ORDINANCE #10-55:

AN ORDINANCE AMENDING THE PINEHURST ENGINEERING STANDARDS MANUAL AS IT PERTAINS TO SECTIONS 6, 7 AND 8 AND STANDARD DETAILS # 3.05, 6.04, 6.05, 6.06, 6.08 AND 7.07.

THAT WHEREAS, the Village Council of the Village of Pinehurst adopted a new Pinehurst Development Ordinance on the 24th day of May, 2005, for the purpose of regulating planning and development in the Village of Pinehurst and the extraterritorial area over which it has jurisdiction; and

WHEREAS, the Engineering Standards Manual was incorporated as a part of the Pinehurst Development Ordinance on January 12, 2010; and

WHEREAS, said Ordinances may be amended from time to time as circumstances and the best interests of the community have required; and

WHEREAS, a Public Hearing was held at 1:00 p.m. on October 27, 2010 in the Assembly Hall of the Pinehurst Village Hall, Pinehurst, North Carolina after due notice in The Pilot, a newspaper in Southern Pines, North Carolina, with general circulation in the Village of Pinehurst, and its extraterritorial jurisdiction, for the purpose of considering proposed Pinehurst Engineering Standards Manual text changes, at which time all interested citizens, residents and property owners in the Village of Pinehurst and its extraterritorial jurisdiction were given an opportunity to be heard as to whether they favored or opposed the proposed text amendments; and

WHEREAS, the Planning and Zoning Board has recommended that the Village Council amend Sections 6, 7 and 8 and standard details # 3.05, 6.04, 6.05, 6.06, 6.08 and 7.07 of the Engineering Standards Manual; and

WHEREAS, the Village Council, after considering all of the facts and circumstances surrounding the proposed amendments in the text of the Pinehurst Development Ordinance and the Engineering Standards Manual, have determined that it is in the best interest of the Village of Pinehurst and the extraterritorial jurisdiction and that it is consistent with the 2010 Comprehensive Plan that the Development Ordinance and the Engineering Manual be further amended, making the amendments as requested;

NOW, THEREFORE, BE IT ORDAINED AND ESTABLISHED by the Village Council of the Village of Pinehurst, North Carolina in regular session assembled on the 27th day of October, 2010, as follows:

SECTION 1. That the Engineering Standards Manual of the Village of Pinehurst be and the same hereby is amended by adding the following text amendment to Section 6:

6.01 Preliminary Considerations

Water mains shall extend fully to the far end of the property frontage or tract being served. Dead end mains shall terminate with one joint of ~~ductile iron~~ pipe having an

anchor ring, concrete thrust collar and a blow-off assembly. Waterlines, which may be extended in the future, shall terminate with a main line valve immediately upstream of the ~~ductile iron~~ pipe and blow-off assembly.

6.02 Design

a. Location:

Water mains shall be generally located either in the north or east side of the street pavement. **Water mains may also be located within the road shoulder on a case-by-case basis if approval is granted by both the Moore County Public Utilities Director and Village Manager.**

e. Valves:

Valves shall be installed on all branches from feeder mains and on hydrant branches according to the following schedule:

- 3~~4~~ valves at cross intersections
- 2~~3~~ valves at tee intersections
- 1 valve on hydrant branches
- 1 valve at "stub outs" for future extensions

In certain cases, the Village may require additional valves to be placed at crosses and/or tees if the addition of a valve will improve the water distribution system's capability to isolate portions of the system or keep existing customers in service during a shut-down.

6.03 Materials

a. General Requirements - Water Distribution Mains:

All water mains to be installed within the jurisdictional limits of the Village of Pinehurst shall be ductile iron **pipe or C-900 PVC pipe. All water mains located within the Village Commercial Zoning District shall be ductile iron pipe. All "transmission" mains (defined as mains that customers generally will not tap into) that are located under asphalt shall be ductile iron pipe.**~~.~~

b2. C-900 Polyvinyl Chloride (PVC) Pipe

Polyvinyl Chloride (PVC) Pipe shall comply with applicable AWWA and Uni-Bell standards. PVC pipe shall be rigid polyvinyl chloride with integrally formed, factory fabricated bell, for rubber type joint rings. It shall be suitable for all conditions imposed by Plan locations and for a maximum working pressure of 200

psi, plus 100 psi surge allowance at 73 degrees F. Pipe shall be Type 1, Grade 1, made from clear virgin material and shall conform to the requirements of AWWA Specifications C-900-07 or latest revision, DR18 class 235. These are the minimum designs allowed for the system. The Design Engineer shall verify if potential operating pressures are in excess of these ratings and if additional pressure ratings are necessary.

All pipe shall bear the National Sanitation Foundation Seal of Approval for potable water, the manufacturer's name, and class of pipe. Laying lengths shall be 20-feet except that random lengths may be furnished for special connections and other uses. Pipe shall be furnished in factory-packaged units. Provisions shall be made for expansion and contraction at each joint, through the rubber gasket and pipe bell.

Iron fittings shall be provided for PVC pipe confirming to Section 6.03 (i) of these specifications.

All PVC pipe shall be installed with #12 coated copper tracing wire and magnetic detector tape.

6.04 Installation of Water Mains, Fittings, Valves & Appurtenances

c. Pipe Installation:

(1) General - All water main pipe shall be clean before installation. Any dirty pipe shall be thoroughly swabbed by the Contractor. Pipe showing evidence of oil or grease contamination shall not be used.

Pipe laying and jointing shall be accomplished in strict accordance with the recommendations of the pipe manufacturer. Care shall be taken during pipe installation so as not to exceed the maximum joint deflection as prescribed below. ~~for ductile iron pipe.~~

MAXIMUM JOINT DEFLECTION IN INCHES ~~D. I. PIPE~~

d. Pipe Bedding:

The barrel of the pipe shall bear uniformly upon the supporting trench bottom at all times. The foundations of ~~ductile iron~~ water pipe shall conform to the minimum requirements described below and as described in Section 6.04(b), above.

