Standard Details
2025 Edition

CITY OF LENEXA

Community Development Department

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INDEX OF SHEETS

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 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. CONTRACTOR MUST ALSO ADHERE TO SECTION VII "RESPONSIBILITIES OF THE EXCAVATOR" OF THE KANSAS ONE CALL EXCAVATORS MANUAL (https://kansas811.com/wp-content/uploads/2020/02/koc_excavator_manual_2009.pdf); THE KANSAS UNDERGROUND UTILITY DAMAGE PREVENTION ACT (KUUDPA); THE KANSAS STATE STATUTES; OR ANY REGULATIONS DEVELOPED BY THE KANSAS CORPORATION COMMISSION (KCC).

12. THE CONTRACTOR SHOULD FOLLOW CHAPTER 5 "EXCAVATION" OF THE COMMON GROUND ALLIANCE (CGA) BEST PRACTICES MANUAL, CURRENT VERSION.

13. 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. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF ALL UTILITIES PRIOR TO ANY CONSTRUCTION TO PROVIDE NON-INTERRUPTED SERVICE. THE CONTRACTOR MUST ALSO ADHERE TO SECTION VII "RESPONSIBILITIES OF THE EXCAVATOR" OF THE KANSAS ONE CALL EXCAVATORS MANUAL THE KANSAS UNDERGROUND UTILITY DAMAGE PREVENTION ACT (KUUDPA); THE KANSAS STATE STATUTES; OR ANY REGULATIONS DEVELOPED BY THE KANSAS CORPORATION COMMISSION (KCC).

14. 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.

15. CONTRACTOR SHALL PROTECT AND NOT DISTURB EXISTING BENCHMARKS DURING GRADING AND/OR CONSTRUCTION, UNLESS OTHERWISE APPROVED BY THE ENGINEER.

16. ALL MANHOLES, CATCH BASINS, UTILITY VALVES, COMMUNICATIONS HAND HOLES, AND METER PITS TO BE ADJUSTED OR REBUILT TO GRADE AS REQUIRED.

17. 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.

18. ALL WASTE MATERIAL RESULTING FROM THE PROJECT SHALL BE DISPOSED OF OFF-SITE BY THE CONTRACTOR UNLESS OTHERWISE SPECIFIED IN THE CONTRACT OR PLANS. WASTE MATERIAL DISPOSED OF ON-SITE 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.

19. 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).

20. 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 IS RESPONSIBLE FOR MAINTAINING EXCESSIVE GROWTH (8 INCHES IN HEIGHT) OF WEEDS AND GRASSES FOR ALL AREAS WITHIN THE CONSTRUCTION LIMITS. 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: MIKE PILLER
    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. IF DEPTH IS NOT SHOWN IS SHALL BE FULL DEPTH. 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. THE CONTRACTOR SHALL FURNISH CHANGEABLE MESSAGE BOARDS FOR A MINIMUM PERIOD OF SEVEN (7) DAYS PRIOR TO ANY CLOSURE OR TRAFFIC DISRUPTION FOR APPROACHES THAT ARE IMPACTED WHEN A ROAD IS BEING CLOSED OR WHEN TRAFFIC IS SIGNIFICANTLY IMPACTED BY CONSTRUCTION, AS DIRECTED BY THE 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 HDPE STORM SEWER PIPE FOR STORM SEWER BID ITEMS THAT DO NOT SPECIFY A PIPE MATERIAL, THE CONTRACTOR SHALL USE GRANULAR BACKFILL MATERIAL PER D-302.

47. THE ASPHALT UNDER THE CURB SHALL BE SUBSIDIARY TO THE CURB AND GUTTER BID ITEM.

48. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSING OF ANY ABANDONED UTILITY CABLE, FIBER OR CONDUIT THAT IS EXPOSED DURING CONSTRUCTION.

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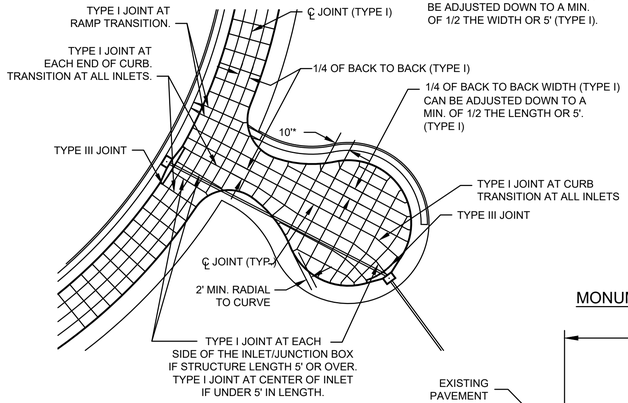
Lenexa KANSAS

GENERAL NOTES

SHEET D-100

JOINT LAYOUT

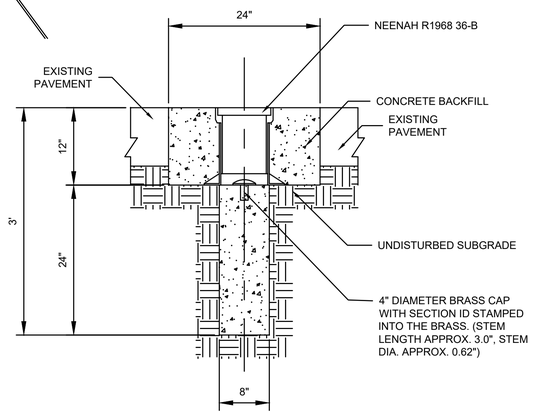


* 10' TO 12' TYPICALLY, BUT CAN BE ADJUSTED DOWN TO A MIN. OF 1/2 THE WIDTH OR 5' (TYPE I).

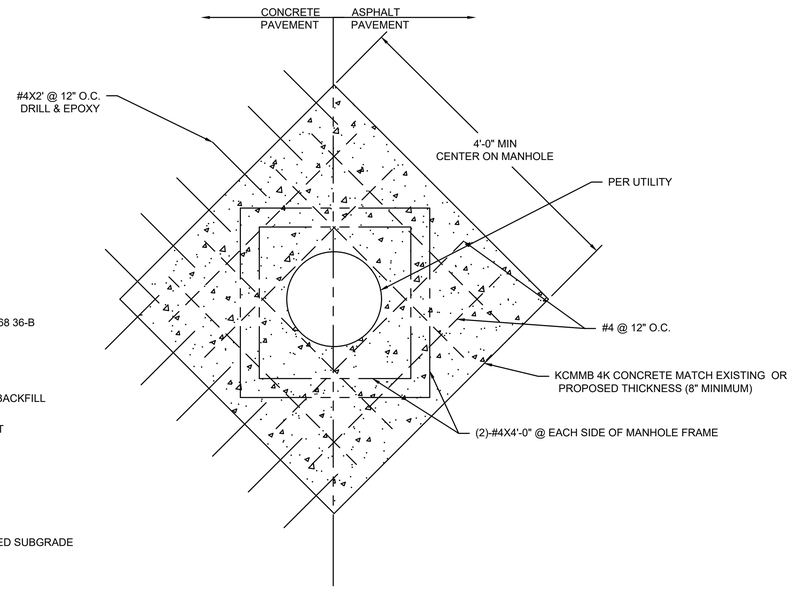
NOTE:

1. THE JOINT PATTERN SHOWN MAY NOT BE PRACTICAL FOR ALL SITUATIONS. DISCUSS VARIATIONS WITH CITY REVIEWER.
2. MAX. DIMENSION BETWEEN ANY 2 JOINTS IS 12'.
3. MIN. DIMENSION BETWEEN ANY 2 JOINTS IS 5' EXCEPT FOR TYPE III.

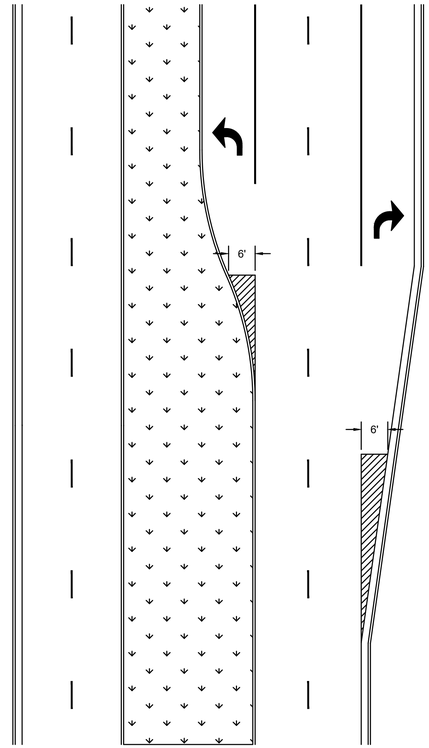
MONUMENT BOX



MANHOLE IN PAVED AREA

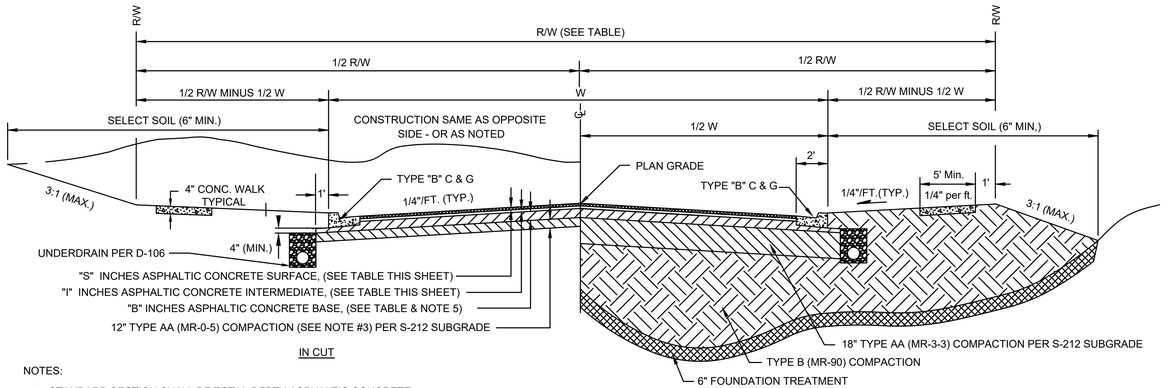


TURN LANE TRANSITION PAVEMENT



1. KCMMB 4K CONCRETE SHALL BE PLACED FULL DEPTH TO MINUS 2" FOR TURN LANE TRANSITIONS UNTIL THE WIDTH OF THE TURN LANE IS 6'. CONCRETE SHALL BE PAID AS ASPHALT PAVEMENT.

MAJOR STREET SECTION



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 CONFORM TO THE PORTLAND CEMENT ASSOCIATION PUBLICATION FOR DESIGN AND CONSTRUCTION OF CONCRETE HIGHWAYS. ALL TIE BARS SHALL BE EPOXY COATED.

TABLE

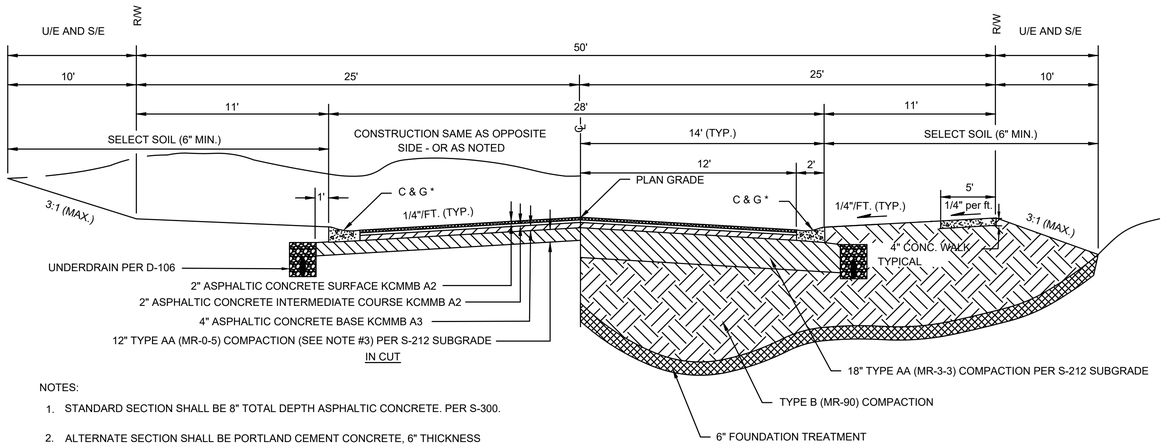
STREET TYPE	MIN. R/W	MIN. W	ASPHALT			KCMMB MIX			CONC.
			B	I	S	B	I	S	
PRIMARY ARTERIAL †	100'	52'	8"	2"	2"	A3	A1	A1	9"
SECONDARY ARTERIAL †	80'	48'	6"	3"	2"	A3	A1	A1	8"
COLLECTOR †	60'	36'*	3"	4"	2"	A3	A2	A2	7"
COMMERCIAL †	60'	36'	3"	4"	2"	A3	A2	A2	7"
INDUSTRIAL †	60'	36'	3"	4"	2"	A3	A2	A2	7"

*VARIES - SEE DESIGN CRITERIA

† VARIES - PER CITY OF LENEXA COMPLETE STREETS STUDY CONTACT ENGINEERING

RESIDENTIAL STREET SECTION

NOTE: 5' CONC.WALK (1 SIDE ONLY)



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 CONFORM TO THE PORTLAND CEMENT ASSOCIATION PUBLICATION FOR DESIGN AND CONSTRUCTION OF CONCRETE HIGHWAYS. ALL TIE BARS SHALL BE EPOXY COATED.

*TYPE A CURB WITH FULL DEPTH 8" FACE UNLESS OTHERWISE NOTED ON THE PLANS.

U/E : UTILITY EASEMENT
S/E : SIDEWALK EASEMENT

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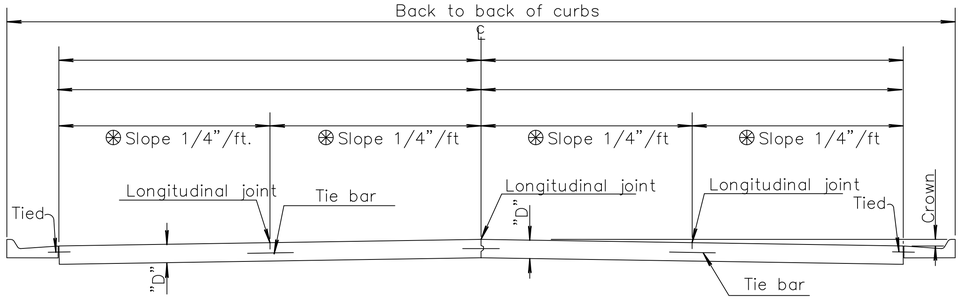
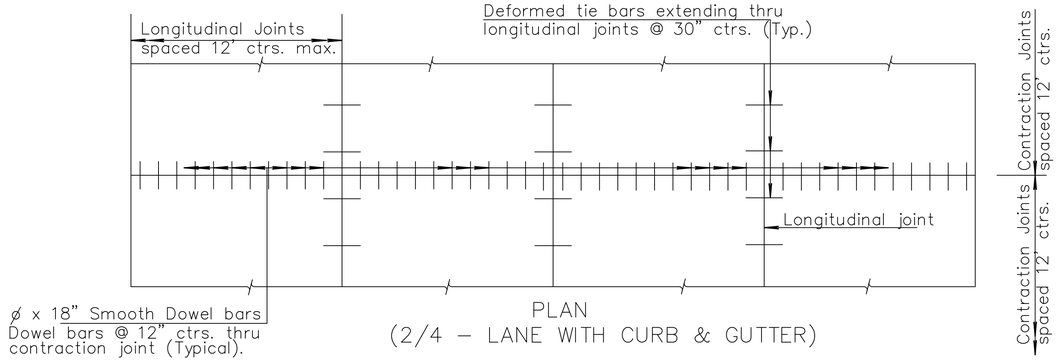
Lenexa KANSAS

STR. SECTION, JOINT LAYOUT, MONUMENT BOX — SHEET D-101

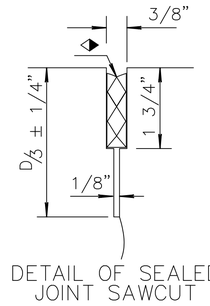


TRANSVERSE SECTION
(4 – LANE WITH CURB & GUTTER)

Normal cross slopes. See Typical Section or Cross Sections for variations.



PLAN
(2/4 – LANE WITH CURB & GUTTER)



DETAIL OF SEALED
JOINT SAWCUT

Make an initial 1/8" saw cut (D/3 ± 1/4" depth); the second 3/8" saw cut is a separate operation done after concrete has gained sufficient strength to avoid spalling as determined by the Engineer.

DOWEL SIZE	
D (in.)	Diameter
6 < D < 9	1"
9 ≤ D < 11	1 1/4"
D ≥ 11	1 1/2"

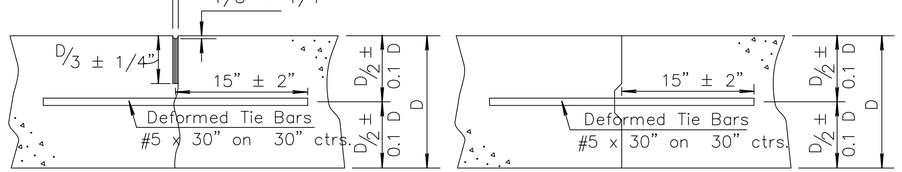
GENERAL NOTE

Epoxy coat all deformed tie bars that are straight. Patch any damage to the epoxy coating in accordance with the Standard Specifications. Use billet steel Grade 40 reinforcing for deformed tie bars that require bending, shall be epoxy coated. Use load transfer devices as shown in details at all construction joints on mainline pavement unless otherwise noted. Shoulder contraction joints have no dowels unless specifically shown on the plans.

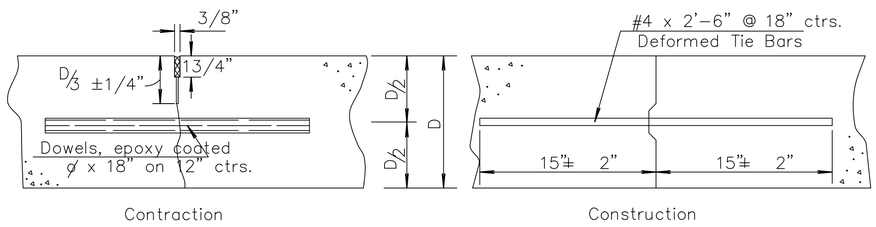
Fill all sawed joints on the project in accordance with the Standard Specifications.

Shape all keyed joints similar to section of recessed form leg as shown on this sheet.

Evenly space tie bars along the length of slab with no tie bar within 12" of contraction joint. All longitudinal joints are tied..



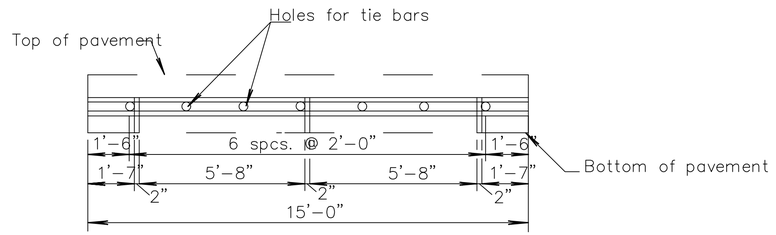
LONGITUDINAL JOINTS



TRANSVERSE JOINTS

Note: Construct contraction joints at plan locations or at the Engineer's direction.

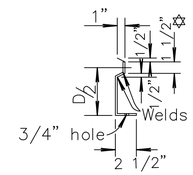
When necessary to interrupt continuous placement for a substantial length of time or at the end of a day's paving, the Contractor has the option of ending placement at a contraction joint or with a construction joint located a minimum of five (5) feet from a contraction joint. Construct either joint type by placing a header at the end of the pour or by paving past the joint location. After the concrete has hardened, saw joint and drill holes for tie bars or dowels.



METAL STRIP FOR
LONGITUDINAL CONSTRUCTION JOINT

To be used only against forms, do not extend through contraction joints. For automated placement tie bars are spaced at uniform 30" centers.

✡Use snap–in leg or other approved design in lieu of welded leg.



SECTION OF
RECESSED
FORM LEG

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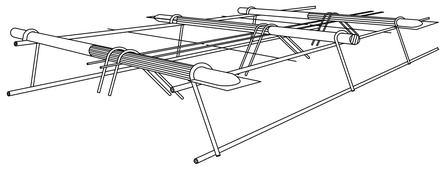
APPROVED:	---

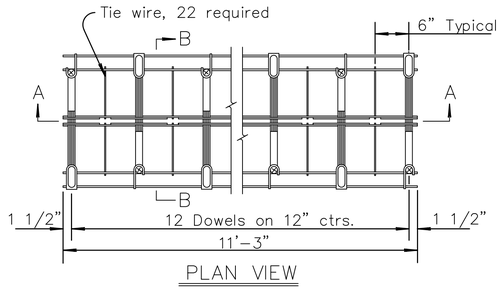
Lenexa KANSAS

CONCRETE PAVING DETAILS 1

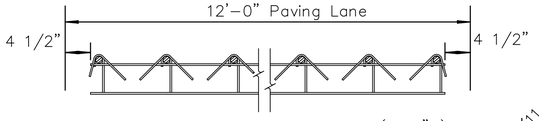
SHEET D-102



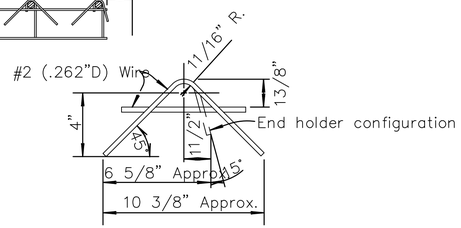
PERSPECTIVE VIEW

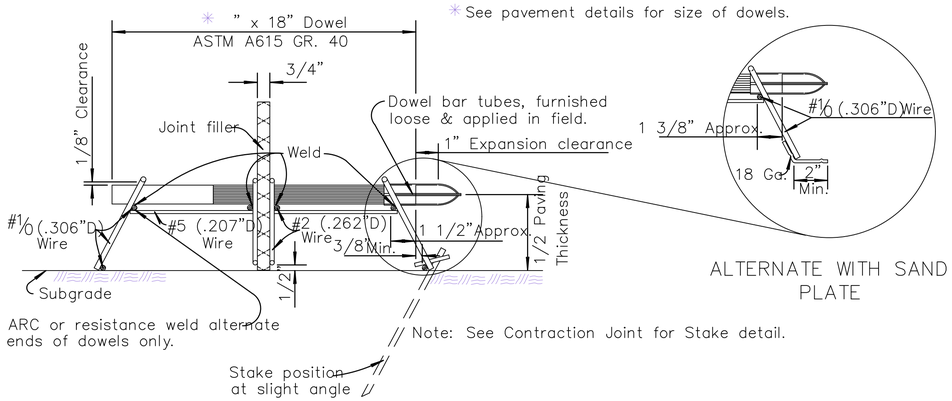


PLAN VIEW



SEC. A-A





SEC. B-B

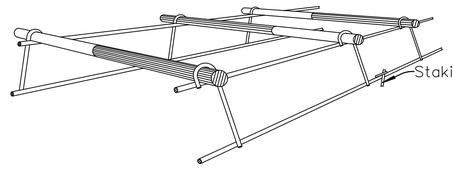
* See pavement details for size of dowels.

ALTERNATE WITH SAND PLATE

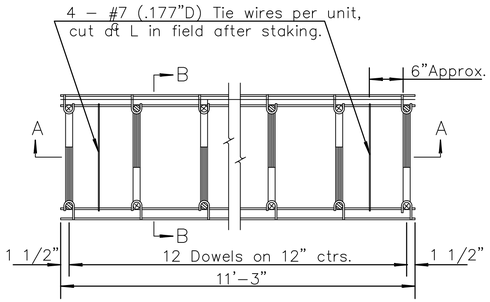
Note: See Contraction Joint for Stake detail.

EXPANSION JOINT

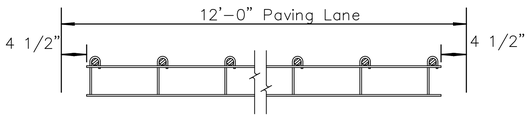
Note: Wire sizes shown are minimum required.
Sides held together with tie wire, allowing quick separation of sides & insertion of expansion material, provided in field.
One length of Preformed Expansion Joint filler (Type B), or other approved material, cut to fit crown and subgrade shall be used for each lane of pavement as expansion joint filler.
A string line shall be stretched between the pavement forms along the center line of the joint.
Each dowel bar shall be coated with an epoxy coating that meets the standard specifications. The coating material shall be a powdered epoxy resin approved by the Chief, Bureau of Materials and Research and shall be uniformly applied according to accepted practices and the resin manufacturer's recommendations. For Alt. 1 the coating need not be applied to the end faces of the bars and will not be required within 2" of the end which will be fixed in the supporting basket by welding.
In order to identify the location of the bond breaker application, the working end of dowel and the supporting leg shall receive a light application of red paint at the place of fabrication. The bond breaker to be applied in the field prior to concrete placement shall consist of coating approximately three-fifths of the length of each dowel bar with hard grease at the working end identified by the red paint.
The cutting to length of the dowel bars shall be done in such a manner to result in no appreciable deformation of the ends.
The entire joint assembly shall be carefully leveled up so that the dowels are parallel to the slab surface and free to slide in the dowel holders. Any grease scraped off the dowels in assembling the joint shall be replaced. Any excess grease on the dowel holders shall be removed.
After the complete expansion joint is assembled, it shall be checked to be certain that the vertical plane of the joint will be perpendicular to the finished surface of the slab and at a right angle with the center line of the slab. The dowels shall be checked to be certain that they are level and will remain in a position parallel with the finished surface of the slab.
Concrete shall be placed over and adjacent to the joint in accordance with the requirements of the Specifications.
To finish the joint after completion of machine finishing, floating and straight edging of the surface, the concrete over the filler shall be carefully removed and the joint edged with an edger of the proper size.
Expansion Joint material is to be installed in the field.
Other approved designs may be used in lieu of the type shown.



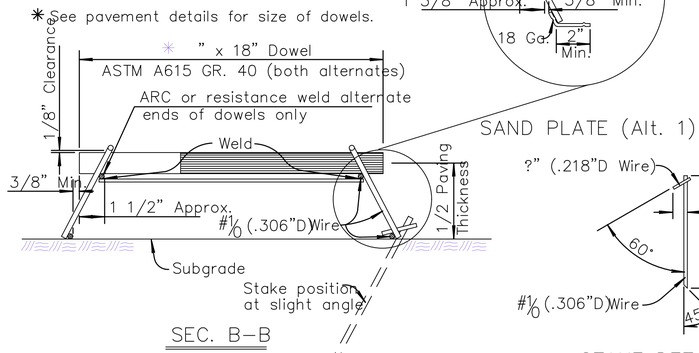
PERSPECTIVE VIEW



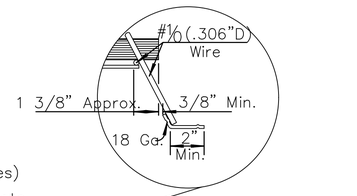
PLAN VIEW



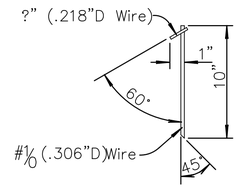
SEC. A-A



SEC. B-B



SAND PLATE (Alt. 1)



STAKE DETAIL
(6 Pieces minimum required)

CONTRACTION JOINT

GENERAL NOTE

Dowel bar insertion may be by mechanical dowel placers regardless of the joint spacing.
Each dowel bar shall be coated with an epoxy coating that meets the standard specifications. The coating material shall be a powdered epoxy resin approved by the Chief, Bureau of Materials and Research and shall be uniformly applied according to accepted practices and the resin manufacturer's recommendations. For Alt. 1 the coating need not be applied to the end faces of the bars and will not be required within 2" of the end which will be fixed in the supporting basket by welding.
The cutting to length of the dowel bars shall be done in such a manner to result in no appreciable deformation of the ends.

Wire sizes shown are minimum required.
Basket to be staked to sub-grade, as shown. Ramset or similar type fastener with clip to be used when subgrade condition requires it.
A string line shall be stretched between the pavement forms along the center line of the joint. The position of the joint shall be carefully marked so that the saw cut will coincide with the center line of the joint.
In order to identify the location of the bond breaker application, the working end of dowel and the supporting leg shall receive a light application of red paint at the place of fabrication. The bond breaker to be applied in the field prior to concrete placement shall consist of coating approximately three-fifths of the length of each dowel bar with hard grease at the working end identified by the red paint.
The entire joint assembly shall be carefully leveled so that the dowels are parallel to the slab surface and free to slide in the dowel holders. Any coating scraped off the dowels in assembling the joint shall be replaced.
After the complete contraction joint is assembled, it shall be checked to be certain that the vertical plane of the joint will be perpendicular to the finished surface of the slab and at a right angle with the center line of the slab unless shown otherwise on the plans. The dowels shall be checked to be certain that they are level and will remain in a position parallel with the finished surface of the slab.
Concrete shall be placed over and adjacent to the joint in accordance with the requirements of the Specifications.
Other approved designs may be used in lieu of the type shown.

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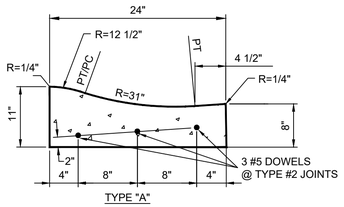
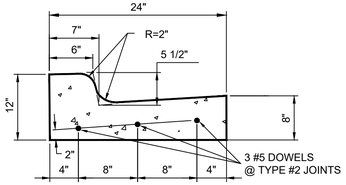
CONCRETE PAVING DETAILS 2

SHEET D-103

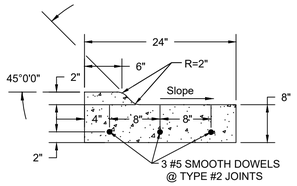
CONCRETE CURB & GUTTER DETAILS



TYPE "A"

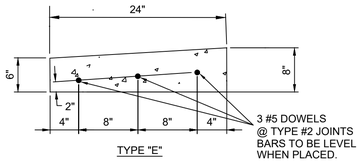


TYPE "B"



TYPE "D"

MOUNTABLE MEDIAN CURB

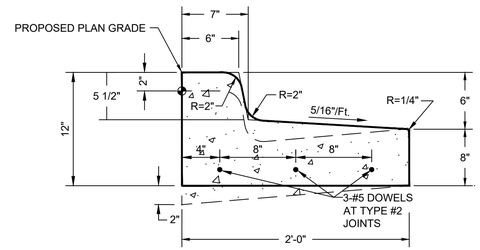


TYPE "E"

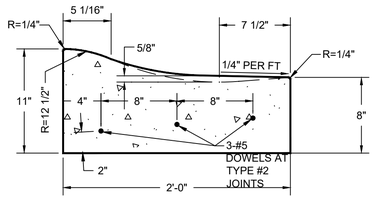
T=8" NON-REINFORCED FOR COMMERCIAL DRIVE, ALLEY APPROACH, AND SIDEWALK IN DRIVE ENTRANCE.

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 AND EVERY 150'.
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.TOOLED JOINTS SHALL BE D/4 OR THE CONTRACTOR SHALL "OPEN UP" THE JOINTS BY SAWING.

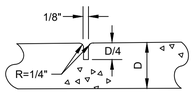


TYPE "B - DRY" CURB



TYPE "A - DRY" CURB

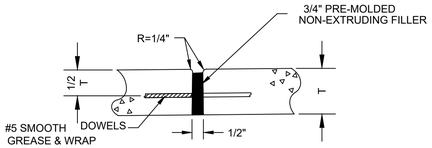
DRY CURB & GUTTER



TYPE 1

NOTES:

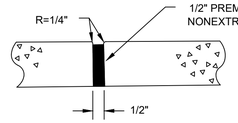
1. TYPE 1 JOINTS MAY BE CONSTRUCTED WITH A GROOVING TOOL OR WITH A CONCRETE SAW AFTER THE CONCRETE IS SET.
2. TYPE 1 JOINTS SHALL BE PLACED AT 10' CENTERS



TYPE 2

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.

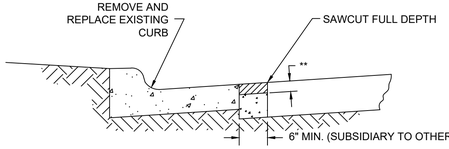


TYPE 3

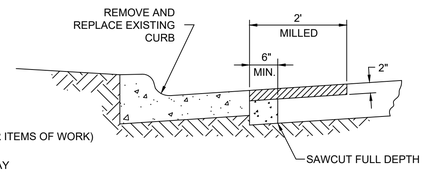
NOTE:

1. TYPE 3 JOINTS SHALL BE PLACED WHERE NEW CONCRETE ABUTS EXISTING CONCRETE. SIDEWALKS AND DRIVEWAYS ONLY.

JOINT DETAILS



TYPE 1 CURB REMOVAL



TYPE 2 CURB REMOVAL

(ONLY WHEN SPECIFIED)

** 2" - MILL & OVERLAY
1" - UBAS

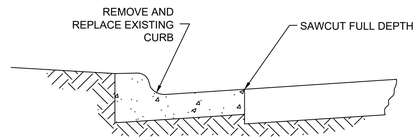
REMOVE AND REPLACE
ASPHALTIC CONCRETE
SURFACE COURSE

REMOVE AND REPLACE
BASE COURSE - KCMMB-4K CONCRETE

* MATCH EXISTING
THICKNESS, (6" MIN.)

NOTES:

1. SAWCUT SHALL BE MADE WITH A CONCRETE SAW MEETING THE REQUIREMENTS OF THE STANDARD SPECIFICATIONS.
2. CURB SHALL BE REMOVED IN 5' SECTIONS AT A MINIMUM AND 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.



TYPE 3 CURB REMOVAL

(ONLY WHEN SPECIFIED)

CURB REMOVAL DETAILS

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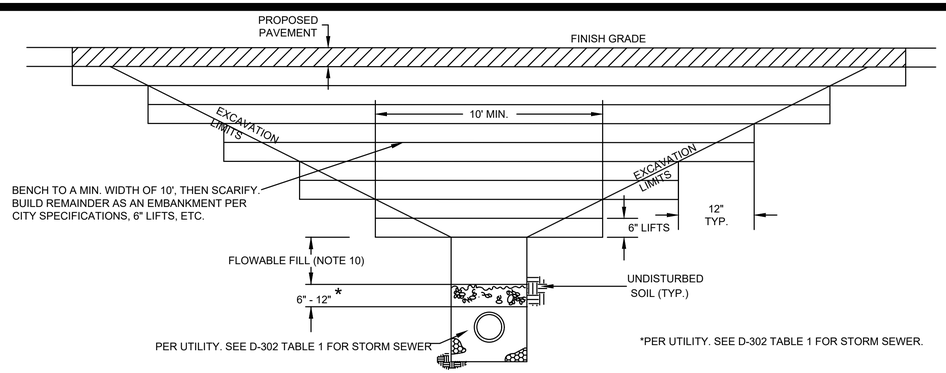
CURB & GUTTER AND JOINT DETAILS

SHEET D-104



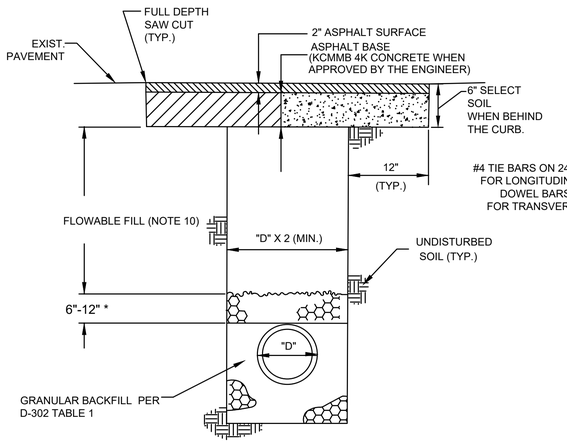
*PER UTILITY. SEE D-302 TABLE 1 FOR STORM SEWER.

TRENCHING IN FUTURE PAVED AREA

(SEE NOTES BELOW)

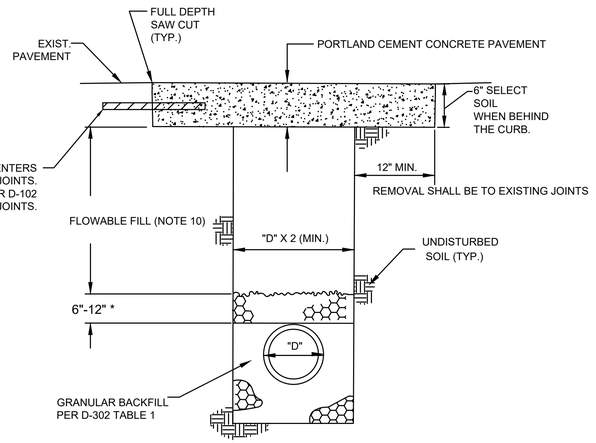
NOTES:

1. CONTRACTOR SHALL CONTACT THE CITY FOR INSPECTION PRIOR TO PLACING BACKFILL AND AGAIN PRIOR TO PLACING ASPHALT.
2. THE 1.0' EITHER SIDE OF ORIGINAL TRENCH SHALL NOT BE REMOVED UNTIL BACKFILL HAS BEEN PLACED AND COMPACTED.
3. ASPHALT SHALL COMPLY WITH CITY SPECIFICATIONS AS FOLLOWS PER S-300
4. ALL PIPES SHALL BE INSPECTED PRIOR TO BACKFILL. ALL PIPE COVERED PRIOR TO INSPECTION SHALL BE UNCOVERED AT THE CONTRACTOR'S EXPENSE.
5. 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.
6. ALL CONSTRUCTION AND MATERIALS SHALL CONFORM TO THE CITY OF LENEXA TECHNICAL SPECIFICATIONS.
7. 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.
8. NO PUBLIC STREET SHALL BE OPEN CUT WITHOUT PRIOR APPROVAL OF THE CITY ENGINEER.
9. ALL UTILITY PATCHES IN EXISTING PAVEMENT SHALL BE BACKFILLED USING FLOWABLE FILL.
10. WHEN FLOWABLE FILL IS NOT USED AND WHERE SELECT EXCAVATED MATERIAL IS USED FOR BACKFILL MATERIAL (TYPE AA MR-3-3), THE CONTRACTOR SHALL SUBMIT AND PAY FOR DENSITY TESTS AS REQUIRED BY THE CITY ENGINEER.



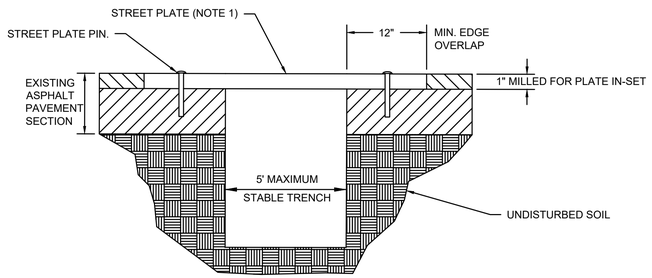
* PER UTILITY
EXISTING EXPOSED UTILITIES SHALL BE BACKFILLED PER THE UTILITY PROVIDERS REQUIREMENTS
SEE STORM SEWER TRENCHING
FOR STORM SEWERS.

TRENCHING IN EXISTING ASPHALT PAVED AREA



* PER UTILITY
EXISTING EXPOSED UTILITIES SHALL BE BACKFILLED PER THE UTILITY PROVIDERS REQUIREMENTS
SEE STORM SEWER TRENCHING
FOR STORM SEWERS.

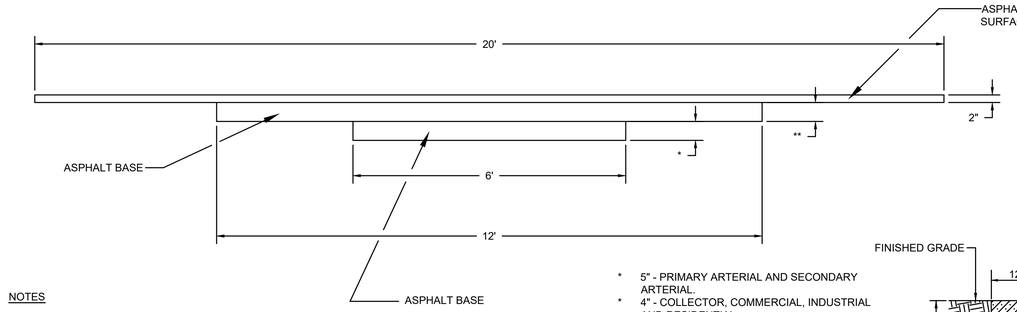
TRENCHING IN EXISTING CONCRETE PAVED AREA



NOTES:

1. STREET PLATES SHALL BE 1" THICK PER ASTM A36 MINIMUM STEEL, Fy = 36 KSI.
2. STREET PLATES SHALL BE PINNED WHEN SPEEDS EXCEED 25 MPH OR SLOPES GREATER THAN 5%. PINS SHALL NOT EXTEND MORE THAN 1/2-INCH ABOVE THE STREET PLATE. PIN HOLES SHALL BE FILLED WITH CRACK SEALANT PER S-303 CRACK SEALING AFTER THE PINS ARE REMOVED.
3. STREET PLATES SHALL BE PLACED WITH POSITIVE CONTACT ON ALL SUPPORTING SURFACES. COLD PATCH MAY BE USED TO DISPLACE ANY VOIDS BETWEEN STREET PLATE AND SUPPORTING SURFACE.
4. STREET PLATES ON CONCRETE STREETS SHALL BE RAMPED IN LIEU OF BEING EMBEDDED. STREET PLATES WILL NOT BE ALLOWED ON CONCRETE STREETS BETWEEN DECEMBER 1 AND FEBRUARY 28.
5. 1-INCH EMBEDMENT MAY BE WAIVED FOR SHORT-TERM DURATIONS AT THE CITY ENGINEERS DISCRETION.
6. ANY VARIATION TO THIS DETAIL REQUIRES SUBMITTAL OF A SIGNED/SEALED ENGINEERING DRAWING MEETING THE REQUIREMENTS OF HS-20-44 LOADING.
7. THE 1' EITHER SIDE OF THE ORIGINAL TRENCH SHALL NOT BE REMOVED UNTIL BACKFILL HAS BEEN PLACED AND COMPACTED.

STREET PLATE



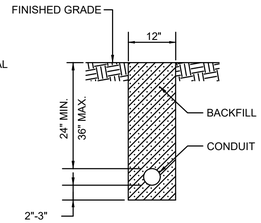
NOTES

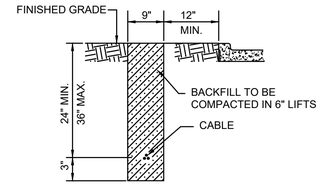
1. THIS DETAIL SHALL BE USED FOR THE REPAIR OF A HUMP IN THE STREET.
2. REMOVE A MINIMUM OF 12 L.F. OF CURB AND GUTTER ON EACH SIDE OF STREET OR LANE REPAIR.

* 5" - PRIMARY ARTERIAL AND SECONDARY ARTERIAL.
* 4" - COLLECTOR, COMMERCIAL, INDUSTRIAL AND RESIDENTIAL

** 5" - PRIMARY ARTERIAL
** 4" - SECONDARY ARTERIAL
** 3" - COLLECTOR, COMMERCIAL AND INDUSTRIAL
** 4" - RESIDENTIAL

PAVEMENT HUMP REPAIR

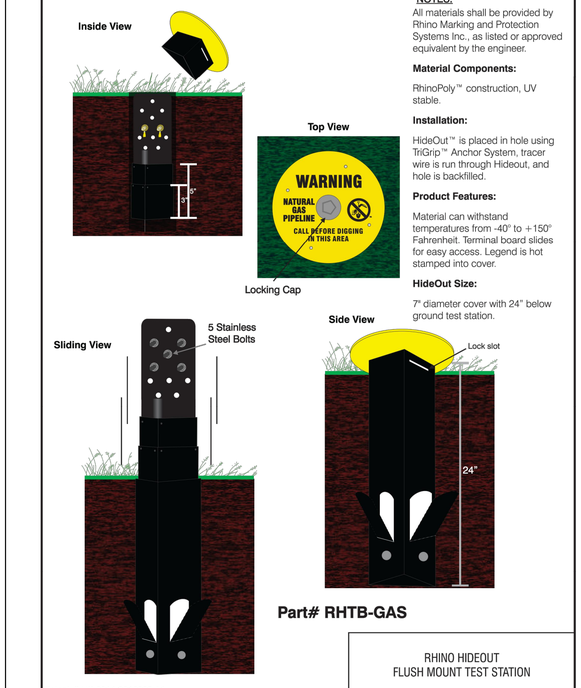




NOTE:

1. CONTRACTOR SHALL CONTACT THE CITY FOR INSPECTION AS DETAILED IN CITY ORDINANCE.
2. BACKFILL IN UNPAVED AREAS SHALL BE FREE OF RUBBLE AND ROCK.
3. EXCAVATION BACKFILL SHALL BE PLACED IN MAXIMUM 6" LIFTS (LOOSE MEASURE) AND COMPACTED BY WACKER "PACKER" OR EQUAL.
4. CONDUITS SHALL BE PITCHED TO DRAIN.
5. ANY SIDEWALK REMOVED TO FACILITATE THE WORK SHALL BE REPLACED IN ACCORDANCE WIITH THE CITY DETAIL FOR SIDEWALK CONSTRUCTION.
6. 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.
7. EXISTING EXPOSED UTILITIES SHALL BE BACKFILLED PER THE UTILITY PROVIDERS REQUIREMENTS.

UTILITY TRENCHING IN UNPAVED AREAS



NOTES:
All materials shall be provided by Rhino Marking and Protection Systems Inc., as listed or approved equivalent by the engineer.

Material Components:
RhinoPoly™ construction, UV stable.

Installation:
HideOut™ is placed in hole using TriGrip™ Anchor System, tracer wire is run through Hideout, and hole is backfilled.

Product Features:
Material can withstand temperatures from -40° to +150° Fahrenheit. Terminal board slides for easy access. Legend is hot stamped into cover.

HideOut Size:
7" diameter cover with 24" below ground test station.

HIDEOUTGAS_SPEC • 8-11-15

UTILITY TRACER STATION

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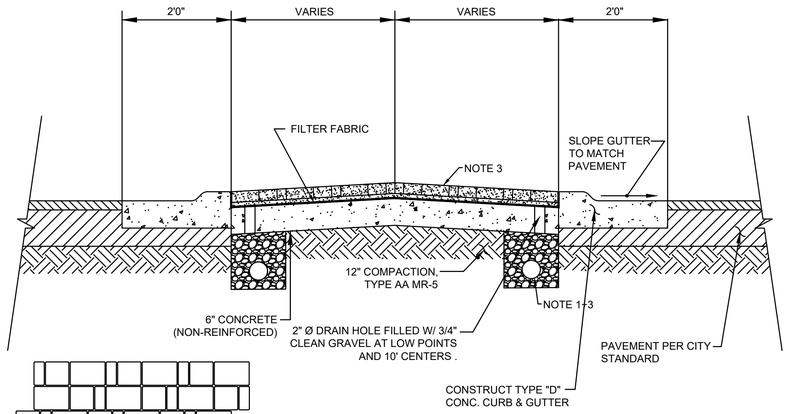
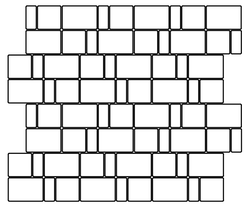
REVISED DATE:	01/25
DETAILED:	BKC
APPROVED:	---

Lenexa KANSAS

UTILITY TRENCHING — SHEET D-105



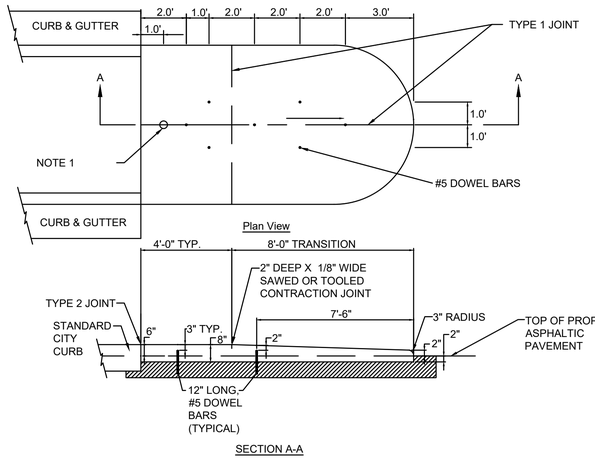


++ PAVING PATTERN
NO SCALE

MOUNTABLE MEDIAN PAVER DETAIL

NOTES:

1. CONTRACTOR SHALL CORE DRILL 6" DIAMETER HOLE AND UTILIZE XCESSORIES SQUARED PART NO. HDA200-30-G ANCHORS. ANCHORS SHALL BE SET IN CONCRETE USING CIRCULAR OR SQUARE FORMS. FINISHED GRADE SHALL MATCH GRADE OF THE MEDIAN.



MEDIAN NOSE DETAIL

NOTES:

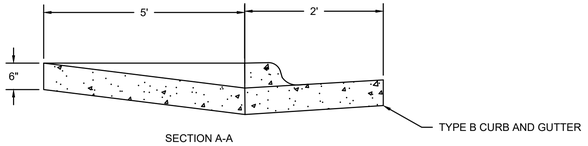
1. UNDERDRAIN SHALL BE INSTALLED AROUND THE PERIMETER OF THE MEDIAN AND CONNECTED TO THE STORM DRAIN SYSTEM.

2. UNDERDRAIN SHALL BE INSTALLED TO THE CENTER OF THE MEDIAN AND CONNECTED TO THE STORM DRAIN SYSTEM.

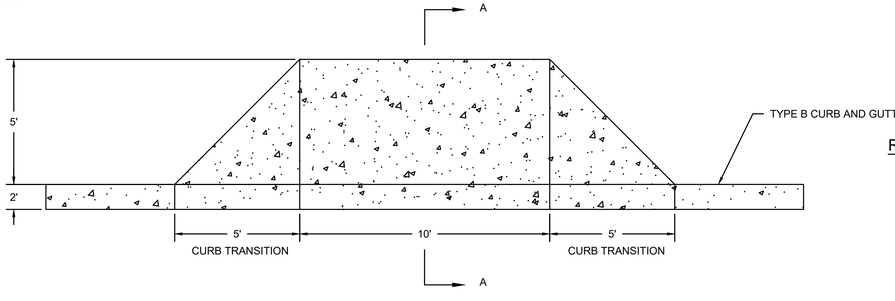
3. CONCRETE PAVERS, PAVESTONE "COBBLE STONE" OR EQUAL
4-9/16"x2-1/4"x2-3/8"
4-9/16"x4-9/16"x2-3/8"
4-9/16"x6-13/16"x2-3/8"

PAVER COLOR
VARIABLE. CONTACT ENGINEERING

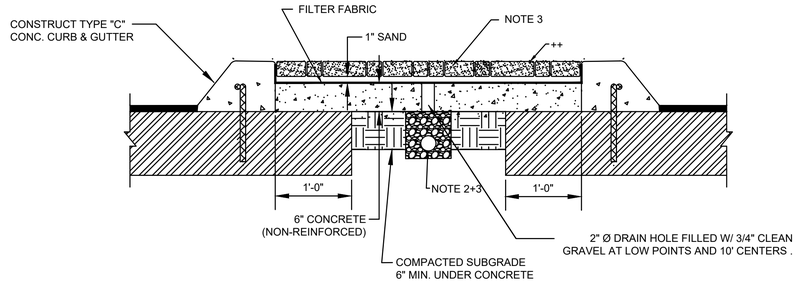
TABLE 1						
% RETAINED-SQUARE MESH SIEVES						
	1"	3/4"	1/2"	3/8"	No. 4	No. 8
BEDDING MATERIAL	0	0-20	-	40-70	75-100	95-100



SECTION A-A

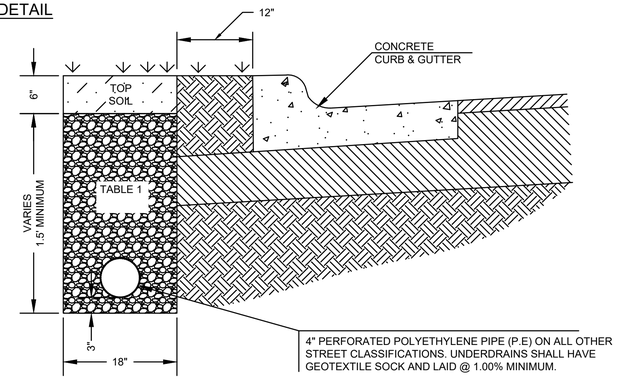


LANDSCAPER ENTRANCE DETAIL

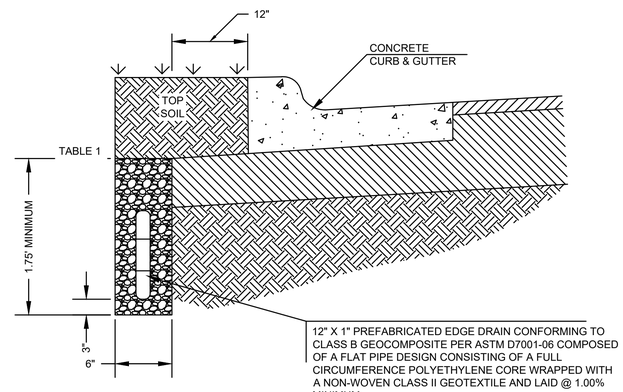


SECTION
NO SCALE

MEDIAN PAVER DETAIL



ROADWAY UNDERDRAIN DETAIL



RESIDENTIAL ROADWAY EDGEDRAIN DETAIL

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APPROVED:	---

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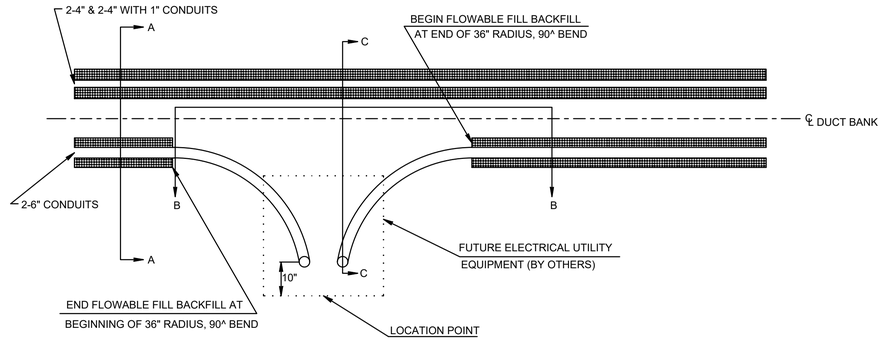
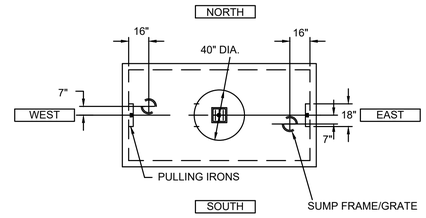
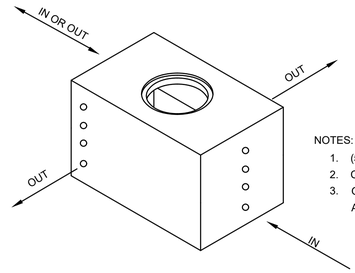
MEDIANS & UNDERDRAINS

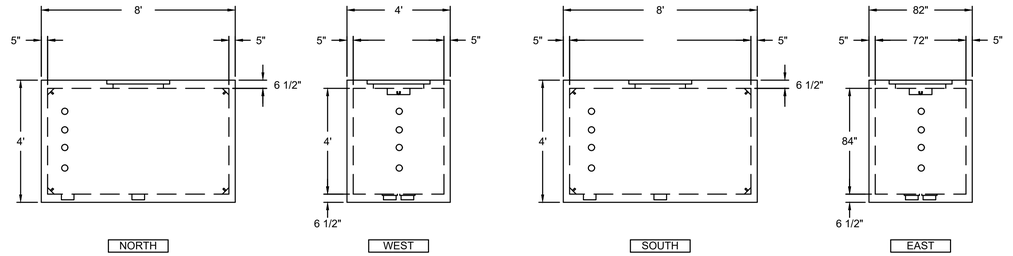
SHEET D-106



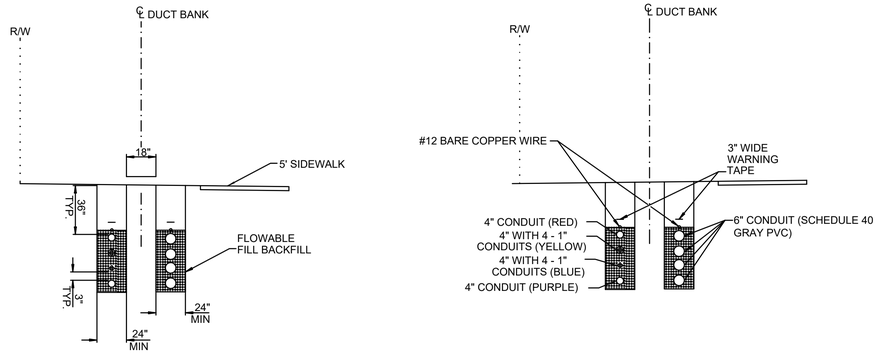




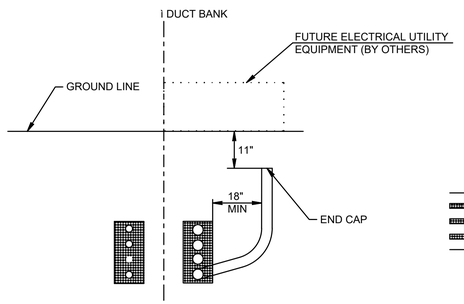
NOTES:
1. (5) GALVANIZED PULLING IRONS (STANDARD).
2. CABLE RACK INSERTS (STANDARD).
3. GROUNDING RIBBON STANDARD FOR TELEPHONE APPLICATIONS.



