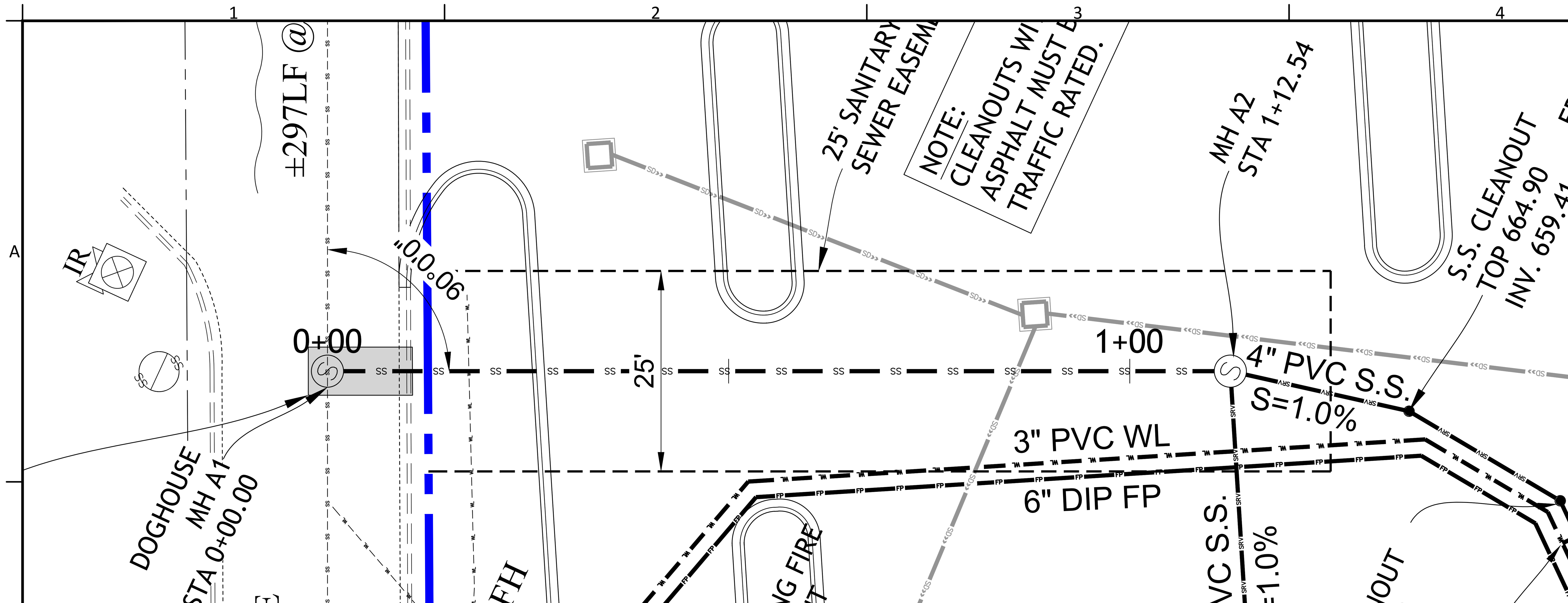
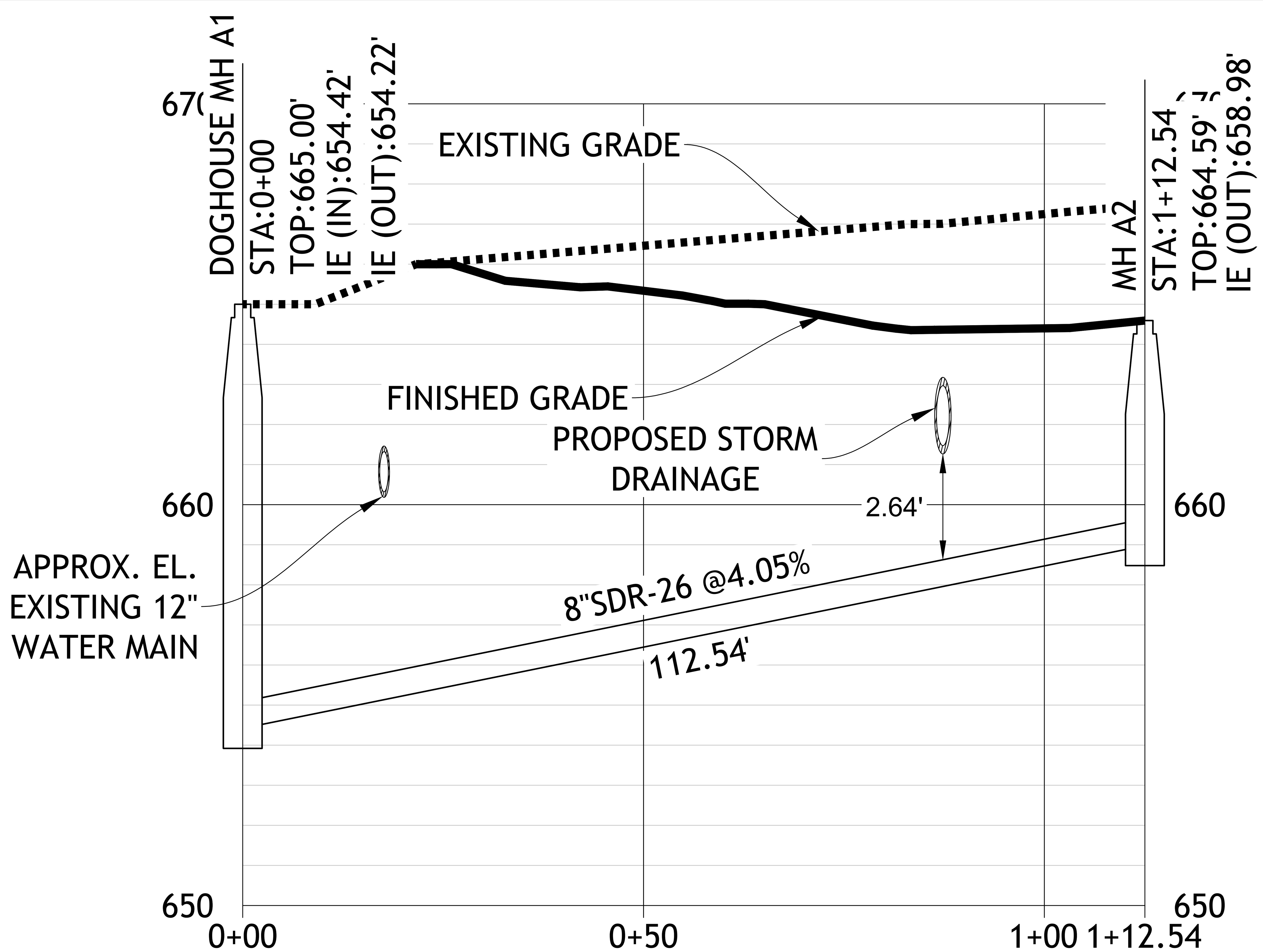




SEWER LINE-A

SCALE:
HORIZONTAL: 1"=10'
VERTICAL: 1"=2'

