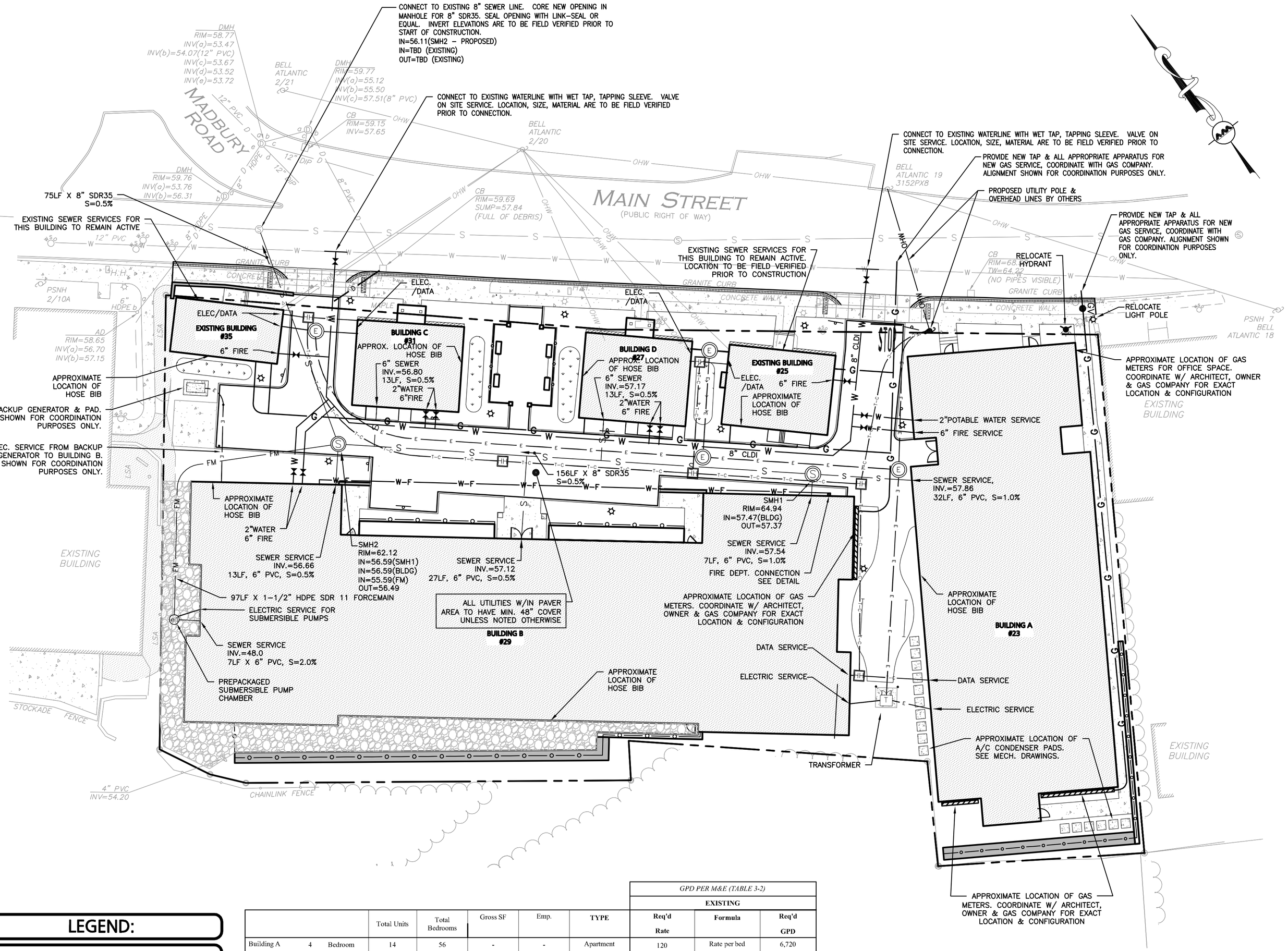

LEGEND:

- SEWER MANHOLE
- SEWER CLEANOUT
- SEWER VENT
- SEWER LINE — S —
- FORCE MAIN — FM —
- CONCRETE PIPE ENCASEMENT
- WATER LINE — W —
- FIRE PROTECTION — W-F —
- OVERHEAD WIRE — OHW —
- WATER VALVE
- HYDRANT
- TELE/CABLE CONDUIT — T-C —
- ELECTRIC MANHOLE/SPLICE BOX
- ELECTRICAL CONDUIT — E —
- HAND HOLE

			Total Units	Total Bedrooms	Gross SF	Emp.	TYPE	GPD PER M&E (TABLE 3-2) EXISTING Req'd Rate	Formula	Req'd GPD
Building A	4	Bedroom	14	56	-	-	Apartment	120	Rate per bed	6,720
Building A			-	-	3,300	10	Office	13	Rate per Emp.	130
									Total Proposed =	6,850

			Total Units	Total Bedrooms	Gross SF	Emp.	TYPE	GPD PER M&E (TABLE 3-2) PROPOSED PEAK Req'd Rate	Formula	Req'd GPD
Building B	1	Bedroom	7	7	-		Apartment	120	Rate per bed	840
	3	Bedroom	8	24	-		Apartment	120	Rate per bed	2,880
	4	Bedroom	21	84	-		Apartment	120	Rate per bed	10,080
Building A	4	Bedroom	12	48	-		Apartment	120	Rate per bed	5,760
25 Main Street	4	Bedroom	2	8	-		Apartment	120	Rate per bed	960
35 Main Street	4	Bedroom	2	8	-		Apartment	120	Rate per bed	960
Building A			-	-	2,944	10	Office	13	Rate per Emp.	130
Building C			-	-	2,940	10	Office	13	Rate per Emp.	130
Buildind D			-	-	2,940	10	Office	13	Rate per Emp.	130
									Total Proposed =	21,870

THE FLOWS LISTED BELOW ARE FOR DESIGN PURPOSES ONLY AS ASSOCIATED WITH THE PRE-PACKAGED PUMPSTATION. THESE FLOWS HAVE ALREADY BEEN ACCOUNTED FOR IN THE OVERALL PROJECT FLOW.

Pump Station Flows Only

			Total Units	Total Bedrooms	TYPE	GPD PER M&E (TABLE 3-2) Req'd Rate	Formula	Req'd GPD
Building B	1	Bedroom	1	1	Apartment	120	Rate per bed	120
	3	Bedroom	0	0	Apartment	120	Rate per bed	0
	4	Bedroom	5	20	Apartment	120	Rate per bed	2,400
							Total Proposed =	2,520

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

UTILITY NOTES:

1. THERE SHALL BE NO PHYSICAL CONNECTION BETWEEN A PUBLIC OR PRIVATE POTABLE WATER SUPPLY SYSTEM AND A SEWER OR SEWER APPURTENANCE WHICH WOULD PERMIT THE PASSAGE OF SEWAGE OR POLLUTED WATER INTO THE POTABLE SUPPLY. NO WATER PIPE SHALL PASS THROUGH OR COME IN CONTACT WITH ANY PART OF A SEWER OR SEWER MANHOLE.
   A. SEWERS SHALL BE LOCATED AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN.
   B. A DEVIATION FROM THE SEPARATION REQUIREMENTS OF (1) OR (2) ABOVE SHALL BE ALLOWED WHERE NECESSARY TO AVOID CONFLICT WITH SUBSURFACE STRUCTURES, UTILITY CHAMBERS, AND BUILDING FOUNDATIONS, PROVIDED THAT THE SEWER IS CONSTRUCTED IN ACCORDANCE WITH THE FORCE MAIN CONSTRUCTION REQUIREMENTS SPECIFIED IN ENV-WQ 704.06.
      a. WHENEVER SEWERS MUST CROSS WATER MAINS, THE SEWER SHALL BE CONSTRUCTED AS FOLLOWS:
      b. VERTICAL SEPARATION OF THE SEWER AND WATER MAIN SHALL BE NOT LESS THAN 18 INCHES, WITH WATER ABOVE SEWER; AND
      c. SEWER PIPE JOINTS SHALL BE LOCATED AT LEAST 6 FEET HORIZONTALLY FROM THE WATER MAIN.
      d. HOWEVER, SHOULD CONSTRUCTION OPERATIONS REVEAL OR EXPOSE A WATERLINE MAIN OR SERVICE RUNNING APPROXIMATELY PARALLEL AND LESS THAN 10 FEET HORIZONTALLY FROM THE PROPOSED SEWER INSTALLATION AND WHERE IT IS NOT PRACTICABLE TO RELOCATE THE SEWER, THE FOLLOWING METHODS OF PROTECTION MUST BE EMPLOYED:
         1) IF THE ABOVE SEPARATION CANNOT BE ACHIEVED, THE SEWER SHALL BE DUCTILE IRON PIPE OF THE SAME SIZE SHALL BE UTILIZED. APPROPRIATE MANUFACTURED FITTINGS SHALL BE EMPLOYED TO ADAPT THE IRON PIPE TO THE CONTRACT SEWER PIPE.
         2) WHENEVER THE WATERLINE CROSSES OVER THE NEW SEWER WITH LESS THAN 18 INCHES OF SEPARATION, THE SEWER PIPE FOR A DISTANCE OF 6 FEET ON EACH SIDE OF THE WATERLINE SHALL BE CLASS 52 DUCTILE IRON PIPE. APPROPRIATE MANUFACTURED FITTINGS SHALL BE EMPLOYED TO ADAPT THE IRON PIPE TO THE CONTRACT SEWER PIPE. AS AN ALTERNATIVE, THE WATERLINE MAY BE RAISED, IF FEASIBLE, TO ACHIEVE THE REQUIRED SEPARATION.
         3) SHOULD THE WATERLINE IN EITHER SITUATION BE AT OR BELOW THE SEWER ELEVATION, THE WATERLINE OR THE SEWER MUST BE RELOCATED TO ACHIEVE 10 FT. SEPARATION OR THE WATERLINE RAISED.
2. THE LATEST STANDARDS OF THE TOWN OF DURHAM, DEPARTMENT OF PUBLIC WORKS, WASTEWATER DIVISION SHALL BE FOLLOWED WHEN PERFORMING ANY SANITARY SEWER WORK. SEWER WORK WILL BE INSPECTED BY TOWN OF DURHAM PERSONNEL AND ALL COSTS SHALL BE THE RESPONSIBILITY OF THE DEVELOPER.
3. THE LATEST STANDARDS OF THE TOWN OF DURHAM AND DEPARTMENT OF PUBLIC WORKS SHALL BE FOLLOWED WHEN INSTALLING ANY WATER LINES, AND ALL WATER LINE WORK WILL BE INSPECTED BY TOWN OF DURHAM PERSONNEL. ALL CONTRACTORS SHALL BE RESPONSIBLE FOR PRESSURE TESTING, DISINFECTING, AND FLUSHING OF LINES. INSPECTION COSTS SHALL BE THE RESPONSIBILITY OF THE DEVELOPER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION AND REMOVAL OF ALL NECESSARY DISINFECTING AND FLUSHING TAPS AS DIRECTED.
