THE CITY OF BROADVIEW HEIGHTS

ENGINEERING AND CONSTRUCTION STANDARDS

UPDATED: January 2025

CITY ENGINEER: GENE ESSER P.E.

THE CITY OF BROADVIEW HEIGHTS ENGINEERING DEPARTMENT

9543 BROADVIEW ROAD, BROADVIEW HEIGHTS, OHIO 44147

(440) - 838 - 4705

https://www.broadview-heights.org/

CITY OF BROADVIEW HEIGHTS
GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS INCLUDED ON THIS PROJECT SHALL BE IN ACCORDANCE WITH THE MOST RECENT EDITION OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS (ODOT) AND THE CONSTRUCTION SPECIFICATIONS AND DETAILS OF THE CITY OF BROADVIEW HEIGHTS. WHERE CONFLICTS OCCUR IN THE ABOVE, THE ENGINEER OF THE CITY OF BROADVIEW HEIGHTS SHALL DETERMINE THE GOVERNING AUTHORITY.

2. ALL CONTRACTORS PERFORMING ANY WORK WITHIN THE RIGHT-OF-WAY OF STATE ROUTES WITHIN THE CITY OF BROADVIEW HEIGHTS MUST HAVE CURRENT ODOT PREQUALIFICATION FOR THE TYPE OF WORK WHICH THEY ARE PERFORMING.

3. THE CONTRACTOR SHALL NOT COMMENCE ANY FORM OF CONSTRUCTION WITHOUT CONTACTING THE CITY ENGINEER AT (440) 838-4705, TO ARRANGE FOR INSPECTION. FORTY-EIGHT (48) HOURS NOTICE IS REQUIRED.

4. IF ANY CHANGE IN THE WORK SCHEDULE BECOMES NECESSARY, IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE CITY ENGINEER TO AVOID UNNECESSARY INSPECTION COSTS. IF NO NOTIFICATION IS MADE WITH REGARD TO CANCELLATION OF WORK, THE CONTRACTOR WILL BE CHARGED FOR THE INSPECTION TIME INCURRED.

5. ANY DEFECTS IN THE CONSTRUCTION, INCLUDING MATERIALS OR WORKMANSHIP, SHALL BE CORRECTED AT CONTRACTOR'S EXPENSE BY REMOVAL AND REPLACEMENT OR OTHER APPROVED METHOD PRIOR TO ACCEPTANCE BY THE CITY.

6. THE CONTRACTOR SHALL PERFORM FLUSHING AND SUBMIT, AT HIS COST, VIDEO FOOTAGE OF ANY SEWERS INSTALLED AND RECEIVE APPROVAL FROM THE CITY ENGINEER PRIOR TO THE ACCEPTANCE OF ANY CITY INFRASTRUCTURE AND AT THE END OF ANY CONSTRUCTION ACTIVITIES.

7. THE CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AT ALL TIMES AND SHALL BACKFILL AND GRADE EXCAVATED AREAS SO AS TO ELIMINATE STANDING WATER WITHIN THE PROJECT AREA.

8. THE CONTRACTOR SHALL, AT HIS COST, DISPOSE OF ALL SURPLUS EXCAVATED MATERIAL.

9. THE LOCATION OF UNDERGROUND UTILITIES AND STRUCTURES SHOWN ON THE PLANS HAS BEEN OBTAINED BY DILIGENT FIELD CHECK AND FROM RECORD DATA AVAILABLE. NO GUARANTEE IS MADE FOR ACCURACY OR COMPLETENESS. THE EXACT LOCATION AND PROTECTION OF UTILITIES AND STRUCTURES IS THE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL USE DUE DILIGENCE TO PROTECT FROM DAMAGE ALL EXISTING UTILITIES AND STRUCTURES, WHETHER SHOWN ON THE PLANS OR NOT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OR RESTORATION OF SAME IN ACCORDANCE WITH THE DIRECTION OF THE AFFECTED UTILITY COMPANY REPRESENTATIVE AND/OR THE ENGINEER.

10. THE CONTRACTOR SHALL PROVIDE ALL CONSTRUCTION AND TRAFFIC CONTROL DEVICES IN CONFORMANCE WITH THE LATEST EDITION OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

11. ANY CHANGES IN TRAFFIC PATTERN REQUIRE 5 BUSINESS DAYS NOTICE.

12. ROOF DRAINS, FOUNDATION DRAINS AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.

13. ALL EXISTING LAWN AREAS REMOVED OR DISTURBED BY THE WORK SHALL BE REPLACED BY SEEDING AND MULCHING IN ACCORDANCE WITH ODOT ITEM 659 AND SHALL BE RESEEDED AND MULCHED IF SATISFACTORY RE-ESTABLISHMENT OF LAWN DOES NOT OCCUR. ACCEPTANCE SHALL BE BASED UPON EVIDENCE OF SATISFACTORY RE-ESTABLISHMENT OF LAWN AREA. ALL AREAS SHALL BE RESTORED TO THEIR ORIGINAL PRE-CONSTRUCTION CONDITION OR BETTER.

14. AT THE CONCLUSION OF CONSTRUCTION, THE CONTRACTOR SHALL CLEAN UP ALL DEBRIS AND MATERIALS RESULTING FROM CONSTRUCTION AND SHALL RESTORE ALL SURFACES, STRUCTURES, DITCHES AND PROPERTY TO ITS ORIGINAL CONDITION TO THE SATISFACTION OF THE CITY ENGINEER.

15. ALL EXCAVATION UNDER OR NEAR EXISTING OR FUTURE PAVEMENT (INCLUDING SIDEWALKS) SHALL BE BACKFILLED WITH PREMIUM BACKFILL AS DEFINED HEREIN. AT QUESTIONABLE AREAS THE DECISION OF THE CITY ENGINEER, OR HIS/HER REPRESENTATIVE, WILL PREVAIL.

16. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLING AND MAINTAINING SOIL EROSION AND SEDIMENTATION CONTROL IN ACCORDANCE WITH THE APPROVED PLANS, OEPA REQUIREMENTS, THE RAINWATER AND LAND DEVELOPMENT MANUAL, AND AS DIRECTED BY THE CITY ENGINEER.

17. UNDER NO CIRCUMSTANCES SHALL A WATER OR SANITARY SERVICE LINE CROSS PROPERTY LINES.

18. NO RECYCLED OR RECLAIMED MATERIAL SHALL BE USED IN CONSTRUCTION UNLESS APPROVED BY THE CITY IN WRITING. ANY RECYCLED OR RECLAIMED MATERIAL PLACED BY THE CONTRACTOR WITHOUT APPROVAL SHALL BE REMOVED AT THE CONTRACTORS EXPENSE.

19. ALL ODOT 304 AND 448 SHALL BE COMPRISED OF 100% VIRGIN LIMESTONE. CRUSHED GRAVEL WILL NOT BE ACCEPTED.

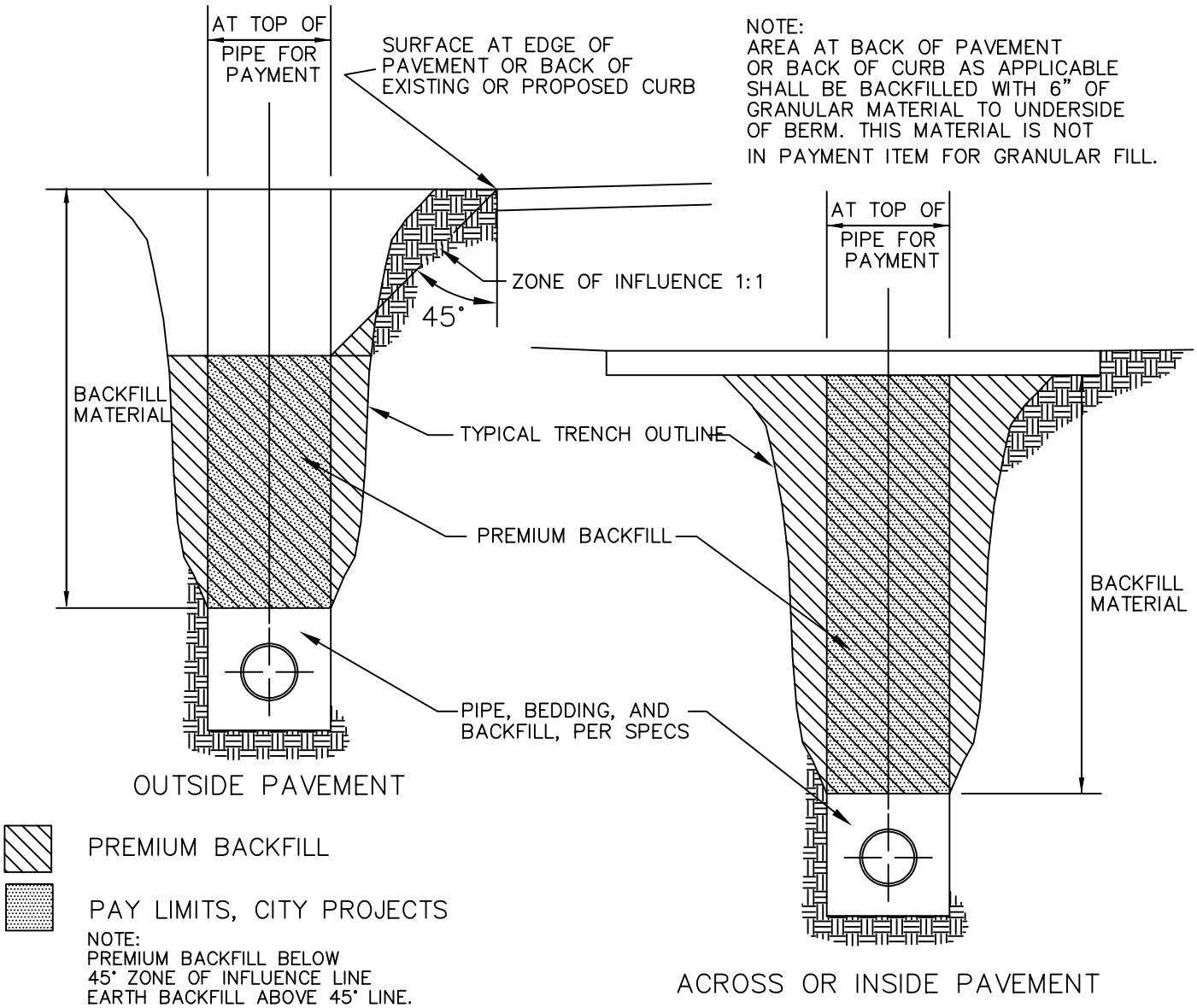
20. ALL SHOP DRAWINGS AND MATERIAL SPECIFICATIONS SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO CONSTRUCTION. THE CITY RESERVES THE RIGHT TO REJECT ANY SUBMITTAL THAT DOES NOT COMPLY WITH CITY SPECIFICATIONS.

21. ALL EROSION AND SEDIMENT CONTROL DEVICES USED IN CATCH BASINS OR INLET BASINS SHALL BE GEO-TEXTILE BAG SUPPORTED BY A METAL FRAME WITH BUILT-IN OVERFLOW.

22. ALL SEEDED AREAS SHALL BE PROTECTED BY THE CONTRACTOR UNTIL 70% OF GRASS IS FULLY ESTABLISHED.

23. ALL TREE ROOTS EXPOSED DURING EXCAVATION SHALL BE CLEAN CUT BY THE END OF THE WORK DAY.

BACKFILL DESCRIPTIONS:



ORDINARY BACKFILL SHALL BE CONSIDERED AS BEING COMPOSED OF MATERIALS NOT LARGER THAN FOUR(4) INCHES IN SIZE, SELECTED FROM THE MATERIALS PREVIOUSLY EXCAVATED FROM THE TRENCH AND SHALL BE FREE OF SLAG, RECYCLED ASPHALT, CINDERS, RUBBISH, ASHES, ORGANIC OR PERISHABLE MATERIAL OR OTHER OBJECTIONABLE SUBSTANCES, AS APPROVED BY THE CITY ENGINEER. ORDINARY BACKFILL IS PERMITTED IN AREAS NOT LOCATED UNDER EXISTING OR FUTURE PAVED SURFACES AND SHALL BE PLACED AND BROUGHT UP EVENLY IN THE TRENCH IN APPROXIMATELY TWELVE (12) INCH LOOSE LIFTS, EACH LIFT BEING THOROUGHLY COMPACTED BY TAMPING ROLLING, OR OTHER METHODS SATISFACTORY TO THE CITY.

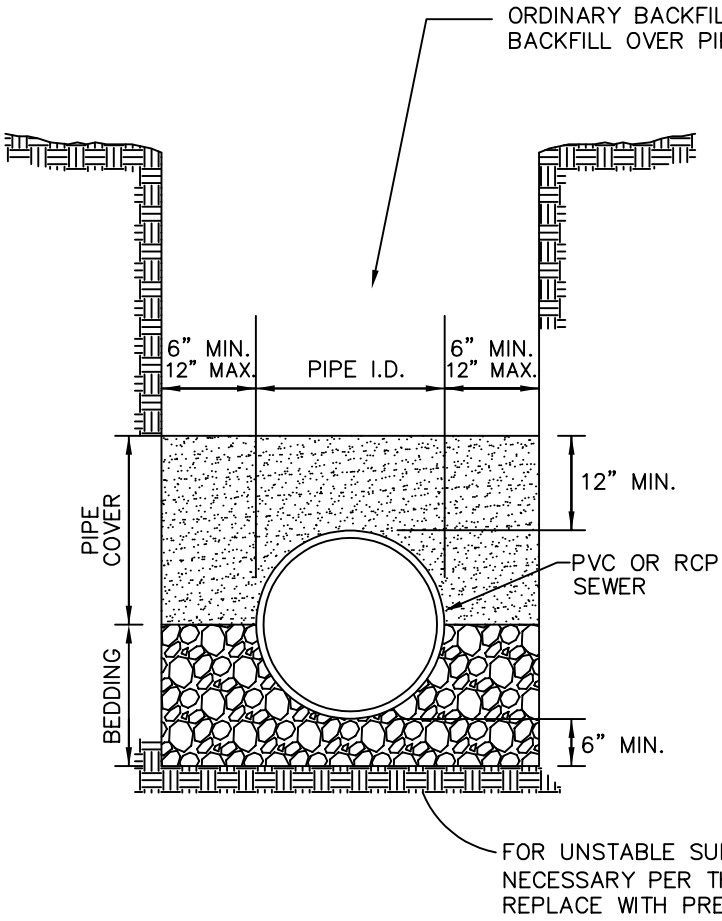
PREMIUM BACKFILL SHALL BE ODOT ITEM NO. 304 LIMESTONE. PREMIUM BACKFILL IS REQUIRED AT ALL PLACES WHERE THE TRENCH IS CONSTRUCTED UNDER EXISTING OR FUTURE PAVED SURFACES (INCLUDING ROADS, DRIVES, BERMS, WALKS, BIKEWAYS, GUTTERS, ETC.), WHERE A PIPE OR STRUCTURE IS LOCATED WITHIN THE 45 DEGREE ZONE OF INFLUENCE, OR WHERE SPECIFICALLY CALLED FOR ON THE PLANS AND SHALL BE PLACED AND BROUGHT UP EVENLY IN THE TRENCH IN LIFTS OF NOT MORE THAN TWELVE (6) INCHES IN DEPTH.

