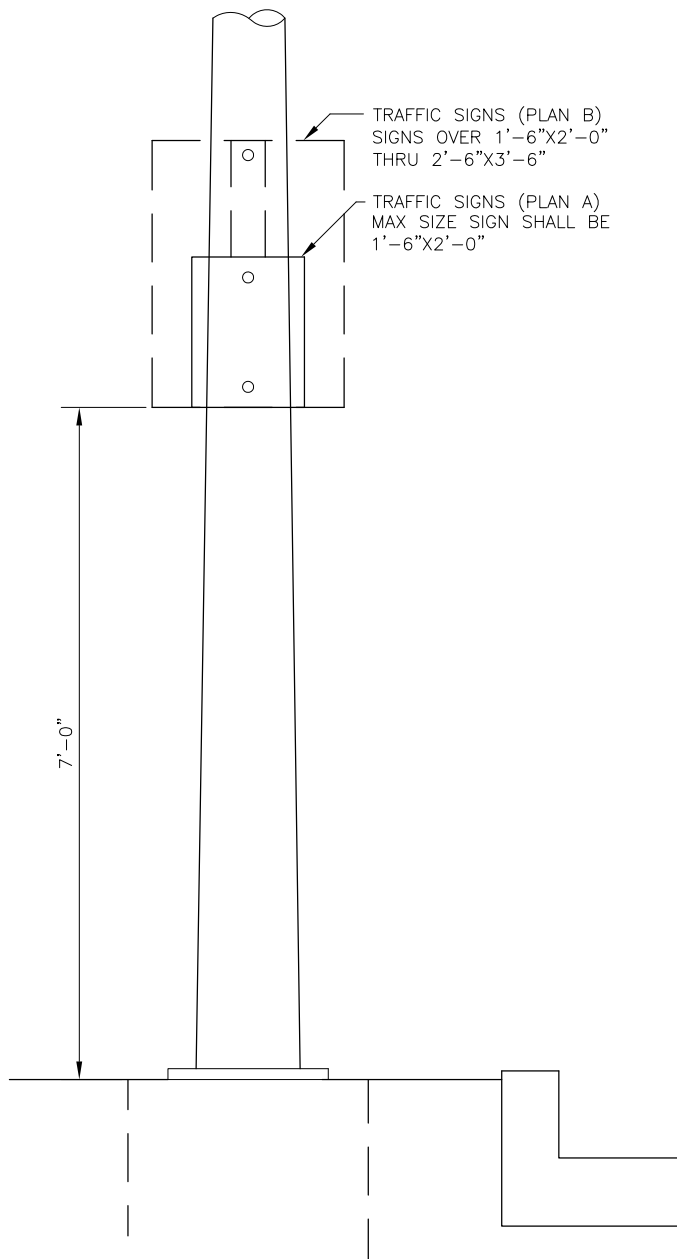
ON ALUMINUM POLES USE 5/16" ALUMINUM RIVNUTS
FOR STEEL POLES LESS THAN SEVEN (7) GAUGE USE
5/16" STAINLESS STEEL RIVNUTS
(RIVNUTS OPTIONAL ON HEAVIER GAUGE STEEL POLES)



REF STD SPEC SEC 8-21

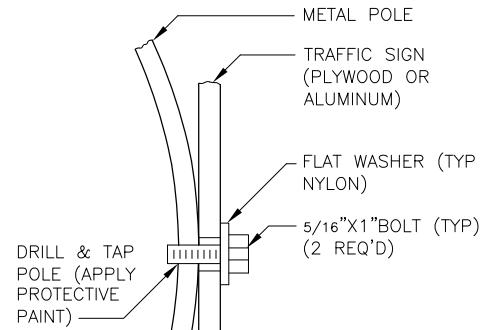
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

SNS BRACKET FOR
STEEL POLES

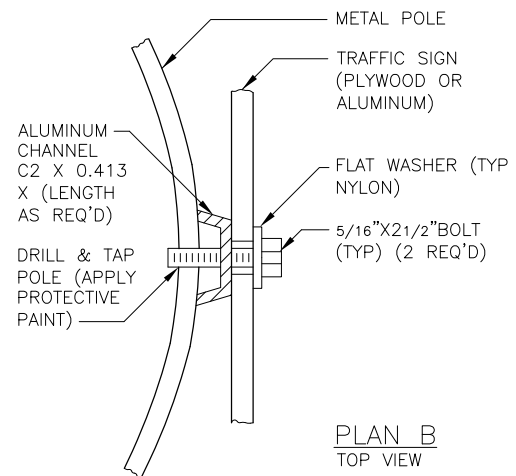
**NOTES:**

1. FOR STEEL POLES LESS THEN SEVEN (7) GAUGE USE 5/16" STAINLESS STEEL RIVNUTS. STAINLESS STEEL RIVNUTS OPTIONAL ON HEAVIER GAUGE STEEL POLES
2. ON ALUMINUM POLES USE 5/16"ALUMINUM RIVNUTS
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 2'-6"X3'-6" USE STD PLAN NO 612. MOUNT SIGNS VERTICALLY ON STRAIN POLE WITH THREE (3) FASTENERS MIN
5. FOR DARK COLORED POLES PAINT BAND TO MATCH POLE

