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	PLAN NO.	SHEET NO.
	INDEX	1
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LINCOLN STANDARD PLANS – 2020

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LSP 150	R.C. COLLARS, ELBOWS AND PLUGS	LSP 642	P. C. CONCRETE PAVEMENT REPAIR (2 SHEETS)
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LSP 161	BAR GRATE FOR FLARED END SECTION	LSP 651	CURB AND DRIVEWAY DETAILS
LSP 162	CAST IRON MANHOLE RING, COVER AND STEPS	LSP 652	CURB SAWING – CURB RAMP
LSP 163	SURVEY MONUMENT BOX AND STAKING	LSP 653	CURB SAWING – DRIVEWAYS
LSP 170	LOW FLOW LINER	LSP 660	CONCRETE PAVEMENT JOINT DETAILS (2 SHEETS)
LSP 175	SEDIMENT FENCE	LSP 669	KEYHOLE POTHOLE EXCAVATION AND BACK FILL
		LSP 670	PAVEMENT REPLACEMENT FOR UTILITY CONSTRUCTION

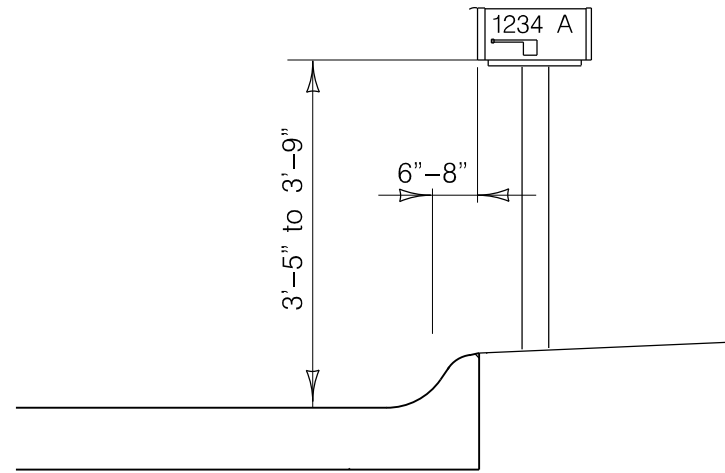
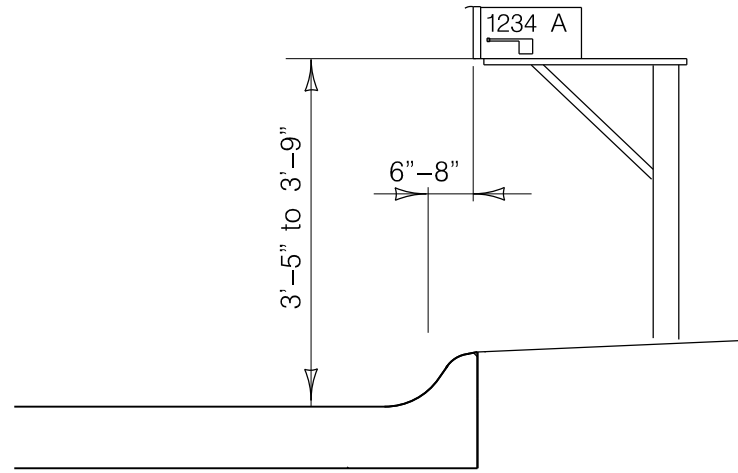


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 EFFECTIVE DATE JANUARY 2, 2020

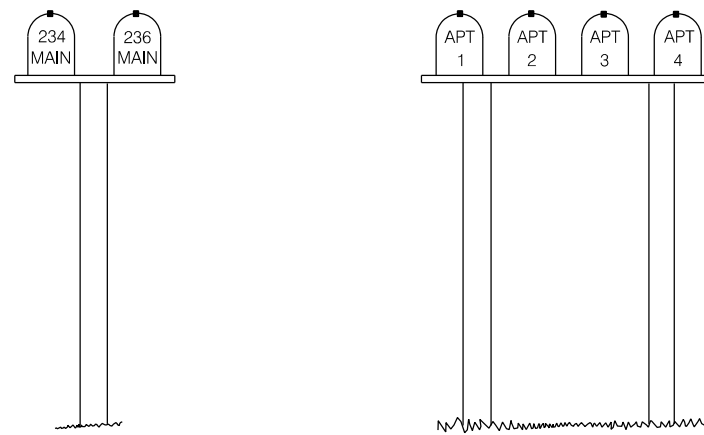
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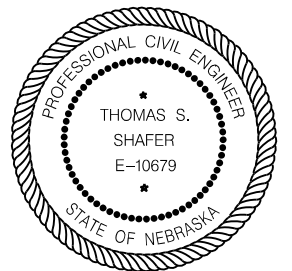
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GROUPING OF TWO OR MORE MAIL BOXES TOGETHER IS ENCOURAGED.
 THE ADDRESS SHOULD BE EITHER ON THE MAIL BOX DOOR OR ON THE SIDE OF THE MAILBOX. PLACING A NAME ON THE BOX IS OPTIONAL.



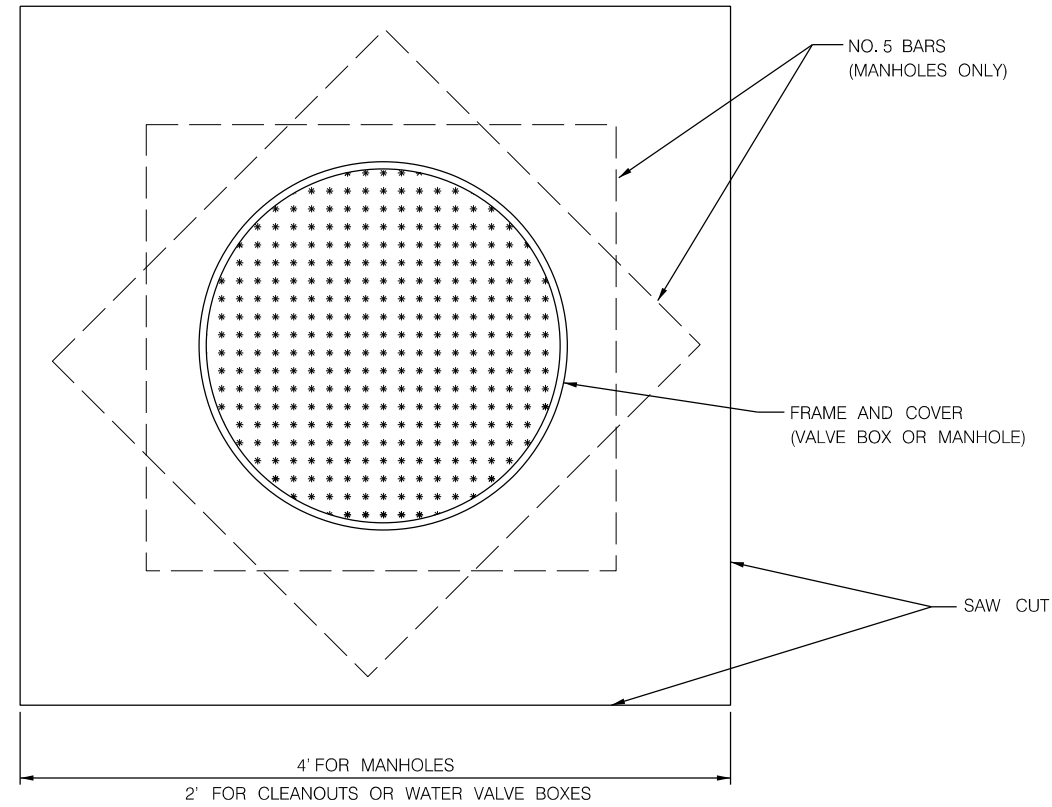
MAILBOX GROUPING



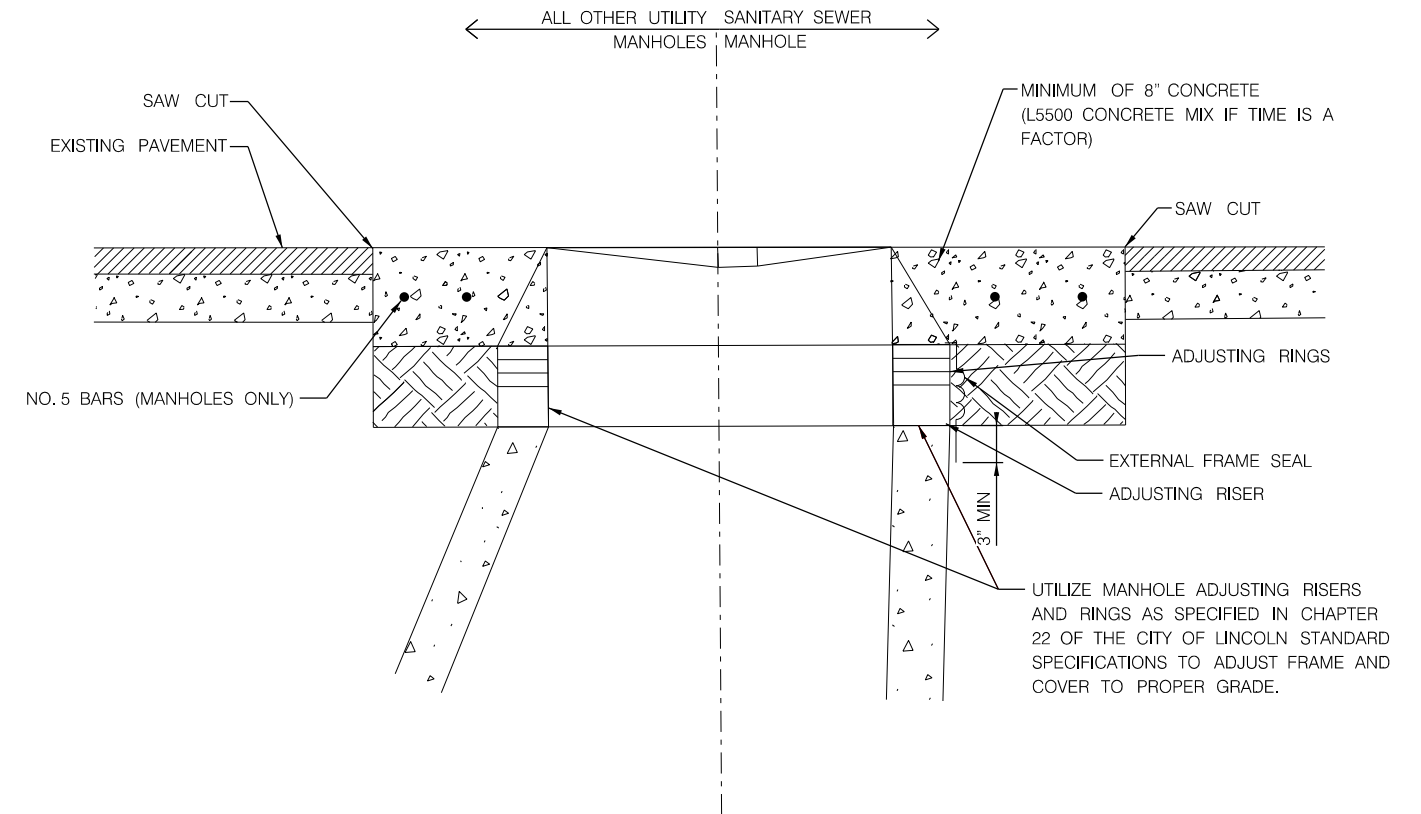
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DIRECTION OF TRAVEL



PLAN



SIDE VIEW

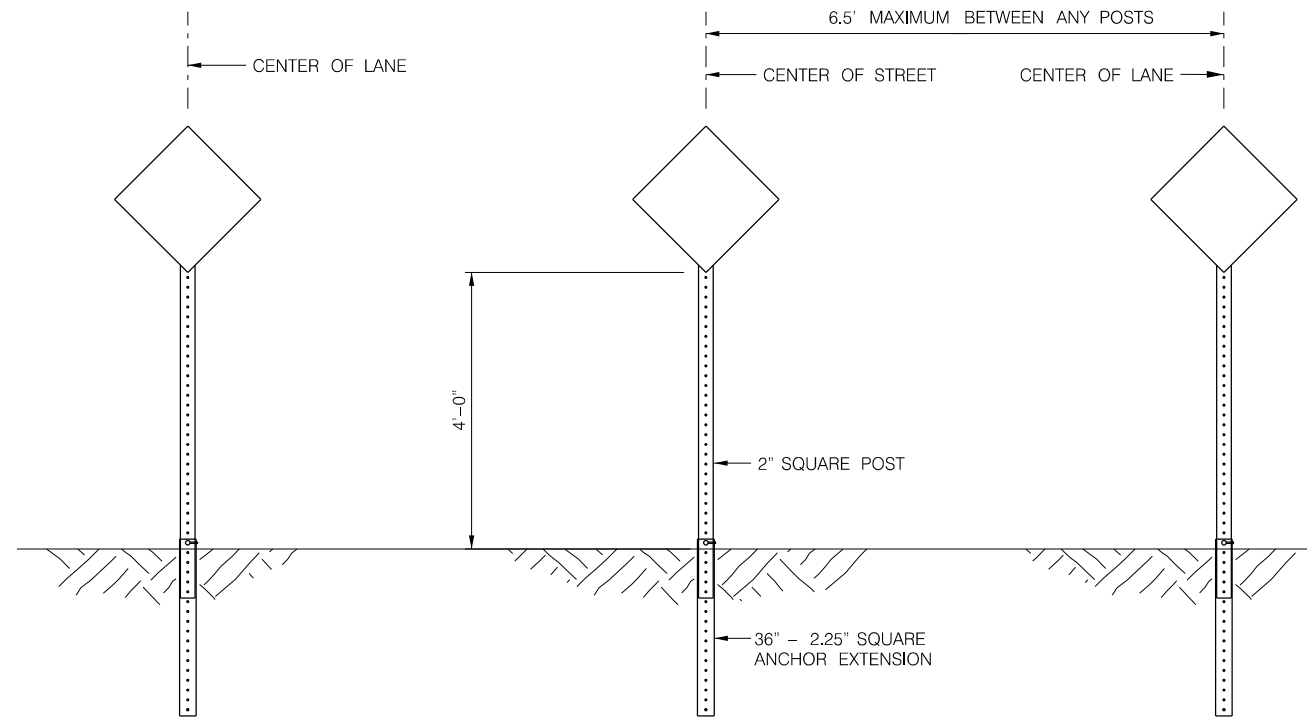
GENERAL NOTES:

- BEFORE PLACING ADJUSTING RINGS AND RISERS, THE TOP SECTION OF THE MANHOLE SHALL BE FLAT WITHOUT ANY LOOSE BRICK, CONCRETE, OR OTHER MATERIAL, REMOVE LOOSE MATERIAL UNTIL A SOLID SURFACE IS OBTAINED.
- MANHOLE SURFACES WHICH ARE DAMAGED OR IRREGULAR SHALL BE CLEANED AND LEVELED WITH NON-SHRINK GROUT PRIOR TO INSTALLATION OF THE ADJUSTING RINGS AND RISERS.
- MANHOLE ADJUSTING RINGS SHALL BE USED FOR THE TOP 4" OF ADJUSTMENT.
- MANHOLE ADJUSTING RISERS SHALL BE USED TO ADJUST FROM 4" TO 25" BELOW THE MANHOLE FRAME.
- ANGLED ADJUSTING RINGS SHALL BE USED TO MATCH PAVEMENT SLOPE.
- ALL WORK SHALL BE APPROVED BY THE CITY CONSTRUCTION REPRESENTATIVE.



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DEAD END SIGNING

SIGNS SHALL BE 18" RED DIAMOND PANEL WITH HIGH INTENSITY SHEETING.

TYPE III BARRICADES ONLY TO BE USED AS A SUBSTITUTE WITH THE APPROVAL OF CITY TRAFFIC ENGINEER

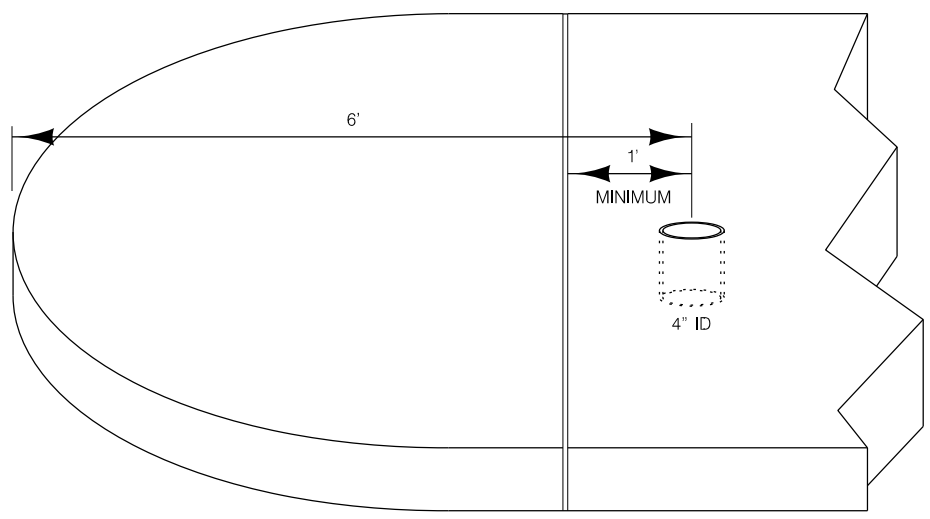


DEAD END SIGNING

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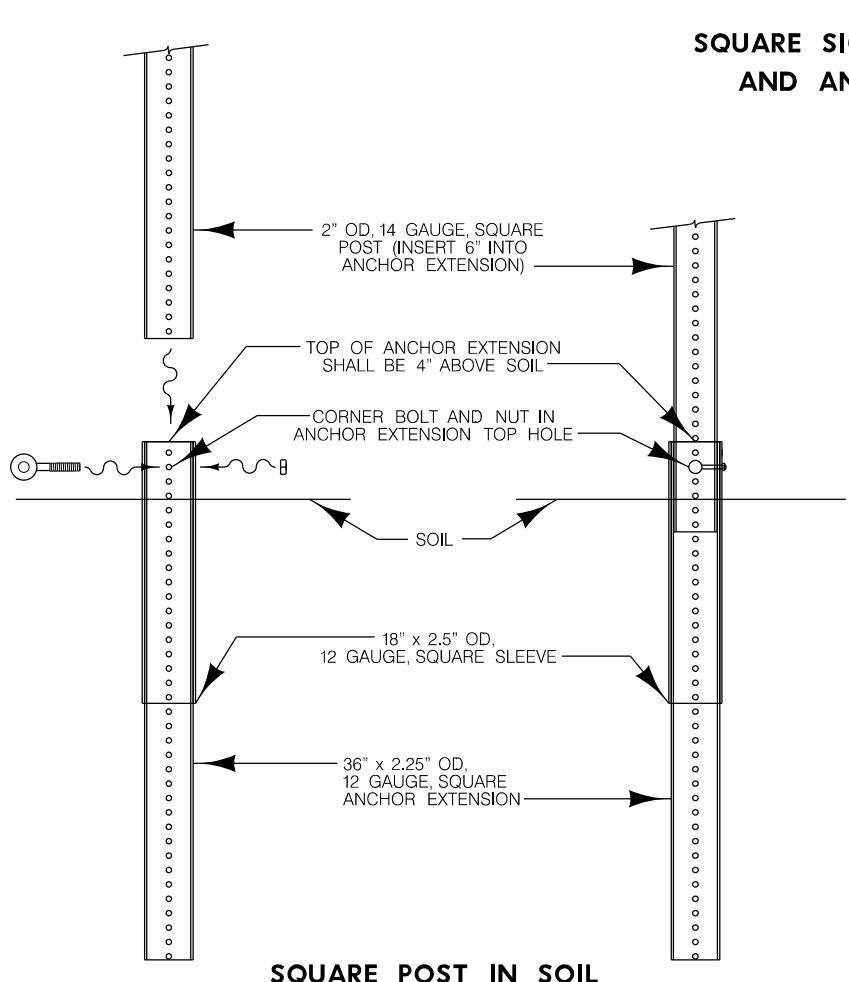
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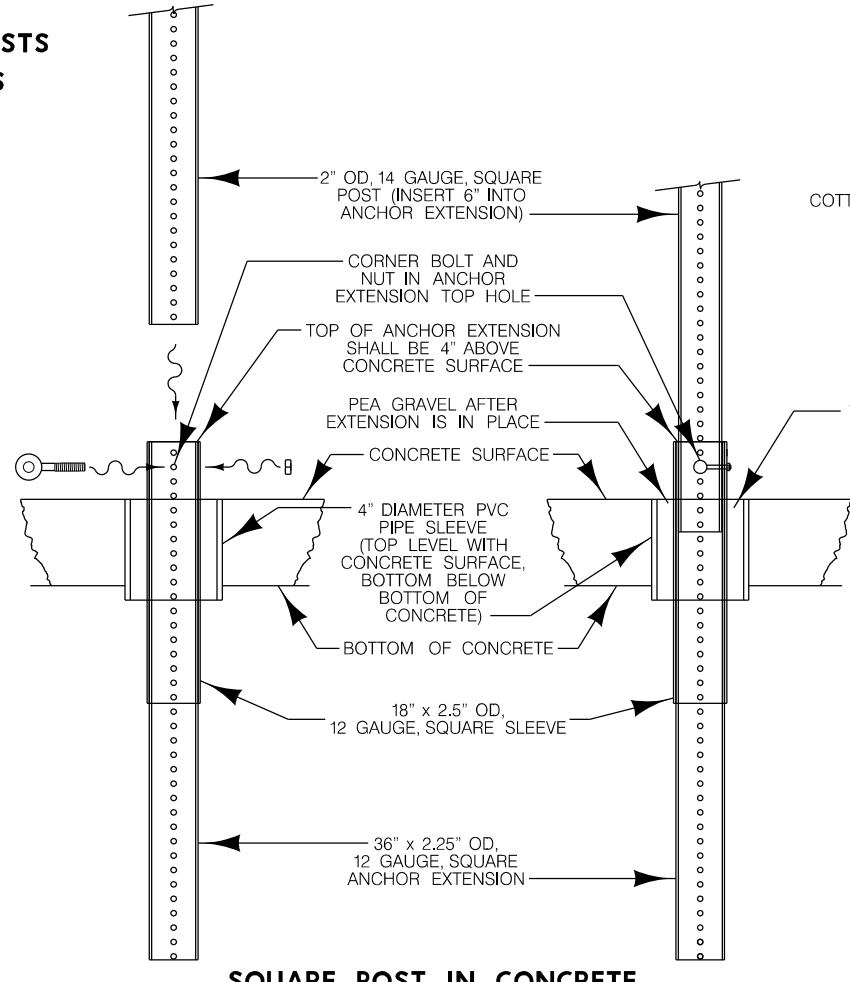
ANCHOR EXTENSION SLEEVE

ANCHOR EXTENSION SLEEVE SHALL BE MADE OF 4" ID PVC PIPE. THE TOP OF SLEEVE SHALL BE LEVEL WITH SURFACE OF CONCRETE. BOTTOM OF SLEEVE SHALL EXTEND BELOW BASE OF CONCRETE. IF SLEEVE IS NOT INSTALLED AT TIME OF CONCRETE POUR, A 4" HOLE MAY BE DRILLED THROUGH THE CONCRETE AFTER CONCRETE HAS CURED.

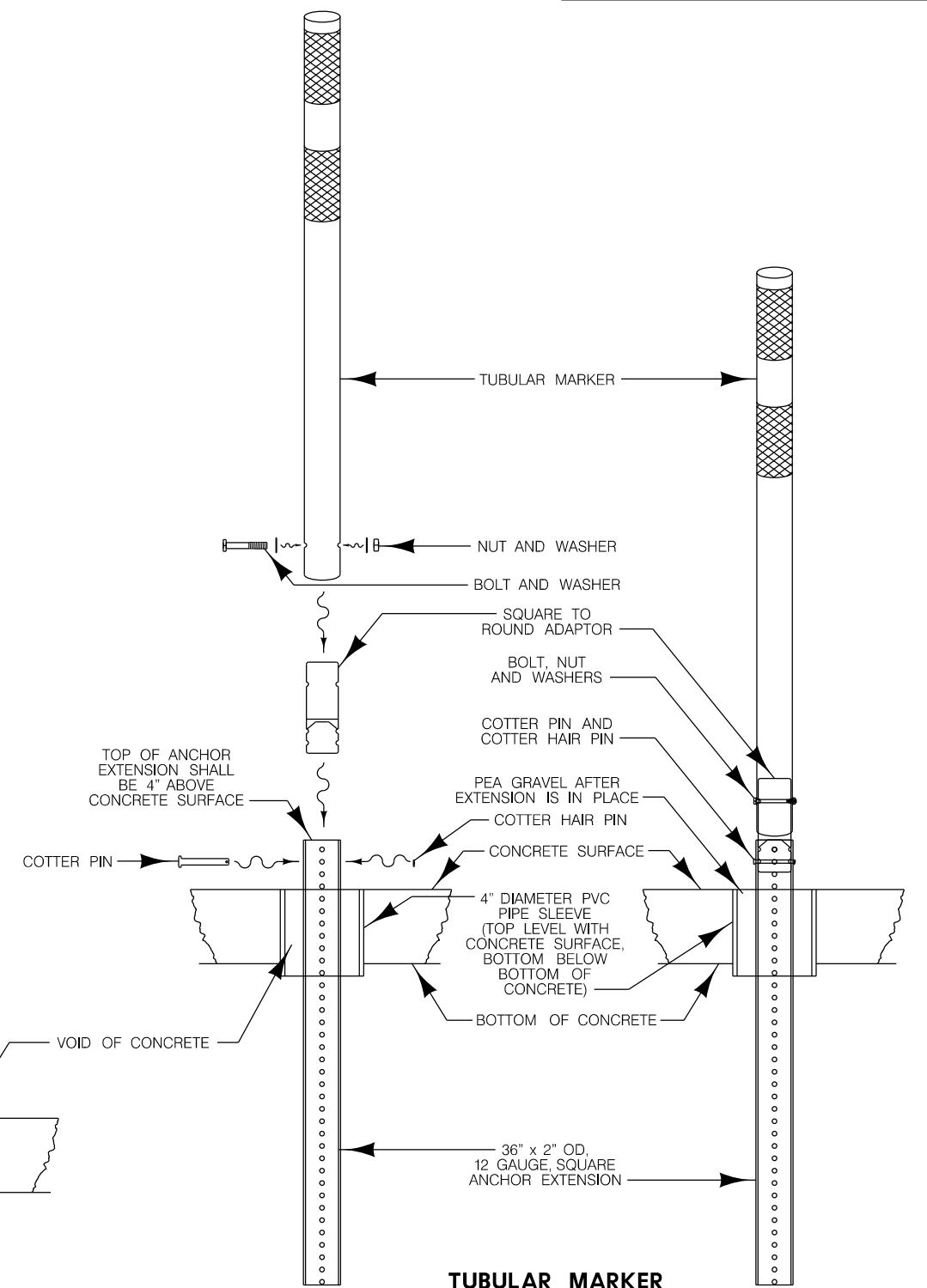
SQUARE SIGN POSTS AND ANCHORS



SQUARE POST IN SOIL



SQUARE POST IN CONCRETE



TUBULAR MARKER TO SQUARE POST

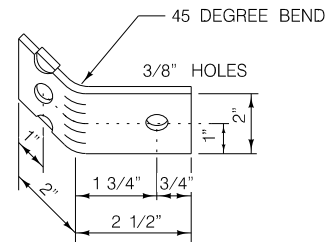


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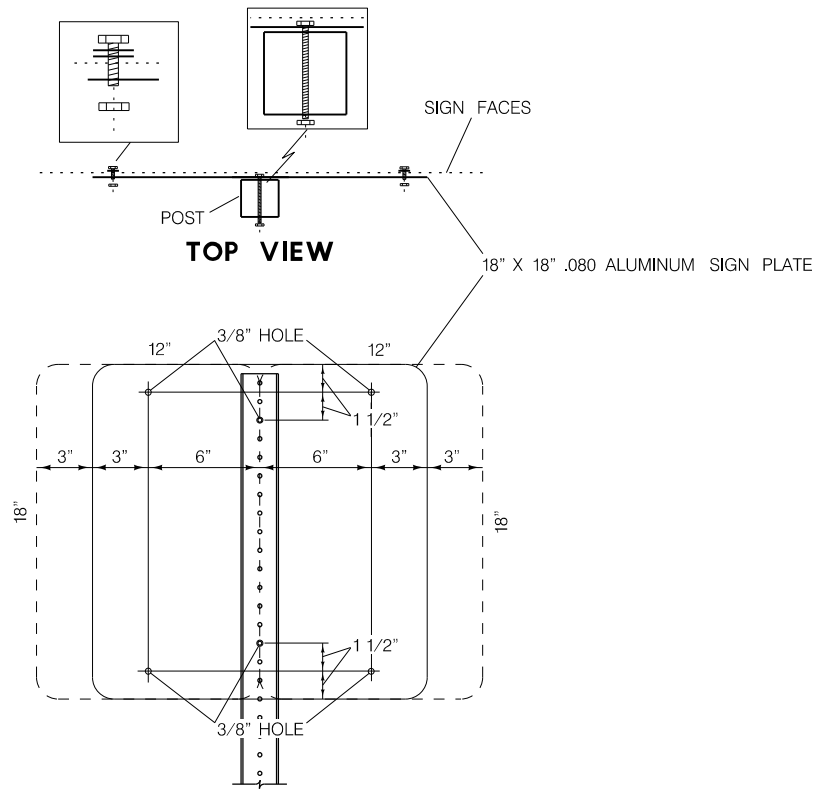
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45 DEGREE SIGN BRACKET

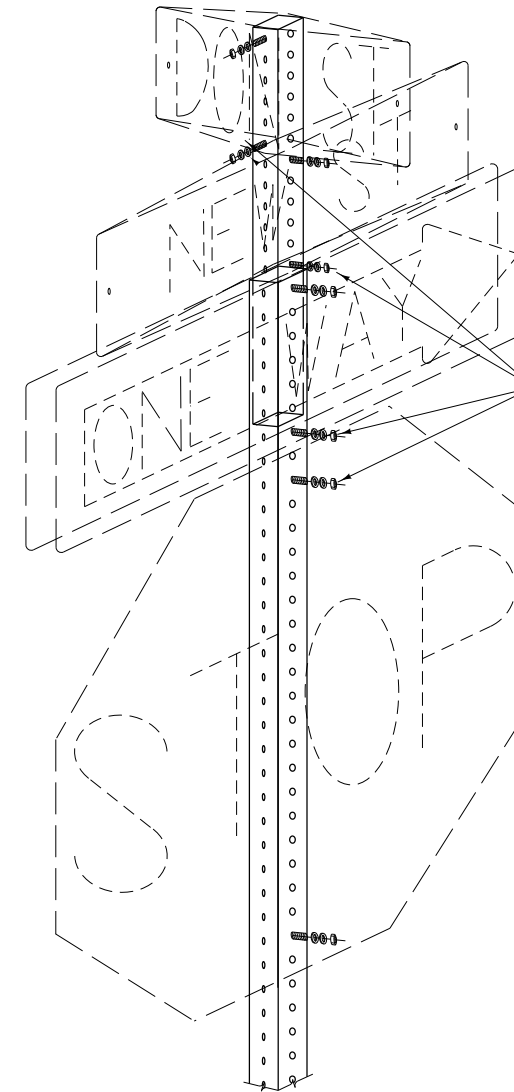


THIS 3/16" THICK, ZINC CADMIUM BRACKET SHALL BE USED WHEN A SIGN NEEDS TO BE INSTALLED AT A 45 DEGREE ANGLE BELOW ANOTHER SIGN THAT IS PERPENDICULAR TO THE STREET. 5/16" STAINLESS STEEL BOLTS SHALL BE USED FOR INSTALLATION.



THIS SIGN PLATE SHALL BE USED WHEN TWO 12" SIGNS ARE TO BE INSTALLED SIDE BY SIDE, FACING THE SAME DIRECTION. THE BOLTS THAT HOLD THE SIGN PLATE TO THE POST SHALL BE BEHIND THE SIGNS AND SHALL BE 5/16" X 2 1/2" TO 3" ZINC CADMIUM. THE SIGNS SHALL BE BOLTED TO SIGN PLATE USING 5/16" X 1" STAINLESS STEEL BOLTS WITH NYLON WASHERS.

MULTIPLE SIGNS ON POST



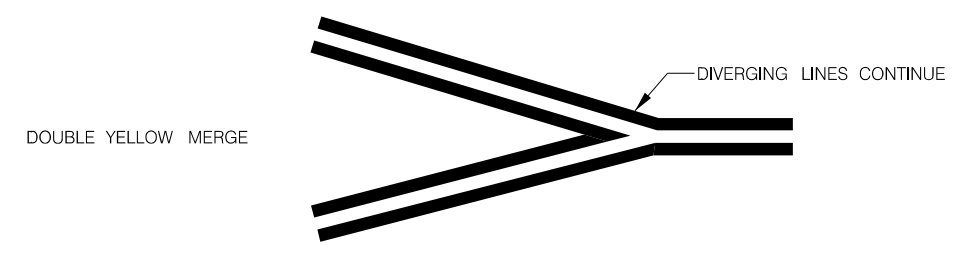
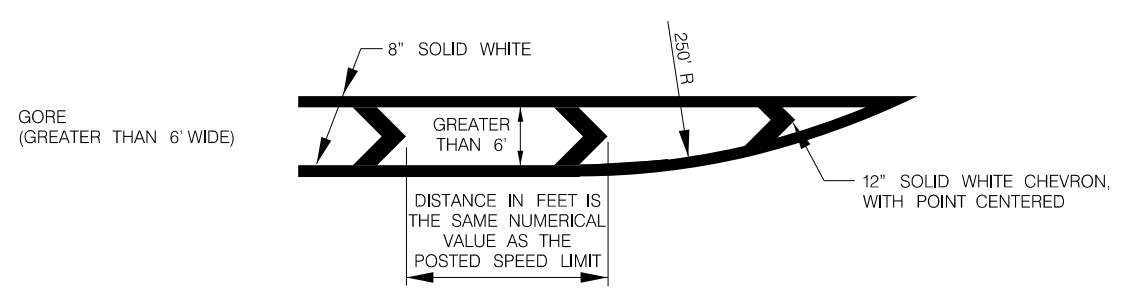
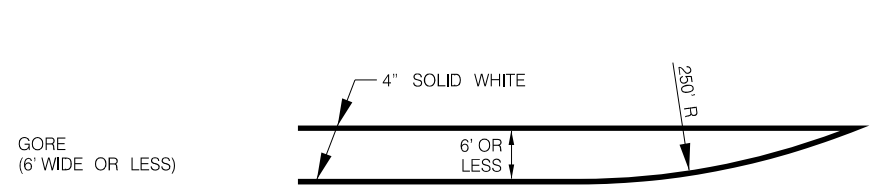
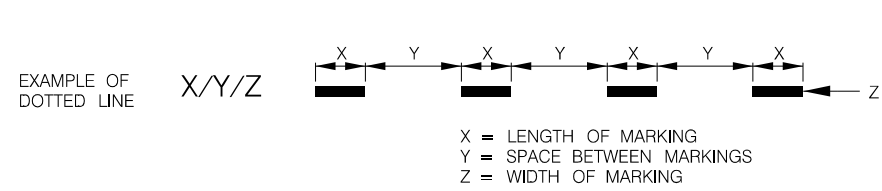
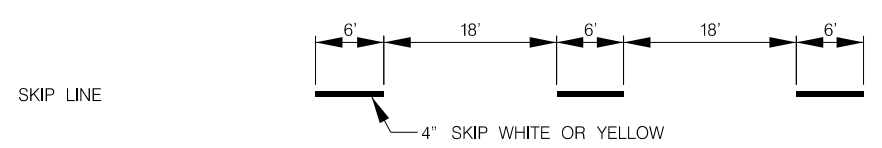
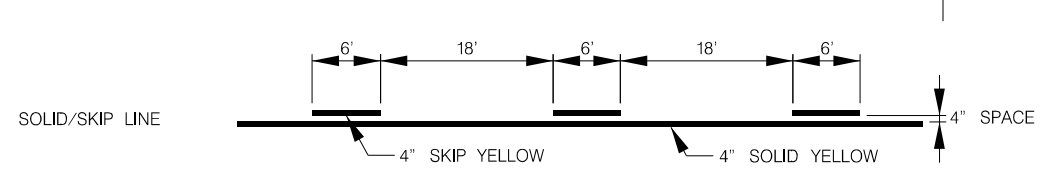
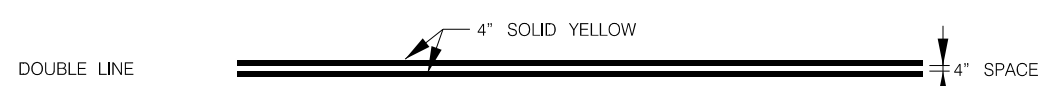
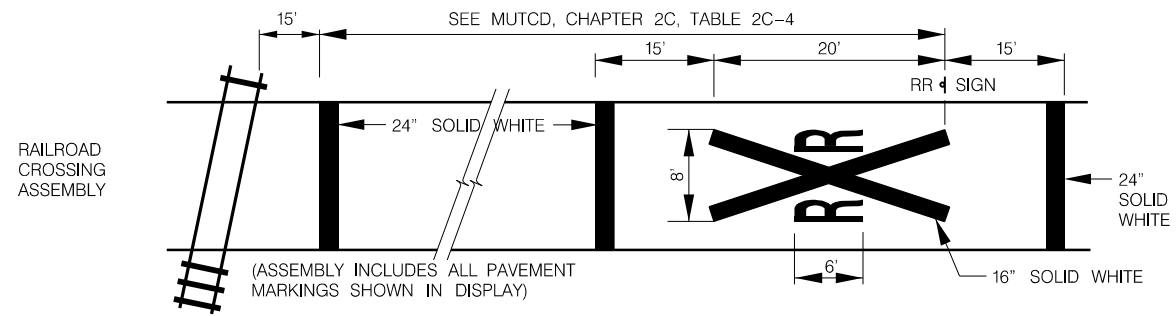
STOP SIGN WITH STREET NAME SIGNS AND ONE WAYS

NOTE:

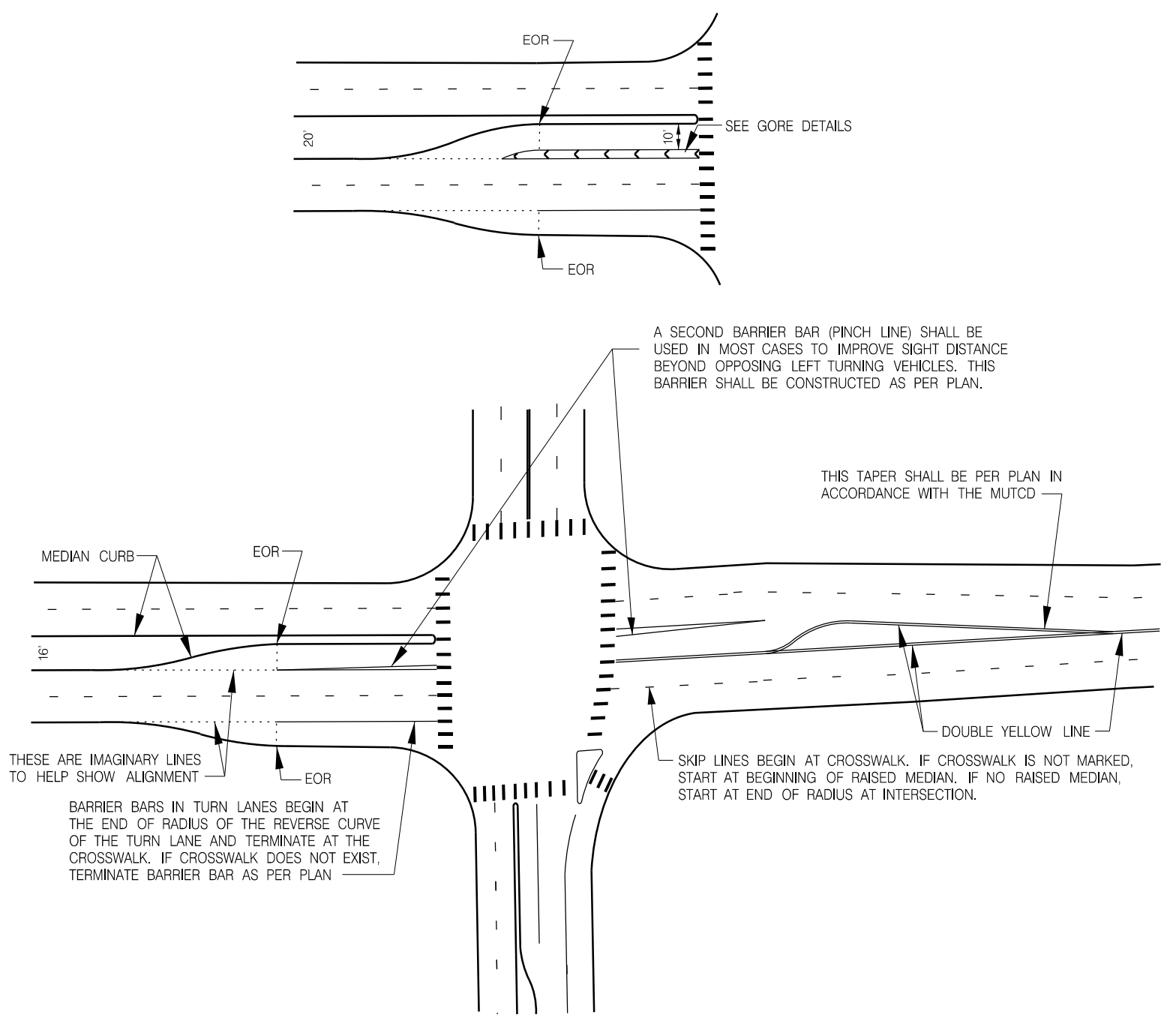
SIGNS 4' OR GREATER IN WIDTH SHALL BE MOUNTED ON 2 POSTS.



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LONGITUDINAL MARKING



NOTES:

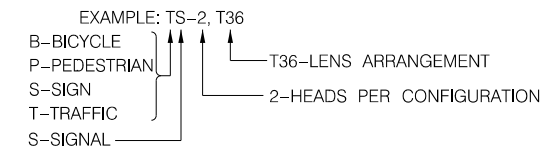
- IF THERE ARE ANY QUESTIONS CONCERNING PLACEMENT OF MARKINGS, CONTACT ENGINEER FOR APPROVAL BEFORE PROCEEDING WITH WORK.
- ALL LONGITUDINAL LINES AND LANE WIDTHS ARE MEASURED FROM BACK OF CURB TO CENTER OF MARKING LINE, AND BETWEEN CENTERS OF MARKING LINES.
- MARKINGS SHALL NOT BE INSTALLED CLOSER THAN 2" FROM A JOINT LINE.
- MARKINGS SHOULD NORMALLY BE INSTALLED TO THE LEFT SIDE OF THE JOINT LINE IN THE TRAVEL DIRECTION, EXCEPT IN RIGHT TURN LANES, WHERE MARKINGS SHOULD NORMALLY BE INSTALLED TO THE RIGHT SIDE OF THE JOINT LINE IN THE TRAVEL DIRECTION.
- WHEN 12" CHEVRONS ARE INSTALLED BETWEEN (2) 8" LINES WITHIN A GORE AREA, THE POINT OF THE CHEVRONS SHALL BE CENTERED BETWEEN THE TWO 8" LINES. EACH GORE AND CHEVRON AREA SHALL BE REVIEWED BY TRAFFIC ENGINEERING TO DETERMINE IF IT SHALL BE GROOVED.
- ALL CROSSWALK LOCATIONS WILL BE PRE-MARKED BY THE CONTRACTOR AND INSPECTED BY TRAFFIC ENGINEERING BEFORE MARKINGS ARE APPLIED.
- SPACING OF CONTINENTAL CROSSWALK MARKINGS SHALL BE ORIENTED PARALLEL TO THE GENERAL FLOW OF TRAFFIC, SPACED TO AVOID WHEEL PATHS, AS PER PLAN, AND IN ACCORDANCE WITH THE MUTCD.



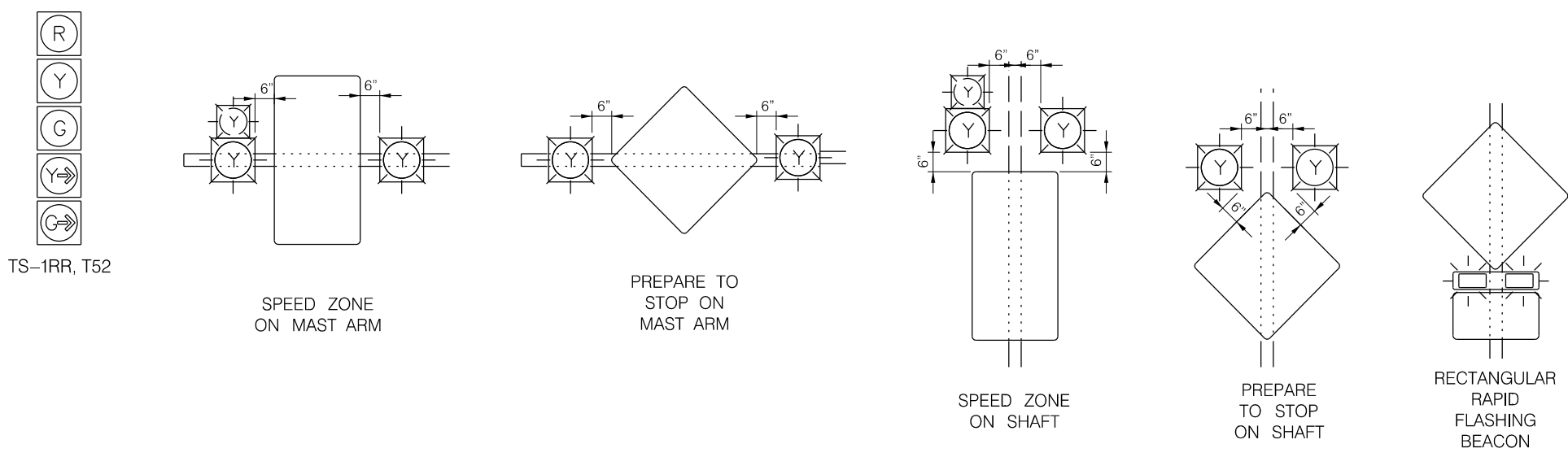
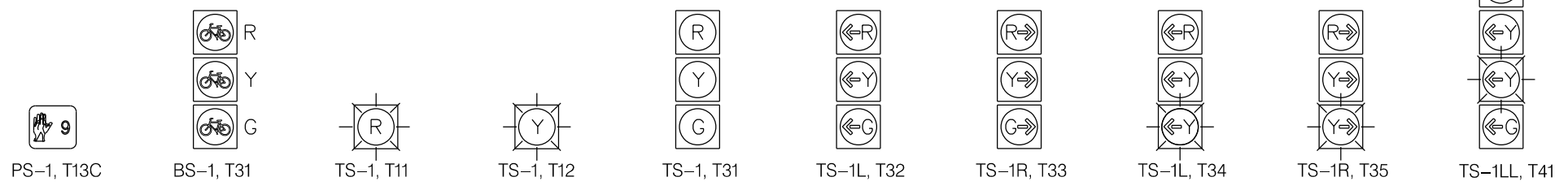
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STANDARD SIGNAL FACE ARRANGEMENTS



PROPOSED	LEGEND	EXISTING
	MAINLINE CONDUIT GROUP TRENCH	
	MAINLINE CONDUIT GROUP BORED	
	CONDUIT IN TRENCH	
	CONDUIT BORED	
	CONCRETE ANCHOR	
	CONDUIT PLUG	
	CONTROLLER & PAD	
	DOWN GUY	
	DYNAMIC MESSAGE SIGN	
	ELECTRIC METER PEDESTAL	
	EMERGENCY DETECTOR	
	FIBER MARKER	
	GROUND	
	HEAD BS-1, T31	
	HEAD PS-1, T13C	
	HEAD TS-1, T11 & TS-1, T12	
	HEAD TS-1, T31	
	HEAD TS-1L, T32	
	HEAD TS-1R, T33	
	HEAD TS-1L, T34	
	HEAD TS-1R, T35	
	HEAD TS-1LL, T41	
	HEAD TS-1RR, T52	
	HEAD, PREPARE TO STOP	
	HEAD, SPEED ZONE	
	LED MESSAGE SIGN	
	LUMINAIRE	
	MAST ARM	
	METRO STREET NAME SIGN	
	OVERHEAD CABLE	
	PEDESTRIAN PUSH BUTTON	
	PEDESTRIAN PUSH BUTTON AUDIBLE	
	POLE WITH FOUNDATION	
	POLE, STREET LIGHT	
	POLE, WOOD	
	POWER PEDESTAL	
	POWER POLE	
	POWER TRANSFORMER	
	PULL BOX	
	PULL BOX, T48	
	RADIO ANTENNA	
	RISER	
	SIGN ON ARM	
	SPAN WIRE	
	SPLICE, DIRECT BURIED	
	SPEED INDICATOR	
	MONITORING CAMERA	
	TRAFFIC MONITORING POLE	
	RECTANGULAR RAPID FLASHING BEACON	
	VEHICLE DETECTOR	
	VEHICLE DETECTOR PUCKS	
	VEHICLE DETECTOR CAMERA	



CABLE COLOR DESIGNATIONS

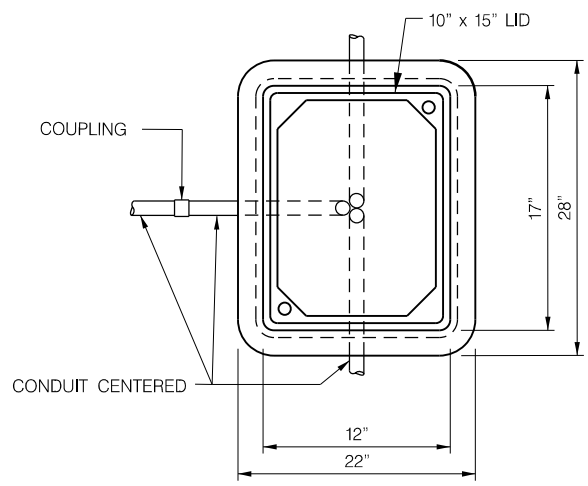
3/C LED SIGN	WHITE	AC-
	BLACK	AC+
	RED	SAFETY GROUND
7/C PEDESTRIAN SIGNAL HEADS	WHITE	AC-
	RED	MAIN PHASE DON'T WALK
	ORANGE	MAIN PHASE WALK
	BLACK	SIDE PHASE DON'T WALK
	GREEN	SIDE PHASE WALK
	BLUE	SPARE
	WHITE-BLACK	SPARE
16/C SIGNAL HEADS AT PEDESTRIAN SIGNAL BOTH DIRECTIONS	WHITE	AC-
	RED	1ST DIRECTION RED BALL
	ORANGE	1ST DIRECTION YELLOW BALL
	GREEN	1ST DIRECTION GREEN BALL
	RED-WHITE	SPARE
	BLACK	DONT WALK
	BLUE	WALK
	WHITE-BLACK	2ND DIRECTION RED BALL
	RED-BLACK	2ND DIRECTION YELLOW BALL
	ORANGE-BLACK	2ND DIRECTION GREEN BALL
	GREEN-BLACK	SPARE
	BLACK-RED	SPARE
	BLACK-WHITE	SPARE
	BLUE-WHITE	SPARE
	BLUE-BLACK	SPARE
	GREEN-WHITE	SPARE
3/C PEDESTRIAN PUSH BUTTONS (ARE ALWAYS SEPARATE)	WHITE	AC-
	RED	MAIN PHASE PUSH BUTTON
	BLACK	SIDE PHASE PUSH BUTTON
16/C TRAFFIC SIGNAL HEADS AT INTERSECTION SIGNAL	WHITE	MAIN PHASE AC-
	RED	MAIN PHASE RED BALL
	ORANGE	MAIN PHASE YELLOW BALL
	GREEN	MAIN PHASE GREEN BALL
	RED-WHITE	MAIN PHASE LEFT TURN RED ARROW
	BLACK	MAIN PHASE LEFT TURN YELLOW ARROW
	BLUE	MAIN PHASE LEFT TURN GREEN ARROW
	WHITE-BLACK	SECONDARY PHASE AC-
	RED-BLACK	SECONDARY PHASE RED BALL (RED ARROW)
	ORANGE-BLACK	SECONDARY PHASE YELLOW BALL (YELLOW ARROW)
	GREEN-BLACK	SECONDARY PHASE GREEN BALL (GREEN ARROW)
	BLACK-RED	SECONDARY PHASE RED ARROW (FLASHING YELLOW ARROW)
BLACK-WHITE	SECONDARY PHASE YELLOW ARROW	
BLUE-WHITE	SECONDARY PHASE GREEN ARROW	
BLUE-BLACK	SPARE	
GREEN-WHITE	SPARE	



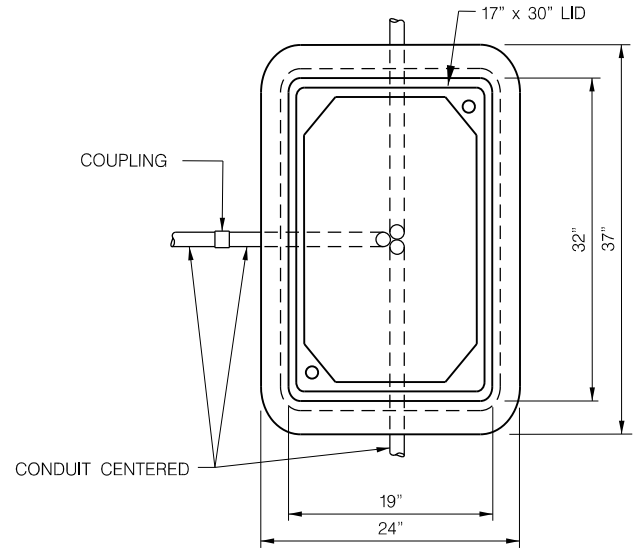
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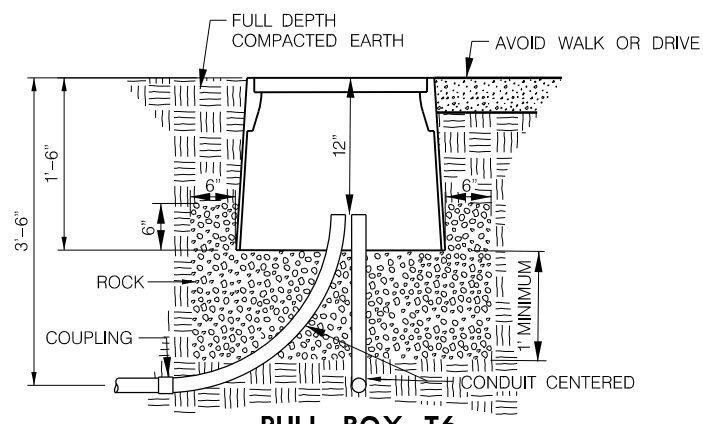
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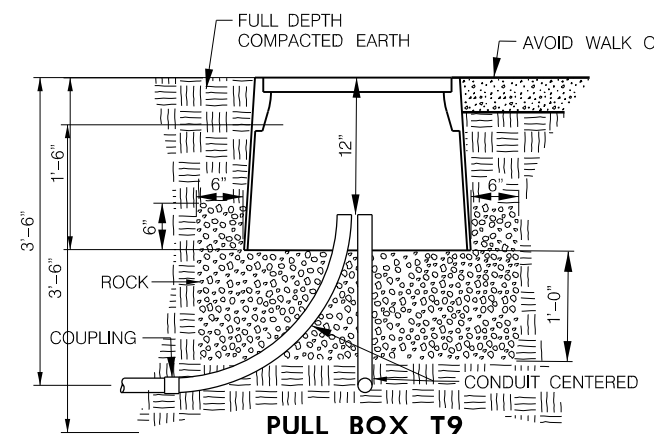
**PULL BOX T6
PLAN VIEW**



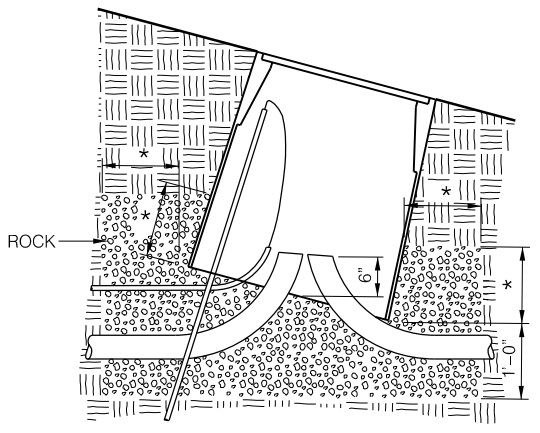
**PULL BOX T9
PLAN VIEW**



**PULL BOX T6
END VIEW**

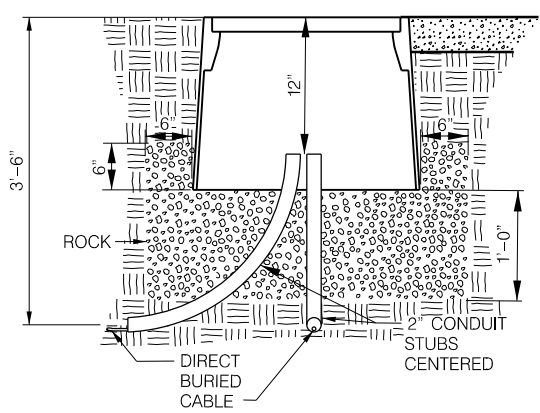


**PULL BOX T9
END VIEW**



* IS 6" FOR T6 & T9 AND 12" FOR TR27 & T48

**PULL BOX ON SLOPE
SIDE VIEW**



**TYPICAL PULL BOX STUBS
FOR DIRECT BURIED CABLE
END VIEW**

PULL BOX NOTES:
 PULL BOX T6 IS FOR STREET LIGHTS ONLY WITH A LID EMBOSSED ON THE TOP SURFACE WITH TIER 15 AND "ELECTRIC". PULL BOX T9 IS FOR GENERAL USE WITH A LID EMBOSSED ON THE TOP SURFACE WITH TIER 15 AND "ELECTRIC". PULL BOX TR27 IS THE TRAFFIC POLE PULL BOX WITH A LID EMBOSSED ON THE TOP SURFACE WITH TIER 15 AND "TRAFFIC". PULL BOX T48 IS THE FIBER OR CONTROLLER PULL BOX WITH A 2 PIECE LID EMBOSSED ON THE TOP SURFACE WITH TIER 15 AND "TRAFFIC" OR "FIBER".

ALL PULL BOXES AND THEIR LIDS ARE REQUIRED TO CONFORM TO ALL TEST PROVISIONS OF ANSI/SCTE 77 "SPECIFICATIONS FOR UNDERGROUND ENCLOSURE INTEGRITY" TIER 15 AND LABELED AS SUCH INSIDE THE PULL BOX AND ON TOP OF THE LID.

ALL PULL BOXES SHALL CONFORM TO LINCOLN SPECIFICATIONS.

ALL PULL BOX LIDS SURFACES SHALL HAVE A MINIMUM COEFFICIENT OF FRICTION OF 0.5 IN ACCORDANCE WITH ASTM C1028.

AVOID PLACING PULL BOXES IN CONCRETE. THE PULL BOX EDGES, LID AND LIFTING EYE SHALL BE KEPT CLEAR OF CONCRETE AND FOREIGN MATERIAL.

DO NOT INSTALL LID BOLTS.

PULL BOX SHALL REST FIRMLY ON AN AGGREGATE BASE MEETING ALL THE REQUIREMENTS OF COURSE AGGREGATE FOR CONCRETE AS DESCRIBED IN CHAPTER 3 OF THE CITY OF LINCOLN STANDARD SPECIFICATIONS. THE AGGREGATE BASE SHALL BE PLACED IN 6" LIFTS AND COMPACTED WITH MECHANICAL OR HAND METHODS TO THE SATISFACTION OF THE ENGINEER.

THE AGGREGATE BASE SHALL BE PLACED TO THE DIMENSIONS SHOWN FOR EACH TYPE OF PULL BOX.

THE REMAINING EXCAVATION SHALL BE BACKFILLED WITH SOIL AND SHALL MEET THE REQUIREMENTS FOR BACKFILL IN CHAPTER 20 OF THE CITY OF LINCOLN STANDARD SPECIFICATIONS.

ALL DIMENSIONS ARE NOMINAL

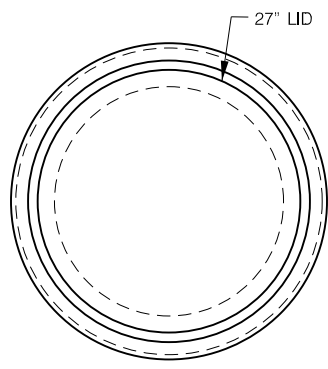


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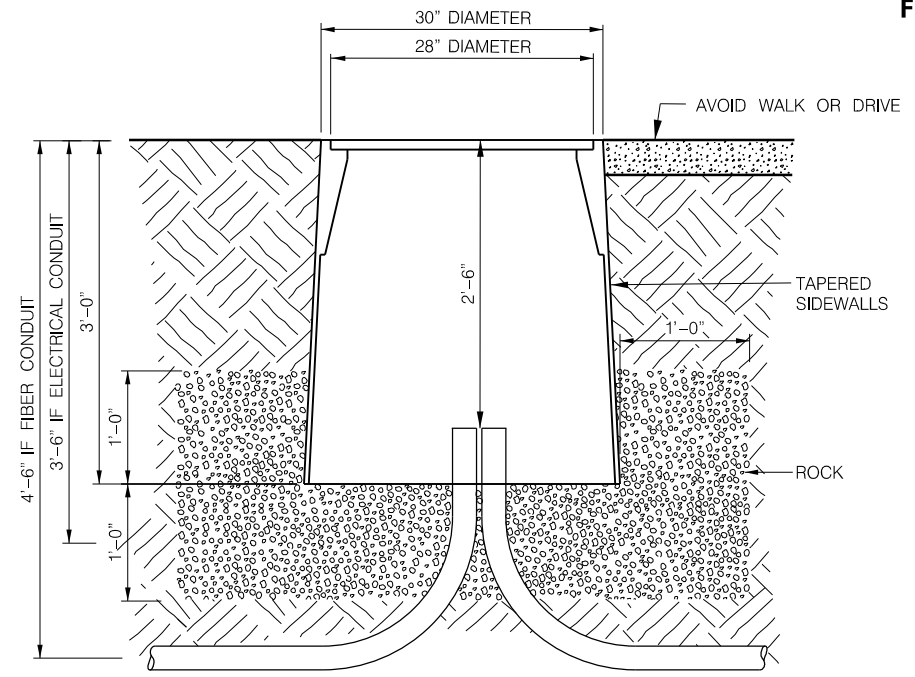
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	Date: 1/2/2020	Drawn: CAW
	Horz. Scale: N.T.S.	Checked:
		Approved:

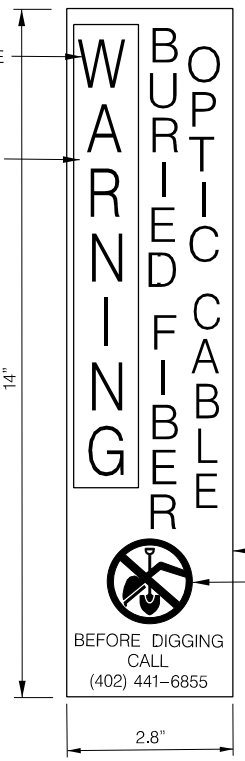
DIMENSIONS ARE NOMINAL



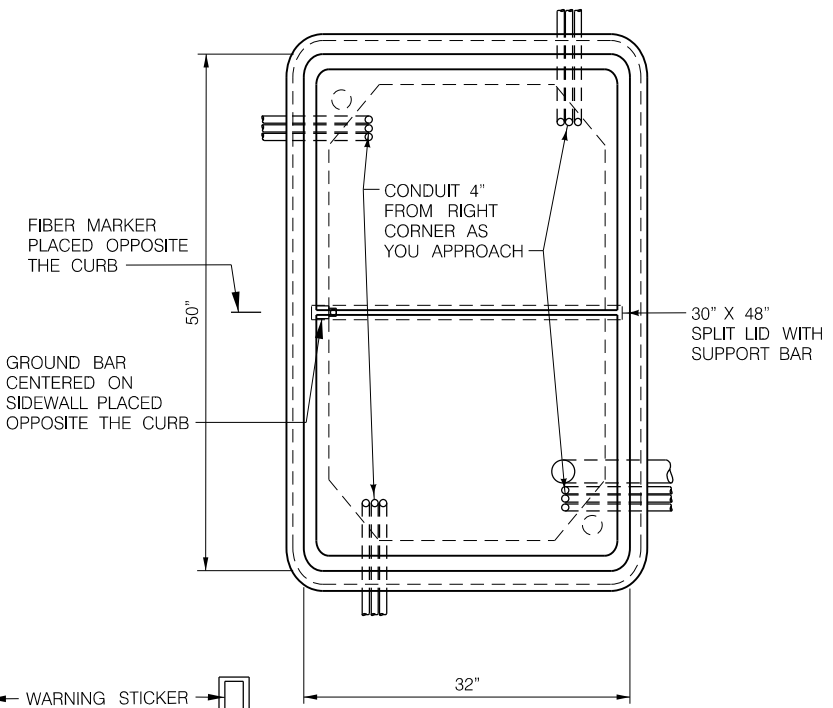
**PULL BOX TR27
PLAN VIEW**



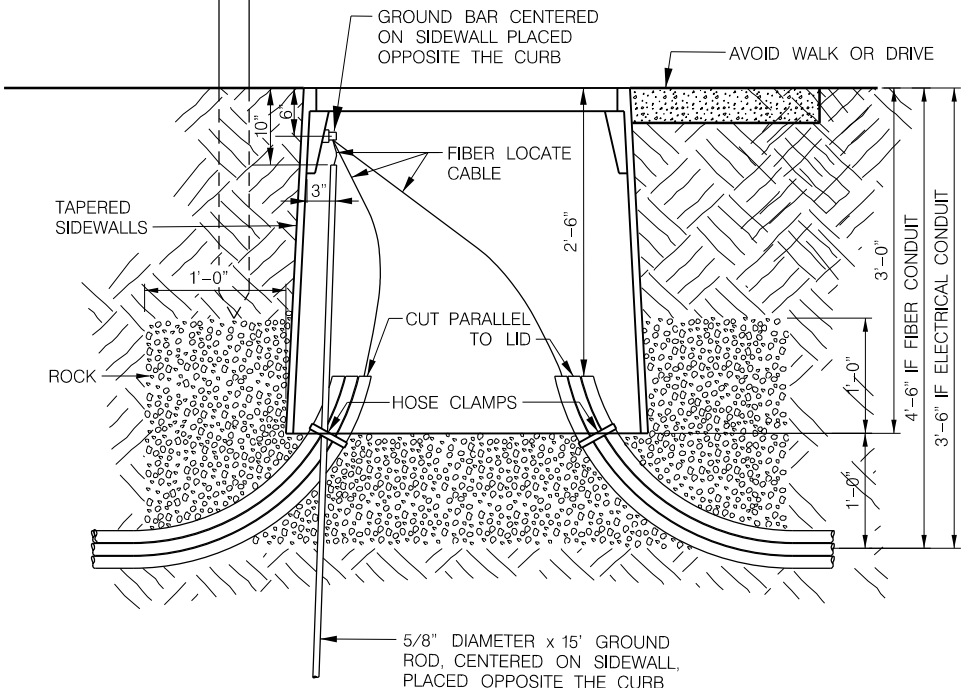
**PULL BOX TR27
SIDE VIEW**



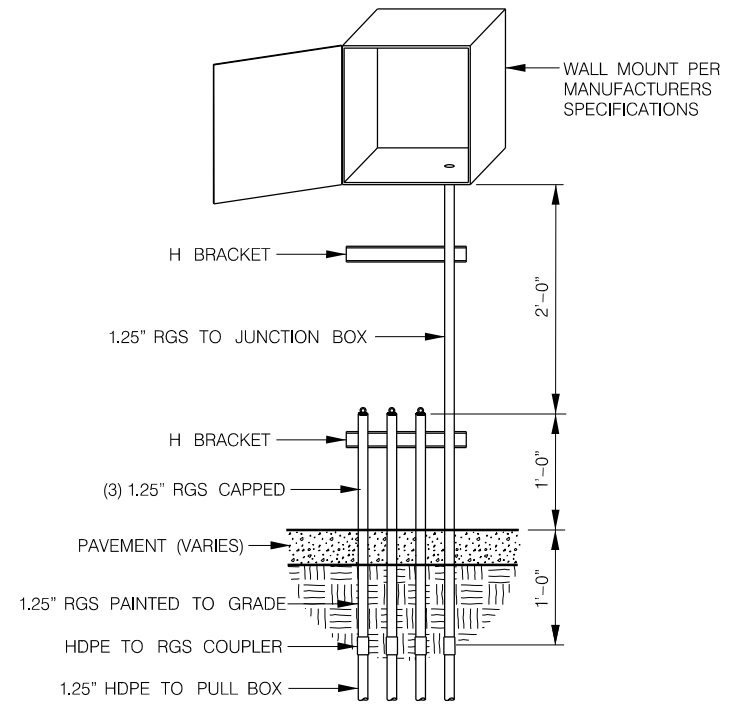
FIBER MARKER



**PULL BOX T48
PLAN VIEW**



**PULL BOX T48
END VIEW**



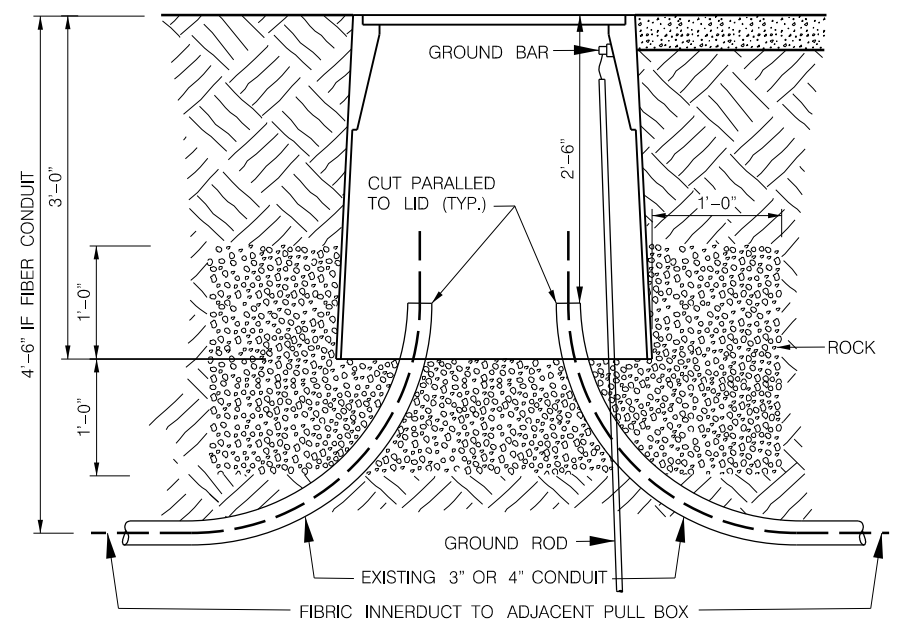
BUILDING ENTRANCE - FIBER ACCESS



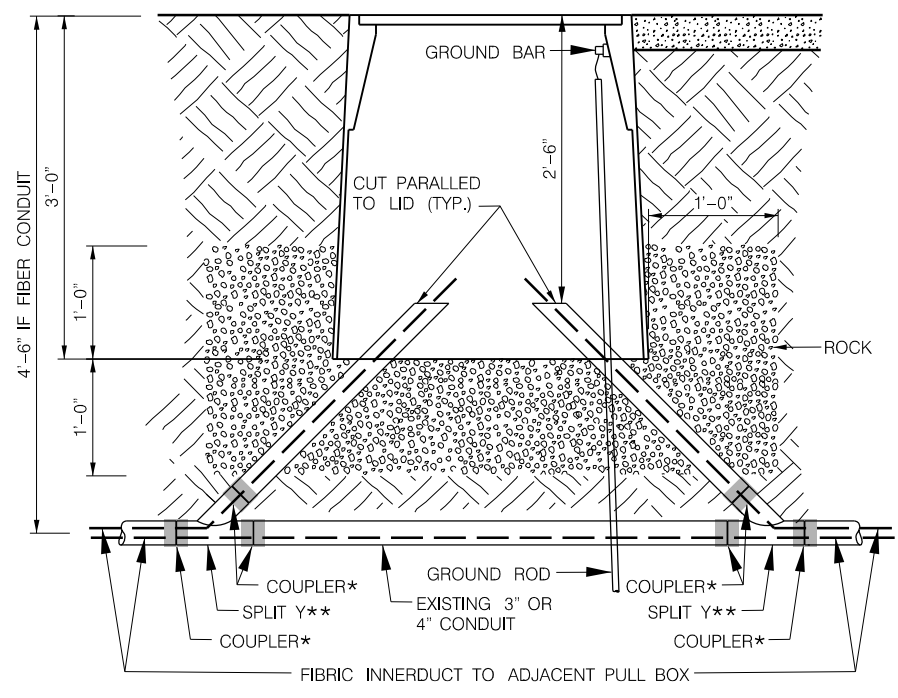
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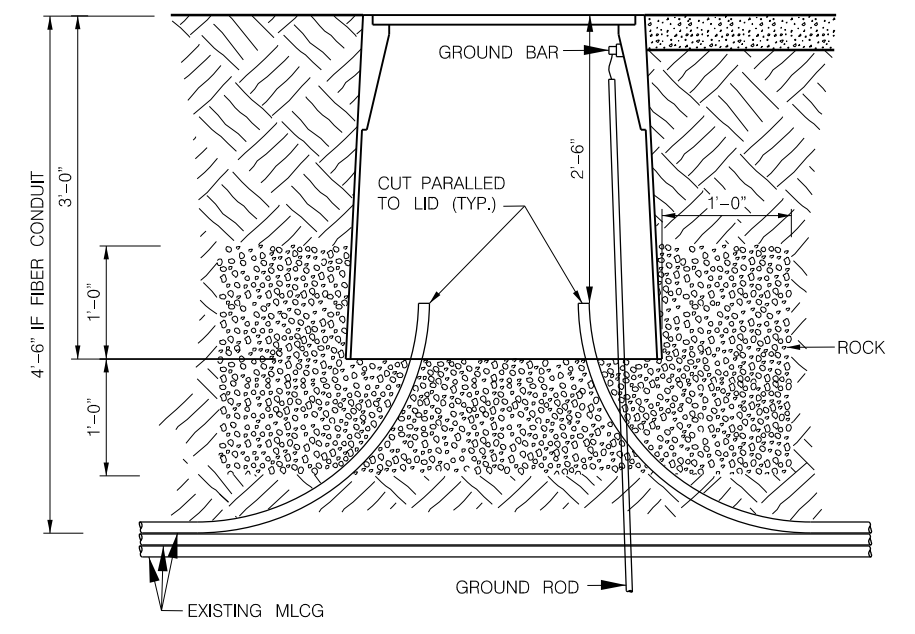
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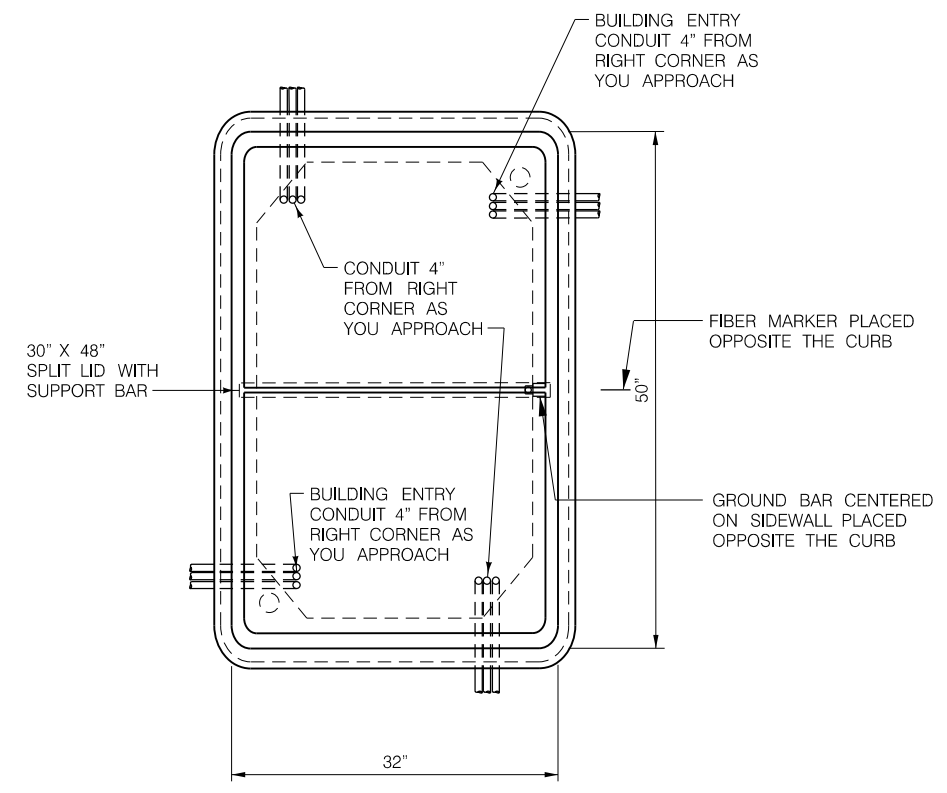
CAPTURE EMPTY 3" OR 4" CONDUIT DETAIL



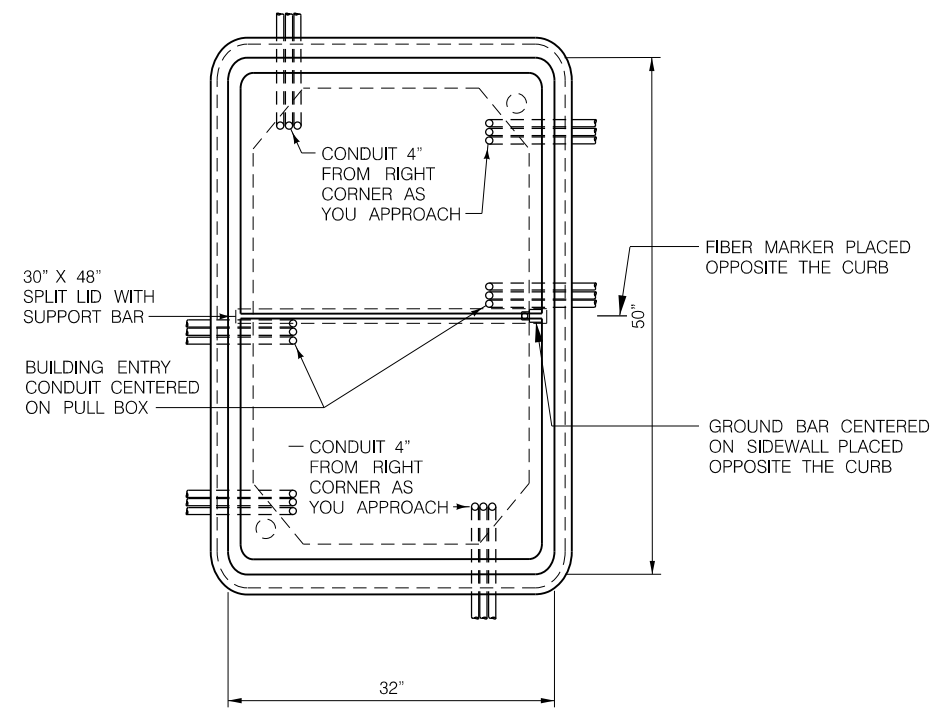
CAPTURE EMPTY 3" OR 4" CONDUIT WITH FIBER DETAIL



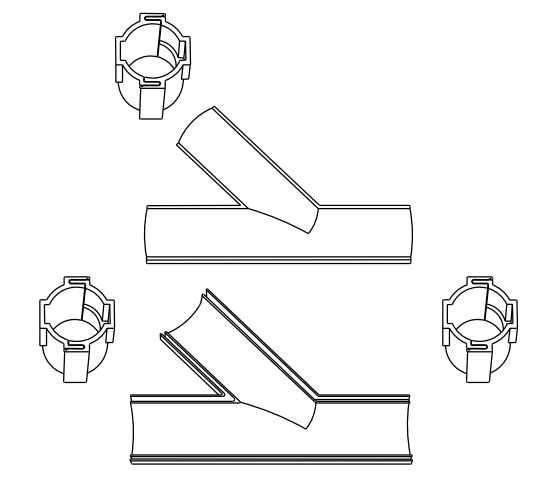
CAPTURE MAIN LINE CONDUIT GROUP DETAIL



PULL BOX T48 MID-BLOCK



PULL BOX T48 ARTERIAL CORNER

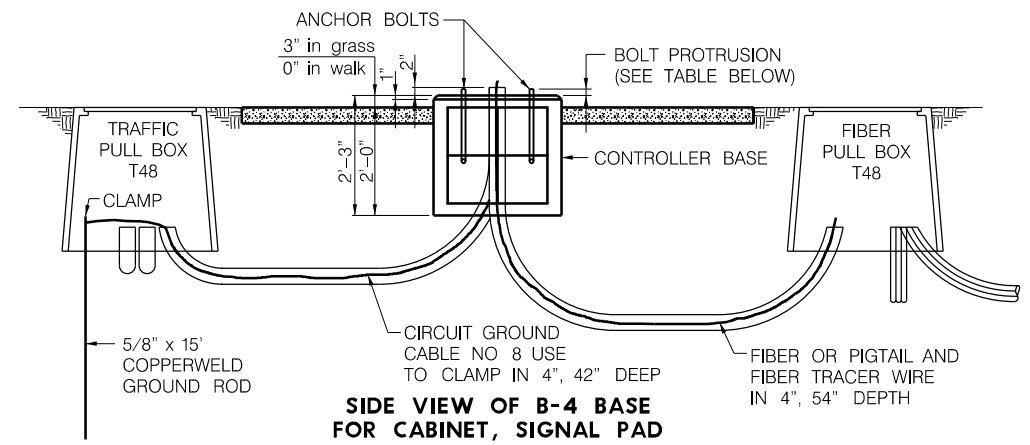
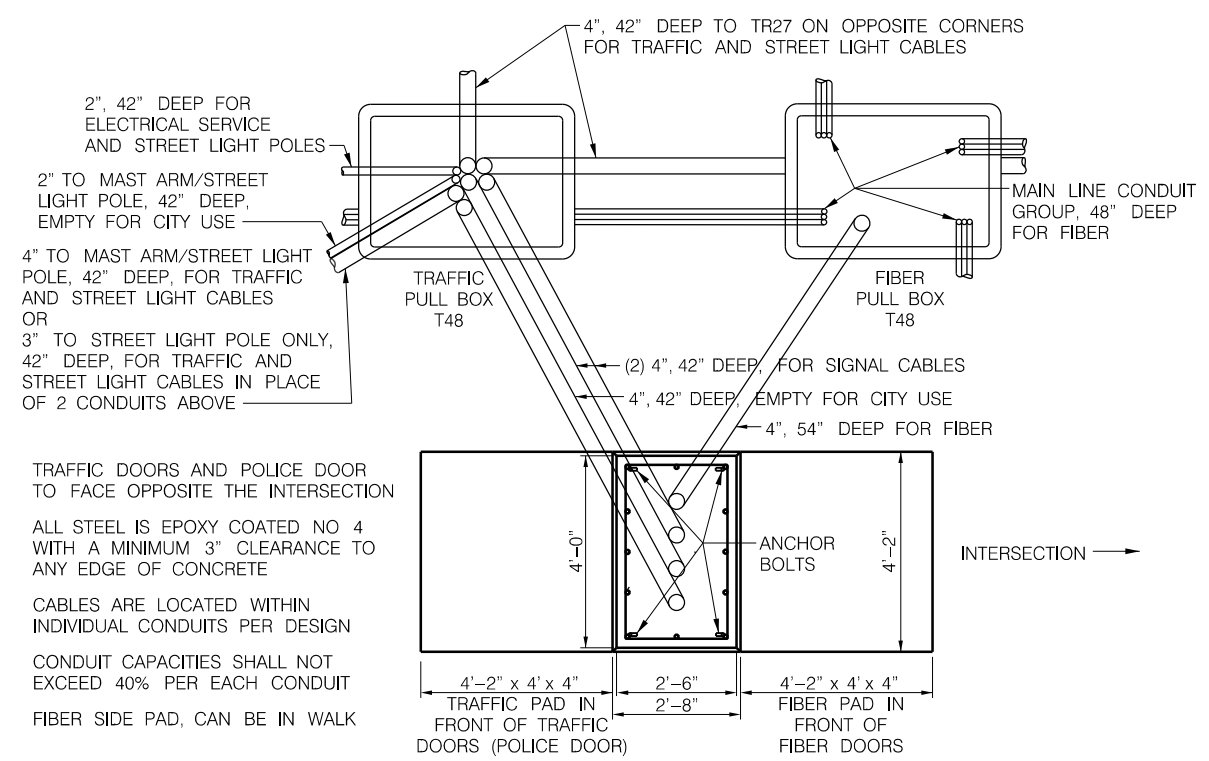
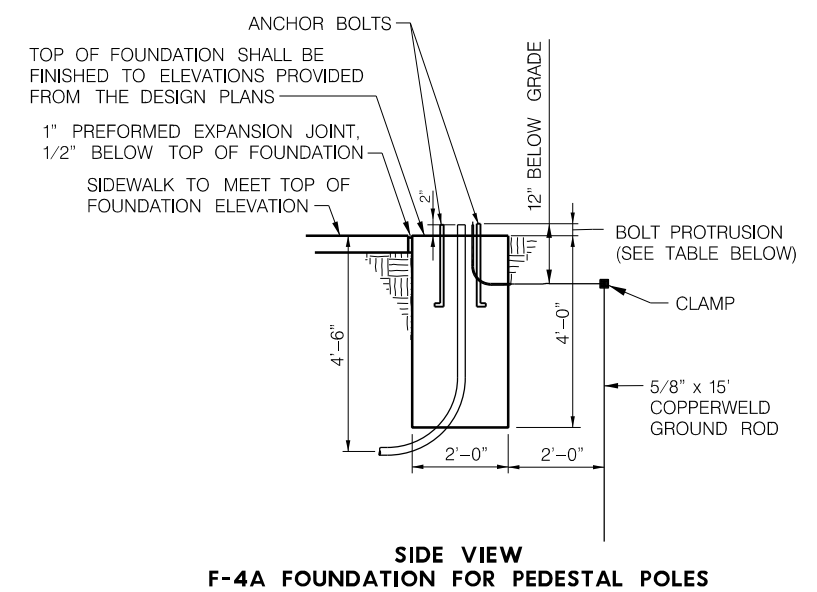
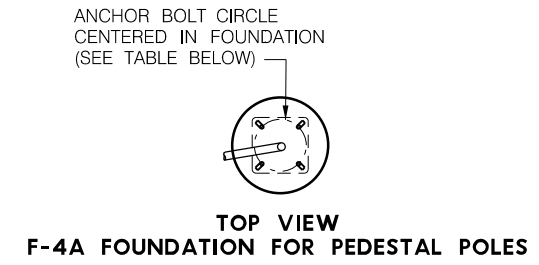


SPLIT Y DETAIL

*COUPLER WILL SECURELY MATE TO EXISTING 2" OR 3" OR 4" CONDUIT (HDPE SCHEDULE 40, 80 AND PVC SCHEDULE 40 OR OTHER CREATING AN AIR TIGHT SYSTEM. AMERICAN POLYWATER'S BONDUIT CONDUIT ADHESIVE OR APPROVED ALTERNATE IS REQUIRED.
 **SPLIT Y IS CRS SPLIT Y AND COUPLINGS OR APPROVED ALTERNATE



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ALL STEEL IS EPOXY COATED NO 4 WITH A MINIMUM 3" CLEARANCE TO ANY EDGE OF CONCRETE

CABINET PAD
BOTH 4'-2" X 4' X 4" CONCRETE PADS SHALL BE LEVEL IN BOTH DIRECTIONS.

GROUNDING
THE GROUND ROD FOR THE B-4 AND F-4A CONTROLLER BASE SHALL BE INSTALLED IN THE PULL BOX NEAREST THE CONTROLLER. (1) NO 8 USE CABLE SHALL BE INSTALLED BETWEEN THE CONTROLLER AND THE GROUND ROD. THE CONTRACTOR SHALL BOND THE CABLES AT THE GROUND ROD AND IN THE CABINET. THE GROUND ROD FOR THE F-8 AND F-4A FOUNDATION SHALL BE LOCATED 2' FROM THE EDGE OF THE FOUNDATION AND THE TOP OF THE GROUND ROD SHALL BE 1' BELOW THE FINISHED GRADE. UNDER NO CIRCUMSTANCES SHALL THE GROUND ROD BE INSTALLED WITHIN THE CABINET BASE OR POLE FOUNDATION.

CONDUIT BENDS
90 DEGREE FACTORY SWEEPS, WITH A 48" RADIUS, SHALL BE USED IN CONTROLLER BASES, THE HOME RUN PULL BOX (FIRST ELECTRICAL PULL BOX TO THE CABINET) AND IN FIBER PULL BOXES; IN ALL OTHER CASES, 90 DEGREE BENDS, WITH A MINIMUM 16" RADIUS SHALL BE USED.

ANCHOR BOLT PROTRUSION
THE BOLT PROTRUSION SHOWN IN THE TABLE BELOW SHALL BE FROM THE HIGHEST CORNER BOLT AND THE OTHER BOLTS SHALL BE LEVEL TO THE BOLT TOPS FROM THAT BOLT.

