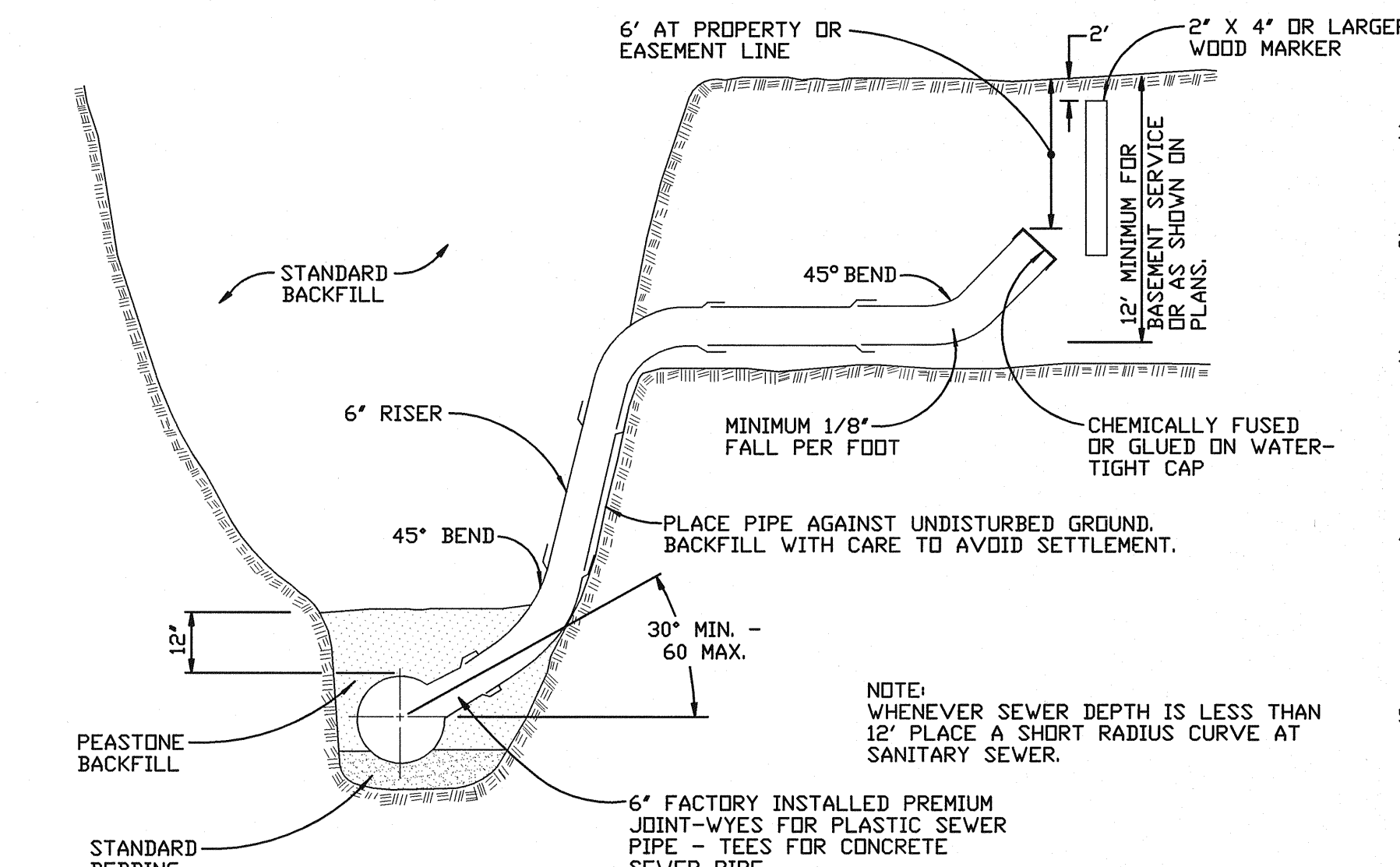