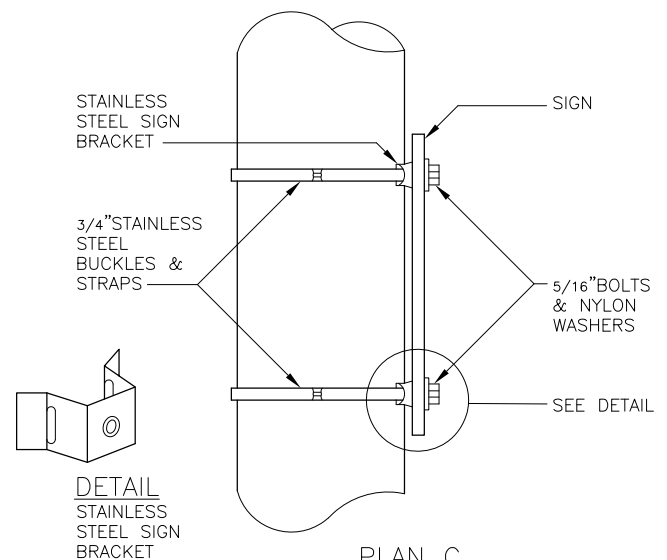
DO NOT SCALE
REF STD SPEC SEC 8-21



PLAN A
TOP VIEW



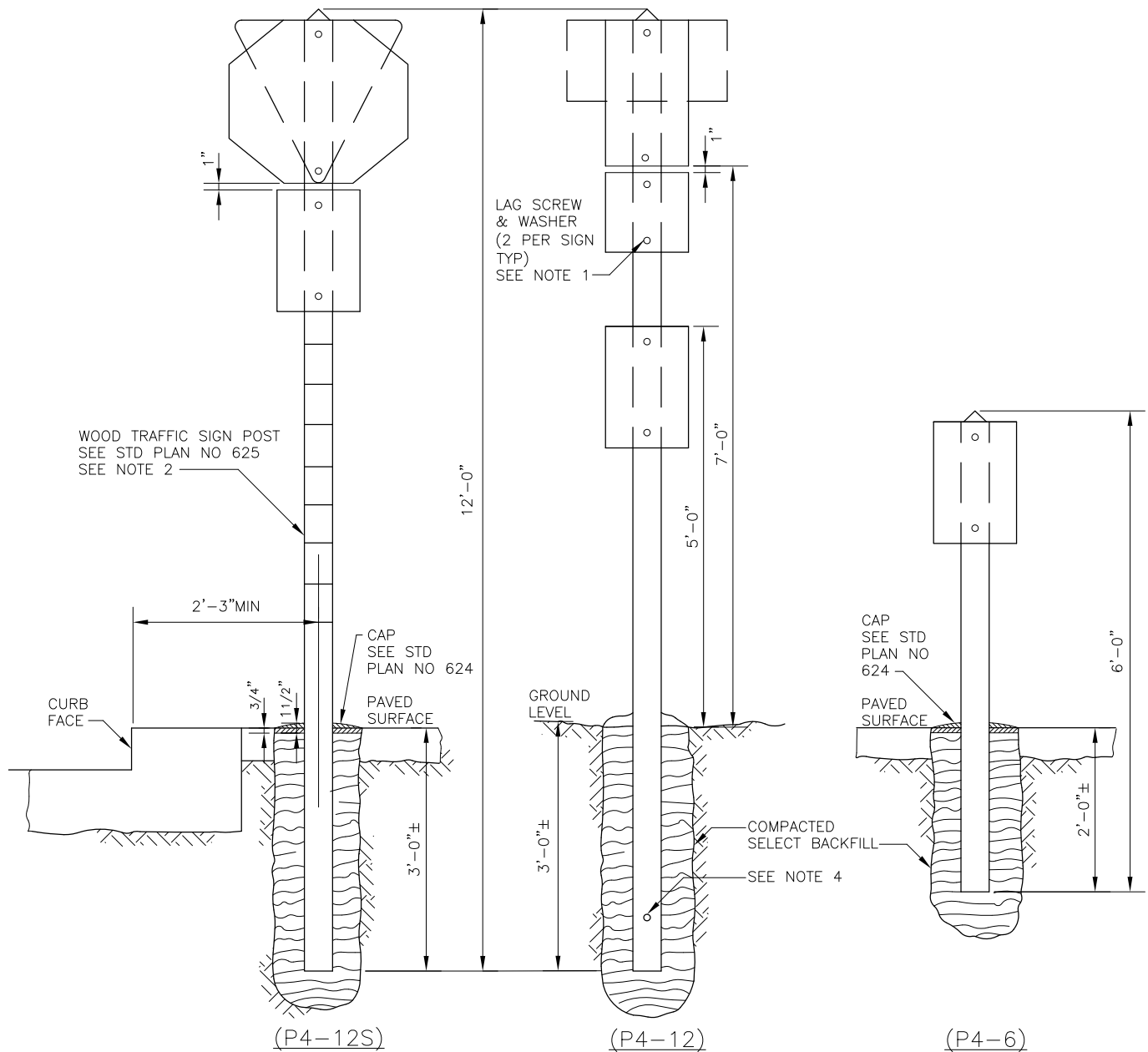
PLAN B
TOP VIEW



PLAN C
SIDE VIEW

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

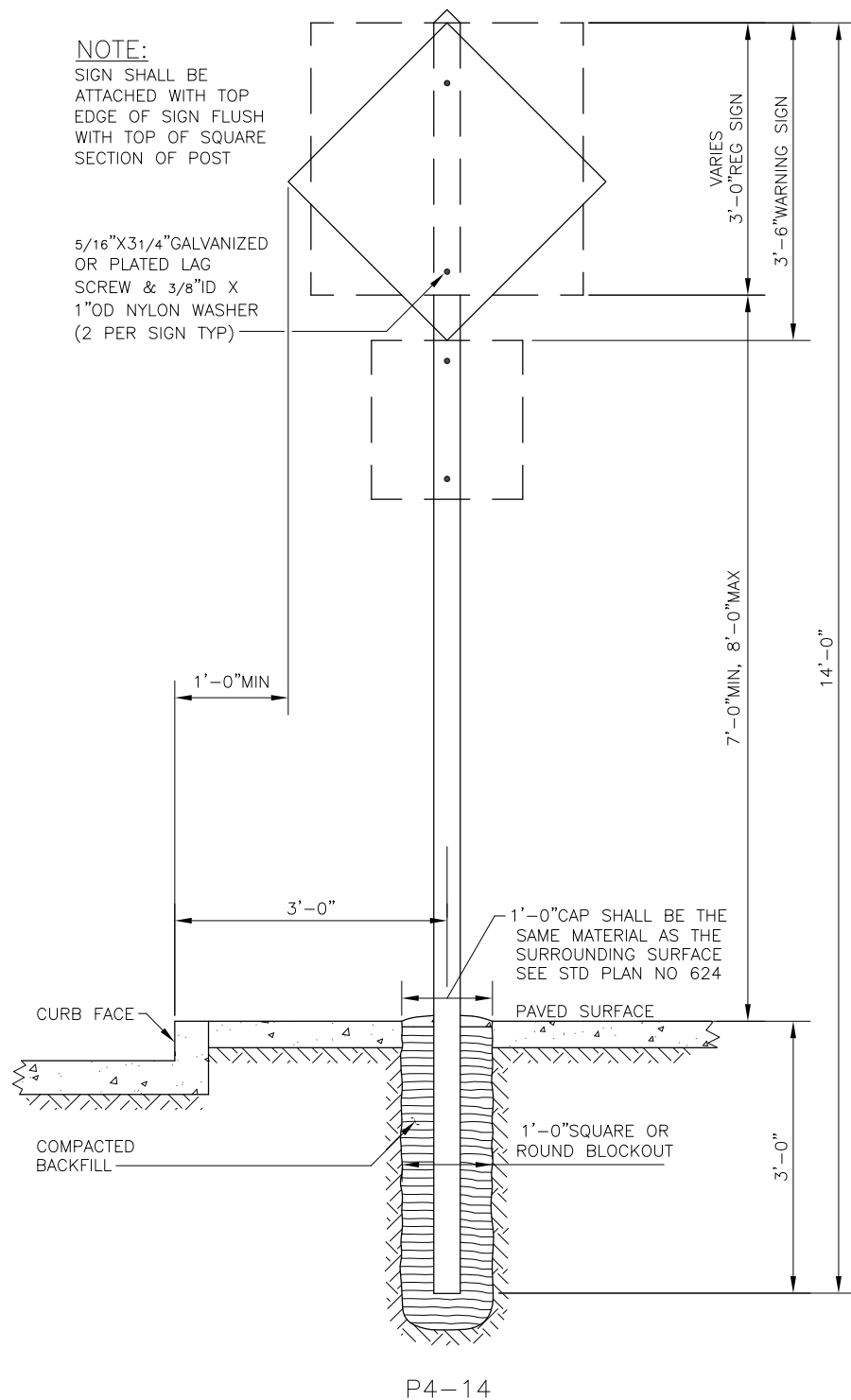
TRAFFIC SIGN MOUNTING
ON METAL POLES

**NOTES:**

1. 5/16"X3 1/4" GALVANIZED OR PLATED LAG SCREW & 3/8" ID X 1" OD NYLON WASHER
2. FOR "YIELD" SIGNS PAINTED STRIPES SHALL FACE TOWARD THE APPROACHING TRAFFIC (SEE STD PLAN NO 625)
3. 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
4. CONTACT THE TRANSPORTATION DIV (684-5087) FOR DETAILS REGARDING SIGN MESSAGE AND FOUNDATION

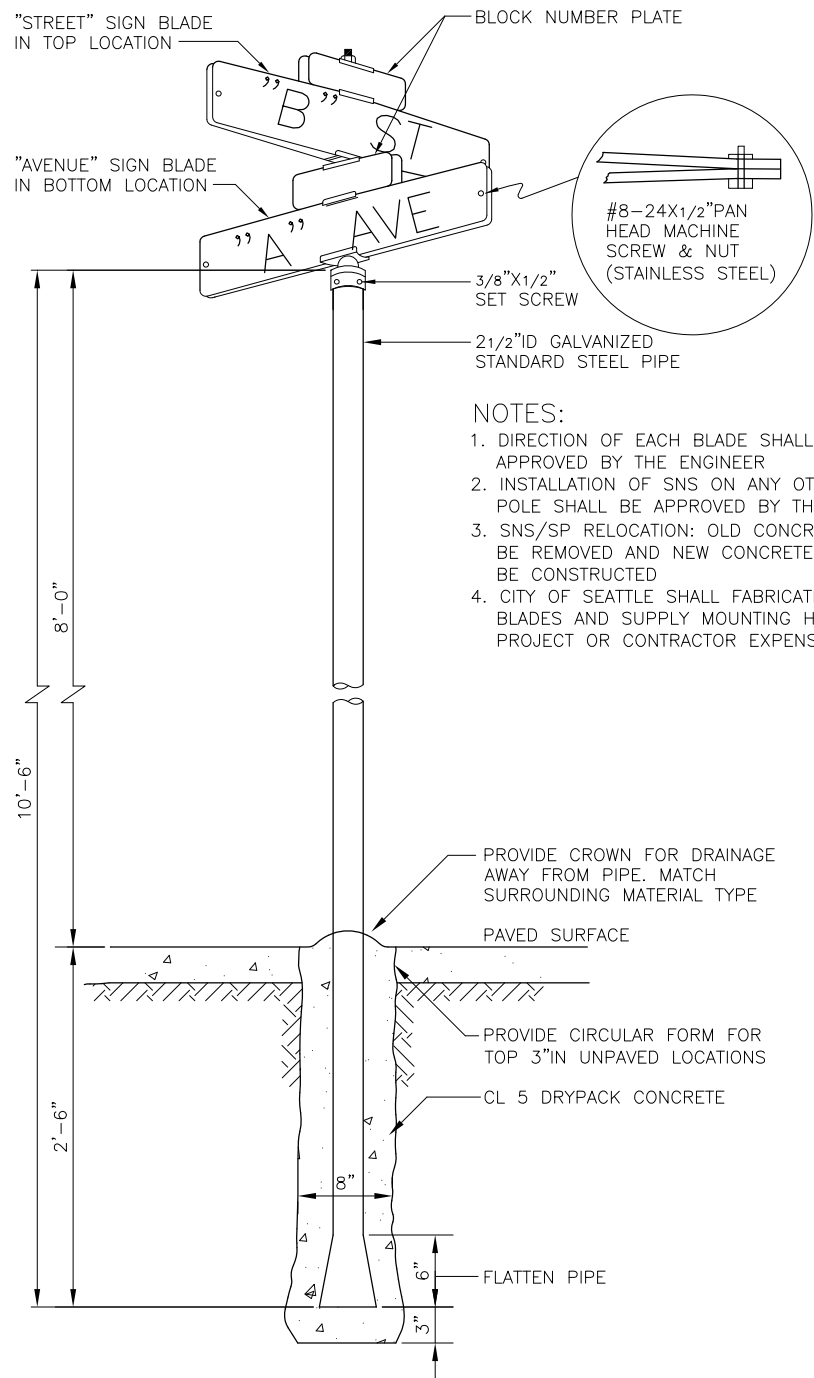
REF STD SPEC SEC 8-21

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENTTRAFFIC SIGN & WOOD
POST INSTALLATION



REF STD SPEC SEC 8-21

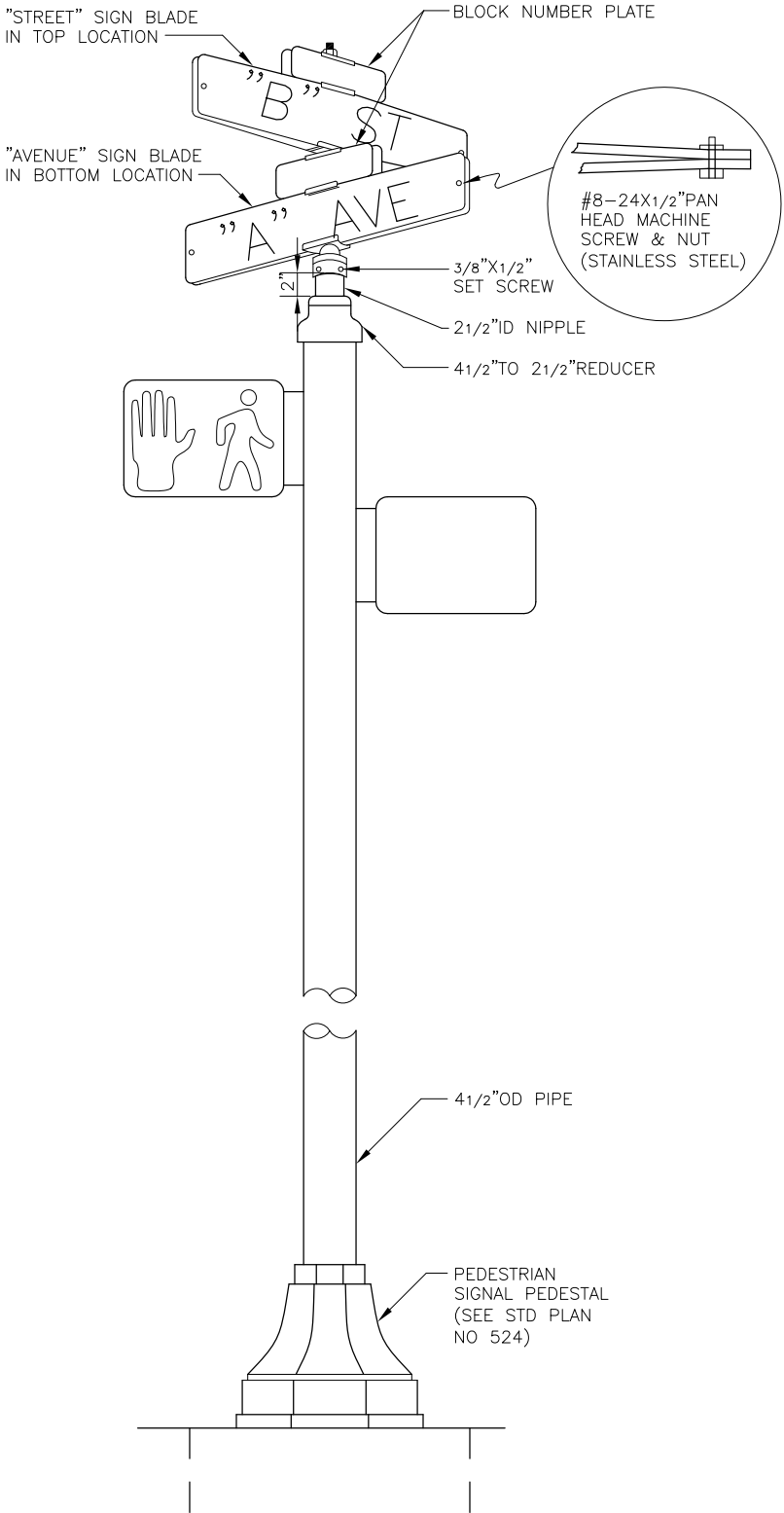
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENTTRAFFIC SIGN & WOOD
POST INSTALLATION