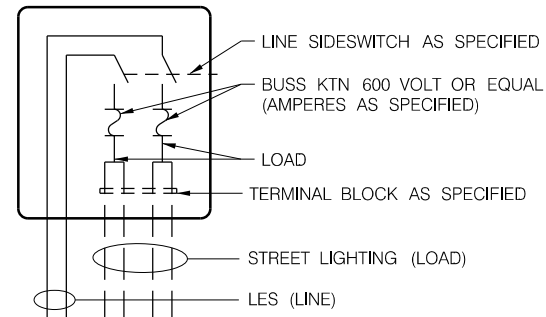
ANCHOR BOLT INFORMATION		
	CABINET	PEDESTAL
ANCHOR BOLT SIZE	3/4" x 18" x 3"	3/4" x 18" x 3"
BOLT CIRCLE	-	13"
BOLT PROTRUSION	1 1/2"	3"
THREAD LENGTH	3 5/8"	3 5/8"



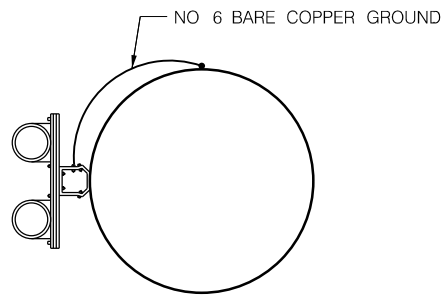
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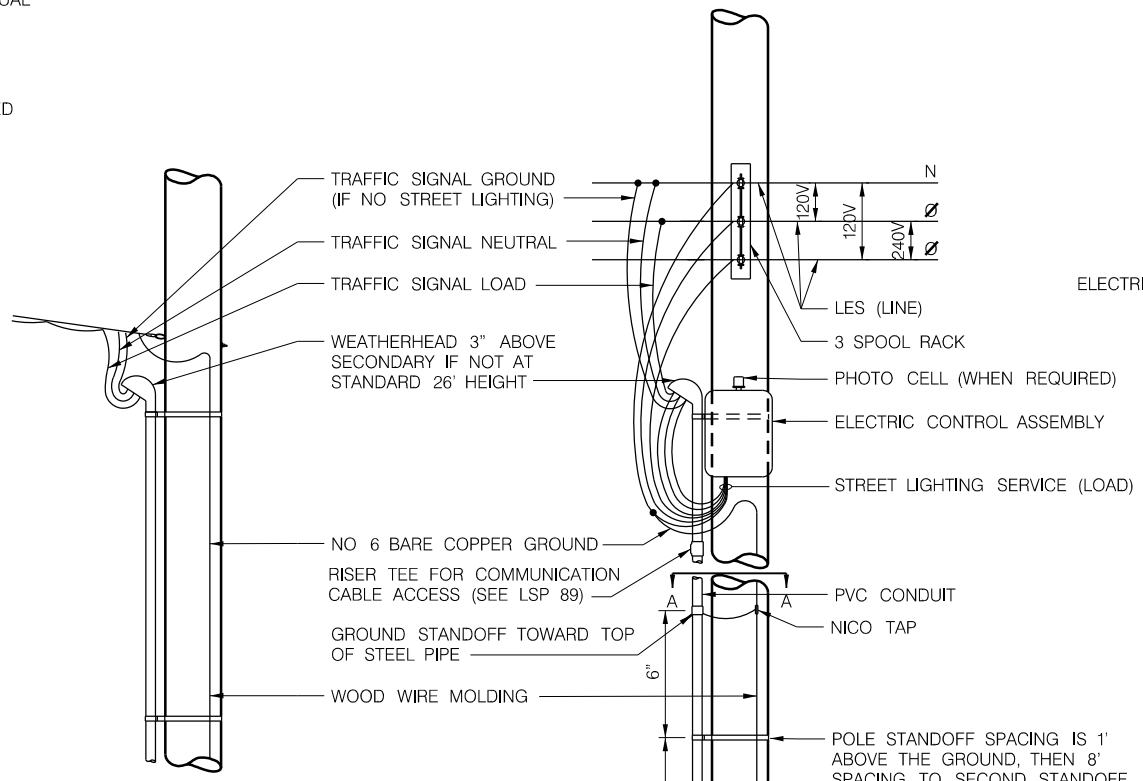
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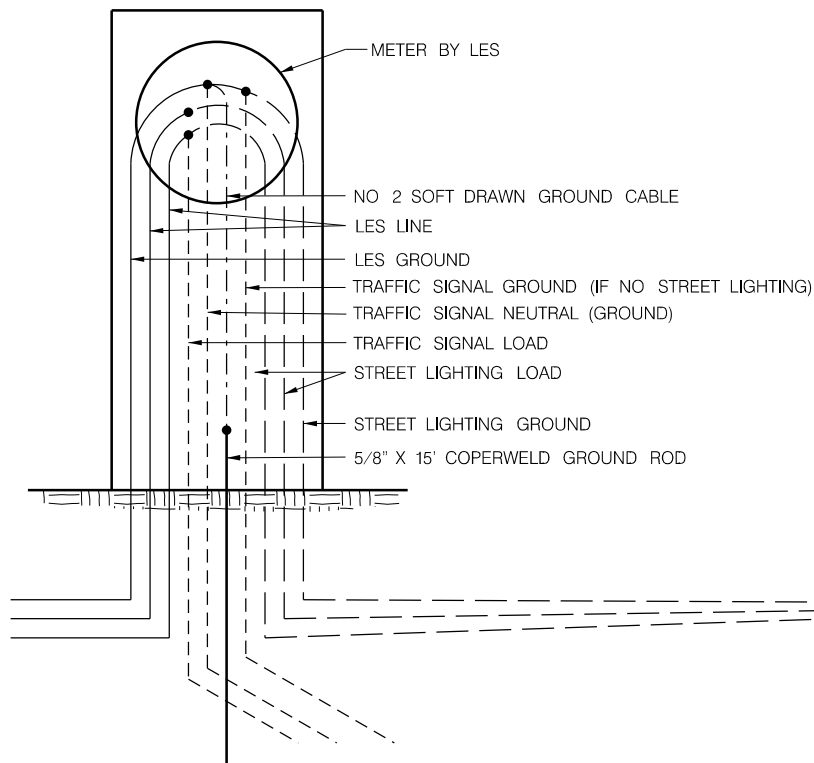
ELECTRIC CONTROL ASSEMBLY



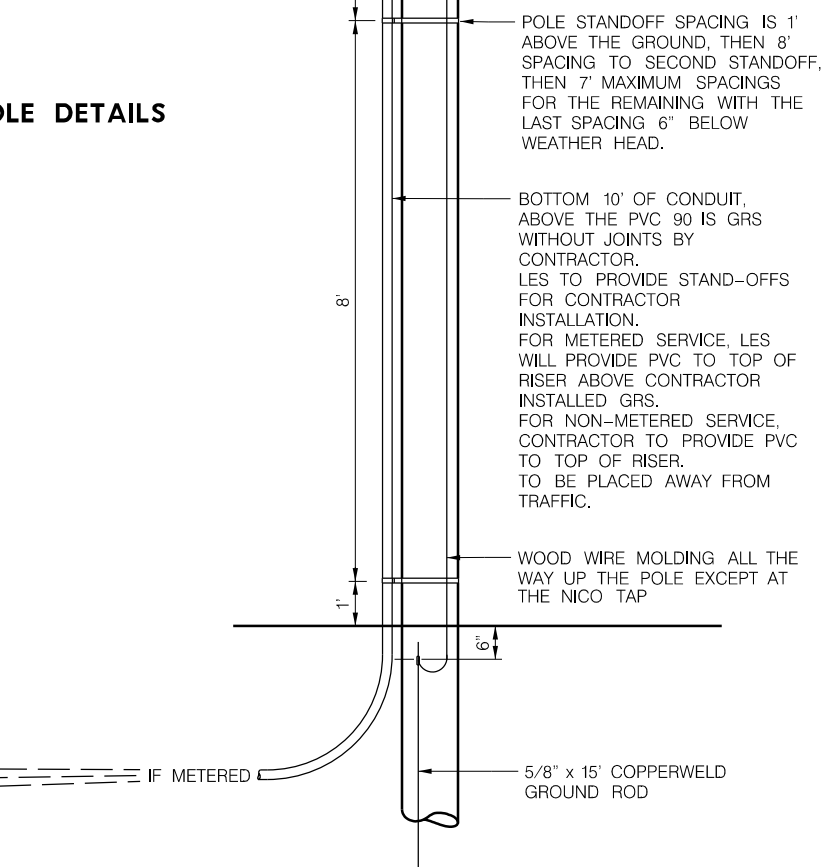
SECTION A-A



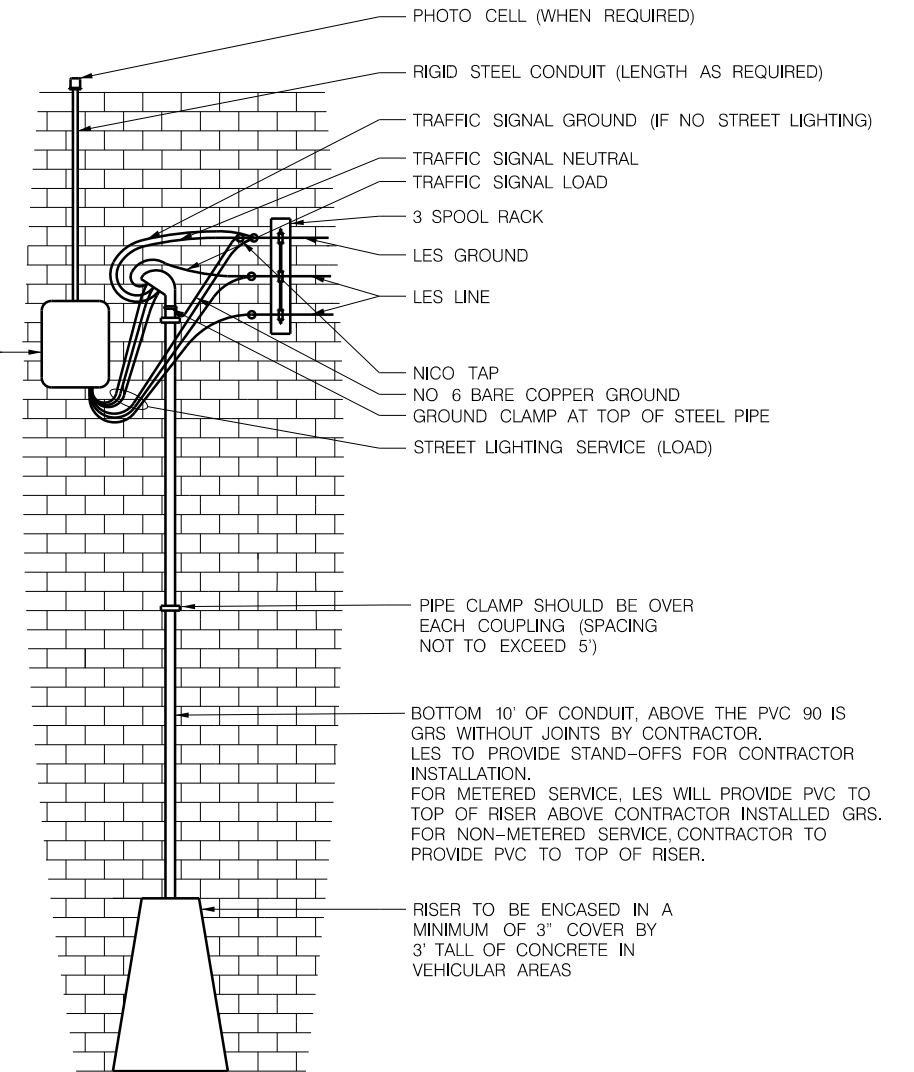
POWER TO WOOD POLE DETAILS



METER PEDESTAL DETAIL



CONTROL RELAY AND WOOD POWER POLE DETAILS



SIDE OF BUILDING DETAILS

ELECTRICAL SERVICE NOTE:

EACH RIGED STEEL RISER, EITHER WOOD POLE, OR SIDE OF BUILDING, SHALL BE GROUNDED IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, LOCAL ORDANCES, APPLICABLE CODES AND THE REQUIREMENTS OF THE LINCOLN ELECTRIC SYSTEM.

THE SIDE OF BUILDING INSTALLATION SHALL REQUIRE A RISER GROUNDING CLAMP, NICO TAP AND NO 6 BARE COPPER. THE NO 6 BARE COPPER WIRE SHALL BE CLAMPED TO THE SERVICE CABLE MESSENGER.

THE SIDE OF POLE INSTALLATION SHALL REQUIRE A RISER GROUNDING CLAMP, NO 6 BARE COPPER, 5/8" x 15' GROUND ROD AND WOOD MOLDING.

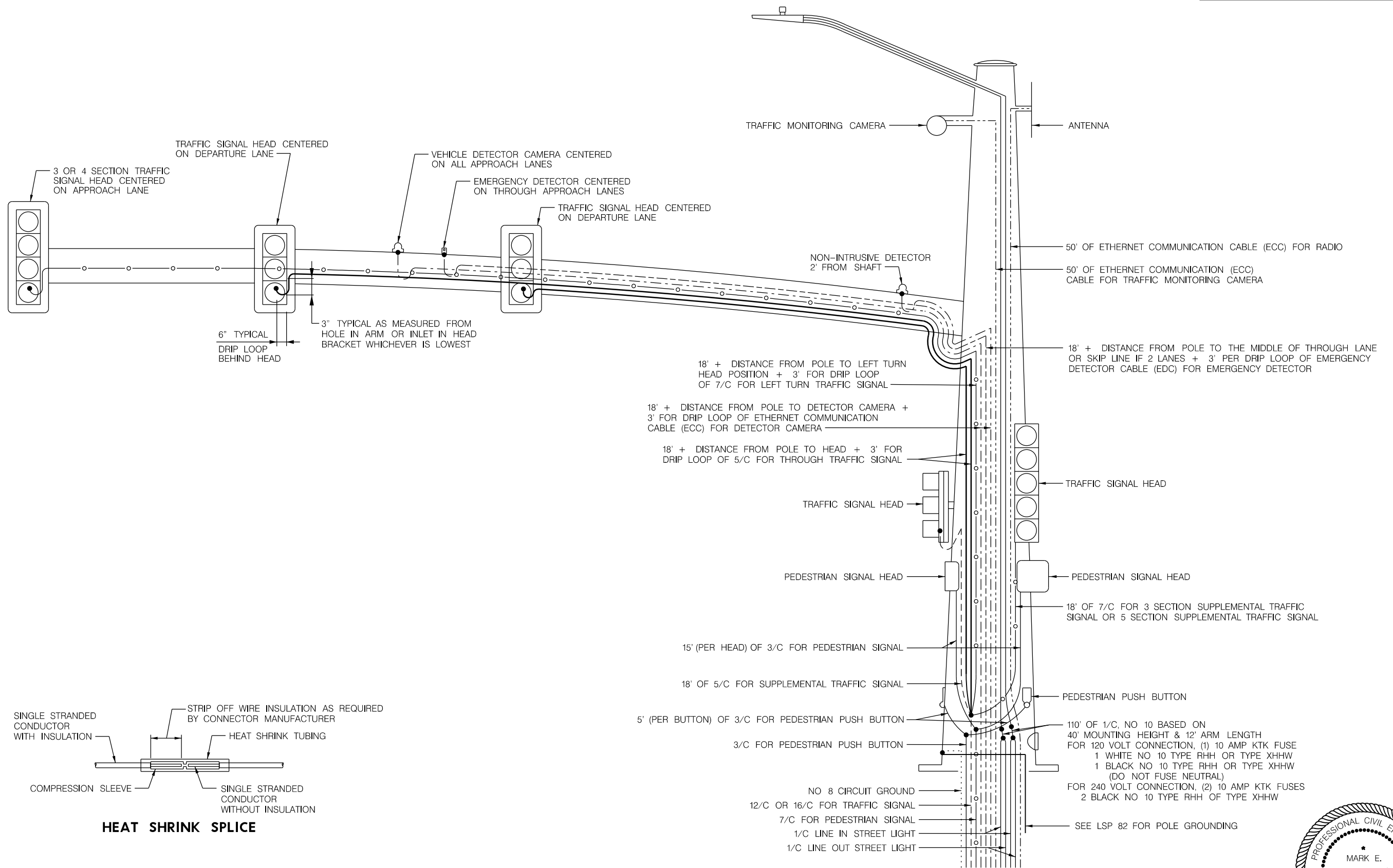
PROVIDE SUFFICIENT LEAD LENGTH FOR L. E. S. TO MAKE FINAL ELECTRICAL CONNECTIONS TO SECONDARY.

PHOTO ELECTRICAL CONTROL ASSEMBLY TO BE LOCATED ON NORTH, EAST OR WEST FACE OF POLE WITH PHOTO ELECTRIC CELL WINDOW FACING NORTH.



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TYPICAL MAST ARM TRAFFIC SIGNAL AND STREET LIGHTING POLE WIRING DETAIL

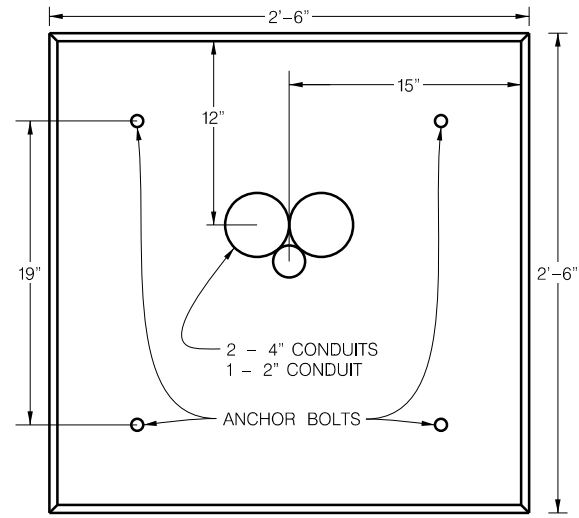


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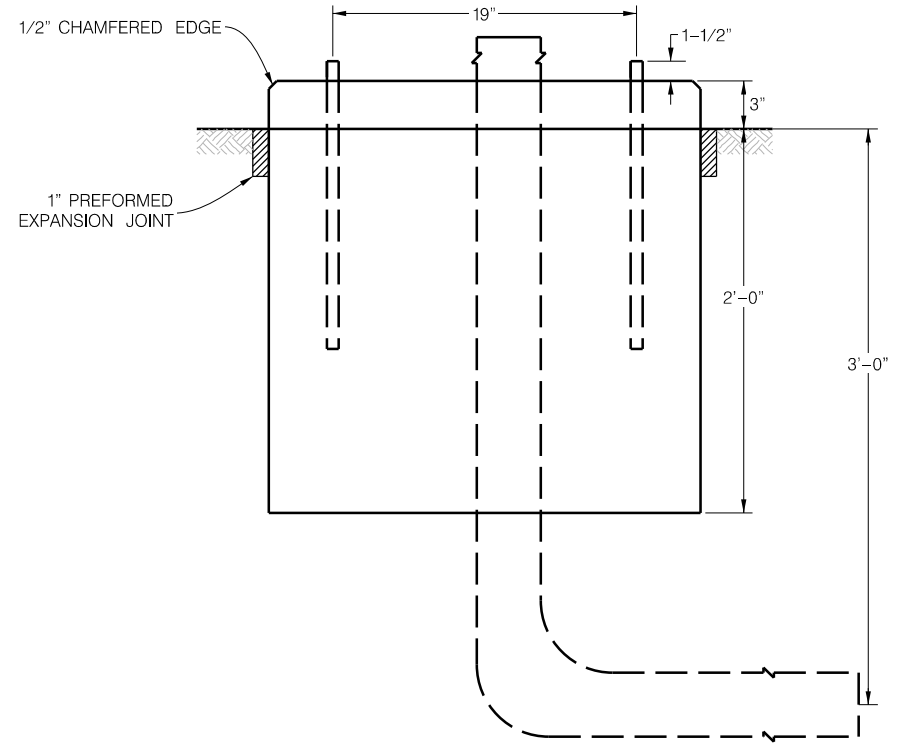
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	Horz. Scale: N.T.S.	Checked:
		Approved:

STREET SIDE

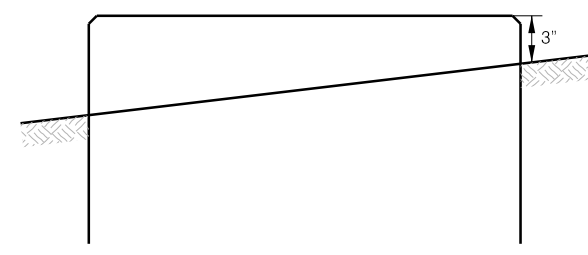


TOP VIEW



SIDE VIEW

STREET SIDE

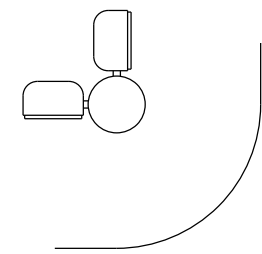


GRADED INSTALLATION



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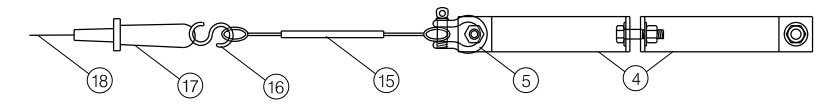
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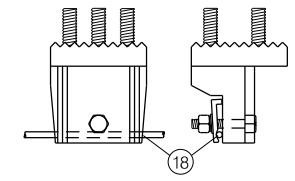
STANDARD PEDESTRIAN HEAD PLACEMENT

EXAMPLE: R-SW2-40-12T-6.5-0.25-PC

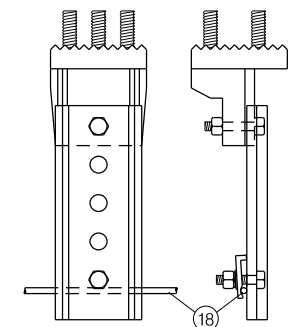
R-ROUND
 O-OCTAGONAL
 SPAN WIRE POLE }
 TYPE 1, 2 OR 3
 SL MOUNTING HEIGHT
 SL ARM LENGTH & TYPE
 6', 8' or 10' S-SINGLE
 10, 12' or 15' T-TRUSS
 (T* IF TWIN ARM)
 UPSWEEP
 LAMP SIZE IN KILOWATTS
 PC-PHOTO CELL
 SC-SHORTING CAP



TIE WIRE SAFETY RELEASE



TETHER ASSEMBLY



TETHER ASSEMBLY WITH EXTENTION

NOTE:
 POLE MANUFACTURER TO STAMP ALL
 MAJOR COMPONENTS WITH POLE NUMBER

SPAN WIRE LOADING NOTES:

SPAN WIRE SHALL BE INSTALLED WITH 5% SAG, UNDER DEAD LOAD AND SHALL BE ADJUSTED ON THE POLES TO PROVIDE THE PROPER MOUNTING HEIGHT INDICATED. FOR INSTALLATION OF A SINGLE SPAN (INLINE) OR WHERE POLE CLAMP POSITIONS VARY BY MORE THAN SIX INCHES (6") A TWO PIECE 180 DEGREE SEPARATION CLAMP SHALL BE USED. WHERE THE POLE CLAMP POSITIONS ARE WITHIN SIX INCH (6") VALUE A FOUR-PIECE 90 DEGREE SEPARATION CLAMP SHALL BE USED.

TO CALCULATE THE POLE CLAMP POSITION FOR ANY SPAN:

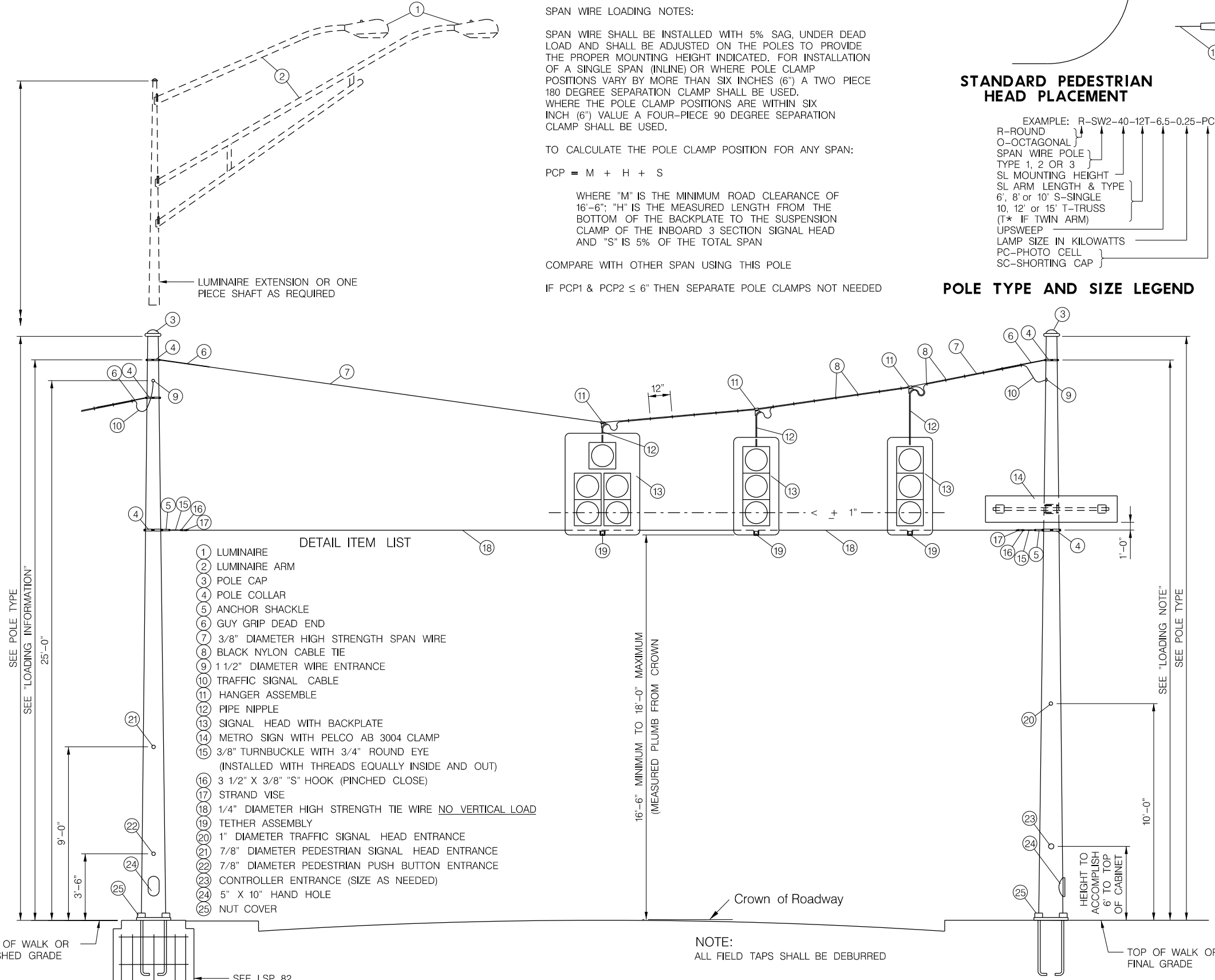
$PCP = M + H + S$

WHERE "M" IS THE MINIMUM ROAD CLEARANCE OF 16'-6"; "H" IS THE MEASURED LENGTH FROM THE BOTTOM OF THE BACKPLATE TO THE SUSPENSION CLAMP OF THE INBOARD 3 SECTION SIGNAL HEAD AND "S" IS 5% OF THE TOTAL SPAN

COMPARE WITH OTHER SPAN USING THIS POLE

IF PCP1 & PCP2 ≤ 6" THEN SEPARATE POLE CLAMPS NOT NEEDED

POLE TYPE AND SIZE LEGEND



DETAIL ITEM LIST

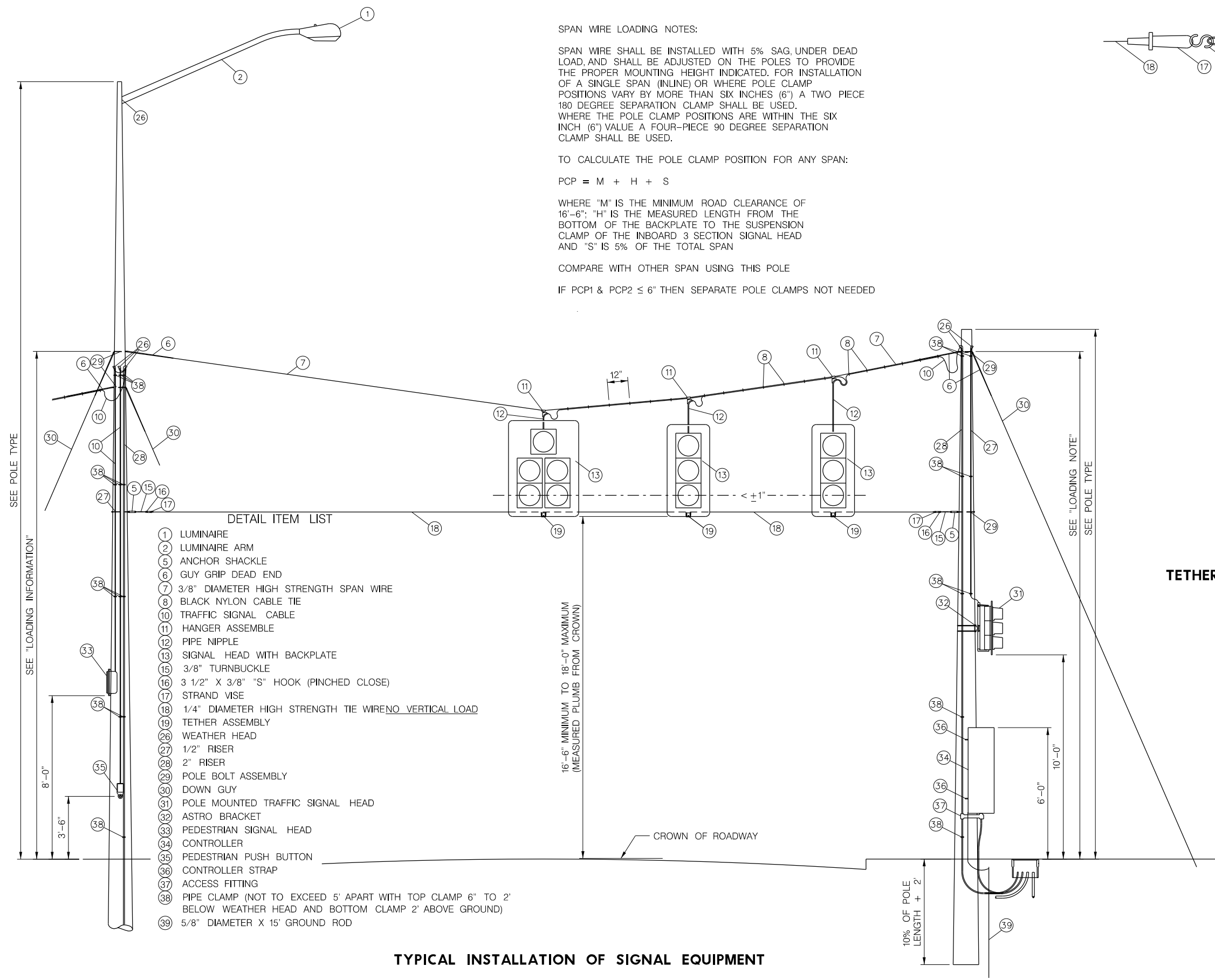
- 1 LUMINAIRE
- 2 LUMINAIRE ARM
- 3 POLE CAP
- 4 POLE COLLAR
- 5 ANCHOR SHACKLE
- 6 GUY GRIP DEAD END
- 7 3/8" DIAMETER HIGH STRENGTH SPAN WIRE
- 8 BLACK NYLON CABLE TIE
- 9 1 1/2" DIAMETER WIRE ENTRANCE
- 10 TRAFFIC SIGNAL CABLE
- 11 HANGER ASSEMBLY
- 12 PIPE NIPPLE
- 13 SIGNAL HEAD WITH BACKPLATE
- 14 METRO SIGN WITH PELCO AB 3004 CLAMP
- 15 3/8" TURNBUCKLE WITH 3/4" ROUND EYE (INSTALLED WITH THREADS EQUALLY INSIDE AND OUT)
- 16 3 1/2" X 3/8" "S" HOOK (PINCHED CLOSE)
- 17 STRAND VISE
- 18 1/4" DIAMETER HIGH STRENGTH TIE WIRE NO VERTICAL LOAD
- 19 TETHER ASSEMBLY
- 20 1" DIAMETER TRAFFIC SIGNAL HEAD ENTRANCE
- 21 7/8" DIAMETER PEDESTRIAN SIGNAL HEAD ENTRANCE
- 22 7/8" DIAMETER PEDESTRIAN PUSH BUTTON ENTRANCE
- 23 CONTROLLER ENTRANCE (SIZE AS NEEDED)
- 24 5" X 10" HAND HOLE
- 25 NUT COVER

TYPICAL INSTALLATION OF SIGNAL EQUIPMENT



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- DETAIL ITEM LIST**
- 1 LUMINAIRE
 - 2 LUMINAIRE ARM
 - 5 ANCHOR SHACKLE
 - 6 GUY GRIP DEAD END
 - 7 3/8" DIAMETER HIGH STRENGTH SPAN WIRE
 - 8 BLACK NYLON CABLE TIE
 - 10 TRAFFIC SIGNAL CABLE
 - 11 HANGER ASSEMBLY
 - 12 PIPE NIPPLE
 - 13 SIGNAL HEAD WITH BACKPLATE
 - 15 3/8" TURNBUCKLE
 - 16 3 1/2" X 3/8" "S" HOOK (PINCHED CLOSE)
 - 17 STRAND VISE
 - 18 1/4" DIAMETER HIGH STRENGTH TIE WIRE NO VERTICAL LOAD
 - 19 TETHER ASSEMBLY
 - 26 WEATHER HEAD
 - 27 1/2" RISER
 - 28 2" RISER
 - 29 POLE BOLT ASSEMBLY
 - 30 DOWN GUY
 - 31 POLE MOUNTED TRAFFIC SIGNAL HEAD
 - 32 ASTRO BRACKET
 - 33 PEDESTRIAN SIGNAL HEAD
 - 34 CONTROLLER
 - 35 PEDESTRIAN PUSH BUTTON
 - 36 CONTROLLER STRAP
 - 37 ACCESS FITTING
 - 38 PIPE CLAMP (NOT TO EXCEED 5' APART WITH TOP CLAMP 6" TO 2' BELOW WEATHER HEAD AND BOTTOM CLAMP 2' ABOVE GROUND)
 - 39 5/8" DIAMETER X 15' GROUND ROD

SPAN WIRE LOADING NOTES:

SPAN WIRE SHALL BE INSTALLED WITH 5% SAG UNDER DEAD LOAD AND SHALL BE ADJUSTED ON THE POLES TO PROVIDE THE PROPER MOUNTING HEIGHT INDICATED. FOR INSTALLATION OF A SINGLE SPAN (INLINE) OR WHERE POLE CLAMP POSITIONS VARY BY MORE THAN SIX INCHES (6") A TWO PIECE 180 DEGREE SEPARATION CLAMP SHALL BE USED. WHERE THE POLE CLAMP POSITIONS ARE WITHIN THE SIX INCH (6") VALUE A FOUR-PIECE 90 DEGREE SEPARATION CLAMP SHALL BE USED.

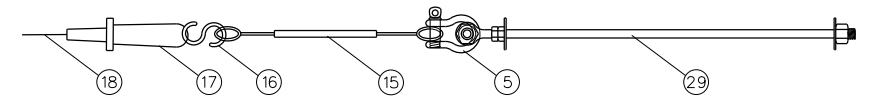
TO CALCULATE THE POLE CLAMP POSITION FOR ANY SPAN:

$$PCP = M + H + S$$

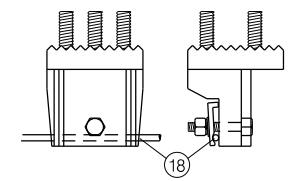
WHERE "M" IS THE MINIMUM ROAD CLEARANCE OF 16'-6"; "H" IS THE MEASURED LENGTH FROM THE BOTTOM OF THE BACKPLATE TO THE SUSPENSION CLAMP OF THE INBOARD 3 SECTION SIGNAL HEAD AND "S" IS 5% OF THE TOTAL SPAN

COMPARE WITH OTHER SPAN USING THIS POLE

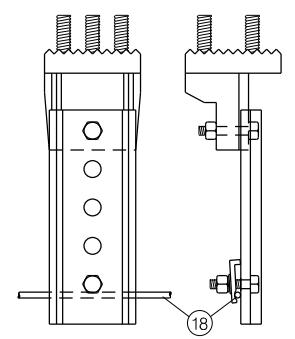
IF $PCP1 \text{ \& } PCP2 \leq 6"$ THEN SEPARATE POLE CLAMPS NOT NEEDED



TIE WIRE SAFETY RELEASE



TETHER ASSEMBLY



TETHER ASSEMBLY WITH EXTENTION



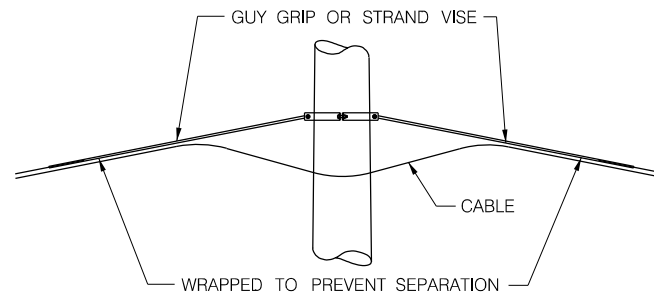
TYPICAL INSTALLATION OF SIGNAL EQUIPMENT

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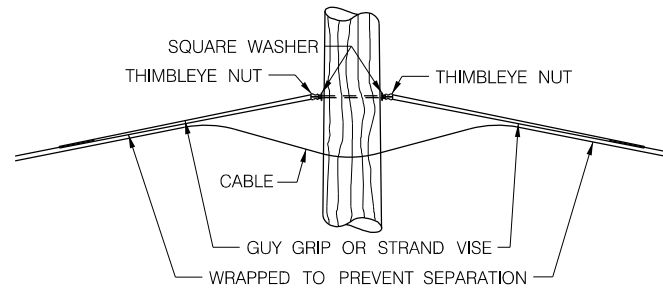
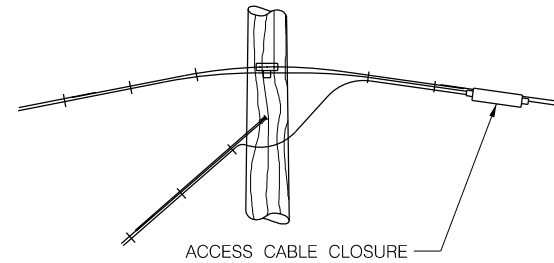
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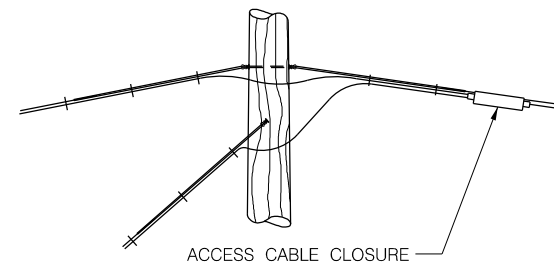
CABLE SUSPENSION CLAMP
 CLAMP SIZED PER MANUFACTURERS SPECIFICATION



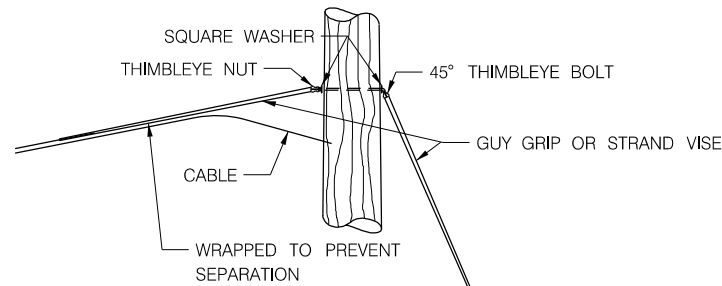
TYPICAL DOUBLE DEADEND FOR STEEL POLE



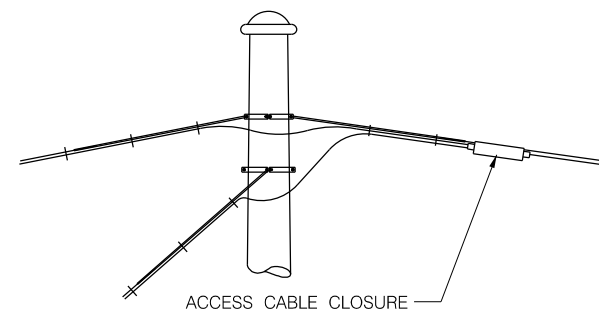
TYPICAL DOUBLE DEADEND FOR WOOD POLE



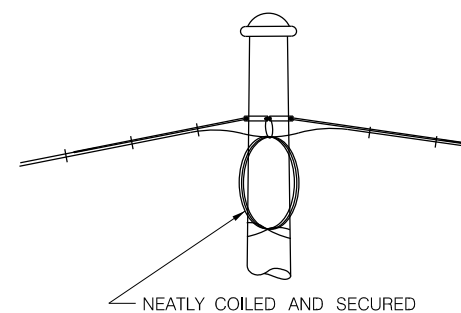
TYPICAL DOUBLE DEADEND WITH OVERHEAD SPLICE AT WOOD POLE



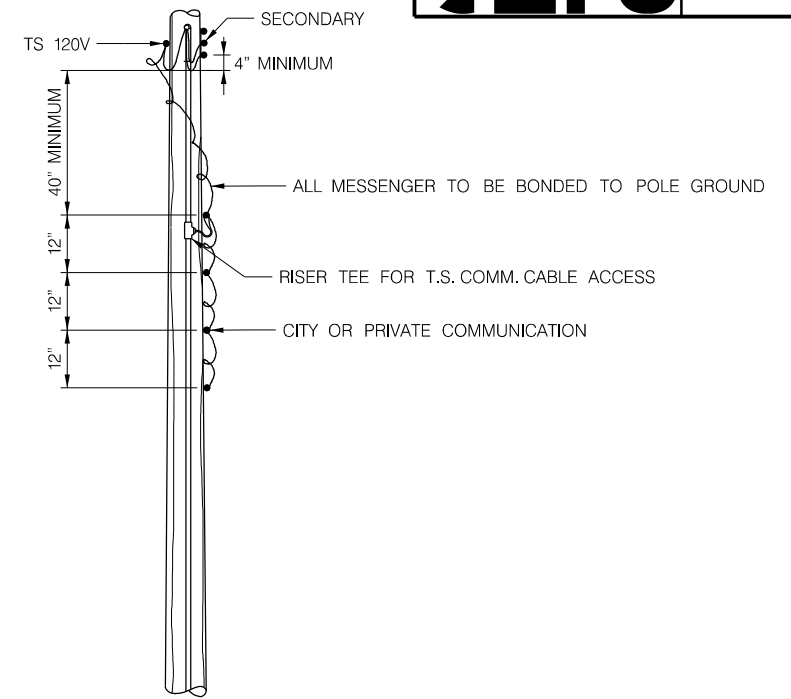
TYPICAL DEADEND TO UNDERGROUND FOR WOOD POLE



TYPICAL DOUBLE DEADEND WITH OVERHEAD SPLICE AT STEEL POLE

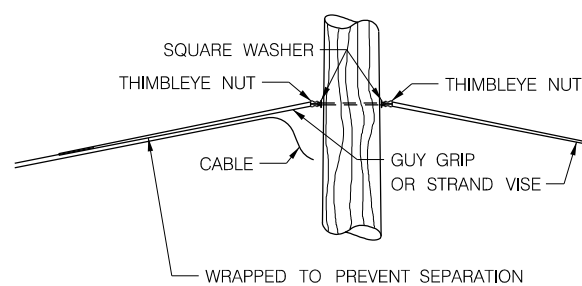


TYPICAL DOUBLE DEADEND WITH COIL FOR FUTURE CONNECTION AT STEEL POLE

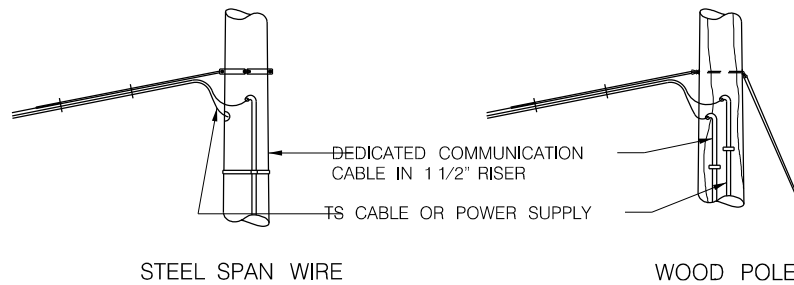
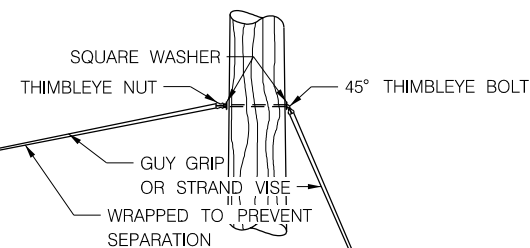


OVERHEAD LINE SPACING

LINE CLEARANCE:
 COMMUNICATION CABLE AND 120 VOLT T.S. CABLE MAY SHARE THE SAME RISER WITH "TEE ACCESS" WITH A "CORD GRIP".



TYPICAL DEADEND WITH OVERHEAD GUY FOR WOOD POLE



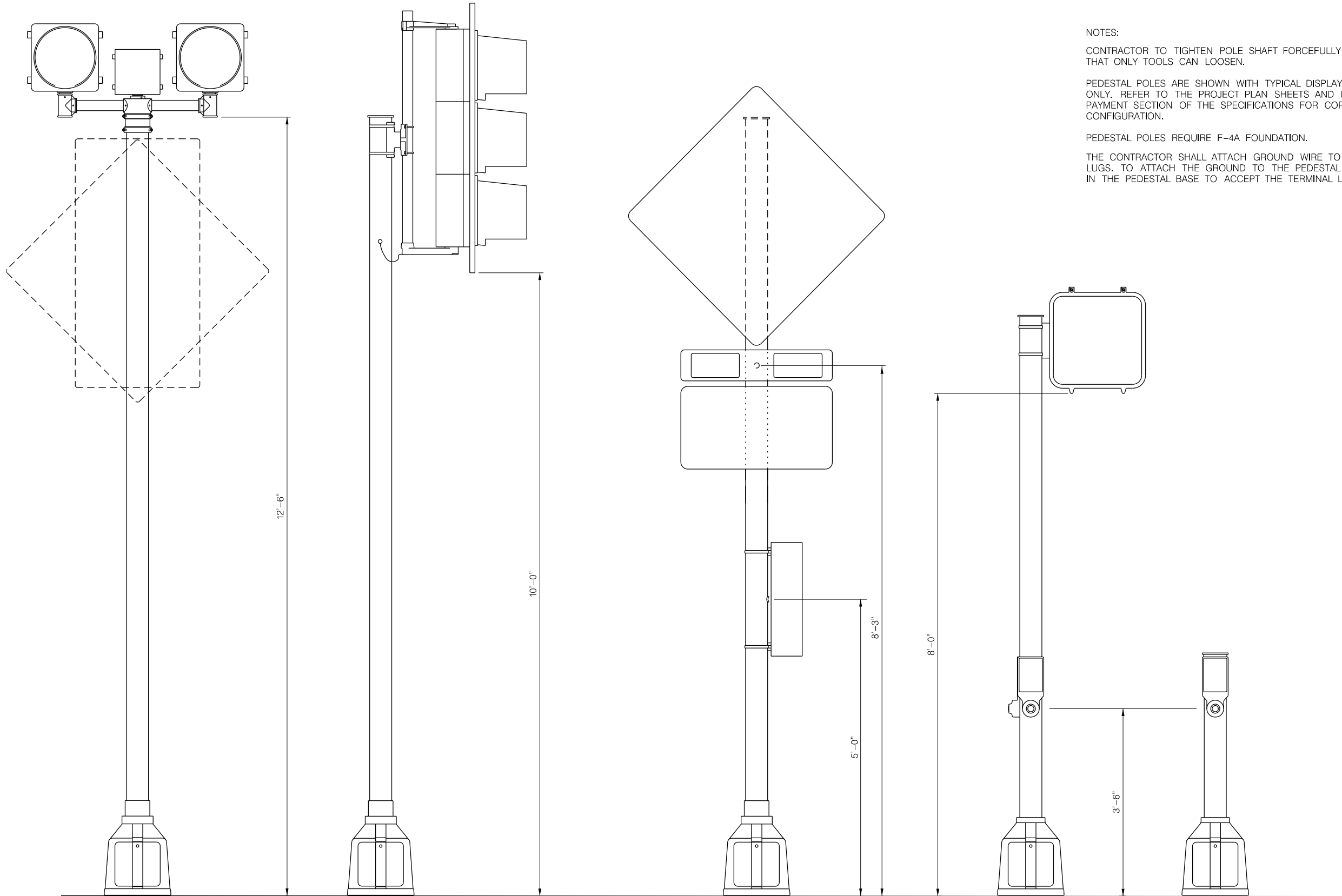
STEEL SPAN WIRE DEAD END WITH UNDERGROUND CONNECTION



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 DATE: 11/27/2019
 DGN: ..\2020 DGN Files\LSP_90.dgn

LTU	PLAN NO.	SHEET NO.
	90	1
	Date: 1/2/2020	Drawn: CAW
	Horz. Scale: N.T.S.	Checked:
		Approved:



PEDESTAL POLE, 3

PEDESTAL POLE, 3

PEDESTAL POLE, 3

PEDESTAL POLE, 1

PEDESTAL POLE, PPB

NOTES:
 CONTRACTOR TO TIGHTEN POLE SHAFT FORCEFULLY INTO THE BASE, SO THAT ONLY TOOLS CAN LOOSEN.
 PEDESTAL POLES ARE SHOWN WITH TYPICAL DISPLAY CONFIGURATIONS ONLY. REFER TO THE PROJECT PLAN SHEETS AND MEASUREMENT AND PAYMENT SECTION OF THE SPECIFICATIONS FOR CORRECT INSTALLATION CONFIGURATION.
 PEDESTAL POLES REQUIRE F-4A FOUNDATION.
 THE CONTRACTOR SHALL ATTACH GROUND WIRE TO BASE USING TERMINAL LUGS. TO ATTACH THE GROUND TO THE PEDESTAL POLE BASE, DRILL A HOLE IN THE PEDESTAL BASE TO ACCEPT THE TERMINAL LUG.



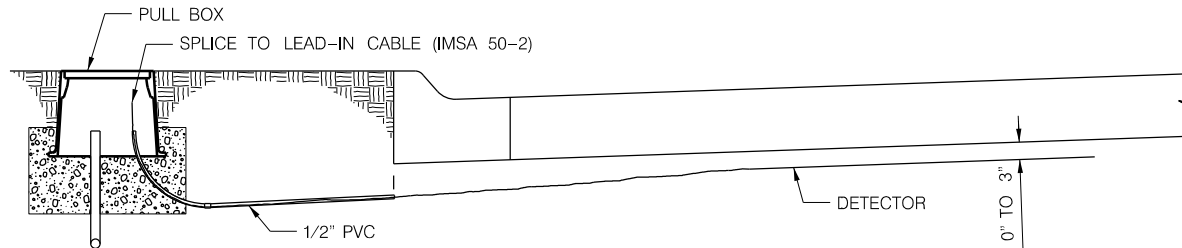
PEDESTAL MOUNTED

LSP 90

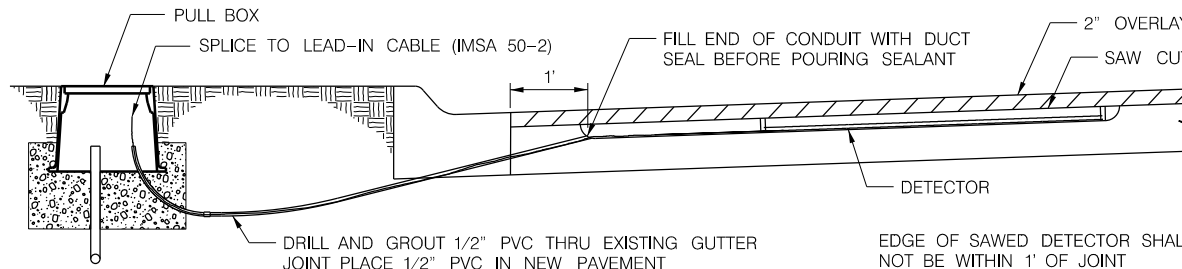
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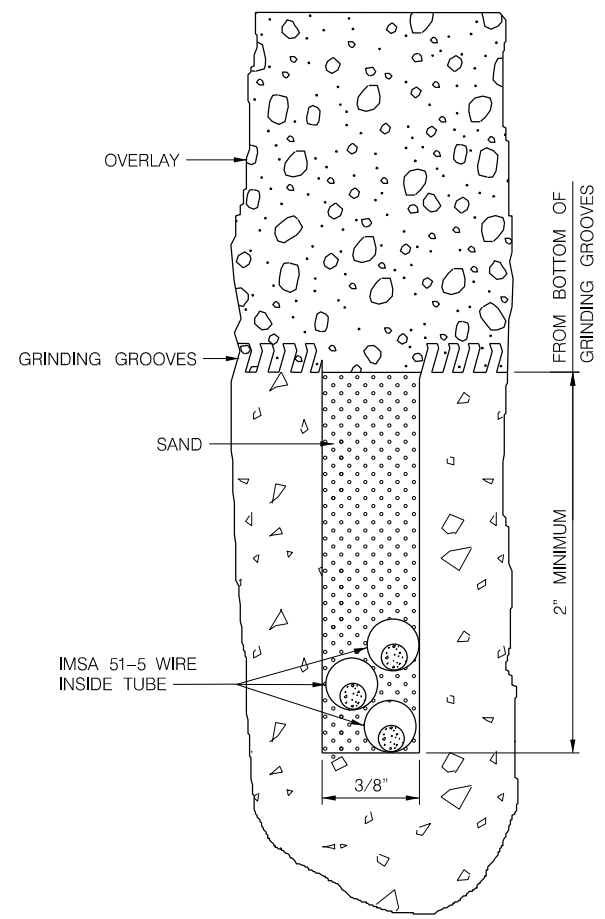
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	91	1
	Date: 1/2/2020	Drawn: CAW
	Horz. Scale: N.T.S.	Checked:
		Approved:



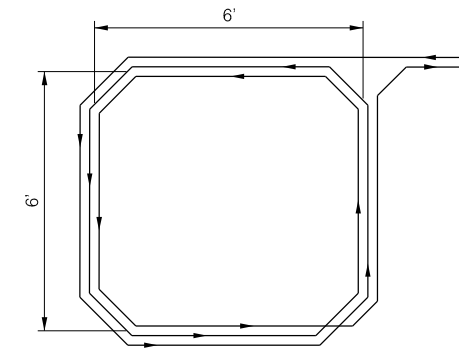
PREFORMED LOOP DETECTOR



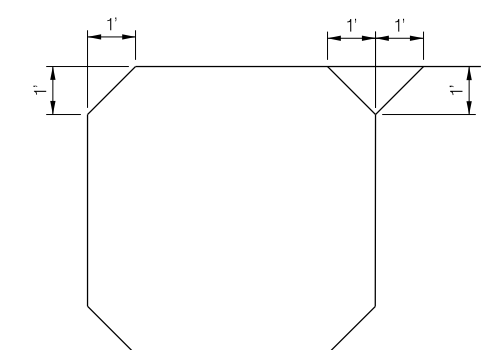
SAWED LOOP DETECTOR UNDER OVERLAY



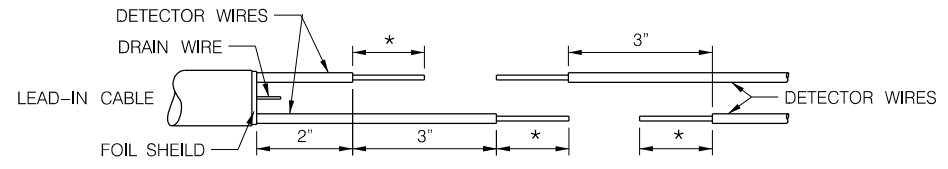
SAWED LOOP DETECTOR SECTION UNDER OVERLAY



LOOP DETECTOR WIRE ARRANGEMENT

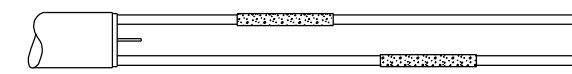


LOOP DETECTOR SAWED CORNER DETAIL

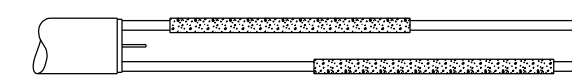


* STRIP OFF WIRE INSULATION AS REQUIRED BY CONNECTOR MANUFACTURER

STRIP DETECTOR AND LEAD-IN CABLE CONDUCTORS. BEFORE SPlicing SLIP HEAT-SHRINKABLE SILICONE-LINED CROSS-LINKED POLYETHYLENE INSULATING TUBING OVER LEAD-IN CABLE AND INDIVIDUAL CONDUCTORS.

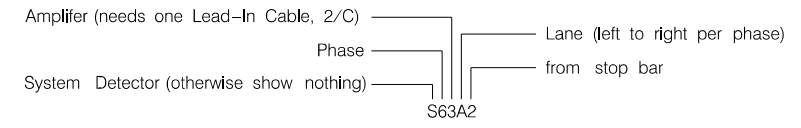


CRIMP THE BARE CONDUCTORS TOGETHER WITH AN APPROVED UNINSULATED BUTT CONNECTOR

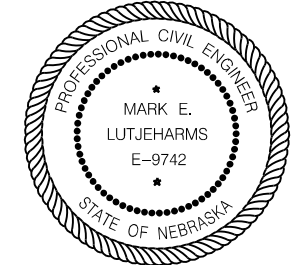


SLIDE HEAT-SHRINK TUBING OVER SPLICES. THE TUBING SHALL COVER APPROXIMATELY 1" OF CONDUCTOR INSULATION AT EACH END OF SPLICE. HEAT THE TUBING AS SPECIFIED BY THE MANUFACTURER. NO OPEN FLAME.

LEAD-IN CABLE SPLICE DETAIL

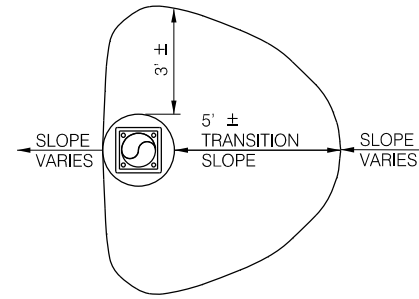


VEHICLE DETECTOR NUMBERING



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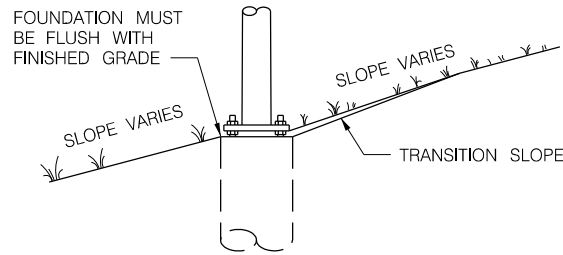


EXAMPLE: SL-A-C-40-T6/12T-3

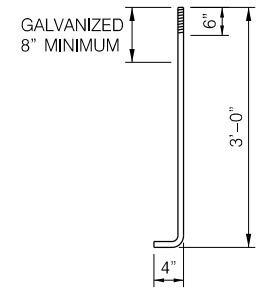
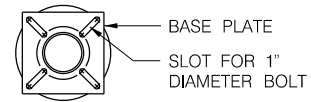
STREET LIGHT POLE
 A - ANCHOR BASE
 T - TRANSFORMER BASE
 B - BREAKAWAY
 C - CONCRETE FOUNDATION
 EM - EMBEDDED
 PI - POWER INSTALLED
 S - ON STRUCTURE
 SP - SPECIAL
 W - WOOD

MOUNTING HEIGHT
 ONLY IF TWIN STREET LIGHT ARM
 ARM LENGTH
 SECOND ARM LENGTH, IF DIFFERENT
 ARM TYPE
 SINGLE IS NO DESIGNATION
 T - TRUSS
 UPSWEEP OF LUMINAIRE ARM

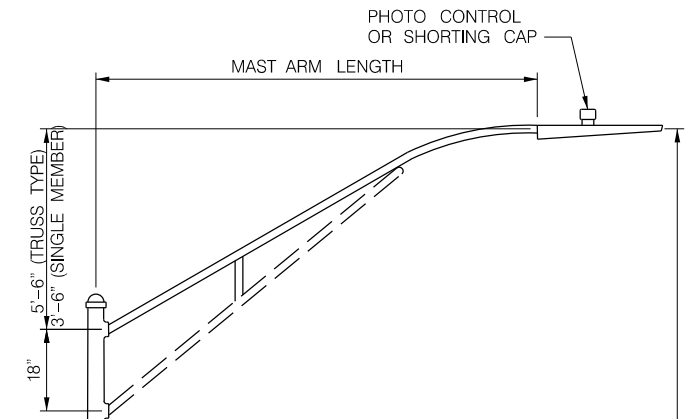
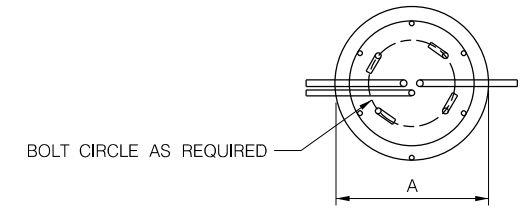
POLE TYPE AND SIZE LEGEND



LIGHT POLES LOCATED ON SLOPE

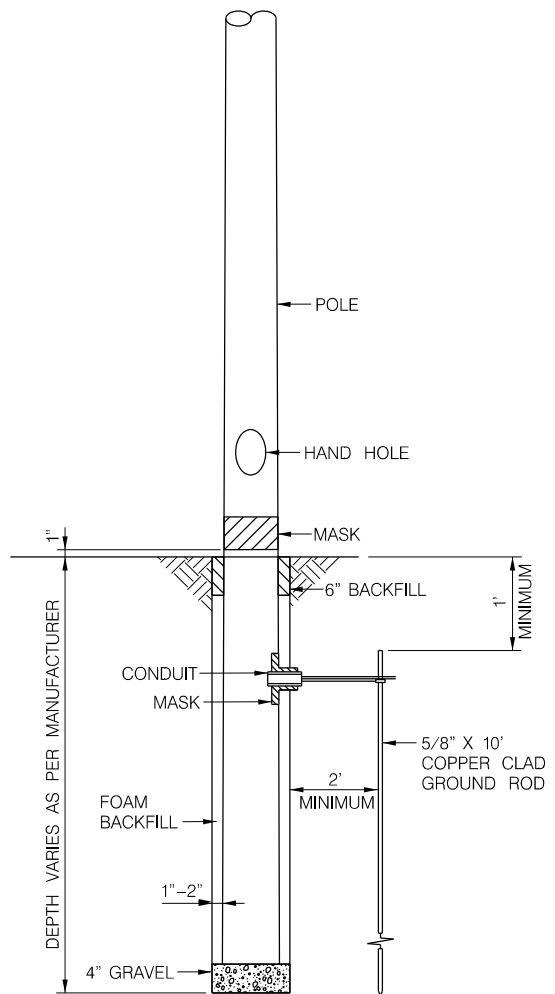


ANCHOR BOLT DETAIL

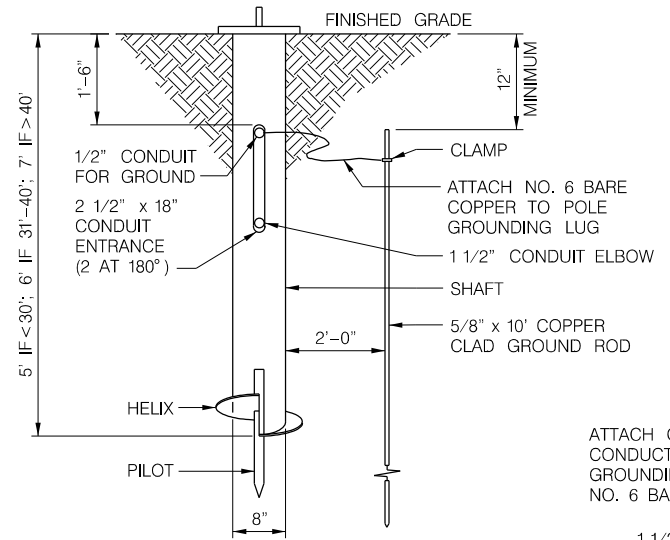


POLE DATA

MATERIAL: STEEL
 GAUGE: 11
 SECTION: TAPERED ROUND
 FINISH: GALVANIZED STEEL
 TAPER: 0.14" PER FOOT
 HAND HOLE: REINFORCED HAND HOLE WITH COVER, APPROXIMATELY 3" x 5", 90° CLOCKWISE FROM MAST ARM
 GROUNDING LUG: 13 NC NUT WELDED TO INSIDE SURFACE OF POLE OPPOSITE HAND HOLE
 WIRING SUPPORT HOOK: REQUIRED



EMBEDDED POLE



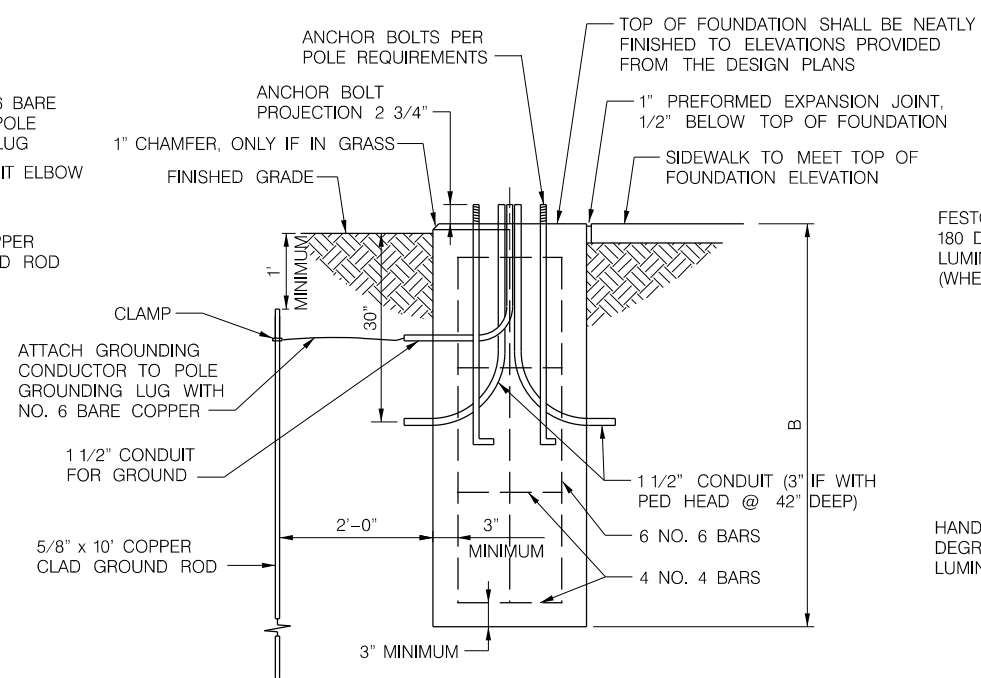
NOTES:
 FOUNDATION MUST BE INSTALLED PRIOR TO TRENCHING AND WITHOUT PILOT HOLE.
 FOUNDATION MUST BE INSTALLED WITH BASEPLATE LEVEL AND FLUSH WITH FINISHED GRADE.

FOUNDATION:
 SHAFT: ASTM A53 SCHEDULE 4 ø, GRADE B.
 ASTM A501 OR ASTM A252, GRADE 2.
 BASE PLATE: ASTM A36
 HELIX: ASTM A29
 PILOT: ASTM 575

GALVANIZE FOUNDATION PER ASTM A153 AFTER FABRICATION.

HARDWARE:
 CARRIAGE BOLTS: SAE J429 GRADE 5 GALVANIZED A153 CLASS C
 HEAVY HEX NUTS: ASTM A563 GRADE D OR DH GALVANIZED A153
 WASHERS: ASTM F436 GALVANIZED A153

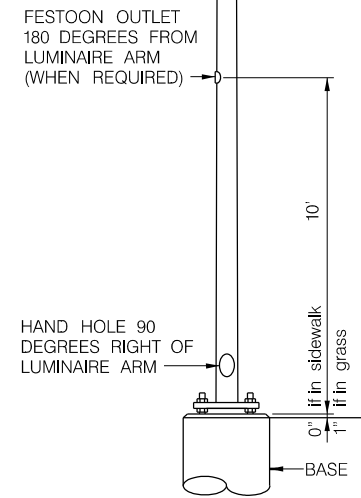
POWER INSTALLED FOUNDATION



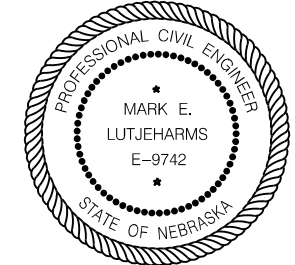
REINFORCING STEEL: EPOXY COATED, GRADE 60
 ANCHOR BOLTS: 1" DIAMETER (AASHTO M314, GR.55)
 HEAVY HEX GALVANIZED NUTS: (AASHTO M291, GR A)
 FLAT WASHERS GALVANIZED: (AASHTO M293)

STREET LIGHT FOUNDATION DATA					
FOUNDATION	MOUNTING HEIGHT	A	B	STEEL	CONCRETE
F2530	UP TO 30'	2'-0"	5'-0"	50 lb.	0.58 CU. YDS.
F3540	31' TO 40'	2'-0"	5'-6"	55 lb.	0.64 CU. YDS.
F4550	41' TO 50'	2'-6"	6'-0"	63 lb.	1.10 CU. YDS.

CONCRETE FOUNDATION



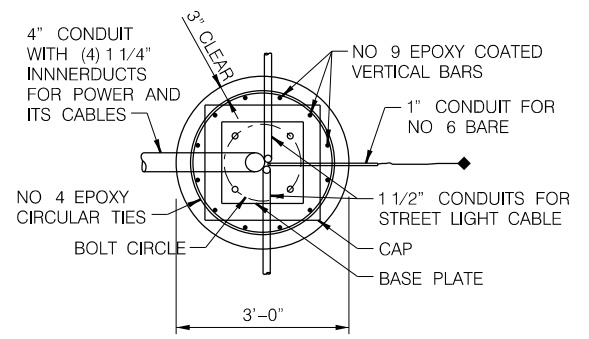
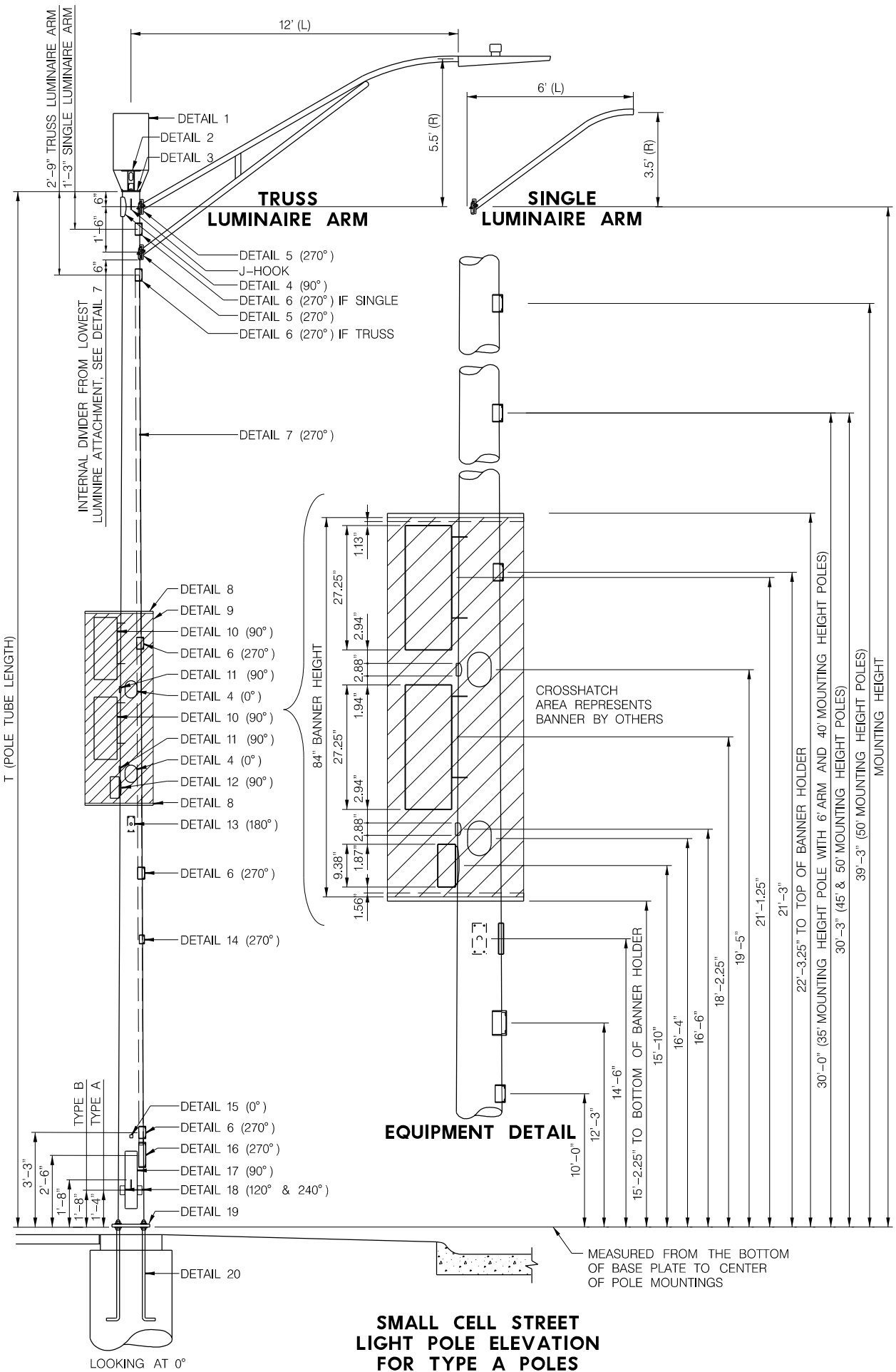
STREET LIGHTING POLE ELEVATION



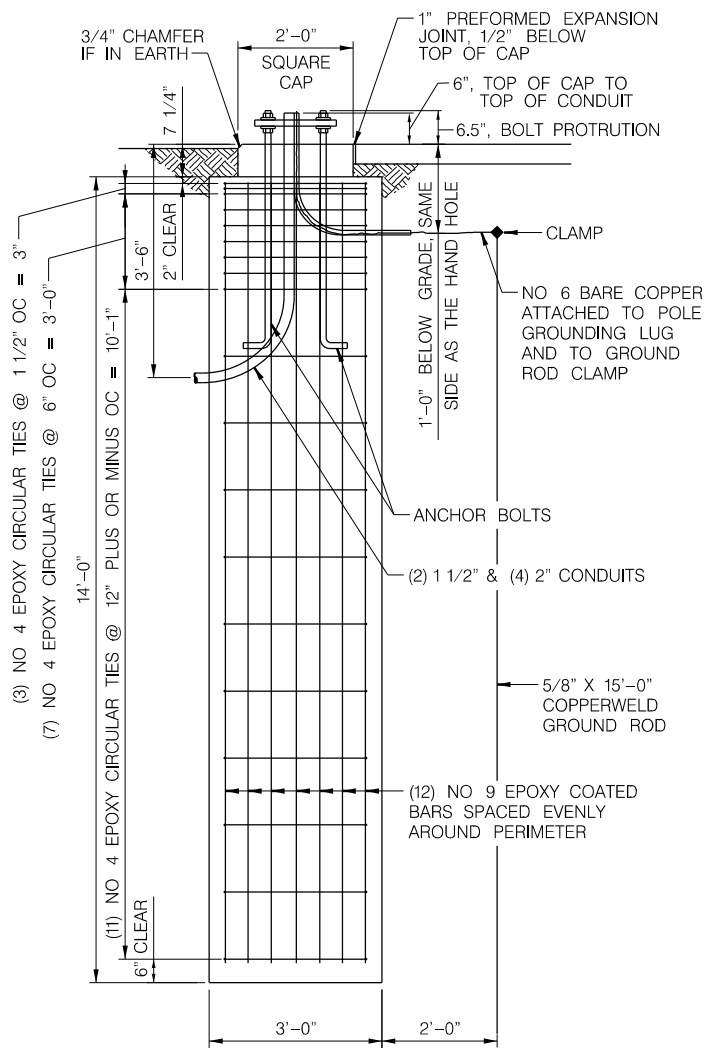
STREET LIGHTING POLES

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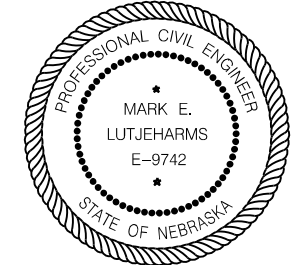
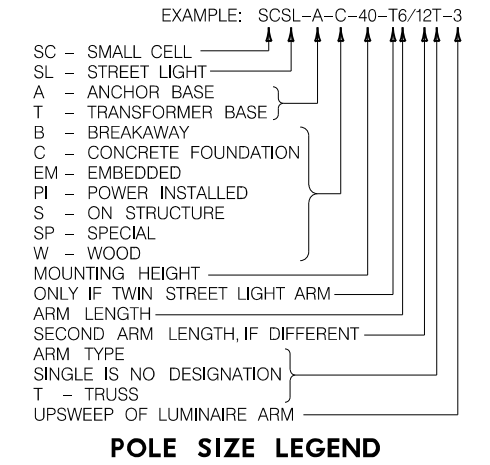


SMALL CELL STREET LIGHT POLE FOUNDATION FOR TYPE A AND TYPE B POLES, TOP VIEW



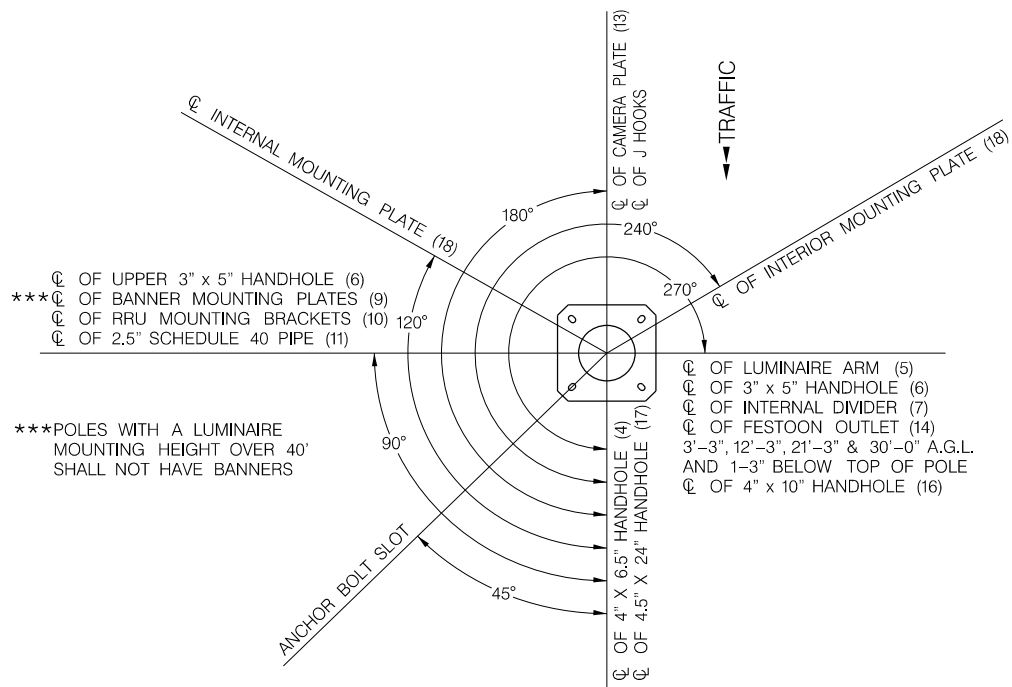
SMALL CELL STREET LIGHT POLE FOUNDATION FOR TYPE A AND TYPE B POLES, ELEVATION

- NOTES:
- 3 RIGID 0.25" THICK BANNERS: (1) 24" WIDE X 84" LONG, (2) 30" WIDE X 84" LONG FOR TYPE A POLES OR (2) 31" WIDE X 144" LONG FOR TYPE B POLES. BANNERS WILL BE PROVIDED BY AND INSTALLED BY CONTRACTOR. THE CITY OF LINCOLN WILL PROVIDE BANNER SPECIFICATIONS AND DESIGN. COST FOR BANNERS WILL BE INCLUDED IN THE SPECIAL SERVICES CHARGED FOR THE POLE INSTALLATION.
 - FINISH FOR TYPE A POLES SHALL BE GALVANIZED (GV) WITH BASE COAT OF HOT DIP GALVANIZED TO ASTM A123 TO SPEC F-1. FINISH FOR TYPE B POLES SHALL BE TGIF OR URETHANE POLYESTER POWDER, COLOR WHITE SILVER METALLIC TO SPEC F-590FK.
 - POLES SHALL SUPPORT THE SPECIFIED CAMERA AND ANY OTHER IDENTIFIED ATTACHMENTS. THE CAMERA WITH MOUNTING BRACKET SPECIFIED BY THE CITY SHOULD BE UTILIZED IN THE CALCULATIONS.
 - THE DEFLECTION AT THE CAMERA ATTACHMENT SHALL NOT EXCEED 1" IN A 30 MPH (NON-GUST WIND).
 - LESSEE RRUS EQUIPMENT SHALL NOT EXCEED 17.5 CUBIC FEET WITHOUT PRIOR WRITTEN APPROVAL.
 - LESSEE TO PROVIDE AND INSTALL FACTORY TERMINATED PATCH PANEL WITH PIGTAIL, 12-STEP, AT BASE OF POLE, RESULTING WITH 50' PIGTAIL COIL IN NEAREST FIBER PULL BOX.
 - POWER AVAILABLE FOR CITY POLE ATTACHMENT, POWER SUPPLY MODULE TO BE INSTALLED AND POWERED BY LESSEE, SEE DETAIL 18. COMMSCOPE POWER SUPPLY TO BE FURNISHED BY LESSEE. THE POWER DRAW FOR CITY POLE ATTACHMENT SHALL NOT EXCEED 15 AMPS.
 - ANTENNA TO BE MOUNTED AT POLE TOP FOR ALL POLE TYPES. ANTENNA SHALL NOT EXCEED 3 CUBIC FEET WITHOUT PRIOR WRITTEN APPROVAL. PANEL ANTENNAS REQUIRE WRITTEN APPROVAL PRIOR TO INSTALL.
 - LUMINAIRE ARM ATTACHMENT IS 6" BELOW THE TOP OF SHAFT FOR TOP TRUSS ARM OR SINGLE ARM LUMINAIRE. CONTRACTOR TO PROVIDE LUMINAIRE ARM. LUMINAIRE WILL MATCH THE LATEST CITY OF LINCOLN STANDARD SPECIFICATIONS WHEN INSTALLED. COST FOR LUMINAIRE IS LIMITED TO \$250 AND WILL BE INCLUDED IN THE SPECIAL SERVICES CHARGED FOR POLE INSTALLATION.
 - OPTIONAL FINISH COAT AND COLOR DETERMINED BY CITY BASED ON SITE CONDITION.
 - MINIMUM CONCRETE COVER FROM EPOXY COATED BAR TO EDGE OF CONCRETE IS 3", UNLESS OTHERWISE SHOWN.
 - EXPOSED CORNERS OF FOUNDATION SHALL HAVE 3/4" CHAMFER.
 - IF IN WALK, TOP OF FOUNDATION SHALL BE SAME AS WALK WITHOUT CHAMFER.
 - TOP OF FOUNDATION CYLINDER SHALL BE NEATLY FINISHED LEVEL.
 - ALL HANDHOLES TO BE UL CLASSIFIED, FOR POLES GREATER THAN 12'. SEE DETAIL 15 FOR LABEL OR 4, 6, 16 AND 17 FOR HANDHOLE.
 - ALL HANDHOLES AND FESTOON OUTLETS SHALL HAVE A COVER SUPPLIED BY MANUFACTURER WITH A NEC GASKET AND WASHER KIT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE MISSING COVERS OR GASKETS CONFORMING TO NEC SPECIFICATION 410.30. THEY SHALL BE RAINPROOF, 3R PER NEC 110.28.
 - USE DESIGN CRITERIA, IBC 2012 WITH 100 MPH DESIGN WIND SPEED FOR TYPE A POLE AND 115 MPH DESIGN WIND SPEED FOR TYPE B POLE.

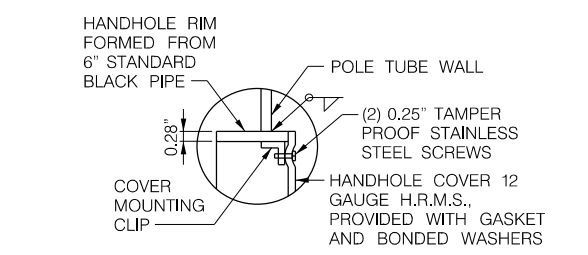


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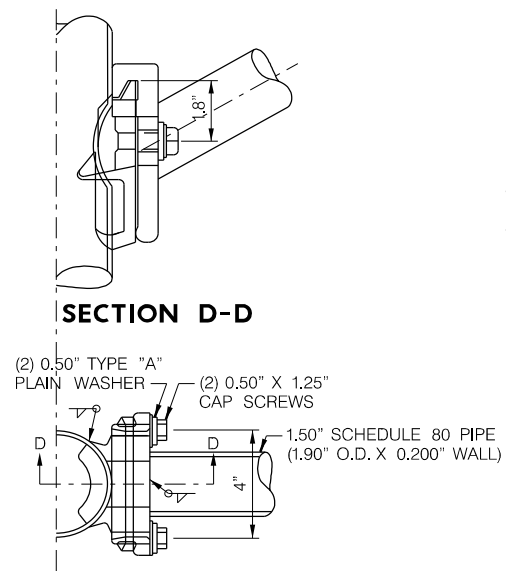
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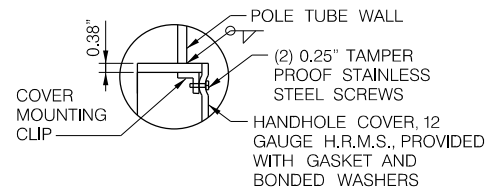
RADIAL INDEX FOR SMALL CELL STREET LIGHT POLE TYPE A POLES



SECTION C-C

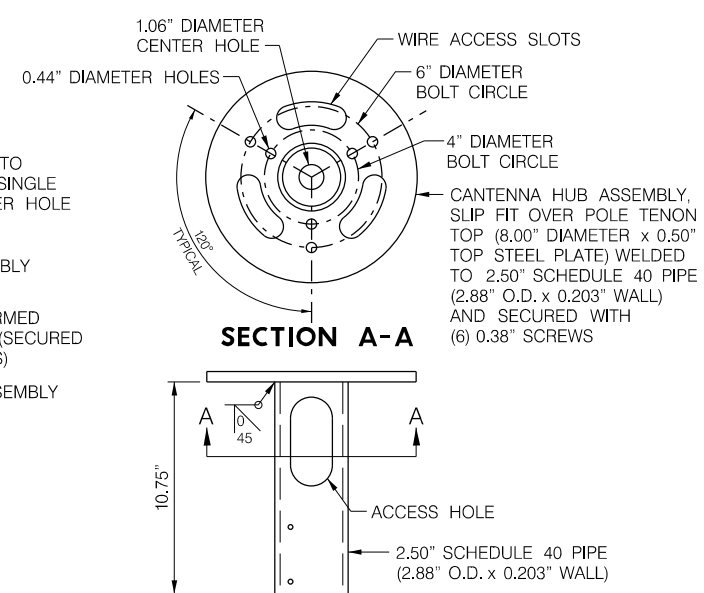


DETAIL 5, LUMINAIRE ARM ATTACHMENT FOR TYPE A POLES

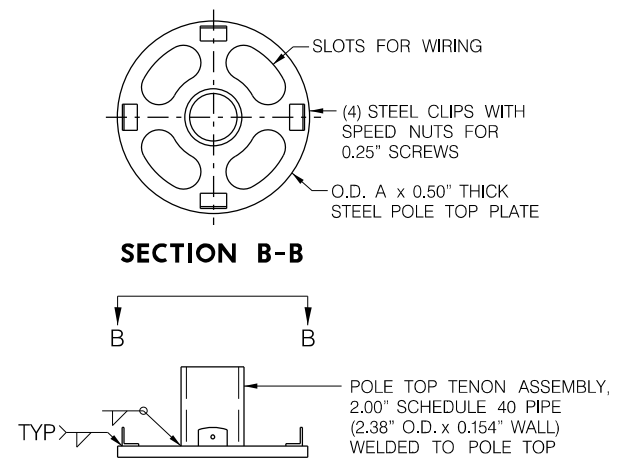


SECTION E-E

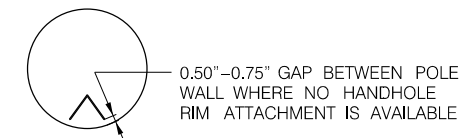
DETAIL 6, 3" x 5" HANDHOLE FOR TYPE A AND B POLES



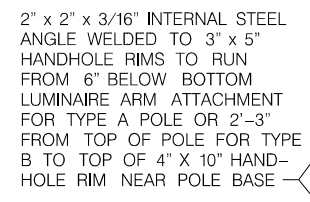
DETAIL 2, CANTENNA HUB ASSEMBLY FOR TYPE A AND B POLES



DETAIL 3, POLE TOP TENON ASSEMBLY FOR TYPE A AND B POLES

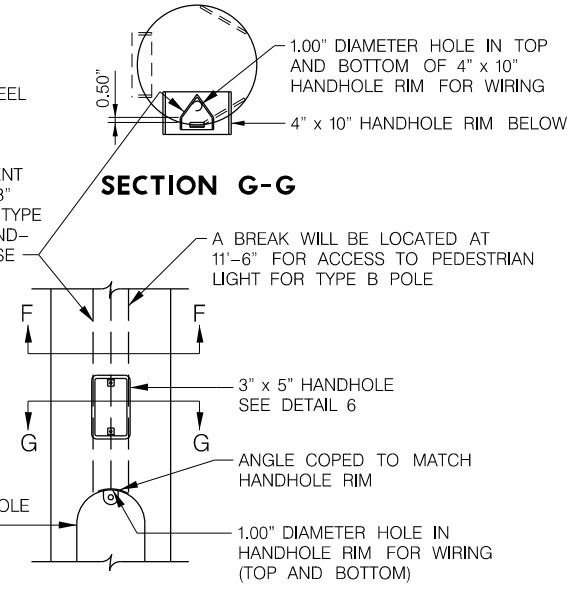


SECTION F-F



SECTION G-G

DETAIL 7, INTERNAL DIVIDER FOR TYPE A AND B POLES



DETAIL 8, BANNER HOLDER FOR TYPE A POLES

POLE TYPE	MOUNTING HEIGHT	LUMINAIRE ARM TYPE	POLE AND LUMINAIRE ARM DATA																
			LUMINAIRE ARM				DETAIL 3 O.D. A	POLE TUBE				POLE BASE				ANCHOR BOLT			
			ARM SPAN L	RISE HEIGHT R	PIPE DIAMETER	WALL THICKNESS		BASE DIA.	TOP DIA.	LENGTH T	GAUGE	SQUARE S	BOLT CIRCLE Y	THICK M	SLOT Z	DIA. K	LENGTH J	THREAD LENGTH U	HOOK H
A	30'	SINGLE	6.00'	3.50'	2.38"	0.154"	9.00"	12.00"	8.22"	27.00"	7	17.00"	16.00"	1.25"	1.38" X 1.94"	1.25"	42.00"	6.00"	6.00"
A	30'	TRUSS	12.00'	5.50'	2.38"	0.154"	9.50"	12.00"	8.50"	25.00"	7	17.00"	16.00"	1.25"	1.38" X 1.94"	1.25"	42.00"	6.00"	6.00"
A	35'	SINGLE	6.00'	3.50'	2.38"	0.154"	8.50"	12.00"	7.52"	32.00"	7	17.00"	16.00"	1.25"	1.38" X 1.94"	1.25"	42.00"	6.00"	6.00"
A	35'	TRUSS	12.00'	5.50'	2.38"	0.154"	8.50"	12.00"	7.80"	30.00"	7	17.00"	16.00"	1.25"	1.38" X 1.94"	1.25"	42.00"	6.00"	6.00"
A	40'	SINGLE	6.00'	3.50'	2.38"	0.154"	8.00"	12.00"	6.82"	37.00"	7	17.00"	16.00"	1.25"	1.38" X 1.94"	1.25"	42.00"	6.00"	6.00"
A	40'	TRUSS	12.00'	5.50'	2.38"	0.154"	8.00"	12.00"	7.10"	35.00"	7	17.00"	16.00"	1.25"	1.38" X 1.94"	1.25"	42.00"	6.00"	6.00"
A	45'	SINGLE	6.00'	3.50'	2.38"	0.154"	7.00"	12.00"	6.12"	42.00"	7	17.00"	16.00"	1.25"	1.38" X 1.94"	1.25"	42.00"	6.00"	6.00"
A	45'	TRUSS	12.00'	5.50'	2.38"	0.154"	7.00"	12.00"	6.40"	40.00"	7	17.00"	16.00"	1.25"	1.38" X 1.94"	1.25"	42.00"	6.00"	6.00"
A	50'	SINGLE	6.00'	3.50'	2.38"	0.154"	7.00"	13.00"	6.42"	47.00"	7	18.00"	17.00"	1.25"	1.38" X 1.94"	1.25"	42.00"	6.00"	6.00"
A	50'	TRUSS	12.00'	5.50'	2.38"	0.154"	7.50"	13.00"	6.70"	45.00"	7	18.00"	17.00"	1.25"	1.38" X 1.94"	1.25"	42.00"	6.00"	6.00"
B	33.5'	SINGLE	6.00'	0'	1.90"	0.200"	7.50"	11.00"	6.10"	35.00"	7	16.50"	15.00"	1.50"	1.38" X 2.56"	1.25"	42.00"	6.00"	6.00"

EQUIPMENT DATA		
ITEM	MOUNTING HEIGHT FEET	SIZE
ANTENNA	*	15.00"ø X 24.00" H
LUMINAIRE ARM	**	NA
RRUS 32	21.10	12.05" W X 27.20" H
RRUS 32	18.19	12.05" W X 27.20" H
LOAD CENTER CABINET	15.83	4.88" W X 9.38" H
BANNER	15.19	SEE NOTE 1
CAMERA	14.50	N/A

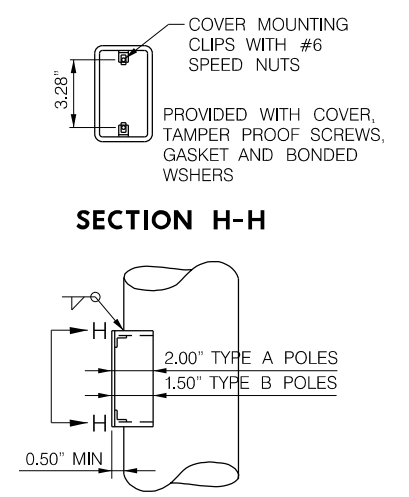
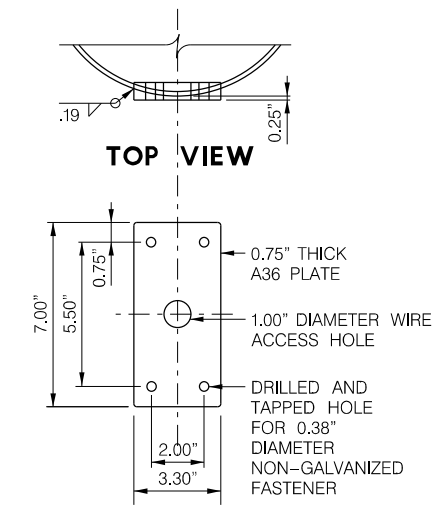
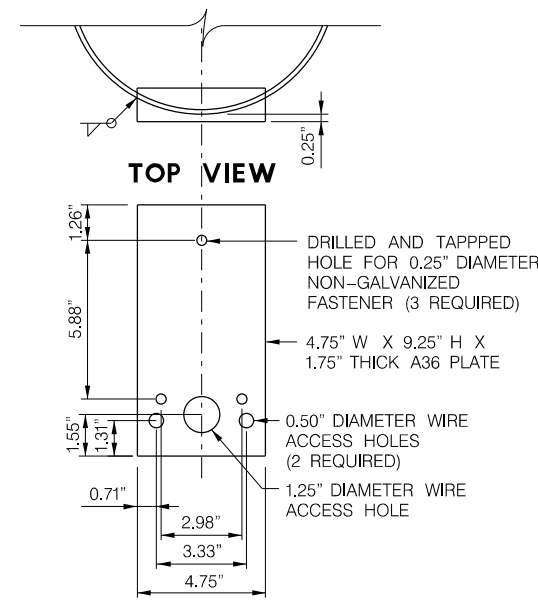
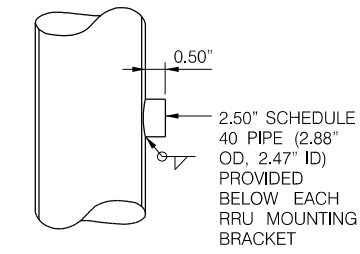
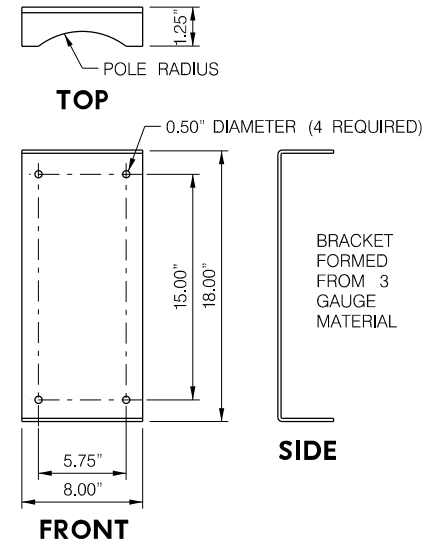
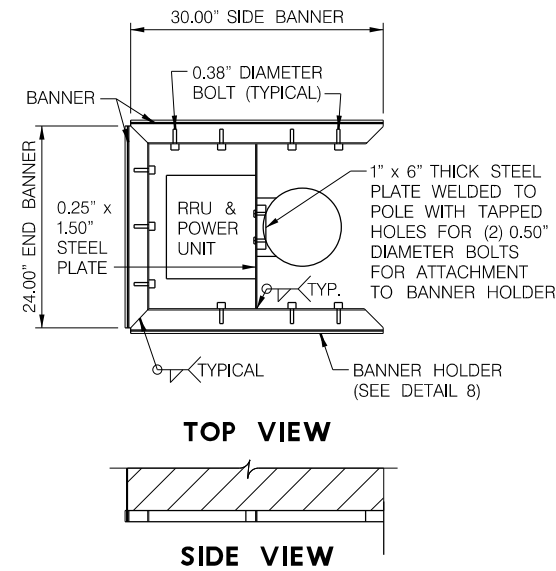
*Top of Shaft
 **6" below Top of Shaft

MATERIAL DATA		
COMPONENT	ASTM DESIGNATION	MINIMUM YIELD (KSI)
POLE TUBE	A595 GRADE A OR A572	55
MOUNTING BRACKETS	A36	36
ARM ATTACHMENTS	A27 GRADE 65-35 OR A36	35
POLE BASE	A36	36
ARM CONNECTING BOLTS	SAE GRADE 5	-
ARM PIPE, 2" SCHEDULE 40	A513 OR EQUIVALANT	36
ANCHOR BOLTS	F1554 GRADE 55	55



