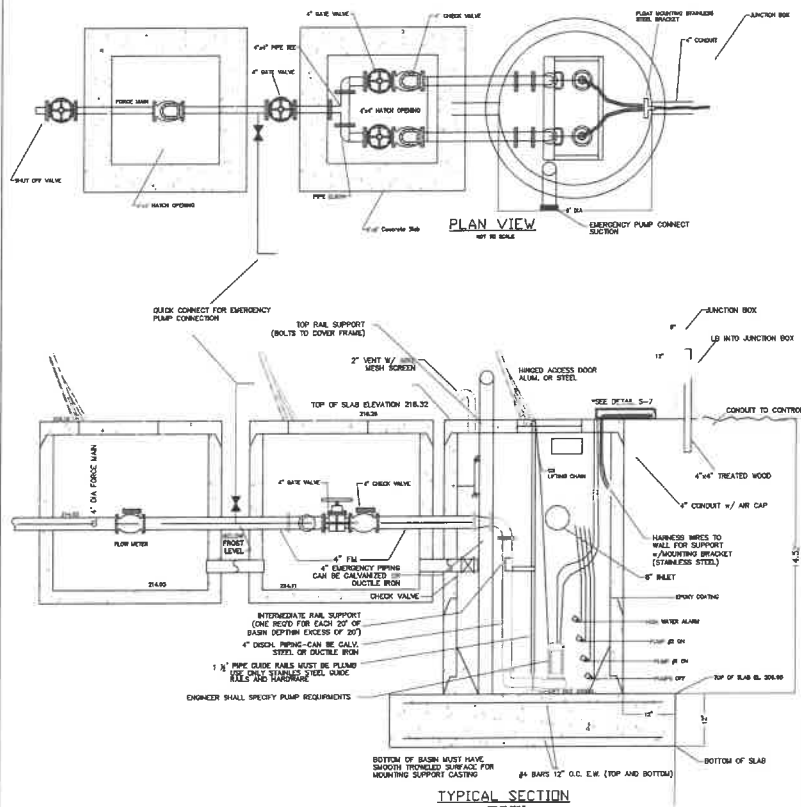


NOTES:

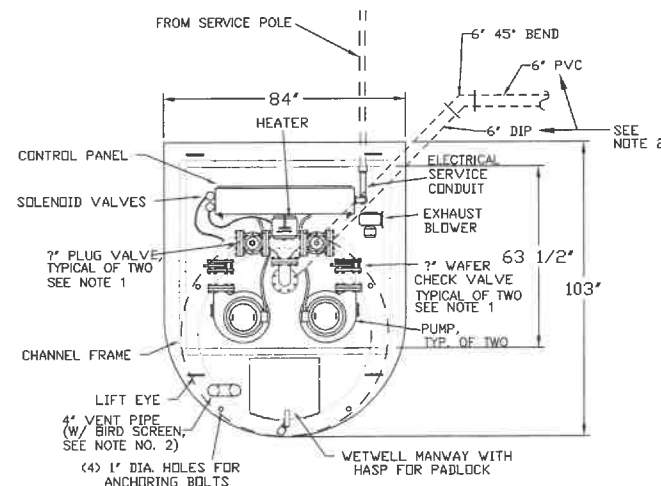
1. PUMP STATION MUST MEET ALL ZONING SET-BACK REQUIREMENTS
2. PUMP STATION MUST MEET ALL LANDSCAPING REQUIREMENTS
3. WATER SERVICE FOR YARD HYDRANT MUST HAVE RPZ PROTECTION.
4. PUMP STATION FENCE TO BE 50'X50' MINIMUM
5. 5' BUFFER SHALL BE REQUIRED BETWEEN FENCE AND EASEMENT LINE.
6. FOR ELECTRICAL PANEL REFER TO DETAILS S-9, S-10, S-11, S-12, AND S-13.
7. REFER TO MINIMUM REQUIREMENTS FOR SEWER LIFT STATION-2007edition
8. GATE VALVES AND CHECK VALVES TO BE SIZED WITH FORCE MAIN
9. CONCRETE FLOW METER VAULT SHOULD BE 4'WIDE X 4'DEEP AND 4' LONG AND IT MUST BE PROVIDED 4'X4' ALUMINUM BILCO HATCH
10. CONCRETE VALVE VAULT SHOULD BE 6'WIDE X 3'DEEP AND 6' LONG AND IT MUST BE PROVIDED 4'X4' ALUMINUM BILCO HATCH
11. NOTES 9 AND 10 DEPENDENT ON FORCE MAIN AND VALVE SIZE

TYPICAL SUBMERSIBLE PUMP STATION LAYOUT DETAIL S1
NO SCALE

* FOR RAIN HOOD REFER TO DETAIL S-9
* SEE DETAIL S-7 FOR JUNCTION BOX

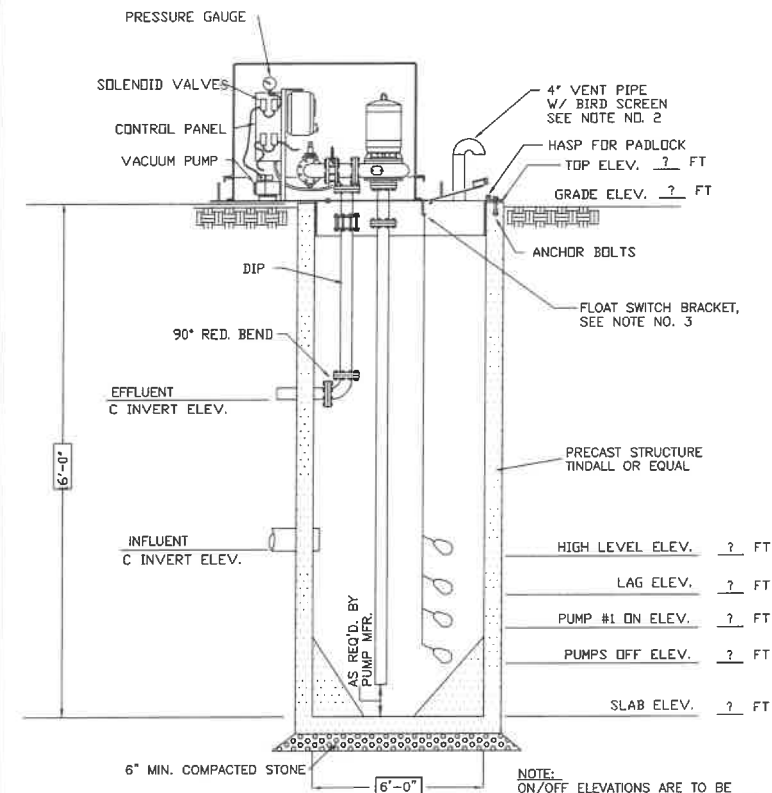


TYPICAL BELOW GROUND PUMPS SEWER LIFT STATION DETAIL S2
NO SCALE



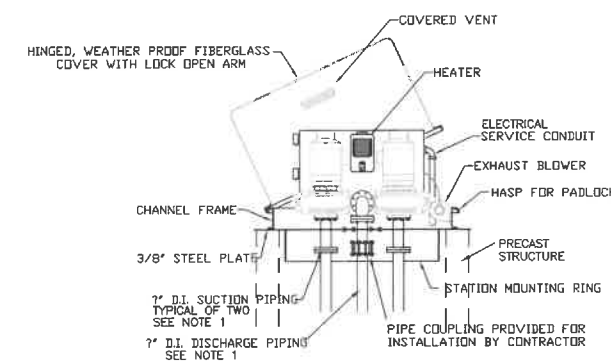
TYPICAL PLAN VIEW OF SEWER LIFT STATION WITH ABOVE GROUND PUMPS DETAIL S3
NO SCALE