SANITARY SEWER LINES NOTES

1. M.H. FRAME AND COVER SHALL BE MF-11 AND MC-18 RESPECTIVELY AS MANUFACTURED BY SUMTER MACHINERY COMPANY OR SEWER AUTHORITY APPROVED EQUAL. FRAME SHALL WEIGH 208 POUNDS AND COVER SHALL WEIGH 120 POUNDS. ALL SURFACES OF FRAME AND COVER SHALL BE BITUMINOUS COATED.
2. STEPS SHALL BE COPOLYMER POLYPROPYLENE PLASTIC, REINFORCED WITH 1/2" GRADE 60 REINFORCEMENT OR SEWER DISTRICT APPROVED
3. THE CONTRACTOR IS RESPONSIBLE FOR TOP ELEVATION OR ALL M.H. COVER TO ALLOW FOR THICKNESS OF ASPHALT PAVEMENT, STONE OR TOPSOIL IN GRASSED AREAS TO MEET FINISH GRADE ELEVATIONS.
4. BENCH MAY CONTAIN BROKEN BRICKS, TILE, ETC., IN MORTAR MIX.
5. REINFORCED PRECAST M.H. WITH FORMED INVERTS AS MANUFACTURED BY TINDALL CONCRETE COMPANY ("G" SERIES) CONFORMING TO ASTM C-478, OR APPROVED EQUAL MAY BE USED. PRECAST CONCRETE RINGS, NOT EXCEEDING 12 INCHES MAY BE USED FOR ADJUSTMENT OF RING TO SURFACE. ADJUSTMENTS GREATER THAN 12 INCHES REQUIRE ADDITIONAL BARREL RISER SECTIONS INSTALLED BELOW THE CONE SECTION.
6. FOR STRAIGHT (GRADE AND ALIGNMENT) THROUGH M.H., P.V.C. PIPE SHALL BE LAID INSTEAD OF BRICK INVERT. PIPE SHALL BE CUT SO JOINT DOES NOT HIT IN M.H. TOP ONE-FOURTH SECTION OF PIPE SHALL BE EVENLY BROKEN OUT AFTER BENCH IS POURED.
7. A DROP OF 24 INCHES MAXMUM FROM THE POINT OF SEWAGE ENTRANCE TO THE POINT OF SEWAGE OUTFLOW IS PERMITTED PROVIDED THE INVERT IS SLOPED FROM THE ENTRANCE POINT TO THE OUTFLOW POINT. CONTRACTOR SHALL MATCH "CROWN OF PIPE" WHEN CONNECTING NEW SEWER LINE TO EXSTING.
8. ANY MANHOLES LOCATED OFF OF ROADS OR HIGHWAY RIGHT-OF-WAY SHALL BE RAISED APPROXMATELY ONE (1) FOOT ABOVE FINISHED GRADE.
9. POLYVINYL CHLORIDE (PVC) SEWER PIPE SHALL CONFORM TO ASTM D-3034, SDR-35, INSTALLED IN ACCORDANCE WITH ASTM D-2321. ELASTOMERIC JOINTS SHALL COMPLY WITH ASTM D-3212. SDR-35 SHALL BE INSTALLED IN CLASS "B" BEDDING AS DETAILED ON DRAWINGS. NO ULTRARIB PIPE ALLOWED.
10. DUCTILE IRON PIPE SHALL BE CLASS 50, CONFORMING TO AWWA C151, FURNISHED AND INSTALLED IN ACCORDANCE WITH THE SPECIFICATIONS. ALL DUCTILE IRON PIPE SHALL BE LINED WITH PROTECTO 401 (INSTALLATION OF GRAVITY SEWER). JOINTS IN D.I.P. AT THE CREEK CROSSING SHALL BE RESTRAINED FROM MOVEMENT (LOK-TIGHT OR APPROVED EQUAL).
11. EACH JOINT SHALL BE CLEARLY AND LEGIBLY MARKED WITH THE MANUFACTURER'S NAME OR IDENTIFYING SYMBOL WITH THE LETTERS E.S. APPEARING ON THE EXTERIOR OF THE PIPE NEAR THE SOCKET.
12. MECHANICAL JOINT COUPLINGS SHALL BE USED AT ALL PIPE TRANSITIONS.
13. A MIN. OF 4 FT. OF COVER SHALL BE MAINTAINED OVER ALL PVC PIPE LINES.
14. ALL SANITARY SEWER LINES SHALL BE AIR TESTED AND MUST CONFORM TO ASTM C828, LATEST REVISION.
15. ALL FLEXBLE PIPE SHALL BE TESTED BY PULLING A MANDREL, GO/NO GO, DEVICE BY HAND NO EARLIER THAN 30 DAYS AFTER THE TRENCHING HAS BEEN COMPLETELY BACKFILLED. THE MAXMUM ALLOWABLE PIPE DEFLECTION SHALL NOT EXCEED 5 PERCENT OF NOMINAL INSIDE PIPE DIAMETER.
16. WATER LINES SHALL BE INSTALLED AFTER ALL GRAVITY SEWER LINES ARE INSTALLED.
17. THIS CONTRACTOR SHALL FIELD VERIFY THE LOCATION OF ALL EXSTING UNDERGROUND UTILITIES BEFORE COMMENCING WORK. CONTACT WATER, TELEPHONE, POWER AND GAS COMPANY BEFORE EXCAVATION IS BEGUN.
18. THIS CONTRACTOR SHALL BE RESPONSIBLE FOR ALL SURVEY WORK NECESSARY TO STAKE SEWER LINES. THE CENTERLINE AND ALL MANHOLE LOCATIONS SHALL BE STAKED IN THE FIELD. THE OWNER'S SURVEYOR WILL SET ALL LOT CORNERS. CONTRACTOR SHALL PROTECT ALL PROPERTY MARKERS.
19. ALL UTILITY TRENCHES SHALL BE THOROUGHLY COMPACTED TO PREVENT SETTLEMENT AND DAMAGE TO FUTURE PAVEMENT AND STRUCTURES.
20. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRS TO EXSTING ROADS USED BY HIS OPERATION. THE CONTRACTOR SHALL REMOVE MUD AND DEBRIS FROM HIGHWAY AND NOT ALLOW DUST TO BECOME A NUISANCE OR SAFETY HAZARD.
21. ALL SANITARY SEWER WORK SHALL BE CONSTRUCTED TO LINES AND GRADES SHOWN AS DETAILED ON THE DRAWING. THE CONTRACTOR SHALL PROVIDE STANDARD MANHOLES AT ALL BENDS AND CHANGES IN GRADE IN SEWER LINES AND CONNECTIONS TO EXSTING SEWER LINES. PIPE BEDDING AND BACKFILL SHALL BE CAREFULLY CONTROLLED. ALL SANITARY SEWER WORK SHALL COMPLY WITH LOCAL CODES AN ORDINANCES. THE ENGINEER, THE LOCAL AUTHORITY AND THE STATE HEALTH AUTHORITY MUST INSPECT ALL SEWER WORK AS REQUIRED BEFORE BEING PUT IN SERVICE.
22. ALL WORK SHALL BE CONSTRUCTED IN STRICT ACCORDANCE WITH THE PLANS AND SPECIFICATIONS AND INSTRUCTIONS GIVEN BY THE OWNER'S REPRESENTATIVE, THE STATE HEALTH AUTHORITY AND THE LOCAL GOVERNING AUTHORITY.
23. CONTRACTOR SHALL NOT TIE NEW SEWER LINE TO EXSTING MANHOLE UNTIL ALL CONSTRUCTION IS APPROVED, TESTED AND ACCEPTED BY THE LOCAL GOVERNING AUTHORITY.
24. ALL SEWER LINES IN RELATION TO WATER LINES MUST CONFORM TO "TEN STATES STANDARDS", SECTION 38.3, 1990 EDITION, AT A MINIMUM
25. THE CONTRACTOR SHALL GRASS ALL RIGHT-OF-WAY IN ACCORDANCE WITH SPECIFICATIONS FOR GRASSING.
26. A PRE-CONSTRUCTION CONFERENCE WITH THE CONTRACTOR, SEWER AUTHORITY, STATE HEALTH AUTHORITY, AND THE ENGINEER WILL BE HELD PRIOR TO SEWER LINE CONSTRUCTION.
27. CONTRACTOR TO ASSUME CLASS "B" BEDDING FOR SDR-35 PVC IN HIS BID PROPOSAL. CLASS "A" BEDDING WILL BE PAID FOR AS AN "EXTRA" SHOULD FIELD CONDITIONS REQUIRE THIS BEDDING.
28. COUPLINGS SHALL BE HYMAX COUPLING 984-260 OR 1200-260 AS MANUFACTURED BY TOTAL PIPING SOLUTIONS, OLEAN, NEW YORK, OR APPROVED EQUAL.
29. SANITARY SEWER SERVICES SHALL BE INSTALLED PER DETAILS. LOCATION OF SERVICE LINES SHALL BE MEASURED FROM MANHOLES AND FURNISHED WITH "AS-BUILT" DRAWINGS TO THE ENGINEER. EACH LOT OR BUILDING SHALL HAVE (1) 6" OR 4" SERVICE LINE, AS SPECIFIED FOR ON THE DRAWINGS, PLUGGED AT R\W LINE OR WITHIN 5' OF THE BUILDING. NEW SERVICE LINES SHALL BE INSTALLED AS REQUIRED ON EXSTING SEWER LINES FOR APPLICABLE LOTS OR BUILDINGS. MINIMUM SLOPE ON ALL 6" SERVICE LINES SHALL BE 1% AND ON ALL 4" SERVICE LINES SHALL BE 2%
30. ALL WATER AND SEWER LINE BACKFILL IN ROAD R\W OR PAVED AREAS SHALL BE COMPACTED TO 95% STD. PROCTOR BY CONTRACTOR. THE OWNER'S REPRESENTATIVE SHALL TEST COMPACTION.
31. THE UTILITY CONTRACTOR SHALL BLADE ROADS SMOOTH READY FOR PAVING AFTER ALL UTILITY CONSTRUCTION IS COMPLETE.
32. ALL SEWER LINE WORK SHALL BE "APPROVED" BY THE STATE HEALTH AND LOCAL AUTHORITY, AND "APPROVED" AS-BUILT DRAWINGS SHALL BE FURNISH TO THE OWNER BEFORE CONTRACTOR RECEIVES FINAL PAYMENT
33. THE CONTRACTOR SHALL PAY ALL SEWER TAP FEES TO THE LOCAL GOVERNING AUTHORITY. THE CONTRACTOR SHALL INSTALL TEE AND RUN THE SERVICE LINES TO ROAD RIGHT-OF-WAY.
34. THE CONTRACTOR SHALL NOT PERFORM ANY WORK UNTIL HE HAS OBTAINED COPIES OF ALL NECESSARY ENCROACHMENT AND CONSTRUCTION PERMITS.
35. THIS CONTRACTOR SHALL SHORE TRENCH EXCAVATION AND USE PIPE BOX TO COMPLY WITH ALL OSHA SAFETY REGULATIONS. IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO PROVIDE JOB SITE SAFETY AND COMPLY WITH ALL SAFETY REQUIREMENTS. THE CONTRACTOR IS RESPONSIBLE FOR HIS MEANS AND METHODS OF CONSTRUCTION.

CONTRACTOR NOTE:
CONTRACTOR TO VERIFY EXISTING INVERTS AND ELEVATIONS IN THE FIELD. IF ANY DISCREPANCY IS OBSERVED, CONTRACTOR TO NOTIFY ENGINEER.