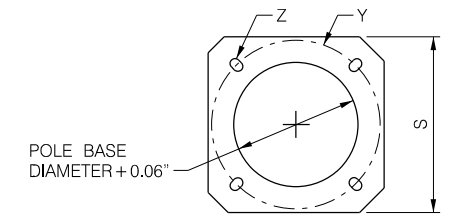
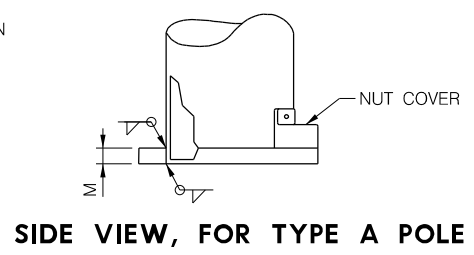
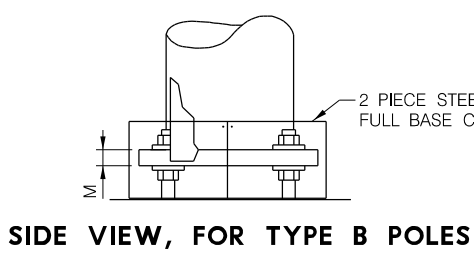
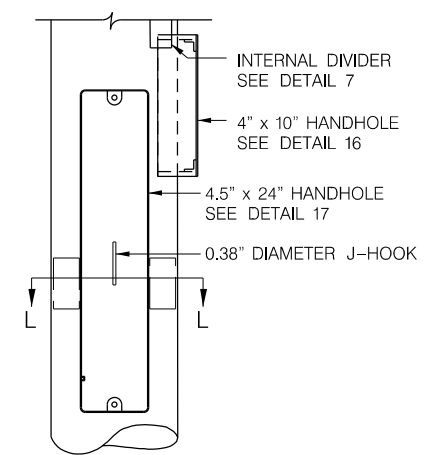
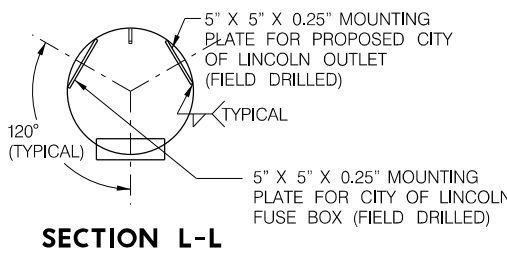
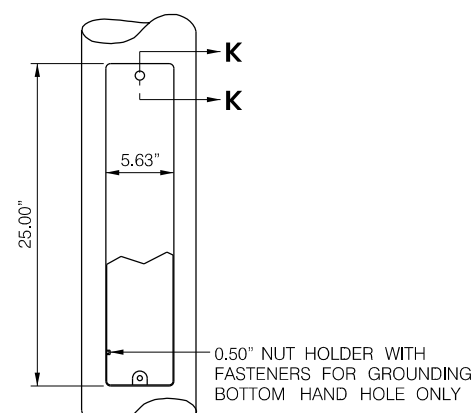
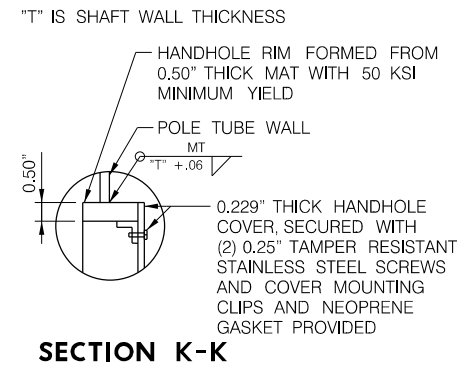
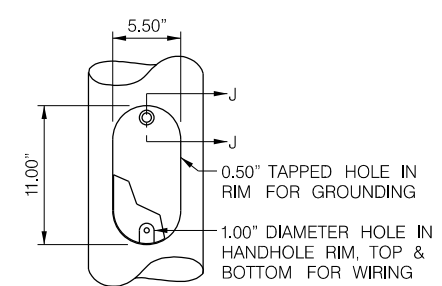
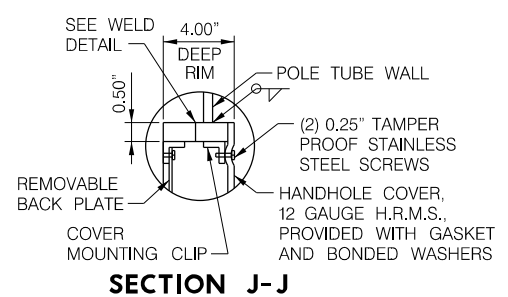
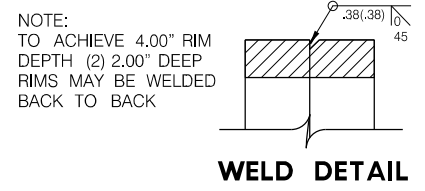
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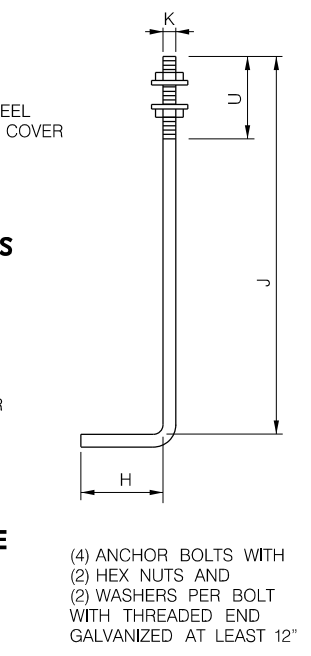


"CLASSIFIED LABEL": UL1598, CATEGORY IEUR (LUMINAIRE POLES) POLES AT LEAST 12' TALL, BUT LESS THAN 100'

DETAIL 15
UL CLASSIFIED LABEL FOR
TYPE A AND B POLES



DETAIL 19
POLE BASE FOR
TYPE A AND B POLES

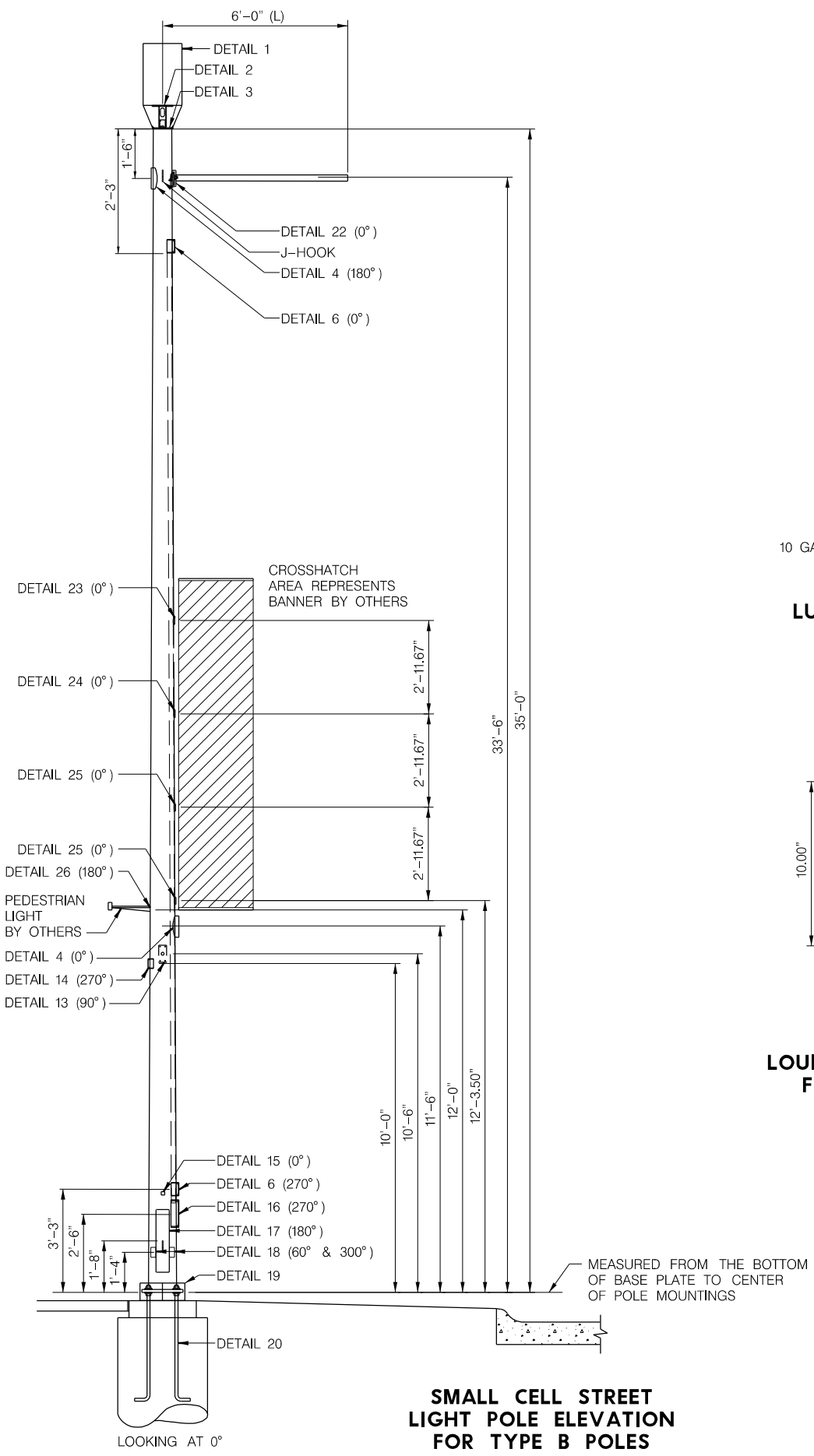


DETAIL 20
J ANCHOR BOLT FOR
TYPE A AND B POLES

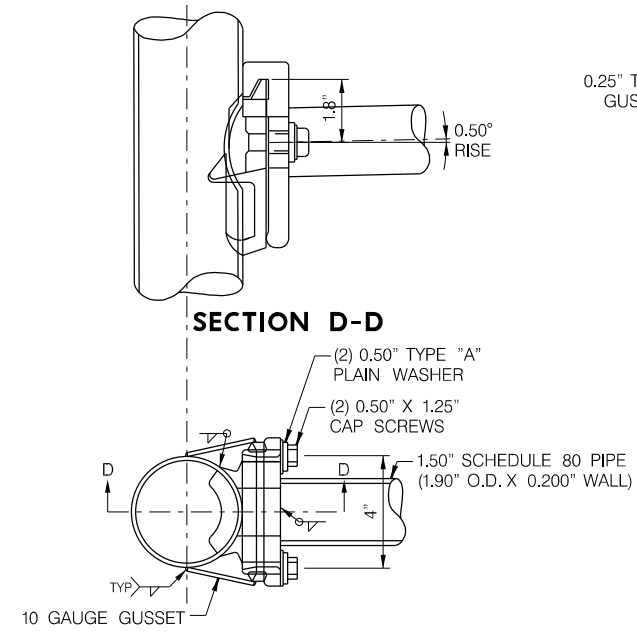


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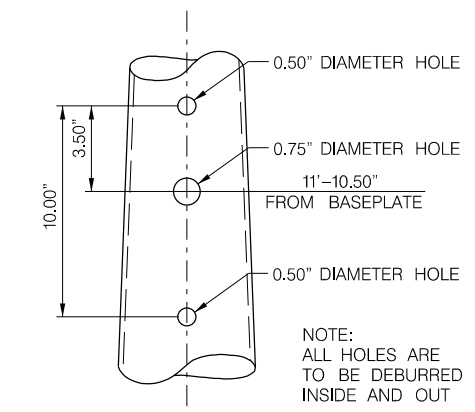
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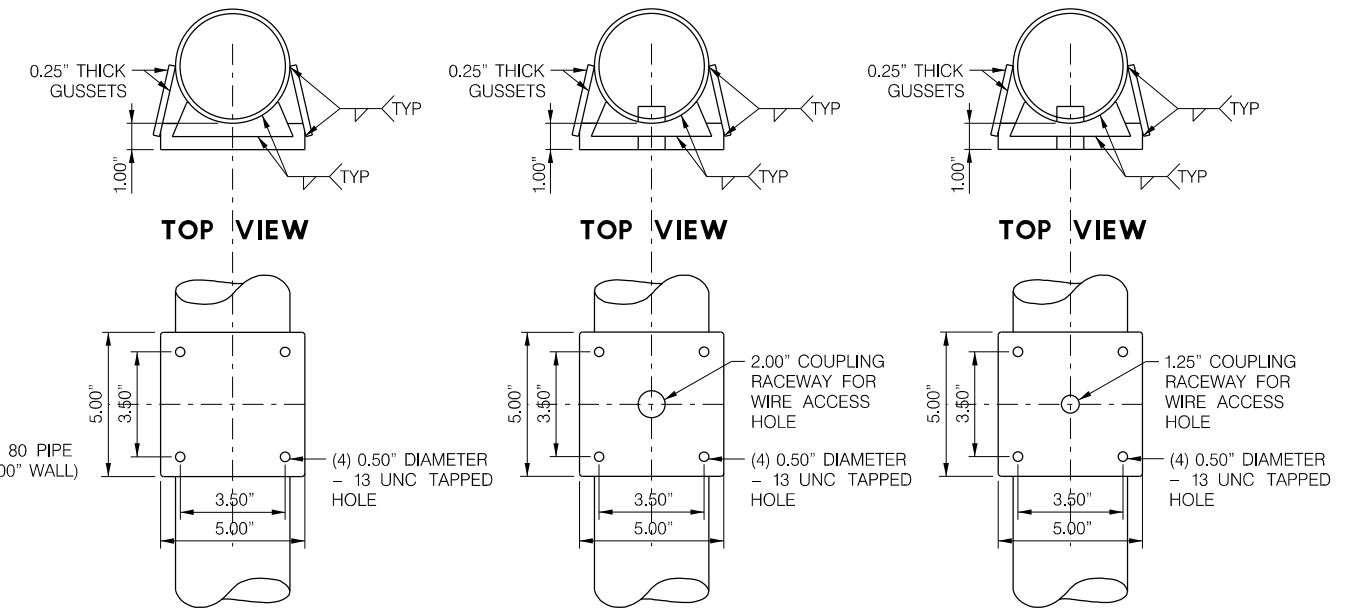
SMALL CELL STREET LIGHT POLE ELEVATION FOR TYPE B POLES



DETAIL 22, LUMINAIRE ARM ATTACHMENT FOR TYPE B POLES



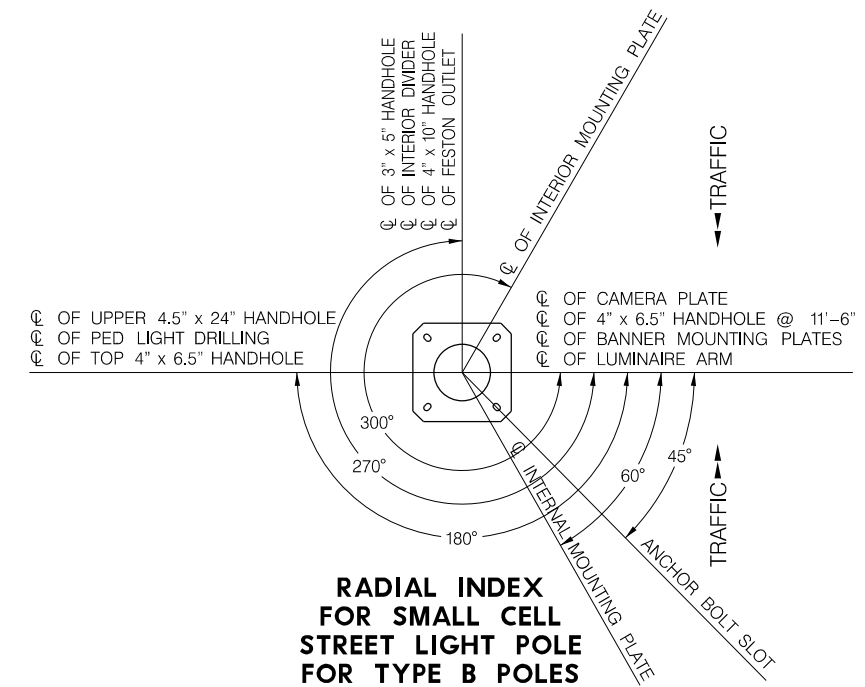
DETAIL 26 LOUIS POULSEN DRILLING FOR TYPE B POLES



DETAIL 23 BANNER AND SIGN ATTACHMENT FOR TYPE B POLES

DETAIL 24 BANNER AND SIGN ATTACHMENT FOR TYPE B POLES

DETAIL 25 BANNER AND SIGN ATTACHMENT FOR TYPE B POLES



RADIAL INDEX FOR SMALL CELL STREET LIGHT POLE FOR TYPE B POLES



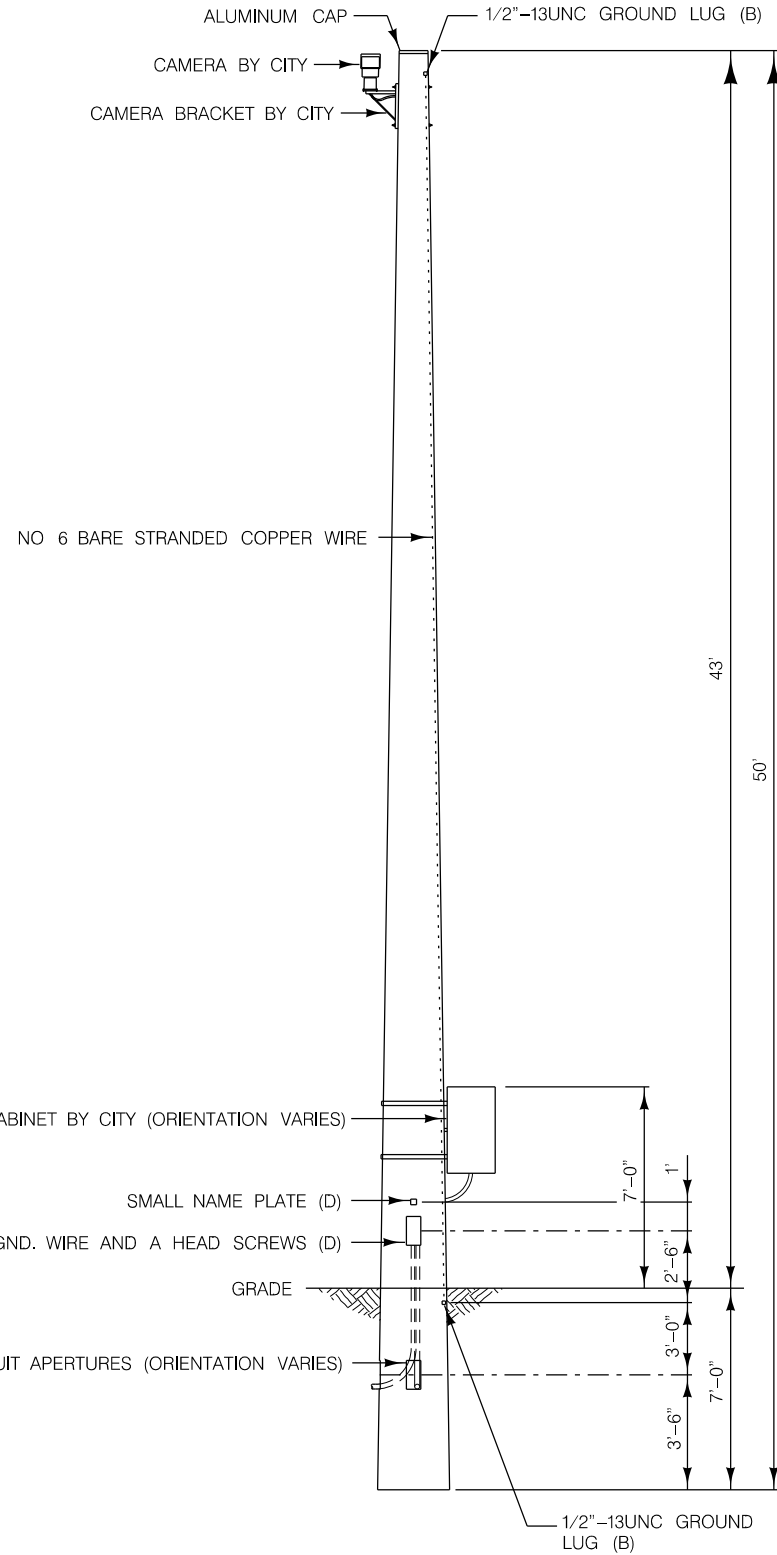
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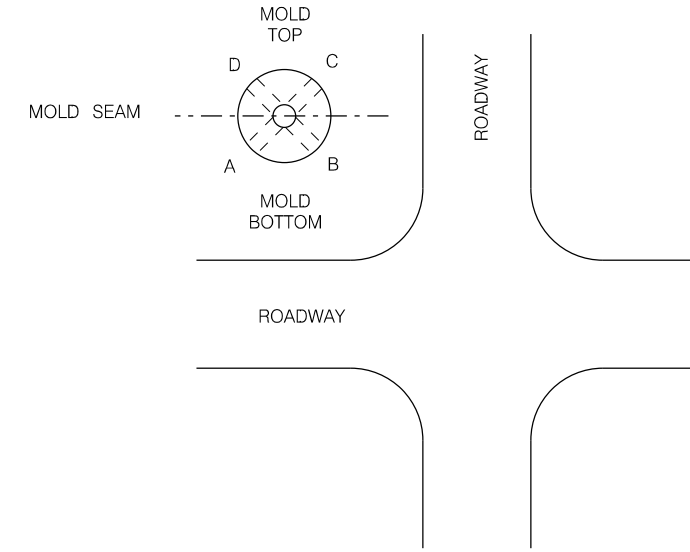
LTU	PLAN NO.	SHEET NO.
	94	1
Date: 1/2/2020	Drawn: CAW	
Horz. Scale: N.T.S.	Checked: MEL	
	Approved: LJB	

GROUNDING NOTES:

- 1) NO. 6 BARE STRANDED COPPER WIRE SHALL BE INSTALLED IN CONDUIT WITH POWER SUPPLY AND CONNECTED TO GROUND ROD IN NEAREST PULL BOX.
- 2) CABINET SHALL BE GROUNDED TO THE NO. 6 BARE STRANDED COPPER WIRE.
- 3) GROUND ROD AND GROUND WIRE CONNECTIONS ARE SUBSIDIARY TO POLE INSTALLATION.



CONCRETE POLE

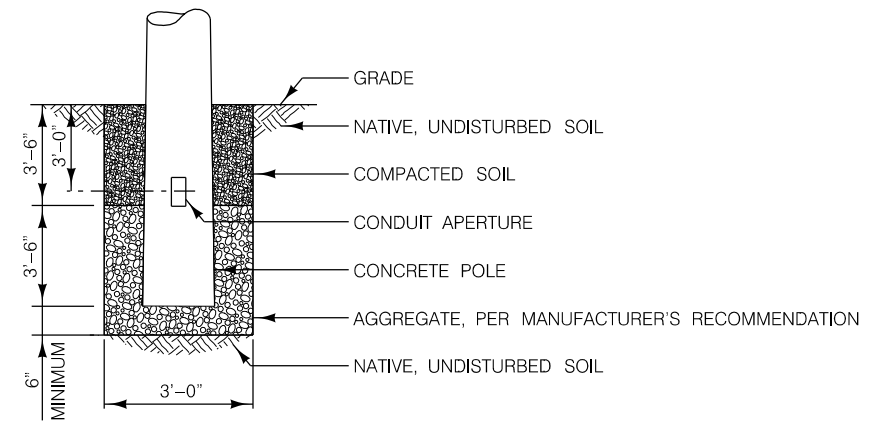


ORIENTATION DETAIL

NOTES:

HANDLING, TRANSPORTATION AND INSTALLATION OF POLE PER MANUFACTURER'S RECOMMENDATIONS, SHALL INCLUDE:

- 1) CHOKER THE POLE WITH A NYLON SLING 20-25% OF POLE LENGTH FROM TOP
- 2) ATTACH SLING TO HOOK AND LIFT, ALLOWING BUTT OF POLE TO REST ON GROUND UNTIL VERTICAL
- 3) LIFT POLE AND POSITION OVER AUGURED HOLE
- 4) LOWER POLE UNTIL BUTT RESTS ON BOTTOM CENTER OF HOLE
- 5) WHILE CONTINUING TO HOLD POLE, ADD BACKFILL, TAMPING EVERY 4"
- 6) CHECK FOR PLUMBNESS AFTER WHICH BELOW GRADE WIRING CAN BE MADE



**CONCRETE POLE
 EMBEDMENT DETAIL**



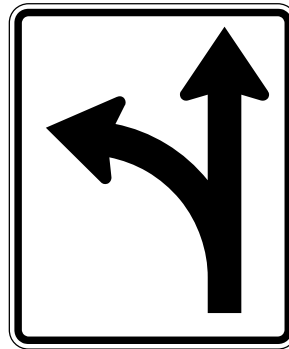
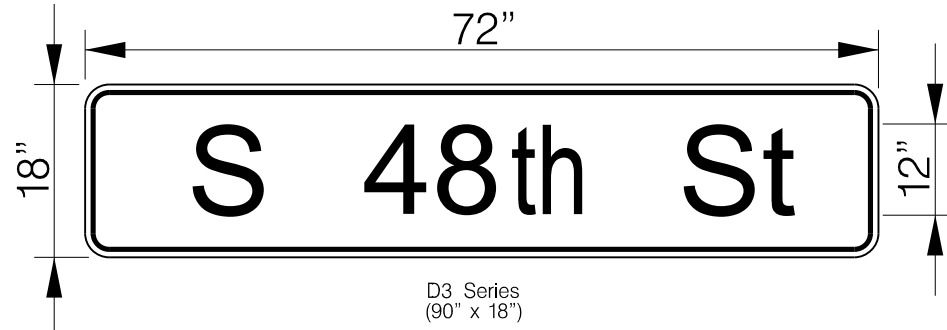
CONCRETE POLE

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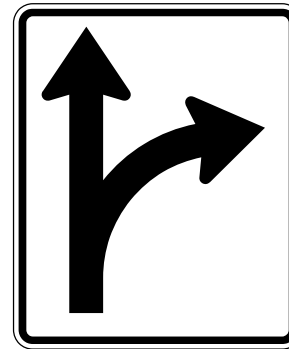
R10-11b
(36" x 36")



R3-6L
(30" x 36")



R6-1L
(54" x 18")



R3-6R
(30" x 36")



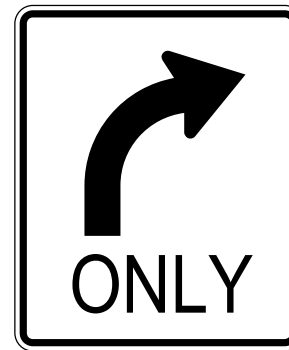
R6-1R
(54" x 18")



R3-5L
(30" x 36")

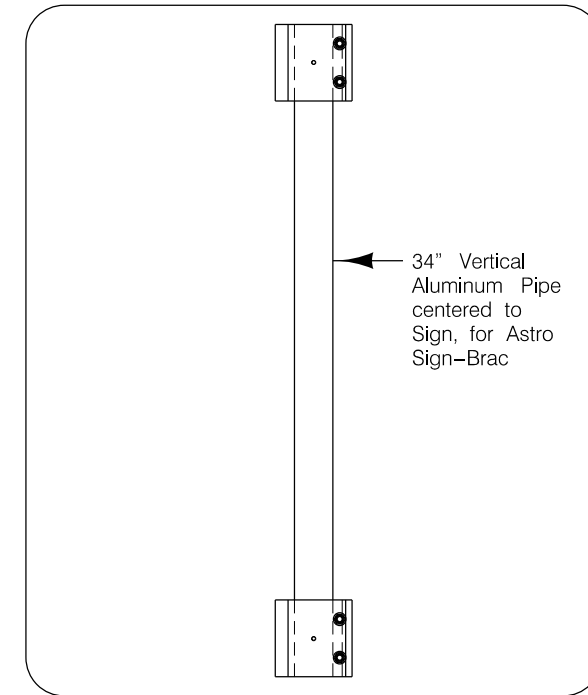


R3-5a
(30" x 36")



R3-5R
(30" x 36")

OVERHEAD SIGNS

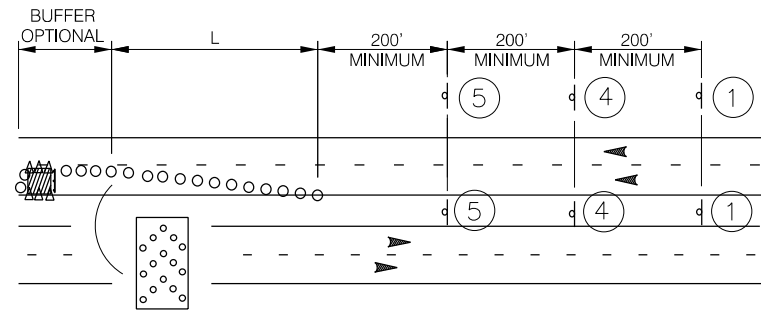


SIGN MOUNTING
 Mast arm signs shall be installed with Astro Sign-Brac, model AS-0144-30-62-SS-PNC

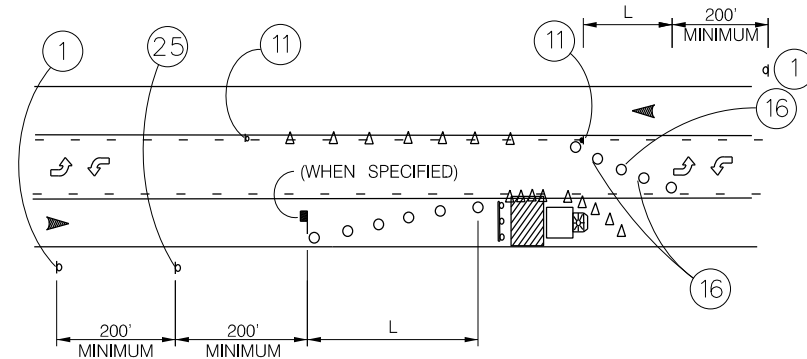


OVERHEAD SIGNS

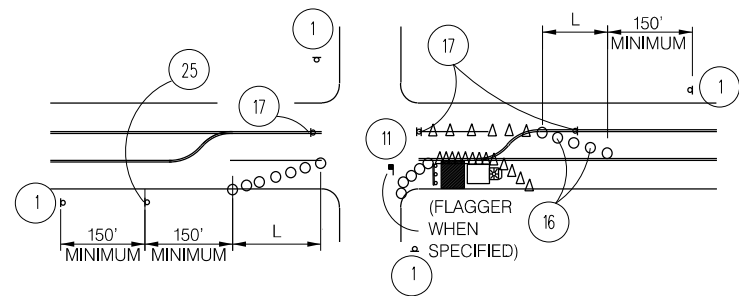
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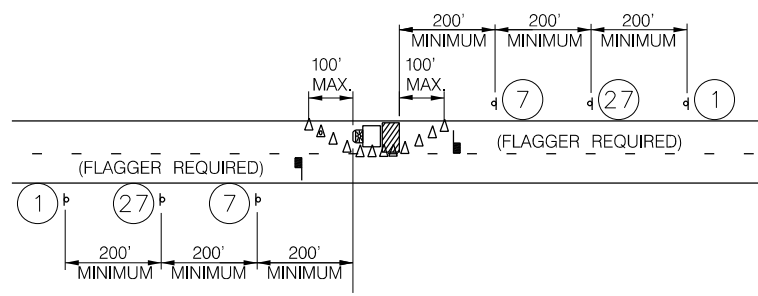
TYPICAL LANE CLOSURE FOR FOUR LANE DIVIDED ROADWAY



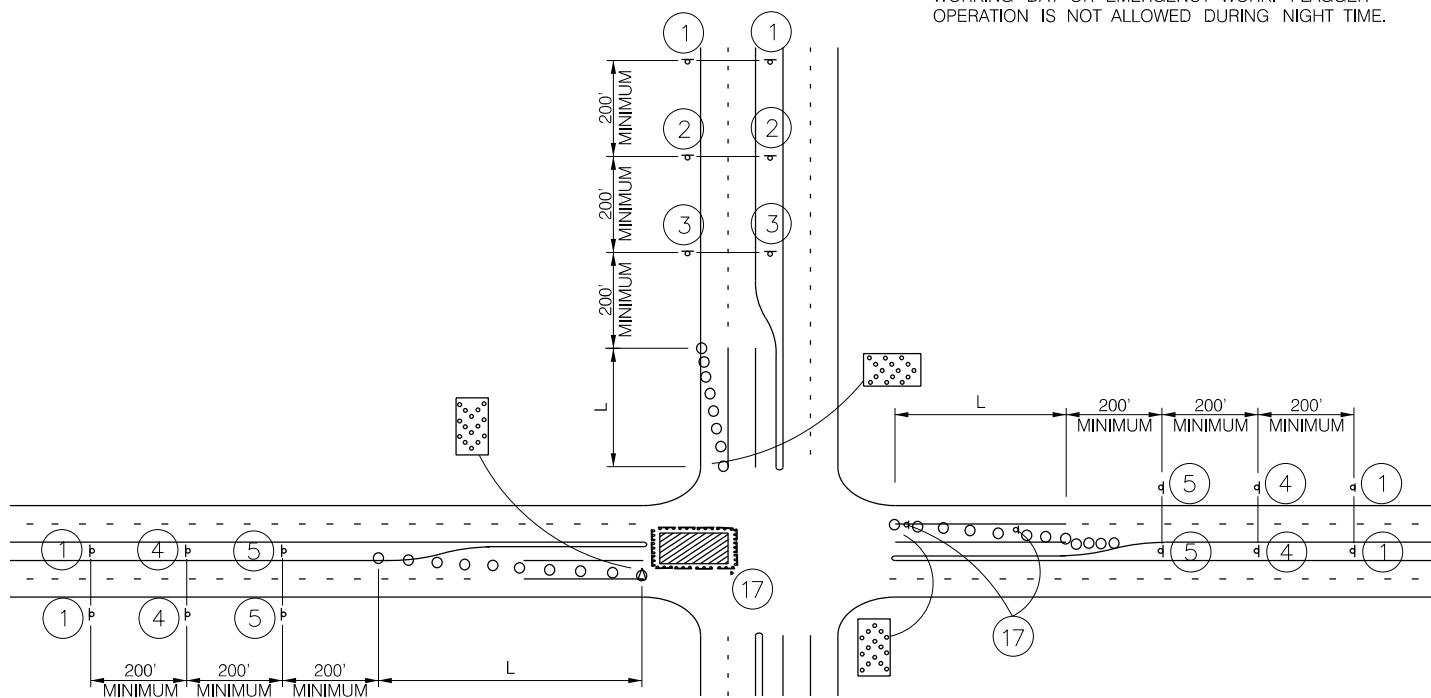
CONSTRUCTION IN CURB LANE OF A TWO-WAY TWO LANE ROADWAY WITH A COMMON LEFT TURN LANE



CONSTRUCTION IN CURB LANE ADJACENT TO LEFT TURN LANE, OPPOSING DIRECTION



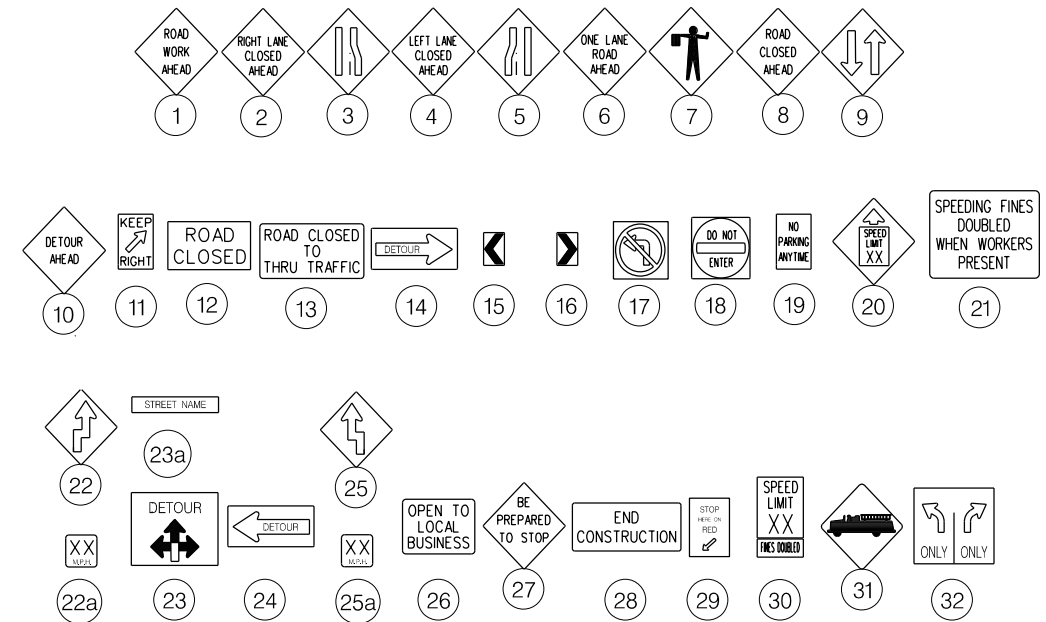
TWO-WAY TWO LANE NON-RESIDENTIAL FLAGGER OPERATION, NO LONGER THAN ONE (1) NORMAL WORKING DAY OR EMERGENCY WORK. FLAGGER OPERATION IS NOT ALLOWED DURING NIGHT TIME.



LANES BLOCKED IN INTERSECTION

NOTES:

1. PARKING TO BE PROHIBITED ON DETOUR ROUTE AS REQUIRED.
 2. ADDITIONAL SIGNING MAY BE REQUIRED ON LONGER DETOUR ROUTES.
 3. AS DIRECTED BY THE DIRECTOR OF PUBLIC WORKS AND UTILITIES, PERMANENT STRIPING TO BE REMOVED AND TEMPORARY STRIPING INSTALLED.
 4. WHEN CONSTRUCTION IS COMPLETED, TEMPORARY STRIPING IS TO BE REMOVED AND PERMANENT STRIPING INSTALLED BY OTHERS.
- THE CONTRACTOR SHALL MAINTAIN TRAFFIC DURING CONSTRUCTION AND PROVIDE, INSTALL, MAINTAIN AND REMOVE ALL TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE CITY OF LINCOLN STANDARD SPECIFICATIONS, THE PROJECT SPECIAL PROVISIONS, THE CITY OF LINCOLN TRAFFIC CONTROL GUIDELINES FOR STREET CONSTRUCTION, MAINTENANCE AND UTILITY OPERATIONS, THE ORDINANCES AND REGULATIONS OF THE CITY OF LINCOLN AND THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. FAILURE OF THE CONTRACTOR TO ERECT AND MAINTAIN APPROVED TRAFFIC CONTROL DEVICES SHALL BE REASON TO SUSPEND THE WORK.

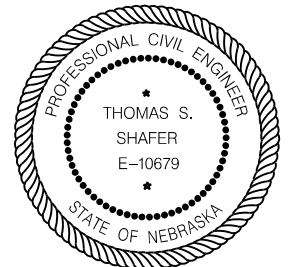


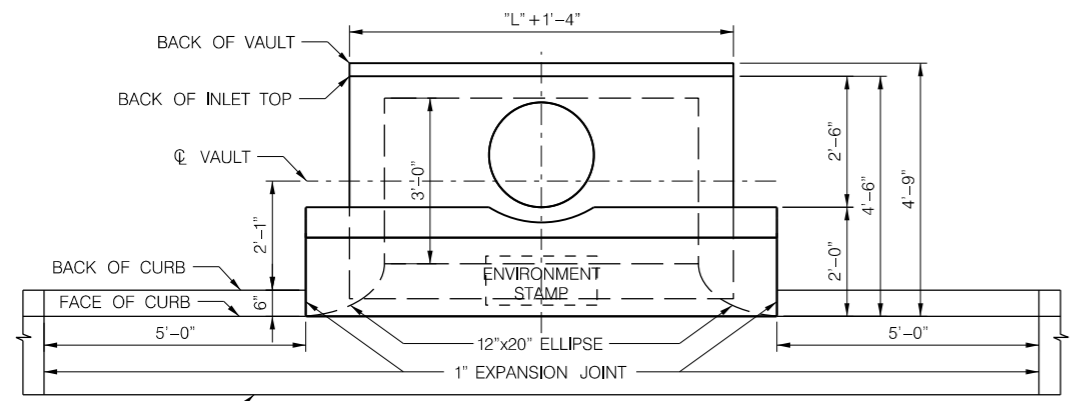
LEGEND

- △ CONES
- DRUMS
- ⊞ TYPE III BARRICADE
- ▨ ARROW BOARD
- FLAGGER
- ▨ CONSTRUCTION AREA

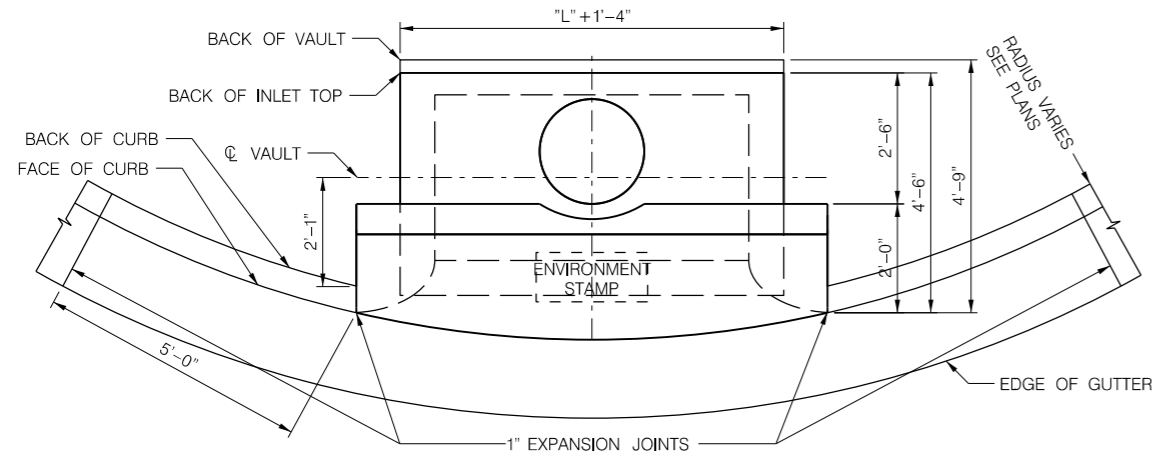
FORMULA FOR TAPER LENGTH

$L = S \times W$ FOR SPEEDS OF 45 MPH OR OVER
 $L = \frac{W \times S^2}{60}$ FOR SPEEDS OF 40 MPH OR UNDER
 L = LENGTH OF TAPER
 W = WIDTH OF LANE

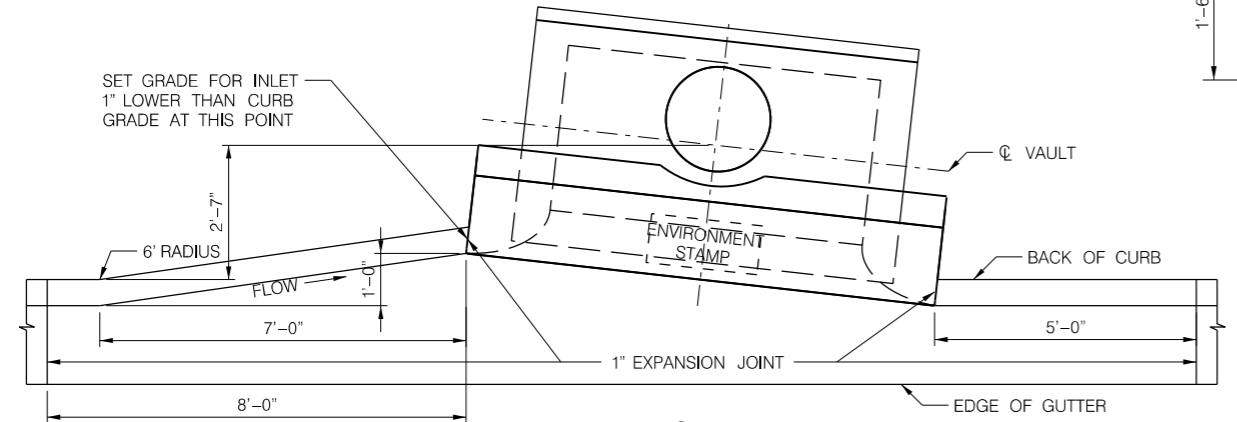




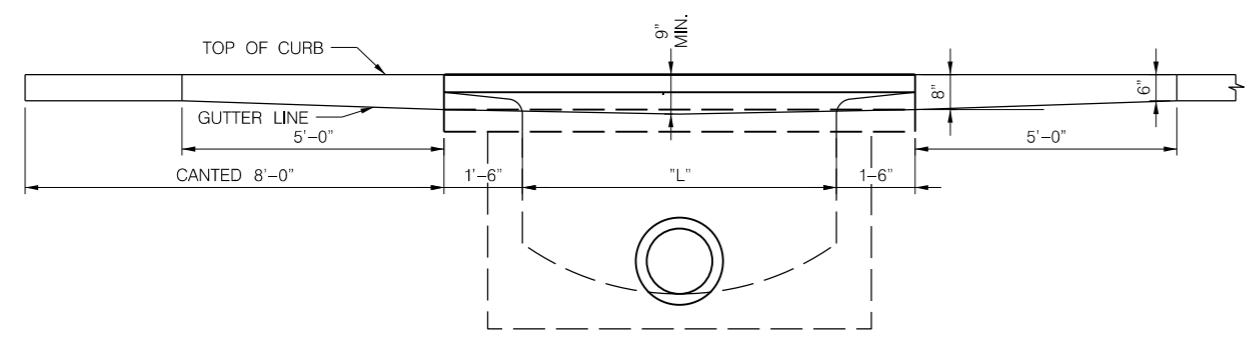
PLAN OF TYPE "A-2" STORM DRAINAGE INLET



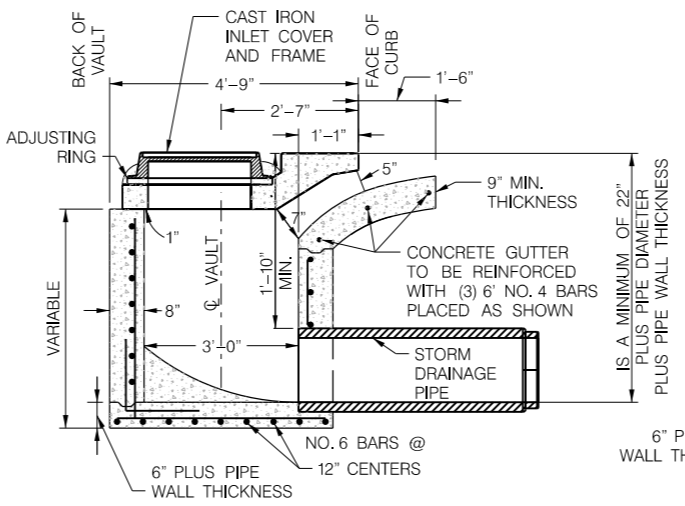
PLAN OF TYPE "A-2" RADIUS STORM DRAINAGE INLET



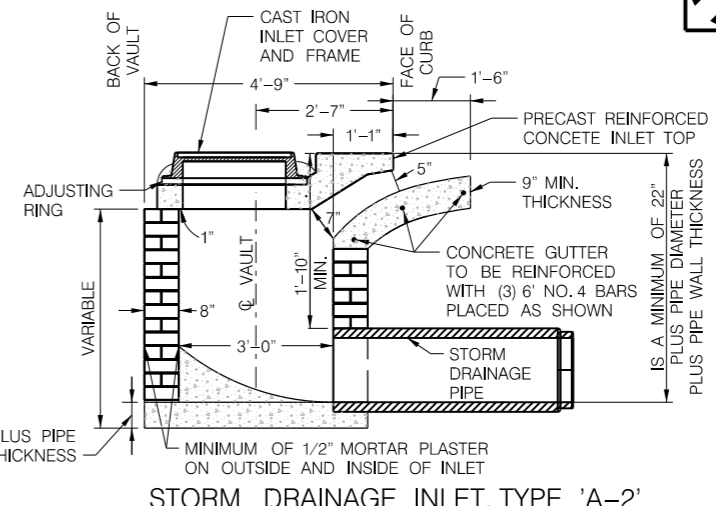
PLAN OF TYPE "A-2" CANTED STORM DRAINAGE INLET



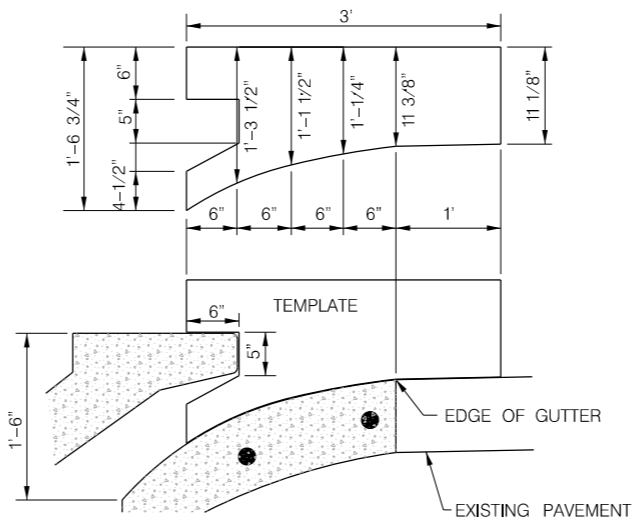
ELEVATION OF GUTTER DEPRESSION AT FACE OF CURB



STORM DRAINAGE INLET, TYPE 'A-2' (POURED IN PLACE OPTION)



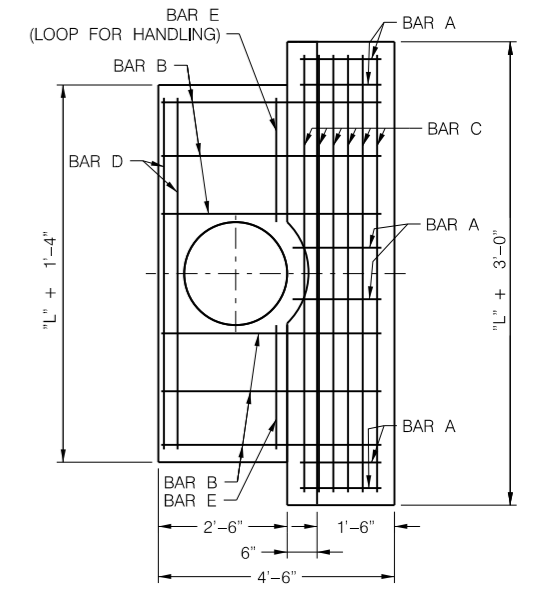
STORM DRAINAGE INLET, TYPE 'A-2' (BRICK OPTION)



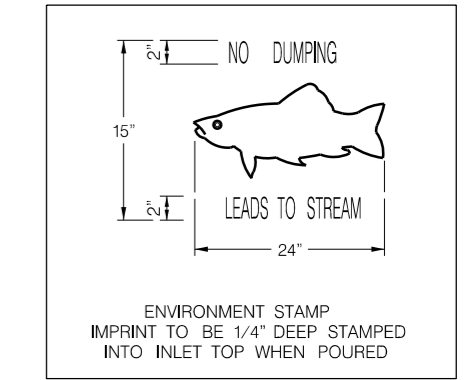
INLET THROAT DEPRESSION TEMPLATE (1/4" PLYWOOD)

SCHEDULE OF REINFORCEMENT FOR PRECAST CONCRETE INLET TOP

BAR	SHAPE	INLET OPENING = "L"		
		No.	Size	Length
A		6	#4	1'-9 1/2"
B		10	#4	4'-6"
C		8	#4	8'-9"
D		2	#4	7'-0"
E		2	#4	3'-0"



PLAN & SECTION OF PRECAST REINFORCED CONCRETE INLET TOP



ENVIRONMENTAL STAMP

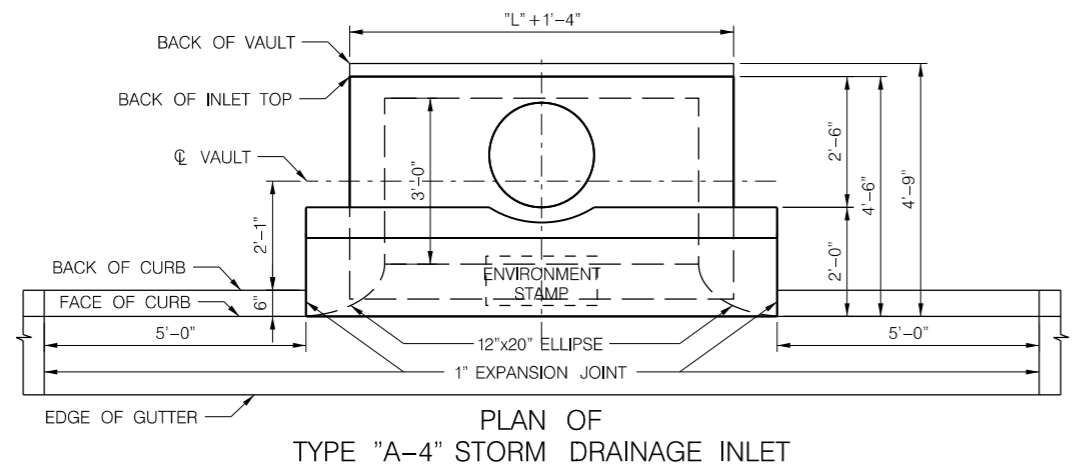
GENERAL NOTES:

- ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO A.S.T.M. SERIAL DESIGNATION A-305-507 AND SHALL SATISFY THE BEND TEST REQUIREMENTS FOR STRUCTURAL GRADE STEEL IN ACCORDANCE WITH THE REQUIREMENTS.
- MINIMUM DEPTH OF EMBEDMENT FOR REINFORCING STEEL SHALL BE 2" UNLESS OTHERWISE INDICATED.
- ALL CONCRETE SHALL BE L3500.
- INLET TOP SHALL BE PRECAST UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- EACH INLET TOP SHALL INCLUDE A CAST IRON INLET COVER AND FRAME. (SEE L.S.P.162)
- EACH INLET SHALL INCLUDE LENGTH OF CURB AS PER SPECIFICATIONS.
- CURB GUTTER AND GUTTER LINE ON EACH SIDE OF THE INLET TOP SHALL BE TRANSITIONED GRADUALLY TO THE INLET THROAT IN NO LESS THAN 5 FEET.
- CONCRETE GUTTER DEPRESSION AT THE INLET THROAT OPENING SHALL BE CONSTRUCTED PER INLET THROAT DEPRESSION DETAIL.
- INLET TOP SHALL BE PLACED SUCH THAT A MINIMUM OF 5" INLET THROAT OPENING IS ESTABLISHED PER DETAILS.
- INLET TOP SHALL BE PLACED IN A MANNER THAT MINIMIZES INTERFERENCE WITH SNOW PLOW OPERATIONS. THE FACES OF ALL INLET TOPS SHALL IN NO INSTANCE PROTRUDE BEYOND THE NORMAL GUTTER LINE OR ADJACENT CURB FACES.
- CURB FACES SHALL BE TRANSITIONED GRADUALLY AND UNIFORMLY TO THE INLET TOP FACE WITHIN 2 FEET OF THE INLET TOP.
- ALL REINFORCING STEEL SHALL BE EPOXY COATED.
- THE CAST IRON INLET COVER AND FRAME SHALL BE SET IN A BED OF MORTAR, AND CAREFULLY ADJUSTED TO PROPOSED GRADE.
- THE CONCRETE GUTTER ALONG THE ENTIRE LENGTH OF THE INLET OPENING SHALL BE CONSTRUCTED TO FORM THE INLET THROAT. THE INLET THROAT SHALL BE GRADUALLY DEPRESSED FROM THE EDGE OF GUTTER TO THE INLET VAULT PER INLET THROAT DEPRESSION TEMPLATE DETAIL.
- CONTRACTOR SHALL USE INLET THROAT DEPRESSION TEMPLATE, HELD AGAINST THE UPPER FRONT EDGE OF INLET, TO ENSURE ADEQUATE INLET THROAT DEPRESSION ALONG THE INLET OPENING.

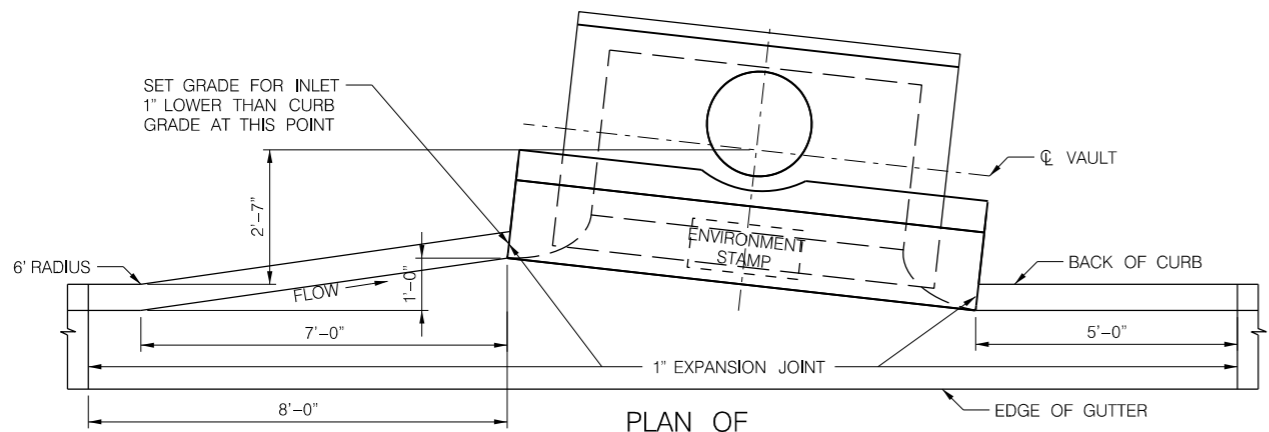


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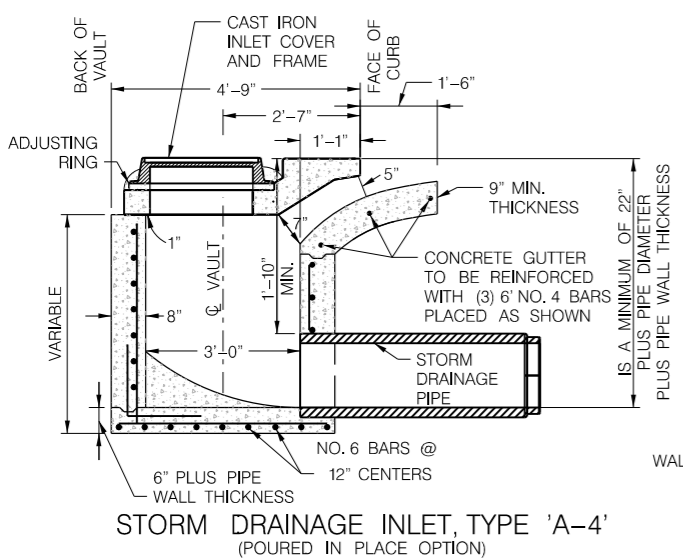
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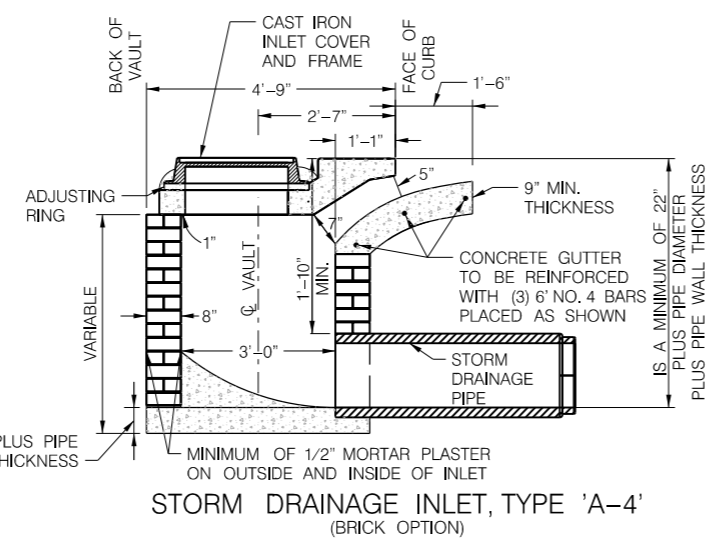
PLAN OF TYPE "A-4" STORM DRAINAGE INLET



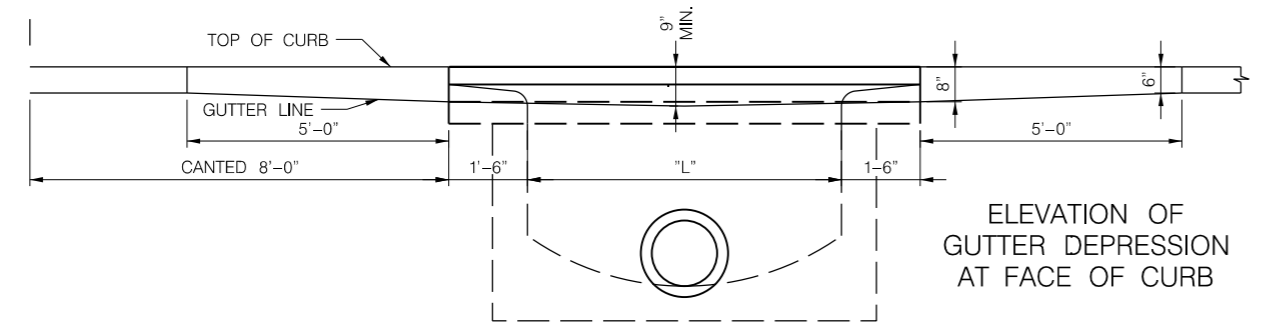
PLAN OF TYPE "A-4" CANTED STORM DRAINAGE INLET



STORM DRAINAGE INLET, TYPE 'A-4' (POURED IN PLACE OPTION)



STORM DRAINAGE INLET, TYPE 'A-4' (BRICK OPTION)

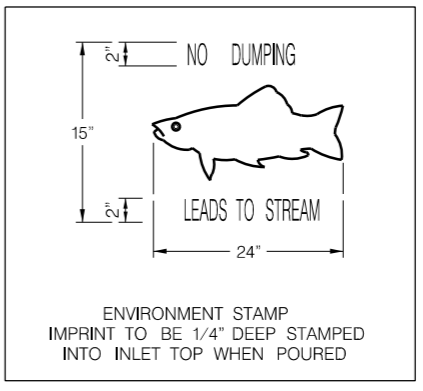


ELEVATION OF GUTTER DEPRESSION AT FACE OF CURB

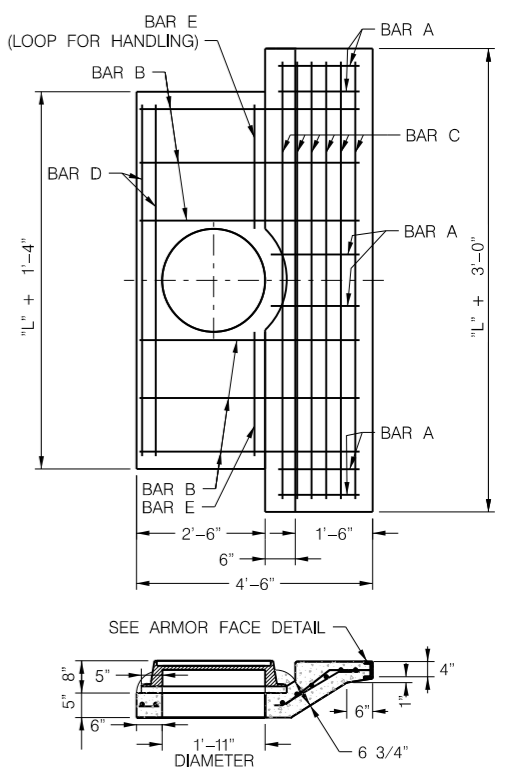
- GENERAL NOTES:
- ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO A.S.T.M. SERIAL DESIGNATION A-305-507 AND SHALL SATISFY THE BEND TEST REQUIREMENTS FOR STRUCTURAL GRADE STEEL IN ACCORDANCE WITH THE REQUIREMENTS. MINIMUM DEPTH OF EMBEDMENT FOR REINFORCING STEEL SHALL BE 2" UNLESS OTHERWISE INDICATED.
 - ALL CONCRETE SHALL BE L3500.
 - INLET TOP SHALL BE PRECAST UNLESS OTHERWISE APPROVED BY THE ENGINEER.
 - EACH INLET TOP SHALL INCLUDE A CAST IRON INLET COVER AND FRAME.
 - SEE (L.S.P. 162)
 - EACH INLET SHALL INCLUDE LENGTH OF CURB AS PER SPECIFICATIONS.
 - CURB GUTTER AND GUTTER LINE ON EACH SIDE OF THE INLET TOP SHALL BE TRANSITIONED GRADUALLY TO THE INLET THROAT IN NO LESS THAN 5 FEET.
 - CONCRETE GUTTER DEPRESSION AT THE INLET THROAT OPENING SHALL BE CONSTRUCTED PER INLET THROAT DEPRESSION DETAIL.
 - INLET TOP SHALL BE PLACED SUCH THAT A MINIMUM OF 5" INLET THROAT OPENING IS ESTABLISHED PER DETAILS.
 - INLET TOP SHALL BE PLACED IN A MANNER THAT MINIMIZES INTERFERENCE WITH SNOW PLOW OPERATIONS. THE FACES OF ALL INLET TOPS SHALL IN NO INSTANCE PROTRUDE BEYOND THE NORMAL GUTTER LINE OR ADJACENT CURB FACES.
 - CURB FACES SHALL BE TRANSITIONED GRADUALLY AND UNIFORMLY TO THE INLET TOP FACE WITHIN 2 FEET OF THE INLET TOP.
 - ALL REINFORCING STEEL SHALL BE EPOXY COATED.
 - THE CAST IRON INLET COVER AND FRAME SHALL BE SET IN A BED OF MORTAR, AND CAREFULLY ADJUSTED TO PROPOSED GRADE.
 - EACH TYPE A-4 INLET SHALL INCLUDE METAL FACE ARMORING AS SHOWN IN THE FACE ARMOR DETAIL.
 - WHEN TRANSITIONING CURB TO AN ARMORED INLET TOP, THE CURB FACE ADJACENT TO THE INLET TOP SHOULD BE SIMILAR TO A BARRIER STYLE CURB WITH 8" VERTICAL FACE.
 - THE CONCRETE GUTTER ALONG THE ENTIRE LENGTH OF THE INLET OPENING SHALL BE CONSTRUCTED TO FORM THE INLET THROAT. THE INLET THROAT SHALL BE GRADUALLY DEPRESSIONED FROM THE EDGE OF GUTTER TO THE INLET VAULT PER INLET THROAT DEPRESSION TEMPLATE DETAIL.
 - CONTRACTOR SHALL USE INLET THROAT DEPRESSION TEMPLATE, HELD AGAINST THE UPPER FRONT EDGE OF INLET, TO ENSURE ADEQUATE INLET THROAT DEPRESSION ALONG THE INLET OPENING.

SCHEDULE OF REINFORCEMENT FOR PRECAST CONCRETE INLET TOP

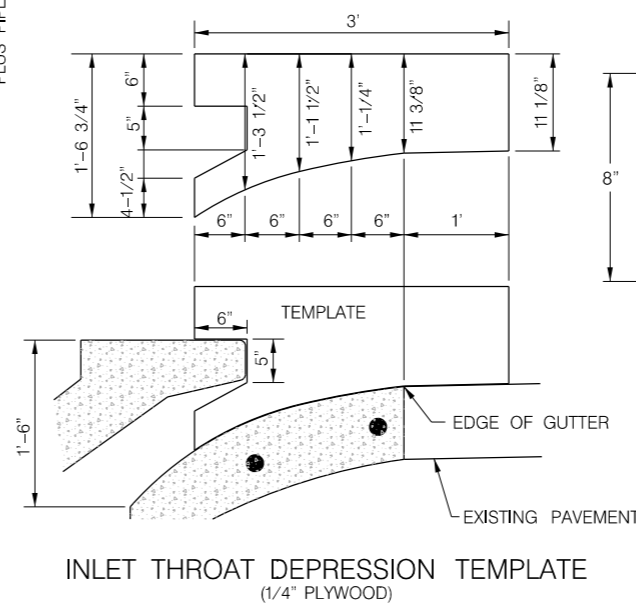
BAR	SHAPE	INLET OPENING = "L"		
		No.	Size	Length
A		6	#4	1'-9 1/2"
B		10	#4	4'-6"
C		8	#4	8'-9"
D		2	#4	7'-0"
E		2	#4	3'-0"



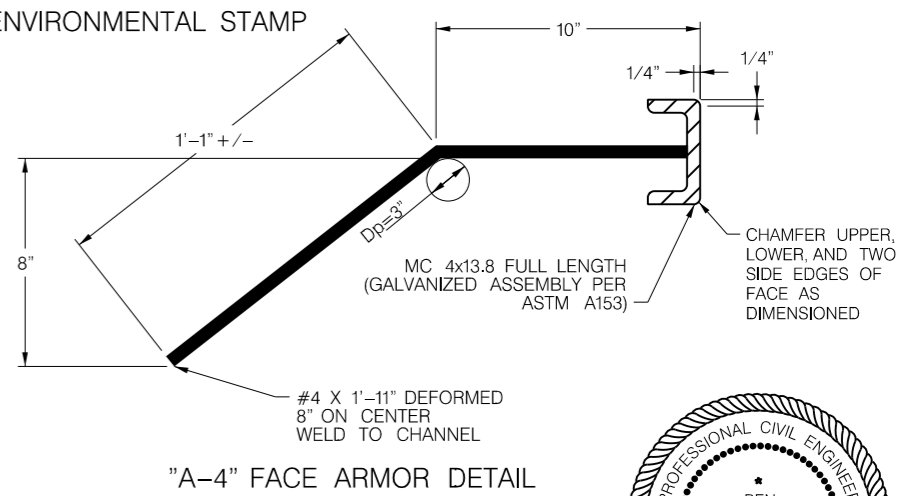
ENVIRONMENTAL STAMP



PLAN & SECTION OF PRECAST REINFORCED CONCRETE ARMORED INLET TOP



INLET THROAT DEPRESSION TEMPLATE (1/4" PLYWOOD)

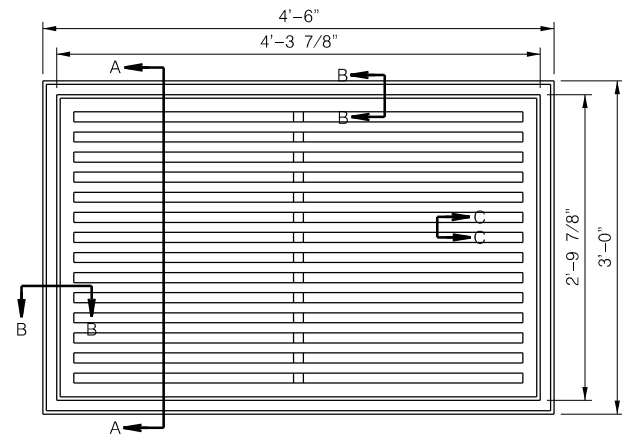


"A-4" FACE ARMOR DETAIL



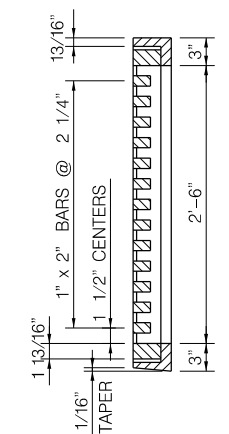
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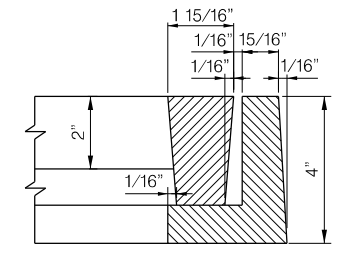


NOTE: CLEAR OPENING = 5.5 SQUARE FEET

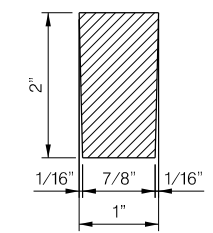
TYPE 'H' GRATE AND FRAME



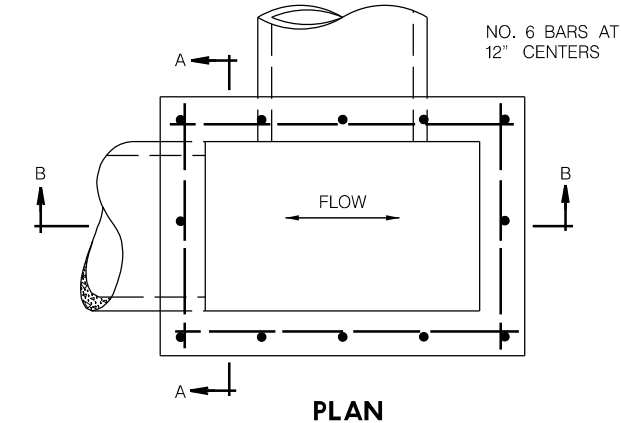
SECTION A-A



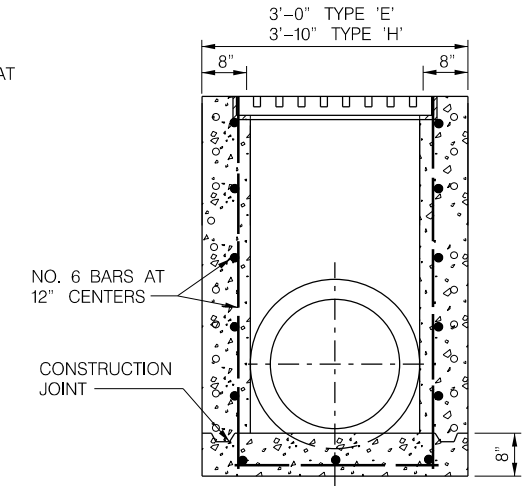
SECTION B-B



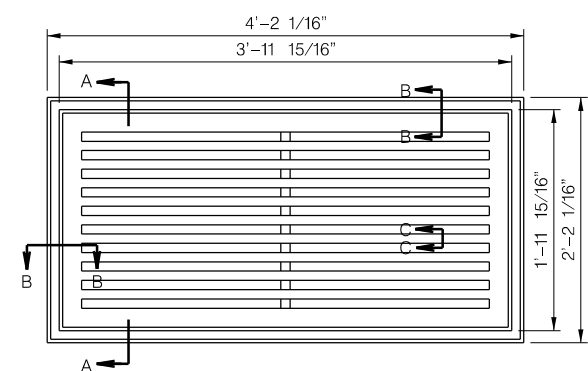
SECTION C-C



PLAN

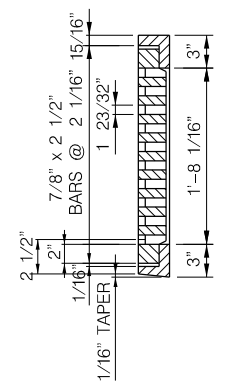


SECTION A-A

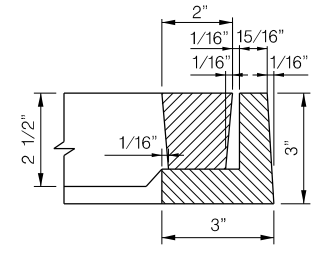


NOTE: CLEAR OPENING = 3.6 SQUARE FEET

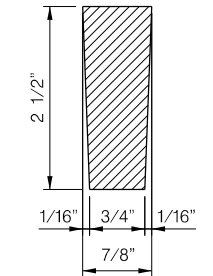
TYPE 'E' GRATE AND FRAME



SECTION A-A



SECTION B-B

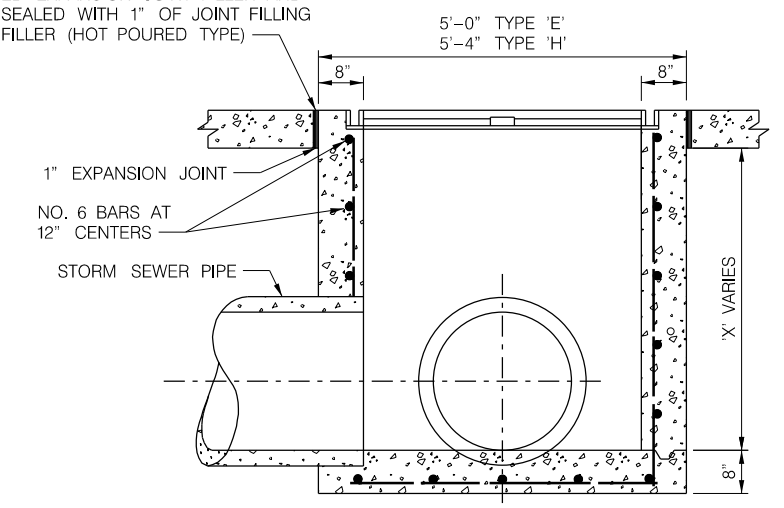


SECTION C-C

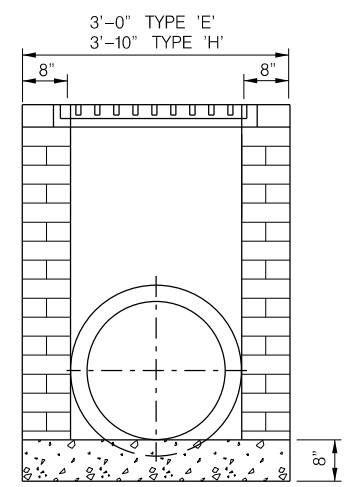
'X' DEPTH In Ft.	TYPE 'E'		TYPE 'H'	
	CONCRETE CUBIC YARDS	STEEL POUNDS	CONCRETE CUBIC YARDS	STEEL POUNDS
3.0	1.4	135	1.7	169
4.0	1.7	171	2.1	212
5.0	2.0	207	2.5	256
6.0	2.4	243	2.9	299
7.0	2.7	279	3.3	342
8.0	3.0	315	3.7	385
9.0	3.4	351	4.1	428
Add 0.1	0.033	3.6	0.040	4.3

EACH INLET SHALL INCLUDE A CAST IRON GRATE AND FRAME.
 TABLE DOES NOT INCLUDE DEDUCTIONS FOR PIPE OPENING.

IN CONCRETE PAVEMENT, EXPANSION JOINT TO BE FILLED WITH PREFORMED EXPANSION JOINT FILLER AND SEALED WITH 1" OF JOINT FILLING FILLER (HOT POURED TYPE)

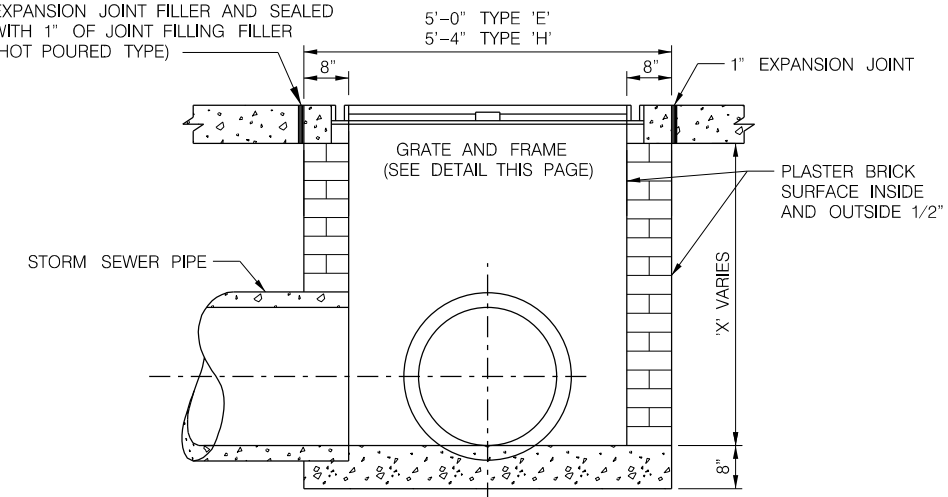


**SECTION B-B
TYPE 'E₁' AND 'H₁' GRATE INLET**



**SECTION A-A
TYPE 'E₂' AND 'H₂' GRATE INLET**

IN CONCRETE PAVEMENT, EXPANSION JOINT TO BE FILLED WITH PREFORMED EXPANSION JOINT FILLER AND SEALED WITH 1" OF JOINT FILLING FILLER (HOT POURED TYPE)



**SECTION B-B
TYPE 'E₂' AND 'H₂' GRATE INLET**

GENERAL NOTES:
 ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO A.S.T.M. SERIAL DESIGNATION A-305-507 AND SHALL SATISFY THE BEND TEST REQUIREMENTS FOR STRUCTURAL GRADE STEEL IN ACCORDANCE WITH THE REQUIREMENTS.

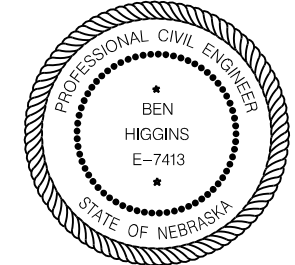
ALL CONCRETE SHALL BE L3500.

MINIMUM DEPTH OF EMBEDMENT FOR REINFORCING STEEL SHALL BE 2" UNLESS OTHERWISE INDICATED.

ALL CASTINGS TO BE COATED WITH BITUMINOUS PAINT.

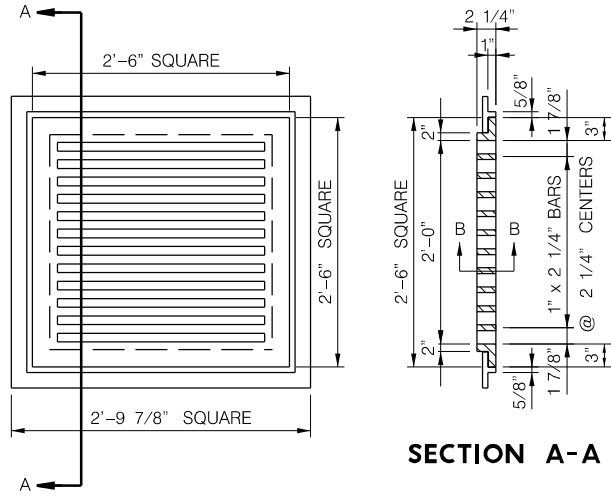
BRICK GRATE INLET SHALL NOT EXCEED 72"

ALL REINFORCING STEEL TO BE EPOXY COATED.



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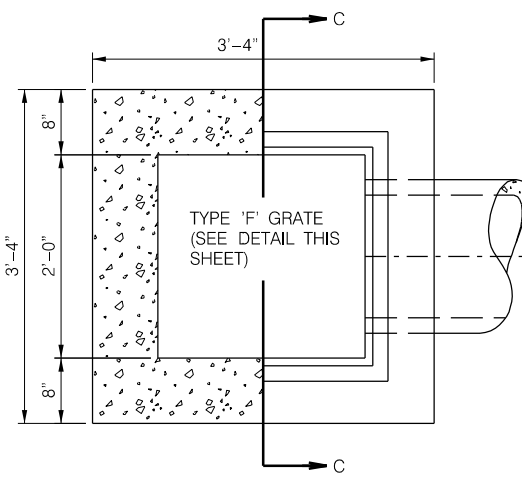
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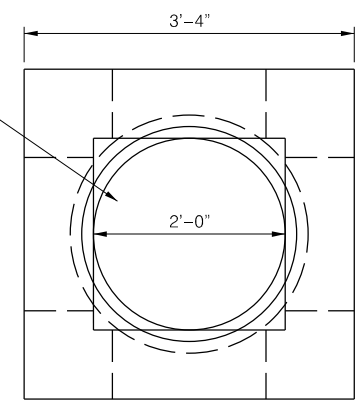
SECTION B-B

SECTION A-A

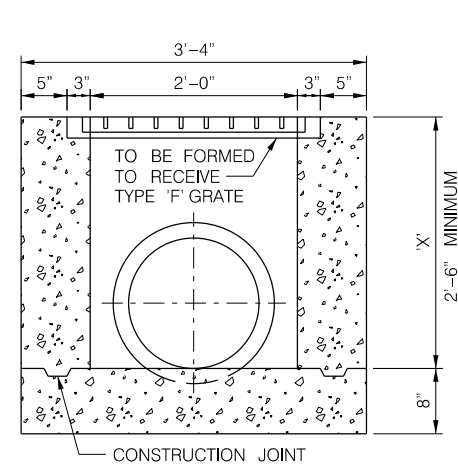
TYPE 'F' GRATE INLET



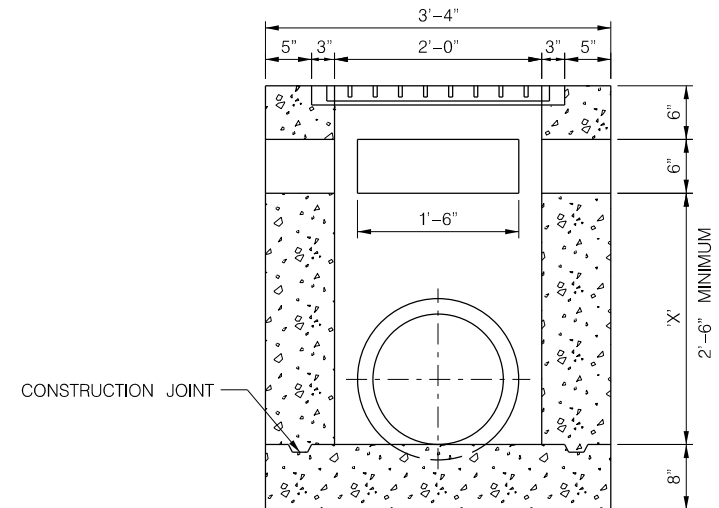
NOTE:
 FOR DETAIL OF
 COVER AND FRAME,
 SEE L.S.P. 162



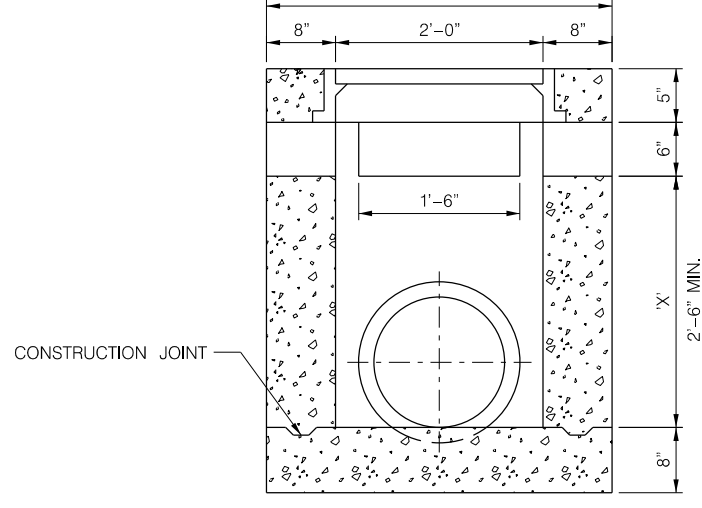
**DETAIL OF
 TYPE 'F-3' INLET TOP**



**SECTION C-C
 TYPE 'F-1A'**



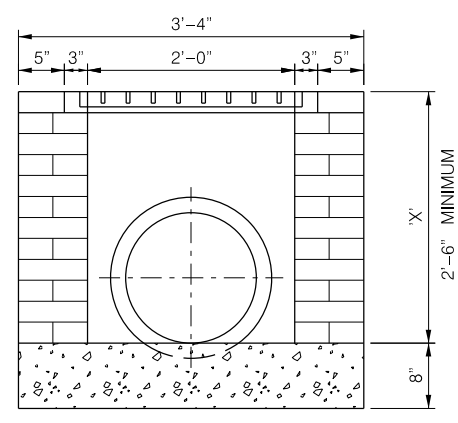
**SECTION C-C
 TYPE 'F-2A'**



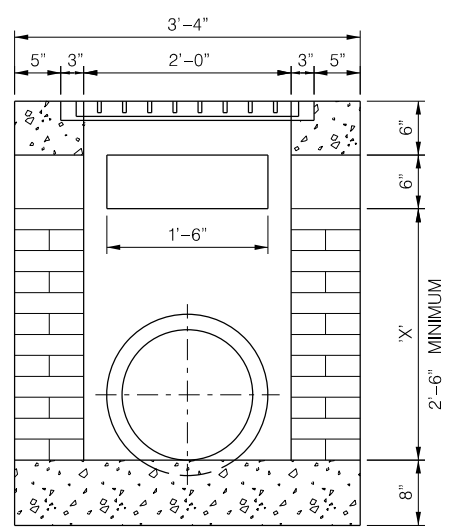
**SECTION C-C
 TYPE 'F-3A'**

APPROXIMATE QUANTITIES FOR DRAINAGE INLETS			
'X' DEPTH	TYPE 'F-1A'	TYPE 'F-2A'	TYPE 'F-3A'
FEET	CONC. CU. YDS.	CONC. CU. YDS.	CONC. CU. YDS.
3.0	1.1	1.3	1.3
4.0	1.3	1.5	1.5
5.0	1.6	1.8	1.8
6.0	1.8	2.1	2.1
7.0	2.1	2.3	2.3
8.0	2.4	2.6	2.6
9.0	2.6	2.8	2.8
ADD 0.1	0.03	0.026	0.026

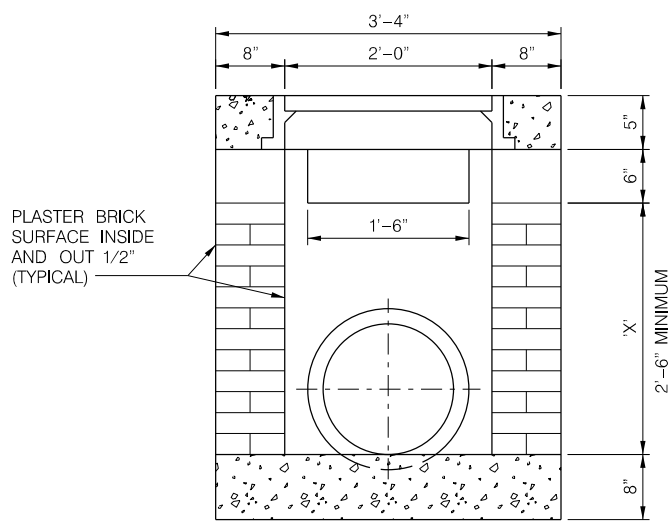
EACH INLET SHALL INCLUDE A CAST IRON GRATE AND FRAME.
 TABLE DOES NOT INCLUDE DEDUCTION FOR PIPE OPENING.



TYPE 'F-1B'



TYPE 'F-2B'



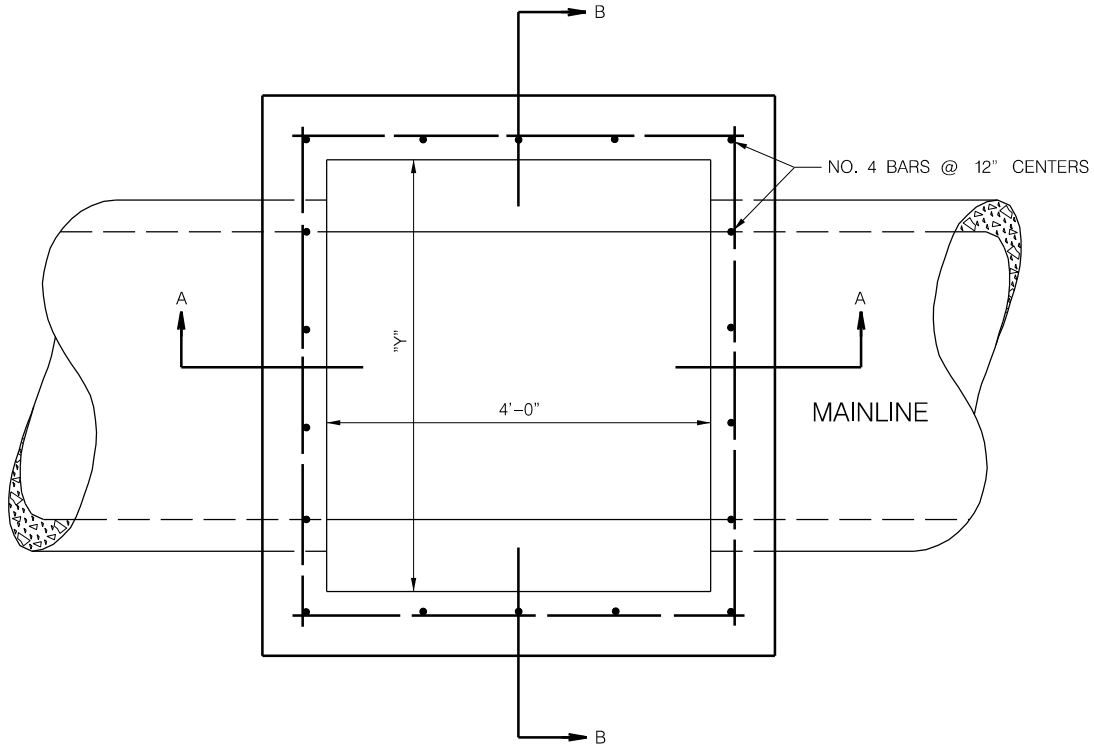
TYPE 'F-3B'

NOTE:
 PROVIDE OPENINGS IN WALLS OF TYPE "F-2"
 AND "F-3" INLETS AS NOTED ON THE PLANS.
 DETAILS AND QUANTITIES REFLECT OPENINGS
 IN 3 WALLS AS TYPICAL FOR TYPE "F-2" AND
 TYPE "F-3" GRATE INLETS.
 ALL CONCRETE SHALL BE L3500.
 ALL CASTINGS ARE TO BE COATED WITH
 BITUMINOUS PAINT.
 BRICK GRATE INLET SHALL NOT EXCEED 6'.