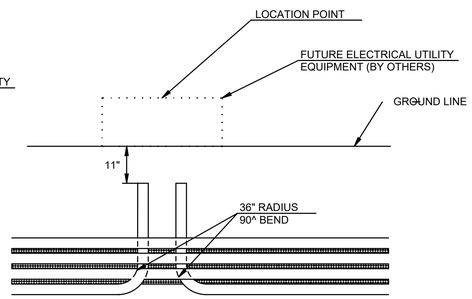
COMMUNICATION MANHOLE



SEC A-A

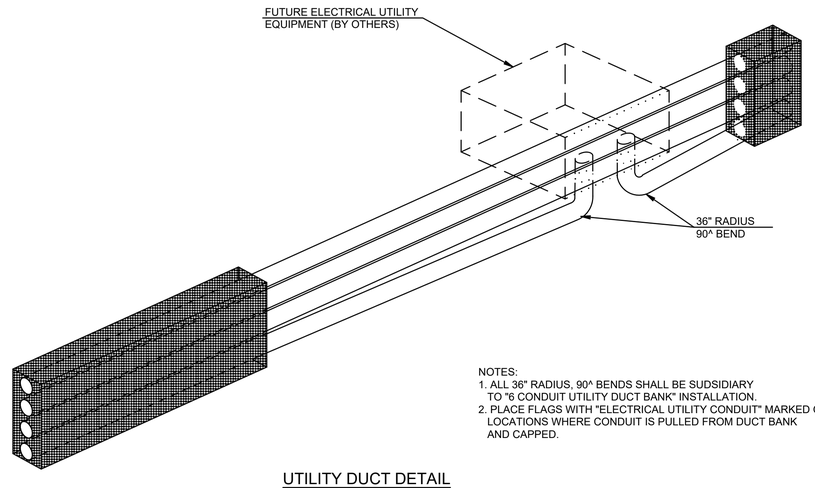


SEC C-C



SEC B-B

TYPICAL 8 CONDUIT DUCT



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

UTILITY DUCT DETAIL

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REVISED DATE:	01/25
DETAILED:	BKC
APPROVED:	---

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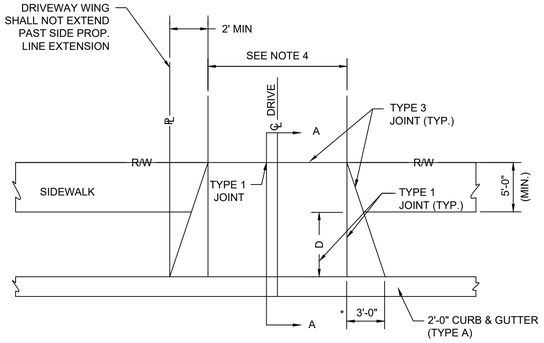
DUCT BANK DETAILS

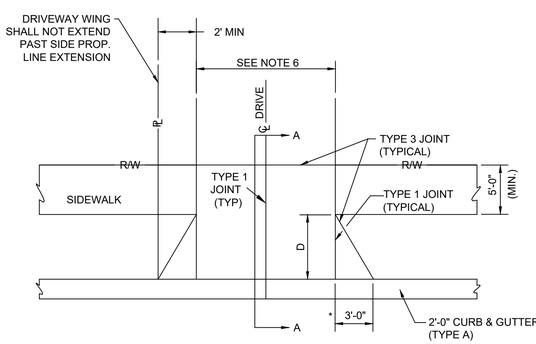
SHEET D-107

RESIDENTIAL DRIVE



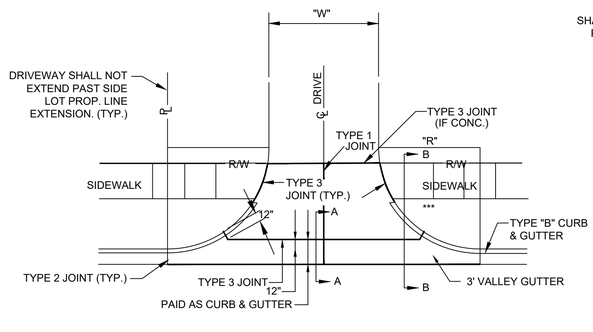
PLAN A

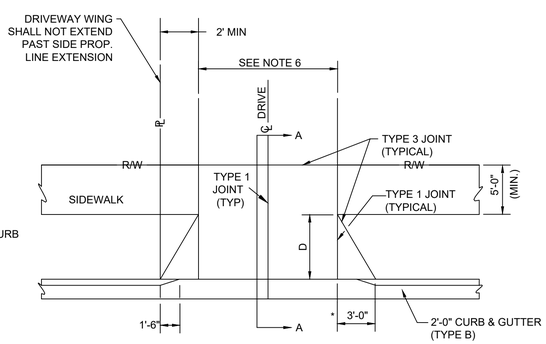
FOR USE WHEN "D" IS LESS THAN 5.0' (OR WHEN THERE IS NO SIDEWALK)



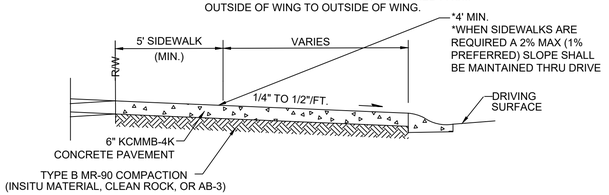
PLAN B

FOR USE WHEN "D" IS 5.0' OR GREATER.

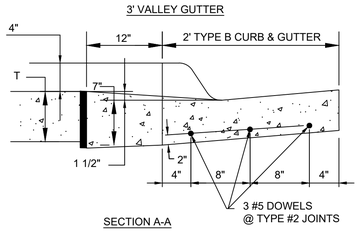




* FOR DRIVE WIDTHS 10'-12', ADJUST WINGS TO OBTAIN A MINIMUM OF 18' AT THE CURB; MEASURED FROM OUTSIDE OF WING TO OUTSIDE OF WING.



SECTION A-A

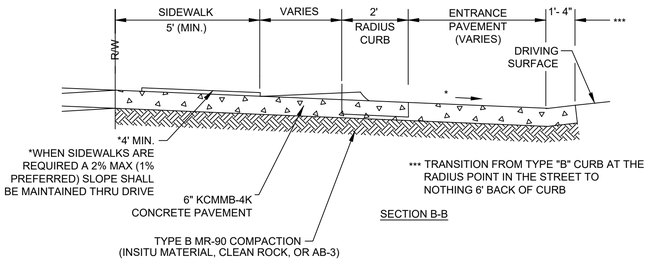


SECTION A-A

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

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

TYPICAL PLAN



SECTION B-B

*** TRANSITION FROM TYPE "B" CURB AT THE RADIUS POINT IN THE STREET TO NOTHING 6' BACK OF CURB

NOTES:

1. SEE CURB & GUTTER DETAIL SHEET FOR JOINTING DETAILS.
2. ALL CONCRETE SHALL BE KCMMB-4K.
3. IF A LEVELING COURSE IS NEEDED FOR COMMERCIAL OR INDUSTRIAL DRIVES , 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.
4. WINGS MUST BE 3' WIDE AND INSTALLED ON BOTH SIDES OF DRIVEWAY.
5. DRIVEWAY MUST BE 2' OR GREATER FROM THE SIDE PROPERTY LINE AT ALL POINTS BEYOND THE RIGHT-OF-WAY.
6. MINIMUM WIDTH 10', MAXIMUM WIDTH 32' OR 35% OF PROPERTY FRONT FOOTAGE WHICHEVER IS LESS, EXCEPT AS FOLLOWS:
   a) SINGLE FAMILY LOTS: ALLOWED AN 18' WIDTH REGARDLESS OF FRONTAGE.
   b) DUPLEX: ALLOWED A 18' WIDTH FOR EACH UNIT REGARDLESS OF FRONTAGE.
   c) MULTIPLE DRIVEWAYS MUST BE SEPARATED BY A LANDSCAPE STRIP AT LEAST 4' WIDE.
7. 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.
8. TIE AND DOWEL BARS SHALL BE LEVEL WHEN PLACED.

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

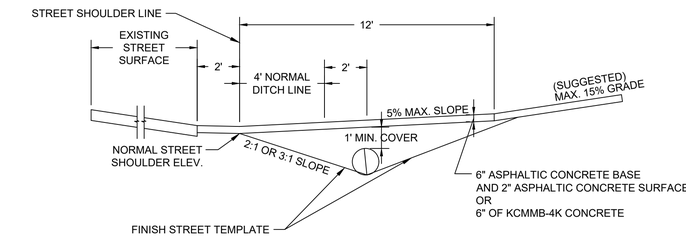
* OR 35% OF PROPERTY FRONT FOOTAGE WHICH EVER IS LESS

* * 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

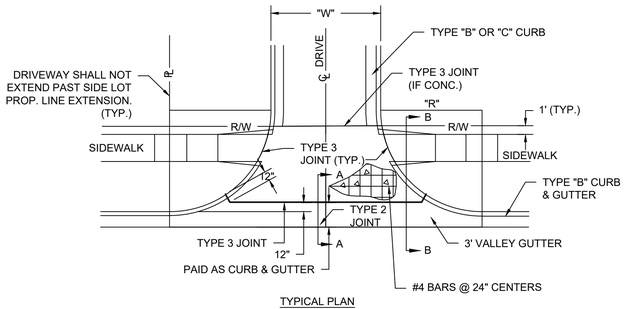


SECTION SHOWING PROFILE IN CUTS

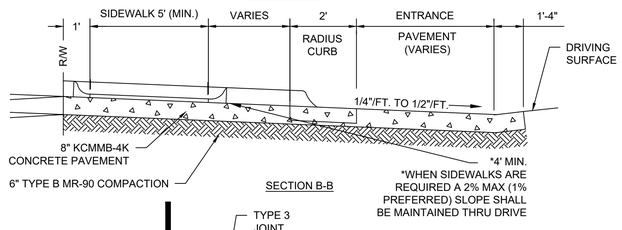
NOTES:

1. DRIVEWAY SHALL BE SURFACED WITH EITHER 6" OF ASPHALTIC CONCRETE BASE AND 2" ASPHALTIC CONCRETE SURFACE OR 6" OF KCMMB-4K CONCRETE.
2. ALL FILL MATERIAL SHALL BE COMPACTED TO 90% OF STANDARD MAXIMUM DENSITY. BACKFILL SHALL BE SUITABLE SOIL OR AB-3.
3. PROPERTY OWNER SUPPLIES THE CULVERT, TO CITY SPECIFICATIONS AND CITY FORCES INSTALL CULVERTS. PROPERTY OWNER INSTALL THE DRIVE SURFACE.

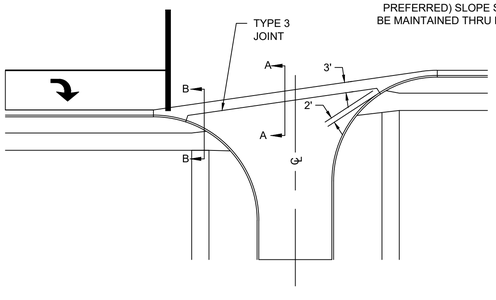
COMMERCIAL & INDUSTRIAL DRIVE



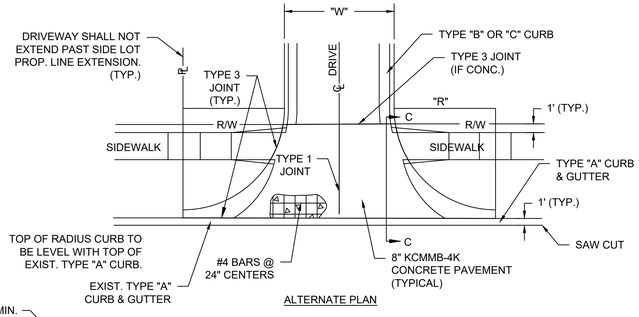
TYPICAL PLAN



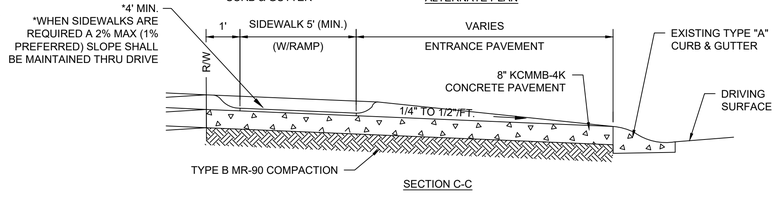
SECTION B-B



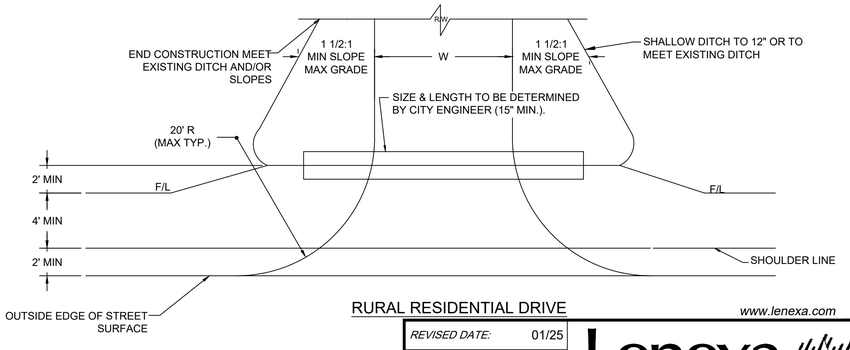
RIGHT TURN LANE



ALTERNATE PLAN



SECTION C-C



RURAL RESIDENTIAL DRIVE

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REVISED DATE:	01/25
DETAILED:	BKC
APPROVED:	---

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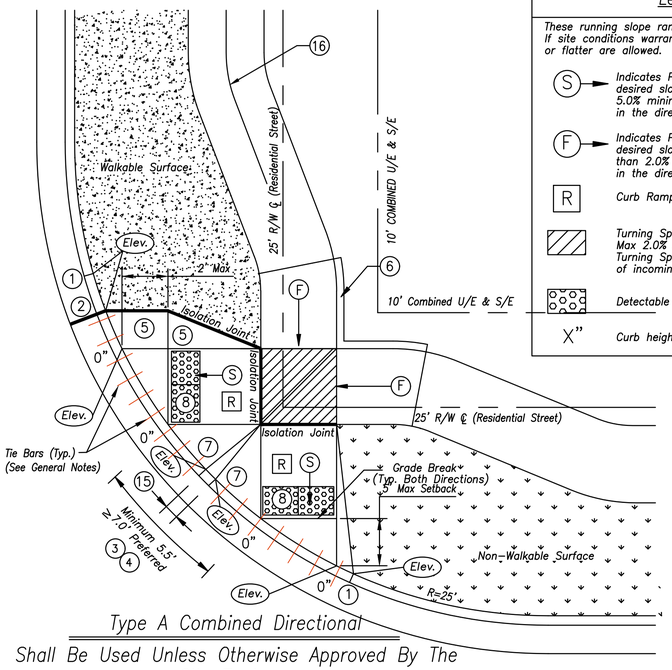
ENTRANCES

SHEET D-200

Legend

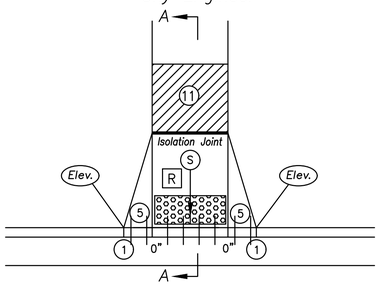
These running slope ranges shall be the starting point. If site conditions warrant, running slopes up to 8.3% or flatter are allowed.

- (S) Indicates Pedestrian Ramp – desired slope between 5.0% minimum and 8.3% maximum in the direction shown.
- (F) Indicates Pedestrian Ramp – desired slope greater than 2.0% and less than 5.0% in the direction shown.
- R Curb Ramp
- Turning Space – 5' x 5' min. Max 2.0% slope in all directions. Turning Spaces shall be full width of incoming PARs.
- Detectable Warning Plates
- X" Curb height

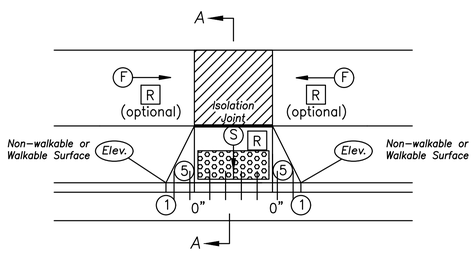


Type A Combined Directional

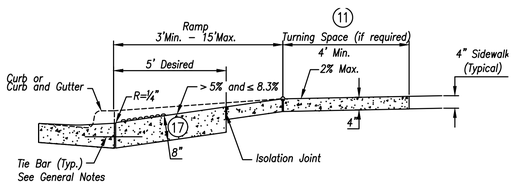
Shall Be Used Unless Otherwise Approved By The City Engineer



Perpendicular

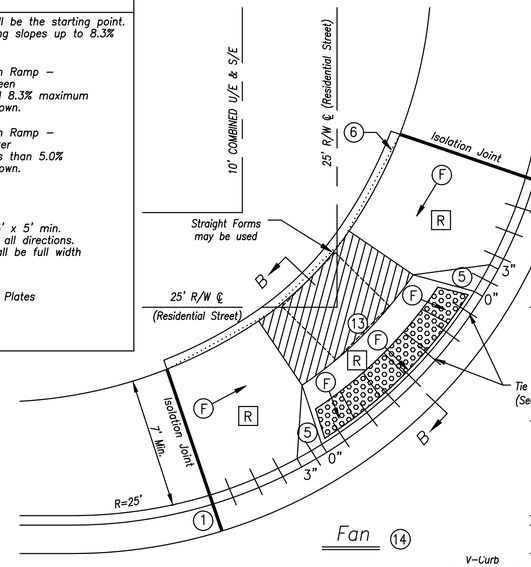


Mid-Block

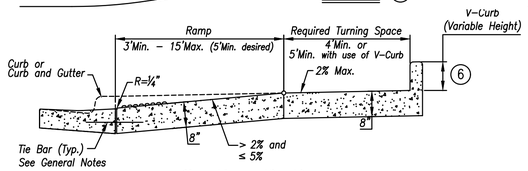


Section A–A

Perpendicular/Mid-Block

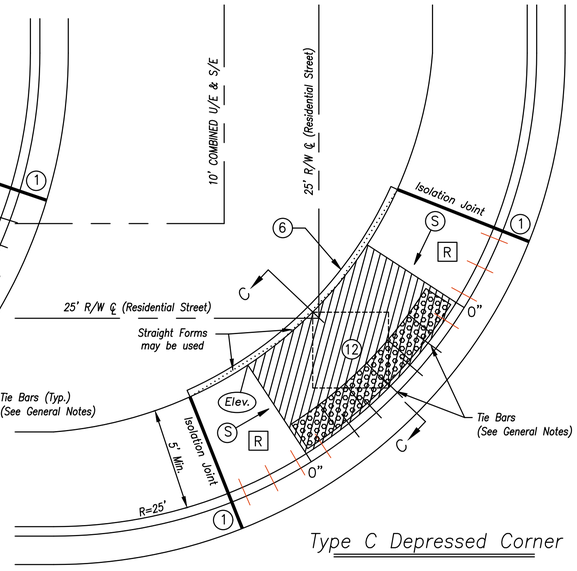


Fan (14)

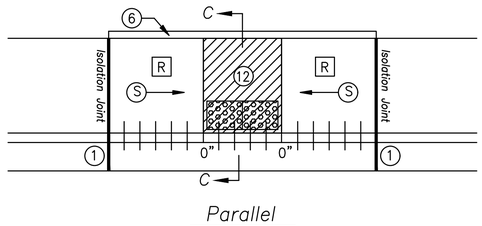


Section B–B

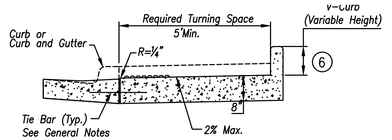
Fan



Type C Depressed Corner

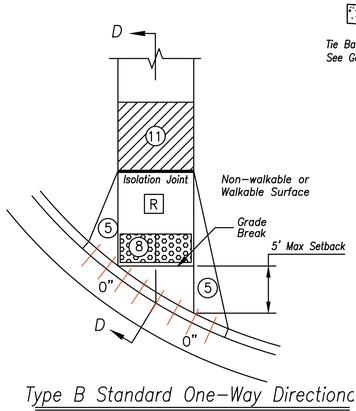


Parallel

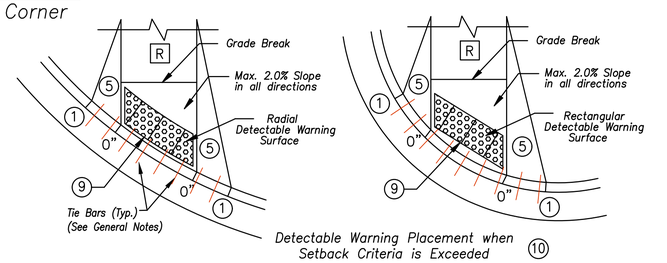


Section C–C

Parallel/Depressed Corner

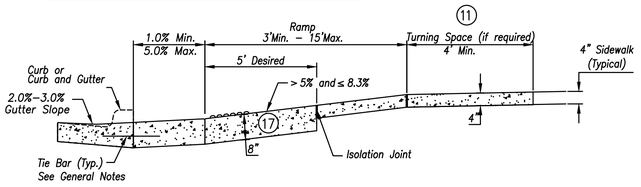


Type B Standard One-Way Directionc



Detectable Warning Placement when Setback Criteria is Exceeded (10)

Type B One-Way Directional with Detectable Warning at Back of Curb



Section D–D

Ramp Element Notes:

1. Match full curb height.
2. 3" high curb when using a 3' long ramp
   4" high curb when using a 4' or longer ramp.
3. 3" minimum curb height (5.5' min. distance required between domes);
   4" preferred (7' min. distance required between domes).
4. The divider between the ramps should not be in the path of travel for combined directional ramps. If this occurs, modify the ramp location or switch ramp to a fan/depressed corner.
5. See Standard Detail Sheet D–202 for flare details.
6. When adjacent to grass, grading shall always be used when feasible. V–curb, if used, shall be placed outside the sidewalk limits when right of way allows. When grading exceeds 4:1 within right of way or sidewalk easement, use V–curb. When adjacent to parking lots, tapers should be used over V–curb to reduce tripping hazard and facilitate snow and ice removal.
7. 8% to 10% walkable flare. If area between ramps is greater than 15 s.f., grass may be installed.
8. Place domes at the back of curb when allowable setback criteria is exceeded.
9. Rectangular detectable warnings may be setback up to 9" from the back of curb with corners set 2" from back of curb. If 9" setback is exceeded, use radial detectable warnings. Radial detectable warnings shall be setback up to 6" maximum from the back of curb.
10. For directional ramps with the detectable warnings placed at the back of curb, the detectable warnings shall cover the entire width of the walk/path.
11. A turning space is not required at the top of a Perpendicular or Standard One–Way Directional curb ramp if there is no change in direction at the top of the ramp.
12. Detectable warnings may be part of the 5' x 5' min. landing area if it is not feasible to construct the landing outside of the detectable warning area.
13. A 7' min top radius grade break required to be constructible.
14. "S" slopes on fans shall only be used when "F" slopes have been evaluated and deemed impractical.
15. 6" minimum length. See Detectable Edge with Curb and Gutter detail.
16. Minimum sidewalk centerline radius – 10', 20' preferred.
17. Only 8" thick panels will be paid for as "HANDICAPPED RAMPS". Sidewalk behind isolation joint will be paid for as "4" CONCRETE SIDEWALK".

General Sidewalk & Sidewalk Ramp Notes:

1. KCMMB4K Concrete shall be used throughout.
2. Sidewalk ramp location determined from the intersection of the extension of back of sidewalk and back of curb & gutter.
3. Positive flow line drainage shall be maintained through the Pedestrian Access Route (PAR). No ponding shall be present in the PAR.
   Any vertical lip that occurs at the flow line shall not be greater than ¼ inch.
4. Turning Spaces shall be located anywhere the PAR changes direction, and if the approaching walk is inverse grade.
5. The maximum cross slope requirements for perpendicular curb ramps and blended transitions adjacent to pedestrian street crossings are as follows:
   At Yield or Stop Control – 2%;
   Without Yield or Stop Control, or with Traffic Signals – 5%;
   At Midblock – no greater than the street grade.
6. When not adjacent to pedestrian street crossings, PAR and and ramp cross–slope 1% desired, 2% maximum.
7. Contraction joints shall be constructed along all grade breaks and at the tops of concrete flares adjacent to walkable surfaces.
8. All grade breaks within the PAR shall be perpendicular to the path of travel.
9. All ramp types should have a minimum of 3' ramp length.
10. Detectable warnings shall continuously extend for a minimum of 24" in the path of travel. Detectable warning to cover the entire width of sidewalk and shared–use paths. Arc length of radial detectable warnings should not be greater than 20 feet.
11. Rectangular detectable warnings shall be setback 2" minimum to 9"maximum from the back of curb. See (9) for information regarding rectangular detectable warning placement.
    Radial detectable warnings shall be setback 2" minimum to 6" maximum from the back of curb.
12. Elevations shall be provided at all corners of sidewalk slabs which compose the landings or ramps and at all corners of one additional sidewalk panel along the sidewalk in addition to the points labeled (Elev.) on these details.
    Slope between these points shall be calculated and shown on the plans.
    Chord distance from PC & PT to fully depressed curb section of curb return shall be shown on the plans.
    Slope shall be shown for the existing or proposed edge of pavement where ramps connect.
13. Longitudinal joint spacing to match width of sidewalk (5' Min.).
14. Isolation joints shall be placed where walk abuts driveways and similar structures, and 250' centers max.
15. Install 18" tie bars #4 epoxy coated @ 18" o.c. and through wings as shown.
16. Sidewalk Ramp shall be lengthened as needed to provide compliant slope (8.3% Max.) but need not exceed 15' regardless of resulting slope.
17. Curb depression at ramp opening shall be staked prior to curb construction.
19. No casting or utility boxes shall be allowed in ramps or turning spaces. Contractor shall be responsible for adjusting utility boxes and coordinating with utilities to obtain ramp and sidewalk compliance.
20. Do not scale these drawings for dimensions.

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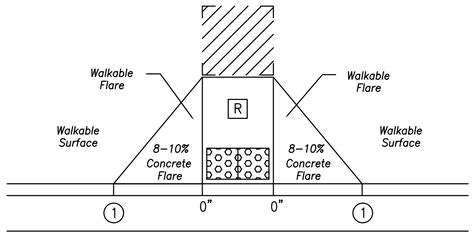
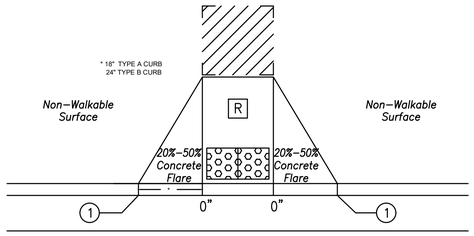
SIDEWALK RAMP DETAILS 1

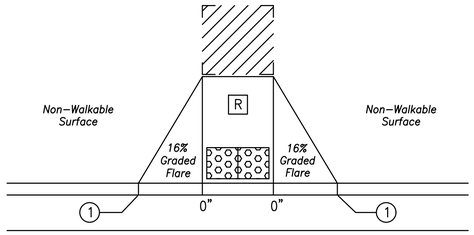
SHEET D-201



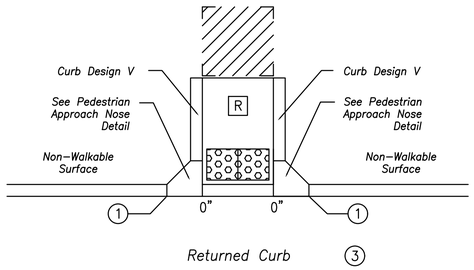
Paved Flares Adjacent to Walkable Surface



Paved Flares Adjacent to Non–Walkable Surface

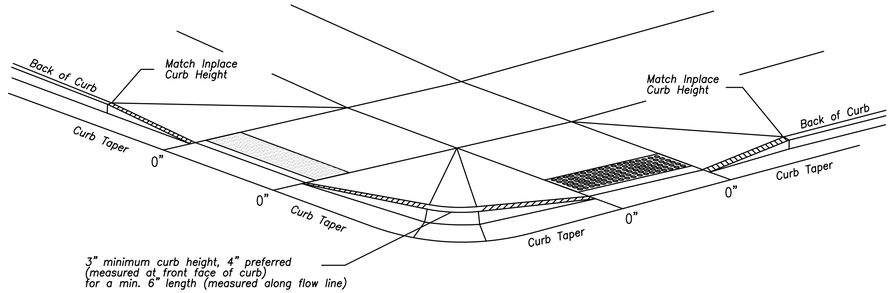


Graded Flares

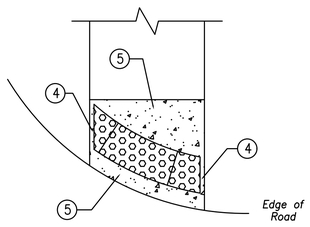


Returned Curb ③

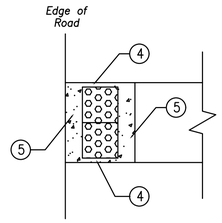
Typical Side Treatment Options ②⑧



Detectable Edge with Curb and Gutter ⑥

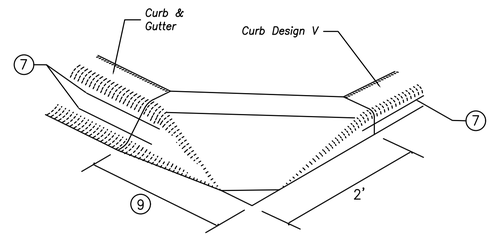


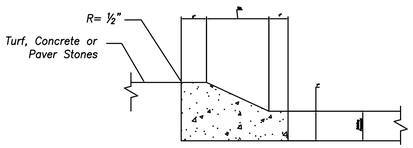
Radial Detectable Warning



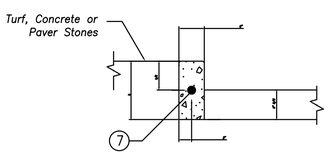
Rectangular Detectable Warning

Detectable Edge without Curb and Gutter

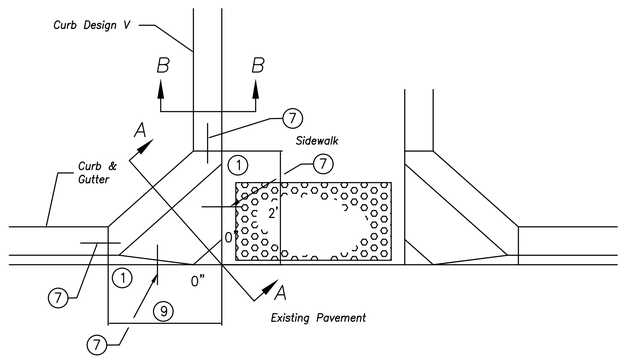




Section A–A



Section B–B



Pedestrian Approach Nose Detail

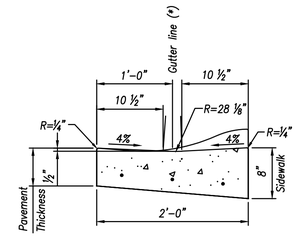
(For Returned Curb Side Treatment)

Ramp Element Notes

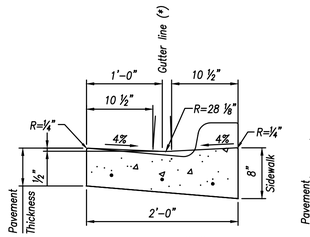
A walkable surface is defined as a paved surface adjacent to a curb ramp without raised obstacles that could mistakenly be traversed by a user who is visually impaired.

Concrete flare lengths adjacent to non–walkable surfaces should be less than 8' long measured along the ramps from the back of curb.

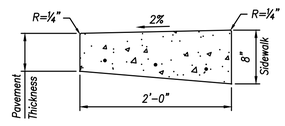
1. *Full curb height.*
2. *Side treatments are applicable to all ramp types and should be implemented as needed as field conditions dictate. The engineer shall determine the ramp side treatments based on maintenance of both roadway and sidewalk, adjacent property considerations, and mitigating construction impacts.*
3. *Typically used for medians and islands.*
4. *When no concrete flares are proposed, maintain 2" between edge of domes and edge of concrete.*
5. *If no curb and gutter is placed in rural sections, detectable warnings shall be placed 1' from the edge of bituminous roadway and/or bituminous shared–use path to provide visual contrast.*
6. *All constructed curbs must have a continuous detectable edge for the visually impaired. This detectable edge requires detectable warnings wherever there is zero–inch high curb. Curb tapers are considered a detectable edge when the taper starts within 2" of the edge of the detectable warnings and uniformly rises to a 3–inch minimum curb height. Any curb not part of a curb taper and less than 3 inches in height is not considered a detectable edge and therefore is not compliant with accessibility standards.*
7. *Drill and epoxy 1 – #4 12" long reinforcement bar (epoxy coated) with 3" min. cover. Reinforcement bars are not needed if the approach nose is poured integral with the curb. Use 2 – #4 bars when curb height exceeds 6".*
8. *Side treatment examples shown are when the initial landing is approximately level with the full height curb (i.e. 6' long ramp for 6" high curb). When the initial landing is more than 1" below full height curb refer to sheets 1 & 2 to modify the curb height tapers and maintain positive boulevard drainage.*
9. *3' for medians and splitter islands. Nose can be reduced to 2' on free right islands.*



Use With Type "A" Curb



Use With Type "B" Curb

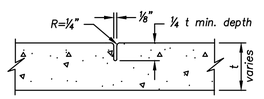


Use with Type "A – Dry" or Type "B – Dry" Curb

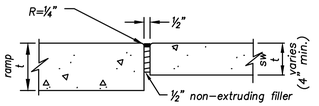
* – 0.5% minimum positive slope in gutter line shall be maintained through transition from standard curb to ramp curb

Street Curb Detail at Ramp

Note: See Standard Curb Detail for additional requirements



Contraction Joint (Type 1)



Isolation Joint (Type 3)

Joint Details

Not to Scale

Legend

R	Curb Ramp
	Turning Space – 5' x 5' min. Max 2.0% slope in all directions. Turning Spaces shall be full width of incoming PARs.
	Detectable Warning Panels
X"	Curb height

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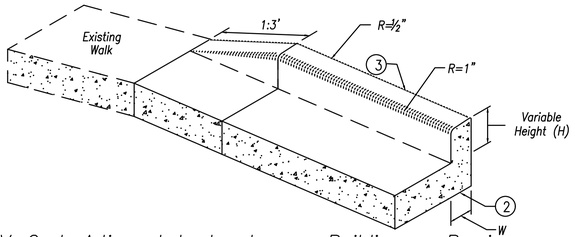
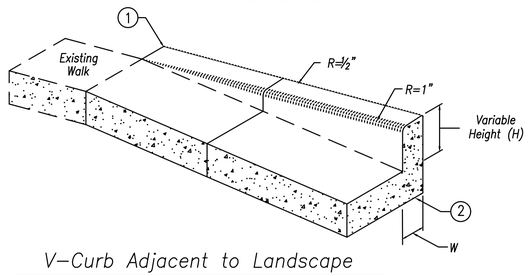
SIDEWALK RAMP DETAILS 2

SHEET D-202



V–Curb Adjacent to Landscape, Building or Barrier

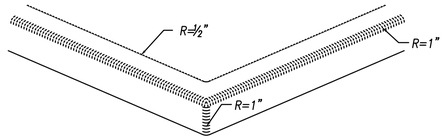
Curb within Sidewalk Limits



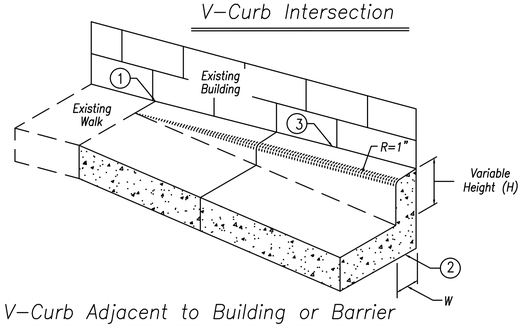
V–Curb Adjacent to Landscape

Curb outside Sidewalk Limits

Concrete Curb Design V	
Curb Height H	Curb Width W
<6"	4"
6" – <9"	6"
9" – 12"	6" w/ reinforcement

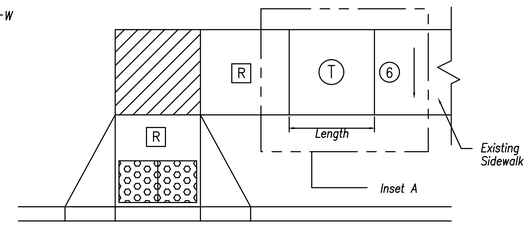


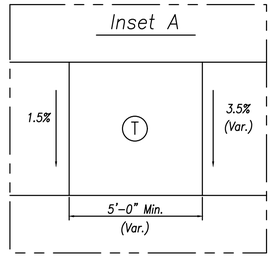
V–Curb Intersection



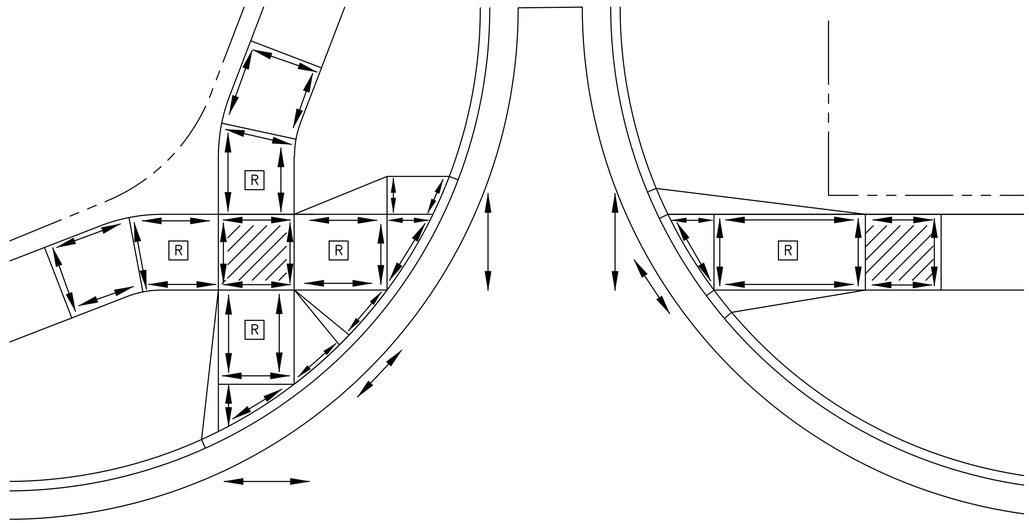
V–Curb Adjacent to Building or Barrier

Curb outside Sidewalk Limits





Transition Panel ④⑤



ADA Compliance Verification Measurement Locations

Not to Scale

NOTES:
1. Measurements shall be taken in accordance with current ADA requirements.

Ramp Element Notes:

A walkable flare is an 8–10% concrete flare that is required when the flare is adjacent to a walkable surface, or when the pedestrian path of travel of a push button traverses the flare.

Where right–of–way allows, use of V curb should be minimized. Grading adjacent turf or sloping adjacent pavement is preferred. 6:1 grading preferred, 4:1 maximum. On rehabilitation projects if 4:1 is exceeded within right of way, V–curb should be used.

V–curb shall be placed outside the sidewalk limits when right of way allows.

V–curb next to building shall be a 4" width and shall match previous top of sidewalk elevations.

All V–curb contraction joints shall match concrete walk joints.

Some detectable warning products require a concrete border for proper installation. The concrete border should not exceed 2 inches.

1. End tapers at transition section shall match inplace sidewalk grades.
2. All V curb shall match bottom of adjacent walk.
3. Edge between new V–curb and inplace structure shall be sealed and bond breaker shall be used between existing structure and placed V–curb.
4. The max. rate of cross slope transitioning is 1 linear foot of sidewalk per half percent cross slope. When PAR width is greater than 6' or the running slope is greater than 5%, double the calculated transition length.
5. Transition panels are to only be used after the ramp,.
6. Existing cross slope.

Detectable Warning Panel Notes:

1. See Preapproved Materials List for products.
2. Detectable Warning Surface to extend a minimum of 2' in direction of travel.
3. Detectable Warning Panels placed radially behind the curb shall be Radius Panels.
4. Detectable Warning Panels shall be installed per manufacturer's recommendations and cleaned of excess material after installation.

Sidewalk Ramp Elements General Requirements:

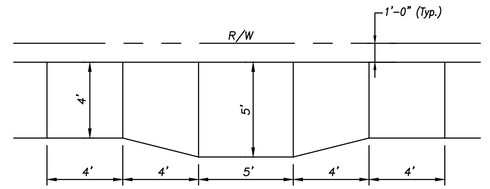
RAMP (Required to transition elevation): Max Running Slope – 8.33%
Max Cross Slope – 2% (1% preferred)
Min Width – 4'

TURNING SPACE (Required to change direction of travel): Max Running Slope – 2%
Max Cross Slope – 2% (1% preferred)
Min Width – 4'

DETECTABLE WARNING SURFACE: Width equals Ramp Opening Width @ Curb
Min Length – 2'
Domes should be aligned with direction of travel.

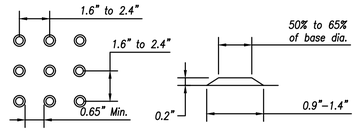
Legend

- R — Curb Ramp
- T — Transition panel(s) – to be used for transitioning the cross–slope of a ramp to the existing walk cross–slope. Rate of transition should be 0.5% per 1 linear foot of walk. See this sheet for additional information.
- Turning Space – 5' x 5' min. Max 2.0% slope in all directions. Turning Spaces shall be full width of incoming PARs.
- Detectable Warning Panels



Wheelchair Passing Space

Wheelchair Passing Space to be Constructed where Length of 4' Wide Sidewalk Exceeds 200'.



Truncated Dome Dimensions

Not to Scale

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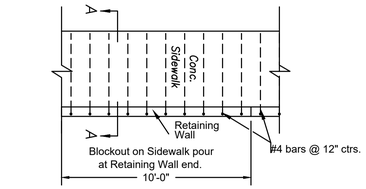
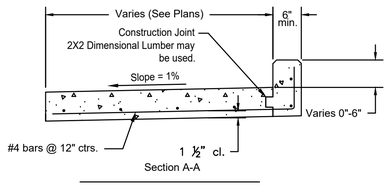
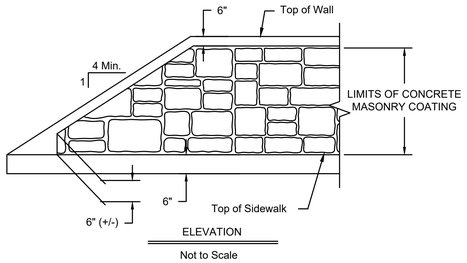
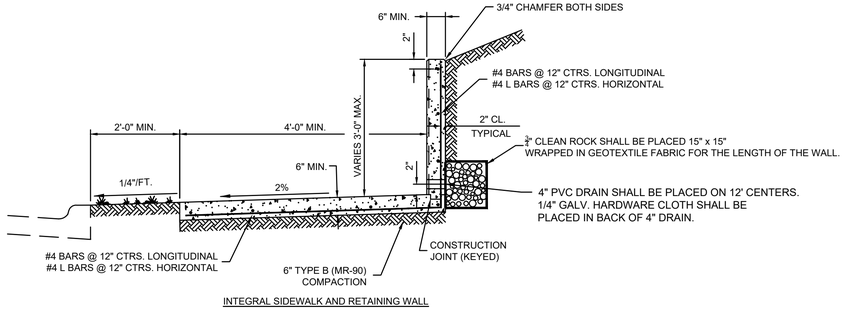
SIDEWALK RAMP DETAILS 3

SHEET D-203

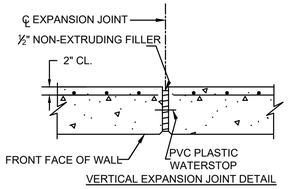




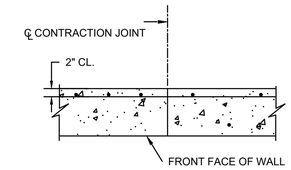




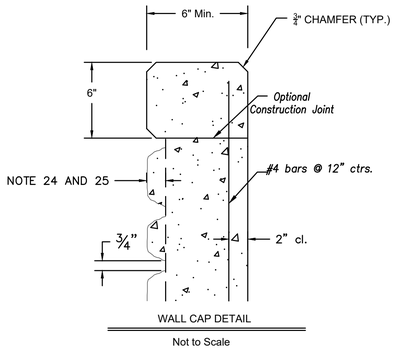
INTEGRAL SIDEWALK AND RETAINING WALL



VERTICAL EXPANSION JOINT DETAIL



VERTICAL CONTRACTION JOINT DETAIL

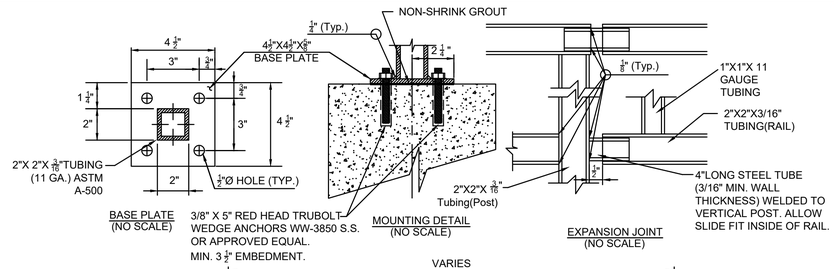


WALL CAP DETAIL

Not to Scale

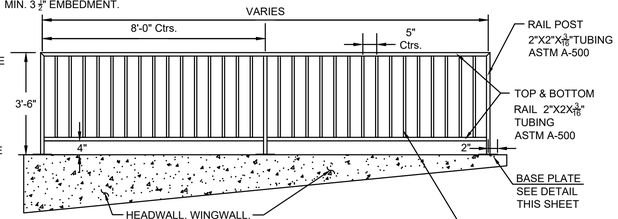
NOTES:

1. TYPE 1 JOINTS SHALL BE PLACED AT 5' CENTERS, LONGITUDINAL AND TRANSVERSE FOR ALL TRAILS.
2. TYPE THREE JOINTS SHALL BE PLACED AT 250' CENTERS AND WHERE WALK ABUTS EXISTING CONCRETE.
3. ALL CONCRETE SHALL BE KCMMB-4K.
4. WHEN UTILITY SERVICE BOXES, METER BOXES, ETC. WHICH MEASURE LESS THAN 1 FT. SQUARE MUST BE PLACED IN THE SIDEWALK OR TRAIL, THE UTILITY SERVICE BOXES, ETC. SHALL BE NO CLOSER TO ANY EDGE OF THE SIDEWALK PANEL THAN 1 FT.
5. WHEN UTILITY BOXES, METER BOXES, ETC. GREATER THAN 1 FT. IN ANY DIMENSION MUST BE PLACED IN THE SIDEWALK OR TRAIL, THEY SHALL BE PLACED IN THE CORNER OF THE SIDEWALK PANEL.
6. AN ISOLATION JOINT SHALL BE PLACED BETWEEN THE CONCRETE AND ANY UTILITY BOX, ETC. WHICH IS PLACED IN THE SIDEWALK / TRAIL.
7. NO SECTION OF SIDEWALK / TRAIL LESS THAN 12" IN ANY DIMENSION. (HORIZONTAL).
8. PUGGED AB-3 MAY BE USED AS A LEVELING COURSE. PUGGED AB-3 MUST BE MOIST (MIN. 5% MOISTURE) AND COMPACTED. DEPTH OF LEVELING COURSE SHALL NOT EXCEED 6". CLEAN ROCK WILL NOT BE ALLOWED.
9. SURFACE TEXTURE SHALL BE A COARSE BROOM FINISH, TRANSVERSE TO THE SLOPE OF THE RAMP.
10. USE OF TYPE "B" OR "C" RAMPS SHALL BE RESTRICTED TO LOCATIONS WHERE IT IS NOT FEASIBLE TO USE TYPE "A".
11. USE OF TYPE "C" RAMPS SHALL BE RESTRICTED TO LOCATIONS WHERE IT IS NOT FEASIBLE TO USE TYPE "A" AND "B".
12. THE SIDEWALK SHALL HAVE A COARSE- TEXTURED, WOOD FLOAT, AND BROOM FINISH, WITH PICTURE FRAME EDGE.
13. DETECTABLE WARNING SHALL BE BRICK RED IN COLOR.
14. DETECTABLE WARNINGS SHALL ONLY BE USED AT PUBLIC STREETS AND MAJOR COMMERCIAL STREETS WHICH REQUIRE THE USE OF STOP OR YIELD CONTROL. THE DETERMINATION OF THESE STREET SHALL BE MADE BY THE CITY ENGINEER.
15. SIDEWALK RAMP LOCATION DETERMINED FROM THE INTERSECTION OF THE EXTENSION OF BACK OF SIDEWALK AND BACK OF CURB & GUTTER.
16. PLAN DRAWINGS SHALL INCLUDE A TABLE OF ELEVATIONS FOR ALL POINTS LABELLED Dev. 05
17. LONGITUDINAL JOINT SPACING TO MATCH WIDTH OF SIDEWALK.
18. ISOLATION JOINTS SHALL BE PLACED WHERE WALK ABUTS DRIVEWAYS AND SIMILAR STRUCTURES, AND 250' CENTERS MAX.
19. SIDEWALK RAMP SHALL BE LENGTHENED TO PROVIDE ADA COMPLIANCE SLOPE BUT NEED NOT EXCEED 15'.
20. ADA MAXIMUM RAMP SLOPE = 1"/FT. ADA MAXIMUM CROSS SLOPE = 2%.
21. DETECTABLE WARNINGS TO COMPLY WITH ADA REQUIREMENTS.
22. LANDING FOR TYPE C RAMP ALONG THE ENTIRE CURB RETURN IS PREFERRED, BUT MAY BE SHORTENED TO MINIMUM ADA COMPLAINT DIMENSIONS.
23. WHEN WALL HEIGHT EXCEEDS 30" A SAFETY BARRIER/RAIL SHALL BE REQUIRED.
24. FORM LINER SHALL BE 1515 SC ASHLAR OR APPROVED EQUAL.
25. PENETRATING STAIN SHALL BE SHERWIN WILLIAMS CONCRETE STAIN SOLID COLOR WATER BASED OR APPROVED EQUAL TINTED TO MATCH; ORANGE- FEDERAL STANDARD 30257, BASIC LIMESTONE - FEDERAL STANDARD 33510 (BASE COLOR), DARK GRAY 2 - SHERWIN WILLIAMS 6151 QUIVER TAN, DARK GRAY - FEDERAL STANDARD 30318, YELLOW - FEDERAL STANDARD 33448, GRAY JOINT COLOR - FEDERAL STANDARD 36440.



NOTE:

1. RAIL POSTS FOR TREE WELLS OR UTILITY POLE WELLS SHALL HAVE BOLTS ANCHORED IN CONCRETE. CONCRETE SHALL BE A MIN. OF 8" X 8" WIDE & 18" DEEP TO SET ANCHOR BOLTS IN A MINIMUM OF 4".
2. RAILING SHALL BE CENTERED IN TOP OF WALL.
3. EXPANSION JOINTS SHALL BE PLACED AT 50' CENTERS, AND IN BOTH TOP AND BOTTOM RAILS.
4. IF WINGWALL IS NOT STRUCTURALLY TIED TO HEADWALL, RAIL SHALL NOT BE CONTINUOUS OVER JOINT.



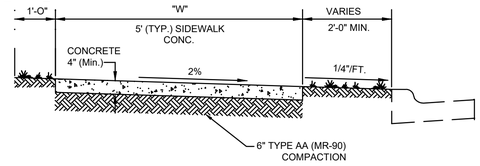
TYPICAL PANEL (NO SCALE)

PAINT SPECIFICATIONS:

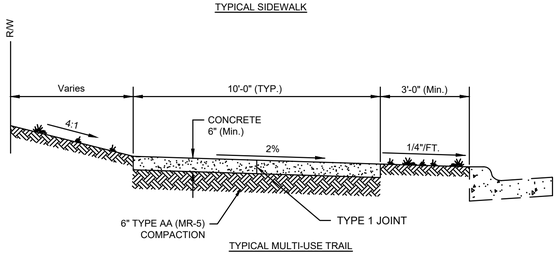
ALL STEEL HANDRAIL SHALL HAVE A DUPLEX COATING SYSTEM WITH A FINISH COAT OF BLACK. GALVANIZE ALL HANDRAIL COMPONENTS IN ACCORDANCE WITH ASTM A123, PREPARE GALVANIZED SURFACES IN ACCORDANCE WITH ASTM D6386, APPLY SHERWIN WILLIAMS RECOATABLE EPOXY PRIMER WITH A DRY FILM THICKNESS OF 4.0-6.0 MILS, APPLY SHERWIN WILLIAMS HI-SOLIDS POLYURETHANE WITH A DRY FILM THICKNESS OF 3.0-5.0 MILS OR APPROVED EQUAL.

PEDESTRIAN RAIL

R/W ON ALL OTHER STREET CLASSIFICATIONS
R/W ON RESIDENTIAL STREETS



TYPICAL SIDEWALK



TYPICAL MULTI-USE TRAIL

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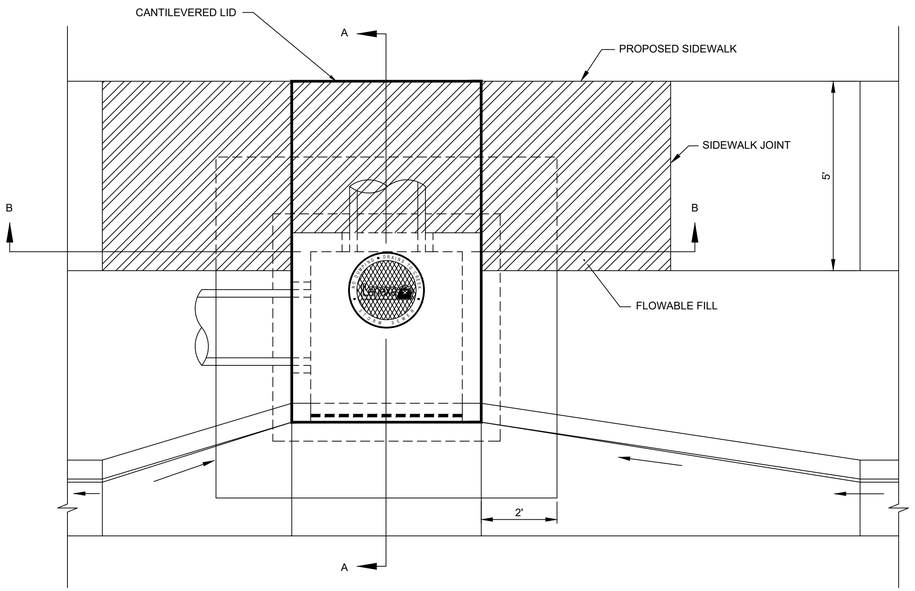
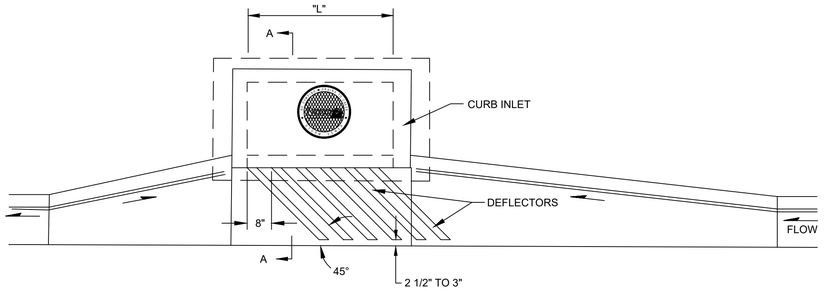
PEDESTRIAN WALKWAYS

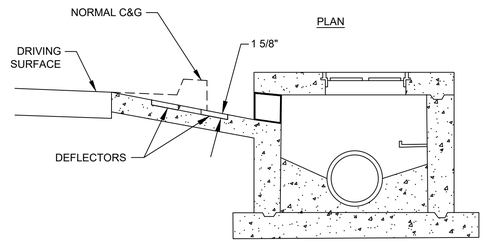
SHEET D-204



PLAN VIEW



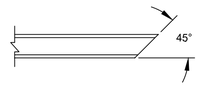
PLAN



SECTION A-A

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

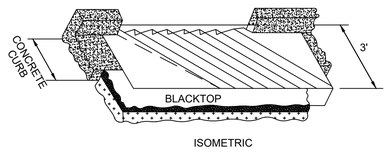
AFTER INITIAL SET, REMOVE DEFLECTOR CHANNEL FORMS AND FINISH SURFACE OF CONCRETE.