REF STD SPEC SEC 8-21

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

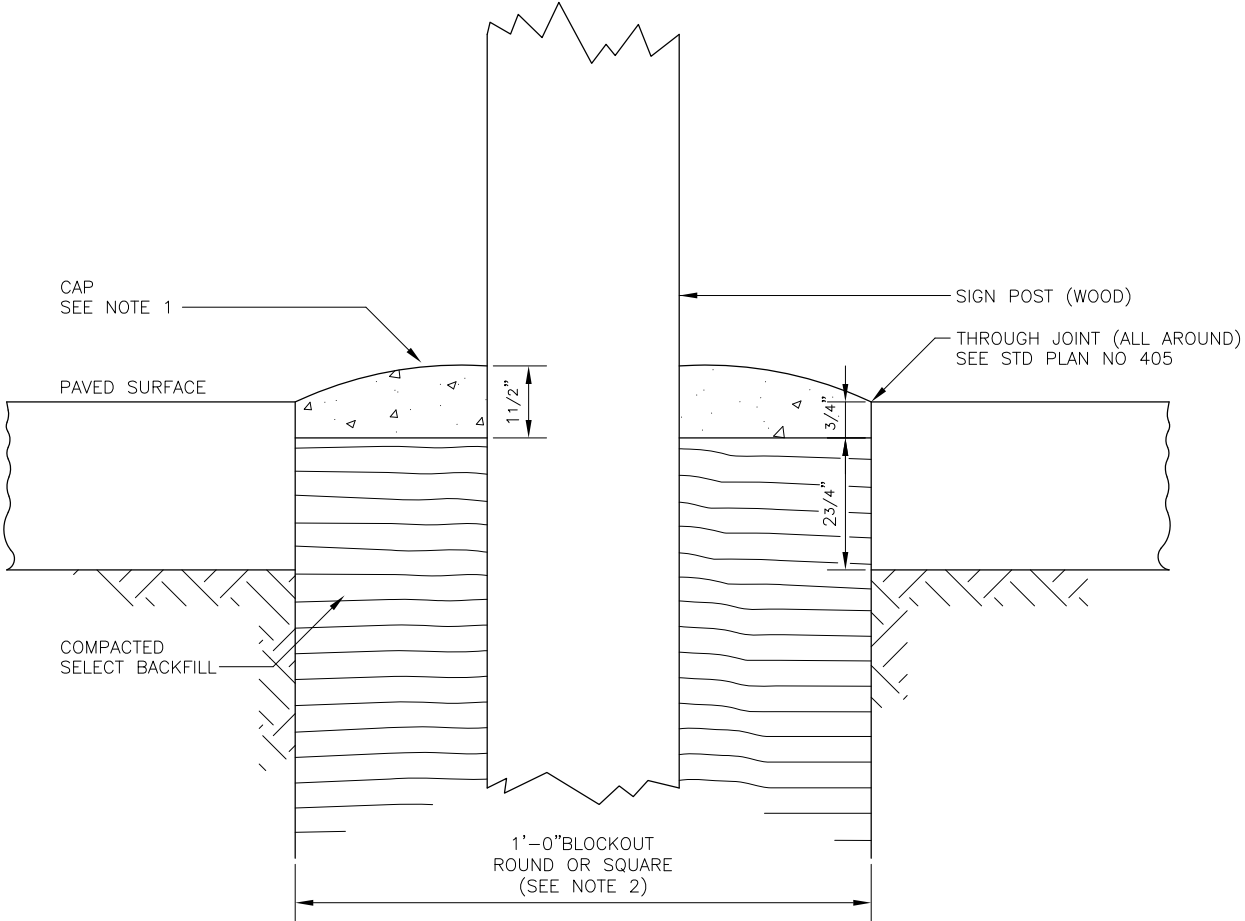
STREET NAME SIGN
INSTALLATION



REF STD SPEC SEC 8-21

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

STREET NAME SIGN
PEDESTAL INSTALLATION



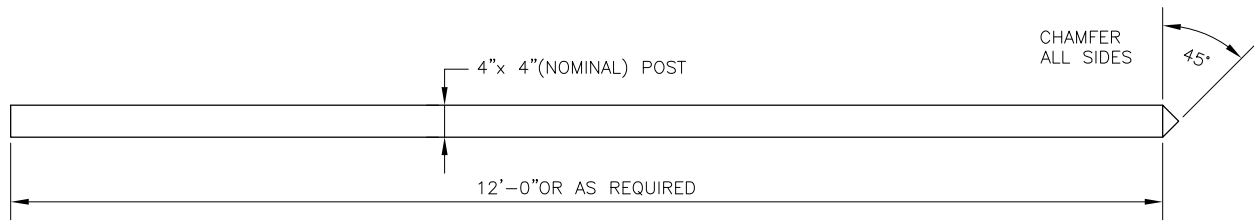
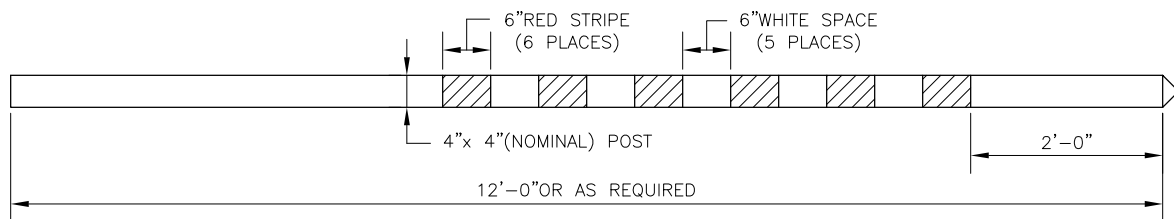
NOTES:

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 1'-0" NOMINAL DIAMETER

REF STD SPEC SEC 8-21

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

POST CAP

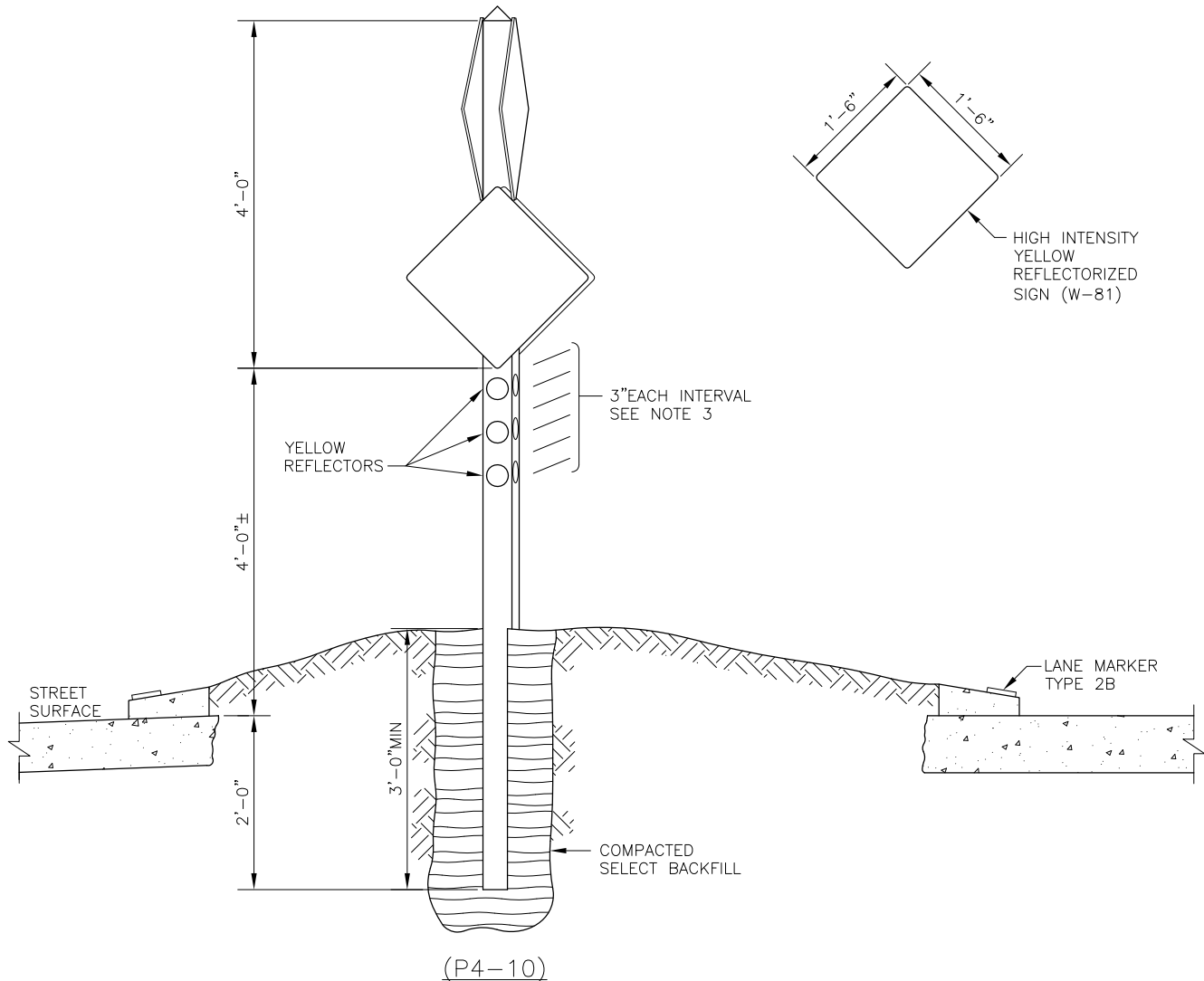
STANDARD SIGN POSTSTOP & YIELD SIGN POST
(P4-12S, P4-12Y)NOTES:

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. SEE STD PLAN NO 620

REF STD SPEC SEC 8-21

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

WOOD TRAFFIC SIGN POSTS

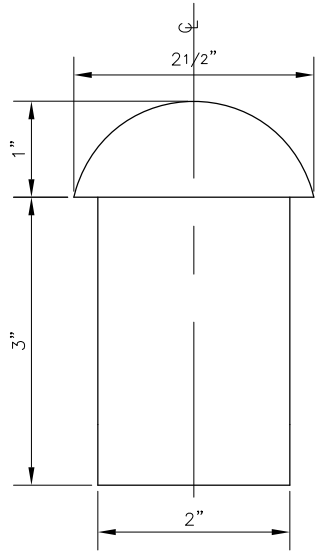
NOTES:

1. IN THE CASE WHERE ALL APPROACHES OF THE INTERSECTION ARE PRIMARILY AT THE SAME LEVEL WITH RESPECT TO GRADES (LESS THAN 3%) THE LOWER SET OF SIGNS WILL FACE THE HIGHER VOLUME STREET
2. IN THE CASE WHERE AN APPROACH HAS A GRADE LARGER THAN 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"X3"YELLOW REFLECTORIZED STRIPS ON THE 4 POST FACES

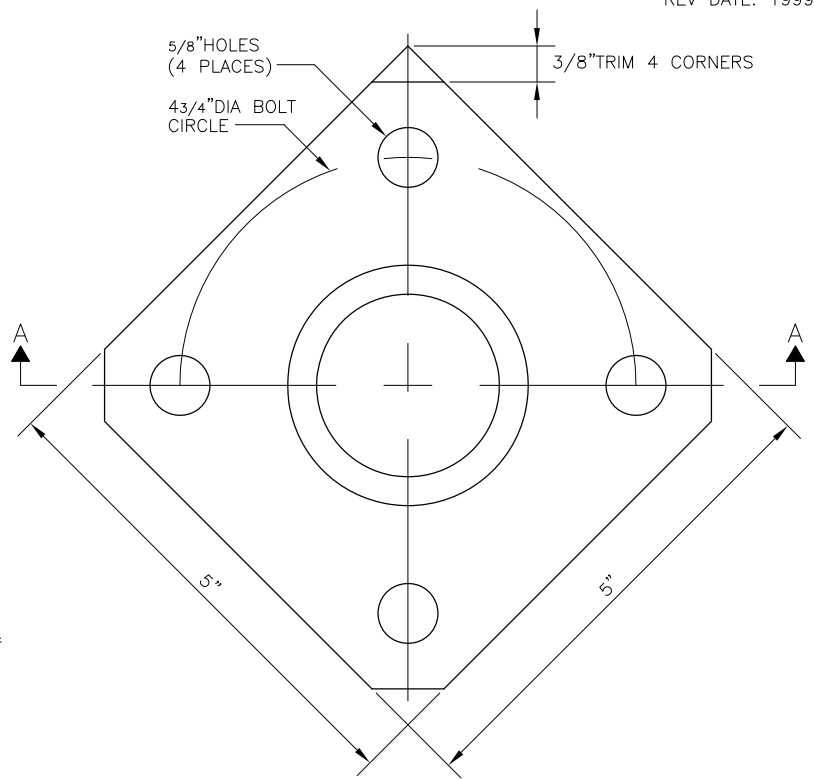
REF STD SPEC SEC 8-21

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

OBJECT MARKER INSTALLATION

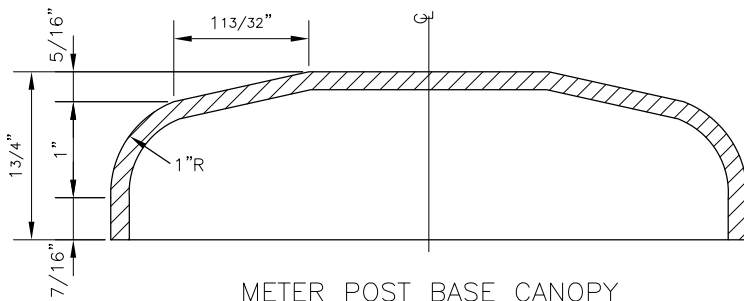
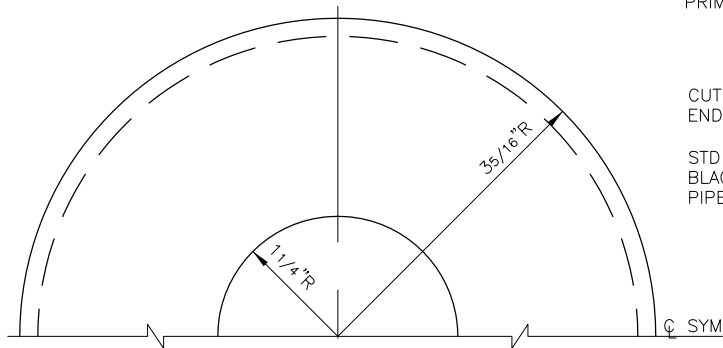


METER POST WOOD FINIAL
(TO BE USED W/ SIGN INSTALLATION)



METER POST

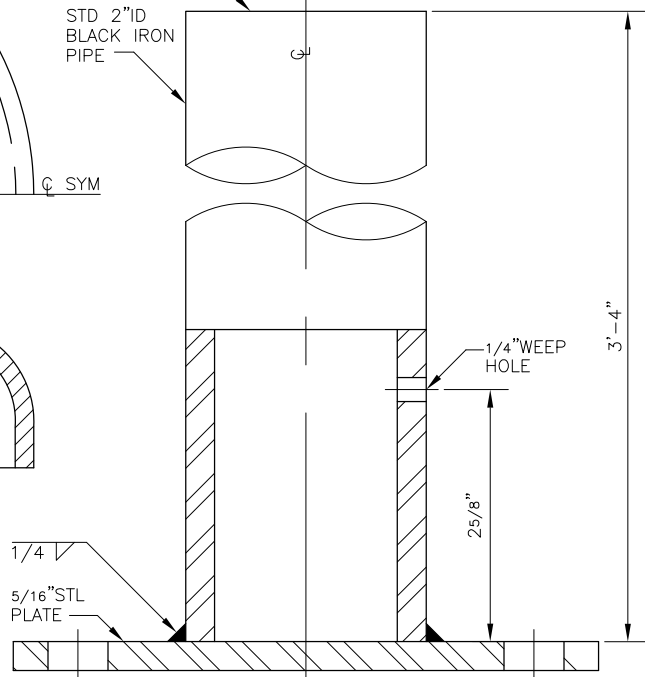
PRIME WITH "RUSTOLEUM" OR APPROVED EQUAL AND
PAINT WITH TWO (2) COATS OF ALUMINUM