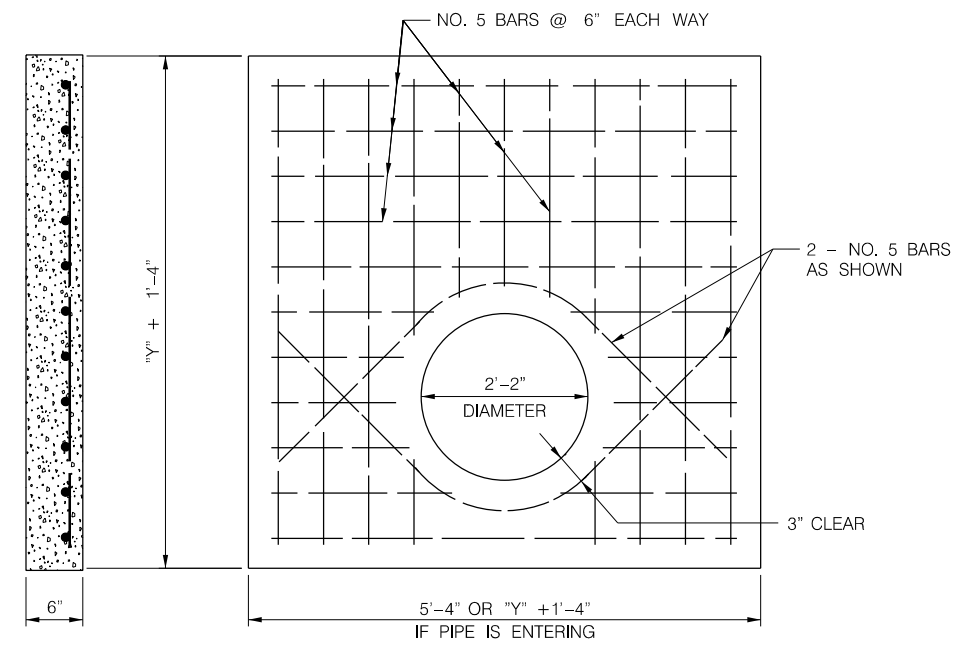
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PIPE DIAMETER	PIPE WALL THICKNESS-"T"	"X" (MINIMUM)	"Y"
15"-30" INC.	3 1/2"	VARIABLES	4'-6"
36"	4"	3'-9"	5'-0"
42"	4 1/2"	4'-0"	5'-6"
48"	5"	4'-5"	6'-0"
54"	5 1/2"	5'-0"	6'-6"
60"	6"	5'-6"	7'-0"
66"	6 1/2"	6'-1"	7'-8"
72"	7"	6'-7"	8'-3"
78"	7 1/2"	7'-2"	8'-9"

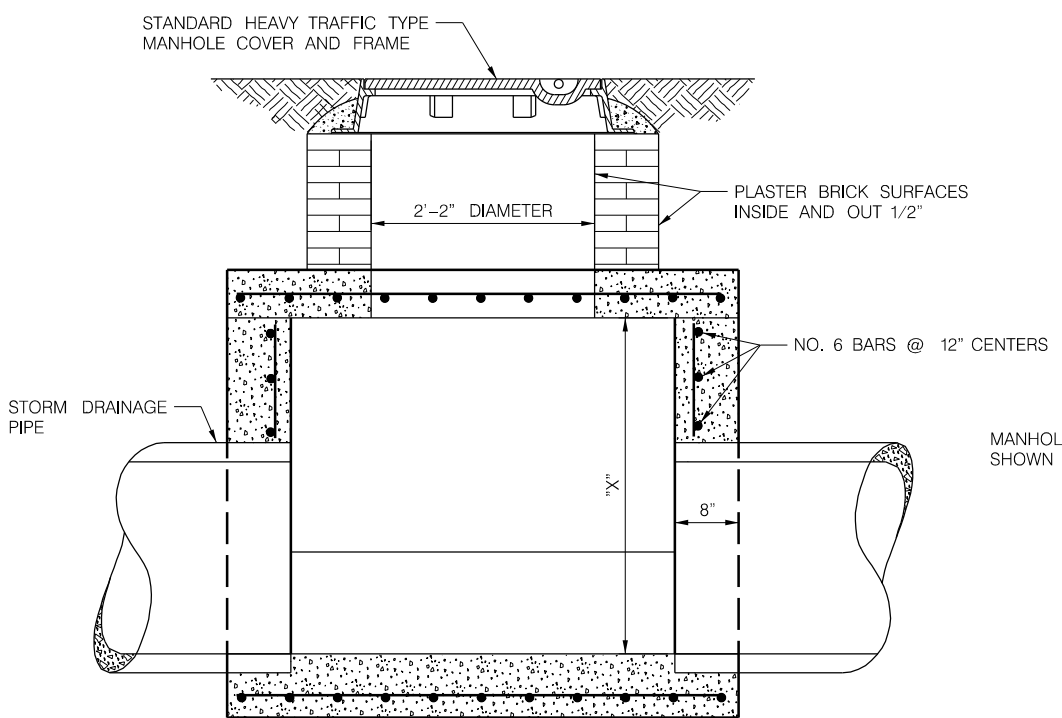
STANDARD PROCEDURES:
 FOR MANHOLES IN PAVEMENT, PLACE STEPS IN WALL FARTHEST FROM GUTTER. FOR MANHOLES BEHIND CURBS, PLACE STEPS FARTHEST FROM BACK OF CURB.
 "Y" IS BASED ON THE LARGEST PIPE IN OR OUT



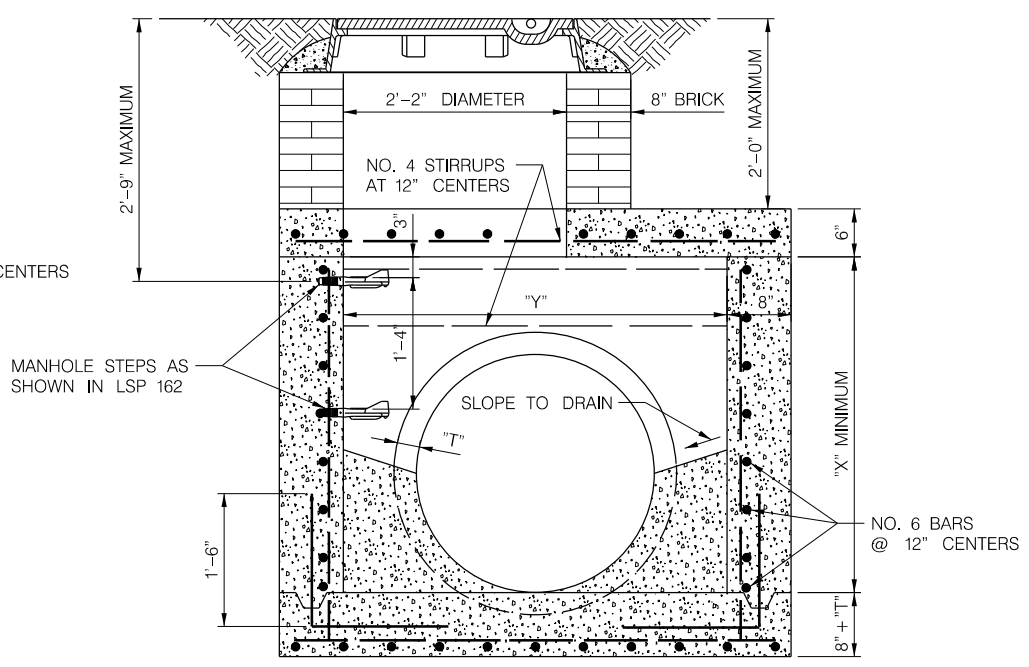
PRECAST MANHOLE TOP

STORM DRAINAGE MANHOLE TYPE M-1

GENERAL NOTES:
 ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM SERIAL DESIGNATION A-305-507 AND SHALL SATISFY THE BEND TEST REQUIREMENTS FOR STRUCTURAL GRADE STEEL IN ACCORDANCE WITH THE REQUIREMENTS.
 ALL CONCRETE SHALL BE L3500.
 MINIMUM DEPTH OF EMBEDMENT FOR REINFORCING STEEL SHALL BE 2" UNLESS OTHERWISE INDICATED.
 THE CAST IRON MANHOLE RING AND COVER SHALL BE SET IN A BED OF MORTAR, AND CAREFULLY ADJUSTED TO PROPOSED GRADE.
 MANHOLE RING AND COVER SHALL BE CITY OF LINCOLN HEAVY TRAFFIC TYPE. (SEE L.S.P. 162)
 MANHOLE STEPS SHALL BE CITY OF LINCOLN STANDARD MANHOLE STEPS. (SEE L.S.P. 162)
 ALL REINFORCING STEEL SHALL BE EPOXY COATED.



SECTION A-A



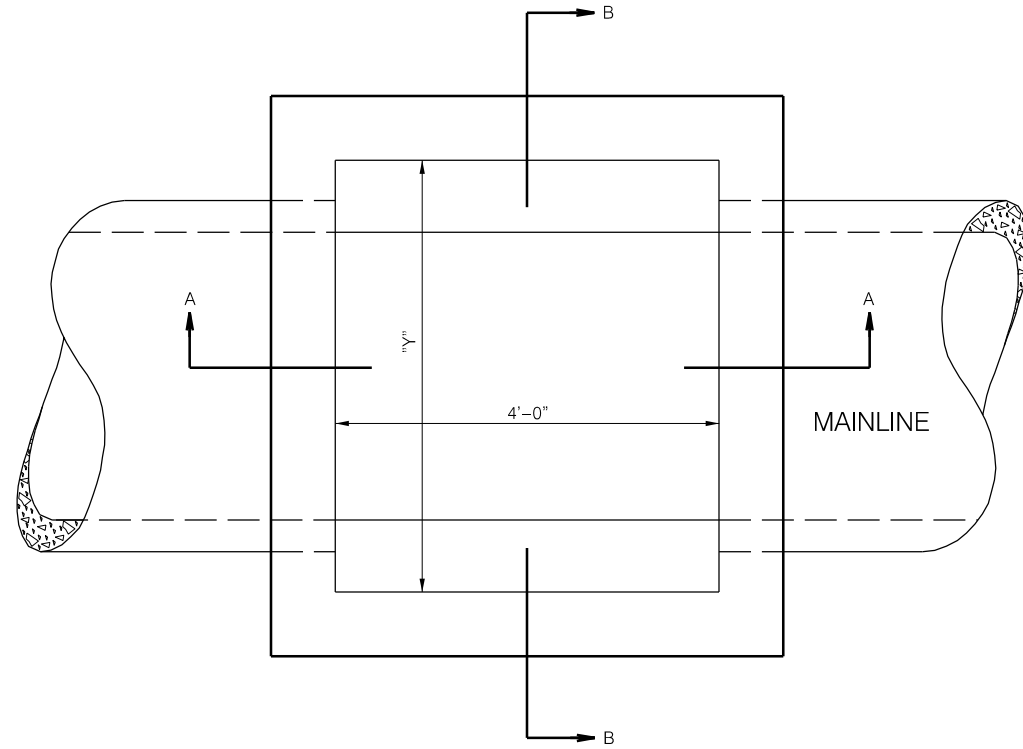
SECTION B-B

STORM DRAINAGE MANHOLE TYPE M-1



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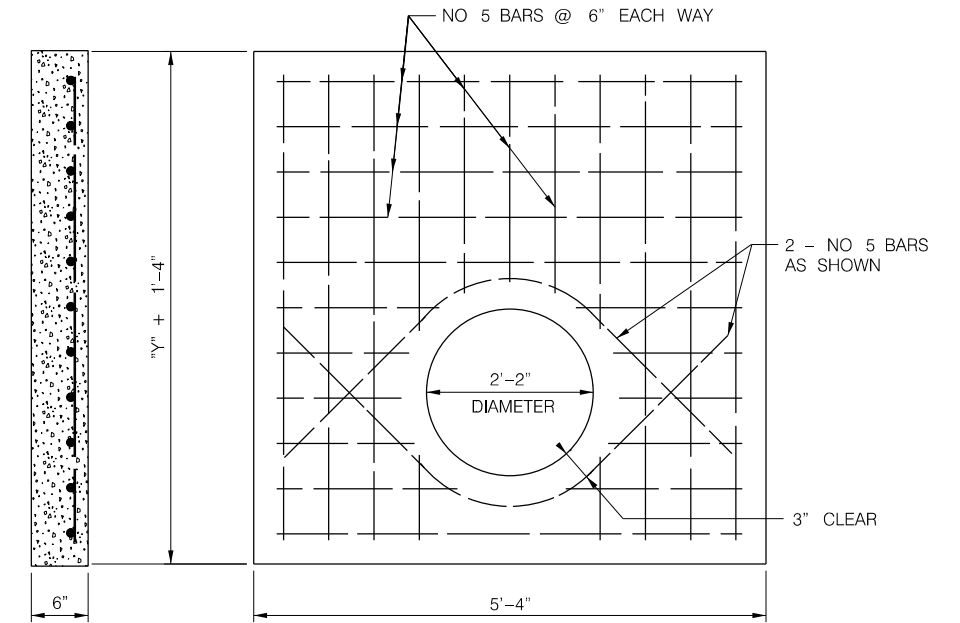


PIPE DIAMETER	PIPE WALL THICKNESS-"T"	"X" (MINIMUM)	"Y"
15"-30" INC.	3 1/2"	VARIES	4'-6"
36"	4"	3'-9"	5'-0"
42"	4 1/2"	4'-0"	5'-6"
48"	5"	4'-5"	6'-0"
54"	5 1/2"	5'-0"	6'-6"
60"	6"	5'-6"	7'-0"
66"	6 1/2"	6'-1"	7'-8"
72"	7"	6'-7"	8'-3"
78"	7 1/2"	7'-2"	8'-9"

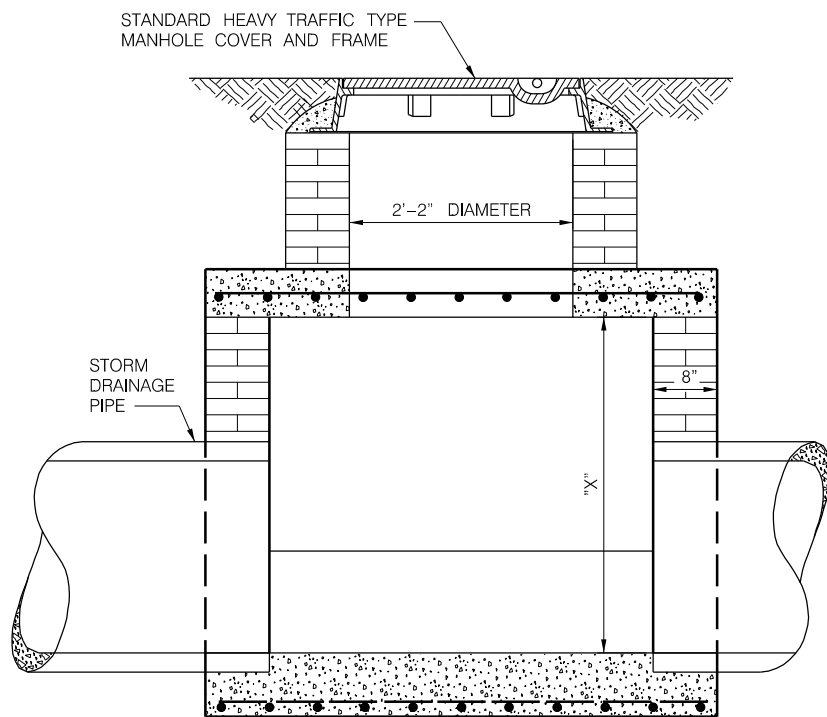
STANDARD PROCEDURES:

FOR MANHOLES IN PAVEMENT, PLACE STEPS IN WALL FARTEST FROM GUTTER. FOR MANHOLES BEHIND CURBS, PLACE STEPS FARTEST FROM BACK OF CURB.

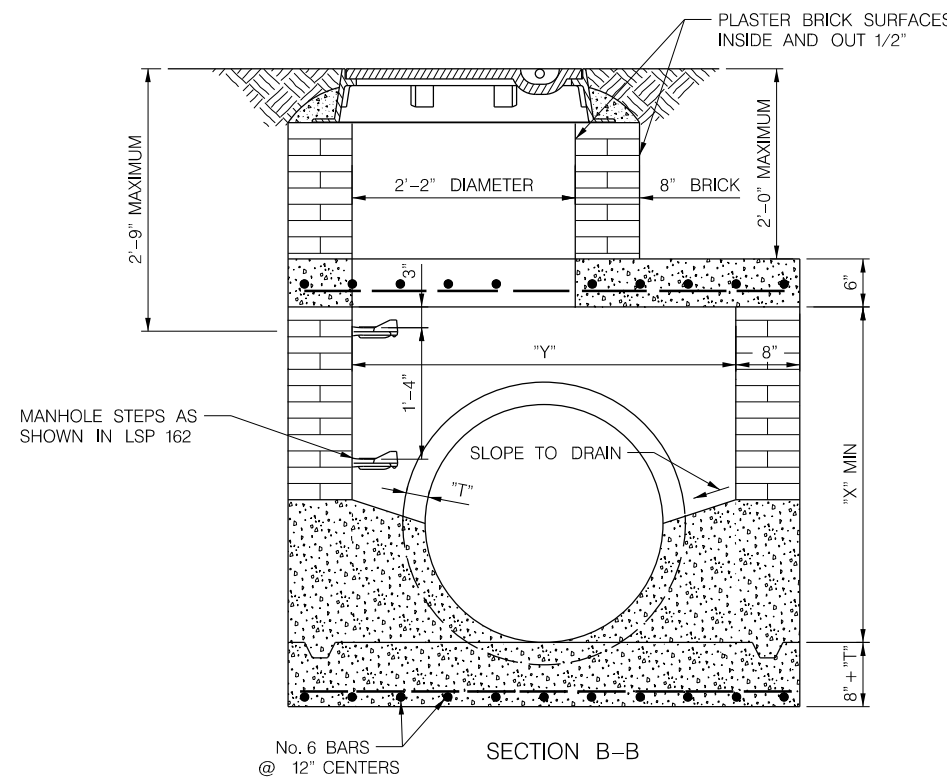
"Y" IS BASED ON THE LARGEST PIPE IN OR OUT



PRECAST MANHOLE TOP



SECTION A-A



SECTION B-B

STORM DRAINAGE MANHOLE TYPE M-1

GENERAL NOTES:

ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM SERIAL DESIGNATION A-305-507 AND SHALL SATISFY THE BEND TEST REQUIREMENTS FOR STRUCTURAL GRADE STEEL IN ACCORDANCE WITH THE REQUIREMENTS.

ALL CONCRETE SHALL BE L3500.

MINIMUM DEPTH OF EMBEDMENT FOR REINFORCING STEEL SHALL BE 2" UNLESS OTHERWISE INDICATED.

THE CAST IRON MANHOLE RING AND COVER SHALL SET IN A BED OF MORTAR, AND CAREFULLY ADJUSTED TO PROPOSED GRADE.

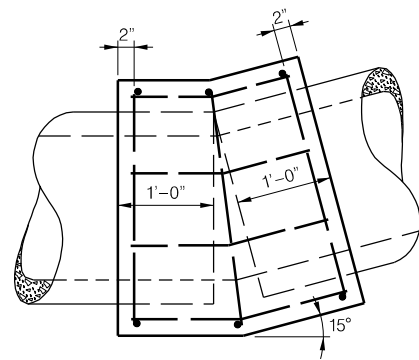
MANHOLE RING AND COVER SHALL BE CITY OF LINCOLN HEAVY TRAFFIC TYPE. (SEE L.S.P. 162)

MANHOLE STEPS SHALL BE CITY OF LINCOLN STANDARD MANHOLE STEPS. (SEE L.S.P. 162)

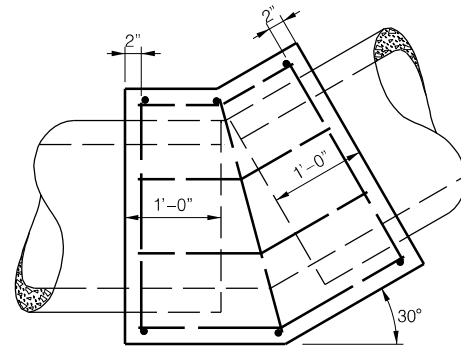
ALL REINFORCING STEEL SHALL BE EPOXY COATED.



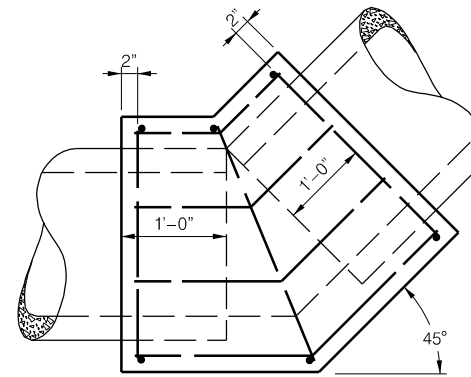
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SIDE ELEVATION

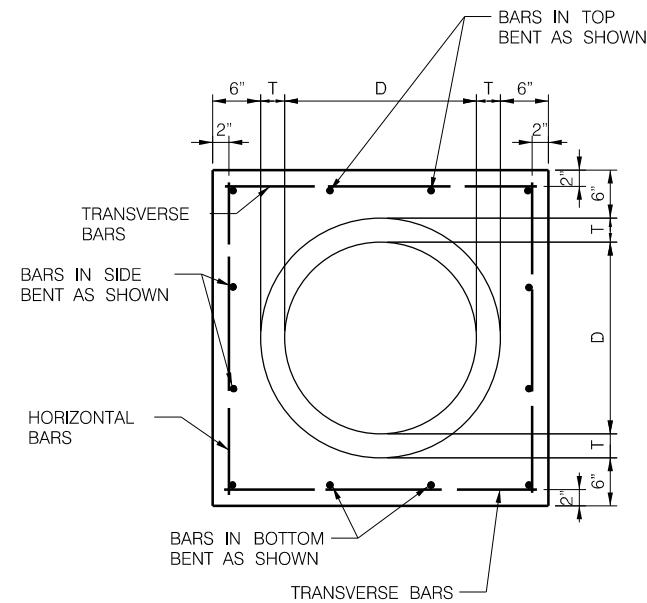


SIDE ELEVATION



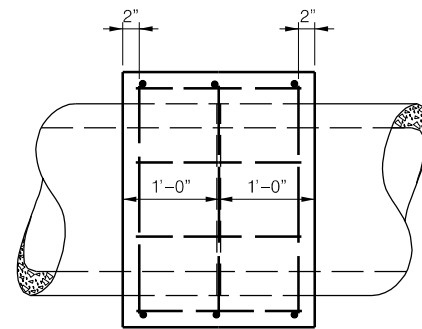
SIDE ELEVATION

R.C. ELBOWS FOR VERTICAL DEFLECTION ONLY

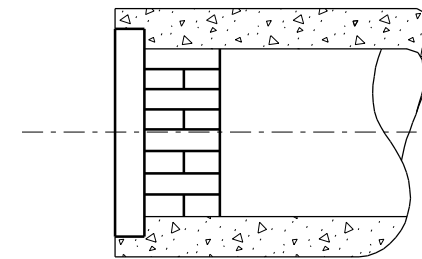


END ELEVATION

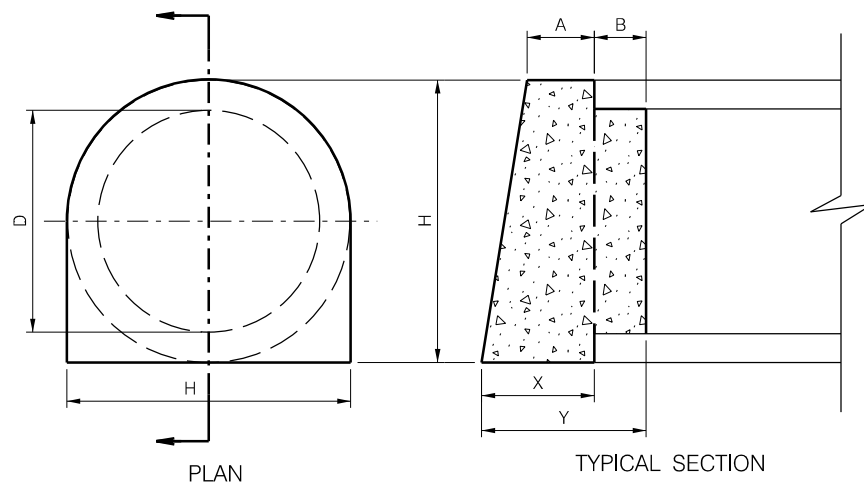
R.C. COLLARS



SIDE ELEVATION



TEMPORARY BRICK PLUG



PLAN

TYPICAL SECTION

CONCRETE PLUGS

CONCRETE PLUGS						
D	H	A	B	X	Y	CONCRETE CU. YDS.
15"	1'-7 1/2"	4"	4"	6"	10"	0.05
18"	1'-11"	4"	4"	6"	10"	0.07
21"	2'-4"	4"	4"	6"	10"	0.12
24"	2'-6"	5"	4"	8"	1'-0"	0.15
30"	3'-1"	5"	4"	8"	1'-0"	0.23
36"	3'-8"	6"	4"	10"	1'-2"	0.39
42"	4'-3"	6"	6"	11"	1'-5"	0.61
48"	4'-10"	7"	8"	1'-0"	1'-8"	0.94
54"	5'-5"	7"	9"	1'-1"	1'-10"	1.27
60"	6'-0"	8"	10"	1'-2"	2'-0"	1.72

REINF. CONCRETE ELBOWS AND COLLARS

PIPE SIZE "D"	KIND	"T"	NUMBER OF BARS			CONC. CU. YDS.	STEEL LBS.	
			TRANS.-VERT.	TOP	I-SIDE			BOT.
15"	COLLAR	2 1/4"	12	4	2	4	0.36	50
	15°						0.40	54
	30°						0.43	57
	45°						0.50	59
18"	COLLAR	2 1/2"	12	4	2	4	0.42	55
	15°						0.49	59
	30°						0.56	63
	45°						0.64	66
21"	COLLAR	2 3/4"	12	4	2	4	0.48	57
	15°						0.54	61
	30°						0.63	66
	45°						0.72	69
24"	COLLAR	3"	12	4	2	4	0.53	61
	15°						0.63	65
	30°						0.74	70
	45°						0.86	74
30"	COLLAR	3 1/2"	12	4	2	5	0.63	71
	15°						0.79	76
	30°						0.96	82
	45°						1.14	88
36"	COLLAR	4"	12	4	2	5	0.77	76
	15°						1.01	83
	30°						1.26	91
	45°						1.53	98
42"	COLLAR	4 1/2"	12	5	3	6	0.96	93
	15°						1.32	104
	30°						1.69	115
	45°						2.09	130
48"	COLLAR	5"	12	5	3	6	1.16	98
	15°						1.66	110
	30°						2.19	123
	45°						2.75	137
54"	COLLAR	5 1/2"	12	5	3	6	1.34	108
	15°						2.01	121
	30°						2.70	136
	45°							
60"	COLLAR	6"	12	5	3	6	1.54	110
	15°						2.29	128
	30°						3.28	144
	45°							

NOTE: ALL REINFORCING STEEL SHALL BE NO 5 BARS, PLACED AS SHOWN.

GENERAL NOTES:

ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO A.S.T.M. SERIAL DESIGNATION A-305-50T AND SHALL SATISFY THE BEND TEST REQUIREMENTS. FOR STRUCTURAL GRADE STEEL IN ACCORDANCE WITH THE REQUIREMENTS.

ALL CONCRETE SHALL BE L3500.

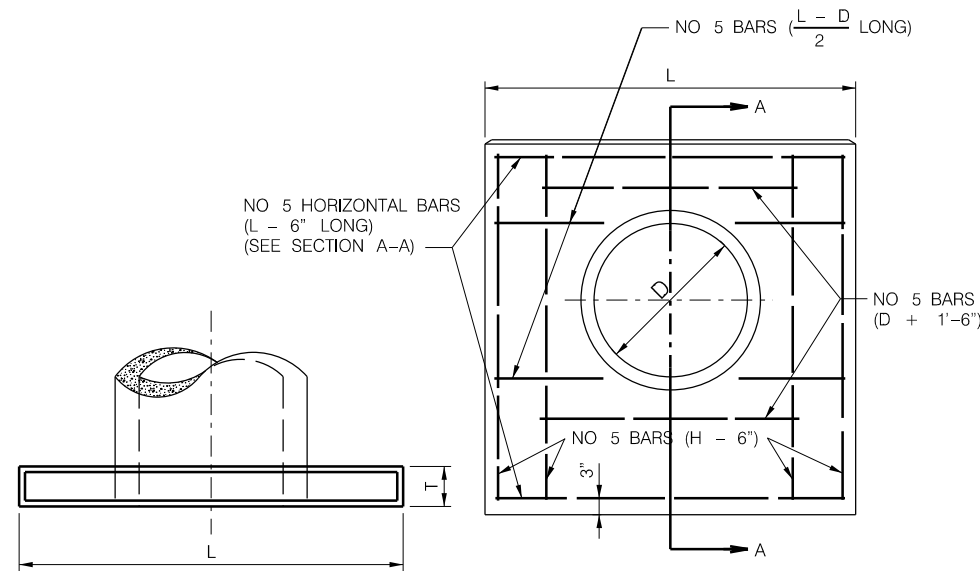
MINIMUM DEPTH OF EMBEDMENT FOR REINFORCING STEEL TO BE AS NOTED. ALL REINFORCING STEEL SHALL BE EPOXY COATED.



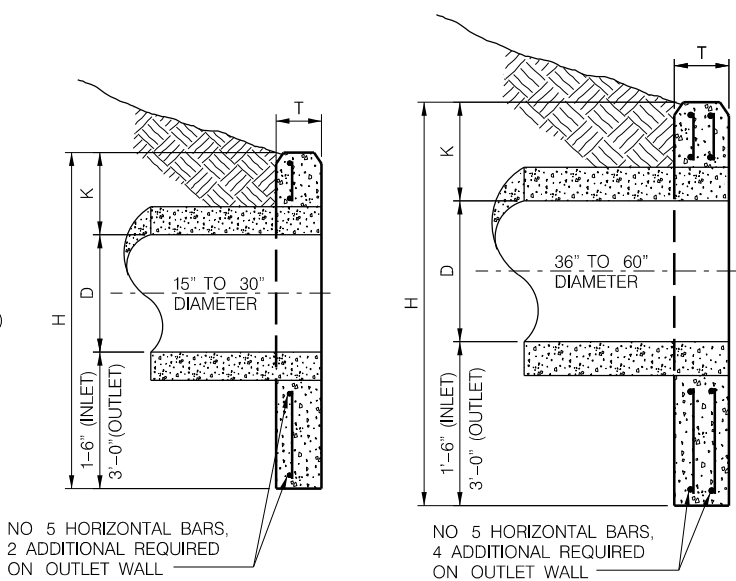
R.C. COLLARS, ELBOWS AND PLUGS

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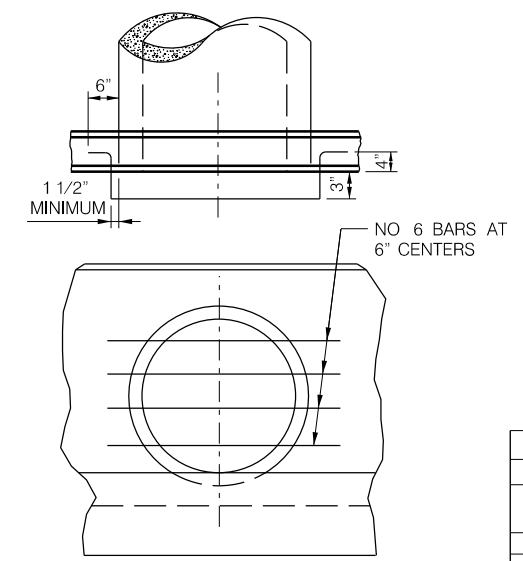
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 DATE: 11/27/2019
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TYPE "A" HEADWALL



SECTION A-A

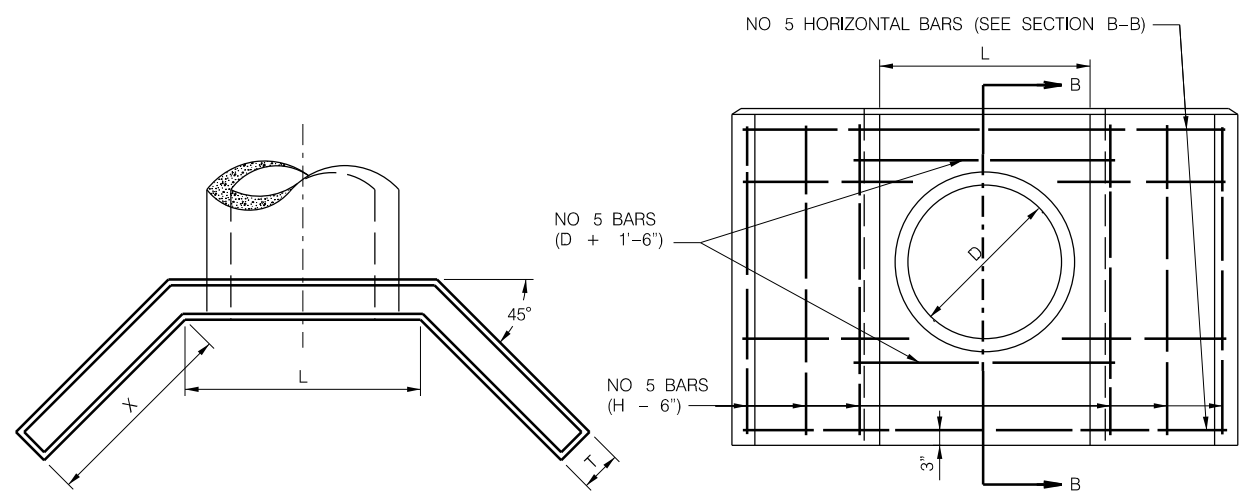


R.C. PIPE END GUARD

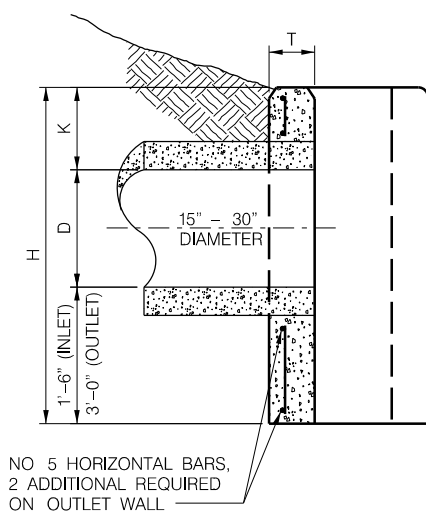
END GUARD			
PIPE SIZE D	NUMBER OF VERTICAL BARS	NUMBER OF HORIZONTAL BARS	POUNDS OF STEEL EACH HEADWALL
15"	0	2	14
18"	0	2	15
21"	1	2	24
24"	1	3	34
30"	1	4	46
36"	1	5	61
42"	2	6	88
48"	2	7	107
54"	2	8	127
60"	3	9	163

TYPE "A" HEADWALL									
D	DIMENSIONS			INLET		OUTLET			
	H	L	K	T	CONCRETE CUBIC YARDS	STEEL POUNDS	CONCRETE CUBIC YARDS		
15"	3'-9"	5'-3"	3'-3"	1'-0"	6"	0.19	31	0.28	43
18"	4'-0"	5'-6"	3'-6"	1'-0"	6"	0.21	33	0.30	46
21"	4'-3"	5'-9"	4'-6"	1'-0"	6"	0.28	38	0.41	53
24"	4'-6"	6'-0"	4'-10"	1'-0"	6"	0.31	41	0.47	55
30"	5'-1"	6'-7"	5'-10"	1'-1"	6"	0.34	47	0.57	65
36"	5'-7"	7'-1"	6'-8"	1'-1"	8"	0.66	105	0.91	145
42"	6'-2"	7'-8"	7'-10"	1'-2"	8"	0.85	120	1.13	164
48"	6'-8"	8'-2"	9'-10"	1'-2"	8"	1.03	134	1.36	183
54"	7'-3"	8'-9"	10'-2"	1'-3"	8"	1.25	149	1.63	202
60"	7'-9"	9'-3"	11'-2"	1'-3"	8"	1.44	161	1.85	219

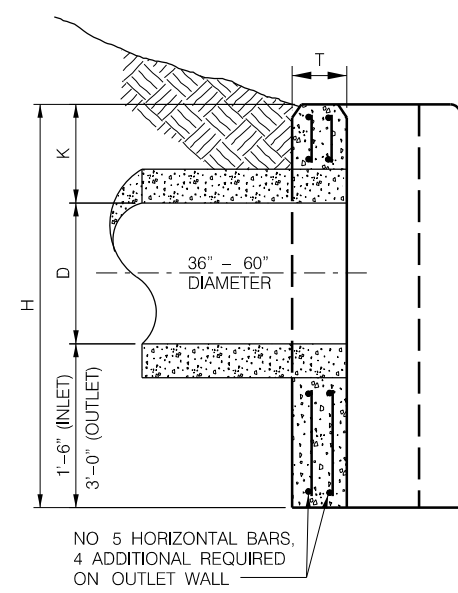
NOTE: ALL REINFORCING STEEL SHALL BE NO 5 BARS, PLACED AS SHOWN.



TYPE "B" HEADWALL

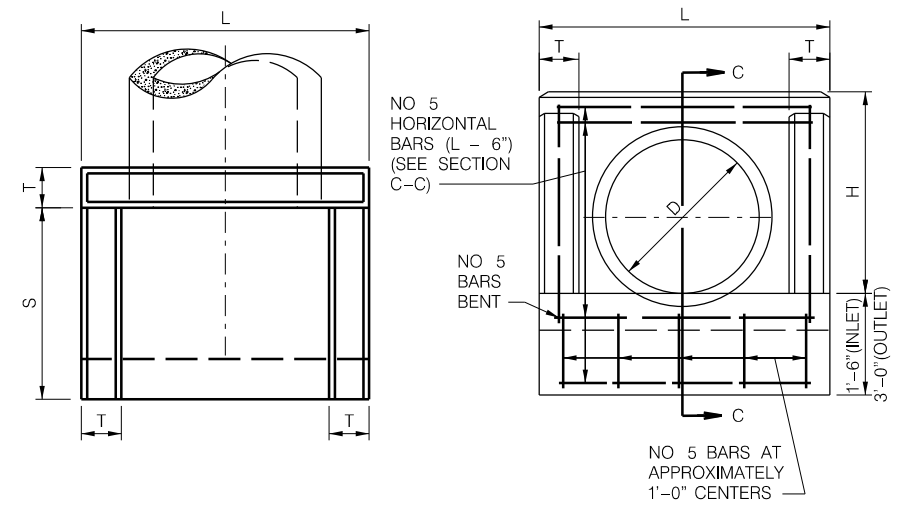


SECTION B-B

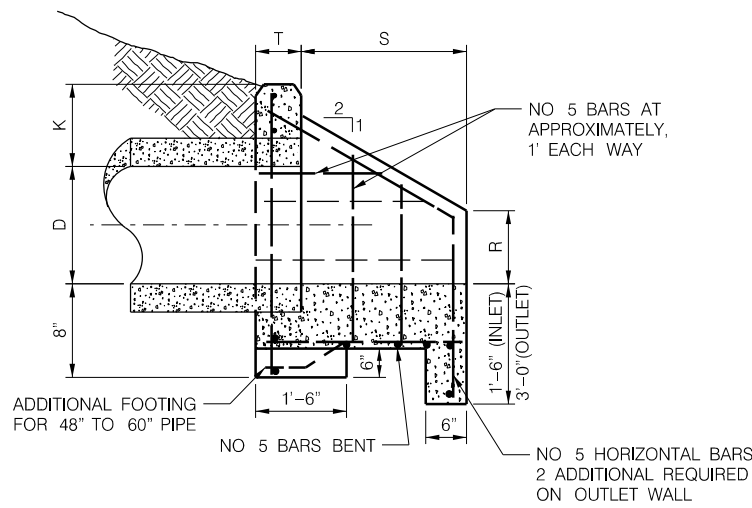


TYPE "B" HEADWALL										
D	DIMENSIONS			INLET		OUTLET				
	H	L	K	X	T	CONCRETE CUBIC YARDS	STEEL POUNDS	CONCRETE CUBIC YARDS	STEEL POUNDS	
15"	3'-9"	5'-3"	2'-2"	1'-0"	1'-0"	6"	0.29	43	0.42	64
18"	4'-0"	5'-6"	2'-5"	1'-0"	1'-0"	6"	0.32	46	0.46	68
21"	4'-3"	5'-9"	2'-9"	1'-0"	1'-3"	6"	0.39	51	0.55	75
24"	4'-6"	6'-0"	3'-0"	1'-0"	1'-6"	6"	0.46	55	0.64	81
30"	5'-1"	6'-7"	3'-7"	1'-1"	2'-0"	6"	0.63	66	0.86	87
36"	5'-7"	7'-1"	4'-2"	1'-1"	2'-0"	8"	0.95	146	1.27	205
42"	6'-2"	7'-8"	4'-9"	1'-2"	2'-6"	8"	1.22	163	1.60	234
48"	6'-8"	8'-2"	5'-4"	1'-2"	3'-0"	8"	1.51	182	1.95	261
54"	7'-3"	8'-9"	5'-11"	1'-3"	3'-6"	8"	1.85	203	2.35	287
60"	7'-9"	9'-3"	6'-6"	1'-3"	3'-6"	8"	2.00	214	2.52	303

NOTE: ALL REINFORCING STEEL SHALL BE NO 5 BARS, PLACED AS SHOWN.

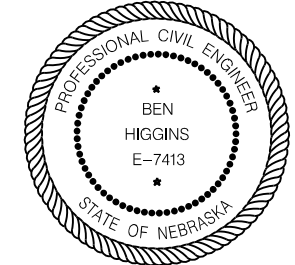


TYPE "C" HEADWALL



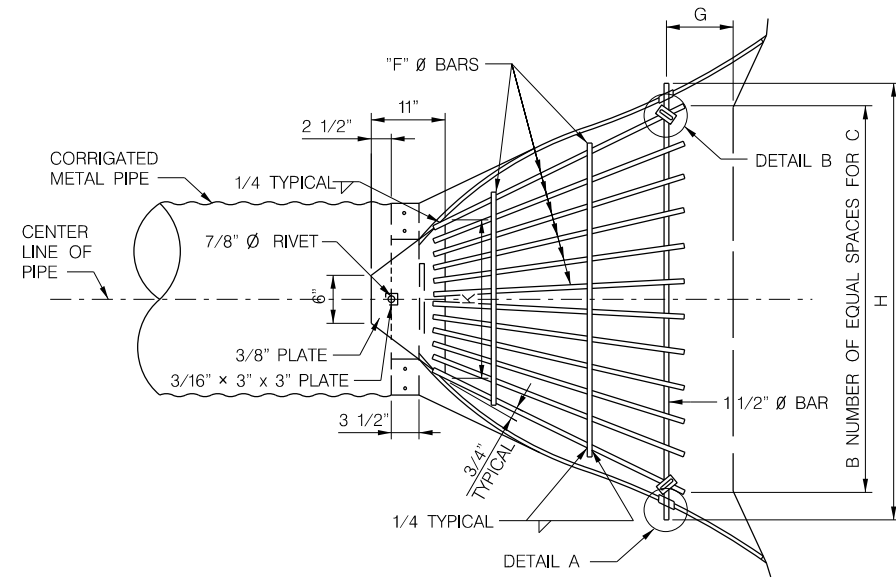
SECTION C-C

GENERAL NOTES:
 ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO A.S.T.M. SERIAL DESIGNATION A-305-507 AND SHALL SATISFY THE BEND TEST REQUIREMENTS FOR STRUCTURAL GRADE STEEL IN ACCORDANCE WITH THE REQUIREMENTS.
 ALL CONCRETE SHALL BE L3500.
 MINIMUM DEPTH OF EMBEDMENT FOR REINFORCING STEEL SHALL BE 2" UNLESS OTHERWISE INDICATED.
 GROOVE END OF CONCRETE PIPE TO FACE UPSTREAM.
 ALL REINFORCING STEEL SHALL BE EPOXY COATED.
 INSTALL END GUARD ON INLET ENDS OF STORM SEWER SYSTEM ONLY.



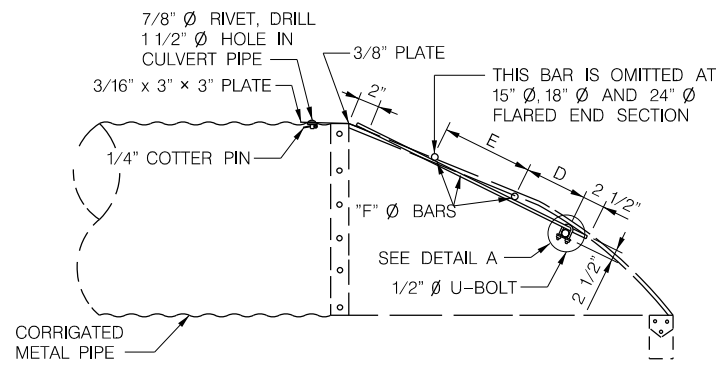
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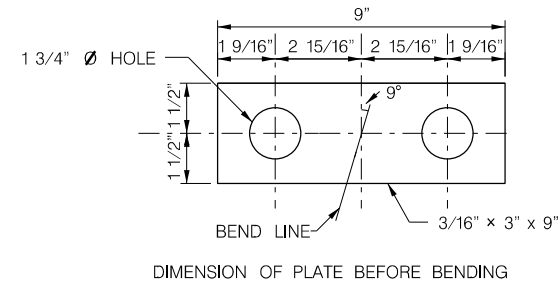


PLAN FOR BAR GRATE

BAR GRATE FOR METAL FLARED END SECTION

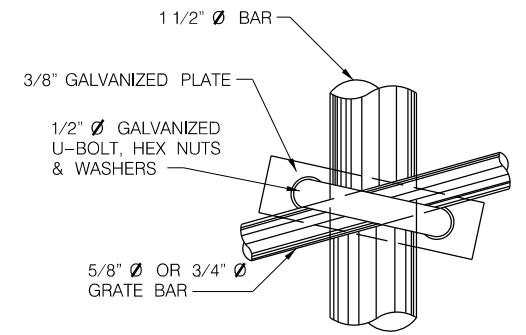
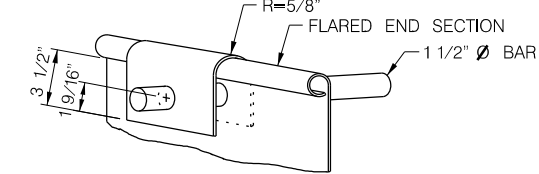


ELEVATION OF BAR GRATE

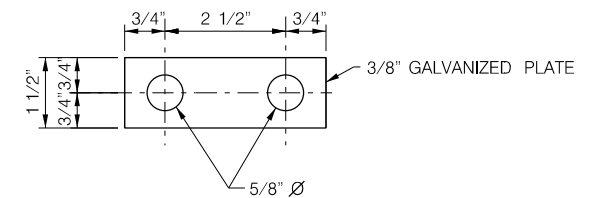
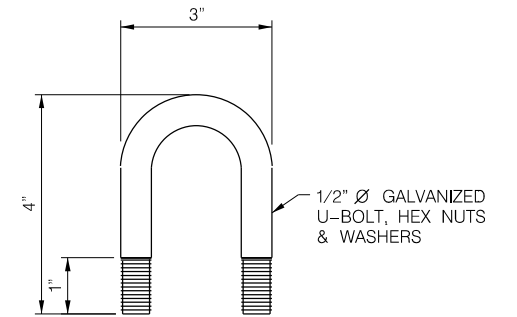


DETAIL A

(2) 3/16" x 3" x 9" PLATES
 REQUIRED PER ASSEMBLY



DETAIL B

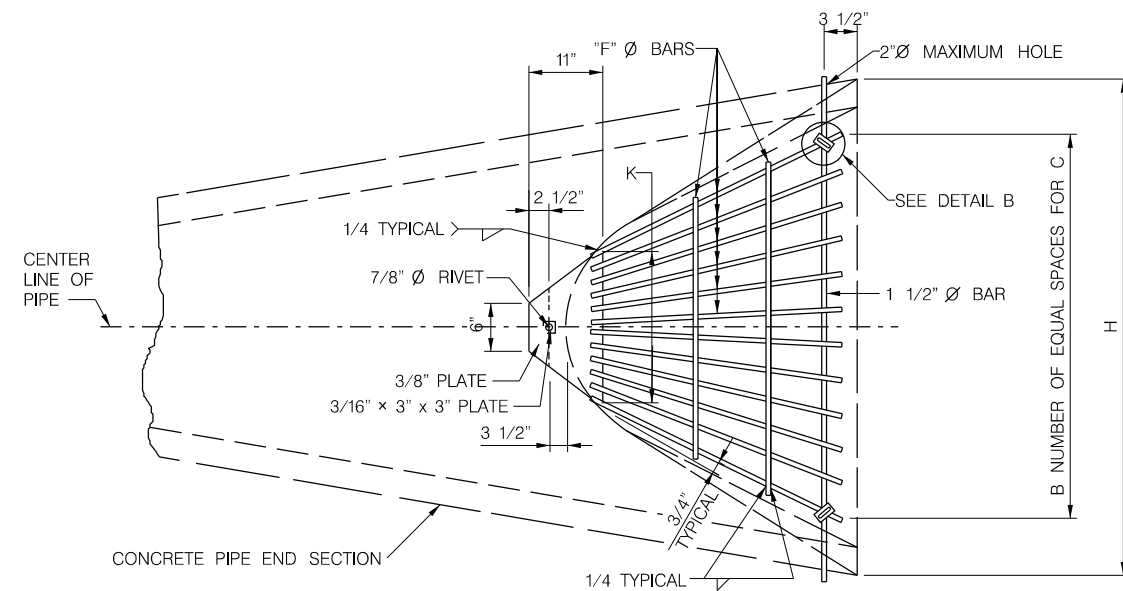


U-BOLT AND PLATE DETAIL

NOTE:

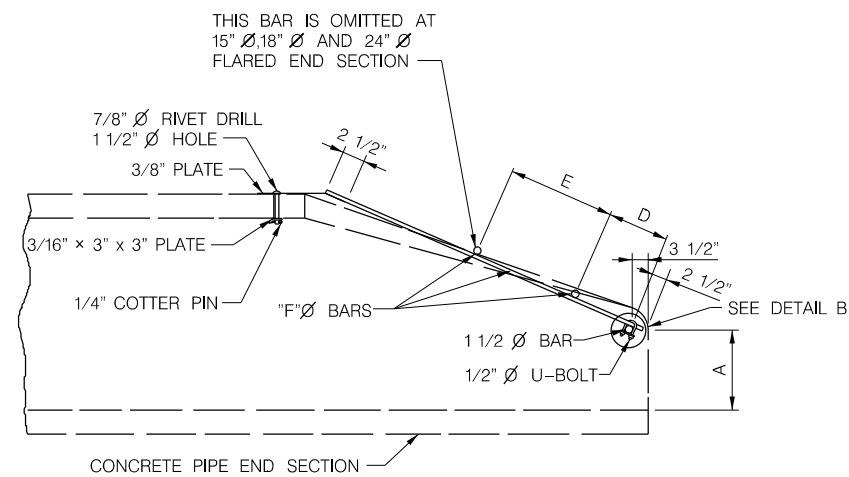
ALL BARS USED IN GRATES SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. A575 GRADE 1020 STEEL.

THE BAR GRATE MAY BE SHOP ASSEMBLED WITH THE FLARED END SECTIONS.



PLAN OF BAR GRATE

BAR GRATE FOR CONCRETE PIPE END SECTION



ELEVATION OF BAR GRATE

BAR GRATE DATA									
	A	B	C	D	E	F	G	H	K
15" Ø PIPE	5"	4	2'-0"	6"	—	5/8"	6"	2'-11"	1'-4"
18" Ø PIPE	8"	5	2'-6"	6"	—	5/8"	8"	3'-6"	1'-4"
24" Ø PIPE	8 1/2"	7	3'-6"	9"	—	5/8"	8"	4'-7"	1'-8"
30" Ø PIPE	11"	9	4'-6"	1'-0"	1'-6"	3/4"	1'-0"	5'-8"	1'-8"
36" Ø PIPE	1'-2"	11	5'-6"	1'-0"	1'-6"	3/4"	1'-0"	6'-9"	2'-0"

NOTE:
 INSTALL BAR GRATE ON INLET ENDS
 OF STORM SEWER SYSTEM ONLY.

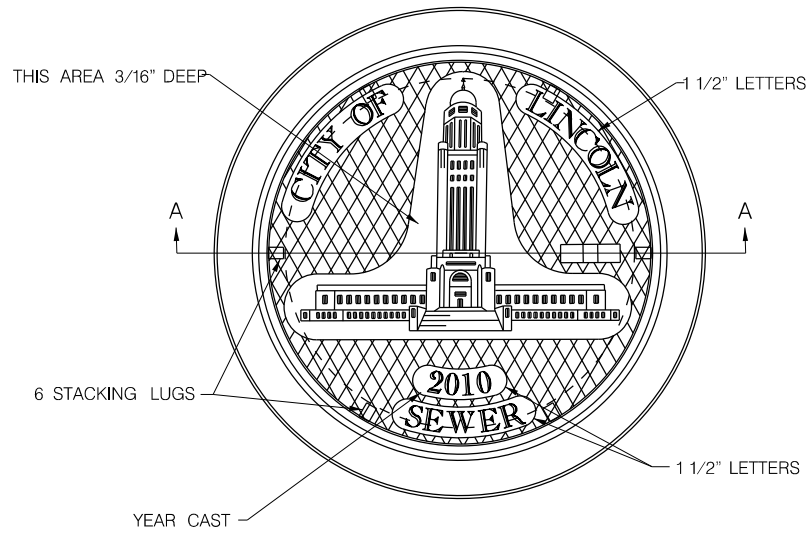


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	Date: 1/2/2020	Drawn: CAW
	Horz. Scale: N.T.S.	Checked: Approved:



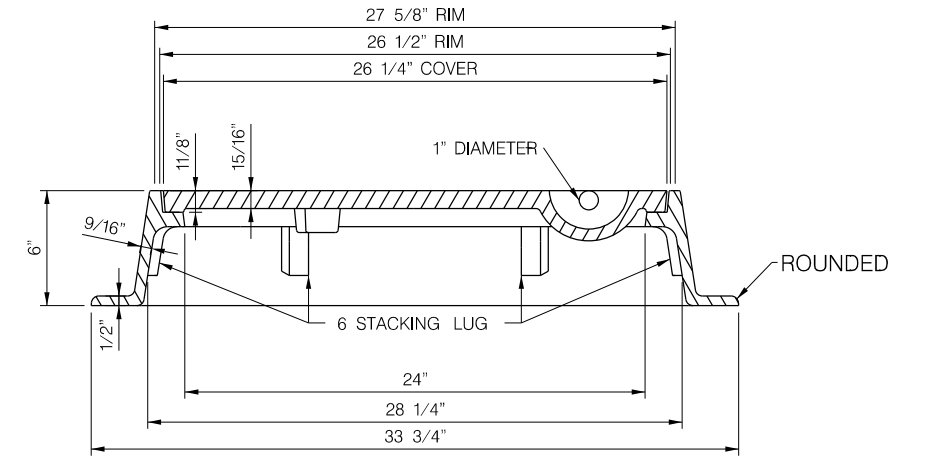
STORM DRAINAGE MANHOLE



WASTEWATER MANHOLE

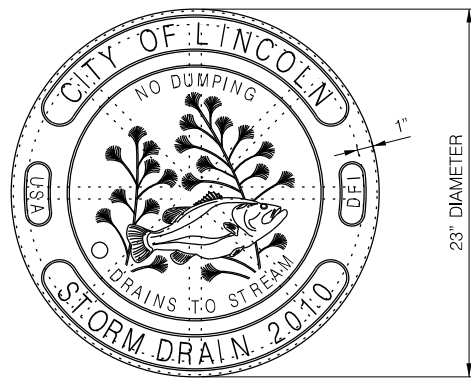


WATER MANHOLE



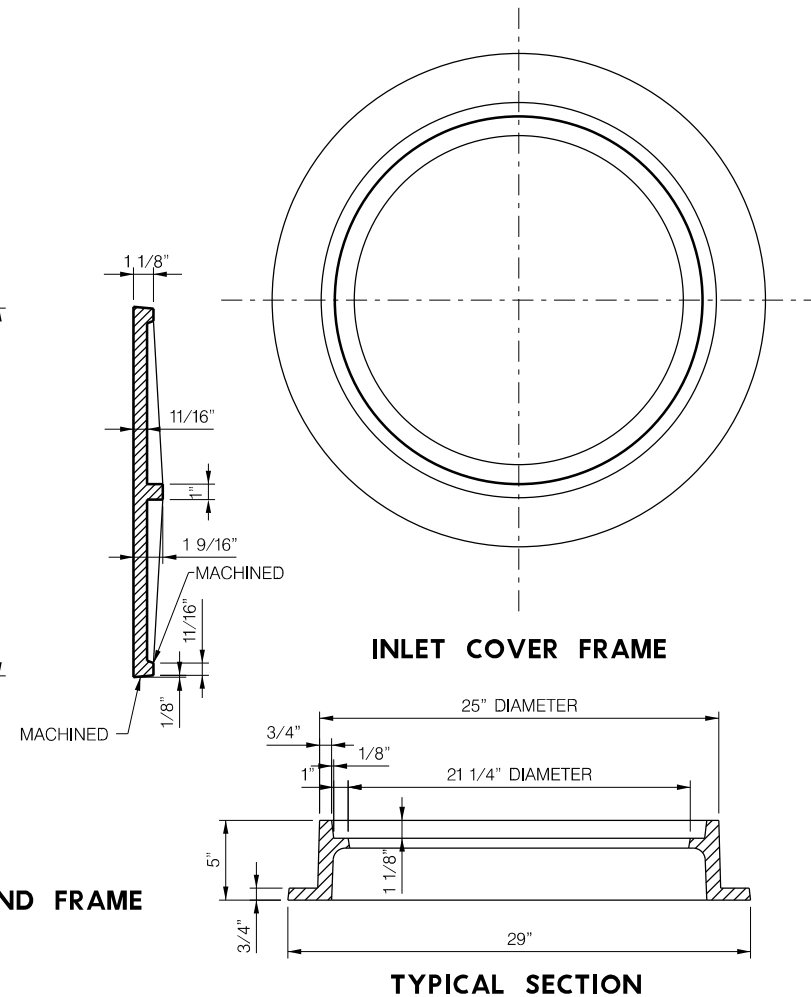
TYPICAL SECTION A-A

STANDARD HEAVY TRAFFIC TYPE MANHOLE COVER AND FRAME

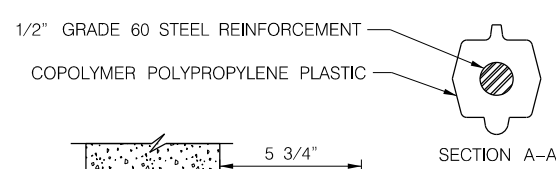
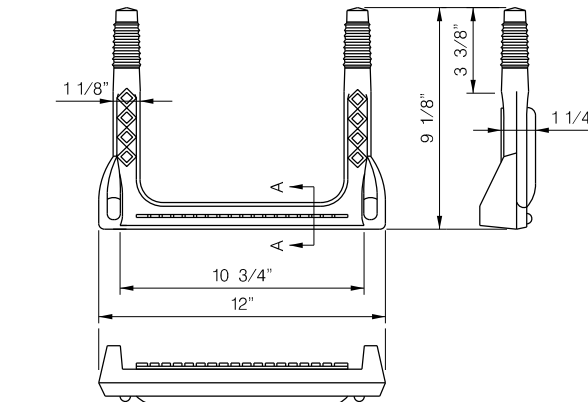


INLET COVER

STANDARD CAST IRON INLET COVER AND FRAME



TYPICAL SECTION

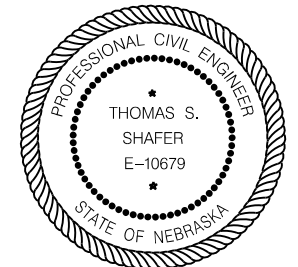


REINFORCED PLASTIC STEPS

GENERAL NOTES:

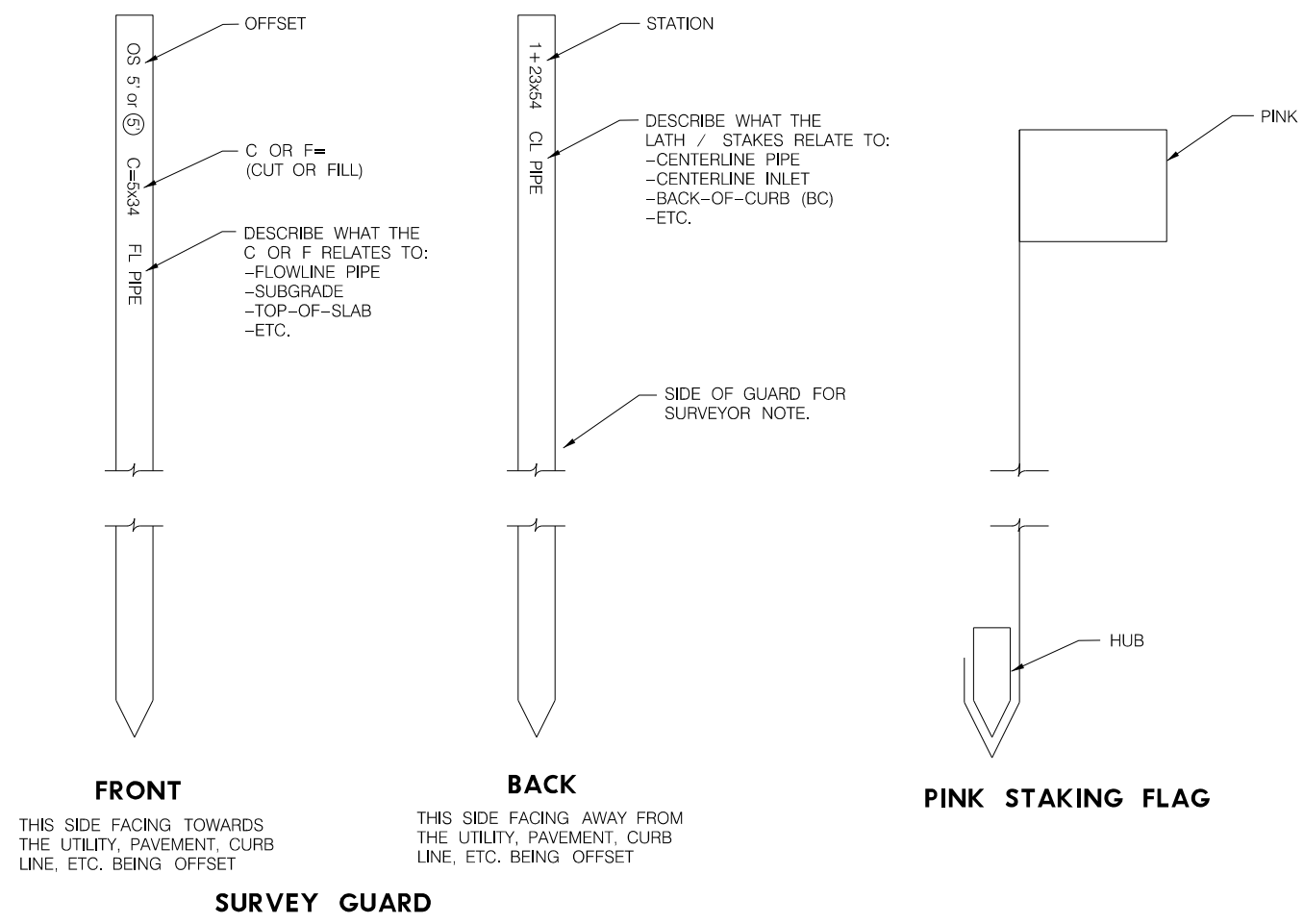
1. CASTING SHALL CONFORM TO THE REQUIREMENTS OF 'SPECIFICATIONS FOR GRAY IRON CASTING' IN ACCORDANCE WITH A.S.T.M. DESIGNATION A-48-83, CLASS 35B
2. CASTINGS ARE TO BE MANUFACTURED TRUE TO PATTERN WITH SATISFACTORY FIT OF COMPONENT PARTS. CASTINGS SHALL BE FREE OF DEFECTS. DIMENSIONS AS DETAILED ON PLAN SHALL NOT DEVIATE BY +/- 1/16" PER FOOT.
3. CASTING SHALL BE FURNISHED WITH MACHINED HORIZONTAL BEARING SURFACES.
4. CASTING SHALL BE RATED 'HEAVY DUTY' SUITABLE FOR H-20 TRAFFIC LOADING.

1. STEP SHALL MEET THE REQUIREMENTS OF ASTM C-478, AASHTO M-199 AND OSHA INSTRUCTION STD 1-1.9
2. POLYPROPYLENE PLASTIC SHALL CONFORM TO ASTM D-4101



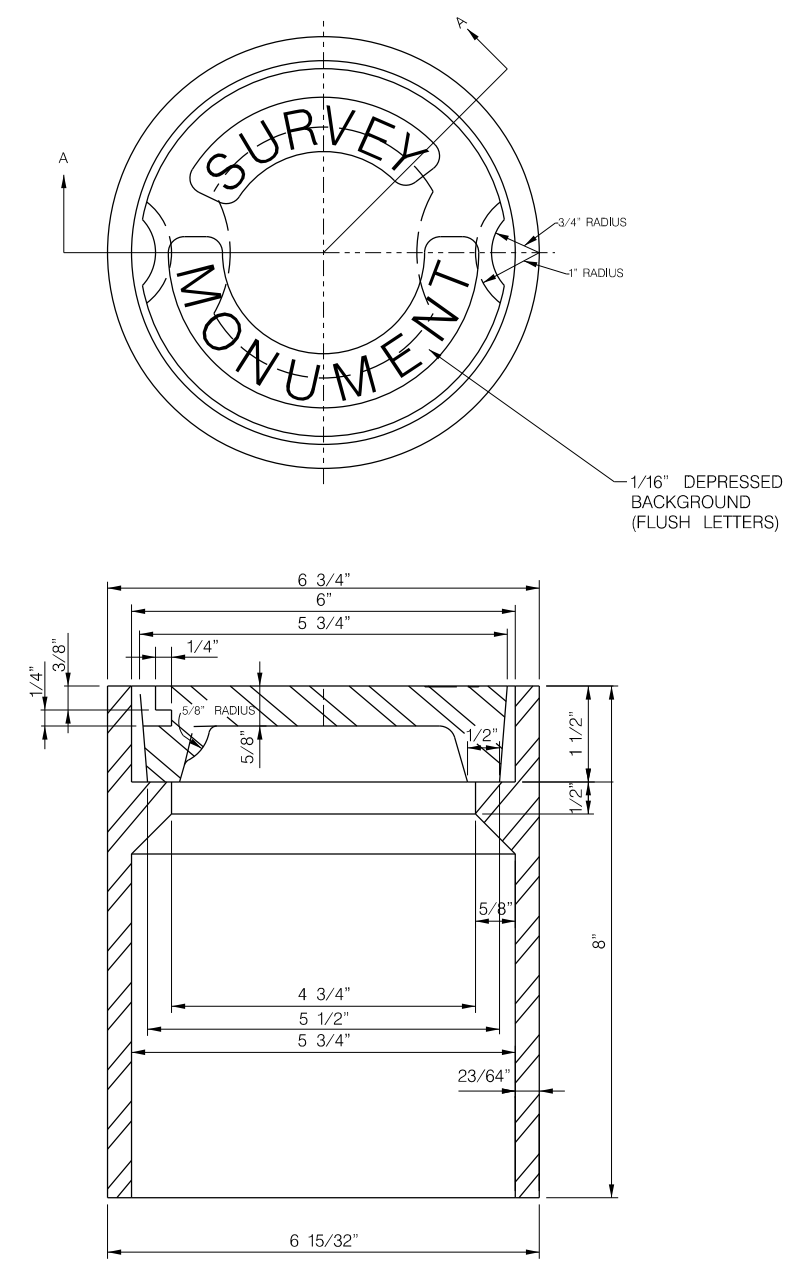
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		Approved:

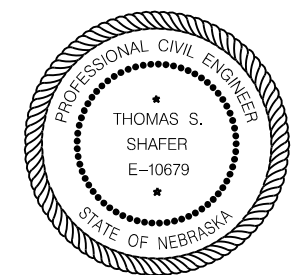


NOTES:
 SURVEYOR TO PAINT GUARD WHERE THEY CHOOSE.
 COLORS TO BE:
 RED FOR ELECTRICAL AND SIGNALS
 ORANGE FOR COMMUNICATION
 BLUE FOR WATER
 GREEN FOR WASTEWATER AND DRAINAGE
 NO PAINT FOR PAVING

SURVEYOR TO PROVIDE ALL ELECTRONIC DATA, COPY OF ELECTRONIC DATA AND COPY OF THE FIELD BOOK (IF REQUIRED). FREQUENCY FOR GUARDS SHALL BE 50' IN STRAIGHT ALIGNMENTS AND 25' ON HORIZONTAL OR VERTICAL CURVES, UNLESS OTHERWISE REQUESTED BY CONTRACTOR. PINK IS THE ONLY ACCEPTABLE FLAG COLOR.

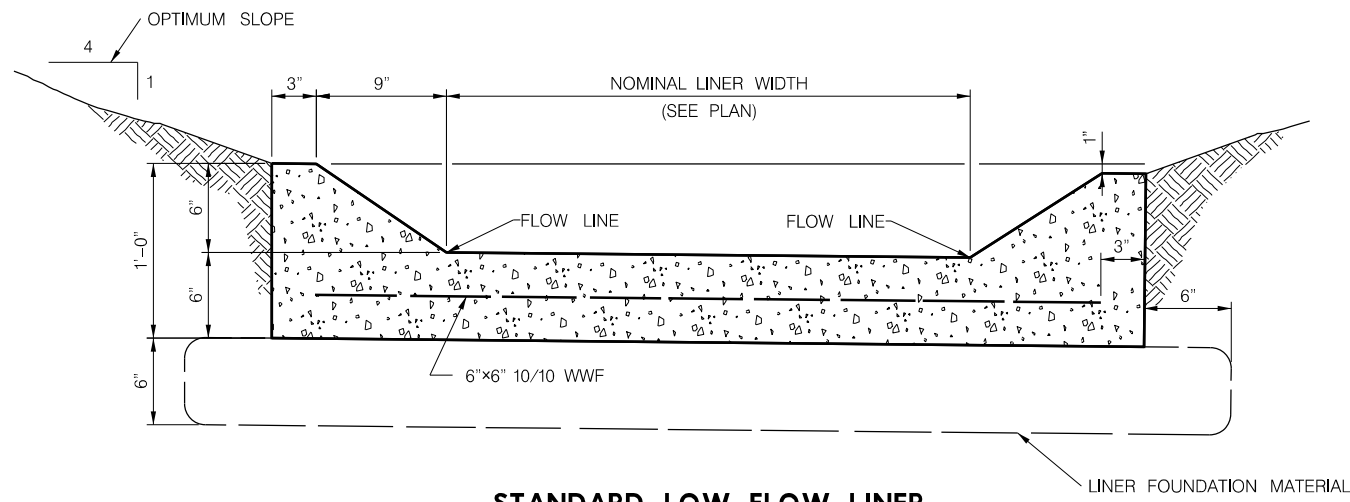


NOTE:
 STANDARD SURVEY MONUMENT BOXES SHALL BE PLACED AT THE CENTERLINE OF ALL STREET INTERSECTIONS, P.C.H.C., P.C.C.H.C., P.R.C.H.C., P.T.H.C., AND SECTION LINES. AS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.



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STANDARD LOW FLOW LINER

NO SCALE

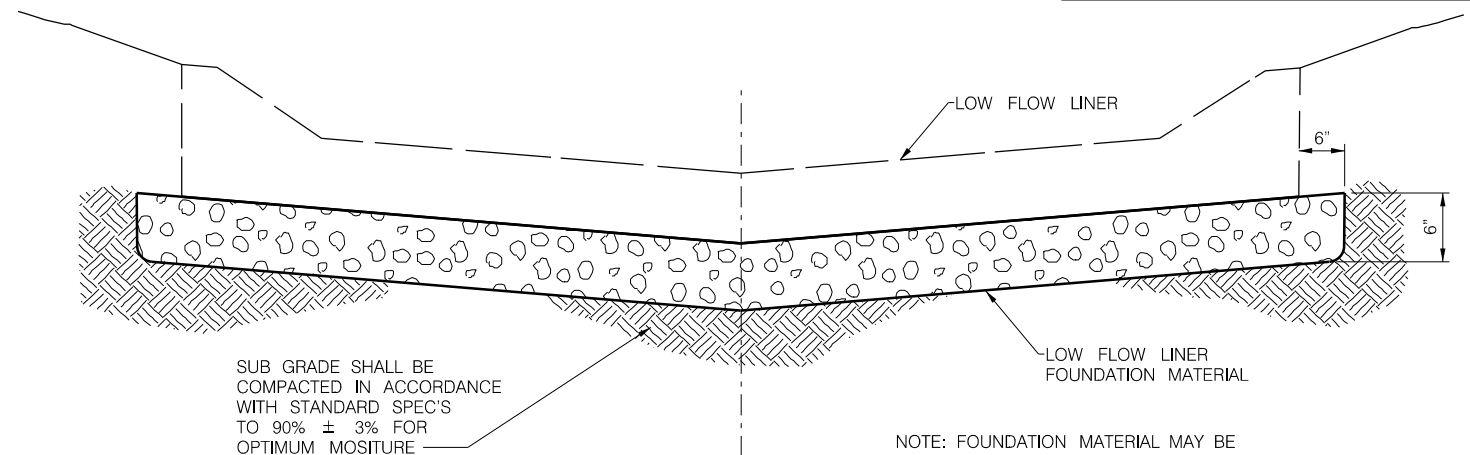
NOTE:

1" PREFORMED EXPANSION JOINT SEALED WITH 1" OF JOINT FILLING FILLER (HOT POURED TYPE) SHALL BE INSTALLED @ INTERVALS OF 80' MAXIMUM.

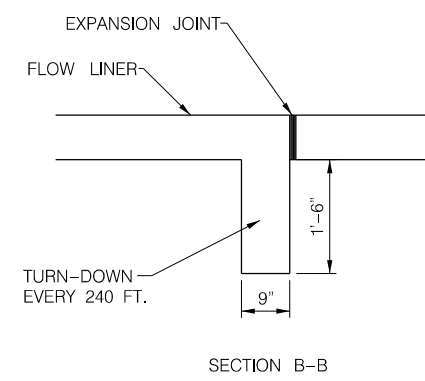
CONTRACTION JOINT SPACING SHALL BE 10' MAXIMUM. ALL CONCRETE SHALL BE L3500.

ALL WELDED STEEL WIRE FABRIC SHALL CONFORM TO A.S.T.M. DESIGNATION A-185.

CHAMFER ALL EXPOSED EDGES 1/2".

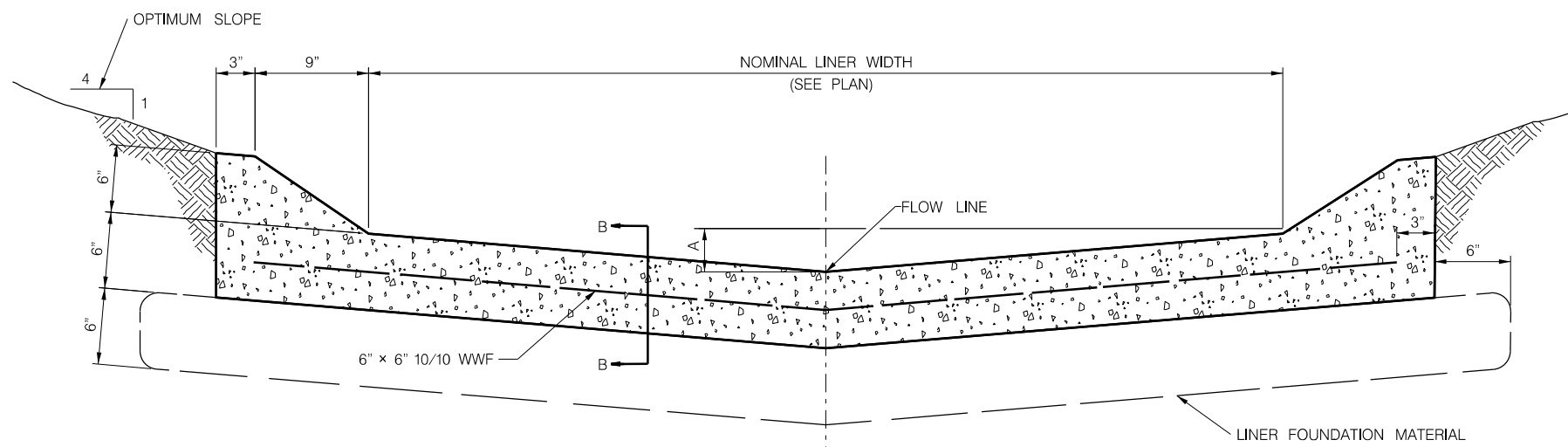


STANDARD TEMPLATE FOR LINER FOUNDATION 3' OR LESS

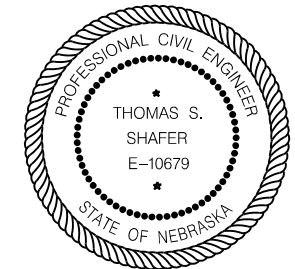


SECTION B-B

MATERIAL REQUIREMENTS FOR LINER AND FOUNDATION			
(QUANTITIES/LINEAL FEET)			
SIZE	A	CONCRETE (CUBIC YARDS)	FOUNDATION (CUBIC YARDS) (6" THICK)
2'	—	.10	.09
2.5'	—	.11	.10
3'	—	.12	.11
3.5'	2"	.125	.12
4'	2"	.13	.13
4.5'	2"	.14	.14
5'	2"	.15	.15
5.5'	3"	.16	.16
6'	3"	.17	.17
6.5'	3"	.18	.18
7'	3"	.19	.185
7.5'	4"	.20	.19
8'	4"	.21	.20
8.5'	4"	.22	.21
9'	4"	.23	.22
9.5'	4"	.24	.23
10'	4"	.245	.24

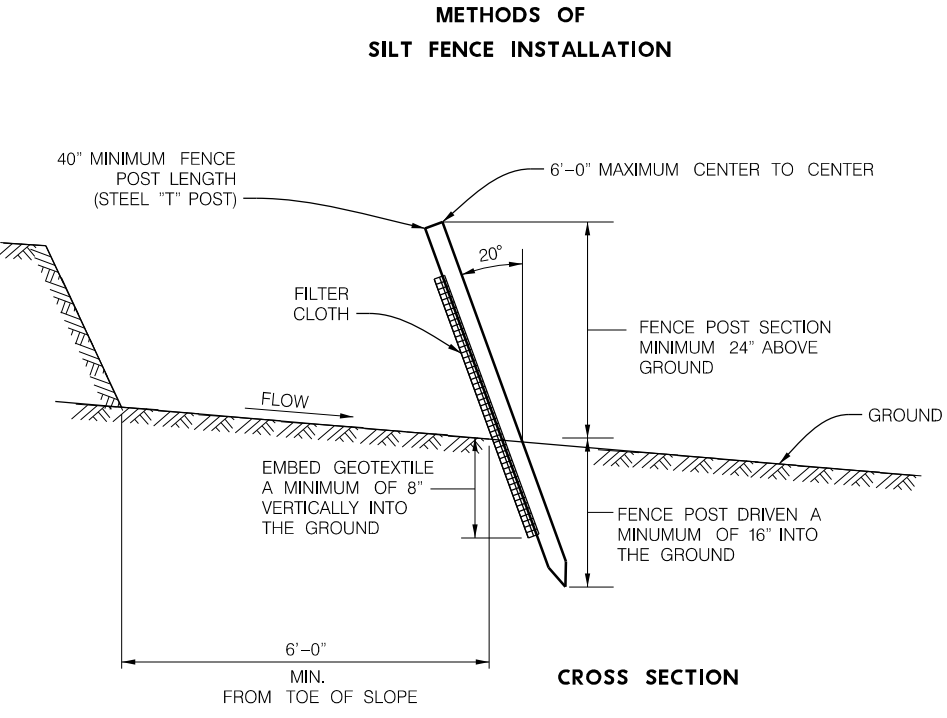
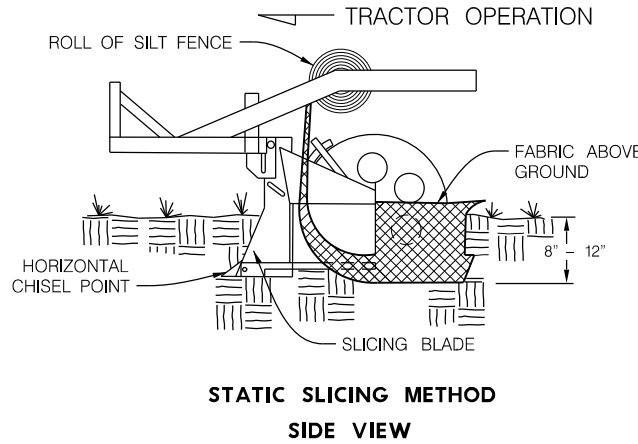
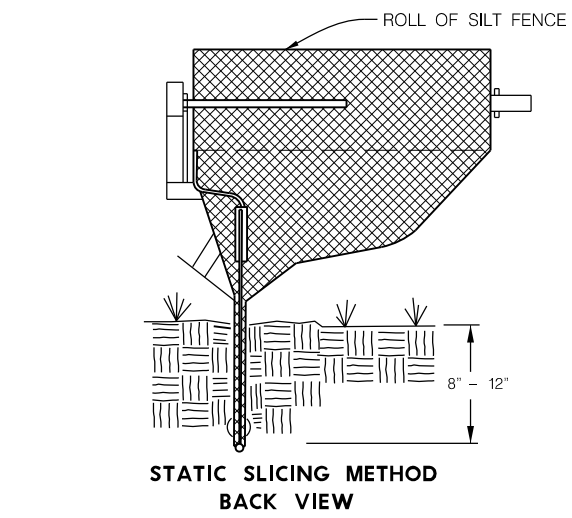
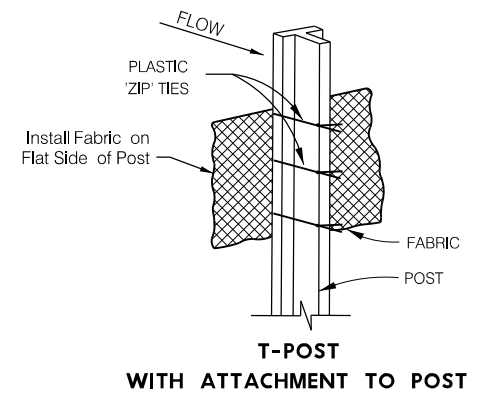
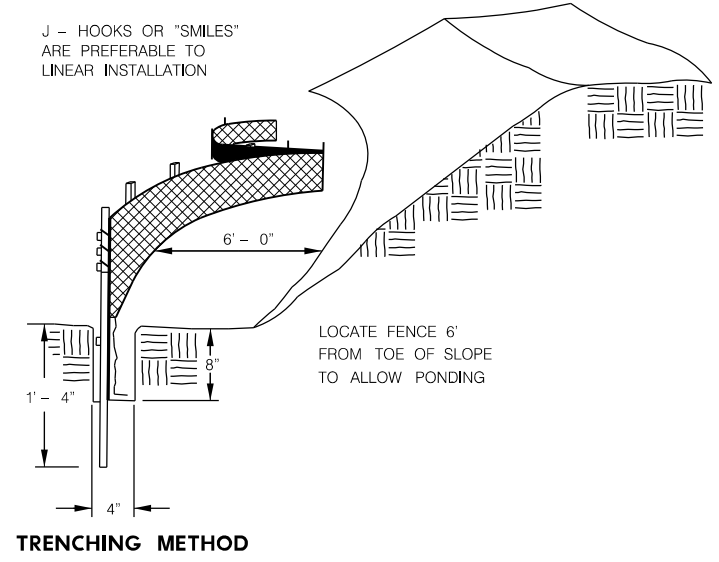


STANDARD LOW FLOW LINER 3.5' OR GREATER

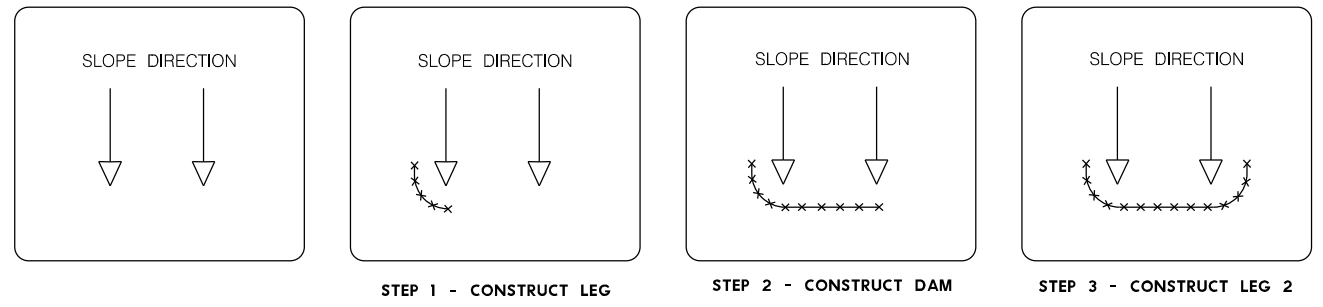


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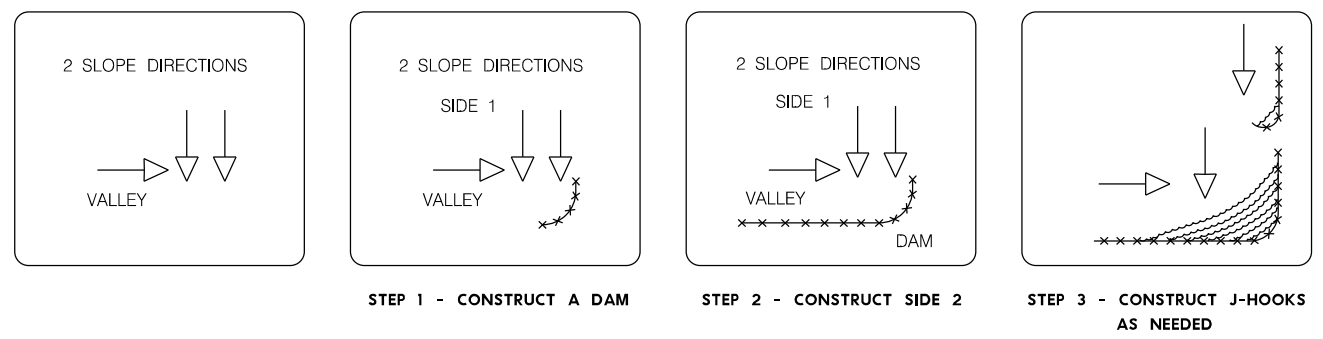
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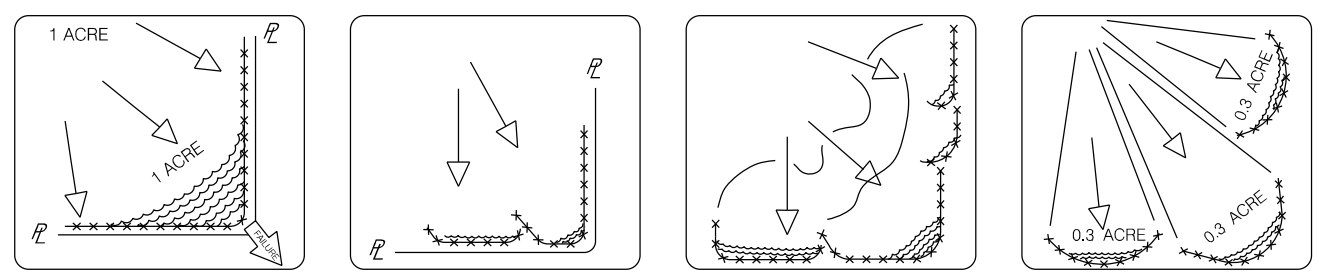
SILT FENCE PLACEMENT/ONE SLOPE
 INSTALLATION WITH J-HOOKS OR "SMILES" INCREASE SILT FENCE EFFICIENCY.



SILT FENCE PLACEMENT/TWO SLOPES
 INSTALLATION WITH J-HOOKS WILL INCREASE SILT FENCE EFFICIENCY AND REDUCE EROSION CAUSING FAILURES.



SILT FENCE PLACEMENT/PERIMETER CONTROL



INCORRECT - DO NOT LAYOUT "PERIMETER CONTROL" SILT FENCES ALONG PROPERTY LINES. ALL SEDIMENT LADEN RUNOFF WILL CONCENTRATE AND OVERWHELM THE SYSTEM.

CORRECT - INSTALL J-HOOKS

CORRECT - INSTALL J-HOOKS

DISCREET SEGMENTS OF SILT FENCE, INSTALLED WITH J-HOOKS OR "SMILES" WILL BE MUCH MORE EFFECTIVE.

