Engineering and Surveying
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Michael W. Robinson, P.E., P.L.S.

December 14, 2023

Cindy's Kitchen, Major Site Plan
Response to TRC Comments dated November 09, 2023

Below please find responses to the TRC Comment Memorandum dated November 09, 2023. Additional responses will be provided by Andy Deel for the stormwater comments and Mark Kasten with Cahoon and Kasten for the Architectural comments.
Please reference revised site plans dated 12-14-23, 6 sheet set.

Comments From Planning (Anna Cherry, 252-232-6066)

- *Please update the plan to include streetscape requirements in Chapter 5.2.8 o Development on lots adjacent and accessed from a major arterial shall comply with the streetscape standards in Table 5.2.8 Major Arterial Streetscape Landscaping and with Vehicular Use Area Landscaping found in Section 5.2.5 Streetscape: 8 ACI Canopy Trees, 4.5 ACI Understory Trees, 10 shrubs per 100' of street frontage.*

Sheet 1 has been revised to include the Major Arterial Streetscape Landscaping. Refer to the plan sheet including the landscape legend and notes.

- *Light Fixture Cut Sheet needed for Goose neck fixtures.*

Sheet 1 has been revised to show the ornamental goose neck fixtures and a lighting legend. A fixture cut sheet has been added to sheet 4. These fixtures use 800 Lumen LED bulbs.

- *Wall mounted lights can't exceed 1600 lumens and shall be full cut off fixtures. Photometric plan required for exterior lighting.*

Sheet 1 has been revised to show more information on the wall pack lighting fixtures and a lighting legend. A fixture cut sheet has been added to sheet 4. These fixtures use 1,327 Lumen LED bulbs and calcaluted FC values are shown.

- *Please update the site plan to include a sidewalk along Caratoke Hwy minimum of 8ft, recommended 10ft. If the sidewalk is within the NCDOT Right of Way, it will require an encroachment agreement.*

Sheet 1 has been revised to include an 8' concrete sidewalk. An encroachment agreement with NCDOT will be secured prior to submitting for a building permit. In addition, the driveway turn out radius has been increased to 30' min. in accordance with the NCDOT Driveway Access Permit previously issued.

- *Please include cross access to neighboring developed parcels. See Chapter 5.1.4.A (7) Parking Lot Cross Access*

The plan includes a parking drive aisle which has been configured to allow for future connections to adjacent properties including a cross access easements.

- *All rooftop equipment shall be screened from view from all streets. UDO Chapter 5.8.3.C(2)(b)*
- *A pitched roof shall have eaves that extend a minimum of 12 inches from the building face. 5.8.3.C(2)(d).*

These Comments will be addressed with revised Architectural plans by Mark Kasten with Cahoon and Kasten

- *Although a loading area is not required, please make sure the one shown will meet the demands of the business.*

The loading area has been reviewed and is sufficient to meet the requirements of the proposed use.

- *Please update site plan to have no more than 50 percent of the required off street parking located between the building facade and Caratoke Hwy. (14 spots of the 29 required) Chapter 5.8.3.A(1)(b)*

Sheet 1 has been revised to meet this requirement agreement with 14 spaces west of the front building façade.

- Plan for removal of unpermitted existing buildings.

See Note 12 on Sheet 1.

<u>Comments from Currituck County Building and Fire Inspections (Bill Newns, 252-232-6023)</u>

- Needed Fire Flow for construction is determined by the ISO method.
- No new construction can occur that creates a Needed Fire Flow greater than the available fire flow on site.
- Knox Box provided on buildings (Coordinate location with the local VFD for building and order the box at Knox website to order search for Currituck Co Fire-EMS at http://www.knoxbox.com for Knox Box location and setup of box call Chris Bailey 252-435-8120.
- Soil and compaction testing for footings.

These comments are acknowledged by the Builder. The required Fire Flow will be calculated by the Architect and a hydrant flow test will be scheduled in the near future to confirm adequate flow capacity.

<u>Comments from Currituck Soil and Stormwater (Dylan Lloyd, 252-232-3360)</u>

Stormwater Comments will be addressed by Andy Deel with revised reports and calculations.

Comments from Currituck County Public Utilities - Water/Wastewater (Will Rumsey, 252-232-6065 and Dave Spence 252-232-4152)

- Please be aware of developmental fees.
- If water is to be connected to new building a backflow cross connection preventor must be installed.
- 1" developmental fee is $10,697.00
- Fire hydrant developmental fee is $6,000.00

Development fees are acknowledged. The potable service will include backflow prevention by a RPZ near the road in a heated enclosure.

Comments from Currituck County GIS (Harry Lee 252-232-4039)

The building address has been updated to 4501 Caratoke Highway, Barco, NC 27917

Stormwater Consultant, McAdams (Daniel Wiebke, 919-361-5000)

Stormwater Comments will be addressed by Andy Deel with revised reports and calculations.

Deel Engineering, PLLC
NC Firm License P-1045

December 12, 2023

Currituck County
Currituck Historic Courthouse
153 Courthouse Road, Suite 302
Currituck, North Carolina 27929

Re: REVISED - Stormwater Management Report Submittal
Major Stormwater Plan
Cindy's Kitchen
Coinjock, Currituck County, NC

On behalf of Cynthia J. Spain, we hereby submit for your review revised elements of the previously submitted Major Stormwater Plan application package for the stormwater management system design for the Cindy's Kitchen Restaurant. Stormwater related Comment Responses are appended to the end of this cover letter.

The following revised and new/supplemental items are included with and shall be considered part of this submittal package:

1. Revised NCDEQ SWM Application (Address Corrected)
2. Revised Stormwater Management Plan Narrative & Calculations
3. EPA SWMM Model Report (for sizing of infrastructure elements)
4. Soil's Scientist Report / Groundwater Mounding Analysis to justify 1' clearance to SHWT)

This package is being submitted with a matching Construction Plans TRC Submittal, and so additional Construction Plans are not included under this transmittal (you will receive your plans under the TRC submittal).

At your earliest convenience, please review the attached information for compliance. If you have any questions, or if you require any additional information, please do not hesitate to contact me at (252) 202-3803.

Sincerely,

David A. Deel, P.E.
Encl: as stated

12/13/2023 Currituck County Resubmission
Deel Engineering Responses to TRC Comments:

McAdams Comments:

APPROVALS AND FORMS

1. (Pg 9/54) The submitted Major Site Plan Application lists the address of the parcel on Caratoke Highway but the NCDENR Stormwater Management Permit Application lists the street address as being on Croatan Highway. Please ensure that the addresses match up.

Response: The road name was incorrect on (US 158 becomes Croatan Highway further south). The correct road name of Caratoke Highway is now shown on the application.

2. (Pg 11/54) Item #9 under Project Information in the NCDENR Stormwater Management Permit Application states that the project has three drainage areas. Item #10 only shows two drainage areas. How many drainage areas is the project considered to have?

Response: The NCDEQ Permit Application is documenting two drainage areas for this project: Drainage Area 1 encompasses all of the proposed improvements (which are collected by the proposed infiltration basin) except a small portion of the entrance. Drainage Area "U" is included on the application to account for the perimeter areas of the site that are "uncontrolled" (no SCM). We have presented this information this way in the past to NCDEQ. The "3" reference was from an earlier iteration of the application and has been changed to "2".

3. (Pg 19/54) NCDEQ Minimum Design Criteria for an infiltrating stormwater control measure require a minimum of 2' separation between the lowest point of the infiltration system and the SHWT, which may be reduced to a minimum of 1' if hydrogeologic evaluation shows that the water table will draw down within 5 days. Only 1' of separation is provided between the bottom of the basin and the SHWT. This either needs to be increased or some sort of verification of drawdown capacity provided to allow the requirement to be reduced to 1' of separation.

Response: A mounding analysis by a licensed Soils Scientist (Protocol Sampling Services, Inc) which confirms the reduction to 1' of clearance is included with this submission.

4. (Pg 19 and 46/54) The narrative claims that 5-yr 24-hr runoff design volume is 8,824 cf, but the simple method calculations for the drainage area result in 8,724 cf. Please ensure that values are correct and consistent.

Response: The noted difference was a function of revisions in the basins in the late stages of design. Due to comments from Dylan Lloyd (Currituck County Soil & Water Conservation) where my conservative assumption of zero runoff for the pre-construction condition was rejected, I have abandoned my original approach (based on my own logic and engineering) of calculating a static volume to meet the 2-yr/5-yr requirement and re-calculated the required storage volume adhering strictly to the methodology prescribed in Currituck County Stormwater Manual Section 2.4.4, "Simple Volume Calculations for Small Sites". The revised new storage requirement per Section 2.4.4 is 5,538 cf. These calculations can be found in the revised Currituck County Stormwater Narrative included in this submission.

5. (Pg 47/54) Infiltration basin volume calculations assume a subsurface soil porosity of 20% which is used to calculate subsurface storage to aid reaching the 5-yr 24-hr storm runoff volume. Why was 20% porosity used?

Response: 20% is typical for sands in this area. However, with the revised storage requirements outlined above, subsurface storage no longer needs to be calculated in order to demonstrate compliance. Therefore, subsurface storage calculations have been removed from the submittal.

SITE PLAN DRAWINGS

Pre-amble/explanation of the system: I should have been clearer in my descriptions of this system in the narrative: It is common in my designs I where there is flat ground and good soils (infiltrating soils), for me to design my swale systems to function as part of the infiltration basin. In this particular design, the swale on the south and west side of the site is interconnected to the main basin on the north side of the site. The system is designed so that water will rise and fall throughout the system concurrently and stored runoff will have a constant head around the site during infiltration. Water stored within the swale portion of the system will infiltrate into the soils under the swale in the same manner as water in the main basin infiltrates into the soils underlying the main basin (to produce conservative results, mounding analysis and drawdown calculations assume that all of the stored water infiltrates into the bottom of the main basin, but this is not how the system will actually function). So – the swales are a part of the basin, the pipes only need to convey head differences between the different section of the basin, and the bottom of the swale can have high points and low points since it is an infiltrating system. The "upper reaches" of the system are the southeast corner of the developed area, and that is the reason for the fill in this area (otherwise, the system would "discharge" through the southeast corner in an unprotected manner during a large storm event).

6. (Pg 37/41) There are two proposed culverts in the site plan, have these been sized for their drainage areas?

Response: As described above, these pipes are equalization pipes and will not actually convey full runoff from their drainage areas due to the storage components that they interconnect. Through years of producing these designs, I have developed the habit of designing these via "rule of thumb" based on experience and that is why you did not receive calculations for these elements. That being said, it has been a long time since I have tested my approach, so this was a good opportunity to test my assumptions / approach:

Since these elements of the system are flowing based on constantly changing head differential between "upstream' and "downstream" ends, the most complete way to analyze them is via system modeling. Therefore, I constructed an EPA SWMM model of the post-construction site to evaluate the sizing of the interconnecting pipes and to check velocities within conveyances. An EPA SWMM report based on that exercise is included with this re-submission and confirms that the pipes are adequately sized within the system and velocities are in acceptable range for these soils.

7. (Pg 37/41) Part of the swale along the south edge of the site is called out as part of the infiltration basin. Is this intended to be considered as part of the infiltration basin, and is its volume included in the volume calculation?

Response: Please see the pre-amble response to this section. The "swales are integrated with and a part of the infiltration basin.

8. (Pg 37/41) The swale is disconnected from the infiltration basin due to a high point in the northwest corner. Is the swale intended to flow into the infiltration basin?

Response: Please see the pre-amble response to this section. The "swales are integrated with and a part of the infiltration basin – low points within the portion of the infiltration basin that we are referring to as "the swale" are intended to infiltrate.

9. (Pg 37/41) How does water flow out of the swale? Perhaps it is assumed that the 5-yr 24-hr storm infiltrations like in the basin, but what about for larger storms?

Response: Please see the pre-amble response to this section. The "swales are integrated with and a part of the infiltration basin – low points within the portion of the infiltration basin that we are referring to as "the swale" are intended to infiltrate. As noted in the Stormwater Narrative, larger storms overflow the system via a drop inlet at the northeast end of the infiltration basin with a top elevation of 11.0' (maximum stored runoff at elevation 11.0').

10. (Pg 37/41) There is approximately 1.5' vertical fill proposed in the southwestern corner of the disturbed portion of the site and continuing down the length of the swale on the southern edge of the site. This is not allowed per UDO Section 7.3.4.C(2).

Response: Please see the pre-amble response to this section. The "upper reaches" of the infiltration system are the southeast corner of the developed area, and that is the reason for the fill in this area – to direct runoff from the drainfield area towards the larger portions of the basin and to prevent the system from discharging through the southeast corner in an unprotected manner during a large storm event.

11. (Pg 37/41) There is an existing curb catch basin in the proposed driveway alignment. Will this be removed? Will roadway drainage be coordinated with NCDOT?

Response: Roadway drainage is being coordinated with NCDOT. The current plan is for this DI to remain and a flat grate / valley grate top to be added to the existing DI.

Dylan Lloyd Comments:

1) Stormwater infiltration basin includes a sub-grade portion of the basin for detention calculations that will utilize voids in the soil. This may require approval of the County Engineer or our engineering consultant under an Alternative Stormwater Plan UDO Sec. 7.3.5.

Response: It is customary for us to include pore space in the storage calculations for Infiltration Basins & this is specifically addressed in the NCDEQ SWM Manual. That being said, we do not need to account for that pore space storage in order to meet the Storage Volume Requirements, so the subgrade storage calculations were removed from the submission.

2) Site elevations show catch basin top grate near entrance with elevation of 12.6". Please include more elevations of the roadway.

Response: Additional grade information has been added.

3) Lists 0 Cubic Feet per Second as pre-existing runoff (assumed from a wooded site). Even if small, say 0.25cfs, a positive number should be used here.

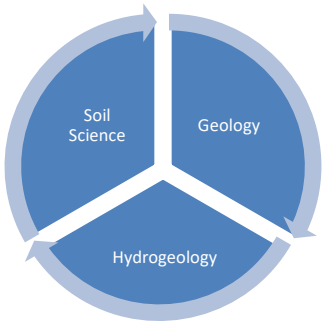
Response: Assuming a flow of zero in order to establish a flow reduction target is reasonable and acceptable Engineering Practice.

All of that being said, I have abandoned my original approach of calculating a static volume to meet the 2-yr/5-yr requirement and re-calculated the required storage volume, adhering strictly to the methodology prescribed in Currituck County Stormwater Manual Section 2.4.4, "Simple Volume Calculations for Small Sites". The revised new storage requirement per Section 2.4.4 is 5,538 cf. These step-by-step calculations can be found in the revised Currituck County Stormwater Narrative included in this submission.

4) I understand the applicant wishes to only consider the 'project area' - but our Stormwater Manual specifically says that the entire parcel be used for Area. 1.69 acres should be used instead of the 1.34 used for variable A in the drainage calcs.

Response: I have re-calculated the required storage volume for 1.69 acres utilizing Currituck County Stormwater Manual Section 2.4.4, "Simple Volume Calculations for Small Sites". The revised new storage requirement per Section 2.4.4 is 5,538 cf. These step-by-step calculations can be found in the revised Currituck County Stormwater Narrative included in this submission.

No longer related to this application, but I want to bring it up anyway: How can we address the Project Area vs Site Area problem? I was able to work it out on this site due to its relatively small size, but a larger site (such as a produce stand on the road frontage of a large farm) could not meet the County's requirements without losing significant portions of their overall property to ponds (on the order of 15-20%). We have been bringing this up for some time – is Planning & Zoning / County Engineering going to do anything to fix this in the ordinance, or is the next farmer that wants to add a produce stand going to have to go through a Text Amendment process?



Protocol Sampling Service, Inc.
"Experts in Environmental Compliance"

4114 Laurel Ridge Drive
Raleigh, North Carolina 27612

(919) 210-6547

Protocolsampling@yahoo.com
Environmentalservicesnc.com

December 12, 2023

Mr. Andy Deel, P.E.
Post Office Box 3901
Kill Devil Hills, North Carolina 27948
Via email; dadeeleng@gmail.com

Re: **Storm Water Management Soil Investigation**
Hydraulic Conductivity (Ksat) Testing
Aquifer Testing and ModFlow Modeling
Cindy's Kitchen
US Highway 158 – Caratoke Highway
Coinjock, Currituck County, North Carolina
Protocol Project #22-172

Dear Mr. Deel:

The following Soil Investigation is submitted to assist in a site assessment for the proposed storm water management improvements associated with the proposed Cindy's Kitchen Restaurant. The study area which is being considered for infiltration swales. The site is located on the east side of Caratoke Highway (US Highway 158) in Coinjock, Currituck County, North Carolina in the Lower Coastal Plain Physiographic Region. According to the Geologic Map of North Carolina (1985), the site lies in an area characterized by the undifferentiated surficial sediments of Quaternary age.

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SITE HISTORY AND PHYSICAL CHARACTERISTICS

The study area is currently undeveloped. Commercial development surrounds the study area. Protocol Sampling Service, Inc. of Raleigh, North Carolina was hired to perform an investigation to identify the depth to seasonal high-water table, if any restrictive layers are present in the proposed location of the infiltration swales determine subsurface permeabilities at and below the expected basin bottom elevation and determine if the water table will subside to its pre-storm elevation within 5 days or less via groundwater modeling using the USGS model ModFlow-NWT.

SOIL INVESTIGATION

The field survey was conducted on November 10, 2022, and November 29 and 30, 2023. Three (3) soil borings were advanced to 72 inches below land surface (bls) with a hand auger in the proposed storm water basin as shown on the attached exhibit. Soil color was determined with a Munsell Soil Color Chart. The presence of fill or other disturbances, the depth to the seasonal high-water table, soil structure and consistence were noted. The borings

were also checked for reduced colors, an anaerobic smell or obvious soil wetness. Surface elevations range from 12.81 feet msl to 11.31 feet msl from west to east across the study area.

FINDINGS - Soil

- The subject property contains, from west to east, soil belonging to the Bojac series in the higher elevations, the Augusta series in the middle elevations and Dragston series in the lower elevations.

- The soil was found to have an apparent depth to seasonal high-water table ranging from 42, 37 and 23-inches bls in soil boring No.1, 2 and 3, respectively. Static water levels were found to be below 68-inches bls in soil boring No.1 and 2 and at 56-inches bls in boring No.3.

- No major restrictive horizons were encountered to a depth of 72-inches in any of the soil borings.

HYDRAULIC CONDUCTIVITY TESTING

Saturated hydraulic conductivity tests were performed to determine the permeability at or slightly below the expected infiltration depth of the infiltration swale. Saturated hydraulic conductivity is a quantitative measure of a saturated soil's ability to transmit water. It can be thought of as the ease with which pores of a saturated soil permit water movement. A common method to measure saturated hydraulic conductivity (K_{SAT}) of the unsaturated zone is by a constant-head well permeameter method (Amoozegar and Mecklenburg, 1999). These K_{SAT} tests take into account soil morphologic factors other than texture, because soil structure and clay mineralogy have been found to have a significant impact on the rate of water movement through soils (Bouma et al., 1983; Schoeneberger et al, 1995, Vepraskas et al, 1996). The Compact Constant Head Permeameter (Amoozemeter) is an example of a constant head permeameter which allows measurements of K_{SAT} in the vadose zone and is widely used in North Carolina and other parts of the country (Amoozegar, 2004; Amoozegar and Mecklenburg, 1999).

The Ksats were run at 18 and 6-inches above the current seasonal high water table elevation at 24 and 36-inches bls and above the capillary fringe. The saturated hydraulic conductivity test performed at 24-inches bls reached steady state readings within twenty minutes and three consecutive readings revealed an average conductivity of 0.854 inches/hour or 0.68 feet/day. The saturated hydraulic conductivity test performed at 36-inches bls reached steady state readings within five minutes and three consecutive readings revealed an average conductivity of 4.40 inches/hour or 8.70 feet/day.

FINDINGS – Conductivity and Porosity

- In-situ testing has revealed an infiltration and percolation rate through the subsurface loamy sand found at 36-inches bls of greater than 4-inches/hour.
- A sample of the natural subsurface sand below the expected basin bottom at 5.5-feet below land surface was collected and taken to the GeoTechnologies, P.A. laboratory in Raleigh, North Carolina for porosity testing. Lab results revealed that the moderately well-sorted fine sand has a porosity of 38% at 102% compaction (Results-attached).

Aquifer Test Methodology

Aquifer parameters were obtained by conducting a 24-hour aquifer test in the middle of the proposed basin at 0.3-gallons/minute on the 12 foot deep well (designated PW). The aquifer test was performed on the pumping well (PW) on November 29 and 30, 2023. PW was screened below the water table with a four-foot section of 1.25-inch 0.010" slotted well screen set from 8.0 to 12-feet bls. The 1.25-inch diameter observation well OW, was installed nine-feet north of the PW and was screened from 8.0 to 12.0-feet bls. The response in the OW was measured by a HOBO Water

Level Logger pressure transducer and by hand with a Solinst water level meter. Pressure transducers measure pressure changes within the well's water column and the information is stored in the logger, which converted and recorded the pressure reading to changes in the static water level.

The test data was analyzed using a computer type-curve matching program called Aqtesolve developed by HydroSolve, Inc. (1996-2007). The match was made using the Neuman solution for an unconfined aquifer using the early time data. Drawdown data and the curve generated from the aquifer test are attached.

AQUIFER PROPERTIES

Using the aforementioned methods, the transmissivity value was determined to be 100 ft^2/day in an aquifer known to be at least 10-feet thick. Specific yield for a water table aquifer in this geologic setting ranges between 0.10 to 0.30 (Groundwater and Wells, Driscoll, 1986). This range is confirmed from site lithologic descriptions.

MOUND MODELING

Hydraulic conductivity is a measure of the rate at which water will pass through a soil in response to a given gradient. Hydraulic conductivity is most directly related to the texture and structure of a given soil. Relatively homogeneous soils with small pores or small particle size, such as clays, typically exhibit low hydraulic conductivity rates. Conversely, coarse textured soils with large pores or large particle size, such as sands or fluvial material which were encountered in the study area can exhibit extremely high conductivity rates.

Modeling of the expected 1.5" rainfall event that will produce 27,776 gallons of stormwater into a basin with an infiltration area of 11, 736 ft^2 has shown that the expected volume will dissipate within the 5-day window with the removal of the top 5.5 feet of existing soil and replacement with clean well-sorted fine to medium sand (Eagle Resources, P.A. report – attached)

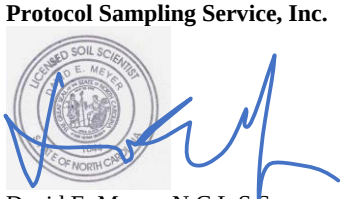
CONCLUSIONS

The existing soil in the infiltrative surface of the basin should be excavated down to a depth of 5.4-feet (6.84' msl) to 5.6-feet (5.88'-msl) below grade and backfilled with clean, well-sorted fine to medium sand free of shells and any organic debris and brought back to an elevation of 9.8'. This will provide a 1-foot separation between the basin bottom and the expected seasonal high water table elevation of 8.80' msl. The sand should be sampled and tested for porosity, sorting and median grain size prior to placement in the basin.

The findings presented herein are based on the site conditions observed during performance of the field survey on November 10, 2022 and November 29 and 30, 2023.

Please call me at (919) 210-6547 if you have any questions or need further assistance.

Sincerely,
Protocol Sampling Service, Inc.



David E. Meyer, N.C.L.S.S.
President

Eagle Resources

David Deel
Deel Engineering PLLC
P.O. Box 3901
Kill Devil Hills, NC 27948

Via email: dadeeleng@gmail.com

December 13, 2023

Subject: Analysis of water inflow and outflow from stormwater pond, Cindy's Kitchen Project

Dear David
This letter responds to the request from David Meyer of Protocol Sampling Services, Inc. (PSS) for the subject assessment. We performed this assessment using a three-dimensional groundwater flow model constructed using information provided by PSS and a CAD drawing provided by your office. The land surface outside the boundary of the stormwater basin was modeled with elevations from the digital elevation model based on LIDAR[1]. The land surface within the basin was modeled using the elevation contours provided on your drawing file[2]. Based upon information from PSS the surficial sand material was modeled with a thickness of 15 feet from the land surface and the underlying clay was modeled as a layer below that with t thickness of 10 feet. The horizontal hydraulic conductivity of the sand was set at 5 feet per day based upon Ksat tests and a pumping test by PSS. The vertical hydraulic conductivity was modeled as 30% o the horizontal value.

The model was constructed using the USGS model ModFlow-NWT and covered an area of 1,000 by 1,000 feet centered on the pond. The regular, rectangular finite-difference grid used a spacing of 5 ft x 5 ft over the area surrounding the pond which was expanded to 20 ft x 20 ft art the edges of model.

A natural recharge rate of 12 inches/year was applied to the top of the model. Constant water level elevations of 5 feet were applied to the west and north model boundaries and a level o 4.9 feet was applied to the east boundary to simulate natural regional groundwater flow across the site.

Inflow to the pond wad modeled by applying recharge to the pond area equal to the unit rate computed using a precipitation rate of 1.5 inches/day multiplied by the total area of the parcel for the project (1.69 acres). This resulted in a total volume of 9,200 cubic feet of runoff into the pond. This volume was assumed to flow into the pond over 24 hours, resulting in a rate of recharge applied to the pond of 1.28 ft/day/

The figures in the Attachment show water accumulation into the pond and seepage to groundwater out of the pond, and the time chart shows the modeled water level at four locations within the pond in response to the inflow. All of these show that the design storm runoff into the pond will drain out within 5 days following the cessation of runoff.

[1] https://sdd.nc.gov/
[2] cindys kitchen-currituck base rev1.dwg

Please let me now if you need anything further regarding this analysis

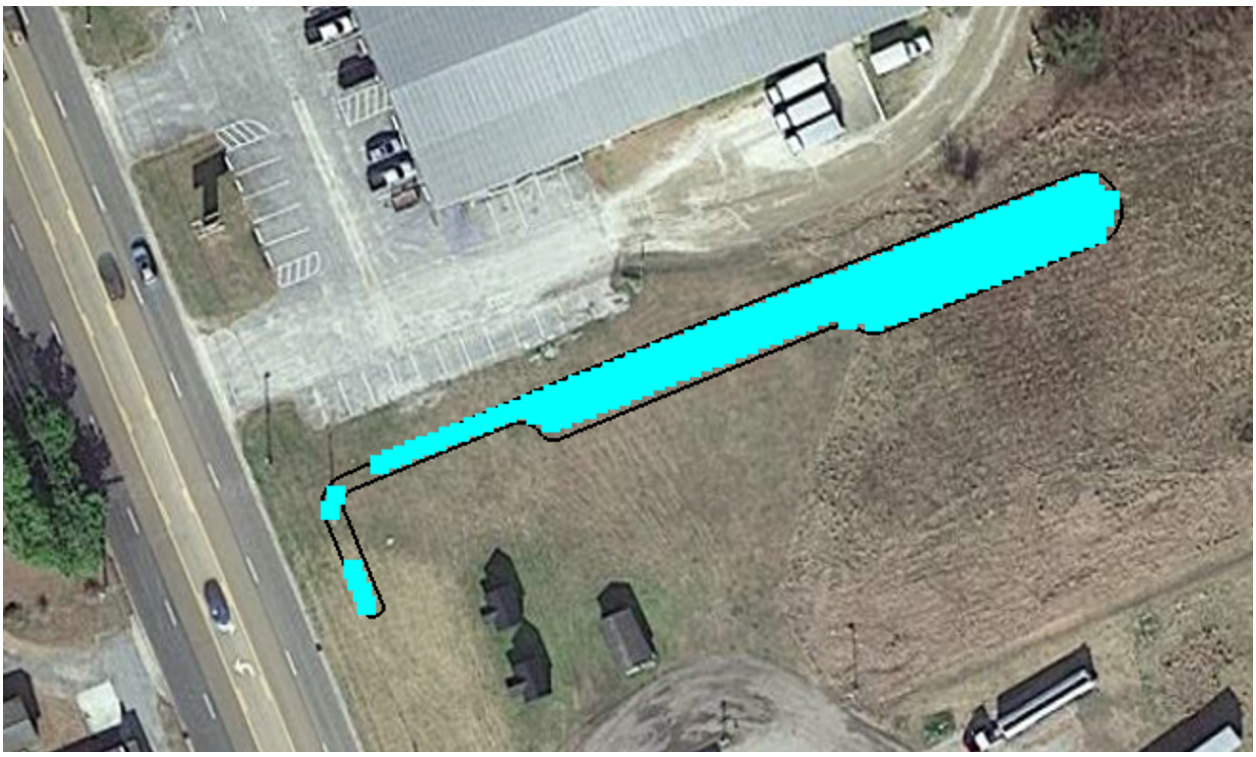
Sincerely yours,

Eric G. Lappala, P.E., P.H.
Cc: David Meyer, Protocol Sampling Services

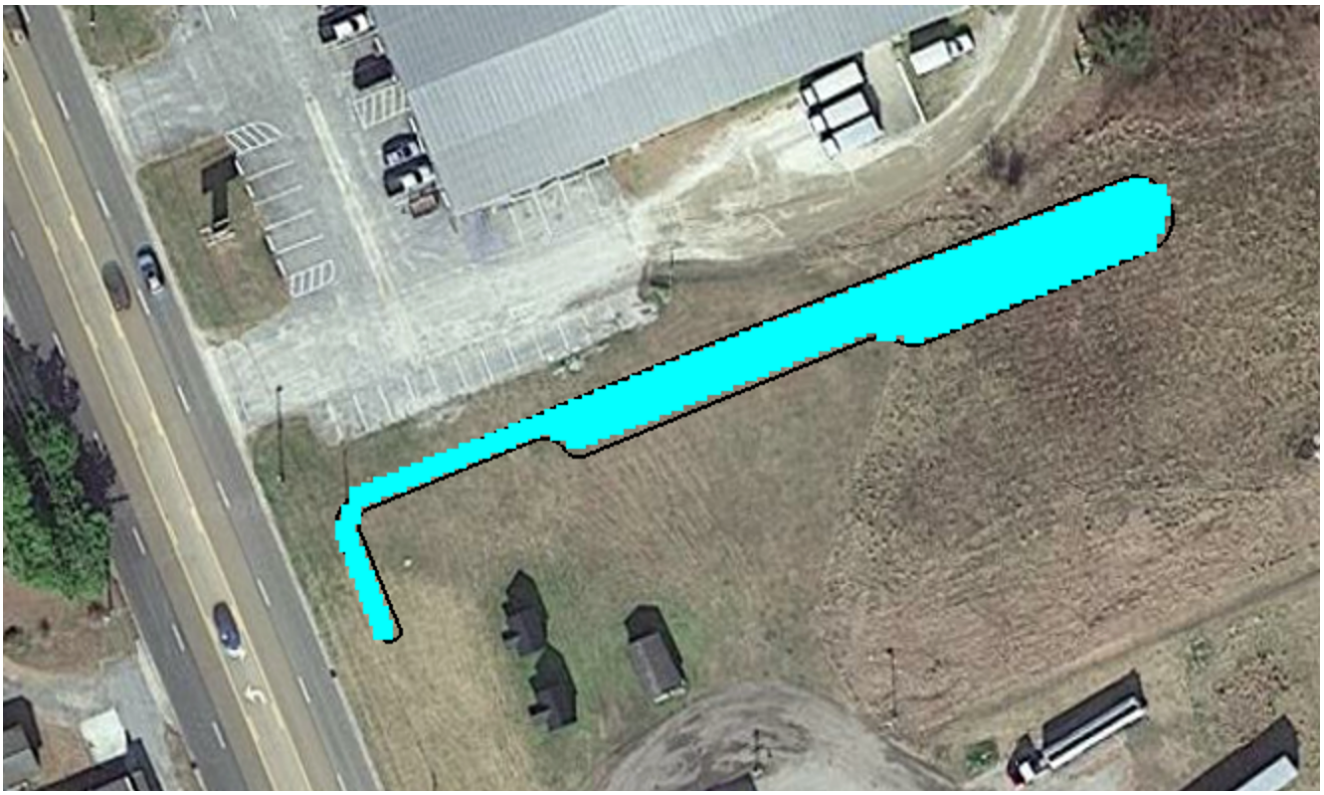
Attachment: Maps and chart of modeled water levels in pond

Basin boundary before stormwater inflow.

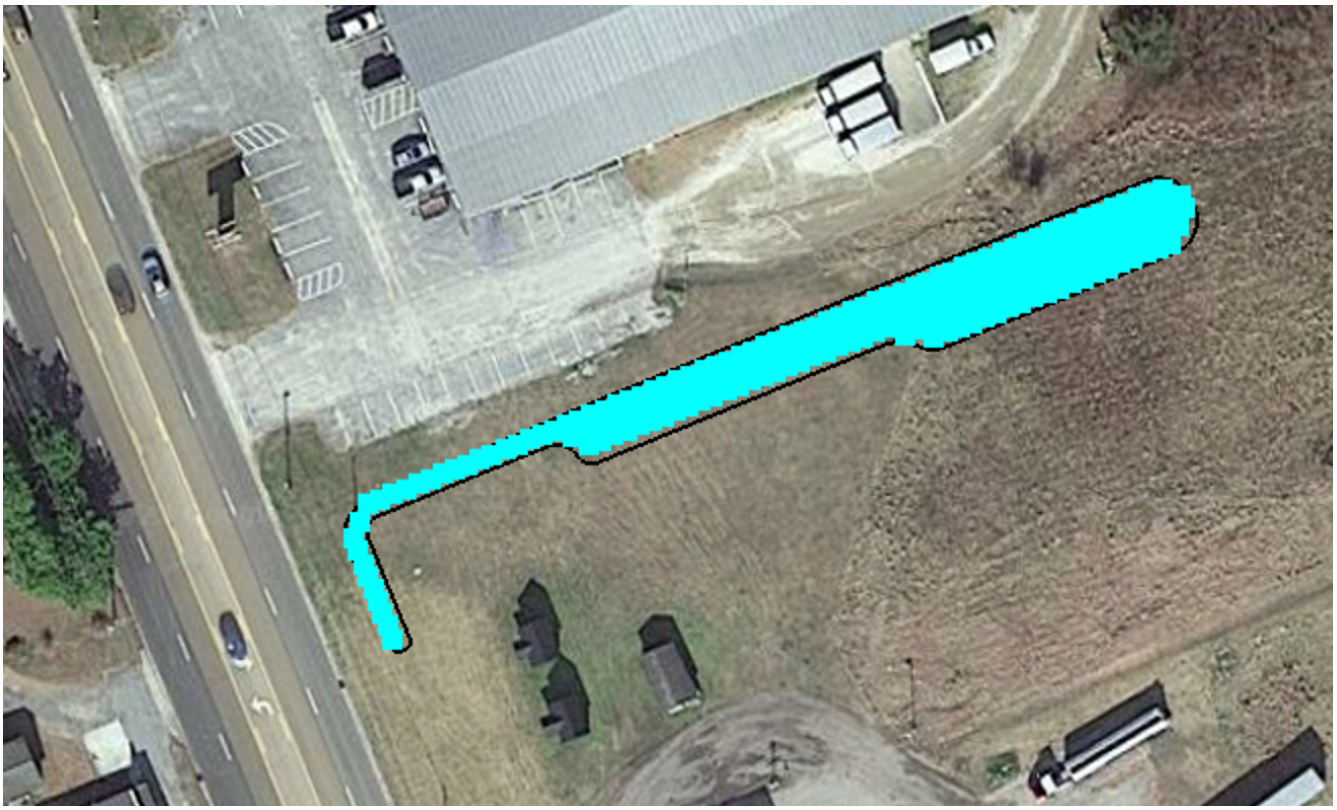
Water in basin (blue triangles) and water table contours 3 hours after rain starts, with runoff from entire property.



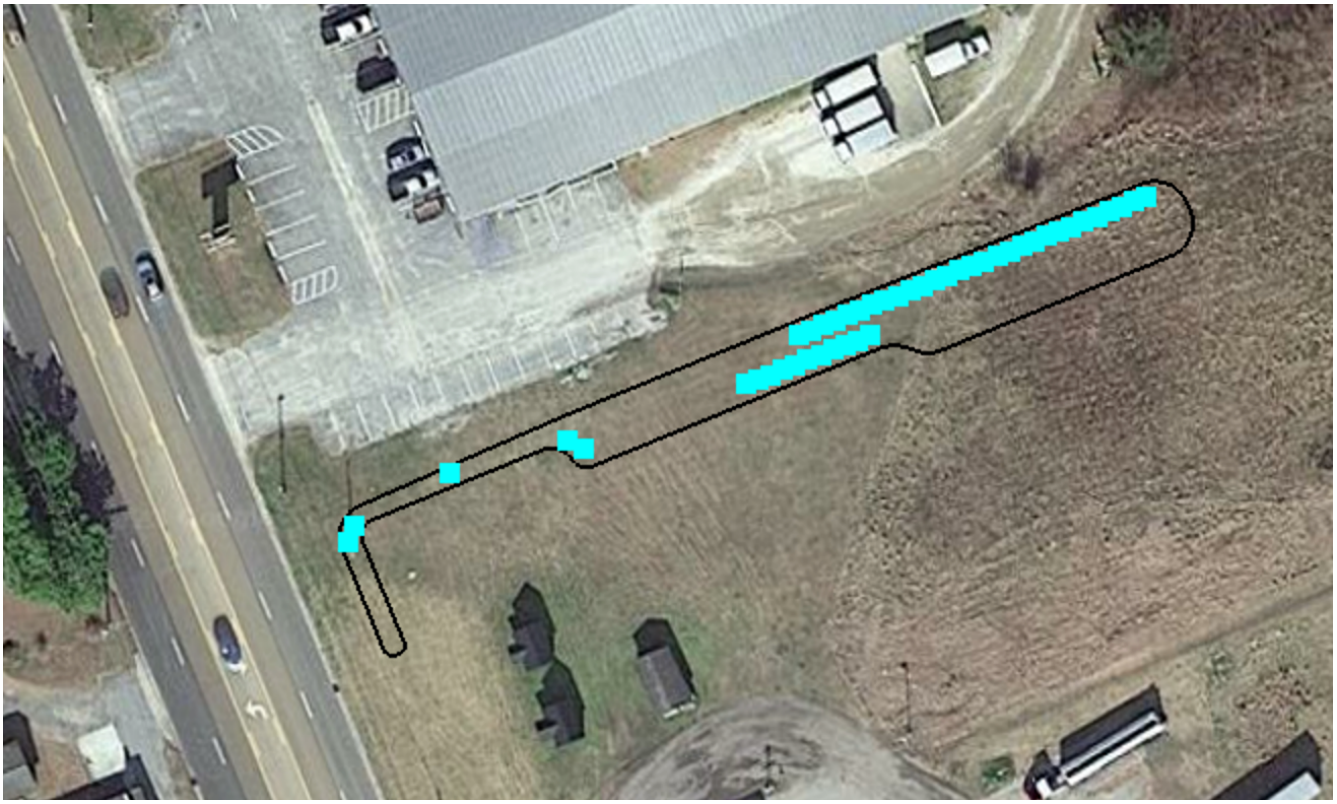
Water in basin (blue triangles) and water table contours 6 hours after rain starts, with runoff from entire property.



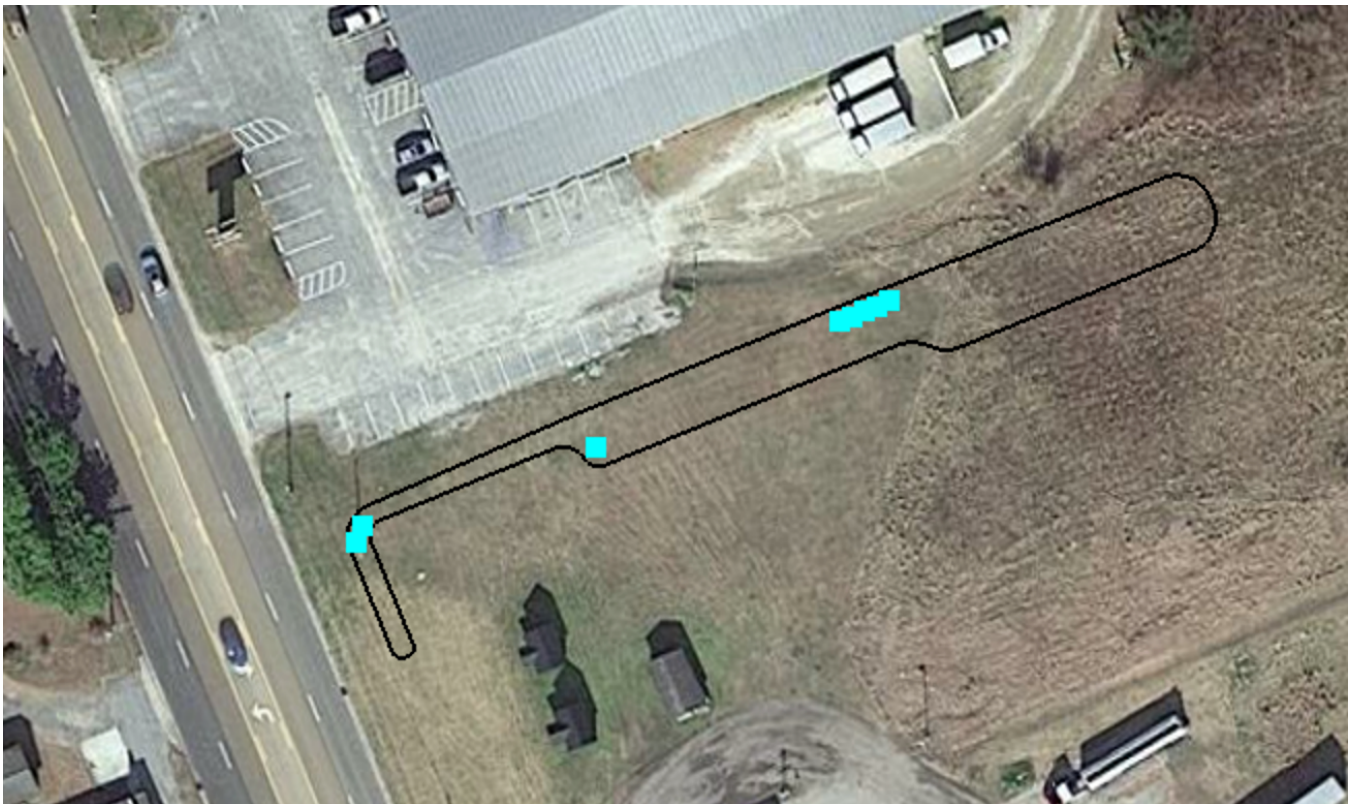
Water in basin (blue triangles) and water table contours 12 hours after rain starts, with runoff from entire property.



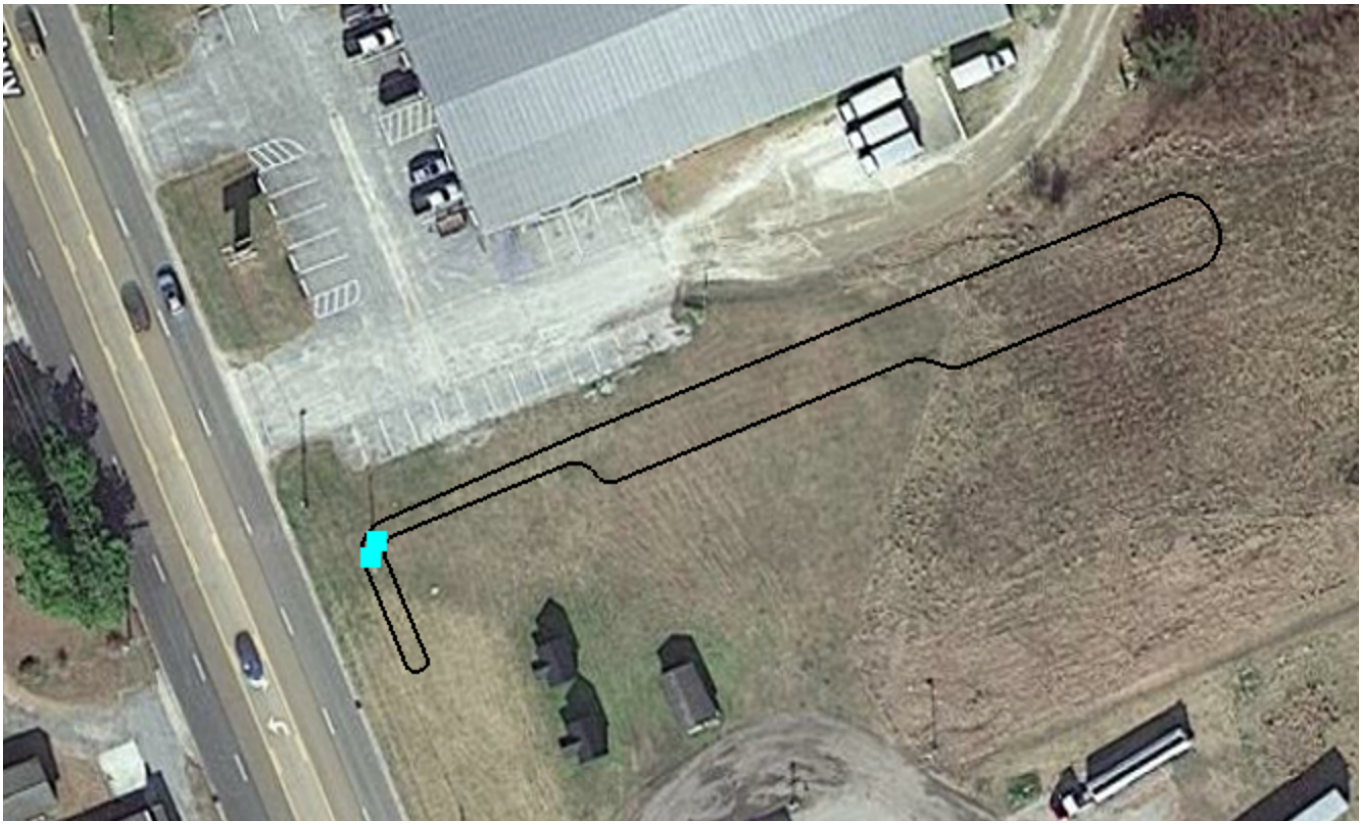
Water in basin (blue triangles) and water table contours 24 hours after rain starts, with runoff from entire property.



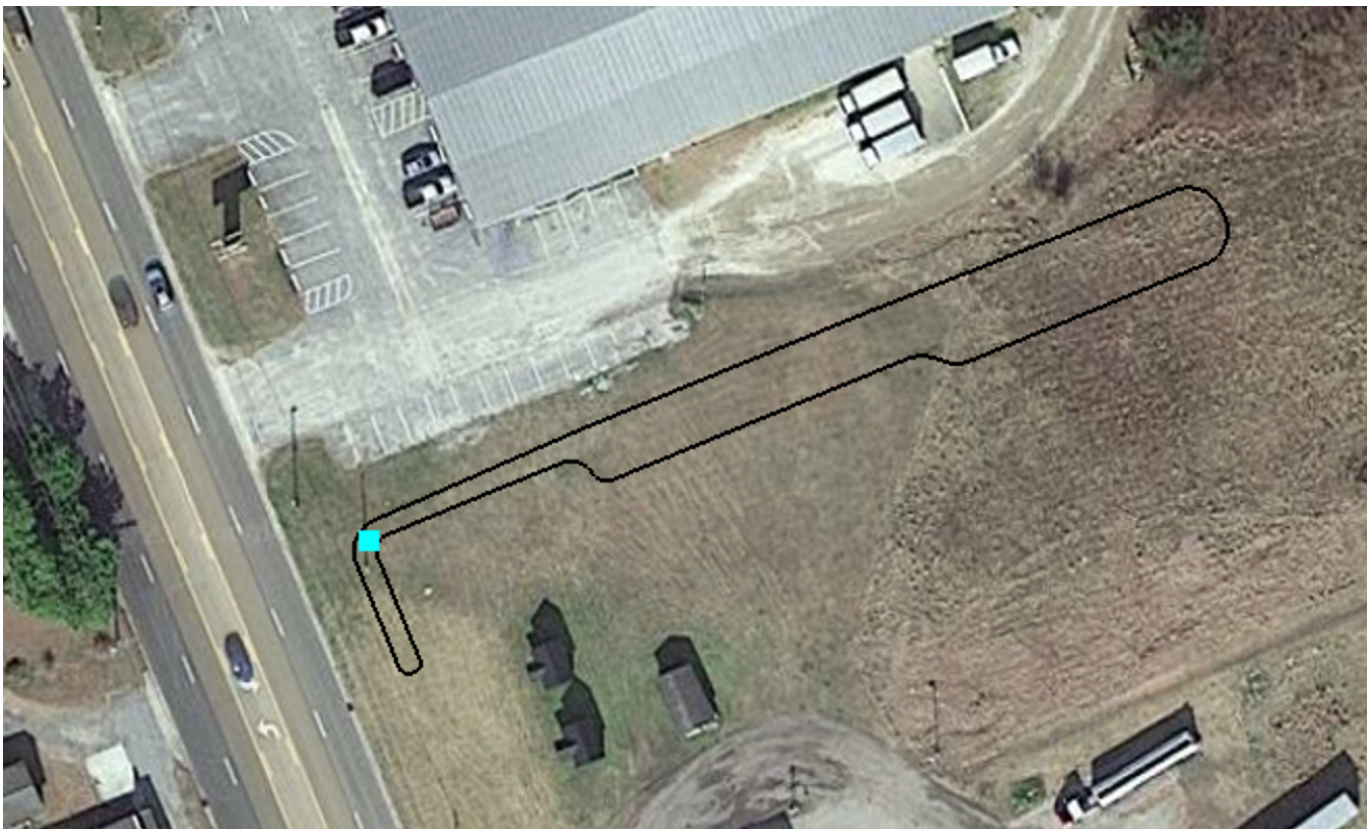
Water in basin (blue triangles) and water table contours 0.1 days after rain and runoff stop.



Water in basin (blue triangles) and water table contours 0.2 days after rain and runoff stop.

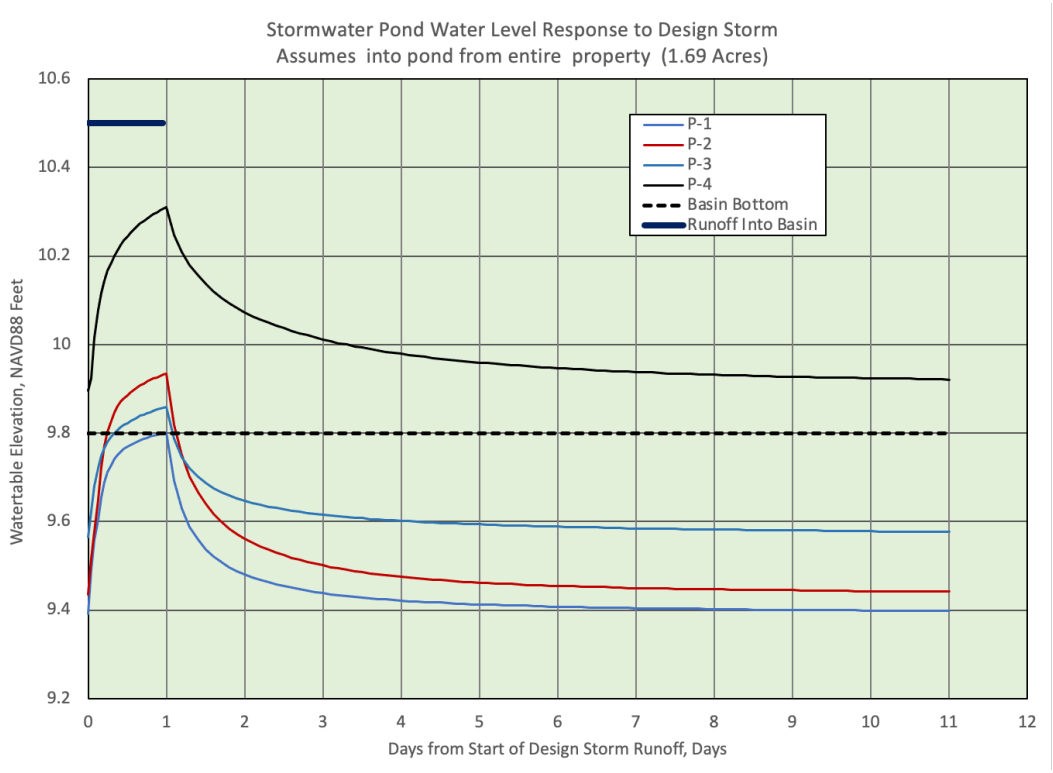


Water in basin (blue triangles) and water table contours 0.3 days after rain and runoff stop.

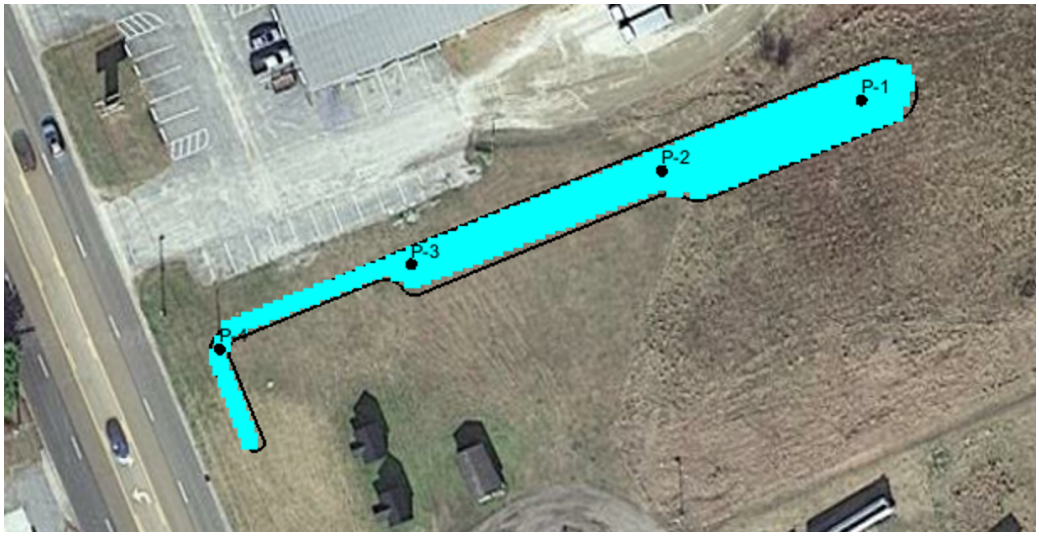


Water in basin (blue triangles) and water table contours 1 day after rain and runoff stop.

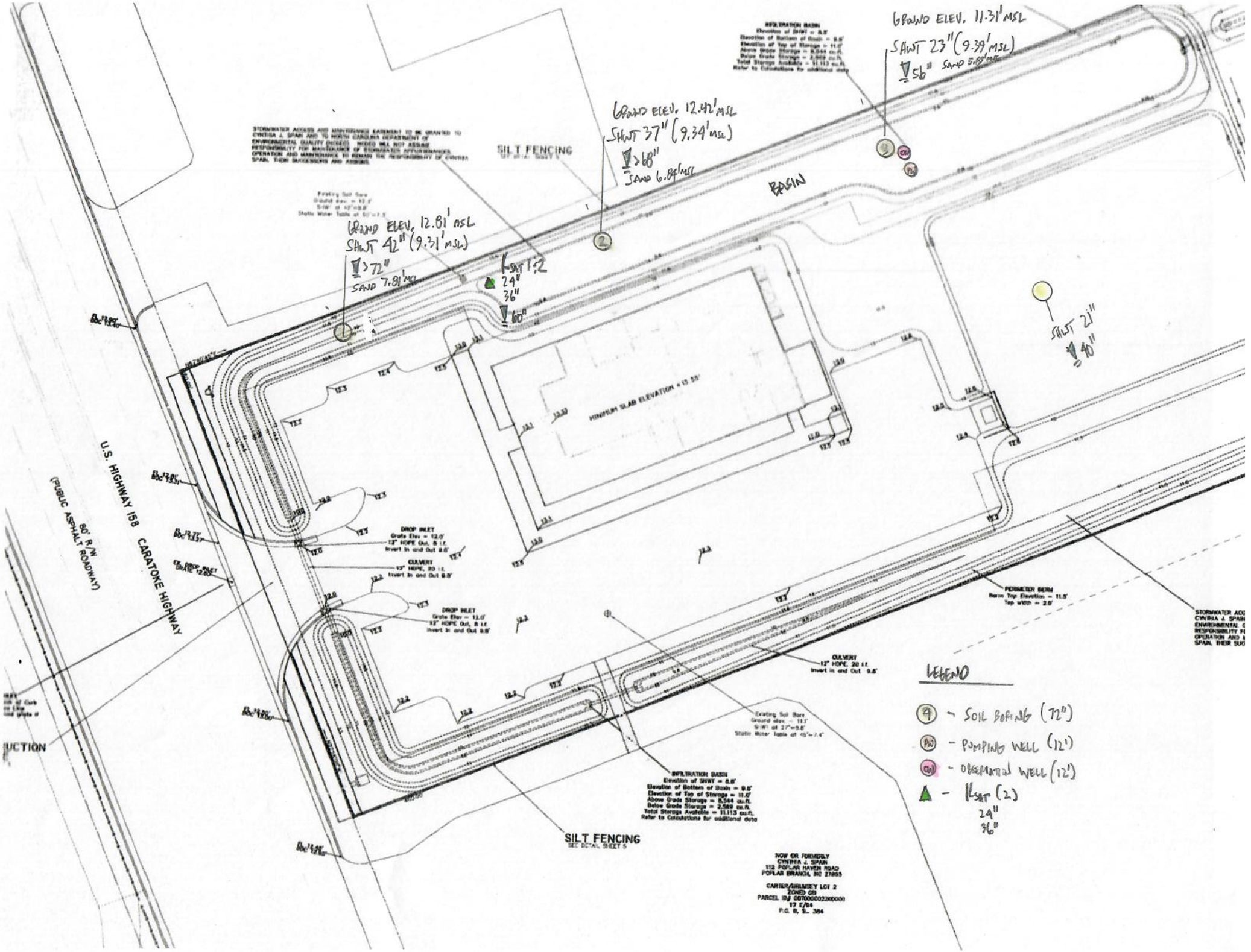
Water in basin (blue triangles) and water table contours 2 days after rain and runoff stop.



Time plots of water levels in basin in response to inflow of design storm



Location of observation points in time chart.


GROUND ELEV. 11.31' MSL
SHWT 23" (9.39' MSL)
56" SAND 5.89' MSL
GROUND ELEV. 12.42' MSL
SHWT 37" (9.34' MSL)
>68"
SAND 6.84' MSL
GROUND ELEV. 12.81' MSL
SHWT 42" (9.31' MSL)
>72"
SAND 7.81' MSL
SHWT 1:2
24"
36"
60"
SHWT 21"
40"
SILT FENCING
BASIN
U.S. HIGHWAY 158 CARATOKE HIGHWAY
80' R/W
(PUBLIC ASPHALT ROADWAY)
DROP INLET
Grate Elev = 12.0'
12" HDPE Out, 8 l.f.
Invert In and Out 8.6'
CULVERT
12" HDPE, 20 l.f.
Invert In and Out 9.8'
DROP INLET
Grate Elev = 12.0'
12" HDPE Out, 8 l.f.
Invert In and Out 9.8'
PERIMETER BERM
Berm Top Elevation = 11.5'
Top width = 2.0'
CULVERT
12" HDPE, 20 l.f.
Invert In and Out 9.5'
INFILTRATION BASIN
Elevation of SHWT = 8.8'
Elevation of Bottom of Basin = 9.5'
Elevation of Top of Storage = 11.0'
Above Grade Storage = 8,544 cu.ft.
Below Grade Storage = 2,569 cu.ft.
Total Storage Available = 11,113 cu.ft.
Refer to Calculations for additional data
SILT FENCING
SEE DETAIL SHEET 5
NOW OR FORMERLY
CYNTHIA J. SPAIN
112 POPLAR HAVEN ROAD
POPLAR BRANCH, NC 27965
CARTER/BRUMLEY LOT 2
ZONED GB
PARCEL ID# 0070000022K000
17 E/84
P.C. B, S. 384
LEGEND
- SOIL BORING (72")
- PUMPING WELL (12')
- OBSERVATION WELL (12')
- KSAT (2)
24"
36"

Protocol Sampling Service, Inc.
4114 Laurel Ridge Dr
Raleigh, NC 27612

Sheet 1 of 1
PROPERTY ID #: 0070006223001
COUNTY: Currituck

SOIL/SITE EVALUATION
***for* ON-SITE WASTEWATER SYSTEM**
(Complete all fields in full)

OWNER: Cindy Hughes
ADDRESS: Lot 1 Caffrey Business Subdivision (Address shall consider NC) APPLICATION DATE
PROPOSED FACILITY: Restaurant PROPOSED DESIGN FLOW (.1949): 1460 GPD DATE EVALUATED: 11-10-22
LOCATION OF SITE: Corolla NC PROPERTY SIZE:
WATER SUPPLY: ☐ Private ☒ Public ☐ Well ☐ Spring ☐ Other PROPERTY RECORDED: Yes
EVALUATION METHOD: ☑ Auger Boring ☐ Pit ☐ Cut TYPE OF WASTEWATER: ☐ Sewage ☐ Industrial Process ☐ Mixed

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941) .1941 STRUCTURE/ TEXTURE	.1941 CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
1	T 0-1% SW	0-12"	bk LS	Fr NS NP	10YR 6/2 42" ▽ 60" Ksat1 24" Ksat2 36"	48"+			PS 0.3-0.6
		12-24"	SBk SCL	Fr SS SP					
		24-35"	SBk SL	Fr SS SP					
		35-45"	SBk LS	Fr NS NP					
		45-48"	bk SL	L NS NP					
2	T 0-1% SW	0-8"	bk SL	Fr NS NP	10YR 6/2 27" ▽ 43"	48"+			PS 0.3-0.6
		8-18"	SBk SCL	Fr SS SP					
		18-31"	bk fSL LS	Fr NS NP					
		31-47"	SBk SL	Fr SS SP					
		47+	bk LS	Fr/L NS NP					
3	T 0-1% SW/WW	0-12"	gr SL	Fr SS SP	10YR 6/1 12" ▽ 32" 10YR 6/1 15" ▽ 39"	36"+			PSW Fill
		12-18"	SBk SCL	Fr SP					
		18-27"	SBk SL	Fi SP SMP					
		27-36"	SBk SL	Fr SS SP					
4	T 0-1% WW	0-10"	Gr LS	Fr NS NP	10YR 6/2 21" ▽ 40+	48"+			PS A1-0.4 W/ 18" Fill 0.3-0.6
		10-14"	bk SL	Fr NS NP					
		14-26"	SBk SCL	Fr SS SP					
		26-34"	SBk SL	Fi SS SMP					
		34-40"	SBk LS	Fr NS NP					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	Yes	Yes
System Type(s)		
Site LTAR		

OTHER FACTORS (.1946):
SITE CLASSIFICATION (.1948):
EVALUATED BY:
OTHER(S) PRESENT:

SATURATED HYDRAULIC CONDUCTIVITY STUDY
Cindy's Kitchen

Date: 11/10/2022
Location: SW
Number: Ksat1
Horizon: Bt
Depth(inches): 24.0

Weather Condition: warm
Temperature (F): 70

SET UP

		cm	in
Hole Depth:		61.0	24.0
Reference:	+	10.2	4.0
Head:	-	15.2	6.0
CHT Tube(s) setting:	=	55.9	22.0

	cm	in
Target Water Level:	15.2	6.0
Beginning Water Level:	15.2	6.0
Ending Water Level:	15.2	6.0

Hole diameter (d): 5.0 cm
Hole radius (r): 2.5 cm
coefficient A: 0.001136

Valve Setting: x (1-ON / 2-ON)

NOTE: Readings based on Ending Water Level

Coversion Factor (C.F.): 105.0

Water Reading	Change in Water Leve	Chamber C.F.	Clock Time (min)	Elapsed Time (min)	Elapsed Time (hr)	Q (cm3/hr)	K (cm/hr)	K (in/hr)	K gal/ft2/day
38.5			0.0						
38			1.0						
36	2.0	105.0	5.0	4.00	0.067	3150.0	3.5791	1.4091	21.082
34.2	1.8	105.0	10.0	5.00	0.083	2268.0	2.5770	1.0146	15.179
31	3.2	105.0	20.0	10.00	0.167	2016.0	2.2906	0.9018	13.493
27.7	3.3	105.0	30.0	10.00	0.167	2079.0	2.3622	0.9300	13.914
24.7	3.0	105.0	40.0	10.00	0.167	1890.0	2.1475	0.8455	12.649
21.7	3.0	105.0	50.0	10.00	0.167	1890.0	2.1475	0.8455	12.649
18.7	3.0	105.0	60.0	10.00	0.167	1890.0	2.1475	0.8455	12.649
						Final Ksat	**2.147**	**0.845**	**12.649**

SATURATED HYDRAULIC CONDUCTIVITY STUDY
Cindy's Kitchen

Date: 11/10/2022
Location: SW
Number: Ksat2
Horizon: C 1
Depth(inches): 36.0

Weather Condition: warm
Temperature (F): 70

SET UP

		cm	in
Hole Depth:		91.4	36.0
Reference:	+	10.2	4.0
Head:	-	15.2	6.0
CHT Tube(s) setting:	=	86.4	34.0

	cm	in
Target Water Level:	15.2	6.0
Beginning Water Level:	15.2	6.0
Ending Water Level:	15.2	6.0

Hole diameter (d): 0.0 cm
Hole radius (r): 0.0 cm
coefficient A: 0.001136

Valve Setting: x (1-ON / 2-ON)

NOTE: Readings based on Ending Water Level

Coversion Factor (C.F.): 105.0

Water Reading	Change in Water Leve	Chamber C.F.	Clock Time (min)	Elapsed Time (min)	Elapsed Time (hr)	Q (cm3/hr)	K (cm/hr)	K (in/hr)	K gal/ft2/day
			0.0						
40.5			0.0						
38	2.5	105.0	1.0	1.00	0.017	15750.0	17.8956	7.0455	105.412
36	2.0	105.0	2.0	1.00	0.017	12600.0	14.3165	5.6364	84.330
34.5	1.5	105.0	3.0	1.00	0.017	9450.0	10.7374	4.2273	63.247
32.5	2.0	105.0	4.0	1.00	0.017	12600.0	14.3165	5.6364	84.330
31	1.5	105.0	5.0	1.00	0.017	9450.0	10.7374	4.2273	63.247
23	8.0	105.0	10.0	5.00	0.083	10080.0	11.4532	4.5091	67.464
7.5	15.5	105.0	20.0	10.00	0.167	9765.0	11.0953	4.3682	65.355
						Final Ksat	**11.095**	**4.368**	**65.355**

POROSITY OF SAND

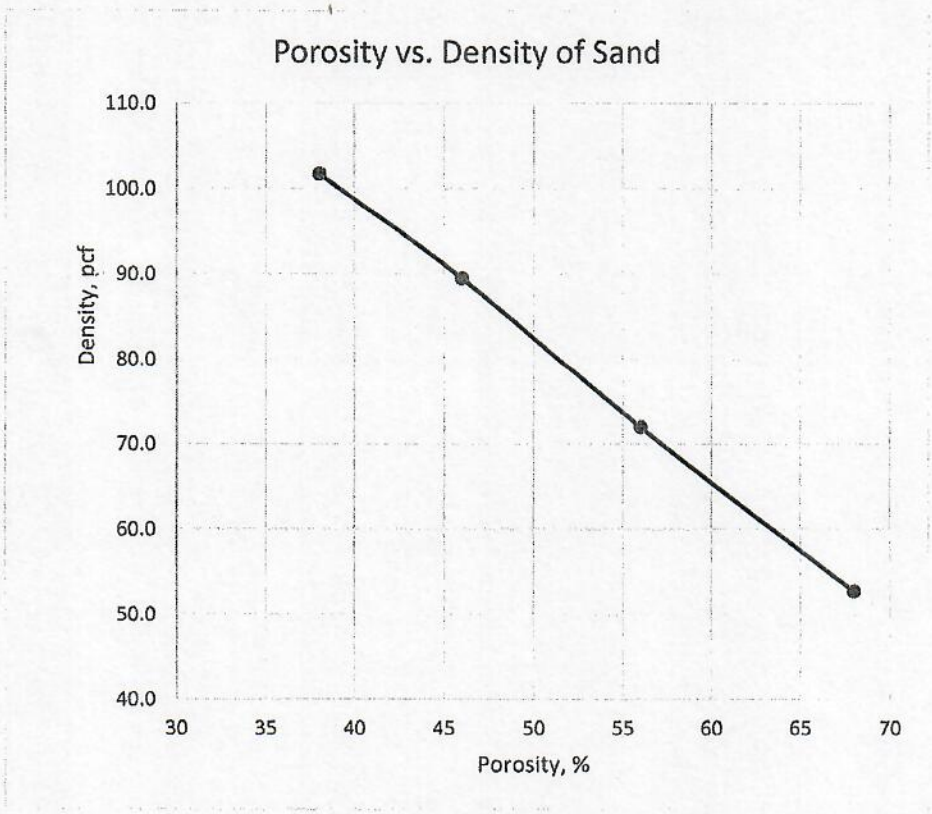
Cindy's Kitchen

Project No. 1-23-To be assigned-CA

Density, pcf	Porosity*
53	68
72	56
90	46
102	38

* Gs = 2.65

Porosity = Volume of Voids / Total Volume



Drilled Boring Log

Boring	Depth (feet)	Description
PW/OW	0.0 – 1.0'	Dark yellowish brown (10YR 4/4) fine sand (SM)
	1.0 – 3.0'	Yellowish brown (10YR 5/4) silty fine sand (SM)
	3.0 – 5.5'	Yellowish brown (10YR 5/4) clayey sand (SC)
	5.5 – 6.0'	Gray (10YR 5/1) fine sand (SM); well sorted
	6.0 – 8.0'	Dark gray (10YR 4/1) fine to medium sand (SM); well sorted
	8.0 – 15.0'	Dark gray (10YR 4/1) fine to medium sand (SM); well sorted
	15.0 – 17.0'	Black (10YR 2/1) **sandy clay** (CL);
	17.0 – 20.0'	Gray (10YR 5/1) fine to medium sand (SM); well sorted
	H_2O @ 56" bls	

PW and OW used in 24 hour aquifer test. Pumping well and observation well each 12'deep with 4' 1.25" 0.010" pvc well screen.