METER POST BASE CANOPY
MATERIAL: 0.062' 2-5-0 ALUM

CUT OFF SQUARE PLAIN
END - REAM

STD 2"ID
BLACK IRON
PIPE

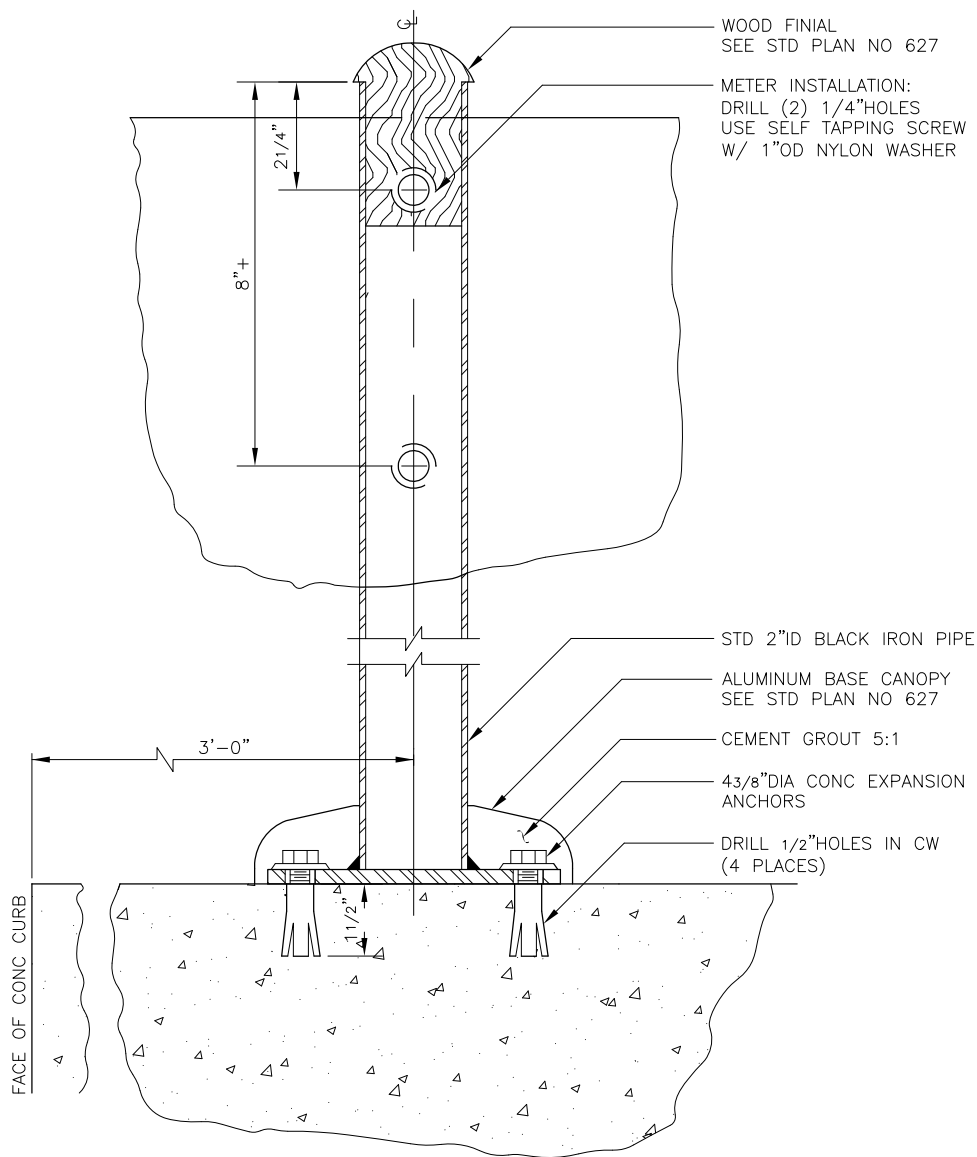


SECTION A-A

REF STD SPEC SEC 8-21

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

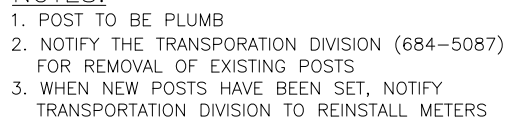
PARKING METER POST &
ACCESSORIES



REF STD SPEC SEC 8-21

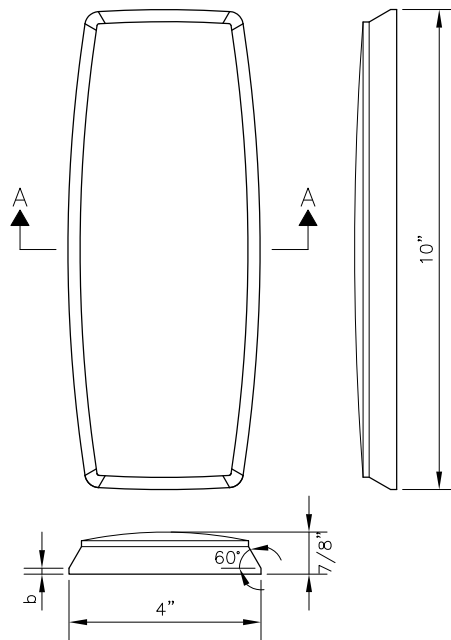
CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

SURFACE MOUNT METER
POST INSTALLATION DETAIL

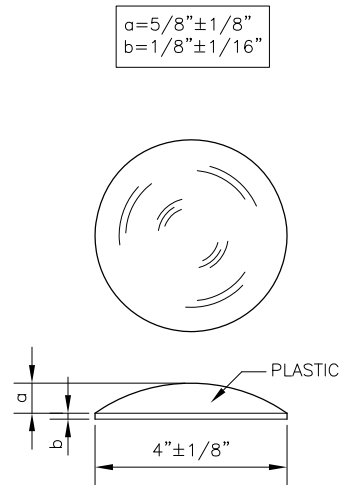


DIRECT BURIAL METER POST INSTALLATION DETAIL

METRO BUS ZONE SIGN INSTALLATION

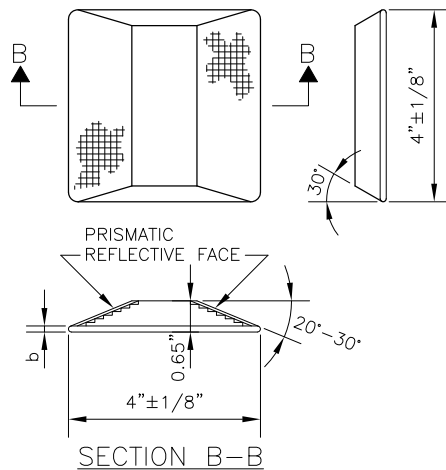


SECTION A-A

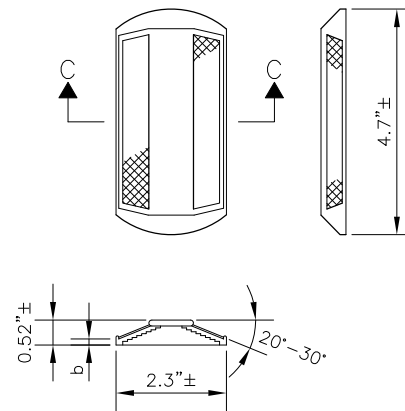
TYPE 700C
PLASTIC TRAFFIC BUTTON

LANE MARKER-TYPE 1

▲ DIRECTION OF TRAFFIC



SECTION B-B

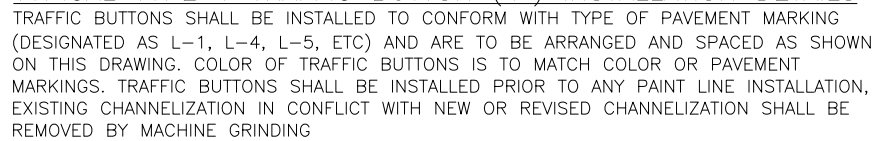
LANE MARKER-TYPE 2A
4" PRISMATIC REFLECTIVE MARKER

SECTION C-C

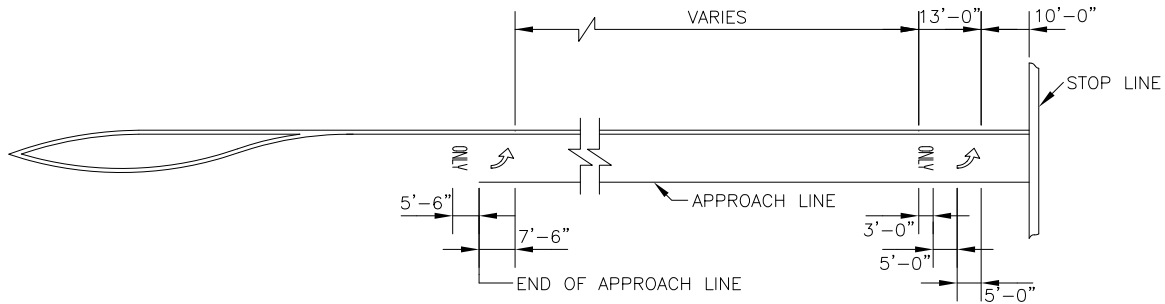
LANE MARKER-TYPE 2B

REF STD SPEC SEC 9-21

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENTTRAFFIC BUTTONS
& LANE MARKERS



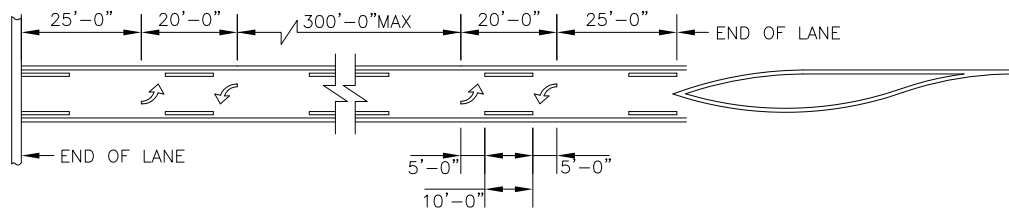
CHANNELIZATION STANDARD



TYPICAL LEFT TURN CHANNELIZATION

NUMBER OF LEGEND SETS REQUIRED BASED ON THE LENGTH OF APPROACH LINES

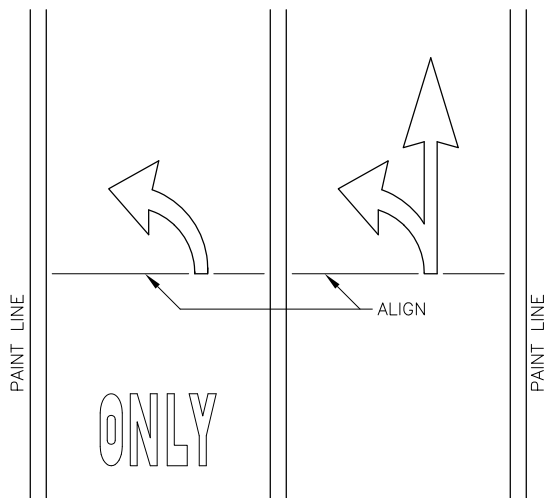
| APPROACH LINE LENGTH | LEGEND SETS |
|----------------------|---|
| LESS THAN 50 FEET | 1 SET AT X-WALK END OF POCKET |
| 50 FEET-120 FEET | 2 SETS |
| 125 FEET-300 FEET | 3 SETS (SECOND LEGEND LOCATED MIDWAY BETWEEN FIRST AND LAST LEGENDS) |
| OVER 300 FEET | ADDITIONAL SETS SPACED AT APPROX 100 FT INTERVALS BETWEEN FIRST AND LAST SETS |



TYPICAL TWO WAY LEFT TURN LANES

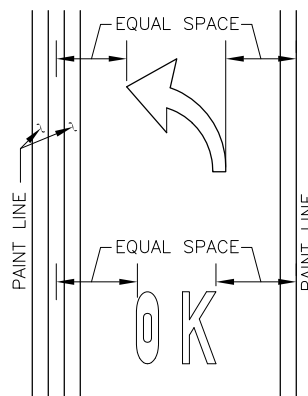
NUMBER OF LEGEND SETS REQUIRED BASED ON THE LENGTH OF TYPICAL TWO WAY LEFT TURN LANES

| LANE LENGTH | LEGEND SETS |
|-------------------|--|
| LESS THAN 50 FEET | 1 SET (CENTERED BETWEEN BOTH ENDS OF LANE) |
| 50 FEET-300 FEET | 2 SETS |
| OVER 300 FEET | 3 SETS (SECOND LEGEND LOCATED MIDWAY BETWEEN FIRST AND LAST LEGENDS) |
| | ADDITIONAL SETS SPACED AT APPROX 300 FT INTERVALS |