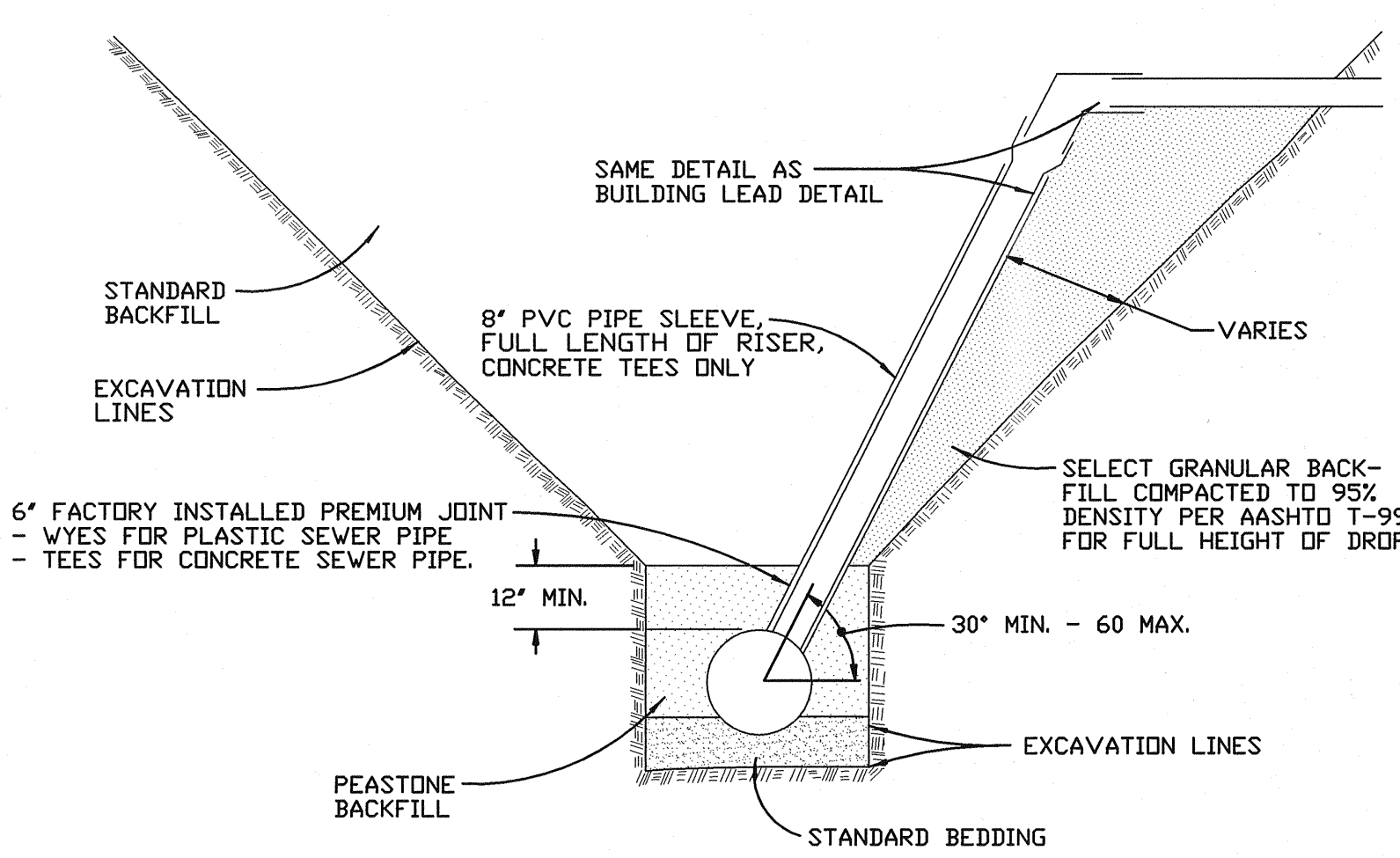


