Sheetz
Automatic Car Wash

NOTICE TO CONTRACTOR
All construction must comply with current NC Building Codes and is subject to field inspection and verification.
APPROVED
Limited building only review
Permit holder responsible for full compliance with the code
03/25/2021
Harnett COUNTY NORTH CAROLINA

Sheet Number	Sheet Name	Sheet Number	Sheet Name
00-CS1	Cover Sheet	03-P3	Plumbing Riser & Details
00-CS2	Appendix B	03-P4	Plumbing Riser & Details
01-A1	Exterior Elevations	03-P5	Floor Heat Layout
01-A2	Floor Plan	04-S1	Floor Framing Plan
01-A3	Equipment Plan	04-S2	Roof Framing Plan
01-A4	Equipment Room Interior Elevations	04-S3	Framing Sections
01-A5	Wash Bay Interior Elevations	04-S4	Section
02-E1	Electrical Plan	04-S5	Section
02-E2	Lighting Plan	04-S6	Section
02-E3	Electrical Schedules	05-F1	Foundation Plan
03-P1	Plumbing Plan	05-F2	Foundation Details
03-P2	Plumbing Risers		

A. General Contractor Scope of Work Responsibilities

1. Obtain all local permits for building installation and make arrangements for all local inspections.
2. Prepare site to be free from ditches, mounds of dirt or other irregularities. Remove overhead utility lines in work area (building and 20' perimeter) and at street entrance.
3. Provide access from street to building location for trucks and crane. Provide gravel construction entrance per local code requirements. Provide gravel drive from construction entrance to building location if site is unable to support trucks and crane (mud, loose sand, etc).
4. Provide temporary electrical service or generator and water for cleanup.
5. Provide rest room facilities.
6. Install building foundations in accordance with Genesis Approved Foundation Drawings.
7. Secure the building once it has been delivered and installed.
8. Provide Genesis with digital pictures of site progress before delivery of the modular building to include:
   a. Site Entrance Conditions
   b. Foundation installation
   c. Building Staging Location
   d. Crane Pad Location in relationship to the foundation
   e. Overhead obstructions
9. Run slab stat to exterior for installation in entrance pad.
10. Ensure that site electrician routed the boiler slab sensor thru the sleeves to wash bay floor and to entrance apron. This must be done prior to pouring the concrete to apron.

B. Site Electrical Responsibilities for Building

1. Provide and connect electrical service entrance to the building including all required equipment. Provide connection(s) for building grounding.
2. Provide circuits, conduit, wiring, etc. For all site electrical equipment (freestanding signage, yard lights, coin box, dryer timer console, etc.).
3. Connect power leads to batteries in emergency lights after main power is connected.
4. Remake all module line electrical crossover connections in the field after building is set.
5. Main electrical disconnect (if required).
6. Bring wiring umbilical into MCC cabinet and make wiring terminations.
7. Route the boiler slab sensors thru sleeves to wash bay floor and to entrance apron. This must be done prior to pouring the concrete to apron.

C. Site Plumbing Responsibilities for Building

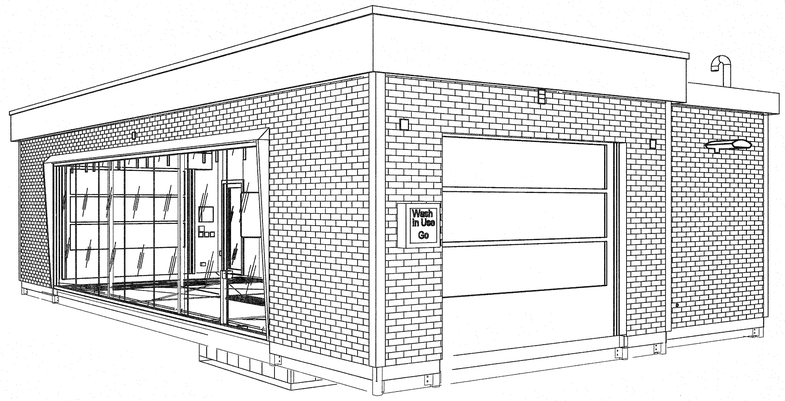
1. Provide and connect main water supply to building and water meter.
2. Provide connection for water supply and sanitary drain lines. Water supply and drain lines within modular building provided by Genesis.
3. Connect rainwater downspouts to drainage system (if required).
4. Grout the connection between the grit separator & the building drain as per foundation plans.
5. Remake all module line crossover connections in the field after building is set. (Copper and or Stainless Steel and or Galvanized and or CPVC)
6. Install pad heat tubing for entrance and exits and route back to sleeves through floor of equipment room (if boiler system is included).
7. Route bay floor heat tubing to sleeves through floor of equipment room (if boiler system is included).
8. Supervise in-ground heating connections between entrance and exit aprons and bay (if boiler system is included).
9. Ensure that equipment room radiant heat system is connected and in working order (as required).
10. Land floor heat tubing to the boiler manifold (if floor heat option is included).
11. Fill boiler and commission system per manufacturer's specifications (if boiler system is included).
12. Ensure that site electrician routed the boiler slab sensor thru the sleeves to wash bay floor and to entrance apron. This must be done prior to pouring the concrete to apron.

D. Local Equipment Distributor

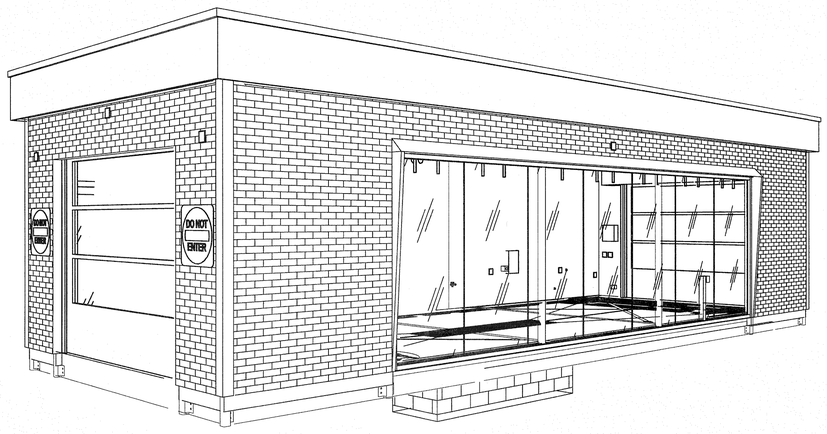
1. Remake all hose connections pertaining to the equipment package per the equipment schedule on the contract drawings.
2. Erect, assemble, position and secure all ancillary equipment furnished to included but not limited to POS system, clearance bars, signage, dryer timers, etc.
3. Review drawings to confirm utilities, equipment locations & equipment specifications.
4. Signage and graphics.
5. Additional Car wash equipment above that which is specified.
6. Accept and provide warranty of equipment installed with building.
7. Assist General Contractor in following architectural and engineering drawings provided, by Genesis. Provide detailed industry expertise and knowledge. Provide data to properly locate stub-ups for support equipment. Coordinate with Superintendent before equipment delivery to verify scheduled delivery date of building and ancillary equipment (dependent upon verification of building support locations).
8. Unload, uncrate and inspect ancillary equipment for damage including filing any claims directly with Genesis before the truck can leave the facility.
9. *Coordinate terminations, openings, etc with general contractor to help assure a smooth installation.*
10. Inspect and ensure proper operation of Emergency Stop Button.
11. Confirm correct operation of R.O. Window washer unit (when applicable).
12. Confirm correct operation of Reclaim unit (when applicable).
13. Distributor will not perform any electrical trades work. This is the responsibility of site electrician. Distributor will advise and or assist if requested by project electrician with equipment terminations.
14. Install all signs and confirm proper operation.
15. Start up and commission wash equipment per manufacturer's specifications.
16. Clean up area and dispose of waste left behind from packaging of products.
17. Confirm correct operation of wash bay doors. (if doors are installed)
18. Adjust track / rails after building is set in field.
19. Adjust entrance and exit doors. (if doors are installed)
20. Run slab stat to exterior for installation in entrance pad.
21. Check and tighten (if necessary) all plumbing connections.
22. Mount the boiler outdoor sensor and the door package thermostat on the north face of the building. (Note: Be careful not to drill into the gutter if it is mounted under the soffit.)

E. Field Erector

1. Insulate between washbay and equipment room.
2. Set washbay module.
3. Install p-traps and r.o. chase (PVC pipe and elbows) on equipment room module.
4. Remove shipping tape covering electrical cross over junction box, thru wall for carwash and dryer junction box.
5. Set equipment room module.
6. Weld building modules to weld plates as per detail 8 on sheet F2.
7. Remove all equipment bracing in washbay and equipment room. Return orange painted bracing and ratchet straps and come-a-longs to BM.
8. Install flashing between modules and waterproof.
9. Install flashing at lifting points and waterproof. See detail on sheet E14.
10. Install ceiling hung washbay heater (DX52-20) if required.
11. Install washbay heater vents thru roof and water proof. (Note: Holes in roof are already cut).
12. Install ceiling hung equipment room heater (DR-30). See sheet A3 and EL1.
13. Install fascia and gutter on washbay module.
14. Install window trim on washbay module.
15. Clean, caulk, and touch up.
16. Check all doors for proper operation.
17. Clean up all trash from jobsite.
18. Check floor for cracks. Repair if necessary.



1 Perspective View Entrance



2 Perspective View Exit

NORTH CAROLINA

ITEMS TO BE INSTALLED IN FIELD, SUBJECT TO LOCAL CODE

ELECTRICAL & PLUMBING, SEE SHEET E1 AND P1
GAS METER, C.T. CAN, METER AND DISCONNECT
WATER METER, SHEET METAL WINDOW TRIM
ALL SITE WORK INCLUDING FOUNDATION

NOTES :

1. THESE BUILDINGS WILL BE LOCATED A DISTANCE GREATER THAN 15'-1" FROM PROPERTY LINES OR INTERIOR LOT LINES PER THE BUILDING CODE.
2. THIS BUILDING WILL NOT BE LOCATED IN A FLOOD PRONE AREA.
3. THE SITE CONTRACTOR IS TO PROVIDE HANDICAPPED ACCESSIBLITY TO ALL DOORS OF THE BUILDING AS APPLICABLE.
4. ALL ITEMS REQUIRED UNDER PART III 28CFR36 TO BE PROVIDED ON SITE BY THE OWNER
5. 3RD PARTY INSPECTION LABEL, STATE LABEL, & MFG DATA PLATE ARE LOCATED AS SHOWN ON SHEET A2. (1) (2) (3)
6. A RESTROOM WILL BE WITHIN 500 FT OF THIS BUILDING.

BUILDING DESIGN CRITERIA

THIS BUILDING IS TO CONFORM TO THE FOLLOWING CODES:

2018 NC BUILDING CODE (ICC/ANSI A117.1 - 09 EDITION)
2018 NC PLUMBING CODE
2018 NC MECHANICAL CODE
2018 NC FUEL GAS CODE
2018 NC FIRE CODE
2017 NC ELECTRICAL CODE W/ AMENDMENTS
2018 NC ENERGY CONSERVATION CODE OR 2013 ASHRAE 90.1

OCCUPANCY : GROUP "B"
OCCUPANCY LOAD: 1, AREA - 923 SQ/FT.
CONSTRUCTION TYPE : II-B, UNSPRINKLERED
HEIGHT OF BUILDING: 11'-10" FROM GRADE
NUMBER OF STORIES: 1

DESIGN LOADS : THIS BUILDING IS CONSTRUCTED TO WITHSTAND THE FOLLOWING LOADS:

FLOOR-	LIVE LOAD	- 100 PSF
ROOF-	LIVE LOAD	-30 PSF
	SNOW LOAD	-5 PSF
	SEISMIC	DESIGN CLASS D DESIGN CATEGORY A
WIND LOAD-		
	BASIC WIND SPEED	-115 MPH Vult (EXP "C") 89 MPH Vasd
	WIND EXPOSURE	-C

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Conyers, GA 30012
770.483.7543
www.frey-moss.com

No.	Description	Date

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P.O. BOX 28
COVINGTON, GA 30015

PROFESSIONAL SEAL
NORTH CAROLINA PROFESSIONAL SEAL 11066 ENGINEER CHARLES H. MOSS
1-13-21

MODULAR CONSTRUCTION

CLIENT: Sheetz
PROJECT NAME: 42' Single Bay Car Wash
SHEET TITLE: Cover Sheet
PROJECT NUMBER: G20V36
ADDRESS: Sawyer Rd. & NC 24-87 Cameron, NC
GENESIS NO.: PR1078
DRAWING NO.:
GBF PROJECT NO.:
DATE: 12/10/20
PROFESSIONAL IN CHARGE:
PROJECT MANAGER:
DRAWN BY: TM
QUALITY CONTROL: SM

00-CS1

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Scale As indicated

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2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
(EXCEPT 1 AND 2-FAMILY DWELLINGS AND TOWNHOUSES)
(Reproduce the following data on the building plans sheet 1 or 2)

Name of Project: Sheetz 24' x 42' Modular Single Bay Car Wash
Address: Sawyer Rd & NC 24-87, Cameron, North Carolina Zip Code 28326
Owner/Authorized Agent: Shawn McGovern Phone # (770) 381-6900 E-Mail
Owned By: Private
Code Enforcement Jurisdiction: State

CONTACT:

DESIGNER	FIRM	NAME	LICENSE #	TELEPHONE #	E-MAIL
Architectural				( )	
Civil				( )	
Electrical				( )	
Fire Alarm				( )	
Plumbing				( )	
Mechanical				( )	
Sprinkler-Standpipe				( )	
Structural	Frey-Moss Structures	Charles H. Moss	11066	(770) 483-9229	
Retaining Walls >5' High				( )	
Other				( )	

("Other" should include firms and individuals such as truss, precast, pre-engineered, interior designers, etc.)

2018 NC BUILDING CODE: New Building
2018 NC EXISTING BUILDING CODE: N/A N/A N/A
CONSTRUCTED: (date) _____ **CURRENT OCCUPANCY(S) (Ch. 3):** _____
RENOVATED: (date) _____ **PROPOSED OCCUPANCY(S) (Ch. 3):** _____
OCCUPANCY CATEGORY (Table 1604.5): **Current:** II **Proposed:** II

BASIC BUILDING DATA
Construction Type: II-B
Sprinklers: No N/A
Standpipes: N/A
Primary Fire District: No **Flood Hazard Area:** No
Special Inspections Required: No

Gross Building Area Table

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
3rd Floor			
2nd Floor			
Mezzanine			
1st Floor		923	
Basement			
TOTAL		923	

ALLOWABLE AREA
Primary Occupancy Classification(s): Business
Accessory Occupancy Classification(s): _____
2018 NC Administrative Code and Policies

Incidental Uses (Table 509): _____
Special Uses (Chapter 4 – List Code Sections): _____
Special Provisions: (Chapter 5 – List Code Sections): _____
Mixed Occupancy: No Separation: Select one Exception: _____
Select one

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

_____ + _____ + ... = 0.039 ≤ 1.00

STORY NO.	DESCRIPTION AND USE	(A) BLDG AREA PER STORY (ACTUAL)	(B) TABLE 506.2[2] AREA	(C) AREA FOR FRONTAGE INCREASE[1,3]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED[2,3]
One	B-Car Wash	923	23,000		

[1] Frontage area increases from Section 506.2 are computed thus:
a. Perimeter which fronts a public way or open space having 20 feet minimum width = _____ (F)
b. Total Building Perimeter = _____ (P)
c. *Ratio (F/P)* = _____ *(F/P)*
d. W = Minimum width of public way = _____ (W)
e. Percent of frontage increase $I_f = 100[F/P - 0.25] \times W/30 =$ _____ (%)
[2] Unlimited area applicable under conditions of Section 507.
[3] Maximum Building Area = total number of stories in the building x D (maximum3 stories) (506.2).
[4] The maximum area of open parking garages must comply with Table 406.5.4. The maximum area of air traffic control towers must comply with Table 412.3.1.
[5] Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE
Building Height in Feet (Table 504.3)	55	11'-10"	
Building Height in Stories (Table 504.4)	Four	One	

[1] Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.

FIRE PROTECTION REQUIREMENTS

BUILDING ELEMENT	FIRE SEPARATION DISTANCE (FEET)	RATING REQ'D	RATING PROVIDED (W/_____ REDUCTION)	DETAIL # AND SHEET #	DESIGN # FOR RATED ASSEMBLY	SHEET # FOR RATED PENETRATION	SHEET # FOR RATED JOINTS
Structural Frame, Including columns, girders, trusses		N/A					
Bearing Walls		N/A					
Exterior		N/A					
North		N/A					
East		N/A					
West		N/A					
South		N/A					
Interior		N/A					
Nonbearing Walls and Partitions Exterior walls		N/A					

North		N/A					
East		N/A					
West		N/A					
South		N/A					
Interior walls and partitions		N/A					
Floor Construction Including supporting beams and joists		N/A					
Floor Ceiling Assembly		N/A					
Columns Supporting Floors		N/A					
Roof Construction, including supporting beams and joists		N/A					
Roof Ceiling Assembly		N/A					
Columns Supporting Roof		N/A					
Shaft Enclosures - Exit		N/A					
Shaft Enclosures - Other		N/A					
Corridor Separation		N/A					
Occupancy/Fire Barrier Separation		N/A					
Party/Fire Wall Separation		N/A					
Smoke Barrier Separation		N/A					
Smoke Partition		N/A					
Tenant/Dwelling Unit/ Sleeping Unit Separation		N/A					
Incidental Use Separation		N/A					

* Indicate section number permitting reduction

PERCENTAGE OF WALL OPENING CALCULATIONS

FIRE SEPARATION DISTANCE (FEET) FROM PROPERTY LINES	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)
> 30 ft	N/A	N/A	N/A

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: No
Exit Signs: No
Fire Alarm: No
Smoke Detection Systems: No
Carbon Monoxide Detection: No

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: N/A

- ☐ Fire and/or smoke rated wall locations (Chapter 7)
- ☐ Assumed and real property line locations (if not on the site plan)
- ☐ Exterior wall opening area with respect to distance to assumed property lines (705.8)
- ☐ Occupancy Use for each area as it relates to occupant load calculation (Table 1004.1.2)
- ☐ Occupant loads for each area

2018 NC Administrative Code and Policies

ENERGY SUMMARY

ENERGY REQUIREMENTS:
The following data shall be considered minimum and any special attribute required to meet the energy code shall also be provided. Each Designer shall furnish the required portions of the project information for the plan data sheet. If performance method, state the annual energy cost for the standard reference design vs annual energy cost for the proposed design.

Existing building envelope complies with code: No

Exempt Building: No Provide code or statutory reference:

Climate Zone: 3A

Method of Compliance: Energy Code - Performance
(If "Other" specify source here): _____

THERMAL ENVELOPE (Prescriptive method only)

Roof/ceiling Assembly (each assembly)
Description of assembly: Standing Seam Metal Roof
U-Value of total assembly: 0.038
R-Value of Insulation: 30
Skylights in each assembly: N/A
U-Value of skylight:
total square footage of skylights in each assembly:

Exterior Walls (each assembly)
Description of assembly: Metal Framed Walls
U-Value of total assembly: 0.062
R-Value of Insulation: 26
Openings (windows or doors with glazing)
U-Value of assembly: 0.98
Solar heat gain coefficient: 0.72
projection factor: 0.10
Door R-Values: 0.35

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

Floors over unconditioned space (each assembly)
Description of assembly: Steel Joist
U-Value of total assembly: 0.040
R-Value of insulation: 24.56

Floors slab on grade
Description of assembly: N/A
U-Value of total assembly:
R-Value of Insulation:
Horizontal/vertical requirement:
slab heated:

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
MECHANICAL DESIGN
(PROVIDE ON THE MECHANICAL SHEETS IF APPLICABLE)

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermat Zone
winter dry bulb: 10
summer dry bulb: 95

Interior design conditions
winter dry bulb: 40
summer dry bulb: 95
relative humidity: 50%

Building heating load: 175 kBtu/h
Building cooling load: N/A

Mechanical Spacing Conditioning System
Unitary
description of unit:
heating efficiency:
cooling efficiency:
size category of unit:
Boiler
Size category. If oversized, state reason.: < 300 kBtu/h
Chiller
Size category. If oversized, state reason.:

List equipment efficiencies: 80%

- ☐ Exit access travel distances (1017)
- ☐ Common path of travel distances (Tables 1006.2.1 & 1006.3.2(1))
- ☐ Dead end lengths (1020.4)
- ☐ Clear exit widths for each exit door
- ☐ Maximum calculated occupant load capacity each exit door can accommodate based on egress width (1005.3)
- ☐ Actual occupant load for each exit door
- ☐ A separate schematic plan indicating where fire rated floor/ceiling and/or roof structure is provided for purposes of occupancy separation
- ☐ Location of doors with panic hardware (1010.1.10)
- ☐ Location of doors with delayed egress locks and the amount of delay (1010.1.9.7)
- ☐ Location of doors with electromagnetic egress locks (1010.1.9.9)
- ☐ Location of doors equipped with hold-open devices
- ☐ Location of emergency escape windows (1030)
- ☐ The square footage of each fire area (202)
- ☐ The square footage of each smoke compartment for Occupancy Classification I-2 (407.5)
- ☐ Note any code exceptions or table notes that may have been utilized regarding the items above

ACCESSIBLE DWELLING UNITS
(SECTION 1107)

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

ACCESSIBLE PARKING
(SECTION 1106)

LOT OR PARKING AREA	TOTAL # OF PARKING SPACES: REQUIRED	PROVIDED	# OF ACCESSIBLE SPACES PROVIDED: REGULAR WITH 5' ACCESS AISLE	VAN SPACES WITH: 132" ACCESS AISLE	8' ACCESS AISLE	TOTAL # ACCESSIBLE PROVIDED:
N/A						
TOTAL						

PLUMBING FIXTURE REQUIREMENTS
(TABLE 2902.1)

USE		WATER CLOSETS MALE	FEMALE	UNISEX	URINALS	LAVATORIES MALE	FEMALE	UNISEX	SHOWERS TUBS	DRINKING FOUNTAINS REGULAR	ACCESSIBLE
SPACE	EXIST'G										
	NEW	1	Same		N/A	1	Same		N/A	1	1
	REQ'D										

Restrooms and Drinking Fountain within 500 ft of building

SPECIAL APPROVALS

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

_____
_____

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
STRUCTURAL DESIGN
(PROVIDE ON THE STRUCTURAL SHEETS IF APPLICABLE)

DESIGN LOADS:

Importance Factors: Snow (I_S) 1.0
Seismic (I_E) 1.0

Live Loads: Roof 30 psf
Mezzanine N/A psf
Floor 100 psf

Ground Snow Load: 5 psf

Wind Load: Basic Wind Speed 115 mph (ASCE-7)
Exposure Category C

SEISMIC DESIGN CATEGORY: A
Provide the following Seismic Design Parameters:
Risk Category (Table 1604.5) II
Spectral Response Acceleration S_s 0.062 %g S_1 0.034 %g
Site Classification (ASCE 7) D
Data Source: Presumptive
Basic structural system Bearing Wall
Analysis Procedure: Simplified
Architectural, Mechanical, Components anchored? Yes

LATERAL DESIGN CONTROL: Wind

SOIL BEARING CAPACITIES:
Presumptive Bearing Capicity 2000 psf
Pile size, type, and capacity _____

2018 APPENDIX B
BUILDING CODE SUMMARY FOR ALL COMMERCIAL PROJECTS
ELECTRICAL DESIGN
(PROVIDE ON THE ELECTRICAL SHEETS IF APPLICABLE)

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance: Energy Code - Prescriptive

Lighting schedule (each fixture type)
lamp type required in fixture
number of lamps in fixture
ballast type used in the fixture
number of ballasts in fixture
total wattage per fixture
total interior wattage specified vs. allowed (whole building or space by space)
total exterior wattage specified vs. allowed

Additional Efficiency Package Options
(When using the 2018 NCECC) not required for ASHRAE 90.1)
- ☐ C406.2 More Efficient HVAC Equipment Performance
- ☐ C406.3 Reduced Lighting Power Density
- ☐ C406.4 Enhanced Digital Lighting Controls
- ☐ C406.5 On-Site Renewable Energy
- ☐ C406.6 Dedicated Outdoor Air System
- ☐ C406.7 Reduced Energy Use in Service Water Heating

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	Description	Date

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COVINGTON, GA 30015

NORTH CAROLINA PROFESSIONAL SEAL 11066 ENGINEER CHARLES H. MOSS
12-21

FREY MOSS STRUCTURES
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Sheetz

42' Single Bay Car Wash

Appendix B

Project number
G20V36

Address
Sawyer Rd. &
NC 24-87
Cameron, NC

Drawing No.
Genesis No. PR0062
Date 1/9/2021
Drawn by AR
Checked by OO

CS2

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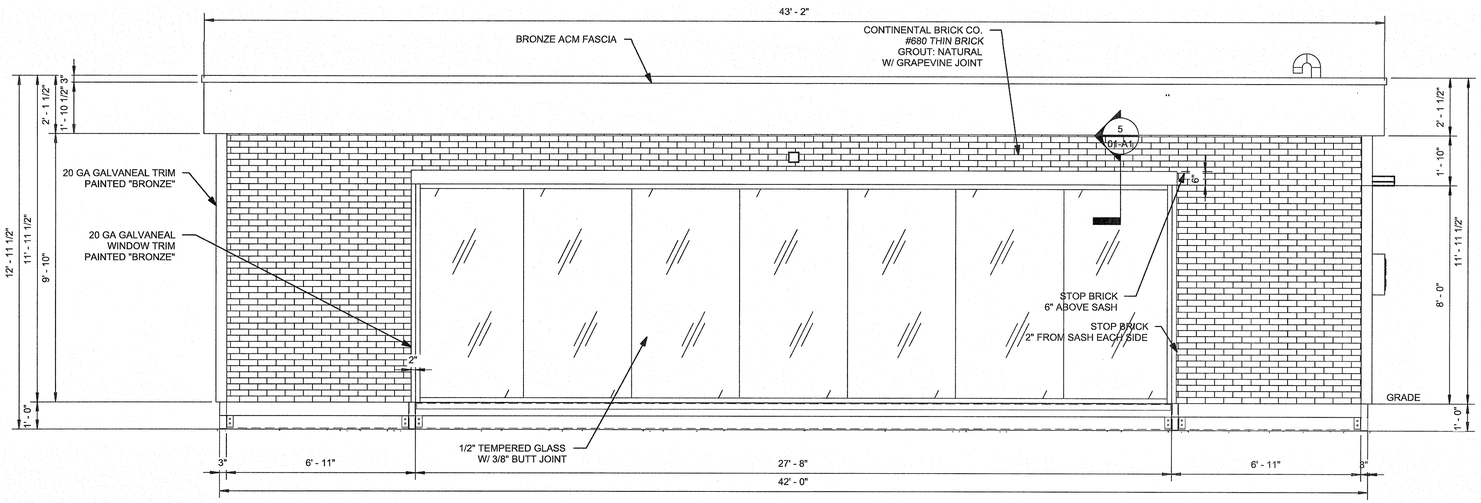
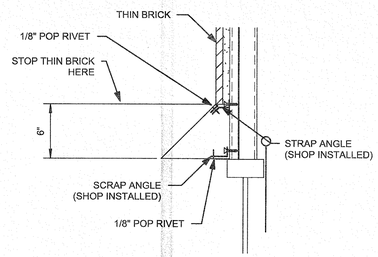
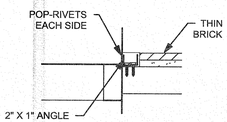


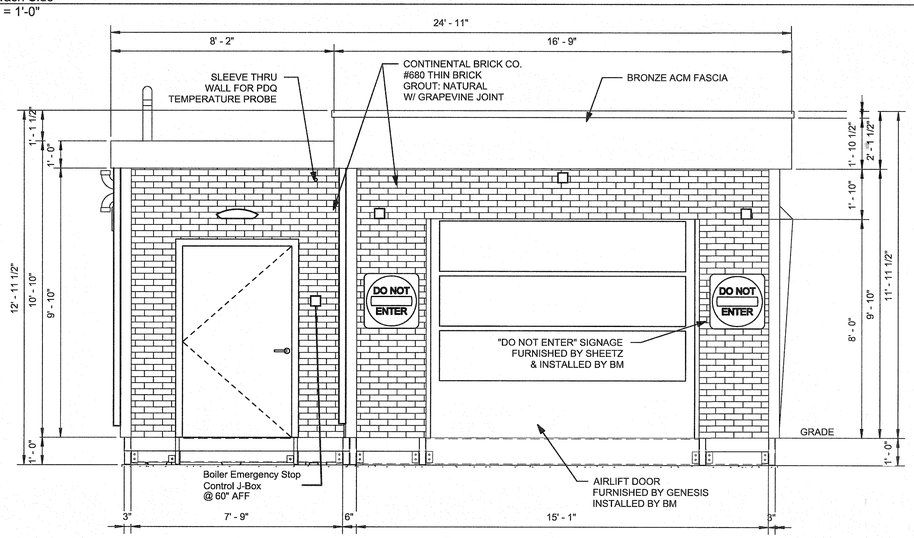
1 Carwash Side
3/8" = 1'-0"



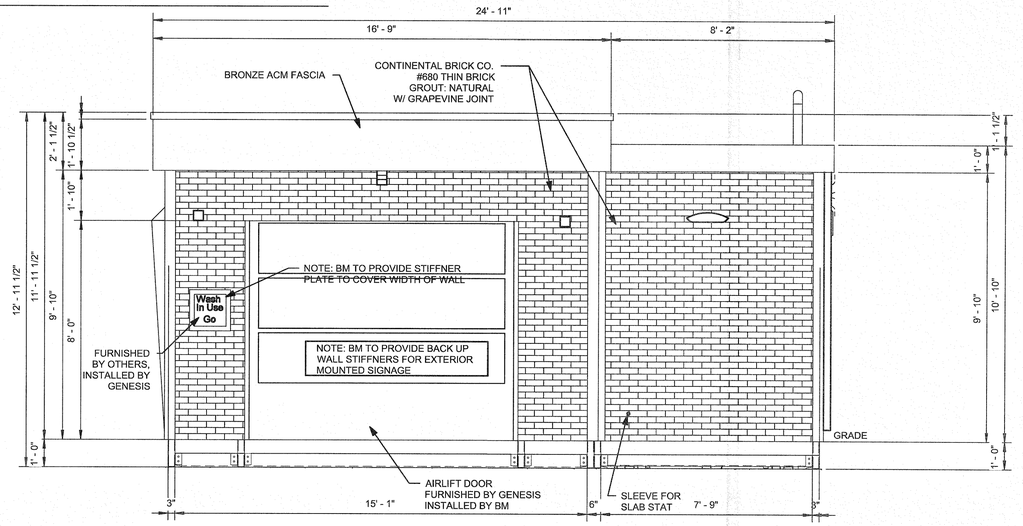
5 Window Trim Detail
1 1/2" = 1'-0"



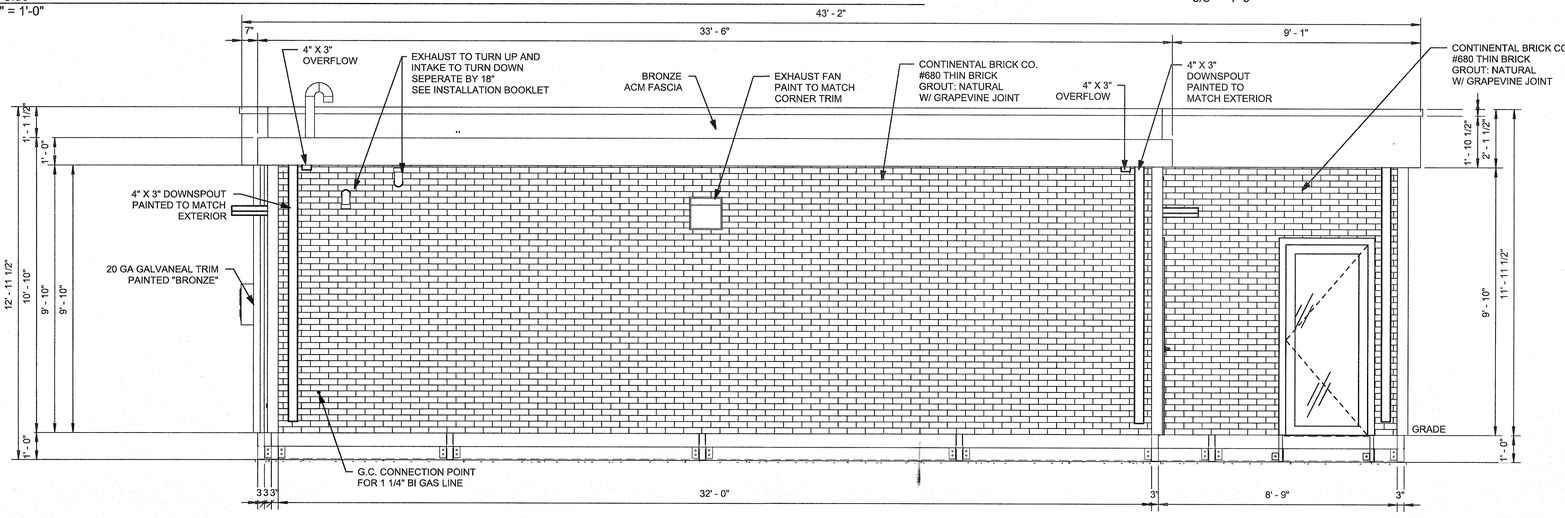
6 Window Trim Detail
1 1/2" = 1'-0"



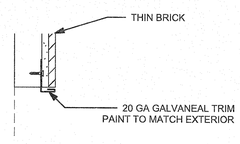
2 Exit Side
3/8" = 1'-0"



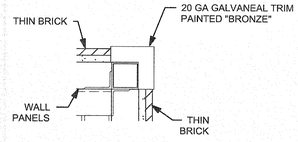
4 Entrance Side
3/8" = 1'-0"



3 Equipment Room Side
3/8" = 1'-0"



7 Door Trim Detail
1 1/2" = 1'-0"



8 Corner Trim Detail
1 1/2" = 1'-0"

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No.	Description	Date

C.H. MOSS, P.E.
P.O. BOX 28
COVINGTON, GA 30015

PROFESSIONAL SEAL

NORTH CAROLINA PROFESSIONAL SEAL 11468 ENGINEER CHARLES H. MOSS
1-13-21

MODULAR CONSTRUCTION

CLIENT
Sheetz

PROJECT NAME
42' Single Bay Car Wash

SHEET TITLE
Exterior Elevations

PROJECT NUMBER
G20V36

ADDRESS
Sawyer Rd. &
NC 24-87
Cameron, NC

GENESIS NO.	PR1078
DRAWING NO.	
GBF PROJECT NO.	
DATE	12/10/20
PROFESSIONAL IN CHARGE	
PROJECT MANAGER	
DRAWN BY	TM
QUALITY CONTROL	SM