DEMLR USE ONLY		
Date Received	Fee Paid	Permit Number
Applicable Rules: ☐ Coastal SW – 1995 ☐ Coastal SW – 2008 ☐ Ph II - Post Construction *(select all that apply)* ☐ Non-Coastal SW- HQW/ORW Waters ☐ Universal Stormwater Management Plan ☐ Other WQ Mgmt Plan: _____		

State of North Carolina
Department of Environment and Natural Resources
Division of Energy, Mineral and Land Resources

STORMWATER MANAGEMENT PERMIT APPLICATION FORM

This form may be photocopied for use as an original

I. GENERAL INFORMATION

1. Project Name (subdivision, facility, or establishment name - should be consistent with project name on plans, specifications, letters, operation and maintenance agreements, etc.):

   Cindy's Kitchen

2. Location of Project (street address):

   (tbd) Caratoke Highway

   City:Coinjock County:Currituck Zip:27965

3. Directions to project (from nearest major intersection):

   Project is located on the east side of NC 158 approximately 570 feet north of the intersection of NC 158 and Coinjock Acres Drive

4. Latitude:36° 21′ 17.07″ N Longitude:75° 57′ 35.14″ W of the main entrance to the project.

II. PERMIT INFORMATION:

1. a. Specify whether project is (check one): ☒New ☐Modification ☐ Renewal w/ Modification†

   †*Renewals with modifications also requires SWU-102 – Renewal Application Form*

   b. If this application is being submitted as the result of a **modification** to an existing permit, list the existing permit number_____ , its issue date (if known)_____, and the status of construction: ☐Not Started ☐Partially Completed* ☐ Completed* **provide a designer's certification*

2. Specify the type of project (check one):
   ☐Low Density ☒High Density ☐Drains to an Offsite Stormwater System ☐Other

3. If this application is being submitted as the result of a **previously returned application** or a **letter from DEMLR requesting a state stormwater management permit application**, list the stormwater project number, if assigned, _____ and the previous name of the project, if different than currently proposed, _____.

4. a. Additional Project Requirements (check applicable blanks; information on required state permits can be obtained by contacting the Customer Service Center at 1-877-623-6748):

   ☐CAMA Major ☒Sedimentation/Erosion Control: 1.69 ac of Disturbed Area

   ☐NPDES Industrial Stormwater ☐404/401 Permit: Proposed Impacts _____

   b. If any of these permits have already been acquired please provide the Project Name, Project/Permit Number, issue date and the type of each permit:_____

5. Is the project located within 5 miles of a public airport? ☒No ☐Yes

   If yes, see S.L. 2012-200, Part VI: http://portal.ncdenr.org/web/lr/rules-and-regulations

III. CONTACT INFORMATION

1. a. Print Applicant / Signing Official's name and title (specifically the developer, property owner, lessee, designated government official, individual, etc. who owns the project):

Applicant/Organization: Cynthia J. Spain

Signing Official & Title: Cynthia J. Spain

b. Contact information for person listed in item 1a above:

Street Address: 112 Poplar Haven Road

City: Poplar Branch State: NC Zip: 27965

Mailing Address (*if applicable*): same as above

City: State: Zip:

Phone: (252) 619-0421 Fax: ( )

Email: cindy@cindyskitchennc.com

c. Please check the appropriate box. The applicant listed above is:

☒ The property owner (Skip to Contact Information, item 3a)
☐ Lessee* (Attach a copy of the lease agreement and complete Contact Information, item 2a and 2b below)
☐ Purchaser* (Attach a copy of the pending sales agreement and complete Contact Information, item 2a and 2b below)
☐ Developer* (Complete Contact Information, item 2a and 2b below.)

2. a. Print Property Owner's name and title below, if you are the lessee, purchaser or developer. (This is the person who owns the property that the project is located on):

Property Owner/Organization: same as above

Signing Official & Title:

b. Contact information for person listed in item 2a above:

Street Address:

City: State: Zip:

Mailing Address (*if applicable*):

City: State: Zip:

Phone: ( ) Fax: ( )

Email:

3. a. (Optional) Print the name and title of another contact such as the project's construction supervisor or other person who can answer questions about the project:

Other Contact Person/Organization:

Signing Official & Title:

b. Contact information for person listed in item 3a above:

Mailing Address:

City: State: Zip:

Phone: ( ) Fax: ( )

Email:

4. Local jurisdiction for building permits: Currituck County

Point of Contact: Donna Voliva, Asst. Planning Director Phone #: (252) 232-6032

IV. PROJECT INFORMATION

1. In the space provided below, briefly summarize how the stormwater runoff will be treated.

   Runoff from developed areas will be collected in a perimeter swale and conveyed to an oversized infiltration basin located in the NE quadrant of the property

2. a. **If claiming vested rights**, identify the supporting documents provided and the date they were approved:
   - ☐ Approval of a Site Specific Development Plan or PUD — Approval Date: _____
   - ☐ Valid Building Permit — Issued Date: _____
   - ☐ Other: _____ — Date: _____

   b. **If claiming vested rights**, identify the regulation(s) the project has been designed in accordance with:
   - ☐ Coastal SW – 1995
   - ☐ Ph II – Post Construction

3. Stormwater runoff from this project drains to the Pasquotank River basin.

4. Total Property Area: 1.69 acres

5. Total Coastal Wetlands Area: 0.0 acres

6. Total Surface Water Area: 0 acres

7. Total Property Area (4) – Total Coastal Wetlands Area (5) – Total Surface Water Area (6) = Total Project Area+: 1.69 acres

   + *Total project area shall be calculated to exclude the following: the normal pool of impounded structures, the area between the banks of streams and rivers, the area below the Normal High Water (NHW) line or Mean High Water (MHW) line, and coastal wetlands landward from the NHW (or MHW) line. The resultant project area is used to calculate overall percent built upon area (BUA). Non-coastal wetlands landward of the NHW (or MHW) line may be included in the total project area.*

8. Project percent of impervious area: (Total Impervious Area / Total Project Area) X 100 = 28.5 %

9. How many drainage areas does the project have? 2 *(For high density, count 1 for each proposed engineered stormwater BMP. For low density and other projects, use 1 for the whole property area)*

10. Complete the following information for each drainage area identified in Project Information item 9. If there are more than four drainage areas in the project, attach an additional sheet with the information for each area provided in the same format as below.

Basin Information	Drainage Area 1	Drainage Area U	Drainage Area __	Drainage Area __
Receiving Stream Name	Coinjock Bay	Coinjock Bay		
Stream Class *	SC	SC		
Stream Index Number *	30-1-6	30-1-6		
Total Drainage Area (sf)	53,631	19,969		
On-site Drainage Area (sf)	53,631	19,969		
Off-site Drainage Area (sf)	0	0		
Proposed Impervious Area** (sf)	20,664	282		
% Impervious Area** (total)	38.5%	1.4%		

Impervious** Surface Area	Drainage Area 1	Drainage Area U	Drainage Area __	Drainage Area __
On-site Buildings/Lots (sf)	4,791	0		
On-site Streets (sf)	0	0		
On-site Parking (sf)	14,031	282		
On-site Sidewalks (sf)	1,187	0		
Other on-site (sf)	155	0		
Future (sf)	500	0		
Off-site (sf)	0	0		
Existing BUA*** (sf)	0	0		
Total (sf):	20,664	282		

* *Stream Class and Index Number can be determined at: http://portal.ncdenr.org/web/wq/ps/csu/classifications*

** *Impervious area is defined as the built upon area including, but not limited to, buildings, roads, parking areas, sidewalks, gravel areas, etc.*

*** *Report only that amount of existing BUA that will remain after development. Do not report any existing BUA that is to be removed and which will be replaced by new BUA.*

11. How was the off-site impervious area listed above determined? Provide documentation. _____

AutoCAD Area Routine

Projects in Union County: *Contact DEMLR Central Office staff to check if the project is located within a Threatened & Endangered Species watershed that may be subject to more stringent stormwater requirements as per 15A NCAC 02B .0600.*

V. SUPPLEMENT AND O&M FORMS

The applicable state stormwater management permit supplement and operation and maintenance (O&M) forms must be submitted for each BMP specified for this project. The latest versions of the forms can be downloaded from http://portal.ncdenr.org/web/wq/ws/su/bmp-manual.

VI. SUBMITTAL REQUIREMENTS

Only complete application packages will be accepted and reviewed by the Division of Energy, Mineral and Land Resources (DEMLR). A complete package includes all of the items listed below. A detailed application instruction sheet and BMP checklists are available from http://portal.ncdenr.org/web/wq/ws/su/statesw/forms_docs**. The complete application package should be submitted to the appropriate DEMLR Office.** (The appropriate office may be found by locating project on the interactive online map at http://portal.ncdenr.org/web/wq/ws/su/maps.)

Please **indicate that the following required information have been provided by initialing** in the space provided for each item. All original documents MUST be signed and initialed in **blue ink**. **Download the latest versions for each submitted application package** from http://portal.ncdenr.org/web/wq/ws/su/statesw/forms_docs.

Initials

1. *Original and one copy* of the Stormwater Management Permit Application Form. _____
2. *Original and one copy* of the signed and notarized Deed Restrictions & Protective Covenants Form. *(if required as per Part VII below)* _____
3. *Original* of the applicable Supplement Form(s) (sealed, signed and dated) **and** O&M agreement(s) for each BMP. _____
4. Permit application processing fee of $505 *payable to NCDENR*. (For an Express review, refer to http://www.envhelp.org/pages/onestopexpress.html for information on the Express program and the associated fees. Contact the appropriate regional office Express Permit Coordinator for additional information and to schedule the required application meeting.) _____
5. A detailed narrative (one to two pages) describing the stormwater treatment/managementfor the project. This is required in addition to the brief summary provided in the Project Information, item 1. _____
6. A USGS map identifying the site location. If the receiving stream is reported as class SA or the receiving stream drains to class SA waters within ½ mile of the site boundary, include the ½ mile radius on the map. _____
7. Sealed, signed and dated calculations (one copy). _____
8. Two sets of plans folded to 8.5" x 14" (sealed, signed, & dated), including: _____
   a. Development/Project name.
   b. Engineer and firm.
   c. Location map with named streets and NCSR numbers.
   d. Legend.
   e. North arrow.
   f. Scale.
   g. Revision number and dates.
   h. Identify all surface waters on the plans by delineating the normal pool elevation of impounded structures, the banks of streams and rivers, the MHW or NHW line of tidal waters, and any coastal wetlands landward of the MHW or NHW lines.
      - Delineate the vegetated buffer landward from the normal pool elevation of impounded structures, the banks of streams or rivers, and the MHW (or NHW) of tidal waters.
   i. Dimensioned property/project boundary with bearings & distances.
   j. Site Layout with all BUA identified and dimensioned.
   k. Existing contours, proposed contours, spot elevations, finished floor elevations.
   l. Details of roads, drainage features, collection systems, and stormwater control measures.
   m. Wetlands delineated, or a note on the plans that none exist. (Must be delineated by a qualified person. Provide documentation of qualifications and identify the person who made the determination on the plans.
   n. Existing drainage (including off-site), drainage easements, pipe sizes, runoff calculations.
   o. Drainage areas delineated (included in the main set of plans, not as a separate document).

p. Vegetated buffers (where required).

9. Copy of any applicable soils report with the associated SHWT elevations (Please identify elevations in addition to depths) as well as a map of the boring locations with the existing elevations and boring logs. Include an 8.5"x11" copy of the NRCS County Soils map with the project area clearly delineated. For projects with infiltration BMPs, the report should also include the soil type, expected infiltration rate, and the method of determining the infiltration rate. (**Infiltration Devices submitted to WiRO:** S*chedule a site visit for DEMLR to verify the SHWT prior to submittal, (910) 796-7378.)* _____
10. A copy of the most current property deed. Deed book: 17 Page No: 94 _____
11. For corporations and limited liability corporations (LLC): Provide documentation from the NC Secretary of State or other official documentation, which supports the titles and positions held by the persons listed in Contact Information, item 1a, 2a, and/or 3a per 15A NCAC 2H.1003(e). The corporation or LLC must be listed as an active corporation in good standing with the NC Secretary of State, otherwise the application will be returned. http://www.secretary.state.nc.us/Corporations/CSearch.aspx _____

VII. DEED RESTRICTIONS AND PROTECTIVE COVENANTS

For all subdivisions, outparcels, and future development, the appropriate property restrictions and protective covenants are required to be recorded prior to the sale of any lot. If lot sizes vary significantly or the proposed BUA allocations vary, a table listing each lot number, lot size, and the allowable built-upon area must be provided as an attachment to the completed and notarized deed restriction form. The appropriate deed restrictions and protective covenants forms can be downloaded from http://portal.ncdenr.org/web/lr/state-stormwater-forms_docs. Download the latest versions for each submittal.

In the instances where the applicant is different than the property owner, it is the responsibility of the property owner to sign the deed restrictions and protective covenants form while the applicant is responsible for ensuring that the deed restrictions are recorded.

By the notarized signature(s) below, the permit holder(s) certify that the recorded property restrictions and protective covenants for this project, if required, shall include all the items required in the permit and listed on the forms available on the website, that the covenants will be binding on all parties and persons claiming under them, that they will run with the land, that the required covenants cannot be changed or deleted without concurrence from the NC DEMLR, and that they will be recorded prior to the sale of any lot.

VIII. CONSULTANT INFORMATION AND AUTHORIZATION

Applicant: Complete this section if you wish to designate authority to another individual and/or firm (such as a consulting engineer and/or firm) so that they may provide information on your behalf for this project (such as addressing requests for additional information).

Consulting Engineer: David A. Deel, P.E.

Consulting Firm: Deel Engineering, PLLC

Mailing Address: P.O. Box 3901

City: Kill Devil Hills State: NC Zip: 27948

Phone: (252) 202-3803 Fax: ( )

Email: dadeeleng@gmail.com

IX. PROPERTY OWNER AUTHORIZATION *(if Contact Information, item 2 has been filled out, complete this section)*

I, *(print or type name of person listed in Contact Information, item 2a)* _____, certify that I own the property identified in this permit application, and thus give permission to *(print or type name of person listed in Contact Information, item 1a)* _____ with *(print or type name of organization listed in Contact Information, item 1a)* _____ to develop the project as currently proposed. A copy of the lease agreement or pending property sales contract has been provided with the submittal, which indicates the party responsible for the operation and maintenance of the stormwater system.

As the legal property owner I acknowledge, understand, and agree by my signature below, that if my designated agent (entity listed in Contact Information, item 1) dissolves their company and/or cancels or defaults on their lease agreement, or pending sale, responsibility for compliance with the DEMLR Stormwater permit reverts back to me, the property owner. As the property owner, it is my responsibility to notify DEMLR immediately and submit a completed Name/Ownership Change Form within 30 days; otherwise I will be operating a stormwater treatment facility without a valid permit. I understand that the operation of a stormwater treatment facility without a valid permit is a violation of NC General Statue 143-215.1 and may result in appropriate enforcement action including the assessment of civil penalties of up to $25,000 per day, pursuant to NCGS 143-215.6.

Signature:_____ Date:_____

I, _____, a Notary Public for the State of _____, County of _____, do hereby certify that _____ personally appeared before me this ___ day of _____, _____, and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal, _____

SEAL

My commission expires_____

X. APPLICANT'S CERTIFICATION

I, *(print or type name of person listed in Contact Information, item 1a)* Cynthia J. Spain, certify that the information included on this permit application form is, to the best of my knowledge, correct and that the project will be constructed in conformance with the approved plans, that the required deed restrictions and protective covenants will be recorded, and that the proposed project complies with the requirements of the applicable stormwater rules under 15A NCAC 2H .1000 and any other applicable state stormwater requirements.

Signature:_____ Date:_____

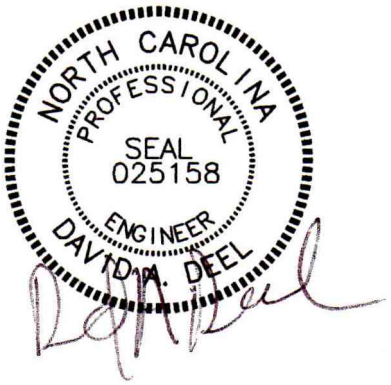
I, _____, a Notary Public for the State of _____, County of _____, do hereby certify that _____ personally appeared before me this ___ day of _____, _____, and acknowledge the due execution of the application for a stormwater permit. Witness my hand and official seal, _____

SEAL

My commission expires_____

Stormwater Management Plan Narrative

Cindy's Kitchen
Currituck County Submittal
December 12, 2023



General

The following narrative will detail the proposed stormwater management plan for a proposed restaurant to be placed on a 1.69 acre parcel in Coinjock, NC. As per state regulations, a high density stormwater permit is being pursued, with water quality treatment provided in a stormwater infiltration basin. To meet Currituck County's peak flow mitigation requirements, the infiltration basin will be designed to retain a peak flow mitigation volume which exceeds the State required water quality volume. The following narrative, application and calculations will demonstrate the parameters of this design in full compliance with Currituck County regulations.

Summary of Design Approach

Currituck County's Stormwater Management Ordinance prescribes that for this project, stormwater control measures must be provided such that the post-construction runoff from the site for a 5yr, 24hr rainfall event must be equal to or less than the pre-construction runoff from a 2yr, 24hr rainfall event across a theoretically wooded site.

Section 2.4.4 of the Currituck County Stormwater Manual also provides an alternative "Simple Volume Calculations" prescriptive sizing calculation methodology for sites under 10 acres. This methodology was utilized to calculate a minimum volume for a proposed infiltration basin.

In order to meet this storage requirement, an interconnected infiltration basin & swale system "ringing" the south, west, and northern perimeter of the property is proposed. The system tapers from a basin along the north property line to a swale along the south property line, but the entire swale / basin system stores and infiltrates collected runoff up to a storage elevation of 11.0'.

Summary of Existing Conditions

The subject parcel is located on the east side of NC 158 approximately 570 feet north of the intersection of NC 158 and Coinjock Acres Drive. The site is currently vacant and maintained as a grassy field. Runoff from the site predominately flows to the rear of the property where it is collected in a ditch that ultimately discharges into the wooded wetland to the east.

Summary of Proposed Conditions

The proposed development consists of the construction of a restaurant & bakery with associated parking and utility infrastructure. Stormwater will be managed via an interconnected infiltration basin & swale located along the southern, western, and northern periphery of the developed area. Runoff from all developed areas will be collected in this infiltration basin & swale system and the entire basin & swale system will fill-up simultaneously (up to a maximum elevation of 11.0') and then infiltrate stored runoff.

Stormwater Collection, Treatment, Storage and Disposal

Collection

Runoff from all developed areas will be collected in an infiltration basin & swale system "ringing" the south, west, and northern perimeter of the developed area.

Treatment & Storage

The infiltration basin will offer several methods of stormwater runoff treatment prior to release. Runoff from the drainage area will enter the basin via overland flow through vegetation. Large particulates and debris such as paper trash, sticks, and plastic products will accumulate within the vegetation.

The basin bottom, side slopes, and berm will be seeded or sodded and maintained according to the operation and maintenance plan. The runoff will undergo filtration of fine particulates and pollutants by the vegetation within not only the basin bottom but also the basin side walls. The filtration by the vegetation is considered the primary treatment method. A secondary treatment method is also available when the stormwater runoff infiltrates into the subsurface. When the water passes through the void spaces between the particles of soil material particulates and pollutants that have a particle or grain size larger than the void size will be filtered out. In addition, some pollutants will adsorb to the surface of the soil particles. The benefit of this adsorption will prevent the pollutants from reaching the water table and in some nutrient and microbe rich areas existing within the subsurface the pollutants will be consumed as food and undergo a natural biodegradation.

The runoff generated by a 1.5 inch storm (NCDEQ requirement) will require 2,721 ft^3 of storage. The storage required to meet the Currituck County "Simple Volume Calculations" method is 5,538 ft^3 of storage (calculations below).

The storage available above the ground surface within the basin is 8,497 ft^3:

Cindy's Kitchen
Infiltration Basin Volume Tabulations
Updated 12-12-2023

DA1 Infiltration Basin

Above Grade Storage	
SHWT @:	8.8
Bottom Basin @	9.8
Top Storage @	11.0

Elev:	Area (sf)	Avg Area	Vol	Sum Vol (cf)	
9.8	4575			0	
		4957	991		
10.0	5339			991	
		7506	7506		
11.0	9672			**8497**	(Total)

Disposal

As discussed in previous sections the majority of stormwater runoff entering this management system will be infiltrated, therefore infiltration will be the primary source of disposal. Using a factor of safety of two and an infiltration rate of 0.8 in/hr (per the soils investigation report), the drawdown time for the Currituck County Storage Volume of 5,538 ft^3 is calculated to be 36.31 hours for the proposed infiltration basin.

Cindy's Kitchen
Infiltration System Dewatering (drawdown) Calculations
10/23/2023

Per NCDEQ SCM Manual:

T=FS x (Dv x 12)/(K x SA)

T = dewatering time (hrs)
FS = factor of safety (use 2.0) — 2
Dv = design volume (cf)
K = hydraulic conductivity of soil (in/hr) = — 0.8 in/hr
SA = surface area of bottom of infil system (sf)

Drainage Area 1 - Infiltration Basin

Dv =	5538	cf	(from Curr Co. Simple Volume
SA=	4575	sf	Calculation Method)
T=	36.31	hrs	
T=	1.51	days	

In the event that the capacity of the system is exceeded, runoff will overflow the system via a drop inlet located in the east end of the infiltration basin and will be conveyed to the existing outfall ditch.

Currituck County Storage Volume Calculation

Section 2.4.4 of the Currituck County Stormwater Manual provides an alternative "Simple Volume Calculations" prescriptive sizing calculation methodology for sites under 10 acres:

2.4.4. Simple Volume Calculations for Small Sites (under 10 acres)

Currituck County allows for small sites that are less than 10 acres total drainage area to calculate a storage volume required for retention of the post-development 10-year, 24-hour storm (for Subdivisions), or the post-development 5-year, 24-hour storm (for all other Major Stormwater Plans), and release it at the required wooded, 2-year, 24-hour rate.

To determine the required volume, first follow the steps outlined in Section 2.4.3.A to determine the pre- and post-development peak flows. Also, determine the depth of runoff outlined in Steps 2 and 3 in Section 2.4.3.B.

Compute the runoff volume, V_r

$$V_r = \frac{Q}{12} * A$$

Where:

V_r = *Runoff Volume, acre-feet*

Q = *Runoff Depth found in Steps 2 & 3, inches*

A = *Drainage Area, acres*

Compute the required volume, V_s in cubic yards (for Subdivisions):

$$V_s = 1613.33 * V_r * \left(1 - \frac{Q_{2-pre}}{Q_{5-post}}\right)$$

Step 1: Calculate Q2pre and Q2post per Sec 2.4.3.A:

Cindy's Kitchen					
Pre-Construction (Wooded, 2-yr, 24 hr rainfall event)					
Curr SW Manual Sec 2.4.3.A					
	Area =	1.69	Ac		"= Input"
	C =	0.2	(runoff Coefficient)		"= Calculated"
	P=	4	in		
Time fo Concentration:					
	Sheet Flow:				
	Mannings n =	0.1			
	Elev Up =	12.4			
	Elev Down =	10.34			
	Length =	300			
	Slope =	0.006867			
	Tc1=	23.40011	min		
	Shallow Concentrated Flow				
	Unpaved:				
	Velocity =	69.3652	fpm	(=972xS^0.53)	
	Length =	150	ft		
	Tc2=	2.162468	min	(=L/V)	
	Total Tc =	25.56	min	(=Tc1+Tc2)	
Peak Flow Calculation					
	Intensity, i	3.17	in/hr	(interpolated from table 2-5, Curr SWM Manual)	
	Q=	1.07	(cfs)	(Q=CiA)	

Cindy's Kitchen
Post-Construction (5-yr, 24 hr rainfall event)
Curr SW Manual Sec 2.4.3.A

Composite C Calculation:

Coverage	C	Area	Weighted Area
Impervious	0.95	0.476148	0.45234045
Open Space	0.25	1.213476	0.303368916
Composite C =	0.447265		

Area =	1.69	Ac		"= Input"
C =	0.45	(runoff Coefficient)		"= Calculated"
P=	5	in	(5-yr event)	

Time fo Concentration:

Total Tc =	5.00	min	(Conservative assumption based on decades of experience with similar small commercial sites)

Peak Flow Calculation

Intensity, i	6.82	in/hr	(interpolated from table 2-5, Curr SWM Manual)
Q=	5.16	(cfs)	(Q=CiA)

Step 2: Calculate Runoff Depth, Q - per Sec 2.4.3.B, 2&3:

Runoff Depth Calculator						
Cindy's Kitchen Pre-Construction (2-yr, 24 hr rainfall event) Curr SW Manual Sec 2.4.3.B (steps 2 & 3)						
Composite Cn Calculation:						
	Coverage	Cn	Area	Weighted Area		
	Woods (A Soils)	30	0.130395	3.91184573		"= Input"
	Woods (C Soils)	70	1.559223	109.1456198		"= Calculated"
	Composite C =	66.91				
Calculate Runoff Depth:						
	S =	4.944772	(1000/Cn-10)			
	P=	4	(in., Curr SWM Manual Table 2-7)			
	Q=	1.14	(in.)			

Step 3: Calculate Storage Volume Required per Sec 2.4.4:

Storage Volume Required Calculator				
Cindy's Kitchen Pre /Post -Construction (2-yr / 5yr, 24 hr mitigation) Curr SW Manual Sec 2.4.4				
Summary from other calculations:				
Q2(pre)=	1.07	cfs		
Q5(post)=	5.16	cfs		"= Input"
Q(Runoff Depth)=	1.14	in		"= Calculated"
Drainage Area =	1.69	ac.		
Vr =	0.160493	ac-ft (runoff volume)		
Vs =	205.11	cy (storage volume required)		
Vs =	5538	cf (storage volume required)		

Per the methodology outlined in Section 2.4.4 of the Currituck Stormwater Manual, the required storage volume to meet Currituck County requirements is 5,538 cf.

Soils

Protocol Sampling Service, Inc. performed on-site soil borings to verify soil type and determine elevation of the seasonal high water table. Information collected indicates that the soils found throughout this site are composed primarily of sandy loam and loamy sand. These soil types will have moderately high to high permeability. These findings generally correlate with the description mapped and discussed in the United States Department of Agriculture, Soil Conservation Service, Soil Survey of Currituck County, North Carolina, which map the soil for this site as follows:

AaA - Altavista fine sandy loam, Permeability is moderately high to high

BoA – Bojac loamy sand, Permeability is high

A soils map excerpt has been included in the appendix of this narrative.

Conclusions

The proposed stormwater management plan for this site provides stormwater storage & infiltration for the runoff volume required by the Currituck County Stormwater Management Ordinance. Additionally, the design provides treatment of the NCDEQ required water quality volume. This proposed design will more than adequately serve the stormwater management requirements of this site.

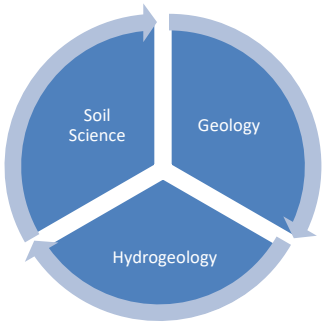
APPENDIX A
Aerial Imagery

Mapping | Search

Selected Parcels Feature

Parcel ID Number	0070000022J0000
Global PIN	8996-51-4812
Number	
Apt/Unit/Suite	
Street Direction	
Street Name	CARATOKE
Street Type	HWY
Street Suffix Direction	
City	
Subdivision	
Legal Description	CARTER/BRUMSEY LOT 1
Township	CRAWFORD
Owner Name 1	SPAIN, CYNTHIA J.
Owner Name 2	
Owner Name 3	
Billing Address	112 POPLAR HAVEN RD
Billing Address Continued	
Billing City	POPLAR BRANCH
Billing State	NC
Billing ZIP Code	27965
Acreage (Legal)	1.69
Acreage (GIS)	1.69
Tax Value: Land	134500
Tax Value: Buildings	0
Tax Value: Total	134500

APPENDIX B
Soils Investigation &
SCS Soil Survey Excerpts



Protocol Sampling Service, Inc.
"Experts in Environmental Compliance"

4114 Laurel Ridge Drive
Raleigh, North Carolina 27612

Protocolsampling@yahoo.com
Environmentalservicesnc.com

(919) 210-6547

November 11, 2022

Mr. Andy Deel, P.E.
Post Office Box 3901
Kill Devil Hills, North Carolina 27948
Via email; dadeeleng@gmail.com

Re: **Storm Water Management Soil Investigation**
Hydraulic Conductivity (Ksat) Testing
Cindy's Kitchen
US Highway 158 – Caratoke Highway
Coinjock, Currituck County, North Carolina
Protocol Project #22-172

Dear Mr. Deel:

The following Soil Investigation is submitted to assist in a site assessment for the proposed storm water management improvements associated with the proposed Cindy's Kitchen Restaurant. The study area which is being considered for infiltration swales. The site is located on the east side of Caratoke Highway (US Highway 158) in Coinjock, Currituck County, North Carolina.

SITE HISTORY AND PHYSICAL CHARACTERISTICS

The study area is currently undeveloped. Commercial development surrounds the study area. Protocol Sampling Service, Inc. of Raleigh, North Carolina was hired to perform an investigation to identify the depth to seasonal high-water table, if any restrictive layers are present in the proposed location of the infiltration swales determine subsurface permeabilities at or slightly above the expected basin bottom elevation.

SOIL INVESTIGATION

The field survey was conducted on November 10, 2022. Three (3) soil borings were advanced to 48 inches below land surface (bls) with a hand auger in predetermined boring locations as shown on the attached exhibit. Soil color was determined with a Munsell Soil Color Chart. The presence of fill or other disturbances, the depth to the seasonal high-water table, soil structure and consistence were noted. The borings were also checked for reduced colors, an anaerobic smell or obvious soil wetness. Surface elevations range from 13 feet msl to 9 feet msl from west to east across the study area.

FINDINGS - Soil

- The subject property contains, from west to east, soil belonging to the Bojac series in the higher elevations, the Augusta series in the middle elevations and Dragston series in the lower elevations.

- The soil was found to have an apparent depth to seasonal high-water table ranging from 42, 27 and 12-inches bls in soil boring No.1, 2 and 3, respectively. Static water levels were found from 60-inches bls in soil boring No.1, 43-inches bls in soil boring No.2 and at 32-inches bls in boring No.3.

- No major restrictive horizons were encountered to a depth of 48-inches in any of the soil borings.

HYDRAUILIC CONDUCTIVITY TESTING

Saturated hydraulic conductivity tests were performed to determine the permeability at or slightly below the expected infiltration depth of the infiltration swale. Saturated hydraulic conductivity is a quantitative measure of a saturated soil's ability to transmit water. It can be thought of as the ease with which pores of a saturated soil permit water movement. A common method to measure saturated hydraulic conductivity (K_{SAT}) of the unsaturated zone is by a constant-head well permeameter method (Amoozegar and Mecklenburg, 1999). These K_{SAT} tests take into account soil morphologic factors other than texture, because soil structure and clay mineralogy have been found to have a significant impact on the rate of water movement through soils (Bouma et al., 1983; Schoeneberger et al, 1995, Vepraskas et al, 1996). The Compact Constant Head Permeameter (Amoozemeter) is an example of a constant head permeameter which allows measurements of K_{SAT} in the vadose zone and is widely used in North Carolina and other parts of the country (Amoozegar, 2004; Amoozegar and Mecklenburg, 1999).

The Ksats were run at 18 and 6-inches above the current seasonal high water table elevation at 24 and 36-inches bls and above the capillary fringe. The saturated hydraulic conductivity test performed at 24-inches bls reached steady state readings within twenty minutes and three consecutive readings revealed an average conductivity of 0.854 inches/hour or 0.68 feet/day. The saturated hydraulic conductivity test performed at 36-inches bls reached steady state readings within five minutes and three consecutive readings revealed an average conductivity of 4.40 inches/hour or 8.70 feet/day.

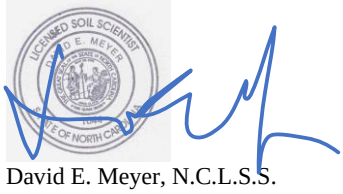
FINDINGS - Conductivity

- In-situ testing has revealed an infiltration and percolation rate through the subsurface loamy sand found at 36-inches bls of greater than 4-inches/hour. The moderately well-sorted silty fine sand is estimated to have a porosity of 25 to 30%.

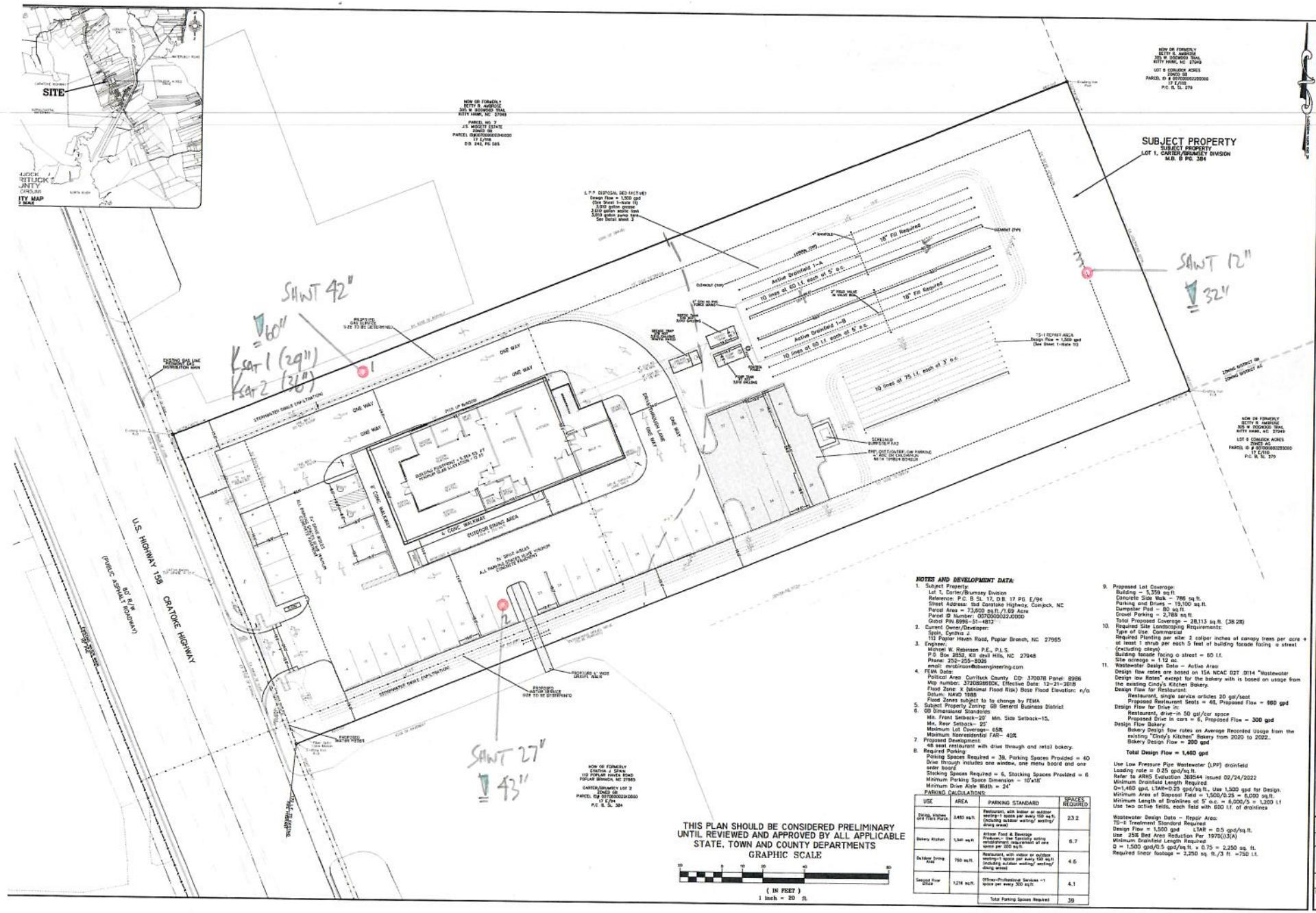
The findings presented herein are based on the site conditions observed during performance of the field survey on November 10, 2022.

Please call me at (919) 210-6547 if you have any questions or need further assistance.

Sincerely,
Protocol Sampling Service, Inc.



David E. Meyer, N.C.L.S.S.
President



THIS PLAN SHOULD BE CONSIDERED PRELIMINARY UNTIL REVIEWED AND APPROVED BY ALL APPLICABLE STATE, TOWN AND COUNTY DEPARTMENTS

GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

NOTES AND DEVELOPMENT DATA:

1. Subject Property:
   Lot 1, Carter/Brumsey Division
   Reference: P.C. B. SL. 17, D.B. 17 PG. E/94
   Street Address: Old Coratoke Highway, Coinjock, NC
   Parcel Area = 73,600 sq.ft./1.69 Acre
   Parcel ID Number: 007000002240000
   Global PIN 8996-51-4812
2. Current Owner/Developer:
   Spain, Cynthia J.
   112 Poplar Haven Road, Poplar Branch, NC 27965
3. Engineer:
   Michael W. Robinson P.E., P.L.S.
   P.O. Box 2852, Kill Devil Hills, NC 27948
   Phone: 252-255-8026
   email: mrobinson@obxengineering.com
4. FEMA Data:
   Political Area: Currituck County CID: 370078 Panel: 8986
   Map number: 3720898600K, Effective Date: 12-21-2018
   Flood Zone: X (Minimal Flood Risk) Base Flood Elevation: n/a
   Datum: NAVD 1988
   Flood Zones subject to to change by FEMA
5. Subject Property Zoning: GB General Business District
6. GB Dimensional Standards:
   Min. Front Setback–20' Min. Side Setback–15.
   Min. Rear Setback– 25'
   Maximum Lot Coverage– 65%
   Maximum Nonresidential FAR– 40%
7. Proposed Development:
   48 seat restaurant with drive through and retail bakery.
8. Required Parking:
   Parking Spaces Required = 38, Parking Spaces Provided = 40
   Drive through includes one window, one menu board and one order board
   Stacking Spaces Required = 6, Stacking Spaces Provided = 6
   Minimum Parking Space Dimension = 10'x18'
   Minimum Drive Aisle Width = 24'

PARKING CALCULATIONS

USE	AREA	PARKING STANDARD	SPACES REQUIRED
Dining, Kitchen and Retail Area	3,483 sq.ft.	Restaurant, with indoor or outdoor seating–1 space per every 150 sq.ft. (including outdoor seating/ seating/ dining areas)	23.2
Bakery Kitchen	1,340 sq.ft.	Artisan Food & Beverage Producer– Use Specialty eating establishment requirement of one space per 200 sq.ft.	6.7
Outdoor Dining Area	750 sq.ft.	Restaurant, with indoor or outdoor seating–1 space per every 150 sq.ft (including outdoor seating/ seating/ dining areas)	4.6
Seasonal Row Office	1,216 sq.ft.	Office–Professional Services –1 space per every 300 sq.ft.	4.1
		Total Parking Spaces Required	38

9. Proposed Lot Coverage:
   Building – 5,359 sq.ft.
   Concrete Side Walk – 786 sq.ft.
   Parking and Drives – 15,100 sq.ft.
   Dumpster Pad – 80 sq.ft.
   Gravel Parking – 2,788 sq.ft.
   Total Proposed Coverage – 28,113 sq.ft. (38.2%)
10. Required Site Landscaping Requirements:
    Type of Use: Commercial
    Required Planting per site: 2 caliper inches of canopy trees per acre + at least 1 shrub per each 5 feet of building facade facing a street (excluding alleys)
    Building facade facing a street = 80 l.f.
    Site acreage = 1.12 ac.
11. Wastewater Design Data – Active Area:
    Design flow rates are based on 15A NCAC 02T .0114 "Wastewater Design low Rates" except for the bakery with is based on usage from the existing Cindy's Kitchen Bakery.
    Design Flow for Restaurant:
    Restaurant, single service articles 20 gpd/seat
    Proposed Restaurant Seats = 48, Proposed Flow = **960 gpd**
    Design Flow for Drive in:
    Restaurant, drive-in 50 gpd/car space
    Proposed Drive in cars = 6, Proposed Flow = **300 gpd**
    Design Flow Bakery:
    Bakery Design flow rates on Average Recorded Usage from the existing "Cindy's Kitchen" Bakery from 2020 to 2022..
    Bakery Design Flow = **200 gpd**

    Total Design Flow = 1,460 gpd

    Use Low Pressure Pipe Wastewater (LPP) drainfield
    Loading rate = 0.25 gpd/sq.ft.
    Refer to ARHS Evaluation 3629544 issued 02/24/2022
    Minimum Drainfield Length Required
    Q=1,460 gpd, LTAR=0.25 gpd/sq.ft., Use 1,500 gpd for Design.
    Minimum Area of Disposal Field = 1,500/0.25 = 6,000 sq.ft.
    Minimum Length of Drainlines at 5' o.c. = 6,000/5 = 1,200 l.f.
    Use two active fields, each field with 600 l.f. of drainlines

    Wastewater Design Data – Repair Area:
    15-E Treatment Standard Required
    Design Flow = 1,500 gpd LTAR = 0.5 gpd/sq.ft.
    Use 25% Bed Area Reduction Per 1970.0(3)(A)
    Minimum Drainfield Length Required
    Q = 1,500 gpd/0.5 gpd/sq.ft. x 0.75 = 2,250 sq. ft.
    Required linear footage = 2,250 sq. ft./3 ft. =750 l.f.

MICHAEL W. ROBINSON, P.E., P.L.S.
ENGINEERING AND SURVEYING
P.O. BOX 2852
KILL DEVIL HILLS, N.C. 27948
PHONE: 252-255-8026
EMAIL: mrobinson@obxengineering.com

PRELIMINARY
SKETCH PLAN

NO	DATE	REVISIONS DESCRIPTION	BY

PROJECT:
CINDY'S KITCHEN
COINJOCK — CURRITUCK COUNTY — NORTH CAROLINA
LOT 1, CARTER/BRUMSEY DIVISION

DATE:	SCALE:
11-06-22	1"=20'
DESIGNED: MWR	DRAWN: MWR
SHEET: 1 OF 1	
CAD FILE:	
PROJECT NO: 052916	

Protocol Sampling Service, Inc.
4114 Laurel Ridge Dr
Raleigh, NC 27612

Sheet 1 of 1
PROPERTY ID #: 0070000225000
COUNTY: Currituck

SOIL/SITE EVALUATION
for ON-SITE WASTEWATER SYSTEM
(Complete all fields in full)

OWNER: Cindy's Kitchen
ADDRESS: Lot 1 Castle Bonner Subdivision Carotoke Hwy Currituck NC
PROPOSED FACILITY: Restaurant
PROPOSED DESIGN FLOW (.1949): 1460 GPD
LOCATION OF SITE: Currituck NC
APPLICATION DATE
DATE EVALUATED: 11-10-22
PROPERTY SIZE:
PROPERTY RECORDED: Yes

WATER SUPPLY: ☐ Private ☒ Public ☐ Well ☐ Spring ☐ Other
EVALUATION METHOD: ☑ Auger Boring ☐ Pit ☐ Cut
TYPE OF WASTEWATER: ☒ Sewage ☐ Industrial Process ☐ Mixed

PROFILE #	.1940 LANDSCAPE POSITION/ SLOPE %	HORIZON DEPTH (IN.)	SOIL MORPHOLOGY (.1941) STRUCTURE/ TEXTURE	SOIL MORPHOLOGY (.1941) CONSISTENCE/ MINERALOGY	OTHER PROFILE FACTORS .1942 SOIL WETNESS/ COLOR	.1943 SOIL DEPTH	.1956 SAPRO CLASS	.1944 RESTR HORIZ	PROFILE CLASS & LTAR
1	T 0-1% SW	0-12"	gr LS	Fr NS NP	10YR 6/2 42" ▽ 60" 1Sat 24" Ksat 2 36"	48"+			PS 0.3-0.6
		12-24"	SBr SCL	Fr SS SP					
		24-35"	SBr SL	Fr SS SP					
		35-45"	SBr LS	Fr NS NP					
		45-48"	gr SL	L NS NP					
2	T 0-1% SW	0-8"	br SL	Fr NS NP	10YR 6/2 27" ▽ 43"	48"+			PS 0.3-0.6
		8-18"	SBr SCL	Fr SS SP					
		18-37"	br/gr LS	Fr NS NP					
		37-47"	SBr SL	Fr SS SP					
		47-	br LS	Fr/L NS NP					
3	T 0-1% SW/WW	0-12"	gr SL	Fr SS SP	10YR 6/1 12" ▽ 32"	36"+			PS w/ Fill
		12-18"	SBr SCL	Fr SP					
		18-27"	SBr SL	Fi SP SBK					
		27-36"	SBr SL	Fr SS SP	10YR 6/1 15" ▽ 34"				
4	T 0-1% WW	0-10"	Gr LS	Fr NS NP	10YR 6/2 21" ▽ 40"	48"+			PS 0.1-0.4
		10-16"	br SL	Fr NS NP					
		16-26"	SBr SCL	Fr SS SP					
		26-34"	SBr SC	Fi SB SBK					
		34-48"	SBr LS	Fr NS NP					

DESCRIPTION	INITIAL SYSTEM	REPAIR SYSTEM
Available Space (.1945)	Yes	Yes
System Type(s)		
Site LTAR		

OTHER FACTORS (.1946):
SITE CLASSIFICATION (.1948):
EVALUATED BY:
OTHER(S) PRESENT:

COMMENTS:

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Currituck County, North Carolina

December 14, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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Contents

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:772 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 10 20 40 60

Feet
0 35 70 140 210

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Currituck County, North Carolina
Survey Area Data: Version 22, Sep 8, 2022

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 5, 2020—Oct 7, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AaA	Altavista fine sandy loam, 0 to 2 percent slopes	1.4	87.0%
BoA	Bojac loamy sand, 0 to 3 percent slopes	0.2	13.0%
Totals for Area of Interest		**1.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Currituck County, North Carolina

AaA—Altavista fine sandy loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 3rn7
Elevation: 0 to 20 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Altavista and similar soils: 80 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Altavista

Setting

Landform: Marine terraces
Landform position (two-dimensional): Summit
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy and loamy fluviomarine deposits and/or marine deposits

Typical profile

Ap - 0 to 12 inches: fine sandy loam
BE - 12 to 15 inches: sandy clay loam
Bt - 15 to 35 inches: sandy clay loam
BC - 35 to 42 inches: sandy loam
Cg - 42 to 80 inches: coarse sandy loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Tomotley, undrained

Percent of map unit: 5 percent
Landform: Depressions on stream terraces, flats on marine terraces

Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: Yes

BoA—Bojac loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 3rnb
Elevation: 0 to 30 feet
Mean annual precipitation: 42 to 58 inches
Mean annual air temperature: 61 to 64 degrees F
Frost-free period: 190 to 270 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Bojac and similar soils: 90 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bojac

Setting

Landform: Ridges on marine terraces
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy and sandy fluviomarine deposits

Typical profile

Ap - 0 to 8 inches: loamy fine sand
Bt - 8 to 47 inches: fine sandy loam
C - 47 to 85 inches: loamy fine sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: A
Hydric soil rating: No

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

EPA SWMM Model Report

Cindy's Kitchen
Currituck County
December 12, 2023

General

The following report will detail the EPA SWMM Model which was constructed & analyzed in order to provide design guidance for the stormwater management systems to be installed with the construction of the proposed Cindy's Kitchen site in Coinjock, NC.

General

The subject parcel is located on the east side of NC 158 approximately 570 feet north of the intersection of NC 158 and Coinjock Acres Drive. The site is currently vacant and maintained as a grassy field. Runoff from the site predominately flows to the rear of the property where it is collected in a ditch that ultimately discharges into the wooded wetland to the east.

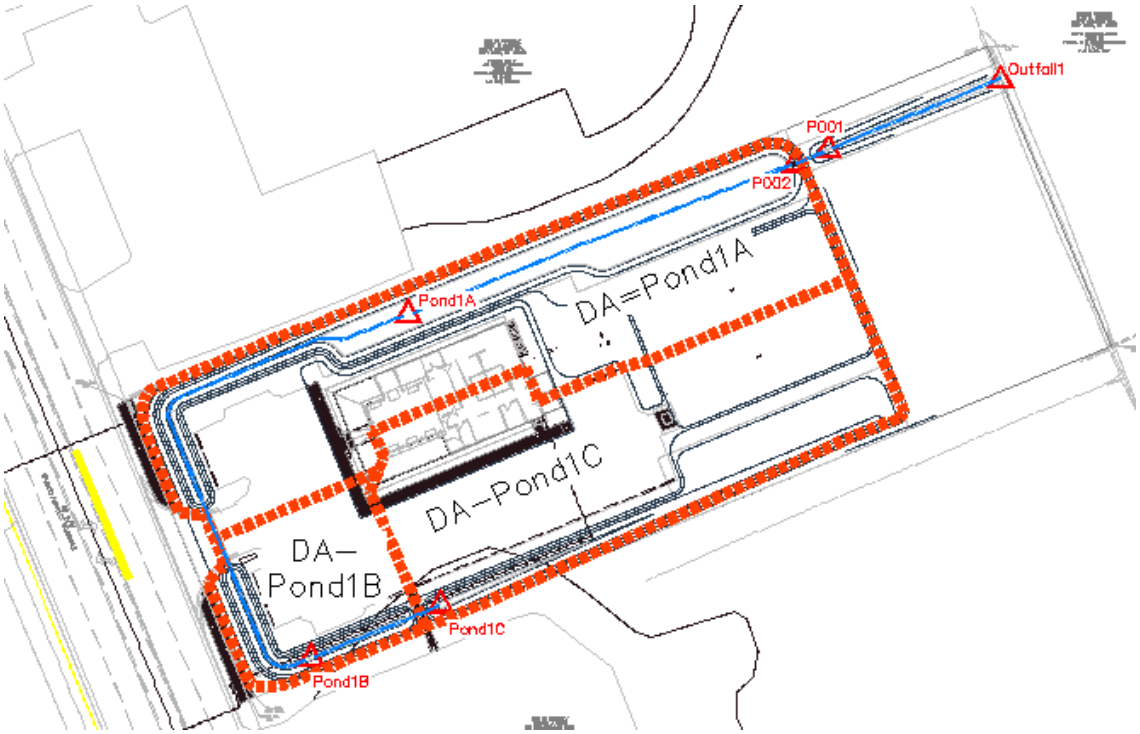
The proposed development consists of the construction of a restaurant / bakery with associated parking and utility infrastructure. Stormwater will be managed via an oversized infiltration basin & swale system "ringing" the south, west, and northern perimeter of the property. The entire swale / basin system stores and infiltrates collected runoff.

Purpose of this Model

Pre-development / post development peak flow mitigation for this site is analyzed separately utilizing the methodology outlined in Section 2.4.4 of the Currituck County Stormwater Manual. These calculations are presented separately from this report.

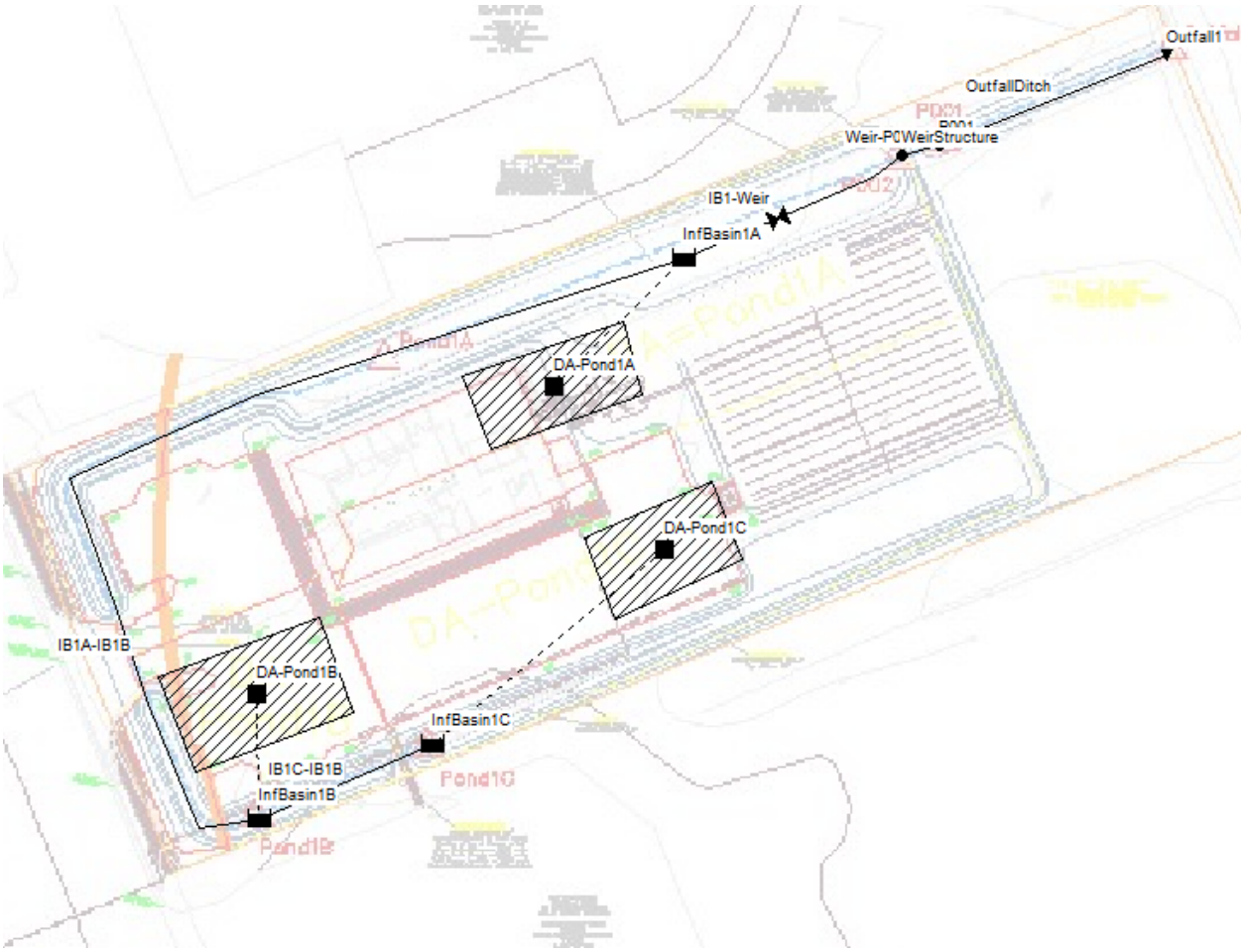
The purpose of this model is to analyze the internal conveyances between sections of the combined infiltration basin / swale system as well as checking flows and velocities at the overflow & outfall. The proposed on-site system consists of three different infiltration basin / swale sections which "fill-up" simultaneously, but with head imbalances as they fill. The proposed internal pipes allow for equalization of the imbalances within the system rather than the traditional conveyance of a design storm from upstream to downstream. Since headwater and tailwater within the system are constantly changing throughout a storm event, modeling is the only proper way to analyze the system. For this type of analysis, we prefer EPA SWMM.

Prop. Conditions Drainage Areas Schematic:



EPA SWMM Model (Prop Conditions Graphical Model):

Electronic Copy available upon request



Model Hydrology

Runoff was modeled utilizing the NRCS (SCS) Method for the 2-yr, 5-yr, and 10-yr, 24-hour storm events. NRCS standard Type III (coastal) rainfall distributions were utilized with total rainfall depths of:

2yr, 24hr Total Rainfall Depth = 3.74 in. (NOAA Atlas 14)
5yr, 24hr Total Rainfall Depth = 4.81 in. (NOAA Atlas 14)
10yr, 24 hr Total Rainfall Depth = 5.74 in. (NOAA Atlas 14)

Runoff was routed through the model utilizing a Dynamic Wave method.

Model Elements

Model Elements input data is included in the Appendix of this narrative.

Methodology

In an examination of the drainage shed, the existing outfall ditch at the rear of the property was selected as the outfall point for the model. This is identified as Outfall node "Outfall1"

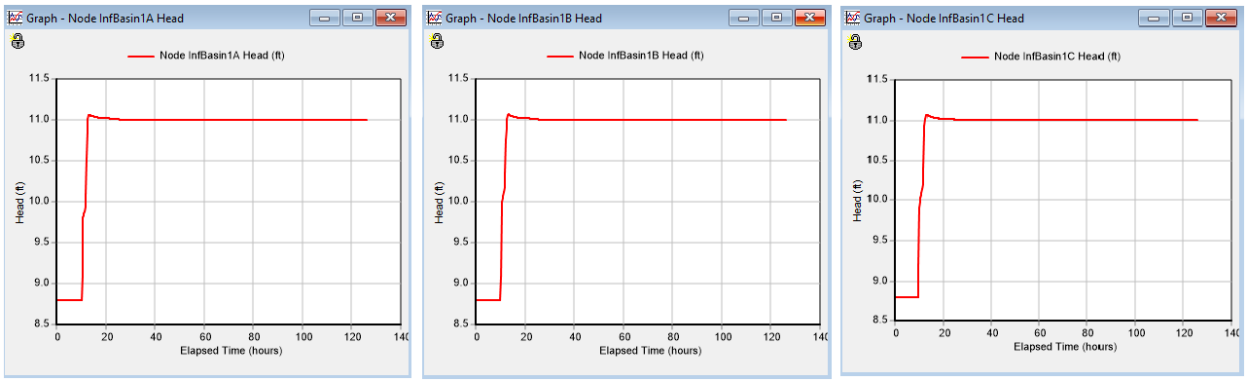
The developed site is divided into three drainage areas which flow directly to the three segments of the Infiltration basin / swale system. The three segments of the infiltration basin / swale system are represented by storage nodes and the storage available within each node was input while ignoring subsurface storage (producing conservative results). The three infiltarion basin / swale segments are connected via two 24" HDPe culverts, which are represented by links connecting the storage nodes within the model.

The 10-yr, 24 hour rainfall event was analyzed to assess the adequacy of the proposed drainage infrastructure.

Results:

Internal conveyances between infiltration basin segments:

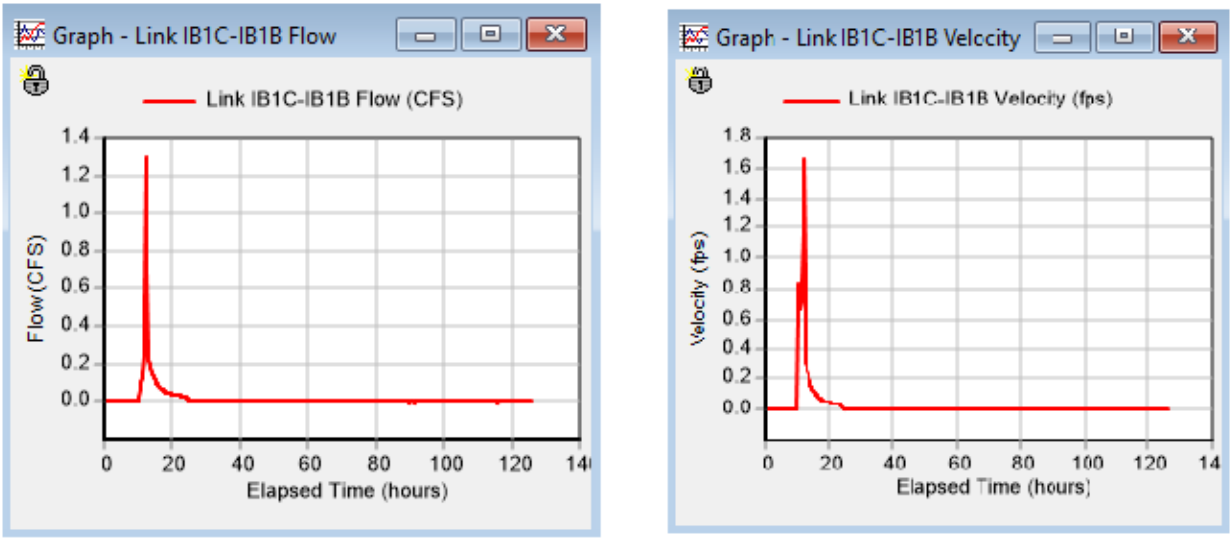
Two 12” HDPe pipes connect the three basin segments. To check the adequacy of the pipe sizing, peak HGL is analyzed in the three basin segments. If head does not “build” within the system to unacceptable levels in the basins, then the pipes are considered to be adequately sized. The infiltration basin / swale system has an overflow weir structure set at elevation 11.0’ and a top of available storage at 11.5’. The 10-yr, 24-hr rainfall event produce the following HGL curves for the three basin segments:



As shown on the above graphs, the HGL peaks slightly above an elevation of 11.0’ (the weir elevation) at the peak of the rainfall event and then comes back down to an elevation of 11.0’ for all three basin segments. This confirms that the interconnecting 12” HDPe pipes are adequately sized. **(Please note that draw-down will continue below the 11.0’ elevation via infiltration within the basin, which is not modeled here since it is not pertinent to the purposes of this model).**

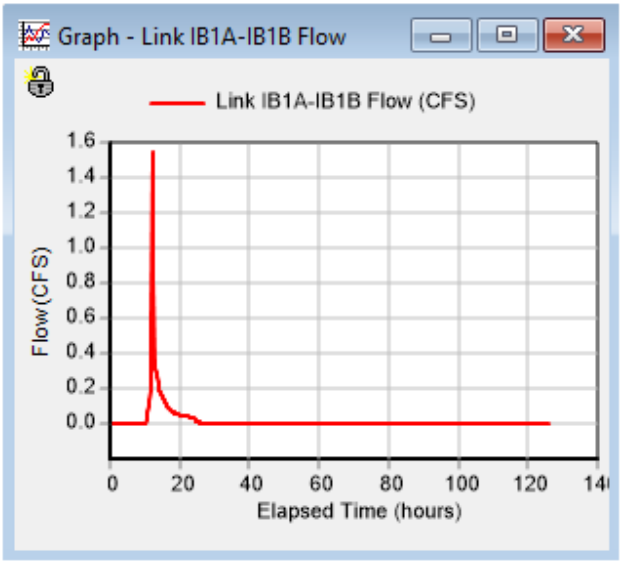
Check Pipe Outlet Flow & Velocity:

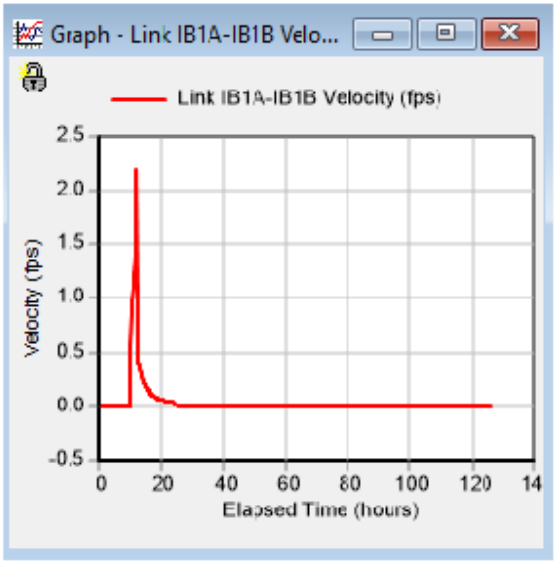
Southern 12” HPDe Interconnecting Pipe (under sidewalk):



A Rip-Rap apron is provided at the pipe outlet. Velocity of flow will dissipate as it flow moves away from the pipe into the basin. 1.65 fps is within acceptable velocities for unprotected flows across these soils.

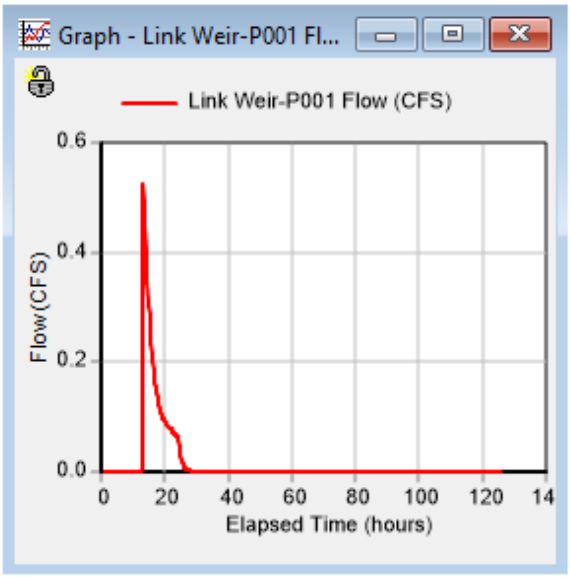
Western 12" HPDe Interconnecting Pipe (under main site entrance):

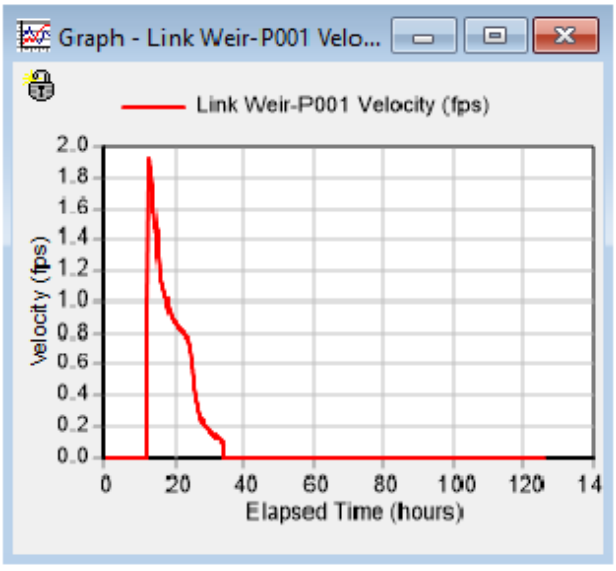




A Rip-Rap apron is provided at the pipe outlet. Velocity of flow will dissipate as it flow moves away from the pipe into the basin. 2.2 fps is within acceptable velocities for unprotected flows across these soils.