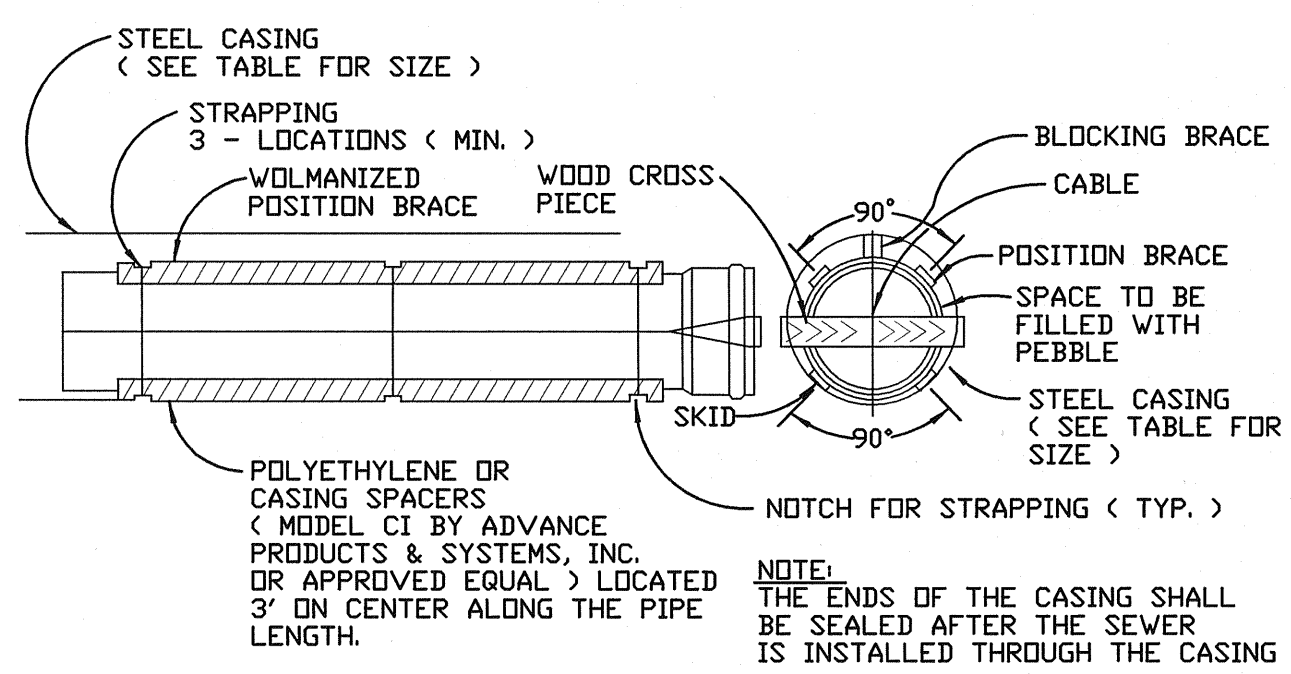
**SANITARY SEWER CONSTRUCTION NOTE**



**BUILDING LEAD DETAIL  
0' - 15' COVER**



**BUILDING LEAD DETAIL  
GREATER THAN 15' COVER**



**STEEL CASING REQUIREMENTS**

PIPE SIZE	RECOMMENDED MINIMUM CASING DIAMETER	MINIMUM WALL THICKNESS
6'	12"	.375
8'	16"	.375
10'	18"	.375
12'	20"	.375
15'	24"	.406
18' & 21'	36"	.532
24'	42"	.563
27' & 30'	48"	.625
36'	54"	.688
42'	60"	.750
48'	66"	.813

- ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF VILLAGE OF NEW HAVEN. ALL SANITARY SEWER CONSTRUCTION SHALL HAVE COMPETENT FULL TIME INSPECTION PROVIDED BY OR CAUSED TO BE PROVIDED BY VILLAGE OF NEW HAVEN.
- AT ALL CONNECTIONS TO VILLAGE OF NEW HAVEN SANITARY SEWERS OR TO EXTENSIONS THEREOF, AND BEFORE START OF CONSTRUCTION, THE CONTRACTOR MUST REQUEST AND HAVE IN HIS POSSESSION AN APPROVED CONNECTIONS PERMIT ISSUED BY VILLAGE OF NEW HAVEN.
- THE CONTRACTOR SHALL ARRANGE FOR A PRECONSTRUCTION MEETING WITH THE VILLAGE OF NEW HAVEN CLERK, VARIOUS UTILITY COMPANIES AND GOVERNMENTAL AGENCIES MUST BE NOTIFIED OF THE MEETING BY THE CONTRACTOR. ( 3 WORKING DAY NOTICE REQUIRED )  
  
THE CONTRACTOR SHALL NOTIFY MISS DIG ( 1-800-482-7171 ), VILLAGE OF NEW HAVEN AT 586-749-5301 AND THE OFFICE OF THE MACOMB COUNTY PUBLIC WORKS COMMISSIONER AT 586-469-5325, THREE WORKING DAYS PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL ASSUME RESPONSIBILITY FOR THE PROTECTION OF ALL EXISTING UTILITIES DURING CONSTRUCTION. ALL COSTS FOR LOCATING, REMOVING AND REPLACING OR RELOCATING THESE UTILITIES SHALL BE INCLUDED IN THE COST OF CONSTRUCTING THE SANITARY SEWER. ALL UTILITIES DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED WITH LIKE MATERIAL. THE CONTRACTOR SHALL VERIFY THE DEPTH AND HORIZONTAL LOCATION OF ALL EXISTING UTILITIES BEFORE ANY WORK IS STARTED. THE EXACT LOCATION OF EXISTING UTILITIES SHALL BE DETERMINED BY HAND DIGGING.
- A MACOMB COUNTY PUBLIC WORKS, ROAD COMMISSION OF MACOMB COUNTY, AND/OR MICHIGAN DEPARTMENT OF TRANSPORTATION PERMIT IS REQUIRED FOR ALL CONSTRUCTION WITHIN THEIR ROAD AND / OR DRAIN RIGHT-OF-WAYS AND / OR EASEMENT. IT IS THE CONTRACTOR'S RESPONSIBILITY TO SECURE ALL PERMITS AND BONDS PRIOR TO CONSTRUCTION, OR INSURE THAT ALL REQUIRED PERMITS AND BONDS HAVE BEEN OBTAINED PRIOR TO CONSTRUCTION.
- NO SEWER INSTALLATION SHALL HAVE AN INFILTRATION EXCEEDING 100 GALLONS PER INCH OF DIAMETER PER MILE OF PIPE PER 24 HOUR PERIOD. INFILTRATION TESTING SHALL BE CONDUCTED WHERE GROUND WATER IS INSUFFICIENT. ALL INSTALLATIONS SHALL ALSO PASS LOW PRESSURE AIR TEST ( SEE CHART BELOW ) AS SPECIFIED IN THE VILLAGE SPECIFICATIONS.  
  