01-A1

Page 2 Of 22
Scale As indicated

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Door Schedule

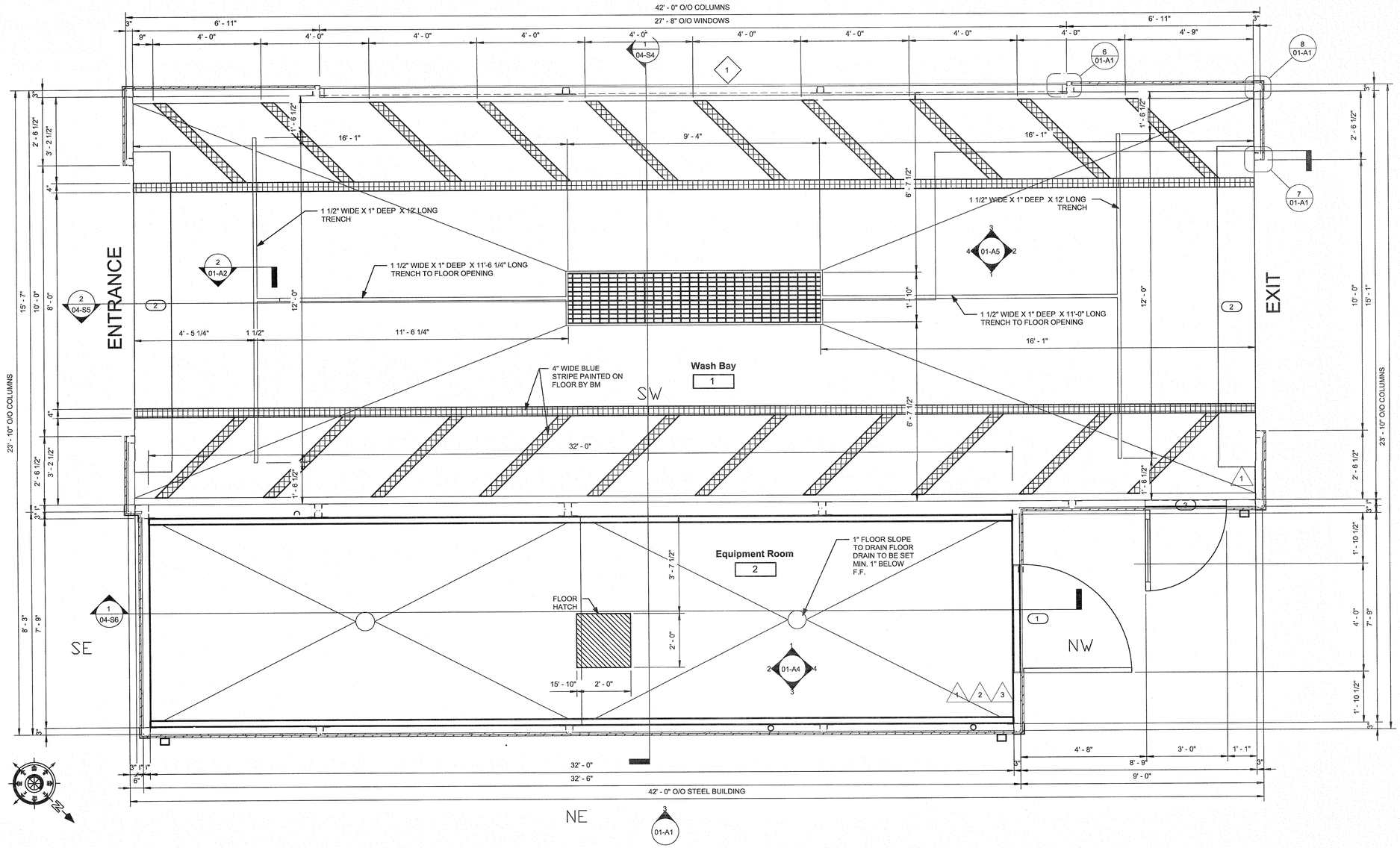
Mark	Count	Description	Finish	Frame Type	Frame Finish	Height	Width	Lockset	Closer	Hand
1	1	Hollow Metal Door (Furnished & Installed by BM)	Insulated Metal Door, Painted to Match White interior & Bronze Exterior	Metal	Painted White Epoxy interior & Bronze Exterior to match	7' - 0"	4' - 0"	Corbin 3300 Series Lockset. Handle Model #CL3357 NZD 626 LC w/ Lockset 2000 033 626 D1	Cal Royal 300 Series Door Closer	RH
2	2	XRS Extreme Roll-Up Door	Vinyl (Color to be determined)	-	-	8' - 0"	10' - 0"	NA	NA	NA
3	1	Storefront entrance door (Furnished & Installed by BM)	Storefront Single Door - Bronze Aluminum Color w/ 1/4" Safety Glass, Handicap Aluminum Threshold, 1 1/2 Pair Heavy Duty Hinges w/ Non-Removable Pins. Push/Pull Bars, Weatherstripping & Door Sweep.	Bronze Aluminum	Bronze Aluminum	7' - 0"	3' - 0"	NA	Cal Royal 300 Series Door Closer, Finish: Bronze (Mounted on exterior side)	RH

Glazing Schedule

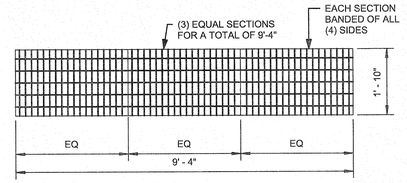
Mark	Count	Description	Length	Height	Area
1	1	Bronze Aluminum Frame W/ 1/2" Tempered Glass W/ 3/8" Butt Joints (4'-0" O/C Max.) (Furnished & Installed by BM)	27' - 8"	8'-0"	221 SF

Room Finish Schedule

Name	Floor Finish	Wall Finish	Ceiling Finish
Wash Bay	5,000 PSI Special Mix Lightweight Concrete Over 22GA. Type "F" Decking w/ Blue Stripes Per Floor Plan (Sherwin Williams Pro Park Blue, 03-27232 Gallon B97LD2022) on Driver and Passenger Side of Wash Bay. Seal Entire Floor of Wash Bay with Cure & Seal.	Extru-Tech PVC Panels	Extru-Tech PVC Panels
Equipment Room	5,000 PSI Special Mix Lightweight Concrete Over 22GA. Type "F" Decking	Pre-Finished 20 GA Embossed Sheet Metal panels with Baked on Enamel White Paint	Pre-Finished 20 GA Embossed Sheet Metal panels with Baked on Enamel White Paint

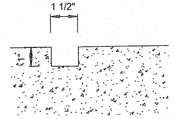


1 Finished Floor
1/2" = 1'-0"



3 Floor Grate Detail
1/2" = 1'-0"

1 - STATE LABEL
2 - MFG. DATA PLATE
3 - 3rd PARTY INSPECTION LABEL



2 Undercarriage Trench
3" = 1'-0"

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No.	Description	Date

C.H. MOSS, P.E.
P.O. BOX 28
COVINGTON, GA 30015

PROFESSIONAL SEAL

NORTH CAROLINA PROFESSIONAL SEAL 11055 ENGINEER CHARLES H. MOSS 1/13/21

MODULAR CONSTRUCTION

CLIENT: Sheetz

PROJECT NAME: 42' Single Bay Car Wash

SHEET TITLE: Floor Plan

PROJECT NUMBER: G20V36

ADDRESS: Sawyer Rd. & NC 24-87 Cameron, NC

GENESIS NO.: PR1078

DRAWING NO.:

GBF PROJECT NO.:

DATE: 12/10/20

PROFESSIONAL IN CHARGE:

PROJECT MANAGER:

DRAWN BY: TM

QUALITY CONTROL: SM

01-A2

Page 3 Of 22

Scale: As indicated

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Car Wash Equipment Schedule

Mark	Count	Description	Manufacturer	Model	Furnished By	Installed By
1	1	Tandem Surfline, Floor Mounted	PDQ		LED	Genesis
2	1	High Pressure Pump Station	PDQ		LED	Genesis
3	1	Productivity Panel	PDQ		LED	Genesis
4	1	Base Solution Panel	PDQ		LED	Genesis
5	1	18" x 18" Wait go Sign	PDQ	Wait/Go Sign	LED	Genesis
7	1	Confirmation Sign	PDQ		LED	Genesis
8	1	Bay Box	PDQ		LED	Genesis
9	1	Fixed undercarriage	PDQ		LED	Genesis
10	2	J18	PDQ		LED	Genesis
11	2	Ultra Sonic Sensor	PDQ		LED	Genesis
12	1	Entry Station	PDQ	Access	LED	LED
13	1	Bridge Box	PDQ		LED	Genesis
14	1	R.O. Unit	Pur Clean		LED	Genesis
16	2	300 Gallon Vertical Storage	Chemtainer	TC6481IC	LED	Genesis
17	4	Photo Eye	PDQ		LED	Genesis
18	1	NFB High-Efficiency Condensing Fire Tube Boiler	Navien, Inc.	NFB-175	Genesis	Genesis
19	2	Door Controller	Airlift Doors		Genesis	Genesis
20	1	Maintenance Box	PDQ		LED	Genesis
22	2	Do Not enter Sign		24" x 24"	Genesis	BM

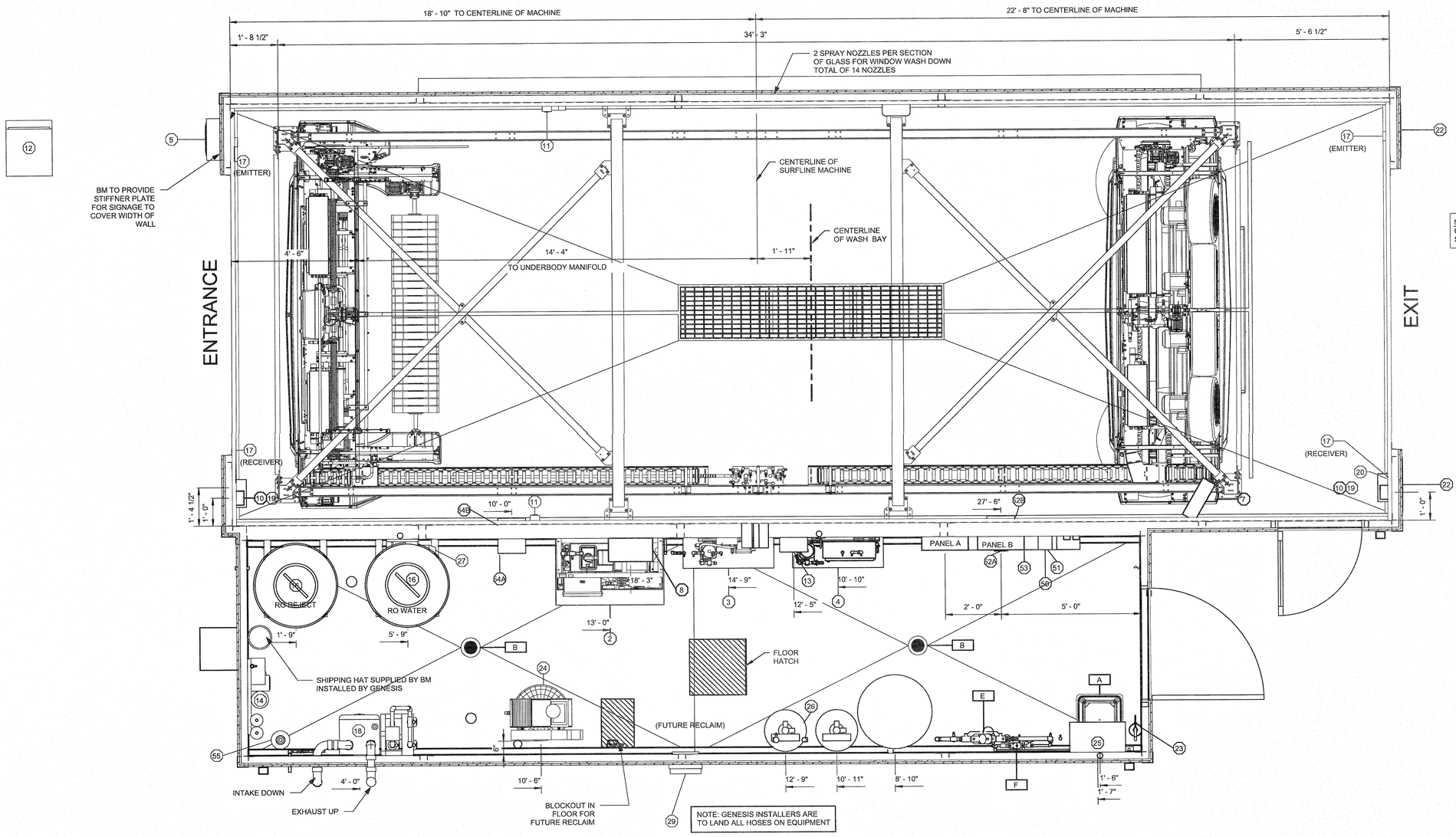
Car Wash Equipment Schedule

Mark	Count	Description	Manufacturer	Model	Furnished By	Installed By
23	1	Fire Extinguisher, Min. 5 LB (Furnished & Installed by Owner)		101b ABC	Sheetz	Sheetz
24	1	Air compressor	Champion		Genesis	Genesis
25	1	Electric Cold Water Stationary Pressure Washer, 2,000 PSI, 3 GPM, 220 Volt	Hydro Spray	HSWC3020EDXA	Genesis	Genesis
26	1	Water Softener System	Velocity	TWIN-2T-150K	Genesis	Genesis
27	1	Repress Pump	Pur Clean		LED	Genesis
29	1	Exhaust Fan		509	BM	BM
50	1	6" x 6" Camera/Telephone thru Wall Electrical Box	BME	Camera/Telephone	BME	BME
51	1	Lighting Contactor	BME		BME	BME
52A	1	6" x 6" High Voltage thru Wall Electrical Box - Equipment Room Side	BME	Power	BME	BME
52B	1	12" x 12" High Voltage thru Wall Electrical Box - Wash Bay Side	BME	Power	BME	BME
53	1	6" x 48" Wire Trough	BME	Power	BME	BME
54A	1	12" x12" Low Voltage thru Wall Electrical Box - Equipment Room Side	BME	Power	BME	BME
54B	1	12" x18" Low Voltage thru Wall Electrical Box - Equipment Room Side	BME	Power	BME	BME
55	1	Inline Centrifugal Fan	Fantech	FR125	BME	BME

Plumbing Fixture Schedule

Mark	Count	Description	Manufacturer	Model	Furnished By	Installed By	Comments
A	1	Utility Sink (ANSI-Specification Z 124.6-2001) w/ Eye Wash Faucet Combo	-	-	BMP	BMP	Direct Drain.
B	2	Floor Drain (ASTM D2665) ASME A112.63	-	-	BMP	BMP	
C	1	Lead Free Under Sink Guardian - compression and Quick-Connect fitting thermostatic mixing valves.	WATTS	LFUSG-B-M2	BMP	BMP	
D	1	Instantaneous Water Heater	Chronomite Laboratories	M-20L / 240	BMP	BMP	
E	1	Backflow Preventer-1 1/2" Connection w/ Air Gap Fitting, ASSE 1013, CSA B64.4	Wilkins	975XL	BMP	BMP	Non-potable water. Relief to hub drain.
F	1	Backflow Preventer-3/4" Connection w/ Air Gap Fitting, ASSE 1013, CSA B64.4	Wilkins	975XL	BMP	BMP	Potable water. Relief to hub darin.

BM = BLDG. MANUFACTURER
BME = BLDG. MANUFACTURER ELECTRICIAN
BMP = BLDG. MANUFACTURER PLUMBER



1 Equipment Plan
1/2" = 1'-0"

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No.	Description	Date

C.H. MOSS, P.E.
P.O. BOX 98
COVINGTON, GA 30015

PROFESSIONAL SEAL
NORTH CAROLINA PROFESSIONAL SEAL 11058 ENGINEER CHARLES H. MOSS
1-13-21

MODULAR CONSTRUCTION

CLIENT: Sheetz

PROJECT NAME: 42' Single Bay Car Wash

SHEET TITLE: Equipment Plan

PROJECT NUMBER: G20V36

ADDRESS: Sawyer Rd. & NC 24-87 Cameron, NC

GENESIS NO.: PR1078
DRAWING NO.:
GBF PROJECT NO.:
DATE: 12/10/20
PROFESSIONAL IN CHARGE:
PROJECT MANAGER:
DRAWN BY: TM
QUALITY CONTROL: SM

01-A3

Page 4 Of 22
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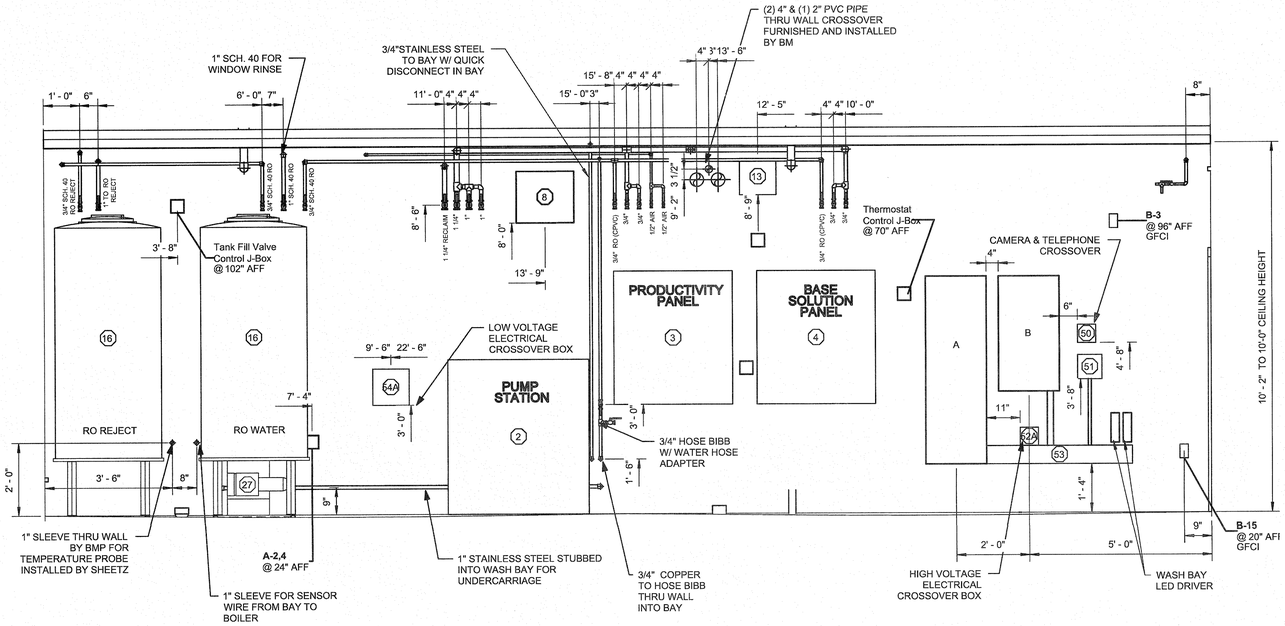
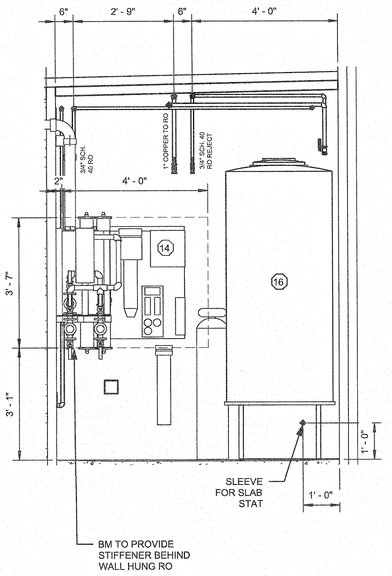
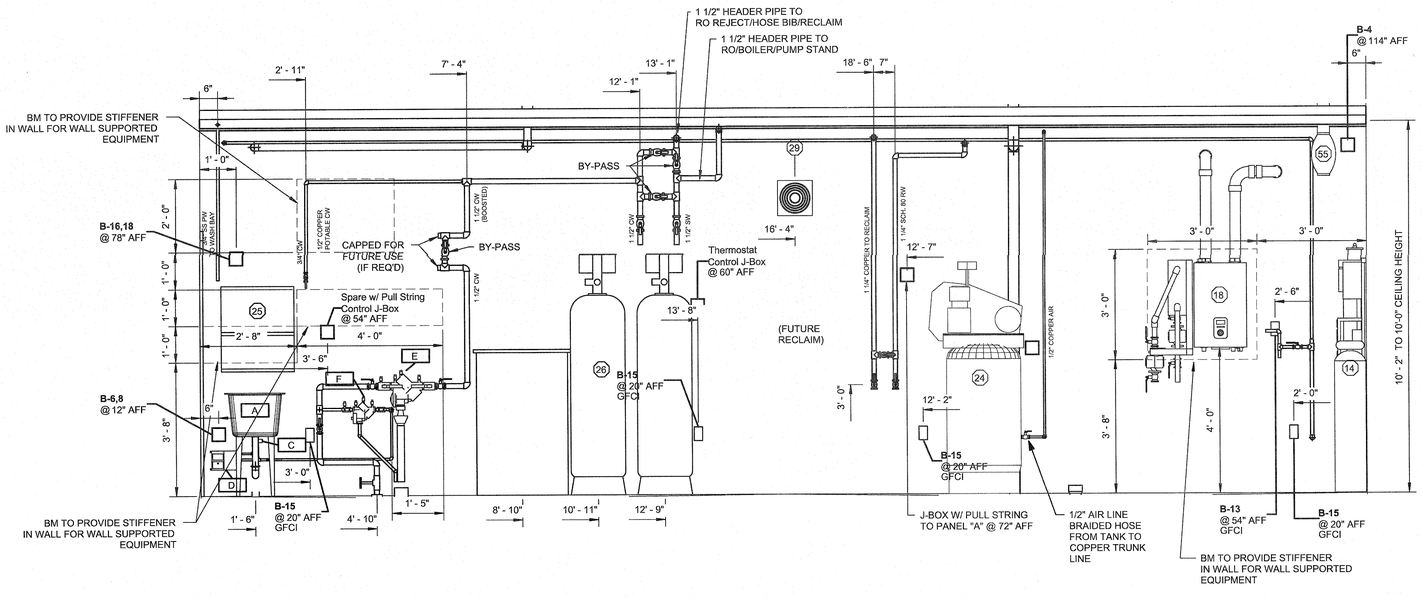


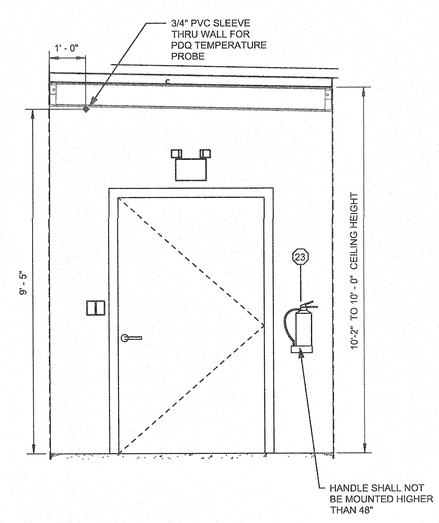
1 Equipment Room
1/2" = 1'-0"



2 Equipment Room
1/2" = 1'-0"



3 Equipment Room
1/2" = 1'-0"



4 Equipment Room
1/2" = 1'-0"

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No.	Description	Date

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P.O. BOX 28
COVINGTON, GA 30015

PROFESSIONAL SEAL
NORTH CAROLINA PROFESSIONAL SEAL 31006 ENGINEER CHARLES H. MOSS
1-13-21

MODULAR CONSTRUCTION

CLIENT
Sheetz

PROJECT NAME
42' Single Bay Car Wash

SHEET TITLE
Equipment Room Interior Elevations

PROJECT NUMBER
G20V36

ADDRESS
Sawyer Rd. &
NC 24-87
Cameron, NC

GENESIS NO.	PR1078
DRAWING NO.	
GBF PROJECT NO.	
DATE	12/10/20
PROFESSIONAL IN CHARGE	
PROJECT MANAGER	
DRAWN BY	TM
QUALITY CONTROL	SM

01-A4

Page 5 Of 22
Scale 1/2" = 1'-0"

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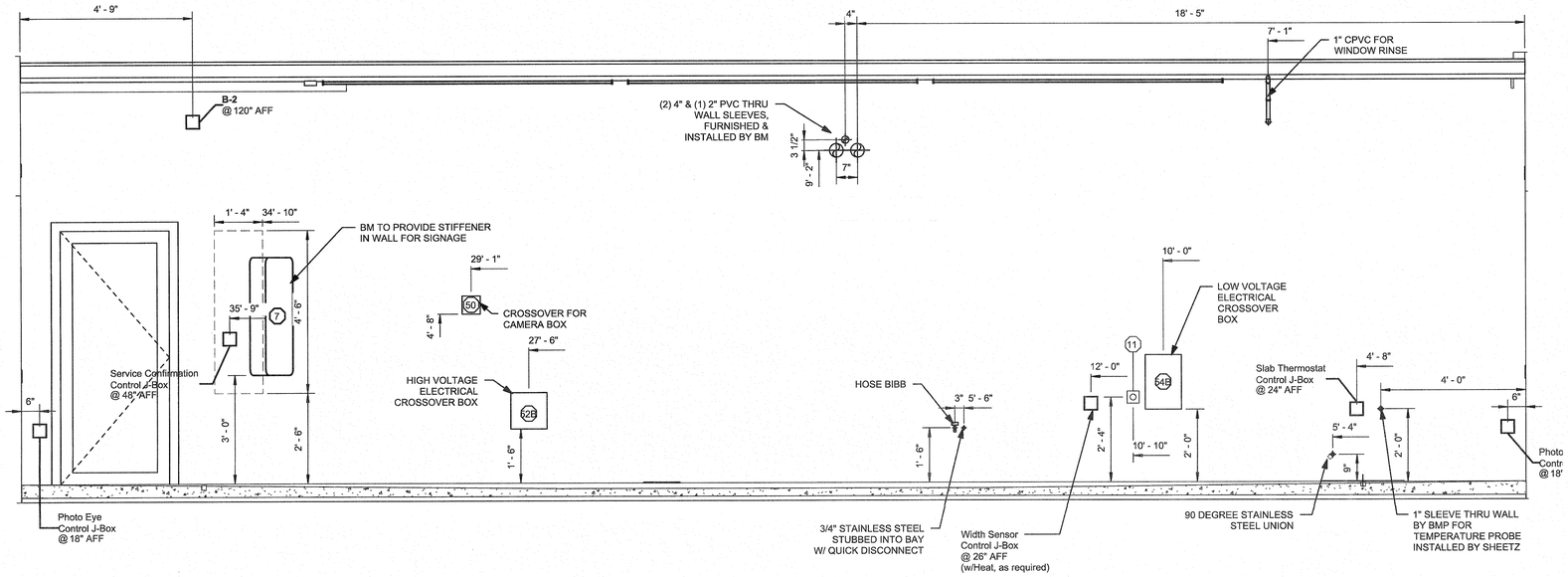
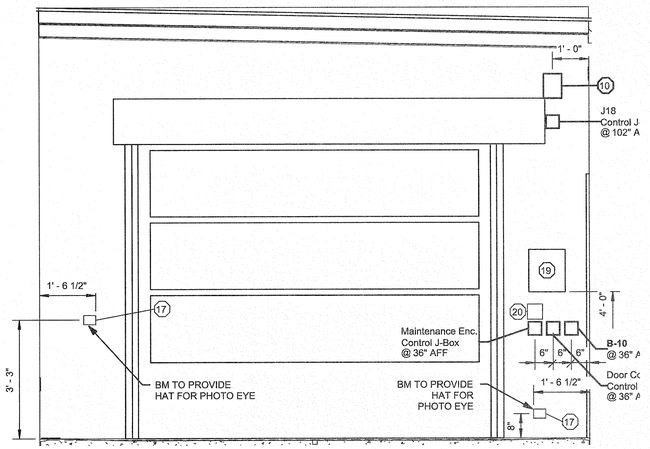
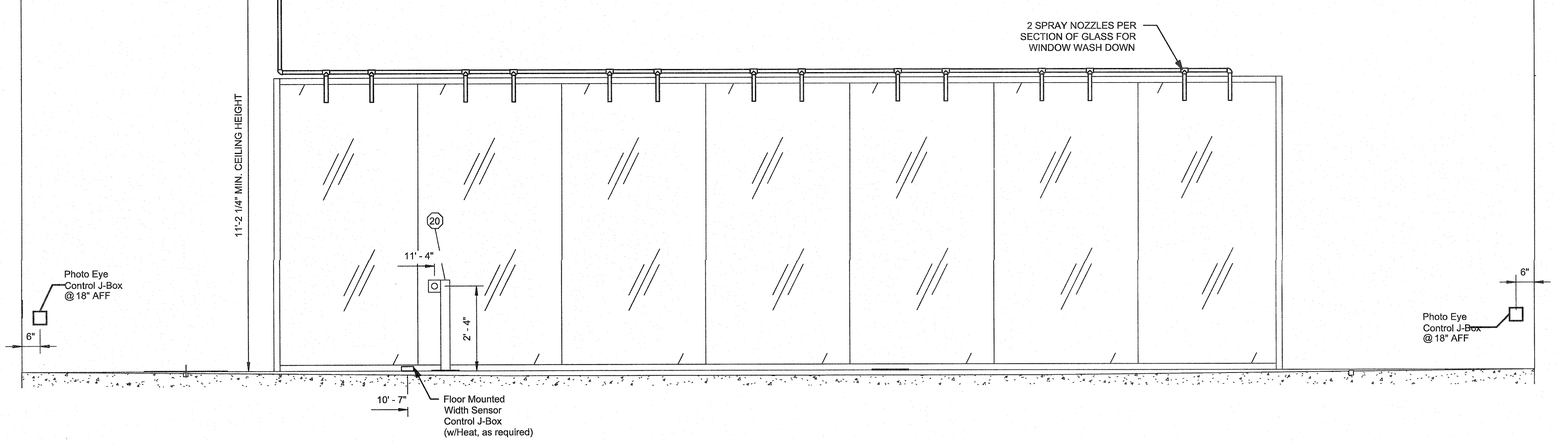


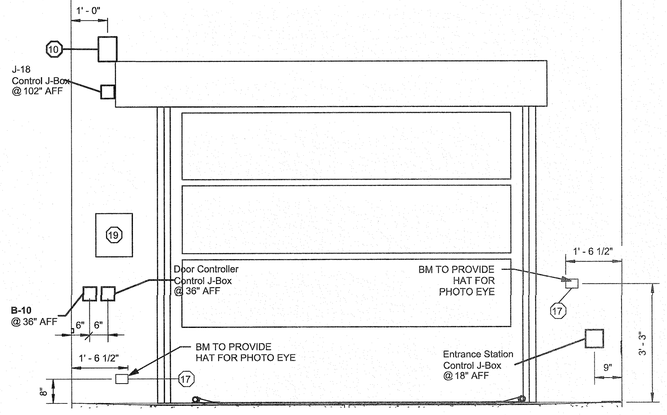
1 Wash Bay
1/2" = 1'-0"



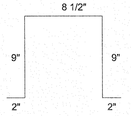
2 Wash Bay
1/2" = 1'-0"



3 Wash Bay
1/2" = 1'-0"



4 Wash Bay
1/2" = 1'-0"



5 Photo Eye Hat Section
1 1/2" = 1'-0"

NOTE: ALL FASTENERS & CONNECTORS TO BE STAINLESS STEEL IN WASH BAY

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No.	Description	Date

PROFESSIONAL SEAL
NORTH CAROLINA PROFESSIONAL SEAL 11902 ENGINEER CHARLES H. MOSS
1-13-21

MODULAR CONSTRUCTION

CLIENT
Sheetz

PROJECT NAME
42' Single Bay Car Wash

SHEET TITLE
Wash Bay Interior Elevations

PROJECT NUMBER
G20V36

ADDRESS
Sawyer Rd. &
NC 24-87
Cameron, NC

GENESIS NO.	PR1078
DRAWING NO.	
GBF PROJECT NO.	
DATE	12/10/20
PROFESSIONAL IN CHARGE	
PROJECT MANAGER	
DRAWN BY	TM
QUALITY CONTROL	SM

01-A5

Page 6 Of 22
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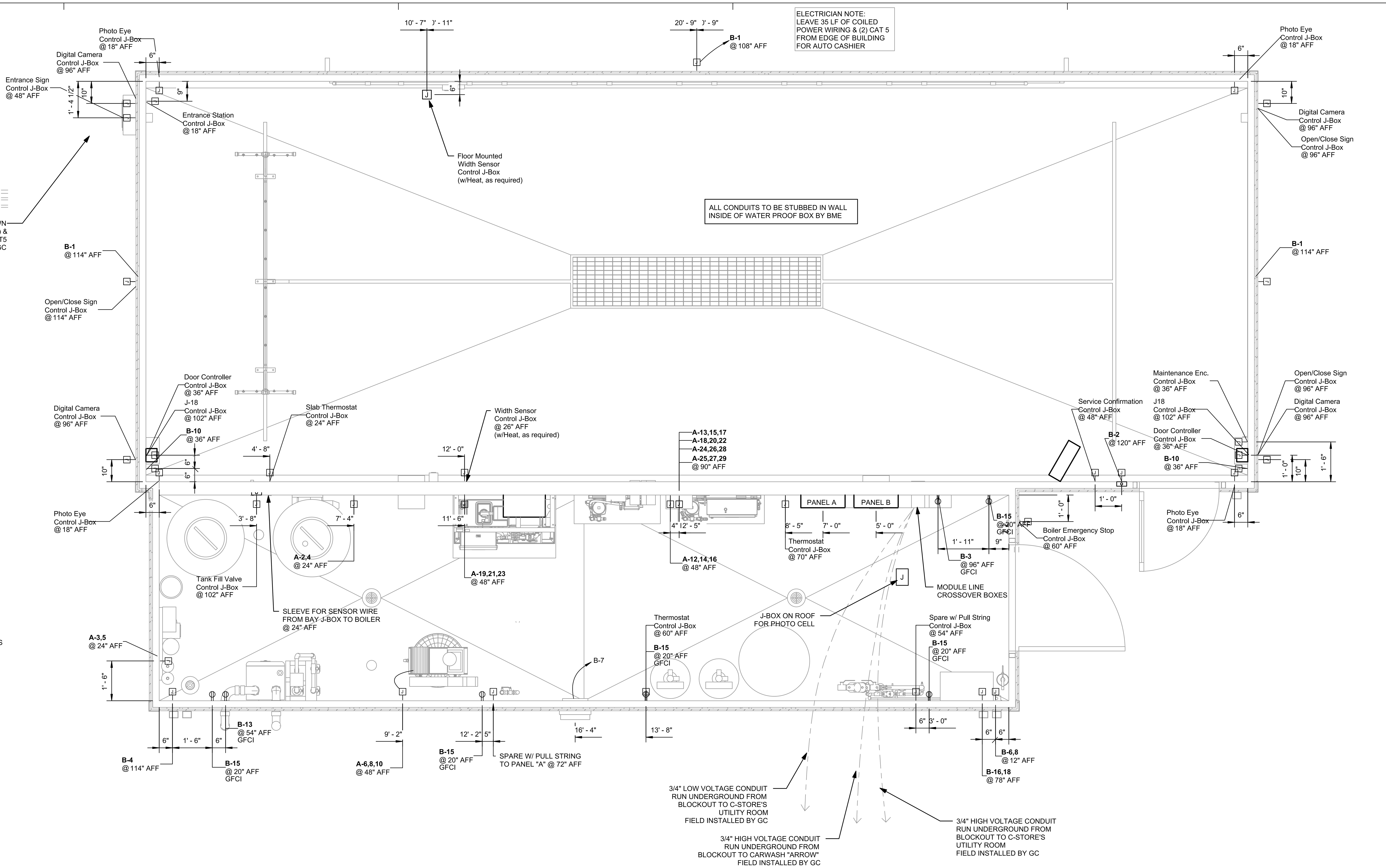

BME = BLDG. MANUFACTURER ELECTRICIAN

NOTES:
1. BOILER OUTDOOR STAT AND THE CARWASH EQUIPMENT T-STAT THAT CLOSES THE BAY OVERHEAD DOORS DURING FREEZING WEATHER SHOULD BE INSTALLED IN FIELD BY THE DISTRIBUTOR.
2. BME WILL INSTALL SLEEVE THRU WALL TO ROUTE THE STAT THRU. THE EXTRA WIRE SHOULD BE LEFT COILED SO THERE IS SUFFICIENT LENGTH TO RUN TO THE NORTH FACE OF THE BUILDING.
3. THE CARWASH EQUIPMENT T-STAT WILL BE LEFT INSIDE THE EQUIPMENT ROOM AND THE DISTRIBUTOR WILL ROUTE IT THRU THE CROSSOVERS INTO THE BAY TO MOUNT WHERE THEY DESIRE.