NOTES:
1. SIZES TO BE ADDED BY ENGINEER TO REPLACE ?
2. PIPE MATERIAL TO BE DIP UNLESS OTHERWISE SPECIFIED BY HRW



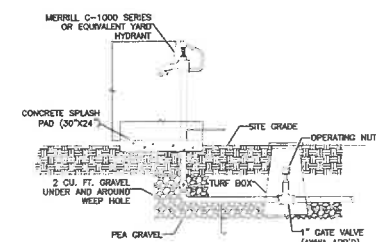
TYPICAL SEWER LIFT STATION FOR ABOVE GROUND PUMPS DETAIL S4
NO SCALE

NOTE:
1. ENGINEER MUST ADD ELEVATIONS PER PROJECT FOR BASE SLAB, FLOATS, & TOP TO REPLACE ?



TYPICAL PUMP ELEVATION FOR SEWER LIFT STATION WITH ABOVE GROUND PUMPS DETAIL S5
NO SCALE

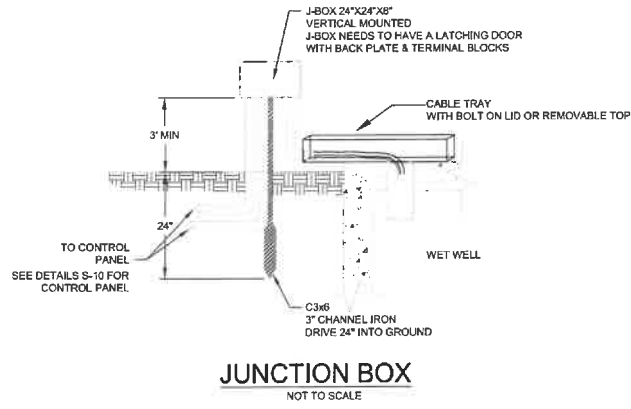
NOTES:
1. ENGINEER TO SPECIFY PIPE SIZE PER PROJECT.
ENGINEER TO SPECIFY PUMP SIZE, FLOW, HEAD.



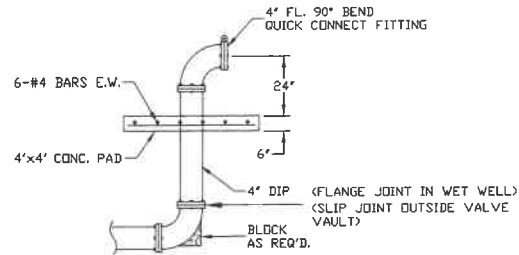
TYPICAL YARD HYDRANT INSTALLATION DETAIL S6
NO SCALE

NOTES:
1. APPROVED RPZ ASSEMBLY MUST BE INSTALLED BETWEEN THE GATE VALVE AND METER.

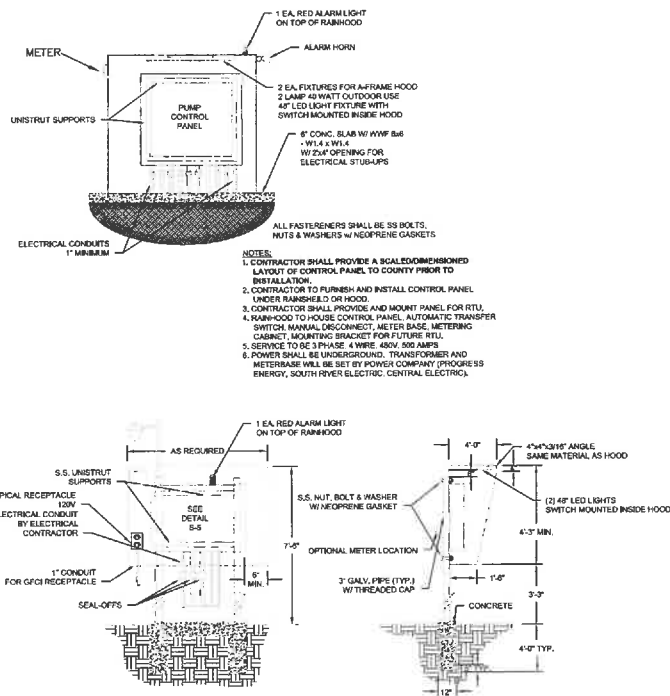
Date	App'd.
Mark	Revisions
HARNETT County Public Utilities LILLINGTON, NORTH CAROLINA	
SANITARY SEWER DETAILS WASTE WATER SYSTEM HARNETT COUNTY SPECIFICATIONS HARNETT COUNTY - NORTH CAROLINA	
Scale:	NOTED
Date:	2009
Drawn By:	H.C.D.P.U.
Checked By:	W.W.R.
Book No.:	
Page No.:	
Job No.:	
Sheet No.:	WW-1