(1) ~~Ductile Iron~~ Pipe - shall rest on a firm and stable flat bottom trench with bell holes excavated such that the pipe rests uniformly on its entire barrel length.

h. Reaction Blocking:

All dead end lines shall be plugged and anchored by using ~~ductile iron~~ pipe, thrust collars and blocking as shown in the Standard Details.

SECTION 2. That the Engineering Standards Manual of the Village of Pinehurst be and the same hereby is amended by adding the following text amendment to Section 7:

7.01 Design

b. Location:

All public sanitary sewer mains shall be within dedicated street rights-of-way or dedicated sanitary sewer easements. When sanitary sewer mains are installed in street rights-of-way, they shall be located ~~in the center of the pavement or right-of-way,~~ where practical, ~~or~~ in the south or west side of the pavement. All sanitary sewers shall be extended to all upstream property lines to readily enable future connection to adjoining property.

Note: Lesser widths may be allowed by the Village Manager for retrofits of existing facilities and in extenuating circumstances.

Where a water main and a sanitary sewer cross, and the vertical separation is less than 18 inches, or the water line passes under the sewer, both the water main and sewer shall be ductile iron pipe, equivalent to water main standards for a distance of 10 feet on each side at the point of crossing. ~~*(NOTE: All new water mains shall be constructed with ductile iron pipe - see Section 6.03 of these specifications. If an existing, non-ductile iron pipe is encountered, a section of ductile iron pipe shall be installed to meet these requirements.)*~~ The sewer shall be ductile iron pipe for the entire segment - pipe transitions are allowed only at manholes.

e. Size:

The minimum gradient for sanitary sewers and the peak design flows shall conform to the following:

SEWER SIZE	MINIMUM SLOPE (ft/100 ft)	PEAK DESIGN FLOW (mgd)
8"	~~0.500~~**0.400**	~~0.28~~**0.25**
10"	~~0.300~~**0.280**	~~0.40~~**0.37**
12"	~~0.250~~**0.220**	~~0.60~~**0.54**
15"	~~0.200~~**0.150**	~~0.90~~**0.81**
18"	~~0.150~~**0.120**	~~2.00~~**1.56**
21" & Larger	***Contact Village Engineer ***	

NOTE: ***These slopes are the minimum allowed by NCDENR. Greater slopes are recommended when feasible.*** *The Village reserves the right to require additional pipe slope where, in the opinion of the Village Engineer, it is determined to be in the best interest of system maintenance.*

7.03 Manholes & Accessory Materials

a. General Requirements:

All new manholes shall be of precast concrete construction.

~~The inside diameter of manholes shall be determined by the sewer main size as listed below:~~

~~MANHOLE SIZE REQUIREMENTS~~			
~~DEPTH~~	~~OUTLET PIPE SIZE~~		
~~RANGE~~	~~8" 12"~~	~~15" 30"~~	~~36" 54"~~
~~0' 10'~~	~~4'~~	~~6'~~	~~7'~~
~~10' 20'~~	~~5'~~	~~6'~~	~~7'~~
~~> 20'~~	~~6'~~	~~7'~~	~~8'~~

~~One foot shall be added to the diameters specified above for all inside drop manholes.~~ **The minimum interior diameter of gravity sewer manholes shall be 4-feet for manholes less than 12 feet in depth and 5-feet for manholes 12 feet and greater in depth. In addition, the manhole shall be 4-feet in diameter for pipe sizes up to 18-inches in diameter, 5-feet for pipe sizes of 21-inch to 30-inch in diameter, and 6-feet for pipe sizes of 36-inch to 42-inch diameter. A minimum access diameter of 22-inches shall be provided.**

The minimum interior diameter for manholes containing drop structures shall be 5-feet.

SECTION 3. That the Engineering Standards Manual of the Village of Pinehurst be and the same hereby is amended by adding the following text amendment to Section 8:

8.02 Design

a. General Requirements:

All new pump stations shall be of **the submersible-type or** the Enclosed Above Grade Self-Priming Package-Type Station, as manufactured by Gormann-Rupp unless otherwise approved in writing by the Village Engineer. ~~In the event a regional existing lift station is being rehabilitated by the MCPUD and the existing site conditions do not allow for installation of an above ground self-priming lift station, submersible pumps may be allowed, provided all other Village standards and specifications are met.~~ Submersible

pumps shall be as manufactured by Flygt, ABS, Gormann-Rupp, Myers, or Village-approved equal.

c. Site Work - General:

Suction and discharge piping shall be **C-900 PVC pipe or** ductile iron pipe designed and manufactured per AWWA Specifications C150 and C151.

g. Wet Well Features:

(3) **Screening Facilities** ~~Trash Baskets~~

Consideration shall be given to protecting pump station structures and equipment from physical damage or clogging from solid material normally present in wastewater through the use of screening and baskets.

If a bar screen is utilized, the influent sewer and pump shall have an open flange connection within the wet well and have a bar screen with a maximum clear opening of two and one-half inches. Design consideration shall be given to the loss of head through the bar screen. The bottom of the screen channel shall be placed at least twelve (12) inches below the invert of the incoming sewers to allow for some accumulation of screenings without effecting the high water level in the wetwell. Adequate clearances for ease of maintenance shall be **provided. Bar screen shall be constructed of aluminum or stainless steel.**

As an alternate to the bar screen, ~~A~~a removable aluminum trash basket **may**~~shall~~ be furnished and installed at the pumping station. The basket shall be mounted directly in front of the incoming sewer line and shall be completely removable by means of ~~system of~~**stainless steel or** aluminum guide rails.

8.03A Submersible Pumping Stations

a. General:

(1) Pumps

Submersible-type pumping stations shall include duplex submersible pumps with motors installed on lift-out rail systems, concrete wet wells, access hatch, controls, piping, valves, and other necessary appurtenances as specified herein. Pump shall be designed for automatic connection to the discharge connection elbow, guided by no less than two (2) guide bars extending from the top of the station to the discharge elbow.

