



**Standard Details
2015 Edition**



CITY OF LENEXA
Community Development Department
12350 West 87th Street Parkway ▪ Lenexa, KS 66215
www.lenexa.com

INDEX OF SHEETS

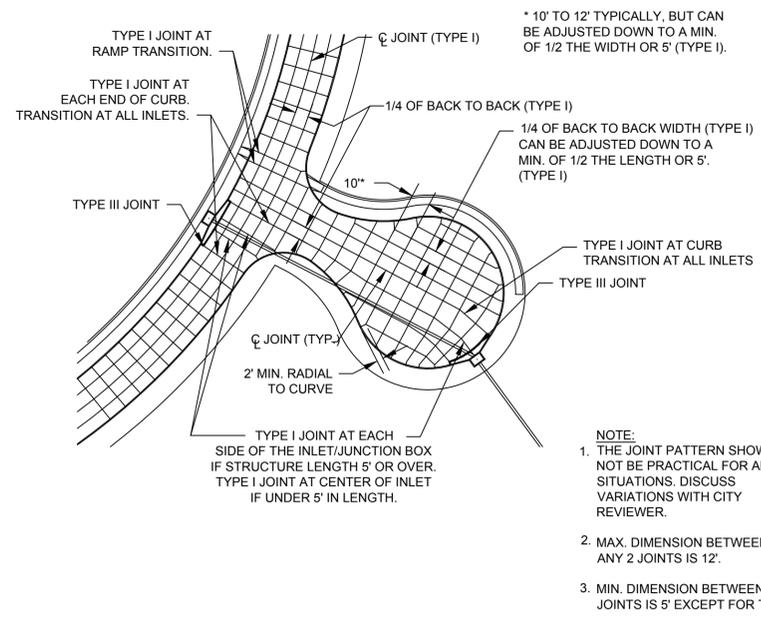
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1. THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO ALL APPLICABLE STANDARDS AND SPECIFICATIONS IN THE LATEST EDITION OF THE CITY OF LENEXA'S TECHNICAL SPECIFICATIONS, EXCEPT WHERE NOTED OTHERWISE.
2. THE CONTRACTOR SHALL HAVE ONE (1) SIGNED COPY OF THE PLANS (APPROVED BY THE CITY OF LENEXA) AND ONE (1) COPY OF THE PROJECT CONTRACT BOOK AT THE JOB SITE AT ALL TIMES.
3. LINEAL FOOT MEASUREMENTS SHOWN ON THE PLANS ARE HORIZONTAL MEASUREMENTS, NOT SLOPE MEASUREMENTS. ALL PAYMENTS SHALL BE MADE ON HORIZONTAL MEASUREMENTS.
4. ALL WORKMANSHIP AND MATERIALS SHALL BE SUBJECT TO THE INSPECTION AND APPROVAL OF THE ENGINEERING DIVISION OF THE CITY OF LENEXA.
5. EXCEPT WHERE NECESSARY TO INSTALL EROSION AND SEDIMENT CONTROL DEVICES, CLEARING, GRUBBING AND TREE REMOVAL SHALL NOT BEGIN UNTIL ALL EROSION AND SEDIMENT CONTROL DEVICES HAVE BEEN INSTALLED AND THE SOIL HAS BEEN STABILIZED. CLEARING AND GRUBBING OPERATIONS AND DISPOSAL OF ALL DEBRIS THEREFROM SHALL BE PERFORMED BY THE CONTRACTOR IN STRICT ACCORDANCE WITH ALL LOCAL CODES AND ORDINANCES. THE CONTRACTOR SHALL PROTECT ALL MAJOR TREES FROM DAMAGE. NO TREE SHALL BE REMOVED WITHOUT PERMISSION OF THE OWNER, UNLESS SHOWN OTHERWISE.
6. THE CONTRACTOR SHALL ERECT AND MAINTAIN THROUGHOUT CONSTRUCTION, ORANGE COLORED TEMPORARY CONSTRUCTION FENCE AROUND ALL AREAS INDICATED ON THE PLANS TO BE LEFT UNDISTURBED OR AS DIRECTED BY THE ENGINEER. PRIOR TO ACTUAL FENCE INSTALLATION, THE CONTRACTOR SHALL STAKE FENCE LOCATIONS IN THE FIELD FOR REVIEW BY THE OWNER. THE FENCE MATERIAL SHALL BE 48" IN HEIGHT AND MADE OF HIGH DENSITY POLYETHYLENE PLASTIC WITH A NOMINAL MESH OPENING SIZE OF 1.25 INCHES (X) 1.25 INCHES. NO CONSTRUCTION EQUIPMENT, CONSTRUCTION MATERIALS, OR PERSONAL VEHICLES MAY BE PARKED OR STORED INSIDE THE FENCING. ALSO, THE CONTRACTOR SHALL INSTALL SILT FENCE AND TEMPORARY DIVERSION DIKES TO PREVENT SEDIMENT FROM ACCUMULATING INSIDE THE PLASTIC CONSTRUCTION FENCING.
7. PRIOR TO INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY EROSION CONTROL SHALL BE COMPLETED ON ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1) EMBANKMENTS OF PONDS, BASINS, AND TRAPS. SEDIMENT CONTROL SHALL BE COMPLETED WITHIN FOURTEEN (14) CALENDAR DAYS ON ALL OTHER DISTURBED OR GRADED AREAS. THIS REQUIREMENT DOES NOT APPLY TO THOSE AREAS THAT ARE SHOWN ON THE PLANS THAT ARE CURRENTLY BEING USED FOR MATERIAL STORAGE OR FOR THOSE AREAS, WHICH ACTUAL CONSTRUCTION ACTIVITIES ARE CURRENTLY BEING PERFORMED.
8. THE CONTRACTOR SHALL PREPARE AND FOLLOW A PHASED METHOD OF CONSTRUCTION GRADING TO MINIMIZE THE AMOUNT OF EXPOSED BARE GROUND AT ANY ONE TIME. THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS WITH TEMPORARY SEEDING AND RECEIVE APPROVAL FROM THE CITY BEFORE CONTINUING TO DISTURB ADDITIONAL AREAS.
9. CONTRACTOR MUST INSTALL AND MAINTAIN THE EROSION CONTROL MEASURES SHOWN ON THESE PLANS. IF THE ENGINEER DETERMINES THAT THE INSTALLATION OR THE MAINTENANCE IS INADEQUATE, THE CONTRACTOR MUST IMMEDIATELY CORRECT AT HIS EXPENSE. IF IT IS DETERMINED THAT ADDITIONAL EROSION CONTROL MEASURES ARE NEEDED, THE CONTRACTOR WILL BE DIRECTED TO INSTALL AND MAINTAIN THOSE MEASURES.
10. FOLLOWING THE FINAL REMOVAL OF ALL EROSION CONTROL MEASURES, THE CONTRACTOR SHALL RE-GRADE AND RE-SEED ALL AREAS THAT WERE DISTURBED BY THE REMOVAL.
11. THE CONTRACTOR SHALL ADHERE TO THE PROVISIONS OF KANSAS STATE LAW, WHICH REQUIRES THAT ANY PERSON OR FIRM DOING EXCAVATION ON PUBLIC RIGHT-OF-WAY DO SO ONLY AFTER GIVING NOTICE TO, AND OBTAINING INFORMATION FROM, UTILITY COMPANIES. THE NAMES AND TELEPHONE NUMBERS OF UTILITY COMPANIES, EVEN IF ONLY REMOTELY INVOLVED WITH THIS PROJECT ARE AS SHOWN ON THE COVER SHEET OF THIS PROJECT.
12. THE EXISTING UTILITY LOCATIONS SHOWN ON THESE PLANS ARE SHOWN IN AN APPROXIMATE WAY FROM UTILITY COMPANY RECORDS AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE UTILITY INFORMATION SHOWN IS NOT MEANT TO BE ALL INCLUSIVE. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO CONSTRUCTION TO PROVIDE NON-INTERRUPTION OF SERVICE, TO ENSURE PROPER CLEARANCES, AND TO AVOID DAMAGE THERETO. UTILITIES DAMAGED THROUGH THE NEGLIGENCE OF THE CONTRACTOR TO OBTAIN THE LOCATION OF SAME SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT HIS EXPENSE.
13. COMMENCEMENT OF WORK SHALL NOT TAKE PLACE UNTIL THE CONTRACTOR NOTIFIES THE CITY ENGINEER OF SUCH INTENT. ALL REQUIRED AND PROPERLY EXECUTED BONDS AND PERMIT FEES ARE RECEIVED AND APPROVED BY THE CITY ENGINEER, AND ALL THOSE UTILITY COMPANIES WHICH HAVE FACILITIES IN THE NEAR VICINITY OF THE CONSTRUCTION WORK HAVE BEEN NOTIFIED.
14. CONTRACTOR SHALL PROTECT AND NOT DISTURB EXISTING BENCHMARKS DURING GRADING AND/OR CONSTRUCTION, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
15. ALL MANHOLES, CATCH BASINS, UTILITY VALVES AND METER PITS TO BE ADJUSTED OR REBUILT TO GRADE AS REQUIRED.
16. THE CONTRACTOR SHALL PROVIDE FOR CONTROL OF SURFACE EROSION AND SEDIMENT DEPOSITION DURING ALL PHASES OF CONSTRUCTION AND UNTIL THE OWNER ACCEPTS THE WORK AS COMPLETE. THE CONTRACTOR SHALL PROVIDE TEMPORARY SEEDING, BERMS, SILT FENCE, SEDIMENT TRAPS, STRAW BALES OR OTHER MEANS TO PREVENT SEDIMENT FROM REACHING THE PUBLIC RIGHT-OF-WAY, STREAMS OR ADJACENT PROPERTY. IN THE EVENT THE PREVENTION MEASURES ARE NOT EFFECTIVE, THE CONTRACTOR SHALL REMOVE ANY DEBRIS SEDIMENT AND RESTORE THE RIGHT-OF-WAY AND ADJACENT PROPERTY TO ITS ORIGINAL OR BETTER CONDITION.
17. ALL WASTE MATERIAL RESULTING FROM THE PROJECT SHALL BE DISPOSED OF OFF-SITE BY THE CONTRACTOR. THESE SITES SHALL BE APPROVED BY THE ENGINEER AS TO SUITABILITY, APPEARANCE AND SITE LOCATION. LOCATIONS THAT, IN THE OPINION OF THE ENGINEER, WILL LEAVE AN UNSIGHTLY APPEARANCE WILL NOT BE APPROVED. MATERIAL EITHER STOCKPILED OR DISPOSED OF IN A FLOODPLAIN WILL REQUIRE A KANSAS STATE BOARD OF AGRICULTURE PERMIT. ANY MATERIAL DUMPED IN THE WATERS OF THE UNITED STATES OR WETLANDS IS SUBJECT TO U.S. CORPS OF ENGINEERS PERMITTING REGULATIONS.
18. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ALL TRAFFIC HANDLING MEASURES NECESSARY TO ENSURE THAT THE GENERAL PUBLIC IS PROTECTED AT ALL TIMES. TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD - LATEST EDITION).
19. PRIOR TO INSTALLATION OF ANY PAVEMENT, THE CONTRACTOR SHALL INSTALL TEMPORARY STREET NAME SIGNS AT EACH INTERSECTION. STREET NAME SIGNS SHALL BE DOUBLE-SIDED WITH 6" WHITE LETTERING ON GREEN BACKGROUND. THE MINIMUM HEIGHT OF THE SIGN SHALL BE 12 INCHES AND WILL VARY IN LENGTH. THE SIGN MAY BE MADE OF WOOD, METAL OR PLASTIC. STREET NAME SIGNS SHALL BE MOUNTED ON WOOD OR METAL POSTS AT 7 FEET ABOVE THE GROUND. THE STREET NAMES SHALL MATCH THE NAMES ON THE APPROVED PLAT. THE CONTRACTOR SHALL MAINTAIN THESE SIGNS THROUGH THE DURATION OF THE PROJECT.
20. CONDITIONS OF THE SITE AT THE TIME OF CONSTRUCTION MAY VARY FROM THE SURVEYED CONDITIONS. CONTRACTOR SHALL VERIFY EXISTING SITE CONDITIONS PRIOR TO BEGINNING CONSTRUCTION. IF FIELD CONDITION DIFFERS FROM THE PLANS, CONTACT THE ENGINEER FOR DIRECTION PRIOR TO PROCEEDING WITH WORK.
21. THE CONTRACTOR SHALL FIELD VERIFY EXISTING SURFACE AND SUBSURFACE GROUND CONDITIONS PRIOR TO THE START OF CONSTRUCTION.
22. ALL EXCAVATION SHALL BE UNCLASSIFIED. NO SEPARATE PAYMENT WILL BE MADE FOR ROCK EXCAVATION.

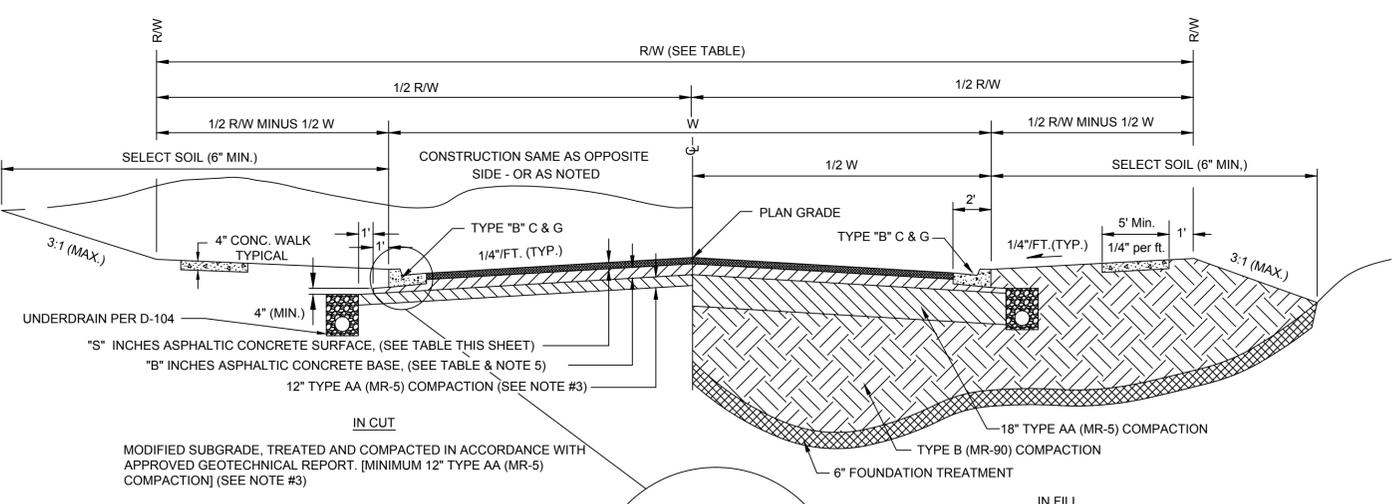
23. CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL PUBLIC ROADWAYS ADJACENT TO THE CONSTRUCTION SITE FREE OF DIRT AND DEBRIS RESULTING FROM ACTIVITIES RELATED TO THE CONSTRUCTION OF THIS PROJECT.
24. CONTRACTOR SHALL KEEP THE ENTIRE PROJECT SITE FREE OF DEBRIS, WEEDS AND TRASH AT ALL TIMES. CONTRACTOR SHALL EXECUTE WORK USING METHODS THAT MINIMIZE EXCESSIVE NOISE OR DUST EMISSIONS. CONTRACTOR SHALL PROVIDE METHODS, MEANS AND FACILITIES TO PREVENT CONTAMINATION OF SOIL OR WATER FROM DISCHARGE OF REGULATED MATERIALS (I.E., DIESEL FUEL) USED DURING CONSTRUCTION.
25. THE SLOPES OF ALL STOCKPILE AREAS SHALL BE GRADED SUCH THAT THEY DO NOT EXCEED 3:1. SILT FENCE SHALL BE INSTALLED COMPLETELY AROUND THE PERIMETER OF THE AREAS AND THE AREAS SHALL BE SEEDED WITHIN 14 DAYS ONCE CONSTRUCTION ACTIVITIES ON THEM CEASE.
26. THE CONTRACTOR SHALL REQUEST THE CITY TO INSPECT AND APPROVE THE WORK UPON THE COMPLETION OF VARIOUS STAGES OF THE WORK. REQUESTS FOR INSPECTION SHALL BE MADE AT LEAST TWENTY-FOUR (24) HOURS IN ADVANCE (EXCLUSIVE OF SATURDAYS, SUNDAYS, AND HOLIDAYS) OF THE TIME THE INSPECTION IS DESIRED. THE CONTRACTOR SHALL OBTAIN WRITTEN NOTIFICATION OF THE CITY'S APPROVAL AT END OF THE FOLLOWING STAGES OF THE CONSTRUCTION:
 - A. UPON COMPLETION OF THE INSTALLATION OF THE PERIMETER EROSION AND SEDIMENT CONTROLS NOTED IN PHASE I OF THE WORK. THE CITY'S INSPECTION SHALL TAKE PLACE BEFORE PROCEEDING WITH ANY OTHER LAND DISTURBANCE ACTIVITY.
 - B. DURING CONSTRUCTION OF THE SEDIMENT BASINS OR STORMWATER MANAGEMENT STRUCTURES.
 - C. AT SPECIAL INSPECTION POINTS NOTED ON THE CONSTRUCTION PERMIT.
 - D. PRIOR TO REMOVAL OR SUBSTANTIAL MODIFICATION OF ANY EROSION AND SEDIMENT CONTROL MEASURE.
 - E. UPON COMPLETION OF FINAL GRADING OPERATIONS.
 - F. UPON ESTABLISHMENT OF GROUND COVERS.
27. PRIOR TO ORDERING PRECAST STRUCTURES, SHOP DRAWINGS SHALL BE SUBMITTED TO THE CITY ENGINEER FOR APPROVAL.
28. ALL PLANT LOCATIONS SHALL BE STAKED BY THE CONTRACTOR AND APPROVED BY THE LANDSCAPE ARCHITECT PRIOR TO PLANTING.
29. SIDEWALK LOCATIONS AND DETAILS ARE INDICATED ON BOTH ROADWAY AND LANDSCAPING PLANS.
30. ALL CONDUITS WITH DEPTHS OF BURY LESS THAN 5 FEET IN AREAS WHERE NEW GAS AND WATER LINES ARE TO BE CONSTRUCTED (BY OTHERS) SHALL NOT BE INSTALLED UNTIL AFTER THE NEW GAS AND WATER LINES HAVE BEEN CONSTRUCTED, TESTED, AND APPROVED.
31. ALL REPAIRS, ADJUSTMENTS OR MODIFICATIONS TO THE SANITARY SEWER FACILITIES SHALL BE PERFORMED BY A CONTRACTOR WHO IS LISTED WITH JOHNSON COUNTY WASTEWATER. THE CORRECT CONTRACTOR LIST IS AVAILABLE ON THE JCW WEBSITE, WWW.JCW.ORG, UNDER "DOWNLOAD FORMS." REQUESTS FOR LISTING SHALL BE DIRECTED TO JOHNSON COUNTY WASTEWATER. ALL CONTRACTORS DESIRING TO BE LISTED WILL BE REQUIRED TO COMPLETE A QUESTIONNAIRE AVAILABLE ON THE JCW WEBSITE UNDER "DOWNLOAD FORMS" AND SUBMIT AN AUDITED FINANCIAL STATEMENT. THE CONTRACTOR MUST DEMONSTRATE TO THE SATISFACTION OF JOHNSON COUNTY WASTEWATER SUFFICIENT EQUIPMENT AND EXPERIENCE TO COMPLETE THE WORK INVOLVED.
32. UPON PROJECT COMPLETION, THE CONTRACTOR SHALL PROVIDE AS-BUILT DRAWINGS OF SEWER RELOCATIONS OR A LETTER OF PROJECT COMPLETION FOR OTHER SANITARY SEWER ADJUSTMENTS (MANHOLE ADJUSTMENTS, REINFORCED CONCRETE ENCASEMENTS, AND/OR DIP REPLACEMENT) TO:

JOHNSON COUNTY WASTEWATER
ATTENTION: CHARLES MCALLISTER
4800 NALL AVENUE
MISSION, KS 66202
33. THE CONTRACTOR IS HEREBY ADVISED THAT NO FEDERALLY-OWNED MAILBOX MAY BE DISTURBED. THE CONTRACTOR SHALL GIVE AT LEAST 24 HOURS ADVANCE NOTICE TO THE MANAGER OF DELIVERY AND COLLECTIONS. TAMPERING WITH FEDERAL MAIL FACILITIES MAY SUBJECT THE CONTRACTOR TO PROSECUTION BY THE FEDERAL GOVERNMENT.
34. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL BE RESPONSIBLE FOR MAINTAINING AND, IF DAMAGED, RESTORING MAILBOXES, DRIVEWAY MARKERS, YARD LIGHTS SPRINKLER SYSTEMS AND SEPTIC SYSTEMS TO A CONDITION EQUAL TO THAT BEFORE DAMAGE OCCURRED. DISTURBED SPRINKLER SYSTEMS SHALL BE TEMPORARILY CONNECTED FOR USE BY PROPERTY OWNER DURING CONSTRUCTION AT CONTRACTOR'S EXPENSE.
35. DRIVEWAYS, SIDEWALKS, AND OTHER AREAS DAMAGED BY THE CONTRACTOR SHALL BE RESTORED AT HIS EXPENSE TO A CONDITION EQUAL TO OR BETTER THAN EXISTING BEFORE DAMAGE OCCURRED.
36. SAWCUTS SHALL BE MADE TO A DEPTH AS SHOWN ON THE PLANS. THIS SHALL BE SUBSIDIARY TO PAVING ITEMS.
37. ALL EXISTING PROPERTY SIGNS SHALL BE REMOVED AND RESET BY THE CONTRACTOR AT HIS OWN EXPENSE.
38. THE CONTRACTOR SHALL INSTALL LIGHTING CONDUIT AND SIGNAL CONDUIT PRIOR TO CONSTRUCTING PAVEMENT.
39. ALL RCP SHALL BE CLASS III UNLESS OTHERWISE NOTED IN THE PLANS.
40. THE CONTRACTOR SHALL FURNISH BORROW NEEDED TO COMPLETE THE EARTHWORK OF THE QUANTITIES INDICATED IN THE PLANS FROM BORROW SITES PROVIDED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER. CONTRACTOR - FURNISHED BORROW SHALL BE SUBSTANTIALLY FREE FROM ROCK, SHALE AND VEGETATION AND SHALL BE SUITABLE FOR COMPACTING IN EMBANKMENTS. THE CONTRACTOR SHALL FURNISH THE ENGINEER WITH A COPY OF THE AGREEMENT WITH THE LANDOWNER FOR BORROW SITES.
41. UNDERDRAINS SHALL BE INSTALLED WITH THE PAVEMENT AT LOCATIONS AS DETERMINED BY THE ENGINEER IN THE FIELD.
42. POLICE, FIRE, MED-ACT AND SCHOOL BUS COMPANIES SHALL BE NOTIFIED PRIOR TO THE CLOSING OF ANY STREET WITH APPROVAL OF THE CITY ENGINEER.
43. THE CONTRACTOR SHALL USE A LICENSED SURVEYOR TO PERFORM THE CONSTRUCTION STAKING ON THE PROJECT.
44. CONNECTION OF THE STORM SEWER PIPES TO NEW OR EXISTING INLETS, MANHOLES, CULVERTS, AND EXISTING PIPES SHALL BE CONSIDERED SUBSIDIARY TO OTHER BID ITEMS.
45. SIDEWALK, SIDEWALK RAMPS, AND DRIVEWAYS MUST BE ADA COMPLIANT.
46. IF THE CONTRACTOR CHOOSES TO USE PVC HR HDPE STORM SEWER PIPE FOR STORM SEWER BID ITEMS THAT DO NOT SPECIFY A PIPE MATERIAL, THE CONTRACTOR SHALL USE PB-3 FOR GRANULAR BACKFILL MATERIAL AS PER THE CITY'S STANDARD DETAILS.
47. THE ASPHALT UNDER THE CURB SHALL BE SUBSIDIARY TO THE CURB AND GUTTER BID ITEM.
48. THE QUANTITY FOR THE CURB AND GUTTER BID ITEMS DOES NOT INCLUDE THE TRANSITION AT THE INLETS. THE TRANSITIONS ARE SUBSIDIARY TO THE CURB AND GUTTER BID ITEMS.

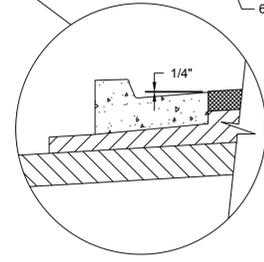
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GENERAL NOTES		SHEET D-100



JOINT LAYOUT



- NOTES:
1. STANDARD SECTION SHALL BE TOTAL DEPTH ASPHALTIC CONCRETE.
 2. ALTERNATE SECTION SHALL BE PORTLAND CEMENT CONCRETE, (AE), WITH MONOLITHIC CURB AND GUTTER. CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF KCMMB-4K CONCRETE. JOINTING PLAN SHALL BE SUBMITTED TO THE CITY ENGINEER FOR REVIEW AND APPROVAL.
 3. IF ROCK IS ENCOUNTERED DURING EXCAVATION, AREA IS TO BE UNDERCUT 12", ROCK REMOVED, AND BROUGHT BACK TO GRADE WITH SUITABLE MATERIAL AND RECOMPACTED.
 4. SELECT SOIL SHALL BE PLACED BETWEEN THE BACK OF CURB AND TOE OF SLOPE AND ANY DISTURBED AREA THAT IS TO SUPPORT VEGETATION.
 5. ASPHALT SHALL EXTEND BENEATH CURB & GUTTER ON COLLECTOR, COMMERCIAL OR INDUSTRIAL STREETS.
 6. WHEN THE CONCRETE ALTERNATE IS CHOSEN, THE BARS AND JOINTS SHALL CONFIRM THE THE PORTLAND CEMENT ASSOCIATION PUBLICATION FOR DESIGN AND CONSTRUCTION OF CONCRETE HIGHWAYS. ALL TIE BARS SHALL BE EPOXY COATED.

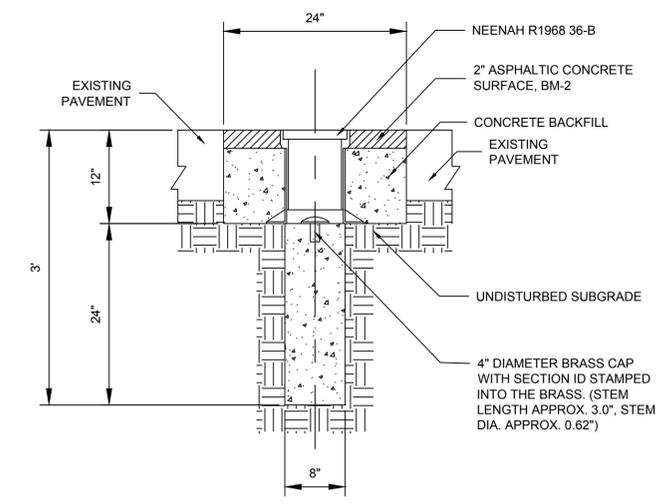


MAJOR STREET SECTION

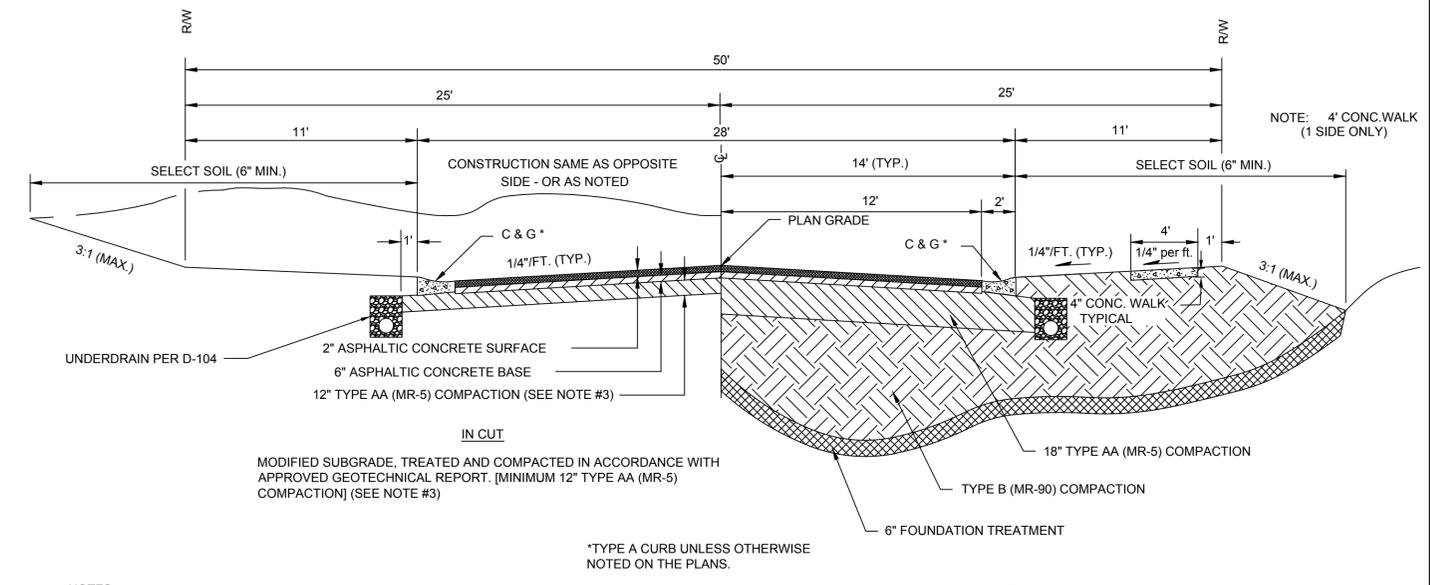
TABLE

STREET TYPE	MIN. R/W	MIN. W	ASPHALT		CONC.
			B	S	
PRIMARY ARTERIAL	100'	52'	10"	2"	9"
SECONDARY ARTERIAL	80'	48'	9"	2"	8"
COLLECTOR	60'	36"	7"	2"	7"
COMMERCIAL	60'	36'	7"	2"	7"
INDUSTRIAL	60'	36'	7"	2"	7"

*VARIES - SEE DESIGN CRITERIA



MONUMENT BOX



- NOTES:
1. STANDARD SECTION SHALL BE 8" TOTAL DEPTH ASPHALTIC CONCRETE. PER S-300.
 2. ALTERNATE SECTION SHALL BE PORTLAND CEMENT CONCRETE, 6" THICKNESS (AE), WITH MONOLITHIC CURB AND GUTTER, 7" THICKNESS (AE) WITHOUT MONOLITHIC CURB. CONCRETE SHALL CONFORM TO THE REQUIREMENTS OF KCMMB-4K CONCRETE. JOINTING PLAN SHALL BE SUBMITTED TO THE CITY ENGINEER FOR REVIEW AND APPROVAL.
 3. IF ROCK IS ENCOUNTERED DURING EXCAVATION, AREA IS TO BE UNDERCUT 12", ROCK REMOVED, AND BROUGHT BACK TO GRADE WITH SUITABLE MATERIAL AND RECOMPACTED.
 4. SELECT SOIL SHALL BE PLACED BETWEEN THE BACK OF CURB AND TOE OF SLOPE AND ANY DISTURBED AREA THAT IS TO SUPPORT VEGETATION.
 5. WHEN THE CONCRETE ALTERNATE IS CHOSEN, THE BARS AND JOINTS SHALL CONFIRM THE THE PORTLAND CEMENT ASSOCIATION PUBLICATION FOR DESIGN AND CONSTRUCTION OF CONCRETE HIGHWAYS. ALL TIE BARS SHALL BE EPOXY COATED.

RESIDENTIAL STREET SECTION

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REVISED DATE: ---

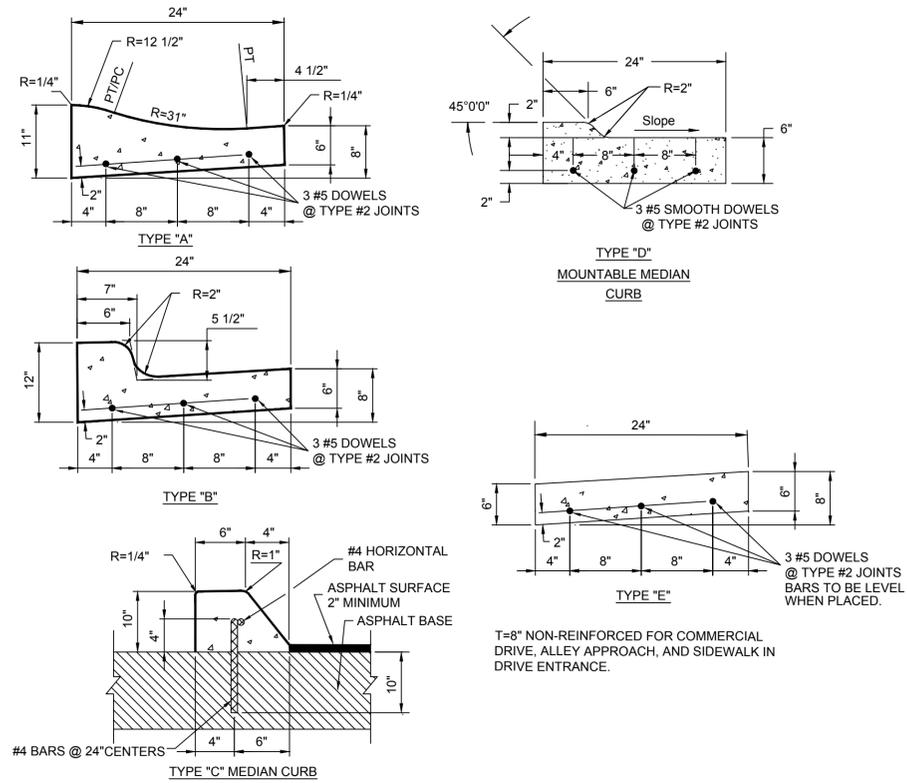
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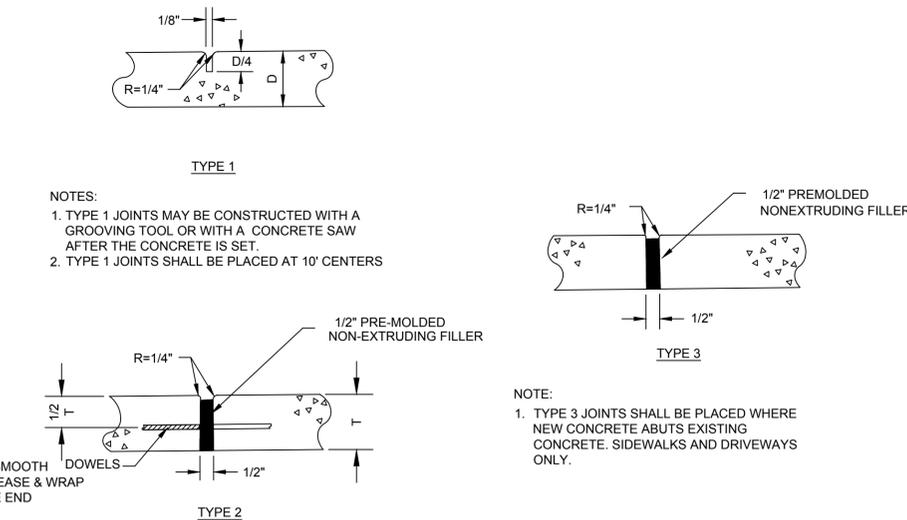
Lenexa
KANSAS

STR. SECTION, JOINT LAYOUT, MONUMENT BOX

SHEET D-101



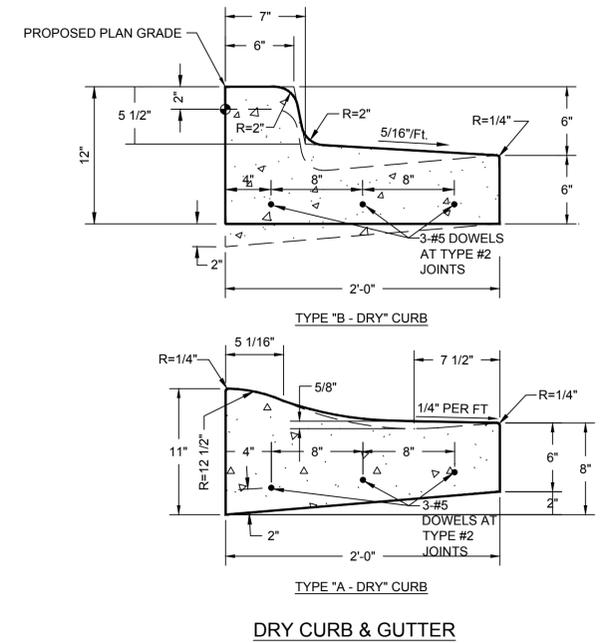
CONCRETE CURB & GUTTER DETAILS



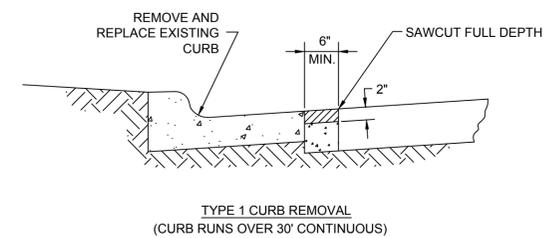
- NOTES:
1. TYPE 1 JOINTS MAY BE CONSTRUCTED WITH A GROOVING TOOL OR WITH A CONCRETE SAW AFTER THE CONCRETE IS SET.
 2. TYPE 1 JOINTS SHALL BE PLACED AT 10' CENTERS
- NOTES:
1. TYPE 2 JOINTS SHALL BE PLACED @ ALL P.C.'s, P.T.'s AND TRANSITIONS, AND WHERE NEW CURB OR PAVEMENT TIES INTO EXISTING CURB.
 2. SMOOTH BARS SHALL BE 24" LONG.
 3. DOWEL BARS SHALL BE LEVEL WHEN PLACED.

JOINT DETAILS

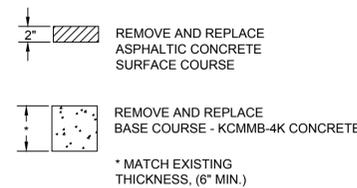
- NOTES:
1. ALL CONCRETE SHALL BE KCMMB-4K
 2. ALL JOINTS WITH EXISTING CURB SHALL BE TYPE 2 JOINTS.
 3. A TYPE 2 JOINT SHALL BE PLACED AT ALL CURB RETURNS.
 4. A TYPE 1 JOINT SHALL BE PLACED AT 10' CENTERS.
 5. TYPE "E" CURB SHALL NOT BE USED WITHOUT APPROVAL OF THE ENGINEER.
 6. AB-3 MAY BE USED AS A LEVELING COURSE TO BRING SUBGRADE TO PROPER ELEVATION. (6" MAX.)
 7. IN TRANSITIONS, WATER SHALL FLOW FROM THE GUTTER OF TYPE "A" CURB TO THE LIP OF TYPE "A-DRY" CURB AT 0.5% MIN. SLOPE.
 8. A "TOOL" JOINT SHALL BE PLACED EVERY 50 FEET DURING PLACEMENT.



DRY CURB & GUTTER



TYPE 1 CURB REMOVAL
(CURB RUNS OVER 30' CONTINUOUS)

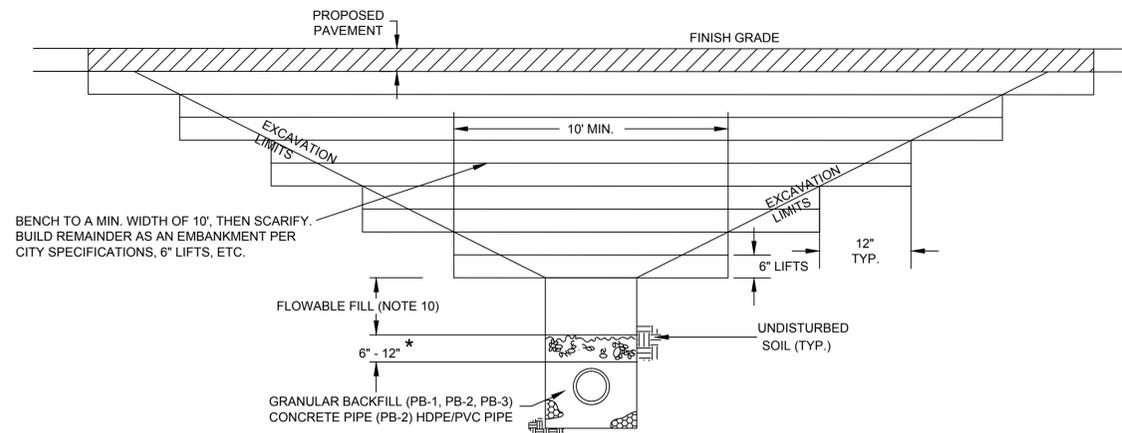


TYPE 2 CURB REMOVAL
(ONLY WHEN SPECIFIED)

- NOTES:
1. SAWCUT SHALL BE MADE WITH A CONCRETE SAW MEETING THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS.
 2. CURB SHALL BE REMOVED TO THE NEAREST JOINT, AND THE JOINT SHALL BE SAW CUT TO FULL DEPTH.
 3. REPLACE ANY CONDUIT MARKERS THAT ARE DISTURBED DURING CURB REMOVAL AND REPLACEMENT.

CURB REMOVAL DETAILS

REVISED DATE:	---	
DETAILED:	---	
APPROVED:	---	
CURB & GUTTER AND JOINT DETAILS		SHEET D-102



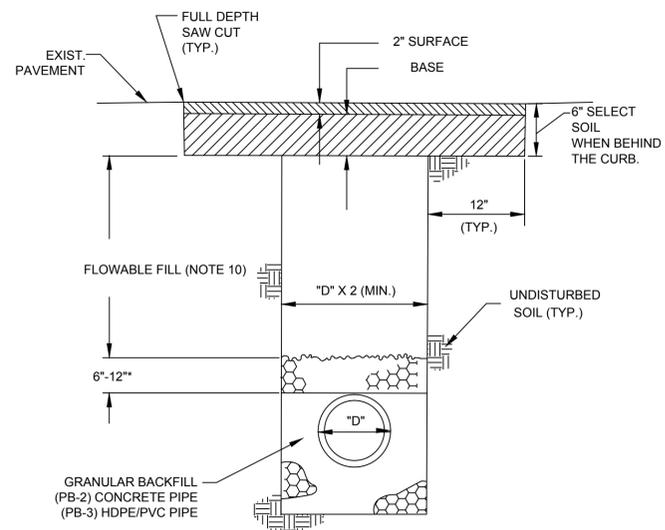
BENCH TO A MIN. WIDTH OF 10', THEN SCARIFY. BUILD REMAINDER AS AN EMBANKMENT PER CITY SPECIFICATIONS, 6" LIFTS, ETC.

TRENCHING IN FUTURE PAVED AREA (SEE NOTES BELOW)

NOTES:

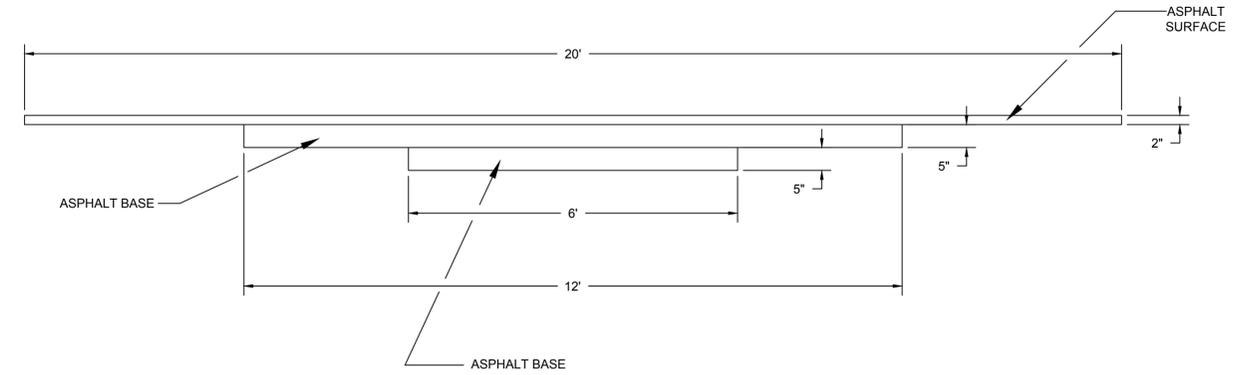
- CONTRACTOR SHALL CONTACT THE CITY FOR INSPECTION PRIOR TO PLACING BACKFILL AND AGAIN PRIOR TO PLACING ASPHALT.
- THE 1.0' EITHER SIDE OF ORIGINAL TRENCH SHALL NOT BE REMOVED UNTIL BACKFILL HAS BEEN PLACED AND COMPACTED.
- ASPHALT SHALL COMPLY WITH CITY SPECIFICATIONS AS FOLLOWS PER S-300
- ALL PIPES SHALL BE INSPECTED PRIOR TO BACKFILL. ALL PIPE COVERED PRIOR TO INSPECTION SHALL BE UNCOVERED AT THE CONTRACTOR'S EXPENSE.
- UNLESS OTHERWISE AUTHORIZED BY THE CITY ENGINEER, TRENCH BACKFILL IN AREAS OF FUTURE STREET CONSTRUCTION, SHALL CONFORM TO THIS DETAIL. BACKFILL LIMITS FOR THIS DETAIL SHALL EXTEND TO THE TOP OF TRENCH AND 3 FT. BACK OF ALL CURBS, AND UNDER ANY SIDEWALKS, EXISTING OR PROPOSED.
- ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE CITY OF LENEXA TECHNICAL SPECIFICATIONS.
- ANY EXCAVATION LEFT OPEN OVERNIGHT ON ANY THOROUGHFARE OR COLLECTOR TYPE STREET SHALL BE SECURELY PLATED, WHERE PRACTICAL. IF IT IS NECESSARY TO CLOSE THE STREET, DETOURS SHALL BE POSTED PER PLANS SUBMITTED AND APPROVED BY THE ENGINEER PRIOR TO START OF THE EXCAVATION.
- NO PUBLIC STREET SHALL BE OPEN CUT WITHOUT PRIOR APPROVAL OF THE CITY ENGINEER.
- ALL UTILITY PATCHES IN EXISTING PAVEMENT SHALL BE BACKFILLED USING FLOWABLE FILL.
- WHEN FLOWABLE FILL IS NOT USED AND WHERE SELECT EXCAVATED MATERIAL IS USED FOR BACKFILL MATERIAL, THE CONTRACTOR SHALL SUBMIT AND PAY FOR DENSITY TESTS AS REQUIRED BY THE CITY ENGINEER.

* (PB-1, PB-2 OR PB-3) CONCRETE PIPE (PB-2) HDPE/PVC PIPE OR PER OTHER UTILITY SEE DETAIL D-302



* PER UTILITY SEE STORM SEWER TRENCHING FOR STORM SEWERS.

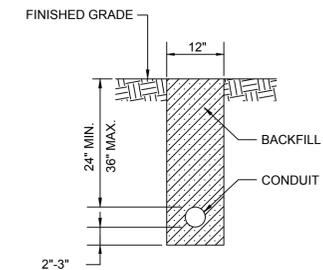
TRENCHING IN EXISTING PAVED AREA



NOTES

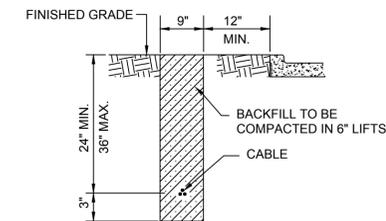
- THIS DETAIL SHALL BE USED FOR THE REPAIR OF A HUMP IN THE STREET.
- REMOVE A MINIMUM OF 12 L.F. OF CURB AND GUTTER ON EACH SIDE OF STREET OR LANE REPAIR.

PAVEMENT HUMP REPAIR

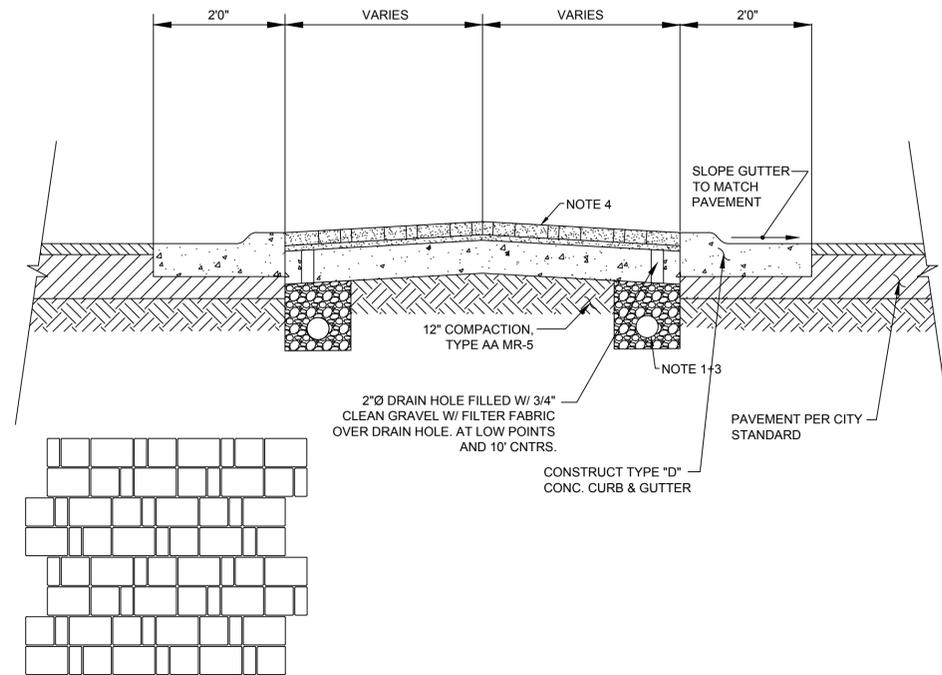


NOTE:

- CONTRACTOR SHALL CONTACT THE CITY FOR INSPECTION AS DETAILED IN CITY ORDINANCE.
- BACKFILL IN UNPAVED AREAS SHALL BE FREE OF RUBBLE AND ROCK.
- EXCAVATION BACKFILL SHALL BE PLACED IN MAXIMUM 6" LIFTS (LOOSE MEASURE) AND COMPACTED BY WACKER "PACKER" OR EQUAL.
- CONDUITS SHALL BE PITCHED TO DRAIN.
- ANY SIDEWALK REMOVED TO FACILITATE THE WORK SHALL BE REPLACED IN ACCORDANCE WITH THE CITY DETAIL FOR SIDEWALK CONSTRUCTION.
- ALL AREAS DISTURBED BY THE EXCAVATION MUST BE SODDED. SOD MUST BE WATERED FOR 20 DAYS AFTER PLACEMENT. SEEDING MAY BE ALLOWED WITH THE PERMISSION OF THE CITY ENGINEER.

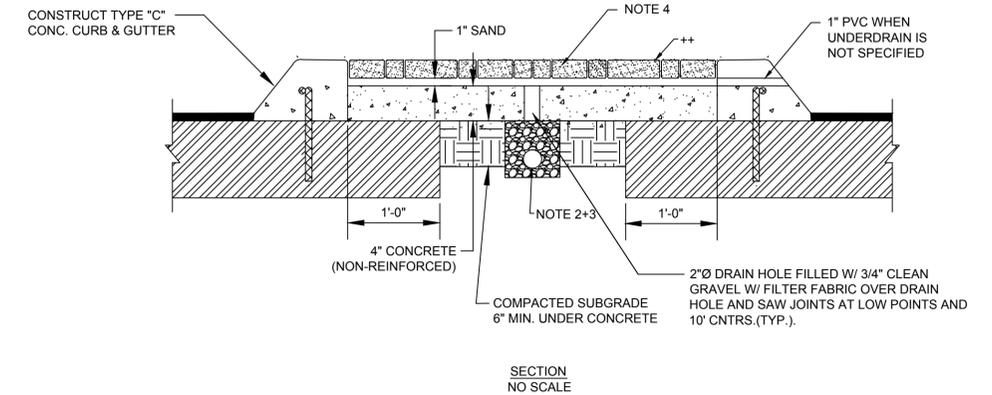


UTILITY TRENCHING IN UNPAVED AREAS



++ PAVING PATTERN
NO SCALE

MOUNTABLE MEDIAN PAVER DETAIL



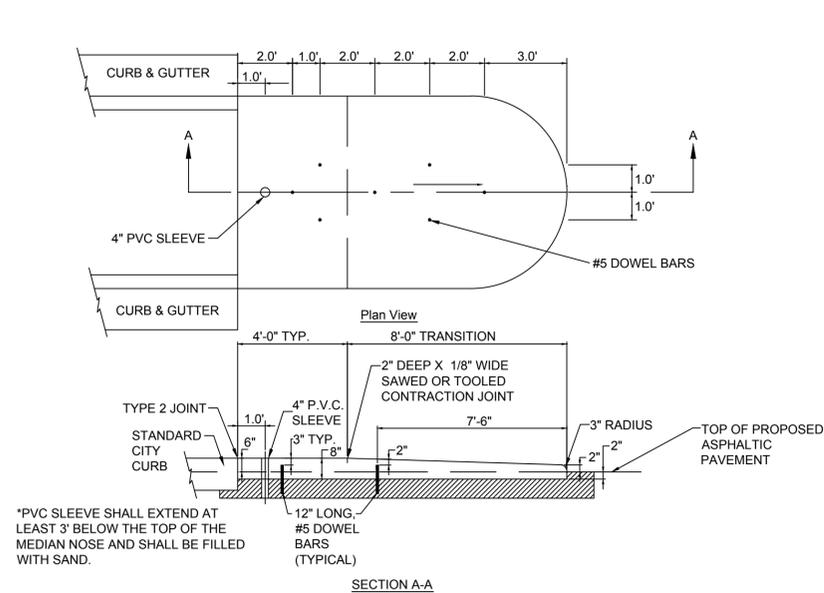
SECTION
NO SCALE

MEDIAN PAVER DETAIL

NOTES:

1. UNDERDRAIN SHALL BE INSTALLED AROUND THE PERIMETER OF THE MEDIAN AND CONNECTED TO THE STORM DRAIN SYSTEM.
2. UNDERDRAIN SHALL BE INSTALLED TO THE CENTER OF THE MEDIAN AND CONNECTED TO THE STORM DRAIN SYSTEM.
3. PER TECHNICAL SPECIFICATION S-512 "UNDERDRAINS"
4. CONCRETE PAVERS, PAVESTONE "COBBLE STONE" OR EQUAL
4-9/16"x2-1/4"x2-3/8"
4-9/16"x4-9/16"x2-3/8"
4-9/16"x6-13/16"x2-3/8"

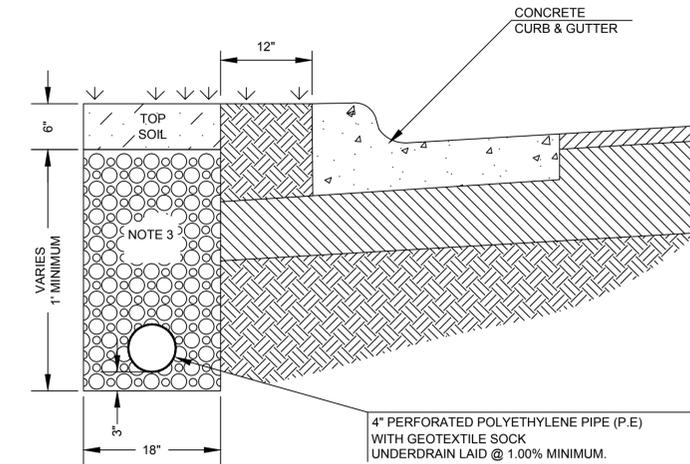
PAVER COLOR
VARIABLE. CONTACT ENGINEERING



*PVC SLEEVE SHALL EXTEND AT LEAST 3' BELOW THE TOP OF THE MEDIAN NOSE AND SHALL BE FILLED WITH SAND.

SECTION A-A

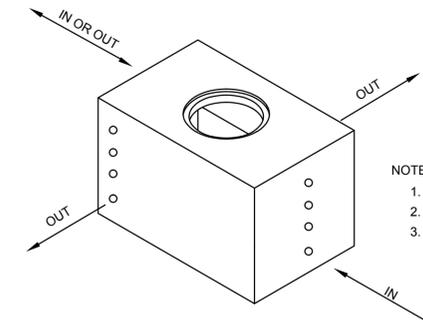
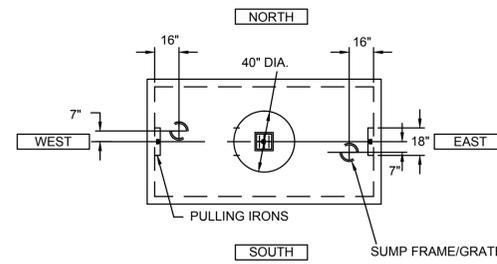
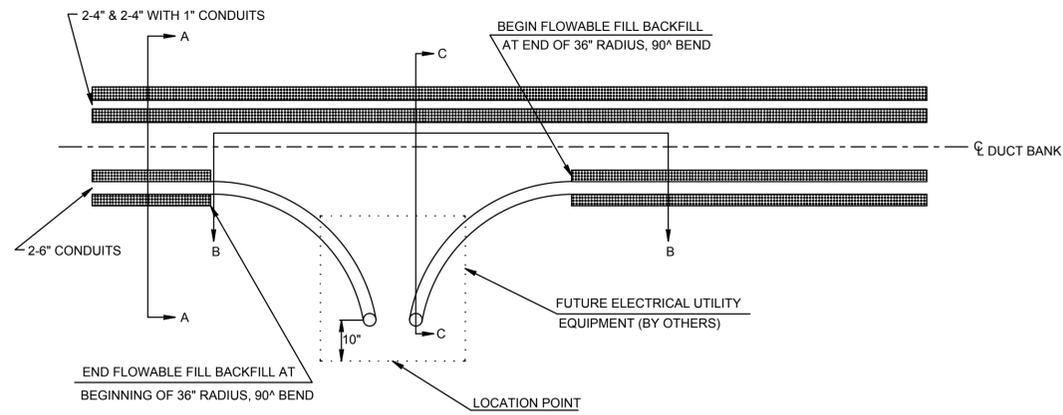
MEDIAN NOSE DETAIL



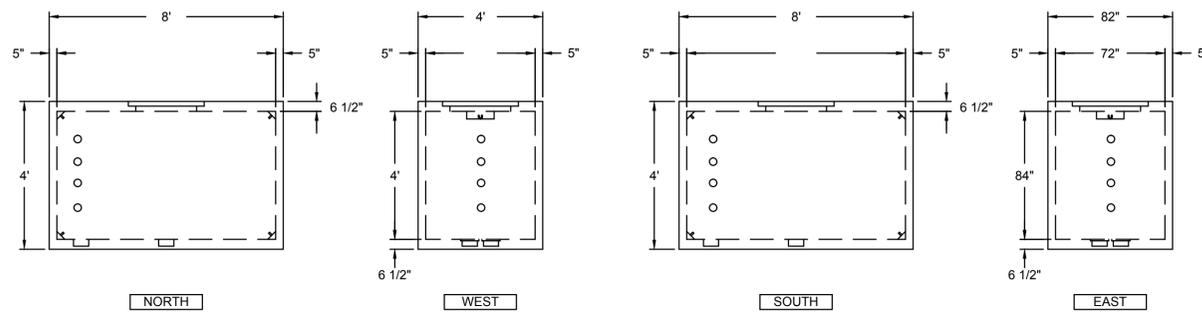
ROADWAY MEDIAN UNDERDRAIN DETAIL

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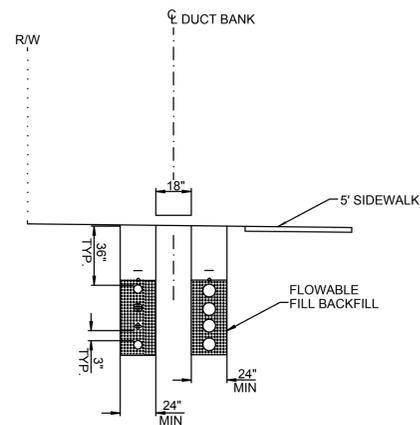
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DETAILED:	---	
APPROVED:	---	
MEDIANS & UNDERDRAINS		SHEET D-104



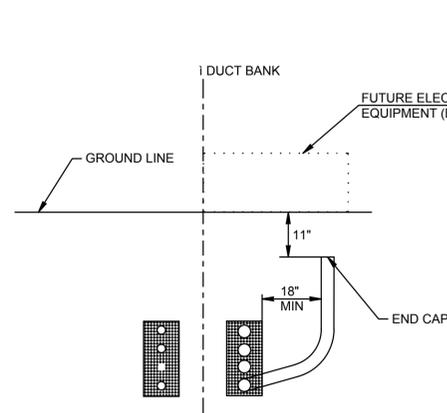
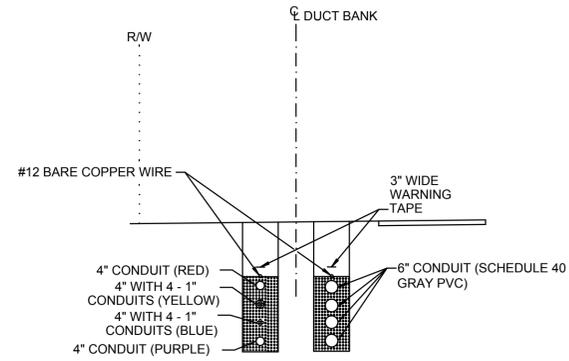
- NOTES:
- (5) GALVANIZED PULLING IRONS (STANDARD).
 - CABLE RACK INSERTS (STANDARD).
 - GROUNDING RIBBON STANDARD FOR TELEPHONE APPLICATIONS.



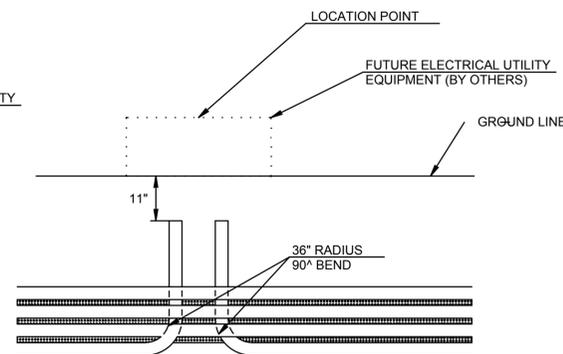
COMMUNICATION MANHOLE



SEC A-A

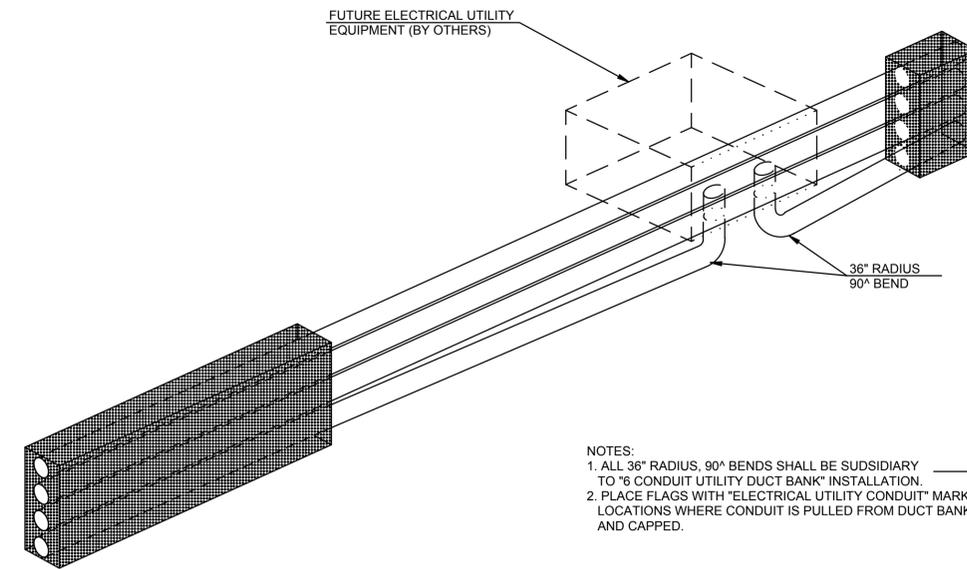


SEC C-C



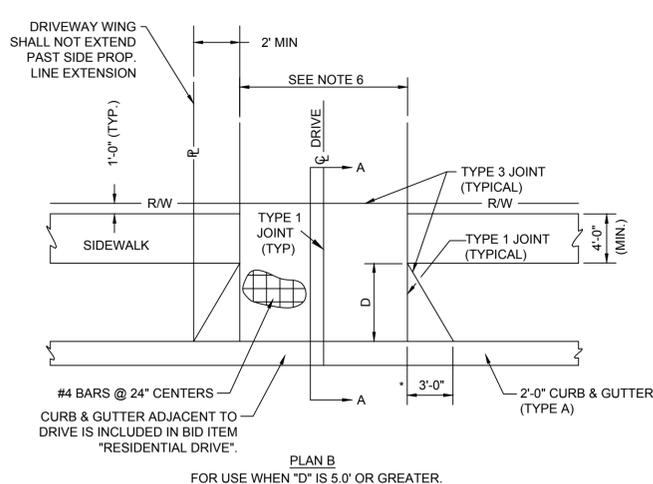
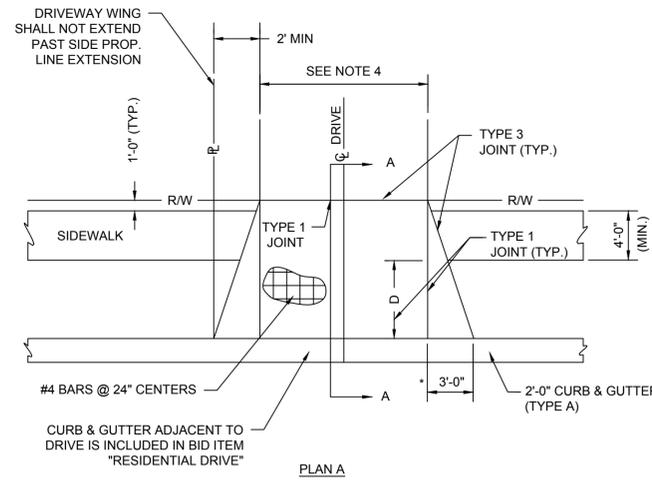
SEC B-B

TYPICAL 8 CONDUIT DUCT



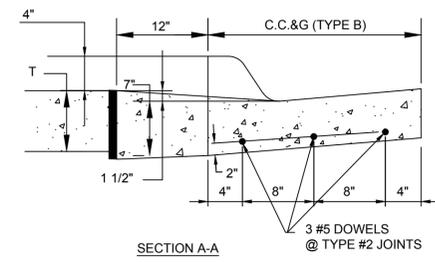
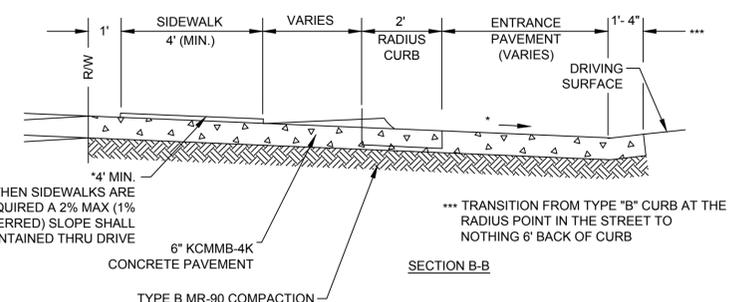
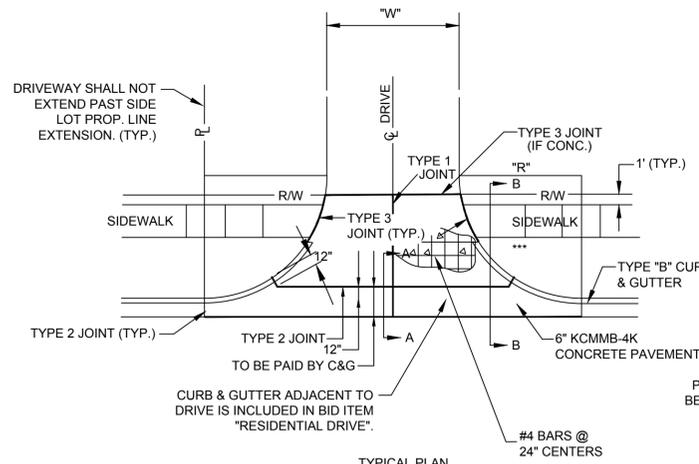
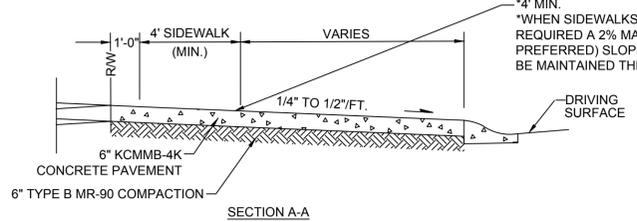
- NOTES:
- ALL 36" RADIUS, 90° BENDS SHALL BE SUBSIDIARY TO "6 CONDUIT UTILITY DUCT BANK" INSTALLATION.
 - PLACE FLAGS WITH "ELECTRICAL UTILITY CONDUIT" MARKED ON IT AT LOCATIONS WHERE CONDUIT IS PULLED FROM DUCT BANK AND CAPPED.

UTILITY DUCT DETAIL



FOR USE WHEN "D" IS LESS THAN 5.0' (OR WHEN THERE IS NO SIDEWALK)

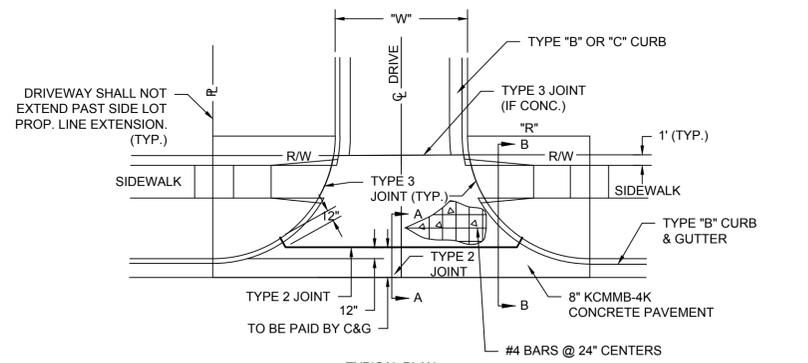
* FOR DRIVE WIDTHS 10'-12', ADJUST WINGS TO OBTAIN A MINIMUM OF 18' AT THE CURB, MEASURED FROM OUTSIDE OF WING TO OUTSIDE OF WING.