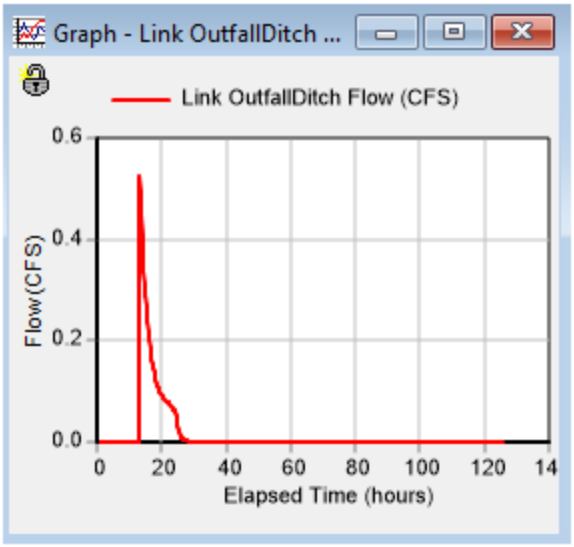
Overflow Structure Outlet Pipe:

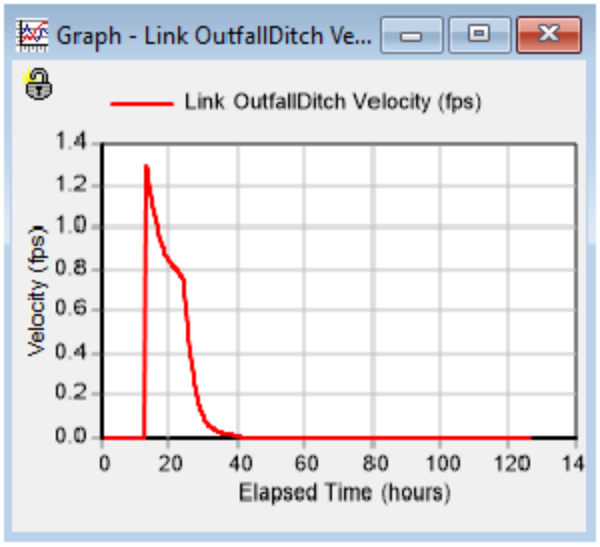




A Rip-Rap apron is provided at the pipe outlet. 1.95 fps is within acceptable velocities for unprotected flows across these soils.

Outlet Swale:



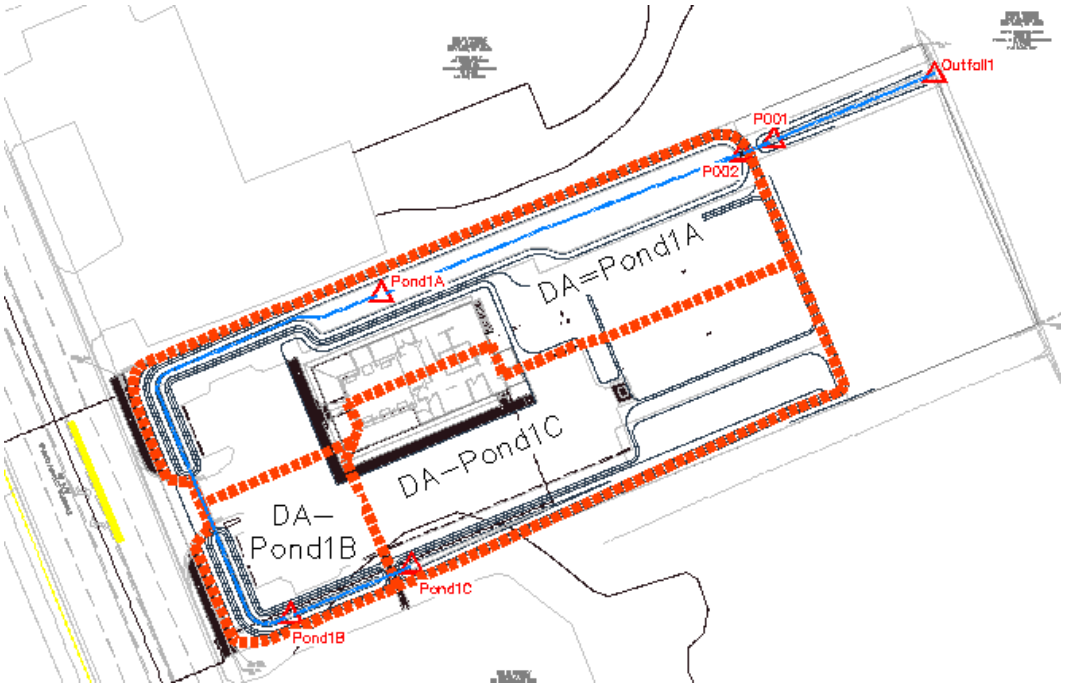


1.3 fps is within acceptable velocities for unprotected flows across these soils.

Conclusions:

The proposed stormwater drainage infrastructure is adequate to convey and manage the 10-yr, 24 hr rainfall event (design storm) without uncontrolled overflow, within the confines of the system, and without discharging at erosive velocities.

APPENDIX A
Drainage Area Tabulations



Post-Con Drainage Area Parameters - SCS Method

Cindy's Kitchen

DA-Pond1A									
		CN	Area Ac.	Area SF					
Impervious - Disconnec		98	0.14	6205	Weighted CN =		77		
Wooded	A Soils	30	0.00	0					
Open Space	A Soils	39	0.05	2324		Connected Impervious:			
Open Space	C Soils	74	0.39	17085		Area Ac.	Area SF	% of DA	
	CN SubTotal		0.59	25614		0.00		0.00	
Formula: Potential Max Retention S = (1000 / CN) - 10						Total Drainage Area:			
						Area Ac	Area SF		
Formula:	Lag = [(l^0.8) * (S+1)^0.7] / 1900* (Y^0.5)					0.59	25614	25614	
Formula: Time of Concentration = 5 / 3 * Lag									
									Width:
Length = l	53		S=	3.0		Ia=	0.61		483.28
Elev Up	13		Lag =	0.0	Hours				
Elev Dn (Inv)	12		Tc =	0.0	Hours				
Slope % = Y	1.89		Tc =	2.4	Minutes				
CN =	77								

Post-Con Drainage Area Parameters - SCS Method

Cindy's Kitchen

DA-Pond1B

		CN	Area Ac.	Area SF					
Impervious - Disconnec		98	0.09	4043	Weighted CN =		81		
Wooded	A Soils	30	0.00	0					
Open Space	A Soils	39	0.03	1388		Connected Impervious:			
Open Space	C Soils	74	0.04	1660		Area Ac.	Area SF	% of DA	
	CN SubTotal		0.16	7091		0.00	0	0.00	
Formula: Potential Max Retention			S = (1000 / CN) - 10			Total Drainage Area:			
						Area Ac	Area SF		
Formula:	Lag = [(l^0.8) * (S+1)^0.7] / 1900* (Y^0.5)					0.16	7091	7091	
Formula: Time of Concentration = 5 / 3 * Lag									
									Width:
Length = l	68		S=	2.4		Ia=	0.47		104.28
Elev Up	13.1		Lag =	0.0	Hours				
Elev Dn (Inv)	12		Tc =	0.0	Hours				
Slope % = Y	1.62		Tc =	2.8	Minutes				
CN =	81								

Post-Con Drainage Area Parameters - SCS Method

Cindy's Kitchen

DA-Pond1C

		CN	Area Ac.	Area SF					
Impervious - Disconnec		98	0.22	9515	Weighted CN =		85		
Wooded	A Soils	30	0.00	0					
Open Space	A Soils	39	0.00	0		Connected Impervious:			
Open Space	C Soils	74	0.27	11944		Area Ac.	Area SF	% of DA	
	CN SubTotal		0.49	21459		0.00	0	0.00	
Formula: Potential Max Retention S = (1000 / CN) - 10						Total Drainage Area:			
						Area Ac	Area SF		
Formula:	Lag = [(l^0.8) * (S+1)^0.7] / 1900* (Y^0.5)					0.49	21459	21459	
Formula: Time of Concentration = 5 / 3 * Lag									
									Width:
Length = l	67		S=	1.8		Ia=	0.36		320.28
Elev Up	13		Lag =	0.0	Hours				
Elev Dn (Inv)	12		Tc =	0.0	Hours				
Slope % = Y	1.49		Tc =	2.6	Minutes				
CN =	85								

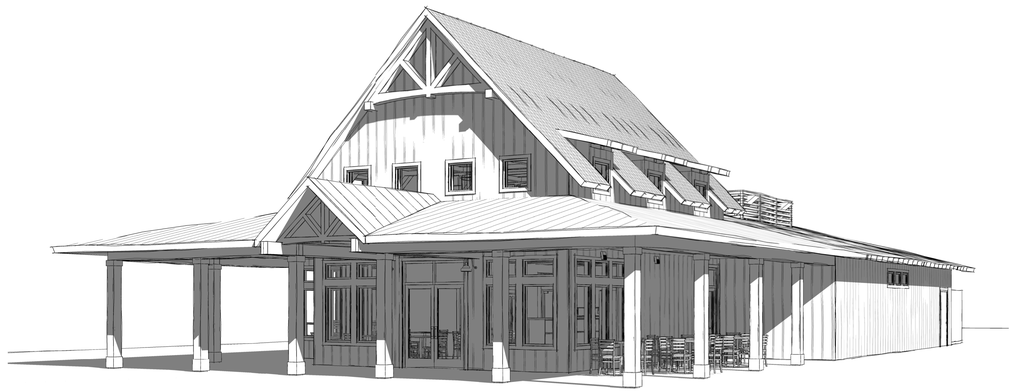
Cindy's Kitchen

ABBREVIATIONS

1R1S	(1) ROD + (1) SHELF
ACI	AMERICAN CONCRETE INSTITUTE
ACT	ACOUSTICAL CEILING TILE
AFF	ABOVE FINISH FLOOR
AFG	ABOVE FINISH GRADE
AHU	AIR HANDLING UNIT
ALUM.	ALUMINUM
AM	ANTE MERIDEN
ARCH.	ARCHITECTURAL
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
BFE	BASE FLOOD ELEVATION
B.O.	BOTTOM OF
CJ	CONTROL JOINT
CAB.	CABINET
CLG	CEILING
CMU	CONCRETE MASONRY UNIT
CO	CLEANOUT
CONC.	CONCRETE
CONT.	CONTINUOUS
CPET	COMMON PATH OF EXIT TRAVEL
CW	COLD WATER
DBL	DOUBLE
DR.	DOOR
DWG.	DRAWING
DWV	DRAIN/ WASTE/ VENT
DS	DOWNSPOUT
DTL.	DETAIL
EC	ELECTRICAL CONTRACTOR
EJ.	EXPANSION JOINT
ELECT.	ELECTRICAL
ELEV.	ELEVATION
ETC.	ETCETERA
E.T.R.	EXISTING TO REMAIN
EWC	ELECTRIC WATER COOLER
EXIST.	EXISTING
EXT.	EXTERIOR
FBGLS.	FIBERGLASS
FCP	FIBER CEMENT PANEL
FD	FLOOR DRAIN
FF	FINISH FLOOR
FEC	FIRE EXTINGUISHER CABINET
FJ	FALSE JOINT
FLR.	FLOOR
GC	GENERAL CONTRACTOR
GA.	GAUGE
GALV.	GALVANIZED
GEN	GENERAL
GS	GANG STUD
GWB	GYPSUM WALL BOARD
H/C	HANDICAPPED
HDWR	HARDWARE
HM	HOLLOW METAL
HORIZ.	HORIZONTAL
HP	HEAT PUMP
IM	ICEMAKER
INSUL.	INSULATION
INT.	INTERIOR
KW	KILOWATT
LOCS.	LOCATIONS
LSL	LAMINATED STRAND LUMBER
MAX.	MAXIMUM
MBT	MARBLE THRESHOLD
MC	MECHANICAL CONTRACTOR
MCJ	MASONRY CONTROL JOINT
MEJ	MASONRY EXPANSION JOINT
MECH.	MECHANICAL
MFR.	MANUFACTURER
MIN.	MINIMUM
MT	METAL THRESHOLD
MTL.	METAL
NCSBC	NORTH CAROLINA STATE BUILDING CODE
N.I.C.	NOT IN CONTRACT
NO.	NUMBER
NOM.	NOMINAL
O.C.	ON CENTER
O.D.	OVERFLOW DRAIN/OUTSIDE DIAMETER
O.H.	OPPOSITE HAND
OPNG.	OPENING
O/S	OUTSIDE
OTB	OPEN TO BELOW
PC	PLUMBING CONTRACTOR
PH	PHASE
PJ	PANEL JOINT
PL	POINT LOAD
P-LAM	PLASTIC LAMINATE
PME	PLUMBING, MECHANICAL, & ELECTRICAL
PP	PUSH PAD
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PSL	PARALLEL STRAND LUMBER
P.T.	PRESSURE TREATED
PNTD	PAINTED
P.W. / PWD	PLYWOOD
RC	REINFORCED CONCRETE
RCP	REFLECTED CEILING PLAN
RD	ROOF DRAIN
REINF	REINFORCED OR REINFORCING
REQ'D	REQUIRED
RL	ROOF LEADER
RUB	RUBBER
SAN	SANITARY
SF	SQUARE FOOT OR SQUARE FEET
SIM	SIMILAR
SP	SOUTHERN PINE
SPF	SPRUCE/ PINE/ FIR
SS	STAINLESS STEEL
STOR	STOREFRONT
STL.	STEEL
TD	TRAVEL DISTANCE
TME	TO MATCH EXISTING
T.O.	TOP OF
T.O.P.	TOP OF PLATE
TRD.	TREAD
TYP.	TYPICAL
U.N.O.	UNLESS NOTED OTHERWISE
V	VOLT/ VOLTAGE
VCT	VINYL COMPOSITE TILE
VERT.	VERTICAL
VIF	VERIFY IN FIELD
W/	WITH
WGL	WIRE GLASS
WD	WOOD

GENERAL CONSTRUCTION NOTES

1. THESE DRAWINGS CONTAIN THE MINIMUM INFORMATION NECESSARY FOR ANY REPUTABLE CONTRACTOR TO UNDERTAKE CONSTRUCTION. THE CONTRACTOR SHALL FURNISH ALL LABOR, MATERIALS, EQUIPMENT AND SERVICES NECESSARY FOR THE COMPLETION OF THE PROJECT. HE SHALL COMPLETE THE WORK IN THE BEST AND MOST WORKMANLIKE MANNER, AND DO EVERYTHING PROPERLY INCIDENTAL THERETO, AS SHOWN ON THE PLANS, REQUIRED BY ALL APPLICABLE CODES, AS RECOMMENDED BY PRODUCT MANUFACTURERS, AND IN ACCORDANCE WITH CONTRACT DOCUMENTS.
2. ALL WORK SHALL BE IN COMPLIANCE WITH THE CURRENT NORTH CAROLINA BUILDING CODE
3. THE CONTRACTOR SHALL VERIFY DIMENSIONS BEFORE BEGINNING WORK. DIMENSIONS FOR NEW CONSTRUCTION SHOULD BE HELD TO THE MAXIMUM EXTENT POSSIBLE.
4. PREMISES OF THE ENTIRE JOB SITE WILL BE MAINTAINED IN A NEAT AND ORDERLY CONDITION DURING THE ENTIRE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL CONFORM TO ALL REQUIREMENTS OF OSHA.
5. PRIOR TO THE FINAL PAYMENT THE CONTRACTOR SHALL GIVE TO THE OWNER A LABELED BINDER CONTAINING A LIST OF ALL SUPPLIERS AND SUBCONTRACTORS WITH ADDRESSES AND PHONE NUMBERS, GUARANTEES, AND OPERATION AND MAINTENANCE MANUALS OF ALL EQUIPMENT. THE CONTRACTOR SHALL WARRANT THE WORK FOR A PERIOD OF ONE YEAR.
6. IF A PORTION OF THE WORK HAS BEEN COVERED WHICH THE ARCHITECT HAS NOT SPECIFICALLY REQUESTED TO OBSERVE PRIOR TO ITS BEING COVERED, THE ARCHITECT MAY REQUEST TO SEE SUCH WORK AND IT SHALL BE UNCOVERED BY THE CONTRACTOR. IF SUCH WORK IS IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, COSTS OF UNCOVERING AND REPLACEMENT SHALL, BY APPROPRIATE CHANGE ORDER, BE CHARGED TO THE ARCHITECT. IF SUCH WORK IS NOT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL PAY SUCH COSTS UNLESS THE CONDITION WAS CAUSED BY THE OWNER OR A SEPARATE CONTRACTOR IN WHICH EVENT THE OWNER SHALL BE RESPONSIBLE FOR PAYMENT OF SUCH COSTS. THE CONTRACTOR SHALL PROMPTLY CORRECT THE WORK REJECTED BY THE ARCHITECT OR FAILING TO CONFORM TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
7. ALL CONCRETE SHALL BE 3000 PSI MINIMUM, AND ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF THE ACI AND ASTM.
8. LIGHT GAUGE STEEL FRAMING SHALL BE IN ACCORDANCE WITH THE LIGHT-GAUGE STEEL FRAMING CONSTRUCTION MANUAL AND AS PER ASTM A446, A570, OR A611.
9. REINFORCING BARS FOR CONCRETE WORK SHALL BE GRADE 60, DEFORMED AS PER ASTM A615.
10. WELDED WIRE FABRIC SHALL BE AS PER ASTM A185 OF SIZES AND TYPE AS SHOWN ON DRAWINGS.
11. METAL TIE DOWN STRAPS, ANCHORS AND CLIPS SHALL BE AS PER "SIMPSON STRONGTIE" OR EQUAL.
12. WOOD FRAMING AND BLOCKING SHALL BE #2 SPF OF THE SIZES INDICATED AND SHALL HAVE A MIN. Fb VALUE OF 1200 PSI.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ROOFING IN ACCORDANCE WITH NRCA REQUIREMENTS AND THE ROOFING PRODUCT MANUFACTURER'S RECOMMENDATIONS INCLUDING WATERPROOFING OF ALL PENETRATIONS AND SUPPORTS FOR MECHANICAL EQUIPMENT, AND AS SHOWN ON DRAWINGS.
14. THE CONTRACTOR SHALL DETERMINE BEFORE BEGINNING WORK WHETHER AN ELEVATION CERTIFICATE WILL BE REQUIRED AND SHALL OBTAIN THE CERTIFICATE AT THE EARLIEST OPPORTUNITY. ONE COPY MUST BE PROVIDED FOR THE OWNER.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INSULATION. INSULATION SHALL BE INSTALLED IN FULL CONTACT WITH SHEATHING AND GWB OF WALL CAVITY. FLOOR AND CEILING INSULATION SHALL BE IN FULL CONTACT WITH GWB. INSULATION SHALL BE INSTALLED TO MANUFACTURER'S SPECIFICATIONS, WITH NO SUBSTANTIAL GAPS, VOIDS, COMPRESSION OR WIND INTRUSION.
16. SOIL SHALL BE FREE OF ORGANIC MATERIAL AND CONSOLIDATED TO BE CAPABLE OF 1,500 PSF AND LIMIT LONG TERM SETTLEMENT.
17. CAULK ALL GAPS IN FRAMING AND SHEATHING AT FRAMING ROUGH-IN. CAULK GAPS IN GWB NOT SEALED BY TAPE AND JOINT COMPOUND. AIR TIGHTNESS SHALL BE LESS THAT OR EQUAL TO .30 CFM50 PER SQUARE FOOT OF CONDITIONED ENVELOPE AREA.



1 Perspective

DRAWING NUMBER / 1 View Name / 1/8" = 1'-0" — DRAWING TITLE

DRAWING NUMBER / 1 / A101 / SHEET NUMBER — EXTERIOR ELEVATION KEY

DRAWING NUMBER / 1 / A101 / SHEET NUMBER — INTERIOR ELEVATION KEY

Name / Elevation — LEVEL CALLOUT

1 — DOOR TAG

A — WINDOW TAG

A — WALL TAG

Room name / 101 — ROOM TAG

5' - 0" — DIMENSION (FACE OF STUD U.N.O.)

SIM / 1 / A101 — SECTION KEY

SIM / 1 / A101 — DETAIL KEY

SIM / 1 / A101 — ENLARGED PLAN OR DETAIL KEY

Drawing Symbols
1/4" = 1'-0"

Drawing Index	
Sheet Number	Sheet Name
E302	Unnamed
P01	Unnamed
A001	Cover Sheet
A002	Appendix B
A003	Life Safety Plans
A101	Foundation Plan
A102	First Floor Plan
A104	Roof Plan
A105	Reflected Ceiling Plans
A106	Equipment Plan
A201	Elevations
A301	Building Sections
A302	Building Sections
A401	Interior Elevations
A402	Kitchen Elevations
A403	Kitchen Elevations
A501	Wall Sections
A502	Wall Sections
P101	Plumbing Supply First Floor Plan
P102	Plumbing Waste First Floor Plan
P103	Plumbing Second Floor Plan
P201	Plumbing Riser
P301	Plumbing Schedule
P302	Plumbing Details
P303	Plumbing Details & Notes
M101	Mecahnical First Floor Plan
M102	Mechanical Second Floor Plan
M103	Mechanical Roof Plan
M201	Mecahnical Details, Schedules, & Notes
M202	Mechanical Details
M301	Mechanical Hood
M302	Mechanical Hood
M303	Mechanical Hood
M304	Mechanical Hood
E101	Electrical Lighting First Floor Plan
E102	Electrical Power First Floor Plan
E103	Electrical Lighting & Power Second Floor
E104	Electrical Power RoofPlan
E201	Electrical Panel Schedules & Notes
E301	Electrical Light Fixture Schedule & Notes

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CONTRACTOR

Design / Build
Premiere Contracting, Inc.
OUTER BANKS • NORTH CAROLINA

Project:	**Cindy's Kitchen**
Project No:	**21091**
Location:	**Caratoke Hwy. Coinjock, NC**
Title:	**Cover Sheet**
Date:	**August 25, 2023**
Scale:	**1/4" = 1'-0"**

MARK AREY KASTEN — REGISTERED ARCHITECT — 7220 — NORTH CAROLINA — NAGS HEAD, N.C.

CAHOON & KASTEN ARCHITECTS, P.C. — REGISTERED ARCHITECTURAL CORPORATION — 51211 — NORTH CAROLINA — NAGS HEAD, N.C.

8/25/23

Revisions:

No.	Description	Date

Designed: Designer
Drawn: Author
Reviewed: Checker
Cad File:

A001

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: Cindy's Kitchen
Address: Caratoke Hwy.
Coinjock, NC

Owner/Authorized Agent: Cyntha Spain
Phone #: _____ E-Mail: _____
Owned By: ☐ City/County ☒ Private ☐ State
Code Enforcement Jurisdiction: ☐ City _____ ☒ County Currituck ☐ State

CONTACT: Mark Kasten, AIA

DESIGNER	FIRM	NAME	LIC #	TELEPHONE #	E-MAIL
Architectural	Cahoon + Kasten Architects	Mark Kasten	7220	252.441.0271	mark@obxarchitects.com
Civil	Michael W. Robinson	Mike Robinson	18994	252.255.8026	mrobinson@obxengineering.com
Electrical					
Fire Alarm					
Plumbing					
Mechanical					
Sprinkler-Standpipe					
Structural					
Retaining Walls >5'h					
Other					

2018 NC BUILDING CODE: ☒ New Building ☐ Addition ☐ 1st Time Interior Completion ☐ Shell / Core* ☐ Phased Construction*

*Contact the local inspection jurisdiction for possible additional procedures and requirements.

2018 NC EXISTING BUILDING CODE: ☐ Prescriptive ☐ Alteration Level I ☐ Historic Property ☐ Repair ☐ Alteration Level II ☐ Change of Use ☐ Chapter 14 ☐ Alteration Level III

CONSTRUCTED: (date) _____ **CURRENT OCCUPANCY(S)** (Ch. 3): _____
RENOVATED: (date) _____ **PROPOSED OCCUPANCY(S)** (Ch. 3): _____
RISK CATEGORY (Table 1604.5): **Current:** _____ **Proposed:** _____

BASIC BUILDING DATA

Construction Type (check all that apply): ☐ I-A ☐ I-B ☐ II-A ☐ II-B ☐ III-A ☐ III-B ☐ IV ☐ V-A ☒ V-B
Sprinklers: ☒ No ☐ Partial ☐ NFPA 13 ☐ NFPA 13R ☐ NFPA 13D
Standpipes: ☒ No ☐ Class I ☐ II ☐ III ☐ Wet ☐ Dry
Primary Fire District: ☒ No ☐ Yes **Flood Hazard Area:** ☒ No ☐ Yes
Special Inspections Required: ☒ No ☐ Yes If special inspections are required, contact the local inspection jurisdiction for additional procedures and requirements.

Gross Building Area Table

FLOOR	EXISTING (SQ FT)	NEW (SQ FT)	SUB-TOTAL
4th Floor			
3rd Floor			
2nd Floor			
Mezzanine			
1st Floor		4600 SF	4600 SF
Basement			
Total		4600 SF	4600 SF

ALLOWABLE AREA

Primary Occupancy Classification(s):
Assembly ☐ A-1 ☒ A-2 ☐ A-3 ☐ A-4 ☐ A-5
Business ☒
Educational ☐
Factory ☐ F-1 Moderate ☐ F-2 Low
Hazardous ☐ H-1 Detonate ☐ H-2 Deflagrate ☐ H-3 Combust ☐ H-4 Health ☐ H-5 HPM
Institutional ☐ I-1 ☐ I-2 I-1 & I-2 Condition ☐ 1 ☐ 2 ☐ I-3 ☐ I-4 I-3 Condition ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5
Mercantile ☐
Residential ☐ R-1 ☐ R-2 ☐ R-3 ☐ R-4
Storage ☐ S-1 Moderate ☐ S-2 Low ☐ High Pile ☐ Parking Garage ☐ Open ☐ Enclosed ☐ Repair Garage
Utility and Miscellaneous ☐

Accessory Occupancy Classification(s): _____
Incidental Uses (Table 509): _____
Special Uses (Chapter 4 - List Code Sections): _____
Special Provisions (Chapter 5 - List Code Sections): _____
Mixed Occupancy: ☐ No ☒ Yes Separation: __ Hr. Exception: __
☒ Non-Separated Use (508.3)
☐ Separated Use (508.4) See below for area calculations for each story, the area of the occupancy shall be such that the sum of the ratios of the actual floor area of each use divided by the allowable floor area for each use shall not exceed 1.

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

$$\_\_\_\_\_ + \_\_\_\_\_ + \text{... ...} = \leq 1$$

STORY #	DESCRIPTION AND USE	(A) BLDG. AREA PER STORY (ACTUAL)	(B) TABLE 506.2[4] AREA	(C) AREA FOR FRONTAGE INCREASE[1,5]	(D) ALLOWABLE AREA PER STORY OR UNLIMITED[2,3]
1	Restaurant	4600 SF	6000 SF		6000 SF
	Building Area	4600 SF	Maximum Allowable Building Area		12000 SF

[1] Frontage area increases from Section 506.3 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 If = 100 [F/P - 0.25] x W/30 = _____ (%)
[2] Unlimited area applicable under conditions of Section 507.
[3] Maximum Building Area = total number of stories in the building x D (maximum 3 stories)(506.2).
[4] The maximum area of open parking garages must comply with Table 406.5.4.
[5] Frontage increase is based on the unsprinklered area value in Table 506.2.

ALLOWABLE HEIGHT

	ALLOWABLE	SHOWN ON PLANS	CODE REFERENCE[1]
Building Height in Feet (Table 504.3)[2]	40'	25	
Building Height in Stories (Table 504.4)[3]	1	2	

1. Provide code reference if the "Shown on Plans" quantity is not based on Table 504.3 or 504.4.
2. The maximum height of air traffic control towers must comply with Table 412.3.1.
3. Then maximum height of open parking garages must comply with Table 406.5.4.

PERCENTAGE OF WALL OPENING CALCULATIONS

WALL	FIRE SEPARATION DISTANCE FROM PROPERTY LINES (FEET)	DEGREE OF OPENINGS PROTECTION (TABLE 705.8)	ALLOWABLE AREA (%)	ACTUAL SHOWN ON PLANS (%)

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		0					
Bearing walls							
Exterior							
North		1	1	3/A102			
East		1	1	3/A102			
West		1	1	3/A102			
South		1	1	3/A102			
Interior		0					
Nonbearing walls and partitions							
Exterior walls							
North		1	1	3/A102			
East		1	1	3/A102			
West		1	1	3/A102			
South		1	1	3/A102			
Interior walls and partitions		0					
Floor construction Including supporting beams and joists		0					
Floor Ceiling Assembly		0					
Columns Supporting Floors		0					
Roof Construction, including supporting beams and joists		0					
Roof Ceiling Assembly		0					
Columns Supporting Roof		0					
Shafts Enclosures - Exit							
Shafts Enclosures - Other							
Corridor Separation							
Occupancy/ Fire Barrier Separation							
Party/Fire Wall Separation							
Smoke Barrier Separation							
Smoke Partition							
Tenant/Dwelling Unit/ Sleeping Unit Separation							
Incidental Use Separation							

* Indicate section number permitting reduction

LIFE SAFETY SYSTEM REQUIREMENTS

Emergency Lighting: ☐ No ☒ Yes
Exit Signs: ☐ No ☒ Yes
Fire Alarm: ☒ No ☐ Yes
Smoke Detection Systems: ☒ No ☐ Yes ☐ Partial _____
Carbon Monoxide Detection: ☒ No ☐ Yes

LIFE SAFETY PLAN REQUIREMENTS

Life Safety Plan Sheet #: _____

☐ 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 calculations (Table 1004.1.2)
☒ Occupant loads for each area
☒ Exit access travel distances (1017)
☒ Common path of travel distances (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

ACCESSIBLE PARKING (SECTION 1106)

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

PLUMBING FIXTURE REQUIREMENTS (TABLE 2902.1)

USE		WATERCLOSETS			URINALS	LAVATORIES			SHOWERS /TUBS	DRINKING FOUNTAINS	
		MALE	FEMALE	UNISEX		MALE	FEMALE	UNISEX		REGULAR	ACCESSIBLE
SPACE	EXISTG										
	NEW	1	1	0	0	1	1	0	0	0	0
	REQ'D	1	1	0	0	1	1	0	0	0	0

SPECIAL APPROVALS

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

_____
_____
_____

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: ☐ (If checked the remainder of this section is not applicable.)
Exempt Building: ☐ Provide code or statutory reference: _____
Climate Zone: ☒ 3A ☐ 4A ☐ 5A
Method of Compliance:
Energy Code ☐ Performance ☒ Prescriptive
ASHRAE 90.1 ☐ Performance ☐ Prescriptive
Other ☐ Performance (specify source) _____

THERMAL ENVELOPE (Prescriptive method only)

Roof/ceiling Assembly (each assembly)
Description of assembly:
U-Value of total assembly:
R-Value of insulation: R38
Skylights in each assembly:
U-Value of skylights:
total s.f. of skylights in each assembly:

Exterior Walls (each assembly)
Description of assembly:
U-Value of total assembly:
R-Value of insulation: R19
Openings (windows or doors with glazing)
U-Value of assembly:
Solar heat gain coefficient:
Projection factor:
Door R-Values:

Walls below grade (each assembly)
Description of assembly:
U-Value of total assembly:
R-Value of insulation:

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

Floors slab on grade
Description of assembly:
U-Value of total assembly:
R-Value of insulation:
Horizontal/vertical requirement:
Slab heated:

STRUCTURAL DESIGN

DESIGN LOADS
Importance Factors: Wind (I_w) 1
Snow (I_s) 1
Seismic (I_E) 1
Live Loads: Roof 20 psf
Mezzanine N/A psf
Floor 100/50 psf
Ground Snow Load: 10 psf
Wind Load: Basic Wind Speed 135 mph (ASCE-7)
Exposure Category C

SEISMIC DESIGN CATEGORY: ☐ A ☐ B ☐ C ☒ D
Provide the following Seismic Design Parameters:
Occupancy Category (Table 1604.5) ☐ I ☒ II ☐ III ☐ IV
Spectral Response Acceleration S_s .076 %g S_1 .044 %g
Site Classification (ASCE-7) ☐ A ☐ B ☐ C ☒ D ☐ E ☐ F
Data Source: ☐ Field Test ☒ Presumptive ☐ Historical Data
Basic structural system (check one)
☒ Bearing wall ☐ Dual w/Special Moment Frame
☐ Building Frame ☐ Dual w/Intermediate R/C or Special Steel
☐ Moment Frame ☐ Inverted Pendulum
Analysis Procedure: ☐ Simplified ☒ Equivalent Lateral Force ☐ Dynamic
Architectural, Mechanical, Components anchored? ☒ Yes ☐ No

LATERAL DESIGN CONTROL: Earthquake ☐ Wind ☒

SOIL BEARING CAPACITIES:
Field Test (provide copy of test report) _____ psf
Presumptive Bearing capacity 1500 psf
Pile size, type, and capacity _____

MECHANICAL SUMMARY

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT

Thermal Zone
winter dry bulb: _____
summer dry bulb: _____
Interior design conditions
winter dry bulb: _____
summer dry bulb: _____
relative humidity: _____
Building heating load: _____
Building cooling load: _____
Mechanical Spacing Conditioning System
Unitary
description of unit: _____
heating efficiency: _____
cooling efficiency: _____
size category of unit: _____
Boiler
Size category. If oversized, state reason.: _____
Chiller
Size category. If oversized, state reason.: _____
List equipment efficiencies: _____

SEE MECHANICAL

ELECTRICAL SUMMARY

ELECTRICAL SYSTEM AND EQUIPMENT

Method of Compliance:
Energy Code: ☐ Prescriptive ☐ Performance
ASHRAE 90.1: ☐ Prescriptive ☐ Performance
Lighting Schedule (each fixture type)
lamp type required in fixture
number of lamps in fixture
ballast type used in the fixture
number of ballasts in fixture
total wattage per fixture
total interior wattage specified vs. allowed (whole [illegible] space by space)
total exterior wattage specified vs. allowed
Additional Efficiency Package Options
(When using the 2018 NCECC; not required [illegible] ASHRAE 90.1)
☐ C406.2 More Efficient HVAC [illegible] Performance
☐ C406.3 Reduced Lighting [illegible] ity
☐ C406.4 Enhanced Digital [illegible] Controls
☐ C406.5 On-Site Renewable [illegible] rgy
☐ C406.6 Dedicated Outdoor Air System
☐ C406.7 Reduced Energy Use in Service Water Heating

SEE ELECTRICAL

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CONTRACTOR

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Outer Banks • North Carolina

Project: **Cindy's Kitchen**
Project No: **21091**
Location: **Caratoke Hwy. Coinjock, NC**
Title: **Appendix B**
Date: **August 25, 2023**
Scale:

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8/25/23

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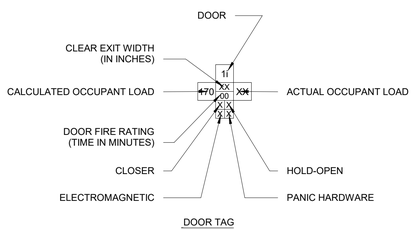
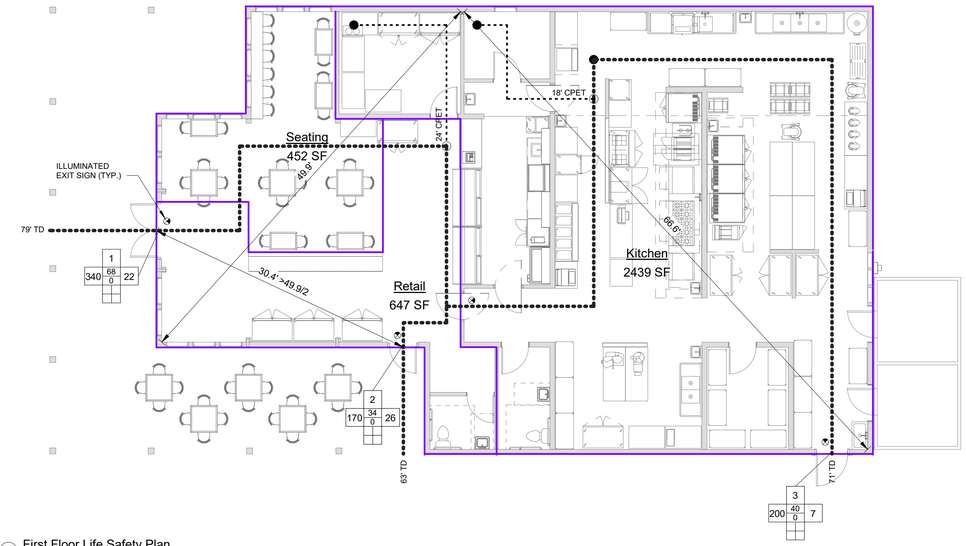
A002



Life Safety Legend
1/4" = 1'-0"



1 First Floor Life Safety Plan
1/8" = 1'-0"

Occupant Schedule

Name	Area	Occupancy	Occupancy S.F. Type	Area Per Occupant	Occupants
Seating	452 SF	Assembly Unconcentrated (tables and chairs)	Net	15 SF	31
Retail	647 SF	Mercantile	Gross	60 SF	11
Kitchen	2439 SF	Kitchens, Commercial	Gross	200 SF	13
					55

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Premiere Contracting, Inc.
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Project:	**Cindy's Kitchen**
Project No:	**21091**
Location:	**Caratoke Hwy. Coinjock, NC**
Title:	**Life Safety Plans**
Date:	**August 25, 2023**
Scale:	**As indicated**

MARK AREY KASTEN REGISTERED ARCHITECT 7320 NORTH CAROLINA NAGS HEAD, N.C.
CAHOON + KASTEN ARCHITECTS, P.C. REGISTERED ARCHITECTURAL CORPORATION 51211 NORTH CAROLINA NAGS HEAD, N.C.
8/25/23

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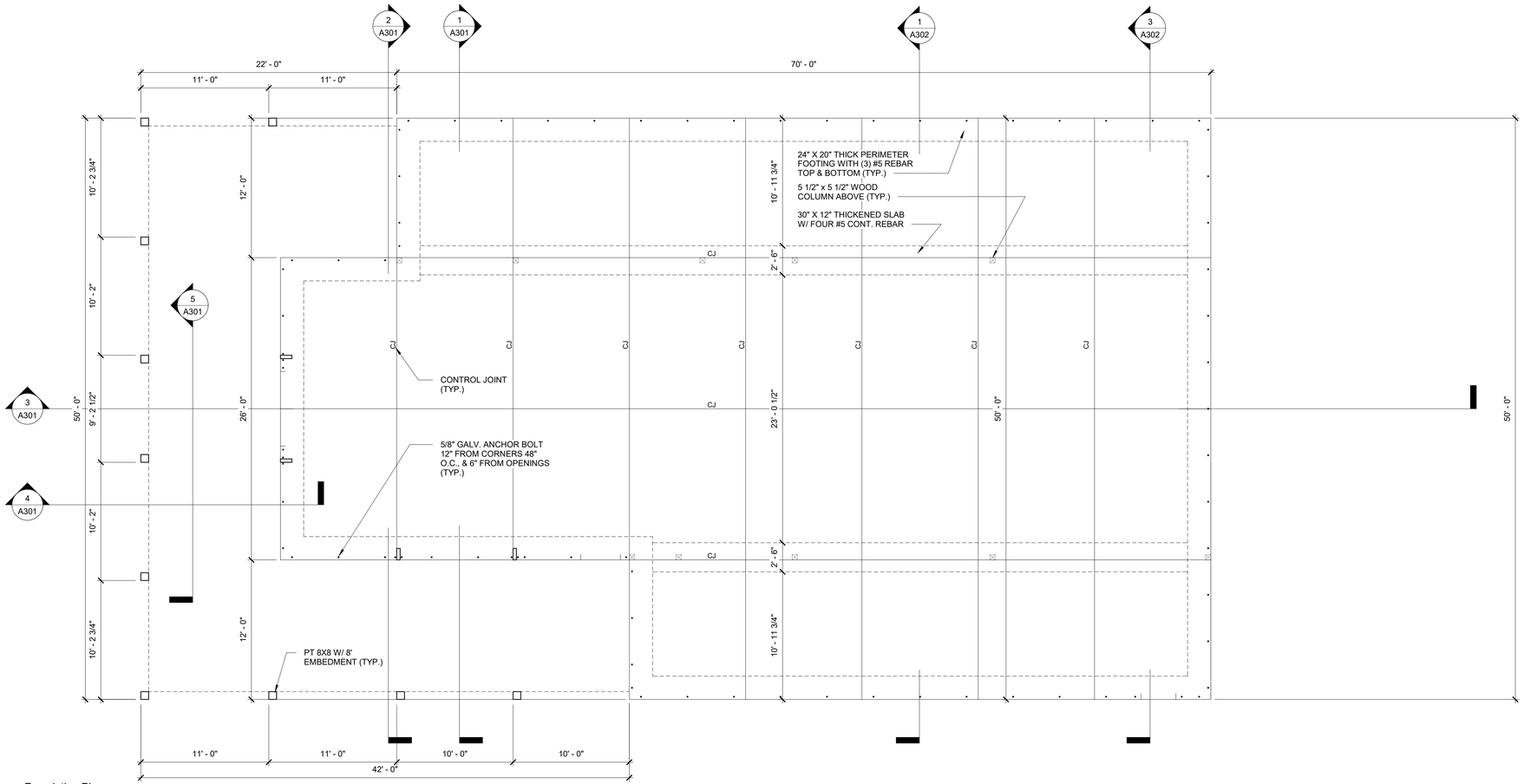
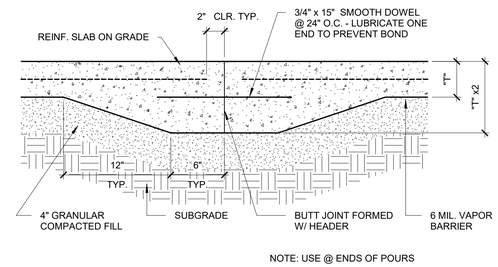


1 Foundation Plan
3/16" = 1'-0"

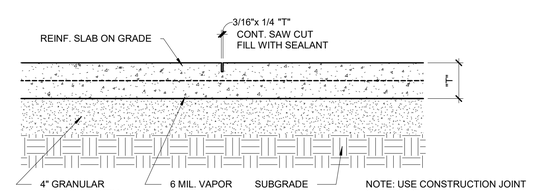


4 Construction Joint Detail (End Pour)
1 1/2" = 1'-0"

CONCRETE LAP REBAR SPLICE SCHEDULE

BAR SIZE	LAP LENGTH (in.)	
	f'c = 3000 psi	f'c = 4000 psi
#4	29	25
#5	36	31
#6	43	37
#7	63	54
#8	72	61
#9	80	69
#10	89	76

3 Concrete Rebar Lap Splice Schedule
1 1/2" = 1'-0"



5 Control Joint Detail (Saw Cut)
1 1/2" = 1'-0"

CONCRETE MATERIALS SCHEDULE

LOCATION	MIN. COMPRESSIVE STRENGTH (AT 28 DAYS)	COMMENTS
FOUNDATIONS	4000 PSI	-
FLOOR SLAB, WALLS, EQUIPMENT PADS	4000 PSI	-
CONCRETE FOR MASONRY CORES, BOND BEAMS	ASTM C476 GROUT	-
SIDEWALKS, BOLLARD FILL, MISC. CONCRETE	3000 PSI	-

2 Concrete Materials Schedule
1 1/2" = 1'-0"

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Project:	**Cindy's Kitchen**
Project No:	**21091**
Location:	**Caratoke Hwy. Coinjock, NC**
Title:	**Foundation Plan**
Date:	**August 25, 2023**
Scale:	**As indicated**

MARK AREY KASTEN
REGISTERED ARCHITECT
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REGISTERED ARCHITECTURAL CORPORATION
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NORTH CAROLINA
NAGS HEAD, NC

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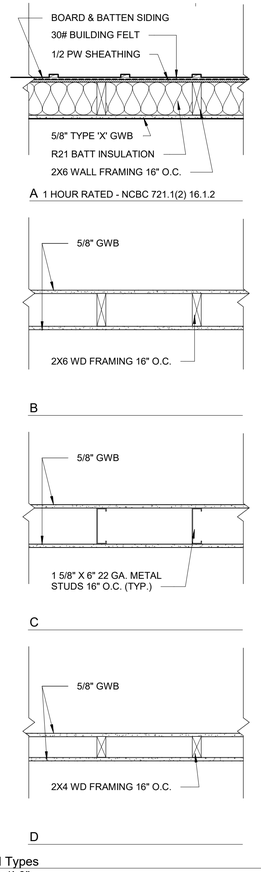
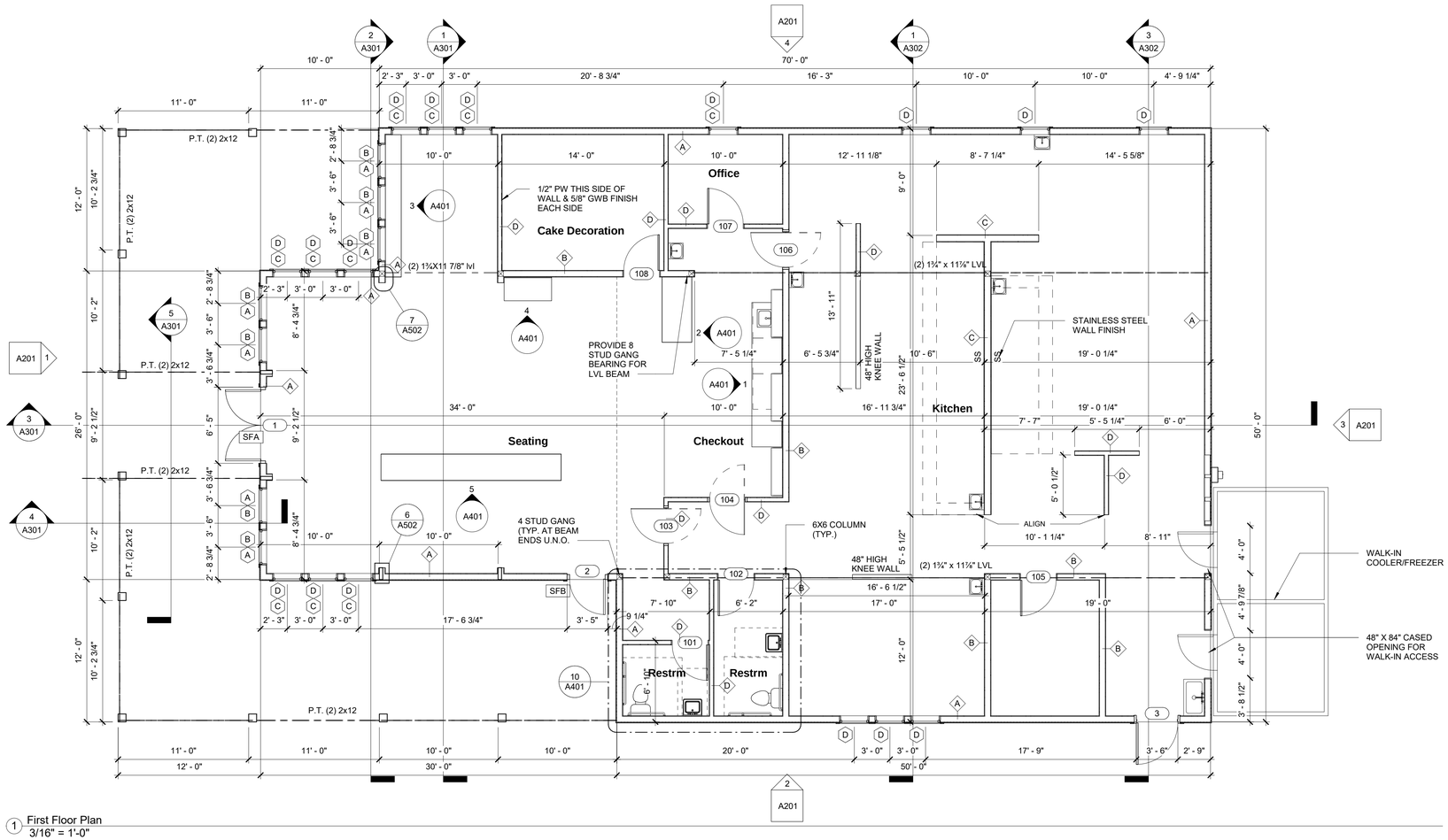
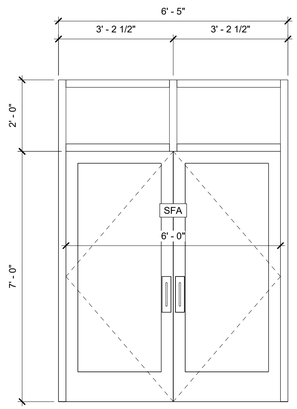


3 Wall Types
1" = 1'-0"

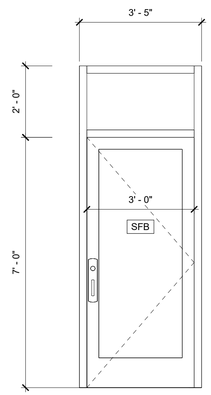


1 First Floor Plan
3/16" = 1'-0"



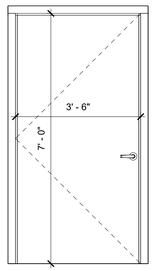
SFA

2 Storefront SFA
1/2" = 1'-0"



SFB

4 Storefront SFB
1/2" = 1'-0"



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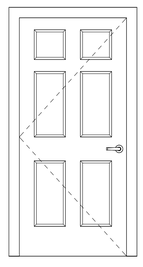

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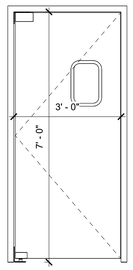

E

Door Types
1/2" = 1'-0"

Door Schedule Comm

Door Number	Type	Function	Description	Door					Frame			Comments
				Width	Height	Thickness	Door Material	Finish	Type	Material	Finish	
1	SFA	Exterior	Double Swing Storefront	6' - 0"	7' - 0"	0' - 1 3/4"	Alum/Glass	Anodized	Storefront	Alum	Anodized	
2	SFB	Interior	Single Swing Storfront	3' - 0"	7' - 0"	0' - 1 3/4"	Alum/Glass	Anodized	Storefront	Alum	Anodized	
3	C	Exterior	Single Swing Flush	3' - 6"	7' - 0"	0' - 1 3/4"	Galv. Hollow Metal	Painted	Hollow Metal	Galv. Stl	Painted	
101	D	Interior	Single Swing Six Panel	3' - 0"	6' - 8"	0' - 1 3/8"	Wood	Painted		Wood	Painted	
102	D	Interior	Single Swing Six Panel	3' - 0"	6' - 8"	0' - 1 3/8"	Wood	Painted		Wood	Painted	
103	E	Interior	Single Bi-Swing Kitchen	3' - 0"	7' - 0"	0' - 0 161/256"	Stainless Steel					
104	E	Interior	Single Bi-Swing Kitchen	3' - 0"	7' - 0"	0' - 0 161/256"	Stainless Steel					
105	D	Interior	Single Swing Six Panel	3' - 0"	6' - 8"	0' - 1 3/8"	Wood	Painted		Wood	Painted	
106	E	Interior	Single Bi-Swing Kitchen	3' - 0"	7' - 0"	0' - 0 161/256"	Stainless Steel					
107	D	Interior	Single Swing Six Panel	3' - 0"	6' - 8"	0' - 1 3/8"	Wood	Painted		Wood	Painted	
108	D	Interior	Single Swing Six Panel	3' - 0"	6' - 8"	0' - 1 3/8"	Wood	Painted		Wood	Painted	

Window Schedule

Type Mark	Description	Type	Manufacturer	Thermal Resistance (R)	Heat Transfer Coefficient (U)	Solar Heat Gain Coefficient	Visual Light Transmittance	Head Height	Comments
A	Fixed Vinyl	36" x 60"	TBD	1.5394 (h·ft²·°F)/BTU	0.6496 BTU/(h·ft²·°F)	0.78	0.9	7' - 0"	
B	Fixed Vinyl	36" x 18"	TBD	1.5394 (h·ft²·°F)/BTU	0.6496 BTU/(h·ft²·°F)	0.78	0.9	9' - 0"	
C	Fixed Vinyl	30" x 60"	TBD	1.5394 (h·ft²·°F)/BTU	0.6496 BTU/(h·ft²·°F)	0.78	0.9	7' - 0"	
D	Fixed Vinyl	30" x 18"	TBD	1.5394 (h·ft²·°F)/BTU	0.6496 BTU/(h·ft²·°F)	0.78	0.9	9' - 0"	
E	Fixed Vinyl	30" x 30"	TBD	2.8571 (h·ft²·°F)/BTU	0.3500 BTU/(h·ft²·°F)	0.26	0.42	5' - 0"	

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Premiere Contracting, Inc.
OUTER BANKS • NORTH CAROLINA

Project:	**Cindy's Kitchen**
Project No:	**21091**
Location:	**Caratoke Hwy. Coinjock, NC**
Title:	**First Floor Plan**
Date:	**August 25, 2023**
Scale:	**As indicated**

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CAHOON & KASTEN ARCHITECTS P.C. — REGISTERED ARCHITECTURAL CORPORATION — 51211 — NORTH CAROLINA — NAGS HEAD, NC

8/25/23

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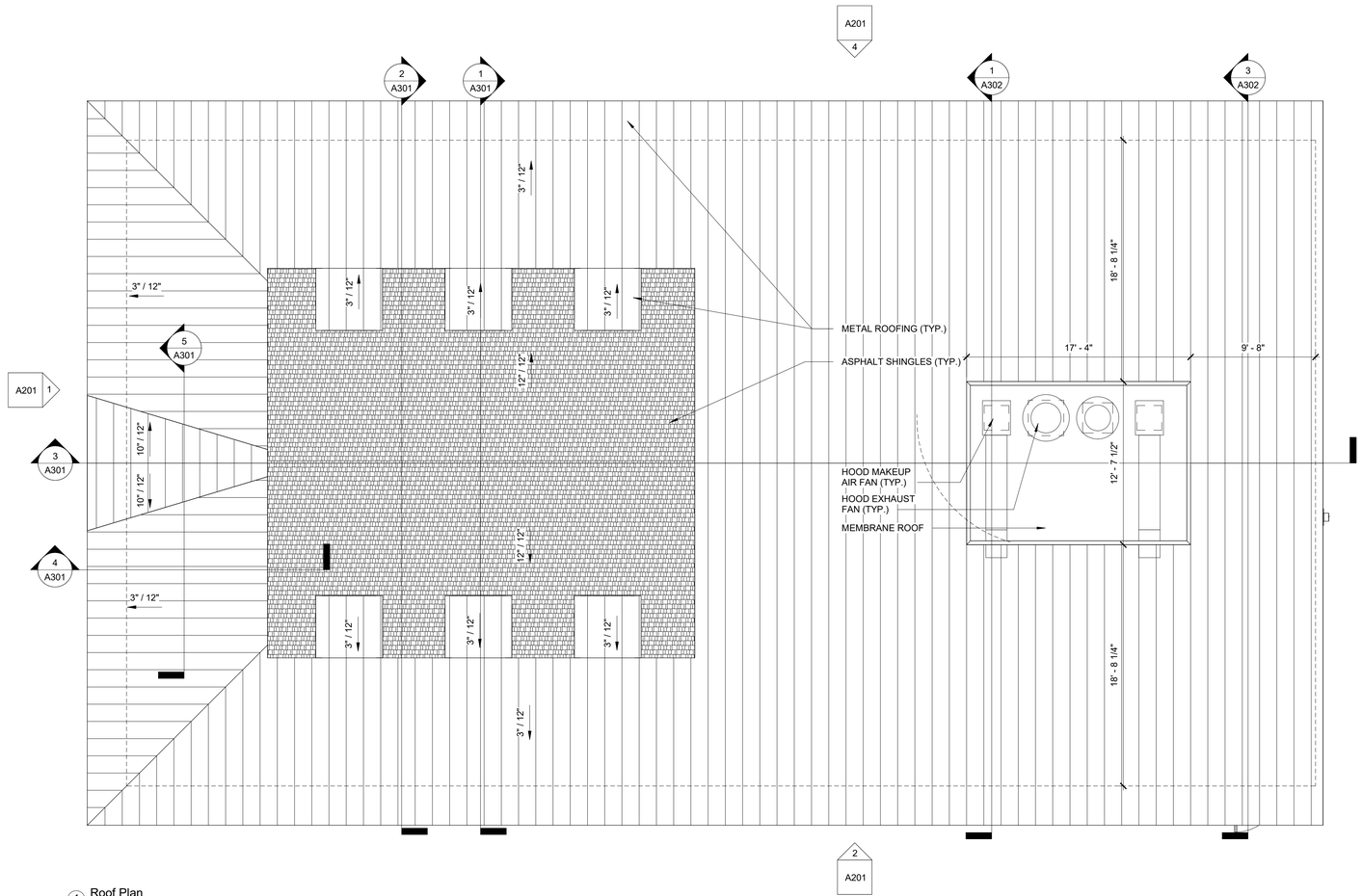

1 Roof Plan
3/16" = 1'-0"

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Project:	**Cindy's Kitchen**
Project No:	**21091**
Location:	**Caratoke Hwy. Coinjock, NC**
Title:	**Roof Plan**
Date:	**August 25, 2023**
Scale:	**3/16" = 1'-0"**

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8/25/23

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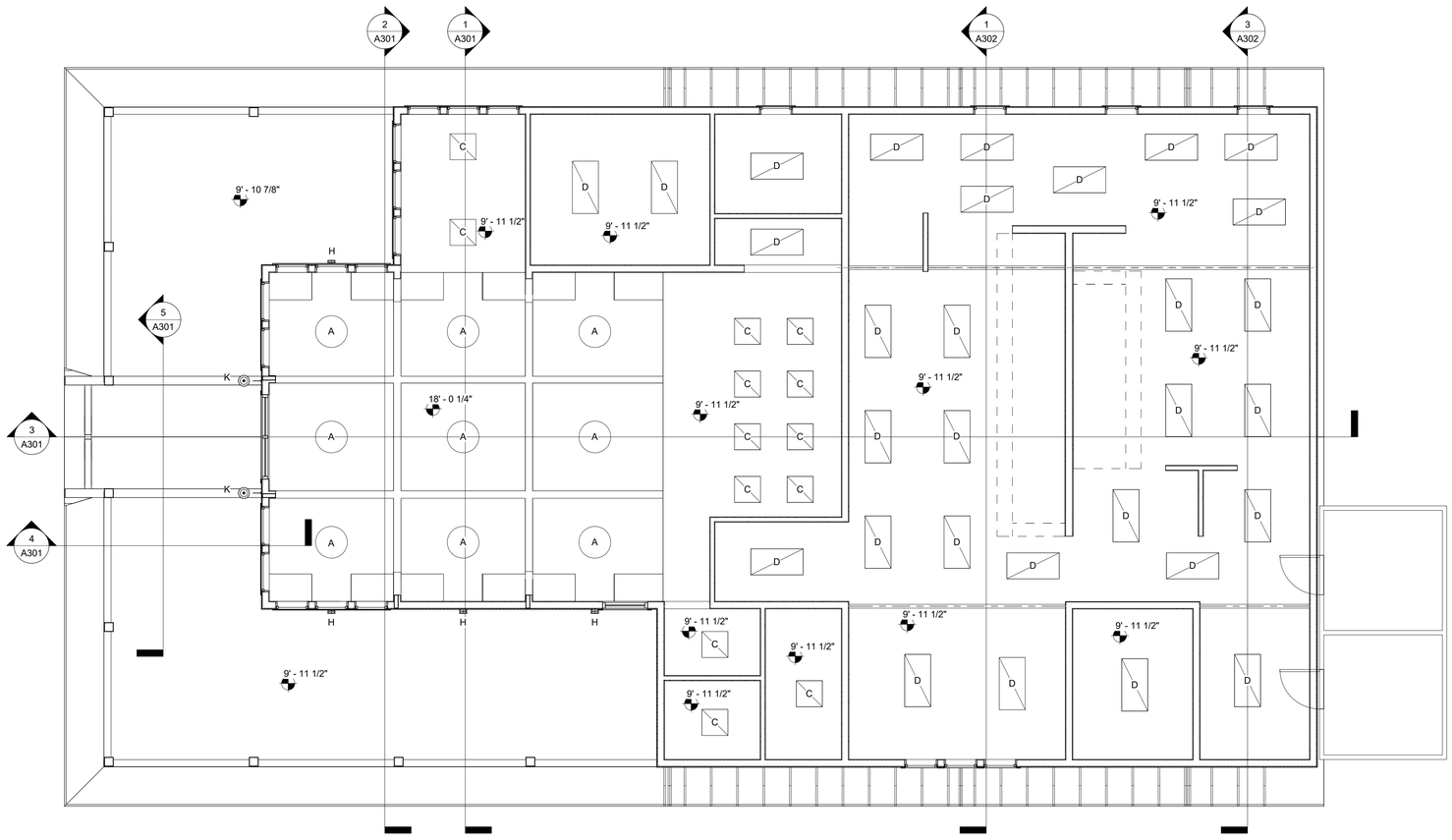

1 First Floor Reflected Ceiling Plan
3/16" = 1'-0"

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Project:	**Cindy's Kitchen**
Project No:	**21091**
Location:	**Caratoke Hwy. Coinjock, NC**
Title:	**Reflected Ceiling Plans**
Date:	**August 25, 2023**
Scale:	**3/16" = 1'-0"**

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Reviewed:	Checker
Cad File:	

A105

1 First Floor Equipment Plan
1/4" = 1'-0"

Specialty Equipment Schedule

#	Description	Width	Depth	Height	Manufacturer	Model
1	MERCHANDISER rEFRIGERATOR	53 7/8"	31 23/32"	78 15/16"	TRUE MANUFACTURING	GDM-49-HC-TSL01
2	WORK TABLE	48"	30"	35 1/2"	Advance Tabco	MSLAG-304C-X
3	SHELVING	48"	24"	74"	OYLMPIC	J2448K
4	CURVED GLASS, GLASS END REFRIGERATOR	77 1/4"	39"	49 1/8"	TRUE MANUFACTURING	TDM-R-77
5	ESPRESSO MACHINE	36 5/16"	23 1/2"	22 13/32"	CASADIO	DIECI A3
6	COFFEE MAKER	8 1/2"	17 11/16"	16 13/16"	BUNN	CWTF15-3
7	HAND SINK	16"	15"	14"	Krowne Metal	HS-26L
8	ICE CREAM CHEST, DIPWELL AND INSTALL KIT	48 3/4"	27 3/4"	37 1/2"	AVANTCO	360ADC8HC
9	REACH-IN SOLID SWING DOOR REFRIGERATOR	54 1/8"	29 1/2"	83 5/16"	TRUE MANUFACTURING	T-49-HC
10	REACH-IN SOLID SWING DOOR FREEZER	54 1/8"	29 1/2"	83 5/16"	TRUE MANUFACTURING	T-49F-HC
11	UNDERCOUNTER REFRIGERATOR	36"	32"	28 5/8"	BEVERAGE-AIR	UCR36AHC
12	WATER BATH HOT FOOD TABLE	77 3/4"	22 5/8"	34"	DUKE MANUFACTURING	EP305SW
13	GRIDDLE	36"	34"	58"	GARLAND	M48R
14	RANGE	36"	41 1/2"	58"	GARLAND	G60-10RR
15	OVEN - GAS	38"	44 1/2"	70 9/16"	GARLAND	MCO-GD-20-S
16	FRYER	15 5/8"	30 27/32"	41 1/8"	FRYMASTER	GF14
17	FRY WARMER	14 1/4"	19 1/2"	23 1/2"	WINCO	EHL-2
18	FILLER TABLE	18"	30"	35 1/2"	Advance Tabco	FT-3018
19	FRYER	20"	35 1/2"	45"	DEAN (FRYMASTER)	SR162G
20	OVEN - ELECTRIC	38"	44 1/2"	70 9/16"	GARLAND	MCO-ED-20M
21	DISHWASH - CLEAN TABLE	35"	30"	44 1/2"	Advance Tabco	DTC-S70-36L
22	DISHWASHER	25 1/2"	25"	60"	CMA DISHMACHINES	CMA-180-VL
23	DISHWASH - SOIL TABLE	59"	30"	44 1/2"	Advance Tabco	DTS-S70-60R
24	SHEET PAN RACK	20 1/4"	26"	64"	ADVANCE TABCO	PR18-3W
25	SINK - 2 COMPARTMENT - 2 DRAINBOARDS	72"	29 3/4"	43"	ADVANCE TABCO	FC-2-1824-18RL
26	SINK - 3 COMPARTMENT - 2 DRAINBOARDS	120"	29 3/4"	43"	ADVANCE TABCO	FS-3-2424-24RL
27	WALK-IN COOLER/FREEZER	231"	116"	92"	THERMALRITE	
28	POT SINK FAUCET				DORMONT	LFF-WST8-S12S
29	DISHWASH - PRE-RINSE FAUCET				DORMONT	LFP-WS8B
30	KITCHEN HOOD	264"	48"	24"	CAPTIVAIRE	

Specialty Equipment Schedule

#	Description	Width	Depth	Height	Manufacturer	Model
31	KITCHEN HOOD	168"	48"	24"	CAPTIVAIRE	
33	MIXER - 30 QT	22 11/16"	26 5/16"	46 1/8"	GLOBE	SP30
34	WORK TABLE - 72"	72"	30"	35 1/2"	Advance Tabco	MSLAG-306C-X
35	SLICER	24 5/8"	30 5/16"	27 11/16"	GLOBE	GC512
36	WORK TABLE	36"	30"	35 1/2"	Advance Tabco	MSLAG-303
37	CASH REGISTER	16"	17"	12"	SAM4'S	ER350
38	REACH-IN SOLID SWING DOOR REFRIGERATOR	27"	29 1/2"	83 5/16"	TRUE MANUFACTURING	T-23-HC
39	REACH-IN GLASS SWING DOOR FREEZER	54 5/32"	29 13/16"	83 3/8"	TRUE	T-49FG-HC~FGD01
41	ICE CADDIES	22 7/16"	30 5/16"	28 3/4"	CAMBRO	ICS100L110
42	ICE MAKER	30"	28 1/2"	38 1/2"	MANITOWOC ICE	URF0310A
43	SS WALL SHELF	72"	12"	60"	ADVANCE TABCO	WS-12-72
44	DRANABLE SHELF	22"	15 1/2"	12"	ADVANCE TABCO	DT-22-EC
45	PREP TABLE	48 5/16"	34 1/16"	46 15/32"	TRUE	TSSU-48-18M-B-HC
46	MICROWAVE	20 1/8"	14 1/8"	13"	ACP	RCS10DSE
47	MICROWAVE SHELF	24 1/4"	18"	13"	ADVANCE TABCO	MS-18-24
49	WORKTOP FREEZER	48 5/16"	31 1/16"	39 1/2"	TRUE MANUFACTURING	TWT-48F-HC
50	DUNNAGE RACK	48"	21"	12"	CAMBRO	DRS480480
51	MIXER - 5 QT (BY OWNER)	10 3/8"	15"	16 9/16"		
52	WRAPPER	22 1/2"	26"	8 3/4"	VISION TECH SHOP	CW-500E
53	FOOD CUTTER	31 7/8"	19 15/16"	28 3/4"	HOBART	84145-19
54	SS WALL SHELF	48"	12"	60"	ADVANCE TABCO	WS-12-48
55	SS WALL SHELF	36"	12"	60"	ADVANCE TABCO	WS-12-36
56	MOP SINK	37"	21"	10"	Advance Tabco	9-OP-20
59	ELECTRIC GRIDDLE	15"	26 1/4"	11 7/8"	BLACK & DECKER	GD2011B
60	VERTICAL TOASTER	25 3/8"	16"	29 1/2"	MARSHALL AIR SYSTEMS, INC.	AUTOTOAST VT18
62	ICED TEA MAKER	10 1/8"	22 3/8"	36"	BUNN	36700.0300
63	CURVED GLASS, GLASS END DRY CASE	77 1/4"	39"	49 1/8"	TRUE	TDM-DC-77
64	FLAV-R-SAVOR, TALL HUMIDIFIED HOLDING CABINETS	25 3/8"	34 29/32"	73 5/16"	HATCO	FSHC-17W1D

