CLEMSON UNIVERSITY LAND STEWARDSHIP FOUNDATION / LICAR, LLC

CU-ICAR FLEX LAB ONE

GREENVILLE, SC

Issue Date/ Description: 08.17.2020 PRICING SET
MPS Project No: 019640.00
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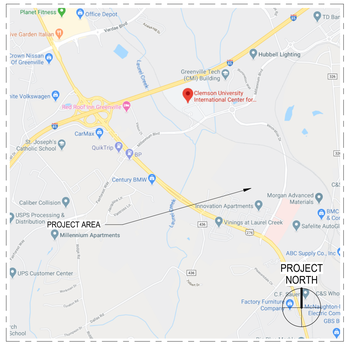
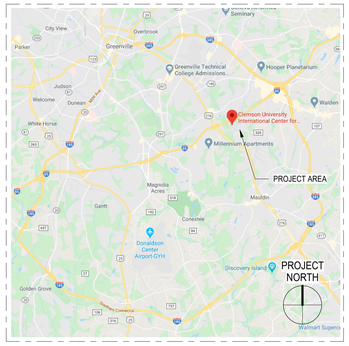


SITE MAP



VICINITY MAP

DRAWING LIST

SHEET NO	SHEET NAME
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CIVIL	
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C2.1	WATER AND SEWER PLAN
C2.2	WATER AND SEWER DETAILS
C2.3	WATER AND SEWER DETAILS
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C3.1	PAVING, GRADING, AND DRAINAGE PLAN
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C3.4	PAVING, GRADING, AND DRAINAGE DETAILS
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mcmillan pazdan smith ARCHITECTURE

CONSULTANT LOGO

SEALS

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STATE OF SOUTH CAROLINA — JONATHAN DARVIN — Greenville, SC — No. 29607 — REGISTERED ARCHITECT

CLEMSON UNIVERSITY LAND STEWARDSHIP FOUNDATION / LICAR, LLC

CU-ICAR FLEX LAB ONE

GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

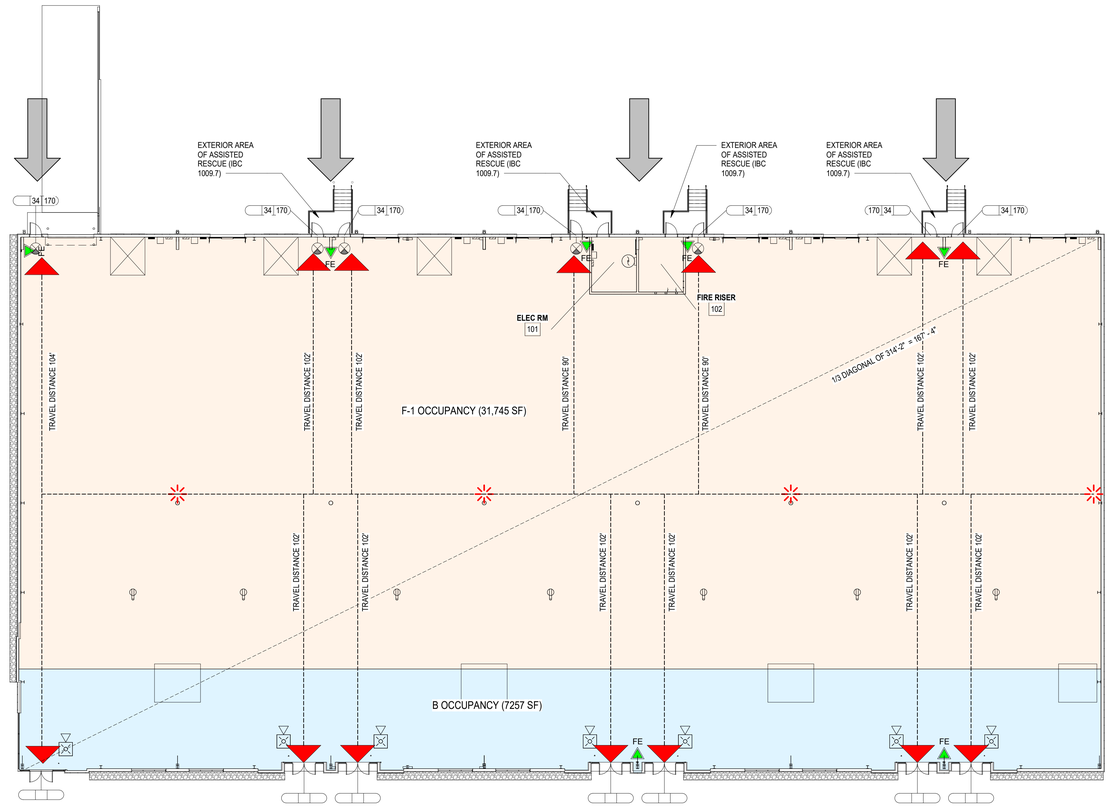
NOT FOR CONSTRUCTION

PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:
COVER SHEET

SHEET NO. G001

PROJ. NO. 019640.00



C1 G010 **LIFE SAFETY**
1/16" = 1'-0"

LIFE SAFETY LEGEND

FIRE RATING AND NOTES:

1. SEE FLOOR PLAN(S) AND WALL TYPE SCHEDULE FOR WALL ASSEMBLY TYPES AND CONSTRUCTION
2. FIRE CAULK AROUND ALL ELECTRICAL CONDUIT PASSING THROUGH WALLS.
3. SEE MECHANICAL AND PLUMBING DRAWINGS FOR SPECIAL DETAILS WHERE DUCTWORK AND PIPING PASS THROUGH WALLS.
4. REFER TO SHEET G0.03 & G1.01 FOR GENERAL FLOOR, ROOF, AND STRUCTURAL RATING REQUIREMENTS AND RELEVANT PROPOSED PROTECTION SYSTEMS.

200 36 240 — DOOR EXIT OCCUPANT LOAD / DOOR EXIT OCCUPANT CAPACITY / DOOR CLEAR EXIT WIDTH (IN INCHES)

RATED - 1 HOUR

RATED - 2 HOUR

EGRESS PATH OF TRAVEL

FE — BRACKET MOUNTED FIRE EXTINGUISHER

FEC — EXTERIOR FIRE EXTINGUISHER CABINET

CEILING MOUNTED EXIT SIGN (ARROWS WHEN INDICATED)

WALL MOUNTED EXIT SIGN (ARROWS WHEN INDICATED)

CR — CARD READER ACCESS CONTROL

FIRE DEPARTMENT ACCESS DOOR

EXIT FROM SPACE

EXIT TO EXTERIOR

B : BUSINESS OCCUPANCY

F-1 : MODERATE-HAZARD FACTORY INDUSTRIAL OCCUPANCY

CODE SUMMARY

IBC AND IFC CODE SUMMARY

PROJECT DESCRIPTION
A NEW 39,002 SF SPECULATIVE MANUFACTURING BUILDING (SQUARE FOOTAGE UNDER DRIPLINE)
THE PRIMARY FUNCTION OF THE BUILDING IS A SPECULATIVE LOGISTICS AND WAREHOUSE USE
THE AREAS OF THE BUILDING ARE:
- 31,371 SF (POTENTIAL) HIGH-PILE COMBUSTIBLE STORAGE AREA FOR SPECULATIVE LOGISTICS AND WAREHOUSING TENANTS IN-RACK STORAGE (CLASSIFIED AS S-1 OCCUPANCY)
- 374 SF ELECTRICAL ROOM AND FIRE PROTECTION WATER PUMP ROOM (CLASSIFIED AS S-1 OCCUPANCY)
- 7,257 SF POTENTIAL TENANTS OFFICE SPACE (CLASSIFIED AS B OCCUPANCY)

UNLIMITED AREA BUILDINGS (IBC 507.4)
CRITERIA PROVIDED:
- FULLY SPRINKLERED THROUGHOUT BUILDING
- ONE STORY WITH S-1
- 60 FEET CLEAR AROUND ENTIRE BUILDING

FIRE EXTINGUISHERS (IBC SECTION 906.1)
FIRE EXTINGUISHERS PROVIDED PER IBC SECTION 906.1. COORDINATE FINAL LOCATION WITH LOCAL FIRE OFFICIAL.

EXIT SIGNS (IBC SECTION 1103)
EXIT SIGNS INSTALLATION PER SECTION 1013

MEANS OF EGRESS ILLUMINATION (IBC SECTION 1008)
MEANS OF EGRESS ILLUMINATION PER SECTION 1008

APPLICABLE CODES

CONSTRUCTION IS TO COMPLY WITH ALL OF THE FOLLOWING:

- SOUTH CAROLINA BUILDING CODE 2018
- SOUTH CAROLINA FIRE CODE 2018
- SOUTH CAROLINA PLUMBING CODE 2018
- SOUTH CAROLINA MECHANICAL CODE 2018
- 2009 INTERNATIONAL ENERGY CONSERVATION CODE
- SOUTH CAROLINA FUEL GAS CODE 2018
- **2017** ICC/ANSI A117.1 ACCESSIBLE BUILDINGS STANDARDS
- 2017 NATIONAL ELECTRICAL CODE (NFPA 70)
- 2009 ASHRAE 90.1 ENERGY STANDARD FOR BUILDINGS
- OSHA STANDARD 29 CFR - 1926.1053 (LADDERS)

JURISDICTION: CITY OF GREENVILLE, GREENVILLE COUNTY, SOUTH CAROLINA

BASIC BUILDING CODE INFORMATION

CONSTRUCTION CLASSIFICATION TYPE (IBC 602)	IIB
OCCUPANCY GROUP (indicate all) (IBC 302)	B, F-1
OCCUPANCY GROUP (indicate most restrictive) (IBC Table 503)	F-1
Does building require Incidental Use Area Separation? (IBC 509)	NO (Sprinklered)
Does building have Accessory Occupancy (ies)? What percentage of story is accessory occupancy? (IBC 508.2)	NO
Mixed Occupancy (IBC508)	YES
Non separated (IBC 508.3)	YES
Separated (IBC 508.4) (IBC 506.5)	NO
OTHER FIRE PROTECTION SYSTEMS, DEVICES or FEATURES If the building has any special or notable fire protection or safety feature or hazard the designers should list them here, describe the performance characteristics and refer to locations in construction documents. (e.g. fire extinguishers, smoke evacuation / control / compartments. Note IBC 414.1.3.)	FULLY SPRINKLERED BUILDING

BUILDING AREA

AREA LIMIT BY PER STORY (IBC Table 506.2) (Does not indicate increases for street frontage.)	B: 92,000 sf **S-1: 62,000 sf** (1 Story & Sprinklered)
MAXIMUM AREA PER STORY	62,000 sf
Total Designed Area of Building	40,000 sf

BUILDING HEIGHT

HEIGHT		DESIGNED	ALLOWED
Without any Allowable Increase (IBC Table 504.3 & 504.4)	In Feet	50'	B: 75' F: 75'
	In Stories	1	B: 4 **F-1: 3**

OCCUPANT LOAD & EXITS

per 1006.3.1 and TABLE 1004.1.2

DESIGNATED AREAS OF BUILDINGS	Occ Load	Exits
B: 7,260 sf @ 150 gross F-1: 31,745 sf @ 100 gross	B: 49 F-1: 318	2 Required 14 Provided
TOTAL:	367	

EGRESS

MAX TRAVEL DISTANCE	TABLE 1017.2	B: 300' **F-1: 250'**
COMMON PATH OF TRAVEL	TABLE 1006.2.1	B: 100' F: 100'
DEAD END CORRIDORS	TABLE 1020.4	B: 50' S: 50'
MIN. CORRIDOR WIDTH	TABLE 1020.2	44" 24" @ MECH PLAT

BUILDING ENVELOPE

CLIMATE ZONE 3
IECC **2009** Tables 502.2.(1) & 502.3

SYSTEM	REQUIRED	PROVIDED
ROOFS - INSUL ABV DECK SOLAR REFLECTANCE INDEX (SRI)	U-0.048 3YR AGED ≥ 64.0	U-0.044 ≥ 64.0 (WHITE)
METL BLDG WALLS	U-0.084	U-0.060
OPAQUE SWINGING DOORS	U-0.70 Max.	U-0.70 Max.
OPAQUE GARAGE DOORS	U-1.45 Max.	U-1.45 Max.
ENTRANCE DOORS	U-0.90 Max.	U-0.90 Max.
(FIXED) WINDOWS	U-0.60 Max.	U-0.60 Max.
SHGC (TYP. GLAZING)	.25 Max.	.25 Max.

FIRE RESIST RATING - BLDG ELEMENTS

STRUCTURAL FRAME (IBC Table 601)	Required & Designed Rating (HRs)	0
BEARING WALLS, EXTERIOR (IBC Table 601)	Required & Designed Rating (HRs)	0
BEARING WALLS, INTERIOR (IBC Table 601)	Required & Designed Rating (HRs)	0
NONBEARING WALLS & PARTITIONS , EXTERIOR (IBC Table 601 & 602)	Required & Designed Rating (HRs)	0 1 (if less than 10ft)
NONBEARING WALLS & PARTITIONS , INTERIOR (IBC Table 601 & 602)	Required & Designed Rating (HRs)	0
FLOOR CONSTRUCTION INCLUDING SUPPORTING BEAMS & JOISTS (IBC Table 601)	Required & Designed Rating (HRs)	0
ROOF CONSTRUCTION INCLUDING SUPPORTING BEAMS & JOISTS (IBC Table 601)	Required & Designed Rating (HRs)	0

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mcmillan pazdan smith ARCHITECTURE

CONSULTANT LOGO

SEALS

CU-ICAR

CU-ICAR FLEX LAB

GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
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PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:
LIFE SAFETY

SHEET NO. G010

PROJ. NO. 019640.00

FLEX LAB ONE SITE IMPROVEMENTS

FOR

CU ICAR - TECHNOLOGY NEIGHBORHOOD 3

CITY OF GREENVILLE, SC

PREPARED FOR:

CLEMSON UNIVERSITY LAND STEWARDSHIP FOUNDATION & LICAR, LLC

5 RESEARCH DRIVE

GREENVILLE, SC 29607

TM# M010.03-01-009.05, M010.03-01-009.07

AUGUST 16, 2021

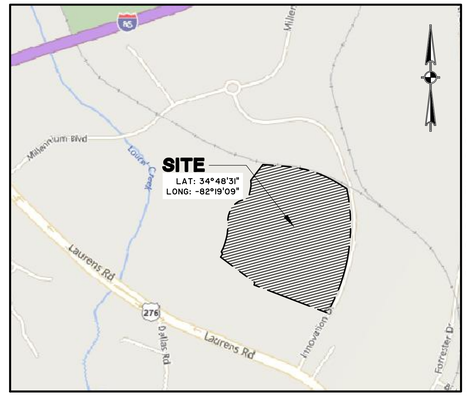
J-28283.0000

PREPARED BY:

THOMAS & HUTTON

REVISION HISTORY			
REV. NO.	REVISION	BY	DATE

SUBMITTAL HISTORY	
SUBMITTED TO	DATE



VICINITY MAP
SCALE: 1" = 1000'

CU ICAR - FLEX LAB ONE
J-28283.0000
08/16/2021

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C2.1	WATER AND SEWER PLAN
C2.2	WATER AND SEWER DETAILS
C2.3	WATER AND SEWER DETAILS
C2.4	WATER AND SEWER DETAILS
C3.1	PAVING, GRADING, AND DRAINAGE PLAN
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811 Know what's below. Call before you dig.

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SEWER LEGEND

DESCRIPTION	EXISTING	PROPOSED
GRAVITY PIPE	SS	
SINGLE SERVICE LATERAL		
DOUBLE SERVICE LATERAL		
MANHOLE		
CLEANOUT		
FORCEMAIN	10"FM 10"FM	10"FM 10"FM
VALVE AND BOX		
FLUSH HYDRANT		
REDUCER		
BACKFLOW PREVENTOR		
CROSS		
TEE		
90° BEND - HORIZONTAL		
45° BEND - HORIZONTAL		
22-½° BEND - HORIZONTAL		
11-¼° BEND - HORIZONTAL		
BEND - VERTICAL		
PLUG \ CAP		

DRAINAGE LEGEND

DESCRIPTION	EXISTING	PROPOSED
PIPE		
DITCH		
CURB INLET (CI) CATCH BASIN (CB)		
CURB INLET - RIGHT (CI) OR CATCH BASIN - RIGHT (CB)	OR	OR
CURB INLET - LEFT (CI) OR CATCH BASIN - LEFT (CB)	OR	OR
CURB INLET - BOTH (CI) OR CATCH BASIN - LEFT (CB)	OR	OR
CONTROL STRUCTURE (CS)		
DITCH INLET (DI)		
GRATE INLET (GI)		
HOODED INLET (HI)	OR	OR
JUNCTION BOX (JB)		
MANHOLE (SDMH)		
ROLL CURB INLET (RC)		
ROOF INLET (RI)		
YARD INLET (YI)		
FLARED END SECTION (FES)		

ABBREVIATIONS

DBL	DOUBLE	FM	FORCE MAIN (SANITARY SEWER)	PC	POINT OF CURVE	TC	TOP OF CURB
BOT	BOTTOM	FP	FINISH PAD	PH	POST HYDRANT	TH	THROAT ELEVATION
CB	CATCH BASIN	FR	FRAME	PT	POINT OF TANGENT	TG	TOP OF GUTTER
CI	CURB INLET	GI	GRATE INLET	PVC	POLYVINYL CHLORIDE	TP	TOP OF PAVEMENT
CO	CLEAN OUT	GV	GATE VALVE	RCP	REINFORCED CONCRETE PIPE	TW	TOP OF WALK
CPP	CORRUGATED PLASTIC PIPE	HDPE	HIGH DENSITY POLYETHYLENE	RC	ROLL CURB INLET	TYP	TYPICAL
DBL	DOUBLE	HI	HOODED INLET	RCP	REINFORCED CONCRETE PIPE	VI	VALLEY INLET
DI	DITCH INLET	INV	INVERT ELEVATION	RI	ROOF INLET	W	WATER
DIP	DUCTILE IRON PIPE	JB	JUNCTION BOX	RJP	RESTRAINED JOINT PIPE	W/	WITH
EL	ELEVATION	LF	LINEAR FEET	R/W	RIGHT-OF-WAY	WV	WATER VALVE
ES	END SECTION	MAX	MAXIMUM	SD	STORM DRAINAGE	YI	YARD INLET
FES	FLARED END SECTION	MIN	MINIMUM	SDMH	STORM DRAINAGE MANHOLE	YI	YARD INLET
FG	FINISH GRADE	MH	MANHOLE	SF	SQUARE FEET		
FH	FIRE HYDRANT	OC	ON CENTER	SS	SANITARY SEWER		

WATER LEGEND

DESCRIPTION	EXISTING	PROPOSED
WATER MAIN	10"W	10"W
SINGLE SERVICE LATERAL		
DOUBLE SERVICE LATERAL		
VALVE AND BOX		
FIRE HYDRANT W/VALVE & BOX		
POST HYDRANT		
REDUCER		
BACKFLOW PREVENTOR		
CROSS		
TEE		
90° BEND - HORIZONTAL		
45° BEND - HORIZONTAL		
22-½° BEND - HORIZONTAL		
11-¼° BEND - HORIZONTAL		
BEND - VERTICAL		
CAP		

OTHER UTILITIES LEGEND

DESCRIPTION	EXISTING
NATURAL GAS	UGG UGG
TELEPHONE	OHT OHT
UNDERGROUND TELEPHONE	UTL UTL
ELECTRICITY	OHP OHP
UNDERGROUND ELECTRICITY	UGP UGP

CITY OF GREENVILLE STANDARD NOTES

1. ALL RETAINING WALLS (BY OTHERS) FOUR (4) FEET AND GREATER IN HEIGHT, WHEN MEASURED FROM THE BOTTOM OF THE FOOTING TO THE TOP OF THE WALL AT ANY POINT, AND ALL RETAINING WALLS (BY OTHERS) SUPPORTING A SURCHARGE OR IMPOUNDING CLASS I, II, OR IIIA LIQUIDS MUST BE ENGINEERED BY A REGISTERED SOUTH CAROLINA PROFESSIONAL ENGINEER AND SUBMITTED TO THE CITY OF GREENVILLE'S BUILDING CODES DEPARTMENT FOR REVIEW AND APPROVAL PRIOR TO INSTALLATION.
2. ANY REVIEW/ACCEPTANCE BY THE CITY OF GREENVILLE DOES NOT RELIEVE THE CONTRACTOR OR SUBCONTACTORS FROM MEETING CODE/ORDINANCE REQUIREMENTS (SOUTH CAROLINA CODE OF LAWS SECTIONS 40-11-110 AND 40-59-90)
3. THE CONTRACTOR MUST NOTIFY THE CITY OF GREENVILLE'S CONSTRUCTION INSPECTION BUREAU (864) 467-8890 A MINIMUM OF 72 HOURS PRIOR TO BEGINNING DEMOLITION AND CONSTRUCTION.
4. AN ENCROACHMENT PERMIT FROM THE SCDOT FOR STATE ROADS OR FROM THE CITY OF GREENVILLE FOR CITY ROADS (CONTACT THE CONSTRUCTION INSPECTION BUREAU, (864) 467-8890) IS REQUIRED FOR ANY WORK PERFORMED WITHIN THE PUBLIC RIGHT-OF-WAY.
5. THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER OF RECORD FOR A DIGITAL STAKING PLAN TO ESTABLISH COMPLETE HORIZONTAL AND VERTICAL CONTROL. THE CONTRACTOR IS RESPONSIBLE FOR SURVEY STAKEOUT OF ALL IMPROVEMENTS. DISCREPANCIES BETWEEN THE PLANS, CONSTRUCTION STAKES, AND FIELD CONDITIONS SHALL BE REPORTED TO THE ENGINEER OF RECORD IMMEDIATELY FOR RESOLUTION PRIOR TO INSTALLATION OF PROPOSED IMPROVEMENTS.

GENERAL NOTES

1. CONTRACTOR SHALL MAINTAIN MINIMUM COVER OVER THE WATER MAIN PIPE BARREL OF 3'-0" UNLESS OTHERWISE INDICATED. TOP OF PIPE ELEVATIONS ARE SHOWN FOR CASES WHERE FUTURE STORM SEWERS ARE TO BE INSTALLED. IN NO CASE SHALL THE WATER MAIN BE INSTALLED AT A LOWER ELEVATION THAN THAT SHOWN.
2. SHOULD PIPE, FITTINGS, AND OTHER MATERIALS BE NEEDED IN ADDITION TO THAT SHOWN ON THE DRAWINGS BECAUSE PIPELINE WAS NOT INSTALLED TO THE ALIGNMENT AND PROFILE SHOWN, THEN THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING THOSE NECESSARY MATERIALS AND PROVIDING THE EQUIPMENT AND LABOR TO INSTALL THEM TO MEET THE DESIGN INTENT OF THE WATERMAIN AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR SHALL NOTIFY THE OWNER AND THE ENGINEER 48 HOURS IN ADVANCE OF ALL REQUIRED TESTS AND INSPECTIONS.
4. THE CONTRACTOR WILL NOTIFY THE ENGINEER IF UNSUITABLE MATERIAL IS DISCOVERED PRIOR TO BEGINNING ANY REMOVAL OPERATION.
5. ALL WATERMAINS SHALL BE POLYVINYL CHLORIDE (PVC C900) UNLESS OTHERWISE INDICATED.
6. ALL GRAVITY SEWER MAIN SHALL BE POLYVINYL CHLORIDE (PVC SDR35) UNLESS OTHERWISE INDICATED.
7. TOPOGRAPHIC SURVEYING INFORMATION BY SITE DESIGN, INC.
8. **BOUNDARY SURVEY INFORMATION BY FEELAND & ASSOCIATES, INC.**
9. ALL ELEVATIONS SHOWN ARE BASED ON NAVD88.
10. HORIZONTAL DATUM IS SC STATE PLANE (NAD83)
11. CONTRACTOR IS TO VERIFY ACCURACY OF ANY TEMPORARY BENCHMARKS SHOWN PRIOR TO UTILIZING THEM FOR CONSTRUCTION.
12. THE EXISTING UNDERGROUND UTILITIES SHOWN HEREON ARE BASED UPON AVAILABLE INFORMATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DETERMINING THE EXACT LOCATION OF ALL UTILITIES OTHER THAN THOSE SHOWN ARE ENCOUNTERED DURING CONSTRUCTION , THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY AND TAKE STEPS TO PROTECT THE LINE(S) AND ENSURE CONTINUED SERVICE. DAMAGE CAUSED TO EXISTING UTILITIES BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR. ADDITIONALLY, THE CONTRACTOR SHALL CONFIRM THE CONNECTION POINTS OF NEW UTILITIES TO EXISTING UTILITIES PRIOR TO BEGINNING NEW CONSTRUCTION.
13. IF WORK IS SUSPENDED OR DELAYED FOR 14 DAYS, THE CONTRACTOR SHALL TEMPORARILY STABILIZE THE DISTURBED AREA AT NO ADDITIONAL COST TO THE OWNER.
14. THE CONTRACTOR SHALL INSTALL ANY BARRICADES PRIOR TO BEGINNING CONSTRUCTION
15. THE FOLLOWING NOTES ARE SPECIFIED BY THE COUNTY ENGINEER AND ARE TO BE EXECUTED BY THE CONTRACTOR FOR STREETS IN THE PROJECT WHICH ARE TO BE DEEDED TO THE COUNTY:
    a. ANY DAMAGE TO EXISTING PAVEMENT MUST BE REPAIRED AT CONTRACTORS EXPENSE AND TO THE SATISFACTION OF THE COUNTY ENGINEER AND THE PROJECT ENGINEER.
    b. ALL RIGHT-OF-WAY AND DRAINAGE EASEMENT CONSTRUCTION SHALL MEET SCDOT STANDARD SPECIFICATIONS UNLESS SPECIFIED ELSEWHERE AND APPROVED IN WRITING BY THE COUNTY ENGINEER.
    c. ALL LOTS WITHIN THE DEVELOPMENT SHALL BE FILLED AND HAVE POSITIVE DRAINAGE TO THE APPROPRIATE EASEMENT OR RIGHT-OF-WAY AS APPROVED ON THE PLANS PRIOR TO THE ISSUANCE OF ANY BUILDING PERMITS OR FINAL ACCEPTANCE OF THE RIGHT-OF-WAYS BY THE COUNTY
    d. WHERE FIELD INSPECTIONS ARE REQUIRED BY THE COUNTY, THE CONTRACTOR SHALL NOTIFY THE ENGINEERING DIVISION A MINIMUM OF 48 HOURS IN ADVANCE TO SCHEDULE SUCH INSPECTIONS.
    e. A COMPLETE SET OF APPROVED DRAWINGS AND SPECIFICATIONS MUST BE MAINTAINED ON SITE AT ALL TIMES THAT THE CONTRACTOR IS PERFORMING WORK. THESE DRAWINGS SHALL BE MADE AVAILABLE UPON REQUEST.
    f. ANY REVISIONS DURING CONSTRUCTION WHICH ALTER THE ROAD LAYOUT, CONSTRUCTION METHODS, RIGHT-OF-WAY LOCATION OR DRAINAGE MUST BE SUBMITTED AND APPROVED IN WRITING BY THE COUNTY ENGINEER.
    g. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL CONSTRUCTION PERMITS NECESSARY FROM OTHER RESPONSIBLE AGENCIES.
    h. ALL TREES SHOWING DISTURBANCE WITHIN THE PROTECTED ROOT ZONE SHALL BE PRUNED AND FERTILIZED BY A CERTIFIED ARBORIST PRIOR TO RECEIVING FINAL PLAT APPROVAL (THIS WORK WILL BE DONE BY THE OWNER OUTSIDE OF THE CONTRACT.)
    i. LAKE CONTOURS SHOWN HEREIN WILL PROVIDE A DEPTH ONE FOOT GREATER THAN NECESSARY FOR STORM WATER MANAGEMENT. THIS IS TO PROVIDE FOR ONE FOOT OF SILT BUILDUP DURING CONSTRUCTION OF ANY AREA OF ANY POND WHICH SILTS MORE THAN ONE FOOT ABOVE DESIGNED BOTTOM ELEVATION SHALL BE RESTORED TO THE MINIMUM ACCEPTABLE DEPTH OF ONE FOOT LESS THAN ORIGINAL CONSTRUCTED DEPTH.
    j. ALL ABOVE GROUND UTILITIES ARE TO BE OUTSIDE OF THE R/W AND ALL AT GRADE UTILITIES ARE TO BE OUT OF THE CURB LINE.
16. THE CONTRACTOR SHALL INSTALL ALL EROSION CONTROL AND PREVENTION STRUCTURES SHOWN ON THE PLANS. BOTH MUST BE APPROVED BY CITY OF GREENVILLE PRIOR TO BEGINNING ANY LAND DISTURBING ACTIVITIES.
17. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IF UNSUITABLE MATERIAL IS DISCOVERED PRIOR TO BEGINNING ANY REMOVAL OPERATION.
18. CONTRACTOR WILL BE REQUIRED TO ADJUST MANHOLE FRAMES TO MATCH FINAL GRADE AT NO ADDITIONAL COST.
19. THE FOLLOWING NOTES ARE SPECIFIED BY THE SOUTH CAROLINA DEPARTMENT OF HEALTH AND ENVIRONMENTAL CONTROL (SCDHEC) AND ARE TO BE EXECUTED BY THE CONTRACTOR:
    a. ALL SEDIMENT CONTROL MEASURES SHALL BE INSPECTED AT LEAST ONCE EVERY SEVEN CALENDAR DAYS AND AFTER ANY STORM EVENT OF GREATER THAN 0.5 INCHES OF PRECIPITATION DURING ANY 24-HOUR PERIOD. ALL SEDIMENT CONTROL FEATURES SHALL BE MAINTAINED UNTIL FINAL STABILIZATION HAS BEEN OBTAINED.
    b. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, BUT IN NO CASE MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY OR PERMANENTLY CEASED, UNLESS ACTIVITY IN THAT PORTION OF THE SITE WILL RESUME WITHIN 14 DAYS.
    c. RESIDENTIAL SUBDIVISIONS REQUIRE EROSION CONTROL FEATURES FOR INFRASTRUCTURE AS WELL AS FOR INDIVIDUAL LOT CONSTRUCTION. INDIVIDUAL PROPERTY OWNERS SHALL FOLLOW THESE PLANS DURING LOT CONSTRUCTION OR PROVIDE AN INDIVIDUAL PLAN MEETING SECTION R.72-307 OF THE STORM WATER MANAGEMENT AND SEDIMENT REDUCTION ACT REQUIREMENTS.
20. ALL EROSION AND SEDIMENT CONTROL DEVICES SHALL BE CONSTRUCTED SIMULTANEOUSLY WITH THE DISTURBANCE OF THE LAND AND SHALL REMAIN FUNCTIONAL UNTIL THE CONTRIBUTING DISTURBED AREAS ARE STABILIZED. SILT BARRIERS WILL BE INSTALLED AS NECESSARY TO PREVENT EXCESSIVE SEDIMENTATION OF DOWNSTREAM AREAS. DEVICES SHALL BE IN ACCORDANCE WITH THE MANUAL OF "EROSION AND SEDIMENT CONTROL PRACTICES FOR DEVELOPING AREAS" BY THE S.C. LAND RESOURCES CONSERVATION COMMISSION.
21. CONTRACTOR SHALL GRADE AREAS TO DRAIN FOR POSITIVE FLOW PRIOR TO FINAL APPROVAL.
22. ALL TRAFFIC CONTROL SIGNS AND PAVEMENT MARKINGS SHALL BE IN ACCORDANCE WITH THE MANUAL ON "UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS" AND "SOUTH CAROLINA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES" BOTH CURRENT EDITIONS.
23. ALL AREAS DISTURBED WILL BE GRASSED IMMEDIATELY AFTER THE INSTALLATION. GRASSING SHALL BE IN ACCORDANCE WITH SECTION 810 OF THE SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION CURRENT EDITION. PAYMENT SHALL BE AS SHOWN IN THE BID FORM AND SHALL BE COMPENSATION FOR ALL NECESSARY WORK AND MATERIALS TO COMPLETE THE SEEDING IN ACCORDANCE WITH THESE SPECIFICATIONS. (SEE SPECIFICATIONS BELOW)
24. ALL DRAINAGE WILL BE MADE FUNCTIONAL DAILY AS WORK PROGRESSES.
25. EACH EXISTING ROAD WILL BE CLEANED UP AND RESTORED DAILY.
26. NEW PAVEMENT TO BE FLUSH WITH EDGE OF EXISTING PAVEMENT.
27. ALL STORM DRAIN PIPE INVERTS IN AND OUT ARE THE SAME AS THE BOX INVERT UNLESS OTHERWISE NOTED ON THE PLAN SHEETS AND/OR PROFILES.
28. ONLY TYPE S AND M MORTAR IS TO BE USED IN STORMWATER SYSTEM CONSTRUCTION AND ALL BRICKWORK AND BRICK MUST MEET SCDOT SPECIFICATIONS.

GENERAL INFORMATION

COUNTY	GREENVILLE
CITY	GREENVILLE
ZONING	S-I (MIXED)

OWNER:
LICAR, LLC
5 RESEARCH DRIVE
GREENVILLE, SC 29607
(864) 283-7105

ENGINEER:
THOMAS & HUTTON
501 RIVER STREET
SUITE 200
GREENVILLE,SC 29601
(864) 412-2222

SURVEYOR:

TOPO: SITE DESIGN, INC.
800 EAST WASHINGTON STREET, SUITE B
GREENVILLE, SC 29601
(864) 271-0496

BOUNDARY: FREELAND & ASSOCIATES, INC.
323 W. STONE AVENUE
GREENVILLE, SC 29609
(864) 271-4924

PREPARED FOR:
LICAR, LLC
5 RESEARCH DRIVE
GREENVILLE, SC 29607
864-283-7105

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040286 THOMAS B HUTTON ENGINEERING No C002860 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 040286 JOHN W. KEARNS, III REGISTERED 8/14/2020

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
501 River Street • Suite 200
Greenville, SC 29601 • 864.412.2222
www.thomasandhutton.com

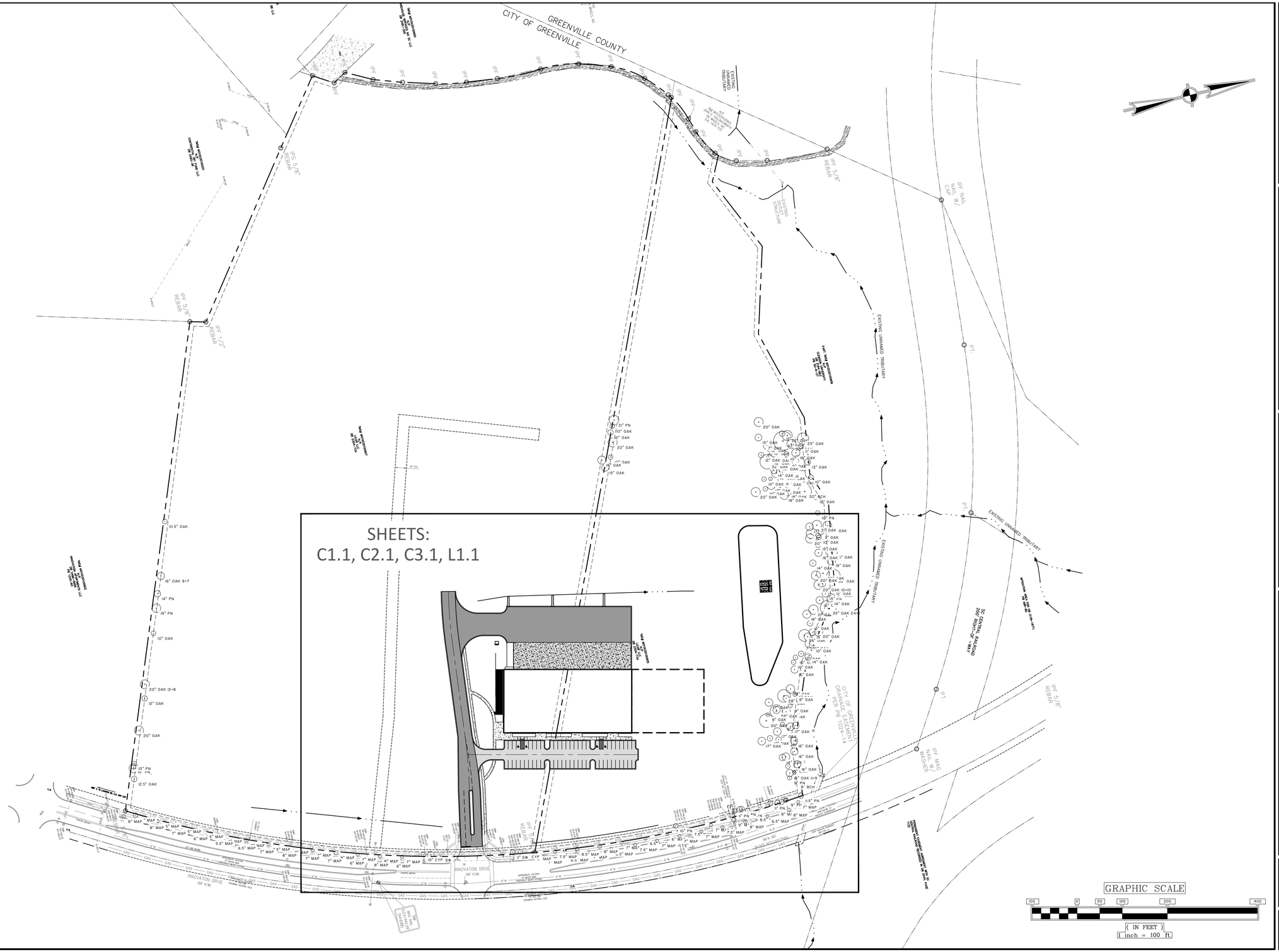
LICAR, LLC
CITY OF GREENVILLE, SC

CU ICAR - TN3 - FLEX BUILDING

GENERAL NOTES AND LEGEND

JOB NO:	J-28283.0000
DATE:	08/14/2020
DRAWN:	CMC
DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	N/A

G1.1



SOUTH CAROLINA PROFESSIONAL ENGINEER — THOMAS B HUTTON ENGINEERING No. C002286 — CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA PROFESSIONAL ENGINEER — RYAN W. PRICE — 30477 — 8.14.2020

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
501 River Street • Suite 200
Greenville, SC 29601 • 864.412.2222
www.thomasandhutton.com

LICAR, LLC
CITY OF GREENVILLE, SC

CU ICAR - TN3 - FLEX BUILDING

SHEET INDEX

JOB NO:	J-28283.0000
DATE:	08/14/2020
DRAWN:	CMC
DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	1" = 100'

G1.2

Z:\18283\18283.0000\Engineering\Drawings\Construction Plans\Site Improvement Plans\18283.0000 - SP - PL.dwg - Jul 27, 2020 - 1:40:20 PM

LEGEND:

- LIGHT DUTY ASPHALT PAVING
- HEAVY DUTY ASPHALT PAVING
- CONCRETE WALKS AND PLAZA
- HEAVY DUTY CONCRETE PAVING
- GRAVEL
- GRANITE SCREENINGS

NOTES:
1. ALL DIMENSIONS ARE TO EDGE OF ASPHALT OR FACE OF BUILDING UNLESS OTHERWISE NOTED.
2. DISTANCES AND BEARINGS ARE BASED ON CENTERLINES.
3. ALL SIGNS SHALL MEET MUTCD STANDARDS (CURRENT EDITION)
4. SEE ARCHITECTURAL PLANS FOR ADDITIONAL BUILDING DETAILS.
5. ALL TRAILER AND EMPLOYEE PARKING SHALL BE 5" WHITE STRIPING WITH EXCEPTION OF ADA SPACES.

LINE TABLE

LINE	BEARING	DISTANCE
L1	N 84°17'01" W	227.26'
L2	N 78°58'24" W	139.70'
L3	S 13°22'07" W	378.23'

CURVE TABLE

CURVE	RADIUS	LENGTH	CHORD	CHD BEARING	DELTA
C1	900.00'	106.24'	106.18'	N 80°54'06" W	6°45'49"
C2	900.00'	31.08'	31.07'	N 83°17'40" W	1°58'42"
C3	900.00'	52.34'	52.33'	N 80°38'21" W	3°19'55"

STOP
50'R
DRAINAGE DITCH
18" STANDARD CURB & GUTTER (TYP.)
3'-WIDE CONCRETE FLUME (TYP.)
3'-WIDE CONCRETE FLUME (TYP.)
3'-WIDE CONCRETE FLUME (TYP.)
16'R
21.5'R
48'
79'
139'
50'R
TRANSFORMER
RAMP
DRIVE-IN RAMP (SEE ARCHITECTURAL PLANS)
TMS# M0100300109005
N/F
LICAR LLC
DB 2304-734
SCREENING WALL (SEE ARCHITECTURAL FOR DETAILS)
5'
18" STANDARD CURB & GUTTER (TYP.)
L1
30'
6'
PROPOSED FLEX BUILDING
+/- 39,200 SF
EXPANSION
+/- 22,400 SF
RESERVED PARKING
VAN ACCESSIBLE
7' SIDEWALK (TYP.)
ADA RAMP W/ DETECTABLE WARNINGS
ADA RAMP W/ DETECTABLE WARNINGS
STOP
24' WHITE STOP BAR
30'R
762.92'R
L3
5'R
2 SPACES @9' (18')
3 SPACES @9' (27')
6 SPACES @9' (54')
8 SPACES @9' (72')
8 SPACES @9' (72')
8 SPACES @9' (72')
8' TYP.
8' TYP.
18" STANDARD CURB & GUTTER (TYP.)
4'R TYP.
5'
L2
22'
16'
24' WHITE STOP BAR
TIE TO EXISTING ASPHALT HERE. APPROX. 623 SF ASPHALT TO BE REMOVED AND REPLACED
INNOVATION DRIVE (80' R/W)
PAINTED MEDIAN
APPROXIMATE LOCATION 12" WATER MAIN (GREENVILLE WATER SYSTEM)
R/W
CITY OF GREENVILLE DRAINAGE EASEMENT PER PB 1024-14
15' UTILITY EASEMENT
CITY OF GREENVILLE DRAINAGE EASEMENT PER PB 1024-14
APPROXIMATE LOCATION 12" WATER MAIN (GREENVILLE WATER SYSTEM)
PAINTED MEDIAN
INNOVATION DRIVE (80' R/W)
APPROXIMATE LOCATION 8" GAS LINE (PIEDMONT NATURAL GAS)
APPROXIMATE LOCATION 12" WATER MAIN (GREENVILLE WATER SYSTEM)

WATER QUALITY POND WITH SAND FILTER

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

SOUTH CAROLINA PROFESSIONAL ENGINEER THOMAS B HUTTON ENGINEERING No C002865 CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA PROFESSIONAL ENGINEER 30777 RYAN W. PERRY 8.14.2020

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
501 River Street • Suite 200
Greenville, SC 29601 • 864.412.2222
www.thomasandhutton.com

LICAR, LLC
CITY OF GREENVILLE, SC

CU ICAR - TN3 - FLEX BUILDING

SITE PLAN

JOB NO:	J-28283.0000
DATE:	08/14/2020
DRAWN:	CMC
DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	1" = 40'

C1.1

WATER NOTES:

1. CONTRACTOR TO COORDINATE FINAL DESIGN WITH GREENVILLE WATER.
2. CONNECTION TO GREENVILLE WATER SYSTEM SHALL BE MADE IN THE PRESENCE OF GREENVILLE WATER INSPECTOR.
3. TEE INSTALLATION SHALL BE SCHEDULED WITH GREENVILLE WATER A MINIMUM OF 10 DAY PRIOR TO WORK.
4. ALL WATER LINES SHALL HAVE A MINIMUM COVER OF 36".
5. WATER SERVICES SHALL MAINTAIN A MINIMUM 5' SEPARATION.
6. RESTRAINED JOINTS TO BE PROVIDED IN ACCORDANCE WITH DETAILS ON SHEET C2.4.
7. ALL LINE FROM TAP TO BACKFLOWS OR CAP TO BE DUCTILE IRON PIPE.
8. CONTRACTOR SHALL REVIEW PAVING, GRADING, AND DRAINAGE DRAWING FOR LOCATION AND DEPTH OF STORM DRAINS AND SHALL ADJUST DEPTH OF WATER MAINS TO AVOID INTERFERENCES.
9. IRRIGATION WATER MAIN AND METER SIZE TO BE DETERMINED BY OTHERS. A SEPARATE TAP AT WATER MAIN WILL BE REQUIRED. COORDINATE WITH GREENVILLE WATER.

FIRE LINE NOTES:

1. ALL WATER SYSTEM JOINTS FOR FIRE PROTECTION SHALL BE MECHANICAL JOINT RESTRAINTS.
2. ALL SITE FIRE MAIN, VALVES, JOINTS, AND ASSOCIATED APPURTENANCES SHALL BE IN ACCORDANCE WITH NFPA 24, LATEST ADDITION.

SEWER NOTES:

1. CONTRACTOR TO SCHEDULE MEETING WITH CITY OF GREENVILLE AT LEAST 72 HOURS BEFORE BEGINNING WORK.
2. COVER OVER GRAVITY SEWER LINE SHALL BE NO LESS THAN 3 FEET.
3. PROPOSED SEWER LATERAL WILL BE PRIVATELY OWNED AND IS NOT A SEWER MAIN.

12" CAP
6" CAP
FH ASSEMBLY
FIRE DEPARTMENT CONNECTION
2" X 2" TEE
10" 90° BEND
2" 45° BEND
10" 45° BEND
2" CAP
10"W
10" X 6" TEE
BACKFLOW PREVENTER W/ VAULT. COORDINATE FINAL DESIGN WITH GREENVILLE WATER.
2" METER AND VAULT. COORDINATE FINAL DESIGN WITH GREENVILLE WATER
2" GV
10" X 2" TEE
12" X 10" TEE
10" GV
10" PIV
2.0" PVC - SDR 21
10" PVC - C900 - DR 18
BACKFLOW PREVENTER WITH FDC VAULT. SEE MEP FOR ELECTRICAL CONNECTION. COORDINATE FINAL DESIGN WITH GREENVILLE WATER.
SEE PLUMBING PLANS FOR CONTINUATION (TYP.)
SEE FIRE PROTECTION PLANS FOR CONTINUATION
TMS# 0010030109905
DB 2520-4 PG 34
LICAR, LLC
N/F
MH #11
FR: 941.26
INV. IN: 936.36 (N)
INV. OUT: 936.26 (S)
MH #10
FR: 941.26
INV. IN: 937.56 (N)
INV. OUT: 937.46 (S)
MH #9
FR: 941.75
INV. OUT: 938.09 (S)
MH #14
FR: 940.39
INV. IN: 935.77 (IN)
INV. OUT: 935.67 (SE)
12" 22.5° BEND
123 LF 8" DIP @ 0.40%
275 LF 8" PVC - SDR 26 @ 0.40%
131 LF 8" PVC - SDR 26 @ 0.40%
278 LF 8" PVC - SDR 26 @ 0.40%
REMOVE CAP AND TIE TO EXISTING 12" WATER MAIN
EX MH
FR: 948.16
INV. IN: 934.56 (NW)
INV. OUT: 934.46 (E)
INNOVATION DRIVE (80' R/W)
PAINTED MEDIAN
APPROXIMATE LOCATION 12" WATER MAIN (GREENVILLE WATER SYSTEM)
CITY OF GREENVILLE DRAINAGE EASEMENT PER PB 1024-14
GRAPHIC SCALE
(IN FEET)
1 inch = 40 ft

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 038285 THOMAS B HUTTON ENGINEERING Co. 0002861 CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA REGISTERED LANDSCAPE ARCHITECT SEAL 2975 RYAN W. JOY 8.14.2020

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
501 River Street • Suite 200
Greenville, SC 29601 • 864.412.2222
www.thomasandhutton.com

LICAR, LLC
CITY OF GREENVILLE, SC

CU ICAR - TN3 - FLEX BUILDING

WATER AND SEWER PLAN

JOB NO:	J-28283.0000
DATE:	08/14/2020
DRAWN:	CMC
DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	1" = 40'

C2.1

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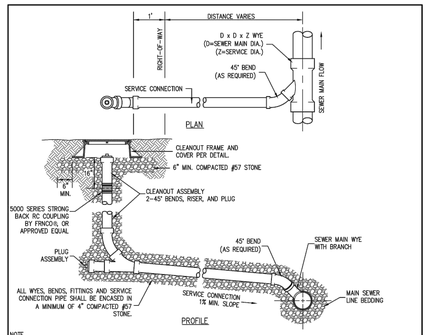
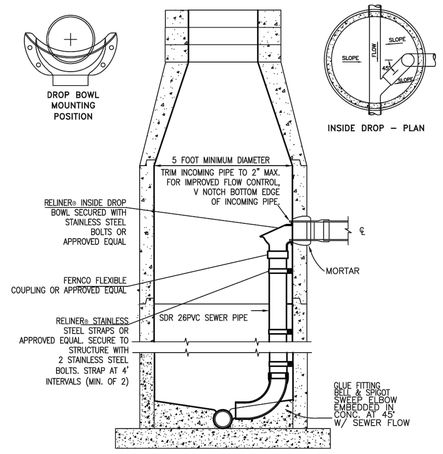


NOTE
1. SERVICE CONNECTION DETAIL IS FOR THE INSTALLATION OF A NEW SERVICE CONNECTION STUB OUT AS PART OF A NEW MAIN SEWER LINE INSTALLATION. CONNECTIONS TO EXISTING SEWER LINES OR CONNECTION OF THE BUILDING DRAIN TO THE SERVICE CONNECTION STUB OUT SHALL BE INSTALLED PER THE INTERNATIONAL PLUMBING CODE (IPC) OR INTERNATIONAL RESIDENTIAL CODE (IRC) AS APPROPRIATE.
2. WHEN THE BUILDING SEWER IS EXTENDED FROM THE STUB OUT TO THE BUILDING DRAIN, THE BUILDING SEWER AND ITS APPURTENANCES SHALL BE PERMITTED THROUGH AND INSPECTED BY THE CITY OF GREENVILLE BUILDING CODES DIVISION.
3. WITHOUT PRIOR KNOWLEDGE OF THE VARIABLES REQUIRED TO SIZE THE SERVICE CONNECTION PER THE IPC OR IRC, THE MINIMUM DIAMETER OF THE SERVICE CONNECTION STUB OUT SHALL BE MINIMUM FOUR (4) INCH DIA. FOR SINGLE FAMILY RESIDENTIAL AND MINIMUM SIX (6) INCH DIA. FOR COMMERCIAL AND MULTIFAMILY DEVELOPMENT.
4. MINIMUM SLOPE OF THE SERVICE LATERAL IS 1.0% OR ⅛" PER FOOT.
5. THE SERVICE CONNECTION STUB OUT AND ITS APPURTENANCES SHALL BE OF THE SAME MATERIAL AS THE MAIN SEWER LINE.
6. SERVICE CONNECTIONS SHALL BE MADE WITH ONE (1) WYE FITTING. THE LONG BRANCH OF THE WYE SHALL HAVE THE SAME INSIDE DIAMETER AS THE WASTEWATER MAIN. TEE FITTINGS ARE NOT PERMITTED.
7. THE WYE FITTING SHALL BE SET BETWEEN THE 10 AND 2 O'CLOCK POSITIONS ALONG THE MAIN SEWER LINE PIPE CIRCUMFERENCE.
8. NO BENDS GREATER THAN 45° SHALL BE USED IN SERVICE CONNECTION INSTALLATION.
9. SERVICE CONNECTIONS SHALL BE A MINIMUM OF THREE (3) FEET FROM PIPE JOINT OR MANHOLE, MEASURED FROM THE NEAREST EDGE OF THE WYE FITTING.
10. CONNECTIONS SHALL BE POSITIONED ALONG THE MAIN SEWER LINE TO PROVIDE AN INDIVIDUAL, SEPARATE AND DIRECT CONNECTION FROM THE STRUCTURE TO THE WASTEWATER MAIN. CONNECTIONS SHALL NOT CROSS ADJACENT LOT PROPERTY LINES.
11. A SERVICE CONNECTION CLEANOUT SHALL BE INSTALLED ONE (1) FOOT FROM THE RIGHT-OF-WAY LINE OR EASEMENT BOUNDARY WITH A CLEANOUT FRAME AND COVER PER DETAIL.
12. SERVICE CONNECTION SHALL BE PLUGGED TO PREVENT INFILTRATION AND SEDIMENTATION OF THE LINE.
13. SERVICE CONNECTIONS SHALL NOT BE CONNECTED TO A NEWLY CONSTRUCTED MAIN SEWER LINE UNTIL A PERMIT TO OPERATE (PTO) HAS BEEN OFFICIALLY ISSUED BY SCDHEC. CONTACT CITY OF GREENVILLE ENGINEERING (467-4400) WITH ANY QUESTIONS.

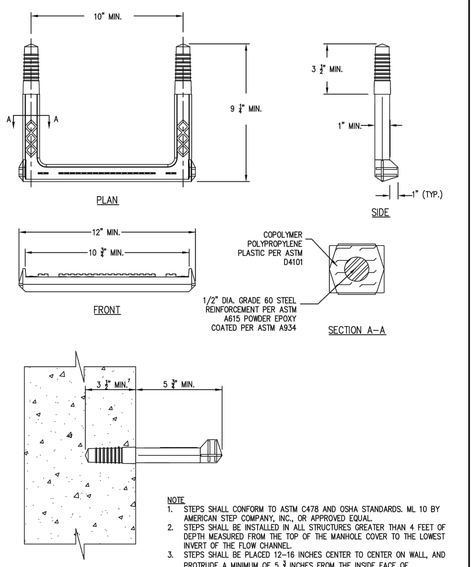
city of greenville — ENGINEERING DIVISION
SERVICE CONNECTION
DATE APPROVED: JUNE 2010 — OFFICE OF THE CITY ENGINEER: Philip B. Lindsay
SCALE: NO SCALE — DETAIL: 25:01



INSIDE DROP CONNECTION

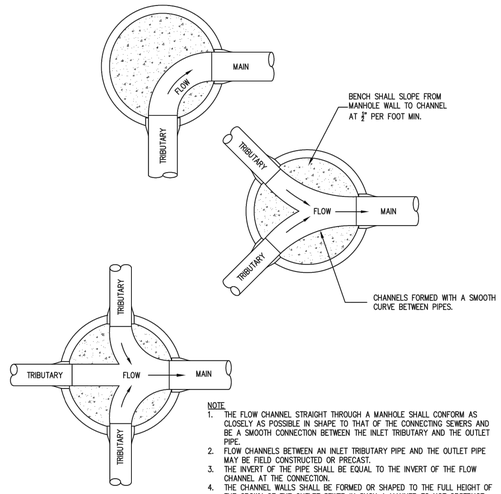
NOTE
1. LOCATION OF STEPS SHALL NOT CONFLICT WITH DROP CONNECTION.
2. PROVIDE CHANNEL WITH CONTINUOUS INVERT FROM DROP CONNECTION TO INVERT OF SEWER MAIN.
3. SEE DETAIL OF STANDARD PRECAST CONCRETE MANHOLE FOR ADDITIONAL DETAILS AND REQUIREMENTS.
4. CONNECTIONS TO WASTEWATER MAINS OF OTHER MATERIAL SHALL BE MADE WITH HARCO MATERIAL TRANSITION COUPLING OR APPROVED EQUAL.
5. SLOPE OF MAIN SEWER LINE APPROACH TO THE DROP ASSEMBLY SHOULD BE NO GREATER THAN 5%
6. ALL INSIDE DROP CONNECTIONS FOR SERVICES AND COLLECTOR SEWERS SHALL USE THE DROP BOWL, OR APPROVED EQUAL AS PRODUCED BY:
   RELINER-DURAN, INC.
   53 MT. ARCHER RD,
   LYME, CT 06371
7. SECURE DROP PIPE TO MANHOLE WALL WITH RELINER-DURAN, INC STAINLESS STEEL ADJUSTABLE CLAMPING BRACKETS, OR APPROVED EQUAL.

city of greenville — ENGINEERING DIVISION
INSIDE DROP CONNECTION
DATE APPROVED: MAY 2016 — OFFICE OF THE CITY ENGINEER:
SCALE: NO SCALE — DETAIL: 21:07



NOTE
1. STEPS SHALL CONFORM TO ASTM C478 AND OSHA STANDARDS. ML 10 BY AMERICAN STEP COMPANY, INC., OR APPROVED EQUAL.
2. STEPS SHALL BE INSTALLED IN ALL STRUCTURES GREATER THAN 4 FEET OF DEPTH MEASURED FROM THE TOP OF THE MANHOLE COVER TO THE LOWEST INVERT OF THE FLOW CHANNEL.
3. STEPS SHALL BE PLACED 12–16 INCHES CENTER TO CENTER ON WALL, AND PROTRUDE A MINIMUM OF 5 ½ INCHES FROM THE INSIDE FACE OF STRUCTURE WALL. STEP SPACING WITHIN A SINGLE STRUCTURE SHALL BE MAINTAINED WITHIN 1" OF THE AVERAGE STEP SPACING FOR THAT STRUCTURE.
4. STEPS SHALL BE LOCATED TO ALLOW DIRECT ACCESS FROM THE SURFACE TO THE TABLE.

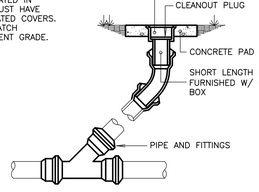
city of greenville — ENGINEERING DIVISION
MANHOLE STEP
DATE APPROVED: JUNE 2010 — OFFICE OF THE CITY ENGINEER: Philip B. Lindsay
SCALE: NO SCALE — DETAIL: 21:04



NOTE
1. THE FLOW CHANNEL STRAIGHT THROUGH A MANHOLE SHALL CONFORM AS CLOSELY AS POSSIBLE IN SHAPE TO THAT OF THE CONNECTING SEWERS AND BE A SMOOTH CONNECTION BETWEEN THE INLET TRIBUTARY AND THE OUTLET PIPE.
2. FLOW CHANNELS BETWEEN AN INLET TRIBUTARY PIPE AND THE OUTLET PIPE MAY BE FIELD CONSTRUCTED OR PRECAST.
3. THE INVERT OF THE PIPE SHALL BE EQUAL TO THE INVERT OF THE FLOW CHANNEL AT THE CONNECTION.
4. THE CHANNEL WALLS SHALL BE FORMED OR SHAPED TO THE FULL HEIGHT OF THE CROWN OF THE OUTLET SEWER IN SUCH A MANNER TO NOT OBSTRUCT MAINTENANCE, INSPECTION OR FLOW IN THE SEWERS AND TO PREVENT SOLIDS DEPOSITION.
5. CURVED FLOW CHANNELS MAY REQUIRE INCREASED CHANNEL SLOPE TO MAINTAIN ACCEPTABLE FLOW VELOCITY.
6. MAXIMUM DIFFERENCE IN ELEVATION BETWEEN THE INVERT OF THE TRIBUTARY INLET AND THE MANHOLE INVERT SHALL BE 18 INCHES. ELEVATION DIFFERENCES GREATER THAN 18 INCHES REQUIRE A DROP MANHOLE.
7. NO TRIBUTARY INLET, INCLUDING SERVICE CONNECTIONS, NOR DROP MANHOLE PIPES SHALL DISCHARGE ONTO THE SURFACE OF THE BENCH.
8. BENCH AND CHANNELS TO BE FORMED USING CONCRETE WITH A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI.
9. CONCRETE SHALL BE TROWELED TO A SMOOTH FINISH.

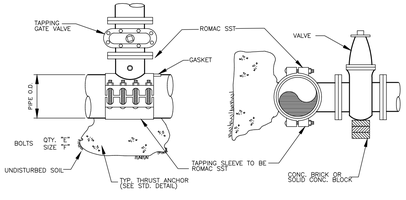
city of greenville — ENGINEERING DIVISION
MANHOLE INVERT SHAPING
DATE APPROVED: JUNE 2010 — OFFICE OF THE CITY ENGINEER: Philip B. Lindsay
SCALE: NO SCALE — DETAIL: 21:03

NOTE:
CLEANOUTS LOCATED IN PAVED AREAS MUST HAVE H20 TRAFFIC-RATED COVERS. COVERS WILL MATCH FINISHED PAVEMENT GRADE.



S10
OCT. 2008
THOMAS & HUTTON ENGINEERING CO.

CLEANOUT DETAIL
NOT TO SCALE



TYPICAL TAPPING SLEEVE (FOR WATERLINE OR SEWER FORCEMAIN)
WS2
NOT TO SCALE

1. THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES BY CALLING PALMETTO UTILITY PROTECTION SERVICE AT 811 THREE (3) DAYS PRIOR TO CONSTRUCTION.

2. THE CONTRACTOR SHALL CONTACT THE CITY OF GREENVILLE, CONSTRUCTION INSPECTION BUREAU, (864) 467–8890, A MINIMUM OF 72 HOURS PRIOR TO ANY CONSTRUCTION ACTIVITY.

3. THE CONTRACTOR SHALL PROVIDE THE CONSTRUCTION INSPECTION BUREAU AND THE ENVIRONMENTAL ENGINEERING BUREAU WITH A CURRENT CONSTRUCTION SCHEDULE PRIOR TO CONSTRUCTION.

4. THE CONTRACTOR IS RESPONSIBLE FOR CONDUCTING ALL WORK IN ACCORDANCE WITH THE LATEST REQUIREMENTS OF THE OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION.

5. ALL MATERIALS AND CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARD DETAILS AND SPECIFICATIONS OF THE CITY OF GREENVILLE, SOUTH CAROLINA AND ALL OTHER APPLICABLE GOVERNING AUTHORITIES. BELOW ARE WASTEWATER GENERAL NOTES BUT IN ALL CASES THE CONTRACTOR SHALL REFER TO THE SPECIFICATIONS AND DETAILS FOR ADDITIONAL MORE DETAILED CONSIDERATIONS.

6. ALL TRENCHES WITHIN THE RIGHT–OF–WAY SHALL BE COMPACTED TO 95% OF STANDARD PROCTOR DENSITY AND ALL OTHER TRENCHES SHALL BE COMPACTED TO 90% OF STANDARD PROCTOR DENSITY TO PREVENT SETTLEMENT AND DAMAGE TO PAVING AND PIPELINE. STANDARD PROCTOR TESTING SHALL BE IN CONFORMANCE WITH ASTM D698. ALL FILL IS TO BE FREE OF ROOTS, TRASH, AND ORGANIC MATTER AND SHALL BE PLACED IN 6" LIFTS. NO STONE LARGER THAN SIX (6) INCHES SHALL BE USED AS BACKFILL. FOR TRENCHES OUTSIDE OF A PAVED SURFACE, THE TOP 6" LIFT SHALL BE SCREENED ORGANIC TOPSOIL AND BE PERMANENTLY STABILIZED WITH VEGETATIVE COVER.

7. ALL PVC PIPE SHALL BE SDR 26, SDR 35, OR C900 MEETING ASTM STANDARDS. ALL DIP SEWER PIPE SHALL BE ASPHALT COATED CEMENT MORTAR LINED CLASS 50 DUCTILE IRON PIPE MEETING ANSI/AWWA STANDARDS WITH SPECIAL CONSIDERATION GIVEN TO CORROSIVE AND SEPTIC CONDITIONS. ALL PIPE SHALL BE INSTALLED IN ACCORDANCE WITH THE LATEST REVISION OF ASTM D2321 (PVC AND DIP) AND APPLICABLE ANSI/AWWA C600 STANDARDS (DIP) AND IN CONFORMANCE WITH THE STANDARD DETAIL, LATEST REVISION.

8. MANHOLES SHALL HAVE A MINIMUM INSIDE DIAMETER OF FOUR (4) FEET AND BE PRECAST 4000 PSI REINFORCED CONCRETE CONFORMING TO ASTM C–478 WITH PREFORMED OPENINGS. THE MANHOLE SHALL BE CONSTRUCTED WITH A FLOW CHANNEL TO PROVIDE A SMOOTH CONNECTION BETWEEN THE INLET TRIBUTARY AND THE OUTLET PIPE.

9. CONNECTIONS MADE AT MANHOLES SHALL BE NO HIGHER THAN 18" ABOVE MANHOLE INVERT. CONNECTIONS HIGHER THAN 18" ABOVE THE MANHOLE INVERT MUST HAVE AN EXTERNAL DROP CONSTRUCTED PER CITY OF GREENVILLE DETAILS AND SPECIFICATIONS.

10. EACH INDIVIDUALLY OWNED PARCEL AND EACH BUILDING HAVING PLUMBING FIXTURES INSTALLED, WHICHEVER IS APPLICABLE, SHALL HAVE AT LEAST ONE DIRECT AND INDIVIDUAL CONNECTION TO A CITY WASTEWATER MAIN WITHOUT CROSSING ADJACENT PROPERTY LINES.
   (A.) NEW CONNECTIONS TO AN EXISTING WASTEWATER MAIN THAT IS ACTIVELY CARRYING FLOW SHALL BE ACCOMPLISHED WITH A TAPPING SADDLE – ROMAC INDUSTRIES TYPE CB, OR APPROVED EQUAL.
   (B.) NEW CONNECTIONS CONSTRUCTED AS PART OF A NEW MAIN INSTALLATION SHALL BE ACCOMPLISHED WITH A WYE FITTING AND SET BETWEEN THE 10 AND 2 O'CLOCK POSITIONS. THE LONG BRANCH OF THE WYE SHALL HAVE THE SAME INSIDE DIAMETER AS THE MAIN. STRAIGHT TEE CONNECTIONS WILL NOT BE ACCEPTED. SERVICE CONNECTION LATERALS SHALL TERMINATE ONE (1) FOOT BEYOND THE RIGHT–OF–WAY OR EASEMENT BOUNDARY WITH A CLEANOUT AND AN AIR/WATER TIGHT PLUG PER THE STANDARD DETAILS.

11. SERVICE CONNECTIONS SHALL BE A MINIMUM OF THREE (3) FEET FROM PIPE JOINTS OR MANHOLES MEASURED FROM THE NEAREST EDGE OF THE WYE FITTING.

12. THE CONTRACTOR SHALL NOT CONNECT SERVICE LATERALS TO EXISTING OR NEW MANHOLES WITHOUT PRIOR WRITTEN APPROVAL FROM THE CITY ENGINEER.

13. THE LOCATION OF THE TERMINUS OF THE SERVICE LATERAL AND CLEANOUT SHALL BE MARKED BY A 2" X 4" TREATED POST PAINTED GREEN DRIVEN A MINIMUM OF THREE (3) FEET AND PROTRUDING APPROXIMATELY THREE (3) FEET ABOVE FINAL GRADE.

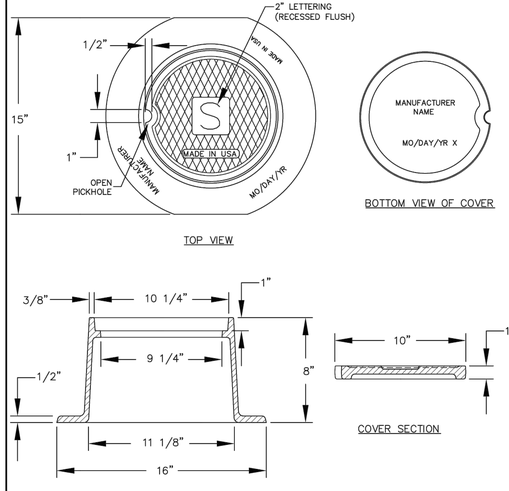
14. SANITARY SEWER SERVICE LATERALS SHALL NOT BE CONNECTED TO A NEWLY CONSTRUCTED SANITARY SEWER MAIN UNTIL A PERMIT TO OPERATE HAS BEEN OFFICIALLY ISSUED BY SCDHEC AND RECEIVED BY THE CITY ENGINEER. CONTACT THE CITY OF GREENVILLE ENVIRONMENTAL ENGINEERING BUREAU AT (864) 467–4400 WITH ANY QUESTIONS.

15. PRESSURE AND DEFLECTION TEST TO BE PERFORMED ON ALL LINES AND VACUUM TEST ON ALL MANHOLES IN THE PRESENCE OF A CITY OF GREENVILLE REPRESENTATIVE AND A REPRESENTATIVE OF THE ENGINEER. ALL TESTS SHALL BE IN CONFORMANCE WITH CITY OF GREENVILLE AND SCDHEC SPECIFICATIONS.

16. THE CONTRACTOR SHALL PROVIDE TO THE DESIGN ENGINEER A RECORD DRAWING OF THE SANITARY SEWER SYSTEM. THE DRAWINGS SHALL, AT A MINIMUM, INCLUDE THE SANITARY SEWER MAIN AND MANHOLE LOCATIONS, PIPE MATERIAL FOR THE MAIN AND THE SERVICE LATERALS, THE DISTANCE OF EACH SERVICE CONNECTION TO THE DOWNSTREAM MANHOLE, LENGTH OF EACH SERVICE LATERAL, AND THE LOCATION AND DEPTH OF EACH SERVICE LATERAL TERMINUS. THE ENGINEER SHALL USE THIS DOCUMENTATION AS WELL AS INFORMATION OBTAINED BY A SURVEYOR TO PREPARE RECORD DRAWINGS. THE ENGINEER CANNOT APPLY FOR FINAL APPROVAL UNTIL THIS INFORMATION IS OBTAINED FROM THE CONTRACTOR.

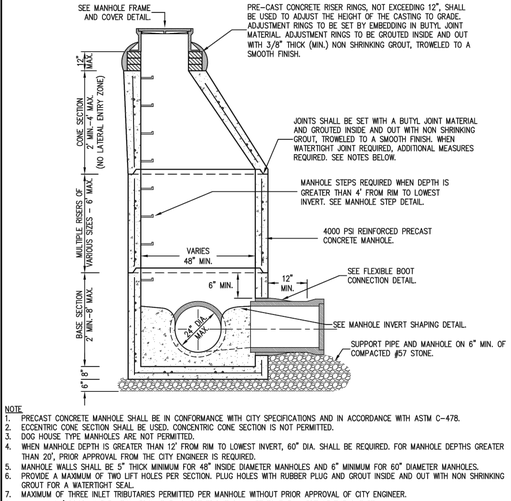
17. THERE SHALL BE A 25–FOOT EASEMENT (12.5' EACH SIDE OF CENTERLINE) ESTABLISHED ON ALL WASTEWATER MAINS.

city of greenville — ENGINEERING DIVISION
WASTEWATER GENERAL NOTES
DATE APPROVED: MAR. 2017 — OFFICE OF THE CITY ENGINEER:
SCALE: NO SCALE — DETAIL: 29:00



NOTE
1. ALL GRAY IRON CASTINGS SHALL CONFORM TO ASTM A48 CL35B AND SHALL BE OF UNIFORM QUALITY.
2. ALL CASTINGS SHALL BE UNDIPPED.
3. ALL CASTINGS SHALL HAVE THE FOLLOWING AVERAGE WEIGHTS:
   FRAME: 39 LBS.
   COVER: 14 LBS.
   TOTAL: 53 LBS.
4. ALL CASTINGS SHALL BE H–20 TRAFFIC RATED.
5. CASTINGS SHALL BE EJIW UNIT NO. 1566, OR APPROVED EQUAL.

city of greenville — ENGINEERING DIVISION
CLEANOUT FRAME AND COVER
DATE APPROVED: JUNE 2010 — OFFICE OF THE CITY ENGINEER: Philip B. Lindsay
SCALE: NO SCALE — DETAIL: 25:02



NOTE
1. PRECAST CONCRETE MANHOLE SHALL BE IN CONFORMANCE WITH CITY SPECIFICATIONS AND IN ACCORDANCE WITH ASTM C–478.
2. ECCENTRIC CONE SECTION SHALL BE USED. CONCENTRIC CONE SECTION IS NOT PERMITTED.
3. DOG HOUSE TYPE MANHOLES ARE NOT PERMITTED.
4. WHEN MANHOLE DEPTH IS GREATER THAN 12' FROM RIM TO LOWEST INVERT, 60" DIA. SHALL BE REQUIRED. FOR MANHOLE DEPTHS GREATER THAN 20', PRIOR APPROVAL FROM THE CITY ENGINEER IS REQUIRED.
5. MANHOLE WALLS SHALL BE 5" THICK MINIMUM FOR 48" INSIDE DIAMETER MANHOLES AND 6" MINIMUM FOR 60" DIAMETER MANHOLES.
6. PROVIDE A MAXIMUM OF TWO LIFT HOLES PER SECTION. PLUG HOLES WITH RUBBER PLUG AND GROUT INSIDE AND OUT WITH NON SHRINKING GROUT FOR A WATERTIGHT SEAL.
7. MAXIMUM OF THREE INLET TRIBUTARIES PERMITTED PER MANHOLE WITHOUT PRIOR APPROVAL OF CITY ENGINEER.
8. MINIMUM 0.1' DROP IN ELEVATION FROM THE LOWEST TRIBUTARY INLET TO THE INVERT OF THE OUTLET.
9. CONNECTIONS TO A PRECAST MANHOLE MUST BE CORED AND REQUIRE A FLEXIBLE BOOT CONNECTION, KOR–N–SEAL OR APPROVED EQUAL. CORING NOT PERMITTED WITHIN 6" OF BARREL SECTION JOINT. CONNECTIONS TO EXISTING MANHOLES SUBJECT TO ADDITIONAL REQUIREMENTS. SEE CITY SPECIFICATIONS, FLEXIBLE BOOT CONNECTION DETAIL, AND MANHOLE INVERT SHAPING DETAILS FOR ADDITIONAL INFORMATION.
10. RE–CORING OR OVER CORING IS NOT PERMITTED ON NEW MANHOLES THAT WERE FABRICATED OR INSTALLED INCORRECTLY.
11. BUTYL JOINT MATERIAL SHALL COMPLY WITH ASTM C990.
12. NON SHRINKING GROUT SHALL BE IN CONFORMANCE WITH ASTM C1107, ASTM C827, CRD C621 SUCH AS 1107 ADVANTAGE GROUT BY DAYTON SUPERIOR, OR APPROVED EQUAL.
13. IN CORROSIVE CONDITIONS AS DIRECTED BY THE CITY ENGINEER (E.G. RECEIVING FORCE MAIN DISCHARGE), MANHOLE INTERIOR WALLS SHALL RECEIVE A 10 MIL MINIMUM THICKNESS ACID RESISTANT COATING, NOVOCOAT SP2000, OR APPROVED EQUAL.
14. WHEN A WATERTIGHT MANHOLE IS REQUIRED AS DIRECTED BY THE CITY ENGINEER, JOINTS SHALL BE SEALED WITH O–RING GASKETS IN CONFORMANCE WITH ASTM C443 AND NON SHRINKING GROUT. ADDITIONALLY THE MANHOLE SHALL RECEIVE WATERPROOFING BY ONE OF THE FOLLOWING METHODS: (A.) EXTERIOR OF THE MANHOLE SHALL RECEIVE A 40 MIL COATING BITUMINOUS COAL TAR EPOXY CONFORMING TO AWWA C210 PER CITY SPECIFICATIONS. (B.) MANHOLES SHALL BE PRECAST WITH WATERPROOFING ADMIXTURE IPANEX BY IPA SYSTEMS IN ACCORDANCE WITH THE MANUFACTURER'S DOSAGE AND MIXING INSTRUCTIONS.

city of greenville — ENGINEERING DIVISION
PRECAST CONCRETE MANHOLE
DATE APPROVED: JUNE 2010 — OFFICE OF THE CITY ENGINEER: Philip B. Lindsay
SCALE: NO SCALE — DETAIL: 21:00

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

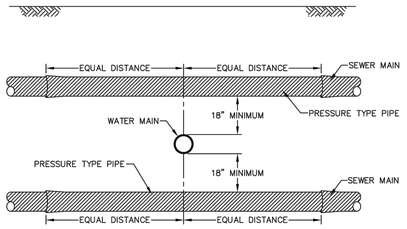
NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
501 River Street • Suite 200
Greenville, SC 29601 • 864.412.2222
www.thomasandhutton.com

LICAR, LLC
CITY OF GREENVILLE, SC
CU ICAR – TN3 – FLEX BUILDING
WATER AND SEWER DETAILS

JOB NO:	J-28283.0000
DATE:	08/14/2020
DRAWN:	CMC
DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	1" = 50'

C2.2

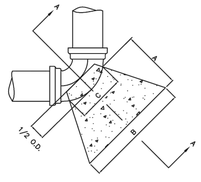


NOTE
1. ALL REASONABLE EFFORT MUST BE MADE FOR THE SEWER LINE TO CROSS UNDER THE WATER MAIN.
2. THE SEWER SHALL BE LAID SUCH THAT THE OUTSIDE EDGE OF THE SEWER MAIN IS A MINIMUM OF 18 INCHES FROM THE OUTSIDE EDGE OF THE WATER MAIN.
3. THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.
4. SEWER MAIN SHALL BE CONSTRUCTED OF SLIP TYPE OR MECHANICAL JOINT PIPE COMPLYING WITH ANSI/AWWA C900 OR ANSI/AWWA C600, PUBLIC WATER SUPPLY STANDARDS FROM NEAREST UPSTREAM MANHOLE TO THE NEAREST DOWNSTREAM MANHOLE.
5. ENTIRE LINE SHALL BE TESTED AT A HIGHER PRESSURE AS SPECIFIED IN THE HORIZONTAL/VERTICAL SEPARATION SECTION OF CHAPTER 8 IN THE DESIGN SPECIFICATION MANUAL TO ASSURE WATER TIGHTNESS PRIOR TO BACKFILLING.
6. THE CROSSING SHALL HAVE ADEQUATE STRUCTURAL SUPPORT TO PREVENT DAMAGE TO THE MAIN.

city of greenville ENGINEERING DIVISION	SEWER & WATER CROSSING SEPARATION	SCALE: NO SCALE
	DATE APPROVED: MAR. 2017 — OFFICE OF THE CITY ENGINEER:	DETAIL: 22:02

MINIMUM DIMENSIONS FOR CONCRETE BLOCKING

BEND	SIZE	A	B	C	D
11 1/4°	6"	1'-0"	2'-0"	4"	1'-0"
	8"	1'-0"	2'-0"	5"	1'-0"
	10"	1'-0"	2'-0"	6"	1'-0"
	12"	1'-0"	2'-0"	7"	1'-0"
	14"	1'-0"	2'-0"	11"	1'-6"
	16"	1'-0"	2'-0"	1'-0"	2'-0"
	20"	2'-0"	3'-0"	1'-3"	2'-0"
	24"	2'-0"	3'-0"	1'-6"	3'-0"
22 1/2°	6"	1'-0"	2'-0"	6"	1'-0"
	8"	1'-0"	2'-0"	7"	1'-0"
	10"	1'-0"	2'-0"	8"	1'-6"
	12"	1'-0"	2'-0"	10"	2'-0"
	14"	2'-0"	3'-0"	11"	2'-0"
	16"	2'-0"	4'-0"	1'-0"	2'-0"
	20"	3'-0"	4'-0"	1'-3"	3'-0"
	24"	3'-0"	4'-0"	1'-6"	4'-0"
45°	6"	1'-0"	2'-0"	6"	1'-0"
	8"	1'-0"	4'-0"	7"	2'-0"
	10"	2'-0"	4'-0"	9"	2'-0"
	12"	2'-0"	3'-0"	11"	3'-0"
	14"	2'-0"	4'-0"	11"	3'-0"
	16"	3'-0"	5'-0"	1'-0"	3'-0"
	20"	4'-0"	6'-0"	1'-3"	4'-0"
	24"	4'-0"	7'-0"	1'-6"	5'-0"
90°	6"	1'-0"	2'-0"	1'-0"	2'-0"
	8"	2'-0"	3'-0"	1'-2"	2'-6"
	10"	2'-0"	3'-0"	1'-6"	3'-0"
	12"	2'-0"	4'-0"	2'-0"	4'-0"
	14"	3'-0"	5'-0"	2'-0"	4'-6"
	16"	4'-0"	6'-0"	2'-2"	4'-9"
	20"	4'-0"	7'-0"	2'-8"	6'-4"
	24"	5'-0"	8'-0"	3'-4"	8'-0"
TEES & PLUGS	6"	1'-0"	2'-0"	10"	1'-6"
	8"	1'-0"	2'-0"	1'-1"	2'-0"
	10"	2'-0"	4'-0"	1'-3"	2'-0"
	12"	2'-0"	4'-0"	1'-7"	3'-0"
	14"	3'-0"	5'-0"	2'-0"	3'-0"
	16"	3'-0"	5'-0"	2'-2"	4'-0"
	20"	4'-0"	6'-0"	2'-8"	5'-0"
	24"	6'-0"	9'-0"	3'-4"	5'-0"



SECTION A–A

NOTE

SOIL CONDITIONS SHALL BE VERIFIED BY G. W. FIELD ENGINEER PRIOR TO DESIGN.

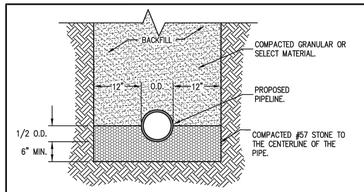
DESIGN DATA:
- DIMENSIONS OF THRUST BLOCK IN FEET BASED ON 2000 POUNDS PER SQUARE FOOT SOIL BEARING PRESSURE AND 200 POUNDS PER SQUARE INCH TEST PRESSURE
- CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS. HIGH EARLY CONCRETE SHALL BE USED.

GreenvilleWater

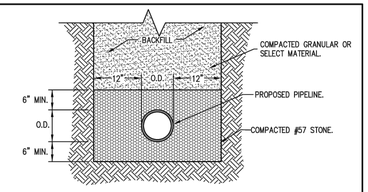
TYPICAL HORIZONTAL THRUST BLOCK

REVISED: 08/02/2013

L:\ENGG\DWG-SUPPORT\DETAILS\THRUSTBLOCK.DWG



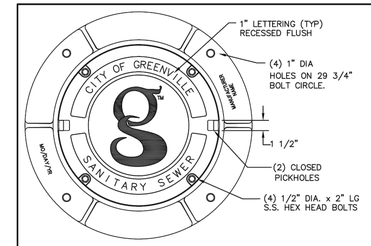
DUCTILE IRON PIPE

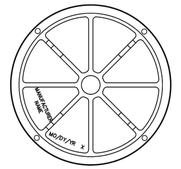


PVC PIPE

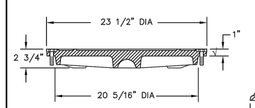
NOTE
1. CONTRACTOR SHALL NOTIFY CITY OF GREENVILLE CONSTRUCTION INSPECTION BUREAU A MINIMUM OF 72 HOURS PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES.
2. PVC PIPE SHALL BE INSTALLED AS SHOWN AND IN CONFORMANCE WITH THE LATEST CITY SPECIFICATIONS AND IN ACCORDANCE WITH ASTM D2321.
3. DUCTILE IRON PIPE SHALL BE INSTALLED AS SHOWN AND IN CONFORMANCE WITH THE LATEST CITY SPECIFICATIONS AND IN ACCORDANCE WITH SECTIONS 4.3.1 THROUGH 4.3.5 (EXCEPT 4.3.3.5, 4.3.4.4, AND 4.3.5.1.1), 5.1.1, AND 6.1 OF ANSI/AWWA C600 AS WELL AS THE APPLICABLE PORTIONS ASTM D2321 FOR NON-RIGID PIPE INSTALLATION.
4. EACH SECTION OF SEWER PIPE SHALL BE LAID TO THE APPROPRIATE LINE AND GRADE, AS DESIGNED AND PERMITTED, WORKING IN THE UPSTREAM DIRECTION WITH THE BELL END LAID UPGRADE.
5. TRENCH BOTTOM, PIPE BEDDING, AND ALL OTHER PLACEMENT AND COMPACTION OPERATIONS SHALL BE INSPECTED BY THE CITY OF GREENVILLE CONSTRUCTION INSPECTION BUREAU IN ACCORDANCE WITH CITY SPECIFICATIONS.
6. AS REQUESTED, THE CONTRACTOR SHALL SUPPLY RELIABLE TESTING DATA CONFIRMING THE MINIMUM STANDARDS ARE MET. THE CITY MAY NOT ACCEPT WORK IF THE CONTRACTOR FAILS TO PRODUCE SUFFICIENT TESTING RESULTS.
7. ALL TRENCH WORK SHALL BE IN COMPLIANCE WITH THE LATEST EDITION OF OSHA PART 1926 SUBPART P APPENDIX B OF THE CODE OF FEDERAL REGULATIONS.
8. TRENCH WIDTHS SHALL BE WIDER TO PERMIT THE PLACEMENT OF TIMBER SUPPORTS, SHEETING, BRACING, AND APPURTENANCES AS REQUIRED BY OSHA REGULATIONS.
9. TRENCH BOTTOM SHALL BE FREE OF WATER BEFORE PLACEMENT OF BEDDING.
10. UNSUITABLE SOIL SHALL BE REMOVED & BACKFILLED WITH APPROVED STONE AS DIRECTED BY THE CITY OF GREENVILLE CONSTRUCTION INSPECTION BUREAU.
11. CONTRACTOR SHALL SHAPE RECESSES BY HAND FOR PIPE BELL.
12. WHEN PLACED WITHIN THE R/W AND ALL TRAVELED SURFACES, BACKFILL MATERIAL SHALL BE CLEAN, SELECT MATERIAL PLACED IN 6" LIFTS & COMPACTED TO 95% STANDARD PROCTOR DENSITY PER ASTM D698.
13. WHEN PLACED OUTSIDE THE R/W, BACKFILL MATERIAL SHALL BE CLEAN, SELECT MATERIAL COMPACTED TO 90% STANDARD PROCTOR DENSITY PER ASTM D698.
14. COMPACTION TESTING SHALL BE PERFORMED PER CITY OF GREENVILLE SPECIFICATIONS.
15. SELECT BACKFILL MATERIAL IS NATIVE SOIL EXCAVATED FROM THE TRENCH FREE OF ROCKS, FOREIGN MATERIAL, AND FROZEN EARTH. UNSUITABLE NATIVE SOIL SHALL NOT BE USED.
16. PIPE SHALL RECEIVE A MINIMUM 36" OF COVER BEFORE ALLOWING VEHICLES OR CONSTRUCTION EQUIPMENT TO TRAFFIC THE TRENCH SURFACE AND AT LEAST 48" OF COVER BEFORE USING A HYDROHAMMER FOR COMPACTION.

city of greenville ENGINEERING DIVISION	PIPE BEDDING	SCALE: NO SCALE
	DATE APPROVED: JUNE 2010 — OFFICE OF THE CITY ENGINEER: Philip B. Lindsay	DETAIL: 23:00

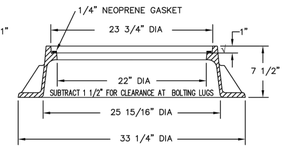




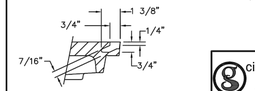
COVER BOTTOM VIEW



COVER SECTION



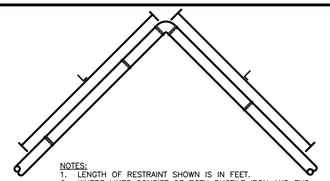
FRAME SECTION



PICKHOLE DETAIL

NOTE
1. ALL WASTEWATER MANHOLE ASSEMBLIES INSTALLED WITHIN THE CITY SHALL CONFORM TO THIS DETAIL AND CITY OF GREENVILLE SPECIFICATIONS.
2. COVER SHALL BE GRAY IRON CONFORMING TO ASTM A48 CL35B AND SHALL WEIGH APPROXIMATELY 130 POUNDS WITHIN ACCEPTABLE TOLERANCE.
3. FRAME SHALL BE GRAY IRON CONFORMING TO ASTM A48 CL35B AND SHALL WEIGH APPROXIMATELY 160 POUNDS WITHIN ACCEPTABLE TOLERANCE.
4. MANHOLE ASSEMBLY SHALL BE UNDIPPED.
5. "√" DESIGNATES MACHINED SURFACE.
6. LETTERING SHALL BE TRUE TYPE ARIAL FONT HAVING ⅛" RELIEF. LOGO SHALL HAVE ¼" RELIEF.
7. EJIW PRODUCT NO. V-2384, US FOUNDRY PRODUCT NO. 8015480, OR APPROVED EQUAL.

city of greenville ENGINEERING DIVISION	WATERTIGHT RING & COVER WASTEWATER UTILITY	SCALE: NO SCALE
	DATE APPROVED: JUNE 2010 — OFFICE OF THE CITY ENGINEER: Philip B. Lindsay	DETAIL: 20:01



DUCTILE IRON LINE

PIPE DIA.	L
4	28
6	40
8	52
10	62
12	73
16	94
20	114
24	132

PVC LINE

PIPE DIA.	L
4	52
6	74
8	96
10	115
12	136

NOTES:
1. LENGTH OF MECHANICAL JOINT RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.

DEAD END RESTRAINT

NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.

PVC LINE

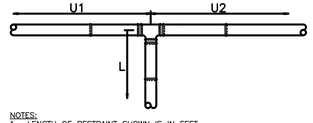
PIPE DIA.	BEND ANGLE 11 1/4°	22 1/2°	45°	90°
4	3	6	12	29
6	4	8	17	41
8	5	11	22	53
10	6	13	26	64
12	7	15	31	75

DUCTILE IRON LINE

PIPE DIA.	BEND ANGLE 11 1/4°	22 1/2°	45°	90°
4	2	4	8	20
6	3	6	12	28
8	4	7	15	36
10	4	9	18	43
12	5	10	21	51
16	6	13	27	65
20	8	16	33	79
24	9	18	38	92

MINIMUM RESTRAINED LENGTH (L)

HORIZONTAL BEND RESTRAINT



NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.
3. U1 AND U2 = UNINTERRUPTED STRAIGHT RUNS OF PIPE IN EACH DIRECTION.
4. Ur = THE SMALLER OF U1 OR U2.
5. L = MINIMUM RESTRAINED LENGTH ALONG THE BRANCH.
6. WHERE Ur IS LESS THAN 5', RESTRAIN TEE AS A 90°. HORIZONTAL BEND.

DUCTILE IRON LINE

TEE Ur	5'-10'	11'-20'	21'-35'	36'-50'	50'-75'	75'-100'
4X4	23	15	2	*	*	*
6X4	21	9	*	*	*	*
6X6	35	27	14	*	*	*
8X4	18	3	*	*	*	*
8X6	33	23	5	*	*	*
8X8	47	39	26	6	*	*
10X4	16	*	*	*	*	*
10X6	31	18	*	*	*	*
10X8	46	36	19	*	*	*
10X10	57	49	36	17	*	*
12X4	13	*	*	*	*	*
12X6	30	14	*	*	*	*
12X8	44	32	13	*	*	*
12X10	56	47	31	7	*	*
12X12	68	60	47	28	*	*
16X6	26	4	*	*	*	*
16X8	41	25	*	*	*	*

DUCTILE IRON LINE

TEE Ur	5'-10'	11'-20'	21'-35'	36'-50'	50'-75'	75'-100'
16X10	54	41	20	*	*	*
16X12	66	56	38	*	*	*
16X16	89	81	38	*	*	*
20X6	22	*	*	*	*	*
20X8	38	18	*	*	*	*
20X10	51	35	8	*	*	*
20X12	64	51	28	*	*	*
20X16	87	77	60	35	10	*
20X20	108	100	87	67	48	*
24X6	18	*	*	*	*	*
24X8	35	10	*	*	*	*
24X10	49	29	*	*	*	*
24X12	62	45	17	*	*	*
24X16	86	73	53	22	*	*
24X20	107	97	81	57	33	*
24X24	127	119	106	86	66	33

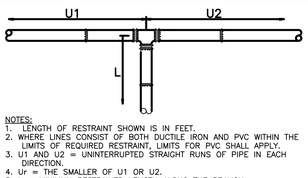
MINIMUM RESTRAINED LENGTH (L)
*RESTRAIN AT TEE ONLY.

TEE RESTRAINT (DUCTILE IRON LINE)

W32
OCT. 2008
THOMAS & HUTTON ENGINEERING CO.

MECHANICALLY RESTRAINED JOINTS DETAILS

NOT TO SCALE



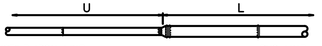
NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.
3. U1 AND U2 = UNINTERRUPTED STRAIGHT RUNS OF PIPE IN EACH DIRECTION.
4. Ur = THE SMALLER OF U1 OR U2.
5. L = MINIMUM RESTRAINED LENGTH ALONG THE BRANCH.
6. WHERE Ur IS LESS THAN 5', RESTRAIN TEE AS A 90°. HORIZONTAL BEND.

PVC LINE

TEE Ur	5'-10'	11'-20'	21'-35'	> 35'
4X4	43	28	4	*
6X4	38	17	*	*
6X6	64	49	25	*
8X4	34	6	*	*
8X6	61	42	10	*
8X8	87	72	48	12
10X4	29	*	*	*
10X6	58	34	*	*
10X8	84	66	35	*
10X10	106	91	67	31
12X4	24	*	*	*
12X6	54	26	*	*
12X8	82	60	23	*
12X10	104	86	57	13
12X12	126	112	87	51

MINIMUM RESTRAINED LENGTH (L)
*RESTRAIN AT TEE ONLY.

TEE RESTRAINT (PVC LINE)



DUCTILE IRON LINE

REDUCER	U	L
6X4	30	21
8X4	72	38
8X6	29	22
10X4	123	51
10X6	63	38
10X8	26	21
12X4	186	64
12X6	106	53
12X8	59	39
12X10	26	21
16X6	214	79
16X8	141	68
16X10	91	56
16X12	54	40
20X10	174	84
20X12	123	71
20X16	51	40
24X12	207	97
24X16	113	72
24X20	48	39

PVC LINE

REDUCER	U	L
6X4	56	38
8X4	134	69
8X6	53	40
10X4	227	94
10X6	117	71
10X8	49	39
12X4	343	118
12X6	196	99
12X8	109	72
12X10	48	40

U = MINIMUM UNINTERRUPTED STRAIGHT RUN OF PIPE ON SMALL SIDE OF REDUCER.

L = MINIMUM RESTRAINED LENGTH.

* WHERE MINIMUM "U" IS NOT MET, PIPE ON LARGE SIDE OF REDUCER SHALL BE RESTRAINED FOR A MINIMUM OF "L" FEET.

NOTES:
1. LENGTH OF RESTRAINT SHOWN IS IN FEET.
2. WHERE LINES CONSIST OF BOTH DUCTILE IRON AND PVC WITHIN THE LIMITS OF REQUIRED RESTRAINT, LIMITS FOR PVC SHALL APPLY.

REDUCER RESTRAINT

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

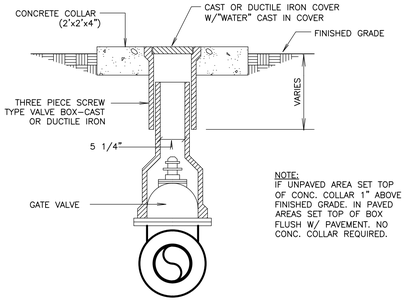
NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
501 River Street • Suite 200
Greenville, SC 29601 • 864.412.2222
www.thomasandhutton.com

LICAR, LLC
CITY OF GREENVILLE, SC
CU ICAR - TN3 - FLEX BUILDING
WATER AND SEWER DETAILS

JOB NO:	J-28283.0000
DATE:	08/14/2020
DRAWN:	CMC
DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	1" = 50'

C2.3

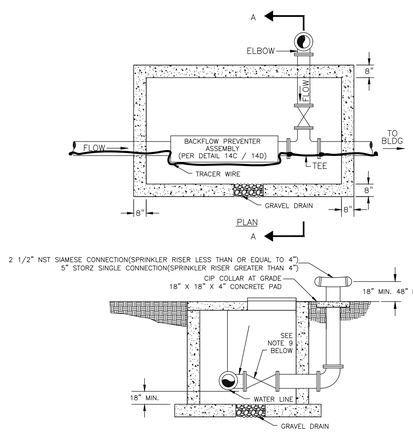


NOTE:
IF UNPAVED AREA SET TOP OF CONC. COLLAR 1" ABOVE FINISHED GRADE. IN PAVED AREAS SET TOP OF BOX FLUSH W/ PAVEMENT. NO CONC. COLLAR REQUIRED.

W10
OCT. 2008
THOMAS & HUTTON ENGINEERING CO.

