PROGRAMMING PACKAGE
UTIA Broiler and Research Facility
SBC 540/001-XX-2023
TABLE OF CONTENTS:

PROJECT NARRATIVE
APPLICABLE CODES AND STANDARDS
PROJECT DESIGN ASSUMPTIONS, STANDARDS, & REFERENCES
ARCHITECTURAL NARRATIVE
CIVIL NARRATIVE
SITE UTILITIES NARRATIVE
MECHANICAL NARRATIVE
PLUMBING & FIRE PROTECTION NARRATIVE
ELECTRICAL NARRATIVE
TENNESSEE HIGH PERFORMANCE BUILDING REQUIREMENTS
UTIA SPRING HILL CENTER
REGIONAL MAP, SITE, & SITE PHOTOS
SITE PLAN
ENLARGED SITE PLAN
UTILITY PLAN
ENLARGE UTILITY PLAN
RESEARCH FACILITY PROGRAM
RESEARCH FACILITY SCHEMES
BROILER FACILITY PROGRAM, SPECIFICATIONS, & DRAWINGS
BROILER FACILITY SCHEMES
PROPOSED TIMELINE & OPINION OF PROBABLE COSTS
APPLICABLE CODES AND STANDARDS

The design of the building must adhere to all applicable local, state, and federal codes, requirements, and regulations, including any standards specified by the University of Tennessee.

CITY OF SPRING HILL, TENNESSEE ADOPTED CODES:
as of August 20, 2018

- 2018 International Residential Building Code
- 2018 International Building Code
- 2018 International Mechanical Code
- 2018 International Fuel Gas Code
- 2018 International Plumbing Code
- 2018 International Fire Code
- 2018 Energy Conservation Code
- 2018 Swimming Pool And Spa Code
- 2006 International Property Maintenance Code

TENNESSEE STATE FIRE MARSHAL’S OFFICE ADOPTED CODES:
as of April 12, 2021

- 2012 International Building Code (IBC) (excluding Chapter 11 and 34 Section 3411)
- 2012 International Mechanical Code (IMC)
- 2012 International Plumbing Code (IPC)
- 2012 International Fuel Gas Code (IFGC)
- 2012 International Fire Code (IFC)
- 2012 International Existing Building Code
- 2012 International Energy Conservation Code
- 2017 National Electric Code, NFPA 70

GENERAL ACCESSIBILITY:

- ICC/ANSI A117.1-2009 Accessibility Standards per IBC Chapter 11
- 2010 ADA Standards
PROJECT DESIGN ASSUMPTIONS, STANDARDS, & REFERENCES

FACILITY ASSUMPTIONS:

Research Facility:
- Approximately 3,200 SF
- Occupancy: Business with classroom accessory occupancies
- Fully Sprinklered

Broiler Facility:
- Approximately 138,000 SF
- Occupancy: Group U – Agricultural Buildings
- Built to a Tyson Foods specification modified by UTIA faculty.

UNIVERSITY OF TENNESSEE STANDARDS:
- The University of Tennessee 2020 Design Guidelines and Preferences: February 2020
- Ten-Year Strategic Plan for UTIA, 2018-2028
- The Tennessee High Performance Building Requirements (TN HPBr): July 1, 2021

INDUSTRY & EXPERT REFERENCES:
- Poultry House Controllers for Beginners, Auburn University, 2002.
ARCHITECTURAL NARRATIVE

OVERVIEW:
The Poultry industry in the state has been experiencing rapid growth, particularly in broiler production and genetic seedstock development. To meet the increasing demand for high-quality protein and provide science-based information to broiler growers, industry partners, and Extension staff, UT Ag Research is taking proactive steps. Recognizing the need for futuristic broiler facilities that prioritize sustainability, welfare, and energy efficiency, UT Ag Research has formed a NextGen Steering committee. Comprised of faculty, Ag Research and Education Center (REC) personnel, and industry representatives, this committee aims to design state-of-the-art broiler facilities that align with global production goals while ensuring optimal resource usage and animal welfare.

The Poultry industry, particularly broiler production and seedstock development, holds significant economic value, contributing approximately $7 billion to the state's economy. With a strong focus on enhancing facility efficiency, sustainability, and animal welfare, UT Ag Research aims to play a central role in generating science-based information for growers, Extension staff, and the industry as a whole. To accomplish this, UT Ag Research recognizes the need to construct NextGen commercial scale houses, providing a platform for conducting crucial research and making valuable discoveries. The programming study entails designing a 3,000 square foot research facility along with a 140,000 square foot broiler facility comprising four individual houses, accompanied by essential support buildings.

As a vital part of an integrated industry, the NextGen broiler facility's design will prioritize the increased sustainability of broiler production. By focusing on facility design, energy usage optimization, and production efficiency, the carbon footprint associated with the production of high-quality protein for human consumption can be significantly reduced. The NextGen Steering committee is entrusted with the task of designing broiler facilities that not only enhance industry sustainability but also improve resilience to weather-related challenges and maximize energy efficiencies compared to existing broiler houses.

Through this programming study, UT Ag Research aims to create a blueprint for cutting-edge broiler facilities that foster sustainability, animal welfare, and energy efficiency. By integrating advanced design strategies and research-driven approaches, the NextGen broiler facility will serve as a beacon of innovation in the industry, meeting the needs of a growing population while minimizing environmental impact. The architectural narrative will explore key aspects such as site integration, goals and objectives, sustainability features, functionality, and materiality to present a holistic vision for the NextGen broiler facility.

GOALS & OBJECTIVES:
The primary goal of this architectural project is to create a sustainable and functional space that integrates research activities and advanced chicken broiler farming practices. The research building aims to facilitate scientific discoveries and innovations while providing a nurturing environment for researchers to collaborate and exchange ideas. The broiler houses should be designed to exceed industry standards in order to ensure optimal living conditions for the chickens, resulting in high-quality and ethically produced meat.
ARCHITECTURAL NARRATIVE

SITE INTEGRATION:
The selected site for the new research building and chicken broiler houses is strategically located on an existing farm, perched atop a hill that offers views across the surrounding farm landscape in every direction. This elevated position establishes a strong connection with nature, aligning perfectly with the overall ethos of the farm.

The site's strategic positioning has been carefully considered to optimize the environmental conditions for both the research activities and chicken rearing practices. Taking advantage of the ample sunlight available, the site maximizes solar exposure to enhance energy efficiency and create a healthy and stimulating environment. The orientation of the broiler houses is a critical aspect that has been given special attention. The houses are intentionally oriented along the East-West axis to leverage the natural patterns of sunlight and air movement. This orientation ensures optimal exposure to the morning and evening sun, allowing for proper heating and natural ventilation within the broiler houses. By carefully aligning the buildings with the sun's path, the design aims to enhance the energy efficiency and overall performance of the broiler houses.

In terms of site layout, the research building is situated to the west of the broiler houses with a gravel loadout area between the research building and broiler houses. Placing the research building in this location serves multiple purposes. Firstly, it establishes a visual and symbolic connection between the research facility and the broiler houses, highlighting the importance of scientific advancements and their application in enhancing broiler production. Secondly, this positioning allows the research building to act as a beacon for the new broiler facility, representing a hub of knowledge and innovation within the larger context of the farm.

The site integration for this architectural project prioritizes the natural beauty and tranquility of the existing farm while maximizing solar exposure and optimizing building orientation for energy efficiency. The careful placement of the research building and the strategic alignment of the broiler houses ensure a harmonious and functional relationship between the different components of the facility. Together, they create a cohesive environment that fosters scientific exploration and exemplifies the farm's commitment to excellence.

FUNCTIONALITY:
The research building should be designed with functionality in mind, accommodating a range of research activities. Flexible laboratories, equipped with state-of-the-art equipment and technology, provide scientists with adaptable spaces to conduct experiments and studies. Collaborative areas, such as meeting rooms and communal spaces, encourage interdisciplinary interactions and foster a sense of community among researchers. Furthermore, the layout of the building should be carefully planned to ensure efficient circulation and seamless workflows, enhancing productivity, and encouraging knowledge exchange.

The chicken broiler houses should be designed to meet and surpass industry standards for the welfare of the chickens. The houses incorporate innovative ventilation systems, temperature control mechanisms, and optimized lighting to create a healthy and comfortable environment for the chickens. The spaces are designed to allow natural movement and ensure proper sanitation, contributing to the overall well-being of the animals. The broiler houses should also incorporate advanced waste management systems to handle organic waste effectively and minimize any negative environmental impact.
SITE DESCRIPTION:
The existing Middle Tennessee AgResearch and Education Center (MTREC) is located in Spring Hill, TN on Main Street (US Hwy 31) south of Saturn Parkway. The facility consist of over 1270 acres and serves as a research facility for agriculture. The project area is located in the middle western section of the farm and currently is an agricultural field.

ZONING AND APPROVAL PROCESS:
The site is located within the City of Spring Hill and is zoned Agricultural (AG). The majority of the surrounding property is located within Maury County and is also zoned either Agricultural or A1 Residential to the south and east with the northern adjoining property zoned Light Industrial (M1). The most northeastern corner of the property adjoins property zoned R4 within Spring Hill. With the project site located close to the center of the property, no buffers or setbacks from surrounding properties are anticipated to be required. Coordination with the City of Spring Hill Planning Department will be necessary to verify if they will require a submittal for review, but initial indications are that the project will be exempt from the planning department submittal process.

PARKING AND ACCESS:
Parking requirements are not anticipated to be applicable from a city requirement. However, adequate parking for the facility’s use should be provided. Operation of the completed facility will require numerous tractor trailer trucks. Access is anticipated to be from the main entrance past the main office before turning south along the exiting gravel drive and continuing with a new driveway to the project site. The turning movements will need to be verified and existing roadways widened and adjusted to accommodate the truck traffic. At the turn past the office a power pole may need to be relocated and a tree removed. All new driveway and parking areas are anticipated to be gravel. Thickness and requirements should be as recommended in the geotechnical report to be completed with the next phases of design. Consideration should be provided to the existing asphalt driveway and its ability to support the truck traffic.

Two accessible parking spaces with access aisle should be provided at the research building and should be constructed of concrete.

SITE WORK - DEMOLITION:
Demolition will be limited since the site is currently an open field but to provide the truck access an electric pole may need to be relocated and a tree removed at the turn south past the main office. Any fencing removed for utility installation shall be replaced in kind and all fenced areas shall be maintained during construction.

SITE WORK – GRADING & DRAINAGE:
Proposed grading should be designed to balance cut and fill quantities as much as possible. Coordination with City of Spring Hill will be required to verify their requirements, but initial indications are that they will want the stormwater to be submitted and reviewed for compliance with their regulations for stormwater quantity and quality control.

Since this project will disturb more than one acre of land, a construction stormwater permit will need to be obtained from TDEC (Tennessee Department of Environment and Conservation). The submittal documents required for this permit review process include Erosion Protection and Sediment Control and Grading Plans, SWPPP Report, and a NOI application.

PREPARED BY:
Catalyst Design Group
SITE UTILITIES NARRATIVE

**DOMESTIC WATER & FIRE SERVICE:**
Municipal water is provided on the western side of Main Street (US Hwy 31) and is operated by the City of Spring Hill. However, the farm property is within the Columbia Power and Water service district. Therefore, a meeting with the two water providers will be required to verify the service provider. Since the line along the roadway belongs to City of Spring Hill this narrative is written based on their requirements. Since the line is located on the opposite side of the highway the service line will need to be bored under the highway for service to the farm. The project will require an 8” fire line into the property and a 4” domestic service. Both lines will need to be metered and have backflow prevention at the highway right of way. The lines are to be extended cross country to the project site where the fire will serve a 6” line to the sprinkler system in the research building and two fire hydrants. The domestic line shall be extended to the research building and the broiler facility. Designer to review backup water concepts including but not limited to back up well water or storage tanks.

**Sewer Service:**
Municipal sanitary sewer service is not provided on the farm property. Therefore, sanitary sewer service will need to be provided by a septic system. Coordination with the County and TDEC will be required for permitting the system. The initial step will involve having a soil scientist designate an acceptable field area for the septic system. This area will then need to be protected from any disturbance. The TDEC contact for the septic systems in this area is Alan Floyd at 931-982-5881.

**ELECTRICAL SERVICES & NATURAL GAS:**
The electrical service shall be extended from the existing power line located north of the proposed project site. Coordination with Columbia Power and Water shall be required for the extension and service connections. See electrical narrative also. Natural gas service shall be on extended from the main along Main Steet following the path of the water line to the research building and broiler facility.

**LANDSCAPING:**
No landscaping is anticipated to be required but the owner request a buffer be planted along the west side of the development to screen the facility from Main Street. The exact location of the buffer should be determined to obtain the greatest effect. The buffer should consist of evergreen plant materials and trees.

**PREPARED BY:**
Catalyst Design Group
MECHANICAL OVERVIEW & DESIGN GOALS:
The intent of the mechanical system is to provide a low energy HVAC system that provides good indoor air quality, and occupant comfort. The project will have two distinct sections: Broiler Houses and Research Facility.

SYSTEM OPTIONS:
Research Facility: System options for the Research facility include but not limited to:
- Packaged Rooftop unit(s) with economizer (VAV or multiple constant volume)
- Variable Refrigerant Flow (VRF) with Dedicated Outside air Unit (DOAS)
- Geothermal Heat Pump with DOAS.

Broiler Houses:
- Reference UTIA 54x600 Broiler House Information for project specific requirements.

CONTROLS:
- Provide Research Facility with Direct Digital Controls using one of the two UT approved controls vendors
- Provide Broiler house with electronic controls system as described in UTIA Broiler house information.
- Provide separate controls for each residence, classroom, and laboratory

SUSTAINABILITY:
During schematic design designer shall provide schematic design energy model and life cycle cost analysis to determine the lowest life cycle cost HVAC system strategy. Project shall be designed to meet minimum point threshold required for the State High Performance Building Requirements (HPBr). Designer shall consider strategies for Research facility such as:
- Energy Recovery
- Demand Control Ventilation
- High Efficiency HVAC equipment.
- Low noise to meet or exceed UT standards.
- Meter all HVAC energy usage for tracking at energy management system.
- Individual zone control where feasible / cost effective

OTHER CONSIDERATIONS:
- Laboratories – We would generally expect the Laboratory spaces to have air only recirculated within each individual space with once through 100% outside air depending on classification of lab spaces. Some lab spaces will potentially need Biosafety Cabinets or Fume Hoods depending on space needs. Lab exhaust shall be extended above roof to meet codes and shall have a minimum 30 ft separation from intakes (or greater as required by NFPA 45). Coordinate with lab planner to maintain required occupied and unoccupied air change rates.
- Laboratory Ventilation Controls – Laboratories shall be provided with laboratory airflow control system with associated makeup, exhaust, and hood exhaust valves to maintain space ventilation and pressure controls.

STANDARDS:
- ASHRAE STANDARD 62 AND 90.1
- University of Tennessee Design and Construction Guidelines: https://fs.utk.edu/guides/

PREPARED BY:
I.C. Thomasson Associates, Inc.
PLUMBING & FIRE PROTECTION NARRATIVE

PLUMBING & FIRE PROTECTION OVERVIEW & DESIGN GOALS:
Provide a Plumbing and Fire protection system that is sustainable, reliable, and maximizes health and safety of occupants. The project will have two distinct sections: Broiler Houses and Research Facility.

SANITARY & WASTE:
Provide a complete sanitary waste and vent system utilizing Schedule 40 cast iron pipe and fittings for all above grade piping and Schedule 40 PVC for below grade. Floor or wall mounted cleanouts will be provided every 80 feet within the building. All new waste and vent piping shall connect to existing sanitary system outside the building. Acid resistant piping and fixtures shall be provided for Labs depending on program requirements.

Refer to UTK programming document for Broiler House requirements that may differ from above.

STORMWATER SYSTEMS:
Provide roof drains and overflow drains as needed based on building and roof type. Where an internal drainage system is required, system shall utilize Schedule 40 cast iron pipe and fittings above grade. PVC is acceptable underground. All rainwater leaders and roof drain bodies to be insulated.

DOMESTIC WATER SYSTEMS:
The facility will be provided with a potable and non-potable domestic cold water system utilizing Type “L” copper pipe and fittings. The domestic water service to the new building will be a 4” main. Potable domestic cold water will be distributed throughout the new building to service plumbing fixtures and equipment. Shutoff valves will be provided to isolate fixtures and equipment. Backflow preventers will be provided at all mechanical equipment connections. Shock absorbers will be provided at all flush valve fixtures.

Evaluate the feasibility of different domestic hot water systems. Utilize systems with high energy efficiency to help achieve net zero energy target. Possible systems include:
• Heat pump hot water systems (possibly integrated into a geothermal system or VRF)
• Electric Water Heater
• Gas water heater

FIRE PROTECTION:
Research and Dorm Building shall be fully sprinklered (R type occupancies require sprinklers). Provide sprinkler system meeting NFPA 13 and all local codes. Provide 6x6 sprinkler riser room with outside access. Provide new 6” sprinkler line from site to feed building sprinkler system.

Broiler house program does not indicate any requirement for a fire protection system.

SUSTAINABILITY:
Provide sustainable building features including but not limited to:
• All plumbing fixtures shall be low flow fixtures meeting “Water Sense” criteria
• Evaluate the use of Greywater systems for toilet flushing or on-site irrigation usage.
• Provide metering of irrigation and building water usage and meter all rainwater reuse

OTHER CONSIDERATIONS:
• Review the needs for backflow requirements to meet local codes. Broiler houses and Research Facility will more than likely require separate backflow prevention.
• Reference Broiler House Program for specific plumbing requirements for Broiler House. Note that Broiler House program references the needs for backup water source. Designer to review backup concepts including but not limited to back up well water or storage tanks.

PREPARED BY:
I.C. Thomasson Associates, Inc.
ELECTRICAL NARRATIVE

ELECTRICAL OVERVIEW & DESIGN GOALS:
The intent of the electrical system is to provide reliable power to the Broiler Houses and Research Facility. Backup power systems with some redundancy shall be provided to the Broiler Houses.