(1) Electrical Plan
1/2" = 1'-0"

Electrical General Notes

1. Site Electrician is responsible for mounting CT & Meter (When Applicable), and making final electrical connection of service to building Panel A.
2. Site Electrician is responsible to make primary grounding to building water piping per NEC. See riser diagram.
3. EMT conduit shall be installed in building, as a complete system and be securly fastened in place to studs, or blocking at least every 10'-0" and within 3'-0" of each outlet box, or j-box, or fitting.
4. A secondary grounding supplied in building by grounding between interior water pipe and building steel frame. See riser diagram.
5. Site Electrcian is responsible for field work.
6. All wiring to be copper type THHN or THWN installed in EMT conduit per NEC.
7. All wiring, fixtures, and equipment are UL listed or labeled or equal.
9. Site Electrician to use in-line fusing at base of each pole.
10. Site electrician shall obtain all required installation permits from local authorities, and make arrangements for any required inspections.
11. Site electrician shall locate and make all electrical connections that cross module lines, and if applicable make connections to roof mounted equipment and fascia signs.
12. After power is installed to building, site electrician shall connect batteries in emergency lighting and exit signs.
13. Site electrician shall furnish and install all required service entrance equipment, conduits, conductors, and grounding, as required to meet local codes and conditions.
14. Site electrician shall furnish and install disconnecting means for all outside lighting and signs within sight of such lighting and sign controls.
15. Site electrician shall install required seals in jobsite installed conduits as required by N.E.C. article 514.
16. After installing all conduits through floor chases in modular building, general contractor shall fill floor chases with concrete and finish floor at chase areas.
17. The service entrance diagram shows minimum requirements as required by the "National Electrical Code". Size for service entrance conductors and conduits may vary, depending on length of conductors. Site electrician shall calculate voltage drop and make adjustments as required. Site electrician shall refer to owner furnished site specific plans for all required on site electrical.
18. Fault current:Building is designed at 10,000 AMPS RMS. When available fault current at site exceeds 10,000 AMPS RMS, the site electrician must install a main fused disconnect which limits the fault current to 10,000 AMPS RMS.

Drawing Name: P:\2021\20210019\500 MEP Construction Documents\G20V36 Sheetz - Cameron, NC\Current\02-E1.dwg Last Modified: Jan 21, 2021 - 5:47pm Plotted on: Jan 21, 2021 - 8:59pm by abhatia

Wash Equipment Conduit Schedule

Load Name	Conduit	Conduit Size	Wire Pulls	Wire Gauge	From	To
Reclaim Pump						
RO Reject Solenoid						
Boost Pump						
Entrance Door Driver Side Sensor	1	1/2"	1	Supplied	Bay Box	Driver Side Sensor Thru J-Box
Entrance Door Passenger Side Sensor	2	1/2"	1	Supplied	Bay Box	Passenger Side Sensor Thru J-Box
Entrance J18	4	1"	7	16 AWG	Bay Box	J18 (Entrance Door Eye Control)
Entrance Sign	6	3/4"	5	16 AWG	Bay Box	Entrance Sign Thru J-Box
Maintenance Box	7	1/2"	3	16 AWG	Bay Box	J-Box for Maintenance Box
Driver Side Width Measure Sensor	8	3/4"	3	(1) Supplied Cable & (2) 16 AWG	Bay Box	J-Box for Sensor

Wash Equipment Conduit Schedule

Load Name	Conduit	Conduit Size	Wire Pulls	Wire Gauge	From	To
Passenger Side Width Measure Sensor	9	3/4"	3	(1) Supplied Cable & (2) 16 AWG	Bay Box	J-Box for Sensor
RO Control	11	1/2"	2	16 AWG	Pump Enclosure	RO System
Confirmation Sign	12	3/4"	9	22 AWG	Instructional Sign	Service Confirmation Sign
Exit J18	14	1"	7	16 AWG	Bay Box	J18 (Exit Door Eye Control)
Exit Door Driver Side Sensor	15	1/2"	1	Supplied	J18 (Exit Door Eye Controls)	Driver Side Sensor Thru J-Box
Exit Door Passenger Side Sensor	16	1/2"	1	Supplied	J18 (Exit Door Eye Controls)	Passenger Side Sensor Thru J-Box
Entry Station	18	1"	13	16 AWG	Wash Activation	Entry Station
Open/Close Sign at Entrance	19	1"	4	18 AWG		
Open/Close Sign at Exit (Driver Side)	20	1"	4	18 AWG		
Open/Close Sign at Exit (Passenger Side)	21	1"	4	18 AWG		

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ISSUE/REVISION RECORD

DATE	DESCRIPTION
01/25/21	PERMIT SET

PROFESSIONAL SEAL
NORTH CAROLINA PROFESSIONAL SEAL 037614 ENGINEER FLOYD A KEELS
01/25/2021

PROFESSIONAL IN CHARGE
FLOYD KEELS, PE
PROJECT MANAGER
RW
QUALITY CONTROL
RW
DRAWN BY
AB

PROJECT NAME
SHEETZ AUTOMATIC CARWASH
CAMERON NC
SAWYER RD. & NC 24-87
CAMERON, NC 28326

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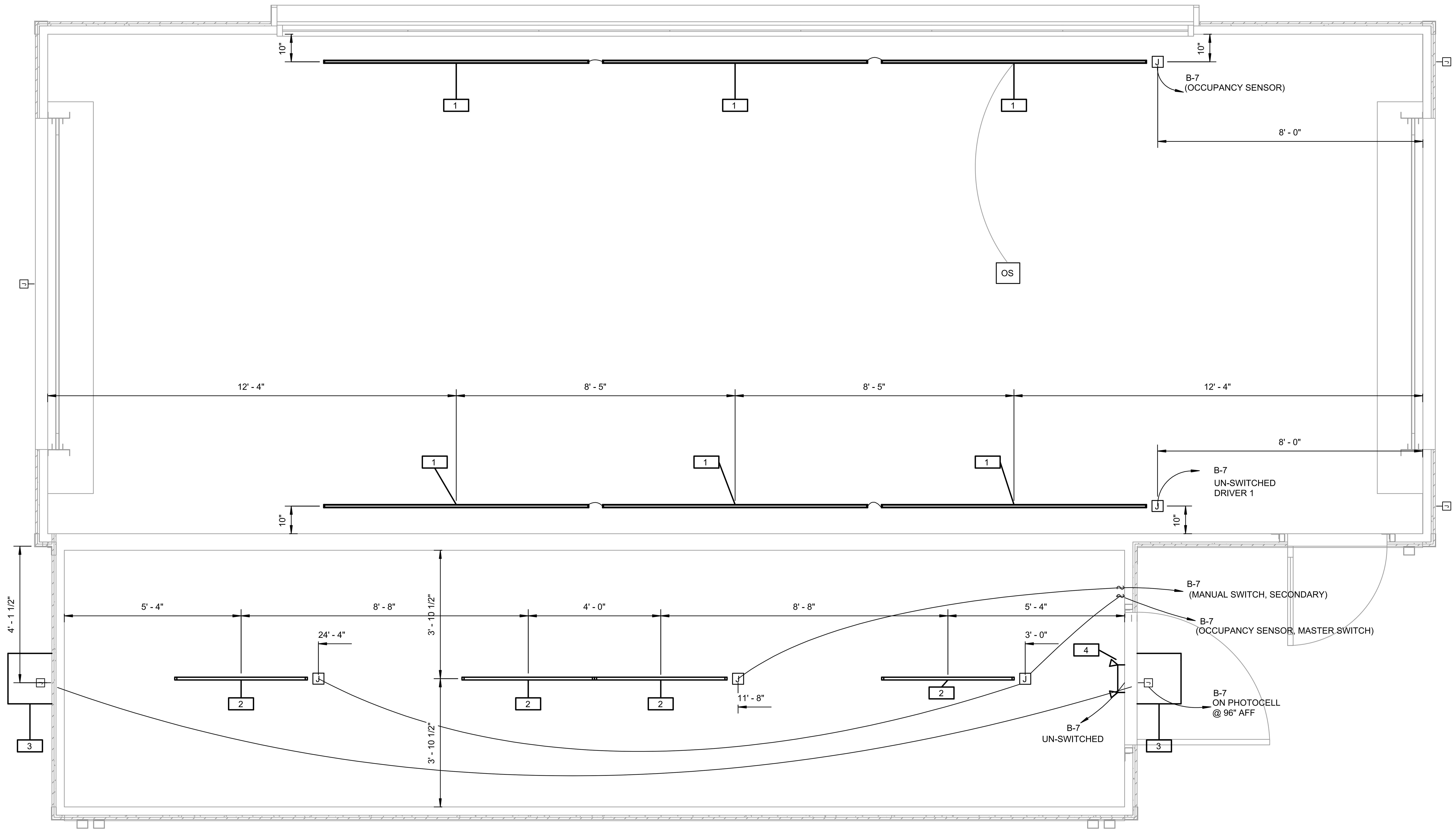
Conyers, Georgia 30012
Voice: (800) 366-6385
Fax: (770) 483-6037

FMS JOB NUMBER
G20V36
FMS MODEL NUMBER
XXXXXX

PROJECT NUMBER
20210019

SHEET TITLE
ELECTRICAL PLAN

SHEET NUMBER
E1



1 Reflected Lighting Plan
1/2" = 1'-0"

Mark	Count	Description	Model	Wattage	Lamp	Comments
1	6	LED Tube Area Light 8'	LEDTUBE8'	80 W	LED	
2	4	LED Linear 4'	LEDLIN	40 W	LED	
3	2	The Edge LED Wall Pack	SEC-EDG-3M-WM-08-D-UL-BK-525	91 W	LED	Furnished and Installed by Sheetz
4	1	Combo Emergency/Exit Light, Thermoplastic Housing. Lead Calcium High Output Batt Rated Min. 1-1/2 Hrs. Red on white. High Charge Indicator. Provide remote heads as noted on plan, Or Equal.	LHQM-S-W-3-R	4 W	LED, RED	

Lighting Fixture Schedule

GreenbergFarrow
1430 W. Peachtree St., Suite 200
Atlanta, GA 30309
t: 404 601 4000 f: 404 601 3980

ISSUE/REVISION RECORD

DATE	DESCRIPTION
01/25/21	PERMIT SET

PROFESSIONAL SEAL

NORTH CAROLINA PROFESSIONAL SEAL 037614 ENGINEER FLOYD A KEELS

01/25/2021

PROFESSIONAL IN CHARGE
FLOYD KEELS, PE

PROJECT MANAGER
RW

QUALITY CONTROL
RW

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AB

PROJECT NAME

SHEETZ AUTOMATIC CARWASH

CAMERON NC

SAWYER RD. & NC 24-87
CAMERON, NC 28326

FREY-MOSS STRUCTURE
1801 Rockdale Industrial Blvd.
Conyers, Georgia 30012
Voice: (800) 366-6385
Fax: (770) 483-6037

FMS JOB NUMBER
G20V36

FMS MODEL NUMBER
XXXXXX

PROJECT NUMBER
20210019

SHEET TITLE

LIGHTING PLAN

SHEET NUMBER

E2

Drawing Name: P:\2021\20210019\500 MEP Construction Documents\G20V36 Sheetz - Cameron, NC\Current\02-E2.dwg Last Modified: Jan 12, 2021 - 11:51am Plotted on: Jan 21, 2021 - 8:58pm by abhatia

Branch Panel: A

Location: Equipment Room 2 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 35,000K A.I.C. (Fully Rated)
Supply From: Power Company | **Phases:** 3 | **Mains Type:** MCB
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 400 A
Enclosure: Type 1 | **MCB Rating:** 400 A

	CKT	Load Class	Circuit Description	Trip	Poles	Wire Size	Wire Type	A(kVA)		B(kVA)		C(kVA)		Wire Type	Wire Size	Poles	Trip	Circuit Description	Load Class	CKT
*	A-1	--	Spare for Future Reclaim	20 A	1	--	--	0.0	0.7					Default	2-#12, 1-#12, 1-#12	2	20 A	RO Repress Pump	Equipment	A-2
	A-3	Equipment	RO System	20 A	2	2-#12, 1-#12, 1-#12	Default			0.7	0.7			--	--	--	--	--	Equipment	A-4
	A-5	Equipment	--	--	--	--	--					0.7	1.2	Default	3-#10, 1-#10, 1-#10	3	30 A	Air Compressor*	Equipment	A-6
	A-7	--	Spare for Future Reclaim	20 A	3	--	--	0.0	1.2					--	--	--	--	--	Equipment	A-8
	A-9	--	--	--	--	--	--			0.0	1.2			--	--	--	--	--	Equipment	A-10
	A-11	--	--	--	--	--	--					0.0	2.3	Default	3-#10, 1-#10, 1-#10	3	25 A	Solution Pump Station*	Equipment	A-12
*	A-13	Equipment	Back Bridge	40 A	3	3-#8, 1-#8, 1-#10	Default	3.6	2.3					--	--	--	--	--	Equipment	A-14
	A-15	Equipment	--	--	--	--	--			3.6	2.3			--	--	--	--	--	Equipment	A-16
	A-17	Equipment	--	--	--	--	--					3.6	3.6	Default	3-#8, 1-#8, 1-#10	3	40 A	Front Bridge	Equipment	A-18
*	A-19	Equipment	High Pressure Pump Station*	45 A	3	3-#6, 1-#6, 1-#10	Default	4.3	3.6					--	--	--	--	--	Equipment	A-20
	A-21	Equipment	--	--	--	--	--			4.3	3.6			--	--	--	--	--	Equipment	A-22
	A-23	Equipment	--	--	--	--	--					4.3	5.3	Default	3-#6, 1-#6, 1-#10	3	50 A	Dryer Feed 1	Equipment	A-24
	A-25	Equipment	Dryer Feed 2	50 A	3	3-#6, 1-#6, 1-#10	Default	5.3	5.3					--	--	--	--	--	Equipment	A-26
	A-27	Equipment	--	--	--	--	--			5.3	5.3			--	--	--	--	--	Equipment	A-28
	A-29	Equipment	--	--	--	--	--					5.3	--	--	--	1	--	Space	--	A-30
	A-31	--	Space	--	1	--	--	--	--					--	--	1	--	Space	--	A-32
	A-33	--	Space	--	1	--	--			--	--			--	--	1	--	Space	--	A-34
	A-35	--	Space	--	1	--	--					--	--	--	--	1	--	Space	--	A-36
	A-37	Power	Surge Protection (F.I.)	30 A	3	3-#10, 1-#10, 1-#10	Default	0.0	3.2					Default	See One Line Riser	3	100 A	Panel B Subfeed	SUB	A-38
	A-39	Power	--	--	--	--	--			0.0	4.5			--	--	--	--	--	SUB	A-40
	A-41	Power	--	--	--	--	--					0.0	4.5	--	--	--	--	--	SUB	A-42
							Total Load:	29.5 kVA		31.5 kVA		30.8 kVA								
							Total Amps:	246 A		262 A		257 A								

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	0.9 kVA	125.00%	1.1 kVA		
Power	1.3 kVA	100.00%	1.3 kVA	**Total Conn. Load:**	91.8 kVA
Equipment	89.6 kVA	100.00%	89.6 kVA	**Total Est. Demand:**	92.0 kVA
				Total Conn. Current:	255 A
				Total Est. Demand Current:	256 A

Notes:
*Overcurent device may have to be increased due to starting and load conditions.
See NEC 430-52, Table 430-52. Wire size based on 75 degrees celsius terminations
and 75 degrees celsius insulation.

Branch Panel: B

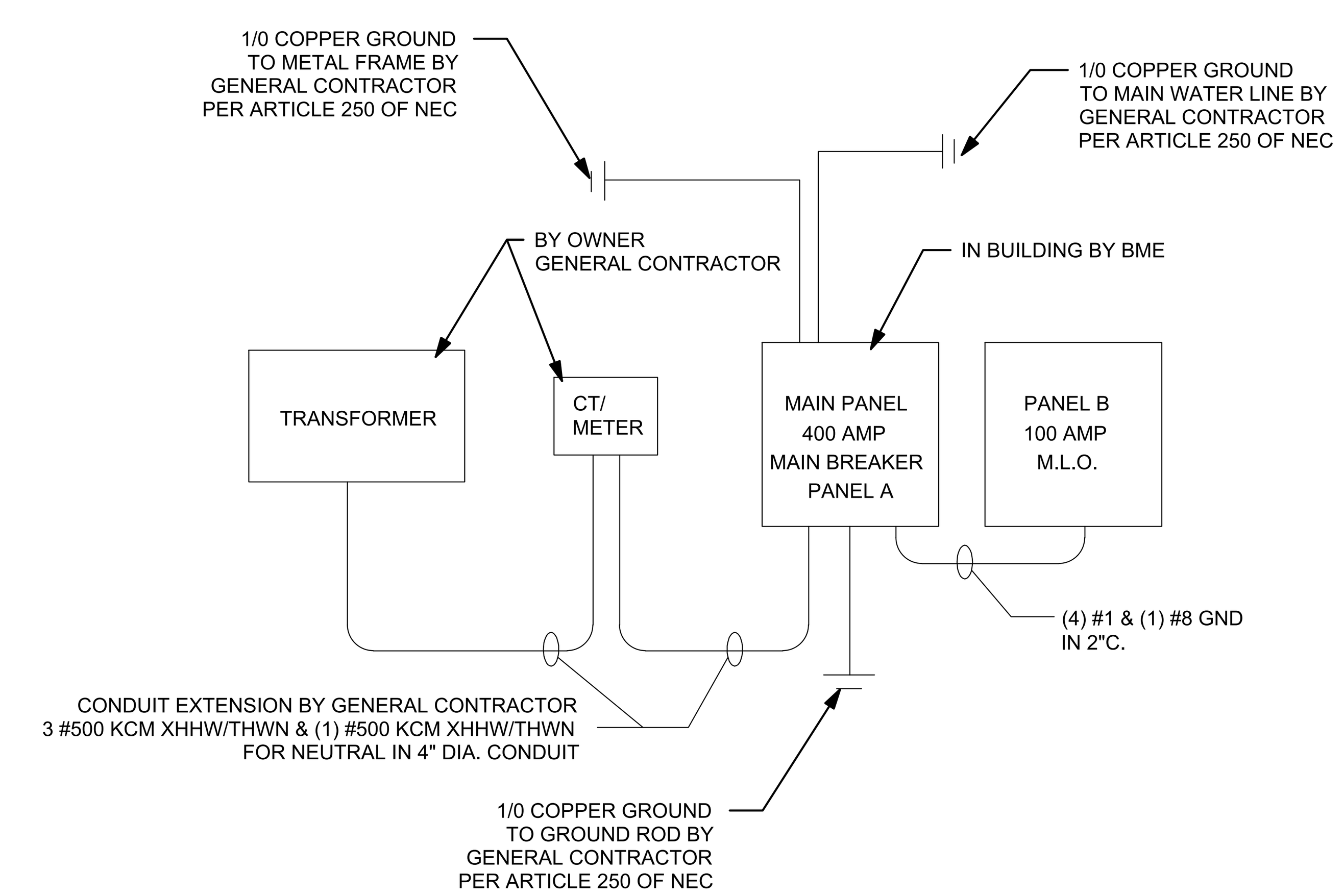
Location: Equipment Room 2 | **Volts:** 120/208 Wye | **A.I.C. Rating:** 35,000K A.I.C (Fully Rated)
Supply From: A | **Phases:** 3 | **Mains Type:** MLO
Mounting: Surface | **Wires:** 4 | **Mains Rating:** 225 A
Enclosure: Type 1 | **MCB Rating:** 100 A

CKT	Load Class	Circuit Description	Trip	Poles	Wire Size	Wire Type	A(kVA)		B(kVA)		C(kVA)		Wire Type	Wire Size	Poles	Trip	Circuit Description	Load Class	CKT
B-1	Lighting	Signs (Spare)	20 A	1	1-#12, 1-#12, 1-#12	Default	0.0	0.0					Default	1-#12, 1-#12, 1-#12	1	20 A	Spare	Equipment	B-2
B-3	Power	Digital Video Recorder	15 A	1	1-#14, 1-#14, 1-#14	Default			0.2	0.1			Default	1-#14, 1-#14, 1-#14	1	15 A	Inline EF (Mech Fixture '55')	Equipment	B-4
B-5	--	Space	--	1	--	--					--	2.0	Default	2-#10, 1-#10, 1-#10	2	25 A	Instantaneous Water Heater	Equipment	B-6
B-7	Lighting	Lights / EF (Mech Fixture '29')	20 A	1	1-#12, 1-#12, 1-#12	Default	0.9	2.1					--	--	--	--	(Plumbing Fixture 'D')	Equipment	B-8
B-9	Equipment	PDQ Access	20 A	1	1-#12, 1-#12, 1-#12	Default			0.4	0.4			Default	1-#12, 1-#12, 1-#12	1	20 A	Door Controllers	Equipment	B-10
B-11	--	Space	--	1	--	--					--	0.0	--	--	2	50 A	Spare	--	B-12
B-13	Power	Floor Heater Boiler (Mech Fixture '18')	20 A	1	1-#12, 1-#12, 1-#12	Default	0.2	0.0					--	--	--	--	--	--	B-14
B-15	Power	Receptacles	20 A	1	1-#12, 1-#12, 1-#12	Default			0.9	2.5			Default	2-#10, 1-#10, 1-#10	2	30 A	Pressure Washer	Equipment	B-16
B-17	--	Space	--	1	--	--					--	2.5	--	--	--	--	--	Equipment	B-18
B-19	--	Space	--	1	--	--	--	--					--	--	1	--	Space	--	B-20
B-21	--	Space	--	1	--	--			--	--			--	--	1	--	Space	--	B-22
B-23	--	Space	--	1	--	--					--	--	--	--	1	--	Space	--	B-24
						Total Load:	3.2 kVA		4.5 kVA		4.5 kVA								
						Total Amps:	27 A		38 A		38 A								

Legend:

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	0.9 kVA	125.00%	1.1 kVA		
Power	1.3 kVA	100.00%	1.3 kVA	**Total Conn. Load:**	12.2 kVA
Equipment	10.0 kVA	100.00%	10.0 kVA	**Total Est. Demand:**	12.4 kVA
				Total Conn. Current:	34 A
				Total Est. Demand Current:	35 A

Notes:



ONE LINE RISER DIAGRAM

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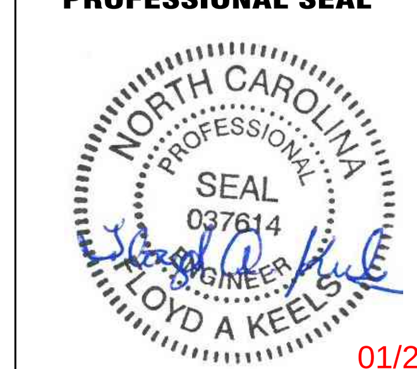

01/25/2021

PROFESSIONAL IN CHARGE
FLOYD KEELS, PE
PROJECT MANAGER
RW
QUALITY CONTROL
RW
DRAWN BY
AB

PROJECT NAME
SHEETZ AUTOMATIC CARWASH
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FMS JOB NUMBER
G20V36
FMS MODEL NUMBER
XXXXXX
PROJECT NUMBER
20210019
SHEET TITLE
ELECTRICAL SCHEDULES
SHEET NUMBER
E3

Plumbing Fixture Schedule

Mark	Count	Description	Manufacturer	Model	Furnished By	Installed By	Comments
A	1	Utility Sink (ANSI-Specification Z 124.6-2001) w/ Eye Wash Faucet Combo	-	-	BMP	BMP	Direct Drain.
B	2	Floor Drain (ASTM D2665) ASME A112.63	-	-	BMP	BMP	
C	1	Lead Free Under Sink Guardian - compression and Quick-Connect fitting thermostatic mixing valves.	WATTS	LFUSG-B-M2	BMP	BMP	
D	1	Instantaneous Water Heater	Chronomite Laboratories	M-20L / 208	BMP	BMP	
E	1	Backflow Preventer-1 1/2" Connection w/ Air Gap Fitting, ASSE 1013, CSA B64.4	Wilkins	975XL	BMP	BMP	Non-potable water. Relief to hub drain.
F	1	Backflow Preventer-3/4" Connection w/ Air Gap Fitting, ASSE 1013, CSA B64.4	Wilkins	975XL	BMP	BMP	Potable water. Relief to hub darin.

Process Piping Plumbing Equipment Schedule

Mark	Count	Description	Manufacturer	Model	Comments
14	1	R.O. Unit	Pur Clean		No drain.
16	2	300 Gallon Vertical Storage	Chemtainer	TC6481IC	Hose to hub drain.
24	1	Air compressor	Champion		Hose to hub drain.
25	1	Electric Cold Water Stationary Pressure Washer, 2,000 PSI, 3 GPM, 220 Volt	Hydro Spray	HSWC3020 EDXA	No drain.
26	1	Water Softener System	Velocity	TWIN-2T-1 50K	Hose to hub drain.

Mechanical Equipment Schedule

Mark	Count	Description	Manufacturer	Model	Comments
18	1	NFB High-Efficiency Condensing Fire Tube Boiler	Navien, Inc.	NFB-175	
29	1	Exhaust Fan		509	
55	1	Inline Centrifugal Fan	Fantech	FR125	

NOTE: G.C. TO RUN INCOMING WATER PIPE AFTER BUILDING IS SET IN FIELD

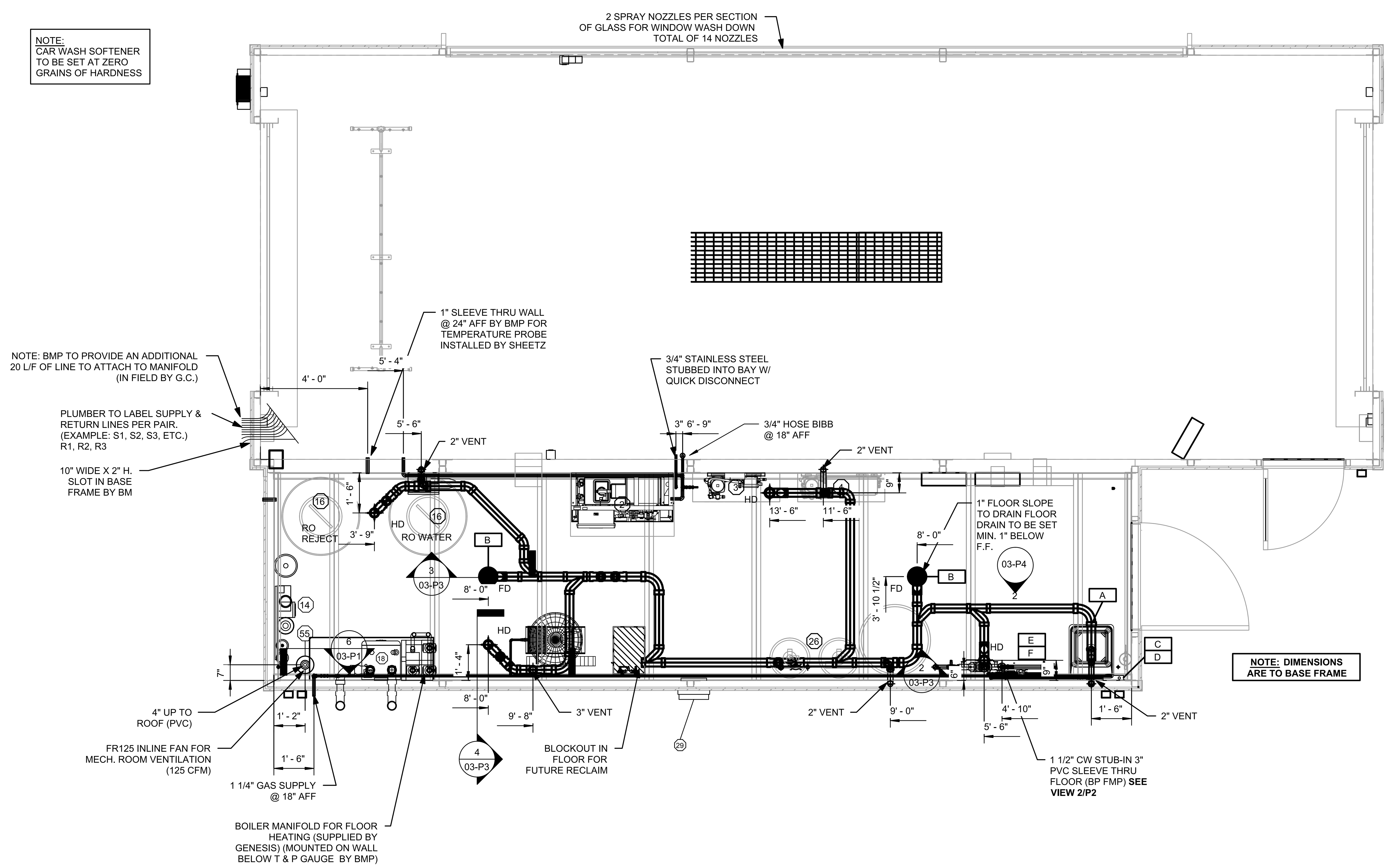
NOTE: SEE INTERIOR ELEVATIONS SHEET A4 & A5 FOR DIMENSIONS

Notes:
1. Equip the boiler w/ a drain valve that drains onto the floor.
2. Re-pipe the boiler safety valve towards floor.
3. Tag stop valves relating to boiler.
4. Boiler thermometer to be installed on outlet.
5. Anchor or brace the boiler using structural means.

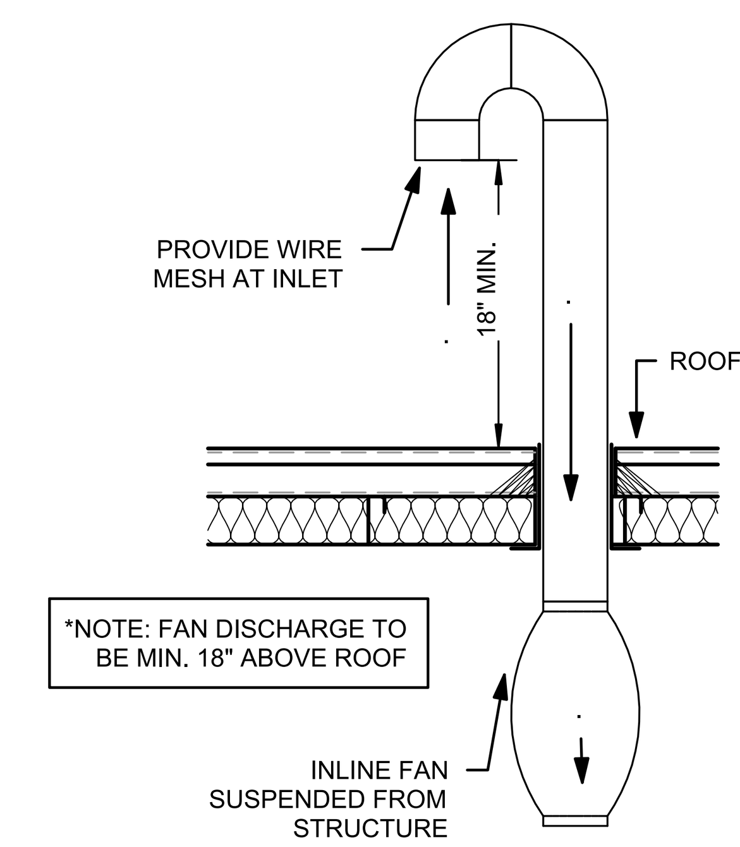
Notes:
1. Heat tubing outside building at entrance & exit furnished by Genesis, installed by GC.
2. BMP to furnish a ball valve on weep valve line.
3. BMP to pull the heat tubing lines longer in equipment room to ensure they reach manifolds.
4. BMP to pressure test boiler & heat tubing lines.

