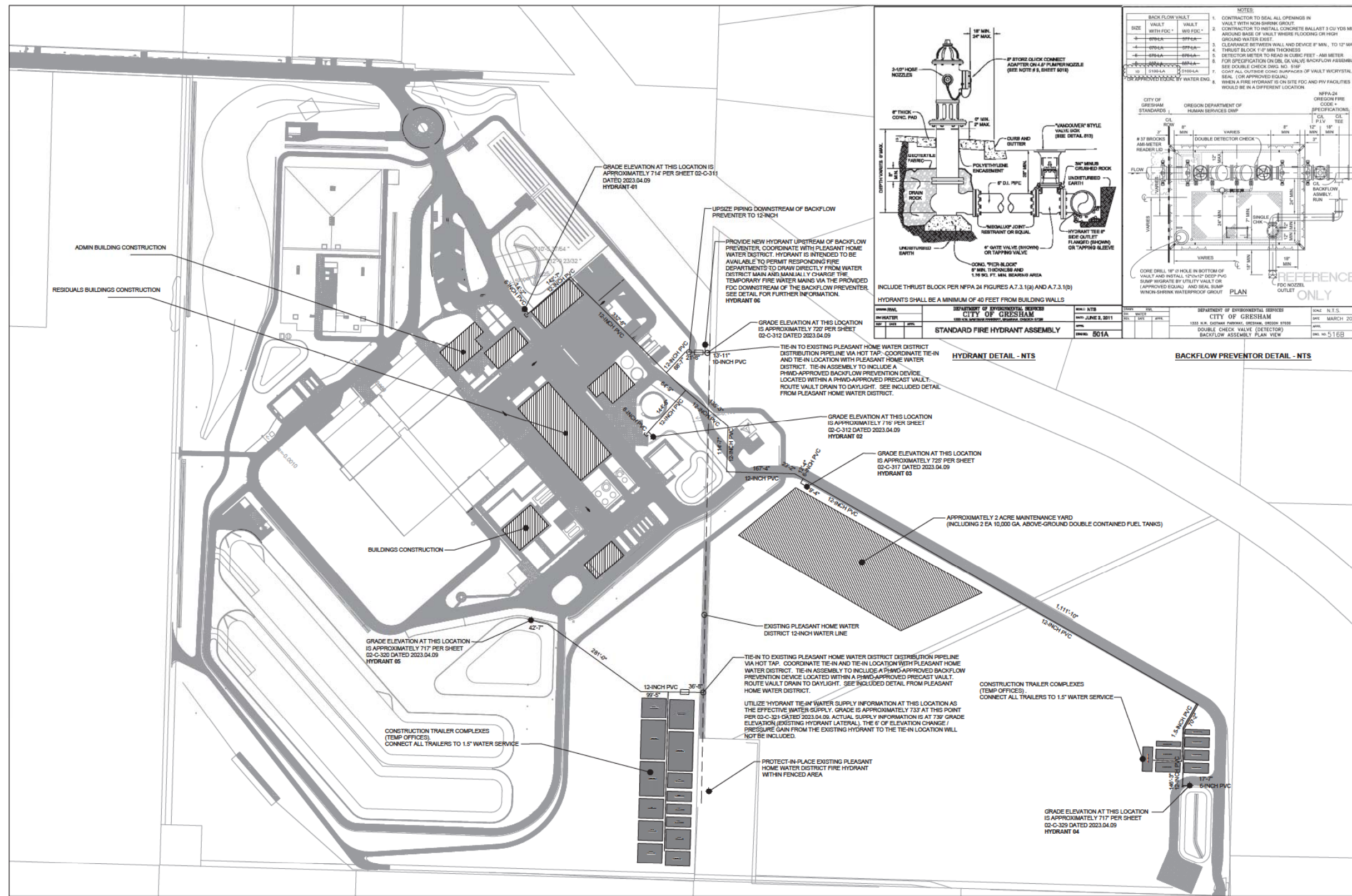




Temporary Fire Suppression Supplemental Information

The MWH-Kiewit JV will furnish and install temporary fire water supply systems at the Portland Water Bureau's filtration facility site to meet applicable fire codes. Temporary fire flow and water service for construction is available through an agreement between the Water Bureau and Pleasant Home Water District. The Water Bureau provided certification from the District to provide water service for the facility site in Exhibit A.128.

Installation of the required temporary utilities to provide fire flow will happen at the outset of construction prior to buildings being constructed or combustible materials being brought to the site. The attached plan identifies information about temporary site utilities, including fire hydrants identified as part of the temporary fire suppression services, that will be installed at the site.



