APPENDIX B
2012 BUILDING CODE SUMMARY
FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2 FAMILY DWELLINGS AND TOWNHOUSES)

Name of Project: DURHAM TECHNICAL COMMUNITY COLLEGE
Address: 1637 EAST LAWSON STREET Zip Code 27703
Proposed Use: FACILITIES SERVICE BUILDING
Owner or Auth. Agent: MARSHALL FULLER Phone # 919-536-7200 Email FULLERM@DURHAMTECH.EDU
Owned By: ☐ City/County ☒ Private ☐ State
Code Enforcement Jurisdiction: ☒ City DURHAM ☐ County ☒ State D.O.I.

LEAD DESIGN PROFESSIONAL: ROBERT SOTOLONGO

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	EMAIL
Architectural	DTW ARCHITECTS	R. SOTOLONGO	04837	919.317.4020	RSOTOLONGO@DTWARCH.COM
Civil	COULTER JEWELL THAMES	V. CHIRICHELLA	031441	919.682.0368	vice@cjtpa.com
Electrical	EDMONDSON ENG.	D. HAYES	028869	919.544.1936	DENNIS.HAYES@EDMONDSONENGINEERS.COM
Fire Alarm	EDMONDSON ENG.	D. HAYES	028869	919.544.1936	DENNIS.HAYES@EDMONDSONENGINEERS.COM
Plumbing	EDMONDSON ENG.	C. CROWL	028862	919.544.1936	CHARLES.CROWL@EDMONDSONENGINEERS.COM
Mechanical	EDMONDSON ENG.	C. CROWL	028862	919.544.1936	CHARLES.CROWL@EDMONDSONENGINEERS.COM
Spr.–Stand.	EDMONDSON ENG.	C. CROWL	028862	919.544.1936	CHARLES.CROWL@EDMONDSONENGINEERS.COM
Structural	SUMMIT ENG.	J. BALLONI	044430	919.544.6436	joseph.balloni@summitde.net
Ret. Walls >5' High	SUMMIT ENG.	J. BALLONI	044430	919.544.6436	joseph.balloni@summitde.net

2012 EDITION OF NC CODE FOR: ☒ New Construction ☐ Addition ☐ Upfit
EXISTING: ☐ Reconstruction ☐ Alteration ☐ Repair ☐ Renovation
CONSTRUCTED: _____ ORIGINAL USE(S): _____
RENOVATED: _____ CURRENT USE(S): _____
PROPOSED USE(S): _____

BUILDING DATA

Construction Type: ☐ I-A ☐ II-A ☐ III-A ☐ IV ☐ V-A
☐ I-B ☒ II-B ☐ III-B ☐ V-B

Sprinklers: ☐ No ☐ Partial ☒ Yes ☒ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
Standpipes: ☒ No ☐ Yes Class ☐ I ☐ II ☐ III ☐ Wet ☐ Dry
Fire District: ☒ No ☐ Yes **Flood Hazard Area:** ☒ No ☐ Yes
Building Height: 35 Feet

Gross Building Area:

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
6th Floor			
5th Floor			
4th Floor			
3rd Floor			
2nd Floor			
Mezzanine			
1st Floor		11,105	
Basement			
TOTAL		11,105	

ALLOWABLE AREA

Occupancy:

Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☒
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 ☐ I-2 ☐ I-3 ☐ I-4
I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☒ S-1 Moderate ☐ S-2 Low ☒ High-piled ☐ Parking Garage
☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Misc. ☐

Accessory Occupancies:

Assembly ☐ A-1 ☐ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☐
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 ☐ I-2 ☐ I-3 ☐ I-4
I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High-piled ☐ Parking Garage
☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Misc. ☐

Incidental Accessory Occupancies (See table 508.2.5)

- ☐ Furnace room where any piece of equipment is over 400,000 Btu per hour input
- ☐ Rooms with boilers where the largest piece of equipment is over 15 psi and 10 horsepower
- ☐ Refrigerant machine room
- ☐ Hydrogen cutoff rooms, not classified as Group H
- ☐ Incinerator rooms
- ☐ Paint shops, not classified as Group H, located in occupancies other than Group F
- ☐ Laboratories and vocational shops, not classified as Group H, located in a Group E or I-2 occupancy
- ☐ Laundry rooms over 100 square feet
- ☐ Group I-3 cells equipped with padded surfaces
- ☐ Group I-2 waste and linen collection rooms
- ☐ Waste and linen collection rooms over 100 square feet
- ☐ Stationary storage battery systems having a liquid electrolyte capacity of more than 50 gallons, or a lithium-ion capacity of 1,000 pounds used for facility standby power, emergency power, or uninterrupted power supplies
- ☐ Rooms containing fire pumps
- ☐ Group I-2 storage rooms over 100 square feet
- ☐ Group I-2 commerical kitchens
- ☐ Group I-2 laundries equal to or less than 100 square feet
- ☐ Group I-2 rooms or spaces that contain fuel-fired heating equipment