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CONTRACTOR

Design / Build
Premiere Contracting, Inc.
Outer Banks • North Carolina

Project: **Cindy's Kitchen**

Project No: **21091**

Location: **Caratoke Hwy. Coinjock, NC**

Title: **Equipment Plan**

Date: **August 25, 2023**

Scale: **1/4" = 1'-0"**

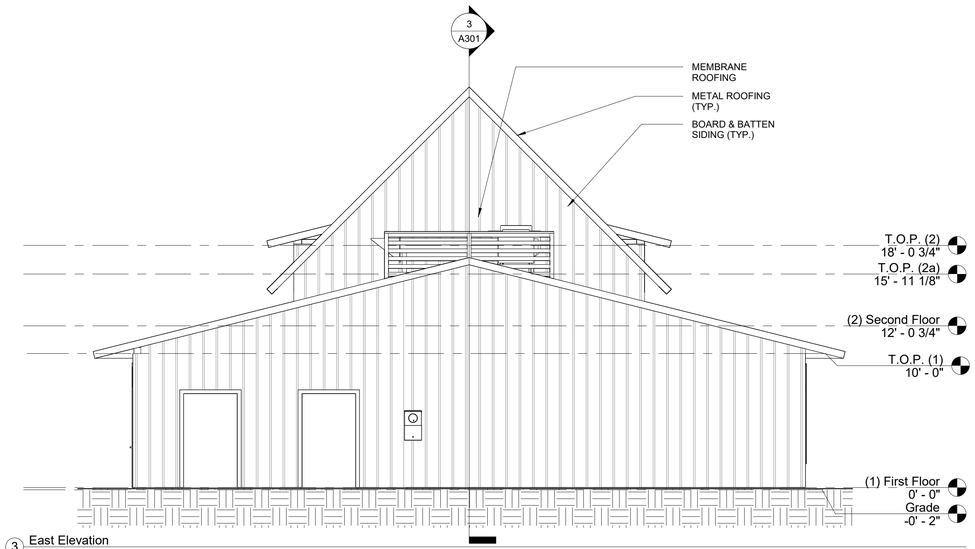
Mark Arey Kasten — Registered Architect — 7220 — North Carolina — Nags Head
Cahoon & Kasten Architects, P.C. — Registered Architectural Corporation — 51211 — North Carolina — Nags Head, NC
8/25/23

Revisions:

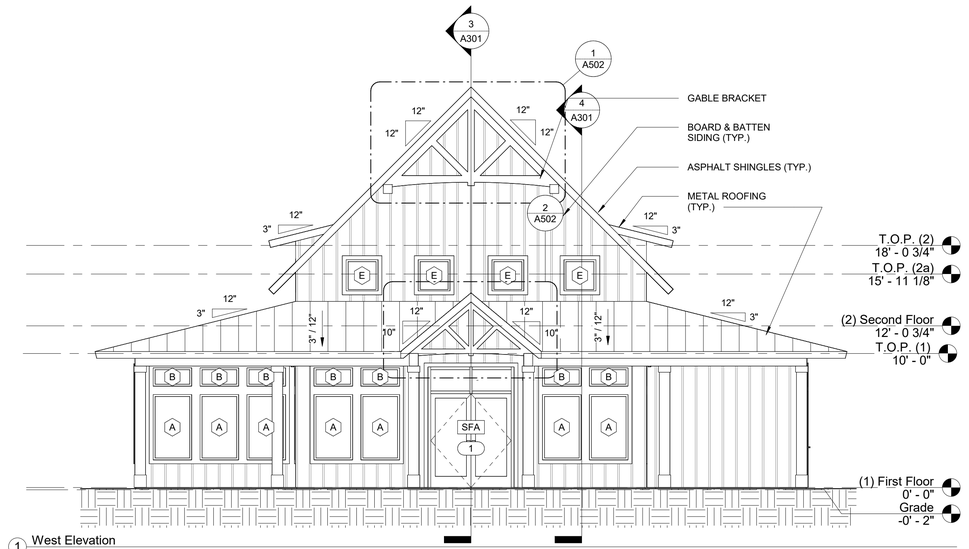
No.	Description	Date

Designed: Designer
Drawn: Author
Reviewed: Checker
Cad File:

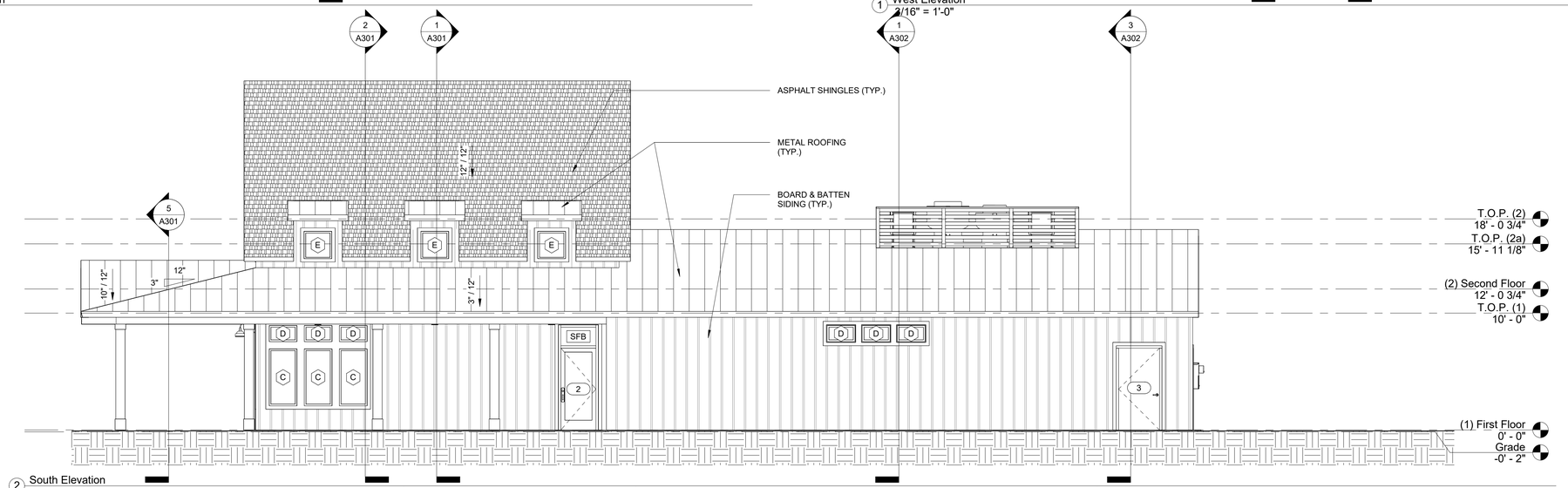
A106



3 East Elevation
3/16" = 1'-0"



1 West Elevation
3/16" = 1'-0"



2 South Elevation
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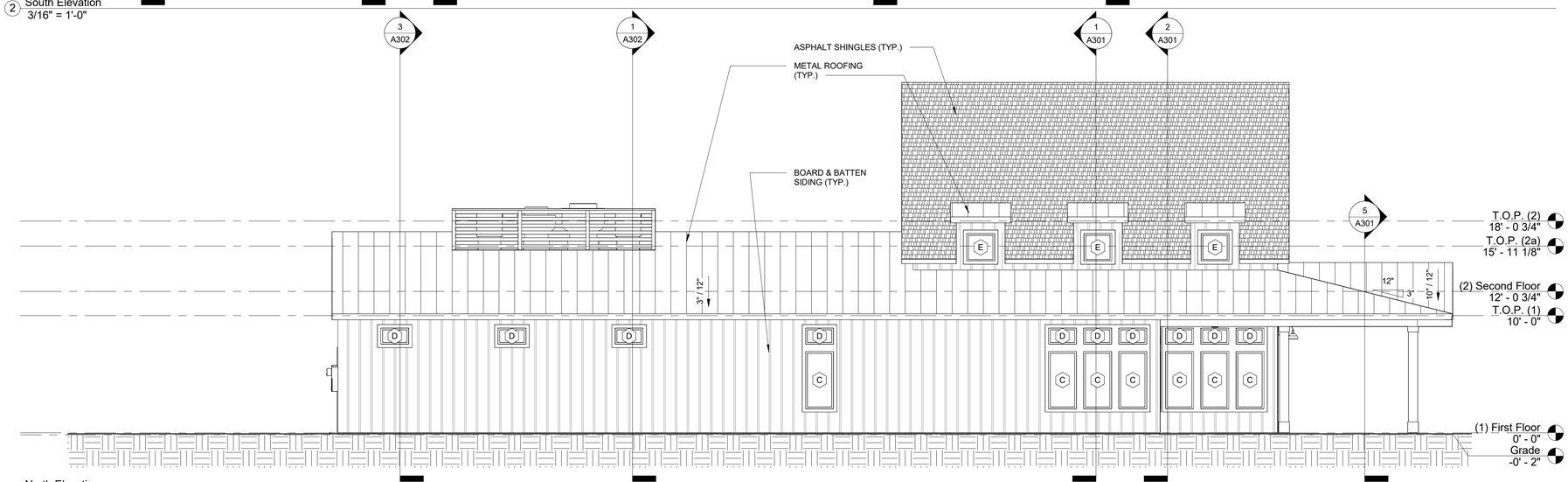

4 North Elevation
3/16" = 1'-0"

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CONTRACTOR

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Project:	**Cindy's Kitchen**
Project No:	**21091**
Location:	**Caratoke Hwy. Coinjock, NC**
Title:	**Elevations**
Date:	**August 25, 2023**
Scale:	**3/16" = 1'-0"**

MARK AREY KASTEN — REGISTERED ARCHITECT — 7220 — NAGS HEAD, N.C.
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8/25/23

Revisions:

No.	Description	Date

Designed: Designer
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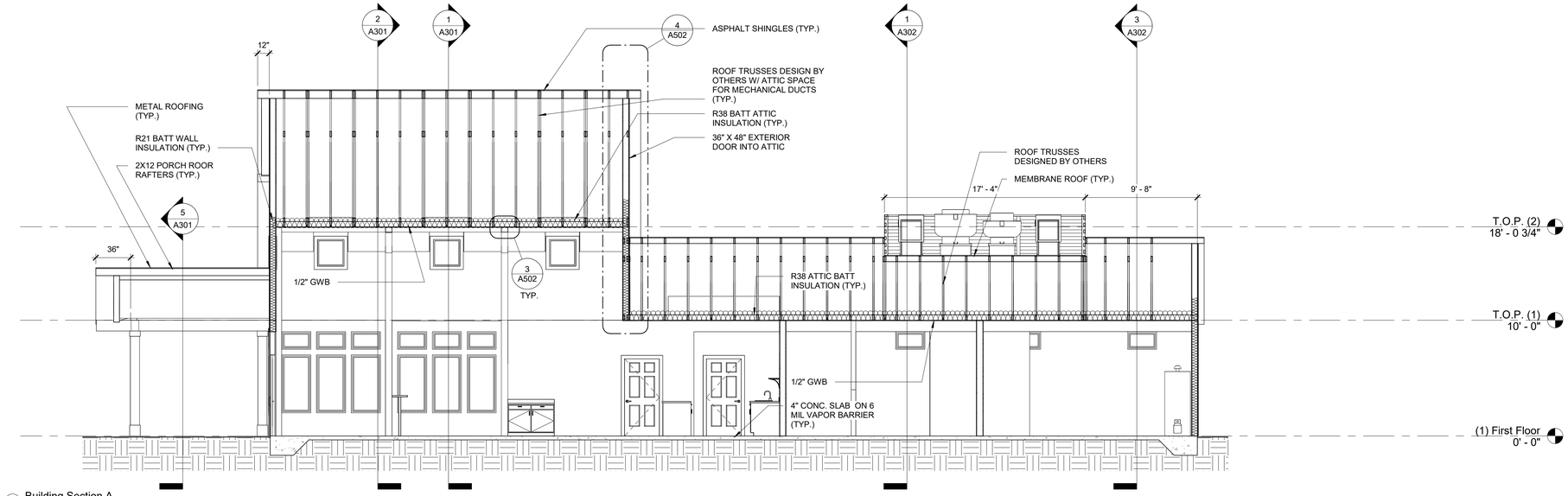
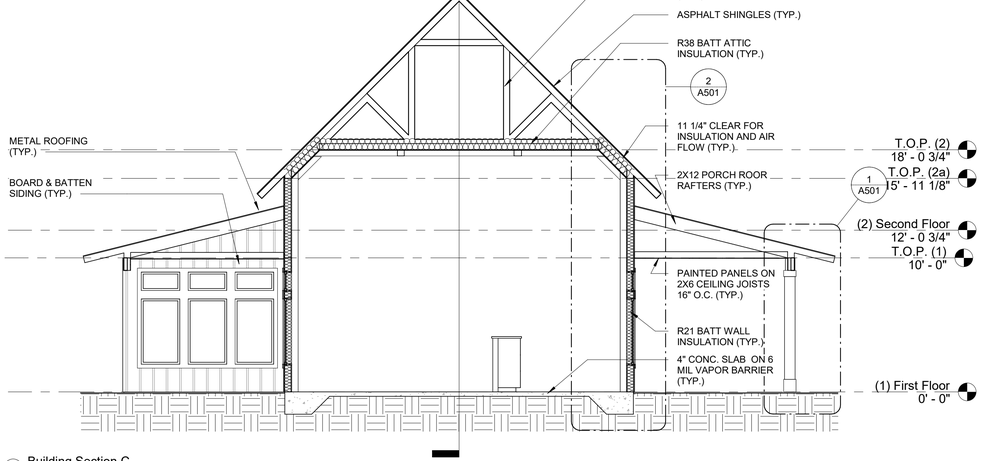
A201



3 Building Section A
3/16" = 1'-0"



2 Building Section C
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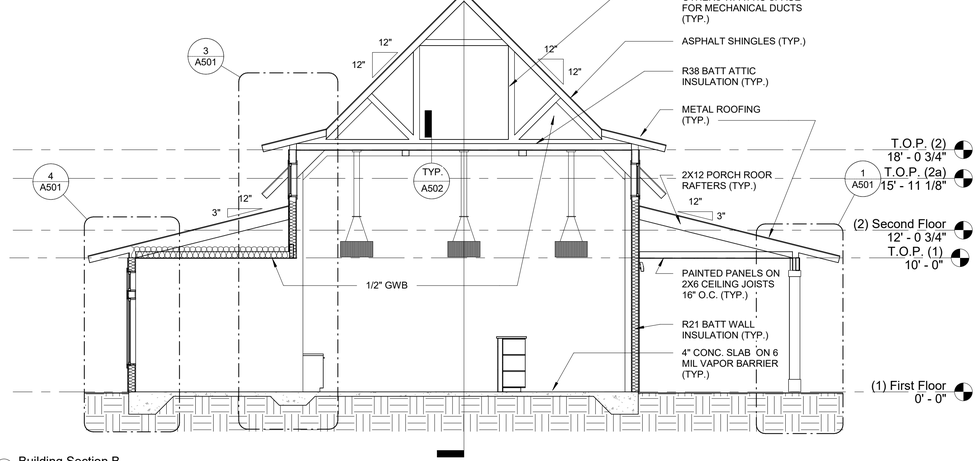

1 Building Section B
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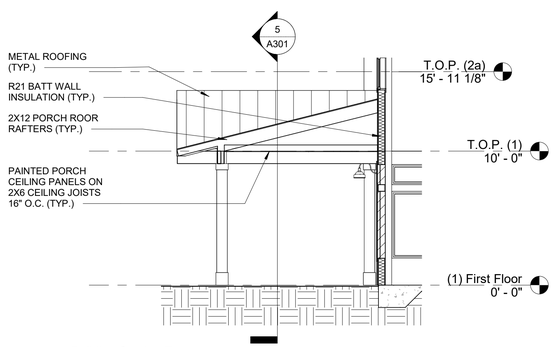
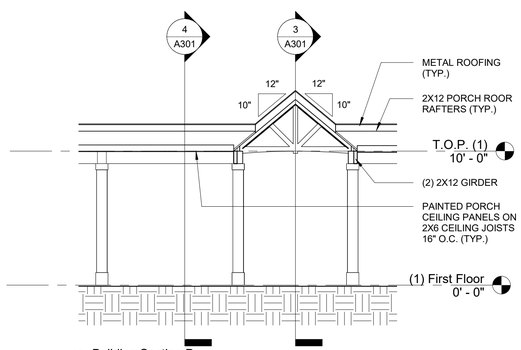


4 Building Section E
3/16" = 1'-0"



5 Building Section D
3/16" = 1'-0"

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Project:	**Cindy's Kitchen**
Project No:	**21091**
Location:	**Caratoke Hwy. Coinjock, NC**
Title:	**Building Sections**
Date:	**August 25, 2023**
Scale:	**3/16" = 1'-0"**

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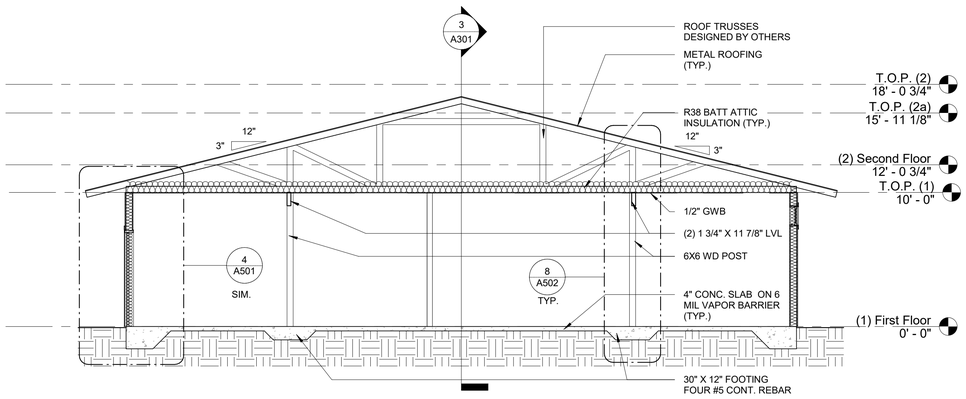
8/25/23

Revisions:

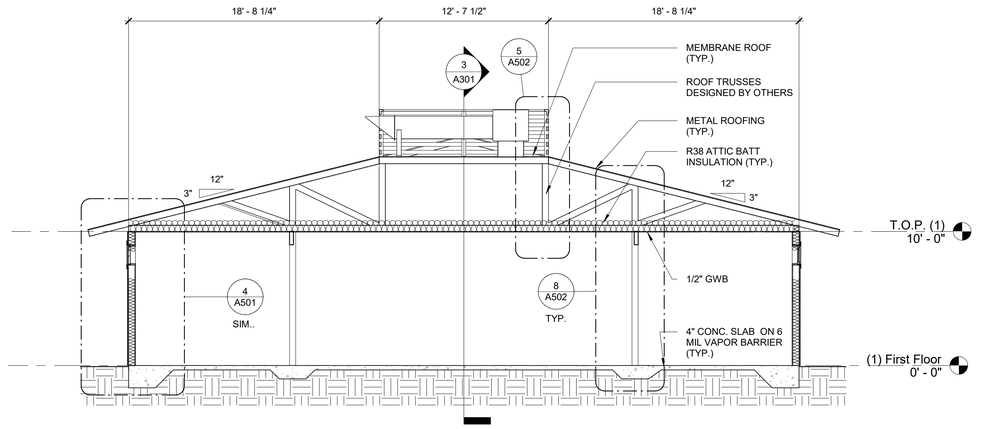
No.	Description	Date

Designed:	Designer
Drawn:	Author
Reviewed:	Checker
Cad File:	

A301



3 Building Section G
3/16" = 1'-0"



1 Building Section F
3/16" = 1'-0"

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Project:	**Cindy's Kitchen**
Project No:	**21091**
Location:	**Caratoke Hwy. Coinjock, NC**
Title:	**Building Sections**
Date:	**August 25, 2023**
Scale:	**3/16" = 1'-0"**

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8/25/23

Revisions:

No.	Description	Date

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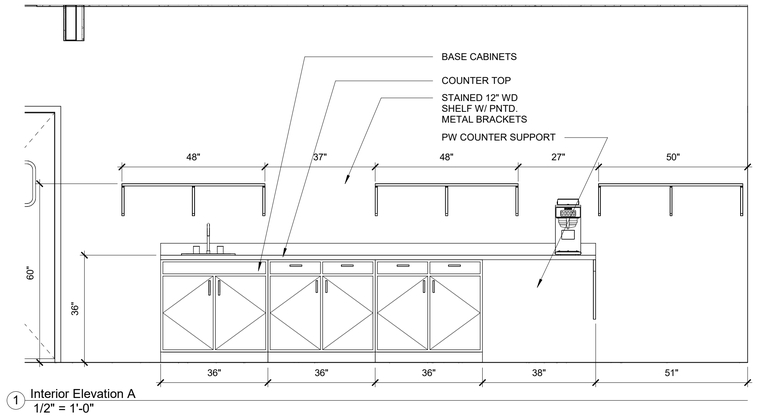
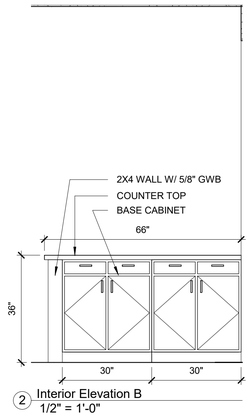
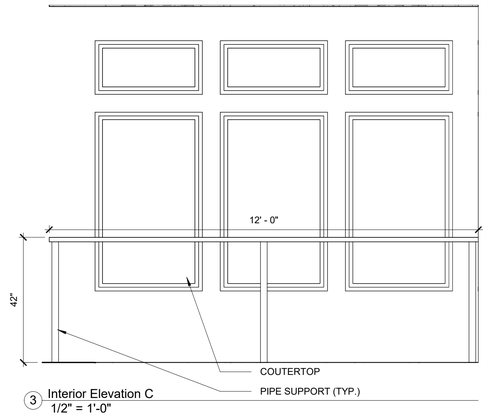
A302



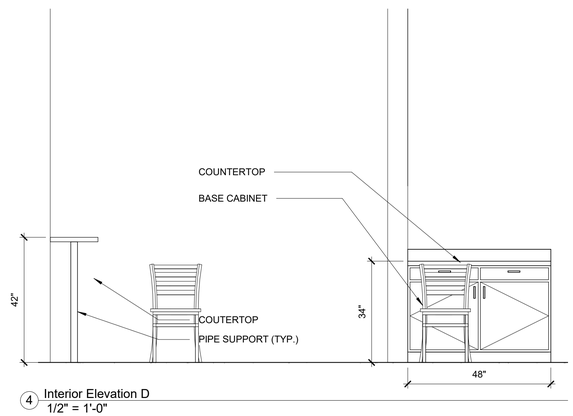
1 Interior Elevation A
1/2" = 1'-0"



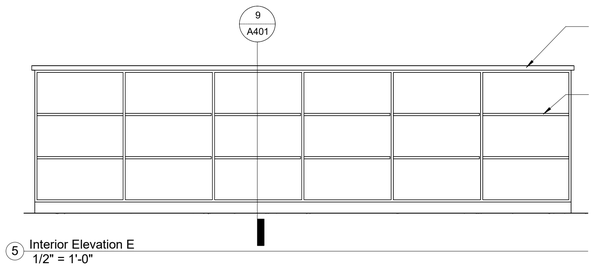
2 Interior Elevation B
1/2" = 1'-0"



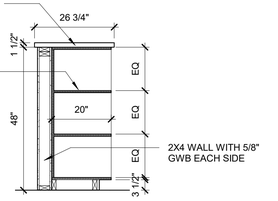
3 Interior Elevation C
1/2" = 1'-0"



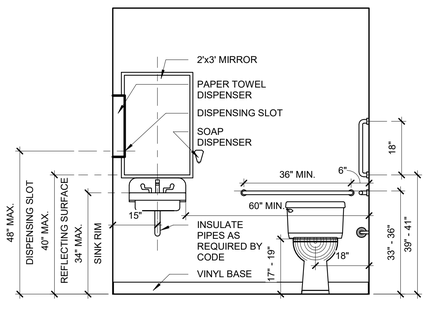
4 Interior Elevation D
1/2" = 1'-0"



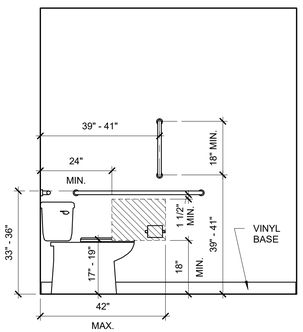
5 Interior Elevation E
1/2" = 1'-0"



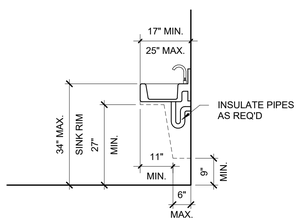
9 Casework Detail A
1/2" = 1'-0"



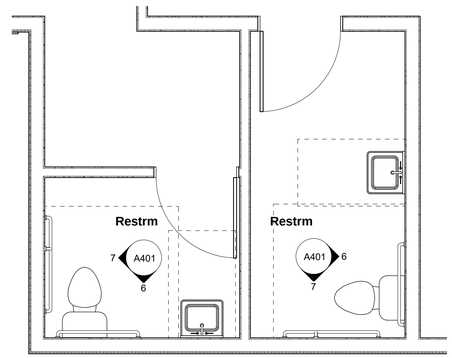
6 Toilet Elevation - RH Front
1/2" = 1'-0"



7 Toilet Elevation - RH Side
1/2" = 1'-0"



8 Sink Detail - Wall Hung
1/2" = 1'-0"



10 Restroom Plan
3/8" = 1'-0"

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Project:	**Cindy's Kitchen**
Project No:	**21091**
Location:	**Caratoke Hwy. Coinjock, NC**
Title:	**Interior Elevations**
Date:	**August 25, 2023**
Scale:	**As indicated**

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8/25/23

Revisions:

No.	Description	Date

Designed: Designer
Drawn: Author
Reviewed: Checker
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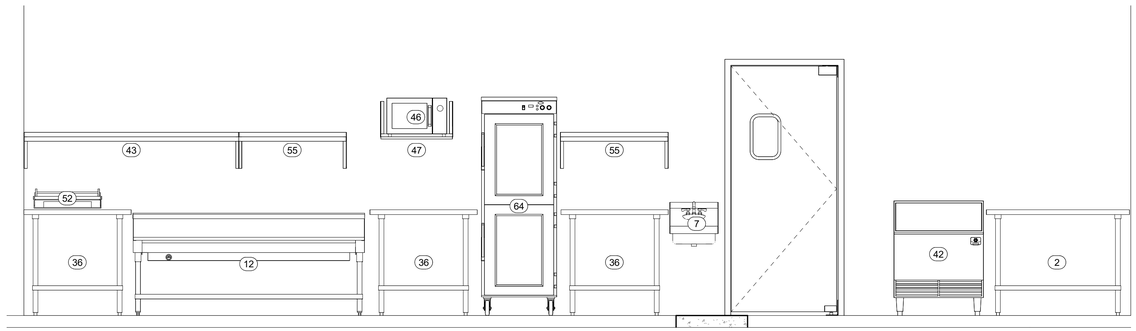
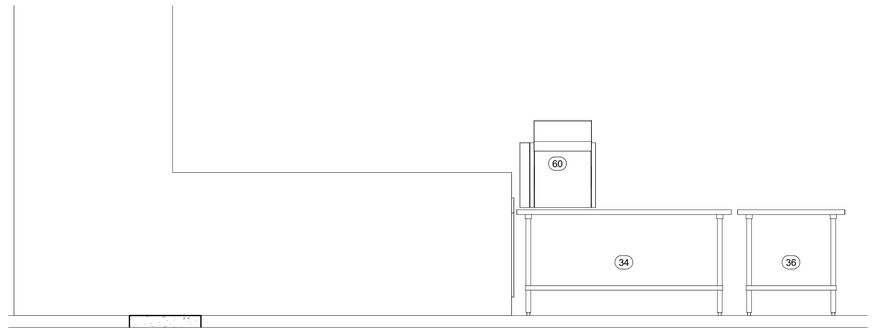
A401



1 Kitchen Elevation A
1/2" = 1'-0"



2 Kitchen Elevation B
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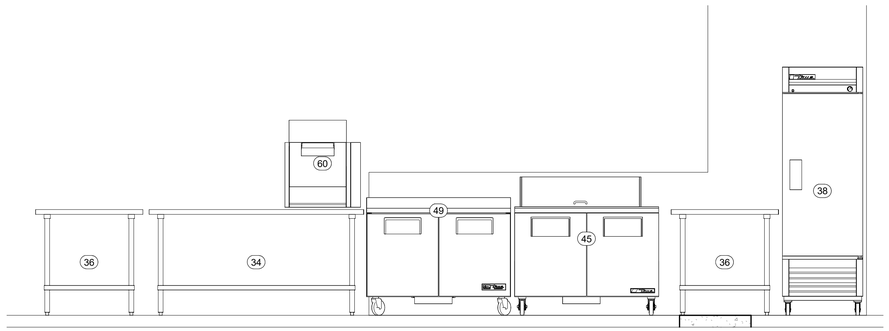
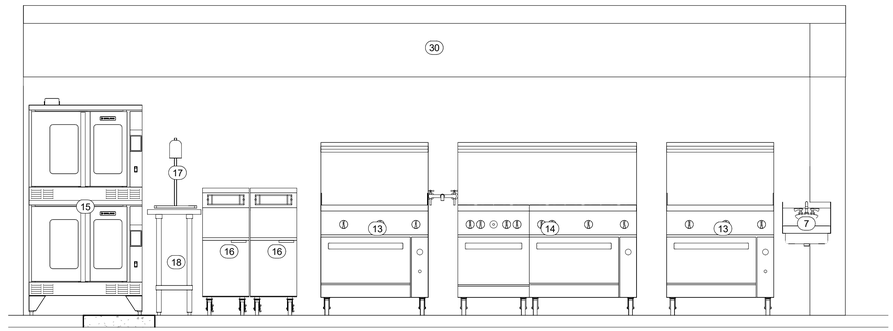


3 Kitchen Elevation C
1/2" = 1'-0"



4 Kitchen Elevation D
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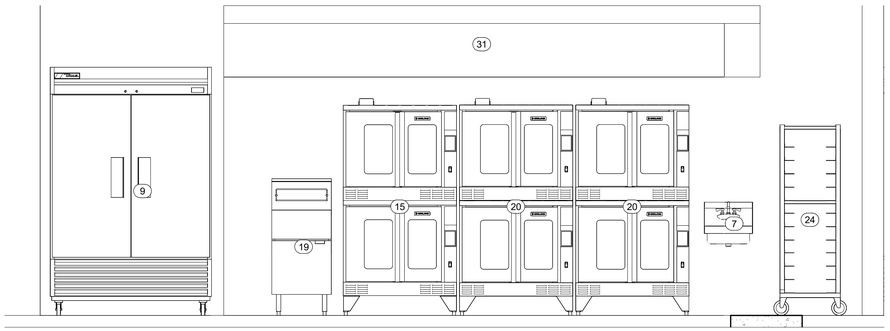
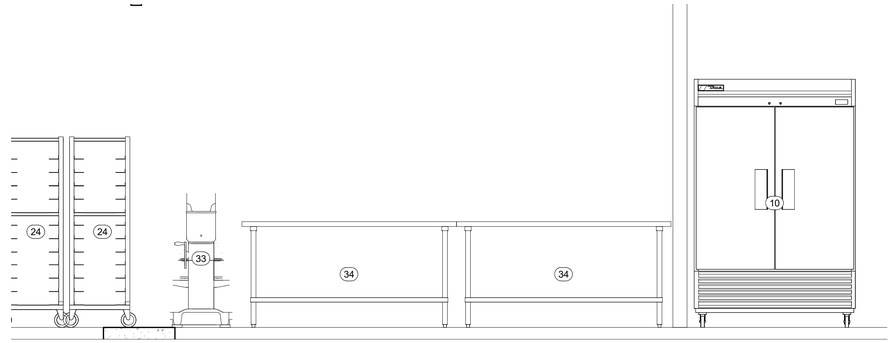
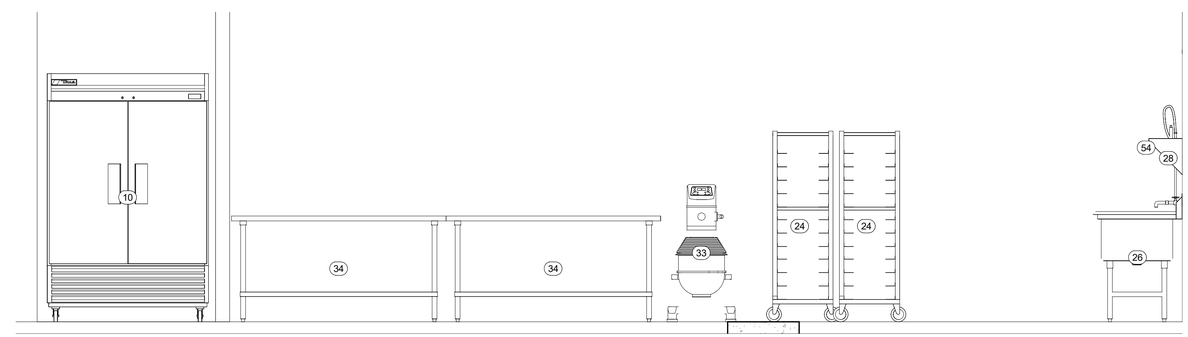


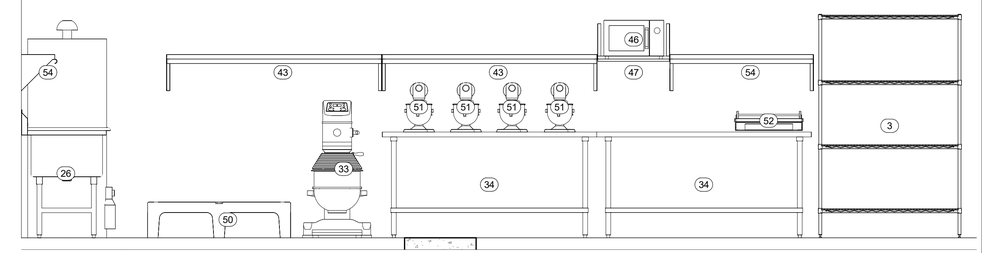
5 Kitchen Elevation F
1/2" = 1'-0"



6 Kitchen Elevation G
1/2" = 1'-0"



7 Kitchen Elevation H
1/2" = 1'-0"



8 Kitchen Elevation J
1/2" = 1'-0"

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Project:	**Cindy's Kitchen**
Project No:	**21091**
Location:	**Caratoke Hwy. Coinjock, NC**
Title:	**Kitchen Elevations**
Date:	**August 25, 2023**
Scale:	**1/2" = 1'-0"**

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8/25/23

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NAGS HEAD, NC

Revisions:

No.	Description	Date

Designed:	Designer
Drawn:	Author
Reviewed:	Checker
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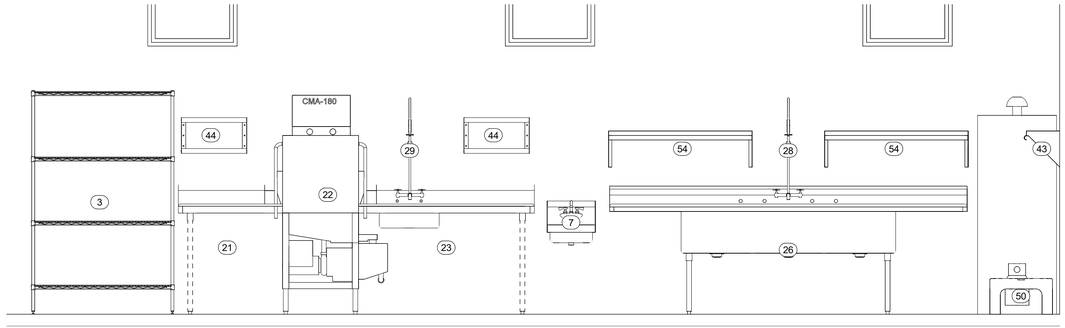
A402



1 Kitchen Elevation K
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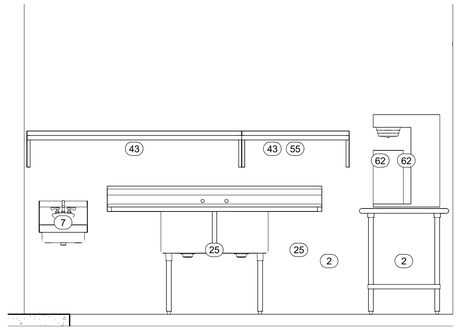

2 Kitchen Elevation L
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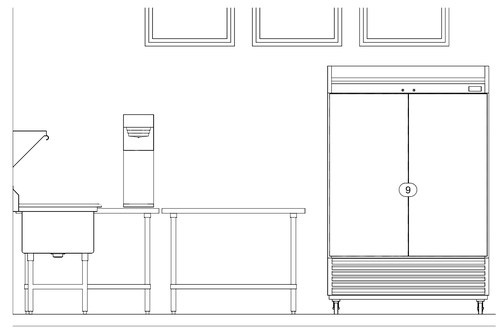

3 Kitchen Elevation M
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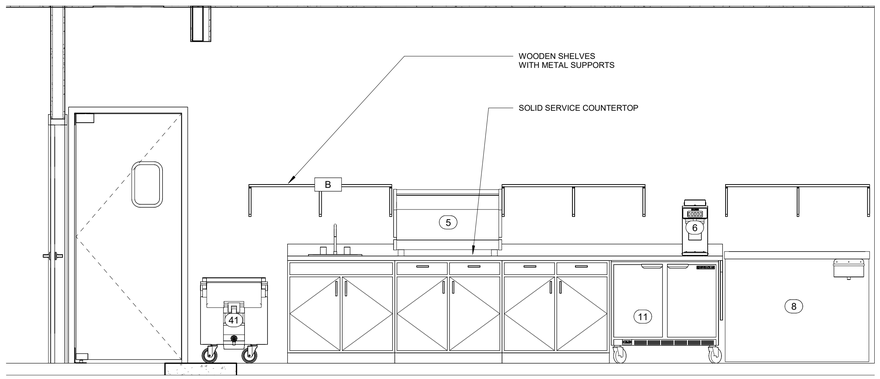
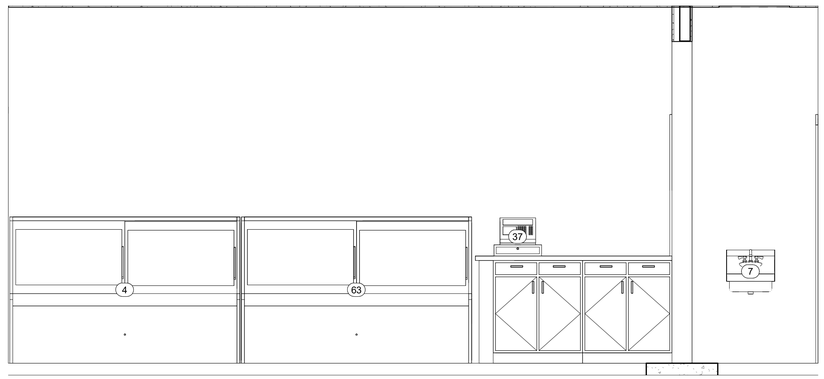
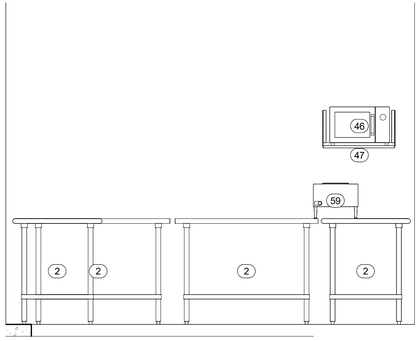


4 Kitchen Elevation N
1/2" = 1'-0"

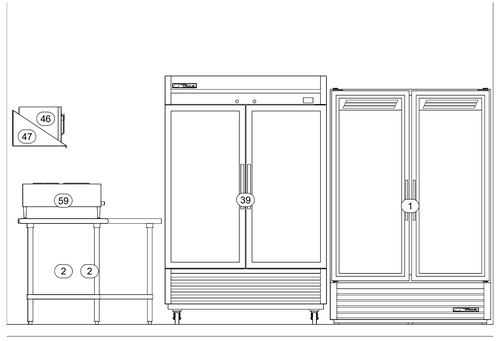


5 Kitchen Elevation O
1/2" = 1'-0"

6 Kitchen Elevation P
1/2" = 1'-0"



7 Kitchen Elevation Q
1/2" = 1'-0"



8 Kitchen Elevation R
1/2" = 1'-0"

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Project:	**Cindy's Kitchen**
Project No:	**21091**
Location:	**Caratoke Hwy. Coinjock, NC**
Title:	**Kitchen Elevations**
Date:	**August 25, 2023**
Scale:	**1/2" = 1'-0"**

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8/25/23

Revisions:

No.	Description	Date

Designed: Designer
Drawn: Author
Reviewed: Checker
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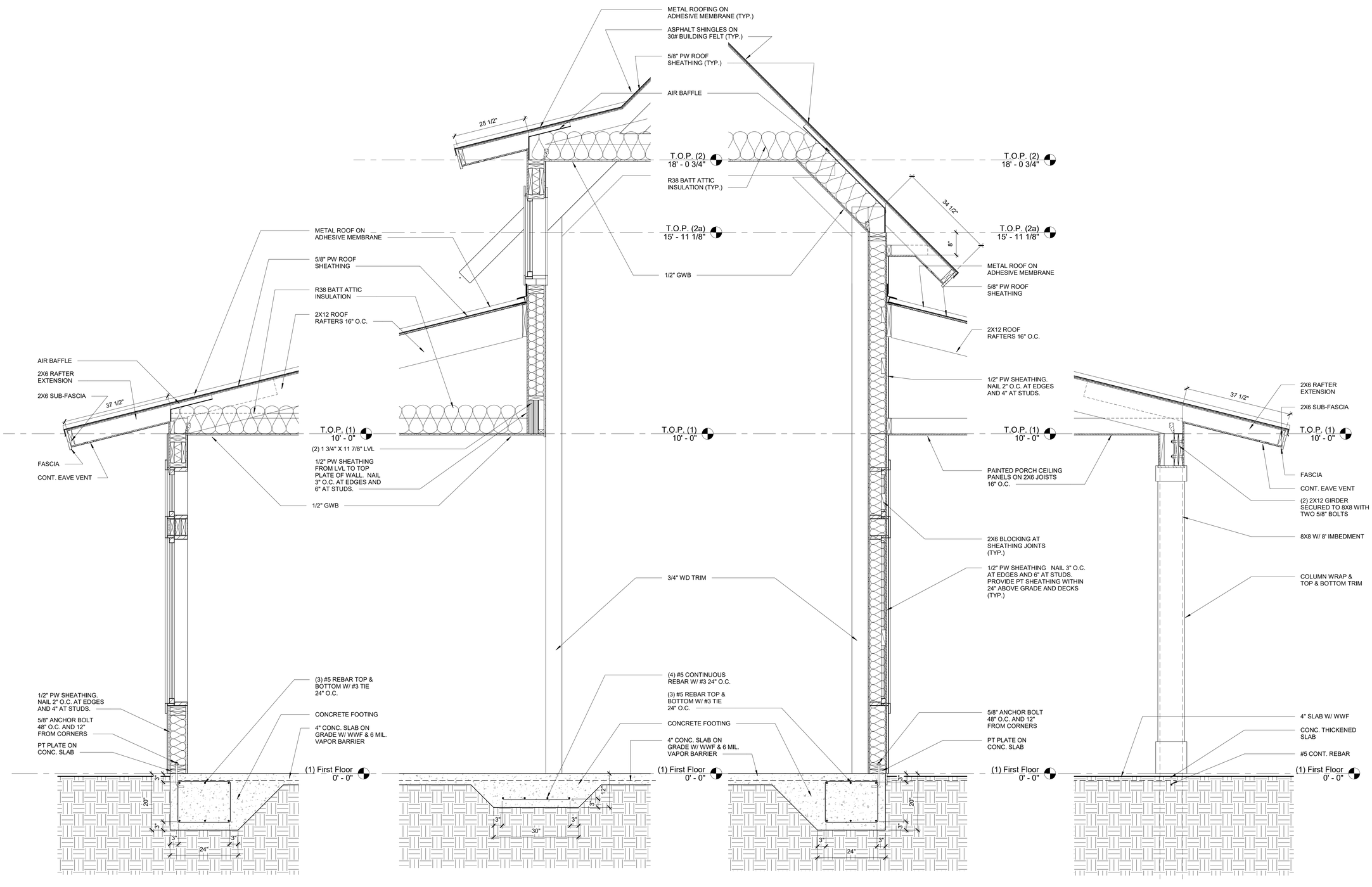
A403



4 Wall Section A
3/4" = 1'-0"

3 Wall Section B
3/4" = 1'-0"

2 Wall Section C
3/4" = 1'-0"

1 Wall Section D
3/4" = 1'-0"

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Project:	**Cindy's Kitchen**
Project No:	**21091**
Location:	**Caratoke Hwy. Coinjock, NC**
Title:	**Wall Sections**
Date:	**August 25, 2023**
Scale:	**3/4" = 1'-0"**

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8/25/23

Revisions:

No.	Description	Date

Designed:	Designer
Drawn:	Author
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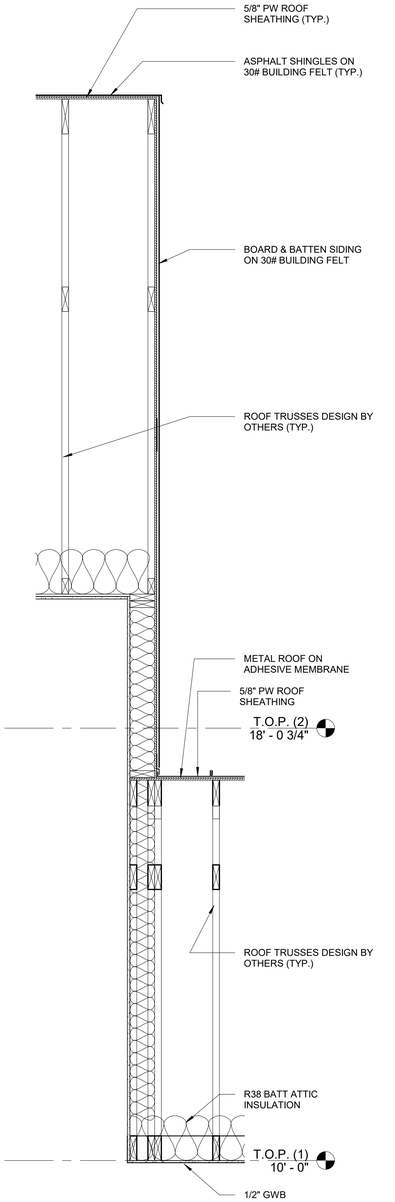
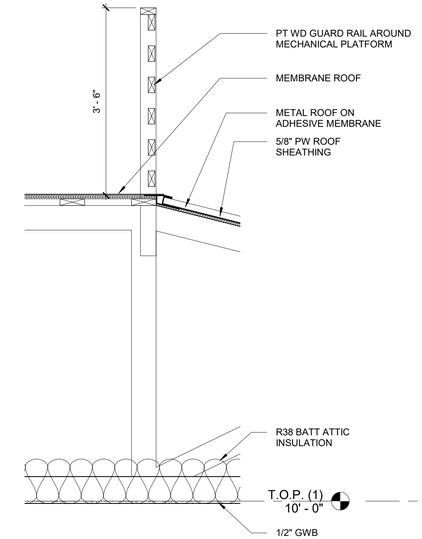
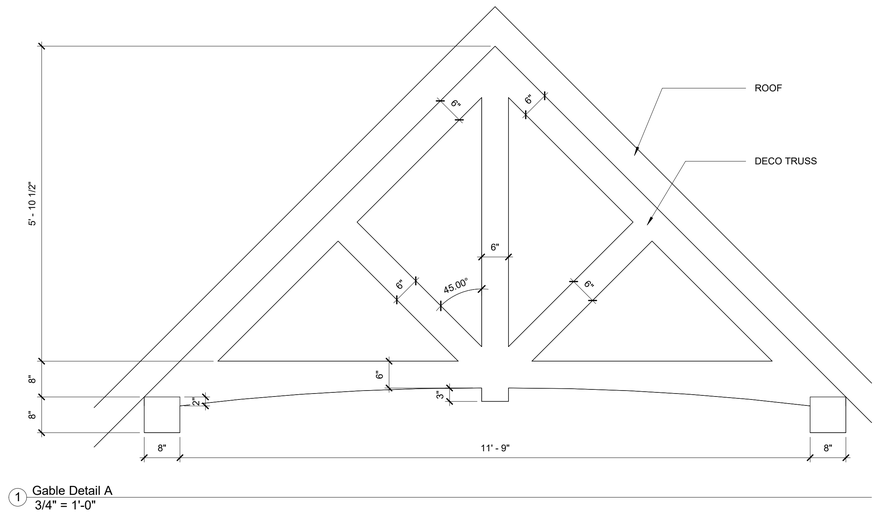
A501



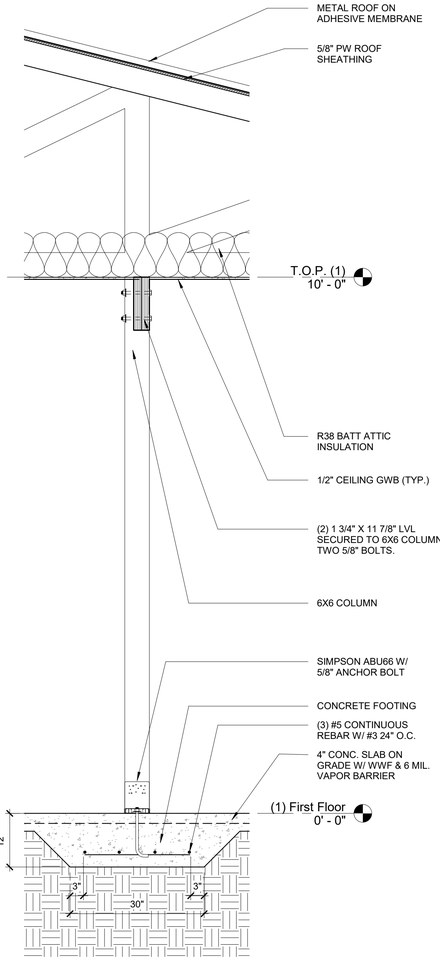
4 Wall Section G
3/4" = 1'-0"



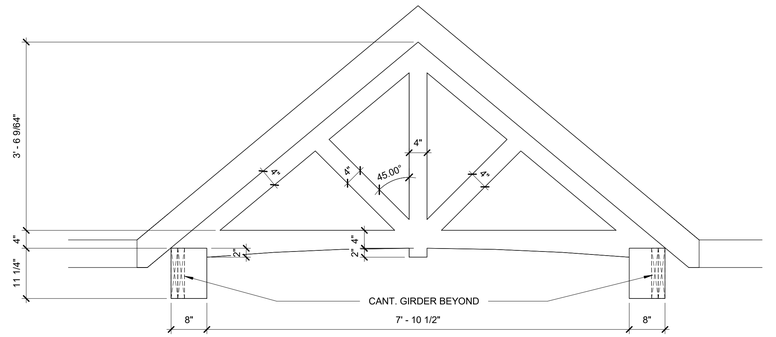
5 Wall Section F
3/4" = 1'-0"



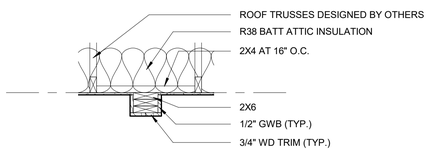
1 Gable Detail A
3/4" = 1'-0"



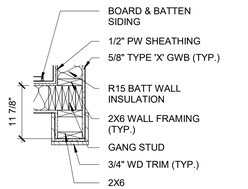
8 Wall Section E
3/4" = 1'-0"



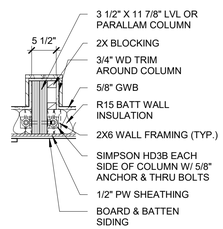
2 Gable Detail B
3/4" = 1'-0"



3 Faux Ceiling Beam Detail
3/4" = 1'-0"



7 Pilaster Detail B
3/4" = 1'-0"



6 Pilaster Detail A
3/4" = 1'-0"

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CONTRACTOR

Design / Build
Premiere Contracting, Inc.
OUTER BANKS • NORTH CAROLINA

Project:	**Cindy's Kitchen**
Project No:	**21091**
Location:	**Caratoke Hwy. Coinjock, NC**
Title:	**Wall Sections**
Date:	**August 25, 2023**
Scale:	**3/4" = 1'-0"**

MARK AREY KASTEN — REGISTERED ARCHITECT — 7220 — NAGS HEAD, NC
CAHOON & KASTEN ARCHITECTS, P.C. — REGISTERED ARCHITECTURAL CORPORATION — 51211 — NAGS HEAD, NC
8/25/23

Revisions:

No.	Description	Date

Designed:	Designer
Drawn:	Author
Reviewed:	Checker
Cad File:	

A502

KITCHEN EQUIPMENT SCHEDULE

ITEM	QTY.	DESCRIPTION	FILTERED WATER	COLD WATER	120° F HOT WATER	140° F HOT WATER	SEWER OR WASTE	GAS MBH	NOTES
5	1	ESPRESSO MACHINE		1/2"					●
6	1	DUAL COFFEE MAKER		1/2"					●
7	7	HAND SINK		1/2"	1/2"		1 1/2"		● ● ●
8	1	ICE CREAM CHEST, DIPWELL					1"		● ●
13	2	GRIDDLE						139	●
14	1	RANGE						406	●
15	2	OVEN - GAS						60	●
16	2	FRYER						100	●
19	1	FRYER						150	●
22	1	DISHWASHER		1/2"		1/2"	2"		● ●
23	1	PRE-RINSE SINK AND FAUCET		1/2"		1/2"	1 1/2"		● ● ●
25	1	SINK - 2 COMPARTMENT AND FAUCET		1/2"		1/2"	1 1/2"		● ● ● ●
26	2	SINK - 3 COMPARTMENT AND FAUCET		1/2"(2)		1/2"(2)	1 1/2"		● ● ● ●
42	1	ICE MAKER		1/2"			1/2"		● ●
56	1	MOP SINK		1/2"		1/2"	1 1/2"		● ● ●
62	1	ICED TEA MAKER		1/2"					●

NOTES:
1. PROVIDE WATER HAMMER ARRESTOR ON ALL EQUIPMENT WITH QUICK CLOSING VALVES.
2. PROVIDED BY KITCHEN EQUIPMENT CONTRACTOR OR OTHERS, INSTALLED BY THE PLUMBING CONTRACTOR. PLUMBING CONTRACTOR TO PROVIDE ALL PIPING, VALVING, ETC., FOR COMPLETE AND OPERATIONAL SYSTEM
3. PROVIDED WITH A CONTINUOUS WASTE.
4. FAUCET BY KITCHEN EQUIPMENT CONTRACTOR.
5. INDIRECT DRAIN TO FLOOR SINK / FLOOR DRAIN / HUB DRAIN.
6. DIRECT DRAIN.

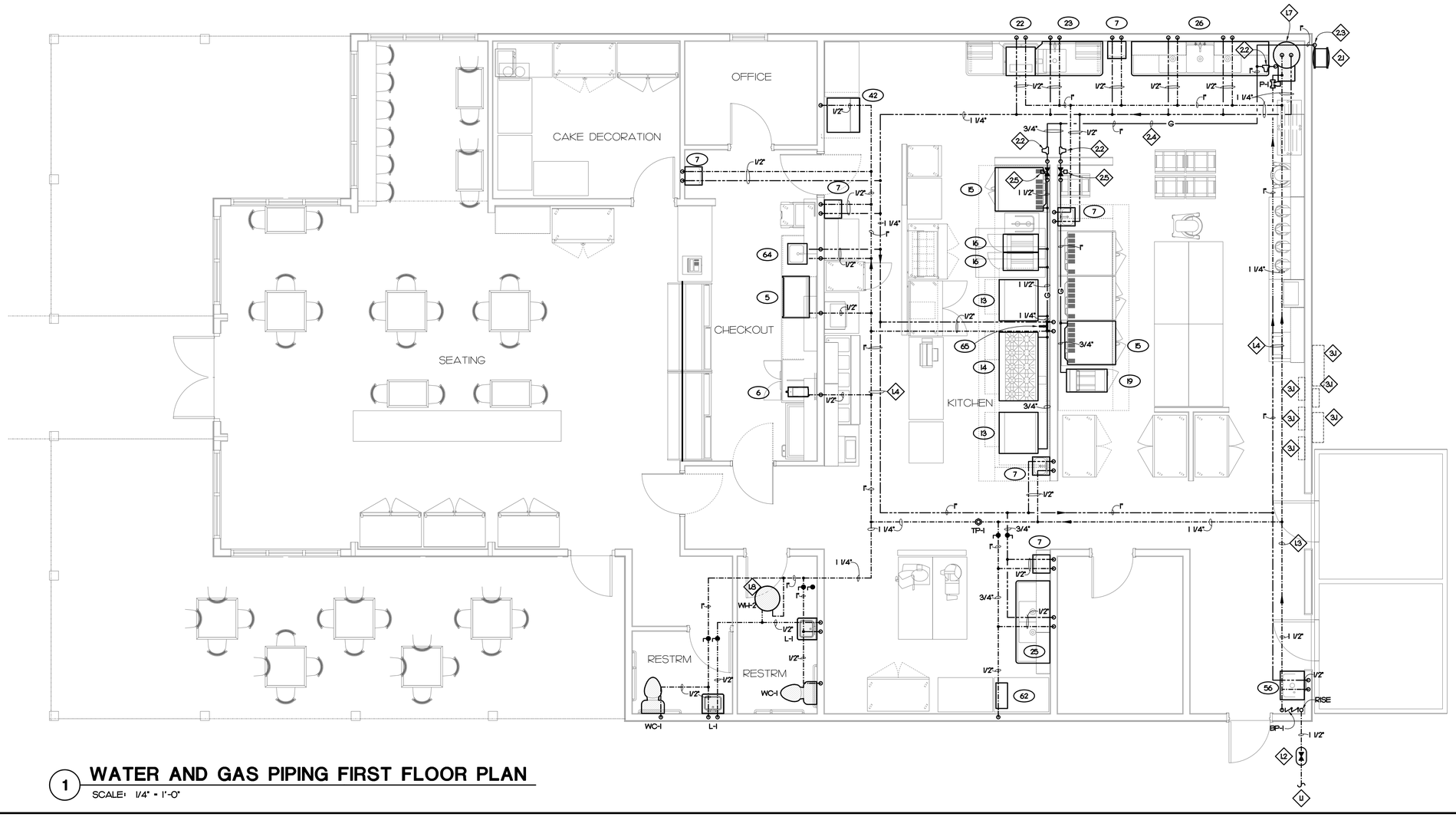
KITCHEN EQUIPMENT SCHEDULE

ITEM	QTY.	DESCRIPTION	FILTERED WATER	COLD WATER	120° F HOT WATER	140° F HOT WATER	SEWER OR WASTE	GAS MBH	NOTES
64	1	DROP IN SINK		1/2"		1/2"	1 1/2"		● ● ● ●
65	1	POT FILL FAUCET		1/2"		1/2"			● ● ●

NOTES:
1. PROVIDE WATER HAMMER ARRESTOR ON ALL EQUIPMENT WITH QUICK CLOSING VALVES.
2. PROVIDED BY KITCHEN EQUIPMENT CONTRACTOR OR OTHERS, INSTALLED BY THE PLUMBING CONTRACTOR. PLUMBING CONTRACTOR TO PROVIDE ALL PIPING, VALVING, ETC., FOR COMPLETE AND OPERATIONAL SYSTEM
3. PROVIDED WITH A CONTINUOUS WASTE.
4. FAUCET BY KITCHEN EQUIPMENT CONTRACTOR.
5. INDIRECT DRAIN TO FLOOR SINK / FLOOR DRAIN / HUB DRAIN.
6. DIRECT DRAIN.

PLUMBING KEY NOTES

- U — 1 1/2" COLD WATER PIPE BELOW FINISHED GRADE. PLUMBING CONTRACTOR'S WORK BEGINS 5'-0" OUTSIDE BUILDING. SEE SITE PLAN FOR CONTINUATION.
- L2 — MAIN SHUT OFF VALVE IN VALVE BOX.
- L3 — WATER PIPING ABOVE FINISHED CEILING. COORDINATE LOCATION WITH MECHANICAL AND ELECTRICAL CONTRACTORS. PROVIDE LABEL WHICH READS "DO NOT TAP", PLACE ON PIPING EVERY 10' UPSTREAM OF BACKFLOW PREVENTER.
- L4 — WATER PIPING ABOVE FINISHED CEILING. COORDINATE LOCATION WITH MECHANICAL AND ELECTRICAL CONTRACTORS.
- L5 — 1" COLD WATER PIPE UP TO SECOND FLOOR.
- L6 — 3/4" HOT WATER PIPE DOWN FROM SECOND FLOOR.
- L7 — WATER HEATER (WH-1) LOCATED AT FLOOR.
- L8 — WATER HEATER (WH-2) LOCATED ABOVE FINISHED CEILING.
- 21 — GAS METER BY OTHERS. 154 MBH @ 2.0 PSI (60' EQUIVLANT LENGTH). PIPING SIZED ACCORDING TO TABLE 402.4(5) OF THE NORTH CAROLINA FUEL GAS CODE.
- 22 — GAS REGULATOR, 2.0 PSI 0.5 PSI PIPING SIZED ACCORDING TO TABLE 402.4(2) OF THE NORTH CAROLINA FUEL GAS CODE.
- 23 — ROUTE GAS PIPE UP ALONG WALL TO ABOVE FINISHED CEILING.
- 24 — ROUTE GAS PIPING ABOVE FINISHED CEILING.
- 25 — GAS SOLENOID VALVE
- 31 — ELECTRICAL EQUIPMENT BY ELECTRICAL CONTRACTOR.



1 WATER AND GAS PIPING FIRST FLOOR PLAN

SCALE: 1/4" = 1'-0"

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NORTH CAROLINA PROFESSIONAL CORPORATION — ATLANTEC ENGINEERS PA No. C-961

NORTH CAROLINA PROFESSIONAL SEAL 22035 ENGINEER JAMES B. DAVIS JR.

7/26/23

Project:	Cindy's Kitchen
Project No:	21091
Location:	Caratoke Hwy. Currituck, NC
Title:	Plumbing Plan
Date:	July 26, 2023
Scale:	As indicated

FIRST FLOOR
WATER AND GAS
PIPING PLAN

Revisions:

No.	Description	Date

Designed:	DRD
Drawn:	DRD
Reviewed:	JBD
Cad File:	

P101

KITCHEN EQUIPMENT SCHEDULE

ITEM	QTY.	DESCRIPTION	FILTERED WATER	COLD WATER	120° F HOT WATER	140° F HOT WATER	SEWER OR WASTE	GAS MBH	NOTES				
(5)	1	ESPRESSO MACHINE		1/2"					●				
(6)	1	DUAL COFFEE MAKER		1/2"					●				
(7)	7	HAND SINK		1/2"	1/2"		1 1/2"		●		●		●
(8)	1	ICE CREAM CHEST, DIPWELL					1"		●			●	
(13)	2	GRIDDLE						139	●				
(14)	1	RANGE						406	●				
(15)	2	OVEN - GAS						60	●				
(16)	2	FRYER						100	●				
(19)	1	FRYER						150	●				
(22)	1	DISHWASHER		1/2"		1/2"	2"		●			●	
(23)	1	PRE-RINSE SINK AND FAUCET		1/2"		1/2"	1 1/2"		●		●	●	
(25)	1	SINK - 2 COMPARTMENT AND FAUCET		1/2"		1/2"	1 1/2"		●	●	●	●	
(26)	2	SINK - 3 COMPARTMENT AND FAUCET		1/2"(2)		1/2"(2)	1 1/2"		●	●	●	●	
(42)	1	ICE MAKER		1/2"			1/2"		●			●	
(56)	1	MOP SINK		1/2"		1/2"	1 1/2"		●		●		●
(62)	1	ICED TEA MAKER		1/2"					●				

NOTES:
1. PROVIDE WATER HAMMER ARRESTOR ON ALL EQUIPMENT WITH QUICK CLOSING VALVES.
2. PROVIDED BY KITCHEN EQUIPMENT CONTRACTOR OR OTHERS, INSTALLED BY THE PLUMBING CONTRACTOR. PLUMBING CONTRACTOR TO PROVIDE ALL PIPING, VALVING, ETC., FOR COMPLETE AND OPERATIONAL SYSTEM
3. PROVIDED WITH A CONTINUOUS WASTE.
4. FAUCET BY KITCHEN EQUIPMENT CONTRACTOR.
5. INDIRECT DRAIN TO FLOOR SINK / FLOOR DRAIN / HUB DRAIN.
6. DIRECT DRAIN.

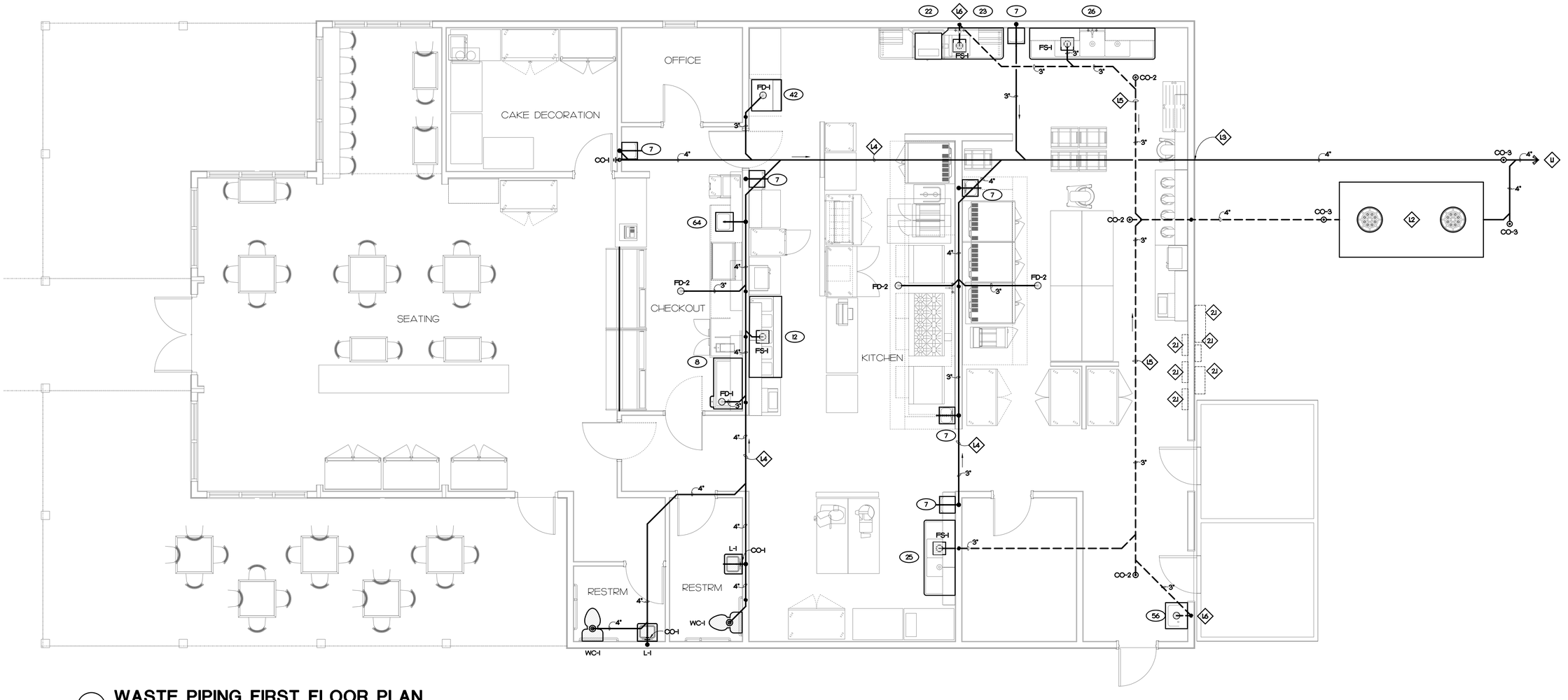
KITCHEN EQUIPMENT SCHEDULE

ITEM	QTY.	DESCRIPTION	FILTERED WATER	COLD WATER	120° F HOT WATER	140° F HOT WATER	SEWER OR WASTE	GAS MBH	NOTES				
(64)	1	DROP IN SINK		1/2"		1/2"	1 1/2"		●		●		●
(65)	1	POT FILL FAUCET		1/2"		1/2"			●		●	●	

NOTES:
1. PROVIDE WATER HAMMER ARRESTOR ON ALL EQUIPMENT WITH QUICK CLOSING VALVES.
2. PROVIDED BY KITCHEN EQUIPMENT CONTRACTOR OR OTHERS, INSTALLED BY THE PLUMBING CONTRACTOR. PLUMBING CONTRACTOR TO PROVIDE ALL PIPING, VALVING, ETC., FOR COMPLETE AND OPERATIONAL SYSTEM
3. PROVIDED WITH A CONTINUOUS WASTE.
4. FAUCET BY KITCHEN EQUIPMENT CONTRACTOR.
5. INDIRECT DRAIN TO FLOOR SINK / FLOOR DRAIN / HUB DRAIN.
6. DIRECT DRAIN.