T=8" NON-REINFORCED FOR COMMERCIAL DRIVE, ALLEY APPROACH, AND SIDEWALK IN DRIVE ENTRANCE.

* 2% MIN./MAX. IF ADJACENT TO A SIDEWALK.

RESIDENTIAL DRIVE



NOTES:

- SEE CURB & GUTTER DETAIL SHEET FOR JOINTING DETAILS.
- ALL CONCRETE SHALL BE KCMMB-4K.
- IF A LEVELING COURSE IS NEEDED, PUGGED AB-3 SHALL BE USED. PUGGED AB-3 MUST BE MOIST (MIN. 5% MOISTURE) AND COMPACTED. DEPTH OF LEVELING COURSE SHALL NOT EXCEED 6". CLEAN ROCK OR GRAVEL WILL NOT BE ALLOWED.
- WINGS MUST BE 3' WIDE AND INSTALLED ON BOTH SIDES OF DRIVEWAY.
- DRIVEWAY MUST BE 2' OR GREATER FROM THE SIDE PROPERTY LINE AT ALL POINTS BEYOND THE RIGHT-OF-WAY.
- MINIMUM WIDTH 10'. MAXIMUM WIDTH 32' OR 35% OF PROPERTY FRONT FOOTAGE WHICHEVER IS LESS, EXCEPT AS FOLLOWS:
 - SINGLE FAMILY LOTS: ALLOWED AN 18' WIDTH REGARDLESS OF FRONTAGE.
 - DUPLEX: ALLOWED A 18' WIDTH FOR EACH UNIT REGARDLESS OF FRONTAGE.
 - MULTIPLE DRIVEWAYS MUST BE SEPARATED BY A LANDSCAPE STRIP AT LEAST 4' WIDE.
- SIDEWALK IS LOCATED ONE FOOT FROM THE R/W LINE, THEREFORE THE EXACT POSITION OF THE SIDEWALK IN RELATION TO THE 3' x 6' TRANSITION MAY VARY.
- TIE AND DOWEL BARS SHALL BE LEVEL WHEN PLACED.

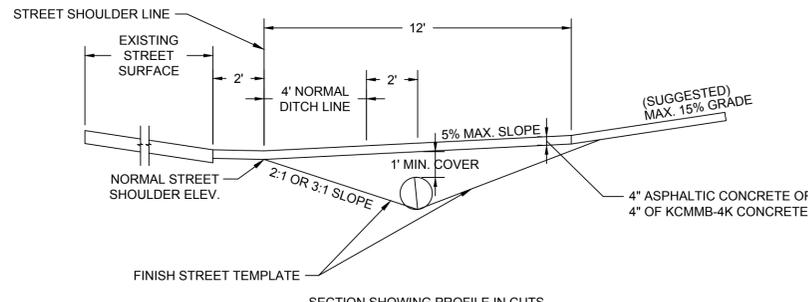
TYPE	"R"		"W"	
	MIN.	MAX.	MIN.	MAX.
RESIDENTIAL	** 5'	15'	10'	* 32'

* OR 35% OF PROPERTY FRONT FOOTAGE WHICH EVER IS LESS

** FOR DRIVE WIDTHS OF 10'-12', ADJUST MIN. RADIUS TO OBTAIN 22' AT THE CURB; MEASURED END OF RADIUS TO END OF RADIUS.

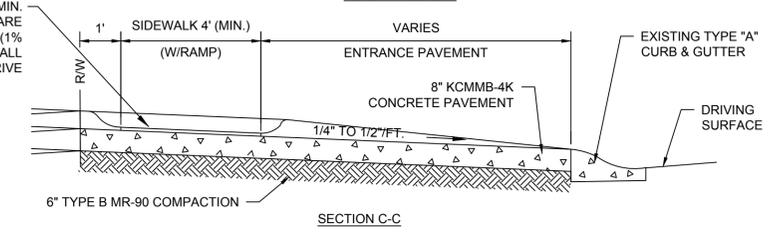
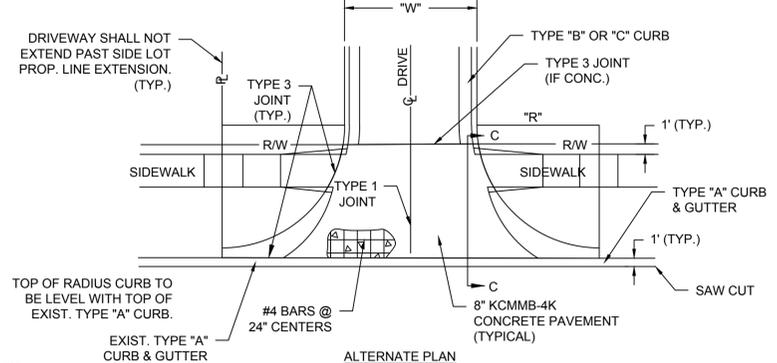
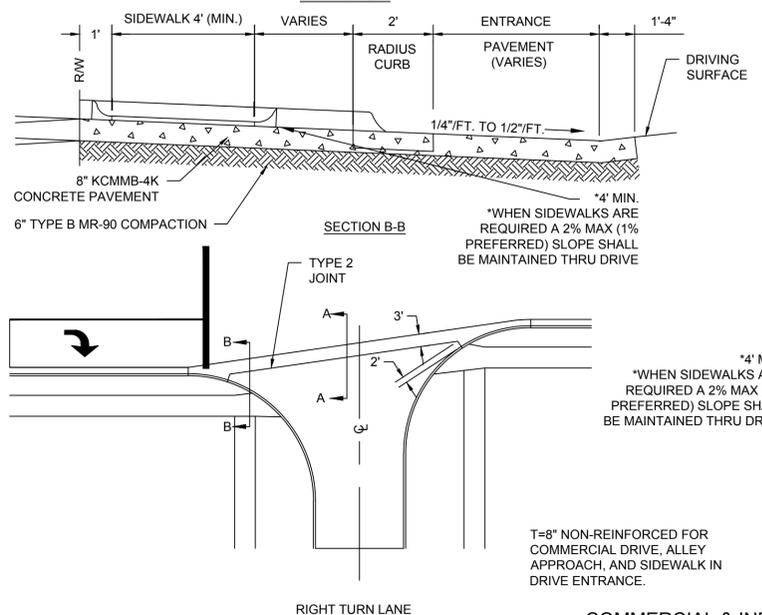
TYPE	"R"		"W"	
	MIN.	MAX.	MIN.	MAX.
COMMERCIAL APARTMENT	*15'	*25'	25'	35'
INDUSTRIAL	**20'	**50'	30'	40'

* 20' DESIRABLE
** 30' DESIRABLE

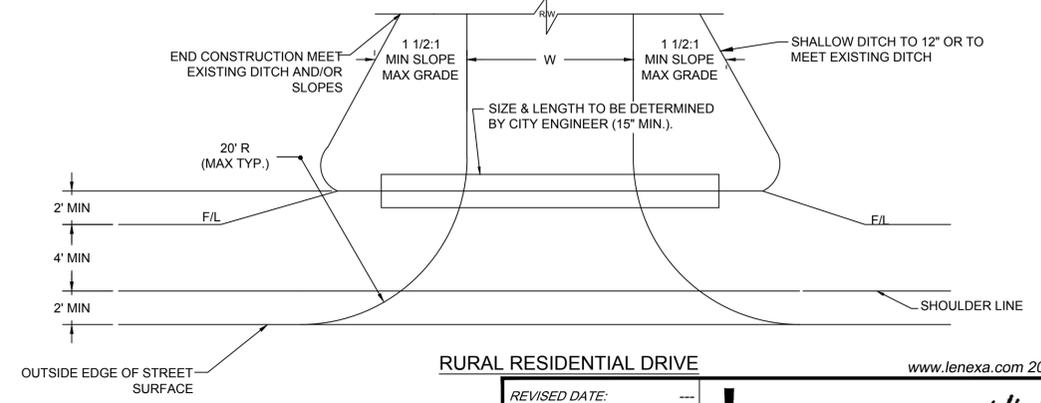


NOTES:

- DRIVEWAY SHALL BE SURFACED WITH EITHER 4" OF ASPHALTIC CONCRETE OR 4" OF KCMMB-4K CONCRETE.
- ALL FILL MATERIAL SHALL BE COMPACTED TO 90% OF STANDARD MAXIMUM DENSITY. BACKFILL SHALL BE SUITABLE SOIL OR AB-3.
- PROPERTY OWNER SUPPLIES THE CULVERT, TO CITY SPECIFICATIONS AND CITY FORCES INSTALL CULVERTS. PROPERTY OWNER INSTALL THE DRIVE SURFACE.



COMMERCIAL & INDUSTRIAL DRIVE



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REVISED DATE: ---

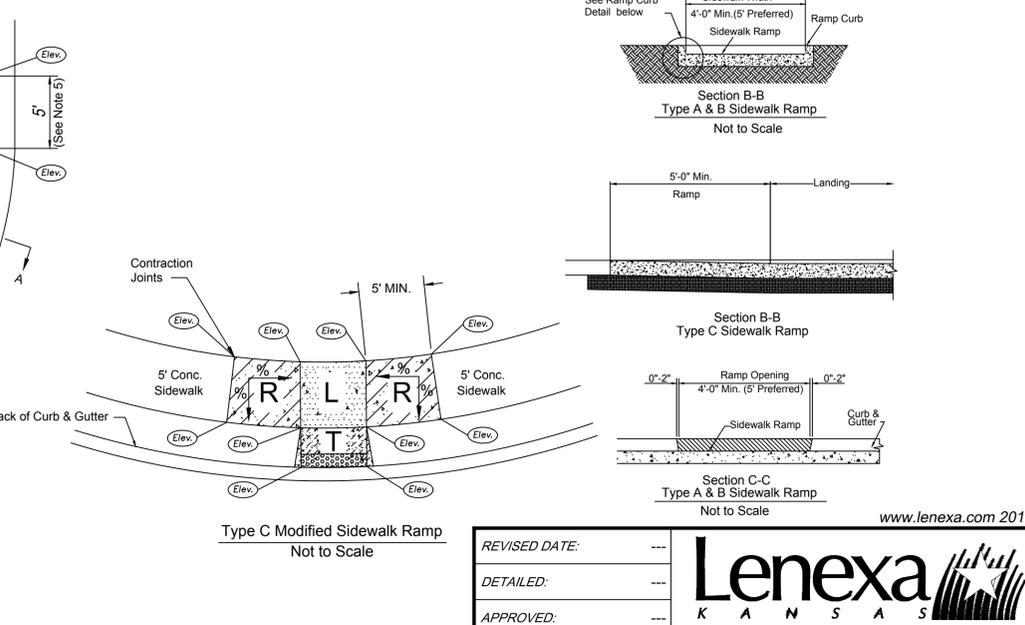
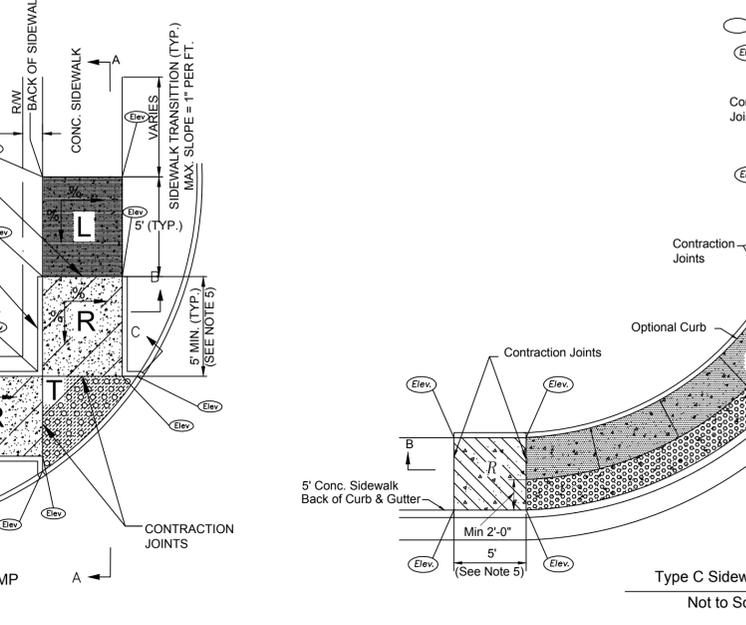
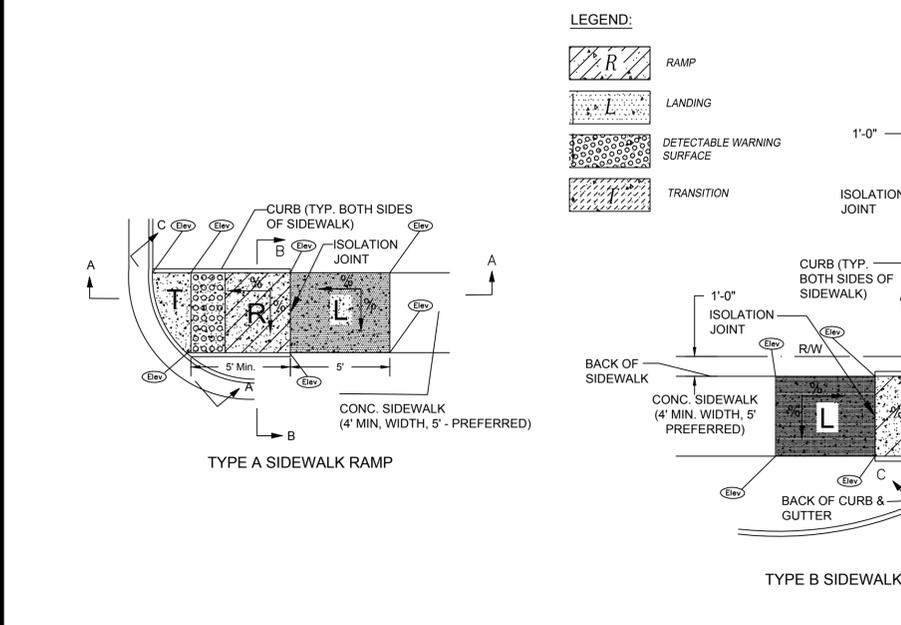
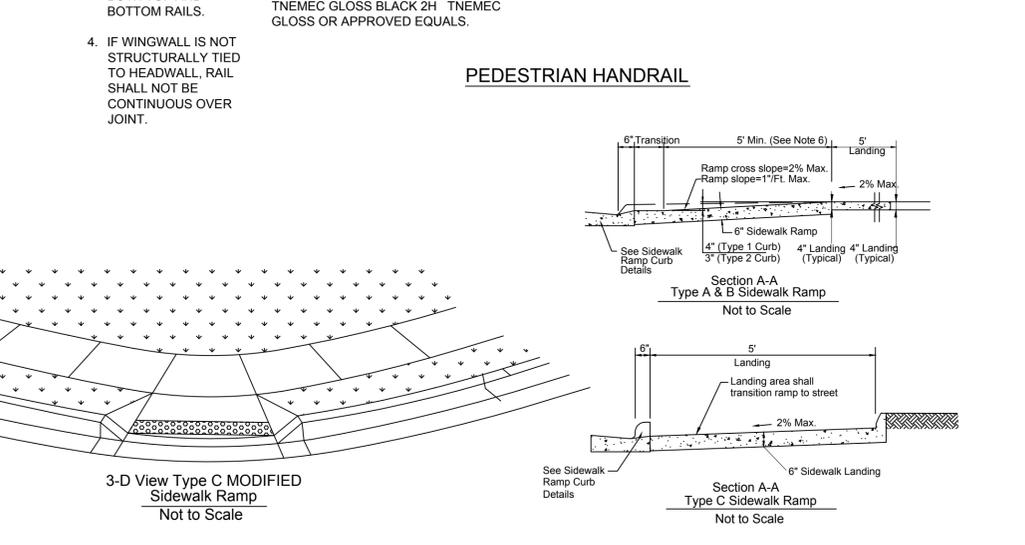
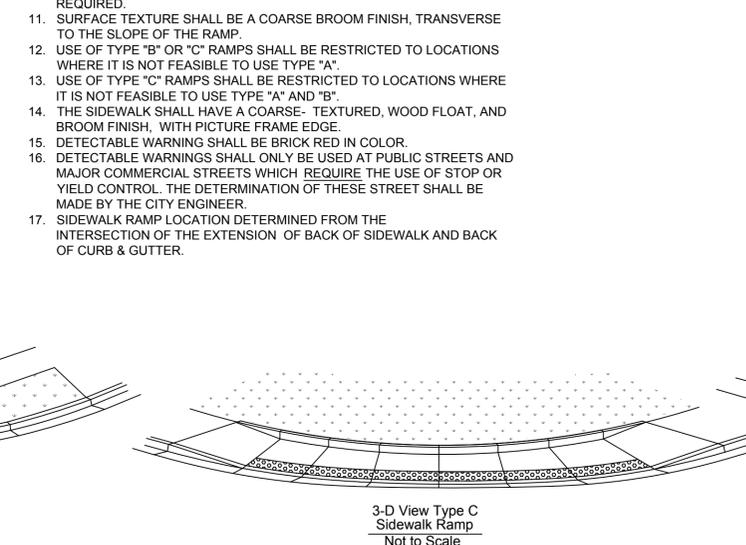
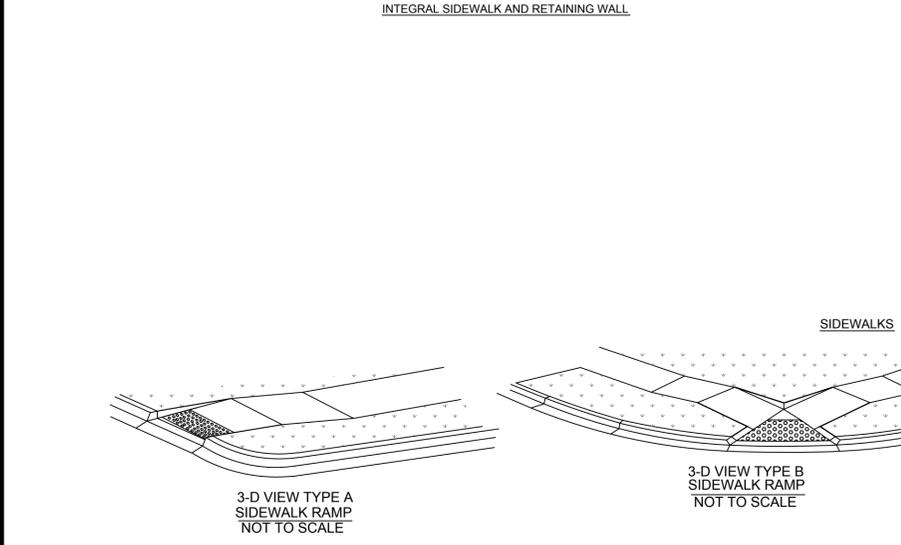
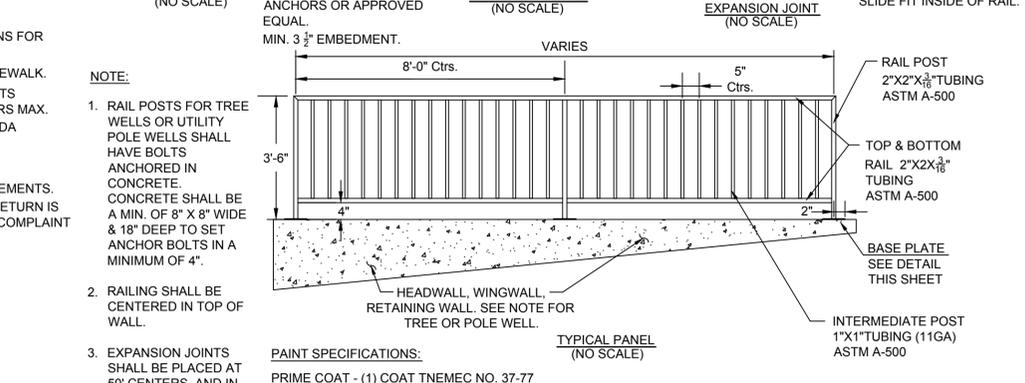
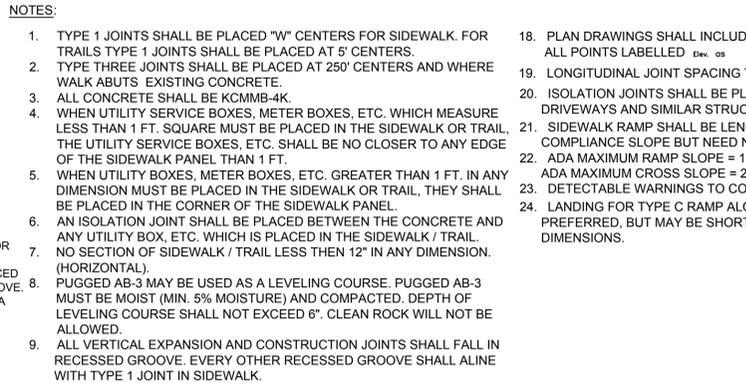
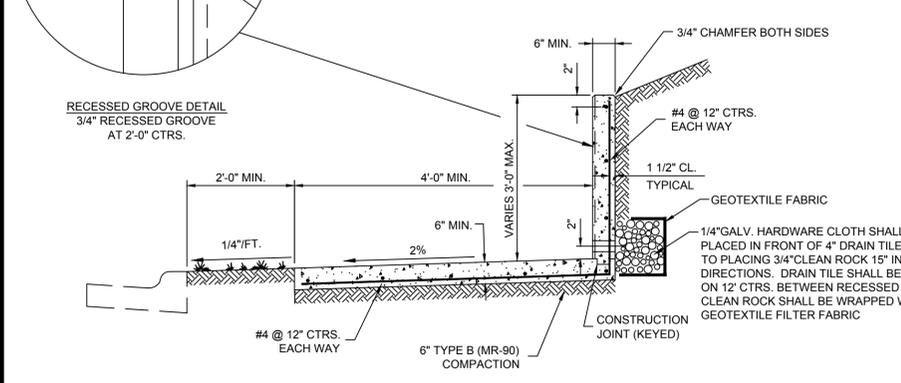
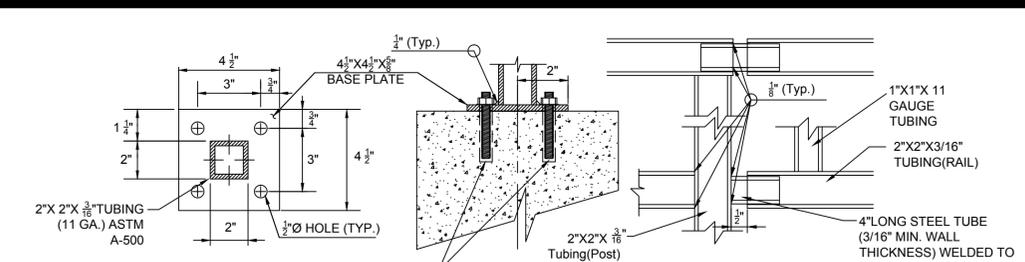
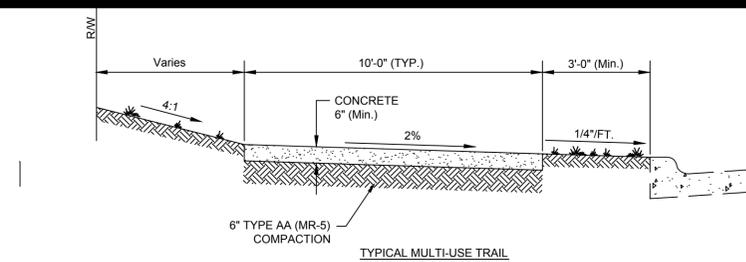
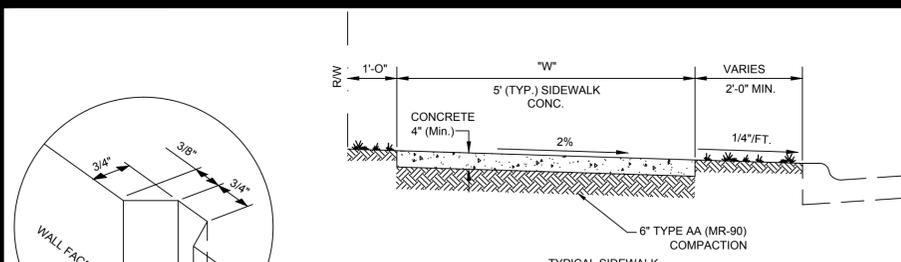
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APPROVED: ---

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KANSAS

ENTRANCES

SHEET D-200

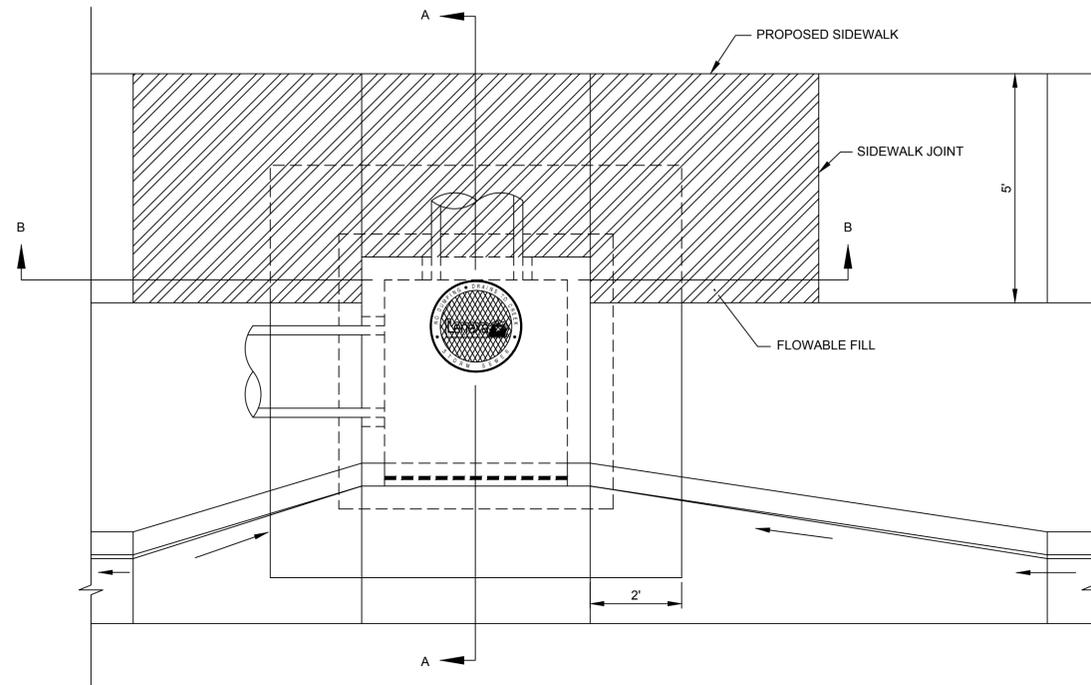


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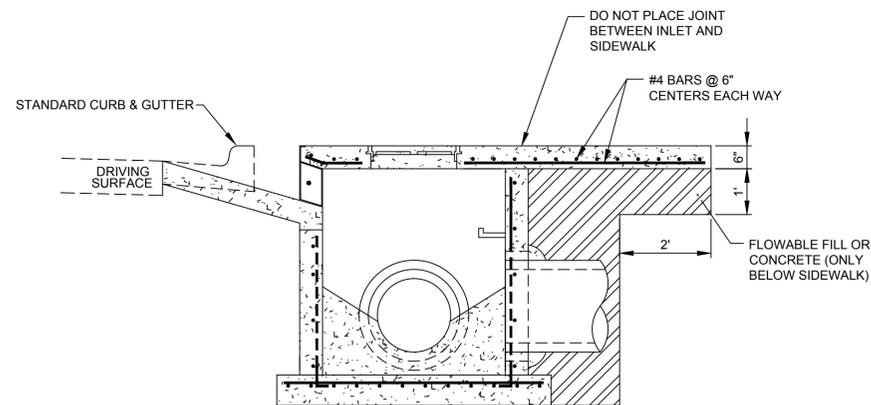
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PEDESTRIAN WALKWAYS

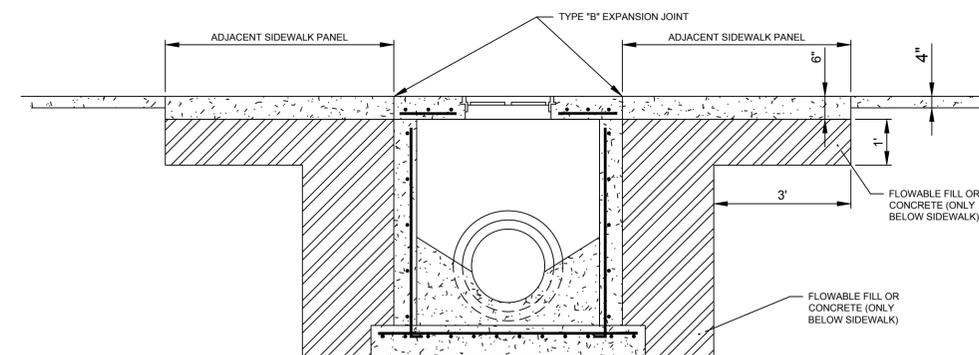
SHEET
D-201



PLAN VIEW



SECTION A-A

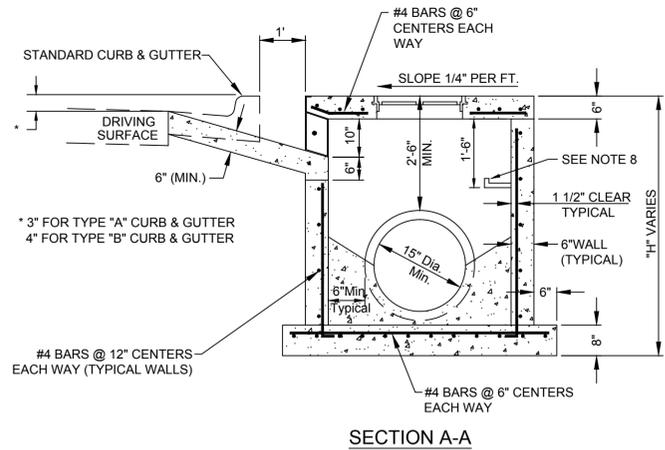


SECTION B-B

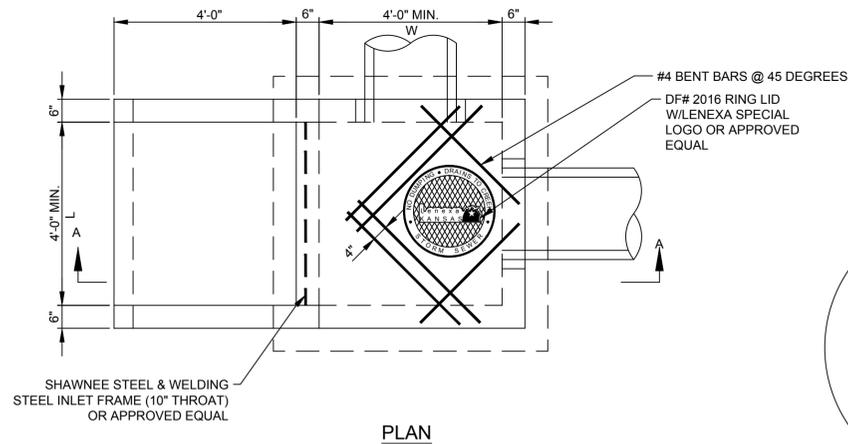
- NOTES:
1. FLOWABLE FILL SHALL BE SUBSIDIARY TO CURB INLETS AND SIDEWALK CONSTRUCTION.

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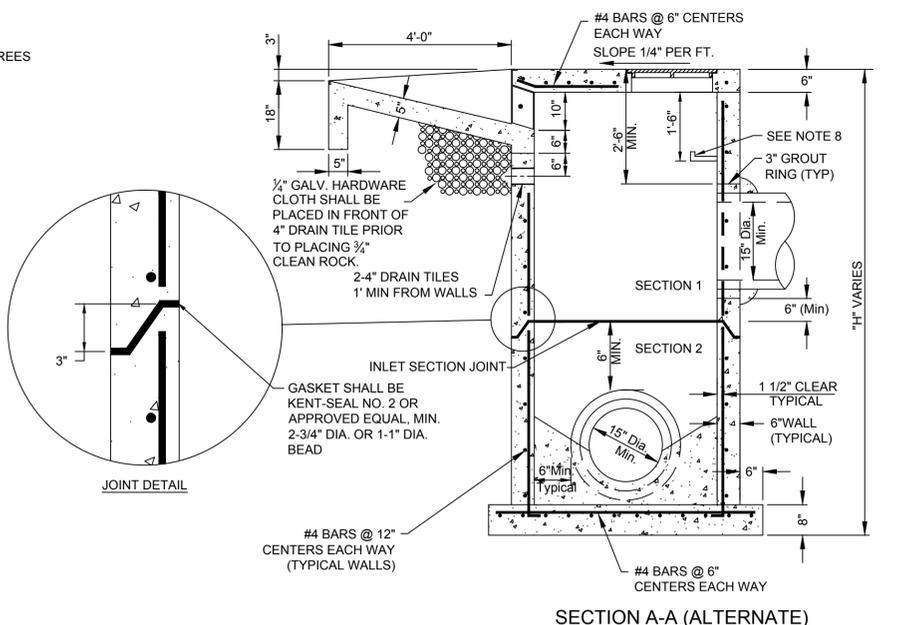




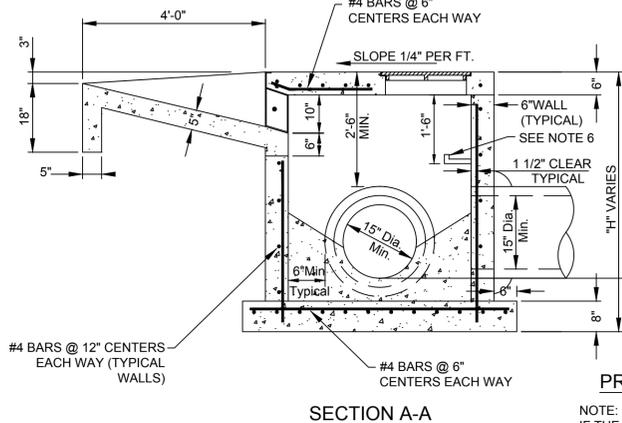
CURB INLET



PLAN



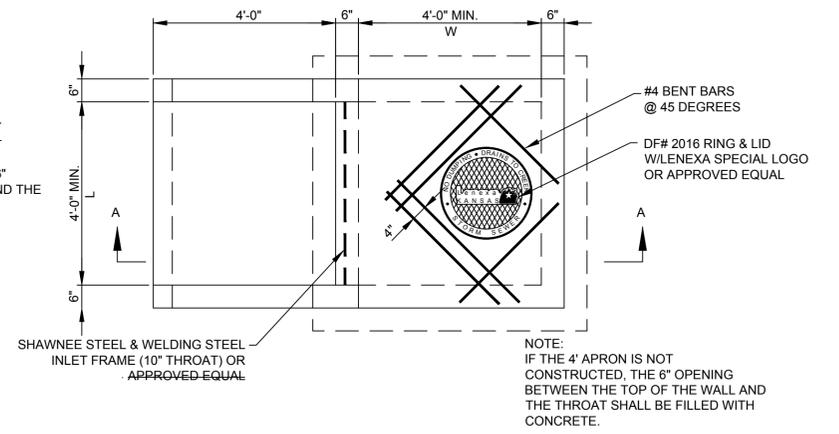
SECTION A-A (ALTERNATE)



SECTION A-A

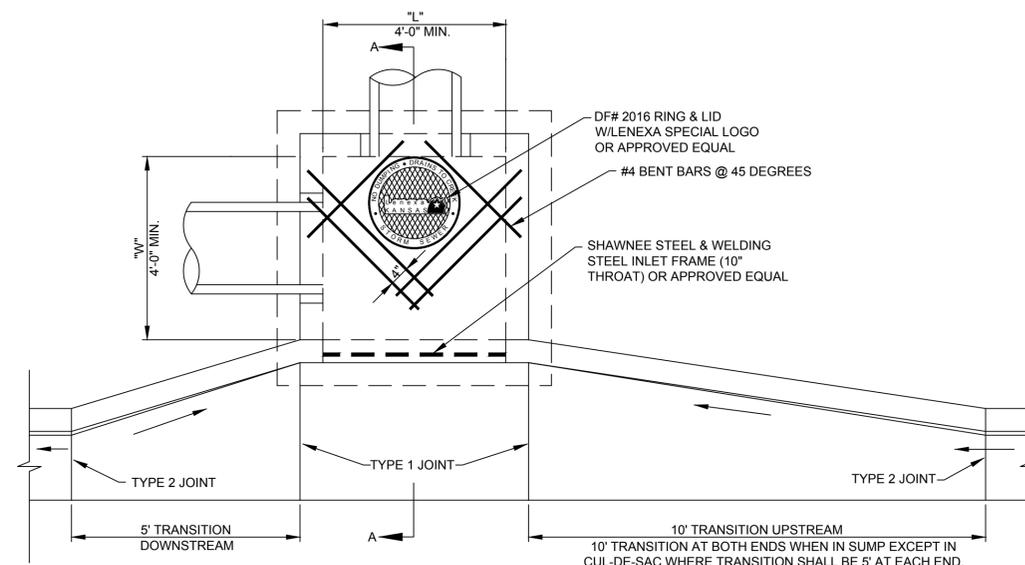
PRE-CAST YARD/AREA INLET

NOTE:
IF THE 4" APRON IS NOT CONSTRUCTED, THE 6" OPENING BETWEEN THE TOP OF THE WALL AND THE THROAT SHALL BE FILLED WITH CONCRETE.

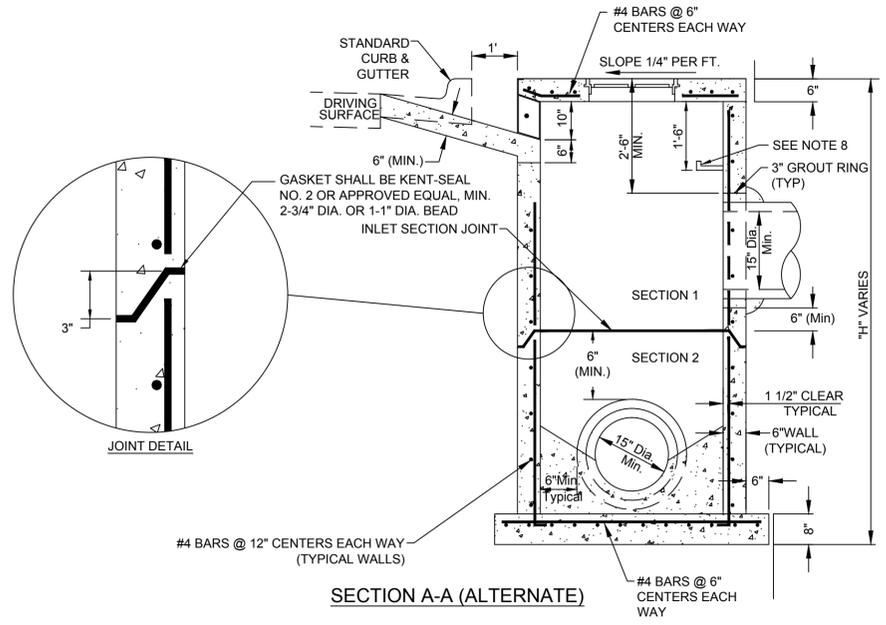


PLAN

NOTE:
IF THE 4" APRON IS NOT CONSTRUCTED, THE 6" OPENING BETWEEN THE TOP OF THE WALL AND THE THROAT SHALL BE FILLED WITH CONCRETE.

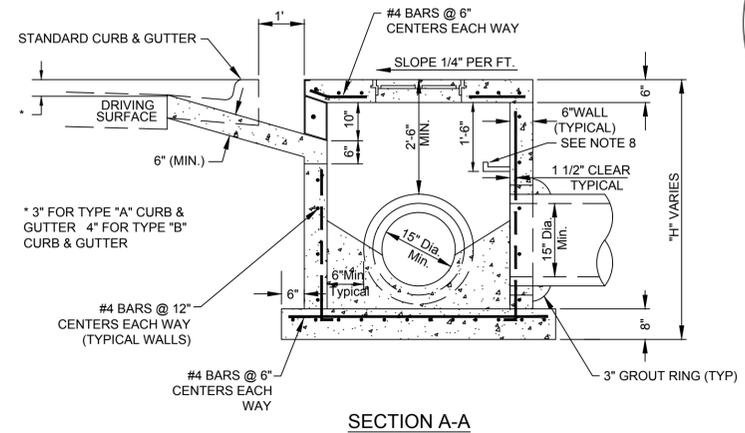


PLAN VIEW



SECTION A-A (ALTERNATE)

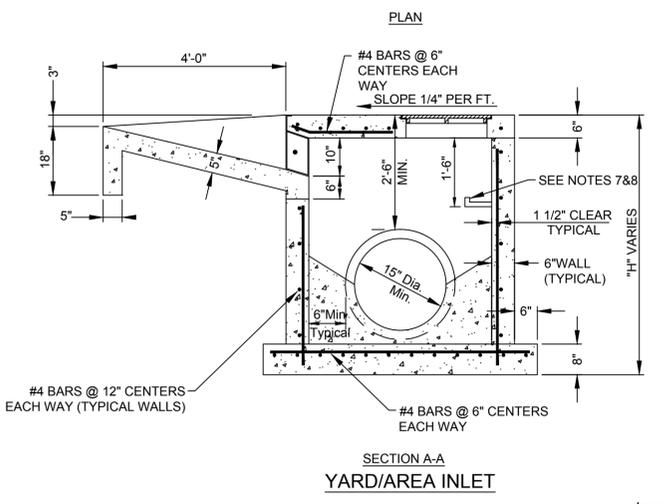
PRE-CAST CURB INLET



SECTION A-A

NOTES:

1. ALL CONCRETE SHALL BE KCMMB-4K.
2. INLET CONSTRUCTION NOTES SHALL LIST THE "L" DIMENSION FIRST, THE "W" DIMENSION SECOND, AND THE "H" DIMENSION THIRD.
3. FLOOR OF INLET SHALL HAVE A SHAPED CONCRETE INVERT TO PROVIDE FOR SMOOTH FLOW.
4. THE MINIMUM DIMENSION BETWEEN TOP OF PIPE AND TOP OF BOX SHALL BE 2'-6" (TYPICAL ALL WALLS).
5. ALL INGRADE INLETS SHALL CONFORM TO STREET GRADE. ALL INLETS IN SUMP SHALL BE LEVEL. BEVEL ALL EXPOSED EDGES WITH 3/4" TRIANGULAR MOLDING.
6. IN INSTANCES WHERE STREET GRADE EQUALS OR EXCEEDS 5%, GUTTER DEFLECTORS SHALL BE UTILIZED. SEE GUTTER DEFLECTOR DETAIL SHEET.
7. STEPS SHALL BE C&B 2102, MA INDUSTRIES PS2-PF OR APPROVED EQUAL. (IN THE EVENT "H" IS EQUAL TO OR GREATER THAN 12 FEET MA INDUSTRIES PS2-PF WILL NOT BE ALLOWED.)
8. STEPS SHALL BE SPACED 1'-4" O.C. VERTICALLY.
9. ANY INLET, YARD INLET, OR JUNCTION BOX OVER 10 FT. IN LENGTH, 6 FT. IN WIDTH, OR 12 FT. IN DEPTH SHALL BE CONSIDERED NON-STANDARD, AND A DETAIL SHALL BE SHOWN. ANY SUCH DETAIL SHALL BE SEALED BY A STRUCTURAL ENGINEER.
10. THE THROAT AND TRANSITION ARE SUBSIDIARY TO THE STRUCTURE.
11. LID SHALL BE SET TRUE TO LINE AND GRADE ALONG CURB PROFILE.

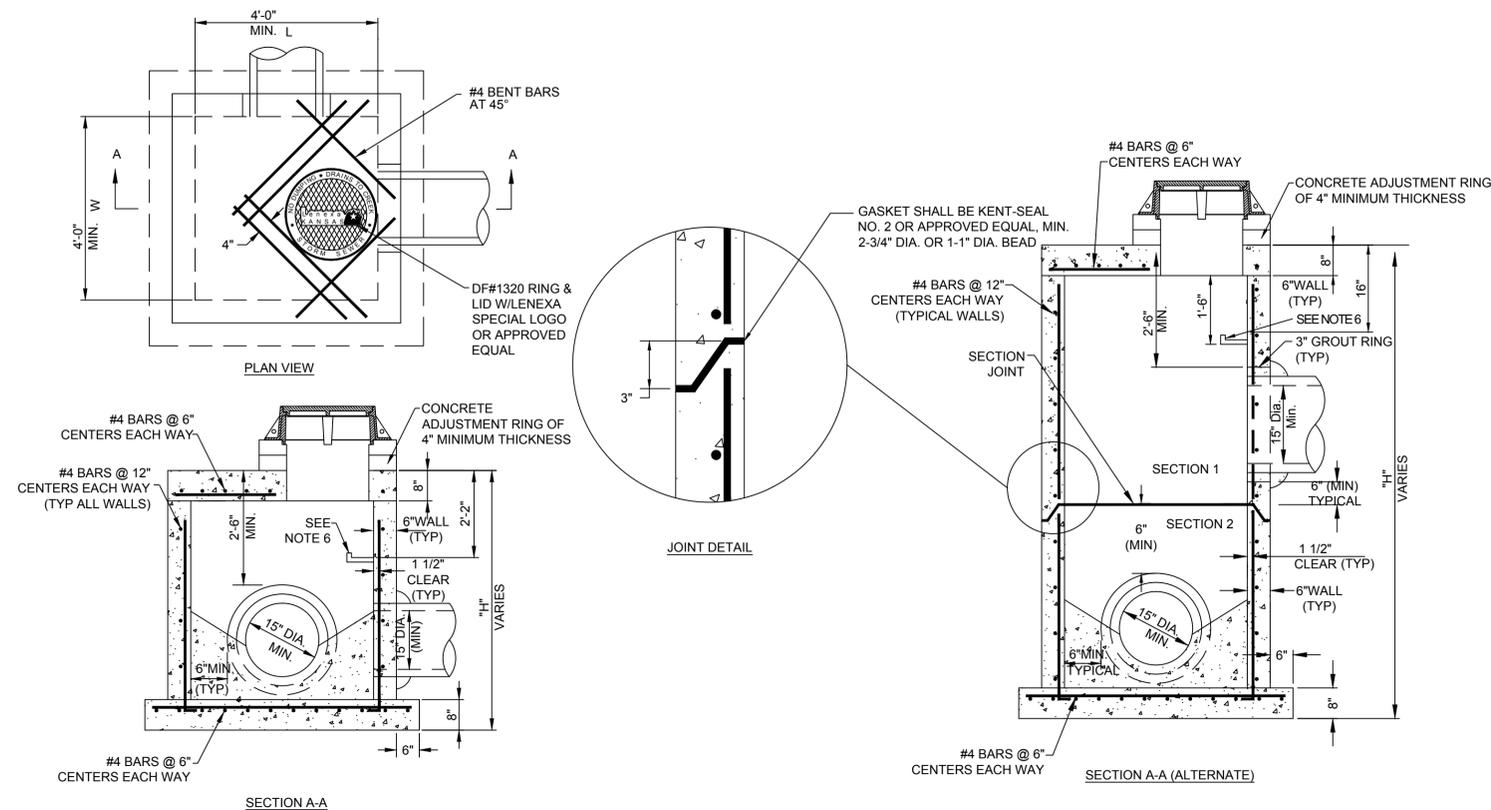


SECTION A-A

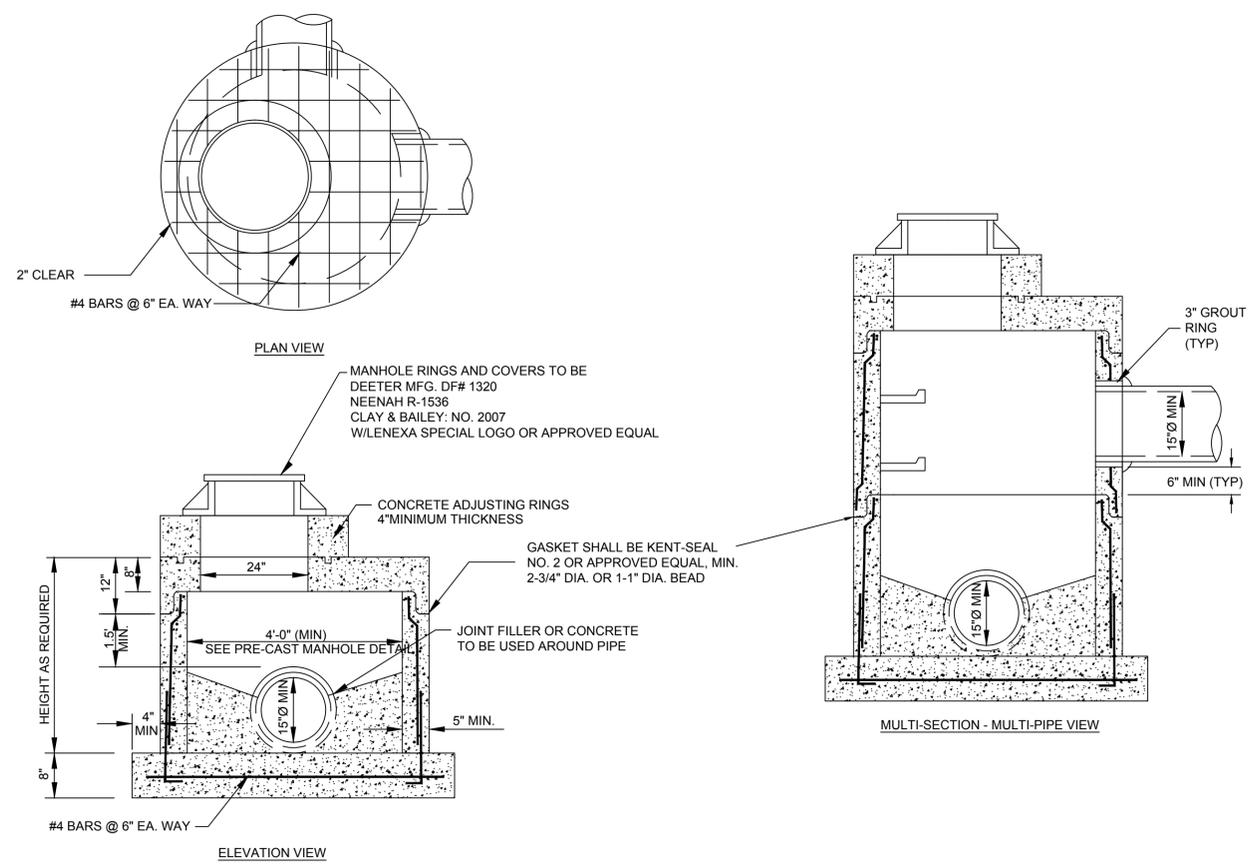
YARD/AREA INLET

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DETAILED:	---	
APPROVED:	---	
STORM SEWER INLETS		SHEET D-300



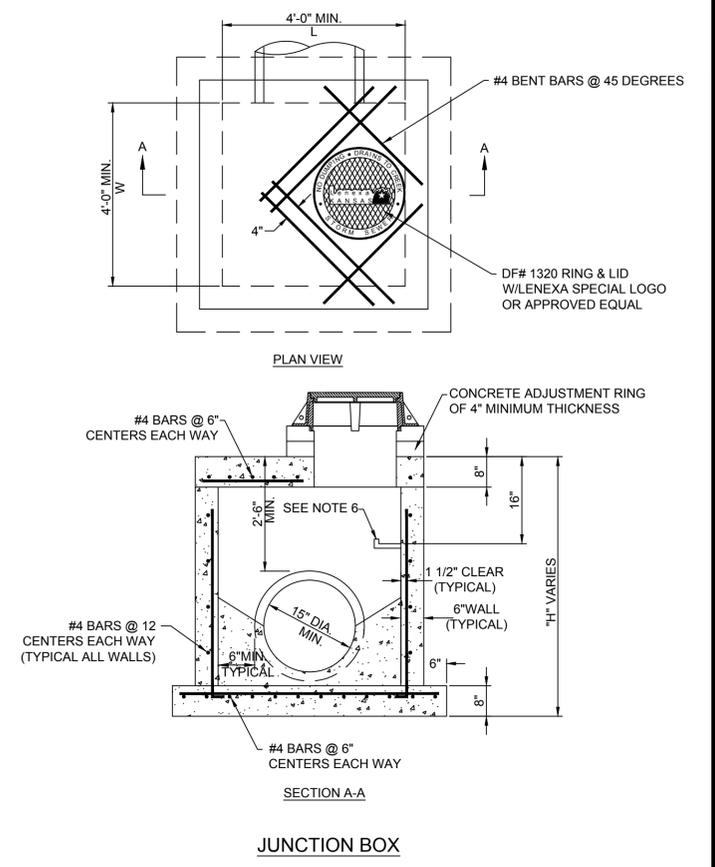
PRE-CAST JUNCTION BOX



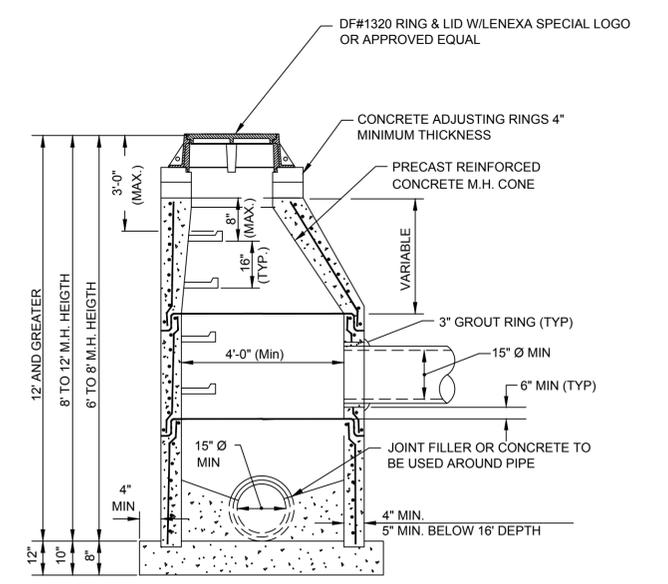
FLATTOP MANHOLE

- NOTES:
- ALL CONCRETE SHALL BE KCMMB-4K.
 - JUNCTION BOX CONSTRUCTION NOTES SHALL LIST THE "L" DIMENSION FIRST, THE "W" DIMENSION SECOND, AND THE "H" DIMENSION THIRD.
 - FLOOR OF JUNCTION BOX SHALL HAVE A SHAPED CONCRETE INVERT TO PROVIDE FOR SMOOTH FLOW.
 - THE MINIMUM DIMENSION BETWEEN TOP OF PIPE AND TOP OF BOX SHALL BE 2'-6" (TYPICAL ALL WALLS).
 - STEPS SHALL BE C&B 2102, MA INDUSTRIES PS2-PF OR APPROVED EQUAL. (IN THE EVENT "H" IS EQUAL TO OR GREATER THAN 12 FEET MA INDUSTRIES PS2-PF WILL NOT BE ALLOWED.)
 - STEPS SHALL BE SPACED 1'-4" O.C. VERTICALLY.
 - WHEN JUNCTION BOX IS INSTALLED UNDER PAVEMENT USE DEETER FOUNDRY RING & LID NO. 1320 OR APPROVED EQUAL.
 - ANY INLET, YARD INLET, OR JUNCTION BOX OVER 10 FT. IN LENGTH, 8 FT IN WIDTH, OR 12 FT. IN DEPTH SHALL BE CONSIDERED NON-STANDARD, AND A DETAIL SHALL BE SHOWN. ANY SUCH DETAIL SHALL BE SEALED BY A STRUCTURAL ENGINEER.
 - PRECAST CONCRETE MANHOLES SHALL CONFORM TO ASTM C478 EXCEPT AS MODIFIED BY THE SPECIFICATIONS.
 - BASES NOT BUILT MONOLITHIC WITH BOTTOM SECTION SHALL BE POURED OF 4000 PSI CONCRETE.
 - MANHOLE MAY BE TRANSITIONED TO 4'-0"Ø 8' ABOVE FLOWLINE OF OUTFALL FOR 5'-0" AND 6'-0" MANHOLES.
 - THE BOTTOM SECTION OF ALL PRECAST MANHOLES NOT BUILT MONOLITHIC WITH THE BASE SHALL BE SET INTO A STEEL REINFORCED POURED CONCRETE BASE A MINIMUM OF 4" (#4 @ 6" E.W.)
 - THE GASKET BETWEEN SECTIONS AND BETWEEN SECTIONS AND CONE SHALL BE KENT-SEAL NO. 2 OR APPROVED EQUAL. MIN 2 3/4"Ø OR 1-1"Ø BEAD.
 - THE CONCRETE USED IN THE CONSTRUCTION OF PRECAST REINFORCED CONCRETE MANHOLES SHALL BE KCMMB-4K.
 - ONLY ECCENTRIC MANHOLE CONES WILL BE ALLOWED UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
 - PIPES SHALL NOT ENTER THE CONE SECTION OF MANHOLE. A FLATTOP MANHOLE SHALL BE USED WHEREVER ELEVATION WOULD REQUIRE ENTRY IN THE CONE AREA.
 - BASES NOT BUILT MONOLITHIC WITH BOTTOM SECTION SHALL BE POURED OF KCMMB-4K CONCRETE.
 - THE BOTTOM SECTION OF ALL PRECAST MANHOLES NOT BUILT MONOLITHIC WITH THE BASE SHALL BE SET INTO A POURED REINFORCED CONCRETE BASE.
 - ONLY FLAT-TOP LIDS WILL BE ALLOWED (SEE DETAIL THIS SHEET).
 - FOR REQUIREMENTS FOR STEPS, SEE STANDARD DETAIL FOR PRECAST MANHOLE.
 - THERE SHALL BE A MINIMUM OF 12" OF WALL BETWEEN INFLOW AND OUTFLOW FOR MANHOLES.

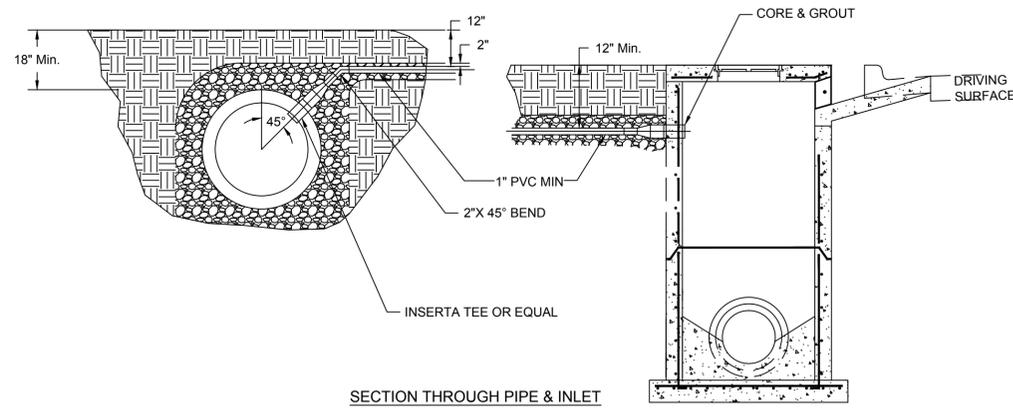
- NOTES:
- PRECAST CONCRETE MANHOLES SHALL CONFORM TO ASTM C478 EXCEPT AS MODIFIED BY THE SPECIFICATIONS.
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 - THE BOTTOM SECTION OF ALL PRECAST MANHOLES NOT BUILT MONOLITHIC WITH THE BASE SHALL BE SET INTO A STEEL REINFORCED POURED CONCRETE BASE A MINIMUM OF 4" (#4 @ 6" E.W.)
 - THE GASKET BETWEEN SECTIONS AND BETWEEN SECTIONS AND CONE SHALL BE KENT-SEAL NO. 2 OR APPROVED EQUAL. MIN 2 3/4"Ø OR 1-1"Ø BEAD.
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 - PIPES SHALL NOT ENTER THE CONE SECTION OF MANHOLE. A FLATTOP MANHOLE SHALL BE USED WHEREVER ELEVATION WOULD REQUIRE ENTRY IN THE CONE AREA.



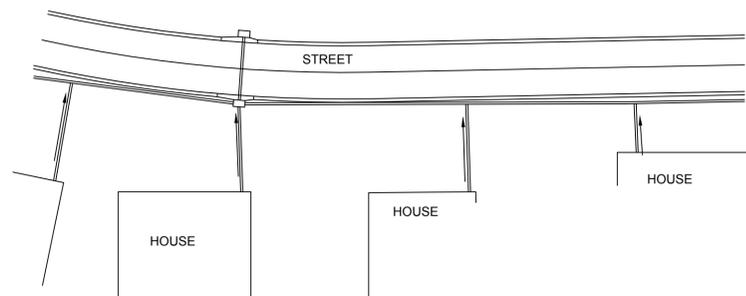
JUNCTION BOX



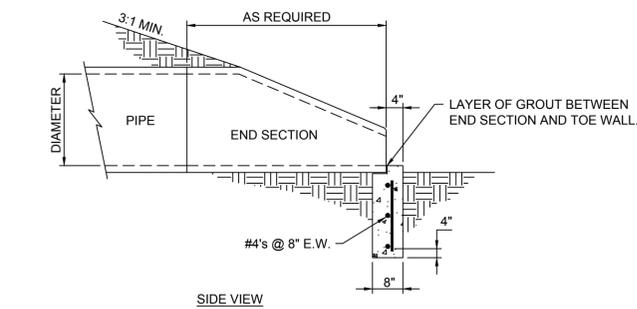
PRE-CAST MANHOLE



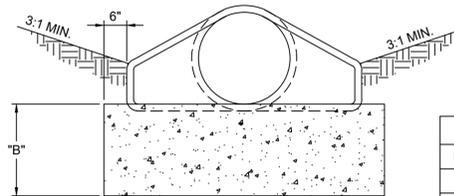
SECTION THROUGH PIPE & INLET



SUMP PUMP CONNECTION TO STORM SEWER



SIDE VIEW



FRONT VIEW

TABLE

TOE WALL DEPTH	"B"
12" - 21"	18"
24" - 48"	24"
54" - 66"	36"

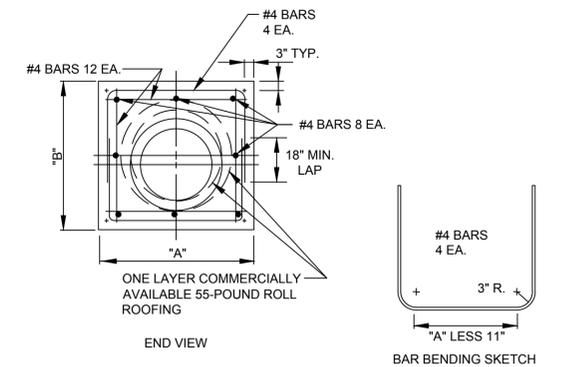
NOTES:

1. THE DEPTH OF THE TOE WALL SHALL BE PER TABLE. IF BEDROCK IS ENCOUNTERED A MINIMUM OF 12" INTO BEDROCK IS REQUIRED.
2. ALL CONCRETE SHALL BE KCMMB-4K.

END SECTION WITH TOE WALL

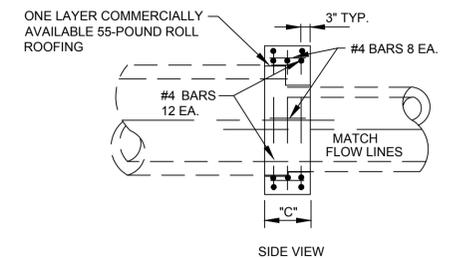
TABLE OF DIMENSIONS

PIPE SIZE (INCHES)	DIMENSIONS	
	"A" & "B" (FT.-IN.)	"C" (FT.-IN.)
12	2-8	1-0
15	3-0	1-0
18	3-3	1-0
	3-3	1-0
	3-3	1-0
21	3-6	1-0
	3-6	1-0
	3-6	1-0
24	3-10	1-0
	3-10	1-0
	3-10	1-0
30	4-5	1-4
	4-5	1-4
	4-5	1-4
36	5-0	1-4
	5-0	1-4
	5-0	1-4
42	5-7	1-4
	5-7	1-4
	5-7	1-4
48	6-2	1-4
	6-2	1-4
	6-2	1-4
54	7-1	1-8
	7-1	1-8
	7-1	1-8
60	7-8	1-8
	7-8	1-8
	7-8	1-8
66	8-3	2-0
	8-3	2-0
	8-3	2-0
72	8-10	2-0
	8-10	2-0
	8-10	2-0



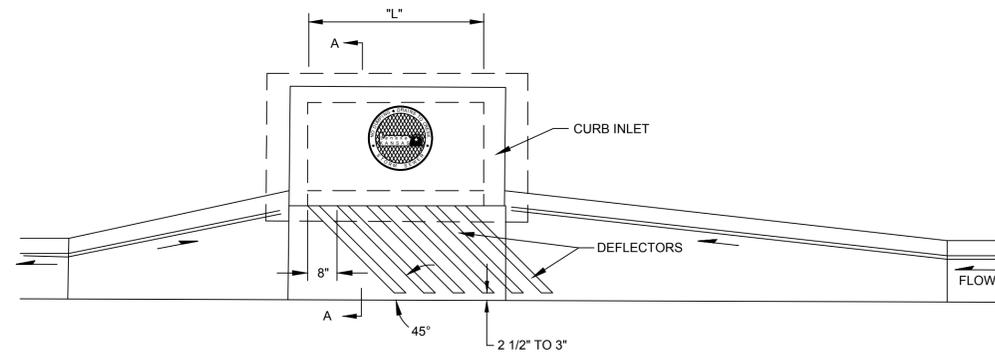
END VIEW

BAR BENDING SKETCH

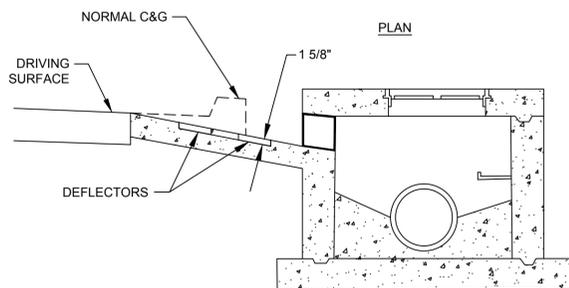


SIDE VIEW

CONCRETE COLLAR



PLAN



SECTION A-A

FORMS SHOULD BE WELL OILED AND HAND PLACED AT TIME OF POUR.

AFTER INITIAL SET, REMOVE DEFLECTOR CHANNEL FORMS AND FINISH SURFACE OF CONCRETE.