SPACING

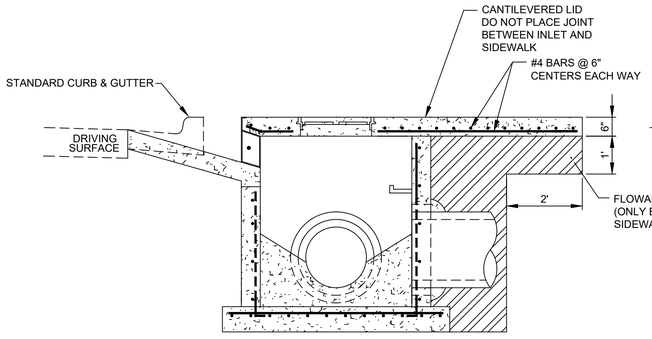
"L"	NO. OF DEFLECTORS
4'	6
6'	9
8'	12

FORM DETAIL

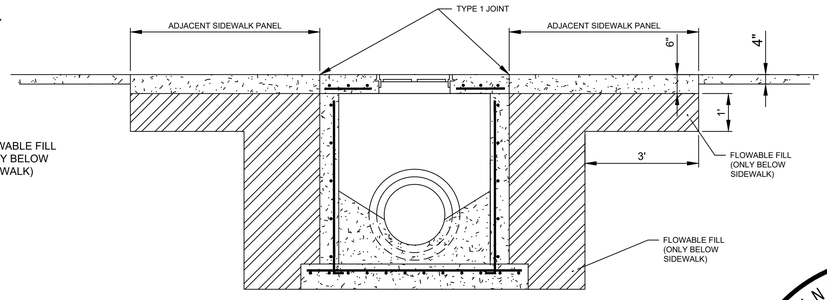


ISOMETRIC

GUTTER DEFLECTOR



SECTION A-A



SECTION B-B

NOTES:

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

CURB INLET ENCROACHING ON SIDEWALK

RING AND LID DF # 2016 OR APPROVED EQUAL

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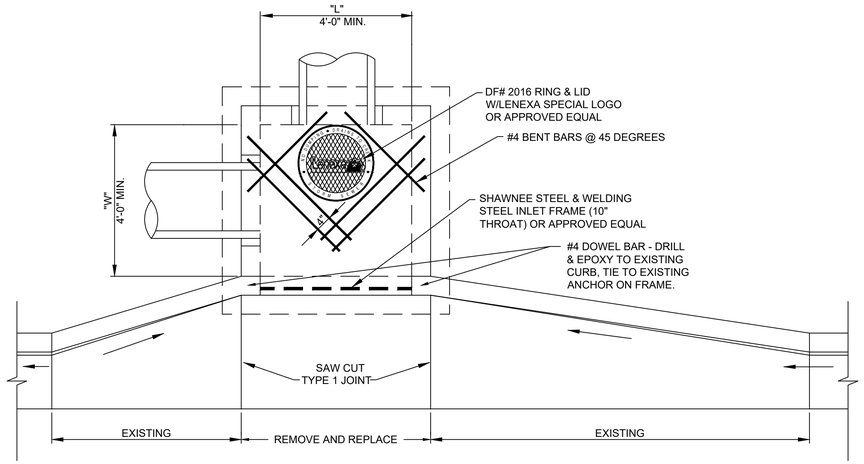
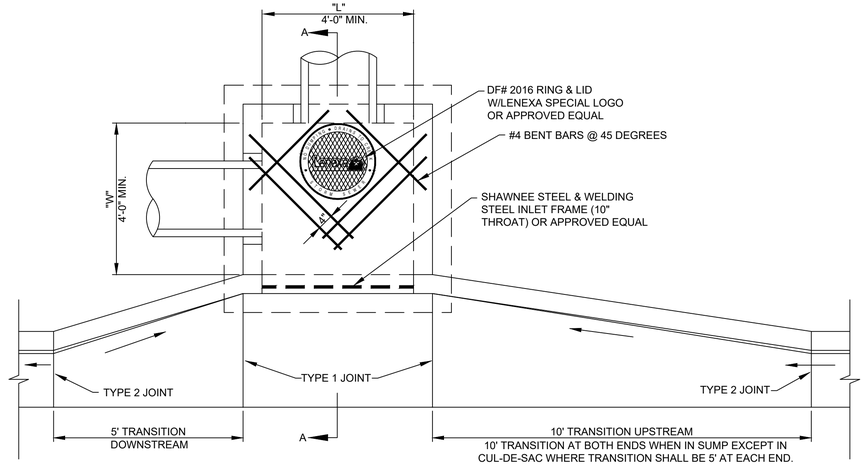
DRAINAGE DETAILS

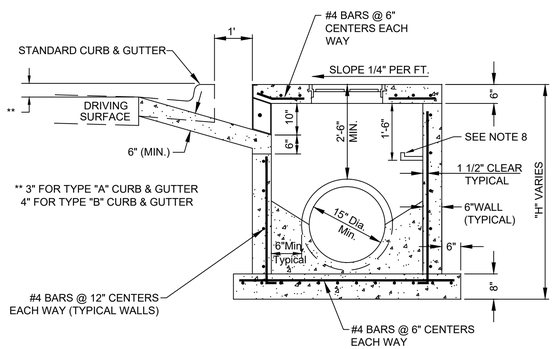
SHEET D-205



CURB INLET TOP REMOVAL AND REPLACEMENT

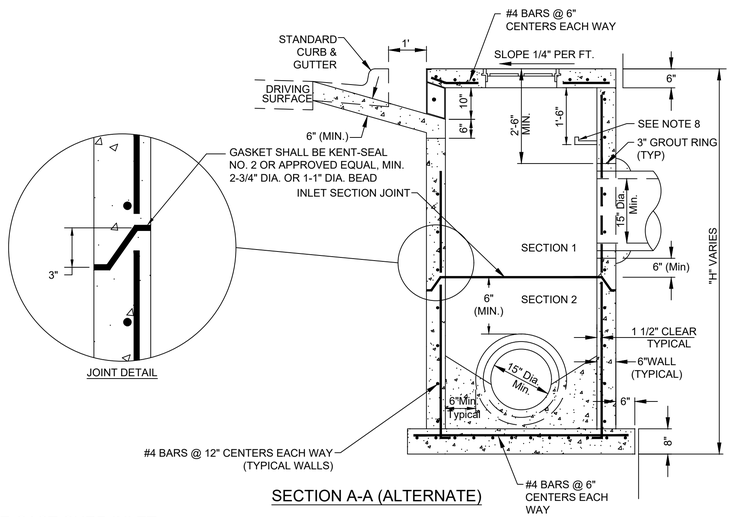


PLAN VIEW



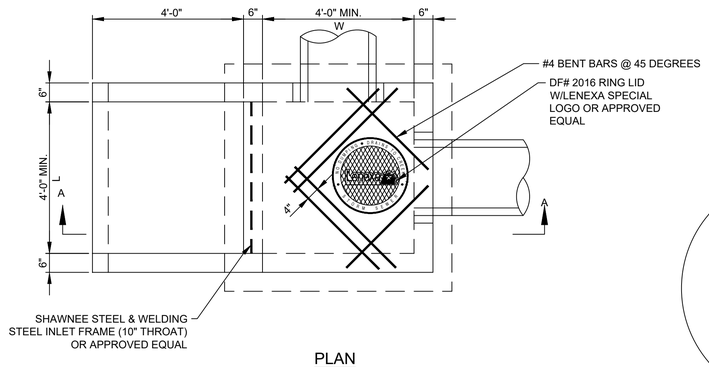
SECTION A-A

CURB INLET

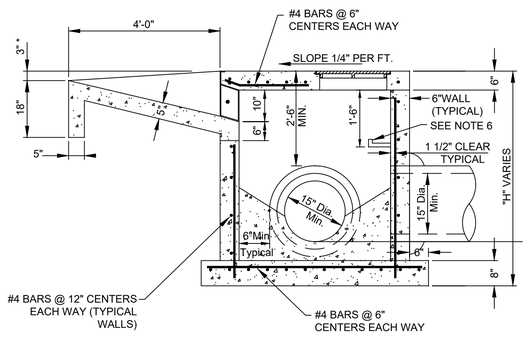


SECTION A-A (ALTERNATE)

PRE-CAST CURB INLET

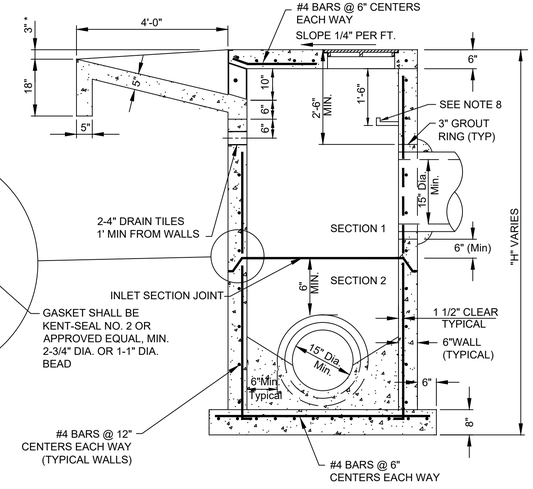


PLAN



SECTION A-A

PRE-CAST YARD/AREA INLET



JOINT DETAIL

SECTION A-A (ALTERNATE)

* 3" MINIMUM (ADJUST AS NEEDED TO DRAIN)

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.

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, 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.
10. LID SHALL BE SET TRUE TO LINE AND GRADE ALONG CURB PROFILE.
11. STORM SEWER PIPES SHALL BE SET 6" INSIDE STRUCTURE WALL.
12. STORM SEWER STRUCTURES SHALL BE SET LEVEL.

14. MAXIMUM ADJUSTMENT FOR LIDS SHALL BE 5". BRICKS OR CONCRETE BLOCKS SHALL BE USED FOR SUPPORT OF THE LID. THE ANNULAR SPACE SHALL BE FILLED WITH KCMMB 4K CONCRETE.

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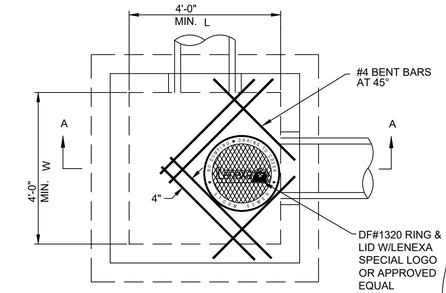
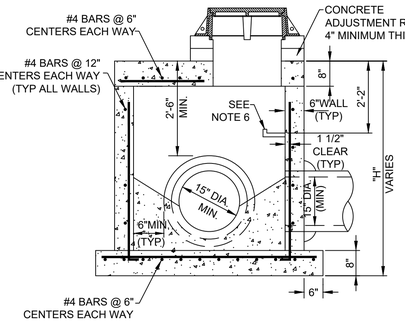
STORM SEWER INLETS

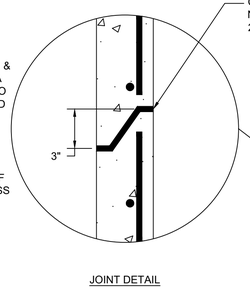
SHEET D-300



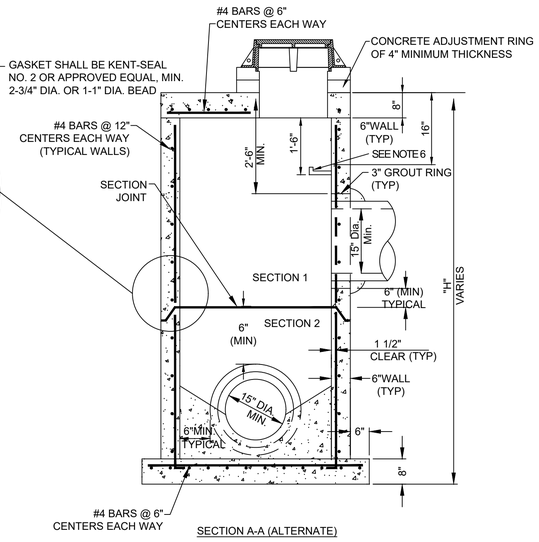
PLAN VIEW



SECTION A-A

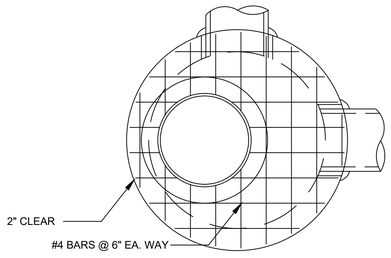


JOINT DETAIL

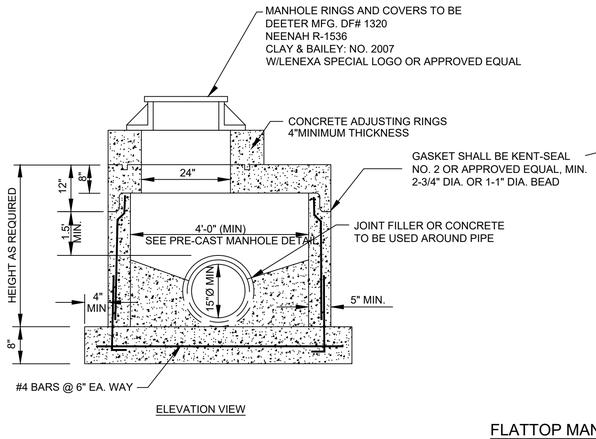


SECTION A-A (ALTERNATE)

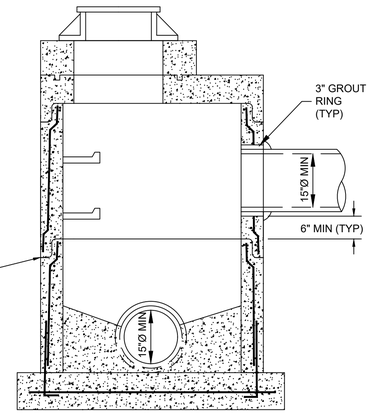
PRE-CAST JUNCTION BOX



PLAN VIEW



ELEVATION VIEW

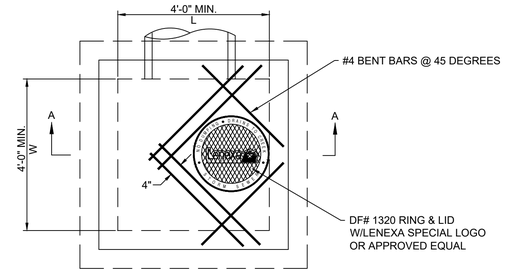


MULTI-SECTION - MULTI-PIPE VIEW

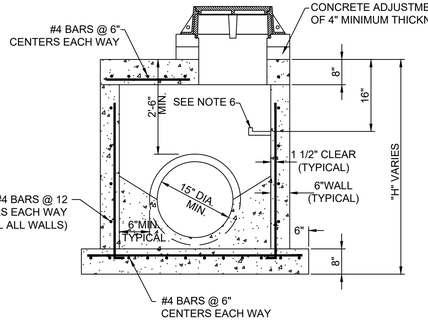
FLATTOP MANHOLE

NOTES:

1. ALL CONCRETE SHALL BE KCMMB-4K.
2. JUNCTION BOX CONSTRUCTION NOTES SHALL LIST THE "L" DIMENSION FIRST, THE "W" DIMENSION SECOND, AND THE "H" DIMENSION THIRD.
3. FLOOR OF JUNCTION BOX 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. 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.)
6. STEPS SHALL BE SPACED 1'-4" O.C. VERTICALLY.
7. WHEN JUNCTION BOX IS INSTALLED UNDER PAVEMENT USE DEETER FOUNDRY RING & LID NO. 1320 OR APPROVED EQUAL.
8. 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.
9. BASES NOT BUILT MONOLITHIC WITH BOTTOM SECTION SHALL BE POURED WITH KCMMB 4K CONCRETE.



PLAN VIEW

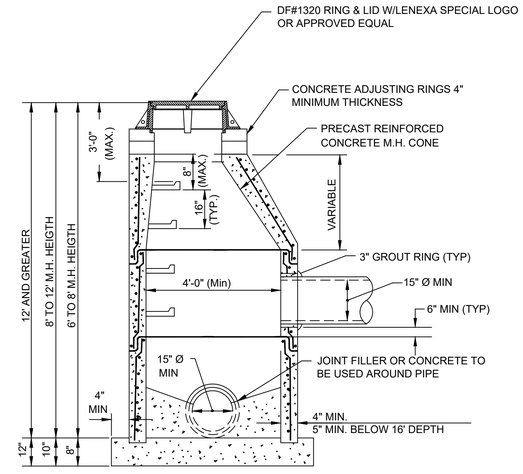


SECTION A-A

JUNCTION BOX

NOTES:

1. PRECAST CONCRETE MANHOLES SHALL CONFORM TO ASTM C478 EXCEPT AS MODIFIED BY THE SPECIFICATIONS.
2. BASES NOT BUILT MONOLITHIC WITH BOTTOM SECTION SHALL BE KCMMB 4K CONCRETE.
3. MANHOLE MAY BE TRANSITIONED TO 4'-0"Ø 8' ABOVE FLOWLINE OF OUTFALL FOR 5'-0" AND 6'-0" MANHOLES.
4. 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.)
5. 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.
6. THE CONCRETE USED IN THE CONSTRUCTION OF PRECAST REINFORCED CONCRETE MANHOLES SHALL BE KCMMB-4K.
7. ONLY ECCENTRIC MANHOLE CONES WILL BE ALLOWED UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
8. PIPES SHALL NOT ENTER THE CONE SECTION OF MANHOLE. A FLATTOP MANHOLE SHALL BE USED WHEREVER ELEVATION WOULD REQUIRE ENTRY IN THE CONE AREA.
9. ONLY FLAT-TOP LIDS WILL BE ALLOWED (SEE DETAIL THIS SHEET).
10. FOR REQUIREMENTS FOR STEPS, SEE STANDARD DETAIL FOR PRECAST MANHOLE.
11. THERE SHALL BE A MINIMUM OF 12" OF WALL BETWEEN INFLOW AND OUTFLOW FOR MANHOLES.



PRE-CAST MANHOLE

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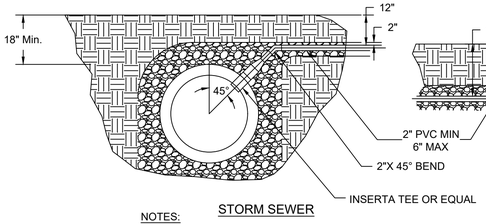
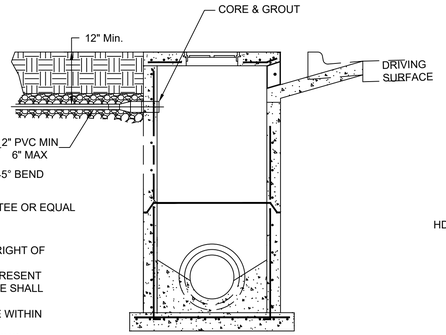
STORM SEWER MANHOLES & JUNCTION BOXES | SHEET D-301



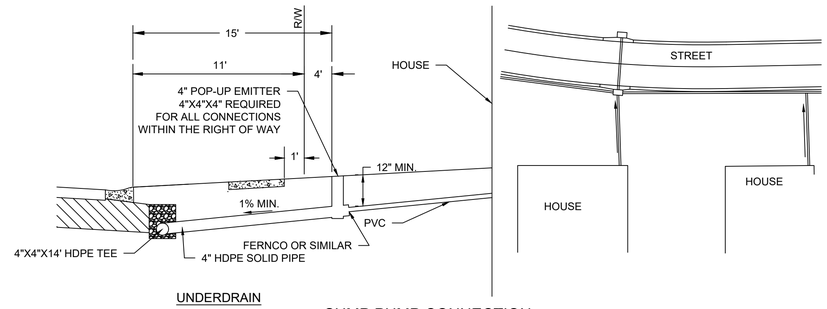


STORM SEWER

STRUCTURE

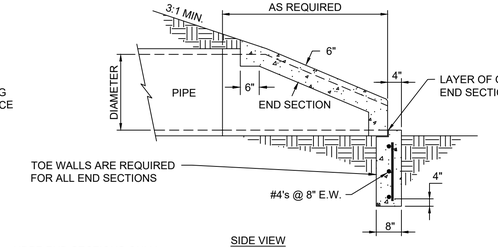
NOTES:

1. ALL SUMP PUMP CONNECTIONS REQUIRE A RIGHT OF WAY PERMIT.
2. WHENEVER AN INLET OR JUNCTION BOX IS PRESENT WITHIN THE PROPERTY, THE SUMP PUMP LINE SHALL CONNECT TO THE STRUCTURE.
3. MINIMUM COVER OVER THE SUMP PUMP LINE WITHIN PUBLIC RIGHT OF WAY SHALL BE 12".
4. GRANULAR BACKFILL SHALL BE USED FOR SUMP PUMP LINE WITHIN THE RIGHT OF WAY AND SHALL BE INSTALLED TO THE DIMENSIONS ON THIS DETAIL. GRANULAR FILL SHALL BE PER TABLE 1.
5. MAXIMUM TRENCH WIDTH ON THE SUMP PUMP LINE SHALL BE 12" EXCEPT AT THE STORM SEWER CONNECTION.

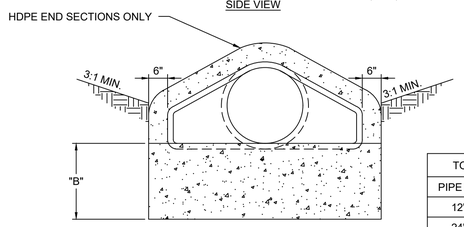


UNDERDRAIN

SUMP PUMP CONNECTION



SIDE VIEW



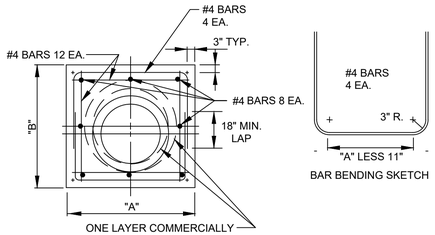
FRONT VIEW

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.
3. HDPE END SECTIONS SHALL HAVE CONCRETE PLACED AROUND ALL SIDES. CONCRETE SHALL BE FORMED AND SHALL HAVE A BROOM FINISH.

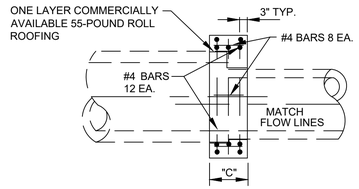
TOE WALL DEPTH	
PIPE DIAMETER	"B"
12" - 21"	18"
24" - 48"	24"
54" - 66"	36"

END SECTION WITH TOE WALL



END VIEW

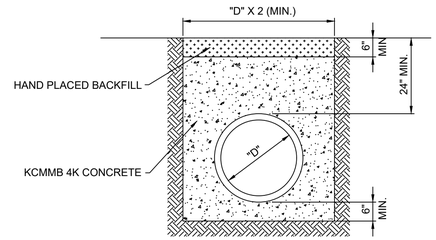
BAR BENDING SKETCH



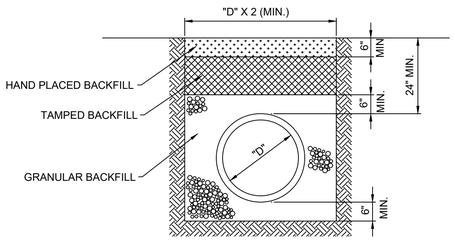
SIDE VIEW

CONCRETE COLLAR

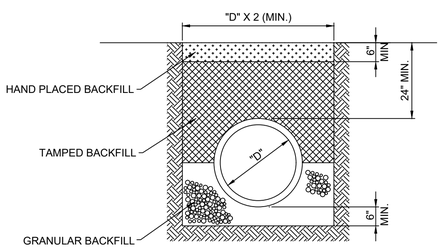
TABLE 2		
PIPE SIZE	DIMENSIONS	
(INCHES)	"A" & "B" (FT.-IN.)	"C" (FT.-IN.)
12	2-8	1-0
15	3-0	1-0
	3-0	1-0
18	3-3	1-0
	3-3	1-0
	3-3	1-0
21	3-6	1-0
	3-6	1-0
	3-6	1-0
24	3-10	1-0
	3-10	1-0
	3-10	1-0
30	4-5	1-4
	4-5	1-4
	4-5	1-4
36	5-0	1-4
	5-0	1-4
	5-0	1-4
42	5-7	1-4
	5-7	1-4
	5-7	1-4
48	6-2	1-4
	6-2	1-4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



CONCRETE ENCASEMENT



HDPE/PVC PIPE BEDDING



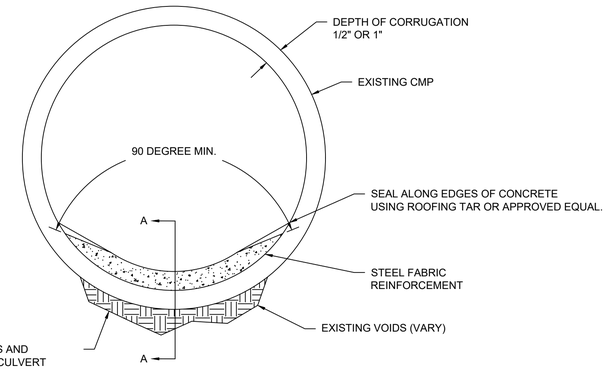
FIRST CLASS BEDDING (RCP)

TABLE 1						
	% RETAINED-SQUARE MESH SIEVES					
	1"	3/4"	1/2"	3/8"	No. 4	No. 8
BEDDING MATERIAL	0	0-20	-	40-70	75-100	95-100

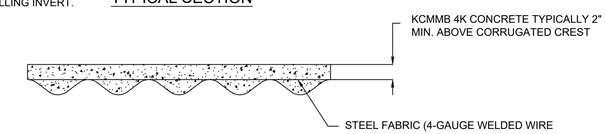
NOTES:

1. GRANULAR FILL SHALL BE PER TABLE 1, 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-3-3 COMPACTION.
3. HAND PLACED FILL SHALL BE FINELY DIVIDED MATERIAL, FREE OF DEBRIS AND STONES, COMPACTED TO TYPE AA MR-3-3 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. FLOW FILL SHALL BE USED TO FORM A STEEP-SLOPE STABILIZATION COLLAR AT EACH JOINT FOR PIPE RUNS OVER 10% PER THE DIMENSION TABLE THIS SHEET.
7. DEFLECTOR CHANNELS ARE TO BE USED IN CONJUNCTION WITH CURB INLETS WHEN LONGITUDINAL GRADE EQUALS OR EXCEEDS 5%.
8. IN LIEU OF CAST-IN-PLACE DEFLECTORS, THE SHAWNEE STEEL & WELDING, INC. DEFLECTORS FOR IN-GRADE INLETS, OR EQUAL, MAY BE USED.
9. IF BEDROCK IS ENCOUNTERED OVER EXCAVATION OF A MINIMUM OF 12" INTO BEDROCK IS REQUIRED.
10. ALL CONCRETE SHALL BE KCMMB-4K.

PIPE BEDDING



TYPICAL SECTION



SECTION A-A

1. CONTRACTOR SHALL CLEAN AND REMOVE DEBRIS FROM PIPES PRIOR TO INVERT REPAIR IN A MANNER APPROVED BY THE ENGINEER. THE ENTIRE INTERIOR SURFACE TO BE REPAIRED SHALL BE CLEANED WITH PRESSURE JET, WATER JET OR WET SANDBLASTING AND RUST REMOVED FROM SURFACE TO THE SATISFACTION OF THE ENGINEER.
2. CONTRACTOR SHALL GROUT ALL VOIDS BELOW AND AROUND PIPE AFTER SEDIMENT REMOVAL AND PIPE CLEANING ARE COMPLETE.
3. THE CONCRETE SHALL CURE FOR A MINIMUM OF 48 HOURS BEFORE ANY WATER IS PERMITTED TO FLOW IN THE PIPE AND INVERT.
4. LOW FLOW CHANNEL FLOW SHALL BE DIVERTED FROM ONE PIPE AT A TIME ALLOWING CHANNEL FLOW TO CONTINUE IN THE SECOND PIPE. PIPE RECEIVING INVERT REPAIR SHALL BE KEPT DRY FROM SURFACE FLOW AND GROUNDWATER DURING REPAIRS. CONTRACTOR SHALL SUBMIT A DEWATERING PLAN FOR APPROVAL BY ENGINEER PRIOR TO STARTING WORK.

PIPE INVERT DETAIL

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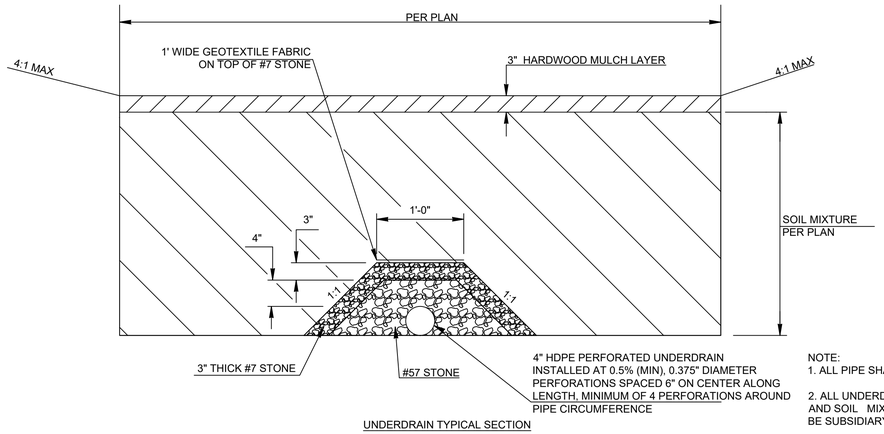
REVISED DATE:	01/25
DETAILED:	BKC
APPROVED:	---

Lenexa KANSAS

STORM SEWER 1

SHEET D-302

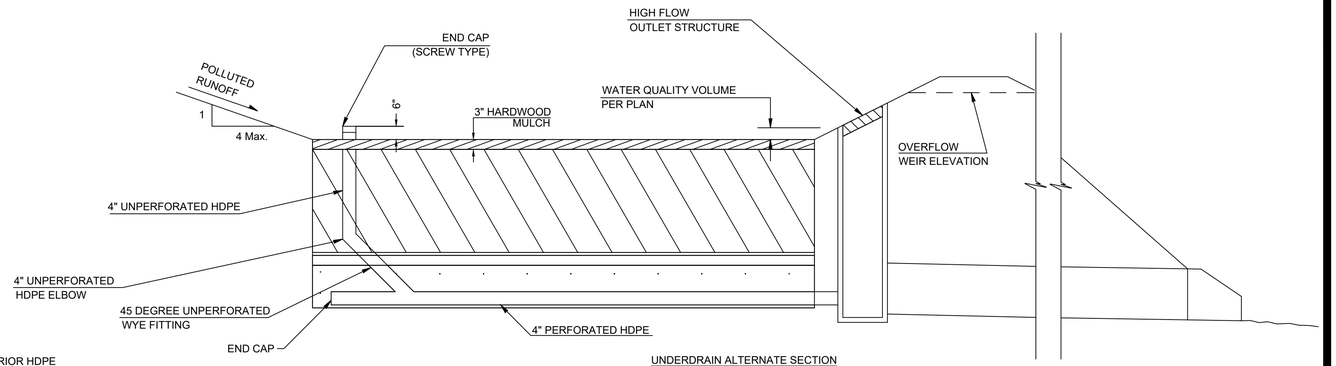


UNDERDRAIN TYPICAL SECTION

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

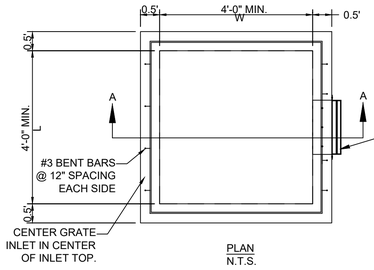


UNDERDRAIN ALTERNATE SECTION

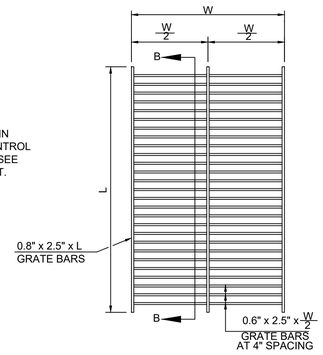
Sieve Size		Percent Passing	
		AASHTO No. 57	AASHTO No. 7
50mm	2-inch	-	-
37.5 mm	1.5-inch	100 min.	-
25 mm	1-inch	95-100	-
19.0 mm	0.75-inch	-	100 min.
12.5 mm	0.5-inch	25-60	90-100
9.5 mm	0.375-inch	-	40-70
4.74 mm	No. 4	10 max.	15 max.
2.36 mm	No. 8	5 max.	5 max.
1.18 mm	No. 16	-	-

"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"

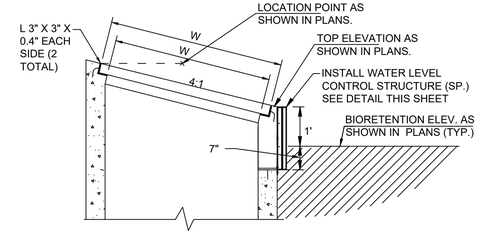
WATER QUALITY UNDERDRAIN



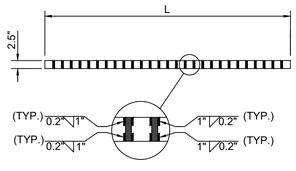
PLAN
N.T.S.



GRATE PLAN
N.T.S.



INLET SECTION A-A
N.T.S.



GRATE SECTION B-B
N.T.S.

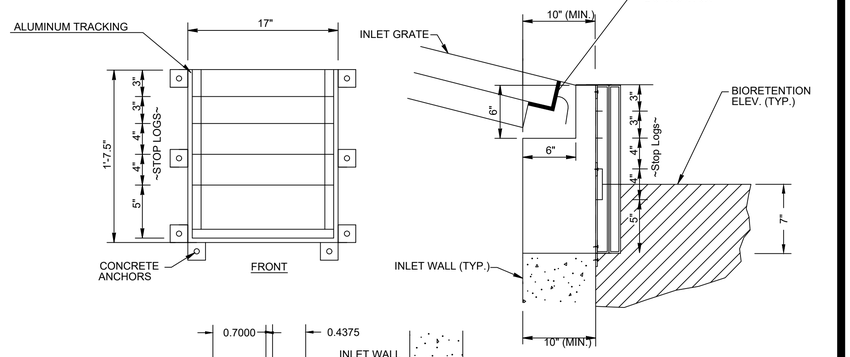
WATER QUALITY AREA INLET NOTES

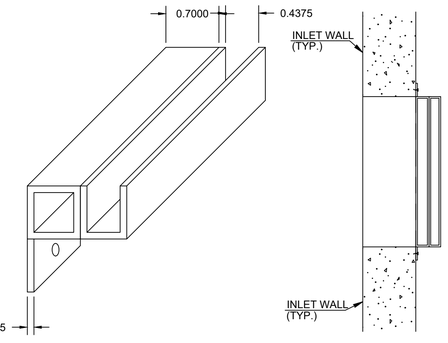
1. BASE AND WALLS OF GRATE AREA INLET SHALL CONFORM TO LENEXA'S STANDARD DETAIL (AREA INLET DETAIL).

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".





AGRI DRAIN WATER LEVEL CONTROL STRUCTURE (SP.)
(OR APPROVED EQUAL)

ISOMETRIC

TOP

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:	01/25
DETAILED:	BKC
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:

1. C/N RATIO <= 25;
2. OXYGEN UPTAKE RATE <= 150 MG O2/KG VOLATILE SOLIDS PER HOUR; AND
3. 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."
4. 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	MINIMUM 32 PPM	*
PHOSPHORUS (PHOSPHATE - P_2O_5)	NOT TO EXCEED 60 PPM PLANT AVAILABLE PHOSPHORUS	*
POTASSIUM (K_2O)	MINIMUM 78 PPM	*
SOLUBLE SALTS	NOT TO EXCEED 500 PPM	*

* USE AUTHORIZED SOIL TEST PROCEDURES.

2. 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.
3. 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.
4. 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.
5. 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.

1. **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.
2. **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.
3. **WATER:** WATER USED IN THE PLANTING, ESTABLISHING, OR CARING FOR VEGETATION SHALL BE FREE FROM ANY SUBSTANCE THAT IS INJURIOUS TO PLANT LIFE.
4. **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

2. **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.
3. **MAGNESIUM SULFATE:** MAGNESIUM SULFATE SHALL BE A CONSTITUENT OF AN APPROVED HORTICULTURAL PRODUCT PRODUCED AS A FERTILIZER.
4. **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.

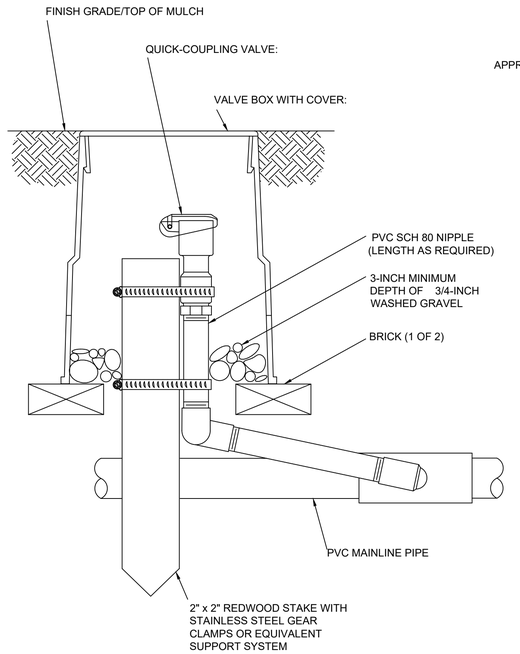
D. OBSERVATION WELLS/CLEANOUTS OF 4-INCH NON-PERFORATED HDPE PIPE SHALL BE PLACED VERTICALLY IN THE BIORETENTION FACILITY AS SHOWN ON THE CONTRACT PLANS. THE WELLS/CLEANOUTS SHALL BE CONNECTED TO THE PERFORATED UNDERDRAIN WITH THE APPROPRIATE MANUFACTURED CONNECTIONS AS SHOWN ON THE CONTRACT PLANS. THE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

E. STORAGE AND MIXING OF BIORETENTION SOIL MIX: BIORETENTION SOIL MIX THAT IS DELIVERED TO THE SITE TO BE STOCKPILED SHALL BE STORED ON A CLEAN IMPERVIOUS SURFACE. IF ANY OF THE OF THE ADJACENT LAND DRAINS TOWARDS THE STOCKPILE, IT SHALL BE PROTECTED FROM RUNOFF WITH APPROPRIATE EROSION CONTROL MEASURES. IF THE SOIL IS TO BE MIXED ON SITE, THEN THE COMPONENTS SHALL BE STORED AS DESCRIBED ABOVE. IN THE EVENT THAT THERE IS NO IMPERVIOUS LOCATION FOR STORAGE AND MIXING, CARE SHALL BE TAKEN TO CONTAMINATE THE SOIL COMPONENTS WITH THE UNDERLYING NATIVE SOIL.

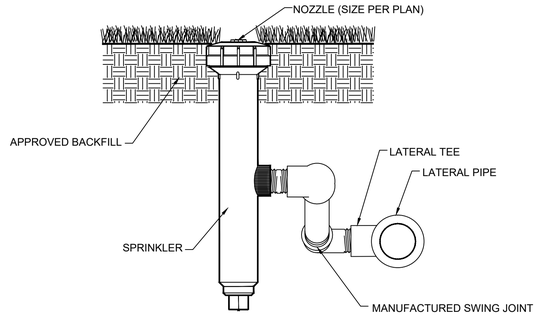
F. PLACEMENT OF THE BIORETENTION SOIL MIXTURE: THE BIORETENTION SOIL MIXTURE (BSM) SHALL BE PLACED AND GRADED USING LOW GROUND-CONTACT PRESSURE EQUIPMENT OR, IF APPROVED BY THE ENGINEER, BY EXCAVATORS AND/OR BACKHOES OPERATING ON THE GROUND ADJACENT TO THE BIORETENTION FACILITY. LOW GROUND-CONTACT PRESSURE 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.

G. 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.

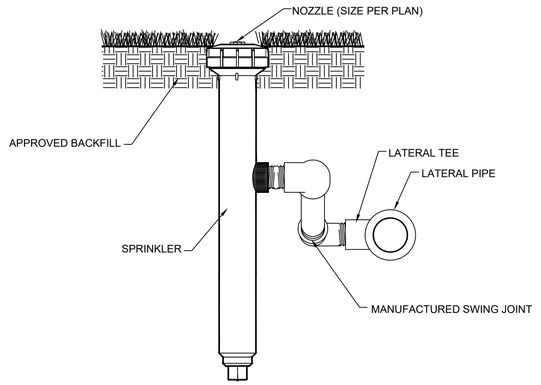
H. PLANT INSTALLATION: TREES, SHRUBS, AND OTHER PLANT MATERIALS SPECIFIED FOR BIORETENTION FACILITIES SHALL BE PLANTED AS SPECIFIED IN THE CONTRACT PLANS AND APPLICABLE LANDSCAPING STANDARDS WITH THE EXCEPTION THAT PESTICIDES, HERBICIDES, AND FERTILIZER SHALL NOT BE APPLIED DURING PLANTING UNDER ANY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



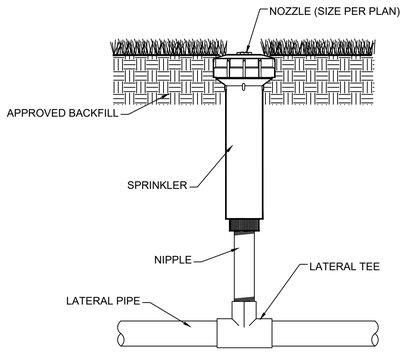
QUICK COUPLER



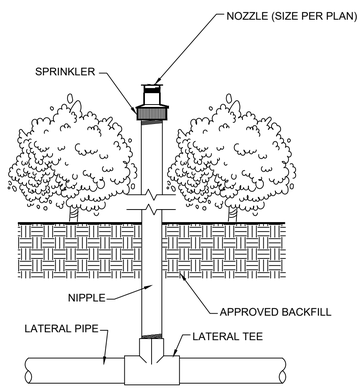
6" POP-UP SPRINKLER W/SWING JOINT
SIDE INLET



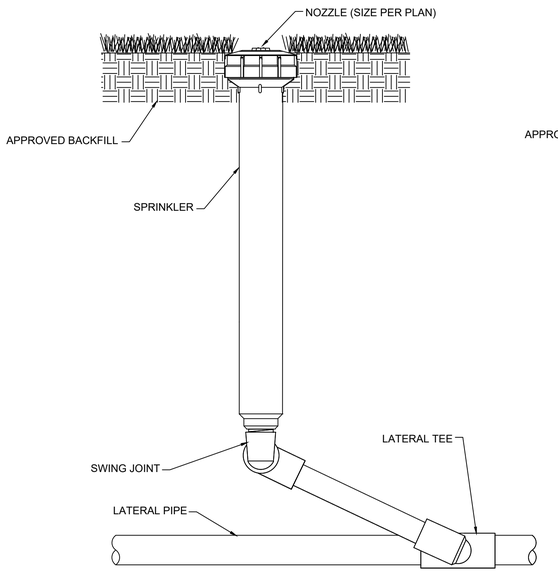
12" POP-UP SPRINKLER W/SWING JOINT SIDE INLET



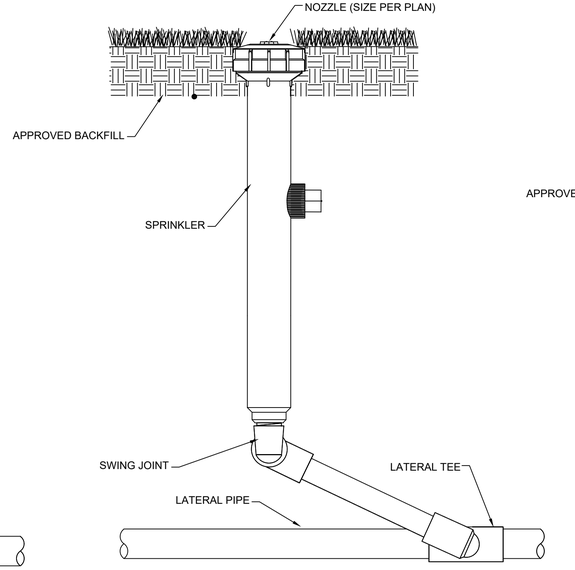
4" POP-UP SPRINKLER RISER



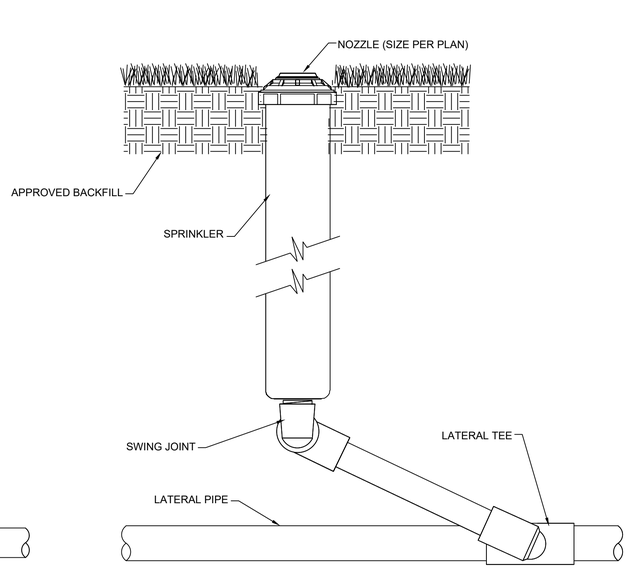
SHRUB SPRINKLER



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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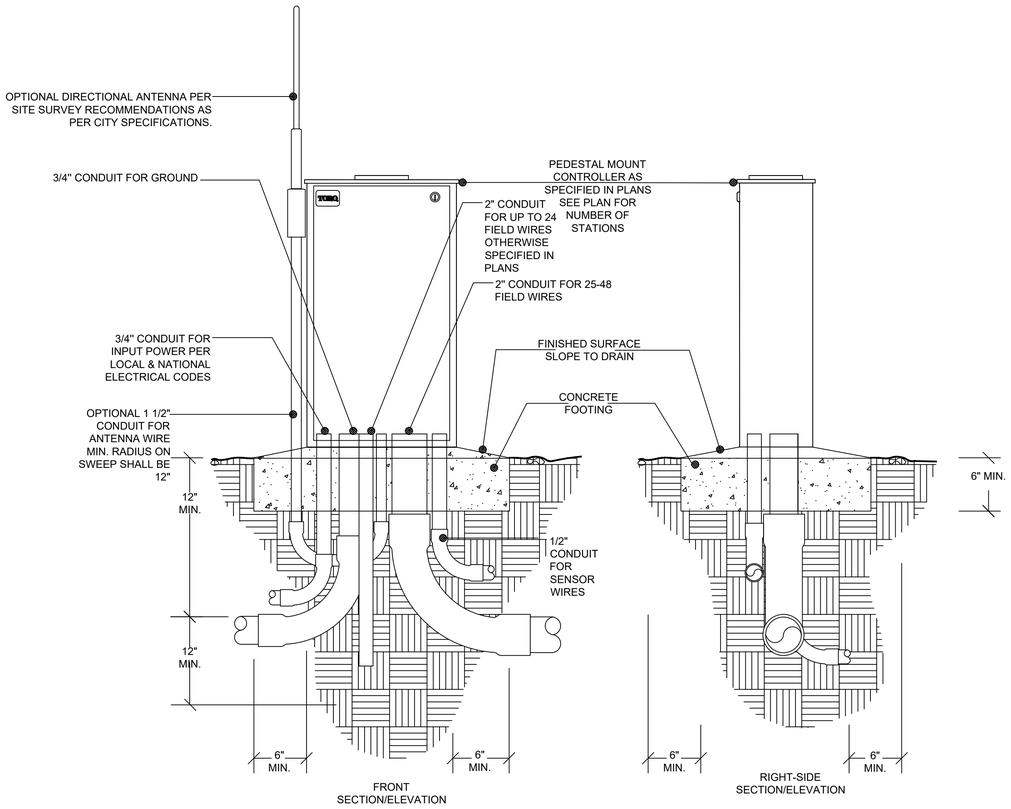
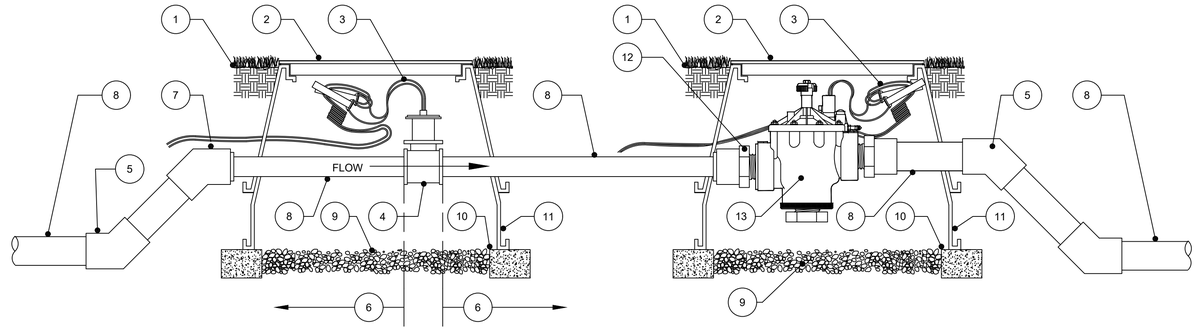
IRRIGATION 1

SHEET D-400



PEDESTAL MOUNT CONTROLLER

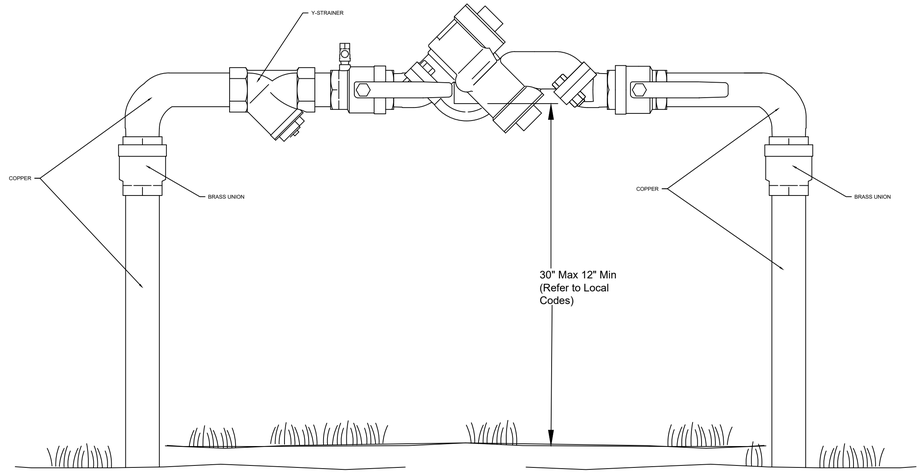


1. FINISH GRADE
2. JUMBO VALVE BOX & COVER
3. CONTROL WIRES WITH 12" MIN. SERVICE COIL AND WATERPROOF WIRE SPLICE CONNECTORS - WIRE COLORS PER SPECIFICATIONS AS PER MANUFACTURER.
4. FLOW SENSOR PER SPECIFICATIONS AS PER MANUFACTURER.
5. PVC 45 DEGREE ELL (TYP.)
6. MINIMUM 10x PIPE DIAMETER UPSTREAM & 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

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

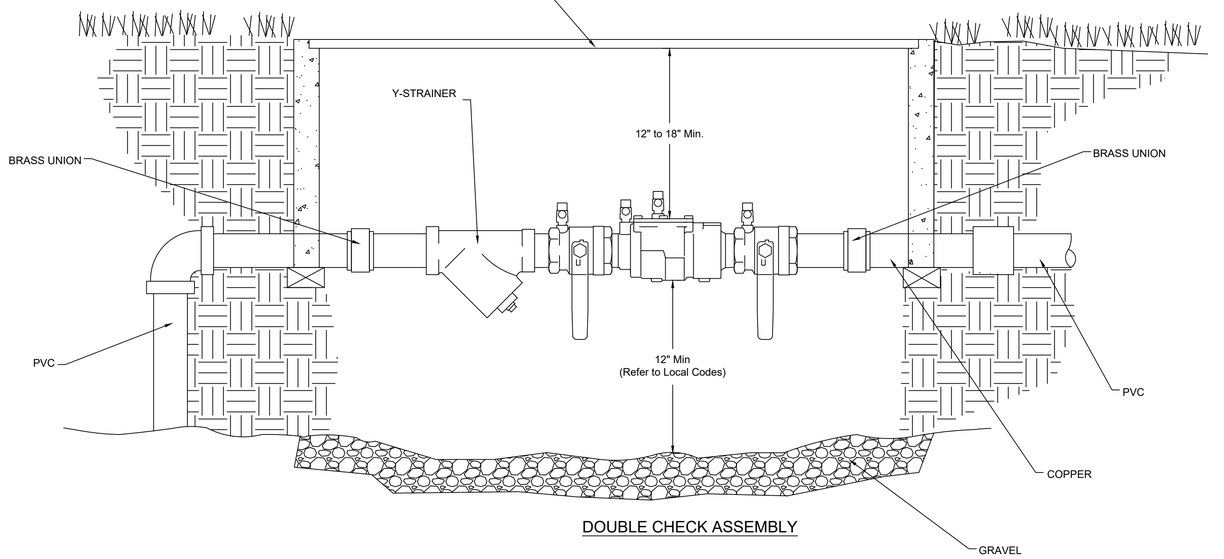
12. PVC MALE ADAPTER (TYP.)
13. REMOTE CONTROL MASTER VALVE WITH FLOW SENSOR AS SPECIFIED IN PLANS.

MASTER VALVE AND FLOW SENSOR ASSEMBLY



REDUCED PRESSURE BACKFLOW PREVENTER

BACKFLOW DEVICE



DOUBLE CHECK ASSEMBLY

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IRRIGATION 2

SHEET 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 COMMUNITY DEVELOPMENT DEPARTMENT OF THE CITY OF LENEXA, KANSAS, CURRENT USAGE.

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 IT'S 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, MULCHING 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 ½" OR MORE WITHIN ANY TWENTY-FOUR (24) HOUR PERIOD, OR CUMULATIVE RAINFALL EVENTS OF ½"OR MORE OBSERVED WITHIN ANY FORTY-EIGHT (48) 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. STABILIZATION OF DISTURBED AREAS MUST, AT A MINIMUM, BE INITIATED IMMEDIATELY WHENEVER ANY CLEARING, GRADING, EXCAVATING, OR OTHER SOIL DISTURBING ACTIVITIES HAVE PERMANENTLY CEASED ON ANY PORTION OF THE SITE, OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE AND WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS. THE DISTURBED AREAS SHALL BE PROTECTED FROM EROSION BY STABILIZING THE AREA WITH MULCH OR OTHER SIMILARLY EFFECTIVE SOIL STABILIZING MATERIAL. INITIAL STABLIZATION ACTIVITIES MUST BE COMPLETED WITHIN 14 DAYS AFTER SOIL DISTURBING ACTIVITIES CEASE. 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 STRAW 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.
MINIMUM 20% EACH OF ANY 4 VARIETIES OF TURF TYPE FINE LEAF FESCUE.
TOTAL APPLICATION RATE SHALL BE 8 POUNDS/1000 SQUARE FEET.
MINIMUM 10% EACH OF PERENNIAL RYE
TOTAL APPLICATION RATE SHALL BE 1 POUND/1000 SQUARE 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.