Submersible pumps shall be designed and manufactured for continuous duty pumping of raw, unscreened wastewater. Pumps shall be installed in such a way that solids are fed in an upflow direction to the impeller with no feet, rails or other obstructions below inlet. Pump selection shall consider the duty requirements as well as the physical and chemical characteristics of the wastewater being conveyed. Materials used in pump construction shall also be suitable from the physical and

chemical characteristics of the wastewater being conveyed.

Pump stations conveying residential, commercial, institutional, or industrial domestic wastewater shall be provided with pumps that are suitable for continuous duty in conveying raw unscreened wastewater.

Pumps shall be capable of handling a three-inch solid and any trash or stringy material that can pass through a four-inch hose unless a mechanical means of solids reduction is installed at the pump station. Pumps shall be made non-clog either by passing solids, trash, and stringy material through a non-clog or vortex-type impeller or by grinding, chopping, or cutting them prior to passing them through the impeller. Impellers shall have blades that are generally forward rounded or otherwise configured to avoid catching solids, trash, and stringy material. Acceptable means of solids reduction shall include mechanical bar screens, trash buckets, or other devices approved by the Village Engineer.

Sufficient submergence of the pump shall prevent vortexing in the wet well. In no case shall the all pumps-off activation level be less than the minimum level required for successful pump operation as recommended by the pump manufacturer. Wet wells shall be provided with the depth required to maintain the active storage volume and the emergency storage volume for the existing area and potential growth area.

(2) Control Panel shall be as specified elsewhere in this section.

(3) Motors

Motor shall be sealed, submersible type with 1.15 service factor. Motors shall be non-overloading at all points on the pump's operating curve. A heat sensor thermostat shall be imbedded in top of winding and be connected in series with the motor starter coil in control box to stop motor if temperature rises in motor to over 220^{0} F for any reason. Thermostat to reset automatically when temperature drops to a safe limit. Motors shall also be equipped with a moisture sensor which signals an alarm if moisture is present between the two seals.

Pump motor cables shall be suitable for submersible pump applications. Cable sizing shall conform to NEC requirements for the full load currents of the motors.

b. Manufacturer:

Submersible pumps shall be as manufactured by Flygt, ABS, Gormann-Rupp, Myers, or Village-approved equal.

c. Shop Drawings:

Prior to purchase of pumping equipment, the Contractor shall submit not less than four (4) sets of data to the Village Engineer for approval, including pump performance data, control panel wiring diagrams and other material required to

determine compliance with these Specifications.

d. Operation & Maintenance Manuals:

Three (3) complete O & M Manuals shall be furnished to the Village Engineer covering all equipment furnished - pumps, motors, controls, alarm dialer, etc.

e. Spare Parts:

At the time that the pumping station is accepted for operation and maintenance by the Village of Pinehurst, certain spare parts shall be furnished, consisting of:

Upper and Lower Mechanical Seal
Motor Cable
Cable Grommet
Inspection Plug Washer
Upper Bearing
Lower Bearing
Wear Ring
Cable Entry Washer
O-Ring Kit
Impeller Bolt
Impeller Key

f. Warranty:

The manufacturers of the pumps and appurtenances shall warrant to the Village of Pinehurst that the equipment that is supplied shall be free of defect in materials and workmanship for a period of 12 months following acceptance of the facility for maintenance by the MCPUD. The warranty shall name the MCPUD as warrantee and a copy of this documentation shall be delivered to the Village Engineer at the time of final acceptance.

g. Manufacturer's Nameplate

A manufacturer's nameplate shall be securely and permanently mounted to each individual piece of equipment furnished under this Section. The nameplate shall be constructed of a durable, non-corrosive material. Critical information shall be clearly engraved or otherwise permanently stamped on the nameplate, and shall be fully legible. The information contained on the manufacturer nameplate shall include at least the following:

1 Manufacturer's Serial Number
2 Name, address and telephone number of equipment manufacturer
3 Model and/or Part Number, including pump impeller sizes, when applicable
4 Performance Criteria (i.e., capacity, design point, etc.)
5 Motor size, speed and voltage
6 Enclosure Type or Rating

7 Any other pertinent information

h. Supplier and Service Nameplate

A durable nameplate, stamp or sticker shall be adhered to each individual piece of equipment containing the name, address, and telephone number of the local business that supplied the equipment, and the name, address and telephone number of the local business that can provide service and replacement parts for the equipment. A 24-hour emergency service telephone number should also be included.

i. Testing

Each pump shall be field tested by the manufacturer's technical representative to demonstrate that the pump performance meets the requirements of the drawings and specifications. The manufacturer shall provide and install any gauges, meters or other devices needed for the field tests.

Pump start-up and testing shall be done in the presence of the Village Engineer or his designated representative and shall demonstrate conformance to the conditions shown on the contract drawings.

8.06 Force Main Materials

a. General:

Force mains shall be constructed of ductile iron pipe **or C-900 PVC pipe** as specified herein. **Force mains constructed within the Village Commercial Zoning District shall be ductile iron pipe as specified herein.**