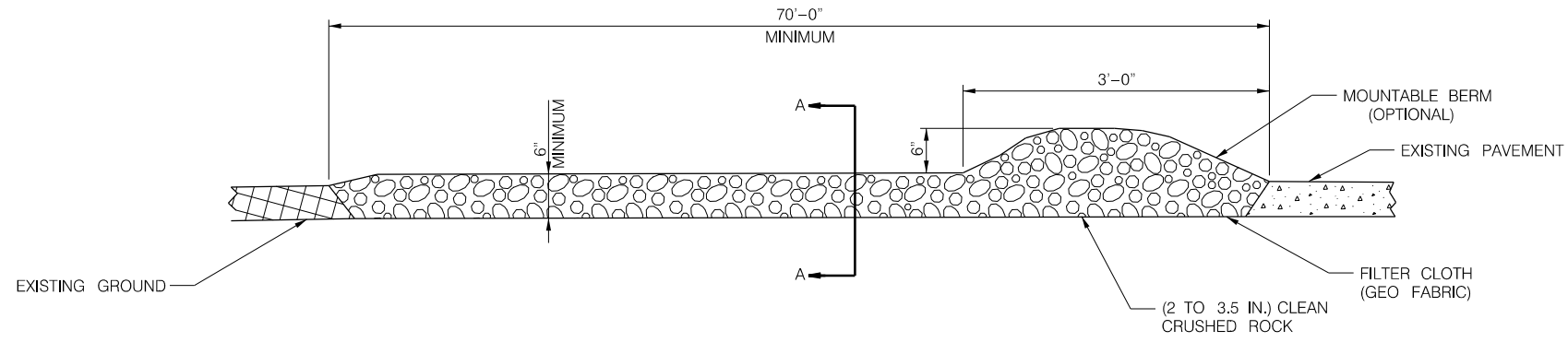
NOTE:
 REFER TO CHAPTER 9 OF THE CITY OF LINCOLN DRAINAGE CRITERIA MANUAL FOR MORE INFORMATION ON SEDIMENT AND EROSION CONTROL MEASURES



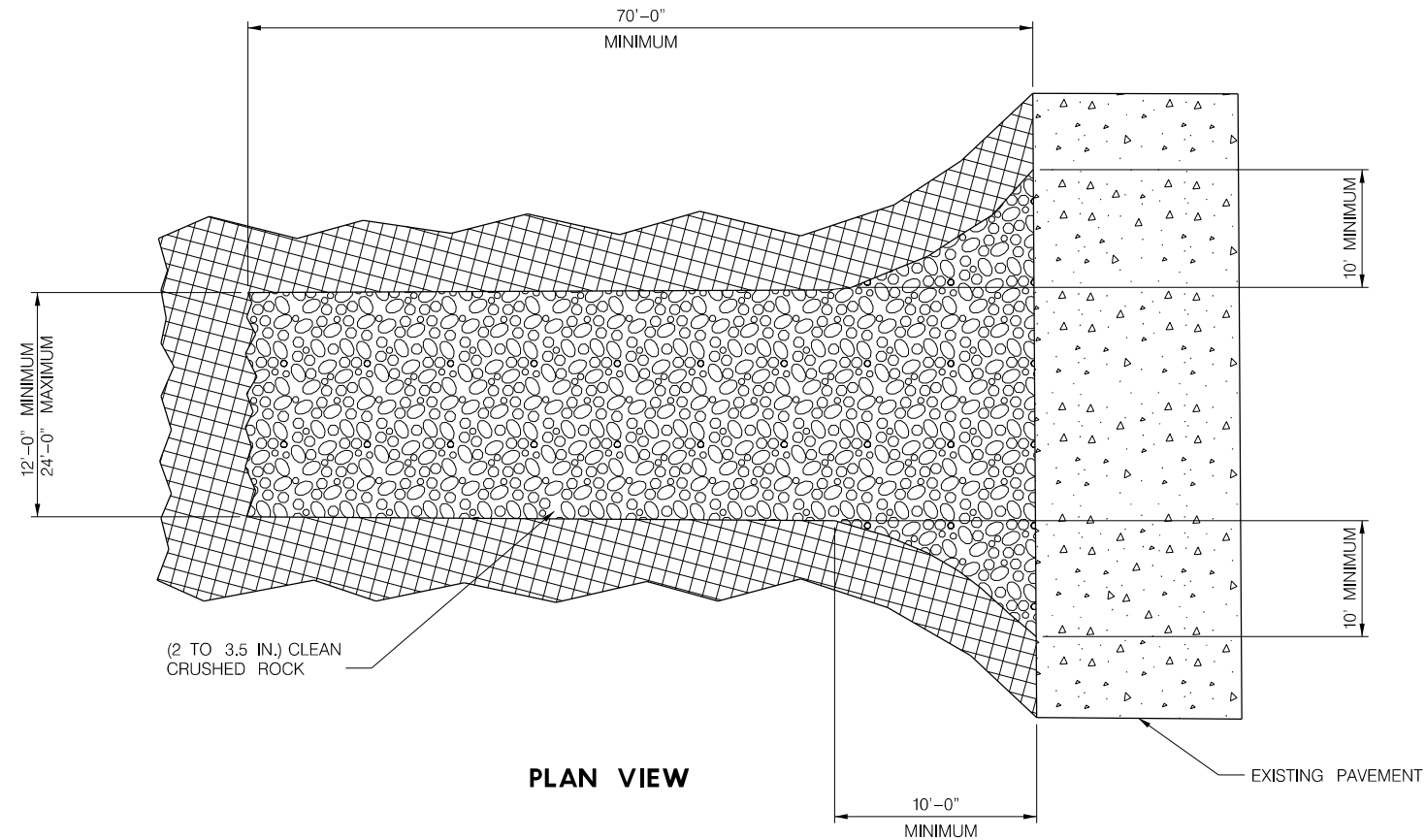
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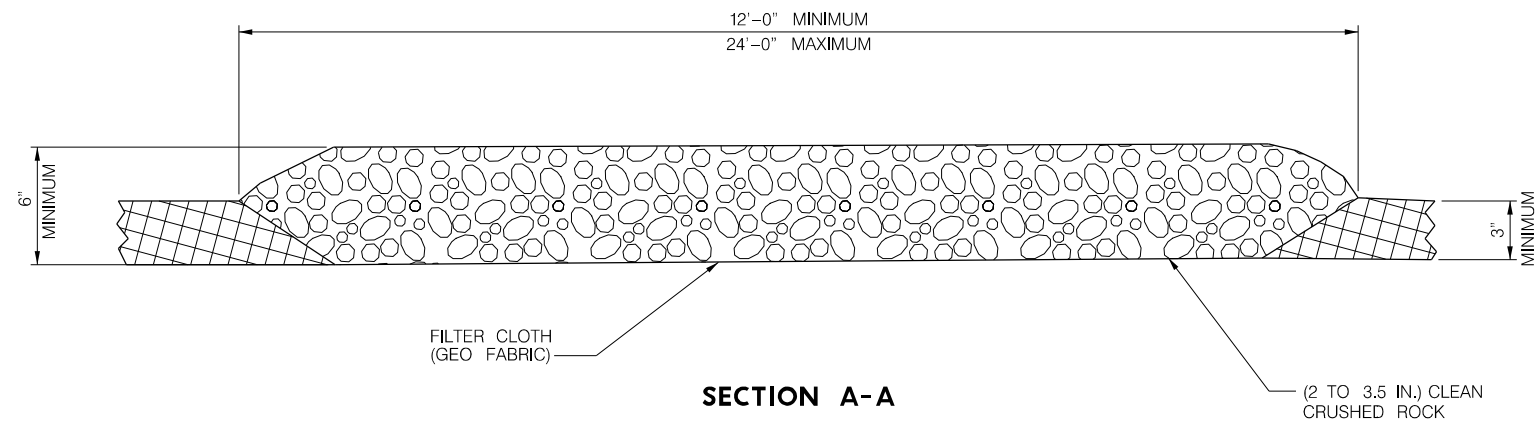
LTU	PLAN NO.	SHEET NO.
	176	1
	Date: 1/2/2020 Horz. Scale: N.T.S.	Drawn: GLL/CAW Checked: Approved:



SIDE VIEW



PLAN VIEW



SECTION A-A

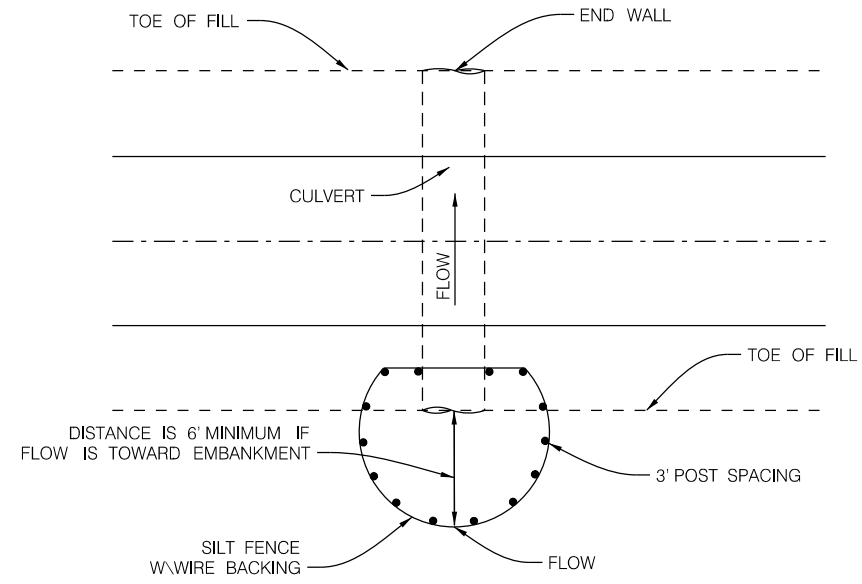
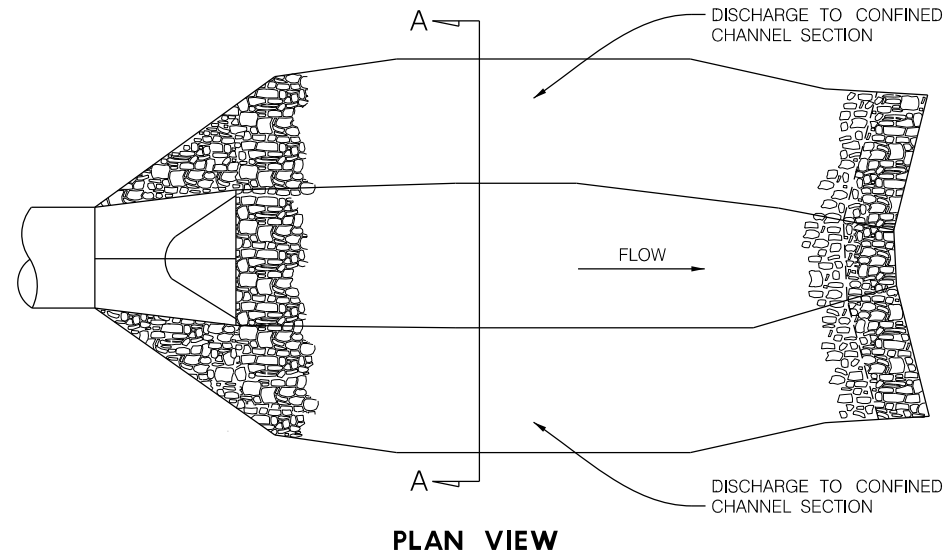
NOTE:
 FILTER CLOTH MUST EXTEND THE FULL WIDTH AND LENGTH OF THE CONSTRUCTION ENTRANCE
 THE 24'-0" WIDTH IS REQUIRED WHEN THE INGRESS AND THE EGRESS ARE THE SAME
 REFER TO CHAPTER 9 OF THE CITY OF LINCOLN DRAINAGE CRITERIA MANUAL FOR MORE INFORMATION OF SEDIMENT AND EROSION CONTROL MEASURES
 DO NOT USE RECYCLED CONCRETE
 SWPPP SIGN MUST BE LOCATED NEAR CONSTRUCTION ENTRANCE



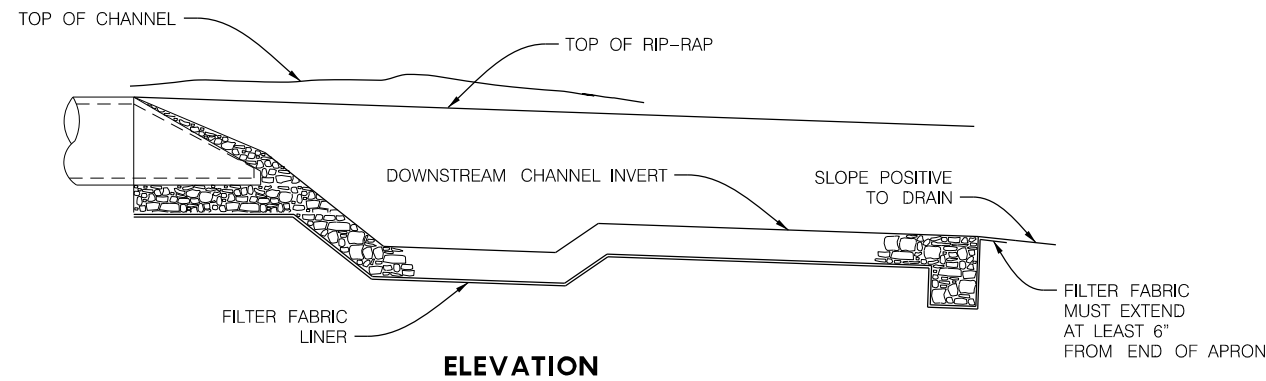
CONSTRUCTION ENTRANCE

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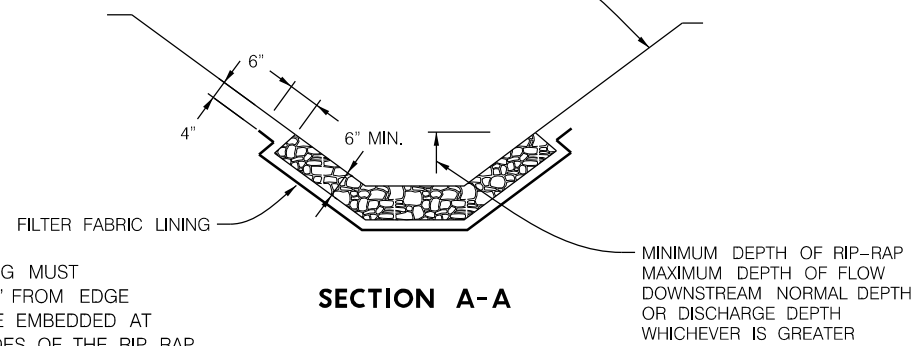
SILT FENCE INLET PROTECTION



ELEVATION

* OUTLET PROTECTION ACCORDING TO CHAPTER 7 OF THE DRAINAGE CRITERIA MANUAL

SIDE SLOPES TO VARY FROM 2:1 AT PIPE OUTLET TO THE END OF THE APRON EXISTING CHANNEL SLOPE



SECTION A-A

FILTER FABRIC LINING MUST EXTEND AT LEAST 6" FROM EDGE OF RIP-RAP AND BE EMBEDDED AT LEAST 4" AT THE SIDES OF THE RIP-RAP

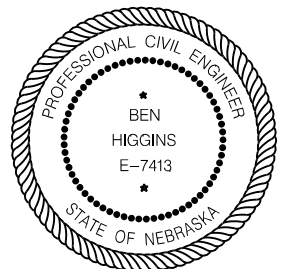
NOTE:
 FILTER CLOTH SHALL BE: GEOTEXTILE, CLASS C

AN ALTERNATIVE GEOTEXTILE WITH CONCRETE SQUARES MAY BE SUBSTITUTED FOR RIP-RAP IF INSTALLED PER THE MANUFACTURER'S SPECIFICATIONS

NOTE:
 REFER TO CHAPTER 9 OF THE CITY OF LINCOLN DRAINAGE CRITERIA MANUAL FOR MORE INFORMATION ON SEDIMENT AND EROSION CONTROL MEASURES

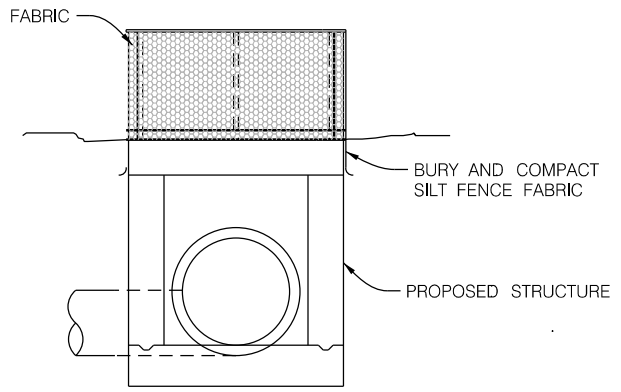
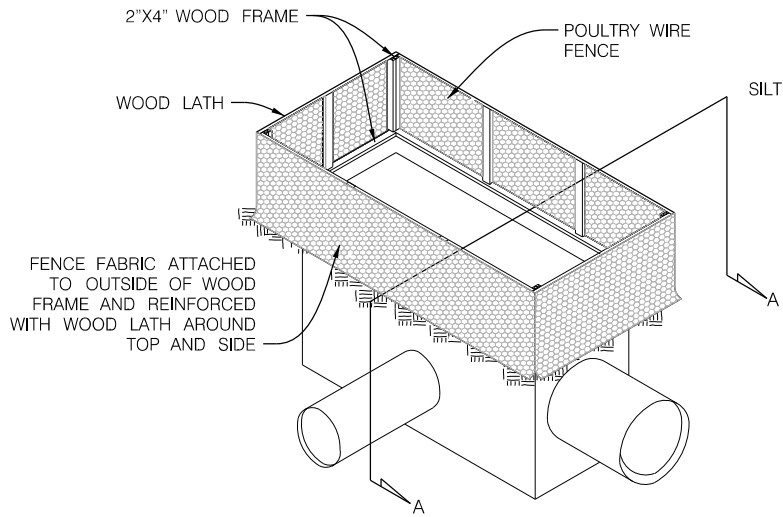
NDOT DESIGNATION	ROCK SIZE D50	ROCK SIZE Dmax	100% of Rock Sizes Passing	50% of Rock Sizes Passing	Rock Sizes No More Than 10% Less Than
Type A	0.77 ft	1.28 ft	154.3 Lbs.	33.0 Lbs.	2.2 Lbs.
Type B	1.02 ft	1.61 ft	308.6 Lbs.	77.2 Lbs.	4.4 Lbs.
Type C	1.28 ft	2.12 ft	694.4 Lbs.	154.3 Lbs.	11.0 Lbs.
Broken Concrete	1.10 ft	1.88 ft	Weight approx 100 lbs/cu. ft.		

1. LIMESTONE, QUARTZITE OR OTHER HARD STONE CLEAN OF DEBRIS
2. ROCK SHALL HAVE A DENSITY OF AT LEAST 140 LB / CF
3. EACH PIECE SHALL HAVE NO DIMENSION GREATER THAN 3 TIMES ITS LEAST DIMENSION
4. ROCK SIZE TO BE CHOSEN BY EVALUATING THE APPROPRIATE OUTLET PARAMETERS
5. BROKEN CONCRETE MUST BE CLEAN OF DEBRIS AND CONTAIN NO ASPHALT

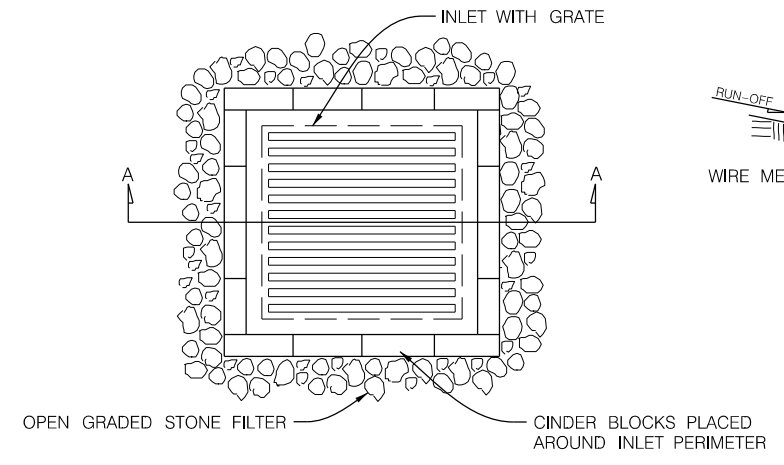


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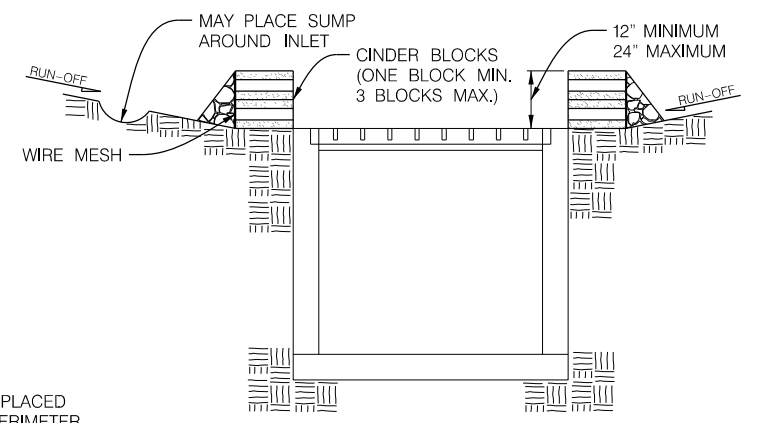
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		Approved:



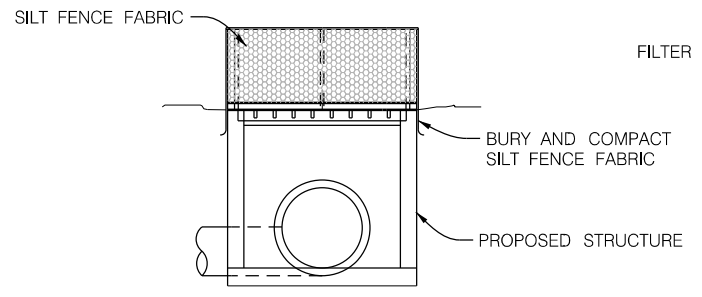
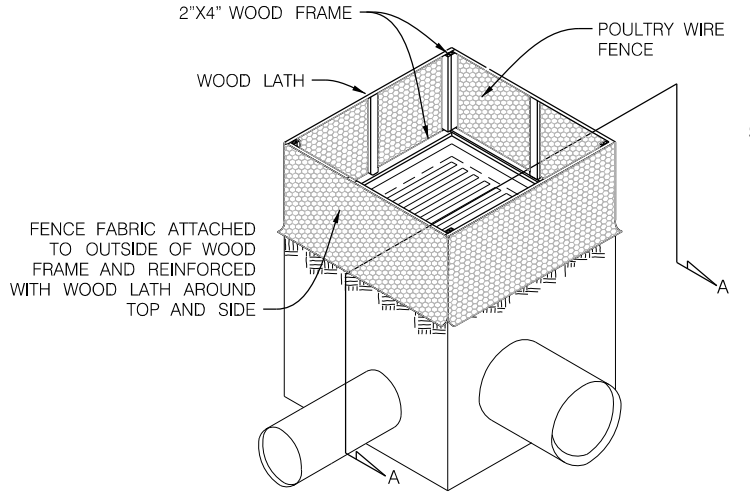
SECTION A-A



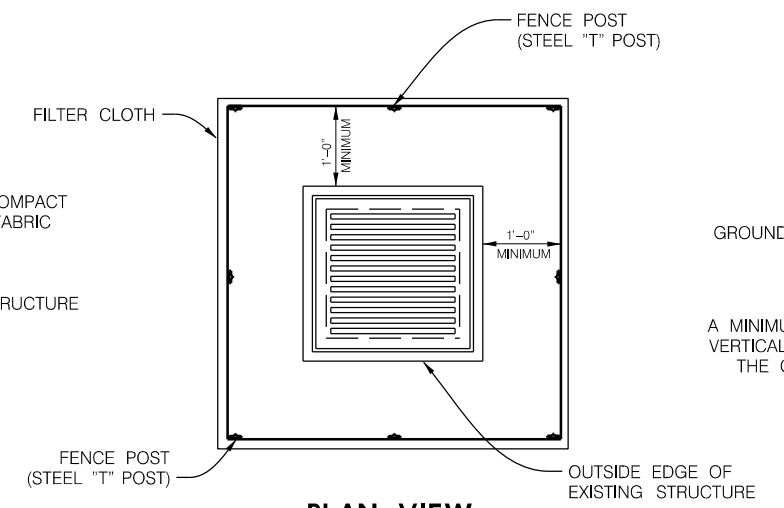
PLAN VIEW



SECTION A-A

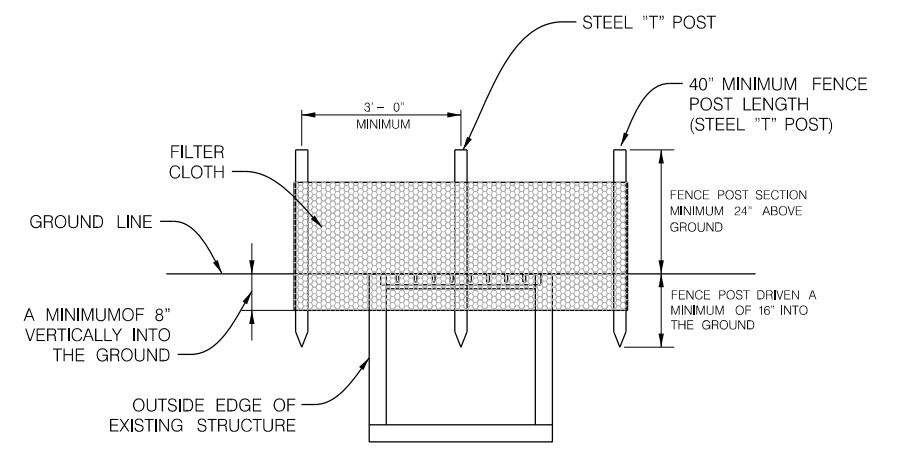


INLET PROTECTION TYPE I



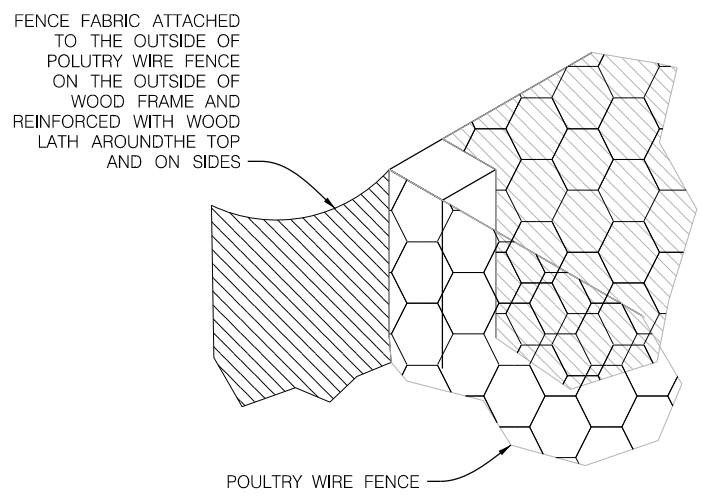
PLAN VIEW

INLET PROTECTION TYPE II

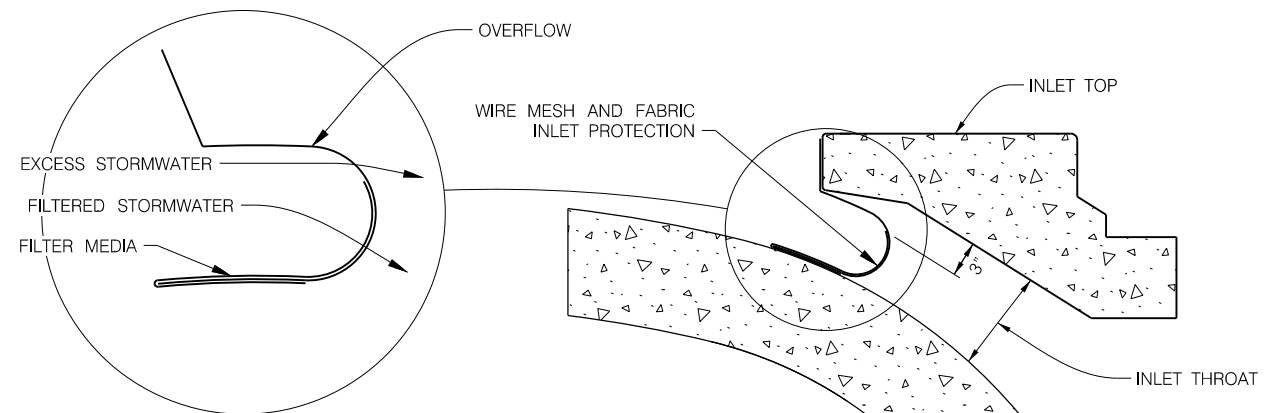


SIDE VIEW

INLET PROTECTION TYPE III



FENCE FABRIC DETAIL



WIRE MESH AND FABRIC INLET PROTECTION CROSS-SECTION

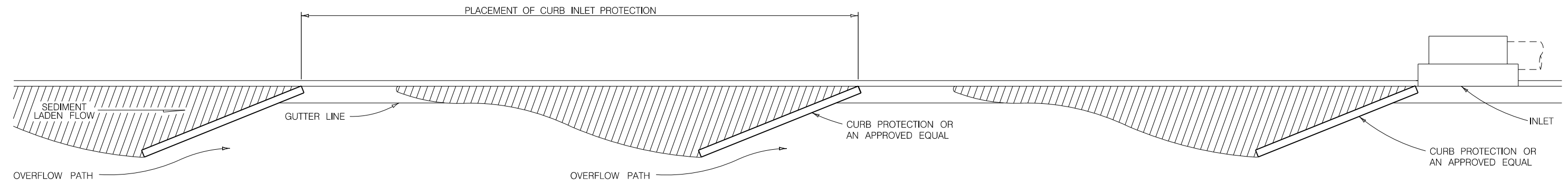
NOTE:
 REFER TO CHAPTER 9 OF THE CITY OF LINCOLN
 DRAINAGE CRITERIA MANUAL FOR MORE
 INFORMATION ON SEDIMENT AND EROSION CONTROL
 MEASURES



INLET PROTECTION

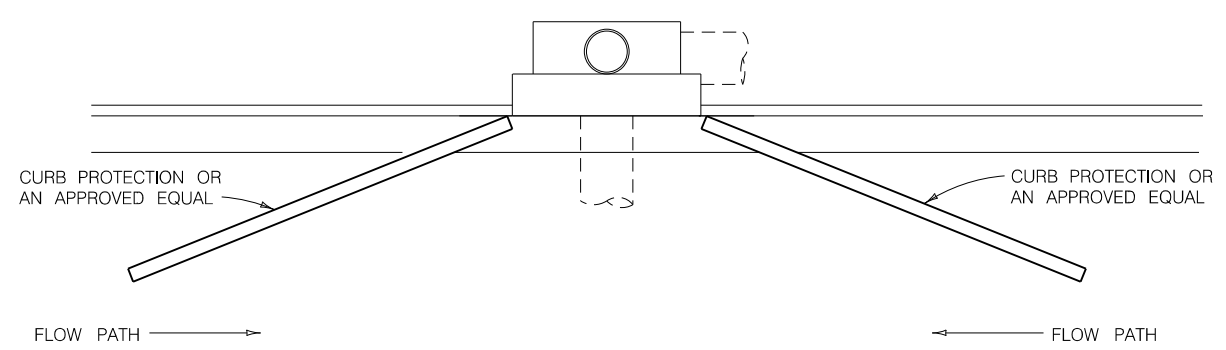
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**SEDIMENT BARRIERS
 FOR LINEAR PROJECTS
 TYPE I
 (TO BE USED ON STREETS
 NOT OPEN TO TRAFFIC)**

PLACEMENT	
STREET GRADE	PLACING
.5	100'
1.0	50'
2.0	25'
3.0	16'
4.0	13'
5.0	10'



**SUMP CURB INLET PROTECTION
 TYPE 2
 (TO BE USED ON STREETS
 NOT OPEN TO TRAFFIC)**

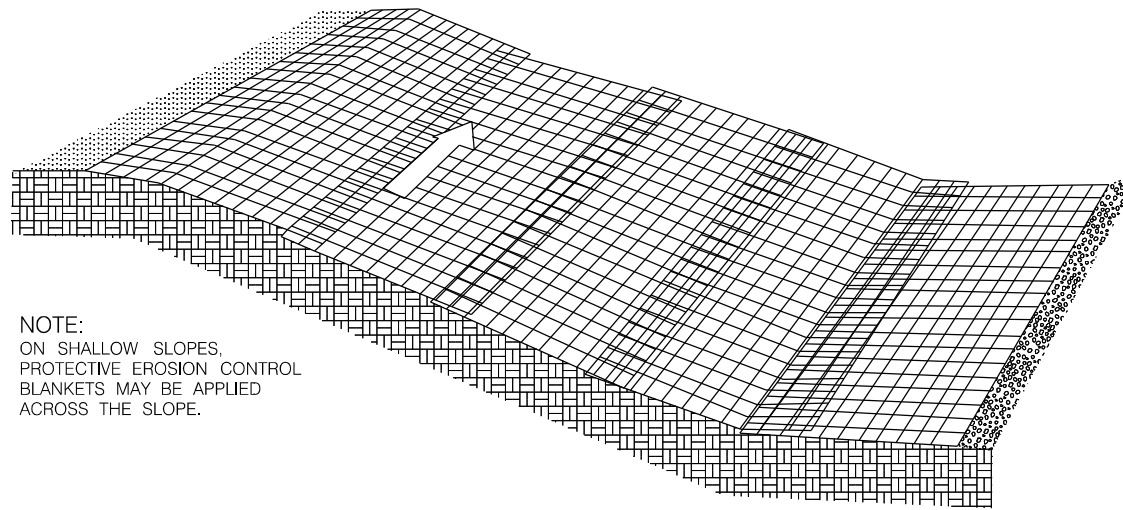
GENERAL NOTE

- DO NOT BLOCK INLET THROAT.
- DO NOT USE BARRIERS AS THE ONLY SEDIMENT CONTROL MEASURES. INLET PROTECTION IS ONLY EFFECTIVE WHEN USED IN CONJUNCTION WITH OTHER UPSTREAM EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES. INLET BARRIER PROTECTION SHOULD BE A LAST LINE OF DEFENSE FOR SEDIMENT CAPTURE.
- INSPECT WEEKLY AND AFTER EACH RAIN FALL EVENT.
- REMOVE SEDIMENT WHEN HALF FULL (1/2 WAY UP SEDIMENT BARRIER)
- IN SUMP LOCATIONS INLET PROTECTION WILL BE PLACED AS DIRECTED BY THE ENGINEER
- DO NOT USE IF STREET IS OPEN TO PUBLIC TRAFFIC. INTENDED FOR GENERAL USE AFTER PAVING AND BEFORE OPEN TO PUBLIC TRAFFIC.



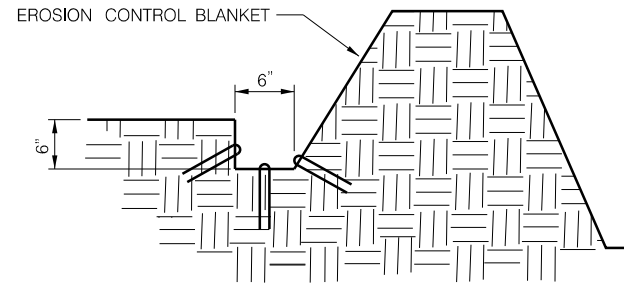
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NOTE:
 ON SHALLOW SLOPES,
 PROTECTIVE EROSION CONTROL
 BLANKETS MAY BE APPLIED
 ACROSS THE SLOPE.

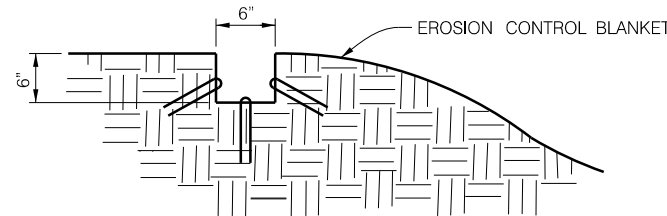
SHALLOW SLOPE APPLICATION



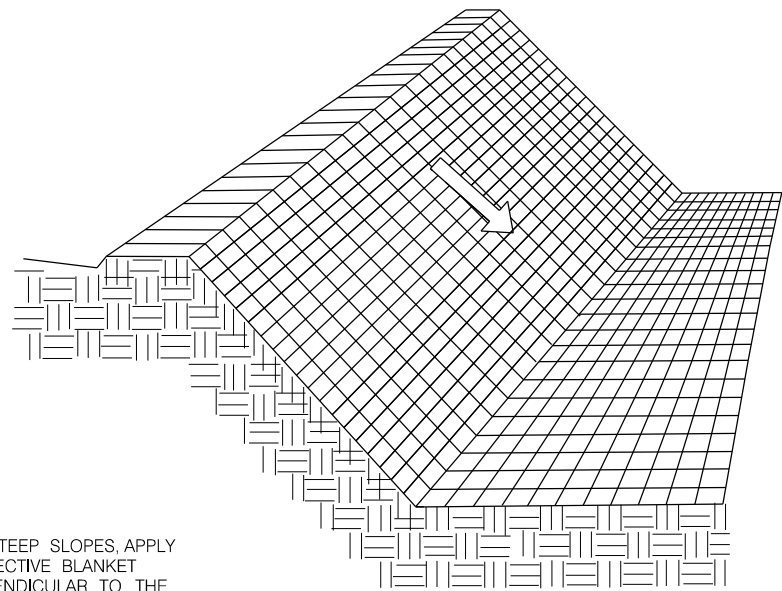
DETAIL OF
BERM

NOTE:
 WHERE THERE IS A BERM AT THE TOP OF THE SLOPE, INSTALL THE MATERIAL OVER THE BERM AND ANCHOR IT BEHIND THE BERM.

THE MATERIAL SHALL BE INSTALLED DOWN THE SLOPE TO A LEVEL AREA BEFORE TERMINATING.

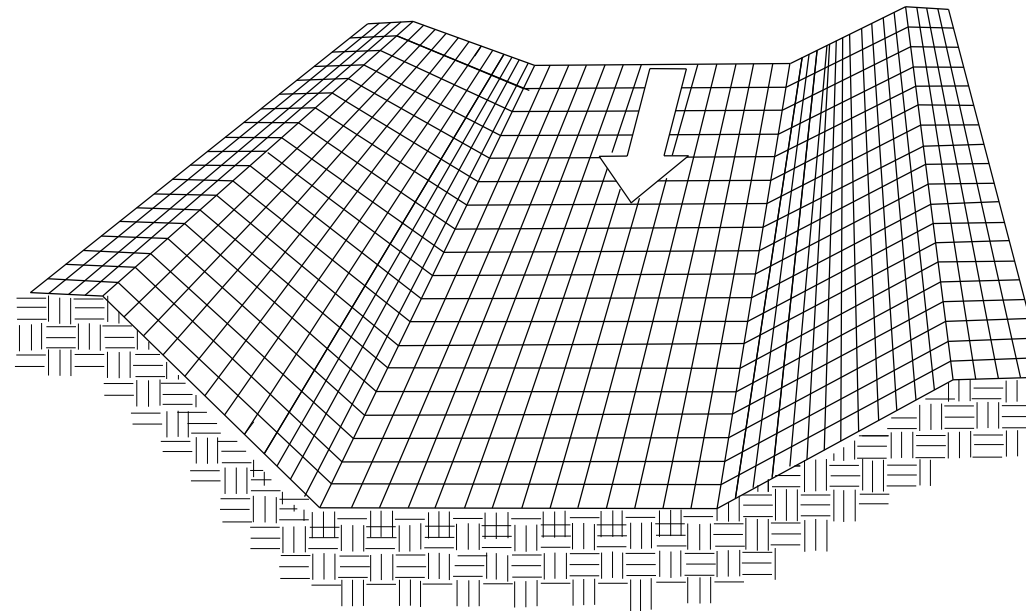


DETAIL OF
TOP OF SLOPE



NOTE:
 ON STEEP SLOPES, APPLY
 PROTECTIVE BLANKET
 PERPENDICULAR TO THE
 DIRECTION OF FLOW AND
 ANCHOR SECURELY

STEEP SLOPE APPLICATION



NOTE:
 BRING MATERIAL DOWN TO A LEVEL AREA
 BEFORE TERMINATING THE INSTALLATION

DITCH APPLICATION

SITE PREPARATION

AFTER THE SITE HAS BEEN GRADED AND SHAPED, PREPARE A SEED BED RELATIVELY FREE FROM CLOUDS AND ROCKS MORE THAN 1 1/2 INCHES IN DIAMETER AND ANY FOREIGN MATERIAL THAT WILL PREVENT UNIFORM CONTACT OF THE PROTECTIVE COVERING WITH THE SOIL SURFACE.

PLANTING

FERTILIZE AND SEED IN ACCORDANCE WITH THE SEEDING OR PLANTING PLAN. WHEN USING JUTE MESH ON A SEEDED AREA, APPLY APPROXIMATELY ONE HALF THE SEED AFTER LAYING THE MAT. THE PROTECTIVE COVERING CAN BE LAID OVER AREAS WHERE SMALL GRASS PLANTS HAVE BEEN INSERTED INTO THE SOIL WHERE GROUND COVERS ARE TO BE PLANTED. LAY THE PROTECTIVE COVERING FIRST AND THEN PLANT THROUGH THE MATERIAL AS PER PLANTING PLAN.

INSTALLATION:

1. START LAYING THE PROTECTIVE COVERING FROM THE TOP OF THE CHANNEL OR SLOPE AND UNROLL DOWN HILL. ALLOW TO LAY LOOSELY ON SOIL DO NOT STRETCH!
2. UP SLOPE ENDS OF THE BLANKET SHOULD BE BURIED IN AN ANCHOR SLOT NO LESS THAN 6 INCHES DEEP. TAMP EARTH
3. EXTEND BLANKET ABOUT 40 INCHES OVER THE TOP OF SLOPE WHEN MATERIAL IS RELATIVELY FLAT. STAPLE MATERIAL AT A MINIMUM OF EVERY 12 INCHES ACROSS THE TOP.
4. EDGES OF THE MATERIAL SHALL BE STAPLED EVERY 3 FT. WHERE MULTIPLE WIDTHS ARE LAID SIDE BY SIDE. THE ADJACENT EDGE SHALL BE OVERLAPPED A MINIMUM OF 6 INCHES AND STAPLED TOGETHER.
5. STAPLE PATTERNS VARY REFER TO CITY ENGINEER SPECIAL PROVISIONS OR PRODUCT MANUFACTURER FOR APPROPRIATE PATTERN.

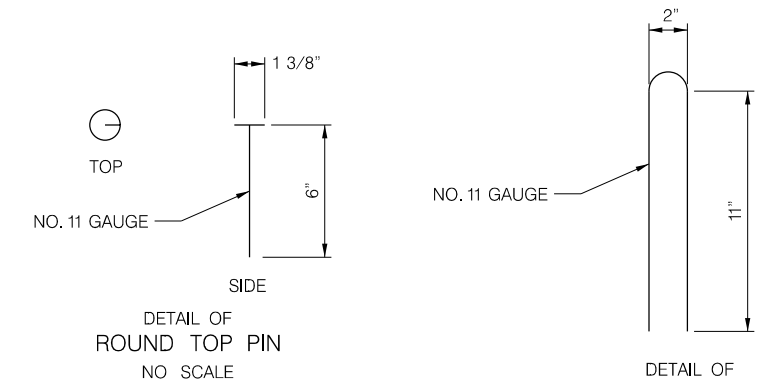
MAINTENANCE AND INSPECTION:

INSPECT CONTROLS AFTER EACH RAIN EVENT OF 1/2 INCH OR GREATER, AND EVERY 7 DAYS UNTIL VEGETATION IS ESTABLISHED, FOR EROSION OR UNDERMINING BENEATH THE NETTING BLANKETS, OR MATS. IF ANY AREA SHOWS EROSION, PULL BACK THAT PORTION OF THE MATERIAL, ADD SOIL, TAMP DOWN, AND RESEED; RE-SECURE THE MATERIAL IN PLACE. IF NETTING, BLANKETS OR MATS BECOME DISLOCATED OR DAMAGED, REPAIR OR REPLACE AND RE-SECURE IMMEDIATELY.

NOTE:

IN DITCHES APPLY PROTECTIVE COVERING PARALLEL TO THE DIRECTION OF FLOW. AVOID JOINING MATERIAL IN THE CENTER OF THE DITCH IF AT ALL POSSIBLE. FOLLOW BLANKET MANUFACTURER'S RECOMMENDATIONS FOR ALLOWABLE VELOCITY AND SHEAR STRESS.

A GEOTEXTILE WITH CONCRETE SQUARES IS AN ACCEPTABLE PRODUCT FOR THIS APPLICATION



DETAIL OF
ROUND TOP PIN
 NO SCALE

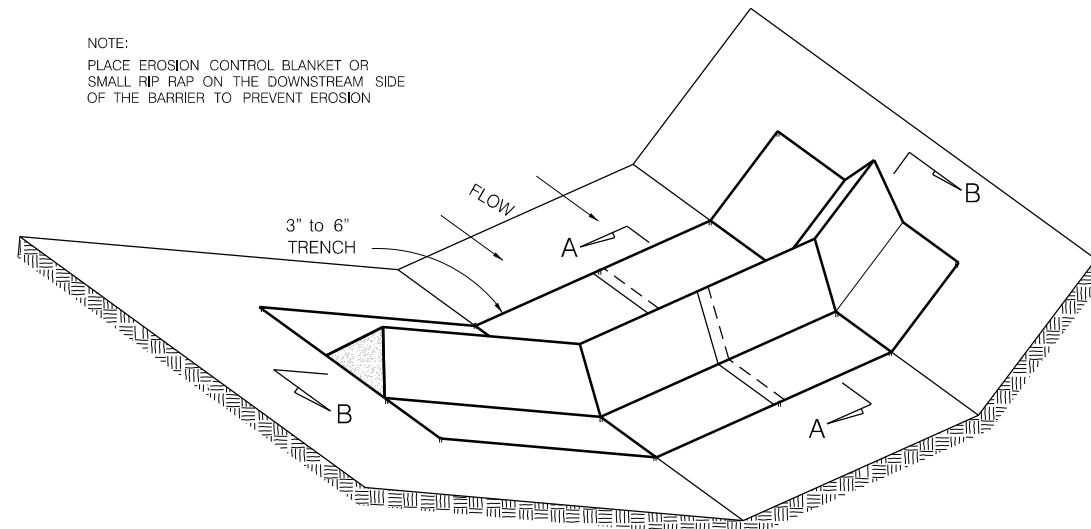
DETAIL OF
STAPLE
 NO SCALE

NOTE:
 REFER TO CHAPTER 9 OF THE CITY OF LINCOLN
 DRAINAGE CRITERIA MANUAL FOR MORE INFORMATION
 ON SEDIMENT AND EROSION CONTROL MEASURES



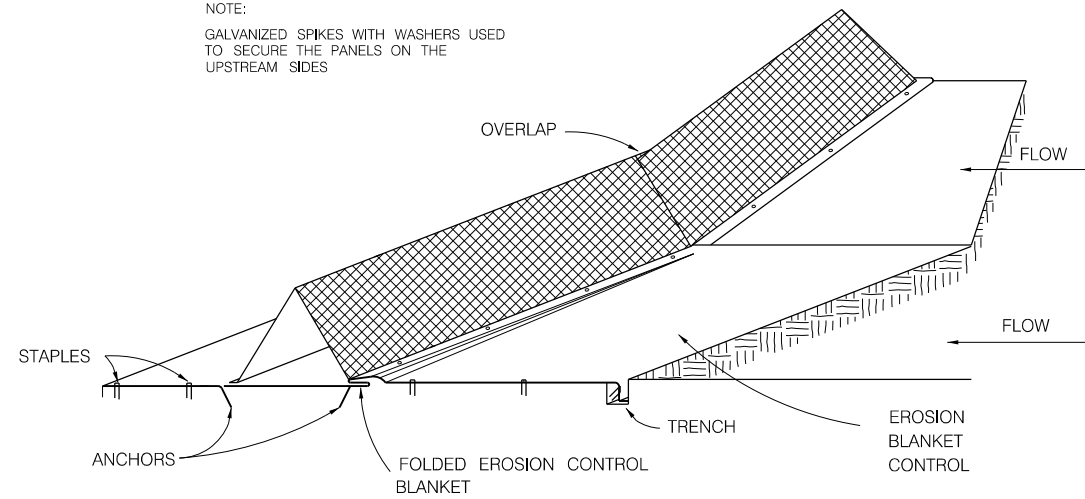
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NOTE:
 PLACE EROSION CONTROL BLANKET OR SMALL RIP RAP ON THE DOWNSTREAM SIDE OF THE BARRIER TO PREVENT EROSION

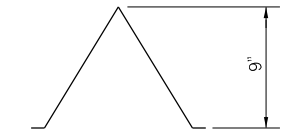


TRIANGULAR SILT BARRIER

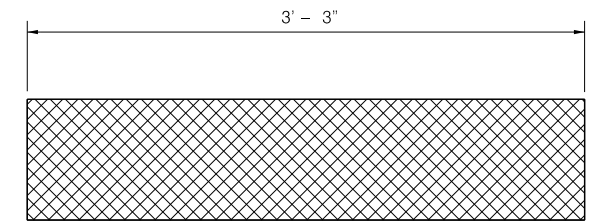
NOTE:
 GALVANIZED SPIKES WITH WASHERS USED TO SECURE THE PANELS ON THE UPSTREAM SIDES



PERMEABLE A-SHAPED BERM



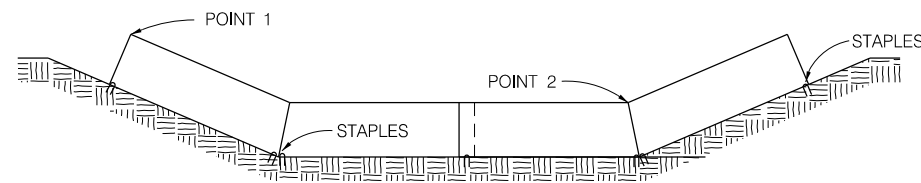
END VIEW



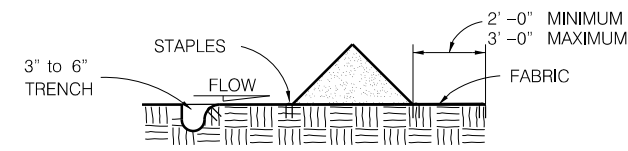
SIDE VIEW

NOTE:

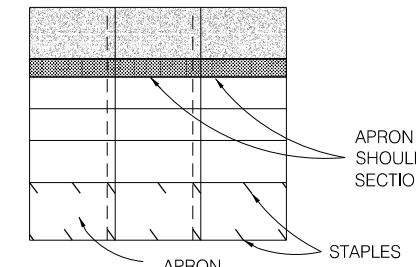
POINT 1 MUST BE HIGHER THAN POINT 2. THIS IS TO ENSURE THAT THE WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.



SECTION B-B

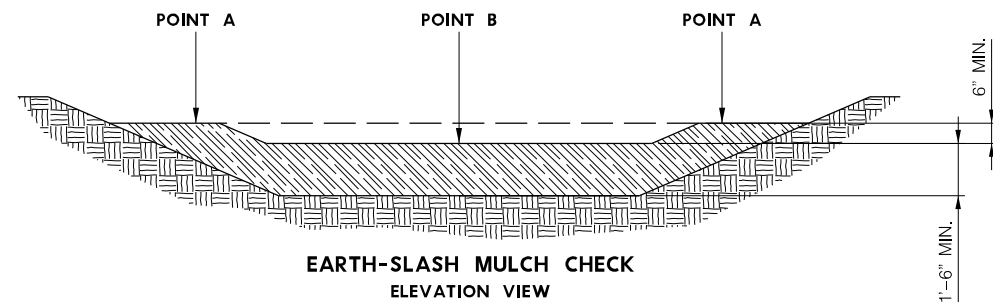


SECTION A-A

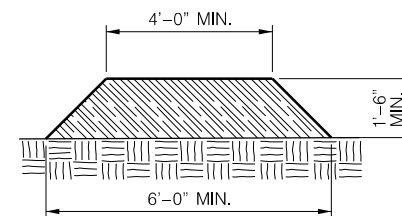


DIKE PLAN VIEW

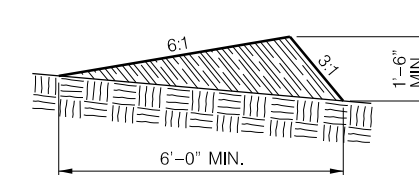
APRON ON THIS SIDE OF DIKE SHOULD BE FOLDED UNDER THE DIKE SECTION AND STAPLED DOWN



EARTH-SLASH MULCH CHECK ELEVATION VIEW



CROSS SECTION SILT CHECK-SLASH MULCH OPTION A



CROSS SECTION SILT CHECK-SLASH MULCH OPTION B

NOTE:

SEDIMENT BARRIERS SHOULD BE PLACED PERPENDICULAR TO THE FLOWLINE OF THE DITCH

THE SEDIMENT BARRIERS SHOULD EXTEND FAR ENOUGH SO THAT THE BOTTOMS OF THE END DIKES ARE HIGHER THAN THE TOP OF THE LOWEST DIKE. THIS PREVENTS WATER FROM FLOWING AROUND THE SEDIMENT BARRIER.

SEDIMENT BARRIERS SHOULD NOT BE PLACED IN DITCHES WHERE HIGH FLOWS ARE EXPECTED.

ROCK CHECKS SHOULD BE USED INSTEAD.

SEDIMENT BARRIERS SHOULD BE PLACED IN DITCHES WITH A SLOPE OF 6 PERCENT OR LESS.

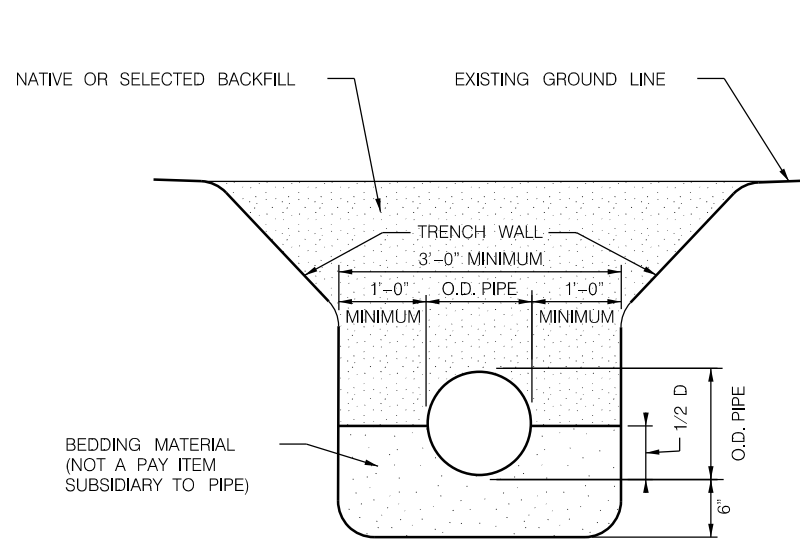
FOR SLOPES STEEPER THAN 6 PERCENT, ROCK CHECKS SHOULD BE USED.

CHECK SPACING

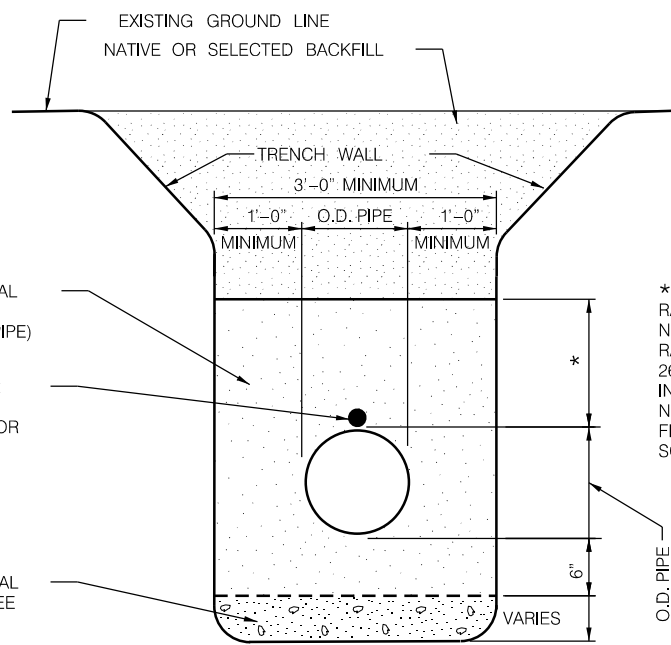
PERCENT OF GRADE	SPACING PER FT.
1.0	200
2.0	98
3.0	66
4.0	49
5.0	39
6.0	10

NOTE:
 REFER TO CHAPTER 9 OF THE CITY OF LINCOLN DRAINAGE CRITERIA MANUAL FOR MORE INFORMATION ON SEDIMENT AND EROSION CONTROL MEASURES



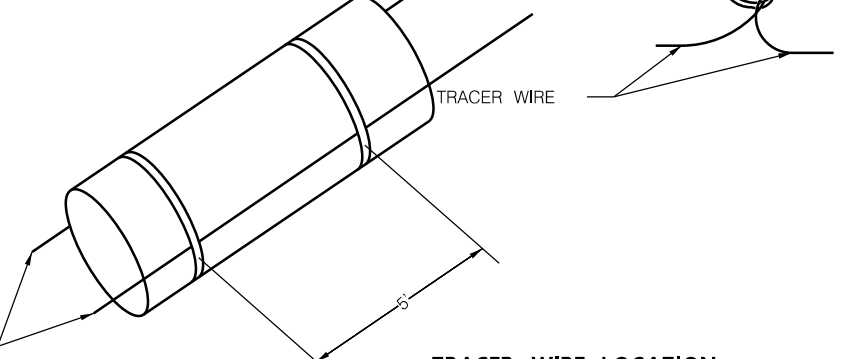
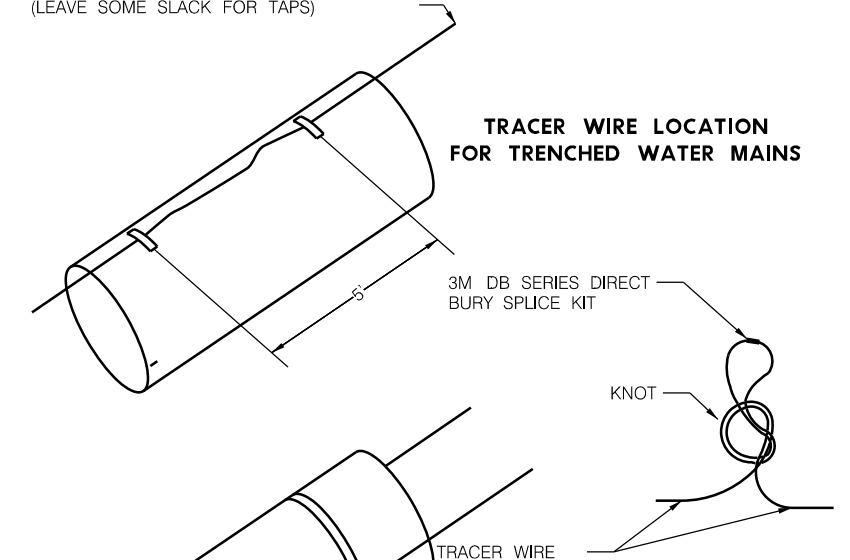


PIPE BEDDING FOR DUCTILE IRON, VITRIFIED CLAY AND REINFORCED CONCRETE PIPE 15" DIAMETER AND LARGER



PIPE BEDDING AND FOUNDATION MATERIAL FOR ALL PIPE EXCEPT DUCTILE IRON, VITRIFIED CLAY, AND REINFORCED CONCRETE

TRACER WIRE (FOR WATER MAINS) TAPE EVERY 5' TO TOP OF PIPE PRIOR TO BACK FILL (LEAVE SOME SLACK FOR TAPS)

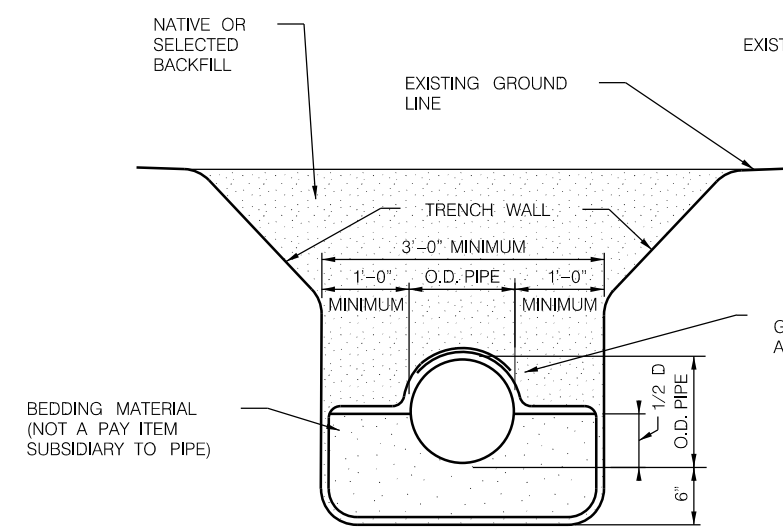


* 6 INCH MIN. FOR ALL PRESSURE RATED FLEXIBLE PIPES (C900) OR NON-PRESSURE RATED FLEXIBLE PIPES THAT ARE SDR 26 SCHEDULE 40 OR STRONGER. 18 INCHES ARE REQUIRED FOR NON-PRESSURE RATED FLEXIBLE PIPE LESS THAN SDR 26 SCHEDULE 40.

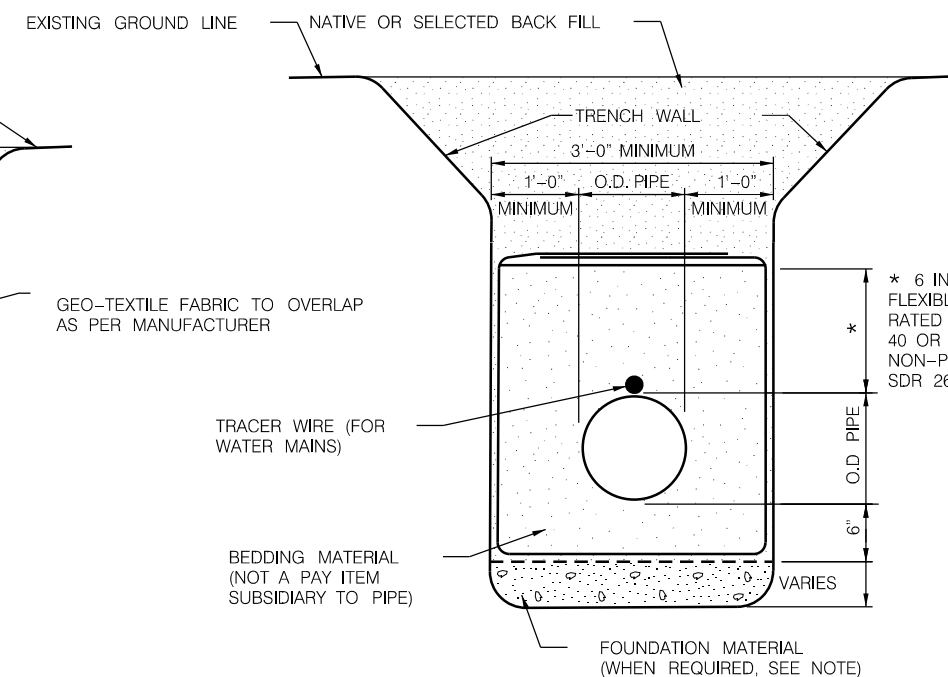
TRACER WIRES ON OPPOSITE SIDES OF THE PIPE (FOR WATER MAINS) TAPE EVERY 5' AROUND THE ENTIRE CIRCUMFERENCE PRIOR TO BACK FILL

GENERAL NOTES:

1. WHEN "FOUNDATION MATERIAL" IS REQUIRED/APPROVED BY THE CONTRACT ADMINISTRATOR, IT SHALL BE PAID AT AN AGREED UNIT PRICE OF \$35 PER CUBIC YARD INSTALLED, BASED ON THE INCREASED DIMENSIONS OF THE MATERIAL ADDED TO STABILIZE THE TRENCH BOTTOM.
2. WHEN REQUIRED BY THE CITY'S PROJECT MANAGER, WATER SHALL BE ADDED TO THE MATERIAL EXCAVATED FROM THE TRENCH WHEN NECESSARY TO MEET SPECIFICATIONS, DURING COMPACTION, AT THE AGREED UNIT PRICE OF \$50 PER 100 CUBIC FEET OF WATER APPLIED TO COMPLETE THE COMPACTION.
3. WIRE SPLICES SHALL BE 3M DBR CONNECTORS, SEALED WITH SILICONE SEALANT, OR EQUAL AND COVERED WITH SCOTCH #33 ELECTRICAL TAPE.

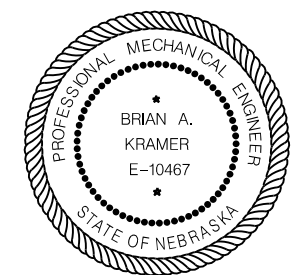


PIPE BEDDING FOR DUCTILE IRON AND REINFORCED CONCRETE PIPE 15" DIAMETER AND LARGER WITH GEO-TEXTILE FABRIC



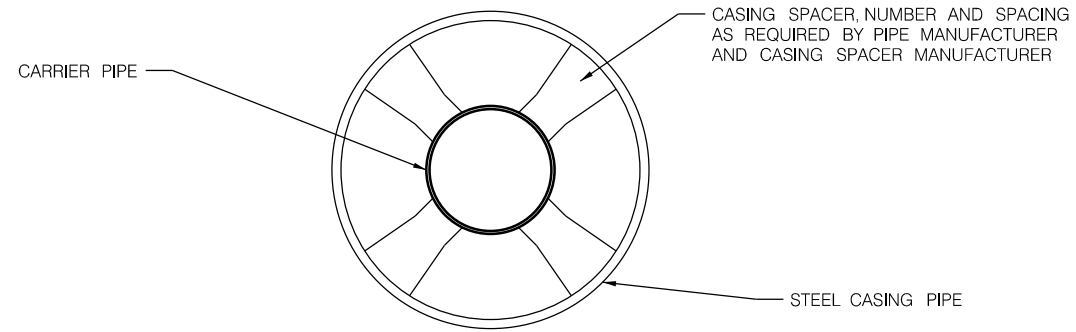
PIPE BEDDING AND FOUNDATION MATERIAL FOR ALL PIPE EXCEPT DUCTILE IRON AND REINFORCED CONCRETE WITH GEO-TEXTILE FABRIC

* 6 INCH MIN. FOR ALL PRESSURE RATED FLEXIBLE PIPES (C900) OR NON-PRESSURE RATED FLEXIBLE PIPES THAT ARE SDR 26 SCHEDULE 40 OR STRONGER. 18 INCHES ARE REQUIRED FOR NON-PRESSURE RATED FLEXIBLE PIPE LESS THAN SDR 26 SCHEDULE 40.

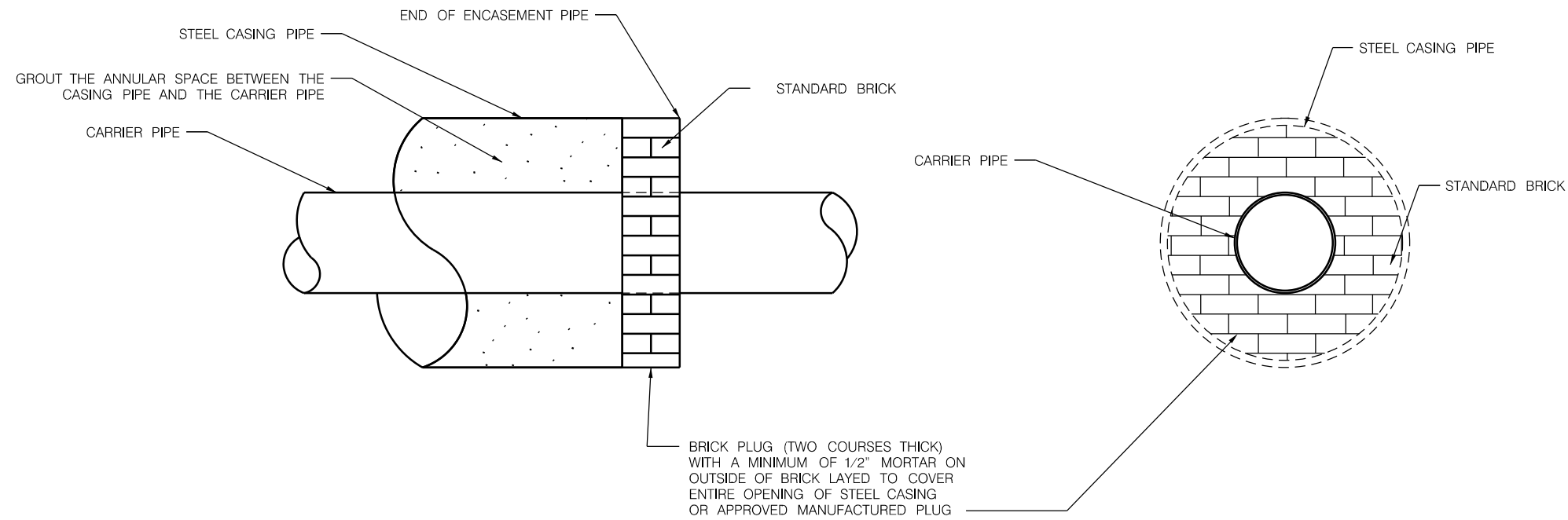


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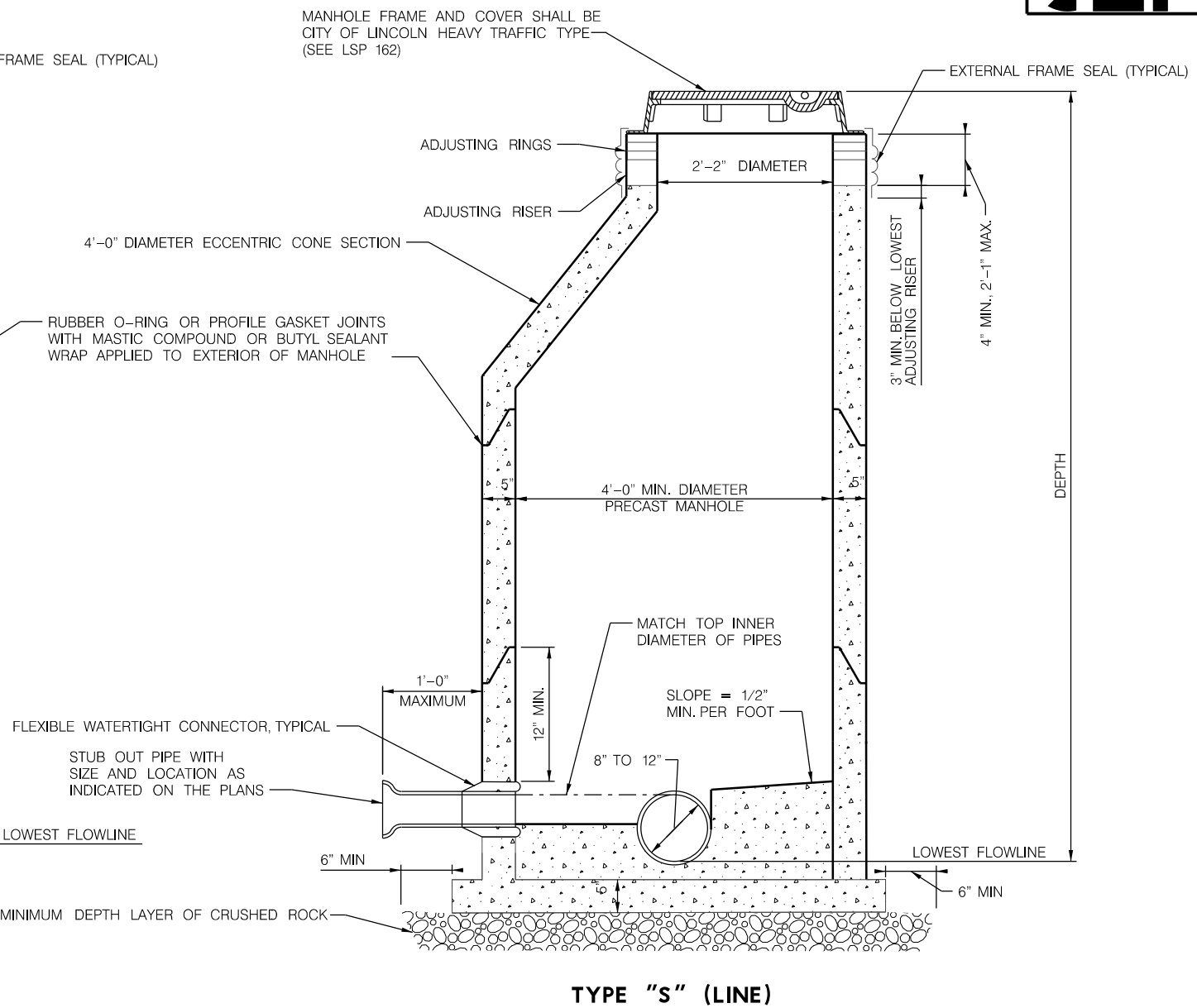
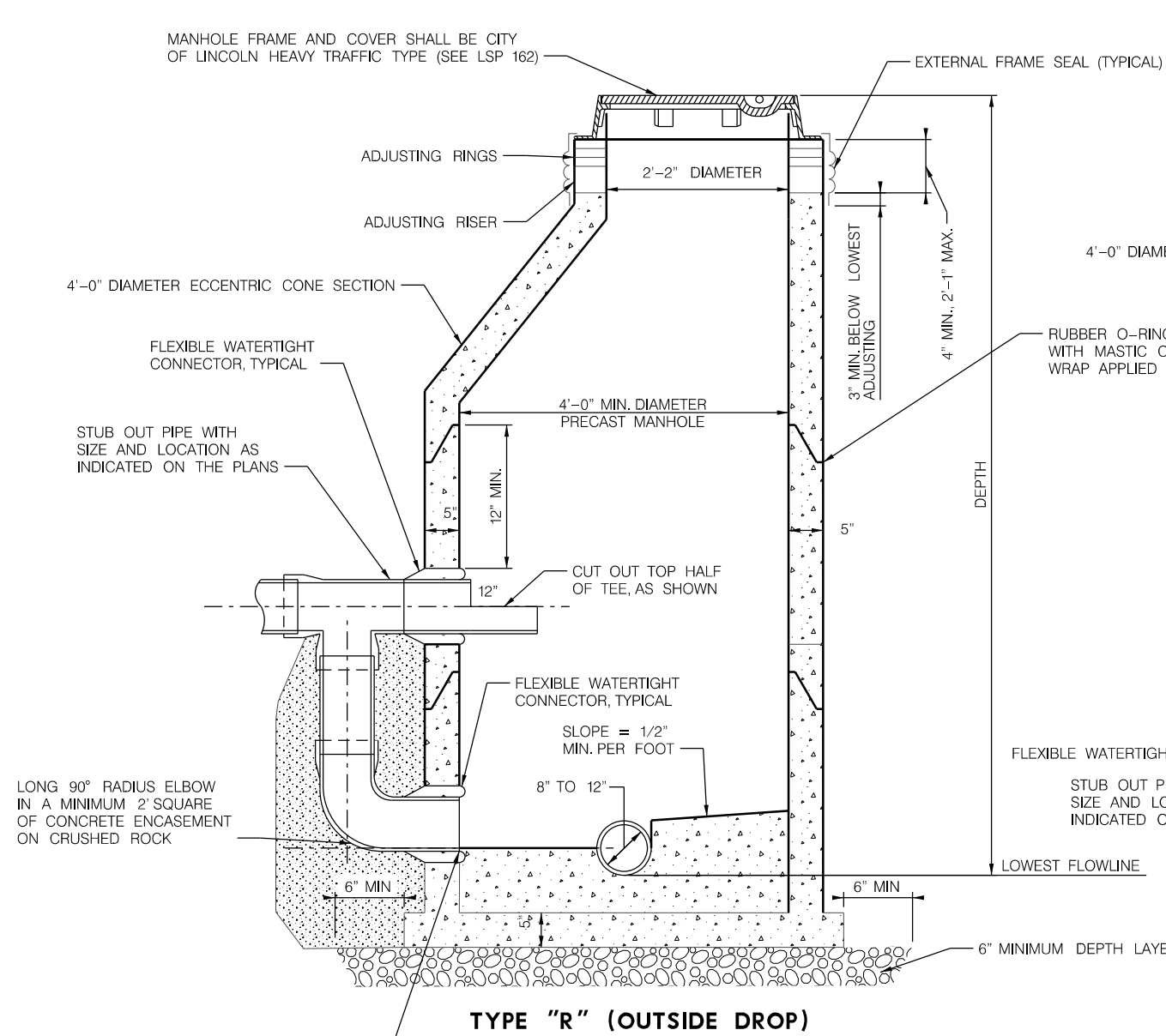


ENCASEMENT WITH CASING CHOCKS



BRICK ENCASEMENT PLUGS





INVERT OF DROP PIPE SHALL MATCH THE CENTERLINE OF THE LOWEST PIPE

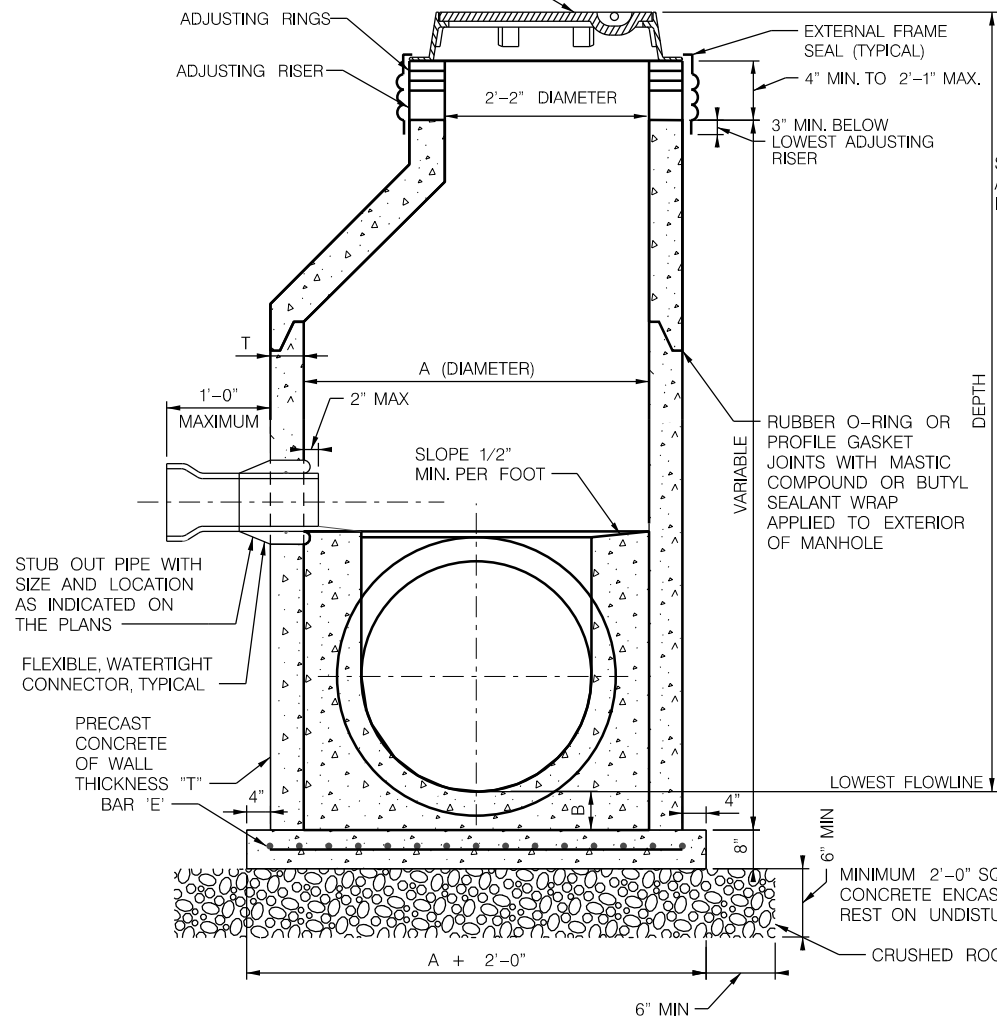
GENERAL NOTES:

- SEE CHAPTER 22 OF THE LINCOLN STANDARD SPECIFICATIONS.
- PLACE VERTICAL SIDE OF ECCENTRIC SECTION FARTHEST FROM BACK OF CURB. MANHOLE ACCESS TO BE POSITIONED OVER THE INCOMING LINES.
- SOLVENT WELD FITTINGS ON OUTSIDE DROPS ARE ACCEPTABLE.

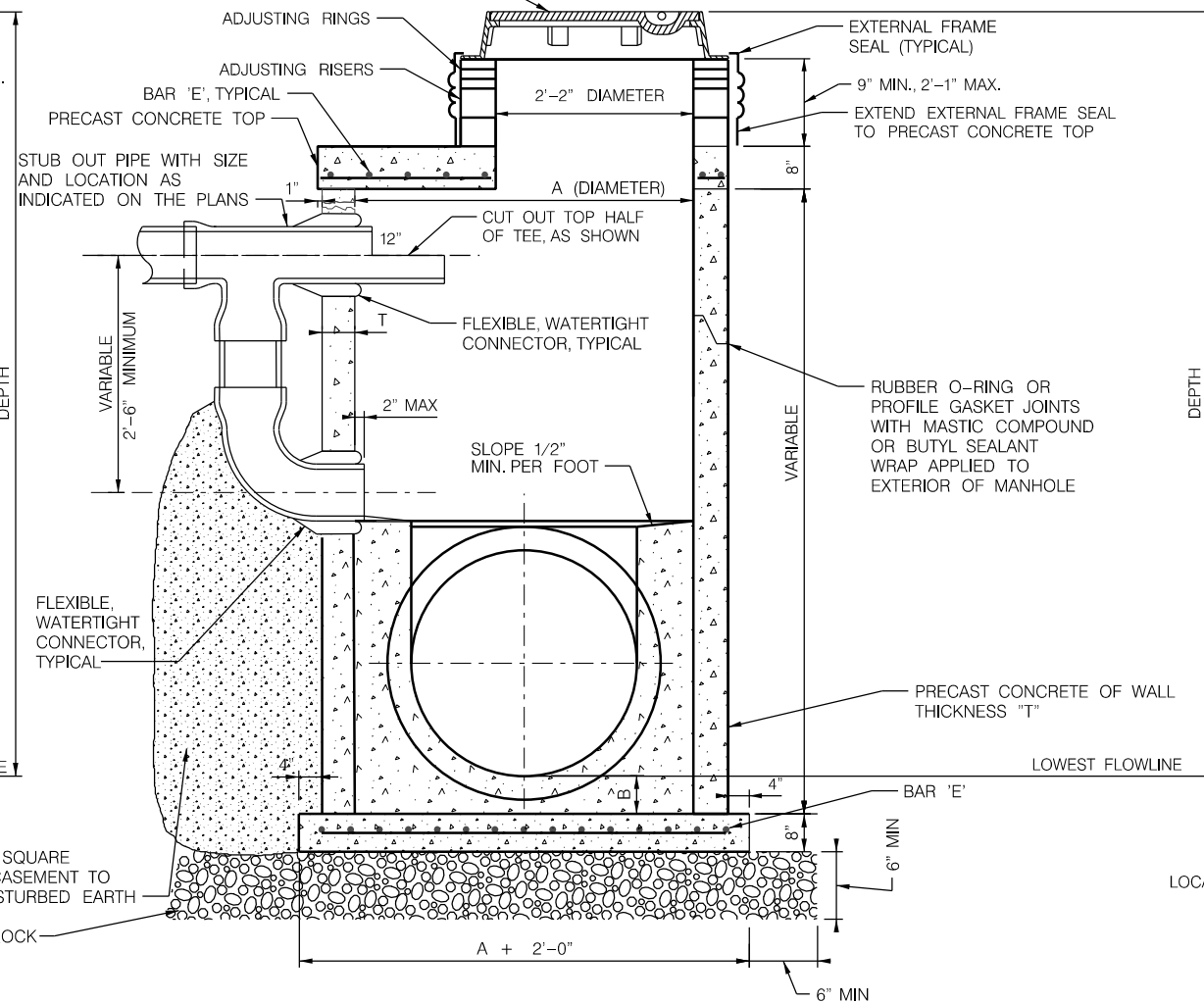


MANHOLE FRAME AND COVER SHALL BE CITY OF LINCOLN HEAVY TRAFFIC TYPE (SEE LSP 162)

MANHOLE FRAME AND COVER SHALL BE CITY OF LINCOLN HEAVY TRAFFIC TYPE (SEE LSP 162)



SECTION OF LINE MANHOLE WITH ECCENTRIC TOP



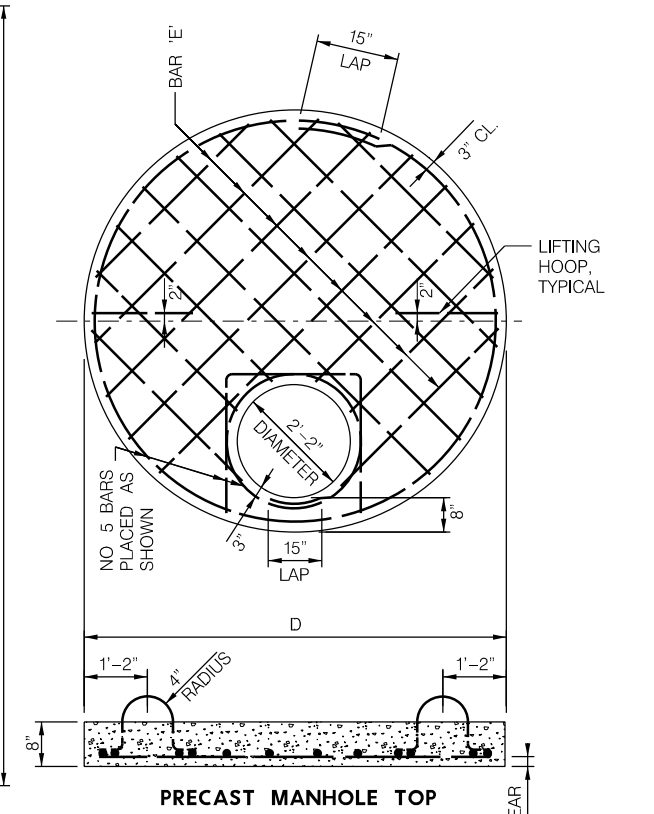
SECTION OF DROP MANHOLE WITH PRECAST TOP

PRECAST REINFORCED CONCRETE MANHOLE

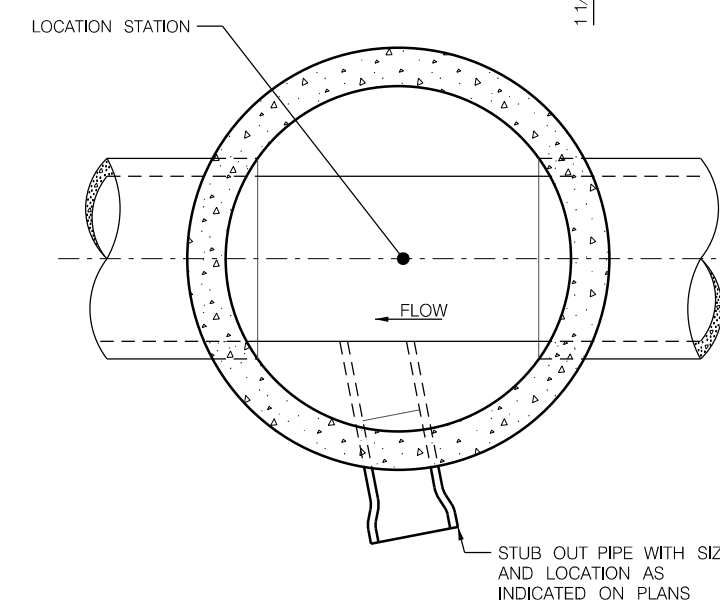
STANDARD SANITARY SEWER MANHOLE	SANITARY TRUNK SEWER DIAMETER	DIMENSIONS				REINFORCING STEEL BAR 'E'
		A	B	D	T	
TYPE "P" (LINE)	15" THRU 27" INCL.	5'-0"	0'-6"	6'-2"	6"	NO 5 BARS @ 12" EACH WAY
TYPE "G" (LINE)	30" THRU 48" INCL.	6'-0"	0'-8"	7'-4"	7"	NO 5 BARS @ 9" EACH WAY
TYPE "Q" (DROP)	15" THRU 27" INCL.	5'-0"	0'-6"	6'-2"	6"	NO 5 BARS @ 12" EACH WAY
TYPE "H" (DROP)	30" THRU 48" INCL.	6'-0"	0'-8"	7'-4"	7"	NO 5 BARS @ 9" EACH WAY

GENERAL NOTES:

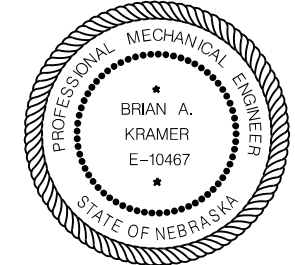
- SEE CHAPTER 22 OF THE LINCOLN STANDARD SPECIFICATIONS.
- PLACE VERTICAL SIDE OF ECCENTRIC SECTION FARTHEST FROM BACK OF CURB. MANHOLE ACCESS TO BE POSITIONED OVER THE INCOMING LINES.
- ALL REINFORCING STEEL SHALL BE EPOXY COATED.
- MAXIMUM DROP PIPE SIZE IS 12".
- SOLVENT WELD FITTINGS ON OUTSIDE DROPS ARE ACCEPTABLE.



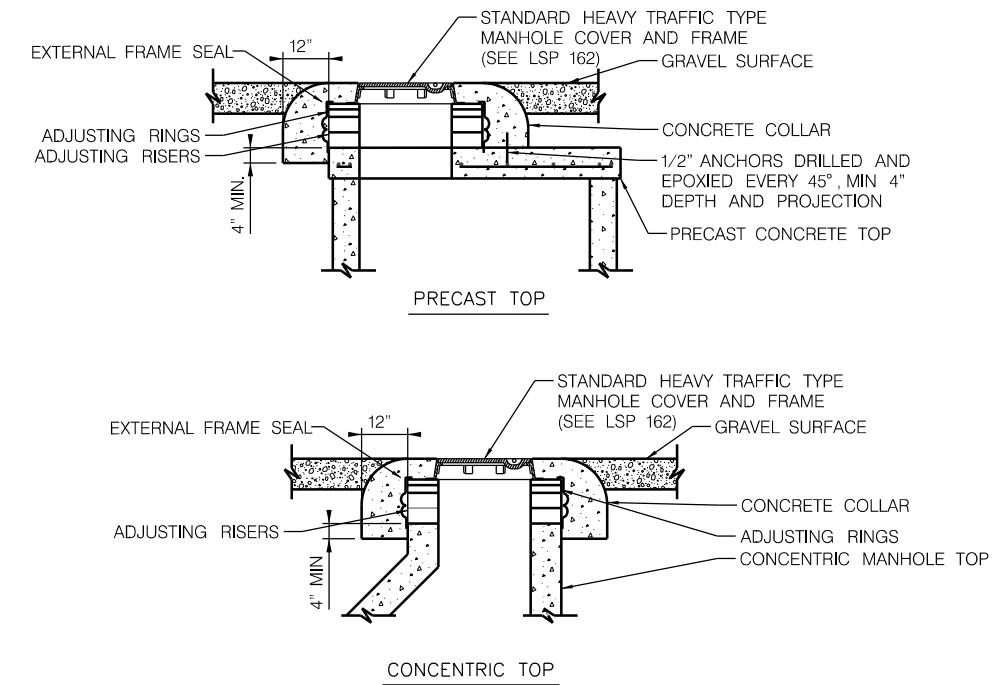
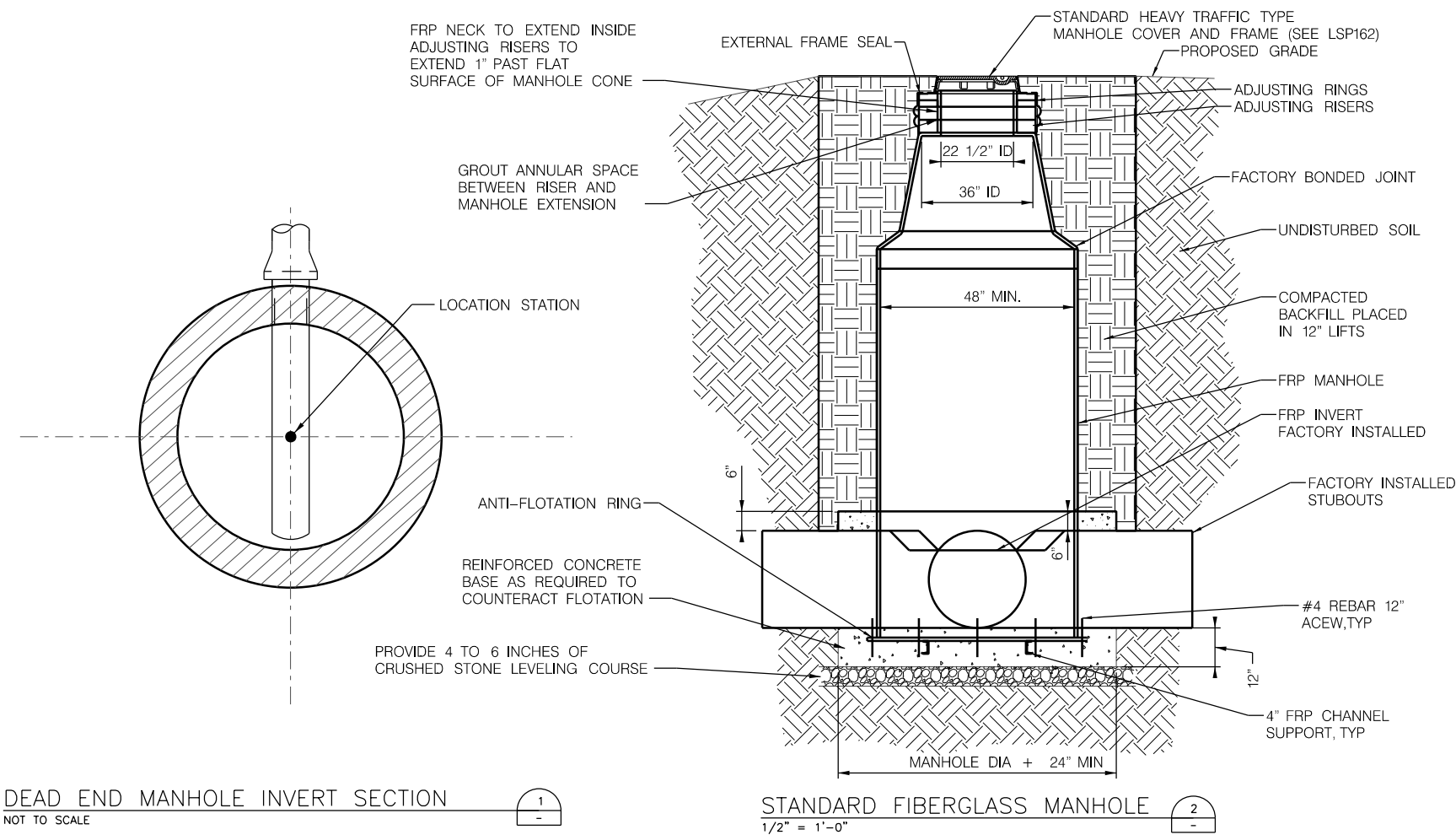
PRECAST MANHOLE TOP



MANHOLE INVERT



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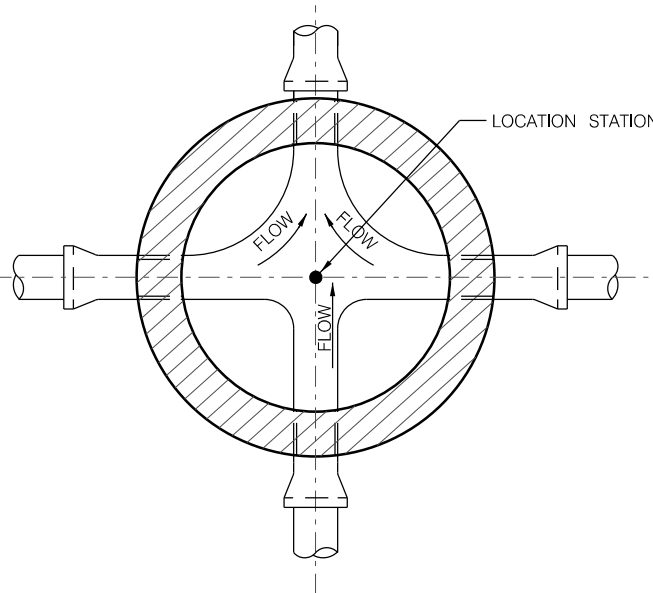


GRAVEL ROAD CONCRETE COLLAR DETAIL 3
NOT TO SCALE

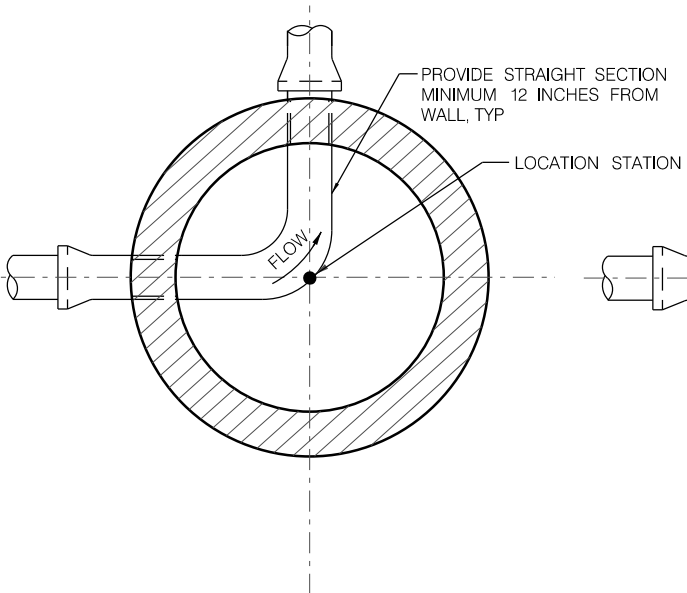
- NOTES:
1. CONCRETE SHALL BE L3500.
 2. ALL REINFORCING SHALL BE EPOXY COATED.