1. D.I.P. IS REQUIRED WHERE COVER IS LESS THAN FOUR FEET.
2. D.I.P. IS REQUIRED WHERE CLEARANCE BETWEEN STORM DRAINAGE AND SEWER IS LESS THAN 18". IF SEPARATION IS LESS THEN 18" ONE 18' OR 20' DIP CENTERED AT CROSSING SHALL BE USED.
3. SEWER LINE WILL BE INSTALLED AFTER FINISH GRADE HAS BEEN ESTABLISHED.
4. MANHOLES RIMS OUTSIDE ROAD R/W MUST BE A MINIMUM OF 24" ABOVE FINISHED GRADE.
5. CONTRACTOR TO CORE DRILL THE EXISTING MANHOLES AT THE TIE-IN CONNECTIONS AND INSTALL A FLEXIBLE RUBBER BOOT. CONNECTION SHALL BE WATERTIGHT. CONTRACTOR SHALL CORE DRILL THE TABLE OF THE EXISTING MANHOLE TO FORM AN INVERT OR CHANNEL ON TOP OF THE TABLE. GREER CPW SHALL BE CONTACTED TO INSPECT THE INSIDE AND OUTSIDE OF THE MANHOLE PRIOR TO BACKFILL.
6. PRECAST CONCRETE RINGS, NOT EXCEEDING 12-INCHES, SHALL BE USED TO ADJUST THE HEIGHT OF THE MANHOLE FRAME AND COVER TO SURFACE. NO MORE THAN TWO (2) RINGS SHALL BE USED. ADJUSTMENTS GREATER THAN 12-INCHES SHALL REQUIRE AN ADDITIONAL BARREL RISER SECTION INSTALLED BELOW THE CONE SECTION.
7. D.I.P. SHALL BE USED FOR A SANITARY SEWER SERVICE WITH LESS THAN 24-INCHES (2-FEET) OF FINAL GRADE (GROUND COVER) OR IF SEPARATION BETWEEN THE STORM DRAINAGE PIPE AND SANITARY SEWER SERVICE IS LESS THAN 18-INCHES.
8. C900 PVC PIPE SHALL BE USED FOR A SANITARY SEWER SERVICE WITH AT LEAST 18-INCHES AND 24-INCHES (2-FEET) OF SEPARATION BETWEEN THE STORM DRAIN PIPE AND SANITARY SEWER SERVICE. THE SERVICE SHALL BE BEDDED WITH STONE - AT LEAST 6-INCHES ABOVE THE TOP OF PIPE/SANITARY SEWER SERVICE.
9. D.I.P. SHALL BE LINED WITH PROTECTO 401

LEGEND
- EXISTING GRADE
- FINISHED GRADE
- STORMDRAINAGE (RCP UNLESS NOTED)

SAFETY NOTE TO CONTRACTOR
THE CONTRACTOR SHALL SHORE TRENCH EXCAVATION AND USE PIPE BOX TO COMPLY WITH ALL OSHA SAFETY REGULATIONS. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO PROVIDE JOB SITE SAFETY AND COMPLY WITH ALL SAFETY REQUIREMENTS. THE CONTRACTOR IS RESPONSIBLE FOR HIS MEANS AND METHODS OF CONSTRUCTION.

811 Know what's below. Call before you dig.

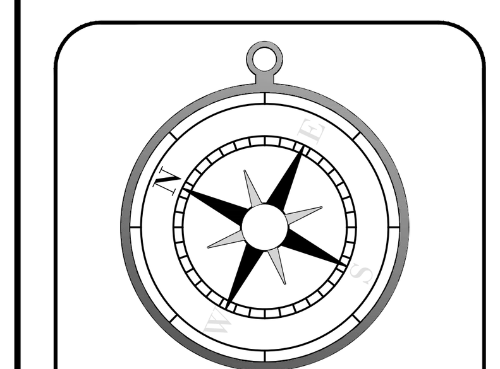
UTILITY NOTE TO CONTRACTOR
THE UTILITIES SHOWN ARE FOR THE CONTRACTOR'S CONVENIENCE ONLY. THERE MAY BE OTHER UTILITIES NOT SHOWN ON THESE PLANS. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR THE LOCATIONS SHOWN AND IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCATIONS OF ALL UTILITIES WITHIN THE LIMITS OF THE WORK. ALL DAMAGE MADE TO EXISTING UTILITIES BY THE CONTRACTOR SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.

NO.	DATE	BY	REVISION
A			

Gray Engineering
132 PILGRIM ROAD · GREENVILLE, SC 29607
PH: (864) 297-3027 · FAX: (864) 729-8747
WWW.GRAYENGINEERING.COM
· SC C.O.A.# C00060 · NC C.O.A.# C-1217 · GA C.O.A.# PEF001941 · TN C.O.A.# 0410819 ·

SOUTH CAROLINA CERTIFICATE OF AUTHORIZATION GRAY ENGINEERING CONSULTANTS, INC. No. C00060
SOUTH CAROLINA PROFESSIONAL ENGINEER REGISTERED No. 40522 3/17/2025

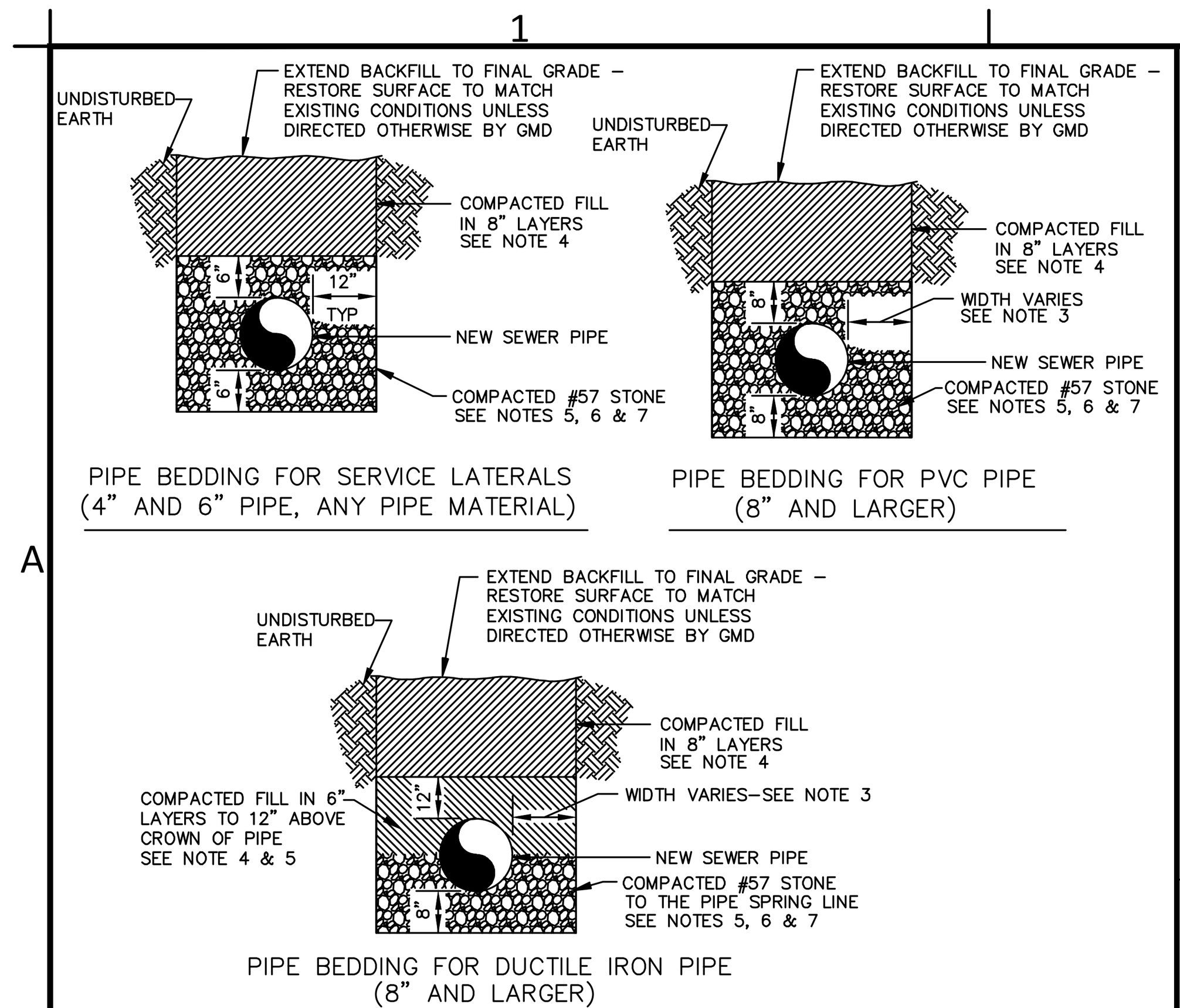
SANITARY SEWER PROFILES
PROPOSED HOME 2 SUITES BY HILTON
475 HOSPITALITY BOULEVARD
GREENWOOD COUNTY SOUTH CAROLINA



SCALE:	1" = 10 '
PROJECT MANAGER:	ZDJ
DRAWN BY:	MSG
PROJECT DATE:	5/3/2023
JOB No.:	2023104
PLOT DATE:	3/17/25

SHEET
SS-1

2023104 - Greenwood Home2Suites - D16.dwg



PIPE BEDDING FOR DUCTILE IRON PIPE (8" AND LARGER)

NOTES:

1. PIPE BEDDING DETAIL APPLIES TO ALL NEW SEWER PIPES INSTALLED.
2. THE CONTRACTOR SHALL USE A TRENCH BOX OR SHEETING AND SHORING IN ACCORDANCE WITH OSHA REGULATIONS WHILE INSTALLING NEW SEWERS. THE CONTRACTOR WILL NOT BE ALLOWED TO SLOPE TRENCH WALLS.
3. TRENCH WIDTH SHALL BE LIMITED TO THE FOLLOWING UNLESS OTHERWISE APPROVED BY GMD:

   4" AND 6" PIPE — 12" EACH SIDE
   8" TO 15" PIPE — 15" EACH SIDE
   16" TO 30" PIPE — 18" EACH SIDE
   36" AND LARGER — 21" EACH SIDE
4. IN GRASSED AREAS, COMMON FILL MAY BE USED AS BACKFILL. IN PAVED AREAS, #57 STONE SHALL BE IMPORTED AND USED AS BACKFILL AND/OR THE EXCAVATION SHALL BE FILLED WITH SCDOT FLOWABLE FILL. IF FLOWABLE FILL IS USED, BACKFILL WITH #57 STONE TO MIN 12" ABOVE THE TOP OF THE PIPE. REMOVE ALL EXCAVATED MATERIAL AND DISPOSE OF OFFSITE.
5. COMPACTION OF STONE AND COMMON FILL TO 12" ABOVE PIPE TO BE WITH "JUMPING JACK" HAND MECHANICAL TAMPS ONLY.
6. MAINTAIN GROUND WATER LEVEL AT LEAST 1 FOOT BELOW THE BOTTOM OF THE STONE BEDDING AT ALL TIMES.
7. IN ROCK, REDUCE STONE BEDDING UNDER PIPE AND STRUCTURES TO 6 INCHES.

GREENWOOD METROPOLITAN DISTRICT
GREENWOOD, SOUTH CAROLINA
PIPE BEDDING
No. | Date | By | Revision — Scale: NONE | Approved By | Date | DETAIL NO. SS-1

MANHOLE SCHEDULES

MH DIAMETER	LARGEST PIPE DIAMETER
4 FEET	8" TO 15"
5 FEET	16" TO 27"
6 FEET	30" TO 45"
8 FEET	48"
SPECIAL DESIGN	> 48"

PIPE DIAMETER	MAX MH SPACING
8" TO 12"	400 FEET
15" TO 27"	450 FEET
30" TO 45"	550 FEET
48" AND LARGER	600 FEET

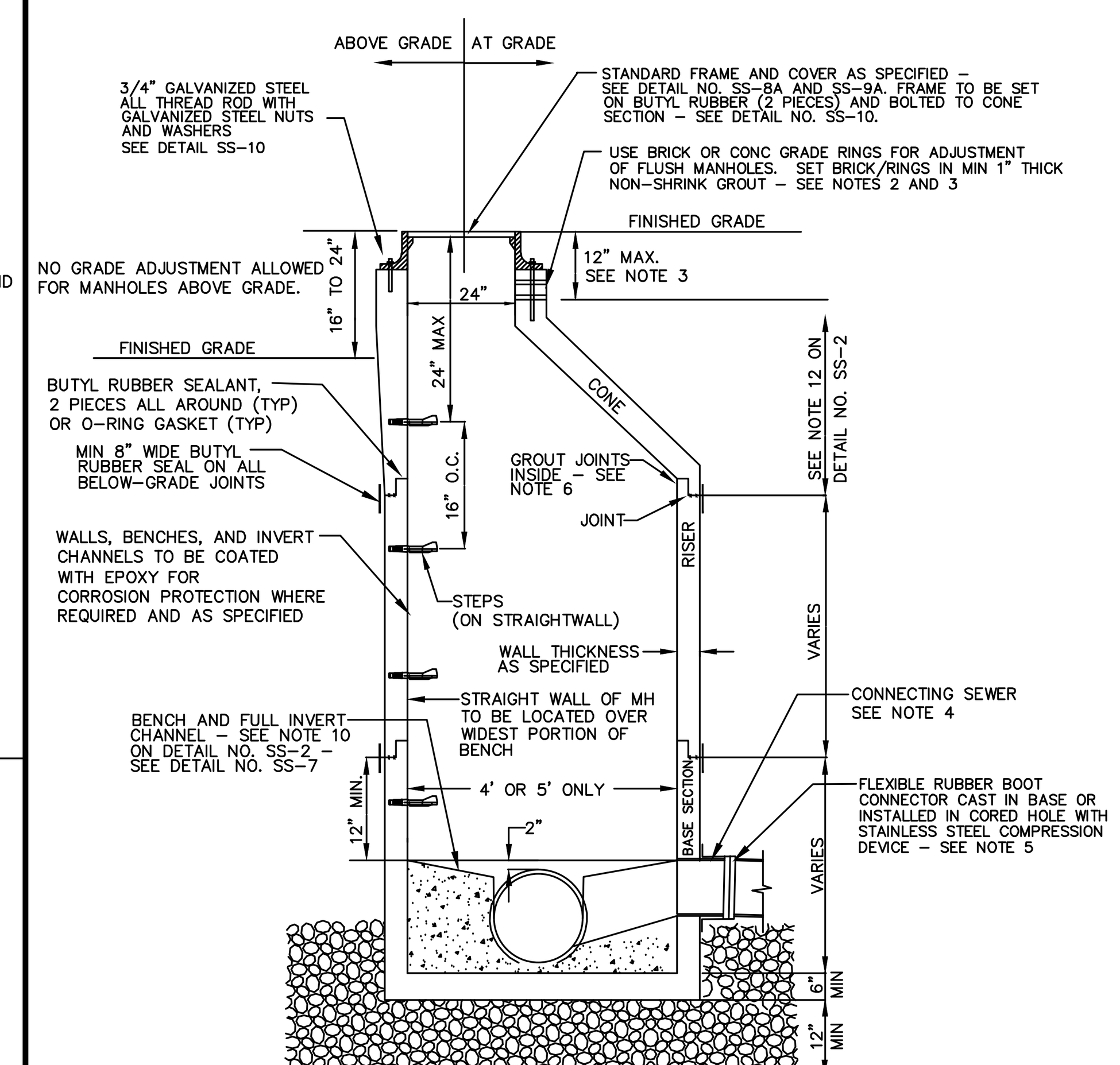
DETAIL NO.	MANHOLE TYPE	WHEN TO USE
SS-3	PRECAST WITH CONE SECTION	(1) USE FOR 4-FOOT AND 5-FOOT DIAMETER MANHOLES ONLY (2) MANHOLES WILL TERMINATE AT GRADE IN LANDSCAPED AREAS AND 16 TO 24 INCHES ABOVE GRADE IN EASEMENT AREAS. NO GRADE ADJUSTMENTS ALLOWED FOR MANHOLES ABOVE GRADE.
SS-4	PRECAST WITH FLAT TOPS	(1) USE FOR ALL 6-FOOT AND 8-FOOT DIAMETER MANHOLES. (2) USE FOR ALL 4-FOOT AND 5-FOOT MANHOLES THAT TERMINATE MORE THAN 2 FEET ABOVE GRADE. (3) USE FOR SHORT MANHOLES (4-FOOT AND 5-FOOT) WHERE A CONE SECTION WILL NOT WORK.

MANHOLE COVER ELEVATIONS:
(1) FLUSH WITH FINISHED GRADE WITHIN STREET R/Ws AND IN LANDSCAPED/LAWN AREAS UNLESS OTHERWISE SPECIFIED.
(2) 16 INCHES ABOVE GRADE IN EASEMENTS EXCEPT TO ACCOMMODATE FLOOD ELEVATIONS PER (3) BELOW.
(3) COVERS TO TERMINATE AT LEAST 1 FOOT ABOVE THE 100-YEAR FLOOD ELEVATION BUT NO GREATER THAN 4 FEET ABOVE GRADE TOTAL. WHERE THE FLOOD ELEVATION IS 4 FEET OR MORE ABOVE GROUND, WATERTIGHT COVERS SHALL BE USED, THE MANHOLE COVER SHALL TERMINATE 2 FEET ABOVE GRADE, AND A VENT PIPE SHALL BE INSTALLED TO 2 FEET ABOVE THE 100-YEAR FLOOD ELEVATION.