NOTE: CAR WASH SOFTENER TO BE SET AT ZERO GRAINS OF HARDNESS

GAS CONSUMPTION TABLE	
FLOOR HEAT	175,000
FUTURE	105,000
TOTAL	280,000



1 Plumbing Plan
3/8" = 1'-0"



6 Fan Detail
03-P1 1" = 1'-0"

PLUMBING LEGEND

BM	BUILDING MANUFACTURER
BMP	PLUMBER
CW	CITY WATER (COPPER)
FD	FLOOR DRAIN
GC	GENERAL CONTRACTOR
HD	HUB DRAIN
HW	HOT WATER LINES (COPPER)
RO	RO WATER (CPVC)
RW	RECLAIM WATER (COPPER)
SS	SANITARY SEWER
SW	SOFT WATER (COPPER)
VSTR	VENT STACK THRU ROOF

Plumbing General Notes

1. All plumbing to be per applicable plumbing code. (See sheet CS1).
2. Hydraulic piping to be watt radiant e-pex cross-linked polyethylene tubing per ASTM F-876/8771 rated @ 100 psi @ 180 degrees fahrenheit or equal. Installed per OML chapter 12.
3. All water lines to be copper and all waste piping to be pvc sch. 40.
4. Vertical copper pipe to be supported every 4' to 5'.
5. All pvc vertical piping inside building shall be anchored between floors and ceiling & allow for thermal expansion.
6. Horizontal copper to be supported at intervals not to exceed 3'.
7. All pvc vertical piping inside building shall be anchored at maximum distance of 4'-0".
8. All vents thru roof shall be a minimum of 3" diameter to prevent frost closure. 12" below roof to 12" above roof.
9. All p-traps for equipment inside the building by building manufacturer supplier.
10. All p-traps for floor drains and hub drains under building are pvc and supplied and installed by BMP.
11. All sanitary sewer connections to points indicated are pvc or per local code and are supplied and installed by GC.
12. Wrap pipes in exterior plumbing walls with pre-formed foam insulation.

Plumbing Field Notes

1. Site contractor to supply and install all plumbing required on site and make field joint connections to building at locations shown on sheet F1.
2. Drainage and vent system shall be tested with 10' head of water after building installation.
3. Water supply system shall be tested with not less than 25 psi above working pressure both in shop and on site.

Gas Notes:

1. No gas piping to be below building slab.
2. Gas piping to be schedule 40 black iron with screwed fittings.
3. Gas using equipment shall be separately valved.
4. Gas plug cocks shall be Rockwell Nordstrum, Dezurick, or approved equal.
5. Gas piping installation shall comply with the applicable gas code and pamphlet 54 of the NFPA and 2009 IFGC.

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PROFESSIONAL SEAL

01/25/2021

PROFESSIONAL IN CHARGE
ROBERT B. SMITH, PE

PROJECT MANAGER
RW

QUALITY CONTROL
RW

DRAWN BY
YY

PROJECT NAME

SHEETZ AUTOMATIC CARWASH

CAMERON NC

SAWYER RD. & NC 24-87
CAMERON, NC 28326

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PROJECT NUMBER
20210019

SHEET TITLE

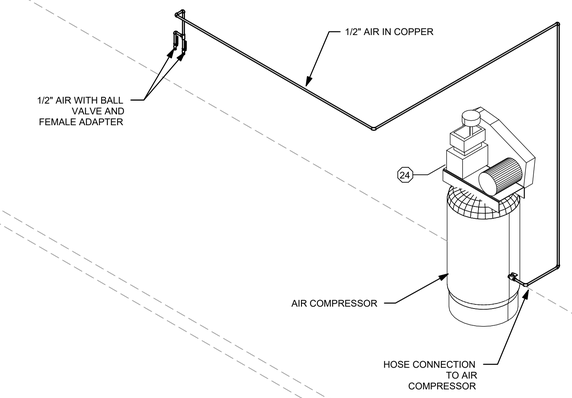
PLUMBING PLAN

SHEET NUMBER

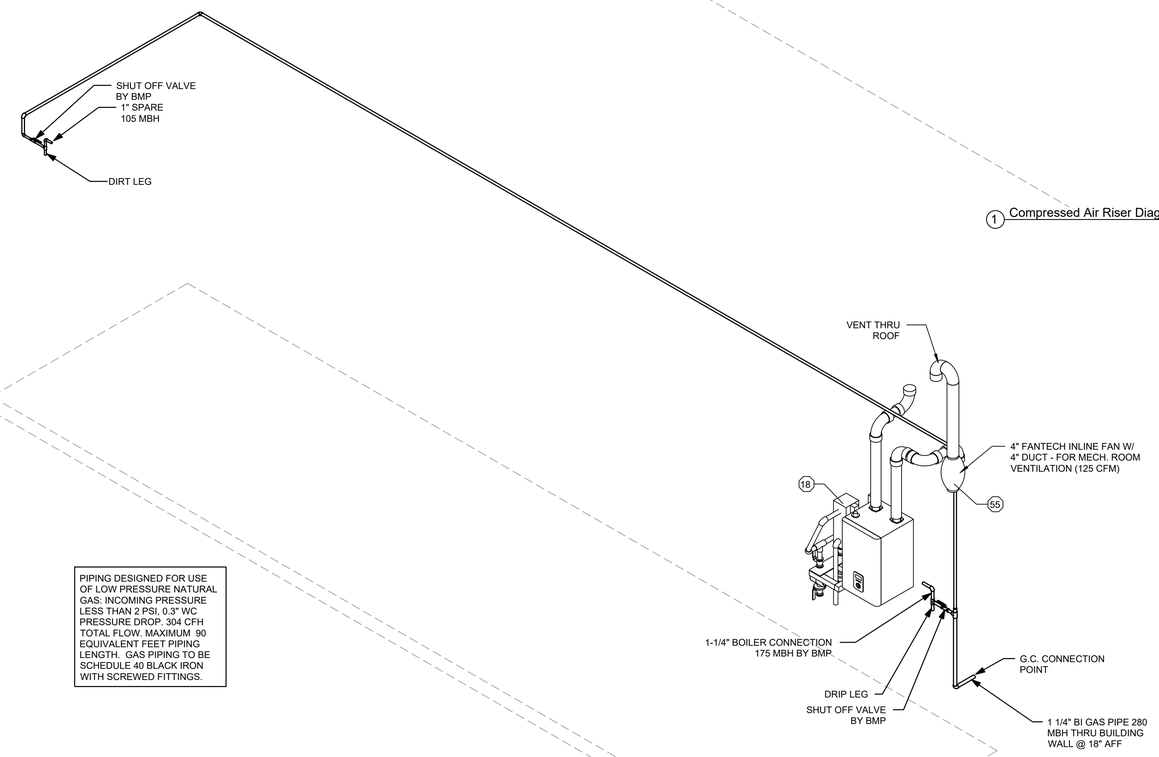
P1

PLUMBING LEGEND

BM	BUILDING MANUFACTURER
BMP	PLUMBER
CW	CITY WATER (COPPER)
FD	FLOOR DRAIN
GC	GENERAL CONTRACTOR
HD	HUB DRAIN
HW	HOT WATER LINES (COPPER)
RO	RO WATER (CPVC)
RW	RECLAIM WATER (COPPER)
SS	SANITARY SEWER
SW	SOFT WATER (COPPER)
VSTR	VENT STACK THRU ROOF



1 Compressed Air Riser Diagram



PIPING DESIGNED FOR USE OF LOW PRESSURE NATURAL GAS: INCOMING PRESSURE LESS THAN 2 PSI, 0.3" WC PRESSURE DROP. 304 CFH TOTAL FLOW. MAXIMUM 90 EQUIVALENT FEET PIPING LENGTH. GAS PIPING TO BE SCHEDULE 40 BLACK IRON WITH SCREWED FITTINGS.

2 Gas Riser Diagram

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PROFESSIONAL SEAL

NORTH CAROLINA PROFESSIONAL SEAL 048412 ENGINEER ROBERT BLAKE SMITH
P-1359 01/25/2021

PROFESSIONAL IN CHARGE
ROBERT B. SMITH, PE

PROJECT MANAGER
RW

QUALITY CONTROL
RW

DRAWN BY
YY

PROJECT NAME

SHEETZ AUTOMATIC CARWASH

CAMERON NC

SAWYER RD. & NC 24-87
CAMERON, NC 28326

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G20V36

FMS MODEL NUMBER
XXXXXX

PROJECT NUMBER
20210019

SHEET TITLE

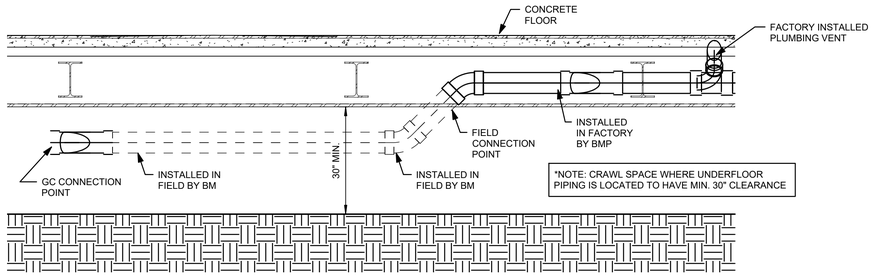
PLUMBING RISER & DETAILS

SHEET NUMBER

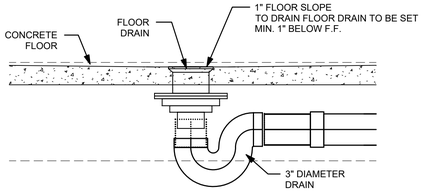
P2

PLUMBING LEGEND

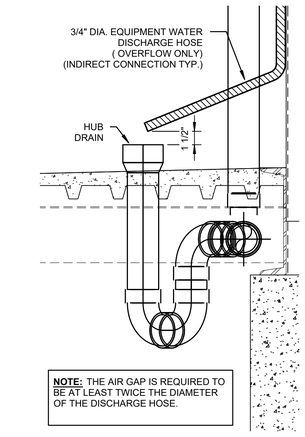
BM	BUILDING MANUFACTURER
BMP	PLUMBER
CW	CITY WATER (COPPER)
FD	FLOOR DRAIN
GC	GENERAL CONTRACTOR
HD	HUB DRAIN
HW	HOT WATER LINES (COPPER)
RO	RO WATER (CPVC)
RW	RECLAIM WATER (COPPER)
SS	SANITARY SEWER
SW	SOFT WATER (COPPER)
VSTR	VENT STACK THRU ROOF



2 03-P3 DWV Exit Detail
1" = 1'-0"



3 03-P3 Floor Drain Detail
1 1/2" = 1'-0"

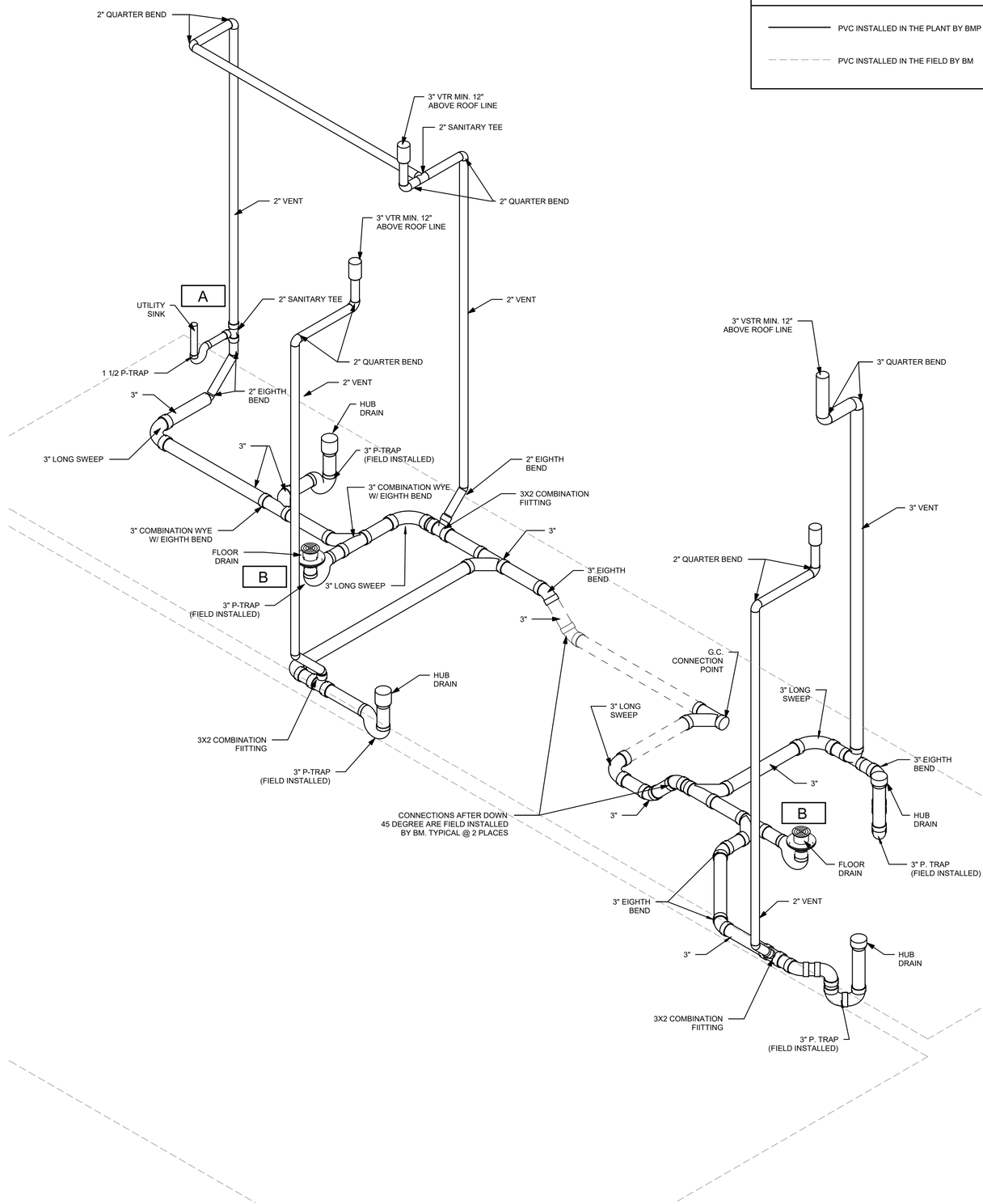


4 03-P3 Hub Drain Detail
1 1/2" = 1'-0"

DWV PIPE LEGEND

PVC INSTALLED IN THE PLANT BY BMP

PVC INSTALLED IN THE FIELD BY BM



1 DWV Riser Diagram

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ISSUE/REVISION RECORD

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PROFESSIONAL SEAL

NORTH CAROLINA PROFESSIONAL SEAL 048412 ENGINEER ROBERT BLAKE SMITH
P-1359 01/25/2021

PROFESSIONAL IN CHARGE
ROBERT B. SMITH, PE

PROJECT MANAGER
RW

QUALITY CONTROL
RW

DRAWN BY
YY

PROJECT NAME

SHEETZ AUTOMATIC CARWASH

CAMERON NC

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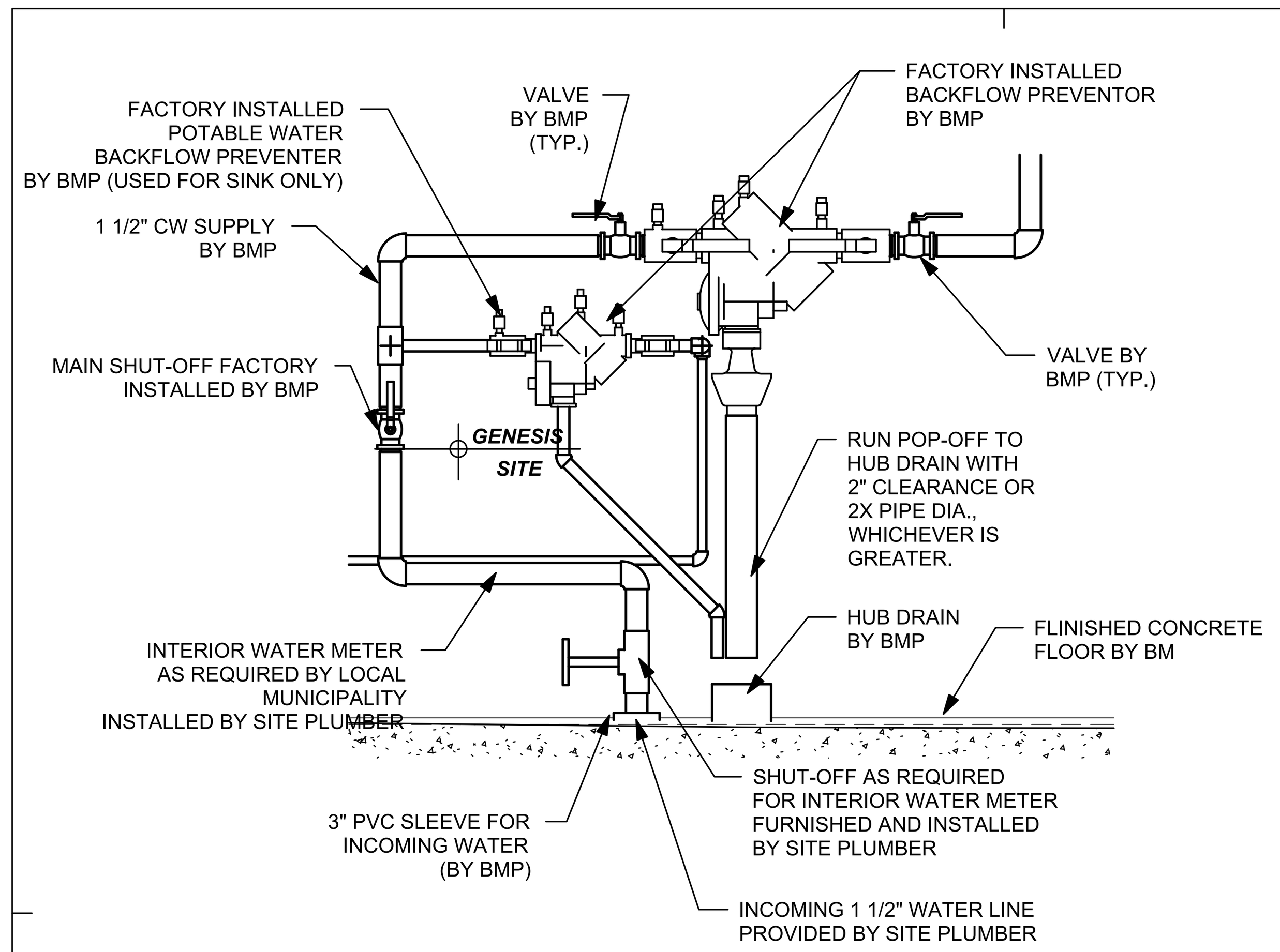
SHEET TITLE

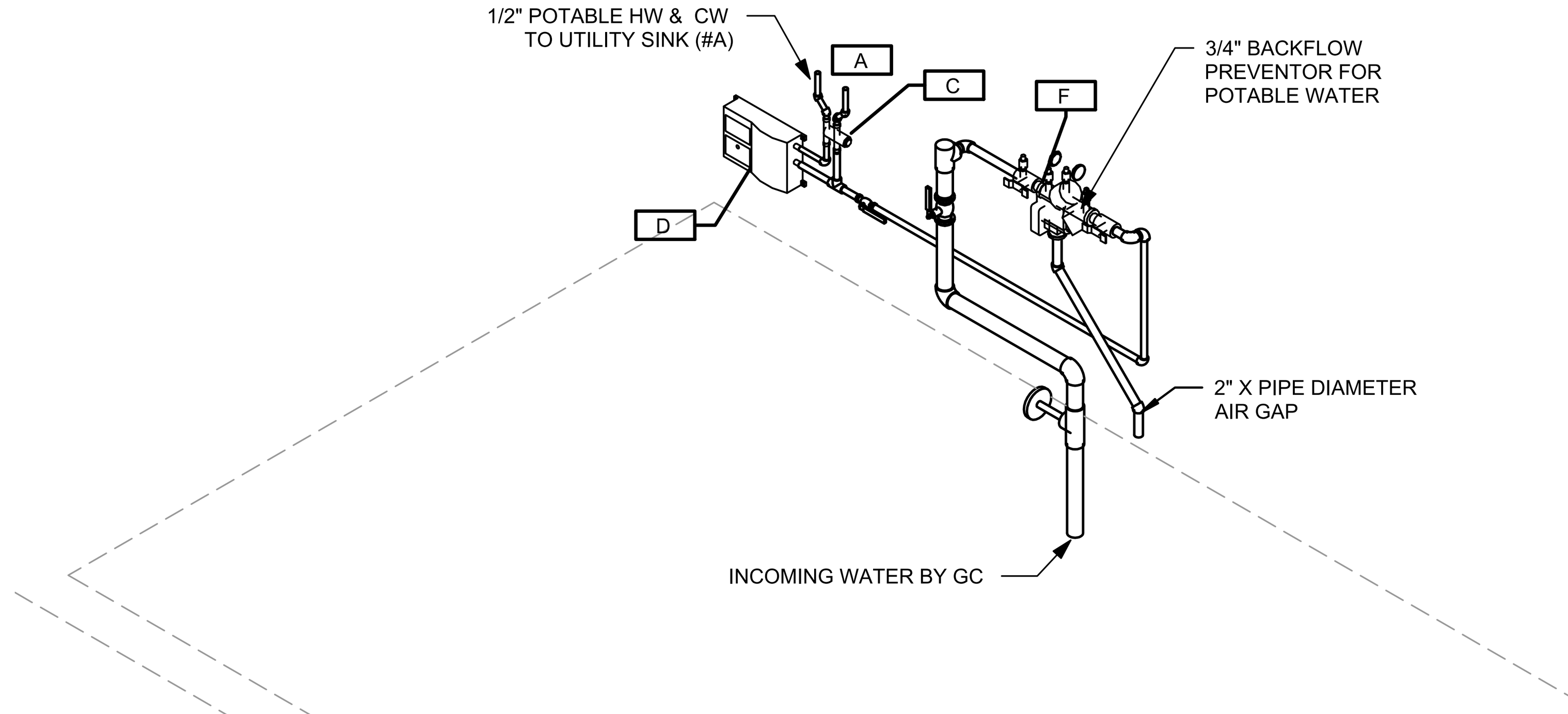
PLUMBING RISER & DETAILS

SHEET NUMBER

P3



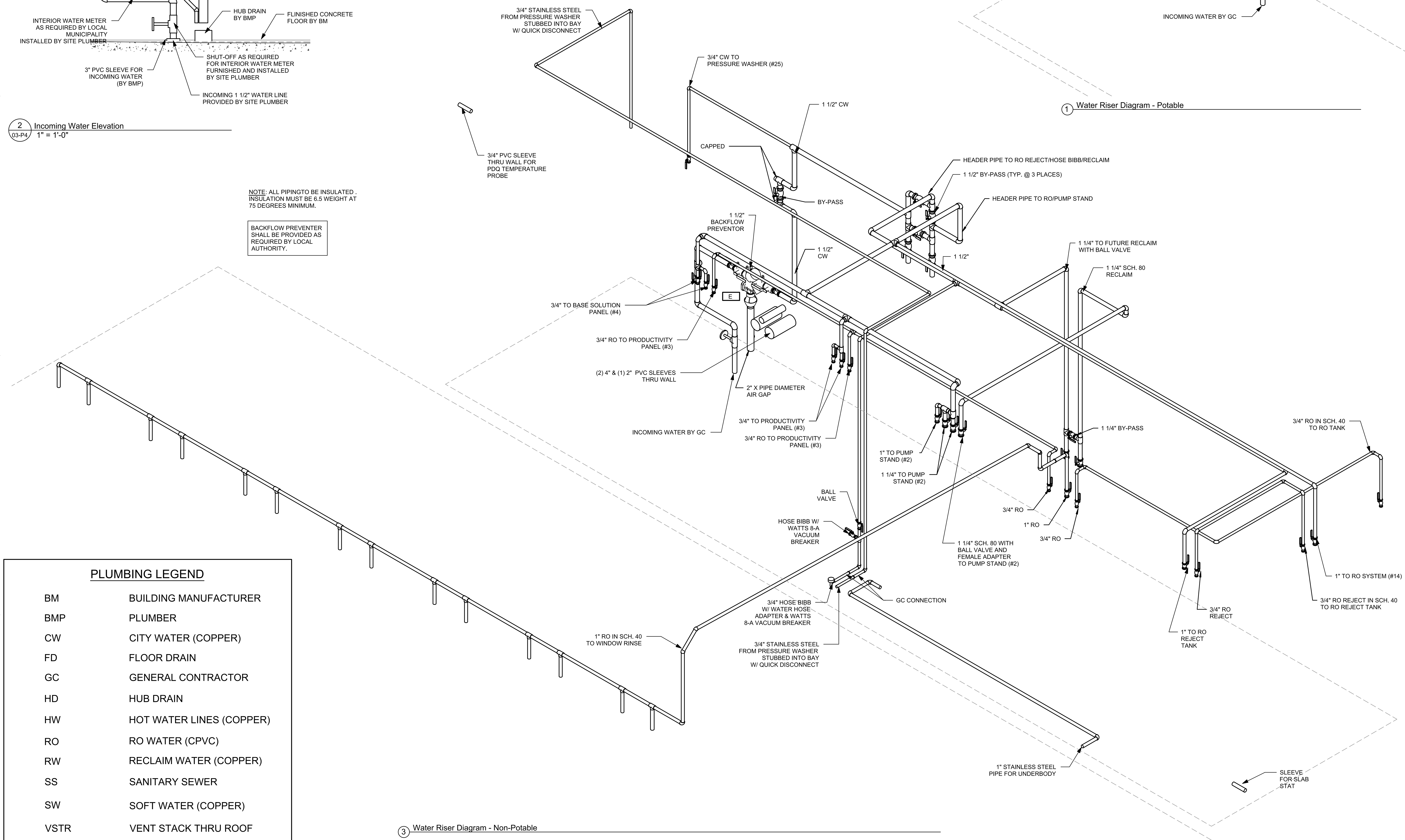
2 Incoming Water Elevation
03-P4 1" = 1'-0"



1 Water Riser Diagram - Potable

NOTE: ALL PIPINGTO BE INSULATED . INSULATION MUST BE 6.5 WEIGHT AT 75 DEGREES MINIMUM.

BACKFLOW PREVENTER SHALL BE PROVIDED AS REQUIRED BY LOCAL AUTHORITY.



3 Water Riser Diagram - Non-Potable

PLUMBING LEGEND

BM	BUILDING MANUFACTURER
BMP	PLUMBER
CW	CITY WATER (COPPER)
FD	FLOOR DRAIN
GC	GENERAL CONTRACTOR
HD	HUB DRAIN
HW	HOT WATER LINES (COPPER)
RO	RO WATER (CPVC)
RW	RECLAIM WATER (COPPER)
SS	SANITARY SEWER
SW	SOFT WATER (COPPER)
VSTR	VENT STACK THRU ROOF

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Conyers, Georgia 30012
Voice: (800) 366-6385
Fax: (770) 483-6037