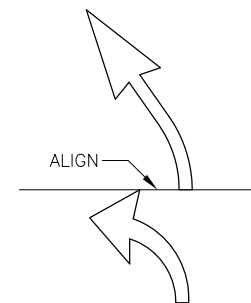


LEGEND PLACEMENT

LEGENDS IN ADJACENT LANES SHALL BE ALIGNED AS SHOWN



LEGENDS SHALL BE CENTERED WITHIN THE LANE TO WHICH THEY APPLY, AS SHOWN



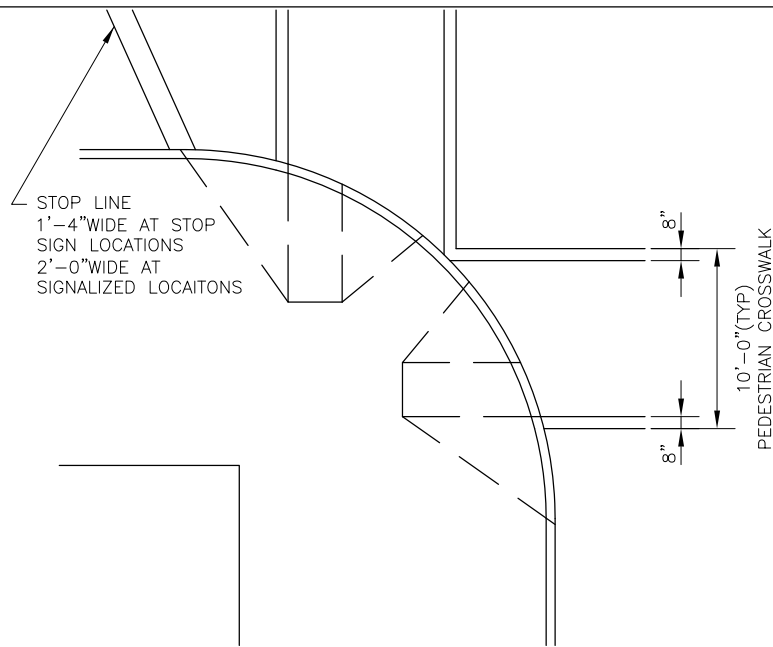
LEGEND COMBINATIONS

OBLIQUE LEFT & 90° LEFT LEGENDS AND OBLIQUE RIGHT & 90° RIGHT LEGENDS MAY BE COMBINED AS SHOWN

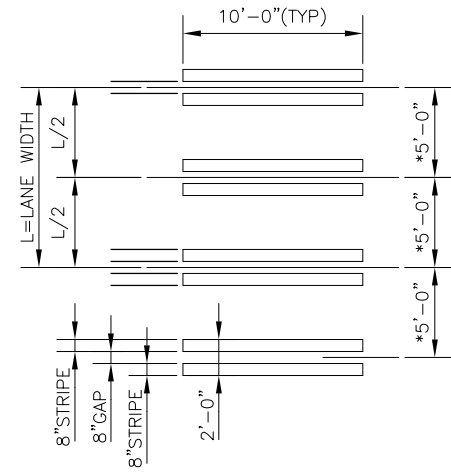
REF STD SPEC SEC 8-22

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

TYPICAL LEFT TURN
CHANNELIZATION AND LEGEND
PLACEMENT



TYPICAL PEDESTRIAN
CROSSWALKS & STOP LINES

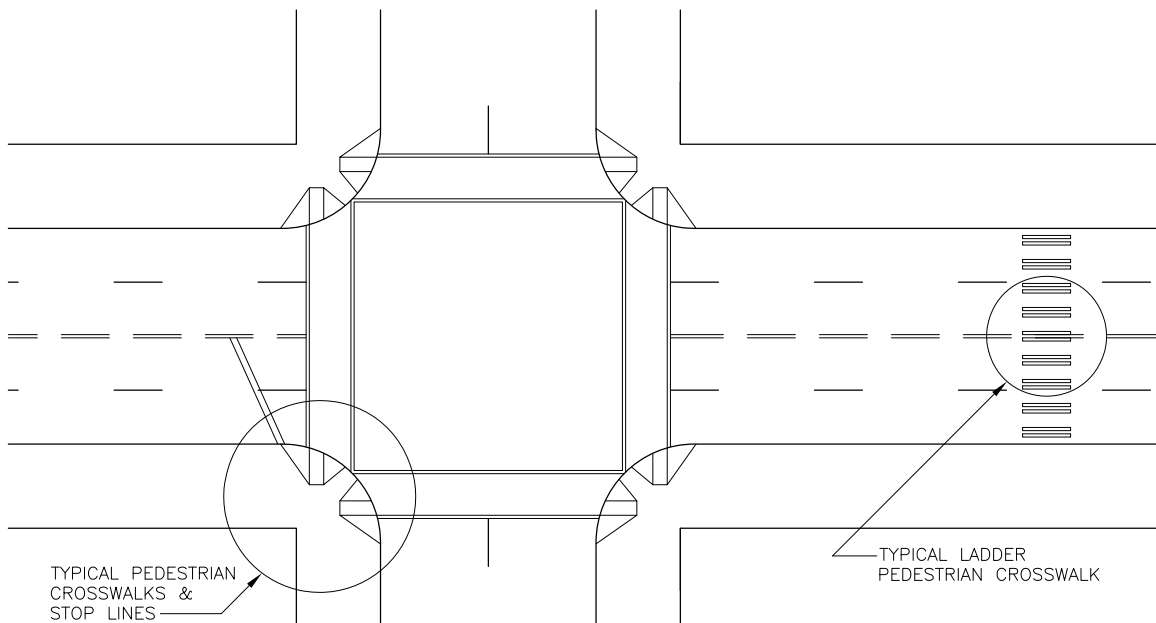


TYPICAL LADDER
PEDESTRIAN CROSSWALKS

* WHERE TRAFFIC LANE LINES ARE NOT USED LADDER BARS SHALL BE 5'-0" CENTER TO CENTER, BEGINNING AT THE MARKED CENTERLINE OF THE ROADWAY

NOTES:

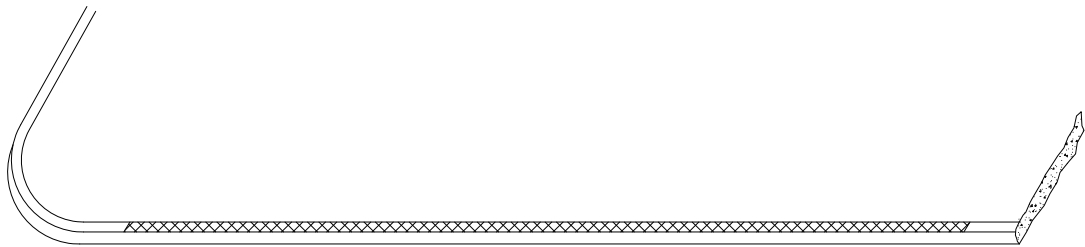
1. EXACT LOCATION OF CROSSWALK LINES AND STOP LINES SHALL BE DESIGNATED BY THE ENGINEER
2. EXISTING CROSSWALKS IN CONFLICT WITH NEW OR REVISED CROSSWALKS SHALL BE REMOVED BY MACHINE GRINDING



REF STD SPEC SEC 8-22

CITY OF SEATTLE
PUBLIC UTILITIES DEPARTMENT

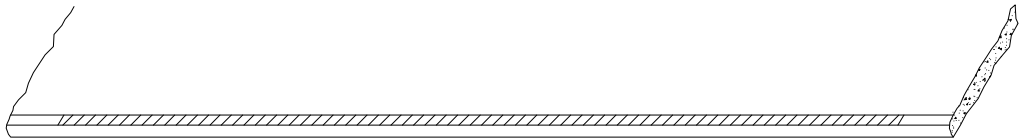
TYPICAL CROSSWALK & STOP
LINE INSTALLATION DETAILS



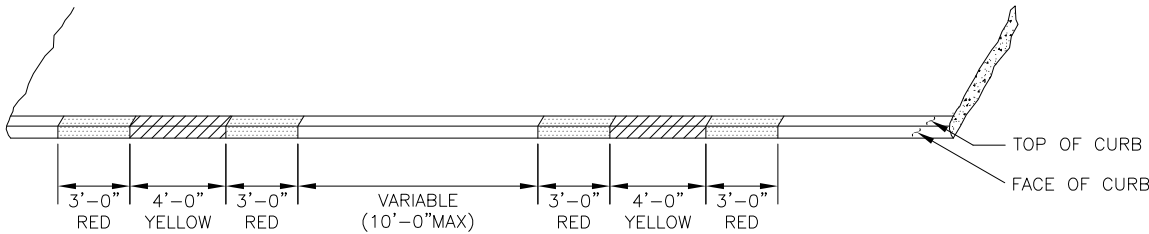
L-10
PASSENGER LOAD ZONE, ETC
(WHITE)



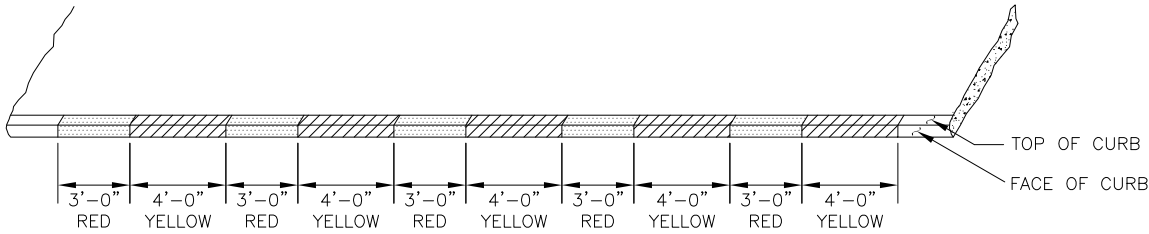
L-11
TOW-AWAY ZONE
(RED)



L-12
COMMERCIAL LOAD, TRUCK LOAD, LOAD & UNLOAD ZONE, ETC
(YELLOW)



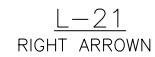
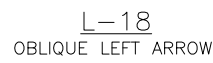
L-13
BUS ZONE (NON PARKING METERED AREAS)
BUS ZONES ARE PAINTED ON TOP & FACE OF CURB



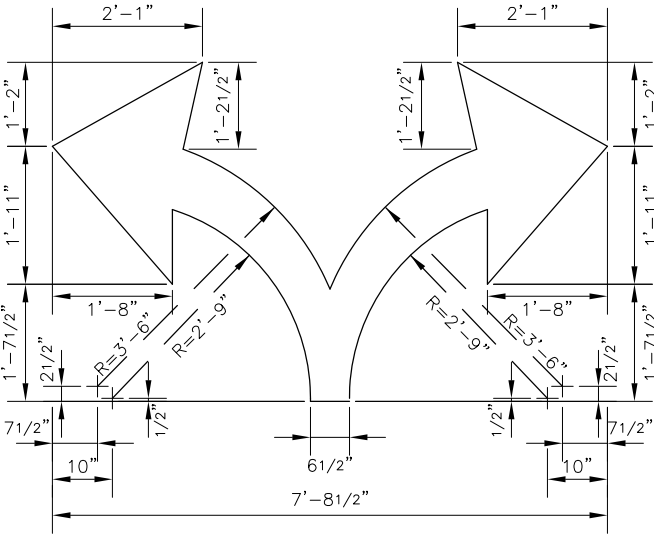
L-13
BUS ZONE (PARKING METERED AREAS)
BUS ZONES ARE PAINTED ON TOP & FACE OF CURB