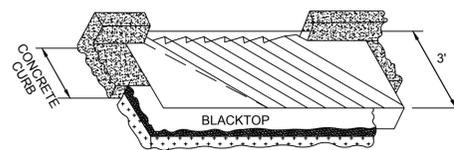
SPACING

"L"	NO. OF DEFLECTORS
4'	6
6'	9
8'	12

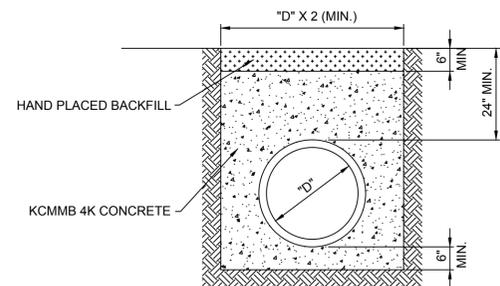


FORM DETAIL

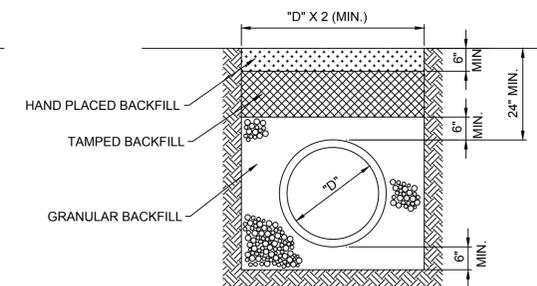
GUTTER DEFLECTOR



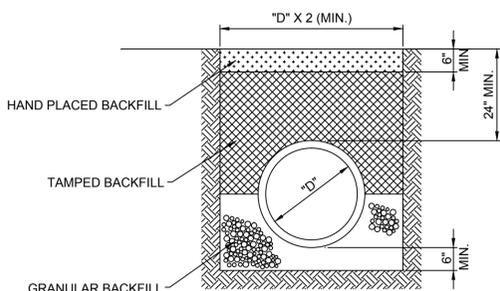
ISOMETRIC



CONCRETE ENCASMENT



HDPE/PVC PIPE BEDDING



FIRST CLASS BEDDING (RCP)

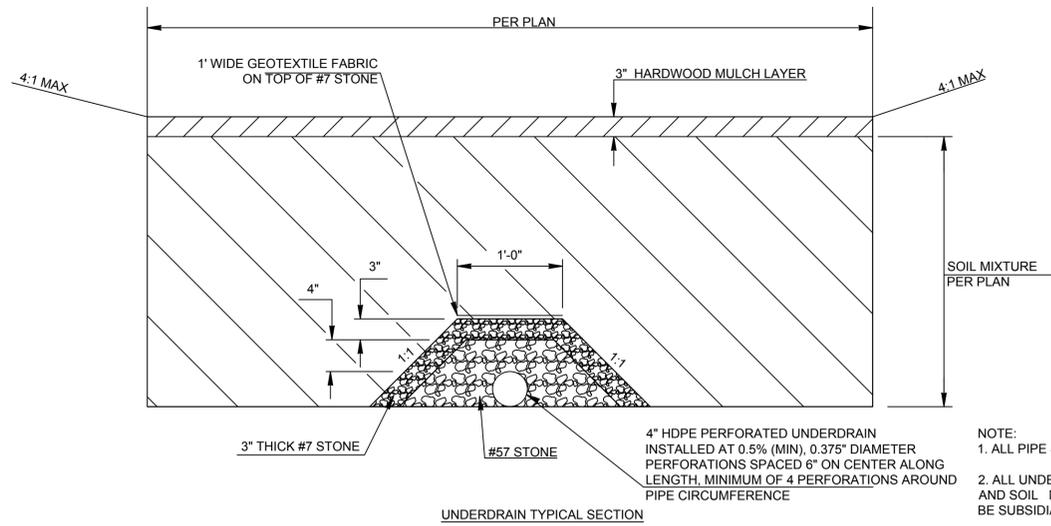
PIPE BEDDING

NOTES:

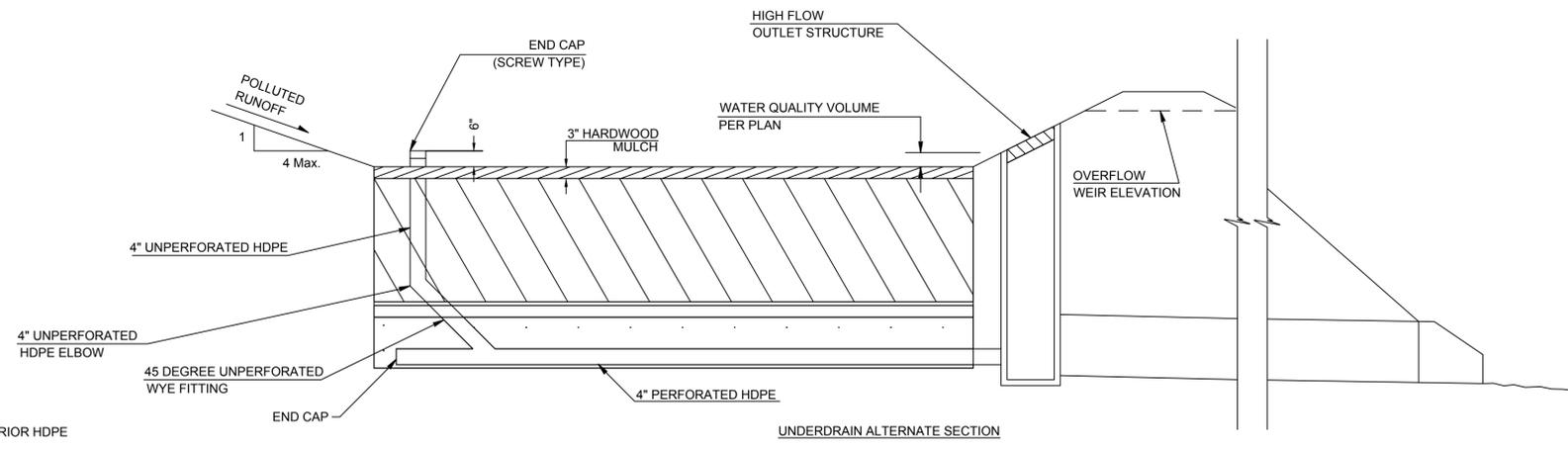
1. GRANULAR FILL SHALL BE PB-1, PB-2 OR PB-3 DESIGNATION FOR CONCRETE PIPE OR SHALL BE PB-2 DESIGNATION FOR HDPE/PVC PIPE, AND SHALL BE PLACED IN 6" LIFTS AND COMPACTED BY SLICING WITH A SHOVEL.
2. TAMPED FILL SHALL BE FINELY DIVIDED, JOB EXCAVATED MATERIAL FREE OF DEBRIS, ORGANIC MATERIAL, AND STONES, COMPACTED TO TYPE AA MR-5 COMPACTION.
3. HAND PLACED FILL SHALL BE FINELY DIVIDED MATERIAL, FREE OF DEBRIS AND STONES, COMPACTED TO TYPE AA MR-5 COMPACTION.
4. ALL PIPE SHALL BE INSPECTED PRIOR TO BACKFILL. ALL PIPE COVERED PRIOR TO INSPECTION SHALL BE UNCOVERED AT THE CONTRACTORS EXPENSE.
5. CONC. COLLAR DIMENSIONS "A" & "B" MAY BE REDUCED UPON APPROVAL OF THE CITY ENGINEER IF THERE ARE CONFLICTS WITH EXISTING OR PROPOSED CONDITIONS.
6. WHENEVER AN INLET OR JUNCTION BOX IS PRESENT WITHIN THE PROPERTY, THE SUMP PUMP LINE SHALL CONNECT TO THE STRUCTURE.
7. MINIMUM COVER OVER THE SUMP PUMP LINE WITHIN PUBLIC RIGHT OF WAY SHALL BE 12".
8. GRANULAR BACKFILL (PB-2) CONCRETE PIPE (PB-2) HDPE/PVC PIPE (PB-3) SHALL BE USED FOR PUMP LINE WITHIN THE RIGHT OF WAY AND SHALL BE INSTALLED TO THE DIMENSIONS ON THIS DETAIL. SEE KDOT STANDARD DETAIL 1107 FOR PB-2 & PB-3.
9. MAXIMUM TRENCH WIDTH ON THE SUMP PUMP LINE SHALL BE 12" EXCEPT AT THE STORM SEWER CONNECTION.
10. DEFLECTOR CHANNELS ARE TO BE USED IN CONJUNCTION WITH CURB INLETS WHEN LONGITUDINAL GRADE EQUALS OR EXCEEDS 5%.
11. IN LIEU OF CAST-IN-PLACE DEFLECTORS, THE SHAWNEE STEEL & WELDING, INC. DEFLECTORS FOR IN-GRADE INLETS, OR EQUAL, MAY BE USED.
12. IF BEDROCK IS ENCOUNTERED A MINIMUM OF 12" INTO BEDROCK IS REQUIRED.
13. ALL CONCRETE SHALL BE KCMMB-4K.

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REVISED DATE:	---	
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APPROVED:	---	



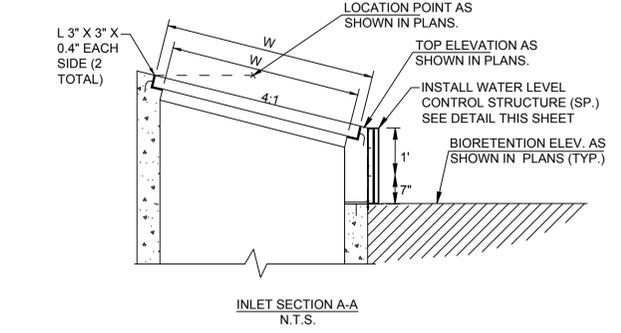
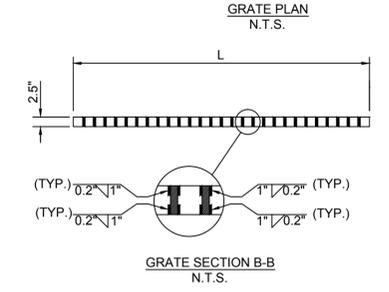
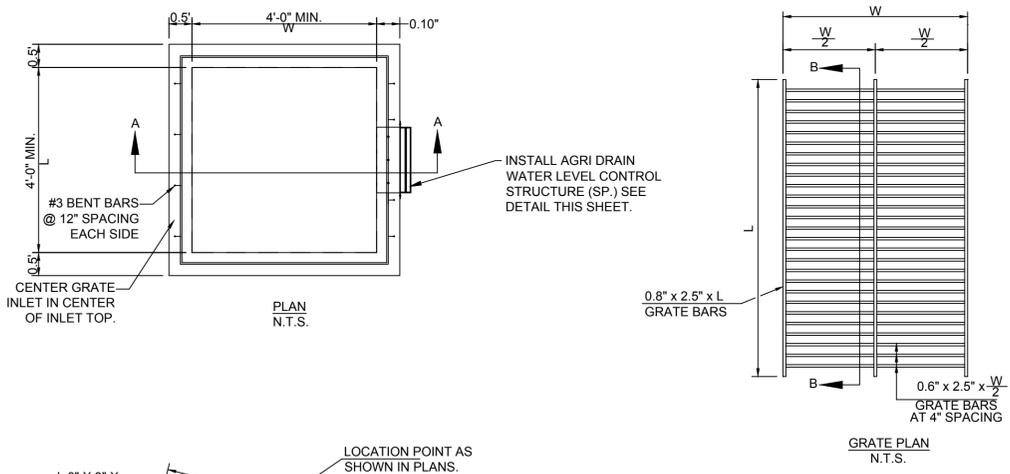
- NOTE:
1. ALL PIPE SHALL BE SMOOTH INTERIOR HDPE
 2. ALL UNDERDRAIN, GEOTEXTILE, AGGREGATE, AND SOIL MIXTURE FOR BIORETENTION SHALL BE SUBSIDIARY TO "BIORETENTION FACILITY."
 3. BIORETENTION FACILITY SHALL INCLUDE VEGETATED PRETREATMENT OR OTHER METHOD PER APWA BMP MANUAL TO SUFFICIENTLY REDUCE INFLOW VELOCITY AND SEDIMENT LOADING



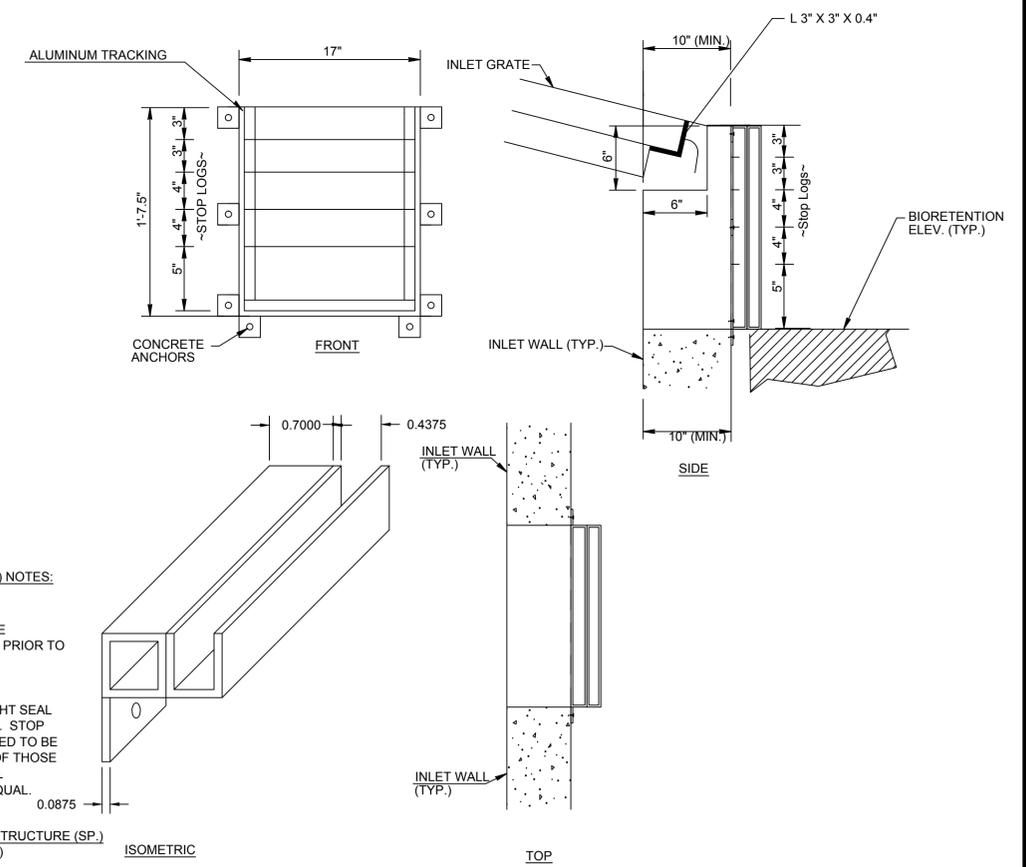
Sieve Size	Percent Passing	
	AASHTO No. 57	AASHTO No. 7
50mm	2-inch	-
37.5 mm	1.5-inch	100 min.
25 mm	1-inch	95-100
19.0 mm	0.75-inch	-
12.5 mm	0.5-inch	25-60
9.5 mm	0.375-inch	-
4.74 mm	No. 4	10 max.
2.36 mm	No. 8	5 max.
1.18 mm	No. 16	-

"NO. 7 & NO. 57 AGGREGATE SHALL BE DOUBLE WASHED TO REDUCE SUSPENDED SOLIDS & POTENTIAL FOR CLOGGING. THE AGGREGATE SHALL BE PLACED AS SHOWN IN THE CONTRACT DRAWINGS"

WATER QUALITY UNDERDRAIN



- WATER QUALITY AREA INLET NOTES**
1. BASE AND WALLS OF GRATE AREA INLET SHALL CONFORM TO LENEXA'S STANDARD DETAIL (AREA INLET DETAIL).
 2. WATER QUALITY AREA INLETS SHALL BE PAID FOR AS WATER QUALITY AREA INLET". (LxW)
 3. SHOP DRAWINGS SHOWING DETAILED DIMENSIONS AND FABRICATION INFORMATION SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION OR INSTALLATION.
 4. AGRI DRAIN WATER LEVEL CONTROL STRUCTURE SHALL BE SUBSIDIARY TO "WATER QUALITY AREA INLET".



- WATER LEVEL CONTROL STRUCTURE (SP.) NOTES:**
1. SHOP DRAWINGS SHOWING DETAILED DIMENSIONS AND FABRICATION INFORMATION SHALL BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION OR INSTALLATION.
 2. STOP LOGS SHALL PROVIDE WATER TIGHT SEAL UNDER 1 FOOT OF PRESSURE HEAD (MIN.). STOP LOGS, WALLS, AND RUNNERS ARE INTENDED TO BE OF SAME CONFIGURATION AND QUALITY OF THOSE FOUND IN AGRI DRAIN INLET WATER LEVEL CONTROL STRUCTURES OR APPROVED EQUAL.

WATER QUALITY AREA INLET

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REVISED DATE: ---
 DETAILED: ---
 APPROVED: ---

Lenexa
 KANSAS

STORM SEWER 2

SHEET D-303

SECTION 9003 BIORETENTION FACILITIES

9003.1 DESCRIPTION

BIORETENTION FACILITIES ARE SMALL LANDSCAPED BASINS INTENDED TO PROVIDE WATER QUALITY MANAGEMENT BY FILTERING STORMWATER RUNOFF BEFORE RELEASE INTO STORM DRAIN SYSTEMS. THIS WORK SHALL CONSIST OF INSTALLING BIORETENTION FACILITIES AS SPECIFIED IN THE CONTRACT DOCUMENTS, INCLUDING ALL MATERIALS, EQUIPMENT, LABOR AND SERVICES REQUIRED TO PERFORM THE WORK.

9003.2 MATERIALS

A. BIORETENTION SOIL MIXTURE: THE BIORETENTION SOIL MIXTURE (BSM) IS A MIXTURE OF PLANTING SOIL, COMPOST, AND SAND CONSISTING OF THE FOLLOWING:

ITEM	COMPOSITION BY VOLUME	REFERENCE
PLANTING SOIL	30%	SEE BELOW.
ORGANIC COMPOST	20%	SEE BELOW.
SAND	50%	ASTM C33 FINE AGGREGATE

B. **PLANTING SOIL:** THE USDA TEXTURAL CLASSIFICATION OF THE PLANTING SOIL FOR THE BSM SHALL BE LOAMY SAND OR SANDY LOAM. THE PLANTING SOIL SHALL BE THE BEST AVAILABLE ON SITE MATERIAL OR FURNISHED. ADDITIONALLY, THE PLANTING SOIL SHALL BE TESTED AND MEET THE FOLLOWING CRITERIA OR AS APPROVED BY THE ENGINEER:

ITEM	PERCENT BY WEIGHT	TEST METHOD
SAND (2.0 – 0.050 mm)	50 – 85%	AASHTO T88
SILT (0.050 – 0.002 mm)	0 – 50%	AASHTO T88
CLAY (LESS THAN 0.002 MM)	2 – 5%	AASHTO T88
ORGANIC MATTER	3 – 10%	AASHTO T194

THE TEXTURAL ANALYSIS FOR THE PLANTING SOIL SHALL BE AS FOLLOWS:

ASTM E11 SIEVE SIZE	MINIMUM PERCENT PASSING BY WEIGHT
2 IN.	100
NO. 4	90
NO. 10	80

AT LEAST 45 DAYS PRIOR TO THE START OF CONSTRUCTION OF BIORETENTION FACILITIES, THE CONTRACTOR SHALL SUBMIT THE SOURCE AND TESTING RESULTS OF THE PLANTING SOIL FOR THE BSM TO THE ENGINEER FOR APPROVAL. NO TIME EXTENSIONS WILL BE GRANTED SHOULD THE PROPOSED PLANTING SOIL FAIL TO MEET THE MINIMUM REQUIREMENTS STATED ABOVE. ONCE A STOCKPILE OF THE PLANTING SOIL HAS BEEN SAMPLED, NO MATERIAL SHALL BE ADDED TO THE STOCKPILE.

C. **ORGANIC COMPOST:** COMPOST IS A HOMOGENEOUS AND FRIABLE MIXTURE OF PARTIALLY DECOMPOSED ORGANIC MATTER, WITH OR WITHOUT SOIL, RESULTING FROM COMPOSTING, WHICH IS A MANAGED PROCESS OF BIO-OXIDATION OF A SOLID HETEROGENEOUS ORGANIC SUBSTRATE INCLUDING A THERMOPHILIC PHASE.

COMPOST IS DEEMED ACCEPTABLE IF IT MEETS 2 OF THE FOLLOWING REQUIREMENTS:

- C/N RATIO <= 25;
- OXYGEN UPTAKE RATE <= 150 MG O2/KG VOLATILE SOLIDS PER HOUR; AND
- COMPOST MUST NOT CONTAIN MORE THAN 1 PERCENT FOREIGN MATTER. FOREIGN MATTER IS DEFINED AS: "ANY MATTER OVER A 2 MM DIMENSION THAT RESULTS FROM HUMAN INTERVENTION AND HAVING ORGANIC OR INORGANIC CONSTITUENTS SUCH AS METAL, GLASS AND SYNTHETIC POLYMERS (E.G. PLASTIC AND RUBBER) THAT MAY BE PRESENT IN THE COMPOST BUT EXCLUDING MINERAL SOILS, WOODY MATERIAL AND ROCKS."
- FOREIGN MATTER LESS THAN 1 PERCENT BY WEIGHT MUST NOT EXCEED 12.5 MM IN ANY DIMENSION.

D. **THE BIORETENTION SOIL MIXTURE (BSM)** SHALL BE A UNIFORM MIX, FREE OF PLANT RESIDUE, STONES, STUMPS, ROOTS OR

OTHER SIMILAR OBJECTS LARGER THAN TWO INCHES EXCLUDING MULCH. NO OTHER MATERIALS OR SUBSTANCES SHALL BE MIXED OR DUMPED WITHIN THE BIORETENTION AREA THAT MAY BE HARMFUL TO PLANT GROWTH, OR PROVE A HINDRANCE TO THE PLANTING OR MAINTENANCE OPERATIONS.

1. THE BIORETENTION SOIL MIXTURE SHALL BE TESTED AND MEET THE FOLLOWING CRITERIA:

ITEM	CRITERIA	Test Method
CORRECTED PH	5.5-7.5	*
MAGNESIUM PHOSPHORUS (PHOSPHATE - P ₂ O ₅)	MINIMUM 32 PPM	*
POTASSIUM (K ₂ O)	MINIMUM 78 PPM	*
SOLUBLE SALTS	NOT TO EXCEED 500 PPM	*

* USE AUTHORIZED SOIL TEST PROCEDURES.

- SHOULD THE PH FALL OUTSIDE OF THE ACCEPTABLE RANGE, IT MAY BE MODIFIED WITH LIME (TO RAISE) OR AMMONIUM SULFATE (TO LOWER). THE LIME OR AMMONIUM SULFATE MUST BE MIXED UNIFORMLY INTO THE BSM PRIOR TO USE IN BIORETENTION FACILITIES.
- SHOULD THE BSM NOT MEET THE MINIMUM REQUIREMENT FOR MAGNESIUM, IT MAY BE MODIFIED WITH MAGNESIUM SULFATE. LIKEWISE, SHOULD THE BSM NOT MEET THE MINIMUM REQUIREMENT FOR POTASSIUM, IT MAY BE MODIFIED WITH POTASH. MAGNESIUM SULFATE AND POTASH MUST BE MIXED UNIFORMLY INTO THE BSM PRIOR TO USE IN BIORETENTION FACILITIES.
- PLANTING SOIL AND/OR BSM THAT FAILS TO MEET THE MINIMUM REQUIREMENTS SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. MIXING OF THE CORRECTIVE ADDITIVES TO THE BSM IS INCIDENTAL AND SHALL BE AT THE CONTRACTOR'S EXPENSE.
- MIXING OF THE BSM TO A HOMOGENEOUS CONSISTENCY SHALL BE DONE TO THE SATISFACTION OF THE ENGINEER. UPON APPROVAL OF ALL REQUIREMENTS AND TESTING ABOVE, THE BSM SHALL BE STOCKPILED, AND NO MATERIAL SHALL BE ADDED TO THE BSM IN THE STOCKPILE OR DURING TRANSPORT TO THE BIORETENTION FACILITY.

E. OTHER MATERIALS

MATERIAL	SPECIFICATION
NO. 57 AGGREGATE	ASTM D448
NO. 7 AGGREGATE	ASTM D448
4 - INCH HDPE PLASTIC PIPE UNDERDRAIN	AASHTO M252
GEOTEXTILE FABRIC	AASHTO M288
MULCH, 2X SHREDDED HARDWOOD BARK	SEE BELOW
WATER	SEE BELOW.
LIME	ASTM C25
AMMONIUM SULFATE	SEE BELOW.
MAGNESIUM SULFATE	SEE BELOW.
POTASH	SEE BELOW.

- SHREDDED HARDWOOD MULCH:** SHREDDED HARDWOOD MULCH SHALL BE AGED A MINIMUM OF 6 MONTHS AND CONSIST OF THE BARK AND WOOD (50/50) FROM HARDWOOD TREES WHICH HAS BEEN MILLED AND SCREENED TO A MAXIMUM 4 IN. PARTICLE SIZE AND PROVIDE A UNIFORM TEXTURE FREE FROM SAWDUST, CLAY, SOIL, FOREIGN MATERIALS, AND ANY ARTIFICIALLY INTRODUCED CHEMICAL COMPOUNDS THAT WOULD BE DETRIMENTAL TO PLANT OR ANIMAL LIFE.
- AGGREGATE:** NO. 7 AND NO. 57 AGGREGATE SHALL BE DOUBLE-WASHED TO REDUCE SUSPENDED SOLIDS AND POTENTIAL FOR CLOGGING. THE AGGREGATE SHALL BE PLACED AS SHOWN IN THE CONTRACT DRAWINGS.
- WATER:** WATER USED IN THE PLANTING, ESTABLISHING, OR CARING FOR VEGETATION SHALL BE FREE FROM ANY SUBSTANCE THAT IS INJURIOUS TO PLANT LIFE.
- LIME:** LIME SHALL CONTAIN NOT LESS THAN 85 PERCENT CALCIUM AND MAGNESIUM CARBONATES. DOLOMITIC (MAGNESIUM) LIME SHALL CONTAIN AT LEAST 10 PERCENT MAGNESIUM AS MAGNESIUM OXIDE AND 85 PERCENT CALCIUM AND MAGNESIUM CARBONATES. LIME SHALL CONFORM TO THE FOLLOWING GRADATION:

SIEVE SIZE	MINIMUM PERCENT PASSING BY WEIGHT
NO. 10	100
NO. 20	98
NO. 100	50

- AMMONIUM SULFATE:** AMMONIUM SULFATE SHALL BE A CONSTITUENT OF AN APPROVED HORTICULTURAL PRODUCT PRODUCED AS A FERTILIZER FOR SUPPLYING NITROGEN AND AS A SOIL ACIDIFIER.
- MAGNESIUM SULFATE:** MAGNESIUM SULFATE SHALL BE A CONSTITUENT OF AN APPROVED HORTICULTURAL PRODUCT PRODUCED AS A FERTILIZER.
- POTASH:** POTASH (POTASSIUM OXIDE) SHALL BE A CONSTITUENT OF AN APPROVED HORTICULTURAL PRODUCT PRODUCED AS A FERTILIZER.

9003.3 CONSTRUCTION

BIORETENTION FACILITIES SHALL NOT BE CONSTRUCTED UNTIL ALL CONTRIBUTING DRAINAGE AREAS ARE PERMANENTLY STABILIZED AGAINST EROSION AND SEDIMENTATION AS SHOWN ON THE CONTRACT PLANS AND TO THE SATISFACTION OF THE ENGINEER. ANY DISCHARGE OF SEDIMENT THAT AFFECTS THE PERFORMANCE OF THE CELL WILL REQUIRE RECONSTRUCTION OF THE CELL TO RESTORE ITS DEFINED PERFORMANCE. NO HEAVY EQUIPMENT SHALL OPERATE WITHIN THE PERIMETER OF A BIORETENTION FACILITY DURING UNDERDRAIN PLACEMENT, BACKFILLING, PLANTING, OR MULCHING OF THE FACILITY.

A. **EXCAVATION:** IF THE BIORETENTION FACILITY IS TO BE USED AS A SEDIMENT BASIN THE BIORETENTION FACILITY SHALL BE EXCAVATED TO THE DIMENSIONS, SIDE SLOPES, AND **1 FOOT ABOVE** THE BOTTOM OF THE BIORETENTION SOIL MIXTURE ELEVATIONS SHOWN ON THE CONTRACT PLANS. ANY SEDIMENT FROM CONSTRUCTION OPERATIONS DEPOSITED IN THE BIORETENTION FACILITY SHALL BE COMPLETELY REMOVED FROM THE FACILITY AFTER ALL VEGETATION, INCLUDING LANDSCAPING WITHIN THE DRAINAGE AREA OF THE BIORETENTION FACILITY, HAS BEEN ESTABLISHED. THE EXCAVATION LIMITS SHALL THEN BE FINAL GRADED TO THE DIMENSIONS, SIDE SLOPES, AND **FINAL** ELEVATIONS SHOWN ON THE CONTRACT PLANS. EXCAVATORS AND BACKHOES, OPERATING ON THE GROUND ADJACENT TO THE BIORETENTION FACILITY, SHALL BE USED TO EXCAVATE THE FACILITY IF POSSIBLE. LOW GROUND-CONTACT PRESSURE EQUIPMENT OR, IF APPROVED BY THE ENGINEER, BY EXCAVATORS AND/OR BACKHOES OPERATING ON THE GROUND ADJACENT TO THE BIORETENTION FACILITY. LOW GROUND-CONTACT PRESSURE EQUIPMENT IS PREFERRED ON BIORETENTION FACILITIES TO MINIMIZE DISTURBANCE TO ESTABLISHED AREAS AROUND PERIMETER OF CELL. NO HEAVY EQUIPMENT SHALL BE USED WITHIN THE PERIMETER OF THE BIORETENTION FACILITY BEFORE, DURING, OR AFTER THE PLACEMENT OF THE BSM.

EXCAVATED MATERIALS SHALL BE REMOVED FROM THE BIORETENTION FACILITY SITE. EXCAVATED MATERIALS SHALL BE USED OR DISPOSED OF IN CONFORMANCE WITH THE PROJECT SPECIFICATIONS.

B. **ROTO-TILLING:** AFTER PLACING THE UNDERDRAIN AND AGGREGATE AND BEFORE THE BSM, THE BOTTOM OF THE EXCAVATION SHALL BE ROTO-TILLED TO A MINIMUM DEPTH OF 6 INCHES TO ALLEVIATE ANY COMPACTION OF THE FACILITY BOTTOM. ANY SUBSTITUTE METHOD FOR ROTO-TILLING MUST BE APPROVED BY THE ENGINEER PRIOR TO USE. ANY PONDED WATER SHALL BE REMOVED FROM THE BOTTOM OF THE FACILITY AND THE SOIL SHALL BE FRIABLE BEFORE ROTO-TILLING. THE ROTO-TILLING SHALL NOT BE DONE WHERE THE SOIL SUPPORTS THE AGGREGATE BED UNDERNEATH THE "UNDERDRAIN FOR BIORETENTION". (SEE "UNDERDRAIN FOR BIORETENTION" SPECIFICATIONS BELOW.)

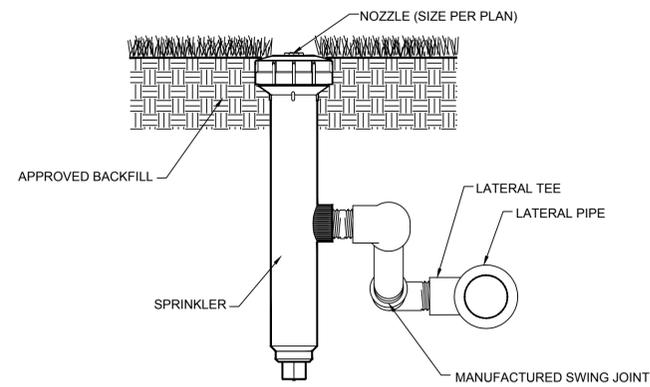
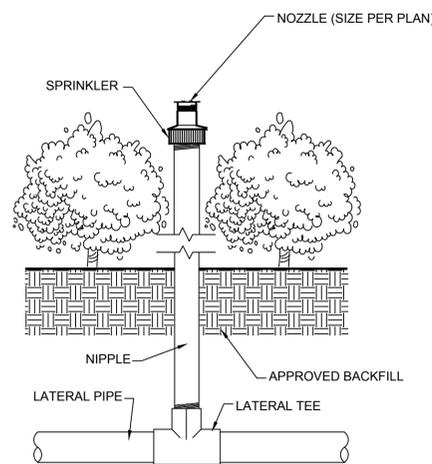
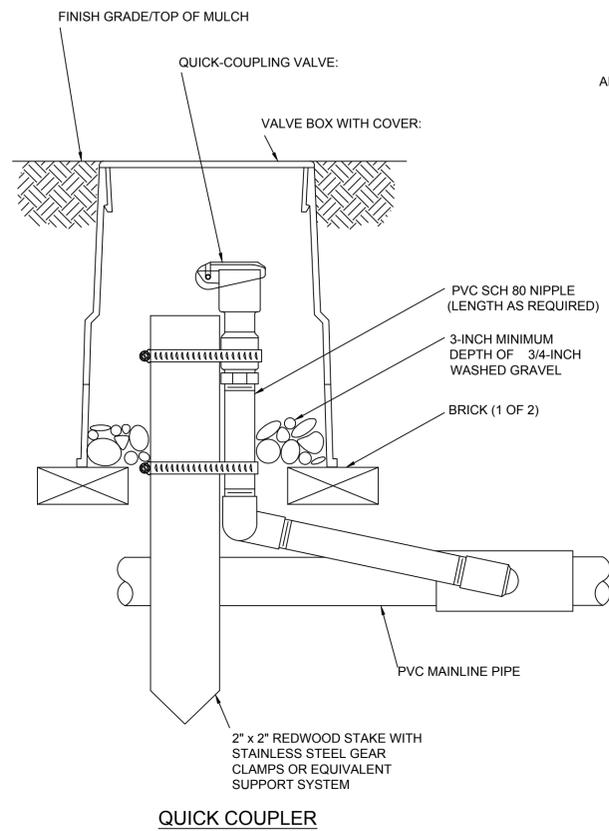
C. **UNDERDRAIN FOR BIORETENTION:** THE UNDERDRAIN SYSTEM, AGGREGATE BED, AND GEOTEXTILE FABRIC SHALL BE PLACED ACCORDING TO DIMENSIONS SHOWN ON THE CONTRACT PLANS.

D. **OBSERVATION WELLS/CLEANOUTS** OF 4-INCH NON-PERFORATED HDPE PIPE SHALL BE PLACED VERTICALLY IN THE BIORETENTION FACILITY AS SHOWN ON THE CONTRACT PLANS. THE WELLS/CLEANOUTS SHALL BE CONNECTED TO THE PERFORATED UNDERDRAIN WITH THE APPROPRIATE MANUFACTURED CONNECTIONS AS SHOWN ON THE CONTRACT PLANS. THE WELLS/CLEANOUTS SHALL EXTEND 6 INCHES ABOVE THE TOP ELEVATION OF THE BIORETENTION FACILITY MULCH, AND SHALL BE CAPPED WITH A SCREW CAP.

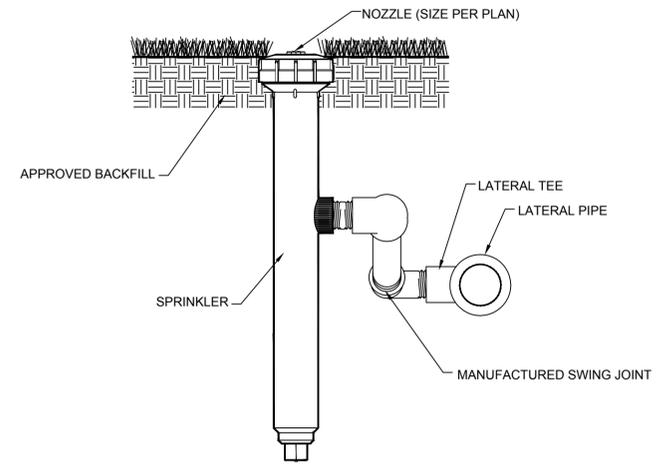
E. **PLACEMENT OF THE BIORETENTION SOIL MIXTURE:** THE BIORETENTION SOIL MIXTURE (BSM) SHALL BE PLACED AND GRADED USING LOW GROUND-CONTACT PRESSURE EQUIPMENT OR, IF APPROVED BY THE ENGINEER, BY EXCAVATORS AND/OR BACKHOES OPERATING ON THE GROUND ADJACENT TO THE BIORETENTION FACILITY. LOW GROUND-CONTACT PRESSURE EQUIPMENT IS PREFERRED ON BIORETENTION FACILITIES TO MINIMIZE DISTURBANCE TO ESTABLISHED AREAS AROUND PERIMETER OF CELL. NO HEAVY EQUIPMENT SHALL BE USED WITHIN THE PERIMETER OF THE BIORETENTION FACILITY BEFORE, DURING, OR AFTER THE PLACEMENT OF THE BSM. THE BSM SHALL BE PLACED IN HORIZONTAL LAYERS NOT TO EXCEED 12 INCHES FOR THE ENTIRE AREA OF THE BIORETENTION FACILITY. THE BSM SHALL BE SATURATED OVER THE ENTIRE AREA OF THE BIORETENTION FACILITY AFTER EACH LIFT OF BSM IS PLACED UNTIL WATER FLOWS FROM THE UNDERDRAIN TO LIGHTLY CONSOLIDATE THE BSM MIXTURE. WATER FOR SATURATION SHALL BE APPLIED BY SPRAYING OR SPRINKLING IN A MANNER TO AVOID SEPARATION OF THE BSM COMPONENTS. SATURATION OF EACH LIFT SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER. IF THE BSM BECOMES CONTAMINATED DURING THE CONSTRUCTION OF THE FACILITY, THE CONTAMINATED MATERIAL SHALL BE REMOVED AND REPLACED WITH UNCONTAMINATED MATERIAL AT THE CONTRACTOR'S EXPENSE. FINAL GRADING OF THE BSM SHALL BE PERFORMED AFTER A 24-HOUR SETTLING PERIOD. UPON FINAL GRADING THE SURFACE OF THE BSM SHALL BE ROTO-TILLED TO A DEPTH OF 6". FINAL ELEVATIONS SHALL BE WITHIN 2 INCHES OF ELEVATIONS SHOWN ON THE CONTRACT PLANS.

F. **MULCHING:** ONCE GRADING IS COMPLETE, THE ENTIRE BIORETENTION FACILITY SHALL BE MULCHED TO A UNIFORM THICKNESS OF 3 INCHES. MULCHING SHALL BE COMPLETE WITHIN 24 HOURS TO REDUCE THE POTENTIAL OF SILT ACCUMULATION ON THE SURFACE. WELL AGED SHREDDED HARDWOOD BARK MULCH IS THE ONLY ACCEPTABLE MULCH. MULCHING SHALL BE DONE IMMEDIATELY AFTER GRADING TO REDUCE POTENTIAL OF ANY SILT ACCUMULATION ON THE SURFACE.

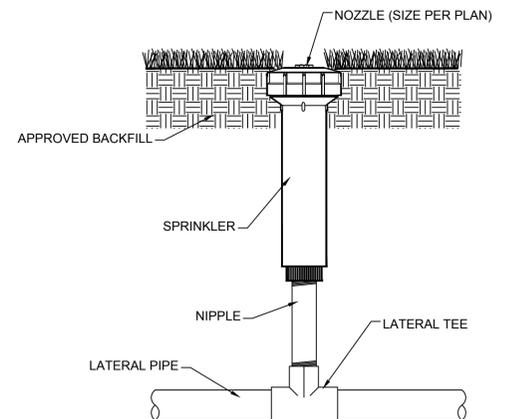
G. **PLANT INSTALLATION:** TREES, SHRUBS, AND OTHER PLANT MATERIALS SPECIFIED FOR BIORETENTION FACILITIES SHALL BE PLANTED AS SPECIFIED IN THE CONTRACT PLANS AND APPLICABLE LANDSCAPING STANDARDS WITH THE EXCEPTION THAT PESTICIDES, HERBICIDES, AND FERTILIZER SHALL NOT BE APPLIED DURING PLANTING UNDER ANY CIRCUMSTANCES. FURTHERMORE, PESTICIDES, FERTILIZER, AND ANY OTHER SOIL AMENDMENTS SHALL NOT BE APPLIED TO THE BIORETENTION FACILITY DURING LANDSCAPE CONSTRUCTION, PLANT ESTABLISHMENT, OR MAINTENANCE.



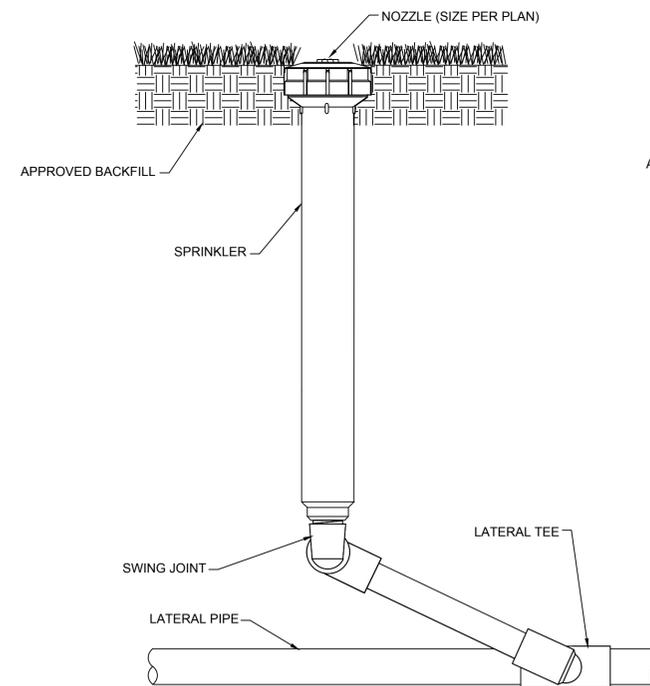
6" POP-UP SPRINKLER W/SWING JOINT SIDE INLET



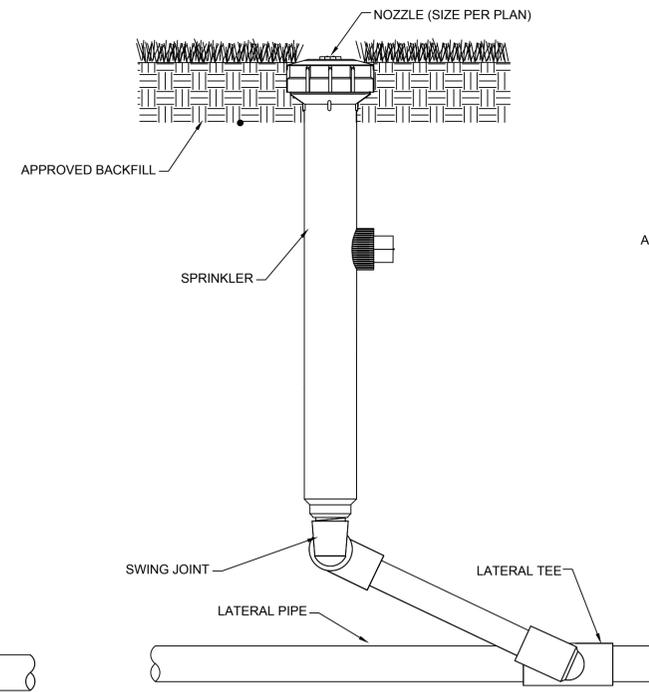
12" POP-UP SPRINKLER W/SWING JOINT SIDE INLET



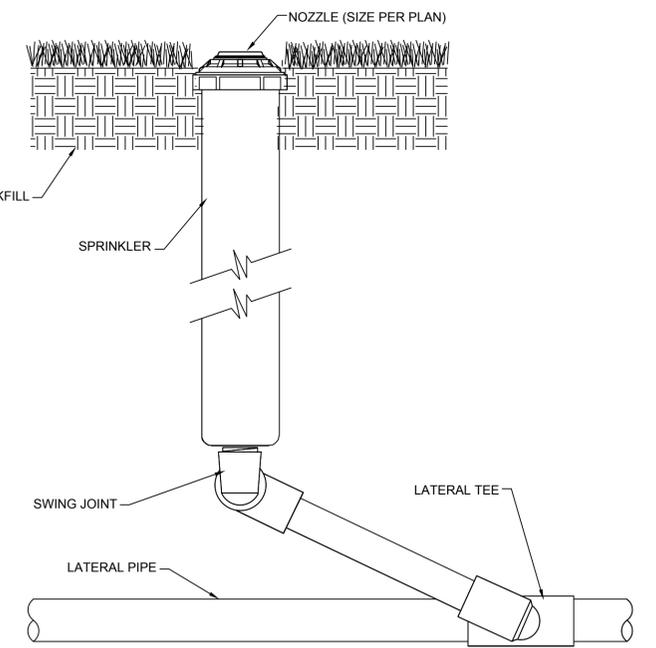
4" POP-UP SPRINKLER RISER



6 INCH POP-UP SPRINKLER W/SWING JOINT



12" POP-UP SPRINKLER W/SWING JOINT



12" SINGLE STREAM POP-UP SPRINKLER W/SWING JOINT

GENERAL NOTES:

1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. INSTALL SPRINKLER AT FINISHED GRADE.

SPRINKLER CONNECTION

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OPTIONAL DIRECTIONAL ANTENNA PER SITE SURVEY RECOMMENDATIONS AS PER CITY SPECIFICATIONS.

3/4" CONDUIT FOR GROUND

PEDESTAL MOUNT CONTROLLER AS SPECIFIED IN PLANS
SEE PLAN FOR NUMBER OF FIELD WIRES FOR UP TO 24 STATIONS OTHERWISE SPECIFIED IN PLANS

2" CONDUIT FOR 25-48 FIELD WIRES

3/4" CONDUIT FOR INPUT POWER PER LOCAL & NATIONAL ELECTRICAL CODES

FINISHED SURFACE SLOPE TO DRAIN

CONCRETE FOOTING

OPTIONAL 1 1/2" CONDUIT FOR ANTENNA WIRE MIN. RADIUS ON SWEEP SHALL BE 12"

1/2" CONDUIT FOR SENSOR WIRES

12" MIN.

12" MIN.

6" MIN.

6" MIN.

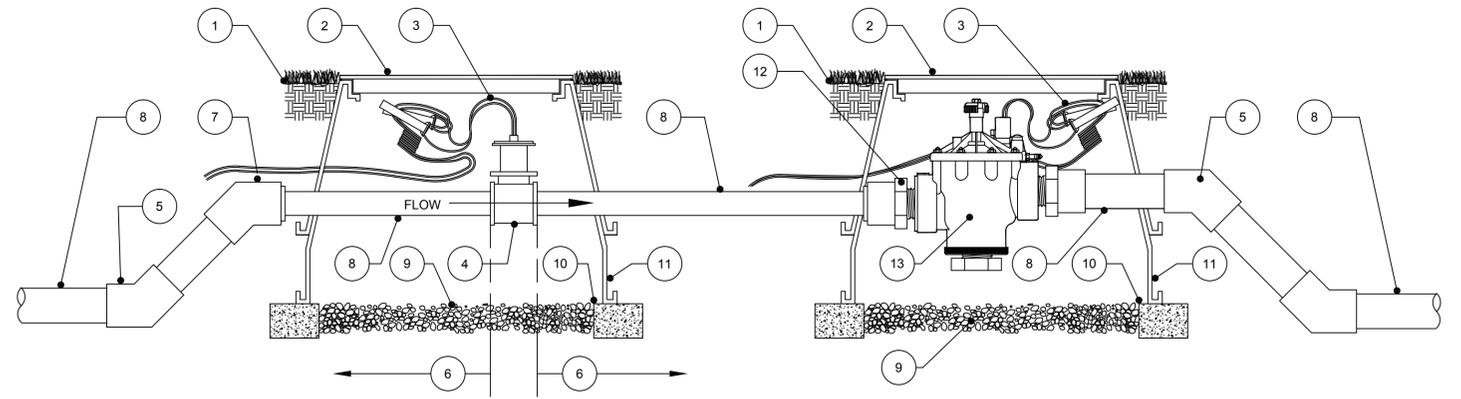
6" MIN.

6" MIN.

FRONT SECTION/ELEVATION

RIGHT-SIDE SECTION/ELEVATION

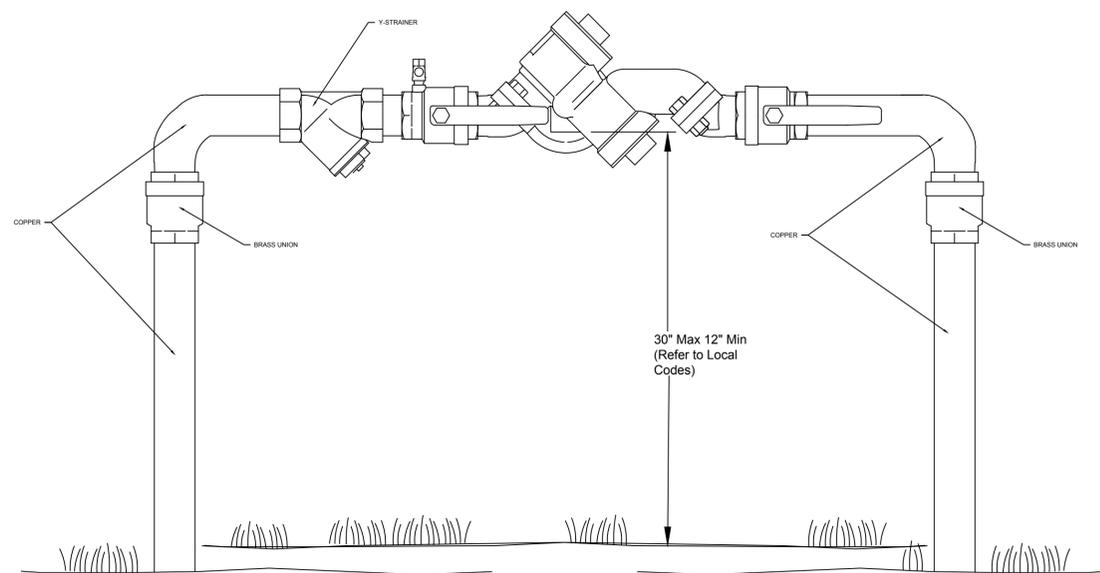
PEDESTAL MOUNT CONTROLLER



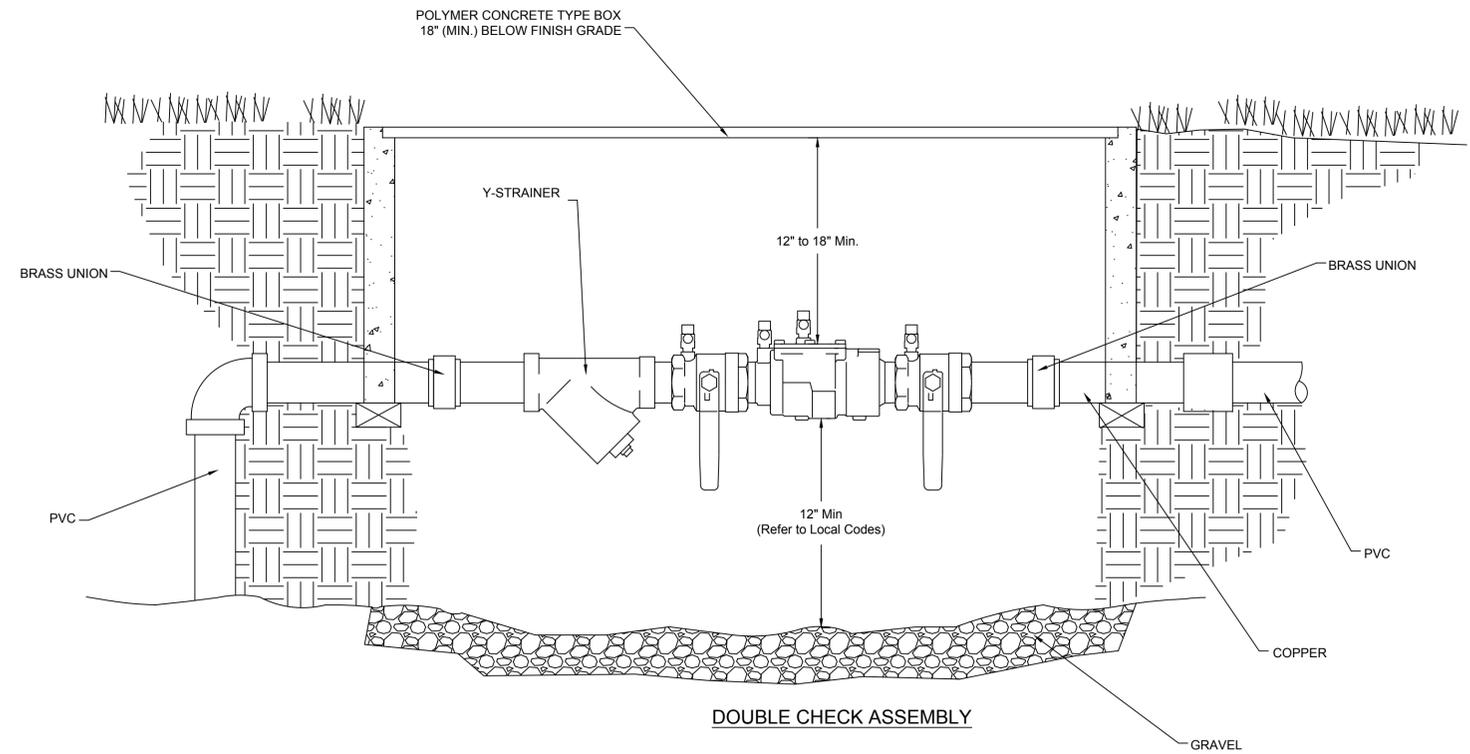
- 1 FINISH GRADE
- 2 JUMBO VALVE BOX & COVER
- 3 CONTROL WIRES WITH 12" MIN. SERVICE COIL AND WATERPROOF WIRE SPLICE CONNECTORS - WIRE COLORS PER SPECIFICATIONS AS PER MANUFACTURER.
- 4 FLOW SENSOR PER SPECIFICATIONS AS PER MANUFACTURER.
- 5 PVC 45 DEGREE ELL (TYP.)
- 6 MINIMUM 10x PIPE DIAMETER UPSTREAM & MINIMUM 5x PIPE DIAMETER DOWNSTREAM OF STRAIGHT PIPE
- 7 PVC 45 DEGREE ELL (TYP.) BUSH DOWN TO FLOW METER SIZE AS NECESSARY
- 8 PVC MAINLINE - LENGTH AS REQUIRED - SEE SPECIFICATIONS FOR TYPE AND DEPTH
- 9 GRAVEL (1 CU. FT.)
- 10 CONTINUOUS BRICK SUPPORTS
- 11 VALVE BOX EXTENSIONS AS REQUIRED
- 12 PVC MALE ADAPTER (TYP.)
- 13 REMOTE CONTROL MASTER VALVE WITH FLOW SENSOR AS SPECIFIED IN PLANS.

NOTES:
SEE PLANS, LEGEND AND SPECIFICATIONS FOR ADDITIONAL INSTALLATION NOTES.

MASTER VALVE AND FLOW SENSOR ASSEMBLY



REDUCED PRESSURE BACKFLOW PREVENTER
BACKFLOW DEVICE



DOUBLE CHECK ASSEMBLY

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D-401

SEDIMENT CONTROL GENERAL NOTES:

1. PRIOR TO CONSTRUCTION THE GENERAL CONTRACTOR SHALL PREPARE DOCUMENTS CONVEYING HIS/HER INTENDED WORK SCHEDULE AND PROPOSED TASK SEQUENCING FOR THE PROJECT. THESE DOCUMENTS SHALL BE SUBMITTED AT THE PRE-CONSTRUCTION MEETING TO THE ENGINEER FOR REVIEW AND APPROVAL. PRIOR TO THE START OF CONSTRUCTION, THE GENERAL CONTRACTOR MUST BE ABLE TO SATISFACTORILY DEMONSTRATE THAT HE/SHE IS CAPABLE OF MEETING ALL EROSION CONTROL REQUIREMENTS ON ALL AREAS OF THE SITE. THE GC WILL ONLY BE ALLOWED TO WORK THE AREA(S) THAT HE/SHE CLEARLY SHOWS THEY CAN ADEQUATELY MEET ALL REQUIREMENTS.

2. THE CONSTRUCTION COVERED BY THESE PLANS SHALL CONFORM TO ALL APPLICABLE STANDARDS AND SPECIFICATIONS OF THE PUBLIC WORKS DEPARTMENT OF THE CITY OF LENEXA, KANSAS, CURRENT USAGE. HOWEVER THE MEASUREMENT AND PAYMENT PORTIONS OF THE SPECIFICATIONS ARE NOT USED.

3. ALL WORKMANSHIP AND MATERIALS SHALL BE SUBJECT TO THE INSPECTION AND APPROVAL OF THE CITY OF LENEXA, KANSAS.

4. EXCEPT WHERE NECESSARY TO INSTALL EROSION AND SEDIMENT CONTROL DEVICES, CLEARING ACTIVITIES SHALL NOT BEGIN UNTIL ALL EROSION AND SEDIMENT CONTROL DEVICES HAVE BEEN INSTALLED AND THE SOIL HAS BEEN STABILIZED.

5. THE CONTRACTOR SHALL PROVIDE FOR CONTROL OF SURFACE EROSION AND SEDIMENT DEPOSITION DURING ALL PHASES OF CONSTRUCTION AND UNTIL THE OWNER ACCEPTS THE WORK AS COMPLETE. THE CONTRACTOR SHALL PROVIDE TEMPORARY SEEDING, BERMS, SILT FENCE, SEDIMENT TRAPS OR OTHER MEANS TO PREVENT SEDIMENT FROM REACHING THE PUBLIC RIGHT-OF-WAY, STREAMS OR ADJACENT PROPERTY. IN THE EVENT THE PREVENTION MEASURES ARE NOT EFFECTIVE, THE CONTRACTOR SHALL REMOVE ANY DEBRIS SEDIMENT AND RESTORE THE RIGHT-OF-WAY AND ADJACENT PROPERTY TO ITS ORIGINAL OR BETTER CONDITION.

6. CONTRACTOR IS RESPONSIBLE FOR KEEPING ALL PUBLIC ROADWAYS ADJACENT TO THE CONSTRUCTION SITE FREE OF DIRT AND DEBRIS RESULTING FROM ACTIVITIES RELATED TO THE CONSTRUCTION OF THIS PROJECT.

7. CONTRACTOR SHALL KEEP THE ENTIRE PROJECT SITE FREE OF DEBRIS AND TRASH AT ALL TIMES. CONTRACTOR SHALL EXECUTE WORK USING METHODS THAT MINIMIZE EXCESSIVE NOISE OR DUST EMISSIONS. CONTRACTOR SHALL PROVIDE METHODS, MEANS AND FACILITIES TO PREVENT CONTAMINATION OF SOIL OR WATER FROM DISCHARGE OF POTENTIAL CONSTRUCTION SITE POLLUTANTS (I.E., DIESEL FUEL, PORT-A-POTTY WASTE, PAINTS, ETC.)

8. AREAS ARE NOTED ON THE PLAN SHEETS FOR STOCKPILING OF MATERIALS. THE SLOPES IN THESE AREAS SHALL BE GRADED SUCH THAT THEY DO NOT EXCEED 3:1. SILT FENCE SHALL BE INSTALLED COMPLETELY AROUND THE PERIMETER OF THE AREAS AND THE AREAS SHALL BE SEEDED WITHIN 14 DAYS ONCE CONSTRUCTION ACTIVITIES ON THEM CEASE.

9. THE CONTRACTOR SHALL ERECT AND MAINTAIN THROUGHOUT CONSTRUCTION, ORANGE COLORED TEMPORARY CONSTRUCTION FENCE AROUND ALL AREAS INDICATED ON THE PLANS TO BE LEFT UNDISTURBED. PRIOR TO ACTUAL FENCE INSTALLATION, CONTRACTOR SHALL STAKE FENCE LOCATION IN THE FIELD FOR REVIEW BY OWNER. THE FENCE MATERIAL SHALL BE 48" IN HEIGHT AND MADE OF HIGH DENSITY POLYETHYLENE PLASTIC WITH A NOMINAL MESH OPENING SIZE OF 1.25 INCHES (X) 1.25 INCHES.

10. NO CONSTRUCTION EQUIPMENT, CONSTRUCTION MATERIALS OR PERSONAL VEHICLES MAY BE PARKED OR STORED INSIDE THE UNDISTURBED AREAS. ALSO THE CONTRACTOR SHALL INSTALL SEDIMENT CONTROL TO PREVENT SEDIMENT FROM ACCUMULATING INSIDE THE UNDISTURBED AREAS.

11. PRIOR TO INITIAL SOIL DISTURBANCE OR REDISTURBANCE, PERMANENT OR TEMPORARY EROSION CONTROL SHALL BE COMPLETED ON ALL PERIMETER DIKES, SWALES, DITCHES, PERIMETER SLOPES, AND ALL SLOPES GREATER THAN 3 HORIZONTAL TO 1 VERTICAL (3:1); EMBANKMENTS OF PONDS, BASINS, AND TRAPS.

12. SEDIMENT CONTROL SHALL BE COMPLETED WITHIN FOURTEEN (14) CALENDAR DAYS ON ALL OTHER DISTURBED OR GRADED AREAS. THIS REQUIREMENT DOES NOT APPLY TO THOSE AREAS THAT ARE SHOWN ON THE PLANS THAT ARE CURRENTLY BEING USED FOR MATERIAL STORAGE OR FOR THOSE AREAS, WHICH ACTUAL CONSTRUCTION ACTIVITIES ARE CURRENTLY BEING PERFORMED.

13. THE CONTRACTOR SHALL REQUEST THE CITY TO INSPECT AND APPROVE THE SEDIMENT CONTROL MEASURES UPON THE COMPLETION OF VARIOUS STAGES OF THE WORK. REQUESTS FOR INSPECTION SHALL BE MADE AT LEAST TWENTY-FOUR (24) HOURS IN ADVANCE (EXCLUSIVE OF SATURDAYS, SUNDAYS, AND HOLIDAYS) OF THE TIME THE INSPECTION IS DESIRED. THE CONTRACTOR SHALL OBTAIN WRITTEN NOTIFICATION OF THE CITY'S APPROVAL AT THE END OF THE FOLLOWING STAGES OF THE CONSTRUCTION:

A. UPON INSTALLATION OF THE PERIMETER EROSION AND SEDIMENT CONTROLS NOTED IN PHASE A OF THE WORK. THE CITY'S INSPECTION SHALL TAKE PLACE BEFORE PROCEEDING WITH ANY OTHER LAND DISTURBANCE ACTIVITY.

B. DURING THE CONSTRUCTION OF SEDIMENT BASINS OR STORMWATER MANAGEMENT STRUCTURES.

C. AT SPECIAL INSPECTION POINTS NOTED ON THE CONSTRUCTION PERMIT.

D. PRIOR TO REMOVAL OR SUBSTANTIAL MODIFICATION OF ANY EROSION AND SEDIMENT CONTROL MEASURE.

E. UPON COMPLETION OF FINAL GRADING OPERATIONS.

F. UPON ESTABLISHMENT OF GROUND COVERS.

14. THE CONTRACTOR SHALL PREPARE AND FOLLOW A PHASED METHOD OF CONSTRUCTION GRADING TO MINIMIZE THE AMOUNT OF EXPOSED BARE GROUND AT ANY ONE TIME. THE CONTRACTOR SHALL STABILIZE DISTURBED AREAS WITH TEMPORARY SEEDING AND RECEIVE APPROVAL FROM THE CITY BEFORE CONTINUING TO DISTURB ADDITIONAL AREAS.

15. FOLLOWING STRIPPING OPERATIONS, THE CONTRACTOR SHALL REMOVE EXISTING TOPSOIL AND STOCKPILE THE MATERIAL IN AN APPROVED AREA. STOCKPILES SHALL BE STABILIZED BY TEMPORARY SEEDING AND ENCIRCLED WITH SILT FENCE.

16. CONTRACTOR MUST INSTALL AND MAINTAIN THE EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THESE PLANS. IF THE ENGINEER DETERMINES THAT THE INSTALLATION OR THE MAINTENANCE IS INADEQUATE, THE CONTRACTOR MUST IMMEDIATELY CORRECT AT HIS EXPENSE. IF IT IS DETERMINED THAT ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES ARE NEEDED THE CONTRACTOR WILL BE DIRECTED TO INSTALL AND MAINTAIN THOSE MEASURES.

17. FOLLOWING THE FINAL REMOVAL OF ALL EROSION CONTROL MEASURES THE CONTRACTOR SHALL RE-GRADE AND RE-SEED ALL AREAS THAT WERE DISTURBED BY THE REMOVAL.

18. THE CONTRACTOR SHALL INSPECT THE LAND DISTURBANCE SITE AT LEAST ONCE EVERY SEVEN (7) DAYS AND WITHIN TWENTY-FOUR (24) HOURS FOLLOWING EACH RAINFALL EVENT OF 1/2" OR MORE WITHIN ANY TWENTY-FOUR (24) HOUR PERIOD. THE CONTRACTOR SHALL ALSO INSPECT AND ASSURE THAT ALL SEDIMENT CONTROL DEVICES ARE IN WORKING CONDITION PRIOR TO ANY FORECASTED RAINFALL.

19. THE CONTRACTOR SHALL REMOVE SEDIMENT FROM THE FLOW AREAS AND MAKE ALL NECESSARY REPAIRS TO MAINTAIN THE INTEGRITY OF THE SEDIMENT CONTROL MEASURES. SEDIMENT SHALL BE REMOVED ONCE IT REACHES 1/2 THE INSTALLED HEIGHT OF MEASURE.

20. SEDIMENT CONTROL MEASURES SHALL BE REMOVED ONCE 70 PERCENT OF THE PERMANENT COVER IS ESTABLISHED OVER 100 PERCENT OF THE TRIBUTARY AREA.

21. SOME OF THE EROSION AND SEDIMENT CONTROL MEASURES, SUCH AS DIVERSION DIKES AND SEDIMENT TRAPS WILL REQUIRE THE CONTRACTOR TO INSTALL, REMOVE, AND REINSTALL THE MEASURES AS CONSTRUCTION PROCEEDS. THE PHASING OF THIS WORK IS DEPENDENT ENTIRELY ON THE CONTRACTOR'S SCHEDULE, AND IS NOT SPECIFIED HEREIN. HOWEVER, THE CONTRACTOR SHALL COORDINATE THESE ACTIONS WITH THE ENGINEER AT THE TIMES ADJUSTMENTS ARE NEEDED.

22. STONE STABILIZED PADS SHALL BE CONSTRUCTED AT THE LOCATIONS SHOWN ON THE PLANS WHERE CONSTRUCTION AND PRIVATE VEHICULAR TRAFFIC WILL BE ALLOWED TO ENTER AND EXIT THE CONSTRUCTION SITE. CONSTRUCTION EQUIPMENT (INCLUDING PERSONAL VEHICLES) ARE NOT ALLOWED TO EXIT THE SITE DIRECTLY ONTO ARTERIAL OR COLLECTOR STREETS. ALL VEHICLES/CONSTRUCTION EQUIPMENT MUST USE THE STABILIZED CONSTRUCTION ENTRANCES SHOWN ON THE PLANS.

23. CONSTRUCTION ENTRANCES SHALL BE CONSTRUCTED PER THE CITY STANDARD DETAIL.

24. THE CONTRACTOR SHALL TEMPORARILY SEED AND MULCH ALL DISTURBED AREAS IF THERE HAS BEEN NO CONSTRUCTION ACTIVITY ON THEM FOR A PERIOD OF 14 CALENDAR DAYS. IF THE ENGINEER DETERMINES THAT A SITE HAS A HIGH POTENTIAL FOR EROSION BASED ON PREVIOUS INFORMATION SUBMITTED, HE MAY DIRECT THAT DISTURBED SOIL BE STABILIZED AFTER PERIODS OF CONSTRUCTION INACTIVITY OF MORE THAN FORTY- EIGHT (48) HOURS.

25. THE CONTRACTOR SHALL SEED OR HYDRO SEED IN ACCORDANCE WITH CITY SPECIFICATION FOR SEEDING AND/OR HYDROSEEDING

SEED MIXTURE TO BE AS FOLLOWS:

50% REGREEN STERILE WHEAT
50% ANNUAL RYE

APPLICATION RATE:
TOTAL SEED MIX 400LBS./ACRE

MULCH MUST BE HAY, BROME GRASS, OR SHREDDED HARDWOOD APPLIED AT A RATE OF 2 TONS PER ACRE AND CRIMPED INTO THE SOIL WITH A WEIGHTED NOTCHED DISC OR A MULCH ANCHORING TOOL TO PUNCH THE MULCH INTO THE SOIL, OR OTHER APPROVED METHOD. THE SEEDED AREAS SHALL BE INSPECTED BY THE ENGINEER TWO TO FOUR WEEKS AFTER SEEDING FOR ADEQUATE SEED GERMINATION, EROSION CONTROL AND WEED CONTROL. REPAIRS AND RESEEDING SHALL BE PERFORMED BY THE CONTRACTOR AT THE DIRECTION OF THE ENGINEER AT NO ADDITIONAL COST TO THE CITY. IF VEGETATIVE MEASURES ARE NOT EFFECTIVE WITHIN THIS TIME FRAME, CONTRACTOR MAY BE REQUIRED TO RESEED OR EMPLOY A NON-VEGETATIVE OPTION TO STABILIZE THE DISTURBED AREA.

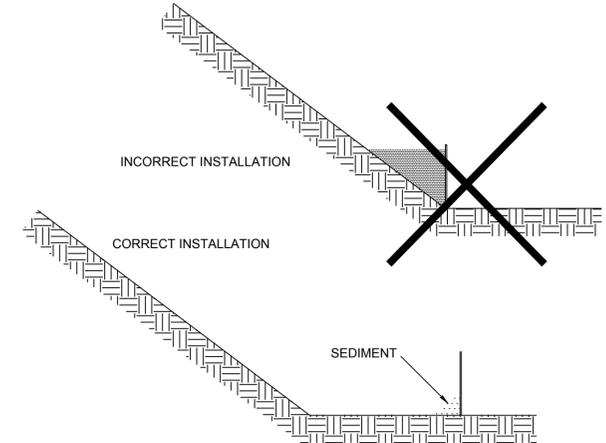
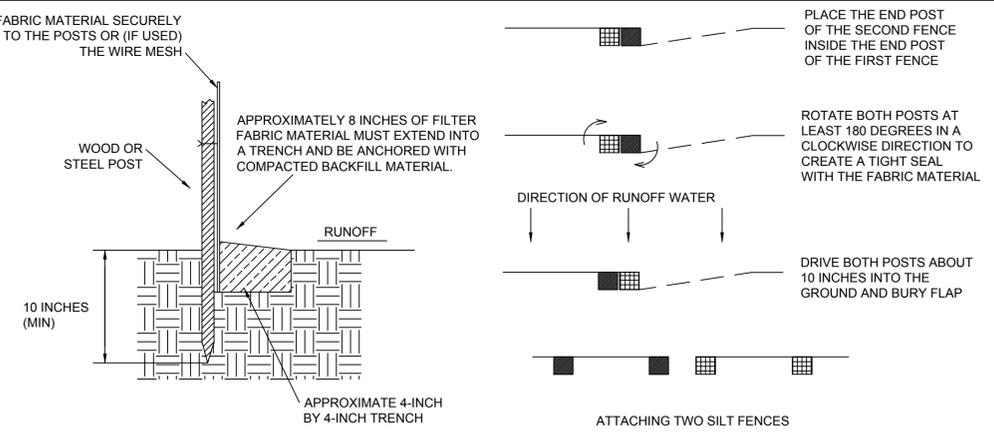
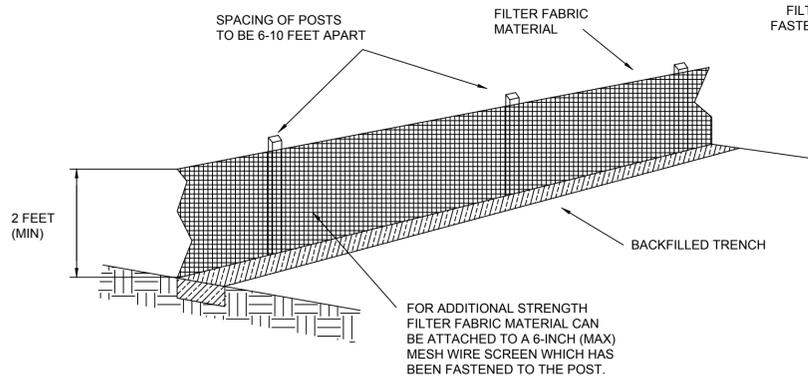
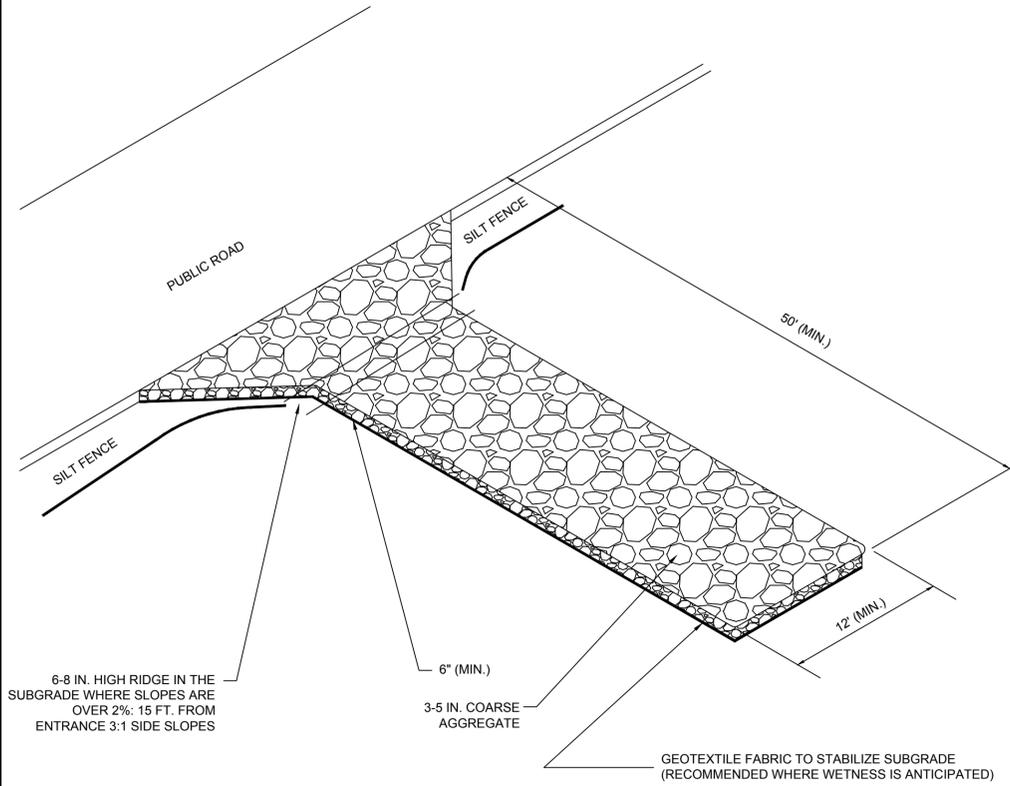
26. IF SEEDING AND MULCH IS NOT EFFECTIVE, ADDITIONAL MULCH SHALL BE UNIFORMLY APPLIED AT A RATE OF 2 TONS PER ACRE AS SPECIFIED IN NOTE 25.