ABS COMPOSITE PIPE AND ANY APPROVED PLASTIC PIPE SHALL BE SUBJECT TO DEFLECTION TEST 30 DAYS AFTER CONSTRUCTION WITH A NINE SIDED MANDREL. THE CONTRACTOR MUST SUPPLY THE MANDREL AND PERFORM THE TEST. THE OWNER WILL WITNESS THE TEST. DEFLECTION SHALL NOT EXCEED 5%. THE OWNER RESERVES THE RIGHT TO TEST THE SEWER FOR DEFLECTION NOT TO EXCEED 7% DURING THE PERIOD OF THE MAINTENANCE BOND. ANY SEWER FOUND EXCEEDING THESE LIMITS SHALL BE REPLACED BY AND AT THE CONTRACTOR'S EXPENSE.  
  
AS PART OF THE FINAL INSPECTION, THE CONTRACTOR SHALL PROVIDE FOR TELEVISION INSPECTION OF THE SANITARY SEWER LINES INSTALLED UNDER THIS CONTRACT. THE CONTRACTOR SHALL ARRANGE FOR, ENGAGE AND PAY ALL EXPENSES INVOLVED FOR THE SERVICES OF A COMPETENT COMPANY TO PERFORM THIS TELEVISION INSPECTION. THE INSPECTION SHALL BE CONDUCTED UNDER THE DIRECT SUPERVISION OF THE ENGINEER WITH ALL TELEVISION INSPECTION BEING OBSERVED BY REPRESENTATIVES OF THE OWNER OR ENGINEER AND THE CONTRACTOR. ANY TELEVISION VIEWING PERFORMED IN THE ABSENCE OF THE ENGINEER OR A REPRESENTATIVE OF THE OWNER SHALL NOT BE CONSIDERED A PART OF THE FINAL INSPECTION. ALL TELEVISION INSPECTION SHALL BE RECORDED ON VIDEO TAPE AND TURNED OVER TO THE OWNER FOR READY REFERENCE AT A LATER DATE. THE VIDEO RECORDING SHALL DISPLAY CONTINUOUSLY THE DATE, TIME AND ENGINEERING STATIONS AND SHALL PERIODICALLY DISPLAY THE NAME OF THE PROJECT, NAME OF THE AREA COVERED AND DIRECTION OF TRAVEL, AND SHALL BE COMPLETED USING A PAN & TILT CAMERA. THE TAPE MUST BE COMPATIBLE WITH THE VILLAGE VIDEO CASSETTE RECORDER.  
  
ANY VISIBLE LEAKS OBSERVED DURING TELEVISION INSPECTION MUST BE SATISFACTORILY REPAIRED WITH ENGINEER OF OWNER REPRESENTATIVE PRESENT.
- INFILTRATION SHALL BE TESTED BY THE OWNER UTILIZING CALIBRATED WEIRS OR FLUMES INSERTED IN THE PIPE FLOWLINE AT A MANHOLE. TEST SECTIONS SHALL GENERALLY BE LIMITED TO A MAXIMUM LENGTH OF ONE HALF MILE. THE OWNER RESERVES THE RIGHT TO TEST SHORTER PIPE LENGTH SEGMENTS IF HE DEEMS IT NECESSARY TO ASSURE THAT NO SEGMENT EXCEEDS THE INFILTRATION LIMITS.
- BUILDING LEAD PIPE, WYES AND CAPS SHALL BE SOLID WALL PLASTIC PIPE, ABS (A.S.T.M. D-2751, SDR 23.5 ) OR PVC ( A.S.T.M. D-2241, SDR 23.5 OR A.S.T.M. D-2466, SCH. 40 ) WITH JOINTS AS SPECIFIED IN NOTE #18. THE JOINT BETWEEN TWO DISSIMILAR SIZES OR TYPES OF BUILDING LEAD PIPE SHALL BE MADE WITH A PROPER SIZE FERROC DUNUT, OR APPROVED EQUAL, WITH POLYVINYL JOINT SEALER. A RUBBER BOOT WITH CLAMPS IS NOT ACCEPTABLE.
- ALL SEWER PIPE SHALL BE INSTALLED IN CLASS 'C' BEDDING OR BETTER, IN CONFORMANCE WITH THE DETAILS PROVIDED.
- ALL SEWER PIPE SHALL BE LAID USING A LASER TO MAINTAIN GRADE AND ALIGNMENT. USE OF A BLOWER IS MANDATORY.
- ALL SEWER PIPE SHALL BE STAKED BY A LICENSED LAND SURVEYOR. ALL SIGNIFICANT POINTS OF EACH ELEMENT SHALL BE LOCATED. THIS SHALL INCLUDE BUT NOT LIMITED TO ALIGNMENT STAKES, OFFSET STAKES, CENTERLINE STAKES AND BENCHMARK REFERENCES. STAKES SHALL BE MARKED WITH ALIGNMENT AND ELEVATION / GRADE CONTROL CUT SHEETS SHALL BE PROVIDED TO ENGINEER AND / OR OWNER REPRESENTATIVE. NO SEWER SHALL BE LAID WITHOUT STAKES.
- ALL NEW MANHOLES SHALL HAVE VILLAGE OF NEW HAVEN APPROVED FLEXIBLE, WATER-TIGHT SEALS WHERE PIPES PASS THROUGH WALLS. MANHOLES SHALL BE PRECAST REINFORCED CONCRETE IN ACCORDANCE WITH ASTM C478 CURRENT SPECIFICATIONS. PRECAST MANHOLE JOINTS AND GASKETS SHALL BE MODIFIED TONGUE AND GROOVE IN ACCORDANCE WITH ASTM C361 CURRENT SPECIFICATIONS. PRECAST MANHOLE CONE SECTIONS SHALL BE VILLAGE OF NEW HAVEN APPROVED MODIFIED ECCENTRIC CONE TYPE. ALL MANHOLES SHALL BE PROVIDED WITH BOLTED, WATER-TIGHT COVERS. MANHOLE STEPS SHALL NORMALLY BE PROVIDED ON A BACK WALL OF THE MANHOLE FURTHEST FROM TRAFFIC.