29. TEMPORARY STOCKPILES REQUIRE APPROVAL OF THE ENGINEER. THIS APPROVAL SHALL INCLUDE LOCATION AND DURATION. IF APPROVED STOCKPILES SHALL HAVE A MAXIMUM HEIGHT OF 5 FEET WITH 3:1 SIDE SLOPES AND IN A MOW-ABLE CONDITION.

30. TEMPORARY MULCH STOCKPILES SHALL HAVE A MAXIMUM HEIGHT OF 4 FEET AND SHALL ONLY BE PERMITTED TO REMAIN IN PLACE FOR A 2 MONTH DURATION.

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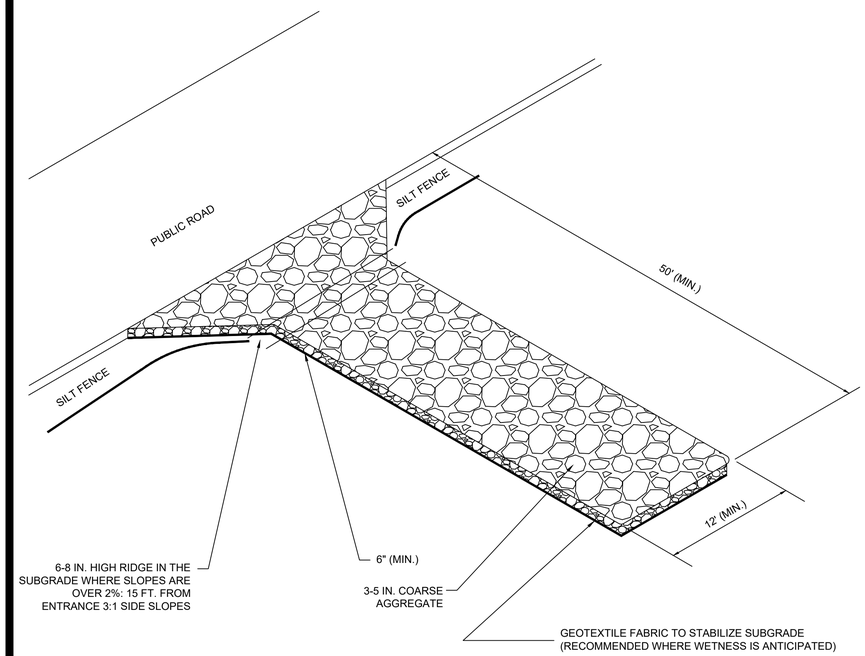
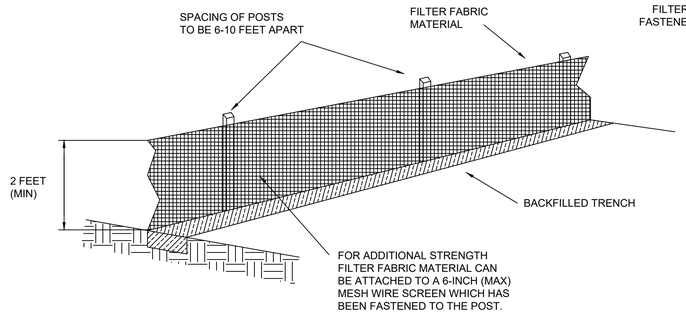
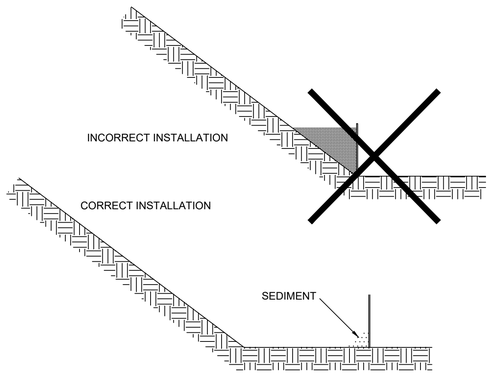
EROSION & SEDIMENT CONTROL NOTES

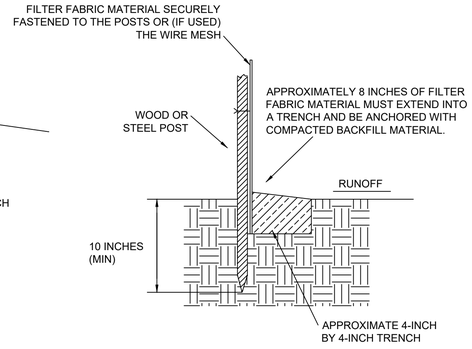
SHEET D-500



STONE STABILIZED PAD "CONSTRUCTION ENTRANCE"







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 ¼ ACRE PER 100 FEET OF SILT FENCE. FILTER FENCE SHALL HAVE DOWNSLOPED ENDS TAPERED TO A J-HOOK ON A DOWNHILL SLOPE.

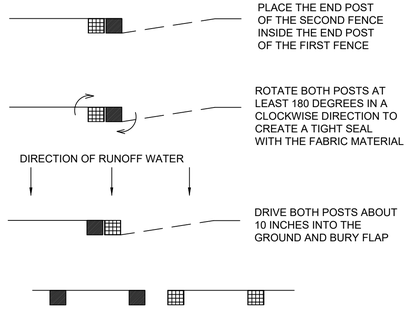
4) THE MAXIMUM SLOPE LENGTH BEHIND THE SILT FENCE IS 100 FEET; AND THE MAXIMUM GRADIENT BEHIND THE SILT FENCE IS 50% (2:1).

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.



ATTACHING TWO SILT FENCES

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 DENUDED 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:

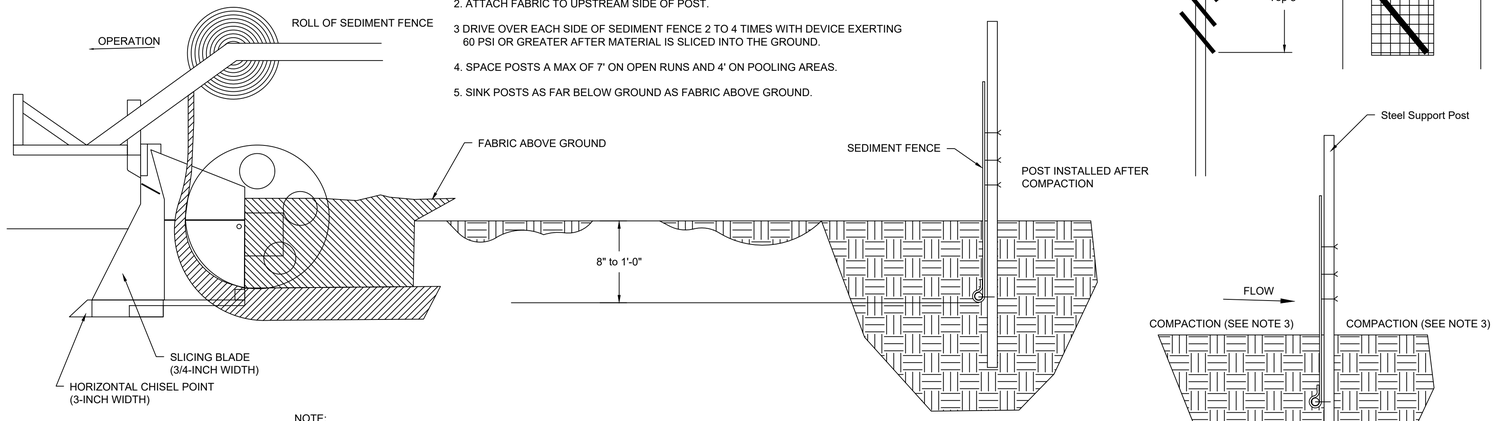
1. LIMIT PONDING HEIGHT TO 24"

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.

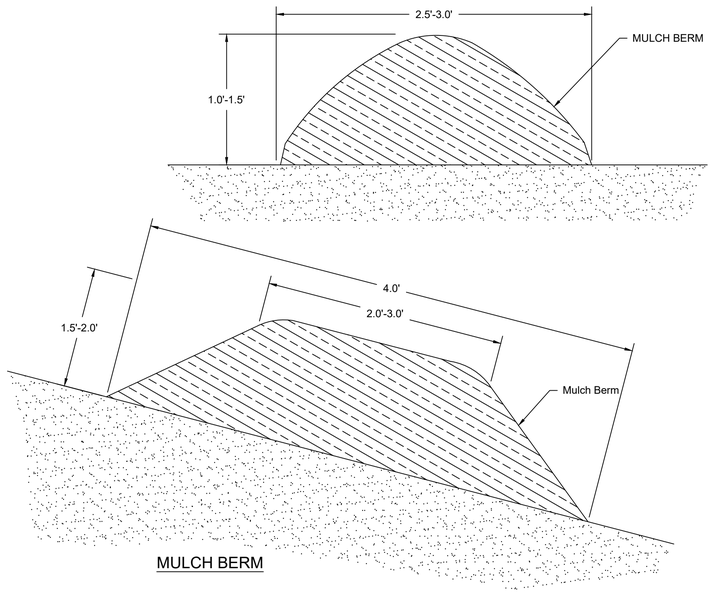
5. SINK POSTS AS FAR BELOW GROUND AS FABRIC ABOVE GROUND.



NOTE:

VIBRATORY PLOW IS NOT ACCEPTABLE BECAUSE OF HORIZONTAL COMPACTION

SILT FENCE INSTALLATION SLICING METHOD



MULCH BERM

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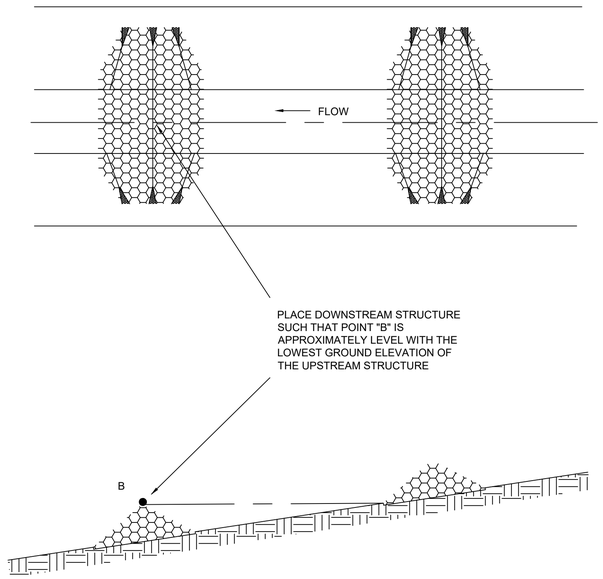
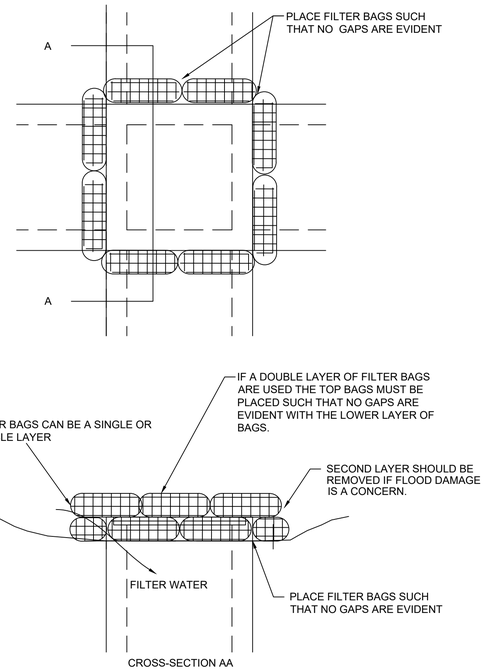
EROSION AND SEDIMENT CONTROL 1

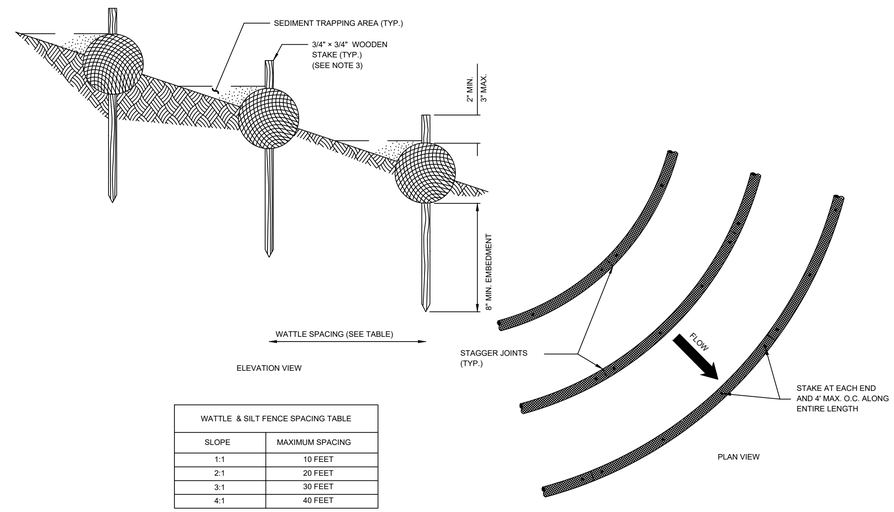
SHEET D-501



ROCK DITCH CHECK



INLET PROTECTION FOR AREA INLET

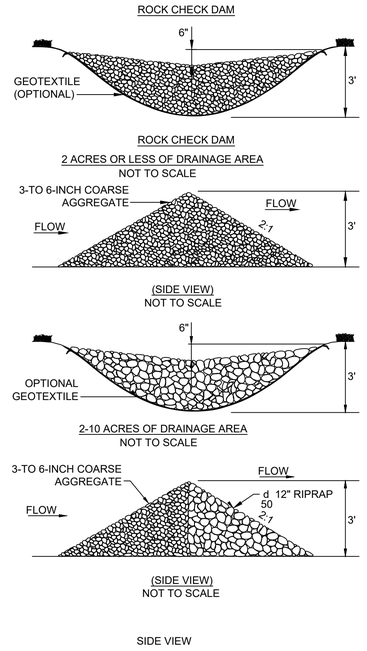


WATTLE & SILT FENCE SPACING TABLE	
SLOPE	MAXIMUM SPACING
1:1	10 FEET
2:1	20 FEET
3:1	30 FEET
4:1	40 FEET

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. ABUT 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.

WATTLE & SILT FENCE INSTALATION ON SLOPE

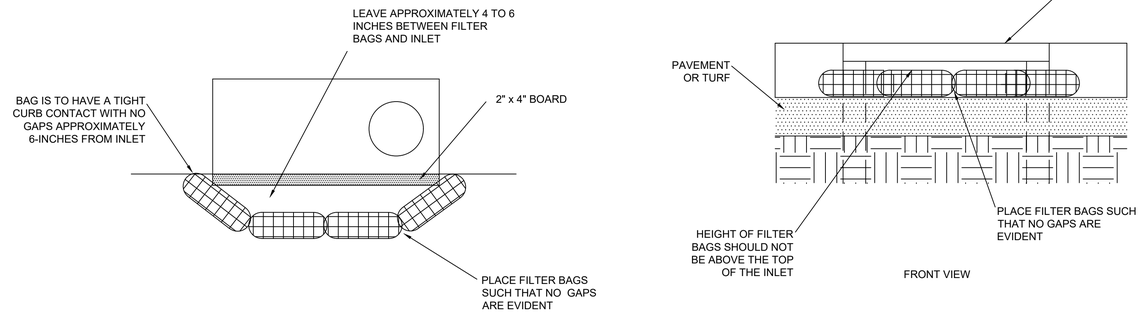


NOTES:
1. WHEN USED TO CONTROL SEDIMENT FROM STEEP SLOPES, ROCK CHECKS SHOULD BE PLACED AWAY FROM THE TOE OF A SLOPE FOR INCREASED HOLDING CAPACITY.

2. WHEN SEDIMENT FILLS THE AREA BEHIND THE S1LT FENCE TO 1/2 THE HEIGHT OF THE ROCK CHECK, THE CONTRACTOR SHALL REMOVE THE SEDIMENT.

NOTES:

1. COMMERCIALLY MANUFACTURED MESH FILTER BAGS CONTAINING PERMEABLE MATERIAL TO SLOW AND FILTER STORMWATER RUNOFF, WITH A MINIMUM FLOW RATE OF 35 GPM/SF.
2. FILLER SHALL CONSIST OF PERVIOUS NON-BIODEGRADABLE MATERIAL HAVING A MINIMUM UNIT WEIGHT OF 4 OUNCES PER SQUARE YARD. THE MULLEN BURT STRENGTH SHALL EXCEED 300 POUNDS PER SQUARE INCH PER ASTM D3786 AND SHALL HAVE ULTRAVIOLET STABILITY EXCEEDING 70% PER ASTM D4355.
3. SHALL BE LOCATED AS SHOWN ON THE PLANS AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
4. REMOVE ANY VISIBLE ACCUMULATION OF SEDIMENT. REPLACE AS NECESSARY TO MAINTAIN FUNCTION AND INTEGRITY OF INSTALLATION.



INLET PROTECTION FOR CURB INLET

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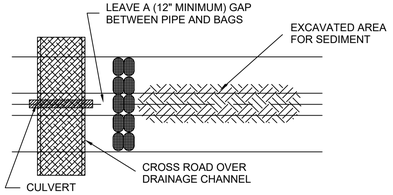
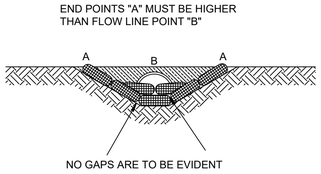
EROSION AND SEDIMENT CONTROL 2

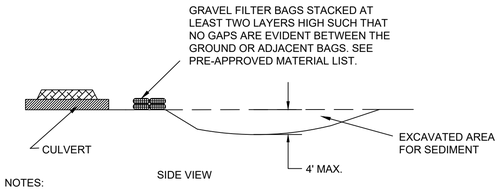
SHEET D-502



TOP VIEW



FRONT VIEW



SIDE VIEW

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.

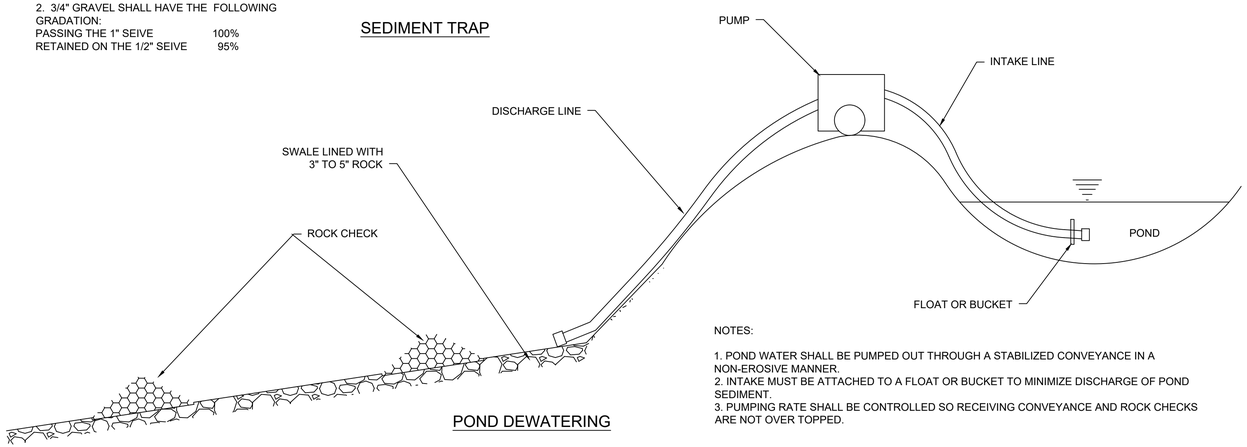
2. 3/4" GRAVEL SHALL HAVE THE FOLLOWING GRADATION:

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.

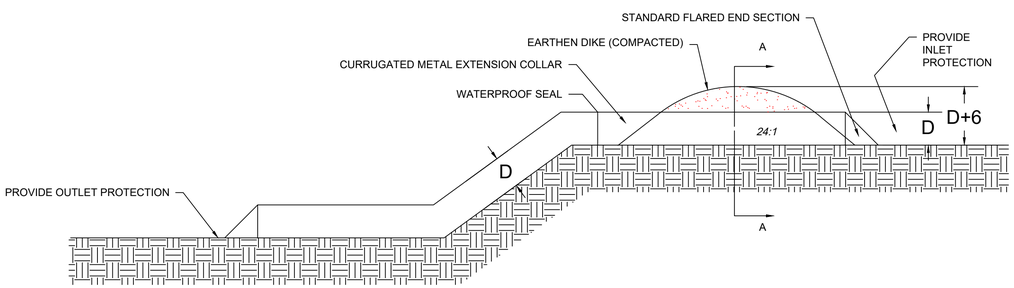
SEDIMENT TRAP



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.

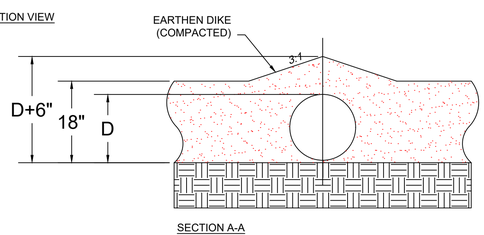
POND DEWATERING



SECTION VIEW

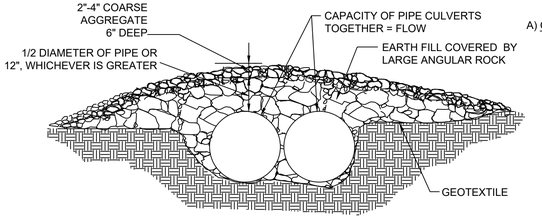
TEMPORARY SLOPE DRAIN GENERAL NOTES:

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.

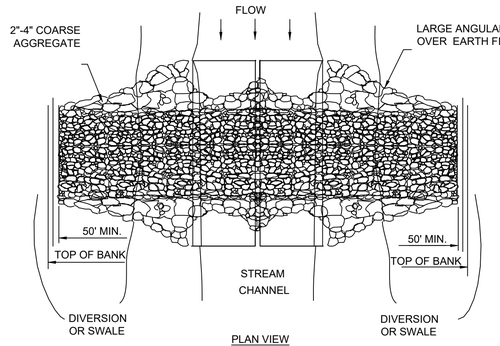


SECTION A-A

TEMPORARY SLOPE DRAIN



ELEVATION
NOT TO SCALE



PLAN VIEW
NOT TO SCALE

TEMPORARY STREAM CROSSING

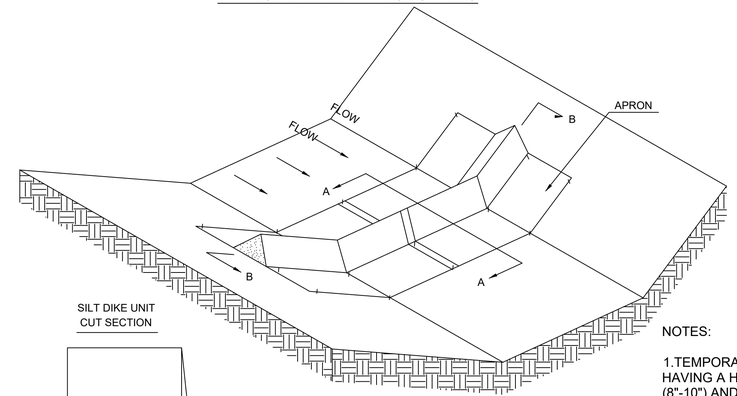
TEMPORARY CULVERT CROSSING NOTE:

A) GENERAL NOTES:

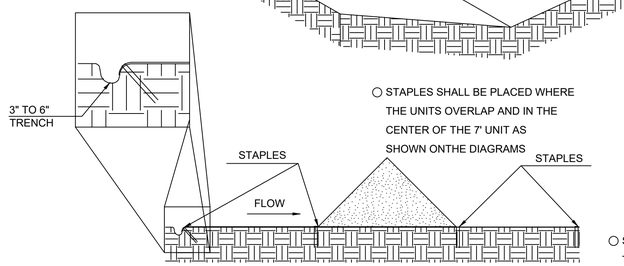
1. CLEARING AND EXCAVATION OF THE STREAM BED AND BANKS SHALL BE KEPT TO A MINIMUM.
2. THE INVERT ELEVATION OF THE CULVERT SHALL BE INSTALLED ON THE NATURAL STREAMBED GRADE TO MINIMIZE INTERFERENCE WITH FISH MIGRATION.
3. GEOTEXTILE SHALL BE PLACED ON THE STREAMBED AND STREAMBANKS PRIOR TO PLACEMENT OF 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 PER DETAIL D-504 (RESTORATION OF TEMPORARY STREAM CROSSING.

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.

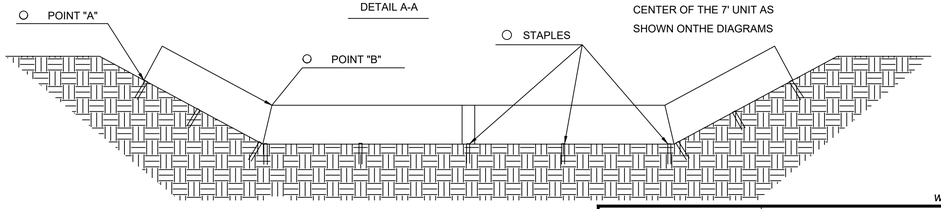


SILT DIKE UNIT
CUT SECTION



○ STAPLES SHALL BE PLACED WHERE THE UNITS OVERLAP AND IN THE CENTER OF THE 7' UNIT AS SHOWN ONTHE DIAGRAMS

DETAIL A-A



○ STAPLES SHALL BE PLACED WHERE THE UNITS OVERLAP AND IN THE CENTER OF THE 7' UNIT AS SHOWN ONTHE DIAGRAMS

DETAIL B-B
DIKE SECTION

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

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").

3. TRIANGULAR SILT DIKES SHALL ONLY BE USED TO AID IN ESTABLISHMENT OF PERMANENT VEGETATION. THEY SHALL NOT BE USED WHEN CONSTRUCTION IS ACTIVE.

INSTALLATION OF TRIANGULAR SILT DIKE

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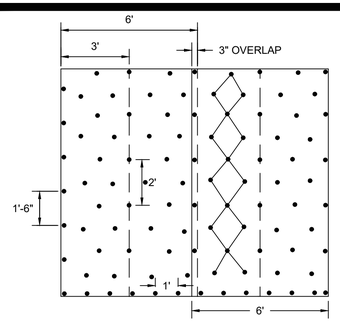
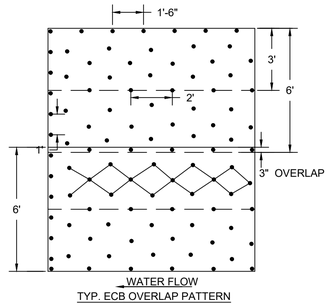
EROSION & SEDIMENT CONTROL 3

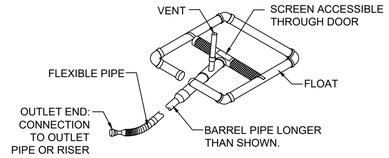
SHEET D-503

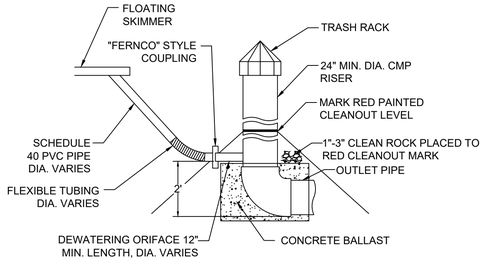


TYP. TRM OVERLAP PATTERN

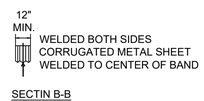


TYP. ECB OVERLAP PATTERN





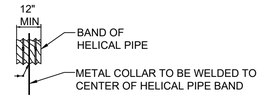
FLOATING SKIMMER DETAIL



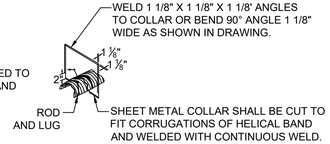
SECTIN B-B

NOTE:

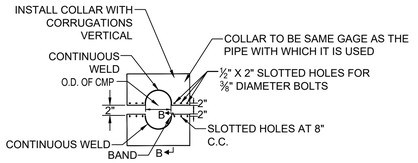
SIZE AND SPACING OF SLOTTED OPENINGS SHALL BE THE SAME AS SHOWN FOR CM COLLAR
USE RODS AND LUGS TO CLAMP BANDS SECURELY TO PIPE.



PARTIAL ELEVATION



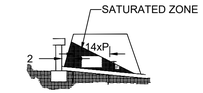
ISOMETRIC VIEW



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) ½" DIAMETER RODS WITH STANDARD TANK LUGS FOR CONNECTING THE COLLARS TO THE PIPE.

CORRUGATED METAL ANTI-SEEPAGE COLLAR DETAIL



ANTI-SEEPAGE COLLAR

NOTES:

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

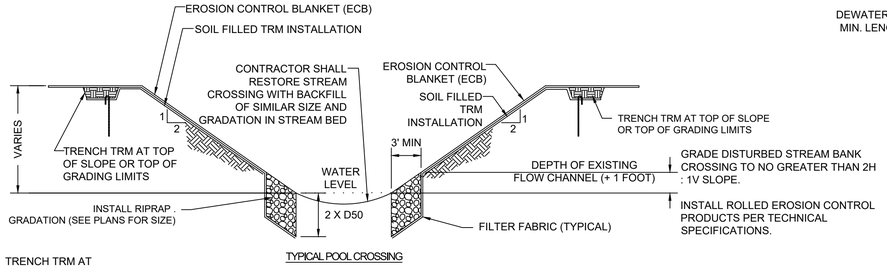
NOTE:

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.

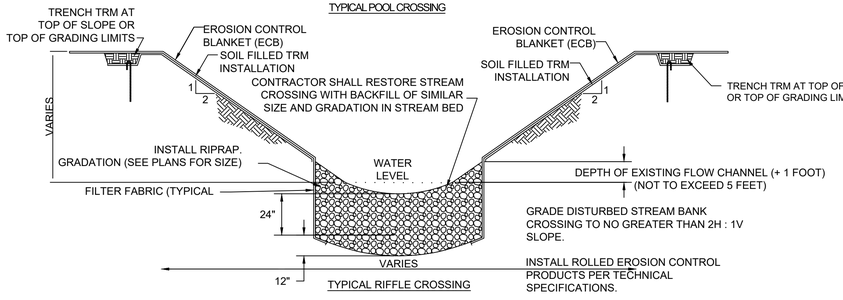
NOTES:

TWO OTHER TYPES OF ANTI-SEEP COLLARS ARE:

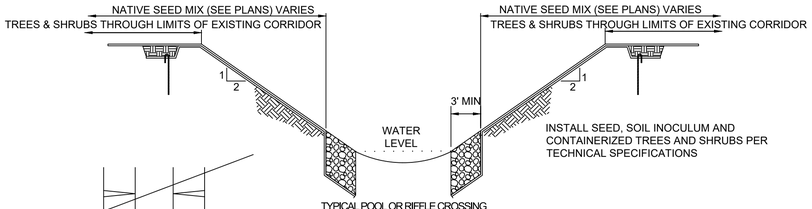
1. CORRUGATED METAL, SIMILAR TO ABOVE EXCEPT SHOP WELDED TO A 4 FT. SECTION OF THE PIPE AND CONNECTED TO THE PIPE WITH CONNECTING BANDS.
2. CONCRETE, 6 INCHES THICK FORMED AROUND THE PIPE WITH #3 REBAR SPACED 15".



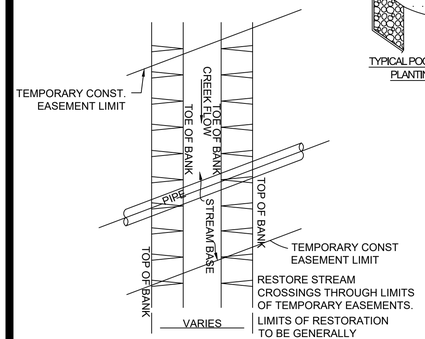
TYPICAL POOL CROSSING



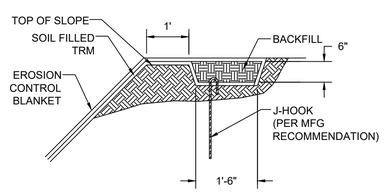
TYPICAL RIFFLE CROSSING



TYPICAL POOL OR RIFFLE CROSSING
PLANTING REQUIREMENTS

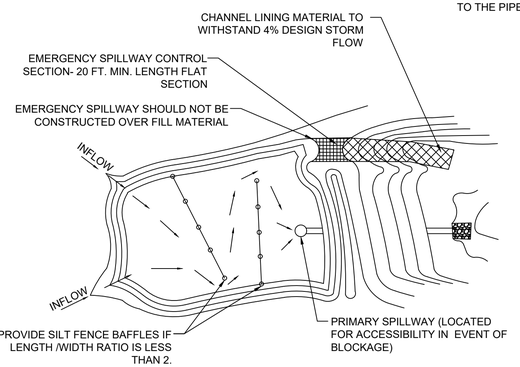


PLAN

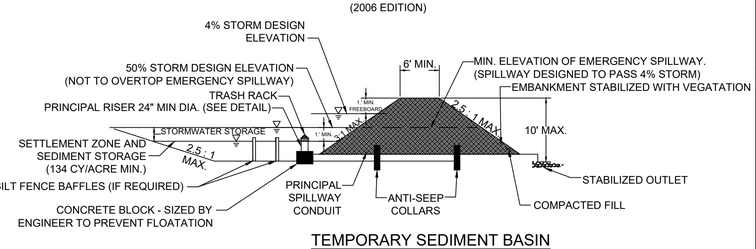


TYP. TRM TOP OF BANK ANCHORING SYSTEM

RESTORATION OF TEMPORARY STREAM CROSSING



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 RIPRAP 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".

Basin Elev (ft)	Surface Area (ft2)	Incremental Volume (ft3)	Cumulative Volume (ft3)	Notes
		---	---	Bottom elevation

TEMPORARY SEDIMENT BASIN

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	Include analysis and supporting documentation/assumptions
4% (25 yr) Design Flow:				cfs	Include analysis and supporting documentation/assumptions
Pond Data:					
Total Required Volume				cu yd	134 cy/acre minimum
Bottom Elevation:				Ft	Match grading plan
Sediment Cleanout Elevation:				Ft	Elevation equal to 20% of total required volume
Top of Riser (Principal Overflow) Elev.				Ft	At or above elevation equal to total required volume
Auxiliary Spillway Elev:				Ft	1.0 ft min above 2 yr WSE
Top of Dam Elev:				Ft	1.0 ft min above 25 yr WSE
Basin Shape Data:					
A = Area at 2 yr WSE				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	24-inch min. Size for 2 year flow minimum
Barrel pipe dia				in	24-inch min. Size for 2 year flow minimum
Riser Pipe Base Size				CY	Size to prevent flotation. 1.25 safety factor required.
Skimmer size				in	Designer shall provide calculations to dewater in 48 to 72 hours
Skimmer perforation sizes				in	
Emergency Spillway Data:					Include analysis and supporting documentation/assumptions
Design Depth in spillway:				ft	Assume clogged principal overflow
Design velocity in spillway				ft/sec	
Lining Material:				N/A	

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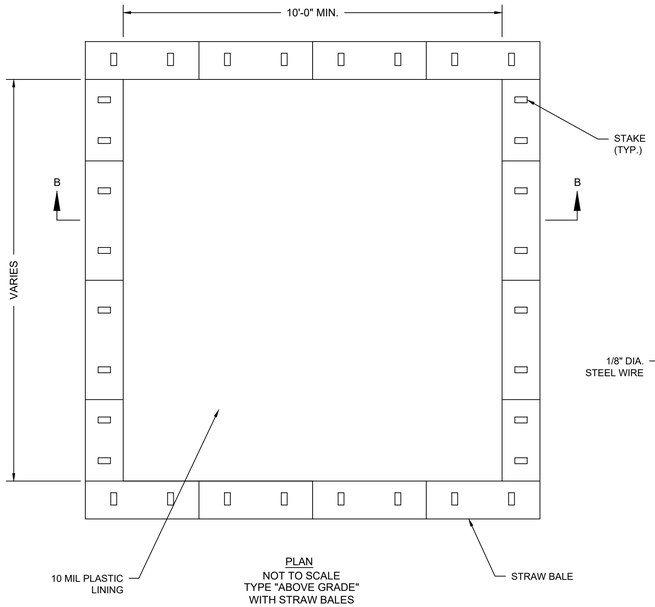
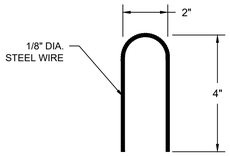
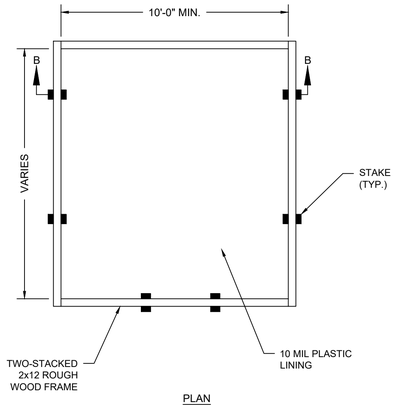
EROSION & SEDIMENT CONTROL 4 — SHEET D-504



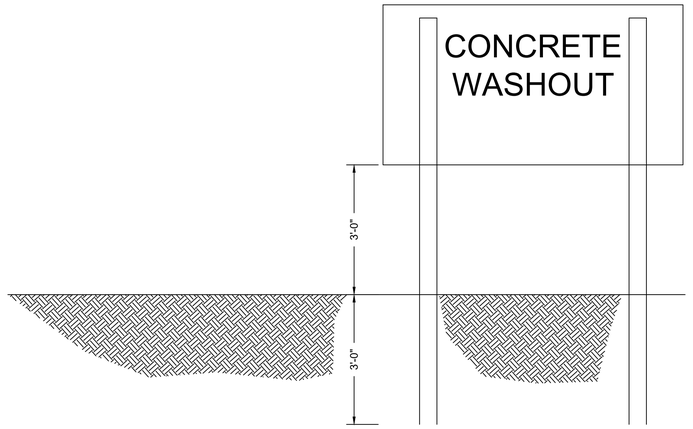
PLAN
NOT TO SCALE
TYPE "ABOVE GRADE"
WITH STRAW BALES



STAPLE DETAIL

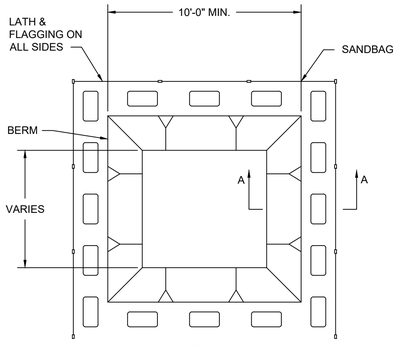


PLAN
NOT TO SCALE
TYPE "ABOVE GRADE"

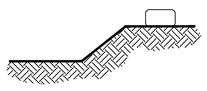


CONCRETE WASHOUT SIGN DETAIL

1. 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.
2. A SIGN SHOULD BE INSTALLED ADJACENT TO EACH WASHOUT FACILITY TO INFORM CONCRETE EQUIPMENT OPERATORS TO UTILIZE THE PROPER FACILITIES.
3. TEMPORARY CONCRETE WASHOUT FACILITIES SHOULD BE CONSTRUCE4D 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.
4. 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.
5. WASHOUT OF CONCRETE TRUCKS SHOULD BE PERFORMED IN DESIGNATED AREAS ONLY.
6. ONLY CONCRETE FROM MIXER TRUCK CHUTES SHOULD B WASHED INTO CONCRETE WASH OUT.
7. CONCRETE WASHOUT FROM CONCRETE PUMPER BINS CAN BE WASHED INTO CONCRETE PUMPER TRUCKS AND DISCHARGED INTO DESIGNATED WASHOUT AREA OR PROPERLY DISPOSED OF OFFSITE.
8. 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.
9. TEMPORARY CONCRETE WASHOUT FACIITY (TYPE ABOVE GRADE).
   a. 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.
   b. STRAW BALES, WOOD STAKES, AND SANDBAG MATERIALS SHOULD CONFORM TO THE PROVISIONS IN THE EROSION AND SEDIMENT CONTROL PLAN.
   c. PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 ML POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL.
10. TEMPORARY CONCRETE WASHOUT FACILITY (TYPE BELOW GRADE).
    a. TEMPORARY WASHOUT FACILITY (TYPE BELOW GRADE) SHOULD BE CONSTRUCTED AS SHOWN IN THE DETAILS O 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.
    b. LATH AND FLAGGING SHOULD BE COMMERCIAL TYPE.

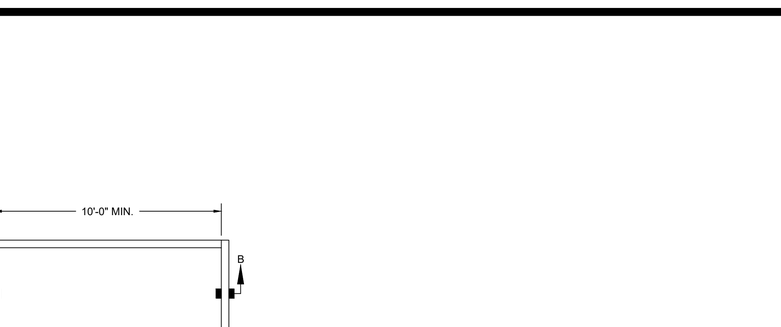


PLAN
NOT TO SCALE
TYPE "BELOW GRADE"

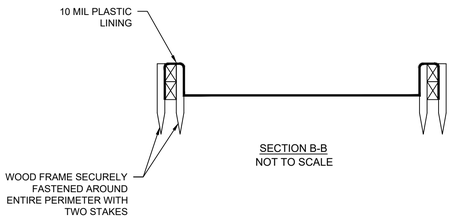


SECTION A-A
NOT TO SCALE

CONCRETE WASHOUT DETAIL A



SECTION B-B
NOT TO SCALE



SECTION B-B
NOT TO SCALE

CONCRETE WASHOUT DETAIL B

NOTES:

1. ACTUAL LAYOUT DETERMINED IN FIELD.
2. THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30 FT. OF THE TEMPORARY CONCRETE WASHOUT FACILITY.

REMOVAL OF TEMPORARY CONCRETE WASHOUT FACILITIES

1. 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.
2. 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

1. 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.
2. 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.
3. 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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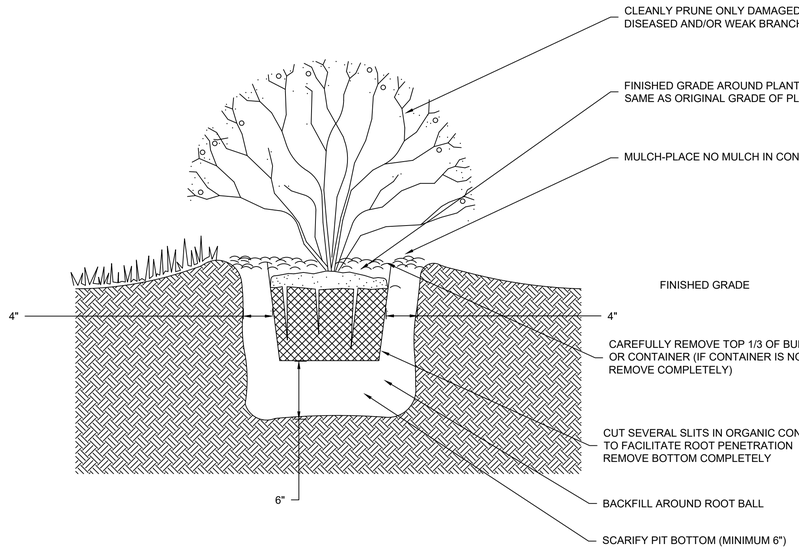
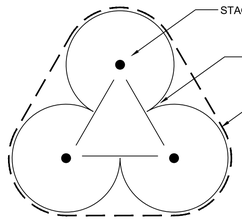
EROSION & SEDIMENT CONTROL 5 | *SHEET* D-505



NOTES:

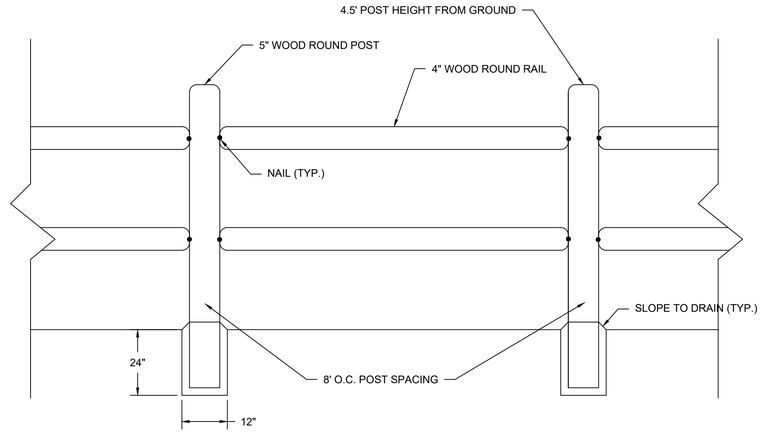
1. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
2. DO NOT SCALE DRAWINGS.

SHRUB PLANTING DETAIL

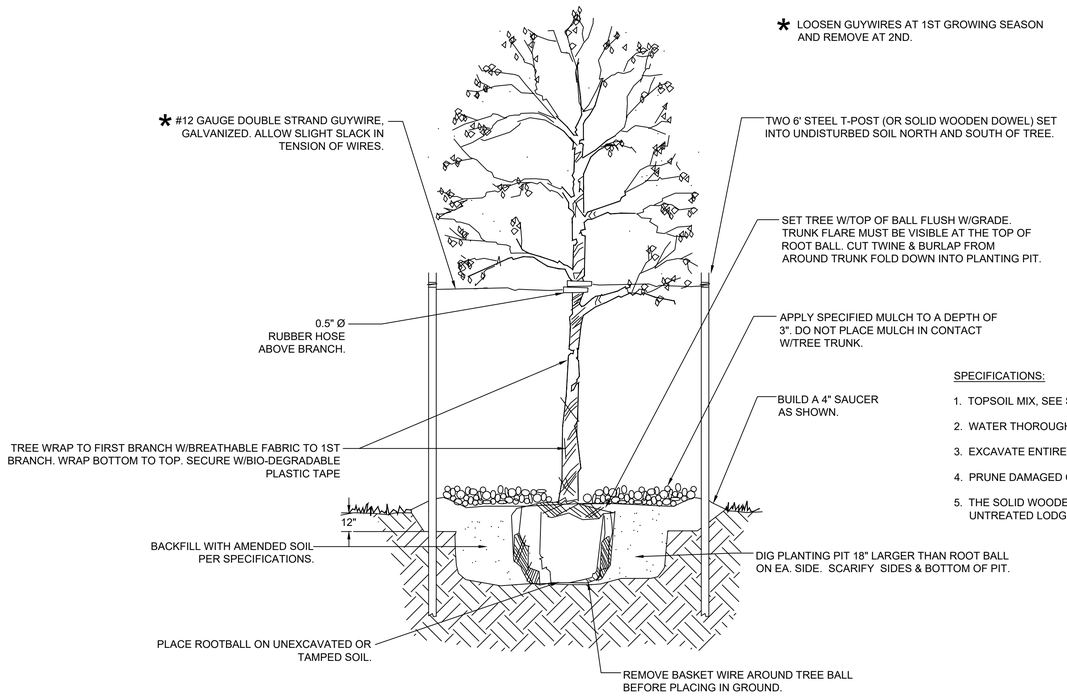


SHRUB BED

1. WOOD ROUND RAIL FENCING SHALL BE AS MANUFACTURED BY RICH MOUNTAIN RUSTIC FENCING, OR PRE-APPROVED EQUIVALENT.
2. FENCING ALIGNMENT SHALL BE MARKED IN THE FIELD AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
3. ALL FENCE POSTS SHALL HAVE 12" DIAMETER x 24" DEEP, NON-REINFORCED CONCRETE FOOTINGS.



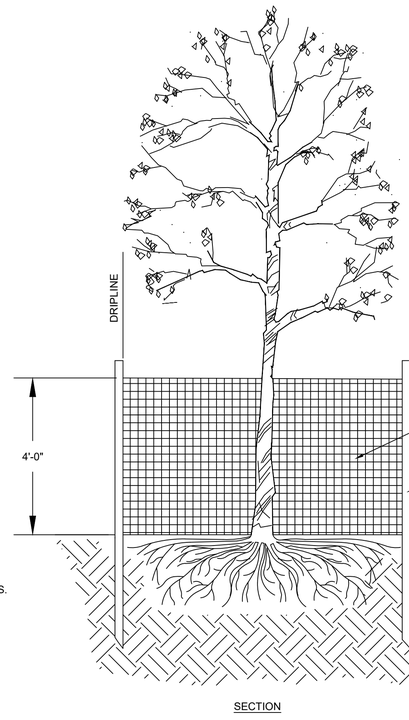
WOOD ROUND RAIL FENCING DETAIL



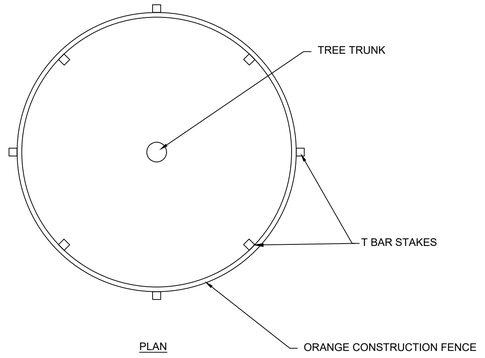
SPECIFICATIONS:

1. TOPSOIL MIX, SEE SPECIFICATION.
2. WATER THOROUGHLY AFTER INSTALLATION.
3. EXCAVATE ENTIRE SHRUB BED AS SHOWN ON PROJECT DRAWINGS.
4. PRUNE DAMAGED OR DEAD WOOD PRIOR TO PLANTING.
5. THE SOLID WOODEN DOWELS SHALL CONSIST OF 2"x6" UNTREATED LODGE POLE PINE STAKES.

TREE PLANTING



SECTION



PLAN

TREE PRESERVATION

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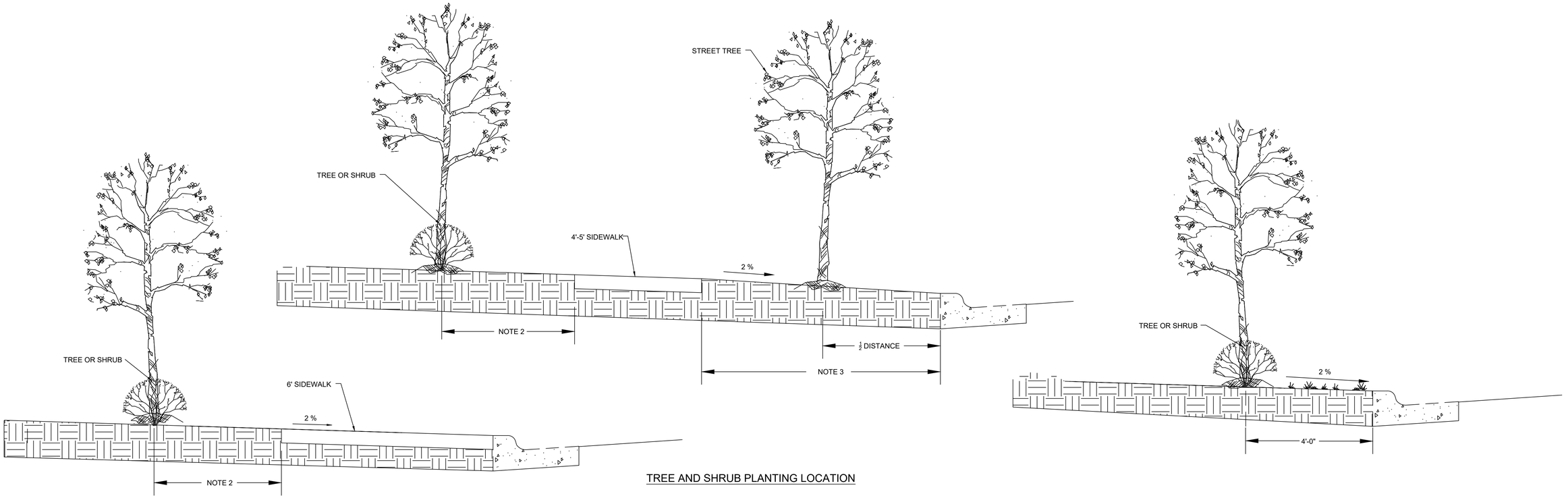
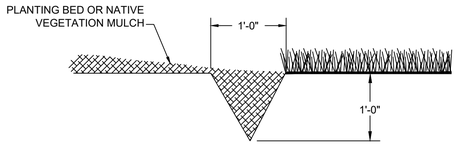
LANDSCAPING & PLANTINGS 1

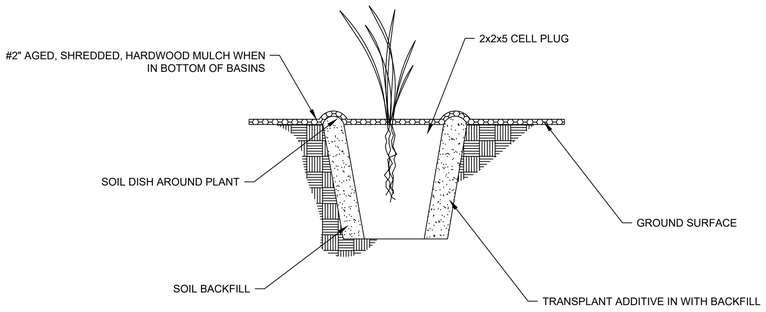
SHEET D-600



TREE AND SHRUB PLANTING LOCATION

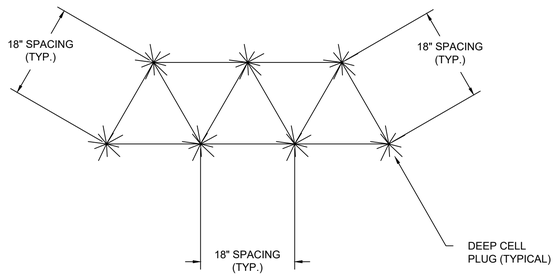


TRENCH EDGE



DEEP CELL-PLUG PLANTING DETAILS

LANDSCAPE MATERIAL



TREE AND SHRUB PLANTING NOTES

1. TREES AND SHRUBS SHALL NOT BE PLANTED IN UTILITY EASEMENTS.
2. TREES AND SHRUBS SHALL BE PLANTED 2' TO 4' FROM THE EDGE OF THE SIDEWALK/TRAIL. THE DISTANCE IS DEPENDANT ON ROOT ZONE AND CANOPY.
3. PARKWAY DISTANCES:
   - PRIMARY ARTERIAL - 18'
   - SECONDARY ARTERIAL - 16'
   - COLLECTOR - 6'
   - COMMERCIAL - 6'
   - INDUSTRIAL - 6'
   - RESIDENTIAL - 6'

NATIVE SEEDING NOTES

1. No native seeding will be allowed during the period from June 15th through October 31st.
2. Seed shall be installed to a depth of ¼ inch. If a seed drill is used, rows shall be 3 to 5 inches apart. When a seed drill is not used, seed must be raked in to a depth of 1/8 inch.
3. All native seeding requires a cover crop as follows: Spring plantings; use oats at a rate of 15lb/acre. Fall plantings; use winter wheat at a rate of 15lb/acre.
4. All native seeding areas steeper that 6:1 shall be blanketed with double-sided, biodegradable straw mat. All other areas shall be covered with straw and shall be crimped in.
5. All native seed shall be watered at a rate of 1" per week for the first growing season.
6. An acceptable native grass stand will contain no less than five (5) healthy mature or developing plants per square foot.