GENERAL SPECIFICATIONS AND REQUIREMENTS

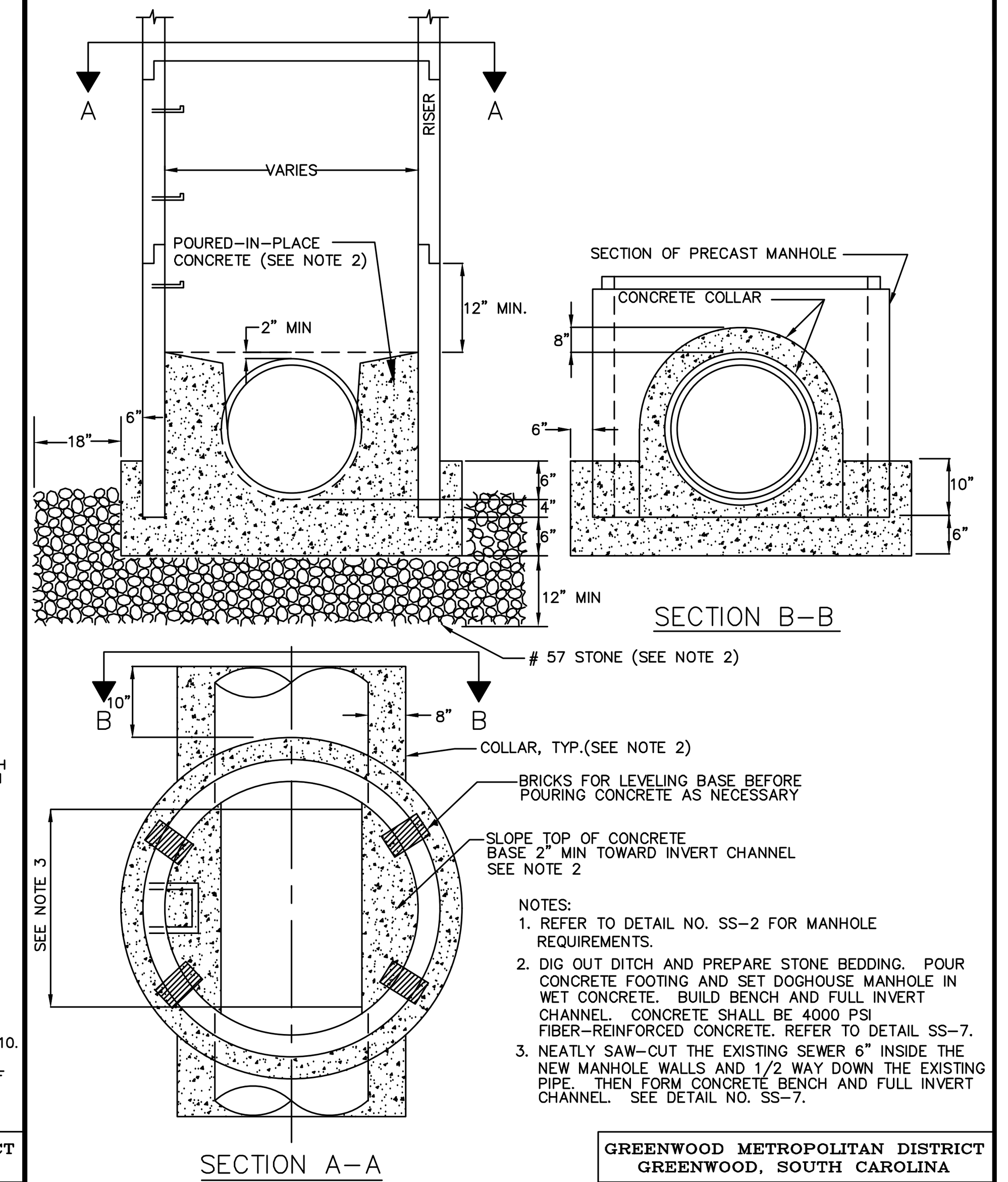
1. MANHOLE TO CONFORM WITH ASTM C478 EXCEPT AS MODIFIED BELOW.
2. MANHOLE BASE TO BE REINFORCED WITH A MINIMUM AREA OF 0.20 SQ. IN. PER LINEAL FOOT EACH WAY. WALL REINFORCING TO BE MINIMUM OF 0.12 SQ. IN. PER LINEAL FOOT. EITHER TONGUE OR GROOVE SHALL HAVE REINFORCING EQUAL IN AREA TO MINIMUM OF WALL SECTION.
3. ALL JOINTS SHALL CONFORM WITH ASTM C443.
4. STEPS TO BE PLASTIC PER DETAIL NO. SS-11.
5. ALL PIPE OPENINGS TO BE NO GREATER THAN 3" LARGER THAN OUTSIDE DIAMETER OF PIPE ALL AROUND AND ADDITIONALLY REINFORCED WITH A MINIMUM OF 0.20 SQ. IN. OF STEEL AT 90 DEGREES (ADDITOINAL REINFORCING NOT REQUIRED FOR CORED OPENINGS).
6. ALL SURFACES SHALL BE SMOOTH EVEN TEXTURED WITH A MINIMUM OF HONEYCOMB, FINS AND OTHER IMPERFECTIONS. THE ENGINEER RESERVES THE RIGHT TO REJECT MANHOLES.
7. NON-PENETRATING LIFTING HOLES SHALL BE PLUGGED WITH EXPANSION GROUT. PENETRATING LIFTING HOLES SHALL NOT BE ALLOWED.
8. PIPES SHALL BE CONNECTED TO MANHOLES WITH FLEXIBLE RUBBER BOOT CONNECTORS AS SHOWN ON THE DETAILS. WHERE REQUIRED AND/OR NECESSARY, CORED HOLES FOR SEWERS MAY BE USED. FOR CORED HOLES, FILL VOIDS WITH NON-SHRINK GROUT AND POUR A CONCRETE COLLAR OUTSIDE OF THE MANHOLE PER DETAIL NO. SS-20.
9. STEPS TO BE OVER WIDEST PORTION OF BENCH.
10. BENCHING AND INVERT CHANNELS SHALL BE PRECAST BY THE MANHOLE MANUFACTURER. FORMED AND POURED IN PLACE BENCHES AND INVERTS MAY BE APPROVED IN CERTAIN SITUATIONS BY THE ENGINEER AND SHALL BE USED WHERE SPECIFICALLY REQUIRED SUCH AS FOR A DOGHOUSE MANHOLE. BENCHING CONCRETE SHALL BE MIN 4000 PSI – ADD FIBER REINFORCING FOR POURED-IN-PLACE BENCHING. FOR PRECAST INVERTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING EXACT INVERT ELEVATIONS PRIOR TO MANUFACTURING THE MANHOLE INCLUDING WHERE CONNECTING TO EXISTING SEWERS. SEE DETAIL NO. SS-7 FOR ADDITIONAL REQUIREMENTS.
11. ALL MANHOLE SECTIONS SHALL BE DESIGNED FOR H-20 LOADING.
12. MINIMUM HEIGHT FOR CONCENTRIC CONES ON MANHOLES WITH BOLT DOWN FRAME AND COVER IS 36".
13. MATCH PIPE CROWN ELEVATIONS OF CONNECTING/INFLUENT SEWERS AND MAIN SEWER.
14. VACUUM TEST MANHOLES PER THE STANDARD SPECIFICATIONS.
15. ALL FRAMES SHALL BE BOLTED TO THE FLAT TOP OR CONE SECTION PER DETAIL NO. SS-10. TWO (2) COMPLETE CIRCLES OF MASTIC SHALL BE INSTALLED UNDER THE FRAME BEFORE SETTING ON THE THE CONE SECTION OR FLAT TOP.

GREENWOOD METROPOLITAN DISTRICT
GREENWOOD, SOUTH CAROLINA
MANHOLE SCHEDULES AND GENERAL REQUIREMENTS
No. | Date | By | Revision — Scale: NONE | Approved By | Date | DETAIL NO. SS-2



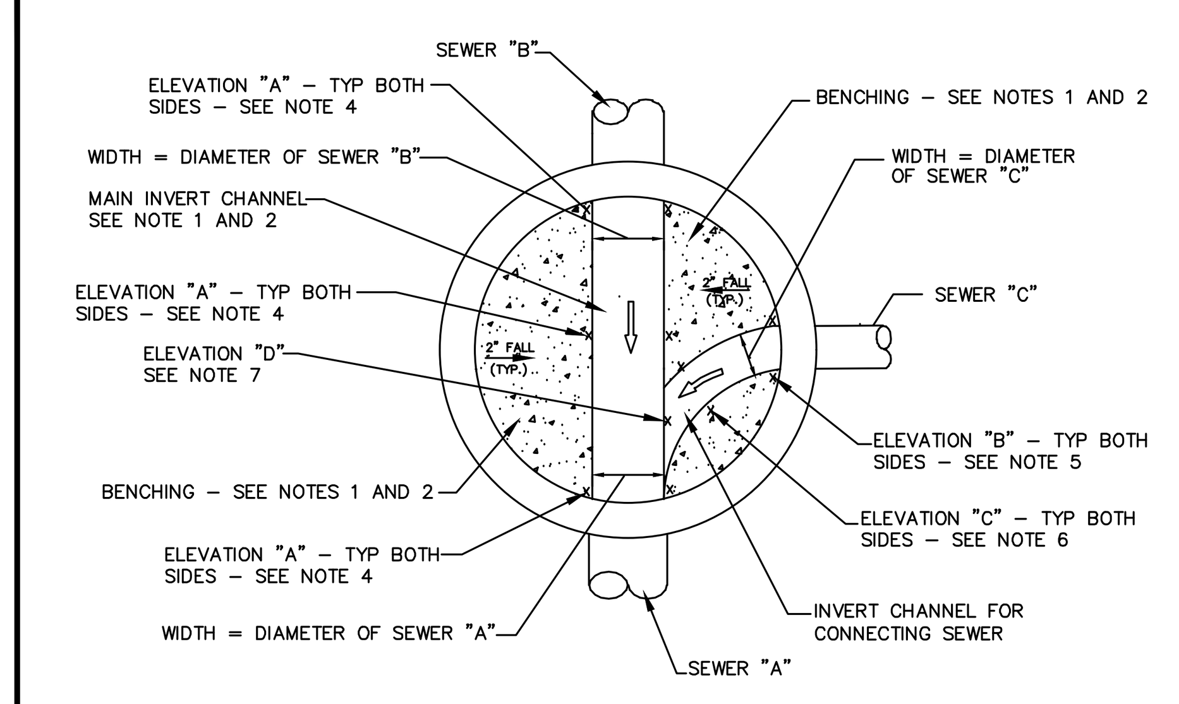
NOTES:
1. REFER TO DETAIL NO. SS-2 FOR ALL MANHOLE REQUIREMENTS SCHEDULES.
2. NON-SHRINK GROUT SHALL COMPLETELY COVER THE BRICK/GRADE RINGS ON THE OUTSIDE, SHALL OVERLAP THE CONE SECTION A MINIMUM OF 6 INCHES AND SHALL COVER THE FRAME FLANGE COMPLETELY. SEE DETAIL NO. SS-10.
3. MANHOLE SHALL BE ORDERED WITH MINIMUM GRADE ADJUSTMENT. ORDER BASE, RISER, AND CONE HEIGHTS TO STACK OUT MANHOLE AS CLOSE AS POSSIBLE TO GRADE. CONTRACTOR TO SUPPLY ENGINEER WITH A SCHEDULE OF EACH MANHOLE SHOWING THE HEIGHTS OF EACH SECTION. MAXIMUM ADJUSTMENT SHALL BE 6 INCHES UNLESS APPROVED OTHERWISE. SEE PAGE 02700-6 IN THIS DESIGN MANUAL.
4. MATCH PIPE CROWN ELEVATIONS OF CONNECTING/INFLUENT SEWERS AND MAIN SEWER.
5. IF HOLE FOR PIPE MUST BE CORE DRILLED IN THE FIELD, REFER TO DETAIL SS-20 FOR REQUIREMENTS.
6. ALL JOINTS SHALL BE GROUTED INSIDE THE MANHOLE WITH NON-SHRINK, HYDROGEN SULFIDE RESISTANT GROUT.