- AT THE CONNECTIONS TO MANHOLES, SEWERS OR EXTENSIONS THERETO, DROP CONNECTIONS WILL BE REQUIRED WHEN THE DIFFERENCE IN INVERT ELEVATIONS EXCEEDS 18 INCHES. THE DROP CONNECTIONS WILL EITHER BE INTERIOR OR EXTERIOR AS APPROVED BY VILLAGE OF NEW HAVEN. THE DETERMINATION WILL BE BASED UPON MANHOLE SIZE, GROUND WATER AND SOIL CONDITIONS AT THE LOCATION WHERE THE TAP WILL BE PERFORMED.
- EXISTING MANHOLES SHALL BE TAPPED WITH THE "KOR-N-SEAL" METHOD FOR SEWERS 6" THRU 15" IN DIAMETER. MANHOLE TAPS FOR 18" DIAMETER SEWERS AND LARGER SHALL HAVE HOLES DRILLED AT 4 INCHES CENTER TO CENTER AROUND THE PERIPHERY OF THE OPENING TO CREATE A PLANE OF WEAKNESS BEFORE BREAKING OUT THE SECTION. NON-SHRINK GROUT SHALL BE USED TO SEAL THE OPENING AND A CONCRETE COLLAR SHALL BE POURED 12 INCHES AROUND THE PIPE AND EXTEND 12 INCHES BEYOND THE OPENING.
- NEW MANHOLES CONSTRUCTED DIRECTLY ON VILLAGE OF NEW HAVEN SEWERS SHALL BE PROVIDED WITH COVERS READING "VILLAGE OF NEW HAVEN SANITARY" IN RAISED LETTERS. NEW MANHOLES BUILT OVER ANY EXISTING SANITARY SEWERS SHALL HAVE MONOLITHIC COVER BOTTOMS.
- NO GROUND WATER, STORM WATER, CONSTRUCTION WATER, DOWNSPOUT DRAINAGE OR WEEP TILE DRAINAGE SHALL BE ALLOWED TO ENTER ANY SANITARY SEWER INSTALLATION.
- THE CONTRACTOR SHALL MAINTAIN ALL EXISTING SANITARY SEWER, WATER OR STORM SEWER SERVICE CONNECTIONS DURING CONSTRUCTION. ANY ADJUSTMENTS OR REPAIRS TO THESE SERVICES SHALL BE MADE BY THE CONTRACTOR AND THE COST SHALL BE INCLUDED IN THE COST FOR CONSTRUCTING THE SANITARY SEWER, UNLESS OTHERWISE PROVIDED IN THE CONTRACT.
- SEWER PIPE MATERIAL:
  - 8" THROUGH 15" PIPE SHALL BE A.B.S. ( ACRYLONITRILE - BUTADIENE - TYRENE ) COMPOSITE SEWER PIPE CONFORMING TO THE CURRENT ASTM D2680 SPECIFICATIONS WITH TYPE SC JOINTS FOR ABS SOLID WALL PIPE SHALL BE SDR 23.5.
  - 18" AND LARGER PIPE SHALL BE REINFORCED CONCRETE CIRCULAR SEWER PIPE CONFORMING TO THE CURRENT ASTM SPECIFICATION C-76 ( WALL C ) WITH SIZE AND CLASS AS INDICATED ON THE PLANS. ALL REINFORCED CONCRETE SEWER PIPE SHALL BE CAST WITH REINFORCING STEEL EXTENDING INTO THE SPIGOTS. ALL JOINTS AND GASKETS SHALL BE MODIFIED TONGUE AND GROOVE, CONFORMING WITH THE REQUIREMENTS OF ASTM C 361 .
  - DUCTILE IRON PIPE-DOUBLE CEMENT LINED CLASS 54 PER ANSI A21.51 AND A21.4. JOINTS AND GASKETS SHALL BE PUSH-IN TYPE PER ANST A21.11 ( TYTON, BELL, TITE, FAST TITE OR APPROVED EQUAL ).
- IN INDUSTRIAL AND COMMERCIAL AREAS, PRIVATE SERVICE CONNECTIONS MADE TO THE SERVICE LEAD MUST HAVE AN ACCESSIBLE SAMPLING AND MONITORING MANHOLE. THE MANHOLE SHALL BE LOCATED IN AN EASEMENT OR PRIVATE PROPERTY AT A LOCATION APPROVED BY VILLAGE OF NEW HAVEN. VITRIFIED PIPE MAY NOT BE USED.
- BUILDING LEAD CONNECTIONS SHALL BE MADE WITH 6" WYES FOR A.B.S. AND P.V.C. PIPE AND 6" TEES FOR CONCRETE PIPE. WYES FOR ABS AND P.V.C. PIPE SHALL BE FACTORY FABRICATED ( NOT EXTRUDED ) AND SHALL BE CHECKED FOR IRREGULARITIES WHICH COULD AFFECT THE DEFLECTION TEST PRIOR TO INSTALLATION.