ALLOWABLE AREA (continued)

Special Uses: ☐ 402 ☐ 403 ☐ 404 ☐ 405 ☐ 406 ☐ 407 ☐ 408 ☐ 409 ☐ 410 ☐ 411 ☐ 412 ☐ 413 ☐ 414 ☐ 415 ☐ 416 ☐ 417 ☐ 418 ☐ 419 ☐ 420 ☐ 421 ☐ 422 ☐ 423 ☐ 424 ☐ 425 ☐ 426 ☐ 427

Special Provisions: ☐ 509.2 ☐ 509.3 ☐ 509.4 ☐ 509.5 ☐ 509.6 ☐ 509.7 ☐ 509.8 ☐ 509.9

Mixed Occupancy: ☐ No ☒ Yes Separation: ____ Hr. Exception ____

☐ Incidental Use Separation (508.2.5)
This separation is not exempt as a Nonseparated Use (see exceptions).

☒ Nonseparated Use (508.3.2)
The required type of construction for the building shall be determined by applying the height and area limitations for each of the applicable occupancies to the entire building. The most restrictive type of construction, so determined shall apply to the entire building.

☐ Separated Use (508.3.3) – See below for area calculations
For each story, the area of occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

$$\frac{\text{Actual Area of Occupancy A}}{\text{Allowable Area of Occupancy A}} + \frac{\text{Actual Area of Occupancy B}}{\text{Allowable Area of Occupancy B}} \leq 1$$
$$+ \quad\quad + \ \ldots \ = \quad \leq 1.00$$

* S1 MOST RESTRICTIVE USE

STORY NO.	DESCRIPTION AND USE	(A) BLDG. AREA PER STORY (ACTUAL)	(B) TABLE 503[5] AREA	(C) AREA FOR OPEN SPACE INCREASE[1]	(D) AREA FOR SPRINKLER INCREASE[2]	(E) ALLOWABLE AREA OR UNLIMITED[3]	(F) MAXIMUM BUILDING AREA[4]
1	S1*	11,105	17,500	13,125	52,500	83,125	83,125

1. Frontage area increases from Section 506.2 are computed thus:
   a. Perimeter which fronts a public way or open space having 20 feet minimum width = .448 (F)
   b. Total Building Perimeter = 448 (P)
   c. Ratio (F/P) = 100% (F/P)
   d. W = Minimum width of public way = 30' (W)
   e. Percent of frontage increase I_f = 100 [F/P – 0.25] x W/30 = 75% (%)
2. The sprinkler increase per section 506.3 is as follows:
   a. Multi-story building I_s = 200 percent
   b. Single story building I_s = 300 percent
3. Unlimited area applicable under conditions of Sections 507.
4. Maximum Building Area = total number of stories in the building x E (506.4).
5. The maximum area of open parking garages must comply with Table 406.3.5. The maximum area of air traffic control towers must comply with Table 412.1.2.

ALLOWABLE HEIGHT

	ALLOWABLE (TABLE 503)	INCREASE FOR SPRINKLERS	SHOWN ON PLANS	CODE REFERENCE
Type of Construction	Type 11-B		Type 11-B	
Building Height in Feet	55'	Feet=H+20'= 75	30'	
Building Height in Stories	2	Stories+1= 3	1	

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (w/ REDUCTION)*	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	DESIGN # FOR RATED PENETRATION	DESIGN # FOR RATED JOINTS
Structural frame, including columns, girders, trusses							
Bearing walls		0					
Exterior		0					
North		0					
East		0					
West		0					
South		0					
Interior		0					
Nonbearing walls and partitions		0					
Exterior		0					
North		0					
East		0					
West		0					
South		0					
Interior walls and partitions		0					
Floor construction including supporting beams and joists		0					
Roof construction including supporting beams and joists		0					
Shafts – Exit		1 HR	NA				
Shafts – Other		1 HR	NA				
Corridor Separation		0	NA				
Occupancy Separation		0	NA				
Party/Fire Wall Separation		0	NA				
Smoke Barrier Separation		0	NA				
Tenant Separation		0	NA				
Incidental Use Separation		1	NA				

*Indicate section number permitting reduction

NA – NOT APPLICABLE

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: ☐ No ☒ Yes
Exit Signs: ☐ No ☒ Yes
Fire Alarm: ☐ No ☒ Yes
Smoke Detection Systems: ☐ No ☐ Yes ☒ Partial SEE FA 1.1
Panic Hardware: ☐ No ☒ Yes