BUILDING ELECTRICAL SERVICE:
Electrical service for the Poultry Barns and Research Laboratory shall originate from pad mounted transformers by Columbia Power and Water Systems (CPWS) located on the site. Primary shall be extended on the site overhead from existing power poles and lines near Main Entrance Drive across field, if acceptable to owner, or routed along new and existing roadways to the Poultry Barn and Research Laboratory location. A single phase pad mount transformer shall be provided to feed the poultry barns. From the secondary of the pad mounted transformer the contractor shall provide 3 sets each: 3#300MCM, 3”C to two (2) new 800A, 120/240V, 1PH, 3W main panelboards ‘MDP2’ and ‘MDP3’ located at the Broiler Houses. MDP2 and MDP3 shall feed each broiler house. Each broiler house shall have 2-200A, 120/240V, 1PH, 3 W feeds to disconnects that feed the panels serving each broiler house. An additional pad mount transformer shall be provided for the Research Laboratory. From the secondary of the pad mounted transformer to a new 400A, 120/208V, 3PH, 4W panel ‘MDP1’ with main breaker, the contractor shall provide 2 sets each: 4#4/0, 3” Conduit inside the Laboratory building. An emergency standby engine generator system shall be provided for the Broiler Houses. The system shall be completely automatic for unattended operation for the duration of any loss of normal utility power. System shall be capable of reaching operating range within 10 seconds of initial start signal. Units shall be a continuous standby and shall consist of two (2) 100 KW/KVA capacity diesel generator units. Broiler Houses shall be connected to allow for each house to be powered from either generator. Unit to meet the requirements of NFPA 110. Unit shall be equipped for outdoor installation and located in generator shed. Unit to be equipped with a sound attenuated housing. Starting batteries to be heavy-duty lead acid type with an automatic battery charger. The system shall be provided with a generator control panel and a remote annunciator (remote annunciator to be housed in the building command center). Transfer switches shall be provided as indicated on the drawings. Switches to be double throw actuated by a single operator. Interlocked molded case circuit breakers, contactors or transfer devices with dual solenoid operators are not acceptable. Provide an automatic exerciser to operate the unit for a period of 1 hour each week. The emergency system shall supply power to the each entire Broiler House. Fuel tanks shall be sized to provide 3 days of continuous runtime at 100% load.

LIGHTING SYSTEMS AND CONTROLS:
Reference Broiler House Program documents for all required lighting, quantities, and controls. Research Laboratory shall consist of LED flat panel fixtures with local occupancy controls with local override dimmer switches.

WIRING DEVICES AND DISTRIBUTION:
Reference Broiler House Program documents for all required wiring devices. Conduit shall be PVC in Broiler Houses. In Research Laboratory provide general use duplex outlets where required. Provide GFI duplex convenience outlets above counters in toilets. Provide dedicated receptacles at equipment locations. Conduit in Research Laboratory shall be EMT type and ¾” minimum.

LOW VOLTAGE SYSTEMS:
IT cabling shall be contractor provided/installed. All data outlets will be new and shall be located at computer stations in classrooms and the office desks in the Research Laboratory. Additional outlets shall be provided as required at Broiler House automation. Reference Broiler House Program documents. Wireless access points shall be provided throughout the entire facility as required.

FIRE ALARM SYSTEMS:
Furnish and install a complete campus standard fire alarm system in the Research Laboratory. Provide sufficient control panels, annunciators, manual station, automatic fire detectors, smoke detectors, alarm indicating appliances, wiring, terminations, electrical boxes, conduit and all other necessary material for a complete operation system. All occupied space shall have a visible alarm indicating appliance. Provide duct smoke detectors in supply and return ducts of all air-handling units. Provide connection to monitoring service.

SUSTAINABILITY:
Lighting controls

OTHER CONSIDERATIONS:
Reference Broiler House Program requirements including automation.

STANDARDS:
National Electrical Code (NEC) 2017
International Building Code (IBC) 2012

PREPARED BY:
I.C. Thomasson Associates, Inc.
These requirements serve as a comprehensive set of best practices for designing and constructing sustainable project sites and buildings. They encompass a wide range of principles and strategies aimed at promoting environmental responsibility, resource efficiency, and occupant well-being. By adhering to these guidelines, architects and builders can create projects that minimize their ecological footprint, optimize energy and water usage, and provide a healthy and comfortable environment for occupants.

The comprehensive nature of these requirements ensures that every aspect of the design and construction process is considered in relation to sustainability. From site selection and development to material specifications, energy performance, indoor air quality, and waste management, each stage is carefully evaluated and guided by the best practices outlined in these requirements.

In terms of site design, the requirements emphasize the importance of preserving natural features, reducing stormwater runoff, and promoting biodiversity. By incorporating green spaces, utilizing permeable surfaces, the project can mitigate the impact on local ecosystems and contribute positively to the surrounding environment.

When it comes to building design, the requirements advocate for energy-efficient strategies such as proper insulation, high-performance glazing, and efficient HVAC systems. Material selection is another critical aspect addressed in these requirements. They encourage the use of sustainable and recycled materials, as well as promoting responsible sourcing practices. This helps to minimize environmental impact, reduce waste generation, and support the development of a circular economy.

These requirements provide the design team with a framework of best practices to guide the design and construction of sustainable project sites and buildings. By incorporating these guidelines into their projects, professionals can create spaces that are environmentally responsible, resource-efficient, and conducive to the well-being of both occupants and the surrounding community.

**Research Facility:**
The new research building on a rural farm site shall adhere to the TN HPBr requirements. The project aims to surpass industry standards by integrating sustainability, functionality, and adaptability. Through innovative design and sustainable practices, the building will minimize its environmental impact and provide a conducive environment for research activities. Flexibility will be prioritized to accommodate evolving needs, while promoting advancements in agricultural research and development. During the programming phase we are tracking 53 points, with an additional 28 points possible. By striving to achieve as many points as possible, the project aims to maximize its sustainability performance and contribute to a healthier and more environmentally friendly built environment.

**Broiler House Facility:**
Given the unique agricultural nature of the new broiler house facility, adhering to the TN HPBr checklist would be challenging and potentially artificial. Instead, the facility could follow the more suitable TN HBPr one-time checklist, tailored for unique circumstances. This approach ensures meaningful sustainability integration while addressing specific broiler house requirements. The design team should remain committed to minimizing the facility's ecological footprint and enhancing its performance, meeting industry demands for sustainable broiler production.
### High Performance Building Requirements - July 2021

#### CHECKLIST / TRACKING FORM

<table>
<thead>
<tr>
<th>Phase</th>
<th>Points</th>
<th>Applicable</th>
<th>Minimum</th>
<th>Project Type</th>
<th>New Construction</th>
<th>Project Phase</th>
<th>Category from Applicability Tree</th>
<th>Compliance Check</th>
<th>Project Completes with the HPBr</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programming</td>
<td>53</td>
<td>O</td>
<td>0</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>0</td>
</tr>
<tr>
<td>DD</td>
<td>0</td>
<td>Other</td>
<td>0</td>
<td>C</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>0</td>
</tr>
<tr>
<td>CD</td>
<td>0</td>
<td>Other</td>
<td>0</td>
<td>C</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>0</td>
</tr>
<tr>
<td>Closeout</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>O</td>
<td>0</td>
</tr>
</tbody>
</table>

#### Checklist Total

<table>
<thead>
<tr>
<th>Programming</th>
<th>DD</th>
<th>DD</th>
<th>CD</th>
<th>Closeout</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>23</td>
<td>22</td>
<td>22</td>
<td>22</td>
</tr>
</tbody>
</table>

#### Credits

<table>
<thead>
<tr>
<th>Possible Points</th>
<th>Credit ID</th>
<th>Applicable to Building/Site Scope?</th>
<th>Description</th>
<th>LM Total:</th>
<th>Check List Total</th>
<th>Primary Credit Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>Yes</td>
<td>Site Generation - Reduce Pouring Surveys</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>Yes</td>
<td>Site Generation - Locate Building Site</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>Yes</td>
<td>Site Generation - Minimize Impervious Surfaces</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>4</td>
<td>Yes</td>
<td>Site Generation - Reuse Site Materials</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>Yes</td>
<td>Site Generation - Reduce Construction Waste</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>Yes</td>
<td>Site Generation - Keep Ground Water</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>7</td>
<td>Yes</td>
<td>Site Generation - No or Low Impact Site Preparation</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>8</td>
<td>Yes</td>
<td>Site Generation - No Use of Chiller 30% of HVAC load</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>9</td>
<td>Yes</td>
<td>Site Generation - No Use of Cooling Tower 30% of HVAC load</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>10</td>
<td>Yes</td>
<td>Site Generation - No Use of HVAC 30% of HVAC load</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>11</td>
<td>Yes</td>
<td>Site Generation - Reduce Exterior Lighting Power to be 10% less than is allowed</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>12</td>
<td>Yes</td>
<td>Site Generation - Reduce Exterior Lighting Power to be 20% less than is allowed</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>13</td>
<td>Yes</td>
<td>Site Generation - Reduce Exterior Lighting Power to be 30% less than is allowed</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>14</td>
<td>Yes</td>
<td>Site Generation - Reduce Exterior Lighting Power to be 40% less than is allowed</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>15</td>
<td>Yes</td>
<td>Site Generation - Reduce Exterior Lighting Power to be 50% less than is allowed</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>16</td>
<td>Yes</td>
<td>Site Generation - Reduce Exterior Lighting Power to be 60% less than is allowed</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>17</td>
<td>Yes</td>
<td>Site Generation - Reduce Exterior Lighting Power to be 70% less than is allowed</td>
<td>Yes</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Water Efficiency

<table>
<thead>
<tr>
<th>Possible Points</th>
<th>Credit ID</th>
<th>Applicable to Building/Site Scope?</th>
<th>Description</th>
<th>LM Total:</th>
<th>Check List Total</th>
<th>Primary Credit Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>Yes</td>
<td>Water Efficient Landscaping - Use efficient irrigation technologies and planting measures</td>
<td>Required</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Yes</td>
<td>Water Efficient Landscaping - Non potable sources vs no irrigation</td>
<td>Required</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>Yes</td>
<td>Water Efficient Landscaping - Water efficient lavatories</td>
<td>Required</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>Yes</td>
<td>Water Efficient Landscaping - Water efficient wash basins</td>
<td>Required</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>Yes</td>
<td>Water Efficient Landscaping - Use of efficient irrigation</td>
<td>Required</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>6</td>
<td>Yes</td>
<td>Water Efficient Landscaping - Efficient irrigation systems</td>
<td>Required</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Energy Efficiency

<table>
<thead>
<tr>
<th>Possible Points</th>
<th>Credit ID</th>
<th>Applicable to Building/Site Scope?</th>
<th>Description</th>
<th>LM Total:</th>
<th>Check List Total</th>
<th>Primary Credit Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>Yes</td>
<td>Energy Efficiency - Reduce Energy Use - Photovoltaic</td>
<td>Required</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Yes</td>
<td>Energy Efficiency - Reduce Energy Use - interleaved solar panels</td>
<td>Required</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>3</td>
<td>Yes</td>
<td>Energy Efficiency - Reduce Energy Use - Low-Energy Lighting</td>
<td>Required</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
<td>Yes</td>
<td>Energy Efficiency - Reduce Energy Use - Energy-Efficient Equipment</td>
<td>Required</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

#### Other

<table>
<thead>
<tr>
<th>Possible Points</th>
<th>Credit ID</th>
<th>Applicable to Building/Site Scope?</th>
<th>Description</th>
<th>LM Total:</th>
<th>Check List Total</th>
<th>Primary Credit Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>1</td>
<td>Yes</td>
<td>Commissioning - Basic commissioning process</td>
<td>Required</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>Yes</td>
<td>Commissioning - Advanced commissioning process</td>
<td>Required</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>
## High Performance Building Requirements - July 2021

### CHECKLIST / TRACKING FORM

<table>
<thead>
<tr>
<th>Phase</th>
<th>SBC Number</th>
<th>Project Name</th>
<th>Date of Issuance</th>
<th>Project Type</th>
<th>New Construction</th>
<th>Project Phase</th>
<th>Category</th>
<th>Project Complex with the HPD?</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>5/2023</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Compliance Check

1. **Applicable to Building/Site:**
   - Yes
   - No

2. **Description:**
   - Energy Efficiency - Building system efficiency, energy conservation, energy monitoring and reporting, life cycle performance assessment

3. **Priority:**
   - 1
   - 2
   - 3

4. **Requirement:**
   - Required
   - Optional

5. **Initials:**
   - O - Owner
   - C - Contractor
   - ME - Mechanical Engineer
   - EE - Electrical Engineer
   - CE - Civil Engineer
   - A - Architect
   - DA - Commissioning Agent
   - LA - Landscape Architect
   - Other

### Project Team Representatives

<table>
<thead>
<tr>
<th>Role</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner</td>
<td>O</td>
</tr>
<tr>
<td>Contractor</td>
<td>C</td>
</tr>
<tr>
<td>Mechanical Engineer</td>
<td>ME</td>
</tr>
<tr>
<td>Electrical Engineer</td>
<td>EE</td>
</tr>
<tr>
<td>Civil Engineer</td>
<td>CE</td>
</tr>
<tr>
<td>Architect</td>
<td>A</td>
</tr>
<tr>
<td>Commissioning Agent</td>
<td>DA</td>
</tr>
<tr>
<td>Landscape Architect</td>
<td>LA</td>
</tr>
<tr>
<td>Other</td>
<td>Other</td>
</tr>
</tbody>
</table>

### Applicability Tree:

- **Phase:**
- **Description Level:**
- **Role:**
- **Initials:**

### Material VOC Limits:

- **Applicable to:**
- **Building/Site:**
- **Category:**
- **Comment:**

### Sustainable Materials:

- **Applicable to:**
- **Building/Site:**
- **Category:**
- **Comment:**

### Long Term Energy Reporting:

- **Applicable to:**
- **Building/Site:**
- **Category:**
- **Comment:**

### Renewable Energy - Provide Renewable Energy Credits (RECs):

- **Applicable to:**
- **Building/Site:**
- **Category:**
- **Comment:**

### Energy Efficiency - Provide Renewable Energy Credits (RECs) equal to 15% of annual site electricity through TVA or RECs equal to 35% from another source

### Energy Star qualified appliances & equipment

- **Applicable to:**
- **Building/Site:**
- **Category:**
- **Comment:**

### Life Cycle Cost Analysis

- **Applicable to:**
- **Building/Site:**
- **Category:**
- **Comment:**

### Project Team Representatives Initials

<table>
<thead>
<tr>
<th>Role</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Owner</td>
<td>O</td>
</tr>
<tr>
<td>Contractor</td>
<td>C</td>
</tr>
<tr>
<td>Mechanical Engineer</td>
<td>ME</td>
</tr>
<tr>
<td>Electrical Engineer</td>
<td>EE</td>
</tr>
<tr>
<td>Civil Engineer</td>
<td>CE</td>
</tr>
<tr>
<td>Architect</td>
<td>A</td>
</tr>
<tr>
<td>Commissioning Agent</td>
<td>DA</td>
</tr>
<tr>
<td>Landscape Architect</td>
<td>LA</td>
</tr>
<tr>
<td>Other</td>
<td>Other</td>
</tr>
</tbody>
</table>

### Comment:

1. **Describe implementation approach for each pursued credit. New comments should be appended to old comments at each project phase. If credits are neither pursued nor applicable, provide justification.**

### Prior Comments:

- **Comment:**
- **Description:**
- **Level:**
- **Input:**
- **Role:**
- **Initials:**

### Priority Credit Responsibility

<table>
<thead>
<tr>
<th>Credit ID</th>
<th>Possible Points</th>
<th>Applicable to Building/Site?</th>
<th>Description</th>
<th>Level</th>
<th>Role</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### M Total:

<table>
<thead>
<tr>
<th></th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>15</th>
<th>16</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### E Total:

<table>
<thead>
<tr>
<th></th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

1. **Refine from copying and pasting data in Column C. “Applicable to Building/Site Scope?” as this can cause errors in some rows.**
2. **If any cell highlights red, then you have a point allocated to a credit that is “not applicable.” This is an error. Simply delete the contents of the cell to reset.**
3. **In column C, if you have copied or pasted in this column and a cell highlights red, delete the contents of that cell to correct the error.**
4. **If no points are available in the dropdown, this means you have listed that credit as “not applicable” and points cannot be attempted.”

### Closeout

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Closeout

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Help/Note:

- **Describe implementation approach for each pursued credit. New comments should be appended to old comments at each project phase. If credits are neither pursued nor applicable, provide justification.**

### Prior Comments:

- **Comment:**
- **Description:**
- **Level:**
- **Input:**
- **Role:**
- **Initials:**

### Priority Credit Responsibility

<table>
<thead>
<tr>
<th>Credit ID</th>
<th>Possible Points</th>
<th>Applicable to Building/Site?</th>
<th>Description</th>
<th>Level</th>
<th>Role</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### M Total:

<table>
<thead>
<tr>
<th></th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>15</th>
<th>16</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### E Total:

<table>
<thead>
<tr>
<th></th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Notes:

1. **Refine from copying and pasting data in Column C. “Applicable to Building/Site Scope?” as this can cause errors in some rows.**
2. **If any cell highlights red, then you have a point allocated to a credit that is “not applicable.” This is an error. Simply delete the contents of the cell to reset.**
3. **In column C, if you have copied or pasted in this column and a cell highlights red, delete the contents of that cell to correct the error.**
4. **If no points are available in the dropdown, this means you have listed that credit as “not applicable” and points cannot be attempted.”

### Closeout

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Help/Note:

- **Describe implementation approach for each pursued credit. New comments should be appended to old comments at each project phase. If credits are neither pursued nor applicable, provide justification.**

### Prior Comments:

- **Comment:**
- **Description:**
- **Level:**
- **Input:**
- **Role:**
- **Initials:**

### Priority Credit Responsibility

<table>
<thead>
<tr>
<th>Credit ID</th>
<th>Possible Points</th>
<th>Applicable to Building/Site?</th>
<th>Description</th>
<th>Level</th>
<th>Role</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### M Total:

<table>
<thead>
<tr>
<th></th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>15</th>
<th>16</th>
<th>17</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### E Total:

<table>
<thead>
<tr>
<th></th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### High Performance Building Requirements - July 2021

#### Checklist / Tracking Form

**Phase** | **Puzzle Summary** | **SBC Number** | **Project Name** | **Project Type** | **Applicable to Building/Site Scope?** | **Category A** | **Category from Applicability Tree** | **Compliance Check** | **Project Completes with the HPBr?** | **Points** | **Priority** | **Level** | **Comment** | **Primary Credit Responsibility** | **Role** | **Initials**
---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---
Programming | | | | New Construction | | | | | | | | | | | | | | |
SD | 0 | | | | | | | | | | | | | | | | | |
DD | 0 | | | | | | | | | | | | | | | | | |
Closeout | 0 | | | | | | | | | | | | | | | | | |

**Helpful Hints:**

1. Refrain from copying and pasting data in Column C, “Applicable to Building/Site Scope?” as this can cause errors in some rows.
2. If any cell highlights red below, then you have a point allocated to a credit that is “not applicable.” This is an error. Simply delete the contents of the cell to correct the error.
3. If column C, if you have copied or pasted in this column and a cell highlights all red, delete the contents of that cell to correct the error.
4. If no points are available in the dropdown, this means you have listed that credit as “not applicable” and points cannot be attempted.