- THE CONTRACTOR SHALL ABIDE BY ALL THE REQUIREMENTS OF THE ROAD RIGHT-OF-WAY OWNER REGARDING CONSTRUCTION OF WATER AND SEWER MAINS, MAINTAINING TRAFFIC, BARRICADING, BORING, BACKFILL AND RESTORATION. THERE WILL BE NO ADDITIONAL COMPENSATION DUE TO THE CONTRACTOR FOR COMPLYING WITH THESE REQUIREMENTS.
- NO WASTE EXCAVATION MATERIAL SHALL BE DISPOSED OF BY PLACING IT IN ANY FLOODPLAIN OR WET LAND OF THE STATE UNLESS APPROPRIATE PERMITS HAVE BEEN ISSUED. THE CONTRACTOR OR PROPERTY OWNER MUST OBTAIN LOCAL FILL PERMITS FOR ANY MATERIALS DEPOSITED UPON LANDS WITHIN ANY CITY, VILLAGE OR VILLAGE.
- THE CONTRACTOR SHALL FURNISH A DETAILED PLAN TO THE MACOMB COUNTY DEPARTMENT PUBLIC WORKS OFFICE AND OBTAIN A SOIL EROSION CONTROL PERMIT UNDER THE ACT 347 PRIOR TO MAKING ANY EARTH CHANGES.
- PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL FURNISH MATERIAL CERTIFICATES TO THE OWNER VERIFYING THAT ALL THE MATERIALS USED ON THE PROJECT ARE IN ACCORDANCE WITH THE SPECIFICATIONS.
- CONTRACTED SAND BACKFILL IS TO BE USED EXCLUSIVELY AT ALL ROAD CROSSINGS, DRIVEWAYS AND SIDEWALKS THROUGHOUT THE COURSE OF THE PROJECT. IN ROADWAYS AND DRIVEWAYS, THE TOP 12 INCHES OF THE EXCAVATION SHALL BE FILLED WITH 21AA ROAD GRAVEL. EXCEPT AS PROVIDED IN THE SPECIFICATIONS, THERE WILL BE NO ADDITIONAL COMPENSATION FOR COMPLYING WITH THIS REQUIREMENT.
- IF AN EXISTING GRAVEL ROAD IS DISTURBED BY CONSTRUCTION EQUIPMENT OR BY STOCKPILING OF MATERIALS OUTSIDE THE EXCAVATION AREA, A MINIMUM OF 250 POUNDS PER SQ.YD. OF 21AA GRAVEL SHALL BE USED TO REPLACE THE DISTURBED AREAS.
- THE CONTRACTOR'S ATTENTION IS DIRECTED TO THOSE PARCELS DESIGNATED WITH AN ASTERISK ( \* ) THROUGHOUT THE CONSTRUCTION PLANS. THIS DESIGNATION REPRESENTS SPECIAL EASEMENT CONDITIONS WHICH THE CONTRACTOR MUST ADHERE TO DURING CONSTRUCTION. SAID SPECIAL EASEMENT CONDITIONS SHALL BE INCLUDED IN THE COST OF CONSTRUCTING THE SANITARY SEWER, AND NO ADDITIONAL COMPENSATION WILL BE CONSIDERED FOR THE CONTRACTOR TO COMPLY WITH THESE REQUIREMENTS.
- ALL CONSTRUCTION CHANGES MUST HAVE WRITTEN APPROVAL OF THE PROJECT ENGINEER, AND / OR VILLAGE OF NEW HAVEN.
- THE CONTRACTOR SHALL BE REQUIRED TO COMPLETE ALL WORK IN AN EXPEDITIOUS MANNER AND SHALL NOT STOP CONSTRUCTION EXCEPT FOR REASONS BEYOND HIS CONTROL SUCH AS, BUT NOT LIMITED TO STRIKES, WEATHER AND AVAILABILITY OF MATERIALS.
- THE CONTRACTOR SHALL PROVIDE A 2 YEAR MAINTENANCE AND GUARANTEE BOND TO THE VILLAGE OF NEW HAVEN, DATED FROM THE TIME OF FINAL ACCEPTANCE BY THE VILLAGE OF NEW HAVEN. A PERFORMANCE BOND SHALL ALSO BE PROVIDED. ALL BONDS SHALL BE FOR 50% OF CONSTRUCTION COST.
- THE CONTRACTOR SHALL HAVE THE OPTION OF STARTING CONSTRUCTION AT THE FIRST MANHOLE UPSTREAM OF THE POINT OF CONNECTION TO THE EXISTING SYSTEM. A TEMPORARY TEST MANHOLE MAY BE USED NEAR THE POINT OF CONNECTION RATHER THAN A PERMANENT ONE, AND THE CONTRACTOR MAY LEAVE THE BASE OF THE TEMPORARY MANHOLE IN PLACE. LINES UP TO 400 FEET IN LENGTH ( TOTAL LENGTH OF EXTENSION ) MAY BE TESTED WITHOUT PLACEMENT OF THE MANHOLE BASE PROVIDED THE LINES ARE TESTED AND PUT IN SERVICE IMMEDIATELY FOLLOWING CONSTRUCTION.