TYPICAL SEWER TRENCH DETAIL

NOT TO SCALE

NOTE:
USE COMPACTED ODOT #304 LIMESTONE BENEATH PROPOSED PAVEMENT.

COVER MATERIAL:
FOR PVC, PIPE COVER SHALL BE NO. 57 LIMESTONE. FOR RCP, PIPE COVER SHALL BE CLEAN SAND OR EXCAVATED INORGANIC MATERIAL NOT MORE THAN 1" SIZE COMPACTED IN NOT MORE THAN EIGHT(8) INCH LOOSE LIFTS.

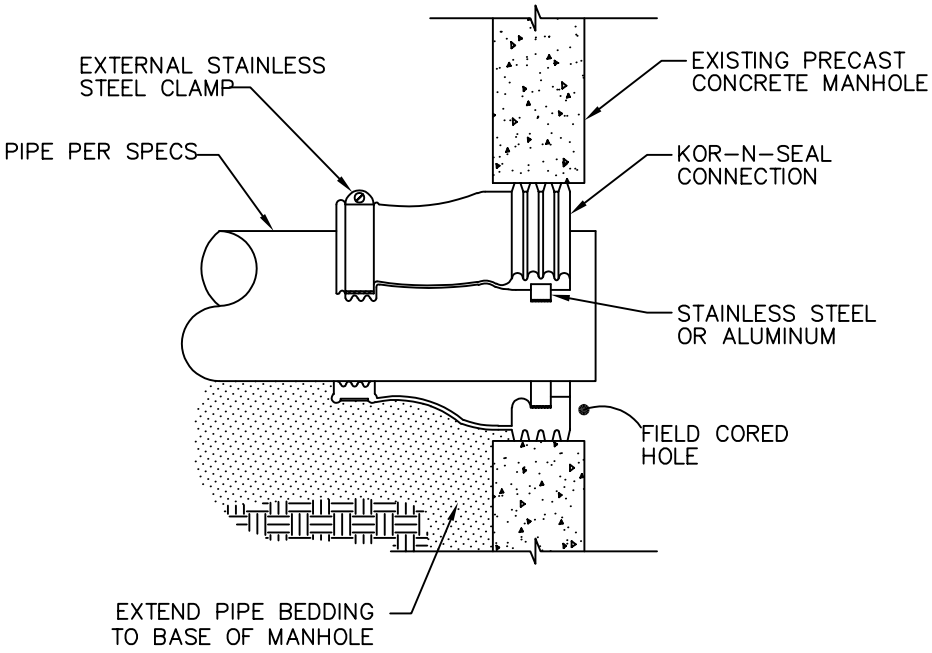


BEDDING MATERIAL:
FOR PVC AND RCP SEWER, USE NO. 57 LIMESTONE TO SPRING LINE OF PIPE

CONNECTION TO EXISTING SANITARY OR STORM MANHOLE

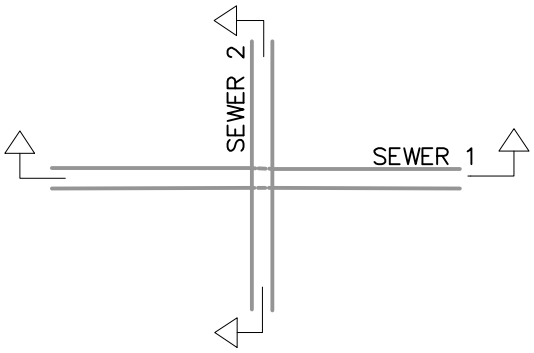
NOT TO SCALE

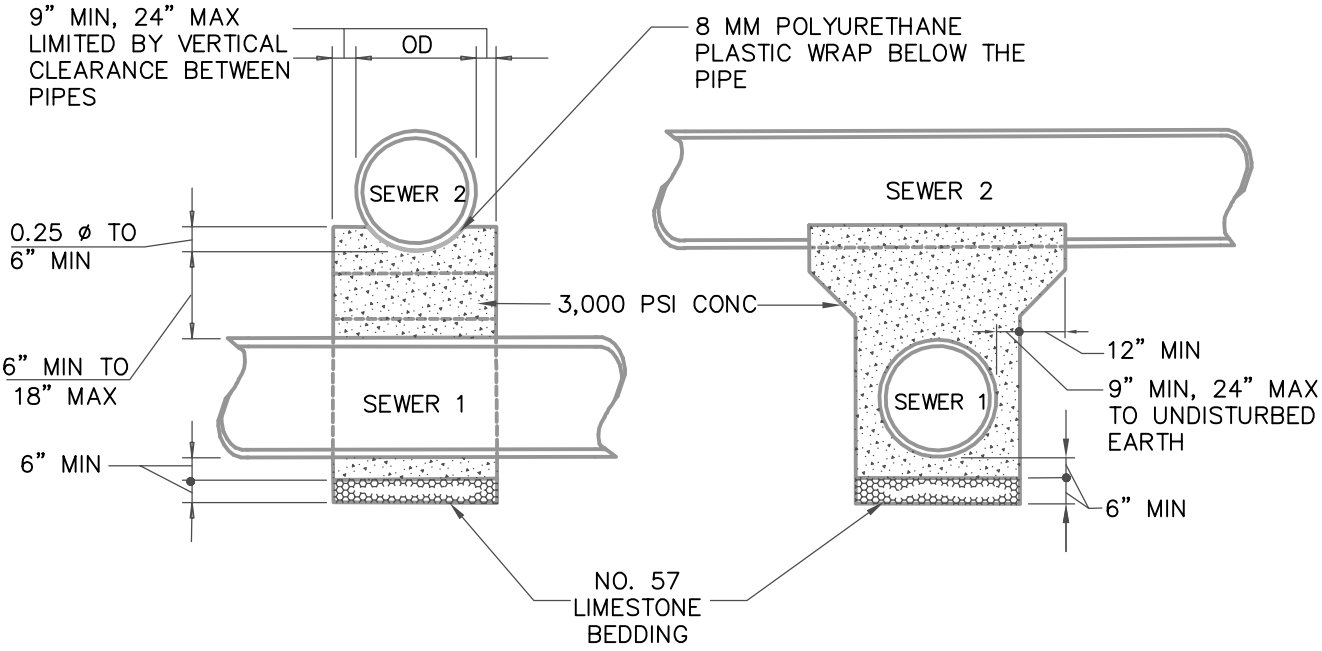
NOTE: WHEN CORING INTO EXISTING MANHOLE A BOOT NEEDS TO BE INSTALLED.



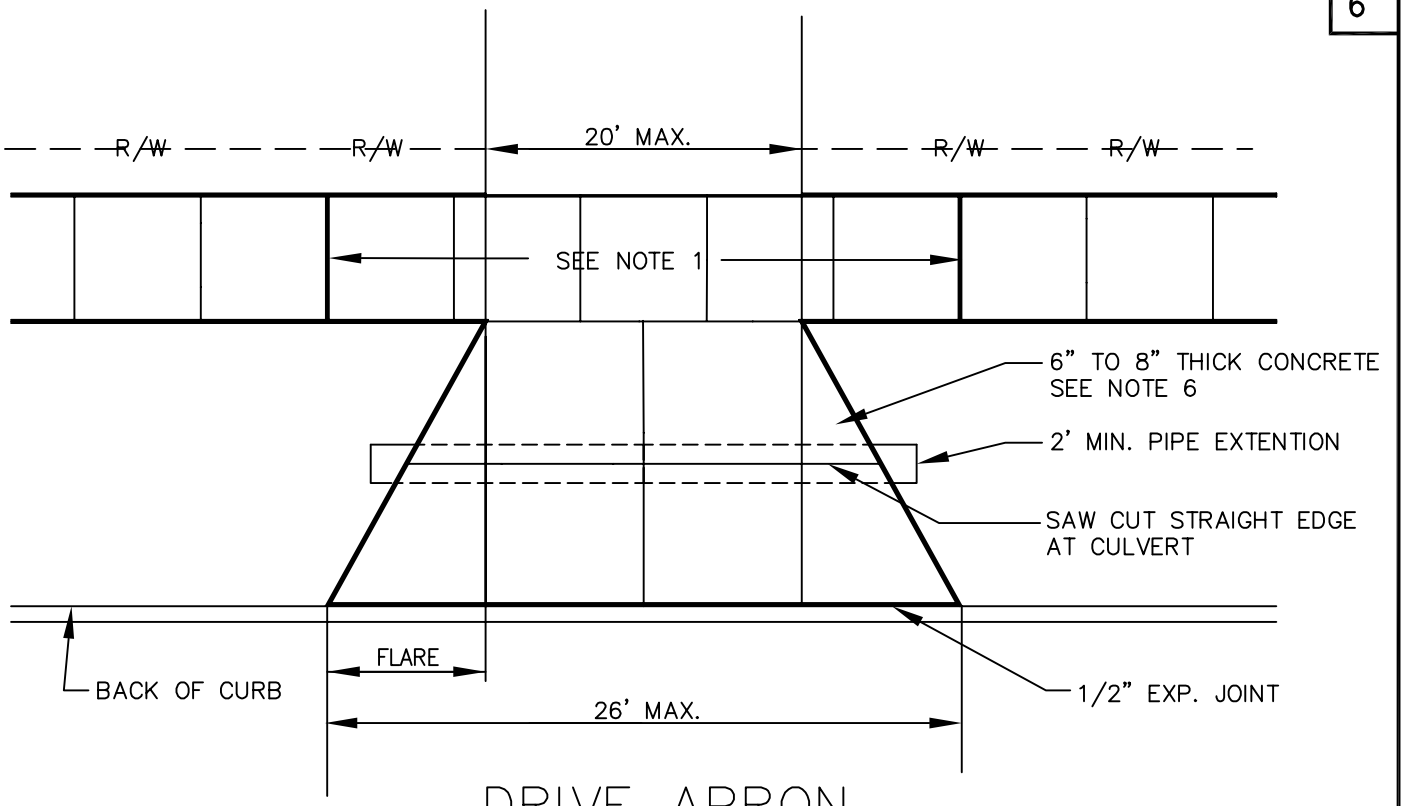
CONCRETE ENCASEMENT

NOT TO SCALE





NOTE: ENCASEMENT IS REQUIRED WHEN PIPE CLEARANCE IS LESS THAN 18".



DRIVE APRON

NOT TO SCALE

NOTES:

1. SEE SIDEWALK DETAIL FOR WIDTH, MINIMUM THICKNESS, AND GRANULAR MATERIAL REQUIREMENTS. THE WALK THAT CROSSES THE DRIVE INCLUDING 5' OUT ON EACH SIDE SHALL BE 6" THICK FOR RESIDENTIAL AND 8" THICK FOR COMMERCIAL DRIVEWAYS. LENGTH MAY VARY PER FIELD CONDITION AS DETERMINED BY THE CITY.

2. DURING NEW CONSTRUCTION CURB CUTS SHALL BE DONE IN TWO PHASES WITH POWER SAW TO MAKE HORIZONTAL CUT. NO VERTICAL CUTS WITH CHISEL OR HAMMER IS PERMITTED. 1ST PHASE CUT PRIOR TO CONSTRUCTION AT 2 1/2" DEPTH. 2ND PHASE CUT JUST PRIOR TO INSTALLATION OF THE DRIVE APRON LEAVING A 1" LIP. FINAL SAW CUT SHALL END WITH A 6" TAPER.

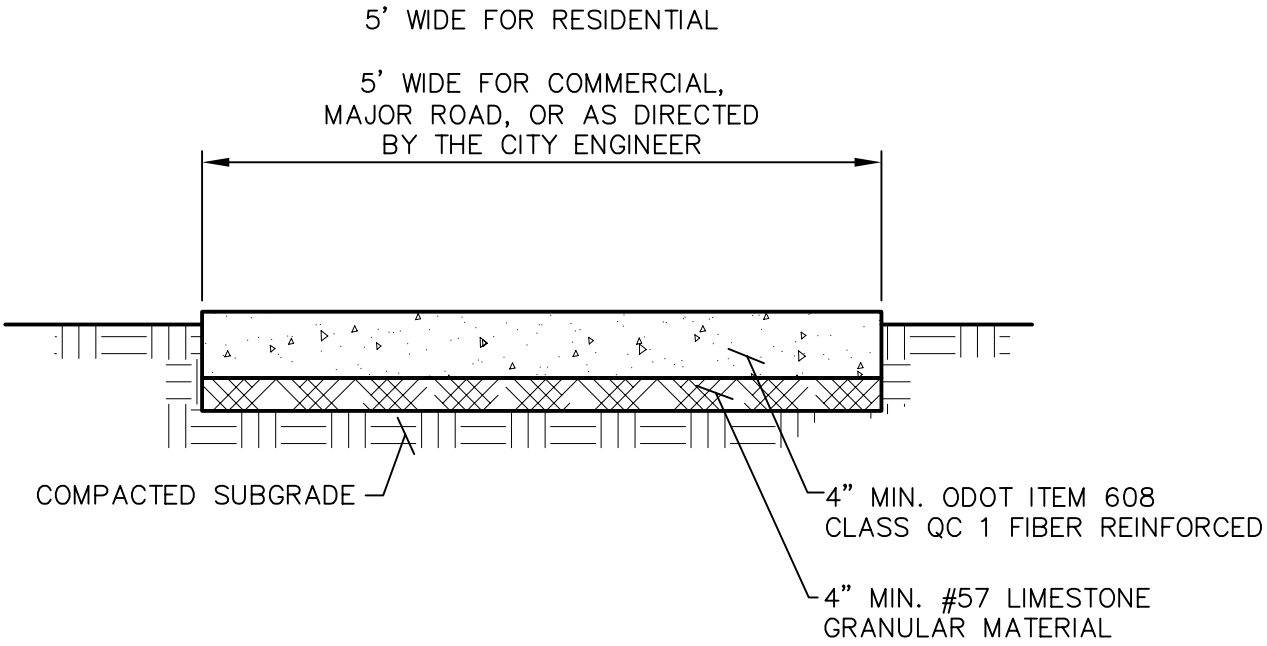
3. FULL DEPTH SAW CUT IS REQUIRED AT EXISTING ASPHALT EDGE.