**Checklist Total:** 53 | 28 | 23 | 0 | 104 | 0 | 0 | 104 | 0 | 0 | 104

**Possible Points**

<table>
<thead>
<tr>
<th>Credit ID</th>
<th>Applicable to Building/Site Scope?</th>
<th>Description</th>
<th>Level:</th>
<th>Comment</th>
<th>Primary Credit Responsibility</th>
<th>Role</th>
<th>Initials</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID 1.1</td>
<td>Yes</td>
<td>Innovation in Design: Provide Specific Title</td>
<td>Priority 1</td>
<td>Yes</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID 1.2</td>
<td>Yes</td>
<td>Innovation in Design: Provide Specific Title</td>
<td>Priority 2</td>
<td>Yes</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID 1.3</td>
<td>Yes</td>
<td>Innovation in Design: Provide Specific Title</td>
<td>Priority 2</td>
<td>Yes</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID 1.4</td>
<td>Yes</td>
<td>Innovation in Design: Provide Specific Title</td>
<td>Priority 2</td>
<td>Yes</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ID 1.5</td>
<td>Yes</td>
<td>Environmentally Accredited Design Team</td>
<td>Priority 1</td>
<td>Yes</td>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**

- Describe implementation approach for each pursued credit. New comments should be appended to old comments at each project phase. If credits are neither pursued nor applicable, provide justification.

**Primary Credit Responsibility**

- Owner
- Contractor
- Mechanical Engineer
- Electrical Engineer
- Civil Engineer
- Architect
- Commissioning Agent
- Landscape Architect
- Other

Print Date: 6/5/2023 3:39 PM State of Tennessee HPBr 2/20/18 Page 3 of 3
MIDDLE TENNESSEE AGREASEARCH & EDUCATION CENTER AT SPRING HILL

The Middle Tennessee AgResearch and Education Center at Spring Hill serves as a vital hub for research and innovation in the agricultural industry. Dedicated to enhancing crop production efficiency and advancing management systems, the center conducts extensive research on commercial crops, weed control systems, and various agricultural practices. The center plays a crucial role in the development and management of fruit and vegetable crops, focusing on key varieties such as peaches, apples, grapes, and blueberries. Committed to holistic agricultural improvement, the center also focuses on the continuous enhancement of beef and dairy cattle production and with this the addition of this project, poultry production and research. Through cutting-edge research and a dedication to excellence, the Middle Tennessee AgResearch and Education Center at Spring Hill stands at the forefront of driving sustainable advancements in the agricultural sector.
LOCATION FOR THE PROPOSED FACILITY
SITE PHOTOS

VIEW TO THE WEST

VIEW TO THE NORTH
SITE PHOTOS

VIEW TO THE EAST

VIEW TO THE SOUTH
### Research Facility Space Program Overview

<table>
<thead>
<tr>
<th>Space Name</th>
<th>SF Each</th>
<th>SF Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Facility</td>
<td>200</td>
<td>200</td>
</tr>
<tr>
<td>Laboratory - Clean</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Laboratory - Dirty</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Laboratory - Engineering</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>Kitchenette</td>
<td>120</td>
<td>120</td>
</tr>
<tr>
<td>Offices (2)</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>Public Restrooms</td>
<td>70</td>
<td>70</td>
</tr>
<tr>
<td>Dormitory Area (2)</td>
<td>150</td>
<td>300</td>
</tr>
<tr>
<td>Shower/Locker Room</td>
<td>270</td>
<td>540</td>
</tr>
<tr>
<td>Storage</td>
<td>75</td>
<td>75</td>
</tr>
</tbody>
</table>

**Total SF**

<table>
<thead>
<tr>
<th>Gross Factor 33%</th>
<th>3,199</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total SF</strong></td>
<td><strong>3,199</strong></td>
</tr>
</tbody>
</table>
**Space Name:** LAB - DIRTY

### Architectural Requirements

**Space Description:** Space for preparing dirty samples (e.g. manure) and works.

**Size:** 400

**Approx. Room Size:**
- Width: 20
- Length: 20

**Adjacencies Required:**

### Windows

- **Required**
- **Operable**

**Operable Specific views:**
- Black-out shades

**Optional**
- No windows
- Interior windows

### Doors and Hardware

- **Size (WxH):**
- **View light**
- **Lock**
- **Sound seal**
- **Hold open**
- **Card reader**
- **Door operator**

**Special requirements:** Card reader access for the building & separate card access to engineering lab.

### Finishes:

- **Floors:** Finished concrete.
- **Walls:** FRP type material/fiberglass covering.
- **Base:** Rubber
- **Ceiling:** ACT, vinyl faced
- **Other:** Wipe and vaccum clean, no acids.

### Casework:

- **Base cabinets**
- **Tall cabinets**
- **Open shelving**
- **Wall cabinets**
- **Counter only**
- **Peg Boards**

**Counter Material / Color:** Epoxy countertops/Black

**Cabinet/Drawer Ratio:**

### Specialties:

- **Marker board**
- **Size:**
- **Number:**
- **Towels dispenser**
- **Tack board**
- **Size:**
- **Number:**
- **Tackable walls**
- **Projection screen**
- **TV bracket**

### Acoustical & Vibration Requirements

- **Acoustically Sensitive**
- **Vibration Producing:**
- **Vibration Sensitive:**
- **Heat Producing**
- **Lighting Sensitive:**
- **Noise Producing**

### Structural Requirements

- **Unusual floor loads:**
- **Ceiling supported equipment:**
- **Rooftop equipment:**
- **Floor trenches:**
- **Recessed slab:**
## UTIA Broiler and Research Facility

**Space Name:** LAB - DIRTY

### HVAC Requirements
- **Temperature (Heating / Cooling):**
- **Humidity:** Handling extra moisture.
- **Unusual cooling loads:**
- **Zone controls:**
- **Special venting or exhaust:**

<table>
<thead>
<tr>
<th>Fume Hood</th>
<th>Number:</th>
<th>Size:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Special Locations
- **Ceiling**
- **Floor**

### Plumbing Requirements
- **Counter sink**
- **Wall hung sink**
- **Specialty sink**
- **Eye wash:** OW to confirm.
- **Safety shower**

<table>
<thead>
<tr>
<th>Cold water</th>
<th>Hot water</th>
<th>Floor drain</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Clay / plaster trap</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Compressed air</th>
<th>Natural gas</th>
<th>Hose bibb</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Clay / plaster trap</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grease trap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drinking fountain</td>
</tr>
<tr>
<td>Bottle filler</td>
</tr>
</tbody>
</table>

### Cylinder Gases
- **Oxygen**
- **CO2**
- **Hydrogen**
- **Other:**

<table>
<thead>
<tr>
<th>Specialty sink</th>
<th>Compressed air</th>
<th>Grease trap</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Natural gas</th>
<th>Hose bibb</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Chemicals & Waste
- **List with Quantities:**

### Fire Protection Requirements
- **Typical**
  - Sprinkler Head Type:

<table>
<thead>
<tr>
<th>Dry System</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Lighting
- **Foot Candles:**
  - **Direct lighting**
  - **Indirect lighting**
  - **Display lighting**

<table>
<thead>
<tr>
<th>Special lighting</th>
<th>Standard switching</th>
<th>Dual level switching</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Occupancy detection</th>
<th>Dimmer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Power
- **110v / 20A / 1PH**
- **480v / 3PH**
- **Dedicated circuits**

<table>
<thead>
<tr>
<th>208v / 30A / 1PH</th>
<th>Emergency power</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cord reel</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>208v / 30A / 3PH</th>
<th>UPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Waterproof</td>
</tr>
</tbody>
</table>

### Special Locations
- **Counter**
- **Special height**

<table>
<thead>
<tr>
<th>Counter / desk</th>
<th>Printer / copier</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Intercom</th>
<th>Volume control</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Bell system</th>
<th>Clock system</th>
</tr>
</thead>
</table>

### Communications
- **Voice / Data Outlets**
  - **Floor**
  - **Wall**

<table>
<thead>
<tr>
<th>Microphone</th>
<th>Speakers</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Intercom</th>
<th>Volume control</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Bell system</th>
<th>Clock system</th>
</tr>
</thead>
</table>
**Space Name:** LAB - DIRTY

### Audio / Visual
- [ ] Smart board
- [ ] TV Display
- [ ] Projector
- [ ] Lecturn
- [ ] Microphone
- [ ] DVD
- [ ] Computer
- [ ] Document Camera
- [ ] Speakers
- [ ] Lecture Capture
- [ ] A/V control system
- [ ] Special

### Security
- [ ] Camera
- [ ] Card reader
- [ ] Intrusion alarm

### Furnishings, Equipment, and Other Considerations

**Furnishings:**

**Equipment:**

List any special equipment to be accommodated in this space and attach cut sheets for each item.
- Dryers with dedicated circuits, consider dryers with exhaust/venting.

**Other considerations:**
# UTIA Broiler and Research Facility

**Space Name:** LAB - CLEAN

## Architectural Requirements

- **Space Description:** Lab space for preparing clean samples and work.
- **Size:**
  - Approx. Room Size: 200
  - Width: 
  - Length: 

## Windows

- Required
- Operable
- Specific views:
  - Black-out shades

## Doors and Hardware

- Size (WxH):
- Closer
- Access control
- Special requirements:
  - View light
  - Card reader
  - Lock
  - Sound seal
  - Hold open
  - Door operator

## Finishes:

- Floors: Finished concrete
- Walls: Painted Gypsum Board
- Base: Rubber
- Ceiling: ACT
- Other:

## Casework:

- Base cabinets
- Wall cabinets
- Counter Material / Color: Epoxy countertops/Black
- Cabinet/Drawer Ratio:
- Other storage requirements:

## Specialties:

- Marker board
- Tack board
- Writable walls
- Smart board
- Size: TBD
- Number: TBD
- Other:

## Acoustical & Vibration Requirements

- Acoustically Sensitive
- Vibration Sensitive:
- Lighting Sensitive:
- Vibration Producing:
- Heat Producing
- Noise Producing

## Structural Requirements

- Unusual floor loads:
- Ceiling supported equipment:
- Roof terrace equipment:
- Floor trenches:
- Recessed slab:
<table>
<thead>
<tr>
<th>HVAC Requirements</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (Heating / Cooling):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humidity:</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unusual cooling loads:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone controls:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special venting or exhaust:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fume Hood</td>
<td>Number:</td>
<td>Size:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plumbing Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counter sink</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall hung sink</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialty sink</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eye wash</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety shower</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cold water</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hot water</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Compressed air</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Natural gas</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hose bibb</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Floor drain</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clay / plaster trap</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Grease trap</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Drinking fountain</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bottle filler</td>
<td></td>
</tr>
<tr>
<td>Cylinder Gases</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oxygen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hydrogen</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>CO2: Small cylinder inside building.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Other:</td>
<td></td>
</tr>
<tr>
<td>Chemicals &amp; Waste</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fire Protection Requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Typical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sprinkler Head Type:</td>
<td>Dry System</td>
<td>Other</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lighting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foot Candles:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct lighting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect lighting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display lighting</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Special lighting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Standard switching</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dual level switching</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Occuancy detection</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dimmer</td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td></td>
<td></td>
</tr>
<tr>
<td>110v / 20A / 1PH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>480v / 3PH</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dedicated circuits</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>208v / 30A / 1PH</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Emergency power</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cord reel</td>
<td></td>
</tr>
<tr>
<td></td>
<td>208v / 30A / 3PH</td>
<td></td>
</tr>
<tr>
<td></td>
<td>UPS</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Waterproof</td>
<td></td>
</tr>
<tr>
<td>Special Locations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ceiling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Counter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special height</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plug molding - wall</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Plug molding - counter</td>
<td></td>
</tr>
<tr>
<td>Communications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voice / Data Outlets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Floor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wall</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Counter / desk</td>
<td>\</td>
</tr>
<tr>
<td></td>
<td>Printer / copier</td>
<td></td>
</tr>
<tr>
<td>Public Address System</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microphone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speakers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Intercom</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Volume control</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bell system</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clock system</td>
<td></td>
</tr>
</tbody>
</table>
## Audio / Visual

- Smart board
- TV Display
- Projector
- Lecturn
- Microphone
- DVD
- Computer
- Document Camera
- Speakers
- Lecture Capture
- A/V control system
- Special

## Security

- Camera
- Card reader
- Intrusion alarm

## Furnishings, Equipment, and Other Considerations

### Furnishings:

- Counter space for equipment (e.g. desktop centrifuge) and cleaning.
- Biosafety cabinet x1 size: 30" x 60".
- Flammable storage area under cabinet.

### Equipment:

List any special equipment to be accommodated in this space and attach cut sheets for each item.

- Freezer (-80°C).
- Refrigerator.

### Other considerations:

A small space within this lab to be build under BSL2 compliance.

Piece of equipment. Size: 5' x 5'. Wish list item, not required.
Space Name: LAB - ENGINEERING

**Architectural Requirements**

Space Description: Lab space for engineering work and equipment.

- **Size:** 400
- **Approx. Room Size:** Width: 20  |  Length: 20

**Windows**

- [ ] Required
- [ ] Operable
- Specific views:
  - [ ] No windows
  - [ ] Optional
  - [ ] Black-out shades
  - [ ] Interior windows

**Doors and Hardware**

- Size (WxH):
  - [ ] View light
  - [ ] Sound seal
  - [ ] Card reader
  - [ ] Lock
  - [ ] Hold open
  - [ ] Door operator

**Special requirements:** Separate Card Reader from Building

**Finishes:**

- Floors: Finished concrete.
- Base: Rubber
- Walls: Painted Gypsum Board
- Ceiling: ACT
- Other:

**Casework:**

- [ ] Base cabinets
- [ ] Tall cabinets
- [ ] Counter only
- [ ] Open shelving
- [ ] Peg Boards
- [ ] Wall cabinets
- Counter Material / Color:
- Cabinet/Drawer Ratio:
- Other storage requirements:

**Specialties:**

- [ ] Marker board
- [ ] Size: TBD
- [ ] Number: TBD
- [ ] Tack board
- [ ] Size:
- [ ] Number:
- [ ] Tackable walls
- [ ] Towel dispenser
- [ ] Projection screen
- [ ] TV bracket
- [ ] Writable walls
- [ ] Lighting Sensitive:
- [ ] Noise Producing
- [ ] Smart board

**Acoustical & Vibration Requirements**

- [ ] Acoustically Sensitive
- [ ] Vibration Producing:
- [ ] Heat Producing
- [ ] Lighting Sensitive:
- [ ] Noise Producing

**Structural Requirements**

- [ ] Unusual floor loads:
- [ ] Ceiling supported equipment:
- [ ] Rooftop equipment:
- [ ] Floor trenches:
- [ ] Recessed slab:
**Space Name:** LAB - ENGINEERING

### HVAC Requirements
- **Temperature (Heating / Cooling):**
- **Humidity:**
- **Unusual cooling loads:**
- **Zone controls:**
- **Special venting or exhaust:**
- **Amonia gas, methane gas, N20 gas.**

### Plumbing Requirements
- **Counter sink**
- **Wall hung sink**
- **Specialty sink**
- **Eye wash**
- **Safety shower**
- **Cold water**
- **Hot water**
- **Compressed air**
- **Natural gas**
- **Hose bibb**
- **Clay / plaster trap**
- **Grease trap**
- **Drinking fountain**
- **Bottle filler**

### Cylinder Gases
- **Oxygen**
- **CO2**
- **Hydrogen**
- **Other: NH3**

### Chemicals & Waste
- List with Quantities:

### Fire Protection Requirements
- **Typical**
- **Dry System**
- **Other**

### Lighting
- **Foot Candles:**
  - **Direct lighting**
  - **Indirect lighting**
  - **Display lighting**
  - Special lighting
  - Standard switching
  - Dual level switching
  - Occupancy detection
  - Dimmer

### Power
- **110v / 20A / 1PH**
- **480v / 3PH**
- **Dedicated circuits**
- **208v / 30A / 1PH**
- **Emergency power**
- **Cord reel**
- **208v / 30A / 3PH**
- **UPS**
- **Waterproof**

### Special Locations
- **Ceiling**
- **Counter**
- **Floor**
- **Special height**
- **Plug molding - wall**
- **Plug molding - counter**

### Communications
- **Voice / Data Outlets**
  - **Counter / desk**
  - **Printer / copier**
  - **Wall phone**
- **Public Address System**
  - **Microphone**
  - **Intercom**
  - **Bell system**
  - **Speakers**
  - **Volume control**
  - **Clock system**
### UTIA Broiler and Research Facility

**Space Name:** LAB - ENGINEERING

<table>
<thead>
<tr>
<th>Audio / Visual</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart board</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TV Display</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projector</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecturn</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microphone</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DVD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Document Camera</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speakers</td>
<td></td>
<td></td>
<td>□</td>
</tr>
<tr>
<td>Lecture Capture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A/V control system</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Security</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Camera</td>
<td></td>
<td>□</td>
<td></td>
</tr>
<tr>
<td>Card reader</td>
<td>□</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrusion alarm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Furnishings, Equipment, and Other Considerations**

- **Furnishings:**
- **Equipment:**
  - List any special equipment to be accommodated in this space and attach cut sheets for each item.
  - Need spaces for desks for a few (3) computers.
  - Need enough power outlets on the wall.
  - Long power strips with 18+ outlets over the counter.