DEAD END MANHOLE INVERT SECTION 1
NOT TO SCALE

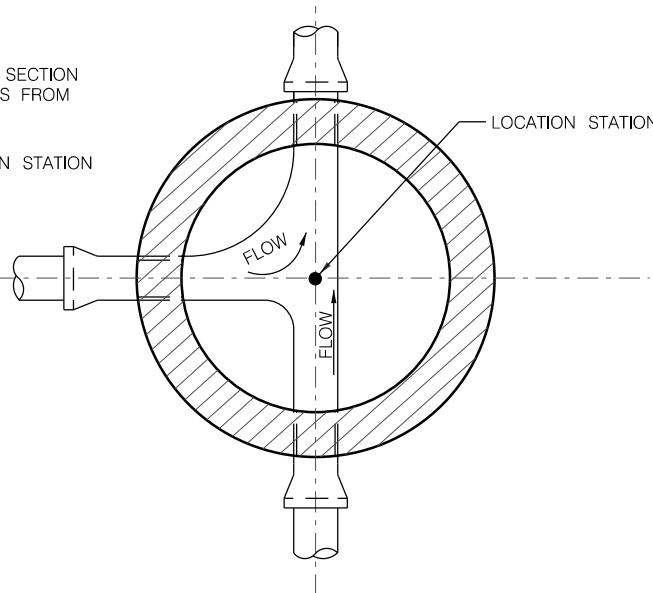
STANDARD FIBERGLASS MANHOLE 2
1/2" = 1'-0"



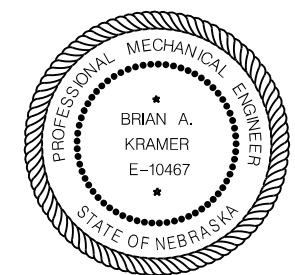
4-WAY MANHOLE INVERT SECTION 4
NOT TO SCALE



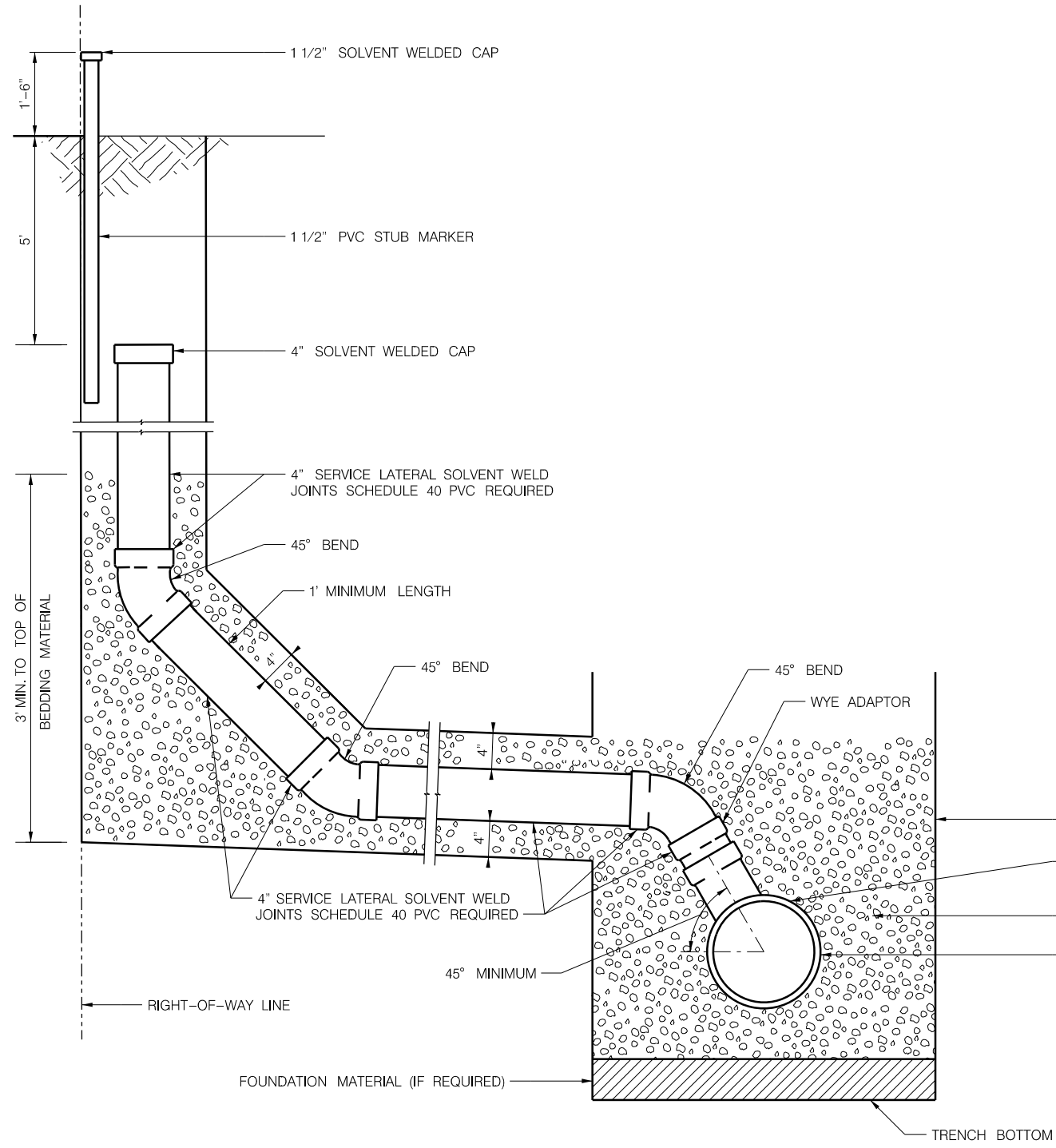
90 DEG MANHOLE INVERT SECTION 5
NOT TO SCALE



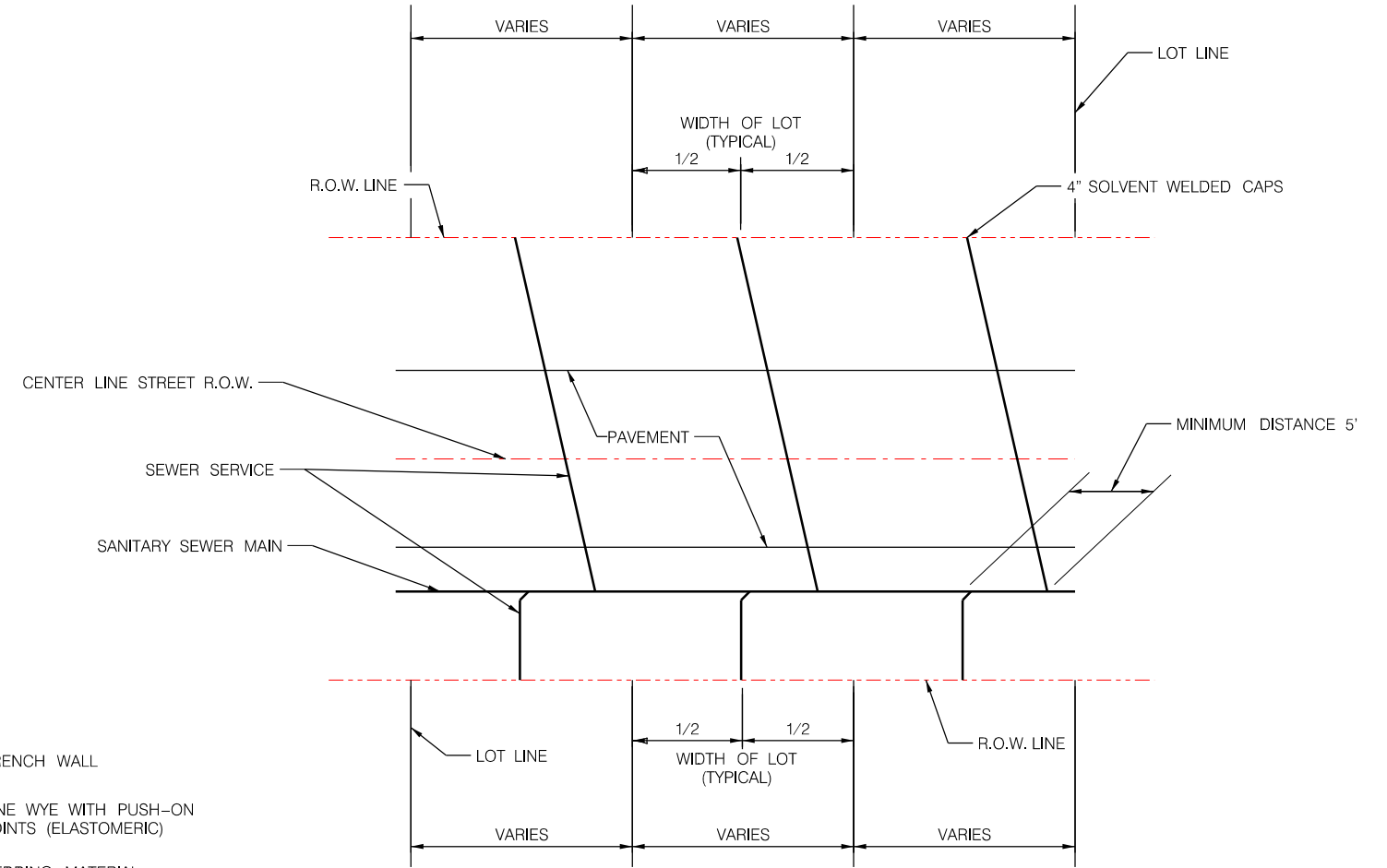
TEE MANHOLE INVERT SECTION 6
NOT TO SCALE



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DETAIL OF
SANITARY SERVICE CONNECTION



PLAN OF
SANITARY SERVICE LOCATIONS

- GENERAL NOTES:
- SERVICE WYE SHALL BE INSTALLED SO THAT SERVICE CONNECTION IS AT LEAST 45 DEGREES FROM HORIZONTAL.
 - SERVICE LINE SHALL BE EXTENDED TO THE PROPERTY LINE.
 - SOLVENT WELDED CONNECTIONS ARE REQUIRED FOR THE ENTIRE SEWER SERVICE CONNECTION FROM LINE WYE TO THE CAP.
 - MINIMUM GRADE FOR SERVICE LATERAL IS 1/8" PER FOOT (.01 PER FOOT).

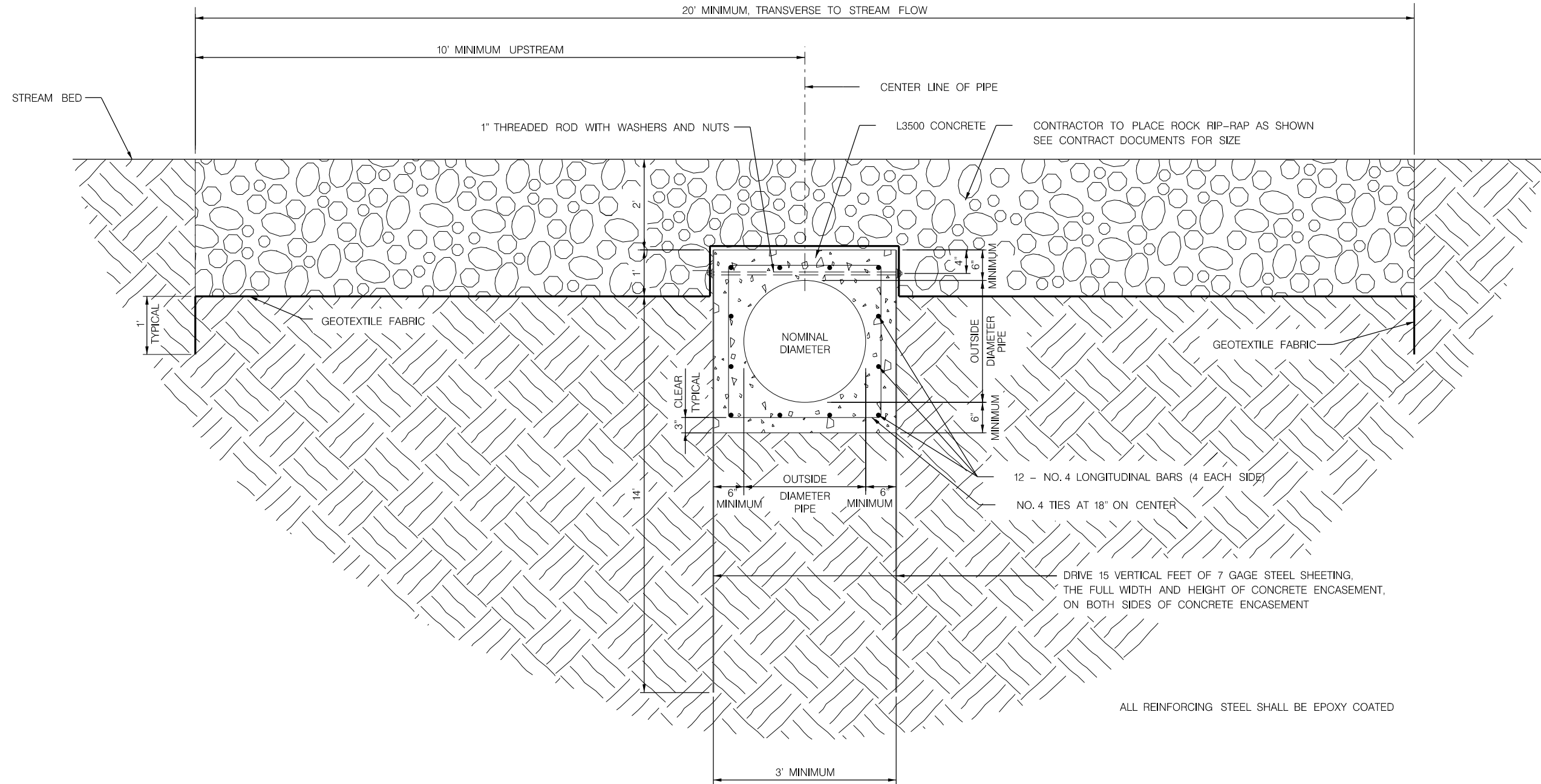


SANITARY SERVICE

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 DATE: 12/4/2019
 DGN: ..\2020 DGN Files\LSP_220.dgn

LTU	PLAN NO.	SHEET NO.
	220	1
	Date: 1/2/2020	Drawn: CAW
	Horz. Scale: N.T.S.	Checked:
		Approved:



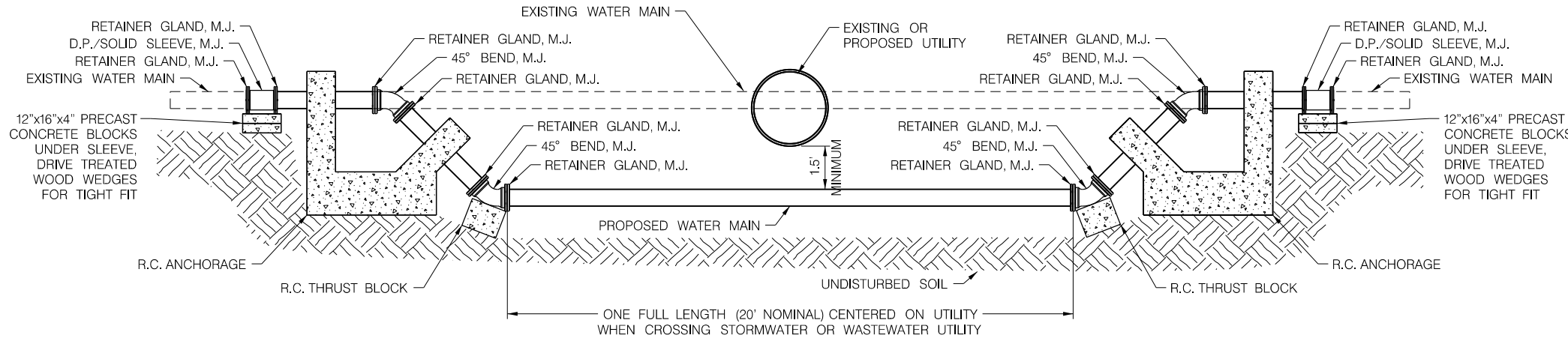
STREAM CROSSING DETAIL



STREAM CROSSING PROTECTION

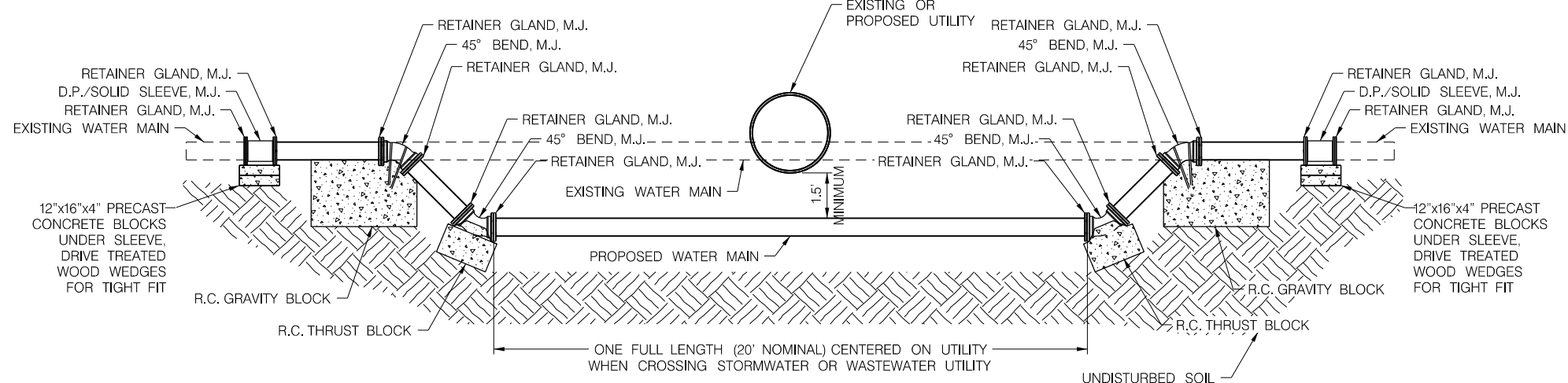
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 USER: sljrd
 DATE: 11/27/2019
 DGN: ..\2020 DGN Files\LSP_301.dgn



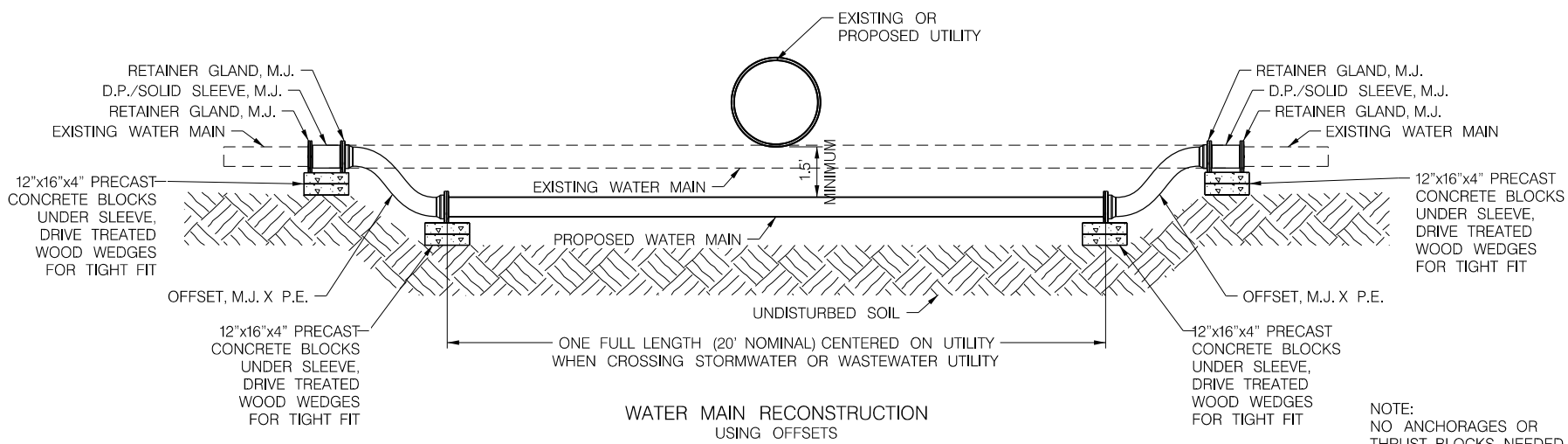
WATER MAIN RECONSTRUCTION USING BENDS

QUANTITIES USED IN WATER MAIN RECONSTRUCTION USING BENDS	
SIZE OF PIPE X 45° BEND, M.J.	4 EA.
SIZE OF PIPE SOLID SLEEVE, M.J. (L=12")	2 EA.
SIZE OF PIPE D.P. SLEEVE, M.J. (TO BE USED WITH A.W.W.A PIPE)	2 EA.
SIZE OF PIPE GRAVITY BLOCK	2 EA.
SIZE OF PIPE R.C. THRUST BLOCK	2 EA.
SIZE OF PIPE WATER MAIN	VARIES L.F.
REMOVE SIZE OF PIPE WATER MAIN	VARIES L.F.
SIZE OF PIPE RETAINER GLANDS, M.J.	12 EA.



WATER MAIN RECONSTRUCTION USING BENDS

QUANTITIES USED IN WATER MAIN RECONSTRUCTION USING BENDS	
SIZE OF PIPE x DROP, M.J. x P.E.	4 EA.
SIZE OF PIPE SOLID SLEEVE, M.J. (L=12")	2 EA.
SIZE OF PIPE D.P. SLEEVE, M.J. (TO BE USED WITH A.W.W.A PIPE)	2 EA.
SIZE OF PIPE WATER MAIN	VARIES L.F.
REMOVE SIZE OF PIPE WATER MAIN	VARIES L.F.
SIZE OF PIPE RETAINER GLANDS, M.J.	6 EA.



WATER MAIN RECONSTRUCTION USING OFFSETS

NOTE:
 NO ANCHORAGES OR THRUST BLOCKS NEEDED WITH OFFSETS

NOTE:

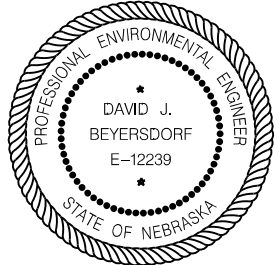
THE TOTAL LENGTH OF WATER RECONSTRUCTION IS TO BE POLYWRAPPED, IF DUCTILE IRON PIPE. SEE STANDARD SPECIFICATIONS

WHEN PROPOSED UTILITY CROSSING IS 36" IN DIA. OR LARGER, CRUSHED ROCK FOUNDATION MATERIAL SHOULD BE USED AS BACKFILL UNDER PROPOSED UTILITY.

ALL CONCRETE SHALL BE L3500


ANY 4" WATER MAIN RECONSTRUCTION IS TO BE COMPLETED USING A MINIMUM OF 6" PIPE AND FITTINGS AND REDUCED TO MEET THE 4" MAIN AT EACH END OF THE RECONSTRUCTION.

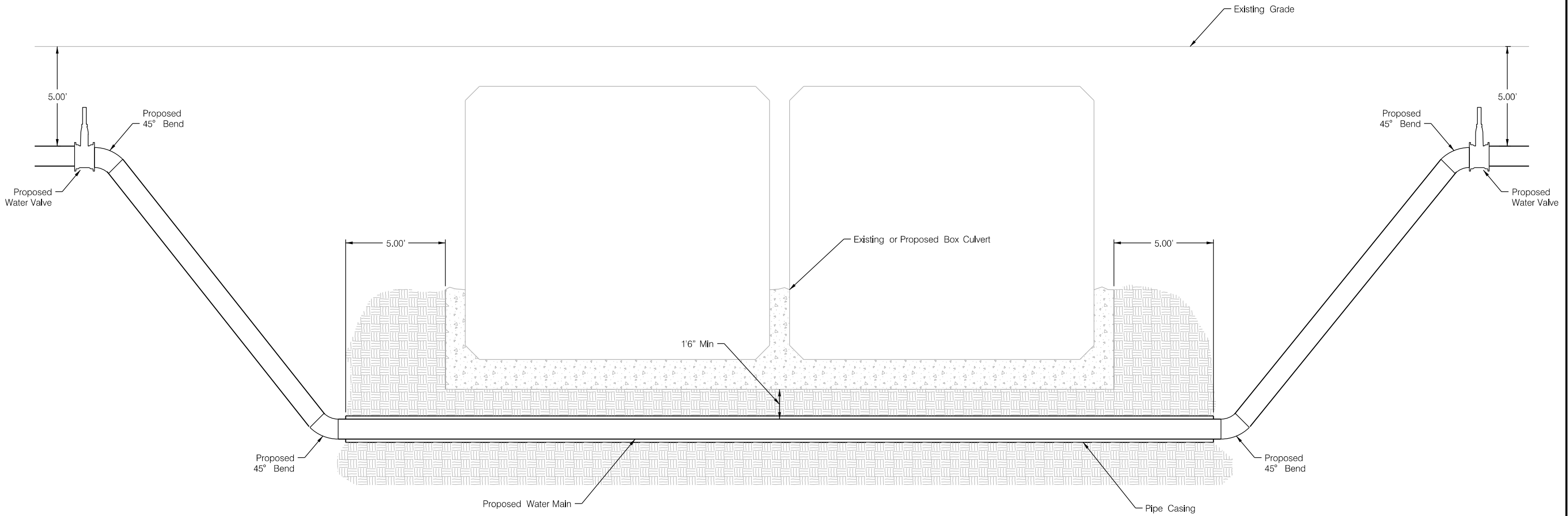
WATER PIPE SHALL BE ENCASED WITH FLOWABLE FILL IN SCENARIOS WHERE IT IS RECONSTRUCTED BELOW AN EXISTING OR PROPOSED WASTEWATER LINE.



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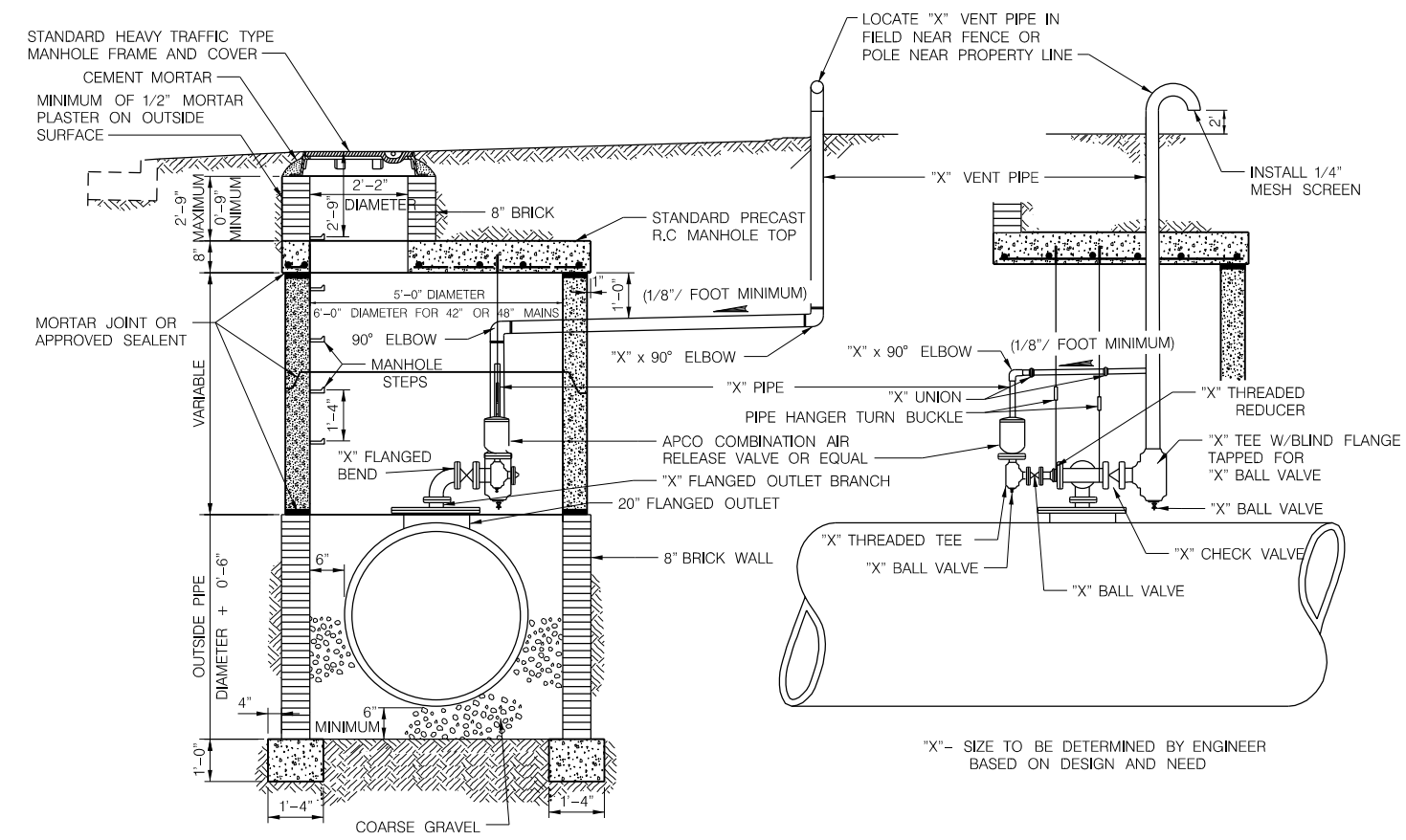
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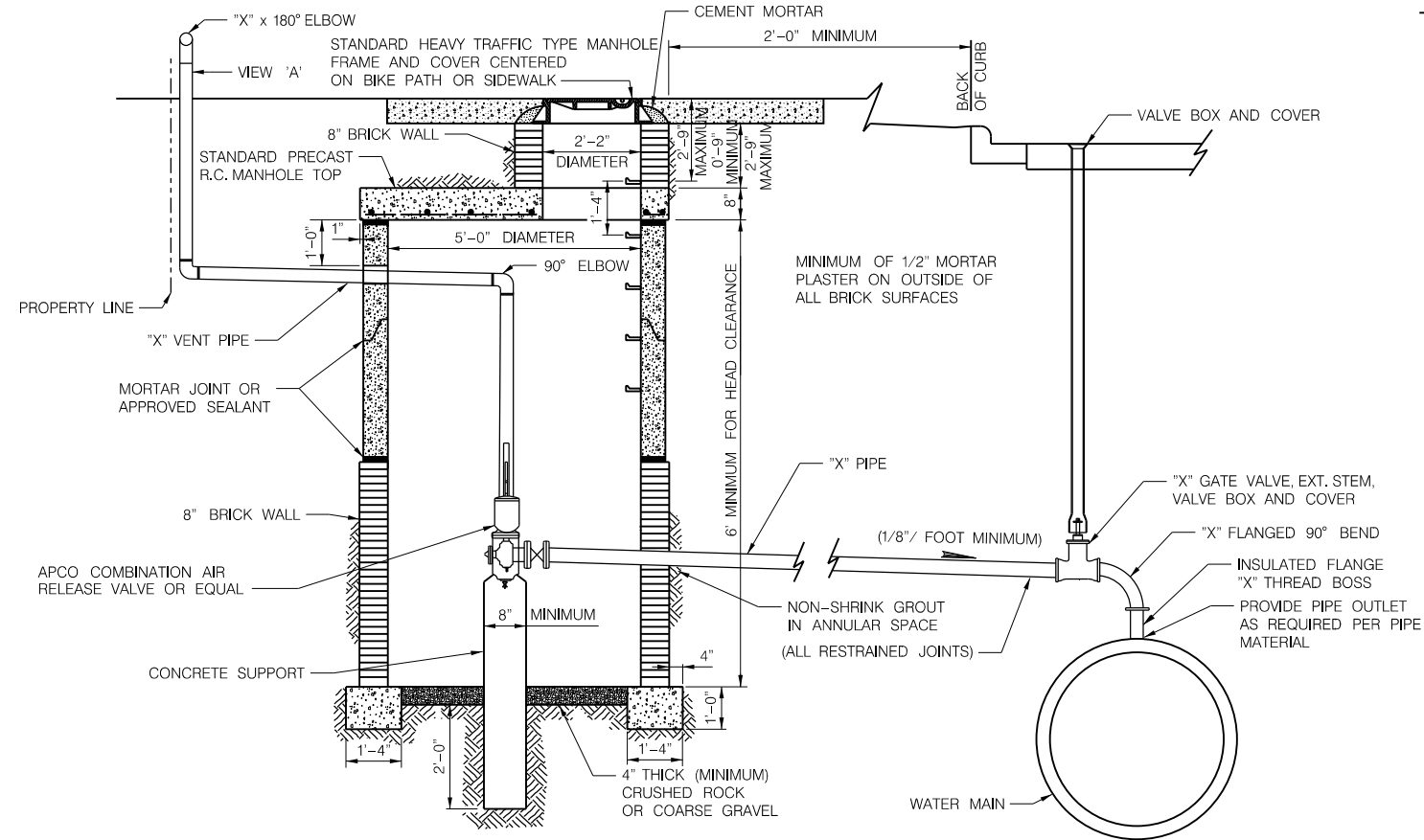
WATER MAIN CASING FOR BOX CULVERT

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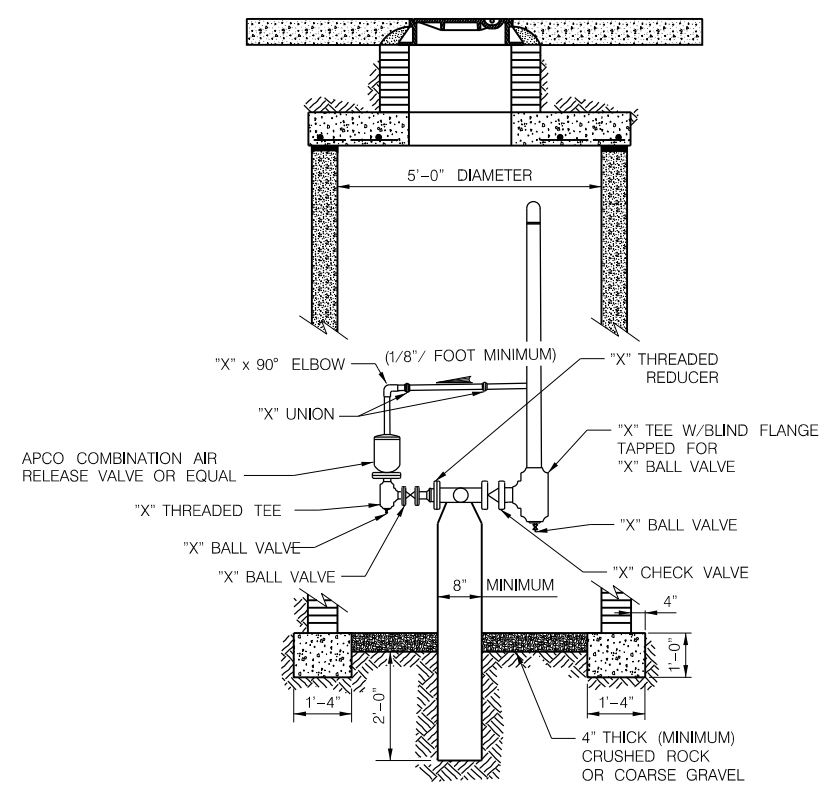
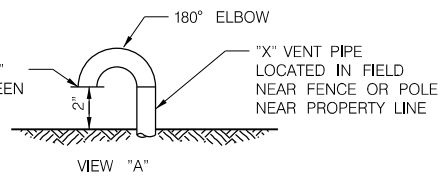
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AUTOMATIC AIR RELIEF VAULT INSTALLATION

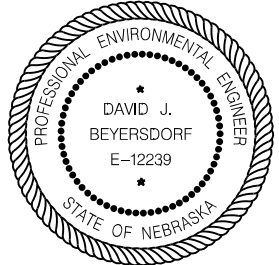


AUTOMATIC AIR RELIEF VAULT INSTALLATION FOR MAINS UNDER PAVING



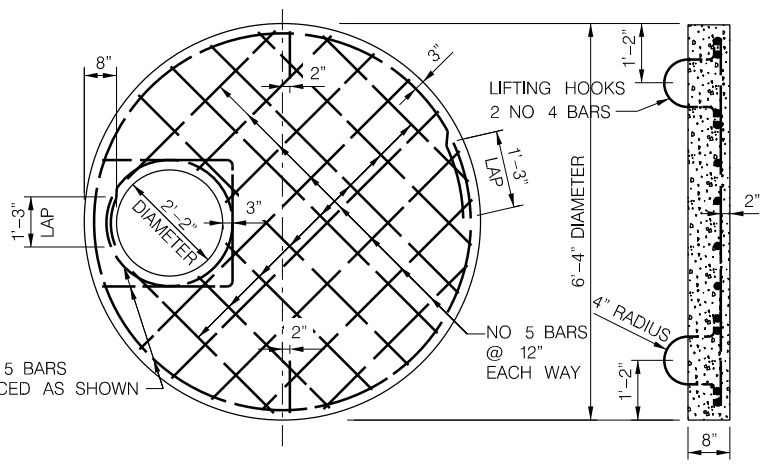
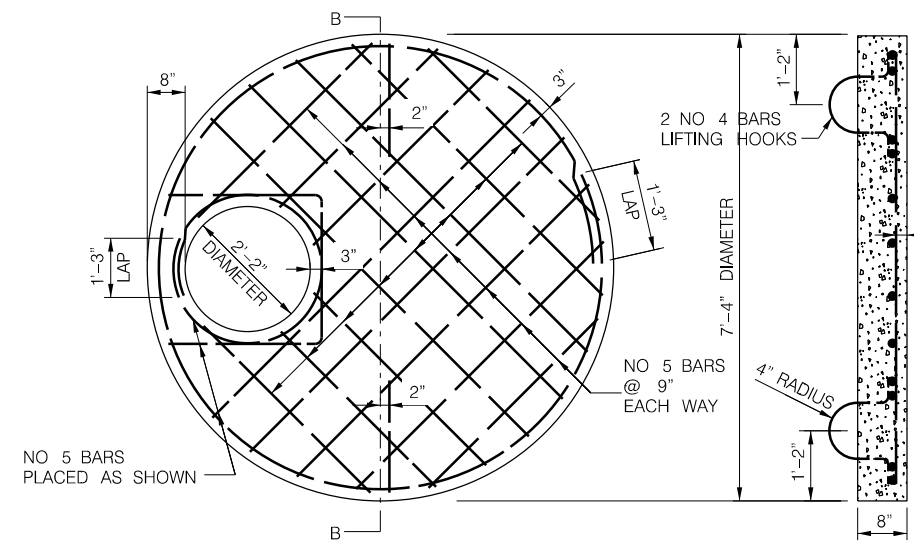
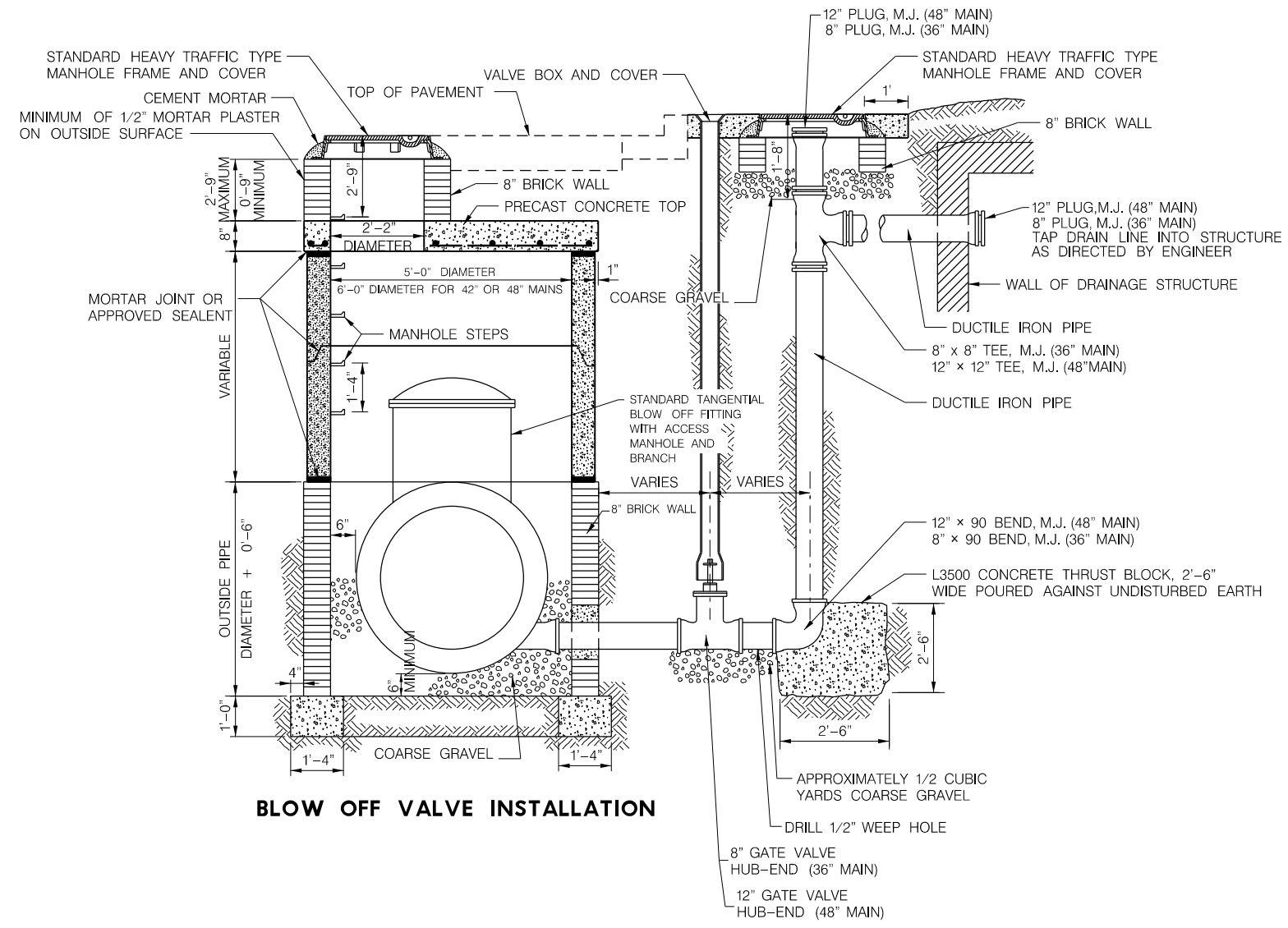
WATER MAIN VALVE MANHOLES, AIR RELIEFS AND BLOW OFFS

NOTES:
 SHUTOFF VALVES SHALL BE CARBON STEEL CONBRACO "APOLLO 88-100 SERIES", NELES-JAMESBURY "SERIES 5000, FIG 5150-11-2200TT", OR POWELL "FIG A224T" BALL VALVES.
 DRAIN VALVES SHALL BE BRASS OR BRONZE CONBRACO "APOLLO 70-100 SERIES" OR STOCKHAM "S-216".
 CHECK VALVES SHALL BE APCO "SERIES 9000 CLASS 150 DOUBLE DOOR CHECK VALVE" OR EQUAL.
 COMBINATION AIR RELEASE VALVES SHALL BE APCO OR EQUAL.
 THE CAST IRON MANHOLE RING SHALL SET IN A BED OF MORTAR, AND CAREFULLY ADJUSTED TO PROPOSED GRADE.
 MANHOLE RING AND COVER SHALL BE CITY OF LINCOLN HEAVY TRAFFIC TYPE. (SEE LSP 162)
 MANHOLE STEPS SHALL BE CITY OF LINCOLN STANDARD MANHOLE STEPS. (SEE LSP 162)
 ALL REINFORCING STEEL SHALL BE EPOXY COATED.
 ANY TAP LARGER THAN 1" SHALL BE INSTALLED BY FACTORY.
 "X"- SIZE AND TYPE TO BE DETERMINED BY ENGINEER BASED ON DESIGN AND NEED



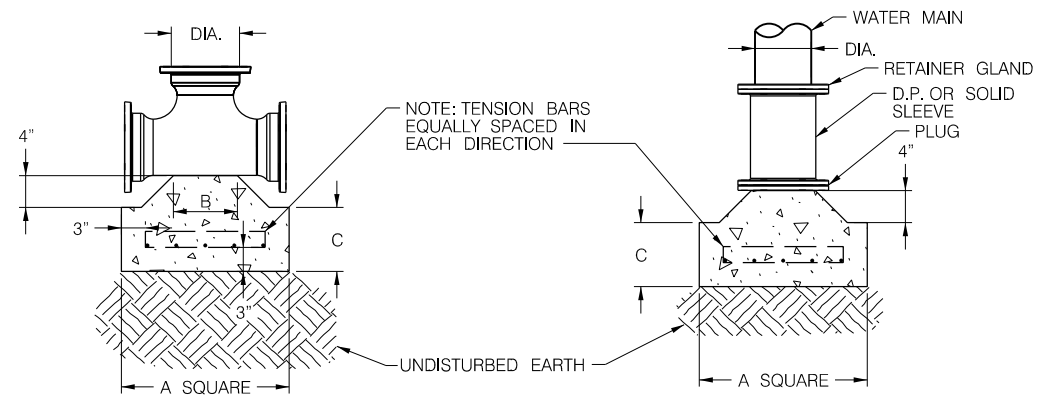
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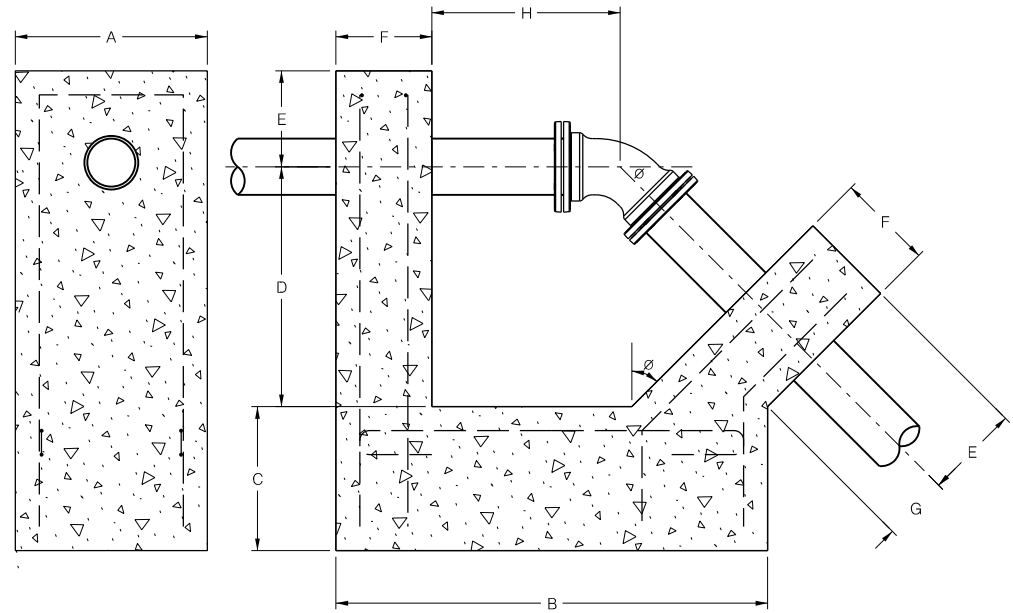
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 DGN: ..\2020 DGN Files\LSP_320est.dgn



REINFORCED CONCRETE TEE BLOCK REINFORCED CONCRETE PLUG BLOCK

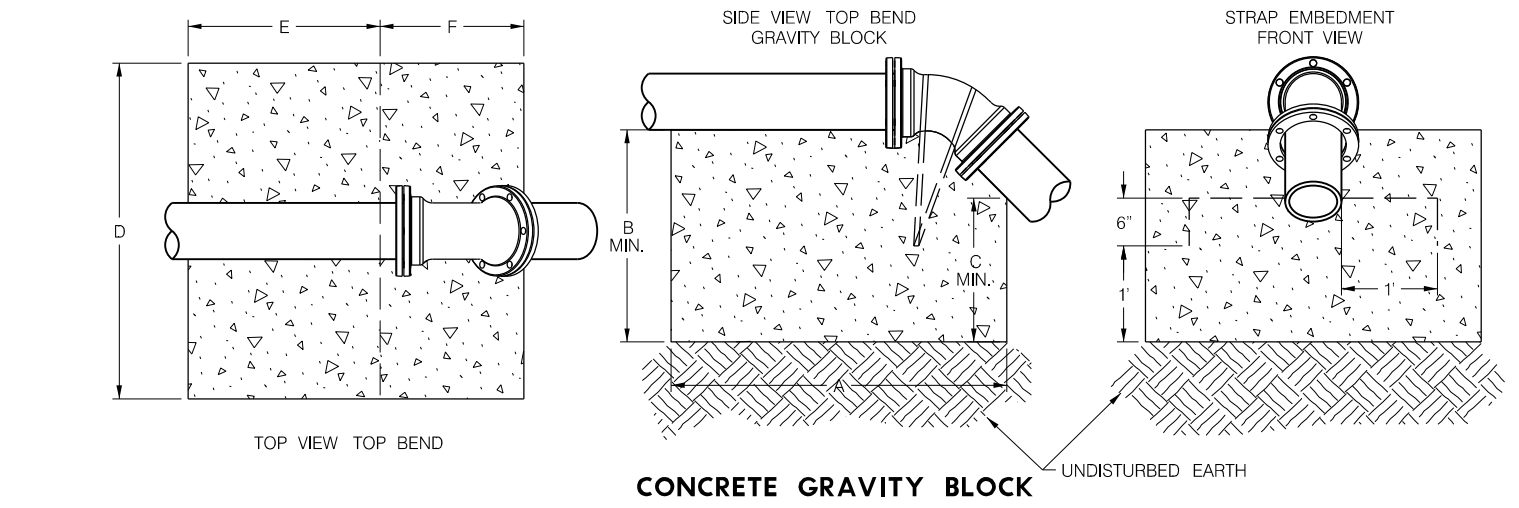
REIN. CONC. TEE BLOCK AND PLUG BLOCK							
DIA.	A	B	C	BAR SIZE	NUMBER OF BARS EACH WAY	STEEL (LBS)	CONCRETE CUBIC YARDS
6	1'-9"	0'-8"	0'-8"	-	-	-	0.1
8	2'-3"	0'-9"	0'-9"	-	-	-	0.2
12	3'-4"	1'-0"	1'-0"	4	6	22.7	0.4
16	4'-6"	1'-3"	1'-3"	4	8	42.8	1.0
20	5'-8"	1'-6"	1'-6"	5	8	86.8	1.9
24	6'-9"	1'-9"	1'-9"	5	11	143.5	3.1
30	8'-6"	2'-6"	2'-0"	5	16	267	5.5
36	10'-0"	3'-0"	2'-6"	6	15	428	9.5
48	13'-6"	4'-0"	3'-0"	7	20	1063	21.2



REINFORCED CONCRETE ANCHORAGE

REINFORCED CONCRETE ANCHORAGE																							
$\theta = 45^\circ$										$\theta = 22 \frac{1}{2}^\circ$													
DIA.	A	B	C	D	E	F	G	H	CONCRETE CUBIC YARDS	BAR SIZE	STEEL (LBS)	DIA.	A	B	C	D	E	F	G	H	CONCRETE CUBIC YARDS	BAR SIZE	STEEL (LBS)
6&8	2'-0"	4'-6"	1'-6"	2'-6"	1'-0"	1'-0"	0'-8"	1'-11"	0.94	4	34	6&8	2'-0"	4'-6"	0'-9"	1'-6"	1'-0"	1'-0"	0'-8"	1'-7"	0.54	4	28
10	2'-6"	5'-0"	1'-6"	3'-0"	1'-3"	1'-0"	1'-0"	2'-4"	1.31	4	42	10	2'-6"	5'-0"	0'-9"	1'-9"	1'-3"	1'-0"	0'-9"	1'-8"	0.75	4	32
12	3'-0"	5'-0"	2'-0"	3'-6"	1'-6"	1'-0"	1'-6"	3'-1"	1.98	4	48	12	3'-0"	5'-0"	0'-9"	2'-0"	1'-6"	1'-0"	1'-0"	1'-9"	1.05	4	36
14	3'-0"	6'-0"	2'-6"	4'-0"	1'-6"	1'-0"	1'-6"	3'-1"	2.58	5	83	14	3'-0"	5'-6"	1'-3"	2'-3"	1'-6"	1'-0"	1'-3"	2'-3"	1.40	4	36
16	3'-6"	6'-6"	2'-9"	4'-6"	1'-6"	1'-0"	1'-9"	3'-5"	3.46	5	92	16	3'-0"	6'-6"	2'-0"	2'-9"	1'-6"	1'-0"	1'-6"	2'-9"	1.79	4	47
18	3'-6"	7'-0"	3'-6"	4'-6"	1'-6"	1'-0"	1'-8"	3'-10"	4.29	5	96	18	3'-6"	7'-0"	1'-9"	3'-0"	1'-6"	1'-0"	1'-8"	3'-1"	2.44	4	50
20	4'-0"	7'-6"	3'-6"	5'-0"	1'-6"	1'-0"	2'-0"	4'-4"	5.25	6	146	20	4'-0"	7'-0"	2'-0"	3'-0"	1'-6"	1'-0"	1'-8"	3'-1"	3.04	5	80
24	5'-0"	10'-0"	3'-0"	7'-0"	2'-0"	1'-0"	2'-10"	6'-0"	7.96	7	250	24	4'-6"	9'-0"	1'-9"	4'-0"	2'-0"	1'-0"	2'-3"	4'-2"	4.11	6	143

REINFORCED CONCRETE THRUST BLOCK															
$\theta = 11 \frac{1}{4}^\circ$						$\theta = 22 \frac{1}{2}^\circ$									
DIA.	A	B	C	BAR SIZE	NUMBER OF BARS EACH WAY	STEEL (LBS)	CONCRETE CUBIC YARDS	DIA.	A	B	C	BAR SIZE	NUMBER OF BARS EACH WAY	STEEL (LBS)	CONCRETE CUBIC YARDS
6	1'-3"	0'-9"	1'-0"	-	-	-	0.1	6	1'-6"	0'-9"	1'-0"	-	-	-	0.1
8	1'-6"	1'-0"	1'-0"	-	-	-	0.1	8	1'-6"	1'-0"	1'-0"	-	-	-	0.1
12	1'-6"	1'-0"	1'-0"	4	3	4.0	0.1	12	2'-3"	1'-0"	1'-0"	4	3	7.0	0.2
16	2'-3"	1'-0"	1'-0"	4	3	7.0	0.2	16	3'-0"	1'-0"	1'-0"	4	5	16.7	0.4
20	2'-9"	1'-3"	1'-0"	4	4	12.0	0.4	20	3'-9"	1'-3"	1'-0"	4	7	30.4	0.6
24	3'-3"	1'-6"	1'-0"	4	6	22.0	0.5	24	4'-6"	1'-6"	1'-3"	5	6	50.1	1.1
30	4'-0"	2'-0"	1'-3"	4	7	32.7	0.9	30	5'-6"	2'-0"	1'-6"	5	9	93.9	1.9
36	4'-9"	2'-6"	1'-3"	5	7	62.0	1.3	36	6'-9"	2'-6"	1'-6"	5	12	169.5	3.3
48	6'-6"	3'-3"	1'-6"	5	13	162.7	1.9	48	9'-0"	3'-3"	2'-0"	10	6	438.9	6.7



REINFORCED CONCRETE THRUST BLOCKS

CONCRETE GRAVITY BLOCK

CONCRETE GRAVITY BLOCK										
$\theta = 90^\circ$						$\theta = 90^\circ$				
BEND	A	B MIN.	C MIN.	D	E	F	CONC. CY	NO.	SIZE	EMBED.
16"x45"	6'-0"	6'-0"	3'-0"	7'-0"	3'-0"	3'-0"	9.33	2	2"x 3/8"	30"
12"x45"	6'-0"	5'-0"	2'-0"	5'-0"	3'-0"	3'-0"	4.72	2	2"x 1/4"	24"
8"x45"	4'-0"	4'-0"	2'-0"	4'-6"	2'-0"	2'-0"	2.33	2	1"x 1/4"	18"
6"x45"	3'-6"	3'-0"	1'-6"	3'-6"	2'-0"	1'-6"	1.43	2	1"x 1/4"	18"
16"x22.5"	5'-6"	5'-6"	4'-6"	4'-6"	3'-0"	2'-6"	5.13	2	2"x 3/8"	30"
12"x22.5"	4'-6"	5'-0"	4'-2"	3'-6"	2'-6"	2'-0"	2.88	2	2"x 1/4"	24"
8"x22.5"	3'-0"	4'-0"	3'-6"	3'-0"	1'-6"	1'-6"	1.33	2	1"x 1/4"	18"
6"x22.5"	2'-0"	3'-3"	3'-0"	3'-0"	1'-3"	0'-9"	0.72	2	1"x 1/4"	18"
16"x11.25"	4'-0"	4'-0"	3'-6"	4'-0"	2'-0"	2'-0"	2.37	2	2"x 3/8"	30"
12"x11.25"	3'-0"	3'-0"	2'-9"	3'-6"	2'-0"	1'-0"	1.17	2	2"x 1/4"	24"
8"x11.25"	3'-0"	2'-0"	1'-9"	3'-0"	2'-0"	1'-0"	0.56	2	1"x 1/4"	18"
6"x11.25"	2'-0"	2'-0"	1'-9"	2'-8"	1'-0"	1'-0"	0.40	2	1"x 1/4"	18"

GENERAL NOTES:

All Reinforcing Steel Shall be Deformed Bars Conforming to A.S.T.M. Serial Designation A-305-507 and Shall Satisfy the Bend Test Requirements for Structural Grade Steel in Accordance with the Requirements

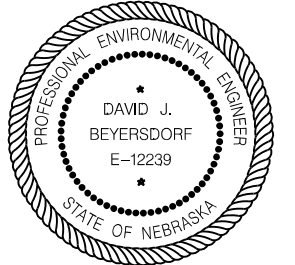
Poured in Place Thrust Blocking Shall be Properly Formed to the Stated Dimensions and Shall Not Encase the M.J. Bolts and Fasteners.

All Concrete Shall be L3500

Minimum Depth of Embedment For Reinforcing Steel to be as Noted.

All Reinforcing Steel Shall be Epoxy Coated.

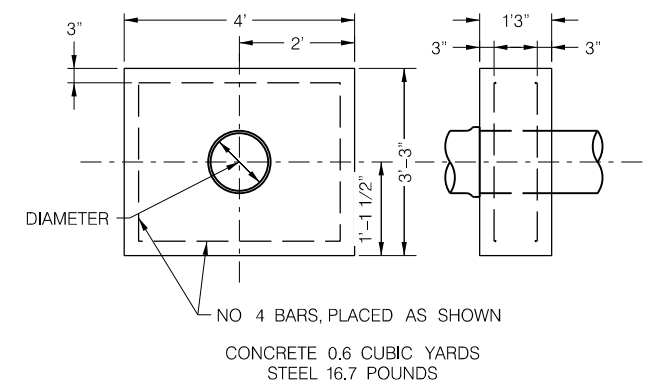
R.C. THRUST BLOCKS, R.C. ANCHORAGES, R.C. GRAVITY BLOCKS, R.C. TEE BLOCKS AND R.C. PLUG BLOCKS



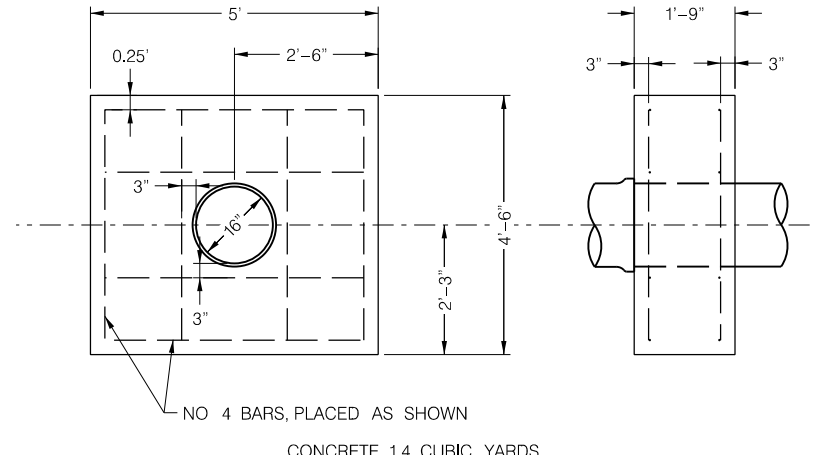
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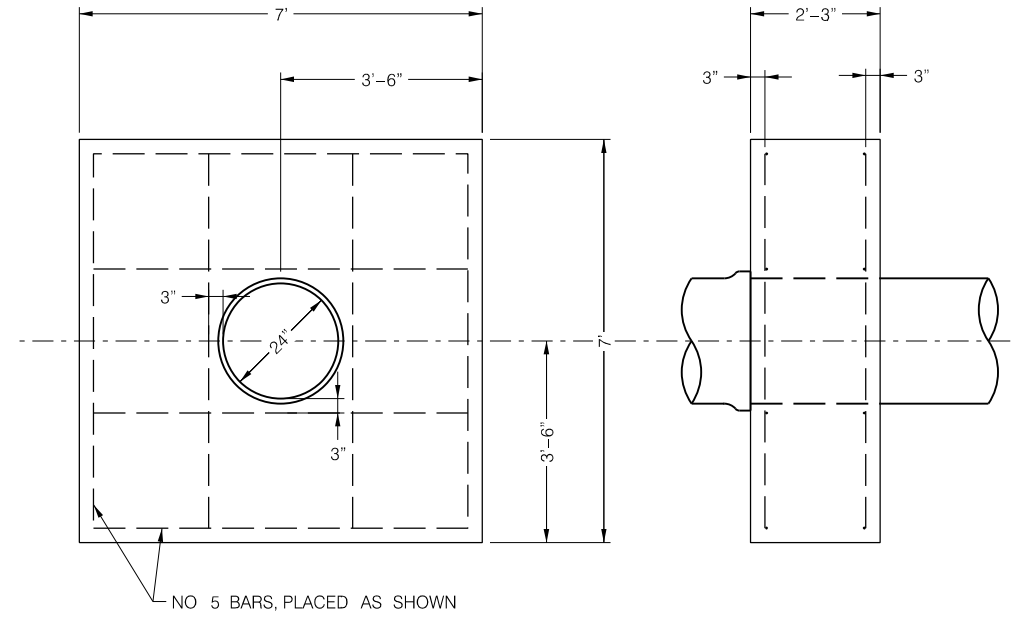
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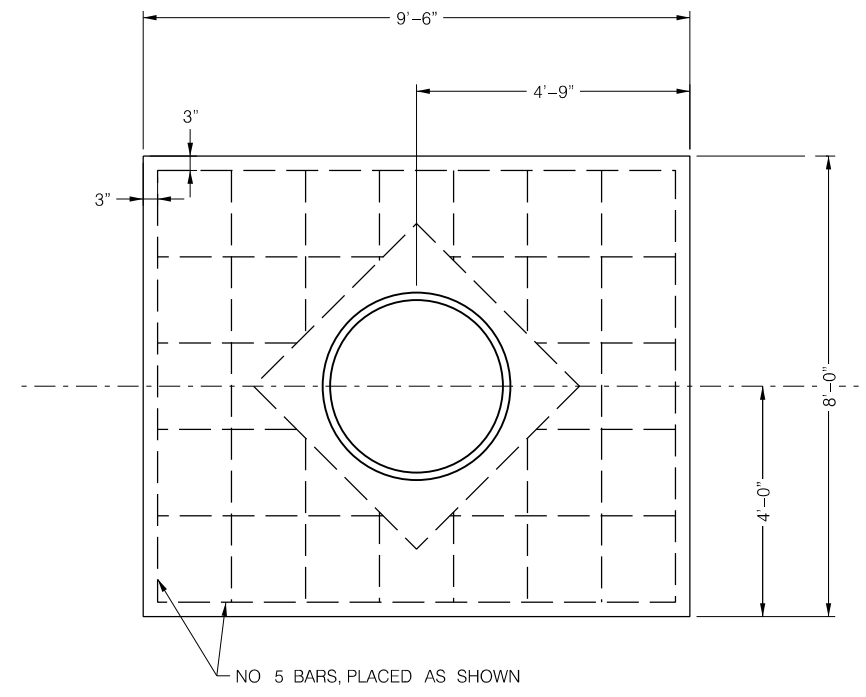
12" OR SMALLER WATER MAIN



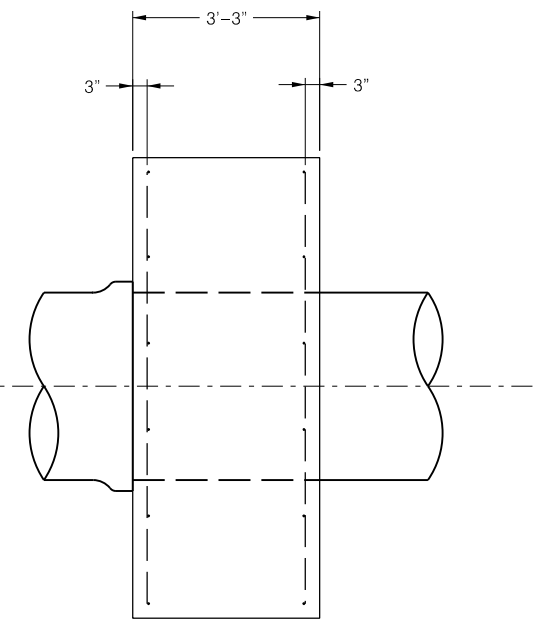
16" WATER MAIN



24" WATER MAINS



30" WATER MAINS



REINFORCED CONCRETE COLLARS

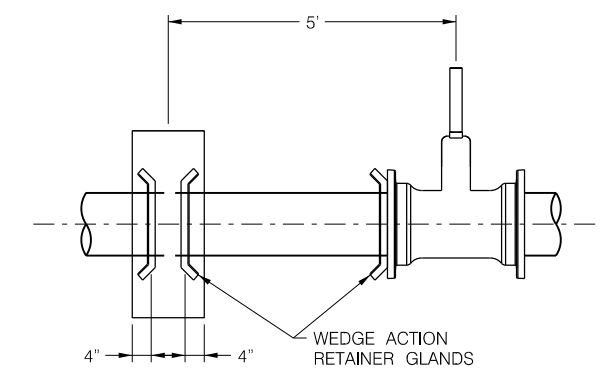
NOTE:

ALL REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO A.S.T.M. SERIAL DESIGNATION A-305-507 AND SHALL SATISFY THE BEND TEST REQUIREMENTS FOR STRUCTURAL GRADE STEEL IN ACCORDANCE WITH THE REQUIREMENTS.

ALL REINFORCING STEEL SHALL BE EPOXY COATED.

ALL CONCRETE SHALL BE L3500.

ALL CONCRETE COLLARS SHALL BE CONSTRUCTED SUCH THAT THEY ARE ANCHORED AGAINST UNDISTURBED SOIL.

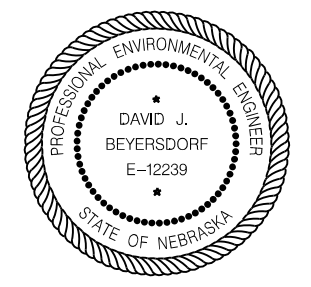


THRUST COLLAR FOR PVC PIPE

WHENEVER PVC PIPE IS USED FOR WATER MAIN MATERIAL, A THRUST COLLAR SHALL BE INSTALLED 5' FROM EACH LINE VALVE OR REDUCER. TWO WEDGE ACTION RETAINER GLANDS SHALL BE EMBEDDED IN THE THRUST COLLAR, WITH THE GRIPPING WEDGES FACING OPPOSITE DIRECTIONS, TO PROVIDE THRUST RESTRAINT FROM EITHER DIRECTION. A SINGLE WEDGE ACTION RETAINER GLAND SHALL BE INSTALLED ON THE MECHANICAL JOINT ON THE SIDE OF THE VALVE OR REDUCER NEAREST THE THRUST COLLAR. SEE L.S.P. 320 FOR CONCRETE AND REINFORCING STEEL DETAILS.

R.C. THRUST COLLARS FOR REDUCERS SHALL BE INSTALLED ON THE SMALL PIPE SIDE OF A REDUCER, HOWEVER THE SIZE SHALL BE BASED OFF OF THE LARGER DIAMETER PIPE.

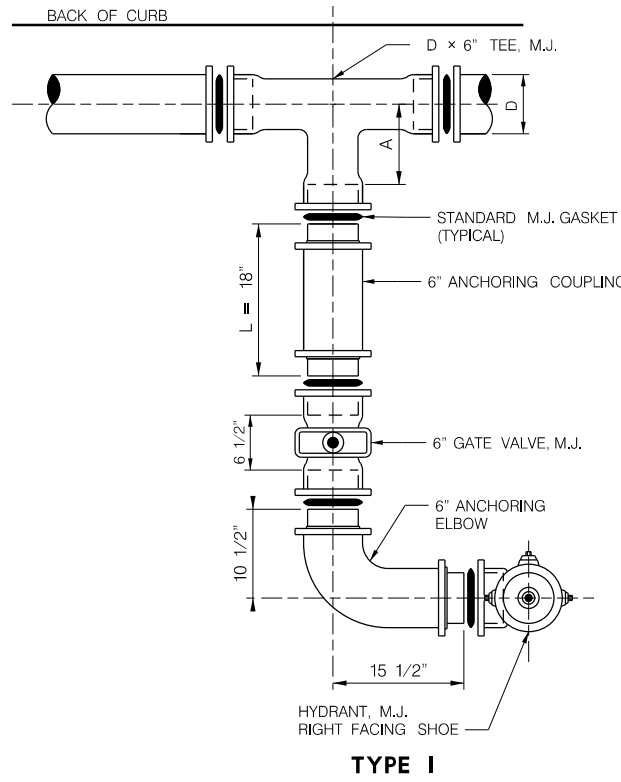
R.C. THRUST COLLARS TO BE BUILT ADJACENT TO VALVES, AT THE SPIGOT SIDE OF LAST PIPE CONNECTION OR ADJACENT TO THE SMALLER DIAMETER SIDE OF M.J. REDUCERS.



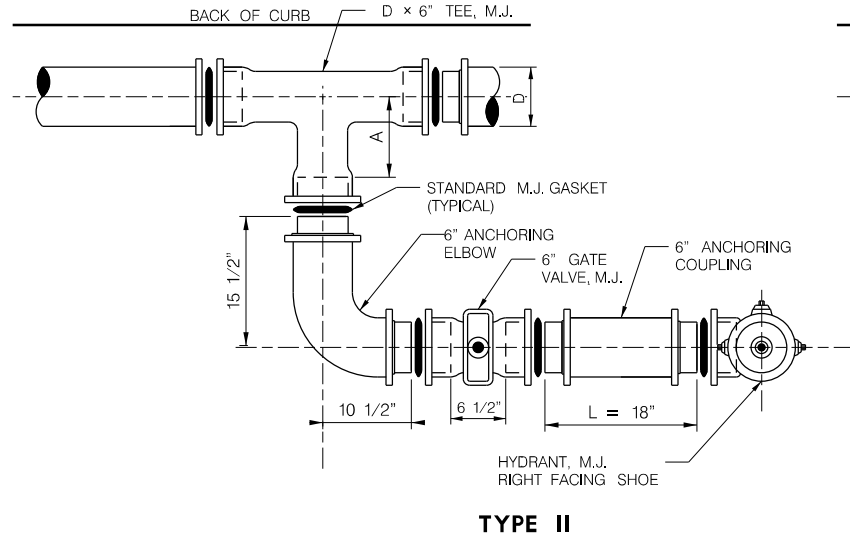
R.C. COLLARS

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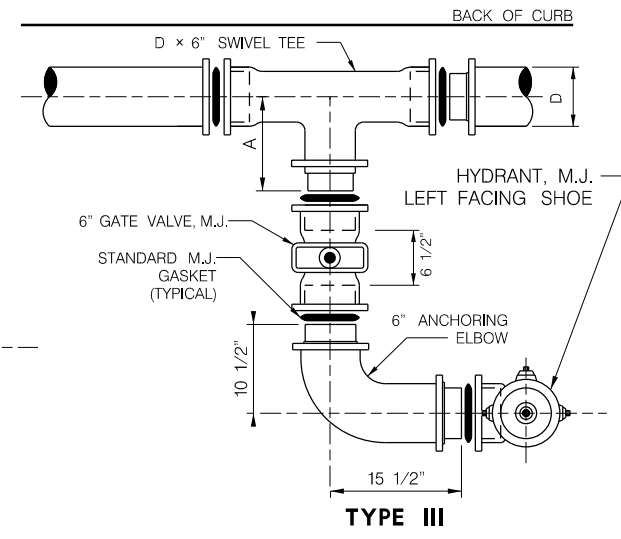
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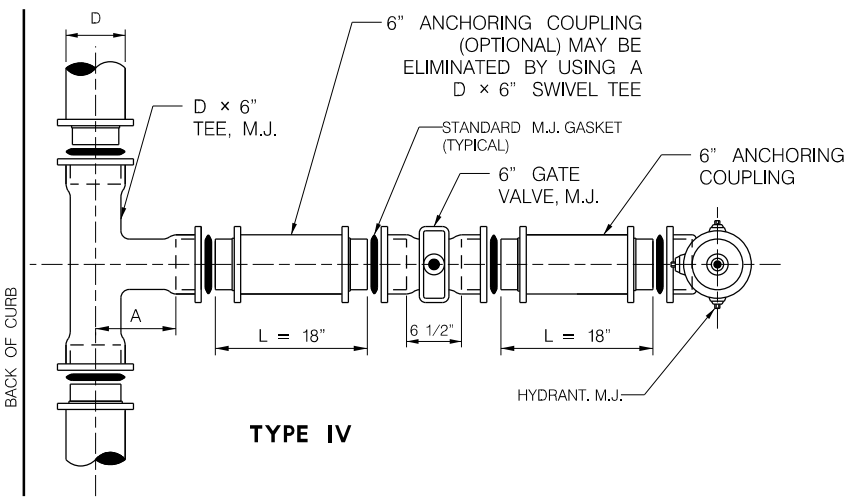
TYPE I



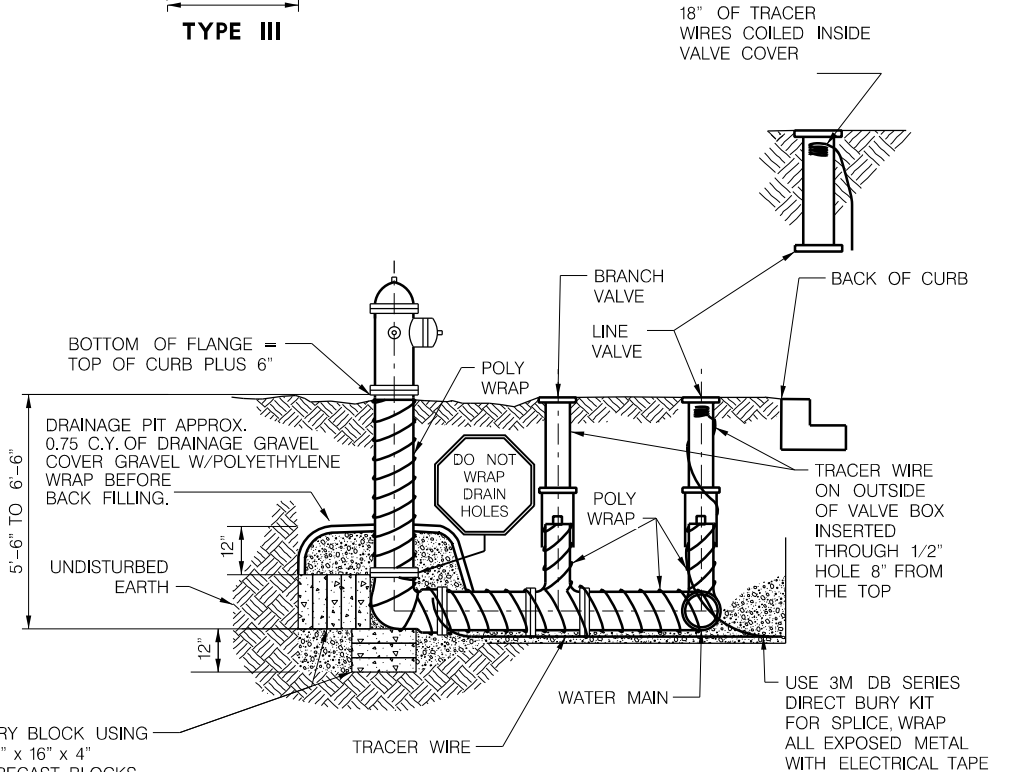
TYPE II



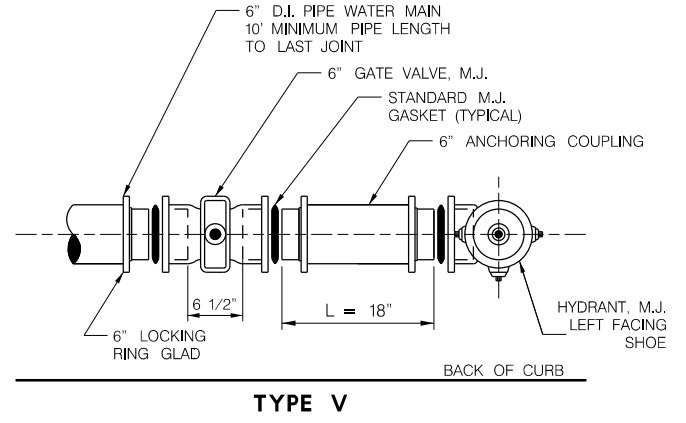
TYPE III



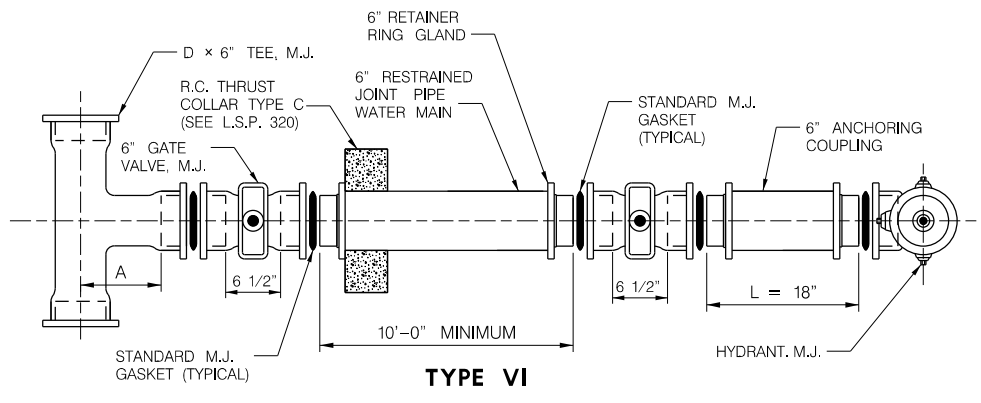
TYPE IV



FIELD SETTING DETAIL



TYPE V



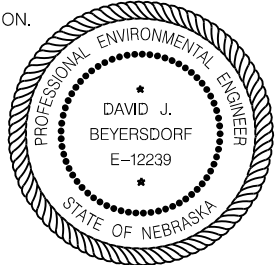
TYPE VI

TEE CONNECTION DIMENSIONS			
MAIN RUN SIZE D	SIZE BRANCH	BRANCH LENGTH SWIVEL TEE A	BRANCH LENGTH A
6"	6"	10.5"	8"
8"	6"	11.5"	9"
12"	6"	14.5"	12"
16"	6"	17.5"	15"
24"	6"	21.5"	19"
30"	6"	24.5"	23"

HYDRANT ASSEMBLY	NUMBER OF FITTINGS REQUIRED						
	5 1/4" PUMPER HYDRANT	6" GATE VALVE, M.J.	6" ANCHORING COUPLING, M.J.	ELBOW, M.J. 6" ANCHORING	D X 6" TEE, M.J.	D X 6" SWIVEL TEE, M.J.	R.C. THRUST COLLAR (TYPE C)
TYPE I	1	1	1	1	1		
TYPE II	1	1	1	1	1		
TYPE III	1	1		1		1	
TYPE IV	1	1	2		1		
TYPE V	1	1	1				
TYPE VI	1	1					1

NOTES:

- ALL ANCHORING COUPLINGS SHALL BE 18" IN LENGTH UNLESS PLANS SHOW OTHERWISE
- ALL ANCHORING COUPLINGS AND ANCHORING ELBOWS SHALL BE CAST WITH AN INTEGRAL M.J. GLAND ON ONE END AND A DUCTILE IRON ROTATABLE M.J. GLAND ON THE OTHER END.
- A LOCKING RING FOR A STANDARD ANCHORING COUPLING SHALL BE SUBSTITUTED FOR ONE OF THE STANDARD GLANDS ON THE 6" GATE VALVE FOR THE TYPE V AND TYPE VI INSTALLATIONS.
- BACKFILL OF HYDRANTS AND VALVES SHALL BE COMPACTED BY HAND WITH SUITABLE MECHANICAL EQUIPMENT.
- THERE SHALL BE NO MORE THAN ONE HYDRANT EXTENSION.
- HYDRANT SHALL DRAIN FREELY AFTER INSTALLATION, DRAIN MATERIAL SHALL BE DRAINAGE GRAVEL ONLY, NO LIMESTONE MATERIAL
- THE HYDRANT SHOE SHALL BE DRY BLOCKED, NO POUR IN PLACE BLOCKING
- HYDRANT LINES LONGER THAN TEN (10) FEET SHALL HAVE RESTRAINED JOINT PIPE AND TWO VALVES. VALVE #1 SHALL BE ANCHORED TO THE TEE AND VALVE #2 SHALL BE ANCHORED TO THE HYDRANT.
- HYDRANT BRANCH VALVES SHALL BE OPENED PRIOR TO PRESSURE TESTING WATER MAIN.



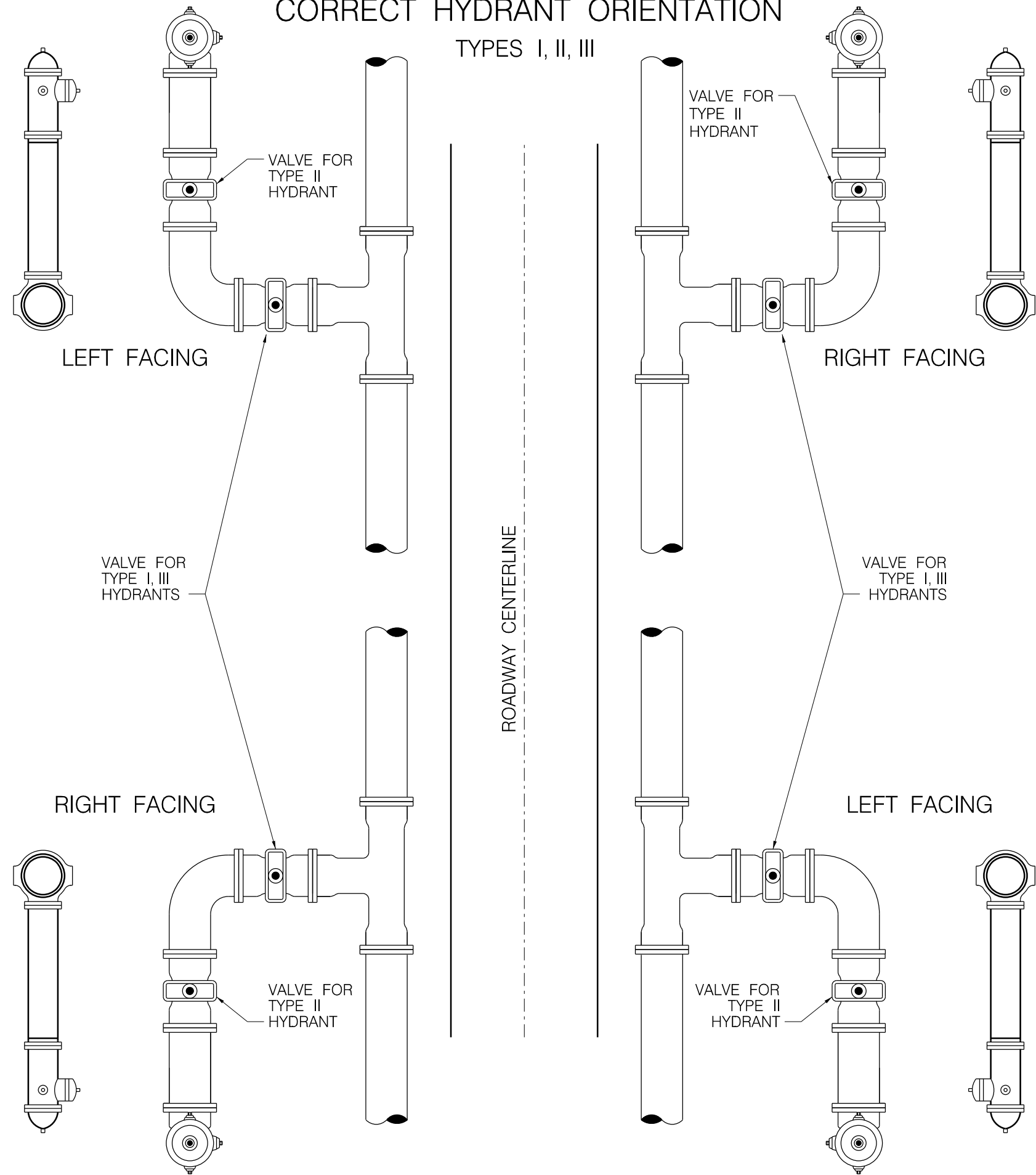
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	Date: 07/31/2020 Horz. Scale: N.T.S.	Drawn: JWH/CEA Checked: Approved:

CORRECT HYDRANT ORIENTATION

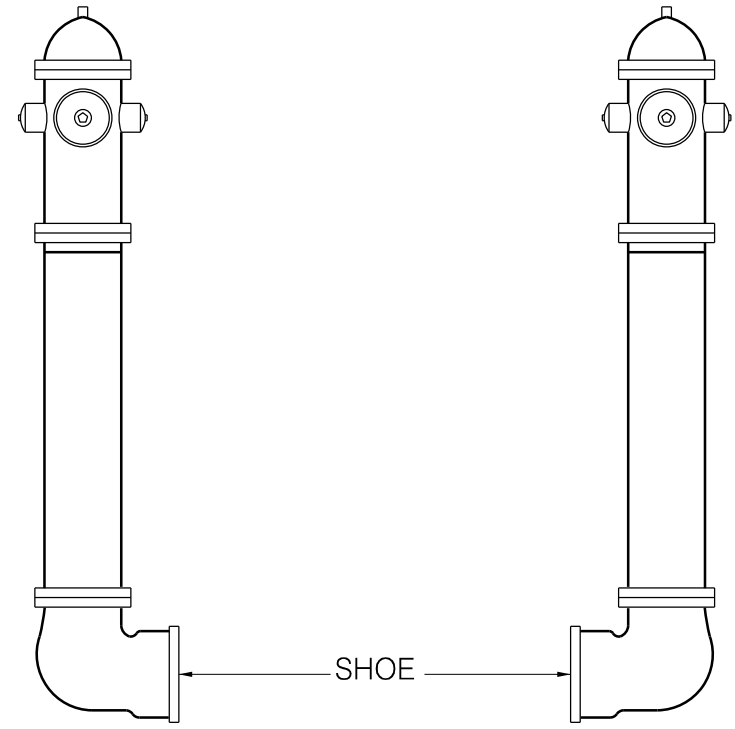
TYPES I, II, III



HYDRANT CONFIGURATION

RIGHT FACING SHOE

LEFT FACING SHOE



WHEN FACING THE LARGE STEAMER NOZZLE, THE HYDRANT SHOE POINTS RIGHT

WHEN FACING THE LARGE STEAMER NOZZLE, THE HYDRANT SHOE POINTS LEFT

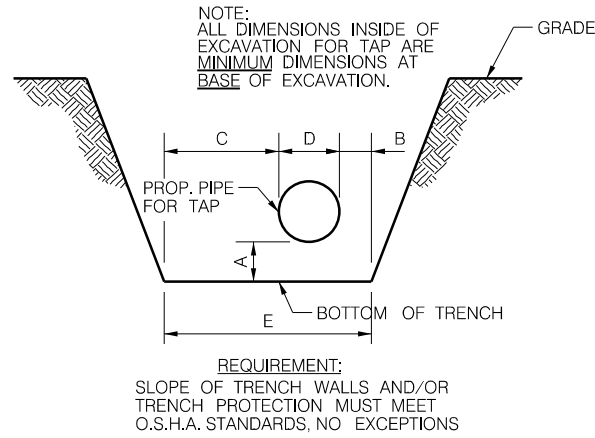
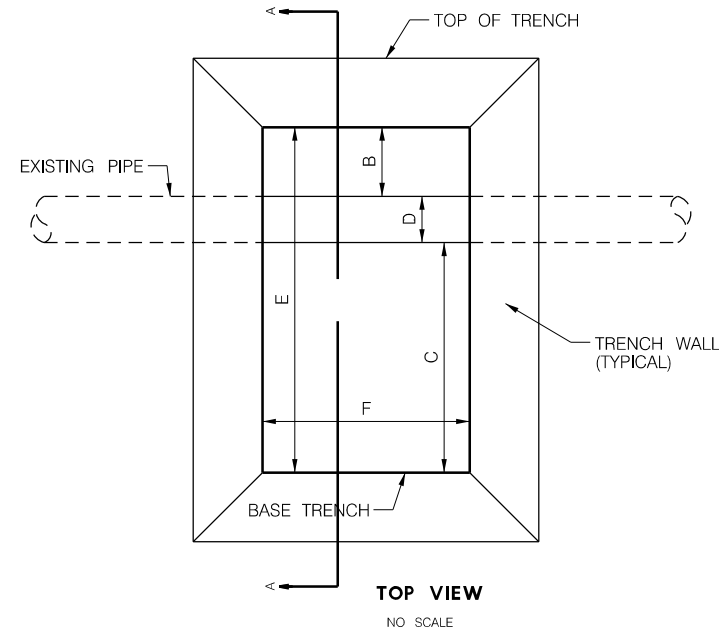
NOTE: THE CONTRACTOR SHALL ORIENT THE LARGE STEAMER NOZZLE OF THE HYDRANT TO FACE THE ROADWAY.