- 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

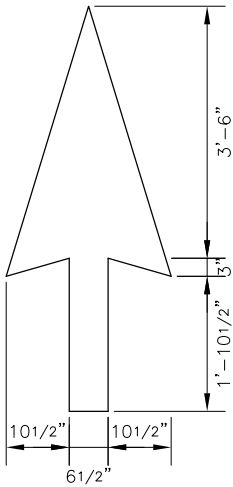
REF STD SPEC SEC 8-22



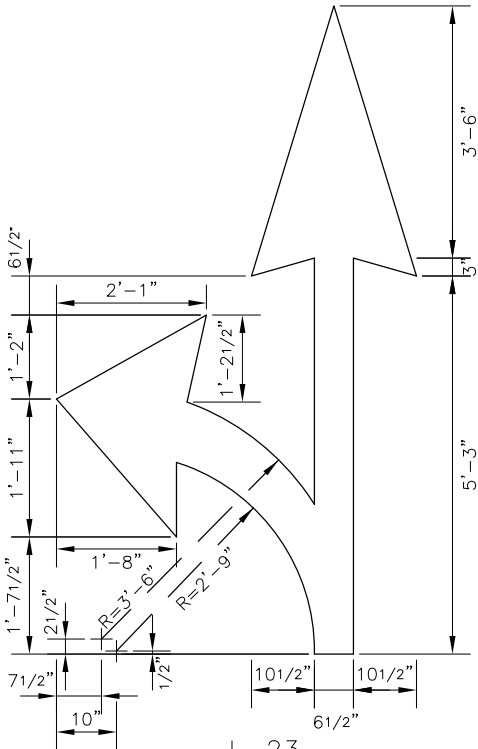
PAVEMENT MARKINGS LEGENDS/SYMBOLS



L-17
LEFT & RIGHT ARROWS

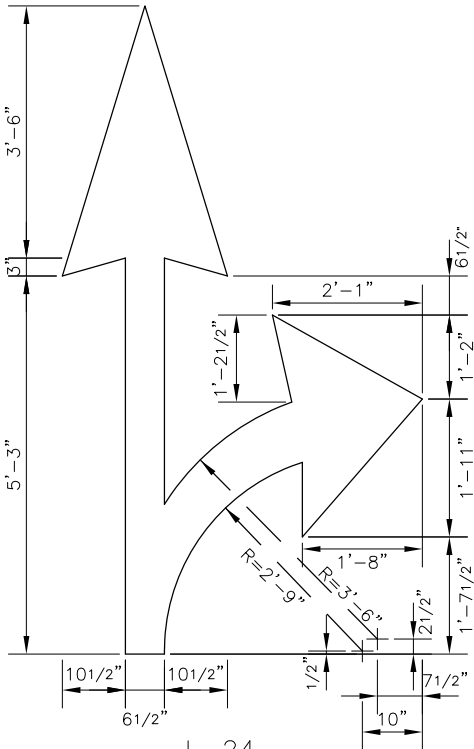


L-22
THROUGH ARROW

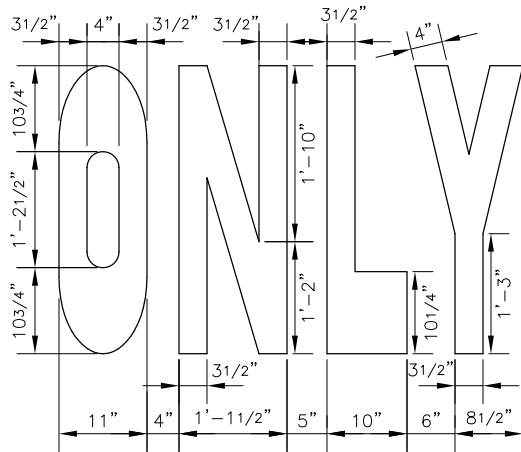


L-23
LEFT & THROUGH ARROWS

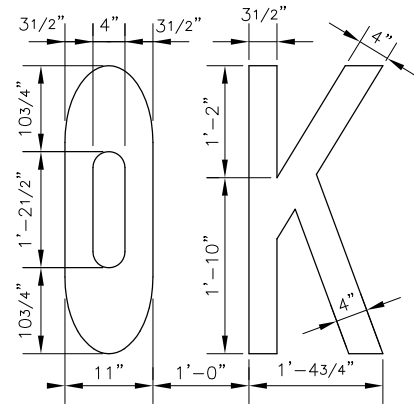
REF STD SPEC SEC 8-22



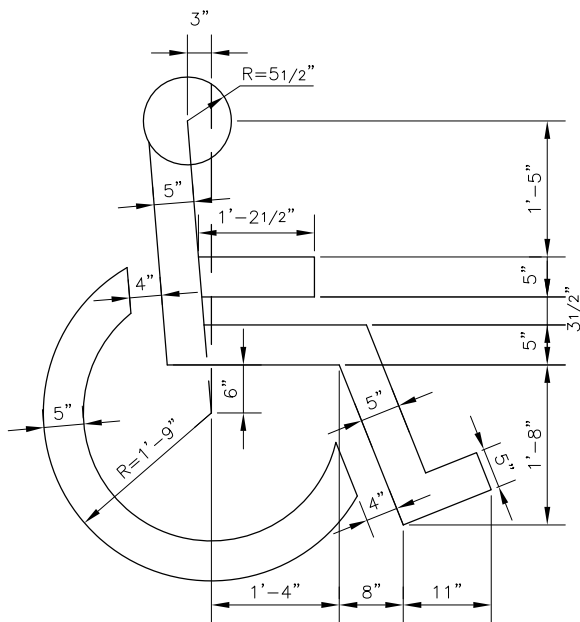
L-24
RIGHT & THROUGH ARROWS



L-25
"ONLY" LEGEND

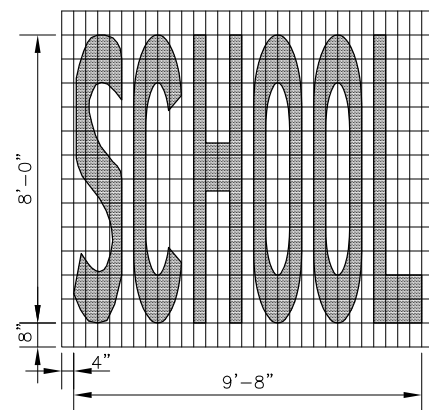


L-26
"OK" LEGEND

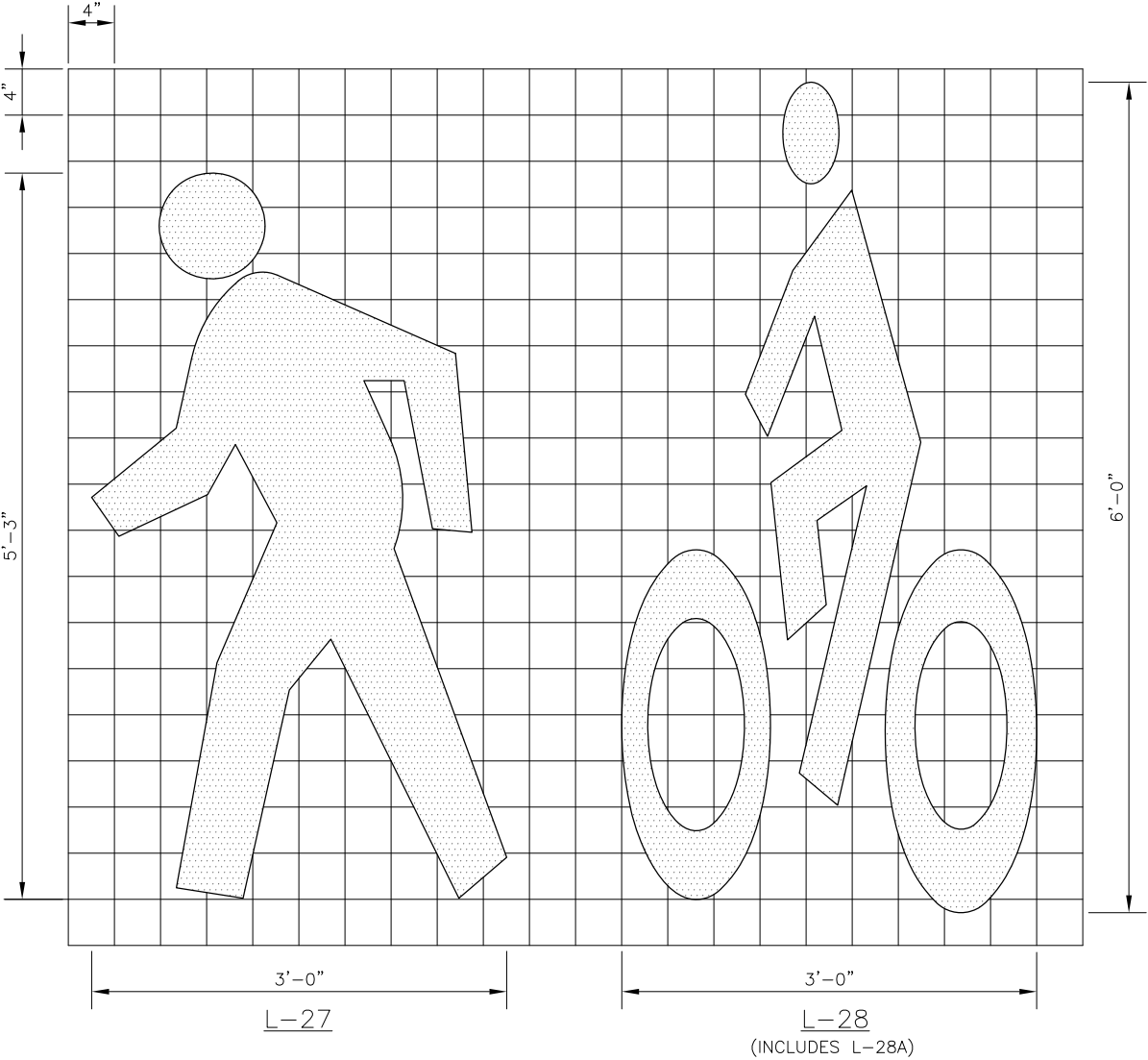
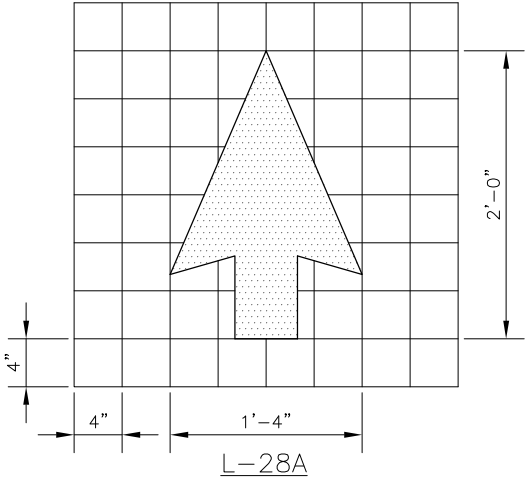