- THE ENTIRE PROJECT AREA OF PUBLICLY FUNDED PROJECTS, AND ALL AREAS NOT UNDER THE OWNERSHIP OF ANY PRIVATE DEVELOPER FOR PRIVATELY FUNDED PROJECTS, SHALL BE VIDEO TAPED IN COLOR PRIOR TO THE START OF CONSTRUCTION. THE TAPE SHALL BE UTILIZED BY THE VILLAGE TO DETERMINE CONSTRUCTION RELATED DAMAGE AND TO ASSURE ADEQUATE RESTORATION. THE TAPE SHALL BE STANDARD 1/2" VHS FORMAT.
- ALL PRECAST MANHOLES, SLAB BASES AND CONCRETE PIPE SHALL BE MANUFACTURED WITH TYPE II, IP OR IIA CEMENT. ALL CONCRETE FOR CHANNELIZATION SHALL BE MADE WITH TYPE II, IP OR IIA CEMENT.
- ALL TERMINAL MANHOLES AND ANY INTERMEDIATE MANHOLES WHERE FUTURE DROP CONNECTIONS ARE A POTENTIAL SHALL BE 1 FOOT LARGER IN DIAMETER THAN WOULD OTHERWISE BE REQUIRED, AND SHALL BE NO SMALLER THAN 5 FEET IN DIAMETER.
- DUCTILE IRON PIPE SHALL BE USED FOR THE SANITARY SEWER AT ALL WATER MAIN AND SANITARY SEWER CROSSINGS WITH LESS THAN 2 ( TWO ) FEET OF VERTICAL CLEARANCE AND WHERE THE WATER MAIN CROSSES BELOW THE SEWER, REGARDLESS OF VERTICAL CLEARANCE DISTANCE. THE DUCTILE IRON PIPE SHALL BE OF EQUAL SIZE ( OR LARGER ) AS THE PROPOSED SEWER AND SHALL EXTEND FROM MANHOLE TO MANHOLE.
- TRENCH DETAIL "A" ( T.D.-A ) - BACKFILL TO A POINT 12" ABOVE THE PIPE SHALL BE AS SPECIFIED ON THE PLANS. THE REMAINDER OF THE BACKFILL SHALL BE MADE WITH SUITABLE EXCAVATED MATERIAL ( EXCLUDING BLUE CLAY ) PLACED IN ONE-FOOT LAYERS WITH EACH LAYER BEING THOROUGHLY COMPACTED BY APPROVED MECHANICAL METHODS, OR OTHER EFFECTIVE MEANS HAVING THE APPROVAL OF THE ENGINEER, TO A DENSITY EQUIVALENT TO THE UNDISTURBED ADJACENT SOIL, OR 90% OF MAX. UNIT WEIGHT, WHICHEVER IS GREATER. WHEN TRENCH DETAIL "A" IS SPECIFIED, THERE WILL BE NO ADDITIONAL COMPENSATION FOR SAND BACKFILL, GRAVEL, SLAG OR HARD SURFACED PRIVATE DRIVEWAYS, PARKING LOTS OR SIDEWALKS ( SEE NOTE 25 ). ALL AREAS OF SUCH TRENCH DETAIL A SHALL BE SURFACED WITH GRAVEL, STONE, PAVEMENT OR TOPSOIL IN ACCORDANCE WITH THE REQUIREMENTS OF RESTORATION ( SEE NOTE 26 ).
- TRENCH DETAIL "B" ( T.D.-B ) - BACKFILL TO A POINT 12" ABOVE THE PIPE SHALL BE AS SPECIFIED ON THE PLANS. THE REMAINDER OF ALL TRENCHES UNDER PUBLIC ROADWAYS AND WITHIN THAT AREA BELOW A LINE PROJECTED AT A 1 ON 1 SLOPE DOWN AND AWAY FROM A POINT 3 FEET OUTSIDE OF THE BACK OF CURB, EDGE OF PAVEMENT OR EDGE OF SHOULDER AREA, OR AS SPECIFIED ON THE PLANS, SHALL BE BACKFILLED WITH BANKRUN SAND MEETING THE REQUIREMENTS OF PORDUS MATERIAL, MDT SEC. 8.0205, CLASS II, AND IS TO BE COMPACTED TO 95% OF MAX. UNIT WEIGHT. WHEN TRENCH DETAIL B IS IN A DITCH OR TURF AREA, IT SHALL BE SURFACED WITH 2" TO 12" OF ORGANIC CLAY MATERIAL AND WITH 4" OF TOPSOIL. ALL OTHER AREAS OF TRENCH DETAIL B SHALL BE SURFACED WITH GRAVEL, STONE OR PAVEMENT IN ACCORDANCE WITH THE REQUIREMENTS OF RESTORATION ( SEE NOTE 26 ).
- THE END OF A SANITARY LEAD SHALL BE CONSTRUCTED TO A DEPTH OF 6 FEET BELOW THE FINISH GRADE AS SHOWN ON THE BUILDING LEAD DETAIL. THE LEAD LOCATION SHALL BE MARKED WITH A 2' X 4' OR LARGER WOOD MARKER.  
  