PLUMBING KEY NOTES

- (U) 4" SANITARY SEWER PIPE BELOW FINISHED GRADE. SEE SITE PLAN FOR CONTINUATION.
- (L2) 2000 GALLON PRECAST CONCRETE GREASE INTERCEPTOR. COORDINATE LOCATION WITH SITE CONTRACTOR.
- (L3) INVERT ELEVATION IS TO BE 234' BELOW FINISHED FLOOR.
- (L4) SANITARY SEWER PIPE BELOW FINISHED FLOOR.
- (L5) GREASE WASTE PIPE BELOW FINISHED FLOOR. LABEL GREASE WASTE PIPING ABOVE AND BELOW FINISHED FLOOR/GRADE AS GREASE WASTE.
- (L6) SANITARY TEE.
- (2J) ELECTRICAL EQUIPMENT BY ELECTRICAL CONTRACTOR.



1 WASTE PIPING FIRST FLOOR PLAN

SCALE: 1/4" = 1'-0"

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NORTH CAROLINA PROFESSIONAL CORPORATION — ATLANTEC ENGINEERS PA No. C-961

NORTH CAROLINA PROFESSIONAL SEAL 22035 ENGINEER TIMOTHY R. TELEPAK, JR.

7/25/23

Project:	Cindy's Kitchen
Project No:	21091
Location:	Caratoke Hwy. Currituck, NC
Title:	Plumbing Plan
Date:	July 26, 2023
Scale:	As indicated

FIRST FLOOR
WASTE
PIPING PLAN

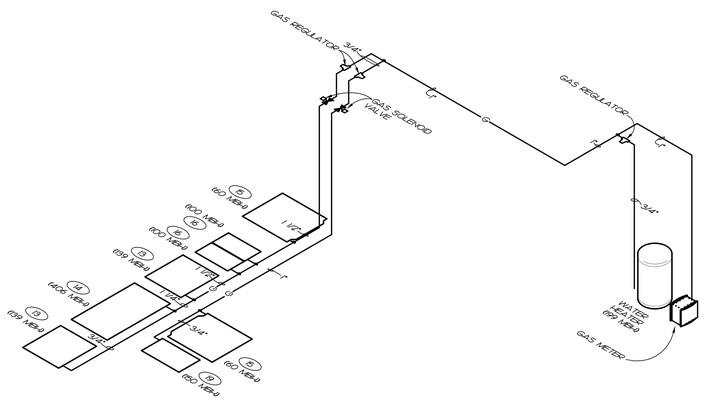
Revisions:

No.	Description	Date

Designed:	DRD
Drawn:	DRD
Reviewed:	JBD
Cad File:	

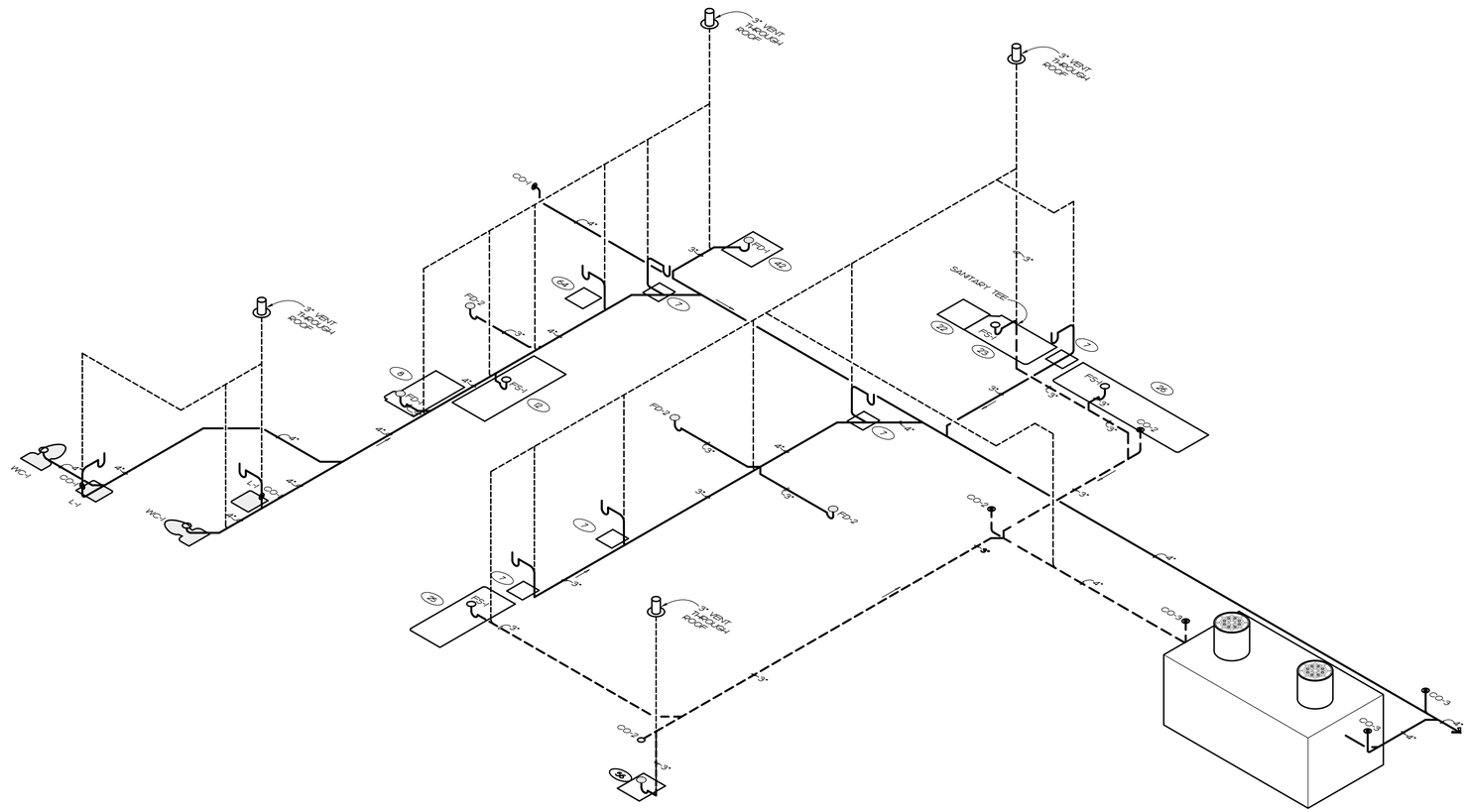
P102

22170



2 GAS PIPING RISER

NOT TO SCALE



1 WASTE PIPING RISER

NOT TO SCALE

ALL VENT PIPING IS TO BE 2" UNLESS NOTED OTHERWISE.

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NORTH CAROLINA PROFESSIONAL CORPORATION — ATLANTEC ENGINEERS PA No. C-961

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22035 JAMES R. DELAHUNTY

Project:	Cindy's Kitchen
Project No:	21091
Location:	Caratoke Hwy. Currituck, NC
Title:	Plumbing Plan
Date:	July 26, 2023
Scale:	As indicated

WASTE PIPING AND GAS PIPING RISERS

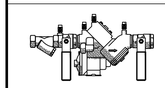
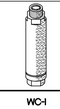
Revisions:

No.	Description	Date

Designed:	DRD
Drawn:	DRD
Reviewed:	JBD
Cad File:	

P201

PLUMBING FIXTURE SCHEDULE

SYMBOL / IMAGE	DESCRIPTION	3 - EQUALS						PIPING CONNECTIONS		
		MANUFACTURER	MODEL NUMBER	MANUFACTURER	MODEL NUMBER	MANUFACTURER	MODEL NUMBER	COLD WATER	HOT WATER	SANITARY SEWER
BP-1	BACKFLOW PREVENTOR	WATTS	LF909QTMI-S	WILKINS	975XL2-S	FEBCO	LF860	1 1/2"	-	-
	LEAD FREE, REDUCED PRESSURE ZONE WITH BALL VALVES AND STRAINER. MOUNT 24" ABOVE FINISHED FLOOR.									
CO-1	WALL CLEANOUT	ZURN	CO-2413-PVC	MIFAB		JR SMITH		-	-	SEE PLUMB DRAWINGS
	ACCESS COVER	ZURN	CO-2530-SS	MIFAB		JR SMITH				
	PVC CLEANOUT BODY AND PLUG TO BE GAS AND WATER TIGHT. PLUG TO HAVE A BRASS THREADED INSERT TO RECEIVE SECURING SCREW FOR STAINLESS STEEL ROUND ACCESS COVER.									
CO-2	FLOOR CLEANOUT	ZURN	CO2449	MIFAB		JR SMITH		-	-	SEE PLUMB DRAWINGS
	PVC CLEANOUT WITH AND ADJUSTABLE PVC RISER, NICKEL BRONZE FRAME AND COVER, AND AN ABS TAPER THREADED PLUG. CLEANOUT TO BE GAS AND WATERTIGHT.									
CO-3	EXTERIOR CLEANOUT	ZURN	Z-1400-HD	WATTS	CO-200-RX-4-34	JR SMITH	4243	-	-	SEE PLUMB DRAWINGS
	CLEANOUT HOUSING	ZURN	Z-1474	WATTS	CO-300-MF					
	HEAVY DUTY EXTERIOR CLEANOUT WITH CAST IRON BODY, EXTRA HEAVY DUTY TOP, AND GAS AND WATERTIGHT ABS TAPERED THREAD PLUG.									
CO-4	CLEANOUT	ZURN	CO2490	JOSAM		JR SMITH		-	-	SEE PLUMB DRAWINGS
	PVC CLEANOUT PLUG TO BE GAS AND WATERTIGHT.									
FD-1	FLOOR DRAIN	ZURN	ZN415I	WATTS	FD-100-ER	MIFAB	FI00-CC-DD	1/2"	-	3"
	FLOOR DRAIN TO HAVE A CAST IRON BODY WITH 3" BOTTOM OUTLET, ADJUSTABLE COLLAR, POLISHED 7" DIAMETER NICKEL BRONZE STRAINER, AND 1/2" TRAP PRIMER CONNECTION.									
FD-2	FLOOR DRAIN	ZURN	ZN415H	WATTS	FD-100-FC	MIFAB	FI000-C	1/2"	-	3"
	FLOOR DRAIN TO HAVE A 3" WASTE BOTTOM OUTLET, CAST IRON BODY WITH ADJUSTABLE COLLAR, POLISHED NICKEL BRONZE ROUND HEELPROOF STRAINER, AND 1/2" TRAP PRIMER CONNECTION.									
FS-1	FLOOR SINK	ZURN	FD2370-PV2-T	WATTS	FS-56-3G-DS	JR SMITH	305-13	-	-	2"
	14" x 14" x 8" DEEP PVC AND SQUARE SLOTTED MEDIUM DUTY 3/4 GRATE, AND ANTI-SPLASH INTERIOR BOTTOM DOME STRAINER.									
L-1	LAVATORY	KOHLER	K-2861-0	AMERICAN STANDARD	0355.012	ZURN	Z5834			
	FAUCET	SYMMONS	SLC-6000	CHICAGO FAUCETS	3500	AMERICAN STANDARD	1340.105			
	TRAP	McGUIRE	8902	DEARBORN BRASS	702-1	KOHLER	K-8999			2"
	SUPPLY	McGUIRE	155LK	BRASS CRAFT	R992AC	KOHLER	K-7605-P-CP	1/2"	1/2"	
	WALL HUNG LAVATORY SHALL BE MADE OF CAST IRON WITH A WHITE FINISH, HAVE 4" CENTERS, AN OVERFLOW. SEE ARCHITECTURAL DRAWINGS FOR MOUNTING HEIGHT. DECK MOUNTED METERED FAUCET SHALL BE CHROME FINISH, AND PROVIDED WITH MIXING VALVE, WITH 3/8" COPPER SUPPLY TUBE INLETS, AND PROVIDED WITH AN AERATOR. RIGID SUPPLY KIT SHALL INCLUDE CHROME PLATED BRASS STOPS WITH THREADED CONNECTIONS, FULL TURN BRASS STEM, REDUCER, AND FLANGE. INLET SHALL BE 3/8" IPS. OUTLET SHALL BE 3/8" IPS. P-TRAP SHALL BE CHROME PLATED CAST BRASS BODY WITH CLEANOUT, CAST BRASS ELBOW AND CAST BRASS SLIP NUT, AND FLANGE. PROVIDE WITH OFFSET DRAIN, TRUEBRO LAV SHIELD, AND WATER TEMPERATURE LIMITING DEVICE THAT CONFORMS TO ASSE 1070 OR CSA B125.3.									
P-1	RECIRCULATING PUMP	B & G	PL36							
	RECIRCULATING PUMP SHALL BE 1/6 HORSEPOWER, 120 VOLT, SINGLE PHASE. PROVIDE PUMP WITH MOUNTING BRACKET, TIMER, AQUASTAT AND DISCONNECT, DISCONNECT WIRING BY LICENSED ELECTRICAL CONTRACTOR.									
SHB-1	SHOWER/BATHTUB	AQUATIC	1503TSC							
	VALVE AND HEAD	SYMMONS	S-96-2	DELTA	T13-4232/R10000UNWS	MOEN	8389	1/2"	1/2"	
	PROVIDE WITH DRAIN. VALVE TO BE ANTI-SCALD PER NORTH CAROLINA BUILDING CODE.									
TP-1	TRAP PRIMER	MIFAB	MP-500					1/2"	-	-
	PRESSURE DROP ACTIVATED BRASS TRAP SEAL PRIMER, WITH INLET OPENING OF 1/2" MALE N.P.T. AND OUTLET OPENING OF FEMALE 1/2" N.P.T.. SERVES UP TO 6 FLOOR DRAIN TRAPS.									
WC-1	WATER CLOSET	KOHLER	K-3979	TOTO	CST744SL	AMERICAN STANDARD	2543A.004.020			4"
	SEAT	BEMIS	1655SSC	KOHLER	K-4670-C-0	CHURCH				
	SUPPLY	BRASSCRAFT	CS4101LC	KOHLER	K-7638	McGUIRE	165	1/2"	-	
	1.6 GPF TOILET SHALL BE MADE OF VITREOUS CHINA WITH A WHITE FINISH AND A 12" ROUGH-IN. TOILET SHALL INCLUDE POLISHED CHROME TRIP LEVER. SEAT SHALL BE EXTRA HEAVY WEIGHT SOLID PLASTIC WITH OPEN FRONT LESS COVER FOR ELONGATED BOWL. SUPPLY KIT SHALL INCLUDE CHROME PLATED BRASS STOPS, FULL TURN BRASS STEM AND FLANGE. INLET SHALL BE 3/8" IPS. OUTLET SHALL BE 3/8" IPS. THE FLUSHING LEVER MECHANISM SHALL BE ON THE WIDE SIDE OF THE STALL.									

PLUMBING FIXTURE SCHEDULE

SYMBOL / IMAGE	DESCRIPTION	3 - EQUALS						PIPING CONNECTIONS		
		MANUFACTURER	MODEL NUMBER	MANUFACTURER	MODEL NUMBER	MANUFACTURER	MODEL NUMBER	COLD WATER	HOT WATER	SANITARY SEWER
WH	WATER HEATER	PHOENIX	PH99-55					1"	1"	
	GAS FIRED WATER HEATER SHALL HAVE AN 55 GALLON STORAGE CAPACITY WITH AN INPUT OF 199 MBH AND A RECOVERY OF 237 GPH AT A 100° RISE. PROVIDE WITH, EXPANSION TANK.									
WH	WATER HEATER	STATE INDUSTRIES	PCE 20 10MSA	A.O. SMITH		LOCHINVAR		3/4"	3/4"	
	ELECTRIC WATER HEATER SHALL HAVE A 20 GALLON STORAGE CAPACITY, AN ELECTRIC INPUT OF 1.5 KW AT 120 VOLT, SINGLE PHASE AND A RECOVERY OF 6 GPH AT A 100° RISE. PROVIDE WITH THERMOSTATIC MIXING VALVE SET AT 110°F, EXPANSION TANK AND DISCONNECT, WIRING BY LICENSED ELECTRICAL CONTRACTOR. WATER HEATER TO BE PROVIDED WITH HEAT TRAPS AND MEET THE ENERGY EFFICIENCY REQUIREMENT PER 2018 NORTH CAROLINA STATE BUILDING CODE: ENERGY CONSERVATION CODE.									

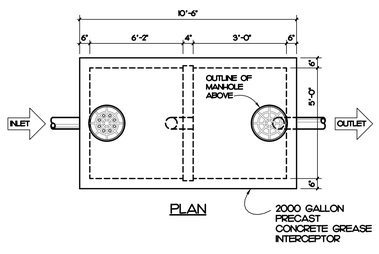
PLUMBING SCHEDULE NOTES AND LEGEND:

1. THE PLUMBING CONTRACTOR MAY SUBSTITUTE FIXTURES WITH OWNERS' APPROVAL.
2. SUBMIT CUT SHEETS FOR ALL PROPOSED FIXTURES TO ARCHITECT PRIOR TO BIDDING.
3. PROVIDE VACUUM BREAKER ON ALL EQUIPMENT REQUIRING PLUMBING.
4. REFER TO MANUFACTURERS WEB SITE FOR CUT SHEETS AND DATA ON THE FIXTURES AND APPURTENANCES USED IN THIS SCHEDULE.

ADA COMPLIANT

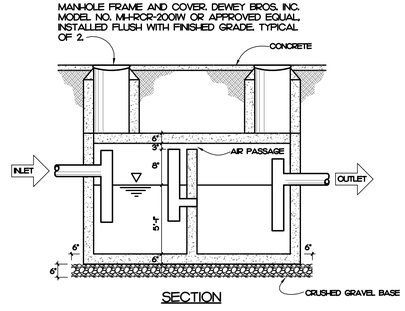
ELECTRICAL POWER

GAS FIRED



PLAN

2000 GALLON PRECAST CONCRETE GREASE INTERCEPTOR



SECTION

CRUSHED GRAVEL BASE

NOTES:

1. CONCRETE: 28 DAY f'_c=4500 psi.
2. REBAR: ASTM A-615 GRADE 60.
3. MECH: ASTM A-185 GRADE 65.
4. DESIGN: ACI318-83 BUILDING CODE, ASTM C-857 MINIMUM STRUCTURAL DESIGN, LOADING FOR UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES.
5. LOADS: H-20 TRUCK WHEEL WITH 30% IMPACT PER AASHTO.
6. FILL WITH CLEAN WATER PRIOR TO START UP OF SYSTEM.
7. CONTRACTOR TO SUPPLY AND INSTALL ALL PIPING AND SANITARY TEES, 4 CLEAN OUTS FOR CLEANING TOWARD TRAP, AND DOW CLEANING AWAY FROM TRAP ON BOTH THE INLET AND OUTLET.
8. GRAY WATER ONLY, BLACK WATER SHALL BE CARRIED BY SEPERATE SEWER.
9. MANHOLES SHALL BE SEALED AIR TIGHT.

1 GREASE INTERCEPTOR DETAIL

NOT TO SCALE

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NORTH CAROLINA PROFESSIONAL CORPORATION — ATLANTEC ENGINEERS PA No. C-961

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22035 JAMES B. DAVIS

Project:	Cindy's Kitchen
Project No:	21091
Location:	Caratoke Hwy. Currituck, NC
Title:	Plumbing Plan
Date:	July 26, 2023
Scale:	As indicated

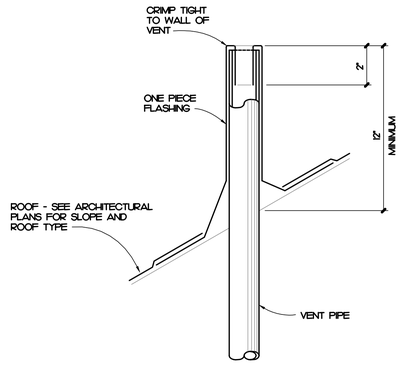
PLUMBING FIXTURE SCHEDULE AND DETAILS

Revisions:

No.	Description	Date

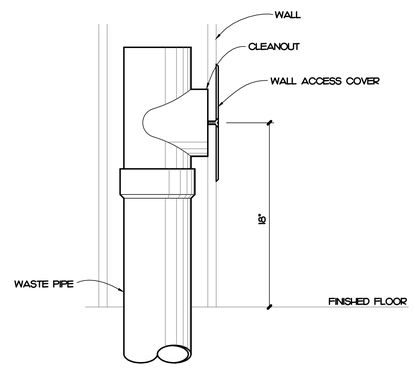
Designed:	DRD
Drawn:	DRD
Reviewed:	JBD
Cad File:	

P301



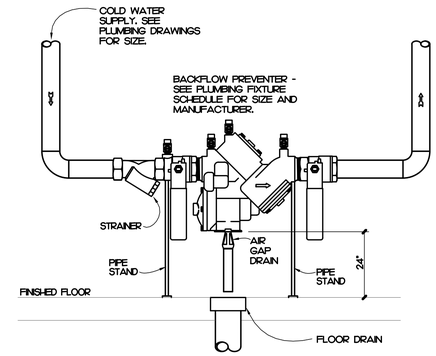
7 VENT THROUGH ROOF DETAIL

NOT TO SCALE



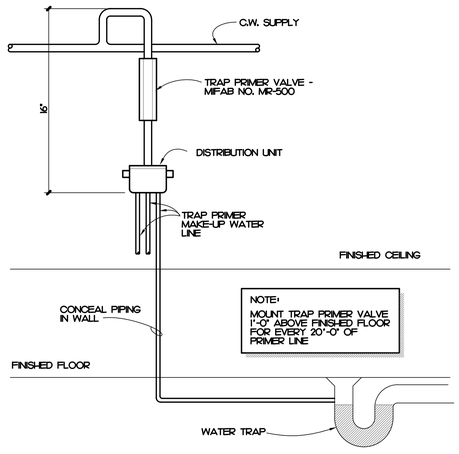
4 WALL CLEANOUT DETAIL

NOT TO SCALE



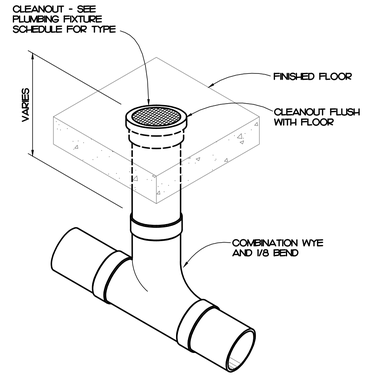
1 BACKFLOW PREVENTER DETAIL

NOT TO SCALE



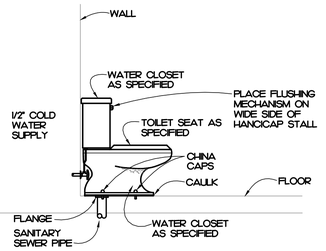
8 TRAP PRIMER DETAIL

NOT TO SCALE



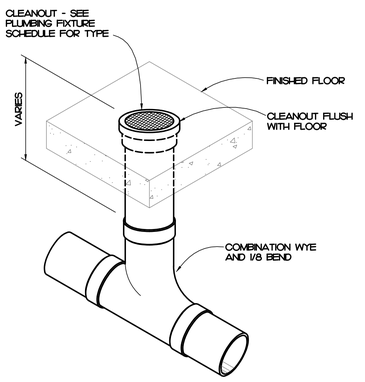
5 FLOOR CLEANOUT DETAIL

NOT TO SCALE



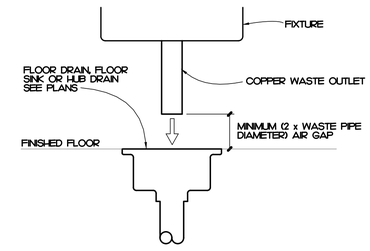
2 WATER CLOSET DETAIL

NOT TO SCALE



6 EXTERIOR CLEANOUT DETAIL

NOT TO SCALE



3 AIR GAP DETAIL

NOT TO SCALE

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NORTH CAROLINA PROFESSIONAL CORPORATION ATLANTEC ENGINEERS PA No. C-961

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22035 JAMES B. DEWEY

Project:	Cindy's Kitchen
Project No:	21091
Location:	Caratoke Hwy. Currituck, NC
Title:	Plumbing Plan
Date:	July 26, 2023
Scale:	As indicated

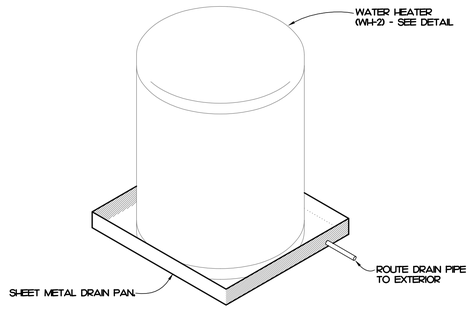
PLUMBING DETAILS

Revisions:

No.	Description	Date

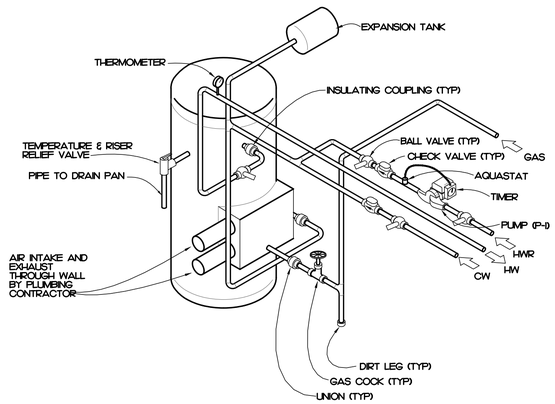
Designed:	DRD
Drawn:	DRD
Reviewed:	JBD
Cad File:	

P302



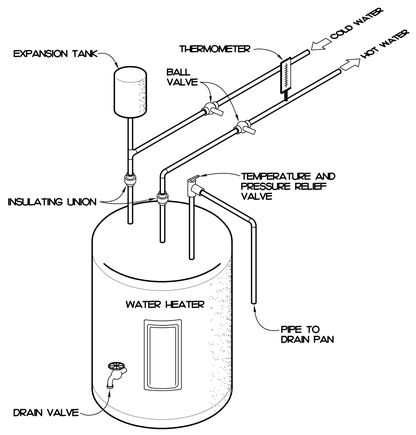
5 WATER HEATER MOUNTING DETAIL

NOT TO SCALE



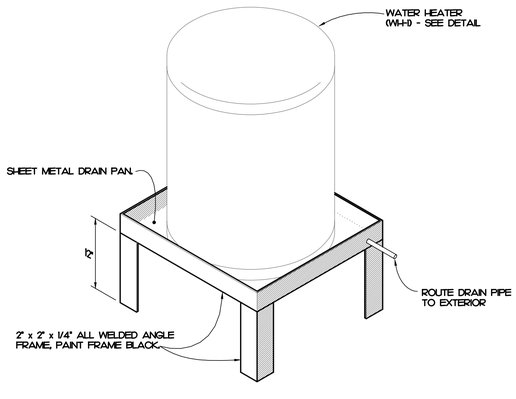
2 WATER HEATER DETAIL (WH-1)

NOT TO SCALE



3 WATER HEATER DETAIL (WH-2)

NOT TO SCALE



4 WATER HEATER MOUNTING DETAIL

NOT TO SCALE

Storage Tank Water Heater Sizing Calculator

Developed by the Plan Review Unit of the Environmental Health Services Section
NC Division of Environmental Health

Facility Name:	
Address:	Caratoke Hwy. Currituck, North Carolina

EQUIPMENT — **GPH CALCULATED**

Enter the description, and number and size of compartments for each sink below	Description	Number of compartments	(inches) Length	Width	Depth	Gallons Per Hour (GPH)
Largest Sink #1	Scullery	3	24	24	14	79
Sink #2	Scullery	2	24	18	14	39
Sink #3						0
Bar sink						0
Sinks are calculated at 75% capacity					**Total**	118

Enter type of prep sink and number of sink compartments for each sink below	Type of prep sink (vegetable, meat, seafood)	Number of compartments	Gallons Per Hour (GPH)
Prep sink #1			0
Prep sink #2			0
Prep sink#3			0
Prep sinks are calculated at 5 gallons per compartment		**Total**	0

Enter the quantity of equipment below	Quantity	Gallons Per Hour (GPH)
Hand sinks	8	40
Can wash	1	10
Mop sink	1	5
Hose reel		0
Clothes washer		0

Enter a description and estimated gallon per hour (GPH) usage for other equipment below	Description	Estimated gallons per hour (GPH) usage	Gallons Per Hour (GPH)
Other Equipment		0	0
Other Equipment			0
Other Equipment			0
Other Equipment			0
Hand sinks and mop sinks are calculated at 5 GPH each, can washes at 10 GPH each. Hose reels are calculated at 5 GPH, clothes washers at 15 GPH, other equipment at the usage entered		**Total**	55

Enter the make, model and Final Rinse Usage in gallons per hour (GPH) for dishmachines	Make	Model	Final Rinse Usage (GPH) Found in "Dishmachine Specs" sheet below or on manufacturer's spec sheet	Gallons Per Hour (GPH)
Dishmachine #1	CMA	180-VL	36	25.2
Dishmachine #2				0

Enter the quantity of pre-rinse units	Quantity	Gallons Per Hour (GPH)
Pre-rinse	1	45
Dishmachines are calculated at 70% of the final rinse usage specified by the manufacturer. Pre-rinses are calculated at 45 GPH	**Total**	70.2

Recovery Rate Needed (GPH):	**243**

1 ELECTRICAL WIRING DETAIL

NOT TO SCALE

PLUMBING GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE CODE, ALL LOCAL AND OTHER APPLICABLE CODES.
2. ANY PERMITS AND INSPECTION FEES SHALL BE SECURED AND PAID FOR BY THE PLUMBING CONTRACTOR.
3. ALL WORK SHALL BE PERFORMED BY EXPERIENCED AND SKILLED CRAFTSMAN. THE PLUMBING CONTRACTOR SHALL COORDINATE ALL OF HIS WORK WITH ALL OTHER CONTRACTORS.
4. THE PLUMBING PLANS AND SPECIFICATIONS SHALL BE THOROUGHLY REVIEWED PRIOR TO PURCHASING MATERIALS AND INSTALLATION. ALL DISCREPANCIES OR INTERFERENCE'S SHALL BE BROUGHT TO THE ENGINEERS ATTENTION.
5. THESE PLANS ARE DIAGRAMMATIC AND MAY NOT SHOW MINOR DETAILS AND LOCATIONS. FOR DIMENSIONS, REFER TO THE ARCHITECTURAL PLANS.
6. THE PLUMBING CONTRACTOR SHALL PROVIDE ALL OPENINGS REQUIRED FOR THE PLUMBING WORK. THE PATCHING SHALL BE BY THE PLUMBING CONTRACTOR AND FINISHING BY GENERAL CONTRACTOR.
7. WATER PIPING BELOW GRADE AND ABOVE GRADE SHALL BE PEX (NO JOINTS BELOW GRADE), SUPPORTED AS REQUIRED AND SHALL BE HYDROSTATICALLY TESTED FOR ONE HOUR AT 150 PSI. TEST TO COMPLY WITH ALL EPA STANDARDS. THE ENTIRE WATER DISTRIBUTION SYSTEM SHALL BE DISINFECTED PRIOR TO PLACING IN SERVICE.
8. ALL PIPE, FITTINGS, FIXTURES, AND SOLDER TO BE LEAD FREE.
9. WATER PIPING LOCATED ABOVE CEILINGS AND IN EXTERIOR WALLS SHALL BE ROUTED ON HEATED SIDE OF CEILING INSULATION (UNDERSIDE) AND WALL INSULATION (INSIDE).
10. ALL COLD AND HOT WATER PIPING SHALL BE INSULATED. INSULATE WASTE PIPING AS DESIGNATED ON PLUMBING DRAWINGS. INSULATION SHALL BE 1" FIBERGLASS. EXPOSED PIPING TO BE WRAPPED WITH ALUMINUM JACKET.
11. DO NOT SUPPORT PIPING FROM BAR JOIST BRIDGING AND/OR ROOF DECK.
12. WATER SHUT - OFF VALVES ABOVE FINISHED CEILING ARE TO BE FREE FROM OBSTRUCTIONS SUCH AS DUCTWORK, LIGHTS, WIRING AND OTHER PIPING SO AS TO PROVIDE EASY ACCESS. MOUNT NO MORE THAN 2'-0" ABOVE FINISHED CEILING.
13. IF THE WATER PRESSURE EXCEEDS 80 PSI A PRESSURE REDUCING VALVE SHALL BE INSTALLED WHERE THE WATER ENTERS THE BUILDING.
14. PLUMBING CONTRACTOR SHALL PROVIDE A DIELECTRIC UNION WHEN CONNECTING DISSIMILAR MATERIAL.
15. WATER HEATERS SHALL HAVE AND EFFICIENCY MEETING REQUIREMENTS OF THE NORTH CAROLINA BUILDING CODE.
16. THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ELECTRICAL AND CONTROL CONNECTIONS TO THE EQUIPMENT FURNISHED UNDER HIS CONTRACT.
17. SANITARY SEWER AND VENT PIPING SHALL BE SCHEDULE 40 PVC. CELLULAR CORE (FOAM CORE) IS NOT ALLOWED. SANITARY SEWER AND VENT PIPING SHALL BE GAS AND AIR TIGHT.
18. THE PLUMBING CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION OF ANY WORK.
19. THE PLUMBING CONTRACTOR SHALL REVIEW ALL UTILITY SITE PLANS FOR WORK BY OTHERS. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE HIS WORK WITH WORK BY OTHERS AND AVOID ALL CONFLICTS.
20. LOCATIONS OF UTILITIES (WASTE AND WATER PIPING, ETC.) PROVIDED BY OTHERS, THAT ARE TO BE CONNECTED TO ARE ASSUMED, IT SHALL BE THE RESPONSIBILITY OF THE PLUMBING CONTRACTOR TO VERIFY THESE LOCATIONS AND MAKE FINAL CONNECTIONS AS REQUIRED.
21. VERIFY THE LOCATION OF ALL EQUIPMENT SUPPLIED BY OTHERS.
22. GAS PIPING SHALL BE SCHEDULE 40 BLACK STEEL INSTALLED IN ACCORDANCE WITH ALL CODES. THE PLUMBING CONTRACTOR TO MAKE FINAL CONNECTION TO ALL EQUIPMENT REQUIRING GAS AND COORDINATE THE GAS CONNECTION SIZE TO THE EQUIPMENT. PROVIDE UNDERGROUND MAGNETIC TRACING TAPE ON ALL UNDERGROUND GAS PIPING.
23. PROVIDE VACUUM BREAKERS ON ALL EQUIPMENT DIRECTLY CONNECTED TO THE WATER SYSTEM.
24. THE PLUMBING CONTRACTOR SHALL REFER TO THE KITCHEN EQUIPMENT COMPANY FOR EXACT DIMENSIONS AND LOCATIONS OF KITCHEN EQUIPMENT.
25. THE PLUMBING CONTRACTOR SHALL MAKE ALL FINAL PLUMBING CONNECTIONS TO THE KITCHEN EQUIPMENT, PROVIDING ALL PIPING, VALVES, ETC., FOR A COMPLETE JOB.
26. ALL VENT PIPING THROUGH THE ROOF SHALL BE A MINIMUM OF 5'-0" FROM ALL MAKE-UP AIR INLETS OR A MINIMUM OF 2'-0" ABOVE THE TOP OF ALL MAKE-UP AIR INLETS. VENTS THROUGH ROOF ARE TO BE ON REAR OF BUILDING.
27. SEE ARCHITECTURAL DRAWINGS FOR PLUMBING MINIMUM FACILITY CALCULATIONS.
28. ALL INDIRECT WASTE IS TO BE PROVIDED WITH AN AIR GAP 2 TIMES THE SIZE OF THE WASTE INLET.
29. THE PLUMBING CONTRACTOR SHALL VERIFY BUILDING FLOOR ELEVATION IS ABOVE MAN-HOLE RIM ELEVATION OR PROVIDE A BACKWATER VALVE AS REQUIRED.
30. THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR MINOR DEMOLITION AT NO COST TO THE OWNER.
31. THE PLUMBING CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A SET OF AS-BUILT DRAWINGS UPON COMPLETION OF PROJECT.

PLUMBING SYMBOL LEGEND

SYMBOL	DESCRIPTION
	COLD WATER PIPING
	WATER PIPING DIRECTION OF FLOW
	HOT WATER PIPING
	120° F HOT WATER PIPING
	140° F HOT WATER PIPING
	HOT WATER RETURN PIPING
	BALL VALVE
	WATER PIPING TURNED DOWN
	WATER PIPING TURNED UP
	PIPING SIDE CONNECTION
	SANITARY SEWER / WASTE PIPING
	SANITARY SEWER / WASTE PIPING DIRECTION OF FLOW
	GREASE WASTE PIPING
	VENT PIPING
	VENT PIPE UP
FIXTURE	PLUMBING FIXTURE PROVIDED AND INSTALLED BY PLUMBING CONTRACTOR
FIXTURE	PLUMBING FIXTURE PROVIDED BY OTHERS AND INSTALLED BY PLUMBING CONTRACTOR

WATER DEMAND FU	WATER DEMAND GPM	SANITARY SEWER DEMAND FU	GAS MBH
66.8	34	48.5	154

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NORTH CAROLINA PROFESSIONAL CORPORATION — ATLANTEC ENGINEERS PA No. C-961

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22035 JAMES B. DAVIS

Project:	Cindy's Kitchen
Project No:	21091
Location:	Caratoke Hwy. Currituck, NC
Title:	Plumbing Plan
Date:	July 26, 2023
Scale:	As indicated

PLUMBING NOTES, LEGEND, LOAD, AND DETAILS

Revisions:

No.	Description	Date

Designed:	DRD
Drawn:	DRD
Reviewed:	JBD
Cad File:	

P303

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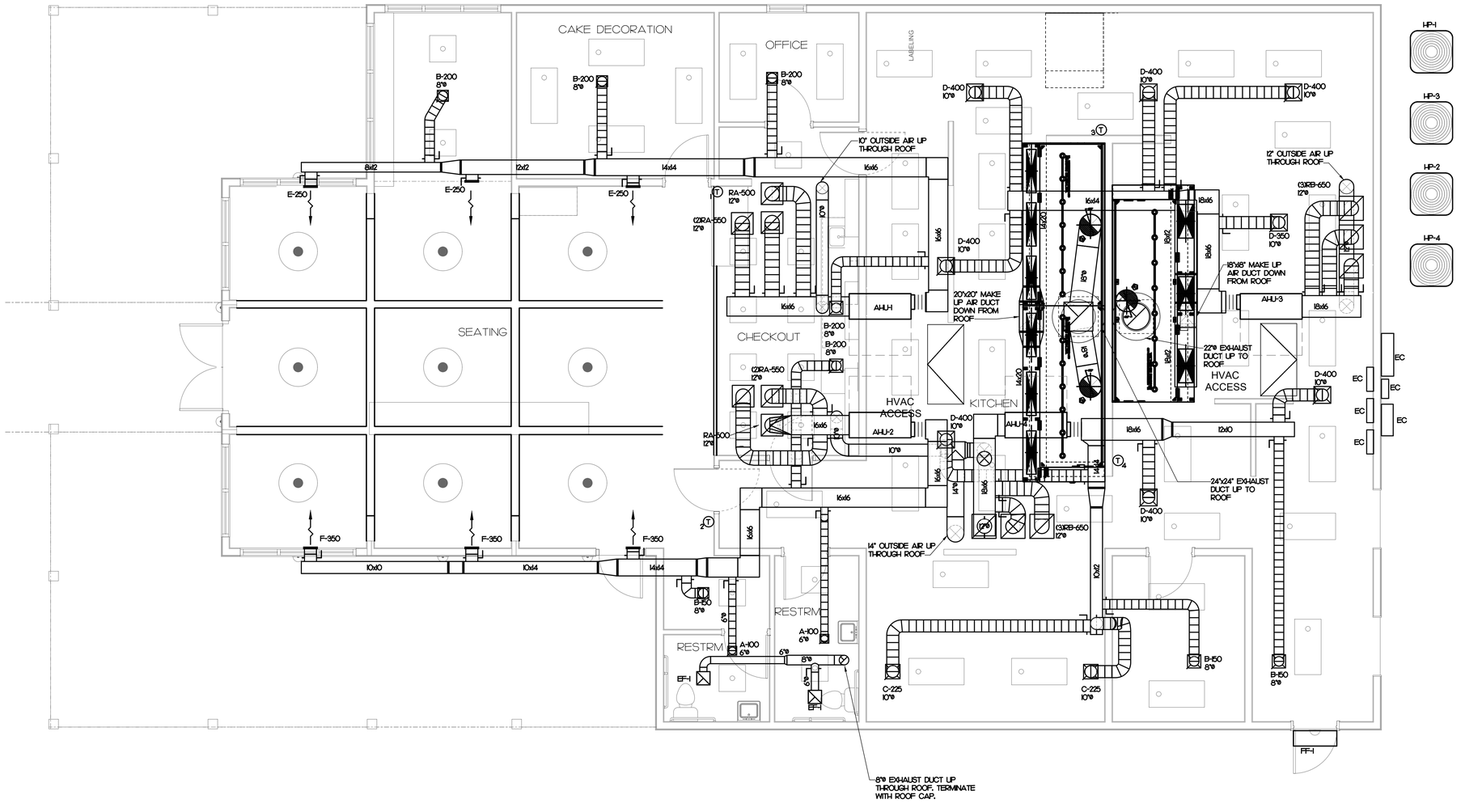

1 MECHANICAL PLAN - FIRST FLOOR

SCALE: 1/4" = 1'-0"

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NORTH CAROLINA PROFESSIONAL SEAL 042035 ENGINEER JAMES B. DELPAPA, JR.

7/26/23

Project:	Cindy's Kitchen
Project No:	21091
Location:	Caratoke Hwy. Currituck, NC
Title:	MECHANICAL
Date:	July 26, 2023
Scale:	As indicated

MECHANICAL PLAN FIRST FLOOR

Revisions:

No.	Description	Date

Designed:	JAD
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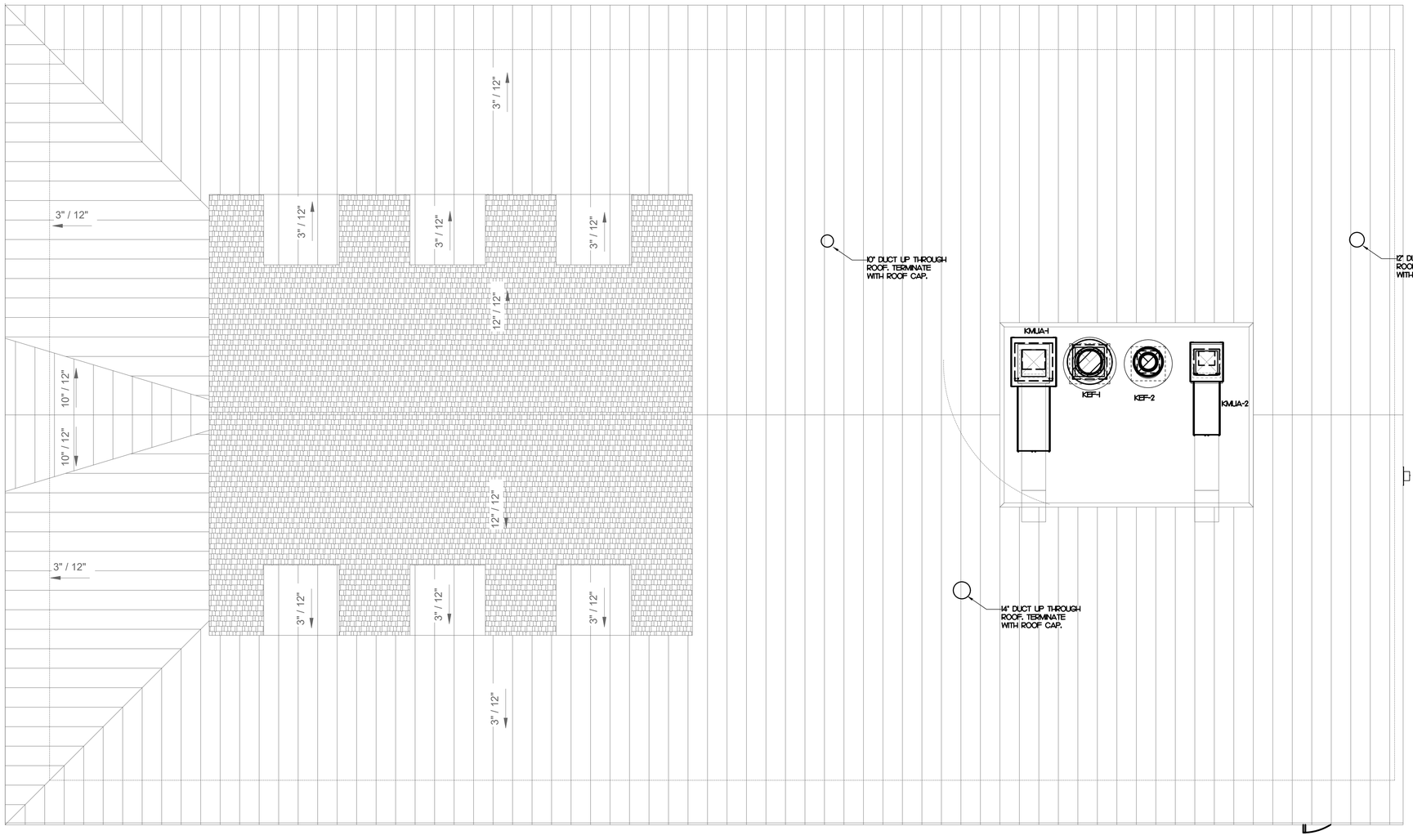
Reviewed:	JBD
Cad File:	

M101



1 MECHANICAL PLAN - ROOF PLAN

SCALE: 1/4" = 1'-0"

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NORTH CAROLINA PROFESSIONAL SEAL 22035 ENGINEER JAMES D. ELDREDGE, JR.

Project:	Cindy's Kitchen
Project No:	21091
Location:	Caratoke Hwy. Currituck, NC
Title:	MECHANICAL
Date:	July 26, 2023
Scale:	As indicated

MECHANICAL ROOF PLAN

Revisions:

No.	Description	Date

Designed:	JAD
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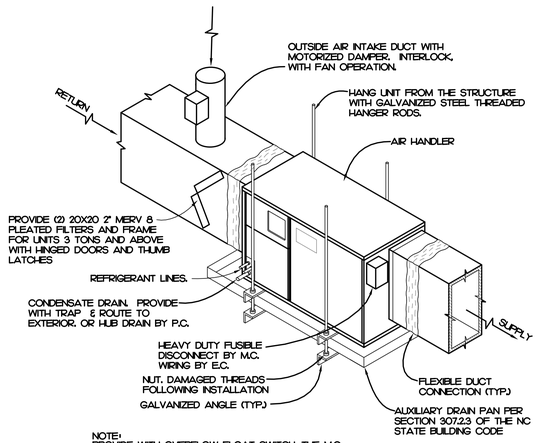
Cad File:	

M102



3 HORIZONTAL AIR HANDLING UNIT DETAIL

SCALE: NOT TO SCALE

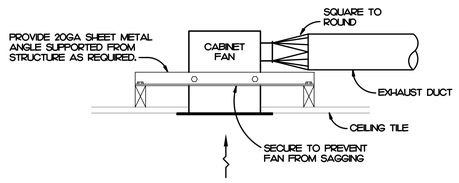
SPLIT-SYSTEM HEAT PUMP SCHEDULE

	INSIDE UNIT								OUTSIDE UNIT									
MARK	BASIS OF DESIGN	FAN CFM	FAN S.P.	FAN H.P.	SUPP. HEAT	ELECTRICAL POWER	ELECTRICAL FLA	ELECTRICAL MOCP	MARK	BASIS OF DESIGN	CAPACITY TOTAL	CAPACITY SENSIBLE	HEATING CAPACITY	ELECTRICAL POWER	ELECTRICAL FLA	ELECTRICAL MOCP	EFFICIENCY COOLING	EFFICIENCY HEATING	NOTES
AH-1	TRANE 4AVM8B0C048	1600	0.5	3/4	10.8 kW	208/3	36.0	45	HP-1	TRANE 4TWA4048	48.2 MBH	35.9 MBH	27.0 MBH	208/3	14.8	30	14.5 SEER	8.2 HSPF	1-4
AH-2	TRANE 4AVM8B0C048	1600	0.5	3/4	10.8 kW	208/3	36.0	45	HP-2	TRANE 4TWA4048	48.2 MBH	35.9 MBH	27.0 MBH	208/3	14.8	30	14.5 SEER	8.2 HSPF	1-4
AH-3	TRANE 4AVM8B0C060	1950	0.5	1	10.8 kW	208/3	37.6	50	HP-3	TRANE 4TWA4060	57.7 MBH	44.5 MBH	34.6 MBH	208/1	17.0	35	14.5 SEER	8.5 HSPF	1-4
AH-4	TRANE 4AVM8B0C060	1950	0.5	1	10.8 kW	208/3	37.6	50	HP-4	TRANE 4TWA4060	57.7 MBH	44.5 MBH	34.6 MBH	208/1	17.0	35	14.5 SEER	8.5 HSPF	1-4

NOTES:
1. PROVIDE WITH FUSIBLE DISCONNECT ON INDOOR AND OUTDOOR UNITS.
2. PROVIDE WITH PROGRAMMABLE THERMOSTAT.
3. SEE OUTSIDE AIR SUMMARY FOR OUTSIDE AIR INTAKE FLOW SETTINGS.
4. PROVIDE WITH SUPPORT FROM STRUCTURE.

GENERAL NOTES

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE LATEST EDITION OF THE STATE CODE, ALL LOCAL AND OTHER APPLICABLE CODES
2. ANY PERMITS AND INSPECTION FEES SHALL BE SECURED AND PAID FOR BY THE MECHANICAL CONTRACTOR (M.C.).
3. ALL WORK SHALL BE PERFORMED BY EXPERIENCED AND SKILLED CRAFTSMAN. THE M.C. SHALL COORDINATE ALL OF HIS WORK WITH ALL OTHER CONTRACTORS.
4. THE MECHANICAL PLANS AND SPECIFICATIONS SHALL BE THOROUGHLY REVIEWED PRIOR TO PURCHASING MATERIALS AND INSTALLATION. ALL DISCREPANCIES OR INTERFERENCES SHALL BE BROUGHT TO THE ENGINEERS' ATTENTION.
5. THESE PLANS ARE DIAGRAMMATIC AND MAY NOT SHOW MINOR DETAILS AND LOCATIONS. FOR DIMENSIONS, REFER TO THE ARCHITECTURAL PLANS.
6. THE M.C. SHALL BE RESPONSIBLE FOR ALL ELECTRICAL STARTERS, INTERLOCKS, CONTROL WIRING. THE ELECTRICAL CONTRACTOR SHALL PROVIDE POWER WIRING, CONDUIT FROM THE DISCONNECT TO M.C. EQUIPMENT. THE M.C. SHALL BE RESPONSIBLE FOR ALL FINAL CONNECTION TO HIS EQUIPMENT.
7. INSTALL FLEXIBLE CONNECTORS ON SUPPLY AND RETURN DUCTWORK AT ALL AIR HANDLING UNITS.
8. INSTALL TURNING VANES IN SUPPLY DUCTS AT ELBOWS. PROVIDE BALANCING AND SPLITTER DAMPERS WHERE SHOWN AND AS REQUIRED FOR SYSTEM BALANCING.
9. ALL THERMOSTATS, WIRING AND CONDUIT ARE TO BE FURNISHED BY THE M.C. MOUNT THERMOSTATS 4'-0" ABOVE THE FLOOR, UNLESS OTHERWISE NOTED.
10. THE M.C. SHALL INSURE THAT ALL MECHANICAL EQUIPMENT INSTALLED UNDER HIS CONTRACT SHALL OPERATE FREE OF OBJECTIONABLE NOISE AND VIBRATION.
11. THE M.C. SHALL KEEP THE PREMISES CLEAR OF DEBRIS FROM HIS WORK DURING CONSTRUCTION AND LEAVE THE AREA AND BUILDING CLEAN AT THE COMPLETION OF HIS WORK. HE SHALL ALSO LEAVE CLEAN ALL EXPOSED EQUIPMENT IN HIS CONTRACT.
12. FLEXIBLE DUCT RUNOUTS SHALL BE A MAXIMUM OF 14'-0".
13. ALL FLEXIBLE DUCT RUNOUTS SHALL INCLUDE INSULATED DAMPERED BOOTS AT THE POINT OF CONNECTION WITH RECTANGULAR DUCT. PROVIDE ALL FLEXIBLE DUCTWORK WITH FOIL-BACKED, EXTERNALLY WRAPPED INSULATION FOR A MINIMUM OF R-8.
14. ALL DUCTWORK SIZES SHOWN ARE ACTUAL SHEET METAL DIMENSIONS. EXTERNALLY WRAP ALL DUCT WITH 3" FOIL-BACKED INSULATION FOR A MINIMUM OF R-8.
15. MECHANICAL CONTRACTOR SHALL WORK WITH TEST AND BALANCE CONTRACTOR TO REMEDY ANY DIFFERENCES TO INCLUDE FAN DRIVE CHANGES, INSTALLATION OF DAMPERS OR OTHER MINOR DUCT MODIFICATIONS TO PROVIDE AIRFLOW TO WITHIN +/- 10% OF THE DESIGN VALUES LISTED ON THESE PLANS.
16. CONTRACTOR SHALL PROVIDE TESTING OF ALL FIRE DAMPERS PRIOR TO SUBSTANTIAL COMPLETION. ENGINEER SHALL WITNESS TESTING OF FIRE DAMPER BY CONTRACTOR. CONTRACTOR SHALL SHUT ALL DAMPERS AND REOPEN TO ENSURE ALL DAMPERS ARE CAPABLE OF CLOSING. CONTRACTOR SHALL PROVIDE ACCESS DOORS AS REQUIRED TO ACCESS DAMPER FOR TESTING.
17. THE AIR HANDLING UNIT SHALL OPERATE AT ALL TIMES DURING OCCUPIED HOURS.
18. THE MECHANICAL CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A SET OF AS-BUILT DRAWINGS UPON COMPLETION OF JOB.
19. THE MECHANICAL CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A SET OF DUCT SHOP DRAWINGS FOR APPROVAL.
20. THE MECHANICAL CONTRACTOR SHALL PROVIDE THE ENGINEER WITH A BALANCE REPORT BY A CERTIFIED TEST AND BALANCE COMPANY.
21. PROVIDE PERMIT LABEL ENGRAVED PLASTIC LAMINATE MECHANICALLY FASTENED TO OUTDOOR UNITS.
22. LABEL CEILING GRID WHERE EQUIPMENT IS LOCATED ABOVE LAY-IN CEILING. WITH EQUIPMENT IDENTIFIER. ALSO LABEL ALL TEMPERATURE SENSORS AND THERMOSTATS WITH EQUIPMENT IDENTIFIER.



2 HARD CEILING CABINET FAN DETAIL

SCALE: NOT TO SCALE

MECHANICAL SYSTEMS, SERVICE SYSTEMS AND EQUIPMENT METHOD OF COMPLIANCE

PRESCRIPTIVE ☒ ENERGY COST BUDGET ☐

THERMAL ZONE 4A

EXTERIOR DESIGN CONDITIONS
winter dry bulb: 16°F
summer dry bulb: 95°F
relative humidity: 46%

INTERIOR DESIGN CONDITIONS
winter dry bulb: 70°F
summer dry bulb: 74°F
relative humidity: 50%

BUILDING HEATING LOAD: BLOCK LOAD = 92.3 MBH
BUILDING COOLING LOAD: BLOCK LOAD = 221.5 MBH (18.5 TONS)

MECHANICAL SPACING CONDITIONING SYSTEM
Unitary:
description of unit: } SEE SCHEDULES ON SHEET(S) THIS SHEET
heating efficiency:
cooling efficiency:
heat output of unit:
cooling output of unit:
Boiler: NA
total boiler capacity. If oversized state reason.
Chiller: NA
total chiller capacity. If oversized state reason.

LIST EQUIPMENT EFFICIENCIES: SEE SCHEDULES ON SHEET(S) THIS SHEET

EQUIPMENT SCHEDULES WITH MOTORS (MECHANICAL SYSTEMS)
motor horsepower: } SEE SCHEDULES ON SHEET(S) THIS SHEET
number of phases:
minimum efficiency:
motor type:
# of poles:

DESIGNER STATEMENT

To the best of my knowledge and belief, the design of this building complies with the mechanical systems, service systems and equipment requirements of the North Carolina State Energy Code.

SIGNED:

NAME: James B. DePapa, Jr., PE

TITLE: Professional Engineer

BUILDING PRESSURIZATION SUMMARY

EXHAUST:
KEF-1: 4466 CFM
KEF-2: 2800 CFM
TOTAL EXHAUST: 7266 CFM

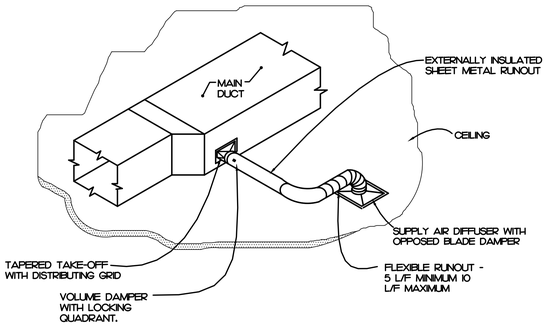
MAKE-UP:
KMAU-1: 3572 CFM
KMAU-2: 2240 CFM
TOTAL MAKE UP: 5812 CFM

OUTSIDE AIR:
AH-1: 400 CFM
AH-2: 400 CFM
AH-3: 475 CFM
AH-4: 475 CFM
TOTAL OUTSIDE AIR: 1750 CFM

BUILDING IS POSITIVE BY 296 CFM.

SYMBOL LEGEND

SYMBOL	DESCRIPTION
	SHEET METAL DUCT
	FLEXIBLE DUCT
	SUPPLY DIFFUSER - LETTER & NUMBER INDICATES TYPE & CFM
	RETURN GRILLE - LETTER & NUMBER INDICATES TYPE & CFM
	EXHAUST GRILLE - LETTER & NUMBER INDICATES TYPE & CFM
	SIDEWALL SUPPLY GRILLE - LETTER & NUMBER INDICATES TYPE & CFM
	SIDEWALL RETURN GRILLE - LETTER & NUMBER INDICATES TYPE & CFM
	EXHAUST FAN
T	THERMOSTAT - MOUNTED 48" ABOVE FINISHED FLOOR
BD	BALANCING DAMPER
	ELBOW WITH TURNING VANES



1 HARD CEILING DIFFUSER DETAIL

SCALE: NOT TO SCALE

FAN SCHEDULE

MARK	BASIS OF DESIGN	SERVICE	TYPE	CFM	RPM	HP/AMPS	S.P.	POWER	NOTES
EF-1	COOK GC-140	BATHROOMS	CABINET FAN	105	1500	67 Watts	0.25"	120/1	1-3
FF-1	MARS STD2236-1U	BACK DOOR	AIR CURTAIN	1379	1750	1/2 HP	-	120/1	1,4

NOTES:
1. PROVIDE WITH DISCONNECT SWITCH.
2. PROVIDE WITH BACKDRAFT DAMPER.
3. CONTROL VIA LIGHT SWITCH BY E.C.
4. PROVIDE WITH AUTOMATIC DOOR SWITCH.

GRILLE & DIFFUSER SCHEDULE

MARK	BASIS OF DESIGN	SERVICE	TYPE	MAX. CFM	FACE SIZE	NECK SIZE	NOTES
A	PRICE SMD	SUPPLY	SURFACE MOUNT	100	8X8	6"ø	1-3,6
B	PRICE SMD	SUPPLY	SURFACE MOUNT	200	10X10	8"ø	1-3,6
C	PRICE SMD	SUPPLY	SURFACE MOUNT	300	12X12	10"ø	1-3
D	PRICE SMD	SUPPLY	SURFACE MOUNT	400	14X14	10"ø	1-3,6
E	PRICE 510	SUPPLY	SURFACE MOUNT	250	12X7	10X5	1-5
F	PRICE 540	SUPPLY	SURFACE MOUNT	350	14X8	10"ø	1-5
RA	PRICE 530	RETURN	SURFACE MOUNT	550	18X18	16X16	1-3
RB	PRICE 530	RETURN	LOUVERED LAY-IN	650	20X20	18X18	1-3
RC	PRICE 530	RETURN	SURFACE MOUNT	1000	18X22	16X20	1-3,6

NOTES:
1. COORDINATE FINISH WITH ARCHITECT.
2. GRILLE TO HAVE FULLY LOUVERED FACE.
3. PROVIDE WITH INSULATED SHEET METAL PLENUM.
4. PROVIDE WITH EXTRACTOR AND FRAME FOR DUCT MOUNTING.
5. FRAME FOR SURFACE MOUNTING.
6. PROVIDE WITH PLASTER FRAME FOR SURFACE MOUNTING.

OUTSIDE AIR SUMMARY

REQUIRED:

DINING: 613 SQFT. X 0.18 CFM/SQFT. + 7.5 CFM/PERSON X 32 PERSONS = 350.34 CFM

KITCHEN: 1,930 SQFT. X 0.7 CFM/SQFT. = 1,351 CFM

OFFICE: 227 SQFT. X 0.06 CFM/SQFT. + 5 CFM/PERSON X 5 PERSONS = 38.62 CFM

TOTAL REQUIRED = 1,739.96 CFM

PROVIDED:

AH-1: 400 CFM

AH-2: 400 CFM

AH-3: 475 CFM

AH-4: 475 CFM

TOTAL PROVIDED = 1,750 CFM

cahoon + kasten
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(919) 571-1111 22170

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22035 JAMES B. DEPAPA, JR. ATLANTEC ENGINEERS PA No. C-961

Project:	Cindy's Kitchen
Project No:	21091
Location:	Caratoke Hwy. Currituck, NC
Title:	MECHANICAL
Date:	July 26, 2023
Scale:	As indicated

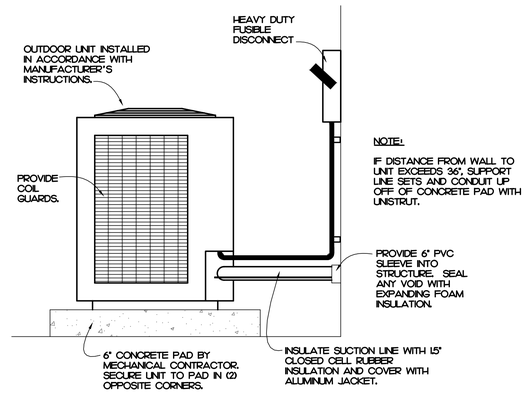
MECHANICAL NOTES, LEGENDS, AND DETAILS

Revisions:

No.	Description	Date

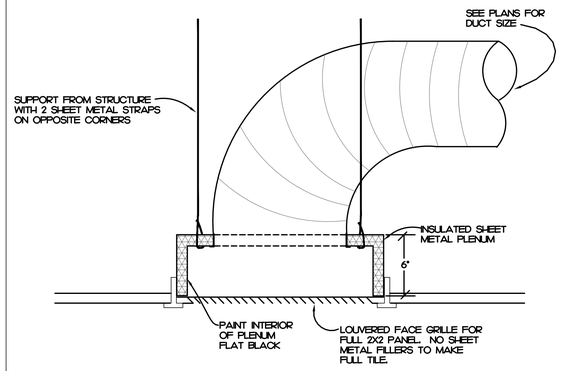
Designed: JAD
Drawn: JAD
Reviewed: JBD
Cad File:

M201



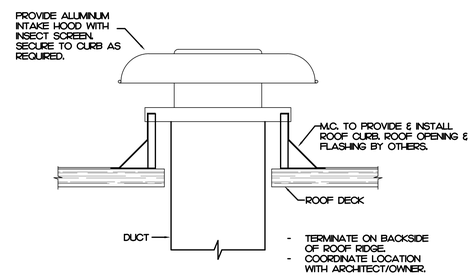
3 GROUND MOUNTED OUTDOOR UNIT DETAIL

SCALE: NOT TO SCALE



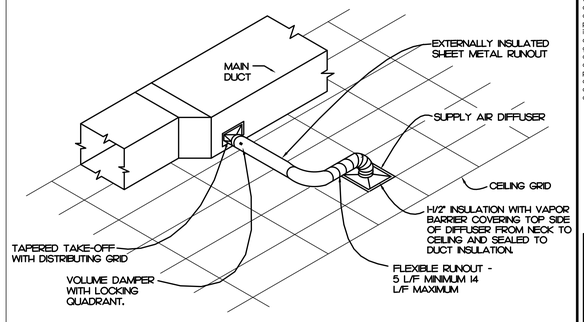
2 RETURN DIFFUSER DETAIL

SCALE: NOT TO SCALE



4 OUTSIDE AIR INTAKE DETAIL

SCALE: NOT TO SCALE



1 LAY-IN DUFFUSER DETAIL

SCALE: NOT TO SCALE

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22170

NORTH CAROLINA PROFESSIONAL CORPORATION — ATLANTEC ENGINEERS PA No. C-961

NORTH CAROLINA PROFESSIONAL SEAL 2035 ENGINEER JAMES A. DELPAPA, JR.

8/25/23

Project:	Cindy's Kitchen
Project No:	21091
Location:	Caratoke Hwy. Currituck, NC
Title:	MECHANICAL
Date:	July 26, 2023
Scale:	As indicated

MECHANICAL DETAILS CONTINUED

Revisions:

No.	Description	Date

Designed:	JAD
Drawn:	JAD
Reviewed:	JBD
Cad File:	

M202

FOR QUESTIONS, CALL THE
Eastern North Carolina
REGION 36
PHONE: (919) 825-3566
EMAIL: reg36@captiveaire.com

PATENT NUMBERS
AC-PSP (UNITED STATES) - US PATENT 7963930 B2.
AC-PSP WALL (CANADA) - CA PATENT 2820509.
AC-PSP ISLAND (CANADA) - CA PATENT 2520330.