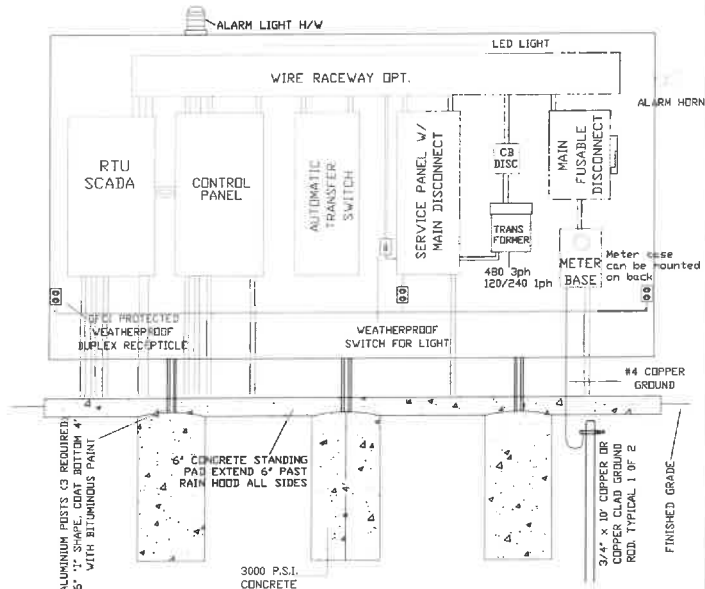
TYPICAL JUNCTION BOX DETAIL S7
NO SCALE



TYPICAL EMERGENCY PUMP DISCHARGE, PLUGGED DETAIL S8
NO SCALE

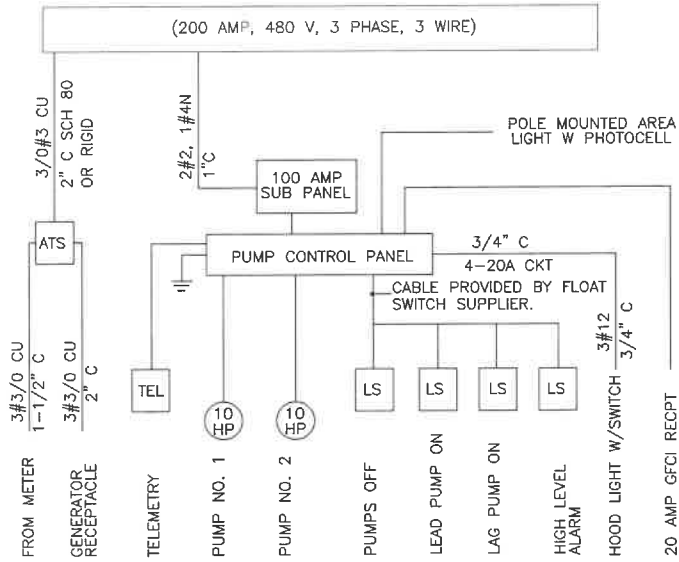


TYPICAL CONTROL PANEL RAIN HOOD DETAIL S9
NO SCALE



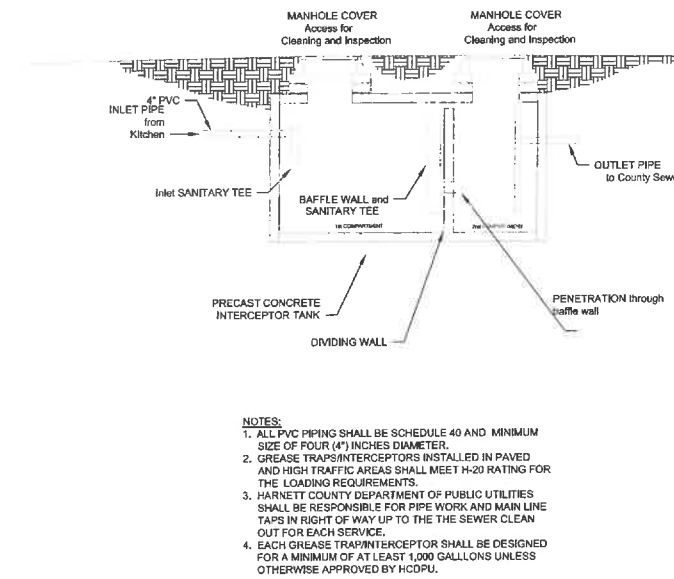
- *NOTES*
- BACKING PLATE TO BE 1/4" ALUMINUM. MOUNT TO 1" BEAM POSTS WITH STAINLESS STEEL NUT, BOLTS, AND WASHERS.
 - ALL ELECTRICAL WORK SHALL CONFORM TO LATEST NATIONAL, STATE AND LOCAL CODES AND REQUIREMENTS.
 - SHOW CONDUIT SIZE AND RUNS WITH WIRE SIZE AND NUMBER ON PUMP STATION PLANS.
 - PANEL LAYOUT IS SCHEMATIC ONLY. ADJUST AS NEEDED TO ACCOMMODATE EQUIPMENT. MAINTAIN 4" MIN. CLEARANCE BETWEEN PANELS AND SIDE SHIELDS.
 - ALL ENCLOSURES SHALL BE NEMA 4X RATED AND LOCKABLE.
 - ENCLOSURES SHALL BE MOUNTED TO ALUMINUM BACKING PLATE WITH NYLON SPACERS & STAINLESS STEEL NUTS BOLTS & WASHERS.
 - CONDUIT SHALL BE RIGID ALUMINUM OR GALVANIZED. MEYERS HUBS SHALL BE USED AT ALL PANEL CONNECTIONS.
 - NO EQUIPMENT SHALL BE MOUNTED LESS THAN 36" ABOVE FINISHED GRADE. MIN. CLEARANCE FROM WORK LIGHT TO STANDING PAD SHALL BE 6' 6".
 - FOR RAIN HOOD DETAIL SEE S-9.

TYPICAL PUMP STATION ELECTRICAL PANEL DETAIL S10
NO SCALE

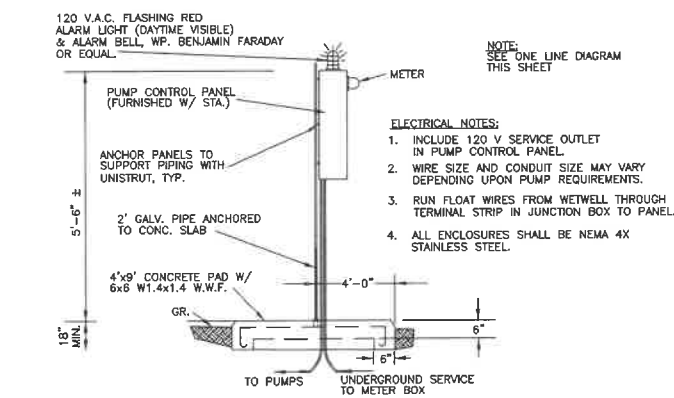


TYPICAL ONE LINE DIAGRAM DETAIL S11
NO SCALE

- NOTE:
- MAIN DISCONNECT BREAKER/FUSE SHOULD BE SIZED BASED UPON PUMP LOAD WIRE SIZES. THE ABOVE SCHEMATIC DIAGRAM IS FOR ILLUSTRATION OF TYPICAL INSTALLATION.
 - ENGINEER SHALL VERIFY BREAKER/FUSE & WIRE SIZES FOR EACH PROJECT.