- GENERAL NOTES:**
1. ALL PIPING, FITTINGS, AND COMPONENTS ARE TO BE PROVIDED, INSTALLED, AND COMMISSIONED IN COMPLIANCE WITH NFPA 24, CURRENT EDITION.
 2. ALL TEMPORARY FIRE WATER PIPING IS SHOWN AS PVC. HOWEVER CEMENT LINED DUCTILE IRON IS ACCEPTABLE. NOTE THAT WHILE THE C-FACTOR FOR DUCTILE IRON IS LOWER, THE INTERIOR DIAMETER IS LARGER WHICH RESULTS IN LOWER FRICTION LOSSES.
 3. PVC PIPING SHALL BE RESTRAINED JOINT TYPE, TERRABRUTE OR OR EQUIVALENT.
 4. DUCTILE IRON PIPING SHALL BE RESTRAINED JOINT TYPE, MEGALUG OR EQUIVALENT.
 5. ALL HYDRANTS SHALL BE PROVIDED WITH AN ISOLATION VALVE AS SHOWN ON THE INCLUDED DETAIL. HYDRANT VALVES NOT SHOWN ON DRAWING FOR CLARITY.
 6. ALL VALVE TO HAVE A MINIMUM 3- FEET OF COVER PER NFPA 24, CONSTRUCTION ACTIVITIES SHALL EVALUATE CRANE AND OTHER EQUIPMENT LOADING TO ENSURE PIPE INTEGRITY IS NOT COMPROMISED.

- HYDRANT NOTES:**
1. PRIVATE FIRE HYDRANTS SHALL BE PAINTED SAFETY RED. PUBLIC HYDRANTS SHALL BE PAINTED IN THE COLOR AS REQUIRED BY THE LOCAL WATER AUTHORITY
 2. ALL FIRE HYDRANTS SHALL HAVE A 5-INCH STORZ ADAPTER WITH NATIONAL STANDARD THREDS INSTALLED ON THE 4 1/2 - INCH FIRE HYDRANT OUTLET. THE ADAPTER SHALL BE CONSTRUCTED OF HIGH-STRENGTH ALUMINUM ALLOY. HAVE A TEFLON COATING ON THE SEAT AND THREADS, AND USE A RUBBER GASKET WITH TWO (2) SET SCREWS TO SECURE IT IN PLACE. THE ADAPTER SHALL BE PROVIDED WITH AN ALUMINUM ALLOY PRESSURE CAP. THE CAP SHALL BE ATTACHED TO THE HYDRANT BARREL OR STORZ ADAPTER WITH A CABLE TO PREVENT THEFT OF THE CAP. MODEL SHALL BE A STORZ HPH450 - 45NHWCAP OR EQUAL APPROVED BY GFES.
 3. HYDRANT SHALL BE INSTALLED NOT LESS THAN 18" OR MORE THAN 36" ABOVE FINISHED GRADE TO THE CENTERLINE OF THE HOSE OUTLETS.
 4. HYDRANT SHALL BE LOCATED NO CLOSER THAN 40' TO STRUCTURES
 5. PROVIDE BOLLARDS FOR ALL HYDRANTS
 6. HYDRANT SHALL BE LOCATED NO CLOSER THAN 40' TO STRUCTURES
 7. THE BACK OF THE HYDRANT ELBOW SHALL INCLUDE THRUST BLOCKING PER NFPA 24 - FIGURE A.7.3.1.
 8. A CONTRACTORS MATERIAL & TEST CERTIFICATE FOR UNDERGROUND PIPING AND A CHECKSHEET FOR TEST OF PRIVATE FIRE HYDRANTS REPORT FOR EACH HYDRANT SHALL BE PROVIDED AT THE FIRE SUPPLY FINAL INSPECTION.

- FIRE DEPARTMENT CONNECTION (FDC) NOTES:**
1. FDC SHALL BE INSTALLED 18" - 48" ABOVE FINISHED GRADE (TO THE CENTER OF THE CAP) AND BE PROVIDED WITH BRASS SCREW IN MALE PLUGS
 2. FDC SHALL BE LOCATED NO CLOSER THAN 40' TO ANY STRUCTURE
 3. FDC SHALL BE WITHIN 50' OF A PUBLIC HYDRANT. GFES SHALL APPROVE LOCATION
 4. WHEN NOT READILY APPARENT WHICH BUILDING AND/OR AREA AN FDC COVERS, IDENTIFYING MARKINGS SHALL BE PROVIDED. THE SIGNAGE SHALL BE MADE OF PERMANENT WHITE IN COLOR PLASTIC OR METAL SIGNS WITH A MINIMUM 2" RED NUMBERS. SIGN SHALL BE SECURELY ATTACHED TO THE PIV OR FDC STEM. IDENTIFY WITH NUMBERS THE ADDRESS AND IF APPLICABLE THE PORTION OF THE BUILDING PROTECTED BY THAT SPECIFIC FDC OR PIV.