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: T2

- ☒ Fire and/or smoke rated wall locations (Chapter 7)
- ☒ Assumed and real property line locations SEE SHEET T2
- ☒ Exterior wall opening area with respect to distance to assumed porperty lines (705.8)
- NA ☐ Existing structures within 30 feet of the proposed building
- ☒ Occupancy types for each area as it relates to occupancy load calculations
- ☒ Occupant loads for each area
- ☒ Exit access travel distances (1016)
- ☒ Common path of travel distances (1014.3 & 1028.9)
- ☒ Dead end lengths (1018.4)
- ☒ Clear exit widths for ech exit door
- ☒ Maximum calculated occupant load capacity each exit door can sccomodate based on egress width (1005.1)
- ☒ Actual occupant load for each exit door
- NA ☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
- ☒ Location of doors with panic hardware (1008.1.10)
- NA ☐ Location of doors with delayed egress locks and the amount of delay (1008.1.9.7.)
- NA ☐ Location of doors with electromagnetic egress locks (1008.1.9.8)
- NA ☐ Location of doors equipped with hold-open devices
- NA ☐ Location of emergency escape windows (1029)
- NA ☐ The square footage of each fire area (902)
- NA ☐ The square footage of each smoke compartment (407.4)
- NA ☐ Note any code exceptions or table notes that may have been untilized regarding the items above

ACCESSIBLE DWELLING UNITS (SECTION 1107) N/A

TOTAL UNITS	ACCESSIBLE UNITS REQUIRED	ACCESSIBLE UNITS PROVIDED	TYPE A UNITS REQUIRED	TYPE A UNITS PROVIDED	TYPE B UNITS REQUIRED	TYPE B UNITS PROVIDED	TOTAL ACCESSIBLE UNITS PROVIDED

ACCESSIBLE PARKING (SECTION 1106)

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES		# OF ACCESSIBLE SPACES PROVIDED			TOTAL # ACCESSIBLE PROVIDED
	REQUIRED	PROVIDED	REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH 132" ACCESS AISLE	VAN SPACES WITH 8' ACCESS AISLE	
	12	12	0	0	2	2
TOTAL	12	12	0	0	2	2

STRUCTURAL DESIGN

DESIGN LOADS:

Importance Factors: Wind (I_W) 1.0; Snow (I_S) 1.0; Seismic (I_E) 1.0
Live Loads: Roof 20 psf; Mezzanine 50 psf; Floor N/A psf
Ground Snow Load: 15 psf
Wind Load: Basic Wind Speed 90 mph (ASCE-7); Exposure Category C; Wind Base Shears (for MWFRS) Vx = N/A Vy = N/A

SEISMIC DESIGN CATEGORY: ☐ A ☒ B ☐ C ☐ D
Provide the following Seismic Design Parameters:
Occupancy Category (Table 1604.5) ☐ I ☒ II ☐ III ☐ IV
Spectral Response Acceleration S_S 19.8 %g S_1 7.8 %g
Site Classification (Table 1613.5.2) ☐ A ☐ B ☐ C ☒ D ☐ E ☐ F
☐ Field Test ☒ Presumptive ☐ Historical Data
Basic structural system (check one)
☐ Bearing Wall ☐ Dual w/Special Moment Frame
☐ Building Frame ☐ Dual w/Intermediate R/C or Special Steel
☒ Moment Frame ☐ Inverted Pendulum
Seismic base shear: Vx = N/A Vy = N/A
Analysis Procedure: ☐ Simplified ☒ Equivalent Lateral Force ☐ Dynamic
Architectural, Mechanical, Components anchored? ☐ Yes ☐ No

LATERAL DESIGN CONTROL: ☐ Earthquake ☒ Wind

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) N/A psf
Presumptive Bearing capacity 2,000 psf
Pile size, type, and capacity N/A

SPECIAL INSPECTIONS REQUIRED: ☐ Yes ☒ No

PLUMBING FIXTURE REQUIREMENTS (TABLE 2902.1)

USE		WATER CLOSETS MALE	WATER CLOSETS FEMALE	URINALS	LAVATORIES MALE	LAVATORIES FEMALE	SHOWERS /TUBS	DRINKING FOUNTAINS REGULAR	DRINKING FOUNTAINS ACCESSIBLE
SPACE	EXISTING								
	NEW	2	1		2	1		1	1
	REQUIRED	2	1		2	1		1	1

SPECIAL APPROVALS

Special approval: (Local Jurisdiction, Department of Insurance, OSC, DPI, DHHS, ICC, etc., describe below)

SITE PLAN APPROVAL / CITY OF DURHAM

ENERGY SUMMARY

ENERGY REQUIREMENTS:

The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If energy cost budget method, state the annual energy cost budget vs. allowable annual energy cost budget.