b2. C-900 Polyvinyl Chloride (PVC) Pipe

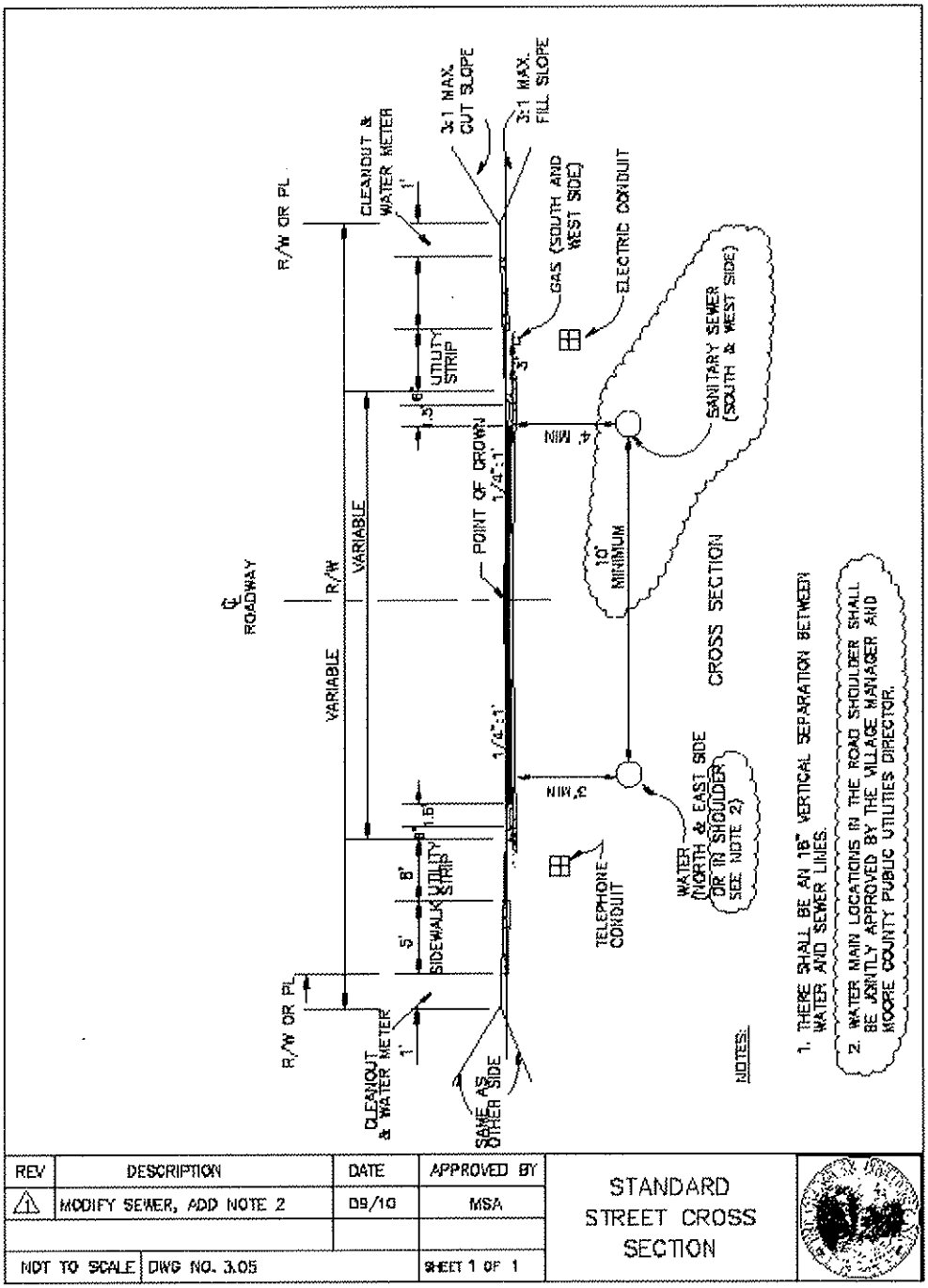
Polyvinyl Chloride (PVC) Pipe shall comply with applicable AWWA and Uni-Bell standards. PVC pipe shall be rigid polyvinyl chloride with integrally formed, factory fabricated bell, for rubber type joint rings. It shall be suitable for all conditions imposed by Plan locations and for a maximum working pressure of 200 psi, plus 100 psi surge allowance at 73 degrees F. Pipe shall be Type 1, Grade 1, made from clear virgin material and shall conform to the requirements of AWWA Specifications C-900-7 or latest revision, DR18 class 235. These are the minimum designs allowed for the system. The Design Engineer shall verify if potential operating pressures are in excess of these ratings and if additional pressure ratings are necessary.

All pipe shall bear the manufacturer's name, and class of pipe. Laying lengths shall be 20feet except that random lengths may be furnished for special connections and other uses. Pipe shall be furnished in factory-packaged units. Provisions shall be made for expansion and contraction at each joint, through the rubber gasket and pipe bell.

Iron fittings shall be provided for PVC pipe confirming to Section 8.06 (c) of these specifications.