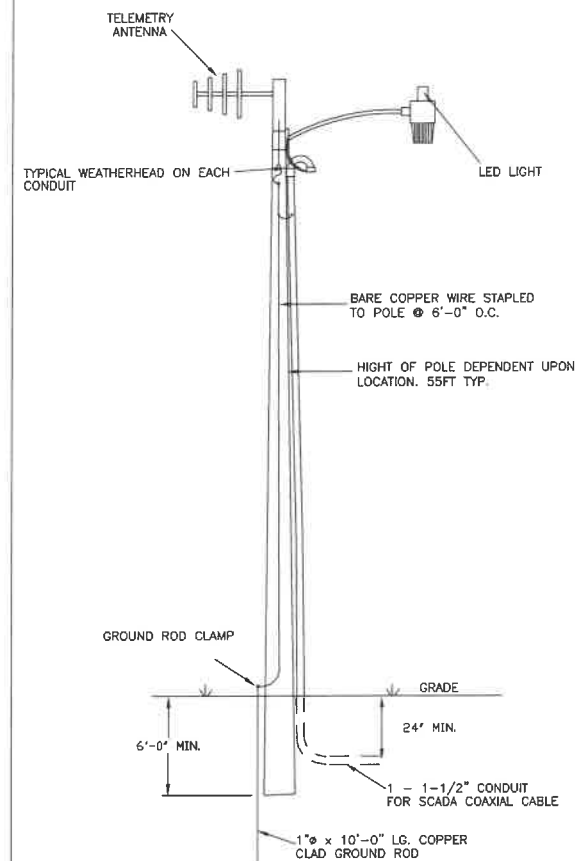


TYPICAL GREASE TRAP INTERCEPTOR DETAIL S12
NO SCALE



TYPICAL CONTROL PANEL & CONC. PAD SIDE VIEW DETAIL S13
NO SCALE

- GENERAL NOTES:
- ALL FIELD WIRING CONNECTIONS BETWEEN PUMPS, FLOAT SWITCHES AND CONTROL PANEL SHALL BE MADE BY LICENSED ELECTRICIAN.
 - P.V.C. END CAP GLUED TO ELBOW AND PERFORATED WITH 16 EA. 0.12" DIA. HOLES MAY BE USED IN LIEU OF THE BIRD SCREEN.
 - RUN FLOAT SWITCH WIRES FROM WETWELL THROUGH TERMINAL STRIP IN JUNCTION BOX TO CONTROL PANEL.
 - ALL ENCLOSURES SHALL BE NEMA 4X STAINLESS STEEL.
 - WIRE SIZE AND CONDUIT SIZE MAY VARY DEPENDING UPON PUMP REQUIREMENTS BUT 1" CONDUIT SHALL BE MIN SIZE.
 - PUMP STATION BASE TO BE MANUFACTURED SPECIFICALLY FOR DIRECT MOUNTING TO OPEN TOP, 6" DIA. MANHOLE AND SHALL BE PROVIDED WITH ALL MOUNTING HARDWARE AND ANCHOR BOLTS. ANCHOR BOLTS SHALL BE HARDENED ALLOY, 5/8" DIA.
 - CIRCUITS SHALL BE IN DIRECT BURIED RIGID STEEL CONDUIT A MINIMUM OF 18" BELOW FINISHED GRADE.
 - COORDINATE GENERATOR RECEPTACLE WITH OWNER.



TYPICAL AREA LIGHT DETAIL S14
NO SCALE

- GENERAL NOTES:
- ALL FIELD WIRING CONNECTIONS BETWEEN PUMPS, FLOAT SWITCHES AND CONTROL PANEL SHALL BE MADE BY LICENSED ELECTRICIAN.
 - P.V.C. END CAP GLUED TO ELBOW AND PERFORATED WITH 16 EA. 0.12" DIA. HOLES MAY BE USED IN LIEU OF THE BIRD SCREEN.
 - RUN FLOAT SWITCH WIRES FROM WETWELL THROUGH TERMINAL STRIP IN JUNCTION BOX TO CONTROL PANEL.
 - ALL ENCLOSURES SHALL BE NEMA 4X STAINLESS STEEL.
 - WIRE SIZE AND CONDUIT SIZE MAY VARY DEPENDING UPON PUMP REQUIREMENTS BUT 1" CONDUIT SHALL BE MIN SIZE.
 - PUMP STATION BASE TO BE MANUFACTURED SPECIFICALLY FOR DIRECT MOUNTING TO OPEN TOP, 6" DIA. MANHOLE AND SHALL BE PROVIDED WITH ALL MOUNTING HARDWARE AND ANCHOR BOLTS. ANCHOR BOLTS SHALL BE HARDENED ALLOY, 5/8" DIA.
 - CIRCUITS SHALL BE IN DIRECT BURIED RIGID STEEL CONDUIT A MINIMUM OF 18" BELOW FINISHED GRADE.
 - COORDINATE GENERATOR RECEPTACLE WITH OWNER.

GENERAL NOTES S15

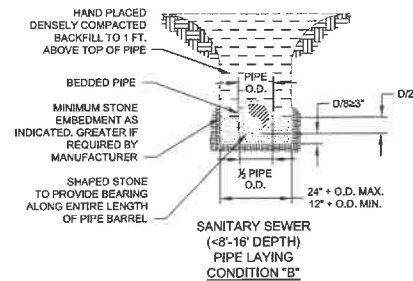
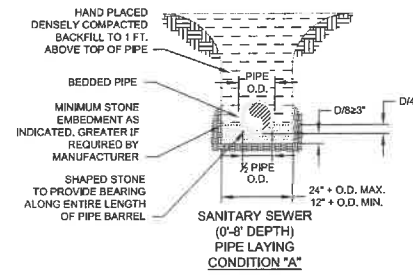
Mark	Revisions
Date	App'd.

HARNETT County
Public Utilities
LILLINGTON, NORTH CAROLINA

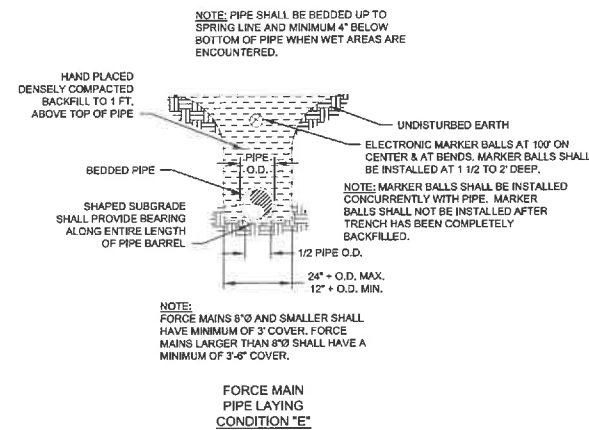
S:\Mapping\MAIN SEWER & WATER DETAILS 2009\DeKalb\VC Logos.jpg

SANITARY SEWER DETAILS
WASTE WATER SYSTEM
HARNETT COUNTY SPECIFICATIONS
HARNETT COUNTY - NORTH CAROLINA

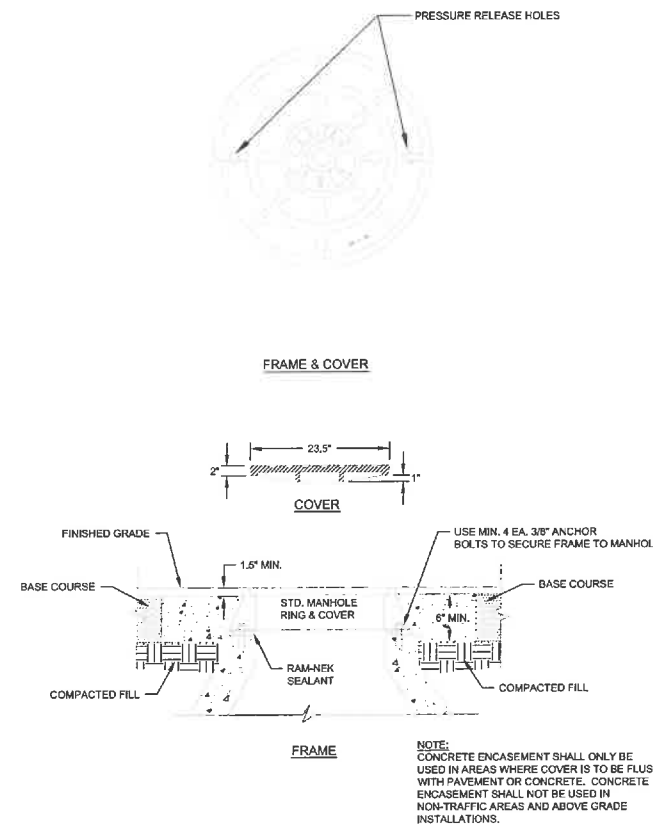
Scale: NOTED
Date: 2009
Drawn By: H.C.D.P.U.
Checked By: W.W.R.
Book No.:
Page No.:
Job No.:
Sheet No.: WW-2