HOOD INFORMATION - JOB#5615559

HOOD NO	TAG	MODEL	MANUFACTURER	LENGTH	MAX COOKING TEMP	TYPE	APPLIANCE DUTY	DESIGN CFM/FT	TOTAL EXH CFM	EXHAUST PLENUM RISER(S) WIDTH	LENG	HEIGHT	DIA	CFM	VEL	SP	TOTAL SUPPLY CFM	HOOD CONSTRUCTION	HOOD CONFIG END TO END	RDV	SWITCHES QUANTITY	LOCATION
1		5424 ND-2-PSP-F	CAPTIVEAIRE	11' 2"	600 DEG	I	HEAVY	200	2233			4"	18"	2233	1264	-0.710"	1786	430 SS WHERE EXPOSED	LEFT	ALONE		
2		5424 ND-2-PSP-F	CAPTIVEAIRE	11' 2"	600 DEG	I	HEAVY	200	2233			4"	18"	2233	1264	-0.710"	1786	430 SS WHERE EXPOSED	RIGHT	ALONE		
3		5424 ND-2-PSP-F	CAPTIVEAIRE	14' 0"	600 DEG	I	HEAVY	200	2800			4"	18"	2800	1584	-1.054"	2240	430 SS WHERE EXPOSED	ALONE	ALONE		

HOOD INFORMATION

HOOD NO	TAG	FILTER(S) TYPE	QTY	HEIGHT	LENGTH	EFFICIENCY @ 7 MICRONS	LIGHT(S) QTY	TYPE	WIRE GUARD	UTILITY CABINET(S) LOCATION	SIZE	FIRE SYSTEM TYPE	FIRE SYSTEM SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY	FIRE SYSTEM PIPING	HOOD HANGING WEIGHT
1		CAPTRATE SOLID FILTER	8	16"	16"	85% SEE FILTER SPEC	7	RECESSED ROUND	NO	WALL MNT	12"x66"x24"	TANK FS	4.0/4.0/4.0/4.0			YES	598 LBS
2		CAPTRATE SOLID FILTER	8	16"	16"	85% SEE FILTER SPEC	7	RECESSED ROUND	NO	RIGHT	12"x54"x24"			DCV-2222	2 LIGHT 2 FAN	YES	790 LBS
3		CAPTRATE SOLID FILTER	10	16"	16"	85% SEE FILTER SPEC	8	RECESSED ROUND	NO	RIGHT	12"x54"x24"					YES	982 LBS
4							0									NO	185 LBS

HOOD OPTIONS

HOOD NO	TAG	OPTION
1		FIELD WRAPPER 18.00" HIGH FRONT.
		BACKSPLASH 80.00" HIGH X 281.00" LONG 430 SS VERTICAL.
		LEFT SIDESPLASH 80.00" HIGH X 54.00" LONG 430 SS VERTICAL.
		LEFT END STANDOFF (FINISHED) 1" WIDE 54" LONG INSULATED.
		INSULATION FOR BACK OF HOOD.
		LEFT WALL AS END PANEL.
2		FIELD WRAPPER 18.00" HIGH FRONT, RIGHT.
		INSULATION FOR BACK OF HOOD.
		RIGHT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.
3		FIELD WRAPPER 18.00" HIGH FRONT, LEFT, RIGHT.
		BACKSPLASH 80.00" HIGH X 180.00" LONG 430 SS VERTICAL.
		INSULATION FOR BACK OF HOOD.
		RIGHT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.
		LEFT VERTICAL END PANEL 27" TOP WIDTH, 21" BOTTOM WIDTH, 80" HIGH INSULATED 430 SS.
4		FIELD WRAPPER 18.00" HIGH FRONT, LEFT, RIGHT.

PERFORATED SUPPLY PLENUM(S)

HOOD NO	TAG	POS	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S) WIDTH	LENG	DIA	CFM	SP
1		Front	135"	14"	6"	MUA	8"	36"		595	0.159"
						MUA	8"	36"		595	0.159"
						MUA	8"	36"		595	0.159"
2		Front	146"	14"	6"	MUA	8"	36"		595	0.159"
						MUA	8"	36"		595	0.159"
						MUA	8"	36"		595	0.159"
3		Front	180"	14"	6"	MUA	12"	28"		746	0.180"
						MUA	12"	28"		746	0.180"
						MUA	12"	28"		746	0.180"

WALL-MOUNT UTILITY CABINET

HOOD NO	LOCATION	SIZE	UTILITY CABINET(S) FIRE SYSTEM TYPE	FIRE SYSTEM SIZE	ELECTRICAL MODEL #	SWITCHES QUANTITY	WEIGHT
1	WALL MNT	12"x66"x24"	TANK FS	4.0/4.0/4.0/4.0			500.00 LBS

SPECIFICATION: CAPTRATE® GREASE-STOP® SOLID FILTER

THE CAPTRATE GREASE-STOP SOLID FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-BAFFLE DESIGN IN CONJUNCTION WITH A SLOTTED REAR BAFFLE DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.

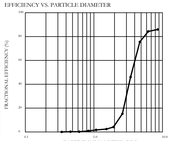
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

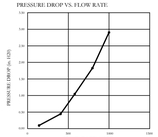
GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 10 INCHES OF WATER GAUGE.

THE CAPTRATE GREASE-STOP SOLID WAS TESTED TO ASTM STANDARD ASTM F2519-05. MANUFACTURER APPROVED FOR USE IN SOLID FUEL APPLICATIONS AS A SPARK ARRESTER.

EFFICIENCY VS. PARTICLE DIAMETER



PRESSURE DROP VS. FLOW RATE



CAPTRATE FILTERS ARE BUILT IN COMPLIANCE WITH:
NFPA #96.
NSF STANDARD #2.
UL STANDARD #1046.
INT. MECH. CODE (IMC).
ULC-S649.

GREASE DUCT & CHIMNEY SPECIFICATIONS:
PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW" ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK. MODEL "DW" IS LISTED TO UL-1978 AND IS INSTALLED USING "V" CLAMP LOCKING CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "DW" DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER THE MANUFACTURES INSTALLATION GUIDE.
PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER. PER MANUFACTURES LISTING MODEL "DW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE SLOPED 1/16" PER 12", HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12". DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE ACCUMULATION IN HORIZONTAL RUNS.

IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE UL-2221 OR UL-103 HT LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW- 2R, 2R TYPE HT, 3R, OR 3Z" ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.

CAPTIVEAIRE SYSTEMS RECOMMENDS THE USE OF LISTED, PRE-FABRICATED ROUND GREASE EXHAUST DUCT TO REDUCE STATIC PRESSURE IN THE SYSTEM, MINIMIZE INSTALLATION AND INSPECTION TIMES, AND ENSURE DUCT IS LIQUID TIGHT

HVAC DISTRIBUTION NOTE

HIGH VELOCITY DIFFUSERS OR HVAC RETURNS SHOULD NOT BE PLACED WITHIN TEN (10) FEET OF THE EXHAUST HOOD. PERFORATED DIFFUSERS ARE RECOMMENDED.

VERIFY CEILING HEIGHT

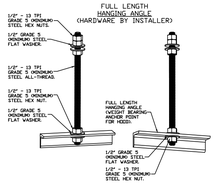
___' - ___"

HEIGHT REQUIRED TO VERIFY THAT HOOD FITS SPACE AND TO SIZE THE ENCLOSURE PANELS

CUSTOMER APPROVAL TO MANUFACTURE:

APPROVED AS NOTED ☐
APPROVED WITH NO EXCEPTION TAKEN ☐
REVISE AND RESUBMIT ☐
SIGNATURE _____
YOUR TITLE _____ DATE _____

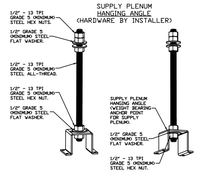
FULL LENGTH HANGING ANGLE (HARDWARE BY INSTALLER)



ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE HEX NUT BENEATH HANGING ANGLE IS ACCEPTABLE FOR FULL LENGTH HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

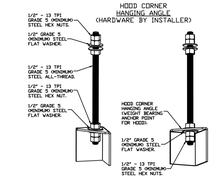
SUPPLY PLENUM HANGING ANGLE (HARDWARE BY INSTALLER)



ASSEMBLY INSTRUCTIONS

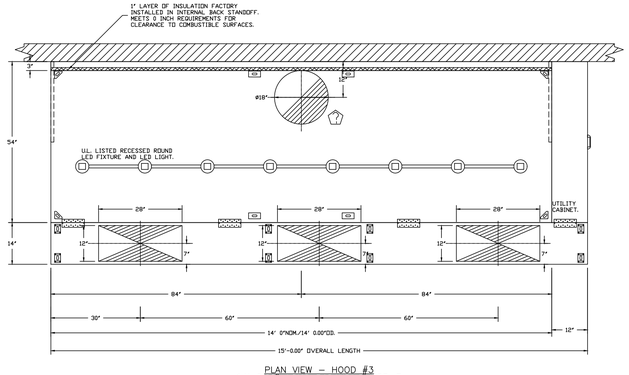
HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE HEX NUT BENEATH HANGING ANGLE IS ACCEPTABLE FOR PSP HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.

HOOD CORNER HANGING ANGLE (HARDWARE BY INSTALLER)

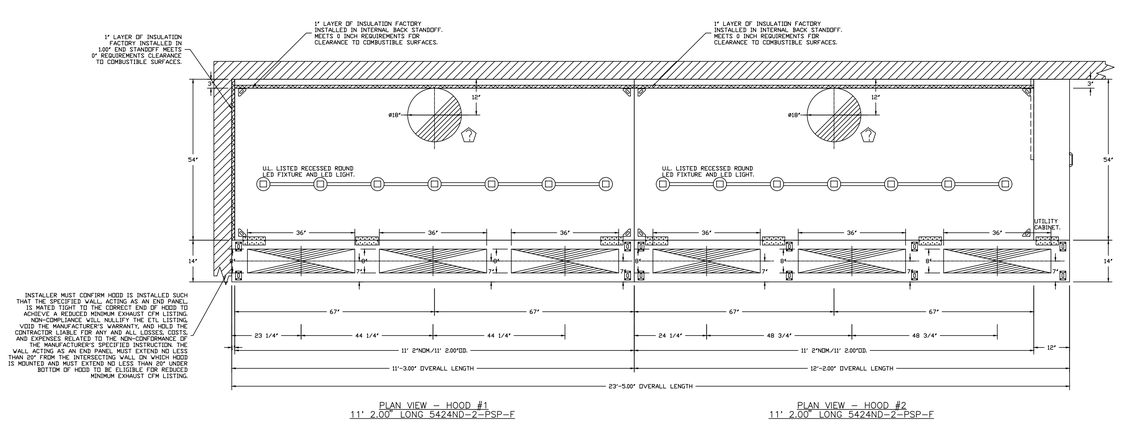


ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.



PLAN VIEW - HOOD #3
14' 0.00" LONG 5424ND-2-PSP-F
NOTE: ADDITIONAL HANGING ANGLES PROVIDED FOR HOODS 12' AND LONGER.



PLAN VIEW - HOOD #1
11' 2.00" LONG 5424ND-2-PSP-F

PLAN VIEW - HOOD #2
11' 2.00" LONG 5424ND-2-PSP-F

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH:

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH
NFPA #96
NSF
UL 710 & ULC710 STANDARDS
E.T.L. LISTED 3054804-001

REVISIONS

	DESCRIPTION	DATE:
△		
△		
△		
△		

CAPTIVEAIRE
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Cindys Kitchen - Currituck, NC
CURRITUCK, NC, 27929

DATE: 8/25/2022
DWG.#: 5615559
DRAWN BY:
SCALE: 3/8" = 1'-0"
MASTER DRAWING
SHEET NO. 1

cahoon + kasten
ARCHITECTS
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NORTH CAROLINA PROFESSIONAL ENGINEER ATLANTEC ENGINEERS PA No. C-961

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 22035 ENGINEER JAMES D. DELAPAZ 8/25/23

Project: Cindy's Kitchen
Project No: 21091
Location: Caratoke Hwy. Currituck, NC
Title: MECHANICAL
Date: July 26, 2023
Scale: As indicated

MECHANICAL HOOD DRAWINGS

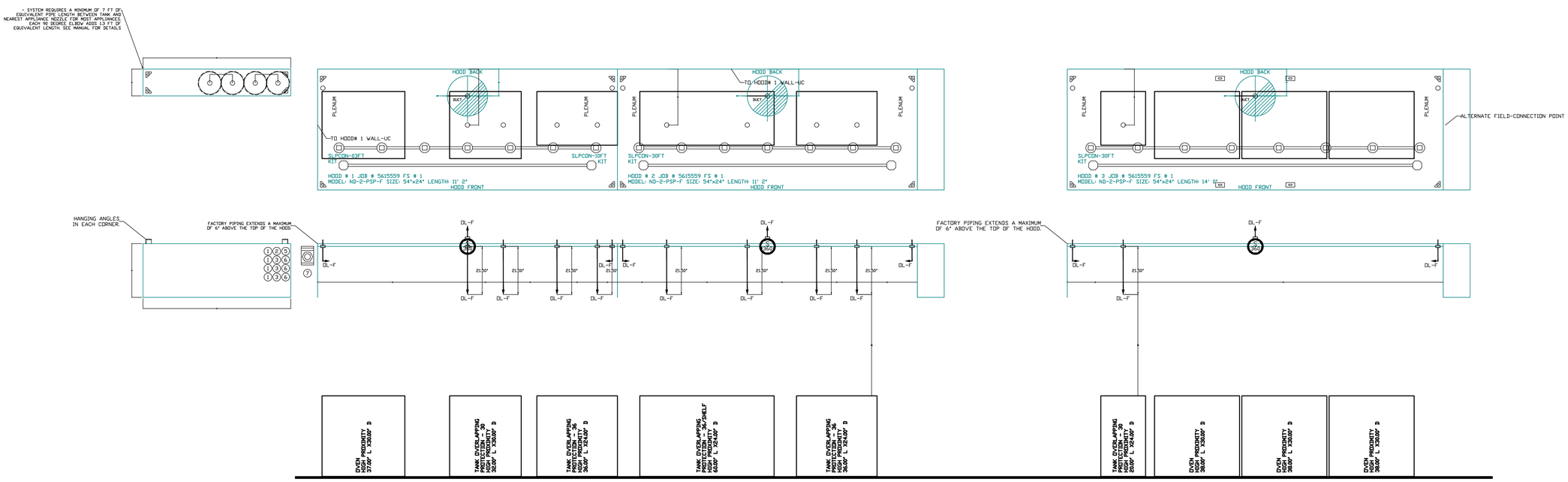
Revisions:

No.	Description	Date

Designed: JAD
Drawn: JAD
Reviewed: JBD
Cad File:

M301

UL 300 HOOD FIRE SUPPRESSION SYSTEM



NOTES
- FIELD PIPE DROPS AS SHOWN
  PIPING, ELBOWS, TEES, AND NOZZLES SUPPLIED BY CAS.
- FIELD INSTALLED DROP: FACTORY WILL PROVIDE QTY 2 60IN LONG PIECES OF CHROME PLATED PIPING SHIPPED LOOSE TO BE FIELD-INSTALLED.
- SHIP LOOSE DROP: FACTORY WILL PROVIDE THE EXACT CHROME PIPE LENGTH NEEDED SHIPPED LOOSE TO BE FIELD-INSTALLED.
- RELOCATE NOZZLES IF FLOW PATTERN IS BLOCKED BY SHELVING, SALAMANDERS, ETC.
- OVERLAPPING COVERAGE SHALL NOT BE USED ON ANY APPLIANCE WITH AN OBSTRUCTION.
- IF APPLICABLE, EXTENDED PRE-PIPED DROPS ARE SHIPPED LOOSE.
- FACTORY PIPING EXTENDS A MAXIMUM OF 6" ABOVE THE TOP OF THE HOOD.

- APPLIANCE DIMENSIONS LISTED REPRESENT THE COOKING SURFACE SIZE, NOT THE OVERALL APPLIANCE SIZE.

- THIS FIRE SYSTEM COMPLIES WITH U.L. 300 REQUIREMENTS.

- DL-F NOZZLE PART NUMBER REPLACES 3070-3/8H-10-SS

JOB #: 5615559.
JOB NAME: CINDYS KITCHEN - CURRITUCK, NC.

SYSTEM SIZE: TANK-SP-4-WC TOTAL FP REQUIRED: 77.
HOOD # 1 11' 2.00" LONG x 54" WIDE x 24" HIGH.
RISER # 1 SIZE: 1Ø" DIA.
HOOD # 1 METAL BLOW-OFF CAPS INCLUDED.
HOOD # 2 11' 2.00" LONG x 54" WIDE x 24" HIGH.
RISER # 1 SIZE: 1Ø" DIA.
HOOD # 2 METAL BLOW-OFF CAPS INCLUDED.
HOOD # 3 14' 0.00" LONG x 54" WIDE x 24" HIGH.
RISER # 1 SIZE: 1Ø" DIA.
HOOD # 3 METAL BLOW-OFF CAPS INCLUDED.

- HEAVY-DUTY APPLIANCES (RATED 600°F) WILL REQUIRE AN ADDITIONAL DOWNSTREAM FIRESTAT IN THE EVENT THAT THE DUCTWORK CONTAINS ANY HORIZONTAL RUNS OVER 25 FT IN LENGTH.
- MEDIUM TO LIGHT-DUTY APPLIANCES (RATED 450°F) WILL NOT REQUIRE ANY ADDITIONAL DOWNSTREAM DETECTION.

LEGEND - FIRE CABINET TANK SYSTEM

1 4 GALLON TANK.
2 PRIMARY ACTUATOR RELEASE.
3 SECONDARY ACTUATOR RELEASE.
4 PRESSURE SUPERVISION SWITCH.
5 PRIMARY HOSE ASSEMBLY.
6 SECONDARY HOSE ASSEMBLY.
7 REMOTE MANUAL ACTUATION DEVICE.

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH:

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH
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REVISIONS

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1		
2		
3		
4		

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Cindys Kitchen - Currituck, NC
CURRITUCK, NC, 27929

DATE: 8/25/2022

DWG.#: 5615559

DRAWN BY:

SCALE: 3/8" = 1'-0"

MASTER DRAWING

SHEET NO. 2

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22170

NORTH CAROLINA PROFESSIONAL ENGINEERING CORPORATION
ATLANTEC ENGINEERS PA No. C-961

NORTH CAROLINA PROFESSIONAL SEAL 22035 ENGINEER JOSEPH A. DELPHIA

7/25/23

Project: Cindy's Kitchen

Project No: 21091

Location: Caratoke Hwy. Currituck, NC

Title: MECHANICAL

Date: July 26, 2023

Scale: As indicated

MECHANICAL HOOD DRAWINGS (CONT.)

Revisions:

No.	Description	Date

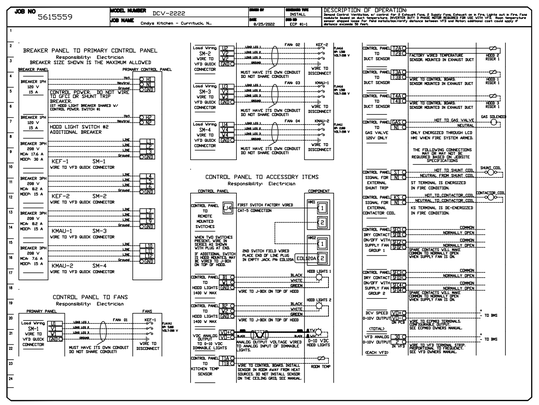
Designed: JAD
Drawn: JAD
Reviewed: JBD
Cad File:

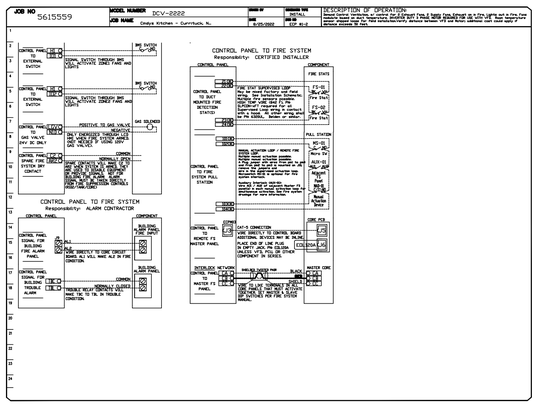
M302

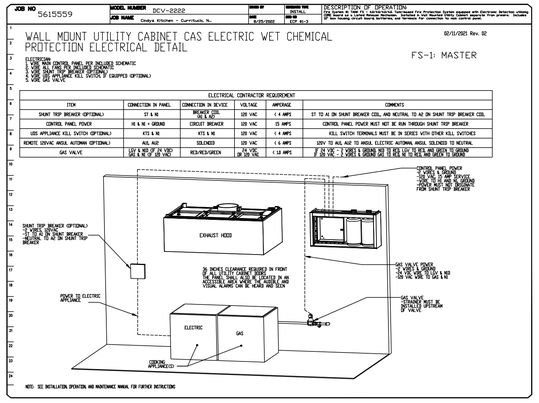
ELECTRICAL PACKAGE – JOB#5615559

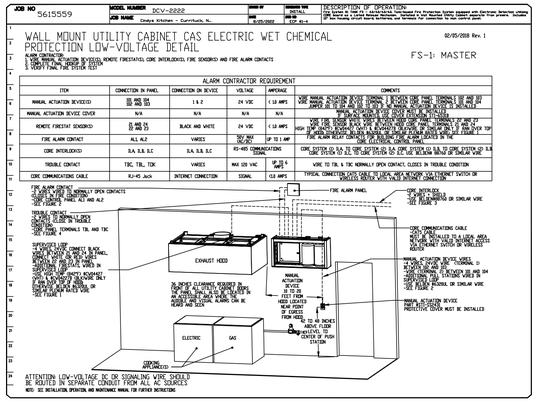
NO	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION
				LOCATION	QUANTITY	
1		DCV-2222	UTILITY CABINET RIGHT	64 – UTILITY CABINET RIGHT	2 LIGHT	SMART CONTROLS DCV
				HOOD # 2	2 FAN	
				11 – SHIP LOOSE W/ HOOD	1 FAN	
				HOOD # 4		
2		Switches				

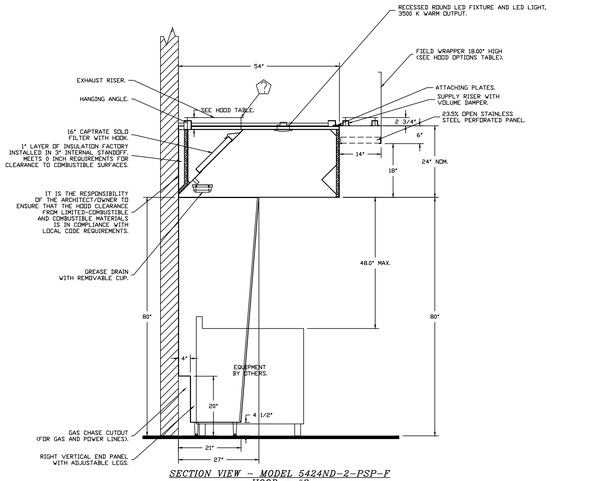
FANS CONTROLLED					
FAN TAG	TYPE	#	HP	VOLT	FLA
KEF-1	EXHAUST	3	5.000	208	14.1
KEF-2	EXHAUST	3	1.500	208	6.6
KMAU-1	SUPPLY	3	1.500	208	6.6
KMAU-2	SUPPLY	3	2.000	208	6.1







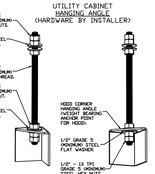


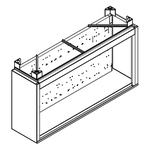


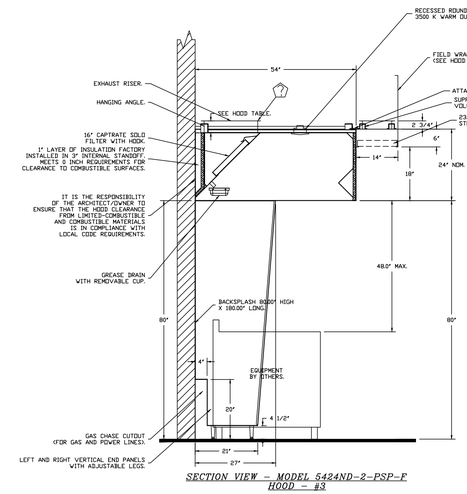
SECTION VIEW – MODEL 5424ND-2-PSP-F
HOOD – #2

WALL-MOUNT UTILITY CABINET
HANGING ANGLE
ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH UTILITY CABINET HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.







SECTION VIEW – MODEL 5424ND-2-PSP-F
HOOD – #3

EXHAUST FAN INFORMATION – JOB#5615559

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	MANUFACTURER	CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	DISCHARGE VELOCITY	WEIGHT (LBS)	SONES
1	KEF-1	1	EADU240H	ECDN-AIR	4466	1.700	954	EXPLOSIDNPROOF	5.000	2.5020	3	208	14.1	1015 FPM	395	18.031178223182
2	KEF-2	1	EADU180H	ECDN-AIR	2800	1.100	1158	ODP,PREMIUM	1.500	1.1180	3	208	6.6	647 FPM	176	15.4795751219348

MUA FAN INFORMATION – JOB#5615559

FAN UNIT NO	TAG	QTY	FAN UNIT MODEL #	BLOWER	HOUSING	MIN CFM	DESIGN CFM	ESP	RPM	MOTOR ENCL	HP	BHP	PHASE	VOLT	FLA	MCA	MOCP	WEIGHT (LBS)	SONES
3	KMAU-1	1	EA-A2-20D	20MF-2-MOD	A2	1500	3572	0.500	1255	ODP,PREMIUM	1.500	1.1310	3	208	6.6	8.3A	15A	417	13.7579655255319
4	KMAU-2	1	A1-15D	15MF-1-MOD	A1	-	2240	0.500	2027	ODP,PREMIUM	2.000	1.3500	3	208	6.1	7.7A	15A	289	28.6966582222879

FAN OPTIONS

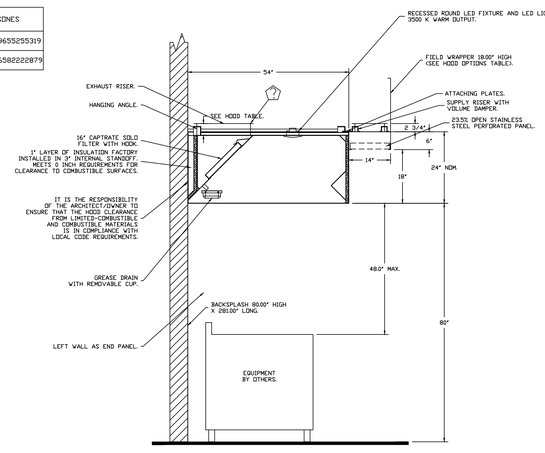
FAN UNIT NO	TAG	QTY	DESCRIPTION
1	KEF-1	1	GREASE BOX
		1	2 YEAR PARTS WARRANTY
2	KEF-2	1	GREASE BOX
		1	2 YEAR PARTS WARRANTY
3	KMAU-1	1	SIZE 2 UNTEMPERED COMMERCIAL DOWN DISCHARGE FOR DIRECT DRIVE AHUS
		1	GRAVITY BACKDRAFT DAMPER FOR SIZE 2 HOUSING
		1	2 YEAR PARTS WARRANTY
4	KMAU-2	1	SIZE 1 UNTEMPERED COMMERCIAL DOWN DISCHARGE FOR DIRECT DRIVE AHUS
		1	GRAVITY BACKDRAFT DAMPER FOR SIZE 1 HOUSING
		1	2 YEAR PARTS WARRANTY
5	EF (DISH)	1	GREASE BOX
		1	ECM WIRING PACKAGE – EXHAUST – MANUAL OR 0-10VDC REFERENCE SPEED CONTROL -MSC-(TELCO), CCW ROTATION
		1	2 YEAR PARTS WARRANTY

FAN ACCESSORIES

FAN UNIT NO	TAG	EXHAUST			SUPPLY			
		GREASE CUP	GRAVITY DAMPER	WALL MOUNT	SIDE DISCHARGE	GRAVITY DAMPER	MOTORIZED DAMPER	WALL MOUNT
1	KEF-1	YES						
2	KEF-2	YES						
3	KMAU-1					YES		
4	KMAU-2					YES		
5	EF (DISH)	YES						

CURB ASSEMBLIES

NO	ON FAN	TAG	WEIGHT	ITEM	SIZE
1	# 1	KEF-1	48 LBS	CURB	31.500"W X 31.500"L X 24.000"H ALONG LENGTH, RIGHT VENTED HINGED.
2	# 2	KEF-2	38 LBS	CURB	26.500"W X 26.500"L X 24.000"H ALONG LENGTH, RIGHT VENTED HINGED.
3	# 3	KMAU-1	42 LBS	CURB	31.000"W X 31.000"L X 15.000"H ALONG LENGTH, RIGHT.
4	# 4	KMAU-2	29 LBS	CURB	21.000"W X 21.000"L X 15.000"H ALONG LENGTH, RIGHT.
5	# 5	EF (DISH)	20 LBS	CURB	19.500"W X 19.500"L X 16.000"H 3.000-12.000 PITCH ALONG LENGTH, RIGHT.



SECTION VIEW – MODEL 5424ND-2-PSP-F
HOOD – #1

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH:

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REVISIONS

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Cindys Kitchen – Currituck, NC
CURRITUCK, NC, 27929

DATE: 8/25/2022

DWG.#: 5615559

DRAWN BY:

SCALE: 3/8" = 1'-0"

MASTER DRAWING

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NORTH CAROLINA PROFESSIONAL CORPORATION
ATLANTEC ENGINEERS PA No. C-961

NORTH CAROLINA PROFESSIONAL SEAL 22035 ENGINEER R. DELPARTE

7/25/23

Project: Cindy's Kitchen

Project No: 21091

Location: Caratoke Hwy. Currituck, NC

Title: MECHANICAL

Date: July 26, 2023

Scale: As indicated

MECHANICAL HOOD DRAWINGS (CONT.)

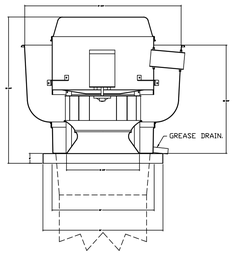
Revisions:

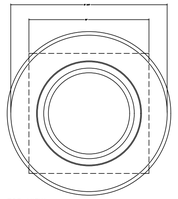
No.	Description	Date

Designed: JAD
Drawn: JAD
Reviewed: JBD
Cad File:

M303

FAN #2 EADU180H - EXHAUST FAN (KEF-2)





TOP VIEW

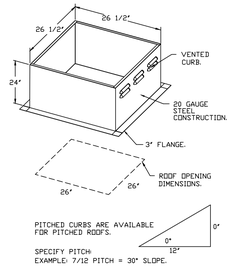
FEATURES:

- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS).
- ROOF MOUNTED FANS.
- RESTAURANT MODEL.
- UL705 AND UL762 AND ULC-S645
- VARIABLE SPEED CONTROL.
- INTERNAL WIRING.
- THERMAL OVERLOAD PROTECTION (SINGLE PHASE).
- HIGH HEAT OPERATION 300°F (149°C).
- GREASE CLASSIFICATION TESTING.
- NEMA 3R SAFETY DISCONNECT SWITCH.

NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DETERIORATING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

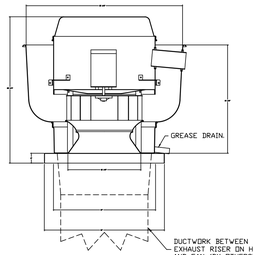
OPTIONS
GREASE BOX.
2 YEAR PARTS WARRANTY.

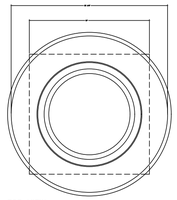


PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

SPECIFY PITCH:
EXAMPLE: 7/12 PITCH = 30° SLOPE.

FAN #5 DU036HFA - EXHAUST FAN (EF (DISH))





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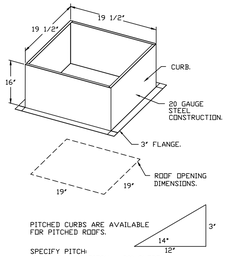
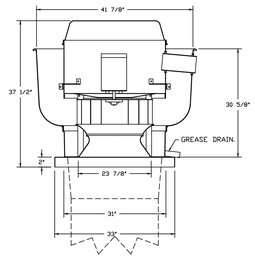
OPTIONS
GREASE BOX.
ECM WIRING PACKAGE - EXHAUST - MANUAL OR 0-10VDC REFERENCE SPEED CONTROL. -MSC- (TELCO), CCW ROTATION.
2 YEAR PARTS WARRANTY.

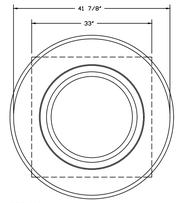


PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

SPECIFY PITCH:
EXAMPLE: 7/12 PITCH = 30° SLOPE.

FAN #1 EADU240H - EXHAUST FAN (KEF-1)





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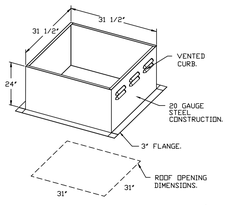
OPTIONS
GREASE BOX.
2 YEAR PARTS WARRANTY.

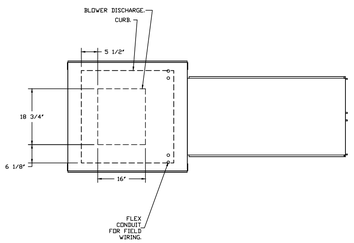


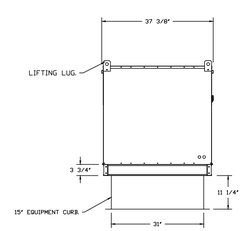
PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.

SPECIFY PITCH:
EXAMPLE: 7/12 PITCH = 30° SLOPE.

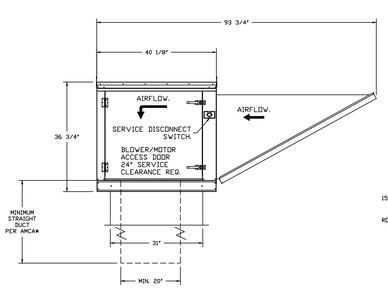
FAN #3 EA-A2-20D - SUPPLY FAN (KMAU-1)
1. UNTEMPERED SUPPLY UNIT WITH 20" MIXED FLOW DIRECT DRIVE FAN IN SIZE #2 HOUSING.
2. INTAKE HOOD WITH EZ FILTERS.
3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT.
4. DOWN DISCHARGE CONSTRUCTION FOR SIZE 2 UNTEMPERED DIRECT DRIVE AHUS.
5. GRAVITY BACK DRAFT DAMPER 22" X 24" , STANDARD GALVANIZED CONSTRUCTION, 1 1/4" REAR FLANGE, FOR SIZE 2 UNTEMPERED FAN HOUSING (SIDE).
6. HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/BLOWER SECTION).
7. 2 YEAR PARTS WARRANTY

*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT.
SUGGESTED STRAIGHT DUCT SIZE IS 20" x 20".



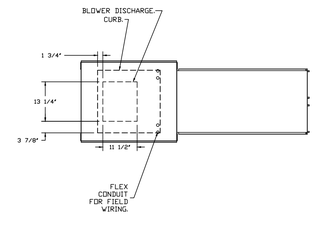


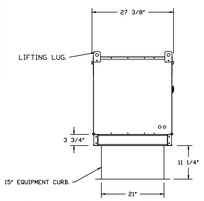
ROOF OPENING 2" SMALLER THAN CURB DIMENSION.



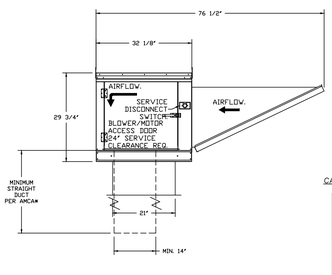
FAN #4 A1-15D - SUPPLY FAN (KMAU-2)
1. UNTEMPERED SUPPLY UNIT WITH 15" MIXED FLOW DIRECT DRIVE FAN IN SIZE #1 HOUSING.
2. INTAKE HOOD WITH EZ FILTERS.
3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT.
4. DOWN DISCHARGE CONSTRUCTION FOR SIZE 1 UNTEMPERED DIRECT DRIVE AHUS.
5. GRAVITY BACK DRAFT DAMPER 16" WIDE X 18" HIGH, STANDARD GALVANIZED CONSTRUCTION, 1 1/4" REAR FLANGE, FOR SIZE 1 UNTEMPERED FAN HOUSING (SIDE).
6. HINGED DOUBLE WALL INSULATED DOOR ASSEMBLY (BURNER/BLOWER SECTION).
7. 2 YEAR PARTS WARRANTY

*NOTE: SUPPLY DUCT MUST BE INSTALLED TO MEET SMACNA STANDARDS. A MINIMUM STRAIGHT DUCT LENGTH MUST BE MAINTAINED DOWNSTREAM OF UNIT DISCHARGE AS OUTLINED IN AMCA PUBLICATION 201. WHEN USING RECTANGULAR DUCTWORK, ELBOWS MUST BE RADIUS THROAT, RADIUS BACK WITH TURNING VANES. FLEXIBLE DUCTWORK AND SQUARE THROAT/SQUARE BACK ELBOWS SHOULD NOT BE USED. ANY TRANSITION AND/OR TURNS IN THE DUCTWORK WILL CAUSE SYSTEM EFFECT. SYSTEM EFFECT WILL DRASTICALLY INCREASE STATIC PRESSURE AND REDUCE AIRFLOW. DO NOT RELY ON UNIT TO SUPPORT DUCT IN ANY WAY. FAILURE TO PROPERLY SIZE DUCTWORK MAY CAUSE SYSTEM EFFECTS AND REDUCE PERFORMANCE OF THE EQUIPMENT.
SUGGESTED STRAIGHT DUCT SIZE IS 14" x 14".





ROOF OPENING 2" SMALLER THAN CURB DIMENSION.



CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH:

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH

NFPA #96
NSF
UL 710 & ULC710 STANDARDS
E.T.L. LISTED 3054804-001

REVISIONS

	DESCRIPTION	DATE:
1		
2		
3		
4		

CAPTIVE-AIRE

Eastern North Carolina
4641 Paragon Park Rd., Raleigh, NC, 27616 PHONE: (919) 825-3566 FAX: (919) 227-5917 EMAIL: reg36@captiveaire.com
www.captiveaire.com

Cindys Kitchen - Currituck, NC
CURRITUCK, NC, 27929

DATE: 8/25/2022

DWG.#: 5615559

DRAWN BY:

SCALE: 3/8" = 1'-0"

MASTER DRAWING

SHEET NO. 4

cahoon + kasten
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2270

NORTH CAROLINA PROFESSIONAL CORPORATION — ATLANTEC ENGINEERS PA No. C-961

NORTH CAROLINA PROFESSIONAL SEAL 22035 ENGINEER JAMES D. DAVIS, JR.

Project: Cindy's Kitchen
Project No: 21091
Location: Caratoke Hwy. Currituck, NC
Title: MECHANICAL
Date: July 26, 2023
Scale: As indicated

MECHANICAL HOOD DRAWINGS (CONT.)

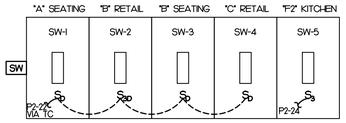
Revisions:

No.	Description	Date

Designed:	JAD
Drawn:	JAD
Reviewed:	JBD
Cad File:	

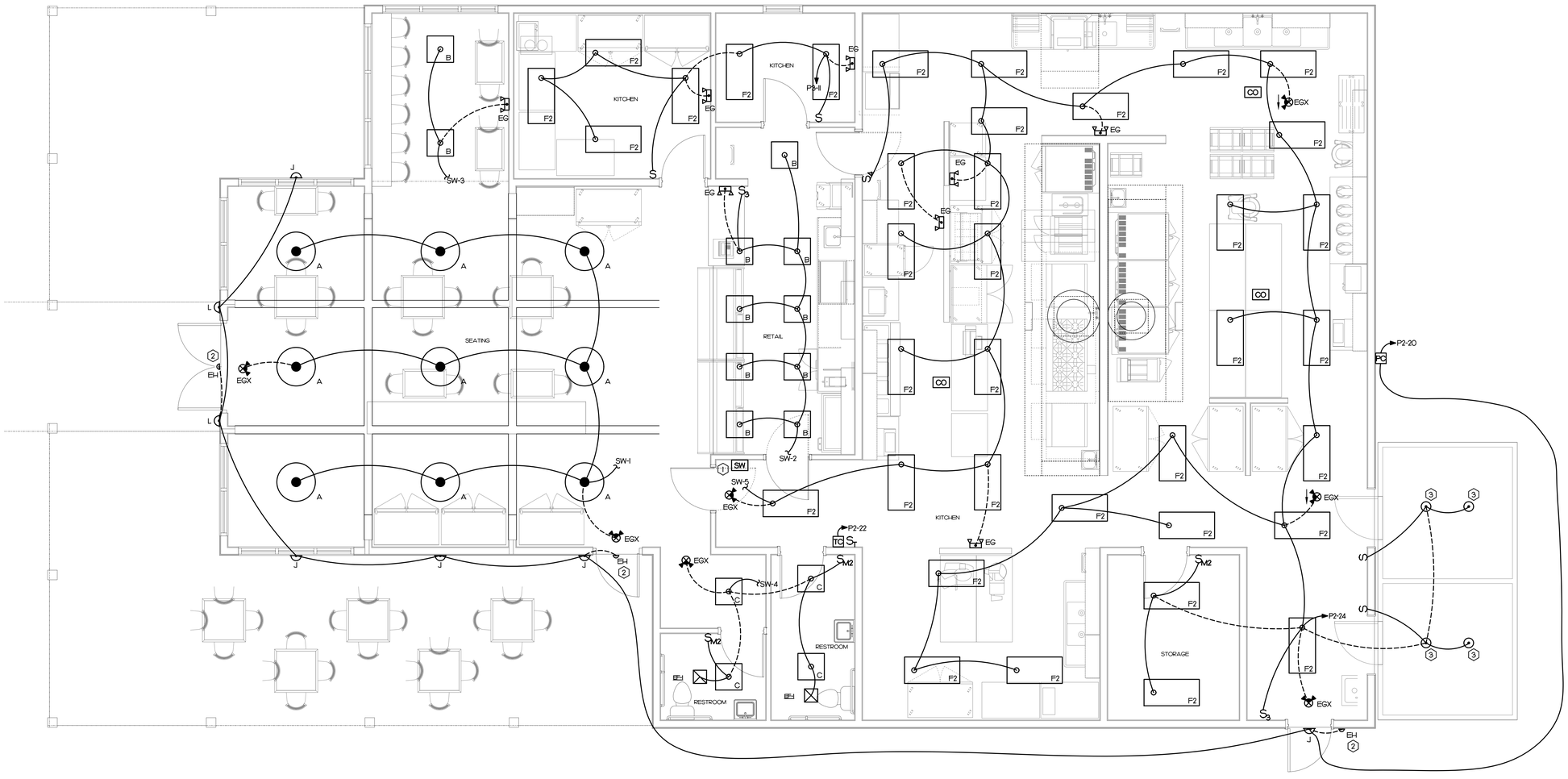
M304

2270



2 SWITCHGANG DETAIL

NOT TO SCALE



1 LIGHTING PLAN

SCALE: 1/4" = 1'-0"

KEY NOTES

1. SEE 2/E101 FOR DETAILS
2. FIXTURE TO BE USED AS EXTERIOR EMERGENCY LIGHT. CONNECT BATTERY BACKUP AHEAD OF PHOTOCELL CONTROL
3. LIGHT FIXTURE BY OTHERS. E.C. TO MAKE FINAL CONNECTION TO FIXTURE AND FIELD COORDINATE LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN

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NORTH CAROLINA PROFESSIONAL CORPORATION — ATLANTEC ENGINEERS PA No. C-961

8/3/23

NORTH CAROLINA PROFESSIONAL SEAL 17382 ENGINEER DAVID J. WHITING

Project:	Cindy's Kitchen
Project No:	21091
Location:	Caratoke Hwy. Currituck, NC
Title:	Trade Plan
Date:	July 26, 2023
Scale:	As indicated

LIGHTING PLAN

Revisions:

No.	Description	Date

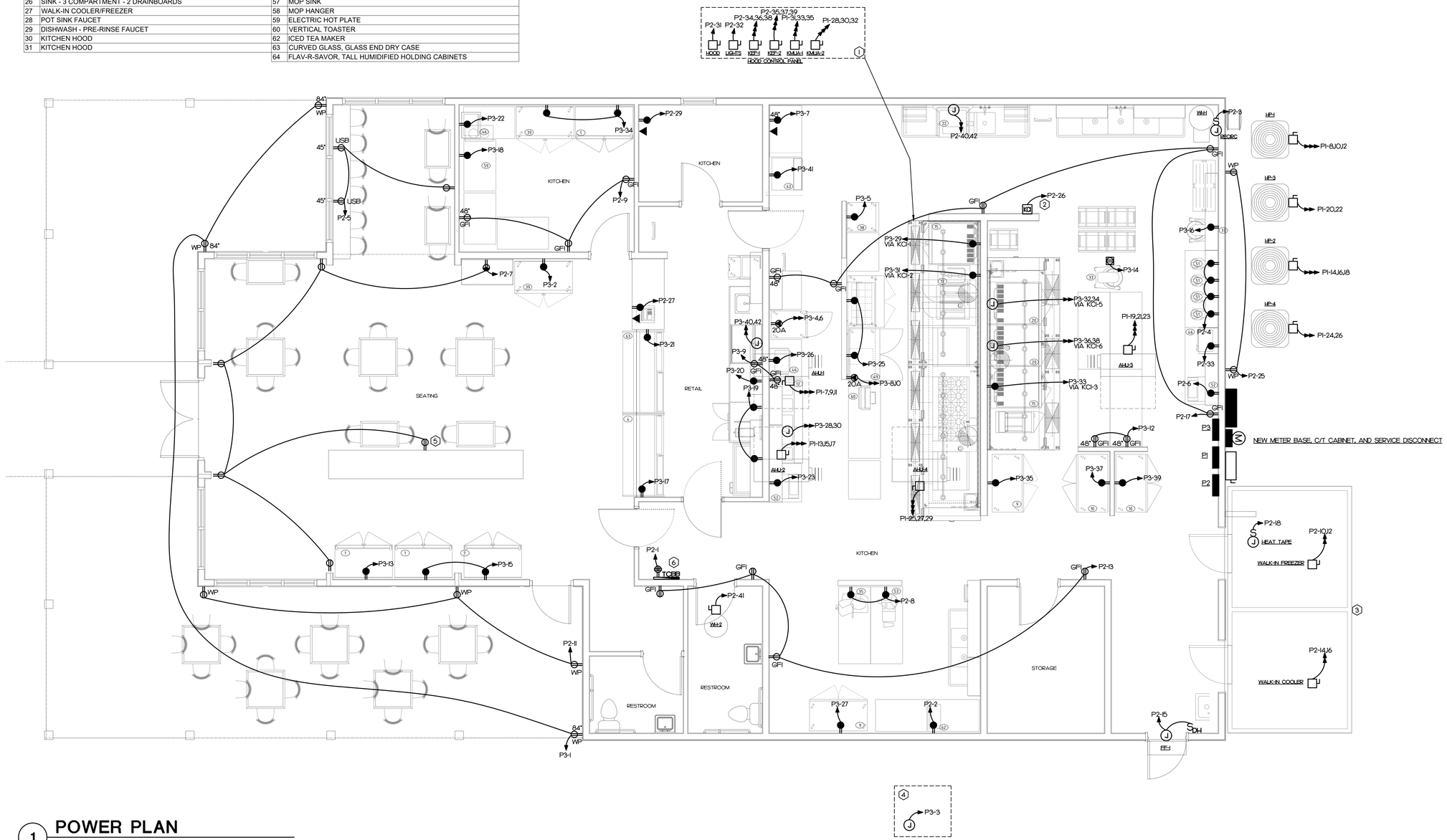
Designed:	SWM
Drawn:	SWM
Reviewed:	DJW
Cad File:	

E101

Specialty Equipment Schedule			
#	Description	#	
1	MERCHANDISER REFRIGERATOR	32	DISHWASHER HOOD
2	WORK TABLE	33	MIXER - 30 QT
3	SHELVING	34	WORK TABLE - 72"
4	CURVED GLASS, GLASS END REFRIGERATOR	35	SLICER
5	ESPRESSO MACHINE	36	WORK TABLE
6	COFFEE MAKER	37	CASH REGISTER
7	HAND SINK	38	REACH-IN SOLID SWING DOOR REFRIGERATOR
8	ICE CREAM CHEST, DIPWELL AND INSTALL KIT	39	REACH-IN GLASS SWING DOOR FREEZER
9	REACH-IN SOLID SWING DOOR REFRIGERATOR	40	WORK TABLE
10	REACH-IN SOLID SWING DOOR FREEZER	41	ICE CADDIES
11	UNDERCOUNTER REFRIGERATOR	42	ICE MAKER
12	WATER BATH HOT FOOD TABLE	43	SS WALL SHELF
13	GRIDDLE	44	DRANABLE SHELF
14	RANGE	45	PREP TABLE
15	OVEN - GAS	46	MICROWAVE
16	FRYER	47	MICROWAVE SHELF
17	FRY WARMER	48	SS WALL SHELF
18	FILLER TABLE	49	WORKTOP FREEZER
19	FRYER	50	DUNNAGE RACK
20	OVEN - ELECTRIC	51	MIXER - 5 QT (BY OWNER)
21	DISHWASH - CLEAN TABLE	52	WRAPPER
22	DISHWASHER	53	FOOD CUTTER
23	DISHWASH - SOIL TABLE	54	SS WALL SHELF
24	SHEET PAN RACK	55	SS WALL SHELF
25	SINK - 2 COMPARTMENT - 2 DRAINBOARDS	56	MOP SINK
26	SINK - 3 COMPARTMENT - 2 DRAINBOARDS	57	MOP SINK
27	WALK-IN COOLER/FREEZER	58	MOP HANGER
28	POT SINK FAUCET	59	ELECTRIC HOT PLATE
29	DISHWASH - PRE-RINSE FAUCET	60	VERTICAL TOASTER
30	KITCHEN HOOD	62	ICED TEA MAKER
31	KITCHEN HOOD	63	CURVED GLASS, GLASS END DRY CASE
		64	FLAV-R-SAVOR, TALL HUMIDIFIED HOLDING CABINETS

KEY NOTES

1. SEE 1/E301 FOR DETAILS
2. SEE 2/E301 FOR DETAILS
3. E.C. TO FIELD VERIFY ELECTRICAL CONNECTIONS FOR WALK-IN COOLER/FREEZER AND NOTIFY ENGINEER IF DIFFERENT
4. LIGHTING CIRCUIT FOR PARKING LOT LIGHTS. FIELD COORDINATE LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN
5. RECEPTACLE TO BE FED FROM BELOW. E.C. TO CUT AND PATCH FLOOR AS REQUIRED
6. COMMUNICATION BOARD.
   - STUB 2-3" EMPTY CONDUITS TO PROPERTY LINE PER COMMUNICATION SERVICE COMPANY. PROVIDE WITH PULL WIRE.
   - PROVIDE GROUND BAR AND 1-#6G CU IN 1/2" TO MAIN GROUNDING AT SERVICE EQUIPMENT.
   - MOUNT RECEPTACLE ON BOARD TO ACCOMMODATE EQUIPMENT.



1 POWER PLAN

SCALE: 1/4" = 1'-0"

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22170

NORTH CAROLINA PROFESSIONAL CORPORATION — ATLANTEC ENGINEERS PA No. C-961

2/3/23

NORTH CAROLINA PROFESSIONAL SEAL 17382 ENGINEER DAVID J. WHITNEY

Project:	Cindy's Kitchen
Project No:	21091
Location:	Caratoke Hwy. Currituck, NC
Title:	Trade Plan
Date:	July 26, 2023
Scale:	As indicated

POWER PLAN

Revisions:

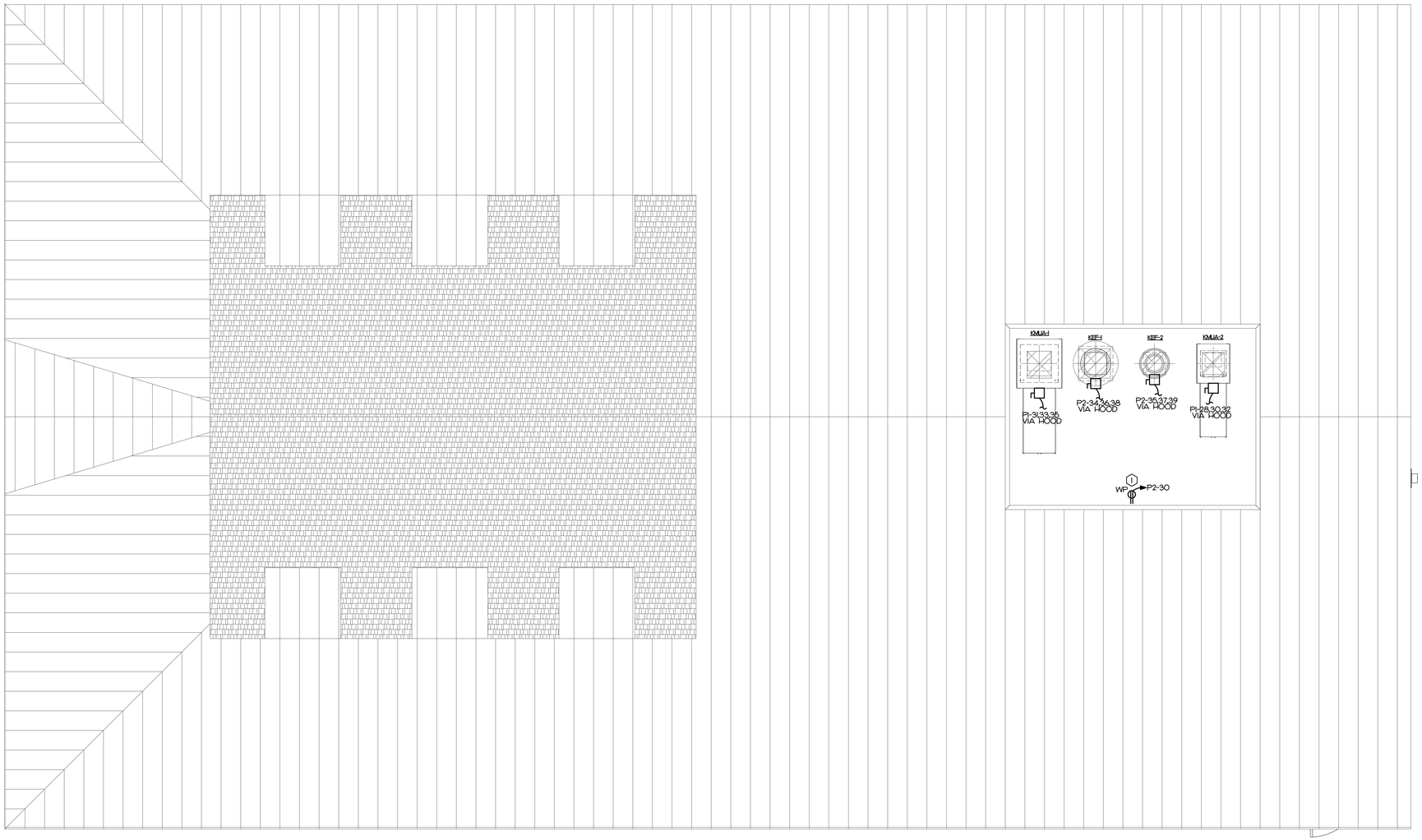
No.	Description	Date

Designed:	SWM
Drawn:	SWM
Reviewed:	DJW
Cad File:	

E102

KEY NOTES

1. SERVICE RECEPTACLE FOR ROOFTOP EQUIPMENT, E.C. TO ENSURE NO DISCONNECT IS MORE THAN 25' FROM A SERVICE RECEPTACLE



1 ROOF PLAN

SCALE: 1/4" = 1'-0"

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ATLANTEC ENGINEERS PA
No. C-961

NORTH CAROLINA PROFESSIONAL SEAL 17382 ENGINEER DAVID J. WHITNEY

Project:	Cindy's Kitchen
Project No:	21091
Location:	Caratoke Hwy. Currituck, NC
Title:	Trade Plan
Date:	July 26, 2023
Scale:	As indicated

ROOF ELECTRICAL PLAN

Revisions:

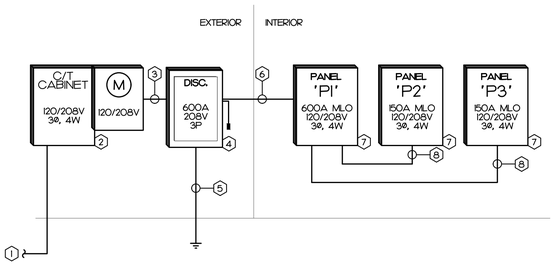
No.	Description	Date

Designed:	SWM
Drawn:	SWM
Reviewed:	DJW
Cad File:	

E103

KEY NOTES

1. NEW 120/208V, 3Φ, 4W UNDERGROUND SERVICE CONDUCTORS:
   - (2) SETS OF (4) #350 IN 3" CONDUIT
   - E.C. TO PROVIDE A PRICE PER FOOT.
   - IF LOCAL UTILITY PROVIDES UNDERGROUND SERVICE CONDUCTORS, E.C. TO PROVIDE OWNER WITH A CREDIT
2. NEW C/T CABINET AND METER BASE ACCORDING TO LOCAL UTILITY
3. NEW SERVICE ENTRANCE CONDUTORS:
   - (2) SETS OF (4) #350 IN 3" CONDUIT
4. PROVIDE A 600A, 208 VOLT, 3-POLE, NEMA 4X FUSED SERVICE RATED DISCONNECT. FUSE AT 600 AMPS WITH MINIMUM 100KAIC RATED CURRENT LIMITING FUSES. E.C. SHALL FIELD VERIFY AVAILABLE MAXIMUM FAULT CURRENT WITH UTILITY AND PROVIDE LABEL INDICATING THE CURRENT ON DISCONNECT PER NEC 110.24(A)
5. NEW GROUNDING ELECTRODE CONDUCTORS PER NEC 250:
   - (1) #2/0G IN 3/4" CONDUIT TO BUILDING STEEL, C.W. MAIN
   - (1) #6G IN 1/2" CONDUIT TO 2 DRIVEN RODS
   - (1) #4G IN 1/2" CONDUIT TO REINFORCED STEEL AT CONCRETE FOOTING
6. NEW FEEDER:
   - (2) SETS OF (4) #350, (1) #2G IN 3" CONDUIT
7. NEW PANELBOARD. SEE PANEL SCHEDULE FOR DETAILS
8. NEW FEEDER. SEE PANEL SCHEDULE FOR DETAILS



1 **POWER RISER**
NOT TO SCALE

2018 NORTH CAROLINA ENERGY CODE

ELECTRICAL SYSTEM AND EQUIPMENT METHOD OF COMPLIANCE: PRESCRIPTIVE

	LIGHTING SCHEDULE:			
LAMP TYPE REQUIRED:	FLUORESCENT T8/T5	LED	CFL	INCAN
NUMBER OF LAMPS:	N/A	SEE	N/A	N/A
BALLAST TYPE USED:	N/A	FIXTURE	N/A	N/A
NUMBER OF BALLASTS:	N/A	SCHEDULE	N/A	N/A
TOTAL WATTAGE PER FIXTURE:	N/A		N/A	N/A

	SPECIFIED	ALLOWED BY CODE
INTERIOR WATTAGE		
FOOD PREPARATION AREA	↓	5272
TOTAL	3514	4749 **
EXTERIOR WATTAGE	ZONE 3	
ALLOWANCE	442	750

NOTES:

1. ** PER SECTION C406.3, THE WHOLE AREA ALLOWED BY CODE IS REQUIRED TO BE 10% LOWER THAN THOSE CALCULATED PER SECTION C405.4.2.
   - VALUE CALCULATE PER SECTION C405.4.2: 5272 WATTS
   - VALUE PER SECTION C406.3: 4749 WATTS
2. ALL EXTERIOR LIGHTS:
   - CONTROLLED BY PHOTOCELL THAT WILL NOT INTENDED TO BE ON FOR 24 HOUR OPERATION.

DESIGNER STATEMENT:
TO THE BEST OF MY KNOWLEDGE AND BELIEF, THE DESIGN OF THIS BUILDING COMPLIES WITH THE ELECTRICAL SYSTEM AND EQUIPMENT REQUIREMENTS OF THE NORTH CAROLINA STATE BUILDING CODE, 2018 - ENERGY.

SIGNED:
NAME: DAVID J. WHITNEY, P.E.
TITLE: ENGINEER

PANEL P1 — 120/208V, 3 PHASE, 4 WIRE

CKT	DESCRIPTION	KVA	C	G	W	CB	CKT	CKT	CB	W	G	C	KVA	DESCRIPTION	CKT
1	PANEL P2	11.5	2	6	1/0	150	1	2	150	1/0	6	2	23.9	PANEL P3	2
3		23.1	--	--	1/0	3P	3	4	3P	1/0	--	--	23.3		4
5		22.9	--	--	1/0	--	5	6	--	1/0	--	--	19.7		6
7	AHU-1	4.3	1	10	8	45	7	8	30	10	10	3/4	1.8	HP-1	8
9		4.3	--	--	8	3P	9	10	3P	10	--	--	1.8		10
11		4.3	--	--	8	--	11	12	--	10	--	--	1.8		12
13	AHU-2	4.3	1	10	8	45	13	14	30	10	10	3/4	1.8	HP-2	14
15		4.3	--	--	8	3P	15	16	3P	10	--	--	1.8		16
17		4.3	--	--	8	--	17	18	--	10	--	--	1.8		18
19	AHU-3	4.5	1	10	8	50	19	20	35	8	10	1	1.8	HP-3	20
21		4.5	--	--	8	3P	21	22	2P	8	--	--	1.8		22
23		4.5	--	--	8	--	23	24	35	8	10	1	1.8	HP-4	24
25	AHU-4	4.5	1	10	8	50	25	26	2P	8	--	--	1.8		26
27		4.5	--	--	8	3P	27	28	15	12	12	1/2	0.9	KMUA-2	28
29		4.5	--	--	8	--	29	30	3P	12	--	--	0.9		30
31	KMUA-1	1.0	1/2	12	15	31		32	--	12	--	--	0.9		32
33		1.0	--	--	12	3P	33	34	--	--	--	--	0.0	SPACE ONLY	34
35		1.0	--	--	12	--	35	36	--	--	--	--	0.0	SPACE ONLY	36
37	SPACE ONLY	0.0	--	--	--	--	37	38	--	--	--	--	0.0	SPACE ONLY	38
39	SPACE ONLY	0.0	--	--	--	--	39	40	--	--	--	--	0.0	SPACE ONLY	40
41	SPACE ONLY	0.0	--	--	--	--	41	42	--	--	--	--	0.0	SPACE ONLY	42

DESCRIPTION	CONNECTED KVA	DEMAND FACTOR	DEMAND KVA
CONT. LOAD	4.82	125%	6.03
RECEPTACLE	6.66	100%/50%	6.66
MTRS/COOLS	43.81	100%	43.81
HEATS	43.20	100%	43.20
WATER HEATER	1.50	100%	1.50
EQUIPMENT	2.80	100%	2.80
KITCHEN EQUIP.	98.05	65%	63.73
SPECIAL EQ.	0.00	100%	0.00
25% OF LARGEST HVAC/MOTOR			3.23
TOTAL DEMAND			170.95

600 A MINIMUM BUS SIZE
MAIN LUGS ONLY
22 K MINIMUM AIC RATING

SURFACE MOUNTING
NEMA 1 ENCLOSURE
GROUND BAR

NOTES
1. SQUARE D: NQ
2. E.C. TO PROVIDE GFCI BREAKER
3. E.C. TO PROVIDE LOCK-OFF PROVISION
4.
5.

CONNECTED LOADS	
PHASE A:	62.1 KVA
PHASE B:	71.3 KVA
PHASE C:	67.5 KVA
TOTAL:	200.8 KVA
DEMAND	475 AMP

PANEL P2 — 120/208V, 3 PHASE, 4 WIRE

CKT	DESCRIPTION	KVA	C	G	W	CB	CKT	CKT	CB	W	G	C	KVA	DESCRIPTION	CKT
1	REC TCBB	0.4	1/2	12	12	20	1	2	20	12	12	1/2	1.7	NOTE 2 TEA MAKER	2
3	WH-1 RECIRC	0.5	1/2	12	12	20	3	4	20	12	12	1/2	1.4	NOTE 2 MIXERS KITCHEN	4
5	REC SEATING	0.4	1/2	12	12	20	5	6	20	12	12	1/2	0.7	NOTE 2 WRAPPER KITCHEN	6
7	REC SEATING	1.1	1/2	12	12	20	7	8	20	12	12	1/2	1.3	NOTE 2 CUTTERS KITCHEN	8
9	REC KITCHEN	0.4	1/2	12	12	20	9	10	30	10	10	3/4	2.1	WALK-IN FREEZER	10
11	REC EXTERIOR	0.5	1/2	12	12	20	11	12	2P	10	--	--	2.1		12
13	REC STORAGE, KITCHEN	0.9	1/2	12	12	20	13	14	20	12	12	1/2	1.2	WALK-IN COOLER	14
15	FF-1	1.2	1/2	12	12	20	15	16	2P	12	--	--	1.2		16
17	REC KITCHEN	0.5	1/2	12	12	20	17	18	20	12	12	1/2	1.5	NOTE 4 HEAT TAPE	18
19	SPARE	0.0	--	--	--	20	19	20	20	12	12	1/2	0.4	LTS EXTERIOR	20
21	SPARE	0.0	--	--	--	20	21	22	20	12	12	1/2	1.0	LTS SEATING, RETAIL	22
23	SPARE	0.0	--	--	--	20	23	24	20	12	12	1/2	1.6	LTS KITCHEN, STORAGE	24
25	REC EXTERIOR	0.2	1/2	12	12	20	25	26	20	12	12	1/2	0.3	NOTE 3 CONTACTOR KC1	26
27	REC POS NOTE 2	0.2	1/2	12	12	20	27	28	--	--	--	--	0.0	SHUNT TRIP	28
29	REC POS NOTE 2	0.2	1/2	12	12	20	29	30	20	12	12	1/2	0.2	REC ROOF	30
31	HOOD CONTROL POWER	0.5	1/2	12	12	20	31	32	20	12	12	1/2	0.5	HOOD LIGHT SWITCH	32
33	MICROWAVE KITCHEN	1.5	1/2	12	12	20	33	34	30	10	10	3/4	2.1	KEF-1	34
35	KEF-2	1.0	1/2	12	12	15	35	36	3P	10	--	--	2.1		36
37		1.0	--	--	12	3P	37	38	--	10	--	--	2.1		38
39		1.0	--	--	12	--	39	40	125	1	6	2	10.6	DISHWASHER KITCHEN	40
41	WH-2	1.5	1/2	12	12	20	41	42	2P	1	--	--	10.6		42

DESCRIPTION	CONNECTED KVA	DEMAND FACTOR	DEMAND KVA
CONT. LOAD	2.91	125%	3.63
RECEPTACLE	4.86	100%/50%	4.86
MTRS/COOLS	10.60	100%	10.60
HEATS	0.00	100%	0.00
WATER HEATER	1.50	100%	1.50
EQUIPMENT	2.80	100%	2.80
KITCHEN EQUIP.	34.84	65%	22.65
SPECIAL EQ.	0.00	100%	0.00
25% OF LARGEST HVAC/MOTOR			1.58
TOTAL DEMAND			47.61

150 A MINIMUM BUS SIZE
MAIN LUGS ONLY
10 K MINIMUM AIC RATING

SURFACE MOUNTING
NEMA 1 ENCLOSURE
GROUND BAR

NOTES
1. SQUARE D: NQ
2. E.C. TO PROVIDE GFCI BREAKER
3. E.C. TO PROVIDE LOCK-OFF PROVISION
4. E.C. TO PROVIDE GFPE BREAKER
5.