GREENWOOD METROPOLITAN DISTRICT
GREENWOOD, SOUTH CAROLINA
STANDARD PRECAST MANHOLES WITH CONE SECTIONS (4' AND 5' ONLY)
No. | Date | By | Revision — Scale: NONE | Approved By | Date | DETAIL NO. SS-3



NOTES:
1. REFER TO DETAIL NO. SS-2 FOR MANHOLE REQUIREMENTS.
2. DIG OUT DITCH AND PREPARE STONE BEDDING. POUR CONCRETE FOOTING AND SET DOGHOUSE MANHOLE IN WET CONCRETE. BUILD BENCH AND FULL INVERT CHANNEL. CONCRETE SHALL BE 4000 PSI FIBER-REINFORCED CONCRETE. REFER TO DETAIL SS-7.
3. NEATLY SAW-CUT THE EXISTING SEWER 6" INSIDE THE NEW MANHOLE WALLS AND 1/2 WAY DOWN THE EXISTING PIPE. THEN FORM CONCRETE BENCH AND FULL INVERT CHANNEL. SEE DETAIL NO. SS-7.

GREENWOOD METROPOLITAN DISTRICT
GREENWOOD, SOUTH CAROLINA
PRECAST DOGHOUSE MANHOLE INSTALLED OVER EXISTING SEWER
No. | Date | By | Revision — Scale: NONE | Approved By | Date | DETAIL NO. SS-5

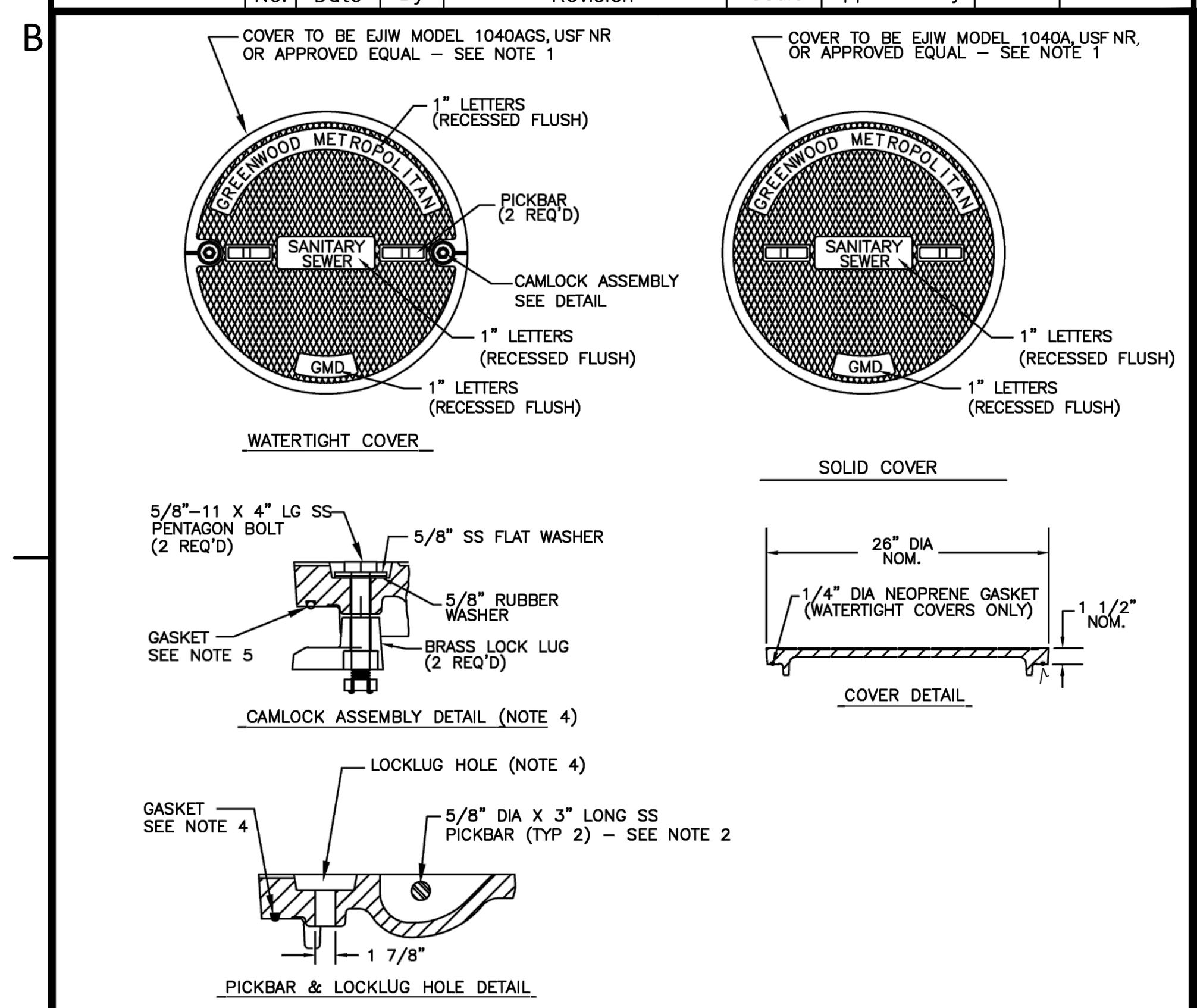


NOTES:
1. THIS DETAIL DEPICTS A TYPICAL BENCHING AND INVERT CHANNEL CONFIGURATION. IT IS IMPOSSIBLE TO DETAIL AND DESCRIBE ALL CONFIGURATIONS THAT WILL BE ENCOUNTERED/REQUIRED. THIS DETAIL IS INTENDED TO PROVIDE GENERAL GUIDELINES AND REQUIREMENTS FOR BENCHING AND INVERT CHANNEL CONSTRUCTION. THE CONTRACTOR SHALL ACCOMMODATE ALL EXISTING CONFIGURATIONS AND CONSTRUCT BENCHING AND INVERT CHANNELS TO THE SATISFACTION OF GMD. ADJUSTMENTS AND REPAIRS TO THE BENCHING AND INVERT CHANNELS SHALL BE PERFORMED AS REQUIRED BY GMD AT NO ADDITIONAL COST. ALL REPAIRS AND ADJUSTMENTS MUST BE MADE WITH AN APPROVED NON-SHRINK GROUT.
2. BENCHING AND INVERT CHANNELS SHALL BE PRECAST BY THE MANHOLE MANUFACTURER. FORMED AND POURED-IN-PLACE BENCHES AND INVERTS MAY BE APPROVED IN CERTAIN SITUATIONS BY THE ENGINEER AND SHALL BE USED WHERE SPECIFICALLY REQUIRED SUCH AS FOR A DOGHOUSE MANHOLE.

   BENCHING AND INVERT CHANNELS SHALL BE CONSTRUCTED USING MINIMUM 4,000 PSI CONCRETE. ADD FIBER REINFORCING FOR POURED-IN-PLACE BENCHES/INVERTS. ELEVATIONS OF BENCHING AND CHANNELS SHALL BE AS DEFINED IN NOTES 4 THROUGH 7. AT LEAST 2 INCHES OF FALL SHALL BE PROVIDED ON THE TOP OF THE BENCHING FROM THE MANHOLE WALLS TO THE INVERT CHANNELS.