VALVE BOX DETAIL

NOT TO SCALE

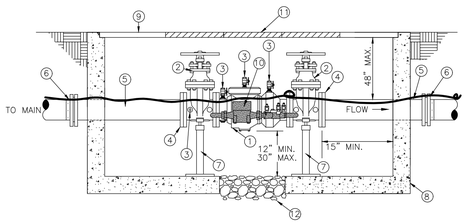


SECTION A–A

NOTES:

1. THE VALVE PIT SHALL BE SIZED TO ACCOMMODATE ALL PROPOSED EQUIPMENT.
2. THERE SHALL BE NO SHUTOFF VALVE IN THE FIRE DEPT. CONNECTION PIPING (PER NFPA 13).
3. ALL FITTINGS SHALL BE FLANGED.
4. ALL PIPING SHALL BE STEEL OR DUCTILE IRON.
5. SEE SITE PLANS FOR SIZES OF PIPES AND FITTINGS. SIAMESE CONNECTION TO BE IN ACCORDANCE WITH NFPA 13.
6. PROVIDE DRAINAGE AWAY FROM STRUCTURE.
7. A 2" MINIMUM CLEARANCE SHALL BE MAINTAINED BETWEEN THE BOTTOM OF THE VAULT LID AND THE RISING STEM OF THE OS&Y VALVE IN THE FULLY OPEN POSITION.
8. KNOX LOCKING PLUG SHALL BE PROVIDED ON THE FIRE DEPARTMENT CONNECTION INLET
9. APPROVED WAFER CHECK OR SWING CHECK VALVE WITH HORIZONTAL MOUNTED BALL DRIP VALVE.

FIRE SERVICE SYSTEM FOR BUILDINGS



MATERIALS

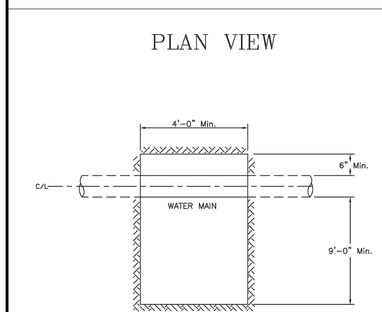
ITEM	QUAN.	DESCRIPTION
1	1	DOUBLE DETECTOR CHECK VALVE ASSEMBLY
2	2	OS&Y RESILIENT SEAT GATE VALVES
3	4	TEST COCKS W/ NO–LEAD BRASS PLUGS
4	2	RESTRAINED FLANGE ADAPTER, MEGALUG (OR EQUIVALENT)
5	1	DUCTILE IRON PIPE, CUT TO FIT
6	2	MECHANICAL JOINT W/ MEGALUG (OR EQUIVALENT)
7	2	2" SCH. 40 GALV. PIPE STAND & BASE BOLTED TO FLANGE
8	1	PIT–CEMENT BLOCK, POURED CONCRETE, OR PREFABRICATED BOX PER CITY SPECS.
9	1	3/8 ALUMINUM FLOOR PLATE / HATCH COVER
10	1	3/4 CUBIC FT. METER W/ CHECK
11	1	2' X 2' MIN. HATCH W/ LOCKING HASP
12	1	#57 STONE GRAVEL DRAIN

NOTES:

1. FOR FINAL APPROVAL, ASSEMBLY MUST BE CENTERED IN ENCLOSURE (IF APPLICABLE). UNDER NO CONDITION WILL ANY CONNECTION BE ALLOWED BETWEEN THE SERVICE METER AND BACKFLOW PREVENTER USED FOR SYSTEM CONTAINMENT. BACKFLOW PREVENTER SHALL ALWAYS BE INSTALLED DOWNSTREAM OF METER.
2. IF A PRESSURE MONITOR IS TO BE INSTALLED, ADD A TEE, VALVE, FITTINGS, AND MOUNT ON SUPPLY SIDE PRIOR TO BACKFLOW PREVENTER; UNDER NO CIRCUMSTANCE SHALL TEST PORTS BE MODIFIED OR UTILIZED FOR THIS OR OTHER APPLICATION, OTHER THAN BACKFLOW DEVICE TESTING.
3. IF ADDITIONAL SIAMESE CONNECTION IS REQUIRED FOR FIRE SERVICE SEE DETAIL W12.

TYPICAL BELOW GRADE INSTALLATION (3", 4", 6", 8", 10" & 12" SIZES)

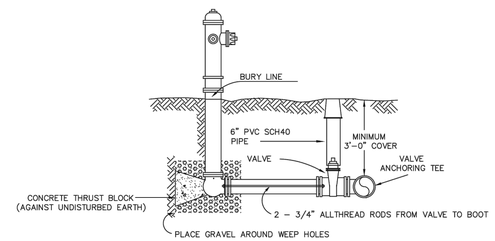
DOUBLE DETECTOR CHECK VALVE ASSEMBLY FOR FIRE SYSTEM (3" AND LARGER)



PLAN VIEW

GreenvilleWater

EXCAVATION REQUIRED FOR LARGE TAPS
(1 1/2" TAPS AND LARGER)
DATE DRAWN: 8/23/2016



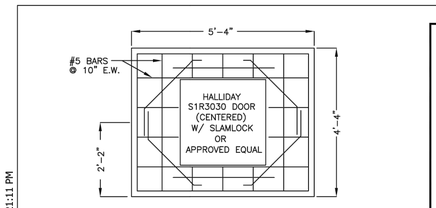
NOTES:

1) FIRE HYDRANT TO BE INSTALLED PLUMB.
2) FIRE HYDRANT TO BE 3–WAY WITH DEPTH OF BURY TO BE DETERMINED BY FIELD CONDITIONS.
3) HYDRANT LEAD TO BE PRESSURE CLASS 350 DUCTILE IRON.
4) WHEN FIRE HYDRANT RESTRAINT BY RODDING NECESSARY, TWO 3/4" ø ALLTHREAD RODS REQUIRED AS A MINIMUM.
5) ONLY USE MUELLER OR AFC HYDRANTS.

GreenvilleWater

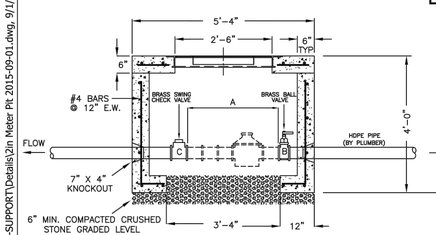
TYPICAL HYDRANT INSTALLATION

REVISED: 11/30/2018



METER INSTALLATION PROCEDURE

1. A CONTRACT FOR WATER SERVICE MUST BE SIGNED AND ALL APPLICABLE FEES PAID AT THE ENGINEERING OFFICE.
2. THE PLUMBING CONTRACTOR OR APPLICANT IS RESPONSIBLE FOR OBTAINING THE NECESSARY PERMITS FOR EXCAVATION.
3. THE METER PIT IS TO BE INSTALLED AND INSPECTED BEFORE THE EXCAVATION IS MADE FOR THE TAP.
4. THE TAP AND METER INSTALLATION IS TO BE SCHEDULED WITH GREENVILLE WATER FOR COORDINATING THIS WORK. FOR OTHER INFORMATION, CALL G.W., TELEPHONE No. 241–6100.
5. PRECAST METER PIT BY APPROVED MANUFACTURERS (CURRENTLY: MST CONCRETE OR RINKER MATERIALS).



	METER SIZE	1–1/2"	2"
A	SPACE FOR METER	2'–4"	2'–8"
B	BRASS BALL VALVE, F.I.P. x F.I.P.	MUELLER B–20 200 FORD B11–666W	MUELLER B–20 200 FORD B11–777W
C	BRASS SWING CHECK VALVE (1–1/2" OR 2") F.I.P. x F.I.P., 200 P.S.I. W.O.G.		

GreenvilleWater

1–1/2" & 2"
WATER METER PIT

REVISED: 9/1/2015

L:\Engg\DWG-SUPPORT\Details\2in Meter Pit 2015-09-01.dwg, 9/1/2015 12:21:11 PM

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030286 JOSEPH M. THOMAS — THOMAS & HUTTON ENGINEERING — No. C002286 — CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030286 JOSEPH M. THOMAS — NOT FOR CONSTRUCTION — 10-14-2020

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
501 River Street • Suite 200
Greenville, SC 29601 • 864.412.2222
www.thomasandhutton.com

LICAR, LLC
CITY OF GREENVILLE, SC

CU ICAR - TN3 - FLEX BUILDING

WATER AND SEWER DETAILS

JOB NO:	J-28283.0000
DATE:	08/14/2020
DRAWN:	CMC
DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	1" = 50'

C2.4

Z:\2017\28283\7000\Engineering\Drawings\Construction Plans\28283-000-20 Sep 30, 2020 - 4:43:44 PM

PROPOSED FLEX BUILDING
+/- 39,200 SF
FFE: 942.25'

FES #24
INV. IN: 932.46 (SE)

3'-WIDE CONCRETE FLUME (TYP.)

3'-WIDE CONCRETE FLUME (TYP.)

3'-WIDE CONCRETE FLUME (TYP.)

139 LF 24" RCP @ 0.40%

10 LF 18" RCP @ 1.00%

HI #28
HD: 937.87
INV. IN: 933.02 (S)
INV. OUT: 933.02 (NW)

33 LF 18" RCP @ 1.00%

RI #27
FR: 939.34
TH: 938.68
INV. OUT: 933.45 (N)

HI #23
HD: 937.88
INV. IN: 933.35 (S)
INV. OUT: 933.35 (N)

RI #9
FR: 927.99
TH: 927.32
INV. OUT: 918.40 (NE)

68 LF 36" RCP @ 1.95%

JB #11
FR: 922.91
INV. IN: 917.08 (SW)
INV. OUT: 908.26 (NE)

66 LF 36" RCP @ 1.90%

CS #18
FR: 909.00
INV. OUT: 903.75 (N)

OUTLET PLUNGE POOL

FES #19
INV. IN: 903.00 (S)

73 LF 36" RCP @ 1.02%

FES #10
INV. IN: 907.00 (SW)

EMERGENCY SPILLWAY.
TOP: 912.0
BOTTOM: 910.0
SEE DETAIL EC3.2

245 LF 36" RCP @ 1.05%

FES #14
INV. IN: 907.00 (SE)

TMS# 4010030109905
DB 2520-41 PG 34

CITY OF GREENVILLE DRAINAGE EASEMENT PER PB 1024-14

101 LF 18" RCP @ 2.00%

101 LF 18" RCP @ 1.95%

101 LF 18" RCP @ 5.46%

2-FT BERM

2-FT BERM

HI #20
HD: 940.22
INV. OUT: 935.40 (N)

101 LF 18" RCP @ 2.00%

HI #21
HD: 940.22
INV. IN: 933.38 (S)
INV. OUT: 933.38 (N)

HI #22
HD: 940.22
INV. IN: 931.36 (S)
INV. OUT: 931.36 (N)

HI #12
HD: 940.22
INV. IN: 928.39 (S)
INV. OUT: 925.79 (N)

153 LF 30" RCP @ 1.05%

JB #13
FR: 925.96
INV. IN: 920.28 (S)
INV. IN: 909.59 (SE)
INV. OUT: 909.59 (NW)

FES #17
INV. IN: 928.72 (S)

FES #16
INV. OUT: 930.91 (N)

110 LF 24" RCP @ 2.00%

RI #15
FR: 916.73
TH: 916.07
INV. OUT: 911.20 (NW)

INNOVATION DRIVE
(80' R/W)

PAINTED MEDIAN

APPROXIMATE LOCATION 12" WATER MAIN (GREENVILLE WATER SYSTEM)

GRAPHIC SCALE
40 0 20 40 80 160
(IN FEET)
1 inch = 40 ft

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

NO.	REVISIONS	BY	DATE

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www.thomasandhutton.com

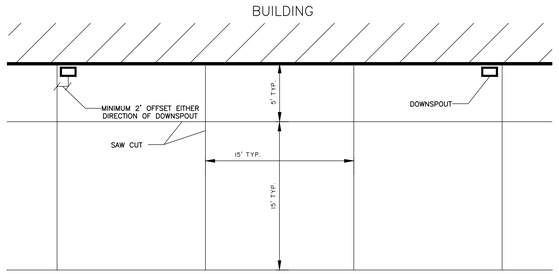
LICAR, LLC
CITY OF GREENVILLE, SC

CU ICAR - TN3 - FLEX BUILDING

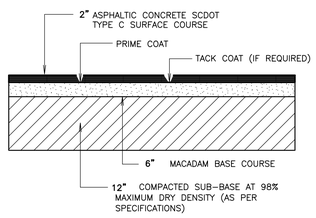
PAVING, GRADING, AND DRAINAGE PLAN

JOB NO:	J-28283.0000
DATE:	08/14/2020
DRAWN:	CMC
DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	1" = 40'

C3.1



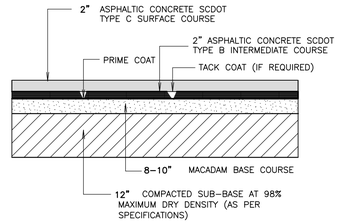
TYPICAL SAW JOINT SPACING PLAN CONTRACTOR TO PROVIDE FINAL PLAN FOR REVIEW



ASPHALT PAVEMENT SECTION (LIGHT DUTY)

NOT TO SCALE

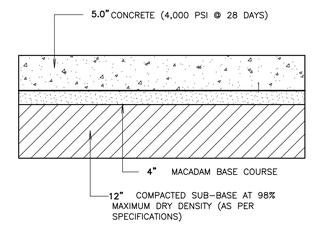
NOTE: THICKNESSES ARE NOT FINALIZED AND ARE TO BE DETERMINED FROM GEOTECHNICAL INVESTIGATION.



ASPHALT PAVEMENT SECTION (HEAVY DUTY)

NOT TO SCALE

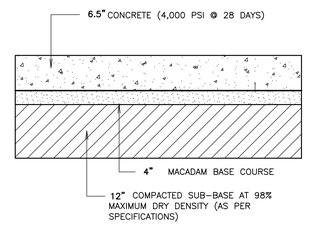
NOTE: THICKNESSES ARE NOT FINALIZED AND ARE TO BE DETERMINED FROM GEOTECHNICAL INVESTIGATION.



CONCRETE PAVEMENT SECTION (STANDARD DUTY)

NOT TO SCALE

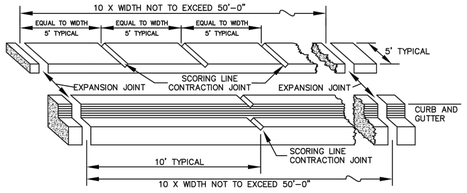
NOTE: THICKNESSES ARE NOT FINALIZED AND ARE TO BE DETERMINED FROM GEOTECHNICAL INVESTIGATION.



CONCRETE PAVEMENT SECTION (HEAVY DUTY)

NOT TO SCALE

NOTE: THICKNESSES ARE NOT FINALIZED AND ARE TO BE DETERMINED FROM GEOTECHNICAL INVESTIGATION.



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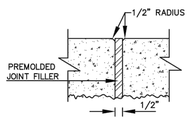
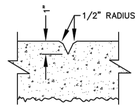


EXPANSION JOINT



CONTRACTION JOINT SCORING LINE

NOTE

1. ALL WORK TO BE COMPLETED IN ACCORDANCE WITH CITY OF GREENVILLE DETAILS AND SPECIFICATIONS. SIDEWALK AND CURBING PER CITY OF GREENVILLE DETAIL.

2. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION INSPECTION BUREAU AT LEAST 24 HOURS PRIOR TO PLACING CONCRETE. THE CITY WILL INSPECT SUBGRADE, FORMS, GRADE AND ALIGNMENT.

3. EXPANSION JOINTS, ½ INCH THICK, SHALL BE PLACED IN THE SIDEWALK AND CURBING AT THE POINT OF CURVATURE (PC) AND POINT OF TANGENCY (PT) OF ALL CURVES, AT THE OUTER EDGES OF DRIVEWAYS, AND AT UNIFORM INTERVALS AS SHOWN. EXPANSION JOINTS SHALL MEET SCDOT SPECIFICATION SECTION 702.2.2.1.

4. TRANSVERSE SCORING LINES (CONTRACTION JOINTS) IN THE SIDEWALK SHALL BE PLACED BETWEEN EXPANSION JOINTS AT UNIFORM INTERVALS EQUAL TO THE WIDTH OF THE WALK AS SHOWN.

5. LONGITUDINAL SCORING LINES WILL BE REQUIRED IN WALKS WIDER THAN 5 FEET OR AS DIRECTED BY THE CITY ENGINEER.

6. TRANSVERSE CONTRACTION JOINTS IN THE CURBING SHALL BE PLACED BETWEEN EXPANSION JOINTS AT UNIFORM 10' INTERVALS.

7. TRANSVERSE AND LONGITUDINAL SCORING LINES SHALL BE A DEPTH OF 1" AND NOT LESS THAN ¼ INCH OR MORE THAN ½ INCH IN WIDTH. THE CORNERS OF THE SCORING LINES SHALL HAVE A ½ INCH MINIMUM RADII.

8. JOINTS IN THE CURB AND GUTTER SHALL ALIGN WITH CORRESPONDING JOINTS IN THE SIDEWALK.

city of greenville ENGINEERING DIVISION	EXPANSION JOINTS AND SCORING LINES	SCALE: NO SCALE
	DATE APPROVED: AUG. 2013 OFFICE OF THE CITY ENGINEER: Philip B. Lindsay	DETAIL: 11:03

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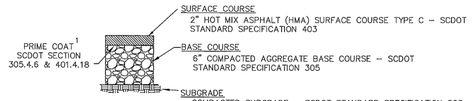
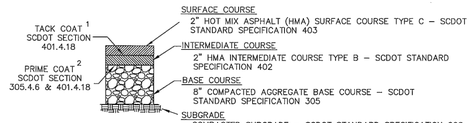


STANDARD DUTY PAVEMENT SECTION

1. APPLICATION RATE FOR MACADAM AND RECYCLED PORTLAND CEMENT BASE COURSE SHALL BE 0.25 – 0.30 GAL PER SQUARE YARD

NOTE: THICKNESSES ARE NOT FINALIZED AND ARE TO BE DETERMINED FROM GEOTECHNICAL INVESTIGATION.



HEAVY DUTY PAVEMENT SECTION

1. APPLICATION RATE FOR LAYING ANY HMA ON EXISTING PAVEMENTS SHALL BE 0.05 – 0.15 GAL PER SQUARE YARD

2. APPLICATION RATE FOR MACADAM AND RECYCLED PORTLAND CEMENT BASE COURSE SHALL BE 0.25 – 0.30 GAL PER SQUARE YARD

city of greenville ENGINEERING DIVISION	ASPHALT PAVEMENT SECTIONS	SCALE: NO SCALE
	DATE APPROVED: AUG. 2008 OFFICE OF THE CITY ENGINEER: Philip B. Lindsay	DETAIL: 16:00

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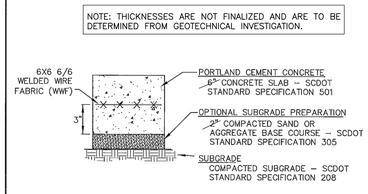
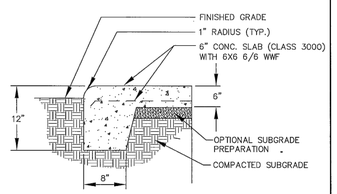
NOTE: THICKNESSES ARE NOT FINALIZED AND ARE TO BE DETERMINED FROM GEOTECHNICAL INVESTIGATION.



STANDARD DUTY PAVEMENT SECTION



EDGE TREATMENT

NOTE

1. CONCRETE SHALL BE SCDOT CLASS 3000 IN CONFORMANCE WITH THE APPLICABLE REQUIREMENTS OF SECTION 701 OF THE SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION. CONCRETE SHALL BE "READY MIX" HAVING A 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI AND BE AIR ENTRAINED.

2. PAVEMENT TO HAVE LONGITUDINAL, EXPANSION, AND TRANSVERSE CONTRACTION JOINTS AS SHOWN ON THE PLANS OR SPECIFIED IN THE SPECIAL PROVISIONS. CONSTRUCT JOINTS IN ACCORDANCE WITH SCDOT STANDARD SPECIFICATION 501.4.13.

3. PAVEMENT SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE APPLICABLE REQUIREMENTS OF SECTION 501 OF THE SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION. SURFACE SHALL TYPICALLY RECEIVE A MEDIUM BROOM FINISH UNLESS OTHERWISE DIRECTED ON THE PLANS OR IN THE SPECIAL PROVISIONS.

4. THE SUBGRADE SHALL BE THOROUGHLY COMPACTED TO 95 PERCENT OF THE STANDARD PROCTOR DENSITY AND FINISHED TO A SMOOTH, FIRM SURFACE AND SHALL BE MOIST AT THE TIME THE CONCRETE IS PLACED.

5. EDGES OF SLAB SHALL BE THICKENED AS SHOWN IN THE DETAIL.

city of greenville ENGINEERING DIVISION	CONCRETE PAVEMENT SECTION	SCALE: NO SCALE
	DATE APPROVED: AUG. 2008 OFFICE OF THE CITY ENGINEER: Philip B. Lindsay	DETAIL: 16:01

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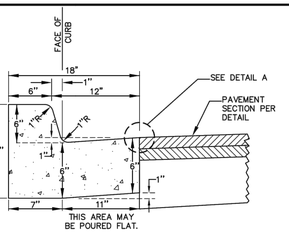
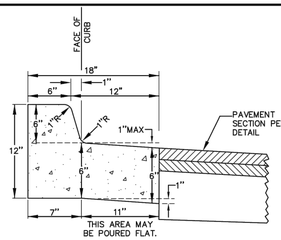


STANDARD CURB



PITCHED CURB

NOTE

1. CONCRETE SHALL BE SCDOT CLASS 3000 IN CONFORMANCE WITH THE APPLICABLE REQUIREMENTS OF SECTION 701 OF THE SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION. CONCRETE SHALL BE "READY MIX" HAVING A 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI AND BE AIR ENTRAINED.

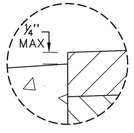
2. CURB AND GUTTER TO HAVE CONSTRUCTION JOINTS AND EXPANSION JOINTS PER THE CITY OF GREENVILLE STANDARD DETAIL.

3. CURB AND GUTTER SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE APPLICABLE REQUIREMENTS OF SECTION 720.4 OF THE SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION. SURFACE SHALL RECEIVE A MEDIUM BROOM FINISH.

4. THE SUBGRADE SHALL BE THOROUGHLY COMPACTED TO 95 PERCENT OF THE STANDARD PROCTOR DENSITY AND FINISHED TO A SMOOTH, FIRM SURFACE AND SHALL BE MOIST AT THE TIME THE CONCRETE IS PLACED.

4. GUTTER SLOPE ON HIGH SIDE OF SUPERELEVATION TO BE DEVELOPED AS SHOWN ON SCDOT STANDARD DRAWING 150-205-00. 1" MAX DROP ACROSS THE GUTTER AT MAX SUPERELEVATION.

5. THERE SHALL BE NO GREATER THAN A ¼" SEPARATION BETWEEN THE TOP OF THE FINAL TRAVEL SURFACE AND THE TOP OF GUTTER.



DETAIL A

city of greenville ENGINEERING DIVISION	CONCRETE CURB & GUTTER	SCALE: NO SCALE
	DATE APPROVED: AUG. 2013 OFFICE OF THE CITY ENGINEER: Philip B. Lindsay	DETAIL: 11:00

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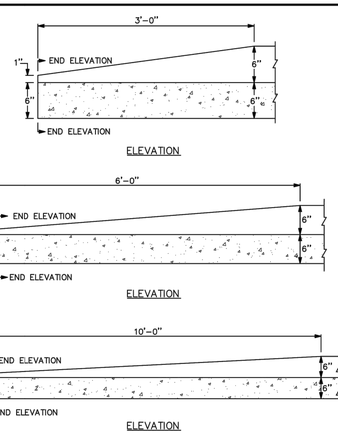
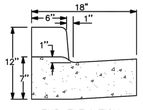


NOTE

1. USE 3.0' CURB END TAPER AT END OF RADII ON INTERSECTING STREETS AND WHERE CURB IS 6 FEET OR GREATER FROM MAINLINE TRAVEL LANE.

2. USE 10.0' CURB END TAPER AT END OF CURB WHERE CURB IS LESS THAN 6 FEET FROM MAINLINE TRAVEL LANE.



END ELEVATION

city of greenville ENGINEERING DIVISION	CURB END TAPER	SCALE: NO SCALE
	DATE APPROVED: AUG. 2013 OFFICE OF THE CITY ENGINEER: Philip B. Lindsay	DETAIL: 11:01

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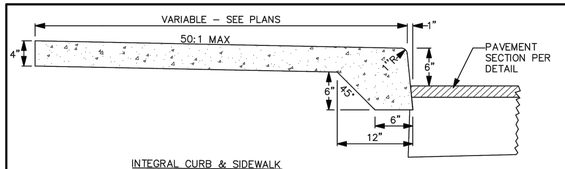
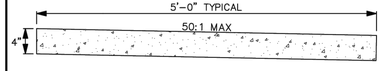


INTEGRAL CURB & SIDEWALK



STANDARD SIDEWALK

NOTE

1. CONCRETE SHALL BE SCDOT CLASS 3000 IN CONFORMANCE WITH THE APPLICABLE REQUIREMENTS OF SECTION 701 OF THE SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION. CONCRETE SHALL BE "READY MIX" HAVING A 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI AND BE AIR ENTRAINED.

2. SIDEWALK TO HAVE SCORING LINES (CONTRACTION JOINTS) AND EXPANSION JOINTS PER THE CITY OF GREENVILLE STANDARD DETAIL.

3. SIDEWALK SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE APPLICABLE REQUIREMENTS OF SECTION 720.4 OF THE SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION. SURFACE SHALL RECEIVE A MEDIUM BROOM FINISH.

4. THE SUBGRADE SHALL BE THOROUGHLY COMPACTED TO 95 PERCENT OF THE STANDARD PROCTOR DENSITY AND FINISHED TO A SMOOTH, FIRM SURFACE AND SHALL BE MOIST AT THE TIME THE CONCRETE IS PLACED.

5. SIDEWALKS SHALL NOT CROSS DRIVEWAYS WITHOUT EXPRESS WRITTEN CONSENT OF THE CITY ENGINEER. TYPICALLY, THE CONTRACTOR SHALL INSTALL THE DRIVEWAY BEFORE THE SIDEWALK. IF INSTALLING THE DRIVEWAY AFTER THE SIDEWALK IS IN PLACE, THE CONTRACTOR SHALL SAW CUT AND REMOVE THE SIDEWALK FOR THE FULL WIDTH OF THE DRIVEWAY SECTION. SEE CITY OF GREENVILLE STANDARD DETAIL FOR DRIVEWAY CONSTRUCTION.

6. INTEGRAL CURB AND SIDEWALK IS NOT PERMISSIBLE FOR PUBLIC INFRASTRUCTURE.

city of greenville ENGINEERING DIVISION	CONCRETE SIDEWALK	SCALE: NO SCALE
	DATE APPROVED: AUG. 2013 OFFICE OF THE CITY ENGINEER: Philip B. Lindsay	DETAIL: 11:02

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 030286 THOMAS B HUTTON ENGINEERING No. C002286 CERTIFICATE OF AUTHORIZATION

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

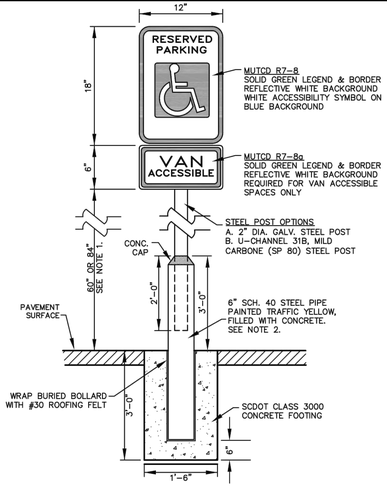
NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
501 River Street • Suite 200
Greenville, SC 29601 • 864.412.2222
www.thomasandhutton.com

LICAR, LLC
CITY OF GREENVILLE, SC
CU ICAR - TN3 - FLEX BUILDING
PAVING, GRADING, AND DRAINAGE DETAILS

JOB NO:	J-28283.0000
DATE:	08/14/2020
DRAWN:	CMC
DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	1" = 1'

C3.2



NOTE
1. 12"x18" ACCESSIBILITY SIGN (R7-8) SHALL BE MOUNTED 7' FROM FINISH GRADE TO BOTTOM EDGE OF SIGN FACE. MOUNTING HEIGHT MAY BE REDUCED TO 5' IF PLACED IN A LANDSCAPE AREA IN WHICH PEDESTRIANS ARE NOT EXPECTED TO USE.

2. BOLLARD MAY BE OMITTED IF INSTALLED IN LANDSCAPE AREAS. WHEN INSTALLED IN LANDSCAPE AREAS, MOUNTING POST SHALL BE DRIVEN A MINIMUM OF 3' BELOW FINISH GRADE. ALTERNATE MOUNTING POSTS MUST BE APPROVED BY THE CITY ENGINEER PRIOR TO CONSTRUCTION.

3. SIGNAGE SHALL BE INSTALLED IN FRONT OF EACH ACCESSIBLE SPACE, CENTERED ON THE WIDTH OF THE SPACE.

4. REFER TO AMERICANS WITH DISABILITIES ACT AND ARCHITECTURAL BARRIERS ACT ACCESSIBILITY GUIDELINES (ADAAG), LATEST EDITION, FOR REQUIRED NUMBER OF ACCESSIBLE SPACES. PER ADAAG, ONE VAN ACCESSIBLE SPACE SHALL BE PROVIDED, MINIMUM, WITH ADDITIONAL VAN ACCESSIBLE SPACES PER ADAAG REQUIREMENTS.

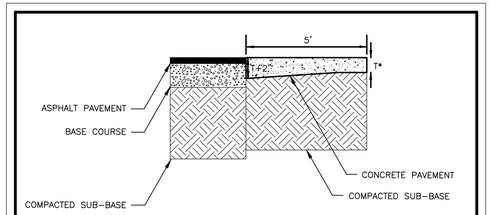
5. ALL SIGNAGE SHALL BE ENGINEER GRADE .080 ALUMINUM REFLECTIVE SIGN MEETING THE REQUIREMENTS OF THE MUTCD AND ADAAG.

city of greenville — ENGINEERING DIVISION

HANDICAP ACCESSIBILITY SIGN

DATE APPROVED: AUG. 2008 | OFFICE OF THE CITY ENGINEER: Philip B. Lindsay

SCALE: NO SCALE | DETAIL: 14:08



CONCRETE-ASPHALT TRANSITION DETAIL

NOT TO SCALE

P26
OCT. 2008
THOMAS & HUTTON ENGINEERING CO.

NOTE:
REFER TO PAVEMENT SECTION DETAIL FOR THICKNESS (T*) OF CONCRETE PAVEMENT

NOTE
1. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION INSPECTION BUREAU AT LEAST 24 HOURS PRIOR TO PLACING CONCRETE. THE CITY WILL INSPECT SUBGRADE, FORMS, GRADE AND ALIGNMENT.

2. CONCRETE SHALL BE 4" THICK AND SHALL BE SCDOT CLASS 3000 IN CONFORMANCE WITH THE APPLICABLE REQUIREMENTS OF SECTION 701 OF THE SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION. CONCRETE SHALL BE "READY MIX" HAVING A 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI AND BE AIR ENTRAINED.

3. THE SUBGRADE SHALL BE THOROUGHLY COMPACTED TO 95 PERCENT OF THE STANDARD PROCTOR DENSITY, FINISHED TO A SMOOTH, FIRM SURFACE, AND SHALL BE MOIST AT THE TIME THE CONCRETE IS PLACED. IF NECESSARY, THE CONTRACTOR SHALL UNDERCUT AND REPLACE UNSUITABLE SOIL WITH COMPACTED AGGREGATE BASE COURSE MEETING SCDOT STANDARD SPECIFICATION 305.

4. RAMP SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF SECTION 720.4 OF THE SCDOT STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION, LATEST EDITION.

5. RAMP SURFACE SHALL RECEIVE A MEDIUM BROOM FINISH.

6. DETECTABLE WARNING SURFACE SHALL BE INSTALLED TO COMPLY WITH CITY OF GREENVILLE DETAIL.

7. RAMP TO HAVE SCORING LINES (CONTRACTION JOINTS) AND ½" EXPANSION JOINTS WHERE SHOWN.

8. EXPANSION JOINTS AND SCORING LINES SHALL CONFORM TO CITY OF GREENVILLE DETAIL.

9. SIDEWALK AND CURB REPLACEMENT PER CITY OF GREENVILLE DETAILS.

10. GUTTER LINE TYPICALLY INSTALLED WITH SMOOTH TRANSITION. INSTALLATION OF A NUISANCE TROUGH, PER STANDARD DETAIL, MAY BE REQUIRED AT THE DIRECTION OF THE CITY ENGINEER.

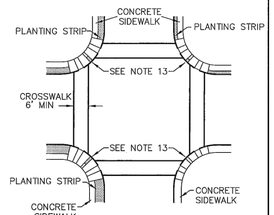
11. THE RAMP OPENING (AT THE FULLY DEPRESSED CURB) SHALL BE LOCATED WITHIN THE PARALLEL BOUNDARIES OF THE CROSSWALK MARKINGS.

12. DRAINAGE STRUCTURES, MAST ARMS, LIGHT POLES AND OTHER OBSTRUCTIONS SHALL NOT BE PLACED IN LINE WITH RAMPS. LOCATION OF THE RAMP SHALL TAKE PRECEDENCE OVER LOCATION OF OBSTRUCTIONS EXCEPT WHERE EXISTING OBSTRUCTIONS ARE BEING UTILIZED IN THE NEW CONSTRUCTION.

13. AT ALL LOCATIONS, NOT LESS THAN 3 FEET OF FULL HEIGHT CURB SHALL BE PLACED BETWEEN THE RAMPS.

14. LOCATION AND TYPE OF RAMP SHALL CLEARLY BE DENOTED ON THE PLANS.

15. CROSSWALKS SHALL BE DESIGNATED WHERE DIRECTED BY CITY ENGINEER.



TYPICAL LOCATION OF ACCESSIBLE RAMPS AND PEDESTRIAN CROSSWALKS

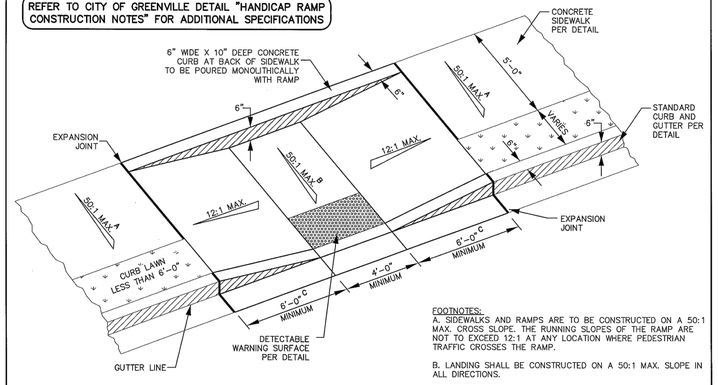
city of greenville — ENGINEERING DIVISION

HANDICAP RAMP CONSTRUCTION NOTES

DATE APPROVED: AUG. 2008 | OFFICE OF THE CITY ENGINEER: Philip B. Lindsay

SCALE: NO SCALE | DETAIL: 14:04

REFER TO CITY OF GREENVILLE DETAIL "HANDICAP RAMP CONSTRUCTION NOTES" FOR ADDITIONAL SPECIFICATIONS



FOOTNOTES:
A. SIDEWALKS AND RAMPS ARE TO BE CONSTRUCTED ON A 50:1 MAX. CROSS SLOPE. THE RUNNING SLOPES OF THE RAMP ARE NOT TO EXCEED 12:1 AT ANY LOCATION WHERE PEDESTRIAN TRAFFIC CROSSES THE RAMP.

B. LANDING SHALL BE CONSTRUCTED ON A 50:1 MAX. SLOPE IN ALL DIRECTIONS.

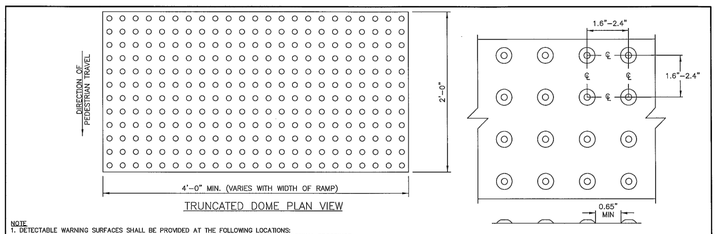
C. 6' MINIMUM LENGTH ONLY APPLIES IF THE CURB LINE IS ON A 0% GRADE. LENGTH OF TAPER WILL VARY BY THE SLOPE OF THE ROADWAY. MAXIMUM SLOPE OF CURB TAPER SHALL BE 12:1.

city of greenville — ENGINEERING DIVISION

HANDICAP RAMP I CURB LAWN LESS THAN 6'-0"

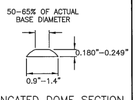
DATE APPROVED: AUG. 2008 | OFFICE OF THE CITY ENGINEER: Philip B. Lindsay

SCALE: NO SCALE | DETAIL: 14:00



TRUNCATED DOME PLAN VIEW

TRUNCATED DOME SPACING



TRUNCATED DOME SECTION

NOTE
1. DETECTABLE WARNING SURFACES SHALL BE PROVIDED AT THE FOLLOWING LOCATIONS:
(A) WHERE A SIDEWALK CROSSES A VEHICULAR WAY, EXCLUDING UN-SIGNALIZED DRIVEWAY CROSSINGS.
(B) WHERE A RAIL SYSTEM CROSSES A PEDESTRIAN FACILITY THAT IS NOT SHARED WITH VEHICLES.
(C) AT ISLANDS AND MEDIANS THAT ARE CUT THROUGH LEVEL WITH THE ROADWAY.

2. AT CURB RAMPS AND BLENDED TRANSITIONS, DETECTABLE WARNING SURFACES SHALL BE LOCATED SO THE EDGE NEAREST THE GUTTER LINE IS 6" MINIMUM AND 8" MAXIMUM DISTANCE FROM THE GUTTER LINE. THE SURFACE SHALL EXTEND A MINIMUM OF 24" ONTO THE RAMP IN THE DIRECTION OF TRAVEL FOR THE FULL WIDTH OF THE CURB RAMP (MINIMUM 4 FEET).

3. AT RAIL CROSSINGS, THE DETECTABLE WARNING SURFACE SHALL BE 24" DEEP AND FULL WIDTH OF THE SIDEWALK (MINIMUM 4 FEET). THE EDGE OF THE SURFACE NEAREST THE RAIL CROSSING IS 6" MINIMUM AND 8" MAXIMUM DISTANCE FROM THE VEHICLE DYNAMIC ENVELOPE (6' FROM THE NEAREST RAIL) UNLESS OTHERWISE NOTED BY THE RAILROAD.

4. ALL DETECTABLE WARNING DEVICES USED IN NEW CONSTRUCTION SHALL BE OF A RIGID PRECAST OR EMBEDDED PRODUCT APPROVED BY THE CITY ENGINEER. RETRO FIT MATS WILL ONLY BE ALLOWED ON EXISTING RAMPS WITH PRIOR APPROVAL BY THE CITY ENGINEER FOR MATERIAL TYPE AND INSTALLATION (I.E. RESURFACING PROJECTS).

5. DETECTABLE WARNING SURFACES SHALL CONSIST OF AN AREA OF TRUNCATED DOMES ALIGNED IN A SQUARE GRID PATTERN. THE BASE OF THESE DOMES SHALL BE 0.90"-1.40". THE TOP DIAMETER OF THE DOMES SHALL BE 50%-65% OF THE ACTUAL BASE DIAMETER, WITH A MINIMUM INDIVIDUAL HEIGHT OF 0.180" AND A MAXIMUM HEIGHT OF 0.249". THE AVERAGE OF TEN (10) INDIVIDUAL NODES PICKED AT RANDOM IN ANY SQUARE FOOT AREA SHALL MEASURE 0.180"-0.249" IN HEIGHT. THE DETECTABLE WARNING DOMES SHALL HAVE A CENTER-TO-CENTER SPACING OF 1.6-2.4".

7. DETECTABLE WARNING DOMES SHALL BE ALIGNED ON A SQUARE GRID IN THE PREDOMINANT DIRECTION OF TRAVEL TO PERMIT WHEELS TO ROLL BETWEEN DOMES.

8. IF PAVERS ARE TO BE USED, PAVERS SHALL BE 6" THICK AND CAST FROM 5000 PSI CONCRETE.

9. IF PANELS ARE TO BE USED, PANELS SHALL BE RIGID WITH TURN DOWN EDGES EMBEDDED IN CONCRETE TO REDUCE TRIP HAZARD.

10. FOR ALL DETECTABLE WARNING SURFACES, THE CITY OF GREENVILLE'S DEFAULT COLOR IS BRICK RED UNLESS A SPECIFIC PROJECT REQUIRES ANOTHER COLOR. WHEN A COLOR OTHER THAN BRICK RED IS SELECTED FOR A PROJECT, IT MUST BE APPROVED BY ALL APPLICABLE DEPARTMENTS. THE COLOR SELECTED SHALL CONTRAST EITHER LIGHT-ON-DARK OR DARK-ON LIGHT. THE MANUFACTURER MUST CERTIFY TO THE CITY ENGINEER THAT THE COLOR SELECTED MEETS THE 70% CONTRAST SPECIFICATIONS OF THE ADAAG.

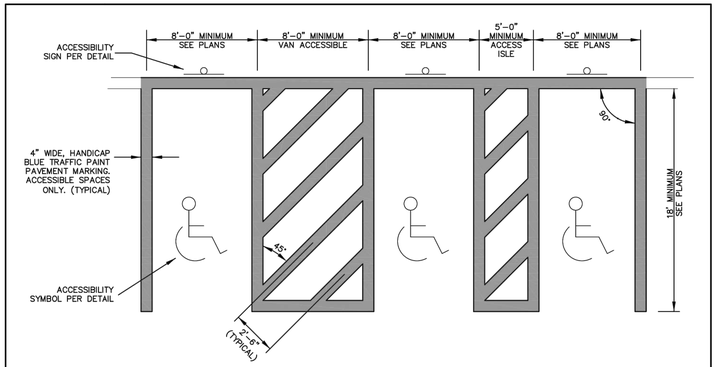
*ADAPTED FROM SCDOT STANDARD DRAWING 720-905-02

city of greenville — ENGINEERING DIVISION

DETECTABLE WARNING SURFACE

DATE APPROVED: AUG. 2008 | OFFICE OF THE CITY ENGINEER: Philip B. Lindsay

SCALE: NO SCALE | DETAIL: 14:05



NOTE
1. FINISH GRADE ACROSS HANDICAP ACCESSIBLE SPACES AND AISLES SHALL NOT EXCEED 2% (50:1) IN ANY DIRECTION.

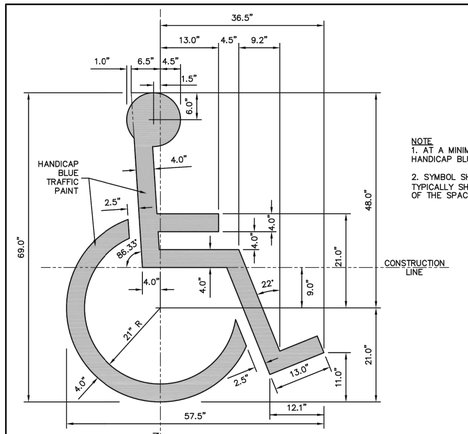
2. 90° PARKING LAYOUT SHOWN. STRIPING ORIENTATION AND DIMENSIONS SIMILARLY SHALL APPLY TO ANGLED PARKING ALIGNMENT.

city of greenville — ENGINEERING DIVISION

HANDICAP ACCESSIBILITY STRIPING

DATE APPROVED: AUG. 2008 | OFFICE OF THE CITY ENGINEER: Philip B. Lindsay

SCALE: NO SCALE | DETAIL: 14:06



NOTE
1. AT A MINIMUM, THE SYMBOL SHALL RECEIVE A DOUBLE COAT OF HANDICAP BLUE TRAFFIC PAINT.

2. SYMBOL SHALL BE CENTERED ON THE WIDTH OF THE STALL AND TYPICALLY SHOULD BE INSTALLED LENGTHWISE IN THE BOTTOM ⅔ OF THE SPACE CLOSEST TO THE TRAVEL AISLE.

city of greenville — ENGINEERING DIVISION

HANDICAP ACCESSIBILITY SYMBOL

DATE APPROVED: AUG. 2008 | OFFICE OF THE CITY ENGINEER: Philip B. Lindsay

SCALE: NO SCALE | DETAIL: 14:07

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

NO.	REVISIONS	BY	DATE

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501 River Street • Suite 200
Greenville, SC 29601 • 864.412.2222
www.thomasandhutton.com

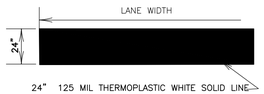
LICAR, LLC
CITY OF GREENVILLE, SC

CU ICAR - TN3 - FLEX BUILDING

PAVING, GRADING, AND DRAINAGE DETAILS

JOB NO:	J-28283.0000
DATE:	08/14/2020
DRAWN:	CMC
DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	1" = 42.9963'

C3.3

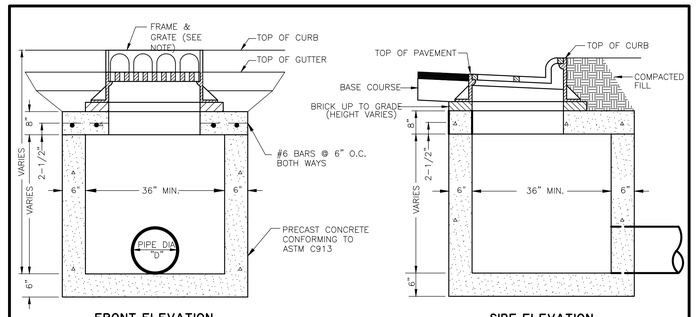


24" 125 MIL THERMOPLASTIC WHITE SOLID LINE

STOP BAR IN ROAD

NOT TO SCALE

NOTE:
1. ALL STRIPING SHALL CONFORM TO CURRENT MUTCD STANDARDS.



FRONT ELEVATION

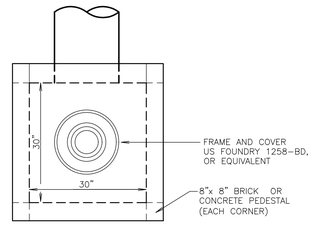
SIDE ELEVATION

NOTE:
FOR 24" CURB AND GUTTER, USE US FOUNDRY 5115-6220 FRAME AND GRATE OR EQUIVALENT.
FOR 18" CURB AND GUTTER, USE NEENAH R-3170 FRAME AND GRATE OR EQUIVALENT.

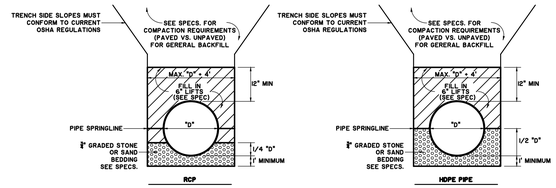
D17
JUNE 2018
THOMAS & HUTTON ENGINEERING CO.

STANDARD CURB INLET GRATE DETAIL

NOT TO SCALE



PLAN

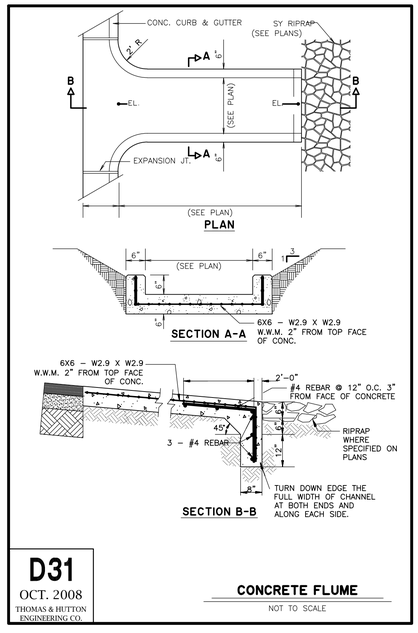


STORM PIPE BEDDING DETAILS

SCALE: NONE

NOTES:

1. THIS DETAIL SHALL ONLY APPLY WHEN IN PLACE MATERIALS ARE UNSUITABLE FOR PIPE BEDDING. SEE THE SPECIFICATIONS FOR BEDDING REQUIREMENTS.
2. FOR PIPE UNDER 48"ø THE MINIMUM BEDDING DEPTH BELOW THE PIPE IS 1'. FOR 48"ø AND LARGER, 2' OF BEDDING SHALL BE USED UNDER PIPE. (ONLY APPLIES TO THIS DETAIL WHERE EXISTING MATERIALS ARE UNSUITABLE FOR BEDDING)
3. WHERE THE ENGINEER DETERMINES ADDITIONAL UNDERCUTTING AND STONE BEDDING IS REQUIRED BEYOND THAT SHOWN ON THE DETAILS TO PROVIDE A STABLE SUBGRADE, IT SHALL BE PAID FOR AT THE COST OF REMOVING THE ADDITIONAL UNSUITABLE MATERIAL BEYOND THAT SHOWN ON THE DETAILS, AND FURNISHING AND INSTALLING ADDITIONAL STONE BEDDING. NO PAYMENT FOR ADDITIONAL STONE OR SAND BEDDING BEYOND THE QUANTITY SHOWN ON THE DETAILS SHALL BE PAID WITHOUT PRIOR WRITTEN APPROVAL OF LOCATION, QUANTITY, AND OVERALL PRICE BY ENGINEER.
4. ALL STORMPIPE JOINTS SHOULD BE WRAPPED IN FILTER FABRIC.



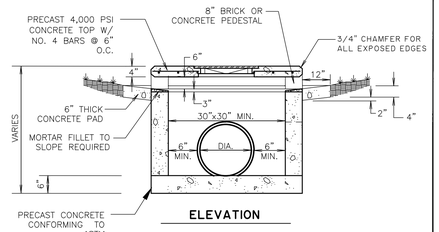
D31
OCT. 2008
THOMAS & HUTTON ENGINEERING CO.

CONCRETE FLUME

NOT TO SCALE

NOTE:
THE PRECAST MANUFACTURER IS TO PREPARE AND SUBMIT TO THE ENGINEER DESIGN DETAILS AND CALCULATIONS FOR THE STRUCTURES SHOWN BASED ON THE DESIGN CRITERIA SPECIFIED. THE DESIGN SHALL BE PERFORMED UNDER THE DIRECT SUPERVISION AND SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF NORTH CAROLINA EXPERIENCED IN THE DESIGN OF PRECAST CONCRETE. THE DESIGN SHALL INCLUDE PROVISIONS FOR HANDLING STRESSES AND CONSTRUCTION LOADS. REPRODUCED COPIES OF ASTM C789 "STANDARD SPECIFICATIONS FOR PRECAST REINFORCED CONCRETE BOX SECTIONS FOR CULVERTS, STORM DRAINS, AND SEWERS" WILL NOT BE ACCEPTED AS A SUBSTITUTE FOR DESIGN.

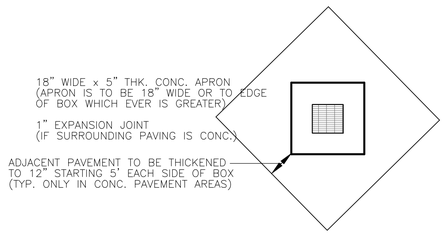
NOTE:
THE PRECAST MANUFACTURER IS TO DESIGN STRUCTURES PER SCDOT SPECIFICATIONS IN TRAFFIC LOADING AREAS.



ELEVATION

ROOF INLET DETAIL

NOT TO SCALE



GRATE INLET APRON DETAIL

NOTE: CONTRACTOR SHALL PROVIDE SAW JOINT PLAN TO ENGINEER FOR APPROVAL

1. ALL CATCH BASINS SHALL BE SEPARATED FROM THE PAVEMENT AND CURB BY BOXING OUT AROUND BASIN AS SHOWN ABOVE. EXPANSION JOINT MATERIAL SHALL RUN COMPLETELY THROUGH CURB AND SLAB. MANHOLE CASTINGS WITHIN THE PAVEMENT SHALL BE BOXED IN LIKE MANNER EXCEPT WHEN TELESCOPING TYPE CASTINGS ARE USED.

2. WHEN A JOINT FALLS WITHIN 5' OF OR CONTACTS BASINS, MANHOLES, OR OTHER STRUCTURES, SHORTEN ONE OR MORE PANELS EITHER SIDE OF OPENING TO PERMIT JOINT TO FALL ON ROUND STRUCTURES AND AT OR BETWEEN CORNERS OF RECTANGULAR STRUCTURES.

3. ALL TRANSVERSE JOINTS MUST EXTEND THROUGH CURBS AND MUST BE CONTINUOUS ACROSS PAVEMENT, EXCEPT TIED TRANSVERSE CONSTRUCTION JOINTS. EXPANSION JOINTS WILL NOT BE REQUIRED EXCEPT AT STRUCTURES OR AS SHOWN ON THE PLANS.

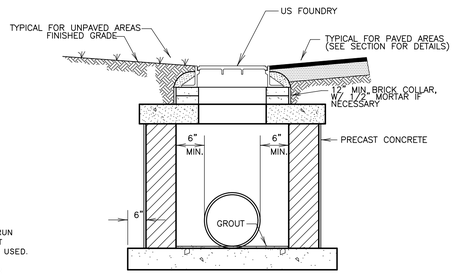
4. ALL SOFT AND YIELDING MATERIAL AND OTHER PORTIONS OF THE SUBGRADE WHICH WILL NOT COMPACT READILY WHEN ROLLED OR TAMPED SHALL BE REMOVED AS DIRECTED AND REPLACED WITH SUITABLE MATERIAL PLACED AND COMPACTED.
THE SUBGRADE SHALL BE THOROUGHLY COMPACTED WITH SUITABLE EQUIPMENT TO HAVE UNIFORM DENSITY AT MOISTURE CONTENTS OF NOT LESS THAN STANDARD OPTIMUM(AASHTO 98).
ALL SEWER TRENCHES AND STRUCTURE EXCAVATIONS SHALL BE BACKFILLED TO NATURAL OR FINISHED GRADE AS SOON AS CONDITIONS PERMIT. ALL BACKFILL SHALL BE COMPACTED WITH MECHANICAL TAMPERS IN LAYERS OF NOT OVER 6" LOOSE MATERIAL. IN ORDER TO PREVENT DIFFERENTIAL HEAVE THE BACKFILL MATERIAL SHALL BE THE SAME MATERIAL AS THE SUBGRADE ADJACENT TO THE TRENCH.

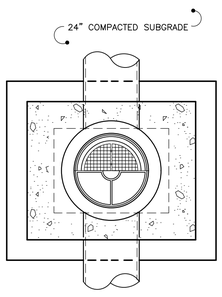
5. THE MINIMUM CEMENT CONTENT SHALL NOT BE LESS THAN 6.0 SACKS (94 lb. PER SACK) PER cu. yd. OF CONCRETE. THE MAXIMUM SIZE AGGREGATE SHALL NOT EXCEED 1/4 OF THE SLAB THICKNESS. THE MAXIMUM SLUMP SHALL NOT EXCEED 3". ALL CONCRETE SHALL BE AIR ENTRAINED IN ACCORDANCE WITH THE FOLLOWING TABLE:

MAX. SIZE OF COARSE AGGREGATE, INCHES	AIR CONTENT, PER CENT BY VOLUME
1-1/2 , 2	5 ± 1
3/4 , 1	6 ± 1
3/8 ,1/2	7-1/2 ± 1

CONCRETE PAVEMENT DETAILS

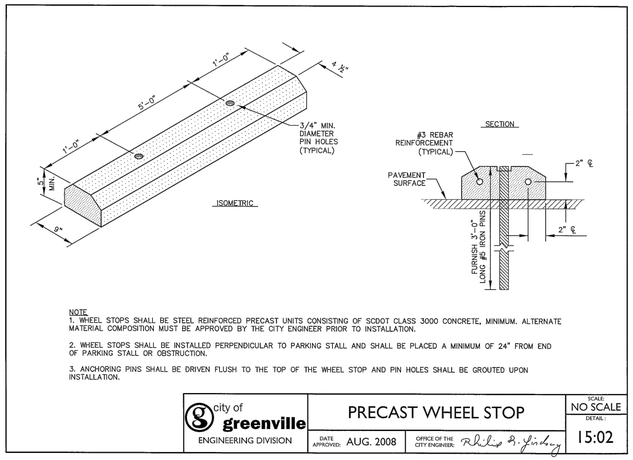
NOT TO SCALE





JUNCTION BOX/ STORM MANHOLE DETAIL

NOT TO SCALE



NOTE
1. WHEEL STOPS SHALL BE STEEL REINFORCED PRECAST UNITS CONSISTING OF SCDOT CLASS 3000 CONCRETE, MINIMUM. ALTERNATE MATERIAL COMPOSITION MUST BE APPROVED BY THE CITY ENGINEER PRIOR TO INSTALLATION.

2. WHEEL STOPS SHALL BE INSTALLED PERPENDICULAR TO PARKING STALL AND SHALL BE PLACED A MINIMUM OF 24" FROM END OF PARKING STALL OR OBSTRUCTION.

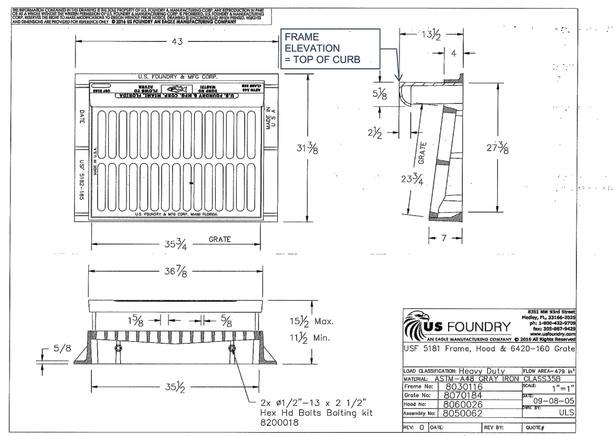
3. ANCHORING PINS SHALL BE DRIVEN FLUSH TO THE TOP OF THE WHEEL STOP AND PIN HOLES SHALL BE GROUTED UPON INSTALLATION.

city of greenville
ENGINEERING DIVISION

PRECAST WHEEL STOP

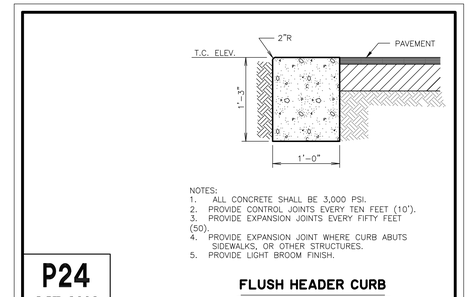
DATE APPROVED: AUG. 2008
OFFICE OF THE CITY ENGINEER: Philip R. Finley

SCALE: NO SCALE
DETAIL: 15:02



HOODED GRATE INLET (HI) USF-5181-6420

NOT TO SCALE



NOTES:
1. ALL CONCRETE SHALL BE 3,000 PSI.
2. PROVIDE CONTROL JOINTS EVERY TEN FEET (10').
3. PROVIDE EXPANSION JOINTS EVERY FIFTY FEET (50).
4. PROVIDE EXPANSION JOINT WHERE CURB ABUTS SIDEWALKS, OR OTHER STRUCTURES.
5. PROVIDE LIGHT BROOM FINISH.

P24
OCT. 2008
THOMAS & HUTTON ENGINEERING CO.

FLUSH HEADER CURB

NOT TO SCALE

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
501 River Street • Suite 200
Greenville, SC 29601 • 864.412.2222
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LICAR, LLC
CITY OF GREENVILLE, SC

CU ICAR - TN3 - FLEX BUILDING

PAVING, GRADING, AND DRAINAGE DETAILS

JOB NO:	J-28283.0000
DATE:	08/14/2020
DRAWN:	CMC
DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	1" = 50'

C3.4

Z:\28283\28283.0000\Engineering\Drawings\Construction Plans\Site Improvement Plans\28283-0000 - PHD - 01.dwg - Aug 14, 2020 - 2:26:23 PM

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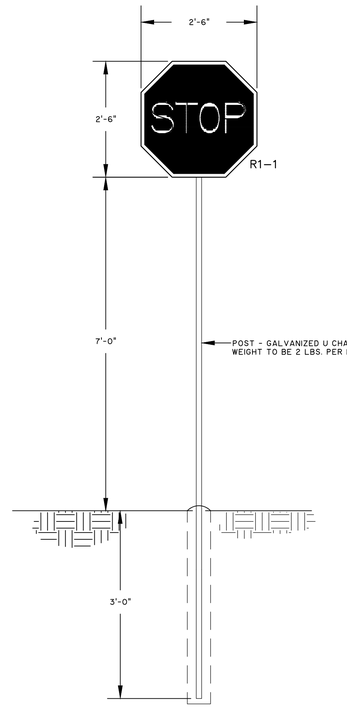
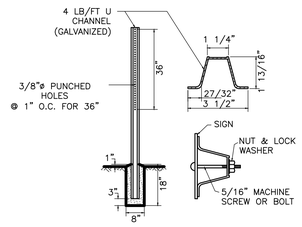


STOP SIGN DETAIL

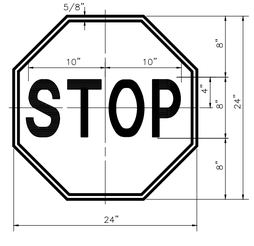
NOT TO SCALE



NOTE:
POST SHALL BE CAREFULLY CLEANED AND PHOSPHATED. IMMEDIATELY AFTER PHOSPHATING POST SHALL BE COATED WITH A MODIFIED POLYESTER PAINT BY ELECTRODEPOSITION AND THEN THOROUGHLY BAKED. COLOR IS PERMA-GREEN PER FED. STANDARD 595-A COLOR #14109 (DARK LIMIT V-)

SIGN POST DETAIL

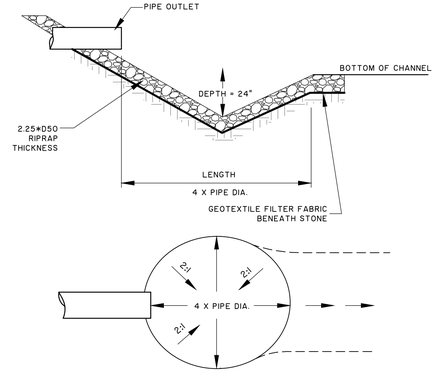
NOT TO SCALE



COLORS
LEGEND – WHITE REFLECTORIZED PAINT
BACKROUND – RED REFLECTORIZED PAINT

STOP SIGN

NOT TO SCALE



OUTLET PLUNGE POOL

NOT TO SCALE

SOUTH CAROLINA
PROFESSIONAL ENGINEER
THOMAS
B HUTTON
ENGINEERING
No C002886
CERTIFICATE OF AUTHORIZATION
SOUTH CAROLINA
PROFESSIONAL ENGINEER
JOHN
W.
RYAN
No. 28283
8.14.2020
PRELIMINARY - DO NOT USE FOR CONSTRUCTION

NO.	REVISIONS	BY	DATE

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501 River Street • Suite 200
Greenville, SC 29601 • 864.412.2222
www.thomasandhutton.com

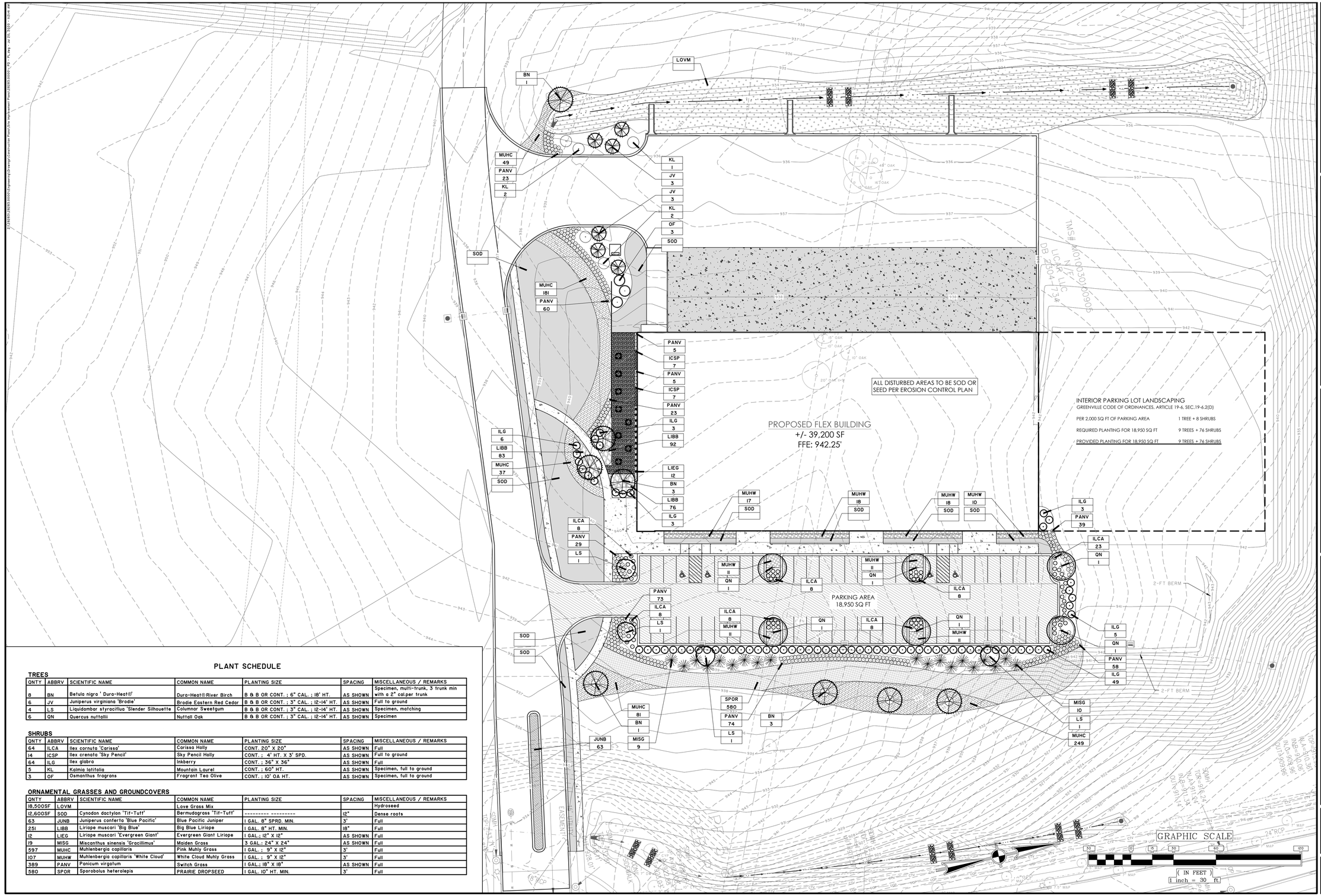
LICAR, LLC
CITY OF GREENVILLE, SC

CU ICAR - TN3 - FLEX BUILDING

PAVING, GRADING, AND DRAINAGE DETAILS

JOB NO:	J-28283.0000
DATE:	08/14/2020
DRAWN:	CMC
DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	1" = 5'

C3.5



INTERIOR PARKING LOT LANDSCAPING
GREENVILLE CODE OF ORDINANCES, ARTICLE 19-6, SEC.19-6.2(D)

PER 2,000 SQ FT OF PARKING AREA	1 TREE + 8 SHRUBS
REQUIRED PLANTING FOR 18,950 SQ FT	9 TREES + 76 SHRUBS
PROVIDED PLANTING FOR 18,950 SQ FT	9 TREES + 76 SHRUBS

PLANT SCHEDULE

TREES

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
8	BN	Betula nigra ' Dura-Heat®'	Dura-Heat® River Birch	B & B OR CONT. : 6" CAL. : 18' HT.	AS SHOWN	Specimen, multi-trunk, 3 trunk min with a 2" caliper trunk
6	JV	Juniperus virginiana 'Brodie'	Brodie Eastern Red Cedar	B & B OR CONT. : 3" CAL. : 12-14' HT.	AS SHOWN	Full to ground
4	LS	Liquidambar styraciflua 'Slender Silhouette	Columnar Sweetgum	B & B OR CONT. : 3" CAL. : 12-14' HT.	AS SHOWN	Specimen, matching
6	QN	Quercus nuttallii	Nuttall Oak	B & B OR CONT. : 3" CAL. : 12-14' HT.	AS SHOWN	Specimen

SHRUBS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
64	ILCA	Ilex cornuta 'Carissa'	Carissa Holly	CONT. 20" X 20"	AS SHOWN	Full
14	ICSP	Ilex crenata 'Sky Pencil'	Sky Pencil Holly	CONT. : 4' HT. X 3' SPD.	AS SHOWN	Full to ground
64	ILG	Ilex glabra	Inkberry	CONT. : 36" X 36"	AS SHOWN	Full
5	KL	Kalmia latifolia	Mountain Laurel	CONT. : 60" HT.	AS SHOWN	Specimen, full to ground
3	OF	Osmanthus fragrans	Fragrant Tea Olive	CONT. : 10' OA HT.	AS SHOWN	Specimen, full to ground

ORNAMENTAL GRASSES AND GROUNDCOVERS

QNTY	ABBRV	SCIENTIFIC NAME	COMMON NAME	PLANTING SIZE	SPACING	MISCELLANEOUS / REMARKS
18,500SF	LOVM		Love Grass Mix			Hydroseed
12,600SF	SOD	Cynodon dactylon 'Tif-Tuft'	Bermudagrass 'Tif-Tuft'	--------- ---------	12"	Dense roots
63	JUNB	Juniperus conferta 'Blue Pacific'	Blue Pacific Juniper	1 GAL. 8" SPRD. MIN.	3'	Full
251	LIBB	Liriope muscari 'Big Blue'	Big Blue Liriope	1 GAL. 8" HT. MIN.	18"	Full
12	LIEG	Liriope muscari 'Evergreen Giant'	Evergreen Giant Liriope	1 GAL.; 12" X 12"	AS SHOWN	Full
19	MISG	Miscanthus sinensis 'Gracillimus'	Maiden Grass	3 GAL.; 24" X 24"	AS SHOWN	Full
597	MUHC	Muhlenbergia capillaris	Pink Muhly Grass	1 GAL. ; 9" X 12"	3'	Full
107	MUHW	Muhlenbergia capillaris 'White Cloud'	White Cloud Muhly Grass	1 GAL. ; 9" X 12"	3'	Full
389	PANV	Panicum virgatum	Switch Grass	1 GAL.; 18" X 18"	AS SHOWN	Full
580	SPOR	Sporobolus heterolepis	PRAIRIE DROPSEED	1 GAL. 10" HT. MIN.	3'	Full

SOUTH CAROLINA
THOMAS & HUTTON ENGINEERING
No. C002286
CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA
REGISTERED LANDSCAPE ARCHITECT
JOHN E. KNAPP
No. 1325
8.14.2020

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
501 River Street • Suite 200
Greenville, SC 29601 • 864.412.2222
www.thomasandhutton.com

LICAR, LLC
CITY OF GREENVILLE, SC

CU ICAR - TN3 - FLEX BUILDING

LANDSCAPE PLAN

JOB NO:	J-28283.0000
DATE:	08/14/2020
DRAWN:	CMC
DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	1" = 30'

L1.1

MAIDEN GRASS *Miscanthus sinensis 'Gracillimus'*

NORTHWIND SWITCH GRASS *Panicum virgatum 'Northwind'*

WEEPING LOVEGRASS *Eragrostis curvula*

PRAIRIE DROPSEED *Sporobolus heterolepis*

MUHLY GRASS *Muhlenbergia capillaris*

JUNIPER *Juniperus conferta 'Blue Pacific'*

INKBERRY HOLLY *Ilex glabra*

SKY PENCIL HOLLY *Ilex crenata*

MOUNTAIN LAUREL *Kalmia latifolia*

BIG BLUE LILLY TURF *Liriope muscari*

FRAGRANT TEA OLIVE *O. fragrans f. aurantiacus*

COLUMNAR SWEETGUM
Liquidambar styraciflua 'Slender Silhouette'

RIVER BIRCH *Betula nigra*

SHUMARD OAK *Quercus shumardii*

BRODIE EASTERN RED CEDAR *Juniperus virginiana 'Brodie'*

NORTH CAROLINA PROFESSIONAL ENGINEER — THOMAS & HUTTON ENGINEERING — No. C002865 — CERTIFICATE OF AUTHORIZATION

NORTH CAROLINA PROFESSIONAL ENGINEER — RYAN W. PHILLIPS — 037744 — 10.14.2020

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Greenville, SC 29601 • 864.412.2222
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LICAR, LLC
CITY OF GREENVILLE, SC

CU ICAR - TN3 - FLEX BUILDING

PLANT PALETTE - IMAGES

JOB NO:	J-28283.0000
DATE:	08/14/2020
DRAWN:	CMC
DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	########

L1.2

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Know what's below.
Call before you dig.

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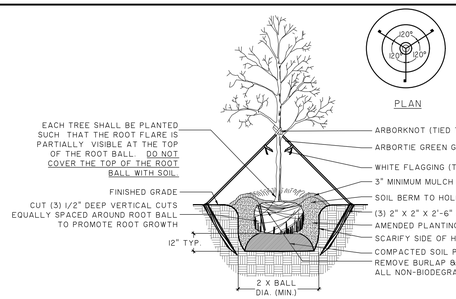
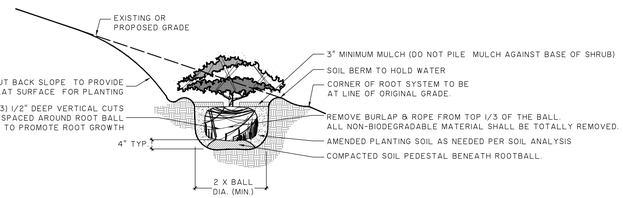


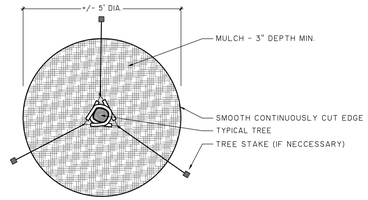
NOTES:
1) SEE LANDSCAPE NOTES FOR THE TYPE OF MULCH MATERIAL TO USE.
2) ONLY GUY TREES WHEN SITE CONDITIONS REQUIRE IT.
3) PLANT ROOT BALL FLUSH WITH FINISHED GRADE UNLESS AREA HAS POOR DRAINAGE, IN WHICH CASE PLANT ROOTBALL 2" ABOVE GRADE.
4) REMOVE ALL BRANCHES THAT ARE DAMAGED, RUBBING, OR CROSSING OTHER BRANCHES.
5) NEVER CUT A CENTRAL LEADER.
6) FINAL TREE STAKING AND PLACEMENT TO BE APPROVED BY OWNER'S REP.
7) CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.

TREE PLANTING
NOT TO SCALE



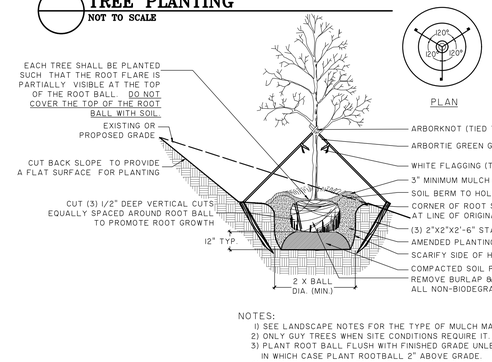
NOTES:
1) SEE LANDSCAPE NOTES FOR THE TYPE OF MULCH MATERIAL TO USE.
2) WHEN GROUNDCOVER AND SHRUBS ARE USED IN MASSES, DO NOT FORM SOIL BERMS ON INDIVIDUAL PLANTS AND ENTIRE PLANTING BED SHALL BE EXCAVATED TO RECEIVE PLANTING SOIL AND PLANT MATERIAL.
3) PLANT ROOT BALL FLUSH WITH FINISHED GRADE UNLESS AREA HAS POOR DRAINAGE, IN WHICH CASE PLANT ROOTBALL 2" ABOVE GRADE. COORDINATE WITH OWNER'S REP. PRIOR TO SETTING ROOTBALL ELEVATIONS.
4) CONTRACTOR SHALL ASSURE PERCOLATION OF ALL PLANTING PITS PRIOR TO INSTALLATION.

SHRUB PLANTING ON A SLOPE
NOT TO SCALE



NOTES:
1) SEE LANDSCAPE NOTES FOR THE TYPE OF MULCH MATERIAL TO USE.
2) APPLY MULCH IN A +/- 5' DIAMETER WHERE PROPOSED TREE PLANTINGS OCCUR IN SOD OR SEEDED AREA.

TREE RING
NOT TO SCALE



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5) NEVER CUT A CENTRAL LEADER.
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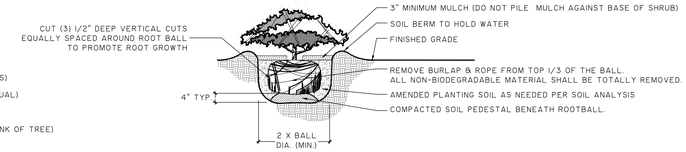
TREE PLANTING ON A SLOPE
NOT TO SCALE



NOTES:
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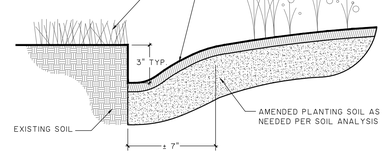
SHRUB PLANTING
NOT TO SCALE



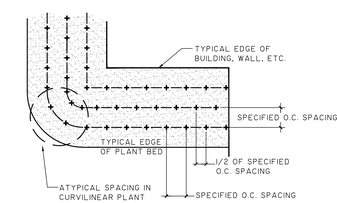
NOTES:
1) TRENCH EDGE TO BE LOCATED BETWEEN PLANTING BEDS AND ALL LAWN AREAS.

SOD TO PLANT BED EDGE
NOT TO SCALE

GENERAL PLANTING / IRRIGATION NOTES:

1. REQUIREMENTS FOR THE MEASUREMENTS, BRANCHING, GRADING, QUALITY, BALLING AND BURLAPPING OF PLANTS IN THE PLANT LIST SHOULD FOLLOW OR EXCEED THE STANDARDS CURRENTLY RECOMMENDED BY THE AMERICAN ASSOCIATION OF NURSERYMEN, INC. IN THE AMERICAN STANDARD FOR NURSERY STOCKS (ASNS). UNLESS OTHERWISE SPECIFIED, ANY SIZE SPECIFIED SHALL BE CONSIDERED MINIMUM. MINIMUMS FOR HEIGHT, SPREAD, CALIPER, ETC. SHALL TAKE PRECEDENT OVER A SPECIFIED CONTAINER SIZE. (I.E. - IF 7 GALLON IS REQUIRED, TO PROVIDE A SPECIFIED HEIGHT OR SPREAD THAT IS SPECIFIED AS A 3 GALLON, THEN THE 7 GALLON SHALL BE SHALL BE REQUIRED AND INCLUDED IN THE BASE BID AND SHALL NOT BE CONSIDERED A CHANGE ORDER.)
2. ALL PLANTS SHALL HAVE A WELL FORMED HEAD WITH MINIMUM CALIPER, HEIGHT AND SPREAD OF THE SIDE BRANCHES AS SHOWN ON THE PLANT LIST. TRUNKS SHALL BE UNDAMAGED AND SHAPE SHALL BE TYPICAL OF THE SPECIES.
3. MEASUREMENT OF CONIFER HEIGHT SHALL INCLUDE NOT MORE THAN FIFTY (50) PER CENT OF THIS YEARS' VERTICAL GROWTH (TOP CANDLE).
4. THE LANDSCAPE CONTRACTOR IS HEREBY NOTIFIED OF THE EXISTENCE OF UNDERGROUND UTILITIES WITHIN THE LIMITS OF THE PROJECT AREA. THE CONTRACTOR SHOULD VERIFY THE EXACT LOCATION OF ALL UTILITY LINES PRIOR TO COMMENCEMENT OF DIGGING OPERATIONS. CONTRACTOR RESPONSIBLE FOR LOCATING, PROTECTING, AND REPAIRING ALL DAMAGE TO BUILDINGS, UTILITIES, PAVEMENT, AND CURB & GUTTER. ANY REPAIRS SHALL BE DONE PROMPTLY AT CONTRACTOR'S EXPENSE.
5. THE CONTRACTOR WILL BE RESPONSIBLE FOR STAKING AND LAYOUT OF PLANTINGS ON THIS PROJECT. THE LANDSCAPE ARCHITECT OR OWNER SHALL BE ADVISED WHEN STAKES ARE READY FOR INSPECTION ON VARIOUS PLANTING AREAS. ALL LAYOUT WORK SHALL BE INSPECTED AND APPROVED BY THE LANDSCAPE ARCHITECT AND OWNER PRIOR TO OPENING ANY PLANTING PITS.
6. IT IS THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR TO VERIFY THAT EACH EXCAVATED TREE OR SHRUB PIT WILL PERCOLATE (DRAIN) PRIOR TO ADDING TOPSOIL AND INSTALLING TREES OR SHRUBS. THE CONTRACTOR SHALL FILL THE BOTTOM OF HOLES WITH SIX (6) INCHES OF WATER. THIS WATER SHOULD PERCOLATE WITHIN A TWENTY-FOUR (24) HOUR PERIOD. IF WATER DOESN'T PERC, CONTRACTOR SHALL NOTIFY THE OWNER'S REP PRIOR TO INSTALLING PLANTS.
7. SHOULD THE LANDSCAPE CONTRACTOR ENCOUNTER UNSATISFACTORY SURFACE OR SUBSURFACE DRAINAGE CONDITIONS, SOIL DEPTH, LATENT SOILS, HARD PANS, STEAM OR OTHER UTILITY LINES OR OTHER CONDITIONS THAT WILL JEOPARDIZE THE HEALTH AND VIGOR OF THE PLANTS, HE MUST ADVISE THE LANDSCAPE ARCHITECT IN WRITING OF THE CONDITIONS PRIOR TO INSTALLING THE PLANTS. OTHERWISE, THE LANDSCAPE CONTRACTOR WARRANTS THAT THE PLANTING AREAS ARE SUITABLE FOR PROPER GROWTH AND DEVELOPMENT OF THE PLANTS TO BE INSTALLED.
8. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING UP THE SITE AT THE COMPLETION OF THE PROJECT AND SHALL MAINTAIN THE SITE IN A REASONABLY NEAT AND CLEAN STATE THROUGHOUT THE INSTALLATION PROCESS. STREETS AND PAVED AREAS SHALL BE CLEANED REGULARLY TO REMOVE CONSTRUCTION MATERIALS AND OTHER DEBRIS RESULTING FROM WORK OF THE PROJECT.
9. REPLACEMENTS OF DEAD OR UNSATISFACTORY MATERIAL SHALL BE MADE AS SPECIFIED IN THE PLANT LIST. THE OWNER OR LANDSCAPE ARCHITECT SHALL INSPECT REPLACED PLANTS WHEN ALL REPLACEMENTS HAVE BEEN MADE. REPLACEMENTS ARE TO BE ALIVE AND IN A HEALTHY CONDITION WHEN THE REPLACEMENTS ARE COMPLETE. REPLACEMENTS ARE NOT SUBJECT TO AN ADDITIONAL GUARANTEE, BUT THE LANDSCAPE CONTRACTOR SHALL CONSULT WITH THE LANDSCAPE ARCHITECT ON REASON FOR PLANT DECLINE/DEATH AND HOW TO AVOID FUTURE INSTANCES.
10. SHOULD THE CONTRACTOR NOT MAKE REPLACEMENTS IN A SATISFACTORY AND TIMELY FASHION IN ACCORD WITH THE PLANTING NOTES, THE OWNER, AFTER PROPER NOTIFICATION TO THE CONTRACTOR MAY UTILIZE THE FUNDS OF THE RETAINAGE TO HAVE THE REPLACEMENTS MADE IN ACCORDANCE WITH THE SPECIFICATIONS BY ANOTHER CONTRACTOR.
11. NO EXCAVATION OR PLANTING PIT SHALL BE LEFT UNATTENDED OVERNIGHT.
12. PLANT MATERIAL QUANTITIES PROVIDED IN THE PLANT LIST ARE FOR REFERENCE ONLY AND THE CONTRACTOR IS RESPONSIBLE FOR THE ACTUAL PLANT MATERIAL COUNTS. DISCREPANCIES BETWEEN QUANTITIES SHOWN ON THE PLANTING PLAN AND THOSE IN THE PLANT LIST SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR CLARIFICATION. IF CLARIFICATION OF DISCREPANCIES FROM THE LANDSCAPE ARCHITECT IS NOT POSSIBLE, THEN QUANTITIES SHOWN ON THE PLANTING PLAN SHALL TAKE PRECEDENCE.
13. REMOVE BURLAP/STRAPPING AND WIRE BASKET FROM TOP 1/3 OF ROOT BALL ON TREES.
14. REMOVE PAPER, PLASTIC OR METAL AROUND ROOT BALLS OF SHRUBS.
15. DO NOT WRAP TREES.
16. WATER ALL PLANT MATERIAL IMMEDIATELY AFTER PLANTING.
17. TREE GUYING MATERIAL SHALL BE 'ARBOR-TIE' OR EQUIVALENT.
18. ALL PLANT BEDS TO BE MULCHED WITH 3" DEPTH OF PINE STRAW MULCH.
19. ALL AREAS OF PLANTING, INCLUDING AREAS OF GRASS SEEDING AND SOD, SHALL BE GRADED TO PROVIDE POSITIVE DRAINAGE AND SHALL BE PROVIDED APPROPRIATE SOIL FOR THE PROPOSED PLANTINGS. THE LANDSCAPE CONTRACTOR SHALL ADJUST PH AND / OR SOIL FERTILITY BY UNIFORMLY INCORPORATING REQUIRED SOIL CONDITIONING MATERIALS AT THE RATE AND DEPTH DETERMINED BY THE ANALYSIS OF THE SOIL TEST (AS REQUIRED IN 3.02 AND 3.13 OF THE LANDSCAPING SPECIFICATIONS). EACH SOIL TEST SHALL BE SPECIFIC TO THE PROPOSED PLANT MATERIAL TO BE INSTALLED IN A GIVEN AREA.
20. ALL EXISTING VEGETATION WITHIN AREAS TO BE PLANTED / SODDED / SEEDED SHALL BE REMOVED PRIOR TO PLANTING / SODDING / SEEDING. ALL AREAS INDICATED TO BE GRASS SEED SHALL BE SEEDED PER GRASSING SPECIFICATIONS FOR PERMANENT STABILIZATION.
21. CONTRACTOR TO SUPPLY AUTOMATIC IRRIGATION SYSTEMS, COMPLETE AND INSTALLED. SYSTEM TO INCLUDE ALL VALVES, PIPES, HEADS, FITTINGS, RAIN SENSOR, AND CLOCK AND TO PROVIDE 100% COVERAGE OF ALL NEW SODDED AND IMPROVED EXISTING GRASS AREAS, TREES, SHRUBS AND PLANTING BEDS. COORDINATE IRRIGATION WITH OWNER'S REPRESENTATIVE. (CONTRACTOR SHALL PROVIDE SHOP DRAWINGS OF PROPOSED IRRIGATION SYSTEM FOR OWNER ACCEPTANCE)
22. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR AUTOMATIC IRRIGATION SYSTEMS. CONTRACTOR SHALL PROVIDE ELECTRIC METER AND SERVICE IN ACCORDANCE WITH STATE AND LOCAL CODES FOR IRRIGATION SYSTEM. LOCATION OF METERS AND CONTROL PANELS FOR IRRIGATION SHALL BE APPROVED BY OWNER'S REP. PRIOR TO INSTALLATION.
23. WHERE IRRIGATION SYSTEM WILL BE INSTALLED WITH ANY WATER SOURCE OTHER THAN DOMESTIC POTABLE WATER, LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR IRRIGATION WATER TESTING. IRRIGATION WATER SHALL BE TESTED FOR LEVELS OF pH, ALKALINITY AND SOLUBLE SALTS. SUBMIT TEST RESULTS TO OWNER'S REPRESENTATIVE FOR REVIEW PRIOR TO INSTALLATION OR ORDERING OF IRRIGATION EQUIPMENT, PUMPS OR WELL DIGGING.
24. ALL TREES SHALL BE INSTALLED PER THE REQUIREMENTS OF THE CITY OF GREENVILLE, SC APPLICABLE ORDINANCES.
25. ALL PLANT BEDS TO RECEIVE WEED INHIBITOR OF PREEN OR ACCEPTED ALTERNATE.
26. FOR SUMMERTIME PLANTINGS, CONTRACTOR TO USE EITHER CONTAINERIZED OR PRE-DUG B & B PLANT MATERIAL.
27. AS AN ADD ALTERNATE BID, THE CONTRACTOR SHALL PROVIDE "SOIL MOIST TRANSPLANT" (OR ACCEPTED EQUIVALENT) AT THE APPLICATION RATES SHOWN BELOW FOR ALL NEWLY INSTALLED PLANTINGS.

Container Size/Amount	Caliper Size/Amount
1 Gallon/.75 oz.	1"/3.0 oz.
2 Gallon/1.5 oz.	2"/6.0 oz.
3 Gallon/1.5 oz.	3"/9.0 oz.
5 Gallon/2.0 oz.	4"/12.0 oz.
7 Gallon/3.0 oz.	5"/15.0 oz
10 Gallon/3.0 oz.	6"/18.0 oz
15 Gallon/5.0 oz.	7"/21.0 oz
20 Gallon/7.0 oz.	8"/24.0 oz
Plant Height/Amount	**Box Size/Amount**
2'/1.5 oz.	16"/5.0 oz.
3'/2.0 oz.	20"/6.0 oz.
4'/3.0 oz.	24"/9.0 oz.
5'/4.0 oz.	30"/12.0 oz.
6'/5.0 oz.	36"/18.0 oz
7'/6.0 oz.	42"/27.0 oz
	60"/30.0 oz.



NOTES:
1) EXCAVATE ENTIRE BED SPECIFIED FOR GROUNDCOVER PLANTING TO A DEPTH OF 12".

PLANT SPACING DETAIL
NOT TO SCALE

SOUTH CAROLINA
REGISTERED
LANDSCAPE ARCHITECT
THOMAS & HUTTON ENGINEERING CO.
No C002865
CERTIFICATE OF AUTHORIZATION
SOUTH CAROLINA
REGISTERED
LANDSCAPE ARCHITECT
JOHN W. HAAS
No 3295
EXPIRES 06.30.2020
10.14.2020

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
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LICAR, LLC
CITY OF GREENVILLE, SC

CU ICAR - TN3 - FLEX BUILDING

LANDSCAPE NOTES & DETAILS

JOB NO:	J-28283.0000
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DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	########

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LANDSCAPING SPECIFICATION

LANDSCAPING

PART 1 - GENERAL

1.1 DESCRIPTION

A. The work covered in this section consists of soil preparation, fine grading, lawns, trees, shrubs and ground cover plantings, their protection and maintenance of planted areas until acceptance.

1.2 RELATED WORK

A. See Civil and Landscape plans and specifications.

1.3 QUALITY ASSURANCE

A. Qualifications of Workmen: Contractor shall provide at least one person present at all times during execution of work that is thoroughly familiar with the type of materials being installed and proper equipment and methods for their installation and who shall direct all work performed under this section.

B. Standards: All seed, sod, trees, shrubs, and ground covers shall meet or exceed the specifications of Federal, State, County and / or Municipality laws requiring inspection for disease and insect control.

1. Plants and planting methods shall conform to the latest edition of American Standard for Nursery Stock, American Nursery & Landscape Association, 1000 Vermont Avenue, NW, Suite 300, Washington, DC 20005

2. Plants shall be true and representative of their genus, species, cultivar, or variety. Nursery stock shipped in accordance with the required specifications shall be deemed to be acceptable within the terms of this section if it is typical in size and habit for the species in the region of the country in which it is grown unless the specifications include additional details.

3. Prior to ordering any plant material, representative photos of each species shall be provided for review and acceptance.

4. One of each bundle or lot shall be tagged with name and size of the plant in accordance with American Nursery & Landscape Association standards. In all cases, botanical names shall take precedence over common names. Landscape Architect should be consulted in the event questions arise about nomenclature of plants to be used and their availability.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed in original containers showing analysis of seed mixture, percentage of pure seed, year of production, net weight, date of packaging and location of packaging. Damaged packages are not acceptable.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

C. Deliver sod on pallets.

D. Handling of plants shall be by lifting the root mass or container and not by lifting plant by trunk or branches. Handling of plants in an improper fashion shall be cause for rejection of plant materials. Care must be taken during all phases of the location and planting procedures not to damage root system, trunk or branches. All plant materials shall be planted as soon after arrival at the site as possible. Contractor is responsible for keeping plants safe from injury by the construction activity and watered to prevent drying out before planting. Balled and burlapped plants shall be "Healed-in" and protected with burlap or other accepted material if they cannot be planted upon delivery. Plants with broken major branches, badly bruised or damaged bark are not acceptable and will be rejected.

1.5 PLANTING DATES

A. The planting season for trees, shrubs and groundcovers is between October 1st and June 1st of the following year. Do not plant if temperature is below freezing or above 90 degrees. Planting at any other time other than the planting season is the Contractor's option and full responsibility and without additional compensation. Planting may, at the option of the Contractor, be postponed into the following planting season but without additional compensation provided the Owner and local governing jurisdiction have approved.

C. Planting dates for sod, sprigging or seeding shall be per the grassing specification.

1.6 MEASUREMENT AND PAYMENT

A. Measurement - The items listed in the proposal shall be considered as sufficient to complete the work in accordance with the plans and specifications. Any portion of the work not listed in bid form, but required to complete the work, shall be deemed to be a part of the item with which it is associated and shall be included in the cost of the unit shown on the bid form.

B. Payment - Payment for the unit shown on the bid form shall be considered to cover the cost of all labor, material, equipment, and performing all operations necessary to complete the work in place. No payment will be made for any material wasted, used for the convenience of the Contractor, unused or rejected.

1. Trees, Shrubs, and Groundcovers - Will be paid for at the contract unit price for planted/installed and accepted trees, shrubs, and groundcovers.

2. Payment for grassing will be made per the grassing specification.

3. Clearing - Will be paid for at the lump sum price for clearing.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Contractor shall, at time of delivery, furnish Owner and / or Landscape Architect with invoices of all materials received; in order the quality and source of materials may be reviewed.

2.2 TOPSOIL

A. TOPSOIL SHALL BE FERTILE, FRIABLE SOIL CONTAINING LESS THAN 5% TOTAL VOLUME OF THE COMBINATION OF SUBSOIL, REFUSE, ROOTS LARGER THAN 1 INCH DIAMETER, HEAVY, STICKY OR STIFF CLAY, STONES LARGER THAN 2 INCHES IN DIAMETER, NOXIOUS SEEDS, STICKS, BRUSH, LITTER, OR ANY SUBSTANCES DELETERIOUS TO PLANT GROWTH. THE PERCENT (%) OF THE ABOVE OBJECTS SHALL BE CONTROLLED BY SOURCE SELECTION NOT BY SCREENING THE SOIL. TOPSOIL SHALL BE SUITABLE FOR THE GERMINATION OF SEEDS AND THE SUPPORT OF VEGETATIVE GROWTH. IMPORTED TOPSOIL SHALL NOT CONTAIN WEED SEEDS IN QUANTITIES THAT CAUSE NOTICEABLE WEED INFESTATIONS IN THE FINAL PLANTING BEDS. IMPORTED TOPSOIL SHALL MEET THE FOLLOWING PHYSICAL AND CHEMICAL CRITERIA:

1. SOIL TEXTURE: USDA LOAM, SANDY CLAY LOAM OR SANDY LOAM WITH CLAY CONTENT BETWEEN 15 AND 25%, AND A COMBINED CLAY/SILT CONTENT OF NO MORE THAN 55%.
2. PH VALUE SHALL BE BETWEEN 5.5 AND 7.0.
3. PERCENT ORGANIC MATTER (OM): 2.0-5.0%, BY DRY WEIGHT.
4. SOLUBLE SALT LEVEL: LESS THAN 2 MMHO/CM.
5. SOIL CHEMISTRY SUITABLE FOR GROWING THE PLANTS SPECIFIED.

B. IMPORTED TOPSOIL SHALL BE A HARVESTED SOIL FROM FIELDS OR DEVELOPMENT SITES. THE ORGANIC CONTENT AND PARTICLE SIZE DISTRIBUTION SHALL BE THE RESULT OF NATURAL SOIL FORMATION. MANUFACTURED SOILS WHERE COARSE SAND, COMPOSTED ORGANIC MATERIAL OR CHEMICAL ADDITIVES HAS BEEN ADDED TO THE SOIL TO MEET THE REQUIREMENTS OF THIS SPECIFICATION SECTION SHALL NOT BE ACCEPTABLE. RETAINED SOIL PEDS SHALL BE THE SAME COLOR ON THE INSIDE AS IS VISIBLE ON THE OUTSIDE.