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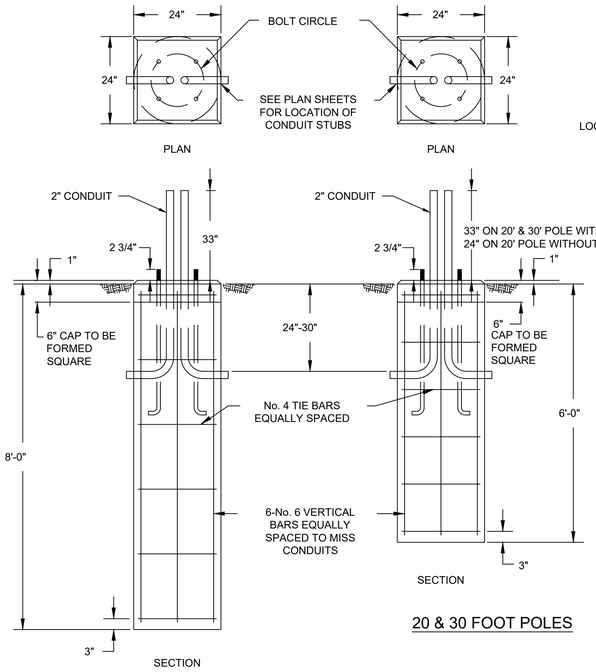
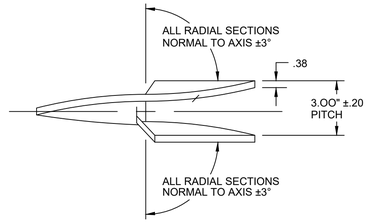
LANDSCAPING & PLANTINGS 2

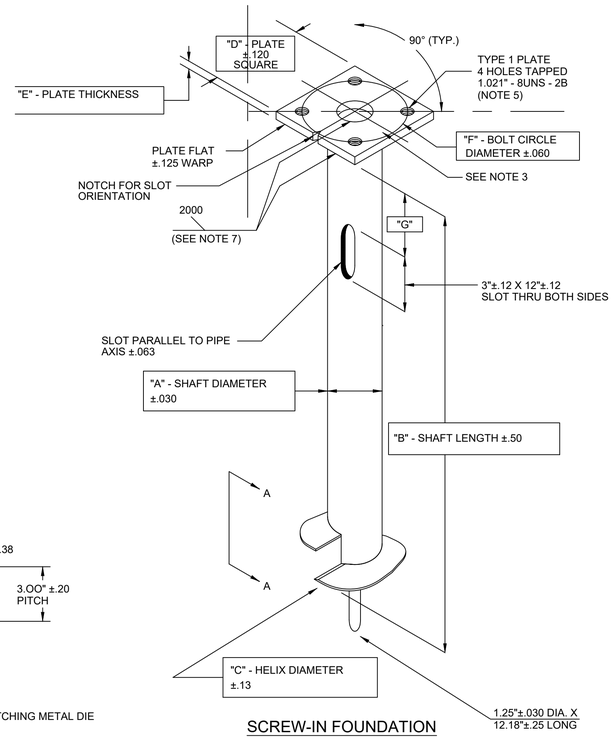
SHEET D-601



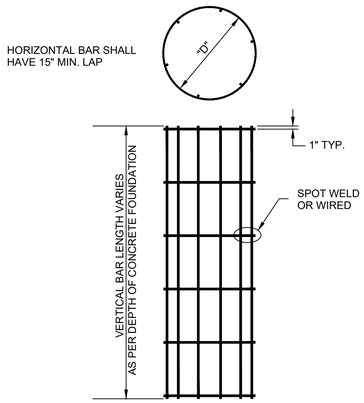
CONCRETE FOUNDATION DETAILS



THREADED STUD



SCREW-IN FOUNDATION



REBAR CAGE DETAIL

REBAR SCHEDULE				
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/40-A-8-8	20,000	8"	60"	14"	14.5"	1.0"	11.5"	18"
3	40'	TWIN	20,000	8"	60"	14"	15"	1.25"	14.5"	18"

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	
TYPE A LUMINAIRE gray (natural)		EACH	
TYPE A LUMINAIRE dark bronze		EACH	
TYPE C LUMINAIRE gray (natural)		EACH	
TYPE C LUMINAIRE dark bronze		EACH	
TYPE D LUMINAIRE gray (natural)		EACH	
TYPE D LUMINAIRE dark bronze		EACH	
TYPE E LUMINAIRE gray (natural)		EACH	
TYPE E LUMINAIRE dark bronze		EACH	
TYPE F LUMINAIRE gray (natural)		EACH	
TYPE F LUMINAIRE dark bronze		EACH	
TYPE Z LUMINAIRE gray (natural)		EACH	
TYPE Z LUMINAIRE dark bronze		EACH	
PHILIPS 55W LED LAMP (for shoeboxes)		EACH	
PHILIPS 40W LED LAMP (for post-tops)		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.	
3" CONDUIT		LN. FT.	
3-1c No. 4 TYPE USE DISTRIBUTION CABLE		LN. FT.	
1-2c No. 14 POLE & BRACKET CABLE		LN. FT.	
CONNECTOR KIT, FUSED		EACH	
CONNECTOR KIT, UNFUSED		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	
ANTI-THEFT DEVICE		EACH	
LUMINAIRE SMART CONTROL CONNECTOR NODE		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.

** PLEASE SEE PRE-APPROVED LIST FOR A LIST OF APPROVED MATERIALS.

NOTES:

1. FINISH: HOT DIP GALVANIZE PER ASTM-A153 (LATEST REVISION). UNLESS OTHERWISE SPECIFIED IN THE PLANS.
2. BASEPLATE TO BE PERPENDICULAR TO SHAFT AXIS (±1) AND HOLE AND CONCENTRIC (±.188 I.D. FIM) TO SHAFT AXIS
3. 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.
4. PILOT POINT AND SHAFT AXES TO BE CONCENTRIC (±.125 FIM) AND IN LINE (±2')
5. 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.
6. PREHEAT (ROOM TEMPERATURE 70°F), TUMBLEBLAST, HANDGRIND, AND CLEAN BASEPLATE, HELIX, AND CORE ON ALL WELD AREAS.
7. FLAMECUT IRREGULARITIES PERMISSIBLE:

   (1) VALLEYS NOT TO EXCEED 3/32 IN. BELOW NOMINAL SURFACE LEVEL.
   (2) PEAKS OR POSITIVE IRREGULARITIES NOT TO EXCEED 1/32 IN. ABOVE NOMINAL SURFACE LEVEL OR INTERSECTIONS OF NOMINAL SURFACES.
8. MANUFACTURER TO HAVE IN EFFECT INDUSTRY RECOGNIZED WRITTEN QUALITY CONTROL FOR ALL MATERIALS AND MANUFACTURING PROCESSES.
9. 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
10. ALL 30' AND 40' ALUMINUM LIGHT POLES SHALL BE FURNISHED WITH BREAKAWAY BASES.
11. 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.
12. FLAME CUT NOTCH OR PROJECTION WILL BE ON BASE PLATE TO INDICATE SLOT ORIENTATION.
13. 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.
14. 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.
15. ALL CONDUITS AND ANCHOR BOLTS FOR CONTROL PADS AND POLE FOUNDATIONS 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.
16. ALL CONCRETE POLE BASES SHALL BE PLACED IN TWO SEPARATE PLACEMENTS. THE FINAL 6 INCHES SHALL BE PLACED AFTER THE POLE IS SET AND FINAL ADJUSTMENTS HAVE BEEN MADE.

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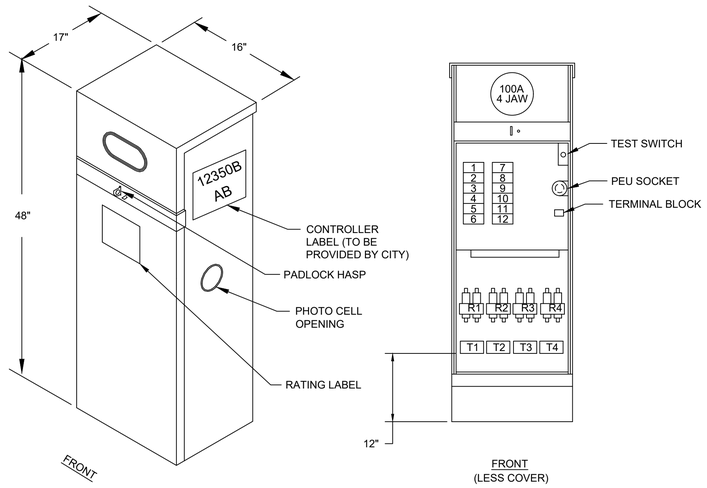
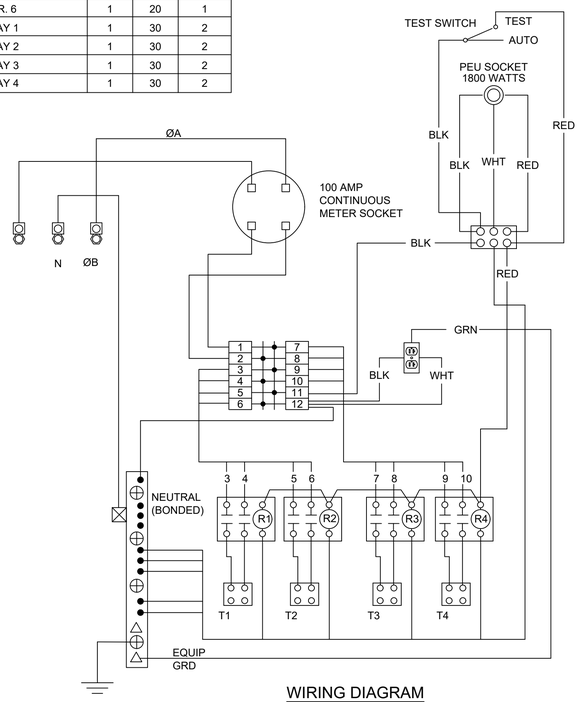
QUANTITIES AND POLE FOUNDATIONS

SHEET D-700

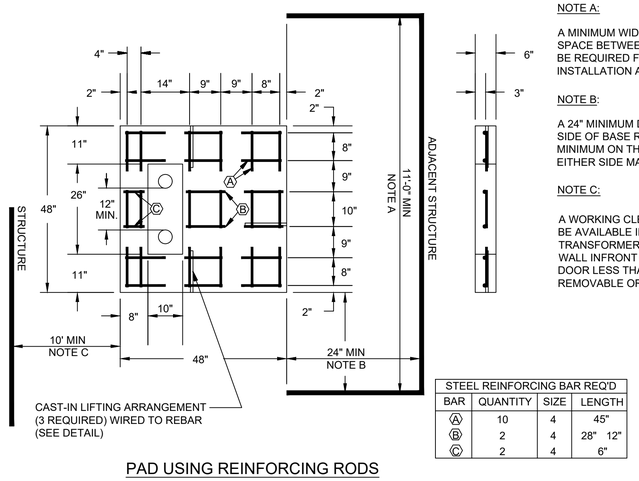


PAD-MOUNTED CONTROL CENTER

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



WIRING DIAGRAM



PAD USING REINFORCING RODS

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

NOTE A:

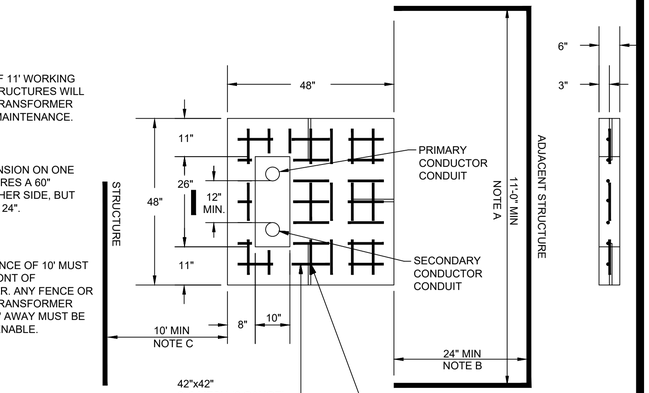
A MINIMUM WIDTH OF 11' WORKING SPACE BETWEEN STRUCTURES WILL BE REQUIRED FOR TRANSFORMER INSTALLATION AND MAINTENANCE.

NOTE B:

A 24" MINIMUM DIMENSION ON ONE SIDE OF BASE REQUIRES A 60" MINIMUM ON THE OTHER SIDE, BUT EITHER SIDE MAY BE 24".

NOTE C:

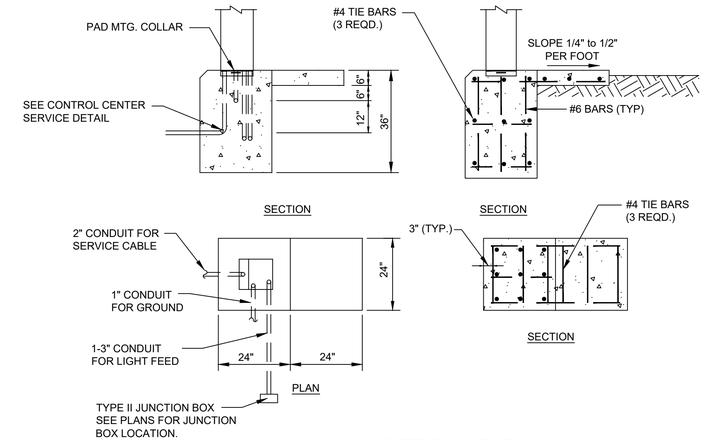
A WORKING CLEARANCE OF 10' MUST BE AVAILABLE IN FRONT OF TRANSFORMER DOOR. ANY FENCE OR WALL INFRONT OF TRANSFORMER DOOR LESS THAN 10' AWAY MUST BE REMOVABLE OR OPENABLE.



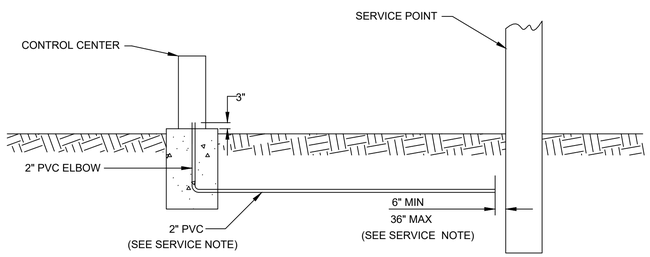
PAD USING REINFORCING MESH

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 4500 PSI AT 28 DAYS. 3/4" MAXIMUM ROCK SIZE.

TRANSFORMER PAD



CONCRETE FOUNDATION FOR CONTROL CENTER



CONTROL CENTER SERVICE

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.

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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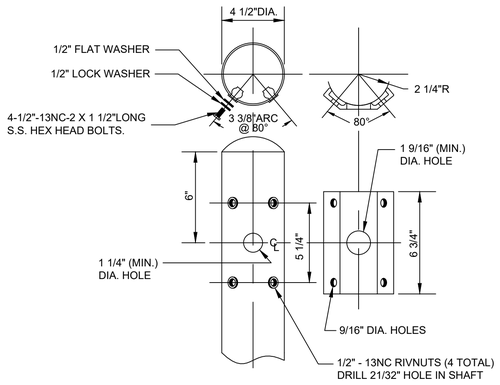
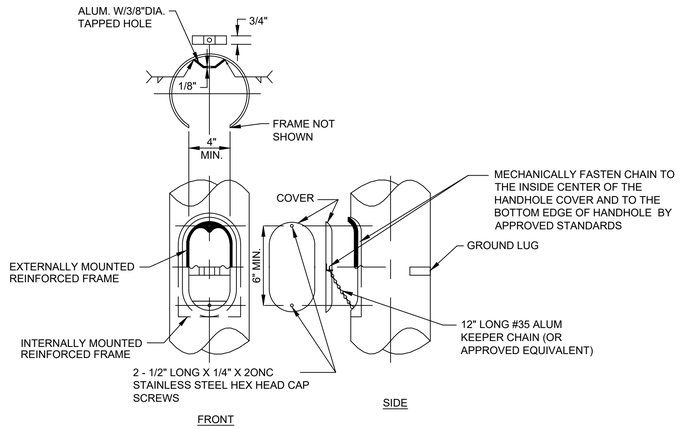
CONTROL CENTER & CONNECTORS

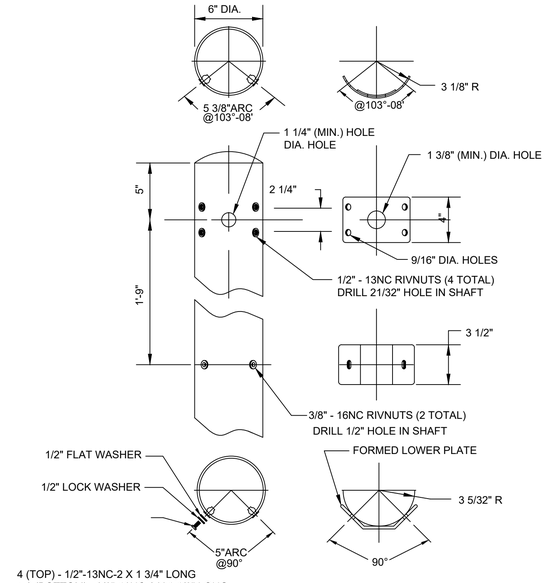
SHEET D-701



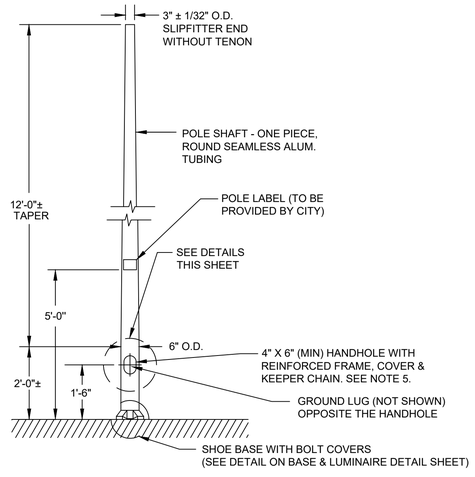
TYPE A - SINGLE MEMBER ARM



HANDHOLE

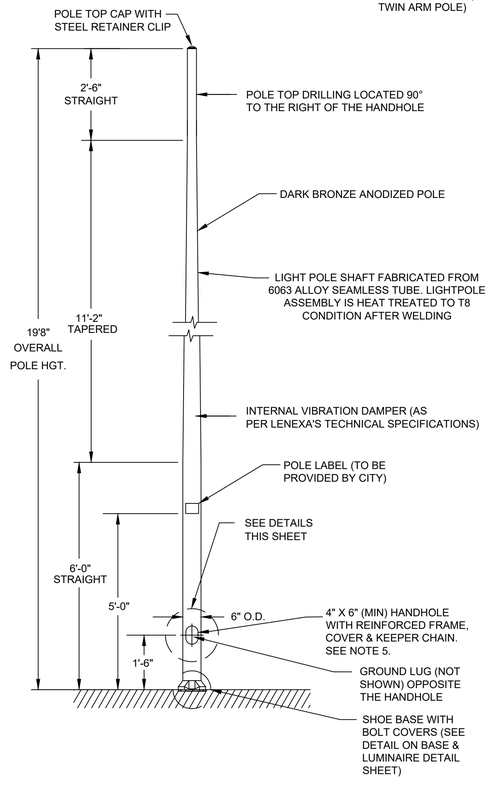


TYPE B - TRUSS ARM



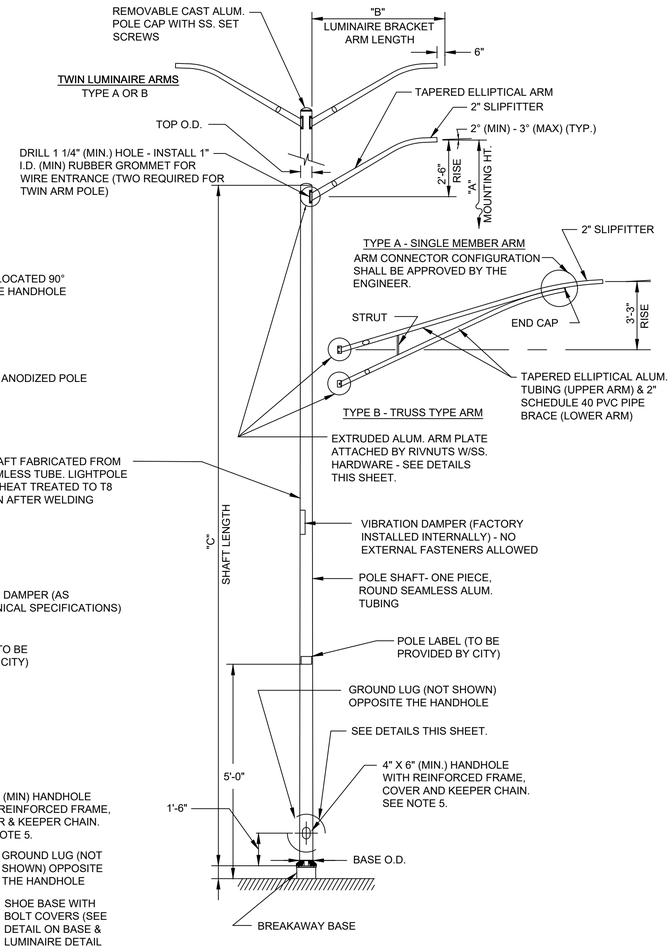
14' POLE ELEVATION

(SEE TABLE 1 FOR DESIGNATIONS & DIMENSIONS)



20' POLE ELEVATION

(SEE TABLE 1 FOR DESIGNATIONS & DIMENSIONS)



30' & 40' POLE ELEVATION

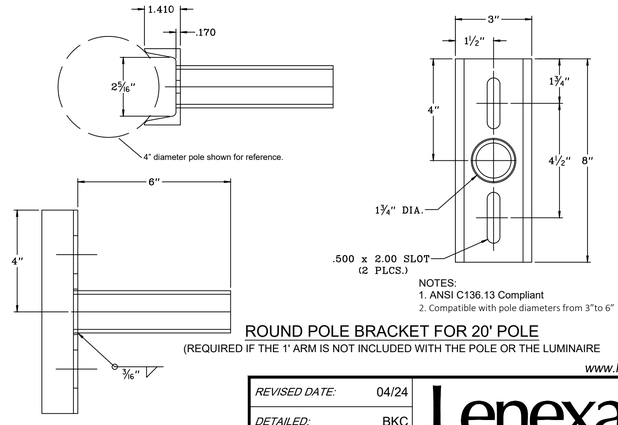
(SEE TABLE 1 FOR DESIGNATIONS & DIMENSIONS)

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

Designation	Mounting Height (A)	Luminaire Arm(s)			Pole Shaft				Shoe Base		Anchor Bolt			Breakaway Base
		Length (B)		Type	Base O.D.	Top O.D.	Min. Wall Thickness	Shaft Length (C)	Square (S)	Bolt Circle (BC)	Diameter	Length	Hook	Type
		Arm 1	Arm 2											
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	-	A	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	A	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	-	A	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:

1. THE ALUMINUM LIGHTING STANDARD INCLUDING ANCHORAGE WITH LUMINAIRE PROPERLY INSTALLED SHALL BE IN ACCORDANCE WITH THE 2013 AMERICAN ASSOCIATION OF HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) FOR 90 MPH WIND AND A LUMINAIRE SIZE OF 1.3 SQ. FT. MIN. EFFECTIVE PROJECTED AREA WEIGHING 55 LB. MIN.
2. 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.
3. ANCHOR BOLTS/THREADED STUDS SHALL PROJECT ABOVE THE FOUNDATION AS PER MANUFACTURER'S RECOMMENDED PRACTICES - 2.5" TO 3".
4. 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
5. THE HANDHOLE SHALL BE ORIENTED 180 DEGREES FROM THE LUMINAIRE ARM.
6. DISTRIBUTION CABLE SHALL BE COLOR-CODED BLACK/RED/WHITE.



NOTES:
1. ANSI C136.13 Compliant
2. Compatible with pole diameters from 3"to 6"

ROUND POLE BRACKET FOR 20' POLE

(REQUIRED IF THE 1' ARM IS NOT INCLUDED WITH THE POLE OR THE LUMINAIRE

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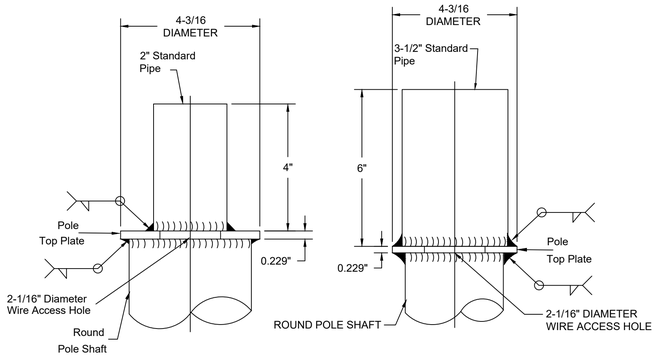
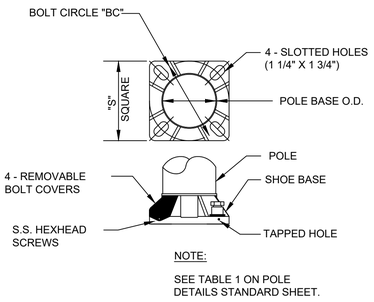
POLE DETAILS

SHEET D-702



TENON & MOUNTING ARM DETAIL



NOTE:

SEE TABLE 1 ON POLE
DETAILS STANDARD SHEET.

SHOE BASE

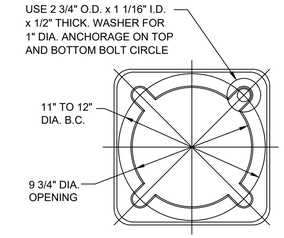
MATERIAL DATA

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

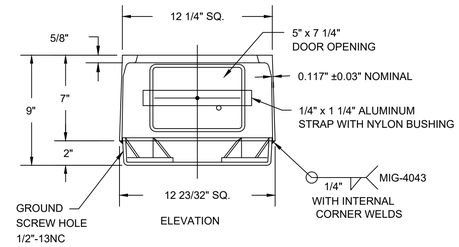
*TRUSS-TYPE LUMINAIRE ARMS (TYPE B) ONLY.

BASE & LUMINAIRE NOTES

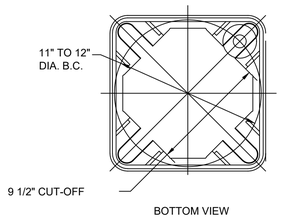
1. POLE SHAFT SHALL HAVE A SATIN GROUND FINISH. UNLESS OTHERWISE SPECIFIED IN THE PLANS.
2. ALL HARDWARE (BOLTS, NUTS, WASHERS BUT NOT INCLUDING ANCHOR BOLTS) NOT OTHERWISE SPECIFICALLY DESIGNATED IN THE SPECIFICATIONS OR DETAILS SHALL BE ALUMINUM OR 300-SERIES PASSIVATED STAINLESS STEEL.
3. ANCHOR BOLTS-GALV. 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.
4. ALL WELDING IS TO BE DONE WITH 4043 WELD WIRE. ALL ARMS AND SHAFTS ARE TO BE HEAT-TREATED TO T6 TEMPER AFTER WELDING.
5. 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.
6. THE ALUMINUM LIGHTING STANDARD INCLUDING ANCHORAGE WITH LUMINAIRE PROPERLY INSTALLED SHALL BE IN ACCORDANCE WITH THE 2013 AMERICAN ASSOCIATION OF HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) FOR 90 MPH WIND AND A LUMINAIRE SIZE OF 1.3 SQ.FT. MIN. EFFECTIVE PROJECTED AREA WEIGHING 55 LB. MIN.



TOP VIEW

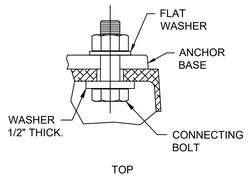


ELEVATION

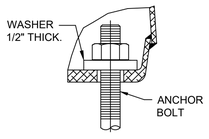


BOTTOM VIEW

11" BREAKAWAY BASE



TOP



BOTTOM

MULTI-TAP CONNECTOR

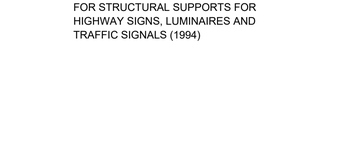
NOTE:

MORRIS 97513 OR APPROVED EQUAL

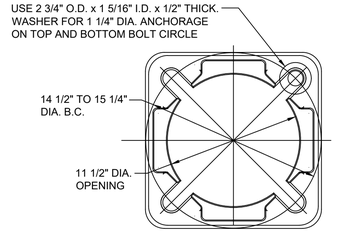
CONNECTING BOLTS
4- 1"-8NC x 3 1/2" LONG
GALV. HEX. HEAD BOLT
SAE GR. 2
4- 1" GALV. WASHER
2 1/2" O.D.
4- 1" GALV. HEX. NUT

MATERIAL SHALL CONFORM TO ASTM
DESIGNATION: B108 ALLOY 356-T6

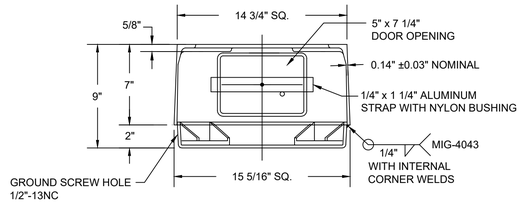
BASE CONFORMS TO BREAKAWAY CRITERIA
OF AASHTO STANDARD SPECIFICATIONS
FOR STRUCTURAL SUPPORTS FOR
HIGHWAY SIGNS, LUMINAIRES AND
TRAFFIC SIGNALS (1994)



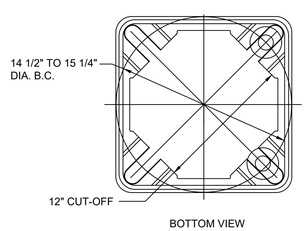
BREAKER-TYPE FUSE CONNECTOR DETAIL



TOP VIEW

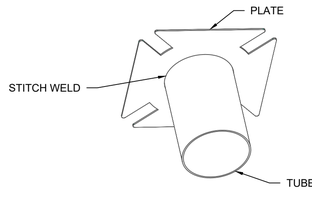


ELEVATION

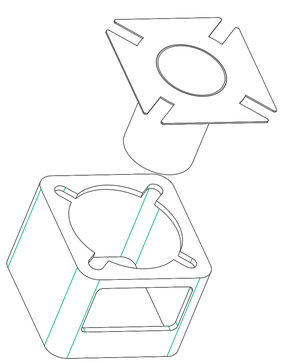


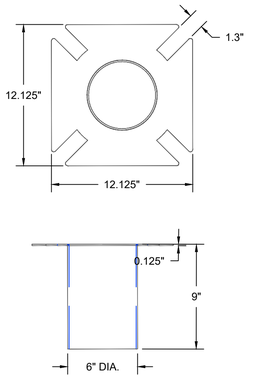
BOTTOM VIEW

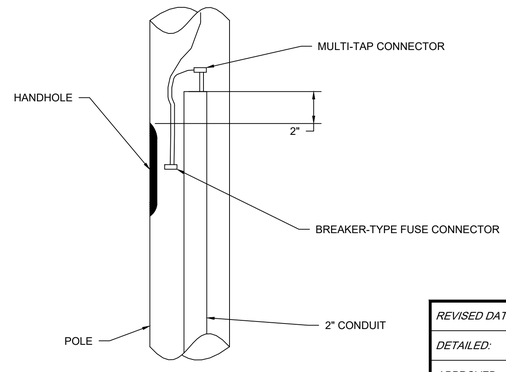
15" BREAKAWAY BASE



0.125" THICK ALIMINUM

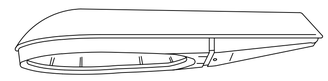






CONDUIT EXTENSION INSIDE POLES

ANTI-THEFT BREAKAWAY BASES



COBRAHEAD LUMINAIRE

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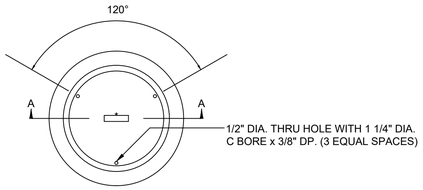
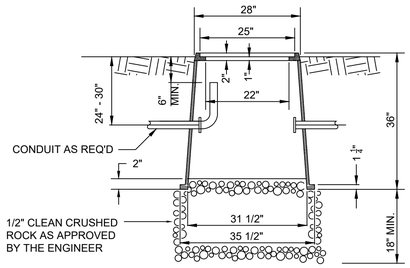
BASE & LUMINAIRE DETAILS

SHEET D-703



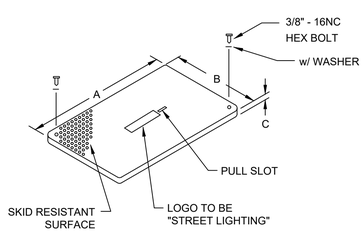
PLAN

* LOGO AS SPECIFIED

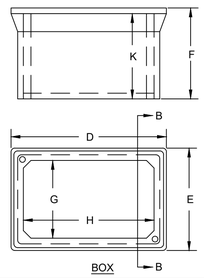


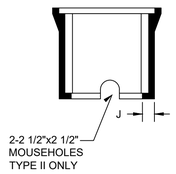
SECTION A - A

FIBERGLASS REINFORCED POLYMER CONCRETE SERVICE BOX



COVER



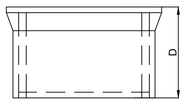


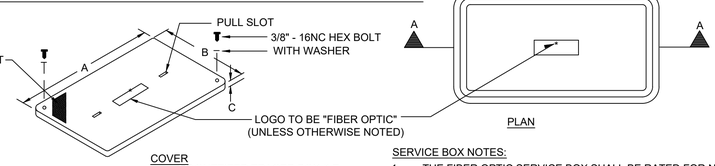
SECTION B-B

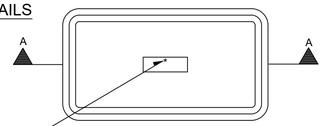
* TOLERANCE ±1/4" IN ANY DIMENSION

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		

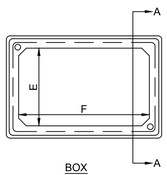
FIBERGLASS REINFORCED POLYMER CONCRETE JUNCTION BOX DETAILS





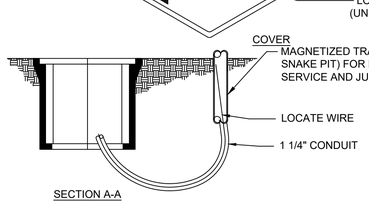


PLAN



BOX

COVER



SECTION A-A

NOTES:

1. BOXES SHALL BE STACKABLE FOR EXTRA DEPTH.
2. 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

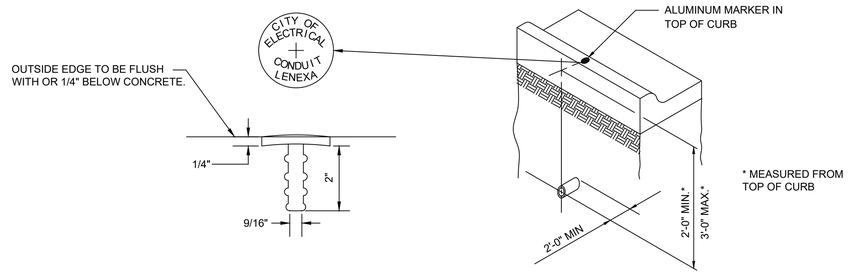
FIBERGLASS REINFORCED POLYMER CONCRETE FIBER OPTIC SERVICE BOX DETAILS

SERVICE BOX NOTES:

1. 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
2. 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 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
3. A 1/2" x 8'-0" GROUND ROD SHALL BE INSTALLED IN EACH SERVICE BOX.
4. 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
5. SERVICE BOX WITH ADJUSTABLE TOP RING SHALL NOT BE PERMITTED.

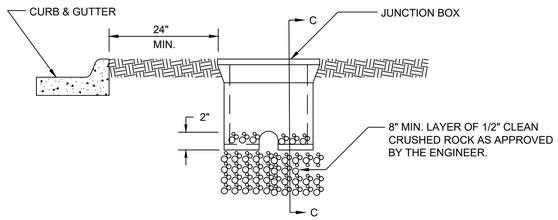


* MEASURED FROM TOP OF CURB

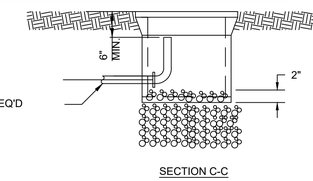
CONDUIT MARKING NOTES:

1. 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. 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.
2. 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.

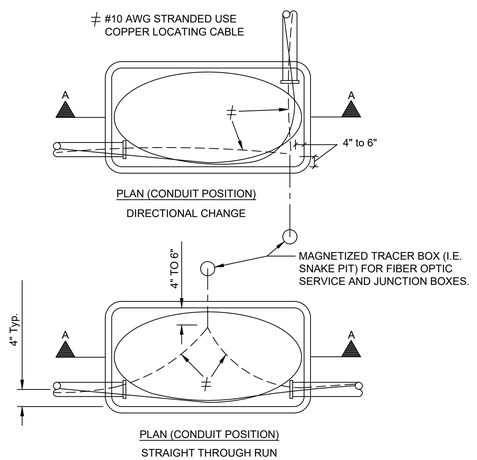
CONDUIT MARKING DETAIL



JUNCTION BOX INSTALLATION DETAIL



SECTION C-C

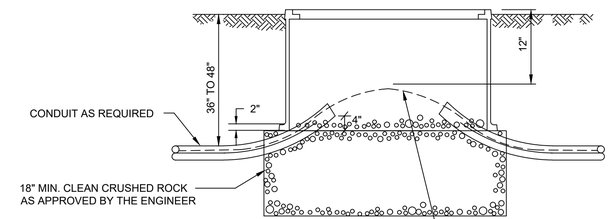


SIGNAL INTERCONNECT NOTES:

1. 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 THAT AN 8" RADIUS BEND.
2. 18" MIN. LAYER OF 1/2" CLEAN CRUSHED ROCK SHALL BE CONSTRUCTED BELOW THE SERVICE BOX FOR DRAINAGE PURPOSES.
3. MAGNETIZED TRACER BOX (I.E. SNAKE PIT) FOR FIBER OPTIC SERVICE AND JUNCTION BOXES.

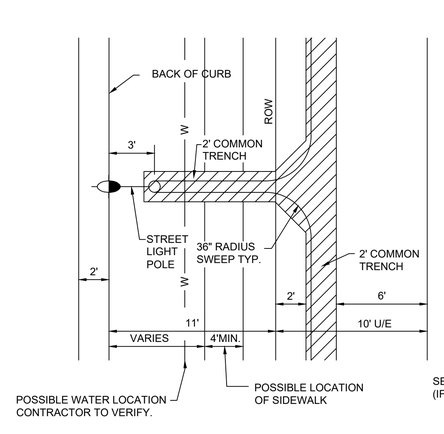
CONDUIT NOTES:

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

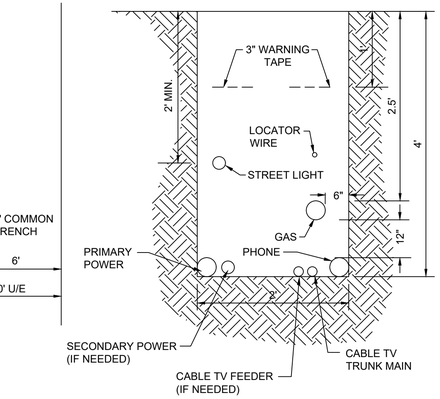


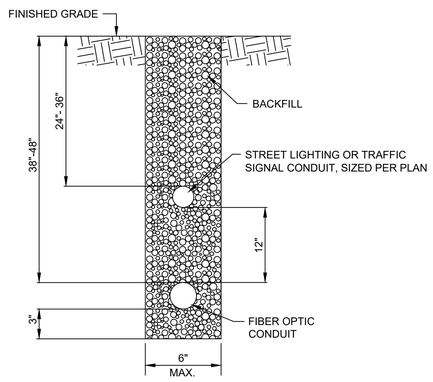
SECTION A-A

INITIAL BOX INSTALLATION DETAIL



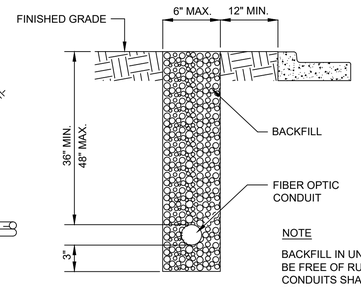
ALTERNATE TRENCHING DETAIL





TRENCH w/ MULTIPLE CONDUITS

IN UNPAVED AREAS



NOTE

BACKFILL IN UNPAVED AREAS SHALL BE FREE OF RUBBLE AND ROCK. CONDUITS SHALL BE PITCHED TO DRAIN.

TRENCHING IN UNPAVED AREAS

TRENCHING DETAILS

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REVISED DATE:	04/24
DETAILED:	BKC
APPROVED:	---

Lenexa KANSAS

BOXES, MARKING, FIBER DETAILS

SHEET D-704

DETECTOR INPUT FILE LAYOUT

		1	2	3	4	5	6	7	8	9	10	11	12	13	14
"I"	U	ø1 E,C	ø2 E,C	ø2 E,C	ø2 CALL	ø3 E,C	ø4 E,C	ø4 E,C	ø4 CALL	ø1 E,C	NA	ADV	PED ø2	PED ø6	FLH
	L		ø2 E,C	ø2 E			ø4 E,C	ø4 E		ø3 E	NA	SP1	PED ø4	PED ø8	STOP TIME
"J"	U	ø5 E,C	ø6 E,C	ø6 E,C	ø6 CALL	ø7 E,C	ø8 E,C	ø8 E,C	ø8 CALL	ø5 E,C	NA	SP2	EVA	EVB	RR1
	L		ø6 E,C	ø6 E			ø8 E,C	ø8 E		ø7 E	NA	SP3	EVC	EVD	RR2

FRONT VIEW

U = Upper
L = Lower

REAR PANEL

LOOP NUMBER	FILE LOCATION	TERMINAL NUMBER	LOOP NUMBER	FILE LOCATION	TERMINAL NUMBER
_____	I 1	DE	_____	J 1	DE
_____	I 1	JK	_____	J 1	JK
_____	I 2	DE	_____	J 2	DE
_____	I 2	JK	_____	J 2	JK
_____	I 3	DE	_____	J 3	DE
_____	I 3	JK	_____	J 3	JK
_____	I 4	DE	_____	J 4	DE
_____	I 4	JK	_____	J 4	JK
_____	I 5	DE	_____	J 5	DE
_____	I 5	JK	_____	J 5	JK
_____	I 6	DE	_____	J 6	DE
_____	I 6	JK	_____	J 6	JK
_____	I 7	DE	_____	J 7	DE
_____	I 7	JK	_____	J 7	JK
_____	I 8	DE	_____	J 8	DE
_____	I 8	JK	_____	J 8	JK
_____	I 9	DE	_____	J 9	DE
_____	I 9	JK	_____	J 9	JK
_____	I 10	DE	_____	J 10	DE
_____	I 10	JK	_____	J 10	JK
_____	I 11	DE	_____	J 11	DE
_____	I 11	JK	_____	J 11	JK
_____	I 12	DE	_____	J 12	DE
_____	I 12	JK	_____	J 12	JK
_____	I 13	DE	_____	J 13	DE
_____	I 13	JK	_____	J 13	JK
_____	I 14	DE	_____	J 14	DE
_____	I 14	JK	_____	J 14	JK

SIGNAL OUTPUT FILE LAYOUT

REAR PANEL

		FIELD TERM.	INDICATION	SIGNAL HEAD NO.
EB	ø4	101	RED	
		102	YELLOW	
		103	GREEN	
EBP	ø4P	104	DONT WALK	
		105		
		106	WALK	
WB	ø8	107	RED	
		108	YELLOW	
		109	GREEN	
WBP	ø8P	110	DONT WALK	
		111		
		112	WALK	
NBP	ø2P	113	DONT WALK	
		114		
		115	WALK	
WBLT	ø3	116	RED	
		117	YELLOW	
		118	GREEN	
SBP	ø6P	119	DONT WALK	
		120		
		121	WALK	
EBLT	ø7	122	RED	
		123	YELLOW	
		124	GREEN	
SBLT	ø1	125	RED	
		126	YELLOW	
		127	GREEN	
NB	ø2	128	RED	
		129	YELLOW	
		130	GREEN	
NBLT	ø5	131	RED	
		132	YELLOW	
		133	GREEN	
SB	ø6	134	RED	
		135	YELLOW	
		136	GREEN	

NOTE:

WIRING IDENTIFICATION SHALL BE CONSISTENT WITH NUMBERS SHOWN FOR POLES, SIGNALS HEADS AND DETECTORS.

WIRING DIAGRAM

NOTE:

CABLE RUNS FOR NORTHBOUND TRAFFIC – COLOR CODE BLUE.

CABLE RUNS FOR SOUTHBOUND TRAFFIC – COLOR CODE PURPLE.

CABLE RUNS FOR EASTBOUND TRAFFIC – COLOR CODE YELLOW.

CABLE RUNS FOR WESTBOUND TRAFFIC – COLOR CODE RED.

DETECTOR SUMMARY

DETECTOR NUMBER	LOOP SIZE	RADAR	NON-INVASIVE	VIDEO CAMERA	NO. OF WIRE TURNS: 2-4-2 TURNS QUADRAPOLE	NO. OF WIRE TURNS: 3 TURNS	MODE: PULSE	MODE: PRESENCE	PHASE CALLED	NO. OF CHANNELS	COMMENTS

TABLE 4 DETECTOR MAP ("D" + Col.+key)

DETECTOR TYPE		DELAY				CARRYOVER			
COLUMN NO.		2		3		4		5	
Key	CHANNEL(*)	Ph.	Time	Ph.	Time	Ph.	Time	Ph.	Time
0	------(1)	1		5		1		5	
1	UPPER (9)	1		5		1		5	
2	UPPER (2)	2		6		2		6	
3	LOWER (2)	2		6		2		6	
4	UPPER (3)	2		6		2		6	
5	LOWER (3)					2		6	
6	------ (4)	2		6		2*		6*	
7	------ (5)	3		7		3		7	
8	LOWER (9)	3		7		3		7	
9	UPPER (6)	4		8		4		8	
A	LOWER (6)	4		8		4		8	
B	UPPER (7)	4		8		4		8	
C	LOWER (7)					4		8	
D	------ (8)	2		6		4*		8*	
E									
F									
CABINET FILE		"I"		"J"		"I"		"J"	

() = SLOT NUMBER * =SET TYPE 3 DETECTOR

TABLE 1 PHASE FUNCTIONS (0 + key)

FUNCTION	KEY	PHASE NUMBER USE CAD LIGHTS 1	2	3	4	5	6	7	8
VEHICLE RECALL	0								
PEDESTRIAN RECALL	1								
RED LOCK	2								
YELLOW LOCK	3								
PERMIT	4								
PEDESTRIAN PHASES	5								
LEAD PHASES	6								
DOUBLE ENTRY	7								
SEQUENTIAL TIMING	8								
START-UP GREEN	9								
OVERLAP A	A								
OVERLAP B	B								
OVERLAP C	C								
OVERLAP D	D								
EXCLUSIVE	E								
SIMULTANEOUS GAP	F								

TABLE 1 PHASE TIMING (PHASE + KEY)

FUNCTION	KEY	PHASE 1	2	3	4	5	6	7	8
MAX. I	0								
MAX. II/HFDW	1								
WALK	2								
FLASH DW	3								
MAX. INITIAL	4								
MIN. GREEN	5								
TBR	6								
TTR	7								
OBSERVE GAP	8								
PASSAGE	9								
MIN. GAP	A								
ADDED ACTUATION	B								
YELLOW	C								
RED CLEAR	D								
RED REVERT	E								
WALK II	F								

EMERGENCY FLASH

PHASE	INDICATION
1	RED
2	RED
3	RED
4	RED
5	RED
6	RED
7	RED
8	RED
PEDESTRIAN	DARK

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REVISED DATE:	04/24
DETAILED:	BKC
APPROVED:	---

Lenexa KANSAS

WIRING DETAILS & TIMINGS

SHEET D-800

TRAFFIC SIGNAL QUANTITIES

ITEM	UNIT	QUAN.
PAD MOUNTED CONTROLLER & CABINET	EACH	
TRAFFIC SIGNAL HEAD (see CHART A)		
MAST ARM BRACKET 3-SECTION HEAD	EACH	
MAST ARM BRACKET 4-SECTION HEAD	EACH	
VERTICAL BRACKET	EACH	
BACKPLATE 3-SECTION	EACH	
BACKPLATE 4-SECTION	EACH	
RED LED KIT	EACH	
YELLOW LED KIT	EACH	
GREEN LED KIT	EACH	
RED LED ARROW KIT	EACH	
YELLOW LED ARROW KIT	EACH	
GREEN LED ARROW KIT	EACH	
BI-MODAL LED GREEN/YELLOW ARROW KIT	EACH	
COUNTDOWN SIGN	EACH	
ORANGE/WHITE "HAND/MAN" COUNTDOWN LED KIT	EACH	
ORANGE LED KIT (DON'T WALK HAND SYMBOL)	EACH	
WHITE LED KIT (WALK SYMBOL)	EACH	
TRAFFIC SIGNAL POLE STEEL (see CHART B)	EACH	
TRAFFIC SIGNAL PEDESTAL ALUMINUM 10'	EACH	
TRAFFIC SIGNAL PEDESTAL ALUMINUM 14'	EACH	
TRAFFIC SIGNAL PEDESTAL ALUMINUM 15'	EACH	
CONCRETE CONTROLLER PAD	EACH	
CONCRETE POLE FOOTING 8'	EACH	
CONCRETE POLE FOOTING 10'	EACH	
CONCRETE POLE FOOTING 12'	EACH	
PEDESTAL FOOTING	EACH	
GROUND ROD & CLAMP	EACH	
CONDUIT ELBOW 90° 1"	EACH	
CONDUIT ELBOW 90° 1.5"	EACH	
CONDUIT ELBOW 90° 2"	EACH	
CONDUIT ELBOW 90° 3"	EACH	
CONDUIT ELBOW 90° 4"	EACH	
CONDUIT 1"	LN. FT.	
CONDUIT 1.5"	LN. FT.	
CONDUIT 2"	LN. FT.	
CONDUIT 3"	LN. FT.	
CONDUIT 4"	LN. FT.	
SERVICE BOX	EACH	
JUNCTION BOX TYPE I	EACH	
JUNCTION BOX TYPE II	EACH	
JUNCTION BOX TYPE III	EACH	
MULTI-CONDUCTOR CABLE NO. 14 AWG 2c	LN. FT.	
MULTI-CONDUCTOR CABLE NO. 14 AWG 5c	LN. FT.	
MULTI-CONDUCTOR CABLE NO. 14 AWG 7c	LN. FT.	
MULTI-CONDUCTOR CABLE NO. 14 AWG 12c	LN. FT.	
DETECTOR LOOP WIRE NO. 14 1c	LN. FT.	
SHIELDED DETECTOR LEAD-IN NO. 18 AWG 4c	LN. FT.	
AUDIBLE PEDESTRIAN SIGNAL SYSTEM	EACH	
PEDESTRIAN PUSH BUTTON-BULL DOG TYPE	EACH	
OPTICOM DETECTOR MODEL 721	EACH	
OPTICOM DETECTOR MODEL 722	EACH	
OPTICOM PHASE SELECTOR MODEL 764	EACH	
OPTICOM DETECTOR CABLE MODEL 138	LN. FT.	
SERVICE ENCLOSURE WITHOUT PHOTOCELL	EACH	
SERVICE ENCLOSURE WITH PHOTOCELL	EACH	
SERVICE WIRE NO. 6 AWG 1c	LN. FT.	
SERVICE WIRE NO. 4 AWG 1c	LN. FT.	
LUMINAIRE & LAMP (LED)	EACH	
POLE & BRACKET CABLE NO. 12 AWG	LN. FT.	
LIGHTING CABLE NO. 3-1C#4 AWG	LN. FT.	
CONNECTOR KIT	EACH	
MULTI-TAP CONNECTOR	EACH	
SIGN R10-3b PEDESTRIAN PUSHBUTTON SIGN	EACH	
SIGN R10-10 "LEFT TURN SIGNAL"	EACH	
SIGN R10-12 "LEFT TURN YIELD ON GREEN "	EACH	
LED ILLUMINATED OVERHEAD STREET NAME SIGN	EACH	
ALUMINUM OVERHEAD STREET NAME SIGN	EACH	
CONNECTOR KIT - FUSED	EACH	
CONNECTOR KIT - UNFUSED	EACH	

TRAFFIC SIGNAL QUANTITIES (CONT.) ***

ITEM	UNIT	QUAN.
CONTINUOUS TRACKING ADVANCE DETECTOR	EACH	
CABINET INTERFACE DEVICE W/ SDLC INTERFACE PANEL	EACH	
1C#10 GROUND CABLE (FOR ADVANCED DETECTOR)	LN.FT.	
RADAR DETECTOR HOME RUN CABLE	LN. FT.	
PTZ VIDEO CAMERA W/ MOUNTING HARDWARE	EACH	
QUAD CAMERA	EACH	
PTZ VIDEO COMMUNICATION W/ POWER CABLE	LN.FT.	
FIXED VIDEO CAMERA AND POLE MOUNT	EACH	
144ct SINGLE MODE FIBEROPTIC CABLE	LN.FT.	
GROUND ROD FOR FIBER OPTIC SERVICE BOX	EACH	
FIBER OPTIC SERVICE BOX	EACH	
SWITCH	EACH	
TRANSRECEIVER	EACH	
GATOR PATCH	EACH	
FIBEROPTIC SPLICE ENCLOSURE	EACH	
Cat6 OUTDOOR-RATED CABLE	LN.FT.	

CONTROLLER AND CABINET DESCRIPTION

ITEM	MODEL NUMBER	QUANTITY
PAD MOUNTED CABINET (LOCAL)	332D	
PAD MOUNTED CABINET (SYSTEM MASTER)	332D	
332D CABINET SHELF	-	
RACK MOUNT CONTROLLER WITH LATEST SOFTWARE VERSION (2K RAM MIN.) (COMPATIBLE WITH OPERATION GREEN LIGHT (OGL))	ATC COBALT-C	
LOOP AMPLIFIER CARD	LMD 622	
CONFLICT MONITOR	2018	
SWITCH PACK	200	
FLASHER UNIT	204	
FLASH TRANSFER RELAY	430	
TWO CHANNEL DETECTOR (3M/CANOGA)	922	
TWO CHANNEL DC ISOLATOR	242	
SURGE PROTECTING POWER STRIP (RACK-MOUNTED)	-	
AUXILIARY OUTPUT FILE	430	
BATTERY BACKUP SYSTEM	-	

CHART A SIGNAL SUMMARY

SIGNAL FACE ARRANGEMENT	NO. SECTIONS	MOUNTING TYPE	QUANTITY
		RIGID MAST ARM	
		RIGID MAST ARM	
		RIGID MAST ARM	
		VERTICAL BRACKET	
		VERTICAL BRACKET	
		VERTICAL BRACKET	

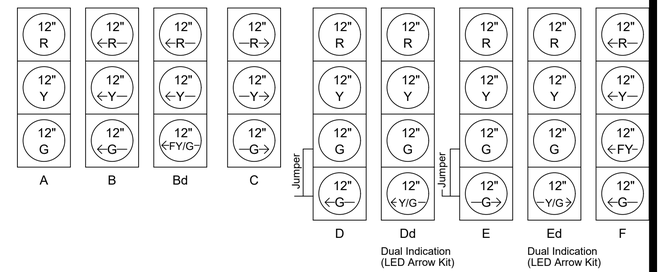
SERVICE BOX SUMMARY

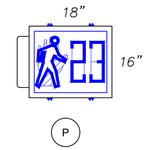
STATION	DIST.-SIDE

JUNCTION BOX SUMMARY

STATION	DIST.-SIDE

Signal Faces



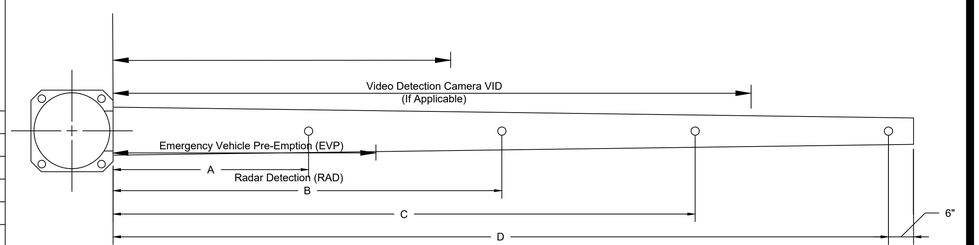


- SUBSCRIPT "d" MEANS DUAL INDICATION YELLOW ARROW/GREEN ARROW SIGNAL
- ** ALL INDICATIONS SHALL BE LED DISPLAYS.
- ** PLEASE SEE PRE-APPROVED LIST FOR APPROVED MATERIALS.