27. ALL SITES REMAINING UNDEVELOPED FOR MORE THAN ONE GROWING SEASON MUST INCLUDE PERMANENT SEED VEGETATIVE STABILIZATION. PERMANENT SEED MIXTURE SHALL BE PER CITY OF LENEXA TECHNICAL SPECIFICATION S-715, AS SHOWN BELOW, UNLESS OTHERWISE NOTED IN PLANS AND APPROVED BY CITY.

30% EACH OF ANY 3 VARIETIES OF TURF TYPE FINE LEAF FESCUE.
10% EACH OF PERENNIAL RYE
TOTAL APPLICATION RATE SHALL BE 8 POUNDS/1,000 SQ. FEET.

28. ALL AREAS OF CONCENTRATED FLOW OR POINT DISCHARGE SHALL BE DIRECTED TO A SEDIMENT BASIN OR SEDIMENT TRAP BEFORE LEAVING THE SITE. SEDIMENT BASINS SHALL BE USED FOR DRAINAGE AREAS OVER 5 ACRES AND SEDIMENT TRAPS MAY BE USED FOR SMALLER DRAINAGE AREAS.

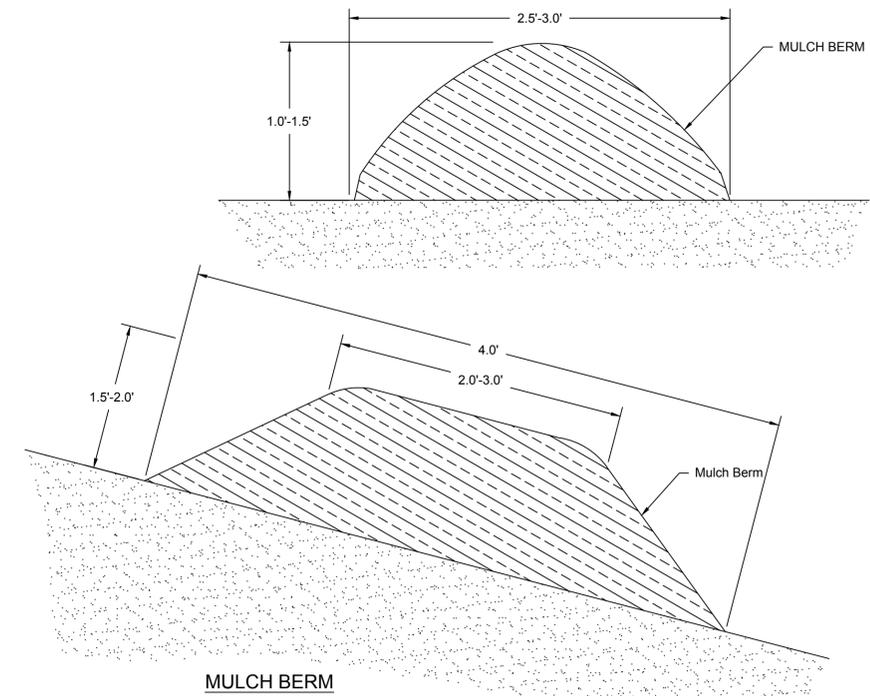
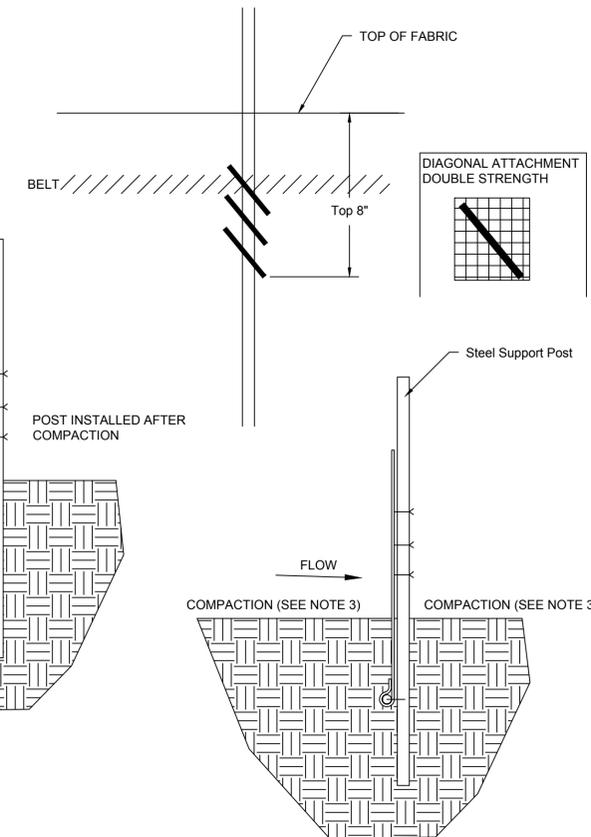
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EROSION & SEDIMENT CONTROL NOTES		SHEET D-500



- NOTES:
1. WHEN USED TO CONTROL SEDIMENT FROM STEEP SLOPES, FILTER FENCES SHOULD BE PLACED AWAY FROM THE TOE OF A SLOPE FOR INCREASED HOLDING CAPACITY.
 2. WHEN SEDIMENT FILLS THE AREA BEHIND THE SILT FENCE TO 1/2 THE HEIGHT OF THE SILT FENCE, THE CONTRACTOR SHALL REMOVE THE SEDIMENT.
 - 3) THE MAXIMUM DRAINAGE AREA FOR OVERLAND FLOW TO A SILT FENCE SHALL NOT EXCEED 1/4 ACRE PER 100 FEET OF SILT FENCE. FILTER FENCE SHALL HAVE DOWNSLOPED ENDS TAPERED TO A J-HOOK ON A DOWNHILL SLOPE.
 - 4) THE MAXIMUM SLOPE LENGTH BEHIND THE SILT FENCE IS 100 FEET; AND THE MAXIMUM GRADIENT BEHIND THE SILT FENCE IS 50% (2:1).
 - 5) THE FENCE SHALL BE PLACED GENERALLY PARALLEL TO THE SITE CONTOURS. UNDER NO CIRCUMSTANCES SHOULD SILT FENCES BE CONSTRUCTED IN STREAMS, SWALES, OR DITCHES WHERE FLOWS ARE LIKELY TO EXCEED 1 CUBIC FOOT PER SECOND (CFS).
 - 6) SILT FENCE MUST BE REMOVED AFTER THE SITE IS STABILIZED.
 - 7) IF WIREBACK SILT FENCE IS USED, AKK POSTS SHALL BE 6' T POSTS.
 8. J-HOOKS SHALL BE PLACED AT 100' INTERVALS.

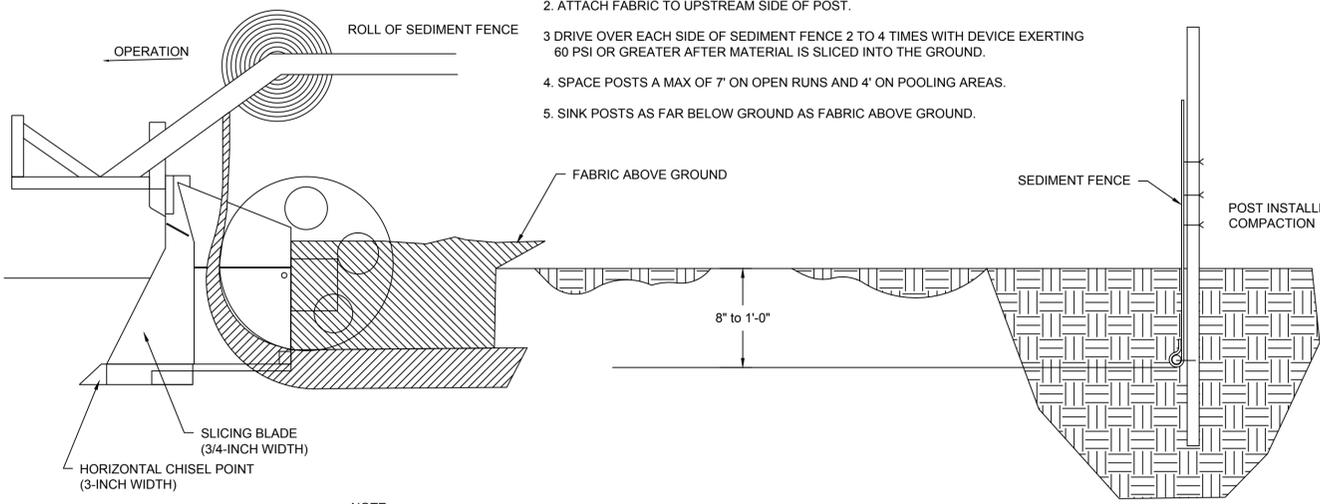
1. THE EROSION CONTROL BERM SHALL BE PLACED, UNCOMPACTED, IN A WINDROW AT LOCATIONS SHOWN ON THE PLANS OR AS DIRECTED BY THE ENGINEER.
2. PARALLEL TO THE BASE OF THE SLOPE, OR AROUND THE PERIMETER OF OTHER AFFECTED AREAS, CONSTRUCT A MULCH BERM. FOR MAXIMUM WATER FILTRATION ABILITY OR FOR STEEP SLOPES, CONSTRUCT A TRAPEZOIDAL MULCH BERM. IN EXTREME CONDITIONS AND WHERE SPECIFIED BY THE ENGINEER, A SECOND BERM SHALL BE CONSTRUCTED AT THE TOP OF THE SLOPE. (THE ENGINEER SHALL SPECIFY BERM REQUIREMENTS)
3. IF THE BERM IS TO BE LEFT AS A PERMANENT FILTER OR PART OF THE NATURAL LANDSCAPE, THE "COMPOST MULCH BERM" MAY BE SEEDED DURING APPLICATION FOR PERMANENT VEGETATION. THE ENGINEER SHALL SPECIFY SEED REQUIREMENTS.
4. DO NOT USE MULCH BERMS IN ANY RUNOFF CHANNELS.
5. PLACE BERMS ON DENUDEED AREAS AS SOON AS POSSIBLE. MULCH/COMPOST AND/OR TEMPORARY OR PERMANENT VEGETATION SHALL BE APPLIED/ESTABLISHED ABOVE THE MULCH BERMS WHEN NECESSARY FOR ADDITIONAL EROSION CONTROL.
6. OTHER DIMENSIONS MAY BE EXCEPTED WHEN RECOMMENDED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER.
7. WHEN SEDIMENT FILLS THE AREA BEHIND THE SILT FENCE TO 1/2 THE HEIGHT OF THE SILT FENCE, THE CONTRACTOR SHALL REMOVE THE SEDIMENT AND PLUGGED MULCH AND RESHAPE BERM WITH CLEAN MULCH AS NEEDED.

INSTALLATION OF SILT FENCE



SEDIMENT FENCE INSTALLATION SLICING METHOD NOTES:

1. LIMIT PONDING HEIGHT TO 24"
2. ATTACH FABRIC TO UPSTREAM SIDE OF POST.
- 3 DRIVE OVER EACH SIDE OF SEDIMENT FENCE 2 TO 4 TIMES WITH DEVICE EXERTING 60 PSI OR GREATER AFTER MATERIAL IS SLICED INTO THE GROUND.
4. SPACE POSTS A MAX OF 7' ON OPEN RUNS AND 4' ON POOLING AREAS.
5. SINK POSTS AS FAR BELOW GROUND AS FABRIC ABOVE GROUND.

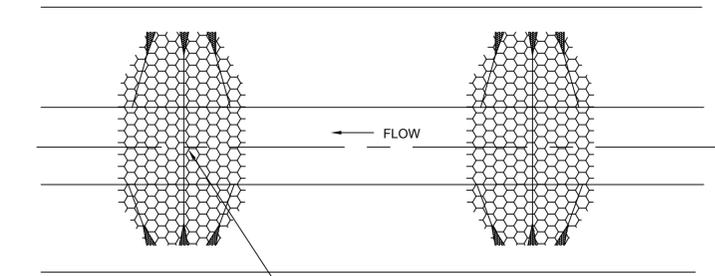


NOTE:
VIBRATORY PLOW IS NOT ACCEPTABLE BECAUSE OF HORIZONTAL COMPACTION

SEDIMENT FENCE INSTALLATION SLICING METHOD

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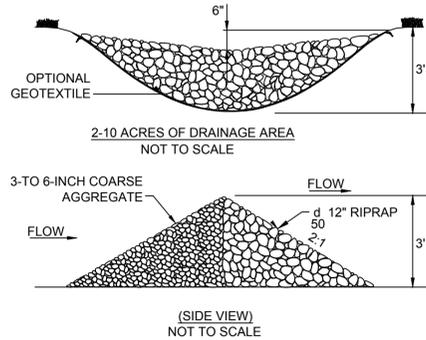
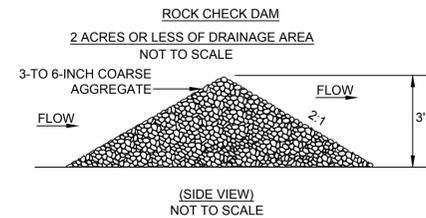
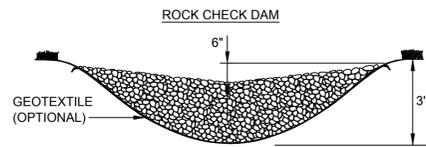
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PLACE DOWNSTREAM STRUCTURE SUCH THAT POINT "B" IS APPROXIMATELY LEVEL WITH THE LOWEST GROUND ELEVATION OF THE UPSTREAM STRUCTURE

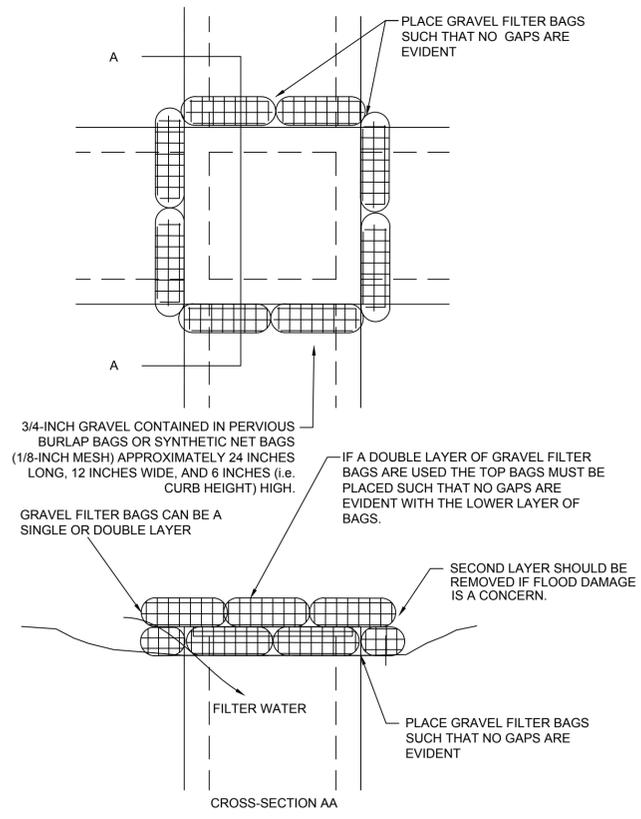


ROCK DITCH CHECK

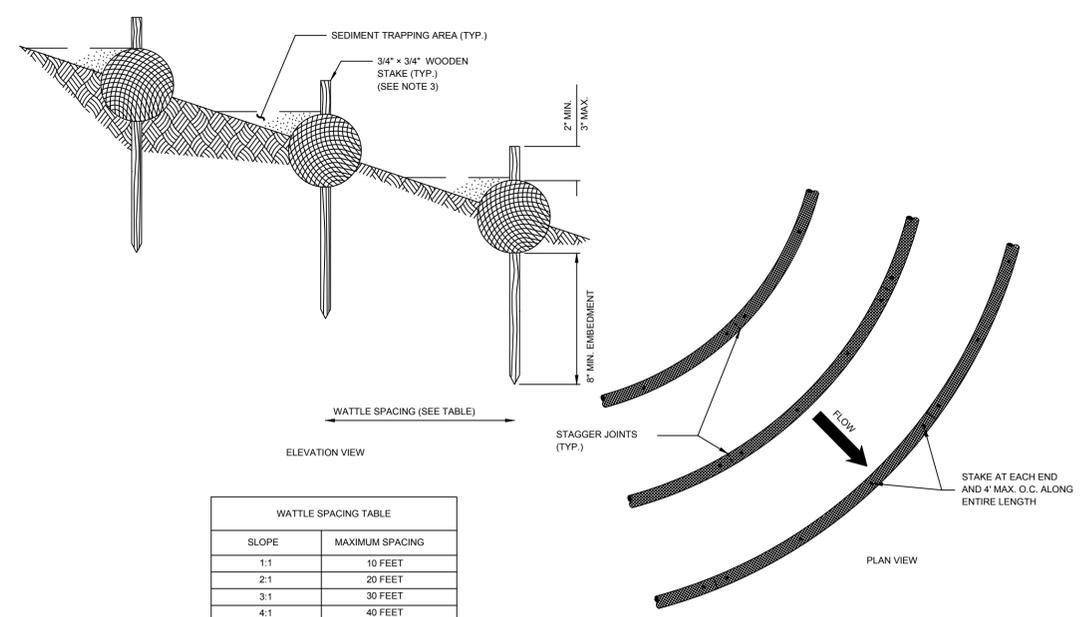


NOTES:
1. WHEN USED TO CONTROL SEDIMENT FROM STEEP SLOPES, ROCK CHECKS SHOULD BE PLACED AWAY FROM THE TOE OF A SLOPE FOR INCREASED HOLDING CAPACITY.

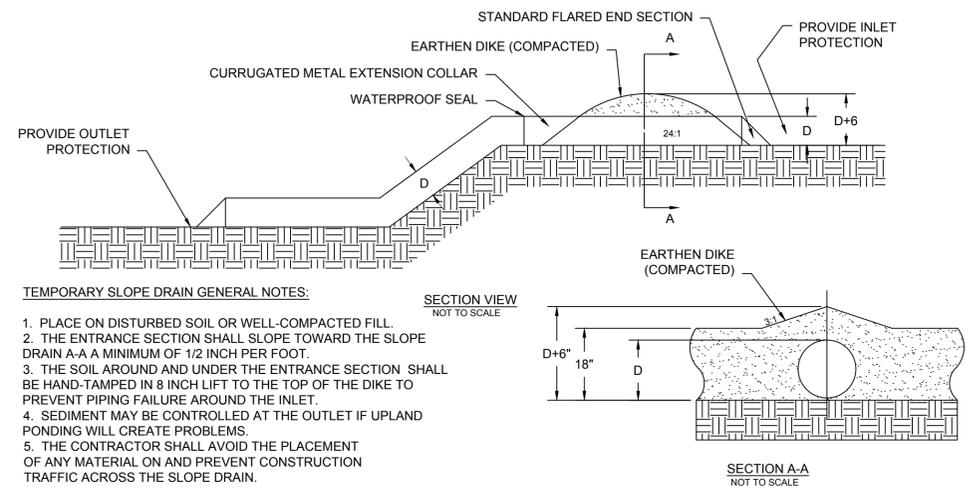
2. WHEN SEDIMENT FILLS THE AREA BEHIND THE SILT FENCE TO 1/2 THE HEIGHT OF THE ROCK CHECK, THE CONTRACTOR SHALL REMOVE THE SEDIMENT.



GRAVEL FILTER FOR AREA INLET

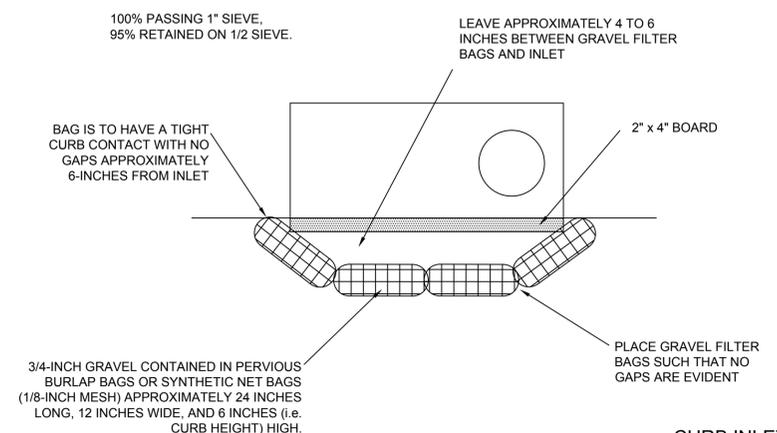


WATTLE SPACING TABLE	
SLOPE	MAXIMUM SPACING
1:1	10 FEET
2:1	20 FEET
3:1	30 FEET
4:1	40 FEET

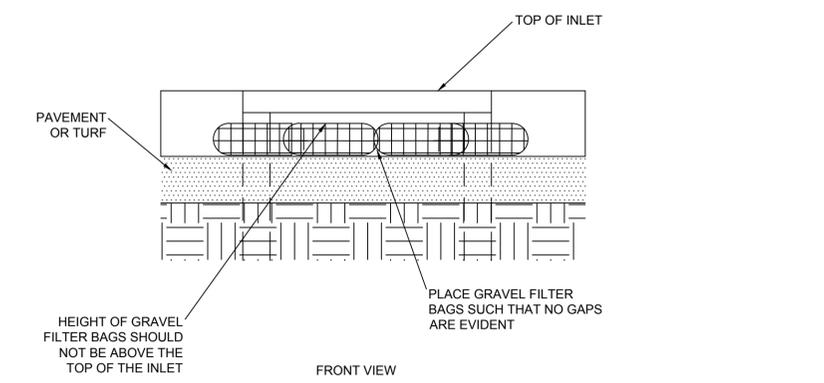


- TEMPORARY SLOPE DRAIN GENERAL NOTES:
1. PLACE ON DISTURBED SOIL OR WELL-COMPACTED FILL.
 2. THE ENTRANCE SECTION SHALL SLOPE TOWARD THE SLOPE DRAIN A-A A MINIMUM OF 1/2 INCH PER FOOT.
 3. THE SOIL AROUND AND UNDER THE ENTRANCE SECTION SHALL BE HAND-TAMPED IN 8 INCH LIFT TO THE TOP OF THE DIKE TO PREVENT PIPING FAILURE AROUND THE INLET.
 4. SEDIMENT MAY BE CONTROLLED AT THE OUTLET IF UPLAND PONDING WILL CREATE PROBLEMS.
 5. THE CONTRACTOR SHALL AVOID THE PLACEMENT OF ANY MATERIAL ON AND PREVENT CONSTRUCTION TRAFFIC ACROSS THE SLOPE DRAIN.

WATTLE INSTALATION ON SLOPE



CURB INLET GRAVEL FILTER



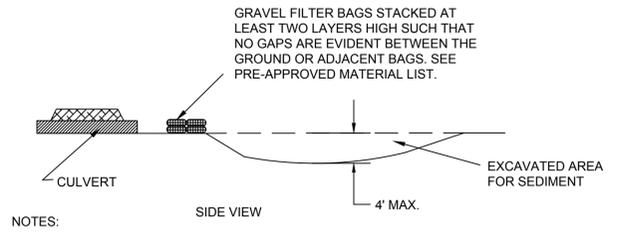
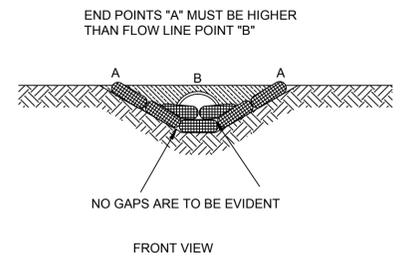
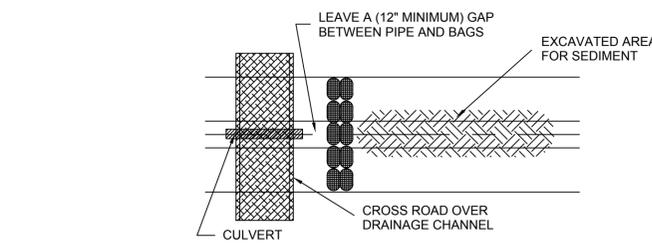
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K A N S A S

EROSION AND SEDIMENT CONTROL 2

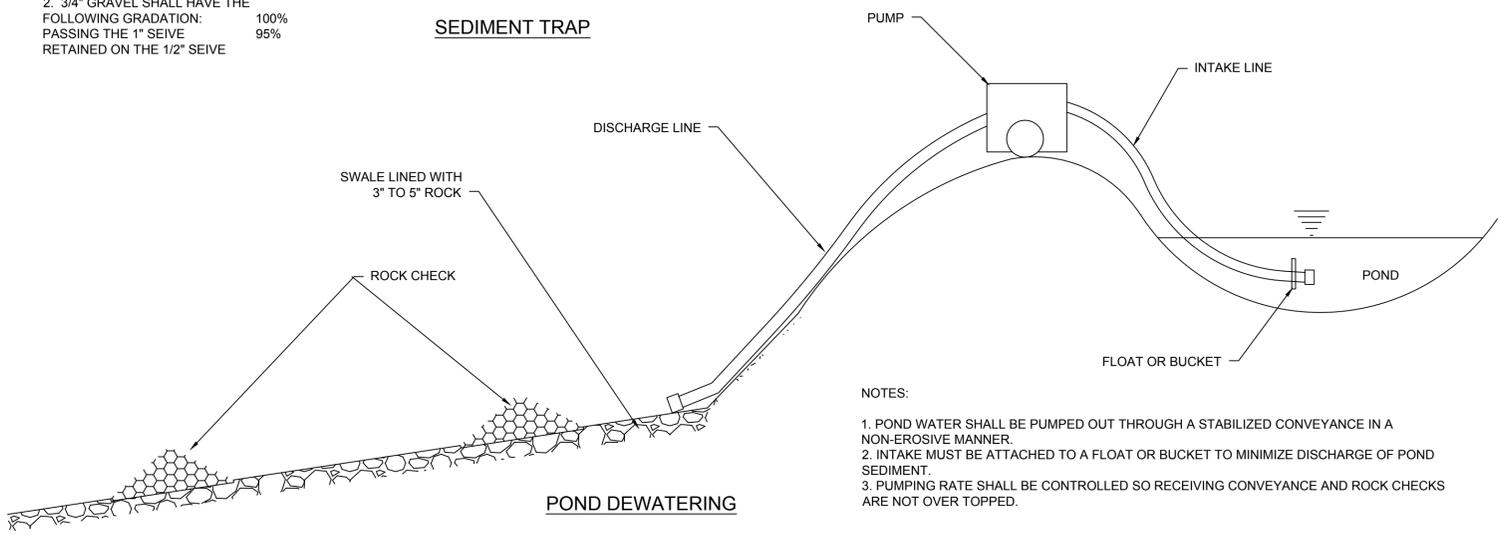
SHEET D-502



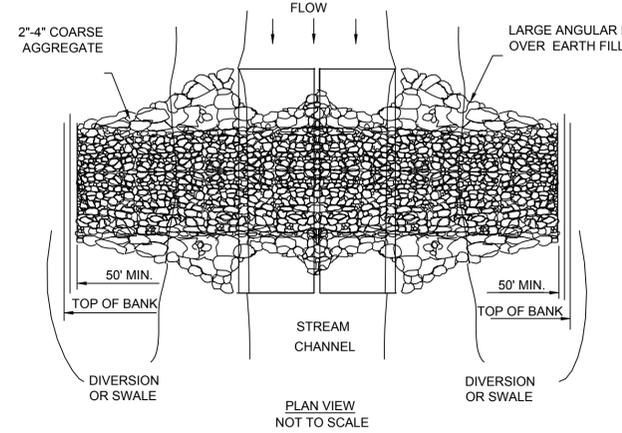
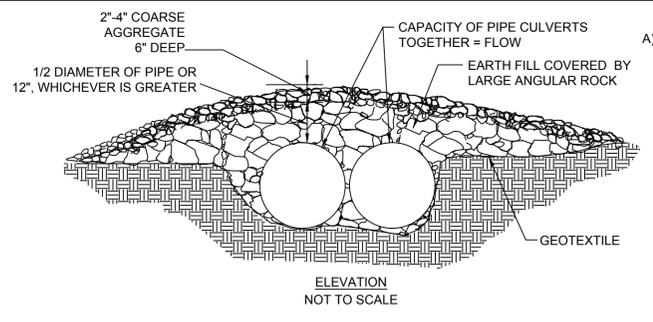
- NOTES:
1. EACH BAG IS TO CONSIST OF 3/4-INCH DIAMETER GRAVEL CONTAINED IN PERVIOUS BURLAP BAGS OR SYNTHETIC NET BAGS (1/8-INCH MECH) AND BE APPROXIMATELY 24 INCHES LONG, 12 INCHES WIDE, AND 6 INCHES HIGH.
 2. 3/4" GRAVEL SHALL HAVE THE FOLLOWING GRADATION:

PASSING THE 1" SEIVE	100%
RETAINED ON THE 1/2" SEIVE	95%
 3. WHEN SEDIMENT FILLS THE AREA BEHIND THE SILT FENCE TO 1/2 THE HEIGHT OF THE SILT FENCE, THE CONTRACTOR SHALL REMOVE THE SEDIMENT.
 4. SIZE OF THE BASIN SHALL CONFORM TO DESIGN.

SEDIMENT TRAP

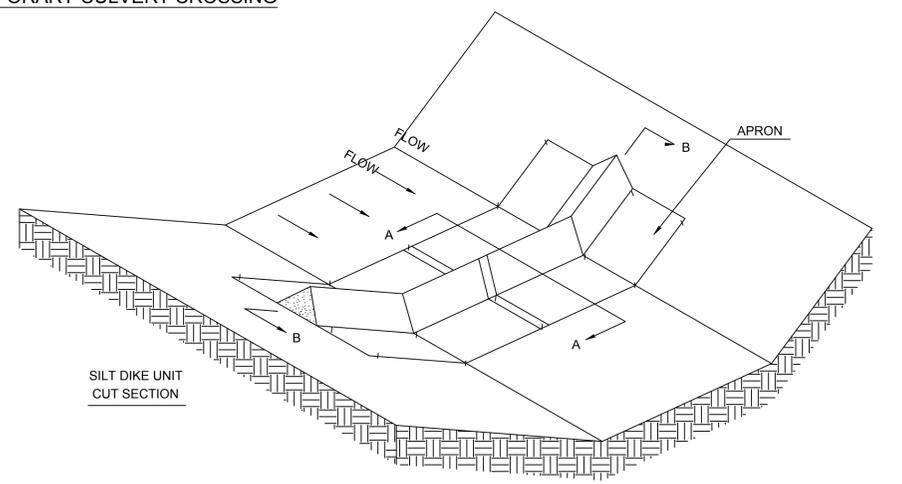


- NOTES:
1. POND WATER SHALL BE PUMPED OUT THROUGH A STABILIZED CONVEYANCE IN A NON-EROSIVE MANNER.
 2. INTAKE MUST BE ATTACHED TO A FLOAT OR BUCKET TO MINIMIZE DISCHARGE OF POND SEDIMENT.
 3. PUMPING RATE SHALL BE CONTROLLED SO RECEIVING CONVEYANCE AND ROCK CHECKS ARE NOT OVER TOPPED.

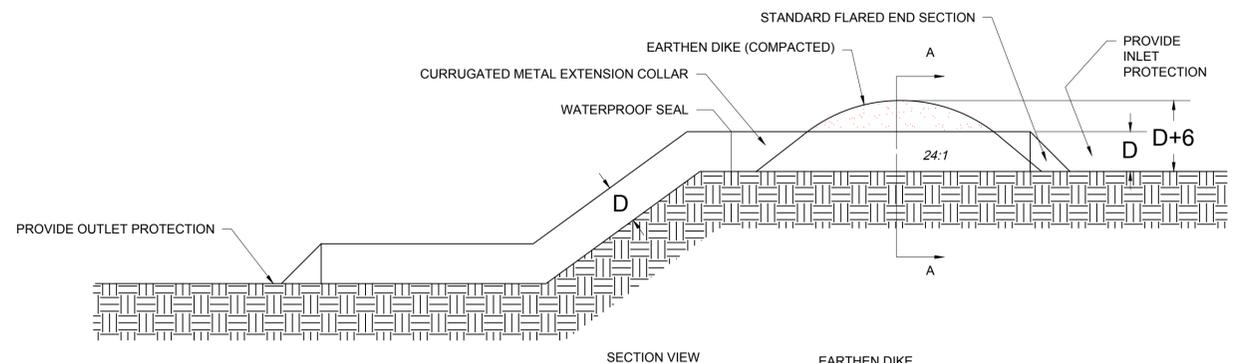


TEMPORARY CULVERT CROSSING

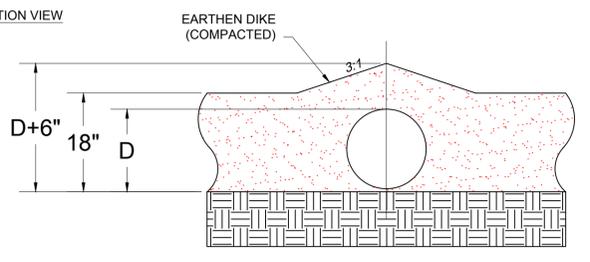
- TEMPORARY CULVERT CROSSING NOTE:**
- A) **GENERAL NOTES:**
1. CLEARING AND EXCAVATION OF THE STREAM BED AND BANKS SHALL BE KEPT TO A MINIMUM.
 2. THE INVERT ELEVATION OF THE CULVERT SHALL BE INSTALLED ON THE NATURAL STREAMBED GRADE TO MINIMIZE INTERFERENCE WITH FISH MIGRATION.
 3. GEOTEXTILE SHALL BE PLACED ON THE STREAMBED AND STREAMBANKS PRIOR TO PLACEMENT OF THE PIPE CULVERT AND AGGREGATE. THE GEOTEXTILE SHALL COVER THE STREAMBED AND EXTEND A MINIMUM OF 6 INCHES AND A MAXIMUM OF 1 FOOT BEYOND THE END OF THE CULVERT AND BEDDING MATERIAL. FILTER CLOTH REDUCES SETTLEMENT AND IMPROVES CROSSING STABILITY.
 4. THE CULVERT SHALL EXTEND A MINIMUM OF 1 FOOT BEYOND THE UPSTREAM AND DOWNSTREAM TOE OF THE AGGREGATE PLACED AROUND THE CULVERT. IN NO CASE SHALL THE CULVERT EXCEED 40 FEET IN LENGTH.
 5. THE CULVERT SHALL BE COVERED WITH A MINIMUM OF 1 FOOT OF AGGREGATE. IF MULTIPLE CULVERTS ARE USED, THEY SHALL BE SEPARATED BY AT LEAST 12 INCHES OF COMPACTED AGGREGATE FILL.
 6. WHEN THE CROSSING HAS SERVED ITS PURPOSE, ALL STRUCTURES INCLUDING CULVERTS, BEDDING, AND GEOTEXTILE MATERIALS SHALL BE REMOVED. REMOVAL OF THE STRUCTURE AND CLEAN-UP OF THE AREA SHALL BE ACCOMPLISHED WITHOUT CONSTRUCTION EQUIPMENT WORKING IN THE CHANNEL.
 7. UPON REMOVAL OF THE STRUCTURE, THE STREAM SHALL IMMEDIATELY BE SHAPED TO ITS ORIGINAL CROSS-SECTION AND PROPERLY STABILIZED.
- B) **INSPECTION AND MAINTENANCE:**
- CARE MUST BE TAKEN TO INSPECT ANY STREAM CROSSING AREA AT THE END OF EACH DAY TO MAKE SURE THAT THE CONSTRUCTION MATERIALS ARE POSITIONED SECURELY. THIS WILL ENSURE THAT THE WORK AREA STAYS DRY AND THAT NO CONSTRUCTION MATERIALS FLOAT DOWNSTREAM.



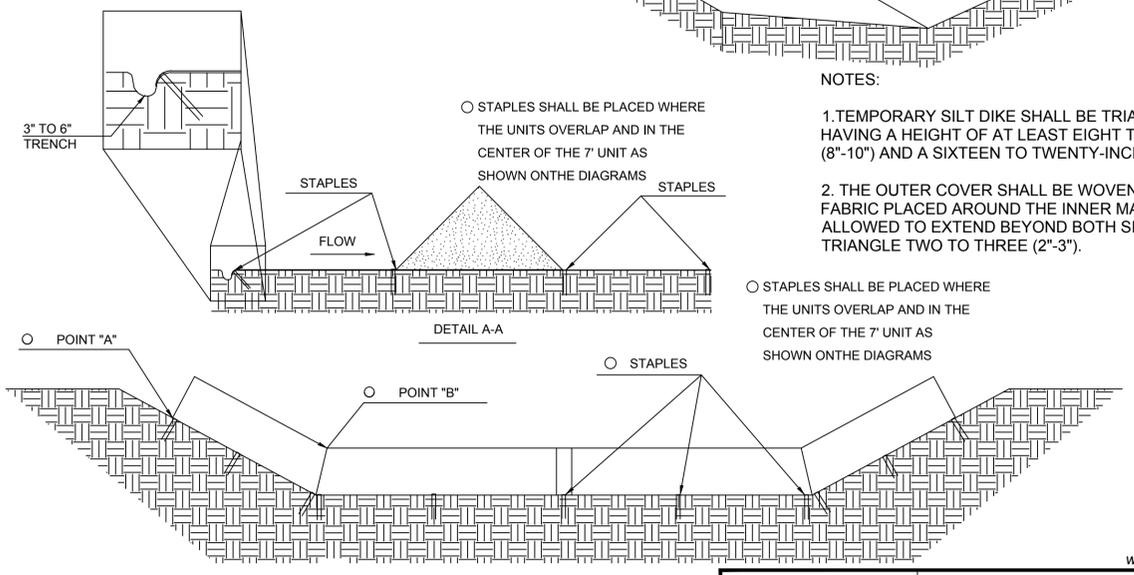
- NOTES:
1. TEMPORARY SILT DIKE SHALL BE TRIANGULAR-SHAPED, HAVING A HEIGHT OF AT LEAST EIGHT TO TEN INCHES (8"-10") AND A SIXTEEN TO TWENTY-INCH (16"-20") BASE.
 2. THE OUTER COVER SHALL BE WOVEN GEOTEXTILE FABRIC PLACED AROUND THE INNER MATERIAL AND ALLOWED TO EXTEND BEYOND BOTH SIDES OF THE TRIANGLE TWO TO THREE (2"-3").



- TEMPORARY SLOPE DRAIN GENERAL NOTES:**
1. PLACE ON DISTURBED SOIL OR WELL-COMPACTED FILL.
 2. THE ENTRANCE SECTION SHALL SLOPE TOWARD THE SLOPE DRAIN A-A A MINIMUM OF 1/2 INCH PER FOOT.
 3. THE SOIL AROUND AND UNDER THE ENTRANCE SECTION SHALL BE HAND-TAMPED IN 8 INCH LIFT TO THE TOP OF THE DIKE TO PREVENT PIPING FAILURE AROUND THE INLET.
 4. SEDIMENT MAY BE CONTROLLED AT THE OUTLET IF UPLAND PONDING WILL CREATE PROBLEMS.
 5. THE CONTRACTOR SHALL AVOID THE PLACEMENT OF ANY MATERIAL ON AND PREVENT CONSTRUCTION TRAFFIC ACROSS THE SLOPE DRAIN.



TEMPORARY SLOPE DRAIN

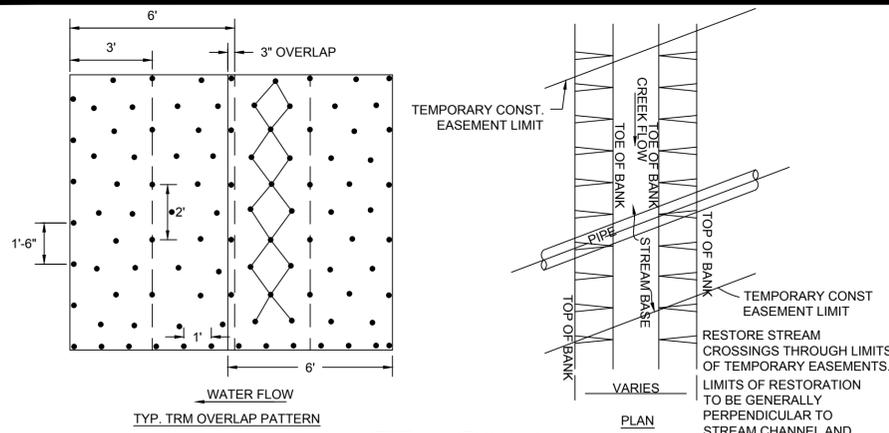


○ POINT "A" MUST BE HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DIKE AND NOT AROUND THE ENDS.

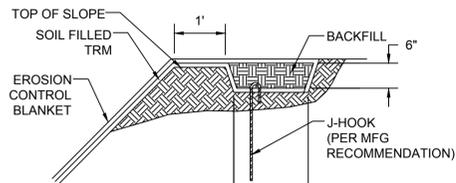
INSTALLATION OF TRIANGULAR SILT DIKE

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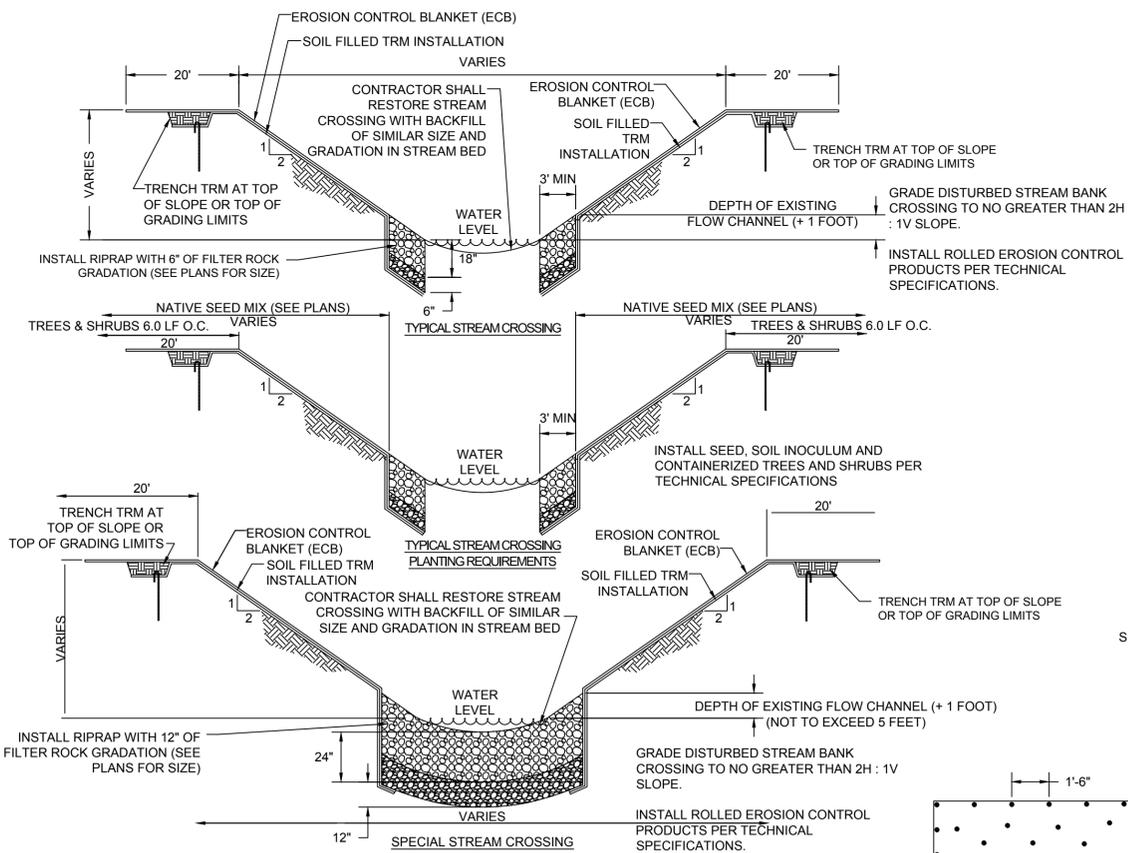




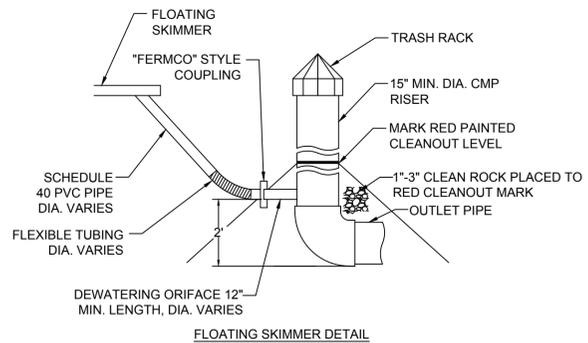
STREAM CROSSING LIMITS OF RESTORATION



TYP. TRM TOP OF BANK ANCHORING SYSTEM



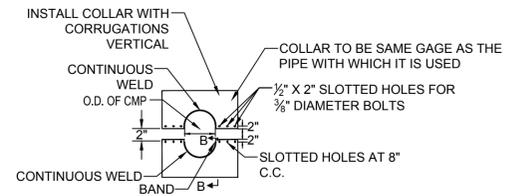
CREEK CROSSING



FLOATING SKIMMER DETAIL

NOTES:

1. INSTALL WATTLES GENERALLY PARALLEL TO THE CONTOURS
2. WATTLES SHALL BE INSPECTED REGULARLY, AND IMMEDIATELY AFTER A RUNOFF PRODUCING RAINFALL, TO ENSURE THEY REMAIN THOROUGHLY ENTRENCHED AND IN CONTACT WITH THE SOIL.
3. LIVE STAKES MAY BE USED FOR PERMANENT INSTALLATIONS.
4. WHEN SEDIMENT FILLS THE AREA BEHIND THE WATTLES TO 1/2 THE HEIGHT OF THE WATTLES, THE CONTRACTOR SHALL REMOVE THE SEDIMENT.
4. INSTALL WATTLES SNUGLY INTO THE TRENCH. ADJACENT WATTLES TIGHTLY, END TO END, WITHOUT OVERLAPPING THE ENDS.
5. PILOT HOLES MAY BE DRIVEN THROUGH THE WATTLE AND INTO THE SOIL, WHEN SOIL CONDITIONS REQUIRE.



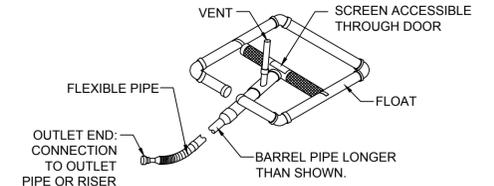
NOTES:

1. ALL MATERIALS TO BE IN ACCORDANCE WITH CONSTRUCTION MATERIAL SPECIFICATIONS.
2. WHEN SPECIFIED ON THE PLANS, COATING OF COLLARS SHALL BE IN ACCORDANCE WITH CONSTRUCTION MATERIAL SPECIFICATIONS.
3. UNASSEMBLED COLLARS SHALL BE MARKED BY PAINTING OR TAGGING TO IDENTIFY MATCHING PAIRS.
4. THE LAP BETWEEN THE TWO HALF SECTIONS AND BETWEEN THE PIPE AND CONNECTING BAND SHALL BE CAULKED WITH ASPHALT MASTIC AT THE TIME OF INSTALLATION.
5. EACH COLLAR SHALL BE FURNISHED WITH TWO (2) 1/2" DIAMETER RODS WITH STANDARD TANK LUGS FOR CONNECTING THE COLLARS TO THE PIPE.

SECTION B-B

NOTE:

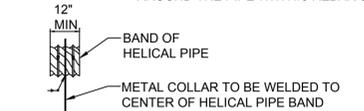
SIZE AND SPACING OF SLOTTED OPENINGS SHALL BE THE SAME AS SHOWN FOR CM COLLAR. USE RODS AND LUGS TO CLAMP BANDS SECURELY TO PIPE.



NOTES:

TWO OTHER TYPES OF ANTI-SEEP COLLARS ARE:

1. CORRUGATED METAL, SIMILAR TO ABOVE EXCEPT SHOP WELDED TO A 4 FT. SECTION OF THE PIPE AND CONNECTED TO THE PIPE WITH CONNECTING BANDS.
2. CONCRETE, 6 INCHES THICK FORMED AROUND THE PIPE WITH #3 REBAR SPACED 15".

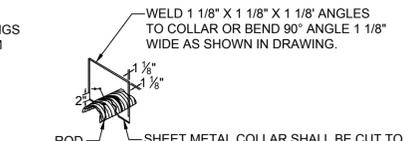


PARTIAL ELEVATION

SECTION B-B

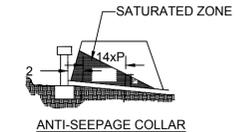
NOTE:

SIZE AND SPACING OF SLOTTED OPENINGS SHALL BE THE SAME AS SHOWN FOR CM COLLAR. USE RODS AND LUGS TO CLAMP BANDS SECURELY TO PIPE.



ISOMETRIC VIEW

CORRUGATED METAL ANTI-SEEPAGE COLLAR DETAIL

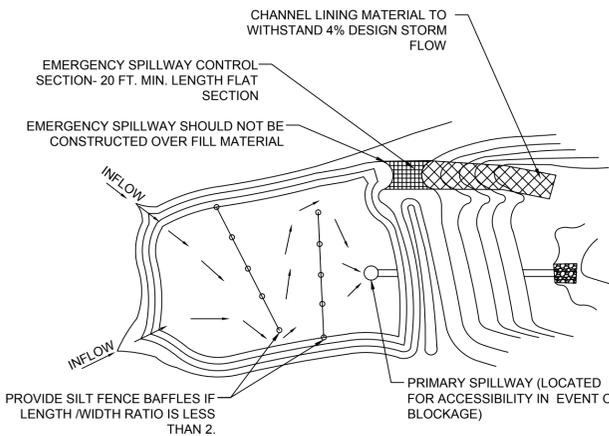


NOTES:

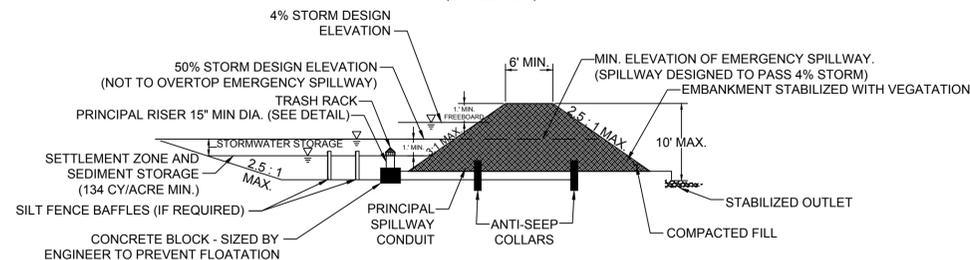
CONNECTIONS BETWEEN THE ANTI-SEEPAGE COLLAR AND THE BARREL MUST BE WATERTIGHT.

NOTE:

FOR BANDS AND COLLARS, MODIFICATION OF THE DETAILS SHOWN MAY BE USED PROVIDING EQUAL WATER TIGHTNESS IS MAINTAINED AND DETAILED DRAWINGS ARE SUBMITTED AND APPROVED BY THE ENGINEER PRIOR TO DELIVERY.



TEMPORARY SEDIMENT BASIN - PLAN VIEW NOT TO SCALE (2006 EDITION)



TEMPORARY SEDIMENT BASIN

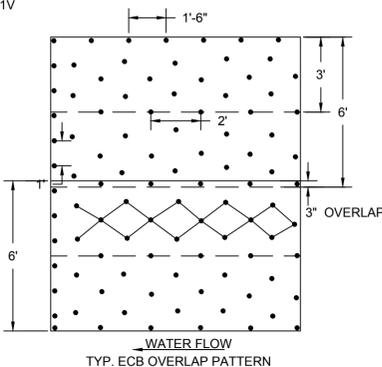
SEDIMENT BASIN NOTES:

DESIGN REQUIREMENTS:

1. THE PLAN AND PROFILES ARE SCHEMATIC IN NATURE. CONSTRUCTION PLANS MUST PROVIDE SPECIFIC SITE CONSTRUCTION ARRANGEMENTS. DETAILS GIVEN IN THESE DRAWINGS SHALL BE USED UNLESS ALTERNATE DETAILS ARE SHOWN IN PLAN AND APPROVED BY THE CITY.
2. IF THE LENGTH TO WIDTH RATIO IS LESS THAN 2, INTERIOR SEDIMENT FENCE BAFFLES SHALL BE PROVIDED TO REDUCE SHORT-CIRCUITING OF THE BASIN.
3. EMERGENCY SPILLWAYS TO BE LOCATED IN A NON-FILL LOCATION WHEN FEASIBLE AND SHALL BE LINED WITH A NON-ERODIBLE MATERIAL SUCH AS RIPPAP OR TURF REINFORCEMENT MAT.

MAINTENANCE/SAFETY REQUIREMENTS:

1. THE PERMIT HOLDER SHALL CLEAN OUT DEPOSITED SEDIMENT WHEN SEDIMENT STORAGE HAS BEEN REDUCED BY 20% OF THE ORIGINAL DESIGN STORAGE VOLUME. THE CLEANOUT LEVEL SHALL BE INDICATED ON THE RISER PIPE AS SHOWN ON THE DRAWINGS.
2. SEDIMENT BASINS SHALL BE FENCED USING CONSTRUCTION FENCE OR OTHER MATERIAL FOR SAFETY REASONS AND INCLUDE WARNING SIGNS, READING: "DANGER - KEEP OUT".

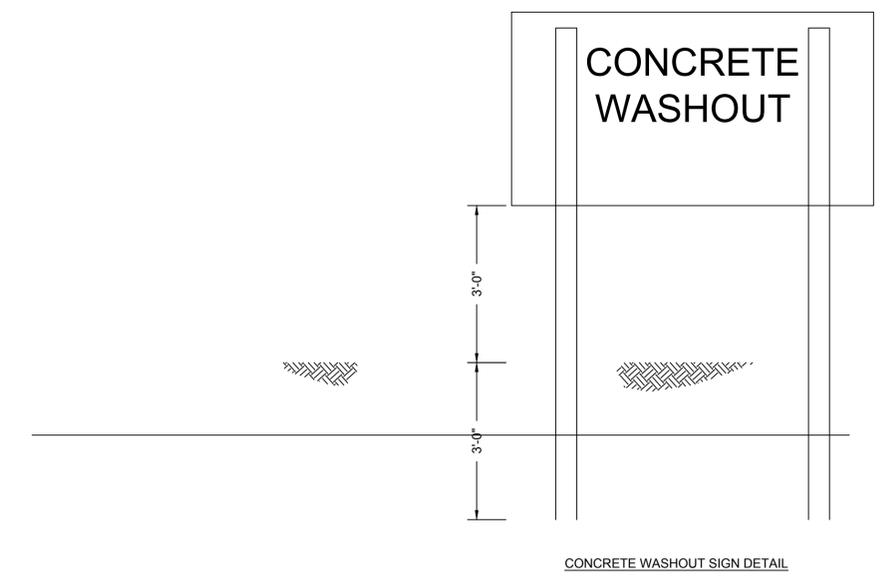
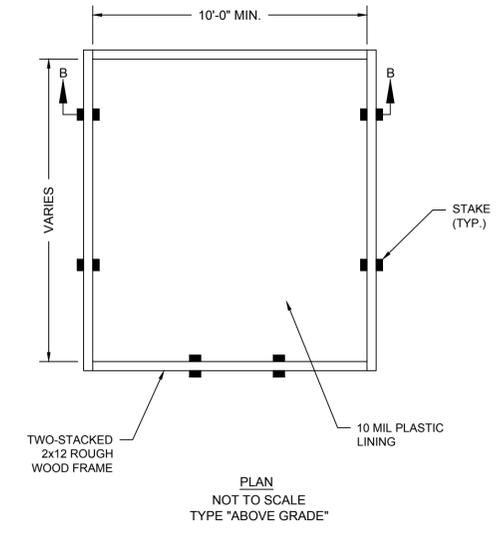
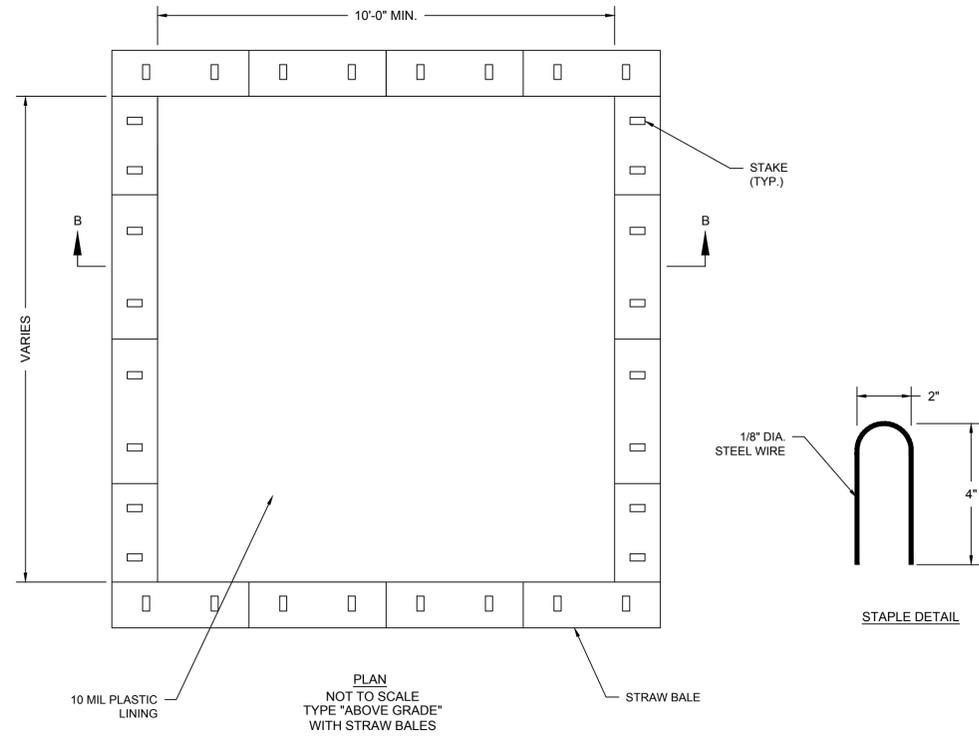


TYP. ECB OVERLAP PATTERN

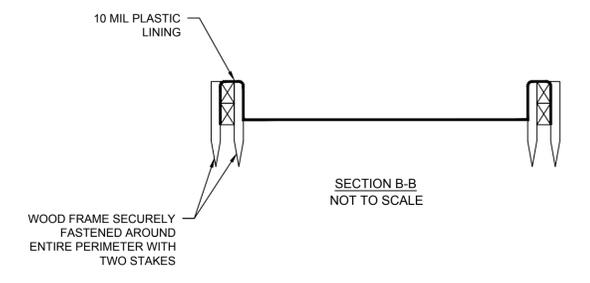
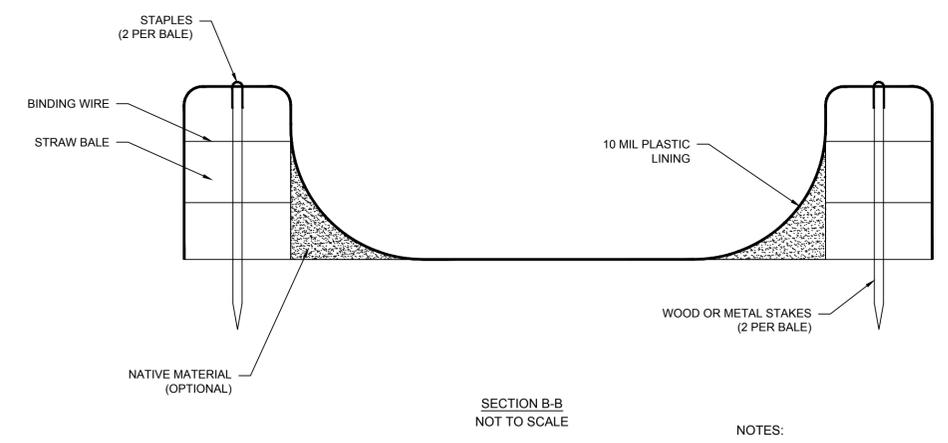
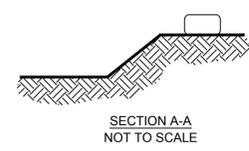
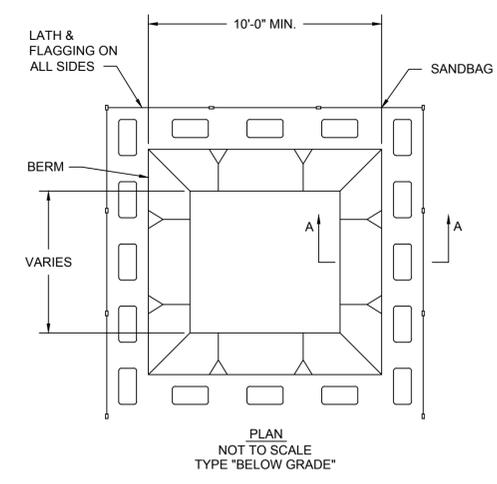
Sediment Basin Design Data Summary - Required on all Sediment Basin Plan Sheets					
Design Item:	Basin # 1	Basin # 2	Basin # 3	Units	Notes
Site Data:					
Tributary Drainage Area to Pond:				Acres	
50% (2 yr) Design Flow:				cfs	
4% (25 yr) Design Flow:				cfs	
Pond Data:					
Minimum Sediment Storage Volume				cu yd	134 cy/acre minimum
Bottom Elevation:				Ft	
Sediment Cleanout Elevation:				Ft	Elev equal to 20% of original design volume.
Top of Riser Elev.				Ft	Top of dry storage volume
Emergency Spillway Elev.				Ft	at or above Q-2 elev. 1.0 ft min above principal spillway
Top of Dam Elev.				Ft	1.0 ft min above Q-25 elev
Basin Shape Data:					
A = Area at Normal Pool				SF	
L = Length of flow path				Ft	
We = Effective Width = A/L				Ft	
Length to Width Ratio = L/We					If Length to Width Ratio is less than 2, baffles are required
Principal Spillway Data:					
Riser pipe dia				in	15-inch min. Size for 2 year flow minimum
Barrel pipe dia				in	15-inch min. Size for 2 year flow minimum
Riser Pipe Base Size				CY	Size to prevent flotation. 1.25 safety factor required
Skimmer perforation sizes				in	Applicable if skimmer is proposed.
Riser Pipe Perforation Columns				#	Applicable if perforated riser is proposed. See Table 1 for requirements.
Riser Pipe Perforation Dia				in	Applicable if perforated riser is proposed. See Table 1 for requirements.
Emergency Spillway Data:					
Design Depth in spillway:				ft	
Design velocity in spillway				ft/sec	
Lining Material:				N/A	

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- TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE LOCATED A MINIMUM OF 50 FT. FROM STORM DRAIN INLETS, OPEN DRAINAGE FACILITIES, AND WATERCOURSES. EACH FACILITY SHOULD BE LOCATED AWAY FROM CONSTRUCTION TRAFFIC OR ACCESS AREAS TO PREVENT DISTURBANCE OR TRACKING.
- A SIGN SHOULD BE INSTALLED ADJACENT TO EACH WASHOUT FACILITY TO INFORM CONCRETE EQUIPMENT OPERATORS TO UTILIZE THE PROPER FACILITIES.
- TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE CONSTRUCTED ABOVE GRADE OR BELOW GRADE AT THE OPTION OF THE CONTRACTOR. TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE CONSTRUCTED AND MAINTAINED IN SUFFICIENT QUANTITY AND SIZE TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.
- TEMPORARY WASHOUT FACILITIES SHOULD HAVE A TEMPORARY PIT OR BERMED AREAS OF SUFFICIENT VOLUME TO COMPLETELY CONTAIN ALL LIQUID AND WASTE CONCRETE MATERIALS GENERATED DURING WASHOUT PROCEDURES.
- WASHOUT OF CONCRETE TRUCKS SHOULD BE PERFORMED IN DESIGNATED AREAS ONLY.
- ONLY CONCRETE FROM MIXER TRUCK CHUTES SHOULD BE WASHED INTO CONCRETE WASH OUT.
- CONCRETE WASHOUT FROM CONCRETE PUMPER BINS CAN BE WASHED INTO CONCRETE PUMPER TRUCKS AND DISCHARGED INTO DESIGNATED WASHOUT AREA OR PROPERLY DISPOSED OF OFFSITE.
- ONCE CONCRETE WASTES ARE WASHED INTO THE DESIGNATED AREA AND ALLOWED TO HARDEN, THE CONCRETE SHOULD BE BROKEN UP REMOVED, AND DISPOSED OF OFFSITE IN A LEGAL MANNER. DISPOSE OF HARDENED CONCRETE ON A REGULAR BASIS.
- TEMPORARY CONCRETE WASHOUT FACILITY (TYPE ABOVE GRADE).
 - TEMPORARY WASHOUT FACILITY (TYPE ABOVE GRADE) SHOULD BE CONSTRUCTED AS SHOWN IN THE DETAILS ON THIS SHEET WITH A RECOMMENDED MINIMUM LENGTH AND MINIMUM WIDTH OF 10 FT., BUT WITH SUFFICIENT QUANTITY AND VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.
 - STRAW BALES, WOOD STAKES, AND SANDBAG MATERIALS SHOULD CONFORM TO THE PROVISIONS IN THE EROSION AND SEDIMENT CONTROL PLAN.
 - PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MIL POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.
- TEMPORARY CONCRETE WASHOUT FACILITY (TYPE BELOW GRADE).
 - TEMPORARY WASHOUT FACILITY (TYPE BELOW GRADE) SHOULD BE CONSTRUCTED AS SHOWN IN THE DETAILS ON THIS SHEET WITH A RECOMMENDED MINIMUM LENGTH AND MINIMUM WIDTH OF 10 FT., BUT WITH SUFFICIENT QUANTITY AND VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS.
 - LATH AND FLAGGING SHOULD BE COMMERCIAL TYPE.



- NOTES:
- ACTUAL LAYOUT DETERMINED IN FIELD.
 - THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

REMOVAL OF TEMPORARY CONCRETE WASHOUT FACILITIES

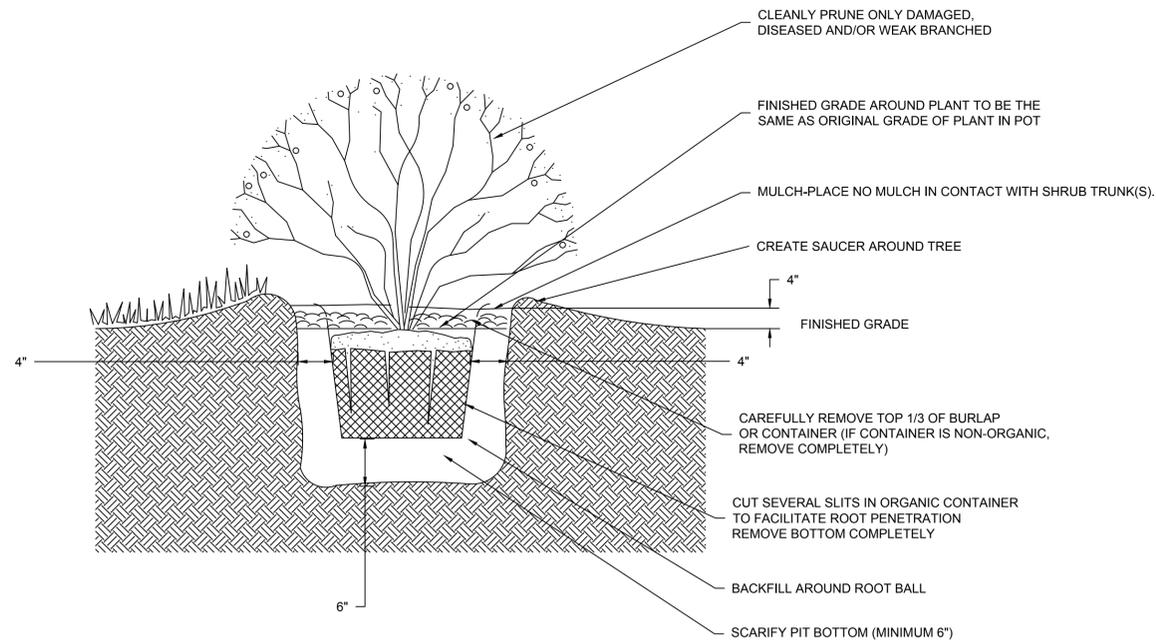
- WHEN TEMPORARY CONCRETE WASHOUT FACILITIES ARE NO LONGER REQUIRED FOR THE WORK, THE HARDENED CONCRETE SHOULD BE REMOVED AND DISPOSED OF. MATERIALS USED TO CONSTRUCT TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE REMOVED FROM THE SITE OF THE WORK AND DISPOSED OF.
- HOLES, DEPRESSIONS OR OTHER GROUND DEPRESSIONS OR OTHER GROUND DISTURBANCE CAUSED BY THE REMOVAL OF THE TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE BACKFILLED AND REPAIRED.