C. IMPORTED TOPSOIL FOR PLANTING SOIL SHALL NOT HAVE BEEN SCREENED AND SHALL RETAIN SOIL PEDS OR CLODS LARGER THAN 2 INCHES IN DIAMETER THROUGHOUT THE STOCKPILE AFTER HARVESTING.

D. STOCKPILED EXISTING TOPSOIL AT THE SITE MEETING THE ABOVE CRITERIA MAY BE ACCEPTABLE.

E. PROVIDE A ONE GALLON SAMPLE FROM EACH IMPORTED TOPSOIL SOURCE(S) WITH REQUIRED SOIL TESTING RESULTS OF ALL EXISTING TOPSOIL TO BE USED. THE SAMPLE SHALL BE A MIXTURE OF THE RANDOM SAMPLES TAKEN AROUND THE SOURCE STOCKPILE OR FIELD.

2.3 SEED

A. See grassing specification.

2.4 SPRIG

A. See grassing specification.

2.5 SOD

A. See grassing specification.

2.6 PLANT MATERIALS

A. Provide all plant materials as indicated on the plans. In the event of any discrepancies between quantities of plants indicated on the plant schedule and those indicated on the plan, plan quantities shall govern.

B. Plants shall be sound, healthy and vigorous, well branched and densely foliated when in leaf. They shall be free of disease, insect pests, eggs or larvae, and shall have healthy, well developed root systems. Plants shall be from a nursery within 300 miles north or south of the project location and shall have been grown under climate conditions similar to those in the locality of project. Trees for planting in rows shall be uniform in size and shape.

B. Plants shall possess a normal balance between height and width. Plants shall be measured when branches are in their normal position. Height and spread dimensions specified refer to the main body of plant and not from branch tip to tip. Plants larger in size than specified may be used with no change in contract price.

C. Plants shall be dug with firm natural balls of earth, of diameter not less than recommended by American Standard for Nursery Stock and of sufficient depth to include fibrous and feeding roots. Plants will not be accepted if ball is cracked or broken before or during planting operations.

D. Trees specified for Street Tree Grade shall conform to standards of the A.N.L.A.:

1. Suitable for planting as street trees.

2. Free of branches to approximately 50% of height from ground.

3. Crown of tree shall be in good balance with the trunk.

2.7 FERTILIZER

A. Commercial fertilizer shall be slow release 5-10-10 or 6-12-12 (or as recommended by soil test), uniform in composition, free flowing, and suitable for application with appropriate equipment. Deliver to site unopened in manufacturer's standard containers showing weight, analysis and name of manufacturer. If stored on site, protect from the elements.

2.8 PEAT MOSS

A. Peat moss shall be finely shredded, 90% organic moss peat, brown in color and suitable for horticultural purposes. Peat shall be measured in air dry condition, containing not more than 35% moisture by weight. Ash content shall not exceed 10%.

2.9 MULCH FOR TREES, SHRUBS, AND GROUND COVERS

A. Mulch for non bio-retention areas shall be as shown on plans.

B. Mulch for bio-retention areas shall be shredded hardwood.

2.10 STAKING EQUIPMENT

A. Trees and palms shall be staked as shown in landscape plans.

2.11 WATER

A. Contractor shall provide water to the project via the installation of a new irrigation system for the area shown on the plans. For bidding purposes, the contractor shall assume drilling a new well with associated pumps and controls as needed for irrigation.

PART 3 - EXECUTION

3.1 FINE GRADING

A. All areas within limits of construction shall be fine graded to the desired grades. All areas within limits of construction are to be fine graded, free of roots, debris and/or other objectionable material, before planting or grassing commence. Any additional fill material needed to fill low or uneven areas shall be provided by the Contractor. Positive drainage away from structures shall be provided in all plant beds so standing water does not occur. Planting beds shall be raised above adjacent lawn areas to provide good drainage conditions.

B. Planting and grassed areas, if not loose, shall be loosened to a minimum depth of 3-inches before fertilizer, seed or sod is applied.

3.2 FERTILIZER AND SOIL AMENDMENTS

A. Contractor shall provide Topsoil Analysis Tests that has been performed by a State Agricultural Experiment Station, Soil and Water Conservation District, State University, or other qualified private testing laboratory, as approved by Landscape Architect.

B. Apply fertilizer and soil amendments after fine grading and mix thoroughly into upper 2 inches of soil.

C. Fertilizer and other necessary soil amendments shall be applied at the rate recommended by Topsoil Analysis Test.

3.3 SODDING

A. See grassing specification.

3.4 SPRIGGING

A. See grassing specification.

3.5 SEEDING

A. See grassing specification.

3.6 SEED PROTECTION

A. See grassing specification.

3.7 LAYOUT OF TREES, SHRUBS, AND GROUND COVERS

A. All plants shall be placed in the proper location as shown on construction plans, allowing Landscape Architect to review all plant locations prior to actual planting. Landscape Architect may make minor adjustments which shall not be cause for changes to the contract price.

3.8 OBSTRUCTIONS BELOW GROUND

A. Prior to excavating planting holes, Contractor shall determine the exact location of electrical, phone, or television cables or conduits, water, drainage or sewer lines, and any other subsurface structures and take precautions to protect them. Any damage to underground utilities shall be repaired immediately at the Contractor's expense.

B. In the event rock, underground construction work, or other obstructions are encountered in any plant hole excavation under this contract, alternate locations may be selected. Where locations cannot be changed, the obstructions shall be removed to a depth of not less than three (3) feet below grade and not less than six (6) inches below bottom of ball or roots when plant is properly set at the required grade. The Contractor shall be responsible for the removal of such rock or other underground obstructions encountered.

3.9 PLANTING HOLES

A. For trees, shrubs and ground covers the planting hole shall be as shown on planting details in the plans. Do not leave planting holes open overnight. In the event that plant holes are dug and not planted in a timely manner, install four (4) foot high orange safety fencing around all excavated areas.

3.10 PLANTING TREES AND SHRUBS

A. Shall be same as grown in the nursery and/or container soil level. Adjust bottom soil mix to insure proper planting level with the proposed surrounding grades. Check plants to insure proper vertical alignment.

B. Fill holes to proper height to receive plant, and thoroughly tamp before setting the plant. Set plant in upright position in the center of the hole, and compact the backfill mixture around the ball or roots. Add soil amendments as required to improve fertility of existing soil and plant growing conditions.

1. When balled or burlapped plants are set, compact topsoil around base of ball to fill all voids. All bindings shall be removed and the top half of burlap removed from around root ball. If burlap is made of natural fibers it can be laid back from the root mass or can be cut away. Remove all burlap if it is made of non-degradable material/fabric. All weeds growing on the root mass shall be removed prior to planting.

2. Containerized plants shall have the container removed prior to planting. Care shall be taken to protect root mass from injury and the root mass intact. If root mass shows evidence of being bound or matted, three vertical 1/2" deep cuts shall be made on alternate sides of the root mass and roots pulled away slightly. This is to untangle roots which have begun to "circle" the root mass and to encourage new root growth. All weeds growing in the root mass shall be removed prior to planting.

3. Roots of bare root plants shall be spread out and topsoil carefully worked in among them. Remove with a clean cut, any broken or frayed roots.

3.11 PLANTING GROUND COVERS

A. Planting beds shall be thoroughly worked to a depth of twelve (12) inches incorporating fertilizer and other soil improvements at the recommended rate suggest by the soils test. Rake prepared planting bed until level, smooth and free from all soil, lumps, rocks, sticks and other deleterious materials. Bed area should be neatly outlined. Space the plants evenly as indicated on the drawings. Plant only in soil that is moist and friable, and not wet or soggy. In the case of planting in the open on hot days, shorten the time between planting and watering.

3.12 WATERING

A. Thoroughly water each plant when the hole is 1/3 full, again at 2/3 full and then complete backfilling. Once backfilling is complete, water again, then tamp the soil in place until the surface of the backfill is level with the surrounding area and the plant bears the same relation of finished grade as it bore to existing grade before being dug.

B. Earth saucers shall be constructed around the perimeter of planting holes of all trees and all single planted shrubs. Earth saucers shall be minimum 3" high and compacted to retain water. Earth saucers shall not be installed in areas where the subsoil is very poorly drained or around mass shrub / groundcover plantings.

C. All trees and shrubs to be hand watered on a regular basis as necessary during the warranty period.

3.13 SOIL MIX

A. Shall be per existing soils on site with recommended amendments from soils test.

3.14 STAKING OF TALL PLANTS

A. Shall be done only if site / environment conditions make if required. If required, trees and palms shall be staked as indicated on the plans.

3.15 MULCHING

A. All plants shall be mulched with an evenly thick layer of clean mulch immediately after planting. Mass plant beds shall be completely mulched to the limits of the bed as shown on the plans. Limit of mulching for individual trees and shrubs shall be slightly beyond the saucer berm. The areas mulched shall be tidy and clean in appearance.

3.16 PRUNING

A. Remove dead, broken or bruised branches after planting using clean, sharp tools.

3.17 WEEDING

A. All planted areas shall be kept free from weeds and undesirable grasses until final acceptance by the Owner. See General notes on plans for additional information.

3.18 INSECT AND DISEASE CONTROL

A. All plant materials shall be disease or insect free upon arrival to the site, however, should any plants show signs of insect or disease infestations, Contractor shall identify nature of infestation and submit to Landscape Architect a proposed method of control. Contractor shall treat all infested plants at its expense. Should the infestation be wide spread and uncontrollable, plants affected shall be removed from site, fresh plants brought in and all other plants treated to prevent infestation of remaining plants at Contractor's expense.

3.19 CLEAN UP

A. Contractor is responsible for removing all trash, debris, rubbish and all other materials associated with the construction from site on a daily basis. All tags, flags, and labels will be removed from plants and trees. The site shall be left broom clean and tidy. Clean up of the site is a prerequisite to final acceptance by the Owner.

PART 4 - MAINTENANCE AND WARRANTY

4.1 MAINTENANCE

A. Protect all plantings (grass, plants and trees) until accepted by Owner. All damage, regardless of cause, shall be immediately repaired and plants replaced if necessary. Erect temporary fences, barricades, signs and other protection as needed to prevent trampling. Contractor is not responsible for replacement of damaged or missing plants and plant materials due to vandalism or other acts beyond the control of the Contractor if proper barriers or other safeguards have been maintained.

B. Maintenance shall include but is not limited to watering, weeding, cultivating, removal of dead material, mulch reapplication, resetting plants to proper grades or upright position, lawn mowing, fertilizing, and other necessary operations.

C. The Contractor shall repair immediately any areas damaged as a result of construction operations or erosion.

E. The Contractor shall maintain all proposed plantings until final acceptance is issued by the Owner.

F. At the end of the maintenance period, all plants shall be in a healthy growing condition. During the maintenance period, should the appearance of any plant indicate weakness and probability of dying, immediately replace without additional cost to the Owner. Replacements required because of vandalism or other causes beyond the control of the Contractor are not part of this contract.

4.2 WARRANTY

A. All shrubs, ground cover, and trees shall be guaranteed by the Contractor to be alive and healthy for a one year period after substantial completion is issued by the Owner. A final inspection with the Owner shall be conducted at the end of the warranty period to determine if any plants will be required to be replaced.

B. Any lawn, plant, or tree which is dead or not showing satisfactory growth shall be replaced at Contractor's expense at the end of warranty period. All replacements shall be of original quality and of a size equal to adjacent plants or trees of the same kind.

END OF SECTION

SOUTH CAROLINA PROFESSIONAL ENGINEER THOMAS B HUTTON ENGINEERING CO No C002286 CERTIFICATE OF AUTHORIZATION

SOUTH CAROLINA PROFESSIONAL ENGINEER JOSEPH R. RYAN No. 29601 REGISTERED 07-14-2020

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
501 River Street • Suite 200
Greenville, SC 29601 • 864.412.2222
www.thomasandhutton.com

LICAR, LLC
CITY OF GREENVILLE, SC

CU ICAR - TN3 - FLEX BUILDING

LANDSCAPE SPECIFICATIONS

JOB NO:	J-28283.0000
DATE:	08/14/2020
DRAWN:	CMC
DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	########

L2.2

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GRASSING SPECIFICATION

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Seeding, planting grass, and fertilizing graded areas around buildings, structures, soccer fields and sidewalk shoulders and other disturbed areas.

B. Seed protection.

C. Maintaining grassed areas until final acceptance.

1.2 RELATED WORK

A. Civil and Landscape plans and specifications.

1.3 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed in original containers showing analysis of seed mixture, percentage of pure seed, year of production, net weight, date of packaging, and location of packaging. Damaged packages are not acceptable. Store in cool, dry locations away from contaminants.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer. Damaged bags are not acceptable. Store in cool, dry locations away from contaminants.

C. Deliver sod on pallets.

D. All material shall be acceptable to Engineer prior to use.

1.4 PLANTING DATES

A. This specification provides for establishment of a permanent grass cover between the dates of March 1 and September 30. If finished earth grades are not completed in time to permit planting and establishment of permanent grass during the favorable season between dates specified above unless otherwise accepted, Contractor will be required to plant a temporary cover to protect new graded areas from erosion and to keep windborne dust to a minimum. The temporary cover shall be planted between October 1 and February 28 unless otherwise permitted.

1.5 MEASUREMENT AND PAYMENT

A. When the season or stage of project is such results of grassing work cannot be determined, conditional acceptance will be made on work completed. When conditional acceptance is made for items of work covered, Contractor shall be entitled to 50% of bid price for the actual work placed and shall receive remaining 50% of bid price when final acceptance is made. Conditional acceptance shall not apply to the remaining items of work, and full bid price payment shall be made when work is acceptably placed and completed in accordance with specifications.

B. Payment for grassing will be made at contract unit price for the item "Grassing" and such payment shall constitute full compensation for furnishing and placing seed and fertilizer or sod where directed and protecting and maintaining seed and sod in all graded and disturbed areas.

PART 2 - PRODUCTS

Contractor shall submit source and species certification documents to Engineer and Owner's Representative for review prior to installation. Supply complete information on all analysis / test methodologies and results; laboratory certifications, manufacturer's specifications, and agency approvals to the Landscape Architect prior to placement of soil mixtures. In addition, provide the Landscape Architect with thoroughly mixed sample of soil mixes for approval prior to placement. Landscape Contractor shall make modifications and improvements to soil mixes deemed necessary by the soil analysis to meet requirements specified here in before, and to ensure proper growing medium for plant material.

2.1 SEED

A. All seed shall conform to all State Laws and to all requirements and regulations of the State Department of Agriculture.

B. The varieties of seed, as specified in Section 2.2, shall be individually packaged or bagged, and tagged to show name of seed, net weight, origin, germination, lot number, and other information required by the State Department of Agriculture,

C. The Engineer reserves the right to test, reject, or accept all seed before seeding.

2.2 SEEDING SCHEDULE

A. SEED	RATE	PLANTING DATES
'Lovegrass'	75 lbs/ acre	March 1 - September 30
Annual Rye (Temp only)	75 lbs/acre	October 1 - February 28

2.3 FERTILIZER

A. Commercial fertilizer of approved type, conforming to state fertilizer laws at the rate as recommended by soils test.

2.4 LIME

A. Agricultural grade, ground limestone at the rate as recommended by soils test.

2.5 SPRIG

A. Healthy living stems, stolons, or rhizomes and attached roots of locally adapted grass without adhering soil, including two to three nodes and from 4 to 6 inches long. Obtain from heavy, dense certified sod. Provide sprigs which have been grown under climatic conditions similar to those in the locality of the project. Coordinate harvesting and planting operations to prevent exposure of sprigs to the sun for more than 30 minutes before covering and moistening. Sprigs showing signs of wilt, mold, containing weeds or other detrimental material or that are heat damaged will be rejected.

B. The varieties of sprig, as specified in section 2.6, shall be individually packaged or bagged, and tagged to show name of sprig, net weight, origin and other information required by the State Department of Agriculture.

C. Sprigs shall be pure to variety specified and shall be free of other grass species, weeds or foreign matter.

D. Sprigs shall be harvested by digging (not collected above soil level) shredding sod, by rototilling sod and raking, by vericutting or by a sprig harvester. Sprigs shall consist of mostly rhizomes and crowns with only a few green leaves.

2.6 SPRIGGING SCHEDULE

A. SPRIG	RATE	PLANTING DATES
'Tifway 419' Bermuda (or approved equal)	1,000 bushels / ac. (Coverage in 3 months)	April 1 - August 31
Stabilize site with temporary grass seed (See section 2.2)		September 1 - March 31

B. In areas where existing grass is to be matched, Contractor shall sprig at the rate and dates recommended by sprig distributor.

2.7 SOD

A. Sod shall be premium grade, densely rooted, good quality grass of the species and certified variety as shown on the plans, free from noxious weeds with no surface soil being visible. The sod shall be obtained from areas where the soil is reasonably fertile. Sod of specified species with not less than 95 percent germination, not less than 85 percent pure seed, and not more than 0.5 percent weed seed. The sod shall be machine cut to a uniform soil thickness that shall contain practically all of the dense root system and not be less than 1-inch thick.

B. Before cutting, sod shall be mowed to a height of not less that 1-1/2" or more than 2". Sod shall be cut in uniform widths min. 12" and in lengths min. 24 inches.

C. Sod shall be delivered to site in a fresh, moist condition with healthy green foliage. It shall be unloaded from delivery trucks on pallets or rolls and placed in final position within 24 hours of delivery. Sod shall be protected from wind and sun and shall not be allowed to dry out before planting.

D. Sod shall be strong enough to support its own weight and retain its size and shape when suspended vertically from a firm grasp on the upper 10 percent of the section.

2.8 ACCESSORIES

A. Straw Mulch: Oat or wheat straw, reasonably free from weeds, foreign matter detrimental to plant life, and in dry condition.

B. Excelsior Mulch: Excelsior mulch shall consist of wood fibers cut from sound, green timber. The average length of fibers shall be 4 to 6 inches. Cut shall be made in such a manner as to provide maximum strength of fiber, but at a slight angle to natural grain of the wood to cause splintering of fibers when weathering in order to provide adherence to each other and to soil.

C. Wood cellulose fiber shall be made from wood chip particles manufactured particularly for discharging uniformly on the ground surface when dispersed by a hydraulic water sprayer. It shall remain in uniform suspension in water under agitation and blend with grass seed and fertilizer to form a homogenous slurry. Mulch fibers shall intertwine physically to form a strong moisture holding mat on the ground surface and allow rainfall to percolate into underlying soil. The mulch shall be heat processed to contain no germination or growth-inhibiting factors. It shall be dyed (non-toxic) an appropriate color to facilitate metering of material.

2.9 PRODUCT REVIEW

A. Contractor shall provide the Engineer with a complete description of all products before ordering. The Engineer will review all products before they are ordered.

PART 3 - EXECUTION

3.1 PREPARATION

A. Areas to be seeded or sprigged shall be made smooth and uniform and shall conform to the finished grade indicated on plans.

B. Remove foreign materials, plants, roots, stones, and debris from surfaces to be seeded.

C. Grassing areas, if not loose, shall be loosened to a minimum depth of 3 inches before fertilizer, seed, sprig or sod is applied.

D. Amendments to soils shall be incorporated into loosened 3 inch top soil layer as recommended by soils test.

E. **No seeding shall occur until acceptance of the seed bed preparation has occurred. Contractor shall notify owner and landscape architect once seed bed is prepared for review and acceptance.**

3.2 STAND OF GRASS

A. Before acceptance of seeding or sprigging is performed for the establishment of permanent vegetation, Contractor will be required to produce a satisfactory stand of perennial grass whose root system shall be developed sufficiently to survive dry periods and winter weather and be capable of re-establishment in spring.

B. Before acceptance of seeding performed for the establishment of temporary vegetation, Contractor will be required to produce a stand of grass sufficient to control erosion for a given area and length of time before the next phase of construction or establishment of permanent vegetation is to commence.

3.3 SEEDING AND SPRIGGING DATES

A. Seeding and sprigging shall be performed during periods and at rates specified in their respective schedules. Seeding and sprigging work may, at discretion of Contractor, be performed throughout the year using schedule prescribed for given period. Seeding and sprigging work shall not be conducted when the ground is frozen or excessively wet. Contractor will be required to produce a satisfactory stand of grass regardless of the period of year work is performed.

3.4 APPLYING LIME AND FERTILIZER

A. Following advance preparation and placing selected material for shoulders and slopes, lime and fertilizer, if called for based on soil tests, shall be spread uniformly over the designated areas, and shall be thoroughly mixed with the soil to a depth of approximately 2 inches. Fertilizer and lime shall be applied at the rate at the rate recommended by required soils test. Unless otherwise provided, lime will not be applied for temporary seeding. In all cases where practicable, acceptable mechanical spreaders shall be used for spreading fertilizer. On steep slopes subject to slides and inaccessible to power equipment, the slopes shall be adequately scarified. Fertilizer may be applied on steep slopes by hydraulic methods as a mixture of fertilizer and seed. When fertilizer is applied with combination seed and fertilizer drills, no further incorporation will be necessary. The fertilizer and seed shall be applied together when Wood Cellulose Fiber Mulch is used. Any stones larger than 2 ½ inches in any dimension, larger clods, roots, or other debris brought to the surface shall be removed.

3.5 SEEDING

A. Seed shall be sown within 24 hours following application of fertilizer and lime and preparation of the seedbed as specified in Section 3.4. Seed shall be uniformly sown at rate specified by the use of acceptable mechanical seed drills. Rotary hand seeders, power sprayers or other satisfactory equipment may be used on steep slopes or on other areas inaccessible to seed drills.

B. Seeds shall be covered and lightly compacted by means of cultipacker or light roller if the drill does not perform this operation. On slopes inaccessible to compaction equipment, the seed shall be covered by dragging spiked chains, by light harrowing or by other satisfactory methods.

C. Apply water with fine spray immediately after each area has been sown.

D. Do not sow seed when ground is too dry, during windy periods or immediately following a rain.

E. If permitted by the special provisions, wood cellulose fiber mulch or excelsior fiber mulch may be used.

3.6 SEED PROTECTION (STRAW MULCH)

A. All seeded areas seeded with permanent grasses shall be uniformly mulched in a continuous blanket immediately following seeding and compacting operations, using at least 2 tons of straw per acre.

3.7 SEED PROTECTION (EXCELSIOR MULCH)

A. Seed shall be sown as specified in Section 3.5. Within 24 hours after covering of seed, excelsior mulch shall be uniformly applied at the rate of 2 tons per acre. The mulch may be applied hydraulically or by other acceptable methods. Should the mulch be placed in a dry condition, it shall be thoroughly wetted immediately after placing. Engineer may require light rolling of the mulch to form a tight mat.

3.8 SEED PROTECTION (WOOD CELLULOSE FIBER MULCH)

A. After the lime has been applied and ground prepared as specified in Section 3.4, wood cellulose fiber mulch shall be applied at a rate of 1,500 pounds per acre in a mixture of seed and fertilizer. Hydraulic equipment shall be used for application of fertilizer, seed, and slurry of the prepared wood pulp. This equipment shall have a built-in agitation system with an operating capacity sufficient to agitate, suspend, and homogeneously mix a slurry of the specified amount of fiber, fertilizer, seed, and water. The slurry distribution lines shall be large enough to prevent stoppage. The discharge line shall be equipped with a set of hydraulic spray nozzles which will provide an even distribution of slurry on various areas to be seeded. The slurry tank shall have a minimum capacity of 1,000 gallons.

Seed, fertilizer, wood pulp mulch, and water shall all be combined into the slurry tank for distribution of all ingredients in one operation by hydraulic seeding method specified herein. Materials shall be combined in a manner recommended by the manufacturer. The slurry mixture shall be regulated so amounts and rates of application shall result in a uniform application of all materials at rates not less than amount specified. Using the color of wood pulp as a guide, equipment operator shall spray prepared seedbed with a uniform visible coat. The slurry shall be applied in a sweeping motion, in an arched stream to fall like rain, allowing wood fibers to build upon each other until an even coat is achieved.

3.9 SPRIGGING

A. Sprigs shall be placed at the date and rates as shown in section 2.6. The sprigging method shall be by broadcast sprigging, hydroplanting or row planter. Sprigging procedure shall ensure even coverage.

B. Sprigs applied by broadcast over the site with a distributor or hydroseeder shall be planted at the rates listed in section 2.6. Cover broadcast sprigs with straw mulch immediately after broadcast and water in immediately (within 2 hours).

C. Sprigs installed by row planter creating a narrow furrow that covers 50 to 80% of the sprig with soil may use less sprig material. Rate shall be as recommended by sprig supplier to provide a solid stand of turf within the time required in Section 2.6. Water in immediately (within 1 hour).

3.10 SODDING

A. Sod shall be placed between March 1st and December 1st. However, if sod is to be placed during periods of temperatures over 90 degrees F., the contractor shall take extra care for quick placement of sod with adequate, consistent watering necessary to ensure sod thrives as planted.

B. Sod shall be placed within 24 hours of cutting.

C. Place top elevation of sod 1/2 inch below adjoining paving or curbs.

D. All areas to be sodded shall be brought to the proper line grade or cross section as was existing prior to construction. Sod shall be placed so that, upon completion, the edges of the sodded areas will be smooth and will conform to the proposed finished grade. Sod shall be laid smooth, edge to edge, with staggered joints. Sod shall be immediately pressed firmly into contact with the sod bed by tamping or rolling, to eliminate any air pockets. A true and even surface shall be provided, to insure knitting without displacement of the sod or deformation of the surfaces of the sodded areas. Do not stretch or overlap sod pieces. Following compaction, screened soil of good quality shall be used to fill all cracks, and excess soil shall be worked into the grass with rakes or other suitable equipment. On slopes steeper than 4 to1, the sod shall be fastened in place with suitable wood or metal pins to hold the sod in place. Any damage by erosion or other causes that may have occurred after completion of grading operations shall be repaired, before commencing with the sodding operations.

E. Immediately before sodding, moisten topsoil with a fine spray to a minimum 1" depth. Sod shall not be laid on soil that is dry and powdery.

F. Sod shall be moist when laid and placed on moist ground. The sod shall be carefully placed by hand, beginning at the toe of slopes and working upwards. The length of the strips shall be at right angles to the flow of surface water. All joints shall be tightly butted and end joints shall be staggered at least 12 inches. The sod shall be immediately pressed firmly into the ground by tamping or rolling. Fill all joints between strips with fine screened soil. Sod on slopes shall be pegged with sod pegs to prevent movement. The sod shall be watered, mowed, weeded, repaired, or otherwise maintained, to insure the establishment of a uniform healthy stand of grass until acceptance.

G. Within 2 hours after sod has been placed, thoroughly water to a minimum depth of 4". After sod and soil have dried, roll sodded areas to ensure good bond between sod and soil and to remove depressions and irregularities. Roll sodded areas with a roller not exceeding 150 lbs. per foot of roller width. Top dress and roll again as necessary to create a smooth even surface.

PART 4 - MAINTENANCE, WARRANTY AND ACCEPTANCE

4.1 MAINTENANCE

A. Maintenance shall consist of providing protection against traffic, watering to ensure uniform seed germination and to keep surface of soil damp, and repairing any areas damaged as a result of construction operations or erosion. Maintenance shall also include, but is not limited to, watering, weeding, cultivating, removal of dead material, lawn mowing, fertilizing, and other necessary operations.

B. The Contractor shall maintain all proposed plantings until the date of final acceptance by the Owner.

4.2 WARRANTY

A. All grassed areas shall be guaranteed by the Contractor to be alive and healthy for a one year period from the date of substantial completion issued by the Owner. A final inspection with the Owner shall be conducted at the end of the warranty period to determine if any areas require replanting. At the end of the warranty period, the sod shall show evidence of rooting to the underlying soil and shall have no competitive weed growth from either the sod or from between the sod joints.

B. Any grassed area which is dead or not showing satisfactory growth shall be replaced at Contractor's expense at the end of warranty period. All replacements shall be of original quality and of a size equal to adjacent plants or trees of the same kind. Replacements required because of vandalism, excessive use or other causes beyond the control of the Contractor are not part of this contract.

4.3 ACCEPTANCE

A. Before acceptance of seeding performed for the establishment of permanent vegetation, Contractor will be required to produce a satisfactory stand of perennial grass whose root system shall be developed sufficiently to survive dry periods and winter weather and be capable of reestablishment in spring.

B. A minimum coverage of 80% density over 100% of the disturbed area is required for seeded areas before project acceptance. Sprig and sod areas shall have 95 % coverage over 100% of the disturbed area prior project acceptance.

END OF SECTION

SOUTH CAROLINA PROFESSIONAL ENGINEER THOMAS B HUTTON ENGINEERING No. C002286 CERTIFICATE OF AUTHORIZATION NORTH CAROLINA

PRELIMINARY - DO NOT USE FOR CONSTRUCTION

NO.	REVISIONS	BY	DATE

THOMAS & HUTTON
501 River Street • Suite 200
Greenville, SC 29601 • 864.412.2222
www.thomasandhutton.com

LICAR, LLC
CITY OF GREENVILLE, SC

CU ICAR - TN3 - FLEX BUILDING

GRASSING SPECIFICATIONS

JOB NO:	J-28283.0000
DATE:	08/14/2020
DRAWN:	CMC
DESIGNED:	RWP
REVIEWED:	KES
APPROVED:	RWP
SCALE:	########

L2.3

ABBREVIATION NOTES:

1. ABBREVIATIONS LISTED BELOW APPLY TO THE ARCHITECTURAL DRAWINGS ONLY, REFER TO CONSTRUCTION DOCUMENTS PREPARED BY MPS CONSULTANTS FOR ABBREVIATIONS USED.
2. REFER TO FINISH SCHEDULE FOR FINISH MATERIAL ABBREVIATIONS NOT SHOWN.

A/C	AIR CONDITION	DBL	DOUBLE	GALV	GALVANIZED	OA	OVERALL
A/E	ARCHITECT/ENGINEER	DEMO	DEMOLITION/DEMOLISH	GB	GRAB BAR	OC	ON CENTER
ABAN	ABANDON	DEPT	DEPARTMENT	GC	GENERAL CONTRACTOR	OD	OUTSIDE DIAMETER
ABRSV	ABRASIVE	DF	DRINKING FOUNTAIN	GDR	GUARD RAIL	OF	OVERFLOW
ACC	ACCESSIBLE	DIA	DIAMETER	GFRC	GLASS-FIBER-REINFORCED CONCRETE	OF/CI	OWNER FURNISHED/CONTRACTOR INSTALLED
ACST INSUL	ACOUSTICAL INSULATION	DIAG	DIAGONAL	GFRG	GLASS-FIBER-REINFORCED GYPSUM	OFD	OVERFLOW DRAIN
ACST PNL	ACOUSTICAL PANEL	DIM	DIMENSION	GFRP	GLASS-FIBER-REINFORCED PLASTER	OF/OI	OWNER FURNISHED/OWNER INSTALLED
ACP	AUTOMATIC CONTROL PANEL	DISP	DISPENSER	GFRP	GLASS-FIBER-REINFORCED PLASTIC	OFS	OUTSIDE FACE OF STUDS
ACST	ACOUSTIC	DIST	DISTANCE	GL	GLASS/GLAZING	OPNG	OPENING
ACT	ACOUSTICAL CEILING TILE	DMPF	DAMPPROOFING	GMP	GUARANTEED MAXIMUM PRICE	OPP	OPPOSITE
AD	AREA DRAIN	DPTN	DEMOUNTABLE PARTITION	GR	GROUT	OPR	OPERABLE
ADJ	ADJACENT or ADJUSTABLE	DS	DOWNSPOUT	GRAN	GRANITE		
AFF	ABOVE FINISHED FLOOR	DSP	DRY STANDPIPE	GT	GREASE TRAP	P	PAINT
AFG	ABOVE FINISHED GRADE	DSPL	DISPOSAL	GYP BD	GYPSUM WALL BOARD	PAT	PATTERN
AFS	ABOVE FINISHED SLAB	DW	DISHWASHER			PBD	PARTICLEBOARD
AHJ	AUTHORITY HAVING JURISDICTION			HB	HOSE BIBB	PERF	PERFORATED
ALT	ALTERNATE	EA	EACH	HC	HOLLOW CORE	PERM	PERMANENT
ALUM	ALUMINUM	EC	EDGE OF CURB	HCP	HANDICAPPED	PERP	PERPENDICULAR
APPROX	APPROXIMATE	EFS	EXTERIOR FINISH SYSTEM	HCWD	HOLLOW CORE WOOD DOOR	PGBD	PEGBOARD
ARCH	ARCHITECT	EG	EDGE GRAIN	HDW	HARDWARE	PJ	PANEL JOINT
ASB	ASBESTOS	EGB	EXTERIOR GYPSUM WALL BOARD	HDWD	HARDWOOD	PLAM or PL	PLASTIC LAMINATE
ASC	ABOVE SUSPENDED CEILING	EIFS	EXTERIOR INSULATION AND FINISH SYSTEM	HM	HOLLOW METAL	PLBG	PLUMBING
ASD	AUTOMATIC SPRINKLER DRAIN	EFG	ENTRANCE FLOOR GRILLE			PLYWD	PLYWOOD
ASI	ARCHITECT'S SUPPLEMENTAL INSTRUCTION	EJ	EXPANSION JOINT	ID	INSIDE DIAMETER/ INSIDE DIMENSION	POL	POLISHED
ASSN	ASSOCIATION	EL	ELEVATION	INSUL	INSULATION	PORC	PORCELAIN
AVG	AVERAGE	ELAST	ELASTOMERIC	INSUL PNL	INSULATED METAL PANEL	PREFAB	PREFABRICATE
		ELEC	ELECTRIC			PREFIN	PREFINISH
BAT	BATTEN	ELEM	ELEMENTARY	JAN	JANITOR	PT	PRESSURE TREATED
BD	BOARD	ELEV	ELEVATOR	JT	JOINT		
BD FT	BOARD FEET (FOOT)	EMER	EMERGENCY			R	RADIUS
BDRY	BOUNDARY	EMER SHR	EMERGENCY SHOWER	KD	KNOCKED DOWN	RADN	RADIATION
BF	BOTH FACES	ENAM	ENAMEL	KPL	KICKPLATE	RB	RESILIENT BASE
BFF	BELOW FINISH FLOOR	ENCL	ENCLOSURE			RBR	RUBBER
BLDG	BUILDING	ENTR	ENTRANCE	LAM	LAMINATE	RCP	REFLECTED CEILING PLAN
BLKHD	BULKHEAD	EOS	EDGE OF SLAB	LAM GL	LAMINATED GLASS	RD	ROOF DRAIN
BLKT	BLANKET	EP	EXPOXY PAINT	LAV	LAVATORY	REBAR	REINFORCING STEEL BARS
BN	BULLNOSE	EPS	EXPANDED POLYSTYRENE BOARD (INSULATION)	LCD	LINEAR CEILING DIFFUSER	REF	REFERENCE
B/STL	BOTTOM OF STEEL	EPX	EPOXY	LCMU	LIGHTWEIGHT CONCRETE MASONRY UNIT	REINF	REINFORCE
BOT	BOTTOM	EQ	EQUAL	LDG	LANDING	REQD	REQUIRED
BSMT	BASEMENT	EQUIP	EQUIPMENT	LDR	LEADER	RESIL	RESILIENT
BTWN	BETWEEN	EQUIV	EQUIVALENT	LF	LINEAR FEET (FOOT)	RESP	RESIN PANEL
BYP	BY PASS	ERD	EXISTING ROOF DRAIN	LOS	LINE OF SIGHT	RFG	ROOFING
		ESCAL	ESCALATOR	LVDR	LOUVER DOOR	RH	ROOF HATCH
CAB	CABINET	EWH	ELECTRIC WATER HEATER	LVR	LOUVER	RLG	RAILING
CANTIL	CANTILEVER	EWS	EYE WASH STATION	LWC	LIGHTWEIGHT CONCRETE	RM	ROOM
CB	CORNER BEAD	EXIST	EXISTING			RO	ROUGH OPENING
CCTV	CLOSED CIRCUIT TELEVISION	EXP	EXPOSED	MAINT	MAINTENANCE	RTF	RUBBER TILE FLOOR
CF	CONTRACTOR FURNISHED	EXT	EXTERIOR	MAX	MAXIMUM	RTU	ROOF TOP UNIT
CF/CI	CONTRACTOR FURNISHED/CONTRACTOR INSTALLED			MC	METAL-CLAD	RV	ROOF VENT
CF/OI	CONTRACTOR FURNISHED/OWNER INSTALLED	FA	FIRE ALARM	MCB	METAL CORNER BEAD	RVL	REVEAL
CFE	CONTRACTOR FURNISHED EQUIPMENT	FCO	FLOOR CLEANOUT	MED	MEDICAL		
CFMF	COLD-FORMED METAL FRAMING	FD	FLOOR DRAIN	MEL	MELAMINE	SB	SPLASH BLOCK
CG	CORNER GUARD	FDC	FIRE DEPARTMENT CONNECTION	MEZZ	MEZZANINE	SBSTR	SUBSTRATE
CH BD	CHALKBOARD	FDCC	FIRE DEPARTMENT CONNECTION CABINET	MF	MILL FINISH	SCHED	SCHEDULE
CIP	CAST-IN-PLACE	FE	FIRE EXTINGUISHER	MID	MIDDLE	SCRN	SCREEN
CJ	CONSTRUCTION JOINT\ CONTROL JOINT	FEC	FIRE EXTINGUISHER CABINET	MIN	MINIMUM	SD	SMOKE DETECTOR
C/L	CENTER LINE	FF&E	FURNITURE, FIXTURE, AND EQUIPMENT	MIRR	MIRROR	SHR	SHOWER
CLDG	CLADDING	FH	FIRE HOSE/ FIRE HYDRANT	MISC	MISCELLANEOUS	SHRD	SHOWER DRAIN
CLG	CEILING	FIN	FINISH	MLDG	MOLDING (MOULDING)	SIM	SIMILAR
CLR	CLEAR	FIN GR	FINISH GRADE	MLWK	MILLWORK	SP	STANDPIPE
CLT	CLEAT	FIXT	FIXTURE	MOD BIT	MODIFIED BITUMEN	SPEC	SPECIFICATION(S)
CMPST	COMPOSITE	FL	FLOORLINE	MOPR	MOP RACK	SPKLR	SPRINKLER
CMU	CONCRETE MASONRY UNIT	FO	FINISHED OPENING	MR	MOISTURE RESISTANT	SPKR	SPEAKER
CNCL	CONCEALED	FOC	FACE OF CONCRETE/ FACE OF CURB	MTL	METAL	SQ FT	SQUARE FOOT
CO	CLEANOUT	FOF	FACE OF FINISH	MW	MICROWAVE	SS	SOLID SURFACE
COL	COLUMN	FOM	FACE OF MASONRY	MWP	MEMBRANE WATERPROOFING	SST	STAINLESS STEEL
CONC	CONCRETE	FOS	FACE OF STUD			ST	STAIR(S)
COND	CONDITION	FOW	FACE OF WALL	N/A	NOT APPLICABLE	STC	SOUND TRANSMISSION CLASS
CONF	CONFERENCE	FRG	FIBER REINFORCED GYPSUM	NCOMBL	NONCOMBUSTIBLE	STOR	STORAGE
COORD	COORDINATE	FURN	FURNITURE	NIC	NOT IN CONTRACT	STN	STAIN
CORR	CORRIDOR			NLB	NONLOADBEARING	SUSP CLG	SUSPENDED CEILING
CP	CONTROL PANEL			NO	NUMBER	SYMM	SYMMETRICAL
CPT	CARPET TILE			NOM	NOMINAL		
CSB	CONCRETE SPLASH BLOCK			NTP	NOTICE TO PROCEED		

T/BD	TO BE DETERMINED
T&G	TONGUE AND GROOVE
TD	TRENCH DRAIN
TEMP	TEMPORARY
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
THRU	THROUGH
TLT	TOILET
T/	TOP OF ___
TOM	TOP OF MASONRY
TOP	TOP OF PARAPET
TOS	TOP OF SLAB\ TOP OF STEEL
TOW	TOP OF WALL
TP	TOILET PARTITION
TRS (or TR)	TRANSITION STRIP
UNFIN	UNFINISHED
UNO	UNLESS NOTED OTHERWISE
VCT	VINYL COMPOSITION TILE
VERT	VERTICAL
VEST	VESTIBULE
VIF	VERIFY IN FIELD
VNR	VENEER
W/	WITH
W/O	WITHOUT
WB	WOOD BASE
WC	WATER CLOSET
WD	WOOD
WF	WASH FOUNTAIN
WH	WATER HEATER
WHSE	WAREHOUSE
WP	WALL PROTECTION
WSCT	WAINSCOT
WWF	WELDED WIRE FABRIC
WWM	WELDED WIRE MESH
XPS	EXTRUDED POLYSTYRENE BOARD (INSULATION)

LINE TYPES

BEYOND

CENTERLINE

DEMOLISHED

HIDDEN

OVERHEAD

ANNOTATIONS

FACE DIMENSION

CENTERLINE DIMENSION

COLUMN GRID TAG - NEW

COLUMN GRID TAG - EXISTING

ALIGN — ALIGN FACE OF SURFACES

SPOT ELEVATION

LEVEL / ELEVATION HEIGHT

REVISION TAG AND CLOUD

GENERAL NOTES:

1. ALL WORK SHALL MEET THE MINIMUM REQUIREMENTS OF THE LATEST ADOPTED EDITIONS OF THE APPLICABLE CODES, AS INDICTED ON THIS SHEET AND ALL OTHER LOCAL, STATE OR FEDERAL CODES OR REGULATIONS HAVING JURISDICTION.
2. DO NOT SCALE DRAWINGS. CLARIFY ANY DIMENSIONAL DISCREPANCIES WITH THE ARCHITECT PRIOR TO CONTINUING WITH THE WORK.
3. CLARIFY ANY COORDINATION DISCREPANCIES BETWEEN ENGINEER DRAWINGS AND ARCHITECTURAL DRAWINGS WITH THE ARCHITECT PRIOR TO CONTINUING WITH THE WORK.
4. ALL WORK LISTED, SHOWN OR IMPLIED ON THE CONSTRUCTION DOCUMENTS SHALL BE SUPPLIED AND INSTALLED BY THE GENERAL CONTRACTOR EXCEPT WHERE OTHERWISE NOTED.

GENERAL NOTES

ANNOTATIONS

NORTH

NORTH (PROJECT OR TRUE)

PROJECT NORTH

TRUE NORTH

A — WINDOW / CURTAIN WALL TAG

L1 — LOUVER TAG

SA4 — WALL TAG

01 — DEMOLITION KEYNOTE

01 — KEYNOTE

TA-1 — ACCESSORY TAG

F1 — FURNITURE TAG

E123456 — EQUIPMENT TAG

S99 — SIGNAGE TAG

1t / 10'-0" / AFF — CEILING TAG: CEILING TYPE (IF / WHEN INDICATED); CEILING HEIGHT

ROOM TAG(S):

ROOM NAME / 150 SF — ROOM TAG WITH AREA (NO ROOM #)

DEPT/ PHASE / ROOM NAME / 00999 — DEPARTMENT OR PHASE (IF SHOWN); ROOM NAME; ROOM # = 2 OR 3 DIGITS; FLOOR # = 1 OR 2 DIGITS

ROOM NAME / 00999 / 150 SF — AREA (IF SHOWN)

150 SF — AREA ONLY

DOOR TAG:

122A / 45 MIN — FLOOR # = 1 OR 2 DIGITS; ROOM # = 2 OR 3 DIGITS; DOOR SEQUENCE (ALPHABETIC); DOOR RATING (IF SHOWN)

VIEW REFERENCE

1/ A810 — PHOTO REFERENCE TAG

PLAN VIEW TITLE REFERENCE

A1 / A101 — VIEW NAME; 1/8" = 1'-0"; PLAN NUMBER; VIEW SCALE; CURRENT SHEET

DETAIL VIEW TITLE REFERENCE

A1 / A101 — VIEW NAME; 1/8" = 1'-0"; DETAIL NUMBER; VIEW SCALE; CURRENT SHEET

PLAN / DETAIL CALLOUT

1 / A103 — SIM; REFERENCED SHEET

BUILDING SECTION CALLOUT

1 / A610 — SIM; REFERENCED SHEET

WALL SECTION CALLOUT

A5 / A610 — SIM; REFERENCED SHEET

DETAIL SECTION CALLOUT

1 / A601 — SIM; REFERENCED SHEET

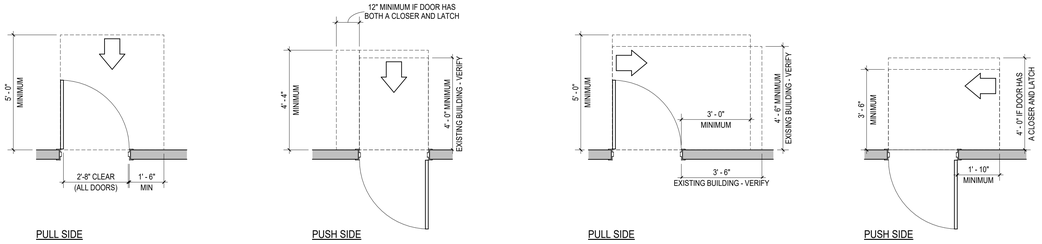
EXTERIOR ELEVATION CALLOUT

1 Ref / A510 / 1 Ref

INTERIOR ELEVATION CALLOUT

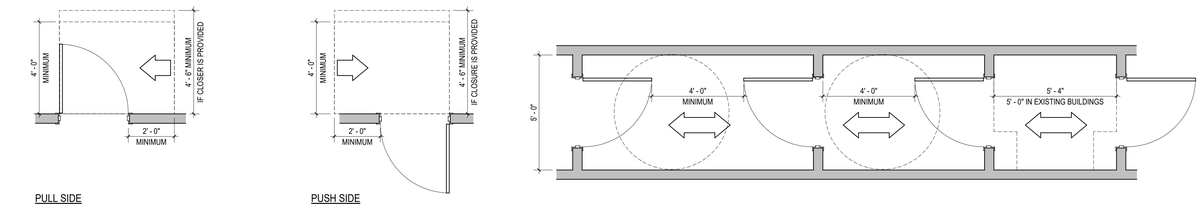
A1 Ref / A101 / A1 Ref

ABBREVIATIONS LIST



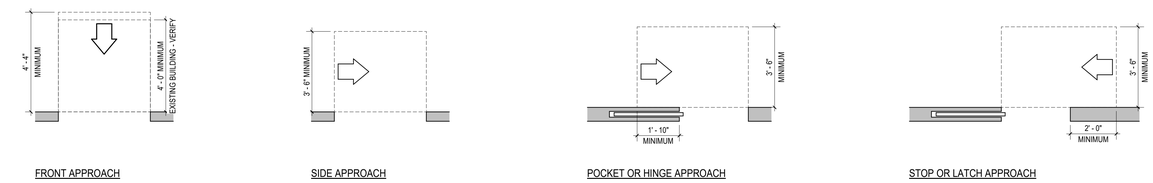
FRONT APPROACHES

HINGE SIDE APPROACHES



LATCH SIDE APPROACHES

DOORS IN A SERIES



DOORWAY W/O DOORS, SLIDING DOORS, AND FOLDING DOORS

MPS MANEUVERING CLEARANCES AT DOORS (ICC/ANSI-2017)

STANDARD GRAPHICS AND SYMBOLS

NOTE:

1. ALL DIMENSIONS SHOWN ARE MINIMUMS.
2. DIMENSIONS AND CLEARANCES SHOWN MUST BE PROVIDED AT ALL DOORS.CONTRACTOR SHALL REVIEW FIELD LAYOUT AND CONFIRM THAT ALL OF THE APPROPRIATE CLEARANCES ARE PROVIDED. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ARCHITECT'S ATTENTION. ANY REMEDIAL WORK THAT SHOULD HAVE BEEN AVOIDED BY BRINGING DISCREPANCIES TO THE ARCHITECT'S ATTENTION SHALL BE AT THE CONTRACTORS EXPENSE.

BATT INSULATION

BRICK

COMPACTED EARTH

CONCRETE

CONCRETE MASONRY UNIT (CMU)

PLYWOOD

POROUS FILL (STONE OR GRAVEL)

RIGID INSULATION

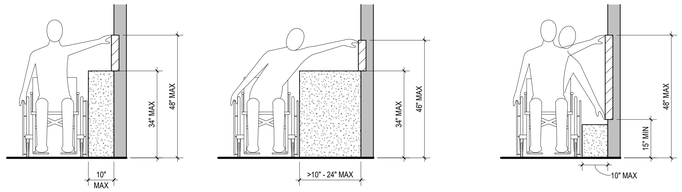
SAND, PLASTER, CEMENT, GROUT, GYPSUM WALL BOARD

STEEL

WOOD - FINISHED

WOOD - ROUGH

TYPICAL MATERIALS



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mcmillan pazdan smith ARCHITECTURE

CONSULTANT LOGO

SEALS

CU-ICAR

CU-ICAR FLEX LAB

GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

NOT FOR CONSTRUCTION

PRINCIPAL IN CHARGE: Prinoipal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:

ABBREVIATION, SYMBOLS AND LEGENDS

SHEET NO. A001

PROJ. NO. 019640.00

DIVISION 3 - CONCRETE

31 31 16 - TERMITE CONTROL

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: INDICATE TOXICANTS TO BE USED, COMPOSITION BY PERCENTAGE, DILUTION SCHEDULE, INTENDED APPLICATION RATE.

B. TEST REPORTS: INDICATE REGULATORY AGENCY APPROVAL REPORTS WHEN REQUIRED.

C. TEST REPORTS: SUBMIT TERMITE-RESISTANT SHEET MANUFACTURER'S SUMMARY OF INDEPENDENT LABORATORY AND FIELD TESTING FOR EFFECTIVENESS IN SUBTERRANEAN TERMITE EXCLUSION.

D. WARRANTY: SUBMIT WARRANTY AND ENSURE THAT FORMS HAVE BEEN COMPLETED IN OWNER'S NAME.

1.02 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: COMPANY SPECIALIZING IN PERFORMING THIS TYPE OF WORK AND:

1. HAVING MINIMUM OF THREE YEARS DOCUMENTED EXPERIENCE.
2. APPROVED BY MANUFACTURER OF TREATMENT MATERIALS.
3. LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED.

1.03 WARRANTY

A. PROVIDE FIVE YEAR INSTALLER'S WARRANTY AGAINST DAMAGE TO BUILDING CAUSED BY TERMITES.

1. INCLUDE COVERAGE FOR REPAIRS TO BUILDING AND TO CONTENTS DAMAGED DUE TO BUILDING DAMAGE. REPAIR DAMAGE AND, IF REQUIRED, RE-TREAT.
2. INSPECT ANNUALLY AND REPORT IN WRITING TO OWNER. PROVIDE INSPECTION SERVICE FOR FIVE YEARS FROM DATE OF SUBSTANTIAL COMPLETION.

PART 2 PRODUCTS

2.01 CHEMICAL SOIL TREATMENT

A. TOXICANT CHEMICAL: EPA (TITLE 7, UNITED STATES CODE, 136 THROUGH 136Y) APPROVED; SYNTHETICALLY COLOR DYED TO PERMIT VISUAL IDENTIFICATION OF TREATED SOIL.

B. DILUENT: RECOMMENDED BY TOXICANT MANUFACTURER.

C. MANUFACTURERS:

1. BASF CORPORATION - CONSTRUCTION CHEMICALS; TERMIDOR 80 WG.
2. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

D. MIXES: MIX TOXICANT TO MANUFACTURER'S INSTRUCTIONS.

PART 3 EXECUTION

3.01 EXAMINATION

A. VERIFY THAT SOIL SURFACES ARE UNFROZEN, SUFFICIENTLY DRY TO ABSORB TOXICANT, AND READY TO RECEIVE TREATMENT.

B. VERIFY FINAL GRADING IS COMPLETE.

3.02 APPLICATION - CHEMICAL TREATMENT

A. COMPLY WITH REQUIREMENTS OF U.S. EPA AND APPLICABLE STATE AND LOCAL CODES.

B. SPRAY APPLY TOXICANT AT DILUTION RATES IN ACCORDANCE WITH MANUFACTURER'S LABEL INSTRUCTIONS.

C. APPLY TOXICANT AT FOLLOWING LOCATIONS:

1. UNDER SLABS-ON-GRADE.
2. AT BOTH SIDES OF FOUNDATION SURFACE.
3. SOIL WITHIN 10 FEET OF BUILDING PERIMETER FOR A DEPTH OF 2 FEET.

D. UNDER SLABS, APPLY TOXICANT IMMEDIATELY PRIOR TO INSTALLATION OF VAPOR BARRIER.

E. AT FOUNDATION WALLS, APPLY TOXICANT IMMEDIATELY PRIOR TO FINISH GRADING WORK OUTSIDE FOUNDATIONS.

F. APPLY EXTRA TREATMENT TO STRUCTURE PENETRATION SURFACES SUCH AS PIPE OR DUCTS, AND SOIL PENETRATIONS SUCH AS GROUNDING RODS OR POSTS.

G. RE-TREAT DISTURBED TREATED SOIL WITH SAME TOXICANT AS ORIGINAL TREATMENT.

H. IF INSPECTION OR TESTING IDENTIFIES THE PRESENCE OF TERMITES, RE-TREAT SOIL AND RE-TEST.
END OF SECTION

DIVISION 5 - METALS

05 51 00 - METAL STAIRS

PART 1 GENERAL

1.01 SUBMITTALS

A. SHOP DRAWINGS: INDICATE PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS, AND ACCESSORIES.

1.02 QUALITY ASSURANCE

A. STRUCTURAL DESIGNER QUALIFICATIONS: PROFESSIONAL STRUCTURAL ENGINEER EXPERIENCED IN DESIGN OF THIS WORK AND LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED, OR PERSONNEL UNDER DIRECT SUPERVISION OF SUCH AN ENGINEER.

B. FABRICATOR QUALIFICATIONS:
1. A QUALIFIED STEEL FABRICATOR THAT IS CERTIFIED BY THE AMERICAN INSTITUTE FOR STEEL CONSTRUCTION (AISC) UNDER AISC 201.

PART 2 PRODUCTS

2.01 METAL STAIRS - PERFORMANCE REQUIREMENTS

A. DELEGATED DESIGN: ENGAGE A QUALIFIED PROFESSIONAL ENGINEER TO DESIGN STAIRS AND RAILINGS INCLUDING ATTACHMENT TO BUILDING STRUCTURE.

B. METAL STAIRS: PROVIDE STAIRS OF THE DESIGN SPECIFIED, COMPLETE WITH LANDING PLATFORMS, VERTICAL AND HORIZONTAL SUPPORTS, RAILINGS, AND GUARDS, FABRICATED ACCURATELY FOR ANCHORAGE TO EACH OTHER AND TO BUILDING STRUCTURE.

1. REGULATORY REQUIREMENTS: PROVIDE STAIRS AND RAILINGS COMPLYING WITH THE MOST STRINGENT REQUIREMENTS OF LOCAL, STATE, AND FEDERAL REGULATIONS; WHERE REQUIREMENTS OF THE CONTRACT DOCUMENTS EXCEED THOSE OF REGULATIONS, COMPLY WITH THE CONTRACT DOCUMENTS.
2. HANDRAILS: COMPLY WITH APPLICABLE ACCESSIBILITY REQUIREMENTS OF ADA STANDARDS.
3. STRUCTURAL DESIGN: PROVIDE COMPLETE STAIR AND RAILING ASSEMBLIES COMPLYING WITH THE APPLICABLE LOCAL CODE.

2.02 METAL STAIRS - GENERAL

A. METAL JOINTING AND FINISH QUALITY LEVELS:

1. INDUSTRIAL: ALL JOINTS MADE NEATLY.

B. FASTENERS: SAME MATERIAL OR COMPATIBLE WITH MATERIALS BEING FASTENED; TYPE CONSISTENT WITH DESIGN AND SPECIFIED QUALITY LEVEL.

C. ANCHORS AND RELATED COMPONENTS: SAME MATERIAL AND FINISH AS ITEM TO BE ANCHORED, EXCEPT WHERE SPECIFICALLY INDICATED OTHERWISE; PROVIDE ALL ANCHORS AND FASTENERS REQUIRED.

2.03 METAL STAIRS WITH GRATING TREADS

A. JOINTING AND FINISH QUALITY LEVEL: INDUSTRIAL, AS DEFINED ABOVE.

2.04 RAILINGS - GENERAL

A. DESIGN, FABRICATE, AND TEST RAILING ASSEMBLIES IN ACCORDANCE WITH THE MOST STRINGENT REQUIREMENTS OF ASTM E985 AND APPLICABLE BUILDING AND LOCAL CODES.

B. ALLOW FOR EXPANSION AND CONTRACTION OF MEMBERS AND BUILDING MOVEMENT WITHOUT DAMAGE TO CONNECTIONS OR MEMBERS.

C. PROVIDE ANCHORS AND OTHER COMPONENTS AS REQUIRED TO ATTACH TO STRUCTURE, MADE OF SAME MATERIALS AS RAILING COMPONENTS UNLESS OTHERWISE INDICATED; WHERE EXPOSED FASTENERS ARE UNAVOIDABLE PROVIDE FLUSH COUNTERSUNK FASTENERS.

D. PROVIDE WELDING FITTINGS TO JOIN LENGTHS, SEAL OPEN ENDS, AND CONCEAL EXPOSED MOUNTING BOLTS AND NUTS, INCLUDING BUT NOT LIMITED TO ELBOWS, T-SHAPES, SPLICE CONNECTORS, FLANGES, ESCUTCHEONS, AND WALL BRACKETS.

2.05 HANDRAILS AND GUARDS

A. WALL-MOUNTED RAILS: ROUND PIPE OR TUBE RAILS UNLESS OTHERWISE INDICATED.

2.06 MATERIALS

A. STEEL SECTIONS: ASTM A36/A36M.

B. STEEL TUBING: ASTM A500/A500M OR ASTM A501/A501M STRUCTURAL TUBING, ROUND AND SHAPES AS INDICATED.

C. STEEL PLATES: ASTM A6/A6M OR ASTM A283/A283M.

D. PIPE: ASTM A53/A53M, GRADE B SCHEDULE 40, BLACK FINISH.

E. GRATINGS: BAR GRATINGS COMPLYING WITH NAAMM MBG 531 OR NAAMM MBG 532, WHICHEVER APPLIES BASED ON BAR SIZES.

2.07 ACCESSORIES

A. STEEL BOLTS, NUTS, AND WASHERS: ASTM A325 (ASTM A325M), TYPE 1, AND GALVANIZED TO ASTM A153/A153M WHERE CONNECTING GALVANIZED COMPONENTS.

B. WELDING MATERIALS: AWS D1.1/D1.1M; TYPE REQUIRED FOR MATERIALS BEING WELDED.

2.08 FABRICATION

A. WELDED JOINTS:

1. GRIND EXPOSED JOINTS FLUSH AND SMOOTH WITH ADJACENT FINISH SURFACE. MAKE EXPOSED JOINTS BUTT TIGHT, FLUSH, AND HAIRLINE. EASE EXPOSED EDGES TO SMALL UNIFORM RADIUS.

2.09 SHOP FINISHING

A. CLEAN SURFACES OF RUST, SCALE, GREASE, AND FOREIGN MATTER PRIOR TO FINISHING.

B. GALVANIZING: HOT-DIP GALVANIZE TO MINIMUM REQUIREMENTS OF ASTM A123/A123M.

1. TOUCH UP ABRADED AREAS AFTER FABRICATION USING SPECIFIED TOUCH-UP PRIMER FOR GALVANIZED SURFACES.

PART 3 EXECUTION

3.01 INSTALLATION

A. INSTALL COMPONENTS PLUMB AND LEVEL, ACCURATELY FITTED, FREE FROM DISTORTION OR DEFECTS.

B. PROVIDE ANCHORS, PLATES AND ANGLES REQUIRED FOR CONNECTING STAIRS TO STRUCTURE.

DIVISION 6 - WOOD, PLASTICS, AND COMPOSITES

06 10 00 - ROUGH CARPENTRY

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: PROVIDE TECHNICAL DATA ON WOOD PRESERVATIVE MATERIALS.

1.02 DELIVERY, STORAGE, AND HANDLING

A. GENERAL: COVER WOOD PRODUCTS TO PROTECT AGAINST MOISTURE. SUPPORT STACKED PRODUCTS TO PREVENT DEFORMATION AND TO ALLOW AIR CIRCULATION.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. DIMENSION LUMBER: COMPLY WITH PS 20 AND REQUIREMENTS OF SPECIFIED GRADING AGENCIES.

1. SPECIES: SOUTHERN PINE, UNLESS OTHERWISE INDICATED.
2. IF NO SPECIES IS SPECIFIED, PROVIDE ANY SPECIES GRADED BY THE AGENCY SPECIFIED; IF NO GRADING AGENCY IS SPECIFIED, PROVIDE LUMBER GRADED BY ANY GRADING AGENCY MEETING THE SPECIFIED REQUIREMENTS.
3. GRADING AGENCY: ANY GRADING AGENCY WHOSE RULES ARE APPROVED BY THE BOARD OF REVIEW, AMERICAN LUMBER STANDARD COMMITTEE (WWW.ALSC.ORG) AND WHO PROVIDES GRADING SERVICE FOR THE SPECIES AND GRADE SPECIFIED; PROVIDE LUMBER STAMPED WITH GRADE MARK UNLESS OTHERWISE INDICATED.

B. LUMBER FABRICATED FROM OLD GROWTH TIMBER IS NOT PERMITTED.

2.02 DIMENSION LUMBER FOR CONCEALED APPLICATIONS

A. GRADING AGENCY: SOUTHERN PINE INSPECTION BUREAU, INC; SPIB (GR).

B. SIZES: NOMINAL SIZES AS INDICATED ON DRAWINGS, S4S.

C. MOISTURE CONTENT: S-DRY OR MC19.

D. MISCELLANEOUS FRAMING, BLOCKING, NAILERS, GROUNDS, AND FURRING:

1. LUMBER: S4S, NO. 2 OR STANDARD GRADE.
2. BOARDS: STANDARD OR NO. 3.

2.03 ACCESSORIES

A. FASTENERS AND ANCHORS:

1. METAL AND FINISH: HOT-DIPPED GALVANIZED STEEL COMPLYING WITH ASTM A153/A153M FOR HIGH HUMIDITY AND PRESERVATIVE-TREATED WOOD LOCATIONS, UNFINISHED STEEL ELSEWHERE.
2. DRYWALL SCREWS: BUGLE HEAD, HARDENED STEEL, POWER DRIVEN TYPE, LENGTH THREE TIMES THICKNESS OF SHEATHING.
3. ANCHORS: TOGGLE BOLT TYPE FOR ANCHORAGE TO HOLLOW MASONRY.

2.04 FACTORY WOOD TREATMENT

A. TREATED LUMBER AND PLYWOOD: COMPLY WITH REQUIREMENTS OF AWPA U1 - USE CATEGORY SYSTEM FOR WOOD TREATMENTS DETERMINED BY USE CATEGORIES, EXPECTED SERVICE CONDITIONS, AND SPECIFIC APPLICATIONS.

1. PRESERVATIVE-TREATED WOOD: PROVIDE LUMBER AND PLYWOOD MARKED OR STAMPED BY AN ALSC-ACCREDITED TESTING AGENCY, CERTIFYING LEVEL AND TYPE OF TREATMENT IN ACCORDANCE WITH AWPA STANDARDS.

PART 3 EXECUTION

3.01 PREPARATION

A. COORDINATE INSTALLATION OF ROUGH CARPENTRY MEMBERS SPECIFIED IN OTHER SECTIONS.

3.02 INSTALLATION - GENERAL

A. SELECT MATERIAL SIZES TO MINIMIZE WASTE.

B. WHERE TREATED WOOD IS USED ON INTERIOR, PROVIDE TEMPORARY VENTILATION DURING AND IMMEDIATELY AFTER INSTALLATION SUFFICIENT TO REMOVE INDOOR AIR CONTAMINANTS.

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

07 26 16 - BELOW-GRADE VAPOR RETARDER

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: SUBMIT MANUFACTURERS' DATA ON MANUFACTURED PRODUCTS.

B. SAMPLES: SUBMIT SAMPLES OF UNDERSLAB VAPOR RETARDER TO BE USED.

C. MANUFACTURER'S INSTALLATION INSTRUCTIONS: INDICATE INSTALLATION PROCEDURES AND INTERFACE REQUIRED WITH ADJACENT CONSTRUCTION.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. BASIS OF DESIGN MANUFACTURER:

1. STEGO INDUSTRIES LLC; STEGO WRAP VAPOR RETARDER (15-MIL): WWW.STEGOINDUSTRIES.COM.

B. OTHER MANUFACTURERS: PROVIDE EITHER THE MANUFACTURER IDENTIFIED AS "BASIS OF DESIGN", OR SUBMIT A SUBSTITUTION REQUEST FOR ONE OF THE MANUFACTURERS LISTED BELOW:

1. REEF INDUSTRIES, INC.; VAPORGUARD. WWW.REEFINDUSTRIES.COM
2. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

2.02 MATERIALS

A. UNDERSLAB VAPOR RETARDER:

1. WATER VAPOR PERMEANCE: NOT MORE THAN 0.010 PERMS, MAXIMUM.
2. COMPLYING WITH ASTM E1745 CLASS A.
3. THICKNESS: 15 MILS.

3.03 ACCESSORIES

A. ACCESSORY PRODUCTS: VAPOR RETARDER MANUFACTURER'S RECOMMENDED TAPE, ADHESIVE, MASTIC, ETC., FOR SEALING SEAMS AND PENETRATIONS IN VAPOR RETARDER.

B. SEAMS: STEGO TAPE BY STEGO INDUSTRIES LLC.

C. SEALING PENETRATIONS OF VAPOR RETARDER: STEGO MASTIC BY STEGO INDUSTRIES LLC.

D. PERIMETER EDGE SEAL: STEGO CRETE CLAW. STEGO TERM BAR AND STEGO TACK TAPE BY STEGO INDUSTRIES LLC.

E. PENETRATION PREVENTION: BEAST FOOT BY STEGO INDUSTRIES, LLC.

F. VAPOR RETARDER-SAVE SCREED SYSTEM: BEAST SCREED BY STEGO INDUSTRIES LLC.

PART 3 EXECUTION

3.01 EXAMINATION

A. VERIFY THAT SURFACE OVER WHICH VAPOR RETARDER IS TO BE INSTALLED IS COMPLETE AND READY BEFORE PROCEEDING WITH INSTALLATION OF VAPOR RETARDER.

3.02 INSTALLATION

A. INSTALL VAPOR RETARDER IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND ASTM E1643.

B. INSTALL VAPOR RETARDER UNDER INTERIOR SLABS ON GRADE; LAP SHEET OVER FOOTINGS AND SEAL TO FOUNDATION WALLS.

C. LAP JOINTS MINIMUM 6 INCHES.

D. SEAL JOINTS, SEAMS AND PENETRATIONS WATERTIGHT WITH MANUFACTURER'S RECOMMENDED PRODUCTS AND FOLLOW MANUFACTURER'S WRITTEN INSTRUCTIONS.

E. NO PENETRATION OF VAPOR RETARDER IS ALLOWED EXCEPT FOR REINFORCING STEEL AND PERMANENT UTILITIES.

F. REPAIR DAMAGED VAPOR RETARDER BEFORE COVERING WITH OTHER MATERIALS.

07 54 23 - THERMOPLASTIC-POLYOLEFIN ROOFING

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: PROVIDE DATA INDICATING MEMBRANE MATERIALS, FLASHING MATERIALS, INSULATION, FASTENERS, AND COVER BOARD.

B. SHOP DRAWINGS: INDICATE JOINT OR TERMINATION DETAIL CONDITIONS, CONDITIONS OF INTERFACE WITH OTHER MATERIALS, SETTING PLAN FOR TAPERED INSULATION, AND MECHANICAL FASTENER LAYOUT.

C. INSTALLER'S QUALIFICATION STATEMENT.

D. WARRANTY:

1. SUBMIT MANUFACTURER WARRANTY AND ENSURE THAT FORMS HAVE BEEN COMPLETED IN OWNER'S NAME AND REGISTERED WITH MANUFACTURER.

1.02 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: COMPANY SPECIALIZING IN PERFORMING THE WORK OF THIS SECTION WITH AT LEAST THREE YEARS OF DOCUMENTED EXPERIENCE.

B. SINGLE SOURCE RESPONSIBILITY: PROVIDE ALL COMPONENTS OF ROOFING SYSTEM INCLUDING MEMBRANE, INSULATION, FASTENERS, FASTENING PLATES, PREFABRICATED ACCESSORIES AND METAL COPINGS AND ROOF EDGE FLASHINGS, THAT ARE MANUFACTURED BY THE ROOFING SYSTEM MANUFACTURER AND COVERED BY THE TOTAL SYSTEM WARRANTY.

1.03 DELIVERY, STORAGE, AND HANDLING

A. DELIVER PRODUCTS IN MANUFACTURER'S ORIGINAL CONTAINERS, DRY, UNDAMAGED, WITH SEALS AND LABELS INTACT.

B. STORE PRODUCTS IN WEATHER PROTECTED ENVIRONMENT, CLEAR OF GROUND AND MOISTURE.

1.04 FIELD CONDITIONS

A. DO NOT APPLY ROOFING MEMBRANE DURING UNSUITABLE WEATHER.

B. DO NOT APPLY ROOFING MEMBRANE TO DAMP OR FROZEN DECK SURFACE OR WHEN PRECIPITATION IS EXPECTED OR OCCURRING.

C. DO NOT EXPOSE MATERIALS VULNERABLE TO WATER OR SUN DAMAGE IN QUANTITIES GREATER THAN CAN BE WEATHERPROOFED THE SAME DAY.

1.05 WARRANTY

A. SYSTEM WARRANTY: PROVIDE MANUFACTURER'S SYSTEM TOTAL SYSTEM WARRANTY COVERING BOTH LABOR AND MATERIALS, AGREEING TO REPAIR OR REPLACE ROOFING THAT LEAKS OR IS DAMAGED DUE TO WIND OR OTHER NATURAL CAUSES.

1. WARRANTY TERM: 20 YEARS, NO DOLLAR LIMIT.
2. FOR REPAIR AND REPLACEMENT INCLUDE COSTS OF BOTH MATERIAL AND LABOR IN WARRANTY.
3. MAXIMUM WIND SPEED WARRANTY: PROVIDE MAXIMUM WIND SPEED COVERAGE WARRANTY COVERING PEAK GUSTS OF 55 MPH MEASURED AT 10 METERS ABOVE GROUND LEVEL.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. THERMOPLASTIC POLYOLEFIN (TPO) MEMBRANE ROOFING MATERIALS:

1. CARLISLE ROOFING SYSTEMS, INC: WWW.CARLISLE-SYNTEC.COM/SLE.
2. FIRESTONE BUILDING PRODUCTS, LLC: WWW.FIRESTONEBPCO.COM.
3. GAF: WWW.GAF.COM/SLE.
4. JOHNS MANVILLE: WWW.JM.COM/#SLE.
5. SUBSTITUTION PROCEDURES: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

B. INSULATION:

1. SAME MANUFACTURER AS MEMBRANE MANUFACTURER.

2.02 ROOFING ASSEMBLY

A. THERMOPLASTIC MEMBRANE ROOFING: SINGLE-PLY MEMBRANE, MECHANICALLY FASTENED, OVER INSULATION.

B. ROOFING ASSEMBLY REQUIREMENTS:

1. ROOF COVERING EXTERNAL FIRE RESISTANCE CLASSIFICATION: UL (FRD) CLASS A.
2. WIND UPLIFT DESIGN PERFORMANCE CRITERIA:
   a. DESIGNED TO WITHSTAND WIND UPLIFT FORCES CALCULATED WITH ASCE 7.
3. INSULATION THERMAL VALUE (R), PROVIDE THICKNESS AS REQUIRED TO ACHIEVE 20.0 MINIMUM.

C. ACCEPTABLE INSULATION TYPES - CONSTANT THICKNESS APPLICATION:

1. MINIMUM TWO LAYERS OF POLYISOCYANURATE BOARD.

D. ACCEPTABLE INSULATION TYPES - TAPERED APPLICATION:

1. WHERE INDICATED ON DRAWINGS AND AS REQUIRED TO FACILITATE DRAINAGE, TAPERED POLYISOCYANURATE BOARD OVER POLYISOCYANURATE CONSTANT THICKNESS APPLICATION.

2.03 MEMBRANE ROOFING AND ASSOCIATED MATERIALS

A. MEMBRANE ROOFING MATERIALS:

1. TPO: THERMOPLASTIC POLYOLEFIN (TPO) CONFORMING TO ASTM D6878/D6878M, SHEET CONTAINS REINFORCING FABRICS OR SCRIMS.
   a. THICKNESS: 60 MIL, 0.060 INCH, MINIMUM.
2. SHEET WIDTH: FACTORY FABRICATED INTO LARGEST SHEETS POSSIBLE.
3. COLOR: WHITE.

B. SEAMING MATERIALS: AS RECOMMENDED BY MEMBRANE MANUFACTURER, REINFORCED OR UNREINFORCED AS RECOMMENDED BY MANUFACTURER.

C. MEMBRANE FASTENERS: AS RECOMMENDED AND APPROVED BY MEMBRANE MANUFACTURER TO MEET SPECIFIED PERFORMANCE REQUIREMENTS AND FOR SPECIFIC PROJECT APPLICATION.

D. FLEXIBLE FLASHING MATERIAL: MATERIAL RECOMMENDED BY MEMBRANE MANUFACTURER

DIVISION 7 - THERMAL AND MOISTURE PROTECTION CONTINUED

07 54 23 - THERMOPLASTIC-POLYOLEFIN ROOFING - CONTINUED

PART 2 PRODUCTS - CONTINUED

2.04 COVER BOARDS

A. COVER BOARD: GLASS MAT FACED GYPSUM PANELS, ASTM C1177/C1177M, FIRE RESISTANT TYPE, 1 /2 INCH THICKNESS.

1. BOARD SIZE: 48 BY 96 INCH.
2. MANUFACTURERS:
   a. GEORGIA-PACIFIC; DENSDECK PRIME: WWW.DENSDECK.COM.
   b. NATIONAL GYPSUM COMPANY; DEXCELL GLASS MAT ROOF BOARD: WWW.NATIONALGYPSUM.COM/#SLE.
   c. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

2.05 INSULATION

A. POLYISOCYANURATE (ISO) BOARD INSULATION: RIGID CELLULAR FOAM, COMPLYING WITH ASTM C1289.

1. CLASSIFICATIONS:
   a. TYPE II:
      1) CLASS 1 - FACED WITH GLASS FIBER REINFORCED CELLULOSIC FELT FACERS ON BOTH MAJOR SURFACES OF CORE FOAM.
      2) COMPRESSIVE STRENGTH: CLASSES 1-2-3, GRADE 3 - 25 PSI (172 KPA), MINIMUM.
2. BOARD SIZE: 48 BY 96 INCH.
3. BOARD THICKNESS: THICKNESS PER BOARD AS REQUIRED TO ACHIEVE SPECIFIED TOTAL INSULATION R-VALUE MINIMUM.

2.06 ACCESSORIES

A. ROOFING NAILS: GALVANIZED, HOT DIPPED TYPE, SIZE AND CONFIGURATION AS REQUIRED TO SUIT APPLICATION.

B. WALKWAY PADS: SUITABLE FOR MAINTENANCE TRAFFIC, CONTRASTING COLOR OR OTHERWISE VISUALLY DISTINCTIVE FROM ROOF MEMBRANE.

1. COMPOSITION: ROOFING MEMBRANE MANUFACTURER'S STANDARD.
2. SIZE: MANUFACTURER'S STANDARD WIDTH.
3. SURFACE COLOR: WHITE OR YELLOW.

PART 3 EXECUTION

3.01 EXAMINATION

A. VERIFY THAT SURFACES AND SITE CONDITIONS ARE READY TO RECEIVE WORK.

B. VERIFY DECK IS SUPPORTED AND SECURE.

C. VERIFY DECK IS CLEAN AND SMOOTH, FLAT, FREE OF DEPRESSIONS, WAVES, OR PROJECTIONS, PROPERLY SLOPED AND SUITABLE FOR INSTALLATION OF ROOF SYSTEM.

D. VERIFY DECK SURFACES ARE DRY AND FREE OF SNOW OR ICE.

E. VERIFY THAT ROOF OPENINGS, CURBS, AND PENETRATIONS THROUGH ROOF ARE SOLIDLY SET, AND NAILING STRIPS ARE IN PLACE.

3.02 INSTALLATION - GENERAL

A. PERFORM WORK IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND NRCA (RM) APPLICABLE REQUIREMENTS.

B. DO NOT APPLY ROOFING MEMBRANE DURING UNSUITABLE WEATHER.

C. DO NOT EXPOSE MATERIALS VULNERABLE TO WATER OR SUN DAMAGE IN QUANTITIES GREATER THAN CAN BE WEATHERPROOFED THE SAME DAY.

3.03 INSULATION - UNDER MEMBRANE - DIRECT TO DECK INSTALLATION

A. ATTACHMENT OF INSULATION:

1. MECHANICALLY FASTEN ALL INSULATION LAYERS TO DECK IN ACCORDANCE WITH ROOFING MANUFACTURER'S INSTRUCTIONS CAPABLE OF RESISTING WIND UPLIFT DESIGN PERFORMANCE CRITERIA.

B. LAY SUBSEQUENT LAYERS OF INSULATION WITH JOINTS STAGGERED MINIMUM 6 INCH FROM JOINTS OF PRECEDING LAYER.

C. PLACE TAPERED INSULATION TO THE REQUIRED SLOPE PATTERN IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

3.04 MEMBRANE APPLICATION

A. MECHANICAL ATTACHMENT: APPLY MEMBRANE AND MECHANICAL ATTACHMENT DEVICES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. AT INTERSECTIONS WITH VERTICAL SURFACES:

1. EXTEND MEMBRANE UP A MINIMUM OF 4 INCHES ONTO VERTICAL SURFACES. SEE DRAWINGS FOR EXTENT OF MEMBRANE.
2. FULLY ADHERE FLEXIBLE FLASHING OVER MEMBRANE AND UP TO NAILING STRIPS.

07 62 00 - SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.01 SUBMITTALS

A. SHOP DRAWINGS: INDICATE LOCATIONS, CONFIGURATIONS, MATERIAL PROFILE, DOWNSPOUT PROFILE, GUTTER PROFILE, JOINTING DETAILS, ATTACHMENT DETAILS, INSTALLATION DETAILS, AND FLASHINGS.

B. SAMPLES: SUBMIT TWO SAMPLES OF FLASHINGS, 4 BY 4 INCH IN SIZE ILLUSTRATING METAL FINISH COLOR OF FLASHINGS, GUTTERS, AND DOWNSPOUTS.

C. SAMPLES: SUBMIT ONE SAMPLE EACH OF GUTTER AND DOWNSPOUT, 6 INCHES LONG ILLUSTRATING DESIGN, FINISH, COLOR, AND CONFIGURATION.

1.02 QUALITY ASSURANCE

A. PERFORM WORK IN ACCORDANCE WITH SMACNA (ASMM) REQUIREMENTS AND STANDARD DETAILS, EXCEPT AS OTHERWISE INDICATED.

B. FABRICATOR AND INSTALLER QUALIFICATIONS: COMPANY SPECIALIZING IN SHEET METAL WORK WITH THREE YEARS OF DOCUMENTED EXPERIENCE.

1.03 DELIVERY, STORAGE, AND HANDLING

A. STACK MATERIAL TO PREVENT TWISTING, BENDING, AND ABRASION, AND TO PROVIDE VENTILATION. SLOPE METAL SHEETS TO ENSURE DRAINAGE.

B. PREVENT CONTACT WITH MATERIALS THAT COULD CAUSE DISCOLORATION OR STAINING. PART 2 PRODUCTS.

2.01 SHEET MATERIALS

A. PREFINISHED GALVANIZED STEEL: ASTM A653/A653M, WITH G90/Z275 ZINC COATING; SHOP PRE-COATED WITH PVDF COATING.

1. PVDF (POLYVINYLIDENE FLUORIDE) COATING: SUPERIOR PERFORMANCE ORGANIC FINISH, AAMA 2605; MULTIPLE COAT, THERMALLY CURED FLUOROPOLYMER FINISH SYSTEM.
2. COLOR: AS SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD COLORS.

2.02 FABRICATION

A. FORM SECTIONS TRUE TO SHAPE, ACCURATE IN SIZE, SQUARE, AND FREE FROM DISTORTION OR DEFECTS.

B. FABRICATE CLEATS OF SAME MATERIAL AS SHEET, MINIMUM 4 INCHES WIDE, INTERLOCKING WITH SHEET.

C. FORM PIECES IN LONGEST POSSIBLE LENGTHS.

D. FORM MATERIAL WITH FLAT LOCK SEAMS, EXCEPT WHERE OTHERWISE INDICATED; AT MOVING JOINTS, USE SEALED LAPPED, BAYONET-TYPE OR INTERLOCKING HOOKED SEAMS.

E. FABRICATE CORNERS FROM ONE PIECE WITH MINIMUM 18 INCH LONG LEGS; SEAM FOR RIGIDITY, SEAL WITH SEALANT.

2.03 GUTTER AND DOWNSPOUT FABRICATION

A. GUTTERS: SMACNA (ASMM), RECTANGULAR PROFILE.

B. DOWNSPOUTS: RECTANGULAR PROFILE.

C. ACCESSORIES: PROFILED TO SUIT GUTTERS AND DOWNSPOUTS.

1. ANCHORAGE DEVICES: TYPE RECOMMENDED BY FABRICATOR.
2. GUTTER SUPPORTS: PREFABRICATED BRACKETS.
3. DOWNSPOUT SUPPORTS: STRAPS FABRICATED FROM FLAT STOCK, SAME MATERIAL AS DOWNSPOUT.

D. SPLASH BLOCKS: PRECAST CONCRETE TYPE, OF SIZE AND PROFILES INDICATED ON DRAWINGS; MINIMUM 3000 PSI AT 28 DAYS, WITH MINIMUM 5 PERCENT AIR ENTRAINMENT.

2.04 ACCESSORIES

A. FASTENERS: GALVANIZED STEEL, WITH SOFT NEOPRENE WASHERS.

B. UNDERLAYMENT: ASTM D2178/D2178M, GLASS FIBER ROOFING FELT.

C. PRIMER: ZINC CHROMATE TYPE.

D. CONCEALED SEALANTS: NON-CURING BUTYL SEALANT.

E. EXPOSED SEALANTS: ASTM C920; ELASTOMERIC SEALANT, WITH MINIMUM MOVEMENT CAPABILITY AS RECOMMENDED BY MANUFACTURER FOR SUBSTRATES TO BE SEALED; COLOR TO MATCH ADJACENT MATERIAL.

F. PLASTIC CEMENT: ASTM D4586/D4586M, TYPE I.

mcmillan pazdan smith ARCHITECTURE

CONSULTANT LOGO

SEALS

CU-ICAR

CU-ICAR FLEX LAB

GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

NOT FOR CONSTRUCTION

PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:
SPECIFICATIONS

SHEET NO. A002

PROJ. NO. 019640.00

8/17/2020 3:37:22 PM BIM 360://019640.00_CU-ICAR Flex Lab Building/ARCH_CU-ICAR FlexLab_R19.rvt
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DIVISION 7 - THERMAL AND MOISTURE PROTECTION CONTINUED

07 62 00 - SHEET METAL FLASHING AND TRIM - CONTINUED

PART 3 EXECUTION

3.01 EXAMINATION

A. VERIFY ROOF OPENINGS, CURBS, PIPES, SLEEVES, DUCTS, AND VENTS THROUGH ROOF ARE SOLIDLY SET, REGLETS IN PLACE, AND NAILING STRIPS LOCATED.

B. VERIFY ROOFING TERMINATION AND BASE FLASHINGS ARE IN PLACE, SEALED, AND SECURE.

3.02 INSTALLATION

A. SECURE FLASHINGS IN PLACE USING CONCEALED FASTENERS, AND USE EXPOSED FASTENERS ONLY WHERE PERMITTED..

B. SEAL METAL JOINTS WATERTIGHT.

3.03 SCHEDULE

A. GUTTERS:

1. SIZE: AS INDICATED ON THE DRAWINGS.
2. MATERIAL: PREFINISHED GALVANIZED STEEL.
3. THICKNESS: AS INDICATED ON THE DRAWINGS.
4. FINISH: PVDF.
5. DRAWING DETAIL: SMACNA (ASMM), FIGURE 1-1; RECTANGULAR GUTTER DESIGN.

B. DOWNSPOUTS:

1. SIZE: AS INDICATED ON THE DRAWINGS.
2. MATERIAL: PREFINISHED GALVANIZED STEEL.
3. THICKNESS: AS INDICATED ON THE DRAWINGS.
4. FINISH: PVDF.

07 71 00 - ROOF SPECIALTIES

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: PROVIDE DATA ON SHAPE OF COMPONENTS, MATERIALS AND FINISHES, ANCHOR TYPES AND LOCATIONS.

B. SHOP DRAWINGS: INDICATE CONFIGURATION AND DIMENSION OF COMPONENTS, ADJACENT CONSTRUCTION, REQUIRED CLEARANCES AND TOLERANCES, AND OTHER AFFECTED WORK.

C. SAMPLES: SUBMIT TWO SAMPLES, 6 INCHES LONG MINIMUM, OF METAL COPING AND ROOF EDGE FLASHINGS.

D. MANUFACTURER'S INSTALLATION INSTRUCTIONS: INDICATE SPECIAL PROCEDURES, FASTENERS, SUPPORTING MEMBERS, AND PERIMETER CONDITIONS REQUIRING SPECIAL ATTENTION.

1.02 WARRANTY

A. PROVIDE WARRANTY UNDER TOTAL ROOFING SYSTEM WARRANTY IN SECTION 07 54 23 - THERMOPLASTIC-POLYOLEFIN ROOFING.

B. WARRANTY DOCUMENTATION:

1. SUBMIT DOCUMENTATION THAT ROOF SPRI ES-1 ROOF SPECIALTIES ARE ACCEPTABLE TO ROOFING MANUFACTURER AND ARE COVERED UNDER THE TOTAL SYSTEM WARRANTY.

PART 2 PRODUCTS

2.01 COMPONENTS

A. ROOF EDGE FLASHINGS: FACTORY FABRICATED TO SIZES REQUIRED; MITERED, WELDED CORNERS; CONCEALED FASTENERS.

1. CONFIGURATION: FASCIA, AND EDGE SECUREMENT FOR ROOF MEMBRANE.
2. PULL-OFF RESISTANCE: TESTED IN ACCORDANCE WITH SPRI ES-1 RE-1 AND RE-2 TO POSITIVE AND NEGATIVE DESIGN WIND PRESSURE AS DEFINED BY ASCE 7.
3. MATERIAL: FORMED ALUMINUM SHEET, 0.050 INCH THICK, MINIMUM; BUT NOT LESS THAN REQUIRED TO MEET PERFORMANCE REQUIREMENTS.
4. FINISH: 70 PERCENT POLYVINYLIDENE FLUORIDE.
5. COLOR: TO BE SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD RANGE.

B. COPINGS: FACTORY FABRICATED TO SIZES REQUIRED; MITERED, WELDED CORNERS; CONCEALED FASTENERS.

1. CONFIGURATION: CONCEALED CONTINUOUS HOLD DOWN CLEAT AT BOTH LEGS; INTERNAL SPLICE PIECE AT JOINTS OF SAME MATERIAL, THICKNESS AND FINISH AS CAP; CONCEALED STAINLESS STEEL FASTENERS.
2. PULL-OFF RESISTANCE: TESTED IN ACCORDANCE WITH SPRI ES-1 RE-3 TO POSITIVE AND NEGATIVE DESIGN WIND PRESSURE AS DEFINED BY ASCE 7 AND SPRI ES-1.
3. MATERIAL: FORMED ALUMINUM SHEET, 0.050 INCH THICK, MINIMUM; BUT NOT LESS THAN REQUIRED TO MEET PERFORMANCE REQUIREMENTS.
4. FINISH: 70 PERCENT POLYVINYLIDENE FLUORIDE.
5. COLOR: TO BE SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD RANGE.

2.02 PERFORMANCE REQUIREMENTS

A. WIND RESISTANCE DESIGN PERFORMANCE CRITERIA: PROVIDE PRODUCTS MEETING THE WIND RESISTANCE UPLIFT CRITERIA OF ASCE 7.

B. PROVIDE METAL COPING AND METAL ROOF EDGE FLASHING PRODUCTS THAT HAVE BEEN SUCCESSFULLY TESTED TO COMPLY WITH ANSI/SPRI/FM 4435/ES-1 AND ARE ACCEPTED WITHIN THE TOTAL SYSTEM ROOFING WARRANTY OF THE MEMBRANE ROOFING FOR THE PROJECT.

2.03 FINISHES

A. PVDF (POLYVINYLIDENE FLUORIDE) COATING: SUPERIOR PERFORMANCE ORGANIC FINISH, AAMA 2605; MULTIPLE COAT, THERMALLY CURED FLUOROPOLYMER FINISH SYSTEM; COLOR AS SELECTED FROM MANUFACTURER'S STANDARD COLORS.

PART 3 EXECUTION

3.01 EXAMINATION

A. VERIFY THAT DECK, CURBS, ROOF MEMBRANE, BASE FLASHING, AND OTHER ITEMS AFFECTING WORK OF THIS SECTION ARE IN PLACE AND POSITIONED CORRECTLY.

3.02 INSTALLATION

A. INSTALL COMPONENTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS ROOFING MEMBRANE MANUFACTURER'S INSTRUCTIONS.

B. COORDINATE INSTALLATION OF COMPONENTS OF THIS SECTION WITH INSTALLATION OF ROOFING MEMBRANE AND BASE FLASHINGS.

07 72 00 - ROOF ACCESSORIES

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: MANUFACTURER'S DATA SHEETS FOR EACH TYPE OF ROOF ACCESSORY.

B. SHOP DRAWINGS: SUBMIT DETAILED LAYOUT DEVELOPED FOR THIS PROJECT AND PROVIDE DIMENSIONED LOCATION AND NUMBER FOR EACH TYPE OF ROOF ACCESSORY.

C. WARRANTY DOCUMENTATION:

1. SUBMIT DOCUMENTATION THAT ROOF ACCESSORIES ARE ACCEPTABLE TO ROOFING MANUFACTURER, AND DO NOT LIMIT THE ROOFING WARRANTY.

1.02 DELIVERY, STORAGE, AND HANDLING

A. STORE PRODUCTS IN MANUFACTURER'S UNOPENED PACKAGING UNTIL READY FOR INSTALLATION.

B. STORE PRODUCTS UNDER COVER AND ELEVATED ABOVE GRADE.

1.03 WARRANTY

A. CORRECT DEFECTIVE WORK WITHIN A FIVE YEAR PERIOD AFTER DATE OF SUBSTANTIAL COMPLETION.

PART 2 PRODUCTS

2.01 ROOF HATCHES

A. ROOF HATCH MANUFACTURERS:

1. BASIS OF DESIGN - BILCO COMPANY; TYPE E (LADDER ACCESS, 3 FT SQUARE, SOLID COVER): WWW.BILCO.COM/#SLE.
2. OTHER ACCEPTABLE MANUFACTURERS: SUBJECT TO APPROVED SUBSTITUTION PROCEDURES, OTHER MANUFACTURERS THAT WILL BE REVIEWED FOR SUBSTITUTION ARE:
3. ACUDOR PRODUCTS INC: WWW.ACUDOR.COM/#SLE.
4. BABCOCK-DAVIS: WWW.BABCOCKDAVIS.COM/#SLE.
5. LMCURBS; ROOF HATCH: WWW.LMCURBS.COM/#SLE.
6. MILCOR, INC: WWW.MILCORINC.COM.
7. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

B. ROOF HATCHES, GENERAL: FACTORY-ASSEMBLED STEEL FRAME AND COVER, COMPLETE WITH OPERATING AND RELEASE HARDWARE.

1. STYLE: PROVIDE FLAT METAL COVERS UNLESS OTHERWISE INDICATED.
2. MOUNTING: PROVIDE FRAMES AND CURBS SUITABLE FOR MOUNTING ON LOW-SLOPE ROOF DECKS.
3. FOR LADDER ACCESS: SINGLE LEAF; 36 BY 36 INCHES.

C. CURB AND FRAME UNITS: ONE-PIECE CURB AND FRAME WITH INTEGRAL CAP FLASHING TO RECEIVE ROOF FLASHINGS; EXTENDED BOTTOM FLANGE TO SUIT MOUNTING.

1. MATERIAL: GALVANIZED STEEL, 14 GAGE, 0.0747 INCH THICK.
2. FINISH: FACTORY PRIME PAINT.
3. INSULATION: MANUFACTURER'S STANDARD; 1 INCH RIGID GLASS FIBER, LOCATED ON OUTSIDE FACE OF CURB.
4. CURB HEIGHT: 14 INCHES FROM FINISHED SURFACE OF ROOF, MINIMUM.
5. NAILER: FACTORY-INSTALLED PRESERVATIVE TREATED WOOD NAILER CONTINUOUS AROUND CURB PERIMETER.

DIVISION 7 - THERMAL AND MOISTURE PROTECTION CONTINUED

07 72 00 - ROOF ACCESSORIES - CONTINUED

PART 2 PRODUCTS - CONTINUED

2.01 ROOF HATCHES - CONTINUED

D. METAL COVERS: FLUSH, INSULATED, HOLLOW METAL CONSTRUCTION.

1. LOADS: CAPABLE OF SUPPORTING 40 PSF LIVE LOAD AND 20 PSF INTERNAL UPLIFT LOAD.
2. MATERIAL: GALVANIZED STEEL; OUTER COVER AS REQUIRED TO MEET LOAD REQUIREMENTS BUT NOT LESS THAN 14 GAGE, 0.0747 INCH THICK; LINER 22 GAGE, 0.03 INCH THICK.
3. FINISH: FACTORY PAINTED POWDER COAT OF BAKED ENAMEL; COLOR AS SELECTED BY ARCHITECT FROM MANUFACTURER'S FULL RANGE.
4. INSULATION: MANUFACTURER'S STANDARD 1 INCH RIGID GLASS FIBER.
5. GASKET: MANUFACTURER'S STANDARD NEOPRENE GASKET, CONTINUOUS AROUND COVER PERIMETER.

E. LADDER-ASSIST POST: MANUFACTURER'S STANDARD TELESCOPING SAFETY POST.

1. BASIS OF DESIGN: BILCO COMPANY; TYPE LU LADDER SAFETY POST.
2. OPERATION: POST LOCKS IN PLACE ON FULL EXTENSION; RELEASE MECHANISM ALLOWS POST TO RETURN TO CLOSED POSITION.
3. HEIGHT: 42 INCHES ABOVE FINISHED ROOF DECK.
4. MATERIAL: STEEL.
5. FINISH: MANUFACTURER'S STANDARD BAKED ENAMEL OR POWDER COAT.

F. HARDWARE: STEEL, ZINC COATED AND CHROMATE SEALED, UNLESS OTHERWISE INDICATED OR REQUIRED BY MANUFACTURER.

1. LIFTING MECHANISMS: COMPRESSION OR TORSION SPRING OPERATOR WITH SHOCK ABSORBERS THAT AUTOMATICALLY OPENS UPON RELEASE OF LATCH; CAPABLE OF LIFTING COVERS DESPITE 10 PSF LOAD.
2. HINGES: HEAVY DUTY PINTLE TYPE.
3. HOLD OPEN ARM WITH VINYL-COATED HANDLE FOR MANUAL RELEASE.
4. LATCH: UPON CLOSING, ENGAGE LATCH AUTOMATICALLY AND RESET MANUAL RELEASE.
5. LOCKING: PADLOCK HASP ON INTERIOR.

2.02 FABRICATION

A. CURBS AND FRAME UNITS.: WHERE SLOPE OF ROOF EXCEEDS 1:48, FABRICATE CURB WITH PERIMETER CURB HEIGHT THAT IS CONSTANT AND EQUIP CURB WITH WATER DIVERTER OR CRICKET THAT DIVERTS WATER ON HIGH SIDE OF ROOF.