A TEMPORARY PERMIT TO PRACTICE IN OREGON HAS BEEN GRANTED TO JEFFREY KLINKHARDT VALID ONLY UNTIL OFFICIAL ACTION IS TAKEN ON JULY 11, 2023 FOR OREGON REGISTRATION.

ISSUED FOR DESIGN	D. COEGL	J. KLINKHARDT	05-16-23
REV	DESIGN BY	CHECKED BY	DATE

BULL RUN FILTRATION PLANT



PACKAGE S-02 TEMPORARY SITE UTILITIES

ENGINEER/DESIGN ORIGINATOR	J. KLINKHARDT	DRAWING NUMBER	FP-001
ISSUED BY	J. KLINKHARDT		
ENGINEER	J. KLINKHARDT		
PROJ MGR	J. KLINKHARDT		

HYDRANT CALCULATIONS

Hydrant	Water Supply	Pressure Available	Backflow Preventer Loss	Grade Elevation	Friction Losses	Available Pressure
01	1500 GPM PER 2022.08.17 EMAIL FROM MURRAY SMITH: 31 PSIG RESIDUAL, 137 PSIG STATIC - GRADE: 720 FEET OF ELEVATION	ASSUMED TO BE AT THE PIPE AS A HYDRANT TEST WAS NOT PERFORMED. EXISTING PIPING IS ANTICIPATED TO HAVE A MINIMUM 3 FEET OF COVER WITH BOTTOM OF PIPE AT 4 FEET BELOW GRADE, ELEVATION LOSS TO GRADE: -2.0 PSIG (LOSS)	BACKFLOW PREVENTER PRESSURE LOSS BASED ON 774DCDA DATA SHEET: -3.0 PSIG (LOSS)	714 FEET	10 INCH PVC DR 18 DIAMETER IS 9.79 INCHES, APPROXIMATELY 20 FEET: -0.1 PSIG (LOSS) 12 INCH PVC DR 18 DIAMETER IS 11.65 INCHES, APPROXIMATELY 340 FEET: -0.7 PSIG (LOSS) 6 INCH PVC DR 18 DIAMETER IS 6.09 INCHES, APPROXIMATELY 20 FEET: -1.0 PSIG (LOSS)	24 PSIG AVAILABLE
02	1500 GPM PER 2022.08.17 EMAIL FROM MURRAY SMITH: 31 PSIG RESIDUAL, 137 PSIG STATIC - GRADE: 720 FEET OF ELEVATION	ASSUMED TO BE AT THE PIPE AS A HYDRANT TEST WAS NOT PERFORMED. EXISTING PIPING IS ANTICIPATED TO HAVE A MINIMUM 3 FEET OF COVER WITH BOTTOM OF PIPE AT 4 FEET BELOW GRADE, ELEVATION LOSS TO GRADE: -2.0 PSIG (LOSS)	BACKFLOW PREVENTER PRESSURE LOSS BASED ON 774DCDA DATA SHEET: -3.0 PSIG (LOSS)	716 FEET	10 INCH PVC DR 18 DIAMETER IS 9.79 INCHES, APPROXIMATELY 20 FEET: -0.1 PSIG (LOSS) 12 INCH PVC DR 18 DIAMETER IS 11.65 INCHES, APPROXIMATELY 340 FEET: -0.7 PSIG (LOSS) 6 INCH PVC DR 18 DIAMETER IS 6.09 INCHES, APPROXIMATELY 20 FEET: -1.0 PSIG (LOSS)	24 PSIG AVAILABLE
03	1500 GPM PER 2022.08.17 EMAIL FROM MURRAY SMITH: 31 PSIG RESIDUAL, 137 PSIG STATIC - GRADE: 720 FEET OF ELEVATION	ASSUMED TO BE AT THE PIPE AS A HYDRANT TEST WAS NOT PERFORMED. EXISTING PIPING IS ANTICIPATED TO HAVE A MINIMUM 3 FEET OF COVER WITH BOTTOM OF PIPE AT 4 FEET BELOW GRADE, ELEVATION LOSS TO GRADE: -2.0 PSIG (LOSS)	BACKFLOW PREVENTER PRESSURE LOSS BASED ON 774DCDA DATA SHEET: -3.0 PSIG (LOSS)	725 FEET	10 INCH PVC DR 18 DIAMETER IS 9.79 INCHES, APPROXIMATELY 20 FEET: -0.1 PSIG (LOSS) 12 INCH PVC DR 18 DIAMETER IS 11.65 INCHES, APPROXIMATELY 310 FEET: -1.4 PSIG (LOSS) 6 INCH PVC DR 18 DIAMETER IS 6.09 INCHES, APPROXIMATELY 20 FEET: -1.0 PSIG (LOSS)	20 PSIG AVAILABLE