INSPECTION AND MAINTENANCE

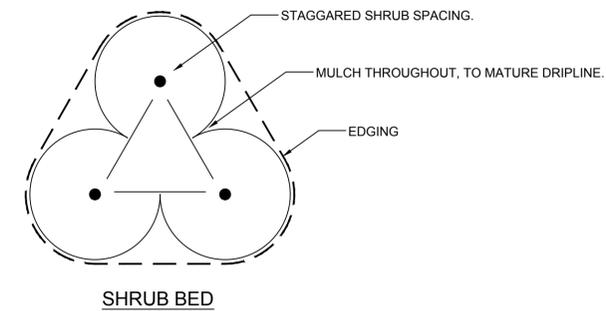
- INSPECT AND VERIFY THAT ACTIVITY-BASED BMPs ARE IN PLACE PRIOR TO THE COMMENCEMENT OF ASSOCIATED ACTIVITIES. WHEN ACTIVITIES ASSOCIATED WITH THE BMP ARE UNDER WAY, INSPECT WEEKLY DURING THE RAINY SEASON AND AT TWO WEEK INTERVALS IN THE NON-RAINY SEASON TO VERIFY CONTINUED BMP IMPLEMENTATION.
- TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE MAINTAINED TO PROVIDE ADEQUATE HOLDING CAPACITY WITH A MINIMUM FREEBOARD OF 4 IN. FOR ABOVE GRADE FACILITIES AND 12 IN. FOR BELOW GRADE FACILITIES. MAINTAINING TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD INCLUDE REMOVING AND DISPOSING OF HARDENED CONCRETE AND RETURNING THE FACILITIES TO A FUNCTIONAL CONDITION. HARDENED CONCRETE MATERIALS SHOULD BE REMOVED AND DISPOSED OF.
- WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES MUST BE CONSTRUCTED AND READY FOR USE ONCE THE WASHOUT IS 75% FULL.

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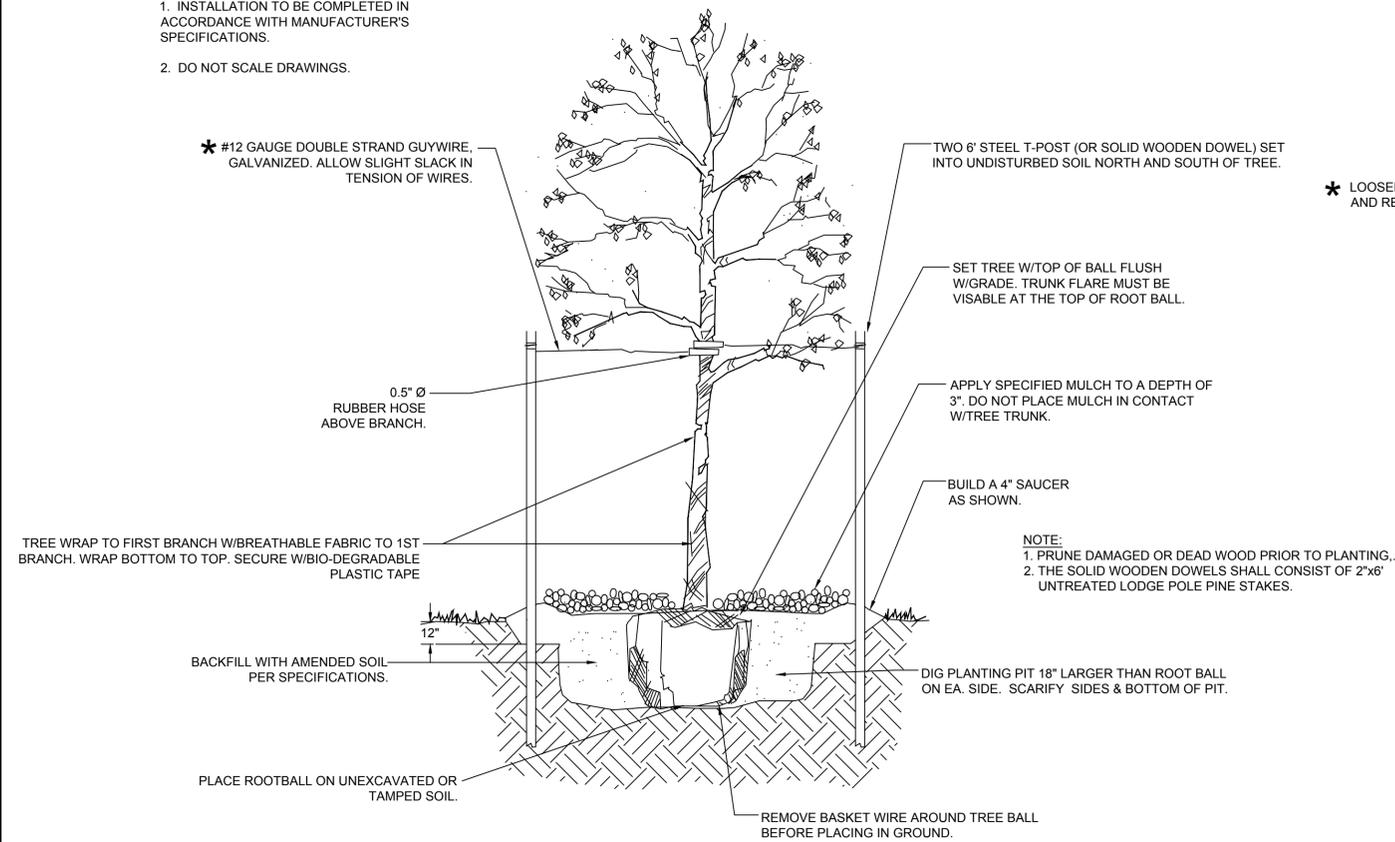


SHRUB PLANTING DETAIL

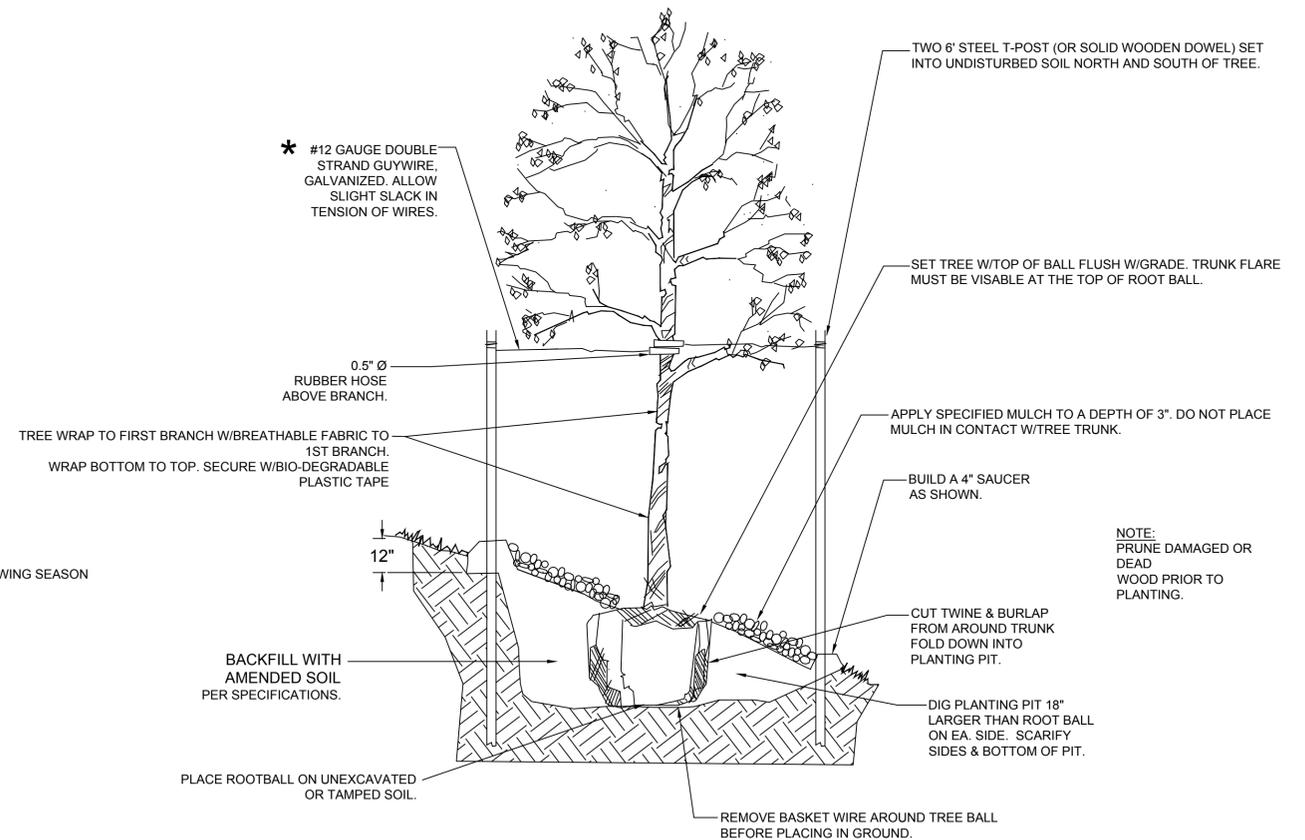


NOTES:

1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWINGS.



TREE PLANTING



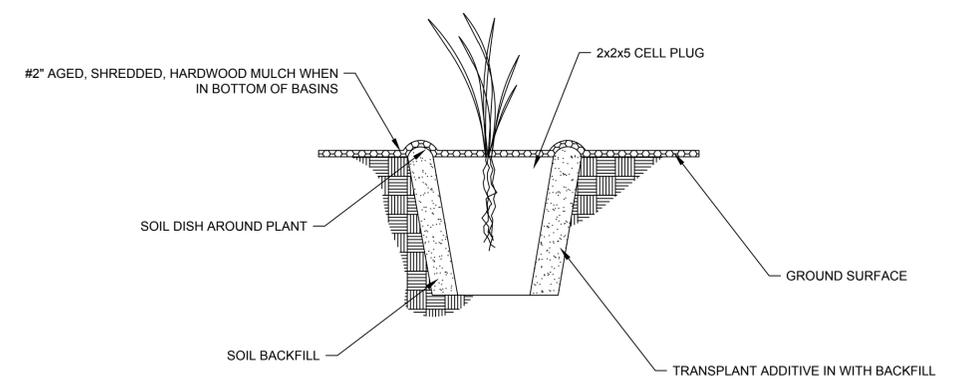
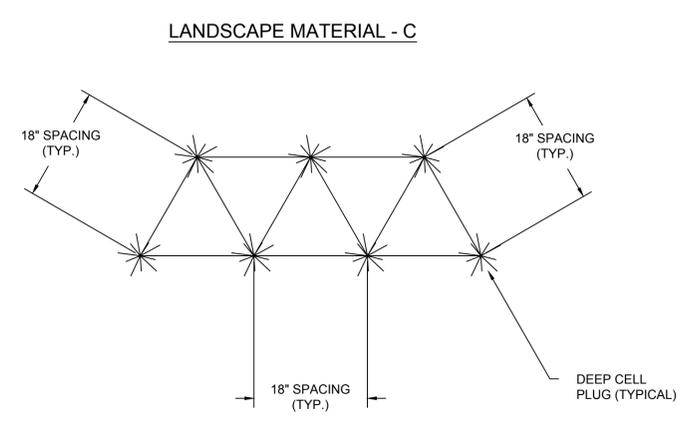
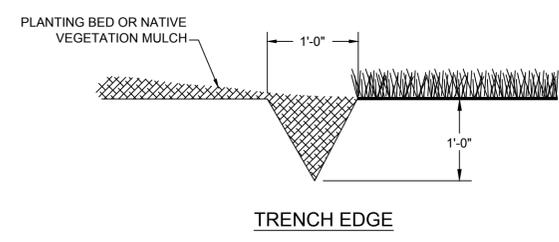
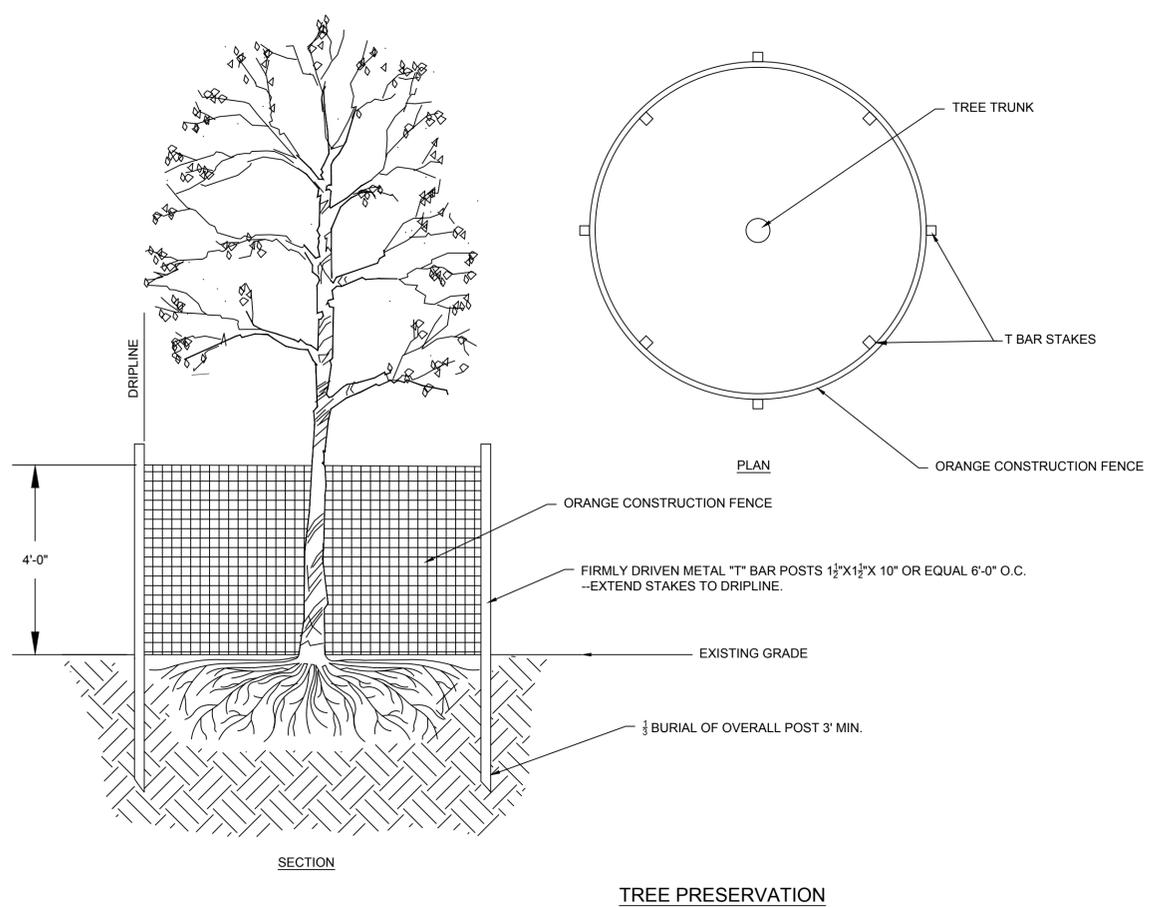
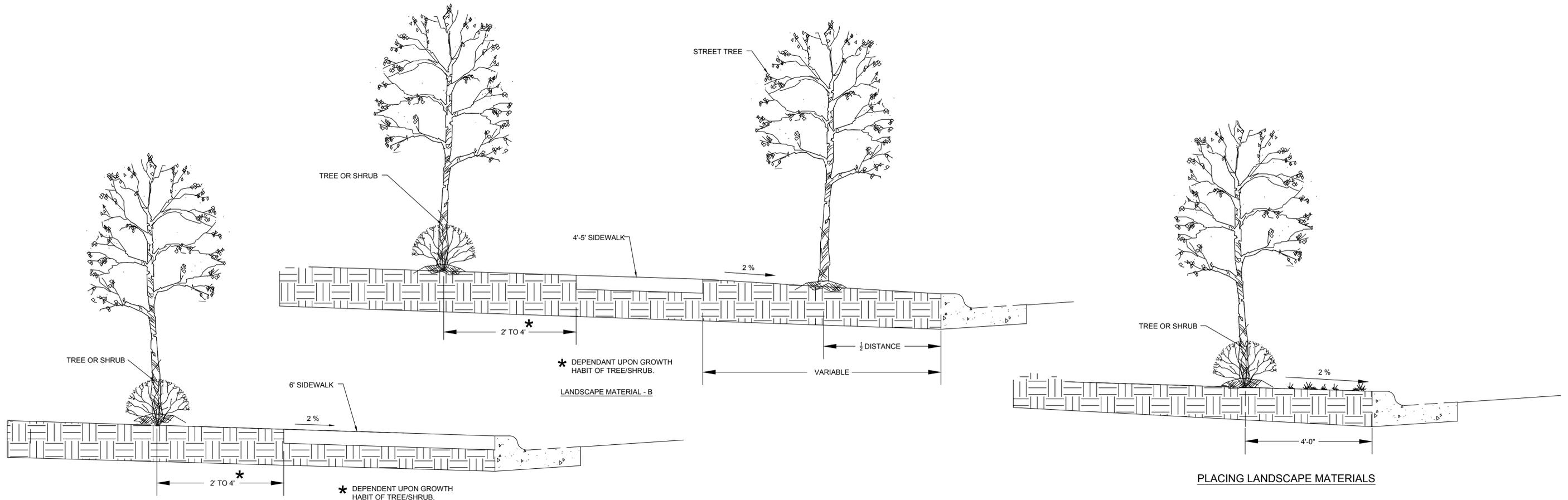
SPECIFICATIONS:

1. TOPSOIL MIX, SEE SPECIFICATION.
2. WATER THOROUGHLY AFTER INSTALLATION.
3. EXCAVATE ENTIRE SHRUB BED AS SHOWN ON PROJECT DRAWINGS.

TREE PLANTING ON SLOPE

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LANDSCAPING & PLANTINGS 1		SHEET D-600



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SHEET D-601

SUMMARY OF STREET LIGHTING QUANTITIES

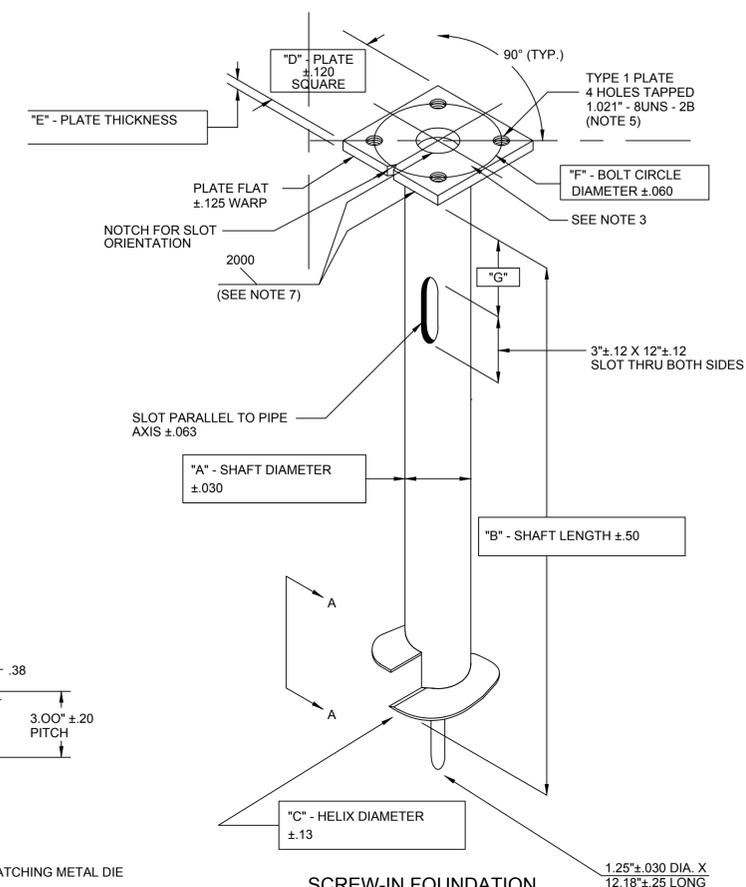
ITEM	UNIT	QUANTITY
40' ALUMINUM POLE (DESIGNATION)	EACH	
40' ALUMINUM POLE (DESIGNATION)	EACH	
40' ALUMINUM POLE (DESIGNATION)	EACH	
40' ALUMINUM POLE (DESIGNATION)	EACH	
30' ALUMINUM POLE (DESIGNATION)	EACH	
30' ALUMINUM POLE (DESIGNATION)	EACH	
30' ALUMINUM POLE (DESIGNATION)	EACH	
30' ALUMINUM POLE (DESIGNATION)	EACH	
20' ALUMINUM POLE - DARK BRONZE ANODIZED	EACH	
14' ALUMINUM POLE	EACH	
CONCRETE FOUNDATION FOR 40' POLE	EACH	
CONCRETE FOUNDATION FOR 30' POLE	EACH	
CONCRETE FOUNDATION FOR 20' POLE	EACH	
CONCRETE FOUNDATION FOR 14' POLE	EACH	
TYPE 1 SCREW IN FOUNDATION	EACH	
TYPE 2A SCREW IN FOUNDATION	EACH	
TYPE 2B SCREW IN FOUNDATION	EACH	
TYPE 3 SCREW IN FOUNDATION	EACH	
COBRA HEAD LED LUMINAIRE 400 WATT HPS EQUIV	EACH	
COBRA HEAD LED LUMINAIRE 250 WATT HPS EQUIV	EACH	
SHOE BOX LED LUMINAIRE 150 WATT HPS EQUIV	EACH	
POST TOP LED LUMINAIRE 150 WATT HPS EQUIV	EACH	
TYPE I JUNCTION BOX	EACH	
TYPE II JUNCTION BOX	EACH	
SERVICE BOX	EACH	
CONTROL CENTER - PAD MOUNTED	EACH	
CONTROL CENTER FOUNDATION	EACH	
CONTROL CENTER GROUND ROD	EACH	
PHOTO CELL (DELAY TYPE)	EACH	
2" CONDUIT	LN. FT.	
1c No. 4 TYPE USE DISTRIBUTION CABLE**	LN. FT.	
1-3c No. 12 POLE & BRACKET CABLE	LN. FT.	
CONNECTOR KIT, FUSED	EACH	
CONNECTOR KIT, UNFUSED	EACH	
FUSE CONNECTOR (BREAKER-TYPE)	EACH	
MULTIPLE TAP STREET LIGHT CONNECTOR	EACH	
CONDUIT MARKERS	EACH	
GEL-FILLED SPLICE ENCLOSURE (UNDERGROUND SPLICE)	EACH	
TRANSFORMER PAD (FOR POWER)	EACH	
SERVICE CABLE	LN. FT.	
BREAKAWAY BASE	EACH	

* THESE APPROXIMATE QUANTITIES WERE PREPARED SOLELY FOR THE CONTRACTOR'S CONVENIENCE AND ARE NOT GUARANTEED TO BE A COMPLETE LIST OF MATERIAL FOR THIS PROJECT.

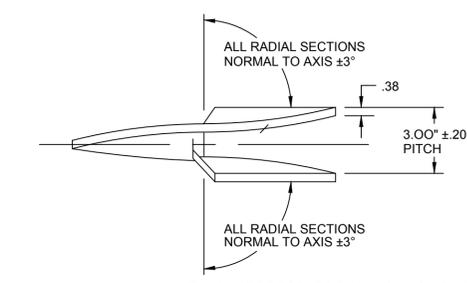
** FOR TOTAL LINEAL FOOTAGE OF 1c No. 4, MULTIPLY THIS QUANTITY BY 3. WIRE LENGTH SHOWN DOES NOT INCLUDE LENGTH FROM BURIED WIRE TO POLE BASE OR SLACK AT SERVICE/JUNCTION BOXES. SEE METHOD OF MEASUREMENT IN LENEXA'S TECHNICAL SPECIFICATIONS.

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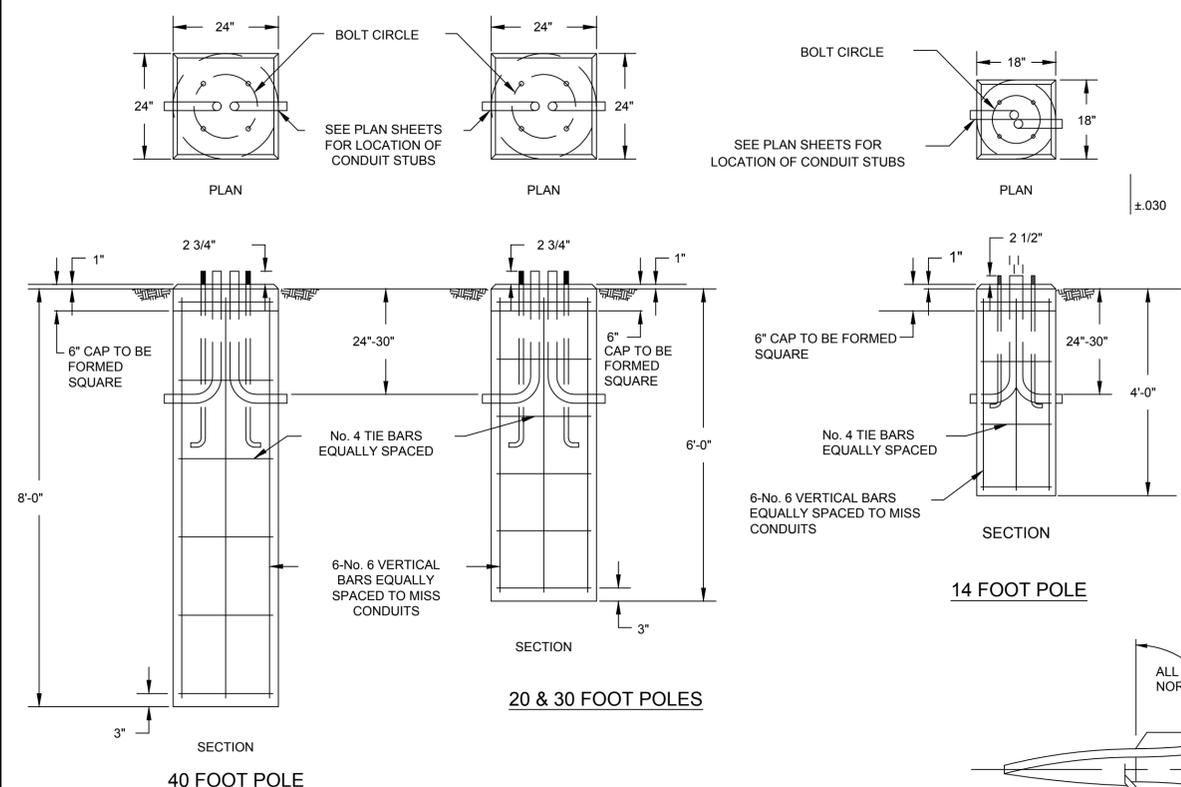
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POLE FOUNDATION DETAIL		SHEET D-700



SCREW-IN FOUNDATION



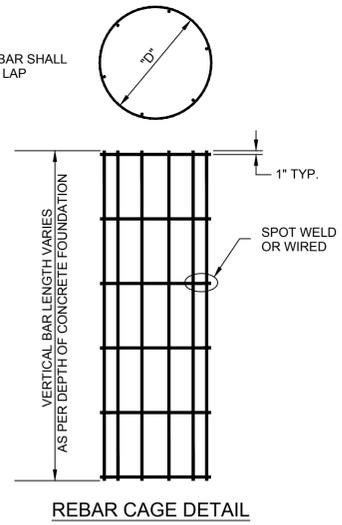
VIEW A-A
(SIDE VIEW OF TRUE HELICAL FORM)
THREADED STUD



CONCRETE FOUNDATION DETAILS

FDN. DIA.	FDN. LENGTH	REBAR CIRCLE "D"	VERTICAL REBAR LENGTH	HORIZONTAL REBAR SPACING
18"	4'	14"	3'-6"	14" MAX.
24"	6'	20"	5'-6"	14" MAX.
24"	8'	20"	7'-6"	14" MAX.
36"	8'	30"	7'-8"	12" MAX.
36"	10'	30"	9'-8"	12" MAX.
36"	12'	30"	11'-8"	9" MAX.

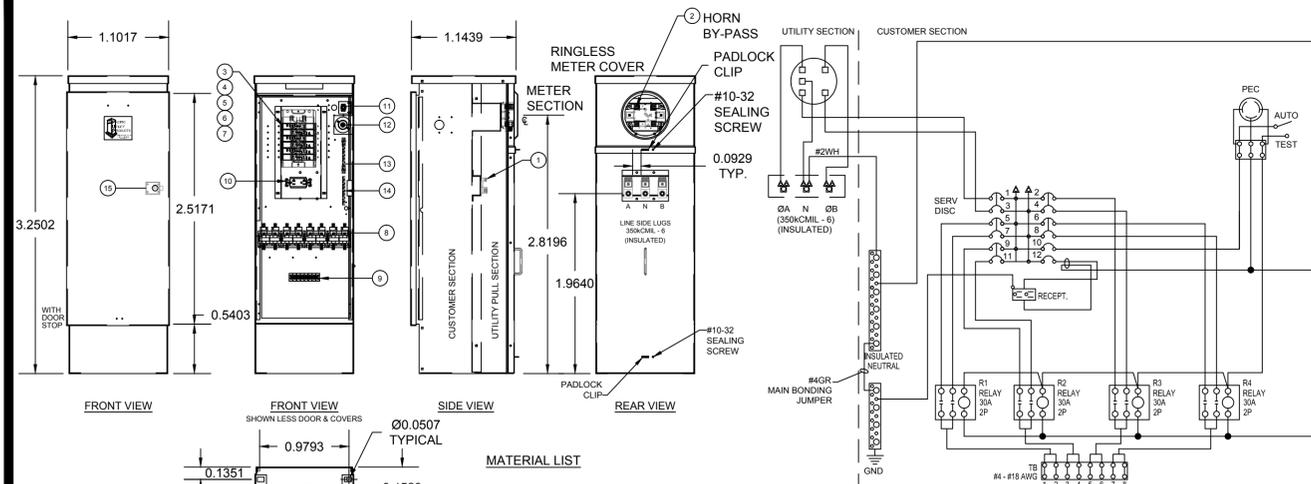
TYPE	MOUNTING HEIGHT	ARM SPECIFICATION	MAXIMUM TORQUE RATING (lbs ft)	A SHAFT DIA.	B SHAFT LENGTH	C HELIX DIA.	D PLATE SIZE	E PLATE THICKNESS	F BOLT CIRCLE	G SLOT LOCATION
1	14', 20'	-	15,000	6"	48"	12"	10"	0.75"	9.5"	12"
2A	30'	SINGLE/TWIN	15,000	6"	60"	12"	12"	1.0"	11.0"	18"
2B	40'	SINGLE	20,000	8"	60"	14"	14.5"	1.0"	11.5"	18"
3	40'	TWIN	20,000	8"	60"	14"	18"	1.25"	14.5"	18"



REBAR CAGE DETAIL

NOTES:

- FINISH: HOT DIP GALVANIZE PER ASTM-A153 (LATEST REVISION)
- BASEPLATE TO BE PERPENDICULAR TO SHAFT AXIS (±1) AND HOLE AND CONCENTRIC (±.188 I.D. FIM) TO SHAFT AXIS
- ALL BASES SHALL BE IDENTIFIED BY THE MANUFACTURER'S INITIALS AND THE ANCHOR TYPE (1,2 & 3) PERMANENTLY STAMP INTO THE TOP PLATE WITH 1/2" LETTERS. THE JULIAN DATE OF MANUFACTURE SHALL BE PERMANENTLY STAMPED IN 1/4" NUMERALS.
- PILOT POINT AND SHAFT AXES TO BE CONCENTRIC (±.125 FIM) AND IN LINE (±2')
- TAP 1" HOLES ON THE SPECIFIED BOLT CIRCLE PERPENDICULAR TO THE BASEPLATE. CLEAN AND CHASE THE THREADS AFTER HOT-DIP GALVANIZING SO THAT A BOLT MAY BE HAND INSTALLED.
- PREHEAT (ROOM TEMPERATURE 70°F), TUMBLEBLAST, HANDGRIND, AND CLEAN BASEPLATE, HELIX, AND CORE ON ALL WELD AREAS.
- FLAMECUT IRREGULARITIES PERMISSIBLE:
 - VALLEYS NOT TO EXCEED 3/32 IN. BELOW NOMINAL SURFACE LEVEL.
 - PEAKS OR POSITIVE IRREGULARITIES NOT TO EXCEED 1/32 IN. ABOVE NOMINAL SURFACE LEVEL OR INTERSECTIONS OF NOMINAL SURFACES.
- MANUFACTURER TO HAVE IN EFFECT INDUSTRY RECOGNIZED WRITTEN QUALITY CONTROL FOR ALL MATERIALS AND MANUFACTURING PROCESSES.
- ALL MATERIAL IS TO BE NEW, UNUSED AND MILL TRACEABLE MEETING THE FOLLOWING SPECIFICATIONS:
 - BASEPLATE: ASTM A36-(LATEST REVISION) HOT ROLLED STEEL PLATE
 - SHAFT: STEEL PIPE PILES, SEAMLESS OR STRAIGHT WELDED, GRADE 2 PER ASTM A252. ALTERNATE MATERIAL PIPE TYPE E OR S, GRADE B PER ASTM A53.
 - HELIX: ASTM A635-(LATEST REVISION) HOT ROLLED STEEL PLATE
 - PILOT POINT: ASTM A575-(LATEST REVISION) HOT ROLLED STEEL
- ALL 30' AND 40' ALUMINUM LIGHT POLES SHALL BE FURNISHED WITH BREAKAWAY BASES.
- THE DESIGN AND PERFORMANCE INTEGRITY OF THE FOUNDATION SHALL BE VERIFIED BY FULL-SCALE TESTS BY QUALIFIED ENGINEERS INDEPENDENT OF THE MANUFACTURER. CERTIFIED TEST REPORTS SHALL BE PROVIDED UPON REQUEST.
- FLAME CUT NOTCH OR PROJECTION WILL BE ON BASE PLATE TO INDICATE SLOT ORIENTATION.
- FOR LIGHT POLES WITH SCREW-IN FOUNDATIONS, MINOR LEVELING ADJUSTMENTS MAY ABE MADE WITH THE USE OF LEVELING SHIMS OR WASHERS. SHIMS AND WASHERS SHALL BE GALVANIZED OR CADMIUM-PLATED STEEL NO MORE THAN 0.25" THICK. ONLY ONE SHIM OR WASHER WILL BE PERMITTED AT ANY ONE ANCHOR BOLT WITH A MAXIMUM OF TWO PER POLE.
- CONCRETE FOUNDATIONS FOR LIGHT POLES SHALL BE USED WHEN THE LIGHT POLE IS TO BE INSTALLED IN THE SIDEWALK OR WITHIN 1.5' (18") FROM THE CENTER OF THE POLE TO THE EDGE OF THE SIDEWALK.



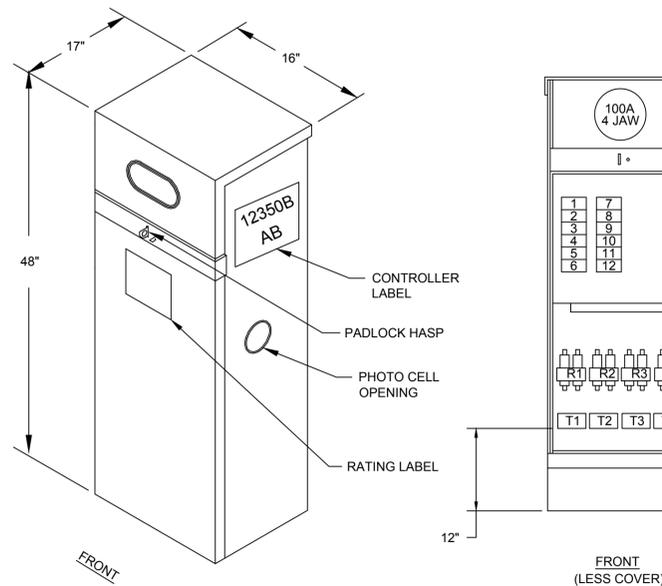
MATERIAL LIST

1. LANDING LUGS 350KCMIL-6 PER PH
2. MTR SOCKET 200A 5J with HORN BY-PASS
3. MAIN CB 100A 2P 120/240VAC 10KAIC
4. LOAD CENTER 125A 12CKT 1-PHASE
5. (4) CB 30A 2P 120/240VAC 10KAIC
6. (1) CB GFCI 20A 1P 120/240VAC 10KAIC
7. (1) CB 15A 1P 120/240VAC 10KAIC
8. (4) MERCURY RELAY 30A 2P MDI
9. (1) TERM BLK 8P 85A #4 - #18 AWG
10. (1) RECEPTACLE 20A 120V DUPLEX
11. SWITCH TOGGLE SPST 20A
12. PE RECEPTACLE
13. INSULATED NEUTRAL BUS
14. GROUND BUS
15. CORBIN / PELCO TYPE 2 LOCK

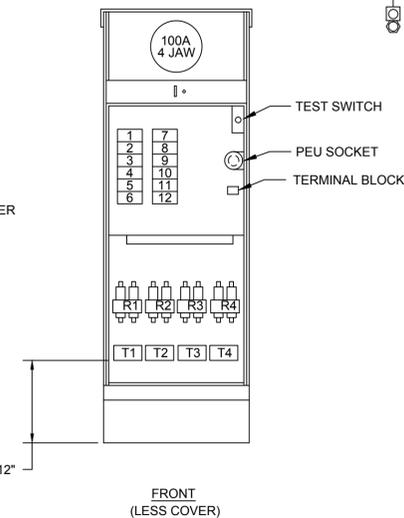
CIRCUIT DIRECTORY				
NO.	DESCRIPTION	QTY	AMP	POLE
1,2	MAIN	1	100	2
3,4	BRKR. 1	1	30	2
5,6	BRKR. 2	1	30	2
7,8	BRKR. 3	1	30	2
9,10	BRKR. 4	1	30	2
11	BRKR. 5	1	15	1
12	BRKR. 6	1	20	1
	RELAY 1	1	30	2
	RELAY 2	1	30	2
	RELAY 3	1	30	2
	RELAY 4	1	30	2

CONTROLLER LABEL NOTES

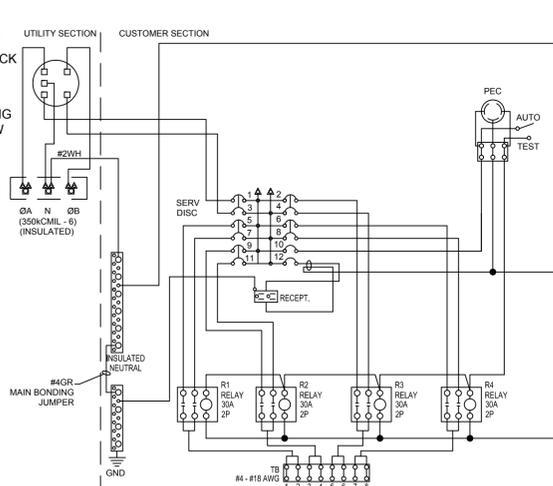
1. THE LABEL SHALL NOT BE SCREEN PRINTED.
2. THE LABEL SHALL CONTAIN 2" HIGH LETTERS AND NUMERALS ON A BACKGROUND MATERIAL THAT WILL ADHERE TO THE CONTROLLER.
3. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL CLEAN THE SURFACE OF THE CONTROLLER WITH RUBBING ALCOHOL TO ENSURE PROPER ADHESION OF THE LABEL/STICKER.
4. THE LABEL SHALL BE PLACED APPROXIMATELY 2 INCHES FROM THE TOP OF THE CONTROLLER ON THE STREET SIDE OF THE CONTROLLER BUT SHALL NOT COVER THE PHOTOCELL.
5. THE LABELS SHALL CONTAIN BLACK LETTERING ON A SILVER REFLECTIVE BACKGROUND.
6. PRIOR TO ORDERING THE LABELS, THE CONTRACTOR SHALL SUBMIT A SAMPLE TO THE CITY FOR REVIEW AND APPROVAL.



PAD-MOUNTED CONTROL CENTER



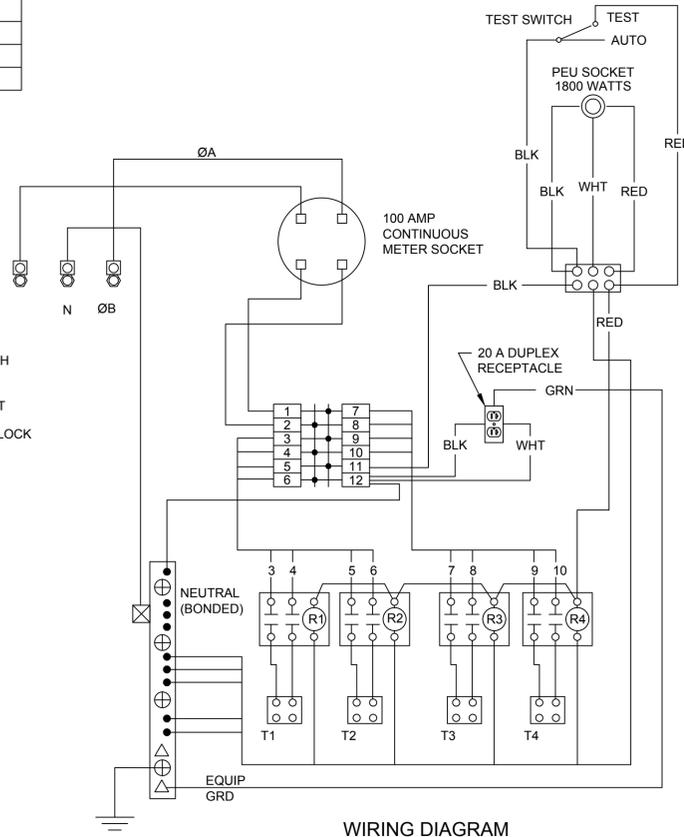
FRONT (LESS COVER)



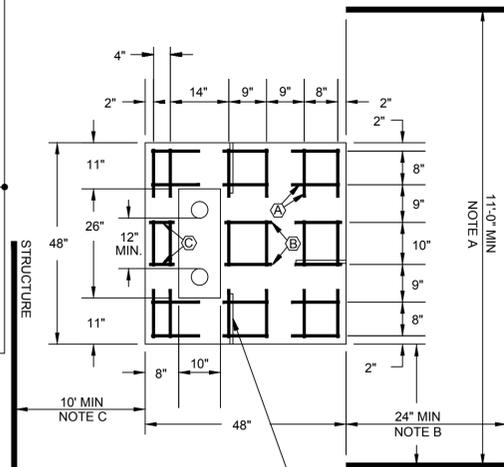
WIRING DIAGRAM

CONTROL CENTER NOTES:

1. ENCLOSURE TO BE ALUMINUM.
2. 20 A. 1-POLE CIRC. BREAKER, "CONTROL".
3. ALL FACTORY INSTALLED WIRE TO BE COPPER.
4. ALL TERMINALS APPROVED FOR COPPER OR ALUM. WIRE.
5. COPPER BUSSED CIRCUIT BREAKER INTERIOR.
6. PADLOCK PROVISIONS.
7. FINISH: BRUSHED ALUMINUM.



WIRING DIAGRAM

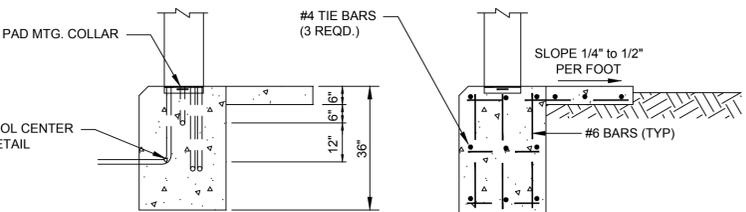


PAD USING REINFORCING RODS

STEEL REINFORCING BAR REQ'D				
BAR	QUANTITY	SIZE	LENGTH	
(A)	10	4	45"	
(B)	2	4	28" 12"	
(C)	2	4	6"	

TRANSFORMER PAD

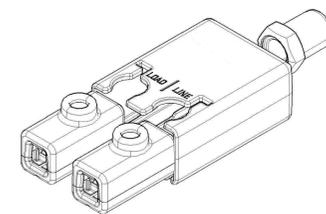
PREMOLDED CONCRETE BASE 1-PHASE TRANSFORMER PAD STOCK NO. 453-120
 CONCRETE REQUIRED - APPROXIMATELY 7 CUBIC FEET
 CONCRETE SHALL BE AIR ENTRAINED USING A FLY ASH MIX AND TEST
 4600 PSI AT 28 DAYS. 3/4" MAXIMUM ROCK SIZE.



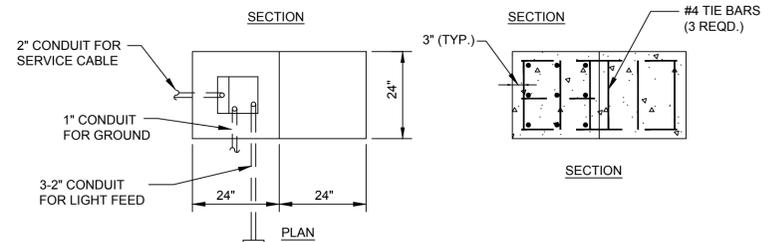
CONCRETE FOUNDATION FOR CONTROL CENTER

SERVICE NOTE:

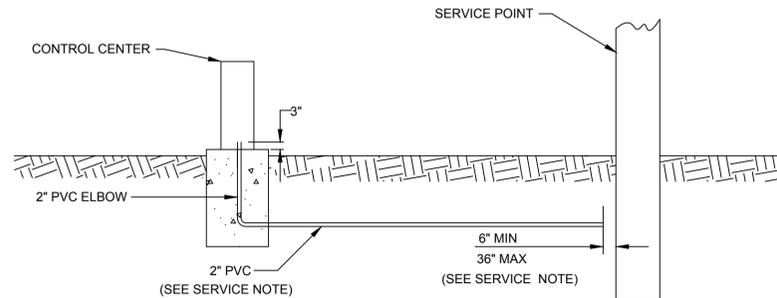
CONTRACTOR SHALL INSTALL 2" PVC CONDUIT AND SERVICE CABLE (30" DEEP) FROM THE METER TO THE SERVICE POINT. SERVICE CABLE SHALL HAVE AN AMPACITY RATING NOT LESS THAN 80 PERCENT OF THE MAXIMUM RATING OF THE CONTROL CENTER.



FUSE KIT DETAIL



CONCRETE FOUNDATION FOR CONTROL CENTER



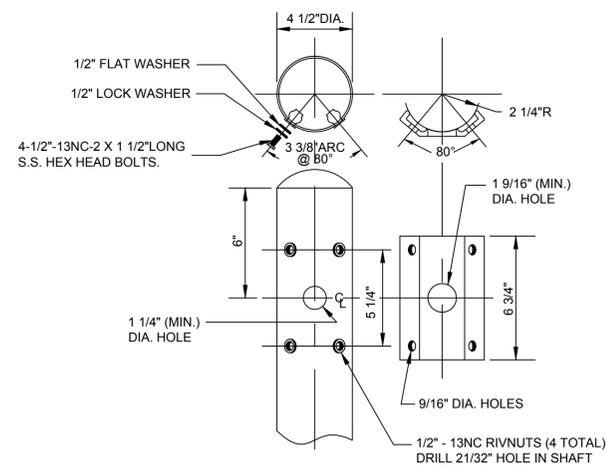
CONTROL CENTER SERVICE

CONTROL CENTER SERVICE NOTES:

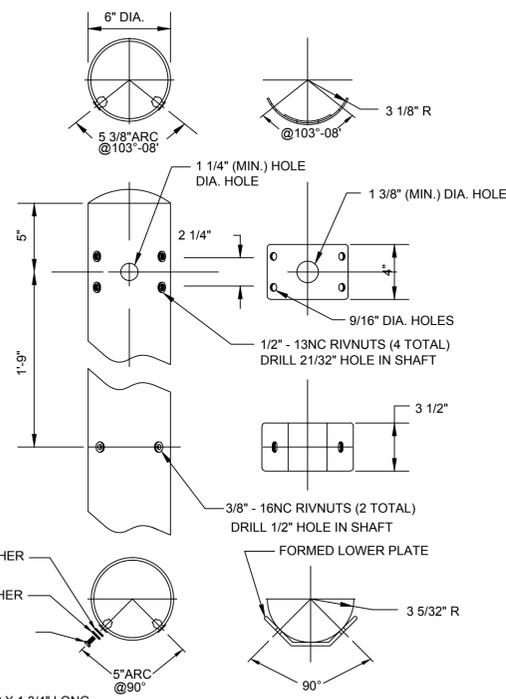
1. CONTRACTOR SHALL PROVIDE GROUND ROD(S) AS REQUIRED FOR MAXIMUM OF 25 OHMS RESISTANCE TO GROUND.
2. THE CONCRETE SLAB SHALL PROVIDE A SEMI-DRY WORKING AREA IN FRONT OF CONTROLLER CABINET.

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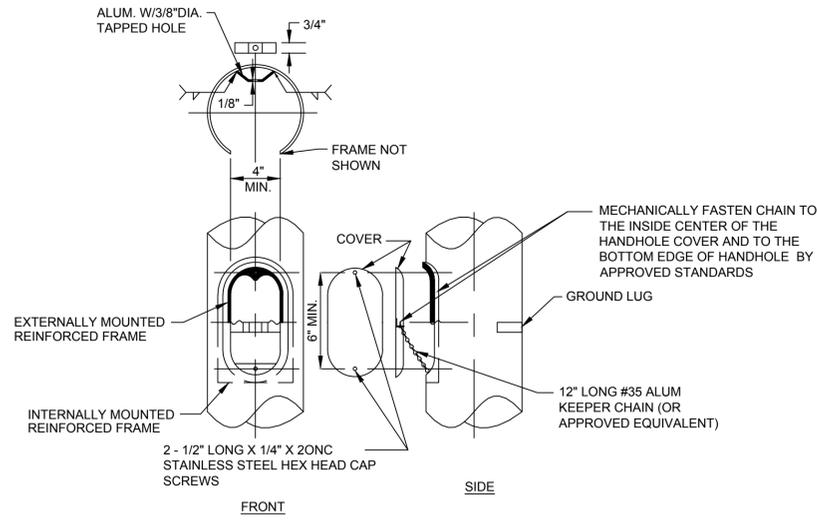




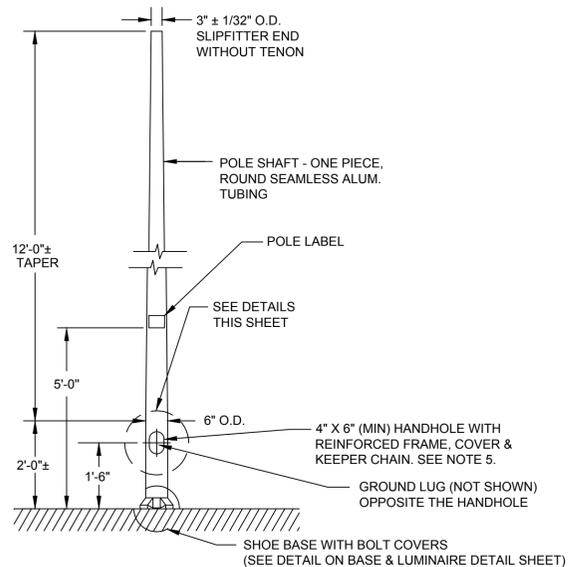
TYPE A - SINGLE MEMBER ARM



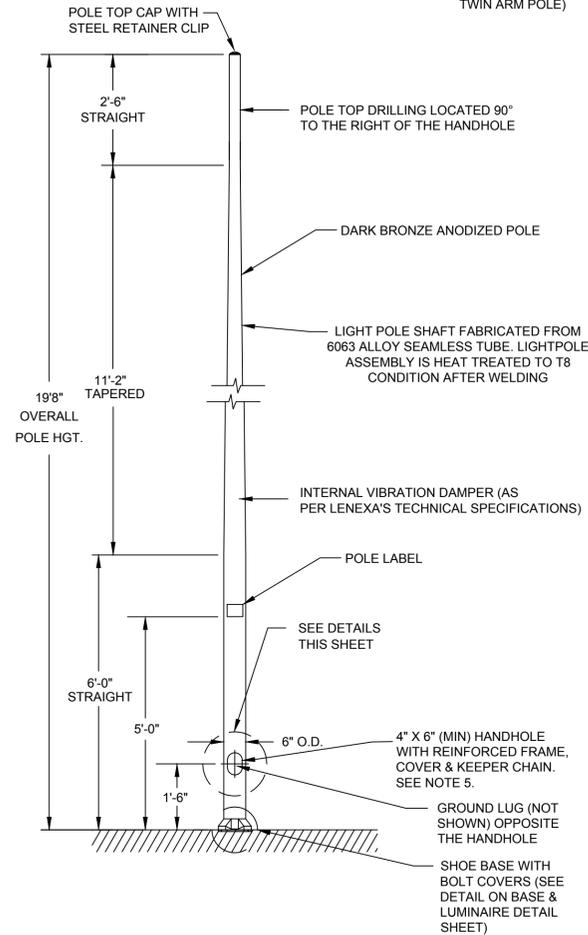
TYPE B - TRUSS ARM



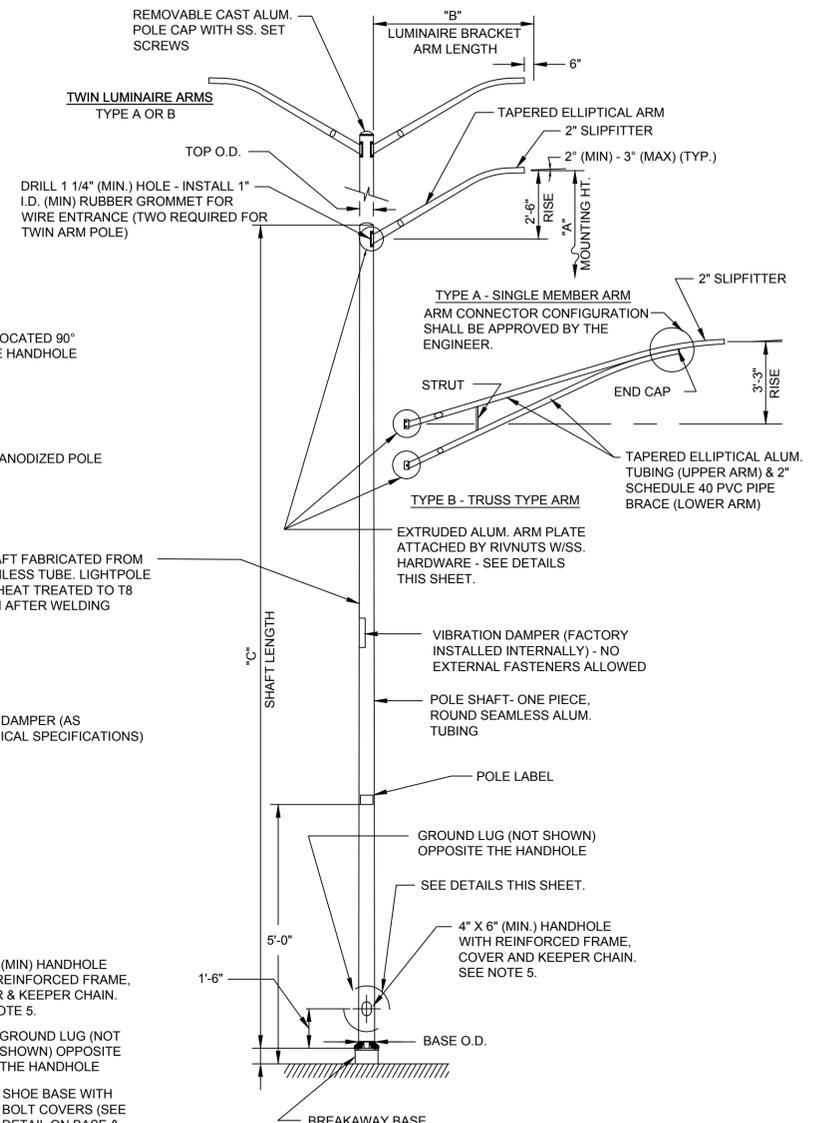
HANDHOLE



14' POLE ELEVATION
(SEE TABLE 1 FOR DESIGNATIONS & DIMENSIONS)



20' POLE ELEVATION
(SEE TABLE 1 FOR DESIGNATIONS & DIMENSIONS)



30' & 40' POLE ELEVATION
(SEE TABLE 1 FOR DESIGNATIONS & DIMENSIONS)

4 (TOP) - 1/2"-13NC-2 X 1 3/4" LONG
+ 2 (BOTTOM) - 3/8"-16NC-2 X 1 1/2" LONG

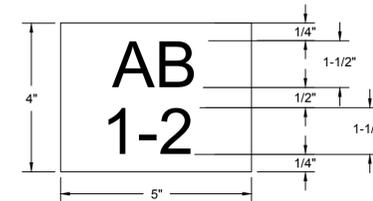
TABLE 1 - LUMINAIRE ARM, POLE, SHOE BASE & ANCHOR BOLT DATA

Designation	Mounting Height (A)	Luminaire Arm(s)		Type	Pole Shaft				Shoe Base		Anchor Bolt			Breakaway Base Type
		Length (B) Arm 1	Length (B) Arm 2		Base O.D.	Top O.D.	Min. Wall Thickness	Shaft Length (C)	Square (S)	Bolt Circle (BC)	Diameter	Length	Hook	
14	14	-	-	-	6"	3.0"	0.156"	14'-0"	9.75"	9.50"	1.00" 8NC	36"	4"	N/A
20	20	-	-	-	6"	4.5"	0.188"	19'-8"	9.75"	9.50"	1.00" 8NC	36"	4"	N/A
30-A-6	30	6	-	A	7"	4.5"	0.188"	27'-6"	10.50"	11.00"	1.00" 8NC	36"	4"	11"
30-A-8	30	8	-	A	7"	4.5"	0.188"	27'-6"	10.50"	11.00"	1.00" 8NC	36"	4"	11"
30-B-10	30	10	-	B	8"	6.0"	0.188"	26'-8"	11.25"	11.00"	1.00" 8NC	36"	4"	11"
30-A-8-8	30	8	8	A	8"	4.5"	0.188"	27'-6"	11.25"	11.00"	1.00" 8NC	36"	4"	11"
30-B-10-10	30	10	10	B	8"	6.0"	0.219"	26'-8"	11.25"	11.00"	1.00" 8NC	36"	4"	11"
40-A-6	40	6	-	A	8"	4.5"	0.219"	37'-6"	11.25"	11.00"	1.00" 8NC	36"	4"	11"
40-A-8	40	8	-	A	8"	4.5"	0.219"	37'-6"	11.25"	11.00"	1.00" 8NC	36"	4"	11"
40-B-10	40	10	-	B	8"	6.0"	0.219"	36'-8"	14.00"	11.00"	1.00" 8NC	48"	4"	11"
40-B-12	40	12	-	B	8"	6.0"	0.219"	36'-8"	14.00"	11.00"	1.00" 8NC	48"	4"	11"
40-B-15	40	15	-	B	8"	6.0"	0.219"	36'-8"	14.00"	11.00"	1.00" 8NC	48"	4"	11"
40-A-8-8	40	8	8	A	8"	4.5"	0.250"	37'-6"	11.25"	11.00"	1.00" 8NC	36"	4"	11"
40-B-8-12	40	8	12	B	10"	6.0"	0.219"	36'-8"	14.00"	14.50"	1.00" 8NC	48"	4"	15"
40-B-12-12	40	12	12	B	10"	6.0"	0.219"	36'-8"	14.00"	14.50"	1.00" 8NC	48"	4"	15"
40-B-15-15	40	15	15	B	10"	6.0"	0.219"	36'-8"	14.00"	14.50"	1.00" 8NC	48"	4"	15"

GENERAL NOTES:

- THE ALUMINUM LIGHTING STANDARD INCLUDING ANCHORAGE WITH LUMINAIRE PROPERLY INSTALLED SHALL BE IN ACCORDANCE WITH THE 1994 AMERICAN ASSOCIATION OF HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) FOR 80 MPH WIND AND A LUMINAIRE SIZE OF 1.3 SQ. FT. MIN. EFFECTIVE PROJECTED AREA WEIGHING 55 LB. MIN.
- THE INTENT OF THESE MATERIAL RESTRICTIONS IS TO PROVIDE INTERCHANGEABILITY OF BOTH TYPES OF LUMINAIRE ARMS FOR MOUNTING ON EITHER THE 30' OR 40' POLE.
- ANCHOR BOLTS/THREADED STUDS SHALL PROJECT ABOVE THE FOUNDATION AS PER MANUFACTURER'S RECOMMENDED PRACTICES - 2.5" TO 3".
- ALL CIRCUIT CABLES IN BOXES AND POLES SHALL BE IDENTIFIED WITH COLOR-CODED TAPE AS FOLLOWS: FROM CONTROLLER: TAPE COLOR CODE RED INTO LIGHTPOLE; TAPE COLOR CODE RED OUT OF LIGHTPOLE; TAPE COLOR CODE BLUE GROUND CABLE; TAPE COLOR CODE WHITE
- THE POLE LABEL AND THE 4"X6" HANDHOLE ARE SHOWN IN THE SAME PLANE IN THE DETAILS ABOVE. HOWEVER, THE POLE LABEL SHALL BE PLACED ON THE STREET SIDE OF THE POLE WHILE THE HANDHOLE SHALL BE ORIENTED 180 DEGREES FROM THE LUMINAIRE ARM.

POLE LABEL DETAIL



POLE LABEL NOTES

- THE LABEL SHALL NOT BE SCREEN PRINTED.
- THE LABEL SHALL CONTAIN 1-1/2" HIGH LETTERS AND NUMERALS ON A BACKGROUND MATERIAL THAT WILL ADHERE TO THE POLE.
- PRIOR TO INSTALLATION, THE CONTRACTOR SHALL CLEAN THE SURFACE OF THE POLE WITH RUBBING ALCOHOL TO ENSURE PROPER ADHESION OF THE LABEL/STICKER.
- THE LABEL SHALL BE PLACED 5' ABOVE THE GROUND ON THE STREET SIDE OF THE POLE.
- LABELS THAT WILL BE PLACED ON NATURAL OR CHAMPAGNE-COLORED ALUMINUM POLES OR GALVANIZED STEEL POLES SHALL CONTAIN BLACK LETTERING ON A SILVER REFLECTIVE BACKGROUND. LABELS THAT WILL BE PLACED ON BLACK POLES SHALL CONTAIN REFLECTIVE SILVER LETTERING ON A BLACK REVERSE PRINT BACKGROUND. LABELS THAT WILL BE PLACED ON BROWN POLES SHALL CONTAIN REFLECTIVE SILVER LETTERING ON A DARK BROWN REVERSE PRINT BACKGROUND.
- PRIOR TO ORDERING THE LABELS, THE CONTRACTOR SHALL SUBMIT A SAMPLE TO THE CITY FOR REVIEW AND APPROVAL.

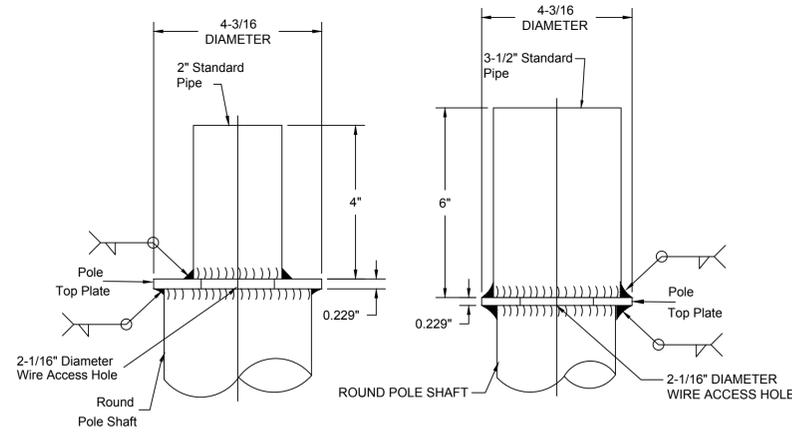
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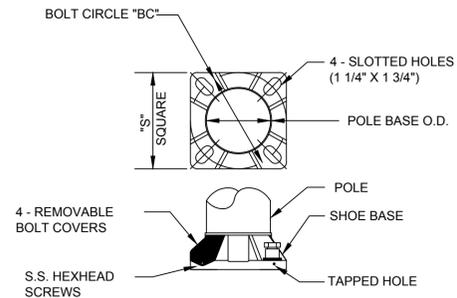
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KANSAS

POLE DETAILS

SHEET D-702



TENON & MOUNTING ARM DETAIL



NOTE:
SEE TABLE 1 ON POLE
DETAILS STANDARD SHEET.

SHOE BASE

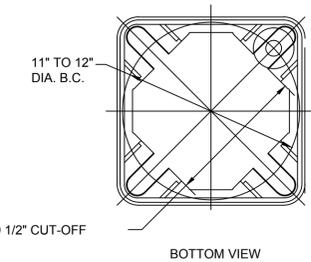
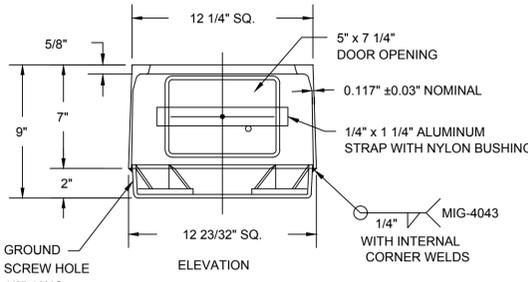
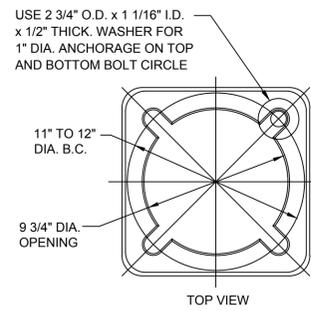
MATERIAL DATA

COMPONENT	ALUMINUM ALLOY DESIGNATION	SPECIFICATION
SHOE BASE	356-T6, CAST	ASTM B26 OR B108
BREAKAWAY BASE	356-T6	ASTM B108
BOLT COVERS	356 or 360, CAST	ASTM B26 OR B108
POLE SHAFT	6063-T6, EXTRUDED	ASTM B221 OR B241
GROUND LUG	6061-T5 or 6063-T6, PLATE	ASTM B221
REINFORCED HANDHOLE FRAME	356-T6 or 6061-T6	ASTM B26, B208 OR B221
HANDHOLE COVER	6063-T6	ASTM B209, B221 OR B241
LUMINAIRE ARM & TUBING PIPES *	6063-T6	ASTM B221, B241 OR B429
LUMINAIRE ARM PLATE	6061-T6 OR 6063-T6 EXTRUDED	ASTM B221
LUMINAIRE ARM STRUT* & ARM CONNECTOR *	6061-T6 OR 6063-T6 EXTRUDED	ASTM B221, B241 OR B429
POLE CAP	356, CAST	ASTM B26 OR B108
ANCHOR BOLTS	NA	ASTM A-576 STEEL, GALVANIZED PER ASTM A-153

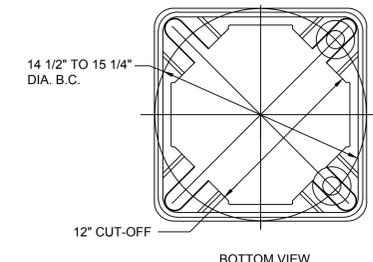
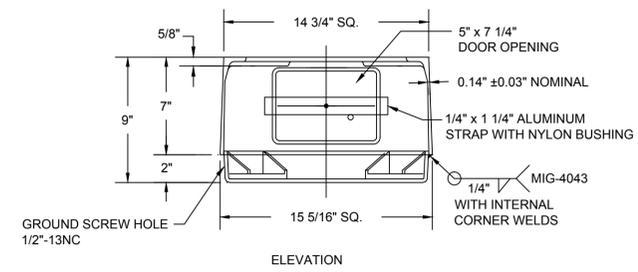
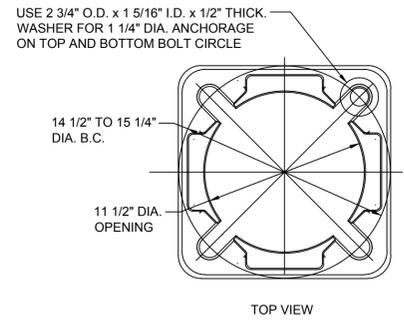
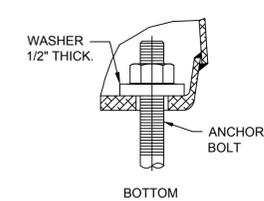
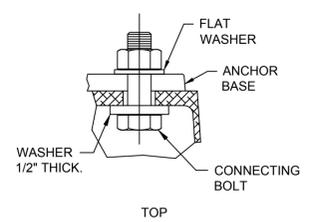
*TRUSS-TYPE LUMINAIRE ARMS (TYPE B) ONLY.