**Other considerations:**
**Space Name:** KITCHENETTE

**Architectural Requirements**

| Space Description: Small Kitchenette to serve the building and potential guests |
| Size: 120 SF |
| Approx. Room Size: Width: 8 Length: 15 |

**Windows**
- [ ] Required
- [ ] Operable
  - Black-out shades
- [ ] No windows
- [ ] Optional
- [ ] Interior windows

**Doors and Hardware**

- [ ] Size (WxH): View light
- [ ] Closer
- [ ] Access control
  - Card reader
- [ ] Lock
- [ ] Hold open
- [ ] Door operator

**Finishes:**
- Floors: Polished concrete
- Walls: Painted Gypsum Board
- Base: Rubber
- Ceiling: ACT
- Other:

**Casework:**
- [ ] Base cabinets
- [ ] Tall cabinets
- [ ] Counter only
- [ ] Open shelving
- [ ] Peg Boards

**Specialties:**
- [ ] Marker board
- [ ] Tack board
- [ ] Writable walls
- [ ] Tackable walls
- [ ] Counter Material / Color: Size: Number:
- [ ] Smart board
- [ ] Projection screen
- [ ] Towel dispenser
- [ ] TV bracket

**Acoustical & Vibration Requirements**
- [ ] Acoustically Sensitive
- [ ] Vibration Producing:
- [ ] Vibration Sensitive:
- [ ] Heat Producing
- [ ] Lighting Sensitive:
- [ ] Noise Producing

**Structural Requirements**
- [ ] Unusual floor loads:
- [ ] Ceiling supported equipment:
- [ ] Rooftop equipment:
- [ ] Floor trenches:
- [ ] Recessed slab:
# UTIA Broiler and Research Facility

## Space Name:
KITCHENETTE

### HVAC Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Number</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature (Heating / Cooling):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humidity:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unsual cooling loads:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zone controls:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special venting or exhaust:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fume Hood</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Plumbing Requirements

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Number</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counter sink</td>
<td></td>
<td>Cold water</td>
</tr>
<tr>
<td>Wall hung sink</td>
<td></td>
<td>Hot water</td>
</tr>
<tr>
<td>Specialty sink</td>
<td></td>
<td>Compressed air</td>
</tr>
<tr>
<td>Eye wash</td>
<td></td>
<td>Natural gas</td>
</tr>
<tr>
<td>Safety shower</td>
<td></td>
<td>Hose bibb</td>
</tr>
</tbody>
</table>

### Cylinder Gases

- Oxygen
- CO2
- Hydrogen
- Other:

### Chemicals & Waste

List with Quanities:

### Fire Protection Requirements

- Typical
- Dry System
- Other

### Sprinkler Head Type:

### Lighting

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Foot Candles:</th>
<th>Special lighting</th>
<th>Occupancy detection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct lighting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect lighting</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display lighting</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Power</th>
<th>Special Locations</th>
</tr>
</thead>
<tbody>
<tr>
<td>110v / 20A / 1PH</td>
<td>208v / 30A / 1PH</td>
<td>Counter</td>
</tr>
<tr>
<td>480v / 3PH</td>
<td>Emergency power</td>
<td>Special height</td>
</tr>
<tr>
<td>Dedicated circuits</td>
<td>Cord reel</td>
<td></td>
</tr>
</tbody>
</table>

### Special Locations

- Ceiling
- Counter
- Special height
- Plug molding - wall

### Communications

**Voice / Data Outlets**

- Floor
- Wall
- Counter / desk
- Printer / copier
- Wall phone

**Public Address System**

- Microphone
- Intercom
- Bell system
- Speakers
- Volume control
- Clock system
**UTIA Broiler and Research Facility**

**Space Name:** KITCHENETTE

<table>
<thead>
<tr>
<th>Audio / Visual</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart board</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TV Display</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projector</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecturn</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microphone</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DVD</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Document Camera</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speakers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecture Capture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A/V control system</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Security</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Camera</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Card reader</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrusion alarm</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Furnishings, Equipment, and Other Considerations**

**Furnishings:**

**Equipment:**

List any special equipment to be accommodated in this space and attach cut sheets for each item.

- Refrigerator with ice maker, provide water connection.
- Microwave.
- Enough counter spaces for meals (e.g. catering meals with drinks). Or space for additional table for meals.
- Dishwasher.

**Other considerations:**
### Architectural Requirements

**Space Description:** Two offices, one for manager, and another for students and visiting scholar.

**Size:** 150 each

**Approx. Room Size:**
- Width: 10
- Length: 15

**Adjoining Spaces Required:** Two offices next to each other.

**Number of Spaces:** 2

<table>
<thead>
<tr>
<th>Windows</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>☑ Required</td>
<td>No windows</td>
</tr>
<tr>
<td>☐ Operable</td>
<td>Black-out shades</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Doors and Hardware</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Size (WxH):</td>
<td>View light</td>
</tr>
<tr>
<td>☐ Closer</td>
<td>Sound seal</td>
</tr>
<tr>
<td>☐ Access control</td>
<td>Card reader</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Special requirements:</th>
<th></th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Finishes:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Floors: LVT</td>
<td></td>
</tr>
<tr>
<td>Base: Rubber</td>
<td></td>
</tr>
<tr>
<td>Walls: Painted Gypsum Board</td>
<td></td>
</tr>
<tr>
<td>Ceiling: ACT</td>
<td></td>
</tr>
</tbody>
</table>

| Other: |  |

<table>
<thead>
<tr>
<th>Casework:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>☐ Base cabinets</td>
<td></td>
</tr>
<tr>
<td>☐ Wall cabinets</td>
<td></td>
</tr>
<tr>
<td>☐ Counter only</td>
<td></td>
</tr>
</tbody>
</table>

| Size: 4" x 6" |  |
|☐ Tack board |  |

|☐ Smart board |  |

|☐ Writable walls |  |

|☐ Marker board |  |

|☐ Tackable walls |  |

|☐ Smart board |  |

|☐ Projection screen |  |

|☐ Open shelving |  |

|☐ Peg Boards |  |

|☐ Other storage requirements: |  |

<table>
<thead>
<tr>
<th>Specialties:</th>
<th></th>
</tr>
</thead>
</table>

|☐ Acoustically Sensitive |  |

|☐ Vibration Producing: |  |

|☐ Vibration Sensitive: |  |

|☐ Heat Producing |  |

|☐ Lighting Sensitive: |  |

|☐ Noise Producing |  |

|☐ Acoustical & Vibration Requirements: |  |

|☐ Structural Requirements: |  |

|☐ Unusual floor loads: |  |

|☐ Ceiling supported equipment: |  |

|☐ Rooftop equipment: |  |

|☐ Floor trenches: |  |

|☐ Recessed slab: |  |
**Space Name:** OFFICE

### HVAC Requirements

- Temperature (Heating / Cooling):
- Humidity:
- Unsual cooling loads:
- Zone controls:
- Special venting or exhaust:
- Fume Hood

<table>
<thead>
<tr>
<th>Number</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Plumbing Requirements

- Counter sink
- Wall hung sink
- Specialty sink
- Eye wash
- Safety shower

- Cold water
- Hot water
- Compressed air
- Natural gas
- Hose bibb

- Floor drain
- Clay / plaster trap
- Grease trap
- Drinking fountain
- Bottle filler

### Cylinder Gases

- Oxygen
- CO2
- Hydrogen
- Other:

### Chemicals & Waste

List with Quanities:

### Fire Protection Requirements

- Typical
- Dry System
- Other

### Special Locations

- Ceiling
- Counter
- Special height
- Plug molding - wall
- Plug molding - counter

### Lighting

- Foot Candles:
- Direct lighting
- Indirect lighting
- Display lighting

- Special lighting
- Standard switching
- Dual level switching
- Occupancy detection
- Dimmer

### Power

- 110v / 20A / 1PH
- 480v / 3PH
- Dedicated circuits

- 208v / 30A / 1PH
- Emergency power
- Cord reel
- 208v / 30A / 3PH
- UPS
- Waterproof

### Special Locations

- Ceiling
- Counter
- Special height
- Plug molding - wall
- Plug molding - counter

### Communications

### Voice / Data Outlets

- Floor
- Wall

- Counter / desk
- Printer / copier
- Wall phone

### Public Address System

- Microphone
- Speakers

- Intercom
- Volume control
- Bell system
- Clock system
Space Name: OFFICE

Audio / Visual
- Smart board
- TV Display
- Projector
- Lecturn
- Microphone
- DVD
- Computer
- Document Camera
- Speakers
- Lecture Capture
- A/V control system
- Special

Security
- Camera
- Card reader
- Intrusion alarm

Furnishings, Equipment, and Other Considerations

Furnishings:

Equipment:
List any special equipment to be accommodated in this space and attach cut sheets for each item.
- Manager office for one person.
- Guest office for two people.
- Phones required for both offices.
- Working desk with space for computers.

Other considerations:
<table>
<thead>
<tr>
<th>Space Name:</th>
<th>DORMITORY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Architectural Requirements</strong></td>
<td></td>
</tr>
<tr>
<td>Space Description: Two dorms for students and visiting scholars.</td>
<td></td>
</tr>
<tr>
<td>Size: 150 each</td>
<td></td>
</tr>
<tr>
<td>Approx. Room Size:</td>
<td>Width: 10</td>
</tr>
<tr>
<td>Adjacencies Required:</td>
<td>Length: 15</td>
</tr>
<tr>
<td>Number of Spaces: 2</td>
<td></td>
</tr>
<tr>
<td><strong>Windows</strong></td>
<td></td>
</tr>
<tr>
<td>☑ Required</td>
<td>☐ No windows</td>
</tr>
<tr>
<td>☐ Operable</td>
<td>☑ Black-out shades</td>
</tr>
<tr>
<td>Specific views:</td>
<td>☐ Optional</td>
</tr>
<tr>
<td>☐ Interior windows</td>
<td></td>
</tr>
<tr>
<td><strong>Doors and Hardware</strong></td>
<td></td>
</tr>
<tr>
<td>Size (WxH):</td>
<td>View light</td>
</tr>
<tr>
<td>☑ Closer</td>
<td>Sound seal</td>
</tr>
<tr>
<td>☐ Access control</td>
<td>Card reader</td>
</tr>
<tr>
<td>Special requirements:</td>
<td>Lock</td>
</tr>
<tr>
<td>☐ Hold open</td>
<td></td>
</tr>
<tr>
<td>☐ Door operator</td>
<td></td>
</tr>
<tr>
<td><strong>Finishes:</strong></td>
<td></td>
</tr>
<tr>
<td>Floors: LVT</td>
<td>Walls: Painted Gypsum Board</td>
</tr>
<tr>
<td>Base: Rubber</td>
<td>Ceiling: ACT</td>
</tr>
<tr>
<td>Other:</td>
<td></td>
</tr>
<tr>
<td><strong>Casework:</strong></td>
<td></td>
</tr>
<tr>
<td>☐ Base cabinets</td>
<td>☑ Tall cabinets</td>
</tr>
<tr>
<td>☐ Wall cabinets</td>
<td>☐ Counter only</td>
</tr>
<tr>
<td>☐ Counter Material / Color:</td>
<td>☐ Open shelving</td>
</tr>
<tr>
<td>☐ Cabinet/Drawer Ratio:</td>
<td>☐ Peg Boards</td>
</tr>
<tr>
<td>Other storage requirements:</td>
<td></td>
</tr>
<tr>
<td><strong>Specialties:</strong></td>
<td></td>
</tr>
<tr>
<td>☐ Marker board</td>
<td>Size:</td>
</tr>
<tr>
<td>☐ Tack board</td>
<td>Number:</td>
</tr>
<tr>
<td>☐ Writable walls</td>
<td>Size:</td>
</tr>
<tr>
<td>☐ Smart board</td>
<td>Number:</td>
</tr>
<tr>
<td>☐ Tackable walls</td>
<td></td>
</tr>
<tr>
<td>☐ Projection screen</td>
<td>Towel dispenser</td>
</tr>
<tr>
<td>☐ TV bracket</td>
<td></td>
</tr>
<tr>
<td><strong>Acoustical &amp; Vibration Requirements</strong></td>
<td></td>
</tr>
<tr>
<td>☐ Acoustically Sensitive</td>
<td>VibrationProducing:</td>
</tr>
<tr>
<td>☐ Vibration Sensitive:</td>
<td>Heat Producing</td>
</tr>
<tr>
<td>☐ Lighting Sensitive:</td>
<td>Noise Producing</td>
</tr>
<tr>
<td><strong>Structural Requirements</strong></td>
<td></td>
</tr>
<tr>
<td>☐ Unusual floor loads:</td>
<td></td>
</tr>
<tr>
<td>☐ Ceiling supported equipment:</td>
<td></td>
</tr>
<tr>
<td>☐ Rooftop equipment:</td>
<td></td>
</tr>
<tr>
<td>☐ Floor trenches:</td>
<td></td>
</tr>
<tr>
<td>☐ Recessed slab:</td>
<td></td>
</tr>
</tbody>
</table>
## HVAC Requirements

**Temperature (Heating / Cooling):**
- [ ] Humidity:

**Unusual cooling loads:**
- [ ] Zone controls:
- [ ] Special venting or exhaust:

- [ ] Fume Hood

<table>
<thead>
<tr>
<th>Number</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Plumbing Requirements

- [ ] Counter sink
- [ ] Wall hung sink
- [ ] Specialty sink
- [ ] Eye wash
- [ ] Safety shower

**Cold water**
- [ ] Floor drain
- [ ] Clay / plaster trap

**Hot water**
- [ ] Grease trap
- [ ] Drinking fountain

**Compressed air**
- [ ] Hose bibb
- [ ] Bottle filler

## Cylinder Gases

- [ ] Oxygen
- [ ] CO2
- [ ] Hydrogen
- [ ] Other:

## Chemicals & Waste

- [ ] Specialty sink
- [ ] Compressed air
- [ ] Grease trap
- [ ] Drinking fountain

## Fire Protection Requirements

- [ ] Typical

**Sprinkler Head Type:**
- [ ] Dry System
- [ ] Other

## Lighting

**Foot Candles:**
- [ ] Direct lighting
- [ ] Indirect lighting
- [ ] Display lighting

**Special lighting**
- [ ] Standard switching
- [ ] Dual level switching
- [ ] Occupancy detection
- [ ] Dimmer

## Power

- [ ] 110v / 20A / 1PH
- [ ] 480v / 3PH
- [ ] Dedicated circuits

**208v / 30A / 1PH**
- [ ] Emergency power
- [ ] Cord reel
- [ ] UPS
- [ ] Waterproof

## Special Locations

- [ ] Ceiling
- [ ] Counter
- [ ] Plug molding - wall
- [ ] Plug molding - counter

- [ ] Floor
- [ ] Special height

## Communications

**Voice / Data Outlets**

- [ ] Floor
- [ ] Wall

**Printer / copier**
- [ ] Wall phone

**Public Address System**

- [ ] Microphone
- [ ] Speakers

**Intercom**
- [ ] Bell system
- [ ] Clock system
### UTIA Broiler and Research Facility

#### Space Name:
**DORMITORY**

<table>
<thead>
<tr>
<th>Audio / Visual</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Smart board</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TV Display</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Projector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecturn</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microphone</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DVD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Document Camera</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Speakers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lecture Capture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A/V control system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Special</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Security</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Camera</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Card reader</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Intrusion alarm</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Furnishings, Equipment, and Other Considerations

- **Furnishings:**
- **Equipment:** List any special equipment to be accommodated in this space and attach cut sheets for each item.
  - With bunk beds for two people per room.
  - Computer desk.
- **Other considerations:** Outlets with USB connections.
**UTIA Broiler and Research Facility**

### Space Name: SHOWER / LOCKER ROOM

#### Architectural Requirements

- **Space Description:** Two shower areas/locker rooms.
- **Size:** 200 SF
- **Approx. Room Size:**
  - Width:
  - Length:
- **Number of Spaces:** 2

#### Windows

<table>
<thead>
<tr>
<th>Require</th>
<th>No windows</th>
<th>Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operable</td>
<td>Black-out shades</td>
<td>Interior windows</td>
</tr>
</tbody>
</table>

#### Doors and Hardware

- **Size (WxH):**
- **View light**
- **Sound seal**
- **Card reader**
- **Lock**
- **Hold open**
- **Door operator**

#### Special requirements:

- **Closer**
- **Access control**

#### Finishes:

- **Floors:** Tile
- **Walls:** Tile
- **Base:** Tile
- **Ceiling:** Painted Gypsum Board

#### Casework:

- **Base cabinets**
- **Wall cabinets**
- **Tall cabinets**
- **Counter only**
- **Open shelving**
- **Peg Boards**

#### Specialties:

- **Marker board**
- **Tack board**
- **Writable walls**
- **Smart board**
- **Towel dispenser**
- **Projection screen**
- **TV bracket**

#### Acoustical & Vibration Requirements

- **Acoustically Sensitive**
- **Vibration Sensitive:**
- **Lighting Sensitive:**
- **Vibration Producing:**
- **Heat Producing**
- **Noise Producing**

#### Structural Requirements

- **Unusual floor loads:**
- **Ceiling supported equipment:**
- **Rooftop equipment:**
- **Floor trenches:**
- **Recessed slab:**
# UTIA Broiler and Research Facility

## Space Name:

**SHOWER / LOCKER ROOM**

### HVAC Requirements

- **Temperature (Heating / Cooling):**
  - [ ] Unusual cooling loads:
  - [ ] Zone controls:
  - [ ] Special venting or exhaust:
  - [ ] Fume Hood

### Plumbing Requirements

<table>
<thead>
<tr>
<th>Number</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>✔️</td>
<td>Cold water</td>
</tr>
<tr>
<td>✔️</td>
<td>Hot water</td>
</tr>
<tr>
<td>✔️</td>
<td>Floor drain</td>
</tr>
<tr>
<td>✔️</td>
<td>Clay / plaster trap</td>
</tr>
<tr>
<td>✔️</td>
<td>Compressed air</td>
</tr>
<tr>
<td>☐</td>
<td>Natural gas</td>
</tr>
<tr>
<td>☐</td>
<td>Hose bibb</td>
</tr>
<tr>
<td>☐</td>
<td>Grease trap</td>
</tr>
<tr>
<td>☐</td>
<td>Drinking fountain</td>
</tr>
<tr>
<td>☐</td>
<td>Bottle filler</td>
</tr>
</tbody>
</table>

### Cylinder Gases

- [ ] Oxygen
- [ ] CO2
- [ ] Hydrogen
- [ ] Other:

### Chemicals & Waste

- List with Quantities:

### Fire Protection Requirements

- [ ] Typical
  - Sprinkler Head Type:
    - [ ] Dry System
    - [ ] Other

### Lighting

- **Foot Candles:**
  - [ ] Direct lighting
  - [ ] Indirect lighting
  - [ ] Display lighting

- **Special lighting**
  - [ ] Standard switching
  - [ ] Dual level switching
  - [ ] Occupancy detection
  - [ ] Dimmer

### Power

- [ ] 110v / 20A / 1PH
- [ ] 208v / 30A / 1PH
- [ ] Emergency power
- [ ] Cord reel
- [ ] 208v / 30A / 3PH
- ☑️ [ ] UPS
- ☑️ [ ] Waterproof

### Special Locations

- [ ] Ceiling
- [ ] Counter
- [ ] Special height
- [ ] Plug molding - wall
- [ ] Plug molding - counter

### Communications

#### Voice / Data Outlets

- [ ] Floor
- [ ] Wall
- [ ] Counter / desk
- [ ] Printer / copier
- [ ] Wall phone

#### Public Address System

- [ ] Microphone
- [ ] Intercom
- [ ] Bell system
- [ ] Speakers
- [ ] Volume control
- [ ] Clock system
### UTIA Broiler and Research Facility

**Space Name:** SHOWER / LOCKER ROOM

<table>
<thead>
<tr>
<th>Audio / Visual</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] Smart board</td>
<td>[ ] Microphone</td>
<td>[ ] Speakers</td>
<td></td>
</tr>
<tr>
<td>[ ] TV Display</td>
<td>[ ] DVD</td>
<td>[ ] Lecture Capture</td>
<td></td>
</tr>
<tr>
<td>[ ] Projector</td>
<td>[ ] Computer</td>
<td>[ ] A/V control system</td>
<td></td>
</tr>
<tr>
<td>[ ] Lecturn</td>
<td>[ ] Document Camera</td>
<td>[ ] Special</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Security</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>[ ] Camera</td>
<td>[ ] Card reader</td>
<td>[ ] Intrusion alarm</td>
</tr>
</tbody>
</table>

### Furnishings, Equipment, and Other Considerations

#### Furnishings:

#### Equipment:

List any special equipment to be accommodated in this space and attach cut sheets for each item.