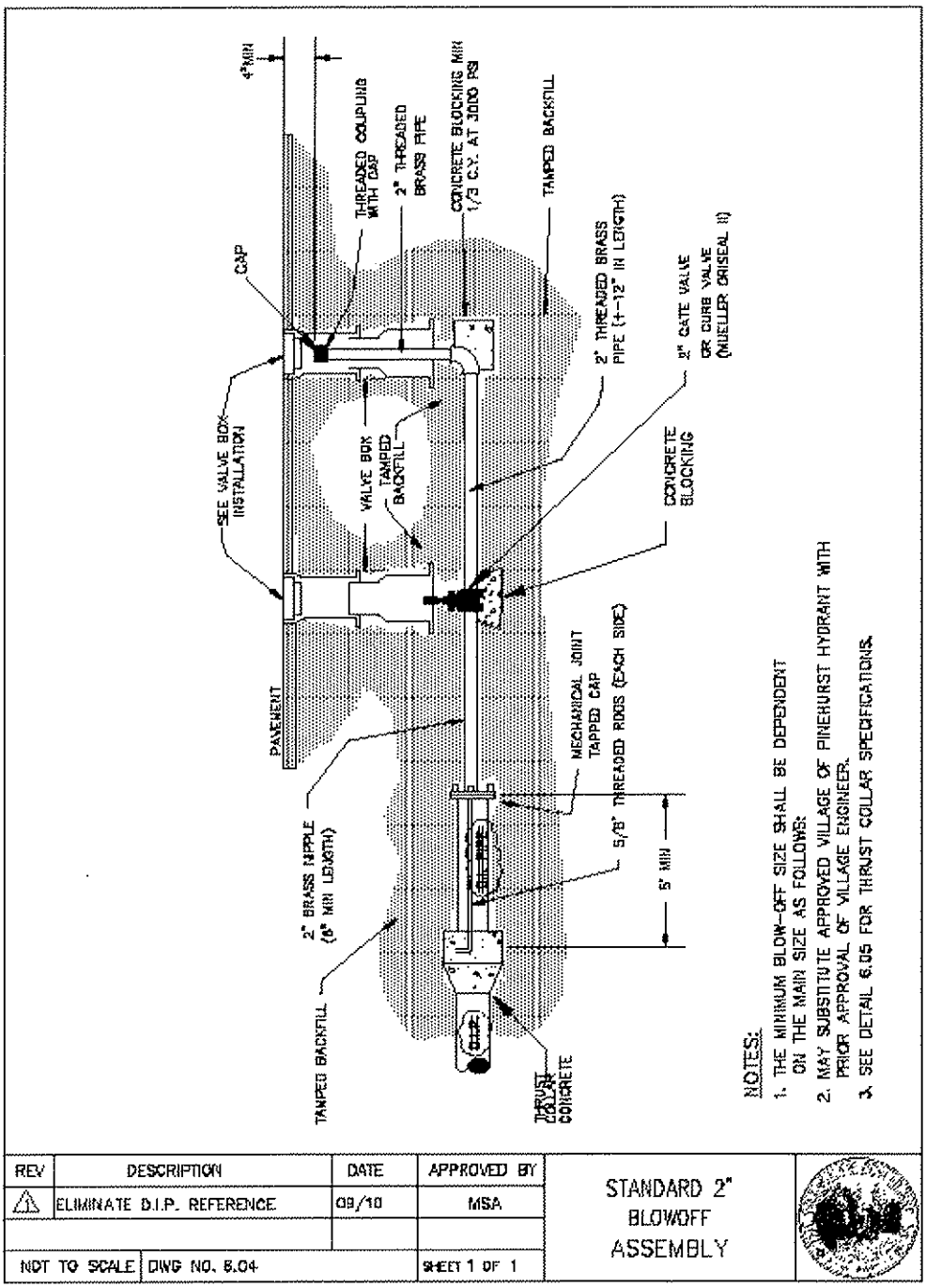
All PVC pipe shall be installed with #12 coated copper tracing wire and magnetic detector tape.

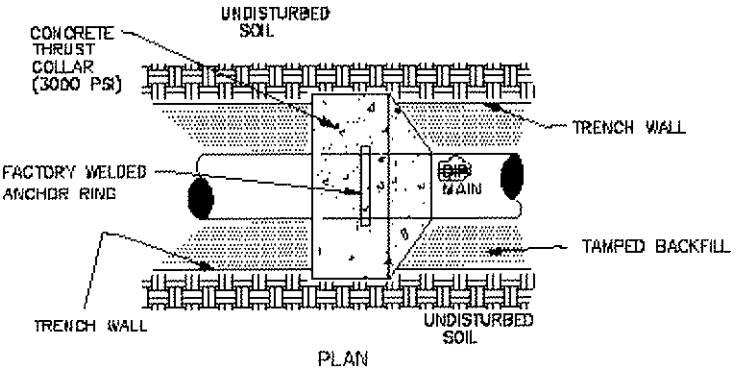
SECTION 4. That the Engineering Standards Manual of the Village of Pinehurst be and the same hereby is amended by adding the following text amendment to Standard Details # 3.05, 6.04, 6.05, 6.06, 6.08 and 7.07 :



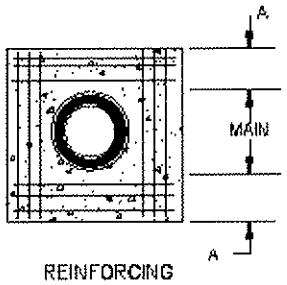
REV	DESCRIPTION	DATE	APPROVED BY
1	MODIFY SEWER, ADD NOTE 2	09/10	MSA
NOT TO SCALE	DWG NO. 3.05		SHEET 1 OF 1

STANDARD STREET CROSS SECTION

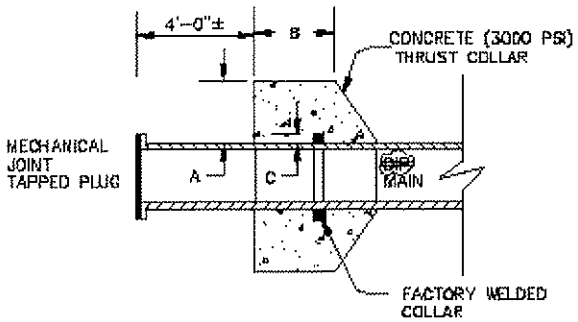

4" MIN
THREADED COUPLING WITH CAP
2" THREADED BRASS PIPE
CONCRETE BLOCKING MIN 1/3 C.Y. AT 3000 PSI
TAMPED BACKFILL
CAP
2" THREADED BRASS PIPE (+-12" IN LENGTH)
2" GATE VALVE OR CURB VALVE (MUELLER OR/SEAL II)
SEE VALVE BOX INSTALLATION
VALVE BOX
TAMPED BACKFILL
CONCRETE BLOCKING
PAVEMENT
MECHANICAL JOINT TAPPED CAP
5/8" THREADED RODS (EACH SIDE)
5' MIN
2" BRASS NIPPLE (6" MIN LENGTH)
TAMPED BACKFILL
THRUST COLLAR CONCRETE
NOTES:
1. THE MINIMUM BLOW-OFF SIZE SHALL BE DEPENDENT ON THE MAIN SIZE AS FOLLOWS:
2. MAY SUBSTITUTE APPROVED VILLAGE OF PINEHURST HYDRANT WITH PRIOR APPROVAL OF VILLAGE ENGINEER.
3. SEE DETAIL 6.05 FOR THRUST COLLAR SPECIFICATIONS.
REV
DESCRIPTION
DATE
APPROVED BY
1
ELIMINATE D.I.P. REFERENCE
09/10
MSA
NOT TO SCALE
DWG NO. 6.04
SHEET 1 OF 1
STANDARD 2" BLOWOFF ASSEMBLY