CONNECTED LOADS	
PHASE A:	11.5 KVA
PHASE B:	23.1 KVA
PHASE C:	22.9 KVA
TOTAL:	57.5 KVA
DEMAND	132 AMP

PANEL P3 — 120/208V, 3 PHASE, 4 WIRE

CKT	DESCRIPTION	KVA	C	G	W	CB	CKT	CKT	CB	W	G	C	KVA	DESCRIPTION	CKT
1	REC EXTERIOR	0.5	1/2	12	12	20	1	2	20	12	12	1/2	1.3	NOTE 2 RETAIL FREEZER	2
3	LTS PARKING LOT NOTE 3	1.5	1/2	12	12	20	3	4	20	12	12	1/2	0.9	NOTE 2 HOLDING CABINET	4
5	REFRIGERATOR KITCHEN NOTE 2	0.4	1/2	12	12	20	5	6	2P	12	--	--	0.9		6
7	REC KITCHEN NOTE 2	0.5	1/2	12	12	20	7	8	20	12	12	1/2	1.4	NOTE 2 UPRIGHT TOASTER	8
9	REC. RETAIL, KITCHEN	0.4	1/2	12	12	20	9	10	2P	12	--	--	1.4		10
11	LTS KITCHEN	0.4	1/2	12	12	20	11	12	20	12	12	1/2	0.4	REC KITCHEN	12
13	MERCHANDISER RETAIL NOTE 2	0.8	1/2	12	12	20	13	14	20	12	12	1/2	1.8	NOTE 2 MIXER KITCHEN	14
15	MERCHANDISER RETAIL NOTE 2	1.7	1/2	12	12	20	15	16	20	12	12	1/2	1.8	NOTE 2 MIXER KITCHEN	16
17	REFRIGERATOR RETAIL NOTE 2	1.4	1/2	12	12	20	17	18	20	12	12	1/2	1.5	NOTE 2 HOT PLATE KITCHEN	18
19	REFRIGERATOR RETAIL NOTE 2	0.7	1/2	12	12	20	19	20	20	12	12	1/2	1.7	NOTE 2 COFFEE MAKER	20
21	REFRIGERATOR RETAIL NOTE 2	0.8	1/2	12	12	20	21	22	20	12	12	1/2	1.5	NOTE 2 MICROWAVE KITCHEN	22
23	WRAPPER KITCHEN NOTE 2	0.8	1/2	12	12	20	23	24	20	12	12	1/2	0.8	NOTE 2 REFRIGERATOR KITCHEN	24
25	FREEZER KITCHEN NOTE 2	1.0	1/2	12	12	20	25	26	20	12	12	1/2	1.9	NOTE 2 MICROWAVE KITCHEN	26
27	REFRIGERATOR KITCHEN NOTE 2	0.6	1/2	12	12	20	27	28	30	10	10	3/4	1.9	NOTE 2,3 HOT TABLE KITCHEN	28
29	OVEN KITCHEN NOTE 2	1.1	1/2	12	12	20	29	30	2P	10	--	--	1.9		30
31	WARMER KITCHEN NOTE 2	0.5	1/2	12	12	20	31	32	60	6	10	1	5.2	NOTE 2,3 OVEN KITCHEN	32
33	OVEN KITCHEN NOTE 2	1.1	1/2	12	12	20	33	34	2P	6	--	--	5.2		34
35	REFRIGERATOR KITCHEN NOTE 2	0.6	1/2	12	12	20	35	36	60	6	10	1	5.2	NOTE 2,3 OVEN KITCHEN	36
37	FREEZER KITCHEN NOTE 2	1.2	1/2	12	12	20	37	38	2P	6	--	--	5.2		38
39	FREEZER KITCHEN NOTE 2	1.2	1/2	12	12	20	39	40	40	8	10	1	3.3	NOTE 3 ESPRESSO MACHINE	40
41	ICE MAKER KITCHEN NOTE 2	1.2	1/2	12	12	20	41	42	2P	8	--	--	3.3		42

DESCRIPTION	CONNECTED KVA	DEMAND FACTOR	DEMAND KVA
CONT. LOAD	1.92	125%	2.40
RECEPTACLE	1.80	100%/50%	1.80
MTRS/COOLS	0.00	100%	0.00
HEATS	0.00	100%	0.00
WATER HEATER	0.00	100%	0.00
EQUIPMENT	0.00	100%	0.00
KITCHEN EQUIP.	63.21	65%	41.08
SPECIAL EQ.	0.00	100%	0.00
25% OF LARGEST HVAC/MOTOR			2.60
TOTAL DEMAND			47.88

150 A MINIMUM BUS SIZE
MAIN LUGS ONLY
10 K MINIMUM AIC RATING

SURFACE MOUNTING
NEMA 1 ENCLOSURE
GROUND BAR

NOTES
1. SQUARE D: NQ
2. E.C. TO PROVIDE GFCI BREAKER
3. E.C. TO PROVIDE LOCK-OFF PROVISION
4.
5.

CONNECTED LOADS	
PHASE A:	23.9 KVA
PHASE B:	23.3 KVA
PHASE C:	19.7 KVA
TOTAL:	66.9 KVA
DEMAND	133 AMP

2 **PANEL SCHEDULES**
NOT TO SCALE

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NORTH CAROLINA PROFESSIONAL CORPORATION — ATLANTEC ENGINEERS PA No. C-961

8/3/23

NORTH CAROLINA PROFESSIONAL SEAL 17382 ENGINEER DAVID J. WHITNEY

Project: Cindy's Kitchen
Project No: 21091
Location: Caratoke Hwy. Currituck, NC
Title: Trade Plan
Date: July 26, 2023
Scale: As indicated

POWER RISER
PANEL SCHEDUELS

Revisions:

No.	Description	Date

Designed: SWM
Drawn: SWM
Reviewed: DJW
Cad File:

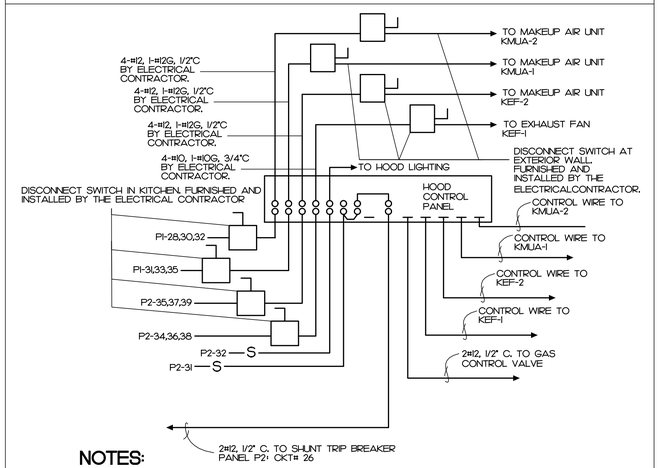
E201

SYMBOL LEGEND

SYMBOL	DESCRIPTION	REMARKS
▭ o	2 X 4 LAY-IN FIXTURE - LETTER DESIGNATES TYPE	SEE FIXTURE SCHED.
▫ o	2 X 2 LAY-IN FIXTURE - LETTER DESIGNATES TYPE	SEE FIXTURE SCHED.
o	LINEAR STRIP FIXTURE - LETTER DESIGNATES TYPE	SEE FIXTURE SCHED.
⊙	PENDANT/SURFACE MOUNT FIXTURE - LETTER DESIGNATES TYPE	SEE FIXTURE SCHED.
◡	WALL SCONCE LIGHT FIXTURE - LETTER DESIGNATES TYPE	SEE FIXTURE SCHED.
	EMERGENCY WITH EXIT LIGHT - CONNECT UNSWITCHED	SEE FIXTURE SCHED.
	BATTERY BACKUP EMERGENCY LIGHT - CONNECT UNSWITCHED	SEE FIXTURE SCHED.
PC	PHOTOCELL, 105-305VAC, 50/60HZ, 1800VA BALLAST LOAD 1000W TUNGSTEN LOAD, 8A LED LOAD (LP TO 2220W @277V)	TORK: ZSSI24
TC	DIGITAL TIME CLOCK, 1-20A 120VAC NO. CONTACTS. 7 DAY FORMAT, ASTRONOMIC/DAY LIGHT SAVING ADJUSTMENT, 7 DAY SCHEDULE POWER BACKUP, OPTION FOR PHOTOCELL CONTROL.	TORK: DGUIOOA
CO	LOCAL CARBON MONOXIDE ALARM. BATTERY POWERED.	GENTEX OR EQUAL
S	SINGLE POLE TOGGLE SWITCH, MOUNT 42" A.F.F. UNLESS NOTED OTHERWISE.	HUBBELL 1221-** WITH NPJI COVER PLATE
S_3	THREE WAY TOGGLE SWITCH, MOUNT 42" A.F.F. UNLESS NOTED OTHERWISE.	HUBBELL 1223-** WITH NPJI COVER PLATE
S_4	FOUR WAY TOGGLE SWITCH, MOUNT 42" A.F.F. UNLESS NOTED OTHERWISE.	HUBBELL 1224-** WITH NPJI COVER PLATE
SW	SWITCHGANG - SEE DETAIL INDICATED	
S_{M2}	WALL MOUNTED OCCUPANCY SENSOR SWITCH, DUAL TECHNOLOGIES, MOUNT 42" A.F.F. UNLESS NOTED OTHERWISE. 800W/120VAC OR 1200W/277VAC	WATTSTOPPER DSW-301-** NP.126 COVER PLATE
S_D	DIMMING SWITCH WITH PRESET TO MATCH TYPE 'XX' FIXTURE, 0-10V DIMMING, MOUNT 42" A.F.F. UNLESS NOTED OTHERWISE. PROVIDE SWITCHED WIRE AND 0-10V CONTROL WIRE TO FIXTURE AS REQUIRED.	LUTRON DVSTV-XX NP.126 COVER PLATE
S_{3D}	DIMMING 3-WAY SWITCH WITH PRESET TO MATCH TYPE 'XX' FIXTURE, 0-10V DIMMING, MOUNT 42" A.F.F. UNLESS NOTED OTHERWISE. PROVIDE SWITCHED WIRE AND 0-10V CONTROL WIRE TO FIXTURE AS REQUIRED.	LUTRON DVSTV-XX NP.126 COVER PLATE
S_T	0-2 HOUR MECHANICAL TIME SWITCH, 120VAC, 1800W MOUNT 42" A.F.F. UNLESS NOTED OTHERWISE.	INTERMATIC FF2H
S_{DH}	AUTOMATIC DOOR SWITCH, ON WHEN DOOR IS OPEN, FIELD COORDINATE LOCATION WITH ARCHITECT PRIOR TO ROUGH-IN	HUBBELL RD550* OR EQUAL
M4	CEILING MOUNTED OCCUPANCY SENSOR, DUAL TECHNOLOGIES, LOW VOLTAGE. PROVIDE LOW VOLTAGE WIRING TO POWER PACK AS REQUIRED.	WATTSTOPPER DT-305
MP	POWER PACK FOR LOW VOLTAGE OCCUPANCY SENSOR. 120/277VAC, 20A 1 POLE CONTACTOR.	WATTSTOPPER BZ-50
	SPECIFICATION GRADE DUPLEX TAMPER RESISTANT RECEPTACLE. MOUNT 16" A.F.F. UNLESS OTHERWISE NOTED.	HUBBELL HBL5362-**-TR WITH NPJ8 COVER PLATE
GFCI	SPECIFICATION GRADE TAMPER RESISTANT GFCI RECEPTACLE MOUNT 16" A.F.F. UNLESS NOTED OTHERWISE.	HUBBELL GFTRST20-** WITH NP.126 COVER PLATE
WP	SPECIFICATION GRADE TAMPER RESISTANT, WEATHER RESISTANT AND GFCI DUPLEX RECEPTACLE WITH IN-USE WEATHER PROOF COVER. MOUNT 16" A.F.F. UNLESS OTHERWISE NOTED.	HUBBELL GFTWRST20-** WITH WP26M COVER PLATE
	SPECIFICATION GRADE DUPLEX TAMPER RESISTANT RECEPTACLE. MOUNT 16" A.F.F. UNLESS OTHERWISE NOTED. FED FROM GFCI CIRCUIT BREAKER.	HUBBELL HBL5362-**-TR WITH NPJ8 COVER PLATE
	SPECIFICATION GRADE DUPLEX TAMPER RESISTANT RECEPTACLE MOUNT 4" ABOVE COUNTER/BACKSPLASH.	HUBBELL HBL5362-**-TR WITH NPJ8 COVER PLATE
USB	SPECIFICATION GRADE TAMPER RESISTANT DUPLEX RECEPTACLE WITH (1) TYPE A AND (1) TYPE C USB PORTS, 5A 5V USB OUTPUT. RECEPTACLE - MOUNT 16" A.F.F. UNLESS NOTED OTHERWISE.	HUBBELL USB20AC-** WITH NP.126 COVER PLATE
	SPECIFICATION GRADE QUAD TAMPER RESISTANT RECEPTACLE MOUNT 16" A.F.F. UNLESS OTHERWISE NOTED.	HUBBELL (2) HBL5362-**-TR WITH NPJ82 COVER PLATE
'XX'	POWER RECEPTACLE WITH GROUND, 'XX' DESIGNATES TYPE OR RATING. FIELD VERIFY NUMBER OF POLE AND NEUTRAL MOUNT 16" A.F.F. UNLESS OTHERWISE NOTED.	HUBBELL TO MATCH EQUIPMENT
	ROUND DUPLEX TAMPER RESISTANT RECEPTACLE FOR CONCRETE FLOOR WITH FLAP COVER. PROVIDE COVER TO MATCH FLOOR TYPE PER ARCHITECT INSTRUCTION. CUT AND PATCH FLOOR AS REQUIRED.	HUBBELL: BOX: FB8 COVER: S-**-3925, (TILE) REC: 5362TR-**
	CEILING PANEL CABINET FAN. FURNISHED AND INSTALLED BY M.C., WIRED BY E.C.	SEE MECH. PLAN.
J	JUNCTION BOX SIZED PER N.E.C.	
	DISCONNECT SWITCH SEE PLANS FOR SIZE AND TYPE	SQUARE D HEAVY DUTY
	NEW CONCEALED WIRING	PER N.E.C.
	UNSWITCHED LIGHTING CONDUCTOR	PER N.E.C.
	HOME RUN TO PANEL BOARD NUMBERS OF ARROW INDICATE CIRCUITS	PER N.E.C.
	120/208V 3Ø, 4W PANEL BOARD - SEE PANEL SCHEDULES	SQUARE D NQ/I-LINE
M	UTILITY METER BASE	SEE POWER RISER
▼	COMMUNICATION OUTLET - MOUNT 16" A.F.F. UNLESS NOTED OTHERWISE STUB 3/4" CONDUIT TO ACCESSIBLE CEILING OR ATTIC SPACE. OUTLET, COVER PLATE AND WIRING BY OTHERS.	SINGLE GANG BOX HUBBELL NPJI3 COVER PLATE
TCBB	COMMUNICATION BACKBOARD: 24" x 24" x 3/4" THICK FIREPROOFED PLYBOARD MOUNTED TO WALL PROVIDE GROUND BAR AND CONNECT 1-#6 AWG GROUND IN 1/2" C. TO PANEL	
A.F.C.	ABOVE FINISHED CEILING	
A.F.F.	ABOVE FINISHED FLOOR - NOTE ALL MOUNTING DIMENSIONS GIVEN ARE TO THE BOTTOM OF THE OUTLET BOX	

GENERAL NOTES

1. THE CONTRACTOR SHALL REFER TO THE ARCHITECTURAL PLANS FOR FLOOR PLAN DIMENSIONS. DO NOT SCALE THESE DRAWINGS.
2. THE ELECTRICAL CONTRACTOR SHALL COORDINATE ANY AND ALL WORK WITH OTHER TRADES INVOLVED IN THE PROJECT, PRIOR TO THE INSTALLATION OF HIS EQUIPMENT SO AS TO AVOID CONFLICTS DURING CONSTRUCTION AND TO ALLOW FOR OPTIMUM MAINTENANCE AND WORKING SPACE.
3. USE OF THE CONDUIT SYSTEM FOR EQUIPMENT GROUNDING SHALL NOT BE ACCEPTABLE. A SEPARATE GREEN GROUND WIRE SHALL BE RUN WITH THE CIRCUIT CONDUCTORS IN EACH CONDUIT.
4. ALL BREAKER SIZES, SHOWN FOR MECHANICAL EQUIPMENT, SHALL BE VERIFIED BEFORE THE PURCHASE OR INSTALLATION OF SAID EQUIPMENT, WITH THE EQUIPMENT SUPPLIER AND THE MECHANICAL CONTRACTOR.
5. ALL WORK AND MATERIAL SHALL BE PROVIDED IN ACCORDANCE WITH THE STATE, LOCAL AND NATIONAL CODES, ORDINANCES AND 2020 NATIONAL ELECTRICAL CODE (NFPA 70).
6. EACH CONTRACTOR SHALL PROVIDE HIS OWN SUPPORT OF ALL DEVICES AND EQUIPMENT PROVIDED BY HIM AND SHALL SUPPORT SUCH EQUIPMENT PER APPROVED GOVERNING CODES OR PER APPROVAL OF THE ENGINEER. UNACCEPTABLE WORKMANSHIP OR MATERIALS SHALL BE REPLACED AT THE REQUEST OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.
7. THE MOUNTING HEIGHTS AND LOCATIONS OF ALL WALL MOUNTED OUTLETS AND JUNCTION BOXES SHALL BE REVIEWED AND COORDINATED WITH THE ARCHITECT, PRIOR TO INSTALLATION FOR USE WITH THE ACTUAL EQUIPMENT, CASEWORK, AND MILLWORK TO BE FURNISHED.
8. THE ELECTRICAL CONTRACTOR SHALL PROVIDE ALL NECESSARY DISCONNECTS, SWITCHES, AND RECEPTACLES UNDER THE ELECTRICAL BID AND SHALL INCLUDE ALL NECESSARY CIRCUITS TO AND FINAL CONNECTIONS TO THE EQUIPMENT PROVIDED BY ALL SUPPLIERS. SEE DETAILS FOR CONNECTION TO EQUIPMENT PROVIDED BY MECHANICAL AND PLUMBING CONTRACTORS.
9. PENETRATION:
   - WHERE ELECTRICAL EQUIPMENT PENETRATES RATED WALLS AND CEILINGS, EXTERIOR WALLS, THEY SHALL BE PROPERLY SEALED PER APPROVED UL METHODS.
   - WHERE ELECTRICAL EQUIPMENT PENETRATES EXTERIOR WALLS, THEY SHALL BE PROPERLY SEALED WITH METHODS APPROVED BY THE ENGINEER. SUBMIT DETAIL OF PROPOSED SEALING METHODS.
10. ALL PERMITS AND INSPECTION FEES SHALL BE SECURED AND PAID BY THE ELECTRICAL CONTRACTOR.
11. ALL WORK SHALL BE PERFORMED BY A LICENSED ELECTRICAL CONTRACTOR.
12. THE CONTRACTOR SHALL PROVIDE COMPLETE UPDATED TYPEWRITTEN PANEL SCHEDULES FOR ALL PANELBOARDS.
13. AS BUILT DRAWINGS SHALL BE GIVEN TO THE OWNER AT THE COMPLETION OF THE PROJECT.
14. THE CONTRACTOR SHALL VERIFY THE CEILING TYPES WITH THE GENERAL CONTRACTOR PRIOR TO THE PURCHASE OF ANY LIGHT FIXTURES SO THAT THE PROPER TRIM WILL BE PROVIDED FOR ALL FIXTURES. ANY DIFFERENCES WILL BE THE RESPONSIBILITY OF THIS CONTRACTOR.
15. ALL WIRE SIZES INDICATED ON THE PANEL SCHEDULES ARE BASED ON 75 DEGREE COPPER THHN/THWN WIRE. ALL WIRE TERMINALS AND EQUIPMENT SHALL BE LISTED AND APPROVED FOR 75°C. ONLY THWN-2 WIRE SHALL BE INSTALLED IN WET AND EXTERIOR LOCATION.
16. MINIMUM CONDUIT SIZE SHALL BE 1/2" AND MINIMUM WIRE SIZE SHALL BE #12 AWG.
17. ARMORED CABLE (TYPE AC) AND METAL-CLAD CABLE (TYPE MC) ARE ACCEPTABLE WIRING METHODS SUBJECTED TO THE FOLLOWING RESTRICTIONS:
   - SEE NEC 320 AND 330 FOR RESTRICTION.
   - PENETRATIONS OF RATED WALLS SHALL BE IN ACCORDANCE WITH APPROVED UL PENETRATION METHODS.
   - CABLE SHALL NOT BE USED FOR HOME RUN TO PANEL BOARD.
   - CABLE SHALL ONLY BE INSTALLED IN CONCEALED SPACE AND FURRED AREAS. MAX. LENGTH OF EACH SECTION IN ACCESSIBLE CONCEALED CEILING SPACES SHALL NOT EXCEED 10 FT.
   - WHERE REQUIRED BY NEC 517.13, CABLE SHALL BE LISTED FOR THE USE.
18. THE MAXIMUM NUMBER OF HOMERUNS IN A CONDUIT SHALL NOT EXCEED THREE (3). FEEDING CIRCUITS WITH SHARED NEUTRAL SHALL BE SWITCHED TOGETHER.
19. WHERE OUTLETS ARE SHOWN BACK TO BACK ON RATED WALLS, STAGGER OUTLETS SO THAT THEY ARE SEPARATED BY A MINIMUM OF 24".
20. ALL DISCONNECTS SHALL HAVE SEPARATE NEUTRAL AND GROUND BARS.
21. ALL PANELS SHALL BE THREE PHASE, FOUR WIRE UNLESS OTHERWISE NOTED.
22. BOXES AND CONDUITS SHALL NOT BE INSTALLED RECESSED IN A 3-HOUR OR HIGHER RATED WALL. WHEN OUTLETS ARE INDICATED ON THESE WALLS, FIELD COORDINATE CONDUIT AND BOX INSTALLATION.
23. FOR ALL RECEPTACLES LOCATED ABOVE COUNTER TOP, MOUNTING HEIGHT SHALL COMPLY WITH ANSI A117.1, SECTION 308. E.C. SHALL FIELD VERIFY CASEWORK DETAIL WITH ARCHITECT PRIOR TO ROUGH-IN.
24. ALL FINAL CONNECTIONS TO KITCHEN EQUIPMENT IS BY THE ELECTRICAL CONTRACTOR.
25. FIELD VERIFY NEUTRAL REQUIREMENT OF EQUIPMENT. FURNISHED AS REQUIRED BY E.C.
26. E.C. TO PROVIDE PLUG TO MATCH RECEPTACLE.
27. FIELD COORDINATE LOCATION OF ALL DISCONNECTS AND RECEPTACLES. FIELD COORDINATE FUSING WITH MANUFACTURER INSTRUCTION
28. EQUIPMENT ITEM NUMBERS PER INFORMATION FROM KITCHEN CONTRACTOR.
29. E.C. TO VERIFY ELECTRICAL REQUIREMENTS FOR KITCHEN EQUIPMENT WITH KITCHEN EQUIPMENT SUPPLIER PRIOR TO PURCHASE
30. THE ELECTRICAL CONTRACTOR SHALL FIELD COORDINATE THE INSTALLATION OF THE NEW UNDERGROUND ELECTRICAL SERVICE WITH THE LOCAL UTILITY. THE OWNER SHALL PAY ALL CHARGES FOR THE INSTALLATION OF THE NEW UNDERGROUND UTILITY SERVICE.
31. THE ELECTRICAL CONTRACTOR SHALL FIELD COORDINATE THE LOCATION OF HIS TELEPHONE CONDUIT STUB OUTS WITH THE LOCAL TELEPHONE COMPANY PRIOR TO HIS INSTALLING ANY CONDUITS.



NOTES:

1. ELECTRICAL CONTRACTOR SHALL CONNECT POWER CIRCUITS TO HOOD CONTROL PANEL AND EXTEND TO EQUIPMENT AS NOTED.
2. KITCHEN HOOD SHALL HAVE DRY CONTACTS TO SEND SIGNAL TO SHUTDOWN ANY ELECTRIC POWER THAT MAY INCREASE THE FIRE, UPON THE ACTIVATION OF THE FIRE-EXTINGUISHING SYSTEM. TAP POWER FROM HOOD CONTROL CIRCUIT (CKT# P2-39 FOR SHUNT TRIP CONTROL.
3. KITCHEN HOOD SHALL PROVIDE 50FC ILLUMINATION AT 30" A.F.F. AT UNDER THE HOOD.

1 KITCHEN HOOD DETAIL

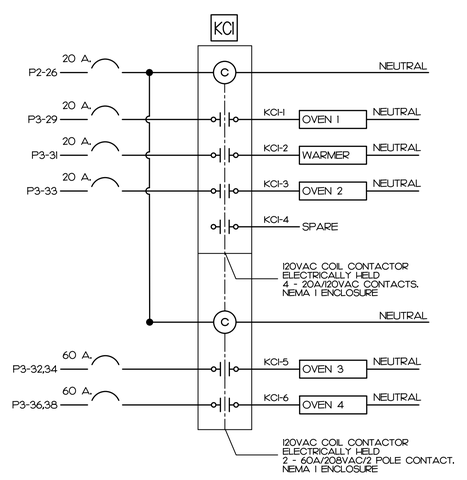
NOT TO SCALE

LIGHT FIXTURE SCHEDULE

TYPE	DESCRIPTION	CATALOG	ELECTRICAL DATA	NOTES
A	PENDANT LUMINAIRE 6000 LUMEN	METALUX: SHSE-DRUM-INDM-2-L35-80-UNV-*-STD	6000 LUMEN LED, 3500K 0-10V ELECTRONIC DIMMING DRIVER 46 WATTS - 52 VA, 120-277V	
B	2x2 LED BACKLIT PANEL 3500 LUMEN	METALUX: 22CGT3535C MOUNTING KIT: CGTSURF22	3500 LUMEN LED, 3500K 0-10V ELECTRONIC DIMMING DRIVER 32 WATTS - 36 VA, 120-277V	
C	2x2 LED FLAT PANEL FIXTURE 4200 LUMEN	METALUX: RT22SP MOUNTING KIT: FPSURF22	4200 LUMEN LED, 3500K 0-10V ELECTRONIC DIMMING DRIVER 36 WATTS - 40 VA, 120-277V	
F	2x4 LED SURFACE MOUNTED PANEL 4200 LUMEN	METALUX: 24CGT4535C MOUNTING KIT: CGTSURF24	4200 LUMEN LED, 3500K 0-10V ELECTRONIC DIMMING DRIVER 38 WATTS - 43 VA, 120-277V	
F2	2x4 LED SURFACE MOUNTED PANEL 5100 LUMEN	METALUX: 24CGT5535C MOUNTING KIT: CGTSURF24	5100 LUMEN LED, 3500K 0-10V ELECTRONIC DIMMING DRIVER 47 WATTS - 53 VA, 120-277V	
G	2x2 LED SURFACE MOUNTED PANEL 3500 LUMEN	METALUX: 22CGT3535C MOUNTING KIT: CGTSURF22	3500 LUMEN LED, 3500K 0-10V ELECTRONIC DIMMING DRIVER 32 WATTS - 36 VA, 120-277V	
H	12" ROUND SURFACE MOUNTED DOWN LIGHT 2000 LUMEN	METALUX: SMD12R-20-9S-WH-E	2000 LUMEN LED, 3500K ELECTRONIC DRIVER 26 WATTS - 29 VA, 120-277V	
J	LED WALL PACK 4200 LUMEN	LUMARK: XTOR4B-Y-*-PCI	4200 LUMEN LED, 3500K ELECTRONIC DRIVER 30 WATTS - 34 VA, 120-277V	
K	2' LED WALL BRACKET 1600 LUMEN	METALUX: 2BGLED-LD4-16SL-F-UNV-L835-CD	1600 LUMEN LED, 3500K 0-10V ELECTRONIC DIMMING DRIVER 19 WATTS - 21 VA, 120-277V	
L	DECORATIVE WALL SCONCE	SELECTED BY OWNER: PROVIDE $500 ALLOWANCE	30 WATT MAXIMUM, 120-277V	
EGX	EMERGENCY WITH EXIT LIGHT 1 SIDE RED LETTER	LITHONIA: LHQM-SD	5 WATTS - 5 VA, 120-277V	
EH	EXTERIOR EMERGENCY LIGHT LISTED FOR WET LOCATION	LITHONIA: AFF-QELR-*-WT	IIW LED HEAD, 11 WATTS - 6 VA, 120-277V	
EG	EMERGENCY LIGHT	LITHONIA: ELM2L-SDRT	2 WATTS - 2 VA, 120-277V	

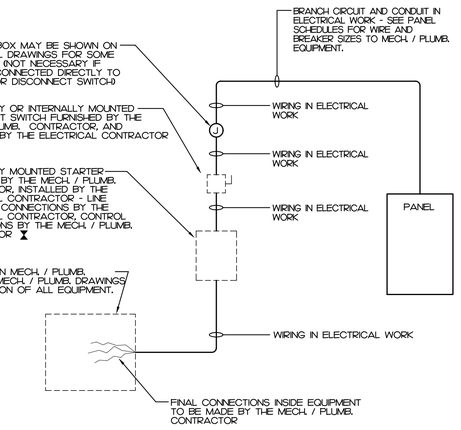
NOTES:

1. SEE ARCHITECTURAL PLAN FOR MOUNTING LOCATION AND HEIGHT. FIELD COORDINATE MOUNTING HEIGHT WITH ARCHITECT IF NOT SHOWN ON ARCHITECTURAL PLAN.
2. E.C. SHALL SUBMIT CATALOG TO ARCHITECT FOR APPROVAL PRIOR PURCHASE ANY. FINISH COLOR AND TRIM SUBJECT TO BE CHANGED PER ARCHITECT.
3. E.C. SHALL FIELD VERIFY LED COLOR WITH ARCHITECT PRIOR TO ORDERING.



2 KITCHEN CONTACTOR DETAIL

NOT TO SCALE



NOTES:

1. A COMBINATION STARTER MAY BE USED IN LIEU OF A A SEPARATE DISCONNECT SWITCH AND STARTER
2. E.C. SHALL FURNISH ALL REQUIRED FUSES.

WIRING TO MECHANICAL AND PLUMBING EQUIPMENT

NOT TO SCALE

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NORTH CAROLINA PROFESSIONAL CORPORATION ATLANTEC ENGINEERS PA No. C-961

8/13/23

NORTH CAROLINA PROFESSIONAL SEAL 17382 ENGINEER DAVID WHITNEY

Project:	Cindy's Kitchen
Project No:	21091
Location:	Caratoke Hwy. Currituck, NC
Title:	Trade Plan
Date:	July 26, 2023
Scale:	As indicated

SYMBOL LEGEND
GENERAL NOTES
DETAILS

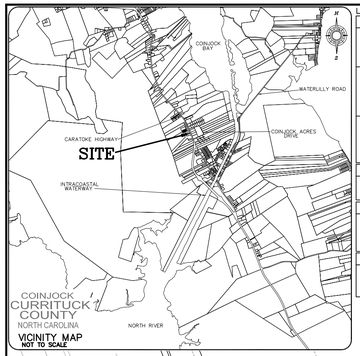
Revisions:

No.	Description	Date

Designed:	SWM
Drawn:	SWM
Reviewed:	DJW
Cad File:	

E301

22170



VICINITY MAP
NOT TO SCALE

LANDSCAPE AND BUFFER NOTES

MAJOR ARTERIAL STREETSCAPE LANDSCAPING

(A) Shrub – 10 Shrubs per 100 l.f. of Street Frontage
160' of Street Frontage.
Street Frontage =160 l.f./100 x 10 = 16 Shrubs
Minimum number of shrubs Required = 16
Number of shrubs shown = 16

(A) Canopy Trees – 8 Aggregate caliper inches (ACI) per 100' of Street Frontage.
Street Frontage =160 l.f./100 x 8 = 12.8 ACI
Assume 2" min. Caliber Trees
Minimum Canopy Trees Required = 6
Number of Canopy Trees shown = 6

(A) Understory Trees – 4.5 Aggregate caliper inches (ACI) per 100' of Street Frontage.
Street Frontage =160 l.f./100 x 4.5 = 7.2 ACI
Assume 2" min. Caliber Trees
Minimum Understory Trees Required = 4
Number Understory Trees shown = 4

VEHICULAR USE AREA LANDSCAPING INTERNAL TO SITE

(B) 1 Canopy tree is required to be within 60' of each parking space

SITE LANDSCAPING - CANOPY TREES

(C) 2 Aggregate caliper inches (ACI) of canopy trees per acre
Site Area = 1.69 acres x 2 = 3.38
Assume 2" min. Caliber Trees
Minimum Canopy Trees Required = 2
Number of Canopy Trees shown = 8

SITE LANDSCAPING ALONG BUILDING FACADE

(D) 1 shrub per 5' of building facade facing a street (placed within 15' of facade and ½ shrubs or grasses must be evergreen)
Required number of shrubs = 50/5 =10
Number of shrubs shown = 10

LANDSCAPE PLAN LEGEND AND NOTES

Canopy Tree:
A tree that has an expected height at maturity of 30 feet or more.

Understory Tree:
A tree that has an expected height at maturity of no greater than 30 feet.

Shrub:
A woody plant, smaller than a tree, consisting of several small stems emerging from the ground, or small branches near the ground. Shrubs may be deciduous or evergreen

ACI:
A horticultural method of measuring the diameter of a tree trunk for the purpose of determining size. The caliper of the trunk is measured six inches above the ground for trees up to and including four inches in diameter, and at twelve inches above the ground for greater than four inches and up to ten inches in diameter, and at breast height (4½ feet) for trees ten inches or greater in diameter. Trees with multiple trunks should be treated as multiple trees and the caliper for each trunk added to aggregate diameter measurement.

Note:
This plan is intended to serve as an inventory plan with the minimum number of canopy trees, understory trees and shrubs required to meet UDO Section 5.2 standards. Species will vary with availability at the time of planting. A species list will be provided to Currituck County Planning for approval prior to planting

NOW OR FORMERLY
BETTY R. AMBROSE
305 W. DOGWOOD TRAIL
KITTY HAWK, NC 27949

PARCEL NO. 7
J.S. MIDGETT ESTATE
ZONED GB
PARCEL ID#0070000022H0000
17 E/118
D.B. 242, PG 525

NOW OR FORMERLY
BETTY R. AMBROSE
305 W. DOGWOOD TRAIL
KITTY HAWK, NC 27949

LOT 6 CONJOCK ACRES
ZONED GB
PARCEL ID # 0070000022B0000
17 E/118
P.C. B, SL. 279

EXISTING DITCH
STORMWATER OVERFLOW SWALE
STORMWATER OVERFLOW WIER/BOX
STORMWATER INFILTRATION BASIN
EDGE OF GRAVEL
PROPOSED GAS SERVICE IF REQUIRED
EXISTING GAS LINE PIEDMONT GAS DISTRIBUTION MAIN
FUTURE PARKING LOT INTERCONNECTIVITY 24' WIDE EASEMENT
EX. EDGE OF ASPHALT
15' SIDE SETBACK
HVAC SLAB
GREASE TRAP 3,010 GALLONS
SEPTIC TANK 3,010 GALLONS
PUMP TANK #1 3,530 GALLONS
2" SCH 40 PVC FORCE MAINS
BUILDING FOOTPRINT = 4,791 SQ. FT.
MINIMUM SLAB ELEVATION = 13.35'
RETAIL 623 sq.ft.
KITCHEN 2,138 sq.ft.
DINING 978 sq.ft.
LOUNGE 465 sq.ft.
WALK-IN COOLER
WALK-IN FREEZER
ROOF LINE
LANDSCAPED AREA
6' CONCRETE WALKWAY (4" THICK)
8' CONCRETE WALKWAY (4" THICK)
24' DRIVE AISLES
ALL PARKING SPACES 9'X18' MINIMUM
4" THICK CONCRETE PAVEMENT
ALL PARKING SPACES 10'X18' MINIMUM
4" THICK CONCRETE PAVEMENT
PROPOSED FIRE HYDRANT
POLE TO BE REMOVED
DETECTABLE PAVER PANEL
LIGHT POST BASE
30"x 30" HIGH INTENSITY PROMOTE STOP SIGN
EX. CATCH BASIN TOP GRATE = 12.6'
THERMOPLASTIC CROSSWALK STRIPING
HOUSE POST BASE
U.S. HIGHWAY 158 CARATOKE HIGHWAY
(PUBLIC ASPHALT ROADWAY)
80' R/W
EX. BACK OF CURB
EX. EDGE OF PAVEMENT
PROPOSED 8' WIDE CONCRETE SIDEWALK 3' OFFSET AND PARALLEL TO EX. BACK OF CURB
10"x 6" TAPPING SLEEVE AND VALVE
6" C900 HYDRANT LINE DIRECTIONALLY DRILLED INSTALLATION TRENCHLESS METHOD NCDOT 1550-4(8) SINGLE PASS REAMING MINIMUM COVER = 5' BELOW PAVING
1" WATER SERVICE LINE DIRECTIONALLY DRILLED INSTALLATION TRENCHLESS METHOD NCDOT 1550-4(8) SINGLE PASS REAMING MINIMUM COVER = 4' BELOW BASE
1" WATER SERVICE LINE
10"x 1" SERVICE SADDLE AND VALVE
Fiber Optic Cable Marker
Existing Iron Rod
PROPOSED 1" RPZ IN HOT BOX SEE DETAIL SHEET 6
PROPOSED 1" WATER METER
CONCRETE CURB STOP
PROPOSED 4' WIDE GRAVEL WALK
STORMWATER INFILTRATION BASIN
FUTURE PARKING LOT INTERCONNECTIVITY 24' WIDE EASEMENT
PROPOSED 1" WATER SERVICE
STORMWATER INFILTRATION BASIN
ENCROACHING GRAVEL DRIVE (TO BE REMOVED)
SCREENED DUMPSTER PAD 6' MIN. THICK CONCRETE SEE DETAIL SHEET 4
12' SIDE SETBACK
CENTERLINE DITCH
TS-II REPAIR AREA 1
Design Flow = 1,640 gpd total
(See Sheet 1-Note 11)
L.P.P. DISPOSAL BED (ACTIVE)
Design Flow = 1,640 gpd
(See Sheet 1-Note 11)
3,010 gallon grease
3,010 gallon septic tank
3,530 gallon pump tank
See Detail sheet 3
8 lines at 51 l.f. each at 3' o.c.
Repair Drainfield 1
18" Fill Required
Finished Grade = 12.5'
Active Drainfield 1-A
14 lines at 47 l.f. at 5' o.c.
Active Drainfield 1-B
14 lines at 47 l.f. at 5' o.c.
8 lines at 51 l.f. each at 3' o.c.
Repair Drainfield 1
LATERAL (TYP)
CLEANOUT (TYP)
3" FIELD VALVE IN VALVE BOX
4" MANIFOLD
TS-II REPAIR AREA 2
Design Flow = 1,640 gpd total
(See Sheet 1-Note 11)
SUBJECT PROPERTY
SUBJECT PROPERTY
LOT 1, CARTER/BRUMSEY DIVISION
M.B. B PG. 384
ZONING DISTRICT GB
ZONING DISTRICT AG
NOW OR FORMERLY
BETTY R. AMBROSE
305 W. DOGWOOD TRAIL
KITTY HAWK, NC 27949
LOT 6 CONJOCK ACRES
ZONED AG
PARCEL ID # 0070000022B0000
17 E/118
P.C. B, SL. 279
NOW OR FORMERLY
CYNTHIA J. SPAIN
112 POPLAR HAVEN ROAD
POPLAR BRANCH, NC 27965
CARTER/BRUMSEY LOT 2
ZONED GB
PARCEL ID# 0070000022K0000
17 E/94
P.C. B, SL. 384

LIGHTING LEGEND

Fixture Designation	Fixture
LIGHT J	Lumark XTOR1B-W by Cooper Lighting Crosstour 12W wall mount LED Luminare Lumens = 1,327 lms 8' Mounting Height, Full Cutofff
LIGHT L	16" Gooseneck Wall Mount Fixture Steel Llighting Co. Luminare Lumens = 800 lms 8' Mounting Height, Full Cutofff

SEE SHEET 4 FOR FIXTURE CUT SHEETS

THIS PLAN SHOULD BE CONSIDERED PRELIMINARY UNTIL REVIEWED AND APPROVED BY ALL APPLICABLE STATE, TOWN AND COUNTY DEPARTMENTS

GRAPHIC SCALE
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

NOTES AND DEVELOPMENT DATA:

1. **Subject Property:**
Lot 1, Carter/Brumsey Division
Reference: P.C. B SL. 17, D.B. 17 PG. E/94
Street Address: 4501 Caratoke Highway, Barco, NC, 27917
Parcel Area = 73,600 sq.ft./1.69 Acre
Parcel ID Number: 0070000022J0000
Global PIN:8996-51-4812
2. **Current Owner/Developer:**
Spain, Cynthia J.
112 Poplar Haven Road, Poplar Branch, NC 27965
Phone: 252-619-0421 email:cindy@cindyskitchennc.com
3. **Engineer:**
Michael W. Robinson P.E., P.L.S.
P.O. Box 2852, Kill devil Hills, NC 27948
Phone: 252-255-8026
email: mrobinson@obxengineering.com
4. **FEMA Data:**
Political Area: Currituck County CID: 370078 Panel: 8986
Map number: 3720898600K, Effective Date: 12-21-2018
Flood Zone: X (Minimal Flood Risk) Base Flood Elevation: n/a
Datum: NAVD 1988
Flood Zones subject to to change by FEMA
Entire Lots is within X Flood Zone
5. **Subject Property Zoning:** GB General Business District
6. **GB Dimensional Standards:**
Min. Front Setback-20' Min. Side Setback-15,
Min, Rear Setback- 25'
Maximum Lot Coverage- 65%
Maximum Nonresidential FAR- 40%
7. **Proposed Development:**
48 seat restaurant with retail bakery.
8. **Required Parking:**
Parking Spaces Required = 29, Parking Spaces Provided = 29
Minimum Parking Space Dimension - 10'x18'
Minimum Drive Aisle Width = 24'
PARKING CALCULATIONS:

USE	AREA	PARKING STANDARD	SPACES REQUIRED
Kitchen and Indoor Seating	3,062 sq.ft.	Restaurant, with indoor or outdoor seating-1 space per every 150 sq.ft. (including outdoor waiting/ seating/ dining areas)	20.4
Outdoor Waiting and Seating	978 sq.ft.	Restaurant, with indoor or outdoor seating-1 space per every 150 sq.ft. (including outdoor waiting/ seating/ dining areas)	6.5
Retail	623 sq.ft.	Retail sales establishments 1 per every 300 sf	2.1
		Total Parking Spaces Required	29

9. **Proposed Lot Coverage:**
Building - 4,791 sq.ft.
Concrete Building Side Walk - 1,142 sq.ft.
Caratoke Highway Side Walk - 385 sq.ft.
Parking and Drives - 14,268 sq.ft.
Dumpster Pad - 80 sq.ft.
HVAC Pad - 75 sq.ft.
Total Proposed Coverage - 20,741 sq.ft. (28.2%)
10. **Required Site Landscaping Requirements:**
See Landscape and Buffer Table this sheet.
11. **Wastewater Design Data - Active Area:**
Design flow rates are based on 15A NCAC 02T .0114 "Wastewater Design low Rates" except for the bakery with is based on usage from the existing Cindy's Kitchen Bakery.
Design Flow for Restaurant:
Restaurant, single service articles 30 gal/seat
Proposed Restaurant Seats = 48, Proposed Flow = **1,440 gpd**
Design Flow Bakery:
Bakery Design flow rates on Average Recorded Usage from the existing "Cindy's Kitchen" Bakery from 2020 to 2022..
Bakery Design Flow = **200 gpd**

Total Design Flow = 1,640 gpd

Use Low Pressure Pipe Wastewater (LPP) drainfield
Loading rate = 0.25 gpd/sq.ft.
Refer to ARHS Evaluation 369544 issued 02/24/2022
Minimum Drainfield Length Required:
Q=1,460 gpd, LTAR=0.25 gpd/sq.ft., Use 1,640 gpd for Design.
Minimum Area of Disposal Field = 1,640/0.25 = 6,560 sq.ft.
Minimum Length of Drainlines at 5' o.c. = 6,000/5 = 1,312 l.f
Use two active fields, each field with 656 l.f. of drainlines

Wastewater Design Data - Repair Area:
TS-II Treatment Standard Required
Design Flow = 1,640 gpd LTAR = 0.5 gpd/sq.ft.
Use 25% Bed Area Reduction Per 1970(l)3(A)
Minimum Drainfield Length Required:
Q = 1,640 gpd/0.5 gpd/sq.ft. x 0.75 = 2,460 sq. ft.
Required linear footage = 2,460 sq. ft./3 ft. =820 l.f.
Use two active fields, each field with 410 l.f. of drainlines

12. **Existing Structures (Sheds) on site shall be removed prior to initiation of land disturbing activities.**

NORTH CAROLINA PROFESSIONAL SEAL 18934 ENGINEER MICHAEL W. ROBINSON
12-14-23

MICHAEL W. ROBINSON, P.E., P.L.S.
ENGINEERING AND SURVEYING
P.O. BOX 2852
KILL DEVIL HILLS, NC 27948
PHONE: 252-255-8026
EMAIL: mrobinson@obxengineering.com

PRELIMINARY SITE PLAN

REVISIONS

NO.	DATE:	DESCRIPTION	BY

PROJECT:
CINDY'S KITCHEN
COINJOCK — CURRITUCK COUNTY — NORTH CAROLINA

LOT 1, CARTER/BRUMSEY DIVISION

DATE: 12-14-23
SCALE: 1"=20'
DESIGNED: MWR
DRAWN: MWR
SHEET: 1 OF 6
CAD FILE:
PROJECT NO: 052916

NOW OR FORMERLY
BETTY R. AMBROSE
305 W. DOGWOOD TRAIL
KITTY HAWK, NC 27949

PARCEL NO. 7
J.S. MIDGETT ESTATE
ZONED GB
PARCEL ID# 0070000022H0000
17 E/118
D.B. 242, PG 525

NOW OR FORMERLY
BETTY R. AMBROSE
305 W. DOGWOOD TRAIL
KITTY HAWK, NC 27949

LOT 6 COINJOCK ACRES
ZONED GB
PARCEL ID # 0070000022B0000
17 E/118
P.C. B, SL. 279

PERIMETER BERM
Berm Top Elevation = 11.5'
Top width = 2.0'

OVERFLOW BASIN
Top of Grate = 11.0'
12" HDPE Culvert Discharge
Invert Out Basin = 8.5'
Invert out Cluvert = 8.4'

INFILTRATION BASIN
Elevation of SHWT = 8.8'
Elevation of Bottom of Basin = 9.8'
Elevation of Top of Storage = 11.0'.
Refer to Calculations for additional data

BASIN UNDERCUT AREA
Undercut Area Below Elevation = 9.8'
Area = 4,200 sq.ft.
The existing soil in the infiltrative surface of the basin should be excavated down to a depth of 5.4-feet (6.84' msl) to 5.6-feet (5.88'-msl) below grade and backfilled with clean, well-sorted fine to medium sand free of shells and any organic debris and brought back to an elevation of 9.8'. This will provide a 1-foot separation between the basin bottom and the expected seasonal high water table elevation of 8.80' msl. The sand should be sampled and tested for sorting and median grain size prior to placement in the basin.
Refer to Calculations and Soils Report for additional data

RIP RAP AT CULVERT DISCHARGE
Class A NCDOT Erosion Control Stone
6' long x4' wide x 6" thick

SILT FENCING
SEE DETAIL SHEET 5

Existing Soil Bore
Ground elev. = 9.6'
SHWT at 12"=8.6'
Static Water Table at 32"=6.9'

NOW OR FORMERLY
BETTY R. AMBROSE
305 W. DOGWOOD TRAIL
KITTY HAWK, NC 27949

LOT 6 COINJOCK ACRES
ZONED AG
PARCEL ID # 0070000022B0000
17 E/118
P.C. B, SL. 279

ZONING DISTRICT GB
ZONING DISTRICT AG

STORMWATER ACCESS AND MAINTENANCE EASEMENT TO BE GRANTED TO CYNTHIA J. SPAIN AND TO NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ). NCDEQ WILL NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF STORMWATER APPURTENANCES. OPERATION AND MAINTENANCE TO REMAIN THE RESPONSIBILITY OF CYNTHIA SPAIN, THEIR SUCCESSORS AND ASSIGNS.

SILT FENCING
SEE DETAIL SHEET 5

Existing Soil Bore
Ground elev. = 12.3'
SHWT at 42"=8.8'
Static Water Table at 60"=7.3'

SUBJECT PROPERTY
SUBJECT PROPERTY
LOT 1, CARTER/BRUMSEY DIVISION
M.B. B PG. 384

MINIMUM SLAB ELEVATION = 13.33'

RIP RAP AT CULVERT DISCHARGE
Class A NCDOT Erosion Control Stone
6' long x4' wide x 6" thick

DROP INLET
Grate Elev = 12.0'
12" HDPE Out, 8 l.f.
Invert In and Out 9.8'

CULVERT
12" HDPE, 20 l.f.
Invert In and Out 9.8'

DROP INLET
Grate Elev = 12.0'
12" HDPE Out, 8 l.f.
Invert In and Out 9.8'

Ex. DROP INLET
GRATE 12.05'

Ex. 12.81'
80C 13.31'

Ex. 12.77'
80C 13.27'

Ex. 12.90'
80C 13.00'

Ex. 12.49'
80C 12.59'

U.S. HIGHWAY 158 CARATOKE HIGHWAY
(PUBLIC ASPHALT ROADWAY)
80' R/W

EXISTING DROP INLET
Saw cut and remove back of Curb
Maintain existing flow Line
Install new NCDOT approved grate if required

GRAVEL CONSTRUCTION ENTRANCE
SEE DETAIL SHEET 5

Existing Soil Bore
Ground elev. = 11.1'
SHWT at 27"=8.8'
Static Water Table at 45"=7.4'

CULVERT
12" HDPE, 20 l.f.
Invert In and Out 9.8'

RIP RAP AT CULVERT DISCHARGE
Class A NCDOT Erosion Control Stone
6' long x4' wide x 6" thick

INFILTRATION SWALE
Elevation of SHWT = 8.8'
Elevation of Bottom of Basin = 9.8'
Elevation of Top of Storage = 11.0'
Refer to Calculations for additional data

SILT FENCING
SEE DETAIL SHEET 5

NOW OR FORMERLY
CYNTHIA J. SPAIN
112 POPLAR HAVEN ROAD
POPLAR BRANCH, NC 27965

CARTER/BRUMSEY LOT 2
ZONED GB
PARCEL ID# 0070000022K0000
17 E/94
P.C. B, SL. 384

PERIMETER BERM
Berm Top Elevation = 11.5'
Top width = 2.0'

STORMWATER ACCESS AND MAINTENANCE EASEMENT TO BE GRANTED TO CYNTHIA J. SPAIN AND TO NORTH CAROLINA DEPARTMENT OF ENVIRONMENTAL QUALITY (NCDEQ). NCDEQ WILL NOT ASSUME RESPONSIBILITY FOR MAINTENANCE OF STORMWATER APPURTENANCES. OPERATION AND MAINTENANCE TO REMAIN THE RESPONSIBILITY OF CYNTHIA SPAIN, THEIR SUCCESSORS AND ASSIGNS.

CERTIFICATE

I, _____, owner/agent hereby certify the information on this plan and attached pages is true and correct to the best of my knowledge.

On the site plan entitled "Cindy's Kitchen, Lot 1, Carter/Brumsey Division", stormwater drainage improvements shall be installed according to these plans and specifications as approved by Currituck County. Yearly inspections are required as part of the stormwater plan. The owner is responsible for all maintenance required. Currituck County assumes no responsibility for the design, maintenance, or performance of the stormwater improvements.

Date: _____ Owner/Agent: _____

CERTIFICATE OF COMPLETION

Based upon site observations and/or information provided by the design professional, I hereby certify that all drainage improvements, grading, structures, and/or systems have been completed in substantial conformance with the approved plans and specifications

_____ _____
Owner/Agent Date

_____ _____
Design Professional Date

NORTH CAROLINA PROFESSIONAL SEAL 23004 ENGINEER MICHAEL W. ROBINSON
12-14-23

THIS PLAN SHOULD BE CONSIDERED PRELIMINARY UNTIL REVIEWED AND APPROVED BY ALL APPLICABLE STATE, TOWN AND COUNTY DEPARTMENTS

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

MICHAEL W. ROBINSON, P.E., P.L.S.
ENGINEERING AND SURVEYING
P.O. BOX 2852
KILL DEVIL HILLS, NC 27948
PHONE: 252-255-8026
EMAIL: mrobinson@obxengineering.com

GRADING, STORMWATER AND SED/EC PLAN

REVISIONS

NO.	DATE	DESCRIPTION	BY

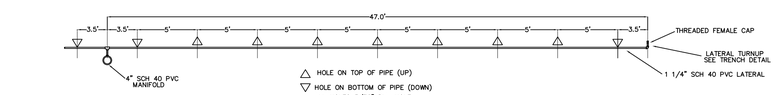
PROJECT:
CINDY'S KITCHEN
CURRITUCK COUNTY NORTH CAROLINA
COINJOCK
LOT 1, CARTER/BRUMSEY DIVISION

DATE:	SCALE:
12-14-23	1"=20'
DESIGNED: MWR	DRAWN: MWR

SHEET: 2 OF 6

CAD FILE:

PROJECT NO: 052916

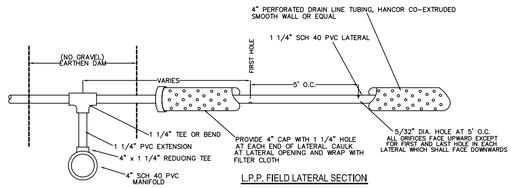


L.P.P. FIELD LATERAL HOLE LAYOUT

PROFILE

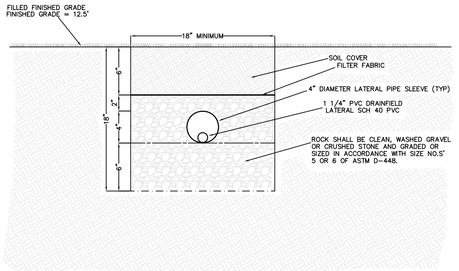
THIS SYSTEM USES 5/32" DIAMETER ORIFICES

ALL LATERALS TO BE INSTALLED LEVEL



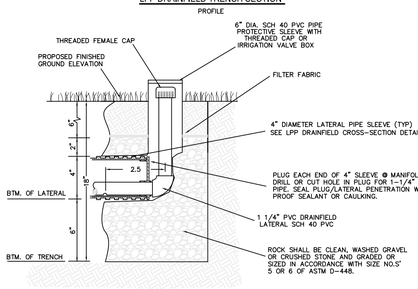
L.P.P. FIELD LATERAL SECTION

PROFILE



LPP DRAINFIELD TRENCH SECTION

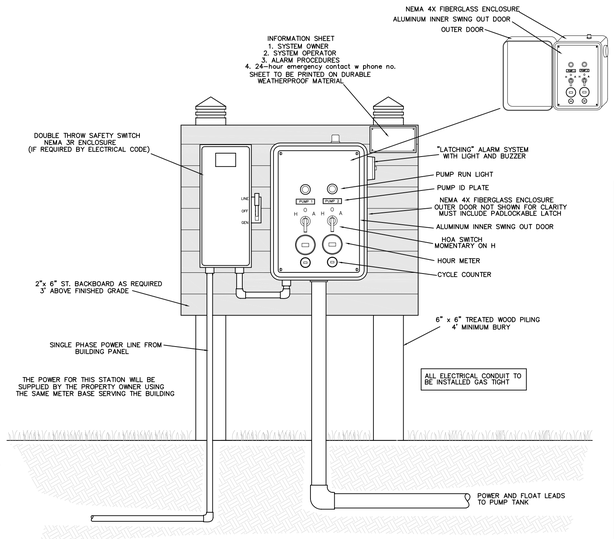
PROFILE



TRENCH X-SECTION

NOT TO SCALE

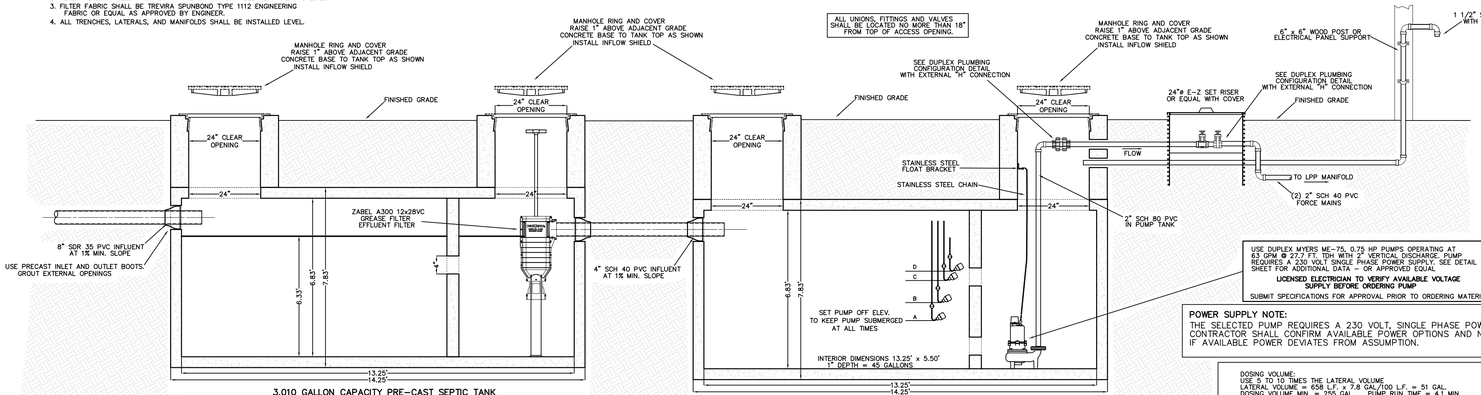
1. ACTIVE DRAINFIELD AREA SHALL BE GRADED SO THAT STORMWATER RUNOFF DOES NOT POND ON DRAINFIELD AREA.
2. VEGETATE DRAINFIELD AND REPAIR AREAS WITH SUITABLE PERMANENT SPECIES
3. FILTER FABRIC SHALL BE TREVIRA SPUNBOND TYPE 1112 ENGINEERING FABRIC OR EQUAL AS APPROVED BY ENGINEER.
4. ALL TRENCHES, LATERALS, AND MANIFOLDS SHALL BE INSTALLED LEVEL.



PUMP SYSTEM CONTROL PANEL

NOT TO SCALE

NO ELECTRICAL SPLICES ALLOWED IN PUMP TANK OR WITHIN ELECTRICAL CONDUIT. CONTRACTOR TO ESTABLISH LOCATION OF CONTROL PANEL AND ORDER PUMPS AND CONTROLS WITH AN ADEQUATE MANUFACTURER INSTALLED CORD



SEPTIC TANK AND PUMP TANK DETAIL

SCALE: NOT TO SCALE

FLOAT SWITCH CONFIGURATION	
A	PUMP OFF
B	LEAD PUMP ON
C	ALARM ON
D	LAG PUMP ON

USE DUPLEX MYERS ME-75, 0.75 HP PUMPS OPERATING AT 63 GPM @ 27.7 FT. TDH WITH 2" VERTICAL DISCHARGE. PUMP REQUIRES A 230 VOLT SINGLE PHASE POWER SUPPLY. SEE DETAIL SHEET FOR ADDITIONAL DATA - OR APPROVED EQUAL

LICENSED ELECTRICIAN TO VERIFY AVAILABLE VOLTAGE SUPPLY BEFORE ORDERING PUMP

SUBMIT SPECIFICATIONS FOR APPROVAL PRIOR TO ORDERING MATERIALS

POWER SUPPLY NOTE:

THE SELECTED PUMP REQUIRES A 230 VOLT, SINGLE PHASE POWER SUPPLY. THE CONTRACTOR SHALL CONFIRM AVAILABLE POWER OPTIONS AND NOTIFY ENGINEER IF AVAILABLE POWER DEVIATES FROM ASSUMPTION.

DOSING VOLUME:
USE 5 TO 10 TIMES THE LATERAL VOLUME
LATERAL VOLUME = 658 L.F. x 7.8 GAL/100 L.F. = 51 GAL
DOSING VOLUME MIN. = 255 GAL PUMP RUN TIME = 4.1 MIN.
DOSING VOLUME MAX. = 510 GAL PUMP RUN TIME = 8.1 MIN.

PUMP FLOAT SETUP:
SET PUMP OFF FLOAT TO MAINTAIN LIQUID COVER OVER PUMP
SET PUMP LEAD ON FLOAT TO PROVIDE 255 TO 510 GALLON DOSE
SET ALARM FLOAT 4" ABOVE PUMP LEAD ON FLOAT
SET PUMP LAG ON FLOAT 2" ABOVE ALARM FLOAT

FINAL FLOAT SETUP DEPENDS ON THE GEOMETRY OF THE PUMP TANK SELECTED CONSULT ENGINEER AFTER TANKS AND PUMPS HAVE BEEN SELECTED TO DETERMINE FINAL FLOAT SETTINGS.
OPERATOR TO RECORD INITIAL FLOAT SETTING AND INITIAL OPERATION CONDITIONS.

Wastewater Design Data – Active Area:

Design flow rates are based on 15A NCAC 02T .0114 "Wastewater Design low Rates" except for the bakery with is based on usage from the existing Cindy's Kitchen Bakery.

Design Flow for Restaurant:
Restaurant, single service articles 30 gal/seat
Proposed Restaurant Seats = 48, Proposed Flow = **1,440 gpd**

Design Flow Bakery:
Bakery Design flow rates on Average Recorded Usage from the existing "Cindy's Kitchen" Bakery from 2020 to 2022..
Bakery Design Flow = **200 gpd**

Total Design Flow = 1,640 gpd

Use Low Pressure Pipe Wastewater (LPP) drainfield
Loading rate = 0.25 gpd/sq.ft.
Refer to ARHS Evaluation 369544 issued 02/24/2022
Minimum Drainfield Length Required:
Q=1,460 gpd, LTAR=0.25 gpd/sq.ft., Use 1,640 gpd for Design.
Minimum Area of Disposal Field = 1,640/0.25 = 6,560 sq.ft.
Minimum Length of Drainlines at 5' o.c. = 6,000/5 = 1,312 l.f
Use two active fields, each field with 656 l.f. of drainlines

Wastewater Design Data – Repair Area:
TS-II Treatment Standard Required
Design Flow = 1,640 gpd LTAR = 0.5 gpd/sq.ft.
Use 25% Bed Area Reduction Per 1970(i)3(A)
Minimum Drainfield Length Required:
Q = 1,640 gpd/0.5 gpd/sq.ft. x 0.75 = 2,460 sq. ft.
Required linear footage = 2,460 sq. ft./3 ft. =820 l.f.
Use two active fields, each field with 410 l.f. of drainlines

Wastewater System Design Data:

Septic and Pump Tanks:
Minimum septic tank capacity = 3,010 gallons
Minimum pump tank capacity = 3,530 gallons
Use State approved precast tanks
Submit tank specifications to engineer for approval prior to ordering (Bridge loaded tanks have been specified due to tank proximity to parking and drives)
All tanks and connections to be leaked tested prior to being placed in service, approval by engineer or health department accepted.

L.P.P. Disposal Field:
Use two active LPP fields, each field with 656 l.f. of drainlines
Drainfield 1-A: Use 14 sleeved laterals, each lateral 47 l.f., all laterals at 5' o.c. with center feed manifold.
Drainfield 1-B: Use 14 sleeved laterals, each lateral 47 l.f., all laterals at 5' o.c. with center feed manifold.
Lateral Diameter = 1 1/4" Sch 40 PVC
Lateral sleeve - 4" perforated drainline tubing by hancor or eq.
See detail for hole layout and orientation
Remove all drill burrs and debris from pipe after drilling pump

LPP Drainfield flow for each of two active drainfields.
Design pressure head at drainfield = 3 ft.
LPP hole diameter = 5/32"
Number of holes per lateral = 9, Number of laterals = 14
Total number of holes = 14 x 9 = 126
Flow per hole at 3 ft field pressure head = 0.5 gpm/hole
Total pump flow at design pressure head = 63 gpm
Manifold: Use 4" sch 40 pvc manifold. See detail for configuration details Force Main: Use 2" sch 40 pvc force main from pump to manifold
See detail for valve arrangement and H connection detail
Maintain 2' minimum cover in force main

PUMP SELECTION:

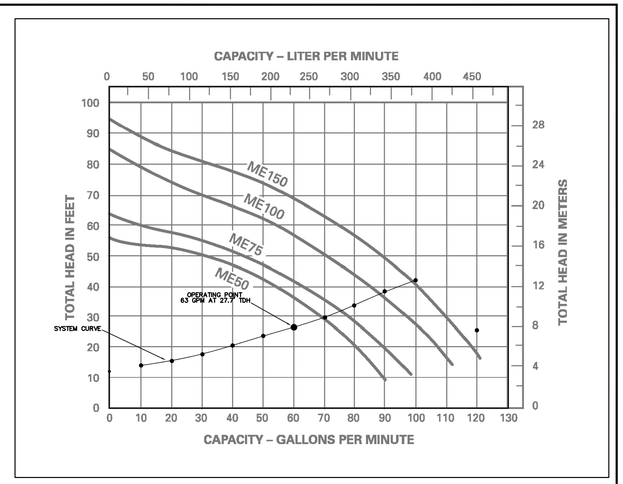
Q =CALCULATED FLOW (GPD) DESIGN POINT = 63 GPM
H_s =STATIC HEAD AT FIELD = 3.0'
H_e =ELEVATION HEAD = 12.0'
L_e =EQUIVALENT LENGTH OF FORCE MAIN = 100 L.F. + 25% = 125 L.F.
d =FORCE MAIN DIAMETER (IN.) = 2.00
C =PIPE COEFFICIENT = 130

H_f =FRICTION HEAD = $\frac{10.44\,(L_{(e)})\,Q^{1.85}}{C^{1.85}\,d^{4.8655}} = 0.00550(Q)^{1.85}$

TDH = $H_s + H_e + H_f$

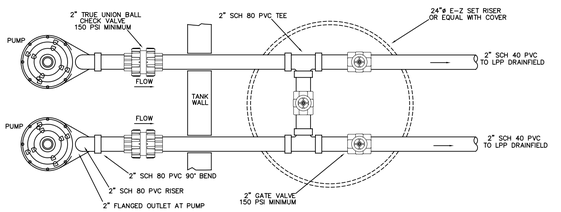
Q (GPM)	TDH (FT)	Q (GPM)	TDH (FT)	
10	15.4	63	27.7	OPERATING CONDITION
20	16.4	70	29.9	
30	18.0	80	33.2	
40	20.1	90	37.2	
50	22.6	100	42.6	

USE TWO MYERS ME75 EFFLUENT PUMPS WITH 0.75 H.P. MOTORS TO OPERATE AT 63 GPM WITH 27.7 FT. TDH. 230 V. SINGLE PHASE, 3450 rpm.
OR APPROVED EQUAL - SUBMIT SPECIFICATIONS FOR APPROVAL PRIOR TO ORDERING



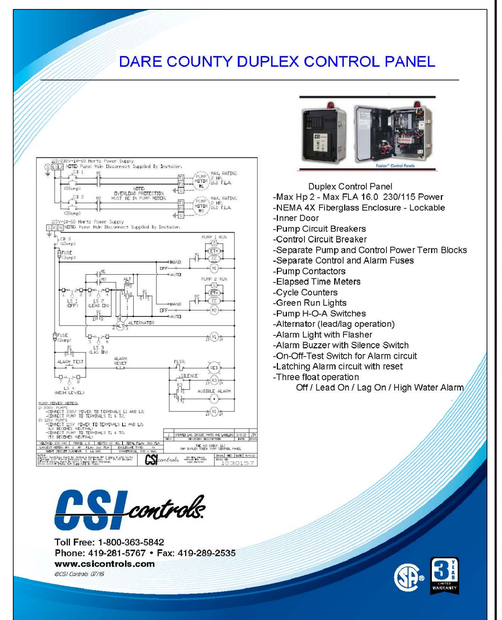
SYSTEM OPERATING CURVE

NOT TO SCALE



DUPLEX PLUMBING CONFIGURATION WITH EXTERNAL "H" CONNECTION

NOT TO SCALE



OWNER NOTIFICATION REGARDING OPERATION AND MAINTENANCE REQUIREMENTS:

1. IN ACCORDANCE WITH 15A NCAC 18A.1961 THIS WASTEWATER SYSTEM HAS A TYPE IV SYSTEM CLASSIFICATION WHICH REQUIRES A CONTRACT FOR OPERATIONS FROM A PUBLIC MANAGEMENT ENTITY WITH A CERTIFIED OPERATOR OR A CONTRACT FOR OPERATIONS WITH A PRIVATE CERTIFIED OPERATOR. THE OPERATOR SELECTED SHALL BE IN GOOD STANDING WITH THE ALBEMARLE REGIONAL HEALTH DEPARTMENT.
2. THIS SYSTEM REQUIRES INSPECTIONS BY THE CONTRACT OPERATOR AT A MINIMUM OF TWICE PER YEAR.
3. THIS SYSTEM REQUIRES REPORTING TO THE ALBEMARLE REGIONAL HEALTH DEPARTMENT ON A YEARLY BASIS. ALL REPORTS SHALL BE SUBMITTED DIRECTLY BY THE OPERATOR TO THE CURRITUCK COUNTY HEALTH DEPARTMENT WITH REPORT COPIES PROVIDED TO THE PROPERTY OWNER.
4. THE REQUIRED INSPECTIONS SHALL AT A MINIMUM INCLUDE THE FOLLOWING:
   A. OPERATOR SHALL MAINTAIN A WRITTEN LOG OF ALL INSPECTIONS INCLUDING DATE AND TIME OF INSPECTION AND ALL SYSTEM FINDINGS. THE LOG SHALL BE MADE AVAILABLE TO THE OWNER, ALBEMARLE REGIONAL HEALTH DEPARTMENT AND ENGINEER UPON REQUEST.
   B. TWICE YEARLY-VISUALLY INSPECT THE DRAINFIELD AREA TO CHECK FOR EVIDENCE OF SURFACED WASTEWATER INCLUDING DEBRIS, PONDING OR EXCESSIVELY GREEN VEGETATION AREAS. NOTIFY PROPERTY OWNER IF VEGETATION AND LANDSCAPING HAS BEEN ALLOWED TO ENCROACH ONTO THE DRAINFIELD.
   C. TWICE YEARLY-MANUALLY OPERATE ALL FLOATS AND CONTROLS TO ENSURE BOTH PUMPS ARE FUNCTIONING, DUPLEX ALTERNATING DOSING IS OCCURRING AND ALARMS ARE FUNCTIONING AS DESIGNED,
   D. YEARLY – MEASURE THE SLUDGE DEPTH IN THE SEPTIC TANK AND PUMP TANK AND PUMP BOTH TANKS AS REQUIRED WHEN SLUDGE LEVELS REACH ¼ LIQUID DEPTH IN THE SEPTIC TANK.
   E. YEARLY – THE DRAINFIELD LATERALS SHALL BE FLUSHED UNTIL ALL SLUDGE AND DEBRIS IS CLEAR. AFTER FLUSHING THE LATERALS, RESET THE PRESSURE HEAD AT THE DRAINFIELD. MEASURE THE DRAW DOWN RATES WITHIN THE PUMP TANK. THE DRAW DOWN RATES SHALL BE COMPARED TO DESIGN RATES. SOME CREEP IN RATES IS EXPECTED AS THE SYSTEM AGES BUT NOTIFY ALBEMARLE REGIONAL HEALTH DEPARTMENT, OWNER AND ENGINEER IF RATES VARY SUDDENLY OR SIGNIFICANTLY.