- Each shower/locker room needs 3 shower stalls, 3 toilets, 2 lavatories, bench, 10 lockers.
- Washer and dryer are needed. FFE, provide connections and required venting.

#### Other considerations:
This scheme, the research facility is organized along a central spine, creating a double-loaded layout that optimizes space utilization and operational efficiency. The central spine serves as a main circulation pathway. On one side of the spine, labs and showers are strategically located, catering to the research activities and providing necessary amenities for the staff. This arrangement ensures convenient access to the broiler houses, facilitating integration between the research areas and the chicken rearing operations.

On the other side of the spine, offices, support spaces, and dormitory rooms. These spaces are strategically positioned to enhance functionality and promote efficient workflow. The offices provide dedicated work areas for administrative tasks and facilitate collaboration among the research team members. The support spaces are designed to accommodate specialized equipment and provide storage for research materials.

The compact scheme ensures minimal wasted space, emphasizing a highly efficient layout that maximizes the use of available square footage. By organizing the program along the central spine, the scheme optimizes functionality and promotes ease of navigation within the facility. The arrangement of spaces on either side of the spine creates a balanced and cohesive environment that supports the research endeavors while maintaining a strong connection to the broiler houses.

Overall, Research Facility Scheme 01 offers a streamlined and efficient design, with careful attention given to the integration of different program elements. Its compact footprint and thoughtful organization enhance operational efficiency, minimizing wasted space and maximizing functionality.
This scheme, the research facility is designed with a layout that revolves around a central collaboration space. The perimeter of the facility is allocated for programmed spaces, while the central area serves as a hub for collaboration and a focal point for interdisciplinary exchange. This option features a layout that emphasizes collaboration and efficiency.

On one side of the facility, showers and a dormitory room are strategically located. This arrangement ensures easy access and convenience for the staff, providing essential amenities for their well-being. On the other side, labs are positioned to facilitate research activities, creating a focused and productive environment. The labs are equipped with state-of-the-art equipment and workstations to support research.

Between the labs and the showers/dormitory room, the scheme incorporates support and office spaces. These areas serve as transitional zones, facilitating smooth communication and workflow between the different functional areas. The support spaces are designed to accommodate storage needs and house specialized equipment, while the offices provide dedicated work areas for administrative tasks and promote collaboration among the research team members.

This layout encourages communication and cooperation among researchers, fostering a collaborative research environment. By strategically placing the showers, dormitory room, labs, support spaces, and offices, this scheme ensures efficient functionality and seamless flow between different zones of the facility.
BROILER FACILITY
### Broiler Facility Space Program Overview

<table>
<thead>
<tr>
<th>Space Name</th>
<th>SF Each</th>
<th>SF Total</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broiler Facility</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Broiler Houses (4)</td>
<td>32,400</td>
<td>129,600</td>
<td>54' x 600'</td>
</tr>
<tr>
<td>Broiler Viewing Room (2)</td>
<td>200</td>
<td>400</td>
<td>10' x 20' (1 per pair of houses)</td>
</tr>
<tr>
<td>Broiler Control Room (4)</td>
<td>200</td>
<td>800</td>
<td>10' x 20' (1 per house)</td>
</tr>
<tr>
<td>Broiler Bin Feed Pad (4)</td>
<td>392</td>
<td>1,568</td>
<td>14' x 28' (1 per house)</td>
</tr>
<tr>
<td>Spent Litter Shed Generator / Water Outbuilding</td>
<td>5,400</td>
<td>5,400</td>
<td>54' x 100'</td>
</tr>
<tr>
<td>Pump House</td>
<td>100</td>
<td>100</td>
<td>assumed 10' x 10'</td>
</tr>
</tbody>
</table>

**Total SF**

138,508
BROILER FACILITY SPACE PROGRAM & SPECIFICATIONS

54 x 600 New Broiler House

Building Information

May 23, 2023
Version 1.0

University of Tennessee Institute of Agriculture

Middle Tennessee AgResearch and Education Center
BUILDING INFORMATION CONTENTS

Summary ................................................................................................................................. 4

I. General Requirements
   A. Builder or Supplier Responsibilities ................................................................. 6

II. Site Planning and Pad Construction
   A. Soil and Water Testing .................................................................................... 6
   B. Site Planning Requirements ........................................................................... 6
   C. Pad & Grading ................................................................................................. 7
   D. Feed Bin, Control Room & Generator Shed Pads ........................................... 7
   E. Road & Load Out Requirements .................................................................... 8

III. House Construction Information
   A. Building Dimensions ...................................................................................... 9
   B. Foundation & Sidewalls ................................................................................. 9
   C. End Walls & End Doors ............................................................................... 10
   D. Truss and Roof .............................................................................................. 11
   E. Tunnel Inlet Window & Tunnel Fans .............................................................. 12
   F. Tunnel Inlet Doors .......................................................................................... 12
   G. Side Wall Vents .............................................................................................. 12
   H. Control Room ................................................................................................. 13
   I. Viewing/Observation Room .......................................................................... 14
   J. Ceiling & Insulation Installation ................................................................. 14
   K. Generator Shed ............................................................................................. 14
   L. Stacking/Composting Shed ......................................................................... 15

IV. Electric, Gas and Water Utility Systems
   A. Electrical Supply ......................................................................................... 15
   B. Generator, Transfer Switches & Disconnects .............................................. 16
   C. Gas Supply .................................................................................................... 17
   D. Water Supply ................................................................................................. 17

V. Equipment and Environmental Control Systems
   A. Ventilation ................................................................................................. 18
   B. 6" Evaporative Cooling System & Sprinklers ................................................. 18
   C. Brooding & Heating (Center House Brooding) ............................................ 19
   D. Drinking ....................................................................................................... 19
   E. Water Panel in Control Room ..................................................................... 20
   F. Feed Pans & Feed Bins ............................................................................... 20
   G. Electronic Control, Backup System & Alarm ............................................. 21
   H. Remote Rail-Mounted Robot ....................................................................... 21
   I. Electrical System for House ......................................................................... 22
   J. Lighting for House ........................................................................................ 23
   K. Gas Plumbing for House ............................................................................. 23
   L. Water Plumbing for House .......................................................................... 23
   M. Extra Instrumentation Package .................................................................. 24
   N. Miscellaneous Items .................................................................................... 24
LIST OF ATTACHED DRAWINGS

A. Site Plan................................................................................................................. SP1
B. Building Detail ........................................................................................................ CS1
C. Equipment Detail .................................................................................................... CS2
D. End Wall Detail ....................................................................................................... ED1
E. Fan Framing ........................................................................................................... FF1
F. Control Room Plan View ....................................................................................... CR1
G. Control Room Building Detail ............................................................................... CR2
H. Control Room Water Panel .................................................................................. CR3
I. Electrical Panel Layout ......................................................................................... CR4
J. Equipment Plan View ............................................................................................ EPV1
K. Litter Shed Plan View ............................................................................................ LS1
L. Litter Shed End Wall ............................................................................................. LS2
M. Litter Shed Building Detail ................................................................................... LS3
N. Generator Plan View ............................................................................................. GS1
O. Generator Electrical Feed ...................................................................................... GS2
P. Viewing Room Plan View ....................................................................................... VR1
Q. Viewing Room Building Detail ............................................................................... VR2
**SUMMARY OF CONSTRUCTION & EQUIPMENT**

- **House Size**: Exterior Dimensions 54’ x 600’ = 32,400sq ft - 8’-0” tall sidewall

- **Truss Load**: Require P.E. Stamped Truss Approval – truss engineered to meet the snow and wind load specifications for the region

- **Feed System**: (3) Flood feeders with EZ starts with sleeve – 10’-6”, 23’-6”, & 42’-6” from feed control room side - Pan spacing is 4 on 10’; 2 ChoreTime or equivalent 18-ton bins (see drawing)

- **Drinking System**: (5) lines of tray drinkers with nipples spaced on 10” centers installed 7’-6”, 13’-6”, 29’-6”, 39’-6”, & 45’-6” from control room side; Water on Demand Pro flush system and 20 flush kits (see drawing)

- **Heating System**: Center Brooding Setup: (44) Radiant Brooders: 40,000 btu/hr each; with 25 in center brooding chamber and 10 in front end and 9 in back end installed 18’-0’ and 35’-0’ from control room side in a staggered manner (see drawing)

- **Wall Construction**: 6” Solid walls - R-19 fiberglass batt insulation – 4x6 (60” O.C.) post frame construction with concrete poured chain wall footing. Wall height: 8’-0” (7’-0” of solid wood framed wall on top of concrete footing that extends 12” above interior finished grade (see drawing)

- **Ceiling Type**: Dropped with Tri-Ply woven (white side down) (black side down in last 50 feet, blown fiberglass insulation, R-24 (see drawing)

- **Fan List**: 57” belt drive slant wall fans with cone shutters of the following performance ratings at 0.15” static pressure:

  **Tunnel Fans**
  - (7) 28,400 cfm, 18.1 cfm/watt, and 0.80 airflow ratio or equivalent.
  - (7) 25,100 cfm, 20.1 cfm/watt, and 0.78 airflow ratio or equivalent.
  - Combination of high capacity and energy efficient fans can be used.

  **Minimum Ventilation Fans**
  - (2) 36” shutter-type minimum ventilation on each end
  - (3) 36” shutter-type minimum ventilation in center brood chamber

  **Stir Fans**
  - (22) 18” basket type fans (see drawing)

- **Tunnel Ventilation**: require 374,500 – 399,300 cfm @ 0.15” s.p. with 14, design wind speed should be a minimum 700+ fpm and 18.1 cfm/watt

- **Sidewall Air Inlets**: (62) **Double L** curved European insulated side wall mount vent doors per house: (17) 8’x44” above tunnel doors total & above control room and (45) 12’x44” down rest of house all spaced on 20’-0” centers with galvanized dark out hoods with 2 strap type vent machines, curved vent doors allowed. Outside hood to serve as sunshade. Builder must insulate either side of the vent door to prevent cold air from entering. Hand winching of some inlets may be desired. Doors above cooling cells require different vent door sizes for clearance purposes. Spacing remains the same.
- **Evaporative Cooling System**: 6” thick x 5’ tall x 120’ long **Evaporative Cooling Cells** – 1,200 sq ft total minimum (600 sq ft each side), 45 x 15 paper pad with black coating on outside, 2 pumps/side (see drawing EPV1). Direct mount; no dog house.

- **Insulated Tunnel Doors**: (2) 5” x 125’ **Diversified Import Tunnel Doors** per house with 2 Diversified Imports Drive vent machines.

- **Environmental Control Sprinklers**: 56 Sprinklers on 2 lines with 3 zones (see drawing EPV1).

- **Electrical Summary**: 4-wire electrical feeders - (2) 200-amp commercial grade Square ‘D’ Type QO 40 slot panel or equivalent per house with main lugs only (no main breaker in panel – must have 200 amp knife switch disconnect) and (1) 100 amp **Square ‘D’ Type** QO 20 slot panel per house.

- **Backup Generator**: Permanent generator with minimum 50kW capacity per house. 2 houses maximum per 400-amp transfer switch. Houses wired for double service from two generators (see drawings GS1 & GS2).

- **Controller**: (1) **Rotem One Touch** controller with 50 relays, Relative Humidity Sensor; **Rotem enhanced back-up (RBU-27)** and **Rotem back-up control (RDT-5)**; **Rotem Communicator** and **Comm-Box**. Must have **M Tech** data collection capabilities. Must be compatible with bird scales and feed bin scales.

- **Water Supply**: (1) well per two houses with the capacity to supply a minimum of 0.7 gallons per minute per 1000 square feet of growing space. 2 peristaltic water meters per house – minimum of (2) 2” PVC SCH 40 line to each house with one line supplying the drinking system and one line supplying the cooling system. (see drawing CR3 and consult with local plumbing authority).

- **Gas Supply**: Natural gas is available to be utilized.

- **Lighting**: (90) EH80 **Overdrive** 16-watt fixtures with **Overdrive** dimmers. (3) lines with fixtures 20’ OC staggered. Light output of 6 ft. candles before dimming.

**The brands and types of equipment specified in this plan may be substituted with other brands and types, provided the performance and quality of such equipment meets that of the equipment identified in this house plan. Regardless, any substitutions must be approved by Tyson local and corporate live production management.**
I. General Requirements

Builder and Supplier Responsibilities

1) Construct and equip each house per the building requirements listed in this document prior to chick placement.

2) Abide by engineered stamped drawing construction methods and details. Provide engineered stamped drawings of the truss per requirements.

3) Removing all construction debris connected with his portion of the construction job before construction is deemed complete and final payment is made.

4) Sealing all carpentry joints and using other appropriate construction methods to ensure house tightness such that the house will pull a minimum of 0.20" of static pressure with one 54" tunnel fan running and all doors and inlets closed. Houses will be tested for tightness by grower and Company representative before house construction is given final approval.

5) Testing all wiring, plumbing, and equipment for proper operation before final approval is given.

6) Final approval will be given by University of Tennessee and Tyson Foods.

II. Site Planning and Pad Construction

Grower must have sample site plan for house layout, load out and access roads, drainage, watersupply plan, water plumbing plan, electrical service plan, and accessory building plans approved by Company prior to contract initiation.

A. Soil and Water Testing

1) Soil Testing: Company will take soil samples for pesticide residue prior to the construction of every new poultry house. Six samples must be taken from the surface area of the intended house pad at a 2" depth, composites and placed into a whirl pack bag. House site must be free of residue per Company lab report before an approval to build is issued.

2) Water Quality Testing: All water samples should be tested for minimum quality standards as described in Amendment 1 on page 28. In cases where test results exceed the maximum acceptable levels, water treatment options should be considered.

B. Site Planning Requirements

1) There must be a minimum of 60’ from wall to wall between houses.

2) Houses must be oriented East to West +/- 22°. Variances must be approved by University of Tennessee.

3) Farm site must be built with biosecurity standards in mind. Site must have an established Perimeter Buffer Area (PBA). The PBA is a functional zone surrounding the site that separates it from areas unrelated to poultry production.

4) Grassed areas around poultry houses must not be used for pasture or other farming purposes. Fencing must be provided to keep all other farm livestock away from houses. No exceptions.

5) Poultry house pads must not be more than 3’ higher than the gravel load out area to accommodate equipment access in all weather conditions.
6) All roads, pads and load out areas must allow all weather access and provide a safe working environment at all times for all parties.

C. House Pad and Grading Requirements for General Contractor or Dirt Work Sub Contractor

1) Pad grade range is to be a maximum of 3” of level pad surface area. Plus or minus 1.5” of target level. Pad must be checked with survey level every 100’.

2) Pad is to be 5’-0” wider and longer than the house dimensions. 54’-0” x 600’ house must have 64’ x 610’ usable pad area.

3) Pad, roads, and load out area must be a minimum of 2’-0” higher than immediate surrounding grade and perimeter drainage ditches.

4) Run off area around each pad should be a minimum of 12” of fall for every 60” of run

5) Feed bin pads, control room pads, propane tank pads, and generator shed pads must be built a minimum of 2’-0” wider than layout dimensions require to ensure enough usable pad area for concrete forming and building construction. These pads must be constructed at house pad finished grade height and level unless noted otherwise.

6) Drainage ditches around the site must have a minimum fall of 6” per 100’ of ditch length. All water falling from the roof of the houses must be directed away from the house, roads, and load out area with at least 6” of fall per 100’.

7) There will be a 15-inch double walled drain tile that extends 3 feet on each side of the combined control room and feed bin pads.

8) Depending on the site, there will be an 18-inch drain tile extending under the access road at the off-end of the house.

9) The excavators will be responsible for ensuring compaction to adequately support the structure. All topsoil roughage must be removed from the pad area. Any portion of the pad that will have more than 1’-0” of fill must be thoroughly compacted in 6” layers with a sheep foot roller or heavy wheel dirt pan. Pad compaction with a track bulldozer is not allowed. Absolutely no trees, stumps, garbage any type of unapproved fill may be buried under any road, load out area or pad on the poultry farm site. Every square foot of pad area must be compacted.

10) Pad and grading work is not considered finished until final approval of house builder and Company is given.

D. Feed Bin, Control Room, Generator Shed and Composter Shed Pads

1) Feed bin dirt pads must be a minimum of 15’ wide x 25’ long built 6” lower than the adjacent house pad finish grade. The 14’ wide x 24’ long concrete feed bin pad must be 8” thick reinforced concrete 3,500 psi minimum with rebar installed with clean broom finished. Feed bin concrete pad must be lower than control room pad if connected (so water doesn’t drain into the control room) and no more than 8 inches above the grade of the road. Additional water should not be added to the concrete on site.

2) Control room dirt pad must be a minimum of 12’ wide x 28’ long built at the same level of the adjacent house pad for a 10’ wide x 25’ long 4” thick concrete slab. Top of control room concrete pad must be higher than feed bin pad if connected. The control room is 10’ wide x 20’ long with a 10’ wide x 5’ long covered porch.
3) Generator Shed dirt pad 24’ wide x 36’ long built at the same level of the adjacent housepads for a 20’ wide x 32’ long 6” thick concrete slab. Generator room located between houses in center of farm 65 feet beyond the feed bins. Between houses #2 & #3. Generator shed must have access road built up to generator shed per site plan. Generator shed must have water supply.

4) Composter and Caked Litter shed dirt pad 64’ wide x 205’ long

5) Pad work is not considered finished until final approval of house builder and Company representative is given.

E. Road and Load Out Requirements

1) Turn-off road entrance must be a minimum of 60’-0” wide to allow for tractor trailer turning and maneuvering on and off farm road safely in both directions.

2) All roads are to be a minimum of 24’-0” from ditch to ditch. Usable road surface must be a minimum of 18’-0” wide of graveled width with a 3” crown for drainage. Roads must allow all weather access to live and feed haul trucks, trailers and equipment.

3) Access roads between houses must be centered between houses and roads must be same level as house pads and extend to feed bin pads for truck access. Access roads must extend past feed tanks a minimum of 65’-0” and must be graveled to the end. There will one full length road between houses 1 and 2 to connect to a rear road that provides access to the back of the houses. The road at the back of the houses should be an all-weather road.

4) Load out area must be at same level of each poultry house pad after final gravel or rock work is completed. Ball rock might be used as initial base for load out area covered by smaller gravel.

5) All roads and load out area must have a minimum of 4” thick 2” diameter minimum rock. Additional material will be required over time.

6) All roads and load out areas must be graded to drain adequately and avoid any standing water on driving surfaces.

7) There must be a minimum of 100’ of graded graveled surface at the load out end of each house for live haul and feed hauling equipment to maneuver.

8) The load out pad must extend a minimum of 25’ x 100’ beyond the outside wall of each house for equipment maneuver.

9) Load out area must be level but drain from front side away from houses with a 1% slope from houses.