BASE & LUMINAIRE NOTES

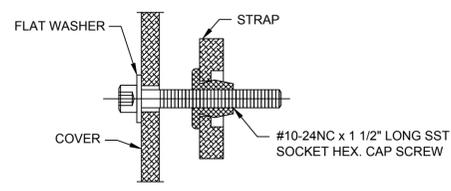
- POLE SHAFT SHALL HAVE A SATIN GROUND FINISH.
- ALL HARDWARE (BOLTS, NUTS, WASHERS BUT NOT INCLUDING ANCHOR BOLTS) NOT OTHERWISE SPECIFICALLY DESIGNATED IN THE SPECIFICATIONS OR DETAILS SHALL BE ALUMINUM OR 300-SERIES PASSIVATED STAINLESS STEEL.
- ANCHOR BOLTS-GALV. STEEL ANCHOR BOLTS WITH 50,000 PSI MINIMUM YIELD; TOP 10" MIN. GALVANIZED; INC. ONE NUT EACH AND TWO FLAT WASHERS GALVANIZED TO ASTM A-153 STANDARDS (4 BOLTS, 4 NUTS, & 8 WASHERS TO BE PROVIDED WITH EACH POLE). ANCHOR BOLTS SHALL BE USED WITH CONCRETE FOUNDATIONS-THREADED STUD (SEE POLE FOUNDATION DETAIL SHEET) SHALL BE USED WITH SCREW-IN FOUNDATION ANCHOR.
- ALL WELDING IS TO BE DONE WITH 4043 WELD WIRE. ALL ARMS AND SHAFTS ARE TO BE HEAT-TREATED TO T6 TEMPER AFTER WELDING.
- ALL POLES, ARMS, AND MISCELLANEOUS EQUIPMENT SHALL CONFORM TO THESE DETAILS AND AS SPECIFIED IN THE LATEST EDITION OF THE STREET LIGHTING SPECIFICATION. THE POLES AND ARMS SHALL BE DIMENSIONED TO ENABLE INTERCHANGEABILITY.
- THE ALUMINUM LIGHTING STANDARD INCLUDING ANCHORAGE WITH LUMINAIRE PROPERLY INSTALLED SHALL BE IN ACCORDANCE WITH THE 1994 AMERICAN ASSOCIATION OF HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) FOR 80 MPH WIND AND A LUMINAIRE SIZE OF 1.3 SQ.FT. MIN. EFFECTIVE PROJECTED AREA WEIGHING 55 LB. MIN.



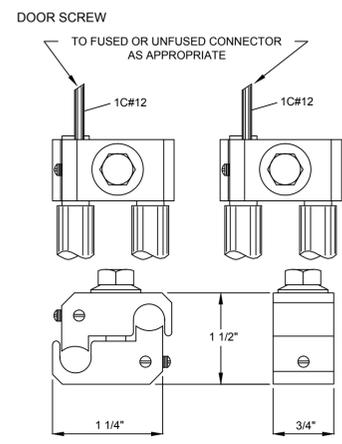
11\"/>



15\"/>

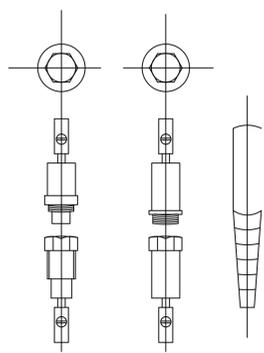


BREAKER-TYPE FUSE CONNECTOR DETAIL

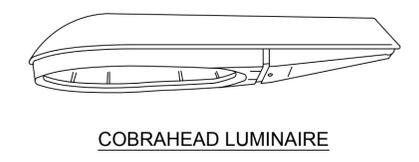


MULTI-TAP CONNECTOR

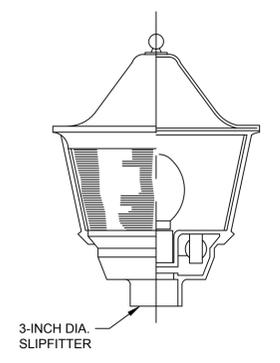
NOTE:
INCLUDES PLASTIC INSULATING COVER



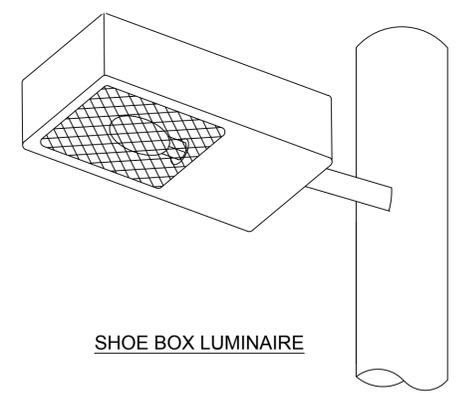
FUSE KIT DETAIL



COBRAHEAD LUMINAIRE



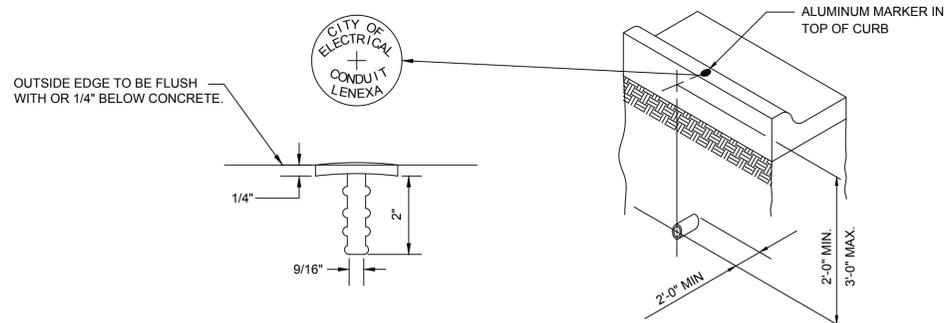
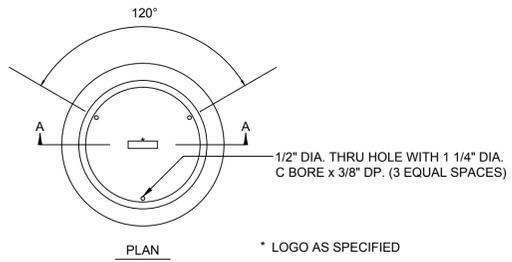
POST TOP LUMINAIRE



SHOE BOX LUMINAIRE

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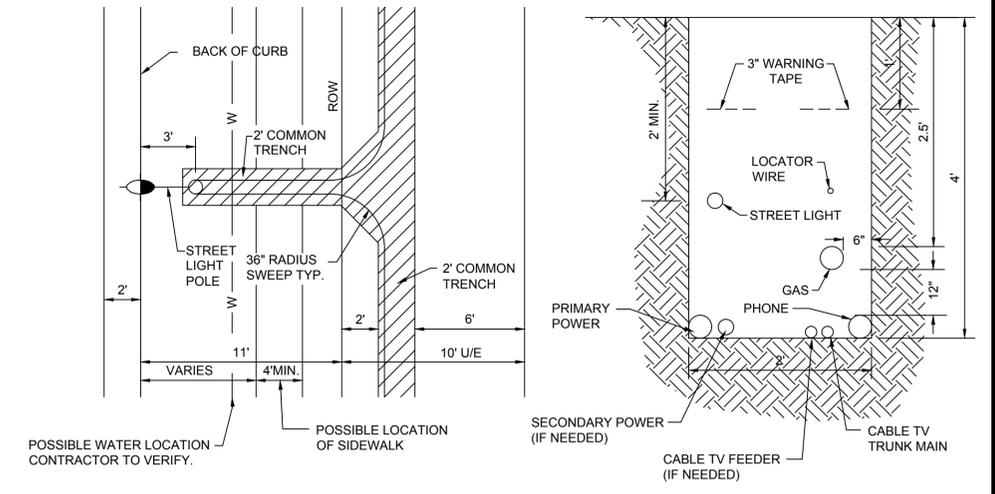
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BASE & LUMINAIRE DETAILS		SHEET D-703



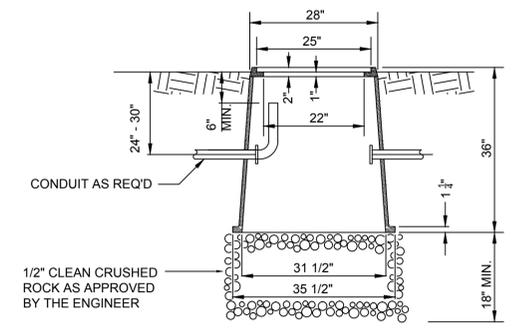
CONDUIT MARKING NOTES:

- CONDUIT SHALL BE PLACED 2'-0" TO 3'-0" BELOW THE TOP OF CURB ELEVATION AND SHALL EXTEND 2'-0" MINIMUM BEYOND THE BACK OF CURB. CONDUIT SHALL BE INSTALLED TO DRAIN, AND ALL ENDS SHALL BE THREADED AND CAPPED. AN ALUMINUM MARKER SHALL BE PLACED IN THE TOP OF THE CURB DIRECTLY OVER THE CONDUIT AND SHALL BE FLUSH WITH THE CURB. ALUMINUM MARKERS WILL BE FURNISHED BY THE CONTRACTOR.
- THE CONTRACTOR SHALL NOTIFY THE CITY OF LENEXA, DEPARTMENT OF MUNICIPAL SERVICES TRAFFIC DIVISION (913-477-7835) FOR INSPECTION OF THE CONDUIT INSTALLATION. AT LEAST 24 HOURS NOTICE SHALL BE PROVIDED. THE CONDUIT SHALL NOT BE COVERED SO AS TO ENSURE PROPER DEPTH, CORRECT CONDUIT MATERIAL, AND PROPER CONDUIT END TREATMENT AS DESCRIBED ABOVE.

CONDUIT MARKING DETAIL

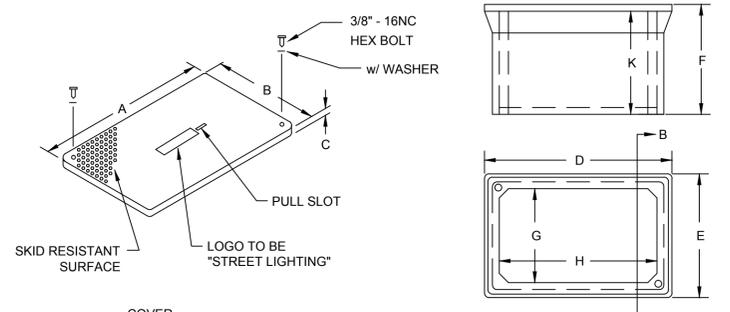


ALTERNATE TRENCHING DETAIL



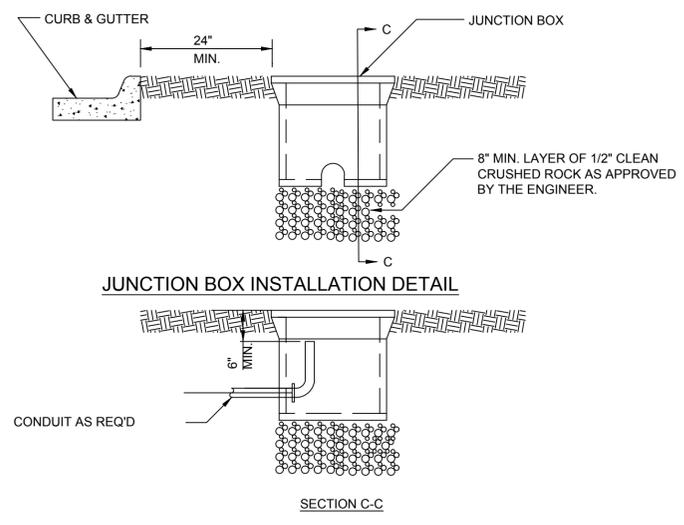
SECTION A - A

FIBERGLASS REINFORCED POLYMER CONCRETE SERVICE BOX

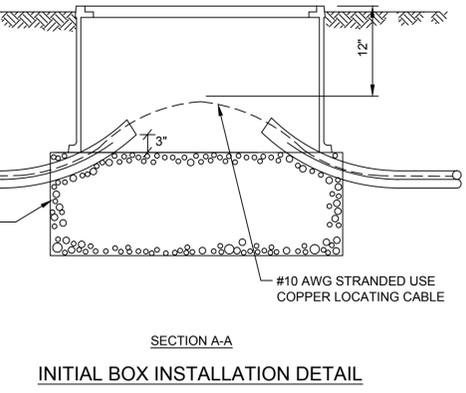
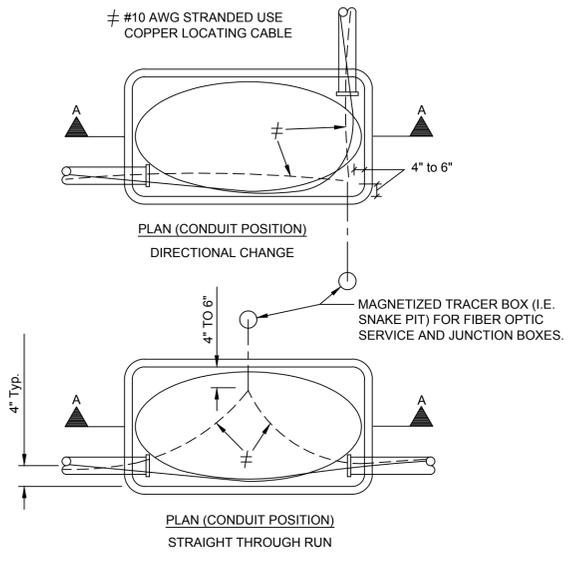


TYPE	DIMENSIONS (IN.) *									
	A	B	C	D	E	F	G	H	J	K
I	12 7/8	12 7/8	1 1/2	14	14	12 3/4	10 1/2	10 1/2	1	12
II	18 1/2	11 1/2	1 1/2	20 1/2	13 1/2	12	10 1/4	17 1/4	3/8	11 1/4
III	30 1/2	17 1/2	1 3/4-2		30	15 1/2	28 1/2			

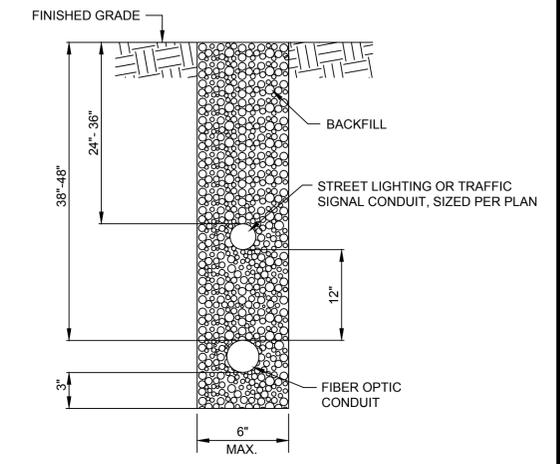
* TOLERANCE ±1/4" IN ANY DIMENSION



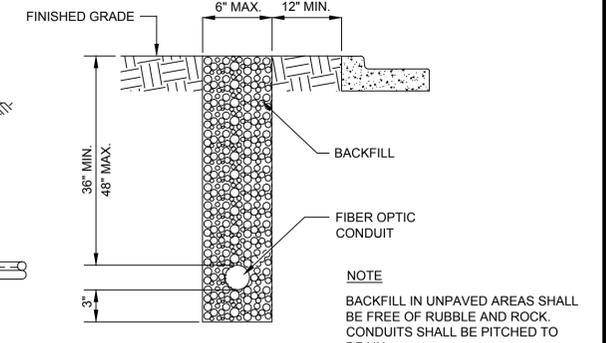
JUNCTION BOX INSTALLATION DETAIL



INITIAL BOX INSTALLATION DETAIL

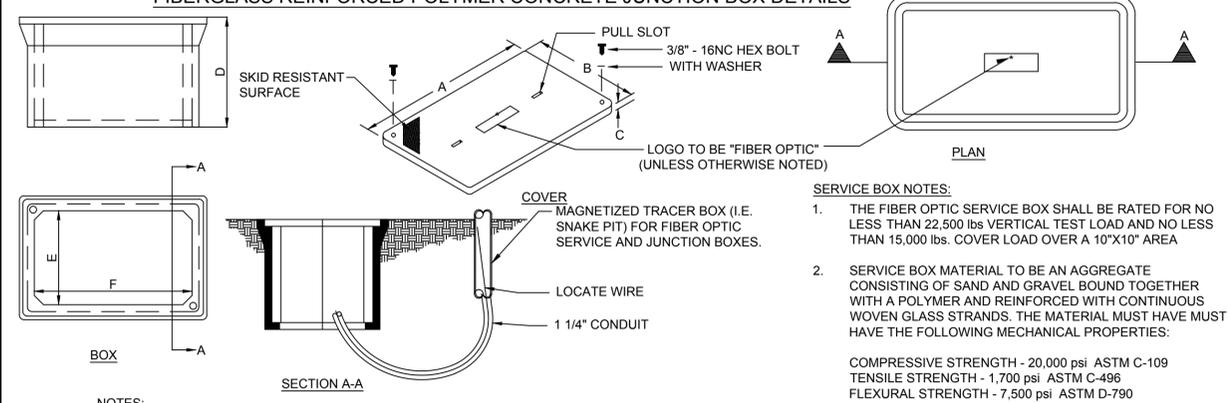


TRENCHING IN UNPAVED AREAS



TRENCHING DETAILS

FIBERGLASS REINFORCED POLYMER CONCRETE JUNCTION BOX DETAILS



SERVICE BOX NOTES:

- THE FIBER OPTIC SERVICE BOX SHALL BE RATED FOR NO LESS THAN 22,500 LBS VERTICAL TEST LOAD AND NO LESS THAN 15,000 LBS. COVER LOAD OVER A 10"x10" AREA
- SERVICE BOX MATERIAL TO BE AN AGGREGATE CONSISTING OF SAND AND GRAVEL BOUND TOGETHER WITH A POLYMER AND REINFORCED WITH CONTINUOUS WOVEN GLASS STRANDS. THE MATERIAL MUST HAVE THE FOLLOWING MECHANICAL PROPERTIES:
COMPRESSIVE STRENGTH - 20,000 psi ASTM C-109
TENSILE STRENGTH - 1,700 psi ASTM C-496
FLEXURAL STRENGTH - 7,500 psi ASTM D-790
- A 1/2" x 8'-0" GROUND ROD SHALL BE INSTALLED IN EACH SERVICE BOX.
- SERVICE BOX MATERIAL TO BE AN AGGREGATE CONSISTING OF SAND AND GRAVEL BOUND TOGETHER WITH A POLYMER AND REINFORCED WITH A CONTINUOUS WOVEN GLASS STRANDS. THE MATERIAL MUST HAVE THE FOLLOWING MECHANICAL PROPERTIES:
COMPRESSIVE STRENGTH - 20,000 PSI
TENSILE STRENGTH - 1700 PSI
FLEXURAL STRENGTH - 7500 PSI
- SERVICE BOX WITH ADJUSTABLE TOP RING SHALL NOT BE PERMITTED.

SIGNAL INTERCONNECT NOTES:

- THE CONDUIT SHALL ENTER AND EXIT THE SERVICE BOX BETWEEN 36" AND 48" AND SHALL BE 4" CENTERED OFF THE EDGE OF THE SERVICE BOX WALL. THE FIBER CABLE SHALL AT NO TIME HAVE LESS THAN AN 8" RADIUS BEND.
- 18" MIN. LAYER OF 1/2" CLEAN CRUSHED ROCK SHALL BE CONSTRUCTED BELOW THE SERVICE BOX FOR DRAINAGE PURPOSES.
- MAGNETIZED TRACER BOX (I.E. SNAKE PIT) FOR FIBER OPTIC SERVICE AND JUNCTION BOXES.

CONDUIT NOTES:

- THE CONDUIT SHALL BE SIZED ACCORDING TO PLAN.
- THE CONDUIT SHALL BE SMOOTH WALLED INSIDE AND OUT AND BE ORANGE IN COLOR.
- A #10 AWG STRANDED USE COPPER LOCATING CABLE SHALL BE LOCATED INSIDE THE CONDUIT.
- THE CONDUIT SHALL BE BORED UNDER ALL EXISTING PAVEMENTS, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
- DUCT SEAL SHALL BE APPLIED AT ALL CONDUIT ENTRANCES AFTER INSTALLATION REGARDLESS OF CABLE INSTALLATION OR EMPTY.

- NOTES:**
- BOXES SHALL BE STACKABLE FOR EXTRA DEPTH.
 - BOXES AND COVERS SHALL BE RATED FOR NO LESS THAN 15,000 POUNDS OVER A 10 in x 10 in AREA.

UNITS	DIMENSION					
	A	B	C	D	E	F
Inches	47 5/8	30 1/8	3	36	28 1/8	45 5/8

FIBERGLASS REINFORCED POLYMER CONCRETE FIBER OPTIC SERVICE BOX DETAILS

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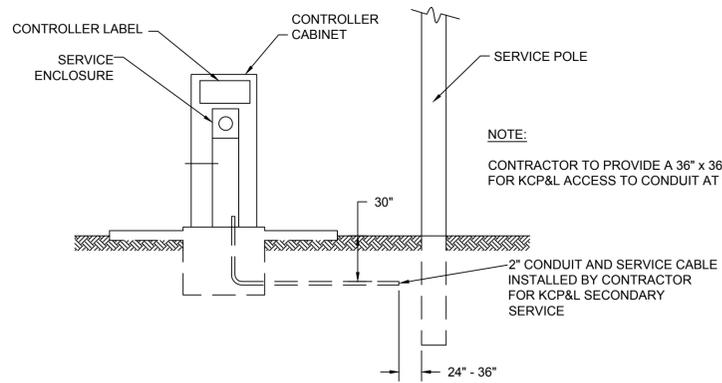
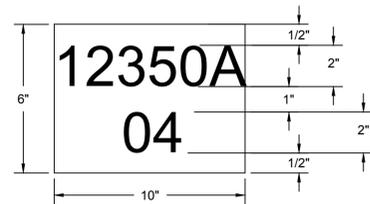
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BOXES, MARKING, FIBER DETAILS

SHEET D-704

CONTROLLER LABEL NOTES

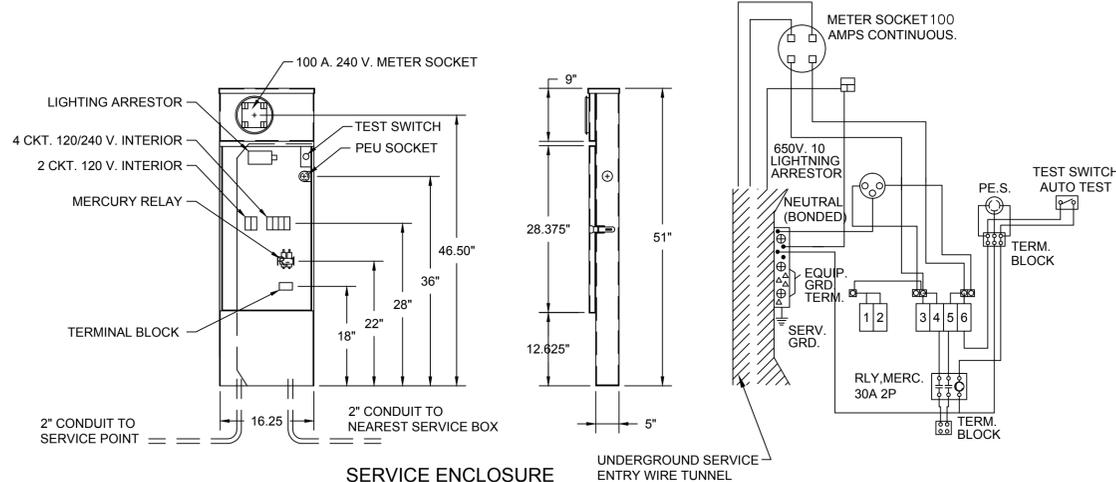
1. THE LABEL SHALL NOT BE SCREEN PRINTED.
2. THE LABEL SHALL CONTAIN 2" HIGH LETTERS AND NUMERALS ON A BACKGROUND MATERIAL THAT WILL ADHERE TO THE CONTROLLER.
3. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL CLEAN THE SURFACE OF THE CONTROLLER WITH RUBBING ALCOHOL TO ENSURE PROPER ADHESION OF THE LABEL/STICKER.
4. THE LABEL SHALL BE PLACED APPROXIMATELY 2 INCHES FROM THE TOP OF THE CONTROLLER ON THE STREET SIDE OF THE CONTROLLER BUT SHALL NOT COVER THE PHOTOCELL.
5. THE LABELS SHALL CONTAIN BLACK LETTERING ON A SILVER REFLECTIVE BACKGROUND.
6. PRIOR TO ORDERING THE LABELS, THE CONTRACTOR SHALL SUBMIT A SAMPLE TO THE CITY FOR REVIEW AND APPROVAL.



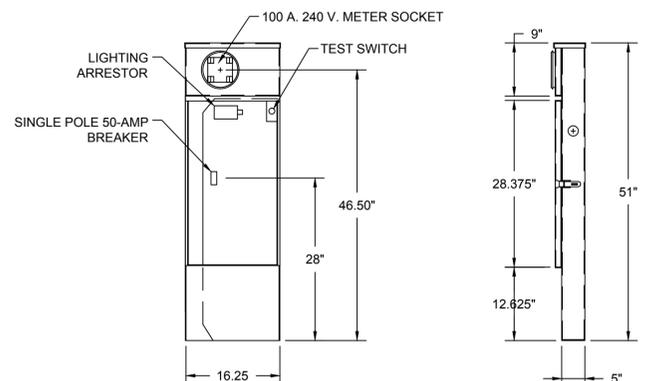
SECONDARY POWER SERVICE NOTES:

1. THE CONTRACTOR SHALL INSTALL 2" PVC CONDUIT AND SERVICE CABLE FOR POWER.
2. THE CONTRACTOR SHALL INSTALL A MINIMUM 1" DIAMETER WATERTIGHT CONDUIT ENTRANCE BETWEEN THE BREAKER BOX PORTION OF THE SECONDARY SERVICE ENCLOSURE AND THE TRAFFIC SIGNAL CONTROLLER CABINET.
3. THE CONTRACTOR SHALL INSTALL 1c-#6 USE SECONDARY SERVICE WIRE TO CONNECT THE BREAKER(S) AND TRAFFIC SIGNAL CABINET.

SECONDARY POWER SERVICE DETAIL



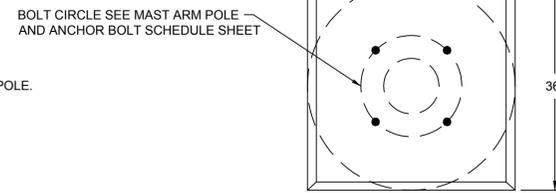
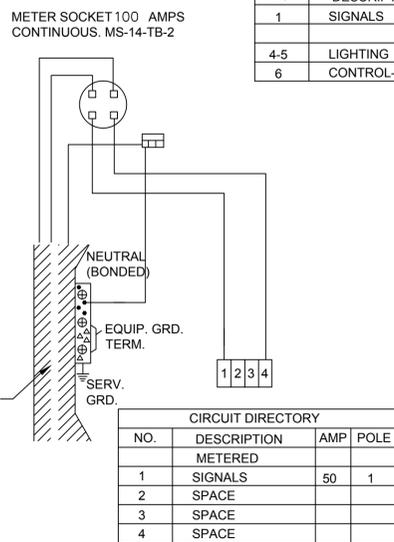
SERVICE ENCLOSURE WITH PHOTOCELL



SERVICE ENCLOSURE WITHOUT PHOTOCELL

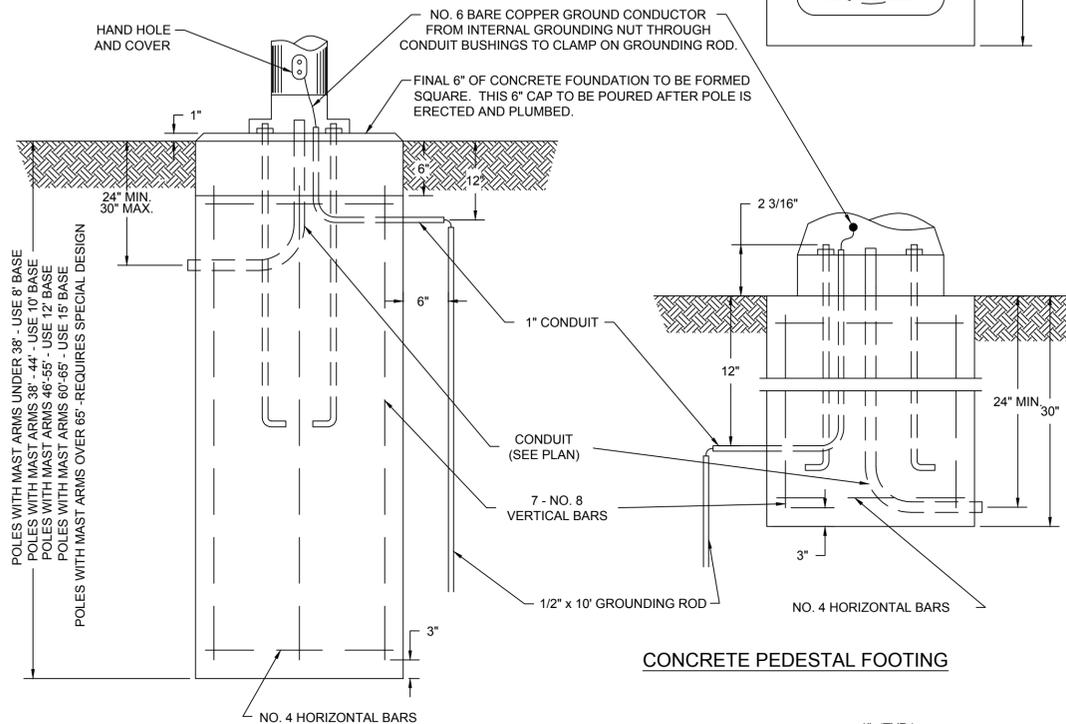
SERVICE ENCLOSURE NOTES:

1. THE SERVICE ENCLOSURE SHALL BE AN MET2-VLM-LTS OR MET2-VLM-TS OR APPROVED EQUAL.
2. A WATERTIGHT SEAL SHALL BE PROVIDED BETWEEN THE SERVICE ENCLOSURE AND THE CONCRETE PAD.
3. WHEN STREET LIGHTS MOUNTED TO SIGNAL POLES OR STREET LIGHTS ON LIGHT POLES ARE POWERED THROUGH THE SIGNAL CONTROLLER, THE SERVICE ENCLOSURE SHALL BE A MYERS MET2-VLM-LTS. THE MYERS MET2-VLM-LTS SHALL ALSO BE USED TO POWER THE LED ILLUMINATED STREET NAME SIGNS.

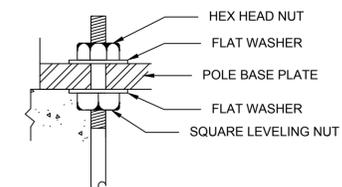


BOLT CIRCLE SEE MAST ARM POLE AND ANCHOR BOLT SCHEDULE SHEET

NOTE:
CONTRACTOR TO PROVIDE A 36" x 36" PIT FOR KCP&L ACCESS TO CONDUIT AT SERVICE POLE.

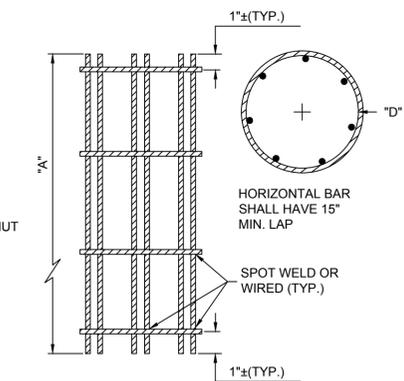


CONCRETE POLE FOOTING



ANCHOR BOLT DETAIL FOR COMBINATION LIGHTING / SIGNAL POLE

CONCRETE PEDESTAL FOOTING



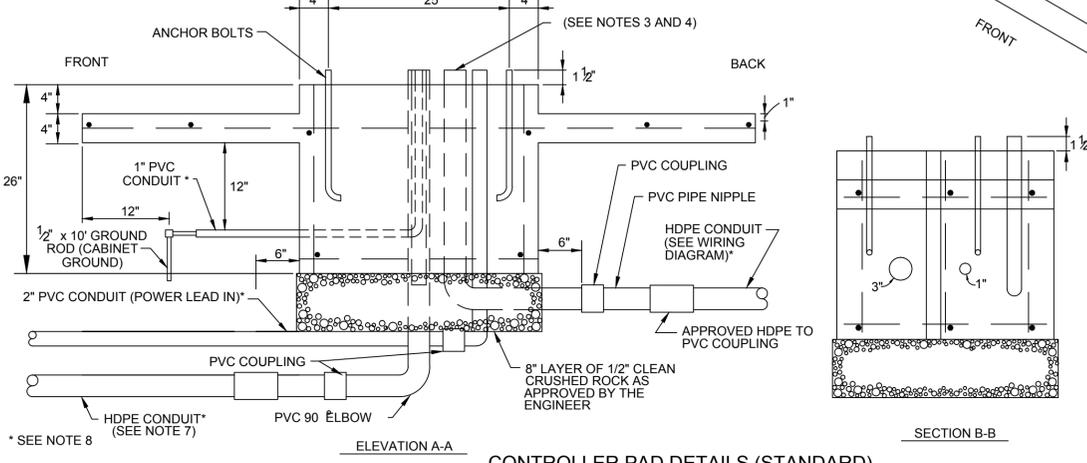
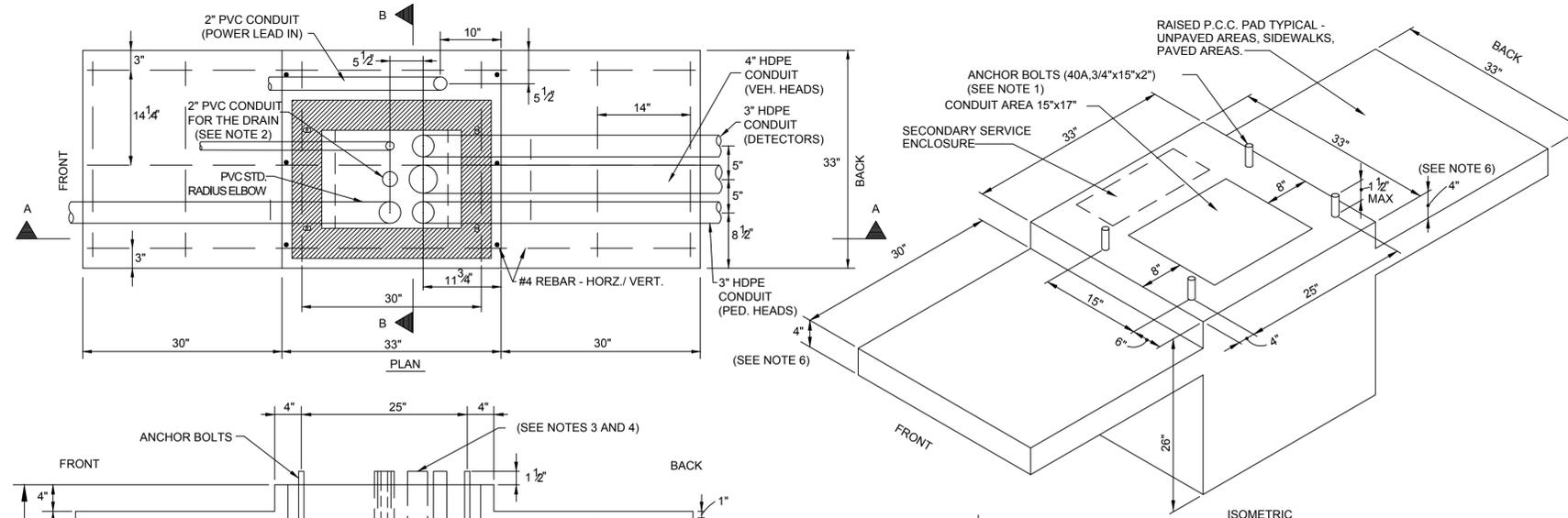
REBAR CAGE DETAIL

GENERAL NOTES:

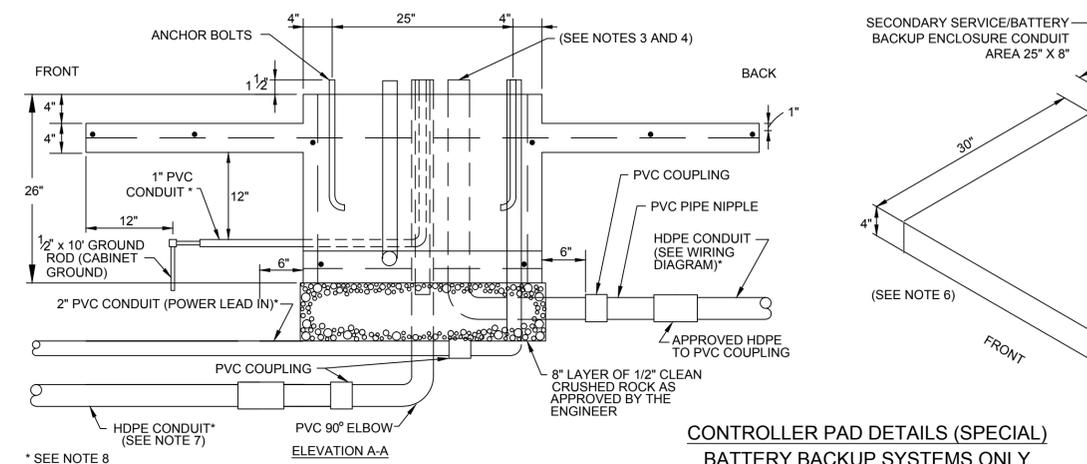
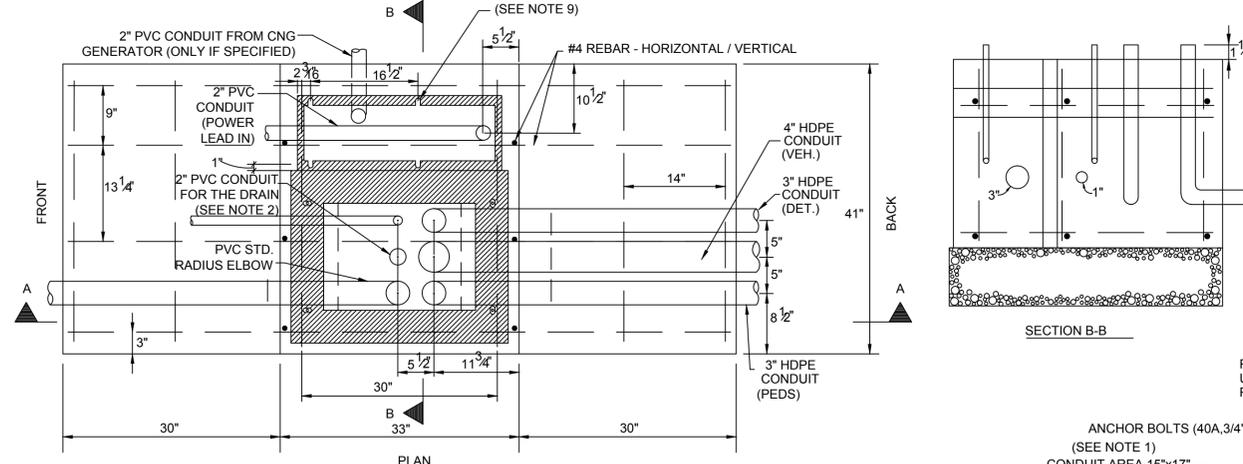
1. ALL CONDUITS AND ANCHOR BOLTS FOR CONTROL PADS AND TRAFFIC SIGNAL POLE BASES SHALL BE RIGIDLY INSTALLED BEFORE CONCRETE IS PLACED. ANCHOR BOLTS SHALL BE SPACED BY MEANS OF A TEMPLATE, THE CENTER OF WHICH SHALL COINCIDE WITH THE CENTER OF THE BASE.
2. BUSHINGS SHALL BE ATTACHED TO ALL CONDUIT ENDS.
3. WHERE CONCRETE FOOTINGS OR PADS ARE INSTALLED ON A SLOPE, THE TOP ELEVATION SHALL BE ESTABLISHED ONE INCH ABOVE THE HIGHEST ADJACENT POINT AND MINIMUM DEPTHS SHALL BE MEASURED FROM THE LOWEST ADJACENT POINT. CONTRACTOR SHALL PROVIDE APPROVED BACKFILL AND GRADE AROUND FOOTINGS OR PADS AS DIRECTED BY THE ENGINEER.
4. CONDUITS EXTENDED INTO CONCRETE FOOTINGS OR PADS SHALL TERMINATE 3 TO 4 INCHES ABOVE THE TOP OF THE FOOTING OR PAD.

REBAR SCHEDULE

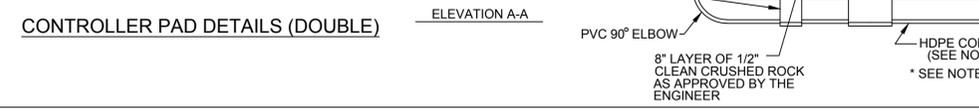
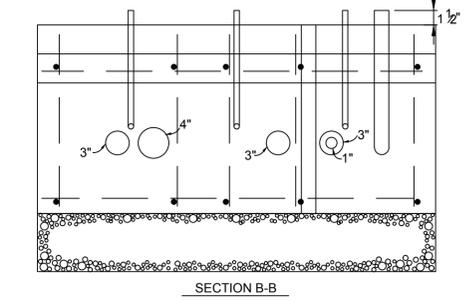
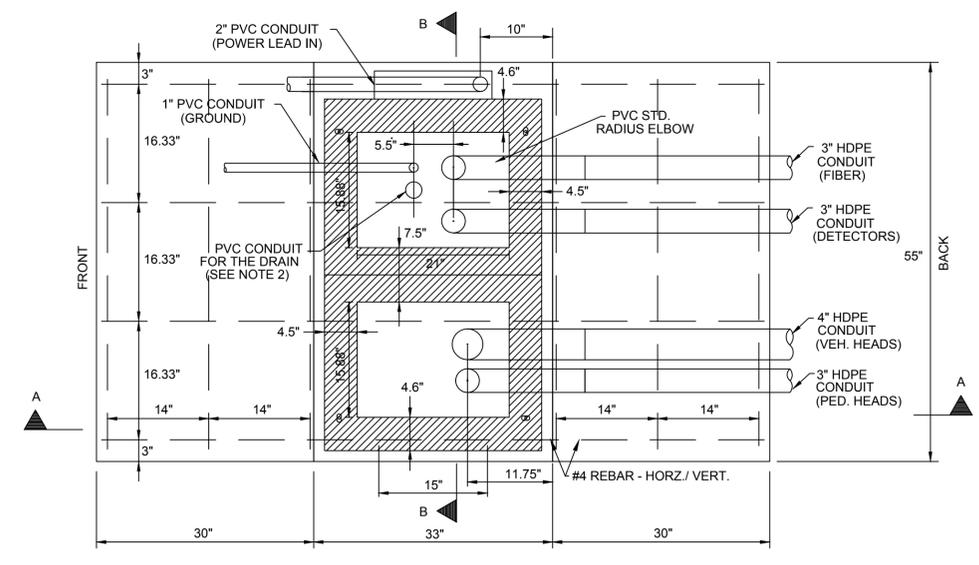
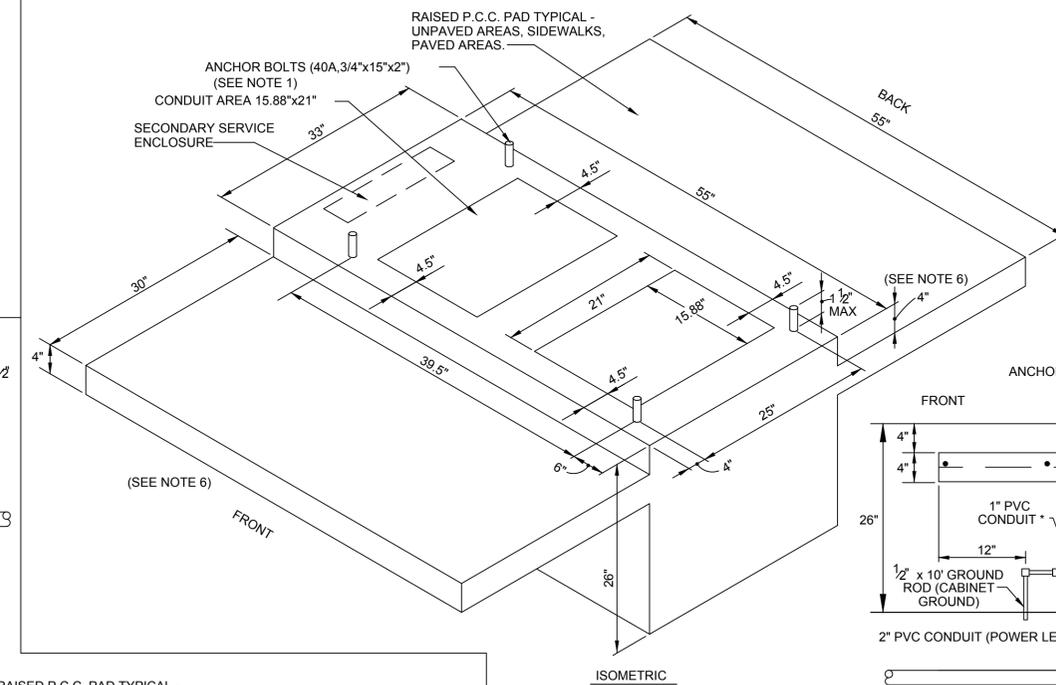
BASE DIA.	BASE LENGTH	REBAR CIRCLE "D"	VERT. REBAR LENGTH "A"	HOR. REBAR SPACING
24"	30"	20"	2' - 0"	12" MAX.
36"	8' - 0"	30"	7' - 8"	12" MAX.
36"	10' - 0"	30"	9' - 8"	12" MAX.
36"	12' - 0"	30"	11' - 8"	9" MAX.



CONTROLLER PAD DETAILS (STANDARD)



**CONTROLLER PAD DETAILS (SPECIAL)
BATTERY BACKUP SYSTEMS ONLY**



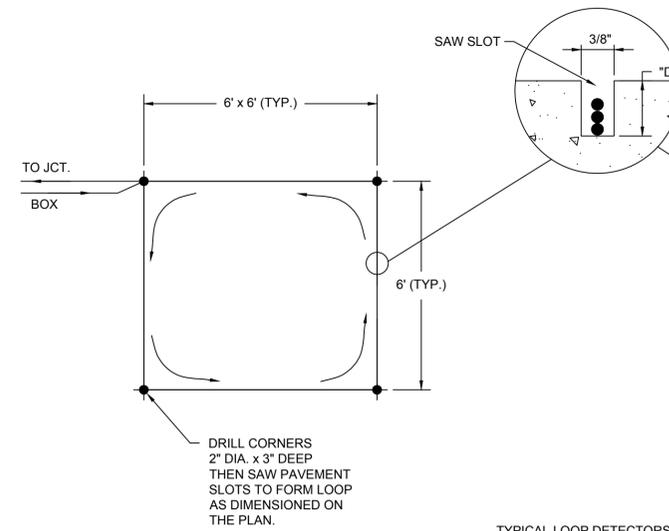
CONTROLLER PAD DETAILS (DOUBLE)

- SIGNAL CONTROLLER PAD NOTES:**
- ALL CONDUITS AND ANCHOR BOLTS SHALL BE RIGIDLY INSTALLED BEFORE CONCRETE IS PLACED.
 - TOP OF PAD TO BE SLOPED TO DRAIN.
 - A #10 THHN/THWN STRANDED COPPER SYSTEM GROUND CABLE SHALL BE INSTALLED THROUGH ONE OF THE HDPE CONDUITS BETWEEN THE CONTROLLER AND CLOSEST SERVICE BOX (SEE CONTROLLER CABINET GROUNDING DETAIL). DUCT SEAL SHALL BE APPLIED AT ALL CONDUIT ENTRANCES AFTER CABLE INSTALLATION.
 - A WATERTIGHT SEAL SHALL BE APPLIED ALONG THE INSIDE AND OUTSIDE EDGES OF THE CABINET WHERE IT ABUTS TO THE CONCRETE PAD AND AROUND THE SECONDARY SERVICE ENCLOSURE WHERE IT ABUTS TO THE CABINET.
 - 4" IS NOMINAL DIMENSION. 2"x4" FORMS ARE ACCEPTABLE EXCEPT WHERE OTHERWISE NOTED OR DIRECTED (EXPOSED CONCRETE SURFACES SHALL BE FORMED BY OTHER MEANS FOR AN ACCEPTABLE FINISHED APPEARANCE).
 - SCHEDULE 40 HDPE CONDUIT (ORANGE IN COLOR) WITH A #10 THHN/THWN STRANDED COPPER LOCATING CABLE AND POLYPROPYLENE PULL ROPE SIZED PER PLAN.
 - PVC CONDUIT ELBOWS IN CONCRETE FOUNDATIONS SHALL BE CONNECTED TO HDPE CONDUIT WITH PVC PIPE NIPPLE AND APPROVED PVC TO HDPE COUPLINGS. ALL PVC CONDUIT AND ELBOWS SHALL BE CONSIDERED SUBSIDIARY TO THE TRAFFIC SIGNAL CONTROLLER PAD.
 - CONTRACTOR TO INSTALL CONCRETE ANCHORS AND BOLTS PER MANUFACTURER'S RECOMMENDATION TO ANCHOR SECONDARY SERVICE/BATTERY BACKUP ENCLOSURE TO CONCRETE FOUNDATION. ALSO ANCHOR TO SIGNAL CABINET WITH SHEET METAL SCREWS.
 - NON-HARDENING DUCT SEALANT TO BE APPLIED TO CONDUIT ENTRANCES.
 - PROVIDE WATERTIGHT SEAL BETWEEN THE CONTROLLER CABINET AND THE CONCRETE PAD.
 - CONTROLLER PAD TO BE EXCAVATED AND FORMED TO THE DIMENSIONS SHOWN WITHOUT DISTURBING THE AREAS OF ADJACENT SUBGRADE.
 - THE ENGINEER IN CHARGE OF CONSTRUCTION SHALL DETERMINE THE ORIENTATION OF THE CONTROLLER PAD.
 - CONTRACTOR TO PROVIDE A SPARE TWO INCH LARGE SWEEP PVC CONDUIT ENTRANCE IN CONCRETE PAD TO NEAREST SERVICE BOX. BOTH ENDS OF CONDUIT TO BE SECURELY CAPPED.
 - WHEN TYPE METZ-VLM IS USED THE CONDUIT FOR POWER SHOULD BE OFFSET TO ALLOW FOR CENTERING OF THE POWER CONTROL CABINET ON THE SIDE OF THE SIGNAL CONTROL BOX.
 - ONE GROUND ROD IS REQUIRED FOR THE CABINET.

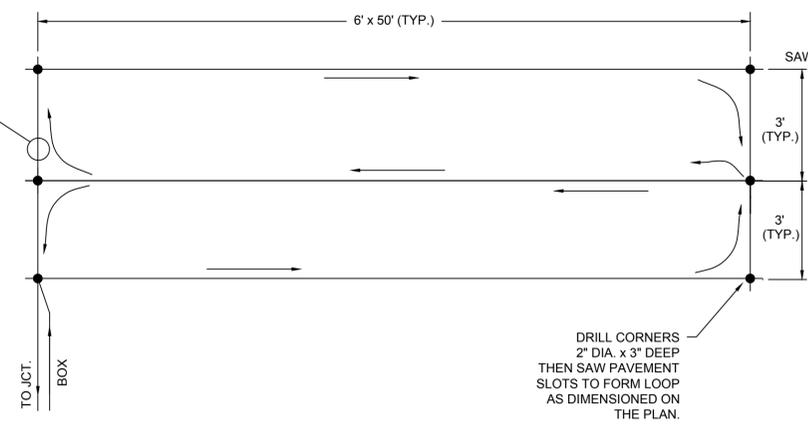
REVISOR: _____
 DATE: _____
 DETAILED: _____
 APPROVED: _____

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 KANSAS

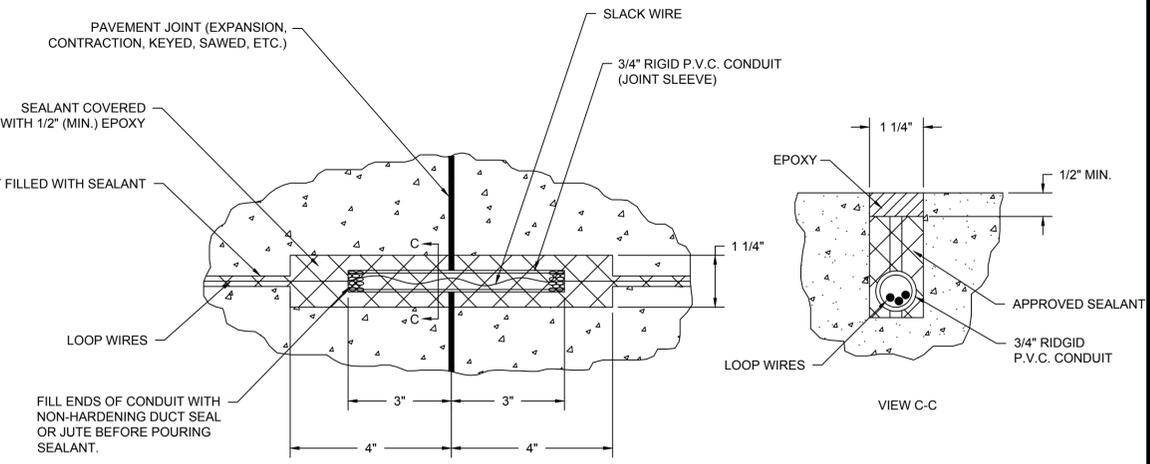
NO. TURNS WIRE IN SLOT	DEPTH "D"	
	ASPHALT	CONCRETE
2	2 3/4"	2"
3	3"	2 1/4"
4	3 1/4"	2 1/2"



TYPICAL LOOP DETECTORS



QUADRAPOLE LOOP (2-4-2 TURNS)



JOINT CROSSING DETAIL

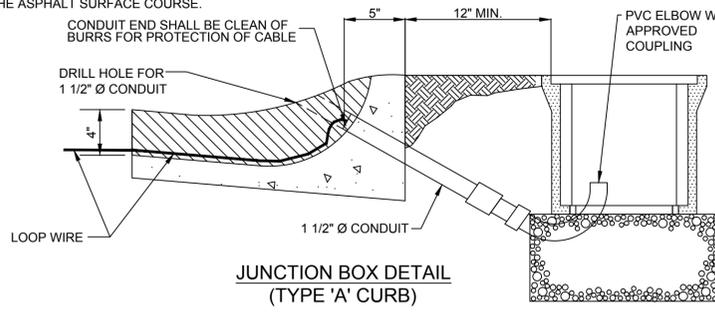
TRANSVERSE LOOP (3 TURNS)

NOTES:

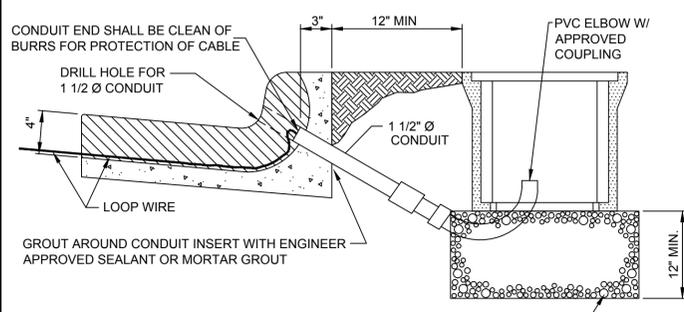
1. QUADRAPOLE LOOP TO BE ONE CONTINUOUS WIRE PLACED IN TWO TURNS. ALL LOOPS TO BE WOUND IN SAME DIRECTION, WITH START AND END CLEARLY MARKED AT JUNCTION BOX.
2. TRANSVERSE LOOP TO BE ONE CONTINUOUS WIRE PLACED IN THREE TURNS. ALL LOOPS TO BE WOUND IN SAME DIRECTION, WITH START AND END CLEARLY MARKED AT JUNCTION BOX.
3. SLOT IN PAVEMENT FOR LOOPS TO BE CUT 3/8" WIDE AT MINIMUM DEPTH "D" AS INDICATED ABOVE. AFTER THOROUGHLY CLEANING AND BLOWING DRY, FILL SLOTS WITH AN APPROVED ASPHALT SEALER (ASPHALT PAVEMENT-AP) OR AN APPROVED ELASTIC EPOXY SEALANT (CONCRETE PAVEMENT-CP) TO WITHIN 1/8" OF PAVEMENT SURFACE.
4. OTHER THAN SOLDERED TYPE SPLICE OR SPLICE MADE WITH WIRE NUTS AT THEIR JUNCTION, FEEDER CABLE AND LOOP WIRE SHALL BE OF CONTINUOUS RUN WITH NO SPLICES. ALL CONNECTIONS TO BE WATERTIGHT WITH APPROVED SPLICE KITS. WATERTIGHT CONNECTIONS SHALL EXTEND TO AND ENCOMPASS EACH OUTER JACKET OF THE DETECTOR FEEDER AND LOOP WIRE CABLES.
5. ALL LEADS FOR INDIVIDUAL LOOPS TO BE KEPT SEPARATE AND LOOP WIRE BETWEEN THE LOOP AND THE FEEDER CABLE CONNECTION SHALL BE TWISTED 3 TURNS PER FOOT.
6. ALL LOOPS SHALL BE WET CUT WITH EQUIPMENT APPROVED BY THE ENGINEER.
7. WHERE LOOPS ARE TO BE INSTALLED ON PROJECTS INVOLVING EITHER ASPHALT PAVEMENT CONSTRUCTION OR MILLING AND OVERLAY OF AN EXISTING ASPHALT PAVEMENT, LOOPS SHALL BE INSTALLED IN THE BASE COURSE PRIOR TO PLACEMENT OF THE ASPHALT SURFACE COURSE.

GENERAL NOTES:

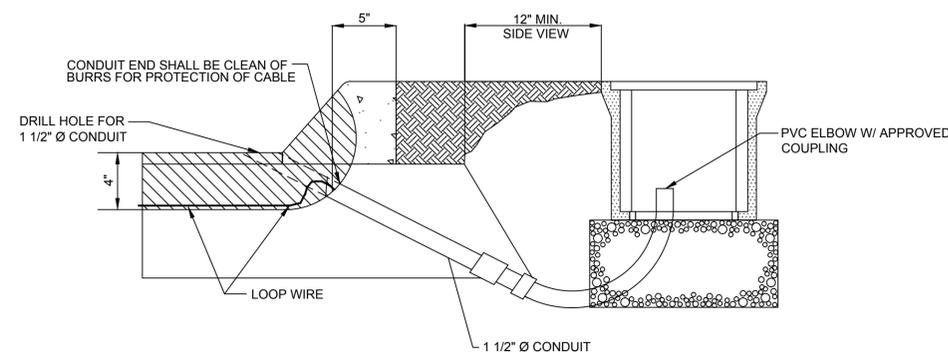
1. SAW CUT IN THE CURB AND GUTTER SECTION AND CONDUIT ENTRANCE TO BE SEALED WITH A PLIABLE, NON-HARDENING DUCT SEALANT. NO LOOP SEALANT SHALL BE APPLIED IN THE CURB AND GUTTER SECTION OR AT CONDUIT ENTRANCE.
2. GROUT AROUND CONDUIT INSERTED INTO CURB OR PAVEMENT SECTION.
3. EACH LOOP SHALL HAVE A SEPARATE LEAD-IN SAWCUT TO THE LOOP WIRE ENTRANCE IN THE CURB OR AT THE EDGE OF PAVEMENT.
4. PVC CONDUIT MAY BE USED CONTINUOUS FROM CURB TO JUNCTION BOX IF DISTANCE FROM BACK OF CURB TO CENTER OF JUNCTION BOX IS LESS THAN 10 FEET.
5. QUADRAPOLE LOOP TO BE ONE CONTINUOUS WIRE PLACED IN TWO TURNS. ALL LOOPS TO BE WOUND IN SAME DIRECTION, WITH START AND END CLEARLY MARKED AT JUNCTION BOX.
6. TRANSVERSE LOOP TO BE ONE CONTINUOUS WIRE PLACED IN THREE TURNS. ALL LOOPS TO BE WOUND IN SAME DIRECTION, WITH START AND END CLEARLY MARKED AT JUNCTION BOX.
7. SLOT IN PAVEMENT FOR LOOPS TO BE CUT 3/8" WIDE AT MINIMUM DEPTH "D" AS INDICATED ABOVE. FILL, CLEAN AND DRY SLOTS WITH AN APPROVED ASPHALT SEALER (ASPHALT PAVEMENT-AP) OR AN APPROVED ELASTIC EPOXY SEALANT (CONCRETE PAVEMENT-CP) TO WITHIN 1/8" OF PAVEMENT SURFACE.
8. OTHER THAN SOLDERED TYPE SPLICE OR SPLICE MADE WITH WIRE NUTS AT THEIR JUNCTION, FEEDER CABLE AND LOOP WIRE SHALL BE OF CONTINUOUS RUN WITH NO SPLICES. ALL CONNECTIONS TO BE WATERTIGHT WITH APPROVED SPLICE KITS. WATERTIGHT CONNECTIONS SHALL EXTEND TO AND ENCOMPASS EACH OUTER JACKET OF THE DETECTOR FEEDER AND LOOP WIRE CABLES.
9. ALL LEADS FOR INDIVIDUAL LOOPS TO BE KEPT SEPARATE AND LOOP WIRE BETWEEN THE LOOP AND THE FEEDER CABLE CONNECTION SHALL BE TWISTED 3 TURNS PER FOOT.
10. ALL LOOPS SHALL BE WET CUT WITH EQUIPMENT APPROVED BY THE ENGINEER.
11. WHERE LOOPS ARE TO BE INSTALLED ON PROJECTS INVOLVING EITHER ASPHALT PAVEMENT CONSTRUCTION OR MILLING AND OVERLAY OF AN EXISTING ASPHALT PAVEMENT, LOOPS SHALL BE INSTALLED IN THE BASE COURSE PRIOR TO PLACEMENT OF THE ASPHALT SURFACE COURSE.



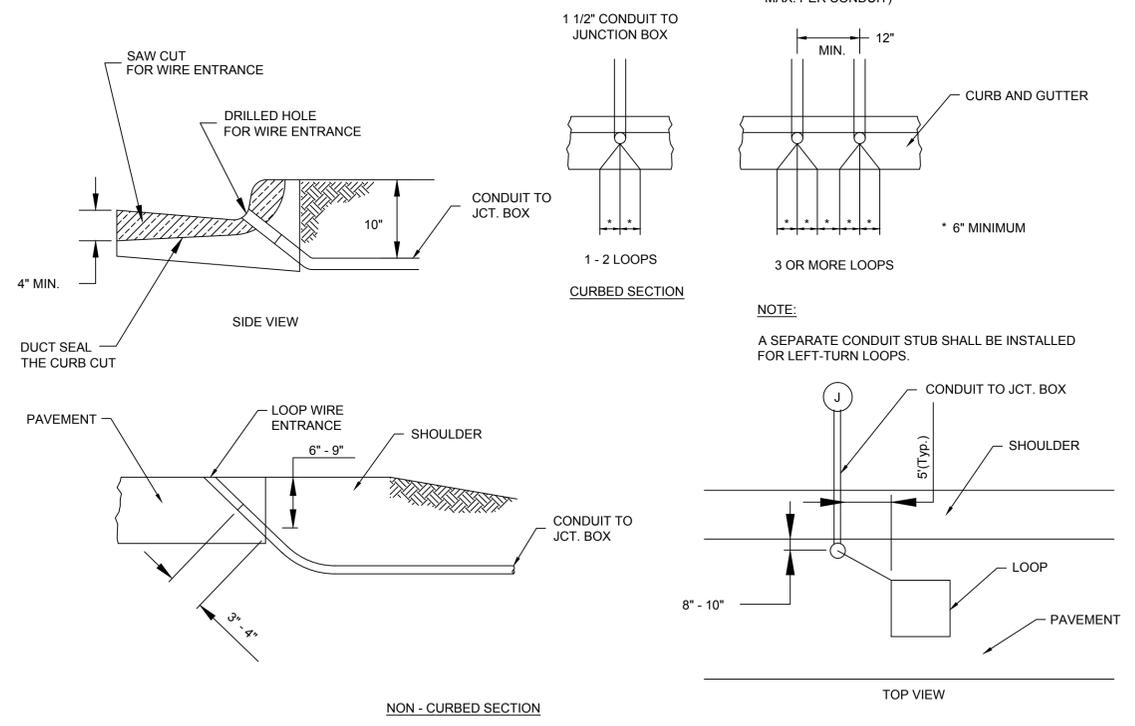
JUNCTION BOX DETAIL (TYPE 'A' CURB)



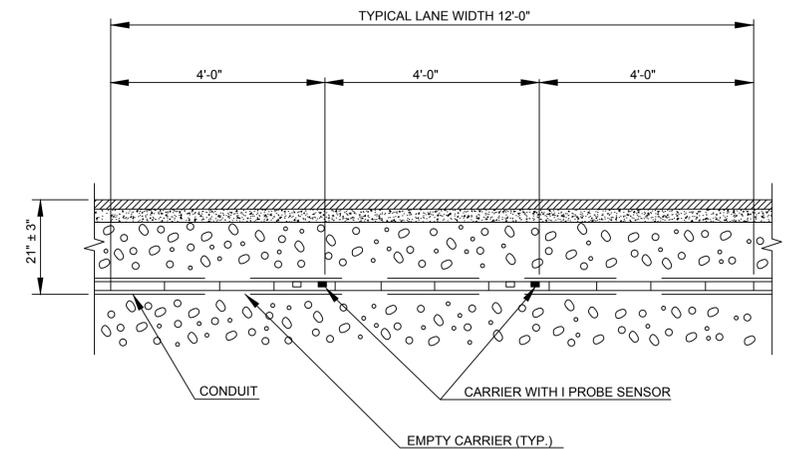
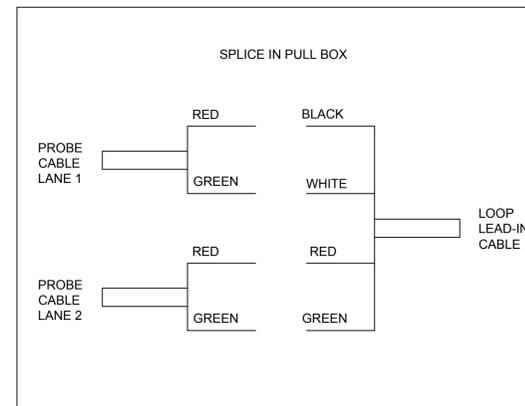
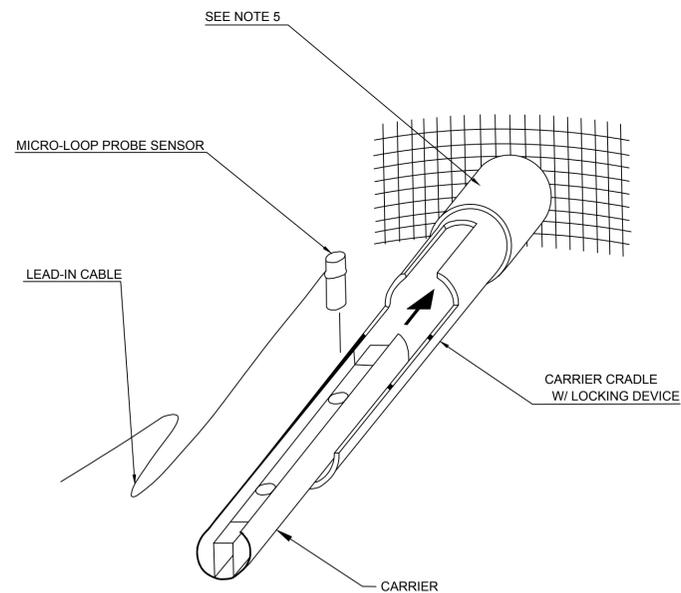
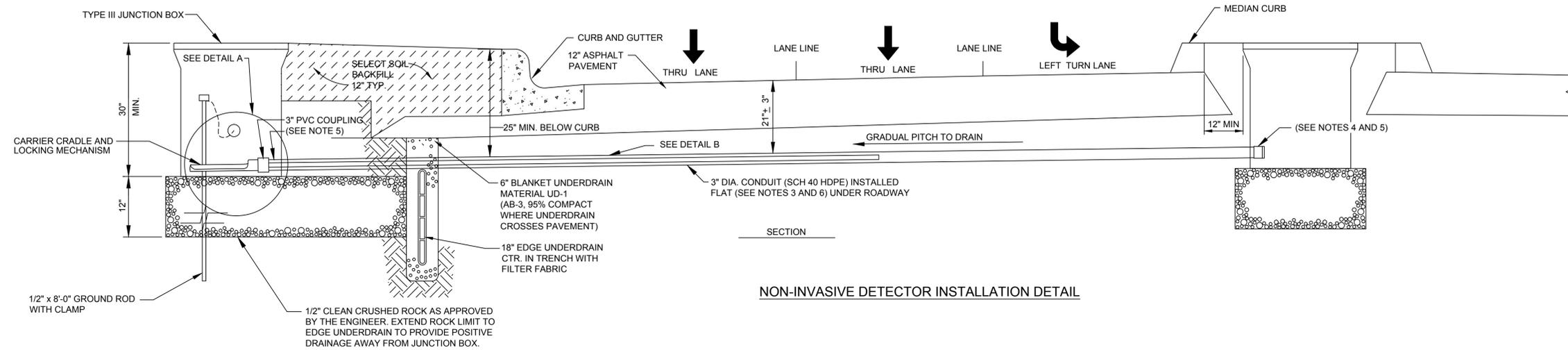
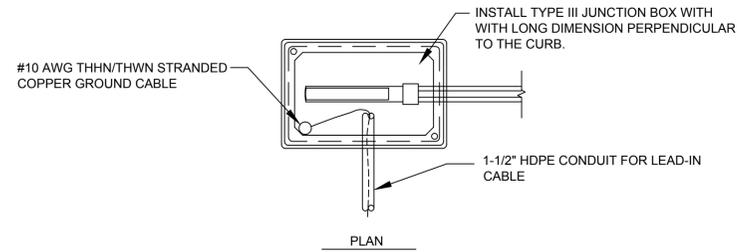
JUNCTION BOX DETAIL (TYPE 'B' CURB)



JUNCTION BOX DETAIL (TYPE 'C' CURB)



LOOP WIRE ENTRANCE DETAIL



NOTE:

CARRIER CRADLE SHALL BE PROPERLY BAGGED AND SECURED FOLLOWING INSTALLATION ACCORDING TO MANUFACTURER'S INSTRUCTIONS

NOTES:

1. PROBE SHALL BE POSITIONED AT THE THIRD POINT OF EACH LANE. EXACT POSITIONING AND CONFIGURATION TO BE DETERMINED BY MANUFACTURER'S FIELD REPRESENTATIVE.
2. SUFFICIENT NUMBER OF CARRIERS TO BE INSTALLED TO COVER THE DISTANCE FROM THE JUNCTION BOX TO THE FARTHEST PROBE. FIRST CARRIER INSERTED SHALL BE END CAP CARRIER.
3. ANY DEVIATION IN CONDUIT ALIGNMENT SHALL BE LESS THAN 1/4" PER FOOT.
4. CONDUIT END CAP TO BE PRESS FITTED (NO ADHESIVE).
5. CONDUIT TO EXTEND APPROXIMATELY 8 INCHES INTO JUNCTION BOX.
6. CONDUIT CROSSINGS FOR ALL NON-INVASIVE LOOPS SHALL BE TRENCHED IN AND BACKFILLED WITH FLOWABLE FILL PRIOR TO THE INSTALLATION OF OP SPECIAL DRAINABLE BASE. NO BORING OF THE CONDUIT WILL BE ALLOWED AFTER THE ASPHALTIC CONCRETE BASE IS INSTALLED. THIS DOES NOT APPLY FOR EXISTING PAVEMENT CONDITIONS WHEN ROADWAY WORK IS NOT BEING PERFORMED.
7. CONTRACTOR SHALL USE SANDPAPER TO ABRAND THE ENDS OF LEAD-IN CABLE AND PROBE CABLE AT THE JUNCTION BOX PRIOR TO MAKING SPLICE.