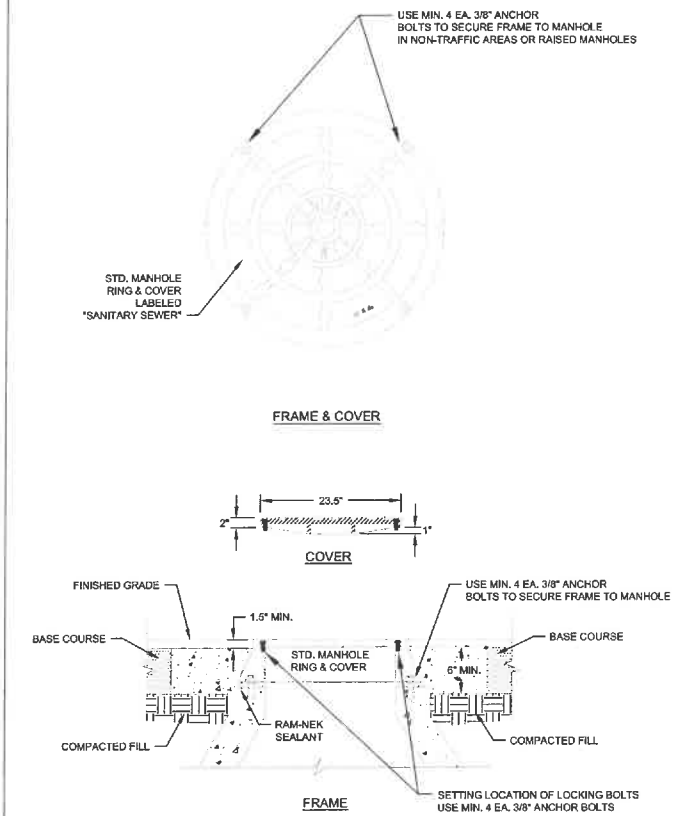
TYPICAL PIPE LAYING CONDITION DETAIL S
NO SCALE 16



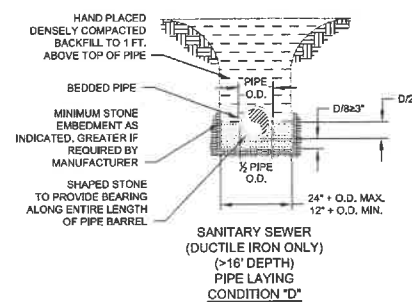
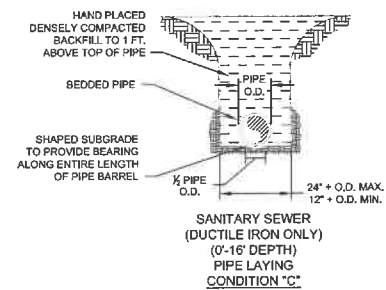
TYPICAL PIPE LAYING CONDITION DETAILS S
NO SCALE 18