10) Load out area must be free from any permanent structures or other obstructions. All low hanging limbs and or wires must be moved or relocated to allow safe access to live haul and feed delivery vehicles. There will be no electrical wires over any part of the load out area or around the feed bins.
III. House Construction Information

Structural Design Notice: A Professional Engineer’s original stamped structural drawing for this house must be filed and approved by University of Tennessee before construction begins. Additionally, it is the builder’s responsibility to provide Company with an original stamped truss drawing that meets the design criteria specified for the location. The builder’s design and craftsmanship must reflect the engineered structural design indicated in the drawings.

If ACQ pressure treated lumber is used all fasteners must be approved for use with ACQ lumber and anything metal must have a plastic barrier installed between the metal and the ACQ lumber.

A. Building Dimensions (Exterior)

54’ x 600’ - 54 feet wide x 600 feet long x 8’ tall side walls

B. Foundation and Sidewalls (see drawing CS1)

1) Exterior foundation dimensions are 54'-0” x 600'-0”, this will be the outside edge of the concrete foundation and exterior 4x6 inch posts.

2) 4x6 posts pressure treated to CCA - 0.6 cu/ft. retention or equivalent 12”-0” long will be used for structural post members. These posts will be installed 60” on centers (see special post spacing at tunnel fans) so the wall will be 6” thick. Each post will be installed 36” below grade embedded in concrete and 8’-0” minimum above grade. Each post must be plumbed and double checked every 40’ to ensure proper post alignment and spacing.

3) Special Post Spacing: Double 4x6 posts will be spaced on 6'-5” on centers at each 57” tunnel fan per engineered drawings on the tunnel fan end of the house. (See fan layout and engineered drawings for framing details on drawing FF1)

4) Sidewall height will be 8’-0” tall from finished grade (including double top plate) with 12” of concrete above grade and 12” below grade. The concrete foundation will be 7.0” wide minimum. There will be 7’-0” of solid lumber wall on top of the 12” of concrete foundation above finished grade.

5) Concrete end wall foundations will be constructed with the same foundation as the side walls are built. Builder must frame for front end wall door. See end wall framing details.

6) Poured concrete chain wall construction will be used to construct the foundation. 3,000 psi concrete will be used. Additional water should not be added to concrete on site. Two runs of #3 rebar will be used to in the concrete foundation per layout drawings and engineered specifications. This foundation will have a special 1.5” tall x 1.5” wide plywood notch in the interior top corner of the concrete for sealing purposes. The chain wall will flare to 8.5” width in front of the cool cells.

7) The top of the sidewall at 8’-0” will be finished with a double 2x6 top plate with staggered seams nailed together.

8) There will be a CCA - 0.4 lb./cu ft. pressure treated or equivalent 2x6 lumber sill plate installed between each pair of 4x6 posts directly on top of the concrete foundation. Builder must seal concrete to bottom sill plate connection with Company approved expansion joint sealer, caulking, or rubber seal.
9) There will be 3 horizontal 2x6 nailers installed between the 4x6 post on 24” centers.

10) Sidewall Fan Framing: Builder must obtain rough opening of tunnel and exhaust fans prior to framing openings. Rough openings of fans must be framed with (2) 2x6 treated lumber. (1) 57” exhaust fans must be mounted on the opposite side of the house from control room so they are visible through control room door.

NOTE: Either 29 ga G90 galvanized or AZ55 Galvalume may be used. AZ55 has less variation in color than G90.

11) Exterior covering of the sidewalls above the concrete foundation will be 29 gauge galvanized or painted #1 ribbed metal run horizontally on walls. End of ribs must be flashed with metal to prevent rodent entrance. Metal stops approximately 8 -10” from exterior finished grade and must overlap exterior concrete/bottom sill plate seam. No 5V metal, corrugated metal, or standing seams allowed anywhere on the farm.

12) The sidewall insulation will be 6” fiberglass batt insulation faced (R-19). Insulation must be stapled to face of posts (not sides of posts) to prevent movement. There must be a minimum 4 mil clear plastic vapor barrier installed on the inside of the 4x6 posts to protect the insulation and make the house as air tight as possible. All seams must overlap 30”. The vapor barrier must extend from the top of the wall to the bottom of the plywood notch in the foundation.

13) Interior covering of the sidewalls above the concrete foundation will be 4-ply 1/2” CDX plywood lapping over concrete seam at sill plate sitting on concrete notch in foundation. The plywood will overlap the bottom concrete foundation 1.5”. Staples are not approved for use to attach the plywood to the post and nailers. Nails approved for use with treated lumber must be used. All seams must land on a nailer or post.

14) There will be a total of 2 Eagen or equivalent 36” wide x 72” tall, standard, manufactured, pre-hung FRP (Fiberglass Reinforced Panel) insulated man doors installed on opposite sidewalls of the house at center house with one being under the control room porch. The door under the control room porch will have a window and a closet-type door knob that can only be opened from the inside of the poultry house. Door on sidewall opposite control room must have a thumb latch lock with keys. Doors must be installed to open to the outside of the house. Doors must be totally sealed with caulking for an air tight seal. Additionally, a 2’-0” man door will enter dirty side of the control room from the porch and a 2’-0” door will enter the house from the clean side of the control room. (see drawings CR1 & CR2)

15) See sidewall air inlet framing section for locations and rough opening dimensions in sidewalls.

16) Every effort to ensure that the sidewalls are constructed and sealed for air tightness. Each house must be able to achieve a 0.20” of pressure during a static pressure test with (1) 57” fans running and the house closed tight. Test will be done after equipment is installed upon final approval as punch list items are worked out.

17) Ufer Ground: There must be an additional 5/8” diameter rebar 20’ long be installed in the foundation and tied to the existing foundation rebar and wire tied every 24” with a 36” 90-degree bend sticking out where the electrical ground rod will be installed to serve as an additional grounding means. (see drawing CR2)

C. End Walls and End Doors (see drawing ED1)

1) End walls will also be constructed with the poured concrete chain wall foundation with 4x6 posts and 2x6 studs with 2x6 pressure treated sill plate. The end walls will be constructed similar to the sidewalls with fiberglass insulation, vapor barrier, plywood and exterior metal.
2) There will be a 12'-0" wide x 10'-0" tall **Eagen Slider** manufactured sliding end wall door frame installed in each end wall of house. There will be a 6" thick by 13'-0" wide x 16'-0" long 3,000 psi concrete load out pad installed on the outside of each end wall door and a 6" thick by 13'-0" wide x 10'-0" long load-out pad inside each end wall door. There must be wire mesh or rebar installed into the pad for reinforcement. There will be enough fall installed on the outside load out pad for rain water to run away from the house. The inside pad will slope gradually into the house and must accommodate auto-catching machines. There will be no curb installed at the end wall door in the pad. These concrete load-out pads will have (4) 6" diameter steel bollards installed at the end wall door. Two on outside and two on inside. Bollards will be 7'-0" tall each with 3'-0" installed into the ground encased in concrete and filled with concrete.

3) There will be one **Eagen Slider** or equivalent 36" wide x 72" tall, standard, manufactured, pre-hung metal insulated man door installed in each end wall of the house. Door is installed so the center of the door is approximately 10'-6" from side wall on control room side of house.

4) There will be one 36" fan mounted in each end wall of the house. Fans are installed so the center of the fan is approximately 10'-6" from side wall opposite of control room. Builder must coordinate rough opening for fans with equipment supplier.

D. **Truss and Roof**

1) Roof trusses must be engineered by a registered engineer and to be a minimum of 90 mph wind load (more design load required in some locations with ± 5/12 pitch top chord and ± 2/12 pitch bottom chord minimum. Trusses must be able to be FHA approved with a Professional Engineered seal for a minimum of 31 pounds total load (25 live & 6 dead) and set on 60" centers per engineering requirements.

2) Truss bracing will meet the engineer drawing and truss manufacturer’s specifications. Every truss must be aligned horizontally and plumbed vertically per engineering requirements.

3) Trusses will rest directly onto the double 2x6 solid sidewall top plate and a 2" nominal lumber bird board to be installed between the rafter tails. A hurricane strap is required to strengthen the connection between the truss and the sidewall. The number of nails used in each strap is specified in the drawings.

4) Purlins must be #2 grade yellow pine 2x4 or equivalent with maximum spacing of 24" if not specified by engineered drawing or truss manufacturer. Eave purlin to be covered with continuous metal hat channel and attached to truss with 3" deck screw.

5) There must be a minimum of one 2x4 runner installed directly above the peak of the bottom chord of the truss to allow for inspection if not required by the engineered drawing or truss manufacturer.

6) Knee Braces: (see drawing CS1)

7) For attic access, there will be (1) 36" x 36" hole framed into the bottom chord of the trusses approximately every 100'-0" feet starting at approximately 50 feet off of the front-end wall. The attic access will be approximately 20' off of the control room side of the house. The access hole cover or door must be insulated with a minimum of 6” fiberglass batt insulation stapled to door and sealed tightly with twometal handles screwed to each door. The location of these access holes must be coordinated between the builder and the equipment installer so that no access hole is installed over any equipment or winching lines.

8) Roofing: One-piece metal roofing of 29 gauged ribbed style metal (G90 or AZ55). Metal torun from eave to eave to ridge. Absolutely no horizontal running of roof metal will be accepted. Metal must extend from ridge to side in one piece.
9) Roofing should be screwed down on every purlin at the joints. Center of the roofing sheets should be screwed down on every other purlin. The purlin on the ends or perimeter must be attached 1.5” from the truss tail with same screws. Company approved screws for roofing are: 1.5” concave metal washer over neoprene washer screw – no nailed down roofing allowed (any screws that miss lumber must repaired.)

10) Roof metal must be spaced 3” at peak and covered with continuous ridge cap.

11) Roof metal overhang must be a minimum of 16” at the eaves. Roof overhang must be minimum 24” over cooling pad and a minimum 36” over tunnel fans.

E. Tunnel Inlet Window, and Tunnel Fans

1) There will be one 120'-0” tunnel inlet opening on each sidewall at the front of the house. Truss tail extensions or scabs must be used to construct the roof over the tunnel inlet and tunnel fans using 2x6 lumber.

2) The tunnel inlet framing will be constructed with pressure treated lumber with PVC coated bird wire covering the inlet opening. The inlet opening window must be 110'-0” long and a minimum of 57” tall of clear inlet opening.

3) Tunnel inlet opening will be covered with 1” PVC coated bird wire. All carpenter joints and air leaks must be sealed for air tightness.

F. Tunnel Inlet Door

1) (2) – 60’ tall x 125’ long Diversified Import tunnel doors per house required. Insulated tunnel doors must be installed adjacent to the 60” tall x 120’ long tunnel inlet opening window. The framing for these doors must not be smaller than 60” tall x 120’ long. Doors must be installed air tight with heavy duty hinges and adjustable tensioning mechanisms to maintain a tight seal against the framing in any weather condition. Doors must have continuous 1” thick minimum seal around the entire perimeter of the framing. Door cable or rope must be attached to continuous steel rod for winching. Closing of tunnel doors must be accomplished using rope attached to metal brackets with adjustable tensioning device installed at each bracket.

2) Doors must be installed to open a minimum of 66” measured from the top of the tunnel inlet window to the top of the tunnel inlet door in the full opened position. Safety chains must be installed every 10’ to prevent damage to doors in case of fall. Safety chains must not impede proper opening of door.

3) (2) Strap Type Winch Machines will be installed on each side of the house. Manual hand winches will be installed on each section for adjustment.

G. Side Wall Vents

1) (62) Double L curved European insulated side wall mount vent with thumb latch or equivalent: (15) 8’x44” doors installed on the side walls above tunnel doors on 20'-0” centers and (47) 12’x44” doors installed on the walls down the rest of the house on 20'-0” centers. (see drawing EPV1) Vents must be staggered with 2 strap type vent machines.
2) Openings for these doors must be framed per equipment manufacturer requirements. Note different sized vent opening above tunnel inlet and rest of house. Vent opening must be covered with 1” PVC coated bird wire over the exterior side of the opening prior to outside metal installation. Builder must obtain sample side wall vent prior to framing of side wall vent rough opening so that framing meets manufacturer requirements. All vents must be framed properly. Inlet doors must not conflict with metal knee braces.

3) (2) **Strap Type Winch machine** located at center house will operate all side wall vents on each side. Chains and sprockets mounted on metal angle brackets must be used at all 90 degree turns. Vents must be tied together using continuous steel rod with zoom nuts or cable clamps per University of Tennessee approval. Machine speed per University of Tennessee approval. (2) hand winches per side for adjustment required.

4) (62) manufactured black metal Sidewall Vent Light Hoods will be installed at each sidewall opening to restrict direct sunlight from entering the house when vents are opened. Vent hoods must not restrict the airflow of the vent.

**H. Control Room (see drawings CR1, CR2, CR3, & CR4)**

1) Each control room will be constructed on and 12'-0" wide x 28'-0" long concrete pad 4" thick with 1.5" floor drain per Company. The 4" thick concrete pad will be smooth finished so it can be cleaned and must slope toward the center drain.

2) There will be one 10'-0" wide x 25'-0" long control room that includes a 5’ covered porch on each poultry house. The porch will be adjacent to the feed bin pad and constructed at 310'-0' to 315'-0’ and the control room will continue from 315'-0’ to 3350’ from the front end of the house.

3) One pre-hung manufactured 36”x72” **Eagen** or equivalent side wall door will be situated under the porch to provide access out of the poultry house. Additionally, one pre-hung manufactured 36”x72” **Eagen** or equivalent door will provide entrance into the dirty area of the control room from the porch.

4) The first 5 feet of the control room (dirty area) will be separated from the remainder of the control room (clean area) by a 3.5-inch-thick by 36-inch-tall wall that extends 7 feet from the poultry side of the control room. The wall will have a passage (no door) into the clean room. The main controller should be mounted above this 3-foot wall to provide access to controller without the need for the farmer to enter the clean side of the control.

5) The control room will have 5.5” walls with R-19 fiberglass bats and vapor barrier installed.

6) The control room will have a galvanized metal roof constructed out of the same metal the house is roofed with.

7) There will be one 2x2 window installed with the bottom of the window 4 feet off of the floor of the control room. An opening under the window shall be framed for the heating and cooling unit described below.

8) Each control room should have an 8000 BTU Heat/Cool window unit.

9) Power and water conduit should be stubbed into the dirt pad prior to concrete pouring. The water stub-in pipe must be on the long outside wall in the corner away from the access door. The electrical stub-in will be installed at the opposite corner on the same end adjacent to the poultry house foundation so that power will be installed along the house wall.

10) Each control room should have a utility sink that drains out of the control room.

11) There will be a frost-free spigot under the porch.
I. Viewing/Observation Room (see drawings VR1 & VR2)

1) 20'x10' viewing room will be installed on the tank side of houses 2 and 3.
2) See drawings for location of door, split heat and air unit, electrical receptacle and light placing. Lights will be on a dimmer located in that room.
3) Interior of room to be equipped with (4) insulated smoked glass panels approximately 55"x72" for observation purposes.
4) Glass panels to be sourced from a local glass vendor.
5) Plywood protective panels shall be made to cover smoked glass form inside during cleaning operations.

J. Ceiling and Insulation Installation

1) All poultry houses must be dropped ceiling type. Insulation to be R-24 blown fiberglass material
2) Woven polyethylene fabric (tri-ply) will be the only approved ceiling material allowed. This ceiling material must be installed with the white side down only except for the last 50 feet over the tunnel fans where the black side will be turned down. This material will be 6 mil thickness and a 3.5 oz per square yard in weight. The taped seams will be plywood treated with U.V. protection only.
3) Green polyester strapping ½" wide with at least a 500 lb breaking strength. There will be no polypropylene strapping allowed due to quality concerns. The polyester strapping shall be placed 4" apart on any house regardless of insulation type.
4) Galvanized staples should be used to attach the strapping to the wood trusses. These staples should have a minimum 1" crown and at least minimum 1" to maximum 1.5" leg.
5) Each tape seam must have at least an 8" overlap of ceiling poly. The tape used to seal these seams should be woven and at least 3.5" wide. There should be at least 2 extra support straps placed supporting the tape seam.
6) All access holes and attic inlet holes must be cut out, trimmed out with lumber and stapled so that the ceiling is air tight and no voids in the ceiling material. The ceiling straps will be cut and wrapped around each access hole stapled and overlapped and stapled again so access into attic is permitted. The ceiling must be as air tight as possible.

K. Generator Shed (see drawings GS1 & GS2)

1) One 20'-0" x 32'-0" shed with 6" thick concrete slab with 10'-0" side walls with double 2x4 top plate constructed with back of shed. See Sight plans on pp 2A-2C in drawings for location. This shed must be totally enclosed on 3 sides to allow for ventilation. 4th side must be opened to front of houses or toward access road. This shed must be constructed with 4x4 posts on approximately 48" centers with concrete in ground and posts 36" in ground with a solid 2x lumber wall on back for mounting transfer switch and disconnects etc. The rest of the walls must be 2x4 stud framed over 2x4 treated bottom plate similar to the poultry houses walls but no insulation. Stick frames must have hurricane clips or knee braces to strengthen building for high winds similar to poultry house. Exhaust for generator must be ducted outside the building. Rear of shed arranged so electrical wires can be run in straight lines to control rooms.
2) The generator shed will be protected by (4) 6” diameter steel bollards installed at the front-end wall door. Bollards will be 7’-0” tall each with 3’-0” installed into the ground encased in concrete and filled with concrete.

3) One #3 rebar 20’-0” long installed in concrete slab prior to pour will serve as Ufer ground for generator shed and stubbed out near the back of the generator shed to serve as additional grounding means.

4) The 4th side (opened side) of generator shed may be 2x4 pressure treated stud framed with 2x4 bottom sill plate with an access gate. Opening covered with 1” PVC coated bird wire to make the generator shed rodent and animal proof. If this is done it must be done after electrical and generator equipment and fuel tanks are installed.

5) Walls will be covered with same metal as poultry house with ribs covered with flashing metal run horizontally with j-trim covering opened ribs on ends. Roof must be single metal with ridge cap and allow natural ventilation.

6) Roofing must be installed similar to poultry houses with trusses, purlins, metal, ridge cap, and screws per University of Tennessee.

7) (2) 20A circuits for lights and other loads required in generation shed.

8) Generator shed to have access to freeze proof water hydrant.

L. Litter Shed/Composter Shed (see drawings LS1, LS2, & LS3)

1) Approximately 54’-0”x175’-0”x6”-0 concrete slab with performance standards equaling 3000 PSI, 6’-0” concrete side walls with 6’-0” open above and in compliance with NRCS standards, etc.

2) Roof metal to be extended on either side 24” with metal hat channel.

3) Litter shed to be equipped with freeze proof hydrant. Location to be determined.

4) Electrical service to litter shed will be required for drum composter or dehydrator. Size and location to be determined.