1. ON RIBBED METAL ROOFS DECKS, FORM FLANGE AT PERIMETER BOTTOM TO CONFORM TO ROOF DECK PROFILE.

2.03 METAL MATERIALS

A. SHEET METAL: HOT-DIP ZINC COATED STEEL SHEET COMPLYING WITH ASTM A653/A653M, SS GRADE 33; G90 COATING DESIGNATION.

1. FINISH: MANUFACTURER'S STANDARD FACTORY APPLIED POWDER COAT OR BAKED-ENAMEL FINISH WITH PRIMER AND TOPCOAT TO A MINIMUM DRY FILM THICKNESS OF 2 MILS.

PART 3 EXECUTION

3.01 EXAMINATION

A. DO NOT BEGIN INSTALLATION UNTIL SUBSTRATES HAVE BEEN PROPERLY PREPARED.

B. IF SUBSTRATE PREPARATION IS THE RESPONSIBILITY OF ANOTHER INSTALLER, NOTIFY ARCHITECT OF UNSATISFACTORY PREPARATION BEFORE PROCEEDING.

3.02 INSTALLATION

A. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, IN MANNER THAT MAINTAINS ROOFING SYSTEM WEATHER-TIGHT INTEGRITY.

07 92 00 - JOINT SEALANTS

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA FOR SEALANTS: SUBMIT MANUFACTURER'S TECHNICAL DATA SHEETS FOR EACH PRODUCT TO BE USED, THAT INCLUDES THE FOLLOWING.

1. PHYSICAL CHARACTERISTICS, INCLUDING MOVEMENT CAPABILITY, VOC CONTENT, HARDNESS, CURE TIME, AND COLOR AVAILABILITY.
2. LIST OF BACKING MATERIALS APPROVED FOR USE WITH THE SPECIFIC PRODUCT.
3. SUBSTRATES THAT PRODUCT IS KNOWN TO SATISFACTORILY ADHERE TO AND WITH WHICH IT IS COMPATIBLE.
4. SUBSTRATES THE PRODUCT SHOULD NOT BE USED ON.
5. SUBSTRATES FOR WHICH USE OF PRIMER IS REQUIRED.
6. INSTALLATION INSTRUCTIONS, INCLUDING PRECAUTIONS, LIMITATIONS, AND RECOMMENDED BACKING MATERIALS AND TOOLS.
7. CERTIFICATION BY MANUFACTURER INDICATING THAT PRODUCT COMPLIES WITH SPECIFICATION REQUIREMENTS.

B. PRODUCT DATA FOR ACCESSORY PRODUCTS: SUBMIT MANUFACTURER'S TECHNICAL DATA SHEET FOR EACH PRODUCT TO BE USED, INCLUDING PHYSICAL CHARACTERISTICS, INSTALLATION INSTRUCTIONS, AND RECOMMENDED TOOLS.

C. COLOR CARDS FOR SELECTION: WHERE SEALANT COLOR IS NOT SPECIFIED, SUBMIT MANUFACTURER'S COLOR CARDS SHOWING STANDARD COLORS AVAILABLE FOR SELECTION.

PART 2 PRODUCTS

2.01 JOINT SEALANT APPLICATIONS

A. SCOPE:

1. EXTERIOR JOINTS: SEAL OPEN JOINTS, WHETHER OR NOT THE JOINT IS INDICATED ON DRAWINGS, UNLESS SPECIFICALLY INDICATED NOT TO BE SEALED. EXTERIOR JOINTS TO BE SEALED INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING ITEMS.
   a. JOINTS BETWEEN DOOR, WINDOW, AND OTHER FRAMES AND ADJACENT CONSTRUCTION.
   b. JOINTS BETWEEN DIFFERENT EXPOSED MATERIALS.
2. INTERIOR JOINTS: INTERIOR JOINTS TO BE SEALED INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING ITEMS.
   a. JOINTS BETWEEN DOOR, WINDOW, AND OTHER FRAMES AND ADJACENT CONSTRUCTION.
   b. OTHER JOINTS INDICATED BELOW.
3. DO NOT SEAL THE FOLLOWING TYPES OF JOINTS.
   a. JOINTS INDICATED TO BE TREATED WITH MANUFACTURED EXPANSION JOINT COVER OR SOME OTHER TYPE OF SEALING DEVICE.
   b. JOINTS WHERE SEALANT IS SPECIFIED TO BE PROVIDED BY MANUFACTURER OF PRODUCT TO BE SEALED.
   c. JOINTS WHERE INSTALLATION OF SEALANT IS SPECIFIED IN ANOTHER SECTION.
   d. JOINTS BETWEEN SUSPENDED PANEL CEILINGS/GRID AND WALLS.

B. EXTERIOR JOINTS: USE NON-SAG POLYURETHANE SEALANT, UNLESS INDICATED OTHERWISE BELOW

1. LAP JOINTS IN SHEET METAL FABRICATIONS: BUTYL RUBBER, NON-CURING.

C. INTERIOR JOINTS: USE NON-SAG POLYURETHANE SEALANT, UNLESS OTHERWISE INDICATED.

2.02 JOINT SEALANTS - GENERAL

A. SEALANTS AND PRIMERS: PROVIDE PRODUCTS HAVING LOWER VOLATILE ORGANIC COMPOUND (VOC) CONTENT THAN INDICATED IN SCAQMD 1168.

2.03 NONSAG JOINT SEALANTS

A. POLYURETHANE SEALANT: ASTM C920, GRADE NS, USES M AND A; SINGLE OR MULTICOMPONENT; NOT EXPECTED TO WITHSTAND CONTINUOUS WATER IMMERSION OR TRAFFIC.

1. MOVEMENT CAPABILITY: PLUS AND MINUS 25 PERCENT, MINIMUM.
2. COLOR: TO BE SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD RANGE.
3. SERVICE TEMPERATURE RANGE: MINUS 40 TO 180 DEGREES F.
4. MANUFACTURERS:
   a. SHERWIN-WILLIAMS COMPANY; LOXON S1: WWW.SHERWIN-WILLIAMS.COM.

B. NON-CURING BUTYL SEALANT: SOLVENT-BASED; ASTM C1311; SINGLE COMPONENT, NONSAG, NON-SKINNING, NON-HARDENING, NON-BLEEDING; VAPOR-IMPERMEABLE; INTENDED FOR FULLY CONCEALED APPLICATIONS.

1. MANUFACTURERS:
   a. PECORA: BC-158 BUTYL RUBBER SEALANT.
   b. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

2.04 ACCESSORIES

A. BACKER ROD: CYLINDRICAL CELLULAR FOAM ROD WITH SURFACE THAT SEALANT WILL NOT ADHERE TO, COMPATIBLE WITH SPECIFIC SEALANT USED, AND RECOMMENDED BY BACKING AND SEALANT MANUFACTURERS FOR SPECIFIC APPLICATION.

1. TYPE FOR JOINTS NOT SUBJECT TO PEDESTRIAN OR VEHICULAR TRAFFIC: ASTM C1330; TYPE C - CLOSED CELL POLYETHYLENE.
2. MANUFACTURERS:
   a. NOMACO, INC; HBR: WWW.NOMACO.COM/#SLE.
   b. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

B. BACKING TAPE: SELF-ADHESIVE POLYETHYLENE TAPE WITH SURFACE THAT SEALANT WILL NOT ADHERE TO AND RECOMMENDED BY TAPE AND SEALANT MANUFACTURERS FOR SPECIFIC APPLICATION.

C. PRIMERS: TYPE RECOMMENDED BY SEALANT MANUFACTURER TO SUIT APPLICATION; NON-STAINING.

PART 3 EXECUTION

3.01 INSTALLATION

A. PERFORM WORK IN ACCORDANCE WITH SEALANT MANUFACTURER'S REQUIREMENTS FOR PREPARATION OF SURFACES AND MATERIAL INSTALLATION INSTRUCTIONS.

B. PERFORM INSTALLATION IN ACCORDANCE WITH ASTM C1193.

C. INSTALL BOND BREAKER BACKING TAPE WHERE BACKER ROD CANNOT BE USED.

D. INSTALL SEALANT FREE OF AIR POCKETS, FOREIGN EMBEDDED MATTER, RIDGES, AND SAGS, AND WITHOUT GETTING SEALANT ON ADJACENT SURFACES.

E. NONSAG SEALANTS: TOOL SURFACE CONCAVE, UNLESS OTHERWISE INDICATED; REMOVE MASKING TAPE IMMEDIATELY AFTER TOOLING SEALANT SURFACE.

DIVISION 8 - OPENINGS

08 06 71 - DOOR HARDWARE SCHEDULE

PART 1 GENERAL - NOT USED

1.01 SUBMITTALS

A. COMPLY WITH SUBMITTAL REQUIREMENTS AS INDICATED IN SECTION 08 71 00.

PART 2 PRODUCTS

2.01 DESCRIPTION

A. DOOR HARDWARE SETS PROVIDED REPRESENT THE DESIGN INTENT, THEY ARE ONLY A GUIDELINE AND SHOULD NOT BE CONSIDERED A DETAILED OR COMPLETE HARDWARE SCHEDULE.

1. PROVIDE DOOR HARDWARE ITEM(S) AS REQUIRED FOR SIMILAR PURPOSES, EVEN WHEN ITEM IS NOT LISTED FOR A DOOR IN DOOR HARDWARE SCHEDULE.
2. NECESSARY ITEMS THAT ARE NOT INCLUDED IN A HARDWARE SET SHOULD BE ADDED AND HAVE THE APPROPRIATE ADDITIONAL HARDWARE AS REQUIRED FOR PROPER APPLICATION AND FUNCTIONALITY.
3. DOOR HARDWARE SUPPLIER IS RESPONSIBLE FOR PROVIDING PROPER SIZE AND HAND OF DOOR FOR PRODUCTS REQUIRED IN ACCORDANCE WITH DOOR HARDWARE SCHEDULE AND AS INDICATED ON DRAWINGS.
4. QUANTITIES LISTED ARE FOR EACH PAIR (PR) OF DOORS, OR FOR EACH SINGLE (SGL) DOOR, AS INDICATED IN HARDWARE SETS.

2.02 LOCK FUNCTION CODES

A. FUNCTION CODES FOR CYLINDRICAL LOCKS: COMPLYING WITH BHMA A156.5.

PART 3 EXECUTION

3.01 HARDWARE SET HW-01 EXTERIOR ALUMINUM PAIR

A. PROVIDE EACH SINGLE (SGL) DOOR WITH THE FOLLOWING:

UNITS	LOCK	ITEM	DESCRIPTION	FINISH	MFR
6 EA		HINGE	5BB1 4. X 4.5 NRP	630	IVE
1 SET		FLUSH BOLT	FB458	626	IVE
1 EA		DEADLOCK	MS1850S-050 X T-TURN X INDICATOR	628	ADA
1 EA		CYLINDER - ACTIVE	C987	626	FAL
2 SET		DOOR PUSH / PULL BAR	9090 12" TB	630	IVE
2 EA		SURFACE CLOSER	SC71A SS X DROP PLAT X SUPPORT BRACKET	689	FAL
		WEATHERSTRIP	BY ALUM DOOR MFR		
		THRESHOLD	BY ALUM DOOR MFR		

3.02 HARDWARE SET HW-02 EXTERIOR HOLLOW METAL SINGLE

A. PROVIDE EACH SINGLE (SGL) DOOR WITH THE FOLLOWING:

UNITS	LOCK	ITEM	DESCRIPTION	FINISH	MFR
6 EA		HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1 EA		LOCKSET	T581P6 DANE	626	FAL
1 EA		SURFACE CLOSER	SC71A SS	689	FAL
1 EA		GASKETING	188SBK PSA	BLK	ZER
1 EA		HEAD/FOOT BOLT			
1 EA		DOOR SWEEP	39A	ALUM	ZER
1 EA		THRESHOLD	655A	ALUM	ZER
1 EA		LATCH GUARD	LG10	600	IVE

3.03 HARDWARE SET HW-03 EXTERIOR HOLLOW METAL PAIR

A. PROVIDE EACH PAIR (PR) OF DOORS WITH THE FOLLOWING:

UNITS	LOCK	ITEM	DESCRIPTION	FINISH	MFR
6 EA		HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1 EA		LOCKSET	T581P6 DANE	626	FAL
1 EA		SURFACE CLOSER	SC71A SS	689	FAL
1 EA		GASKETING	188SBK PSA	BLK	ZER
1 EA		HEAD/FOOT BOLT			
1 EA		DOOR SWEEP	39A	ALUM	ZER
1 EA		THRESHOLD	655A	ALUM	ZER
1 EA		LATCH GUARD	LG10	600	IVE

08 11 13 - HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: MATERIALS AND DETAILS OF DESIGN AND CONSTRUCTION, HARDWARE LOCATIONS, REINFORCEMENT TYPE AND LOCATIONS, ANCHORAGE AND FASTENING METHODS, AND FINISHES.

B. SHOP DRAWINGS: DETAILS OF EACH OPENING, SHOWING ELEVATIONS, GLAZING, FRAME PROFILES, AND ANY INDICATED FINISH REQUIREMENTS.

C. FINISH SAMPLES: SUBMIT TWO SAMPLES OF METAL,12 BY 12 INCH, SHOWING FACTORY FINISHES, COLORS, AND SURFACE TEXTURE.

D. INSTALLER'S QUALIFICATION STATEMENT.

1.02 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: COMPANY SPECIALIZING IN PERFORMING WORK OF THE TYPE SPECIFIED AND WITH AT LEAST FIVE YEARS OF DOCUMENTED EXPERIENCE.

1.03 DELIVERY, STORAGE, AND HANDLING

A. COMPLY WITH NAAMM HMMA 840 OR ANSI/SDI A250.8 (SDI-100) IN ACCORDANCE WITH SPECIFIED REQUIREMENTS.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. HOLLOW METAL DOORS AND FRAMES:

1. CECO DOOR, AN ASSA ABLOY GROUP COMPANY: WWW.ASSAABLOYDSS.COM.
2. CURRIES, AN ASSA ABLOY GROUP COMPANY: WWW.ASSAABLOYDSS.COM.
3. STEELCRAFT, AN ALLEGION BRAND: WWW.ALLEGION.COM/SLE.
4. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

2.02 DESIGN CRITERIA

A. REQUIREMENTS FOR HOLLOW METAL DOORS AND FRAMES:

1. STEEL USED FOR FABRICATION OF DOORS AND FRAMES SHALL COMPLY WITH ONE OR MORE OF THE FOLLOWING REQUIREMENTS; GALVANNEALED STEEL CONFORMING TO ASTM A653/A653M, COLD-ROLLED STEEL CONFORMING TO ASTM A1008/A1008M, OR HOT-ROLLED PICKLED AND OILED (HRPO) STEEL CONFORMING TO ASTM A1011/A1011M, COMMERCIAL STEEL (CS) TYPE B FOR EACH.
2. ACCESSIBILITY: COMPLY WITH ICC A117.1 AND ADA STANDARDS.
3. EXTERIOR DOOR TOP CLOSURES: FLUSH END CLOSURE CHANNEL, WITH TOP AND DOOR FACES ALIGNED.
4. DOOR EDGE PROFILE: MANUFACTURERS STANDARD FOR APPLICATION INDICATED.
5. TYPICAL DOOR FACE SHEETS: FLUSH.
6. GLAZED LIGHTS: NON-REMOVABLE STOPS ON NON-SECURE SIDE; SIZES AND CONFIGURATIONS AS INDICATED ON DRAWINGS. STYLE: MANUFACTURERS STANDARD.
7. HARDWARE PREPARATIONS, SELECTIONS AND LOCATIONS: COMPLY WITH NAAMM HMMA 830 AND NAAMM HMMA 831 OR BHMA A156.115 AND ANSI/SDI A250.8 (SDI-100) IN ACCORDANCE WITH SPECIFIED REQUIREMENTS.
8. ZINC COATING FOR EXTERIOR LOCATIONS: PROVIDE METAL COMPONENTS ZINC-COATED (GALVANIZED) AND/OR ZINC-IRON ALLOY-COATED (GALVANNEALED) BY THE HOT-DIP PROCESS IN ACCORDANCE WITH ASTM A653/A653M, WITH MANUFACTURER'S STANDARD COATING THICKNESS, UNLESS NOTED OTHERWISE FOR SPECIFIC HOLLOW METAL DOORS AND FRAMES.
   a. BASED ON SDI STANDARDS: PROVIDE AT LEAST A40/ZF120 (GALVANNEALED) FOR INTERIOR APPLICATIONS, AND AT LEAST A60/ZF180 (GALVANNEALED) FOR EXTERIOR LOCATIONS.

B. COMBINED REQUIREMENTS: IF A PARTICULAR DOOR AND FRAME UNIT IS INDICATED TO COMPLY WITH MORE THAN ONE TYPE OF REQUIREMENT, COMPLY WITH THE SPECIFIED REQUIREMENTS FOR EACH TYPE; FOR INSTANCE, AN EXTERIOR DOOR THAT IS ALSO INDICATED AS BEING SOUND-RATED MUST COMPLY WITH THE REQUIREMENTS SPECIFIED FOR EXTERIOR DOORS AND FOR SOUND- RATED DOORS; WHERE TWO REQUIREMENTS CONFLICT, COMPLY WITH THE MOST STRINGENT.

2.03 HOLLOW METAL DOORS

A. DOOR FINISH: FACTORY PRIMED AND FIELD FINISHED.

B. EXTERIOR DOORS: THERMALLY INSULATED.

1. BASED ON SDI STANDARDS: ANSI/SDI A250.8 (SDI-100).
   a. LEVEL 2 - HEAVY-DUTY.
   b. PHYSICAL PERFORMANCE LEVEL A, 1,000,000 CYCLES; IN ACCORDANCE WITH ANSI/SDI A250.4.
   c. MODEL 2 - SEAMLESS.
   d. DOOR FACE METAL THICKNESS: 16 GAGE, 0.053 INCH, MINIMUM.
2. CORE: POLYURETHANE.
   a. FOAM PLASTIC INSULATION: MANUFACTURER'S STANDARD BOARD INSULATION WITH MAXIMUM FLAME SPREAD INDEX (FSI) OF 75, AND MAXIMUM SMOKE DEVELOPED INDEX (SDI) OF 450 IN ACCORDANCE WITH ASTM E84, AND COMPLETELY ENCLOSED WITHIN INTERIOR OF DOOR.
3. DOOR THERMAL RESISTANCE: R-VALUE OF 8.7, MINIMUM, FOR INSTALLED THICKNESS OF POLYURETHANE.
4. DOOR THICKNESS: 1-3/4 INCH, NOMINAL.
5. WEATHERSTRIPPING: REFER TO SECTION 08 71 00.

C. INTERIOR DOORS, NON-FIRE RATED:

1. BASED ON SDI STANDARDS: ANSI/SDI A250.8 (SDI-100).
   a. LEVEL 1 - STANDARD-DUTY.
   b. PHYSICAL PERFORMANCE LEVEL A, 1,000,000 CYCLES; IN ACCORDANCE WITH ANSI/SDI A250.4.
   c. MODEL 2 - SEAMLESS.
   d. DOOR FACE METAL THICKNESS: 16 GAGE, 0.053 INCH, MINIMUM.
2. DOOR THICKNESS: 1-3/4 INCH, NOMINAL.

DIVISION 8 - OPENINGS CONTINUED

2.04 HOLLOW METAL FRAMES

A. COMPLY WITH STANDARDS AND/OR CUSTOM GUIDELINES AS INDICATED FOR CORRESPONDING DOOR IN ACCORDANCE WITH APPLICABLE DOOR FRAME REQUIREMENTS.

B. EXTERIOR DOOR FRAMES: FULL PROFILE/CONTINUOUSLY WELDED TYPE.

1. GALVANIZING: COMPONENTS HOT-DIPPED ZINC-IRON ALLOY-COATED (GALVANNEALED) IN ACCORDANCE WITH ASTM A653/A653M, WITH A60/ZF180 COATING.
2. FRAME METAL THICKNESS: 16 GAGE, 0.053 INCH, MINIMUM.
3. FRAME FINISH: FACTORY PRIMED AND FIELD FINISHED.
4. WEATHERSTRIPPING: SEPARATE, SEE SECTION 08 71 00.

C. INTERIOR DOOR FRAMES, NON-FIRE RATED: FULL PROFILE/CONTINUOUSLY WELDED TYPE.

1. FRAME METAL THICKNESS: 16 GAGE, 0.053 INCH, MINIMUM.

D. PROVIDE MORTAR GUARD BOXES FOR HARDWARE CUT-OUTS IN FRAMES TO BE INSTALLED IN MASONRY OR TO BE GROUTED.

E. FRAMES IN MASONRY WALLS: SIZE TO SUIT MASONRY COURSING WITH HEAD MEMBER 4 INCH HIGH TO FILL OPENING WITHOUT CUTTING MASONRY UNITS.

F. FRAMES WIDER THAN 48 INCHES: REINFORCE WITH STEEL CHANNEL FITTED TIGHTLY INTO FRAME HEAD, FLUSH WITH TOP.

2.05 FRAME ANCHORS

A. JAMB ANCHORS: PROVIDE FRAMES, OTHER THAN SLIP-ON DRYWALL TYPE, WITH A MINIMUM OF THREE ANCHORS PER JAMB SUITABLE FOR THE ADJOINING WALL CONSTRUCTION. PROVIDE ANCHORS OF NOT LESS THAN 0.042 INCH IN THICKNESS OR 0.167 INCH DIAMETER WIRE.

1. PROVIDE AN ADDITIONAL ANCHOR PER JAMB FOR FRAMES OVER 90 INCHES.

2.06 FINISHES

A. PRIMER: RUST-INHIBITING, COMPLYING WITH ANSI/SDI A250.10, DOOR MANUFACTURER'S STANDARD.

2.07 ACCESSORIES

A. GLAZING: AS SPECIFIED IN SECTION 08 80 00.

B. SILENCERS: RESILIENT RUBBER, FITTED INTO DRILLED HOLE; PROVIDE THREE ON STRIKE SIDE OF SINGLE DOOR, THREE ON CENTER MULLION OF PAIRS, AND TWO ON HEAD OF PAIRS WITHOUT CENTER MULLIONS.

PART 3 EXECUTION

3.01 INSTALLATION

A. GENERAL: INSTALL HOLLOW-METAL DOORS AND FRAMES PLUMB, RIGID, PROPERLY ALIGNED, AND SECURELY FASTENED IN PLACE. COMPLY WITH APPROVED SHOP DRAWINGS AND WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.

B. INSTALL DOORS AND FRAMES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND RELATED REQUIREMENTS OF SPECIFIED DOOR AND FRAME STANDARDS OR CUSTOM GUIDELINES INDICATED. COMPLY WITH ANSI/SDI A250.11.

C. COORDINATE FRAME ANCHOR PLACEMENT WITH WALL CONSTRUCTION.

D. FLOOR ANCHORS: SECURE WITH POST-INSTALLED EXPANSION ANCHORS.

1. FLOOR ANCHORS MAY BE SET WITH POWER-ACTUATED FASTENERS INSTEAD OF POST-INSTALLED EXPANSION ANCHORS IF SO INDICATED AND APPROVED ON SHOP DRAWINGS.

08 36 13 - SECTIONAL DOORS

PART 1 GENERAL

1.01 SUBMITTALS

A. SHOP DRAWINGS: INDICATE OPENING DIMENSIONS AND REQUIRED TOLERANCES, CONNECTION DETAILS, ANCHORAGE SPACING, HARDWARE LOCATIONS, AND INSTALLATION DETAILS.

B. PRODUCT DATA: SHOW COMPONENT CONSTRUCTION, ANCHORAGE METHOD, AND HARDWARE.

C. SAMPLES: SUBMIT TWO PANEL FINISH SAMPLES, 4 X 4 INCH MINIMUM IN SIZE, ILLUSTRATING COLOR AND FINISH.

1.03 WARRANTY

A. CORRECT DEFECTIVE WORK WITHIN A FIVE YEAR PERIOD AFTER DATE OF SUBSTANTIAL COMPLETION.

DIVISION 8 - OPENINGS CONTINUED

08 36 13 - SECTIONAL DOORS - CONTINEUED

2.01 STEEL DOORS

A. STEEL DOORS: FLUSH STEEL, INSULATED; VERTICAL LIFT OPERATING STYLE WITH TRACK AND HARDWARE; COMPLYING WITH DASMA 102, COMMERCIAL APPLICATION.

B. DESIGN PERFORMANCE CRITERIA:

1. STRUCTURAL PERFORMANCE: WITHSTAND POSITIVE AND NEGATIVE WIND LOADS EQUAL TO 1.5 TIMES DESIGN WIND LOADS SPECIFIED BY LOCAL CODE WITHOUT DAMAGE OR PERMANENT SET, WHEN TESTED IN ACCORDANCE WITH ASTM E330/E330M, USING 10 SECOND DURATION OF MAXIMUM LOAD.
2. DESIGN WIND LOADS: COMPLY WITH REQUIREMENTS OF ASCE 7.
3. DOOR NOMINAL THICKNESS: 2 INCHES THICK, MINIMUM.
4. EXTERIOR FINISH: FACTORY FINISHED WITH TWO-COAT BAKED-ON POLYESTER; COLOR AS SELECTED FROM MANUFACTURERS STANDARD LINE.
5. INTERIOR FINISH: FACTORY FINISHED WITH TWO-COAT BAKED-ON POLYESTER; COLOR: WHITE.
6. GLAZED LIGHTS: GLAZED LITES AS INDICATED ON THE DRAWINGS.
7. OPERATION: CHAIN HOIST

C. DOOR PANELS, EXTERIOR FACE: STEEL CONSTRUCTION, HOT-DIP GALVANIZED STEEL SHEET OF GAGE AS REQUIRED TO MEET PERFORMANCE REQUIREMENTS, BUT NOT LESS THAN 24 GAGE, 0.0239 INCH; RIBBED PROFILE.

1. INTERIOR BACK COVER: STEEL CONSTRUCTION, STEEL SHEET OF 26 GAGE, 0.179 INCH, MINIMUM, FLUSH PROFILE.

D. CENTER AND END STILES: STEEL, 16 GAGE, 0.06 INCH MINIMUM, BUT NOT LESS THAN THICKNESS REQUIRED TO MEET PERFORMANCE REQUIREMENTS.

E. GLAZING: INSULATED SAFETY GLASS, CLEAR.

2.02 DOOR COMPONENTS

A. SPRING COUNTERBALANCE: SIZED TO WEIGHT OF DOOR AND WITH A MINIMUM 7-TO-1 SAFETY FACTOR:

1. STANDARD CYCLE SPRINGS: 10,000 CYCLES, MINIMUM.

B. TRACK: GALVANIZED STEEL, GAGE AND PROFILE AS RECOMMENDED BY MANUFACTURER FOR LOADING REQUIRED AND CLEARANCES AVAILABLE.

C. HINGE AND ROLLER ASSEMBLIES: HEAVY DUTY HINGES AND ADJUSTABLE ROLLER HOLDERS OF GALVANIZED STEEL; FLOATING HARDENED STEEL BEARING ROLLERS, LOCATED AT TOP AND BOTTOM OF EACH PANEL, EACH SIDE.

D. LIFT MECHANISM: TORSION SPRING ON CROSS HEAD SHAFT, WITH BRAIDED GALVANIZED STEEL LIFTING CABLES.

E. SILL WEATHERSTRIPPING: FLEXIBLE BULB-SHAPED SEAL, ONE PIECE; FITTED TO BOTTOM OF DOOR PANEL, FULL LENGTH CONTACT.

F. JAMB WEATHERSTRIPPING: FLEXIBLE SEALS, PLACED IN MODERATE CONTACT WITH DOOR PANELS.

G. HEAD WEATHERSTRIPPING: FLEXIBLE SEALS, ONE PIECE FULL LENGTH ON TOP PANEL.

H. HANDLE: INTERIOR AND EXTERIOR HANDLE.

I. LOCK: INTERIOR MOUNTED SLIDE LOCK.

2.03 MATERIALS

A. SHEET STEEL: HOT-DIPPED GALVANIZED STEEL SHEET, ASTM A653/A653M, WITH G60/Z180 COATING, PLAIN SURFACE.

B. INSULATION: EXPANDED POLYSTYRENE (EPS).

C. HARDWARE: GALVANIZED STEEL HINGES AND FIXTURES.

PART 3 EXECUTION

3.01 EXAMINATION

A. VERIFY THAT WALL OPENINGS ARE READY TO RECEIVE WORK AND OPENING DIMENSIONS AND TOLERANCES ARE WITHIN SPECIFIED LIMITS.

3.02 INSTALLATION

A. INSTALL DOOR UNIT ASSEMBLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. ANCHOR ASSEMBLY TO WALL CONSTRUCTION AND BUILDING FRAMING WITHOUT DISTORTION OR STRESS.

C. SECURELY BRACE DOOR TRACKS SUSPENDED FROM STRUCTURE. SECURE TRACKS TO STRUCTURAL MEMBERS ONLY.

08 43 13 - ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: PROVIDE COMPONENT DIMENSIONS, DESCRIBE COMPONENTS WITHIN ASSEMBLY, ANCHORAGE AND FASTENERS, AND GLASS.

B. SHOP DRAWINGS: INDICATE SYSTEM DIMENSIONS, FRAMED OPENING REQUIREMENTS AND TOLERANCES, AFFECTED RELATED WORK, EXPANSION AND CONTRACTION JOINT LOCATION AND DETAILS, AND FIELD WELDING REQUIRED.

C. DESIGN DATA: PROVIDE FRAMING MEMBER STRUCTURAL AND PHYSICAL CHARACTERISTICS, ENGINEERING CALCULATIONS, AND DIMENSIONAL LIMITATIONS.

D. INSTALLER QUALIFICATIONS STATEMENT.

1.02 QUALITY ASSURANCE

A. DESIGNER QUALIFICATIONS: DESIGN STRUCTURAL SUPPORT FRAMING COMPONENTS UNDER DIRECT SUPERVISION OF A PROFESSIONAL STRUCTURAL ENGINEER EXPERIENCED IN DESIGN OF THIS WORK AND LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED.

B. INSTALLER QUALIFICATIONS: COMPANY SPECIALIZING IN PERFORMING WORK OF TYPE SPECIFIED AND WITH AT LEAST FIVE YEARS OF DOCUMENTED EXPERIENCE AND APPROVED BY MANUFACTURER.

1.03 DELIVERY, STORAGE, AND HANDLING

A. HANDLE PRODUCTS OF THIS SECTION IN ACCORDANCE WITH AAMA CW-10.

B. PROTECT FINISHED ALUMINUM SURFACES WITH WRAPPING. DO NOT USE ADHESIVE PAPERS OR SPRAYED COATINGS THAT BOND TO ALUMINUM WHEN EXPOSED TO SUNLIGHT OR WEATHER.

1.04 FIELD CONDITIONS

A. DO NOT INSTALL SEALANTS WHEN AMBIENT TEMPERATURE IS LESS THAN 40 DEGREES F. MAINTAIN THIS MINIMUM TEMPERATURE DURING AND 48 HOURS AFTER INSTALLATION.

1.05 WARRANTY

A. CORRECT DEFECTIVE WORK WITHIN A TWO YEAR PERIOD AFTER DATE OF SUBSTANTIAL COMPLETION.

B. PROVIDE FIVE YEAR MANUFACTURER WARRANTY AGAINST FAILURE OF GLASS SEAL ON INSULATING GLASS UNITS, INCLUDING INTERPANE DUSTING OR MISTING. INCLUDE PROVISION FOR REPLACEMENT OF FAILED UNITS.

C. PROVIDE TEN YEAR MANUFACTURER WARRANTY AGAINST EXCESSIVE DEGRADATION OF EXTERIOR FINISH. INCLUDE PROVISION FOR REPLACEMENT OF UNITS WITH EXCESSIVE FADING, CHALKING, OR FLAKING.

PART 2 PRODUCTS

2.01 BASIS OF DESIGN - FRAMING FOR INSULATING GLAZING

A. CENTER-SET STYLE, THERMALLY-BROKEN:

1. BASIS OF DESIGN: YKK AP AMERICA INC; YES 45 FT: WWW.YKKAP.COM.
2. VERTICAL MULLION DIMENSIONS: 2 INCHES WIDE BY 4-1/2 INCHES DEEP.

B. OTHER MANUFACTURERS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, OTHER MANUFACTURERS WITH PRODUCTS OF THIS SECTION THAT WILL BE CONSIDERED AS A SUBSTITUTE ARE IDENTIFIED BELOW:

1. C.R. LAURENCE COMPANY, INC; U.S. ALUMINUM: WWW.CRL-ARCH.COM/SLE.
2. EFCO, A PELLA COMPANY.
3. KAWNEER COMPANY, INC.
4. OLDCASTLE BUILDING ENVELOPE.

C. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

2.02 BASIS OF DESIGN - SWINGING DOORS

A. MEDIUM STILE, INSULATING GLAZING, NOT THERMALLY-BROKEN:

1. BASIS OF DESIGN: YKK AP AMERICA INC; 35D: WWW.YKKAP.COM.

B. OTHER MANUFACTURERS: PROVIDE EITHER THE PRODUCT IDENTIFIED AS "BASIS OF DESIGN" OR AN EQUIVALENT PRODUCT OF ONE OF THE MANUFACTURERS LISTED BELOW:

1. C.R. LAURENCE COMPANY, INC; U.S. ALUMINUM: WWW.CRL-ARCH.COM/#SLE.
2. EFCO, A PELLA COMPANY: WWW.EFCOCORP.COM/#SLE.
3. KAWNEER NORTH AMERICA: WWW.KAWNEER.COM.

C. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

mcmillan pazdan smith ARCHITECTURE

CONSULTANT LOGO

SEALS

CU-ICAR

CU-ICAR FLEX LAB

GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

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DIVISION 8 - OPENINGS CONTINUED

08 43 13 - ALUMINUM-FRAMED STOREFRONTS - CONTINUED

2.03 STOREFRONT

A. ALUMINUM-FRAMED STOREFRONT: FACTORY FABRICATED, FACTORY FINISHED ALUMINUM FRAMING MEMBERS WITH INFILL, AND RELATED FLASHINGS, ANCHORAGE AND ATTACHMENT DEVICES.

1. UNITIZED, SHOP ASSEMBLY.
2. GLAZING RABBET: FOR 1 INCH INSULATING GLAZING.
3. FINISH: CLASS I COLOR ANODIZED.
   a. FACTORY FINISH ALL SURFACES THAT WILL BE EXPOSED IN COMPLETED ASSEMBLIES.
   b. COAT CONCEALED METAL SURFACES THAT WILL BE IN CONTACT WITH CEMENTITIOUS MATERIALS OR DISSIMILAR METALS WITH BITUMINOUS PAINT.
4. FINISH COLOR: AS SELECTED BY ARCHITECT FROM MANUFACTURER'S STANDARD LINE.
5. FABRICATION: JOINTS AND CORNERS FLUSH, HAIRLINE, AND WEATHERPROOF, ACCURATELY FITTED AND SECURED; PREPARED TO RECEIVE ANCHORS AND HARDWARE; FASTENERS AND ATTACHMENTS CONCEALED FROM VIEW; REINFORCED AS REQUIRED FOR IMPOSED LOADS.
6. CONSTRUCTION: ELIMINATE NOISES CAUSED BY WIND AND THERMAL MOVEMENT, PREVENT VIBRATION HARMONICS, AND PREVENT "STACK EFFECT" IN INTERNAL SPACES.
7. SYSTEM INTERNAL DRAINAGE: DRAIN TO THE EXTERIOR BY MEANS OF A WEEP DRAINAGE NETWORK ANY WATER ENTERING JOINTS, CONDENSATION OCCURRING IN GLAZING CHANNEL, AND MIGRATING MOISTURE OCCURRING WITHIN SYSTEM.

B. PERFORMANCE REQUIREMENTS FOR EXTERIOR SYSTEMS:

1. WIND LOADS: DESIGN AND SIZE COMPONENTS TO WITHSTAND THE SPECIFIED LOAD REQUIREMENTS WITHOUT DAMAGE OR PERMANENT SET, WHEN TESTED IN ACCORDANCE WITH ASTM E330/E330M, USING LOADS 1.5 TIMES THE DESIGN WIND LOADS AND 10 SECOND DURATION OF MAXIMUM LOAD.
2. WIND LOAD DESIGN CRITERIA:
   a. DESIGN WIND LOADS: COMPLY WITH REQUIREMENTS OF ASCE 7.
   b. MEMBER DEFLECTION: LIMIT MEMBER DEFLECTION TO FLEXURE LIMIT OF GLASS IN ANY DIRECTION, WITH FULL RECOVERY OF GLAZING MATERIALS.
3. WATER PENETRATION RESISTANCE ON MANUFACTURED ASSEMBLY: NO UNCONTROLLED WATER ON INTERIOR FACE, WHEN TESTED IN ACCORDANCE WITH ASTM E331 AT PRESSURE DIFFERENTIAL OF 8 PSF.
4. AIR LEAKAGE LABORATORY TEST: MAXIMUM OF 0.06 CU FT/MIN SQ FT OF WALL AREA, WHEN TESTED IN ACCORDANCE WITH ASTM E283 AT 6.27 PSF PRESSURE DIFFERENTIAL ACROSS ASSEMBLY.
5. CONDENSATION RESISTANCE FACTOR OF FRAMING: 50, MINIMUM, MEASURED IN ACCORDANCE WITH AAMA 1503.

2.04 COMPONENTS

A. ALUMINUM FRAMING MEMBERS: TUBULAR ALUMINUM SECTIONS, DRAINAGE HOLES AND INTERNAL WEEP DRAINAGE SYSTEM.

1. GLAZING STOPS: FLUSH.
2. STRUCTURALLY REINFORCED MEMBERS: EXTRUDED ALUMINUM WITH INTERNAL REINFORCEMENT OF STRUCTURAL STEEL MEMBER.

B. GLAZING: AS SPECIFIED IN SECTION 08 80 00.

C. SWING DOORS: GLAZED ALUMINUM.

1. THICKNESS: 1-3/4 INCHES.
2. STILE AND RAIL WIDTH: AS INDICATED ON DRAWINGS.
3. TOP RAIL: 5 INCHES WIDE.
4. BOTTOM RAIL: 10 INCHES WIDE.
5. GLAZING STOPS: SQUARE.
6. FINISH: SAME AS STOREFRONT.

2.05 MATERIALS

A. EXTRUDED ALUMINUM: ASTM B221 (ASTM B221M).

B. SHEET ALUMINUM: ASTM B209 (ASTM B209M).

C. STRUCTURAL STEEL SECTIONS: ASTM A36/A36M; GALVANIZED IN ACCORDANCE WITH REQUIREMENTS OF ASTM A123/A123M.

D. FASTENERS: STAINLESS STEEL.

E. EXPOSED FLASHINGS: ALUMINUM SHEET, 20 GAGE, 0.032 INCH MINIMUM THICKNESS; FINISH TO MATCH FRAMING MEMBERS.

2.06 FINISHES

A. CLASS I COLOR ANODIZED FINISH: AAMA 611 AA-M12C22A44 ELECTROLYTICALLY DEPOSITED COLORED ANODIC COATING NOT LESS THAN 0.7 MILS THICK.

B. TOUCH-UP MATERIALS: AS RECOMMENDED BY COATING MANUFACTURER FOR FIELD APPLICATION.

2.07 HARDWARE

A. FOR EACH DOOR, INCLUDE WEATHERSTRIPPING, SILL SWEEP STRIP, AND THRESHOLD.

B. OTHER DOOR HARDWARE: AS SPECIFIED IN SECTION 08 71 00; INCLUDES:

1. PIVOTS: CENTER TYPE; TOP AND BOTTOM.
2. PUSH / PULL SET: STANDARD CONFIGURATION PUSH / PULL HANDLES.
3. DOOR CLOSERS: CONCEALED OVERHEAD.
4. LOCKS: DEAD LATCH WITH TURN HANDLE INSIDE; PROVIDE FOR DOORS AS SCHEDULED.

C. FOR EACH DOOR, INCLUDE WEATHERSTRIPPING, SILL SWEEP STRIP, AND THRESHOLD.

1. WEATHERSTRIPPING: WOOL PILE, CONTINUOUS AND REPLACEABLE; PROVIDE ON ALL EXTERIOR DOORS.
2. SILL SWEEP STRIPS: RESILIENT SEAL TYPE, RETRACTING, OF NEOPRENE; PROVIDE ON ALL EXTERIOR DOORS.
3. THRESHOLD: EXTRUDED ALUMINUM, ONE PIECE PER DOOR OPENING, RIBBED SURFACE; PROVIDE ON ALL EXTERIOR DOORS.

D. OTHER DOOR HARDWARE: SEE SECTION 08 71 00.

PART 3 EXECUTION

3.01 EXAMINATION

A. VERIFY DIMENSIONS, TOLERANCES, AND METHOD OF ATTACHMENT WITH OTHER WORK.

B. VERIFY THAT WALL OPENINGS AND ADJOINING AIR AND VAPOR SEAL MATERIALS ARE READY TO RECEIVE WORK OF THIS SECTION.

3.02 INSTALLATION

A. INSTALL WALL SYSTEM IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. ATTACH TO STRUCTURE TO PERMIT SUFFICIENT ADJUSTMENT TO ACCOMMODATE CONSTRUCTION TOLERANCES AND OTHER IRREGULARITIES.

C. ALIGN ASSEMBLY PLUMB AND LEVEL, FREE OF WARP OR TWIST. MAINTAIN ASSEMBLY DIMENSIONAL TOLERANCES, ALIGNING WITH ADJACENT WORK.

08 71 00 - DOOR HARDWARE

PART 1 GENERAL

1.01 ADMINISTRATIVE REQUIREMENTS

A. PREINSTALLATION MEETING: CONVENE A PREINSTALLATION MEETING TWO WEEKS PRIOR TO COMMENCING WORK OF THIS SECTION; ATTENDANCE IS REQUIRED BY AFFECTED INSTALLERS AND THE FOLLOWING:

1. ARCHITECT.
2. OWNER
3. INSTALLER'S ARCHITECTURAL HARDWARE CONSULTANT (AHC).
4. HARDWARE INSTALLER.
5. OWNER'S SECURITY CONSULTANT.

B. FURNISH TEMPLATES FOR DOOR AND FRAME PREPARATION TO MANUFACTURERS AND FABRICATORS OF PRODUCTS REQUIRING INTERNAL REINFORCEMENT FOR DOOR HARDWARE.

C. KEYING REQUIREMENTS MEETING:

1. SCHEDULE MEETING AT PROJECT SITE PRIOR TO OWNER OCCUPANCY.
2. ATTENDANCE REQUIRED:
   a. CONTRACTOR.
   b. OWNER.
   c. INSTALLER'S ARCHITECTURAL HARDWARE CONSULTANT (AHC).
   d. HARDWARE INSTALLER.
3. AGENDA:
   a. ESTABLISH KEYING REQUIREMENTS.
   b. VERIFY LOCKSETS AND LOCKING HARDWARE ARE FUNCTIONALLY CORRECT FOR PROJECT REQUIREMENTS.
   c. VERIFY THAT KEYING AND PROGRAMMING COMPLIES WITH PROJECT REQUIREMENTS.
   d. ESTABLISH KEYING SUBMITTAL SCHEDULE AND UPDATE REQUIREMENTS.
4. INCORPORATE "KEYING REQUIREMENTS MEETING" DECISIONS INTO KEYING SUBMITTAL UPON REVIEW OF DOOR HARDWARE KEYING SYSTEM INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
   a. ACCESS CONTROL REQUIREMENTS.
   b. KEY CONTROL SYSTEM REQUIREMENTS.
   c. SCHEMATIC DIAGRAM OF PRELIMINARY KEY SYSTEM.
   d. FLOW OF TRAFFIC AND EXTENT OF SECURITY REQUIRED.

1.02 SUBMITTALS

A. PRODUCT DATA: MANUFACTURER'S CATALOG LITERATURE FOR EACH TYPE OF HARDWARE, MARKED TO CLEARLY SHOW PRODUCTS TO BE FURNISHED FOR THIS PROJECT, AND INCLUDES CONSTRUCTION DETAILS, MATERIAL DESCRIPTIONS, FINISHES, AND DIMENSIONS AND PROFILES OF INDIVIDUAL COMPONENTS.

B. SHOP DRAWINGS - DOOR HARDWARE SCHEDULE: SUBMIT DETAILED LISTING THAT INCLUDES EACH ITEM OF HARDWARE TO BE INSTALLED ON EACH DOOR. USE DOOR NUMBERING SCHEME AS INCLUDED IN CONTRACT DOCUMENTS.

1. PREPARED BY OR UNDER SUPERVISION OF ARCHITECTURAL HARDWARE CONSULTANT (AHC).
2. CONFORM TO DHI (H&S) USING DOOR NUMBERS AND HARDWARE SET NUMBERS AS INDICATED IN CONSTRUCTION DOCUMENTS.
   a. SUBMIT IN VERTICAL FORMAT, REFER TO SECTION 08 06 71.
3. LIST GROUPS AND SUFFIXES IN PROPER SEQUENCE.
4. PROVIDE COMPLETE DESCRIPTION FOR EACH DOOR LISTED.
5. PROVIDE MANUFACTURER'S AND PRODUCT NAMES, AND CATALOG NUMBERS; INCLUDE FUNCTIONS, TYPES, STYLES, SIZES AND FINISHES OF EACH ITEM.
6. INCLUDE ACCOUNT OF ABBREVIATIONS AND SYMBOLS USED IN SCHEDULE.

C. MAINTENANCE DATA: INCLUDE DATA ON OPERATING HARDWARE, LUBRICATION REQUIREMENTS, AND INSPECTION PROCEDURES RELATED TO PREVENTATIVE MAINTENANCE.

1. SUBMIT MANUFACTURER'S PARTS LISTS AND TEMPLATES.
2. BITTING LIST: LIST OF COMBINATIONS AS FURNISHED.

D. KEYING SCHEDULE:

1. SUBMIT THREE (3) COPIES OF KEYING SCHEDULE IN COMPLIANCE WITH REQUIREMENTS ESTABLISHED DURING KEYING REQUIREMENTS MEETING UNLESS OTHERWISE INDICATED.

DIVISION 8 - OPENINGS CONTINUED

08 71 00 - DOOR HARDWARE - CONTINUED

1.03 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: COMPANY SPECIALIZING IN PERFORMING WORK OF THE TYPE SPECIFIED FOR COMMERCIAL DOOR HARDWARE WITH AT LEAST THREE YEARS OF DOCUMENTED EXPERIENCE.

B. SUPPLIER QUALIFICATIONS: COMPANY WITH CERTIFIED ARCHITECTURAL HARDWARE CONSULTANT (AHC) TO ASSIST IN WORK OF THIS SECTION.

1.04 DELIVERY, STORAGE, AND HANDLING

A. PACKAGE HARDWARE ITEMS INDIVIDUALLY; LABEL AND IDENTIFY EACH PACKAGE WITH DOOR OPENING CODE TO MATCH DOOR HARDWARE SCHEDULE.

1.05 WARRANTY

A. WARRANTY AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP FOR PERIOD INDICATED, FROM DATE OF SUBSTANTIAL COMPLETION.

1. CLOSERS: FIVE YEARS, MINIMUM.
2. EXIT DEVICES: THREE YEARS, MINIMUM.
3. LOCKSETS AND CYLINDERS: THREE YEARS, MINIMUM.
4. OTHER HARDWARE: TWO YEARS, MINIMUM.

PART 2 PRODUCTS

2.01 DESIGN AND PERFORMANCE CRITERIA

A. PROVIDE SPECIFIED DOOR HARDWARE AS REQUIRED TO MAKE DOORS FULLY FUNCTIONAL, COMPLIANT WITH APPLICABLE CODES, AND SECURE TO EXTENT INDICATED.

B. PROVIDE DOOR HARDWARE PRODUCTS THAT COMPLY WITH THE FOLLOWING REQUIREMENTS:

1. APPLICABLE PROVISIONS OF FEDERAL, STATE, AND LOCAL CODES.
2. LISTED AND CERTIFIED COMPLIANT WITH SPECIFIED STANDARDS BY BHMA (CPD).
3. AUXILIARY HARDWARE: BHMA A156.16.
4. STRAPS AND TEE HINGES: BHMA A156.20.
5. HARDWARE PREPARATION FOR STEEL DOORS AND STEEL FRAMES: BHMA A156.115.

C. FASTENERS:

1. PROVIDE FASTENERS OF PROPER TYPE, SIZE, QUANTITY, AND FINISH THAT COMPLY WITH COMMERCIALLY RECOGNIZED STANDARDS FOR PROPOSED APPLICATIONS.

2.02 HINGES

A. MANUFACTURER:

1. BASIS OF DESIGN: IVES, AN ALLEGION COMPANY: HTTP//US.ALLEGION.COM/EN/HOME/PRODUCTS/BRANDS/IVES.HTML
2. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

B. HINGES: COMPLYING WITH BHMA A156.1, GRADE 1.

1. PROVIDE HINGES ON EVERY SWINGING DOOR.
2. PROVIDE FOLLOWING QUANTITY OF BUTT HINGES FOR EACH DOOR:
   a. DOORS FROM 60 INCHES HIGH UP TO 90 INCHES HIGH: THREE HINGES.
   b. DOORS 90 INCHES HIGH UP TO 120 INCHES HIGH: FOUR HINGES.

2.03 FLUSH BOLTS

A. MANUFACTURERS:

1. BASIS OF DESIGN: IVES, AN ALLEGION BRAND: WWW.ALLEGION.COM/US.
2. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

B. FLUSH BOLTS: COMPLYING WITH BHMA A156.16, GRADE 1.

1. FLUSH BOLT THROW: 3/4 INCH, MINIMUM.
2. PROVIDES EXTENSION BOLTS IN LEADING EDGE OF DOOR, ONE BOLT INTO FLOOR, ONE BOLT INTO TOP OF FRAME.
   a. PAIRS OF SWING DOORS: AT INACTIVE LEAVES, PROVIDE FLUSH BOLTS OF TYPE AS REQUIRED TO COMPLY WITH CODE.

2.04 LOCK CYLINDERS

A. MANUFACTURERS:

1. BASIS OF DESIGN: FALCON, AN ALLEGION BRAND: WWW.ALLEGION.COM/US.
2. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

B. LOCK CYLINDERS: PROVIDE KEY ACCESS ON OUTSIDE OF EACH LOCK, UNLESS OTHERWISE INDICATED.

1. PROVIDE CYLINDERS FROM SAME MANUFACTURER AS LOCKING DEVICE.
2. PROVIDE CAMS AND/OR TAILPIECES AS REQUIRED FOR LOCKING DEVICES.

2.05 CYLINDRICAL LOCKS

A. MANUFACTURERS:

1. BASIS OF DESIGN: FALCON, AN ALLEGION BRAND: WWW.ALLEGION.COM/US.
2. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

B. CYLINDRICAL LOCKS (BORED): COMPLYING WITH BHMA A156.2, GRADE 1.

1. STRIKES: PROVIDE MANUFACTURER'S STANDARD STRIKE FOR EACH LATCHSET OR LOCKSET WITH STRIKE BOX AND CURVED LIP EXTENDING TO PROTECT FRAME IN COMPLIANCE WITH INDICATED REQUIREMENTS.
   a. FINISH: AS SCHEDULED.

2.06 AUXILIARY LOCKS (DEADLOCKS)

A. MANUFACTURERS:

1. BASIS OF DESIGN: ADAMS RITE; AN ASSA ABLOY GROUP COMPANY: WWW.ASSAABLOYDSS.COM.
2. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

B. AUXILIARY LOCKS (DEADLOCKS): COMPLYING WITH BHMA A156.36, GRADE 1.

1. PROVIDE STRIKE THAT MATCHES FRAME.

2.07 DOOR PULLS AND PUSH BARS

A. MANUFACTURERS:

1. BASIS OF DESIGN: IVES, AN ALLEGION COMPANY: HTTP://US.ALLEGION.COM/EN/HOME/PRODUCTS/BRANDS/IVES.HTML
2. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

B. DOOR PULLS AND PUSH BARS: COMPLYING WITH BHMA A156.6.

1. BAR TYPE: BAR SET, UNLESS OTHERWISE INDICATED.

2.08 CLOSERS

A. MANUFACTURERS; SURFACE MOUNTED:

1. BASIS OF DESIGN: FALCON, AN ALLEGION BRAND: WWW.ALLEGION.COM/US.

B. CLOSERS: COMPLYING WITH BHMA A156.4, GRADE 1.

1. TYPE: SURFACE MOUNTED TO DOOR.
2. PROVIDE DOOR CLOSER ON EACH EXTERIOR DOOR.

2.09 THRESHOLDS

A. MANUFACTURERS:

1. BASIS OF DESIGN: ZERO INTERNATIONAL, INC: WWW.ZEROINTERNATIONAL.COM.
2. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

B. THRESHOLDS: COMPLYING WITH BHMA A156.21.

1. PROVIDE THRESHOLD AT EACH EXTERIOR DOOR, UNLESS OTHERWISE INDICATED.
2. THRESHOLD SURFACE: FLUTED HORIZONTAL GROOVES ACROSS FULL WIDTH.

2.10 WEATHERSTRIPPING AND GASKETING

A. MANUFACTURERS:

1. BASIS OF DESIGN: ZERO INTERNATIONAL, INC: WWW.ZEROINTERNATIONAL.COM.
2. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

B. WEATHERSTRIPPING AND GASKETING: COMPLYING WITH BHMA A156.22.

1. DOOR SWEEP TYPE: AS SCHEDULED.
2. PROVIDE WEATHERSTRIPPING ON EACH EXTERIOR DOOR AT HEAD, JAMBS, AND MEETING STILES OF DOOR PAIRS, UNLESS OTHERWISE INDICATED; .
3. PROVIDE DOOR BOTTOM SWEEP ON EACH EXTERIOR DOOR, UNLESS OTHERWISE INDICATED.

2.11 LATCH PROTECTOR

A. MANUFACTURERS:

1. BASIS OF DESIGN: IVES, AN ALLEGION COMPANY: HTTP://US.ALLEGION.COM/EN/HOME/PRODUCTS/BRANDS/IVES.HTML

B. LATCH PROTECTOR: PROVIDE ON DOOR TO PROTECT LATCH FROM BEING TAMPERED WITH WHILE IN LOCKED POSITION.

2.12 KEY CONTROL SYSTEMS

A. KEY CONTROL SYSTEMS: COMPLYING WITH GUIDELINES OF BHMA A156.28.

1. KEYING: GRAND MASTER KEYED.
2. INCLUDE CONSTRUCTION KEYING AND CONTROL KEYING WITH REMOVABLE CORE CYLINDERS.
3. KEY MANAGEMENT SYSTEM: FOR EACH KEYED LOCK ON PROJECT, PROVIDE ONE SET OF CONSECUTIVELY NUMBERED DUPLICATE KEY TAGS WITH HANGING HOLE AND SNAP CATCH.
4. SECURITY KEY TAGS: FOR EACH KEYED LOCK ON PROJECT, PROVIDE ONE SET OF MATCHING KEY TAGS FOR PERMANENT ATTACHMENT TO ONE KEY OF EACH SET.

DIVISION 8 - OPENINGS CONTINUED

08 71 00 - DOOR HARDWARE - CONTINUED

2.13 KEY CABINET

A. MANUFACTURERS:

1. KNOX COMPANY: WWW.KNOXBOX.COM.

B. KEY CABINET: SHEET STEEL CONSTRUCTION, PIANO HINGED DOOR WITH KEY LOCK; BHMA A156.28.

1. MOUNTING: WALL-MOUNTED.
2. CAPACITY: ACTUAL QUANTITY OF KEYS, PLUS 25 PERCENT ADDITIONAL CAPACITY.
3. HORIZONTAL METAL HOOK STRIPS WITH REPLACEABLE LABELS COVERED WITH CLEAR PLASTIC.
4. SIZE KEY HOOKS TO HOLD 6 KEYS EACH.
5. FINISH: BAKED ENAMEL, MANUFACTURER'S STANDARD COLOR.
6. KEY CABINET LOCK TO BUILDING KEYING SYSTEM.

2.14 FIRE DEPARTMENT LOCK BOX

A. MANUFACTURERS:

1. KNOX COMPANY; KNOX-BOX RAPID ENTRY SYSTEM: WWW.KNOXBOX.COM.

B. FIRE DEPARTMENT LOCK BOX:

1. HEAVY-DUTY, SURFACE MOUNTED, SOLID STAINLESS-STEEL BOX WITH HINGED DOOR AND INTERIOR GASKET SEAL; SINGLE DRILL RESISTANT LOCK WITH DUST COVERS AND TAMPER ALARM.
2. CAPACITY: HOLDS 10 KEYS.
3. FINISH: MANUFACTURER'S STANDARD SILVER.

2.15 FINISHES

PART 3 EXECUTION

3.01 INSTALLATION

A. INSTALL HARDWARE IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND APPLICABLE CODES.

B. USE TEMPLATES PROVIDED BY HARDWARE ITEM MANUFACTURER.

C. DO NOT INSTALL SURFACE MOUNTED ITEMS UNTIL APPLICATION OF FINISHES TO SUBSTRATE ARE FULLY COMPLETED.

3.02 ADJUSTING

A. ADJUST HARDWARE FOR SMOOTH OPERATION.

08 80 00 - GLAZING

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA ON INSULATING GLASS UNIT AND GLAZING UNIT GLAZING TYPES: PROVIDE STRUCTURAL, PHYSICAL AND ENVIRONMENTAL CHARACTERISTICS, SIZE LIMITATIONS, SPECIAL HANDLING AND INSTALLATION REQUIREMENTS.

B. PRODUCT DATA ON GLAZING ACCESSORIES: PROVIDE CHEMICAL, FUNCTIONAL, AND ENVIRONMENTAL CHARACTERISTICS, LIMITATIONS, SPECIAL APPLICATION REQUIREMENTS. IDENTIFY AVAILABLE COLORS.

C. SAMPLES: SUBMIT TWO SAMPLES 12 BY 12 INCH MINIMUM OF GLASS UNITS, SHOWING COLORATION AND DESIGN.

D. SAMPLES: SUBMIT 4 INCH LONG BEAD OF GLAZING SEALANT, COLOR AS SELECTED.

1.02 QUALITY ASSURANCE

A. PERFORM WORK IN ACCORDANCE WITH GANA (GM), GANA (SM), AND IGMA TM-3000 FOR GLAZING INSTALLATION METHODS.

B. INSTALLER QUALIFICATIONS: COMPANY SPECIALIZING IN PERFORMING WORK OF THE TYPE SPECIFIED AND WITH AT LEAST THREE YEARS DOCUMENTED EXPERIENCE.

1.03 FIELD CONDITIONS

A. DO NOT INSTALL GLAZING WHEN AMBIENT TEMPERATURE IS LESS THAN 40 DEGREES F.

1.04 WARRANTY

A. INSULATING GLASS UNITS: PROVIDE A FIVE YEAR MANUFACTURER WARRANTY TO INCLUDE COVERAGE FOR SEAL FAILURE, INTERPANE DUSTING OR MISTING, INCLUDING PROVIDING PRODUCTS TO REPLACE FAILED UNITS.

PART 2 PRODUCTS

2.01 PERFORMANCE REQUIREMENTS - EXTERIOR GLAZING ASSEMBLIES

A. PROVIDE TYPE AND THICKNESS OF EXTERIOR GLAZING ASSEMBLIES TO SUPPORT ASSEMBLY DEAD LOADS, AND TO WITHSTAND LIVE LOADS CAUSED BY POSITIVE AND NEGATIVE WIND PRESSURE ACTING NORMAL TO PLANE OF GLASS.

1. DESIGN PRESSURE: CALCULATED IN ACCORDANCE WITH APPLICABLE CODES.
2. COMPLY WITH ASTM E1300 FOR DESIGN LOAD RESISTANCE OF GLASS TYPE, THICKNESS, DIMENSIONS, AND MAXIMUM LATERAL DEFLECTION OF SUPPORTED GLASS.
3. SEISMIC LOADS: DESIGN AND SIZE GLAZING COMPONENTS TO WITHSTAND SEISMIC LOADS AND SWAY DISPLACEMENT IN ACCORDANCE WITH THE REQUIREMENTS OF ASCE 7.
4. PROVIDE GLASS EDGE SUPPORT SYSTEM SUFFICIENTLY STIFF TO LIMIT THE LATERAL DEFLECTION OF SUPPORTED GLASS EDGES TO LESS THAN 1/175 OF THEIR LENGTHS UNDER SPECIFIED DESIGN LOAD.
5. GLASS THICKNESSES LISTED ARE MINIMUM.

B. THERMAL AND OPTICAL PERFORMANCE: PROVIDE EXTERIOR GLAZING PRODUCTS WITH PERFORMANCE PROPERTIES AS INDICATED. PERFORMANCE PROPERTIES ARE IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED DATA AS DETERMINED WITH THE FOLLOWING PROCEDURES AND/OR TEST METHODS:

1. CENTER OF GLASS U-VALUE: COMPLY WITH NFRC 100 USING LAWRENCE BERKELEY NATIONAL LABORATORY (LBNL) WINDOW 6.3 COMPUTER PROGRAM.
2. CENTER OF GLASS SOLAR HEAT GAIN COEFFICIENT (SHGC): COMPLY WITH NFRC 200 USING LAWRENCE BERKELEY NATIONAL LABORATORY (LBNL) WINDOW 6.3 COMPUTER PROGRAM.
3. SOLAR OPTICAL PROPERTIES: COMPLY WITH NFRC 300 TEST METHOD.

2.02 GLASS MATERIALS

A. FLOAT GLASS: PROVIDE FLOAT GLASS BASED GLAZING UNLESS NOTED OTHERWISE.

1. ANNEALED TYPE: ASTM C1036, TYPE I - TRANSPARENT FLAT, CLASS 1 - CLEAR, QUALITY-Q3.
2. HEAT-STRENGTHENED AND FULLY TEMPERED TYPES: ASTM C1048, KIND HS AND FT.
3. FULLY TEMPERED SAFETY GLASS: COMPLIES WITH ANSI Z97.1 AND CPSC 16 CFR PART 1201 CRITERIA.
4. TINTED TYPE: ASTM C1036, CLASS 2 - TINTED, QUALITY-Q3, COLOR AND PERFORMANCE CHARACTERISTICS AS INDICATED.
5. THICKNESSES: AS INDICATED; PROVIDE GREATER THICKNESS AS REQUIRED FOR EXTERIOR GLAZING WIND LOAD DESIGN.

2.03 INSULATING GLASS UNITS

A. INSULATING GLASS UNITS:

1. DURABILITY: CERTIFIED BY AN INDEPENDENT TESTING AGENCY TO COMPLY WITH ASTM E2190.
2. COATED GLASS: COMPLY WITH REQUIREMENTS OF ASTM C1376 FOR PYROLYTIC (HARD-COAT) OR MAGNETIC SPUTTER VAPOR DEPOSITION (SOFT-COAT) TYPE COATINGS ON FLAT GLASS; COATED VISION GLASS, KIND CV; COATED OVERHEAD GLASS, KIND CO; OR COATED SPANDREL GLASS, KIND CS.
3. WARM-EDGE SPACERS: FLEXIBLE SILICONE WITH POLYISOBUTYLENE (PIB) PRIMARY SEAL.
4. SPACER COLOR: BLACK.
5. EDGE SEAL:
   a. TRI-SEALED SYSTEM: PROVIDE POLYISOBUTYLENE SEALANT AS PRIMARY SEAL APPLIED BETWEEN SPACER AND GLASS PANES, AND SILICONE, POLYSULFIDE, OR POLYURETHANE SEALANT AS SECONDARY SEAL APPLIED AROUND PERIMETER.
6. COLOR: BLACK.
7. PURGE INTERPANE SPACE WITH DRY AIR, HERMETICALLY SEALED.

B. INSULATING GLASS UNITS: SAFETY GLAZING.

1. APPLICATIONS:
   a. GLAZED LITES IN EXTERIOR ALUMINUM ENTRANCE DOORS.
   b. GLAZED SIDELIGHTS AND PANELS NEXT TO DOORS.
   c. OTHER LOCATIONS REQUIRED BY APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND REGULATIONS.
   d. OTHER LOCATIONS INDICATED ON DRAWINGS TO RECEIVE INSULATED SAFETY GLAZING.

2. GLASS TYPE: SAME AS INSULATED GLASS UNITS EXCEPT PROVIDE FULLY TEMPERED FLOAT GLASS FOR BOTH OUTBOARD AND INBOARD LITES.

2.04 INSULATING GLASS UNITS

A. INSULATING GLASS UNITS: VISION GLAZING, WITH LOW-E COATING.

1. APPLICATIONS: EXTERIOR INSULATING GLASS GLAZING UNLESS OTHERWISE INDICATED.
2. SOLAR HEAT GAIN COEFFICIENT (SHGC): 0.16, MAXIMUM.
3. GLAZING METHOD: DRY GLAZING METHOD, GASKET GLAZING.
4. BASIS OF DESIGN - GUARDIAN GLASS, LLC: WWW.GUARDIANGLASS.COM/#SLE.
5. OUTBOARD LITE: HEAT-STRENGTHENED FLOAT GLASS UNLESS FULLY TEMPERED REQUIRED BY CODE, 1/4 INCH THICK, MINIMUM.
   a. LOW-E COATING: SUNGUARD SNX 51/23 ON #2 SURFACE.
   b. GLASS TINT: GRAY.
6. INBOARD LITE: HEAT-STRENGTHENED FLOAT GLASS UNLESS FULLY TEMPERED REQUIRED BY CODE, 1/4 INCH THICK.
   a. COATING: NO COATING ON INBOARD LITE.
   b. GLASS: CLEAR.

DIVISION 8 - OPENINGS CONTINUED

08 80 00 - GLAZING - CONTINUED

2.05 BASIS OF DESIGN - MONOLTHIC GLAZING UNITS

A. MONOLITHIC EXTERIOR VISION GLAZING:

1. APPLICATIONS: EXTERIOR GLAZING IN HOLLOW METAL DOORS
2. GLASS TYPE: FULLY TEMPERED FLOAT GLASS.
3. TINT: CLEAR.
4. THICKNESS: 1/4 INCH, NOMINAL.
5. GLAZING METHOD: DRY GLAZING METHOD, GASKET GLAZING.

B. MONOLITHIC INTERIOR VISION GLAZING:

1. APPLICATIONS: INTERIOR GLAZING IN HOLLOW METAL DOORS.
2. GLASS TYPE: FULLY TEMPERED FLOAT GLASS.
3. TINT: CLEAR.
4. THICKNESS: 1/4 INCH, NOMINAL.
5. GLAZING METHOD: DRY GLAZING METHOD, GASKET GLAZING.

C. MONOLITHIC SAFETY GLAZING:

1. APPLICATIONS:
   a. GLAZED LITES IN DOORS.
   b. GLAZED SIDELIGHTS TO DOORS.
   c. OTHER LOCATIONS REQUIRED BY APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND R EGULATIONS.
   d. OTHER LOCATIONS INDICATED ON DRAWINGS TO RECEIVE MONOLITHIC SAFETY GLAZING.
2. GLASS TYPE: SAME AS MONOLITHIC VISION GLAZING EXCEPT PROVIDE FULLY TEMPERED FLOAT GLASS.

2.06 ACCESSORIES

A. SETTING BLOCKS: SILICONE, WITH 80 TO 90 SHORE A DUROMETER HARDNESS; ASTM C864 OPTION II. LENGTH OF 0.1 INCH FOR EACH SQUARE FOOT OF GLAZING OR MINIMUM 4 INCH X WIDTH OF GLAZING RABBET SPACE MINUS 1/16 INCH X HEIGHT TO SUIT GLAZING METHOD AND PANE WEIGHT AND AREA.

B. GLAZING GASKETS: RESILIENT SILICONE EXTRUDED SHAPE TO SUIT GLAZING CHANNEL RETAINING SLOT; ASTM C864 OPTION II; COLOR BLACK.

PART 3 EXECUTION

3.01 INSTALLATION, GENERAL

A. INSTALL GLAZING IN COMPLIANCE WITH WRITTEN INSTRUCTIONS OF GLASS, GASKETS, AND OTHER GLAZING MATERIAL MANUFACTURERS, UNLESS MORE STRINGENT REQUIREMENTS ARE INDICATED, INCLUDING THOSE IN GLAZING REFERENCED STANDARDS.

B. INSTALL GLAZING SEALANTS IN ACCORDANCE WITH ASTM C1193, GANA (SM), AND MANUFACTURER'S INSTRUCTIONS.

3.02 INSTALLATION - DRY GLAZING METHOD (GASKET GLAZING)

A. PLACE SETTING BLOCKS AT 1/4 POINTS WITH EDGE BLOCK NO MORE THAN 6 INCH FROM CORNERS.

B. REST GLAZING ON SETTING BLOCKS AND PUSH AGAINST FIXED STOP WITH SUFFICIENT PRESSURE ON GASKET TO ATTAIN FULL CONTACT.

C. INSTALL REMOVABLE STOPS WITHOUT DISPLACING GLAZING GASKET; EXERT PRESSURE FOR FULL CONTINUOUS CONTACT.

08 91 00 - LOUVERS

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: PROVIDE DATA DESCRIBING DESIGN CHARACTERISTICS, MAXIMUM RECOMMENDED AIR VELOCITY, DESIGN FREE AREA, MATERIALS AND FINISHES.

B. SHOP DRAWINGS: INDICATE LOUVER LAYOUT PLAN AND ELEVATIONS, OPENING AND CLEARANCE DIMENSIONS, TOLERANCES; HEAD, JAMB AND SILL DETAILS; BLADE CONFIGURATION, SCREENS, BLANKOUT AREAS REQUIRED, AND FRAMES.

C. SAMPLES: SUBMIT TWO SAMPLES 2 BY 2 INCHES IN SIZE ILLUSTRATING FINISH AND COLOR OF EXTERIOR AND INTERIOR SURFACES.

1.02 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: COMPANY SPECIALIZING IN PERFORMING WORK OF TYPE SPECIFIED AND WITH AT LEAST THREE YEARS OF DOCUMENTED EXPERIENCE.

1.03 DELIVERY, STORAGE, AND HANDLING

A. STORE LOUVERS UNDER COVER AND ELEVATED ABOVE GRADE.

B. HANDLE PRODUCTS OF THIS SECTION IN ACCORDANCE WITH AAMA CW-10.

C. PROTECT FINISHED ALUMINUM SURFACES WITH WRAPPING. DO NOT USE ADHESIVE PAPERS OR SPRAYED COATINGS THAT BOND TO ALUMINUM WHEN EXPOSED TO SUNLIGHT OR WEATHER.

1.04 WARRANTY

A. PROVIDE TWENTY YEAR MANUFACTURER WARRANTY AGAINST DISTORTION, METAL DEGRADATION, AND FAILURE OF CONNECTIONS.

1. FINISH: INCLUDE COVERAGE AGAINST DEGRADATION OF EXTERIOR FINISH.

PART 2 PRODUCTS

2.01 LOUVERS

A. LOUVERS: FACTORY FABRICATED AND ASSEMBLED, COMPLETE WITH FRAME, MULLIONS, AND ACCESSORIES; AMCA CERTIFIED IN ACCORDANCE WITH AMCA 511.

1. WIND LOAD RESISTANCE: DESIGN TO RESIST POSITIVE AND NEGATIVE WIND LOAD AS REQUIRED BY CODE WITHOUT DAMAGE OR PERMANENT DEFORMATION.
2. INTAKE LOUVERS: DESIGN TO ALLOW MAXIMUM OF 0.01 OZ/SQ FT WATER PENETRATION AT CALCULATED INTAKE DESIGN VELOCITY BASED ON DESIGN AIR FLOW AND ACTUAL FREE AREA, WHEN TESTED IN ACCORDANCE WITH AMCA 500-L.
3. DRAINABLE BLADES: CONTINUOUS RAIN STOP AT FRONT OR REAR OF BLADE ALIGNED WITH VERTICAL GUTTER RECESSED INTO BOTH JAMBS OF FRAME.
4. SCREENS: PROVIDE INSECT SCREENS AT INTAKE LOUVERS AND BIRD SCREENS AT EXHAUST LOUVERS.

B. STATIONARY LOUVERS: HORIZONTAL BLADE, EXTRUDED ALUMINUM CONSTRUCTION, WITH INTERMEDIATE MULLIONS MATCHING FRAME.

1. FREE AREA: 50 PERCENT, MINIMUM.
2. BLADES: DRAINABLE.
3. FRAME: 6 INCHES DEEP, CHANNEL PROFILE; CORNER JOINTS .
4. ALUMINUM THICKNESS: FRAME 12 GAGE, 0.0808 INCH MINIMUM; BLADES 12 GAGE, 0.0808 INCH MINIMUM.
5. ALUMINUM FINISH: CLASS II NATURAL ANODIZED; FINISH WELDED UNITS AFTER FABRICATION.

2.02 MATERIALS

A. EXTRUDED ALUMINUM: ASTM B221 (ASTM B221M).

2.03 FINISHES

A. CLASS I COLOR ANODIZED FINISH: AAMA 611 AA-M12C22A42 INTEGRALLY COLORED ANODIC COATING NOT LESS THAN 0.7 MILS THICK.

B. COLOR: AS SELECTED FROM MANUFACTURER'S STANDARD COLORS.

PART 3 EXECUTION

3.01 EXAMINATION

A. VERIFY THAT PREPARED OPENINGS ARE READY TO RECEIVE THIS WORK AND OPENING DIMENSIONS ARE AS INDICATED ON SHOP DRAWINGS.

B. VERIFY THAT FIELD MEASUREMENTS ARE AS INDICATED ON SHOP DRAWINGS.

3.02 INSTALLATION

A. INSTALL LOUVER ASSEMBLY IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. INSTALL LOUVERS LEVEL AND PLUMB.

DIVISION 9 - FINISHES

09 91 13 - EXTERIOR PAINTING

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: PROVIDE COMPLETE LIST OF PRODUCTS TO BE USED, WITH THE FOLLOWING INFORMATION FOR EACH:

1. MANUFACTURER'S NAME, PRODUCT NAME AND/OR CATALOG NUMBER, AND GENERAL PRODUCT CATEGORY (E.G. "ALKYD ENAMEL").
2. CROSS-REFERENCE TO SPECIFIED PAINT SYSTEM(S) PRODUCT IS TO BE USED IN; INCLUDE DESCRIPTION OF EACH SYSTEM.

B. SAMPLES: SUBMIT TWO PAPER CHIP SAMPLES, APPROXIMATELY 6 BY 6 INCH IN SIZE ILLUSTRATING RANGE OF COLORS AND TEXTURES AVAILABLE FOR EACH SURFACE FINISHING PRODUCT SCHEDULED.

1.02 DELIVERY, STORAGE, AND HANDLING

A. DELIVER PRODUCTS TO SITE IN SEALED AND LABELED CONTAINERS; INSPECT TO VERIFY ACCEPTABILITY.

B. CONTAINER LABEL: INCLUDE MANUFACTURER'S NAME, TYPE OF PAINT, BRAND NAME, LOT NUMBER, BRAND CODE, COVERAGE, SURFACE PREPARATION, DRYING TIME, CLEANUP REQUIREMENTS, COLOR DESIGNATION, AND INSTRUCTIONS FOR MIXING AND REDUCING.

C. PAINT MATERIALS: STORE AT MINIMUM AMBIENT TEMPERATURE OF 45 DEGREES F AND A MAXIMUM OF 90 DEGREES F, IN VENTILATED AREA, AND AS REQUIRED BY MANUFACTURER'S INSTRUCTIONS.

PART 2 PRODUCTS

2.01 MANUFACTURERS

2.02 PAINTS AND FINISHES - GENERAL

A. PAINTS AND FINISHES: READY MIXED, UNLESS REQUIRED TO BE A FIELD-CATALYZED PAINT.

1. FOR OPAQUE FINISHES, TINT EACH COAT INCLUDING PRIMER COAT AND INTERMEDIATE COATS, ONE-HALF SHADE LIGHTER THAN SUCCEEDING COAT, WITH FINAL FINISH COAT AS BASE COLOR.
2. SUPPLY EACH PAINT MATERIAL IN QUANTITY REQUIRED TO COMPLETE ENTIRE PROJECT'S WORK FROM A SINGLE PRODUCTION RUN.
3. DO NOT REDUCE, THIN, OR DILUTE PAINT OR FINISHES OR ADD MATERIALS UNLESS SUCH PROCEDURE IS SPECIFICALLY DESCRIBED IN MANUFACTURER'S PRODUCT INSTRUCTIONS.

B. COLORS: AS INDICATED ON DRAWINGS.

1. EXTEND COLORS TO SURFACE EDGES; COLORS MAY CHANGE AT ANY EDGE AS DIRECTED BY ARCHITECT.

2.03 PAINT SYSTEMS - EXTERIOR

A. EXTERIOR GYPSUM BOARD, OPAQUE, LATEX, THREE-COAT SYSTEM:

1. ONE COAT OF LATEX PRIMER SEALER.
   a. SHERWIN-WILLIAMS MULTI-PURPOSE INTERIOR / EXTERIOR PRIMER SEALER; B51-450 SERIES.
      1) APPLY AT 4.0 MILS WET PER COAT.
2. SATIN: TWO COATS OF LATEX.
3. FIRST FINISH COAT:
   a. SHERWIN-WILLIAMS A-100 EXTERIOR LATEX SATIN; A82-100 SERIES.
      1) APPLY AT 4.0 MILS WET PER COAT.
4. SECOND FINISH COAT:
   a. SHERWIN-WILLIAMS A-100 EXTERIOR LATEX SATIN; A82-100 SERIES.
      1) APPLY AT 4.0 MILS WET PER COAT.

B. FERROUS AND GALVANIZED METAL SUBSTRATES, WATERBASED ALKYD, THREE-COAT SYSTEM:

1. MANUFACTURER OF PRIMER AND FINISH COATS: SHERWIN-WILLIAMS COMPANY.
2. PRIMER: PRO INDUSTRIAL PRO-CRYL UNIVERSAL PRIMER B66 SERIES
   a. APPLY 5.0 TO 10.0 MILS WET FILM THICKNESS; 1.8 TO 3.6 MILS DRY FILM THICKNESS.
3. FIRST TOP COAT:
   a. PRO INDUSTRIAL WATER BASED ALKYD URETHANE ENAMEL; B53-1150 SERIES - SEMI-GLOSS.
   b. APPLY 4.0 TO 5.0 MILS WET FILM THICKNESS; 1.4 TO 1.7 MILS DRY FILM THICKNESS
4. SECOND TOP COAT:
   a. PRO INDUSTRIAL WATER BASED ALKYD URETHANE ENAMEL; B53-1150 SERIES - SEMI-GLOSS.
   b. APPLY 4.0 TO 5.0 MILS WET FILM THICKNESS; 1.4 TO 1.7 MILS DRY FILM THICKNESS

PART 3 EXECUTION

3.01 EXAMINATION

A. MEASURE MOISTURE CONTENT OF SURFACES USING AN ELECTRONIC MOISTURE METER. DO NOT APPLY FINISHES UNLESS MOISTURE CONTENT OF SURFACES ARE BELOW THE FOLLOWING MAXIMUMS:

3.02 PREPARATION

A. CLEAN SURFACES THOROUGHLY AND CORRECT DEFECTS PRIOR TO APPLICATION.

B. PREPARE SURFACES USING THE METHODS RECOMMENDED BY THE MANUFACTURER FOR ACHIEVING THE BEST RESULT FOR THE SUBSTRATE UNDER THE PROJECT CONDITIONS.

C. FERROUS METAL SUBSTRATES:

1. SOLVENT CLEAN ACCORDING TO SSPC-SP 1.
2. SHOP-PRIMED SURFACES: SAND AND SCRAPE TO REMOVE LOOSE PRIMER AND RUST. FEATHER EDGES TO MAKE TOUCH-UP PATCHES INCONSPICUOUS. CLEAN SURFACES WITH SOLVENT. PRIME BARE STEEL SURFACES. TOUCH-UP PRIMER AS REQUIRED.

D. METAL DOORS TO BE PAINTED: PRIME METAL DOOR TOP AND BOTTOM EDGE SURFACES.

3.03 APPLICATION

A. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.

B. DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY. ALLOW APPLIED COATS TO DRY BEFORE NEXT COAT IS APPLIED.

09 91 23 - INTERIOR PAINTING

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: PROVIDE COMPLETE LIST OF PRODUCTS TO BE USED, WITH THE FOLLOWING INFORMATION FOR EACH:

1. MANUFACTURER'S NAME, PRODUCT NAME AND/OR CATALOG NUMBER, AND GENERAL PRODUCT CATEGORY (E.G. "ALKYD ENAMEL").
2. CROSS-REFERENCE TO SPECIFIED PAINT SYSTEM(S) PRODUCT IS TO BE USED IN; INCLUDE DESCRIPTION OF EACH SYSTEM.

B. SAMPLES: SUBMIT TWO PAINTED SAMPLES, ILLUSTRATING SELECTED COLORS AND TEXTURES FOR EACH COLOR AND SYSTEM SELECTED WITH SPECIFIED COATS CASCADED. SUBMIT ON SHEET METAL, 8.5 X 11 INCH IN SIZE. SUBMIT PAINTED SAMPLES OF WOOD TRIM ON WOOD SPECIES SPECIFIED IN SECTION 06 20 00.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. PROVIDE PAINTS AND FINISHES USED IN ANY INDIVIDUAL SYSTEM FROM THE SAME MANUFACTURER.

2.02 PAINTS AND FINISHES - GENERAL

A. PAINTS AND FINISHES: READY MIXED, UNLESS INTENDED TO BE A FIELD-CATALYZED PAINT.

1. PROVIDE PAINTS AND FINISHES OF A SOFT PASTE CONSISTENCY; CAPABLE OF BEING READILY AND UNIFORMLY DISPERSED TO A HOMOGENEOUS COATING, WITH GOOD FLOW AND BRUSHING PROPERTIES, AND CAPABLE OF DRYING OR CURING FREE OF STREAKS OR SAGS.
2. PROVIDE MATERIALS THAT ARE COMPATIBLE WITH ONE ANOTHER AND THE SUBSTRATES INDICATED UNDER CONDITIONS OF SERVICE AND APPLICATION, AS DEMONSTRATED BY MANUFACTURER BASED ON TESTING AND FIELD EXPERIENCE.
3. FOR OPAQUE FINISHES, TINT EACH COAT INCLUDING PRIMER COAT AND INTERMEDIATE COATS, ONE-HALF SHADE LIGHTER THAN SUCCEEDING COAT, WITH FINAL FINISH COAT AS BASE COLOR.
4. SUPPLY EACH PAINT MATERIAL IN QUANTITY REQUIRED TO COMPLETE ENTIRE PROJECT'S WORK FROM A SINGLE PRODUCTION RUN.
5. DO NOT REDUCE, THIN, OR DILUTE PAINT OR FINISHES OR ADD MATERIALS UNLESS SUCH PROCEDURE IS SPECIFICALLY DESCRIBED IN MANUFACTURER'S PRODUCT INSTRUCTIONS.

B. VOLATILE ORGANIC COMPOUND (VOC) CONTENT:

1. PROVIDE PAINTS AND FINISHES THAT COMPLY WITH THE MOST STRINGENT REQUIREMENTS SPECIFIED IN THE FOLLOWING:
   a. 40 CFR 59, SUBPART D--NATIONAL VOLATILE ORGANIC COMPOUND EMISSION STANDARDS FOR ARCHITECTURAL COATINGS.
   b. ARCHITECTURAL COATINGS VOC LIMITS OF STATE IN WHICH THE PROJECT IS LOCATED.
2. DETERMINATION OF VOC CONTENT: TESTING AND CALCULATION IN ACCORDANCE WITH 40 CFR 59, SUBPART D (EPA METHOD 24), EXCLUSIVE OF COLORANTS ADDED TO A TINT BASE AND WATER ADDED AT PROJECT SITE; OR OTHER METHOD ACCEPTABLE TO AUTHORITIES HAVING JURISDICTION.

2.03 PAINT SYSTEMS - INTERIOR

A. INTERIOR SURFACES TO BE PAINTED, UNLESS OTHERWISE INDICATED: INCLUDING SHOP PRIMED STEEL.

B. CONCRETE MASONRY, OPAQUE, LATEX, THREE-COAT SYSTEM:

1. ONE COAT OF BLOCK FILLER: SHERWIN-WILLIAMS CONCRETE & MASONRY PRIMER/SEALER INTERIOR/EXTERIOR LATEX.
   a. APPLY AT 5.3 TO 8.0 MILS WET.
   2. SEMI-GLOSS: TWO COATS OF INTERIOR LATEX.
   a. PROMAR 200 ZERO VOC INTERIOR LATEX SEMI-GLOSS.
   b. APPLY EACH COAT AT 4.0 MILS WET.

C. GALVANNEALED METALS, ALKYD URETHANE ENAMEL, THREE-COAT SYSTEM:

1. PRIMER: ONE COAT GALVANIZE PRIMER.
   a. SHERWIN-WILLIAMS; PRO-CRYL UNIVERSAL PRIMER B66W310.
   b. APPLY AT 5.0 TO 10.0 MILS WET.
   2. FINISH COATS: TWO COATS OF ALKYD URETHANE ENAMEL:
   a. SHERWIN-WILLIAMS; PRO INDUSTRIAL WB ALKYD URETHANE ENAMEL; B53-1150 SEMI-GLOSS.
   b. APPLY AT 4.0 TO 5.0 MILS WET PER COAT; 1.4 TO 1.7 MILS DRY PER COAT.

D. GYPSUM BOARD, LATEX, THREE-COAT SYSTEM:

1. ONE COAT OF LATEX PRIMER SEALER:
   a. SHERWIN-WILLIAMS; PROMAR 200 ZERO VOC INTERIOR LATEX PRIMER.
   b. APPLY AT 4 MILS WET.
   2. FINISH COATS: TWO COATS OF LATEX ENAMEL:
   a. S-W PROMAR 200 ZERO VOC INTERIOR LATEX.
   b. APPLY AT 4 MILS WET PER COAT.

mcmillan pazdan smith ARCHITECTURE

CONSULTANT LOGO

SEALS

CU-ICAR

CU-ICAR FLEX LAB

GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

NOT FOR CONSTRUCTION

PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:

SPECIFICATIONS

SHEET NO. A004

PROJ. NO. 019640.00

DIVISION 9 - FINISHES CONTINUED

09 91 23 - INTERIOR PAINTING - CONTINUED

PART 3 EXECUTION

3.01 EXAMINATION

A. MEASURE MOISTURE CONTENT OF SURFACES USING AN ELECTRONIC MOISTURE METER. DO NOT APPLY FINISHES UNLESS MOISTURE CONTENT OF SURFACES ARE BELOW THE FOLLOWING MAXIMUMS:

1. GYPSUM WALLBOARD: 12 PERCENT.
2. MASONRY, CONCRETE, AND CONCRETE MASONRY UNITS : 12 PERCENT.

3.02 PREPARATION

A. CLEAN SURFACES THOROUGHLY AND CORRECT DEFECTS PRIOR TO APPLICATION.

B. PREPARE SURFACES USING THE METHODS RECOMMENDED BY THE MANUFACTURER FOR ACHIEVING THE BEST RESULT FOR THE SUBSTRATE UNDER THE PROJECT CONDITIONS.

3.03 APPLICATION

A. APPLY PRODUCTS IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.

B. DO NOT APPLY FINISHES TO SURFACES THAT ARE NOT DRY. ALLOW APPLIED COATS TO DRY BEFORE NEXT COAT IS APPLIED.

09 97 23 - CONCRETE AND MASONRY COATINGS

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: PROVIDE MANUFACTURER'S PRODUCT DATA OF COATING MATERIALS.

B. SAMPLES: SUBMIT TWO PAPER CHIP, FAN DECK SAMPLES, ILLUSTRATING FULL RANGE OF COLORS AVAILABLE FOR EACH SURFACE FINISHING PRODUCT SCHEDULED.

C. SAMPLES: SUBMIT TWO SAMPLES APPROXIMATELY 6 BY 6 INCH IN SIZE ILLUSTRATING COLORS AVAILABLE SELECTED FROM PAPER CHIP SAMPLES.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. CONCRETE AND MASONRY COATINGS:

1. THE SHERWIN WILLIAMS COMPANY.
2. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

2.02 MATERIALS

A. COATINGS, GENERAL: PROVIDE COMPLETE SYSTEMS FORMULATED AND RECOMMENDED BY MANUFACTURER FOR THE APPLICATIONS INDICATED, IN THE THICKNESSES INDICATED.

1. MAXIMUM VOLATILE ORGANIC COMPOUND (VOC) CONTENT: AS REQUIRED BY APPLICABLE REGULATIONS.

B. HIGH BUILD, WATER BASED TEXTURED COATING SYSTEM FOR CAST-IN-PLACE: WATER BASED ACRYLIC PRIMER; ACRYLIC, AGGREGATE-FILLED TOP COATS.

1. STATED BY MANUFACTURER AS SUITABLE FOR CONCRETE SURFACES CURED 28 DAYS, MINIMUM
2. FLEXIBILITY TEST: PASSING, WHEN TESTED ACCORDING TO ASTM D522/D522M WITH A 1 INCH MANDREL.
3. FREEZE THAW RESISTANCE: PASSING, WHEN TESTED ACCORDING TO ASTM D2243 FOR 50 CYCLES.
4. MANUFACTURER: SHERWIN WILLIAMS COMPANY.

PART 3 EXECUTION

3.01 EXAMINATION

A. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK.

B. VERIFY THAT SUBSTRATE SURFACES ARE READY TO RECEIVE WORK INCLUDING MINIMUM CURE TIME OF CONCRETE AND SEALANTS, AS INSTRUCTED BY THE COATING MANUFACTURER. OBTAIN AND FOLLOW MANUFACTURER'S INSTRUCTIONS FOR EXAMINATION AND TESTING OF SUBSTRATES.

C. CONCRETE SUBSTRATES: DO NOT BEGIN COATING APPLICATION UNTIL THE FOLLOWING CONDITIONS HAVE BEEN MET.

1. CONCRETE SUBSTRATE CURE TIME: TWENTY-EIGHT DAYS MINIMUM.
2. MOISTURE CONTENT: 16 PERCENT MAXIMUM.
3. ALKALINITY OF CONCRETE: A PH OF 13 MAXIMUM.

D. SEALANT SUBSTRATE: DO NOT BEGIN COATING APPLICATION UNTIL SUBSTRATE HAS CURED SEVEN DAYS MINIMUM.

3.02 PRIMING

A. APPLY PRIMER TO ALL SURFACES INDICATED OR SCHEDULED FOR COATING, UNLESS SPECIFICALLY NOT REQUIRED BY COATING MANUFACTURER. APPLY IN ACCORDANCE WITH COATING MANUFACTURER'S INSTRUCTIONS.

B. CONCRETE: PRIOR TO PRIMING, PATCH HOLES AND INDENTATIONS AND FILL CRACKS WITH MANUFACTURER'S RECOMMENDED CRACK REPAIR MATERIAL.

3.03 COATING APPLICATION

A. APPLY COATINGS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS, TO THICKNESSES SPECIFIED.

B. APPLY IN UNIFORM THICKNESS COATS, WITHOUT RUNS, DRIPS, PINHOLES, BRUSH MARKS, OR VARIATIONS IN COLOR, TEXTURE, OR FINISH. FINISH EDGES, CREVICES, CORNERS, AND OTHER CHANGES IN DIMENSION WITH FULL COATING THICKNESS.

C. FOR WATERPROOFING COATINGS, APPLY TWO TOPCOATS WITH OVERNIGHT DRYING BETWEEN COATS.

DIVISION 10 - SPECIALTIES

10 44 00 - FIRE PROTECTION SPECIALTIES

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: PROVIDE EXTINGUISHER OPERATIONAL FEATURES, EXTINGUISHER RATINGS AND CLASSIFICATIONS, COLOR AND FINISH, AND ANCHORAGE DETAILS.

B. SHOP DRAWINGS: INDICATE ROUGH-IN MEASUREMENTS FOR RECESSED CABINETS, LOCATIONS OF INDIVIDUAL FIRE EXTINGUISHERS, MOUNTING MEASUREMENTS FOR WALL BRACKET, AND ACCESSORIES REQUIRED FOR COMPLETE INSTALLATION.

1.02 FIELD CONDITIONS

A. DO NOT INSTALL EXTINGUISHERS WHEN AMBIENT TEMPERATURE MAY CAUSE FREEZING OF EXTINGUISHER INGREDIENTS.

1.03 WARRANTY

A. SEE SECTION 01 78 00 - CLOSEOUT SUBMITTALS, FOR ADDITIONAL WARRANTY REQUIREMENTS.

B. PROVIDE FIVE YEAR MANUFACTURER WARRANTY FOR FAILURE OF VALVES OR RELEASE LEVERS AND FAILURE OF NFPA 10 TESTING.

C. CORRECT DEFECTIVE WORK WITHIN A FIVE YEAR PERIOD AFTER DATE OF SUBSTANTIAL COMPLETION.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. FIRE EXTINGUISHERS:

1. BASIS OF DESIGN: POTTER-ROEMER / FIRE PRO: WWW.POTTERROEMER.COM.
2. JL INDUSTRIES, INC: WWW.JLINDUSTRIES.COM.
3. KIDDE, A UNIT OF UNITED TECHNOLOGIES CORP: WWW.KIDDE.COM.

2.02 FIRE EXTINGUISHERS

A. FIRE EXTINGUISHERS - GENERAL: COMPLY WITH PRODUCT REQUIREMENTS OF NFPA 10 AND APPLICABLE CODES, WHICHEVER IS MORE STRINGENT.

1. PROVIDE EXTINGUISHERS LABELED BY UL (DIR) FOR PURPOSE SPECIFIED AND AS INDICATED.

B. MULTIPURPOSE DRY CHEMICAL TYPE FIRE EXTINGUISHERS: CARBON STEEL TANK, WITH PRESSURE GAGE.

1. CARTRIDGE OPERATED: SPUN SHELL.
2. CLASS: 4-A: 80-B: C TYPE.
3. SIZE: 5 POUND.
4. FINISH: BAKED POLYESTER POWDER COAT, COLOR AS SELECTED.
5. TEMPERATURE RANGE: MINUS 65 DEGREES F TO 120 DEGREES F.

2.03 ACCESSORIES

A. EXTINGUISHER BRACKETS: FORMED STEEL, CHROME-PLATED.

PART 3 EXECUTION

3.01 EXAMINATION

A. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK.

3.02 INSTALLATION

A. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. EXTINGUISHER AND CABINET INSTALLATION HEIGHT:

1. FIFTY-FOUR INCHES ABOVE FLOOR TO TOP OR CABINET, OR 48 INCHES TO THE HANDLE OF THE FIRE EXTINGUISHER.

C. SECURE RIGIDLY IN PLACE.

D. PLACE EXTINGUISHERS IN CABINETS.

10 73 16.13 - METAL CANOPIES

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: PROVIDE COMPONENT DIMENSIONS, ANCHORAGES, FASTENERS, HARDWARE, AND DRAINAGE DETAILS.

B. SHOP DRAWINGS: INDICATE DIMENSIONS, SIZES, CONNECTION ATTACHMENTS, FABRICATION TOLERANCES, AFFECTED RELATED WORK, SIZE AND TYPE OF FASTENERS, ACCESSORIES, DRAINAGE COMPONENTS AND FLASHINGS. INDICATE STRUCTURAL COMPONENT LOCATIONS, MATERIALS, DIMENSIONS AND DETAILS OF CONSTRUCTION AND ASSEMBLY.

1. PROVIDE DESIGN ENGINEER'S STAMP ON SHOP DRAWINGS.

C. SAMPLES: SUBMIT TWO SAMPLES, 4 BY 4 INCHES MINIMUM IN SIZE ILLUSTRATING ALUMINUM FINISH AND COLOR.

D. PROVIDE CALCULATIONS FOR LOADINGS AND STRESSES OF CANOPIES, FRAMING AND SUPPORT STRUCTURE, STAMPED BY A PROFESSIONAL STRUCTURAL ENGINEER LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED.

E. DESIGN DATA: PROVIDE FRAMING MEMBER STRUCTURAL AND PHYSICAL CHARACTERISTICS, ENGINEERING CALCULATIONS, AND DIMENSIONAL LIMITATIONS.

1.02 QUALITY ASSURANCE

A. DESIGNER QUALIFICATIONS: DESIGN METAL CANOPIES UNDER DIRECT SUPERVISION OF A PROFESSIONAL STRUCTURAL ENGINEER EXPERIENCED IN DESIGN OF THIS WORK AND LICENSED IN THE STATE IN WHICH THE PROJECT IS LOCATED.

1.03 DELIVERY, STORAGE, AND HANDLING

A. HANDLE PRODUCTS OF THIS SECTION IN ACCORDANCE WITH AAMA CW-10.

B. PROTECT FINISHED ALUMINUM SURFACES WITH WRAPPING OR STRIPPABLE COATING. DO NOT USE ADHESIVE PAPERS OR SPRAYED COATINGS THAT BOND TO ALUMINUM WHEN EXPOSED TO SUNLIGHT OR WEATHER.