SINGLE SENSOR ASSEMBLY
2 PROBES PER LANE

DETAIL B

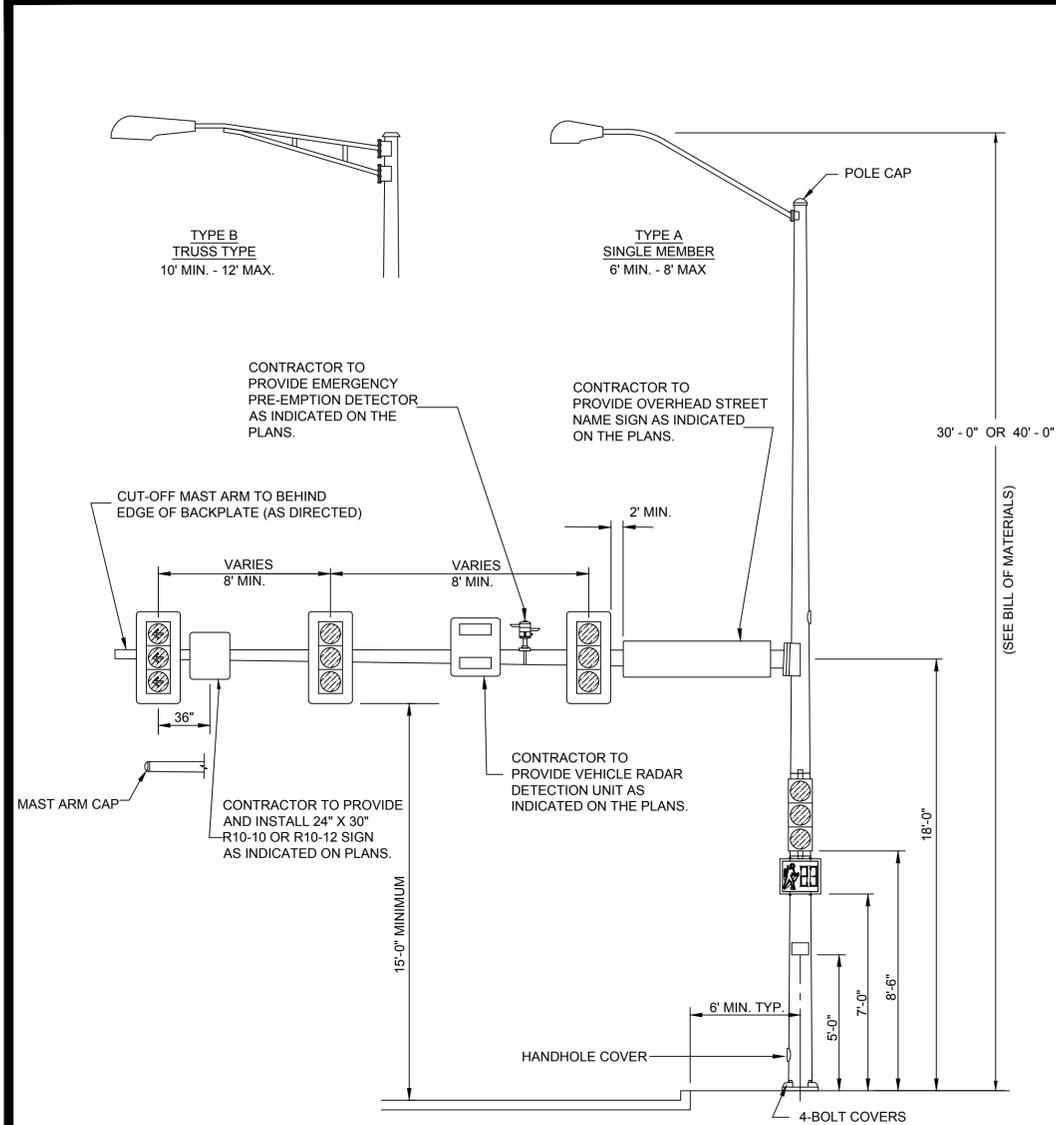
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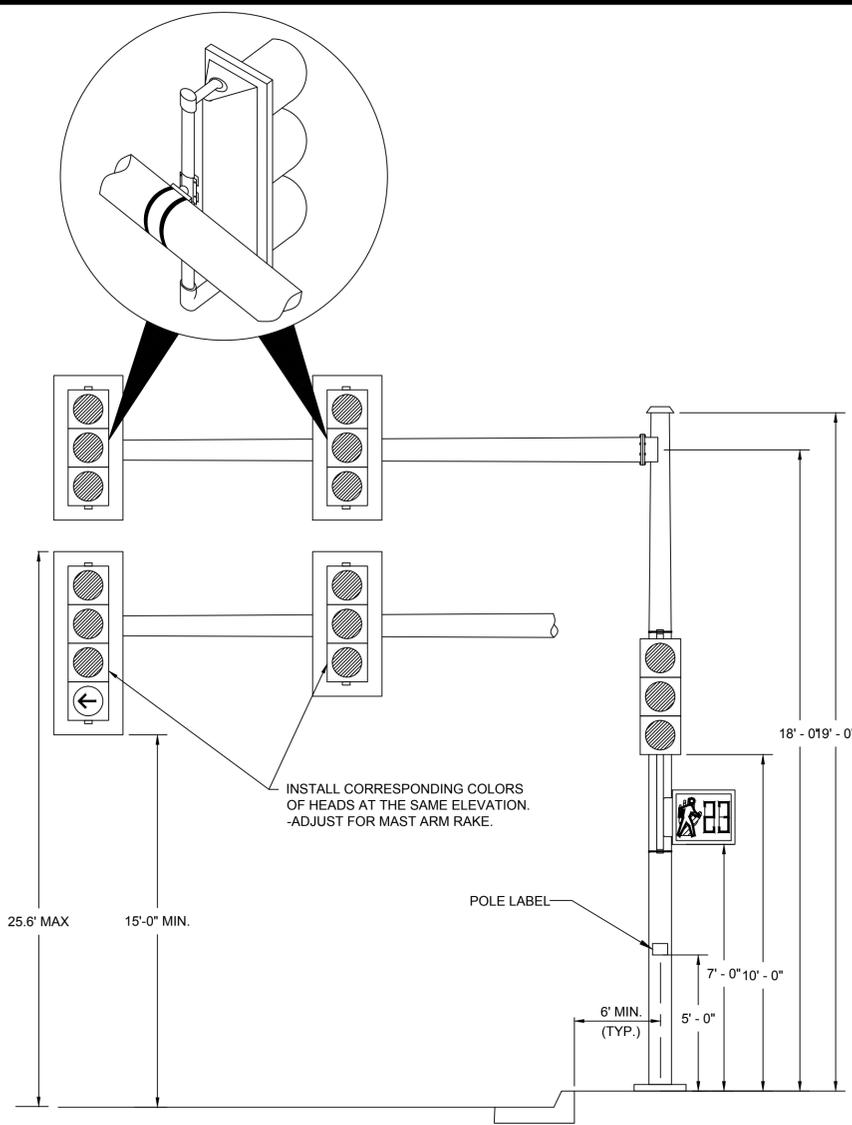
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NON-INVASIVE DETECTOR DETAIL

SHEET
 D-803

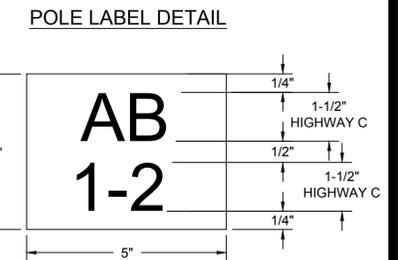


STEEL COMBINATION LIGHTING AND SIGNAL POLE

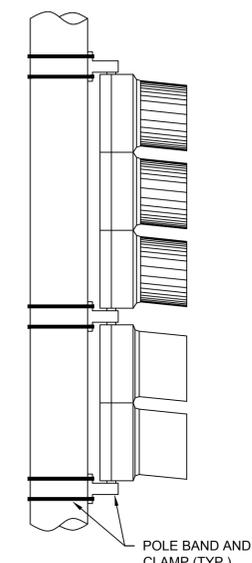


STEEL SIGNAL POLE

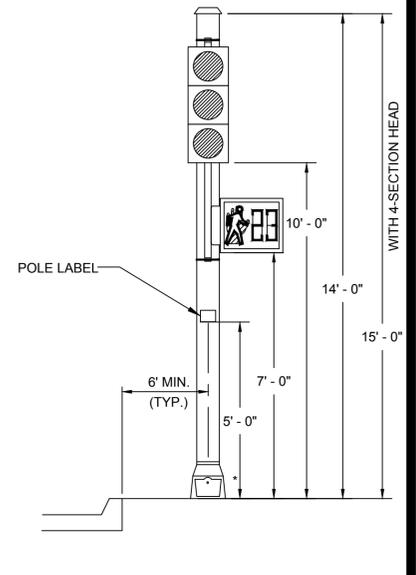
- POLE LABEL NOTES**
1. THE LABEL SHALL NOT BE SCREEN PRINTED.
 2. THE LABEL SHALL CONTAIN 1-1/2" HIGH LETTERS AND NUMERALS ON A BACKGROUND MATERIAL THAT WILL ADHERE TO THE POLE.
 3. PRIOR TO INSTALLATION, THE CONTRACTOR SHALL CLEAN THE SURFACE OF THE POLE WITH RUBBING ALCOHOL TO ENSURE PROPER ADHESION OF THE LABEL/STICKER.
 4. THE LABEL SHALL BE PLACED 5' ABOVE THE GROUND ON THE STREET SIDE OF THE POLE.
 5. LABELS THAT WILL BE PLACED ON NATURAL OR CHAMPAGNE-COLORED ALUMINUM POLES OR GALVANIZED STEEL POLES SHALL CONTAIN BLACK LETTERING ON A SILVER REFLECTIVE BACKGROUND. LABELS THAT WILL BE PLACED ON BLACK POLES SHALL CONTAIN REFLECTIVE SILVER LETTERING ON A BLACK REVERSE PRINT BACKGROUND. LABELS THAT WILL BE PLACED ON BROWN POLES SHALL CONTAIN REFLECTIVE SILVER LETTERING ON A DARK BROWN REVERSE PRINT BACKGROUND.
 6. PRIOR TO ORDERING THE LABELS, THE CONTRACTOR SHALL SUBMIT A SAMPLE TO THE CITY FOR REVIEW AND APPROVAL.



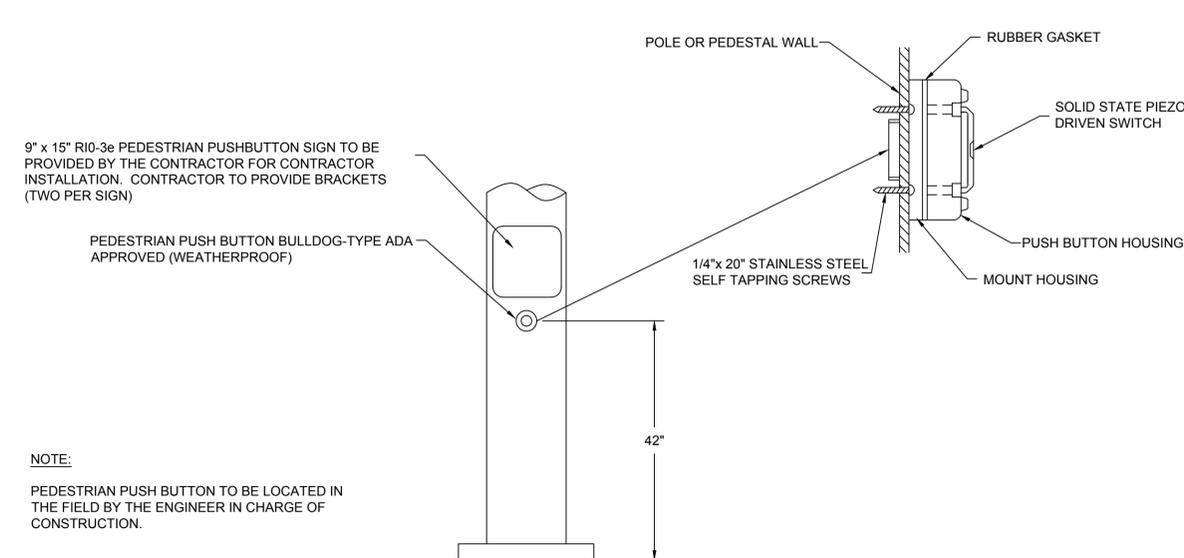
POLE LABEL DETAIL



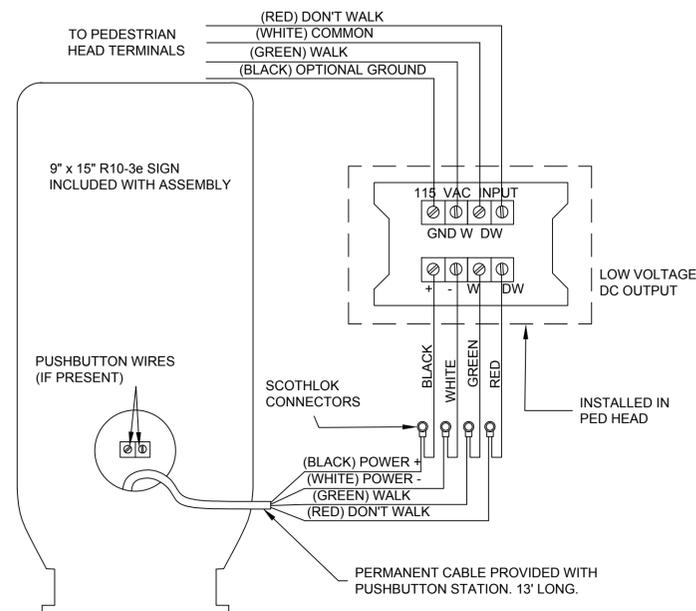
VERTICAL BRACKET MOUNTING DETAIL



ALUMINUM SIGNAL PEDESTAL



TYPICAL DETAIL PEDESTRIAN PUSH BUTTON



NOTES:

1. THE MAST ARM SHALL BE ATTACHED TO THE POLE AFTER THE POLE HAS BEEN ERECTED.
2. THE ENGINEER IN CHARGE OF CONSTRUCTION WILL DETERMINE THE ORIENTATION OF SIGNAL HEADS TO BE MOUNTED ON THE SIDES OF POLES.
3. EACH SIGNAL HEAD, PUSH BUTTON AND LUMINAIRE SHALL HAVE A SEPARATE RUN(S) OF CABLE FROM THE HANDHOLE IN THE POLE BASE. UNLESS OTHERWISE NOTED IN THE PLANS, THE CABLES SHALL BE SIZED AS FOLLOWS:
VEHICULAR SIGNAL HEAD- ONE 7c
PEDESTRIAN SIGNAL HEAD- ONE 7c
PUSH BUTTON- ONE 5c
LUMINAIRE- ONE 2c
SPlices AT THE HANDHOLE SHALL BE MADE WITH WIRE NUTS SECURED WITH ELECTRICAL TAPE. EXCESS CABLE SHALL BE PROVIDED TO ALLOW THE SPLICES TO BE PULLED AT LEAST ONE FOOT OUTSIDE THE HANDHOLE.
4. ALL SIGNS SHALL BE MOUNTED WITH ASTRO-BRACKETS.
5. EACH VEHICULAR SIGNAL HEAD SHALL BE COVERED WITH AN ORANGE BAG SIGNAL HEAD COVER DURING CONSTRUCTION UNTIL THE SYSTEM IS MADE OPERATIONAL.

NOTE:
PEDESTRIAN PUSH BUTTON TO BE LOCATED IN THE FIELD BY THE ENGINEER IN CHARGE OF CONSTRUCTION.

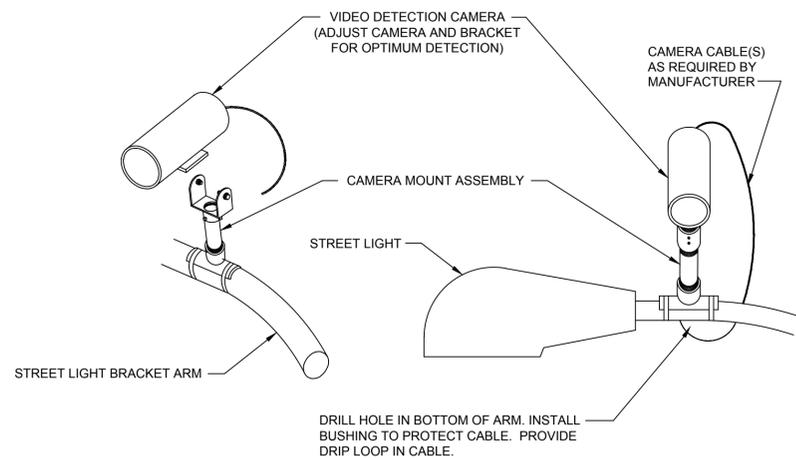
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REVISED DATE:	---
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APPROVED:	---

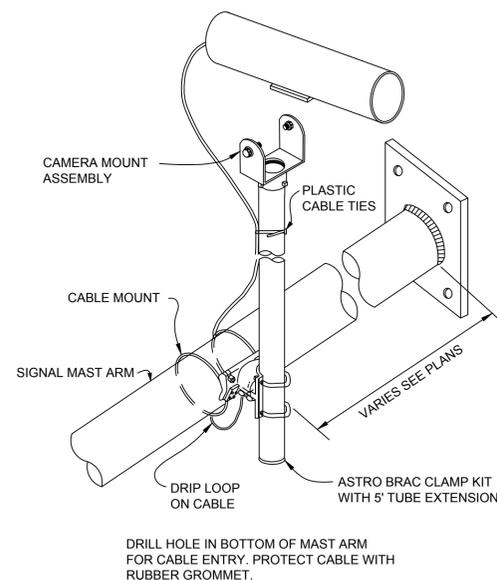
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POLES SIGNAL HEAD PUSH BUTTON

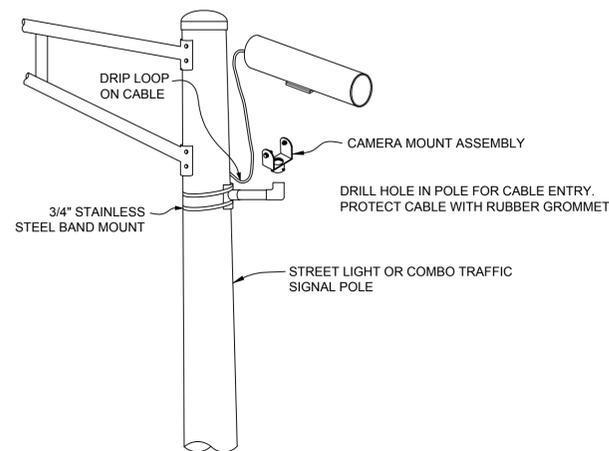
SHEET D-804



**VIDEO DETECTION CAMERA MOUNTING DETAIL
(STREET LIGHT BRACKET ARM MOUNT)**

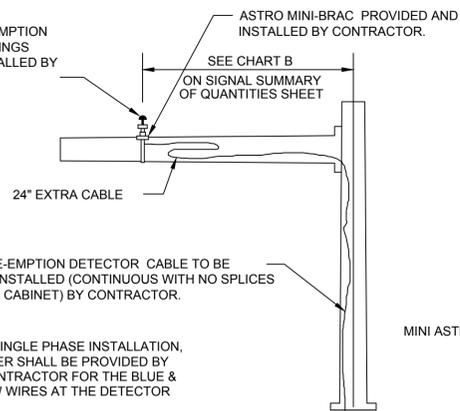


**VIDEO DETECTION CAMERA MOUNTING DETAIL
(MAST ARM MOUNT)**



**VIDEO DETECTION CAMERA MOUNTING DETAIL
(SIDE OF POLE MOUNT)**

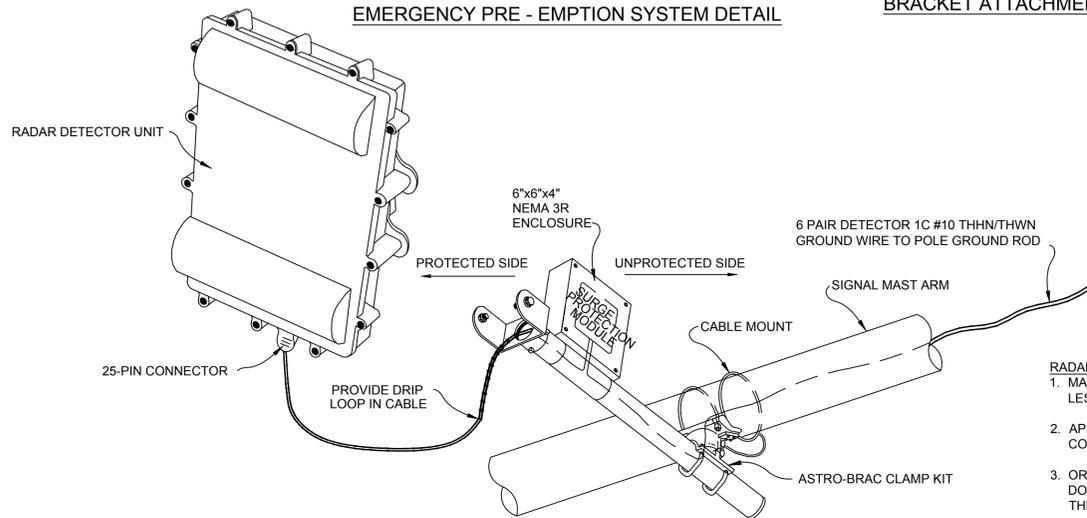
* EMERGENCY PRE-EMPTION DETECTOR AND FITTINGS PROVIDED AND INSTALLED BY CONTRACTOR.



EMERGENCY PRE-EMPTION DETECTOR CABLE TO BE PROVIDED AND INSTALLED (CONTINUOUS WITH NO SPLICES TO CONTROLLER CABINET) BY CONTRACTOR.

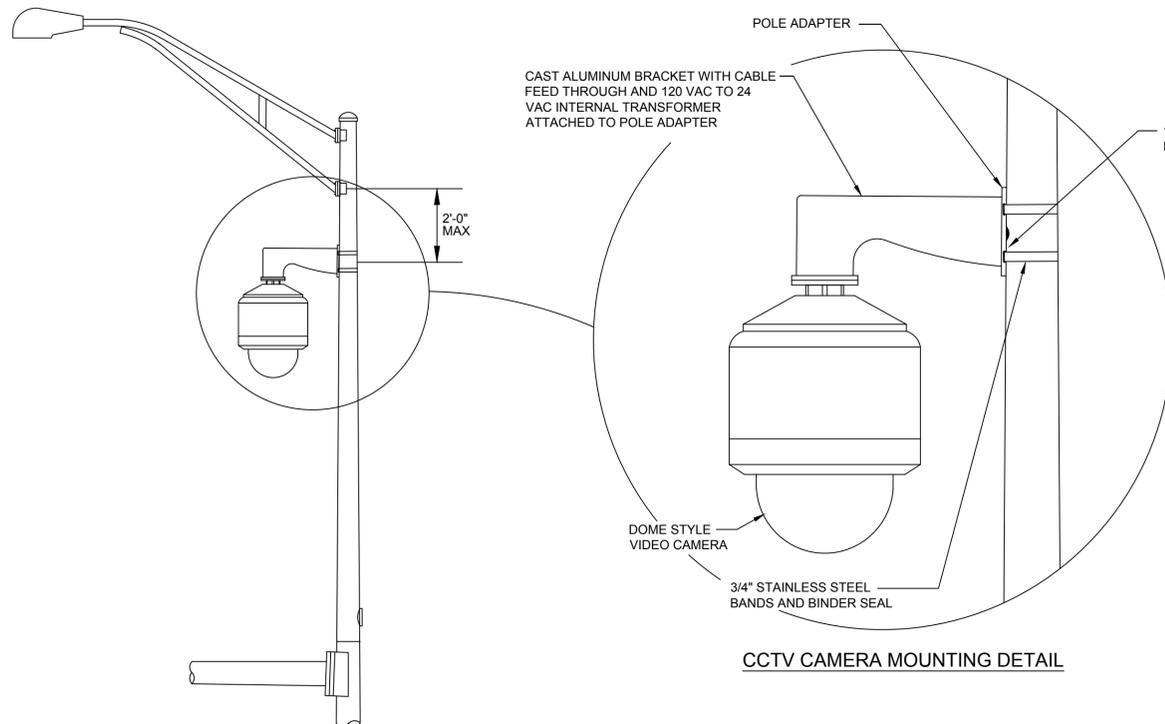
* FOR A SINGLE PHASE INSTALLATION, A JUMPER SHALL BE PROVIDED BY THE CONTRACTOR FOR THE BLUE & YELLOW WIRES AT THE DETECTOR UNIT.

EMERGENCY PRE - EMPTION SYSTEM DETAIL

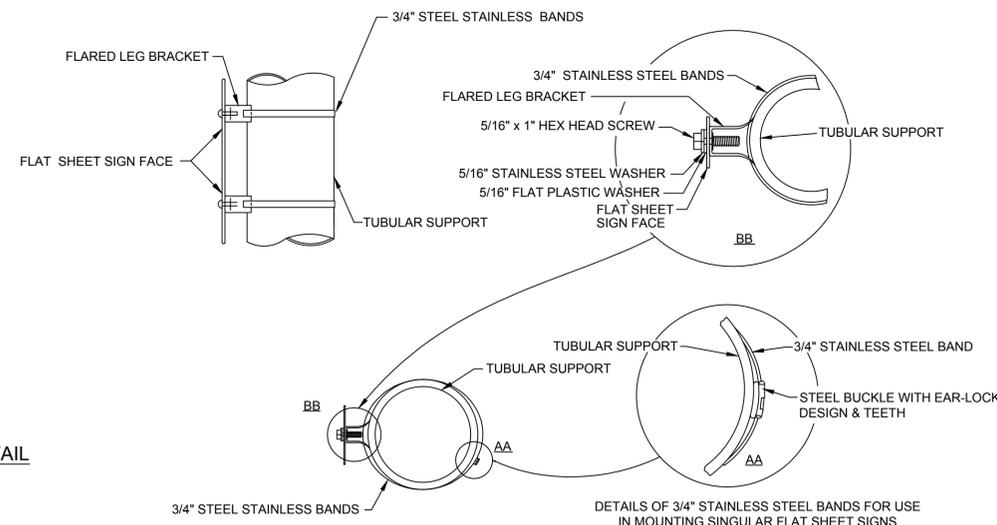


**RADAR DETECTION MOUNTING DETAIL
(MAST ARM BRACKET ARM MOUNT)**

RADAR DETECTION NOTES:
 1. MAINTAIN OFFSETS FROM CENTER OF THE DESIRED LANE LESS THAN 24 FEET.
 2. APPLY SILICON DIELECTRIC COMPOUND INTO THE CONNECTOR AT THE BASE OF THE RADAR DETECTOR.
 3. ORIENT RADAR DETECTOR STRAIGHT AHEAD WITH NO DOWNWARD TILT. BRACKET ARM SHOULD BE PARALLEL TO THE ROAD SURFACE.



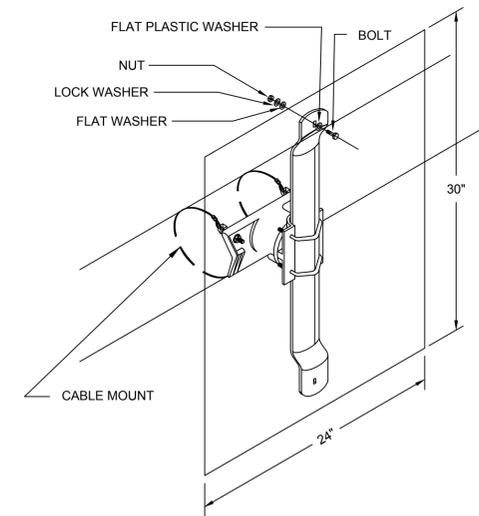
CCTV CAMERA MOUNTING DETAIL



BRACKET ATTACHMENT DETAIL

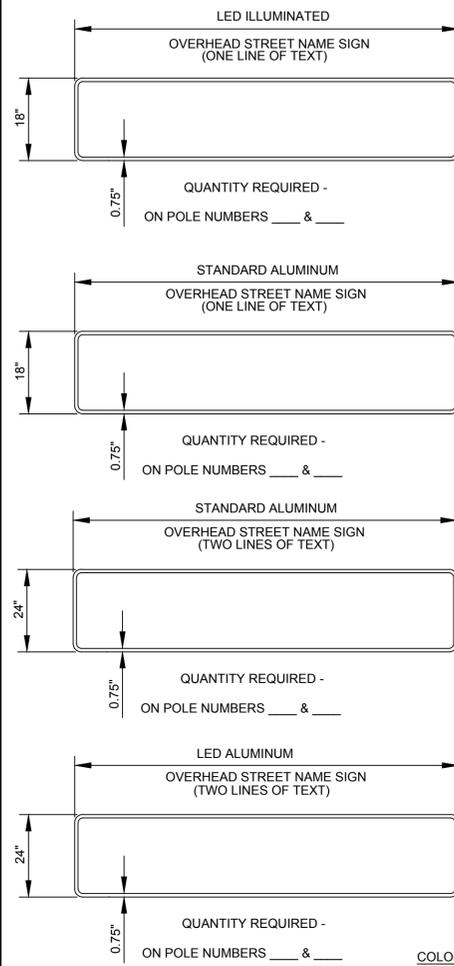
SIDE OF POLE SIGN MOUNTING DETAIL

- SIGN MOUNTING NOTES:**
- SIGNS ON SIDE OF POLE SHALL BE ATTACHED WITH TWO (2) BRACKETS AND STAINLESS STEEL BANDS.
 - HOLES IN SIGN FOR ATTACHMENT TO THE MOUNTING BRACKETS SHALL BE OFFSET A MINIMUM OF 2" FROM THE EDGE OF SIGN.
 - HOLES IN SIGN SHALL BE LOCATED SUCH THAT THE SIGN IS PLUMB AND LEVEL.
 - THIS DETAIL IS NOT INTENDED FOR R10 SERIES SIGNS ATTACHED TO SIGNAL MAST ARMS.



**SIGN MOUNTING BRACKET
DETAIL (R10 SERIES)**

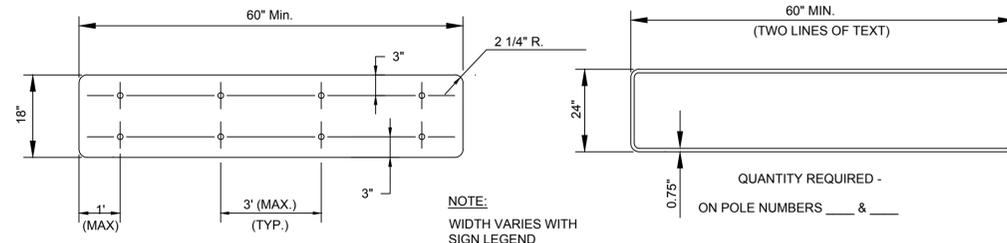
OVERHEAD STREET NAME SIGNS



SIGN FACE DETAIL

LEGEND/BORDER BACKGROUND - WHITE (REFLECTIVE)
- GREEN (REFLECTIVE)

STREET NAME - 12" SERIES E INITIAL
UPPERCASE FOLLOWED BY
LOWERCASE

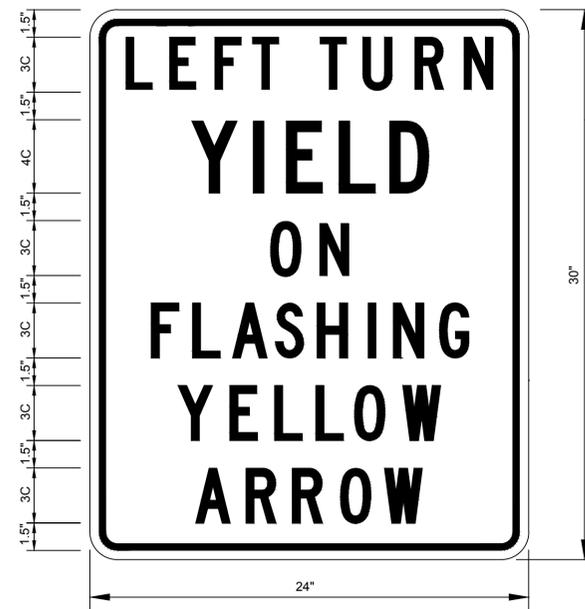


SIGN BLANK MATERIAL -
0.125 GAUGE 6061-T6 OR 5052-H38 ALUMINUM
SIGN BLANK DETAIL

NOTES:

- OVERHEAD STREET NAME SIGNS AND REGULATORY SIGNS SHALL BE SUBSIDIARY TO "TRAFFIC SIGNAL INSTALLATION".
- ALL SIGN FACE SHEETING SHALL BE HIGH INTENSITY WITH EC FILM.
- ALL OVERHEAD STREET NAME SIGNS SHALL HAVE LEGENDS CENTERED ON FACE WITH THE LETTERS AND NUMERALS SPACED TO PRODUCE A READABLE, PROFESSIONAL QUALITY SIGN.
- SCALED DRAWINGS OF THE PROPOSED SIGNS SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL.
- ALL SIGNS SHALL BE MOUNTED TO SIGNAL POLES WITH ASTRO-BRACKETS.
- OVERHEAD STREET NAME SIGNS SHALL BE SIZED ACCORDING TO THE FHWA STANDARD HIGHWAY SIGNS MANUAL.

SIGN FACE DETAILS

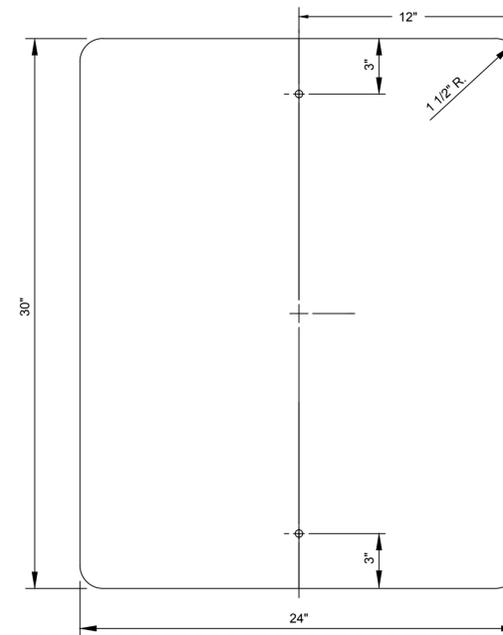


R10-SPECIAL

COLORS

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

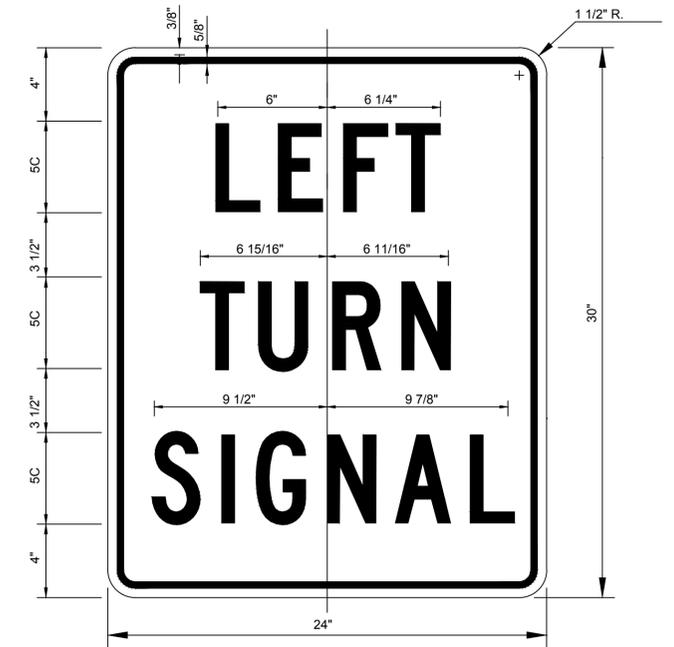
SIGN BLANK DETAILS



* - DRILL ONE HOLE AT STATED DIMENSIONS.
LEVEL SIGN AND DRILL THE SECOND HOLE.

MATERIAL - 0.080" THICK ALUMINUM.

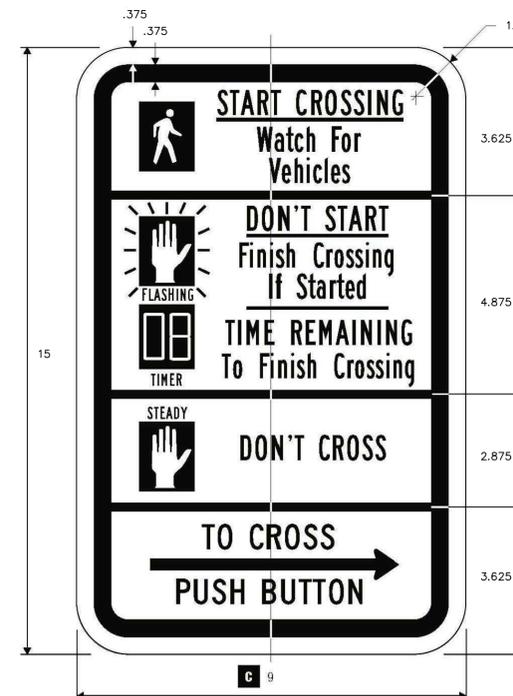
SIGN FACE DETAILS



R10-10L

COLORS

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



R10-3e

COUNT-DOWN PEDESTRIAN

NOTE:

HANDS SHALL BE ORANGE



R10-12

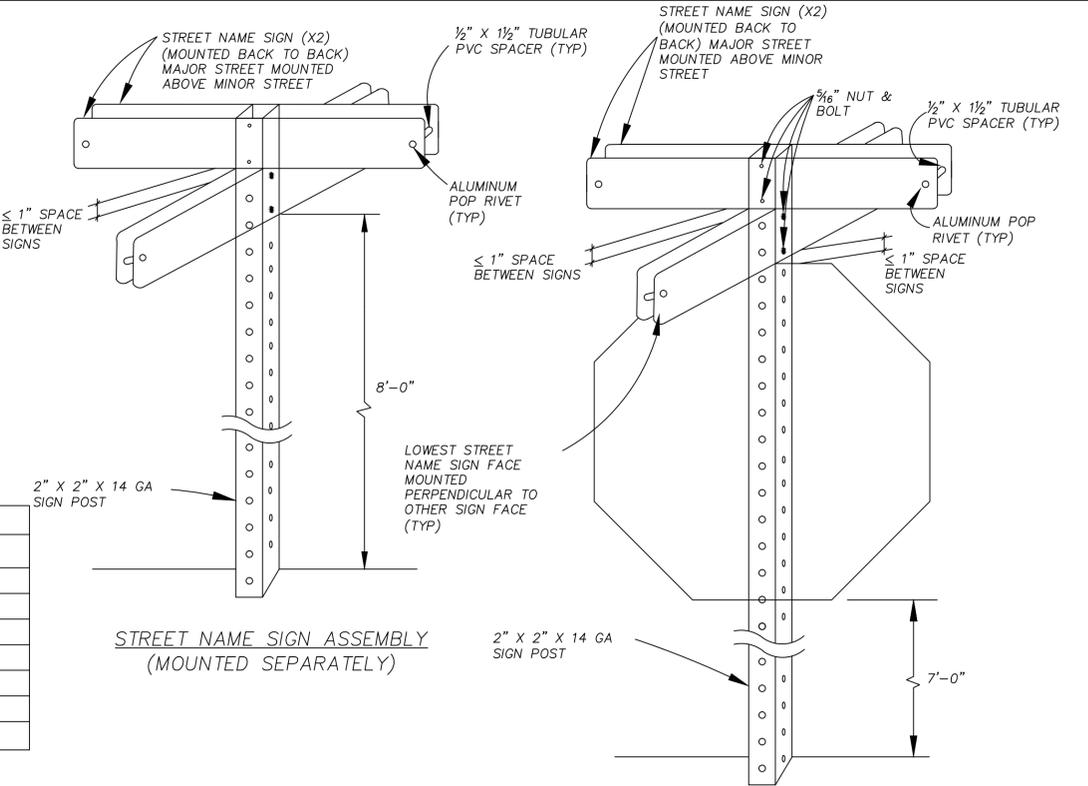
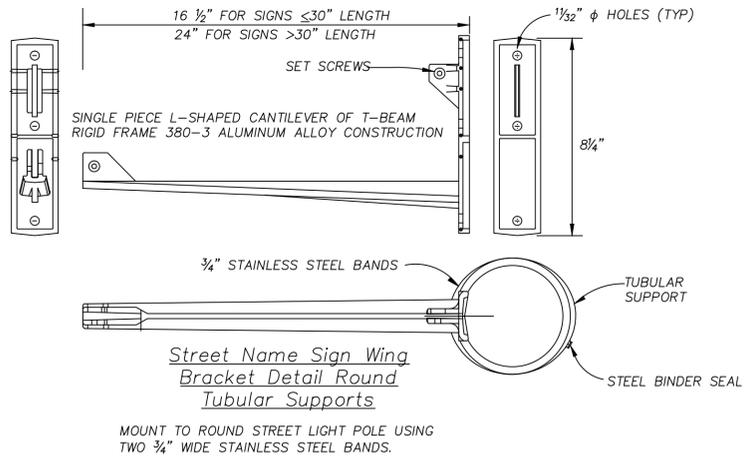
COLORS

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

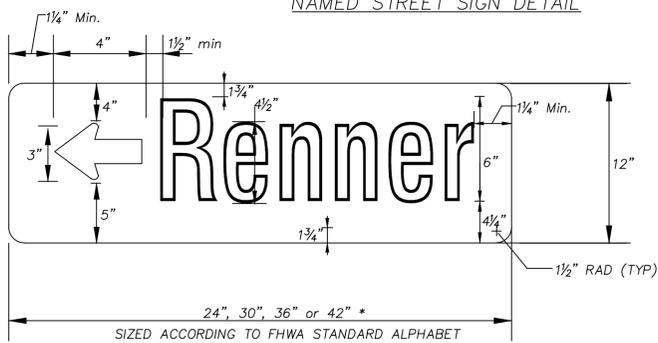
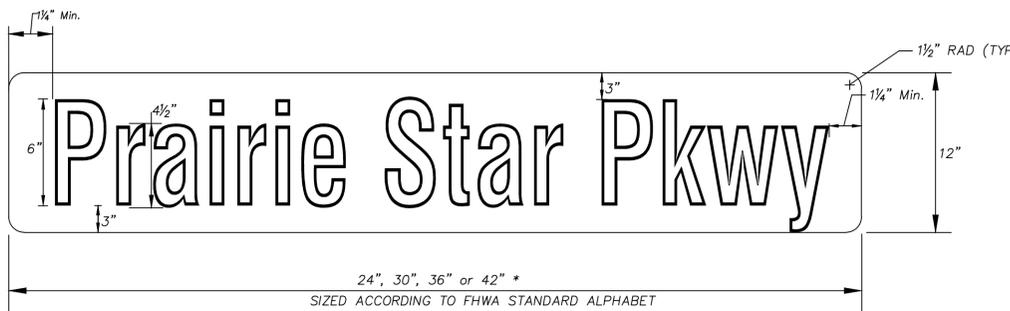
TABLE 1 (ALPHA STREETS)	
STANDARD ABBREVIATION LIST	
Avenue	Ave
Boulevard	Blvd
Circle	Cir
Court	Ct
Creek	Crk
Drive	Dr
Highway	Hwy
Lane	Ln
Parkway	Pkwy
Place	Pl
Plaza	Plz
Road	Rd
Street	St
Terrace	Ter
Trail	Tr
Way	Way

TABLE 2 (NUMBERED STREETS)	
STANDARD ABBREVIATION LIST	
First	st
Second	nd
Third	rd
Fourth to Ninth	th

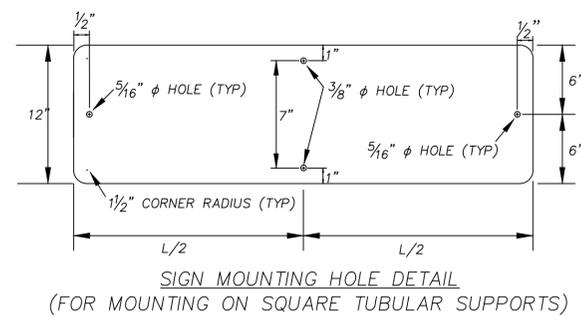
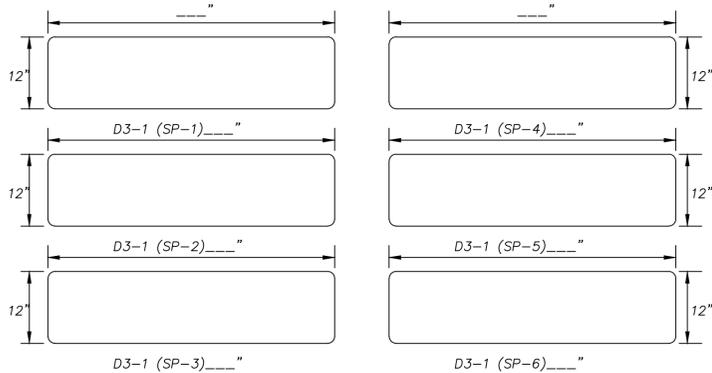
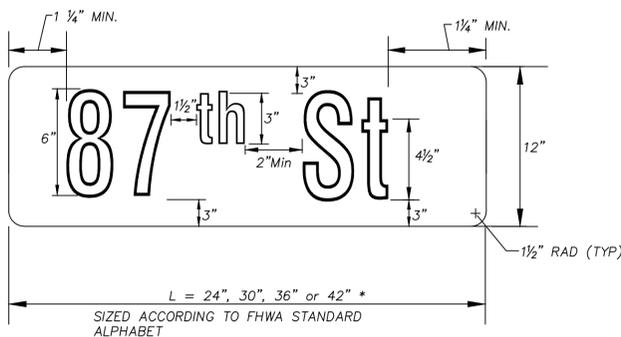
* NOTE: SERIES B 2000 LETTERS SHALL BE USED IN LIEU OF HIGHWAY SERIES C TO AVOID EXCEEDING A 42" SIGN BLANK.



STREET NAME SIGN QUANTITY TABLE				
Sign Designation	Size	Area (S.F.)	Number	Quantity (S.F.)
D3-1 (SP-1)	12" X			
D3-1 (SP-2)	12" X			
D3-1 (SP-3)	12" X			
D3-1 (SP-4)	12" X			
D3-1 (SP-5)	12" X			
D3-1 (SP-6)	12" X			
Total				



NOTE: PRIOR TO FABRICATING THE STREET NAME SIGNS, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF THE SIGNS TO THE CITY FOR REVIEW AND APPROVAL.



SIGN MATERIAL NOTES:

SIGN BLANK: 0.080 GAUGE, ALODIZED 6061-T6 OR 5052-H38

LEGEND: WHITE (NO BORDER)

BACKGROUND: GREEN (FEDERAL COLOR STDS 595A, COLOR NO.14109)

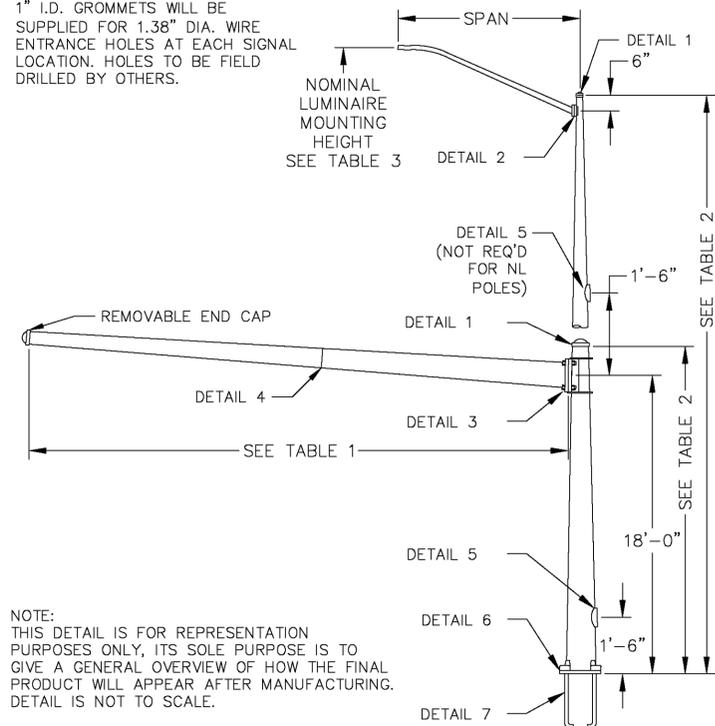
TEXT SERIES: SERIES C 2000 AS INDICATED IN THE EXAMPLES

SHEETING: MICRO-ENCAPSULATED, RETRO-REFLECTIVE PRISMATIC SHEETING (TYPE XI)

PROCESS: ELECTRO-CUTABLE FILM

REVISED DATE:	---	
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STREET NAME SIGNS		SHEET D-807

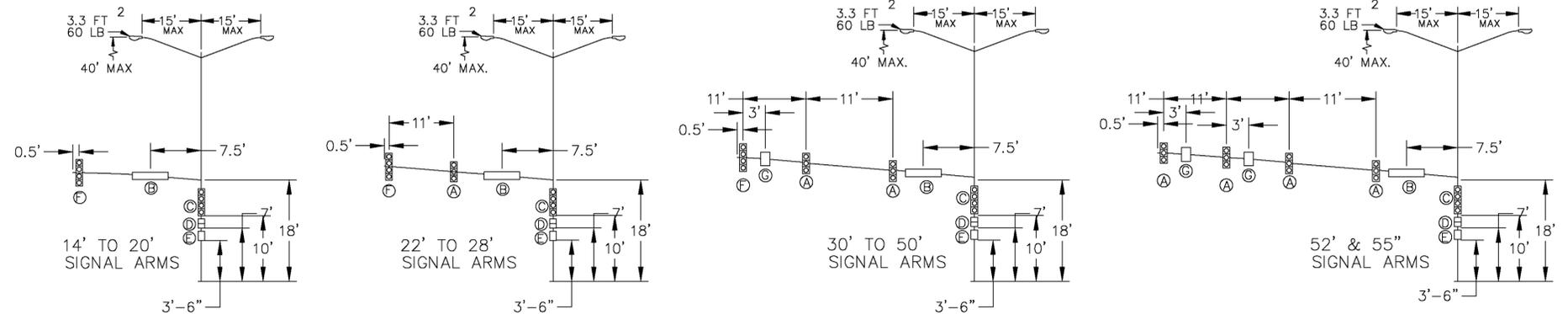
NOTE:
1" I.D. GROMMETS WILL BE SUPPLIED FOR 1.38" DIA. WIRE ENTRANCE HOLES AT EACH SIGNAL LOCATION. HOLES TO BE FIELD DRILLED BY OTHERS.



NOTE:
THIS DETAIL IS FOR REPRESENTATION PURPOSES ONLY, ITS SOLE PURPOSE IS TO GIVE A GENERAL OVERVIEW OF HOW THE FINAL PRODUCT WILL APPEAR AFTER MANUFACTURING. DETAIL IS NOT TO SCALE.

LENEXA POLE SERIES

DEVICE	DESCRIPTION	PROJ. AREA (FT ²)	WEIGHT (LBS)
Ⓐ	12"-3 SEC. SIGNAL HEAD W/ BACK PLATES	8.67	30
Ⓑ	24" X 180" STREET NAME SIGN	30.00	90
Ⓒ	12"-4 SEC. SIGNAL HEAD W/ NO BACK PLATES	5.44	40
Ⓓ	DUAL-2 SEC. PEDESTRIAN SIGNAL	8.00	40
Ⓔ	9" X 15" POLE MOUNTED SIGN	0.94	13
Ⓕ	12"-4 SEC. SIGNAL HEAD W/ BACK PLATES	11.00	40
Ⓖ	24" X 30" MAST ARM MOUNTED SIGN	5.00	10

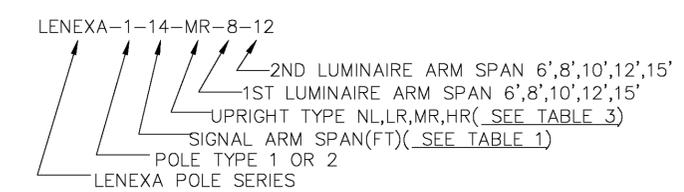


MAXIMUM LOADING INFORMATION

TABLE 1: POLE AND SIGNAL ARM DATA

POLE SERIES	TYPE	DESIGNATION KEY		POLE DATA		BASE PLATE DATA				ANCHOR BOLT DATA				SIGNAL ARM DATA				SIGNAL ARM ATTACHMENT DATA																										
		SIGNAL ARM SPAN (FT)	LUMINAIRE ARM TYPE	BASE DIA. (IN)	LENGTH	WALL GAUGE OR THK.	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	BOLT HOLE "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	HOOK "H" (IN)	THREAD LENGTH "U" (IN)	BOLT QTY.	FIXED END DIA (IN)	FREE END DIA (IN)	GAUGE OF THK (IN)	SIGNAL ARM SPAN (FT)	SQUARE "A" (IN)	BOLT PATTERN "B" (IN)	THK. "C" (IN)	BOLT SIZE "D" (IN)																					
																								ARM 1 SPAN (FT)	ARM 2 SPAN (FT)																			
LENEXA	1	14	NL,LR,MR,HR	6-15	6-15	14.00	0.250	19.00	19.00	1.50	1.75	1.50	54.00	6.00	8.00	4	7.00	5.04	7	14.00	18.75	15.50	1.50	1.25 X 5.00																				
		16															7.00	4.76	7	16.00																								
		18															7.00	4.48	7	18.00																								
		20															8.00	5.20	7	20.00																								
		22															9.00	5.92	7	22.00																								
		24															9.00	5.64	7	24.00																								
		26															9.00	5.36	7	26.00																								
		28															10.00	6.08	7	28.00																								
		30															11.00	6.80	7	30.00																								
		32															10.14	5.66	3	32.00																								
		34															10.14	5.38	3	34.00																								
		36															11.00	5.96	3	36.00																								
		LENEXA															2	38	NL,LR,MR,HR	6-15					6-15	15.50	0.250	20.50	20.50	1.75	2.00	1.75	84.00	6.00	8.00	4	12.50	7.18	5	38.00	20.75	17.50	1.75	1.50 X 5.75
																		40																			12.50	6.90	5	40.00				
42	12.50		6.62	3	42.00																																							
44	12.50		6.34	3	44.00																																							
46	13.00		6.56	3	46.00																																							
48	13.00		6.28	3	48.00																																							
50	13.00		6.36	DET. 4	50.00																																							
52	13.50		6.58	DET. 4	52.00																																							
54	13.50		6.30	DET. 4	54.00																																							
55	13.50		6.16	DET. 4	55.00																																							

SEE TABLE 2



DESIGNATION KEY

TABLE 2: MATERIAL DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
ALL TAPERED SHAFTS	A595 GR.A OR A572	55
BASE PLATE	A36	36
SIMPLEX PLATE	A36	36
LUMINAIRE ARM PIPE	2" SCHED. 40	--
LUM ARM ATTACHMENT	A27 GR. 65-35 OR A36	35
LUMINAIRE CONN. BOLTS	SAE GR.5	--
ANCHOR BOLTS	F1554 GR.55	55
GALVANIZING-STRUCTURES	A123	--
GALVANIZING-HARDWARE	HOT DIP ZINC	--
OPTIONAL		
TIE COAT: EPOXY		
FINISH COAT: ALIPHATIC ACRYLIC POLYURETHANE WITH UV PACKAGE		

TABLE 3: ELEVATIONS

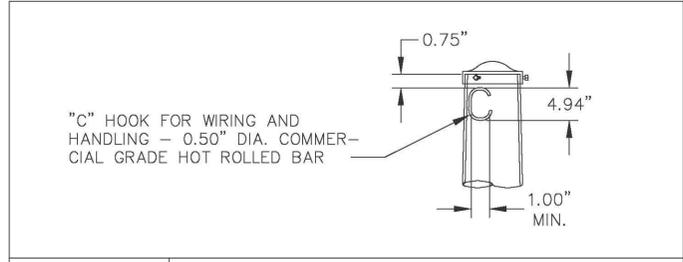
ELEVATIONS	TYPE			
	NO LUM (NL)	LOW RISE (LR)	MEDIUM RISE (MR)	HIGH RISE (HR)
LUMINAIRE MOUNTING HEIGHT	N/A	30'-0"	35'-0"	40'-0"
POLE LENGTH	19'-0"	27'-0"	32'-0"	37'-0"

REVISED DATE: ---
 DETAILED: ---
 APPROVED: ---

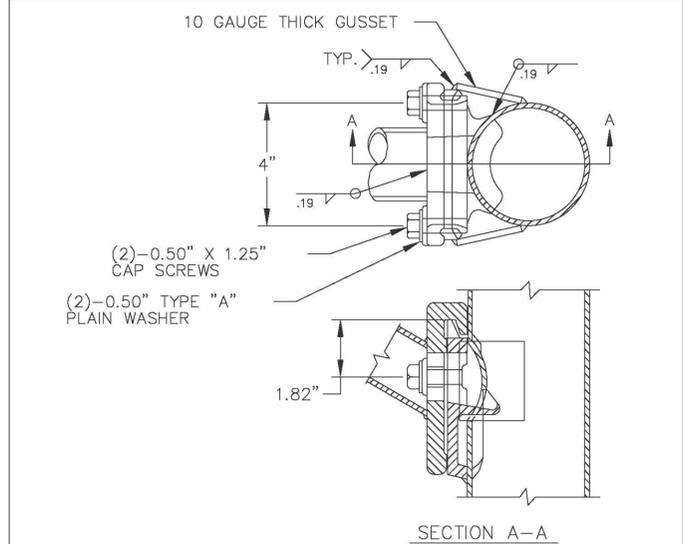
Lenexa
K A N S A S

TRAFFIC SIGNAL STRUCTURES

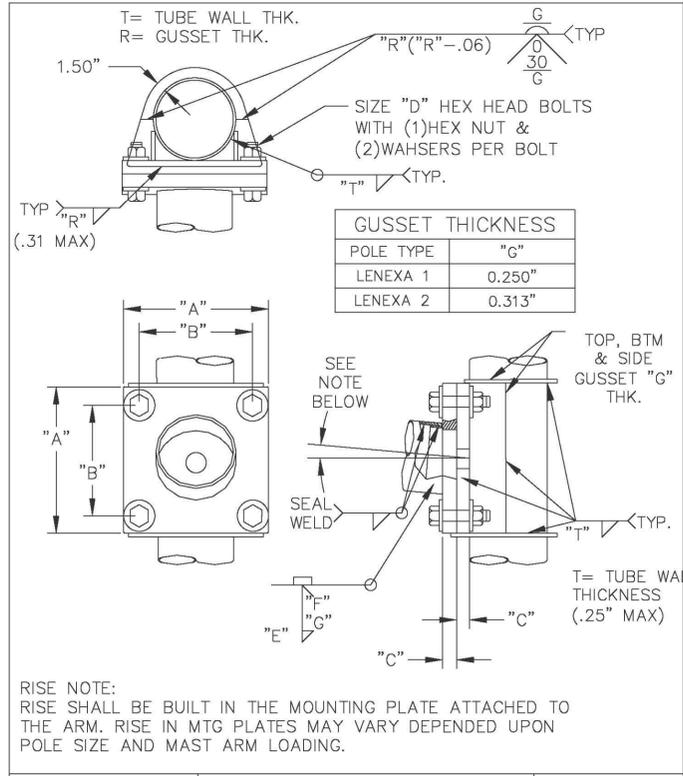
SHEET D-808



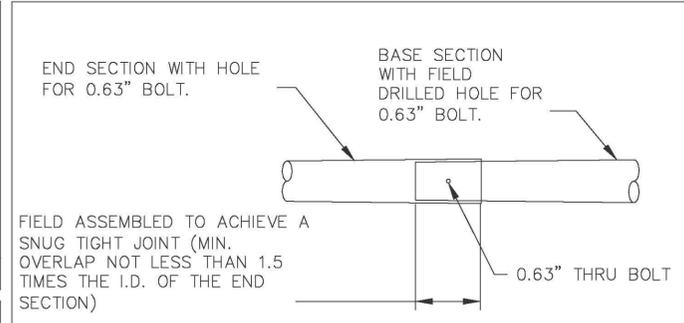
DETAIL 1 POLE TOP



DETAIL 2 LUMINAIRE ARM ATTACHMENT

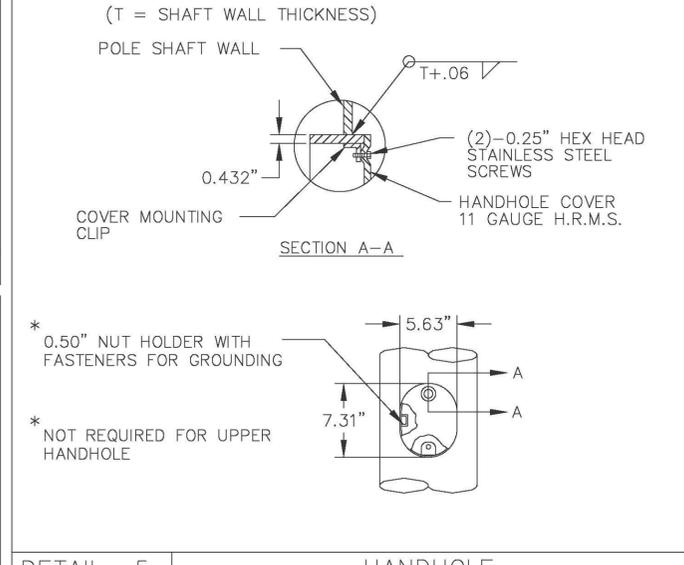


DETAIL 3 SIGNAL ARM ATTACHMENT

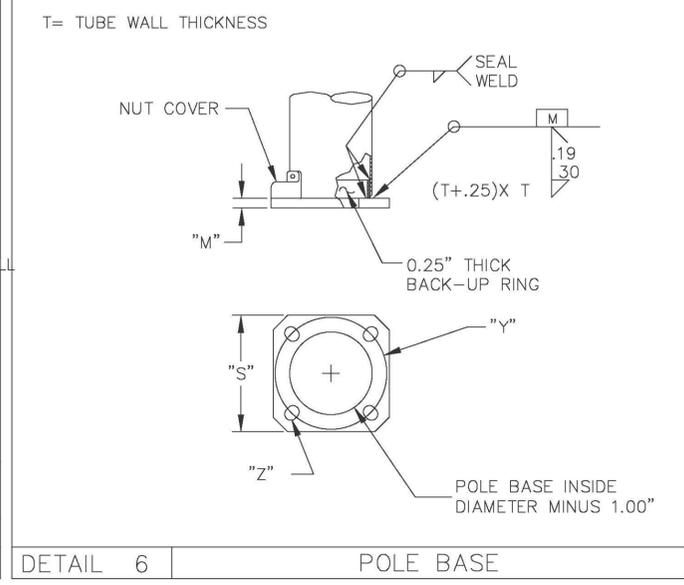


SPAN (FT)	BASE SECTION			END SECTION	
	LENGTH (FT)	GAUGE/THK. (IN)	BASE DIA. (IN)	LENGTH (FT)	GAUGE/THK. (IN)
50.00	19.29	0.250	11.00	33.15	7
52.00	15.85	0.313	12.00	38.72	7
54.00	15.85	0.313	12.00	40.72	7
55.00	15.85	0.313	12.00	41.72	7

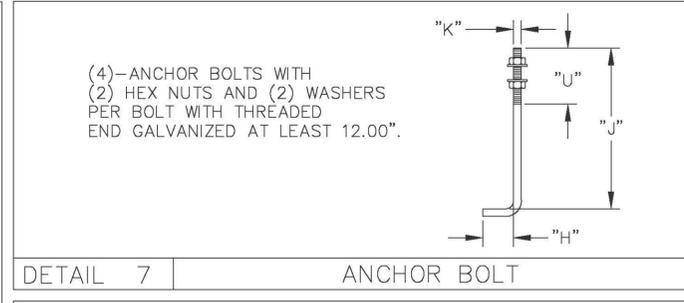
DETAIL 4 50'-55' SIGNAL ARM SLIP JOINT



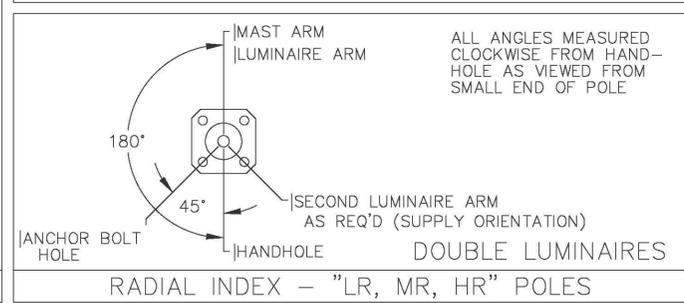
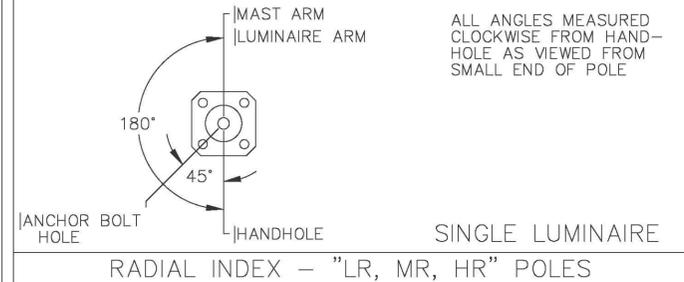
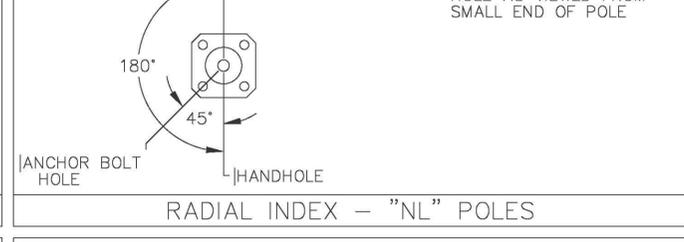
DETAIL 5 HANDHOLE



DETAIL 6 POLE BASE



DETAIL 7 ANCHOR BOLT



THESE TRAFFIC SIGNAL SUPPORT STRUCTURES ARE DESIGNED IN ACCORDANCE WITH LOADING AND ALLOWABLE STRESS REQUIREMENTS OF 2009 AASHTO "STANDARDS SPECIFICATION FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS", FOURTH EDITION. WIND LOADS ARE BASED ON A BASIC WIND SPEED OF 90 MPH WITH A RECURRENCE INTERVAL OF 50 YEARS, AND A FATIGUE CATEGORY OF II. FATIGUE LOADS ARE BASED ON THE REQUIREMENTS OF SECTION 11.7 AND THE FOLLOWING DESIGN LOADS:

VORTEX SHEDDING: NOT APPLICABLE FOR TRAFFIC SIGNAL STRUCTURES WITH PER AASHTO.

NATURAL WIND GUSTS: THE YEARLY MEAN WIND SPEED FOR NATURAL WIND GUSTS WILL BE ASSUMED TO BE 11.2 MPH.

GALLOPING: STRUCTURES ARE NOT DESIGNED TO RESIST PERIODIC GALLOPING FORCES.

TRUCK-INDUCED GUST: STRUCTURES ARE NOT DESIGNED TO INCLUDE TRUCK-INDUCED GUSTS.

AASHTO ICE: STRUCTURES ARE DESIGNED TO INCLUDE ICE LOADS.

AASHTO 2009 SPECIFICATIONS

ALTHOUGH RARE, VIBRATIONS SEVERE ENOUGH TO CAUSE DAMAGE CAN OCCASIONALLY OCCUR IN STRUCTURES OF ALL TYPES. BECAUSE THEY ARE INFLUENCED BY MANY INTERACTING VARIABLES, VIBRATIONS ARE GENERALLY UNPREDICTABLE. THE USER'S MAINTENANCE PROGRAM SHOULD INCLUDE OBSERVATION FOR EXCESSIVE VIBRATION AND EXAMINATION FOR ANY STRUCTURAL DAMAGE OR BOLT LOOSENING.