IV. Electric, Gas and Water Utility Supply

A. Electrical Supply

1) Electrician is required to modify the electrical system/installation to serve the connected load on the farm. There must be a minimum of 50 kw of power supplied to each poultry house. It is recommended that the service entrance and meter be installed at the generator shed.

2) Minimum (2) 200 amps of service per each house required.

3) Pad mounted transformer and meter must be installed near the generator shed that is being served if pad mounted transformer used.

4) Power company must mark underground service wire location with stakes to ensure producer knows where lines are buried.

5) Electrical service may be brought to the farm overhead but must be installed underground a minimum of 50’-0” from the first poultry house so that it doesn’t interfere with feed delivery vehicles. No overhead electrical services allowed closer than 50’-0” of any poultry house. No overhead wires over load out areas.

6) All underground electrical service wires must be installed in conduit.
7) Voltage testing must be done by the power company to ensure proper voltage supply and power quality is achieved upon service installation.

8) Power company must provide electrical grounding at the service entrance.

9) Surge protection or lightning protection equipment should be provided by the power company at the service pole or service entrance to protect their equipment.

10) Additional surge or lightning protection equipment is recommended at the meter pole and on transfer switching at minimum to prevent power failure due to electrical equipment damage during surges or severe weather. Surge protection equipment must be sized to protect the equipment that it is installed on or protecting.

11) Houses must have appropriate panels to enable double service from generators. Redundant generators should be able to power ½ of ventilation system +/- ½ feed lines and entire well for each house. ½ of each of these services are wired to 2 panels.

B. Stand-by Generator, Transfer Switches and Disconnects

1) Generators (Min 50 Kw/house): 2 x 100 Kw for 4 houses

2) Electrician/generator supplier must insure that stand-by generator will serve the total connected load to the farm

3) Generator must be equipped with communications box that communicates with the controller

4) Houses should be wired for double service with 2 generators (see drawing GS2).

5) Stand-by Generator system must be able to start and continuously run the entire farm including all reasonable equipment at the same time.

6) Stand-by Generator must be programmed to exercise for the same 1-hour period every week and power must actually transfer during the exercise.

7) Stand-by Generator must be supplied with a minimum of 3 days of fuel supply in one tank per generator supplier fuel consumption requirements.

8) Stand-by Generator must have engine sized at minimum of 1.7 horse power for every kw of capacity the generator is sized at.

9) Must have block heater wired on dedicated circuit provided by generator shed convenience panel.

10) Stand-by Generator must be equipped with manual starting switch that bypasses electronic controls in case of circuit board failure.

11) Stand-by Generator must have a battery conditioner or battery charger installed to keep battery fully charged.

12) Stand-by Generator must be grounded with its own 8’-0”x 5/8” copper clad ground rod and additionally connected to the entire farm systems ground network. This ground must be tied to Ufer ground installed in generator shed concrete slab. (see drawing CR2)

13) Stand-by Generator exhaust must be run outside of the generator shed.

14) No more than 2 houses per 400-amp transfer switch. Transfer switching must have automatic sensing and automatic transfer capability.

15) Each house will have (2) 200 amp per house disconnect installed on the feeder lines to each house. Commercial grade fused or breaker disconnects must be used.
16) There must be 2 additional feeders that supplies 2 service panels (200-amp minimum) with main breaker, for the generator shed to provide power for generator accessories, lights, outlets, and any water storage or well pumps for the farm. Service panel and feeder must be sized to meet amp load to be served.

17) All feeder wires must be connected to equipment under lugs inside electrical equipment. Absolutely no wire splices allowed unless in an approved box and under lugs. Absolutely no split bolts allowed for splicing feeder wires. All premises wiring will be copper.

18) All wiring to be installed in accordance with industry standards and local code regulations if required. All electrical equipment must be double checked and equipment tested prior to final approval of Company to place chicks in house

19) Stand-by Generators must be serviced by a professional generator service technician on a yearly basis with a full inspection conducted.

C. Gas Supply

1) If (NG) is used then the gas service must be sized and have sufficient pressure to handle all heating equipment per heating equipment manufacturer recommendations.

2) Gas supply lines must be sized per equipment manufacturer requirements for the specified equipment used in the house. Low pressure requirements must be specified by heating equipment manufacturer. Lines must be pressurized to 30# of pressure for 24 hours and tested for air leaks prior to hooking to gas source or as specified by local code.

3) Absolutely no PVC or flexible gas piping allowed as supply lines in houses.

D. Water Supply

1) There will be one well per two houses with the capacity to supply a minimum of 0.7 gallons of water per minute per 1000 square feet of growing space (4-house farm will have two wells). Pressure going into the control room should be a minimum of 55 psi. If multiple wells are not available, there must be two sources, each capable of supplying 0.7 gallons of water per 1,000 square feet of growing space, of water installed per farm. Municipal/rural water and well; or multiple wells (ask Tyson if storage tanks are required)

2) Backup sources of water or treatment systems must be redundantly plumbed into the main system supply line to allow for a continuous backup source of water and bypasses installed around equipment to houses.

3) Water filtration and treatment must be installed if water quality does not meet Company standards. Filtration and treatment requirements to be specified after wells are drilled.

4) Minimum supply lines must be sized to allow for minimal pressure loss to each house. Minimum (2) 2” SCH 40 grade PVC to each house is required. These 2” lines must extend into the control room and feed all branches. One 2’ line supplies water to drinking system and the other supplies water to the cooling system. Main supply line from meter or well supply source feeding 2 houses or more must be a minimum of 2” from the 2” meter or well head to 2” branches going to each house. Lines must be buried below local freeze depth. (see drawing CR3)

5) Supply lines must be protected and encased if they run under roads.

6) Water supply lines from the well/meter to the houses must be sufficient size to prevent excessive pressure losses in the pipes. Ideally, the pressure at each house should be at minimum 40 psi. Well pressure is generally minimum 50 – 60 psi.
7) If there is a large change in elevation or a distance greater than 300 feet between the water municipal water or well source and the houses consult a plumbing specialist to help size pipes to accommodate for pressure losses due to elevation changes.

8) If rural water is used, there must be a minimum of a 2-inch tap or 2 one-inch taps.

9) If two separate sources are not available, then Company requires storage capacity of 5,000 gallons of water storage per house. Water storage tanks must not transmit light. Pumps and plumbing must be installed in an enclosed building. Location and size of water distribution building will be determined based on well location, available water supply (gpm) and quality.

V. Equipment and Environmental Control Systems

All screw hooks or lag bolts screwed to trusses must have pilot holes drilled to avoid splitting truss during equipment installation.

A. Ventilation

1) Hot Weather Ventilation – fans to provide 370,400 – 393,500 cfm at 0.15” static pressure. Total tunnel ventilation fan capacity must be installed in the tunnel end of the house. (14) 57” belt drive slant wall fans with cone shutters of the following performance ratings at 0.15” static pressure will be required. Tunnel fans must be minimum of 18.1 cfm/watt.

2) Minimum Ventilation Fans – (5) 36” slant wall belt drive louvered shutter, 10,000 cfm minimum or as efficient as possible (see drawing EPV1). Two minimum ventilation fans will be placed on each end wall and three in center section of house.

3) Recirculating Fans: (22) 18” basket fans per house. Fans to have a minimum of 2,000 cfm air flow. (12) fans installed in center brooding chamber and (5) in each off end installed. These fans will be installed on the north side of the house approximately 22'-6” from interior of north sidewall to center of fans in a racetrack configuration. (see drawing EPV1)

B. 6” Evaporative Cooling System & Environmental Control Sprinklers

1) 6” Recirculation Systems: 1,200 square foot of 6” Evaporative Cooling Cells edge coated evaporative cooling systems will be installed beginning at the front-end sides of the house. 120 linear foot of 5-foot-tall pad will be installed complete with 2 recirculation pumps required per side. (4) pumps per house. Pumps will be located in the center of the system. System plumbed with by-pass so either pump can supply entire system on respective side of house.

2) Cooling system to be mounted directly in side wall.

3) Systems must be installed to manufacturer recommendations with thermostat and 24-hour timers.

4) Pads must have black exterior protective edge coating. No large flute pad will be accepted. Pads systems must be installed to allow for an air tight seal so air only enters through the evaporative pad. Pads must consistently fit together when installed with no opened air gaps between pads. Pads must be installed per manufacturer requirements. No upside down or backwards pad installations will be accepted.
5) Water supply for cooling systems must be plumbed to meet system requirements. This line will be run from the main house control room from the main 2" supply header with 1.25" schedule 40 PVC run on the inside wall of the control room approximately 48" from finished floor grade with shut-off valves at tee to supply water to opposite side. 1" spigots with flexible 1" hoses will tie the plumbing line to the cooling system fill valves and allow for winterization of system.

6) Dog legs with ball valve on end must be installed at the end of each cooling system distribution header to catch debris left in the water header and flushed periodically. Bleed off valve and hose installed to allow for recommended bleed off water during high usage.

7) Sprinkler with 56 Weeden Sprinklers installed with 30" drop tube on two lines on 20-foot centers and in 3 zones controlled by Weeden Sprinkler Controller. Sprinklers arranged to avoid, feed hoppers, control pans fans and brooders.

8) Sprinkler sensors placed at the center of each ¼ house section.

C. Brooding (Center House) and Heating (see drawing EPV1)

1. (44) direct spark 40,000 BTU Radiant Round Brooders per house total: (25) 40,000 btu/hr each radiant heater will be installed per layout drawing in the "center house" brooding chamber arrangement. (4) zones required in this setup. (10) 40,000 btu/hr radiant heaters installed in the front and and (9) installed in the backends of the house. (2) zones required in each off end. Heaters must be installed on an electric winch to be operated at center house. Each row winched separately.

2. Brooder line spacing: From control room side = 18'-0" & 35'-0" and staggered length wise

3. Each gas drop must have a manual shut-off valve for each heater.

4. All flexible gas hoses must be rated for use with gas and have visible identification noting gas. No air hose permitted. Recommend using gas hoses with threaded fittings on each end.

5. Gas hose to be winched and plumbed to avoid contact with canopy

D. Drinking (see drawings EPV1 & CS2)

1) 5 lines of tray nipple drinkers will be installed per drinker systems layout. Nipples on 10" centers.

2) Drinker line spacing from control room side wall = 7'6", 13'-6", 29'-6", 39'-6", & 45'-6"

4) Drinker lines spaced 10'-0" from end walls except for center water line(s) spaced 20'-0" from front end wall or end door. All drinker lines spaced 10'-0" from back end wall.

5) Water on Demand Pro flush system with variable speed pump will be used

6) Drinker systems will be set up to be used with center brooding setup broken in to 4 sections per line. Each section will have a Water on Demand Reducer (regulator) Each section will have a flush kit (4 regulators and flush kits per line). Drinker lines broken at approximately 150'-0", 300'-0' and 450'-0' with 10 feet between breaks

7) Each regulator will have an inlet on the top for drinking water and a by-pass inlet on the side for high pressure flushing. The regulator will be redundantly plumbed and will have two separate supplies of water. The top inlet (for drinking water) will be plumbed with lines that go through filtration, pressure reduction and metering in the plumbing tree in the control room. The plumbing for the side inlet will by-pass filtration, pressure reduction and metering and supply high pressure water for flushing.
8) Water supply lines and flush lines must be high pressure type or gas ½ inch hose. The high-pressure flush inlet will be plumbed with a 90° ½" barbed elbow. Garden hoses not acceptable. Fittings must be plastic and not metal. Cut-off on each drop required.

9) Drinkers must be setup on hand winches with shocker wires and setup for center brooding. Lines must be winched every 10'-0” minimum. One winch per line located in center.

10) Drinkers must be setup with regulators on (30 psi).

11) Flushing lines must be run outside of house for cleaning, flushing and draining drinker lines. Lines can either be run out end walls or side walls per method approved by Company.

E. Water Panel in Control Room (see drawing CR3)

1) Main 2” SCH 40 PVC water line to control room must extend up wall and branch off with tee’s like a distribution header to equipment. All plumbing must be Schedule 40 PVC unless noted otherwise.

2) Water on Demand Pro automatic water control and flush system.

3) High pressure flush will be used.

4) (2) digital water meters (1 pulse per gallon) required for brooding chamber one meter for the front and back quarters.

5) (2) Dosatron (E 128) Peristaltic variable dose medicators, 1 for each branch of the drinking panel.

6) Pressure gauges installed on both sides of filters, regulators and medicator.

7) Water pressure range must be set at 30-60 psi with low pressure switches and alarms set accordingly.

8) All control room plumbing must be run along the side walls and not on the ceiling.

9) All interior house plumbing must be run along the side walls of the house below the sidewall vents and not on the ceiling.

10) All plumbing lines must use straps made for PVC plumbing lines.

F. Feed Pans & Feed Bins (see drawing EPV1)

1) (3) lines of flood type pan feeders spaced 4 pans on 10’ sticks broken at half house with 6 ChoreTime feed hoppers with automatic by-pass fill switches. Flood feeders with control pans at each brooding chamber and ends of each line. Chick Mates in brooding chamber. (6) single boot feed hoppers with system split half way down the house. Anti-roost wire. Control pans on each end of each line with control pans at each end of the brooding chamber. (4) control pans per line. Bypass switches on control pans must be mounted on wall at brooding curtains. Control pans at ends of house to have integrated lights. The front end of the 2 outside lines are set off the front-end wall 10 feet and run of 290 ft to the center of the house (300 ft). The inside line is set off of the end wall by 20 feet and runs 280 ft to the center of the house (300 ft). There is a gap of 10 feet between all lines at the center of the house. All three lines start at 310 and run 280 feet to the back of the house (590 ft) and are set off the back wall by 10 feet.

2) Feed line spacing from control room side is 10'-6", 23'-6’ and 42'-6’ (the middle feed line is off center away from the control room side of the house)

3) Feed lines must be winched with an electric winch and as per equipment manufacturer recommendations. One winch per line. Feed lines suspended every 10'-0”.
4) (2) 18 ton 9’ diameter feed tanks per house with Model 90 twin tandem fill system are required. 3.5" fill system with tandem feed auger equipped with high speed gear box for operation with augers entering house at approximately 300’ from front end of house. Each bin must be equipped with ladder and ground level opening device. Each bin must have clear boots with minimum of 12” of clearance to concrete.

5) One mailbox for each house must be installed at feed tanks for feed tickets.

6) Feed lines drilled, with fill spout for chick feeder, between every pan (in brooding chamber).

7) 360 Round Turbogrow chick feeder. Must be removable and not affixed to feed line.

G. Electronic Control, Backup System, and Alarm

1) Rotem One Touch controller with 50 relays, Relative Humidity Sensor; Rotem enhanced back-up (RBU-27) and Rotem back-up control (RDT-5); Rotem Communicator and Comm-Box. Communications system will be located in the Water/Generator building.

2) Static sensor high pressure hose must run approximately 15’ into attic from adjacent side wall with end hose mounted 12” above insulation with screen installed on end of tube with no kinks in hose. Sensor must be accessible via attic access hole. Low pressure hose must be mounted on inside of chicken hose on side wall adjacent to control room in visible location with protective screen on end of tube and no kinks in hose.

3) See sensor layout on equipment layout. Sensors must run down water line drop line tied with S- hook and zip tie so sensor wire is not damaged when lines are moved up or down. Sensor located at hook just above water line per Company approval. Outside sensor adjacent to control room placed in protective bottle or 2” PVC sleeve

4) In addition to other modes of communication, alarm system must utilize audible siren on farm

5) Each house on farm must be wired and set up exactly the same. If more than one crew per farm they must coordinate together so each house is an exact replica to the next in every aspect possible per Company (see wiring diagram and relay assignment)

6) Must be able to hook controllers together, collect data and be PC compatible.

7) Each house must be programmed by Company recommended controller assignments for consistent operation and setup. See controller assignment sheet.

8) Backup Assignments and Operation must be consistent across all houses and all farms. See Relay assignment sheet in Drawings

9) Hardware to utilize overtime feed alarm on fill system and generator exercise must be included and installed with controller.

10) Cellular service is recommended if signal allows. If not, one phone line with internet service to the water/generator shed is required. Houses connected to communications in water/generator shed via direct bury wire. Telephone lines must be grounded for optimal lightening protection as recommended by manufacturer.

11) M Tech data collection package to be added per Tyson recommendations.

H. Remote Rail-Mounted Robot per University of Tennessee and Tyson Foods, provisions for a test run of the remote robot will be discussed.
**I. Electrical System for House**

1) All new houses on the farm must be wired exactly the same with equipment, switches, outlets, and lights. All breakers, controllers, relays and control rooms must be wired and arranged exactly the same in each house. (see drawing CR4)

2) (2) 4-wire feeders (2-hots, 1-neutral & 1-ground) rated to feed (2) 200 amp panels per house must be used to supply power consistently across the farms electrical system. Feeder wire sizing must be designed by the electrician installing the electrical equipment per National Electrical Code. Feeders to each house must be installed in PVC grade electrical conduit. All wiring must be copper.

3) All control room electrical equipment to be mounted on the poultry house side of the control room unless otherwise noted.

4) (2) 200-amp Square D QO 40 space commercial grade main panel or equivalent installed with main lugs only connection (no main breaker or fuses). Copper bus bars are required for main panels. Loads must be properly balanced between each leg in panel. (No residential grade panels accepted!)

5) All electrical wires to be copper #12 stranded THHN for general use and #10 copper stranded THHN for tunnel fans. All wire to be commercial grade wires installed in conduit. No romex or residential grade wires allowed. One fan per breaker installed. No fan circuits run in attic. Recommend running fan circuits alongside walls. No conduit run within 13’-0” from side wall of house that will prevent air flowing along ceiling from side wall vents.

6) All exhaust fans and tunnel fans must be wired with commercial cord & plug connections to allow for disconnecting means of fan for servicing. Electrician must not direct wire fans.

7) All outlets to be commercial grade with commercial grade outlet covers and boxes.

8) Minimum #6 solid ground wire must be run to (1) 8’-0”x 5/8” diameter copper clad ground rod installed outside the house adjacent to the main panel at each poultry house with an acorn type solid ground clamp with set bolt. No 2-piece pipe clamps are accepted. #6 solid copper wire must extend out and connect to Ufer ground with similar acorn type solid ground clamp with no splices.

9) There must be one ground rod installed at each poultry house control room, one at the generator shed, one at the generator, and one at the meter base or pole with no splices. All ground rods will be connected together using the ground wire and this is the reason for using the 4-wire feeder system to connect all ground rods together. In addition to all ground rods being connected, if each house has an additional Ufer ground installed, each ground rod at the control room will have the #6 solid wire extended to the Ufer ground to complete the grounding system.

10) Equipment Wiring: Must be installed to industry standards and/or state or local codes based on the equipment manufacturer requirements for each piece of equipment.

11) Convenience Outlets: (3) 120-volt duplex GFCI outlets must be installed in the control room (one for heating/cooling unit 115v). One additional convenience outlet must be installed on the exterior of the front-end wall of the house in a weatherproof box. (6) 120-volt duplex outlets must be installed inside the house on the control room side of the wall – one on each end wall and one every 100’. All wire in conduit.