1.04 WARRANTY

A. FINISH WARRANTY: PROVIDE TEN YEAR MANUFACTURER WARRANTY AGAINST EXCESSIVE DEGRADATION OF EXTERIOR FINISH. INCLUDE PROVISION FOR REPLACEMENT OF UNITS WITH EXCESSIVE FADING, CHALKING, OR FLAKING.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. METAL CANOPIES:

1. MAPES INDUSTRIES, INC.; SUPER LUMIDECK, CANTILEVER SUPPORTED, FLAT SOFFIT.

2.02 PERFORMANCE REQUIREMENTS

A. GENERAL, REGULATORY REQUIREMENTS: PROVIDE CANOPIES IN COMPLIANCE WITH STRUCTURAL CRITERIA INDICATED ON STRUCTURAL DRAWINGS.

B. WIND LOADS: DESIGN AND SIZE COMPONENTS TO WITHSTAND THE SPECIFIED LOAD REQUIREMENTS WITHOUT DAMAGE OR PERMANENT SET, WHEN TESTED IN ACCORDANCE WITH ASTM E330/E330M , USING LOADS 1.5 TIMES THE DESIGN WIND LOADS AND 10 SECOND DURATION OF MAXIMUM LOAD.

C. SNOW LOADS: PROVIDE CANOPIES CAPABLE OF RESISTING SNOW LOADS INDICATED ON STRUCTURAL DRAWINGS.

2.03 METAL CANOPIES

A. FASCIA: MANUFACTURER'S STANDARD, EXTRUDED ALUMINUM, 8 INCH DEEP, J-STYLE FASCIA.

1. THICKNESS: 0.125 INCH MINIMUM.

2.04 STEEL FRAMING SYSTEM

A. STEEL TUBING: ASTM A501/A501M HOT-FORMED STRUCTURAL TUBING.

B. STEEL ROD: MILD CARBON STEEL, WELDABLE QUALITY.

C. MOUNTING: BRACKETS AND FLANGES, WITH STEEL INSERTS AND THREADED RODS WITH CRUSH SLEEVE (AS REQ'D) FOR MOUNTING IN INSULATED METAL PANEL WALL CONSTRUCTION.

D. EXPOSED FASTENERS: FLUSH COUNTERSUNK GALVANIZED STEEL SCREWS OR BOLTS; CONSISTENT WITH DESIGN OF SYSTEM.

E. FINISH EXPOSED COMPONENTS: GALVANIZED IN ACCORDANCE WITH REQUIREMENTS OF ASTM A123/A123M.

F. SHOP PREFINISHING EXPOSED COMPONENTS: FLUOROPOLYMER; COLOR AS SELECTED FROM MANUFACTURER'S STANDARDS.

2.05 FABRICATION

A. SHOP FABRICATE TO THE GREATEST EXTENT POSSIBLE.

B. FIT AND SHOP ASSEMBLE COMPONENTS IN LARGEST PRACTICAL SIZES, FOR DELIVERY TO SITE.

C. FABRICATE COMPONENTS WITH JOINTS TIGHTLY FITTED AND SECURED.

D. EXPOSED FASTENINGS: UNOBTRUSIVELY LOCATED; CONSISTENT WITH DESIGN OF COMPONENT, EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE.

E. SUPPLY COMPONENTS REQUIRED FOR ANCHORAGE OF FRAMING. FABRICATE ANCHORS AND RELATED COMPONENTS OF SAME MATERIAL AND FINISH AS FRAMING, EXCEPT WHERE SPECIFICALLY NOTED OTHERWISE.

F. ACCURATELY FORM COMPONENTS TO SUIT EACH OTHER AND TO BUILDING STRUCTURE.

G. CONCEALED DRAINAGE: FABRICATE FOR INTERNAL WATER DRAINAGE INTO SCUPPER OUTLET FOR SIDE EXIT AT FRONT OF CANOPY.

DIVISION 10 - SPECIALTIES CONTINUED

10 73 16.13 - METAL CANOPIES

2.06 FINISHES

A. SUPERIOR PERFORMING ORGANIC COATINGS: AAMA 2605 MULTIPLE COAT, THERMALLY CURED POLYVINYLIDENE FLUORIDE (PVDF) SYSTEM.

1. POLYVINYLIDENE FLUORIDE (PVDF) MULTI-COAT THERMOPLASTIC FLUOROPOLYMER COATING SYSTEM, INCLUDING MINIMUM 70 PERCENT PVDF COLOR TOPCOAT AND MINIMUM TOTAL DRY FILM THICKNESS OF 0.9 MIL; COLOR AND GLOSS AS SELECTED FROM MANUFACTURER'S STANDARD OR PREMIUM COLOR SELECTIONS.

B. ATTACHMENT HARDWARE: MANUFACTURER'S STANDARD PAINTED FINISH.

PART 3 EXECUTION

3.01 EXAMINATION

A. VERIFY THAT WALL SUBSTRATE ANCHORS ARE ACCEPTABLE AND ARE READY TO RECEIVE WORK.

3.02 FRAMING INSTALLATION

A. INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND SHOP DRAWINGS.

B. INSTALL COMPONENTS PLUMB AND LEVEL, ACCURATELY FITTED, FREE FROM DISTORTION OR DEFECTS.

C. ANCHOR FRAMING TO STRUCTURE.

D. FIELD WELD ANCHORS AS INDICATED ON SHOP DRAWINGS. GRIND WELDS SMOOTH. TOUCH-UP WELDS WITH PRIMER.

E. CONCEAL BOLTS AND SCREWS WHENEVER POSSIBLE. WHERE NOT CONCEALED, USE FLUSH COUNTERSUNK FASTENINGS.

10 75 00 - FLAGPOLES

PART 1 GENERAL

1.01 SUBMITTALS

A. Product Data: For each type of flagpole include construction details, material descriptions, dimensions of components and profiles, operating characteristics, fittings, accessories, and finishes.

B. Shop Drawings: Indicate detailed dimensions, base details, anchor requirements, and imposed loads.

1.02 QUALITY ASSURANCE

A. Designer Qualifications: Design flagpole under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed the State in which the Project is located.

1.03 WARRANTY

A. Aluminum Flagpole Shafts: Provide manufacturer lifetime warranty.

B. Finish Warranty: Provide five year manufacturer warranty finish warranty.

C. Hardware and Accessories Warranty: Provide one year manufacturer's hardware and accessories warranty.

PART 2 PRODUCTS

2.01 FLAGPOLES

A. Flagpoles: Designed in accordance with NAAMM FP 1001.

1. Material: Aluminum.
2. Design: Cone tapered.
3. Mounting: Ground mounted type.
4. Nominal Height: 35 ft; measured from nominal ground elevation.
5. Halyard: External type.

2.02 POLE MATERIALS

A. Aluminum: ASTM B221 (ASTM B221M), 6063 alloy, T6 temper.

2.03 ACCESSORIES

A. Finial Ball: Aluminum, 6 inch diameter.

B. Truck Assembly: Cast aluminum; revolving, stainless steel ball bearings, non-fouling.

C. Cleats: 9 inch size, aluminum with galvanized steel fastenings, two per halyard.

D. Cleat Box: Aluminum, with built-in hinge and hasp assembly, attached to pole with tamper proof screws inside box.

E. Halyard: 5/16 inch diameter polypropylene, braided, white.

2.04 OPERATORS

A. Hand Crank.

2.05 MOUNTING COMPONENTS

A. Foundation Tube Sleeve: AASHTO M 36, corrugated 16 gage, 0.0598 inch steel, galvanized, depth as required to meet performance requirements.

B. Pole Base Attachment: Tube; steel base with base cover.

2.06 FINISHING

A. Metal Surfaces in Contact With Concrete: Asphaltic paint.

B. Concealed Steel Surfaces: Galvanized to ASTM A123/A123M requirements.

C. Exposed to View Steel Surfaces: Galvanized to ASTM A123/A123M requirements.

D. Flagpole: Aluminum, Mill finish.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install flagpole, base assembly, and fittings in accordance with manufacturer's instructions.

B. Fill foundation tube sleeve with concrete specified in Section 03 30 00.

C. Install foundation plate and centering wedges for flagpoles base set in concrete base and fasten.

D. Set brackets for wall set flagpoles anchored securely into wall construction. Seal watertight.

DIVISION 11 - EQUIPMENT

11 13 16.23 - LOADING DOCK SHELTERS

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: FOR EACH TYPE OF PRODUCT; PROVIDE MANUFACTURER'S DATA SHEETS.

B. SHOP DRAWINGS: INCLUDE PLANS, ELEVATIONS, SECTIONS, AND DETAILS INDICATING FRAMED WALL OPENINGS, DIMENSIONS AND TOLERANCES, ADJACENT CONSTRUCTION, FITTINGS FOR ANCHORAGES, AND ANCHOR POINTS.

C. SAMPLES: FOR EACH FINISH PRODUCT, SUBMIT TWO SAMPLES OF SHELTER COVERING MATERIAL, 6 X 6 INCH MINIMUM, IN SIZE REPRESENTING ACTUAL PRODUCT, FINISH, AND COLOR.

PART 2 PRODUCTS

2.01 STATIONARY DOCK SHELTER

A. SIDE FRAMES: FOAM SIDE FRAMES REINFORCED WITH HIGH MOLECULAR WEIGHT POLYETHYLENE (HMWPE) LAYER.

B. SIDE CURTAINS: REMOVABLE, VELCRO-ATTACHED SIDE CURTAINS WITH DETACHABLE HOOKS TO SEAL EXPOSED TRAILER DOOR HINGE GAPS WITHOUT RESTRICTING ACCESS TO LOADS.

C. HEAD PAD HEIGHT: 30 INCHES

D. HEAD CURTAIN CONSTRUCTION: PIVOTING CANOPY HEADER WITH INTEGRAL RAIN GUTTER;

1. WEAR PLEATS: OVERLAPPING WEAR PLEATS ON ENDS OF HEAD CURTAIN FACE.

E. SIDE AND TOP COVERING MATERIAL: VINYL IMPREGNATED WATERPROOF NYLON FABRIC; TO REMAIN FLEXIBLE TO MINUS 65 DEGREES F.

1. OPTION: MANUFACTURER'S HIGH-STRENGTH, FRICTION-RESISTANT CURTAIN FABRIC.

F. COVERING WEIGHT: 40 OZ/SQ FT; BLACK COLOR WITH 5 INCH WIDE YELLOW STRIP AT BOTTOM OF SIDE PAD.

G. MANUFACTURER'S PROPRIETARY, HIGH-STRENGTH, FRICTION-RESISTANT FABRIC:

1. PRODUCT: RITE-HITE CORP; DURATHON.

H. DOCK LEVELER AND PIT SEALING SYSTEM: MANUFACTURER'S PROPRIETARY, UNDER-DOCK-LEVELER AND PIT SEALING SYSTEM THAT ADJUSTS TO LEVELER POSITION AND SELF STORES.

2.02 ACCESSORIES

A. ANCHORS:

1. METAL AND FINISH: HOT-DIPPED GALVANIZED STEEL COMPLYING WITH ASTM A153/A153M FOR HIGH HUMIDITY AND PRESERVATIVE-TREATED WOOD LOCATIONS, UNFINISHED STEEL ELSEWHERE.
2. ANCHORS: EXPANSION SHIELD AND LAG BOLT TYPE FOR ANCHORAGE TO SOLID MASONRY OR CONCRETE.

PART 3 EXECUTION

3.01 INSTALLATION

A. INSTALL SHELTER COMPONENTS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS AND APPROVED SHOP DRAWINGS.

B. DOCK SHELTERS: ATTACH DOCK SHELTERS SECURELY TO BUILDING STRUCTURE IN PROPER RELATION TO OPENINGS, DOCK BUMPERS, AND DOCK LEVELERS TO ENSURE AN EFFECTIVE SEAL OF DOCK-SHELTER CURTAINS WITH SIDES AND TOP OF TRUCK BODY WHEN TRUCKS ARE POSITIONED AGAINST DOCK BUMPERS.

C. SET PLUMB AND LEVEL.

11 13 19 - STATIONARY LOADING DOCK EQUIPMENT

PART 1 GENERAL

1.01 SUBMITTALS

A. PRODUCT DATA: MANUFACTURER'S DATA SHEETS ON EACH PRODUCT TO BE USED.

B. SHOP DRAWINGS: INDICATE PLANS, ELEVATIONS, SECTIONS, AND DETAILS REQUIRED OPENING DIMENSIONS AND TOLERANCES, PERIMETER CONDITIONS OF CONSTRUCTION, AND DIAGRAMS FOR POWER, SIGNAL, AND CONTROL WIRING. SUPPORTING CONSTRUCTION REQUIREMENTS FOR EQUIPMENT ATTACHMENT. OPERATING RANGES AND REQUIRED CLEARANCES.

C. MAINTENANCE DATA: PROVIDE UNIT MAINTENANCE INFORMATION, LUBRICATION CYCLES, AND SPARE PARTS MANUAL.

1.02 QUALITY ASSURANCE

A. INSTALLER QUALIFICATIONS: COMPANY SPECIALIZING IN PERFORMING WORK OF TYPE SPECIFIED AND WITH AT LEAST THREE YEARS OF DOCUMENTED EXPERIENCE.

1.03 DELIVERY, STORAGE, AND HANDLING

A. DELIVER PRODUCTS TO PROJECT SITE IN MANUFACTURER'S UNOPENED PACKAGING UNTIL READY FOR INSTALLATION.

B. STORE EQUIPMENT UNDER COVER AND ELEVATED ABOVE GRADE.

1.04 FIELD CONDITIONS

A. EXISTING CONDITIONS: FIELD VERIFY DIMENSIONS OF CONSTRUCTION RELATED TO STATIONARY LOADING DOCK EQUIPMENT PRIOR TO FABRICATION, INCLUDING RECESSED PIT DIMENSIONS, SLOPE OF INCLINED DOCK APPROACH, DOCK HEIGHT, AND HEIGHT AND WIDTH OF DOCK DOOR OPENINGS.

1.05 WARRANTY

A. MANUFACTURER AGREES TO CORRECT DEFECTIVE WORK WITHIN TWO YEAR PERIOD FROM DATE OF SUBSTANTIAL COMPLETION.

DIVISION 11 - EQUIPMENT CONTINUED

11 13 19 - STATIONARY LOADING DOCK EQUIPMENT

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. BASIS OF DESIGN: RITE-HITE CORP: WWW.RITEHITE.COM.

B. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

2.02 LOADING DOCK BUMPERS

A. STEEL-FACE, LAMINATED-TREAD DOCK BUMPERS: FABRICATED FROM MULTIPLE, UNIFORMLY THICK RUBBER PLIES, WITH 3/8 INCH STEEL FACEPLATE OF SAME SIZE AS RUBBER SURFACE. LAMINATE PLIES UNDER PRESSURE ON NOT LESS THAN TWO 3/4 INCH DIAMETER, STEEL SUPPORTING RODS THAT ARE WELDED AT ONE END TO 1/4 INCH THICK, STRUCTURAL-STEEL END ANGLE AND SECURED WITH A NUT AND ANGLE AT THE OTHER END.

1. BASIS OF DESIGN: RITE-HITE CORP; STEEL-FACED DOCK BUMPERS - MODEL RH412-14SF: WWW.RITEHITE.COM.
2. PROJECTION FROM WALL: 4 INCHES.
3. WIDTH: 14 INCHES.
4. VERTICAL HEIGHT: 12 INCHES.
5. PROFILE: RECTANGULAR.
6. FINISH: MANUFACTURER'S STANDARD PAINT APPLIED TO STEEL COMPONENTS OF DOCK BUMPER:
7. SUBSTITUTIONS: MUST BE SUBMITTED TO THE ARCHITECT FOR APPROVAL.

2.03 MATERIALS

A. STRUCTURAL STEEL SECTIONS: ASTM A36/A36M.

B. STEEL PLATES, SHAPES, AND BARS: ASTM A6/A6M OR ASTM A283/A283M.

C. WELDING MATERIALS: AWS D1.1/D1.1M; TYPE REQUIRED FOR MATERIALS BEING WELDED.

D. STEEL BOLTS, NUTS, AND WASHERS: ASTM F3125/F3125M, TYPE 1, AND GALVANIZED IN ACCORDANCE WITH ASTM A153/A153M WHERE CONNECTING GALVANIZED HARDWARE COMPONENTS.

2.04 FINISHES

A. GALVANIZING: HOT-DIP GALVANIZE TO MINIMUM REQUIREMENTS OF ASTM A123/A123M.

PART 3 EXECUTION

3.01 EXAMINATION

A. EXAMINE LOADING DOCK EQUIPMENT AREA FOR COMPLIANCE WITH REQUIREMENTS FOR INSTALLATION TOLERANCES AND OTHER CONDITIONS RELATED TO THIS WORK.

B. PROCEED WITH INSTALLATION AFTER UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED.

3.02 INSTALLATION

A. INSTALL IN ACCORDANCE WITH MANUFACTURER'S WRITTEN INSTRUCTIONS.

1. SET SQUARE AND LEVEL.

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CONSULTANT LOGO

SEALS

CU-ICAR

CU-ICAR FLEX LAB

GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

NOT FOR CONSTRUCTION

PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:

SPECIFICATIONS

SHEET NO.

A005

PROJ. NO. 019640.00

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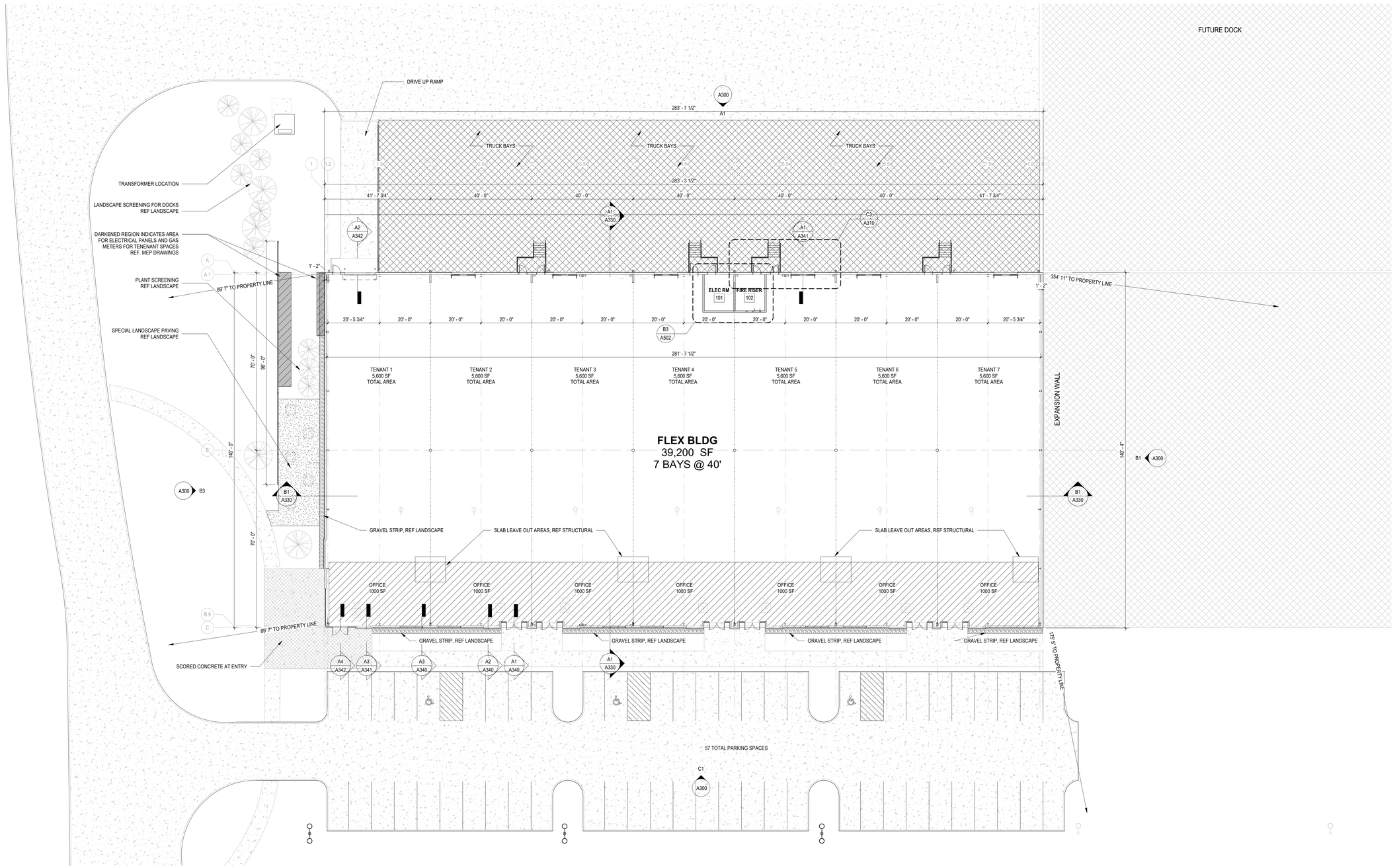
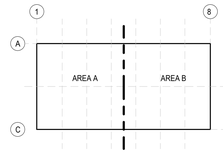


A1 OVERALL FLOOR PLAN

A1 / A100 — 1/16" = 1'-0"



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CONSULTANT LOGO

SEALS

CU-ICAR

CU-ICAR FLEX LAB

GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

NOT FOR CONSTRUCTION

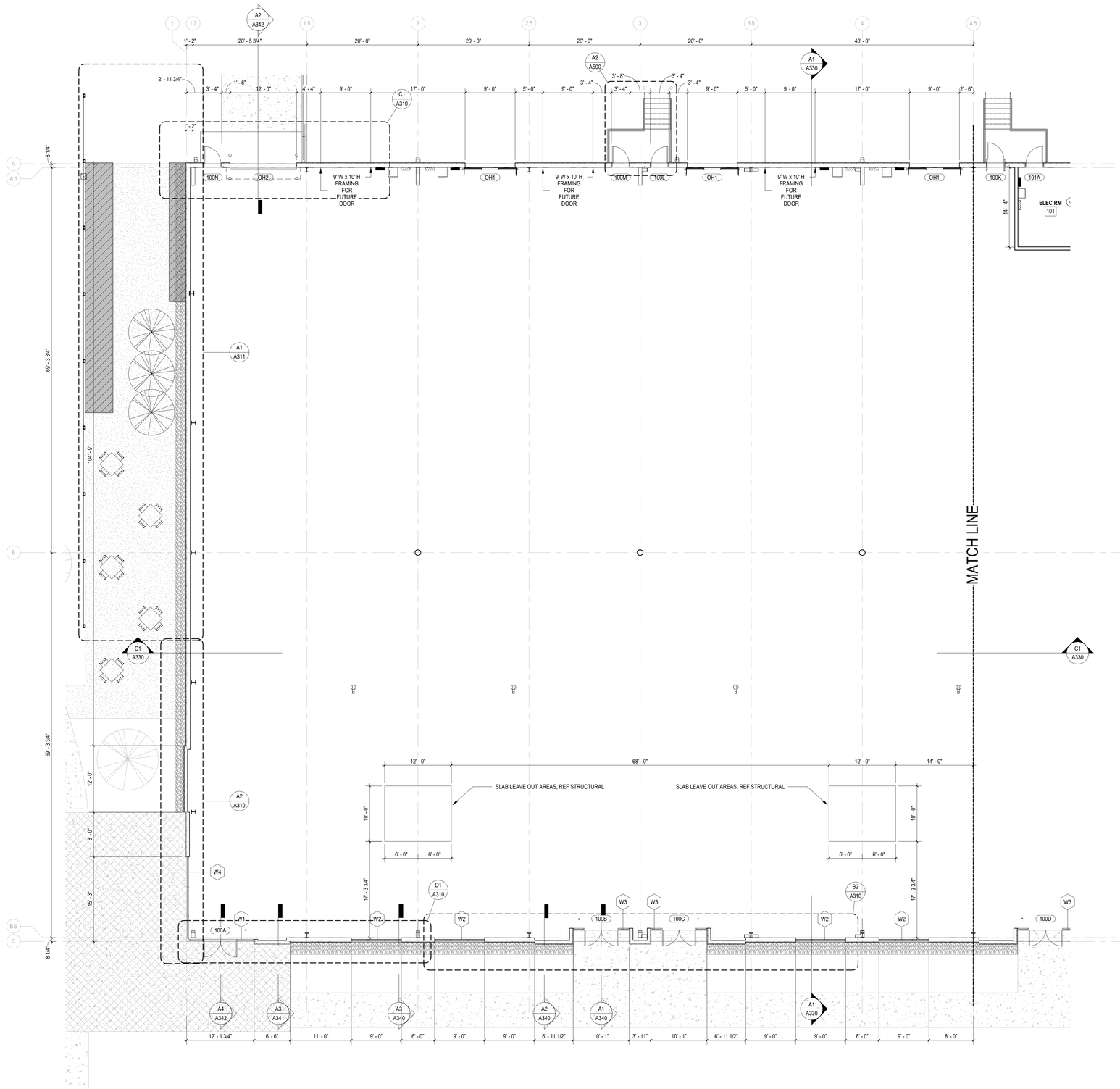
PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: JPW

SHEET TITLE:

OVERALL FLOOR PLAN

SHEET NO. A100

PROJ. NO. 019640.00



FLOOR PLAN AREA A

A1 / A101 — 1/8" = 1'-0"

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03 00 00 - CONCRETE

03 30 00 — ***CAST IN PLACE CONCRETE***: 6" SLAB ON GRADE ON 4" ABC STONE BASE MATERIAL, REF STRUCTURAL FOR REINFORCING AND CONTROL JOINTS

05 00 00 - METALS

05 21 19 — ***OPEN WEB STEEL JOIST FRAMING***: REF STRUCTURAL
05 31 23 — ***STEEL ROOF DECKING***: SHOP PRIMED WHITE MECHANICALLY FASTENED WITH WHITE FASTENERS, SEE STRUCTURAL
05 40 00 — ***COLD-FORMED METAL FRAMING***
05 51 00 — ***METAL STAIRS:*** HOT DIPPED GALVANIZED
05 51 33 — ***METAL LADDERS:*** ROOF ACCESS LADDER ATTACHED TO HSS COLUMNS
05 52 00 — ***PIPE AND TUBE RAILINGS:*** 1 1/2" DIA. HOT DIPPED GALVANIZED PAINTED WITH EXTERIOR ENAMEL
05 58 23.01 — ***FORMED METAL GUARDS***: Z GUARDS AT DOCK DOORS
05 58 23.02 — ***FORMED METAL GUARDS***: DOWNSPOUT GUARDS
05 58 23.03 — ***METAL BOLLARDS***: 6" STEEL BOLLARD, PAINTED

06 00 00 - WOODS, PLASTICS, COMPOSITES

06 10 00 — ***ROUGH CARPENTRY***
06 16 53 — ***MOISTURE-RESISTANT SHEATHING BOARD:*** 1/2" EXTERIOR FIBERGLASS REINFORCED GYPSUM BOARD SHEATHING

07 00 00 - THERMAL AND MOISTURE PROTECTION

07 26 16 — ***BELOW GRADE VAPOR RETARDER***: 10 MIL VAPOR BARRIER AT ALL SOG AREAS
07 27 26 — ***FLUID-APPLIED MEMBRANE AIR BARRIER***
07 41 13.19 — ***INSULATED METAL WALL PANELS:*** 3" INSULATED METAL PANEL, BASIS OF DESIGN CF ARCHITECTURAL VERTICAL (METL SPAN)
07 41 13.19 — ***INSULATED METAL WALL PANELS:*** 3" INSULATED METAL PANEL, BASIS OF DESIGN CF ARCHITECTURAL HORIZONTAL (METL SPAN)
07 42 13 — ***PANELS:*** UNITIZED INSULATED TRANSLUCENT PANEL SYSTEM, BASIS OF DESIGN, KS UNIQUAD SYSTEM
07 54 23 — ***THERMOPLASTIC-POLYOLEFIN ROOFING***: 45 MIL WITH 2 LAYERS OF 1.75" POLYISOCYANURATE INSULATION (R-20) COMPLYING WITH UL 1256 (SIMILAR TO JOHNS MANVILLE ENRGY 3) ATTACHED WITH WHITE SREWS
07 71 00 — ***ROOF SPECIALTIES***: ROOF HATCH
07 71 13 — ***MANUFACTURED COPINGS:*** PREFINISHED METAL COPING, NON-METALLIC KYNAR 500 COLORS, COLOR BY ARCHITECT
07 71 23 — ***MANUFACTURERED GUTTER AND DOWNSPOUTS:*** PREFINISHED METAL, COLOR BY ARCHITECT

08 00 00 - OPENINGS

08 11 13 — ***HOLLOW METAL DOORS AND FRAMES***
08 36 13 — ***SECTIONAL DOORS:*** 24 GAUGE PANELS WITH WHITE FACTORY APPLIED FINISH, VISION LITE ON LATCH SIDE, POLYSTYRENE INSULATION (R-7.45), STEEL BACK COVERS, 2" ANGLE MOUNT TRACK AND HARDWARE, PERIMETER WEATHERSTRIPPING, FULL VERTICAL LIFT TRACK, AND MANUAL PUSH UP/PULL DOWN OPERAITON,SEE SCHEDULE FOR TYPE
08 43 13 — ***ALUMINUM-FRAMED STOREFRONT***: TUBELITE OR EQUAL 2"X 4-1/2" CLEAR ANODIZED THERMAL BREAK STOREFRONT SYSTEM
08 80 00 — ***GLAZING:*** 1" SOLARGRAY SOLARBAN 60; SEE WINDOW SCHEDULE FOR TYPE
08 91 00 — ***LOUVERS***

09 00 00 - FINISHES

09 21 16 — ***GYPSUM BOARD ASSEMBLIES***
09 22 16 — ***NON-STRUCTURAL METAL FRAMING***
09 91 23 — ***INTERIOR PAINT:*** COLOR BY ARCHITECT

10 00 00 - SPECIALTIES

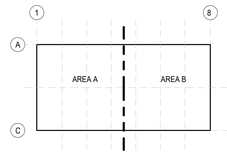
10 73 16.13 — ***METAL CANOPIES:*** BASIS OF DESIGN: CUSTOM
10 73 16.14 — ***METAL CANOPIES:*** BASIS OF DESIGN: MAPES CANTILEVER SUPERLUMIDECK FLAT SOFFIT

11 00 00 - EQUIPMENT

11 13 13 — ***LOADING DOCK BUMPERS:*** AT EACH DOCK DOOR
11 13 19.13 — ***LOADING DOCK LEVELERS:*** BASIS OF DESIGN KELLY 45,000 LBS, MECHANICAL

26 00 00 - ELECTRICAL

26 51 19 — ***LED INTERIOR LIGHTING:*** HIGH BAY LED LIGHTS
26 56 19.01 — ***LED EXTERIOR LIGHTING:*** WP1, WALL PACK LIGHTING, REF ELECTRICAL
26 56 19.02 — ***LED EXTERIOR LIGHTING:*** FL1, FLOOD LIGHT AT DOCKS, REF ELECTRICAL
26 56 19.03 — ***LED EXTERIOR LIGHTING:*** STRIP LIGHT, BASIS OF DESIGN: MNSL LED STRIPLIGHT, REF ELECTRICAL



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SEALS

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CU-ICAR FLEX LAB

GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

NOT FOR CONSTRUCTION

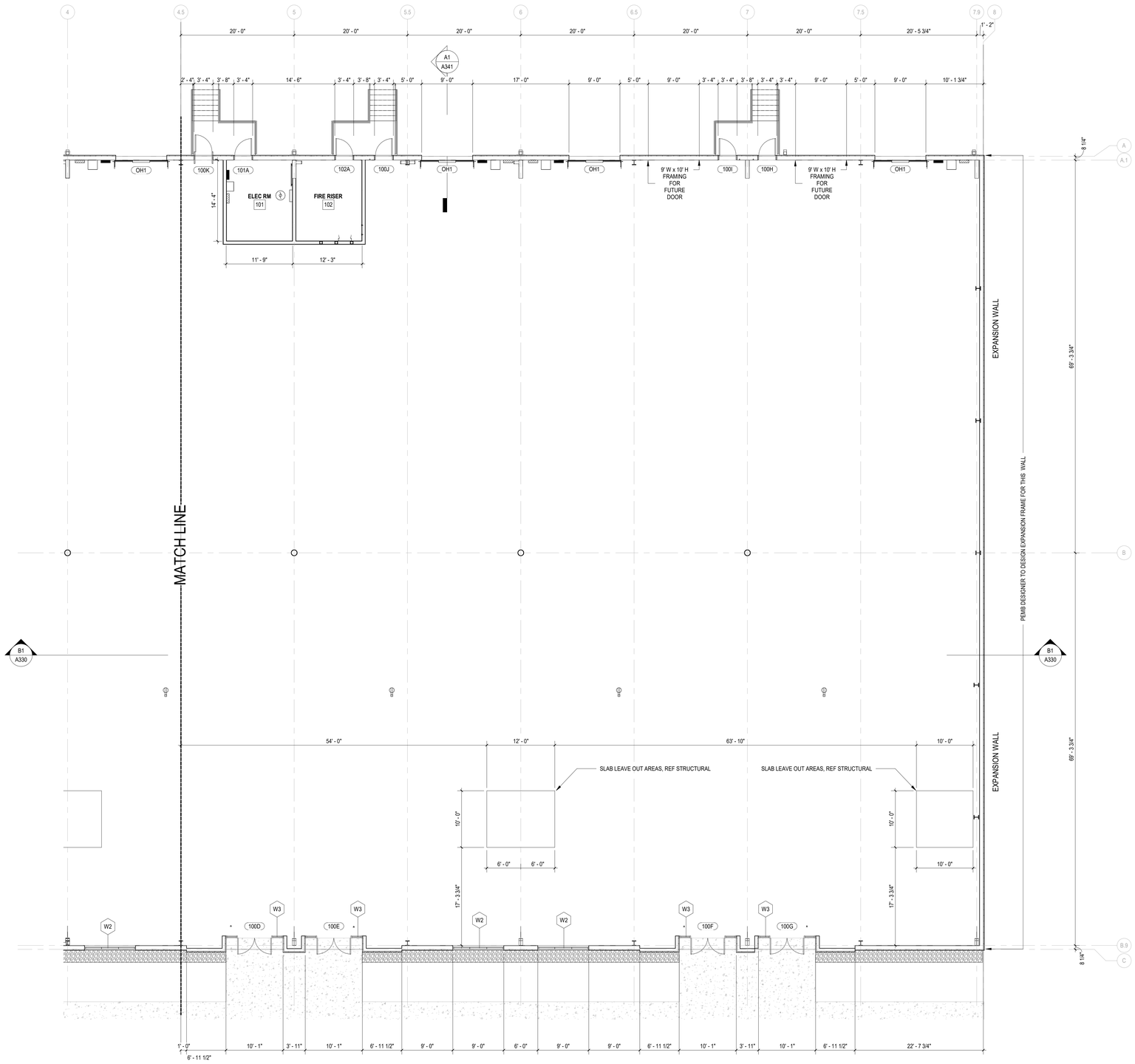
PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:

FLOORPLAN - AREA A

SHEET NO. A101

PROJ. NO. 019640.00



FLOOR PLAN AREA B

A1 / A102 — 1/8" = 1'-0"

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03 00 00 - CONCRETE

03 30 00 — ***CAST IN PLACE CONCRETE***: 6" SLAB ON GRADE ON 4" ABC STONE BASE MATERIAL, REF STRUCTURAL FOR REINFORCING AND CONTROL JOINTS

05 00 00 - METALS

05 21 19 — ***OPEN WEB STEEL JOIST FRAMING***: REF STRUCTURAL
05 31 23 — ***STEEL ROOF DECKING***: SHOP PRIMED WHITE MECHANICALLY FASTENED WITH WHITE FASTENERS, SEE STRUCTURAL
05 40 00 — ***COLD-FORMED METAL FRAMING***
05 51 00 — ***METAL STAIRS:*** HOT DIPPED GALVANIZED
05 51 33 — ***METAL LADDERS:*** ROOF ACCESS LADDER ATTACHED TO HSS COLUMNS
05 52 00 — ***PIPE AND TUBE RAILINGS:*** 1 1/2" DIA. HOT DIPPED GALVANIZED PAINTED WITH EXTERIOR ENAMEL
05 58 23.01 — ***FORMED METAL GUARDS***: 2 GUARDS AT DOCK DOORS
05 58 23.02 — ***FORMED METAL GUARDS***: DOWNSPOUT GUARDS
05 58 23.03 — ***METAL BOLLARDS***: 6" STEEL BOLLARD, PAINTED

06 00 00 - WOODS, PLASTICS, COMPOSITES

06 10 00 — ***ROUGH CARPENTRY***
06 16 53 — ***MOISTURE-RESISTANT SHEATHING BOARD:*** 1/2" EXTERIOR FIBERGLASS REINFORCED GYPSUM BOARD SHEATHING

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07 41 13.19 — ***INSULATED METAL WALL PANELS:*** 3" INSULATED METAL PANEL, BASIS OF DESIGN CF ARCHITECTURAL HORIZONTAL (METL SPAN)
07 42 13 — ***PANELS:*** UNTIZED INSULATED TRANSLUCENT PANEL SYSTEM, BASIS OF DESIGN, KS UNIQUAD SYSTEM
07 54 23 — ***THERMOPLASTIC-POLYOLEFIN ROOFING***: 45 MIL WITH 2 LAYERS OF 1.75" POLYISOCYANURATE INSULATION (R-20) COMPLYING WITH UL 1256 (SIMILAR TO JOHNS MANVILLE ENRGY 3) ATTACHED WITH WHITE SREWS
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07 71 23 — ***MANUFACTURERED GUTTER AND DOWNSPOUTS:*** PREFINISHED METAL, COLOR BY ARCHITECT

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08 80 00 — ***GLAZING:*** 1" SOLARGRAY SOLARBAN 60; SEE WINDOW SCHEDULE FOR TYPE
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09 00 00 - FINISHES

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11 13 19.13 — ***LOADING DOCK LEVELERS:*** BASIS OF DESIGN KELLY 45,000 LBS, MECHANICAL

26 00 00 - ELECTRICAL

26 51 19 — ***LED INTERIOR LIGHTING:*** HIGH BAY LED LIGHTS
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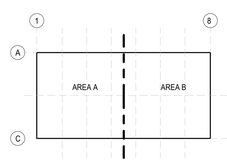

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SEALS

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GREENVILLE, SC

SHEET ISSUE:

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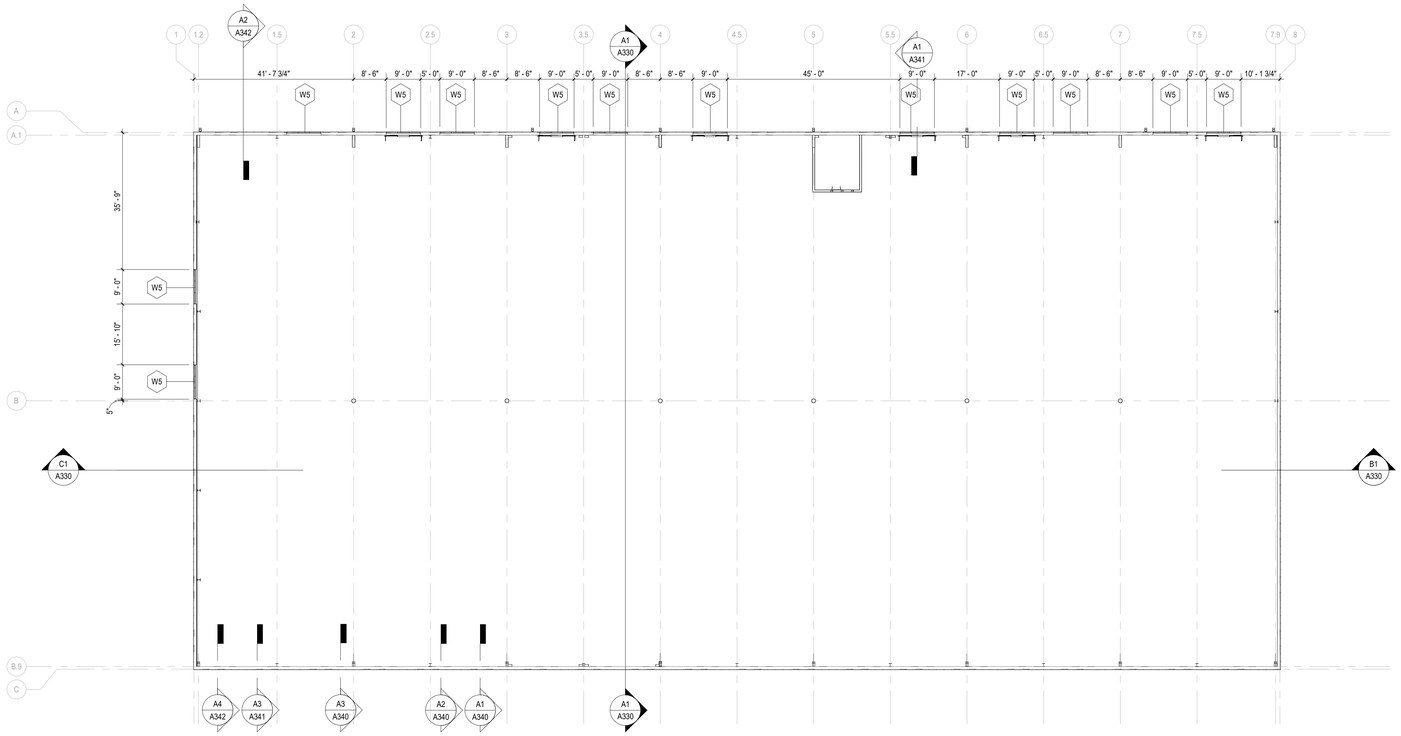
PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:

FLOORPLAN - AREA B

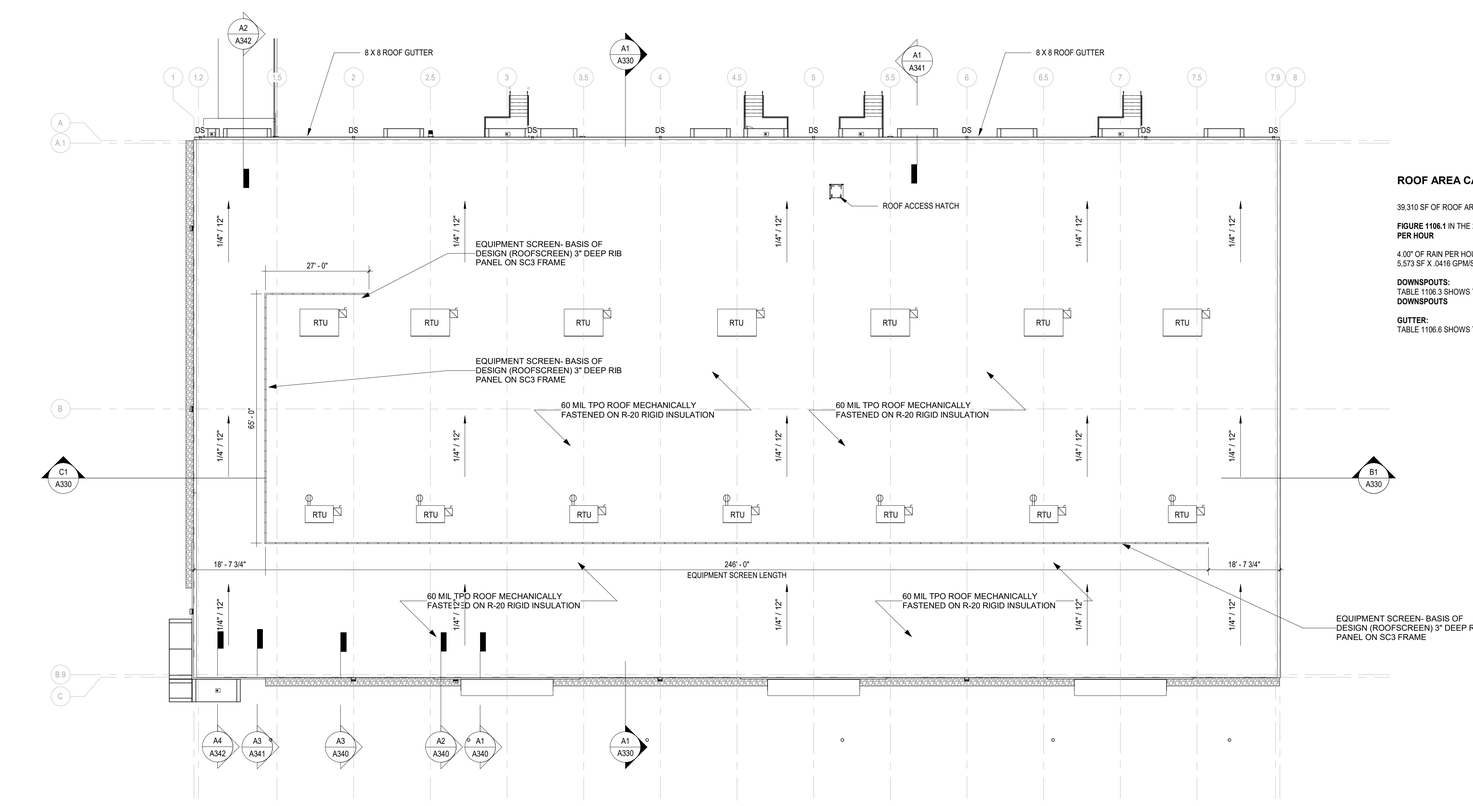
SHEET NO. A102

PROJ. NO. 019640.00



C1 A120 **CLERESTORY PLAN**

1/16" = 1'-0"



ROOF AREA CALCULATIONS

39,310 SF OF ROOF AREA DIVIDED BY 8 DOWNSPOUTS @ 40' O.C. = 4,914 SF PER D.S.

FIGURE 1106.1 IN THE 2018 SOUTH CAROLINA PLUMBING CODE SHOWS THIS AREA RECEIVES UP TO **4.00" OF RAIN PER HOUR**

4.00" OF RAIN PER HOUR = .0416 GALLONS PER MINUTE FOR EACH SF OF ROOF AREA
5,573 SF X .0416 GPM/SF = 232 GPM

DOWNSPOUTS:
TABLE 1106.3 SHOWS THAT A 4 1/2" X 4 1/2" DOWNSPOUT CAN ACCOMMODATE 360 GPM. **PROVIDE 8 - 6" X 6" DOWNSPOUTS**

GUTTER:
TABLE 1106.6 SHOWS THAT A 5" X 8" GUTTER CAN ACCOMMODATE 651 GPM. **PROVIDE A 8" X 8" GUTTER**

C1 A120 **ROOF PLAN**

1/16" = 1'-0"

03 00 00 - CONCRETE

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05 31 23 ***STEEL ROOF DECKING***: SHOP PRIMED WHITE MECHANICALLY FASTENED WITH WHITE FASTENERS, SEE STRUCTURAL
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08 80 00 ***GLAZING:*** 1" SOLARGRAY SOLARBAN 60; SEE WINDOW SCHEDULE FOR TYPE
08 91 00 ***LOUVERS***

09 00 00 - FINISHES

09 21 16 ***GYPSUM BOARD ASSEMBLIES***
09 22 16 ***NON-STRUCTURAL METAL FRAMING***
09 91 23 ***INTERIOR PAINT:*** COLOR BY ARCHITECT

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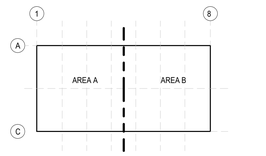
10 73 16.14 ***METAL CANOPIES:*** BASIS OF DESIGN: MAPES CANTILEVER SUPERLUMIDECK FLAT SOFFIT

11 00 00 - EQUIPMENT

11 13 13 ***LOADING DOCK BUMPERS:*** AT EACH DOCK DOOR
11 13 19.13 ***LOADING DOCK LEVELERS:*** BASIS OF DESIGN KELLY 45,000 LBS, MECHANICAL

26 00 00 - ELECTRICAL

26 51 19 ***LED INTERIOR LIGHTING:*** HIGH BAY LED LIGHTS
26 56 19.01 ***LED EXTERIOR LIGHTING:*** WP1, WALL PACK LIGHTING, REF ELECTRICAL
26 56 19.02 ***LED EXTERIOR LIGHTING:*** FL1, FLOOD LIGHT AT DOCKS, REF ELECTRICAL
26 56 19.03 ***LED EXTERIOR LIGHTING:*** STRIP LIGHT, BASIS OF DESIGN: MNSL LED STRIPLIGHT, REF ELECTRICAL



mcmillan pazdan smith ARCHITECTURE

CONSULTANT LOGO

SEALS

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GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

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PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:

CLERESTORY & ROOF PLAN

SHEET NO. A120

PROJ. NO. 019640.00

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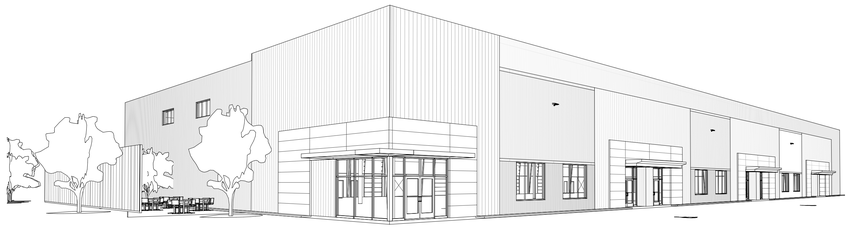
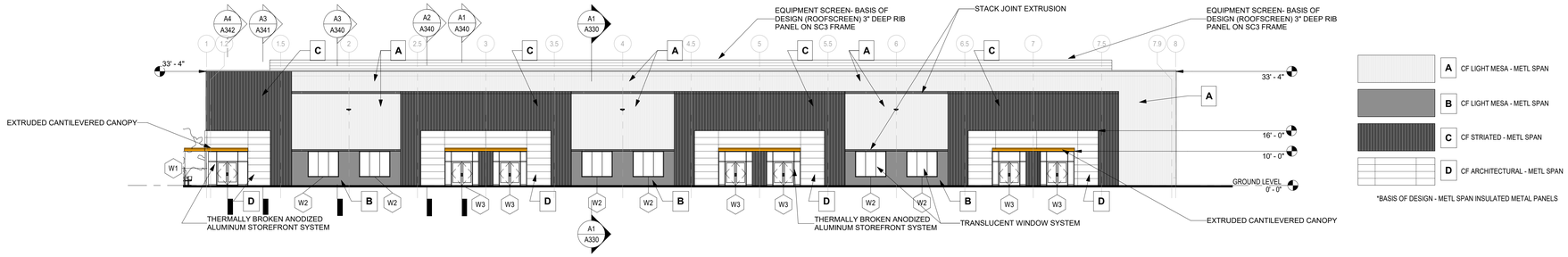
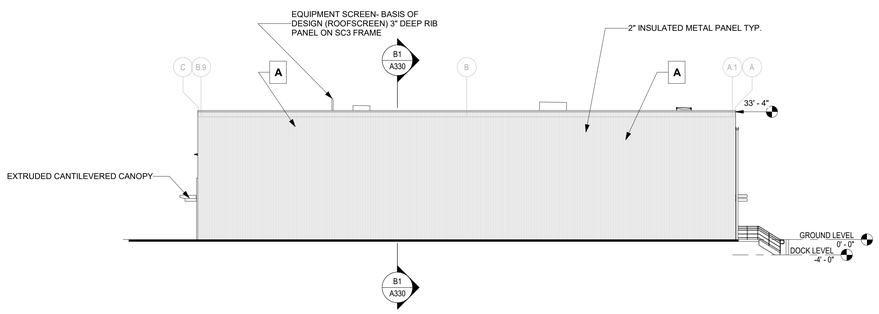
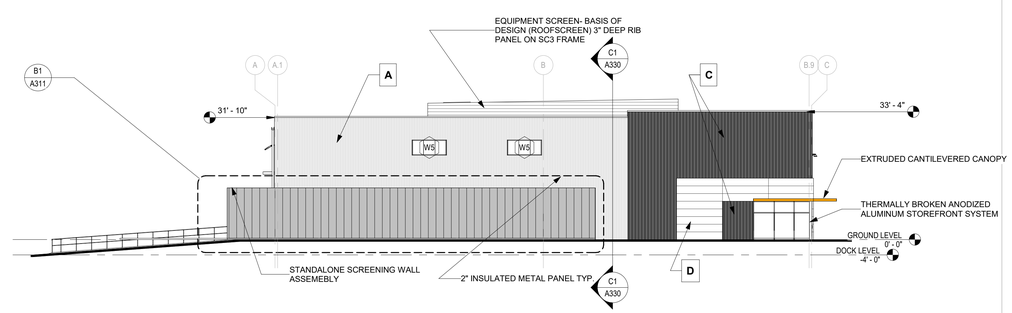




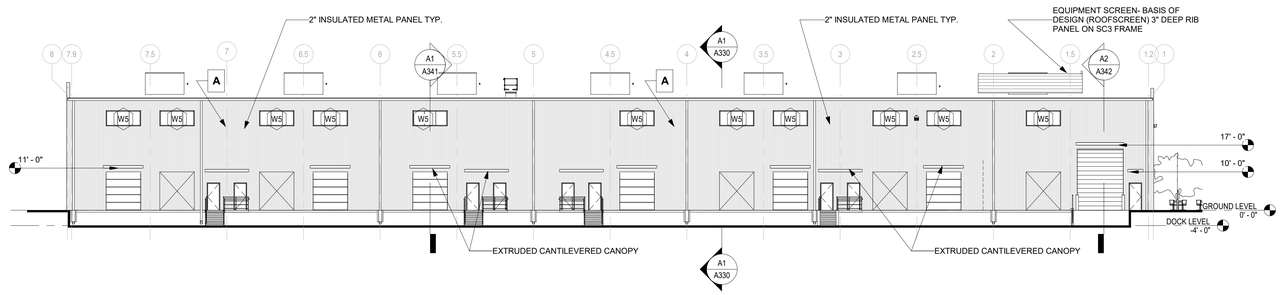
C1 A300 **EAST ELEVATION**
1/16" = 1'-0"



B1 A300 **NORTH ELEVATION**
1/16" = 1'-0"



B3 A300 **SOUTH ELEVATION**
1/16" = 1'-0"



A1 A300 **WEST ELEVATION**
1/16" = 1'-0"

03 00 00 - CONCRETE

03 30 00 ***CAST IN PLACE CONCRETE:*** 6" SLAB ON GRADE ON 4" ABC STONE BASE MATERIAL, REF STRUCTURAL FOR REINFORCING AND CONTROL JOINTS

05 00 00 - METALS

05 21 19 ***OPEN WEB STEEL JOIST FRAMING:*** REF STRUCTURAL
05 31 23 ***STEEL ROOF DECKING:*** SHOP PRIMED WHITE MECHANICALLY FASTENED WITH WHITE FASTENERS, SEE STRUCTURAL
05 40 00 ***COLD-FORMED METAL FRAMING***
05 51 00 ***METAL STAIRS:*** HOT DIPPED GALVANIZED
05 51 33 ***METAL LADDERS:*** ROOF ACCESS LADDER ATTACHED TO HSS COLUMNS
05 52 00 ***PIPE AND TUBE RAILINGS:*** 1 1/2" DIA. HOT DIPPED GALVANIZED PAINTED WITH EXTERIOR ENAMEL
05 58 23.01 ***FORMED METAL GUARDS:*** 2' GUARDS AT DOCK DOORS
05 58 23.02 ***FORMED METAL GUARDS:*** DOWNSPOUT GUARDS
05 58 23.03 ***METAL BOLLARDS:*** 6" STEEL BOLLARD, PAINTED

06 00 00 - WOODS, PLASTICS, COMPOSITES

06 10 00 ***ROUGH CARPENTRY***
06 16 53 ***MOISTURE-RESISTANT SHEATHING BOARD:*** 1/2" EXTERIOR FIBERGLASS REINFORCED GYPSUM BOARD SHEATHING

07 00 00 - THERMAL AND MOISTURE PROTECTION

07 26 16 ***BELOW GRADE VAPOR RETARDER:*** 10 MIL VAPOR BARRIER AT ALL SOG AREAS
07 27 26 ***FLUID-APPLIED MEMBRANE AIR BARRIER***
07 41 13.19 ***INSULATED METAL WALL PANELS:*** 3" INSULATED METAL PANEL, BASIS OF DESIGN CF ARCHITECTURAL VERTICAL (METL SPAN)
07 41 13.19 ***INSULATED METAL WALL PANELS:*** 3" INSULATED METAL PANEL, BASIS OF DESIGN CF ARCHITECTURAL HORIZONTAL (METL SPAN)
07 42 13 ***PANELS:*** UNITIZED INSULATED TRANSLUCENT PANEL SYSTEM, BASIS OF DESIGN, KS UNIQUAD SYSTEM
07 54 23 ***THERMOPLASTIC-POLYOLEFIN ROOFING:*** 45 MIL WITH 2 LAYERS OF 1.75" POLYISOCYANURATE INSULATION (R-20) COMPLYING WITH UL 1256 (SIMILAR TO JOHNS MANVILLE ENRGY 3) ATTACHED WITH WHITE SREWS
07 71 00 ***ROOF SPECIALTIES***: ROOF HATCH
07 71 13 ***MANUFACTURED COPINGS:*** PREFINISHED METAL COPING, NON-METALLIC KYNAR 500 COLORS, COLOR BY ARCHITECT
07 71 23 ***MANUFACTURERED GUTTER AND DOWNSPOUTS:*** PREFINISHED METAL, COLOR BY ARCHITECT

08 00 00 - OPENINGS

08 11 13 ***HOLLOW METAL DOORS AND FRAMES***
08 36 13 ***SECTIONAL DOORS:*** 24 GAUGE PANELS WITH WHITE FACTORY APPLIED FINISH, VISION LITE ON LATCH SIDE, POLYSTYRENE INSULATION (R-7.45), STEEL BACK COVERS, 2" ANGLE MOUNT TRACK AND HARDWARE, PERIMETER WEATHERSTRIPPING, FULL VERTICAL LIFT TRACK, AND MANUAL PUSH UP/PULL DOWN OPERAITON,SEE SCHEDULE FOR TYPE
08 43 13 ***ALUMINUM-FRAMED STOREFRONT***: TUBELITE OR EQUAL 2"X 4-1/2" CLEAR ANODIZED THERMAL BREAK STOREFRONT SYSTEM
08 80 00 ***GLAZING:*** 1" SOLARGRAY SOLARBAN 60; SEE WINDOW SCHEDULE FOR TYPE
08 91 00 ***LOUVERS***

09 00 00 - FINISHES

09 21 16 ***GYPSUM BOARD ASSEMBLIES***
09 22 16 ***NON-STRUCTURAL METAL FRAMING***
09 91 23 ***INTERIOR PAINT:*** COLOR BY ARCHITECT

10 00 00 - SPECIALTIES

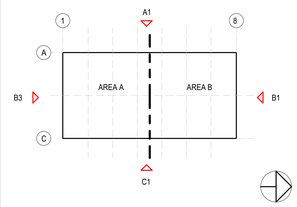
10 73 16.13 ***METAL CANOPIES:*** BASIS OF DESIGN: CUSTOM
10 73 16.14 ***METAL CANOPIES:*** BASIS OF DESIGN: MAPES CANTILEVER SUPERLUMIDECK FLAT SOFFIT

11 00 00 - EQUIPMENT

11 13 13 ***LOADING DOCK BUMPERS:*** AT EACH DOCK DOOR
11 13 19.13 ***LOADING DOCK LEVELERS:*** BASIS OF DESIGN KELLY 45,000 LBS, MECHANICAL

26 00 00 - ELECTRICAL

26 51 19 ***LED INTERIOR LIGHTING:*** HIGH BAY LED LIGHTS
26 56 19.01 ***LED EXTERIOR LIGHTING:*** WP1, WALL PACK LIGHTING, REF ELECTRICAL
26 56 19.02 ***LED EXTERIOR LIGHTING:*** FL1, FLOOD LIGHT AT DOCKS, REF ELECTRICAL
26 56 19.03 ***LED EXTERIOR LIGHTING:*** STRIP LIGHT, BASIS OF DESIGN: MNSL LED STRIPLIGHT, REF ELECTRICAL



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CONSULTANT LOGO

SEALS

CU-ICAR

CU-ICAR FLEX LAB

GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

NOT FOR CONSTRUCTION

PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:

OVERALL BUILDING ELEVATIONS

SHEET NO. A300

PROJ. NO. 019640.00

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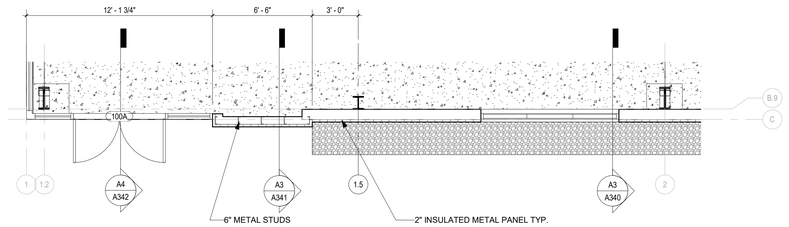
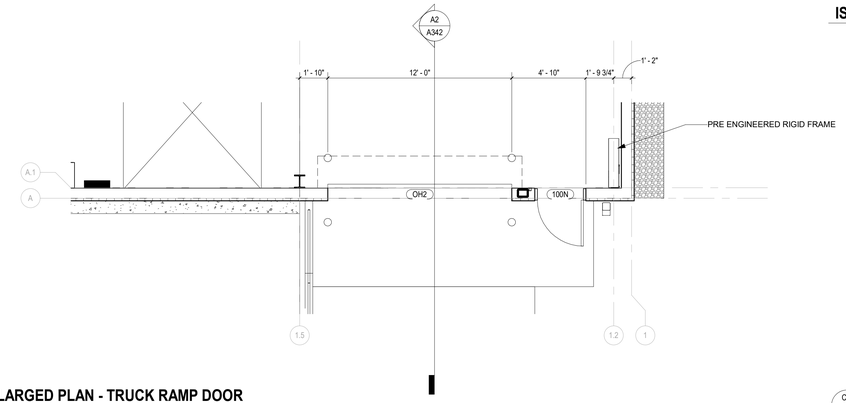


D1 A310 **ENLARGED PLAN - CORNER ENTRY A**

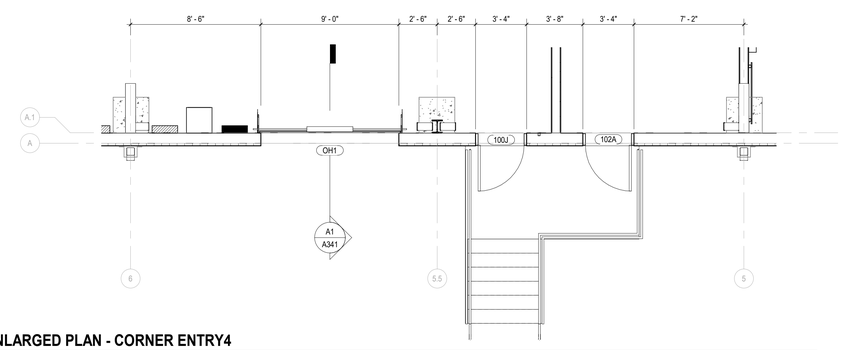
1/4" = 1'-0"

ISOMETRIC_ CORNER



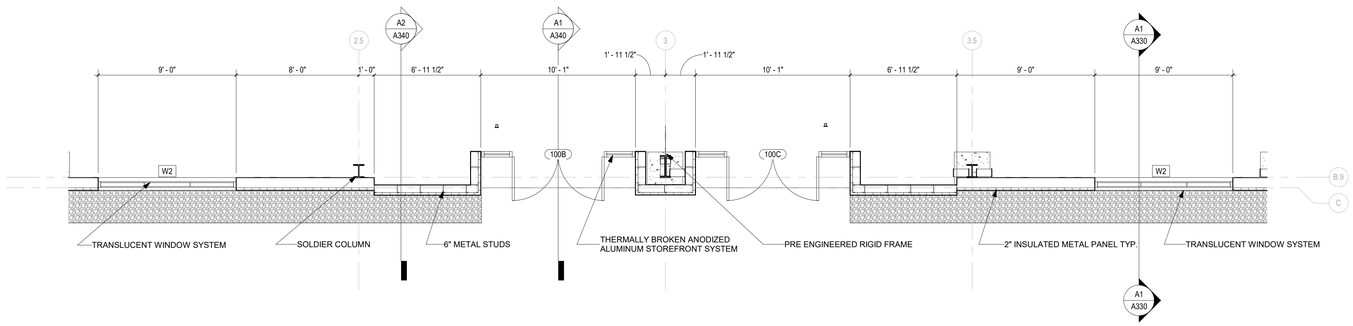
C1 A310 **ENLARGED PLAN - TRUCK RAMP DOOR**

1/4" = 1'-0"



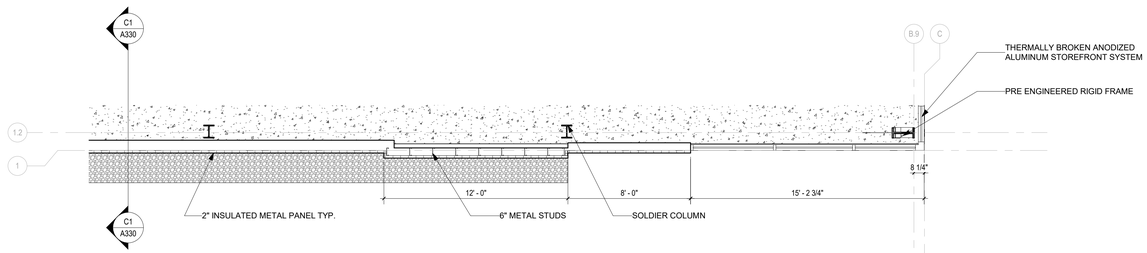
C3 A310 **ENLARGED PLAN - CORNER ENTRY4**

1/4" = 1'-0"



B2 A310 **ENLARGED PLAN - AT RECESSED ENTRY**

1/4" = 1'-0"



A2 A310 **ENLARGED PLAN - CORNER ENTRY B**

1/4" = 1'-0"

03 00 00 - CONCRETE

03 30 00	***CAST IN PLACE CONCRETE:*** 6" SLAB ON GRADE ON 4" ABC STONE BASE MATERIAL, REF STRUCTURAL FOR REINFORCING AND CONTROL JOINTS

05 00 00 - METALS

05 21 19	***OPEN WEB STEEL JOIST FRAMING:*** REF STRUCTURAL
05 31 23	***STEEL ROOF DECKING:*** SHOP PRIMED WHITE MECHANICALLY FASTENED WITH WHITE FASTENERS, SEE STRUCTURAL
05 40 00	***COLD-FORMED METAL FRAMING***
05 51 00	***METAL STAIRS:*** HOT DIPPED GALVANIZED
05 51 33	***METAL LADDERS:*** ROOF ACCESS LADDER ATTACHED TO HSS COLUMNS
05 52 00	***PIPE AND TUBE RAILINGS:*** 1 1/2" DIA, HOT DIPPED GALVANIZED PAINTED WITH EXTERIOR ENAMEL
05 58 23.01	***FORMED METAL GUARDS:*** 2 GUARDS AT DOCK DOORS
05 58 23.02	***FORMED METAL GUARDS:*** DOWNSPOUT GUARDS
05 58 23.03	***METAL BOLLARDS:*** 6" STEEL BOLLARD, PAINTED

06 00 00 - WOODS, PLASTICS, COMPOSITES

06 10 00	***ROUGH CARPENTRY***
06 16 53	***MOISTURE-RESISTANT SHEATHING BOARD:*** 1/2" EXTERIOR FIBERGLASS REINFORCED GYPSUM BOARD SHEATHING

07 00 00 - THERMAL AND MOISTURE PROTECTION

07 26 16	***BELOW GRADE VAPOR RETARDER:*** 10 MIL VAPOR BARRIER AT ALL SOG AREAS
07 27 26	***FLUID-APPLIED MEMBRANE AIR BARRIER***
07 41 13.19	***INSULATED METAL WALL PANELS:*** 3" INSULATED METAL PANEL, BASIS OF DESIGN CF ARCHITECTURAL VERTICAL (METL SPAN)
07 41 13.19	***INSULATED METAL WALL PANELS:*** 3" INSULATED METAL PANEL, BASIS OF DESIGN CF ARCHITECTURAL HORIZONTAL (METL SPAN)
07 42 13	***PANELS:*** UNITIZED INSULATED TRANSLUCENT PANEL SYSTEM, BASIS OF DESIGN, KS UNIQUAD SYSTEM
07 54 23	***THERMOPLASTIC-POLYOLEFIN ROOFING:*** 45 MIL WITH 2 LAYERS OF 1.75" POLYISOCYANURATE INSULATION (R-20) COMPLYING WITH UL 1256 (SIMILAR TO JOHNS MANVILLE ENRGY 3) ATTACHED WITH WHITE SREWS
07 71 00	***ROOF SPECIALTIES:*** ROOF HATCH
07 71 13	***MANUFACTURED COPINGS:*** PREFINISHED METAL COPING, NON-METALLIC KYNAR 500 COLORS, COLOR BY ARCHITECT
07 71 23	***MANUFACTURERED GUTTER AND DOWNSPOUTS:*** PREFINISHED METAL, COLOR BY ARCHITECT

08 00 00 - OPENINGS

08 11 13	***HOLLOW METAL DOORS AND FRAMES***
08 36 13	***SECTIONAL DOORS:*** 24 GAUGE PANELS WITH WHITE FACTORY APPLIED FINISH, VISION LITE ON LATCH SIDE, POLYSTYRENE INSULATION (R-7.45), STEEL BACK COVERS, 2" ANGLE MOUNT TRACK AND HARDWARE, PERIMETER WEATHERSTRIPPING, FULL VERTICAL LIFT TRACK, AND MANUAL PUSH UP/PULL DOWN OPERAITON,SEE SCHEDULE FOR TYPE
08 43 13	***ALUMINUM-FRAMED STOREFRONT:*** TUBELITE OR EQUAL 2"X 4-1/2" CLEAR ANODIZED THERMAL BREAK STOREFRONT SYSTEM
08 80 00	***GLAZING:*** 1" SOLARGRAY SOLARBAN 60; SEE WINDOW SCHEDULE FOR TYPE
08 91 00	***LOUVERS***

09 00 00 - FINISHES

09 21 16	***GYPSUM BOARD ASSEMBLIES***
09 22 16	***NON-STRUCTURAL METAL FRAMING***
09 91 23	***INTERIOR PAINT:*** COLOR BY ARCHITECT

10 00 00 - SPECIALTIES

10 73 16.13	***METAL CANOPIES:*** BASIS OF DESIGN: CUSTOM
10 73 16.14	***METAL CANOPIES:*** BASIS OF DESIGN: MAPES CANTILEVER SUPERLUMIDECK FLAT SOFFIT

11 00 00 - EQUIPMENT

11 13 13	***LOADING DOCK BUMPERS:*** AT EACH DOCK DOOR
11 13 19.13	***LOADING DOCK LEVELERS:*** BASIS OF DESIGN KELLY 45,000 LBS, MECHANICAL

26 00 00 - ELECTRICAL

26 51 19	***LED INTERIOR LIGHTING:*** HIGH BAY LED LIGHTS
26 56 19.01	***LED EXTERIOR LIGHTING:*** WP1, WALL PACK LIGHTING, REF ELECTRICAL
26 56 19.02	***LED EXTERIOR LIGHTING:*** FL1, FLOOD LIGHT AT DOCKS, REF ELECTRICAL
26 56 19.03	***LED EXTERIOR LIGHTING:*** STRIP LIGHT, BASIS OF DESIGN: MNSL LED STRIPLIGHT, REF ELECTRICAL

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GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

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PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:

ENLARGED PLANS

SHEET NO. A310

PROJ. NO. 019640.00

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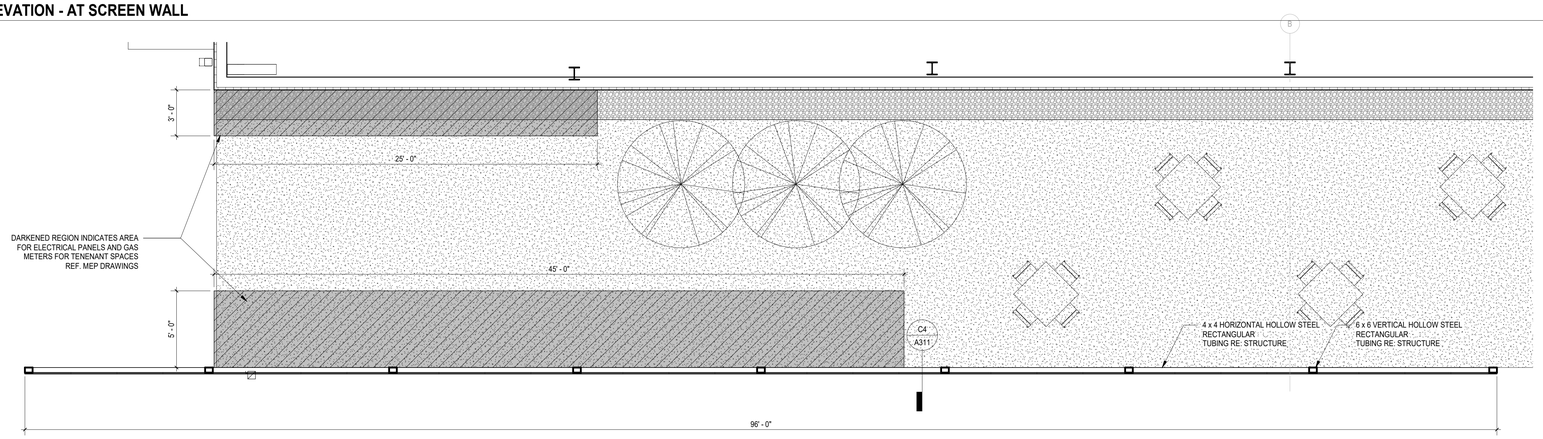
B1 / A311 **ENLARGED ELEVATION - AT SCREEN WALL**

1/4" = 1'-0"



A1 / A311 **ENLARGED PLAN - SCREEN WALL AND YARD**

1/4" = 1'-0"

C4 / A311 **SCREEN WALL SECTION**

1/2" = 1'-0"

03 00 00 - CONCRETE

03 30 00 ***CAST IN PLACE CONCRETE***: 6" SLAB ON GRADE ON 4" ABC STONE BASE MATERIAL, REF STRUCTURAL FOR REINFORCING AND CONTROL JOINTS

05 00 00 - METALS

05 21 19 ***OPEN WEB STEEL JOIST FRAMING***: REF STRUCTURAL
05 31 23 ***STEEL ROOF DECKING***: SHOP PRIMED WHITE MECHANICALLY FASTENED WITH WHITE FASTENERS, SEE STRUCTURAL
05 40 00 ***COLD-FORMED METAL FRAMING***
05 51 00 ***METAL STAIRS:*** HOT DIPPED GALVANIZED
05 51 33 ***METAL LADDERS:*** ROOF ACCESS LADDER ATTACHED TO HSS COLUMNS
05 52 00 ***PIPE AND TUBE RAILINGS:*** 1 1/2" DIA. HOT DIPPED GALVANIZED PAINTED WITH EXTERIOR ENAMEL
05 58 23.01 ***FORMED METAL GUARDS***: Z GUARDS AT DOCK DOORS
05 58 23.02 ***FORMED METAL GUARDS***: DOWNSPOUT GUARDS
05 58 23.03 ***METAL BOLLARDS***: 6" STEEL BOLLARD, PAINTED

06 00 00 - WOODS, PLASTICS, COMPOSITES

06 10 00 ***ROUGH CARPENTRY***
06 16 53 ***MOISTURE-RESISTANT SHEATHING BOARD:*** 1/2" EXTERIOR FIBERGLASS REINFORCED GYPSUM BOARD SHEATHING

07 00 00 - THERMAL AND MOISTURE PROTECTION

07 26 16 ***BELOW GRADE VAPOR RETARDER***: 10 MIL VAPOR BARRIER AT ALL SOG AREAS
07 27 26 ***FLUID-APPLIED MEMBRANE AIR BARRIER***
07 41 13.19 ***INSULATED METAL WALL PANELS:*** 3" INSULATED METAL PANEL, BASIS OF DESIGN CF ARCHITECTURAL VERTICAL (METL SPAN)
07 41 13.19 ***INSULATED METAL WALL PANELS:*** 3" INSULATED METAL PANEL, BASIS OF DESIGN CF ARCHITECTURAL HORIZONTAL (METL SPAN)
07 42 13 ***PANELS:*** UNITIZED INSULATED TRANSLUCENT PANEL SYSTEM, BASIS OF DESIGN, KS UNIQUAD SYSTEM
07 54 23 ***THERMOPLASTIC-POLYOLEFIN ROOFING***: 45 MIL WITH 2 LAYERS OF 1.75" POLYISOCYANURATE INSULATION (R-20) COMPLYING WITH UL 1256 (SIMILAR TO JOHNS MANVILLE ENRGY 3) ATTACHED WITH WHITE SREWS
07 71 00 ***ROOF SPECIALTIES***: ROOF HATCH
07 71 13 ***MANUFACTURED COPINGS:*** PREFINISHED METAL COPING, NON-METALLIC KYNAR 500 COLORS, COLOR BY ARCHITECT
07 71 23 ***MANUFACTURERED GUTTER AND DOWNSPOUTS:*** PREFINISHED METAL, COLOR BY ARCHITECT

08 00 00 - OPENINGS

08 11 13 ***HOLLOW METAL DOORS AND FRAMES***
08 36 13 ***SECTIONAL DOORS:*** 24 GAUGE PANELS WITH WHITE FACTORY APPLIED FINISH, VISION LITE ON LATCH SIDE, POLYSTYRENE INSULATION (R-7.45), STEEL BACK COVERS, 2" ANGLE MOUNT TRACK AND HARDWARE, PERIMETER WEATHERSTRIPPING, FULL VERTICAL LIFT TRACK, AND MANUAL PUSH UP/PULL DOWN OPERAITON,SEE SCHEDULE FOR TYPE
08 43 13 ***ALUMINUM-FRAMED STOREFRONT***: TUBELITE OR EQUAL 2"X 4-1/2" CLEAR ANODIZED THERMAL BREAK STOREFRONT SYSTEM
08 80 00 ***GLAZING:*** 1" SOLARGRAY SOLARBAN 60; SEE WINDOW SCHEDULE FOR TYPE
08 91 00 ***LOUVERS***

09 00 00 - FINISHES

09 21 16 ***GYPSUM BOARD ASSEMBLIES***
09 22 16 ***NON-STRUCTURAL METAL FRAMING***
09 91 23 ***INTERIOR PAINT:*** COLOR BY ARCHITECT

10 00 00 - SPECIALTIES

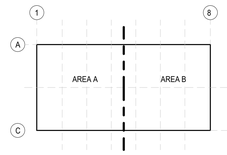
10 73 16.13 ***METAL CANOPIES:*** BASIS OF DESIGN: CUSTOM
10 73 16.14 ***METAL CANOPIES:*** BASIS OF DESIGN: MAPES CANTILEVER SUPERLUMIDECK FLAT SOFFIT

11 00 00 - EQUIPMENT

11 13 13 ***LOADING DOCK BUMPERS:*** AT EACH DOCK DOOR
11 13 19.13 ***LOADING DOCK LEVELERS:*** BASIS OF DESIGN KELLY 45,000 LBS, MECHANICAL

26 00 00 - ELECTRICAL

26 51 19 ***LED INTERIOR LIGHTING:*** HIGH BAY LED LIGHTS
26 56 19.01 ***LED EXTERIOR LIGHTING:*** WP1, WALL PACK LIGHTING, REF ELECTRICAL
26 56 19.02 ***LED EXTERIOR LIGHTING:*** FL1, FLOOD LIGHT AT DOCKS, REF ELECTRICAL
26 56 19.03 ***LED EXTERIOR LIGHTING:*** STRIP LIGHT, BASIS OF DESIGN: MNSL LED STRIPLIGHT, REF ELECTRICAL



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SEALS

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GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

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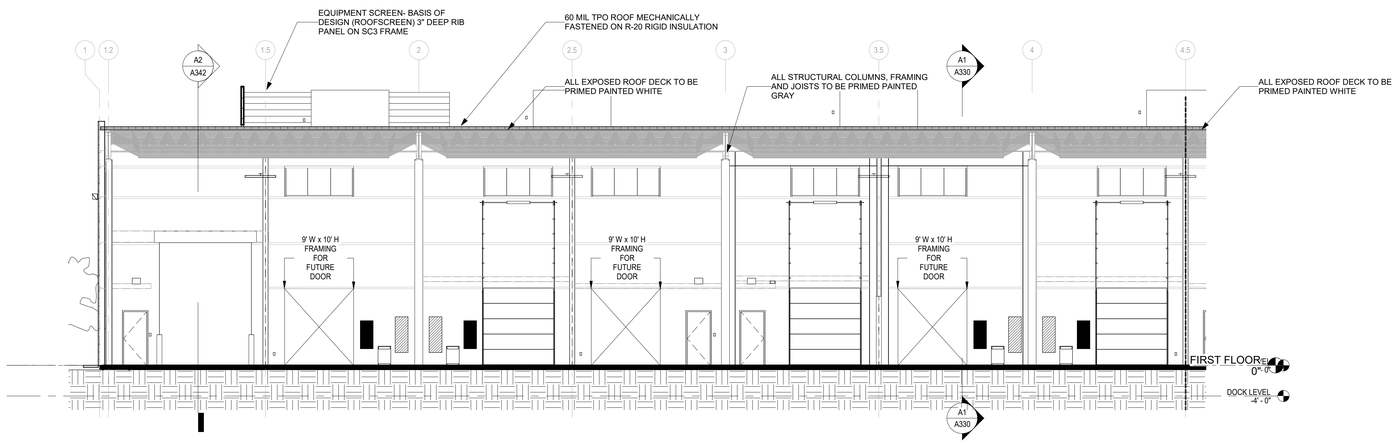
PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:

ENLARGED ELEVATIONS

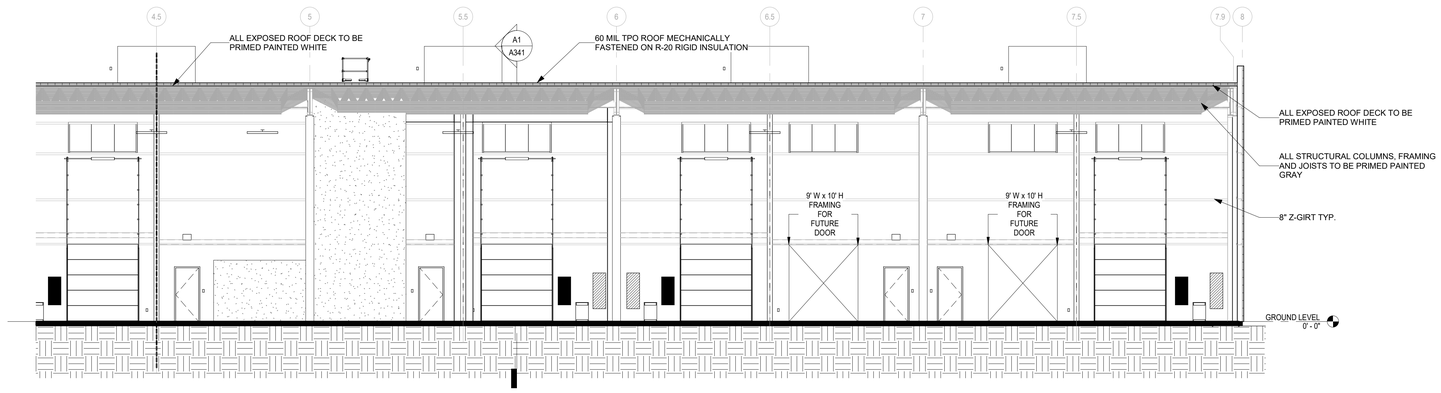
SHEET NO. A311

PROJ. NO. 019640.00



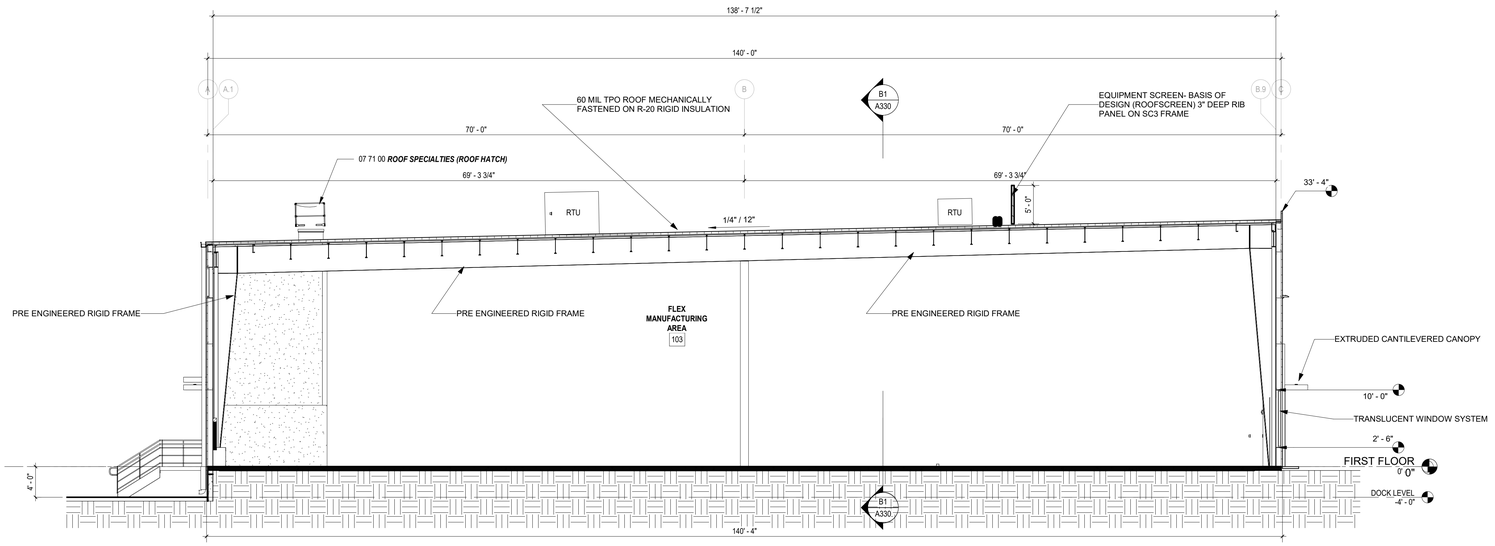
C1 A330 **BLDG SECTION LOOKING WEST - AREA A**

1/8" = 1'-0"



B1 A330 **BLDG SECTION LOOKING WEST - AREA B**

1/8" = 1'-0"



A1 A330 **BLDG SECTION LOOKING NORTH**

1/8" = 1'-0"

03 00 00 - CONCRETE

03 30 00 ***CAST IN PLACE CONCRETE***: 6" SLAB ON GRADE ON 4" ABC STONE BASE MATERIAL, REF STRUCTURAL FOR REINFORCING AND CONTROL JOINTS

05 00 00 - METALS

05 21 19 ***OPEN WEB STEEL JOIST FRAMING***: REF STRUCTURAL
05 31 23 ***STEEL ROOF DECKING***: SHOP PRIMED WHITE MECHANICALLY FASTENED WITH WHITE FASTENERS, SEE STRUCTURAL
05 40 00 ***COLD-FORMED METAL FRAMING***
05 51 00 ***METAL STAIRS:*** HOT DIPPED GALVANIZED
05 51 33 ***METAL LADDERS:*** ROOF ACCESS LADDER ATTACHED TO HSS COLUMNS
05 52 00 ***PIPE AND TUBE RAILINGS:*** 1 1/2" DIA. HOT DIPPED GALVANIZED PAINTED WITH EXTERIOR ENAMEL
05 58 23.01 ***FORMED METAL GUARDS***: Z GUARDS AT DOCK DOORS
05 58 23.02 ***FORMED METAL GUARDS***: DOWNSPOUT GUARDS
05 58 23.03 ***METAL BOLLARDS***: 6" STEEL BOLLARD, PAINTED

06 00 00 - WOODS, PLASTICS, COMPOSITES

06 10 00 ***ROUGH CARPENTRY***
06 16 53 ***MOISTURE-RESISTANT SHEATHING BOARD:*** 1/2" EXTERIOR FIBERGLASS REINFORCED GYPSUM BOARD SHEATHING

07 00 00 - THERMAL AND MOISTURE PROTECTION

07 26 16 ***BELOW GRADE VAPOR RETARDER***: 10 MIL VAPOR BARRIER AT ALL SOG AREAS
07 27 26 ***FLUID-APPLIED MEMBRANE AIR BARRIER***
07 41 13.19 ***INSULATED METAL WALL PANELS:*** 3" INSULATED METAL PANEL BASIS OF DESIGN CF ARCHITECTURAL VERTICAL (METL SPAN)
07 41 13.19 ***INSULATED METAL WALL PANELS:*** 3" INSULATED METAL PANEL BASIS OF DESIGN CF ARCHITECTURAL HORIZONTAL (METL SPAN)
07 42 13 ***PANELS:*** UNITIZED INSULATED TRANSLUCENT PANEL SYSTEM, BASIS OF DESIGN, KS UNIQUAD SYSTEM
07 54 23 ***THERMOPLASTIC-POLYOLEFIN ROOFING***: 45 MIL WITH 2 LAYERS OF 1.75" POLYISOCYANURATE INSULATION (R-20) COMPLYING WITH UL 1256 (SIMILAR TO JOHNS MANVILLE ENRGY 3) ATTACHED WITH WHITE SREWS
07 71 00 ***ROOF SPECIALTIES***: ROOF HATCH
07 71 13 ***MANUFACTURED COPINGS:*** PREFINISHED METAL COPING, NON-METALLIC KYNAR 500 COLORS, COLOR BY ARCHITECT
07 71 23 ***MANUFACTURERED GUTTER AND DOWNSPOUTS:*** PREFINISHED METAL, COLOR BY ARCHITECT

08 00 00 - OPENINGS

08 11 13 ***HOLLOW METAL DOORS AND FRAMES***
08 36 13 ***SECTIONAL DOORS:*** 24 GAUGE PANELS WITH WHITE FACTORY APPLIED FINISH, VISION LITE ON LATCH SIDE, POLYSTYRENE INSULATION (R-7.45), STEEL BACK COVERS, 2" ANGLE MOUNT TRACK AND HARDWARE, PERIMETER WEATHERSTRIPPING, FULL VERTICAL LIFT TRACK, AND MANUAL PUSH UP/PULL DOWN OPERAITON,SEE SCHEDULE FOR TYPE
08 43 13 ***ALUMINUM-FRAMED STOREFRONT***: TUBELITE OR EQUAL 2"X 4-1/2" CLEAR ANODIZED THERMAL BREAK STOREFRONT SYSTEM
08 80 00 ***GLAZING:*** 1" SOLARGRAY SOLARBAN 60; SEE WINDOW SCHEDULE FOR TYPE
08 91 00 ***LOUVERS***

09 00 00 - FINISHES

09 21 16 ***GYPSUM BOARD ASSEMBLIES***
09 22 16 ***NON-STRUCTURAL METAL FRAMING***
09 91 23 ***INTERIOR PAINT:*** COLOR BY ARCHITECT

10 00 00 - SPECIALTIES

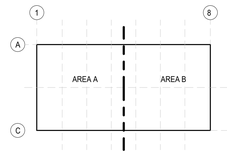
10 73 16.13 ***METAL CANOPIES:*** BASIS OF DESIGN: CUSTOM
10 73 16.14 ***METAL CANOPIES:*** BASIS OF DESIGN: MAPES CANTILEVER SUPERLUMIDECK FLAT SOFFIT

11 00 00 - EQUIPMENT

11 13 13 ***LOADING DOCK BUMPERS:*** AT EACH DOCK DOOR
11 13 19.13 ***LOADING DOCK LEVELERS:*** BASIS OF DESIGN KELLY 45,000 LBS, MECHANICAL

26 00 00 - ELECTRICAL

26 51 19 ***LED INTERIOR LIGHTING:*** HIGH BAY LED LIGHTS
26 56 19.01 ***LED EXTERIOR LIGHTING:*** WP1, WALL PACK LIGHTING, REF ELECTRICAL
26 56 19.02 ***LED EXTERIOR LIGHTING:*** FL1, FLOOD LIGHT AT DOCKS, REF ELECTRICAL
26 56 19.03 ***LED EXTERIOR LIGHTING:*** STRIP LIGHT, BASIS OF DESIGN: MNSL LED STRIPLIGHT, REF ELECTRICAL



mcmillan pazdan smith ARCHITECTURE

CONSULTANT LOGO

SEALS

CU-ICAR

CU-ICAR FLEX LAB

GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

NOT FOR CONSTRUCTION

PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:

OVERALL BUILDING SECTIONS

SHEET NO. A330

PROJ. NO. 019640.00

8/17/2020 2:56:51 PM BIM 360:\DRAWING_EXCHANGE\Building\BIM_EXCHANGE.rvt
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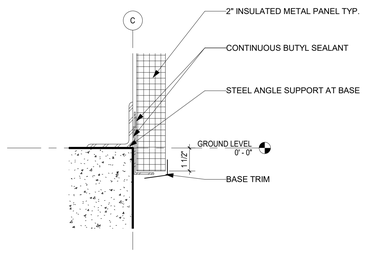
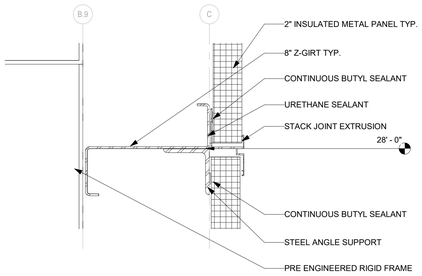
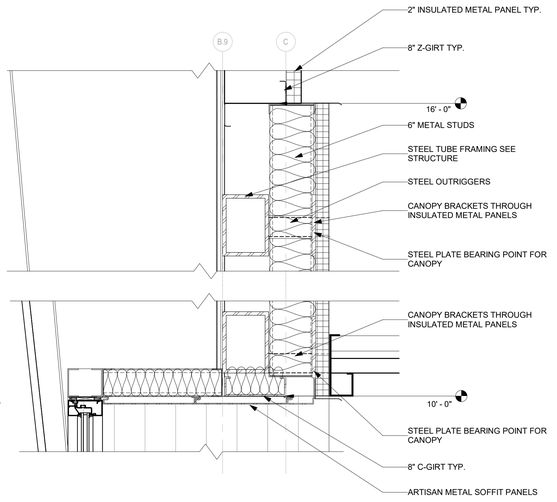


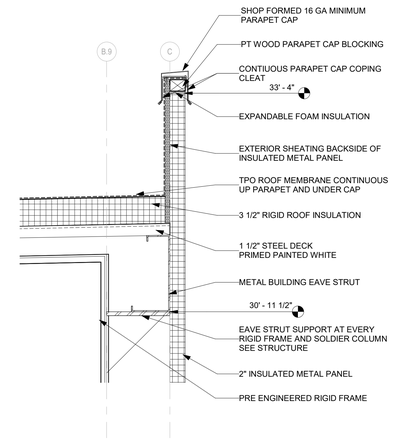
D2 / A340 **IMP BASE DETAIL**
3" = 1'-0"

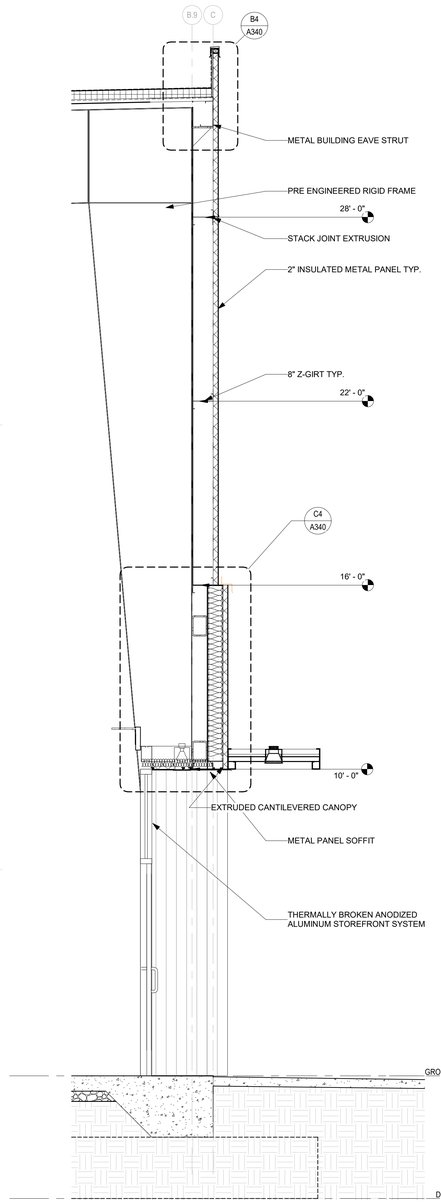


D3 / A340 **IMP STACK JOINT DETAIL**
3" = 1'-0"