PLAN



REINFORCING



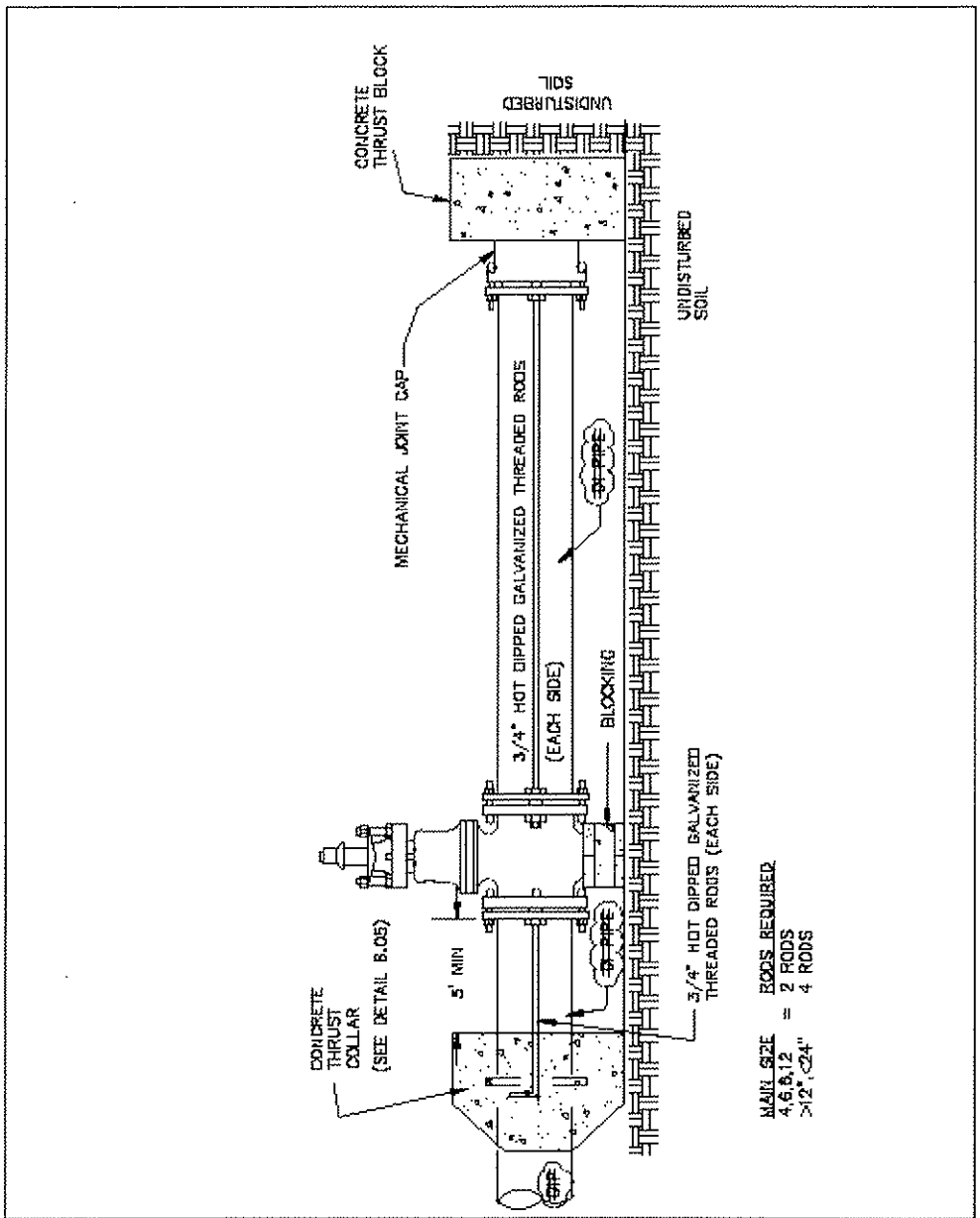
NOTES:

1. 6" TO 16" MAINS=12-NO.7 BARS.
2. 20" TO 36" MAINS=12-NO.8 BARS.
3. BARS PLACED AS SHOWN.