SIGNAL FACES **

CHART B TRAFFIC SIGNAL POLES

POLE NO.	MAST ARM LENGTH	LUM. TYPE	LUMINAIRE ARM ARM 1 STYLE	ARM 1 SPAN	ARM 2 STYLE	ARM 2 SPAN	NO. OF SIGNALS ON ARM	SIGNAL SPACING (SEE SIGNAL HEAD SPACING DETAIL) A	B	C	D	EVP	RAD	VID



SIGNAL HEAD SPACING DETAIL

NOTE:

1. THIS LIST OF QUANTITIES IS NOT A GUARANTEE OF A COMPLETE LISTING OF ALL MATERIALS NEEDED TO COMPLETE THE LUMP SUM TRAFFIC SIGNAL INSTALLATION AND IS PROVIDED SOLELY FOR THE CONTRACTOR'S CONVENIENCE. THE CONTRACTOR SHOULD VERIFY QUANTITIES FOR BIDDING PURPOSES.
2. MOUNTING HARDWARE SHALL BE SIZED TO ENSURE PUSH BUTTONS ARE MOUNTED WITHIN 10" REACH OF ADJACENT SIDEWALK CONSTRUCTION.
3. MAST ARMS ARE SIZED WITH AN EXTRA TWO FEET BEYOND FAR SIGNAL TO ACCOMMODATE VARYING FIELD CONDITIONS. DEPENDING UPON THE FINAL LOCATIONS OF THE SIGNAL POLES, A SHORT SECTION OF THE MAST ARM MAY NEED TO BE CUT OFF, AS DIRECTED BY THE ENGINEER.

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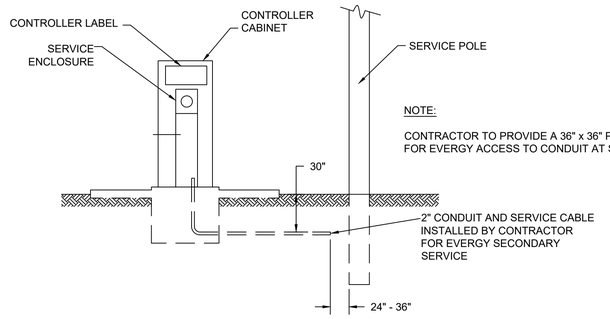
SIGNAL SUMMARY OF QUANTITIES

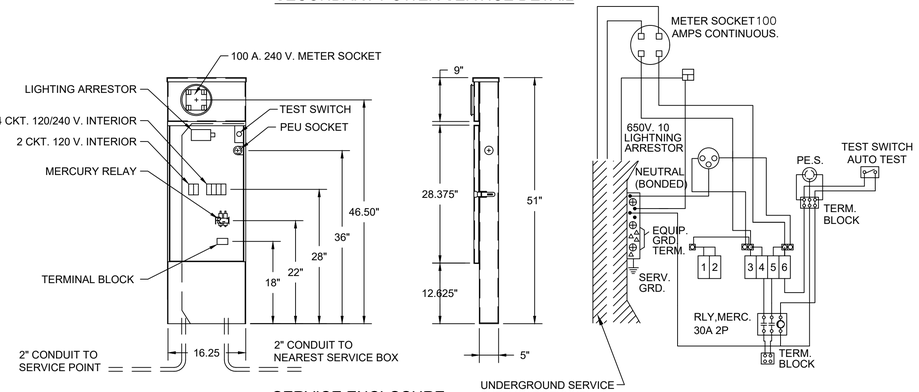
SHEET D-801



SECONDARY POWER SERVICE NOTES:

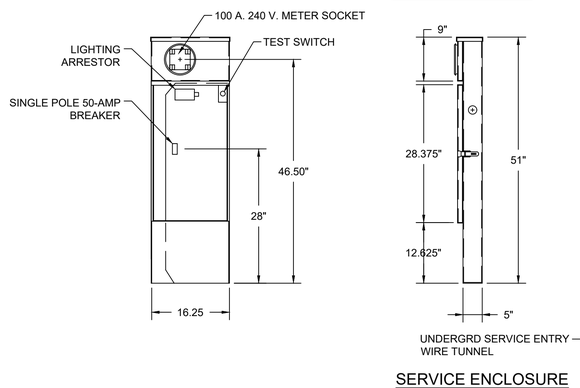
1. THE CONTRACTOR SHALL INSTALL 2" PVC CONDUIT AND SERVICE CABLE FOR POWER.
2. THE CONTRACTOR SHALL INSTALL A MINIMUM 1" DIAMETER WATERTIGHT CONDUIT ENTRANCE BETWEEN THE BREAKER BOX PORTION OF THE SECONDARY SERVICE ENCLOSURE AND THE TRAFFIC SIGNAL CONTROLLER CABINET.
3. THE CONTRACTOR SHALL INSTALL 1c-#6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

SECONDARY POWER SERVICE DETAIL



SERVICE ENCLOSURE WITH PHOTOCELL

CIRCUIT DIRECTORY			
NO.	DESCRIPTION	AMP	POLE
1	SIGNALS	50	1
3	SPARE	15	1
4-5	LIGHTING	30	2
6	CONTROL-PE	15	1

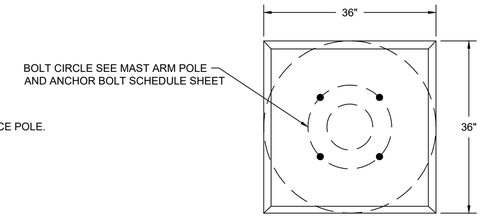


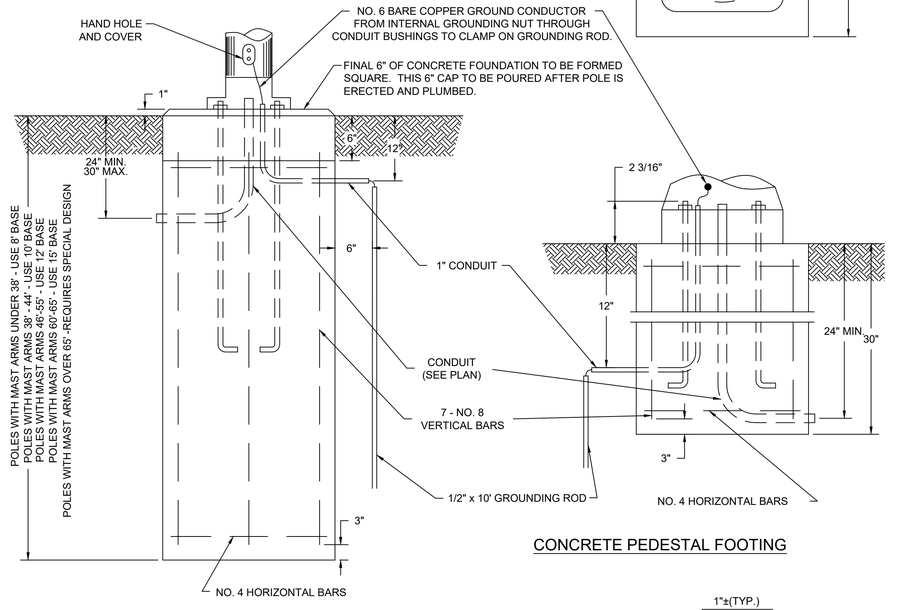
SERVICE ENCLOSURE WITHOUT PHOTOCELL

CIRCUIT DIRECTORY			
NO.	DESCRIPTION	AMP	POLE
	METERED		
1	SIGNALS	50	1
2	SPACE		
3	SPARE	15	1
4	SPACE		

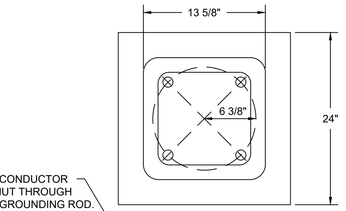
SERVICE ENCLOSURE NOTES:

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 MEYERS MET2-VLM-LTS SHALL ALSO BE USED TO POWER THE LED ILLUMINATED STREET NAME SIGNS.

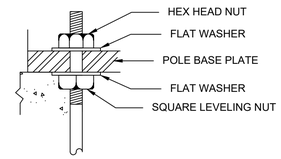




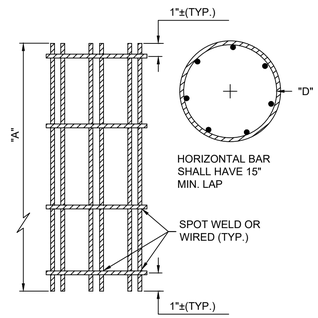
CONCRETE PEDESTAL FOOTING



CONCRETE POLE FOOTING



ANCHOR BOLT DETAIL FOR COMBINATION LIGHTING / SIGNAL POLE



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. 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.
3. CONDUITS EXTENDED INTO CONCRETE FOOTINGS OR PADS SHALL TERMINATE 3 TO 4 INCHES ABOVE THE TOP OF THE FOOTING OR PAD.
4. ALL SIGNAL POLE BASES SHALL BE PLACED IN TWO PLACEMENTS. THE FINAL 6 INCHES SHALL BE PLACED AFTER THE POLE IS SET AND FINAL ADJUSTMENTS HAVE BEEN MADE.

REBAR SCHEDULE				
BASE DIA.	BASE LENGTH	REBAR CIRCLE "D"	VERT. REBAR LENGTH "A"	HOR. REBAR SPACING
24"	30"	18"	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.

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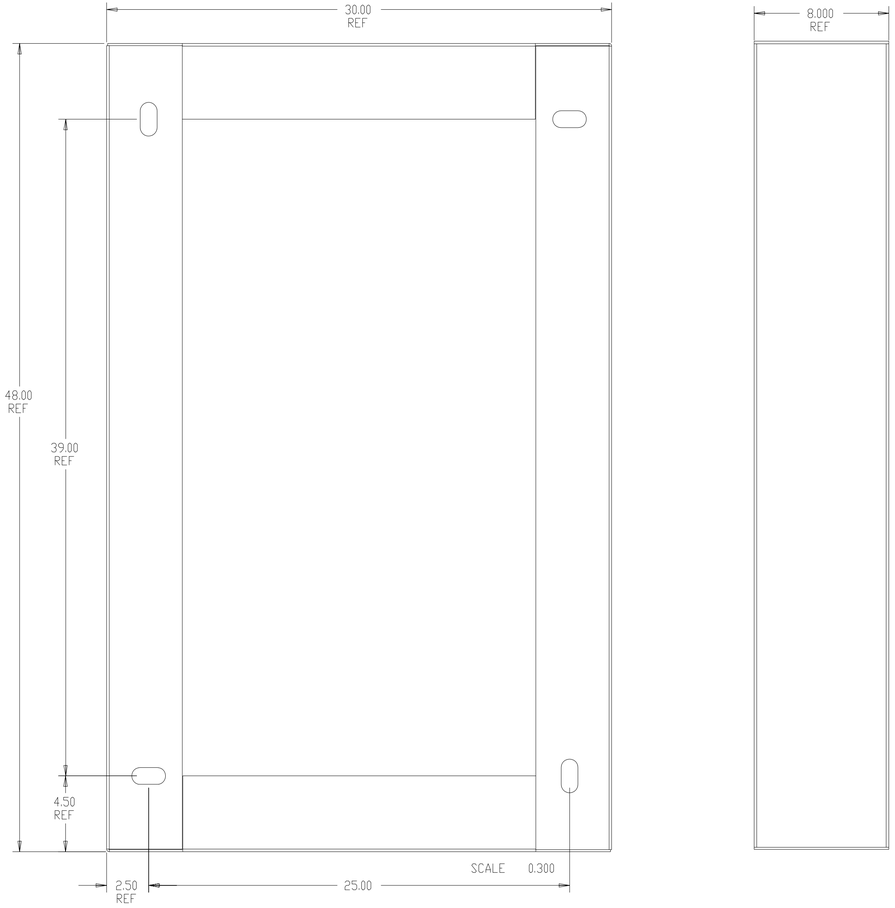
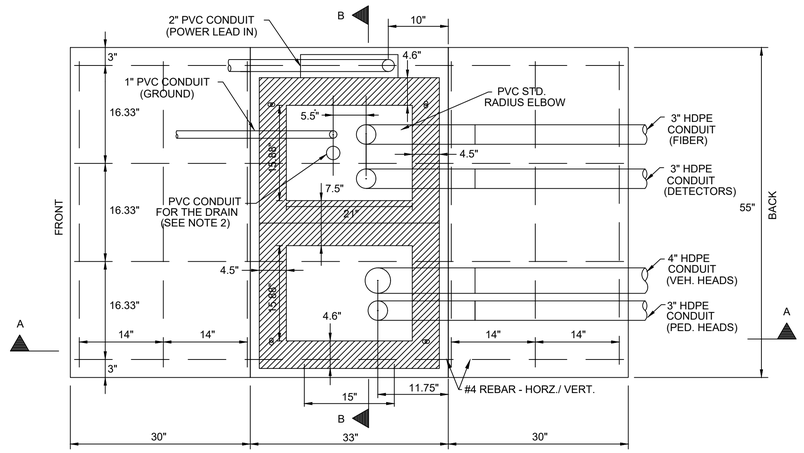
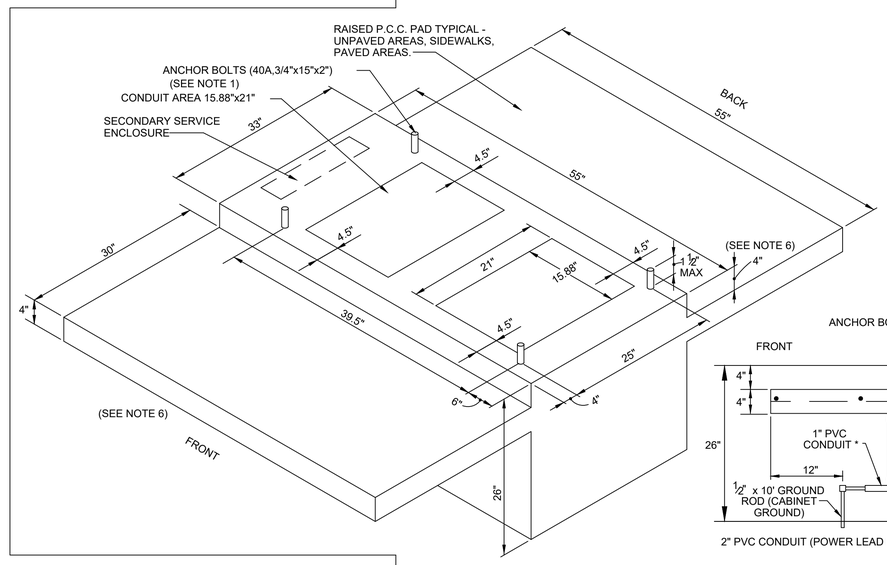
CONCRETE FOOTING PAD POWER SERVICE — SHEET D-802

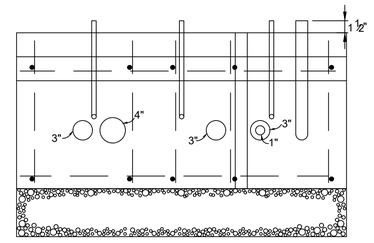


NOTES
1. CONTINUOUSLY WELD ALL SEAMS.
2. WELDS ON MOUNTING SURFACES (TOP AND BOTTOM) SHOULD BE SMOOTH AND FLAT.

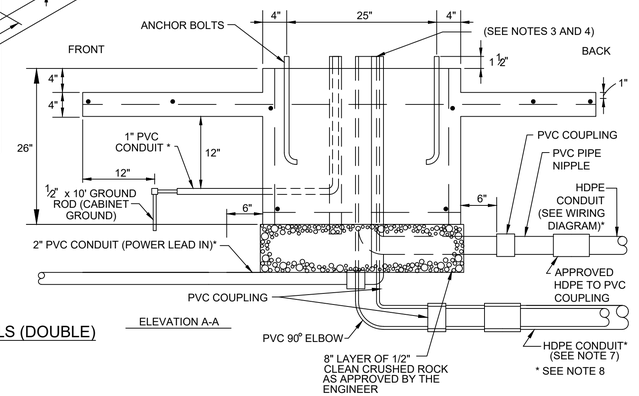




ISOMETRIC

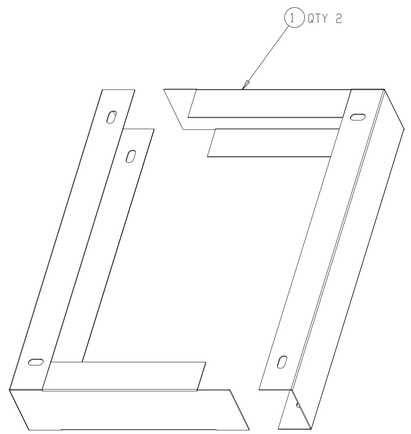


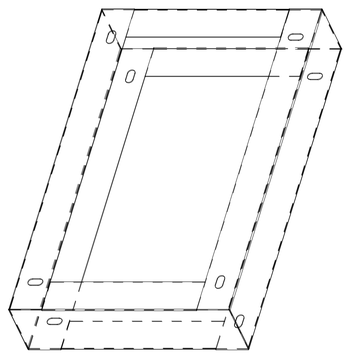
SECTION B-B



ELEVATION A-A

CONTROLLER PAD DETAILS (DOUBLE)





SIGNAL CONTROLLER PAD NOTES:

1. ALL CONDUITS AND ANCHOR BOLTS SHALL BE RIGIDLY INSTALLED BEFORE CONCRETE IS PLACED.
2. TOP OF PAD TO BE SLOPED TO DRAIN.
3. A 1-c#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).
4. DUCT SEAL SHALL BE APPLIED AT ALL CONDUIT ENTRANCES AFTER CABLE INSTALLATION.
5. 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.
6. 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).
7. SCHEDULE 40 HDPE CONDUIT (ORANGE IN COLOR) WITH A #10 THHN/THWN STRANDED COPPER LOCATING CABLE AND POLYPROPYLENE PULL ROPE SIZED PER PLAN.
8. 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.
9. 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.
10. NON-HARDENING DUCT SEALANT TO BE APPLIED TO CONDUIT ENTRANCES.
11. PROVIDE WATERTIGHT SEAL BETWEEN THE CONTROLLER CABINET AND THE CONCRETE PAD.
12. CONTROLLER PAD TO BE EXCAVATED AND FORMED TO THE DIMENSIONS SHOWN WITHOUT DISTURBING THE AREAS OF ADJACENT SUBGRADE.
13. THE ENGINEER IN CHARGE OF CONSTRUCTION SHALL DETERMINE THE ORIENTATION OF THE CONTROLLER PAD.
14. 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.
15. WHEN TYPE MET2-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.
16. ONE GROUND ROD IS REQUIRED FOR THE CABINET.

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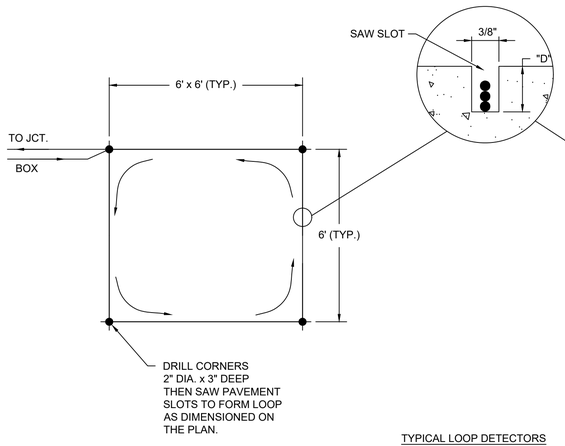
TRAFFIC SIGNAL FOUNDATION DETAIL

SHEET D-803

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"

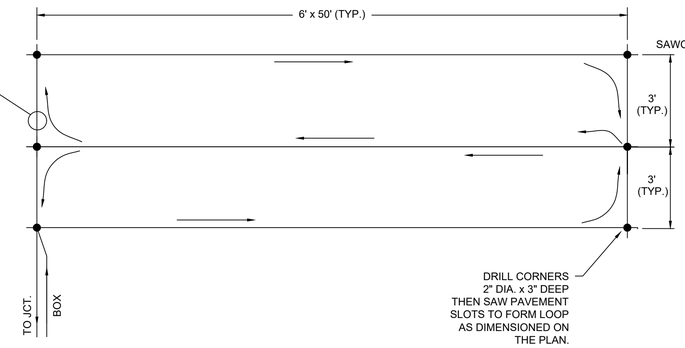


TYPICAL LOOP DETECTORS

TRANSVERSE LOOP (3 TURNS)

NOTES:

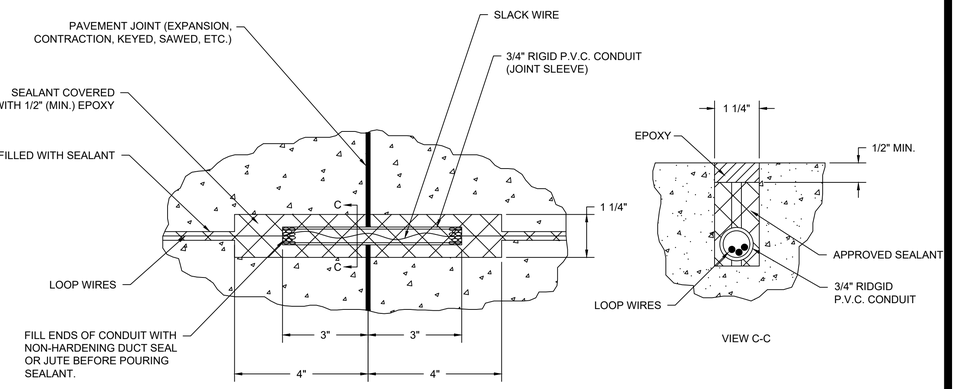
1. QUADRAPOLE LOOP TO BE ONE CONTINUOUS WIRE PLACED IN TWO TURNS. ALL LOOPS TO BE WOUND IN SAME DIRECTION, WITH START AND END CLEARLY MARKED AT JUNCTION BOX.
2. TRANSVERSE LOOP TO BE ONE CONTINUOUS WIRE PLACED IN THREE TURNS. ALL LOOPS TO BE WOUND IN SAME DIRECTION, WITH START AND END CLEARLY MARKED 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.



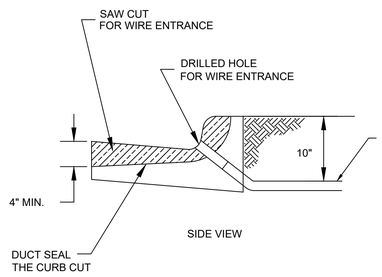
QUADRAPOLE LOOP (2-4-2 TURNS)

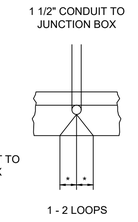
GENERAL NOTES:

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.

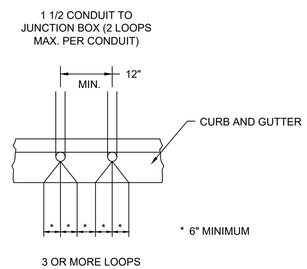


JOINT CROSSING DETAIL



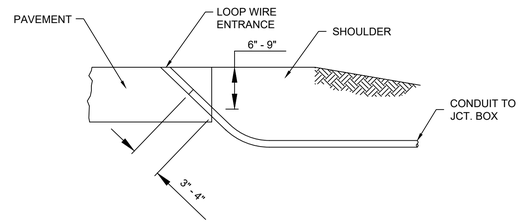


CURBED SECTION

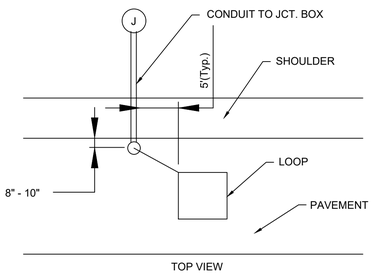


NOTE:

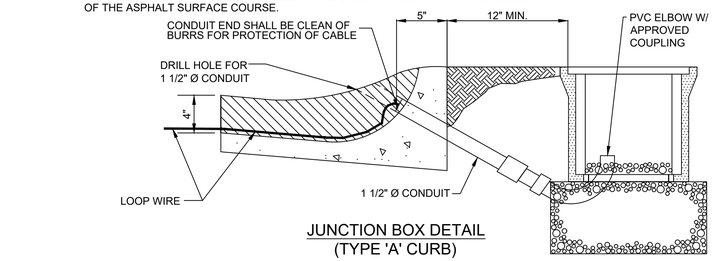
A SEPARATE CONDUIT STUB SHALL BE INSTALLED FOR LEFT-TURN LOOPS.



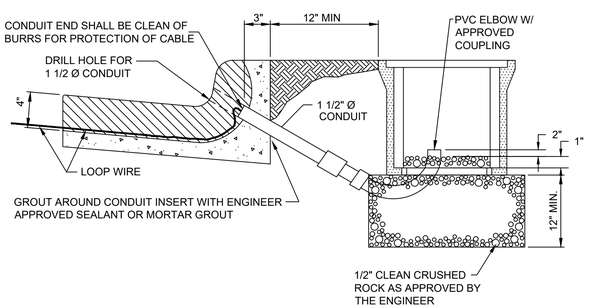
NON - CURBED SECTION



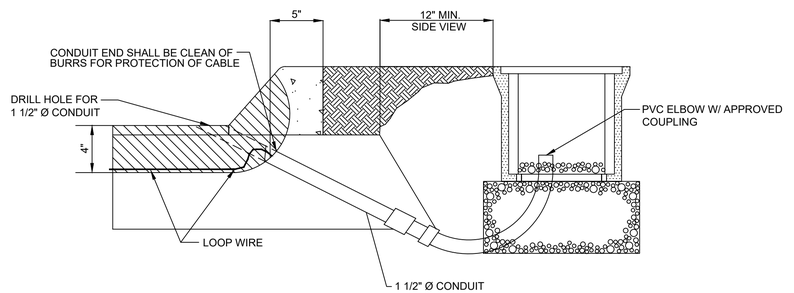
LOOP WIRE ENTRANCE DETAIL



JUNCTION BOX DETAIL
(TYPE 'A' CURB)



JUNCTION BOX DETAIL
(TYPE 'B' CURB)



JUNCTION BOX DETAIL
(TYPE 'C' CURB)

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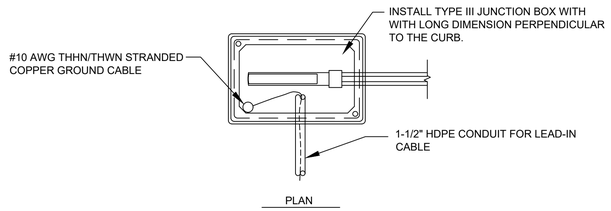
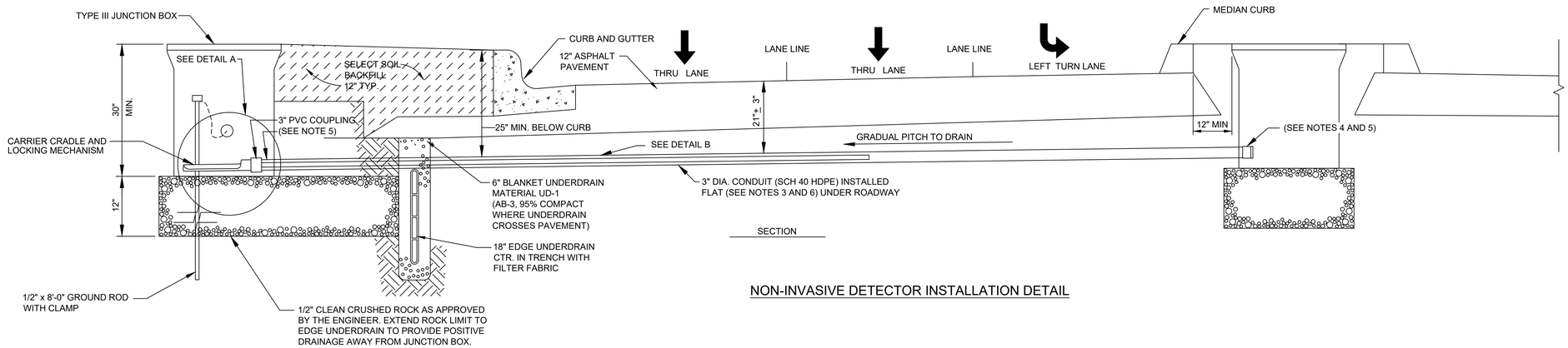
LOOP DETECTOR INSTALLATION

SHEET D-804

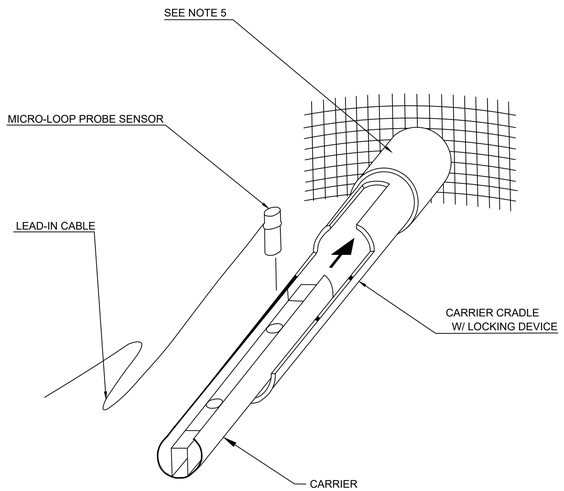


PLAN



SECTION

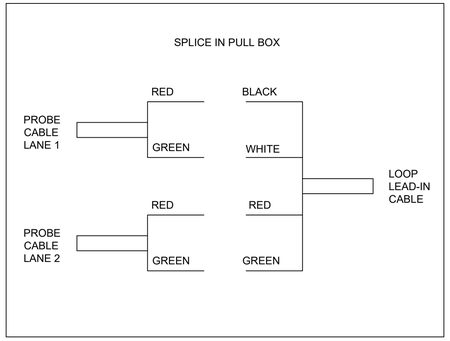
NON-INVASIVE DETECTOR INSTALLATION DETAIL



DETAIL A

NOTE:

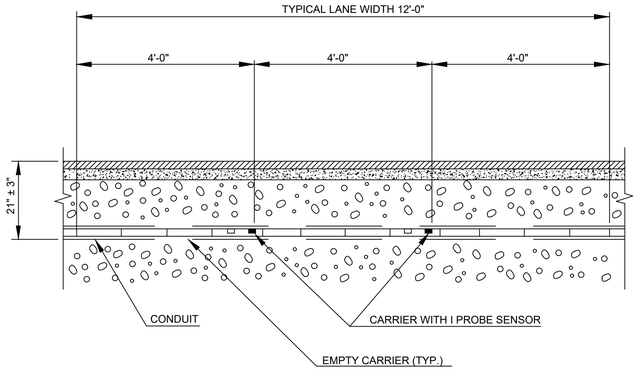
CARRIER CRADLE SHALL BE PROPERLY BAGGED AND SECURED FOLLOWING INSTALLATION ACCORDING TO MANUFACTURER'S INSTRUCTIONS



WIRING DETAIL

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 0P 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 ABRAID 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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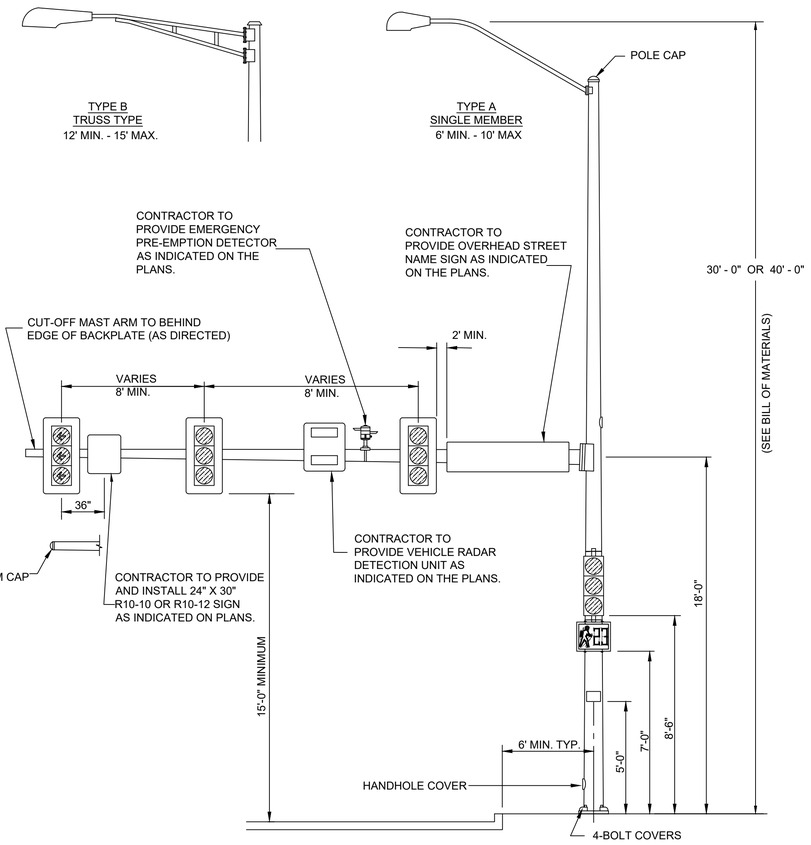
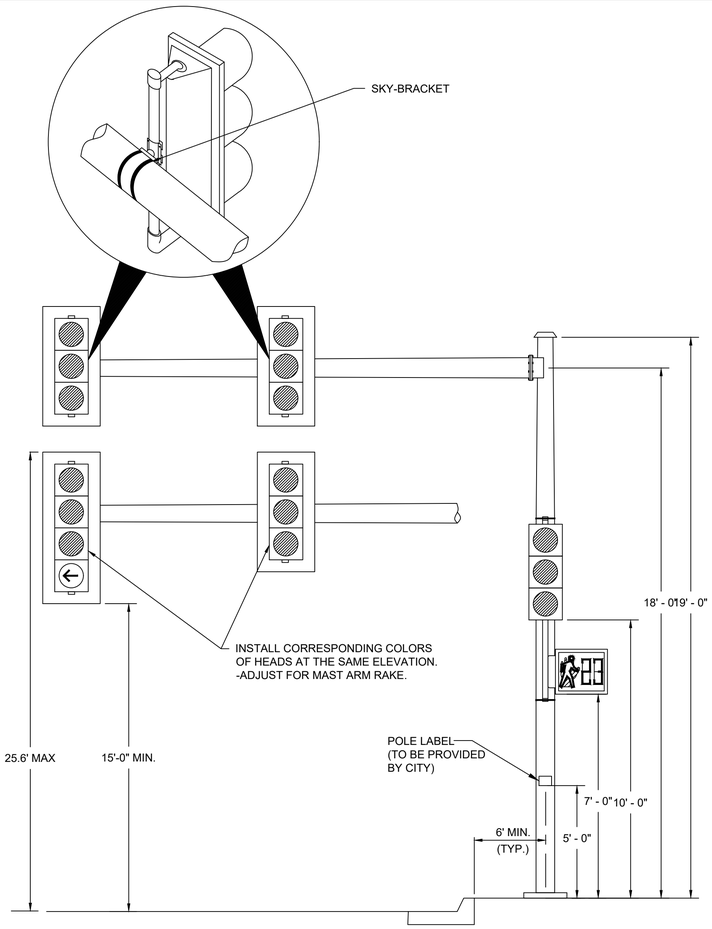
NON-INVASIVE DETECTOR DETAIL

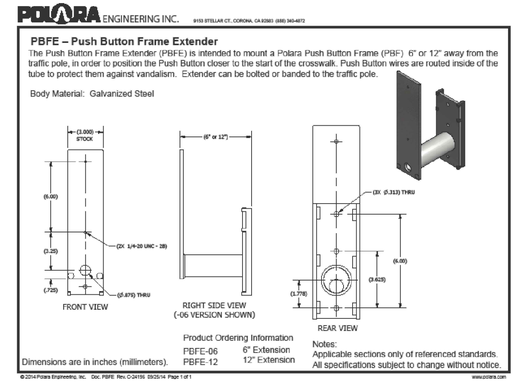
SHEET D-805

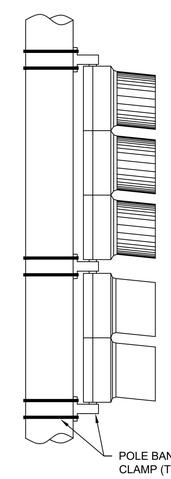


STEEL COMBINATION LIGHTING AND SIGNAL POLE

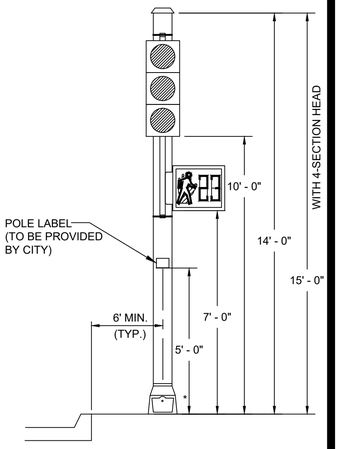


STEEL SIGNAL POLE

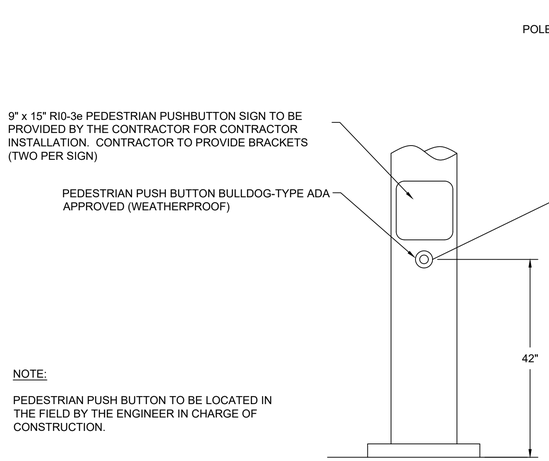




VERTICAL BRACKET MOUNTING DETAIL



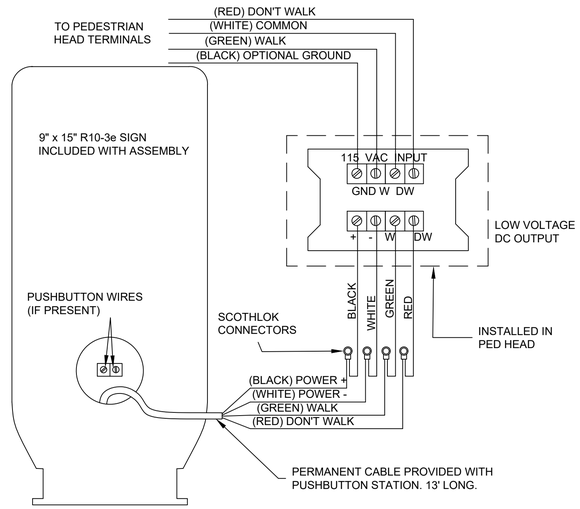
ALUMINUM SIGNAL PEDESTAL



NOTE:

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

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 3c

   SPLICES AT THE HANDHOLE SHALL BE MADE WITH WIRE NUTS. 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 SKY-BRACKETS.
5. EACH VEHICULAR SIGNAL HEAD SHALL BE COVERED WITH AN ORANGE BAG SIGNAL HEAD COVER DURING CONSTRUCTION UNTIL THE SYSTEM IS MADE OPERATIONAL.

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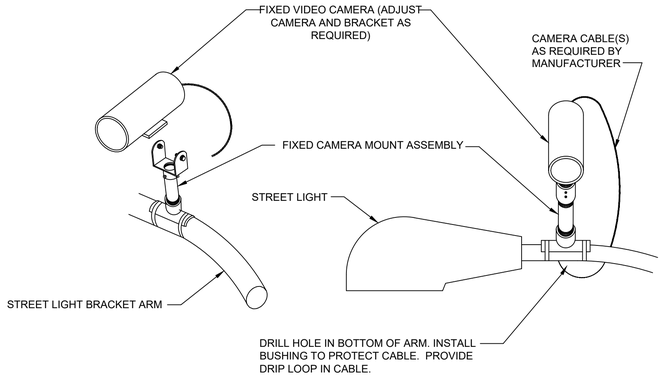
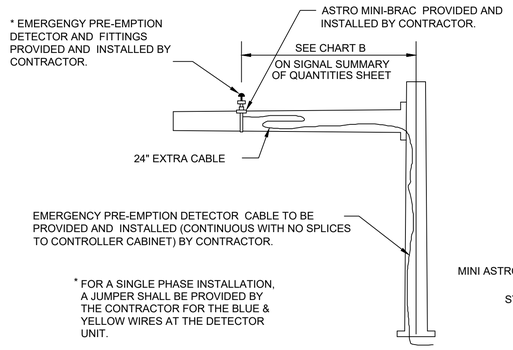
POLES SIGNAL HEAD PUSH BUTTON

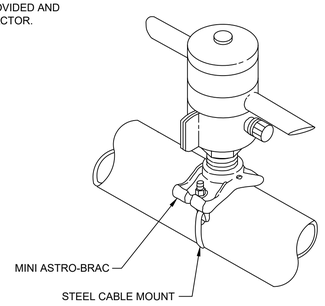
SHEET D-806



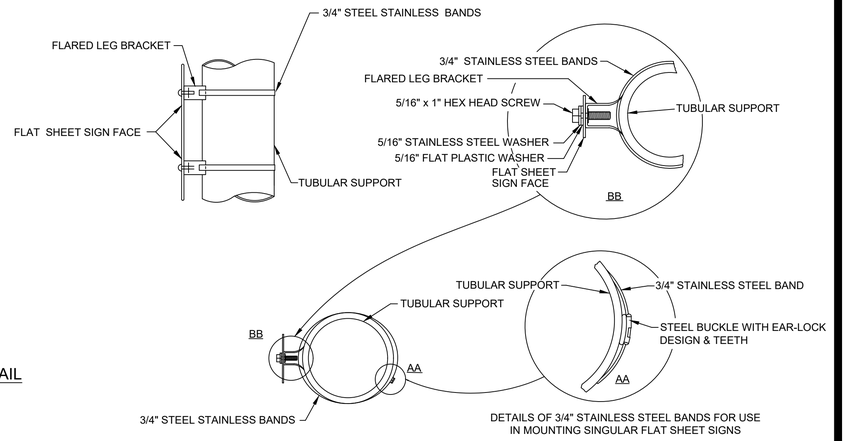
FIXED VIDEO CAMERA MOUNTING DETAIL (STREET LIGHT BRACKET ARM MOUNT)



EMERGENCY PRE - EMPTION SYSTEM DETAIL



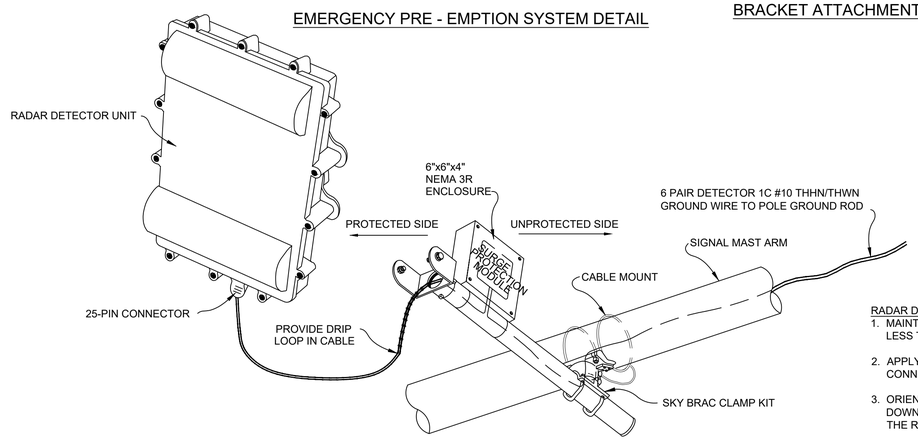
BRACKET ATTACHMENT DETAIL



SIDE OF POLE SIGN MOUNTING DETAIL

SIGN MOUNTING NOTES:

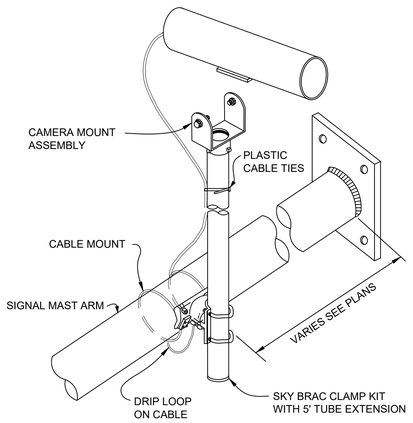
1. SIGNS ON SIDE OF POLE SHALL BE ATTACHED WITH TWO (2) BRACKETS AND STAINLESS STEEL BANDS.
2. HOLES IN SIGN FOR ATTACHMENT TO THE MOUNTING BRACKETS SHALL BE OFFSET A MINIMUM OF 2" FROM THE EDGE OF SIGN.
3. HOLES IN SIGN SHALL BE LOCATED SUCH THAT THE SIGN IS PLUMB AND LEVEL.
4. THIS DETAIL IS NOT INTENDED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



RADAR DETECTION MOUNTING DETAIL (MAST ARM BRACKET ARM MOUNT)

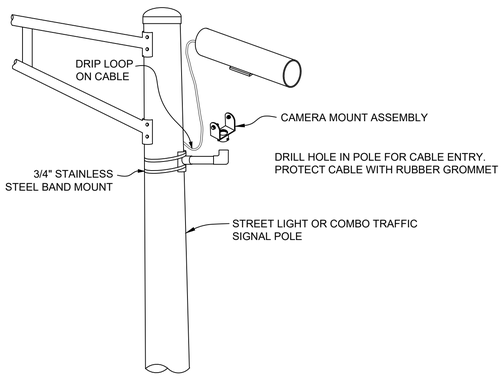
RADAR DETECTION NOTES:

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.

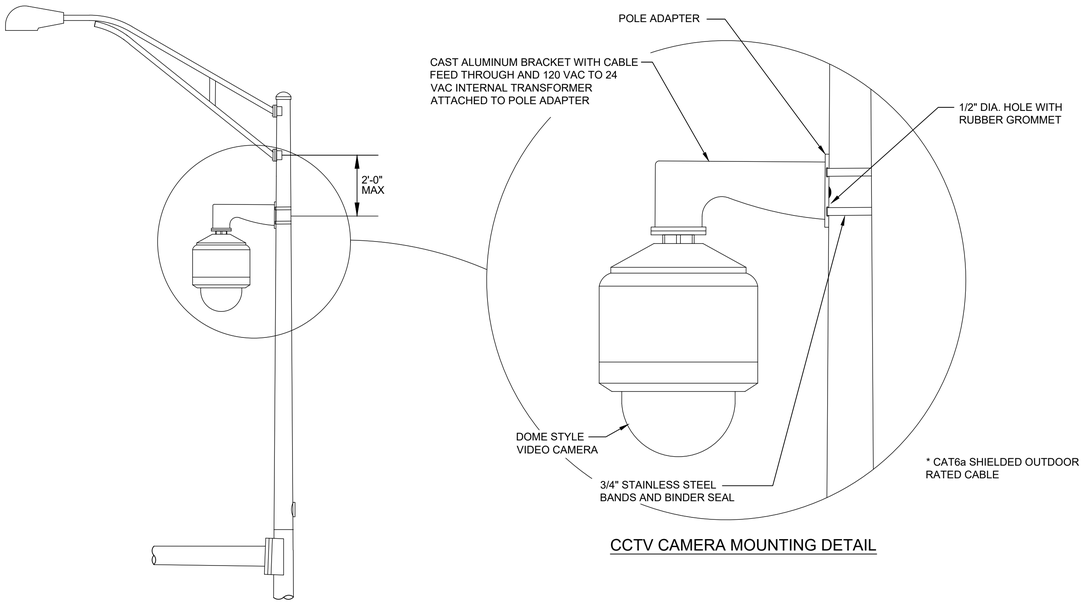


DRILL HOLE IN BOTTOM OF MAST ARM FOR CABLE ENTRY. PROTECT CABLE WITH RUBBER GROMMET.

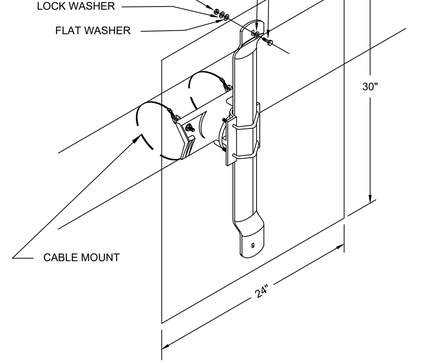
FIXED VIDEO CAMERA MOUNTING DETAIL (MAST ARM MOUNT)



FIXED VIDEO CAMERA MOUNTING DETAIL (SIDE OF POLE MOUNT)



CCTV CAMERA MOUNTING DETAIL



SIGN MOUNTING BRACKET DETAIL (R10 SERIES)

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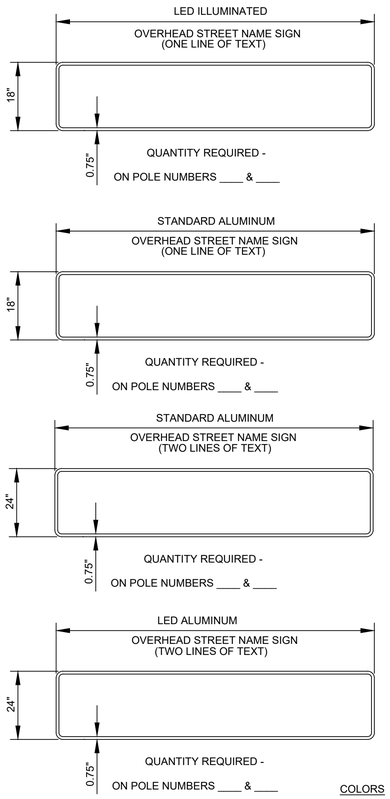
CAMERA OPTICOM & SIGN MOUNTING DET. SHEET D-807

OVERHEAD STREET NAME SIGNS



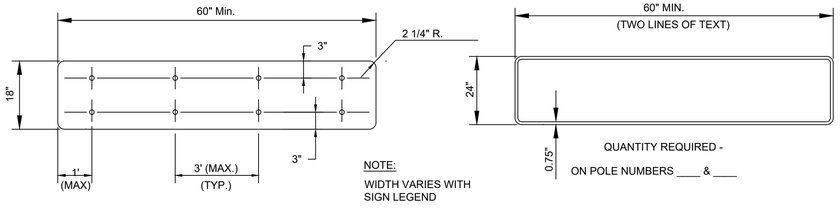
SIGN FACE DETAIL

COLORS

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

LETTERING

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



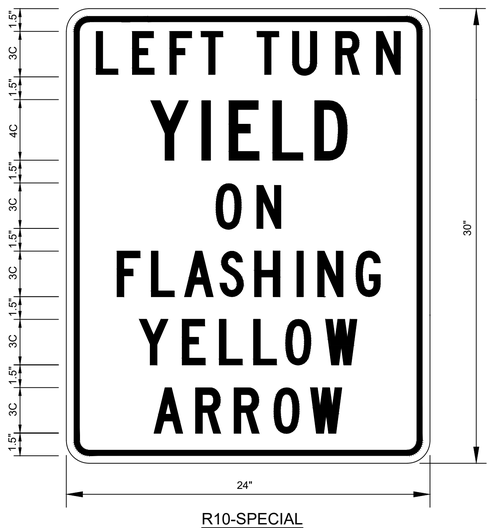
NOTE:

WIDTH VARIES WITH SIGN LEGEND

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

SIGN BLANK DETAIL

SIGN FACE DETAILS

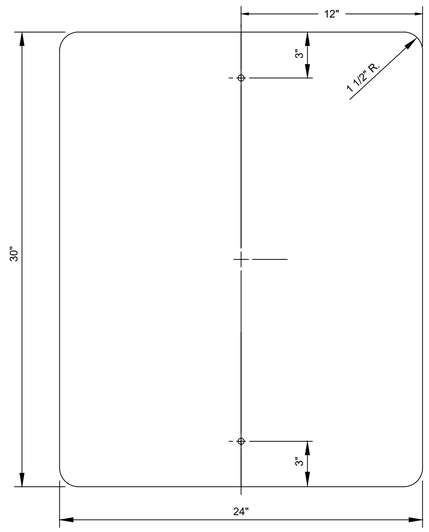


R10-SPECIAL

COLORS

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

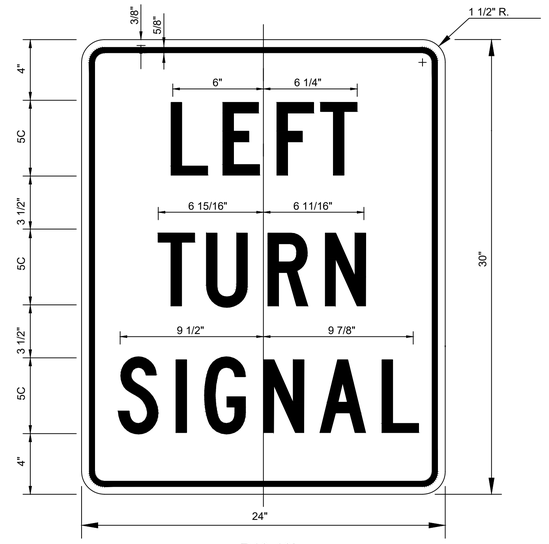
SIGN BLANK DETAILS



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

MATERIAL - 0.080" THICK ALUMINUM.

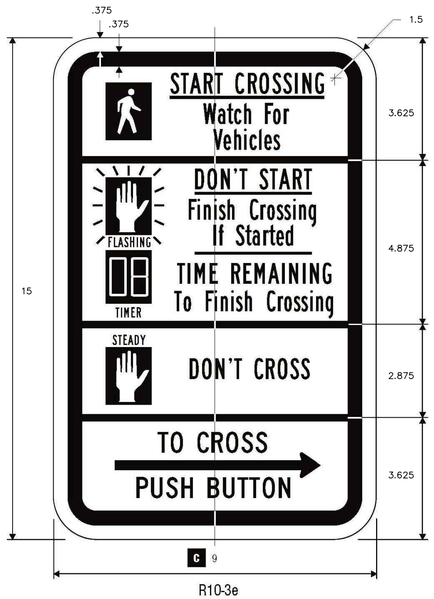
SIGN FACE DETAILS



R10-10L

COLORS

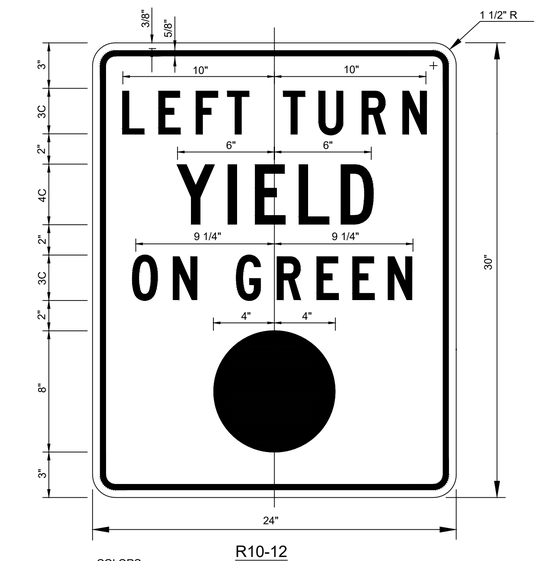
LEGEND	- BLACK (NON-REFLECTIVE)
BACKGROUND	- WHITE (REFLECTIVE)



R10-3e
COUNT-DOWN PEDESTRIAN

NOTE:

HANDS SHALL BE ORANGE



R10-12

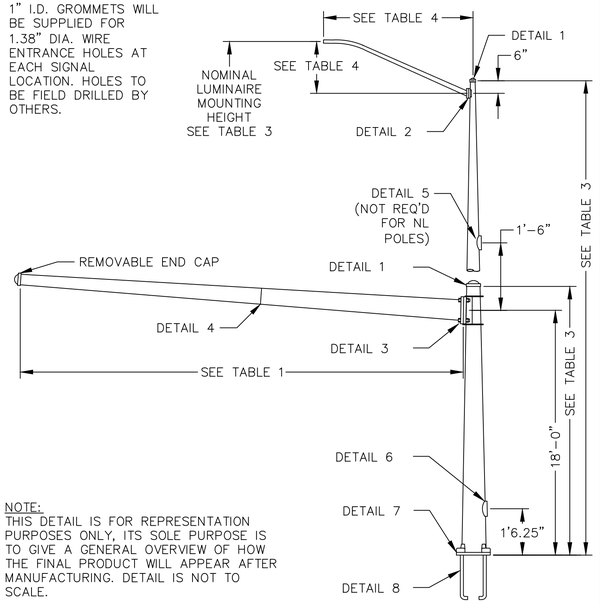
COLORS

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

NOTES:

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

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.