4. ALL EXPANSION JOINT MATERIAL SHALL BE REFLEX RUBBERIZED EXPANSION JOINT AND SHALL BE TRIMMED 1/8" FINISHED GRADE.

5. FOR UNCURBED ROADS, CONCRETE DRIVEWAY SHALL BE SET BACK 12" TO 18" FROM THE EDGE OF THE ROAD.

6. RESIDENTIAL DRIVE SHALL BE 6" THICK CONCRETE (ODOT CLASS QC1, FIBER OR WIRE REINFORCED). COMMERCIAL DRIVES SHALL BE 8" THICK CONCRETE (ODOT CLASS QC1, FIBER REINFORCED).

7. THE GRADE OF THE APRON SHALL NOT EXCEED 8% FOR A DISTANCE OF TEN FEET FROM THE SIDEWALK AND THE MAXIMUM DRIVEWAY GRADE AT ANY POINT SHALL NOT EXCEED 12%.



CONCRETE WALKS

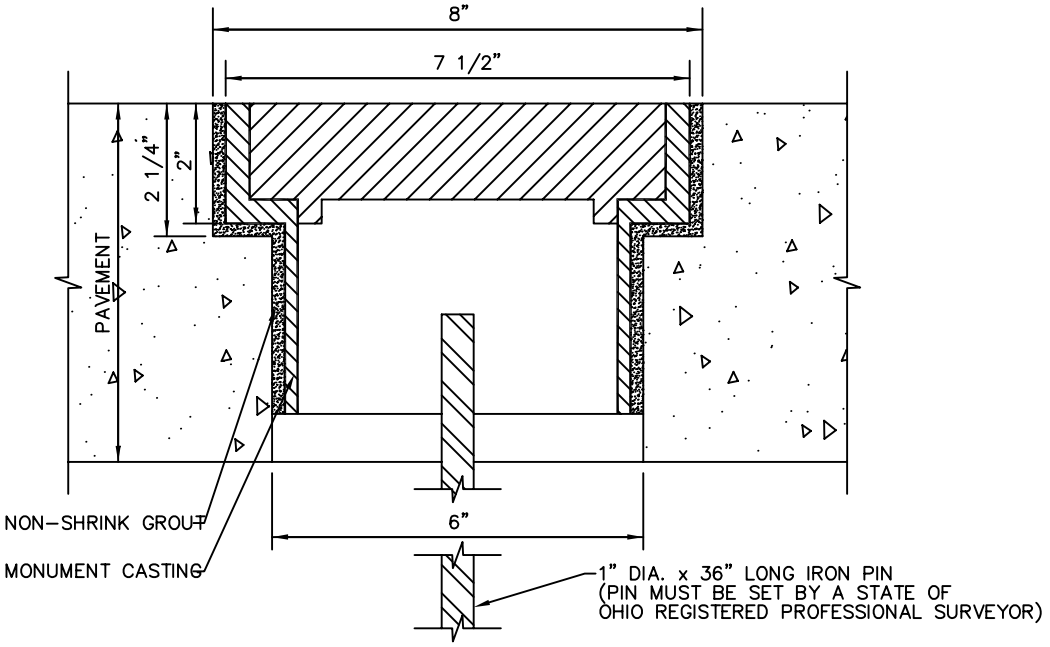
NOTES:

1. CROSS SLOPES FOR WALKS = 3/16" PER FOOT.

2. PROVIDE TOOL IMPRESSED JOINTS 1/4" WIDE MINIMUM 1" DEEP AT 5' INTERVALS. EXPANSION CONTROL JOINT SHALL BE PROVIDED EVERY 100' INTERVALS UNLESS OTHERWISE NOTED ON THE PLANS. USE ONLY 1/2" JOINT MATERIALS FULL DEPTH. RUBBERIZED EXPANSION SHALL BE FLUSH WITH CONCRETE EDGES.

3. BROOM FINISH PERPENDICULAR TO TRAFFIC FLOW. APPLY CURING AND SEALING COMPOUNDS PER ODOT 451.11.

4. ALL SIDEWALKS SHALL HAVE FOLLOWING THICKNESS:
   4" TYPICAL THICKNESS
   6" RESIDENTIAL DRIVE APRONS (5' ON EACH SIDE OF DRIVE)
   8" COMMERCIAL DRIVE APRONS (5' ON EACH SIDE OF DRIVE)



NOTES:

MONUMENT BOX CASTING SHALL BE E.J.I.W. #2960 WITH SPECIAL ORDER LID.

ANNULAR SPACE BETWEEN CASTING AND PAVEMENT SHALL BE FILLED WITH NON-SHRINK GROUT PER O.D.O.T. 705.20.

FOR MONUMENT BOXES NOT WITHIN PAVEMENT, USE E.J.I.W. 8365 CASTING WITH 1" DIA. x 36" LONG IRON PIN.

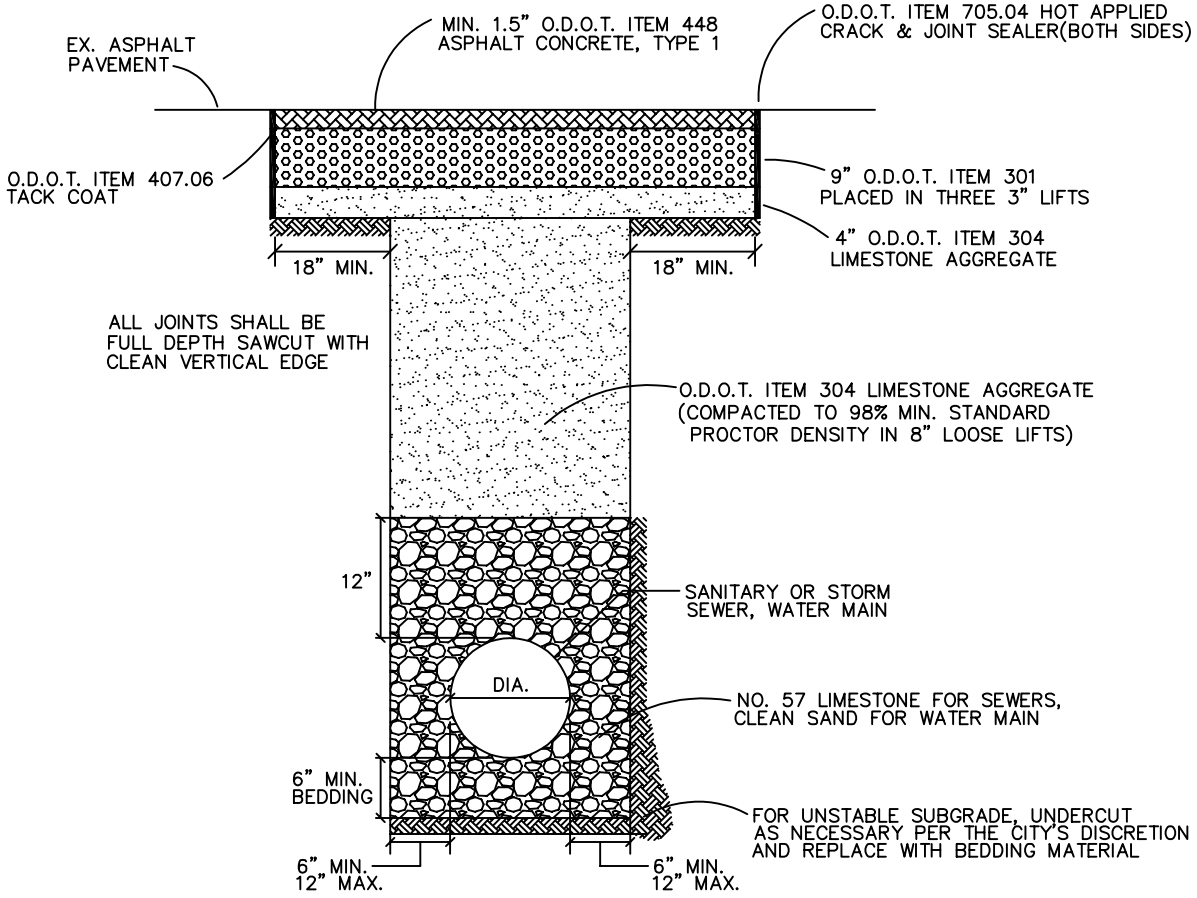
NOTES ON INSTALLATION:

1. CORE BOTH OPENINGS IN PAVEMENT.
2. REMOVE DEBRIS AND PREPARE CONCRETE FOR GROUT PER MANUFACTURE'S INSTRUCTIONS.
3. COAT PAVEMENT OPENING AND EXTERIOR OF CASTING WITH GROUT.
4. INSTALL CASTING AND FINISH FLUSH WITH EXISTING PAVEMENT.

CORED/BOXLESS MONUMENT ASSEMBLY DETAIL
(FOR USE IN RIGID OR FLEXIBLE PAVEMENT)

NOT TO SCALE

NO ROADWAY SHALL BE OPEN CUT WITHOUT WRITTEN PERMISSION FROM THE CITY ENGINEER.



NOTE:

FOR CONCRETE PAVEMENT:
1. ASPHALT SECTION SHALL BE REPLACED BY 8" OF FIBERMESH REINFORCED CONCRETE,
2. USE 5/8" DOWELS PLACED AT 30" MAX. SPACING.

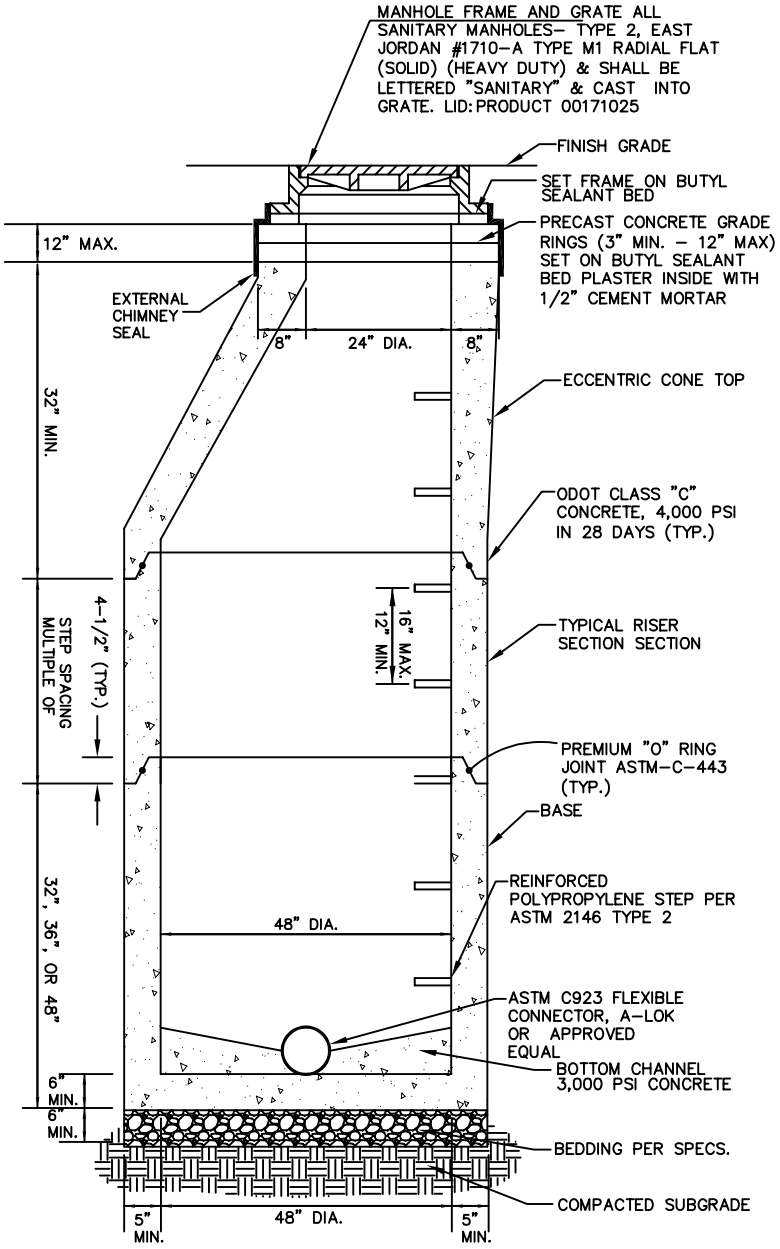
IF EXISTING MATERIAL IS SUPERIOR TO MINIMUM REQUIREMENTS, MATCH EXISTING PAVEMENT SECTION

PAVEMENT RESTORATION/ STREET OPENING

(STREET OPENING PERMITS ARE ORIGINATED THROUGH THE CITY OF BROADVIEW HEIGHTS ENGINEERING DEPARTMENT)