NORTH CAROLINA PROFESSIONAL SEAL 19934 ENGINEER MICHAEL W. ROBINSON 12-14-23

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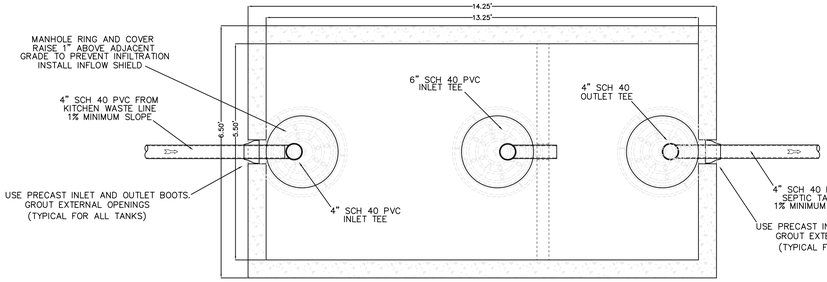
PRELIMINARY
WASTEWATER DETAILS

REVISIONS

NO.	DATE	DESCRIPTION	BY

PROJECT:
CINDY'S KITCHEN
COINJOCK NORTH CAROLINA
CURRITUCK COUNTY
LOT 1, CARTER/BRUMSEY DIVISION

DATE: 12-14-23
SCALE: 1"=20'
DESIGNED: MWR
DRAWN: MWR
SHEET: 3 OF 6
CAD FILE:
PROJECT NO: 052916

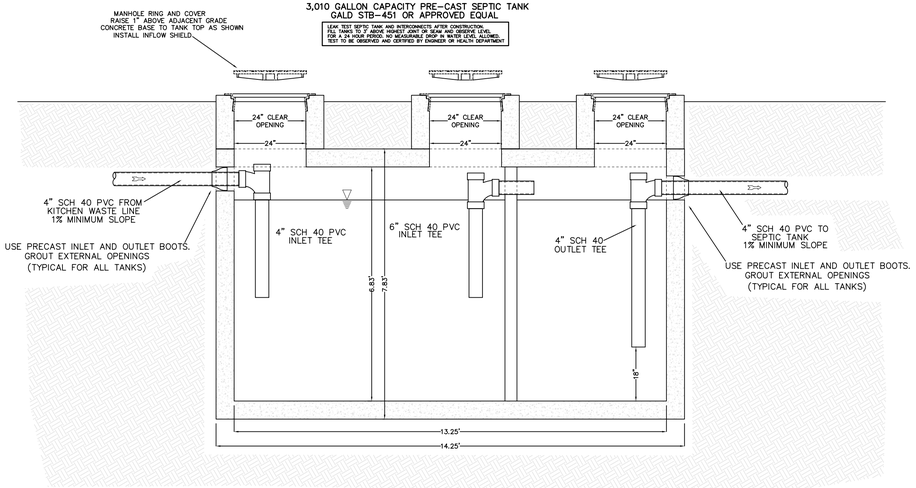


GREASE TRAP - PLAN

NOT TO SCALE

3,010 GALLON CAPACITY PRE-CAST SEPTIC TANK
GALD STB-451 OR APPROVED EQUAL

LEAK TEST SEPTIC TANK AND INTERCONNECTS AFTER CONSTRUCTION.
FILL TANKS TO 2" ABOVE HIGHEST JOINT OR SEAM AND OBSERVE LEVEL
FOR A 24 HOUR PERIOD. NO MEASURABLE DROP IN WATER LEVEL ALLOWED.
TEST TO BE OBSERVED AND CERTIFIED BY ENGINEER OR HEALTH DEPARTMENT



GREASE TRAP - PROFILE

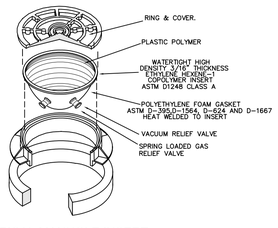
NOT TO SCALE

3,010 GALLON CAPACITY PRE-CAST SEPTIC TANK
GALD STB-451 OR APPROVED EQUAL

LEAK TEST SEPTIC TANK AND INTERCONNECTS AFTER CONSTRUCTION.
FILL TANKS TO 2" ABOVE HIGHEST JOINT OR SEAM AND OBSERVE LEVEL
FOR A 24 HOUR PERIOD. NO MEASURABLE DROP IN WATER LEVEL ALLOWED.
TEST TO BE OBSERVED AND CERTIFIED BY ENGINEER OR HEALTH DEPARTMENT

TYPICAL MANHOLE FRAME & COVER

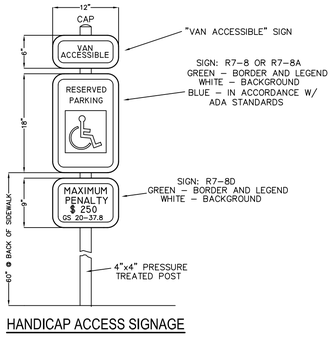
SCALE: NONE



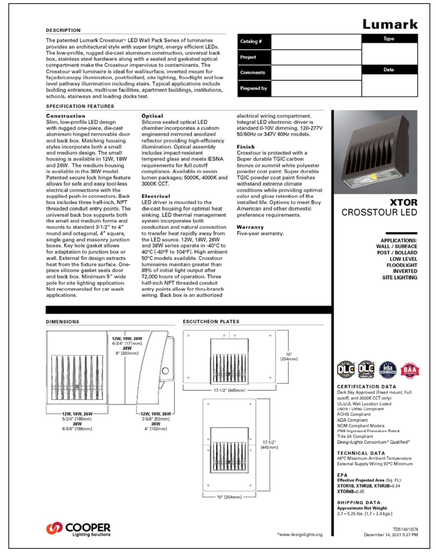
TYPICAL MANHOLE INSERT

SCALE: NONE

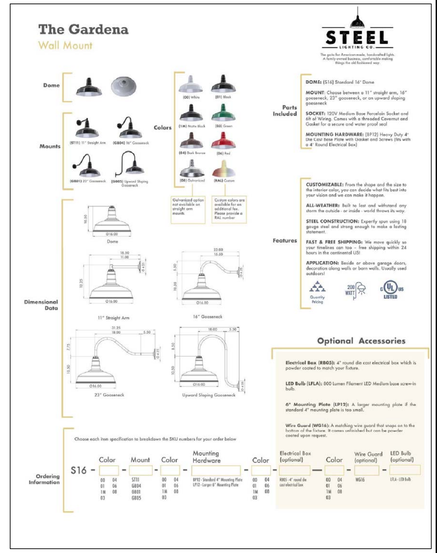
SIGN-NO PARKING FIRE LANE



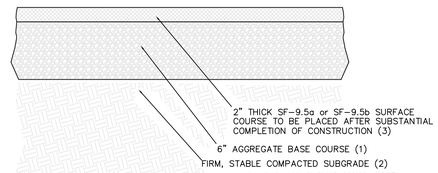
HANDICAP ACCESS SIGNAGE



LIGHTING - WALL PACK - LIGHT J
1,327 Lumen LED
SEE SHEET 1 FOR LOCATIONS

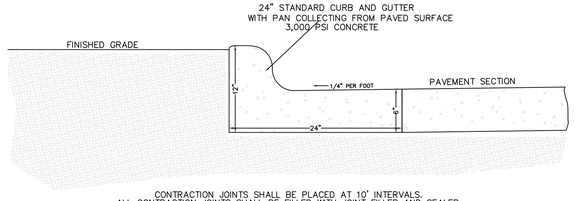


LIGHTING - WALL PACK - LIGHT L
800 Lumen LED
SEE SHEET 1 FOR LOCATIONS



OPTION-TYPICAL LIGHT DUTY ASPHALT PAVING SECTION

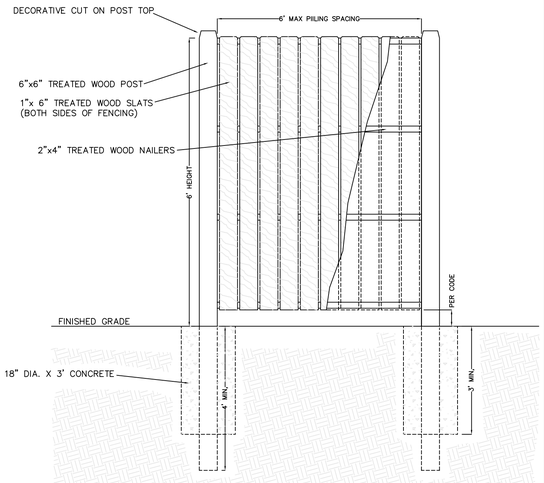
(1) NCDOT ABC materials compacted to a dry density of at least 100% of the Standard Proctor maximum dry density (ASTM D698)
(2) Subgrade soils compacted to a dry density of at least 100% of the Standard Proctor maximum dry density (ASTM D698)
(3) Optional, surface course may be placed with original intermediate paving



CONTRACTION JOINTS SHALL BE PLACED AT 10' INTERVALS.
ALL CONTRACTION JOINTS SHALL BE FILLED WITH JOINT FILLER AND SEALER.

CURB AND GUTTER PAVING SECTION AA

NOT TO SCALE



DUMPSTER FENCE DETAIL

NOT TO SCALE

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PRELIMINARY
GENERAL DETAILS

REVISIONS

NO.	DATE	DESCRIPTION	BY

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 16956 12-14-23 MICHAEL W. ROBINSON

PROJECT: CONWOCK
CINDY'S KITCHEN
CURRITUCK COUNTY NORTH CAROLINA
LOT 1, CARTER/BRUMSEY DIVISION

DATE: 12-14-23
SCALE: 1"=20'
DESIGNED: MWR
DRAWN: MWR
SHEET: 4 OF 6
CAD FILE:
PROJECT NO: 052916

SOIL EROSION & SEDIMENTATION CONTROL PLAN NOTES:

1. SOIL EROSION & SEDIMENT CONTROL PLAN NOTES;
   a.) AREA TO BE DISTURBED: ±110,000 sq.ft. (2.53 ac.)
   b.) PROVIDE A GROUND COVER (TEMPORARY OR PERMANENT) ON ALL SLOPES 3:1 OR STEEPER WITHIN 7 CALENDAR DAYS AND ALL SLOPES FLATTER THAN 3:1 WITHIN 14 CALENDAR DAYS FOLLOWING COMPLETION OF ANY PHASE OF GRADING. PROVIDE A PERMANENT GROUND COVER FOR ALL DISTURBED AREAS WITHIN 15 WORKING DAYS OR 90 CALENDAR DAYS (WHICHEVER IS SHORTER) FOLLOWING COMPLETION OF CONSTRUCTION OR DEVELOPMENT
   c.) IF LAND DISTURBING ACTIVITIES OCCUR OUTSIDE THE PERMANENT VEGETATION SEEDING DATES (APR. 1– SEP.30) THEN TEMPORARY VEGETATION SEEDING SPECIFICATIONS SHALL BE FOLLOWED FOR PLANTING UNTIL THE NEXT APPROPRIATE PERMANENT SEEDING PERIOD, AT WHICH TIME PERMANENT VEGETATION SHALL BE ESTABLISHED ACCORDING TO PERMANENT VEGETATION SEEDING SPECIFICATIONS (SEE PERM. & TEMP. SEEDING SPECIFICATIONS ON SHEET ES2).
   d.) IF EXCESSIVE WIND EROSION OR STORMWATER RUNOFF EROSION DEVELOPS DURING TIME OF CONSTRUCTION ANY LOCATION ON THE PROJECT SITE, ADDITIONAL SILT FENCING OR OTHER MEASURES SHALL BE INSTALLED AS DIRECTED BY ENGINEER SO AS TO PREVENT DAMAGE TO ADJACENT PROPERTY. SEE SILT FENCE DETAIL ON THIS SHEET.
   e.) SOIL EROSION AND SEDIMENTATION CONTROLS ARE TO BE INSPECTED WEEKLY AND AFTER ANY SIGNIFICANT RAINFALL PRODUCING EVENT AND SHALL BE MAINTAINED AND REPAIRED AS NECESSARY UNTIL PERMANENT CONTROLS ARE ESTABLISHED.
   f.) CONSTRUCTION SCHEDULE:
      1) OBTAIN PLAN APPROVAL AND OTHER APPLICABLE PERMITS. NO WORK SHALL BE PERFORMED IN WETLAND AREAS PRIOR TO ISSUANCE OF ALL APPLICABLE USACE PERMITS.
      2) FLAG AND/OR ROUGH STAKE WORK LIMITS.
      3) HOLD PRECONSTRUCTION CONFERENCE (OWNER, CONTRACTOR, ENGINEER, AND APPROPRIATE GOVERNMENT OFFICIALS) AT LEAST ONE WEEK PRIOR TO START OF CONSTRUCTION ACTIVITIES.
      4) INSTALL SILT FENCING AT LOCATIONS SHOWN ON PLAN
      5) COMPLETE CLEARING AND GRUBBING PROCEDURES.
      6) GRADE SITE ACCORDING TO PLAN
      7) INSTALL INFILTRATION BASINS AND STORM SEWER. DROP INLETS TO BE PROTECTED WITH INLET PROTECTION UNTIL CONTRIBUTING DRAINAGE AREAS ARE STABILIZED. PIPE ENDS AT INFILTRATION BASINS SHALL BE PROTECTED WITH OUTLET PROTECTION.
      8) INSTALL PERMEABLE PAVEMENT GRAVEL BASE. BASE LAYER TO BE PROTECTED FROM SEDIMENT AT ALL TIMES. CONSTRUCTION TRAFFIC TO BE RESTRICTED TO SPECIFIC AREAS WITHIN THE BASE (STAGING / WORK AREA TO BE DEFINED BY CONTRACTOR AND CLEARLY DEMARCATED UTILIZING BARRIERS/CONES/TAPE). ONCE HEAVY BUILDING CONSTRUCTION IS COMPLETE, STAGING / WORK AREA BASE MATERIAL WILL BE INSPECTED BY ENGINEER AND IF FOUND TO BE DEGRADED, IT SHALL BE REMEDIATED AT THE EXPENSE OF THE CONTRACTOR. INSTALLATION OF PERMEABLE CONCRETE PAVEMENT SHALL NOT TAKE PLACE UNTIL ALL EARTHWORK ACTIVITIES AND ALL HEAVY BUILDING CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. INSTALLED PERMEABLE CONCRETE SHALL BE PROTECTED FROM SEDIMENT AND FROM HEAVY CONSTRUCTION EQUIPMENT AT ALL TIMES.
      9) ALL EROSION & SEDIMENTATION CONTROL PRACTICES WILL BE INSPECTED WEEKLY AND AFTER HEAVY RAINFALL EVENTS. NEEDED REPAIRS WILL BE MADE IMMEDIATELY.
      10) ONCE SITE IS FULLY STABILIZED; REMOVE INLET AND OUTLET PROTECTION, CLEAN STORM SEWER OF ANY SEDIMENT, FINE–GRADE AND SEED OR LANDSCAPE INFILTRATION BASINS.

PERMANENT VEGETATION

SEEDING DATES: APRIL 1– SEPT 30

SEED MIXTURE	APPLICATION RATES/ACRE
BAHIA	50 LBS.
COMMON BERMUDA (UNHULLED)	50 LBS.
GERMAN MILLETT	15 LBS.
FESCUE	20 LBS.
FERTILIZER 26–13–13 @ 500 LB/ACRE	
MULCH APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.	

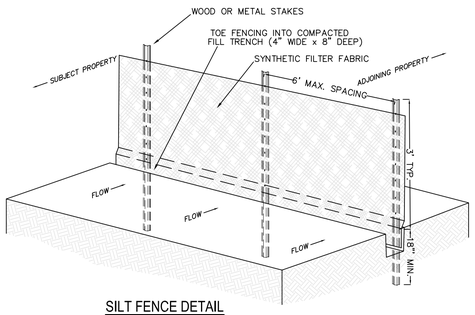
TEMPORARY VEGETATION

SEEDING DATES: OCT. 1 – MARCH 31

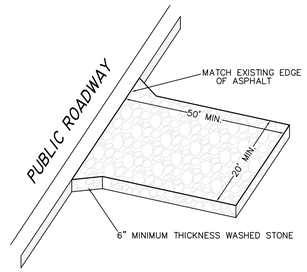
SEED MIXTURE	APPLICATION RATES/ACRE
RYE GRAIN	175 LBS.
FERTILIZER 10–10–10 @ 1000 LB/ACRE	
MULCH APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.	

GENERAL: FERTILIZER RATES SHOWN ARE GENERAL RECOMMENDATIONS; FREQUENCY AND AMOUNT OF FERTILIZATION CAN BEST BE DETERMINED THROUGH SITE SPECIFIC SOIL TESTING.
MAINTENANCE: SATISFACTORY STABILIZATION AND EROSION CONTROL REQUIRES A COMPLETE VEGETATIVE COVER. EVEN SMALL BREACHES IN VEGETATIVE COVER CAN EXPAND RAPIDLY AND, IF LEFT UNATTENDED, CAN ALLOW SERIOUS SOIL LOSS FROM AN OTHERWISE STABLE SURFACE. A SINGLE HEAVY RAIN IS OFTEN SUFFICIENT TO GREATLY ENLARGE BARESPOTS, AND THE LONGER REPAIRS ARE DELAYED, THE MORE COSTLY THEY BECOME. PROMPT ACTION WILL KEEP SEDIMENT LOSS AND REPAIR COST DOWN.
NEW SEEDLINGS SHOULD BE INSPECTED FREQUENTLY AND MAINTENANCE PERFORMED AS NEEDED. IF RILLS AND GULLIES DEVELOP, THEY MUST BE FILLED IN, RE–SEEDED,AND MULCHED AS SOON AS POSSIBLE. DIVERSIONS MAY BE NEEDED UNTIL NEW PLANTS TAKE HOLD.
MAINTENANCE REQUIREMENTS EXTEND BEYOND THE SEEDING PHASE.
WEAK OR DAMAGED SPOTS MUST BE RELIMED, FERTILIZED, MULCHED, AND RESEEDED AS PROMPTLY AS POSSIBLE. REFERTILIZATION MAY BE NEEDED TO MAINTAIN PRODUCTIVE STANDS.

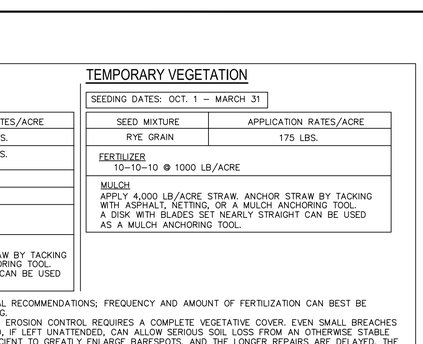
SEEDING SPECIFICATIONS



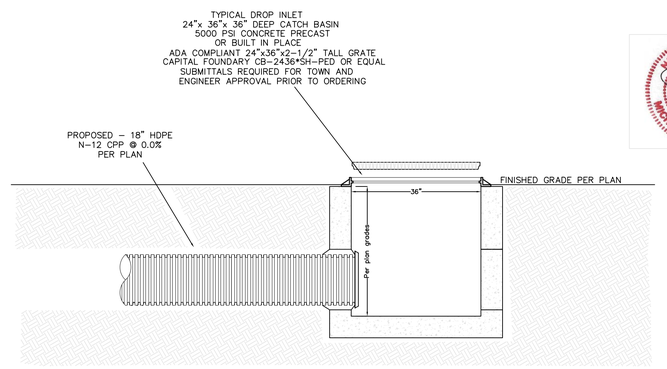
SILT FENCE DETAIL
NOT TO SCALE



GRAVEL CONSTRUCTION ENTRANCE DETAIL
NOT TO SCALE



STORM PIPE OUTLET DETAIL
(APPLIES TO ALL PROPOSED STORM PIPE OUTLETS)
NOT TO SCALE



DETAIL - PROPOSED DROP INLET TYPICAL
NOT TO SCALE

NORTH CAROLINA PROFESSIONAL SEAL 19994 ENGINEER MICHAEL W. ROBINSON 12-14-23

GROUND STABILIZATION AND MATERIALS HANDLING PRACTICES FOR COMPLIANCE WITH THE NCG01 CONSTRUCTION GENERAL PERMIT
Implementing the details and specifications on this plan sheet will result in the construction activity being considered compliant with the Ground Stabilization and Materials Handling sections of the NCG01 Construction General Permit (Sections E and F, respectively). The permittee shall comply with the Erosion and Sediment Control plan approved by the delegated authority having jurisdiction. All details and specifications shown on this sheet may not apply depending on site conditions and the delegated authority having jurisdiction.

SECTION E: GROUND STABILIZATION

Required Ground Stabilization Timeframes			
Site Area Description	Stabilize within this many calendar days after ceasing land disturbance	Timeframe variations	
(a) Perimeter dikes, swales, ditches, and perimeter slopes	7	None	
(b) High Quality Water (HQW) Zones	7	None	
(c) Slopes steeper than 3:1	7	If slopes are 10' or less in length and are not steeper than 2:1, 14 days are allowed	
(d) Slopes 3:1 to 4:1	14	-7 days for slopes greater than 50' in length and with slopes steeper than 4:1 -7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed	
(e) Areas with slopes flatter than 4:1	14	-7 days for perimeter dikes, swales, ditches, perimeter slopes and HQW Zones -10 days for Falls Lake Watershed unless there is zero slope	

Note: After the permanent cessation of construction activities, any areas with temporary ground stabilization shall be converted to permanent ground stabilization as soon as practicable but in no case longer than 90 calendar days after the last land disturbing activity. Temporary ground stabilization shall be maintained in a manner to render the surface stable against accelerated erosion until permanent ground stabilization is achieved.

GROUND STABILIZATION SPECIFICATION
Stabilize the ground sufficiently so that rain will not dislodge the soil. Use one of the techniques in the table below:

Temporary Stabilization	Permanent Stabilization
• Temporary grass seed covered with straw or other mulches and tackifiers • Hydroseeding • Rolled erosion control products with or without temporary grass seed • Appropriately applied straw or other mulch • Plastic sheeting	• Permanent grass seed covered with straw or other mulches and tackifiers • Geotextile fabrics as permanent soil reinforcement matting • Hydroseeding • Shrubs or other permanent plantings covered with mulch • Uniform and evenly distributed ground cover sufficient to restrain erosion • Structural methods such as concrete, asphalt or retaining walls • Rolled erosion control products with grass seed

POLYACRYLAMIDES (PAMS) AND FLOCCULANTS
1. Select flocculants that are appropriate for the soils being exposed during construction, selecting from the *NC DWR List of Approved PAMS/Flocculants*.
2. Apply flocculants at or before the inlets to Erosion and Sediment Control Measures.
3. Apply flocculants at the concentrations specified in the *NC DWR List of Approved PAMS/Flocculants* and in accordance with the manufacturer's instructions.
4. Provide ponding area for containment of treated Stormwater before discharging offsite.
5. Store flocculants in leak-proof containers that are kept under storm-resistant cover or surrounded by secondary containment structures.

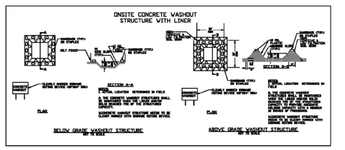
EQUIPMENT AND VEHICLE MAINTENANCE
1. Maintain vehicles and equipment to prevent discharge of fluids.
2. Provide drip pans under any stored equipment.
3. Identify leaks and repair as soon as feasible, or remove leaking equipment from the project.
4. Collect all spent fluids, store in separate containers and properly dispose as hazardous waste (recycle when possible).
5. Remove leaking vehicles and construction equipment from service until the problem has been corrected.
6. Bring used fuels, lubricants, coolants, hydraulic fluids and other petroleum products to a recycling or disposal center that handles these materials.

LITTER, BUILDING MATERIAL AND LAND CLEARING WASTE
1. Never bury or burn waste. Place litter and debris in approved waste containers.
2. Provide a sufficient number and size of waste containers (e.g dumpster, trash receptacle) on site to contain construction and domestic wastes.
3. Locate waste containers at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
4. Locate waste containers on areas that do not receive substantial amounts of runoff from upland areas and does not drain directly to a storm drain, stream or wetland.
5. Cover waste containers at the end of each workday and before storm events or provide secondary containment. Repair or replace damaged waste containers.
6. Anchor all lightweight items in waste containers during times of high winds.
7. Empty waste containers as needed to prevent overflow. Clean up immediately if containers overflow.
8. Dispose waste off-site at an approved disposal facility.
9. On business days, clean up and dispose of waste in designated waste containers.

PAINT AND OTHER LIQUID WASTE
1. Do not dump paint and other liquid waste into storm drains, streams or wetlands.
2. Locate paint washouts at least 50 feet away from storm drain inlets and surface waters unless no other alternatives are reasonably available.
3. Contain liquid wastes in a controlled area.
4. Containment must be labeled, sized and placed appropriately for the needs of site.
5. Prevent the discharge of soaps, solvents, detergents and other liquid wastes from construction sites.

PORTABLE TOILETS
1. Install portable toilets on level ground, at least 50 feet away from storm drains, streams or wetlands unless there is no alternative reasonably available. If 50 foot offset is not attainable, provide relocation of portable toilet behind silt fence or place on a gravel pad and surround with sand bags.
2. Provide staking or anchoring of portable toilets during periods of high winds or in high foot traffic areas.
3. Monitor portable toilets for leaking and properly dispose of any leaked material. Utilize a licensed sanitary waste hauler to remove leaking portable toilets and replace with properly operating unit.

EARTHEN STOCKPILE MANAGEMENT
1. Show stockpile locations on plans. Locate earthen-material stockpile areas at least 50 feet away from storm drain inlets, sediment basins, perimeter sediment controls and surface waters unless it can be shown no other alternatives are reasonably available.
2. Protect stockpile with silt fence installed along toe of slope with a minimum offset of five feet from the toe of stockpile.
3. Provide stable stone access point when feasible.
4. Stabilize stockpile within the timeframes provided on this sheet and in accordance with the approved plan and any additional requirements. Soil stabilization is defined as vegetative, physical or chemical coverage techniques that will restrain accelerated erosion on disturbed soils for temporary or permanent control needs.



CONCRETE WASHOUTS
1. Do not discharge concrete or cement slurry from the site.
2. Dispose of, or recycle settled, hardened concrete residue in accordance with local and state solid waste regulations and at an approved facility.
3. Manage washout from mortar mixers in accordance with the above item and in addition place the mixer and associated materials on impervious barrier and within lot perimeter silt fence.
4. Install temporary concrete washouts per local requirements, where applicable. If an alternate method or product is to be used, contact your approval authority for review and approval. If local standard details are not available, use one of the two types of temporary concrete washouts provided on this detail.
5. Do not use concrete washouts for dewatering or storing defective curb or sidewalk sections. Stormwater accumulated within the washout may not be pumped into or discharged to the storm drain system or receiving surface waters. Liquid waste must be pumped out and removed from project.
6. Locate washouts at least 50 feet from storm drain inlets and surface waters unless it can be shown that no other alternatives are reasonably available. At a minimum, install protection of storm drain inlet(s) closest to the washout which could receive spills or overflow.
7. Locate washouts in an easily accessible area, on level ground and install a stone entrance pad in front of the washout. Additional controls may be required by the approving authority.
8. Install at least one sign directing concrete trucks to the washout within the project limits. Post signage on the washout itself to identify this location.
9. Remove leavings from the washout when at approximately 75% capacity to limit overflow events. Replace the tarp, sand bags or other temporary structural components when no longer functional. When utilizing alternative or proprietary products, follow manufacturer's instructions.
10. At the completion of the concrete work, remove remaining leavings and dispose of in an approved disposal facility. Fill pit, if applicable, and stabilize any disturbance caused by removal of washout.

HERBICIDES, PESTICIDES AND RODENTICIDES
1. Store and apply herbicides, pesticides and rodenticides in accordance with label restrictions.
2. Store herbicides, pesticides and rodenticides in their original containers with the label, which lists directions for use, ingredients and first aid steps in case of accidental poisoning.
3. Do not store herbicides, pesticides and rodenticides in areas where flooding is possible or where they may spill or leak into wells, stormwater drains, ground water or surface water. If a spill occurs, clean area immediately.
4. Do not stockpile these materials onsite.

HAZARDOUS AND TOXIC WASTE
1. Create designated hazardous waste collection areas on-site.
2. Place hazardous waste containers under cover or in secondary containment.
3. Do not store hazardous chemicals, drums or bagged materials directly on the ground.

NORTH CAROLINA Environmental Quality

NCG01 GROUND STABILIZATION AND MATERIALS HANDLING | EFFECTIVE: 04/01/19

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION A: SELF-INSPECTION
Self-inspections are required during normal business hours in accordance with the table below. When adverse weather or site conditions would cause the safety of the inspection personnel to be in jeopardy, the inspection may be delayed until the next business day on which it is safe to perform the inspection. In addition, when a storm event of equal to or greater than 1.0 inch occurs outside of normal business hours, the self-inspection shall be performed upon the commencement of the next business day. Any time when inspections were delayed shall be noted in the Inspection Record.

Inspect	Frequency (during normal business hours)	Inspection records must include:
(1) Rain gauge maintained in good working order	Daily	Daily rainfall amounts. If no daily rain gauge observations are made during weekend or holiday periods, and no on-site/all-day rainfall information is available, record the cumulative rain measurement for those un-attended days (see this will determine if a site inspection is needed). Days on which no rainfall occurred shall be recorded as "zero." The permittee may use another rain-monitoring device approved by the Division.
(2) E&SC Measures	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the measures inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Indication of whether the measures were operating properly, 5. Description of maintenance needs for the measure, 6. Description, evidence, and date of corrective actions taken.
(3) Stormwater discharge outfalls (SDCs)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	1. Identification of the discharge outfalls inspected, 2. Date and time of the inspection, 3. Name of the person performing the inspection, 4. Evidence of indicators of stormwater pollution such as oil sheen, floating or suspended solids or discoloration, 5. Indication of visible sediment leaving the site, 6. Description, evidence, and date of corrective actions taken.
(4) Perimeter of site	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If visible sedimentation is found outside site limits, then a record of the following shall be made: 1. Actions taken to clean up or stabilize the sediment that has left the site limits, 2. Description, evidence, and date of corrective actions taken, and 3. An explanation as to the actions taken to control future releases.
(5) Streams or wetlands onsite or offsite (where accessible)	At least once per 7 calendar days and within 24 hours of a rain event ≥ 1.0 inch in 24 hours	If the stream or wetland has increased visible sedimentation or a stream has visible increased turbidity from the construction activity, then a record of the following shall be made: 1. Description, evidence and date of corrective actions taken, and 2. Records of the required reports to the appropriate Division Regional Office per Part III, Section G, Item (2)(a) of this permit.
(6) Ground stabilization measures	After each phase of grading	1. The phase of grading (installation of perimeter E&SC measures, clearing and grubbing, installation of storm drainage facilities, completion of all land-disturbing activity, construction or redevelopment, permanent ground cover),
		2. Documentation that the required ground stabilization measures have been provided within the required timeframe or an assurance that they will be provided as soon as possible.

NOTE: The rain inspection resets the required 7 calendar day inspection requirement.

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION B: RECORDKEEPING
1. E&SC Plan Documentation
The approved E&SC plan as well as any approved deviation shall be kept on the site. The approved E&SC plan must be kept up-to-date throughout the coverage under this permit. The following items pertaining to the E&SC plan shall be kept on site and available for inspection at all times during normal business hours.

Item to Document	Documentation Requirements
(a) Each E&SC measure has been installed and does not significantly deviate from the locations, dimensions and relative elevations shown on the approved E&SC plan.	Initial and date each E&SC measure on a copy of the approved E&SC plan or complete, date and sign an inspection report that lists each E&SC measure shown on the approved E&SC plan. This documentation is required upon the initial installation of the E&SC measures or if the E&SC measures are modified after initial installation.
(b) A phase of grading has been completed.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate completion of the construction phase.
(c) Ground cover is located and installed in accordance with the approved E&SC plan.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate compliance with aproved ground cover specifications.
(d) The maintenance and repair requirements for all E&SC measures have been performed.	Complete, date and sign an inspection report.
(e) Corrective actions have been taken to E&SC measures.	Initial and date a copy of the approved E&SC plan or complete, date and sign an inspection report to indicate the completion of the corrective action.

2. Additional Documentation to be Kept on Site
In addition to the E&SC plan documents above, the following items shall be kept on the site and available for inspectors at all times during normal business hours, unless the Division provides a site-specific exemption based on unique site conditions that make this requirement not practical:

(a) This General Permit as well as the Certificate of Coverage, after it is received.

(b) Records of inspections made during the previous twelve months. The permittee shall record the required observations on the Inspection Record Form provided by the Division or a similar inspection form that includes all the required elements. Use of electronically-available records in lieu of the required paper copies will be allowed if shown to provide equal access and utility as the hard-copy records.

3. Documentation to be Retained for Three Years
All data used to complete the e-NOI and all inspection records shall be maintained for a period of three years after project completion and made available upon request. [40 CFR 122.41]

PART III
SELF-INSPECTION, RECORDKEEPING AND REPORTING

SECTION C: REPORTING
1. Occurrences that Must be Reported
Permittees shall report the following occurrences:
(a) Visible sediment deposition in a stream or wetland.

(b) Oil spills if:
- They are 25 gallons or more,
- They are less than 25 gallons but cannot be cleaned up within 24 hours,
- They cause sheen on surface waters (regardless of volume), or
- They are within 100 feet of surface waters (regardless of volume).

(c) Releases of hazardous substances in excess of reportable quantities under Section 311 of the Clean Water Act (Ref: 40 CFR 110.3 and 40 CFR 117.3) or Section 102 of CERCLA (Ref: 40 CFR 302.4) or G.S. 143-215.85.

(d) Anticipated bypasses and unanticipated bypasses.

(e) Noncompliance with the conditions of this permit that may endanger health or the environment.

2. Reporting Timeframes and Other Requirements
After a permittee becomes aware of an occurrence that must be reported, he shall contact the appropriate Division regional office within the timeframes and in accordance with the other requirements listed below. Occurrences outside normal business hours may also be reported to the Department's Environmental Emergency Center personnel at (800) 858-0368.

Occurrence	Reporting Timeframes (After Discovery) and Other Requirements
(a) Visible sediment deposition in a stream or wetland	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the sediment and actions taken to address the cause of the deposition. Division staff may waive the requirement for a written report on a case-by-case basis. • If the stream is named on the NC 303(d) list as impaired for sediment-related causes, the permittee may be required to perform additional monitoring, inspections or apply more stringent practices if staff determine that additional requirements are needed to assure compliance with the federal or state impaired-waters conditions.
(b) Oil spills and release of hazardous substances per Item 1(b)-(c) above	• ***Within 24 hours***, an oral or electronic notification. The notification shall include information about the date, time, nature, volume and location of the spill or release.
(c) Anticipated bypasses [40 CFR 122.41(m)(3)]	• ***A report at least ten days before the date of the bypass, if possible***. The report shall include an evaluation of the anticipated quality and effect of the bypass.
(d) Unanticipated bypasses [40 CFR 122.41(m)(3)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that includes an evaluation of the quality and effect of the bypass.
(e) Noncompliance with the conditions of this permit that may endanger health or the environment[40 CFR 122.41(l)(7)]	• ***Within 24 hours***, an oral or electronic notification. • ***Within 7 calendar days***, a report that contains a description of the noncompliance, and its causes; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time noncompliance is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance. [40 CFR 122.41(l)(6) • Division staff may waive the requirement for a written report on a case-by-case basis.

PART II, SECTION G, ITEM (4)
DRAW DOWN OF SEDIMENT BASINS FOR MAINTENANCE OR CLOSE OUT

Sediment basins and traps that receive runoff from drainage areas of one acre or more shall use outlet structures that withdraw water from the surface when these devices need to be drawn down for maintenance or close out unless this is infeasible. The circumstances in which it is not feasible to withdraw water from the surface shall be rare (for example, times with extended cold weather). Non-surface withdrawals from sediment basins shall be allowed only when all of the following criteria have been met:

(a) The E&SC plan authority has been provided with documentation of the non-surface withdrawal and the specific time periods or conditions in which it will occur. The non-surface withdrawal shall not commence until the E&SC plan authority has approved these items,
(b) The non-surface withdrawal has been reported as an anticipated bypass in accordance with Part III, Section C, Item (2)(c) and (d) of this permit,
(c) Dewatering discharges are treated with controls to minimize discharges of pollutants from stormwater that is removed from the sediment basin. Examples of appropriate controls include properly sited, designed and maintained dewatering tanks, weir tanks, and filtration systems,
(d) Vegetated, upland areas of the sites or a properly designed stone pad is used to the extent feasible at the outlet of the dewatering treatment devices described in Item (c) above,
(e) Velocity dissipation devices such as check dams, sediment traps, and riprap are provided at the discharge points of all dewatering devices, and
(f) Sediment removed from the dewatering treatment devices described in Item (c) above is disposed of in a manner that does not cause deposition of sediment into waters of the United States.

NORTH CAROLINA Environmental Quality

NCG01 SELF-INSPECTION, RECORDKEEPING AND REPORTING | EFFECTIVE: 04/01/19

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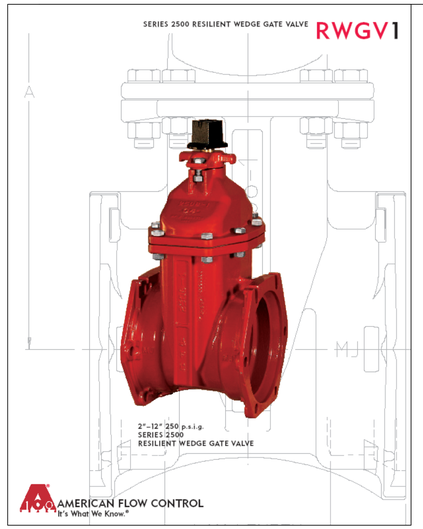
PRELIMINARY
STORMWATER DETAILS

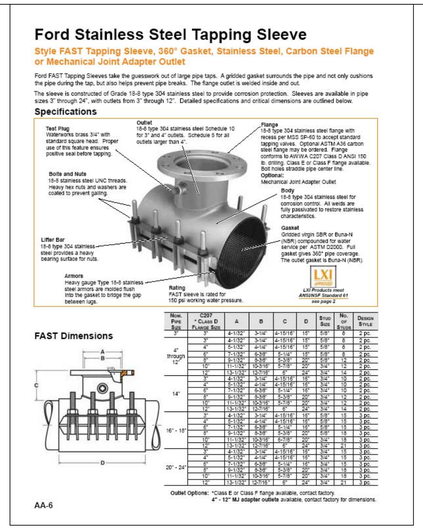
NO.	DATE:	REVISIONS DESCRIPTION	BY:

PROJECT:
CINDY'S KITCHEN
COINJOCK
NORTH CAROLINA
CURRITUCK COUNTY
LOT 1, CARTER/BRUMSEY DIVISION

DATE: 12–14–23
SCALE: 1"=20'
DESIGNED: MWR
DRAWN: MWR
SHEET: 5 OF 6
CAD FILE:
PROJECT NO: 052916



AMERICAN FLOW CONTROL SERIES 2500 RESILIENT WEDGE GATE VALVE
CLOW MODEL MJ-F6100 OR APPROVED EQUAL



Nom. Pipe Size	CSST Class D Flange Size	A	B	C	D	Stup Size	No. of Studs	Device STYLE
3"	3"	4-1/32"	3-1/4"	4-15/16"	15°	5/8"	8	2 pc.
4" through 12"	3"	4-1/32"	3-1/4"	4-15/16"	15°	5/8"	8	2 pc.
	4"	5-1/32"	4-1/4"	4-15/16"	15°	5/8"	8	2 pc.
	6"	7-1/32"	6-3/8"	5-1/8"	15°	5/8"	12	2 pc.
	8"	9-1/32"	8-3/8"	5-1/8"	22½°	3/4"	12	2 pc.
	10"	11-1/32"	10-3/8"	5-1/8"	22½°	3/4"	12	2 pc.
	12"	13-1/32"	12-3/8"	5"	34°	3/4"	14	2 pc.
14"	3"	4-1/32"	3-1/4"	4-15/16"	15°	5/8"	12	2 pc.
	4"	5-1/32"	4-1/4"	4-15/16"	15°	5/8"	12	2 pc.
	6"	7-1/32"	6-3/8"	5-1/8"	22½°	3/4"	12	2 pc.
	8"	9-1/32"	8-3/8"	5-1/8"	22½°	3/4"	12	2 pc.
	10"	11-1/32"	10-3/8"	5-1/8"	22½°	3/4"	12	2 pc.
	12"	13-1/32"	12-3/8"	5"	34°	3/4"	14	2 pc.
16" - 18"	3"	4-1/32"	3-1/4"	4-15/16"	15°	5/8"	15	3 pc.
	4"	5-1/32"	4-1/4"	4-15/16"	15°	5/8"	15	3 pc.
	6"	7-1/32"	6-3/8"	5-1/8"	22½°	3/4"	15	3 pc.
	8"	9-1/32"	8-3/8"	5-1/8"	22½°	3/4"	15	3 pc.
	10"	11-1/32"	10-3/8"	5-1/8"	22½°	3/4"	15	3 pc.
	12"	13-1/32"	12-3/8"	5"	34°	3/4"	15	3 pc.
20" - 24"	4"	5-1/32"	4-1/4"	4-15/16"	15°	3/4"	15	3 pc.
	6"	7-1/32"	6-3/8"	5-1/8"	22½°	3/4"	15	3 pc.
	8"	9-1/32"	8-3/8"	5-1/8"	22½°	3/4"	15	3 pc.
	10"	11-1/32"	10-3/8"	5-1/8"	22½°	3/4"	15	3 pc.
	12"	13-1/32"	12-7/8"	5"	34°	3/4"	21	3 pc.

Outlet Options: *Class E or Class F flange available, contact factory.
4" - 12" MJ adapter outlets available, contact factory for dimensions.

STAINLESS STEEL TAPPING SLEEVE - FORD OR APPROVED EQUAL
OR APPROVED EQUAL

GENERAL FEATURES / GENERAL SPEC

M&H AWWA C502 FIRE HYDRANTS

- Model 129
- Traffic Model
- 250 PSI Working Pressure – 500 PSI Hydrostatic Test – AWWA
- UL / FM Approved

Type: Compression type, opening against line pressure. Main valve will remain closed should hydrant be broken off by traffic accident.

Classification and Size: Hydrants are classified by the main valve size, number and size of larve and pumper nozzles. Hydrant sizes are designated as 4 ½ and 5 ¼ inches, size being the inside diameter of the main valve seat opening.

Length: Hydrant lengths are determined by depth of trench below ground level. Lengths are in multiples of six inches.

Barrel: Upper section of barrel (nozzle section) consists the hose and pumper nozzles. The water way is uniform in diameter for entire length of barrel.

Hydrant Inlet: Hydrant shoe or elbow is provided with flange or mechanized joint connection to fit connecting pipe. All shoe types except flanged are provided with lugs for strapping. The two drain openings in the hydrant shoe are bronze bushed. All shoes are protected from corrosion with fusion bonded epoxy coating.

Hose and Pumper Nozzles: Threaded with fine thread and screwed (not leaded) into tapped openings in nozzle section of hydrant. Hose and pumper nozzle caps are provided with rubber gaskets and chained to nozzle section.

Dry Top: Operating threads are isolated from the waterway by a double O-ring seal in the oue piece bonzer. Operating nut has lubricating hole for lubrication of operating threads and thrust bearing.

Dry Barrel: When the valve of the hydrant is closed, two drain valves in the hydrant shoe automatically open and allow rapid and complete drainage of the hydrant barrel. This dry barrel eliminates danger of damage to the hydrant by freezing.

Operating Mechanism and Working Parts: A stopper resistant cast iron weather shield protects the operating mechanism and rubber O-ring seals from environmental elements and painting solvents. The bronze operating nut drives a steel main valve rod, which in bronze sleeved where it passes through the one-piece bonzer. A bronze-to-bronze seat assembly allow for all working parts to be easily removable through the top of the hydrant without excavating. The bronze seat ring threads into a bronze retainer ring housing, which is permanently affixed into the shoe. The dual positive acting drain valve is constructed of a high strength aluminum bronze to provide additional strength for operation and disassembly. The rubber drain valve facings are water pressure activated and effectively eliminate the drain valve as a maintenance issue.

Component Materials: All gray iron parts conform to ASTM A-126, Class B. Ductile Iron componesnts confirm to ASTM A536. All non-corrosive metal parts are made of copper alloys conforming to AWWA Standard C502 requirements. Remaining componesnts are performance selected from some of the highest quality materials available today.

Shop Test: Main valve tested from inlet side to 250psi. With main valve open, drain valve and seitre hydrant, hydrant hydrostatic pressure tested to 500psi.

July 2005 / M&H C502 / Model 129

M & H AWWA C502, MODEL 129- TRAFFIC MODEL FIRE HYDRANT
NO SUBSTITUTIONS PERMITTED

ES-LF009

For Health Hazard Applications

Job Name _____ Contractor _____
Job Location _____ Approval _____
Engineer _____ Contractor's P.O. No. _____
Approval _____ Representative _____

LEAD FREE

Series LF009

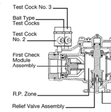
Reduced Pressure Zone Assemblies

Sizes: ¼" – 3" (8 – 80mm)

Series LF009 Reduced Pressure Zone Assemblies are designed to protect potable water supplies in accordance with national plumbing codes and water authority requirements. This series can be used in a variety of installations, including the prevention of health hazard cross-connections in piping systems or for containment at the service line entrance.The LF009 features Lead Free* construction to comply with Lead Free* installation requirements.

The LF009 features two independent check valves, captured springs and replaceable check seats with an intermediate relief valve. Its compact modular design facilitates easy maintenance and assembly access. Sizes ¼" – 1" (8 – 25mm) shutoffs have tee handles.


LF009



Features

- Single access cover and modular check construction for ease of maintenance
- Top entry - all internals immediately accessible
- Captured springs for safe maintenance
- Internal relief valve for reduced installation clearances
- Replaceable seats for economical repair
- Lead Free* cast copper silicon alloy body construction for durability ¼" – 2" (8 – 50mm)
- Fused epoxy coated cast iron body 2½" and 3" (65 and 80mm)
- Ball valve test cocks – screwdriver slotted ¼" - 2" (8 - 50mm)
- Large body passages provides low pressure drop
- Compact, space saving design
- No special tools required for servicing

Specifications

A Reduced Pressure Zone Assembly shall be installed at each potential health hazard location to prevent backflow due to backsphonage and/ or backpressure. The assembly shall consist of an internal pressure differential relief valve located in a zone between two positive seating check modules with captured springs and silicone seat discs. Seats and discs shall be replaceable. The assembly shall include resilient seated valve. There shall be no threads or screws in the waterway exposed to the fluids. Service of all internal components shall be through a single access cover secured with stainless steel bolts. Body and shutoffs shall be constructed using Lead Free* cast copper silicon alloy materials. Lead Free* reduced pressure zone assembly shall comply with state codes and meet requirements of the latest revision of AWWA C511.

The assembly shall also include two resilient seated isolation valves, four resilient seated test cocks and an air gap drain fitting. The assembly shall meet the requirements of: USC, ASSE Std. 1013; AWWA Std. C511; CSA B64.4. Shall be a Watts Series LF009.

Watts product specifications in U.S. customary units and metric are approximate and are provided for reference only. For precise measurements, please contact Watts Technical Service. Watts reserves the right to change or modify product design, construction, specifications, or materials without prior notice and without incurring any obligation to make such changes and modifications on Watts products previously or subsequently sold.

Now Available
WattsBox Insulated Enclosures.
For more information, send for literature ES-WB.

NOTICE
Inquire with governing authorities for local installation requirements

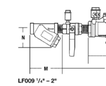
NOTICE
The information contained herein is not intended to replace the full installation instructions. Proper installation is the responsibility of the service of a trained product installer. You are required to thoroughly read all installation instructions and product safety information before beginning the installation of this product.

***The wetted surface of this product contacted by consumable water contains less than 0.25% of lead by weight.**

WATTS

1" WATTS SERIES LF009 REDUCED PRESSURE ASSEMBLY

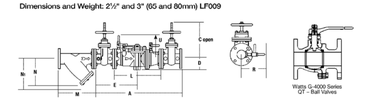
Dimensions and Weight: ¼" – 2" (8 – 50mm) LF009



LF009 ¼" – 2"

SIZE DN	DIMENSIONS (APPROX.)												WEIGHT	
	A		B		C		D		M		N			
in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kgs.
¼	8	10	250	4⅝	117	3⅛	86	1½	32	5½	140	3⅛	80	3½	1.6
⅜	10	10	250	4⅝	117	3⅛	86	1½	32	5½	140	3⅛	80	3½	1.6
½	15	10	250	4⅝	117	3⅛	86	1½	32	5½	140	3⅛	80	3½	1.6
¾	20	10¼	260	5	127	3⅜	92	1⅝	41	6⅛	156	3⅜	86	3½	1.6
1	25	14¼	368	5½	140	3½	76	2¼	64	9½	241	3½	93	5	2
1¼	32	15¾	400	6	152	4	102	2½	64	11¼	285	4¼	108	8	3.5
1½	40	17½	444	6	152	4½	114	2½	64	11¼	285	4¼	108	8	3.5
2	50	21½	543	7½	187	4½	114	3½	83	13½	343	5¼	131	9	3.7

Dimensions and Weight: 2½" and 3" (65 and 80mm) LF009



STRAINER SIZE	DIMENSIONS (APPROX.)								WEIGHT	
	W		H		L		R			
in.	mm	in.	mm	in.	mm	in.	mm	in.	lbs.	kgs.
2½	65	10	254	6½	165	9¾	248	28	12.7
3	80	10¼	257	7	178	10	254	34	15.4

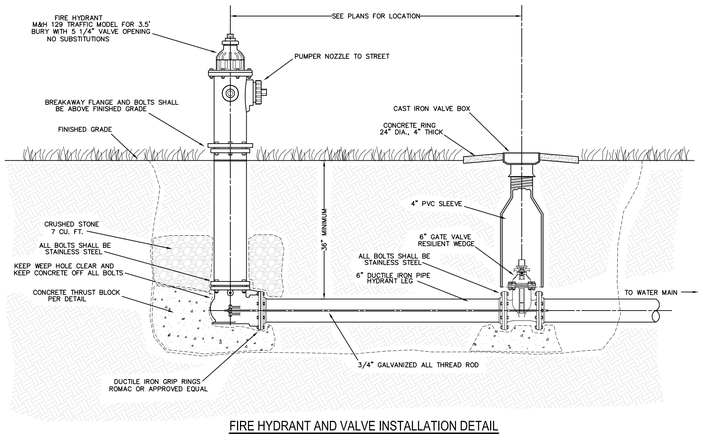
‡Clearance for servicing

MODEL	SIZE DN	DIMENSIONS (APPROX.)												WEIGHT	
		A		B		C		D		E		L			
		in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.	mm	lbs.	kgs.
LF009Z	2½	65	—	—	—	—	—	—	—	—	—	18½	460	75	34.0
LF009ZQT	2½	65	10¼	845	16½	403	4½	114	16½	418	10¼	460	7¾	197	10%
LF009DCZ	2½	65	10¼	845	16½	403	4½	114	16½	418	10¼	460	7¾	197	10%
LF009QDCZ	2½	65	10¼	845	16½	403	4½	114	16½	418	10¼	460	7¾	197	10%
LF009Z	3	80	14¼	820	16½	425	4½	114	16½	422	10½	460	8	222	10%
LF009ZQT	3	80	14¼	820	16½	425	4½	114	16½	422	10½	460	8	222	10%
LF009DCZ	3	80	14¼	820	12½	324	4½	114	16½	422	10½	460	8	222	10%
LF009QDCZ	3	80	14¼	820	7	178	4½	114	16½	422	10½	460	8	222	10%

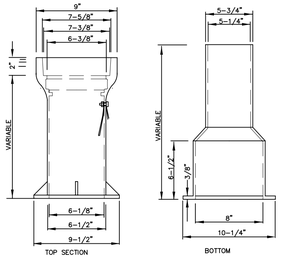
PAINTING REQUIREMENTS FOR NEW FIRE HYDRANTS		
WATERLINE DIAMETER	BONNETT	BODY
6"	YELLOW	RED
8"	ORANGE	RED
10" AND LARGER	GREEN	RED

NOTE: RED BODY MUST BE REPAINTED BY CONTRACTOR
PAINT WITH RUSTOLEUM ENAMEL "SAFETY YELLOW", "SAFETY ORANGE" "SAFETY GREEN" AND "SAFETY RED"

NOTES:
1. DO NOT BLOCK HYDRANT DRAIN WITH THRUST BLOCKING
2. COAT TIE RODS AND NUTS WITH EPOXY
3. DO NOT SUPPORT VALVE BOX DIRECTLY ON VALVE
4. ALL JOINTS SHALL BE MECHANICAL JOINTS
5. INSTALL REFLECTIVE HYDRANT MARKER, STIMPSONITE MODEL 88AB, TWO WAY REFLECTOR IN CENTERLINE OF PAVEMENT PERPENDICULAR TO HYDRANT LOCATION USING E-BOND EPOXY ADHESIVE 1240/1241 PER MANUFACTURERS SPECIFICATIONS.

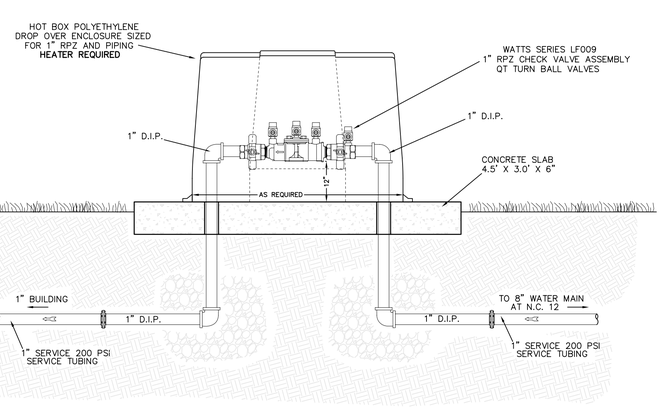


FIRE HYDRANT AND VALVE INSTALLATION DETAIL
NOT TO SCALE



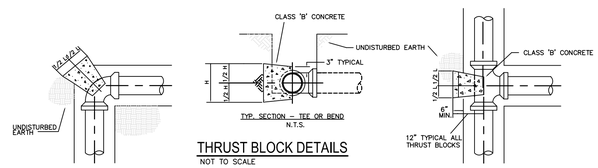
NOTES
1. VALVE BOX SHALL BE 3 PART SLIP–TYPE MANUFACTURED BY ALABAMA PIPE CO., CHAPMAN VALVE CO., COLUMBIAN IRON WORKS R.D. WOOD CO. OR APPROVED EQUAL.
2. VALVE BOX SHALL BE 3–PIECE CLOSE GRAINED CAST IRON SLIP–TYPE VALVE BOX WITH A MINIMUM THICKNESS OF 3/16".
3. VALVE BOX SHALL HAVE RAISED LETTERS "WATER" CAST INTO COVER.
4. VALVE BOX ACCOMMODATES 4" THRU 12" VALVES.
5. VALVE BOX SHALL HAVE 3/8" HOLE DRILLED IN TOP SECTION THRU WHICH A 1/4" X 1–1/2" GALVANIZED BOLT SHALL BE USED TO SECURE A 12GA. THHN TRACER WIRE FOR NON–FERROUS PIPE. A 1/2" WASHER SHALL BE USED BETWEEN NUT AND INSIDE OF BOX. TIGHTEN HAND TIGHT.
6. SCREW TYPE VALVE BOXES ARE NOT ACCEPTABLE.
7. DIMENSIONS SHOWN ARE FOR INFORMATION ONLY AND VARY BASED UPON THE MANUFACTURER.

VALVE BOX DETAIL - WATER
NOT TO SCALE



1" 200 PSI CTS POLYETHYLENE
SERVICE TUBING

1" BACK FLOW PREVENTION
NOT TO SCALE



THRUST BLOCK DETAILS
NOT TO SCALE

NOTE:
WRAP ALL FITTINGS IN 6 MIL. PLASTIC BEFORE POURING REACTION BACKING . ALL CONCRETE TO BE 3000 PSI

CONCRETE THRUST BLOCK SCHEDULE

PIPE SIZE	TEE AND DEAD END			BEND										DESIGN PRESSURE
				90°			45°			22 1/2°			11 1/4°		
INCHES	H	L	C.Y.	H	L	C.Y.	H	L	C.Y.	H	L	C.Y.	H	L	C.Y.	PSI
4" & 2"	1.5'	2.0'	0.11	1.5'	2.0'	0.11	1.5'	2.0'	0.11	1.5	2.0	0.11	1.5	2.0	0.11	150
6"	2.5'	2.5'	0.23	2.5'	2.5'	0.23	1.5'	2.0'	0.11	1.5	2.0	0.11	1.5	2.0	0.11	150
8"	2.5'	2.5'	0.23	3.0	3.0	0.33	2.5'	2.5'	0.23	1.5	2.0	0.11	1.5	2.0	0.11	150

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PRELIMINARY
GENERAL DETAILS

NO.	DATE	DESCRIPTION	BY

PROJECT:
CINDY'S KITCHEN
CURRITUCK COUNTY NORTH CAROLINA
CONNOCK
LOT I, CARTER/BRUMSEY DIVISION

DATE: 12–14–23
SCALE: 1"=20'
DESIGNED: MWR
DRAWN: MWR
SHEET: 6 OF 6
CAD FILE:
PROJECT NO: 052916

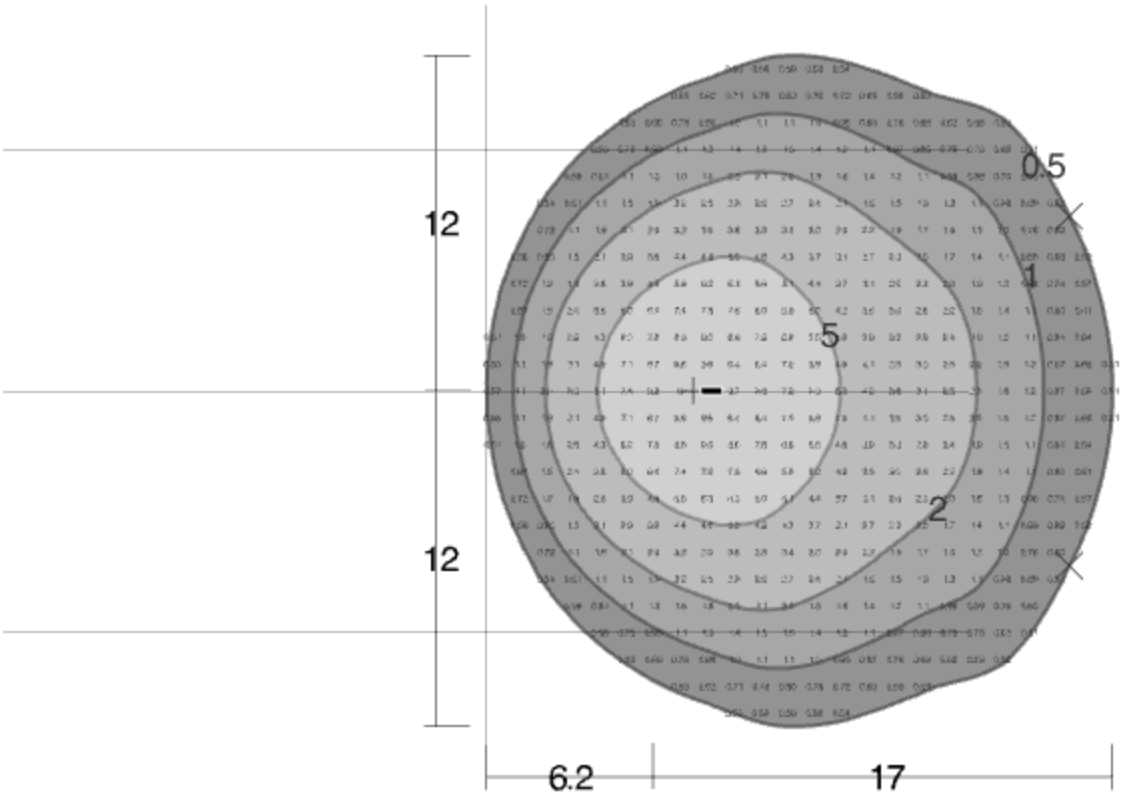
NORTH CAROLINA PROFESSIONAL SEAL 19955 ENGINEER MICHAEL W. ROBINSON 12-14-23

XTOR1B-Y.ies

COOPER LIGHTING SOLUTIONS - LUMARK (FORMERLY EATON)
XTOR1B-Y
CROSSTOUR WALL MOUNT LED
Single (Arm)

Luminaire Watts	12	W
Ballast/Driver Factor	1.00	
Light Loss Factor	1.00	
Total Proration Factor	1.00	
Luminaire Lumens	1327	lms

8.0 ft



Min: 0.50 fc
Max/Avg: 4.0

Avg: 2.6 fc
Avg/Min: 5.2

Max: 10 fc
Max/Min: 21

The Gardena

Wall Mount

STEEL LIGHTING CO.

The go-to for American-made, handcrafted lights. A family-owned business, comfortable making things the old fashioned way.

Dome

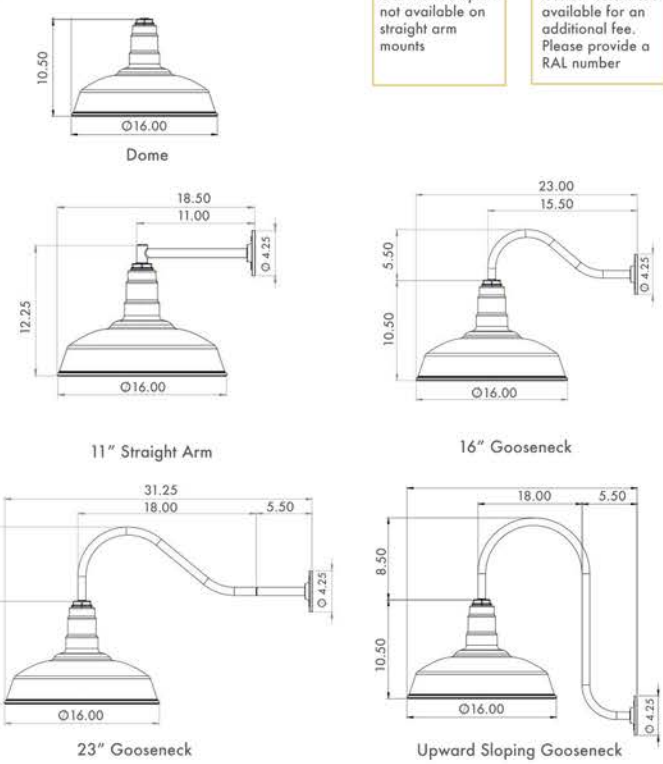
Mounts

Colors

Galvanized option not available on straight arm mounts

Custom colors are available for an additional fee. Please provide a RAL number

Dimensional Data



Parts Included

DOME: (S16) Standard 16" Dome

MOUNT: Choose between a 11" straight arm, 16" gooseneck, 23" gooseneck, or an upward sloping gooseneck

SOCKET: 120V Medium Base Porcelain Socket and 6ft of Wiring. Comes with a threaded Covernut and Gasket for a secure and water proof seal

MOUNTING HARDWARE: (BP12) Heavy Duty 4" Die Cast Base Plate with Gasket and Screws (fits with a 4" Round Electrical Box)

Features

CUSTOMIZABLE: From the shape and the size to the interior color, you can decide what fits best into your vision and we can make it happen.

ALL-WEATHER: Built to last and withstand any storm the outside - or inside - world throws its way.

STEEL CONSTRUCTION: Expertly spun using 18 gauge steel and strong enough to make a lasting statement.

FAST & FREE SHIPPING: We move quickly so your timelines can too – free shipping within 24 hours in the continental US!

APPLICATION: Beside or above garage doors, decoration along walls or barn walls. Usually used outdoors!

Quantity Pricing

200 WATT

c UL us LISTED

Optional Accessories

Electrical Box (RB05): 4" round die cast electrical box which is powder coated to match your fixture.

LED Bulb (LFLA): 800 Lumen Filament LED Medium base screw-in bulb.

6" Mounting Plate (LP12): A larger mounting plate if the standard 4" mounting plate is too small.

Wire Guard (WG16): A matching wire guard that snaps on to the bottom of the fixture. It comes unfinished but can be powder coated upon request.

Ordering Information

Choose each item specification to breakdown the SKU numbers for your order below

S16 – [Color] – [Mount] – [Color] – [Mounting Hardware] – [Color] – [Electrical Box (optional)] — [Color] – [Wire Guard (optional)] – [LED Bulb (optional)]

Color	Mount	Color	Mounting Hardware	Color	Electrical Box (optional)	Color	Wire Guard (optional)	LED Bulb (optional)
00 04 01 06 1M 08 03	ST11 GB04 GB01 GB05	00 04 01 06 1M 08 03	BP12 - Standard 4" Mounting Plate LP12 - Larger 6" Mounting Plate	00 04 01 06 1M 08 03	RB05 - 4" round die cast electrical box	00 04 01 06 1M 08 03	WG16	LFLA - LED Bulb