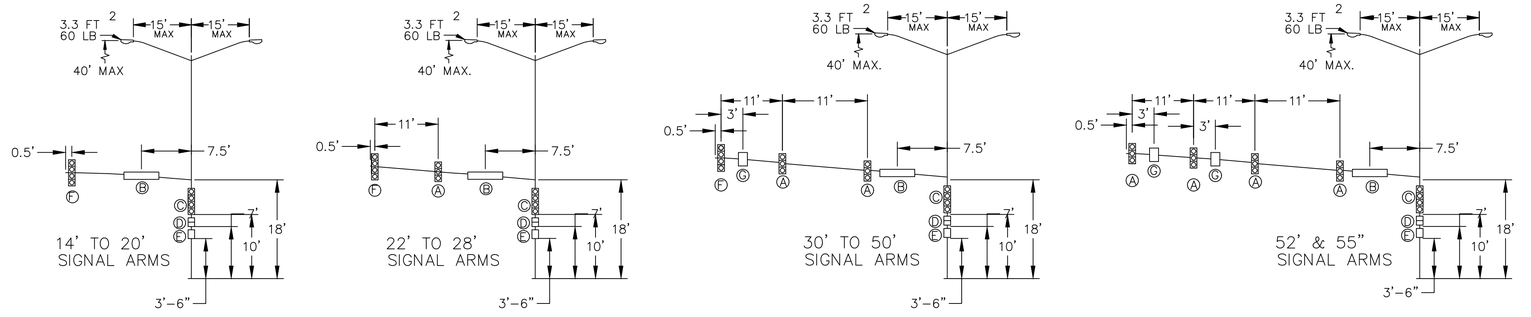
LENEXA POLE SERIES

LENEXA–1–14–MR–8–12

- LENEXA POLE SERIES
- POLE TYPE 1 OR 2
- SIGNAL ARM SPAN(FT)(SEE TABLE 1)
- UPRIGHT TYPE NL,LR,MR,HR(SEE TABLE 3)
- 1ST LUMINAIRE ARM SPAN(SEE TABLE 4)
- 2ND LUMINAIRE ARM SPAN(SEE TABLE 4)

DESIGNATION KEY

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

DESIGNATION KEY						POLE DATA			BASE PLATE DATA					ANCHOR BOLT DATA					SIGNAL ARM DATA				SIGNAL ARM ATTACHMENT DATA				
POLE SERIES	TYPE	SIGNAL ARM SPAN (FT)	LUMINAIRE ARM TYPE	LUMINAIRE ARM 1 SPAN (FT)	LUMINAIRE ARM 2 SPAN (FT)	BASE DIA. (IN)	LENGTH	WALL GAUGE OR THK.	SQUARE "S" (IN)	BOLT CIRCLE "Y" (IN)	THK. "M" (IN)	CENTER HOLE "P" (IN)	BOLT HOLE "Z" (IN)	DIA. "K" (IN)	LENGTH "J" (IN)	HOOK "H" (IN)	THREAD LENGTH "U" (IN)	BOLT QTY.	SIGNAL ARM SPAN (FT)	FIXED END DIA (IN)	FREE END DIA (IN)	GAUGE OF THK (IN)	CENTER HOLE DIA. "E" (IN)	SQUARE "A" (IN)	BOLT PATTERN "B" (IN)	THK. "C" (IN)	BOLT SIZE "D" (IN)
LENEXA	1	14	NL,LR,MR,HR	6–15	6–15	13.00	SEE TABLE 3	0.239	19.00	19.00	2.00	10.25	1.75	1.50	54.00	6.00	8.00	4	14.00	9.00	7.04	7	7.64	17.75	14.50	2.00	1.25 X 6.25
		16																	16.00	9.00	6.76	7	7.64				
		18																	18.00	9.00	6.48	7	7.64				
		20																	20.00	9.00	6.20	7	7.64				
		22																	22.00	9.00	5.92	7	7.64				
		24																	24.00	9.00	5.64	7	7.64				
		26																	26.00	9.00	5.36	7	7.64				
		28																	28.00	9.00	5.08	7	7.64				
		30																	30.00	10.00	5.80	7	8.64				
		32																	32.00	10.00	5.52	7	8.64				
		34																	34.00	10.00	5.24	7	8.64				
		36																	36.00	10.00	4.96	7	8.64				
LENEXA	2	38	NL,LR,MR,HR	6–15	6–15	14.50		0.219	20.50	20.50	2.00	11.75	2.00	1.75	84.00	6.00	8.00	4	38.00	11.00	5.68	7	8.75	19.25	16.00	2.00	1.25 X 6.25
		40																	40.00	11.00	5.40	7	8.75				
		42																	42.00	11.00	5.12	7	8.75				
		44																	44.00	11.00	4.84	7	8.75				
		46																	46.00	12.00	5.56	7	9.25				
		48																	48.00	12.00	5.28	7	9.25				
		50																	50.00	12.00	6.36	7	9.25				
		52																	52.00	12.50	5.58	DET. 4	8.75				
		54																	54.00	12.50	5.30	DET. 4	8.75				
		55																	55.00	12.50	5.16	DET. 4	8.75				

TABLE 2: MATERIAL & FINISH DATA

COMPONENT	ASTM DESIGNATION	MIN. YIELD (KSI)
ALL TAPERED SHAFTS	A595 GR.A OR A572	55
BASE PLATE	A36	36
SIMPLEX PLATES	A36	36
LUM ARM ATTACHMENT	A36	36
LUMINAIRE CONN. BOLTS	SAE GR.5	--
ANCHOR BOLTS	F1554 GR.55	55
GALVANIZING–HARDWARE	F2329	--

STANDARD FINISH:
SYSTEM: GALVANIZED (GV)
BASE COAT: HOT–DIP GALVANIZED TO ASTM A123
PRIME COAT: NONE
FINISH COAT: NONE
COLOR: NONE
SPEC: F–1

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	20'–0"	27'–0"	32'–0"	37'–0"

OPTIONAL FINISH:
SYSTEM: V–PRO 54 (VP54) LIQUID (ALTERNATE)
BASE COAT: HOT–DIP GALVANIZED TO ASTM A123
PRIME COAT: POLYAMIDOAMINE OR POLYAMIDE EPOXY
FINISH COAT: ALIPHATIC ACRYLIC POLYURETHANE WITH UV PACKAGE
COLOR: ????
SPEC: F–604????

TABLE 4: LUMINAIRE

ARM SPAN (FT)	SINGLE RISE HEIGHT	DOUBLE RISE HEIGHT 180°(*)	BASE OD (IN)	END OD (IN)	WALL THK (IN)	STAGGERED DOUBLE RISE HEIGHT 0°–179°(*)	BASE OD IN)	END OD (IN)	WALL THK (IN)
6	3'–6"	3'–6"	3.44	2.40	11	4'–6"	N/A	N/A	N/A
8	3'–6"	3'–6"	3.67	2.40	11	4'–6"	3.76	2.40	11
10	3'–6"	3'–6"	3.93	2.40	11	4'–6"	3.98	2.40	11
12	3'–6"	3'–6"	4.19	2.40	11	4'–6"	4.23	2.40	11
15	3'–6"	3'–6"	4.60	2.40	11	4'–6"	4.63	2.40	11

(*) ANGLES MEASURED CLOCKWISE FROM FIRST LUMINAIRE ARM

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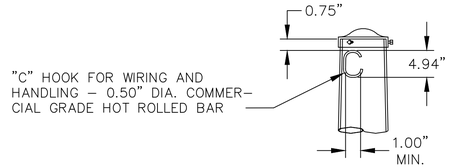
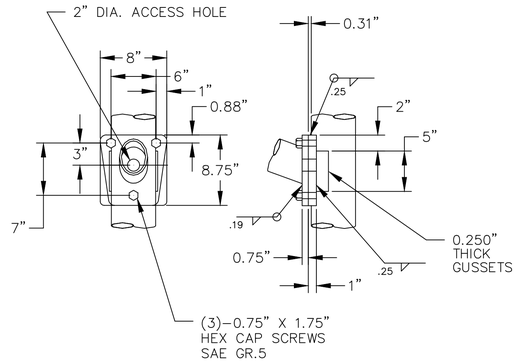
TRAFFIC SIGNAL STRUCTURES

SHEET D-809

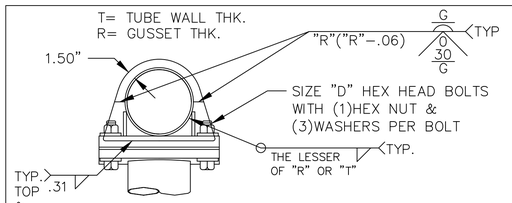


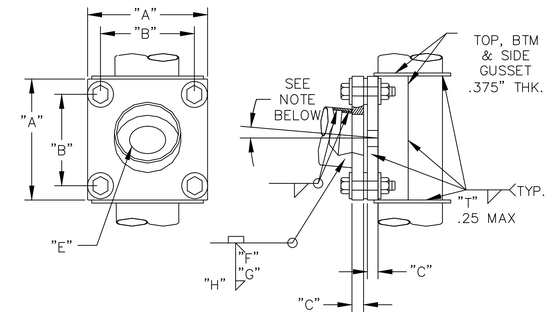
DETAIL X | POLE TOP



* DOUBLE SIMPLEXES OTHER THAN @ 180° WILL NEED TO BE STAGGERED 1'–0" APART.

DETAIL X | LUMINAIRE ARM ATTACHMENT

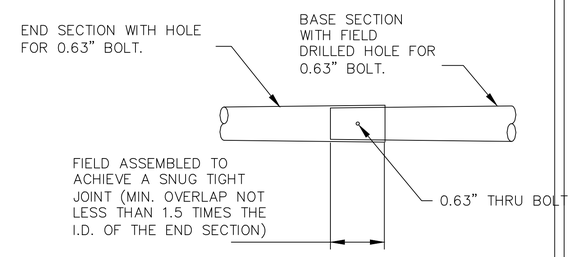




RISE NOTE:
RISE SHALL BE BUILT IN THE MOUNTING PLATE ATTACHED TO THE ARM. RISE IN MTG PLATES MAY VARY DEPENDED UPON POLE SIZE AND MAST ARM LOADING.

ARM SHAFT WALL THK.	ARM–TO–PLATE WELD "H"	BEVEL "F"X"G"
ALL	(ARM THK.+.25") X ARM THK.	.19" X 30°

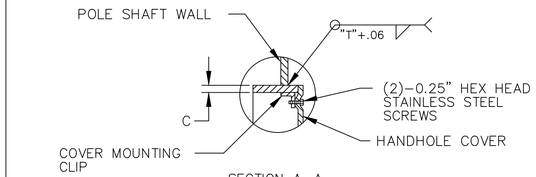
DETAIL 3 | SIGNAL ARM ATTACHMENT



SPAN (FT)	BASE SECTION		END SECTION		
	LENGTH (FT)	GAUGE/THK. (IN)	BASE DIA. (IN)	LENGTH (FT)	GAUGE/THK. (IN)
52.00	50.00	0.209	6.12	3.83	7
54.00	50.00	0.209	6.12	5.83	7
55.00	50.00	0.209	6.12	6.83	7

DETAIL X | 50'–55'SIGNAL ARM SLIP JOINT

("T"= SHAFT WALL THICKNESS)

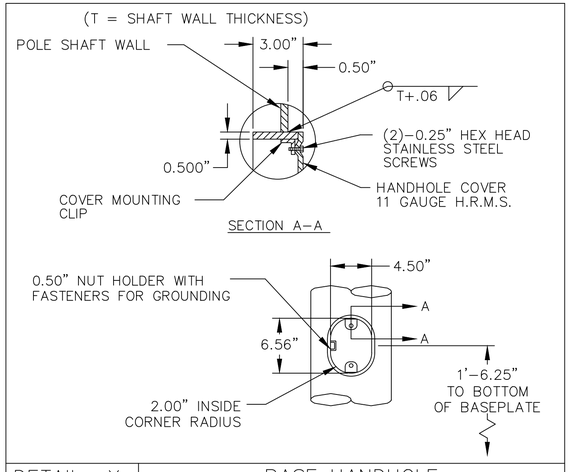


NOTE:
HANDHOLE SUPPLIED 180° FROM SIMPLEX ON COMBINATION POLES ONLY.

POLE THK.	A	B	C
0.239"	7.56"	5.19"	0.280"
ALL OTHERS	7.31"	5.63"	0.432"

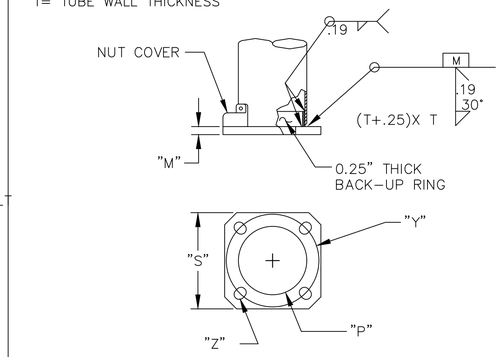
DETAIL 5 | UPPER HANDHOLE

(T = SHAFT WALL THICKNESS)

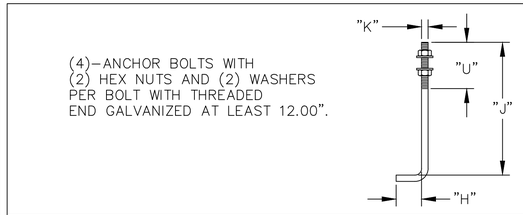


DETAIL X | BASE HANDHOLE

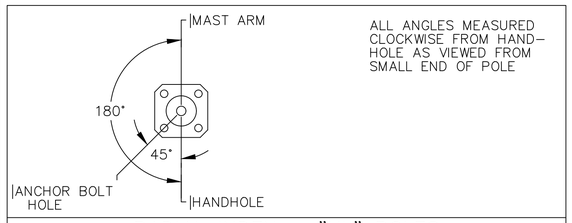
T= TUBE WALL THICKNESS



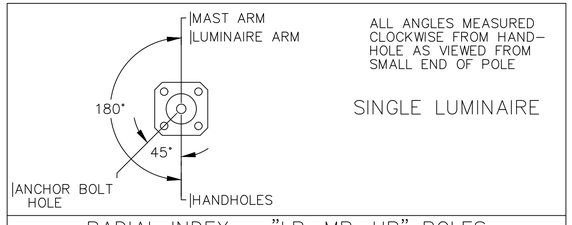
DETAIL X | POLE BASE



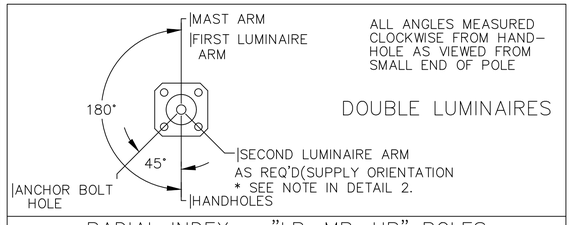
DETAIL X | ANCHOR BOLT



RADIAL INDEX – "NL" POLES



RADIAL INDEX – "LR, MR, HR" POLES



RADIAL INDEX – "LR, MR, HR" POLES

DESIGN CRITERIA:
THE MAST ARM TRAFFIC STRUCTURES SHOWN ON THIS DRAWING HAVE BEEN DESIGNED IN ACCORDANCE WITH THE LOADING AND THE ALLOWABLE STRESS REQUIREMENTS OF THE 2013 AASHTO "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPORTS FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS", SIXTH EDITION, LTS–6. THE WIND LOADS WERE CALCULATED FROM A BASIC WIND VELOCITY OF 90 MPH WITH A RECURRENCE INTERVAL OF 50 YEARS, AND A FATIGUE CATEGORY OF 2. THE FATIGUE LOADS WERE CALCULATED ON THE REQUIREMENTS OF SECTION 11 OF THE CODE, AND THE FOLLOWING CONDITIONS:

- ? STRUCTURES ARE DESIGNED TO RESIST NATURAL WIND GUSTS BASED ON THE YEARLY MEAN WIND VELOCITY OF 11.2 MPH.
- ? STRUCTURES ARE NOT DESIGNED TO RESIST GALLOPING– INDUCED CYCLIC LOADS.
- ? TRUCK–INDUCED GUST LOADS ARE EXCLUDED PER THE REQUIREMENTS OF THE CODE.

**NOTE:
UPON INITIAL FIELD ASSEMBLY OF THE MAST–ARM'S FIRST SECTION'S BUTT PLATE TO THE MAST–ARM VERTICAL POLE'S BUTT PLATE, IF THE END USER DETERMINES THAT THERE IS A SUFFICIENT GAP AT A BOLT HOLE SUCH THAT THERE WILL NOT BE FACE–TO–FACE CONTACT BETWEEN THE TWO BUTT PLATES, THEN A WASHER SHALL BE INSERTED TO PROVIDE FACE–TO–FACE CONTACT BETWEEN THE TWO BUTT PLATES IN ACCORDANCE WITH SECTION 5.16 "BOLTED CONNECTIONS" OF THE 2013 EDITION OF AASHTO.

AASHTO 2013 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. THE VALMONT WARRANTY SPECIFICALLY EXCLUDES FATIGUE FAILURE OR SIMILAR PHENOMENA RESULTING FROM INDUCED VIBRATION, HARMONIC OSCILLATION OR RESONANCE ASSOCIATED WITH MOVEMENT OF AIR CURRENTS AROUND THE PRODUCT.

VIBRATION DISCLAIMER

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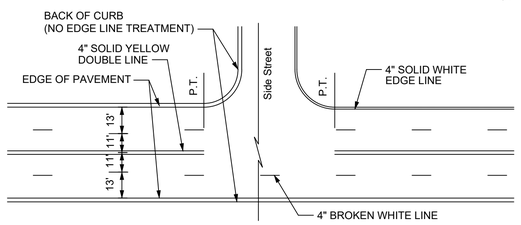
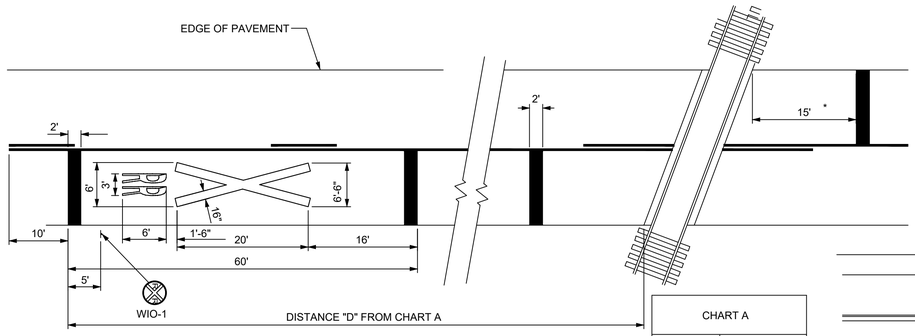
TRAFFIC SIGNAL STRUCTURES 2 | SHEET D-810



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.

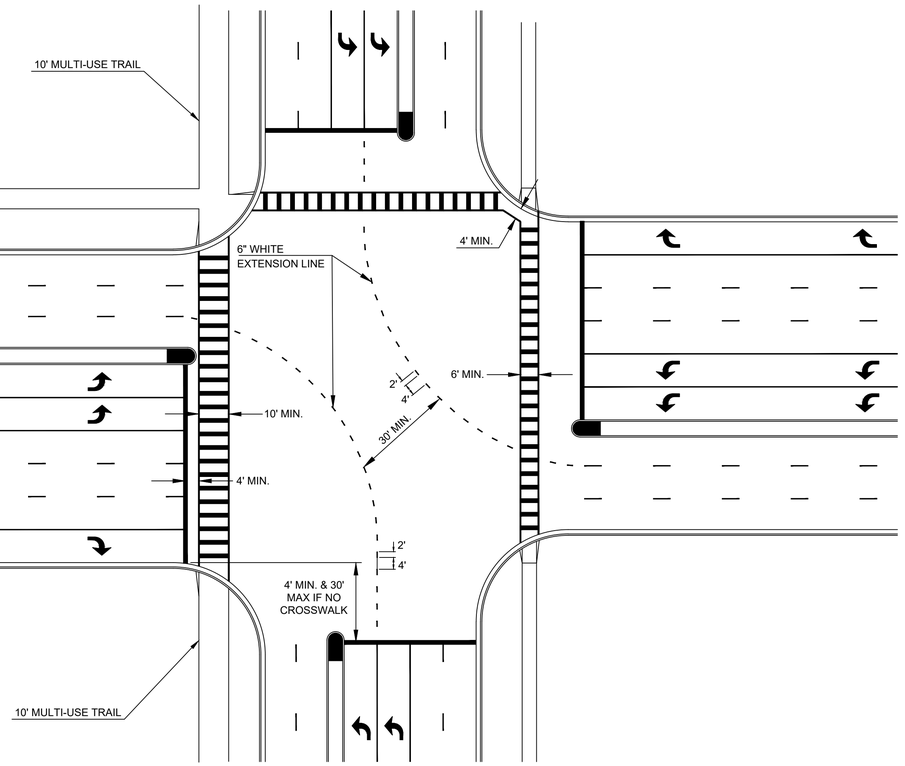
* STOP LINE 8 FT. FROM NEAREST EDGE OF GATE OR CANTILEVER, IF PRESENT.

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.

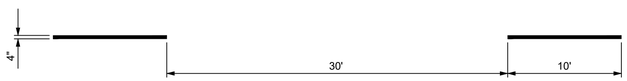


TYPICAL CROSSWALK AND LEFT TURN

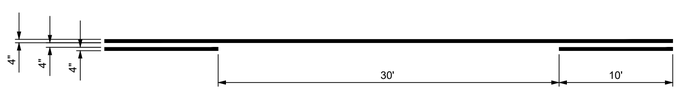
EXTENSION LINE MARKINGS

NOTES:

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

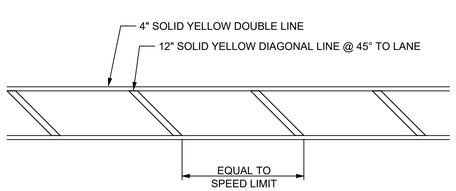


TYPICAL 4" BROKEN LINE DETAIL

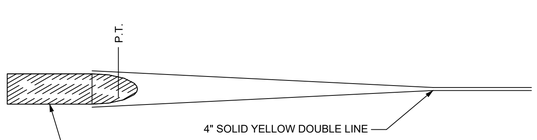


TYPICAL COMBINATION 4" SOLID AND BROKEN LINE DETAIL

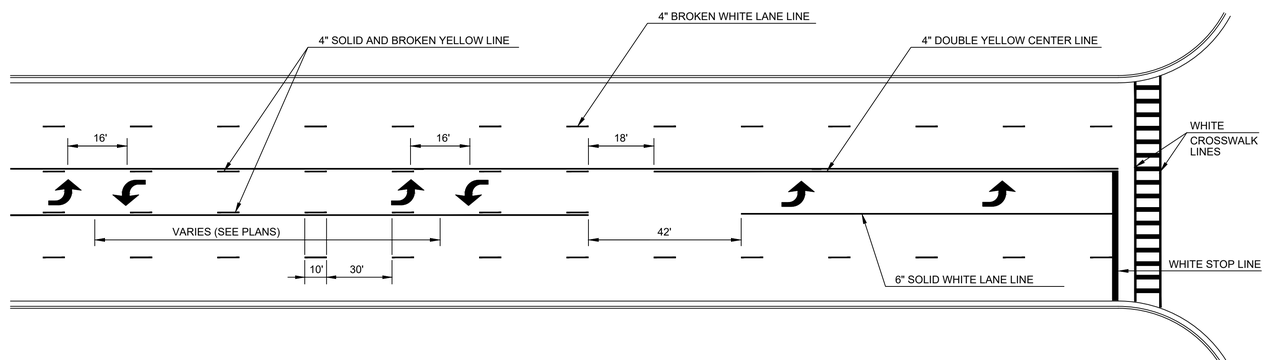
TYPICAL 4" SOLID YELLOW DOUBLE LINE DETAIL



TYPICAL 12" SOLID YELLOW DIAGONAL LINE DETAIL



TYPICAL MEDIAN NOSE CENTERLINE TREATMENT



TYPICAL TWO-WAY LEFT TURN MARKINGS

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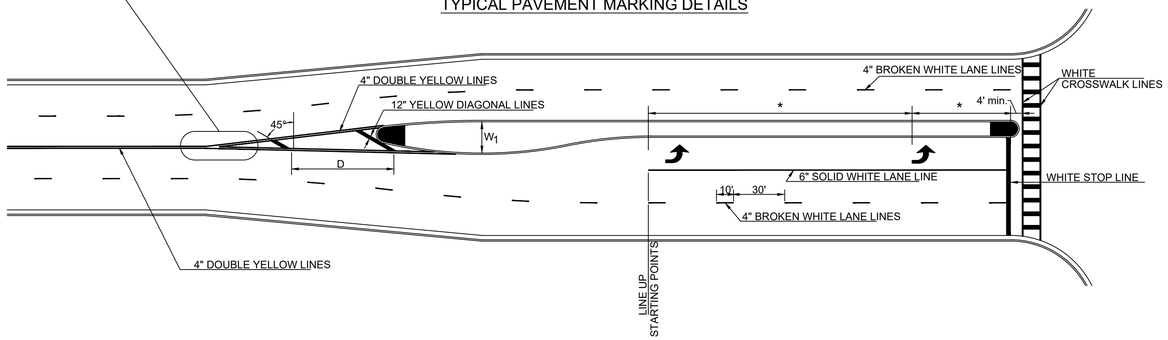
PAVEMENT MARKING DETAILS

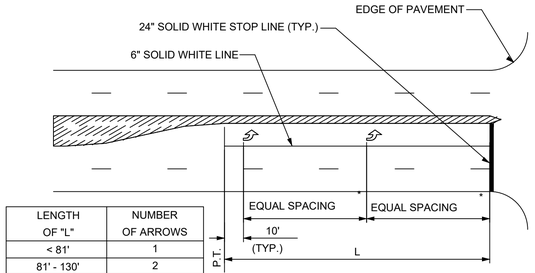
SHEET D-900

TYPICAL PAVEMENT MARKING DETAILS



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.

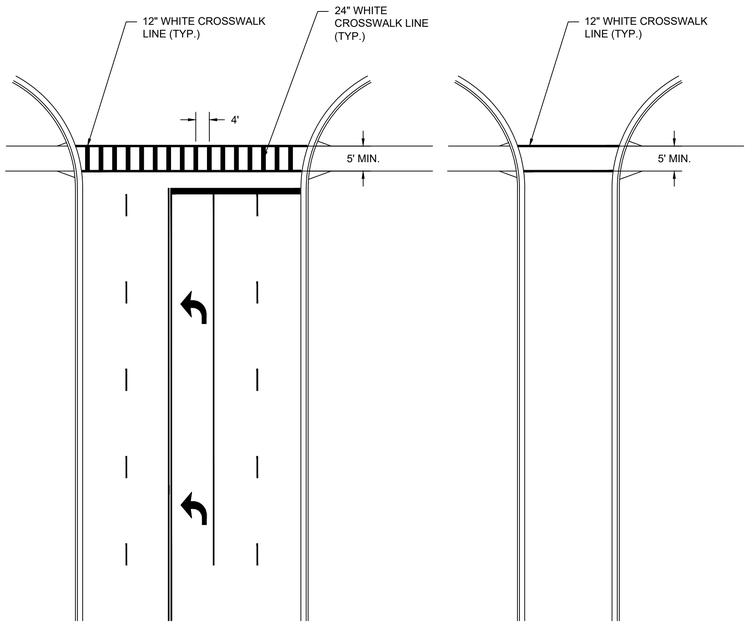
TYPICAL MARKINGS FOR A RAISED MEDIUM



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

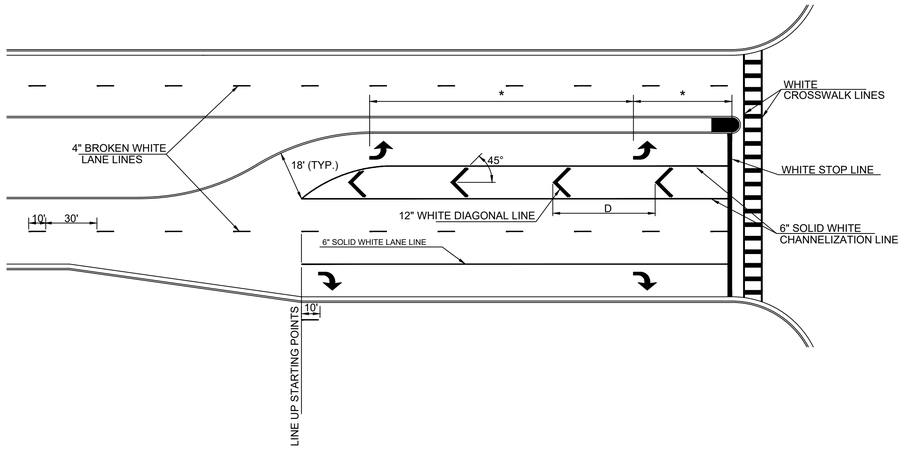
TYPICAL TURN LANE TREATMENT



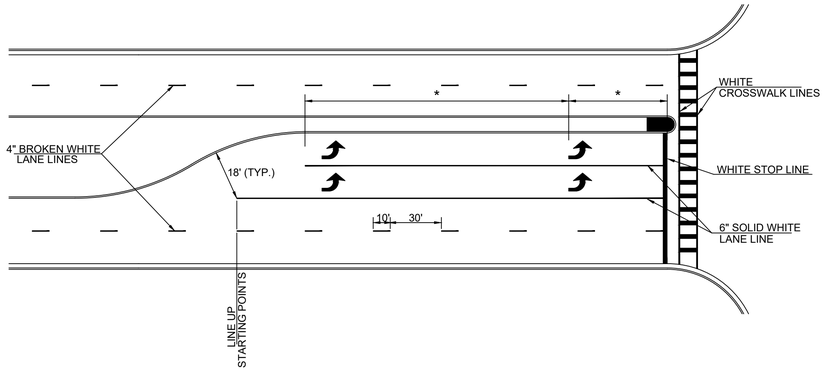
NOTES:
1) ALIGN THE 4' GAP WITH THE VEHICLE WHEEL PATH.
2) THE WIDTH OF THE GAP MAY BE ADJUSTED AS PER THE CITY INSPECTOR.

TYPICAL CROSSWALK DETAILS
ARTERIAL AND MAJOR COLLECTORS

TYPICAL CROSSWALK DETAILS
LOCAL, LOCAL COLLECTORS AND INDUSTRIAL



TYPICAL LEFT TURN CHANNELIZATION ISLAND LANE MARKINGS



TYPICAL DUAL LEFT-TURN LANE MARKINGS

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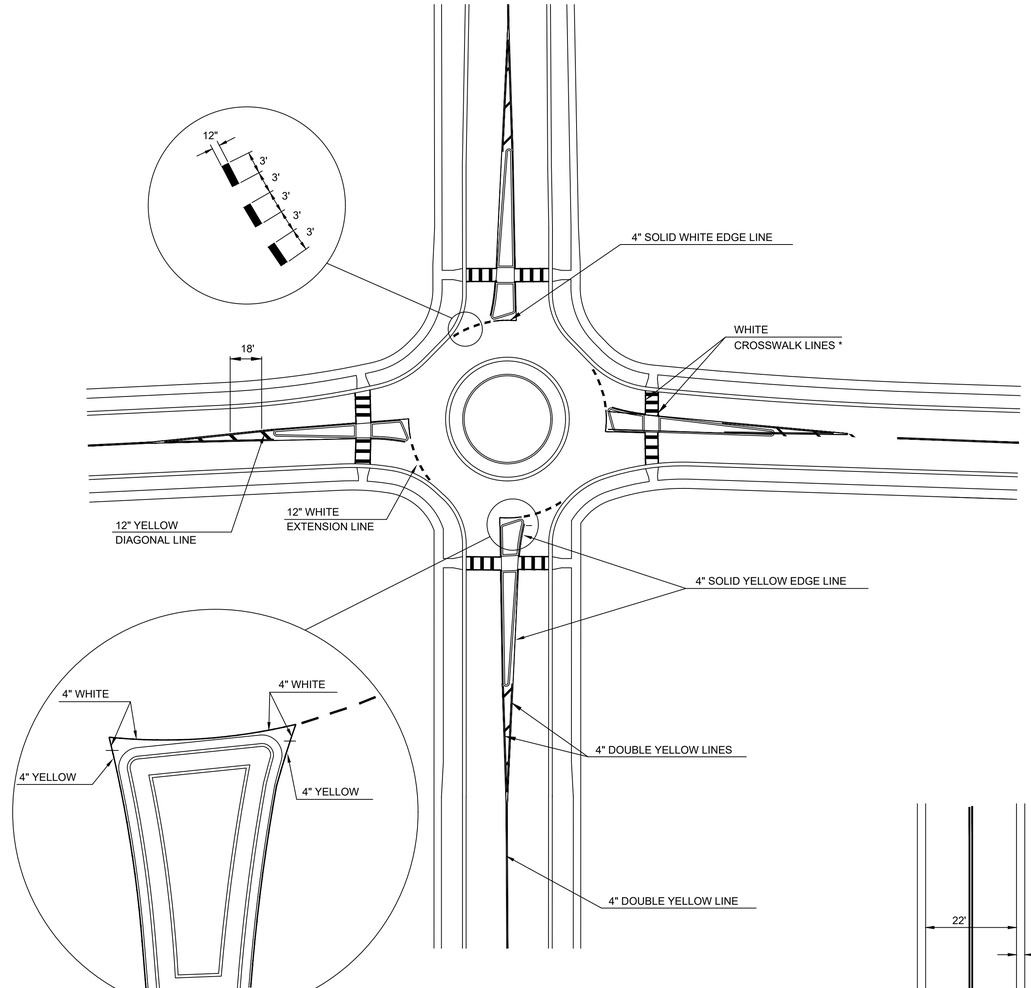
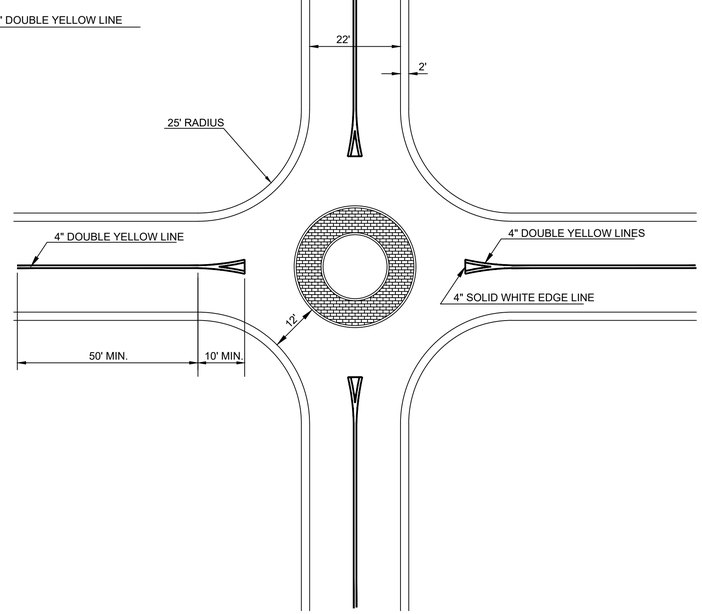
PAVEMENT MARKING DETAILS 2

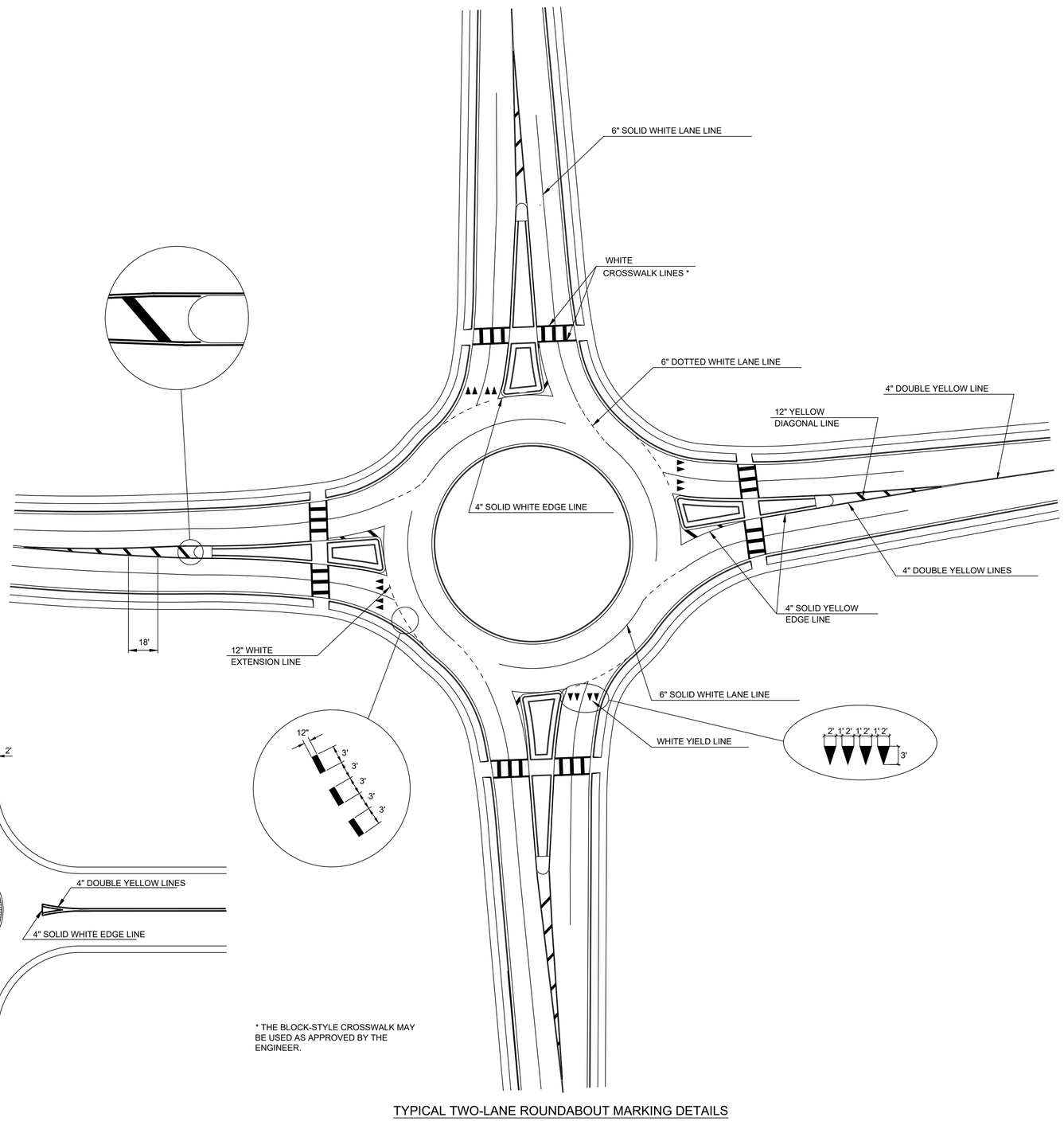
SHEET D-901



TYPICAL ONE-LANE ROUNDABOUT MARKING DETAILS



TYPICAL TRAFFIC CIRCLE MARKINGS



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

TYPICAL TWO-LANE ROUNDABOUT MARKING DETAILS

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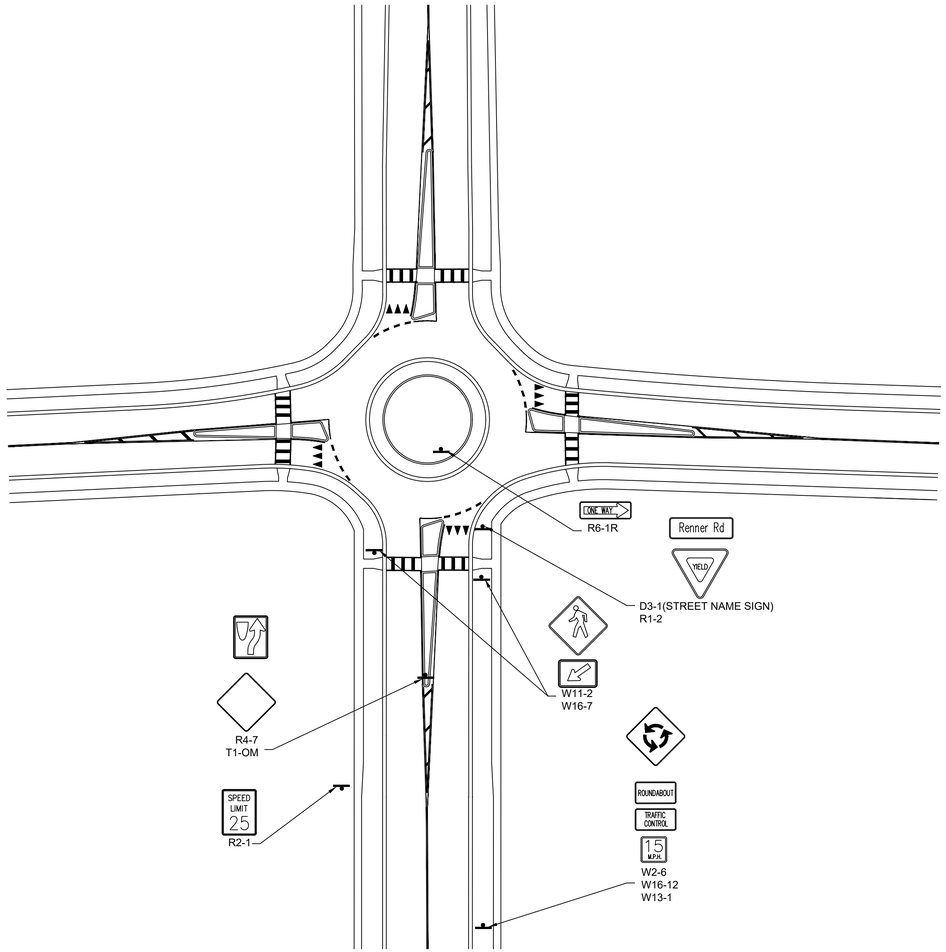
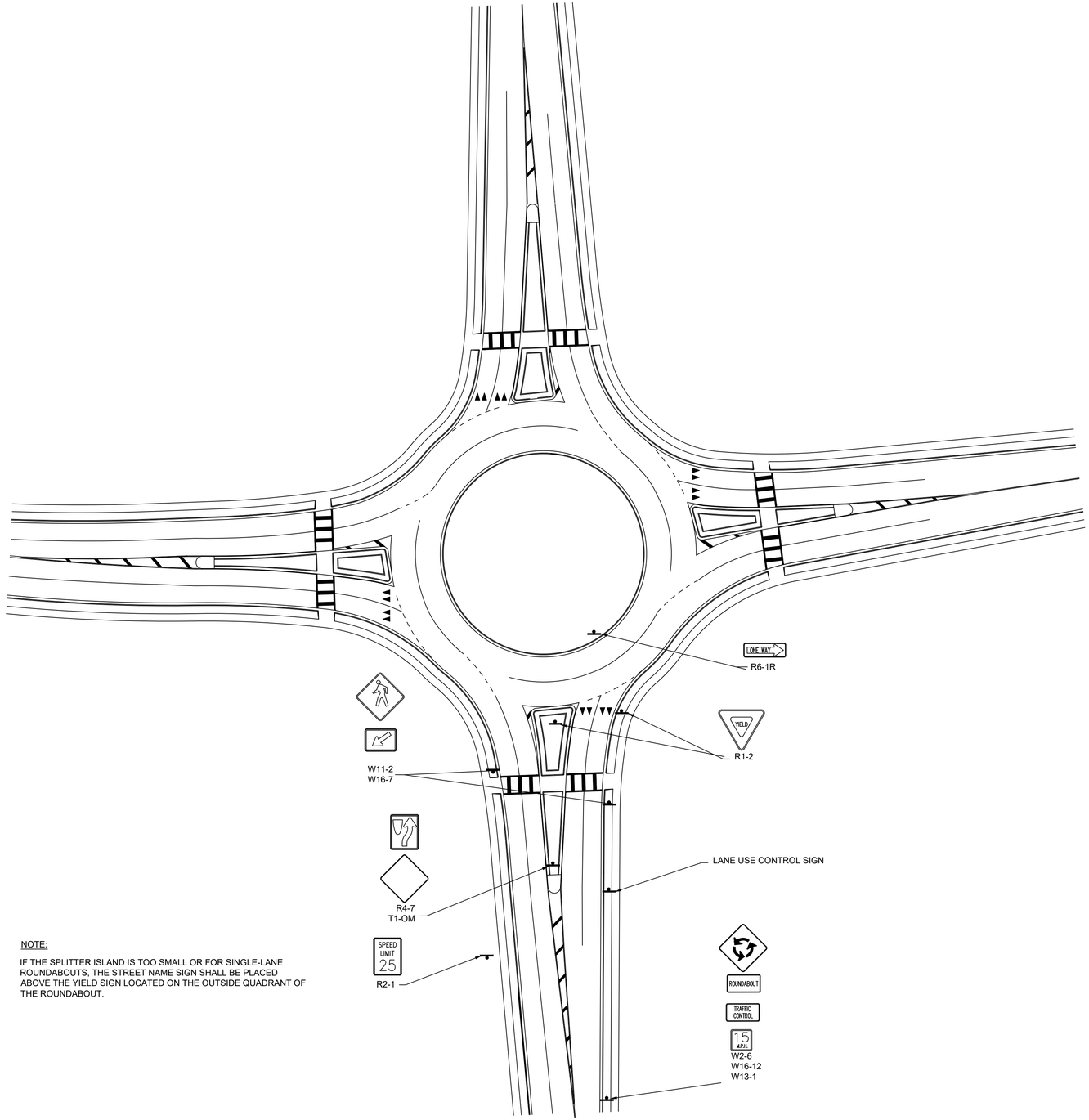
ROUNDABOUT & TRAFFIC CIRCLE MARKING DET. | *SHEET* D-902



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)

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ROUNDABOUT SIGNING

SHEET D-903

SUMMARY OF PAVEMENT MARKING QUANTITIES - ASPHALT																			
LOCATION OF PROJECT	4" Solid White Line	4" Broken White Line	4" Solid Yellow Line	4" Broken Yellow Line	6" Solid White Line	6" Dotted White Line	24" Solid White X-walk Line	12" Solid White X-walk Line	12" Broken White Line	12" Dotted White Extension Line	12" Solid Yellow Diag. Line	12" Solid White Diag. Line	4" Dotted White Extension Line	24" Solid White Stop Line	24" X 36" White Yield Line	Left Arrow	Right Arrow	ONLY	Railroad Crossing
	THERMO	THERMO	THERMO	THERMO	THERMO	THERMO	THERMO	THERMO	THERMO	THERMO	THERMO	THERMO	THERMO	THERMO	THERMO	Pre-Formed THERMO	Pre-Formed THERMO	Pre-Formed THERMO	Pre-Formed THERMO
TOTALS																			

SUMMARY OF PAVEMENT MARKING QUANTITIES - CONCRETE																			
LOCATION OF PROJECT	4" Solid White Line	4" Broken White Line	4" Solid Yellow Line	4" Broken Yellow Line	6" Solid White Line	24" Solid White X-walk Line	12" Solid White X-walk Line	12" Broken White Line	12" Dotted White Extension Line	12" Solid Yellow Diag. Line	12" Solid White Diag. Line	4" Dotted White Extension Line	24" Solid White Stop Line	24" X 36" White Yield Line	Left Arrow	Right Arrow	ONLY	Railroad Crossing
	MULTI-COMPONENT	MULTI-COMPONENT	MULTI-COMPONENT	MULTI-COMPONENT	MULTI-COMPONENT	MULTI-COMPONENT	MULTI-COMPONENT	MULTI-COMPONENT	MULTI-COMPONENT	MULTI-COMPONENT	MULTI-COMPONENT	MULTI-COMPONENT	MULTI-COMPONENT	MULTI-COMPONENT	MULTI-COMPONENT	MULTI-COMPONENT	MULTI-COMPONENT	MULTI-COMPONENT
TOTALS																		

SUMMARY OF SIGNING QUANTITIES					
LOCATION	NEW SIGN/ RELOCATE FROM	LEGEND	MUTCD NO.	SIGN SIZE	SHEETING PERFORMANCE

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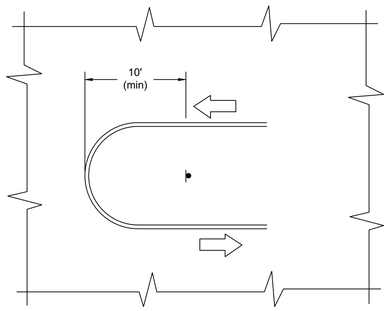
PAVEMENT MARKING & SIGNING QUANTITIES

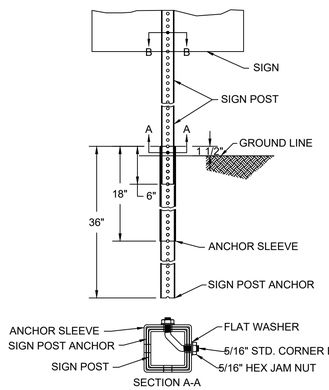
SHEET D-904



TYPICAL MEDIAN SIGN LOCATION

NOTE:

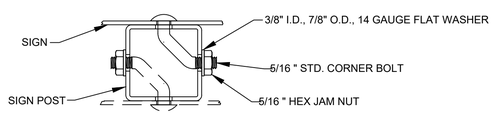
A RAISED MEDIAN INSTALLED SIGN SHALL NOT EXTEND BEYOND THE BACK FACE OF CURB. NORMAL CLEARANCE SHOULD BE 2' FROM SIGN EDGE TO BACK FACE OF CURB.



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.

NOTE:

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



SECTION B-B

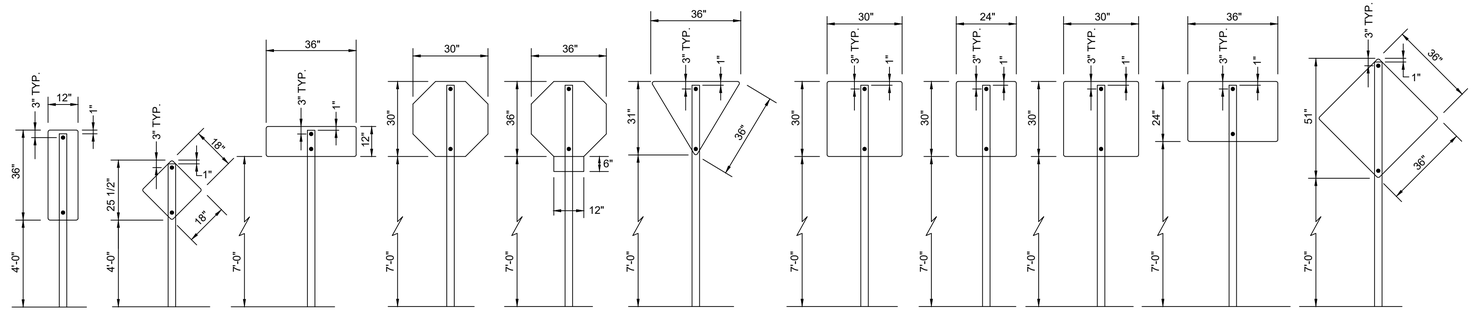
BREAKAWAY SIGN POST DETAIL

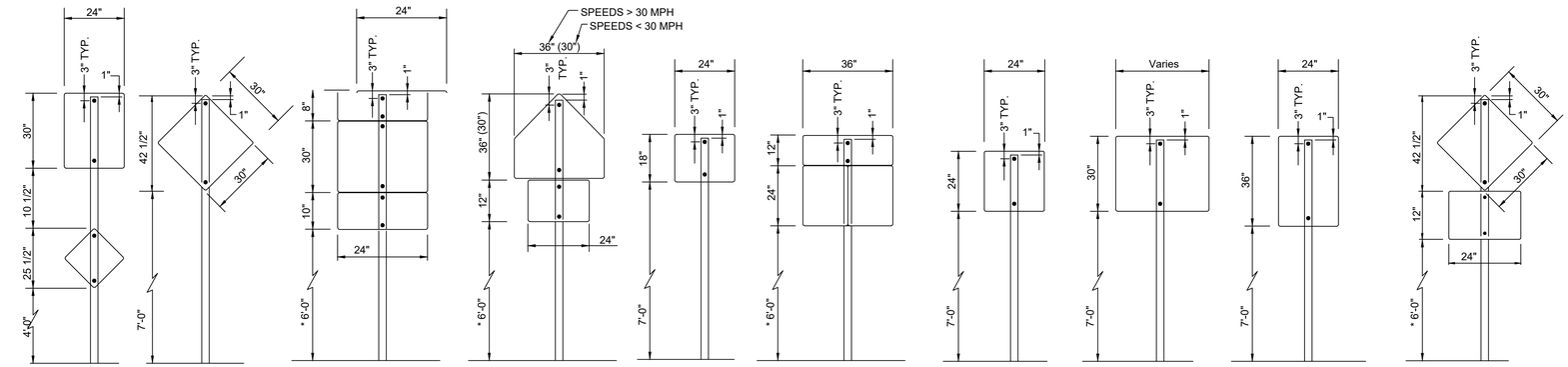
INSTALLATION SEQUENCE

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.

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).

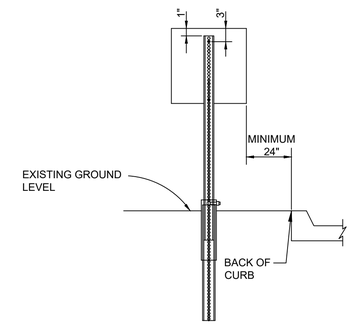




SIGN MOUNTING DETAILS

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 25 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. ANCHORS FOR STOP SIGN ASSEMBLIES THAT WILL INCLUDE STREET NAME SIGNS SHALL BE 48" IN LENGTH. YIELD SIGN AND STREET NAME ONLY ANCHORS SHALL BE 48" IN LENGTH.
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 XCESSORIES SQUARED PART NO.SB8-CTA48-G OR APPROVED EQUAL. SIGN POSTS SHALL BE PLACED IN CONCRETE.
6. FOR ASSEMBLIES THAT ARE MOUNTED IN MEDIANS, THE CONTRACTOR SHALL CORE DRILL A 6" DIAMETER HOLE AND UTILIZE XCESSORIES SQUARED PART NO. HDA200-30-G ANCHORS, OR APPROVED EQUAL. ANCHORS SHALL BE SET IN CONCRETE USING A CIRCULAR OR SQUARE FOR SO THE FINISHED GRADE OF THE CONCRETE MATCHES THE GRADE OF THE MEDIAN.
7. ALL HARDWARE SHALL BE EITHER GALVANIZED STEEL OR ZINC. STAINLESS STEEL IS NOT PERMITTED.



TRAFFIC SIGN INSTALLATION DETAIL

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

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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. ON FEDERALLY FUNDED PROJECTS, SIGN SHALL BE A NON-PARTICPIATING ITEM.
9. GRAPHICS AND SIGN LAYOUT SHALL BE SUBMITTED TO THE CITY FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
10. IN SITUATIONS WHEN THE SIGN MUST STRADDLE THE SIDEWALK, THE BOTTOM OF THE SIGN SHALL BE 8 FEET ABOVE THE TOP OF THE SIDEWALK. ADDITIONALLY, THE SIGN POSTS SHALL BE LOCATED AT LEAST ONE FOOT FROM THE EDGE OF THE SIDEWALK TO THE SIGN POSTS.
11. TEXT SHALL BE FUTURE STD. (EXTRA BOLD).

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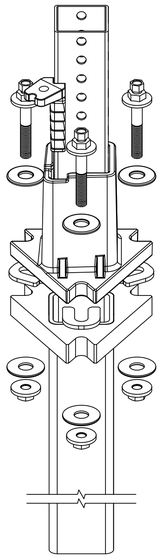
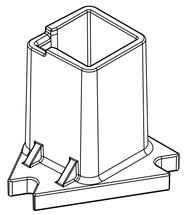
PROJECT SIGN DETAIL

SHEET D-906



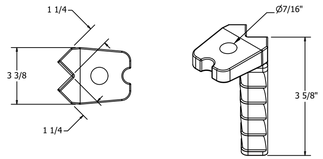
COMPLETE SLIP
BASE ASSEMBLY

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



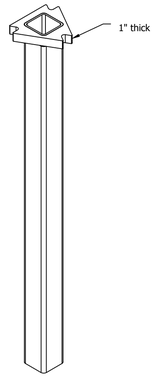
RECEIVER TO BE CAST
FROM DUCTILE IRON
ASTM A536 CLASS 65-45-12.
GALVANIZED PER ASTM A153.

LWX35F-G
POST LOCKING WEDGE



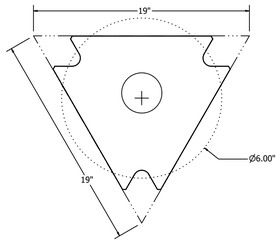
LOCKING WEDGE FORGED
FROMSAE 1035 STEEL AND
GALVANIZED PER ASTM A153.