SANITARY SEWER NOTES–THE CITY OF BROADVIEW HEIGHTS

1. ALL SANITARY SEWERS ARE TO BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE CONSTRUCTION AND MATERIAL SPECIFICATIONS, AND STANDARD DETAILS, OF THE CITY OF BROADVIEW HEIGHTS ENGINEERING DEPARTMENT AND THE 10 STATE STANDARDS FOR WATERWORKS AND WASTEWATER FACILITIES. ALL SANITARY SEWER CONSTRUCTION SHALL CONFORM WITH PROVISIONS INCLUDED HEREIN AND/OR ODOT ITEM 603. CONDUIT SHALL BE PVC, CONFORMING WITH REQUIREMENTS OF ASTM D–3034, SDR 35, CELL CLASSIFICATION 12454–B (PER ASTM D–1784), WITH O–RING JOINTS CONFORMING TO ASTM D–3212. FOR PIPES BURIED WITH MORE THAN THIRTEEN (13) FEET OF COVER, PIPE SHALL MEET MINIMUM STIFFNESS RATING OF ps–115 AND SHALL CONSIST OF SDR 26 OR THICKER WALL.
2. THE LINE AND GRADE OF SEWER MAINS SHALL BE CONTROLLED DURING THE SEWER CONSTRUCTION BY USE OF AN APPROVED LASER DEVICE. THE LINE AND GRADE OF THE LASER SHALL BE "CHECKED" FROM LINE AND GRADE STAKES PLACED AT THE MIDPOINT BETWEEN MANHOLES.
3. ALL SEWERS SHALL HAVE PREFORMED WYE–BRANCH FITTINGS, OF THE THICKNESS CLASS OF THE MAIN SEWER, INSTALLED INTEGRALLY WITH THE MAIN, FOR 6" DIAMETER HOUSE SERVICE CONNECTIONS.
4. SANITARY SEWER CONNECTIONS SHALL BE AT A MINIMUM GRADE OF 1% AND TERMINATE 1 FOOT OUTSIDE THE RIGHT–OF–WAY OR UTILITY EASEMENT LINE FOR NON–DEDICATED ROADS, WHICHEVER IS APPLICABLE. CONNECTIONS SHALL BE 6" DIAMETER (MIN.) IN SIZE, INSTALLED AT A MINIMUM GRADE OF 1.00.
5. SANITARY SERVICE CONNECTIONS SHALL BE LOCATED A MINIMUM OF 5 FEET FROM ANY WATER SERVICE CONNECTION OR STORM SERVICE CONNECTION.
6. THE END OF EACH SERVICE CONNECTION SHALL BE SEALED WITH A TIGHT–FITTING PLUG AND MARKED WITH A 4" X 4" HARDWOOD STAKE EXTENDING VERTICALLY TO ABOUT 3 FEET ABOVE THE GROUND SURFACE.
7. ALL EXCAVATION UNDER OR NEAR EXISTING OR FUTURE PAVEMENT (INCLUDING SIDEWALKS) SHALL BE BACKFILLED WITH PREMIUM BACKFILL AS DEFINED HEREIN. AT QUESTIONABLE AREAS THE DECISION OF THE CITY ENGINEER, OR HIS REPRESENTATIVE, WILL PREVAIL.
8. AT ALL STORM SEWER MAIN AND SANITARY MAIN INTERSECTIONS (CROSSINGS) LESS THAN 18 INCHES, THE UPPER PIPE IS TO BE BRIDGED OVER THE LOWER PIPE BY CONSTRUCTION OF CONCRETE ENCASEMENT.
9. WHEREVER UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED, WORK SHALL BE DISCONTINUED UNTIL THE AREA IS STABILIZED TO THE SATISFACTION OF THE CITY ENGINEER. ALL CONDUITS SHALL BE INSTALLED ON A FIRM BED FOR THEIR FULL LENGTH IN ACCORDANCE WITH ODOT ITEM 603.03 UNLESS OTHERWISE SPECIFIED.
10. SANITARY SEWERS SHALL MEET REQUIRE VACUUM TESTING MEETING OR EXCEEDING ASTM D–1244 OR AIR TESTING CONFORMING WITH ASTM F–1417. AIR TESTING SHALL BE PERFORMED NO SOONER THAN 30 DAYS FOLLOWING COMPLETION OF BACKFILLING. TESTING SHALL BE PERFORMED BY AN ACCREDITED INDEPENDENT TESTING SERVICE. A REPRESENTATIVE OF THE CITY SHALL BE PRESENT DURING TESTING.
11. ALL PVC SEWER MAINS SHALL BE TESTED FOR DEFLECTION PER CITY SPECIFICATIONS. THE DIAMETER DEFLECTION SHALL NOT EXCEED 5 PERCENT. DEFLECTION TESTING SHALL BE PERFORMED NO SOONER THAN 30 DAYS FOLLOWING COMPLETION OF BACKFILLING. TESTING SHALL BE PERFORMED BY AN ACCREDITED INDEPENDENT TESTING SERVICE. TESTING SHALL BE IN ACCORDANCE WITH ASTM D–3034. A REPRESENTATIVE OF THE CITY SHALL BE PRESENT DURING TESTING.
12. ALL SANITARY SEWER MAINS 8" AND LARGER SHALL BE CCTV INSPECTED BY A COMPANY REGULARLY ENGAGED IN THIS TYPE OF WORK UPON COMPLETION OF INSTALLATION. COST SHALL BE PAID FOR BY THE CONTRACTOR.
13. ROOF DRAINS, FOUNDATION DRAINS AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.
14. SANITARY MANHOLE CONSTRUCTION SHALL MEET THE REQUIREMENTS OF ASTM C–478 AND C–443. ALL MANHOLES SHALL BE AIR/VACUUM TESTED IN ACCORDANCE WITH AND MEET ALL REQUIREMENTS OF ASTM C–1244.
15. ALL NEW SANITARY MANHOLES SHALL INCLUDE INSTALLATION OF AN EXTERNAL SHRINK WRAP (EXTERNAL CHIMNEY SEAL AS MANUFACTURED BY CRETEX, OR PRE–APPROVED EQUAL).
16. EXTERNAL DROP MANHOLES ARE REQUIRED WHEN THE INVERT IS 24" ABOVE THE BOTTOM INVERT OF THE MANHOLE. INTERNAL DROP MANHOLES ARE NOT PERMITTED. INTERNAL DROPS ON EXISTING SANITARY MANHOLES ARE NOT PERMITTED UNLESS SPECIFICALLY APPROVED BY THE CITY ENGINEER.
17. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROPERLY MAINTAINING EXISTING SANITARY FLOW DURING THE CONSTRUCTION TESTING OF PROPOSED IMPROVEMENTS. THE CONTRACTOR'S METHODS FOR MAINTAINING FLOW MUST BE APPROVED BY THE CITY ENGINEER.
18. MINIMUM VERTICAL CLEARANCE BETWEEN SANITARY SEWER AND WATERLINE SHALL BE 18 INCHES. MINIMUM HORIZONTAL SEPARATION SHALL BE 10 FEET.
19. MINIMUM COVER OVER SANITARY SEWER SHALL BE 4 FEET.
20. MANHOLE TOP OF CASTING ELEVATIONS MAY REQUIRE ADJUSTMENT DURING SITE GRADING. MANHOLE COVERS SHALL NOT BE BURIED. UPON COMPLETION OF CONSTRUCTION AND RESTORATION, ALL MANHOLES, PROPOSED AND EXISTING, SHALL BE IN CONFORMANCE WITH THE CITY OF BROADVIEW HEIGHTS ENGINEERING DEPARTMENT SPECIFICATIONS AND DETAILS.
21. CONTRACTOR SHALL PROVIDE END OF LATERAL INVERT ELEVATION.
22. FORCE MAIN PIPE SHALL COMPLY WITH OEPA AND LATEST VERSION OF "TEN STATE STANDARDS".
23. GRAVITY SANITARY SEWERS AND FORCE MAINS SHALL BE STAKED PRIOR TO THE INSTALLATION OF NEW PIPE. A STATE OF OHIO REGISTERED PROFESSIONAL SURVEYOR SHALL BE REQUIRED FOR THE MAINLINE STAKING AND OFFSETS. STAKING SHALL BE FOR BOTH LINE AND GRADE NO GREATER SPACING THAN EVERY FIFTY (50) FEET PLUS AT ALL FITTINGS AND OFF–SET AT TEN (10) FEET. ALL CITY GRAVITY SEWERS SHALL BE INSTALLED WITH THE USE OF A LASER TO INSURE THAT THEY ARE INSTALLED PROPERLY TO GRADE.



NOTES:

SECTIONS OF THE PRECAST MANHOLES SHALL BE CAST AND ASSEMBLED WITH EITHER ALL TONGUE OR ALL GROOVE ENDS UP. LIFT HOLES MAY BE PROVIDED IN EACH SECTION FOR HANDLING.

TOP AND TRANSITION (FOR REDUCER) SECTIONS MAY BE EITHER ECCENTRIC CONE OR FLAT SLAB FOR SHALLOW INSTALLATIONS (LESS THAN 4'–6" COVER).

BASES FOR MANHOLES ARE SHOWN WITH MONOLITHIC FLOOR AND RISER WHICH MAY BE CAST IN ONE OR TWO OPERATIONS. A PERMISSIBLE ALTERNATE IS TO CAST AND SHIP THE FLOOR AND BARREL SEPARATELY. OPENINGS FOR INLET AND OUTLET PIPES SHALL BE PROVIDED WHEN THE UNIT IS CAST OR LATER TO MEET PROJECT REQUIREMENTS. BOTTOM CHANNELS MAY BE FORMED OF CONCRETE PRECAST IN THE BASE OR BY FIELD CONSTRUCTION. BASES MAY ALSO BE POURED IN PLACE.

OPENINGS IN RISER SECTIONS FOR 18" AND SMALLER INLET PIPES SHALL BE PREFABRICATED. FLEXIBLE CONNECTIONS SHALL BE PROVIDED. THE FLEXIBLE CONNECTIONS SHALL BE OF "COMPRESSION" TYPE, CAST INTEGRALLY WITH THE MANHOLE WALL AND SHALL BE "A–LOK" OR A–LOK "X–CEL" AS MANUFACTURED BY A–LOK PRODUCTS, INC. OR APPROVED EQUAL, CONFORMING TO THE REQUIREMENTS OF ASTM C–923. FLEXIBLE CONNECTORS WITH EXPANSION RINGS OR TENSION BANDS AND CLAMPS (BAND AND CLAMP) ARE NOT ACCEPTABLE.

JOINT SEAL BETWEEN PRECAST MANHOLE SECTIONS SHALL BE RESILIENT AND FLEXIBLE GASKET JOINTS PER ASTM C–443 OR LATEST EDITION. IN ADDITION TO THE O–RING, A BUTYL RESIN RUBBER STRIP IS TO BE INSERTED INTO AND AROUND THE CIRCUMFERENCE OF EACH MANHOLE JOINT AS MANUFACTURED BY CONCRETE SEALANTS, INC., GRADE NO. CS–202 OR APPROVED EQUAL.

MATERIALS FOR BASES AND OTHER PRECAST SECTIONS, INCLUDING REINFORCEMENT NOT SPECIFIED HEREON, SHALL COMPLY WITH THE SPECIFICATIONS.

PRECAST MANHOLE SHALL CONFORM TO THE REQUIREMENTS OF ASTM C–478.

SEAL LIFT HOLES WITH APPROVED CONCRETE PLUGS AND BITUMASTIC SEAL.

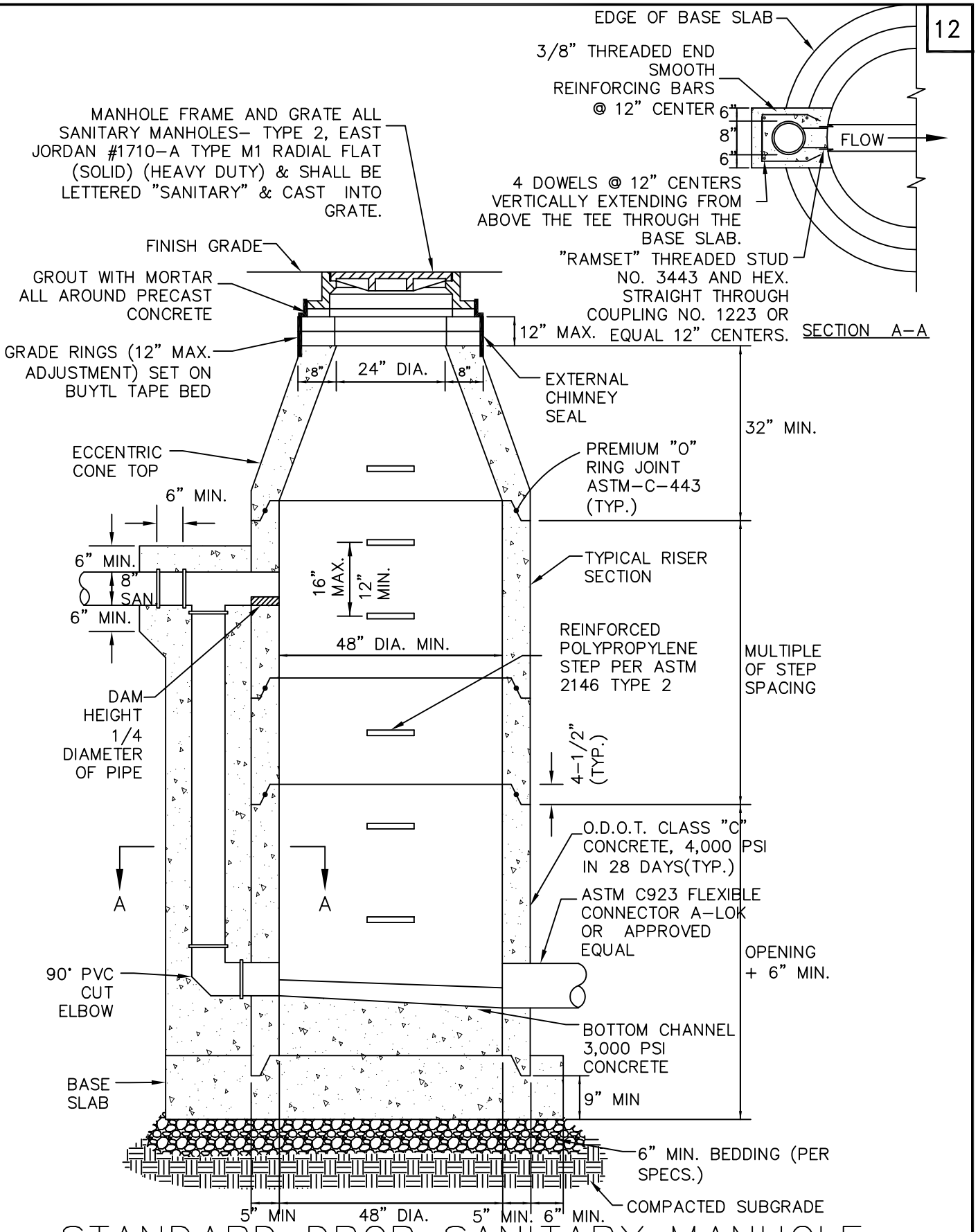
WHERE A SERVICE CONNECTION IS TO CONNECT DIRECTLY TO A MANHOLE, THE SERVICE CONNECTION SHALL NOT CONNECT ANY HIGHER THAN 2'–0" ABOVE THE MANHOLE INVERT.