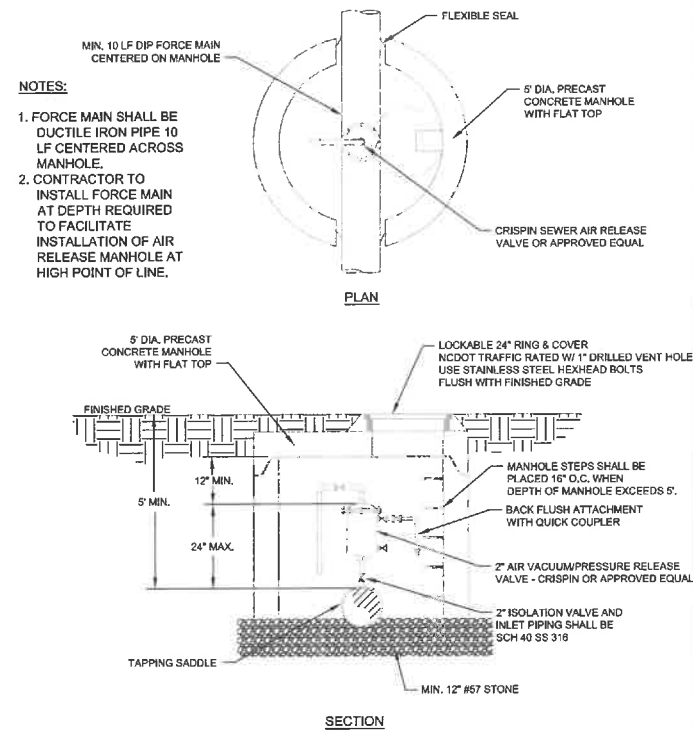
TYPICAL PRESSURE RELEASE MANHOLE FRAME & COVER DETAIL S
NO SCALE 20



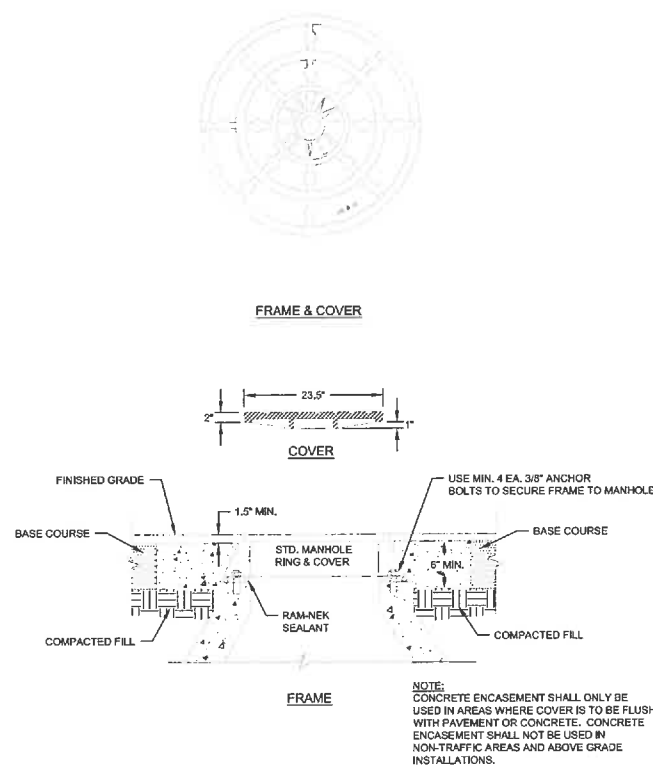
TYPICAL LOCKABLE MANHOLE FRAME & COVER DETAIL S
NO SCALE 22



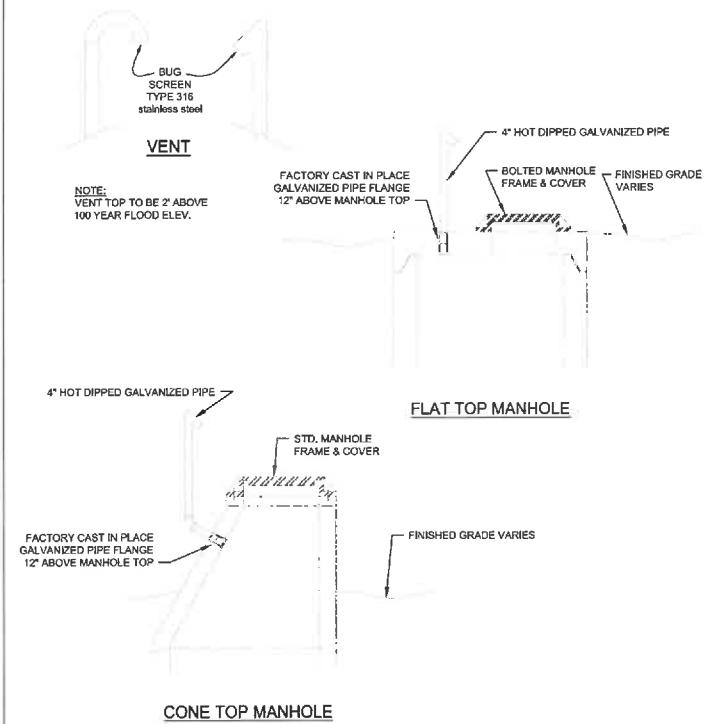
TYPICAL PIPE LAYING CONDITION DETAIL S
NO SCALE 17



TYPICAL AIR VACUUM/RELEASE MANHOLE FOR FORCE MAIN DETAIL S
NO SCALE 19

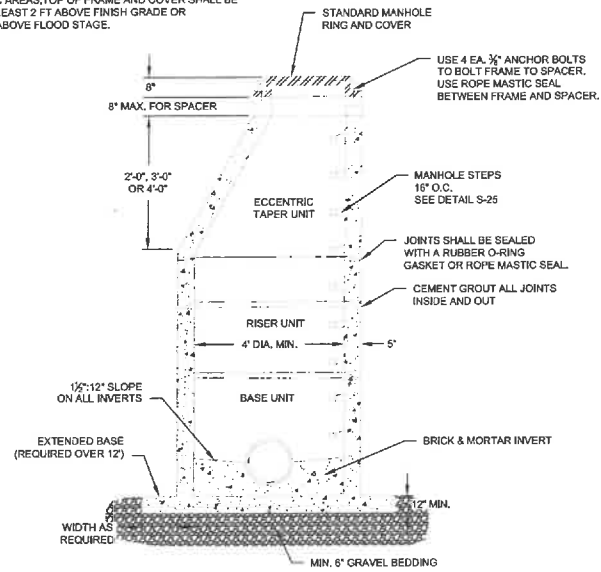


TYPICAL STANDARD MANHOLE FRAME & COVER DETAIL S
NO SCALE 21



TYPICAL VENTED MANHOLE DETAIL S
NO SCALE 23

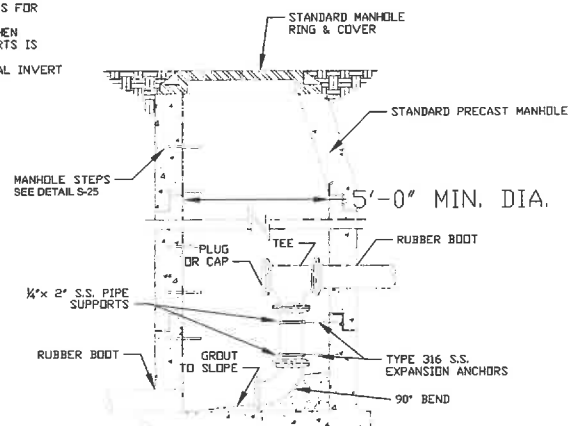
NOTE:
IN NON-TRAFFIC AREAS, TOP OF FRAME AND COVER SHALL BE
INSTALLED AT LEAST 2 FT ABOVE FINISH GRADE OR
AT LEAST 1 FT ABOVE FLOOD STAGE.



TYPICAL STANDARD PRECAST CONCRETE MANHOLE DETAIL S 24

NO SCALE
NOTES:
1. SEE DETAIL S-28 FOR TYPICAL INVERT.

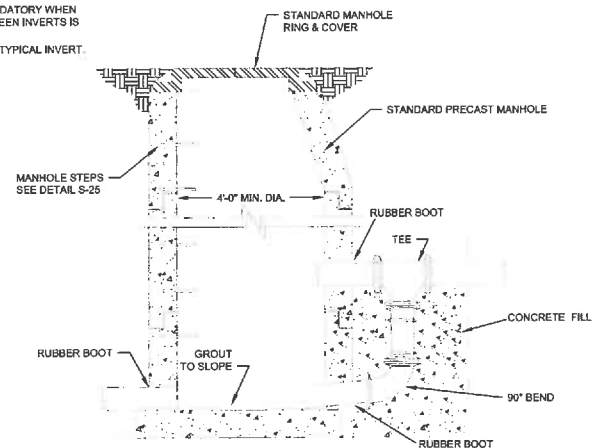
NOTE:
1. PIPE SIZE FOR DROP TO EQUAL
INFLOW SEWER PIPE SIZE.
2. FITTINGS FOR DROPS SHALL BE C-900
OR SCHEDULE 40 PVC.
3. SAW-CUT OR DRILL ALL HOLES FOR
PIPE AND BOLTS.
4. DROP-MANHOLE MANDATORY WHEN
DIFFERENTIAL BETWEEN INVERTS IS
GREATER THAN 24".
5. SEE DETAIL S-28 FOR TYPICAL INVERT



TYPICAL INSIDE DROP MANHOLE DETAIL S 25

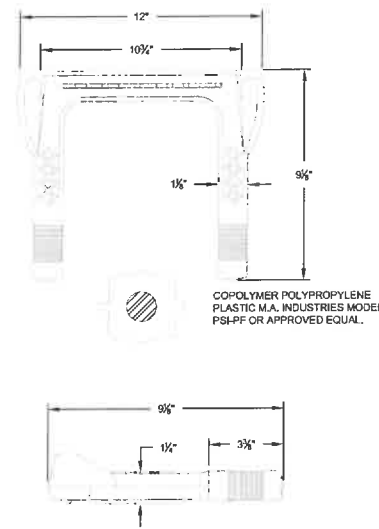
NO SCALE

NOTE:
1. PIPE SIZE FOR DROP TO EQUAL INFLOW
SEWER PIPE SIZE.
2. FITTINGS FOR DROPS SHALL BE C-900 OR
SCHEDULE 40 PVC.
3. SAW-CUT OR DRILL ALL HOLES FOR PIPE AND
BOLTS.
4. DROP-MANHOLE MANDATORY WHEN
DIFFERENTIAL BETWEEN INVERTS IS
GREATER THAN 24".
5. SEE DETAIL S-28 FOR TYPICAL INVERT.