SCHEDULE

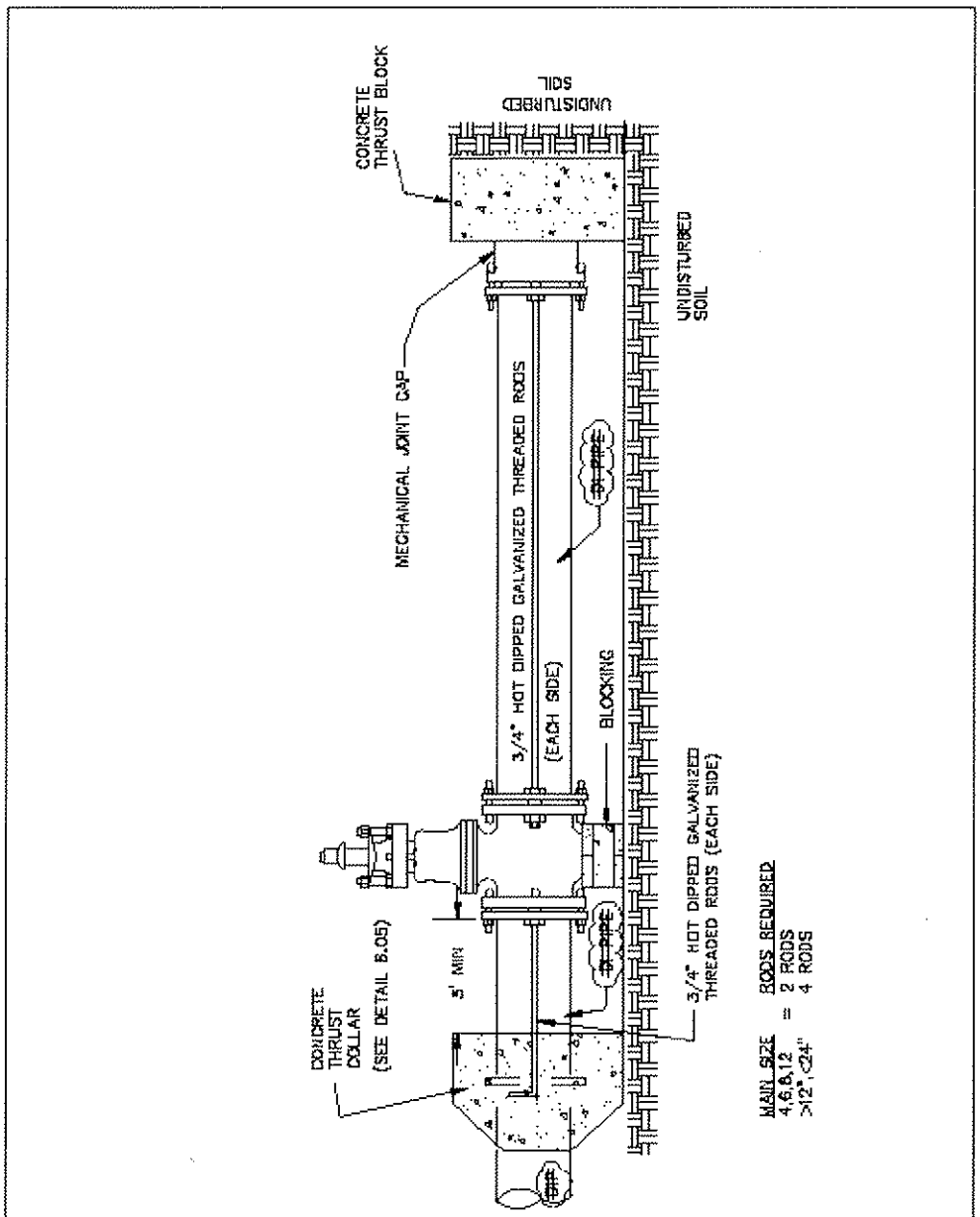
PIPE DIAMETER	CONCRETE THRUST COLLAR		ANCHOR RING	RING REQUIRED
	A	B	C	
6",8",12"	1'-0"	1'-0"	2"	ONE
16"	1'-4"	1'-0"	2"	ONE
20"	1'-4"	1'-0"	3"	ONE
24"	1'-4"	1'-0"	3"	TWO
30"	1'-4"	1'-2"	4"	TWO
36"	1'-4"	1'-4"	4"	TWO

REV	DESCRIPTION	DATE	APPROVED BY	STANDARD THRUST COLLAR INSTALLATION
⚠	ELIMINATE D.I.P. REFERENCE	09/10	MSA	
NOT TO SCALE	DWG NO. 6.05		SHEET 1 OF 1	