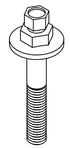
SB8-CTA48-G
UNIBASE CONCRETE
ANCHOR STUB



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

SLIP PLATE DIMENSION





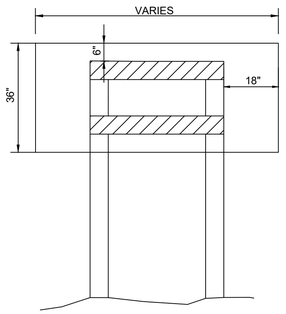
RTB50-300-G
1/2"-13 x 3"
GRADE 8 DOUBLE
HEX BOLT,
GALVANIZE PER
ASTM B695
(3 EACH PER KIT)

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



ADVANCE STREET NAME SIGN DETAIL

NOTES:
A. MINIMUM OF 12" DIAMETER X 42" CONCRETE FOOTING.
B. 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.
C. ALL COMPONENTS OF ORIGINAL INSTALLATION SHALL BE REUSABLE WITH THE EXCEPTION OF THE MATCHPLATE HARDWARE BOLT.
D. BRASS SHIMS MAY BE USED BETWEEN SLIP PLATES TO LEVEL THE UPPER SLIP PLANE.
E. SLIP BASE MUST BE FHWA ACCEPTED, MEETING CURRENT AASHTO & NCHRP 350 REQUIREMENTS.
F. SIGN BRACE CLAMPS MUST ALLOW SIGN BRACE TO BE ADJUSTED UP, DOWN, LEFT OR RIGHT IN ORDER TO ACHIEVE PERFECT POSITION OF SIGN PANEL.
G. DRIVE RIVET MUST HAVE WASHER PRE-INSTALLED AND FIT INTO SIGN BRACE TO SECURE ALUMINUM SIGN PANEL.
H. FOR PROPER HARDWARE INSTALLATION, SEE SEPERATE HARDWARE INSTALLATION INSTRUCTIONS.
I. 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.

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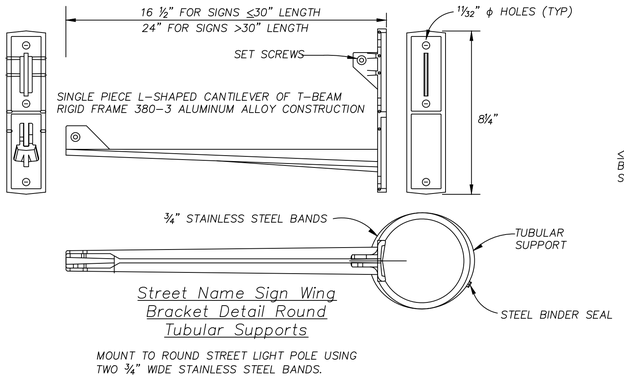
ADVANCE STREET NAME SIGN DETAIL

SHEET D-907

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

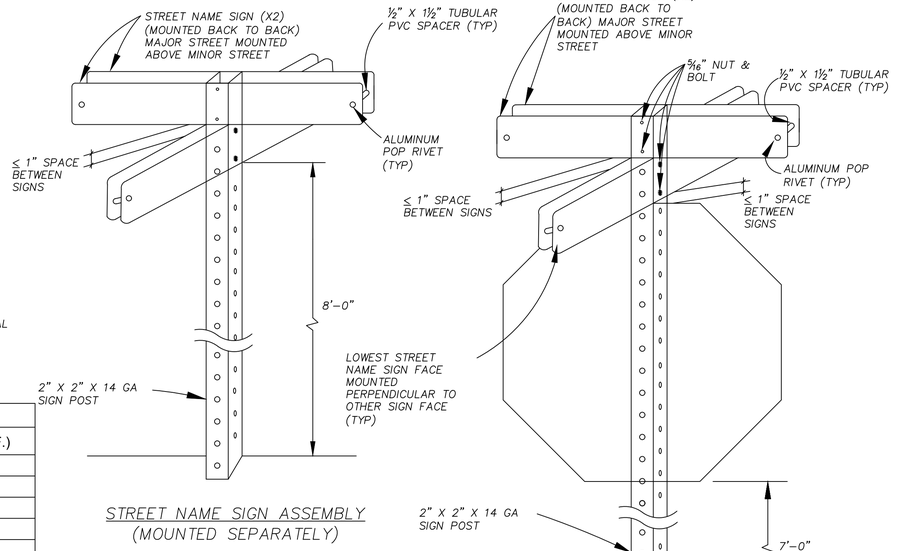
TABLE 2 (NUMBERED STREETS)	
STANDARD ABBREVIATION LIST	
First	st
Second	nd
Third	rd
Fourth to Ninth	th

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



Street Name Sign Wing Bracket Detail Round Tubular Supports

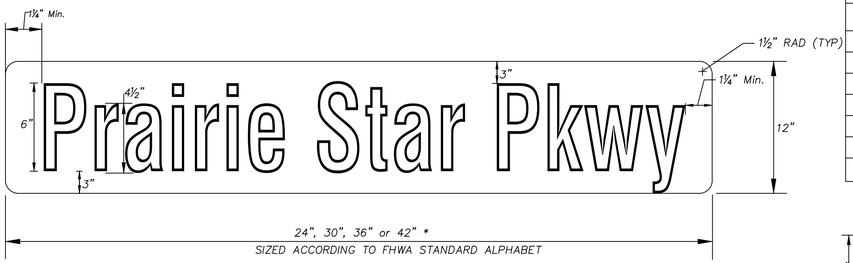
MOUNT TO ROUND STREET LIGHT POLE USING TWO ¾" WIDE STAINLESS STEEL BANDS.



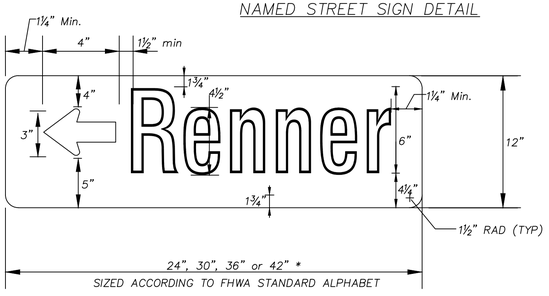
STREET NAME SIGN ASSEMBLY (MOUNTED SEPARATELY)

STREET NAME SIGN ASSEMBLY (MOUNTED WITH OTHER SIGN)

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				

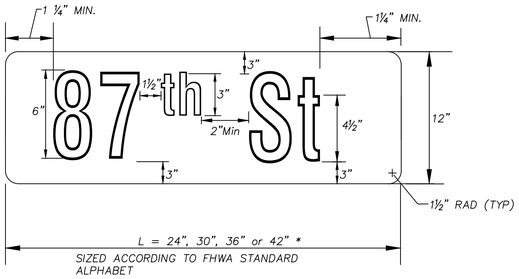


NAMED STREET SIGN DETAIL

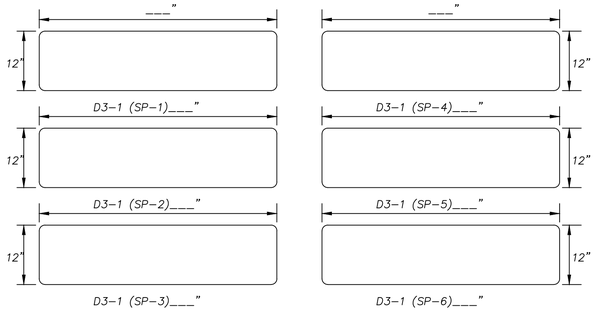


NAMED STREET SIGN DETAIL / DIRECTIONAL

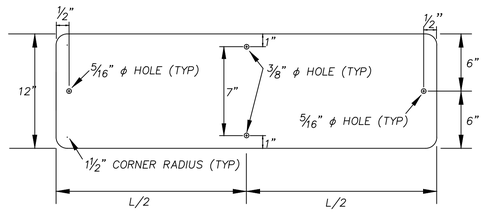
NOTE: PRIOR TO FABRICATING THE STREET NAME SIGNS, THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF THE SIGNS TO THE CITY FOR REVIEW AND APPROVAL.



NUMBERED STREET SIGN DETAIL



PROJECT SIGN DETAILS



SIGN MOUNTING HOLE DETAIL (FOR MOUNTING ON SQUARE TUBULAR SUPPORTS)

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

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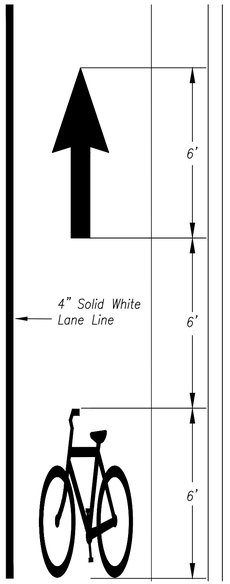
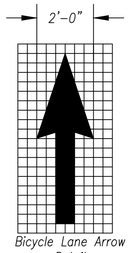
POST-MOUNTED STREET NAME SIGNS

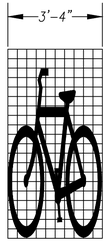
SHEET D-908



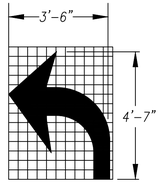


Bicycle Lane Arrow Detail

Each grid = 4" X 4"

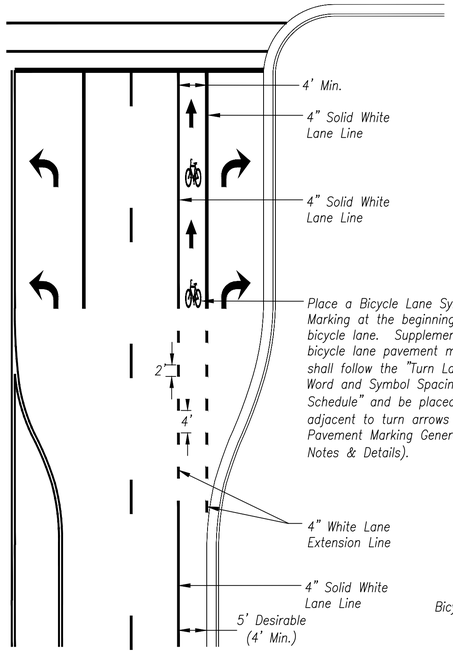


Bicycle Detail

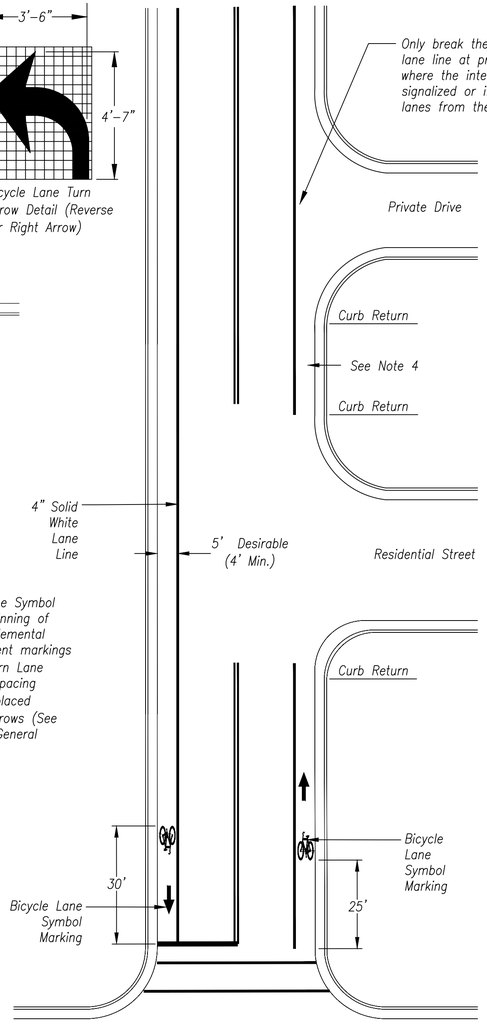


Bicycle Lane Turn Arrow Detail (Reverse for Right Arrow)

Bicycle Lane Symbol Marking Detail



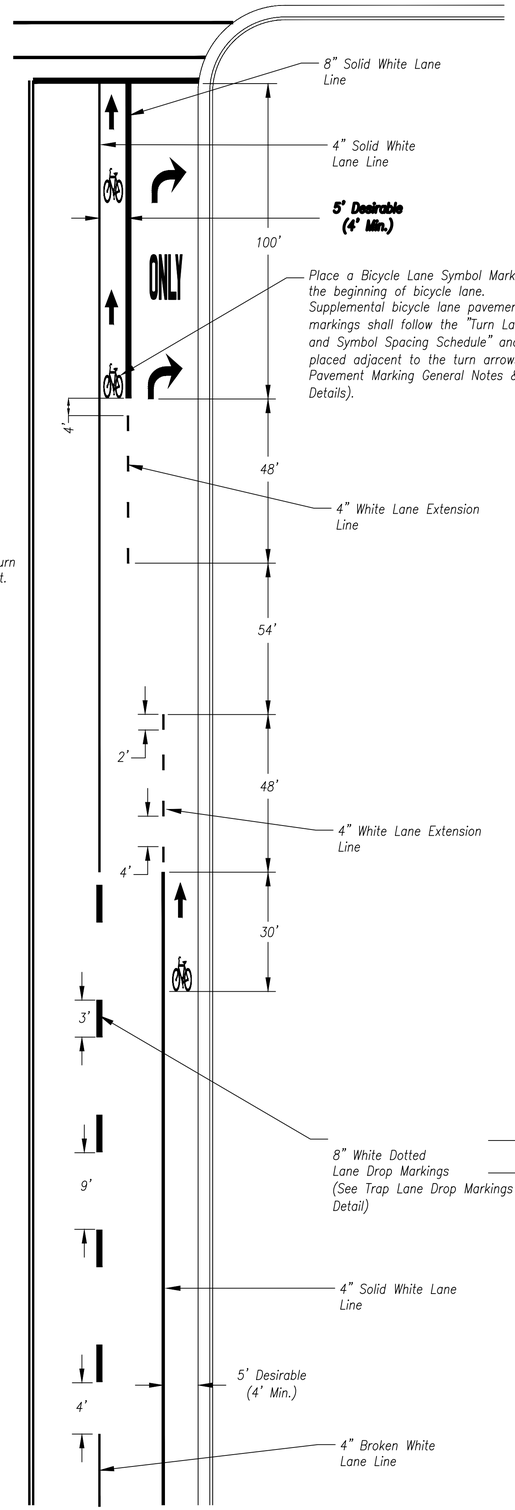
Typical Bicycle Lane at Intersections with Turn Lanes



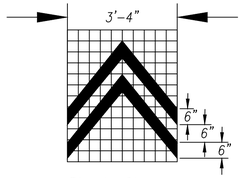
Typical Bicycle Lane at Intersections without Turn Lanes

Bicycle Lane Marking Notes

1. Longitudinal pavement markings (4" Solid White Lane Line) shall be used to define bicycle lanes.
2. Bicycle lanes should not be provided on the circular roadway of a roundabout. Bicycle lane markings should stop at least 100 feet before the crosswalk, or if no crosswalk is provided, at least 100 feet before the yield line, or if no yield line is provided, then at least 100 feet before the edge of the circular roadway.
3. If used, Bicycle Lane Symbol Markings should be placed at the beginning of a bicycle lane and at periodic intervals along the bicycle lane based on engineering judgement.
4. Bicycle Lane Symbol Markings are not required at every intersection but should be placed after each intersection with a thoroughfare or collector roadway. Supplemental Bicycle Lane Pavement Markings may also be placed in a visible location in a bicycle lane on the intersection approach (prior to the crosswalk). Install per engineering judgment.
5. Bicycle Lane Symbol Marking shall be placed centered in the bicycle lane, when possible. Care should be taken to avoid placing the Bicycle Lane Symbol marking in the gutter pan.
6. Bicycle Lane Symbol Markings are comprised of the Bicycle Symbol and one Bicycle Lane Arrow. Measurement will be made per each for each Bicycle Symbol and per each for each Bicycle Lane Arrow.

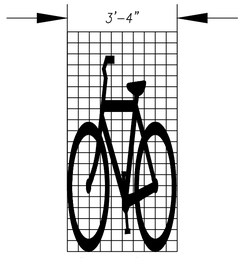


Typical Bicycle Lane Approaching Trap Through Lane



Bicycle Chevron Detail

Each grid = 4" X 4"

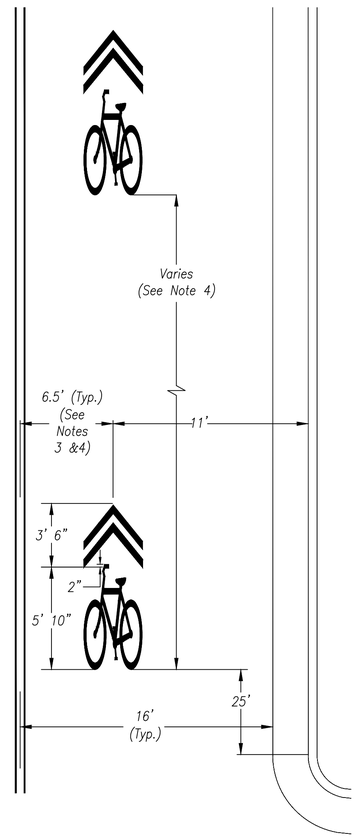


Bicycle Detail

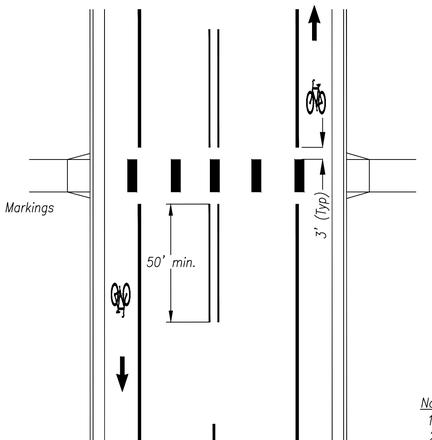
Shared Lane Marking (Sharrow) Detail

Shared Lane Marking Notes:

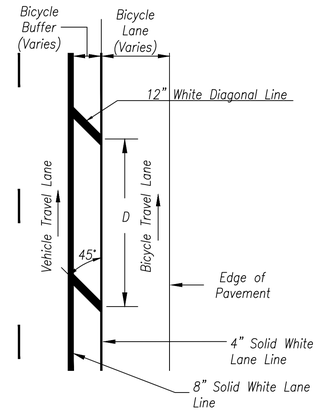
1. The Shared Lane Marking should not be placed on roadways that have a speed limit above 35 mph.
2. Shared Lane Markings shall not be used on shoulders or in designated bicycle lanes.
3. If used in a shared lane with on-street parallel parking, Shared Lane Markings should be placed so that the centers of the marking are at least 11 feet from the face of the curb, or from the edge of the pavement where there is no curb. When parking does not regularly occur, the sharrow marking should be placed such that the centers of the marking are at least 5'-2" from the face of the curb or edge of pavement when there is no curb.
4. If used, the Shared Lane Marking should be placed after an intersection and per engineering judgement thereafter.
5. Shared Lane Marking (Sharrow) symbols are comprised of the Bicycle Symbol and two (2) Chevrons. Measurement will be per each for the Combined Bicycle Symbol and Chevrons.



Typical Shared Lane Markings (Sharrow)



Typical Bicycle Lane Markings at Mid-Block Crosswalks



Buffered Bicycle Lane Markings

Notes

1. D = Posted Speed Limit in feet (i.e. 25mph = 25' spacing).
2. See Bicycle Lane Marking Notes for bicycle lane symbol marking spacing and locations.

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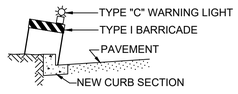
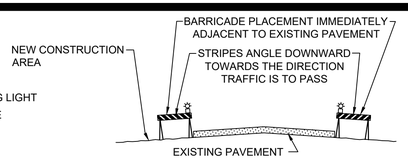
BICYCLE SHARED LANE DETAILS

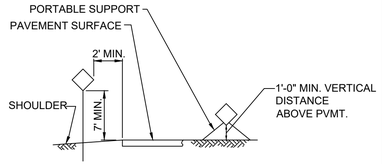
SHEET D-909



TYPICAL BARRICADE PLACEMENT DETAIL NEW CURB SECTIONS



LATERAL PLACEMENT OF CHANNELIZING DEVICES



TYPICAL SIGN PLACEMENT

TRAFFIC CONTROL GENERAL NOTES

TRAFFIC CONTROL DEVICE REQUIREMENTS:

1. ALL TRAFFIC CONTROL DEVICES SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH THE M.U.T.C.D AND THE N.C.H.R.P 350, LATEST EDITIONS. THE TRAFFIC CONTROL PLAN (T.C.P.) WILL COVER A MAJOR PORTION OF THE WORK INVOLVED IN THIS PROJECT. THE CONTRACTOR MAY DEVELOP HIS OWN T.C.P UPON SUBMISSION AND APPROVAL BY THE ENGINEER BEFORE IT CAN BE IMPLEMENTED FOR THIS PROJECT.

2. ALL ORANGE CONSTRUCTION SIGNS SHALL BE REFLECTORIZED WITH FLUORESCENT ORANGE PRISMATIC GRADE RETROREFLECTIVE SHEETING. ALL REGULATORY SIGNS USED IN THE CONSTRUCTION TRAFFIC CONTROL SHALL BE REFLECTORIZED WITH MICRO-ENCAPSULATED PRISMATIC RETROREFLECTIVE SHEETING. ALL TYPE I, II, III AND INDICATOR BARRICADES AND CHANNELIZATION DEVICES SHALL BE REFLECTORIZED WITH A KANSAS DEPARTMENT OF TRANSPORTATION APPROVED HIGH INTENSITY GRADE RETROREFLECTIVE SHEETING. WHITE BANDS ON CONICAL DELINEATORS, TUBULAR MARKERS, DRUMS AND CONES SHALL BE KANSAS DEPT. OF TRANSPORTATION APPROVED HIGH INTENSITY GRADE RETROREFLECTIVE SHEETING. ORANGE BANDS SHALL BE FLUORESCENT PRISMATIC GRADE SHEETING. ALL MARKINGS SHALL BE REFLECTORIZED WITH GLASS BEADS.

3. ALL BARRICADES 3' IN LENGTH OR LONGER SHALL HAVE 6" WIDE STRIPES OF ALTERNATING HIGH INTENSITY GRADE RETROREFLECTORIZED WHITE AND ORANGE SHEETING. ALL BARRICADES LESS THAN 3' IN LENGTH SHALL USE 4" WIDE STRIPES.

4. DRUMS, CONICAL DELINEATORS, DIRECTION INDICATOR BARRICADES, AND TYPE I OR II BARRICADES ARE ACCEPTABLE CHANNELIZATION DEVICES FOR USE IN TAPERS AND TRANSITION AREAS.

5. VERTICAL PANELS, 28" RETRO-REFLECTORIZED CONES AND 28" RETRO-REFLECTORIZED TUBULAR MARKERS MAY BE USED FOR TAPER CHANNELIZATION AND TRANSITION AREAS WHERE SPACE RESTRICTIONS DON'T ALLOW FOR OTHER MORE VISIBLE DEVICES OR FOR SHORT DURATION MAINTENANCE OR UTILITY WORK. NON-REFLECTORIZED 18" ORANGE CONES OR REFLECTORIZED ORANGE TUBULAR MARKERS MAY BE USED DURING DAYLIGHT CONSTRUCTION OR UNDER LOW SPEED CONDITIONS ONLY.

6. TYPE III BARRICADES SHALL BE USED AT STREET CLOSINGS AT THE POINT OF CLOSURE.

7. THE SPACING OF CHANNELIZING DEVICES SHOULD NOT EXCEED A DISTANCE IN FEET EQUAL TO THE SPEED LIMIT FOR TAPER CHANNELIZATION, AND A DISTANCE IN FEET EQUAL TO TWO TIMES THE SPEED LIMIT IN MPH IN TANGENT CHANNELIZATION AREAS.

8. WARNING LIGHTS SHALL BE USED AT NIGHT ON ALL BARRICADES AND SHALL CONFORM TO THE LATEST EDITION OF THE M.U.T.C.D. AND N.C.H.R.P. 350 FOR CRASHWORTHINESS. FLASHING WARNING LIGHTS SHALL BE USED WHEN BARRICADES OR DRUMS ARE USED SINGLY. STEADY BURN LIGHTS SHALL BE USED WHEN CHANNELIZING DEVICES ARE USED IN A SERIES, I.E. LANE CLOSURE, DELINEATION OF EDGE OF TRAVELED CONSTRUCTION, ETC.

9. PROPERLY EQUIPPED FLAGGERS SHALL BE USED TO DIRECT TRAFFIC FOR A LANE CLOSURE OF A TWO-LANE STREET WHEN CONSTRUCTION VEHICLES ARE ENTERING AND EXITING THE WORK AREA OR AT OTHER LOCATIONS AS DIRECTED BY THE CITY. FLAGGERS' CLOTHING AND EQUIPMENT SHALL CONFORM TO THE LATEST EDITION OF THE M.U.T.C.D.

10. ADVANCE WARNING ARROW DISPLAYS SHALL BE USED AT ALL LANE CLOSURES ON MULTILANE STREETS BUT SHOULD NOT BE USED IN LIEU OF PROPER TRAFFIC CONTROL SIGNS, BARRICADES, OR CHANNELIZING DEVICES. PREFERRED PLACEMENT OF THE ARROW DISPLAY SHOULD BE AT THE START OF THE TAPER AREA.

11. TRAFFIC CONTROL DEVICES WHEN NOT IN USE SHALL BE COMPLETELY COVERED OR REMOVED FROM THE CONSTRUCTION SITE.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL TRAFFIC CONTROL DEVICES ON AN AROUND-THE-CLOCK BASIS, WHETHER OR NOT WORK IS ACTIVELY BEING PURSUED AND ANY DEFICIENCIES NOTED SHALL BE CORRECTED IMMEDIATELY.

13. THE TRAFFIC CONTROL REQUIREMENTS SHOWN ON THESE PLANS ARE MINIMUM REQUIREMENTS ONLY AND DO NOT ATTEMPT TO ADDRESS IN DEPTH THE VARIETY OF SITUATIONS THAT MAY OCCUR ONCE CONSTRUCTION HAS STARTED. IN NO WAY DO THE REQUIREMENTS SHOWN ON THESE PLANS RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR SELECTING THE PROPER TRAFFIC CONTROL DEVICES AND IMPLEMENTATION PROCEDURES THAT WILL ASSURE THE SAFETY OF MOTORIST, PEDESTRIANS, AND WORKERS AT ALL TIMES. ANY ADDITIONAL QUANTITIES OF TRAFFIC CONTROL DEVICES NECESSARY TO COMPLETE THE CONTRACT OR AS ORDERED INSTALLED BY THE ENGINEER SHALL BE CONSIDERED SUBSIDIARY TO THE CONTRACT LUMP SUM BID PRICE.

14. SHOULD THE CONTRACTOR FAIL TO ENFORCE THE TRAFFIC CONTROL PLAN OR FAIL TO CLEAN, REPAIR, REPLACE OR OTHERWISE MAINTAIN THE TRAFFIC CONTROL DEVICES WHEN DIRECTED TO DO SO BY THE ENGINEER OR HIS REPRESENTATIVE, THE CITY MAY TAKE ONE OR MORE OF THE FOLLOWING ACTIONS:
A.) EMPLOY ANOTHER AGENCY TO CORRECT DEFICIENCIES IN SIGNING OR WARNING DEVICES AND DEDUCT THE COST FROM THE CONTRACTOR'S PAY ESTIMATE.
B.) SUSPEND ALL PAY ESTIMATES UNTIL DEFICIENCIES ARE CORRECTED.
C.) STOP THE WORK UNTIL DEFICIENCIES ARE CORRECTED.
D.) PLACE THE CONTRACTOR IN DEFAULT.

15. ANY EXISTING PERMANENT SIGNS REMOVED BY THE CONTRACTOR FOR CONSTRUCTION PURPOSES OTHER THAN STOP, YIELD AND STREET NAME SIGNS SHALL BE RETURNED TO THE CITY OF LENEXA MAINTENANCE FACILITIES. ALL STOP, YIELD AND STREET NAME SIGNS REMOVED SHALL BE TEMPORARILY ERECTED IN THE APPROPRIATE LOCATIONS (NO LESS THAN 7 FEET VERTICAL FROM GRADE) UNTIL THE PERMANENT SIGNING CAN BE INSTALLED. ANY TEMPORARY STOP OR YIELD SIGN INSTALLATION TO BE LEFT IN PLACE OVERNIGHT WILL REQUIRE PRIOR APPROVAL FROM THE ENGINEER.

16. ANY PERMANENT SIGN OR EXISTING PAVEMENT MARKINGS THAT CONFLICT WITH THIS TRAFFIC CONTROL PLAN SHALL BE COVERED, OBLITERATED OR REMOVED AS DIRECTED BY THE ENGINEER.

17. THE CONTRACTOR SHALL PROVIDE AS MANY BARRICADES WITH APPROPRIATE WARNING LIGHTS AS NEEDED TO EFFECTIVELY PROTECT PEDESTRIANS OR TRAFFIC FROM EXPOSED OBJECTS OR EXCAVATIONS. LIGHTED BARRICADES SHALL BE USED AT REMOVED SIDEWALK SECTIONS AND TEMPORARY ROCK PLACED FOR A WALKING SURFACE UNTIL CONCRETE IS PLACED.

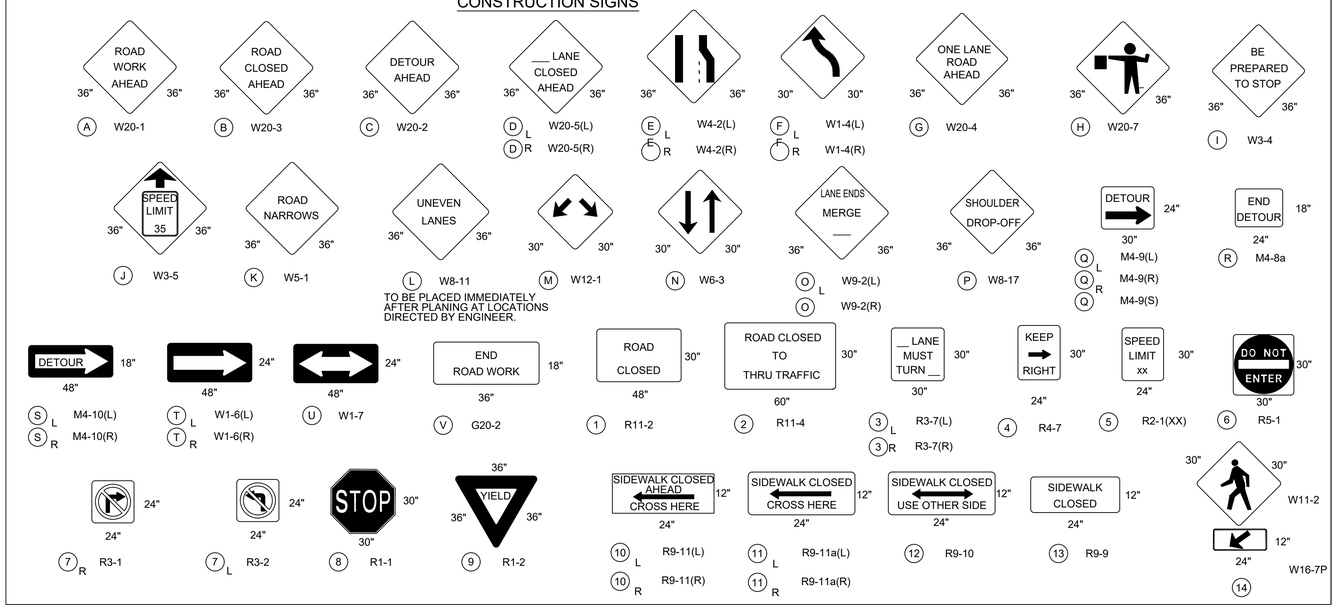
18. DURING ALL CONSTRUCTION PERIODS, THE CONTRACTOR SHALL HAVE AT THE JOBSITE ALL NECESSARY TRAFFIC CONTROL DEVICES (APPROPRIATE SIGNS, LIGHTED ARROW DISPLAY, CHANNELIZING DEVICES, ETC.) TO PROPERLY CLOSE AT LEAST ONE LANE OF TRAFFIC.

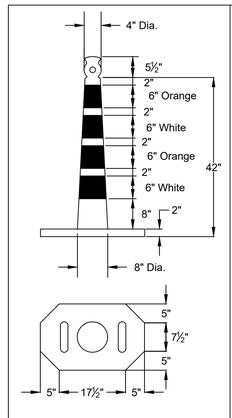
19. ANY TWO CONSECUTIVE DROP-OFF CONDITIONS THAT EXIST WITHIN 50' OR MORE OF EACH OTHER WILL BE CONSIDERED AS ONE HAZARD AND WILL REQUIRE TYPE "C" LIGHTS ON STANDARD DEVICES IN A SERIES. ANY DROP-OFF CONDITION 100' OR MORE IN LENGTH WILL ALSO REQUIRE TYPE "C" LIGHTS ON STANDARD DEVICES TO DELINEATE TRAFFIC FROM THE HAZARD. ANY DROP-OFF CONDITION EXISTING UNDER 50' IN LENGTH WILL REQUIRE TYPE "A" LIGHTS ON STANDARD DEVICES USED SINGLY TO WARN OF THE HAZARD. THESE REQUIREMENTS SHALL APPLY TO ANY DROP-OFF GREATER THAN TWO INCHES IN HEIGHT. APPROPRIATE WARNING SIGNS (SHOULDER DROP-OFF) SHALL BE PLACED IN ADVANCE OF THE HAZARD. ANY DROP-OFF GREATER THAN 4" REQUIRES A 3:1 OR FLATTER SLOPE WEDGE AGAINST THE PAVEMENT WITH APPROPRIATE WARNING SIGNS.

20. ALL W20-1 ADVANCE WARNING SIGNS SHALL BE POST MOUNTED.

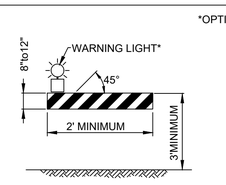
21. PLACE G20-2 SIGNS 500' MINIMUM PAST CONSTRUCTION. IF THE G20-2 SIGN WILL BE LESS THAN 1,000 FEET FROM OTHER CONSTRUCTION IMPROVEMENTS, IT CAN BE OMITTED. PLACEMENT OF ADVANCE WORK ZONE SIGNING SHALL BE AS INDICATED IN THE "ADVANCE WARNING SIGNING SPACING" TABLE BASED ON THE SPEED OF THE FACILITY.

CONSTRUCTION SIGNS

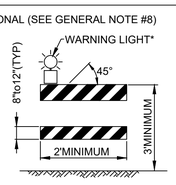




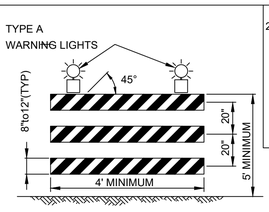
CONICAL DELINEATOR



TYPE I BARRICADE

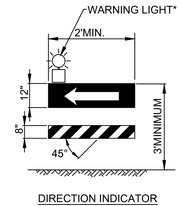


TYPE II BARRICADE

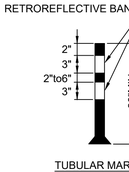


TYPE III BARRICADE

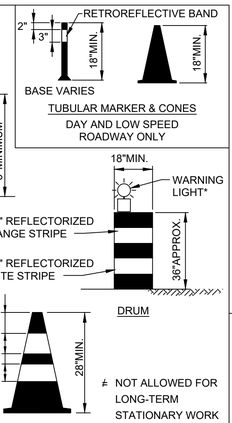
VERTICAL PANEL



DIRECTION INDICATOR BARRICADE



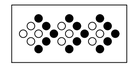
TUBULAR MARKER ≠



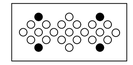
28" CONE ≠

≠ NOT ALLOWED FOR LONG-TERM STATIONARY WORK

TYPE	MIN. SIZE	MIN.# LAMPS	USAGE
A	48"x24"	12	LOW SPEED STREETS 25-30 MPH
B	60"x30"	13	INTERMEDIATE SPEED STREETS 35-45 MPH
C	96"x48"	15	HIGH SPEED STREETS 50-55 MPH



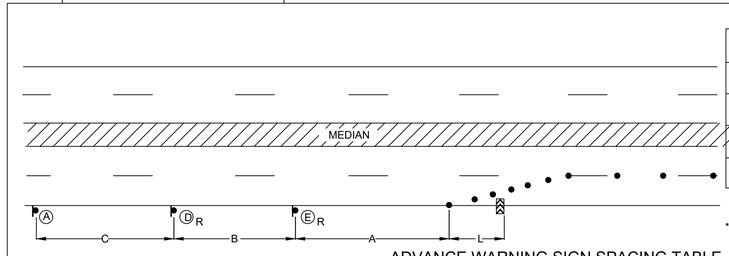
ARROW DISPLAY SHALL BE SET IN THE (LEFT OR RIGHT) SEQUENTIAL CHEVRON MODE FOR LANE CLOSURES.



ARROW DISPLAY SHALL BE SET IN THE CAUTION MODE FOR WORK NEAR ROADSIDE

USE OF A TYPE "C" PANEL AT AN "A" OR "B" LOCATION OR USE OF A TYPE "B" PANEL AT AN "A" LOCATION IS ALLOWABLE.

ARROW DISPLAY



ADVANCE WARNING SIGN SPACING TABLE

ROAD TYPE	DISTANCE BETWEEN SIGNS** A	B	C
RESIDENTIAL AND COLLECTOR (30 MPH AND UNDER)	100'	100'	100'
URBAN ARTERIALS (35 MPH TO 45 MPH)	350'	350'	350'
URBAN ARTERIALS (50 MPH AND OVER)	350'	350'	350'
RURAL ROADS (40 MPH AND OVER)	500'	500'	500'

** THE COLUMN HEADINGS A, B, AND C ARE THE DISTANCES BETWEEN ADVANCED WARNING SIGNS AND RESTRICTION POINTS AS INDICATED BELOW.

LENGTH AND DEVICE SPACING FOR LANE CLOSURE AND CHANNELIZATION TAPERS

SPEED LIMIT	MINIMUM TAPER LENGTH (L) **			MIN. NO. OF DEVICES FOR TAPER	MAXIMUM DEVICE SPACING
M.P.H.	LANE WIDTH IN FEET 10	11	12	(12FT. LANE)	IN FEET
20	70	75	80	5	20
25	105	115	125	6	25
30	150	165	180	7	30
35	205	225	245	8	35
40	270	295	320	9	40
45	450	495	540	13	45
50	500	550	600	13	50
55	550	605	660	13	55

**NOTE: TAPER FORMULA - $L = SxW$ (S > 45 MPH); $L = S xW^2/60$ (S < 40 MPH)

WHERE
L = MINIMUM TAPER LENGTH
S = POSTED SPEED LIMIT (PRIOR TO CONSTRUCTION)
W = WIDTH OF OFFSET

CONSTRUCTION REQUIREMENTS:

1. CONSTRUCTION SHALL BE SEQUENCED TO PROVIDE THE LEAST POSSIBLE ADVERSE EFFECT TO RESIDENCES.
2. CONSTRUCTION MATERIALS SHALL BE KEPT OFF SIDEWALKS AND CONSOLIDATED IN AREAS WITHIN THE CITY RIGHT-OF-WAY UNLESS OTHERWISE APPROVED BY THE ENGINEER.
3. MUD AND CONSTRUCTION DEBRIS ON STREETS OR SIDEWALKS SHALL BE CLEANED OFF IMMEDIATELY.
4. ACCESS SHALL BE MAINTAINED TO ALL DRIVES AND SIDE STREETS OR AS INDICATED IN THE TRAFFIC CONTROL PLAN.
5. CONSTRUCTION VEHICLES SHALL BE PARKED ALONG STREETS SO AS NOT TO RESTRICT SIGHT DISTANCE FOR VEHICLES EXITING AT STREETS OR ANY DRIVES.
6. NO CONSTRUCTION SHALL BE PERFORMED ON HOLIDAYS AND WEEKENDS UNLESS PRIOR APPROVAL IS RECEIVED IN WRITING FROM THE ENGINEER.
7. THE CONTRACTOR IS RESPONSIBLE FOR AVOIDING ANY AND ALL UTILITIES WHEN SETTING SIGN POSTS AND WILL BE REQUIRED TO COORDINATE HIS ACTIVITIES WITH ANY AND ALL UTILITY COMPANIES WHETHER THEIR FACILITY IS INDICATED ON THE PLANS OR NOT.
8. STREET PLATES, WHEN USED, SHALL BE A36 CERTIFIED STEEL AT LEAST 1" THICK WITH LIFT HOOKS AND SECURELY FASTENED TO THE PAVEMENT WITH STAKES, PINS OR ASPHALT WEDGE COURSE.
9. ANY CONSTRUCTION ACTIVITIES WHICH REQUIRE THE CLOSING OF A LANE OF TRAFFIC SHALL NOT OCCUR DURING THE HOURS OF 7:00 A.M. TO 8:30 A.M. AND 4:00 P.M. TO 6:00 P.M. MONDAY THROUGH FRIDAY.
10. LANE CLOSURES LASTING LONGER THAN THREE (3) CONSECUTIVE DAYS SHALL BE CONSIDERED A LONG TERM CLOSURE. AS A RESULT, TEMPORARY PAVEMENT MARKING TAPE SHALL BE REQUIRED. TEMPORARY PAVEMENT MARKING TAPE SHALL BE SUBSIDIARY TO THE LUMP SUM TRAFFIC CONTROL BID ITEM.
11. THE CITY ENGINEER MAY REQUIRE THE CONTRACTOR TO WORK OVERNIGHT OR ON WEEKENDS FOR PROJECTS THAT CAUSE SIGNIFICANT DISRUPTION TO TRAFFIC.

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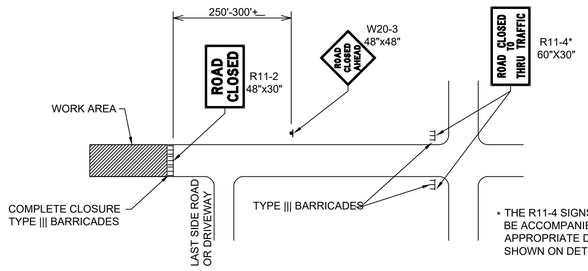
TRAFFIC CONTROL DETAILS

SHEET D-1000



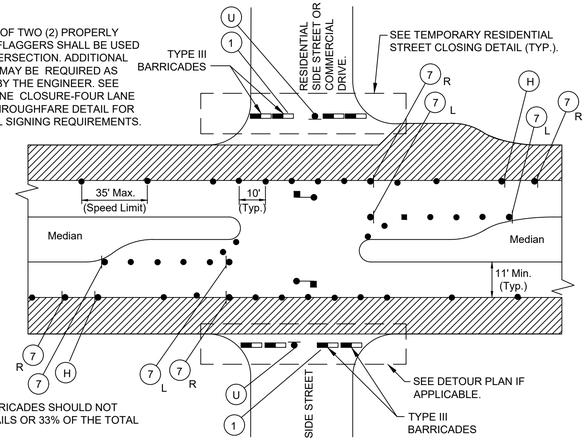
* THE R11-4 SIGNS SHOULD BE ACCOMPANIED WITH THE APPROPRIATE DETOUR SIGNING SHOWN ON DETOUR ROUTE PLANS

ROAD CLOSURE NOTES

1. 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.
2. 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 TRAVEL OF THE ROADWAY.
3. THE ENTIRE AREA OF BARRICADE RAILS, BOTH FRONT AND BACK, SHALL BE FULLY RETROREFLECTORIZED WITH HIGH INTENSITY SHEETING.
4. 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.
5. 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.
6. WHEN BARRICADES ARE PLACED END-TO-END, A TYPE A FLASHING WARNING LIGHT SHALL BE MOUNTED NEAR EACH OUTSIDE CORNER OF THE END BARRICADES.
7. 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.

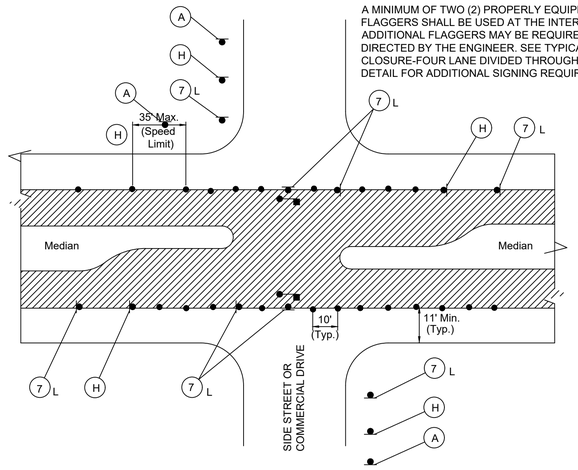
TYPICAL ROAD CLOSURE DETAILS

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.

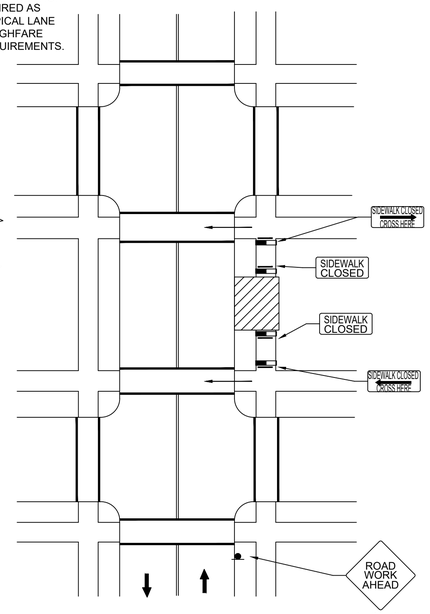


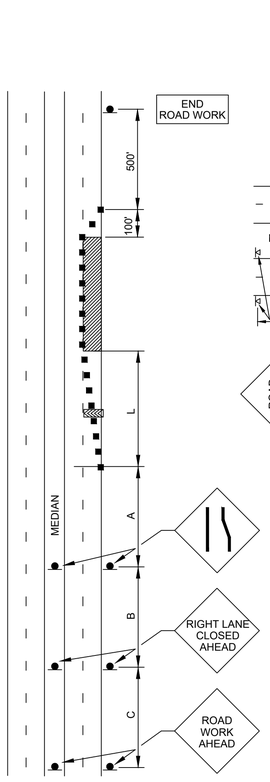
INTERSECTION SPECIAL DETAIL
OUTSIDE LANE CLOSURE

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.

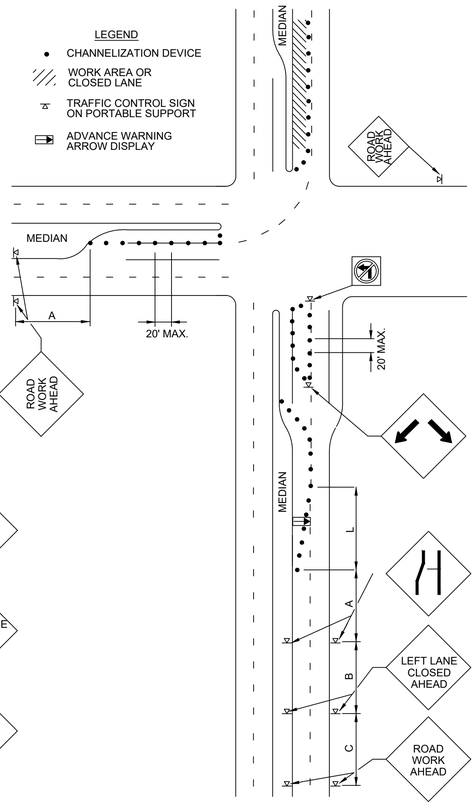


INTERSECTION SPECIAL DETAIL
INSIDE LANE CLOSURE

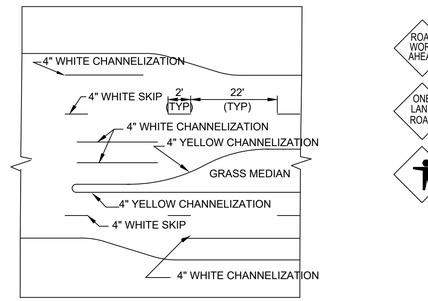


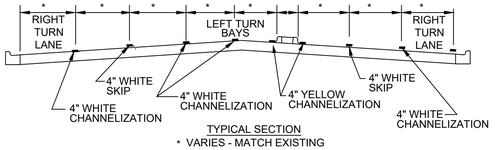


TYPICAL LANE CLOSURE
FOUR LANE DIVIDED ARTERIAL
(RIGHT LANE CLOSURE SHOWN)

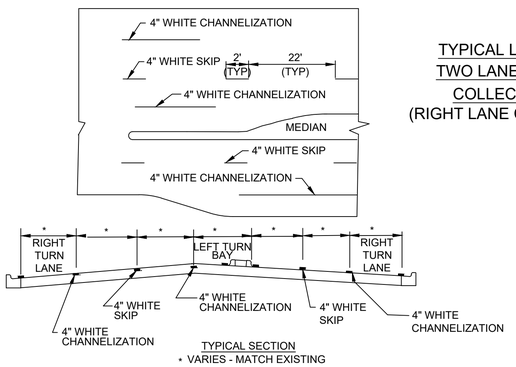


TYPICAL LEFT LANE CLOSURE
PROVIDING ACCESS TO LEFT TURN LANE

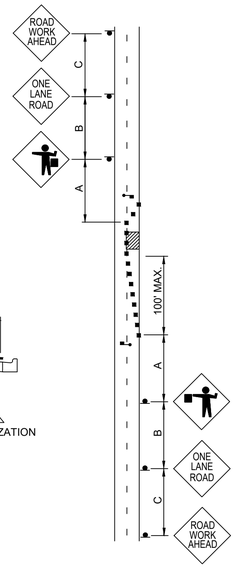




TEMPORARY PAVEMENT MARKING DETAILS
(TEMPORARY PAVEMENT MARKINGS
TO BE INSTALLED IMMEDIATELY
AFTER COLD PLANING)

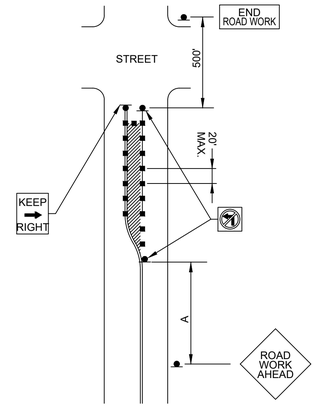


TEMPORARY PAVEMENT MARKING DETAILS

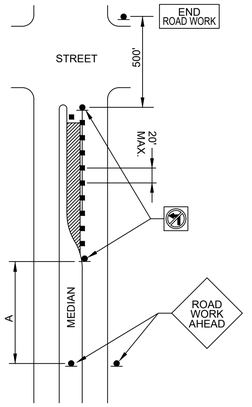


TYPICAL LANE CLOSURE
TWO LANE ARTERIAL OR
COLLECTOR STREET
(RIGHT LANE CLOSURE SHOWN)

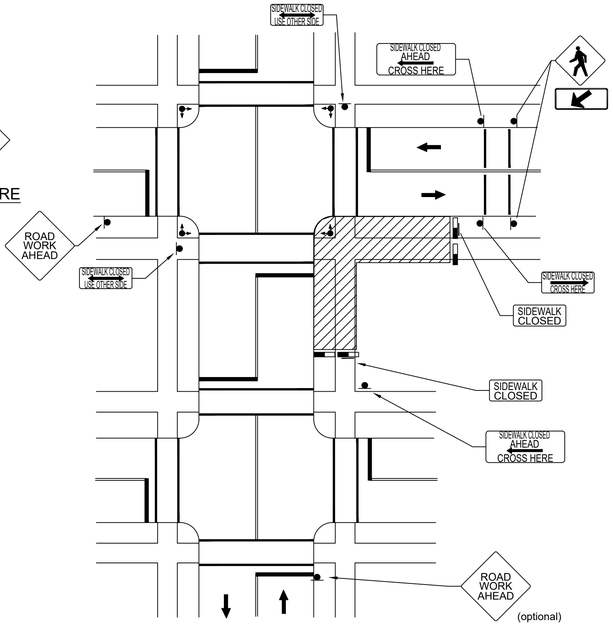
NOTE:



TYPICAL LEFT TURN LANE CLOSURE



TYPICAL LEFT TURN LANE CLOSURE
WITH MEDIAN



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TRAFFIC CONTROL INSTALLATION

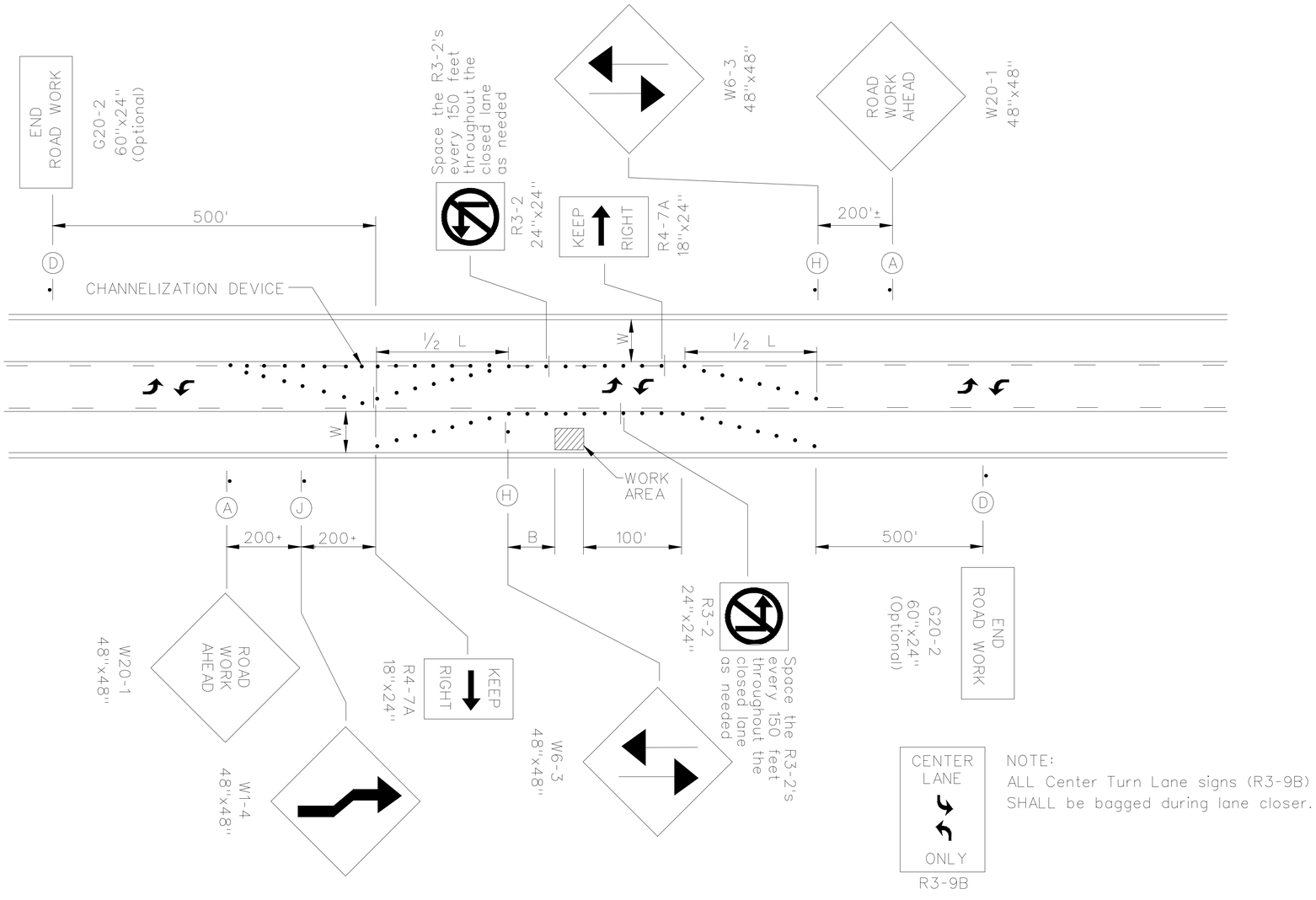
SHEET D-1001

Guidelines for length of longitudinal buffer space (B)	
Speed× (mph)	Length (Feet)
20	35
25	55
30	85
35	120
40	170
45	220

×Posted speed

MAXIMUM CHANNELIZATION SPACING IN FEET		
Speed Limit M.P.H.	Along Taper	After Taper
20	20	40
25	25	50
30	30	60
35	35	70
40	40	80
45	45	90
50	50	100
55	55	100

TAPER DETAIL				
Speed Limit M.P.H.	Minimum Taper Length (L) Lane Width (W)			Minimum Number of Channelizing Devices for Taper
	10	11	12	
20	70	75	80	5
25	105	115	125	6
30	150	165	180	7
35	205	225	245	8
40	270	295	320	9
45	450	495	540	13
50	500	550	600	13
55	550	605	660	13



NOTE:
ALL Center Turn Lane signs (R3-9B) SHALL be bagged during lane closer.

TYPICAL LANE CLOSURE - THREE-LANE STREET

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TRAFFIC CONTROL TYPICAL THREE-LANE CLOSURE | SHEET D-1002