Climate Zone: ☐ 3 ☒ 4 ☐ 5
Method of Compliance:
☒ Prescriptive (Energy Code)
☐ Performance (Energy Code)
☐ Prescriptive (ASHRAE 90.1)
☐ Performance (ASHRAE 90.1)

THERMAL ENVELOPE

Roof/Ceiling Assembly (each assembly)
Description of assembly METAL BUILDING CONTINUOUS INSULATION
U-Value of total assembly U-.033
R-Value of insulation R-30 AND THERMAL BLOCKS R-5 RIGID INSULATION
Skylights in each assembly NA
U-Value of skylight
Total square footage of skylights in each assembly

Exterior Walls (each assembly)
Description of assembly METAL BUILDING CONTINUOUS INSULATION
U-Value of total assembly
R-Value of insulation THE FIRST LAYER R-13 INSUL. BATTS IS INSTALLED CONTINUOUSLY PERPENDICULAR TO THE GIRTS AND IS COMPRESSED AS THE METAL SKIN IS ATTACHED TO THE GIRTS. R-19 AND R-10 AT BRICK
Openings (windows or doors with glazing) 1" INSULATED GLAZING / TRANSLUCENT PANEL
U-Value of assembly U-0.28 WINTER U-0.22
Solar heat gain coefficient 0.32 0.18
Projection factor N/A N/A
Door R-Values

Walls below grade (each assembly)
Description of assembly N/A
U-Value of total assembly
R-Value of insulation

Floors over unconditioned space (each assembly)
Description of assembly N/A
U-Value of total assembly
R-Value of insulation

Floors slab on grade
Description of assembly
U-Value of total assembly
R-Value of insulation R-10 RIGID INSULATION 36" WIDE AT BUILDING PERIMETER
Horizontal/vertical requirement
Slab heated

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone 4A
Winter dry bulb 15.0° F
Summer dry bulb 90° F

Interior design conditions
Winter dry bulb OFFICE: 70° F – WAREHOUSE: 65° F
Summer dry bulb OFFICE: 75° F – WAREHOUSE (ALTERNATE G-2): 78° F
Relative humidity 55% (cooling only)

Building heating load OFFICE AND WAREHOUSE: 280,000 Btu/h
Building cooling load OFFICE: 91,200 Btu/h – WAREHOUSE (ALT. G-2): 190,800 Btu/h

Mechanical Spacing Conditioning System
Unitary
Description of unit OFFICE: S-S HEAT PUMP; WAREHOUSE (ALT. G-2): PACKAGED HEAT PUMP
Heating efficiency SPLIT SYSTEM HEAT PUMPS: COP = 3.6; PACK. HEAT PUMP: COP = 2.4
Cooling efficiency SPLIT SYSTEM HEAT PUMP: SEER = 16; PACK. HEAT PUMP: SEER = 11
Size category of unit S-S HEAT PUMP: <65,000 Btu/h; PACK. HEAT PUMP: 65,000 – 135,000 Btu/h
Boiler
Size category. If oversized, state reason. N/A
Chiller
Size category. If oversized, state reason. N/A

List equipment efficiencies SEE SCHEDULES (on "M" drawing sheets)

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance
Energy Code: ☒ Prescriptive ☐ Performance
ASHRAE 90.1: ☐ Prescriptive ☐ Performance

Lighting schedule (each fixture type)
Lamp type required in fixture
Number of lamps in fixture
Ballast type used in the fixture
Number of ballasts in the fixture
Total wattage per fixture
Total interior wattage specified vs. allowed
Total exterior wattage specified vs. allowed

Additional Prescriptive Compliance
- ☐ 506.2.1 More Efficient Mechanical Equipment
- ☒ 506.2.2 Reduced Lighting Power Density
- ☐ 506.2.3 Energy Recovery Ventilation Systems
- ☐ 506.2.4 Higher Efficiency Service Water Heating
- ☐ 506.2.5 On-site Supply of Renewable Energy
- ☐ 506.2.6 Automatic Daylighting Control Systems

DATA SHEET

NEW FACILITIES SERVICE BUILDING FOR:

DURHAM TECHNICAL COMMUNITY COLLEGE

1700 COOPER ST.
DURHAM,NC

SCO # 17-16794-01A
NCCCS # 2246

PROJECT NUMBER
17005

ROBERTO L. SOTOLONGO — REGISTERED — NORTH CAROLINA — 04837 — 9-17-2018 — ARCHITECT — DURHAM, N.C.
Robert Sotolongo

DTW ARCHITECTS AND PLANNERS, LTD. — REGISTERED ARCHITECTURAL CORPORATION — CERT. NO. 162 — NORTH CAROLINA — DURHAM, N.C.

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Revisions

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