SANITARY MANHOLES SHALL INCLUDE THE INSTALLATION OF AN EXTERNAL MANHOLE ENCAPSULATION SYSTEM BY WRAPID SEAL, OR APPROVED EQUAL).

SANITARY MANHOLES SHALL BE VACUUM TESTED PER ASTM C–1244–93.

STANDARD 48" PRECAST SANITARY MANHOLE

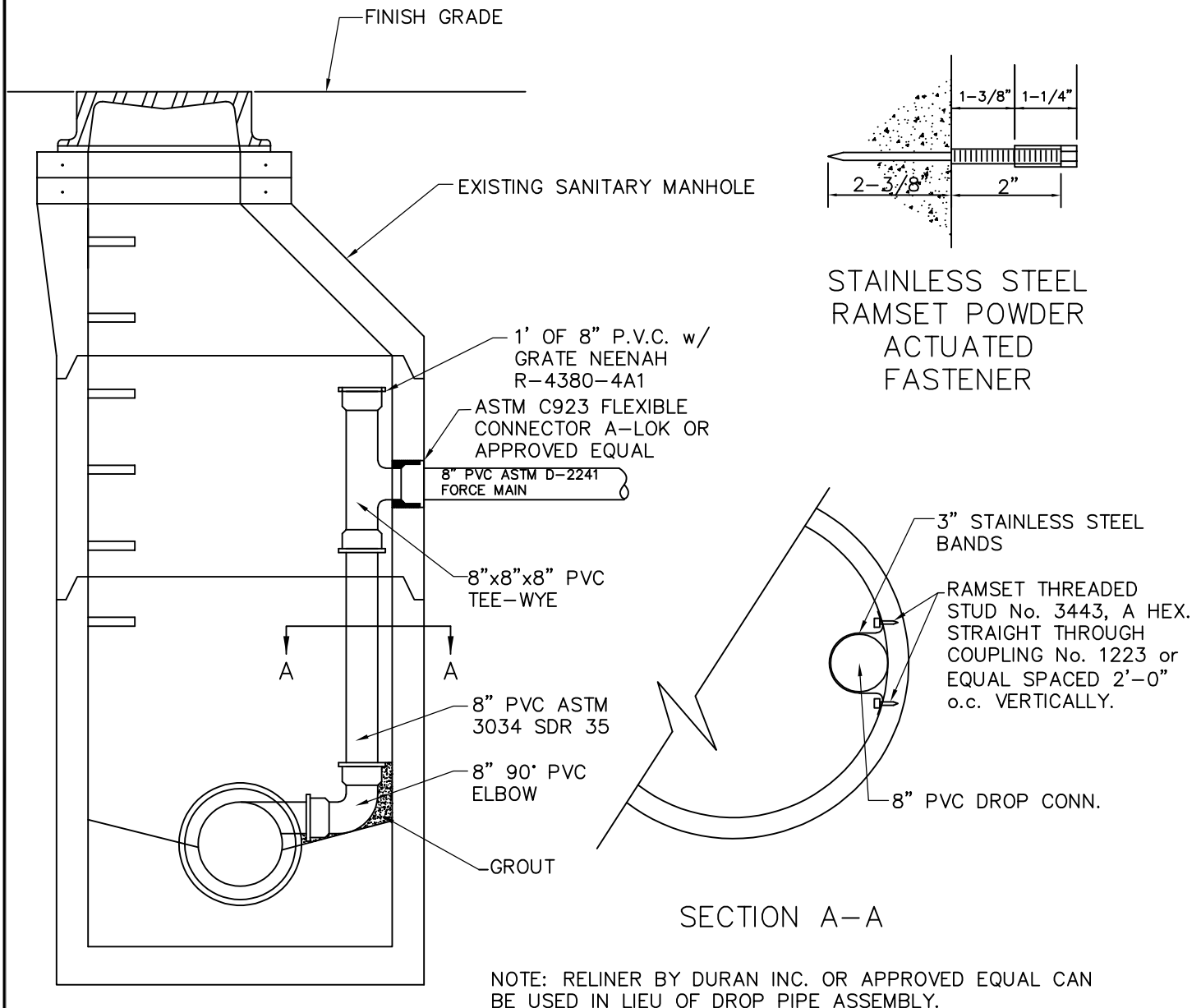
NOT TO SCALE



STANDARD DROP SANITARY MANHOLE

SIGNATURE, CITY ENGINEER _____ DATE _____

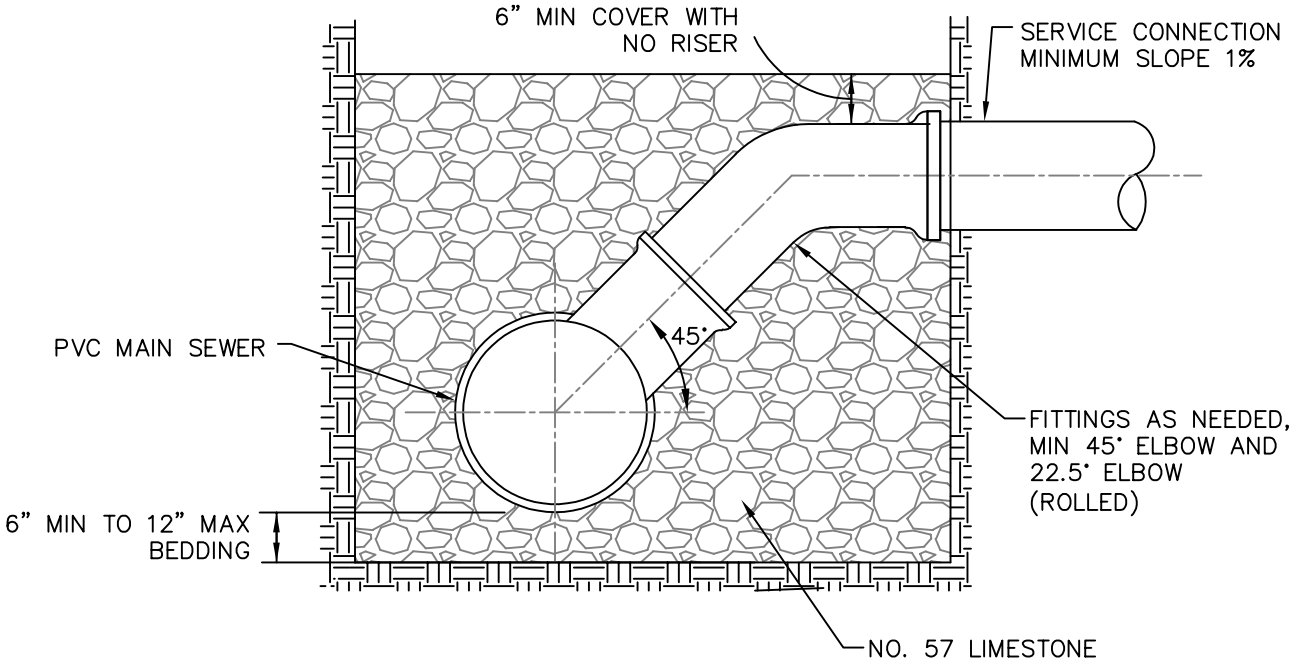
WRITTEN PERMISSION FROM THE CITY ENGINEER IS REQUIRED FOR ALL INTERNAL DROP CONNECTIONS



NOTE: RELINER BY DURAN INC. OR APPROVED EQUAL CAN BE USED IN LIEU OF DROP PIPE ASSEMBLY.

INTERNAL DROP CONNECTION TO EXISTING SANITARY MANHOLE

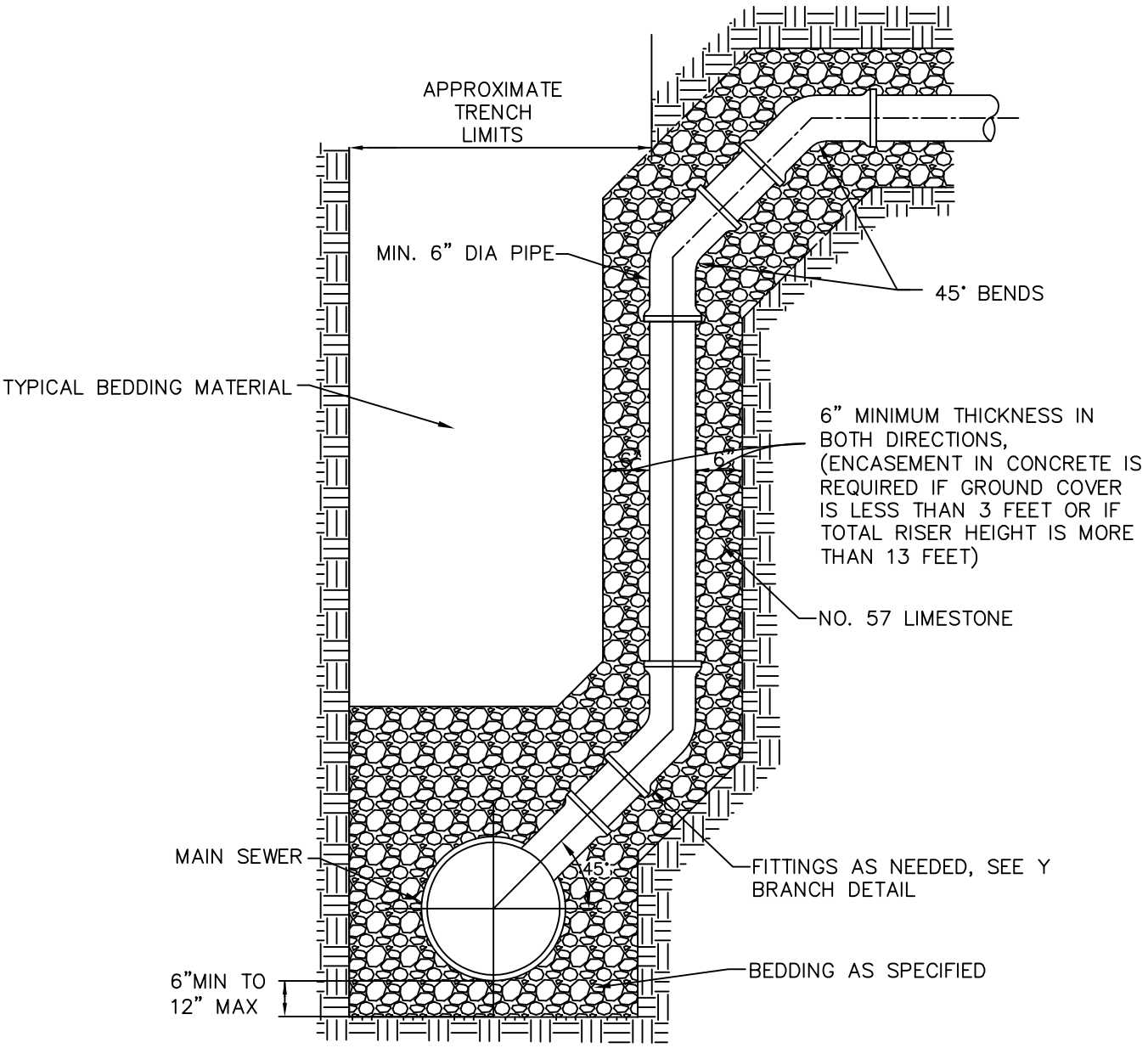
NOT TO SCALE



CONNECTION DETAIL FOR PVC SEWERS

NOT TO SCALE

NOTE:
ENCASEMENT IN CONCRETE IS REQUIRED IF GROUND COVER IS LESS THAN 3 FEET.

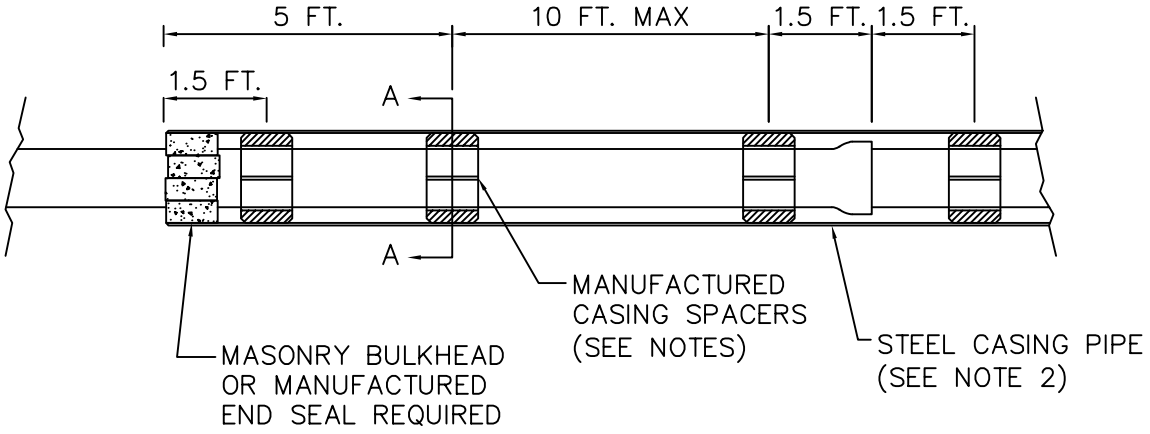


TYPICAL RISER DETAIL

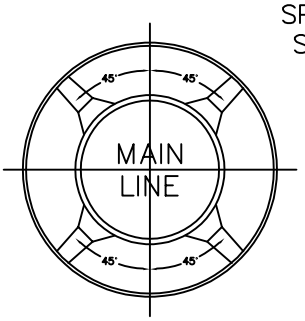
NOT TO SCALE

NOTES:

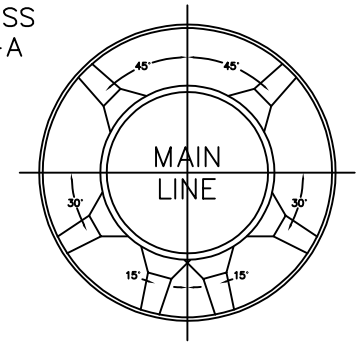
1. THIS DETAIL SHALL BE THE MINIMUM STANDARD FOR THE INSTALLATION OF CASING PIPE WASTEWATER PIPELINES.
2. CASING PIPE SHALL BE DETERMINED BY ODOT ITEM 638.11 AND CASING PIPE WALL THICKNESS SHALL BE DETERMINED BY ODOT ITEM 748.06.
3. CASING PIPE SHALL BE EXTENDED A MINIMUM OF 5 FEET BEYOND THE EDGE OF PAVEMENT OR BACK OF CURB.
4. PIPE WITHIN CASING SHALL HAVE RESTRAINED JOINTS.
5. ONLY MANUFACTURED CASING SPACERS SHALL BE USED TO SPACE MAINLINE WITHIN CASING. SELECTED SPACERS MUST ACCOUNT FOR THE CARRIER/CASING DIFFERENTIAL AND SHALL BE APPROVED BY THE CITY ENGINEER.
6. CASING SHALL BE FILLED WITH FLOWABLE FILL SUCH AS HOT SAND.