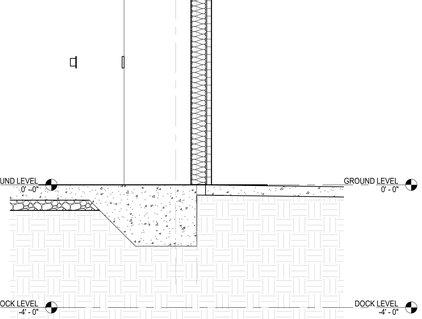


C4 / A340 **FRAMING DETAIL AT RECESS**
1 1/2" = 1'-0"



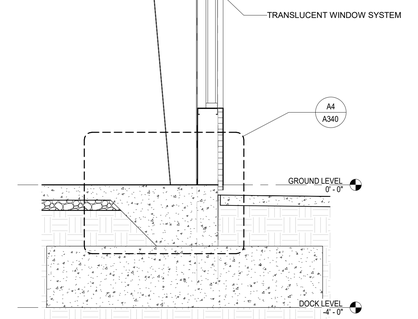


B4 / A340 **IMP PARAPET DETAIL AT FRONT**
1 1/2" = 1'-0"

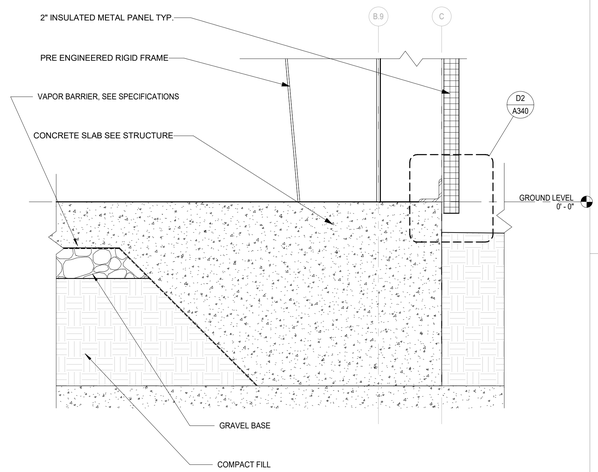


A1 / A340 **WALL SECTION - ENTRY**
1/2" = 1'-0"

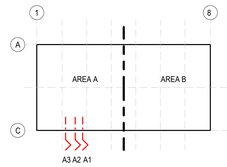
A2 / A340 **WALL SECTION - METAL PANEL**
1/2" = 1'-0"



A3 / A340 **WALL SECTION - AT TYPICAL WINDOW**
1/2" = 1'-0"



A4 / A340 **WALL BASE DETAIL**
1 1/2" = 1'-0"



03 00 00 - CONCRETE

03 30 00 ***CAST IN PLACE CONCRETE:*** 6" SLAB ON GRADE ON 4" ABC STONE BASE MATERIAL, REF STRUCTURAL FOR REINFORCING AND CONTROL JOINTS

05 00 00 - METALS

05 21 19 ***OPEN WEB STEEL JOIST FRAMING***: REF STRUCTURAL
05 31 23 ***STEEL ROOF DECKING***: SHOP PRIMED WHITE MECHANICALLY FASTENED WITH WHITE FASTENERS, SEE STRUCTURAL
05 40 00 ***COLD-FORMED METAL FRAMING***
05 51 00 ***METAL STAIRS:*** HOT DIPPED GALVANIZED
05 51 33 ***METAL LADDERS:*** ROOF ACCESS LADDER ATTACHED TO HSS COLUMNS
05 52 00 ***PIPE AND TUBE RAILINGS:*** 1 1/2" DIA. HOT DIPPED GALVANIZED PAINTED WITH EXTERIOR ENAMEL
05 58 23.01 ***FORMED METAL GUARDS***: Z GUARDS AT DOCK DOORS
05 58 23.02 ***FORMED METAL GUARDS***: DOWNSPOUT GUARDS
05 58 23.03 ***METAL BOLLARDS***: 6" STEEL BOLLARD, PAINTED

06 00 00 - WOODS, PLASTICS, COMPOSITES

06 10 00 ***ROUGH CARPENTRY***
06 16 53 ***MOISTURE-RESISTANT SHEATHING BOARD:*** 1/2" EXTERIOR FIBERGLASS REINFORCED GYPSUM BOARD SHEATHING

07 00 00 - THERMAL AND MOISTURE PROTECTION

07 26 16 ***BELOW GRADE VAPOR RETARDER***: 10 MIL VAPOR BARRIER AT ALL SOG AREAS
07 27 26 ***FLUID-APPLIED MEMBRANE AIR BARRIER***
07 41 13.19 ***INSULATED METAL WALL PANELS:*** 3" INSULATED METAL PANEL, BASIS OF DESIGN CF ARCHITECTURAL VERTICAL (METL SPAN)
07 41 13.19 ***INSULATED METAL WALL PANELS:*** 3" INSULATED METAL PANEL, BASIS OF DESIGN CF ARCHITECTURAL HORIZONTAL (METL SPAN)
07 42 13 ***PANELS:*** UNITIZED INSULATED TRANSLUCENT PANEL SYSTEM, BASIS OF DESIGN, KS UNIQUAD SYSTEM
07 54 23 ***THERMOPLASTIC-POLYOLEFIN ROOFING***: 45 MIL WITH 2 LAYERS OF 1.75" POLYISOCYANURATE INSULATION (R-20) COMPLYING WITH UL 1256 (SIMILAR TO JOHNS MANVILLE ENRGY 3) ATTACHED WITH WHITE SREWS
07 71 00 ***ROOF SPECIALTIES***: ROOF HATCH
07 71 13 ***MANUFACTURED COPINGS:*** PREFINISHED METAL COPING, NON-METALLIC KYNAR 500 COLORS, COLOR BY ARCHITECT
07 71 23 ***MANUFACTURERED GUTTER AND DOWNSPOUTS:*** PREFINISHED METAL, COLOR BY ARCHITECT

08 00 00 - OPENINGS

08 11 13 ***HOLLOW METAL DOORS AND FRAMES***
08 36 13 ***SECTIONAL DOORS:*** 24 GAUGE PANELS WITH WHITE FACTORY APPLIED FINISH, VISION LITE ON LATCH SIDE, POLYSTYRENE INSULATION (R-7.45), STEEL BACK COVERS, 2" ANGLE MOUNT TRACK AND HARDWARE, PERIMETER WEATHERSTRIPPING, FULL VERTICAL LIFT TRACK, AND MANUAL PUSH UP/PULL DOWN OPERAITON,SEE SCHEDULE FOR TYPE
08 43 13 ***ALUMINUM-FRAMED STOREFRONT***: TUBELITE OR EQUAL 2"X 4-1/2" CLEAR ANODIZED THERMAL BREAK STOREFRONT SYSTEM
08 80 00 ***GLAZING:*** 1" SOLARGRAY SOLARBAN 60; SEE WINDOW SCHEDULE FOR TYPE
08 91 00 ***LOUVERS***

09 00 00 - FINISHES

09 21 16 ***GYPSUM BOARD ASSEMBLIES***
09 22 16 ***NON-STRUCTURAL METAL FRAMING***
09 91 23 ***INTERIOR PAINT:*** COLOR BY ARCHITECT

10 00 00 - SPECIALTIES

10 73 16.13 ***METAL CANOPIES:*** BASIS OF DESIGN: CUSTOM
10 73 16.14 ***METAL CANOPIES:*** BASIS OF DESIGN: MAPES CANTILEVER SUPERLUMIDECK FLAT SOFFIT

11 00 00 - EQUIPMENT

11 13 13 ***LOADING DOCK BUMPERS:*** AT EACH DOCK DOOR
11 13 19.13 ***LOADING DOCK LEVELERS:*** BASIS OF DESIGN KELLY 45,000 LBS, MECHANICAL

26 00 00 - ELECTRICAL

26 51 19 ***LED INTERIOR LIGHTING:*** HIGH BAY LED LIGHTS
26 56 19.01 ***LED EXTERIOR LIGHTING:*** WP1, WALL PACK LIGHTING, REF ELECTRICAL
26 56 19.02 ***LED EXTERIOR LIGHTING:*** FL1, FLOOD LIGHT AT DOCKS, REF ELECTRICAL
26 56 19.03 ***LED EXTERIOR LIGHTING:*** STRIP LIGHT, BASIS OF DESIGN: MNSL LED STRIPLIGHT, REF ELECTRICAL

mcmillan pazdan smith ARCHITECTURE

CONSULTANT LOGO

SEALS

CU-ICAR

CU-ICAR FLEX LAB

GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

NOT FOR CONSTRUCTION

PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:

WALL SECTIONS

SHEET NO. A340

PROJ. NO. 019640.00

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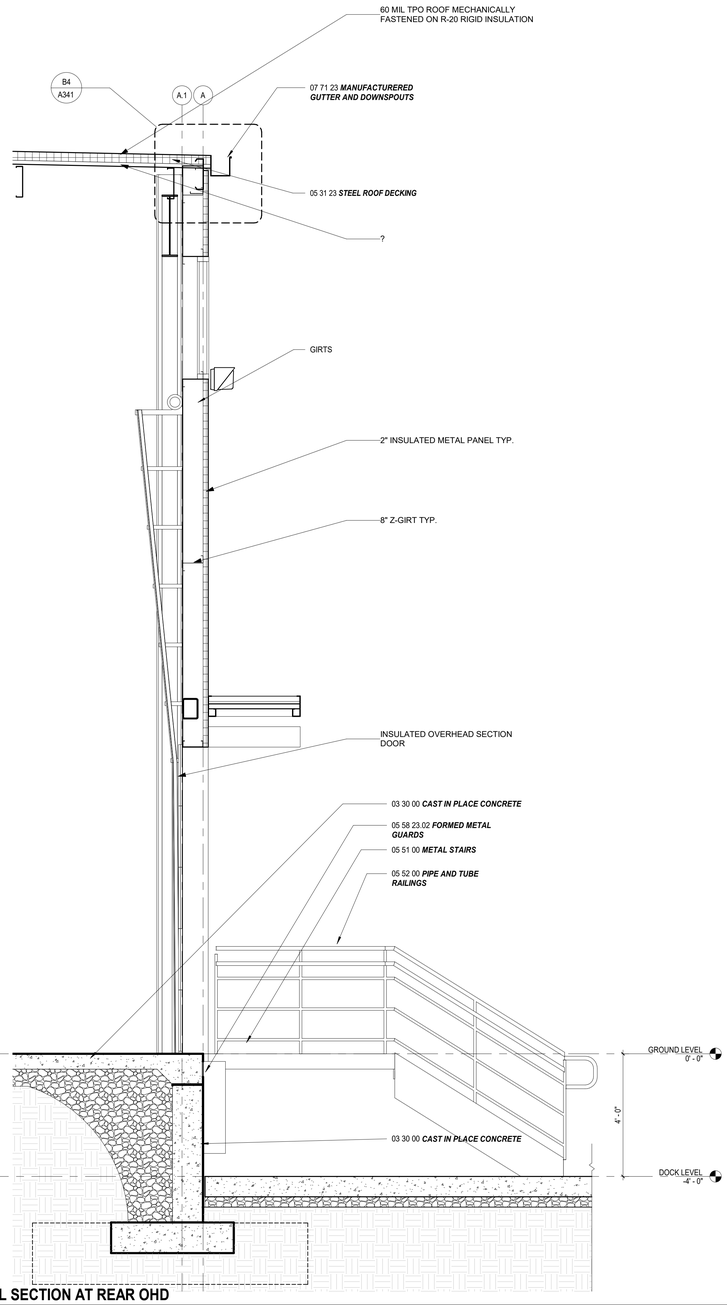
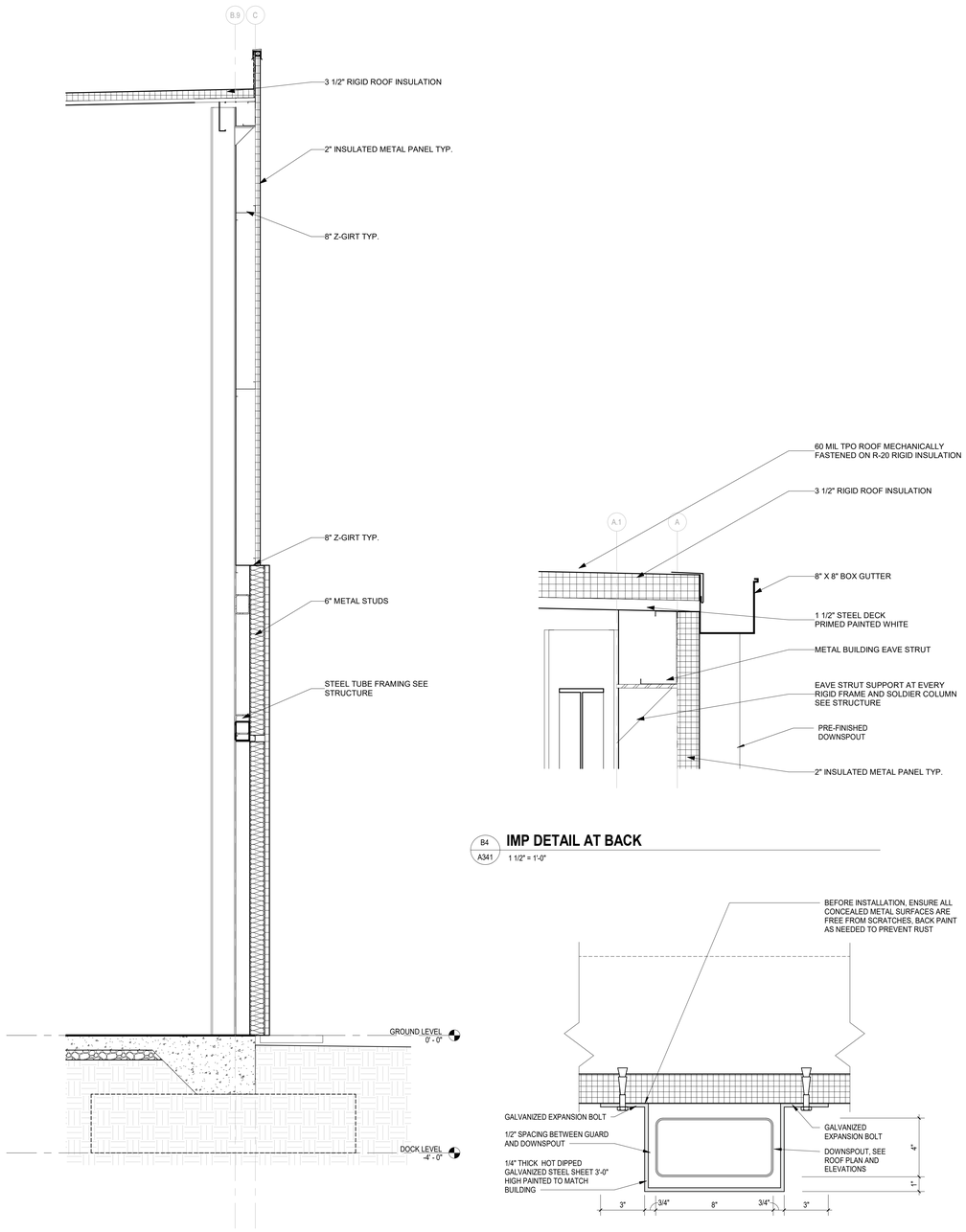


A1 A341 **WALL SECTION AT REAR OHD**
1/2" = 1'-0"



A3 A341 **WALL SECTION AT WALL POP OUT**
1/2" = 1'-0"

B4 A341 **IMP DETAIL AT BACK**
1 1/2" = 1'-0"

A4 A341 **TYPICAL DOWNSPOUT GUARD DETAIL**
3" = 1'-0"

03 00 00 - CONCRETE

03 30 00 ***CAST IN PLACE CONCRETE***: 6" SLAB ON GRADE ON 4" ABC STONE BASE MATERIAL, REF STRUCTURAL FOR REINFORCING AND CONTROL JOINTS

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05 51 33 ***METAL LADDERS:*** ROOF ACCESS LADDER ATTACHED TO HSS COLUMNS
05 52 00 ***PIPE AND TUBE RAILINGS:*** 1 1/2" DIA. HOT DIPPED GALVANIZED PAINTED WITH EXTERIOR ENAMEL
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05 58 23.02 ***FORMED METAL GUARDS***: DOWNSPOUT GUARDS
05 58 23.03 ***METAL BOLLARDS***: 6" STEEL BOLLARD, PAINTED

06 00 00 - WOODS, PLASTICS, COMPOSITES

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07 42 13 ***PANELS:*** UNITIZED INSULATED TRANSLUCENT PANEL SYSTEM, BASIS OF DESIGN, KS UNIQUAD SYSTEM
07 54 23 ***THERMOPLASTIC-POLYOLEFIN ROOFING***: 45 MIL WITH 2 LAYERS OF 1.75" POLYISOCYANURATE INSULATION (R-20) COMPLYING WITH UL 1256 (SIMILAR TO JOHNS MANVILLE ENRGY 3) ATTACHED WITH WHITE SREWS
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07 71 13 ***MANUFACTURED COPINGS:*** PREFINISHED METAL COPING, NON-METALLIC KYNAR 500 COLORS, COLOR BY ARCHITECT
07 71 23 ***MANUFACTURERED GUTTER AND DOWNSPOUTS:*** PREFINISHED METAL, COLOR BY ARCHITECT

08 00 00 - OPENINGS

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08 36 13 ***SECTIONAL DOORS:*** 24 GAUGE PANELS WITH WHITE FACTORY APPLIED FINISH, VISION LITE ON LATCH SIDE, POLYSTYRENE INSULATION (R-7.45), STEEL BACK COVERS, 2" ANGLE MOUNT TRACK AND HARDWARE, PERIMETER WEATHERSTRIPPING, FULL VERTICAL LIFT TRACK, AND MANUAL PUSH UP/PULL DOWN OPERAITON,SEE SCHEDULE FOR TYPE
08 43 13 ***ALUMINUM-FRAMED STOREFRONT***: TUBELITE OR EQUAL 2"X 4-1/2" CLEAR ANODIZED THERMAL BREAK STOREFRONT SYSTEM
08 80 00 ***GLAZING:*** 1" SOLARGRAY SOLARBAN 60; SEE WINDOW SCHEDULE FOR TYPE
08 91 00 ***LOUVERS***

09 00 00 - FINISHES

09 21 16 ***GYPSUM BOARD ASSEMBLIES***
09 22 16 ***NON-STRUCTURAL METAL FRAMING***
09 91 23 ***INTERIOR PAINT:*** COLOR BY ARCHITECT

10 00 00 - SPECIALTIES

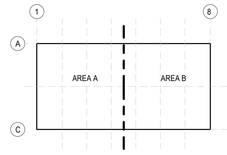
10 73 16.13 ***METAL CANOPIES:*** BASIS OF DESIGN: CUSTOM
10 73 16.14 ***METAL CANOPIES:*** BASIS OF DESIGN: MAPES CANTILEVER SUPERLUMIDECK FLAT SOFFIT

11 00 00 - EQUIPMENT

11 13 13 ***LOADING DOCK BUMPERS:*** AT EACH DOCK DOOR
11 13 19.13 ***LOADING DOCK LEVELERS:*** BASIS OF DESIGN KELLY 45,000 LBS, MECHANICAL

26 00 00 - ELECTRICAL

26 51 19 ***LED INTERIOR LIGHTING:*** HIGH BAY LED LIGHTS
26 56 19.01 ***LED EXTERIOR LIGHTING:*** WP1, WALL PACK LIGHTING, REF ELECTRICAL
26 56 19.02 ***LED EXTERIOR LIGHTING:*** FL1, FLOOD LIGHT AT DOCKS, REF ELECTRICAL
26 56 19.03 ***LED EXTERIOR LIGHTING:*** STRIP LIGHT, BASIS OF DESIGN: MNSL LED STRIPLIGHT, REF ELECTRICAL



mcmillan pazdan smith ARCHITECTURE

CONSULTANT LOGO

SEALS

CU-ICAR

CU-ICAR FLEX LAB

GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

NOT FOR CONSTRUCTION

PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:

WALL SECTIONS

SHEET NO. A341

PROJ. NO. 019640.00

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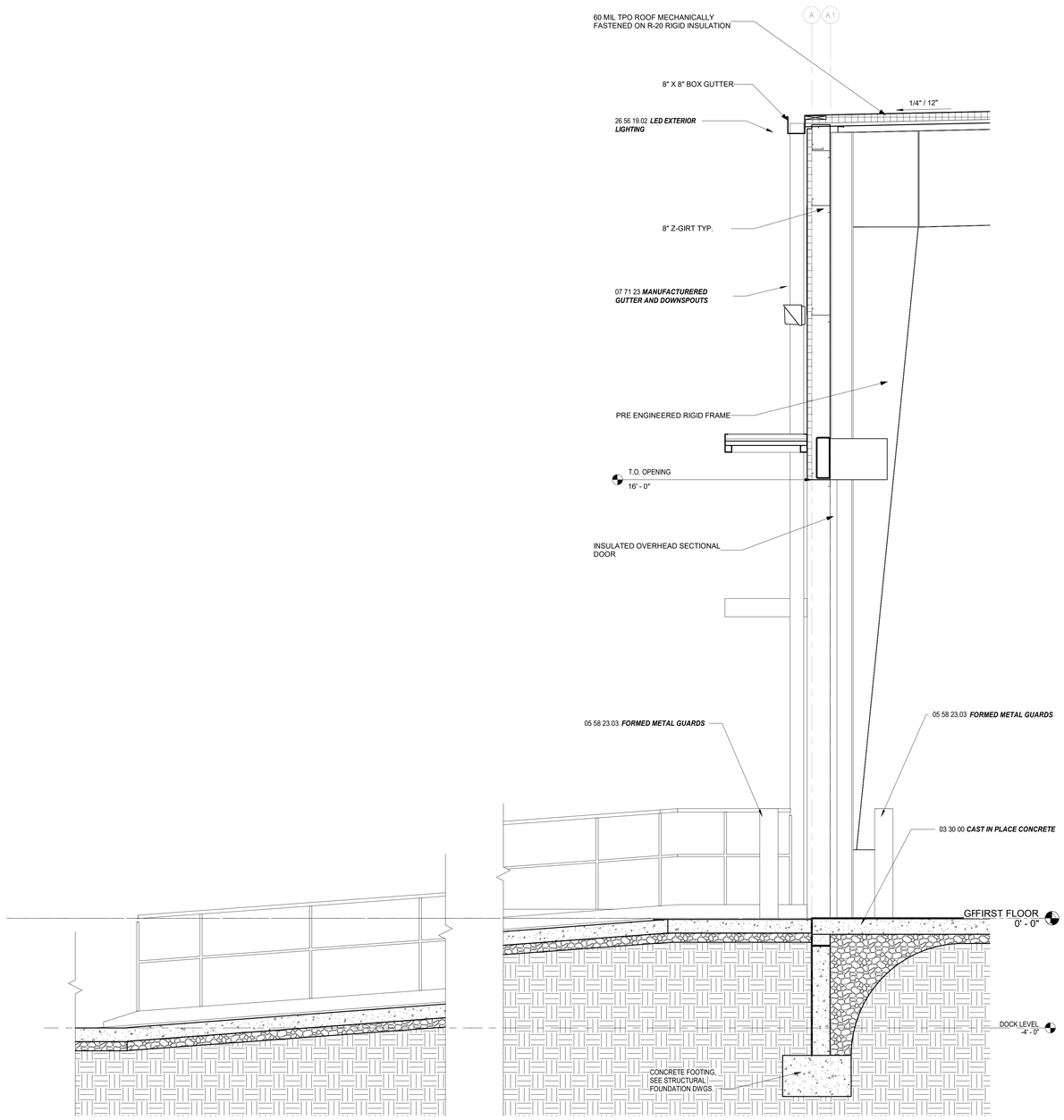
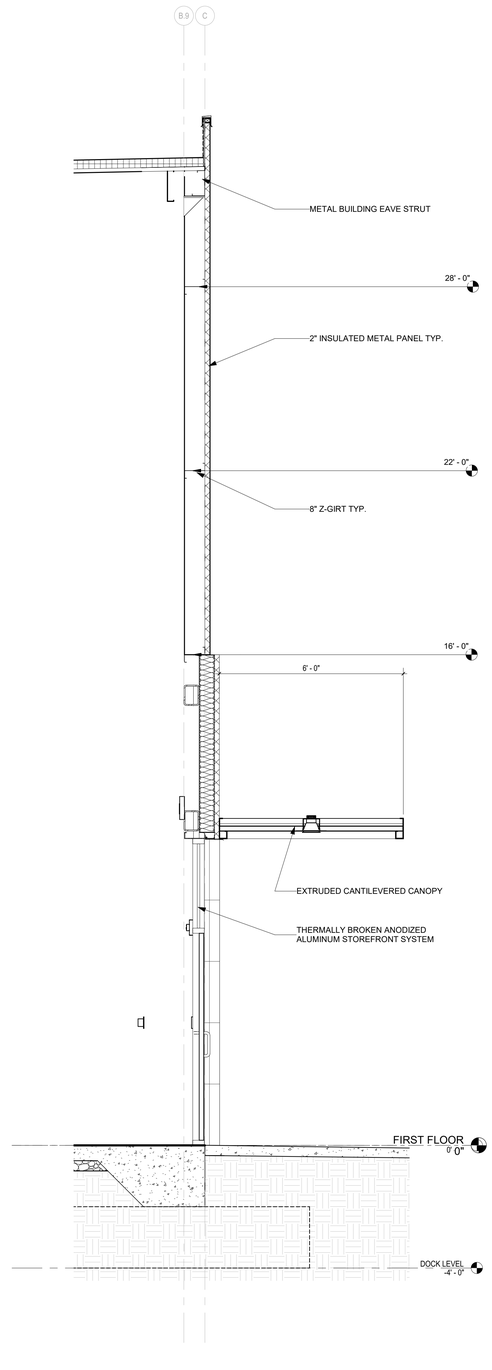


A2 / A342 **WALL SECTION - DRIVE IN DOOR & RAMP**
1/2" = 1'-0"



A4 / A342 **WALL SECTION AT FRONT ENTRY**
1/2" = 1'-0"

03 00 00 - CONCRETE

03 30 00 ***CAST IN PLACE CONCRETE***: 6" SLAB ON GRADE ON 4" ABC STONE BASE MATERIAL, REF STRUCTURAL FOR REINFORCING AND CONTROL JOINTS

05 00 00 - METALS

05 21 19 ***OPEN WEB STEEL JOIST FRAMING***: REF STRUCTURAL
05 31 23 ***STEEL ROOF DECKING***: SHOP PRIMED WHITE MECHANICALLY FASTENED WITH WHITE FASTENERS, SEE STRUCTURAL
05 40 00 ***COLD-FORMED METAL FRAMING***
05 51 00 ***METAL STAIRS:*** HOT DIPPED GALVANIZED
05 51 33 ***METAL LADDERS:*** ROOF ACCESS LADDER ATTACHED TO HSS COLUMNS
05 52 00 ***PIPE AND TUBE RAILINGS:*** 1 1/2" DIA. HOT DIPPED GALVANIZED PAINTED WITH EXTERIOR ENAMEL
05 58 23.01 ***FORMED METAL GUARDS***: Z GUARDS AT DOCK DOORS
05 58 23.02 ***FORMED METAL GUARDS***: DOWNSPOUT GUARDS
05 58 23.03 ***METAL BOLLARDS***: 6" STEEL BOLLARD, PAINTED

06 00 00 - WOODS, PLASTICS, COMPOSITES

06 10 00 ***ROUGH CARPENTRY***
06 16 53 ***MOISTURE-RESISTANT SHEATHING BOARD:*** 1/2" EXTERIOR FIBERGLASS REINFORCED GYPSUM BOARD SHEATHING

07 00 00 - THERMAL AND MOISTURE PROTECTION

07 26 16 ***BELOW GRADE VAPOR RETARDER***: 10 MIL VAPOR BARRIER AT ALL SOG AREAS
07 27 26 ***FLUID-APPLIED MEMBRANE AIR BARRIER***
07 41 13.19 ***INSULATED METAL WALL PANELS:*** 3" INSULATED METAL PANEL, BASIS OF DESIGN CF ARCHITECTURAL VERTICAL (METL SPAN)
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07 42 13 ***PANELS:*** UNITIZED INSULATED TRANSLUCENT PANEL SYSTEM, BASIS OF DESIGN, KS UNIQUAD SYSTEM
07 54 23 ***THERMOPLASTIC-POLYOLEFIN ROOFING***: 45 MIL WITH 2 LAYERS OF 1.75" POLYISOCYANURATE INSULATION (R-20) COMPLYING WITH UL 1256 (SIMILAR TO JOHNS MANVILLE ENRGY 3) ATTACHED WITH WHITE SREWS
07 71 00 ***ROOF SPECIALTIES***: ROOF HATCH
07 71 13 ***MANUFACTURED COPINGS:*** PREFINISHED METAL COPING, NON-METALLIC KYNAR 500 COLORS, COLOR BY ARCHITECT
07 71 23 ***MANUFACTURERED GUTTER AND DOWNSPOUTS:*** PREFINISHED METAL, COLOR BY ARCHITECT

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08 36 13 ***SECTIONAL DOORS:*** 24 GAUGE PANELS WITH WHITE FACTORY APPLIED FINISH, VISION LITE ON LATCH SIDE, POLYSTYRENE INSULATION (R-7.45), STEEL BACK COVERS, 2" ANGLE MOUNT TRACK AND HARDWARE, PERIMETER WEATHERSTRIPPING, FULL VERTICAL LIFT TRACK, AND MANUAL PUSH UP/PULL DOWN OPERAITON,SEE SCHEDULE FOR TYPE
08 43 13 ***ALUMINUM-FRAMED STOREFRONT:*** TUBELITE OR EQUAL 2"X 4-1/2" CLEAR ANODIZED THERMAL BREAK STOREFRONT SYSTEM
08 80 00 ***GLAZING:*** 1" SOLARGRAY SOLARBAN 60; SEE WINDOW SCHEDULE FOR TYPE
08 91 00 ***LOUVERS***

09 00 00 - FINISHES

09 21 16 ***GYPSUM BOARD ASSEMBLIES***
09 22 16 ***NON-STRUCTURAL METAL FRAMING***
09 91 23 ***INTERIOR PAINT:*** COLOR BY ARCHITECT

10 00 00 - SPECIALTIES

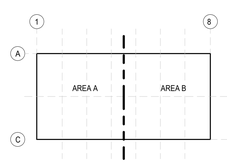
10 73 16.13 ***METAL CANOPIES:*** BASIS OF DESIGN: CUSTOM
10 73 16.14 ***METAL CANOPIES:*** BASIS OF DESIGN: MAPES CANTILEVER SUPERLUMDECK FLAT SOFFIT

11 00 00 - EQUIPMENT

11 13 13 ***LOADING DOCK BUMPERS:*** AT EACH DOCK DOOR
11 13 19.13 ***LOADING DOCK LEVELERS:*** BASIS OF DESIGN KELLY 45,000 LBS, MECHANICAL

26 00 00 - ELECTRICAL

26 51 19 ***LED INTERIOR LIGHTING:*** HIGH BAY LED LIGHTS
26 56 19.01 ***LED EXTERIOR LIGHTING:*** WP1, WALL PACK LIGHTING, REF ELECTRICAL
26 56 19.02 ***LED EXTERIOR LIGHTING:*** FL1, FLOOD LIGHT AT DOCKS, REF ELECTRICAL
26 56 19.03 ***LED EXTERIOR LIGHTING:*** STRIP LIGHT, BASIS OF DESIGN: MNSL LED STRIPLIGHT, REF ELECTRICAL



mcmillan pazdan smith ARCHITECTURE

CONSULTANT LOGO

SEALS

CU-ICAR

CU-ICAR FLEX LAB

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SHEET ISSUE:

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PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:

WALL SECTIONS

SHEET NO. A342

PROJ. NO. 019640.00

8/17/2020 3:38:14 PM BIM://MC-MPS/MPS_CU-ICAR Flex Lab-Buildings/MPS_CU-ICAR Flex Lab-Buildings_R19.rvt
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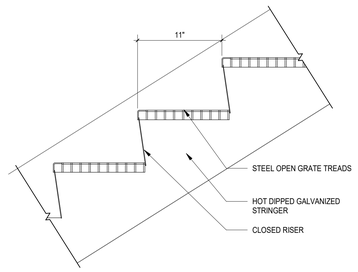
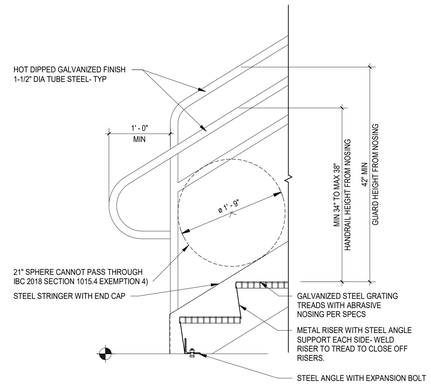
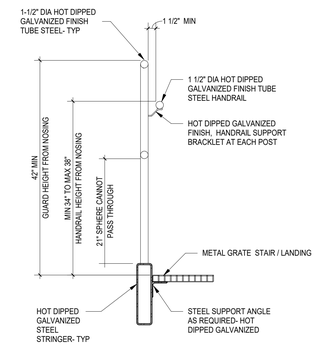


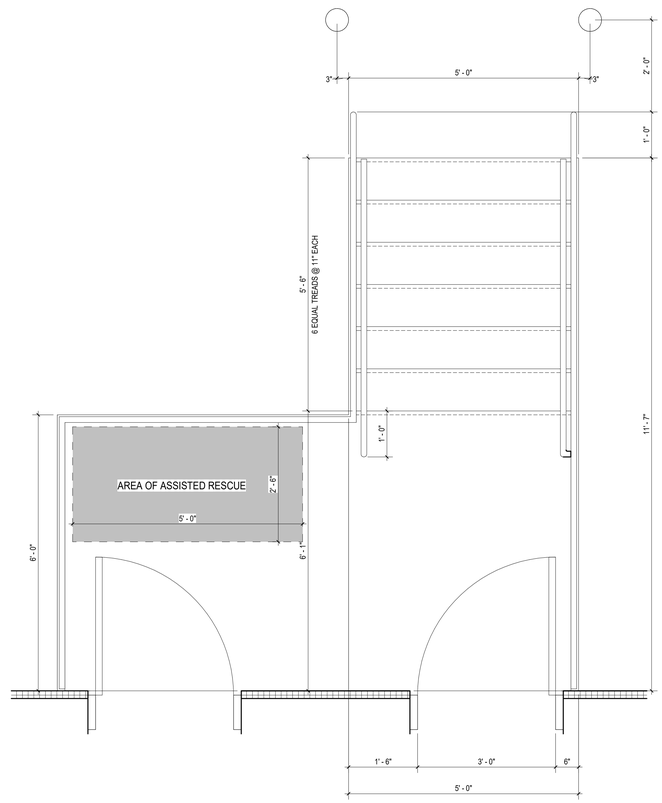
C3 / A500 **TYPICAL METAL GRATE STAIR DETAIL**
1 1/2" = 1'-0"



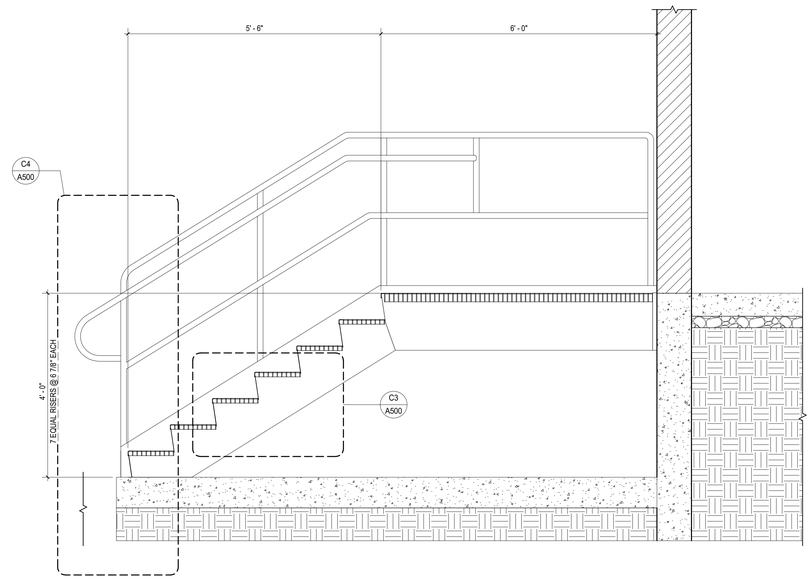
C4 / A500 **TYPICAL STAIR DETAIL AT EXTERIOR STAIRS**
1" = 1'-0"



C5 / A500 **TYPICAL GUARDRAIL AT STAIRS**
1" = 1'-0"



A2 / A500 **LOADING DOCK - TYP. STAIR PLAN WITH ASSISSTED RESCUE**
3/4" = 1'-0"



A4 / A500 **LOADING DOCK - TYPICAL STAIR SECTION**
3/4" = 1'-0"

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PROJECT ARCHITECT: Architect
DRAWN BY: HKN

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STAIRS

SHEET NO. A500

PROJ. NO. 019640.00

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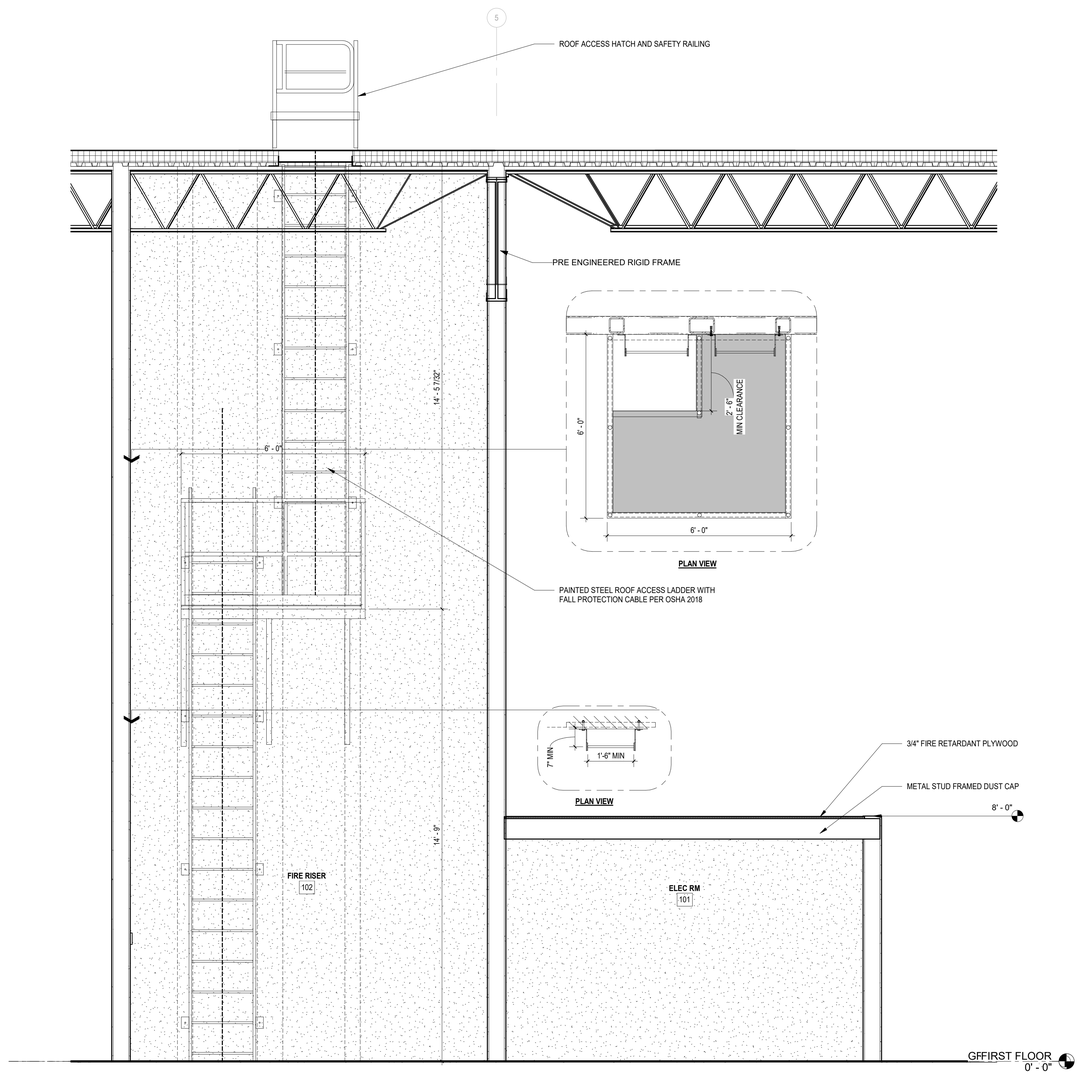


PLAN VIEW

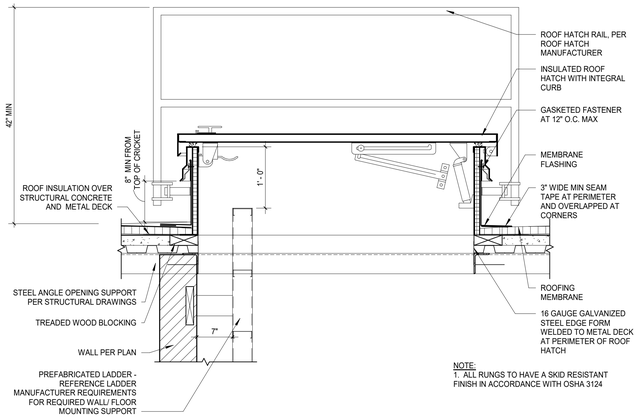
PLAN VIEW

NOTE:

1. HOT DIPPED GALVANIZED FINISH
2. ALL FASTENERS SHALL BE SECURED INTO STRUCTURE OR APPROVED BLOCKING, USE COMPRESSION SLEEVES WHERE NEEDED TO PREVENT CRUSHING
3. **PROVIDE A PERSONAL FALL ARREST SYSTEM OR A LADDER SAFETY SYSTEM PER OSHA 29 CFR (NOVEMBER, 2018) PART 1910.28(b)(9)(i)(B)**

B1 / A502 **ELEVATION - ROOF ACCESS HATCH**

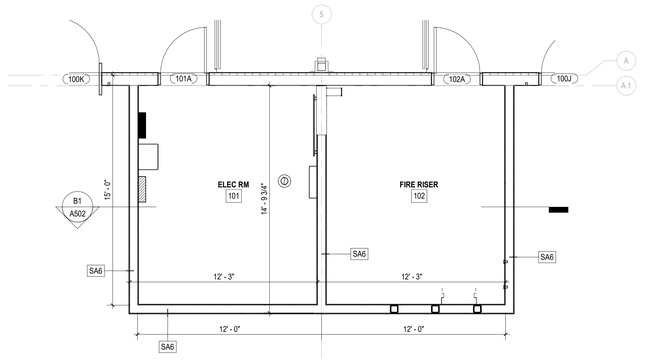
1/2" = 1'-0"



NOTE:
1. ALL RUNGS TO HAVE A SKID RESISTANT FINISH IN ACCORDANCE WITH OSHA 3124

C3 / A502 **ROOF HATCH DETAIL**

1" = 1'-0"



B3 / A502 **ENLARGED PLAN - ELECTRICAL & FIRE RISER ROOM**

1/4" = 1'-0"

GENERAL PARTITION NOTES

A. PLAN DIMENSIONS ARE FACE OF STUD, CMU OR FINISH FACE OF EXISTING WALL CONSTRUCTION UNLESS SPECIFICALLY NOTED OTHERWISE
B. GYPSUM WALL BOARD LAYERS ON RATED WALLS SHALL BE CONTINUOUS THROUGH ALL INTERSECTIONS WITH NON-RATED WALLS. REFER TO FIRE WALL PRIORITY DIAGRAM.
C. REFERENCE ALL FLOOR PLANS AND LIFE SAFETY PLANS FOR RATED WALL LOCATIONS AND RATINGS.
D. PROVIDE TYPE X, MOLD AND MOISTURE RESISTANT GYPSUM WALL BOARD IN ALL TOILET AND JANITOR ROOMS.
E. PROVIDE CEMENT BOARD IN ALL WET SHOWER AREA WALLS WITH TILE FINISH.
F. PROVIDE IMPACT RESISTANT GYPSUM WALL BOARD UP TO 4'-0" IN ALL LOBBIES, CORRIDORS, AND STAIRWELLS.
G. AT ALL JOINTS AT TOP OF ALL FIRE RATED PARTITIONS: PROVIDE COMPLETE UL LISTED FIRE RESISTIVE JOINT SYSTEM TO MATCH FIRE RESISTANCE OF WALL ASSEMBLY AND THAT IS ALSO COMPATIBLE WITH JOINT SUBSTRATES.
H. ANY PORTION OF GYPSUM WALL BOARD THAT BECOMES WET OR SHOWS SIGNS OF MOISTURE DAMAGE, EITHER BEFORE OR AFTER INSTALLATION, IS TO BE REMOVED IMMEDIATELY AND REPLACED WITH NEW DRY GYPSUM WALL BOARD.
I. INTERIOR PARTITIONS MAY HAVE ADDITIONAL FINISHES. REFERENCE FINISH SCHEDULE AND DETAIL SHEETS FOR ADDITIONAL INFORMATION.
J. PROVIDE PROJECT SPECIFIC DELGATED DESIGN DATA INCLUDING STUD SPACING, STUD GAUGE,BRACING AND DEFLECTION.
K. SOUND ATTENUATION BLANKET IS REQUIRED AT ALL INTERIOR PARTITIONS AND SHALL RUN FULL HEIGHT OF PARTITION UNLESS NOTED OTHERWISE. SOUND ATTENUATION BATT SHALL BE AS FOLLOWS:
   a. FIRE RESISTANT PARTITIONS: MINERAL WOOL SOUND ATTENUATION FIRE BLANKET (SAFB) - FULL STUD DEPTH
   b. NON-RATED PARTITIONS: UNFACED FIBERLASS SOUND ATTENUATION BATTS (SAB) - FULL STUD DEPTH
L. MINOR WALLS OR OTHER WALLS NOT TAGGED WILL BE OF THE SAME WALL TYPE AS ADJACENT WALLS (UNLESS OTHERWISE NOTED).
M. COORDINATE AND PROVIDE ALL REQUIRED BLOCKING WITHIN THE WALLS. THIS INCLUDES BUT IS NOT LIMITED TO, ALL MILLWORK, CASEWORK, GRAB BARS, LCD MONITORS, AND TOILET PARTITIONS.
N. INSTALL GYPSUM WALL BOARD ON INTERIOR PARTITIONS WITH A MINIMUM 1/4" GAP BETWEEN THE GYPSUM WALL BOARD AND THE FINISHED FLOOR.

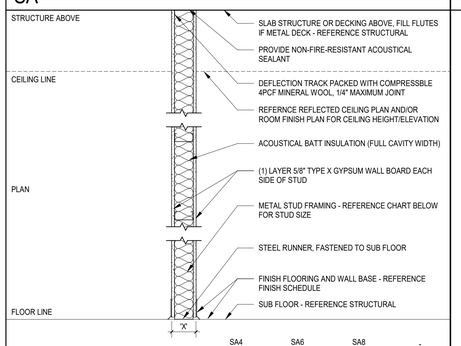
CONTROL JOINT NOTES

GYPSUM WALL BOARD:

LOCATE CONTROL JOISTS AS FOLLOWS:

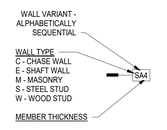
A. PROVIDE CONTROL JOINTS IN WIDTHS NO GREATER THAN 30'-0" OC, BUT NO LESS THAN 16'-0".
B. INSTALL CONTROL JOINTS ACCORDING TO ASTM C 840 AND IN SPECIFIC LOCATIONS APPROVED BY ARCHITECT FOR VISUAL EFFECT.
C. SUBMIT CONTROL JOINT LOCATION PLAN TO ARCHITECT FOR REVIEW PRIOR TO INSTALLATION.
D. PROVIDE CONTROL JOINTS ABOVE DOOR JAMBS WHENEVER POSSIBLE.
E. STAGGER JOINTS FOR ALL RATED WALLS WITH MULTIPLE LAYERS OF GYPSUM WALL BOARD.

SA



	SA4	SA6	SA8	-
STUD SIZE	3 5/8"	6	8	-
ACTUAL DIMENSION 'X'	4 7/8"	7 1/4"	9 1/4"	-
FIRE RESISTANCE AND DESIGN NUMBER	- -	- -	- -	- -
ACOUSTICAL RATING	49 STC (SA-870717)	49 STC (SA-870717)	49 STC (SA-870717)	- -

WALL TAG LEGEND



FURRING	STEEL STUD	WOOD STUD	SHAFT WALL	MASONRY
L - LAMINATED	1 - 1 5/8" STUD	1 - 1 1/2" NAILER	2 - 2 1/2" CH STUD	4" CMU
0 - 7/8" HAT	2 - 2 1/2" STUD	3 - 2 x 4" STUD	4 - 4" CH STUD	6 - 6" CMU
1 - 1 1 /2" HAT	3 - 3 5/8" STUD	6 - 2 x 6" STUD	6 - 6" CH STUD	8 - 8" CMU
	4 - 4" STUD	8 - 2 x 8" STUD		
	6 - 6" STUD			
	8 - 8" STUD			

WALL FRAMING PRIORITY

A. PARTITIONS SHALL BE PRIORITIZED BASED ON FIRE AND SMOKE RATING.
B. PARTITIONS SHALL BE CONSTRUCTED SUCH THAT HIGHER PRIORITY IS FRAMED BEFORE LOWER PRIORITY.
C. LOWER PRIORITY PARTITIONS SHALL BE FRAMED TIGHT TO, BUT NOT INTERRUPT HIGHER PRIORITY CONSTRUCTION. (SEE THE EXAMPLE BELOW)

2 HOUR FIRE RATED WITH SMOKE BARRIER	PRIORITY 1 (HIGHEST)
2 HOUR FIRE RATED	PRIORITY 2
1 HOUR FIRE RATED WITH SMOKE BARRIER	PRIORITY 3
1 HOUR FIRE RATED	PRIORITY 4
NONE RATED	PRIORITY 5 (LOWEST)

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mcmillan pazdan smith ARCHITECTURE

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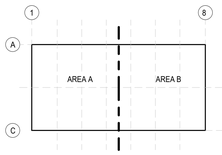


PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:

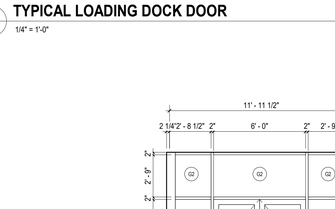
ELECTRICAL & FIRE RISER ROOM

SHEET NO. A502

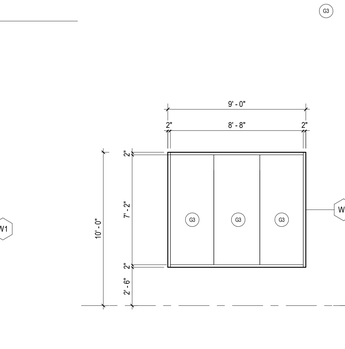
PROJ. NO. 019640.00

DOOR SCHEDULE

FLOOR	DOOR NO.	DOOR WIDTH	DOOR HEIGHT	DOOR THK.	DOOR TYPE	DOOR RATING	DOOR MATERIAL	DOOR HARDWARE TYPE	FRAME TYPE	FRAME MATERIAL	DETAILS HEAD	DETAILS JAMB	REMARKS
GROUND LEVEL	100A	6' - 0"	6' - 9"		14								
GROUND LEVEL	100B	6' - 0"	6' - 11"		14								
GROUND LEVEL	100C	6' - 0"	6' - 11"		14								
GROUND LEVEL	100D	6' - 0"	6' - 11"		14								
GROUND LEVEL	100E	6' - 0"	6' - 11"		14								
GROUND LEVEL	100F	6' - 0"	6' - 11"		14								
GROUND LEVEL	100G	6' - 0"	6' - 11"		14								
GROUND LEVEL	100H	3' - 0"	7' - 0"	0' - 1 3/4"	7								
GROUND LEVEL	100I	3' - 0"	7' - 0"	0' - 1 3/4"	7								
GROUND LEVEL	100J	3' - 0"	7' - 0"	0' - 1 3/4"	7								
GROUND LEVEL	100K	3' - 0"	7' - 0"	0' - 1 3/4"	7								
GROUND LEVEL	100L	3' - 0"	7' - 0"	0' - 1 3/4"	7								
GROUND LEVEL	100M	3' - 0"	7' - 0"	0' - 1 3/4"	7								
GROUND LEVEL	100N	3' - 0"	7' - 0"	0' - 1 3/4"	7								
GROUND LEVEL	101A	3' - 0"	7' - 0"	0' - 1 3/4"	7								
GROUND LEVEL	102A	3' - 0"	7' - 0"	0' - 1 3/4"	7								
GROUND LEVEL	OH1	9' - 0"	10' - 0"	0' - 1 1/2"	D4								
GROUND LEVEL	OH1	9' - 0"	10' - 0"	0' - 1 1/2"	D4								
GROUND LEVEL	OH1	9' - 0"	10' - 0"	0' - 1 1/2"	D4								
GROUND LEVEL	OH1	9' - 0"	10' - 0"	0' - 1 1/2"	D4								
GROUND LEVEL	OH1	9' - 0"	10' - 0"	0' - 1 1/2"	D4								
GROUND LEVEL	OH2	12' - 0"	16' - 0"	0' - 2"	H								



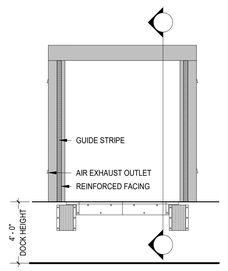
TYPICAL AT DOCK DOOR



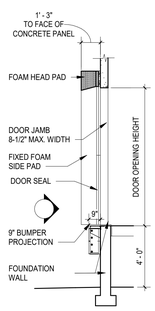
TYPICAL AT DRIVE IN DOOR

7 / A800 PLAN DETAIL - PIPE BOLLARDS

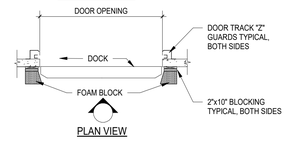
1" = 1'-0"



ELEVATION VIEW



SECTION VIEW



PLAN VIEW

NOTE:

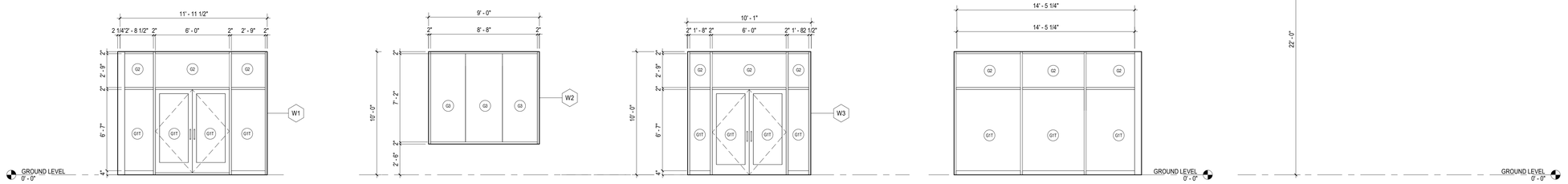
COORDINATE DOCK SEAL REQUIREMENTS WITH OWNER'S REP. AND MANUFACTURER. DOCK SEALS TO BE FURNISHED AND INSTALLED BY CONTRACTOR. INSTALL PER MANUFACTURERS RECOMMENDATIONS.

2 / A800 TYPICAL LOADING DOCK DOOR

1/4" = 1'-0"

GLASS TYPE SCHEDULE

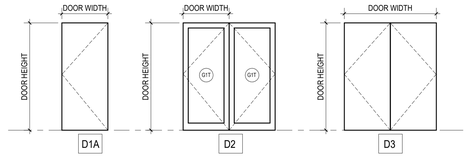
- G1T — 1-INCH INSULATED GLASS FULLY TEMPERED, WITH LOW-E COATING, GRAY TINTED (EXTERIOR GLASS)
- G2 — 1-INCH INSULATED GLASS, WITH LOW-E COATING, GRAY TINTED(EXTERIOR GLASS)
- G3 — INSULATED POLYCARBONATE GLAZING PANEL



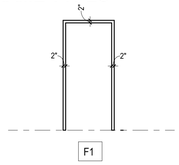
A1 / A800 WINDOW TYPES

1/4" = 1'-0"

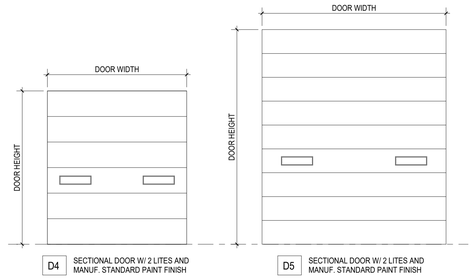
DOOR TYPES



FRAME TYPES



OVERHEAD DOOR TYPES



1 / A800 DOOR AND FRAME TYPES

1/4" = 1'-0"

GENERAL DOOR AND FRAME NOTES

A) FIELD VERIFY ALL ROUGH OPENINGS PRIOR TO MANUFACTURE OF FRAMES, DOORS, STOREFRONTS, ETC.

B) PROVIDE DOOR SWINGS AS REPRESENTED, UNLESS NOTED OTHERWISE.

C) ALL DOOR NUMBERS ARE LABELED PER THEIR ROOM NUMBERS, THEN A SEQUENTIAL SUFFIX "A, B, C...."

D) ALL HINGED DOORS TO HAVE HOLLOW METAL FRAMES WITH EITHER 2" OR 4" HEADS AS INDICATED IN THE SCHEDULE AND PER THE DETAILS. OTHER CRITERIA (RATING, ETC.) AS SCHEDULED.

E) ALL ALUMINUM STORFRONT IS TO BE FRONT-GLAZED W/ G1T AT EXTERIOR WALL. FRAMES SHOULD BE 2" NOMINAL X 4 1/2" NOMINAL. ALL STOREFRONT SILLS IN CONTACT WITH THE CONCRETE SLAB SHALL BE 4 1/2" HIGH X 4 1/2" DEEP.

8/17/2020 3:38:18 PM — BIM://MC PAZDAN SMITH ARCHITECTURE - EXCAVATION.rvt by Brandon Wright
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CONSULTANT LOGO

SEALS

CU-ICAR

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GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

NOT FOR CONSTRUCTION

PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:

DOOR SCHEDULE

SHEET NO. A800

PROJ. NO. 019640.00

8/17/2020 3:38:19 PM - \\REVIT_SERVER\...\CU-ICAR FAL-mcMillanPazdanSmith_EXCAPA.rvt
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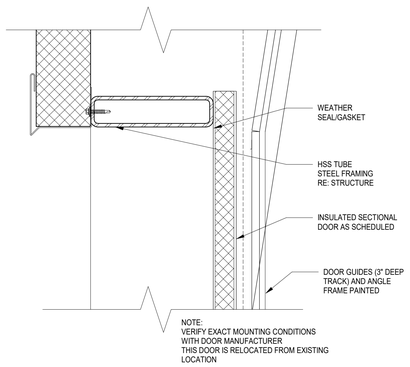
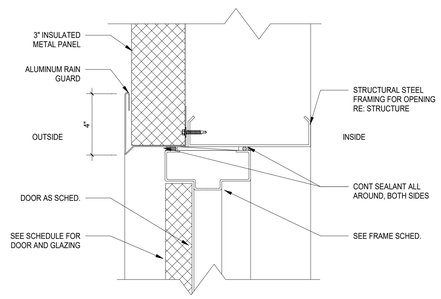
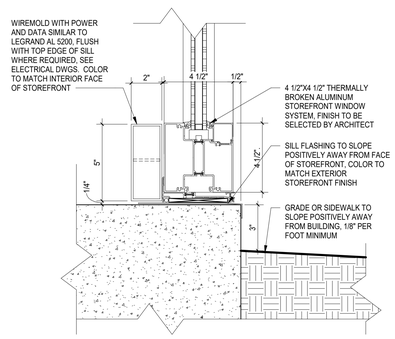


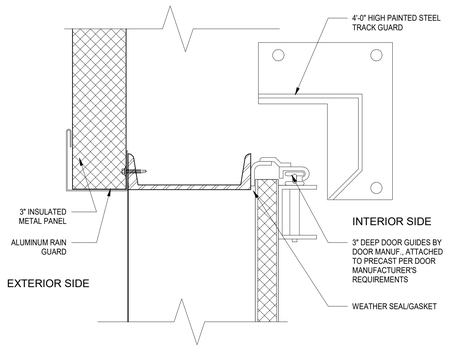
4 A801 **OHD HEAD AT IMP OPENING**
3" = 1'-0"



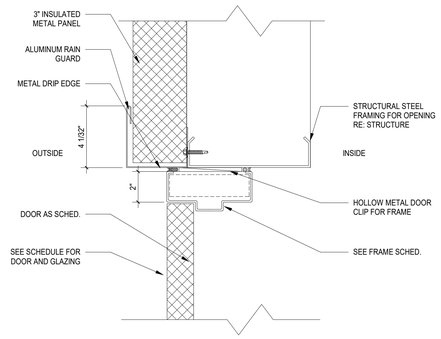
2 A801 **HOLLOW METAL DOOR HEAD AT IMP OPENING**
3" = 1'-0"



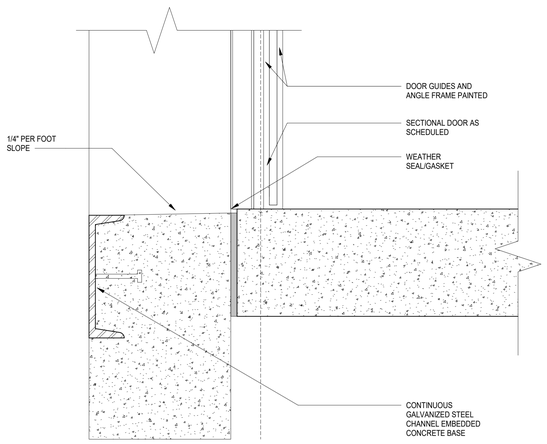
A1 A801 **ALUMINUM STOREFRONT SILL DETAIL AT FLOOR SLAB**
3" = 1'-0"

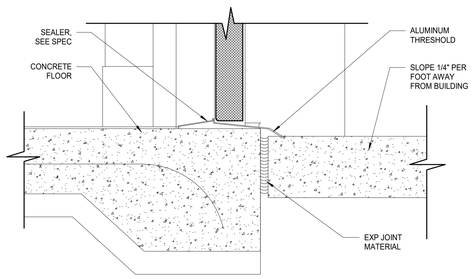


5 A801 **OHD JAMB AT IMP OPENING**
3" = 1'-0"

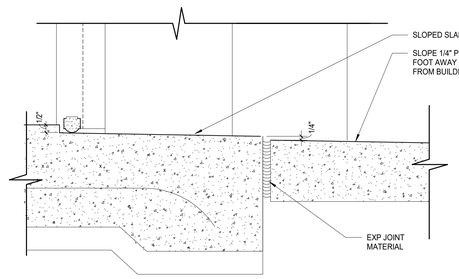


3 A801 **HOLLOW METAL DOOR JAMB AT IMP OPENING**
3" = 1'-0"





ES-1 (SWING DOOR)



ES-2 (OVERHEAD DOOR)

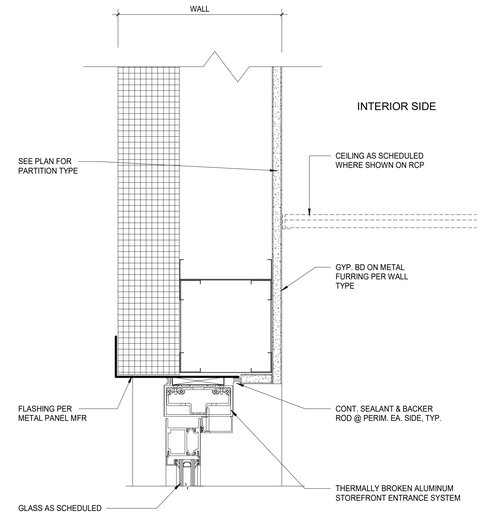
S3 - SILL DETAIL

A3 A801 **HEAD AND JAMB DETAILS - SECTIONAL DOOR**
3" = 1'-0"

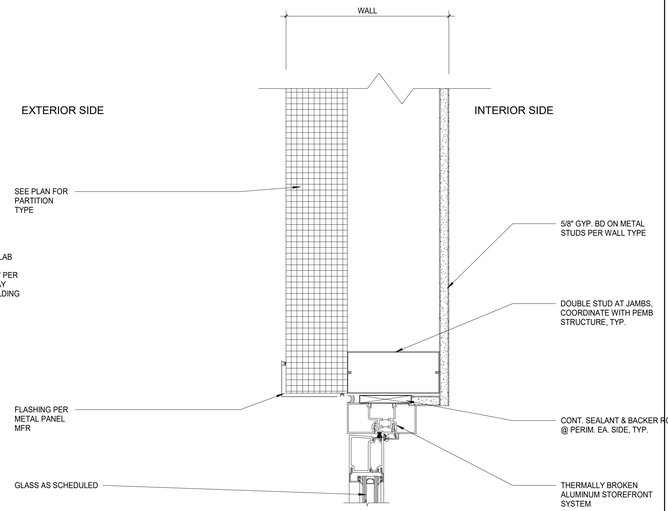
1 A801 **DOOR SILLS - EXTERIOR**
3" = 1'-0"

A4 A801 **ALUMINUM STOREFRONT WINDOW DETAILS**
3" = 1'-0"

EXTERIOR SIDE



H2 - HEAD DETAIL



J2 - JAMB DETAIL

mcmillan pazdan smith ARCHITECTURE

CONSULTANT LOGO

SEALS

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GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

NOT FOR CONSTRUCTION

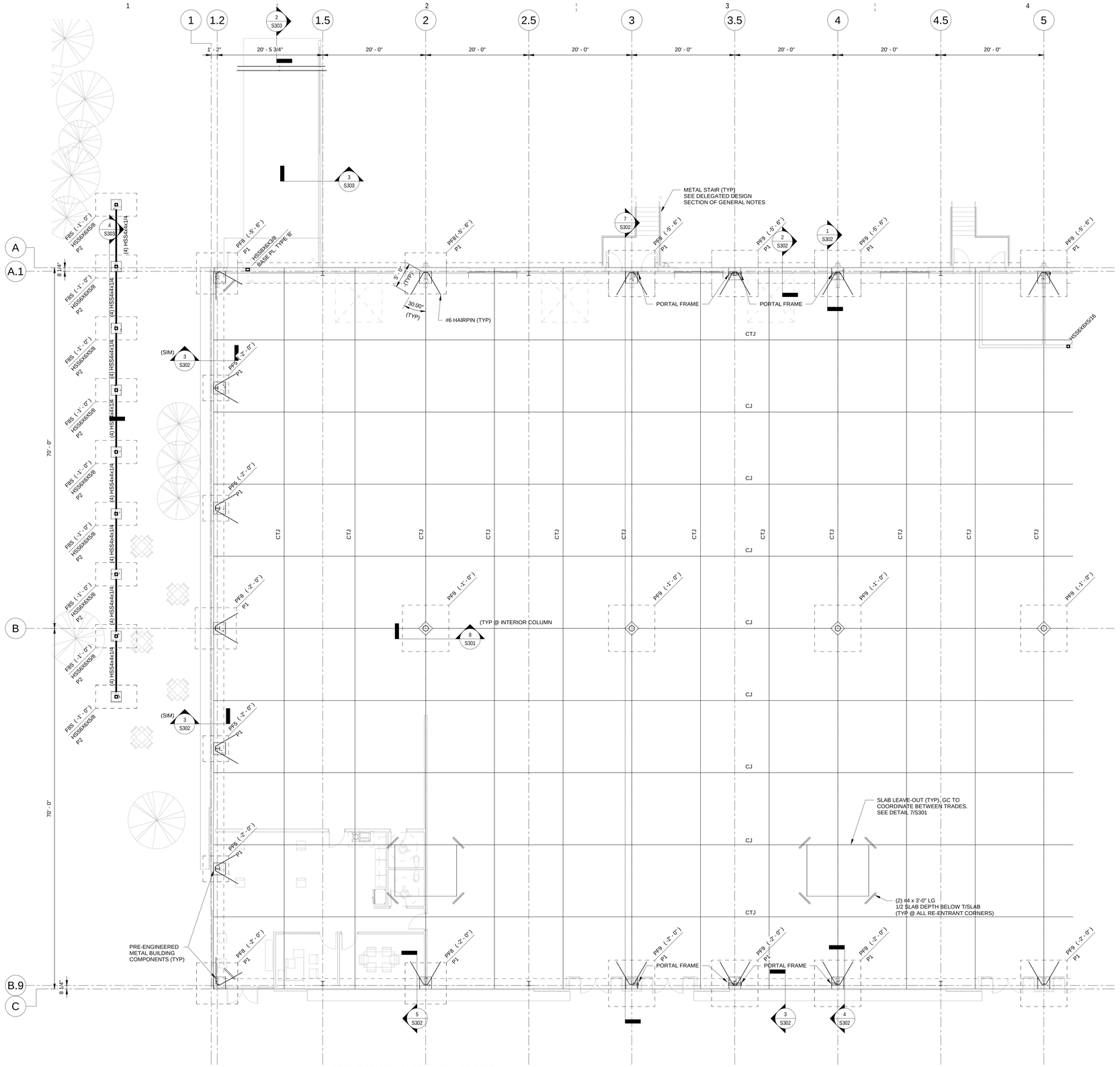
PRINCIPAL IN CHARGE: Principal
PROJECT ARCHITECT: Architect
DRAWN BY: Author

SHEET TITLE:

DOOR & WINDOW HEAD, JAMB AND SILLS

SHEET NO. A801

PROJ. NO. 019640.00



INDICATES PRE-ENGINEERED BUILDING COLUMN.

INDICATES TOP OF FOOTING ELEV. FROM FIN. FL. ELEV. 0'-0"

INDICATES FOOTING TYPE - SEE SCHEDULE ON DWG S301

PF4 (-1'-6") P2

INDICATES CONCRETE PIER SEE DETAILS ON DWG S301

INDICATES PIER TYPE - SEE SCHEDULE ON DWG S301

FOOTING LEGEND

1 FOUNDATION / SLAB PLAN - AREA A
S101 — 1/8" = 1'-0"

BUILDING FINISH FLOOR EL. 0'-0" (U.N.O.) + DATUM EL. xx'-x" (SEE CIVIL DWG)

SLAB-ON-GRADE = 6" CONCRETE SLAB, 4000 PSI CONCRETE STRENGTH, REINF. W/ WWF 4x4xW2.9xW2.9 PLACED 2" CLEAR COVER FROM TOP OF SLAB. (ALT: #3@12" O.C. E.W. TOP) (TYP, U.N.O.)

CJ - INDICATES CONSTRUCTION JOINT, SEE DETAIL 1/S301
CTJ - INDICATES CONTROL JOINT, SEE DETAIL 1/S301

NOTES:

1. SEE DRAWING S001 - S003 FOR GENERAL NOTES AND BASIS OF DESIGN.
2. SEE ARCH. DRAWINGS FOR ALL BUILDING/WALL PLAN DIMENSIONS NOT SHOWN ON STRUCTURAL DWGS.
3. SEE ARCH. DRAWINGS FOR SLAB EDGE DIMENSIONS.
4. ALL FOOTINGS SHALL BE CENTERED ON COLUMNS, U.N.O.
5. CONTINUOUS WALL FOOTING REINFORCEMENT AND TURNED DOWN GRADE BEAMS, LONG-WAY BARS, SHALL BE CONTINUOUS THRU COLUMN FOOTINGS.
6. WHERE CONTINUOUS FOOTINGS OF DIFFERENT SIZES MERGE TOGETHER, THE SMALLER FOOTING LONG-WAY BARS SHALL EXTEND, (TENSION LAP SPLICE), INTO THE LARGER FOOTING.
7. COORDINATE ALL SLAB RECESS LOCATIONS, SIZE AND DEPTHS W/ ARCH. DWGS.
8. SEE PLUMBING DRAWINGS FOR ADD'L INFORMATION.
9. PLACE CJ AT INTERIOR/EXTERIOR SLAB TRANSITION LOCATIONS.

FLOOR FLATNESS / LEVELNESS

ALL SLAB ON GRADE SHALL HAVE THE FOLLOWING FLOOR FLATNESS AND FLOOR LEVELNESS

Ff = 35
FL = 25

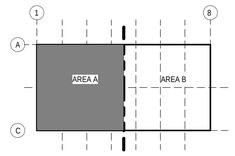
NOTES TO PEMB ENGINEER:

1. DESIGN PEMB FRAME AND PURLINS FOR SUPERIMPOSED DEAD LOAD OF 20 PSF.

2. PEMB SUPPLIER TO PROVIDE HORIZONTAL BRACING AS REQUIRED FOR FRAME STABILITY UNDER CODE LOADING FOR FRAMES AND SOLDIER COLUMNS.

3. IN ADDITION TO THE SUPERIMPOSED DEAD LOADS AND CODE LIVE LOADS, PEMB PURLINS AND FRAME TO BE DESIGNED FOR RTU LOADS, RTU SCREEN LOADS, PIPING HEADER LOADS, ROLLUP DOOR AUX STEEL LOADS, AND CANOPY AUXILLIARY STEEL FRAMING LOADS.

NOTE:
ALL FOOTING SIZES SHOWN FOR PEMB ARE PRELIMINARY SIZES AND SHALL BE VERIFIED W/ FINAL PEMB SHOP DRAWINGS AND COLUMN REACTION REPORT



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CONSULTANT LOGO

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Michael M. Simpson & Associates, Inc.
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30 Patewood Drive, Suite 100
Greenville, S.C. 29615
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SEALS

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GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

NOT FOR CONSTRUCTION

PRINCIPAL IN CHARGE: MMS
PROJECT ENGINEER: MDI
DRAWN BY: ERB

SHEET TITLE:
FOUNDATION / SLAB PLAN - AREA A

SHEET NO. S101

PROJ. NO. 019640.00

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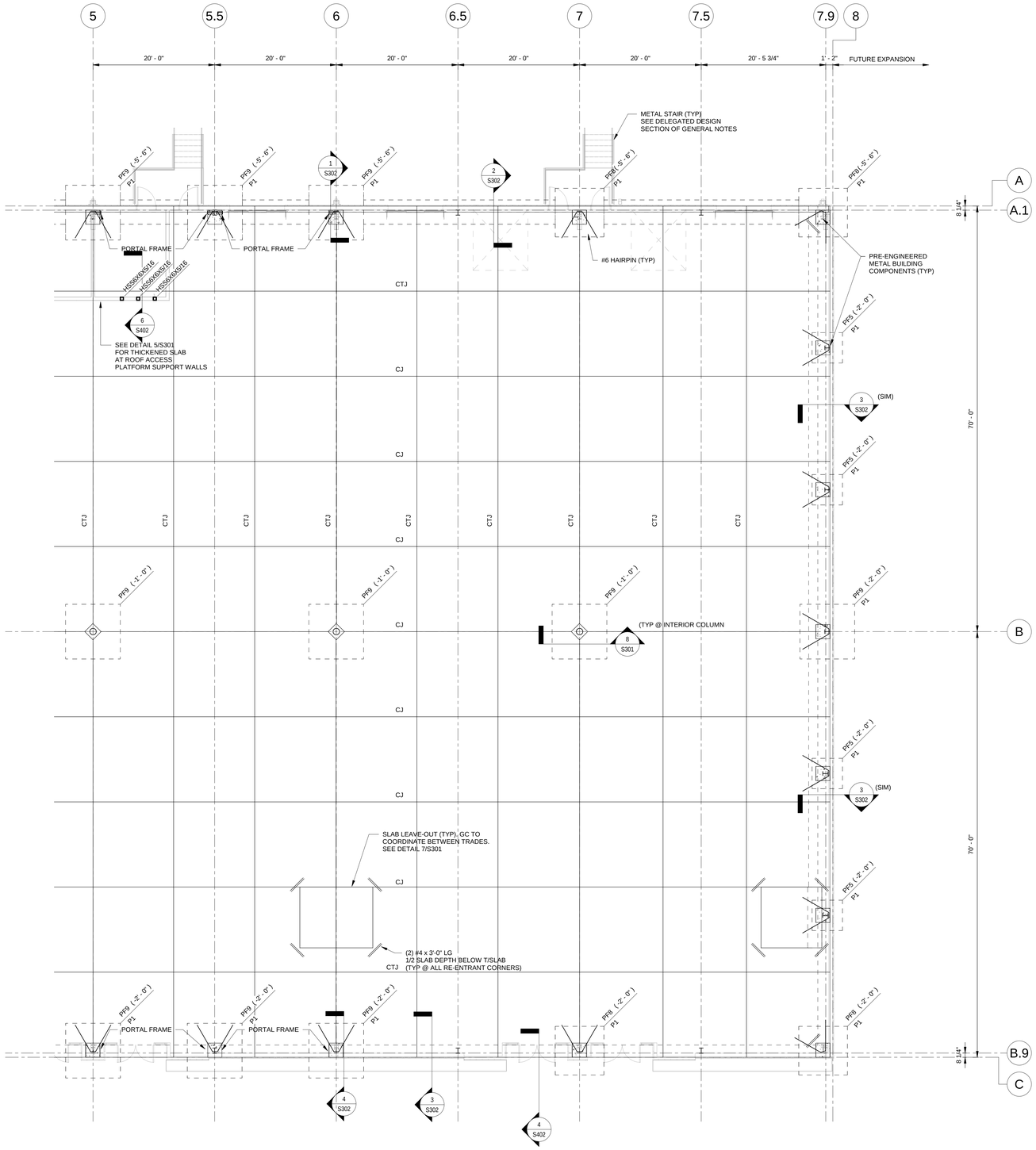
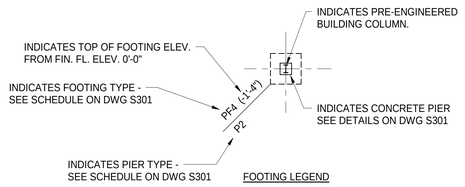




1 S102 FOUNDATION / SLAB PLAN - AREA B

1/8" = 1'-0"

BUILDING FINISH FLOOR EL. 0'-0" (U.N.O.) + DATUM EL. xx'-x" (SEE CIVIL DWG)

SLAB-ON-GRADE = 6" CONCRETE SLAB, 4000 PSI CONCRETE STRENGTH, REINF. W/ WWF 4x4xW2.9xW2.9 PLACED 2" CLEAR COVER FROM TOP OF SLAB. (ALT: #3@12" O.C. E.W. TOP) (TYP, U.N.O.)

CJ - INDICATES CONSTRUCTION JOINT, SEE DETAIL 1/S301
CTJ - INDICATES CONTROL JOINT, SEE DETAIL 1/S301

NOTES:

1. SEE DRAWING S001 - S003 FOR GENERAL NOTES AND BASIS OF DESIGN.
2. SEE ARCH. DRAWINGS FOR ALL BUILDING/WALL PLAN DIMENSIONS NOT SHOWN ON STRUCTURAL DWGS.
3. SEE ARCH. DRAWINGS FOR SLAB EDGE DIMENSIONS.
4. ALL FOOTINGS SHALL BE CENTERED ON COLUMNS, U.N.O.
5. CONTINUOUS WALL FOOTING REINFORCEMENT AND TURNED DOWN GRADE BEAMS, LONG-WAY BARS, SHALL BE CONTINUOUS THRU COLUMN FOOTINGS.
6. WHERE CONTINUOUS FOOTINGS OF DIFFERENT SIZES MERGE TOGETHER, THE SMALLER FOOTING LONG-WAY BARS SHALL EXTEND, (TENSION LAP SPLICE), INTO THE LARGER FOOTING.
7. COORDINATE ALL SLAB RECESS LOCATIONS, SIZE AND DEPTHS W/ ARCH. DWGS.
8. SEE PLUMBING DRAWINGS FOR ADD'L INFORMATION.
9. PLACE CJ AT INTERIOR/EXTERIOR SLAB TRANSITION LOCATIONS.

FLOOR FLATNESS / LEVELNESS

ALL SLAB ON GRADE SHALL HAVE THE FOLLOWING FLOOR FLATNESS AND FLOOR LEVELNESS

Ff = 35
FL = 25

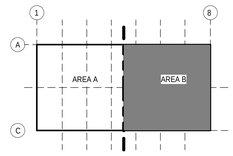
NOTES TO PEMB ENGINEER:

1. DESIGN PEMB FRAME AND PURLINS FOR SUPERIMPOSED DEAD LOAD OF 20 PSF.

2. PEMB SUPPLIER TO PROVIDE HORIZONTAL BRACING AS REQUIRED FOR FRAME STABILITY UNDER CODE LOADING FOR FRAMES AND SOLDIER COLUMNS.

3. IN ADDITION TO THE SUPERIMPOSED DEAD LOADS AND CODE LIVE LOADS, PEMB PURLINS AND FRAME TO BE DESIGNED FOR RTU LOADS, RTU SCREEN LOADS, PIPING HEADER LOADS, ROLLUP DOOR AUX STEEL LOADS, AND CANOPY AUXILLIARY STEEL FRAMING LOADS.

NOTE:
ALL FOOTING SIZES SHOWN FOR PEMB ARE PRELIMINARY SIZES AND SHALL BE VERIFIED W/ FINAL PEMB SHOP DRAWINGS AND COLUMN REACTION REPORT



mcmillan pazdan smith ARCHITECTURE

CONSULTANT LOGO

MMSA, Inc.
Michael M. Simpson & Associates, Inc.
Consulting Structural Engineers
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Greenville, S.C. 29615
(864) 331-1201

SEALS

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GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

NOT FOR CONSTRUCTION

PRINCIPAL IN CHARGE: MMS
PROJECT ENGINEER: MDI
DRAWN BY: ERB

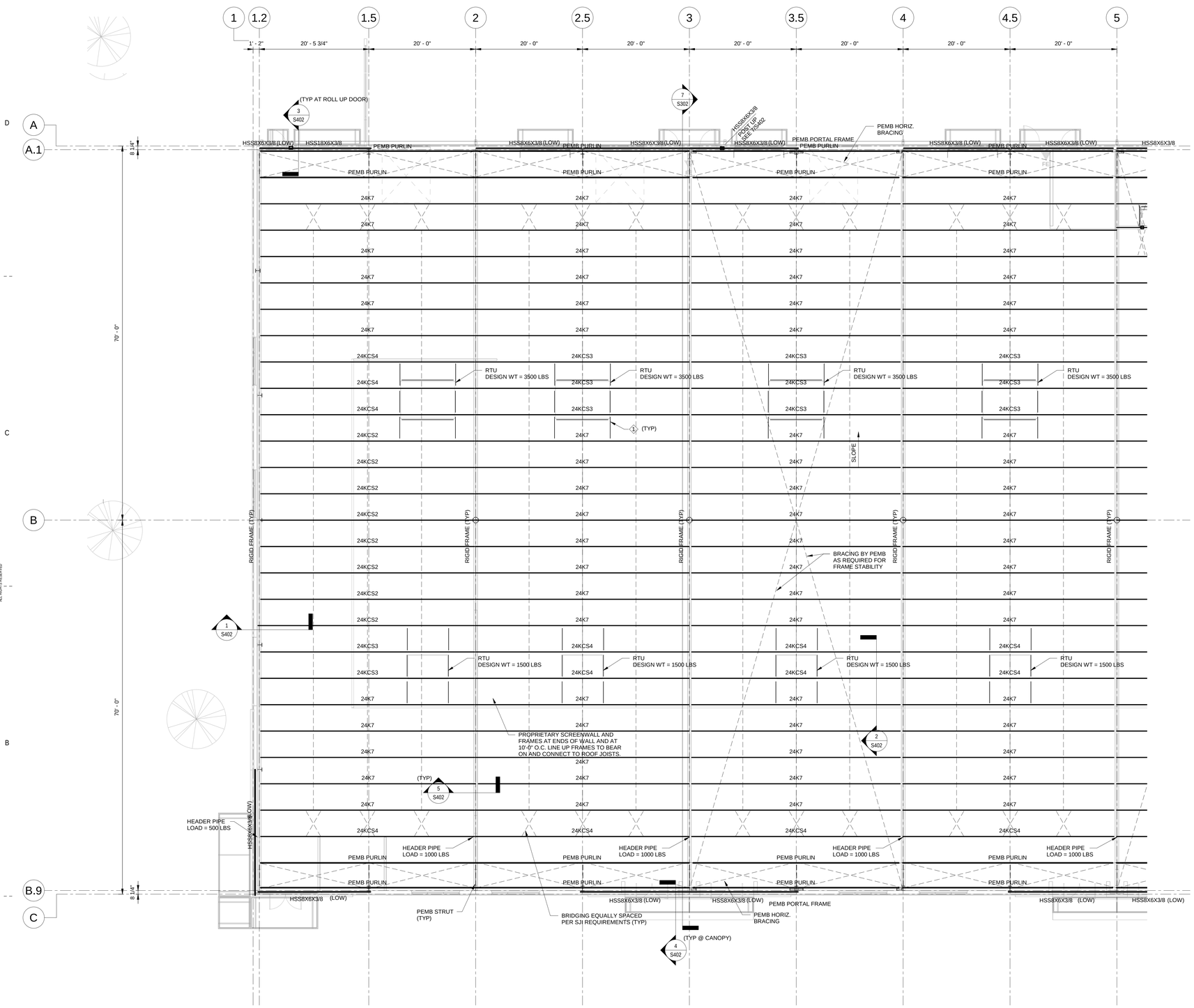
SHEET TITLE:

FOUNDATION / SLAB PLAN - AREA B

SHEET NO.

S102

PROJ. NO. 019640.00



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1 ROOF FRAMING PLAN - AREA A

1/8" = 1'-0"

T/STL ELEV. = VARIES

ALL ROOF FRAMING CONSTRUCTION IS STEEL JOIST WITH 1 1/2", 22GA GALV. WIDE RIB METAL DECK (TYP, UNO).

NOTE: ALL JOIST SPACED AT 5'-0" O.C. MAX (TYP, U.N.O)

1 INDICATES LM TYP AT ALL ROOF TOP EQUIPMENT. LM IS L5x3 1/2x3/8"
SEE S401 FOR ADDITIONAL INFORMATION

NOTES:
1. SEE S001 & S002 FOR GENERAL NOTES AND BASIS OF DESIGN
2. SEE ARCH. DWGS. FOR ALL BUILDING/WALL PLAN DIMENSIONS NOT SHOWN.
3. SEE PRE-ENGINEERED SHOP DRAWING SUBMITTAL FOR ADDITIONAL INFORMATION.

NOTES TO PEMB ENGINEER:

1. DESIGN PEMB FRAME AND PURLINS FOR SUPERIMPOSED DEAD LOAD OF 20 PSF.

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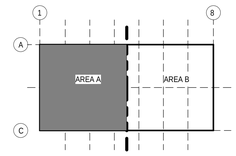
3. IN ADDITION TO THE SUPERIMPOSED DEAD LOADS AND CODE LIVE LOADS, PEMB PURLINS AND FRAME TO BE DESIGNED FOR RTU LOADS, RTU SCREEN LOADS, PIPING HEADER LOADS, ROLLUP DOOR AUX STEEL LOADS, AND CANOPY AUXILLIARY STEEL FRAMING LOADS.



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SHEET ISSUE:

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B	08.17.2020	PRICING SET	

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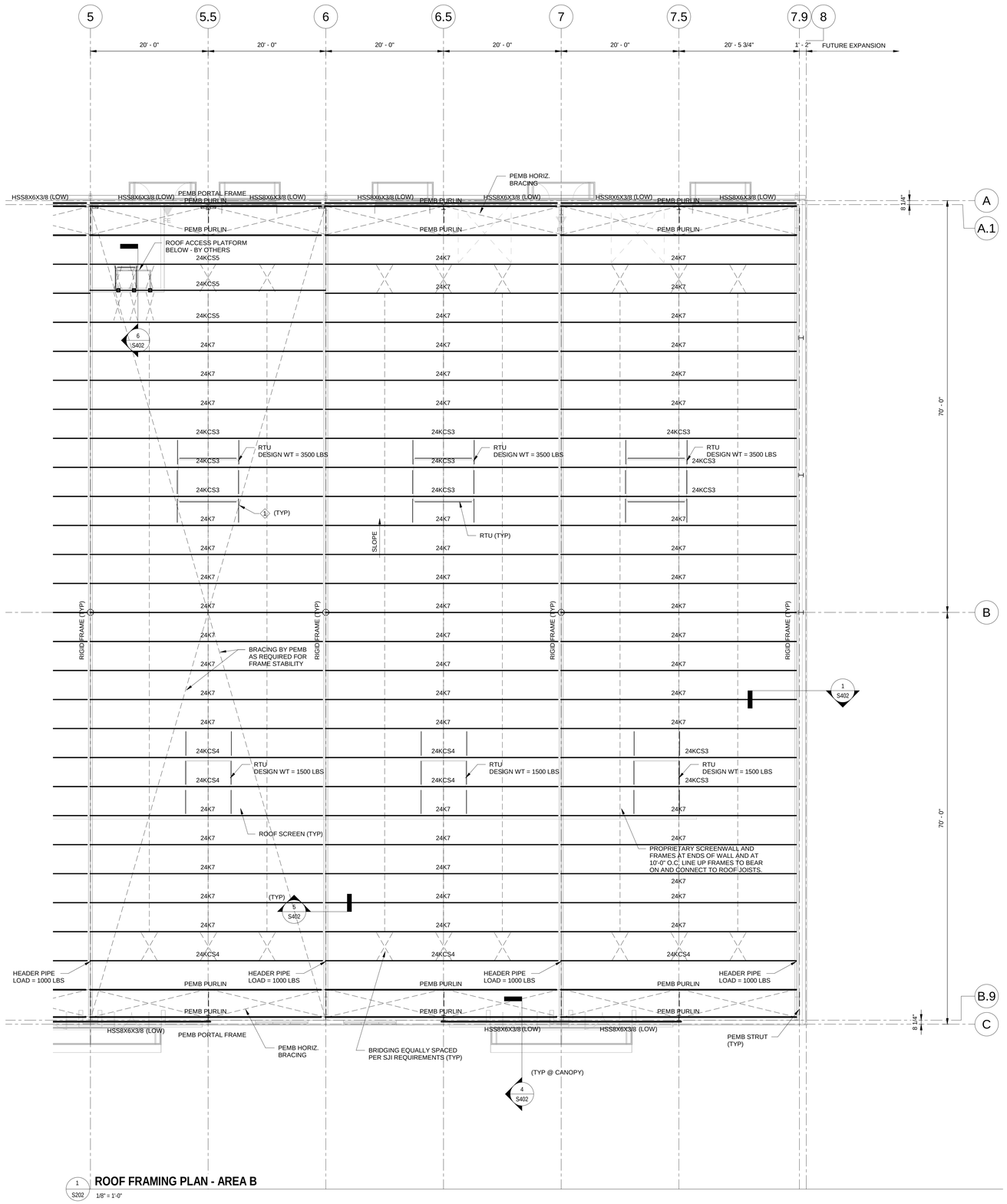
PRINCIPAL IN CHARGE: MMS
PROJECT ENGINEER: MDI
DRAWN BY: ERB

SHEET TITLE:
ROOF FRAMING PLAN - AREA A

SHEET NO.
S201

PROJ. NO.
019640.00



ROOF FRAMING PLAN - AREA B

1/8" = 1'-0"

T/STL ELEV. = VARIES

ALL ROOF FRAMING CONSTRUCTION IS STEEL JOIST WITH 1 1/2", 22GA GALV. WIDE RIB METAL DECK (TYP, UNO).

NOTE: ALL JOIST SPACED AT 5'-0" O.C. MAX (TYP, U.N.O)

1 INDICATES LM TYP AT ALL ROOF TOP EQUIPMENT. LM IS L5x3 1/2x3/8"
SEE S401 FOR ADDITIONAL INFORMATION

NOTES:
1. SEE S001 & S002 FOR GENERAL NOTES AND BASIS OF DESIGN
2. SEE ARCH. DWGS. FOR ALL BUILDING/WALL PLAN DIMENSIONS NOT SHOWN.
3. SEE PRE-ENGINEERED SHOP DRAWING SUBMITTAL FOR ADDITIONAL INFORMATION.

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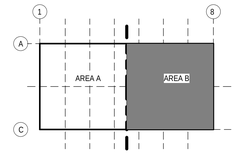

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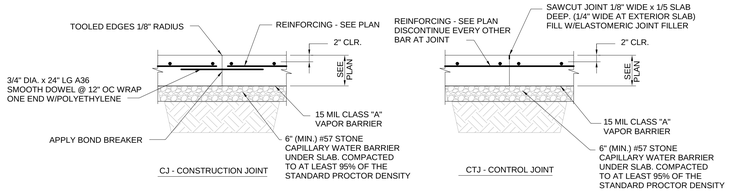
PRINCIPAL IN CHARGE: MMS
PROJECT ENGINEER: MDI
DRAWN BY: ERB

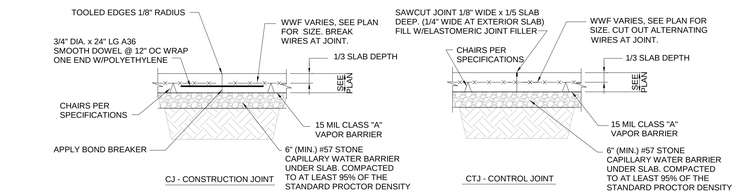
SHEET TITLE:

ROOF FRAMING PLAN - AREA B

SHEET NO. S202

PROJ. NO. 019640.00

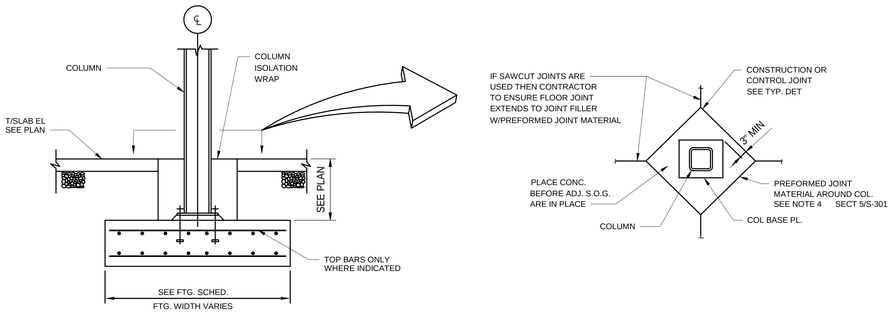




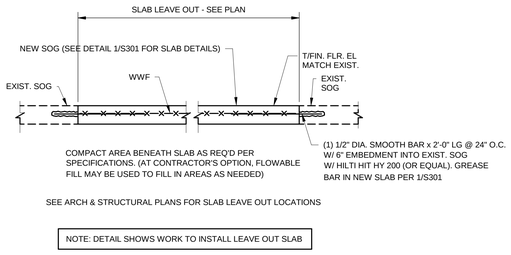
NOTES:

1. CONSTRUCTION AND/OR CONTROL JOINTS ARE INTERCHANGEABLE AT THE CONTRACTOR'S OPTION U.N.O. SEE PLANS FOR LAYOUT OF CONSTRUCTION AND/OR CONTROL JOINTS. JOINTS (16'-0" ON CENTER MAXIMUM). JOINTS LOCATED AT COLUMN CENTER LINES ARE CONSIDERED OPTIMUM.
2. DO NOT LOCATE CONSTRUCTION AND/OR CONTROL JOINTS BELOW MASONRY WALLS.
3. SAW CUTTING OF JOINTS SHALL BE AS SOON AS THE CONCRETE SETS SUFFICIENTLY TO PERMIT CUTTING WITHOUT CHIPPING SPALLING OR TEARING, BUT NOT MORE THAN 24 HOURS AFTER PLACING.
4. JOINT FILLER/SEALER SHALL BE AN ELASTOMERIC JOINT (POLYURETHANE POURABLE SEALANT) PER ASTM C920-87.
5. VAPOR BARRIER SHALL BE 15 MIL CLASS "A" POLYETHYLENE SHEETING OR EQUIVALENT (INSTALL PER ASTM E-1643)

1 S301 TYPICAL SLAB ON GRADE JOINT DETAILS
3/4" = 1'-0"



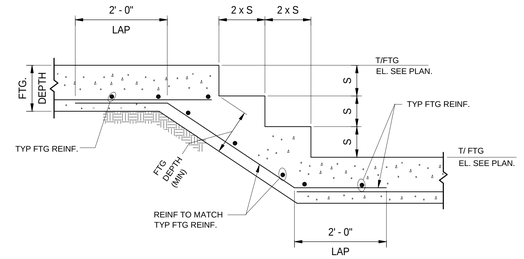
4 S301 TYP. INTERIOR COLUMN S.O.G JOINT DETAIL
3/4" = 1'-0"



7 S301 SLAB LEAVE OUT DETAIL
3/4" = 1'-0"

PRE-ENGINEERED BUILDING FOOTINGS					
REINFORCING SCHEDULE FOR SQUARE FOOTINGS					
DESIGNATION	FOOTING SIZE (FT x FT)	DEPTH (IN)	BOTTOM REINFORCING	TOP REINFORCING	REMARKS
PF5	5'-0" x 5'-0"	12" **	5 - #5 E.W.	———	
PF8	8'-0" x 8'-0"	18" **	8 - #6 E.W.	8 - #6 E.W.	
PF9	9'-0" x 9'-0"	24" **	9 - #7 E.W.	9 - #4 E.W.	