VIBRATION DISCLAIMER

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REVISOR: ---

DATE: ---

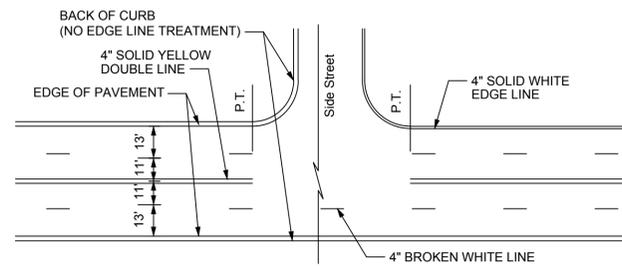
APPROVED: ---

Lenexa

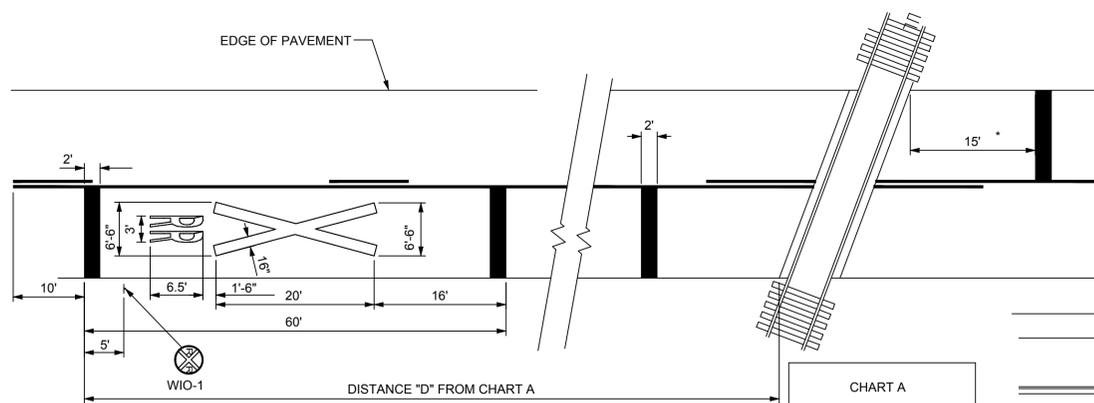
K A N S A S

TRAFFIC SIGNAL STRUCTURES 2

SHEET D-809



TYPICAL MARKINGS FOR FOUR-LANE ROADWAY
IN COMBINATION WITH
WITH TYPICAL SIDE STREET TREATMENT



A THREE LANE ROADWAY SHOULD BE MARKED WITH A CENTERLINE FOR TWO LANE APPROACH OPERATION ON THE APPROACH TO A CROSSING.

ON MULTI-LANE ROADS THE TRANSVERSE BANDS SHOULD EXTEND ACROSS ALL APPROACH LANES, AND INDIVIDUAL R X R SYMBOLS SHOULD BE USED IN EACH APPROACH LANE.

REFER TO STANDARD ALPHABET FOR HIGHWAY SIGNS AND MARKINGS FOR R X R SYMBOLS DETAILS.

* STOP LINE 8 FT. FROM NEAREST EDGE OF GATE OR CANTILEVER, IF PRESENT.

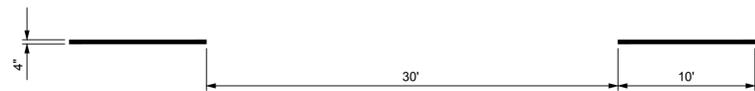
TYPICAL RAILROAD CROSSING DETAIL

CHART A	
POSTED SPEED (MPH)	DISTANCE D (FEET)
65	850
55	700
50	625
45	550
40	475
35	400
30	325
25	250
20	175

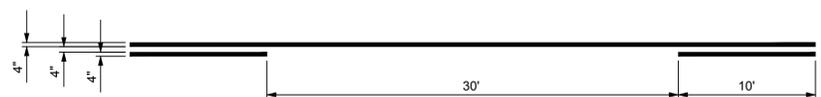
NOTE:
ALL DISTANCES ARE MINIMUM.

NOTES:

- ALL PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
- ALL TURN ARROWS AND LEGENDS SHALL BE CENTERED IN THEIR RESPECTIVE TRAFFIC LANES.
- ON CONCRETE PAVEMENT, ALL MARKINGS SHALL BE EPOXY. (SEE SPECIFICATIONS)
- PAVEMENT MARKINGS, EITHER TEMPORARY OR PERMANENT, ARE REQUIRED AT ALL TIMES IF THE ROADWAY IS OPEN TO TRAFFIC. (SEE SPECIFICATIONS)
- ALL MARKINGS THAT CONFLICT WITH THE DESIRED MARKINGS SHALL BE COMPLETELY REMOVED. (SEE SPECIFICATIONS)



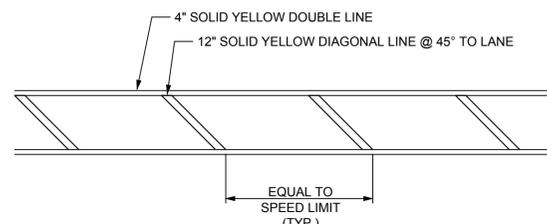
TYPICAL 4" BROKEN LINE DETAIL



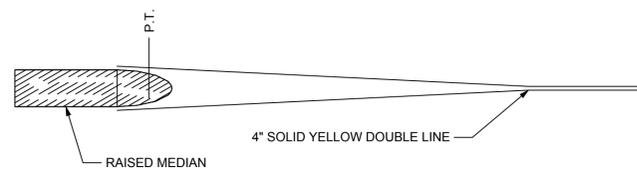
TYPICAL COMBINATION 4" SOLID AND BROKEN LINE DETAIL



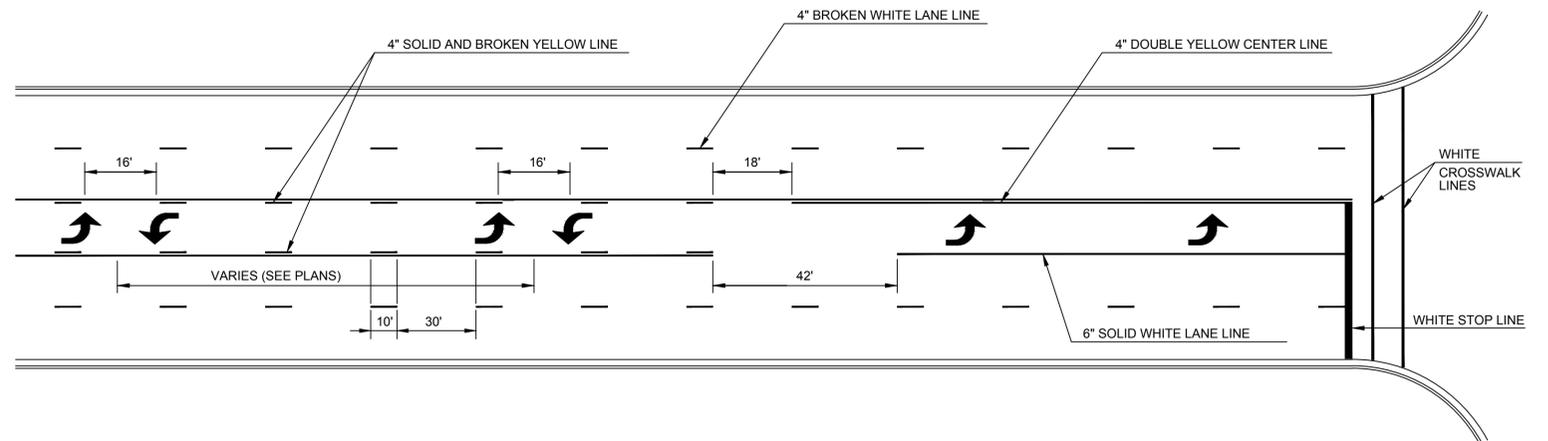
TYPICAL 4" SOLID YELLOW DOUBLE LINE DETAIL



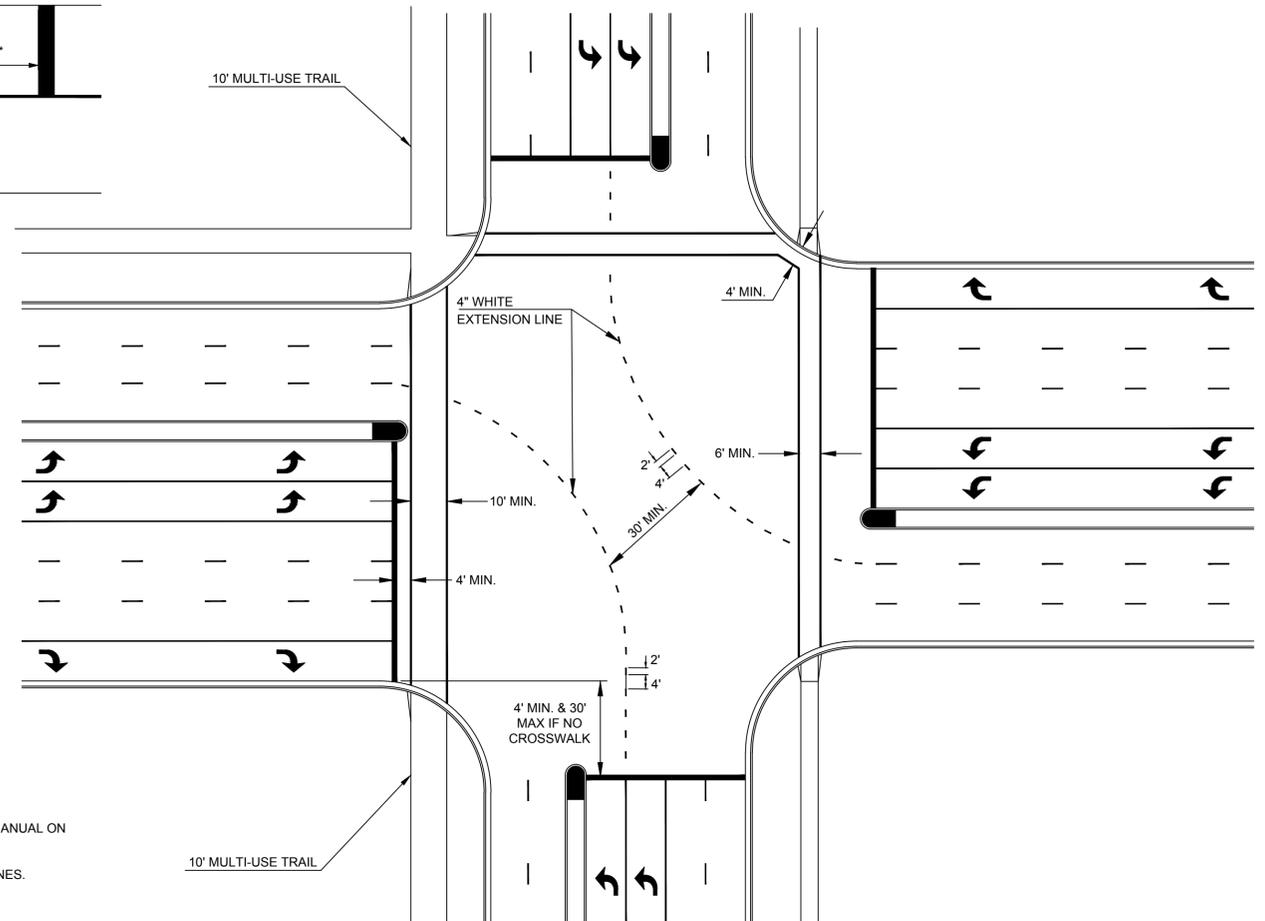
TYPICAL 18" SOLID YELLOW DIAGONAL LINE DETAIL



TYPICAL MEDIAN NOSE CENTERLINE TREATMENT

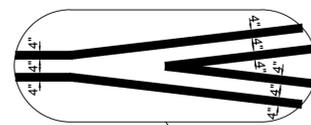


TYPICAL TWO-WAY LEFT TURN MARKINGS

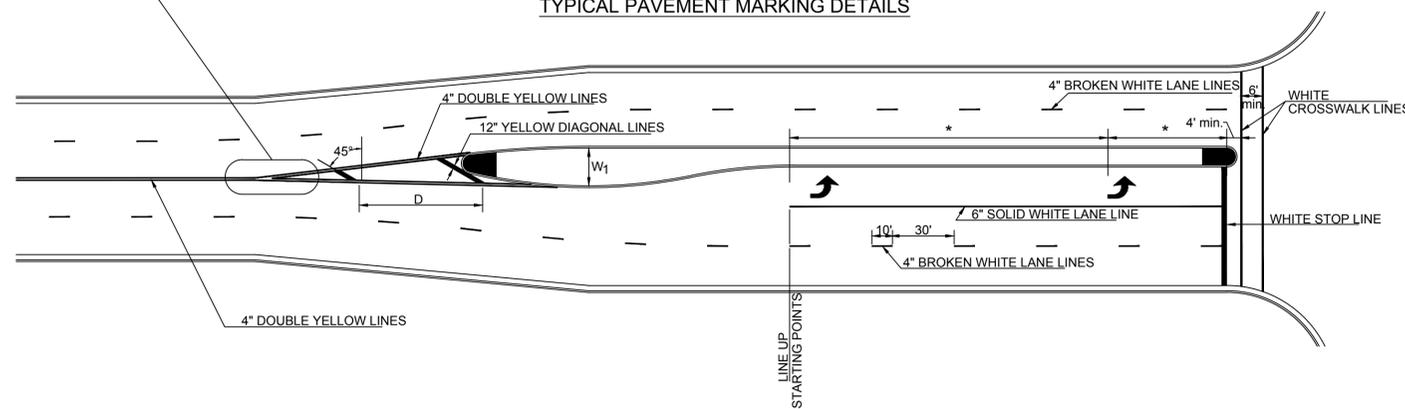


TYPICAL CROSSWALK AND LEFT TURN

EXTENSION LINE MARKINGS

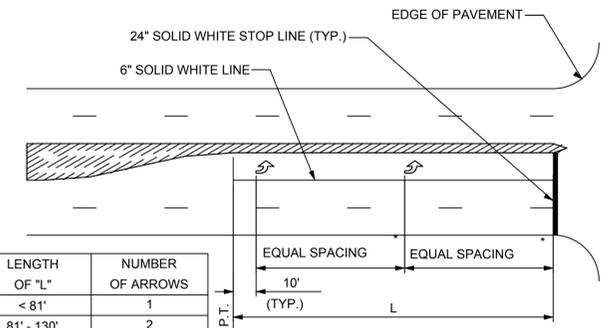


TYPICAL PAVEMENT MARKING DETAILS



TYPICAL MARKINGS FOR A RAISED MEDIUM

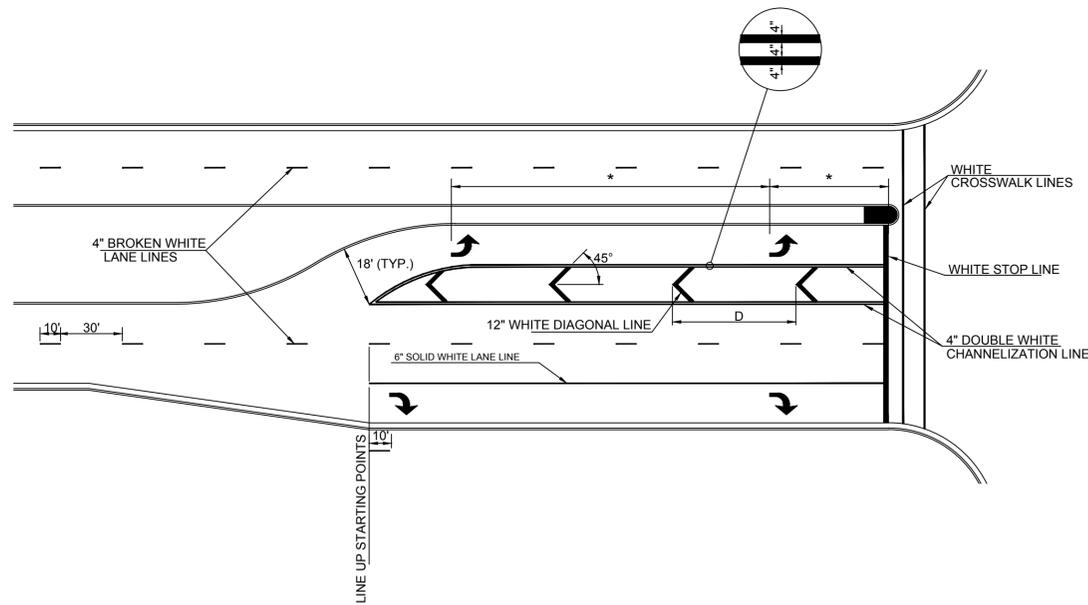
- NOTES:
- 1) * VARIABLE, SEE SPACING SCHEDULE AND/OR PLANS FOR LOCATION.
 - 2) D= POSTED SPEED LIMIT IN FEET (I.E. 25MPH = 25' SPACING) ADJUST IN THE FIELD FOR A MINIMUM OF TWO.
 - 3) REFER TO SHEET D-900 FOR THE TURN ARROW SPACING INFORMATION.



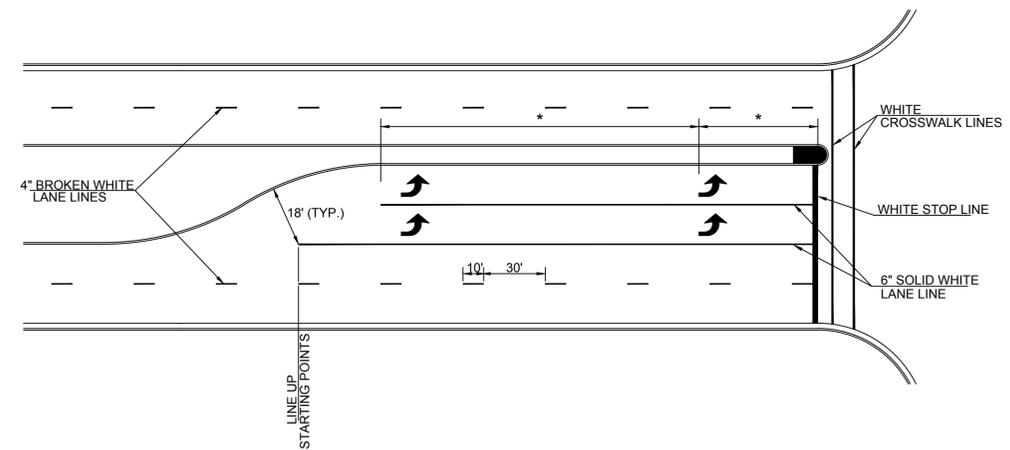
LENGTH OF "L"	NUMBER OF ARROWS
< 81'	1
81' - 130'	2
131' - 300'	3
300'-400'	4
400'-500'	5

* EQUAL SPACING = (L-10) / NO. OF ARROWS

TYPICAL TURN LANE TREATMENT

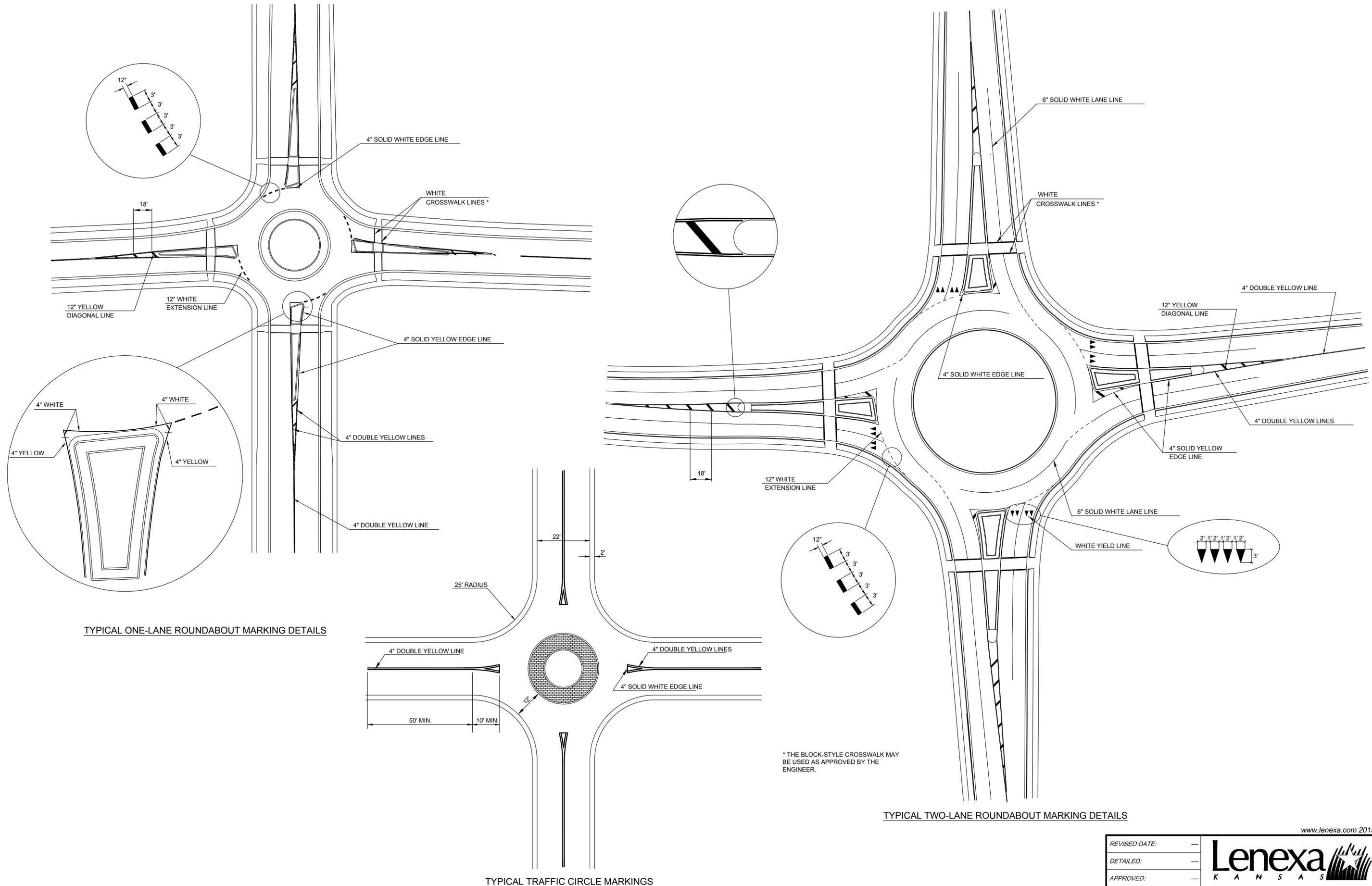


TYPICAL LEFT TURN CHANNELIZATION ISLAND LANE MARKINGS



TYPICAL DUAL LEFT-TURN LANE MARKINGS

REVISED DATE:	---	
DETAILED:	---	
APPROVED:	---	
PAVEMENT MARKING DETAILS 2		SHEET D-901



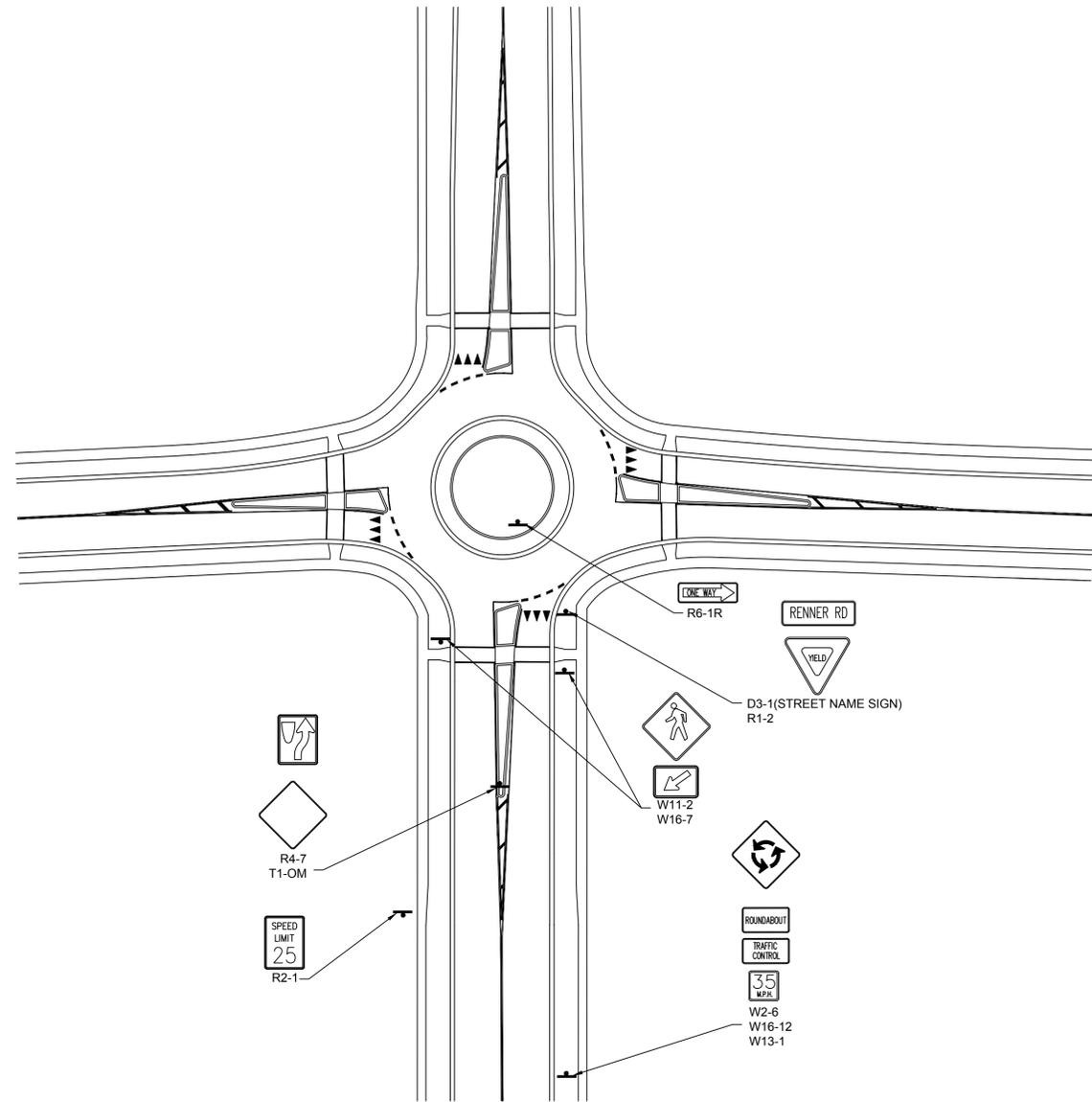
* THE BLOCK-STYLE CROSSWALK MAY BE USED AS APPROVED BY THE ENGINEER.

TYPICAL ONE-LANE ROUNDABOUT MARKING DETAILS

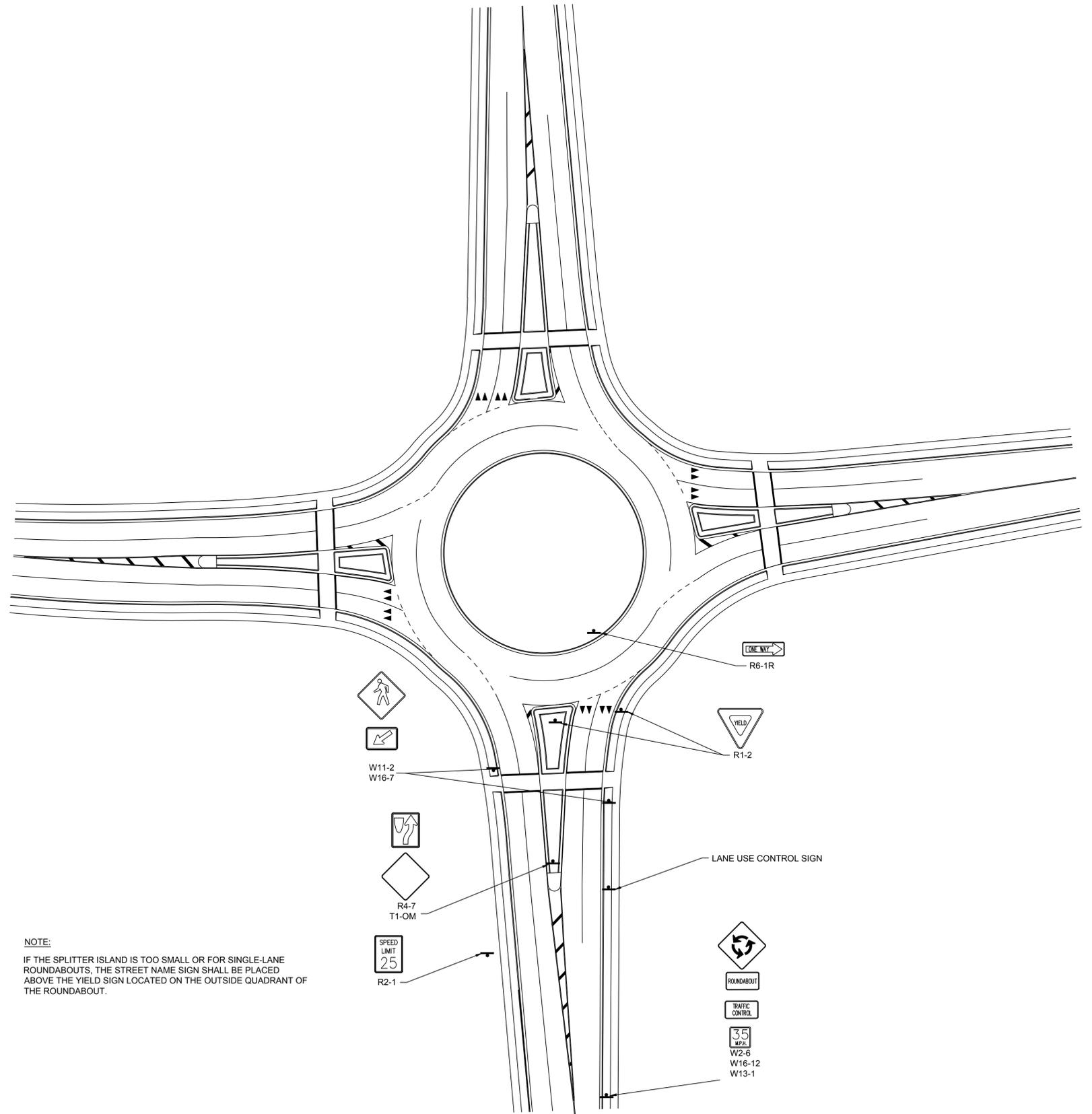
TYPICAL TWO-LANE ROUNDABOUT MARKING DETAILS

TYPICAL TRAFFIC CIRCLE MARKINGS

REVISED DATE:	---	
DETAILED:	---	
APPROVED:	---	



TYPICAL ONE-LANE ROUNDABOUT SIGNING DETAILS
(FOR ONE OF THE LEGS)



NOTE:
IF THE SPLITTER ISLAND IS TOO SMALL OR FOR SINGLE-LANE ROUNDABOUTS, THE STREET NAME SIGN SHALL BE PLACED ABOVE THE YIELD SIGN LOCATED ON THE OUTSIDE QUADRANT OF THE ROUNDABOUT.

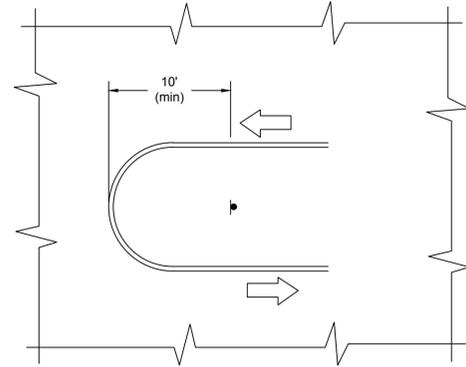
TYPICAL TWO-LANE ROUNDABOUT SIGNING DETAILS
(FOR ONE OF THE LEGS)

REVISED DATE:	---
DETAILED:	---
APPROVED:	---



NOTE:

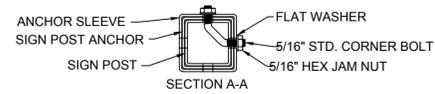
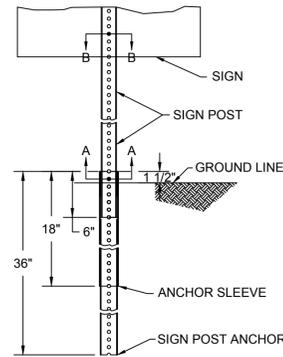
THE HEIGHT TO THE BOTTOM OF A SECONDARY SIGN MOUNTED BELOW ANOTHER SIGN WHEN IT IS LOCATED IN A PEDESTRIAN WALKWAY, OR EXTENDS MORE THAN 4" INTO A PEDESTRIAN WALKWAY SHALL BE A MINIMUM OF 80" IN COMPLIANCE WITH THE AMERICANS WITH DISABILITY ACT (ADA).



TYPICAL MEDIAN SIGN LOCATION

NOTE:

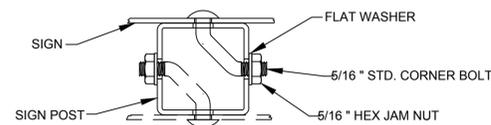
A RAISED MEDIAN INSTALLED SIGN SHALL NOT EXTEND BEYOND THE BACK FACE OF CURB. NORMAL CLEARANCE SHOULD BE 2' FROM SIGN EDGE TO BACK FACE OF CURB.



MATERIALS TABLE FOR SIGN POST AND FOOTING		
SIGN POST 14 Ga.	FOOTING	
	POST ANCHOR	POST ANCHOR SLEEVE
2" x 2"	2 1/4" x 2 1/4" x 14Ga.	2 1/2" x 2 1/2" x 12 Ga.
2 1/2" x 2 1/2"	2 3/4" x 2 3/4" x 14Ga.	3" x 3" x 12 Ga.

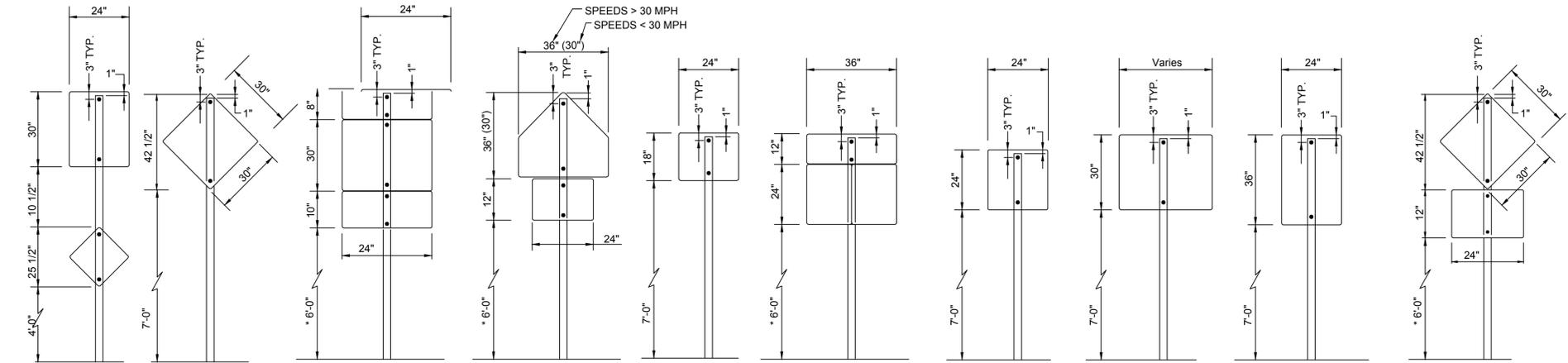
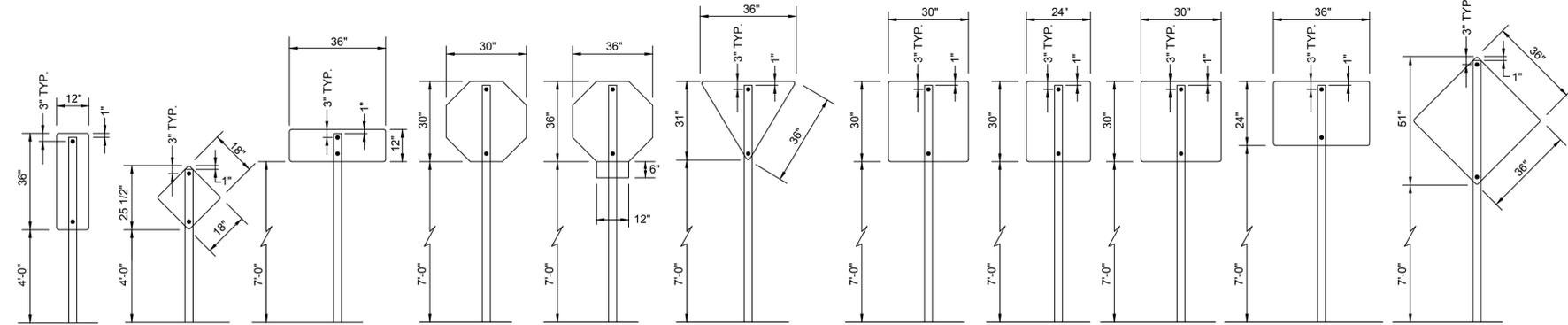
NOTE:

14 GAUGE POSTS MUST MEET A CERTIFIED MINIMUM YIELD STRENGTH OF 60,000 PSI.



SECTION B-B

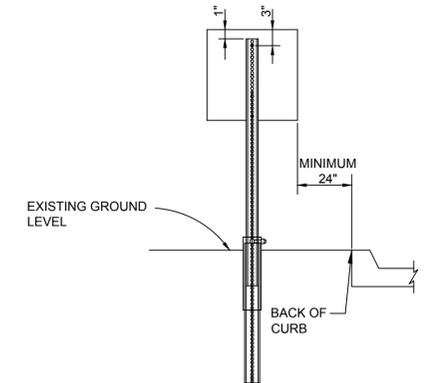
BREAKAWAY SIGN POST DETAIL



SIGN MOUNTING DETAILS

GENERAL SIGN NOTES

1. THE MAXIMUM SIGN AREA FOR ONE POST IS 9.0 FT. SQ. A SIGN OR COMBINATION OF SIGNS WITH GREATER THAN 9.0 FT. SQ. WILL REQUIRE TWO POSTS. IN ADDITION, SIGNS WITH A WIDTH GREATER THAN 36" WILL REQUIRE TWO POSTS.
2. SIGN MATERIAL THICKNESS SHALL BE 0.125" THICK ALUMINUM FOR SIGNS LARGER THAN 30"X30". SIGNS 30" X 30" AND SMALLER SHALL BE 0.080" THICK.
3. STOP SIGNS SHALL BE INSTALLED SUCH THAT THE TOP OF THE SIGN IS 20 INCHES BELOW THE TOP OF THE SIGN POST AND A MINIMUM OF 7 FEET FROM THE BOTTOM OF THE SIGN TO THE TOP OF SURFACE AT THE EDGE OF PAVEMENT.
4. IN ALL INSTALLATIONS, THE FIRST HOLE ABOVE THE GROUND LINE ON THE SIGN, POST ANCHOR AND POST ANCHOR SLEEVE (IF REQUIRED) MUST BE IN LINE FOR INSERTION OF THE CORNER BOLT.
5. FOOTING FOR ADVANCE STREET NAMES SIGNS SHALL BE ACCESSORIES SQUARED PART NO.SB8-CTA48-G OR APPROVED EQUAL. SIGN POSTS SHALL BE PLACED IN CONCRETE.



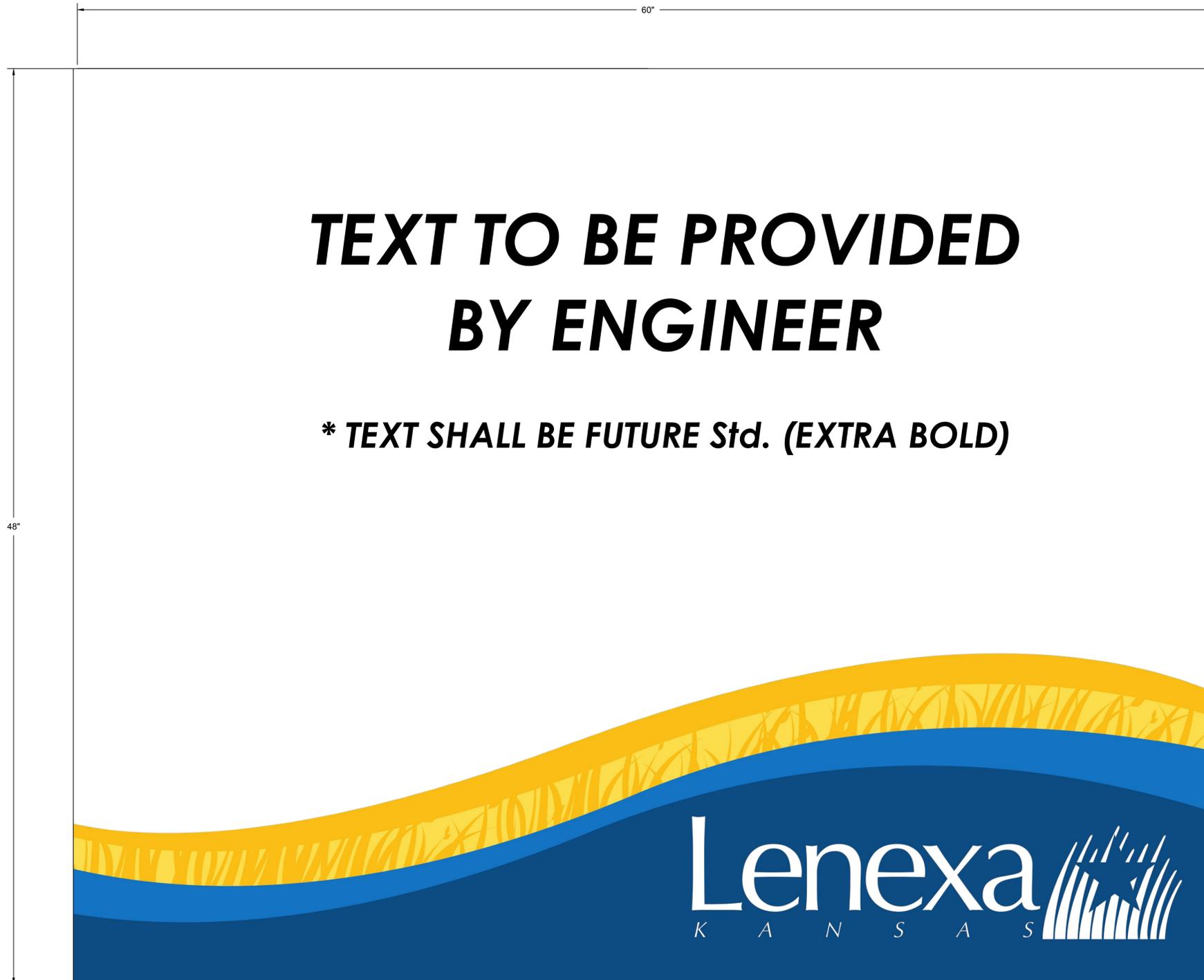
TRAFFIC SIGN INSTALLATION DETAIL

* THE SIGN POST SHALL BE INSTALLED EXACTLY 6 INCHES INTO THE ANCHOR SLEEVE.

INSTALLATION SEQUENCE

1. DRIVE POST ANCHOR INTO SUBGRADE.
2. DRIVE POST ANCHOR SLEEVE (IF REQUIRED) INTO SUBGRADE OVER THE POST ANCHOR.
3. INSTALL SIGN POST INTO THE POST ANCHOR.

REVISED DATE:	---	
DETAILED:	---	
APPROVED:	---	
SIGN DETAILS		SHEET D-905

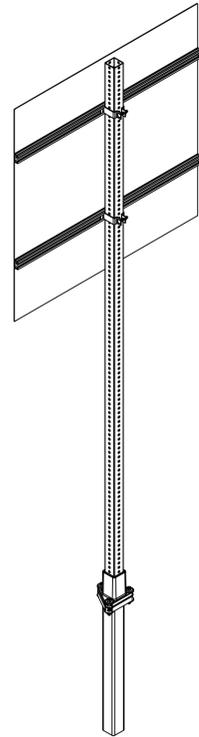


NOTES:

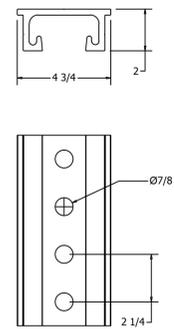
1. SIGN SHALL BE MOUNTED ON TWO 4"x6" POSTS, #1 GRADE LUMBER.
2. SIGN SHALL BE CONSTRUCTED OF 3/4" EXTERIOR A-C PLYWOOD.
3. SIGN AND POSTS SHALL BE PAINTED WITH 2 COATS OF WHITE EXTERIOR PAINT.
4. SIGN SHALL BE ERECTED PRIOR TO ANY CONSTRUCTION ACTIVITY AND MAINTAINED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION. SIGN WILL BE REMOVED UPON PROJECT COMPLETION BY THE CITY.
5. THE SIGN(S) SHALL BE PLACED ON EACH END OF THE PROJECT LIMITS. LOCATION TO BE DETERMINED BY THE ENGINEER.
6. SIGN SHALL BE FASTENED TO POSTS WITH 1/2" BOLTS, NUTS, AND WASHERS PLACED AT 1' CENTERS ON THE POSTS. BACKFILL AROUND POSTS SHALL BE THOROUGHLY TAMPED .
7. SIGN GRAPHICS AND LOGO WILL BE PROVIDED BY THE CITY TO THE CONTRACTOR.
8. SIGN SHALL BE RETRO-REFLECTIVE AND SHALL HAVE ENGINEERING GRADE SHEETING.
9. ON FEDERALLY FUNDED PROJECTS, SIGN SHALL BE A NON-PARTICIPATING ITEM.

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REVISED DATE:	---	
DETAILED:	---	
APPROVED:	---	
PROJECT SIGN DETAIL		SHEET D-906

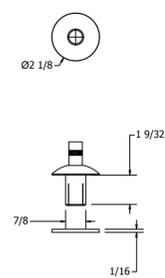


**ASB200P1
SIGN BRACE**



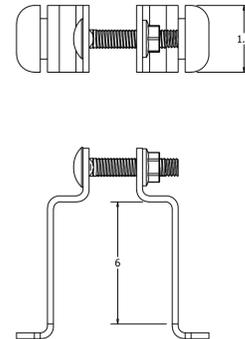
6061-T6 ALUMINUM ALLOY;
2" MOUNTING SURFACE x
7/8" DEPTH x 1/8" NOMINAL
WALL THICKNESS.
QUANTITY AND SPACING
TO BE BASED ON STATE
AUTHORIZED SPACING
CHART. 3/8" HOLES ON 1"
CENTERS CENTERED
ALONG ENTIRE LENGTH
OF THE BRACE.

**DRAS3878-06-W
RIVET w/washer**



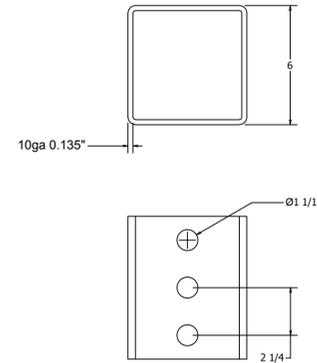
3/8" ALUMINUM SHELL
/ STEEL CORE RIVET
WITH NYLON WASHER.

**SBPCS250SQ
SIGN CLAMP**

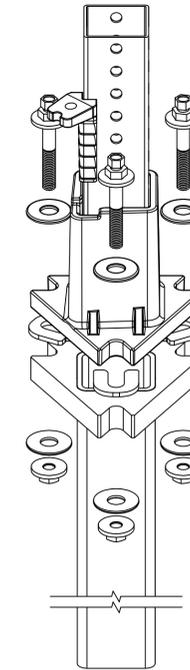


MATERIALS: 1.4" WIDE x 11ga.
TYPE 304, #2B FINISHED
STAINLESS STEEL BRACKET.
INCLUDES STAINLESS STEEL
3/8"-16 x 2" CARRIAGE BOLT
AND SERRATED FLANGED NUT.

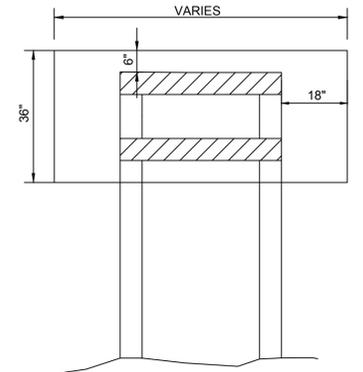
TELESPAR



STRUCTURAL STEEL, ASTM
A1011, Grade 50. AVERAGE
MINIMUM YIELD STRENGTH
AFTER COLD-FORMING
MUST BE 60,000 psi. MUST
BE CORNER WELDED,
SCARFED AFTER WELDING,
THEN ZINC COATED AFTER
SCARFING. MUST BE
COATED WITH A CROMATE
CONVERSION COATING
AND CLEAR ORGANIC
POLYMER TOPCOAT.
INTERIOR AND EXTERIOR
WILL BE GALVANIZED.



COMPLETE SLIP
BASE ASSEMBLY
(DETAILED BELOW)



ADVANCE STREET NAME SIGN DETAIL

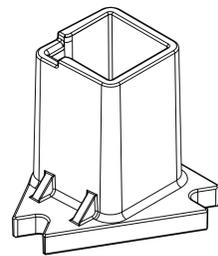
ADVANCE STREET SIGN NOTES

- FOR THE ADVANCED STREET SIGN NAME SIGNS, THE SIGN POST ASSEMBLY SHALL CONTAIN HEAVY DUTY ANCHORS. THE SIGN SHALL BE EQUIPPED WITH CROSS BRACES THAT ARE POSITIONED HORIZONTALLY.

NOTES:

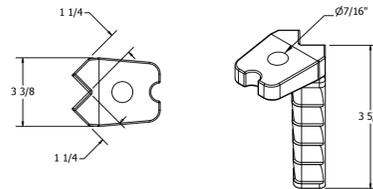
- MINIMUM OF 12" DIAMETER X 42" CONCRETE FOOTING UNLESS INSTALLING INTO SOIL.
- SECURE SIGN SUPPORT TO POST RECEIVER WITH USE OF DRIVEABLE LOCKING WEDGE, WHICH SHALL ELIMINATE ALL TOLERANCE BETWEEN POST AND COUPLER WITHOUT THE NEED FOR THREADED FASTENERS. WEDGE MUST CONTAIN RIBS PREVENTING POST FROM PULLING OUT DUE TO VIBRATION.
- ALL COMPONENTS OF ORIGINAL INSTALLATION SHALL BE REUSABLE WITH THE EXCEPTION OF THE MATCHPLATE HARDWARE BOLT.
- BRASS SHIMS MAY BE USED BETWEEN SLIP PLATES TO LEVEL THE UPPER SLIP PLANE.
- SLIP BASE MUST BE FHWA ACCEPTED, MEETING CURRENT AASHTO & NCHRP 350 REQUIREMENTS.
- SIGN BRACE CLAMPS MUST ALLOW SIGN BRACE TO BE ADJUSTED UP, DOWN, LEFT OR RIGHT IN ORDER TO ACHIEVE PERFECT POSITION OF SIGN PANEL.
- DRIVE RIVET MUST HAVE WASHER PRE-INSTALLED AND FIT INTO SIGN BRACE TO SECURE ALUMINUM SIGN PANEL.
- FOR PROPER HARDWARE INSTALLATION, SEE SEPERATE HARDWARE INSTALLATION INSTRUCTIONS.
- 2-1/2" x 12GA SQUARE POST MAY BE INSERTED WITH A 2-3/16 x 10GA SQUARE POST FOR EVEN GREATER SIGN AREA CAPACITY.

**SB8C-250A-G
2-1/2" SQUARE POST RECEIVER**



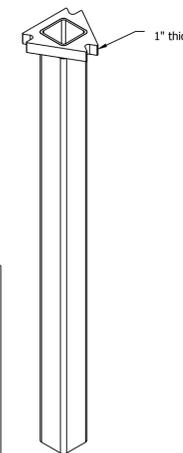
RECEIVER TO BE CAST
FROM DUCTILE IRON
ASTM A536 CLASS 65-45-12.
GALVANIZED PER ASTM A153.

**LWX35F-G
POST LOCKING WEDGE**



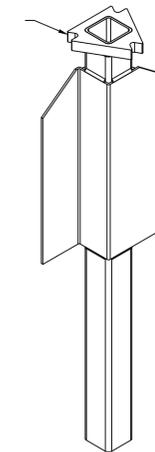
LOCKING WEDGE FORGED
FROM SAE 1035 STEEL AND
GALVANIZED PER ASTM A153.

**SB8-CTA48-G
UNIBASE CONCRETE
ANCHOR STUB**



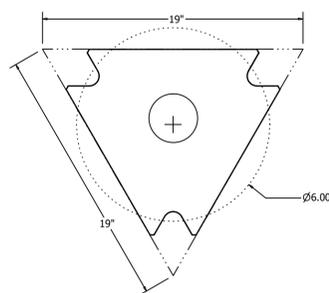
UNIBASE ANCHOR
MADE OF A500
GRADE B TUBE
WELDED TO A572
SLIP PLATE.
GALVANIZED PER
ASTM A153.

**SB8-CTWA48-G
UNIBASE SOIL-
ANCHOR STUB**



UNIBASE SOIL ANCHOR
MADE OF A500
GRADE B TUBE WELDED TO A572
GRADE 50 SLIP PLATE.
WING MADE OF FGA ASTM
A569 PLATE. GALVANIZED
PER ASTM A153.

SLIP PLATE DIMENSION



RTB50-300-G
1/2"-13 x 3"
GRADE 8 DOUBLE
HEX BOLT,
GALVANIZE PER
ASTM B695
(3 EACH PER KIT)



TCS175-188
1-3/4" SQUARE x
3/16" THICK TEFLON
COATED, HARDENED
SLIP WASHER
(3 EACH PER KIT)

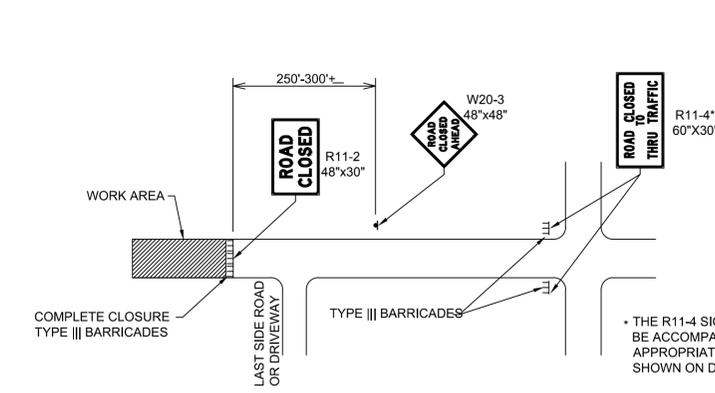


FW58-G
5/8" U.S.S. FLAT
WASHER ANSI
B 18.22.1, TYPE
A WIDE, GALVANIZE
PER ASTM B695
(6 EACH PER KIT)

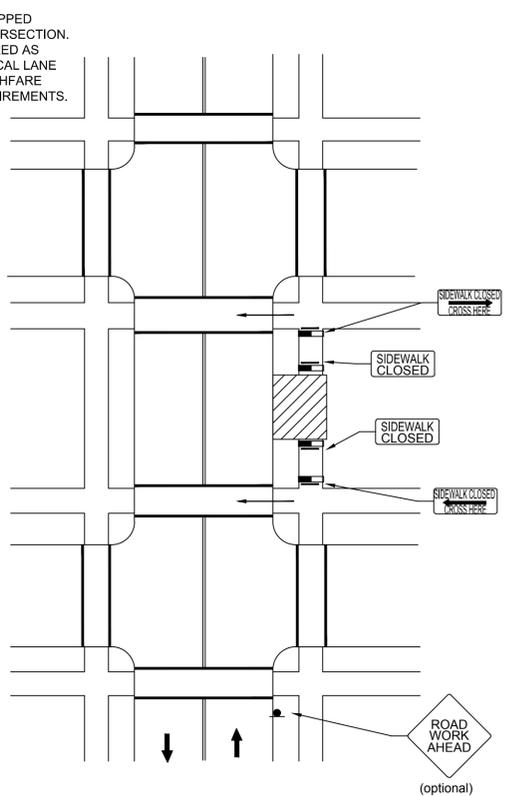
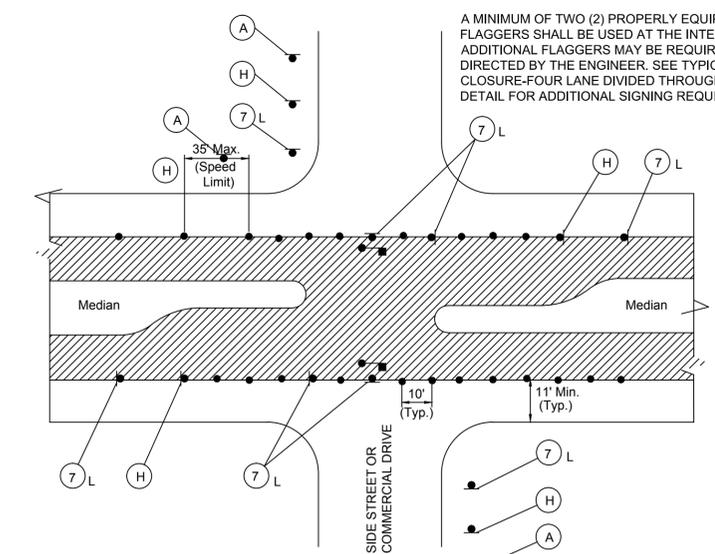
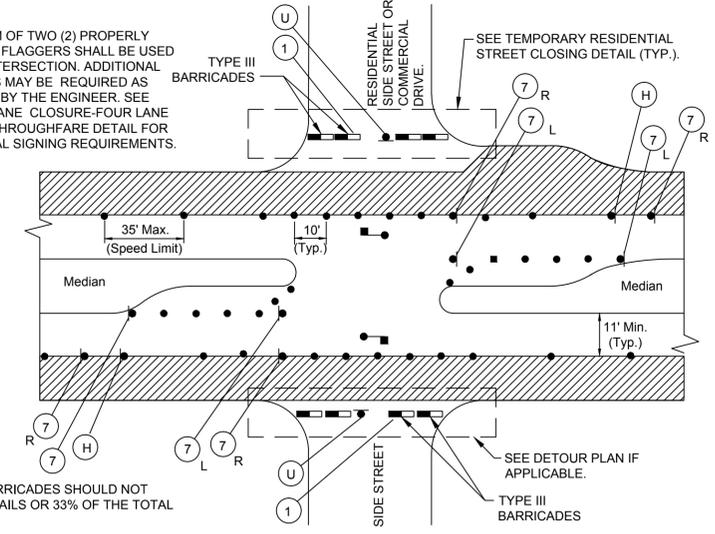


G8LFN50-G
1/2"-13 GRADE 8
LARGE FLANGE NUT
GALVANIZE PER
ASTM B695
(3 EACH PER KIT)

RTSB-MPHDW - SLIP BASE MATCH PLATE HARDWARE KIT - MUST BE FHWA ACCEPTED



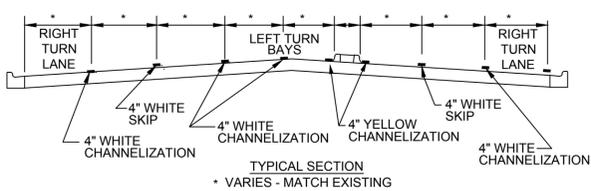
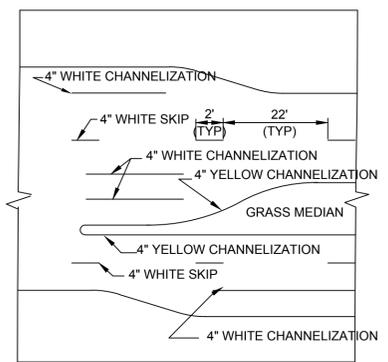
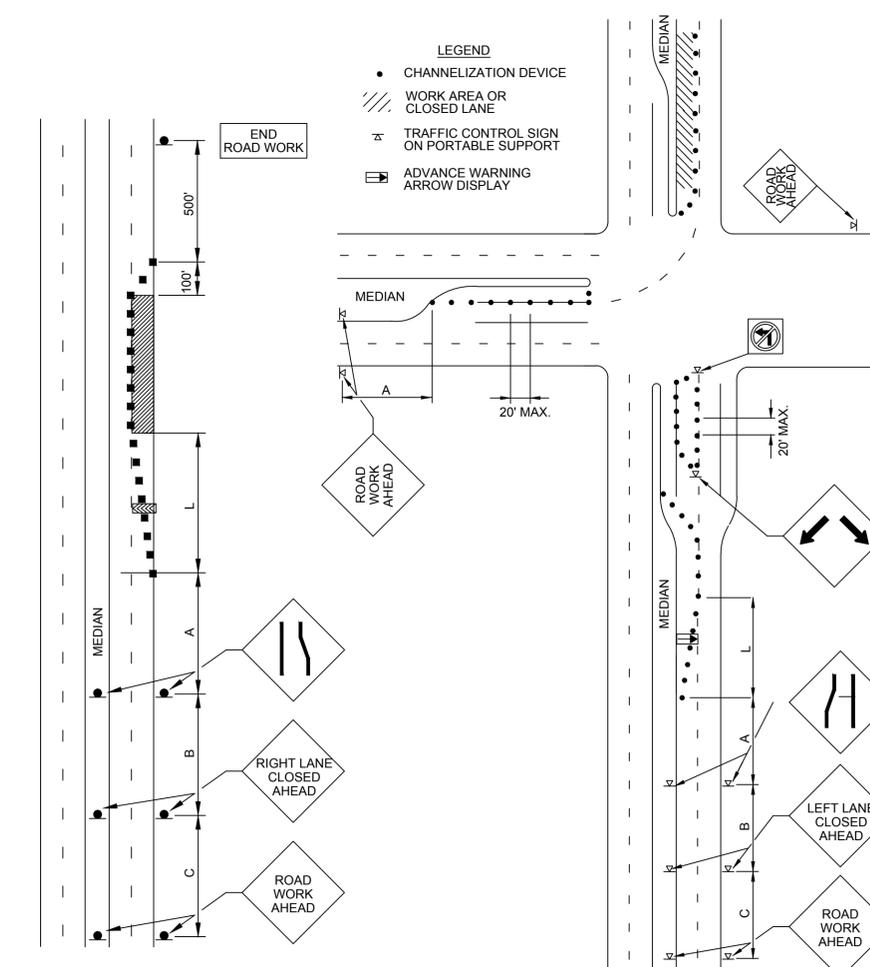
NOTES:
 A MINIMUM OF TWO (2) PROPERLY EQUIPPED FLAGGERS SHALL BE USED AT THE INTERSECTION. ADDITIONAL FLAGGERS MAY BE REQUIRED AS DIRECTED BY THE ENGINEER. SEE TYPICAL LANE CLOSURE-FOUR LANE DIVIDED THROUGHFARE DETAIL FOR ADDITIONAL SIGNING REQUIREMENTS.



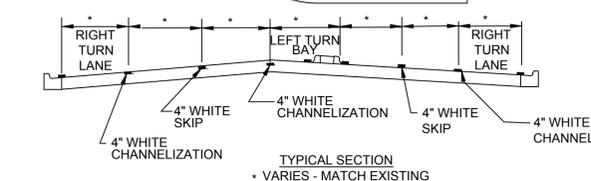
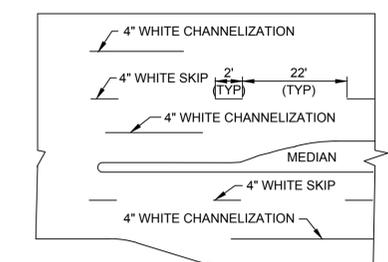
ROAD CLOSURE NOTES

- FOR COMPLETE ROAD CLOSURE, TYPE III BARRICADES SHALL BE PLACED END-TO-END TO COMPLETELY COVER THE ROADWAY AND SHOULDERS. WHEN ACCESS MUST BE ALLOWED FOR CONSTRUCTION OR OTHER OFFICIAL/GOVERNMENT VEHICLES, THE BARRICADES SHALL BE LONGITUDINALLY STAGGERED FAR ENOUGH APART FROM ONE ANOTHER TO ALLOW SAFE PASSAGE OF VEHICLES AND MAINTAIN THE APPEARANCE OF A CLOSED ROADWAY. TYPE III BARRICADES SHALL BE REALIGNED AND PLACED END-TO-END TO DENY ANY ACCESS WHEN THE CONSTRUCTION ACTIVITY HAS CEASED FOR THE DAY.
- AT THE POINT WHERE THROUGH TRAFFIC MUST DETOUR AND LOCAL TRAFFIC CAN PROCEED TO THE LOCATION WHERE THE ROADWAY IS COMPLETELY CLOSED, THE R11-4 SIGN SHALL BE USED WITH TYPE III BARRICADES (WINGED POSITION), LOCATED OFF THE EDGE OF THE ROADWAY.
- THE ENTIRE AREA OF BARRICADE RAILS, BOTH FRONT AND BACK, SHALL BE FULLY RETROREFLECTORIZED WITH HIGH INTENSITY SHEETING.
- THE STRIPES ON THE BARRICADES SHALL SLOPE DOWNWARD TO THE SIDE WHERE TRAFFIC IS TO PROCEED OR TOWARD THE CENTER OF THE ROADWAY AT ROAD CLOSURES.
- APPROVED SIGNS MOUNTED ON TYPE III BARRICADES SHOULD NOT COVER MORE THAN 50% OF THE TOP TWO RAILS OR 33% OF THE TOTAL AREA OF THE THREE RAILS.
- WHEN BARRICADES ARE PLACED END-TO-END, A TYPE A FLASHING WARNING LIGHT SHALL BE MOUNTED NEAR EACH OUTSIDE CORNER OF THE END BARRICADES.
- THE CONTRACTOR SHALL PROVIDE A MINIMUM OF TWO(2) CHANGEABLE MESSAGE BOARDS PRIOR TO AND THROUGHOUT THE CLOSURE OF THE STREET. THE CITY ENGINEER SHALL DETERMINE THE LOCATIONS OF THE CHANGEABLE MESSAGE BOARDS AS WELL AS THE MESSAGES THAT WILL BE PLACED ON THESE BOARDS.

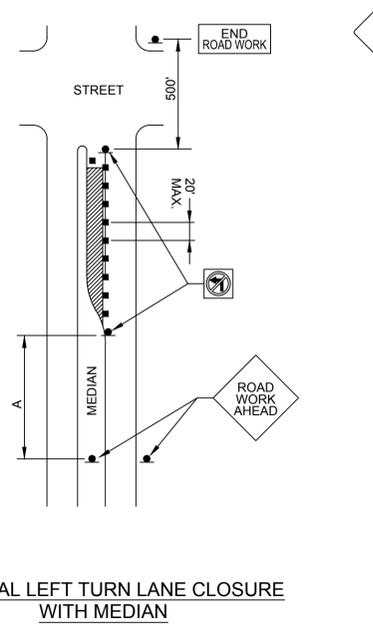
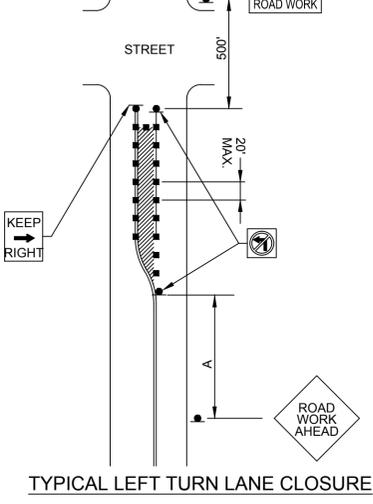
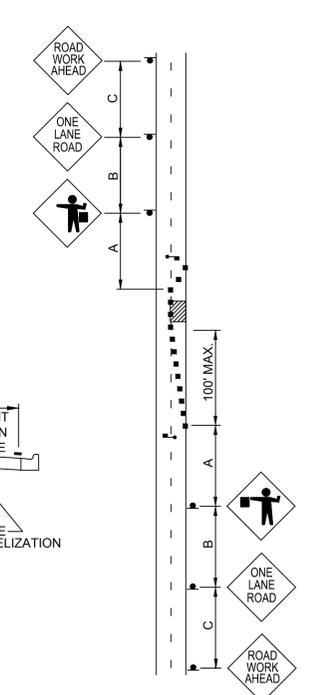
TYPICAL ROAD CLOSURE DETAILS



TEMPORARY PAVEMENT MARKING DETAILS (TEMPORARY PAVEMENT MARKINGS TO BE INSTALLED IMMEDIATELY AFTER COLD PLANING)



TYPICAL LANE CLOSURE TWO LANE ARTERIAL OR COLLECTOR STREET (RIGHT LANE CLOSURE SHOWN)

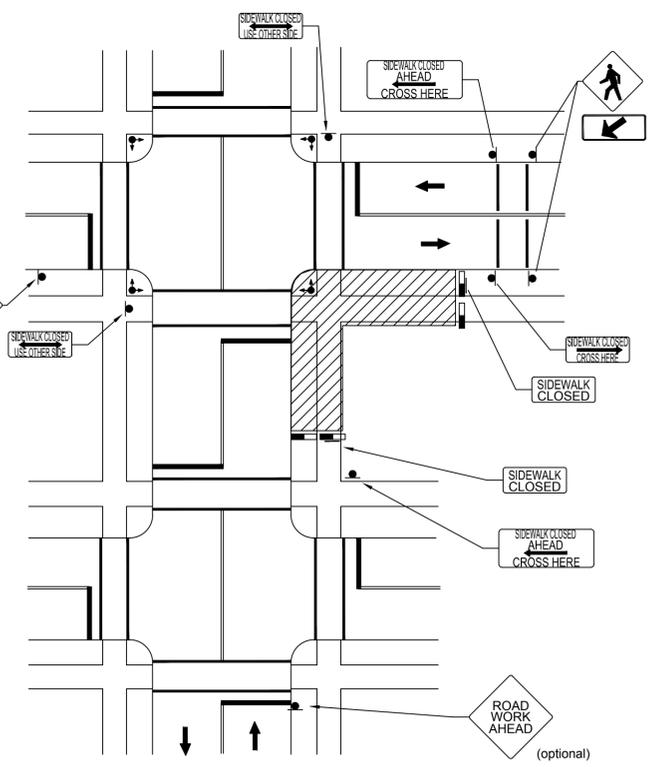


TYPICAL LANE CLOSURE FOUR LANE DIVIDED ARTERIAL (RIGHT LANE CLOSURE SHOWN)

TYPICAL LEFT LANE CLOSURE PROVIDING ACCESS TO LEFT TURN LANE

TEMPORARY PAVEMENT MARKING DETAILS

TYPICAL LEFT TURN LANE CLOSURE WITH MEDIAN



REVISED DATE:	---
DETAILED:	---
APPROVED:	---

Lenexa
KANSAS

SHEET D-1001