SPACER CROSS SECTION A–A



SIZES 4 IN. THRU 12 IN.



SIZES 16 IN. THRU 36 IN.

TYPICAL BORE AND JACK CASING DETAIL

NOT TO SCALE

STORM SEWER NOTES

1. ALL STORM SEWER CONSTRUCTION SHALL CONFORM TO ODOT ITEM 611, THE 10 STATE STANDARDS FOR WATERWORKS AND WASTEWATER FACILITIES, AND WITH SPECIFIC PROVISIONS INCLUDED HEREIN:

A.) SERVICE CONNECTIONS SHALL BE 6" DIAMETER (MIN.) IN SIZE, INSTALLED AT A MINIMUM GRADE OF 1.00% AND SHALL BE PVC, CONFORMING TO ASTM D-3034, SDR 35, CELL CLASSIFICATION 12454-B (PER ASTM D-1784) WITH O-RING JOINTS CONFORMING TO ASTM D-3212. SERVICE CONNECTIONS SHALL BE INSTALLED TO A POINT ONE FOOT INSIDE OF THE UTILITY EASEMENT LINE.

B.) MAIN PIPE 8" TO 15" DIAMETER IN SIZE SHALL BE CORRUGATED POLYETHYLENE CONFORMING TO AASHTO M294, TYPE S WITH MATERIAL CONFORMING TO ASTM D-3350 OR PVC CONFORMING TO ASTM D-3034, SDR 35.

C.) MAIN PIPE 18" DIAMETER IN SIZE AND ABOVE SHALL BE RCP, CLASS 3, WITH BITUMINOUS JOINTS CONFORMING TO ASTM C-76 OR APPROVED EQUAL.

D.) ALL MAIN PIPE CONSTRUCTED UNDER EXISTING OR FUTURE PAVEMENT SHALL BE RCP, CLASS 4, WITH BITUMINOUS JOINTS CONFORMING TO ASTM C-76 OR APPROVED EQUAL. WHENEVER ALL OR A PART OF A PIPE SEGMENT BETWEEN MANHOLES IS UNDER EXISTING OR FUTURE PAVEMENT, THE ENTIRE SEGMENT OF PIPE BETWEEN THE MANHOLES SHALL BE RCP.

E.) INLET OR CATCH BASIN CONNECTIONS UNDER PAVEMENT SHALL BE RCP, CLASS 4, OF THE SIZE SHOWN ON THE PLANS (12" DIAMETER MINIMUM), CONFORMING TO ASTM C-76, AND SHALL BE INSTALLED AT A MINIMUM GRADE OF 1.00

2. THE LINE AND GRADE OF SEWER MAINS SHALL BE CONTROLLED DURING THE SEWER CONSTRUCTION BY USE OF AN APPROVED LASER DEVICE. THE LINE AND GRADE OF THE LASER SHALL BE "CHECKED" FROM LINE AND GRADE STAKES PLACED AT THE MIDPOINT BETWEEN MANHOLES.

3. ALL SEWERS SHALL HAVE PREFORMED WYE-BRANCH FITTINGS, OF THE THICKNESS CLASS OF THE MAIN SEWER, INSTALLED INTEGRALLY WITH THE MAIN, FOR 6" DIAMETER HOUSE SERVICE CONNECTIONS.

4. STORM SERVICE CONNECTIONS SHALL BE LOCATED A MINIMUM OF 5 FEET FROM ANY WATER SERVICE CONNECTION OR SANITARY SERVICE CONNECTION.

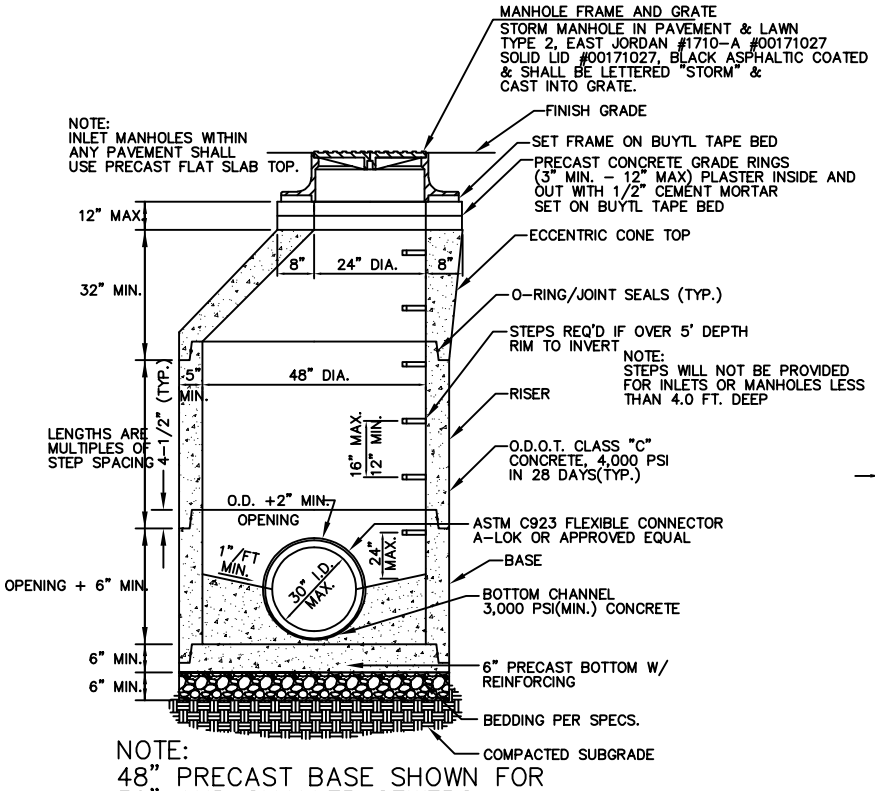
5. THE END OF EACH SERVICE CONNECTION SHALL BE SEALED WITH A TIGHT-FITTING PLUG AND MARKED WITH A 4" X 4" HARDWOOD STAKE EXTENDING VERTICALLY TO ABOUT 3 FEET ABOVE THE GROUND SURFACE.

6. AT ALL STORM SEWER MAIN AND SANITARY MAIN INTERSECTIONS (CROSSINGS) LESS THAN 18 INCHES, THE UPPER PIPE IS TO BE BRIDGED OVER THE LOWER PIPE BY CONSTRUCTION OF CEMENT AND HARDWOOD SUPPORTS UNDER THE UPPER PIPE ON EACH SIDE OF LOWER PIPE (SEE DETAIL).

7. WHEREVER UNSTABLE SOIL CONDITIONS ARE ENCOUNTERED, WORK SHALL BE DISCONTINUED UNTIL THE AREA IS STABILIZED TO THE SATISFACTION OF THE CITY ENGINEER. ALL CONDUITS SHALL BE INSTALLED ON A FIRM BED FOR THEIR FULL LENGTH IN ACCORDANCE WITH ODOT ITEM 603.03 UNLESS OTHERWISE SPECIFIED.

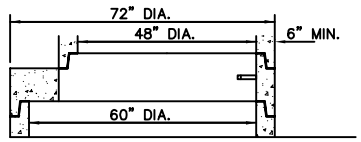
8. STORM SEWERS 15" AND SMALLER SHALL BE TELEVISED AFTER INSTALLATION.

9. ALL PIPES LARGER THAN 24' DIAMETER ENTERING MANHOLES SHALL HAVE SMOOTH INTERIOR.

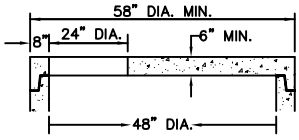


NOTE:
48" PRECAST BASE SHOWN FOR
30" AND SMALLER SEWERS.

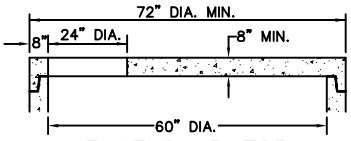
* FOR PIPE SIZE LARGER THAN 30", USE MANHOLE BASE WITH MINIMUM DIAMETER OF 60" AND MINIMUM THICKNESS OF 6".



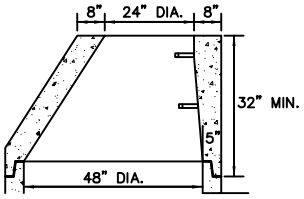
FLAT SLAB
TRANSITION



FLAT SLAB TOP



FLAT SLAB TOP



ALTERNATE
ECCENTRIC CONE TOP

NOTES:

SECTIONS OF THE PRECAST MANHOLE SHALL BE CAST AND ASSEMBLED WITH EITHER ALL TONGUE OR ALL GROOVE ENDS UP. LIFT HOLES MAY BE PROVIDED IN EACH SECTION FOR HANDLING.

TOP AND TRANSITION (FOR REDUCER) SECTIONS MAY BE EITHER ECCENTRIC CONE OR FLAT SLAB.

BASES FOR MANHOLES THAT ARE SHOWN WITH MONOLITHIC FLOOR AND RISER WHICH MAY BE CAST IN ONE OR TWO OPERATIONS. A PERMISSIBLE ALTERNATE IS TO CAST AND SHIP THE FLOOR AND BARREL SEPARATELY. OPENINGS FOR INLET AND OUTLET PIPES SHALL BE PROVIDED EITHER WHEN THE UNIT IS CAST OR LATER TO MEET PROJECT REQUIREMENTS. BOTTOM CHANNELS MAY BE FORMED OF CONCRETE PRECAST IN THE BASE OR BY FIELD CONSTRUCTION. BASES MAY ALSO BE POURED IN PLACE.

OPENINGS IN RISER SECTIONS FOR 18" AND SMALLER INLET PIPES MAY BE PREFABRICATED.

JOINT SEAL BETWEEN PRECAST MANHOLE SECTIONS ON SEWERS SHALL BE RESILIENT AND FLEXIBLE. GASKET JOINTS PER A.S.T.M. C-443 OR LATEST EDITION.

MATERIALS FOR BASES AND OTHER PRECAST SECTIONS, INCLUDING REINFORCEMENT NOT SPECIFIED HEREON, SHALL COMPLY WITH THE SPECIFICATIONS.

PRECAST MANHOLE SHALL CONFORM TO THE REQUIREMENTS OF A.S.T.M. C-478.

SEAL LIFT HOLES WITH APPROVED CONCRETE PLUGS AND BITUMASTIC SEAL.

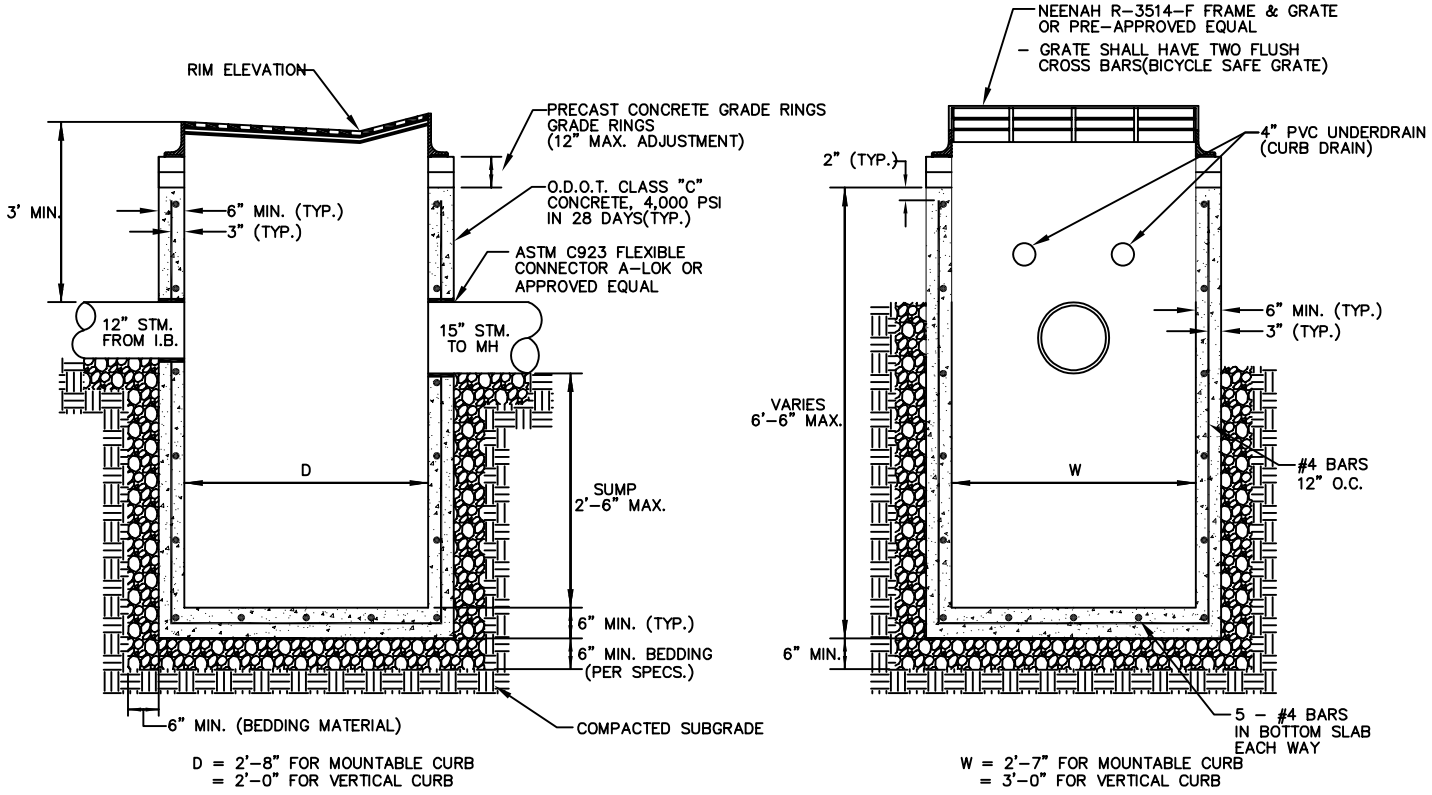
IN ADDITION TO THE "O" RING, A BUTYL RESIN RUBBER STRIP IS TO BE INSERTED INTO AND AROUND THE CIRCUMFERENCE OF EACH MANHOLE JOINT AS MANUFACTURED BY CONCRETE SEALANTS, INC., GRADE NO CS-202, OR EQUAL.