TYPICAL OUTSIDE DROP MANHOLE DETAIL S 26

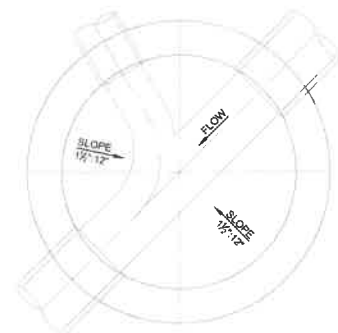
NO SCALE



TYPICAL POLYPROPYLENE PLASTIC STEP DETAIL S 27

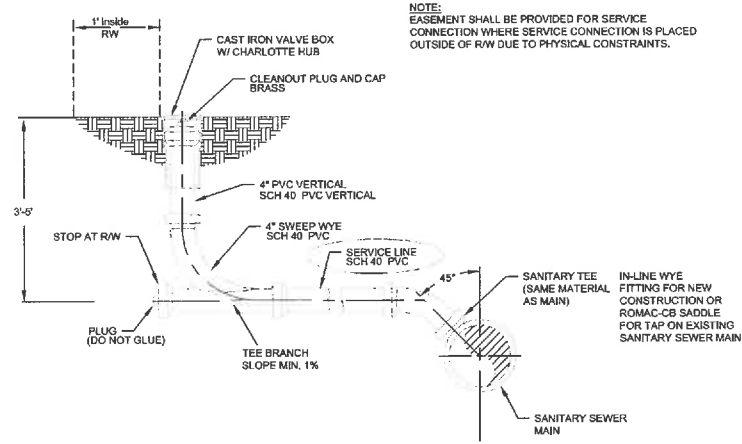
NO SCALE

NOTE:
1. THE FLOW CHANNEL THROUGH MANHOLES SHOULD BE MADE
TO CONFORM IN SHAPE AND SLOPE TO THE SEWER MAIN.
2. CHANGE IN DIRECTION OF THE CHANNEL SHALL NOT BE
EXCEEDED 90 DEGREES.
3. SEE DETAIL S-24 FOR TYPICAL MANHOLE STRUCTURE.



TYPICAL MANHOLE INVERT DETAIL S 28

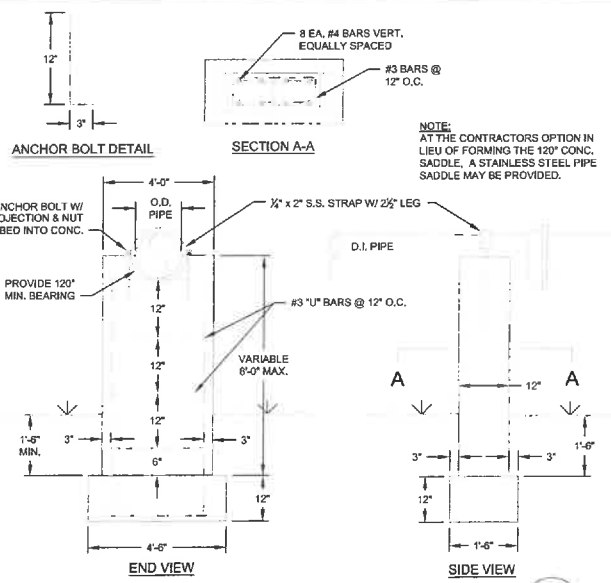
NO SCALE



TYPICAL SEWER SERVICE CONNECTION DETAIL S 29

NO SCALE

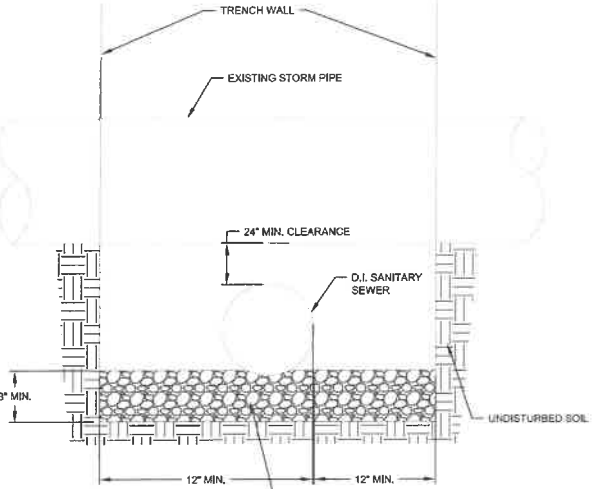
NOTE:
EASEMENT SHALL BE PROVIDED FOR SERVICE
CONNECTION WHERE SERVICE CONNECTION IS PLACED
OUTSIDE OF RW DUE TO PHYSICAL CONSTRAINTS.



TYPICAL AERIAL PIPE SUPPORTS DETAIL S 30

NO SCALE

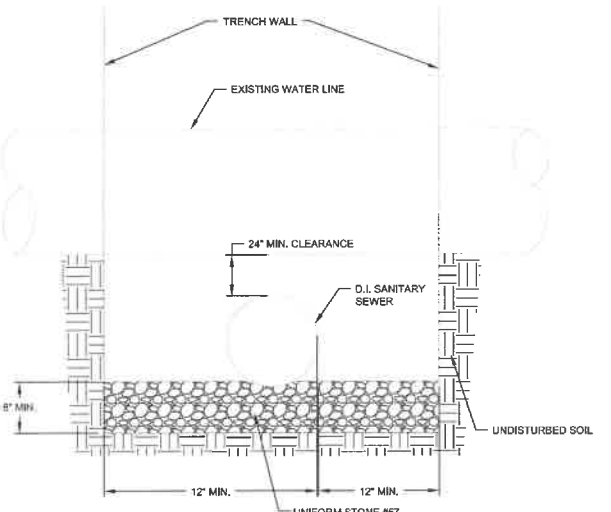
NOTE:
AT THE CONTRACTORS OPTION IN
LIEU OF FORMING THE 12" CONC.
SADDLE, A STAINLESS STEEL PIPE
SADDLE MAY BE PROVIDED.



TYPICAL STORM SEWER CROSSING FOR SANITARY SEWER DETAIL S 31

NO SCALE

NOTE:
1 EA. JOINT OF DUCTILE IRON PIPE SHALL BE CENTERED
UNDER STORM PIPE FOR ALL CROSSINGS.



TYPICAL WATER LINE CROSSING FOR SANITARY SEWER DETAIL S 32

NO SCALE

NOTE:
1 EA. JOINT OF DUCTILE IRON PIPE SHALL BE CENTERED
UNDER WATER LINE FOR ALL CROSSINGS.

HARNETT COUNTY
Public Utilities
LILLINGTON, NORTH CAROLINA

S:\Mapping\MAIN SEWER & WATER DETAILS 2009\06-04-09\VC Logos.jpg

SANITARY SEWER DETAILS
WASTE WATER SYSTEM
HARNETT COUNTY SPECIFICATIONS
HARNETT COUNTY - NORTH CAROLINA

Scale: NOTED
Date: 2009
Drawn By: H.C.D.P.U.
Checked By: W.W.R.
Book No.:
Page No.:
Job No.:
Sheet No.:
WW-4