   INVERT CHANNELS SHALL BE U-SHAPED CHANNELS FOLLOWING THE SHAPE AND DIAMETER OF THE CONNECTING SEWER PIPE FROM THE BOTTOM TO THE SPRINGLINE OF THE PIPE AND THEN EXTENDING VERTICAL TO THE REQUIRED HEIGHT. THUS, THE WIDTH OF THE TOP OF THE CHANNEL SHALL EQUAL THE CORRESPONDING SEWER DIAMETER. THE HEIGHT SHALL BE AS DEFINED IN THESE NOTES WITH THE MINIMUM HEIGHT IN ALL CASES EQUAL TO THE CORRESPONDING SEWER DIAMETER. INVERT CHANNELS SHALL BE SMOOTH, UNIFORM, FREE OF BURRS AND BRIARS THAT MAY CATCH DEBRIS, AND CONSTANTLY SLOPING FROM INLET SEWERS TO THE OUTLET SEWER.
3. CONSTRUCT INVERT CHANNEL FOR CONNECTING SEWERS WITH A CONSTANT CURVE FROM THE EDGE OF THE MANHOLE WALL TO THE MAIN INVERT CHANNEL. PROVIDE MAXIMUM CURVATURE SUCH THAT FLOW FROM CONNECTING SEWERS WILL FREELY DISCHARGE INTO THE MAIN INVERT CHANNEL AND ALL FLOWS WILL FREELY EXIT THE MANHOLE. CHANNEL SHALL BE CONSTANTLY SLOPING WITH THE MAXIMUM POSSIBLE SLOPE. SEE NOTES 2 AND 7.
4. ELEVATION "A" TO EQUAL THE CROWN ELEVATION OF SEWER "B".
5. ELEVATION "B" TO EQUAL THE CROWN ELEVATION OF SEWER "C".
6. ELEVATION "C" SHALL EQUAL AT LEAST THE INVERT CHANNEL ELEVATION AT THAT POINT PLUS THE DIAMETER OF SEWER "C". ADJUST THE ELEVATION UPWARD AS NECESSARY TO AT LEAST EXCEED THE BENCHING ELEVATION AT THE NEARBY MAIN INVERT CHANNEL.
7. ELEVATION "D" REPRESENTS THE ELEVATION OF THE INVERT CHANNEL FOR THE CONNECTING SEWER WHERE IT JOINS THE MAIN INVERT CHANNEL. IF SEWER "C" IS THE SAME SIZE AS SEWER "B", THE CHANNELS SHALL JOIN AT THE SAME ELEVATION WHEREVER POSSIBLE. IF SEWER "C" IS A SERVICE LATERAL, THE CONNECTING SEWER INVERT CHANNEL SHALL JOIN THE MAIN CHANNEL A MINIMUM OF 3 INCHES ABOVE THE MAIN CHANNEL WHEREVER POSSIBLE. ANY SUCH DROP TO THE MAIN CHANNEL SHALL BE SMOOTH AND ROUNDED SO THAT DEBRIS WILL FREELY DISCHARGE INTO THE MAIN CHANNEL.

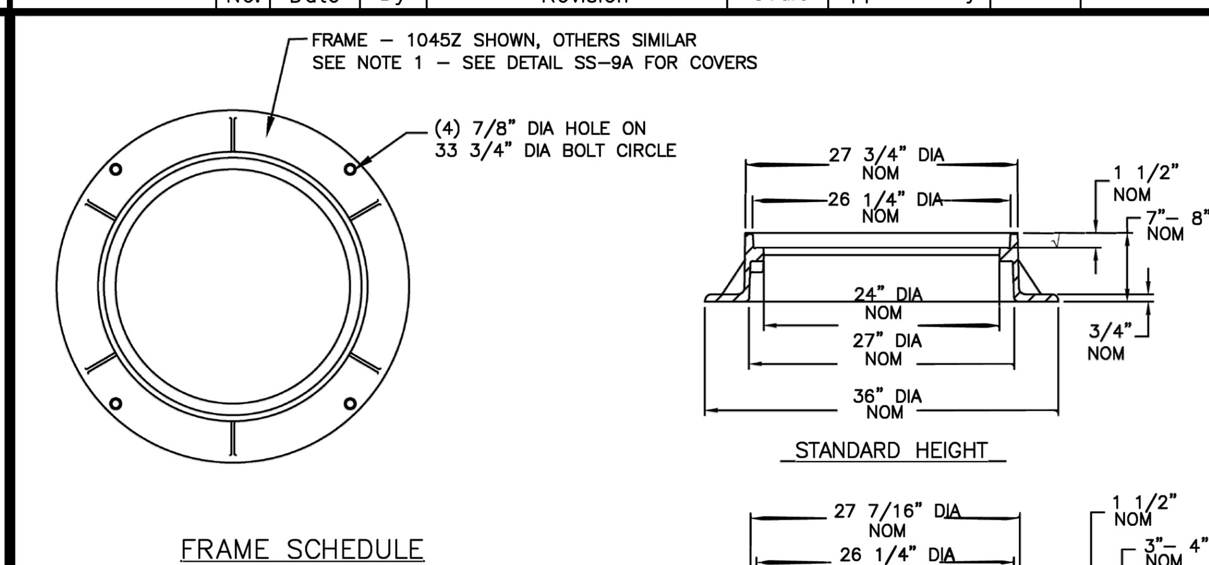
GREENWOOD METROPOLITAN DISTRICT
GREENWOOD, SOUTH CAROLINA
BENCH AND INVERT PLAN
No. | Date | By | Revision — Scale: NONE | Approved By | Date | DETAIL NO. SS-7



NOTES:
1. ALTERNATE COVERS TO THOSE SHOWN MUST BE APPROVED BY GMD.
   A SAMPLE OF THE FRAME AND COVER MUST BE DELIVERED TO GMD AS PART OF THE REVIEW AND APPROVAL PROCESS. COVERS MUST FIT ANY FRAME SHOWN IN DETAIL SS-8A.
   EJIW = EAST JORDAN IRON WORKS, USF = U.S. FOUNDRY
2. COVERS TO BE ASTM A48 CLASS 35 GRAY IRON WITH A MINIMUM WEIGHT OF 144 POUNDS.
3. NOMINAL DIMENSIONS SHOWN TYPICALLY MEAN PLUS OR MINUS 1/4" INCH UNLESS OTHERWISE APPROVED BY GMD.
4. WATERTIGHT COVER ONLY

√ MACHINED SURFACE

GREENWOOD METROPOLITAN DISTRICT
GREENWOOD, SOUTH CAROLINA
STANDARD MANHOLE COVERS
No. | Date | By | Revision — Scale: NONE | Approved By | Date | DETAIL NO. SS-9A

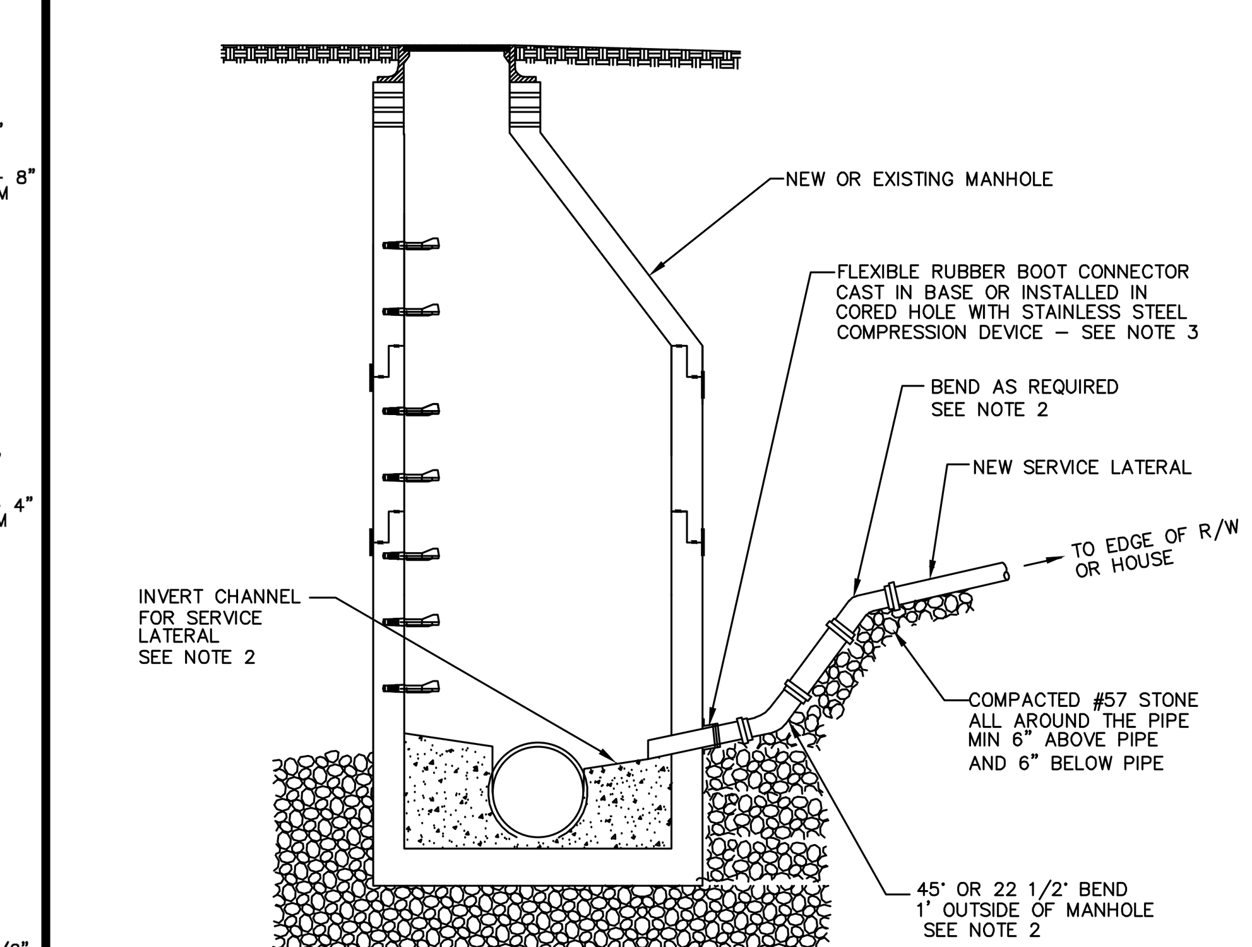


FRAME SCHEDULE

STANDARD HEIGHT:	EJIW MODEL 1045Z FRAME, USF 755 OR APPROVED EQUAL – SEE NOTE 1 MIN WEIGHT 205 POUNDS
LOW PROFILE:	EJIW MODEL 1046Z FRAME, OR APPROVED EQUAL – SEE NOTE 1 MIN WEIGHT 115 POUNDS
SLAB-TYPE:	EJIW MODEL 2450Z TOP FLANGE FRAME, OR APPROVED EQUAL – SEE NOTE 1