HYDRANT INSTALLATIONS

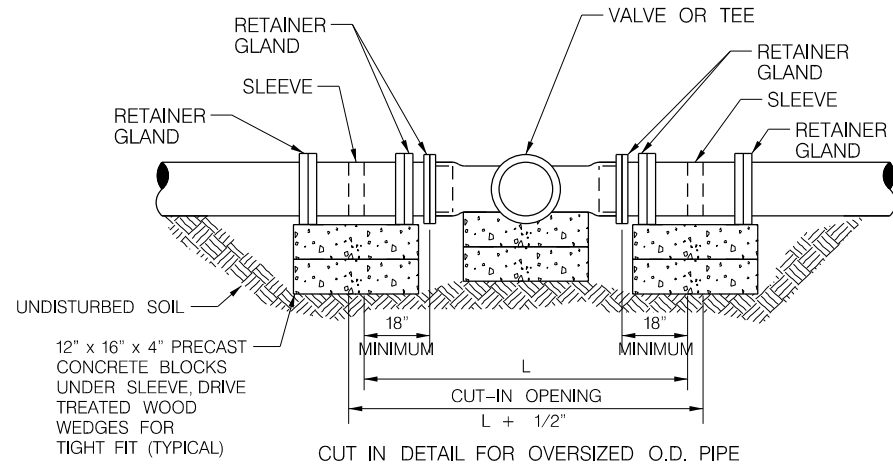
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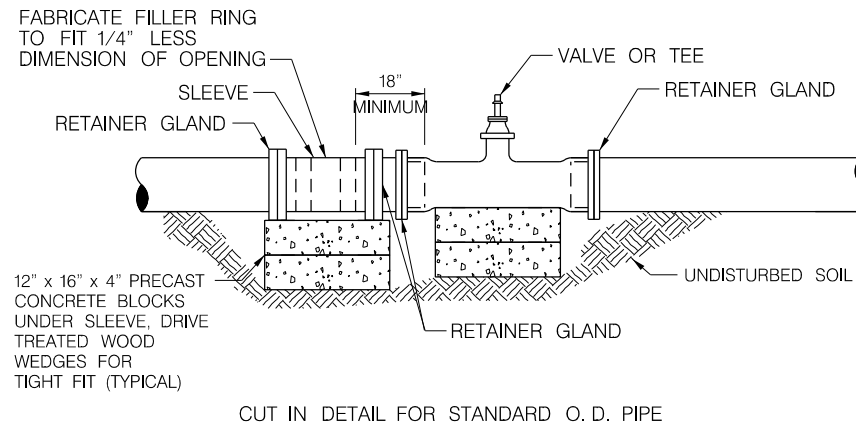


SECTION A-A
NO SCALE

WATER TAPPING EXCAVATION PIT						
	A	B	C	D	E	F
TAPPING SLEEVE AND VALVE	12"	12"	6'-0"	10" OR LESS	8" MINIMUM	4'-0"
			7'-0"	12" OR LESS	9" MINIMUM	
WATER SERVICE TAP	6"	12"	3" MINIMUM	16" OR LESS	5'-0"	3'-0"
WASTEWATER SERVICE TAP	6"	12"	3" MINIMUM	15" OR LESS	5'-0"	3'-0"

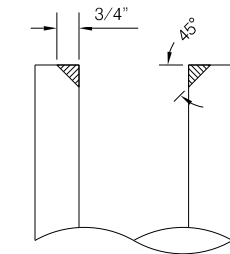


CUT IN DETAIL FOR OVERSIZED O.D. PIPE

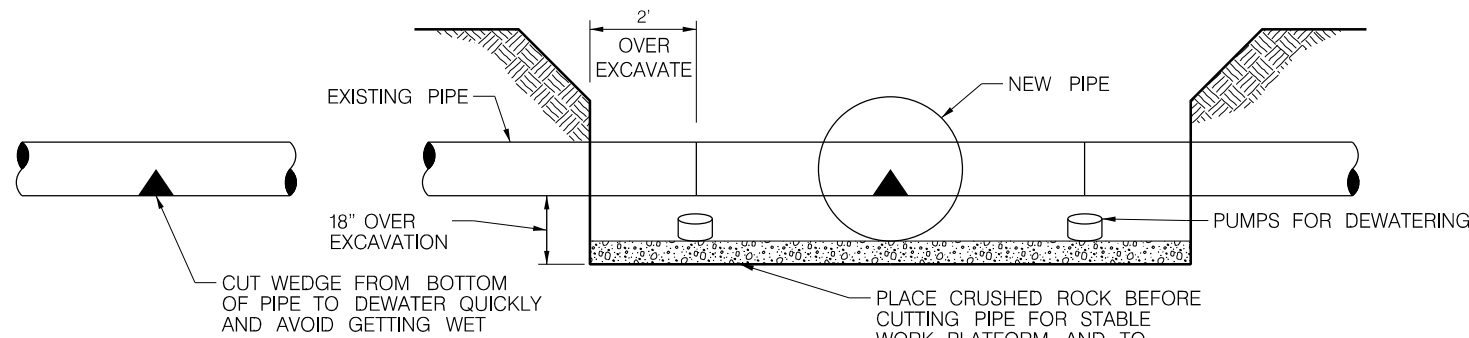
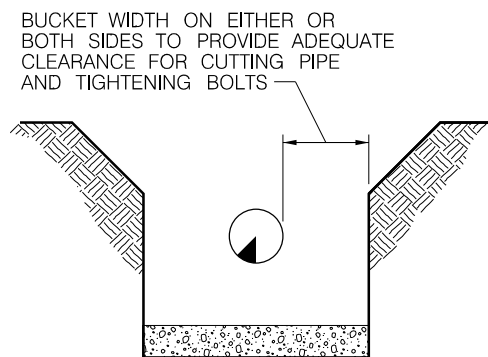


CUT IN DETAIL FOR STANDARD O.D. PIPE

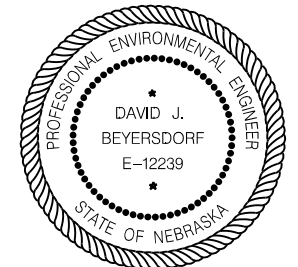
CUT IN FOR VALVES OR FITTINGS



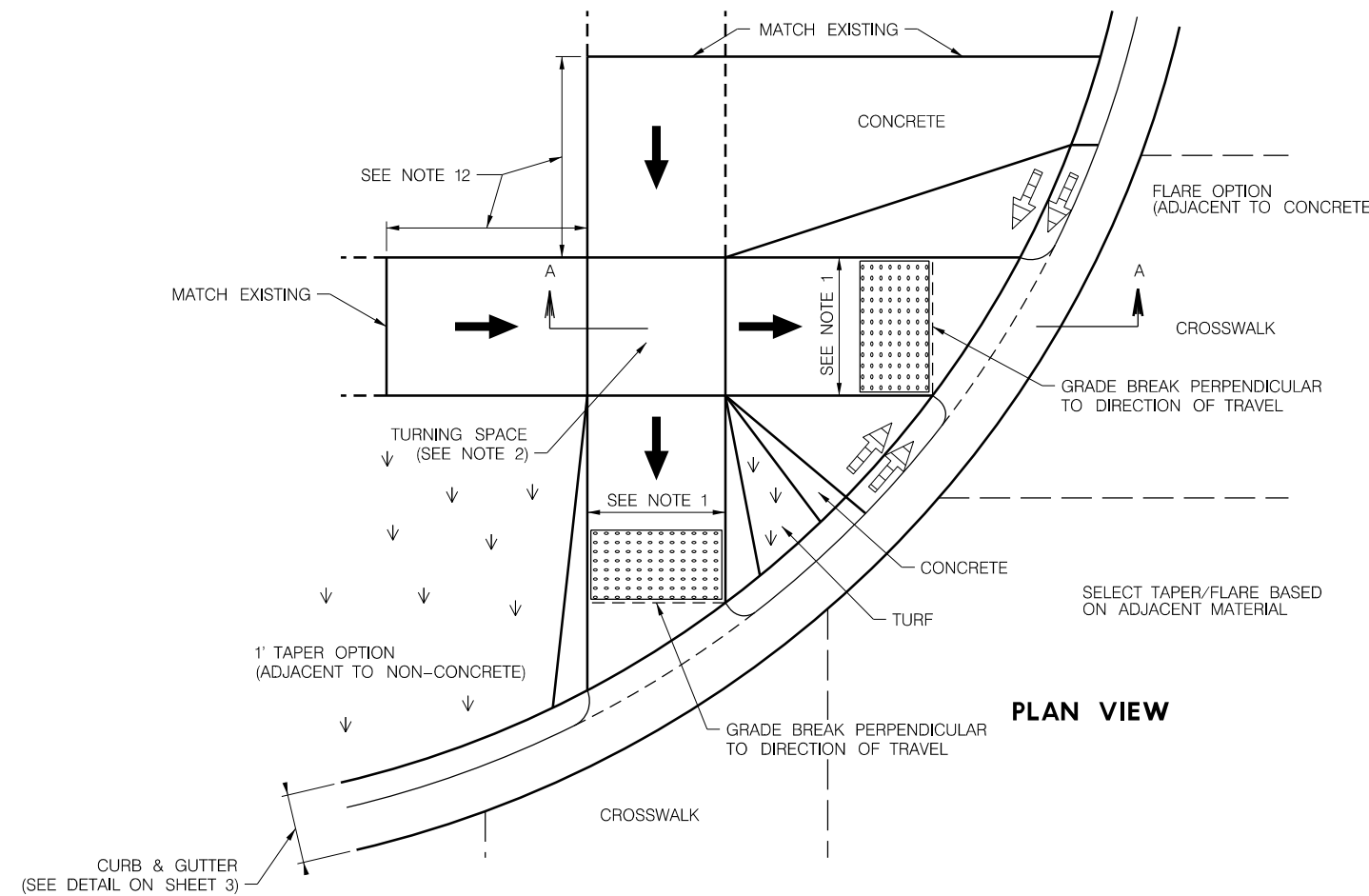
CHAMFER FOR 12" PVC BUTTERFLY VALVE



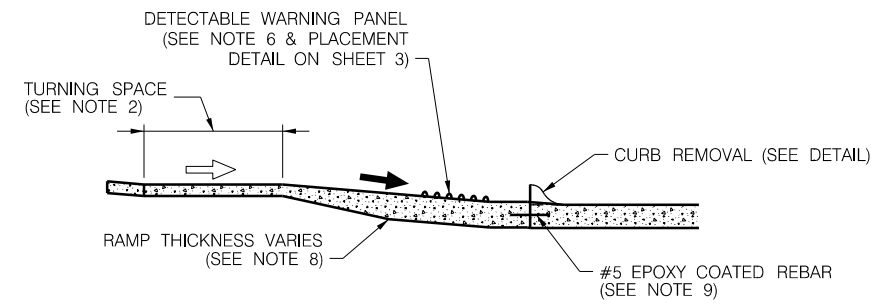
EXCAVATING AND DEWATER IN FOR TIE-INS
LINCOLN WATER SYSTEM



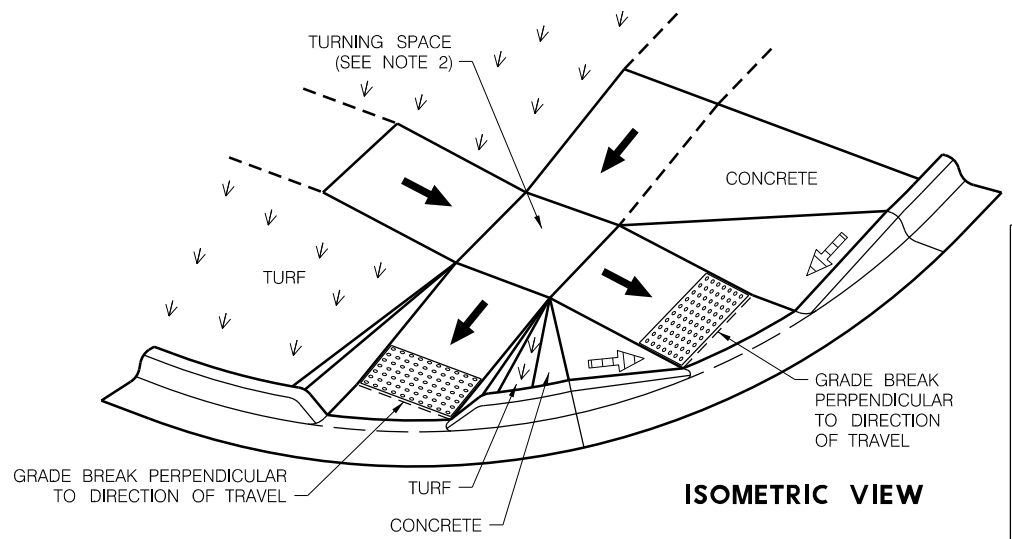
TYPE A RAMP



PLAN VIEW



CROSS SECTION VIEW
SECTION A-A



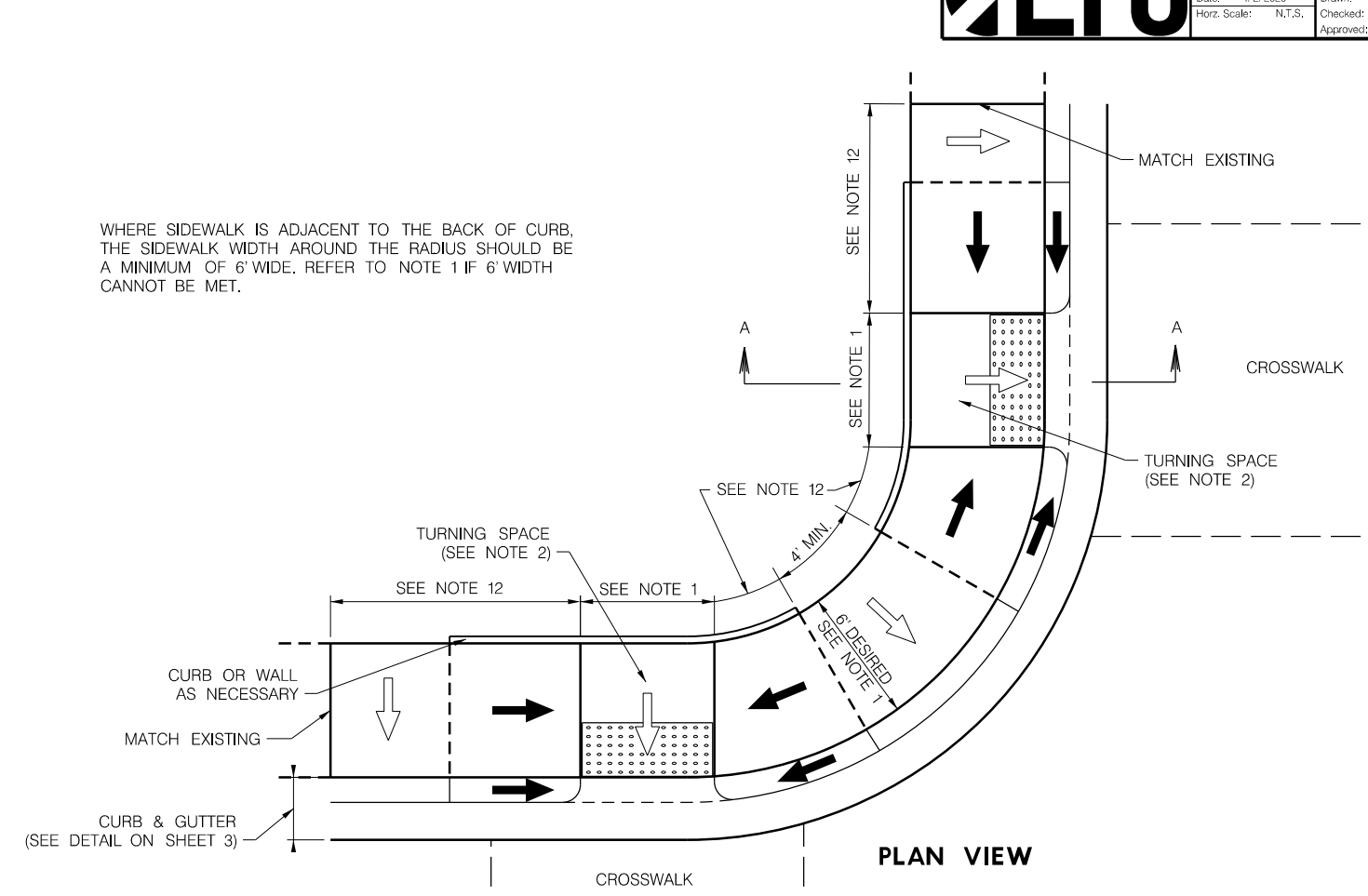
ISOMETRIC VIEW

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	9.0% DESIRABLE MAXIMUM (10.0% ABSOLUTE MAXIMUM) SLOPE

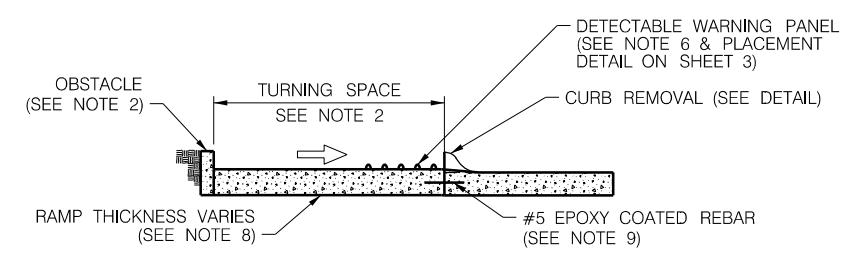
SLOPES MAY BE LESS THAN THE DESIRABLE MAXIMUM, BUT SHALL NOT EXCEED THE ABSOLUTE MAXIMUM. THE CONTRACTOR SHOULD ACCOUNT FOR CONSTRUCTION TOLERANCES TO PREVENT EXCEEDING THE MAXIMUM SLOPES. ANY SLOPES EXCEEDING THE ABSOLUTE MAXIMUMS SHALL NOT BE ACCEPTED WITHOUT PRIOR APPROVAL FROM THE PROJECT MANAGER. JUSTIFICATION FOR INABILITY TO MEET SLOPE REQUIREMENTS SHALL BE DETERMINED BY REFERENCING PROWAG R202.3.1

SLOPE LEGEND

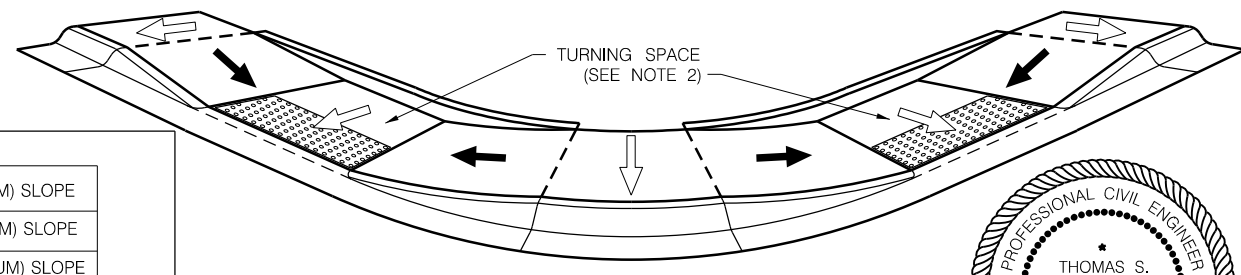
TYPE B RAMP



PLAN VIEW

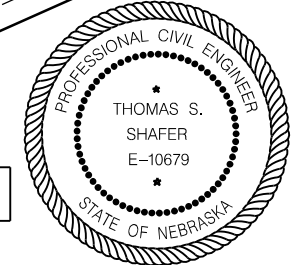


CROSS SECTION VIEW
SECTION A-A



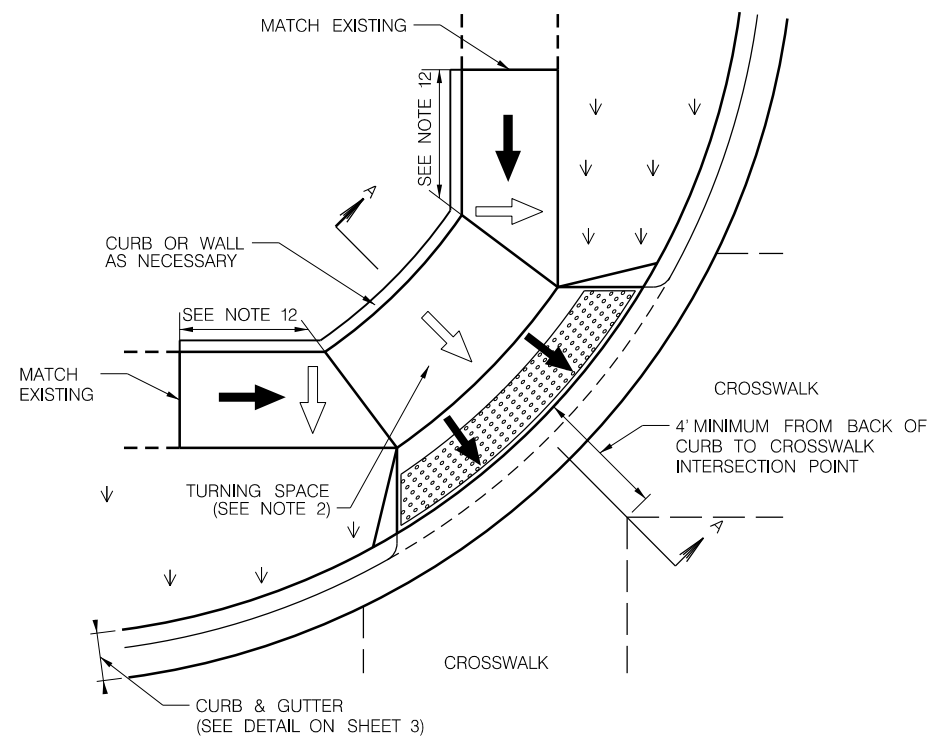
ISOMETRIC VIEW

FOR FURTHER DETAILS
SEE NOTES ON SHEET 3

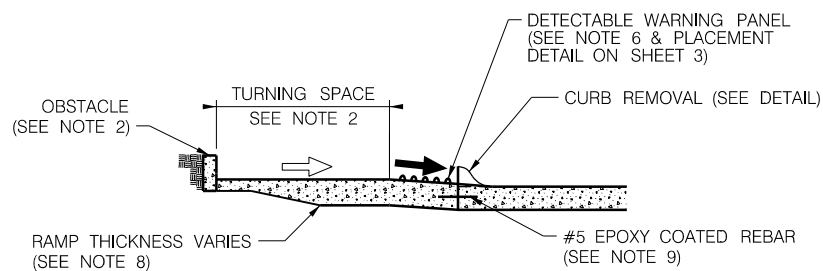


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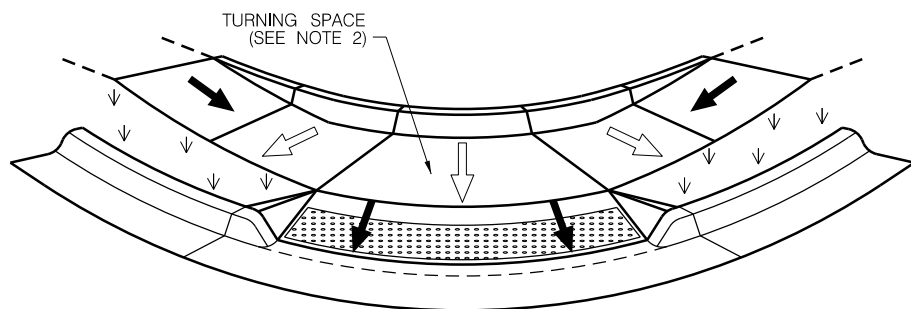
TYPE C RAMP



PLAN VIEW



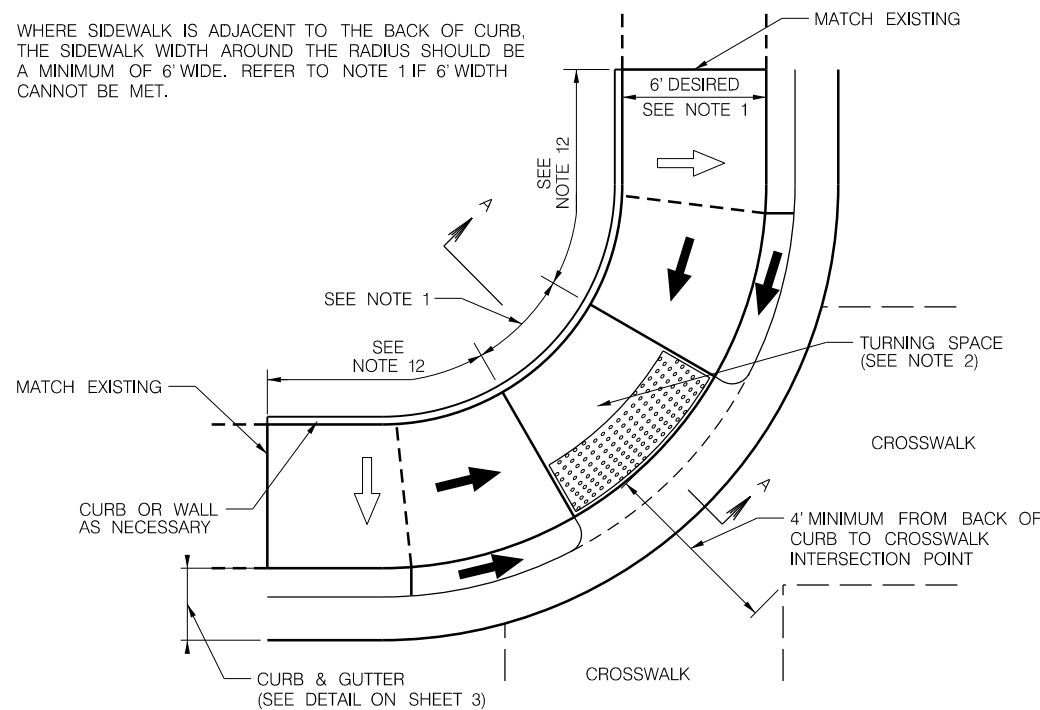
CROSS SECTION VIEW
SECTION A-A



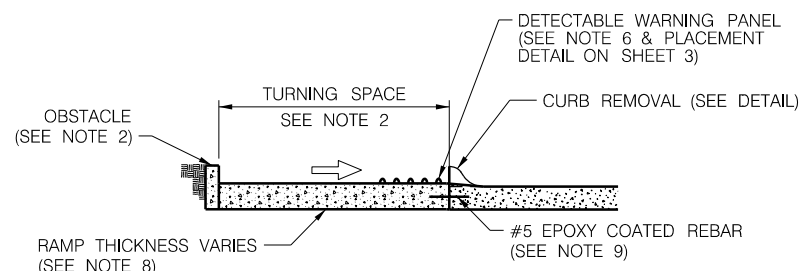
ISOMETRIC VIEW

TYPE D RAMP

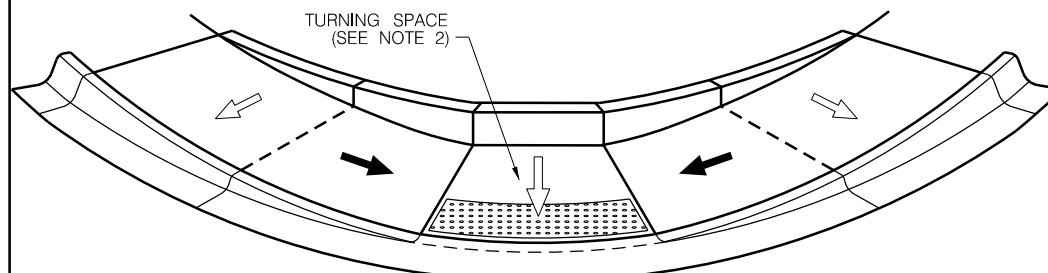
WHERE SIDEWALK IS ADJACENT TO THE BACK OF CURB, THE SIDEWALK WIDTH AROUND THE RADIUS SHOULD BE A MINIMUM OF 6' WIDE. REFER TO NOTE 1 IF 6' WIDTH CANNOT BE MET.



PLAN VIEW



CROSS SECTION VIEW
SECTION A-A



ISOMETRIC VIEW

	1.5% DESIRABLE MAXIMUM (2.0% ABSOLUTE MAXIMUM) SLOPE
	7.3% DESIRABLE MAXIMUM (8.3% ABSOLUTE MAXIMUM) SLOPE
	9.0% DESIRABLE MAXIMUM (10.0% ABSOLUTE MAXIMUM) SLOPE

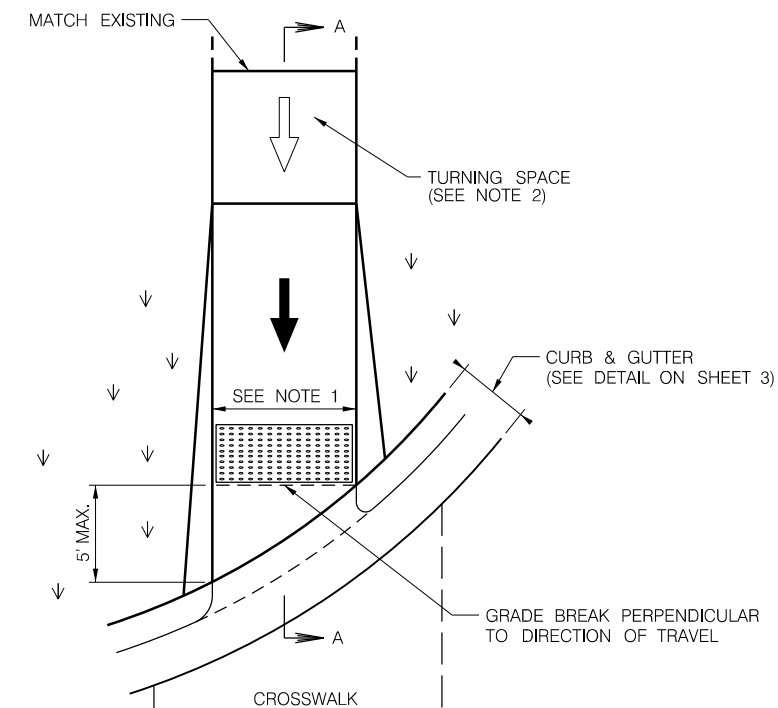
SLOPES MAY BE LESS THAN THE DESIRABLE MAXIMUM, BUT SHALL NOT EXCEED THE ABSOLUTE MAXIMUM. THE CONTRACTOR SHOULD ACCOUNT FOR CONSTRUCTION TOLERANCES TO PREVENT EXCEEDING THE MAXIMUM SLOPES. ANY SLOPES EXCEEDING THE ABSOLUTE MAXIMUMS SHALL NOT BE ACCEPTED WITHOUT PRIOR APPROVAL FROM THE PROJECT MANAGER. JUSTIFICATION FOR INABILITY TO MEET SLOPE REQUIREMENTS SHALL BE DETERMINED BY REFERENCING PROWAG R202.3.1.

SLOPE LEGEND

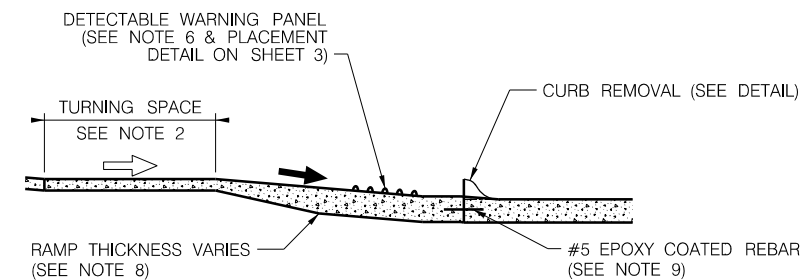
TYPE E RAMP



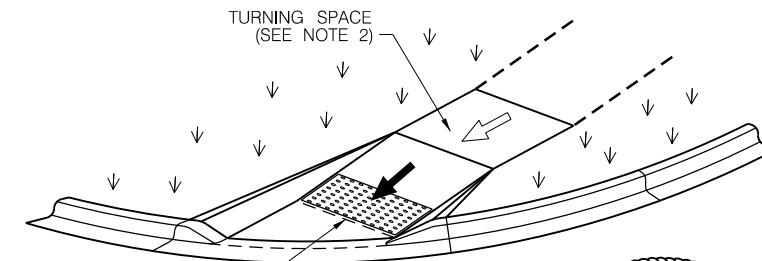
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PLAN VIEW

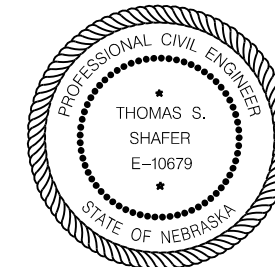


CROSS SECTION VIEW
SECTION A-A

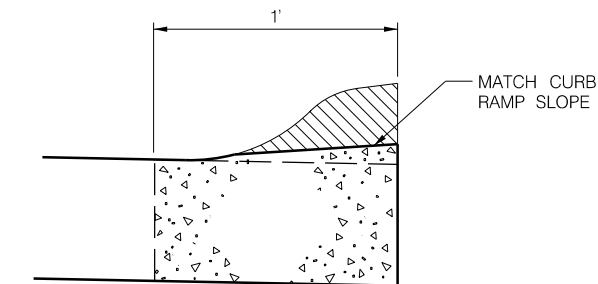
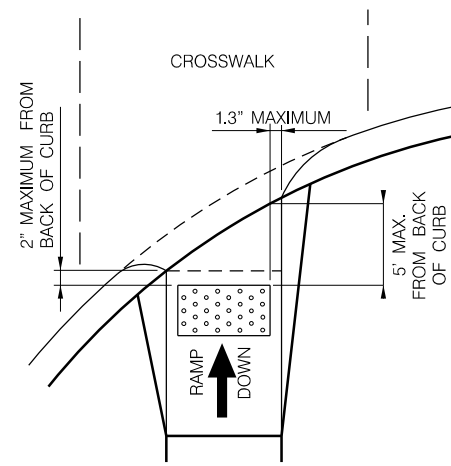
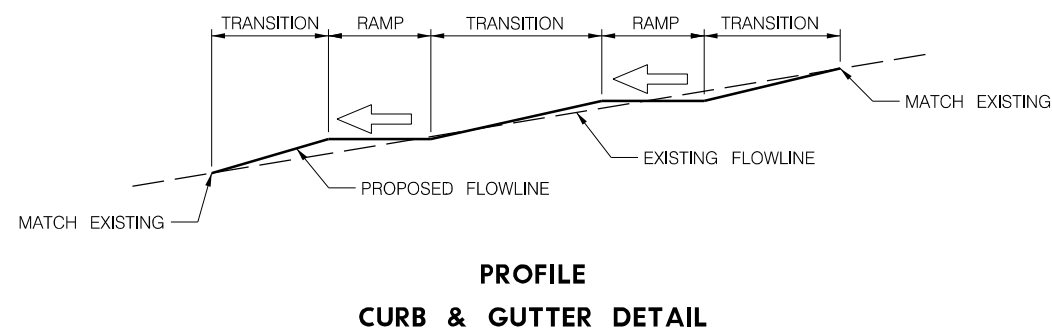
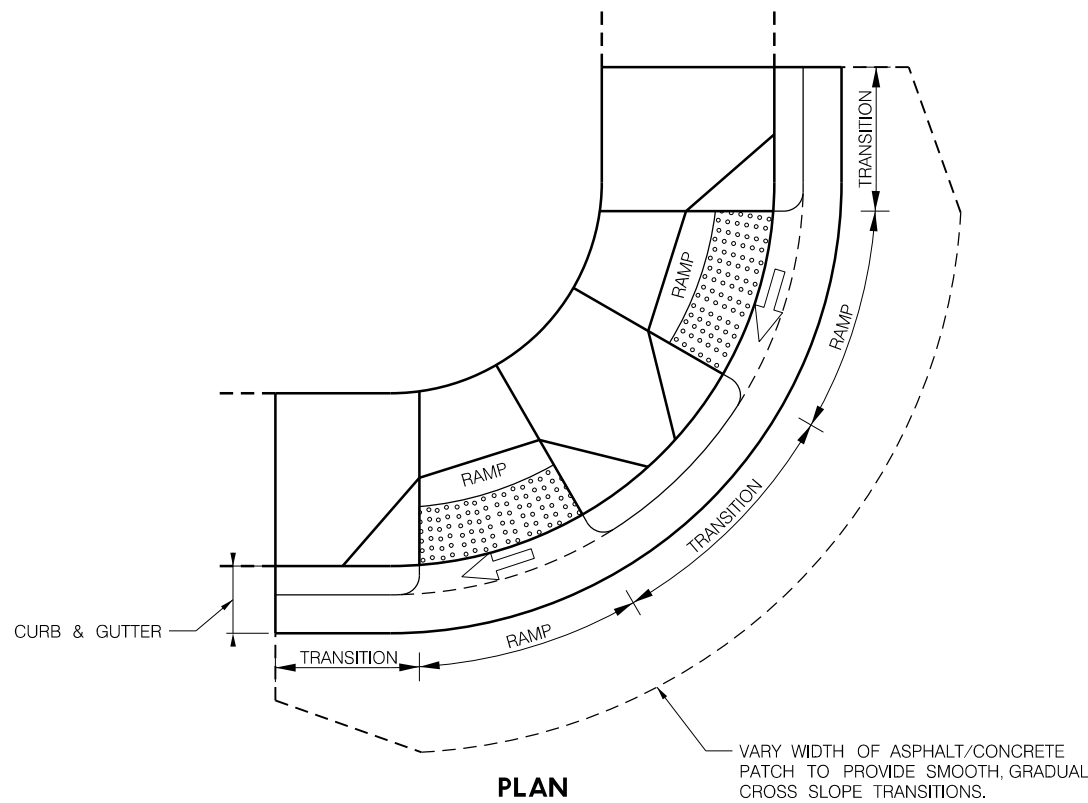


ISOMETRIC VIEW

FOR FURTHER DETAILS, SEE NOTES ON SHEET 3



CURB RAMPS



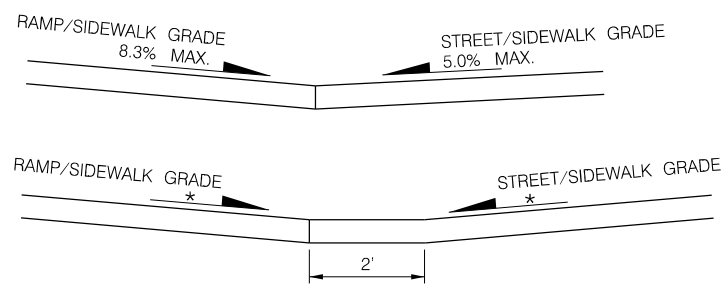
NOTES:

- SIDEWALK RAMP WIDTH REQUIREMENTS:**
NEW CONSTRUCTION: RAMP WIDTH SHALL BE 5' MINIMUM.
RETROFIT CONSTRUCTION: RAMP WIDTH SHALL BE 4' MINIMUM.
BIKE PATH/TRAILS: RAMP WIDTH SHALL BE THE SAME AS THE NOMINAL WIDTH OF THE BIKE PATH/TRAIL.
- THE SLOPE OF TURNING SPACES SHALL HAVE AN ABSOLUTE MAXIMUM OF 2% IN ALL DIRECTIONS.
NEW CONSTRUCTION: THE TURNING SPACE SHALL HAVE ABSOLUTE MINIMUM DIMENSIONS OF 5' X 5'.
RETROFIT CONSTRUCTION: THE TURNING SPACE SHALL HAVE ABSOLUTE MINIMUM DIMENSIONS OF 4' X 4'. IF TURNING SPACE IS CONSTRAINED AT THE BACK OF SIDEWALK, THE TURNING SPACE SHALL BE A MINIMUM OF 5' X 4', WITH THE 5' DIMENSION BEING IN THE DIRECTION OF THE RAMP RUN.
- CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE CURB RAMP, FREE OF SAGS AND SHORT GRADE CHANGES.
- RAMP SHALL BE CONSTRUCTED SUCH THAT THE MAXIMUM VERTICAL DISCONTINUITY IS 0.25". DISCONTINUITIES UP TO 0.5" SHALL BE BEVELED AT 1:2 MINIMUM ACROSS THE ENTIRE LEVEL CHANGE.
- RAMP FLARES SHALL BE CONSTRUCTED WITH A 9% +/- 1% (10% MAXIMUM) SLOPE AT RIGHT ANGLES TO THE SLOPE OF THE CURB RAMP WHEN ADJACENT TO CONCRETE SURFACE.
- ALL CURB RAMPS SHALL BE CONSTRUCTED WITH A LONGITUDINAL DETECTABLE TRUNCATED SURFACE ACROSS THE ENTIRE WIDTH OF RAMP, THE LAST TWO FEET (2') TOWARDS THE CURB, WITH COLOR CONTRAST TO ADJOINING SURFACE.
- DETECTABLE WARNING PANELS MUST BE APPROVED BY THE CITY AND MUST COMPLY WITH ADA DIMENSIONS AND SHALL BE INSTALLED AS PER MANUFACTURERS INSTRUCTIONS.
- CONCRETE THICKNESS FOR SIDEWALK RAMPS SHALL BE EQUAL TO THE PAVEMENT THICKNESS, BUT NO LESS THAN 6" AND NO MORE THAN 10". THE THICKNESS THAT IS DETERMINED SHALL BE CARRIED OUT A DISTANCE OF NO LESS THAN 4' AND NO MORE THAN 6' MEASURED PERPENDICULAR TO THE BACK OF CURB.
- RAMPS SHALL BE TIED TO THE BACK OF THE CURB WITH #5 EPOXY COATED REBAR, 18" LONG, AT 2' MAXIMUM SPACING ACROSS THE WIDTH OF THE RAMP.
- WHERE COMMERCIAL DRIVEWAYS ARE CONSTRUCTED AT THE ADJACENT STREET ELEVATION, OR WHERE THE COMMERCIAL DRIVEWAY UTILIZES YIELD OR STOP CONTROL, DETECTABLE WARNING SURFACES SHALL BE INSTALLED AT THE JUNCTION BETWEEN THE PEDESTRIAN ROUTE AND THE VEHICULAR ROUTE.
- EFFECTIVE DRAINAGE IS REQUIRED IN ALL AREAS OF CURB RAMP CONSTRUCTION.
- FOR RETROFIT APPLICATIONS, RECONSTRUCT A MINIMUM LENGTH OF SIDEWALK AND CURB/GUTTER BEYOND THE RAMP AND/OR TURNING SPACE. THE SIDEWALK SHALL HAVE A DESIRABLE MAXIMUM RUNNING SLOPE OF 7.3% OR A MAXIMUM LENGTH OF 15'.

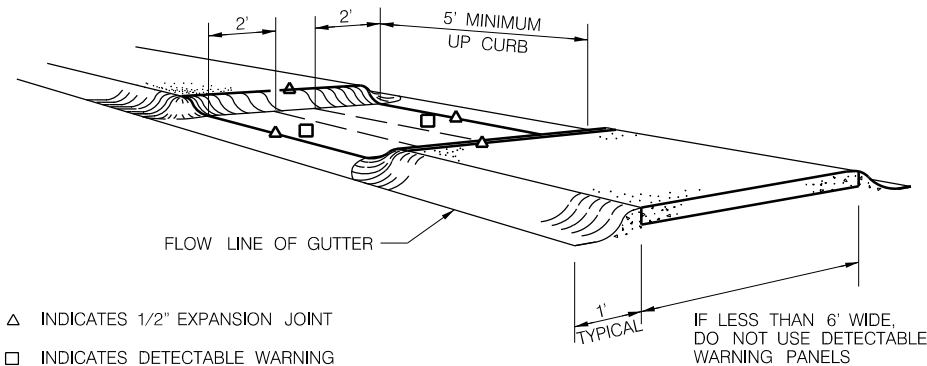
	1.5% DESIRABLE MAXIMUM (2.0% ABSOLUTE MAXIMUM) SLOPE
	7.3% DESIRABLE MAXIMUM (8.3% ABSOLUTE MAXIMUM) SLOPE
	9.0% DESIRABLE MAXIMUM (10.0% ABSOLUTE MAXIMUM) SLOPE

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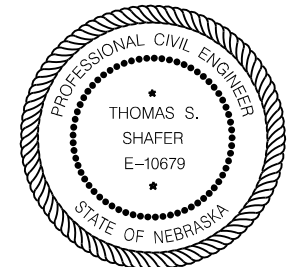
SLOPE LEGEND

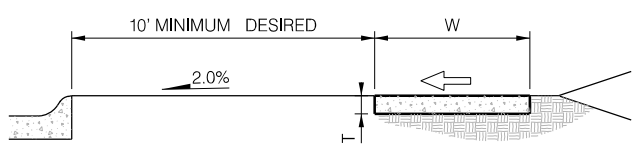
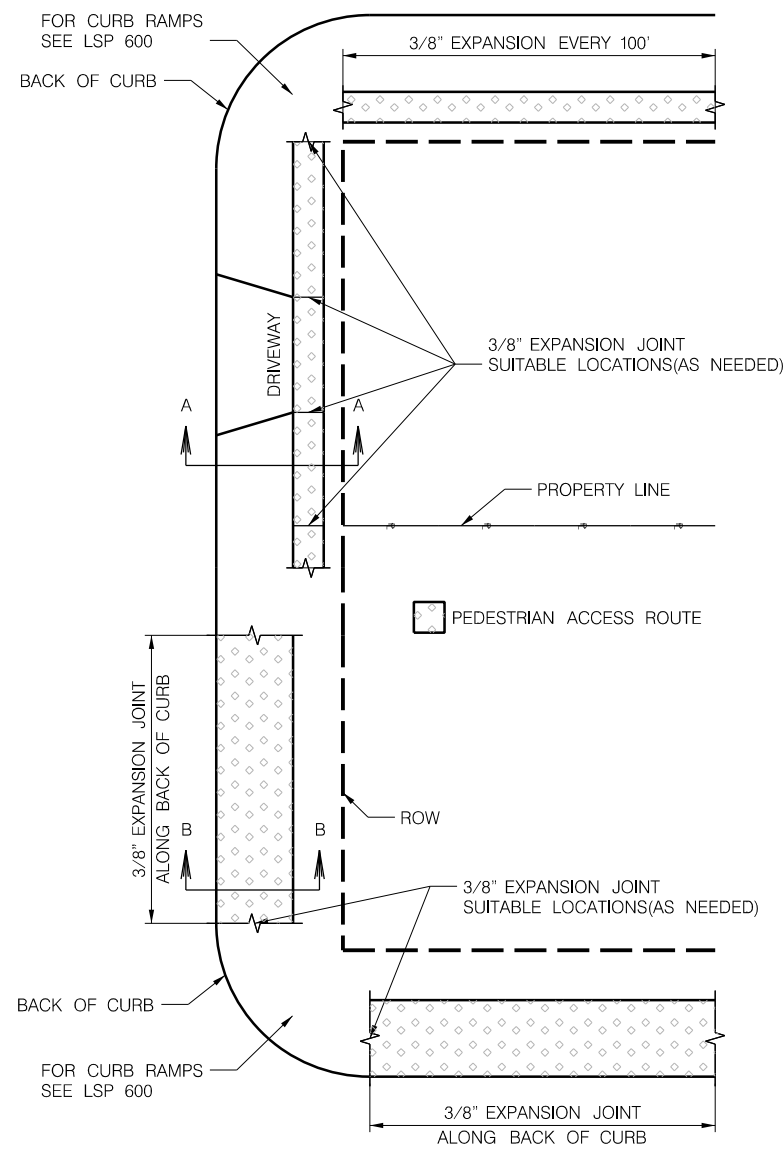


COUNTER SLOPE CONDITIONS

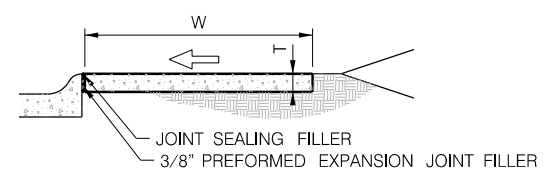


MEDIAN CROSSING

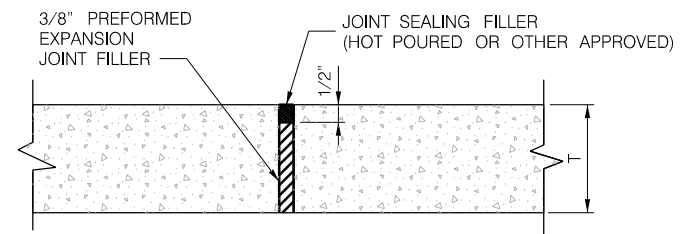




TYPICAL SECTION A-A



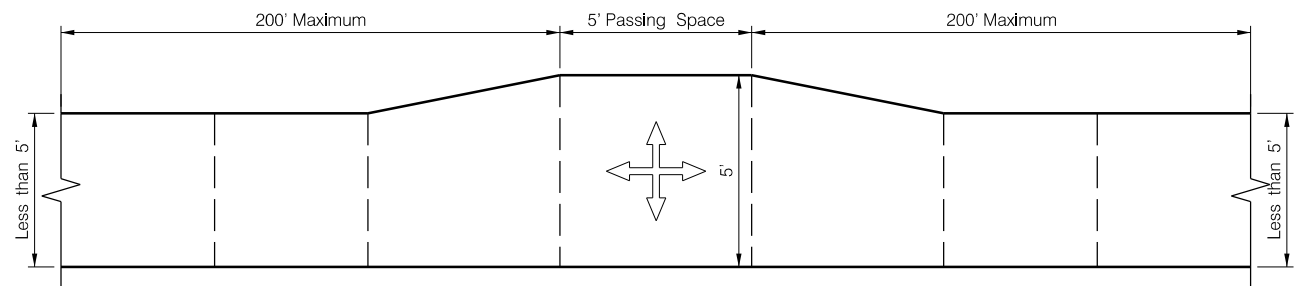
TYPICAL SECTION B-B



EXPANSION JOINT DETAIL

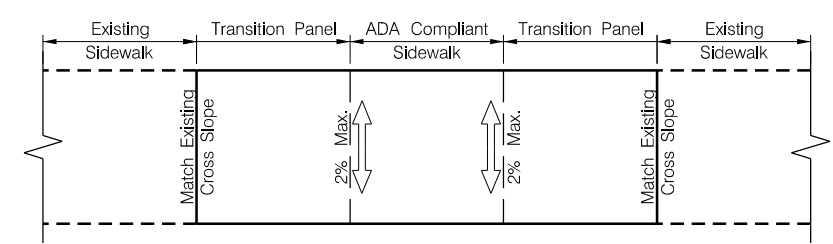
EXPANSION JOINTS SHALL BE PLACED AT 100' INTERVALS OR AT COLD JOINT(S) AS APPROVED BY THE PROJECT MANAGER.

A LONGITUDINAL EXPANSION JOINT SHALL BE PLACED AT THE BACK OF CURB WHEN THE ROUTE ABUTS THE CURB EXCEPT FOR WHERE A CURB RAMP IS TIED TO THE CURB WITH REBAR (PER LSP600).



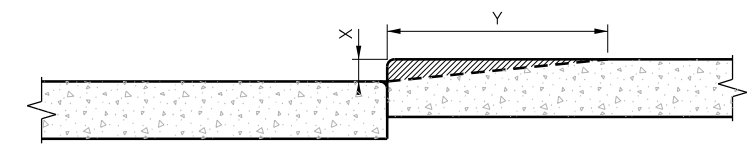
PASSING SPACE DETAIL

WHERE THE CLEAR WIDTH OF THE PEDESTRIAN ACCESS ROUTE IS LESS THAN 5', A PASSING SPACE MEASURING 5'x5' MINIMUM SHALL BE PROVIDED EVERY 200'. CURB RAMP TURNING SPACES, DRIVEWAYS, APPROACHES, OR ANY PART OF THE PEDESTRIAN ACCESS ROUTE MAY BE USED AS THE PASSING SPACE IF IT MEETS THE DIMENSIONING AND SLOPE REQUIREMENTS.



SIDEWALK REPAIR TRANSITION

FOR SIDEWALK REPAIRS REQUIRING REPLACEMENT OF 3 OR MORE SIDEWALK PANELS, A TRANSITION PANEL SHALL BE INSTALLED ON EACH END OF THE REPAIR TO ACCOUNT FOR VARIATIONS IN CROSS SLOPE OF THE EXISTING SIDEWALK NOT TO BE REPAIRED.



SAWING/GRINDING SIDEWALK DETAIL

SIDEWALK TRIP HAZARDS THAT MEASURE LESS THAN 2" VERTICALLY MAY BE REMOVED BY SAWING/GRINDING IF APPROVED BY THE PROJECT MANAGER.

FOR EVERY 1/2" OF VERTICAL SEPARATION, THE REMOVAL AREA SHALL MEASURE A MINIMUM OF 5" HORIZONTALLY. SEE TABLE.

X	Y
0.5"	5"
1"	10"
1.5"	15"
2"	20"

THE FINISHED SURFACE OF THE REPAIR AREA SHALL BE A FLAT, SMOOTH SURFACE.

NOTES:

PEDESTRIAN ACCESS ROUTE SLOPE REQUIREMENTS:
 NEW CONSTRUCTION: CROSS SLOPE SHALL BE 2% OR LESS SLOPING TOWARDS THE STREET UNLESS OTHERWISE NOTED. ANY PORTION THAT EXCEEDS 2% CROSS SLOPE WHEN CONSTRUCTED SHALL BE REMOVED AND RECONSTRUCTED AT NO COST TO THE CITY OF LINCOLN.

RETROFIT/REPAIR CONSTRUCTION: CROSS SLOPE SHALL BE RECONSTRUCTED TO HAVE A 2% MAXIMUM CROSS SLOPE IF THE EXISTING CONDITIONS ALLOW. SEE TRANSITION PANEL DETAIL FOR LOCATIONS WHEN MATCHING EXISTING SIDEWALK.

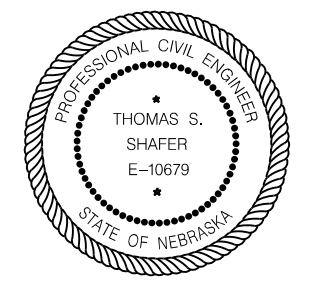
PEDESTRIAN ACCESS ROUTE DESIGN:
 SEE TABLE FOR TYPICAL PEDESTRIAN ACCESS ROUTE CONCRETE THICKNESS AND WIDTH

TYPE OF PEDESTRIAN ACCESS ROUTE	MINIMUM THICKNESS (T)	TYPICAL WIDTH (W)
EXISTING SIDEWALK	4"	VARIABLE
NEW CONSTRUCTION	4"	5'
RESIDENTIAL DRIVEWAY	5"	4'
COMMERCIAL DRIVEWAY	6"	4'
BIKE TRAIL	5"	10'

	1.5% DESIRABLE MAXIMUM (2.0% ABSOLUTE MAXIMUM) SLOPE
	7.3% DESIRABLE MAXIMUM (8.3% ABSOLUTE MAXIMUM) SLOPE
	9.0% DESIRABLE MAXIMUM (10.0% ABSOLUTE MAXIMUM) SLOPE

SLOPES MAY BE LESS THAN THE DESIRABLE MAXIMUM, BUT SHALL NOT EXCEED THE ABSOLUTE MAXIMUM. THE CONTRACTOR SHOULD ACCOUNT FOR CONSTRUCTION TOLERANCES TO PREVENT EXCEEDING THE MAXIMUM SLOPES. ANY SLOPES EXCEEDING THE ABSOLUTE MAXIMUMS SHALL NOT BE ACCEPTED WITHOUT PRIOR APPROVAL FROM THE PROJECT MANAGER. JUSTIFICATION FOR INABILITY TO MEET SLOPE REQUIREMENTS SHALL BE DETERMINED BY REFERENCING PROWAG R202.3.1

SLOPE LEGEND

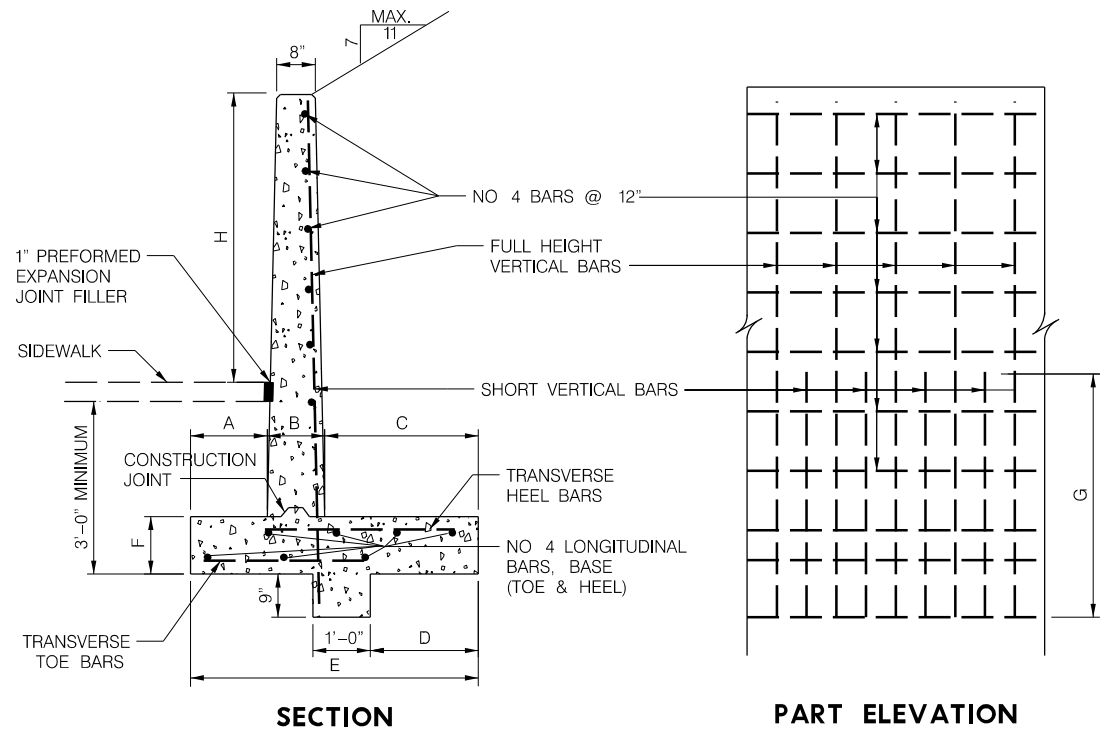


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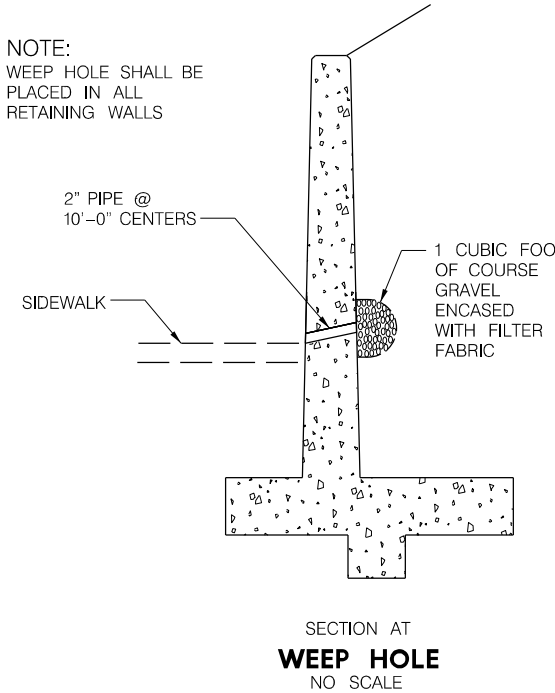
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QUANTITIES PER LINEAR FOOT OF WALL							
HEIGHT OF WALL FEET	CONCRETE CUBIC YARDS	REINFORCING STEEL POUNDS	DAMP-PROOFING SQUARE YARDS	ADDITIONAL CONCRETE		ADDITIONAL STEEL	
				ONE WALL CORNER CUBIC YARDS	ONE ENTRANCE CORNER CUBIC YARDS	ONE WALL CORNER POUNDS	ONE ENTRANCE CORNER POUNDS
UNDER 35"	.305	11.7	.572	1.1	0.14	93	27
35" - 47"	.355	14.9	.669	1.5	0.15	121	35

SURCHARGED FILL BEHIND WALL (MAXIMUM SURCHARGE SLOPE 11:7)													
HEIGHT OF WALL	DIMENSIONS							REINFORCING BARS					
	A	B	C	D	E	F	G	FULL HEIGHT VERTICAL BARS (ALTERNATE WITH SHORT BARS)	SHORT VERTICAL BARS (ALTERNATE WITH FULL HEIGHT BARS)	TRANSVERSE BARS, BASE		LONGITUDINAL BARS, BASE (NO 4)	
	H									TOE BARS	HEEL BARS	NUMBER OF TOE BARS	NUMBER OF HEEL BARS
UNDER 35"	10"	1'-0"	1'-6"	1'-2"	3'-4"	1'-0"	3'-9"	NO 3 @ 14"	NO 3 @ 14"	NO 3 @ 12"	NO 3 @ 12"	2	3
35" - 47"	1'-0"	1'-0"	1'-10"	1'-6"	3'-10"	1'-0"	3'-10"	NO 4 @ 16"	NO 4 @ 16"	NO 3 @ 12"	NO 3 @ 12"	2	3



NOTE:
 WEEP HOLE SHALL BE PLACED IN ALL RETAINING WALLS



NOTE:
 ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4"

MINIMUM COVERING, MEASURED FROM FACE OF THE CONCRETE TO THE SURFACE OF ANY REINFORCING BARS SHALL BE 3".

EXPANSION JOINTS SHALL BE PLACED IN WALLS AT NOT MORE THAN 50'-0" INTERVALS, AT LOCATIONS TO BE DETERMINED BY THE ENGINEER, AND AT 8'-0" FROM ALL WALL AND ENTRANCE CORNERS. LONGITUDINAL BARS SHALL BE CUT AT EXPANSION JOINTS.

DUMMY JOINTS SHALL BE PLACED IN THE FACE OF WALLS AT LOCATIONS TO BE DETERMINED BY THE ENGINEER.

A CONTROL JOINT SHALL BE PLACED MIDWAY BETWEEN EXPANSION JOINTS OR MIDWAY BETWEEN EXPANSION JOINT AND THE END OF THE RETAINING WALL, EXCEPT CONTROL JOINTS MAY BE DELETED WHERE THE DISTANCE BETWEEN EXPANSION JOINTS OR THE DISTANCE BETWEEN EXPANSION JOINT AND END OF RETAINING WALL IS 30'-0" OR LESS. FIELD CUT ALTERNATE LONGITUDINAL BARS AT CONTROL JOINTS. TOP LONGITUDINAL BARS TO BE CONTINUOUS THROUGH CONTROL JOINT.

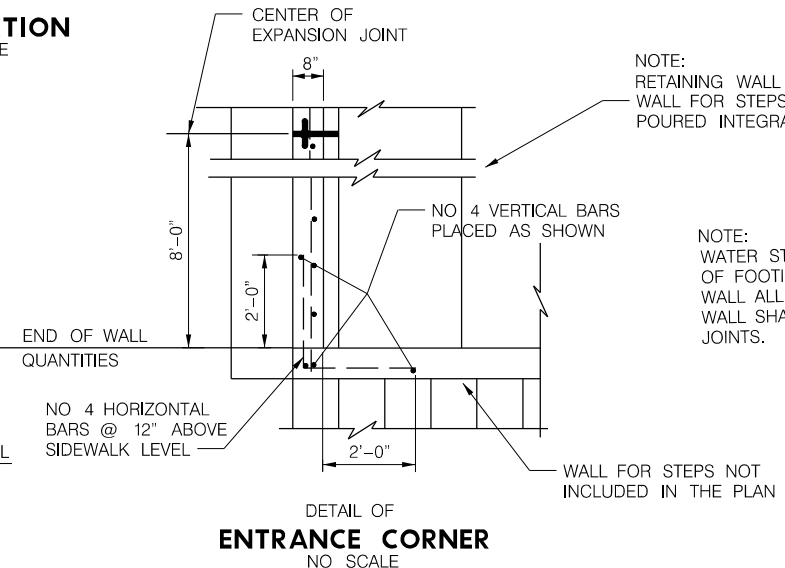
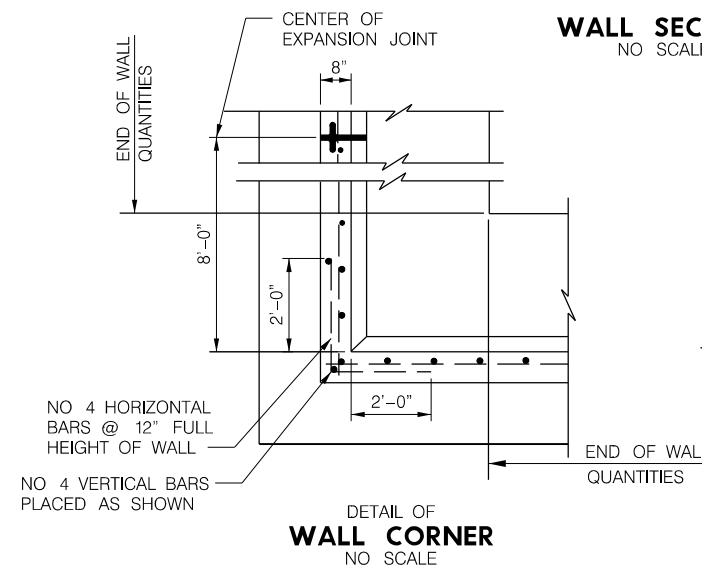
THE BACK FACE OF ALL RETAINING WALLS OVER TWO FEET HIGH SHALL BE DAMP-PROOFED ABOVE THE TOP OF THE FOOTING.

WEEP HOLES SHALL BE PLACED AT 10'-0" CENTERS IN ALL RETAINING WALLS.

ALL EXPOSED FACES OF RETAINING WALLS SHALL BE BUILT WITH FORMS TO SIMULATE A BRICK FACE.

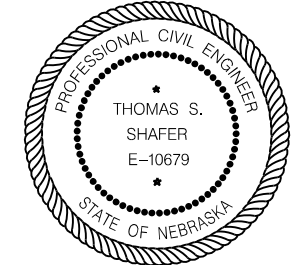
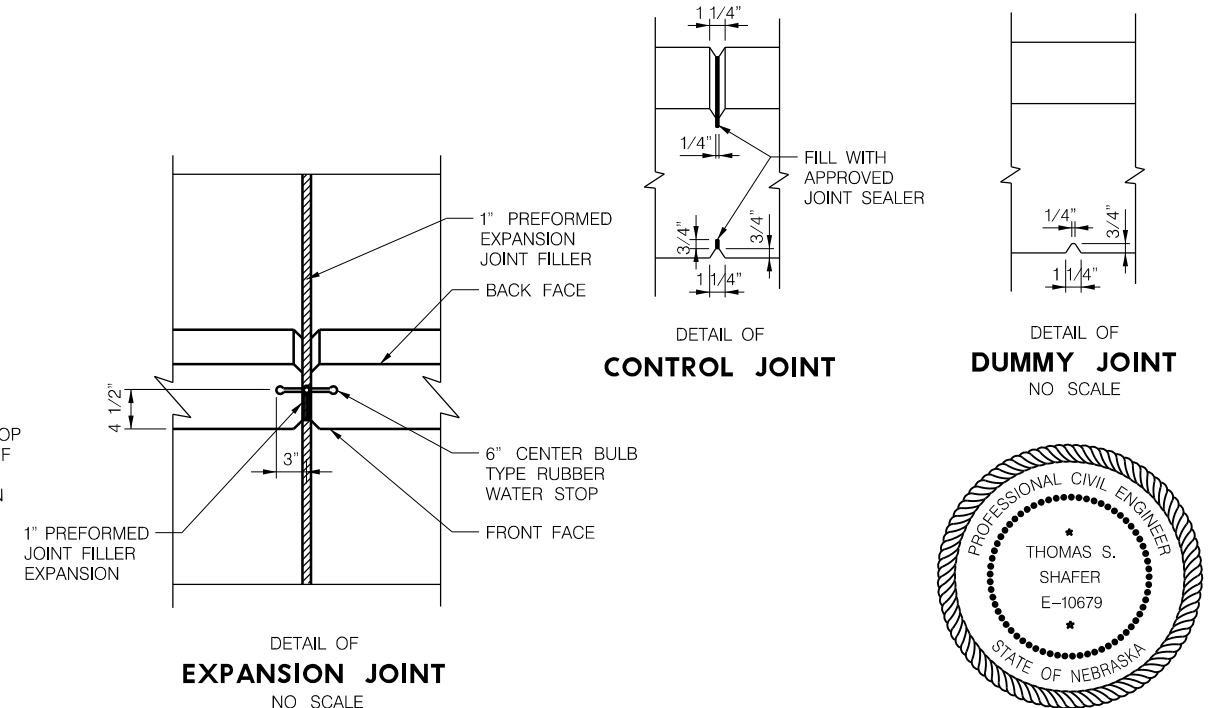
ALL REINFORCING STEEL SHALL BE EPOXY COATED.

ALL CONCRETE SHALL BE L3500.



NOTE:
 RETAINING WALL AND WALL FOR STEPS TO BE POURED INTEGRALLY

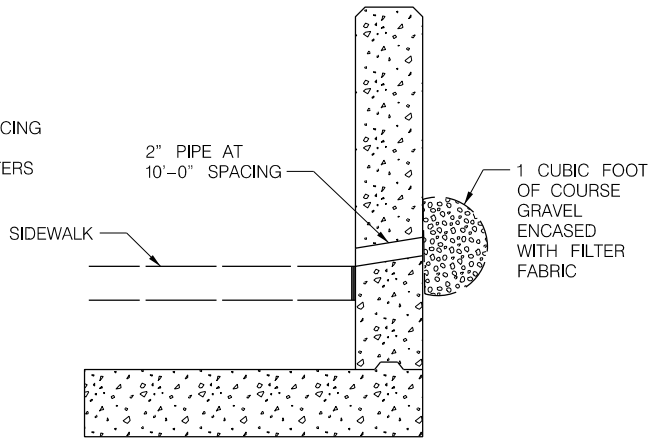
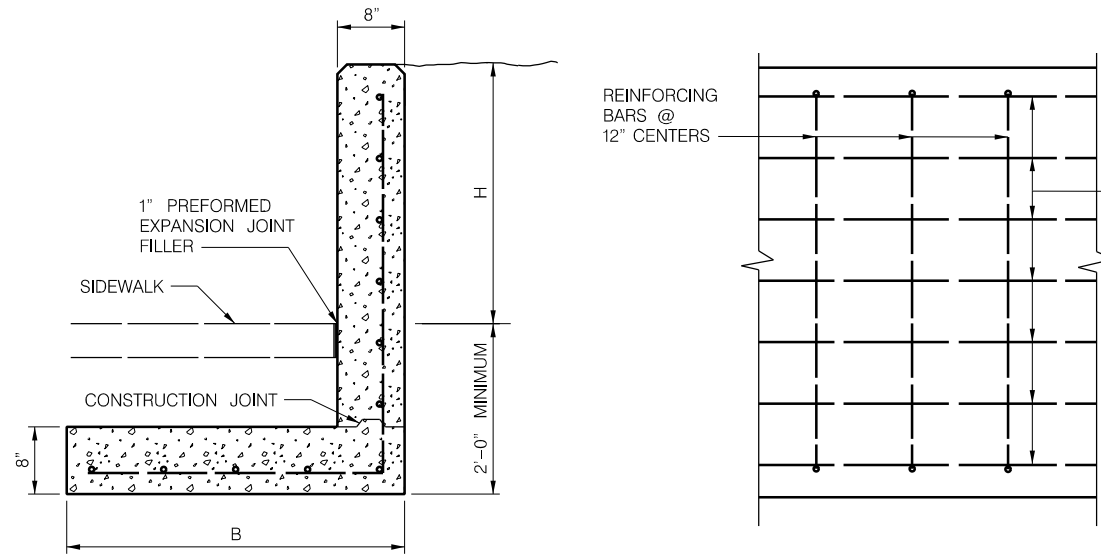
NOTE:
 WATER STOP TO EXTEND FROM TOP OF FOOTING TO 3" BELOW TOP OF WALL ALL LONGITUDINAL STEEL IN WALL SHALL BE CUT AT EXPANSION JOINTS.



REINFORCED CONCRETE RETAINING WALL, TYPE 'A' AND 'B'

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WALL HEIGHT H	BASE LENGTH B	BAR SIZE	CONCRETE CUBIC YARDS	REINFORCING STEEL POUNDS	ADDITIONAL CONCRETE			DAMP PROOFING SQUARE YARDS
					ONE WALL CORNER	ONE WALL CORNER	1-ENTRANCE CORNER	
1'-0"	2'-0"	NO 3	0.107	3.38	0.53	55	11	—
1'-6"	2'-0"	NO 3	0.119	3.95	0.58	58	12	—
2'-0"	2'-0"	NO 3	0.132	4.14	0.64	66	16	—
2'-6"	2'-6"	NO 3	0.156	4.89	0.79	72	17	0.43
3'-0"	2'-6"	NO 3	0.169	5.08	0.84	81	21	0.48
3'-6"	3'-0"	NO 4	0.193	10.4	1.01	88	22	0.54
3'-11"	4'-0"	NO 4	0.230	12.0	1.33	107	26	0.59

WALL DETAIL

SECTION AT WEEP HOLE

NOTE:
 ALL EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4".
 MINIMUM COVERING, MEASURED FROM THE FACE OF THE CONCRETE TO THE SURFACE OF ANY REINFORCING BAR SHALL BE 3".

EXPANSION JOINT SHALL BE PLACED IN RETAINING WALLS AT NOT MORE THAN 50'-0" INTERVALS OR AT LOCATIONS TO BE DETERMINED BY THE ENGINEER, AND AT 4'-0" FROM WALL CORNERS AND ENTRANCE CORNERS FOR TYPE 'C' WALLS. LONGITUDINAL BARS SHALL BE CUT AT EXPANSION JOINTS.

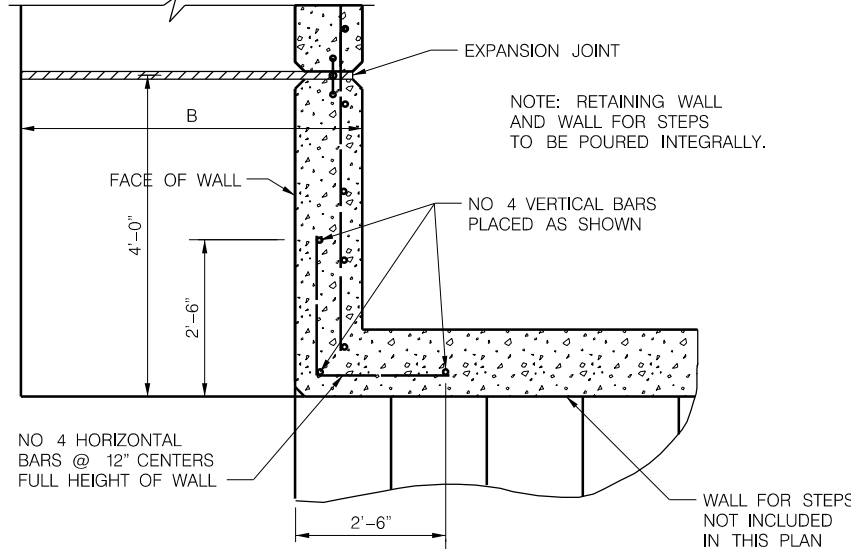
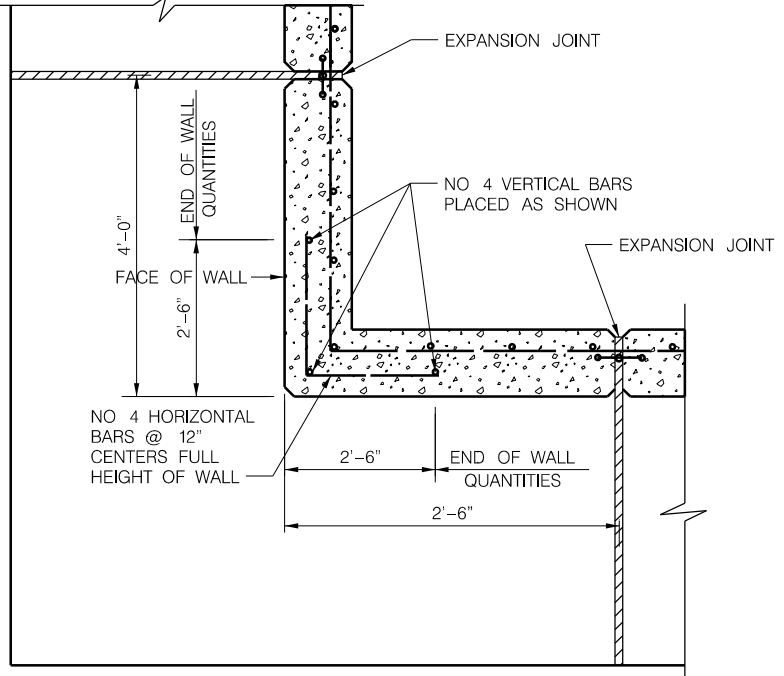
DUMMY JOINTS SHALL BE PLACED IN THE FACE OF WALLS AT LOCATIONS TO BE DETERMINED BY THE ENGINEER.

A CONTROL JOINT SHALL BE PLACED MIDWAY BETWEEN EXPANSION JOINTS OR MIDWAY BETWEEN EXPANSION JOINT AND THE END OF THE RETAINING WALL, EXCEPT CONTROL JOINTS WHERE EXPANSION JOINT AND THE END OF THE RETAINING WALL IS 30'-0" OR LESS. FIELD CUT ALTERNATE LONGITUDINAL BARS AT CONTROL JOINTS. TOP LONGITUDINAL BARS ARE TO BE CONTINUOUS THROUGH CONTROL JOINT.

THE BACK FACE OF ALL RETAINING WALLS OVER TWO FEET HIGH SHALL BE DAMP PROOFED ABOVE THE TOP OF THE FOOTING.

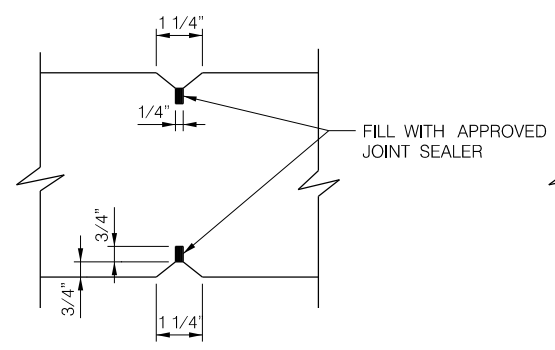
WEEP HOLES SHALL BE PLACED AT 10'-0" CENTERS IN ALL RETAINING WALLS. ALL EXPOSED FACES OF RETAINING WALLS SHALL BE BUILT WITH FORMS TO SIMULATE A BRICK FACE.

ALL REINFORCING STEEL SHALL BE EPOXY COATED.
 ALL CONCRETE SHALL BE L3500



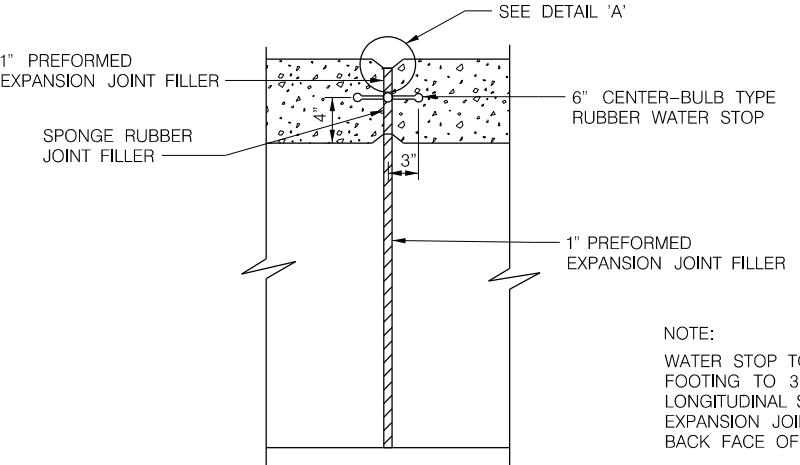
DETAIL OF WALL CORNER

DETAIL OF ENTRANCE CORNER

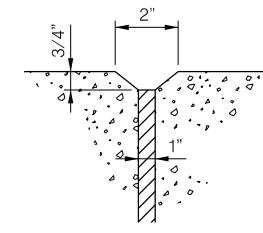


DETAIL OF CONTROL JOINT

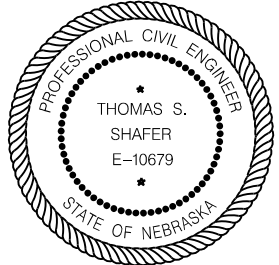
DETAIL OF DUMMY JOINT



DETAIL OF EXPANSION JOINT

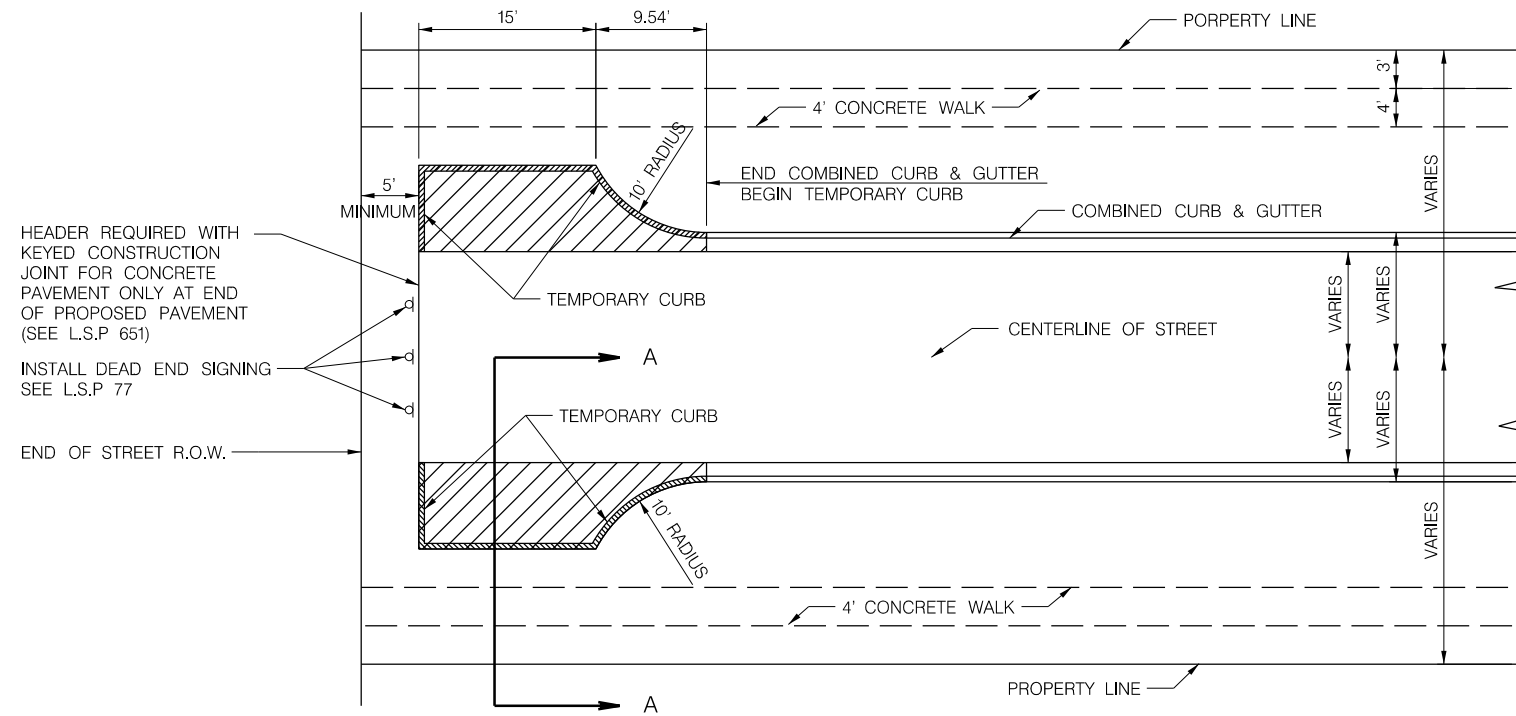


DETAIL 'A'



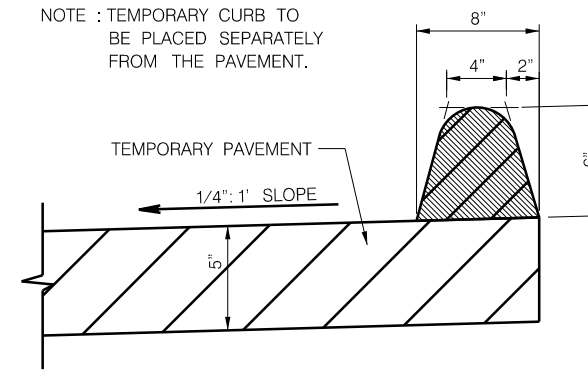
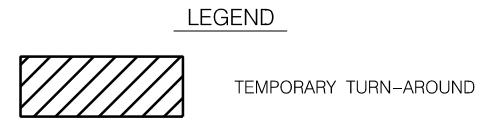
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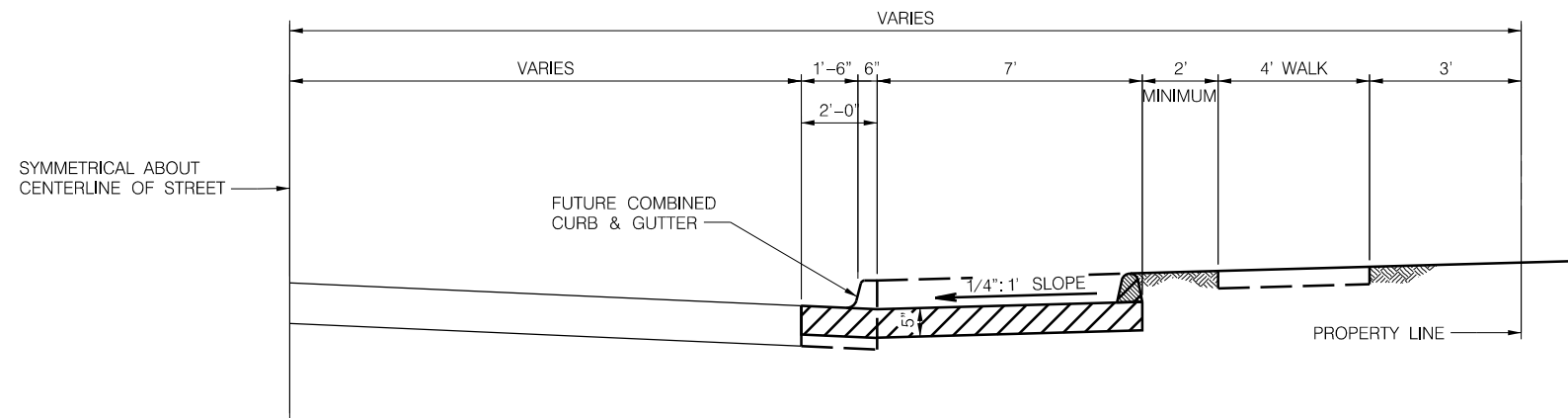
HEADER REQUIRED WITH KEYED CONSTRUCTION JOINT FOR CONCRETE PAVEMENT ONLY AT END OF PROPOSED PAVEMENT (SEE L.S.P 651)
 INSTALL DEAD END SIGNING SEE L.S.P 77
 END OF STREET R.O.W.

PLAN OF
TEMPORARY PAVEMENT TURN AROUND



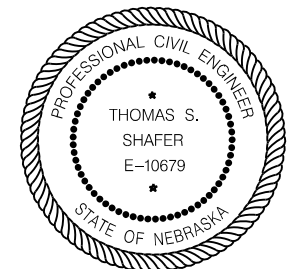
TEMPORARY CURB

NOTE:
TEMPORARY PAVEMENT SHALL BE FULL-DEPTH ASPHALT OR 6" L3500 CONCRETE. TEMPORARY CURB SHALL BE ASPHALT OR L3500 CONCRETE.



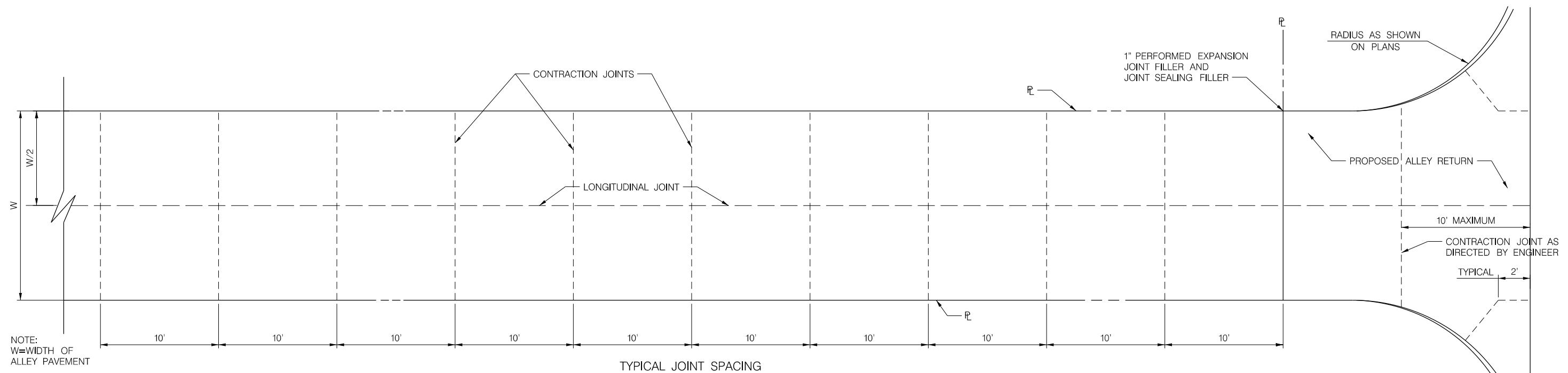
HALF - SECTION A-A
TEMPORARY PAVEMENT TURN AROUND

QUANTITIES		
R.O.W. WIDTH	PAVEMENT WIDTH	QUANTITIES
60'	27'	40 SQUARE YARDS
80'	39'	40 SQUARE YARDS



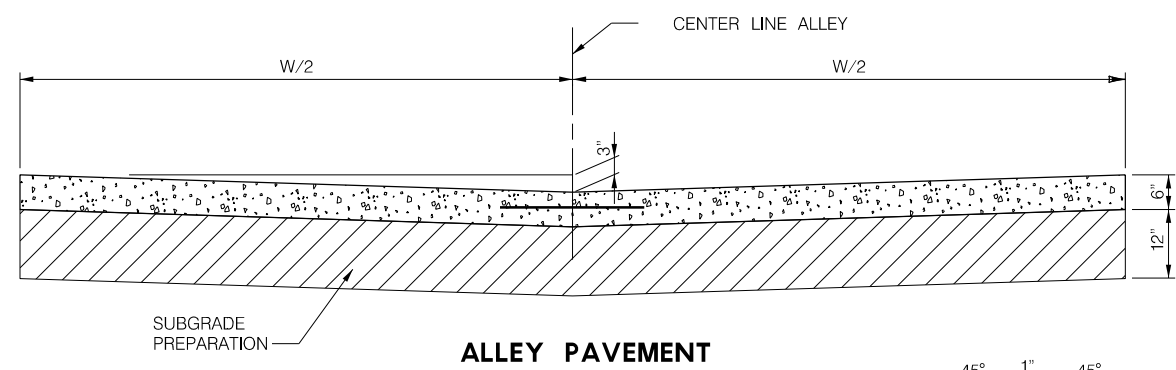
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		Approved:

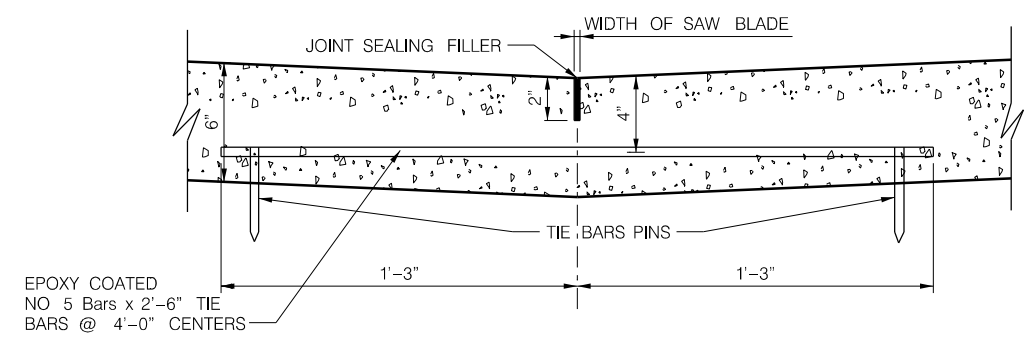


NOTE:
 W=WIDTH OF
 ALLEY PAVEMENT

TYPICAL JOINT SPACING

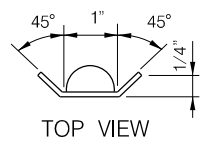


ALLEY PAVEMENT

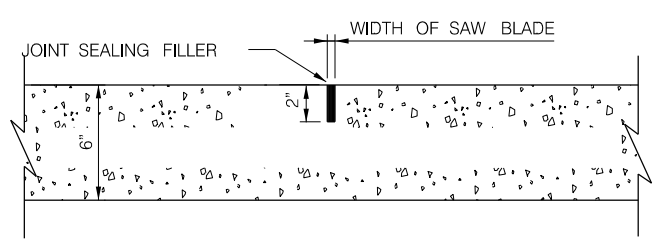


LONGITUDINAL JOINT

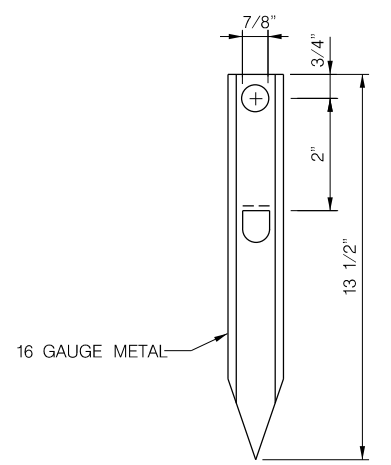
EPOXY COATED
 NO 5 Bars x 2'-6" TIE
 BARS @ 4'-0" CENTERS



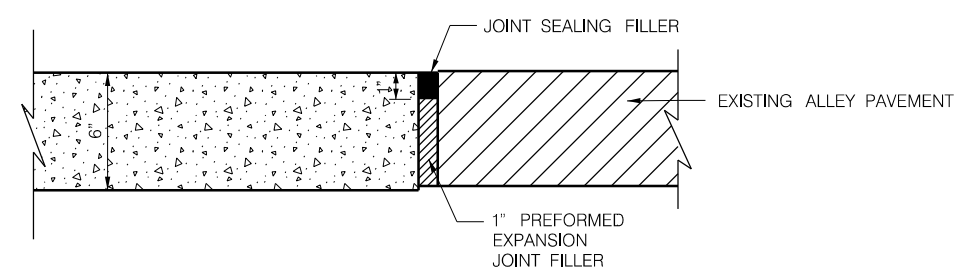
TOP VIEW



TRANSVERSE CONTRACTION JOINT

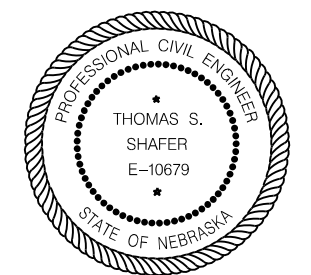


TIE BAR PIN



EXPANSION JOINT AT
 END OF ALLEY RETURN

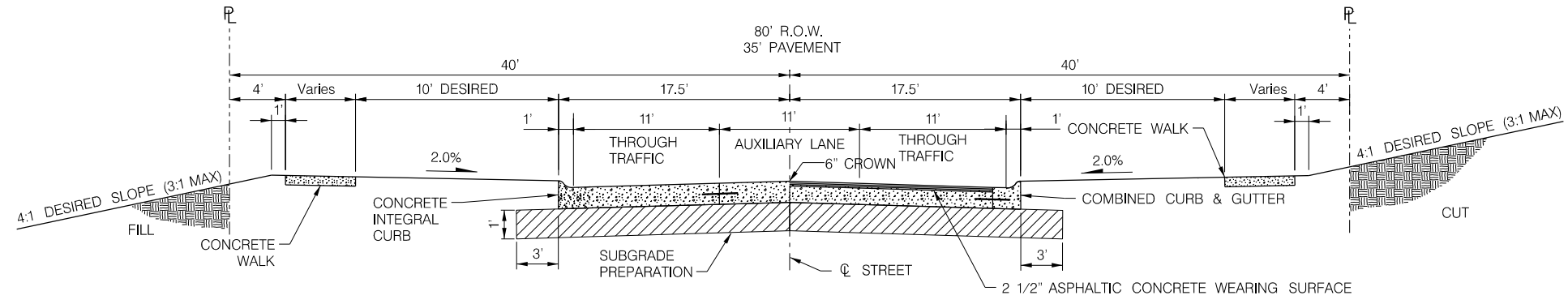
NOTES:
 THE CONTRACTOR MAY SUBSTITUTE OTHER DESIGNS FOR EXPANSION AND CONTRACTION JOINT SUPPORTS IN LIEU OF THE TYPE SHOWN WITH PRIOR WRITTEN APPROVAL BY THE ENGINEER.
 ALL JOINTS SHALL BE SEALED WITH JOINT SEALING FILLER (HOT POURED TYPE) AS PER STANDARD SPECIFICATIONS.
 TIE BARS SHALL BE EPOXY COATED DEFORMED BARS.
 ALL BARS SHALL SATISFY THE BEND TEST REQUIREMENTS FOR STRUCTURAL GRADE BILLET STEEL IN ACCORDANCE WITH THE SPECIFICATIONS.
 THE CONTRACTOR MAY USE MACHINE FOR PLACING THE LONGITUDINAL TIE BARS IN LIEU OF THE BAR PINS. IF A MECHANICAL TIE BAR PLACEMENT MACHINE IS NOT USED, TIE BAR PINS AS SHOWN WILL BE USED.
 ALL CONCRETE SHALL BE L3500.