04	1500 GPM PER 2022.08.17 EMAIL FROM MURRAY SMITH: 31 PSIG RESIDUAL, 137 PSIG STATIC - GRADE: 720 FEET OF ELEVATION	ASSUMED TO BE AT THE PIPE AS A HYDRANT TEST WAS NOT PERFORMED. EXISTING PIPING IS ANTICIPATED TO HAVE A MINIMUM 3 FEET OF COVER WITH BOTTOM OF PIPE AT 4 FEET BELOW GRADE, ELEVATION LOSS TO GRADE: -2.0 PSIG (LOSS)	BACKFLOW PREVENTER PRESSURE LOSS BASED ON 774DCDA DATA SHEET: -3.0 PSIG (LOSS)	717 FEET	10 INCH PVC DR 18 DIAMETER IS 9.79 INCHES, APPROXIMATELY 20 FEET: -0.1 PSIG (LOSS) 12 INCH PVC DR 18 DIAMETER IS 11.65 INCHES, APPROXIMATELY 2,100 FEET: -4.3 PSIG (LOSS) 6 INCH PVC DR 18 DIAMETER IS 6.09 INCHES, APPROXIMATELY 20 FEET: -1.0 PSIG (LOSS)	20 PSIG AVAILABLE
05	1500 GPM PER 2022.08.17 EMAIL FROM MURRAY SMITH: 29 PSIG RESIDUAL, 131 PSIG STATIC - GRADE: 733 FEET OF ELEVATION	ASSUMED TO BE AT THE PIPE AS A HYDRANT TEST WAS NOT PERFORMED. EXISTING PIPING IS ANTICIPATED TO HAVE A MINIMUM 3 FEET OF COVER WITH BOTTOM OF PIPE AT 4 FEET BELOW GRADE, ELEVATION LOSS TO GRADE: -2.0 PSIG (LOSS)	BACKFLOW PREVENTER PRESSURE LOSS BASED ON 774DCDA DATA SHEET: -3.0 PSIG (LOSS)	717 FEET	10 INCH PVC DR 18 DIAMETER IS 9.79 INCHES, APPROXIMATELY 40 FEET: -0.2 PSIG (LOSS) 12 INCH PVC DR 18 DIAMETER IS 11.65 INCHES, APPROXIMATELY 470 FEET: -1.0 PSIG (LOSS) 6 INCH PVC DR 18 DIAMETER IS 6.09 INCHES, APPROXIMATELY 20 FEET: -1.0 PSIG (LOSS)	27 PSIG AVAILABLE
06	1500 GPM PER 2022.08.17 EMAIL FROM MURRAY SMITH: 31 PSIG RESIDUAL, 137 PSIG STATIC - GRADE: 720 FEET OF ELEVATION	ASSUMED TO BE AT THE PIPE AS A HYDRANT TEST WAS NOT PERFORMED. EXISTING PIPING IS ANTICIPATED TO HAVE A MINIMUM 3 FEET OF COVER WITH BOTTOM OF PIPE AT 4 FEET BELOW GRADE, ELEVATION LOSS TO GRADE: -2.0 PSIG (LOSS)	BACKFLOW PREVENTER PRESSURE LOSS BASED ON 774DCDA DATA SHEET: -3.0 PSIG (LOSS)	720 FEET	10 INCH PVC DR 18 DIAMETER IS 9.79 INCHES, APPROXIMATELY 20 FEET: -0.1 PSIG (LOSS) 12 INCH PVC DR 18 DIAMETER IS 11.65 INCHES, APPROXIMATELY 340 FEET: -0.7 PSIG (LOSS) 6 INCH PVC DR 18 DIAMETER IS 6.09 INCHES, APPROXIMATELY 20 FEET: -1.0 PSIG (LOSS)	24 PSIG AVAILABLE