FMS JOB NUMBER
G20V36

FMS MODEL NUMBER
XXXXXX

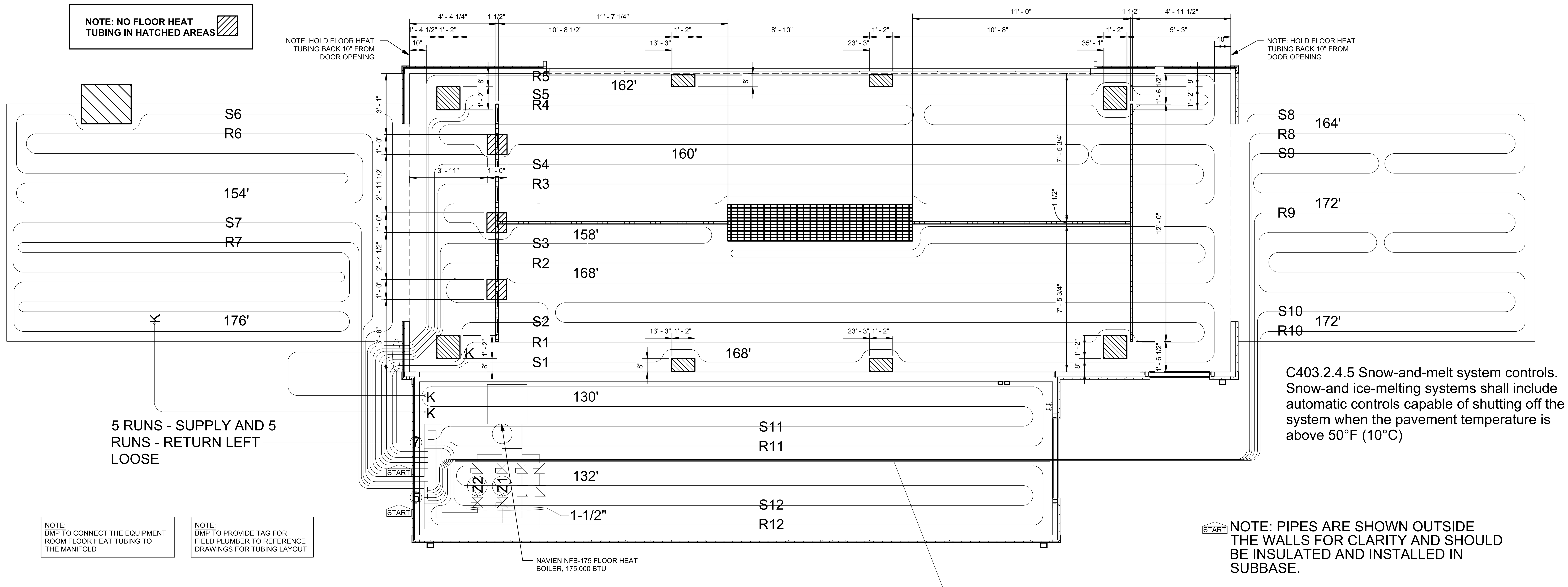
PROJECT NUMBER
20210019

SHEET TITLE

PLUMBING RISER & DETAILS

SHEET NUMBER

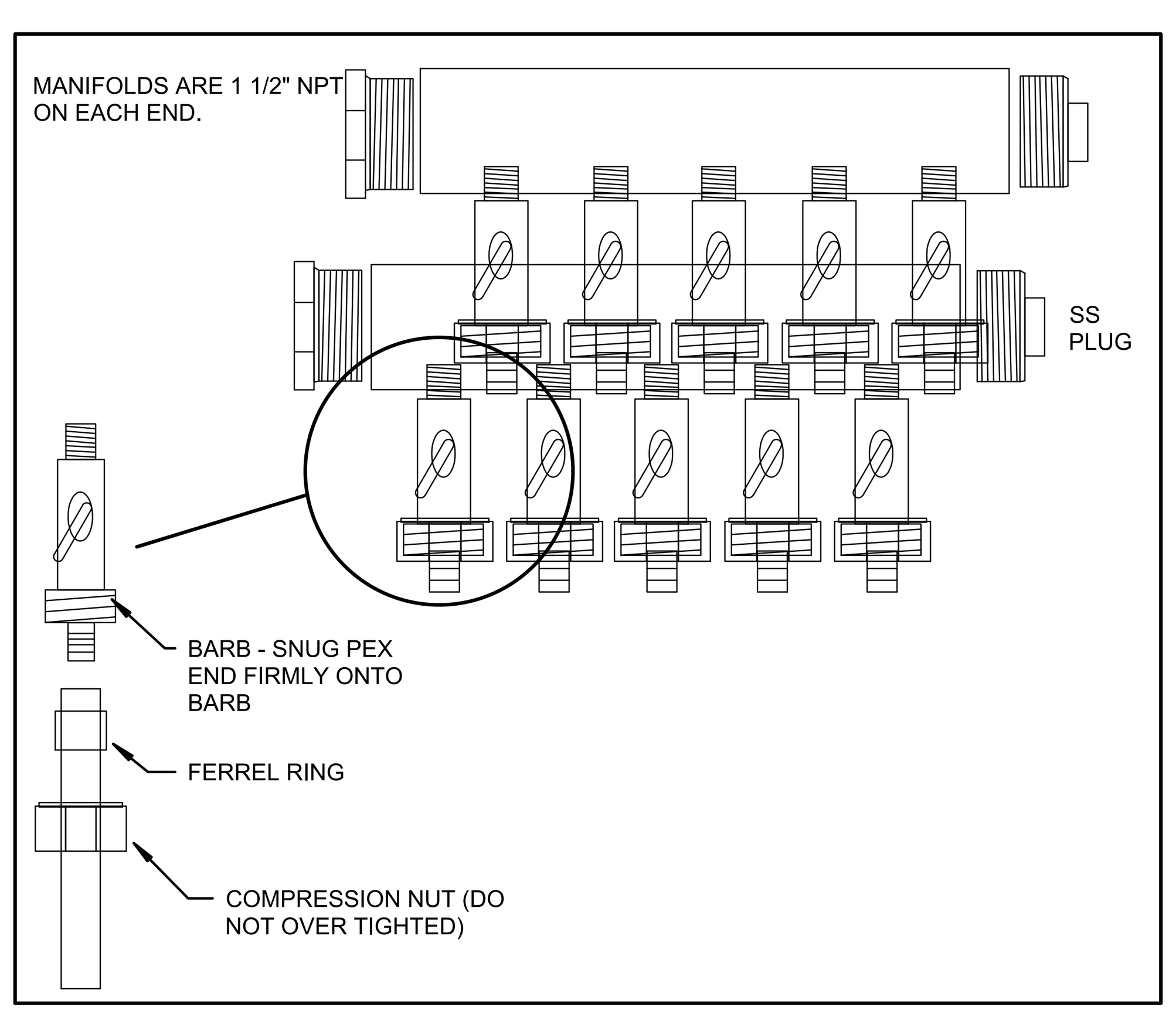
P4

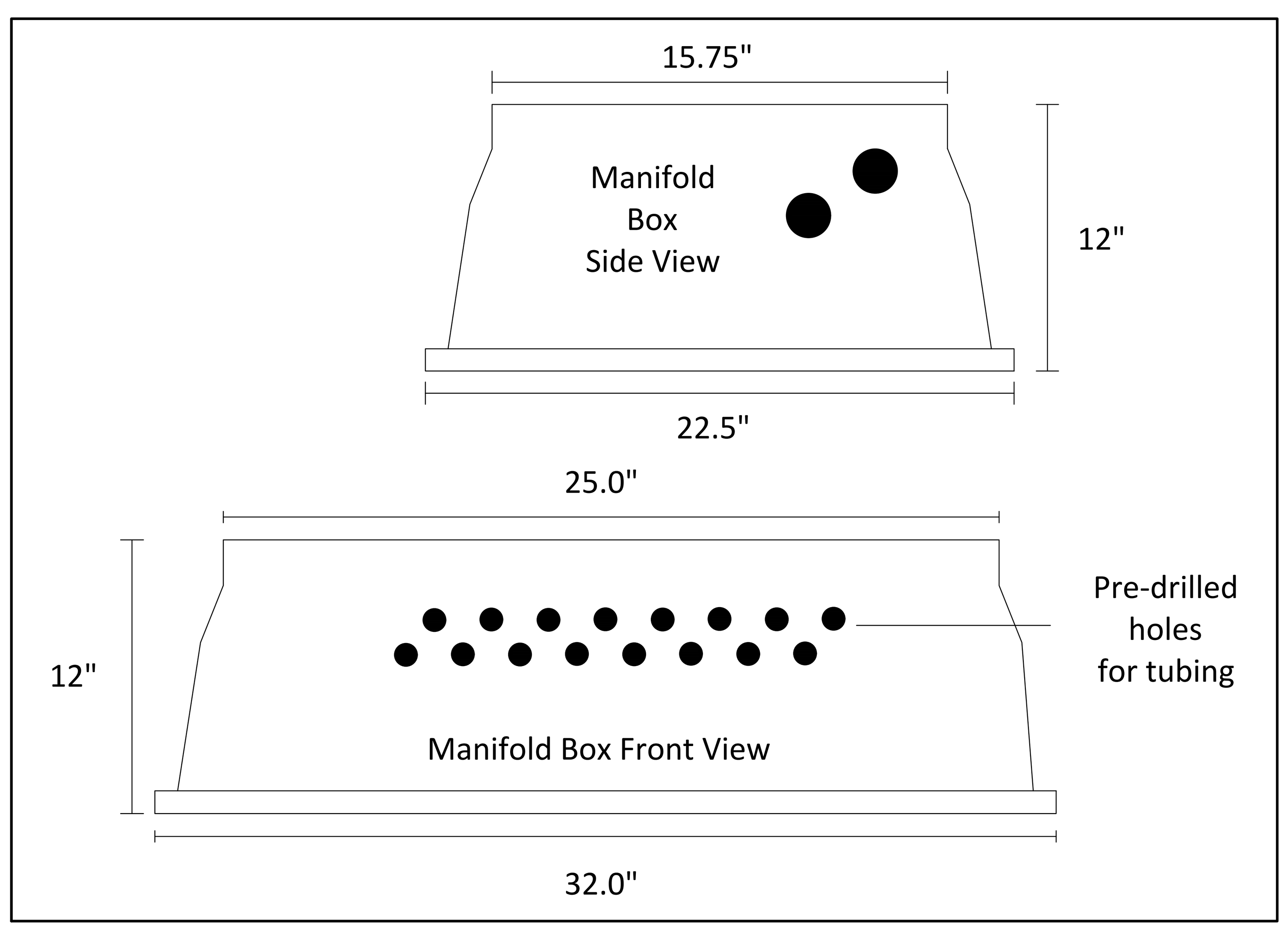


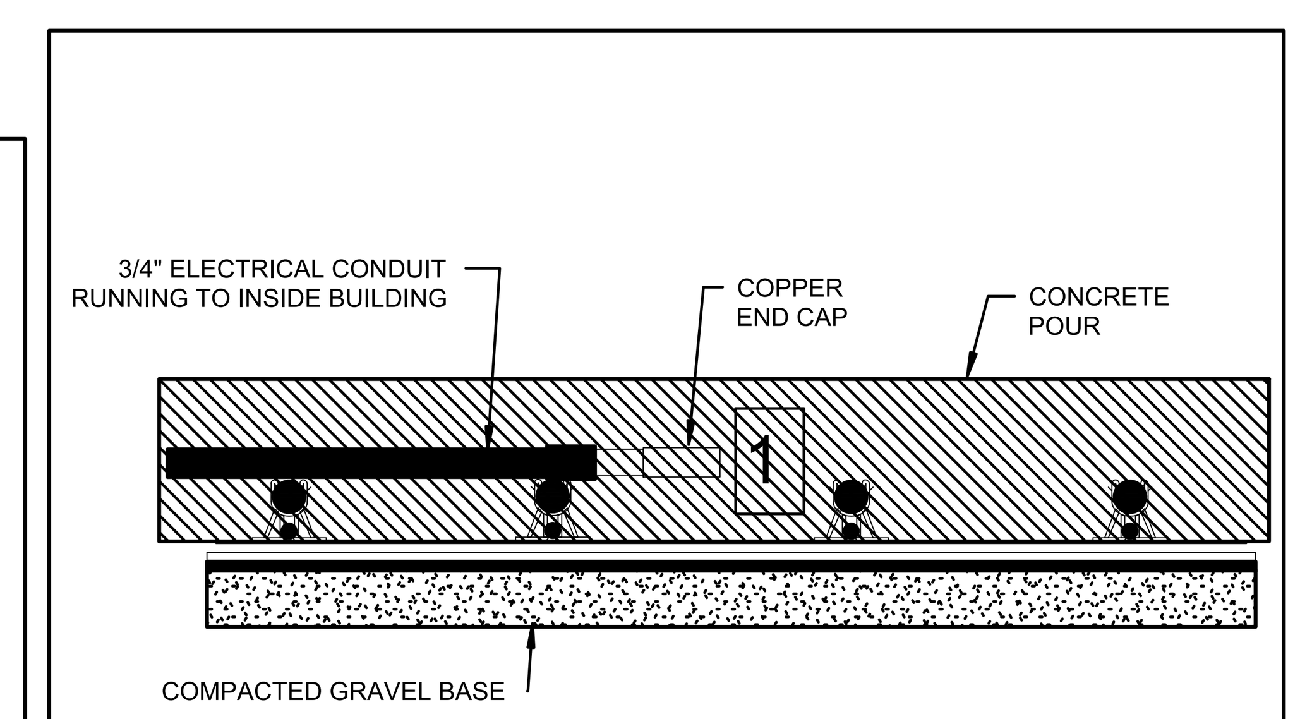
TOTAL HEAT = 175,000 BTUH   TOTAL TUBING LENGTH = 1914 FT
HEAT FOR EQUIPMENT ROOM = 262 FT/ 1914 FT X 175,000 BTUH = 23,041 BTUH
SNOW MELT FOR WASHING BAY = 816 FT/ 1914 FT X 175,000 BTUH = 74,608 BTUH
SNOW MELT FOR DRIVE SLAB = 836 FT/ 1914 FT X 175,000 BTUH = 76,437 BTUH

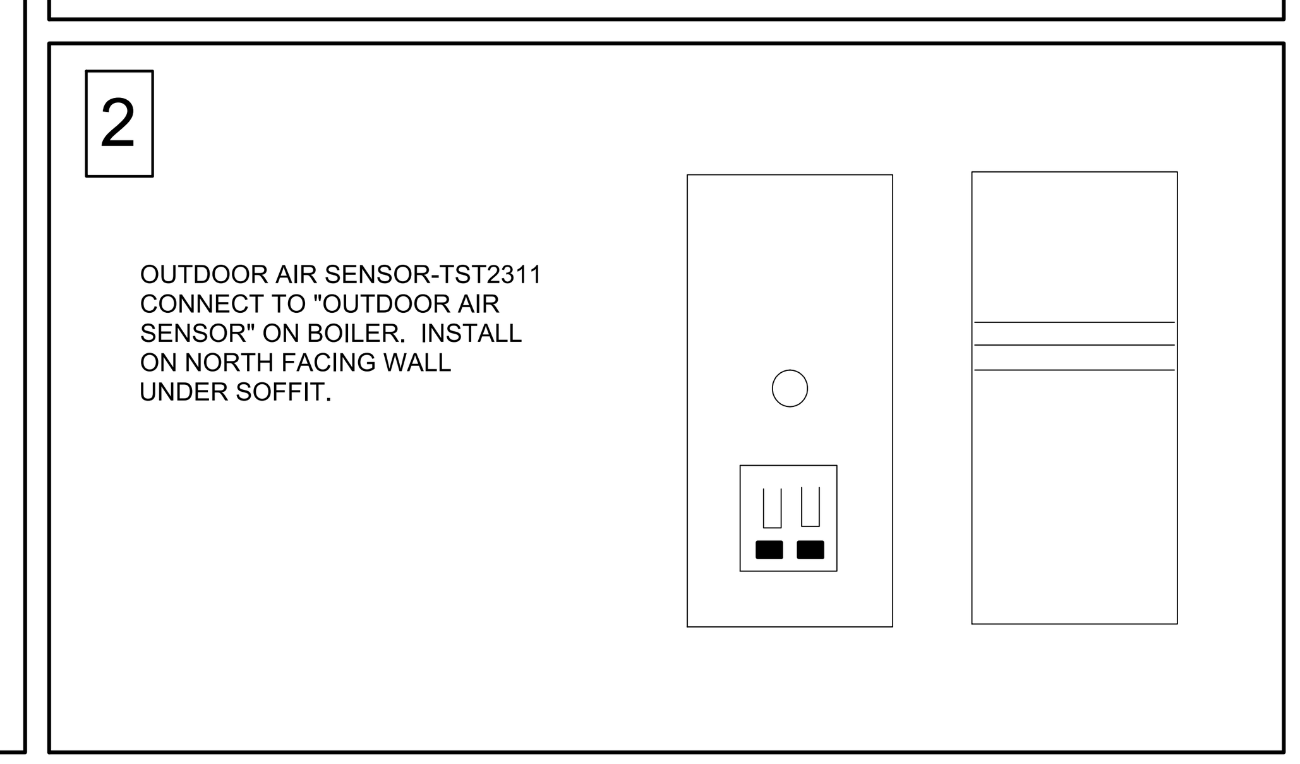
2" PVC SLEEVE UNDER EQUIPMENT ROOM BY GENERAL CONTRACTOR

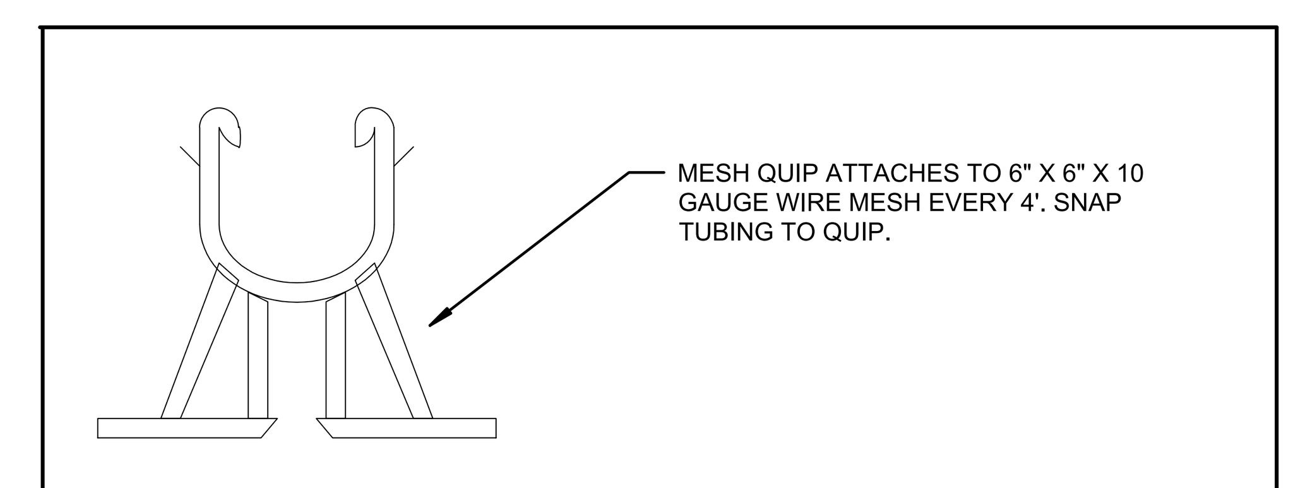
1 Floor Heat Plan
3/8" = 1'-0"

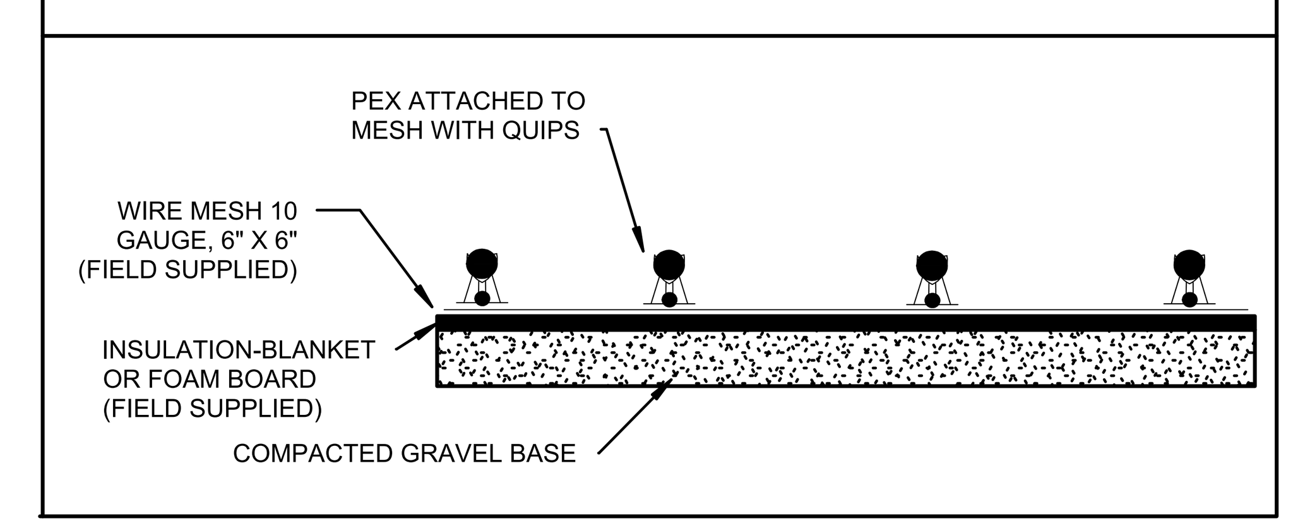












1 **IMPORTANT**

SLAB SENSOR - RAN IN PVC CONDUIT - USE COPPER END CAPS FOR SLAB SENSORS. FISH SENSORTO END OF COPPER CAP (SUPPLIED). SENSOR SHOULD REST 2"-3" FROM SURFACE OF SLAB AND 6" BETWEEN TUBES, REINFORCED END IS 15' LONG. TERMINATE TO CONTROL BOX USING RTD COMMUNICATION CABLE.

FLOOR MAY BE POURED WITHOUT SENSORS IN CONDUIT, BUT CONDUIT MUST BE LAID TO ACCCOMMODATE SENSORS AT LATER DATE.

SENSOR SLID INTO 3/4" PVC CONDUIT

COPPER END CAP CONDUCTS HEAT AND COLD MUCH BETTER THAN PVC

GreenbergFarrow
1430 W. Peachtree St., Suite 200
Atlanta, GA 30309
t: 404 601 4000 f: 404 601 3980

ISSUE/REVISION RECORD

DATE	DESCRIPTION
01/25/21	PERMIT SET

PROFESSIONAL SEAL

SEAL 048412 ROBERT BLAKE SMITH 01/25/2021

PROFESSIONAL IN CHARGE
ROBERT B. SMITH, PE

PROJECT MANAGER
RW

QUALITY CONTROL
RW

DRAWN BY
YY

PROJECT NAME
SHEETZ AUTOMATIC CARWASH
CAMERON NC

SAWYER RD. & NC 24-87
CAMERON, NC 28326

FREY-MOSS STRUCTURE
1801 Rockdale Industrial Blvd.
Conyers, Georgia 30012
Voice: (800) 366-6385
Fax: (770) 483-6037

FMS JOB NUMBER
G20V36

FMS MODEL NUMBER
XXXXXX

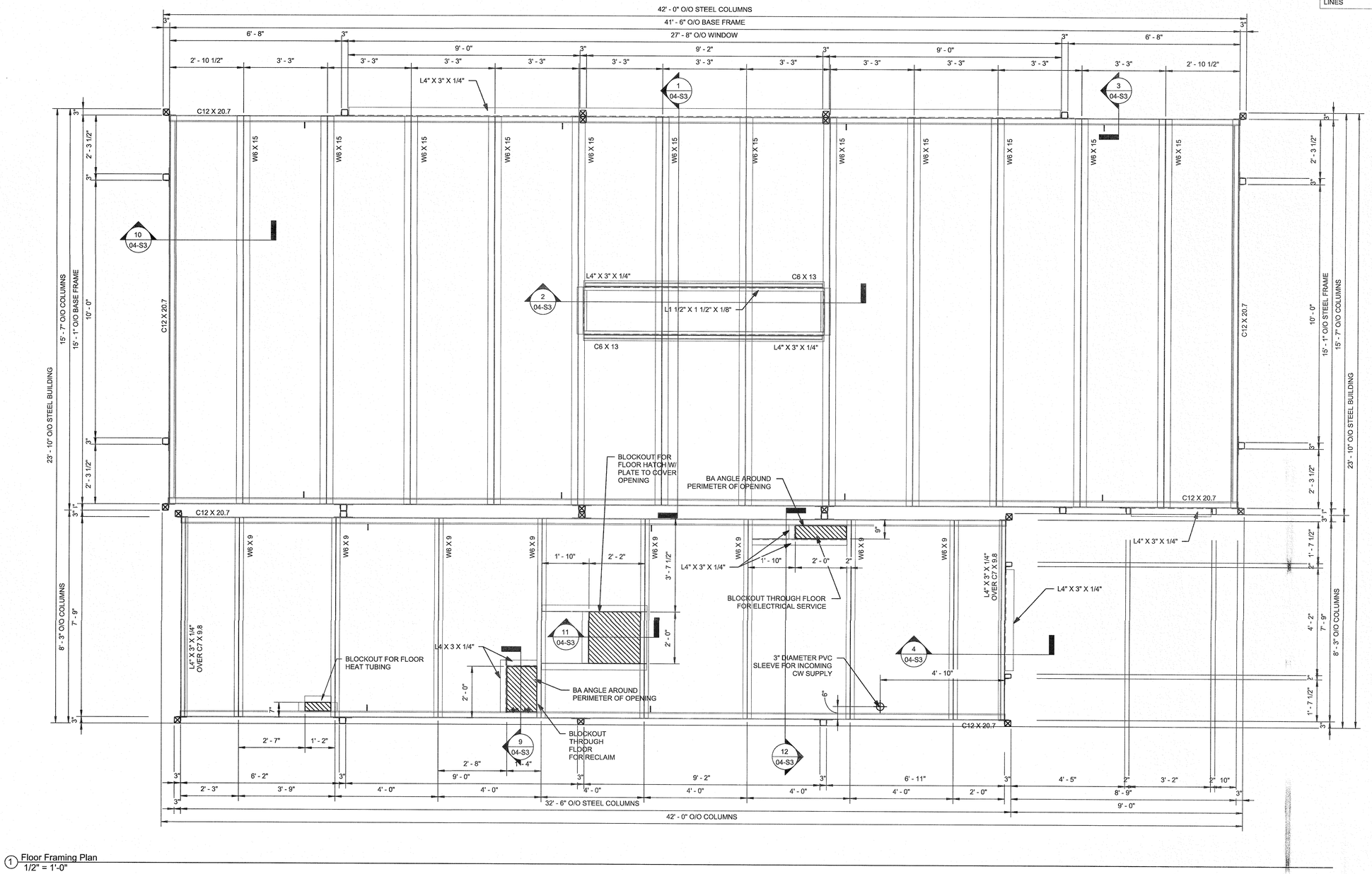
PROJECT NUMBER
20210019

SHEET TITLE
FLOOR HEAT PLAN

SHEET NUMBER
P5

PLUMBING AND/OR ELECTRICAL HOLES(S) WILL NOT BE LOCATED ANY CLOSER THAN 6" FROM COLUMNS.

BEAM WEB PENETRATIONS	
MATERIAL	ALLOWED HOLE SIZE +/- 1/2"
2" DIA.	3" DIA.
3" DIA.	4" DIA.
4" DIA.	5" DIA.
1/2" TO 1" EMT	SLOT 4" X 2" MAX.
1/2" TO 1 1/2" COPPER WATER LINES	1" TO 2" DIA.



1 Floor Framing Plan
1/2" = 1'-0"

NOTE: ALL PULL DIMENSIONS ARE TAKEN FROM OUTSIDE OF THE STEEL BASE FRAME OF EACH MODULE.

- DENOTES LIFTING COLUMN
- DENOTES T.S. 3" X 3" X 3/16" COLUMN
- DENOTES T.S. 3" X 2" X 14 GA COLUMN
- DENOTES BASE LIFTING POINT

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www.frey-moss.com

No.	Description	Date

PROFESSIONAL SEAL
NORTH CAROLINA PROFESSIONAL SEAL 11038 ENGINEER CHARLES H. MOSS
1-13-21

MODULAR CONSTRUCTION

CLIENT: Sheetz

PROJECT NAME: 42' Single Bay Car Wash

SHEET TITLE: Floor Framing Plan

PROJECT NUMBER: G20V36

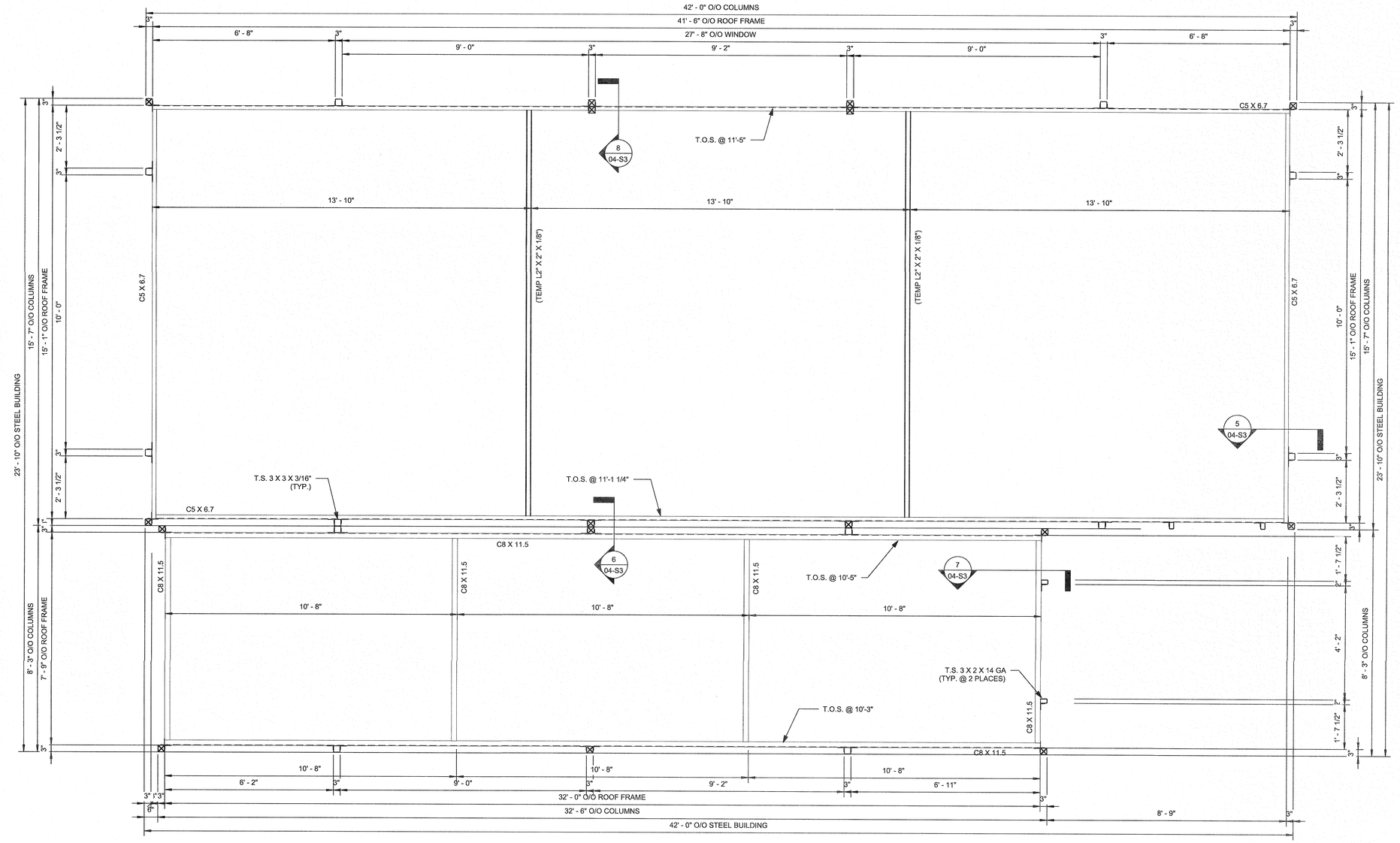
ADDRESS: Sawyer Rd. & NC 24-87 Cameron, NC

GENESIS NO.: PR1078
DRAWING NO.:
GBF PROJECT NO.:
DATE: 12/10/20
PROFESSIONAL IN CHARGE:
PROJECT MANAGER:
DRAWN BY: TM
QUALITY CONTROL: SM

04-S1

Page 15 Of 22
Scale As indicated

12/10/2020 11:22:08 AM



1 Roof Framing Plan
1/2" = 1'-0"

- ⊠ DENOTES LIFTING COLUMN
- □ DENOTES T.S. 3" X 3" X 3/16" COLUMN
- ▯ DENOTES T.S. 3" X 2" X 14 GA COLUMN
- | DENOTES BASE LIFTING POINT

NOTE: ALL PULL DIMENSIONS ARE TAKEN FROM OUTSIDE OF THE STEEL BASE FRAME OF EACH MODULE.

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No.	Description	Date

C.H. MOSS, P.E.
P.O. BOX 28
COVINGTON, GA 30015

PROFESSIONAL SEAL

NORTH CAROLINA PROFESSIONAL SEAL 11068 ENGINEER CHARLES H. MOSS
11-3-21

MODULAR CONSTRUCTION

CLIENT: Sheetz

PROJECT NAME: 42' Single Bay Car Wash

SHEET TITLE: Roof Framing Plan

PROJECT NUMBER: G20V36

ADDRESS: Sawyer Rd. & NC 24-87 Cameron, NC

GENESIS NO.: PR1078
DRAWING NO.:
GBF PROJECT NO.:
DATE: 12/10/20
PROFESSIONAL IN CHARGE:
PROJECT MANAGER:
DRAWN BY: TM
QUALITY CONTROL: SM

04-S2

Page 16 Of 22
Scale As indicated

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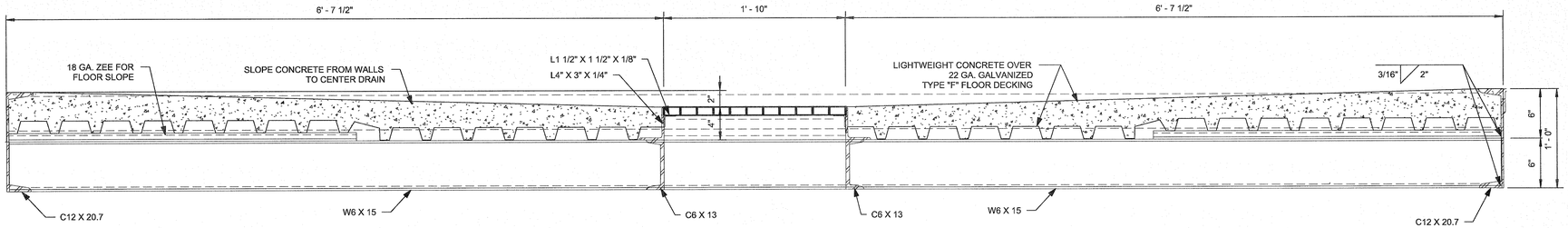
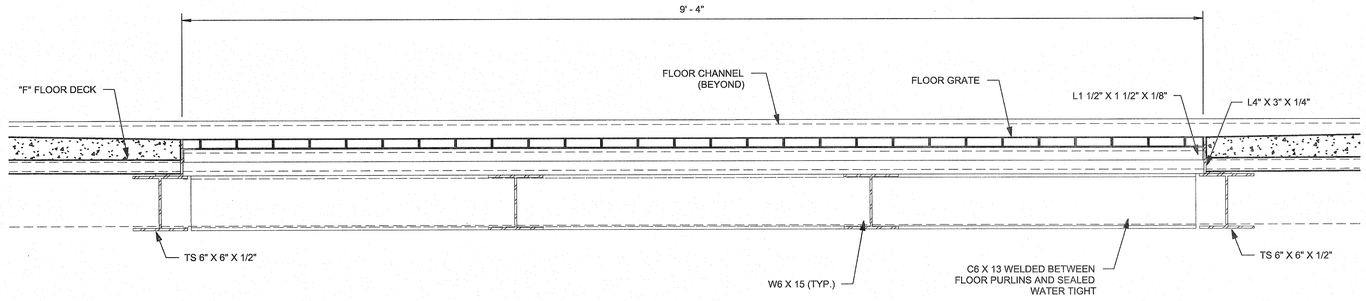
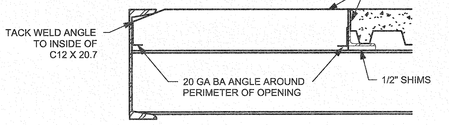


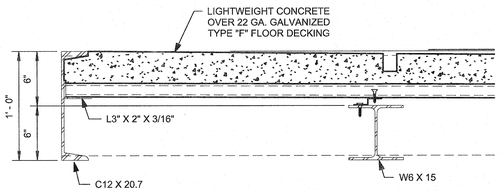
1 04-S3 Base Frame Section 1
1 1/2" = 1'-0"



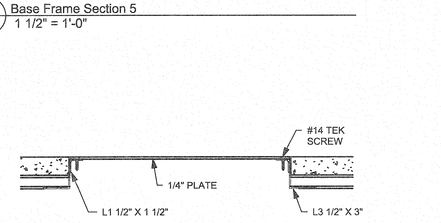
2 04-S3 Base Frame Section 2
1 1/2" = 1'-0"



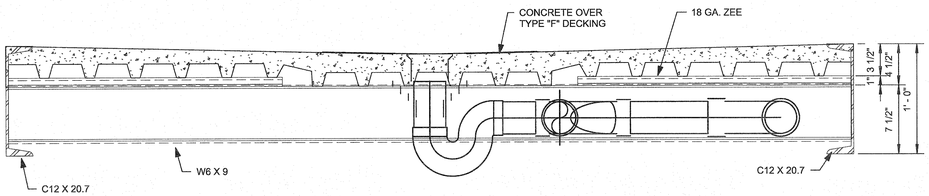
9 04-S3 Base Frame Section 5
1 1/2" = 1'-0"



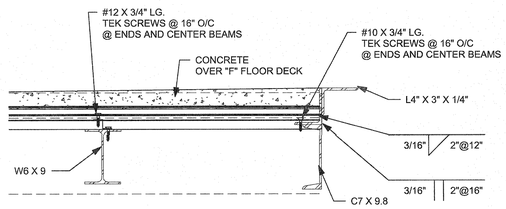
10 04-S3 Base Frame Section 6
1 1/2" = 1'-0"



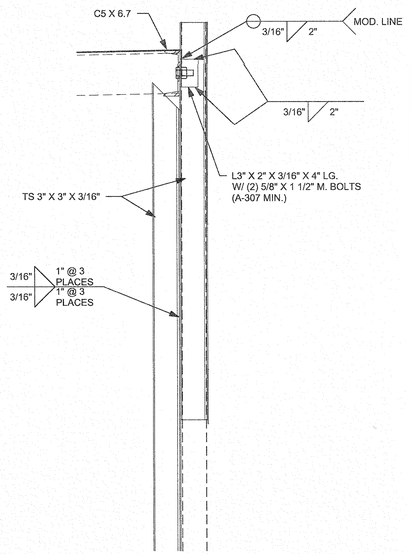
11 04-S3 Base Frame Section 7
1 1/2" = 1'-0"

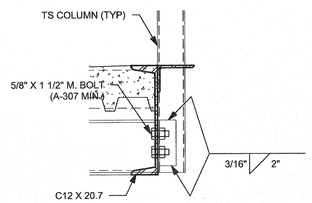


12 04-S3 Base Frame Section 8
1 1/2" = 1'-0"

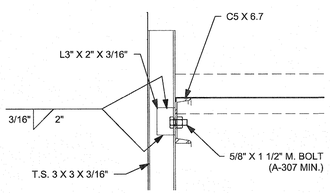


4 04-S3 Base Frame Section 4
1 1/2" = 1'-0"

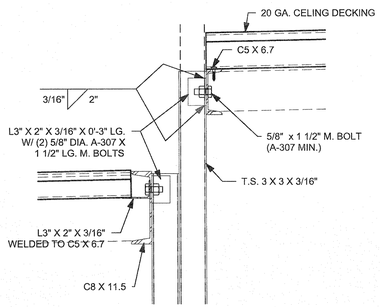




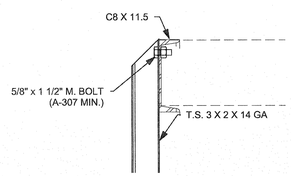
3 04-S3 Base Frame Section 3
1 1/2" = 1'-0"



5 04-S3 Roof Framing Section 9
1 1/2" = 1'-0"



6 04-S3 Roof Framing Section 10
1 1/2" = 1'-0"



7 04-S3 Roof Framing Section 11
1 1/2" = 1'-0"

8 04-S3 Roof Framing Section 12
1 1/2" = 1'-0"

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P.O. BOX 28
COVINGTON, GA 30015

PROFESSIONAL SEAL

NORTH CAROLINA PROFESSIONAL SEAL 11068 ENGINEER CHARLES H. MOSS
1-13-21

MODULAR CONSTRUCTION

CLIENT
Sheetz

PROJECT NAME
42' Single Bay Car Wash

SHEET TITLE
Framing Sections

PROJECT NUMBER
G20V36

ADDRESS
Sawyer Rd. &
NC 24-87
Cameron, NC

GENESIS NO. PR1078
DRAWING NO.
GBF PROJECT NO.
DATE 12/10/20
PROFESSIONAL IN CHARGE
PROJECT MANAGER
DRAWN BY TM
QUALITY CONTROL SM