NOTES:
1. ALTERNATE FRAMES TO THOSE SHOWN MUST BE APPROVED BY GMD.
   A SAMPLE OF THE FRAME AND COVER MUST BE DELIVERED TO GMD AS PART OF THE REVIEW AND APPROVAL PROCESS. FRAMES MUST BE SUITABLE FOR USE WITH ANY COVER SPECIFIED IN DETAIL SS-9A.
   EJIW = EAST JORDAN IRON WORKS, USF = U.S. FOUNDRY
2. COVERS TO BE ASTM A48 CLASS 35 GRAY IRON WITH MINIMUM WEIGHTS SPECIFIED IN THE FRAME SCHEDULE.
3. NOMINAL DIMENSIONS SHOWN TYPICALLY MEAN PLUS OR MINUS 1/4" INCH UNLESS OTHERWISE APPROVED BY GMD.

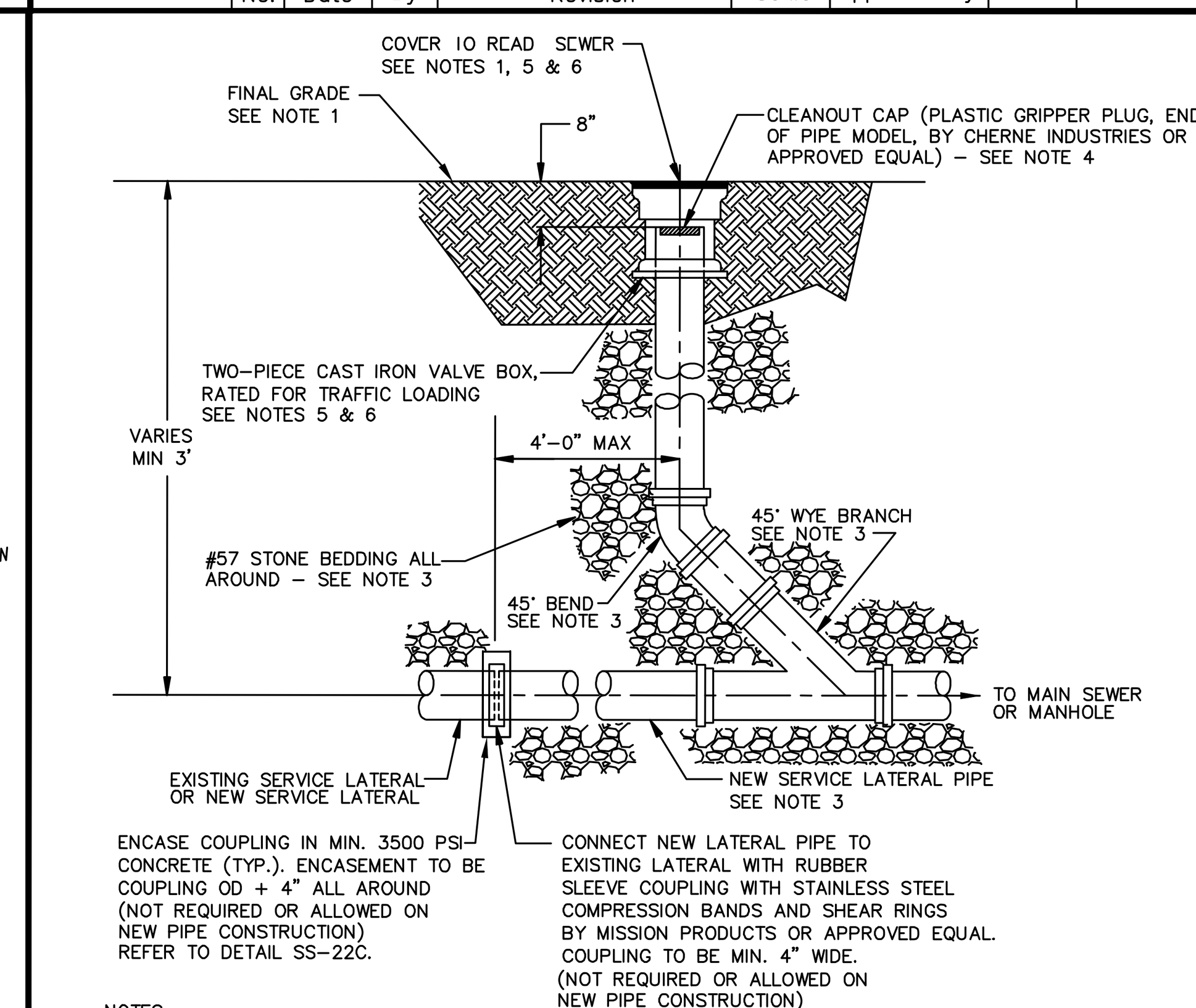
GREENWOOD METROPOLITAN DISTRICT
GREENWOOD, SOUTH CAROLINA
STANDARD MANHOLE FRAMES FOR COVERS
No. | Date | By | Revision — Scale: NONE | Approved By | Date | DETAIL NO. SS-8A



NOTES:
1. REFER TO THIS DETAIL WHEN INSTALLING NEW SERVICE LATERALS TO NEW MANHOLES.
2. ROUTE ALL NEW SERVICE LATERALS BEING INSTALLED TO NEW MANHOLES SUCH THAT THE SERVICE LATERAL CROWN ELEVATION MATCHES THE HIGHEST CROWN ELEVATION OF THE CONNECTING SEWER(S). CONTRACTOR SHALL USE BENDS AS NECESSARY. DROP PIPES INSIDE MANHOLES SHALL NOT BE ALLOWED.

   THE INVERT CHANNEL FOR THE NEW LATERAL SHALL BE FORMED AND POURED AS PART OF THE MAIN PRECAST INVERT CHANNEL AND SHALL MEET ALL REQUIREMENTS SHOWN IN DETAIL SS-7.
3. IF THE HOLE FOR THE SERVICE LATERAL MUST BE CORE-DRILLED IN THE FIELD, REFER TO DETAIL SS-20 FOR REQUIREMENTS.

GREENWOOD METROPOLITAN DISTRICT
GREENWOOD, SOUTH CAROLINA
NEW SERVICE LATERAL INSTALLATION TO NEW MANHOLE
No. | Date | By | Revision — Scale: NONE | Approved By | Date | DETAIL NO. SS-17A



NOTES:
1. CLEANOUT COVER TO BE FLUSH WITH THE FINAL GRADE.
2. LOCATION OF CLEANOUT TO BE APPROVED BY GMD. CLEANOUTS SHALL BE INSTALLED AT ALL BENDS IN THE LATERAL, AT LEAST EVERY 100 FEET (OR CLOSER IF REQUIRED BY CITY/COUNTY REGULATIONS) AND/OR AS REQUIRED BY GMD.
3. LATERAL PIPE AND FITTINGS SHALL BE THE SAME PIPE MATERIAL UNLESS APPROVED OTHERWISE BY GMD. SERVICE LATERAL PIPE AND FITTINGS SHALL BE COMPLETELY ENCAPSULATED IN SCDOT NO. 57 STONE. REFER TO DETAIL SS-1.
4. ALTERNATE CLEANOUT CAPS MUST BE APPROVED BY GMD.
5. VALVE BOXES SHALL BE GRAY IRON CONFORMING TO ASTM A48 CLASS 35 AND SHALL BE FULLY BITUMINOUS SEAL COATED. MIN LENGTH OF TOP SECTION TO BE 16 INCHES.
6. INSTALL AN 18" X 18" CONCRETE COLLAR (MIN 3500 PSI CONCRETE, 6" THICK) AROUND ALL CAST IRON VALVE BOXES LOCATED IN ANY ASPHALT OR CONCRETE PAVED AREA.

GREENWOOD METROPOLITAN DISTRICT
GREENWOOD, SOUTH CAROLINA
TYPICAL CLEANOUT
No. | Date | By | Revision — Scale: NONE | Approved By | Date | DETAIL NO. SS-21

Gray Engineering
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WWW.GRAYENGINEERING.COM
SC C.O.A.# C00060 · NC C.O.A.# C-1217 · GA C.O.A.# PEF001941 · TN C.O.A.# 0418819

SANITRAY SEWER NOTES AND DETAILS

PROPOSED HOME 2 SUITES BY HILTON

GREENWOOD COUNTY SOUTH CAROLINA

475 HOSPITALITY BOULEVARD

SCALE:	
PROJECT MANAGER:	ZDJ
DRAWN BY:	MSG
PROJECT DATE:	5/3/2023
JOB No.:	2023104
PLOT DATE:	3/17/25

SHEET
SS-2

2023104 - Greenwood Home2Suites - D16.dwg