THE MARKER SHALL BE BURIED 2 FEET BELOW FINISHED GRADE, APPROXIMATELY 1 FOOT ABOVE THE END OF THE LEAD.
- THE VERTICAL TOLERANCE FOR SANITARY MANHOLE RIM GRADES ARE AS FOLLOWS:
  - IN RIGHT OF WAY 0.00 FEET TO +0.25 FEET
  - NOT IN RIGHT OF WAY 0.00 FEET TO +0.25 FEET

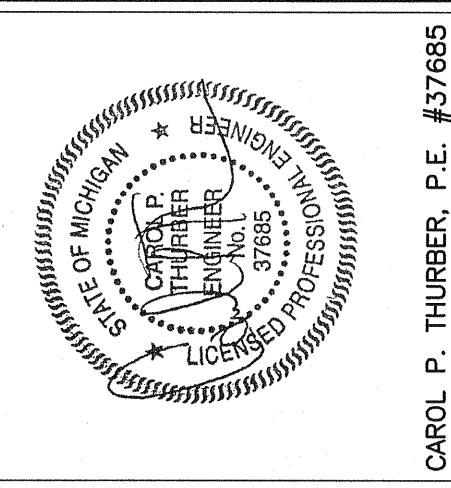
**AIR TEST TABLES**

MINIMUM HOLDING TIME IN SECONDS REQUIRED FOR PRESSURE TO DROP FROM 3 1/2 TO 2 1/2 PSI PIPE DIAMETER

X	4'	6'	8'	10'	12'	15'	18'	21'	24'	27'	30'	33'	36'
25	4	10	18	28	40	62	89	121	158	200	248	299	356
50	9	20	35	55	79	124	178	243	317	401	495	599	713
75	10	30	53	83	119	186	267	364	475	601	743	898	1020
100	18	40	70	110	158	248	356	485	634	765	931	935	
125	22	50	88	138	198	309	446	595	680				
150	26	59	106	165	238	371	510						
175	31	69	123	193	277	425							
200	35	79	141	220	317								
225	40	89	158	248	340								
250	44	99	176	275									
275	48	109	194	283									
300	53	119	211										
350	62	139	227										
400	70	158											
450	79	170											
500	88												
550	97												
600	106												
650	113	170	227	283	340	425	510	595	680	765	851	935	1020

NOTE: TO BE USED WHEN TESTING ONE DIAMETER ONLY

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APPROVED BY: *Michael Barrett*  
 MICHAEL BARRETT  
 DIRECTOR OF PUBLIC WORKS  
 DATE: 8-1-07

**VILLAGE OF NEW HAVEN**  
**STANDARD DETAILS**  
**FOR SANITARY SEWER**  
 (2 OF 2)