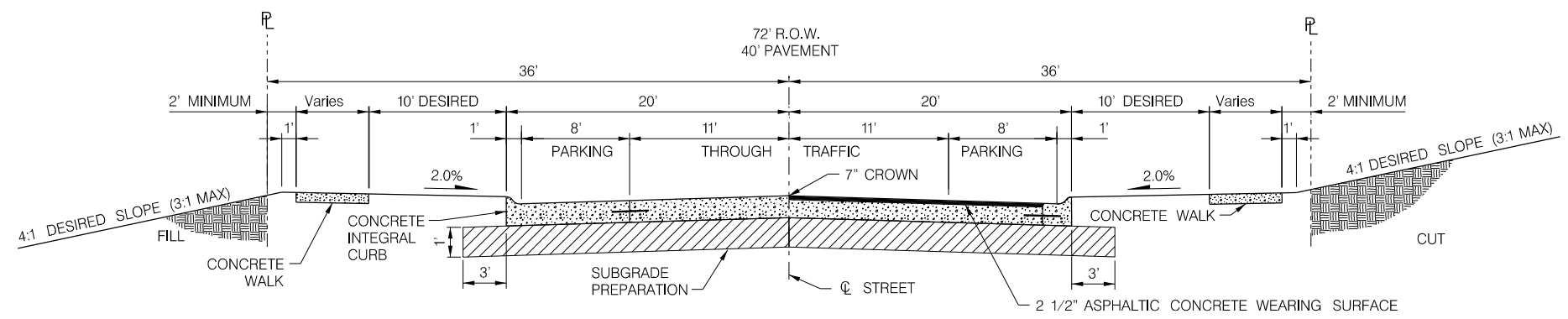
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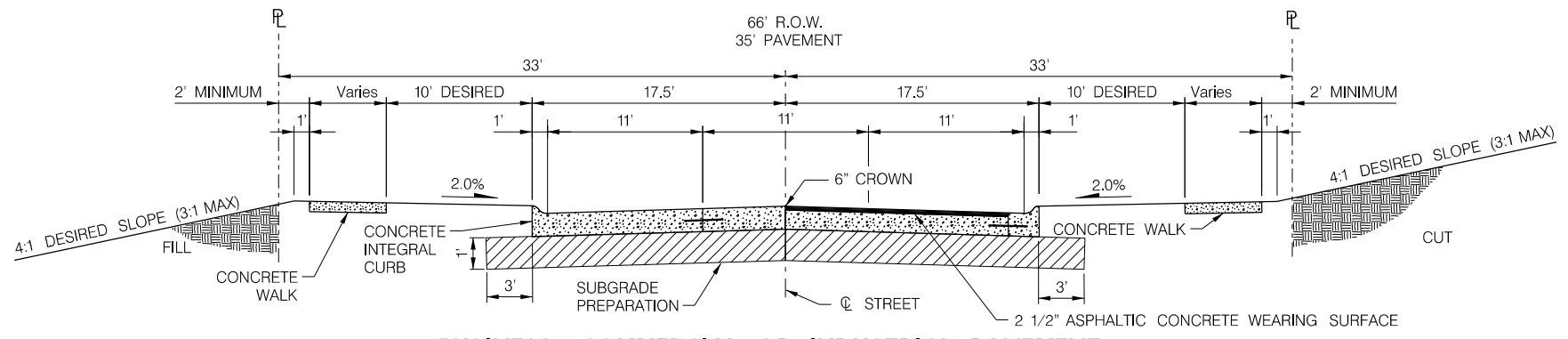
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		Approved:



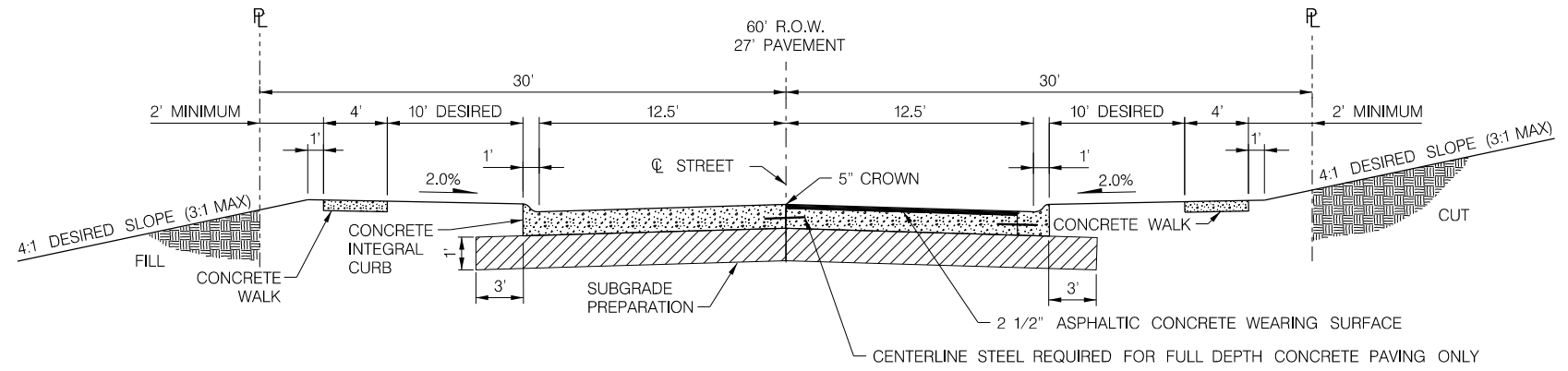
MAJOR TWO LANE PAVEMENT



BUSINESS, COMMERCIAL OR INDUSTRIAL PAVEMENT (WITH PARKING)

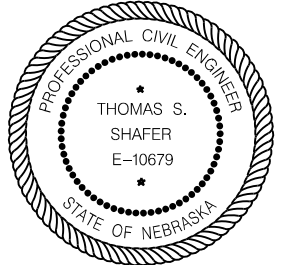


BUSINESS, COMMERCIAL OR INDUSTRIAL PAVEMENT (NO PARKING)



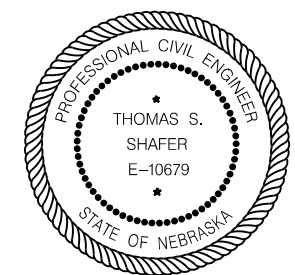
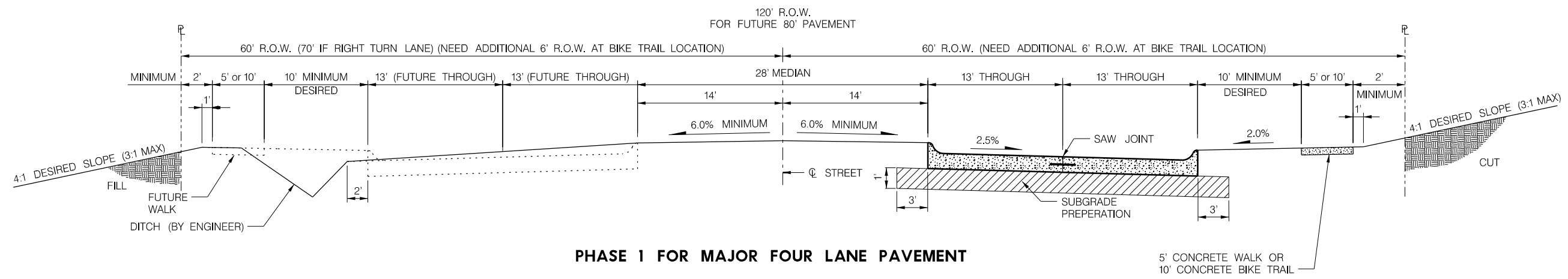
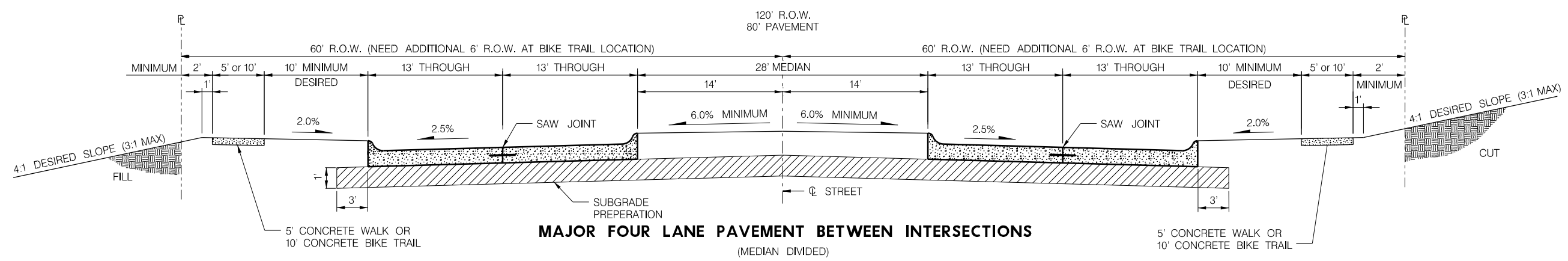
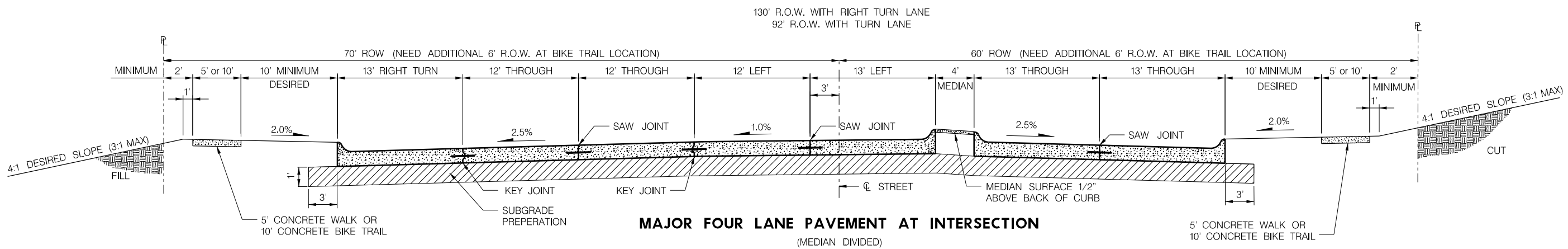
RESIDENTIAL PAVEMENT

CENTERLINE STEEL REQUIRED FOR FULL DEPTH CONCRETE PAVING ONLY



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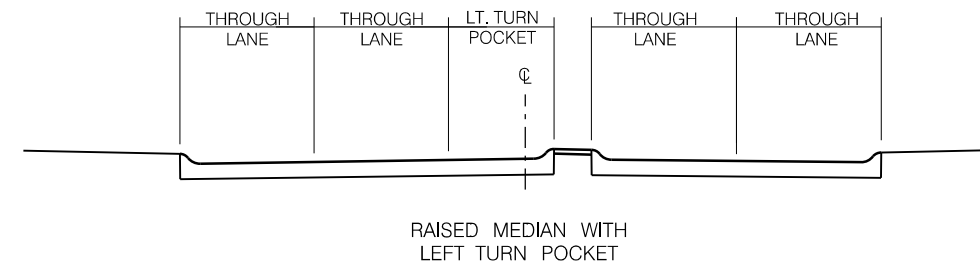
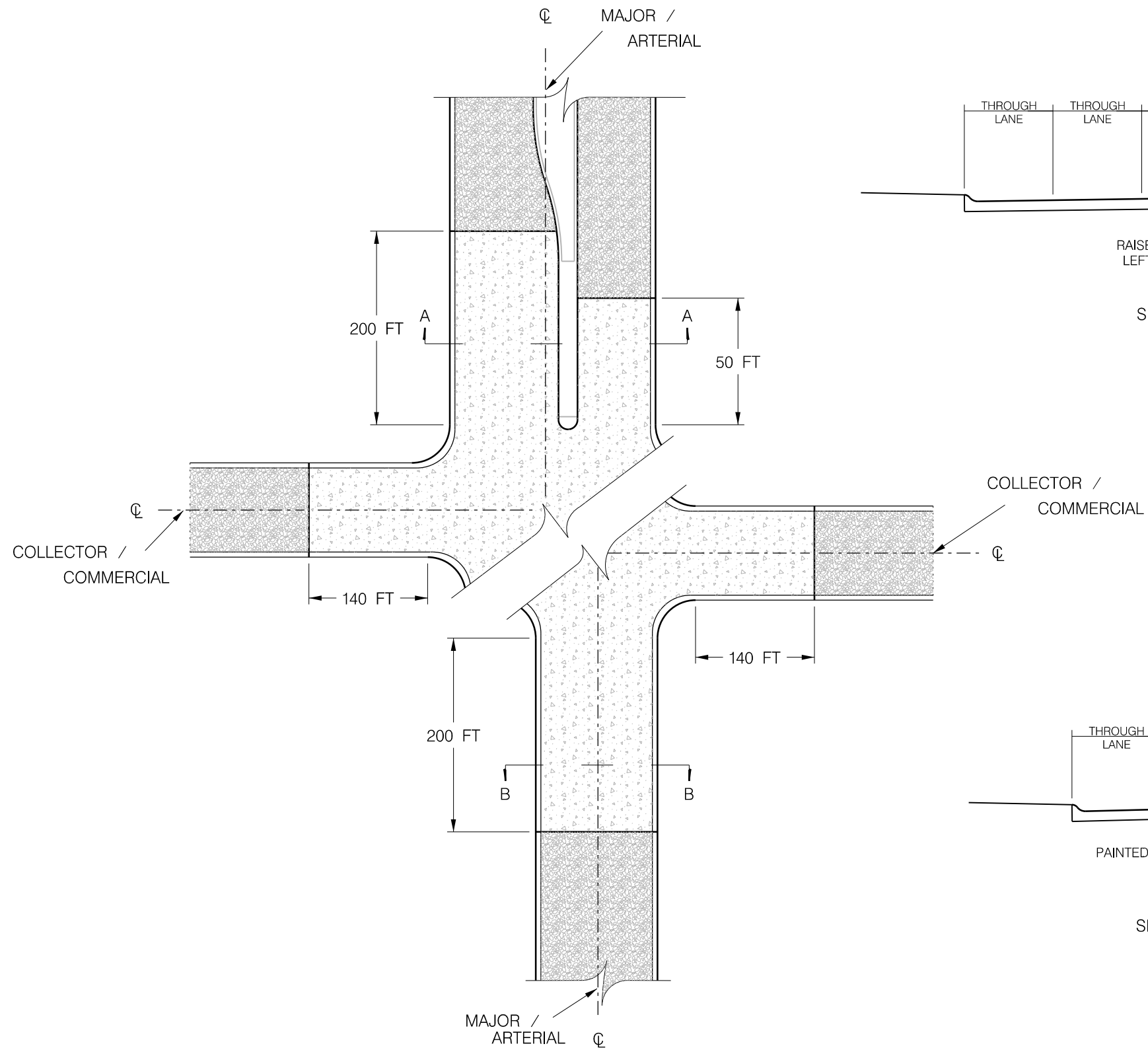
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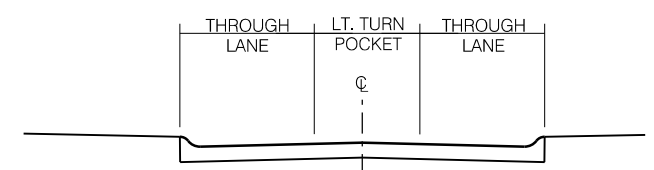
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	641	1
	Date: 1/2/2020	Drawn: BPP
	Horz. Scale: N.T.S.	Checked:
		Approved:





RAISED MEDIAN WITH LEFT TURN POCKET

SECTION A-A



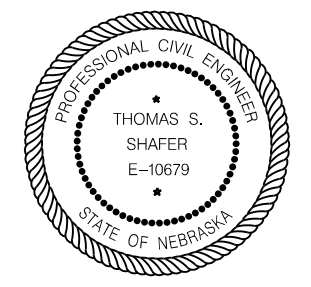
PAINTED LEFT TURN POCKET

SECTION B-B

- LEGEND
-  - R.P.C. CONCRETE PAVEMENT
 -  - ASPHALTIC PAVEMENT

INTERSECTION OF COLLECTOR/COMMERCIAL WITH MAJOR/ARTERIAL

** ALL DIMENSIONS ARE FROM END OF RADIUS

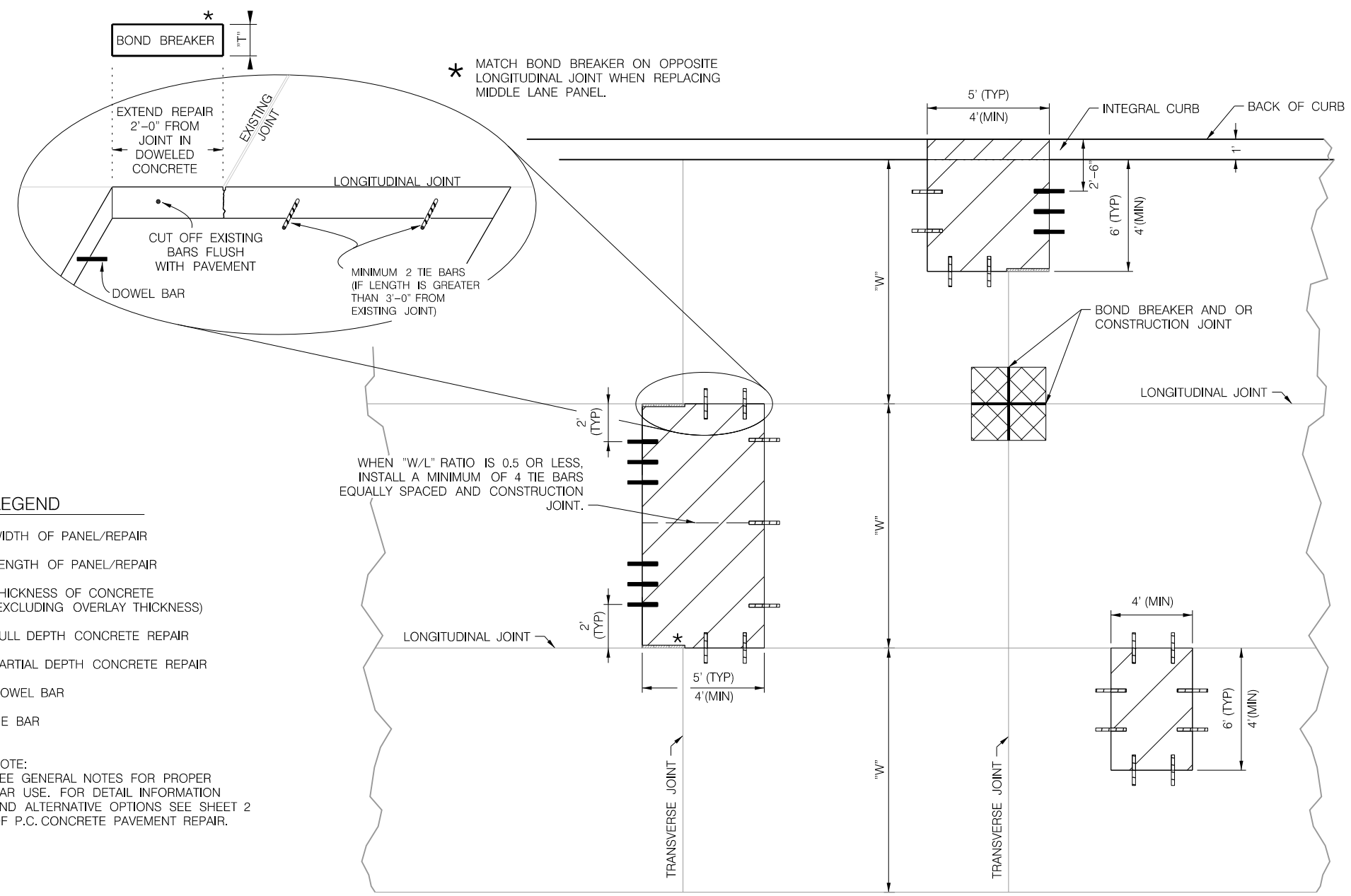


R.P.C. CONCRETE INTERSECTION

LSP 641

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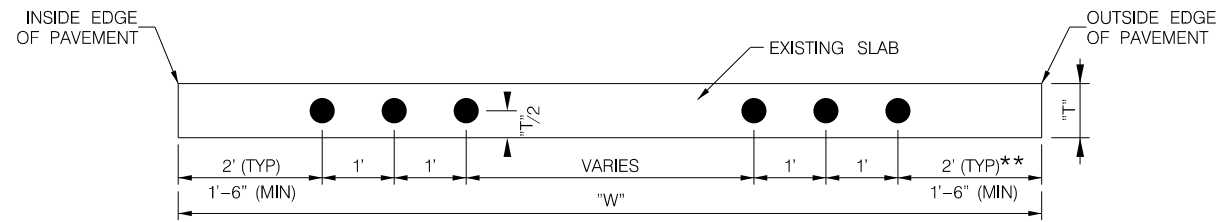
LEGEND

- "W" WIDTH OF PANEL/REPAIR
- "L" LENGTH OF PANEL/REPAIR
- "T" THICKNESS OF CONCRETE (EXCLUDING OVERLAY THICKNESS)
- FULL DEPTH CONCRETE REPAIR
- PARTIAL DEPTH CONCRETE REPAIR
- DOWEL BAR
- TIE BAR

NOTE:
 SEE GENERAL NOTES FOR PROPER BAR USE. FOR DETAIL INFORMATION AND ALTERNATIVE OPTIONS SEE SHEET 2 OF P.C. CONCRETE PAVEMENT REPAIR.

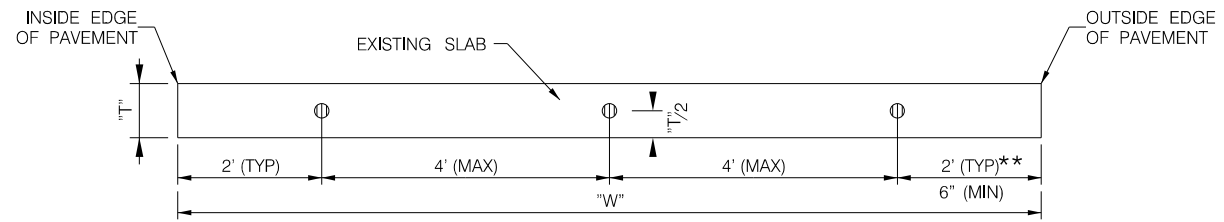
GENERAL NOTES

- FULL DEPTH DIAMOND SAW CUT TO BE USED. FULL DEPTH 4" WHEEL CUTTER SAW CUT WILL BE PERMITTED IF REPAIR WILL BE OVERLAID.
- DOWEL BARS SHALL BE INSTALLED WHEN EXISTING CONCRETE PAVEMENT THICKNESS IS GREATER THAN 6", EXCLUDING EXISTING OVERLAY AND MILLING THICKNESS.
- DOWEL BARS SHALL BE INSTALLED AT NEW TRANSVERSE JOINT NEAREST TO EXISTING TRANSVERSE JOINT OF ADJOINING LANE UNLESS DIRECTED BY THE CITY'S PROJECT MANAGER. EXISTING TRANSVERSE JOINT SHALL NOT BE RE-ESTABLISHED IN THE PAVEMENT REPAIR.
- DOWEL BARS MUST BE DRILLED ALONG THE SAME HORIZONTAL PLANE.
- TIE BARS SHALL BE INSTALLED IN ALL REPAIRS EVERY 4' (MAXIMUM) OR AS SHOWN UNLESS OTHERWISE DIRECTED BY THE CITY'S PROJECT MANAGER.
- INSTALL TIE BARS AT NEW TRANSVERSE JOINT OPPOSITE OF DOWEL BARS.
- ALL DOWEL AND TIE BARS SHALL BE EPOXY COATED PER ASTM A775/A775M-17. SEE CHAPTER 4 OF THE LINCOLN STANDARD SPECIFICATIONS FOR MUNICIPAL CONSTRUCTION FOR ADDITIONAL MATERIAL REQUIREMENTS.
- PAVEMENT REPAIR AT EXISTING TRANSVERSE JOINT SHALL EXTEND 2' FROM JOINT IN DOWELED PAVEMENT UNLESS OTHERWISE REQUIRED BY REPAIR AND APPROVED BY THE CITY'S PROJECT MANAGER.
- WHEN REPAIR EXTENDS THROUGH EXISTING JOINT, INSTALL BOND BREAKER ALONG LONGITUDINAL JOINT BETWEEN DOWELED JOINT AND EXISTING TRANSVERSE JOINT OF ADJOINING LANE.
- IN THE CASE OF 2 OR MORE ADJOINING PANEL REPLACEMENTS IN THE SAME LANE, CONSTRUCT TRANSVERSE JOINT TO MATCH JOINT IN ADJOINING LANE. DOWEL BARS SHALL BE INSTALLED AT 12" CENTERS. BASKETS SHALL BE USED ACCORDING TO LSP 660 AND LINCOLN STANDARD SPECIFICATIONS FOR MUNICIPAL CONSTRUCTION, CHAPTER 4, SECTION 4.01.
- MINIMUM DEPTH ("D") FOR PARTIAL DEPTH REPAIRS SHALL BE 3" FOR PCC, 2" FOR ASPHALT AND 1.5" FOR FPMC. THE MAXIMUM DEPTH SHALL BE 4".
- IF PAVEMENT REPAIR SHOULD EXTEND THROUGH INTEGRAL CURB, THE NEW CURB SHALL BE CONSTRUCTED TO THE SAME DIMENSIONS AS EXISTING CURB.



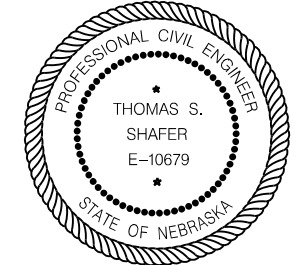
DETAIL OF TRANSVERSE DOWEL BAR PLACEMENT

** 2'-6" IF OUTSIDE EDGE IS BACK OF CURB



DETAIL OF TRANSVERSE TIE BAR PLACEMENT

** 2'-6" IF OUTSIDE EDGE IS BACK OF CURB



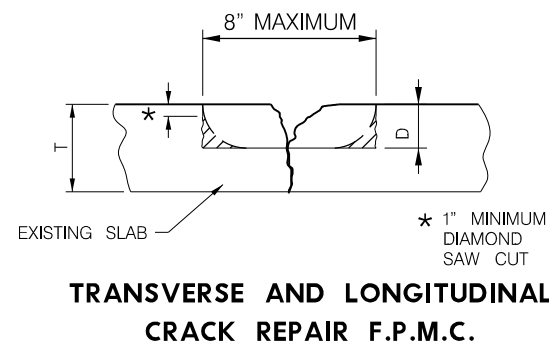
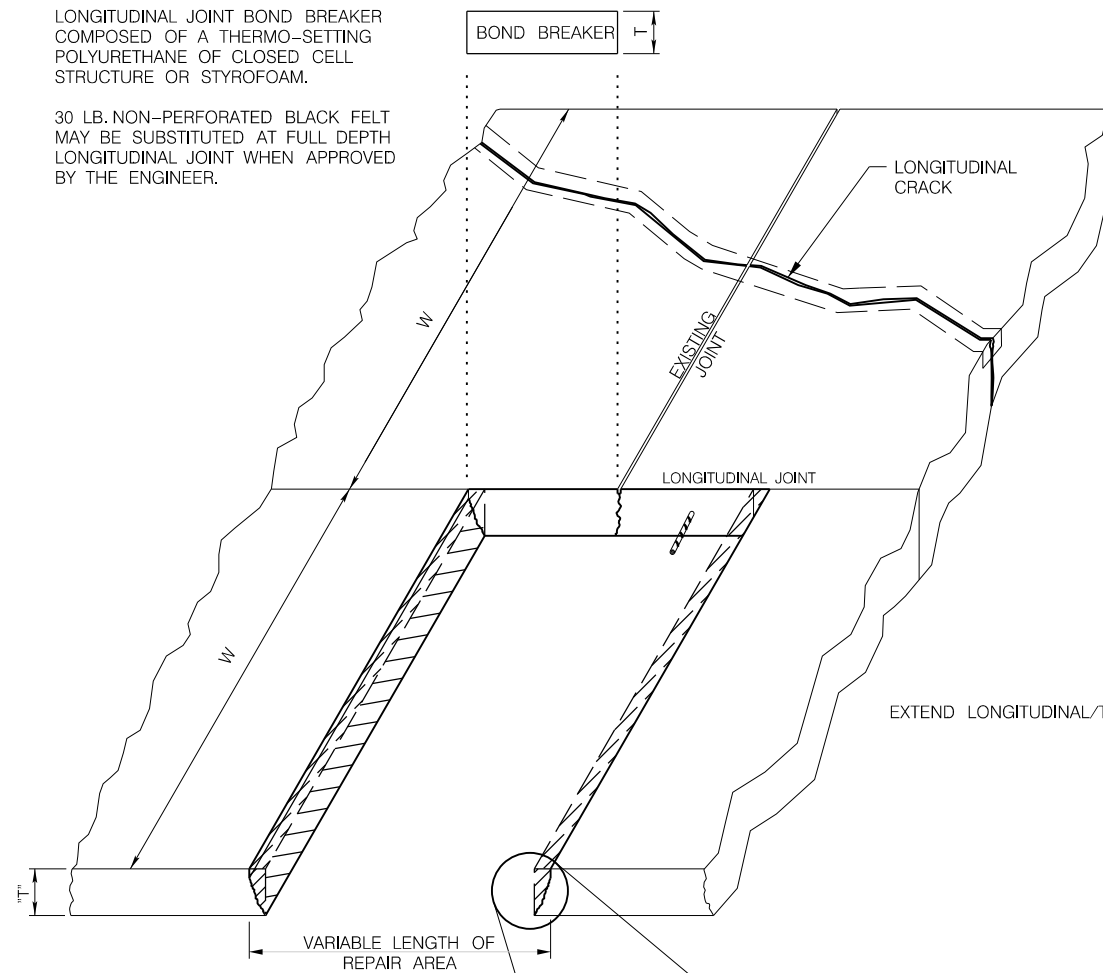
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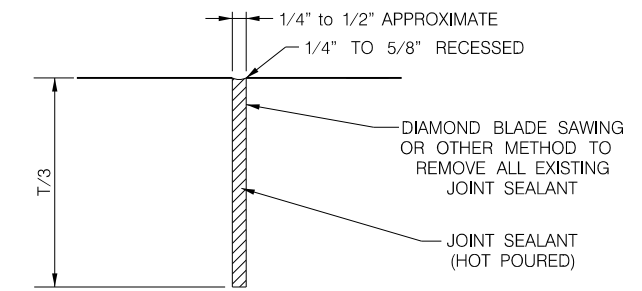
BOND BREAKER

LONGITUDINAL JOINT BOND BREAKER COMPOSED OF A THERMO-SETTING POLYURETHANE OF CLOSED CELL STRUCTURE OR STYROFOAM.

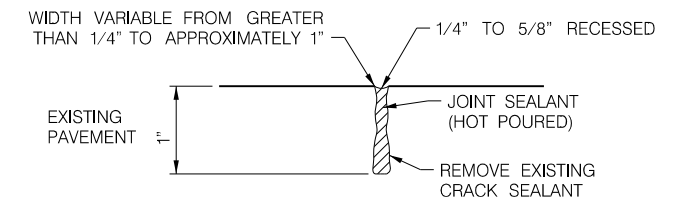
30 LB. NON-PERFORATED BLACK FELT MAY BE SUBSTITUTED AT FULL DEPTH LONGITUDINAL JOINT WHEN APPROVED BY THE ENGINEER.



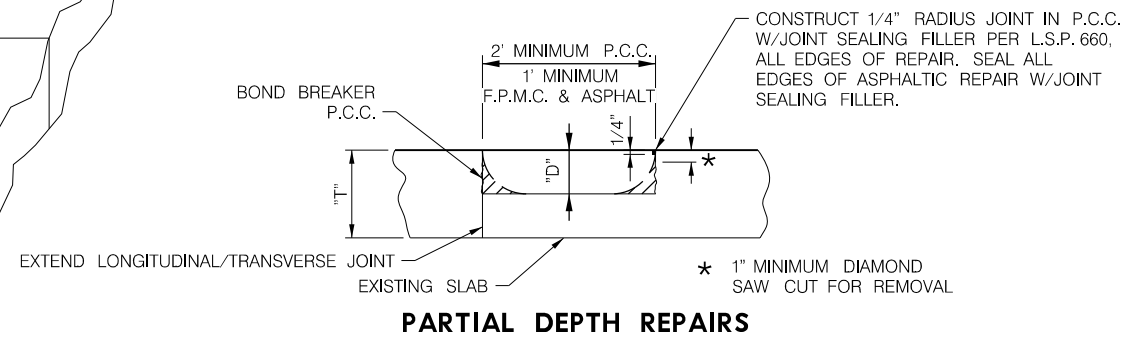
TRANSVERSE AND LONGITUDINAL CRACK REPAIR F.P.M.C.



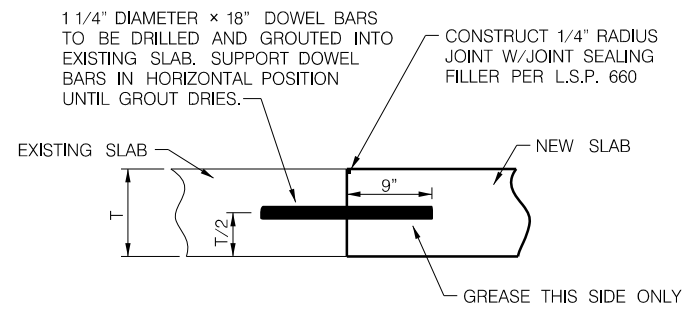
TRANSVERSE AND LONGITUDINAL JOINTS



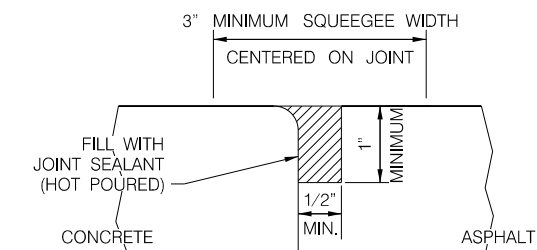
TRANSVERSE AND LONGITUDINAL CRACKS



PARTIAL DEPTH REPAIRS



DOWEL BARS

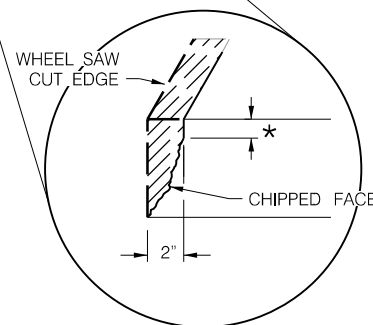


LONGITUDINAL JOINT SEALING (ASPHALT TO CONCRETE)

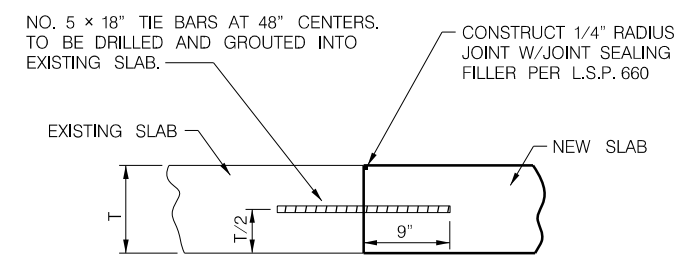
ALTERNATE SAW CUT

APPROXIMATELY 4" WHEEL CUTTER SAW CUT 2" INBOARD FROM DIAMOND SAW CUT ON EACH SIDE OF SECTION TO BE REMOVED.

A 15# MAXIMUM CHIPPING HAMMER SHALL BE USED TO CONSTRUCT THE CHIPPED FACE.



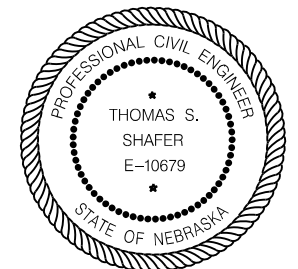
ALTERNATE SAW CUT



TIE BARS

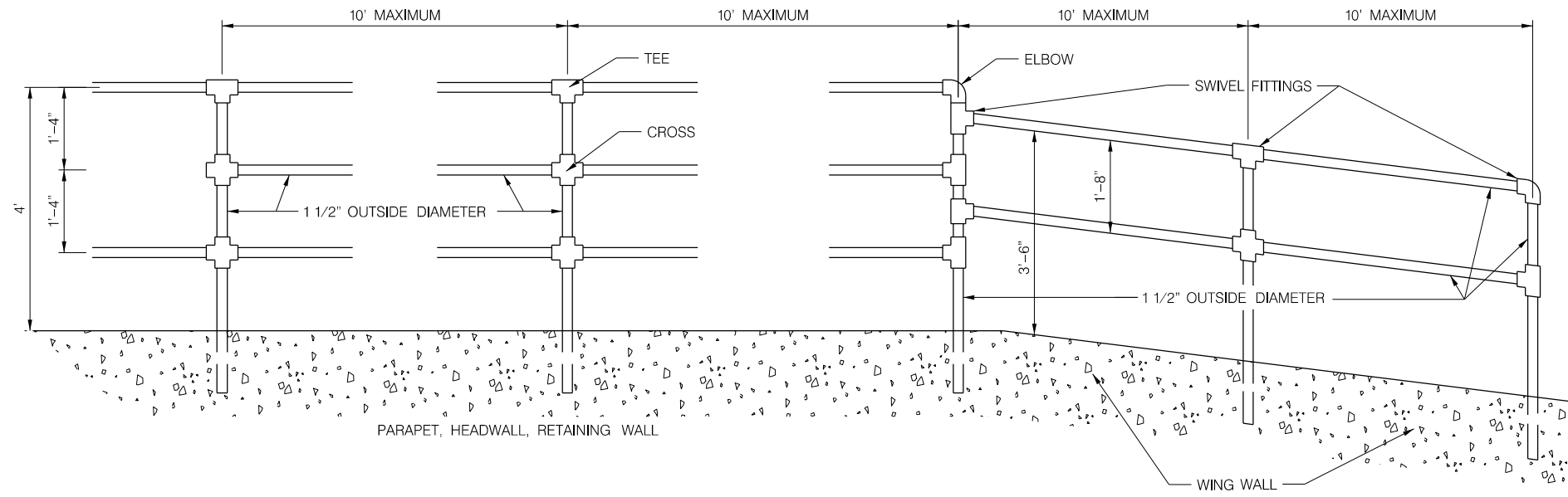
LEGEND

- W WIDTH OF PANEL/REPAIR
- L LENGTH OF PANEL/REPAIR
- T THICKNESS OF CONCRETE (EXCLUDING OVERLAY THICKNESS)
- D DEPTH (MIN 1 1/2"; MAX 4")
- DOWEL BAR
- ▬ TIE BAR
- ▨ MATERIAL LEFT AT MILLED CUTS TO BE REMOVED



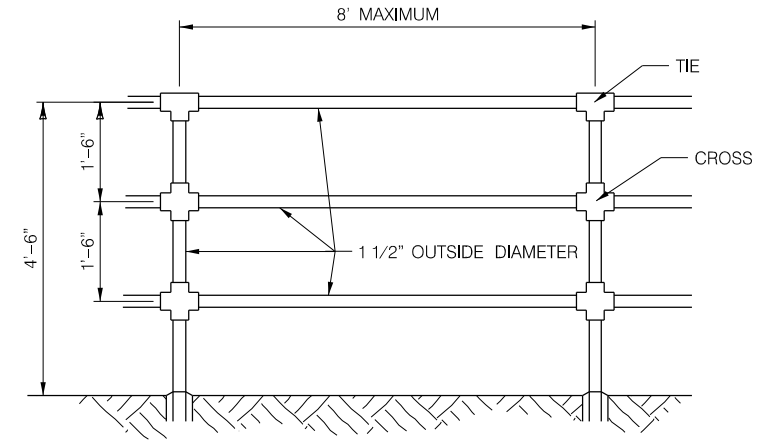
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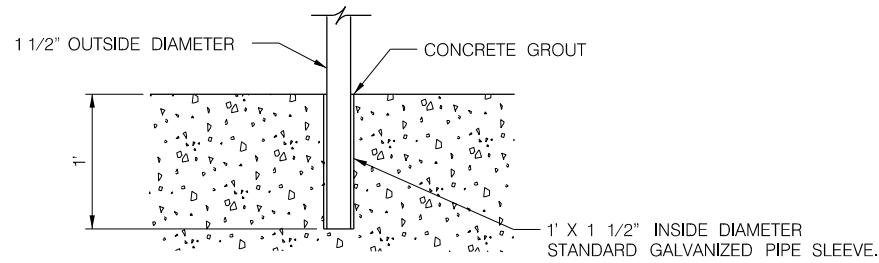


ELEVATION VIEW

**TYPICAL PIPE RAILING
 ON PARAPET, WINGWALL, HEADWALL
 OR RETAINING WALL**

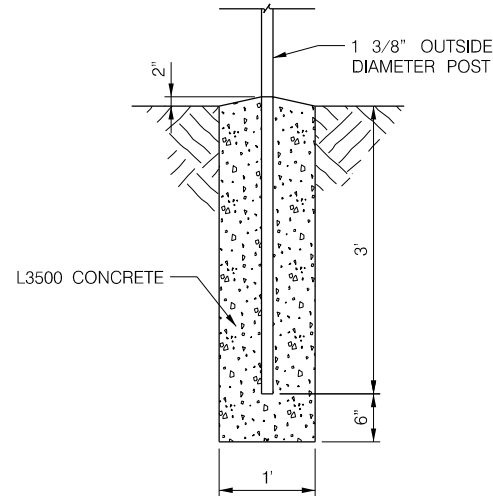


ELEVATION VIEW
**TYPICAL PIPE RAILING
 IN GROUND**



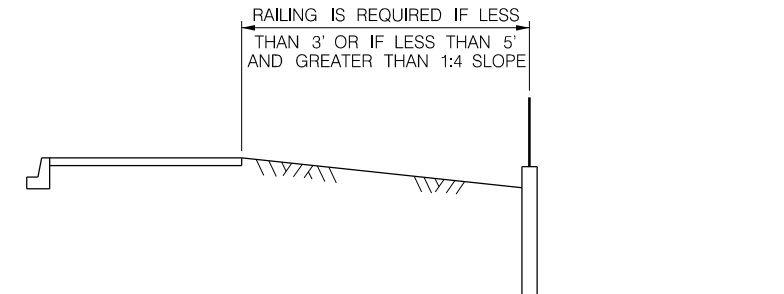
DETAIL OF

**TYPICAL POST SETTING
 ON PARAPET, WINGWALL, HEADWALL
 OR RETAINING WALL**



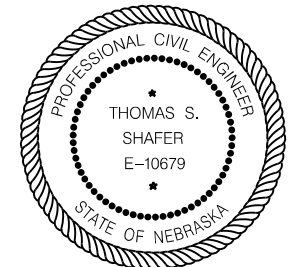
DETAIL OF

**TYPICAL POST SETTING IN
 GROUND (PIPE RAILING)**



RAILINGS REQUIRED

A MINIMUM 2' WIDE GRADED AREA WITH A MAXIMUM 1:6 SLOPE SHOULD BE MAINTAINED ADJACENT TO BOTH SIDES OF A PATH OR SIDEWALK. 3' OR MORE ARE DESIRABLE TO PROVIDE CLEARANCE FROM TREES, POLES, WALLS, FENCES, GUARDRAILS OR OTHER LATERAL OBSTRUCTIONS. WHERE THE PATH IS ADJACENT TO WATERWAYS OR SLOPES DOWN STEEPER THAN 1:4, A MINIMUM 5' SEPARATION FROM THE EDGE OF THE PAVEMENT TO THE TOP OF THE SLOPE IS DESIRABLE. WHEN THIS DESIRABLE DISTANCE CAN NOT BE MET, THE INSTALLATION OF HANDRAIL ADJACENT TO THE TOP OF SLOPE SHOULD BE CONSIDERED. OTHER COMBINATIONS OF SLOPES, EMBANKMENT HEIGHTS AND CONDITIONS AT THE BOTTOM MAY WARRANT THE NEED FOR A HANDRAIL.

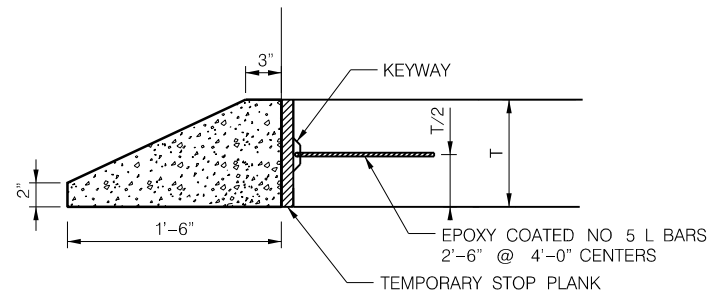


PIPE RAILING FENCE

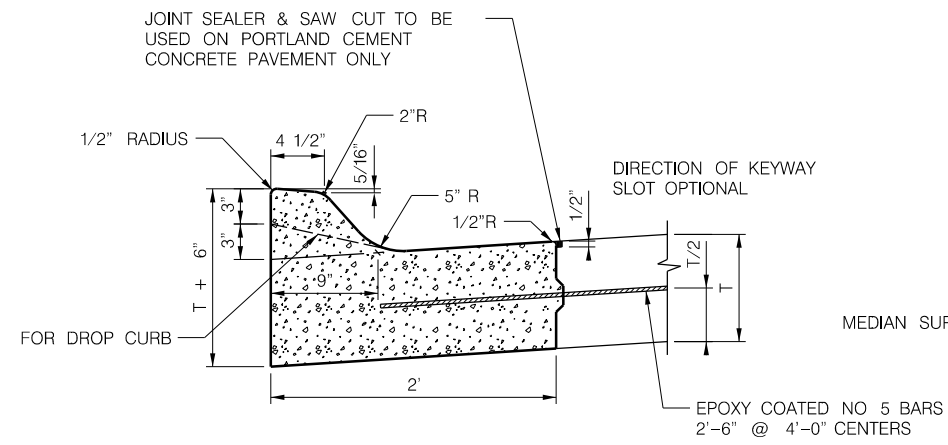
LSP 650

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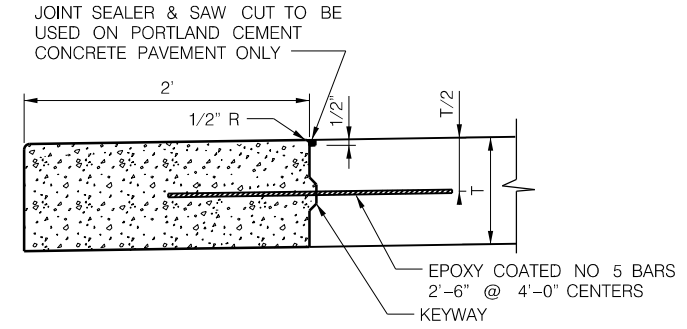
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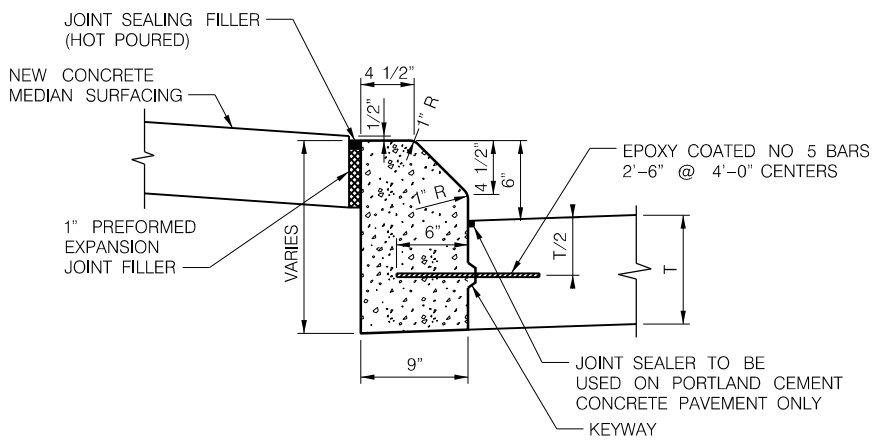
CONCRETE HEADER



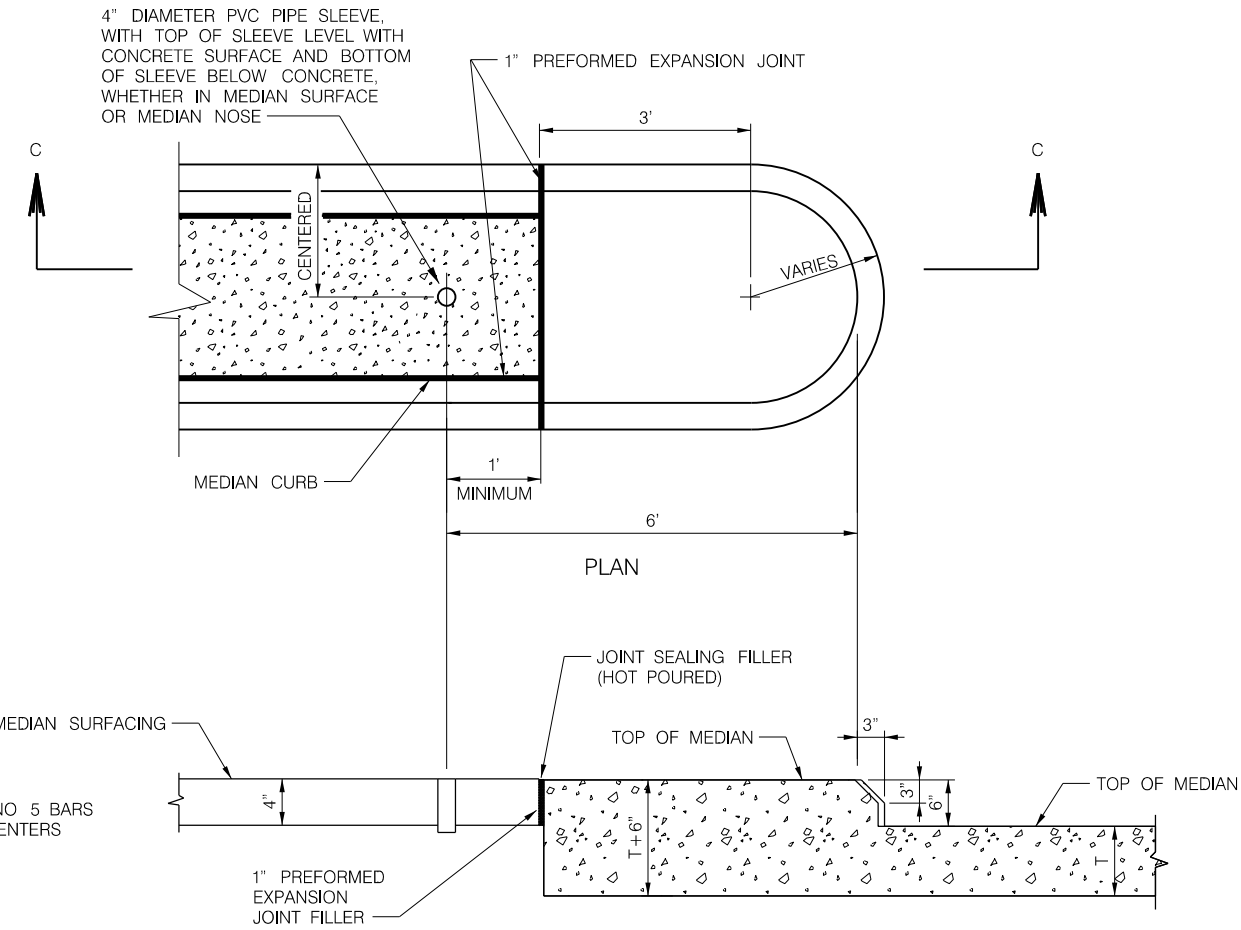
COMBINED CURB AND GUTTER



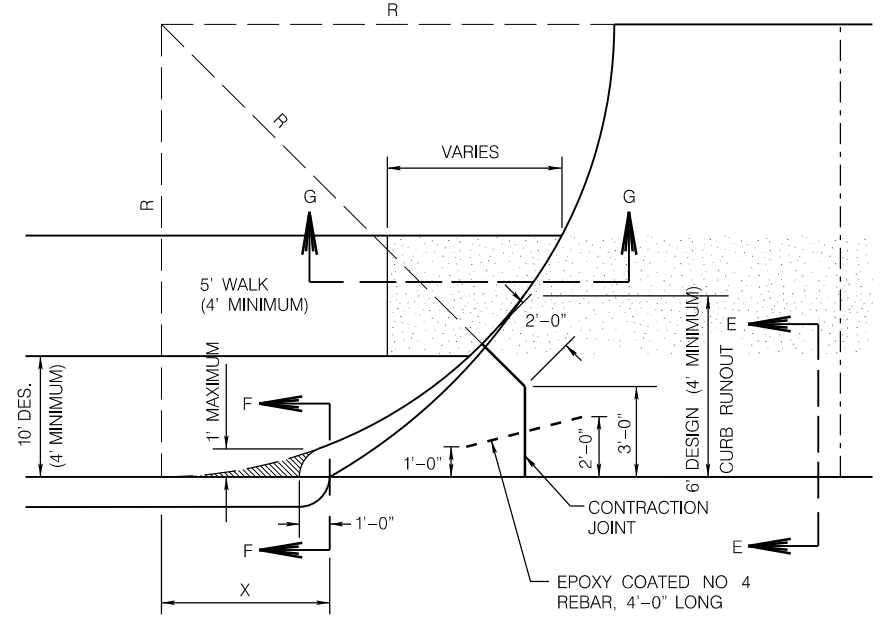
24" CONCRETE GUTTER PAN



CONCRETE MEDIAN CURB



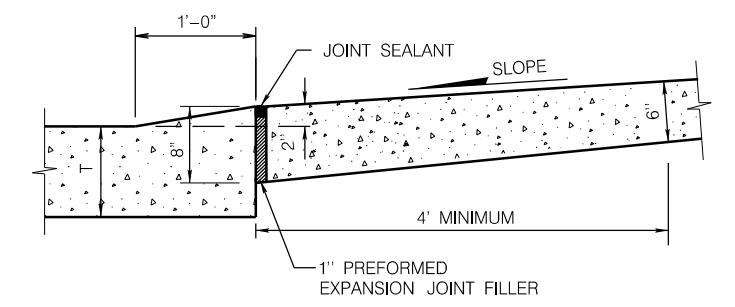
**SECTION C - C
 TYPICAL DETAILS OF
 CONCRETE MEDIAN NOSE**



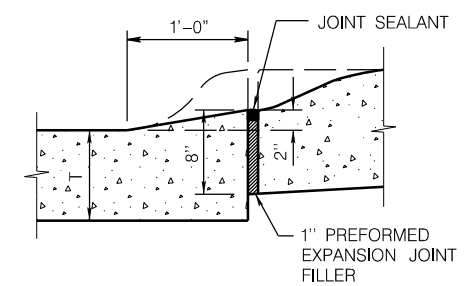
COMMERCIAL DRIVEWAY PLAN

R = RADIUS
 X = $\sqrt{(2R-1)}$
 (X & R IN FEET)

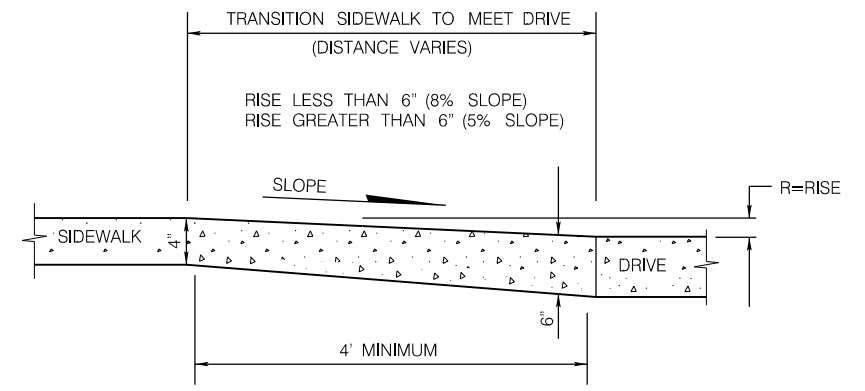
R	X
5'	3.00'
10'	4.36'
15'	5.38'
20'	6.24'
25'	7.00'
30'	7.68'
35'	8.31'
40'	8.89'



SECTION E-E

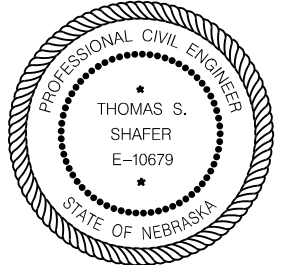


SECTION F-F




SECTION G-G

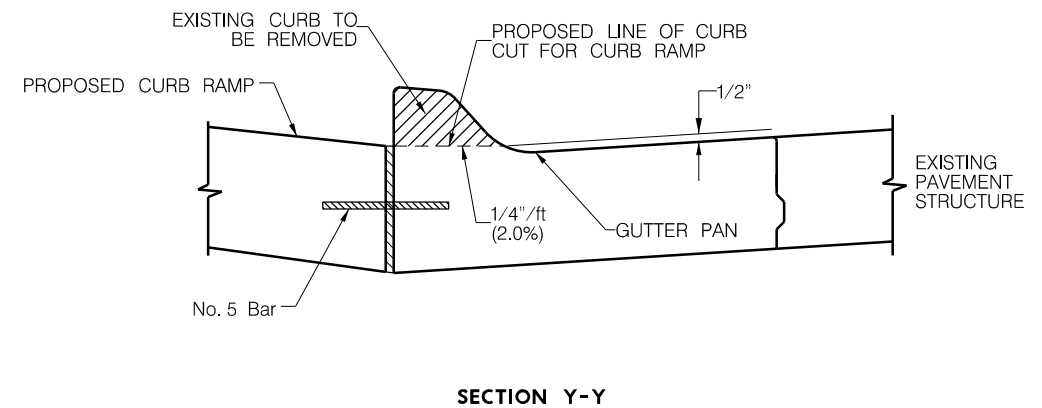
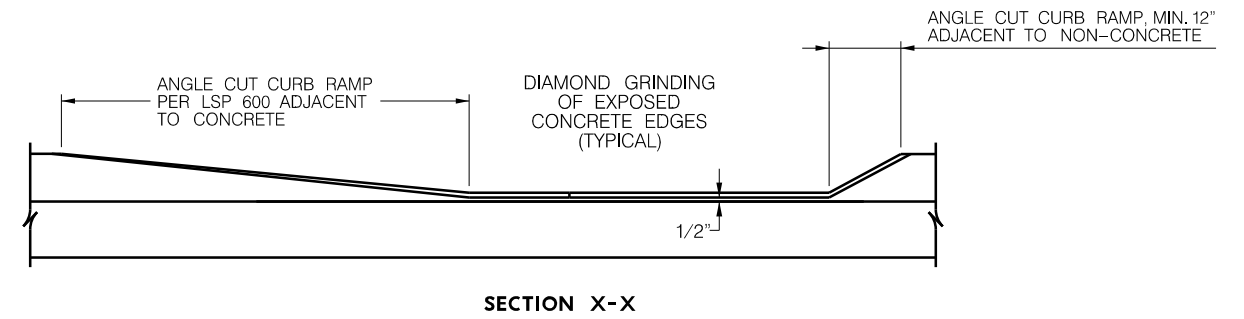
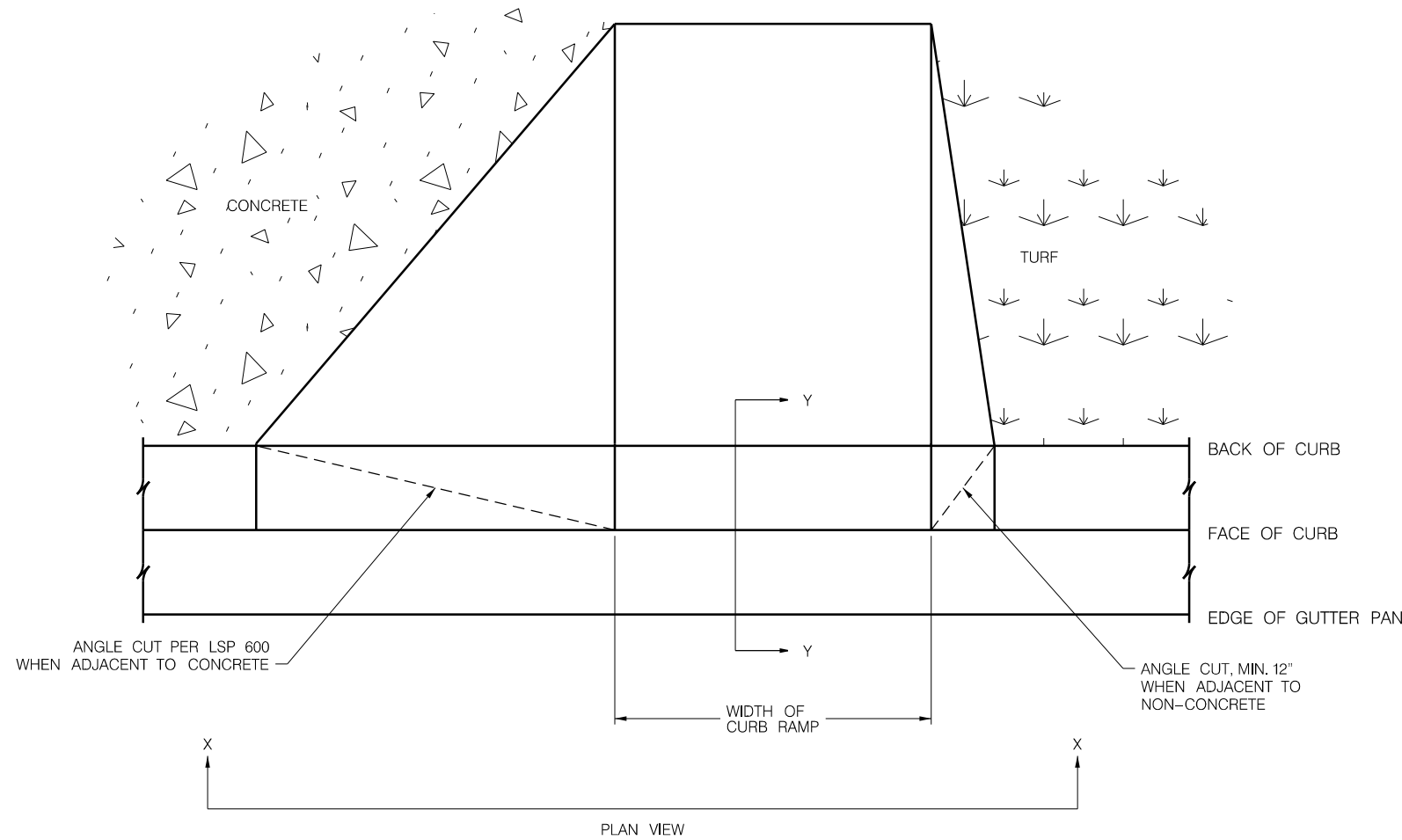
NOTES:
 ALL CONCRETE SHALL BE L-3500 OR LC-3500
 ALL BARS ARE EPOXY COATED
 1" PREFORMED EXPANSION JOINT FILLER SHALL BE PLACED THROUGH ALL CURBS OPPOSITE PAVEMENT EXPANSION JOINTS OR AS DIRECTED BY ENGINEER
 T = THICKNESS OF PAVEMENT



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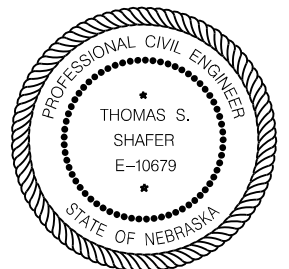
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	652	1
	Date: 1/2/2020	Drawn: JEB
	Horz. Scale: N.T.S.	Checked: ZJB
		Approved: ZJB



NOTES:

1. A DIAMOND BLADE CUTTING SAW SHALL BE UTILIZED FOR ALL REQUIRED CURB SAWING. THE SAW SHALL BE CAPABLE OF CUTTING EXISTING OR NEWLY PLACED CURB MATERIAL INTO THE SHAPE OF A CURB RAMP; LEAVING A SMOOTH, ACCURATE TOP FACE. THE SAW SHALL BE SPECIFICALLY DESIGNED FOR THIS PURPOSE AND SHALL BE APPROVED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE PRIOR TO THE START OF ANY CURB SAWING.
2. THE CURB SHALL BE SAWN IN ACCORDANCE WITH CITY OF LINCOLN STANDARDS OR AS DIRECTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. THE SAWING SHALL BE MADE ALONG NEAT LINES AND SHALL RESULT IN SMOOTH EDGES AND TOP FACES. THE LENGTH OF CURB FACE, WHICH MUST BE REMOVED IN ORDER TO CONFORM TO THE PROPOSED CURB RAMP, SHALL BE SAWN FULL DEPTH AT THE BOTTOM OF THE CURB FACE USING A DIAMOND SAW BLADE.
3. THE SAW CUTTING OF THE CURB FACE SHALL BE INITIATED AT AN ELEVATION 1/2 INCH ABOVE THE EXISTING GUTTER AND EXTENDED AT AN ANGLE OF 1/4 INCH PER FOOT (2.0%) UPWARDS AND AWAY FROM THE GUTTER PAN TO CONFORM TO THE NEW CURB RAMP. END CUTS SHALL BE SAWN FULL DEPTH ON AN ANGLE SO THAT THE SAW CUT FACE PROVIDES APPROPRIATE DIMENSIONS FOR CURB RAMPS (LSP 600).
4. A DIAMOND-GRINDING WHEEL SHALL BE USED FOR ROUNDING ALL SAWED CONCRETE EDGES TO A RADIUS OF 1/4 INCH.
5. THE CONTRACTOR SHALL AT THE END OF EACH WORK DAY, REMOVE THE SLURRY OR RESIDUE FROM THE SAW CUT OPERATION. THE CONTRACTOR SHALL NOT PERMIT THE RESIDUE TO FLOW ACROSS SHOULDERS OR LANES OCCUPIED BY TRAFFIC OR INTO CUTTERS OR OTHER DRAINAGE FACILITIES AND SHALL LEAVE SLABS CLEAN AND DRY, WITH NO RESIDUE REMAINING UPON COMPLETION OF SAWING OPERATIONS.

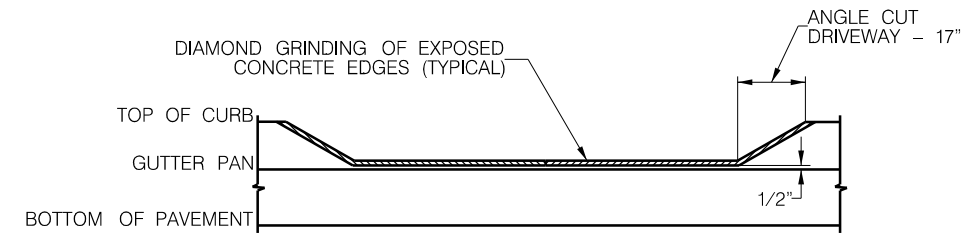
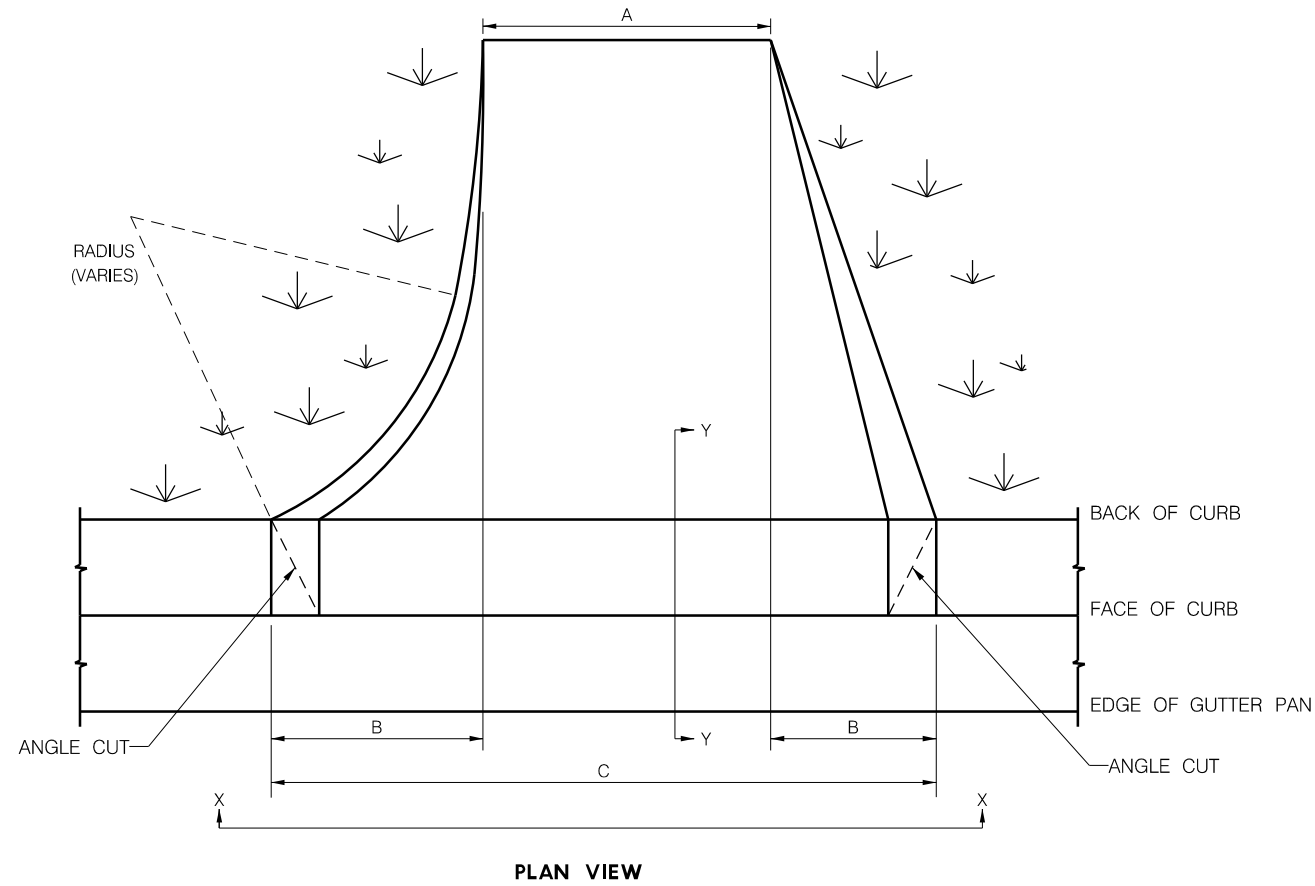


CURB SAWING - CURB RAMP

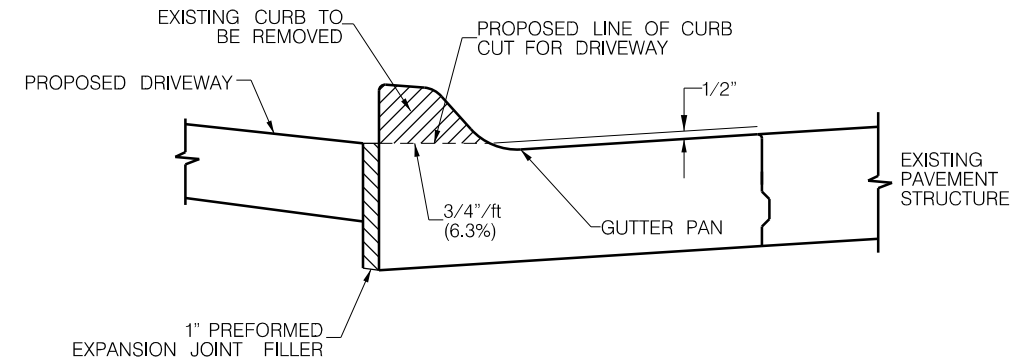
LSP 652

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SECTION X-X



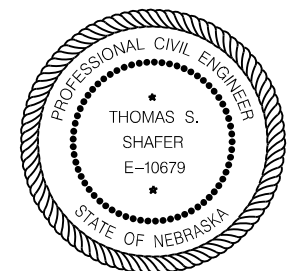
SECTION Y-Y

NOTES:

1. A DIAMOND BLADE CUTTING SAW SHALL BE UTILIZED FOR ALL REQUIRED CURB SAWING. THE SAW SHALL BE CAPABLE OF CUTTING EXISTING OR NEWLY PLACED CURB MATERIAL INTO THE SHAPE OF A DRIVEWAY; LEAVING A SMOOTH, ACCURATE TOP FACE. THE SAW SHALL BE SPECIFICALLY DESIGNED FOR THIS PURPOSE AND SHALL BE APPROVED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE PRIOR TO THE START OF ANY CURB SAWING.
2. THE CURB SHALL BE SAWN IN ACCORDANCE WITH CITY OF LINCOLN STANDARDS OR AS DIRECTED BY THE ENGINEER OR DESIGNATED REPRESENTATIVE. THE SAWING SHALL BE MADE ALONG NEAT LINES AND SHALL RESULT IN SMOOTH EDGES AND TOP FACES. THE LENGTH OF CURB FACE, WHICH MUST BE REMOVED IN ORDER TO CONFORM TO THE PROPOSED CURB RAMP, SHALL BE SAWN FULL DEPTH AT THE BOTTOM OF THE CURB FACE USING A DIAMOND SAW BLADE.
3. THE SAW CUTTING OF THE CURB FACE SHALL BE INITIATED AT AN ELEVATION 1/2 INCH ABOVE THE EXISTING GUTTER AND EXTENDED AT AN ANGLE OF 3/4 INCH PER FOOT (6.3%) UPWARDS AND AWAY FROM THE GUTTER PAN TO CONFORM TO THE NEW DRIVEWAY GRADE. END CUTS SHALL BE SAWN FULL DEPTH ON AN ANGLE SO THAT THE SAW CUT FACE PROVIDES APPROPRIATE DIMENSIONS FOR DRIVEWAYS (LSP 651).
4. A DIAMOND-GRINDING WHEEL SHALL BE USED FOR ROUNDING ALL SAWED CONCRETE EDGES TO A RADIUS OF 1/4 INCH.
5. THE CONTRACTOR SHALL AT THE END OF EACH WORK DAY, REMOVE THE SLURRY OR RESIDUE FROM THE SAW CUT OPERATION. THE CONTRACTOR SHALL NOT PERMIT THE RESIDUE TO FLOW ACROSS SHOULDERS OR LANES OCCUPIED BY TRAFFIC OR INTO CUTTERS OR OTHER DRAINAGE FACILITIES AND SHALL LEAVE SLABS CLEAN AND DRY, WITH NO RESIDUE REMAINING UPON COMPLETION OF SAWING OPERATIONS.

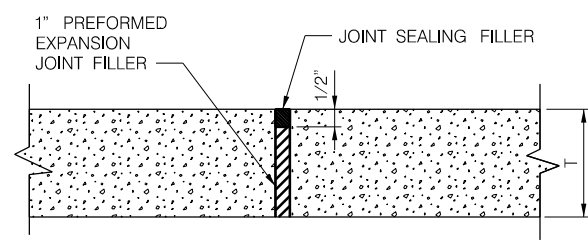
MAX. WIDTH OF DRIVEWAY CUT

DRIVEWAY TYPE	A WIDTH OF DRIVEWAY	B DRIVEWAY FLARE	C MAX. CURB CUT (PAY LENGTH)
RESIDENTIAL (SINGLE FAMILY)	20'	5' STRAIGHT TAPER	30'
RESIDENTIAL (MULTI FAMILY)	25'	15' RADIUS	55'
COMMERCIAL (2-LANE)	30'	25' RADIUS	80'
COMMERCIAL (3-LANE)	36'	25' RADIUS	86'



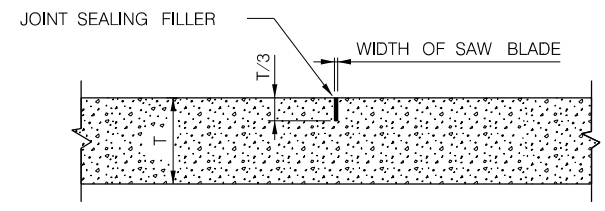
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 DGN: ..\2020 DGN Files\LSP_660st.dgn

LTU	PLAN NO.	SHEET NO.
	660	1
	Date: 1/2/2020	Drawn: CAW
	Horz. Scale: N.T.S.	Checked: Approved:



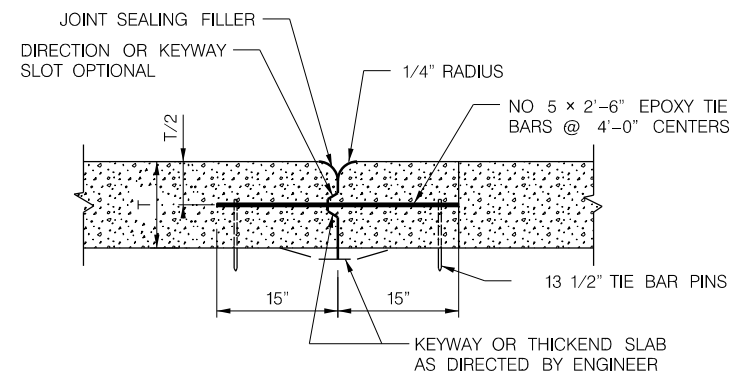
TO BE USED AT THE END OF RETURN ON THE NON THROUGH LEG OF A T-INTERSECTION AND AS PER ENGINEER AT THE END OF CURVES

EXPANSION JOINT

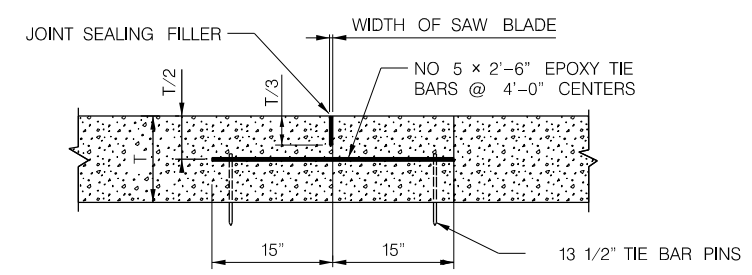


NOTE: CONTRACTION JOINTS SHALL BE SAWED. CONTRACTION JOINTS SHALL BE PLACED AT NOT MORE THAN 15' INTERVALS.

CONTRACTION JOINT

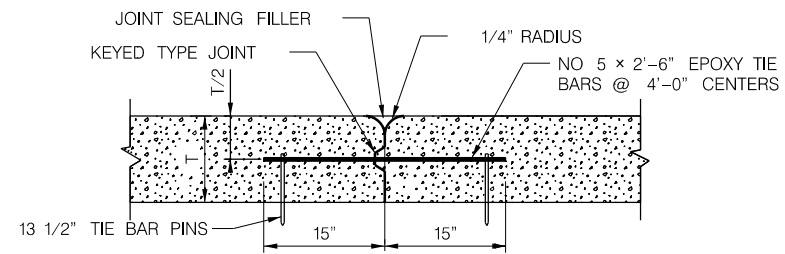


TRANSVERSE CONSTRUCTION JOINT



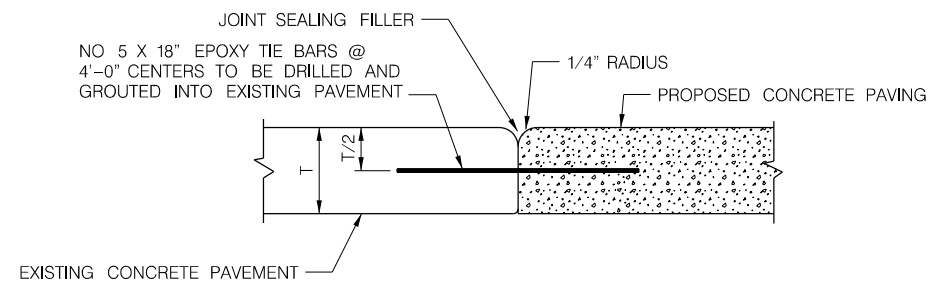
WHEN TWO ADJACENT LANES ARE POURED AT THE SAME TIME, THE LONGITUDINAL JOINT COMMON TO THE TWO LANES SHALL BE SAWED.

SAWED

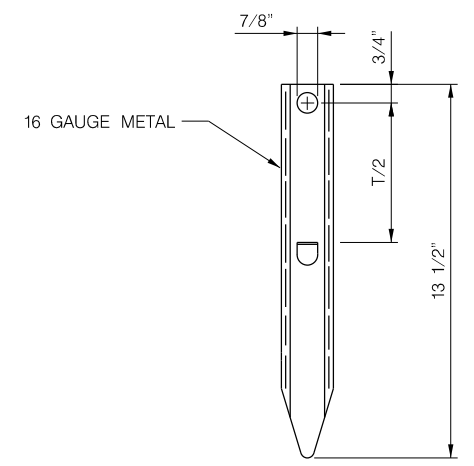
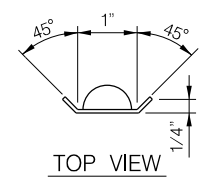


KEY TYPE JOINT SHALL BE USED ON ALL LONGITUDINAL CONSTRUCTION JOINTS WHEN THE ADJACENT LANE IS NOT POURED AT THE SAME TIME.

KEY TYPE

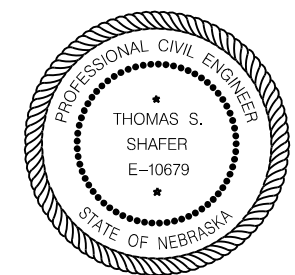


PROPOSED TO EXISTING PAVEMENT



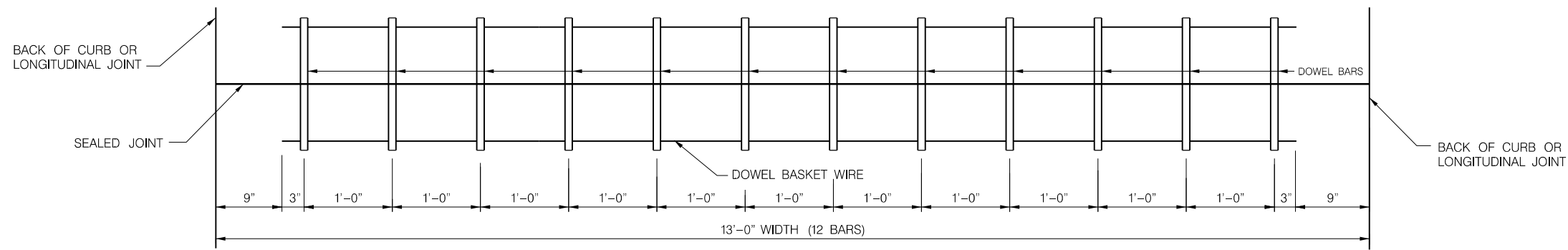
TIE BAR PIN

NOTE:
 THE CONTRACTOR MAY SUBSTITUTE OTHER DESIGNS FOR EXPANSION AND CONTRACTION JOINT SUPPORTS IN LIEU OF THE TYPE SHOWN WITH PRIOR WRITTEN APPROVAL BY THE ENGINEER.
 ALL JOINTS SHALL BE SEALED WITH JOINT SEALING FILLER (HOT POURED TYPE) AS PER STANDARD SPECIFICATIONS.
 TIE BARS SHALL BE EPOXY COATED DEFORMED BARS.
 ALL BARS SHALL SATISFY THE BEND TEST REQUIREMENTS FOR STRUCTURAL GRADE BILLET STEEL IN ACCORDANCE WITH THE SPECIFICATIONS.
 THE CONTRACTOR MAY USE A MACHINE FOR PLACING THE LONGITUDINAL TIE BARS IN LIEU OF THE TIE BAR PINS. IF A MECHANICAL TIE BAR PLACEMENT MACHINE IS NOT USED, TIE BAR PINS AS SHOWN WILL BE USED.



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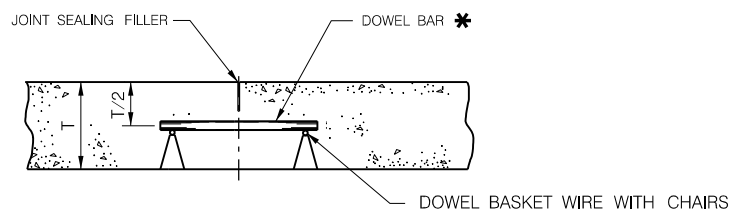
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ASSEMBLY PLAN

*** DOWEL BAR HEIGHT AND DIAMETER**

PAVEMENT THICKNESS (T)	MINIMUM BAR DIA.	DOWEL BAR HEIGHT (T/2)	SKEW TOLERANCE
LESS THAN 10"	1 1/4"	T/2 ± 1/8"	1 1/4"
10" OR MORE	1 1/2"	T/2 ± 1/8"	1 1/4"



CONTRACTION JOINT

NOTE:

THE CONTRACTOR MAY SUBSTITUTE OTHER DESIGNS FOR EXPANSION AND CONTRACTION JOINT SUPPORTS IN LIEU OF THE TYPE SHOWN WITH PRIOR WRITTEN APPROVAL BY THE ENGINEER.

DOWEL BARS SHALL BE EPOXY COATED AND A MINIMUM OF 18" IN LENGTH.

TIE BARS SHALL BE DEFORMED BARS AND ALL OTHERS SHALL BE SMOOTH.

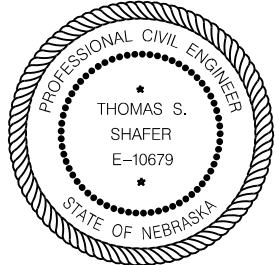
FOR LOAD TRANSFER DEVICES IN LANES OTHER THAN THE 13' LANES SHOWN, MAINTAIN THE SPACING OF THE 18" DOWEL BARS AT 1' INTERVALS.

THE ENDS OF THE DOWEL BASKET WIRE SHALL NOT BE LESS THAN 3" FROM THE EDGES OF THE PAVEMENT OR THE LONGITUDINAL JOINT.

KEY TYPE LONGITUDINAL JOINTS AND TRANSVERSE CONSTRUCTION JOINTS SHALL BE EDGED WITH 1/4" RADIUS AT TIME OF CONCRETE PLACEMENT.

EXPANSION JOINTS SHALL NOT BE SKEWED.

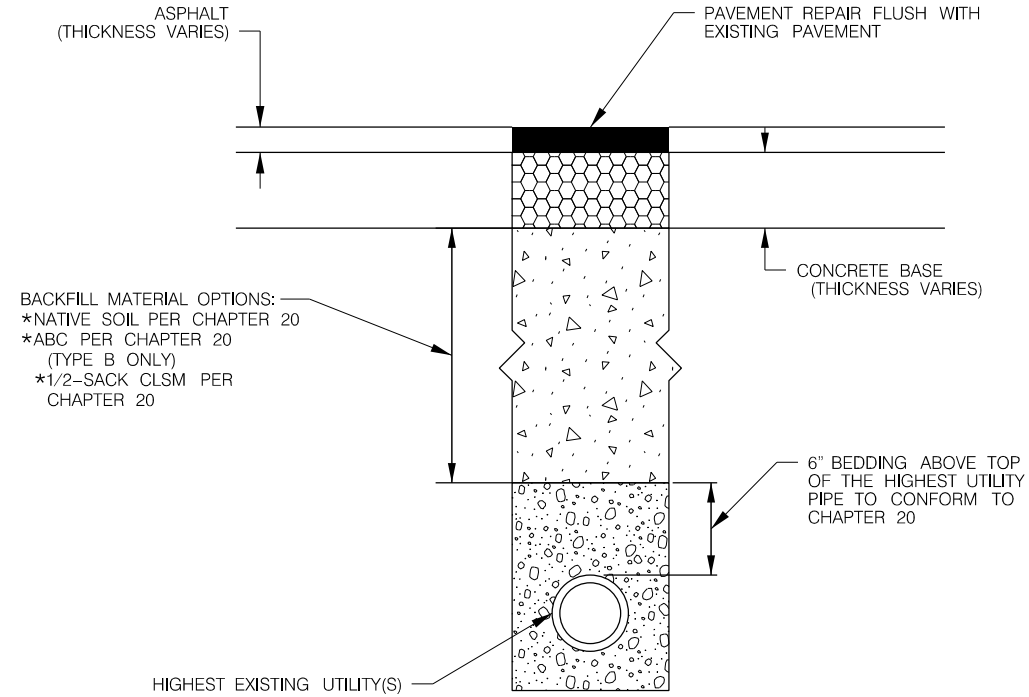
T = PAVEMENT THICKNESS



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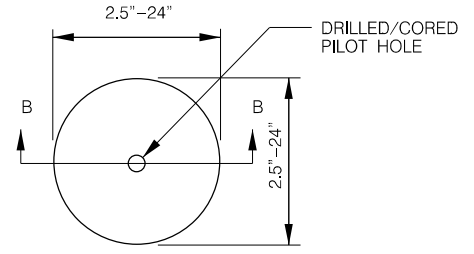
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LTU	PLAN NO.	SHEET NO.
	669	1
	Date: 1/2/2020	Drawn: JWH
	Horz. Scale: N.T.S.	Checked: DYP
		Approved: TSS



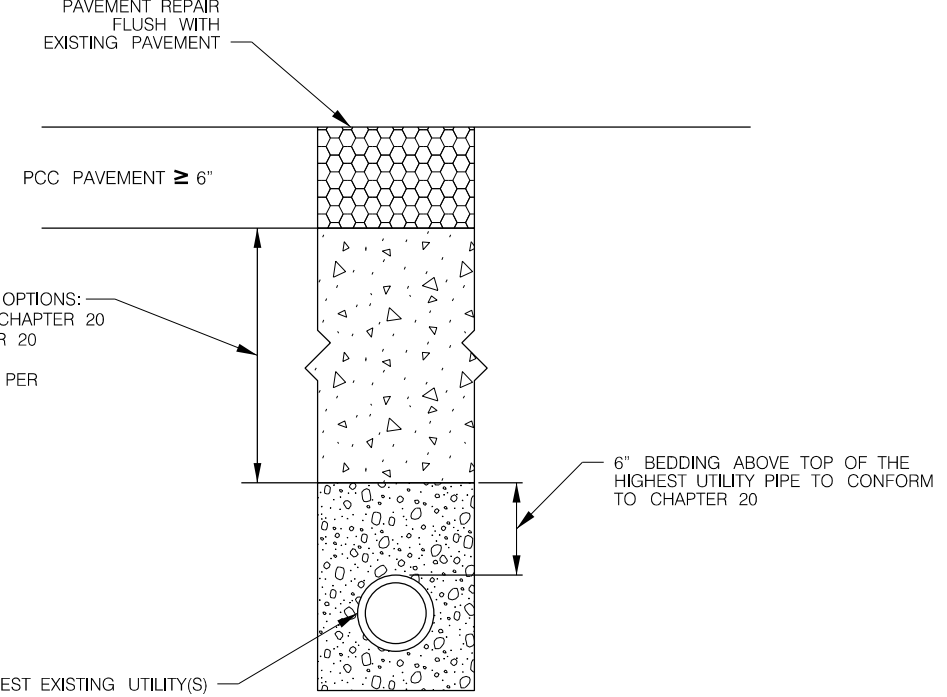
SECTION VIEW

BACKFILL MATERIAL OPTIONS:
 *NATIVE SOIL PER CHAPTER 20
 *ABC PER CHAPTER 20 (TYPE B ONLY)
 *1/2-SACK CLSM PER CHAPTER 20



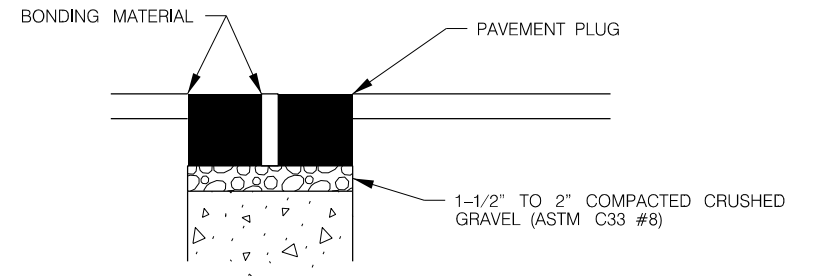
PLAN VIEW

NOTE:
 1. MINIMUM CORE SIZE = 2.5"
 2. ALL CORES MUST BE REPLACED WITH ORIGINAL CORE. IF ORIGINAL CORE IS LOST OR BROKEN, A NEW CORE OF THE SAME MATERIAL SIZE AND THICKNESS MUST BE SOURCED FROM PUBLIC WORKS CORE SLAB AND REINSTALLED WITH BONDING AGENT.
 3. CORE REQUIRES UTILIBOND OR APPROVED ALTERNATE TO CEMENT CORE BACK IN PLACE.
 4. MINIMUM CORE SAW WALL THICKNESS IS 3/8" KERF CUT
 5. CORE MUST BE PROTECTED FROM TRAFFIC UNTIL DESIGN STRENGTH IS ACHIEVED.



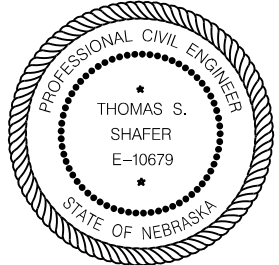
SECTION VIEW

BACKFILL MATERIAL OPTIONS:
 *NATIVE SOIL PER CHAPTER 20
 *ABC PER CHAPTER 20 (TYPE B ONLY)
 *1/2-SACK CLSM PER CHAPTER 20



SECTION B-B

NOTE:
 1. CUT, REMOVE AND REPLACE PAVEMENT PLUG IN ACCORDANCE WITH CHAPTER 20
 2. PLACE BACKFILL IN ACCORDANCE WITH CHAPTER 20
 3. BONDING MATERIAL SHALL BE AS SPECIFIED IN CHAPTER 20

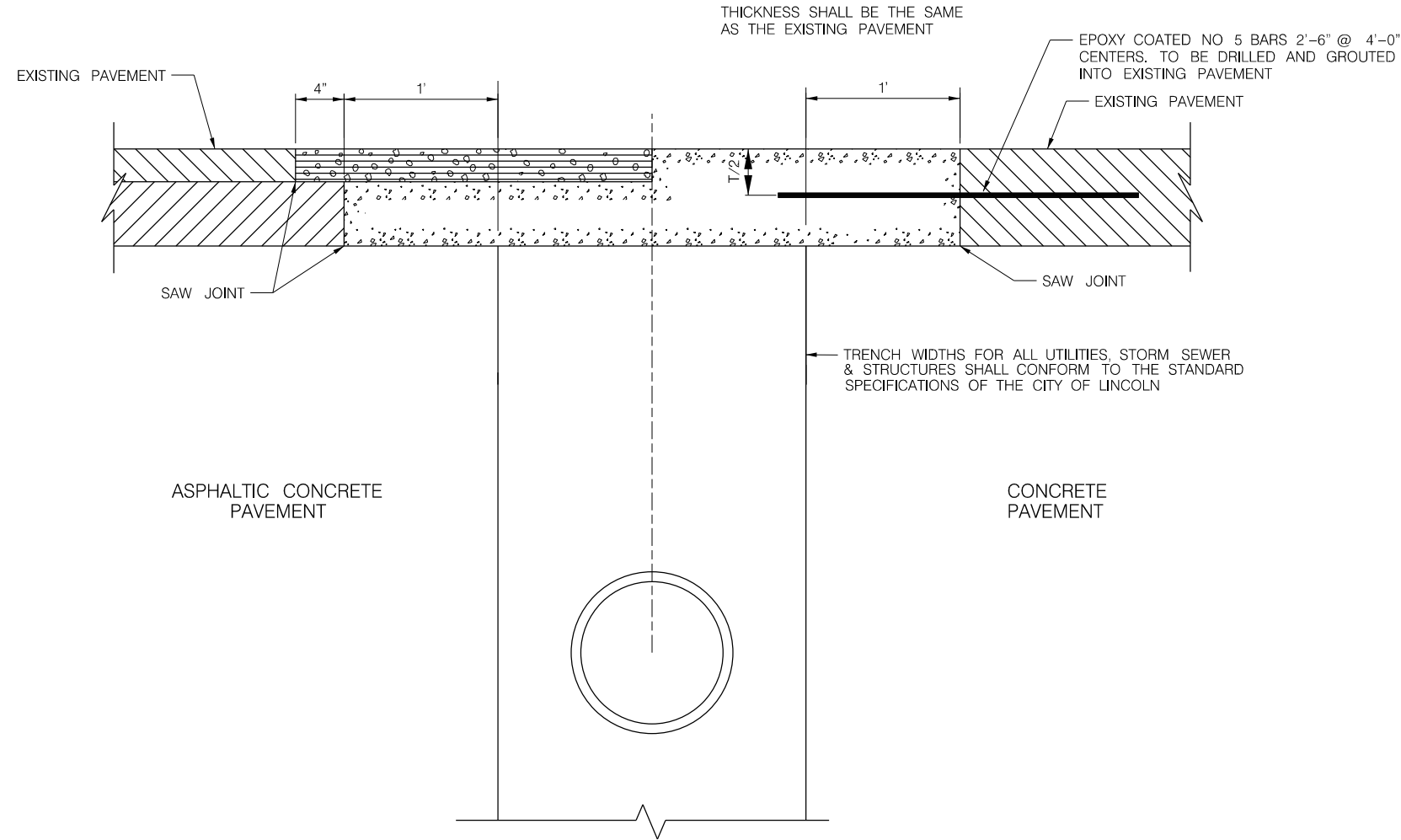


KEYHOLE POTHOLE EXCAVATION AND BACK FILL

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LTU	PLAN NO.	SHEET NO.
	670	1
Date: 1/2/2020	Drawn: CAW	
Horz. Scale: N.T.S.	Checked:	Approved:



NOTES:

1. THE EDGES OF ALL PAVING CUTS SHALL BE NEAT AND SQUARE. ALL CUTS IN EXISTING PAVEMENT SHALL BE MADE USING A CONCRETE SAW.
2. ALL CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF THE CURRENT STANDARD SPECIFICATIONS OF THE CITY OF LINCOLN FOR L3500 CONCRETE OR BETTER.
3. GROUND EACH SIDE OF TRENCH SHALL BE UNDISTURBED FOR REPLACEMENT CONCRETE