4. THE CONTRACTOR SHALL REFER TO ARCHITECTS PLANS AND SPECIFICATIONS FOR ACTUAL LOCATION OF ALL ROOF DRAIN LATERALS AND UTILITY ENTRANCES TO INCLUDE SANITARY SEWER LATERALS, DOMESTIC AND FIRE PROTECTION WATER SERVICE, ELECTRIC, TELEPHONE, AND GAS SERVICE. THE CONTRACTOR SHALL COORDINATE INSTALLATION OF UTILITIES IN SUCH A MANNER AS TO AVOID CONFLICTS AND COORDINATE WITH THE PROPER AGENCY THE LOCATION AND SCHEDULING OF CONNECTIONS WITH THEIR FACILITIES.
5. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE ENGINEER FOR RESOLUTION.
6. ABANDONED EXISTING UTILITIES AND UTILITIES TO BE ABANDONED SHALL EITHER BE ABANDONED IN PLACE AS NOTED OR SHALL BE REMOVED AND DISPOSED OF AS SPECIFIED. ALL UTILITIES SCHEDULED FOR ABANDONMENT OR REMOVAL AND DISPOSAL MUST BE COORDINATED BY THE CONTRACTOR WITH THE RESPECTIVE UTILITY OWNER. WHEN ABANDONED UTILITIES ARE TO BE LEFT IN PLACE, PLUG OR CAP THE ENDS OF THE CONDUITS AND PIPES. REMOVE ABANDONED UTILITY MANHOLES, JUNCTION BOXES AND SIMILAR STRUCTURES TO A MINIMUM DEPTH OF 4 FEET BELOW FINISHED GRADE AND PUNCTURE OR BREAK THE BOTTOM SLABS OF MANHOLES AND SIMILAR STRUCTURE TO ALLOW DRAINAGE. BACKFILL AND COMPACT EXCAVATIONS RESULTING FROM REMOVAL OF UTILITY FACILITATES, AS REQUIRED TO RESTORE THE ORIGINAL GRADE.
7. THE CONTRACTOR SHALL MAKE ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENTS OF NATURAL GAS, ELECTRIC, TELEPHONE AND ANY OTHER UTILITY BY THE UTILITY OWNER.
8. THE CONTRACTOR SHALL USE THE FOLLOWING PIPE MATERIALS:
   - SEWER: PVC (POLYVINYL CHLORIDE), SCHEDULE 35
   - DRAIN: HDPE (HIGH DENSITY CORRUGATED POLYETHYLENE PIPE WITH SMOOTH INNER WALL), ASTM D2321 (UNLESS OTHERWISE SPECIFIED ON PLAN) RCP CLASS IV (REINFORCED CONCRETE PIPE, WHERE SPECIFIED ON PLAN)
   - WATER: CLDI (CEMENT LINED DUCTILE IRON) CLASS 52 AND SHALL BE RESTRAINED AT ALL JOINTS WITH MEGALUG TYPE
10. ALL UTILITY CONNECTIONS THROUGH THE BUILDING WALL SHALL BE BY MEANS OF FLEXIBLE JOINTS.
11. ALL WATER GATES TO PROPOSED HYDRANTS ARE 6" DIAMETER UNLESS OTHERWISE NOTED.
12. ALL WATER MAINS SHALL BE INSTALLED WITH A MINIMUM OF 5 FEET OF COVER AND A MAXIMUM OF 8 FEET OF COVER EXCEPT AS NOTED OR DETAILED OTHERWISE.
13. ALL HYDRANTS SHALL BE INSTALLED WITH A 6 INCH CLDI RUNOUT AND SHALL BE INSTALLED WITH APPROPRIATELY SIZED GATE VALVE, BOX, AND TEE FITTING. ALL HYDRANTS SHALL MEET LOCAL MUNICIPAL SPECIFICATION REQUIREMENTS AND SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATIONS.
14. ALL WATER MAINS 3 INCHES AND LARGER SHALL BE CEMENT LINED DUCTILE IRON – CLASS 52, AND SHALL BE INSTALLED WITH APPROPRIATELY SIZED FITTINGS AND GATE VALVES.