MANHOLE STEPS TO BE REINFORCED POLYPROPYLENE CONFORMING TO A.S.T.M. 2146, TYPE 2.

LANDING PLATFORMS SHALL BE INSTALLED IN THE MANHOLES THAT ARE OVER 28 FEET DEEP TO THE INVERT WITH A MAXIMUM VERTICAL SPACING OF 20 FEET.

STANDARD PRECAST STORM MANHOLE

NOT TO SCALE

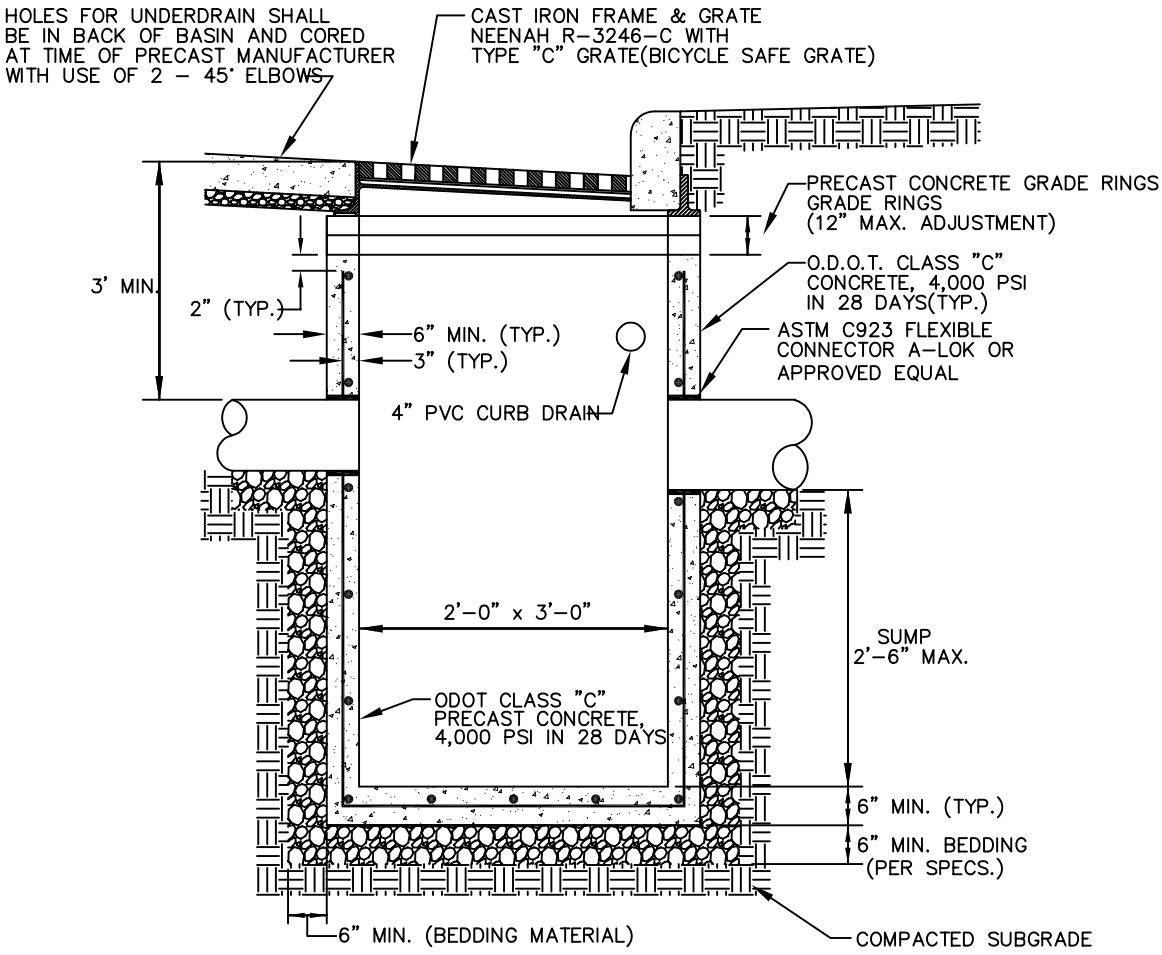


NOTES:

1. ALL REINFORCING STEEL SHALL BE #4 DEFORMED BARS.
2. CONCRETE SHALL BE O.D.O.T. CLASS "C", 4,000 PSI IN 28 DAYS.
3. DOUBLE INLET/CATCH BASIN SHALL BE 2 PRECAST BASINS SIDE BY SIDE WITH 15" PIPE TO CONNECT AT WATER LEVEL.

RECTANGULAR PRECAST CONCRETE CATCH BASIN

NOT TO SCALE

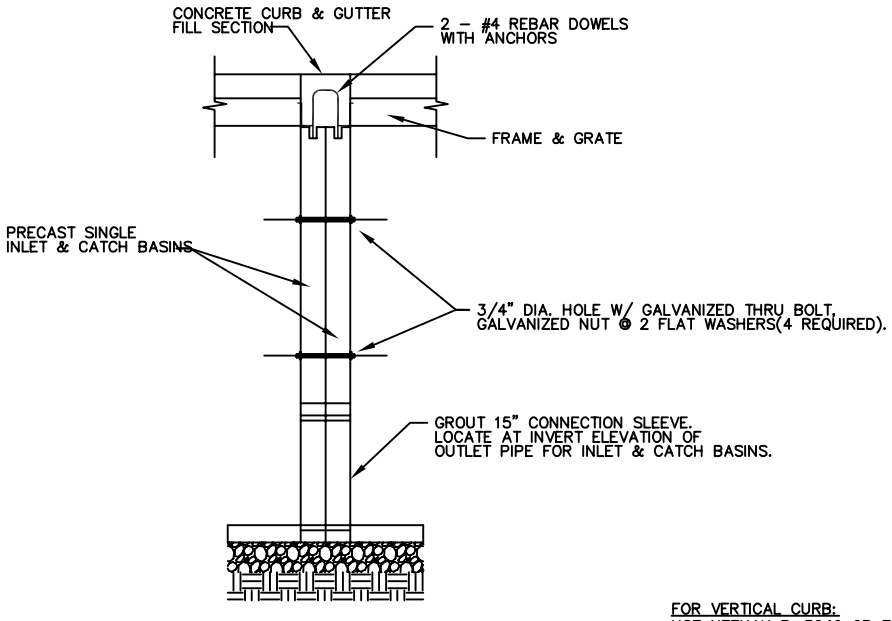


NOTES:

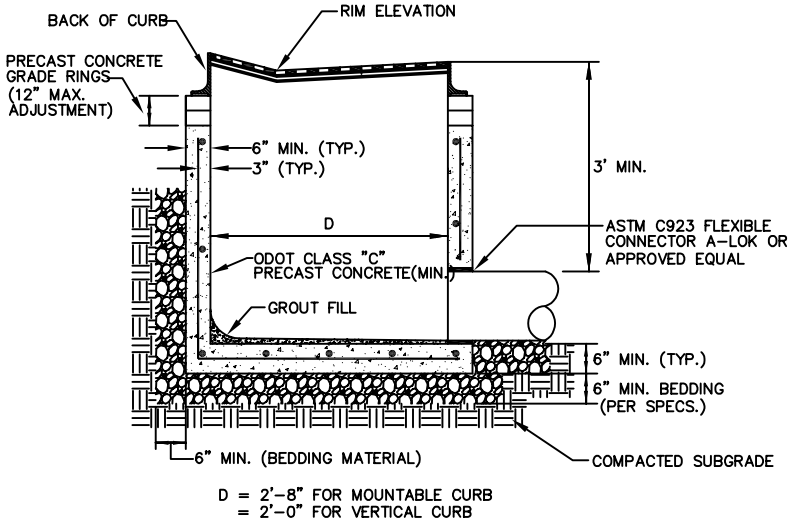
1. CATCH BASIN AND INLET BASIN CONNECTIONS UNDER PAVEMENT TO BE MINMUM SIZE 12" R.C.P.(A.S.T.M. C–78 DESIGN) CONFORMING TO ODOT ITEM 603–706.02, CLASS IV.

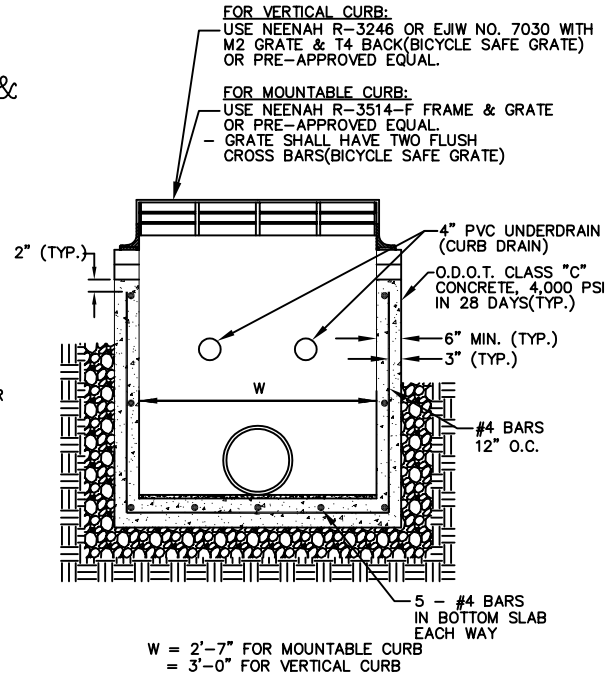
RECTANGULAR PRECAST CONCRETE CATCH BASIN (FOR STANDING CURB)

NOT TO SCALE



DOUBLE INLET & CATCH BASIN

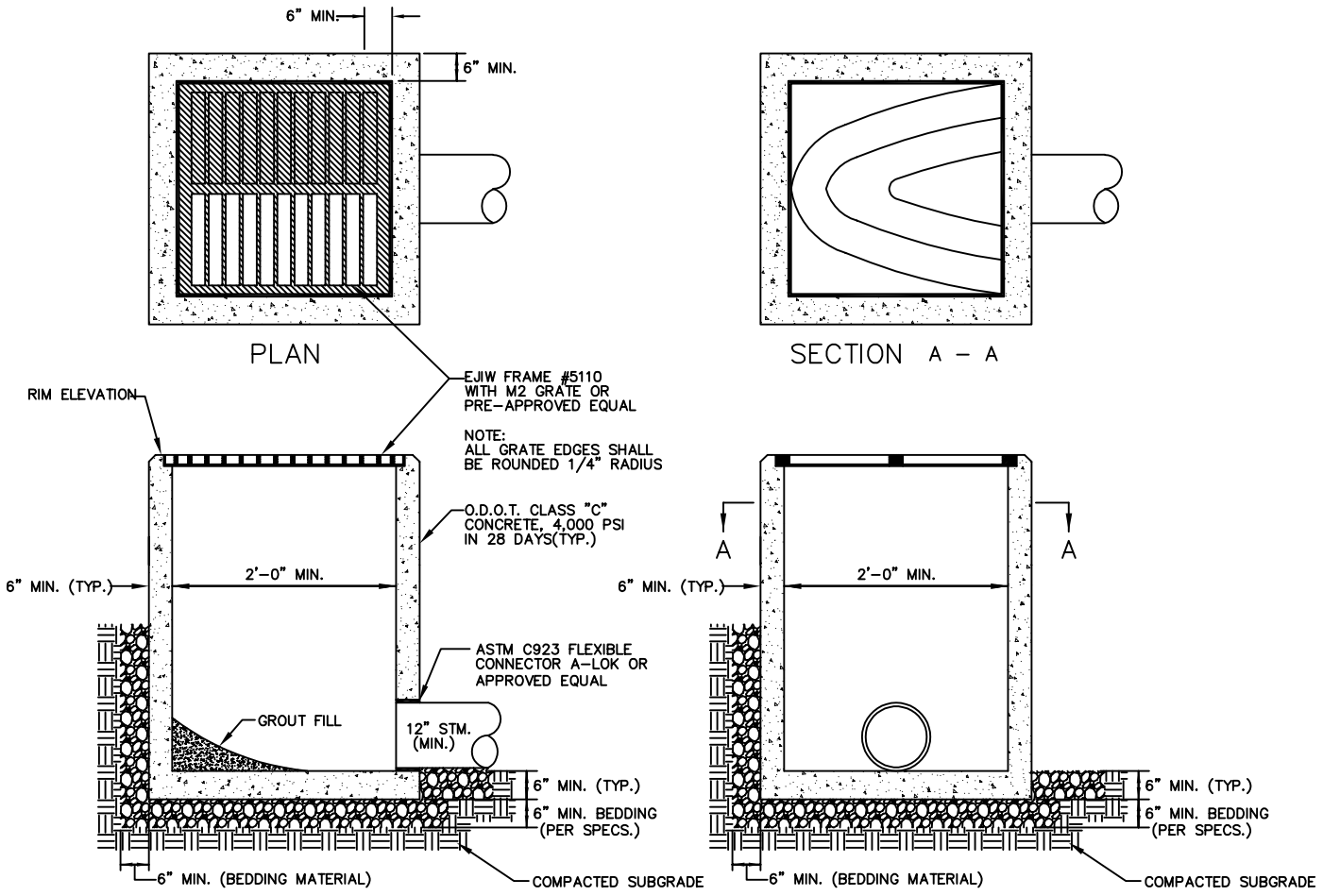




NOTES:
1. ALL REINFORCING STEEL SHALL BE #4 DEFORMED BARS.
2. CONCRETE SHALL BE ODOT CLASS "C", 4,000 PSI IN 28 DAYS.
3. DOUBLE INLET/CATCH BASIN SHALL BE 2 PRECAST BASINS SIDE BY SIDE WITH 15" PIPE TO CONNECT AT WATER LEVEL.
4. CATCH BASIN AND INLET BASIN CONNECTIONS UNDER PAVEMENT TO BE MINMUM SIZE 12" R.C.P.(A.S.T.M. C-78 DESIGN) CONFORMING TO ODOT ITEM 603-706.02, CLASS IV.