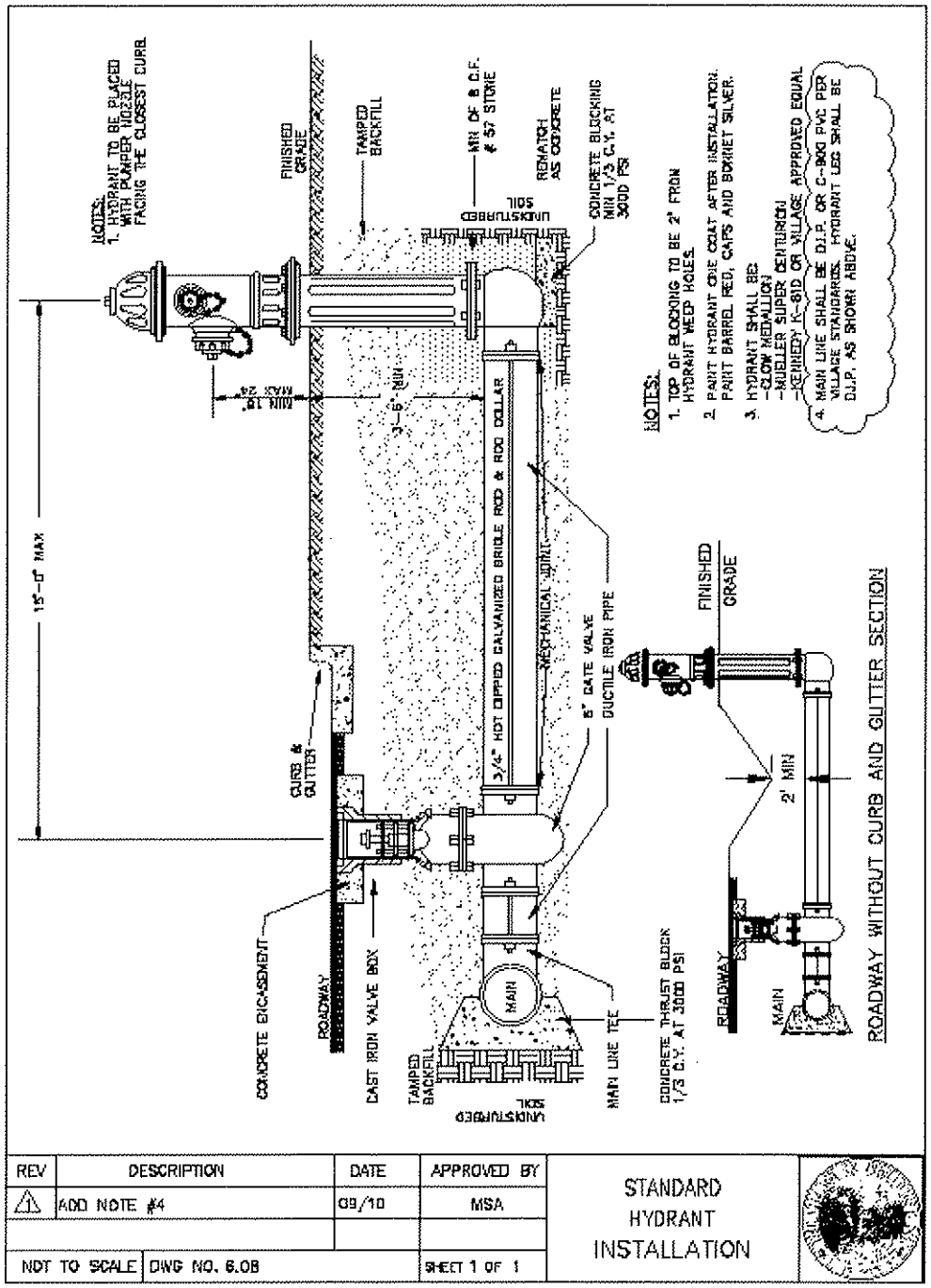


REV	DESCRIPTION	DATE	APPROVED BY
1	ELIMINATE D.I.P. REFERENCE	09/10	MSA
NOT TO SCALE	DWG NO. 8.08		SHEET 1 OF 1

STANDARD CAPPING DETAIL

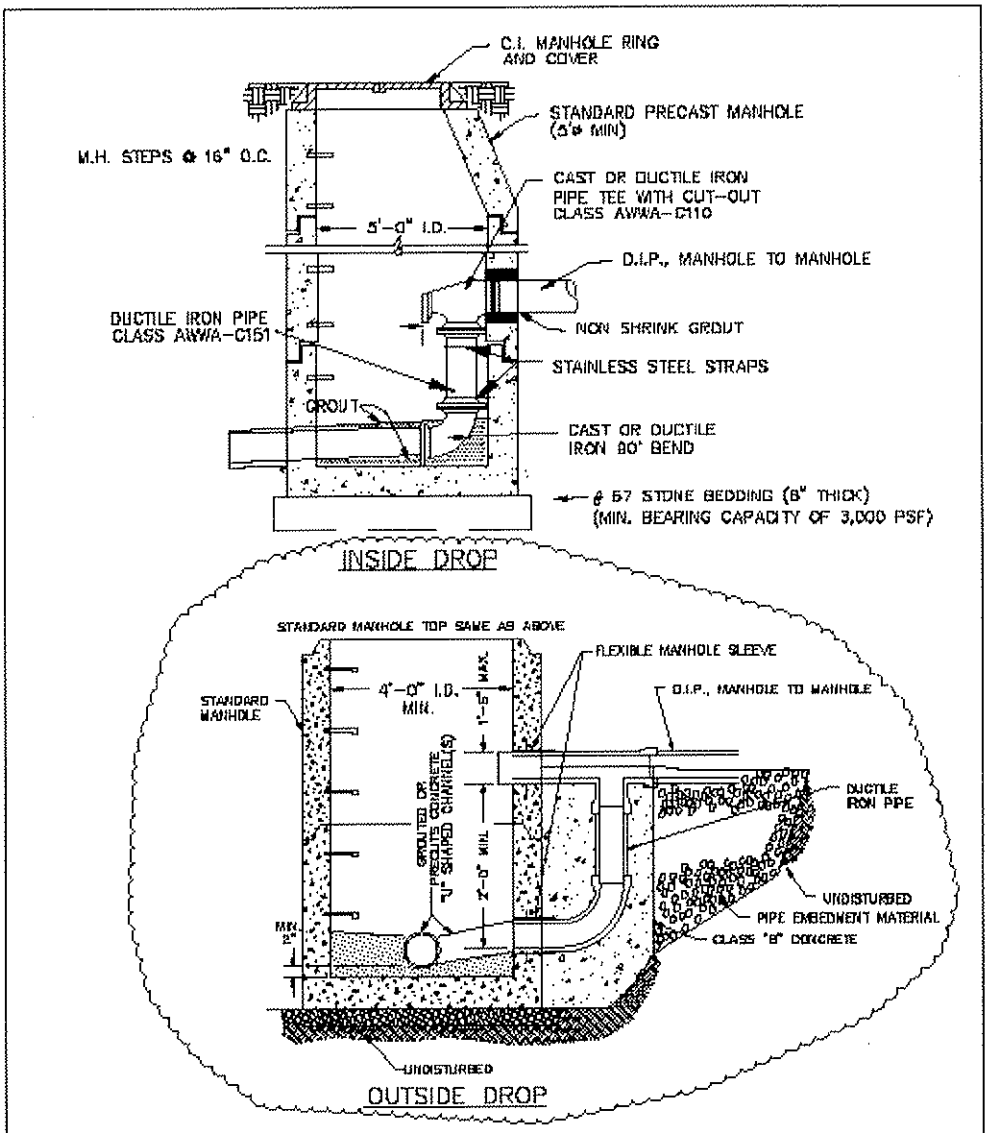


REV	DESCRIPTION	DATE	APPROVED BY	STANDARD CAPPING DETAIL
1	ELIMINATE D.I.P. REFERENCE	09/10	MSA	
NOT TO SCALE	DWG NO. 6.06		SHEET 1 OF 1	



REV	DESCRIPTION	DATE	APPROVED BY
1	ADD NOTE #4	09/10	MSA
NOT TO SCALE	DWG NO. 6.08		SHEET 1 OF 1

STANDARD HYDRANT INSTALLATION



NOTE:

1. SEE DETAIL 7.03 FOR OTHER APPLICABLE MANHOLE SPECIFICATIONS.

REV	DESCRIPTION	DATE	APPROVED BY	STANDARD DROP MANHOLE
⚠	ADD OUTSIDE DROP DETAIL	09/10	MSA	
NOT TO SCALE	DWG NO. 7.07		SHEET 1 OF 1	

SECTION 5. That all ordinances or sections thereof in conflict herewith are hereby repealed and declared null and void from and after the date of adoption of this ordinance.

SECTION 6. That this Ordinance shall be and remain in full force and effect from and after the date of its adoption.

Adopted this 27th day of October, 2010.

(Municipal Seal)

VILLAGE OF PINEHURST
VILLAGE COUNCIL

By: Virginia F. Fallon
Virginia F. Fallon, Mayor

Attest:

Linda S. Brown
Linda S. Brown, Village Clerk

Approved as to Form:

Michael J. Newman, Village Attorney