12) (1) energy efficient security light must be installed on the front-end wall above the end wall door with photocell and on switch located above front-end wall door.

13) All electrical installations and wiring must be done in accordance with local code and industry standards.
J. Lighting for House

1) (90) EH80 Overdrive 16-watt fixtures with Overdrive dimmers. 3 lines with fixtures 20’ OC staggered. Light output of 6 ft. candles before dimming.

2) Outside light lines begin 5’-0” from cool cell end and center light line begins at 15 from cool cell end.

3) All lighting circuits (both dimmed and non-dimmed) must be run through the controller to allow for programmed dark out periods. All dimmed circuits must be run through the approved external dimmer. Additional switches must be installed on the front off-end dimmed circuit(s) and the back off-end dimmed circuit(s) to allow for separate control. These switches must be mounted in the control room and properly labeled.

4) There will be one light installed in each control room on a designated switch with one exterior energy efficient security light on photocell and designated switch and one exterior porch light on a designated switch mounted not to be hit by exterior doors.

5) There will be (4) generator shed lights all installed in the generator room on a designated switch.

6) There will be one drop light or mechanics drop light with molded plug installed at each feed motor and each feed hopper to allow for maintenance.

K. Gas Plumbing for House

1) Natural Gas or LP gas must be specified for each farm. If natural gas is even a remote possibility for the future, plumb all houses to a single area where the NG may come to farm. This area can be used for all the propane tanks. (Imperative to know if natural gas is available).

2) Only rigid steel or iron gas pipe is allowed. No ribbed flexible gas lines permitted as main supply lines.

3) Only gas supply rated flexible supply hoses can be used to supply heating equipment from the main rigid supply lines. Hoses must be visibly rated for gas use.

4) Regulators should be installed over the pipe to avoid ail accumulation.

L. Water Plumbing for House

1) The main water supply lines into the control room must remain 2” PVC to the last tap off of the header. There are two main supplies, one for drinkers and one for cooling system. The drinking system will have two separate branches coming off the 2-inch supply line. One branch will split after the medicator to feed the front and back quarters. The other will feed the center ½ house section. Each branch will have the appropriate shut off valves, regulator, meter, filter, and medicators. (see drawing CR3)

2) Minimum of ¾” SCH 40 PVC must be used to supply necessary equipment unless noted otherwise.

3) Evaporative cooling systems will use 1.25” SCH 40 PVC tap off from the 2” main line in the control room with filter and shut-off valve. One 1.25” line will run down the control room side of the house approximately 48” from the floor on wall then tee off at dog house for one side and then 1.25” PVC across to other side run along ceiling to cooling system on opposite side of house. 1” flexible hoses with threaded connectors may be used to connect supply lines to cooling system fill valves and allow for winterizing system. Plumber must take note if cooling system is fed from ends or center.
4) One ¾” metal frost free spigot should be installed at the front exterior end wall of each house to allow for equipment and live haul wash down. This line should not be pressure regulated. This line will be supplied from the control room with ¾” SCH 40 PVC and plumbed for front fan wash down as well.

5) There must be one ¾” spigot installed on the tunnel fan end wall to allow for tunnel fan wash down. This line should not be pressure regulated.

6) See control room water panel design and sprinkler layout for more details.

M. Extra Instrumentation Package

1) Total instrumentation package will be developed for fuel, water, power, and air quality as recommended by University of Tennessee and Tyson Research Facility in Springdale, AR.

N. Miscellaneous Items

1) Supplied by Builder

a) (2) 1 hem, 2-pocket Brooding Curtains with draws strings 53'-0” wide fastened with 2x4 lumber to bottom chord of trusses located at 150’ and 450’ from the front-end wall. Each brood curtain must be installed on hand winches so they can be winched out of the way and fastened up tight against the ceiling when not in use

b) (2) 2” tall x 53’-0” wide plywood peck boards must be built for each house complete with stands located at each brood curtain. Plywood must be coped around feed lines. Welded angle iron stands every 8 feet across building. Builder must provide metal hangers on sidewalls adjacent to brooding curtain to hang peck boards and stands. Peck boards must be installed at 1/4' and 3/4' from front end wall so curtain weight holds curtain closed when fans are off

c) (3) 16” tall x 53’-0” long black “A” style migration fences

d) (1) steel winching hook per house

e) Rodent bait stations – 27 total per house: Commercially available with lock

2) Supplied by University of Tennessee

a) New construction bedding or shavings. Each house must be filled with a consistent 6” layer of Company approved bedding material prior to chick placement by grower

b) Initial fill-up of Propane

c) (1) ½” heavy duty 110-volt reversible drill

d) (1) 2-wheeled wheelbarrow per house

e) (1) 8’ step ladder per house

f) (1) 10’ step ladder per farm

g) (2) 50’ long x ¾” industrial grade water hoses per farm

h) (1) 100’ 12/3 commercial grade extension cord per house.

3) Supplied by Tyson Foods

a) (1) Biosecurity pan per control room
LITTER SHED
(4) HOUSE SITE
18' DITCH = 6"/100'

(4) HOUSE BROILER CONFIG

DITCH = 6"/100'

APPROX 60' CULVERT @ BIN PADS/CTRL RM

APPROX 60' CULVERT @ BIN PADS/CTRL RM

54x175

GRAVEL LOAD-OUT AREA

GEN/WTR BLDG 20x40

600'

SP1

Utia broiler research facility

Site plan SP1
2x6 HORIZ FRAMING
SPACED @ 24" oc
(2) CONTINUOUS RUNS OF 3/8" REBAR

SIMPSON H-10s
HURRICANE TIE
INSTALLED AT EA TRUSS HEEL
USING TECO NAILS
MIN. 1 1/2" ALLOWABLE SHEAR PER NAIL
MIN. OF 1 1/2" NAILS INSTALLED

54'-0" OUT-OUT POSTS

2x6 HORIZ FRAMING
SPACED @ 24" oc
(2) CONTINUOUS RUNS OF 3/8" REBAR
(4) 1/4" x 2" LAG SCREWS @ EACH END OF KNEE BRACE

WOOD TRUSS @ 5'-0"
MIN. # TOTAL LOAD
60 mph WIND LOAD

2x4 #2 CONTINUOUS LATERAL BRACED
EXACT # AND LOCATION PER ENG
SEALED TRUSS DESIGN

ACTUAL TRUSS CONFIG
MAY VARY FROM SHOWN
SEE ENG TRUSS DRAWING

SIMPSON H-10s
HURRICANE TIE
INSTALLED AT EA TRUSS HEEL
USING TECO NAILS:
10 x 1-1/2" 10 GAUGE
MIN. OF 135# ALLOWABLE SHEAR PER NAIL

2x4 #2 YELLOW PINE
ROOF PURLING
@ 2'-0"

2x4 #2 STEEL KNEE BRACE AT
EACH TRUSS LOCATION
(4) 1/4" x 2" LAG SCREWS @ EACH END OF KNEE BRACE

ROOF PURLINS
@ 24" oc
1/2" CDX (4 ply)

STEEL KNEE BRACE AT
EACH TRUSS LOCATION
(O) 1/4" x 2" LAG SCREWS @ EACH END OF KNEE BRACE

SAFETY LINE
AT ENDWALL AND 75' INTERVALS

54' BROILER CROSS SECTION

BROILER RESEARCH FACILITY
BUILDING DETAIL
CS1
TUNNEL FAN FRAMING TYPICAL @ BOTH SIDES OF HOUSE
(14) TUNNEL FANS TOTAL

** VERIFY R.O. DIMENSIONS FROM FAN MANUFACTURE

UTIA BROILER RESEARCH FACILITY

Fan Framing

FF1
Porch to start 310' from front of house

End Ctrl RM @ 335' from front of house

Utia Broiler Research Facility

Control Room Plan View

Cr1
CONTROL ROOM

DIRT GRADE - TOP PLT

2.5
12
12
5

PANEL

#6 BARE COPPER WIRE RUN FROM PANEL TO COPPER GROUND ROD AND CONNECTED WITH ACORN STYLE CLAMP AND CONTINUE TO UFER GROUND AND CONNECTED WITH ACORN STYLE CLAMP

8'-0" COPPER GROUND ROD

TIE A 20' STICK OF REBAR TO FOOTING REBAR WITH TIE WIRE EVERY 24" PRIOR TO POURING CONCRETE

UFER GROUND:
TIE A 20' STICK OF REBAR TO FOOTING REBAR WITH TIE WIRE EVERY 24" PRIOR TO POURING CONCRETE

UFER GROUND DETAIL

NOTE TO BLDG COORDINATOR:
AFTER CONSTRUCTION & UTILITIES ARE COMPLETE, IT IS THE GROWER'S RESPONSIBILITY TO ENSURE STONE IS PLACED IN THE KNOCK OUTS

UFER GROUND

DRAIN DETAIL

#2 2X6 CEILING JOISTS @ 24" OC

3'-1/2" x 12' DRAIN TO SLOPE FROM 0" TO 2' DEEP AND DRAIN INTO ROCK FILLED KNOCK OUT

DRAIN

CONTROL ROOM - CLEAN

15'-0"

10'-0" WALL

1/2" CDX PLYWOOD (4 ply)

6 mil VAPOR BARRIER

6" (R-19) FIBERGLASS

#2 2X6 FRAMING

@ WALLS & CEILINGS

@ WALLS & CEILINGS & JL VAPORS BARRIES

@ INT WALLS & CEILINGS

1/2" DXX FLYWOOD (4 ply)

@ INT WALLS & CEILINGS

3'-1/2" WALL

CLEAN/DIRTY

CONTROL ROOM - CLEAN

36" TALL WALL

CLEAN/DIRTY

SLOPE CONCRETE FLOOR @ 1" per 10' TOWARDS FRONT WALL

16' x 16' KNOCK OUT

DRAIN

CONTROL ROOM - CLEAN

36"

CONTROL ROOM

3'-1/2" x 12' DRAIN TO SLOPE FROM 0" TO 2' DEEP AND DRAIN INTO ROCK FILLED KNOCK OUT

10'-0" WALL

16" x 16" KNOCK OUT

SINK

FEED BIN PAD

28' x 14' FEED BIN PAD

SLOPE CONCRETE FLOOR @ 1" per 10' TOWARDS FRONT WALL

16' x 16' KNOCK OUT

DRAIN

CONTROL ROOM - CLEAN

36"

CONTROL ROOM

3'-1/2" WALL

CLEAN/DIRTY

CONTROL ROOM - CLEAN

36" TALL WALL

CLEAN/DIRTY

CONTROL ROOM - CLEAN

36"

CONTROL ROOM

3'-1/2" WALL

CLEAN/DIRTY

CONTROL ROOM - CLEAN

36"

CONTROL ROOM

3'-1/2" WALL

CLEAN/DIRTY

CONTROL ROOM - CLEAN

36"

CONTROL ROOM

3'-1/2" WALL

CLEAN/DIRTY

CONTROL ROOM - CLEAN

36"

CONTROL ROOM

3'-1/2" WALL

CLEAN/DIRTY

CONTROL ROOM - CLEAN

36"
4x6-16 TREATED POSTS (.60) EMBEDDED 36" BELOW GRADE
SPACED @ 5'-0" OC AND 12'-0"
DIRT GRADE TO TOP PLATE BELOW GRADE

1-1/2" x 1-1/2" x 1/8" STEEL KNEE BRACE AT EACH TRUSS LOCATION
(4) 1/4" x 2" LAG SCREWS @ EACH END OF KNEE BRACE

2x4 #2 YELLOW PINE ROOF PURLIN @ 24" OC

WOOD TRUSS @ 6" OC
20# TDL
5# TCDL
4# BCDL
3# TOTAL LOAD
20 mph WIND LOAD

ACTUAL TRUSS CONFIG MAY VARY FROM SHOWN - SEE ENG TRUSS DRAWING

SIMPSON H-10s HURRICANE TIE INSTALLED AT EA TRUSS HEEL USING TECO NAILS:
10  x 1-1/2" 10 GAUGE MIN OF 135# ALLOWABLE SHEAR PER NAIL
NAIL OF (12) NAILS INSTALLED

1-1/2" x 1-1/2" x 1/8" STEEL KNEE BRACE AT EACH TRUSS LOCATION
(4) 1/4" x 2" LAG SCREWS @ EACH END OF KNEE BRACE

2x4 #2 CONTINUOUS LATERAL BRACING EXACT # AND LOCATION PER ENG SEALED TRUSS DESIGN

ROOF PURLINS @ 24" OC
MIN OF (12) NAILS INSTALLED

WOOD TRUSS @ 5" OC
20# TDL
5# TCDL
3# TOTAL LOAD
90 mph WIND LOAD

EXACT # AND LOCATION PER ENG SEALED TRUSS DESIGN

CONCRETE BELOW GRADE

OUTSIDE EAVE PURLIN TO BE METAL HAT CHANNEL

(5) CONTINUOUS RUNS OF #4 REBAR

2'-0" CONCRETE
6'-0" CONCRETE
4'-0" CONCRETE
2'-0" CONCRETE

ALUMINUM OR GALVALUME 29 GA ROOF METAL INSTALLED WITH 1-1/2" NEOPRENE WASHERS ROOF SCREWS

UTIA BROILER RESEARCH FACILITY

LITTER SHED BUILDING DETAIL LS3
PIPE BOLLARDS INSTALLED @ FRONT OF GEN/WTR BLDG

40'-0"

20'-0"

4x6 POST APPROX. 5' O.C.

15'-0"

OPENING

WALL SHEATHED WITH 2X LUMBER @ INT FOR SWITCH GEAR MOUNTING

100kw GEN

100kw GEN

FUCEL

FUCEL

*Interior walls & ceiling to be covered with metal.

*Front end wall to have metal on gable only.

*Back end wall to be fully enclosed.

*Recommend this structure to be bird proof per Tyson spec.

UTIA BROILER RESEARCH FACILITY

GENERATOR PLAN VIEW

GS1
1. Generator 'A' supplies ATS A1 & A2 which feed panels A1-A4
2. Generator 'B' supplies ATS B1 & B2 which feed panels B1-B4
8'-0" viewing room

dirt grade - top plt

2.5
12
12
5

310'

28' x 14' FEED BIN PAD

5'-0"
Porch

20'-0"
VIEWING ROOM

porch

6'-8" +/-

10'-0"

10'-0"

VIEWING ROOM

6" (R-19) FIBERGLASS @ WALLS & CEILINGS

6 mil VAPOR BARRIER @ WALLS & CEILINGS

PAINTED METAL @ WALLS & CEILINGS

#2 2x6 FRAMING @ WALLS & CEILINGS

#2 2x6 CEILING JOISTS @ 24" OC

(4) Custom fit Tinted windows

#2 2x6 CEILING JOISTS @ 24" OC

#2 2x6 CEILING JOISTS @ 24" OC

Single Sash Bay Window Operable

UTIA BROILER RESEARCH FACILITY

VIEWING ROOM BUILDING DETAIL VR2
BROILER FACILITY - SCHEME 01

54' x 600' BROILER HOUSES
BROILER FACILITY - SCHEME 02

54' x 500' BROILER HOUSES
PROPOSED TIMELINE AND OPINION OF PROBABLE COSTS
PROPOSED PROJECT TIMELINE

- Programming Document Complete 6/4/23
- Designer Solicitation / Selection / Contract Approval
- Design Development
- RFI - Shaping Conversations
- M&E Review
- Cost Estimate
- Quality Control
- DO Set Complete
- Owner Review
- Check Set
- Constructability Review
- Quality Control
- CD Set Complete
- Owner Review
- Bid Set Complete

(Anticipated completion 8/23/25)
## Preliminary Cost Estimate

### Research Facility

<table>
<thead>
<tr>
<th>Space Name</th>
<th>SF Each</th>
<th>SF Total</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory - Clean</td>
<td>200</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>Laboratory - Dirty</td>
<td>400</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td>Laboratory - Engineering</td>
<td>400</td>
<td>400</td>
<td></td>
</tr>
<tr>
<td>Kitchenette</td>
<td>120</td>
<td>120</td>
<td></td>
</tr>
<tr>
<td>Offices (2)</td>
<td>150</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>Public Restrooms</td>
<td>70</td>
<td>70</td>
<td></td>
</tr>
<tr>
<td>Dormitory Area (2)</td>
<td>150</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>Shower/Locker Room</td>
<td>270</td>
<td>540</td>
<td></td>
</tr>
<tr>
<td>Storage</td>
<td>75</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>2,405</td>
<td></td>
</tr>
<tr>
<td>Gross Factor 33%</td>
<td></td>
<td>3,199</td>
<td></td>
</tr>
</tbody>
</table>

| Total SF                    |         | 3,199    |                          |

| $/SF                        |         | 400.00   | based on recent similar projects |

**Research Facility Estimated Cost**

1,279,460

### Broiler Facility (54' x 600')

<table>
<thead>
<tr>
<th>Space Name</th>
<th>SF Each</th>
<th>SF Total</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broiler Houses (4)</td>
<td>32,400</td>
<td>129,600</td>
<td>54' x 600'</td>
</tr>
<tr>
<td>Broiler Viewing Room (2)</td>
<td>200</td>
<td>400</td>
<td>10'x20' (1 per pair of houses)</td>
</tr>
<tr>
<td>Broiler Control Room (4)</td>
<td>200</td>
<td>800</td>
<td>10'x20' (1 per house)</td>
</tr>
<tr>
<td>Broiler Bin Feed Pad (4)</td>
<td>392</td>
<td>1,568</td>
<td>14'x28' (1 per house)</td>
</tr>
<tr>
<td>Spent Litter Shed</td>
<td>5,400</td>
<td>5,400</td>
<td>54'x100'</td>
</tr>
<tr>
<td>Generator / Water Outbuilding</td>
<td>640</td>
<td>640</td>
<td>20'x32'</td>
</tr>
<tr>
<td>Pump House</td>
<td>100</td>
<td>100</td>
<td>assumed 10' x 10'</td>
</tr>
<tr>
<td></td>
<td></td>
<td>138,508</td>
<td></td>
</tr>
</tbody>
</table>

| Total SF                    |         | 138,508  |                          |

| $/SF                        |         | 22.00    | based on recent industry examples |

**Broiler Facility Estimated Cost**

3,047,176

---

**Total Building Construction Cost**

$4,326,636

**Site & Utilities Cost**

$1,764,000

**BID TARGET**

$6,090,636

**5% Contingency**

$304,532

**MACC**

$6,395,168

- **Fee** $395,751 Basic Services Fee Formula
- **Moveable Equipment** $100,000 These numbers are taken from the DB-70
- **OIT/AV & Security** $250,000 These numbers are taken from the DB-70
- **Adminstration & Miscellaneous** $639,517 Estimated 10% of MACC

**ESTIMATED TOTAL COST**

$7,780,436