15. DOMESTIC WATER SERVICES SHALL BE INSTALLED WITH APPROPRIATELY SIZED GATE, BOX AND TEE FITTINGS.
16. ALL WATER MAIN APPURTENANCES, MATERIALS, METHODS OF INSTALLATION AND TESTING REQUIREMENTS SHALL MEET OR EXCEED THE TOWN OF DURHAM REQUIREMENTS.
17. GENERALLY, WATER MAIN FITTINGS, VALVES AND HYDRANTS SHOWN ON THIS DRAWING ARE FOR INSTALLATION LOCATION PURPOSES. THE CONTRACTOR SHALL NOTE THAT NOT ALL FITTINGS, VALVES AND HYDRANTS ARE NOTED, SHOWN OR INDICATED.
18. ALL WATER MAIN FITTINGS, VALVES AND TEES ETC. SHALL BE RESTRAINED WITH THRUST BLOCKS AS REQUIRED BY THE TOWN OF DURHAM WHERE ADEQUATE RESTRAINT CANNOT BE OBTAINED WITH THRUST BLOCKS, USE OF RETAINER GLANDS IS RECOMMENDED.
19. THE CONTRACTOR SHALL FIELD VERIFY/LOCATE EXISTING WATER MAINS AND WATER SERVICES.
20. VALVES 8 INCHES AND SMALLER SHALL BE GATE VALVES AND SHALL BE RESILIENT SEAT, MODIFIED WEDGE DISK CONFORMING TO AWWA C-509, AND BE APPROVED BY THE MUNICIPALITY.
21. PRESSURE AND LEAKAGE TEST, DISINFECTING AND FLUSHING SHALL BE IN ACCORDANCE WITH ALL LOCAL MUNICIPAL STANDARDS AND REQUIREMENTS. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS IN CONNECTION WITH UTILITY TESTS, FLUSHING AND INSPECTIONS AS REQUIRED BY THE LOCAL MUNICIPALITY.
22. EXISTING LIGHT POLES TO BE RELOCATED AS NECESSARY.
23. ALL BUILDINGS SHALL HAVE FIRE SPRINKLER SERVICE.
24. ALL UTILITY PIPING AND WIRING SHALL BE LOCATED UNDERGROUND.
25. ALL DETAILS RELATING TO THE INSTALLATION AND MATERIALS FOR WATER, WASTEWATER, AND STORMWATER INFRASTRUCTURE AND UTILITY CONNECTIONS SHALL BE SUBJECT TO FINAL REVIEW AND APPROVAL BY THE DURHAM DEPARTMENT OF PUBLIC WORKS. SHOP DRAWINGS FOR ALL VALVES, HYDRANTS, PIPES, FITTINGS, ADAPTORS, PIPE BEDDING, AGGREGATE, FILTER AND BACKFILL MATERIALS, AND PERMEABLE PAVERS ARE TO BE SUBMITTED IN DUPLICATE TO THE TOWN ENGINEER FOR REVIEW AND APPROVAL A MINIMUM OF 30 DAYS PRIOR TO INSTALLATION.

R: \PROJECTS\1925-01\CIVIL\DRAWINGS\CURRENT\C-1925-01_C-3_UTILITIES.DWG

DeSTEFANO ARCHITECTS
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FINAL APPROVAL BY DURHAM PLANNING BOARD. CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER.

MICHAEL BEHRENDT DATE

PROFESSIONAL ENGINEER FOR ALLEN & MAJOR ASSOCIATES, INC.

REV	DATE	DESCRIPTION

APPLICANT\OWNER:

ORION UNH LLC
225 FRANKLIN STREET, 26TH FLOOR
BOSTON, MA 02110

PROJECT:

ORION
STUDENT HOUSING
25/35 MAIN STREET
DURHAM, NEW HAMPSHIRE

PROJECT NO.	1925-01	DATE:	06-09-14
SCALE:	1" = 20'	DWG. NAME:	UTILITIES
DRAFTED BY:	SM	CHECKED BY:	RPC

PREPARED BY:

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DRAWING TITLE: UTILITY PLAN

SHEET No. C-3A

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