L-29
DISABLED PERSON SYMBOL

REF STD SPEC SEC 8-22



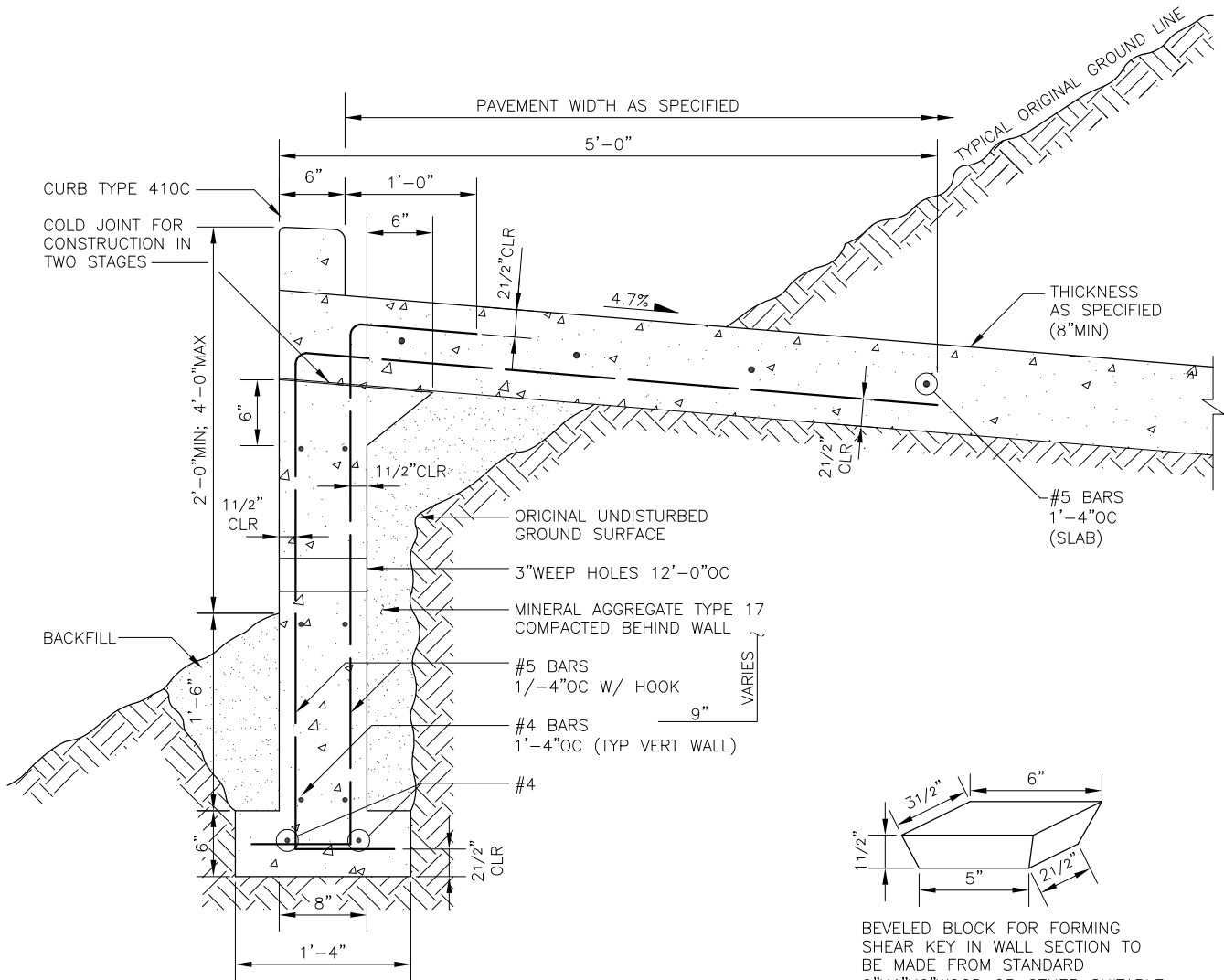
L-35
"SCHOOL" LEGEND



REF STD SPEC SEC 8-21

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BICYCLIST & PEDESTRIAN
SYMBOLS

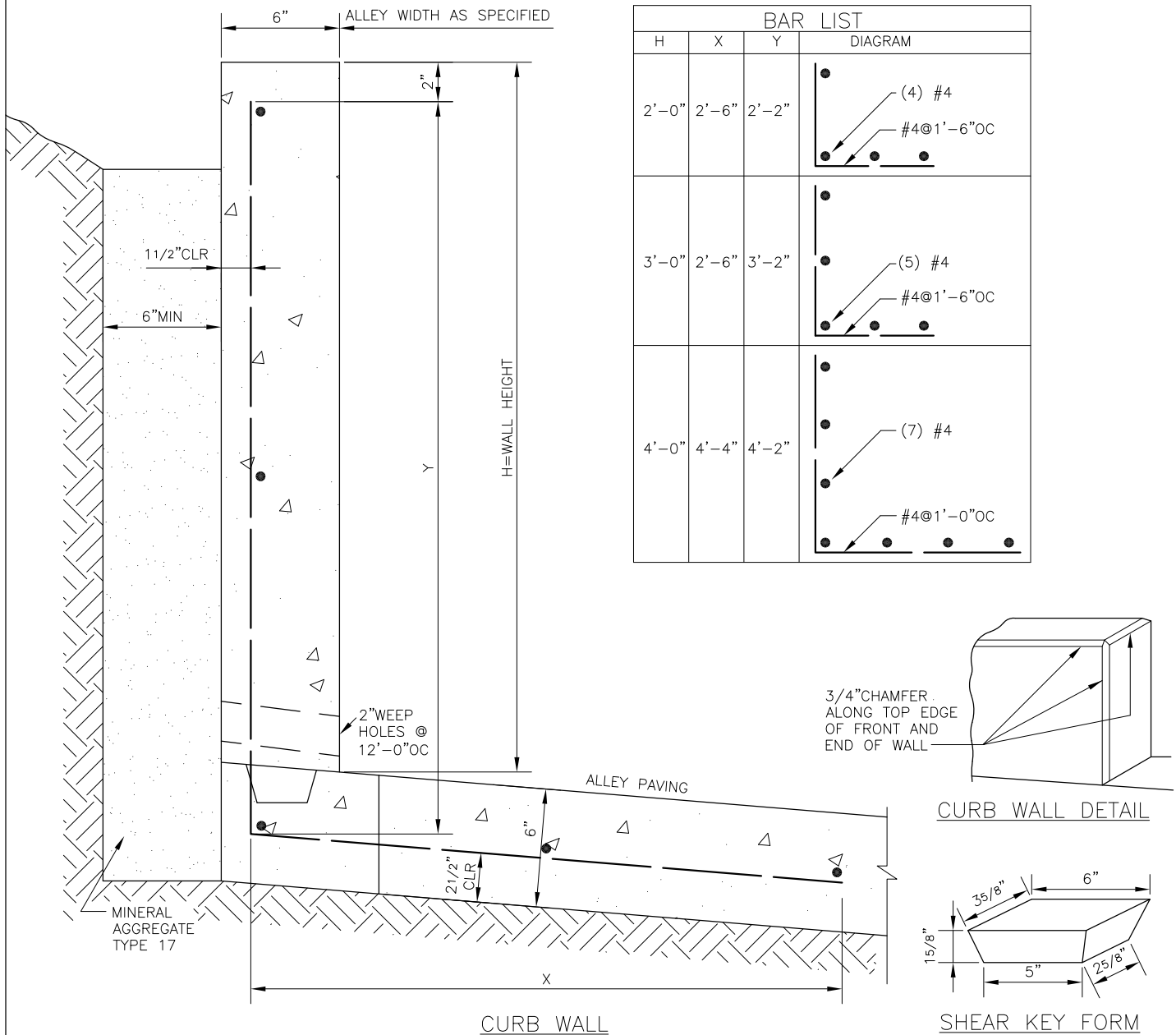
**NOTES:**

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. CLEARANCE TO REINF STEEL IN BACK FACE SHALL BE 2 1/2"
3. WHEN CONSTRUCTION OF ALLEY PAVEMENT IS NOT INTEGRAL WITH SUPPORT WALL, SHEAR KEYS SHALL BE INSTALLED 1'-6" ON CENTERS
4. CONCRETE FOR SUPPORT WALL SHALL BE CL 6 (11/2)
5. REINFORCING STEEL ASTM A615 GR 60

REF STD SPEC SEC 5-05

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SUPPORT WALL

**NOTES:**

1. MATCH WALL THROUGH JOINTS WITH PAVEMENT THROUGH JOINTS. DISCONTINUE HORIZONTAL REINFORCEMENT AT JOINTS AND MAINTAIN 1 1/2" CLEAR TO ALL REINFORCING AT JOINTS
2. CONC CL 6 (1 1/2) FOR CURB WALL
3. MAX HEIGHT 4'-0" (MIN PAVEMENT WIDTH IS 12'-0" FOR WALLS HIGHER THAN 3'-0")
4. BACK FORM FOR CURB WALL MAY BE OMITTED AND CONC PLACED AGAINST NATIVE EARTH WHEN GROUND CONDITIONS PERMIT. CLEARANCE TO REINF STEEL SHALL BE 2 1/2"
5. WHEN CONSTRUCTION OF WALL IS NOT INTEGRAL WITH ALLEY PAVEMENT, SHEAR KEY INDENTATIONS SPACED 1'-6" OC SHALL BE INSTALLED IN THE PAVEMENT SLAB
6. REINF STEEL ASTM A615 GR 60

REF STD SPEC SEC 5-05

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CURB WALL