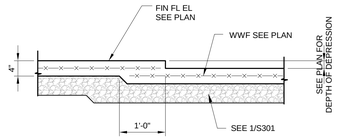
** - FOOTING DEPTH MAY NEED TO BE INCREASED TO ACCOMMODATE REQUIRED ANCHOR BOLT EMBEDMENT. IF REQUIRED, SEE DETAIL 9/S301 THIS DRAWING FOR ADDITIONAL INFORMATION.



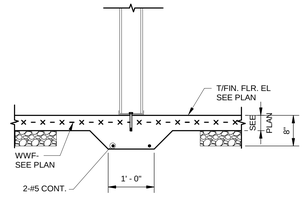
NOTES:

1) S MAX = 2'-0" (SEE PLAN FOR ELEVATION)
2) REINFORCING NOT SHOWN FOR CONCRETE AND CMU WALL. SEE TYP. DETAILS.

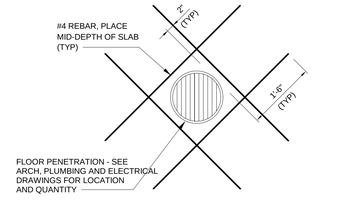
2 S301 TYP STEPPED FOOTING DETAIL
3/4" = 1'-0"



3 S301 SECTION @ SLAB DEPRESSION
3/4" = 1'-0"

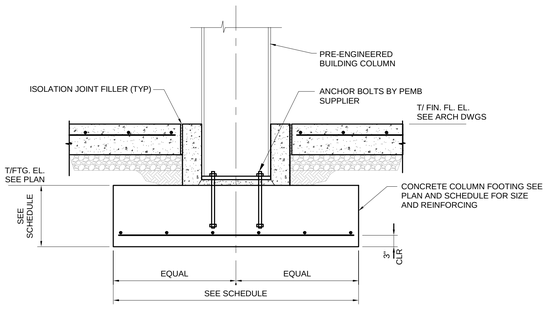


5 S301 TYP THICKEND SLAB AT INTERIOR WALL
3/4" = 1'-0"

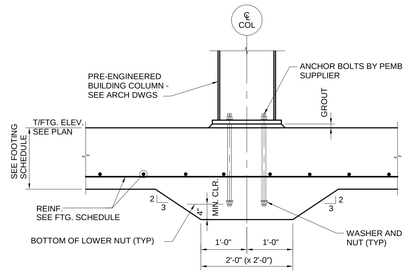


TYPICAL FLOOR PENETRATION REINFORCING DETAIL

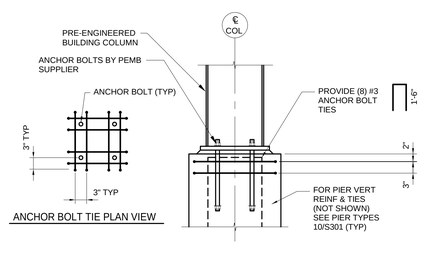
6 S301 DETAIL
3/4" = 1'-0"



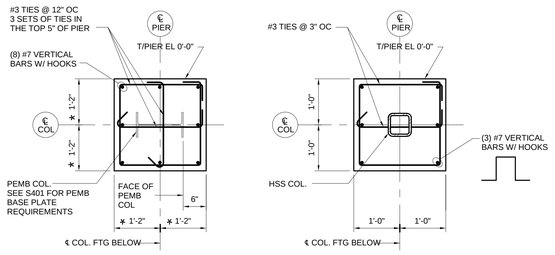
8 S301 SECTION AT INTERIOR COLUMN
3/4" = 1'-0"



9 S301 TYPICAL THICKENED FOOTING FOR LONGER ANCHOR BOLTS
3/4" = 1'-0"



11 S301 PIER WITH ANCHOR BOLT TENSION REINFORCING
3/4" = 1'-0"



PIER TYPE P1 PIER TYPE P2

* INDICATES PIER DIMENSION TO BE VERIFIED BY THE CONTRACTOR BASED ON THE ACTUAL COLUMN AND BASE PLATE SIZE PROVIDED BY THE PEMB SUPPLIER. ASSURE THAT THE PEMB BASE PLATES BEARS DIRECTLY ON THE PIER AND IS A MINIMUM OF 0'-3" CLEAR OF THE EDGE OF THE PIER. THE CONTRACTOR SHALL INCREASE THE PIER SIZE, IF REQUIRED, TO MEET THIS REQUIREMENT. PIER SIZES INDICATED ARE MINIMUM.

10 S301 PIER TYPE DETAILS
3/4" = 1'-0"

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SEALS

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GREENVILLE, SC

SHEET ISSUE:

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B	08.17.2020	PRICING SET	

NOT FOR CONSTRUCTION

PRINCIPAL IN CHARGE: MMS
PROJECT ENGINEER: MDI
DRAWN BY: ERB

SHEET TITLE:

SECTIONS AND DETAILS

SHEET NO. S301

PROJ. NO. 019640.00

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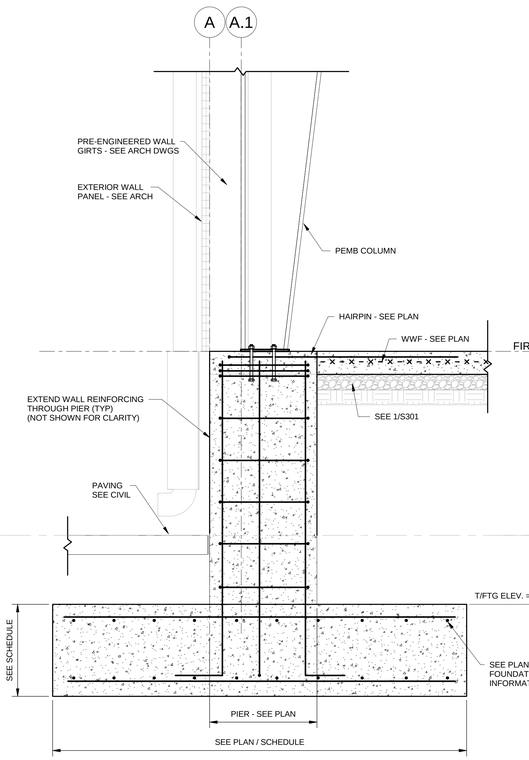
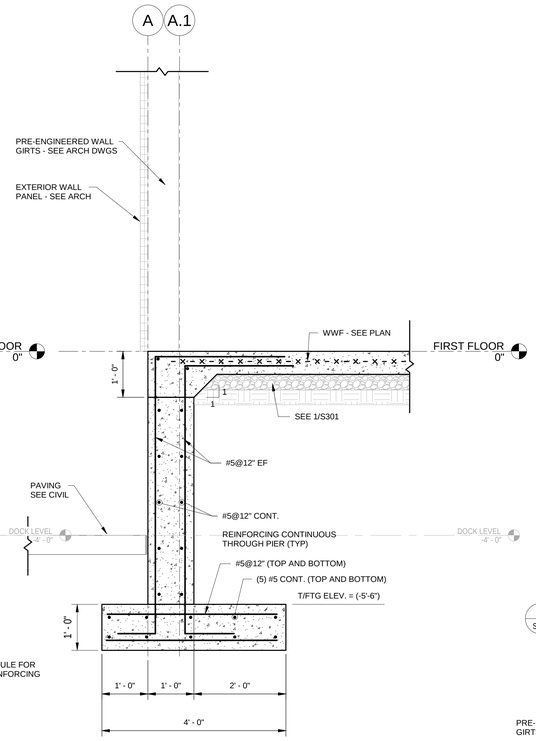
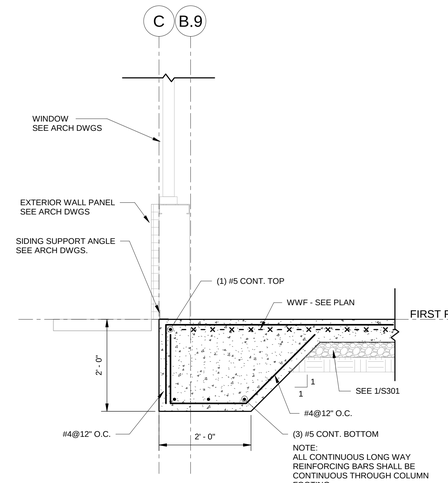


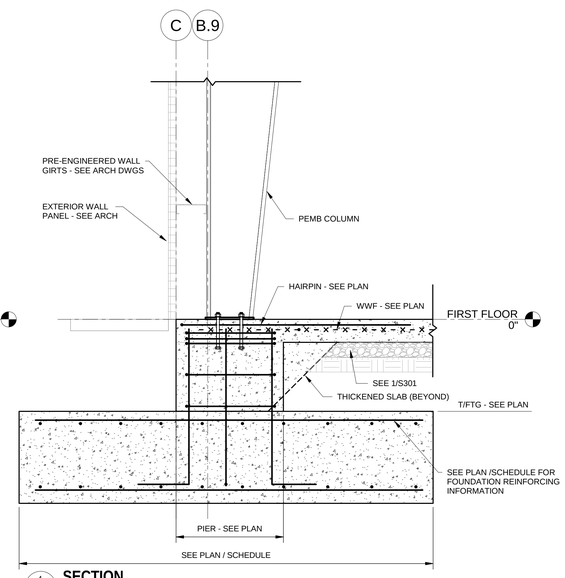
1 S302 **SECTION**
3/4" = 1'-0"



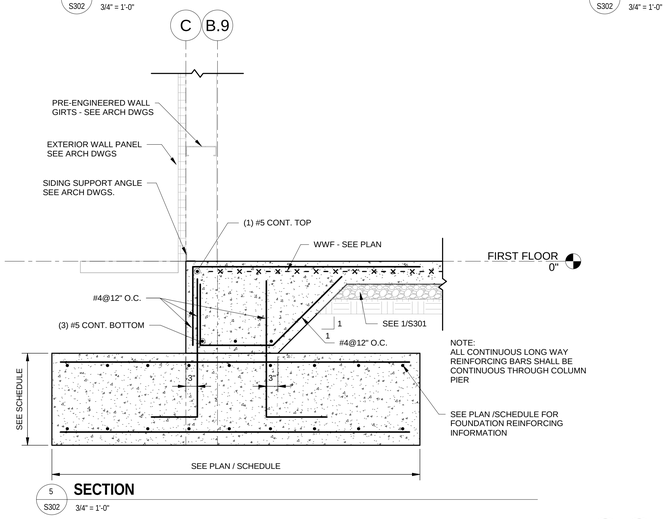
2 S302 **SECTION**
3/4" = 1'-0"



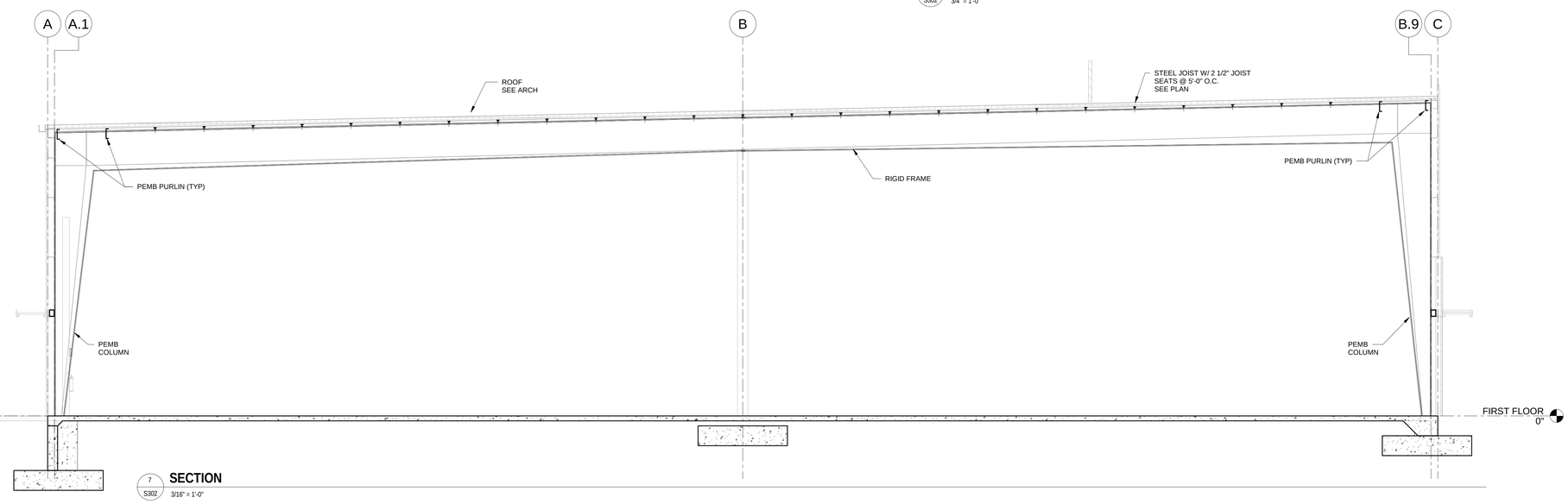
3 S302 **SECTION**
3/4" = 1'-0"



4 S302 **SECTION**
3/4" = 1'-0"



5 S302 **SECTION**
3/4" = 1'-0"



7 S302 **SECTION**
3/16" = 1'-0"

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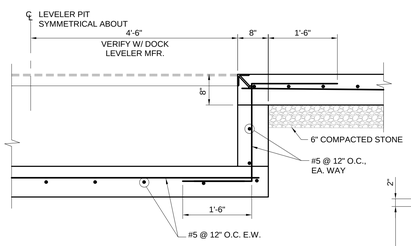
PRINCIPAL IN CHARGE: MMS
PROJECT ENGINEER: MDI
DRAWN BY: ERB

SHEET TITLE:

SECTIONS AND DETAILS

SHEET NO. S302

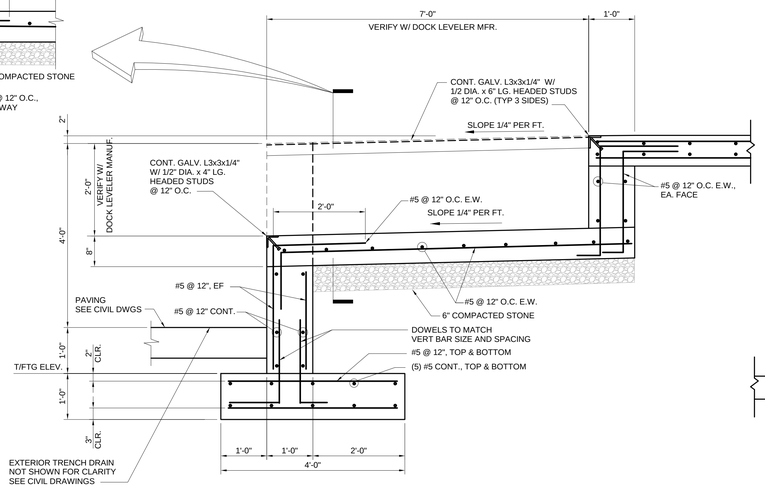
PROJ. NO. 019640.00



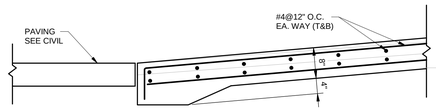
SECTION ACROSS DOCK LEVELER PIT

LEVELER PIT NOTES

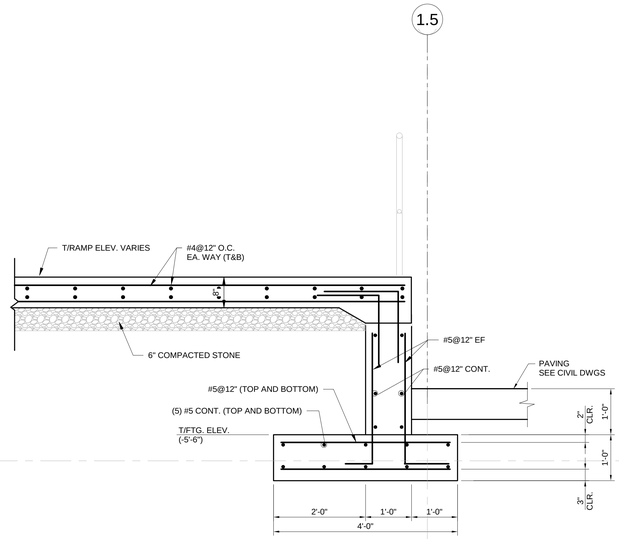
1. FOR DIMENSIONS, ANCHOR BOLTS, CURB ANGLE, INSERT BUMPERS, ETC. SEE MANUFACTURER'S DRAWINGS AND SPECIFICATIONS.
2. LEVELING DOCK SHALL BE INSTALLED PER MANUFACTURER'S DWGS. & SPECS.



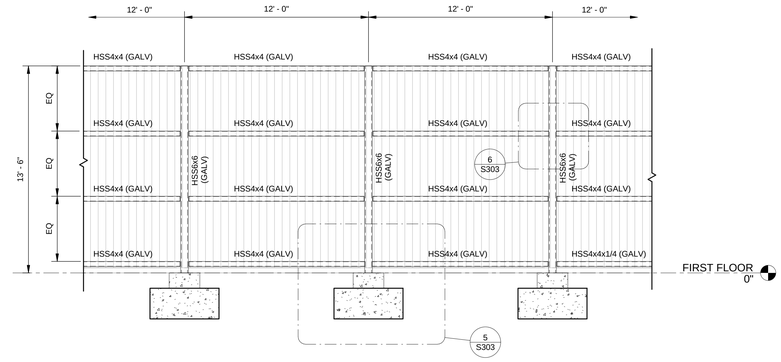
1 S303 **SECTION AT DOCK LEVELER**
3/4" = 1'-0"



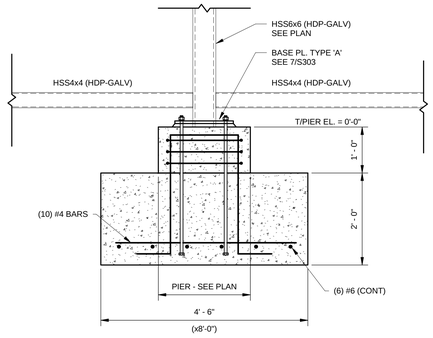
2 S303 **SECTION AT TRUCK RAMP**
3/4" = 1'-0"



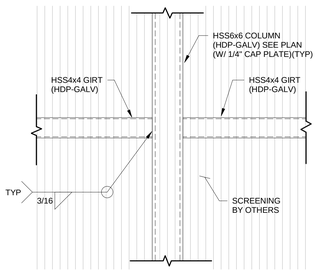
3 S303 **SECTION AT TRUCK RAMP**
3/4" = 1'-0"



4 S303 **SECTION**
1/4" = 1'-0"



5 S303 **SECTION**
3/4" = 1'-0"



6 S303 **DETAIL**
1" = 1'-0"

7 S303 **BASE PLATE TYPES**
3/4" = 1'-0"

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DRAWN BY: ERB

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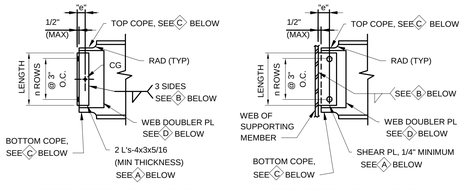
SECTIONS AND DETAILS

SHEET NO. S303

PROJ. NO. 019640.00



TYP FRAMED BEAM CONN - 2 ANGLES

TYP FRAMED BEAM CONN - SINGLE PL

NOTES:

1. CONNECTIONS ABOVE ARE FOR PICTORIAL REPRESENTATION ONLY AND MAY NOT BE INCLUSIVE. WEB EXTENSION PLATES, STIFFENERS, ETC SHALL BE ADDED TO FACILITATE CONNECTION LENGTH REQUIRED @ NO ADDITIONAL COST.
2. FOR BEAMS W/ AXIAL FORCES (PRYING ACTION), SEE NOTE 6.0 ON SHT S001.
3. CONNECTIONS ABOVE SHALL BE DESIGNED TO DEVELOP A MIN END REACTION OF 12K.
4. CONNECTIONS SHALL BE DESIGNED SUCH THAT ALL ADDITIONAL STRESSES DUE TO ECCENTRICITY SHALL BE DEVELOPED BY THE CONNECTION AND NOT INDUCE ANY ADDITIONAL STRESSES INTO SUPPORTING MEMBERS.
5. IN ADDITION TO THE REACTION INDICATED, WEB BOLTS MUST BE DESIGNED FOR THE MOMENT IN THE BOLT GROUP CREATED AS A RESULT OF THE FORCE TRANSFER FROM THE CONNECTING MEMBER TO THE SUPPORTING MEMBER.

A THICKNESS AND LENGTH OF ANGLES OR SHEAR PLATE AND NUMBER OF BOLTS SHALL BE DESIGNED FOR THE REACTION INDICATED USING THE CORRESPONDING "e" DISTANCE CALCULATED FOR THE CONNECTION LAYOUT AND VERIFYING ALL APPLICABLE LIMIT STATES.

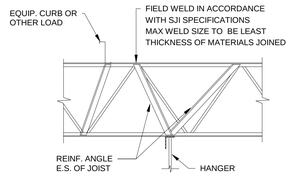
B LENGTH AND SIZE OF WELD SHALL BE DESIGNED FOR THE REACTION INDICATED INCLUDING ANY ADDITIONAL STRESS/MOMENTS CREATED IN THE LOAD TRANSFER FORM THE CONNECTING MEMBER TO THE SUPPORTING MEMBER.

C BEAM COPES SHALL BE PROVIDED AS NECESSARY TO FACILITATE CONNECTION FIT-UP. CAPACITIES OF MEMBERS W/ COPES (TOP OR TOP & BOTTOM) SHALL BE ANALYZED TO DETERMINE THE CRITICAL LIMIT STATE DUE TO THE REDUCED SECTION INCLUDING BUT NOT LIMITED TO BUCKLING OR YIELDING OF THE WEB.

D WEB DOUBLER PLATES OR STIFFENERS (NOT SHOWN) SHALL BE PROVIDED AS NECESSARY TO DEVELOP THE REACTION INDICATED AND FOR REGIONS OF OVER-STRESS AS DESCRIBED IN C ABOVE.

1 S401 TYP STANDARD FRAMING DETAIL

3/4" = 1'-0"



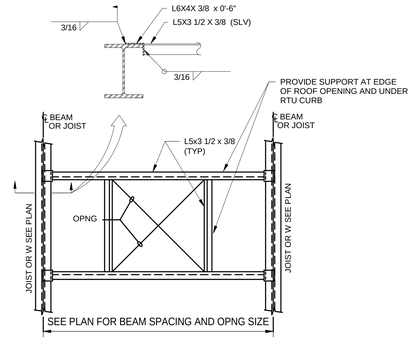
TYPICAL JOIST REINFORCEMENT FOR HANGER OR TOP CHORD LOADS GREATER THAN (A) LBS AT MORE THAN SPECIFIED MAX DISTANCE FROM PANEL POINTS. MAX LOAD PER JOIST - (B) LBS

CONCENTRATED LOADS ON JOISTS

JOIST DEPTH	JOIST REINF. ANGLE	MAX. DIST. FROM PANEL POINT TO CONCEN. LOAD W/O REINF. JOIST	A	B
UP TO 12"	L1x1x 1/8	2"	100#	300#
14" TO 18"	L1 1/4 x1 1/4x 1/8	3"	150#	450#
20" TO 24"	L1 1/2x1 1/2x 3/16	4"	175#	700#
26" TO 44"	L2 x 2 x 3/16	5"	200#	1000#

2 S401 TYP. SECTION FOR CONCENTRATED LOADS ON JOISTS

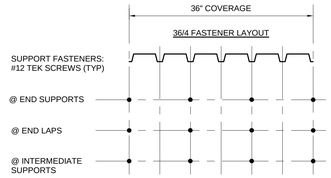
3/4" = 1'-0"



TYPICAL PLAN FOR ROOF OPENING
PLAN OPENING 10" TO 60" OR 6" DIA TO 36" DIA

3 S401 DETAIL AT ROOF OPENING AND RTU CURB

3/4" = 1'-0"



NOTES:

1. NOTIFY ENGINEER IF ANY WIDTH OTHER THAN 36" DECK IS USED.
2. SIDELAP FASTENERS BETWEEN DECK PANELS SHALL BE (2)-#10 TEK SCREWS EQUALLY SPACED BETWEEN ADJACENT JOISTS (UNO).

4 S401 METAL ROOF DECK FASTENING PATTERN

3/4" = 1'-0"

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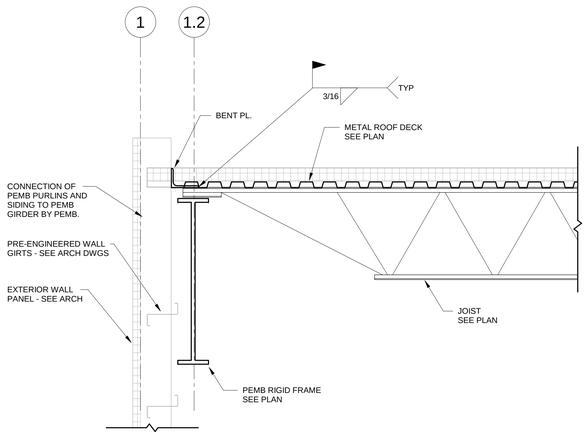
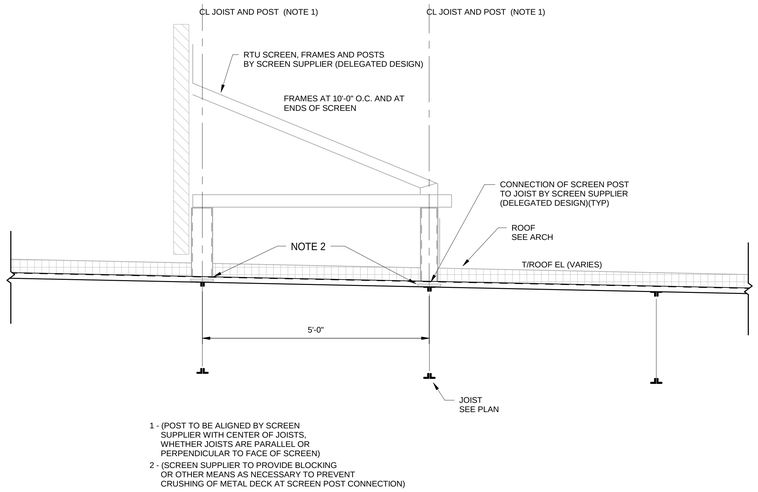
SHEET NO. S401

PROJ. NO. 019640.00

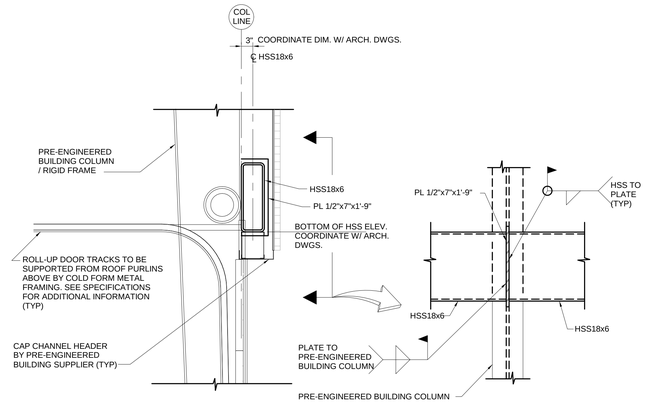


1 S402 **SECTION**
3/4" = 1'-0"

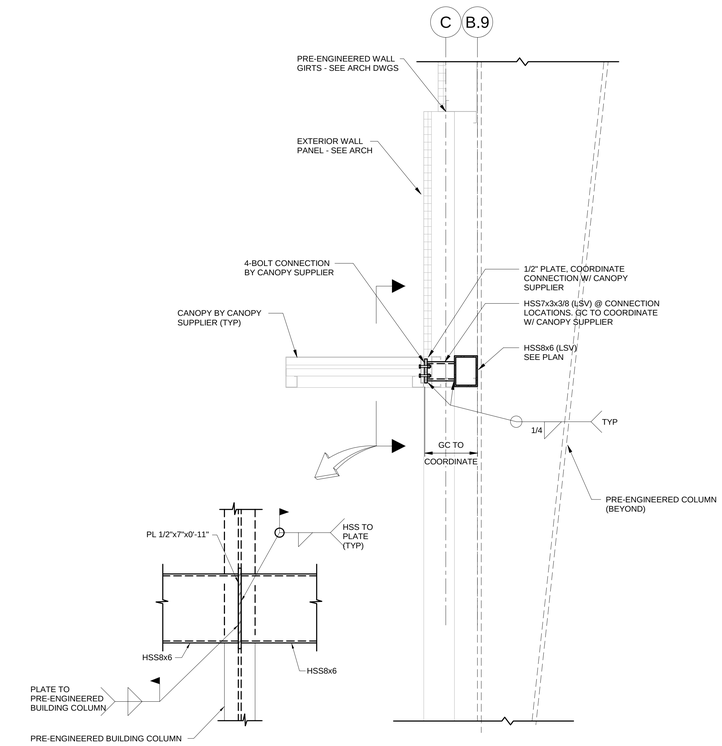


1 - (POST TO BE ALIGNED BY SCREEN SUPPLIER WITH CENTER OF JOISTS, WHETHER JOISTS ARE PARALLEL OR PERPENDICULAR TO FACE OF SCREEN)
2 - (SCREEN SUPPLIER TO PROVIDE BLOCKING OR OTHER MEANS AS NECESSARY TO PREVENT CRUSHING OF METAL DECK AT SCREEN POST CONNECTION)

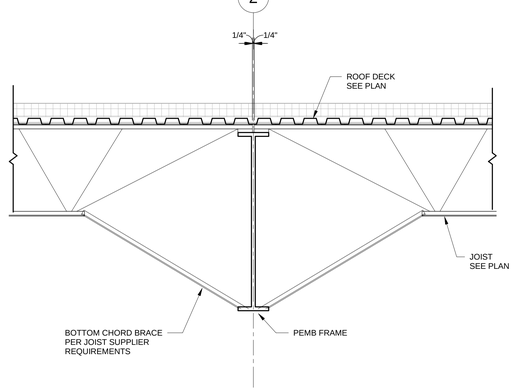
2 S402 **SECTION**
3/4" = 1'-0"



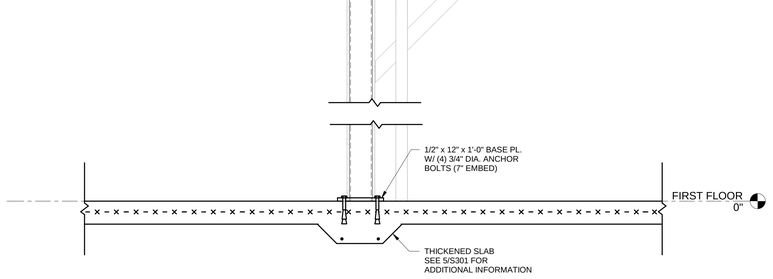
3 S402 **SECTION**
3/4" = 1'-0"



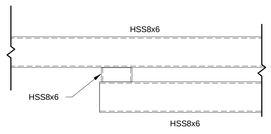
4 S402 **SECTION**
3/4" = 1'-0"



5 S402 **SECTION**
3/4" = 1'-0"



6 S402 **SECTION**
3/4" = 1'-0"



7 S402 **DETAIL**
3/4" = 1'-0"

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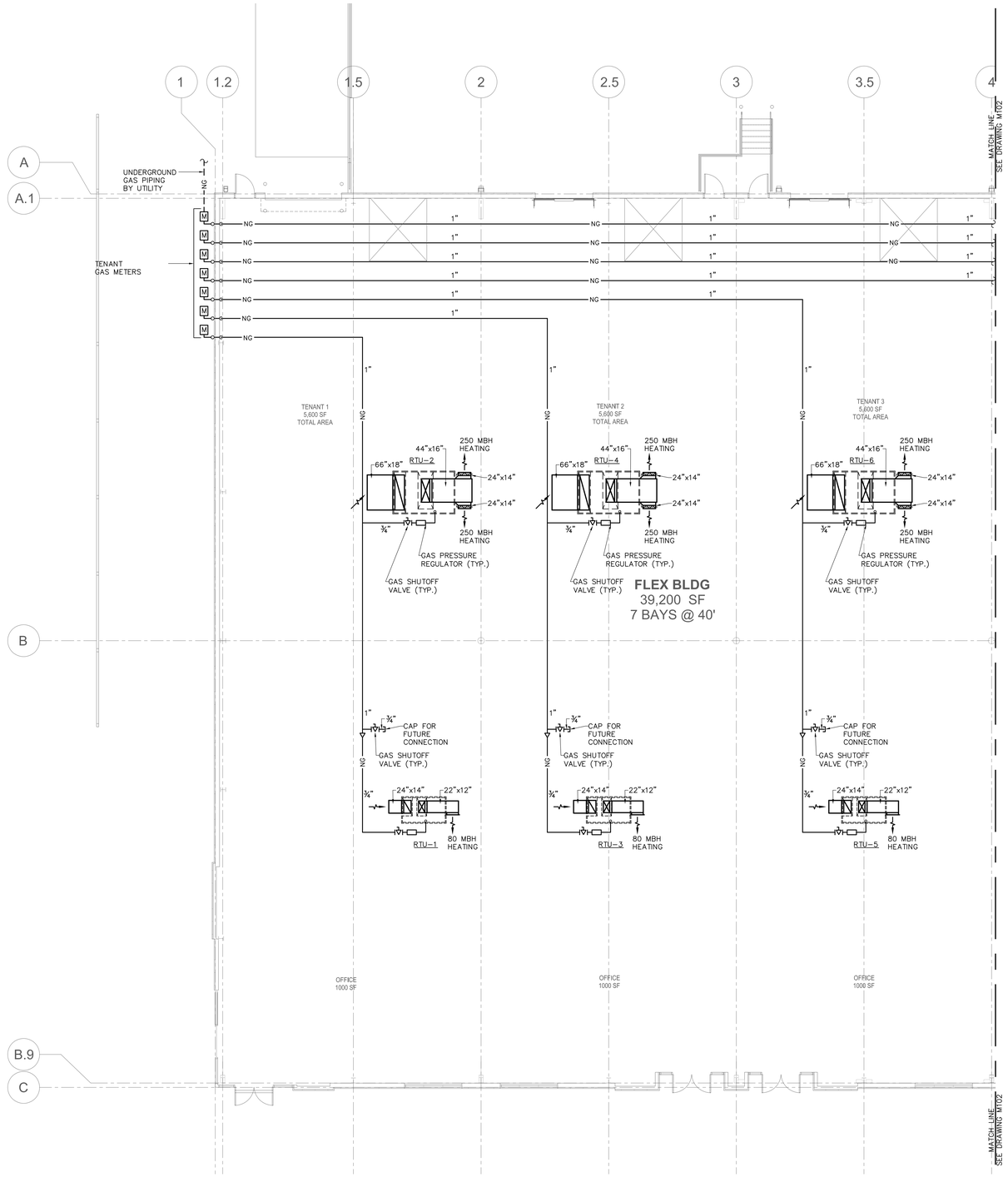
SECTIONS AND DETAILS

SHEET NO. S402

PROJ. NO. 019640.00

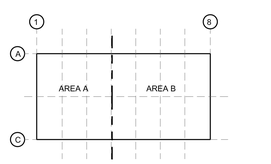


HVAC FLOOR PLAN - AREA A

1/8" = 1'-0"

NOTES:

1. GAS PIPE SIZING BASED UPON 2 PSIG DELIVERY PRESSURE OFF METER WITH 330 MBH HVAC LOAD + ADDITIONAL 80 MBH FUTURE HVAC LOAD = 410 MBH TOTAL.
2. GAS PIPING SHALL BE SUPPORTED TIGHT TO STRUCTURE AND SHALL CONNECT TO HVAC UNIT WITHIN PERIMETER OF ROOF CURB AND NOT REQUIRE ADDITIONAL ROOF PENETRATION.



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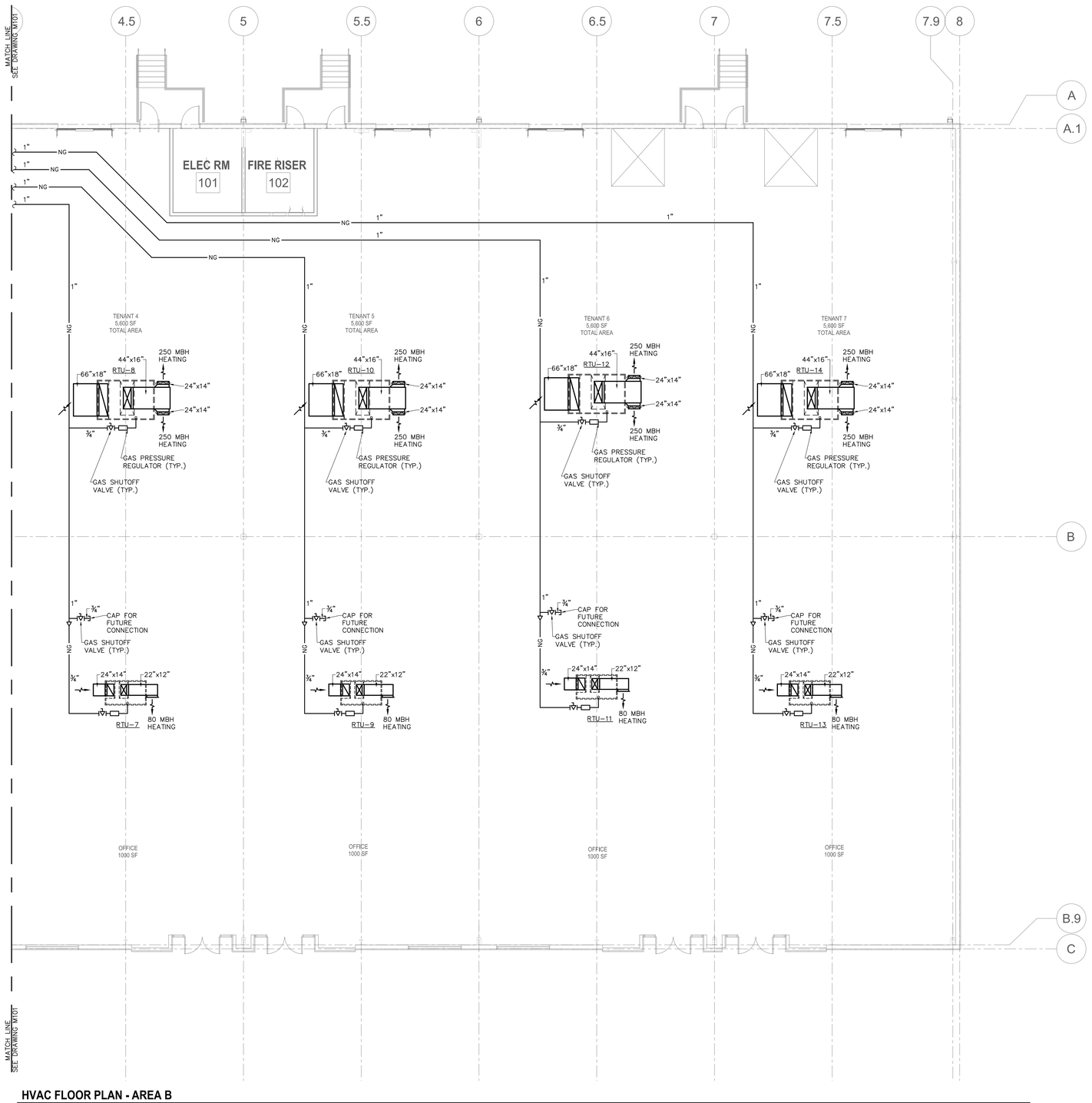
SHEET TITLE:
HVAC FLOOR PLAN - AREA A

SHEET NO. M101

PROJ. NO. 019640.00

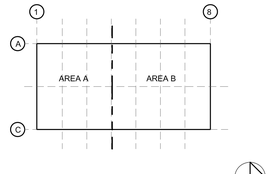


HVAC FLOOR PLAN - AREA B

1/8" = 1'-0"

NOTES:

1. GAS PIPE SIZING BASED UPON 2 PSIG DELIVERY PRESSURE OFF METER WITH 330 MBH HVAC LOAD + ADDITIONAL 80 MBH FUTURE HVAC LOAD = 410 MBH TOTAL.
2. GAS PIPING SHALL BE SUPPORTED TIGHT TO STRUCTURE AND SHALL CONNECT TO HVAC UNIT WITHIN PERIMETER OF ROOF CURB AND NOT REQUIRE ADDITIONAL ROOF PENETRATION.



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SHEET NO. M102

PROJ. NO. 019640.00

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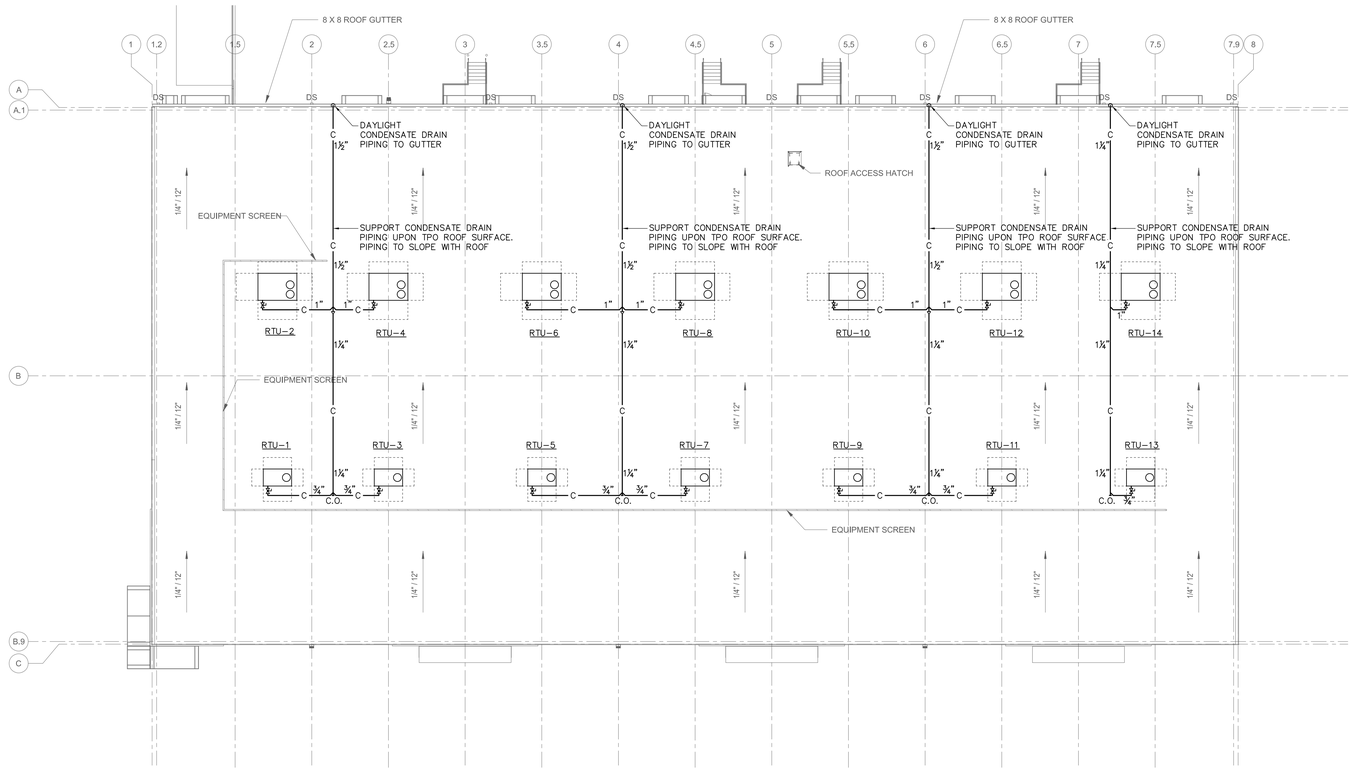
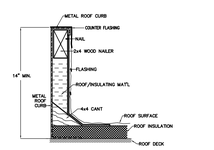
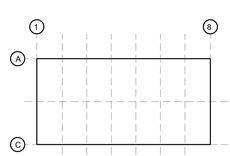


HVAC ROOF PLAN

1/16" = 1'-0"



ROOF CURB CROSS SECTION INSTALLATION DETAIL
NO SCALE
TYPICAL FOR ALL ROOF CURB INSTALLATION OCCURRENCES
CURB SHALL BE FLAT ON TOP AND SLOPED ON BOTTOM TO MATCH ROOF SLOPE



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DRAWN BY: TMI

SHEET TITLE:
HVAC ROOF PLAN

SHEET NO. M103

PROJ. NO. 019640.00

ROOF TOP PACKAGED GAS HEAT, DX COOLING, HOT GAS REHEAT DEHUMIDIFICATION A/C UNIT SCHEDULE

UNIT No.	NOMINAL TONS	SERVICE	TRANE MODEL No.	C.F.M.		MAX. E.S.P. INCHES	FAN H.P.	VOLTAGE	COOLING DATA							HOT GAS REHEAT DATA					HEATING DATA				ELECTRICAL DATA			WEIGHT (lbs.)	REMARKS
				TOTAL	O/A				TOTAL MBH (GROSS)	ENT. AIR		LVG. AIR		E.E.R. A.R.I.	I.E.E.R. A.R.I.	TOTAL MBH	ENT. AIR		LVG. AIR		INPUT MBH	OUTPUT MBH	STAGES	AFUE	M.C.A.	MOP	VOLTAGE		
										DB °F	WB °F	DB °F	WB °F				DB °F	WB °F	DB °F	DP °F									
RTU–1	4	TENANT 1	YHC048E4	1600	–	1.0	1	460/3/60	49.9	80	67	58.6	56.9	11.6	14.2	29.8	58.6	56.9	75.8	55.8	80	64	1	80	11	15	460/3/60	1000	NOTES 1–12
RTU–2	15	TENANT 1	YHD180G4	6000	–	0.75	3	460/3/60	183.4	80	67	59.7	57.1	12.1	14.0	120.3	59.7	57.1	78.2	55.5	250	200	1	80	35	45	460/3/60	2700	NOTES 1–12
RTU–3	4	TENANT 2	YHC048E4	1600	–	1.0	1	460/3/60	49.9	80	67	58.6	56.9	11.6	14.2	29.8	58.6	56.9	75.8	55.8	80	64	1	80	11	15	460/3/60	1000	NOTES 1–12
RTU–4	15	TENANT 2	YHD180G4	6000	–	0.75	3	460/3/60	183.4	80	67	59.7	57.1	12.1	14.0	120.3	59.7	57.1	78.2	55.5	250	200	1	80	35	45	460/3/60	2700	NOTES 1–12
RTU–5	4	TENANT 3	YHC048E4	1600	–	1.0	1	460/3/60	49.9	80	67	58.6	56.9	11.6	14.2	29.8	58.6	56.9	75.8	55.8	80	64	1	80	11	15	460/3/60	1000	NOTES 1–12
RTU–6	15	TENANT 3	YHD180G4	6000	–	0.75	3	460/3/60	183.4	80	67	59.7	57.1	12.1	14.0	120.3	59.7	57.1	78.2	55.5	250	200	1	80	35	45	460/3/60	2700	NOTES 1–12
RTU–7	4	TENANT 4	YHC048E4	1600	–	1.0	1	460/3/60	49.9	80	67	58.6	56.9	11.6	14.2	29.8	58.6	56.9	75.8	55.8	80	64	1	80	11	15	460/3/60	1000	NOTES 1–12
RTU–8	15	TENANT 4	YHD180G4	6000	–	0.75	3	460/3/60	183.4	80	67	59.7	57.1	12.1	14.0	120.3	59.7	57.1	78.2	55.5	250	200	1	80	35	45	460/3/60	2700	NOTES 1–12
RTU–9	4	TENANT 5	YHC048E4	1600	–	1.0	1	460/3/60	49.9	80	67	58.6	56.9	11.6	14.2	29.8	58.6	56.9	75.8	55.8	80	64	1	80	11	15	460/3/60	1000	NOTES 1–12
RTU–10	15	TENANT 5	YHD180G4	6000	–	0.75	3	460/3/60	183.4	80	67	59.7	57.1	12.1	14.0	120.3	59.7	57.1	78.2	55.5	250	200	1	80	35	45	460/3/60	2700	NOTES 1–12
RTU–11	4	TENANT 6	YHC048E4	1600	–	1.0	1	460/3/60	49.9	80	67	58.6	56.9	11.6	14.2	29.8	58.6	56.9	75.8	55.8	80	64	1	80	11	15	460/3/60	1000	NOTES 1–12
RTU–12	15	TENANT 6	YHD180G4	6000	–	0.75	3	460/3/60	183.4	80	67	59.7	57.1	12.1	14.0	120.3	59.7	57.1	78.2	55.5	250	200	1	80	35	45	460/3/60	2700	NOTES 1–12
RTU–13	4	TENANT 7	YHC048E4	1600	–	1.0	1	460/3/60	49.9	80	67	58.6	56.9	11.6	14.2	29.8	58.6	56.9	75.8	55.8	80	64	1	80	11	15	460/3/60	1000	NOTES 1–12
RTU–14	15	TENANT 7	YHD180G4	6000	–	0.75	3	460/3/60	183.4	80	67	59.7	57.1	12.1	14.0	120.3	59.7	57.1	78.2	55.5	250	200	1	80	35	45	460/3/60	2700	NOTES 1–12

NOTES:

1. 2" THICK THROW AWAY FILTERS (2 SETS TOTAL), PLEATED MEDIA (MERV 8 ASHRAE).
2. 0–100% MODULATING OUTSIDE AIR ECONOMIZER, DIFFERENTIAL ENTHALPY CONTROLLED.
3. FIVE YEAR COMPRESSOR AND REFRIGERANT WARRANTY.
4. MANUFACTURER'S START–UP SERVICE AND FIRST YEAR LABOR, PARTS, AND REFRIGERANT WARRANTY.
5. HINGED SERVICE ACCESS PANELS.
6. STAINLESS STEEL GAS HEAT EXCHANGERS WITH 10 YEAR WARRANTY.
7. CONDENSER COIL HAIL GUARD.
8. R–410a REFRIGERANT.
9. HOT GAS REHEAT DEHUMIDIFICATION COIL AND CONTROLS WITH INDOOR ROOM TEMPERATURE AND RELATIVE HUMIDITY SENSOR.
10. CONSTANT AIR VOLUME (CV) OPERATION.
11. STAINLESS STEEL DRAIN PAN.
12. FULL PERIMETER SLOPED ROOF CURB FOR METAL BUILDING ROOF.

MECHANICAL SPECIFICATIONS

SECTION 15000 – MECHANICAL GENERAL PROVISIONS

COORDINATION OF MECHANICAL WORK:

GENERAL: IT IS RECOGNIZED THAT THE CONTRACT DOCUMENTS ARE DIAGRAMMATIC IN SHOWING CERTAIN PHYSICAL RELATIONSHIPS WHICH MUST BE ESTABLISHED WITHIN THE MECHANICAL WORK, AND IN ITS INTERFACE WITH OTHER WORK INCLUDING UTILITIES AND ELECTRICAL WORK, AND THAT SUCH ESTABLISHMENT IS THE EXCLUSIVE RESPONSIBILITY OF THE CONTRACTOR.

QUALITY ASSURANCE, STANDARDS AND SYMBOLS:

GENERAL: THE FOLLOWING STANDARDS ARE IMPOSED, AS APPLICABLE TO THE WORK IN EACH INSTANCE:
- INTERNATIONAL BUILDING CODE (IBC), 2018 EDITION
- NFPA CODE
- INTERNATIONAL ENERGY CONSERVATION CODE (IECC), 2009 EDITION
- INTERNATIONAL MECHANICAL CODE (IMC) 2018 EDITION
- NATIONAL ELECTRICAL CODE, NFPA 70

ELECTRICAL PROVISIONS OF MECHANICAL WORK:

WIRING: THE CONTRACTOR IS RESPONSIBLE FOR ALL CONTROL WIRING. ALL CONTROL WIRING SHALL BE IN CONDUIT.

SECTION 15250 – SYSTEMS INSULATION

DESCRIPTION:

DUCTWORK:

EXTENT OF INSULATION WORK IS INDICATED AS DESCRIBED HEREIN. IN GENERAL, THE WORK TO INCLUDE INSULATING ALL NEW SUPPLY/RETURN DUCT THAT CONNECTS TO HVAC EQUIPMENT.

DUCT INSULATION SHALL COMPLY WITH PARAGRAPH 803.2.8 IN THE 2009 INTERNATIONAL ENERGY CONSERVATION CODE.

DUCTWORK SHALL BE INSULATED WITH 2" THICK TYPE OWENS CORNING FRK–25 SERIES ED150 DUCT WRAP (1.5 PCF). SEAL INSULATION JOINTS WITH FIRE RETARDANT MASTIC.

SECTION 15800 – DUCTWORK

ALL SHEET METAL WORK SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS STIPULATED IN THE CURRENT ISSUE OF NFPA PAMPHLET NO. 90.

SHEET METAL CONSTRUCTION: DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED STEEL. GAUGES (U.S. STANDARDS) OF METAL WHICH SHALL BE USED, TOGETHER WITH THE TYPE OF JOINTS AND METHODS OF STIFFENING AND BRACING FOR VARIOUS SIZE DUCTS SHALL BE AS FOLLOWS:

FABRICATION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF SMACNA HVAC DUCT CONSTRUCTION STANDARDS FOR THE CLASS AND STATIC PRESSURES REQUIRED.

ALL DUCTS SHALL HAVE ALL SEAMS AND JOINTS SEALED AIRTIGHT WITH UNITED SHEET METAL SEALER TO BE APPLIED AS PER MFG. BULLETIN DS–3. NO DUCT TAPE WILL BE ALLOWED.

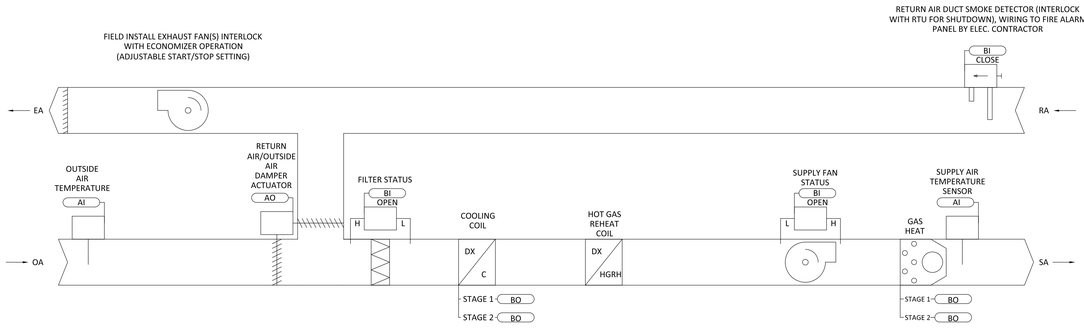
DUCT HANGERS AND SUPPORTS: SHALL BE EITHER STRAP HANGERS OR TRAPEZE HANGERS PROPERLY SECURED TO THE BUILDING CONSTRUCTION. STRAP HANGERS, METAL ATTACHED TO DUCTS, SHALL BE FASTENED TO SUPPORTING MEMBER BY CLAMPS, ANCHOR BOLTS, OR METAL SCREWS WHICHEVER IS MOST APPLICABLE.

SECTION 15350 – FUEL GAS PIPING AND EQUIPMENT

COMPLY WITH APPLICABLE PROVISIONS OF "NATIONAL FUEL GAS CODE", ANSI Z 223.1 (NFPA STANDARD NO. 54). PIPE SIZE 2" AND SMALLER: BLACK STEEL PIPE, SCHEDULE 40, SOCKET WELDED JOINTS AND FITTINGS. PIPING LOCATED OUTDOORS SHALL RECEIVE 2 COATS OF RUST PREVENTATIVE PAINT.

SECTION 15990 – TEST AND BALANCE

PROVIDE INDEPENDENT NEBB CERTIFIED TEST AND BALANCE AGENCY TO PERFORM HVAC AIR BALANCE OF THE FOLLOWING SYSTEMS:
RTU–1 THRU 14. TEST AND ADJUST TO DESIGN SUPPLY, RETURN, AND OUTSIDE AIRFLOWS.



RTU–1 CONTROLS SCHEMATIC (SINGLE ZONE CONSTANT VOLUME WITH HOT GAS REHEAT)

NO SCALE

SIMILAR FOR RTU–2 THROUGH RTU–14

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SEALS

CU-ICAR

CU-ICAR FLEX LAB

GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	

NOT FOR CONSTRUCTION

PRINCIPAL IN CHARGE: Principal
PROJECT ENGINEER: JCP
DRAWN BY: TMI

SHEET TITLE:

HVAC SCHEDULES, SPECIFICATIONS, & CONTROL DIAGRAM

SHEET NO.

M104

PROJ. NO. 019640.00

SYMBOL	DESCRIPTION
HR A-1,3	HOME RUN TO LIGHTING/SERVICE PANEL. HASH MARKS, WHEN SHOWN, INDICATE NUMBERS OF CONDUCTORS. "/" " INDICATES HOT WIRE. "/N" INDICATES NEUTRAL CONDUCTOR. "/G" INDICATES GROUND CONDUCTOR. HOME RUN NOTE INDICATES PANEL NAME AND CIRCUIT NAME OR FEEDER TAG. CONDUCTORS SHALL BE #12 AWG IN 3/4" CONDUIT UNLESS NOTED OTHERWISE. ANY HOME RUN OR CONDUIT WITHOUT HASH MARKS IS TO CONTAIN 3 CONDUCTORS; 1 HOT, 1 NEUTRAL AND 1 EQUIPMENT GROUND, EACH HOT CIRCUIT SHALL BE PAIRED WITH A SEPARATE NEUTRAL CONDUCTOR. SHARING OF NEUTRAL CONDUCTORS BETWEEN CIRCUITS IS NOT ALLOWED.
	EXPOSED CONDUIT
	CONDUIT RUN IN SLAB OR UNDERGROUND.
	CONDUIT RUN CONCEALED ABOVE CEILING OR IN WALLS, UNLESS NOTED OTHERWISE.
	CONDUIT TURNING UP
	CONDUIT TURNING DOWN
	LIGHTING OR SERVICE PANEL, SURFACE MOUNTED.(208V)
	LIGHTING OR SERVICE PANEL, SURFACE MOUNTED.(480V)
T	DRY TYPE TRANSFORMER, KVA AS LISTED ON DRAWINGS.
EF	EXHAUST FAN. SEE MECHANICAL DRAWINGS FOR FAN SPECIFICATIONS.
WH	WATER HEATER.
UH	UNIT HEATER
2HP M	MOTOR, HORSEPOWER AS SHOWN.
30/20/3P/3R	SAFETY DISCONNECT SWITCH. "30" INDICATES AMP RATING, "20" INDICATES FUSE SIZES, "3P" INDICATES NUMBER OF POLES, ENCLOSURE TO BE NEMA 1 UNLESS NOTED OTHERWISE (3R, 4X, ETC.) SQUARE D H300 SERIES HEAVY DUTY SAFETY SWITCH
PE	PHOTOELECTRIC CELL, SPEC GRADE, TO BE MOUNTED ON ROOF, FACING NORTH, TORK MODEL 2101 OR EQUAL.
	WIRING DEVICES
	NOTE: ALL WIRING DEVICES TO BE IVORY, WITH #302 STAINLESS STEEL COVERPLATE (FLUSH MOUNTED) UNLESS NOTED OTHERWISE ON THE DRAWING OR SPECIFICATIONS.
	SWITCH SYMBOLS
S_M	MANUAL MOTOR STARTER
S	SINGLE POLE LIGHTING SWITCH 120-277 VOLT, 20 AMP, SPEC GRADE. LETTER ("a") DESIGNATES WHICH FIXTURES ARE CONTROLLED FROM WHICH SWITCHES WHEN MULTIPLE SWITCHES ARE USED ON ONE CIRCUIT
S_3	SAME AS "S" ABOVE EXCEPT "3" IN SUBSCRIPT DENOTES 3-WAY SWITCH.
	STRAIGHT BLADE DEVICE SYMBOLS
	20A, 125V, 2P, 3W, NEMA 5-20R, DUPLEX RECEPTACLE. HUBBELL 5362-I OR EQUAL. STANDARD POWER. "WP" DENOTES WEATHER RESISTANT RECEPTACLE WITH IN-USE COVER. "GFI" DENOTES GFCI TYPE.
	SAME AS "⏚" ABOVE EXCEPT BOTTOM OF OUTLET MOUNTED ABOVE COUNTER HEIGHT
	QUADRAPLEX - TWO DUPLEX OUTLETS MOUNTED IN A TWO GANG BOX WITH TWO GANG COVER PLATE
	FIRE ALARM, COMMUNICATIONS AND CONTROLS
	COMBINATION DATA/TELEPHONE OUTLET WITH 1" CONDUIT TO ACCESSIBLE CEILING, WITH PULL WIRE. JACKS, CABLE AND BOX COVER BY SYSTEM INSTALLER. "W" INDICATES WALL PHONE OUTLET, 54" AFF.
	TELEPHONE BOARD, ROUTE NO. 6 AWG CU. GROUND TO SERVICE GROUND
FACP	FIRE ALARM CONTROL PANEL, ADDRESSABLE
	AREA SMOKE DETECTOR.
	DUCT MOUNTED SMOKE DETECTOR.
	COMBINATION RATE OF RISE AND FIXED TEMPERATURE OR RATE COMPENSATED HEAT DETECTOR
	WATER FLOW SWITCH
	TAMPER SWITCH
	FIRE ALARM SYSTEM STROBE UNIT ONLY
	FIRE ALARM SYSTEM STROBE UNIT ONLY, CEILING MOUNTED
	FIRE ALARM SYSTEM HORN/STROBE UNIT
F	MANUAL FIRE ALARM PULL STATION
	LIGHTING SYMBOLS:
	4' STRIP FIXTURE
	DOWNLIGHT, WET LOCATION RATED WITH BATTERY BACKUP.
	EXTERIOR WALL PACK
	EXIT FIXTURE WITH INTEGRAL BATTERIES - ARROW INDICATES ILLUMINATED DIRECTIONAL ARROWS, SHADED SECTION INDICATES FACE WHICH IS ILLUMINATED. STEM INDICATES WALL MOUNTED. ALL EXIT LIGHTS SHALL BE MOUNTED TO THE STRUCTURE.
	EMERGENCY LIGHTING UNIT. ALL EMERGENCY LIGHTS SHALL BE MOUNTED TO THE STRUCTURE.
	COMBINATION EMERGENCY LIGHT AND EXIT FIXTURE WITH INTEGRAL BATTERIES - ARROW INDICATES ILLUMINATED DIRECTIONAL ARROWS, SHADED SECTION INDICATES FACE WHICH IS ILLUMINATED. STEM INDICATES WALL MOUNTED. ALL EXIT LIGHTS SHALL BE MOUNTED TO THE STRUCTURE.
	EMERGENCY REMOTE HEADS
	SHOEBOX LIGHT FIXTURE
	BOLLARD LIGHT FIXTURE

GENERAL LIGHTING NOTES:

1. MANUFACTURERS & NUMBERS ARE LISTED TO ESTABLISH QUALITY ONLY AND NOT TO LIMIT COMPETITION. PRIOR TO BIDDING, SUBSTITUTIONS ARE ALLOWED SUBJECT TO SUBMITTAL DATA, PHOTOMETRICS & ENGINEERS APPROVAL AS REQUIRED BY SPECIFICATIONS.
2. POLES FOR AREA FIXTURES ARE TO MATCH FIXTURE FINISH EXACTLY. PROVIDE MULTI-TAP BALLASTS. CONTRACTOR TO COORDINATE PRE-DRILLING OF POLES AS REQUIRED TO ACCEPT ARM MOUNTING. PROVIDE HAND HOLES AT POLE BASES.
3. ALL FIXTURES TO BE U.L. LABELED. ALL EXTERIOR FIXTURES SHALL HAVE U.L. WET LABEL OR DAMP LABEL AS REQUIRED BY LOCATION. CONTRACTOR SHALL VERIFY BEFORE SUBMITTING FIXTURE.
4. PROVIDE ALL MOUNTING ACCESSORIES, BAR HANGARS & HARDWARE REQUIRED.
5. EMERGENCY BATTERIES FOR FIXTURES SHALL PROVIDE A MINIMUM OF 1100 LUMEN OUTPUT. BATTERIES SHALL CONTAIN INTEGRAL SENSING CIRCUIT TO ALLOW FIXTURE TO BE SWITCHED WITH AREA FIXTURES FOR NORMAL OPERATION AND ENERGIZE BATTERY POWERED FIXTURE UPON LOSS OF POWER CIRCUIT, REGARDLESS OF SWITCH POSITION. MANUFACTURER SHALL BE BODINE OR APPROVED EQUAL.

LIGHTING FIXTURE SCHEDULE

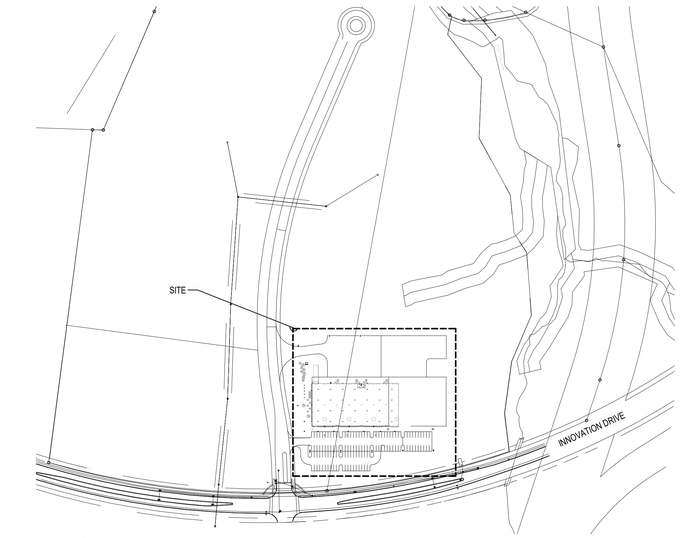
TYPE	DESCRIPTION	MANUFACTURER	MOUNTING HEIGHT	LAMP	WATTAGE	VOLTAGE
BA	7" ROUND LED BOLLARD, DARK BRONZE, 42"TALL.	KIM # PA7RFT-CL-5-12L-020-4K7-42A-DBS-UNV		NOMINAL 2000 LM LED 4000K	22 VA	UNIVERSAL
EM	WALL MOUNTED SPECIFICATION GRADE TWIN-HEAD LED EMERGENCY LIGHT. WHITE FINISH WITH EMERGENCY BATTERY BACKUP.	LITHONIA # ELM2-LED EMERGILITE # EL-2LED LIGHTALARMS # LCA-2LED	7'-0"AFF	BY MFR.	4 VA	UNIVERSAL
EXM	UNIVERSAL MOUNTED EXIT SIGN COMBO WITH RED LETTERS ON WHITE HOUSING. DIFFUSER LENS, WITH TWIN LED EMERGENCY HEADS.	LITHONIA # LHQM-LED-R EMERGILITE # ELXN400-R-2LED LIGHTALARMS # UQLXN500-R-2LED	8'-0"AFF	RED LED/ LED HEADS BY MFR	5 VA	UNIVERSAL
FL	LED FLOOD LIGHT WITH MOTION SENSOR ADJUSTABLE TWO-HEAD FIXTURE, ALUMINUM HOUSING.	LITHONIA # OFLR-6LC-120-MO-BZ		1200 LUMEN LED MODULE 5000K	22 VA	UNIVERSAL
IA	4', LED CHANNEL STRIP LIGHT, STEEL HOUSING, FROSTED ACRYLIC LENS, WHITE FINISH, PAF, 0-10V DIMMING DRIVER	LITHONIA # ZL1D-L48-3000LM-FST-MVOLT-35K-80CRI-WH WILLIAMS # 75R-4-L50/835-(L40)-DIM-UNV COLUMBIA # MPS-4-35-LW-C-W-ED-U	CEILING	NOMINAL 4000 LM LED 3500K	34 VA	UNIVERSAL
LP1	SINGLE HEAD LED SHOEBOX FIXTURE TO MATCH EXISTING CAMPUS/ROADWAY FIXTURE.	HUBBELL # ASLA-24L-4K-210-4-U-WHS-RPA WITH 25' ROUND STEEL POLE	25'	4000K	169 VA	UNIVERSAL
LP2	SAME AS 'LP1' EXCEPT DUAL HEAD FIXTURE.	HUBBELL # ASLA-24L-4K-210-4-U-WHS-RPA WITH 25' ROUND STEEL POLE	25'	4000K	169 VA	UNIVERSAL
RAE	SAME AS 'RA' ABOVE EXCEPT PROVIDED WITH EMERGENCY BATTERY BACKUP, INTEGRAL TEST SWITCH.	GOTHAM # EVO-35/20-6AR-MWD-LSS-MVOLT-EZ10-EL WILLIAMS # 6DR-L30-8-35-EM/10W/ITS-DIM-UNV/O-W-OF-CS-TD/ N-F1 PRESCOLITE # LTR-6RD-H-ML-20L-DM1/LTR-6RD-T-ML-35K- 8-MD-SS		NOMINAL 2000 LM LED 3500K	27 VA	UNIVERSAL
WP	MEDIUM, OPEN FACE, LED WALL PACK, DIE-CAST ALUMINUM BODY, GASKETTED FROSTED POLYCARBONATE LENS, WET LOCATION RATED, BRONZE FINISH	DECO # D464-L-80-40-U-Z-T LITHONIA # DSXW1-LED-20C-1000-40K-TFTM-MVOLT-PE-DDBXD	SEE PLANS	NOMINAL 7000 LM LED 4000K	73 VA	UNIVERSAL

ELECTRICAL GENERAL NOTES:

1. INSPECT SITE PRIOR TO SUBMITTING BID. DRAWINGS ARE INTENDED TO COVER THE REQUIRED ELECTRICAL SYSTEMS. DRAWINGS MAY NOT SHOW COMPLETE OR ACCURATE DETAILS OF THE BUILDING OR SYSTEM IN EVERY RESPECT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ANY ADDITIONAL INFORMATION AS REQUIRED.
2. CONFORM TO THE NATIONAL ELECTRICAL CODE (2017), IBC (2018), IECC (2009), APPLICABLE NEMA, ANSI AND IEEE PUBLICATIONS, U.L. AND ADA STANDARDS AND OSHA REQUIREMENTS. COMPLY WITH LOCAL, COUNTY, STATE AND NATIONAL CODES HAVING JURISDICTION.
3. FURNISH AND INSTALL ALL MATERIALS IN A NEAT AND WORKMANLIKE FASHION. ALL MATERIALS SHALL BE NEW, WITH FIRST QUALITY AND UL LABEL.
4. VERIFY ALL DIMENSIONS AND CLEARANCES PRIOR TO INSTALLATION OF EQUIPMENT AND RACEWAYS. CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF WORK WITH THAT OF ALL OTHER TRADES AS REQUIRED.
5. CONDUIT SHALL BE EMT FOR BRANCH CIRCUIT WIRING AS ALLOWED BY NEC, EXCEPT THAT SET SCREW OR CRIMP FITTINGS ARE NOT ALLOWED. WHERE EXPOSED TO PHYSICAL DAMAGE CONDUITS SHALL BE RIGID GALVANIZED STEEL. MINIMUM CONDUIT SIZE SHALL BE 3/4". ALL CONDUCTORS SHALL BE TYPE THHN/THWN, STRANDED 600V COPPER BUILDING WIRE. MINIMUM SIZE SHALL BE #12 AWG COPPER UNLESS NOTED. UNDERGROUND CONDUITS SHALL BE PVC SCHEDULE 40 WITH TRANSITION TO RIGID GALVANIZED STEEL FOR EXPOSED CONDUITS.
6. PROVIDE GROUNDING FOR ALL EQUIPMENT IN ACCORDANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE. GROUND SERVICE TO BUILDING STEEL, DRIVEN GROUND ROD AND COLD WATER PIPE.
7. ALL ENCLOSURES SHALL BE OF THE NEMA TYPE WHICH IS SUITABLE FOR THE APPLICATION.
8. SEAL ALL CONDUIT PENETRATIONS TO MATCH RATING OF WALL BEING PENETRATED.
9. ALL WORK SHALL HAVE PROPER LABELING AND NAMEPLATES. ALL CIRCUITS SHALL BE LABELED AT PANELS AND BOXES AS INDICATED. ALL PANELS AND DISCONNECTS ARE TO BE PERMANENTLY MARKED WITH NAME OR EQUIPMENT SERVED. ALL PANELS ARE TO BE PROVIDED WITH TYPEWRITTEN PANEL SCHEDULES.
10. ALL BREAKERS ON CIRCUITS SUPPLYING HVAC EQUIPMENT SHALL BE TYPE HACR BREAKERS.
11. PROVIDE TELEPHONE ENTRY CONDUIT AND CONNECTION BOARD AS REQUIRED. STUB CONDUIT INTO SPACE AND EXTEND BEYOND PAVEMENT. COORDINATE WITH TELEPHONE SERVICE PROVIDER AND PAY ALL CHARGES. SEAL ALL TELEPHONE SERVICE CONDUIT AND AROUND CABLES TO PREVENT WATER ENTRY AROUND CONDUIT OR THRU CONDUIT.
12. COORDINATE WITH ELECTRICAL UTILITY AS REQUIRED FOR SERVICE ENTRY. INSTALL PAD, METER AND CONDUITS PER UTILITY REQUIREMENTS AND PAY ALL REQUIRED FEES OR CHARGES FOR SERVICES SHOWN.
13. THOROUGHLY CLEAN ALL EQUIPMENT AND SYSTEMS BEFORE PLACING IN OPERATION. RESTORE FINISHED SURFACES IF DAMAGED AND DELIVER THE ENTIRE INSTALLATION IN AN APPROVED CONDITION. INSTRUCT THE OWNERS' PERSONNEL IN THE PROPER OPERATION AND MAINTENANCE OF THE SYSTEMS. FURNISH TO THE OWNER THREE SETS OF OPERATION AND MAINTENANCE MANUALS FOR EACH SYSTEM.
14. GUARANTEE THE WORK INSTALLED FOR A PERIOD OF ONE YEAR AFTER DATE OF FINAL ACCEPTANCE. DEFECTS WHICH APPEAR AS A RESULT OF NORMAL USAGE SHALL BE REMEDIED BY THE CONTRACTOR TO THE COMPLETE SATISFACTION OF THE OWNER WITHOUT COST TO THE OWNER.
15. CONTRACTOR SHALL KEEP CURRENT A SET OF PLANS FOR THE DURATION OF CONSTRUCTION WITH ALL CHANGES TO WORK NEATLY AND ACCURATELY MARKED IN RED AND SHALL TURN OVER TO OWNER AT COMPLETION OF PROJECT.
16. ALL ELECTRICAL EQUIPMENT SHALL BE INSTALLED TO MEET SEISMIC REQUIREMENTS OF 2018 IBC.
17. ALL PANELBOARDS SHALL BE FURNISHED WITH COPPER BUS BARS AND A COPPER GROUNDING BUS BAR.

ABBREVIATIONS:

AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
ACH	ABOVE COUNTER HEIGHT
CU	COPPER
EC	ELECTRICAL CONTRACTOR
EMT	ELECTRICAL METALLIC TUBING
EWC	ELECTRIC WATER COOLER
FU	FUSE
FWE	FURNISHED WITH EQUIPMENT
GFI	GROUND FAULT INTERRUPTER DEVICE
LTG	LIGHTING (L.)
MLO	MAIN LUGS ONLY
MCB	MAIN CIRCUIT BREAKER
NTS	NOT TO SCALE
PVC	POLYVINYL CHLORIDE CONDUIT
RECPT	RECEPTACLE (R.)
RGS	RIGID GALVANIZED STEEL
UNO	UNLESS NOTED OTHERWISE
UH	UNIT HEATER
UGND	UNDERGROUND
W/	WITH
WH	WATER HEATER
WP	WEATHER PROOF
XFMR	TRANSFORMER



1 E001 KEY PLAN - MILLENIUM CAMPUS - GREENVILLE
1" = 200'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
AUGUST 13, 2020

mcmillan pazdan smith ARCHITECTURE

CONSULTANT LOGO

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SEALS

CU-ICAR

CU-ICAR FLEX LAB

GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	RAB

NOT FOR CONSTRUCTION

PRINCIPAL IN CHARGE: DJB
PROJECT ARCHITECT: RAB
DRAWN BY: TMP/RAB

SHEET TITLE:

ELECTRICAL LEGEND AND SCHEDULES

SHEET NO. E001

PROJ. NO. 019640.00

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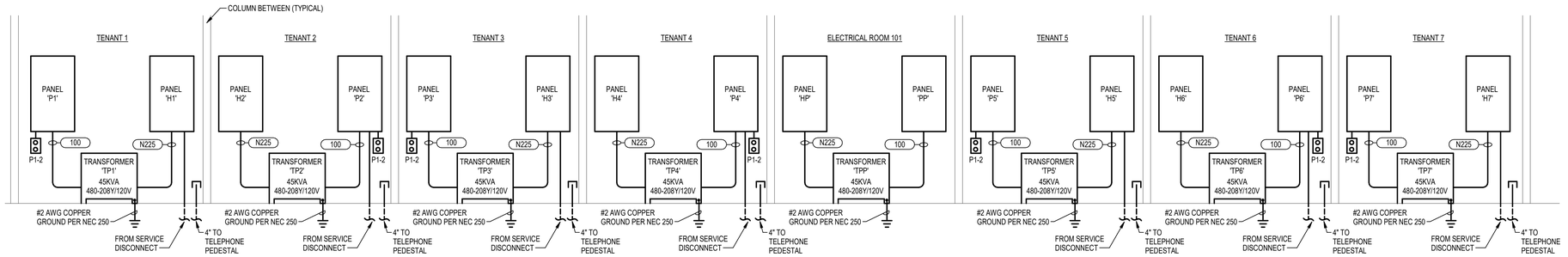
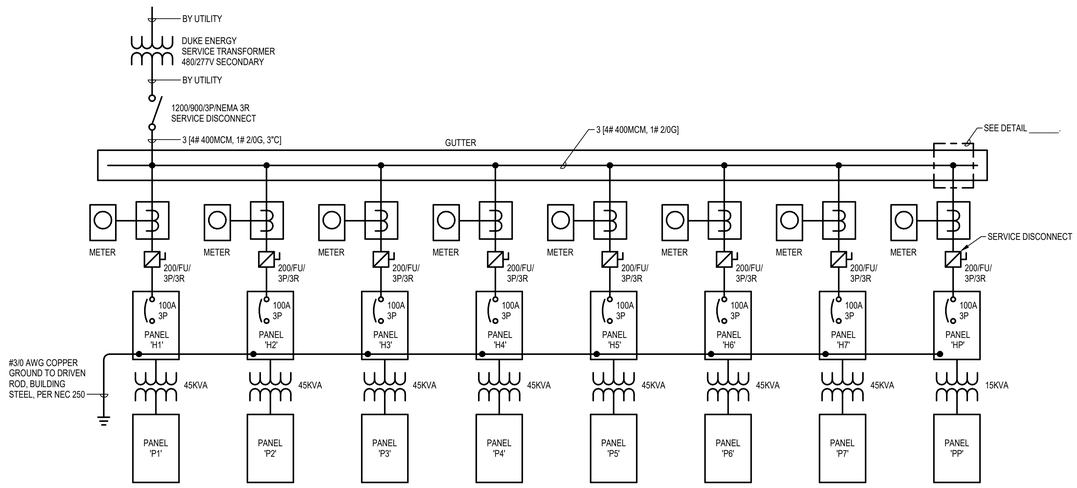
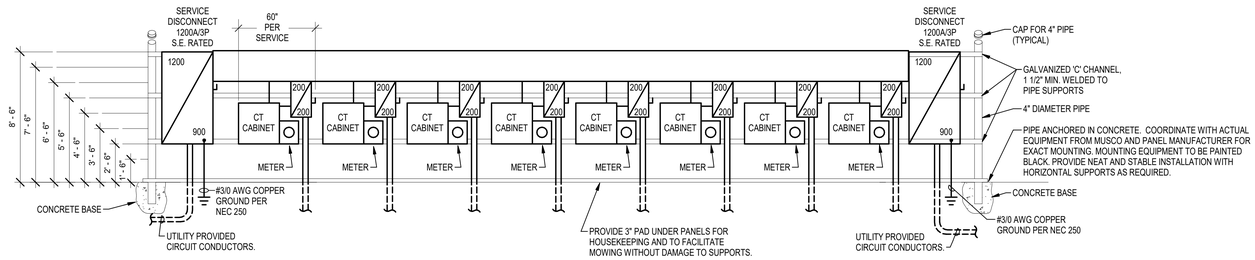
CABLE/CONDUIT SCHEDULE	
TAG	WIRE AND CONDUIT
100	3 #3, 1 #6G; 1 1/2"C
N225	4 #4/0, #4G; 2 1/2"C



1 E002 ELECTRICAL RISER DIAGRAM
NTS



2 E002 ELECTRICAL SINGLE LINE DIAGRAM
NTS



NOTES:

1. COORDINATE INSTALLATION OF SERVICE TO NEW PANEL 'H' WITH UTILITY COMPANY AND PROVIDE ALL REQUIREMENTS.
2. WIRE CONTACTORS TO POLES SUCH THAT EACH FIELD MAY BE SWITCHED SEPARETELY.
3. PROVIDE CONTROL POWER TRANSFORMER WITH SECONDARY PROTECTION FOR MUSCO LIGHTING CONTROL POWER. COORDINATE SIZE WITH MUSCO.
4. PROVIDE 25 YEAR WARRANTY ON SPORTS LIGHTING SYSTEM.
5. PROVIDE NAMEPLATE FOR PANEL WITH I.D. INFORMATION AND "SERVICE DISCONNECT - FED FROM UTILITY TRANSFORMER".
6. INSTALL SURGE PROTECTION, FURNISHED BY MUSCO.

3 E002 EXTERIOR EQUIPMENT RISER DIAGRAM
1/4" = 1'-0"

PRELIMINARY
NOT FOR CONSTRUCTION
AUGUST 13, 2020

mcmillan pazdan smith ARCHITECTURE

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SEALS

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GREENVILLE, SC

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	RAB

NOT FOR CONSTRUCTION

PRINCIPAL IN CHARGE: DJB
PROJECT ARCHITECT: RAB
DRAWN BY: TMP/RAB

SHEET TITLE:
ELECTRICAL RISER DIAGRAM

SHEET NO. E002

PROJ. NO. 019640.00

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SEALS

CU-ICAR

CU-ICAR FLEX LAB

GREENVILLE, SC

PANEL HP **CABINET** SURFACE **TYPE** SQUARE D NF
VOLTAGE 480Y/277V **PHASE** 3 **WIRES** 4 **FEEDER** **MAINS** 200 A MLO

DEVICE			BRANCH CIRCUIT	PHASE LOAD (VOLT-AMPS)							BRANCH CIRCUIT	DEVICE	
AMPS TRIP	POLES	NOTES	DESIGNATION	No.	ØA		ØB		ØC		No.	DESIGNATION	NOTES	POLES	AMPS TRIP
20 A	1		L-PARKING LOT	1	845	0					2	SPACE		--	--
20 A	1		L-PARKING LOT	3			507	0			4	SPACE		--	--
20 A	1		L-EXTERIOR	5					584	0	6	SPACE		--	--
20 A	1		L-ELEC 101, RISER 102	7	136	0					8	SPACE		--	--
20 A	1		L-EXTERIOR	9			632	0			10	SPACE		--	--
				11						0	12	SPACE		--	--
				13		0					14	SPACE		--	--
				15				0			16	SPACE		--	--
				17						0	18	SPACE		--	--
				19		0					20	SPACE		--	--
				21				0			22	SPACE		--	--
				23						0	24	SPACE		--	--
				25		0					26	SPACE		--	--
				27				0			28	SPACE		--	--
				29							30				
				31							32				
				33							34				
				35							36				
100 A	3		PANEL 'PP' VIA XFMR 'TPP'	37	500						38				
				39			0				40				
				41					0		42				
INTEGRATED EQUIPMENT RATING					1.5 kVA		1.1 kVA		0.6 kVA		PANELBOARD LOAD TOTAL				2.7 kVA

PANEL H1 **CABINET** SURFACE **TYPE** SQUARE D NF
VOLTAGE 480Y/277V **PHASE** 3 **WIRES** 4 **FEEDER** **MAINS** 200 A MLO

DEVICE			BRANCH CIRCUIT	PHASE LOAD (VOLT-AMPS)							BRANCH CIRCUIT	DEVICE	
AMPS TRIP	POLES	NOTES	DESIGNATION	No.	ØA		ØB		ØC		No.	DESIGNATION	NOTES	POLES	AMPS TRIP
20 A	1		L-TENANT 1	1	146						2				
				3							4				
				5							6				
				7							8				
				9							10				
				11							12				
				13							14				
				15							16				
				17							18				
				19							20				
				21							22				
				23							24				
				25							26				
				27							28				
				29							30				
				31		3048					32				
				33				3048			34	RTU-1A		3	15 A
				35						3048	36				
100 A	3		PANEL 'P1' VIA XFMR 'T1'	37	680	9700					38				
				39				0	9700		40	RTU-1B		3	45 A
				41						0	42				
INTEGRATED EQUIPMENT RATING					13.6 kVA		12.7 kVA		12.7 kVA		PANELBOARD LOAD TOTAL				39.1 kVA

PANEL H2 **CABINET** SURFACE **TYPE** SQUARE D NF
VOLTAGE 480Y/277V **PHASE** 3 **WIRES** 4 **FEEDER** **MAINS** 200 A MLO

DEVICE			BRANCH CIRCUIT	PHASE LOAD (VOLT-AMPS)							BRANCH CIRCUIT	DEVICE	
AMPS TRIP	POLES	NOTES	DESIGNATION	No.	ØA		ØB		ØC		No.	DESIGNATION	NOTES	POLES	AMPS TRIP
20 A	1		L-TENANT 2	1	146						2				
				3							4				
				5							6				
				7							8				
				9							10				
				11							12				
				13							14				
				15							16				
				17							18				
				19							20				
				21							22				
				23							24				
				25							26				
				27							28				
				29							30				
				31		3048					32				
				33				3048			34	RTU-2A		3	15 A
				35						3048	36				
100 A	3		PANEL 'P2' VIA XFMR 'T2'	37	680	9700					38				
				39				0	9700		40	RTU-2B		3	45 A
				41						0	42				
INTEGRATED EQUIPMENT RATING					13.6 kVA		12.7 kVA		12.7 kVA		PANELBOARD LOAD TOTAL				39.1 kVA

PANEL H3 **CABINET** SURFACE **TYPE** SQUARE D NF
VOLTAGE 480Y/277V **PHASE** 3 **WIRES** 4 **FEEDER** **MAINS** 200 A MLO

DEVICE			BRANCH CIRCUIT	PHASE LOAD (VOLT-AMPS)							BRANCH CIRCUIT	DEVICE	
AMPS TRIP	POLES	NOTES	DESIGNATION	No.	ØA		ØB		ØC		No.	DESIGNATION	NOTES	POLES	AMPS TRIP
20 A	1		L-TENANT 3	1	146						2				
				3							4				
				5							6				
				7							8				
				9							10				
				11							12				
				13							14				
				15							16				
				17							18				
				19							20				
				21							22				
				23							24				
				25							26				
				27							28				
				29							30				
				31		3048					32				
				33				3048			34	RTU-3A		3	15 A
				35						3048	36				
100 A	3		PANEL 'P3' VIA XFMR 'T3'	37	680	9700					38				
				39				0	9700		40	RTU-3B		3	45 A
				41						0	42				
INTEGRATED EQUIPMENT RATING					13.6 kVA		12.7 kVA		12.7 kVA		PANELBOARD LOAD TOTAL				39.1 kVA

PANEL PP **CABINET** SURFACE **TYPE** SQUARE D NQ
VOLTAGE 208Y/120V **PHASE** 3 **WIRES** 4 **FEEDER** **MAINS** 200 A MLO

DEVICE			BRANCH CIRCUIT	PHASE LOAD (VOLT-AMPS)							BRANCH CIRCUIT	DEVICE	
AMPS TRIP	POLES	NOTES	DESIGNATION	No.	ØA		ØB		ØC		No.	DESIGNATION	NOTES	POLES	AMPS TRIP
				1		500					2	FACP		1	20 A
				3							4				
				5							6				
				7							8				
				9							10				
				11							12				
				13							14				
				15							16				
				17							18				
				19							20				
				21							22				
				23							24				
INTEGRATED EQUIPMENT RATING					0.5 kVA		0.0 kVA		0.0 kVA		PANELBOARD LOAD TOTAL				0.0 kVA

PANEL P1 **CABINET** SURFACE **TYPE** SQUARE D NQ
VOLTAGE 208Y/120V **PHASE** 3 **WIRES** 4 **FEEDER** **MAINS** 100 A MCB

DEVICE			BRANCH CIRCUIT	PHASE LOAD (VOLT-AMPS)							BRANCH CIRCUIT	DEVICE	
AMPS TRIP	POLES	NOTES	DESIGNATION	No.	ØA		ØB		ØC		No.	DESIGNATION	NOTES	POLES	AMPS TRIP
20 A	1		R.-TENANT 1	1	180	500					2	R.-ROOF TOP UNIT		1	20 A
				3							4				
				5							6				
				7							8				
				9							10				
				11							12				
				13							14				
				15							16				
				17							18				
				19							20				
				21							22				
				23							24				
INTEGRATED EQUIPMENT RATING					0.7 kVA		0.0 kVA		0.0 kVA		PANELBOARD LOAD TOTAL				0.7 kVA

PANEL P2 **CABINET** SURFACE **TYPE** SQUARE D NQ
VOLTAGE 208Y/120V **PHASE** 3 **WIRES** 4 **FEEDER** **MAINS** 100 A MCB

DEVICE			BRANCH CIRCUIT	PHASE LOAD (VOLT-AMPS)							BRANCH CIRCUIT	DEVICE	
AMPS TRIP	POLES	NOTES	DESIGNATION	No.	ØA		ØB		ØC		No.	DESIGNATION	NOTES	POLES	AMPS TRIP
20 A	1		R.-TENANT 2	1	180	500					2	R.-ROOF TOP UNIT		1	20 A
				3							4				
				5							6				
				7							8				
				9							10				
				11							12				
				13							14				
				15							16				
				17							18				
				19							20				
				21							22				
				23							24				
INTEGRATED EQUIPMENT RATING					0.7 kVA		0.0 kVA		0.0 kVA		PANELBOARD LOAD TOTAL				0.7 kVA

PANEL P3 **CABINET** SURFACE **TYPE** SQUARE D NQ
VOLTAGE 208Y/120V **PHASE** 3 **WIRES** 4 **FEEDER** **MAINS** 100 A MCB

DEVICE			BRANCH CIRCUIT	PHASE LOAD (VOLT-AMPS)							BRANCH CIRCUIT	DEVICE	
AMPS TRIP	POLES	NOTES	DESIGNATION	No.	ØA		ØB		ØC		No.	DESIGNATION	NOTES	POLES	AMPS TRIP
20 A	1		R.-TENANT 3	1	180	500					2	R.-ROOF TOP UNIT		1	20 A
				3							4				
				5							6				
				7							8				
				9							10				
				11							12				
				13							14				
				15							16				
				17							18				
				19							20				
				21							22				
				23							24				
INTEGRATED EQUIPMENT RATING					0.7 kVA		0.0 kVA		0.0 kVA		PANELBOARD LOAD TOTAL				0.7 kVA

PANEL H4 **CABINET** SURFACE **TYPE** SQUARE D NF
VOLTAGE 480Y/277V **PHASE** 3 **WIRES** 4 **FEEDER** **MAINS** 200 A MLO

DEVICE			BRANCH CIRCUIT	PHASE LOAD (VOLT-AMPS)							BRANCH CIRCUIT	DEVICE	
AMPS TRIP	POLES	NOTES	DESIGNATION	No.	ØA		ØB		ØC		No.	DESIGNATION	NOTES	POLES	AMPS TRIP
20 A	1		L-TENANT 4	1	146						2				
				3							4				
				5							6				
				7							8				
				9							10				
				11							12				
				13							14				
				15							16				
				17							18				
				19							20				
				21							22				
				23							24				
				25							26				
				27							28				
				29							30				
				31		3048					32				
				33				3048			34	RTU-4A		3	15 A
				35						3048	36				
100 A	3		PANEL P-4 VIA XFMR 'T4'	37	680	9700					38				
				39				0	9700		40	RTU-4B		3	45 A
				41						0	42				
INTEGRATED EQUIPMENT RATING					13.6 kVA		12.7 kVA		12.7 kVA		PANELBOARD LOAD TOTAL				39.1 kVA

PANEL H5 **CABINET** SURFACE **TYPE** SQUARE D NF
VOLTAGE 480Y/277V **PHASE** 3 **WIRES** 4 **FEEDER** **MAINS** 200 A MLO

DEVICE			BRANCH CIRCUIT	PHASE LOAD (VOLT-AMPS)							BRANCH CIRCUIT	DEVICE	
AMPS TRIP	POLES	NOTES	DESIGNATION	No.	ØA		ØB		ØC		No.	DESIGNATION	NOTES	POLES	AMPS TRIP
20 A	1		L-TENANT 5	1	146						2				
				3							4				
				5							6				
				7							8				
				9							10				
				11							12				
				13							14				
				15							16				
				17							18				
				19							20				
				21							22				
				23							24				
				25							26				
				27							28				
				29							30				
				31		3048					32				
				33				3048			34	RTU-5A		3	15 A
				35						3048	36				
100 A	3		PANEL 'P5' VIA XFMR 'T5'	37	680	9700					38				
				39				0	9700		40	RTU-5B		3	45 A
				41						0	42				
INTEGRATED EQUIPMENT RATING					13.6 kVA		12.7 kVA		12.7 kVA		PANELBOARD LOAD TOTAL				39.1 kVA

PANEL H6 **CABINET** SURFACE **TYPE** SQUARE D NF
VOLTAGE 480Y/277V **PHASE** 3 **WIRES** 4 **FEEDER** **MAINS** 200 A MLO

DEVICE			BRANCH CIRCUIT	PHASE LOAD (VOLT-AMPS)							BRANCH CIRCUIT	DEVICE	
AMPS TRIP	POLES	NOTES	DESIGNATION	No.	ØA		ØB		ØC		No.	DESIGNATION	NOTES	POLES	AMPS TRIP
20 A	1		L-TENANT 6	1	146						2				
				3							4				
				5							6				
				7							8				
				9							10				
				11							12				
				13							14				
				15							16				
				17							18				
				19							20				
				21							22				
				23							24				
				25							26				
				27							28				
				29							30				
				31		3048					32				
				33				3048			34	RTU-6A		3	15 A
				35						3048	36				
100 A	3		PANEL 'P6' VIA XFMR 'T6'	37	680	9700					38				
				39				0	9700		40	RTU-6B		3	45 A
				41						0	42				
INTEGRATED EQUIPMENT RATING					13.6 kVA		12.7 kVA		12.7 kVA		PANELBOARD LOAD TOTAL				39.1 kVA

PANEL H7 **CABINET** SURFACE **TYPE** SQUARE D NF
VOLTAGE 480Y/277V **PHASE** 3 **WIRES** 4 **FEEDER** **MAINS** 200 A MLO

DEVICE			BRANCH CIRCUIT	PHASE LOAD (VOLT-AMPS)							BRANCH CIRCUIT	DEVICE	
AMPS TRIP	POLES	NOTES	DESIGNATION	No.	ØA		ØB		ØC		No.	DESIGNATION	NOTES	POLES	AMPS TRIP
20 A	1		L-TENANT 7	1	146						2				
				3							4				
				5							6				
				7							8				
				9							10				
				11							12				
				13							14				
				15							16				
				17							18				
				19							20				
				21							22				
				23							24				
				25							26				
				27							28				
				29							30				
				31		3048					32				
				33				3048			34	RTU-7A		3	15 A
				35						3048	36				
100 A	3		PANEL 'P7' VIA XFMR 'T7'	37	680	9700					38				
				39				0	9700		40	RTU-7B		3	45 A
				41						0	42				
INTEGRATED EQUIPMENT RATING					13.6 kVA		12.7 kVA		12.7 kVA		PANELBOARD LOAD TOTAL				39.1 kVA

PANEL P4 **CABINET** SURFACE **TYPE** SQUARE D NQ
VOLTAGE 208Y/120V **PHASE** 3 **WIRES** 4 **FEEDER** **MAINS** 100 A MCB

DEVICE			BRANCH CIRCUIT	PHASE LOAD (VOLT-AMPS)							BRANCH CIRCUIT	DEVICE	
AMPS TRIP	POLES	NOTES	DESIGNATION	No.	ØA		ØB		ØC		No.	DESIGNATION	NOTES	POLES	AMPS TRIP
20 A	1		R.-TENANT 4	1	180	500					2	R.-ROOF TOP UNIT		1	20 A
				3							4				
				5							6				
				7							8				
				9							10				
				11							12				
				13							14				
				15							16				
				17							18				
				19							20				
				21							22				
				23							24				
INTEGRATED EQUIPMENT RATING					0.7 kVA		0.0 kVA		0.0 kVA		PANELBOARD LOAD TOTAL				0.7 kVA

PANEL P5 **CABINET** SURFACE **TYPE** SQUARE D NQ
VOLTAGE 208Y/120V **PHASE** 3 **WIRES** 4 **FEEDER** **MAINS** 100 A MCB

DEVICE			BRANCH CIRCUIT	PHASE LOAD (VOLT-AMPS)							BRANCH CIRCUIT	DEVICE	
AMPS TRIP	POLES	NOTES	DESIGNATION	No.	ØA		ØB		ØC		No.	DESIGNATION	NOTES	POLES	AMPS TRIP
20 A	1		R.-TENANT 5	1	180	500					2	R.-ROOF TOP UNIT		1	20 A
				3							4				
				5							6				
				7							8				
				9							10				
				11							12				
				13							14				
				15							16				
				17							18				
				19							20				
				21							22				
				23							24				
INTEGRATED EQUIPMENT RATING					0.7 kVA		0.0 kVA		0.0 kVA		PANELBOARD LOAD TOTAL				0.7 kVA

PANEL P6 **CABINET** SURFACE **TYPE** SQUARE D NQ
VOLTAGE 208Y/120V **PHASE** 3 **WIRES** 4 **FEEDER** **MAINS** 100 A MCB

DEVICE			BRANCH CIRCUIT	PHASE LOAD (VOLT-AMPS)							BRANCH CIRCUIT	DEVICE	
AMPS TRIP	POLES	NOTES	DESIGNATION	No.	ØA		ØB		ØC		No.	DESIGNATION	NOTES	POLES	AMPS TRIP
20 A	1		R.-TENANT 6	1	180	500					2	R.-ROOF TOP UNIT		1	20 A
				3							4				
				5							6				
				7							8				
				9							10				
				11							12				
				13							14				
				15							16				
				17							18				
				19							20				
				21							22				
				23							24				
INTEGRATED EQUIPMENT RATING					0.7 kVA		0.0 kVA		0.0 kVA		PANELBOARD LOAD TOTAL				0.7 kVA

PANEL P7 **CABINET** SURFACE **TYPE** SQUARE D NQ
VOLTAGE 208Y/120V **PHASE** 3 **WIRES** 4 **FEEDER** **MAINS** 100 A MCB

DEVICE			BRANCH CIRCUIT	PHASE LOAD (VOLT-AMPS)							BRANCH CIRCUIT	DEVICE	
AMPS TRIP	POLES	NOTES	DESIGNATION	No.	ØA		ØB		ØC		No.	DESIGNATION	NOTES	POLES	AMPS TRIP
20 A	1		R.-TENANT 7	1	180	500					2	R.-ROOF TOP UNIT		1	20 A
				3							4				
				5							6				
				7							8				
				9							10				
				11							12				
				13							14				
				15							16				
				17							18				
				19							20				
				21							22				
				23							24				
INTEGRATED EQUIPMENT RATING					0.7 kVA		0.0 kVA		0.0 kVA		PANELBOARD LOAD TOTAL				0.7 kVA

SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	RAB

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PRINCIPAL IN CHARGE: DJB
PROJECT ARCHITECT: RAB
DRAWN BY: TMP/RAB

SHEET TITLE:

ELECTRICAL PANEL SCHEDULES

SHEET NO. E003

PROJ. NO. 019640.00

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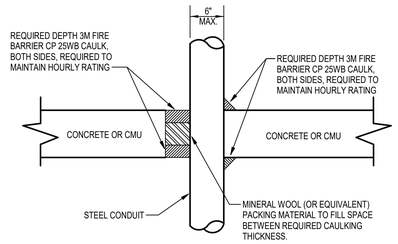
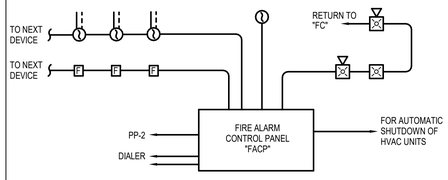
PLOTTED: 11:53:41 AM BY: BRYAN BRANNEN DWG: E003.DWG

PROVIDE FIRESTOPPING THRU ALL RATED (1 HOUR AND ABOVE) WALLS. FIRESTOPPING SHALL BE 3M CP 25WB CAULK OR FIREDAM 150 CAULK OR EQUAL. FIRESTOPPING SHALL BE AS REQUIRED TO MAINTAIN A U.L. SYSTEM CLOSURE. PROVIDE U.L. NO. AND MANUFACTURER'S SPECIFICATION AND INSTALLATION DRAWING FOR ALL SUBSTITUTION REQUESTS.