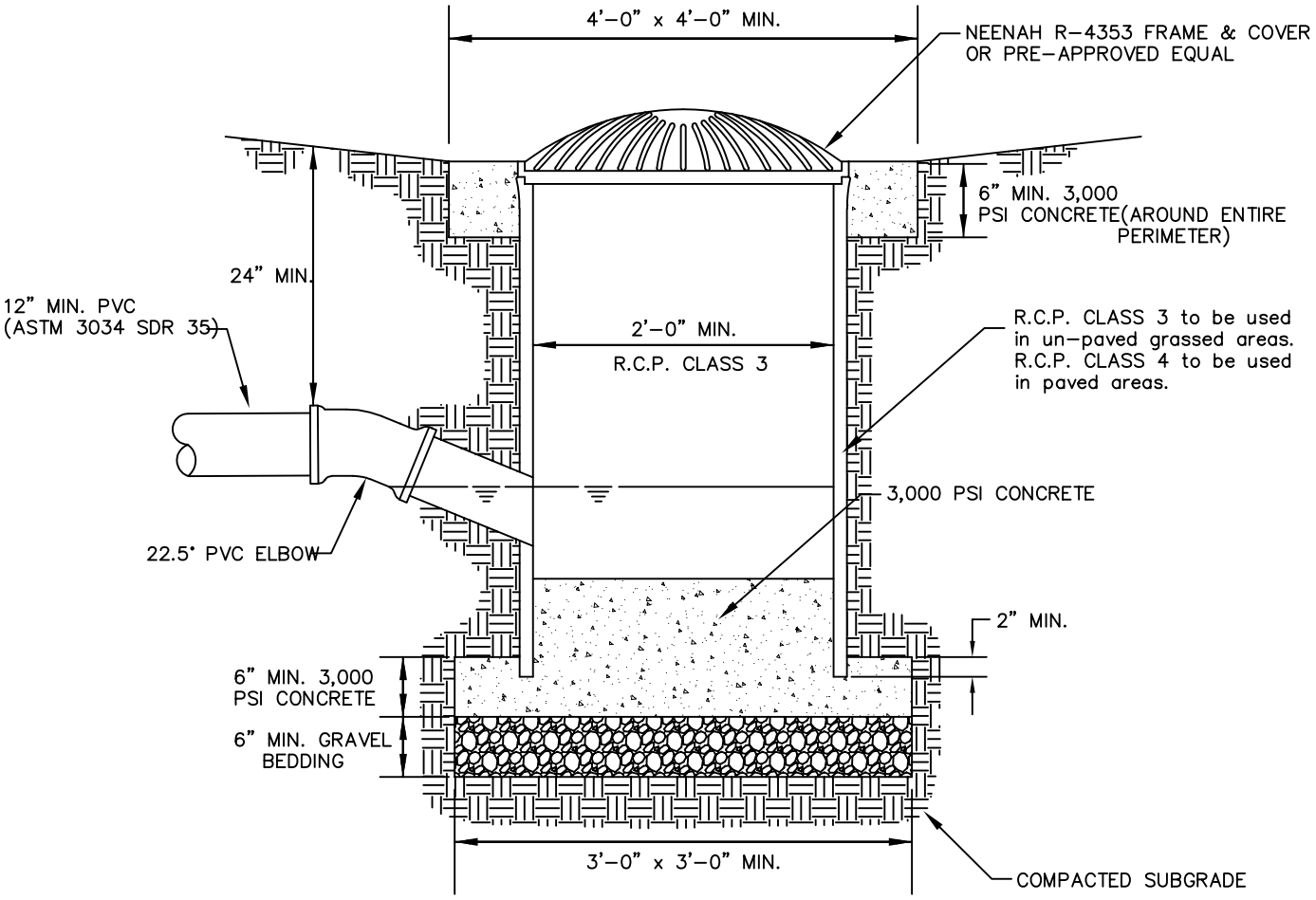
RECTANGULAR PRECAST CONCRETE INLET BASIN

NOT TO SCALE



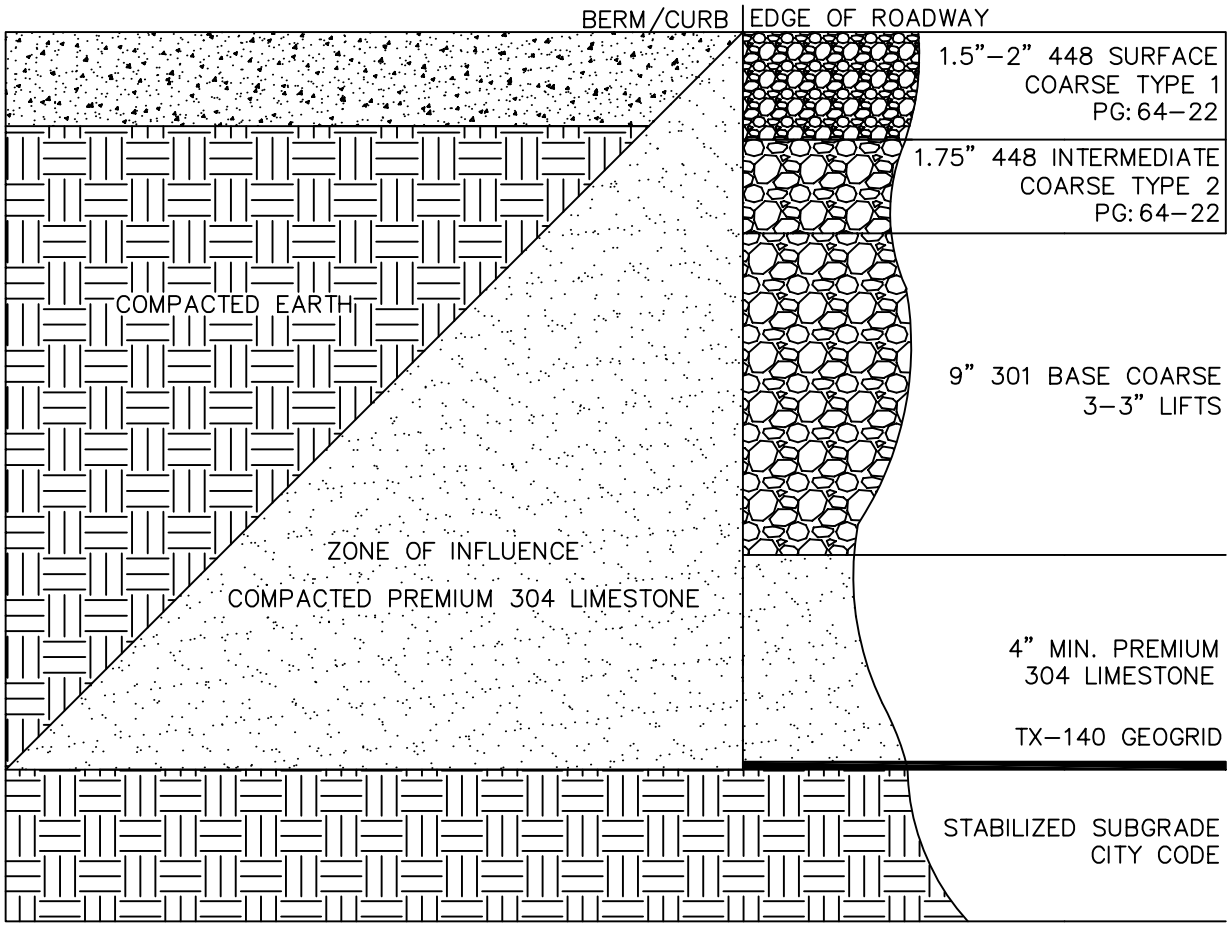
YARD BASIN

NOT TO SCALE



YARD DRAIN

NOT TO SCALE



TYPICAL ASPHALT ROADWAY DETAIL

NOT TO SCALE

NOTES:

1. ALL MATERIALS SHALL BE COMPACTED AND INSTALLED IN ACCORDANCE WITH ODOT SPECIFICATIONS.

2. A JMF AND PLAN IN ACCORDANCE WITH ODOT SPECIFICATIONS SHALL BE SUBMITTED AND APPROVED BY THE CITY ENGINEER PRIOR TO PLACEMENT OF ANY MATERIALS. THE JMF FOR ALL ASPHALT MATERIALS SHALL BE FREE OF RECLAIMED ASPHALT. ANY AND ALL MATERIALS INSTALLED SHALL BE VIRGIN AND OF PREMIUM QUALITY.

3. FULL DEPTH 90 DEGREE SAW CUT IS REQUIRED FOR ALL SETBACKS, TIE–INS AND REPAIRS.

4. BERM MATERIAL SHALL BE COMPOSED OF RECYCLED ASPHALT. THE BERM SHALL BE INSTALLED WITH AN APPROXIMATE 2' WIDTH AND 2" DEPTH FLUSH WITH ROADWAY SURFACE COARSE.

5. PRIOR TO PLACEMENT OF PAVEMENT MATERIAL,THE SURFACE SHALL BE CLEANED AND DRY. THE CONTRACTOR SHALL PAINT/SPRAY THE SIDES AND BOTTOM OF THE REPAIR AREAS WITH ASPHALT MATERIAL MEETING ODOT 401.14 AND 407.02. THE TACK MUST HAVE AN APPLICATION RATE OF 0.6 TO 0.12 GALLONS PER SY.

CITY OF BROADVIEW HEIGHTS
MINIMUM REQUIREMENTS FOR FINAL GRADE INSPECTION

THE FOLLOWING MINIMUM REQUIREMENTS SHALL BE SATISFIED PRIOR TO REQUESTING A FINAL GRADE INSPECTION FOR AN ACTIVE HOME–SITE:

1. NO CHANGES SHALL BE MADE TO THE APPROVED SITE PLAN WITHOUT REVIEW AND APPROVAL FROM THE ENGINEERING DEPARTMENT. ALLOW FOR 5–BUSINESS DAYS FOR REVIEW.
2. THE SITE SHALL BE FREE OF DEBRIS AND EXCESS MATERIALS, INCLUDING BUT NOT LIMITED TO #1'S, #2'S, #57 LIMESTONE, OR NATURAL ROCK. ALL BURIED SILT FENCE NOT IN USE MUST BE REMOVED.
3. PROPERTY PINS SHALL BE EXPOSED AND VISIBLE.
4. WATER SERVICE VALVE SHALL BE AT GRADE, MARKED WITH A LATHE, VISIBLE, AND OPERABLE. THE LOCATION SHALL BE IDENTIFIED ON THE AS–BUILT.
5. WHERE CURBING EXISTS, THE WATER SERVICE VALVE LOCATION SHALL BE MARKED BY A SAW CUT ON THE CURB WITH A 'W.'
6. CLEAN–OUTS SHALL BE CAPPED, LOWERED TO GRADE, AND MARKED WITH A LATHE.
7. ANY CRACKED/DAMAGED SIDEWALK OR CURB SHALL BE REPLACED.
8. MANHOLES SHALL BE VISIBLE, AT GRADE LEVEL, NOT DAMAGED, FREE OF DEBRIS, AND WATERTIGHT.
9. SITE MANAGER SHALL ENSURE SITE ACHIEVES POSITIVE DRAINAGE (MINIMUM 1% FOR ALL SWALES), DOES NOT DIRECT RUNOFF TO ADJACENT PROPERTIES, AND COMPLIES WITH THE APPROVED SITE PLAN.
10. SITE MANAGER AND SURVEYOR SHALL VERIFY THAT THE AS–BUILT SATISFIES THE APPROVED SITE PLAN. ANY DISCREPANCIES SHALL BE ADDRESSED PRIOR TO SUBMITTING TO THE CITY.
11. AS–BUILTS SHALL CONTAIN ENOUGH INFORMATION AND ELEVATIONS TO VERIFY THE GRADES.
12. ALL EROSION CONTROLS SHALL BE MAINTAINED UNTIL THE SITE IS PERMANENTLY STABILIZED PER OEPA REGULATIONS.
13. ALL GRADING MUST BE OF THE FINAL QUALITY.
14. TEMPORARY POWER POLES MUST BE REMOVED, AND PERMANENT ELECTRIC SERVICE MUST BE INSTALLED
15. POWER, TELEPHONE, AND CABLE BOXES MUST BE LEVEL, IF APPLICABLE.
16. IF THE SITE IS BUILT ON BEDROCK, 12"–18" OF CLEAN SOIL MUST BE PLACED AND GRADED PER THE APPROVED SITE PLAN.
17. FOUNDATION WALLS MUST BE BACKED UP AND GRADED FOR POSITIVE DRAINAGE AWAY FROM THE HOUSE. NO BASEMENT WATERPROOFING SHALL BE EXPOSED.
18. ALL GRADES MUST NOT EXCEED A 3:1 SLOPE, OR AS IDENTIFIED ON THE APPROVED SITE PLAN.
19. ALL DAMAGE, INCLUDING OFF–SITE DAMAGE, RESULTING FROM THE SITE ACTIVITIES MUST BE REMEDIATED PRIOR TO FINAL GRADE APPROVAL.
20. ALL OFF–SITE ITEMS THAT AFFECT OR WILL AFFECT THE SITE MUST BE FIXED PRIOR TO FINAL GRADE APPROVAL.
21. ALL SITES WILL BE INSPECTED ON A CASE–BY–CASE BASIS. THIS LIST IS NOT INCLUSIVE DUE TO THE UNIQUENESS OF INDIVIDUAL SITES.
22. ALL TREE ROOTS EXPOSED DURING EXCAVATION SHALL BE CLEAN CUT BY THE END OF THE WORK DAY.