04-S3

Page 17 Of 22
Scale 1 1/2" = 1'-0"

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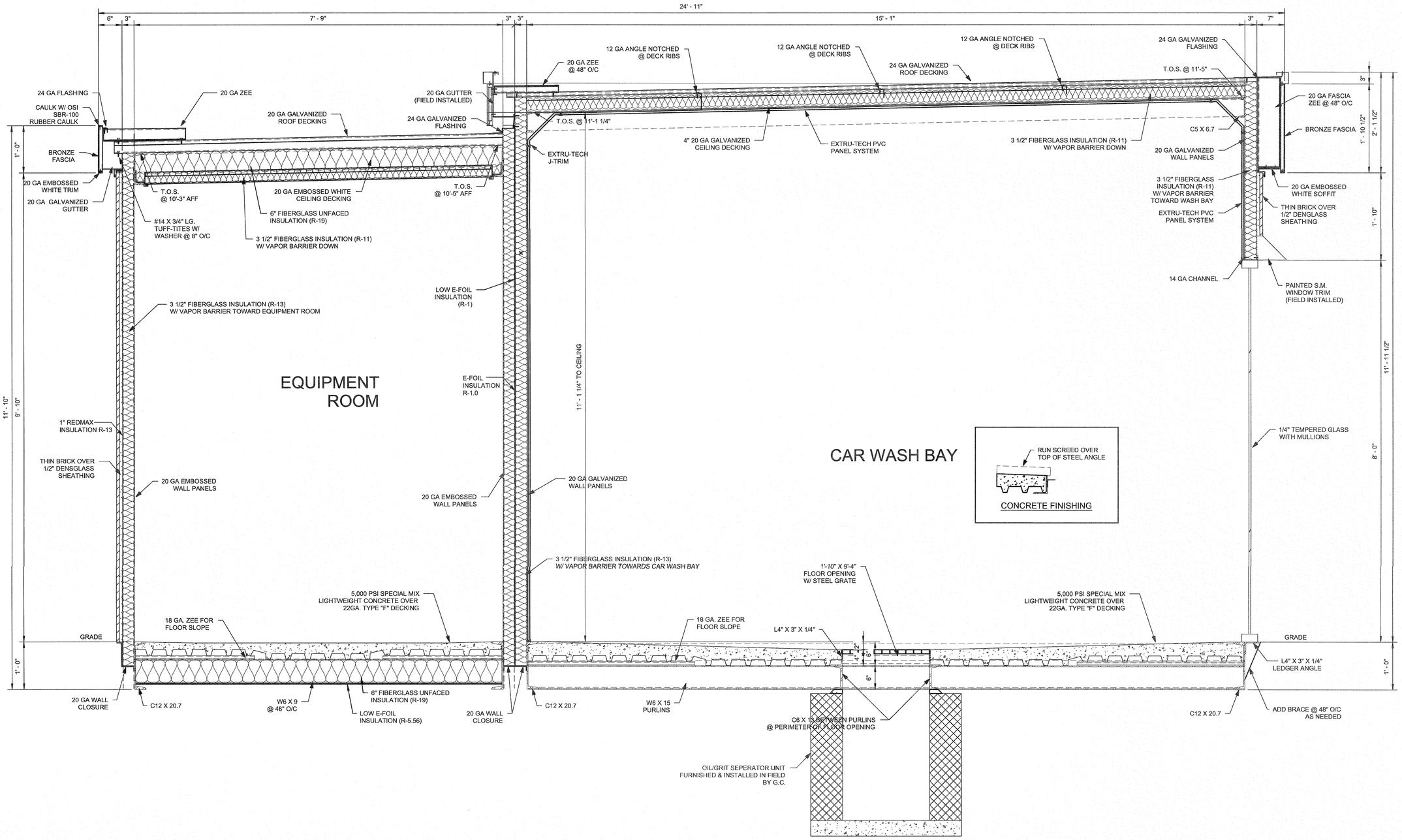

1 / 04-S4 Section thru Wash Bay & Equipment Room
1" = 1'-0"

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PROFESSIONAL SEAL

NORTH CAROLINA PROFESSIONAL SEAL 11008 ENGINEER CHARLES H. MOSS

MODULAR CONSTRUCTION

CLIENT: Sheetz

PROJECT NAME: 42' Single Bay Car Wash

SHEET TITLE: Section

PROJECT NUMBER: G20V36

ADDRESS: Sawyer Rd. & NC 24-87 Cameron, NC

GENESIS NO.	PR1078
DRAWING NO.	
GBF PROJECT NO.	
DATE	12/10/20
PROFESSIONAL IN CHARGE	
PROJECT MANAGER	
DRAWN BY	TM
QUALITY CONTROL	SM

04-S4

Page 18 Of 22

Scale 1" = 1'-0"

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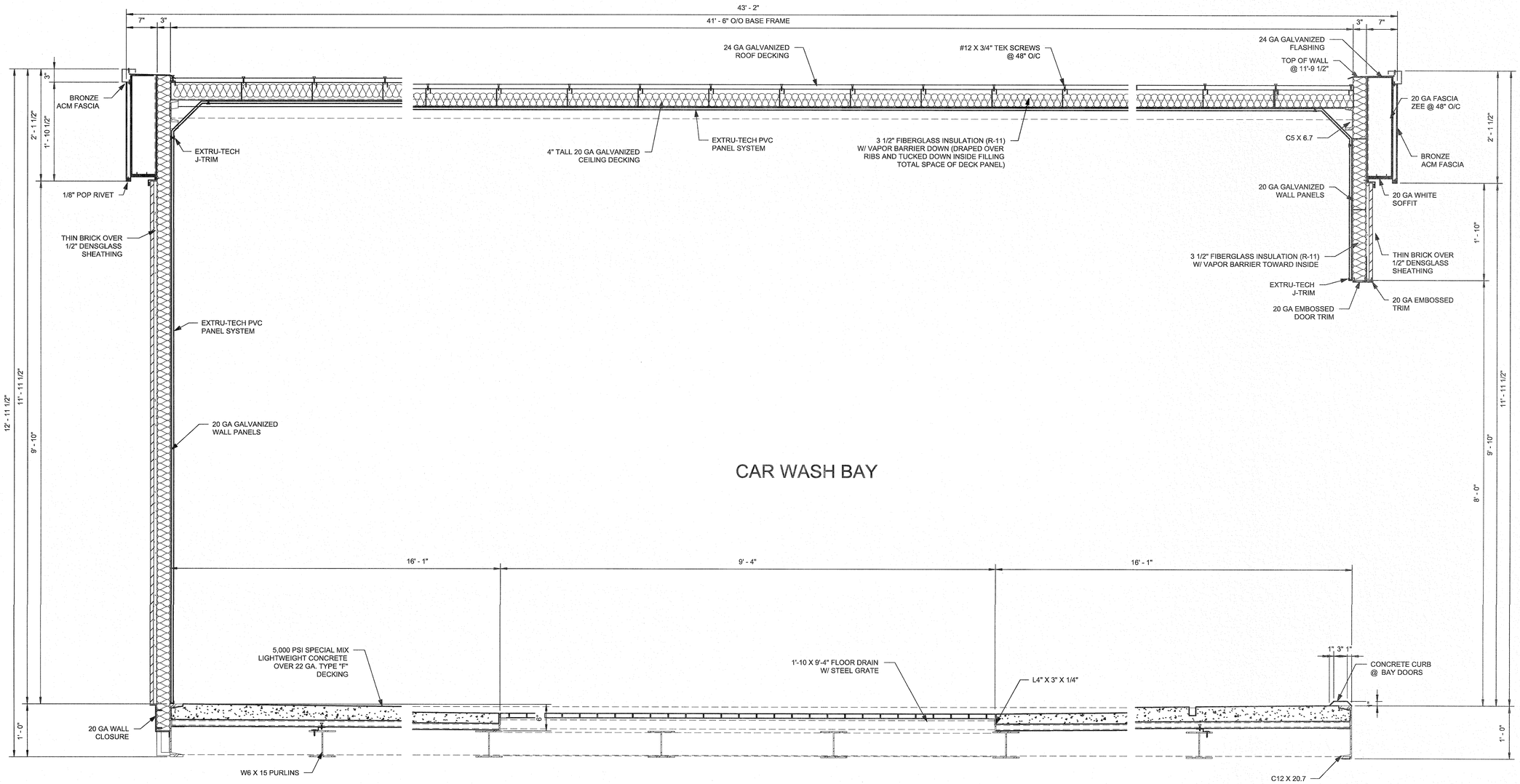

2 / 04-S5 Section thru Wash Bay
1" = 1'-0"

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No.	Description	Date

C.H. MOSS, P.E.
P.O. BOX 28
COVINGTON, GA 30015

PROFESSIONAL SEAL

NORTH CAROLINA PROFESSIONAL SEAL 11009 ENGINEER CHARLES H. MOSS III 12-3-21

MODULAR CONSTRUCTION

CLIENT: Sheetz

PROJECT NAME: 42' Single Bay Car Wash

SHEET TITLE: Section

PROJECT NUMBER: G20V36

ADDRESS: Sawyer Rd. & NC 24-87 Cameron, NC

GENESIS NO.: PR1078

DRAWING NO.:

GBF PROJECT NO.:

DATE: 12/10/20

PROFESSIONAL IN CHARGE:

PROJECT MANAGER:

DRAWN BY: TM

QUALITY CONTROL: SM

04-S5

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Scale 1" = 1'-0"

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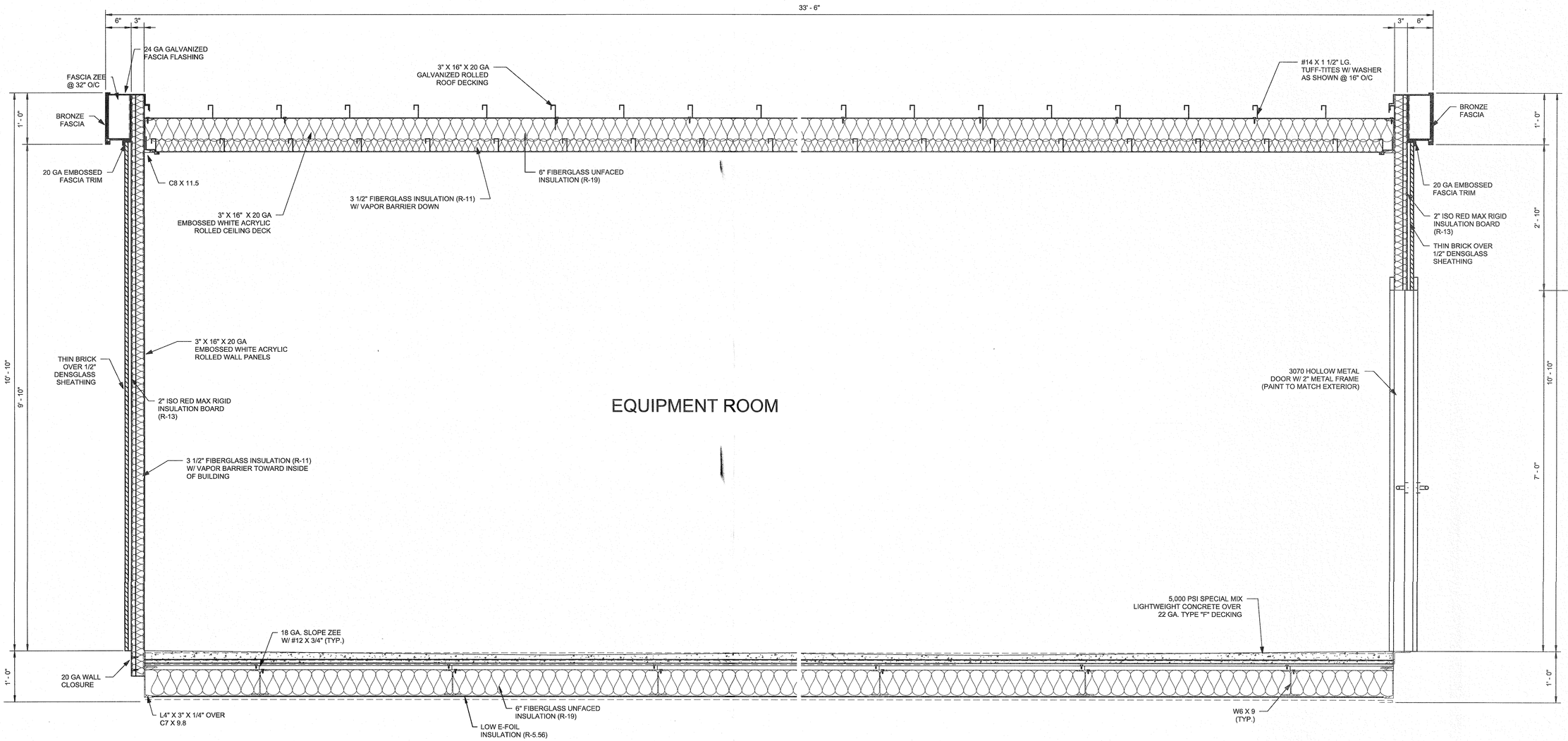

1 Section thru Equipment Room
1" = 1'-0"

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No.	Description	Date

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P.O. BOX 28
COVINGTON, GA 30015

PROFESSIONAL SEAL

NORTH CAROLINA PROFESSIONAL SEAL 11066 ENGINEER CHARLES H. MOSS
11/3/24

MODULAR CONSTRUCTION

CLIENT: Sheetz

PROJECT NAME: 42' Single Bay Car Wash

SHEET TITLE: Section

PROJECT NUMBER: G20V36

ADDRESS: Sawyer Rd. & NC 24-87 Cameron, NC

GENESIS NO.	PR1078
DRAWING NO.	
GBF PROJECT NO.	
DATE	12/10/20
PROFESSIONAL IN CHARGE	
PROJECT MANAGER	
DRAWN BY	TM
QUALITY CONTROL	SM

04-S6

Page 20 Of 22
Scale 1" = 1'-0"

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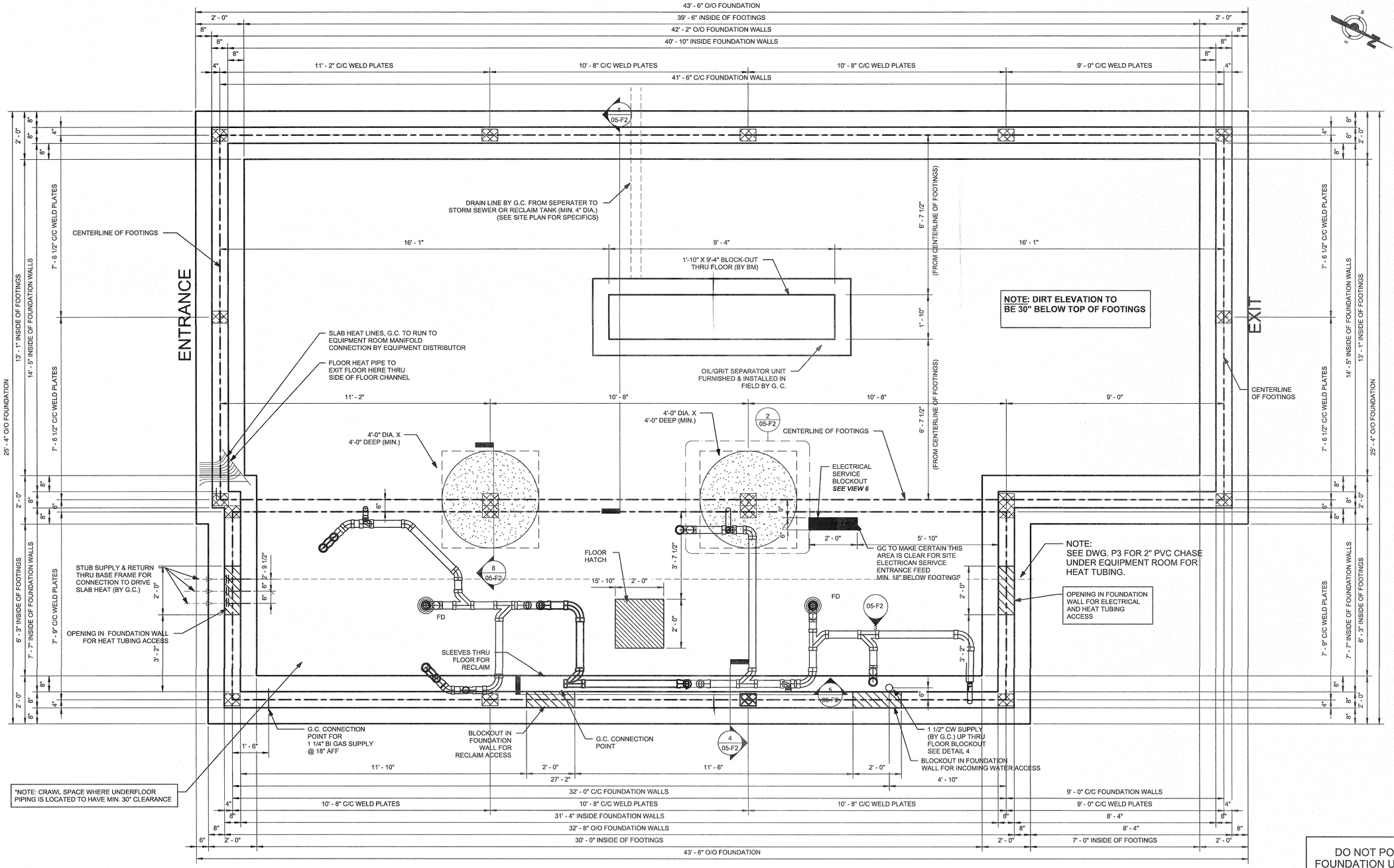
NC HWY 24-87



SAWYER ROAD (SR 2482)

1. SECURE BUILDING BY WELDING BASE CHANNEL TO WELD PLATES BY BM.
2. ALL CONCRETE SHALL BE A MINIMUM OF 2500 PSI AT 28 DAYS.
3. TOP OF PIER FOOTINGS TO BE LEVEL WITHIN +/- 1/4" TOL.
4. SOIL BENEATH PIER FOOTINGS TO BE WELL COMPACTED AND BE CAPABLE OF SUPPORTING A LOAD OF 2000 PSF. SOIL CONDITIONS ARE THE CONTRACTOR'S RESPONSIBILITY.
5. SETTLING OF THE FOOTINGS IS THE CONTRACTOR'S RESPONSIBILITY.
6. ALL CONCRETE FIELD WORK BY G.C.

① Foundation
1/2" = 1'-0"

NOTE:
SIZE AND LOCATION OF FOOTINGS AND WELD PLATES IS CRITICAL. INSTALLATION IS TO CONFORM TO PROVIDED DRAWING WITH REFERENCE TO BOTH SIZE AND LOCATION.

NOTE: G.C. TO RUN INCOMING WATER PIPE AFTER BUILDING IS SET IN FIELD

NOTE:
WELD PLATES FURNISHED AND INSTALLED BY G.C.

NOTE:
DO NOT STUB ELECTRICAL OR PLUMBING ABOVE TOP OF FOOTING / WELD PLATES UNTIL AFTER BUILDING IS SET IN FIELD

NOTE:
FOUNDATION IS 12" BELOW FINISHED FLOOR ELEVATION. SEPARATOR IS 13" BELOW FINISHED FLOOR ELEVATION.

DO NOT POUR FOUNDATION UNLESS THIS DRAWING IS SIGNED APPROVED BELOW

DATE

NAME

SIGNED

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Conyers, GA 30012
770.483.7543
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No.	Description	Date

C.H. MOSS, P.E.
P.O. BOX 28
COVINGTON, GA 30015

PROFESSIONAL SEAL

NORTH CAROLINA PROFESSIONAL SEAL 11005 ENGINEER CHARLES H. MOSS
1-13-21

MODULAR CONSTRUCTION

CLIENT: Sheetz

PROJECT NAME: 42' Single Bay Car Wash

SHEET TITLE: Foundation Plan

PROJECT NUMBER: G20V36

ADDRESS: Sawyer Rd. & NC 24-87 Cameron, NC

GENESIS NO.	PR1078
DRAWING NO.	
GBF PROJECT NO.	
DATE	12/10/20
PROFESSIONAL IN CHARGE	
PROJECT MANAGER	
DRAWN BY	TM
QUALITY CONTROL	SM

05-F1

Page 21 Of 22

Scale As indicated

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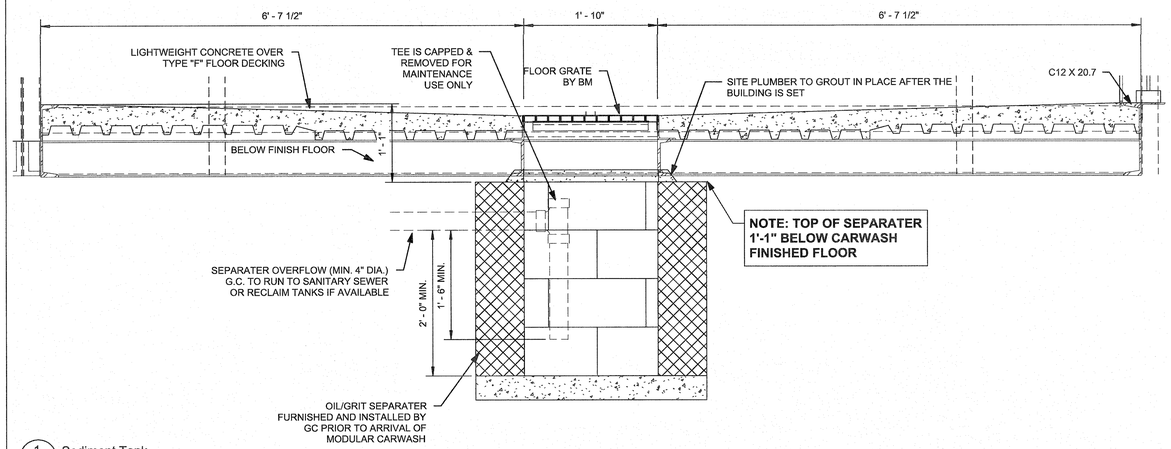
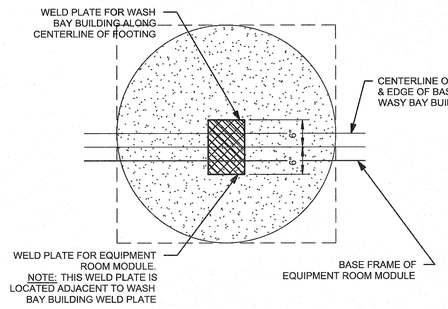
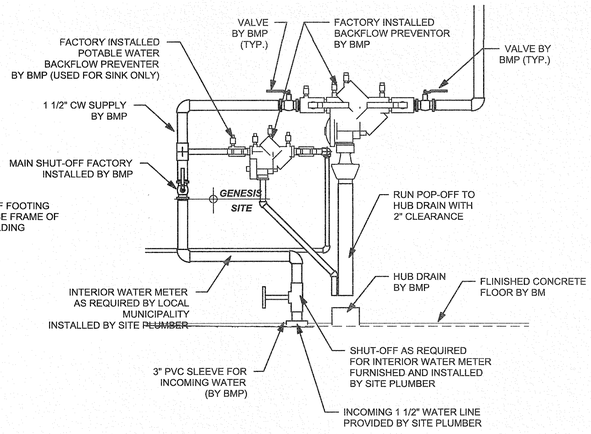


1 05-F2 Sediment Tank
1" = 1'-0"



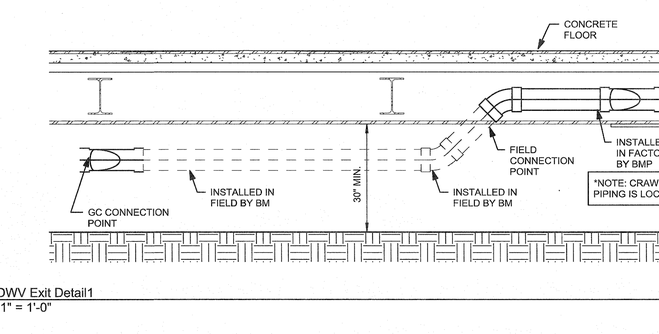
2 05-F2 Callout of Foundation
3/4" = 1'-0"



3 05-F2 Incoming Water Elevation
1" = 1'-0"

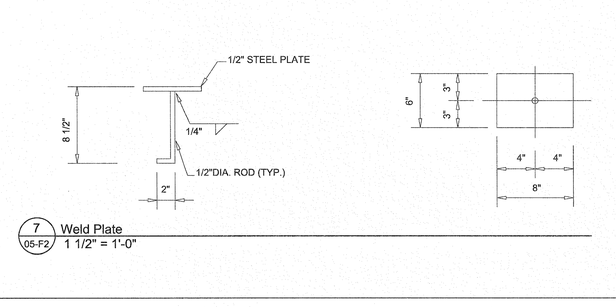
4 05-F2 Footing Detail
1 1/2" = 1'-0"

NOTE:
WELD PLATES FURNISHED AND INSTALLED BY G.C.



8 05-F2 Section Thru Footing1
1 1/2" = 1'-0"

NOTE:
SIZE AND LOCATION OF FOOTINGS AND WELD PLATES IS CRITICAL. INSTALLATION IS TO CONFORM TO PROVIDED DRAWING WITH REFERENCE TO BOTH SIZE AND LOCATION.



6 05-F2 Electrical Service Entry
3/4" = 1'-0"

5 05-F2 DWV Exit Detail1
1" = 1'-0"

7 05-F2 Weld Plate
1 1/2" = 1'-0"

GENESIS
modular carwash building systems
"The Only TRUE Modular Carwash"
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Norcross, GA 30093
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FREY-MOSS STRUCTURES
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1801 Rockdale Industrial Blvd.
Conyers, GA 30012
770.483.7543
www.frey-moss.com

No.	Description	Date

C.H. MOSS, P.E.
P.O. BOX 28
COVINGTON, GA 30015

PROFESSIONAL SEAL

NORTH CAROLINA PROFESSIONAL SEAL 11866 ENGINEER CHARLES H. MOSS
1-13-21

MODULAR CONSTRUCTION

CLIENT
Sheetz

PROJECT NAME
42' Single Bay Car Wash

SHEET TITLE
Foundation Details

PROJECT NUMBER
G20V36

ADDRESS
Sawyer Rd. &
NC 24-87
Cameron, NC

GENESIS NO. PR1078
DRAWING NO.
GBF PROJECT NO.
DATE 12/10/20
PROFESSIONAL IN CHARGE
PROJECT MANAGER
DRAWN BY TM
QUALITY CONTROL SM

05-F2

Page 22 Of 22
Scale As Indicated

12/10/2020 11:22:29 AM

FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

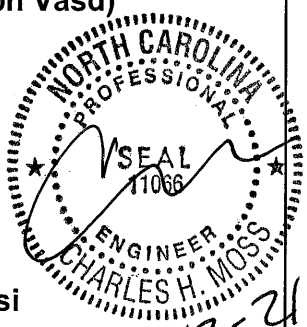
REVISED BY: REVISION DATE: FILE: bldg-v-1642-30-115-NC

STRUCTURAL CALCULATIONS

DESIGN LOADS

ROOF LIVE LOAD =	30	psf (Ground Snow Load = 5 psf)
ROOF DEAD LOAD =	6	psf
FLOOR LIVE LOAD =	100	psf
FLOOR DEAD LOAD BAY =	45	psf
FLOOR DEAD LOAD EQUIPMENT =	30	psf
POINT LOAD FROM VEHICLE =	2.25	kips
WIND SPEED =	115	mph Vult (89 mph Vasd)
EXPOSURE =	C	
SITE CLASS =	D	
SEISMIC DESIGN CATEGORY =	A	

C.H. MOSS, P.E.
P.O. BOX 28
COVINGTON, GA 30015



1-13-21

STRUCTURAL MATERIAL

STRUCTURAL STEEL ASTM A-36-05 Fy = 36 ksi
W-SHAPE STEEL ASTM A-992-06a Fy = 50 ksi
TUBULAR STEEL ASTM A-500-07 GRADE B Fy = 46 ksi
ROOF DECK ASTM A-653-07 Fy = 50 ksi
BOLTS ASTM A-307-04e01 Ft = 20 ksi Fv = 10 ksi
ANCHOR BOLTS A-307 -04e01 Fu = 58 ksi

REFERENCES

MANUAL OF STEEL CONSTRUCTION AISC (ASD) 15th Edition
INCLUDING - AISI/AISC 360-10
SPECIFICATION FOR THE DESIGN OF COLD-FORMED
STEEL MEMBERS - AISI S100-12
2015 INTERNATIONAL BUILDING CODE
ASCE 7-10

ROOF DECK CALCULATION

CEILING DECK CALCULATION::

Note: Ceiling deck supports 24 GA Roof Decking

LL=	**30**	psf
DL=	**6**	psf
w=	**42.0**	#/ft (per (1) 14" panels)

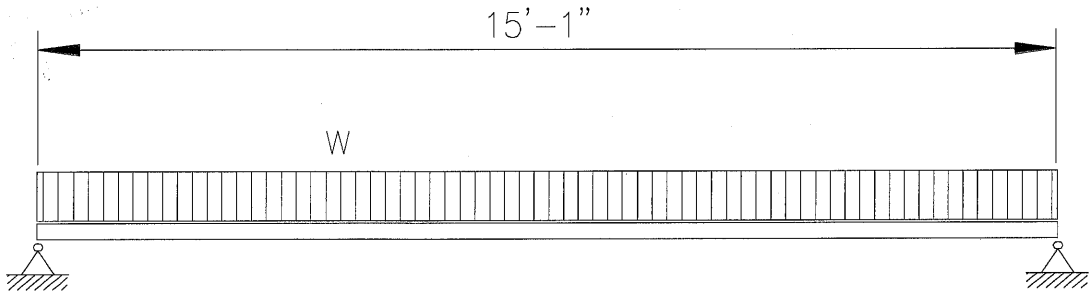
try 20 ga roof deck w/4" deep deck ribs

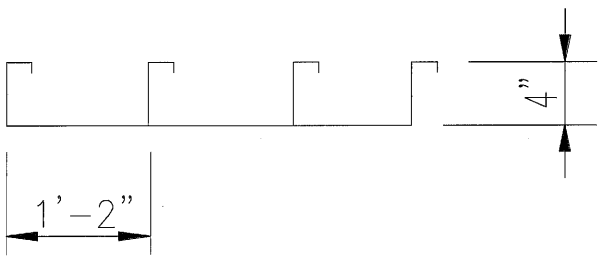
Mmax(+)=	**14.33**	in-kips
Mmax(-)=	**0.00**	in-kips

fb= **21.89** ksi < allowable=30 ksi o.k

use 20 ga roof deck w/4" deep deck ribs

see last sheets of calculations for panel properties.





FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

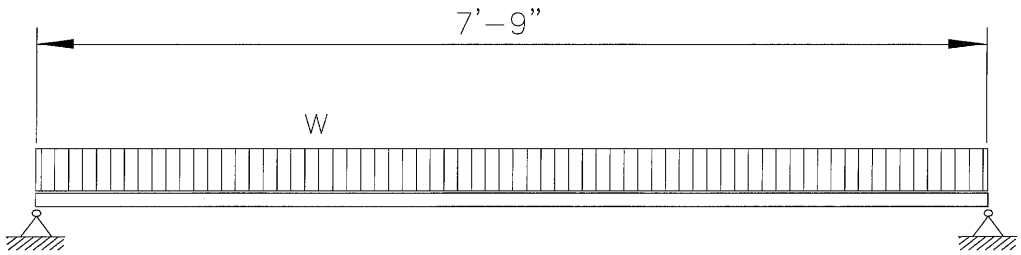
ROOF DECK CALCULATION

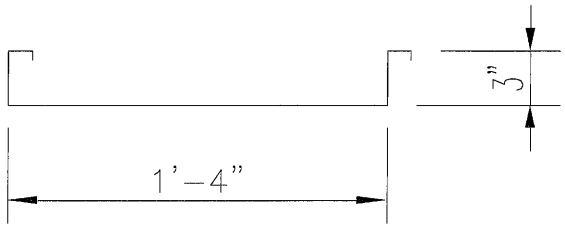
CEILING DECK CALCULATION::

Note: Ceiling deck supports 20 GA Roof Decking

LL=	**30**	psf
DL=	**6**	psf
w=	**47.9**	#/ft(per 16" panel)
Mmax(+)=	**4.32**	in-kips
Mmax(-)=	**0.00**	in-kips
fb=	**13.92**	ksi < allowable=30 ksi o.k

** use **20 ga** roof deck **
see next to last sheet for panel properties.





PANEL SECTION

FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

CAR WASH ROOF BEAM RB1

dead load =	6	psf	end L=	0.00	ft
live load =	30	psf	span L=	13	ft

beam carries **8.0** ft tributary width w= **288** # / ft

end defl=	0	in/ 100^4	span defl=	0.004	in/ 100^4

target end Ix= defl(180)(100)/(Lx12) = **0** in^4
target span Ix= defl(240)(100)/(Lx12) = **1** in^4

try **C5x6.7** Ix (in^4)= **7.49** S (in^3)= **3** **R1=1.87k**

unbraced -L (in) =	16	unbraced -L (in) =	16	
(-)Mmax (k-in) =	25.83	(+)Mmax (k-in) =	13.16	**R2=3.23k**
(-)Fb(ksi)=	23.8	(+)Fb(ksi)=	23.8	
(-)fb(ksi)=	8.6	(+)fb(ksi)=	4.4	

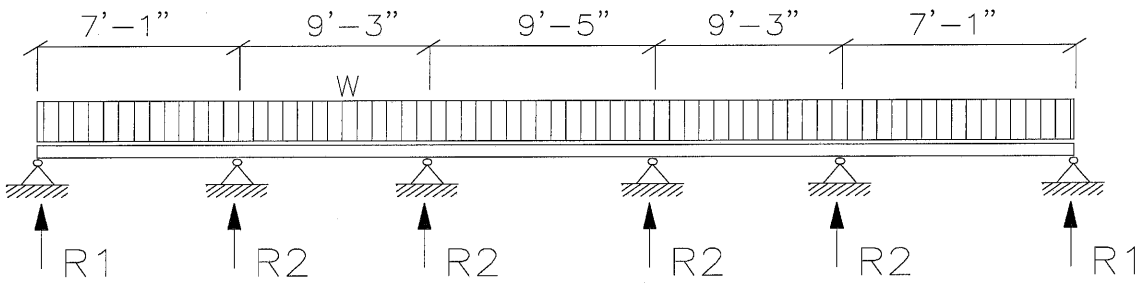
target deflections:(in)

end due to DL+LL =L/180=	0.00	span due to DL+LL =L/240=	0.65
end due to DL =L/540=	0.00	span due to DL =L/720=	0.22

actual deflections:(in)

end due to DL+LL =	0.00	span due to DL+LL =	0.05
end due to DL =	0.00	span due to DL =	0.01

Use C5x6.7 with Zero Flange Brace(s) per Span



FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

CAR WASH ROOF BEAM RB2

dead load =	6	psf	end L=	0.00	ft
live load =	30	psf	span L=	10	ft

beam carries **1.3** ft tributary width w= **48** # / ft

end defl=	0	in/ 100^4	span defl=	0.00113	in/ 100^4

target end Ix= defl(180)(100)/(Lx12) = **0** in^4
target span Ix= defl(240)(100)/(Lx12) = **0** in^4

try **C5X6.7** Ix (in^4)= **7.49** S (in^3)= **3** **R1=1.73k**

unbraced -L (in) =	16	unbraced -L (in) =	16
(-)Mmax (k-in) =	4.18	(+)Mmax (k-in) =	3.02
(-)Fb(ksi)=	23.8	(+)Fb(ksi)=	23.8
(-)fb(ksi)=	1.4	(+)fb(ksi)=	1.0

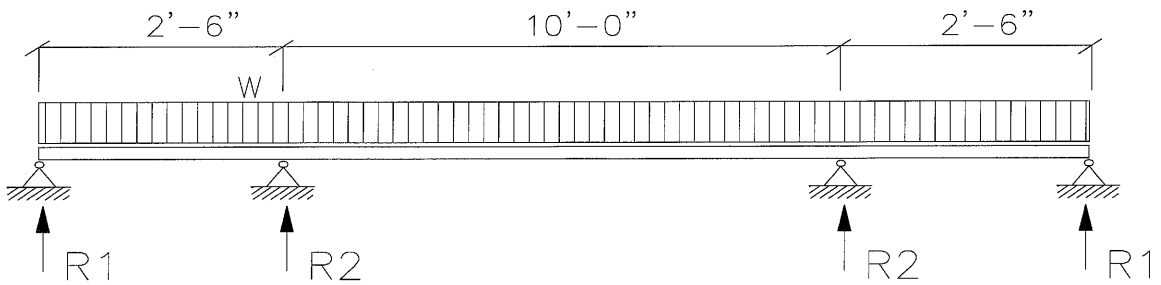
target deflections:(in)

end due to DL+LL =L/180=	0.00	span due to DL+LL =L/240=	0.50
end due to DL =L/540=	0.00	span due to DL =L/720=	0.17

actual deflections:(in)

end due to DL+LL =	0.00	span due to DL+LL =	0.02
end due to DL =	0.00	span due to DL =	0.00

Use C5X6.7 with Zero Flange Brace(s) per Span



FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

EQUIPMENT ROOF BEAM: RB3

dead load =	6	psf	end L=	0.00	ft
live load =	30	psf	span L=	11	ft

beam carries **4.0** ft tributary width w= **144** # / ft

end defl=	0	in/ 100^4	span defl=	0.002	in/ 100^4

target end Ix= defl(180)(100)/(Lx12) = **0** in^4
target span Ix= defl(240)(100)/(Lx12) = **0** in^4

try **C5X6.7** Ix (in^4)= **7.49** S (in^3)= **3** **R =1.37k**

unbraced -L (in) =	16	unbraced -L (in) =	16
(-)Mmax (k-in) =	0	(+)Mmax (k-in) =	13.1
(-)Fb(ksi)=	23.8	(+)Fb(ksi)=	23.8
(-)fb(ksi)=	0.0	(+)fb(ksi)=	4.4

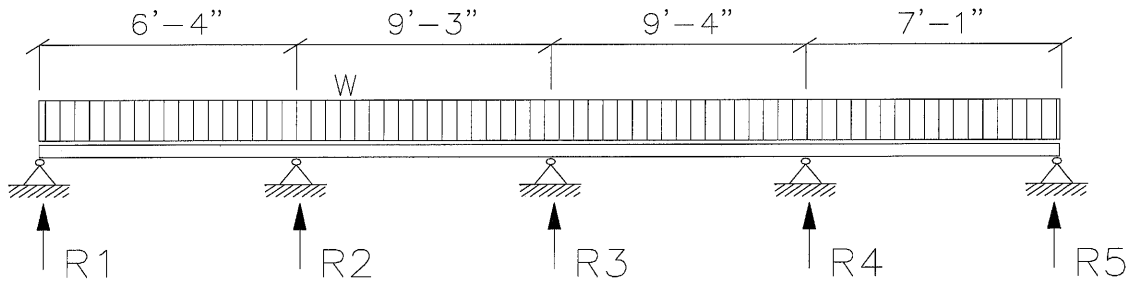
target deflections:(in)

end due to DL+LL =L/180=	0.00	span due to DL+LL =L/240=	0.55
end due to DL =L/540=	0.00	span due to DL =L/720=	0.18

actual deflections:(in)

end due to DL+LL =	0.00	span due to DL+LL =	0.03
end due to DL =	0.00	span due to DL =	0.00

Use C5X6.7 with Zero Flange Brace(s) per Span



FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

EQUIPMENT ROOF BEAM: RB4

dead load =	**6**	psf	end L=	**0.00**	ft
live load =	**30**	psf	span L=	**7.75**	ft

beam carries **2.0** ft tributary width w= **72** # / ft

end defl=	**0**	in/ 100^4	span defl=	**0.002**	in/ 100^4

target end Ix= defl(180)(100)/(Lx12) = **0** in^4
target span Ix= defl(240)(100)/(Lx12) = **1** in^4

try **C5X6.7** Ix (in^4)= **7.49** S (in^3)= **3** **R1=0.22k**

unbraced -L (in) =	**16**	unbraced -L (in) =	**16**
(-)Mmax (k-in) =	**0**	(+)Mmax (k-in) =	**6.49**
(-)Fb(ksi)=	**23.8**	(+)Fb(ksi)=	**23.8**
(-)fb(ksi)=	**0.0**	(+)fb(ksi)=	**2.2**

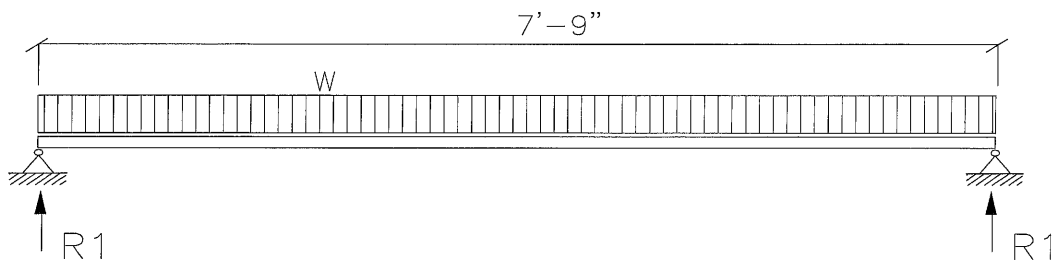
target deflections:(in)

end due to DL+LL =L/180=	**0.00**	span due to DL+LL =L/240=	**0.39**
end due to DL =L/540=	**0.00**	span due to DL =L/720=	**0.13**

actual deflections:(in)

end due to DL+LL =	**0.00**	span due to DL+LL =	**0.03**
end due to DL =	**0.00**	span due to DL =	**0.00**

Use C5X6.7 with Zero Flange Brace(s) per Span



FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

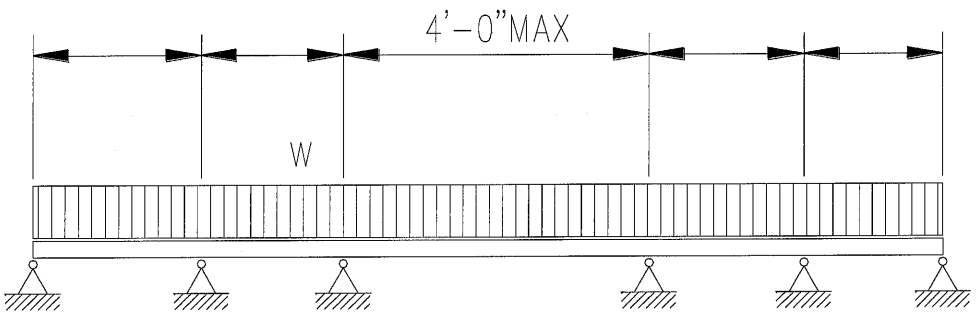
FLOOR DECK CALCULATION

FLOOR DECK CALCULATION::

LL= **100** psf
DL= **45** psf
TL = **145.0** psf

Maximum Load Allowed = **153** psf o.k
Per F-Deck Properites Chart
22 GA with 3-Span Min.

Use 22 GA F-Deck



FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

CAR WASH FLOOR PURLIN: FP1

dead load =	**45**	psf	end L=	**0.00**	ft
live load =	**100**	psf	span L=	**15.1**	ft

beam carries **3.3** ft tributary width w= **479** # / ft

end defl=	**0**	in/ 100^4	span defl=	**0.08**	in/ 100^4

target end Ix= defl(180)(100)/(Lx12) = **0** in^4
target span Ix= defl(360)(100)/(Lx12) = **16** in^4

try **W6 x 15** Ix (in^4)= **29.1** S (in^3)= **9.72** **R1=3.26k**

unbraced -L (in) =	**16**	unbraced -L (in) =	**16**
(-)Mmax (k-in) =	**0**	(+)Mmax (k-in) =	**164**
(-)Fb(ksi)=	**23.8**	(+)Fb(ksi)=	**23.8**
(-)fb(ksi)=	**0.0**	(+)fb(ksi)=	**16.8**

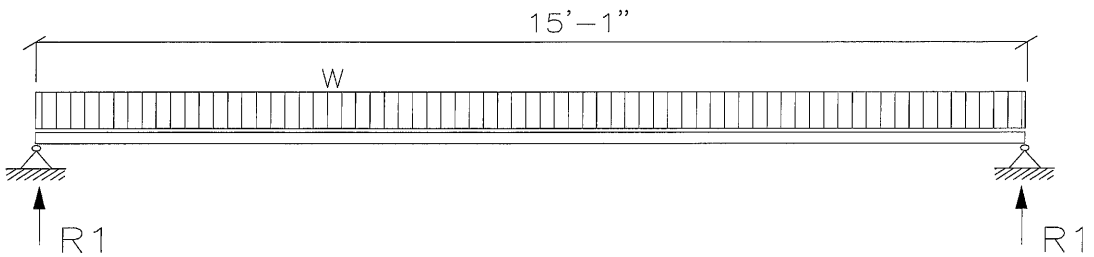
target deflections:(in)

end due to DL+LL =L/180=	**0.00**	span due to DL+LL =L/360=	**0.50**
end due to DL =L/540=	**0.00**	span due to DL =L/720=	**0.25**

actual deflections:(in)

end due to DL+LL =	**0.00**	span due to DL+LL =	**0.28**
end due to DL =	**0.00**	span due to DL =	**0.09**

Use W6 x 15 with Zero Flange Brace(s) per Span



FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

CAR WASH FLOOR PURLIN: FP1

dead load =	**45**	psf	P1 =	**2.25**	kips
live load =	**0**	psf	span L=	**15.1**	ft
beam carries	**3.3**	ft tributary width w=	**149**	# / ft	
end defl=	**0**	in/ 100^4	span defl=	**0.08**	in/ 100^4

target end Ix= defl(180)(100)/(Lx12) = **0** in^4
target span Ix= defl(240)(100)/(Lx12) = **10** in^4

try **W6 x 15** Ix (in^4)= **29.1** S (in^3)= **9.72** **R1=3.35k**

unbraced -L (in) =	**16**	unbraced -L (in) =	**16**
(-)Mmax (k-in) =	**0**	(+)Mmax (k-in) =	**167**
(-)Fb(ksi)=	**23.8**	(+)Fb(ksi)=	**23.8**
(-)fb(ksi)=	**0.0**	(+)fb(ksi)=	**17.2**

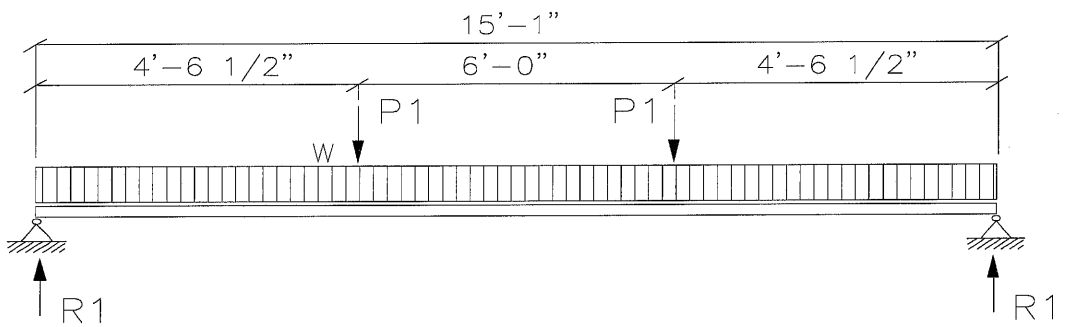
target deflections:(in)

end due to DL+LL =L/180=	**0.15**	span due to DL+LL =L/360=	**0.50**
end due to DL =L/540=	**0.05**	span due to DL =L/720=	**0.25**

actual deflections:(in)

end due to DL+LL =	**0.00**	span due to DL+LL =	**0.27**
end due to DL =	**0.00**	span due to DL =	**0.27**

Use W6 x 15 with Zero Flange Brace(s) per Span



EQUIPMENT FLOOR PURLIN: FP2

The purlins calculated using the vehicle point loads are slightly higher than with just the 100 psf live load. If all purlins are loaded with 100 psf live load this will put much more load into side channels

dead load =	**30**	psf	end L=	**0.00**	ft
live load =	**100**	psf	span L=	**7.75**	ft
beam carries	**4.0**	ft tributary width w=	**520**	# / ft	

end defl=	**0**	in/ 100^4	span defl=	**0.015**	in/ 100^4

target end Ix= defl(180)(100)/(Lx12) = **0** in^4
target span Ix= defl(240)(100)/(Lx12) = **4** in^4

try **W6 x 9** Ix (in^4)= **16.4** S (in^3)= **5.56** **R1=1.73k**

unbraced -L (in) =	**16**	unbraced -L (in) =	**16**
(-)Mmax (k-in) =	**0.00**	(+)Mmax (k-in) =	**46.85**
(-)Fb(ksi)=	**23.8**	(+)Fb(ksi)=	**23.8**
(-)fb(ksi)=	**0.0**	(+)fb(ksi)=	**8.4**

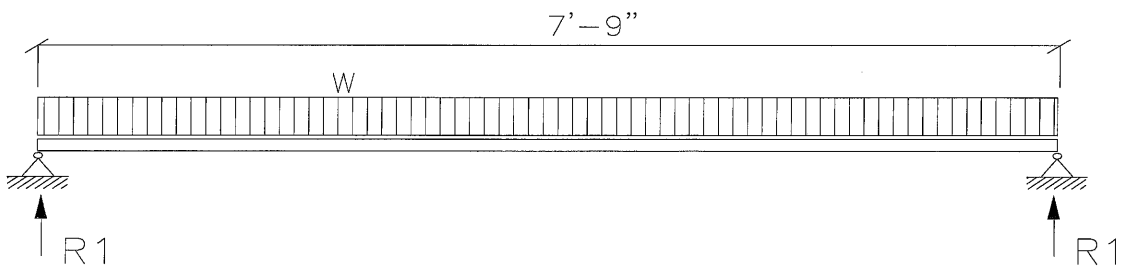
target deflections:(in)

end due to DL+LL =L/180=	**0.00**	span due to DL+LL =L/360=	**0.26**
end due to DL =L/540=	**0.00**	span due to DL =L/720=	**0.13**

actual deflections:(in)

end due to DL+LL =	**0.00**	span due to DL+LL =	**0.09**
end due to DL =	**0.00**	span due to DL =	**0.02**

Use W6 x 9 with Zero Flange Brace(s) per Span



FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

CAR WASH FLOOR BEAM: FB1

dead load =	**45**	psf	end L=	**0.00**	ft
live load =	**100**	psf	span L=	**11**	ft

beam carries **8.0** ft tributary width w= **1160** # / ft

end defl=	**0**	in/ 100^4	span defl=	**0.066**	in/ 100^4

target end Ix= defl(180)(100)/(Lx12) = **0** in^4
target span Ix= defl(240)(100)/(Lx12) = **12** in^4

try **C12X20.7** Ix (in^4)= **129** S (in^3)= **21.5** **R =14.4k**

unbraced -L (in) =	**48**	unbraced -L (in) =	**48**
(-)Mmax (k-in) =	**176**	(+)Mmax (k-in) =	**123**
(-)Fb(ksi)=	**23.8**	(+)Fb(ksi)=	**23.8**
(-)fb(ksi)=	**8.2**	(+)fb(ksi)=	**5.7**

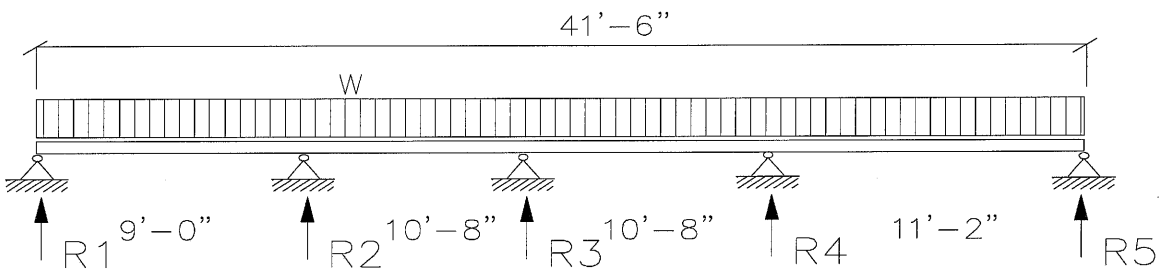
target deflections:(in)

end due to DL+LL =L/180=	**0.00**	span due to DL+LL =L/360=	**0.37**
end due to DL =L/540=	**0.00**	span due to DL =L/720=	**0.18**

actual deflections:(in)

end due to DL+LL =	**0.00**	span due to DL+LL =	**0.05**
end due to DL =	**0.00**	span due to DL =	**0.02**

Use C12X20.7 with Zero Flange Brace(s) per Span



FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

EQUIPMENT FLOOR BEAM: FB2

dead load =	**30**	psf	end L=	**2.00**	ft
live load =	**100**	psf	span L=	**11**	ft

beam carries **4.0** ft tributary width w= **520** # / ft

end defl= **0** in/ 100^4 span defl= **0.024** in/ 100^4

target end Ix= defl(180)(100)/(Lx12) = **0** in^4
target span Ix= defl(240)(100)/(Lx12) = **4** in^4

try **C12X20.7** Ix (in^4)= **129** S (in^3)= **21.5** **R1 =2.16 k**

unbraced -L (in) =	**16**	unbraced -L (in) =	**48**	
(-)Mmax (k-in) =	**72**	(+)Mmax (k-in) =	**50**	**R2 =6.16 k**
(-)Fb(ksi)=	**23.8**	(+)Fb(ksi)=	**23.8**	
(-)fb(ksi)=	**3.3**	(+)fb(ksi)=	**2.3**	

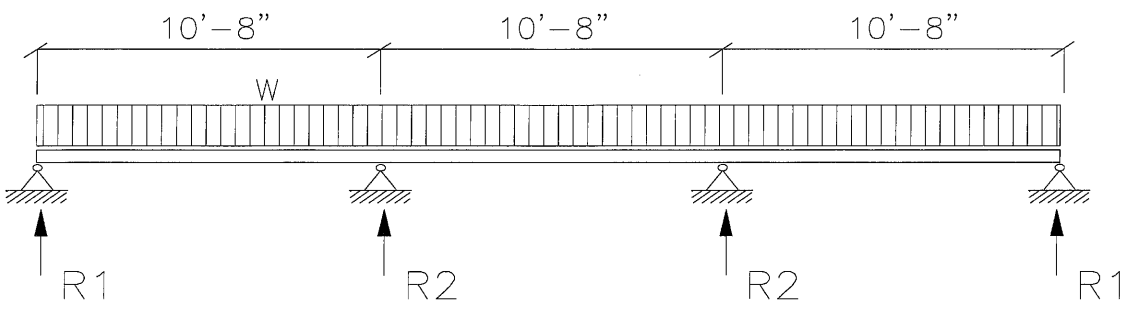
target deflections:(in)

end due to DL+LL =L/360=	**0.07**	span due to DL+LL =L/360=	**0.37**
end due to DL =L/540=	**0.04**	span due to DL =L/720=	**0.18**

actual deflections:(in)

end due to DL+LL =	**0.00**	span due to DL+LL =	**0.02**
end due to DL =	**0.00**	span due to DL =	**0.00**

Use C12X20.7 with Zero Flange Brace(s) per Span



FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

CARWASH FLOOR BEAM: FB3

dead load =	**45**	psf	end L=	**0.00**	ft
live load =	**100**	psf	span L=	**15.1**	ft
beam carries	**2.0**	ft tributary width w=	**290**	# / ft	
end defl=	**0**	in/ 100^4	span defl=	**0.116974**	in/ 100^4

target end Ix= defl(180)(100)/(Lx12) = **0** in^4
target span Ix= defl(240)(100)/(Lx12) = **15** in^4

try	**C12X20.7**	Ix (in^4)=	**129**	S (in^3)=	**21.5**	**R1=2.18k**
	unbraced -L (in) =	**16**		unbraced -L (in) =	**12**	
	(-)Mmax (k-in) =	**0**		(+)Mmax (k-in) =	**99.18**	
	(-)Fb(ksi)=	**23.8**		(+)Fb(ksi)=	**23.8**	
	(-)fb(ksi)=	**0.0**		(+)fb(ksi)=	**4.6**	

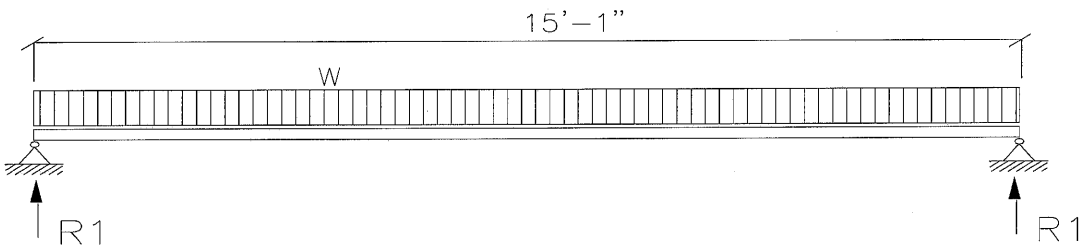
target deflections:(in)

end due to DL+LL =L/180=	**0.00**	span due to DL+LL =L/360=	**0.50**
end due to DL =L/540=	**0.00**	span due to DL =L/720=	**0.25**

actual deflections:(in)

end due to DL+LL =	**0.00**	span due to DL+LL =	**0.09**
end due to DL =	**0.00**	span due to DL =	**0.03**

Use C12X20.7



CARWASH FLOOR BEAM: FB3

dead load =	**45**	psf	P1 =	**2.25**	kips
live load =	**0**	psf	span L=	**15.1**	ft

beam carries **2.0** ft tributary width w= **90** # / ft

end defl=	**0**	in/ 100^4	span defl=	**0.17**	in/ 100^4

target end Ix= defl(180)(100)/(Lx12) = **0** in^4
target span Ix= defl(240)(100)/(Lx12) = **23** in^4

try **C12X20.7** Ix (in^4)= **129** S (in^3)= **21.5** **R1=2.91k**

unbraced -L (in) =	**16**	unbraced -L (in) =	**12**
(-)Mmax (k-in) =	**0**	(+)Mmax (k-in) =	**147.00**
(-)Fb(ksi)=	**23.8**	(+)Fb(ksi)=	**23.8**
(-)fb(ksi)=	**0.0**	(+)fb(ksi)=	**6.8**

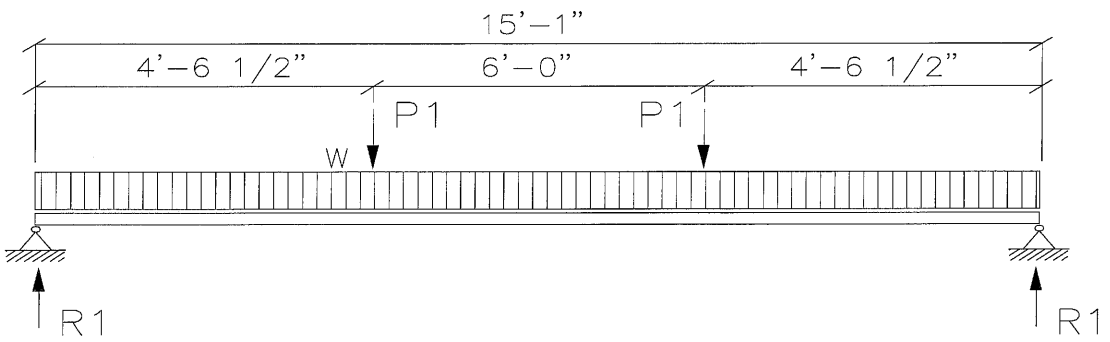
target deflections:(in)

end due to DL+LL =L/180=	**0.15**	span due to DL+LL =L/360=	**0.50**
end due to DL =L/540=	**0.05**	span due to DL =L/720=	**0.25**

actual deflections:(in)

end due to DL+LL =	**0.00**	span due to DL+LL =	**0.13**
end due to DL =	**0.00**	span due to DL =	**0.13**

Use C12X20.7



FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

EQUIPMENT FLOOR BEAM: FB4

dead load =	**45**	psf	end L=	**0.00**	ft
live load =	**100**	psf	span L=	**7.75**	ft

beam carries **2.0** ft tributary width w= **290** # / ft

end defl= **0** in/ 100^4 span defl= **0.008** in/ 100^4

target end Ix= defl(180)(100)/(Lx12) = **0** in^4
target span Ix= defl(240)(100)/(Lx12) = **2** in^4

try **C7 x 9.8** Ix (in^4)= **21.3** S (in^3)= **6.08** **R1=.87k**

unbraced -L (in) =	**16**	unbraced -L (in) =	**16**
(-)Mmax (k-in) =	**0**	(+)Mmax (k-in) =	**26.13**
(-)Fb(ksi)=	**23.8**	(+)Fb(ksi)=	**23.8**
(-)fb(ksi)=	**0.0**	(+)fb(ksi)=	**4.3**

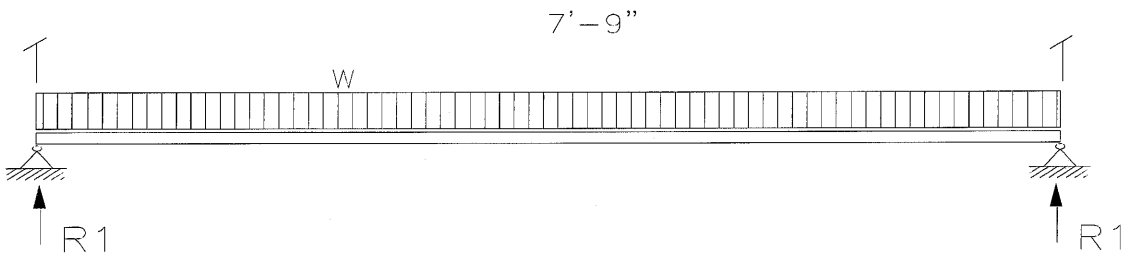
target deflections:(in)

end due to DL+LL =L/180=	**0.00**	span due to DL+LL =L/240=	**0.39**
end due to DL =L/540=	**0.00**	span due to DL =L/720=	**0.13**

actual deflections:(in)

end due to DL+LL =	**0.00**	span due to DL+LL =	**0.04**
end due to DL =	**0.00**	span due to DL =	**0.01**

Use C7 x 9.8 with Zero Flange Brace(s) per Span



FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

WIND & SEISMIC ANALYSIS

wind analysis: refer 2015 INTERNATIONAL BUILDING CODE

height to top of structure =	11.83	ft
wind speed =	115	mph
Importance factor, I =	1.00	
Adjustment Factor (λ) for exposure C =	1.21	
Per figure 28.6-1 Zone A =	21	psf
Per figure 28.6-1 Zone C =	13.9	psf
Load Factor from ASCE 2.4.1 for all cases =	0.6	
design wind force (zone A) = Wind Load X 1.0 X 1.21 X 0.6 =	**15.25**	psf
design wind force (zone C) = Wind Load X 1.0 X 1.21 X 0.6 =	**10.09**	psf
Wind Load on the Side of Building =	**11.07**	psf
Use Minimum Wind Speed per code =	**16.00**	psf

seismic analysis: refer 2015 INTERNATIONAL BUILDING CODE

From Figure 22-1 Ss =	0.062 g
From Figure 22-2 S1 =	0.034 g

From Section 11.4.2 The Site Class D has been selected

From table 11.4-1 Fa =	1.6
From table 11.4-2 Fv =	2.4
Seismic Occupancy Catagory from Table 1-1	1
SMS = Fa x Ss =	0.0992
SM1 = Fv x S1 =	0.08
SDS = 2/3 SMS =	0.07
SD1 = 2/3 SM1 =	0.0544
Seismic Design Category	A
Response Modification Factor from Table 12.2-1.G.1	2.5

WIND & SEISMIC ANALYSIS

seismic analysis continued:

Per Section 12.14.8 the Simplified Analysis has been selected

Equation 12.14-11 shows $V = 1.2 \times S_{DS} / R \times W$

W = (12 psf dead load + 42' Length X 24' Width
= **6.05** kips

Reaction from Seismic at top of building = V = 0.192 kips

moment from wind load:

Tributary height of wall for wind = **6.33** ft

Reaction from wind (Rw) = Tribuatry height (L) (F) = **4.25** kips

Reaction from Wind is greater than from Seismic - Use **4.25** kips

Force taken by shear wall (Fs) = Length of Wall X 181 #/ft = **4.34** kips

Force per Column = (Rw - Fs) / # Columns = **0.00** kips

Moment in column = Force X Height = **0.00** ft-kips

FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

COLUMN CALCULATION

Column Selection:

Try **TS 3 x 3 x 3/16" Columns**

Sx =	1.73 in^3	A =	2.02 in^2	r =	1.13 in
Ix =	2.6 in^4	K =	1.2	Height =	11 ft
KH/r =	140.18	Fa =	7.60 ksi	Fe=	7.60 ksi
		Fb =	27.6 ksi		

Column Calculation at Rigid Frame:

Wind Moment is Greater

Load Combination : DL + LL + WL

P = DL + LL = 3.23 kips

fa=P/A = 1.60 ksi fa/Fa= 0.21

AISC EQ.H1-1 APPLIED

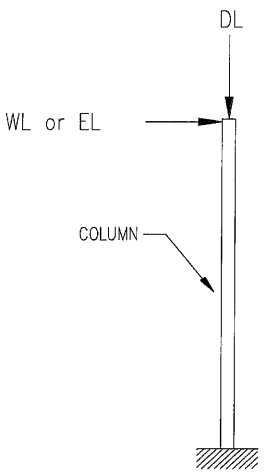
Maximum Moment= 0.00 ft-kips

fb = Moment*12/Sx = 0.00

Use Equation H1-1 = Cm (fb) / [Fb (1- fa/Fe)] = 0.00 ksi

fa/Fa + fb/Fb = **0.21** < 1.00 0.k.

*****USE TS 3 x 3 x 3/16" FOR COLUMN *****



OPTIONAL COLUMN CALCULATION

Column Selection:

Try **TS 3 x 3 x 14 GA Columns**

Sx =	0.9 in^3	A =	0.95 in^2	r =	1.18 in
Ix =	1.33 in^4	K =	1.2	Height =	11 ft
KH/r =	140.18	Fa =	7.60 ksi	Fe=	7.60 ksi
		Fb =	27.6 ksi		

Column Calculation at Rigid Frame:

Wind Moment is Greater

Load Combination : DL + LL + WL

P = DL + LL = 3.23 kips

fa=P/A = 3.40 ksi fa/Fa= 0.41

AISC EQ.H1-1 APPLIED

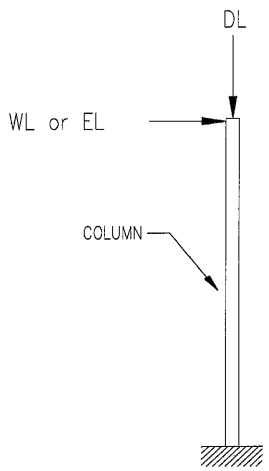
Maximum Moment= 0.00 ft-kips

fb = Moment*12/Sx = 0.00

Use Equation H1-1 = Cm (fb) / [Fb (1- fa/Fe)] = 0.00 ksi

fa/Fa + fb/Fb = **0.41** < 1.00 0.k.

*****USE TS 3 x 3 x 14 GA FOR COLUMN *****



OPTIONAL COLUMN CALCULATION

Column Selection:

Try **TS 3 x 2 x 14 GA Columns**

Sx =	0.65 in^3	A =	0.78 in^2	r =	1.12 in
Ix =	0.98 in^4	K =	1.2	Height =	11 ft
KH/r =	140.18	Fa =	7.60 ksi	Fe=	7.60 ksi
		Fb =	27.6 ksi		

Column Calculation at Rigid Frame:

Wind Moment is Greater

Load Combination : DL + LL + WL

P = DL + LL = 3.23 kips

fa=P/A = 4.14 ksi fa/Fa= 0.55

AISC EQ.H1-1 APPLIED

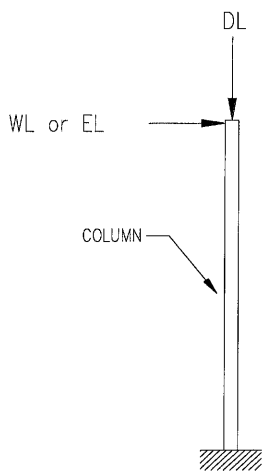
Maximum Moment= 0.00 ft-kips

fb = Moment*12/Sx = 0.00

Use Equation H1-1 = Cm (fb) / [Fb (1- fa/Fe)] = 0.00 ksi

fa/Fa + fb/Fb = **0.55** < 1.00 0.k.