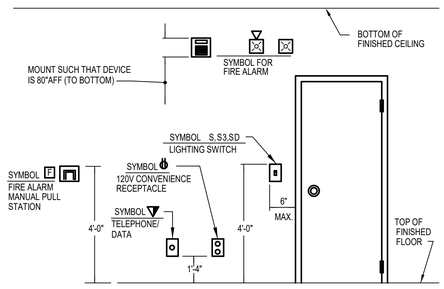
1 E004 TYPICAL CONDUIT SLEEVE DETAIL
NTS



NOTES:

1. ALL CONDUIT SHALL BE 3/4" MIN WITH WIRING AS REQUIRED BY MANUFACTURER. PAINT ALL JUNCTION BOXES, COVERS AND MARK CONDUIT EVERY 10' WITH RED PAINT.
2. DUCT MOUNTED SMOKE DETECTORS TO BE PROVIDED AND WIRED TO FACP BY ELECTRICAL, MOUNTED IN RETURN DUCT OF EACH HVAC UNIT BY MECHANICAL. REFERENCE MECHANICAL DRAWINGS FOR EXACT LOCATIONS. PROVIDE AUXILIARY CONTACT FOR MECHANICAL USE.
3. ELECTRICAL CONTRACTOR SHALL WIRE FROM FACP TO EACH INDIVIDUAL AIR HANDLER CONTROL CIRCUIT TO INSTALL SHUT DOWN CONTACT AS REQUIRED BY NFPA.

2 E004 FIRE ALARM RISER DIAGRAM
NTS



NOTES:

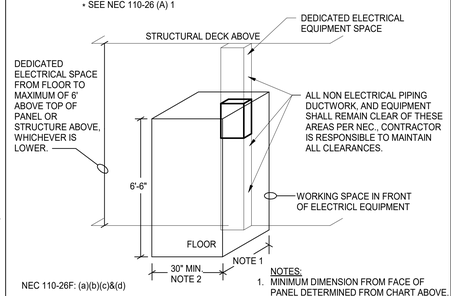
1. DEVICE BOXES MOUNTED IN THE SAME WALL BUT IN SEPARATE ROOMS OR SPACES SHALL NOT BE MOUNTED IN THE SAME WALL CAVITY.

3 E004 TYPICAL DEVICE MOUNTING HEIGHT
NTS

N.E.C. TABLE 110-26(A)(1). WORKING SPACES

NOMINAL VOLTAGE TO GROUND	CONDITIONS MINIMUM CLEAR DISTANCE (FEET)		
	1	2	3
0-150	3	3	3
151-600	3	3 1/2	4

• SEE NEC 110-26 (A) 1

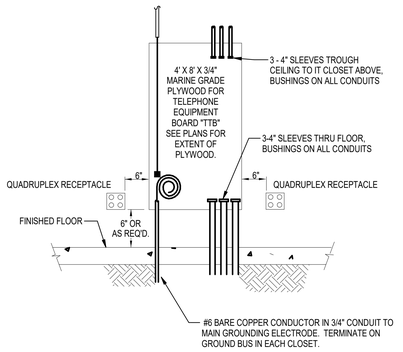


NEC 110-26F: (a)(b)(c)&(d)

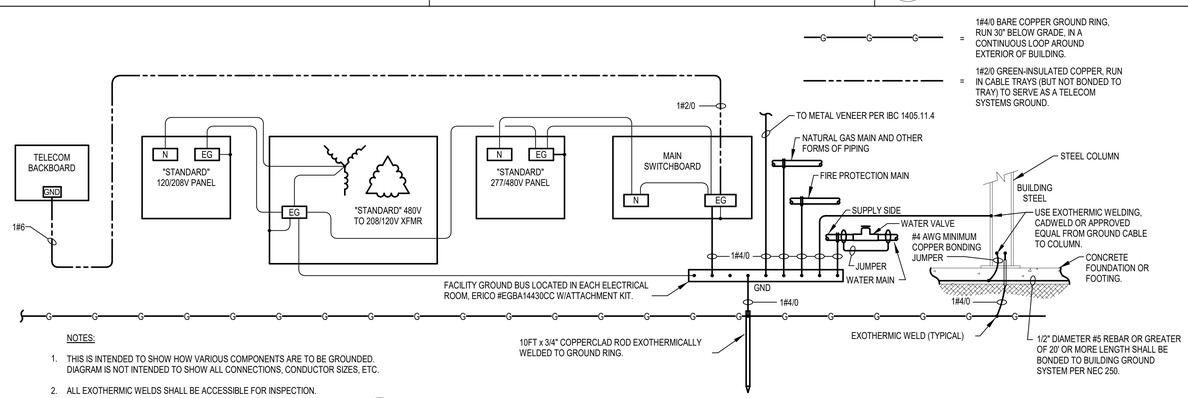
NOTES:

1. MINIMUM DIMENSION FROM FACE OF PANEL DETERMINED FROM CHART ABOVE.
2. MINIMUM WIDTH OF CLEARANCE OR PANEL WIDTH, WHICHEVER IS GREATER.

4 E004 PANEL CLEARANCES PER NEC
NTS



5 E004 TYPICAL TELE/COM BOARD INSTALLATION DETAIL
NTS



NOTES:

1. THIS IS INTENDED TO SHOW HOW VARIOUS COMPONENTS ARE TO BE GROUNDED. DIAGRAM IS NOT INTENDED TO SHOW ALL CONNECTIONS, CONDUCTOR SIZES, ETC.
2. ALL EXOTHERMIC WELDS SHALL BE ACCESSIBLE FOR INSPECTION.

6 E004 TYPICAL CONNECTIONS FOR FACILITITES GROUND SYSTEM
NTS

PLOTTED: 11:53:08 AM BY: MC WHORTER, JULIA AIA Rev. to Submission to Electrical Drawings for P.C.
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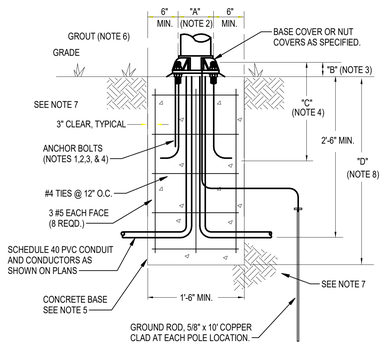
PRINCIPAL IN CHARGE: DJB
PROJECT ARCHITECT: RAB
DRAWN BY: TMP/RAB

SHEET TITLE:
ELECTRICAL DETAILS

SHEET NO. E004

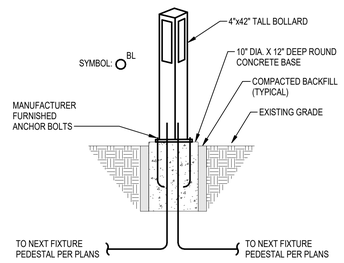
PROJ. NO. 019640.00



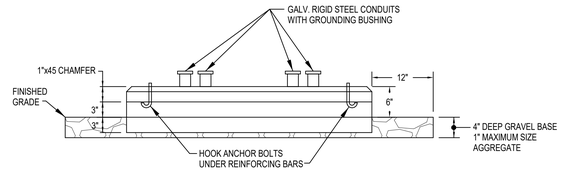
NOTES:

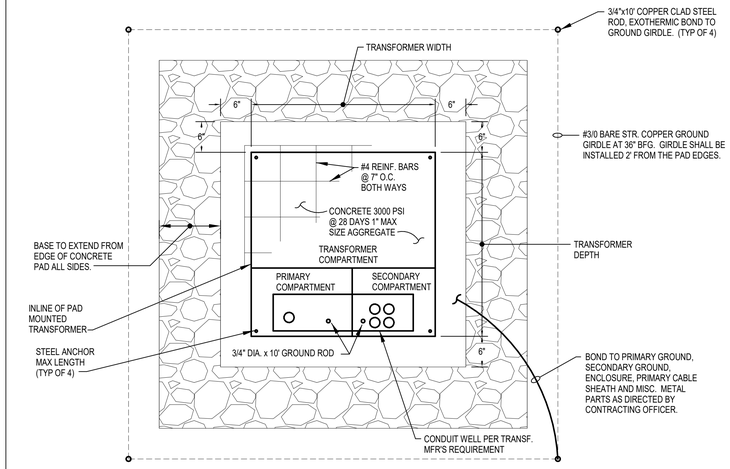
1. POLE SHALL BE PROVIDED WITH MINIMUM OF FOUR ANCHOR BOLTS WITH DOUBLE NUTS, DOUBLE FLAT WASHERS, AND ONE LOCK WASHER SIZED TO MATCH EACH ANCHOR BOLT. ALL NUTS, WASHERS, AND BOLTS SHALL BE HOT DIPPED GALVANIZED.
2. ANCHOR BOLT GAGE, DIMENSION "A", SHALL BE AS REQUIRED BY POLE MANUFACTURER. EXACT LOCATION OF ANCHOR BOLTS SHALL BE DETERMINED BY CONTRACTOR AFTER POLES ARE PURCHASED AND BEFORE CONCRETE BASE IS CONSTRUCTED.
3. BOLT PROJECTION, DIMENSION "B", SHALL BE AS RECOMMENDED BY POLE MANUFACTURER AND SHALL NOT BE LESS THAN 3".
4. ANCHOR BOLT EMBEDMENT, DIMENSION "C", SHALL BE AS RECOMMENDED BY POLE MANUFACTURER AND SHALL NOT BE LESS THAN 12". ANCHOR BOLT DIAMETER SHALL NOT BE LESS THAN 3/4".
5. CONCRETE BASE SHALL BE OF MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI. REINFORCING BARS SHALL BE DEFORMED STEEL, GRADE 60.
6. GROUT SHALL BE PRE-BAG MIX NON-SHRINK, NON-METALLIC, 5000 PSI MINIMUM, ONE TO TWO INCHES THICK.
7. SOIL AROUND FOUNDATION BASE SHALL BE NON-ORGANIC GRANULAR SOIL COMPACTED TO 95% STANDARD PROCTOR (ASTM D-698). TOP 4 TO 6 INCHES MAY BE TOP SOIL OR PAVEMENT.
8. FOUNDATION EMBEDMENT DEPTH, DIMENSION "D", SHALL BE 15 PERCENT OF POLE HEIGHT ABOVE GRADE, MINIMUM OF 3'-0".
9. BURIED CONCRETE BASE SHALL BE USED ONLY WHEN POLE IS PROTECTED ON SITE BY BARRIERS OR BY VIRTUE OF LOCATION.

1 E005 BURIED CONCRETE BASE FOR METAL POLE
NTS

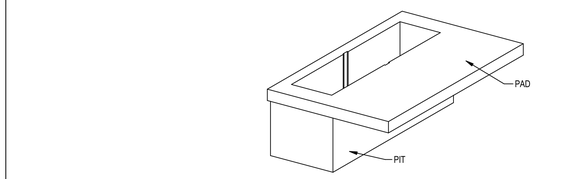


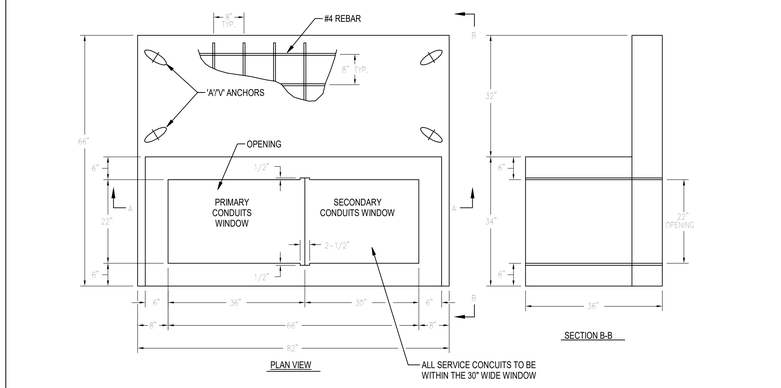
2 E005 TYPICAL BOLLARD DETAIL
NTS

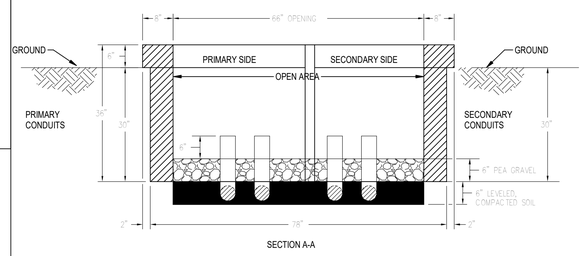




3 E005 TRANSFORMER PADMOUNT DIMENSIONS
1" = 1'-0"







NOTES:

1. THIS DETAIL IS BASED ON DUKE ENERGY'S "3-PHASE PADMOUNT TRANSFORMER CONCRETE FOUNDATION SPECIFICATIONS" DATED JANUARY 2019. REFER TO THAT DOCUMENT FOR COMPLETE SPECIFICATIONS AND INSTALLATION INSTRUCTIONS. (WWW.DUKE-ENERGY.COM/PDFS/SERVICE-REQUIREMENTS-MANUAL.PDF)
2. PER DUKE SPECIFICATIONS, PAD MAY BE PREFAB OR BUILT ON SITE.

SMALL PIT PAD SPECIFICATIONS

4 E005 TRANSFORMER PAD DETAIL
12" = 1'-0"

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PROJECT ARCHITECT:
DRAWN BY: Author

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ELECTRICAL DETAILS

SHEET NO. E005

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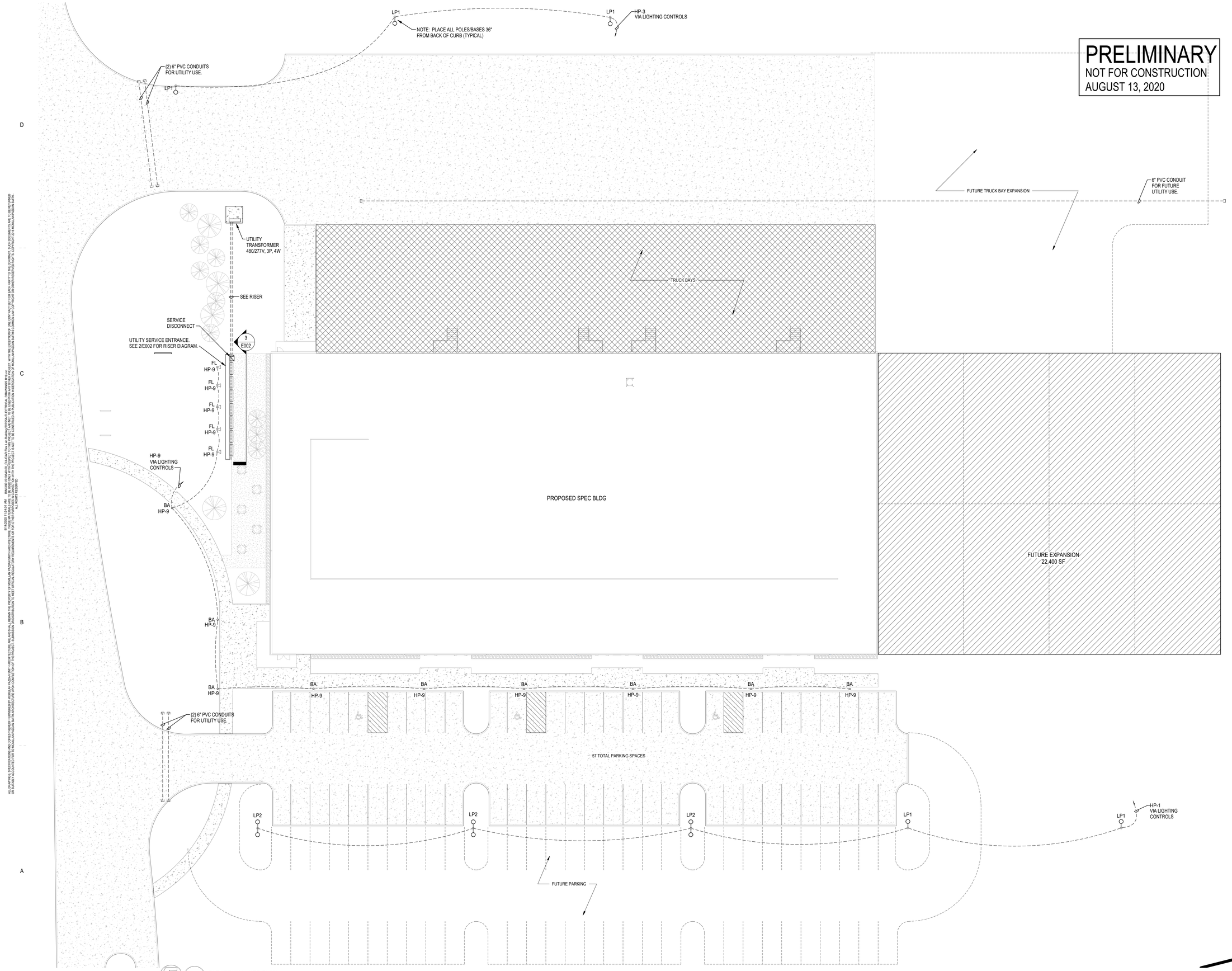

1 E100 ELECTRICAL SITE PLAN
1/16" = 1'-0"

PROJECT NORTH

PRELIMINARY
NOT FOR CONSTRUCTION
AUGUST 13, 2020

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PROJECT ARCHITECT: RAB
DRAWN BY: TMP/RAB

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ELECTRICAL SITE PLAN

SHEET NO. E100

PROJ. NO. 019640.00

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PRINCIPAL IN CHARGE: DJB
PROJECT ARCHITECT: RAB
DRAWN BY: TMP/RAB

SHEET TITLE:

ELECTRICAL LIGHTING AND POWER PLAN

SHEET NO. E101

PROJ. NO. 019640.00

1 E101 ELECTRICAL LIGHTING AND POWER PLAN
1/8" = 1'-0"
8 0 8 16 24

PROJECT NORTH

SECTION 260116 — ELECTRICAL DEMOLITION
PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Materials specified in this section shall comply with all applicable requirements of section 260500, General Provisions.

1.2 DESCRIPTION OF WORK

A. The extent of demolition work shall be in general, but not limited to:
1. Where noted to be removed, all associated circuits shall be removed back to nearest above-ceiling junction box if there is load remaining on the circuit or if the circuit is to be reused. Associated circuits not being reused and without any remaining load shall be removed back to panel and associated breaker shall be labeled "Spare". Demolition shown may indicate portions of circuits are being removed. Contractor shall provide all required investigation and effort to rework remaining circuits to maintain operability. Provide new typed panel schedules to indicate remaining circuits and functions.

B. Demolition includes removal and disposal of demolished materials not specifically noted to remain or to be stored.

1.3 JOB CONDITIONS

A. Occupancy: The building outside the area of construction will be occupied throughout construction. Contractor shall take care when moving materials into and out of the area of construction.

B. Condition of existing systems: The Owner assumes no responsibility for actual condition of items to be demolished. Conditions existing at time of inspection for bidding purposes will be maintained by Owner insofar as practicable.

C. Protection: Ensure safe passage of persons in and around areas of demolition. Conduct operations to prevent injury to building, structure, other facilities and persons.

D. Damages: Promptly repair damages caused to facilities by demolition operations at no cost to Owner.

E. Utility Services: Maintain existing service entrance utilities and gear as described in part 3 below, protect against damage during demolition operations.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 DEMOLITION
A. Demolition: Demolition of all parts to be removed shall be done in a safe, orderly fashion, taking care to avoid damage to parts which are to be left in place. All debris shall be removed from the premises as it is generated and shall not be allowed to accumulate. In the event the Contractor has any questions regarding items to be removed, the Contractor is to ask the Engineer.

B. Disposal of Demolished Materials:
1. Contractor shall investigate all existing circuits on equipment and/or walls to be removed and shall remove any electrical equipment associated with items to be removed. In general, equipment conduit and cable shall be completely removed. Conduit in walls being demolished shall be removed. Circuit conductors which are part of multi-device branch circuits such as lighting or receptacles shall be completely removed.

2. General: Remove from site, debris, rubbish and other materials resulting from demolition operations.

3. Removal: Transport demolished materials removed from premise and legally dispose of off site.

4. As required by the latest environmental regulations and per local requirements for materials being demolished.

END OF SECTION 260116

SECTION 260500 — GENERAL PROVISIONS

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. The provisions of all other sections of Division 1 of these Specifications shall govern the work under this Division or Section the same as if incorporated herein.

1.2 SCOPE

A. The Contractor shall provide and install complete electrical systems including all conductors, raceways, fittings, protective devices, wiring devices, fixtures, supports, and all miscellaneous hardware necessary. All of the above equipment shall be completely installed and left in proper operating condition. All electrically powered equipment whether furnished by others or by the Contractor shall be wired by the Contractor.

B. Complete Power distribution and utilization system shall be installed, including panelboards, utilization devices and equipment as required an indicated on drawings.

C. The Contractor shall furnish and install power, wiring and/or disconnects as shown on drawings for wiring systems for mechanical systems specified in other drawings and specification sections for this project. Temperature control wiring, equipment control and interlock wiring are not included in this division unless specifically noted in these specifications or shown on the plans. All motor disconnects, starters, combination motor controllers and motor control centers shall be furnished under this division of specifications unless noted otherwise.

1.3 REQUIREMENTS

A. Field verification of scale on electrical plans is directed since actual locations, distances and levels will be governed by actual field conditions. The contractor shall investigate existing electrical system and verify circuits shown are available. Before final payment, provide the owner with redlined copy of all changes made during the project and labeled "FIELD RECORD DRAWINGS" with date, company and job superintendent. Provide all panels affected by the project with an updated, typed panel schedules reflecting all changes made.

B. In case of conflicts or discrepancies between plans, plans and specifications and/or actual field conditions, Contractor shall notify the Engineer before work is continued. Coordinate with other trades to avoid conflicts.

C. Permits, Inspections and Tests - The Contractor shall procure and pay for all permits, fees, inspections, and licenses required. Perform all tests to ensure all systems are in good operating condition.

D. Review of Material; Specific reference in the specification to any article, device, product, material, fixture, form or type of construction by name, make or catalog number, with or without the words "or equal", shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition.

E. Bidders shall base bids on the material specified or on equals receiving approval 10 days prior to Bid Opening. Any increase in the cost of work resulting from substitution of any product specified is part of this contract and shall be accomplished in an approved manner at no extra cost to the Owner.

F. Substitutions. No substitution will be considered unless written request for approval has been received by the Engineer at least 10 days prior to the date of receipt of bids. Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitution including drawings, cuts, performance and test data and any other information necessary for an evaluation. A statement setting forth any changes in other materials, equipment or other Work that incorporation of the substitute would require shall be included; failure to do so does not alleviate the Contractor of his responsibility to make any and all necessary changes required for installation of the approved substitution. The burden of proof of the merit of the proposed substitute is upon the proposer. The Engineer's decision of approval or disapproval of a proposed substitution shall be final.

G. All materials shall be new and of current manufacturer. Where more than one of a type of device is used, all shall be by the same manufacturer. All materials shall conform to the grade, quality and standards of those specified.

H. Shop drawings shall be submitted in accordance with the General Conditions. Forward all shop drawings at one time. Each item shall bear project name and identifying symbol from plans. Shop Drawings required are as follows:
1. Lighting Fixtures
2. Wiring Devices
3. Panelboards
4. Disconnect Switches
5. Motor Starters
6. Contactors
7. Time Clocks
8. Transformers
9. Fire Alarm System Equipment
10. Seismic Supports

I. Interferences - The drawings are generally diagrammatic in nature, and accordingly the Contractor shall coordinate his work with that of all other trades to avoid interferences. The Contractor shall examine the complete set of drawings and specifications for the job before installation of electrical work, coordinating locations and routings with other trades to avoid interferences. Work installed by the Contractor which does interfere with another trade shall be removed and reinstalled at the Contractor's expense when directed by the Architect.

J. Workmanship shall be of the highest quality and all work shall be done by workmen skilled in the trades involved.

K. The Contractor shall guarantee all work under this contract for one year and shall be responsible for the maintenance of all electrical equipment furnished and installed under this contract, excluding lamp replacement, for a period of one year from the date of substantial completion.

PART 2 - PRODUCTS
NOT USED

PART 3 - EXECUTION

3.1 APPLICABLE CODES AND STANDARDS
Note: The materials and installation shall conform to the minimum requirements and latest outstanding issues and revisions of the following codes, standards, and regulations wherein they apply:
NFPA No. 70, National Electrical Code, (2014 edition).
IBC (2015), IECC (2009), IFC (2015)
American National Standard, National Electrical Safety Code, (2012).
Applicable Publications of NEMA, ANSI, IEEE and IPCEA.
Underwriter's Laboratories, Inc. Standards
City, State and Local Codes and Regulations having jurisdiction.
OSHA requirements.
ADA requirements.

END OF SECTION 260500

SECTION 260501 — BASIC MATERIALS

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Materials specified in this section shall comply with all applicable requirements of SECTION 260500, GENERAL PROVISIONS.

1.2 SCOPE

A. Contractor Furnished. Unless otherwise noted on the drawings, equipment list, or specifications, the Contractor shall furnish and install all materials, devices, and apparatus necessary for the complete electrical system. All materials and equipment shall be of types and manufacturer specified wherever practical. Should materials or equipment so specified be unobtainable, the Contractor shall submit the description and manufacturer's literature, reason for the substitution request and shall secure the approval of the Engineers before substitution of other material or equipment. This specification establishes performance requirements and the quality of equipment acceptable for use and shall in no way be construed to limit procurement from other manufacturers.

B. Equal or Equivalent. The term "or equal" and similar terms as used on the drawings or specifications shall be interpreted to mean "equal or equivalent" in the opinion of the Engineers.

C. Manufacturer's Prints. Where the Contractor furnishes equipment other than standard construction items, he shall furnish manufacturer's prints of all such equipment to the Engineers.

D. U.L. Listing. All equipment and materials shall be new and conform to the requirements of this specification. All equipment and materials shall be listed by the Underwriter's Laboratories, Inc., and shall bear their label whenever standards have been established and label service is regularly furnished. All equipment and materials shall be of the best grade of their respective kind for the purpose.

PART 2 - PRODUCTS AND EXECUTION

2.1 TRANSFORMERS FOR GENERAL LIGHTING AND POWER

A. Contractor Furnished. The contractor shall furnish and install all general purpose transformers for supplying miscellaneous lighting, appliances, receptacles, and general power and control circuitry. The transformers shall have rated capacity and voltage and shall be the type as specified or shown on the drawings.

B. Unless otherwise indicated, transformers located indoors shall be the dry, self-cooled type rated for 150E rise above 40E ambient temperature. The transformer core shall be visibly grounded to the enclosure by means of a flexible copper grounding conductor sized in accordance with applicable standards. Acceptable manufacturers are Square D, General Electric, Cutler-Hammer and Siemens.

C. All transformers shall have sound levels which do not exceed the NEMA standard sound levels. The transformers shall be installed with sound absorbing isolation pads or devices to further reduce noise levels. Transformers shall not be mounted directly against walls.

D. Suitable mounting supports, brackets, and other hardware shall be furnished and installed by the contractor to provide a quality installation.

2.2 PANELBOARDS (WHERE INDICATED AS NEW)

A. Contractor Furnished. The contractor shall furnish all lighting, service, and power distribution panelboards required. All panelboards shall be of deadfront construction and shall incorporate all switching and protective devices of the type, quantity, number of poles, rating and type specified or shown on the drawings. The drawings and schedules indicate the ampere rating of mains, main breaker or disconnect, main lugs, voltage rating, phases, neutral and type of devices and enclosures. Enclosures for panelboards may be flush or surface type as designated on the drawings.

B. Doors. Hinged doors covering all switching device handles shall be included in all panel trims, except that panelboards having individual metal clad externally operable deadfront units may be supplied without such doors. Trims for flush panels shall overlap the box by at least 3/4" all around. Surface trims shall have the same width and height as the box. Trims shall be mountable by a screw-driver without the need for special tools.

C. Directory. A directory holder with glass or heavy plastic plate and metal frame shall be mounted inside of each door with a neatly typed directory properly identifying each circuit as shown on panel schedule drawings.

D. Nameplate. The contractor shall furnish and install an engraved, laminated plastic nameplate on the trim. The nameplate shall identify the panel by power source designation, panel designation, voltage rating and phase. Nameplate shall be black engraved letters on white background.

E. Bus Bars. Bus bars and other conductive parts shall be copper and sized in accordance with Underwriter's Laboratories standards, full size insulated neutral bars shall be included. Bussing shall be braced equal to or greater than the highest rated practice governing short circuit stresses in panelboards. Phase bussing shall be full height without reduction. Cross connectors shall be copper.

F. Neutral Bus. Neutral bussing on 3-phase panels shall have a suitable lug for each outgoing feeder requiring a neutral connection.

G. Ground Bus. All panels shall be furnished with a bare equipment ground bus.

H. Circuit Numbering. Panelboard circuit numbering shall be such that starting at the top, odd numbers shall be used in sequence down the left-hand side and even numbers shall be used in sequence down the right-hand side.

I. Terminals. Terminals for feeder conductors to the panelboard mains and neutral shall be U.L. listed as suitable for type of conductor specified. Terminals for branch circuit wiring, both breaker and neutral, shall be U.L. listed as suitable for the type of conductor specified.

J. 277/480V Panels. All lighting/service panels rated 277/480 volt, shall be equal to Square D Company, Type NF equipped with bolt-on branch breakers the type and rating specified on the drawings.

K. 120/208V Panels. All lighting/service panels rated 120/208 volt, shall be equal to Square D Company, Type NQOD equipped with bolt-on branch breakers of the type and rating specified on the drawings.

L. Panels and Panelboards are designed around Square D equipment. Acceptable alternate manufacturers are Cutler-Hammer, Siemens, and General Electric Company. All alternate or substitution requests shall meet all performance requirements of specified equipment, as well as space and dimension requirements noted on drawings.

2.3 CIRCUIT BREAKERS

A. Contractor Furnished. The contractor will provide breakers unless specifically designated to be "Owner Furnished" on the drawings, equipment list, or within the specifications.

B. As Specified. Breakers shall be of the type, rating, number of poles, size, and interrupting capacity, specified or required for the environment, location, application, and load served.

C. Molded Case Circuit Breakers. Molded case circuit breakers shall be circuit interrupting devices which will operate both manually for normal switching functions and automatically under overload and short circuit conditions. Circuit breakers shall provide circuit protection when applied within rating.

D. Rating. The molded case circuit breakers shall be rated for fault duty as specified on the plans. Series ratings are not allowed. The Contractor shall verify available fault current with the Utility Company for the actual installation and forward to the Engineer.

2.4 SAFETY SWITCHES

A. Contractor Furnished. The contractor shall provide all safety disconnect switches required. The switches shall be of the type, voltage, ampere, and horsepower rating, number of poles, fusible or nonfusible, as specified or required for the environment, location, application, and load served.

B. Description. All safety switches shall be NEMA premium heavy duty, horsepower rated, industrial type, and shall be Underwriters' Laboratories listed. Fusible switches shall be complete with fuses of the type and rating specified (refer to paragraph "Fuses") and as indicated on the drawings or within these specifications. All switches shall have switch blades that are fully visible in the OFF position when the door is open and shall be of dead front construction with arc suppressors. The mechanism shall be quick-make, quick-break type. The door shall be interlocked (defeatable type) with the handle or mechanism to prevent unauthorized opening of the door in ON position. Pad-locking provisions shall be provided for padlocking in the OFF position with one or more locks or lockable hasps. Grounded switches in a common enclosure shall be mounted in enclosure types specified elsewhere. Individually mounted switches shall be mounted in enclosures suitable for the location and environment as specified on the drawings.

C. Nameplate. All switches shall be provided with an engraved laminated phenolic nameplate showing the power source (Unit No. or other), and title of equipment served. Nameplates to be black letters on white background.

D. Manufacturer and Enclosures. All switches furnished shall have enclosures as specified on the drawings. Acceptable manufacturers shall be Square D, General Electric, Siemens, and Cutler-Hammer.

2.5 FUSES

A. Contractor Furnished. The contractor shall furnish and install fuses in all fusible devices and equipment that are furnished by the contractor.

B. Manufacturer and Listing. The following fuse types shall be used for the applications listed. The following are trade names of the Bussman Manufacturing Division, however, equivalent products by Chase Shawmut Division shall be acceptable.

Application	Trade Names	Class	Voltage (Type)
Motors, Transformers & Miscellaneous Equipment 0-600 Amps	Fusetron	K-5 K-5	240 (FRN) 600 (FRS)
Panelboard Feeders & Service Disconnects 0-600 Amps	Low Peak Low Peak	RK-5 RK-5	240 (LPN-R) 600 (LPS-R)
Panelboard Feeders & Service Disconnects 601-6000 A	HI-CAP	L	600 (KRP-C)

2.6 MISCELLANEOUS CONTROL DEVICES

A. Furnished by Others. Miscellaneous control devices such as duct switches, air flow switches, thermostats and temperature control devices, and similar equipment shall normally be furnished under another division. Any such device that is to be furnished under this division shall be specifically designated on the drawings.

B. Enclosures. All devices furnished shall be suitable for the control requirements and shall have voltage rating and adequate capacity for the application. They shall be housed in enclosures suitable for the location and environment as indicated on the drawings.

2.7 RECEPTACLES – OUTLETS

A. Contractor Furnished. The contractor shall furnish and install all convenience (and power type) receptacles and outlets shown on the drawings. Suitable boxes, covers and matching plugs as specified shall be provided and the installation shall conform to typical details, drawings, and as described elsewhere in this specification. See electrical symbol drawings for additional descriptive data. Contractor shall install devices of the color and type specified on plans.

B. Single Manufacturer. Receptacles of similar usage and rating shall be those of a single manufacturer.

C. Usage and Manufacturer. General use and convenience outlets shall be as specified by symbol on the drawings and as listed on the symbols drawing.

D. Ground Fault Protection. Note that all convenience receptacles to be installed as ground fault interrupting type are so noted on drawings. All outlets located within 72" of sink or water source shall be GFCI type.

2.8 BOXES

A. Contractor Furnished. The contractor shall furnish and install all electrical boxes required for the proper installation of the electrical systems. Boxes shall be of the NEMA type suitable for the location. Boxes shall be installed as specified on the drawings and as described under "Wiring Methods", and other applicable sections of this specification for wiring devices such as switches, receptacles, and similar devices. In order to maintain fire ratings, boxes installed "back-to-back" in fire walls shall not be located in the same space between studs, but shall have a stud located between them.

B. Concealed. Fixture, outlet, and switch boxes installed concealed in walls or ceiling areas shall be galvanized or cadmium plated sheet steel of not less than the minimum size as recommended in the National Electrical Code and shall be furnished with appropriate covers as specified in other applicable sections of these specifications or on the drawings. All boxes shall be accessible for maintenance purposes.

C. Exact locations of all floor boxes shall be coordinated in the field with the architect unless specific dimensions are shown on the drawings.

D. Surface Mounted. Fixture, outlet, and switch boxes installed surface mounted shall only be installed where noted on the plans.

E. Pull Boxes. Pull boxes for interior, or outdoor exposed power wiring shall be provided where shown or required to facilitate the installation of the wiring. Pull boxes shall not be located in finished rooms and shall be accessible for maintenance use.

F. Exterior and Underground. For exterior exposed work, pull boxes shall be of NEMA 3R construction.

2.9 COVERS AND DEVICE PLATES

A. Contractor Furnished. The contractor shall furnish and install the appropriate cover on all boxes, conduit fittings, panels, cabinets, switches, receptacles, and similar wiring devices and other equipment that is Contractor furnished. Conduit outlet fitting covers shall be the type specified under "Conduit Fittings."

2.10 ENCLOSURES

A. Enclosures and housings for all Contractor furnished electrical equipment and devices shall be suitable for the location and environmental conditions and shall be of NEMA type as shown on symbol sheet drawing.

END OF SECTION 260501

SECTION 260519 - CONDUCTORS

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Materials specified in this section shall comply with all applicable requirements of section 260500, general provisions.

1.2 SCOPE

A. This specification covers the requirements for all wire and cable to be used in the installation of the electrical systems for the project, including all power, lighting, control and instrumentation systems.

B. Wire and cable will normally be furnished by the contractor for installation. Drawings will indicate where cable is not to be furnished.

C. All cable is to be "contractor-furnished", the contractor shall submit for approval by the owner any deviations anticipated or proposed with respect to the cable manufacturer, cable type, or specification contained herein.

PART 2 - PRODUCTS

2.1 MATERIALS

A. All wire and cable shall be Underwriters' Laboratories (UL) listed. In addition to other standard labeling, all wire and cable shall be marked UL on the outer surface indicating Underwriters' Laboratories, inc. Certification.

B. Grounding conductors, where insulated, shall be colored solid green. Conductors intended as a neutral shall be colored solid white.

C. For all circuits 600 volt and less, wires and cables shall have code grade, 600 volt type THWN-THHN, 75 degrees c., wet or dry locations, moisture and heat resistant thermoplastic insulation. Insulation thickness shall be per national electrical code, table 310-13.

D. Conductor sizes are expressed in American wire gage (awg) or in circular mils. Conductors shall be annealed copper wire, minimum size #12 awg, except that #14 awg may be used for control. All conductors shall be stranded except that solid conductors may be used for #12 awg lighting and receptacle branch circuits.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Separation of usage. Lighting and power wiring shall be routed in conduits, or other raceways as shown on the drawings. Lighting and power wiring shall not be routed in a common raceway except where shown on drawings. Push-button wiring shall be routed in separate raceways even though related to a particular motor circuit.

B. Pulling. Where mechanical assistance is used for pulling conductors, patented wire pulling compounds having inert qualities that do not harm the wire insulation or covering shall be applied to the conductors as they are pulled into raceways. Interior of all raceways shall be free from grease, filings or foreign matter before conductors are pulled in.

3.2 IDENTIFICATION

A. Wire, cable, raceways, and conduits.

B. Circuit identification numbers shall be placed on each end of the conductor involved by using self-laminating marker tags, T&B Company E-Z code type WSL or equal. Circuit numbers shall be as shown on the plan and panel schedule drawings.

C. Phase identification. Phase sequence throughout the installation shall be standardized wherever practical in all electrical power equipment as follows:

	phase a	phase b	phase c
position occupied	front top left	center center center	rear bottom right
color code: 208/120v, 3-phase 480/277v, 3-phase	black brown	red orange	blue yellow

3.3 SPLICES AND TERMINATIONS

A. Lighting conductors. Splices in lighting conductors shall be made with splicing caps with metal inserts only, such as 3M Company's "Scotchlock" spring connectors. The splices shall be firmly and neatly taped to prevent entry of moisture.

B. Power conductors shall be continuous from outlet to outlet. No power cable shall be spliced except on explicit instructions of the owner's representative.

3.4 LUGS

A. All lugs shall be furnished and installed by the contractor where required.

B. Lugs for copper power wiring, sizes no. 12 and no. 10 awg, shall be T&B "Sta-Kon" uninsulated ring type lugs. Lugs for copper power wiring from no. 10 awg to size 1/0 awg shall be T&B 1-hole type 54100 series. Size 2/0 awg and larger lugs shall be 2-hole type 54200 series (except where 1-hole is required to match motor lead lugs). Sizes above 1/0 are to be applied using hydraulic pump tool.

C. Where motor leads are furnished without lugs, T&B 54500 series 2-way connectors (splicing sleeves) shall be used. Splice sleeves may be desirable where limited space for termination exists.

D. The proper lugs will normally be furnished with equipment in all owner-furnished equipment. All other lugs shall be furnished and installed by the contractor. No mechanical type lugs shall be used except in panelboards. If any mechanical type lugs are furnished with owner-furnished equipment, the contractor shall replace them with proper compression type lugs where practical.

3.5 TAPING

A. All voids, sharp corners and bolt projections shall be made smooth by filling with okonite or scotch fill before applying the laps of tape required for insulation. All loose strands of wire shall be removed before taping. Duxseal will not be permitted.

B. Joints and other sections of wiring requiring tape shall be half lap and at least two layers. Taping shall be neatly done and shall form a permanent insulation equal in mechanical and electrical strength to the insulation of the conductor. Taping shall be as follows:
600 volt insulation - a minimum of 1-1/2 lap layer varnished cambric and 2-1/2 lap layers of 3M no. 33 vinyl plastic electrical tape.

C. All taping, splicing and termination materials shall be furnished by the contractor.

END OF SECTION 260519

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ELECTRICAL SPECIFICATIONS

SHEET NO. ES001

PROJ. NO. 019640.00

SECTION 260539 — ELECTRICAL RACEWAYS
PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Materials specified in this Section shall comply with all applicable requirements of SECTION 260500, GENERAL PROVISIONS.

1.2 SCOPE

A. Contractor Furnished. The contractor shall provide all conduit, fittings, and supports required and not otherwise shown on plans as furnished by others.

B. The types of electrical raceways required for the project include the following:

1. Electrical Metallic Tubing
2. Intermediate Metal Conduit
3. Flexible Metal Conduit
4. Liquid-Tight Flexible Metal Conduit
5. Rigid Galvanized Conduit
6. PVC Rigid Conduit

C. The minimum raceway size shall be as indicated on plans. If no indication is given on plans, then conduit shall be minimum 3/4".

D. Product Delivery, Storage, and Handling. Contractor is to provide color-coded end-cap thread protectors and handle conduit and tubing carefully to prevent damage. Store pipe and tubing inside whenever possible. When necessary to store outdoors, elevate well above grade and enclose with durable, watertight wrapping.

PART 2 - PRODUCTS

2.1 MATERIALS AND COMPONENTS

A. Electrical Metallic Tubing. Galvanized, thin wall tubing, fittings shall be hex-nut, expansion gland type, zinc plated, and U.L. listed as "raintight." No crimp, spring, or set-screw type fittings will be accepted.

B. Intermediate Metal Conduit. Galvanized steel tubing, with zinc coated interior.

C. Flexible Metal Conduit. Galvanized single steel strip, flexible, interlocked.

D. Liquid-Tight Flexible Metal Conduit. Galvanized single steel strip, flexible, interlocked, double wrapped, with liquid-tight PVC jacket.

E. Rigid Galvanized Conduit. Rigid steel, hot-dipped galvanized conduit.

F. PVC Rigid Conduit: U.L. listed Schedule 40 heavy wall rigid conduit.

G. Conduit, tubing and duct accessories including straps, hangers, expansion and deflection fittings as recommended by conduit, tubing, and duct manufacturers.

PART 3 - EXECUTION

3.1 APPLICATION
A. Electrical Metallic Tubing. Branch circuits run in hollow dry walls and above ceilings. Not to be exposed.

B. Flexible Metal Conduit. Connection of motors and for other electrical equipment where subject to movement and vibration and located in a dry, interior location. Flexible conduit is not to exceed 60" in length for any one application and shall be secured at each end and per code.

C. Liquid-tight Flexible Metal Conduit. Connection of motors and for other electrical equipment where subject to movement and vibration, and also subjected to one or more of the following conditions: Exterior location; moist or humid atmosphere where condensate can be expected to accumulate; corrosive atmosphere; subjected to water spray; subjected to dripping oil, grease or water. Flexible conduit is not to exceed 60" in length for any one application and shall be secured at each end and per code.

D. Metal Clad Cable Assemblies. Metal Clad Cable Assemblies (Type AC or MC) shall only be installed when allowed on plans. When installed, assemblies shall be installed in a neat and workmanlike manner, secured to structure per NEC, routed parallel and perpendicular to building walls and structure, and grouped together as much as practical.

E. Intermediate Metal Conduit. All conduits of 2" nominal trade size or more and/or where exposed. Not to be stubbed up at floor level.

F. Rigid Galvanized. Where specified on plans for certain underground or exposed runs, or where stubbed up at floor level.

G. Rigid PVC. Where specified on plans for certain underground runs, UL approved Schedule 40 heavy wall rigid PVC conduit shall be used. Not to be stubbed up at floor level. All PVC underground runs shall transition to rigid galvanized before stubbing up through floor slab or grade.

3.2 INSTALLATION
A. Install conduit and tubing in accordance with NEC and National Electrical Contractors Association's "Standard of Installation", and with recognized industry practices. Where NECA and NEC standards differ, use the more stringent requirement.

B. Complete the installation of raceways before starting installation of wires.

C. Wherever possible, install horizontal raceway runs above water and steam piping.

D. Care shall be taken to keep the interior of conduits clean, and each conduit run shall be thoroughly cleaned and dried before any cable is pulled through.

E. Unless indicated otherwise on drawings, all exposed conduits shall be run parallel with or perpendicular to building structural members.

F. Conduits entering sheet metal enclosures shall be made up with double locknut and insulating bushing. Locknut shall be of the type which will bite into the metal of the box.

G. Conduits entering threaded openings in equipment enclosures, boxes, etc., shall have at least five full threads engaged. In outdoor and underground locations, threaded joints shall be made up with a thin application of conducting joint compound. The inside of the fitting shall be thoroughly cleaned of any excess compound.

H. Power operated bending machines shall be used on conduits 1-1/4" and larger. Heating with torches will not be permitted.

I. All conduit runs shall be continuous from outlet to outlet with all joints and connections pulled tight to insure an electrically continuous and mechanically secure raceway system.

J.All raceways in "finished areas" such as offices, corridors, etc., shall be concealed.

3.3 CONDUIT AND TRAY OPENINGS
A. Contractor's Responsibility. The Contractor shall be responsible for all sleeves and openings through walls and floors necessary for passage of electrical conduits and raceways. Where contractor must provide openings and/or drill concrete floors and/or walls, he shall be responsible for the repair of these openings. Structural members and reinforcing shall not be cut, burned or damaged in any way. All openings in walls and floors, and under switchgear and panels where electrical cables and conduits are installed, shall be closed up by the Contractor to prevent dust, dirt and water from entering.

B. Sealing. The Contractor shall be responsible for sealing all wall and floor openings and all floor and wall sleeve openings utilized by the contractor whether furnished by Others or by the Contractor.

C. Sleeves and openings shall be sealed with materials that will withstand fire and heat to the same rating as the wall, floor, or ceiling through which the conduit or tray passes and shall not be less than a 30-minute barrier.
END OF SECTION 260539

SECTION 265100 — LIGHTING

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Materials specified in this Section shall comply with all applicable requirements of SECTION 260500, GENERAL PROVISIONS.

1.2 WORK INCLUDED

A. Contractor Furnished. The Contractor shall furnish, install and wire all lighting fixtures and the complete lighting system as shown on the drawings. The contractor shall furnish all appropriate mounting hardware as required for installation of the fixtures in the various ceiling types. The contractor shall coordinate the various ceiling types with the architect's reflected ceiling plan and construction details. All fixtures shall be the type and manufacturer specified, with UL label. Recessed incandescent downlights shall have thermal protection.

B. Contractor Work for Relocated Fixtures. The contractor shall disconnect all existing fixtures indicated to be relocated, remove them from the ceiling and store in a safe and protected area for installation in new location. Fixtures shall be cleaned and re-lamped before being installed in new location. All relocated fixtures shall have new seismic slack wires provided and installed by contractor per Seismic Requirements and as indicated on plans.

C. Typical Details, Drawings and Symbols. The Contractor shall install lighting fixtures complete with lamps and as shown on drawings. Refer to symbol drawings for additional descriptive and installation data. The Contractor shall check the location of all fixtures in relation to the structure and the work of other crafts and shall obtain approval of the Owner's representative to relocate fixtures, if required, to avoid interferences.

PART 2 - PRODUCTS

2.1 WIRING DEVICES

A. Wiring Devices. All wall switches for lighting shall be those of a single manufacturer and shall be as specified by the symbol on the drawings and as listed on the symbols drawings.

2.2 LIGHTING FIXTURES

A. All lighting fixtures shall be as specified on the fixture schedule on the drawings.

B. Fluorescent fixtures shall be furnished with electronic start, high power factor, integral ballasts and T-8 lamps. All recessed troffers designated as "Spec Grade" shall have a minimum depth of 4-1/2".

C. All LED fixtures shall be provided complete with driver, housing, and diffusers/reflectors as indicated on plans.

D. Substitutions: The following manufacturers acceptable manufacturers for the types of fixtures specified on the drawings. If proper grade fixture is not provided, fixtures will be required to be replaced with correct fixtures.

Fluorescent or LED Troffers
Day-Brite
Lithonia
Metalux
H. E. Williams

Recessed Down Lighting (Fluorescent or LED)
Infinity
Halo
Lithonia
Prescolite
H.E. Williams

Track Lighting (LED)
Capri
Halo
Lithonia
Prescolite
Lightolier

Emergency and Exit Lighting
Lithonia
Emergilite
Sure Lites
Dualite
LiteAlarms

PART 3 - EXECUTION

3.1 FIXTURE OUTLETS

A. Fixture outlets shall be installed in the locations shown on the drawings. The Contractor shall study the general building plans in relation to the spaces surrounding each outlet in order that his work may fit the other work required, as well as the work of other trades. When necessary, the Contractor shall relocate outlets so that when fixtures or other fittings are installed, they will be symmetrically located according to room layout and will not interfere with other work or equipment.

3.2 LIGHTING SWITCHES

A. Lighting Switches. The Contractor shall furnish and install all lighting switches shown on the drawings. The switches shall be installed in the ungrounded lines and shall be mounted in the appropriate boxes for flush or surface mounting as specified under "Boxes". The appropriate coverplates as specified under "covers" shall be installed. Switch mounting shall be as described on the symbol drawings and as described elsewhere in this specification.

B. Local Switches. Local switches shall be located on the strike side of the doors, keeping approximately 3" away from the door trim or corner, wherever possible. Switch handles shall be set to operate vertically; wall receptacles shall be set with the long dimension vertical where possible. Switches suitable for use in mullions of glass partitions shall be used where noted on plans.

C. Neutral Conductor. The neutral conductor of lighting systems shall be of the same size as the phase conductors. On three and four wire systems the load shall be divided as evenly as possible on each "outside" or phase conductor. Neutral conductors shall be identified throughout by using a white or gray (as specified in "Color Code" section) insulated wire. A green ground wire shall be run in raceway to ground all lighting fixtures, receptacles, boxes and wiring devices.

3.3 FINAL INSPECTIONS

A. At the conclusion of the job, the Contractor shall see to it that all fixtures are cleaned, lamped and in good operating condition. Upon final inspection all covers shall be installed.

END OF SECTION 265100

SECTION 260526 — GROUNDING

PART 1 - GENERAL

1.1 RELATED SECTIONS

A. Materials specified in this Section shall comply with all applicable requirements of SECTION 260500, GENERAL PROVISIONS.

1.2 WORK INCLUDES

A. As Required By the NEC. In general, fixtures, outlets, the enclosing cases, mounting frames, etc., of all switches, circuit breakers, control panels, motors and any other electrically operated or electrical equipment, conduit, trays, and other raceways shall be effectively and permanently grounded with a separate copper grounding conductor of cross-section as required by the National Electrical Code and drawings. It shall be of capacity sufficient to insure continuity and continued effectiveness of the ground connections to carry fault currents. Ground conductors must be as short and straight as possible, protected from mechanical injury and if practicable without splice or joint. The grounding conductor shall be run from a ground established at the source of supply to the equipment to be grounded. Ground wires from below grade shall be protected by galvanized conduit and the conductor shall be bonded via a listed fitting to conduit sleeve on each end. All grounding conductors shall be copper.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

3.1 INSTALLATION

A. Power Conductors Supplying Equipment. A copper grounding conductor must be run inside the conduit or raceway, enclosing the power conductors supplying the equipment, or in case of a multi-conductor power cable, must be located within the sheath.

B. Connect at Source. Ground conductors in power cable or ground wire in conduits shall always be connected directly to station ground at the source end, and to motor frame or equipment enclosure and/or equipment ground bar.

C. System Neutral. The equipment grounding conductor in all circuits shall be connected to the frame and ground lug in the panelboards and not the neutral bus. Equipment ground connections to a system neutral are not permitted.

D. Fuses. In all cases of grounded circuits, fuses must be omitted from the grounded neutral conductor throughout the entire installation.

E. Equipment Frames. Frames of all electrical apparatus will be connected to the grounding system. Neutrals of service transformers shall be connected to the grounding system.

F. Metallic Raceways. All metallic conduits and wiring channels must be connected at each end to the grounding conductor with a good electrical contact.

G. Identification. The grounding conductor shall be stranded and covered with a green jacket.

H. In all cases the white wire should be used for the current-carrying neutral only and never as a grounding conductor, or other purpose.

I. Ground Rods. Where specified on drawings, grounding connections to earth shall be made with 5/8" diameter (minimum) copper-clad steel exten-type ground rods a minimum of 8 feet long, or depth as indicated.

END OF SECTION 260526

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SHEET ISSUE:

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SECTION 271500 - VOICE AND DATA COMMUNICATION CABLING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general requirements of the Contract, including all Division 1 specification sections, apply to work specified in this section.

1.2 SCOPE OF WORK

A. Description of Work: This section includes furnishing all labor, materials, equipment, and testing for the installation of the data communication wiring system for this project.

Voice and data communications cabling system shall be end-to-end AMP Category 6.

B. Contractor shall provide a complete universal cabling wiring system including outlets, cabling, raceway, distribution panels, and terminations for the installation of a high-speed data communication network.

As part of the shop drawing submittal, the Contractor shall provide detailed rack and closet layout diagrams.

C. Data/Telecommunications Cabling Requirements

1. All drops shall terminate in the telecommunications closet.
2. Each cable shall be Category 6 for both voice and data and voice shall be installed and terminated exactly as the data drops on to Category 110 to RJ-45 Category 6 patch panels in the IDF located in the closet.
3. All termination configurations shall be EIA-568-B.
4. Conduit shall be provided from each telecommunications outlet to accessible ceiling.

D. Proper NEC Listing

1. All cables shall be properly listed as plenum rated cable with the appropriate NEC cable listing for installation within buildings. Any omission or error within this contract does not relieve the contractor of his obligation to advise the Owner when an unlisted cable has been specified for installation in a space, and must be changed to meet NEC requirements.

E. Additional Standards:
These standards and specifications shall govern materials and/or workmanship, shall be equally binding and have full force and effect as though they have been copied into this document in full.
Please become familiar with these documents and references:
ANSI/TIA/EIA – 568B.1 Commercial Building Telecommunications Cabling Standard
ANSI/TIA/EIA – 568B. 2 100 ohm Balanced Twisted-Pair Cabling Standard
ANSI/TIA/EIA – 568B.3, Optical Fiber Cabling components Standard
ANSI/TIA/EIA –569A, Commercial Building Standard for Pathways and Spaces
ANSI/TIA/EIA –606, Administration Standard for Telecommunications Infrastructure in Commercial Buildings
ANSI/TIA/EIA –607, Commercial Bonding and Grounding for Telecommunications
ANSI/TIA/EIA –758, Customer owned outside plant Telecommunications
ASTM E814 and UL1479 – fire-stop standards
International Standards Organization/International Electrotechnical Commission (ISO/IEC) DIS 11801, January 6, 1994
BICSI – TDMM, Telecommunications Distribution Methods Manual
National Fire Protection Agency (NFPA-70), National Electrical Code (NEC)
OSHA Standards and Guidelines (1910.268)

If this document is in conflict with any of the above listed documents, the above listed documents shall take precedence.

PART 2 - PRODUCTS

2.1 HORIZONTAL COPPER CABLE

A. Horizontal copper cable shall be AMP Category 6, CMP rated with blue jacket, plenum rated, P/N 219567-6.
B. Voice and data cable will be the same color (blue), installed, terminated and tested in the same manner. The use of the cable for either voice or data will be determined at the time the cable is put in to service. When selecting a jack for a telephone application, it shall be the top left jack in a multi-jack faceplate.
C. All copper cable shall be terminated using the EIA-568B configuration.

2.2 JACKS

A. All copper cabling termination jacks shall be AMP Category 6, almond color. P/N 1375055-1.
B. Faceplates:
All jacks will terminate in AMP 110 Connect, almond color. Part numbers as follows:
557505-1 2-Port
558088-1 4-Port
557691-1 6-Port
1479152-1 1-Port Wall Phone
1116412-1 Blank Port Cover

No ports shall be left unpopulated. Blank ports shall be filled with AMP mini-com blank module inserts. P/N CMBW-X.

2.3 PATCH PANELS

A. All copper cabling in the Telecom closets shall terminate on rack mounted 110-style punch down to modular patch panels.

B. Only 24 port and 48 port patch panels shall be used for terminations.
AMP 1375014-1 24-Port Cat. 6 Patch Panel
AMP 1375015-1 48-Port Cat. 6 Patch Panel

2.4 PATCH CORDS

A. Patch cords shall be provided for closet cross connects and for station.

B. A 5' and 10' patch cord shall be provided for every Category 6 horizontal cable link placed.

C. The patch cords shall be:
1. AMP Cat. 6 Patch Cable, 10 feet, P/N 1-219886-0.
2. AMP Cat. 6 Patch Cable, 5 feet, P/N 219886-5.

2.5 CROSS CONNECTS

A. Closet end:

1. Cross will be made for voice stations by using Silver Satin modular line cords in the closet end, patch panel to patch panel.
2. Use Silver Satin modular line cord RJ11/14, 6P4C, 7-long.

B. Switch end:

1. The voice trunk or riser cable will terminate at the switch end on wall mounted 110M1-50 blocks.
2. Cross connects will be made for voice stations at the switch by using 24 gauge cross connect copper jumper wire from the 110 M1-50 blocks of the riser termination field to the switch jack field.

2.6 SPECIAL CIRCUIT CABLES

A. Place 3 - 4 pair UTP cables from the IDF cabinet to the existing building MDF switch as indicated on plans.. This cable shall be homerun to the switch room. This cable shall be terminated at the switch room at the telephone exchange.
B. All fire and life safety telephone service must also directly connect to the MDF.

2.7 WIRELESS ACCESS POINTS

A. Provide 6' service loop above ceiling at all Access Point locations indicated on plans.

2.8 TELE-POWER POLES

A. Provide 10' service loop in ceilling at all Tele-Power pole locations indicated on plans.

2.9 CLOSETS AND RACKS

A. All equipment racks shall be 7ft high, floor mounted, EIA 19" standard racks.
Secure each rack to the floor slab using 3/8" expansion anchors.
Provide ladder cable runway to tie the rack to the wall and for the routing of cables within the MDF and TCs.
B. Equipment racks will require a minimum 36" clearance from the closet walls on all sides of the rack. Install as per drawings.
C. Unused rack mounting screws shall be placed in a zip-lock bag and attached to the rack upon completion of the cabling installation.
D. Equipment Racks:
1. Two post Network Rack, Model Tripp Lite TAA/GSA 45U Open Frame Rack Cabinet, 800 lb capacity or similar.
2. Equipment rack and cable tray shall be bonded per ANSI-TIA/EIA 607 using #6AWG green insulated copper wire to the provided communications grounding bus bar in each closet. The grounding conductor shall reach the bonding bus bar in as short of route and straight line as possible.
3. Bond Equipment rack and cable tray together.
4. Provide a dedicated L5-30R receptacle, suspended from ceiling via a stress relief cord, at 60" AFF.

2.10 WIRE MANAGEMENT

A. Each rack shall contain both horizontal and vertical cable management. All wire management panels shall contain covers and the covers shall be placed on each at the close of the job.
B. Wire management panel shall contain 4" slotted finger vertical wire management channels on both sides – front and back of the rack.
C. Horizontal management shall be installed above and below each patch panel.
AMP– front and rear hinged covers
D. Vertical management shall be installed on both sides of each floor mount equipment rack. AMP Model with 35" side mount vertical wire management. (Each side of rack requires 2.)
E. Provide and install ladder style cable tray in room above top of rack for assembling cables.

PART 3 - EXECUTION

3.1 GROUNDING AND BONDING

A. Comply with the National Electrical code for proper bonding and grounding practices. (NEC Article 800, Article 725, Article 100, Article 250, Article 770.)
B. The telecommunications rooms shall be equipped with a Telecommunications Bonding Bus (TBB). The cabling contractor will be responsible for assuring that he has made the required ground connections to the TBB using proper fittings and that the ground connections and bonding connections are continuous and that all telecom equipment, rack, conduit and cable tray have been properly bonded at the close of the job.
C. All connections to the TBB shall be made with compression fittings designed for the purpose. Two-hole crimped compression-type connectors are preferable for connection to the TBB.
D. All wires used for telecommunications grounding purposes shall be identified with green insulation.
E. All metallic racks, cable trays and equipment that make up the telecommunications installation shall be grounded and bonded to the TBB system. Connections to the equipment shall be made with connectors designed for the purpose using #6AWG ground wire.
F. All metallic cable shields shall be grounded and bonded using approved cable bullet bonds and clamps.

3.2 FIRE STOPS

A. The Electrical Contractor shall seal firewall penetrations used by the Cabling contractor including penetrations between floors. The penetration seals shall meet the fire rating of the walls and slab and shall meet the requirements set forth in ASTM E814 & UL1479.
B. The electrical contractor shall be responsible for returning all fire rated walls or petitions back to their original fire rating for both penetrations and membrane disruptions.
Both sides of the disruption or partition must be fire stopped.
C. Use only approved fire stop materials that meet the requirements of ASTM E814.
Each should carry an Evaluation by UL according to Standard 1479 or equivalent.
D. Follow all manufacturers' recommendations and practices when installing fire stop materials. If the Contractor is unsure of the fire rating of a particular partition, he should return the structure that has been penetrated to the highest rating possible for the type of structure to be restored.
E. Non-fire rated materials are not allowed and shall not be used to restore fire rated barriers.

3.3 HANDLING OF THE CABLES

A. The cabling contractor shall utilize the cable tray for the placement of the voice riser cable from the MDF to each of the IDF closets.
B. During the installation of the cables, the pulling tension shall not exceed 25 lbs per cable.
C. All cables shall be in continuous runs with no splicing or bridge taps allowed.
D. Cables shall not contain kinks or bends smaller than 4 times the cable outside diameter at any point in the cable run and termination area.
E. Horizontal distribution cables shall be bundled in groups of no more than 50 cables.
F. Care shall be taken to avoid kinking or excessive bending of the cable. If necessary, cable pulleys and lubricants shall be used to reduce the pulling tension during cable installation.
G. Note: Even when cables have passed testing requirements, the contractor may be required to replace cables with damaged outer sheaths which have excessive cuts or gouges and general signs of mishandling. This decision will be left up totally to the Owner and/or its representative and the contractor will bear the total expense to replace such cables.
H. If the any cable must be unreeled during the installation, use the figure-eight configuration to prevent the cable from kinking or twisting.
I. Care shall be used when terminating the drop cables to the jacks to not violate the cable end radius of 4 times the cable diameter. Excess slack shall not be neatly dressed in the box and not twisted or forced when installing the faceplate.
J. Care shall be taken to neatly coil all excess fiber length and store this length in the cable tray. Care should be taken to maintain minimum required service loops.
K. All blank or unused sections of cabinets will be filled with blank cover filler plates and not left void and open.
L. Cap the front and back of all unused positions on the termination panels.

3.4 DRESSING OF CABLES IN THE TC

A. All cables will be properly dressed and neatly bundled together from the point of entry in to the room and in to the rack for termination.
B. Velcro material shall be used to dress the horizontal station cables into the rack for termination.
C. Provide ladder rack as a means of support within the TC from the point of entry in to the room, along the wall(s) to the rack.
D. All cable slack shall be neatly coiled above the ceiling or as specified. Care shall be taken to not coil cable too tightly to cause attenuation.

3.5 TERMINATION OF UTP COPPER CABLES

A. Do not violate the minimum bend radius of the cable (four times the outside diameter).
B. Do not untwist the cable pairs more than a maximum of ½ inch.
C. Remove only as much jacket is necessary to complete the termination.
D. Lace the pairs in to the retention slots of the 110 on the patch panel, maintaining a maximum of ½ inch of untwisted wire for each pair.
E. Maintain 3' of slack in the TC end of the cable and 12 to 16 inches at the station end.
F. Use only Velcro type cable ties in closets. In other areas, do not tightly cinch cable ties.
G. No splicing of cables.
H. Avoid stretching and excessive pulling tension on the cables. Do not exceed 25 lbs per cable during installation.
I. Do not allow excessive sagging of the cable. Within the closets, the cable shall be supported at all times enroute to the point of termination by either cable tray or other means. Provide "J Hooks as required or other means of support if the cable tray or conduit is not required.
J. Refer to ANSI/TIA/EIA/568-A and 568-B.1 for other specifications.

3.8 TC TERMINATIONS

A. In the TC's, the cables will be terminated as one pair per port on rack mounted patch panels.
B. Terminate the multi-pair riser cables on to 48 port 110 to RJ-45 patch panels. Use PANDUIT DP485E8810U - terminate the two cable binder groups of 25 pairs, with one pair of each group per RJ-45 jack on patch panel and leave the 25th pair (violet/gray) un terminated and wrapped to match up with 25 pair un- terminated on the 110 blocks on other end.
C. When a station is determined to be a voice station, a cross will be made in the TC, between the station terminations patch panel (Category 6) to make the completed connection back to the switch in the IDF.

3.9 STATION CABLING

A. All drops shall terminate in the telecommunications closet nearest the drop jack. The jacks located within all common areas, such as the media center, computer labs and administration areas shall all terminate within the same closet.
B. Each cable shall be Category 6 for both voice and data and voice shall be installed and terminated exactly as the data drops on to Category 110 to RJ-45 Category 6 patch panels in the IDF closet.
C. Horizontal distribution cables shall be bundled in groups of no more than 50 cables.
D. All tie-wraps shall be loose and easily moved so as to not disfigure the cables and cause attenuation.
E. Care shall be used when terminating the drop cables to the jacks to not violate the cable bend radius of 4 times the cable diameter. Excess slack shall not be stored in the outlet box.
F. All cables shall be labeled with self-adhesive printed labels on each end for ready identification. Reference ANSI/TIA/EIA-568-606 administration standard. Cable labels shall be located so that they can be viewed without removing the cable bundle ties at the patch panel end and by the removal of the faceplate at the station end. See the "Labeling" section of this document for an example format of labeling scheme.

3.10 LABELING

A. All data communication cables shall be labeled with self-adhesive printed labels on each end. Cable labels at the patch panels shall be located so that they can be viewed without removing the cable bundle ties. At the faceplate, all cable labels shall be applied in locations so that they can be seen by removing the faceplate.
B. All Patch panels, faceplates and fiber optic connection centers shall be labeled per ANSI/EIA/TIA 606 administration standards for labeling.
C. All fiber optic and copper riser cables shall be labeled at both ends with plastic label tags, tie-wrapped in place. Each shall be labeled at each end with origination/destination and type, and every 100 feet in the cable tray.
D. Sample Labeling Scheme – for horizontal cables
Floor # Closet ID - Alpha panel ID panel port #
01 B A 34
E. All trunk cables shall be labeled with self-adhesive printed labels on each end.

3.11 INSPECTIONS

A. On-going inspections shall be performed during construction by the Owner appointee
The cabling contractor shall assist the Owner as necessary with all inspections.
B. The following items are an example of some of the check points for the on-site inspections. As deemed appropriate for each job site and location, other items may be included in inspections that have not been mentioned below.
1. All work shall be performed in a high quality manner and the overall appearance shall be clean, neat and orderly.
C. The following points will be examined and must be satisfactorily complied with.
1. Is the design documentation complete? Are all cables properly labeled from end-to-end?
2. Have all terminated cables been properly tested in accordance with the specifications for the specific category as well as tested for opens, shorts, polarity reversals, and transposition?
3. Is the cable type suitable for its pathway? Are the cables bundled in parallel?
4. Have the pathway manufacturer's guidelines been followed? Are all cable penetrations installed properly and fire stopped according to code?
5. Have the contractors avoided excessive cable bending?
6. Have potential Electromagnetic Interference (EMI) and Radio Frequency Interference (RFI) sources been considered and avoided?
7. Are hanging supports within 1.5 meters (5 feet)?
8. Have patch panel instructions been followed for items such as?
a. Jacket removal point.
b. Termination positions.
c. All pair terminations tight with minimal pair distortions.
d. Twists maintained up to Index Strip.
e. Have 110 modular panel instructions been followed?
f. Cable dressing first.
g. Jackets remain up to the connecting block,
h. All pair terminations tight and undistorted.
i. Twists maintained up to the connecting block.
j. Are identification markings uniform, permanent and readable?

3.12 TESTING AND TEST RESULTS

A. The owner and/or appointed representative shall be notified of test schedules and dates and reserves the right to be present during testing.
B. All test documentation shall be submitted to the owner in printed form unless otherwise requested.
C. The test documentation shall be:
1. Clearly labeled with the test point of origin and destination.
2. Set up for feet and not meters.
3. Bound in notebook form with tabs for separation of the results.
4. Available on diskette or in printed form when requested, readable in Microsoft Word.
D. Station Cable Testing
1. Category 6 horizontal cables shall be tested according to the test set manufacturers instructions utilizing the latest firmware and software.
a. Complete, end to end test results, must be submitted to [customer].
The field test equipment shall meet the requirements of ANSI/TIA/EIA-568-B.1. The appropriate level III tester for Category 6 cabling systems.
Any pairs not meeting the requirements of the standard shall be brought into compliance by the contractor, at no charge to this district.

2. Follow the BICSI standards requirements for Category 6 performance requirements.
Testing shall utilize a Fluke DSP 4300 or comparable meter.

3.13 AS-BUILT DRAWINGS AND DOCUMENTATION

A. The cabling contractor will be required to provide to the customer a complete set of as-built drawings at the close of this project.
B. This documentation shall be provided as a part of the completion of the work and payment can be with-held until such documentation has been provided to the Owner.
C. Handwritten over-layment of information on to existing building drawings will be sufficient. Hand writing and notations however, MUST BE LEGIBLE to be acceptable.
Note: It is the responsibility of the cabling contractor to be familiar with the documentation that will be required of him prior to the commencement of work so that notations and documentation can be compiled as the work progresses. A request for a change order to go back and compile this information after the job has been completed will not be accepted.

D. At a minimum, provide:

1. A typed over-layment of jack numbers and jack location changes on to the site plan drawings.
2. A drawing showing the location of any pulls boxes along with any special notes to help with the location of these boxes.
3. A drawing illustrating the final layout of the equipment rooms showing the orientation of racks, ladder racking and wall field locations.
4. Any special notes beneficial to the customer for documentation of the project in a typed and neat format.

END OF SECTION 271500

SECTION 283100 - INTRUSION DETECTION

1.1 QUALITY ASSURANCE

A. FM Approved and labeled.

1.2 WARRANTY

A. Materials and Workmanship: 1 year.

1.3 PRODUCTS

A. Functional Description of System: Multiplexed, modular, microprocessor-based controls.
1. Supervision: Continuously monitored for normal, alarm, supervisory, and trouble conditions.
Retain one of two "System Control" subparagraphs below. See "Control Units" Article in the Evaluations.
2. System Control: Master control unit monitors intrusion detection units and connecting wiring.
3. System Control: Master control unit monitors intrusion detection devices, perimeter detection units, and connecting wiring in a multiplexed distributed control system or as part of a network.
4. Operator Commands:
a. Help with system operation.
b. Acknowledge alarm.
c. Place protected zone in access.
d. Place protected zone in secure.
e. Protected zone test.
f. System test.
g. Print reports.
5. Timed control of master control unit.
6. Automatic control for the following:
a. Lights.
b. Elevator.
c. Intercommunication stations.
d. Sound system.
e. Closed-circuit television cameras.
7. Printed record of events.
8. Response Time: Two seconds between actuation of any alarm and its indication at master control unit.
9. Circuit supervision.
10. Secure-Access Control: Programmable.

B. System Component Requirements:
1. Compatibility for integration with the following:
a. Door hardware.
b. Elevators.
c. Lighting controls.
d. Intercommunications and programming system.
e. Public address and mass notification system.
f. Access control system.
g. Fire-alarm system.
h. Perimeter security system.
i. Video surveillance system.

2. Surge protection.
3. Intrusion detection units.
4. Interference protection.
5. Tamper protection.
6. Self-testing devices.
7. Antimasking devices.
8. Addressable devices.
9. Remote-controlled devices.

C. Secure and Access Devices: Keypad and display module.

D. Door and Window Switches: Balanced-magnetic type.

E. Intrusion Detection Devices:
1. PIR sensors.
2. Microwave intrusion detectors (interior).
3. Acoustic-type, glass-break sensors.
4. Piezoelectric-type, glass-break sensors.
5. Vibration sensors.
6. Photoelectric sensors.
7. Microwave-PIR dual-technology sensors.
8. Duress-alarm switches.
9. Video motion sensor (interior).

F. Master Control Unit:
1. Construction: wall-mounted console, modular.
2. Alarm-Initiating Protected Zone Boards: Plug-in cards.
3. Alarm Indication: Audible signal and LED plain-language identification on LED or LCD display at master control unit.
4. Timing Unit: Solid state, programmable, 365 days.
5. Alphanumeric display and system controls.
6. Power supply circuits.
7. UPS for six hours of operation.
8. Automatic signal transmission to monitoring station.

G. Audible and Visual Alarm Devices: Bell.

1.4 INSTALLATION

A. Wiring Method: In raceways.

1.5 FIELD QUALITY CONTROL

A. Testing: By Contractor-engaged agency.
1.6 The preceeding verbiage for exhibit B is excerpted from the Government Entity's system requirements is a part of the contract documents. All references to "Lessor" are responsibility of contractor.

END OF SECTION 283100

SECTION 283111 - FIRE ALARM SYSTEM
PART 1 - GENERAL
1.1 SUMMARY

A. This Section includes fire alarm systems.

B. Definitions:
1. FACP: Fire alarm control panel.
2. LED: Light-emitting diode.
3. Definitions in NFPA 72 apply to fire alarm terms used in this Section.

C. System Description:
1. Existing fire alarm system is to remain with device locations modified and added as indicated on plans. Refer to plans for more specific information.

D. Performance Requirements:
1. Comply with NFPA 72.

E. Documentation:
.Approval and Acceptance: Provide the "Record of Completion" form according to NFPA 72 to Owner, Architect, and authorities having jurisdiction.

2. Record of Completion Documents: Provide the "Permanent Records" according to NFPA 72 to Owner. Format of the written sequence of operation shall be the optional input/output matrix.
a. Hard copies on paper to Owner.

1.2 QUALITY ASSURANCE

A. Installer Qualifications: Personnel shall be trained and certified by manufacturer for installation of units required for this Project.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

PART 2 - PRODUCTS
2.1 MANUAL FIRE ALARM BOXES

A. Description: UL 38 listed; finished in red with molded, raised-letter operating instructions in contrasting color. Station shall show visible indication of operation. Mounted on recessed outlet box; if indicated as surface mounted, provide manufacturer's surface back box.

1. Single-action mechanism, breaking-glass or plastic-rod type.
2. Station Reset: Key- or wrench-operated switch.

2.2 SYSTEM SMOKE DETECTORS

A. General Description:
1. UL 268 listed, operating at 24-V dc, nominal.
2. Match existing system equipment.

B. Photoelectric Smoke Detectors

2.3 HEAT DETECTORS

A. General: UL 521 listed.

B. Heat Detector, Combination Type: Actuated by either a fixed temperature of 135 deg F (57 deg C) or rate-of-rise of temperature that exceeds 15 deg F (8 deg C) per minute, unless otherwise indicated.

2.4 NOTIFICATION APPLIANCES

A. Description: Equipped for mounting as indicated and with screw terminals for system connections.

1. Combination Devices: Factory-integrated audible and visible devices in a single-mounting assembly.

B. Horns: Electric-vibrating-polarized type, 24-V dc; with provision for housing the operating mechanism behind a grille. Horns shall produce a sound-pressure level of 90 dBA, measured 10 feet from the horn.

C. Visible Alarm Devices: Xenon strobe lights listed under UL 1971, with clear or nominal white polycarbonate lens mounted on an aluminum faceplate. The word "FIRE" is engraved in minimum 1-inch high letters on the lens.

1. Rated Light Output: Comply with candela requirements of the current NFPA 72 and Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities.

PART 3 - EXECUTION

3.1 INVESTIGATION
Prior to bids, the contractor shall investigate the existing fire alarm system and incude all modifications required to the existing system to accomodate the modified plans layouts, including additional capacity, and battery power if necessary to maintain operation per NFPA 72.

3.2 EQUIPMENT INSTALLATION

A. HVAC: Locate detectors not closer than 3 feet from air-supply diffuser or return-air opening.

B. Heat Detectors in Elevator Shafts: Coordinate temperature rating and location with sprinkler rating and location.

C. Remote Status and Alarm Indicators: Install near each smoke detector that is not readily visible from normal viewing position.

D. Audible Alarm-Indicating Devices: Install not less than 6 inches below the ceiling. Install bells and horns on flush-mounted back boxes with the device-operating mechanism concealed behind a grille.

E. Visible Alarm-Indicating Devices: Install adjacent to each alarm bell or alarm horn and at least 6 inches below the ceiling.

F. Device Location-Indicating Lights: Locate in public space near the device they monitor.

3.3 WIRING INSTALLATION
A. Install wiring according to the following:
1. NECA 1.
2. TIA/EIA 568-A.

B. Color-Coding: Color-code fire alarm conductors differently from the normal building power wiring. Use one color-code for alarm circuit wiring and a different color-code for supervisory circuits. Color-code audible alarm-indicating circuits differently from alarm-initiating circuits. Use different colors for visible alarm-indicating devices. Paint fire alarm system junction boxes and covers red.

3.4 GROUNDING

A. Ground the FACP and associated circuits; comply with IEEE 1100.

3.5 FIELD QUALITY CONTROL

1. Prepare according to NFPA 72, including demonstration of sequences of operation by using the matrix-style form in Appendix A in NFPA 72.

2. Test the modified system in the presence of the authority having jurisdiction, building owner and engineer.

END OF SECTION 283111

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SHEET ISSUE:

NO.	DATE	DESCRIPTION	BY
B	08.17.2020	PRICING SET	RAB

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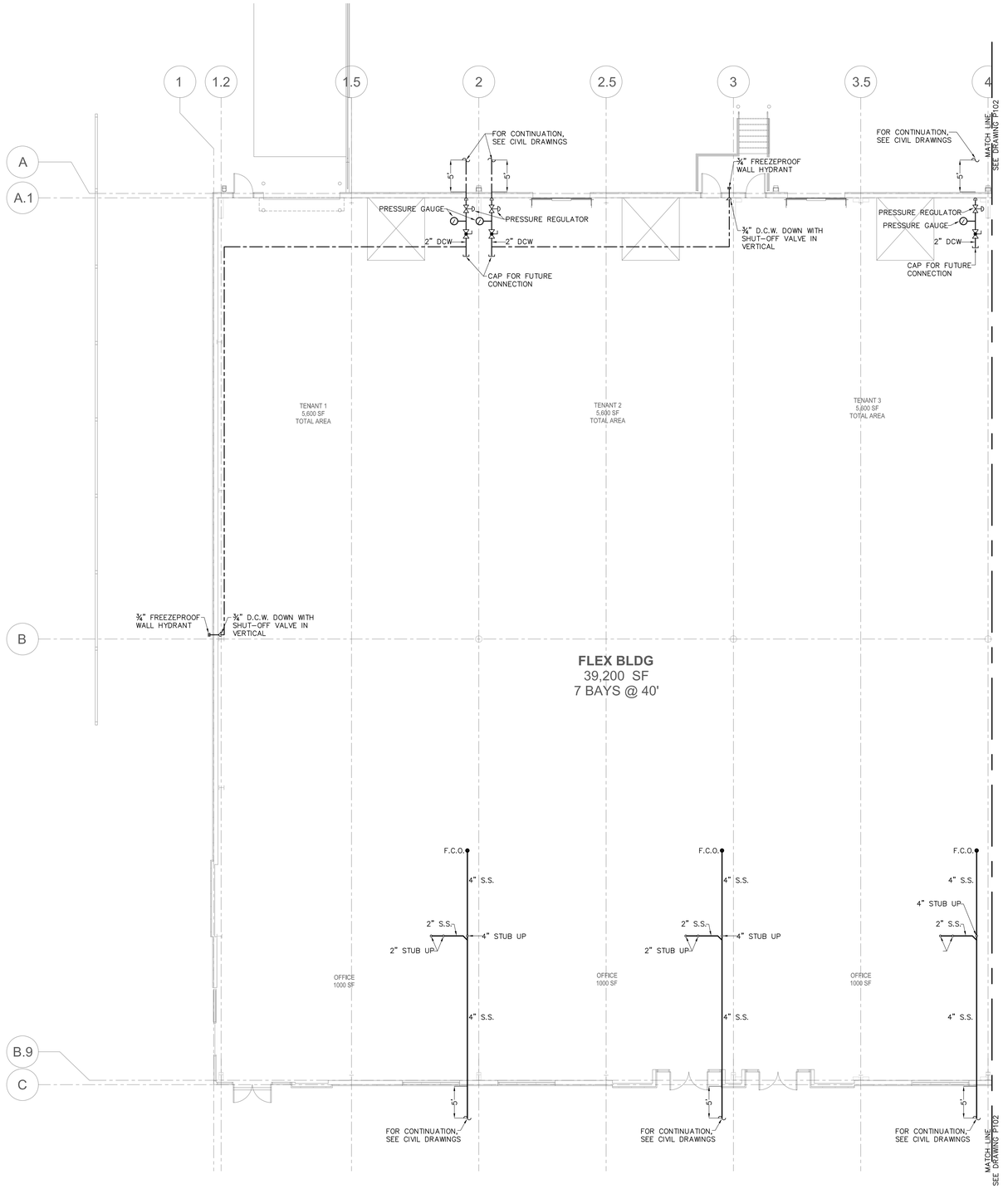
PRINCIPAL IN CHARGE: DJB
PROJECT ARCHITECT: RAB
DRAWN BY: TMP/RAB

SHEET TITLE:
ELECTRICAL SPECIFICATIONS

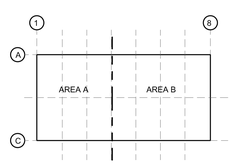
SHEET NO. ES003

PROJ. NO. 019640.00



PLUMBING FLOOR PLAN - AREA A

1/8" = 1'-0"



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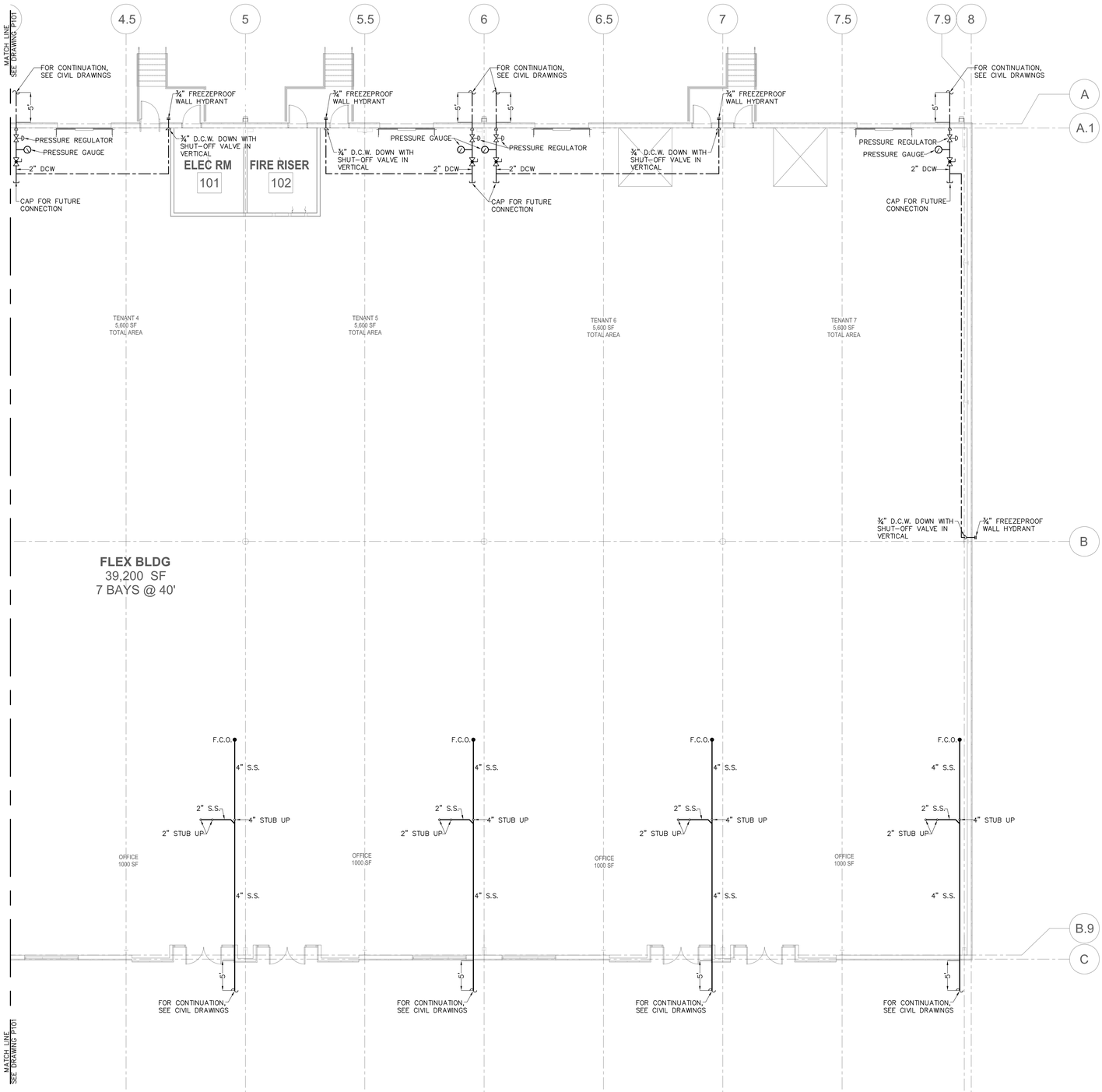
PRINCIPAL IN CHARGE: Principal
PROJECT ENGINEER: JCP
DRAWN BY: TMI

SHEET TITLE:

PLUMBING FLOOR PLAN - AREA A

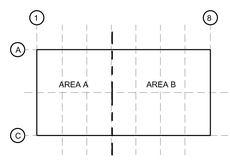
SHEET NO. P101

PROJ. NO. 019640.00



PLUMBING FLOOR PLAN - AREA B

1/8" = 1'-0"



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B	08.17.2020	PRICING SET	

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PRINCIPAL IN CHARGE: Principal
PROJECT ENGINEER: JCP
DRAWN BY: TMI

SHEET TITLE:
PLUMBING FLOOR PLAN - AREA B

SHEET NO. P102

PROJ. NO. 019640.00

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PLUMBING LEGEND

ITEM	DESCRIPTION
C.O.	CLEAN OUT
F.D.	FLOOR DRAIN
F.C.O.	FLOOR CLEAN OUT
PDI	PLUMBING DRAINAGE INSTITUTE
S.S.	SANITARY SEWER
V.T.R.	VENT THRU ROOF
W.C.O.	WALL CLEAN OUT
Y.C.O.	YARD CLEAN OUT
	DOMESTIC COLD WATER PIPING – D.C.W.
	DOMESTIC HOT WATER PIPING – D.H.W.
	SANITARY SEWER or WASTE PIPING
	VENT PIPING
	BALL VALVE
	CHECK VALVE
	CLEAN OUT
	FLOOR or YARD CLEAN OUT
	HUB DRAIN
	UNION
	WATER HAMMER ARRESTOR
	HOSE BIBB or WALL HYDRANT

PLUMBING SPECIFICATIONS

GENERAL PROVISIONS

A. CODES – THE FOLLOWING CODES ARE IMPOSED AS APPLICABLE TO THE WORK.

1. SOUTH CAROLINA DEPARTMENT OF HEALTH & ENVIRONMENTAL CONTROL
2. INTERNATIONAL BUILDING CODE – 2018 EDITION
3. INTERNATIONAL PLUMBING CODE – 2018 EDITION

B. EQUIPMENT LABELING – ALL ELECTRICALLY POWERED EQUIPMENT TO BE U.L. LABELED OR SIMILAR TESTING AGENCY.

C. MAINTENANCE MANUALS – PROVIDE OWNER WITH (3) THREE COMPLETE SETS OF BOUND PRODUCT AND MAINTENANCE DATA.

D. ELECTRICAL – ALL WIRING TO BE PROVIDED BY ELECTRICAL CONTRACTOR.

SYSTEMS INSULATION

A. DOMESTIC WATER PIPING – PIPE SIZE 1–1/2" AND SMALLER – 1" THICKNESS. INSULATION TO BE OWENS CORNING FIBERGLAS ASJ/SSL–11, U.L. LISTED.

B. ACCEPTABLE MANUFACTURERS – CERTAINTEED, KNUAF, AND OWENS–CORNING.

DOMESTIC WATER PIPING SYSTEM

A. PIPING – COPPER TUBE ASTM B88, TYPE L, HARD–DRAWN TEMPER.

B. VALVES – 150 LB. BRONZE GATE AND GLOBE VALVES. ACCEPTABLE MANUFACTURERS: HAMMOND, NIBCO–SCOTT, GRINNELL AND CRANE.

C. ESCUTCHEON – HEAVY CHROME PLATED BRASS.

D. STERILIZATION – AS REQUIRED BY SOUTH CAROLINA DEPARTMENT OF HEALTH & ENVIRONMENTAL CONTROL.

SOIL AND WASTE PIPING SYSTEM

A. PIPING – SCHEDULE 40 PVC STANDARD WEIGHT, SOLID WALL PIPE, WITH SOLVENT WELD JOINTS AND FITTINGS. CELLULAR CONE PVC PIPE IS NOT ACCEPTABLE.

B. ESCUTCHEONS – HEAVY CHROME PLATED BRASS.

C. IN GENERAL ROUGH–IN NEW PIPING IN DESIGNATED LOCATIONS TO POINT 5'–0" OUTSIDE OF BUILDING.

D. CLEANOUTS – ACCEPTABLE MANUFACTURERS: JOSAM, ZURN, WADE, J.R. SMITH.

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PRINCIPAL IN CHARGE: Principal
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DRAWN BY: TMI

SHEET TITLE:

PLUMBING SCHEDULES & SPECIFICATIONS

SHEET NO. P103

PROJ. NO. 019640.00