Date: App'd.
Mark: Revisions

LAYING CONDITIONS	DESCRIPTION	PROJECT USE
 TYPE 1	FLAT BOTTOM UNDISTURBED EARTH TRENCH, LOOSE BACKFILL	NOT USED.
 TYPE 2	FLAT BOTTOMED UNDISTURBED EARTH TRENCH. BACKFILL LIGHTLY CONSOLIDATED TO CENTERLINE OF PIPE.	NOT USED.
 TYPE 3	PIPE BEDDED IN 4" MINIMUM JOB EXCAVATED MATERIAL. BACKFILL LIGHTLY CONSOLIDATED TO TOP OF PIPE.	ALL DUCTILE IRON GRAVITY SEWER LINE.
 TYPE 4	PIPE BEDDED IN SAND, GRANULAR MATERIAL OR GRADED GRAVEL TO THE DEPTH OF 1/8 PIPE DIAMETER, 4" MIN. JOB EXCAVATED MATERIAL COMPACTED TO 4" ABOVE TOP OF PIPE. (APPROX. 95% STANDARD PROCTOR, AASHTO T-99)	ALL PVC WATER LINE AND PVC FORCE MAIN.
 TYPE 5	PIPE BEDDED TO ITS CENTERLINE IN COMPACTED GRANULAR MATERIAL 4" MIN. UNDER PIPE. COMPACTED GRANULAR OR SAND MATERIAL TO 4" ABOVE TOP OF PIPE. (APPROX. 95% STANDARD PROCTOR, AASHTO T-99)	ALL PVC GRAVITY SEWER LINE.
<p>GRAVITY SEWER 35 PIPE FULLY ENCOMPASSED IN 57 STONE 4" UNDER TO 4" ABOVE TOP OF PIPE 26 PIPE GRAVEL 4" BELOW TO TOP OF PIPE</p>		

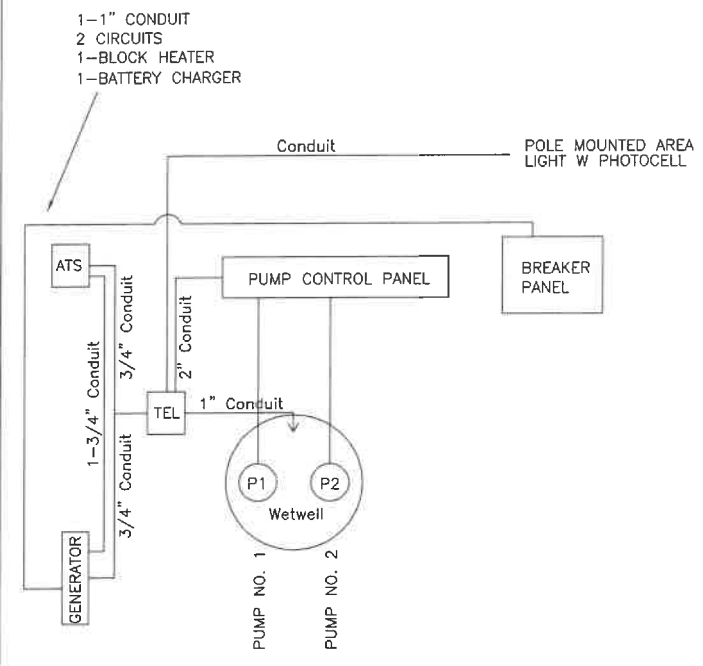
TYPICAL LAYING CONDITIONS DETAIL S
NO SCALE 33

MINIMUM SPECIFIED TIME REQUIRED FOR 0 PSIG PRESSURE DROP AT 5 PSI
FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q = 0.0015

1 Pipe Diameter (in.)	2 Minimum Time (min:sec)	3 Length for Minimum Time (ft)	4 Time for Longer Length (sec)	Specification Time for Length (L) Shown (min:sec)							
				100 ft	150 ft	200 ft	250 ft	300 ft	350 ft	400 ft	450 ft
4	1:53	597	.190 L	1:53	1:53	1:53	1:53	1:53	1:53	1:53	1:53
6	2:50	398	.427 L	2:50	2:50	2:50	2:50	2:50	2:50	2:51	3:12
8	3:47	298	.760 L	4:00	4:00	4:00	4:00	4:00	4:26	5:04	5:42
10	4:43	239	1.187 L	4:43	4:43	4:43	4:57	5:56	6:55	7:54	8:54
12	5:40	199	1.709 L	5:40	5:40	5:42	7:08	8:33	9:58	11:24	12:50
15	7:05	159	2.671 L	7:05	7:05	8:54	11:08	13:21	15:35	17:48	20:02
18	8:30	133	3.846 L	8:30	9:37	12:49	16:01	19:14	22:26	25:38	28:51
21	9:55	114	5.235 L	9:55	13:05	17:27	21:49	26:11	30:32	34:54	39:16
24	11:20	99	6.837 L	11:24	17:57	22:48	28:30	34:11	39:53	45:35	51:17
27	12:45	88	8.653 L	14:25	21:38	28:51	36:04	43:16	50:30	57:42	64:54
30	14:10	80	10.683 L	17:48	26:43	35:37	44:31	53:25	62:19	71:13	80:07
33	15:35	72	12.926 L	21:33	32:19	43:56	53:52	64:38	75:24	86:10	96:57
36	17:00	66	15.384 L	25:39	38:28	51:17	64:06	76:55	89:44	102:34	115:23
42	19:54	57	20.942 L	34:54	52:21	69:49	87:15	104:42	122:10	139:37	157:04
48	22:47	50	27.352 L	45:35	68:23	91:11	113:58	136:46	159:33	182:21	205:09
54	25:31	44	34.618 L	57:42	86:33	115:24	144:15	173:05	201:56	230:47	259:38
60	28:20	40	42.738 L	71:14	106:51	142:28	178:05	213:41	249:18	284:55	320:32

Note: If there has been no leakage (zero psig drop) after one hour of testing, the test section shall be accepted and the test complete

SEWER TESTING TIME TABLE S
34



TYPICAL SCADA ONE LINE DIAGRAM DETAIL S
NO SCALE 11a

- NOTE:
- PULL STRING IN ALL SCADA RACE WAYS.
 - ALL LIGHT FIXTURES SHALL BE LED.
 - 1-1/2" MIN CONDUIT FROM SCADA PANEL TO LIGHT/ANTENNA POLE FOR CO-AX CABLE.
 - J-BOX @ WETWELL SHOULD BE VERTICAL MOUNTED.
 - MIN 24"x24"x8"
 - MIN 36" FROM GRADE TO BOTTOM OF BOX
 - HAVE BACK PLATE INSTALLED WITH PROPER SIZE TERMINAL CONNECTION BLOCKS FOR -MOTORS/PUMPS, #1 & #2 TERMINAL BLOCK FOR FLOATS AND ANY OTHER CONTROL WIRES. THERMALS & SEAL FAILS.

<p>HARNETT County Public Utilities LILLINGTON, NORTH CAROLINA</p>		<p>S:\Mapping\MAIN SEWER & WATER DETAILS 2009\Details\HC Logos.jpg</p>
<p>SANITARY SEWER DETAILS WASTE WATER SYSTEM</p>		<p>HARNETT COUNTY SPECIFICATIONS HARNETT COUNTY - NORTH CAROLINA</p>
<p>Scale: NOTED</p>		<p>Date: 2009</p>
<p>Drawn By: H.C.D.P.U.</p>		<p>Checked By: W.W.R.</p>
<p>Book No.:</p>		<p>Page No.:</p>
<p>Job No.:</p>		<p>Sheet No.:</p>
<p>WW-5</p>		<p>Date: App. 03</p>