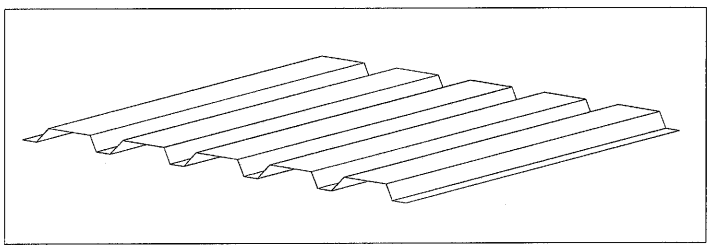
*****USE TS 3 x 2 x 14 GA FOR COLUMN *****

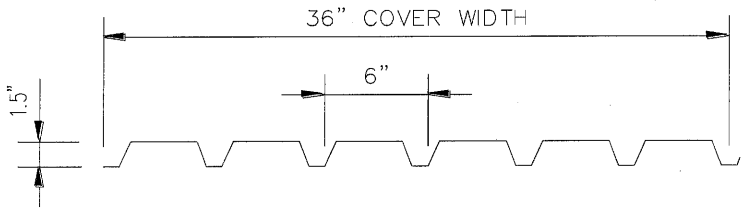


F—DECK FOR FLOOR

SECTION PROPERTIES TABLE

	22 GAGE	20 GAGE	18 GAGE	16 GAGE
DESIGN THICKNESS	.0299	.0359	.0478	.0598
WEIGHT – ptd.	1.6	1.9	2.6	3.2
WEIGHT – galv.	1.7	2.0	2.7	3.3
I_p in^4	.133	.170	.246	.316
S_p in^3	.136	.167	.231	.294
I_n in^4	.158	.189	.252	.316
S_n in^3	.147	.178	.238	.298



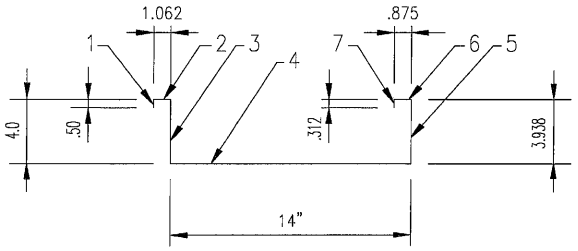


UNIFORM LOAD TABLE (lbs/ft^2)

	SINGLE SPAN				DOUBLE SPAN				TRIPLE SPAN			
	22 GAGE	20 GAGE	18 GAGE	16 GAGE	22 GAGE	20 GAGE	18 GAGE	16 GAGE	22 GAGE	20 GAGE	18 GAGE	16 GAGE
4'–0"	113	139	193	245	123	148	198	248	153	185	248	310
4'–6"	90	110	152	194	97	117	157	196	121	147	196	245
5'–0"	73	89	123	157	78	95	127	159	98	119	159	199
5'–6"	60	74	102	130	65	78	105	131	81	98	131	164
6'–0"	50	62	85	106	54	66	88	110	68	82	110	138
6'–6"	42	51	69	86	46	56	75	94	58	70	94	118
7'–0"	35	43	57	70	40	48	65	81	50	61	81	101
7'–6"	31	36	48	59	35	42	56	71	44	53	71	88
8'–0"	27	32	42	51	31	37	50	62	38	46	62	78
8'–6"		28	36	44	27	33	44	55	34	41	55	69
9'–0"		25	32	38		29	39	49	30	37	49	61
9'–6"			29	34		26	35	44	27	33	44	55
10'–0"			26	31			32	40		30	40	49
10'–6"				28			29	36		27	36	44
11'–0"				26			26	33		25	33	39
Maximum Spans and Cantilevers for Construction Maintenance Loads												
SPAN	4'–6"	5'–6"	7'–1"	8'–0"	5'–6"	6'–8"	8'–3"	9'–4"	5'–7"	6'–10"	8'–4"	9'–6"
CANT.	1'–1"	1'–4"	1'–9"	2'–3"	1'–1"	1'–4"	1'–9"	2'–3"	1'–1"	1'–4"	1'–9"	2'–3"

FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

20 GA. CARWASH CEILING DECK



Fy = 50,000 PSI
Fb = 30,000 PSI
t = .036 in

Calculation Taken from From "AISI Cold Formed Steel Design" 2007 Edition - Section 3.5 & 3.6

	POSITIVE BENDING					NEGATIVE BENDING				
Member	A	Y	AY	AY2	I	A	Y	AY	AY2	I
1	0.50	3.75	1.88	7.03	0.01	0.50	3.75	1.88	7.03	0.01
2	0.99	3.98	3.94	15.70	0.00	0.99	3.98	3.94	15.70	0.00
3	4.00	2.00	8.00	16.00	5.33	4.00	2.00	8.00	16.00	5.33
4	13.93	0.02	0.25	0.00	0.00	1.61	0.02	0.03	0.00	0.00
5	3.94	1.97	7.75	15.27	5.09	3.94	1.97	7.75	15.27	5.09
6	0.80	3.92	3.15	12.34	0.00	0.80	3.92	3.15	12.34	0.00
7	0.31	3.78	1.18	4.46	0.00	0.31	3.78	1.18	4.46	0.00
Totals	24.47		26.15	70.80	10.44	12.15		25.93	70.80	10.44

Determine Effective Width Using Equation B2.1-1 through B2.1-5

Check Compression Members

w/t = 0.990/0.036 = 28 < 30 OK

w/t = 13.928/0.036 = 387 > 30

Calculate Effective Width of Compression Flange

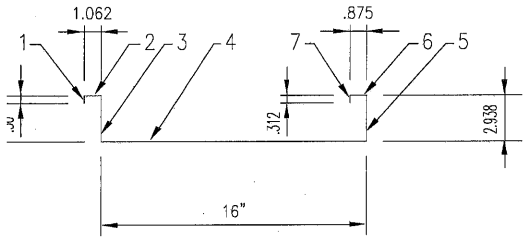
b = p X w = 0.101 X 0.036 = 1.611 in

Ybar = 26.150/24.471 = 1.069
C = 4.000 - 1.069 = 2.931
I = 10.437 + 70.803 - 24.471(1.069)^2
I = 53.297 x t = 53.297 x 0.036
I = 1.919 in^4
S = 1.919 / 2.931
S = 0.655 in^3

Ybar = 25.928/12.154 = 2.133
C = 4.000 - 2.133 = 1.867
I = 10.436 + 70.799 - 12.154(2.133)^2
I = 25.923 x t = 25.923 x 0.036
I = 0.933 in^4
S = 0.933 / 1.867
S = 0.500 in^3

FREY-MOSS STRUCTURES	JOB NO:	G20V36
Sheetz's Inc.	CALC BY:	A.R.
Modular Car Wash	DATE:	1/8/2021

20 GA Equipment Ceiling/ All Wall Deck - 3" Tall



Fy = 50,000
Fb = 30,000
t = .036 in

Calculation Taken from From "AISI Cold Formed Steel Design" 2007 Edition - Section 3.5 & 3.6

	POSITIVE BENDING					NEGATIVE BENDING				
Member	A	Y	AY	AY2	I	A	Y	AY	AY2	I
1	0.500	2.750	1.375	3.781	0.010	0.500	2.750	1.375	3.781	0.010
2	0.990	2.982	2.952	8.803	0.000	0.990	2.982	2.952	8.803	0.000
3	3.000	1.500	4.500	6.750	2.250	3.000	1.500	4.500	6.750	2.250
4	15.928	0.018	0.287	0.005	0.002	1.611	0.018	0.029	0.001	0.000
5	2.938	1.469	4.316	6.340	2.113	2.938	1.469	4.316	6.340	2.113
6	0.803	2.920	2.345	6.847	0.000	0.803	2.920	2.345	6.847	0.000
7	0.312	2.782	0.868	2.415	0.003	0.312	2.782	0.868	2.415	0.003
Totals	24.471		16.643	34.941	4.378	10.154		16.385	34.937	4.377

Determine Effective Width Using Equation B2.1-1 through B2.1-5
From 2001 AISI Standard with 2004 Supplement

Check Compression Members
w/t = 0.990/0.036 = 28 < 30 OK

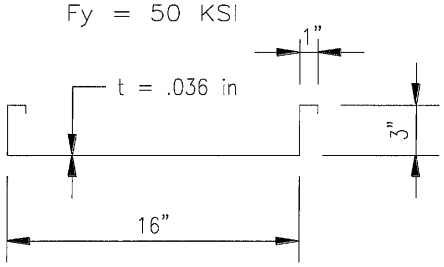
w/t = 15.928/0.036 = 442 > 30

Calculate Effective Width of Compression Flange
b = p X w = 0.101 X 0.036 = 1.611 in

Ybar = 16.643/24.471 = 0.680
C = 3.000 - 0.680 = 2.320
I = 4.378 + 34.941 - 24.471(0.680)^2
I = 28.001 x t = 28.001 x 0.036
I = 1.008 in^4
S = 1.008 / 2.320
S = 0.435 in^3

Ybar = 16.385/10.154 = 1.614
C = 3.000 - 1.614 = 1.386
I = 4.377 + 34.937 - 10.154(1.614)^2
I = 12.874 x t = 12.874 x 0.036
I = 0.463 in^4
S = 0.463 / 1.386
S = 0.334 in^3

Fy = 50 KSI



(3.4.1) SHEAR STRESS IN WEBS

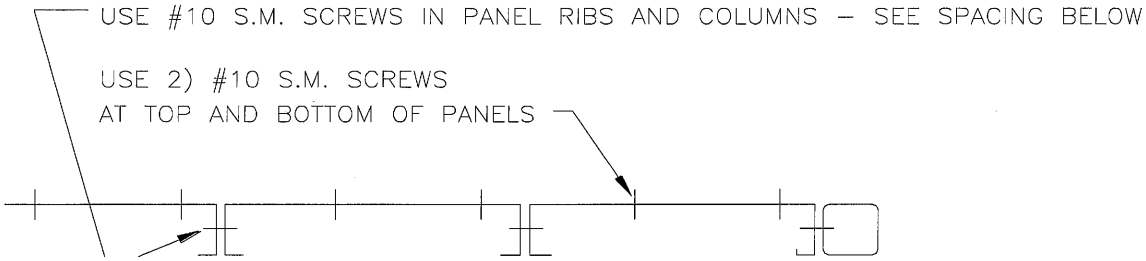
h/t = 16/.036 = 444

$547/\sqrt{33} = 95 \quad 95 < 444$

$Fv = 83.200/(444)^2 = .422$ KSI

V = .422 KSI

MAX. SHEAR PER FOOT = .422 (12 in) (.036) = 182 #/FT



SHEAR WALL FASTENER SPACING

#10 S.M. Screw (Minor Diameter = .18 in)

Value in Shear per Screw = 250# per AISI
Cold Formed Steel Design Table IV

Using Spacing of 22 inches

Max. Shear per Foot in Shear Wall = 250 (1.33) (12 in/ft) / 22 in = 181 #/ft

Use Value of 181 #/ft for Max. Shear per Foot in Shear Wall

Check Wall Deck against Wind Load

From Table 30.7-2 from ASCE 7-10 Zone 5 Pressure = 48.4 psf

Distributed Load on Wall = 48.4 psf X 1.21 X 4/3 ft = 78.1 #/ft

Moment in Panel = 78.1 #/ft X 11 ft^2 / 12 = 787 ft-lbs = 9.45 in-kips

9.45 in-kips / 0.334 in^3 = 28.29 ksi < 30 ksi OK

Calculation for Fastening Roof Flashing

From Table 30.7-2 from ASCE 7-10 Zone 3 Pressure = 82.6 psf

Maximum Wind Load = -82.6 psf X 1.21 = 99.9 psf

Panels are 1.0 ft wide and fasteners are 3'-0" O/C Max

Load in each fastener = 99.9 psf X 1.0 ft X 3 ft = 300 lbs

#10 Teks are good for 302 # Pullout, 1125 # Pullover and 731 # Shear OK

COMcheck Software Version 4.1.5.1

Envelope Compliance Certificate

Project Information

Energy Code:	90.1 (2013) Standard
Project Title:	Sheetz Automatic Carwash
Location:	Cameron, North Carolina
Climate Zone:	3a
Project Type:	New Construction
Performance Sim. Specs:	EnergyPlus 8.1.0.009 (EPW: USA_NC_Charlotte-Douglas.Intl.AP.723140_TMY3.epw)

Construction Site:
Sawyer Rd. & NC 24-87
Cameron, NC 28326

Owner/Agent:

Designer/Contractor:
Andy Rape
Frey-Moss Structures
1801 Rockdale Industrial Blvd.
Conyers, GA 30012
770-483-7543
fms@frey-moss.com

Building Area	Floor Area
1-Transportation : Nonresidential	923

Envelope Assemblies

Assembly	Gross Area or Perimeter	Cavity R-Value	Cont. R-Value	Proposed U-Factor	Budget U-Factor(a)
Roof 1: Metal Building, Standing Seam, Double Insulation Layer with Thermal Blocks (c), [Bldg. Use 1 - Transportation]	268	11.0	17.0	0.038	0.041
Floor 1: Steel Joist, [Bldg. Use 1 - Transportation]	268	19.0	5.6	0.040	0.038
NORTHEAST					
Exterior Wall 1: Other Steel Framed Wall, [Bldg. Use 1 - Transportation] (b)	325	---	---	0.052	0.077
SOUTHEAST					
Exterior Wall 2: Other Steel Framed Wall, [Bldg. Use 1 - Transportation] (b)	83	---	---	0.052	0.077
SOUTHWEST					
Semi-Exterior Wall 1: Other Steel Framed Wall, [Bldg. Use 1 - Transportation] (b)	325	---	---	0.089	0.124
NORTHWEST					
Exterior Wall 3: Other Steel Framed Wall, [Bldg. Use 1 - Transportation] (b)	83	---	---	0.052	0.077
Door 1: Insulated Metal, Swinging, [Bldg. Use 1 - Transportation]	28	---	---	0.350	0.700

(a) Budget U-factors are used for software baseline calculations ONLY, and are not code requirements.
(b) 'Other' components require supporting documentation for proposed U-factors.
(c) Thermal spacer block with minimum R-3.5 must be installed above the purlin/batt, and the roof deck secured to the purlins.

Project Notes

Envelope PASSES: Design 2% better than code

Envelope Compliance Statement

Compliance Statement: The proposed envelope design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed envelope systems have been designed to meet the 90.1 (2013) Standard requirements in COM*check* Version 4.1.5.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Robert B. Smith - PE		01/25/2021
Name - Title	Signature	Date

Exterior Wall - Rs = 0.17 (Exterior Air Film) + 13.0 (2" Redmax) + 0.39 (Durock) + 0.0 (Metal Panel) + 0.68 (Interior Air Film) = 14.24
ER = 11.1 (3.5" R-13 Batt Insulation) x 0.46 (Correction Factor "Fc" from table C402.1.4.1) = 5.11
Uo = 1/(Rs + ER) = 1/(14.24 + 5.11) = 0.052
Semi-Exterior Wall - Uo = 1/(Rs + ER) = 1/(1 + 5.11 x 2) = 0.089

COM*check* Software Version 4.1.5.1

Interior Lighting Compliance Certificate

Project Information

Energy Code:	90.1 (2013) Standard
Project Title:	Sheetz Automatic Carwash
Project Type:	New Construction

Construction Site:
Sawyer Rd. & NC 24-87
Cameron, NC 28326

Owner/Agent:

Designer/Contractor:
Andy Rape
Frey-Moss Structures
1801 Rockdale Industrial Blvd.
Conyers, GA 30012
770-483-7543
fms@frey-moss.com

Allowed Interior Lighting Power

A Area Category	B Floor Area (ft2)	C Allowed Watts / ft2	D Allowed Watts (B X C)
1-Transportation	923	0.70	646
		Total Allowed Watts =	646

Proposed Interior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
1-Transportation				
LED 1: 1: LED: Other:	1	6	80	480
LED 2: 1: LED: Other:	1	4	40	160
		Total Proposed Watts =		640

Interior Lighting PASSES: Design 1% better than code

Interior Lighting Compliance Statement

Compliance Statement: The proposed interior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed interior lighting systems have been designed to meet the 90.1 (2013) Standard requirements in COM*check* Version 4.1.5.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Floyd Keels - PE — Name - Title

Signature

01/25/2021 — Date

COM*check* Software Version 4.1.5.1

Exterior Lighting Compliance Certificate

Project Information

Energy Code:	90.1 (2013) Standard
Project Title:	Sheetz Automatic Carwash
Project Type:	New Construction
Exterior Lighting Zone	2 (Neighborhood business district)

Construction Site:
Sawyer Rd. & NC 24-87
Cameron, NC 28326

Owner/Agent:

Designer/Contractor:
Andy Rape
Frey-Moss Structures
1801 Rockdale Industrial Blvd.
Conyers, GA 30012
770-483-7543
fms@frey-moss.com

Allowed Exterior Lighting Power

A Area/Surface Category	B Quantity	C Allowed Watts / Unit	D Tradable Wattage	E Allowed Watts (B X C)
Illuminated length of facade wall or surface	16 ft	2.5	No	40
			Total Tradable Watts (a) =	0
			Total Allowed Watts =	40
			Total Allowed Supplemental Watts (b) =	600

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.
(b) A supplemental allowance equal to 600 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Proposed Exterior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Illuminated length of facade wall or surface (16 ft): Non-tradable Wattage				
LED 1: 3: Wallpack: Other:	1	2	91	182
			Total Tradable Proposed Watts =	0

Exterior Lighting PASSES: Design 0.0% better than code

Exterior Lighting Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 90.1 (2013) Standard requirements in COM*check* Version 4.1.5.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Floyd Keels - PE
Name - Title

Signature

01/25/2021
Date

COM*check* Software Version 4.1.5.1

Mechanical Compliance Certificate

Project Information

Energy Code:	90.1 (2013) Standard
Project Title:	Sheetz Automatic Carwash
Location:	Cameron, North Carolina
Climate Zone:	3a
Project Type:	New Construction

Construction Site:
Sawyer Rd. & NC 24-87
Cameron, NC 28326

Owner/Agent:

Designer/Contractor:
Andy Rape
Frey-Moss Structures
1801 Rockdale Industrial Blvd.
Conyers, GA 30012
770-483-7543
fms@frey-moss.com

Mechanical Systems List

Quantity	System Type & Description
1	HVAC System - Item #18 (Single Zone): Heating: 1 each - Hydronic or Steam Coil, Hot Water, Capacity = 175 kBtu/h No minimum efficiency requirement applies Fan System: None
1	Water Heater - Item #D: Electric Instantaneous Water Heater, Capacity: 0 gallons No minimum efficiency requirement applies

Mechanical Compliance Statement

Compliance Statement: The proposed mechanical design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed mechanical systems have been designed to meet the 90.1 (2013) Standard requirements in COM*check* Version 4.1.5.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Robert B. Smith - PE
Name - Title

Signature

01/25/2021
Date

COM*check* Software Version 4.1.5.1

Inspection Checklist

Energy Code: 90.1 (2013) Standard

Requirements: 100.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COMcheck Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
4.2.2, 5.4.3.1.1, 5.7 [PR1][1]	Plans and/or specifications provide all information with which compliance can be determined for the building envelope and document where exceptions to the standard are claimed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** S4-S6
4.2.2, 6.4.4.2.1, 6.7.2 [PR2][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the mechanical systems and equipment and document where exceptions to the standard are claimed. Load calculations per acceptable engineering standards and handbooks.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** P5
4.2.2, 7.7.1, 10.4.2 [PR3][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the service water heating systems and equipment and document where exceptions to the standard are claimed. Hot water system sized per manufacturer's sizing guide.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** P5
4.2.2, 8.4.1.1, 8.4.1.2, 8.7 [PR6][2]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the electrical systems and equipment and document where exceptions are claimed. Feeder connectors sized in accordance with approved plans and branch circuits sized for maximum drop of 3%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E1
4.2.2, 9.4.3, 9.7 [PR4][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the interior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include interior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E2

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
9.7 [PR8][1]	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the exterior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include exterior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E2
6.7.2.4 [PR5][1]	Detailed instructions for HVAC systems commissioning included on the plans or specifications for projects >=50,000 ft2.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Footing / Foundation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
4.2.4 [FO1][2]	Installed below-grade wall insulation type and R-value consistent with insulation specifications reported in plans and COMcheck reports.	R-_____	R-_____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
4.2.4 [FO3][2]	Installed slab-on-grade insulation type and R-value consistent with insulation specifications reported in plans and COMcheck reports.	R-_____ ☐ Unheated ☐ Heated	R-_____ ☐ Unheated ☐ Heated	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.3.5 [FO5][2]	Slab edge insulation depth/length.	_____ ft	_____ ft	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.7 [FO6][1]	Exterior insulation protected against damage, sunlight, moisture, wind, landscaping and equipment maintenance activities.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** S4-S6
5.8.1.7.3 [FO7][1]	Insulation in contact with the ground has <=0.3% water absorption rate per ASTM C272.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** S4-S6
6.4.3.7 [FO9][3]	Freeze protection and snow/ice melting system sensors for future connection to controls.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** P5
6.4.4.1.5 [FO11][3]	Bottom surface of floor structures incorporating radiant heating insulated to >=R-3.5.	R-_____	R-_____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** S4-S6 *See the Envelope Assemblies table for values.*

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Framing / Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.4.3.2 [FR1][3]	Factory-built and site-assembled fenestration and doors are labeled or certified as meeting air leakage requirements.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.5.4.3a [FR8][1]	Vertical fenestration U-Factor.	U-____	U-____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.4.3b [FR9][1]	Skylight fenestration U-Factor.	U-____	U-____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.4.4.1 [FR10][1]	Vertical fenestration SHGC value.	SHGC:____	SHGC:____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.5.4.4.2 [FR11][1]	Skylight SHGC value.	SHGC:____	SHGC:____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.2.1, 5.8.2.3, 5.8.2.4, 5.8.2.5 [FR12][2]	Fenestration products rated (U-factor, SHGC, and VT) in accordance with NFRC or energy code defaults are used.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** A2
5.8.2.2 [FR13][1]	Fenestration and door products are labeled, or a signed and dated certificate listing the U-factor, SHGC, VT, and air leakage rate has been provided by the manufacturer.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** A2
5.5.3.6 [FR14][2]	U-factor of opaque doors associated with the building thermal envelope meets requirements.	U-____ ☐ Swinging ☐ Nonswinging	U-____ ☐ Swinging ☐ Nonswinging	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.4.3.1 [FR15][1]	Continuous air barrier is wrapped, sealed, caulked, gasketed, and/or taped in an approved manner, except in semiheated spaces in climate zones 1-6.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** S4-S6

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.4.1.4, 6.4.1.5 [ME1][2]	HVAC equipment efficiency verified. Non-NAECA HVAC equipment labeled as meeting 90.1.	Efficiency:_____	Efficiency:_____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Mechanical Systems list for values.*
6.4.3.4.1 [ME3][3]	Stair and elevator shaft vents have motorized dampers that automatically close.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
6.4.3.4.5 [ME39][3]	Enclosed parking garage ventilation has automatic contaminant detection and capacity to stage or modulate fans to 50% or less of design capacity.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
6.4.3.4.4 [ME5][3]	Ventilation fans >0.75 hp have automatic controls to shut off fan when not required.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** P1
6.4.3.8 [ME6][1]	Demand control ventilation provided for spaces >500 ft2 and >25 people/1000 ft2 occupant density and served by systems with air side economizer, auto modulating outside air damper control, or design airflow >3,000 cfm.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Systems with a design outdoor airflow less than 1200 cfm.
6.5.3.2.1 [ME40][2]	DX cooling systems >= 75 kBtu/h (>= 65 kBtu/h effective 1/2016) and chilled-water and evaporative cooling fan motor hp >= ¼ designed to vary indoor fan airflow as a function of load and comply with operational requirements.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. *See the Mechanical Systems list for values.*
6.4.4.1.1 [ME7][3]	Insulation exposed to weather protected from damage. Insulation outside of the conditioned space and associated with cooling systems is vapor retardant.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** P1
6.4.4.1.2 [ME8][2]	HVAC ducts and plenums insulated. Where ducts or plenums are installed in or under a slab, verification may need to occur during Foundation Inspection.	R-_____	R-_____	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** P5
6.4.4.1.3 [ME9][2]	HVAC piping insulation thickness. Where piping is installed in or under a slab, verification may need to occur during Foundation Inspection.	_____ in.	_____ in.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
6.4.4.1.4 [ME41][3]	Thermally ineffective panel surfaces of sensible heating panels have insulation >= R-3.5.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
6.4.4.2.1 [ME10][2]	Ducts and plenums sealed based on static pressure and location.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** P1

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.4.4.2.2 [ME11][3]	Ductwork operating >3 in. water column requires air leakage testing.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
6.5.2.2.1 [ME50][2]	Three-pipe hydronic systems using a common return for hot and chilled water are not used.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.5.2.3 [ME19][3]	Dehumidification controls provided to prevent reheating, recooling, mixing of hot and cold airstreams or concurrent heating and cooling of the same airstream.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Cooling capacity 40 kBtu/h.
6.5.2.4.1 [ME68][3]	Humidifiers with airstream mounted preheating jackets have preheat auto-shutoff value set to activate when humidification is not required.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
6.5.2.4.2 [ME69][3]	Humidification system dispersion tube hot surfaces in the airstreams of ducts or air-handling units insulated >= R-0.5.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
6.5.2.5 [ME70][3]	Preheat coils controlled to stop heat output whenever mechanical cooling, including economizer operation, is active.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** P1
6.5.3.3 [ME42][3]	Multiple zone VAV systems with DDC of individual zone boxes have static pressure setpoint reset controls.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply. *See the Mechanical Systems list for values.*
6.5.4.2 [ME25][3]	HVAC pumping systems >10 hp designed for variable fluid flow.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Minimum flow is less than required for proper operation and pump power =75 hp.
6.5.4.3, 6.5.4.3.1, 6.5.4.3.2 [ME26][3]	Fluid flow shutdown in pumping systems to multiple chillers or boilers when systems are shut down.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** P5
6.5.6.1 [ME56][1]	Exhaust air energy recovery on systems meeting Tables 6.5.6.1-1, and 6.5.6.1-2.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
6.5.6.2 [ME31][3]	Condenser heat recovery system that can heat water to 85 ºF or provide 60% of peak heat rejection is installed for preheating of service hot water.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** P1
6.5.7.1.1 [ME32][2]	Kitchen hoods >5,000 cfm have make up air >=50% of exhaust air volume.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Mechanical Rough-In Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
6.5.7.1.5 [ME49][3]	Approved field test used to evaluate design air flow rates and demonstrate proper capture and containment of kitchen exhaust systems.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
6.5.8.1 [ME34][2]	Unenclosed spaces that are heated use only radiant heat.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
7.4.2 [ME36][2]	Service water heating equipment meets efficiency requirements.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
6.4.3.9 [ME63][2]	Heating for vestibules and air curtains include automatic controls that shut off the heating system when outdoor air temperatures > 45F. Vestibule heating systems controlled by a thermostat in the vestibule with setpoint <= 60F.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
6.5.10 [ME73][3]	Doors separating conditioned space from the outdoors have controls that disable/reset heating and cooling system when open.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Building entrances have automatic closing devices. **Location on plans/spec:** A2

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Rough-In Electrical Inspection	Complies?	Comments/Assumptions
8.4.2 [EL10][2]	At least 50% of all 125 volt 15- and 20-Amp receptacles are controlled by an automatic control device.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Space type is not private office, open office, or computer classroom.
9.4.1.1 [EL1][2]	Automatic control requirements prescribed in Table 9.6.1, for the appropriate space type, are installed. Mandatory lighting controls (labeled as 'REQ') and optional choice controls (labeled as 'ADD1' and 'ADD2') are implemented.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E2
9.4.1.1 [EL2][2]	Independent lighting controls installed per approved lighting plans and all manual controls readily accessible and visible to occupants.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E2
9.4.1.2 [EL11][2]	Parking garage lighting is equipped with required lighting controls and daylight transition zone lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
9.4.1.1f [EL13][1]	Daylight areas under skylights and roof monitors that have more than 150 W combined input power for general lighting are controlled by photocontrols.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
9.4.1.4 [EL3][2]	Automatic lighting controls for exterior lighting installed.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E2
9.4.1.3 [EL4][1]	Separate lighting control devices for specific uses installed per approved lighting plans.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E2
9.6.2 [EL8][1]	Additional interior lighting power allowed for special functions per the approved lighting plans and is automatically controlled and separated from general lighting.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** E2
10.4.1 [EL9][2]	Electric motors meet requirements where applicable.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** P5

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Insulation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
4.2.4 [IN2][1]	Installed roof insulation type and R-value consistent with insulation specifications reported in plans and COMcheck reports. For some ceiling systems, verification may need to occur during Framing Inspection.	R-_____ ☐ Above deck ☐ Metal ☐ Attic	R-_____ ☐ Above deck ☐ Metal ☐ Attic	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.2, 5.8.1.3 [IN3][1]	Roof insulation installed per manufacturer's instructions. Blown or poured loose-fill insulation is installed only where the ceiling slope is <= 3:12.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** S4-S6
4.2.4 [IN6][1]	Installed above-grade wall insulation type and R-value consistent with insulation specifications reported in plans and COMcheck reports.	R-_____ ☐ Mass ☐ Metal ☐ Steel ☐ Wood	R-_____ ☐ Mass ☐ Metal ☐ Steel ☐ Wood	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.2 [IN7][1]	Above-grade wall insulation installed per manufacturer's instructions.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** S4-S6
4.2.4 [IN8][2]	Installed floor insulation type and R-value consistent with insulation specifications reported in plans and COMcheck reports.	R-_____ ☐ Mass ☐ Steel ☐ Wood	R-_____ ☐ Mass ☐ Steel ☐ Wood	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Envelope Assemblies table for values.*
5.8.1.2 [IN9][2]	Floor insulation installed per manufacturer's instructions.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** S4-S6
5.8.1.1 [IN10][2]	Building envelope insulation is labeled with R-value or insulation certificate has been provided listing R-value and other relevant data.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.9 [IN18][2]	Building envelope insulation extends over the full area of the component at the proposed rated R or U value.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.4 [IN11][2]	Eaves are baffled to deflect air to above the insulation.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** S4-S6
5.8.1.5 [IN12][2]	Insulation is installed in substantial contact with the inside surface separating conditioned space from unconditional space.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** S4-S6
5.8.1.6 [IN13][2]	Recessed equipment installed in building envelope assemblies does not compress the adjacent insulation.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Insulation Inspection	Plans Verified Value	Field Verified Value	Complies?	Comments/Assumptions
5.8.1.7.1 [IN15][2]	Attics and mechanical rooms have insulation protected where adjacent to attic or equipment access.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** S4-S6
5.8.1.7.2 [IN16][2]	Foundation vents do not interfere with insulation.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
5.8.1.8 [IN17][3]	Insulation intended to meet the roof insulation requirements cannot be installed on top of a suspended ceiling. Mark this requirement compliant if insulation is installed accordingly.			☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** S4-S6

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
5.4.3.3 [FI1][1]	Weatherseals installed on all loading dock cargo doors in Climate Zones 4-8.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** A2
6.4.3.1.2 [FI3][3]	Thermostatic controls have a 5 °F deadband.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** having jurisdiction.
6.4.3.2 [FI20][3]	Temperature controls have setpoint overlap restrictions.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.4.3.3.1 [FI21][3]	HVAC systems equipped with at least one automatic shutdown control.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** P5
6.4.3.3.2 [FI22][3]	Setback controls allow automatic restart and temporary operation as required for maintenance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** P5
6.4.3.6 [FI6][3]	When humidification and dehumidification are provided to a zone, simultaneous operation is prohibited. Humidity control prohibits the use of fossil fuel or electricity to produce RH > 30% in the warmest zone humidified and RH < 60% in the coldest zone dehumidified.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** P5
6.7.2.1 [FI7][3]	Furnished HVAC as-built drawings submitted within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.7.2.2 [FI8][3]	Furnished O&M manuals for HVAC systems within 90 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
6.7.2.3 [FI9][1]	An air and/or hydronic system balancing report is provided for HVAC systems serving zones >5,000 ft2 of conditioned area.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
6.7.2.4 [FI10][1]	HVAC control systems have been tested to ensure proper operation, calibration and adjustment of controls.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** P5
7.4.4.3 [FI11][3]	Public lavatory faucet water temperature <=110°F.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met. **Location on plans/spec:** P1
8.7.1 [FI16][3]	Furnished as-built drawings for electric power systems within 30 days of system acceptance.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
8.7.2 [FI17][3]	Furnished O&M instructions for systems and equipment to the building owner or designated representative.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	Requirement will be met.
9.2.2.3 [FI18][1]	Interior installed lamp and fixture lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Interior Lighting fixture schedule for values.*
9.4.2 [FI19][1]	Exterior lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	*See the Exterior Lighting fixture schedule for values.*
10.4.3 [FI24][2]	Elevators are designed with the proper lighting, ventilation power, and standby mode.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.
7.4.3 [FI45][2]	First 8 ft of outlet piping is insulated	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	**Exception:** Requirement does not apply.

Additional Comments/Assumptions:

1	High Impact (Tier 1)	2	Medium Impact (Tier 2)	3	Low Impact (Tier 3)

Report Prepared By:

Frey-Moss Structures

For: Sheetz Carwash North Carolina
Sawyer Rd. & NC 24-87
Cameron, North Carolina 28326

01/25/2021

Design Conditions: Fayetteville, Pope; Latitude: 35; Time 4:00 PM

Indoor:		Outdoor:	
Summer temperature:	75	Summer temperature:	92
Winter temperature:	72	Winter temperature:	20
Relative humidity:	50	Summer grains of moisture:	111
		Daily temperature range:	20

Building Component			Sensible Gain (BTUH)	Latent Gain (BTUH)	Total Heat Gain (BTUH)	Total Heat Loss (BTUH)
Floor	268.1	sq.ft.	0	0	0	3,437
NE Wall	325	sq.ft.	439	0	439	1,352
SW Wall	325	sq.ft.	406	0	406	1,352
NW Wall	62.5	sq.ft.	52	0	52	260
Door	20	sq.ft.	190	0	190	582
Leakage Summer	14	cfm	262	447	709	0
Leakage Winter	27	cfm	0	0	0	1,544
SE Wall	82.5	sq.ft.	159	0	159	343
Ceiling	268.1	sq.ft.	680	0	680	697
People/Vent	0	people	0	0	0	0
Ventilation	100	cfm	1,870	3,196	5,066	5,720
Infiltration Summer	167.8733	cfm	3,139	5,365	8,504	0
Infiltration Winter	176.81	cfm	0	0	0	10,114
Lights	360	watts	1,476	0	1,476	0
Whole Building - All Components			8,673	9,008	17,681 (1.5 tons)	25,401