

# Angkawijana, LLC PROJECT OVERVIEW 2444 Meadowbrook Parkway

**COMPANY/OWNER BACKGROUND:** Angkawijana, LLC is the ownership entity for A&D Foods, Georgia's Largest Privately Owned Seafood Importer, presently located at 65 Crestridge Drive, Suwanee, GA in 45,000 SF. The company primarily receives and distributes frozen fish, meat and poultry.

The existing building at 2444 Meadowbrook Pkwy consists of approximately 200,000 sf of existing warehouse space and 22,000 sf of office space. The existing warehouse will be demolished leaving the 22,000 sf office intact. Then, a new 130,000 sf cold storage warehouse, per this RFP, will be constructed to connect to the existing office. The existing office area will be renovated under a separate permit from the construction of the cold storage warehouse. The goal is to complete the office renovation by September 2014 and the new cold storage warehouse by April 2014.

Owner Contact Information:

Terry Willis, CEO, A&D Foods |65 Crestridge Drive, Suwanee, GA twillis@adfoods.com

**OWNER REPRESENTATIVES:** Silvio Development Company and Constructive Ingenuity will jointly serve as Owner Representatives for A&D Foods and Angkawijana. <u>Please direct all questions to the following</u>:

Jerry Silvio, Silvio Development Company 404-372-2040 jsilvio@silviodevelopments.com

Sara Silvio, Constructive Ingenuity 678-230-5601 ssilvio@constructiveingenuity.com

Kent Johnson, Constructive Ingenuity 678-642-3076 kjohnson@constructiveingenuity.com

**JURISDICTION:** This building is in unincorporated Duluth and is under the permitting jurisdiction of Gwinnett County.

**CONTRACT STRUCTURE:** The following table describes the individual contracts expected for the project.

Scope of Work	Contract
Demolition of existing warehouse	Awarded to Atlanta Demolition
Site Work	Awarded to Atlanta Demolition
Construction & Quality Control Testing	Awarded to Willmer Engineering
Design/Build General Contractor for	Contract direct with Owner
Warehouse & Existing Office Renovation*	
Design/Build Refrigeration	Contract direct with Owner
Concrete Flooring	If the Owner is not comfortable with the proposed
	Concrete Flooring Sub-contractor, he may elect to
	contract direct. (See Evaluation Criteria)
Racking	Contract direct with Owner
Landscaping	Contract direct with Owner

NOTE: \*The Design/Build General Contractor may include an alternate to include refrigeration in their proposal.

# **REQUEST FOR PROPOSAL PROCESS:**

<u>Design/Build General Contractors (D/B GC)</u>: The Request for Proposal Process for the cold storage warehouse scope of work and the refrigeration scope of work will run in parallel and most administrative documents apply to both scopes of work. The Owner's preference is to award the refrigeration separate from the construction of the warehouse; however, the Design/Build General Contractors may partner with a refrigeration contractor and offer an alternate to include the refrigeration if an advantage to the Owner can be demonstrated.

<u>Design/Build Refrigeration Contractors (D/B RC)</u>: The Request for Proposal Process for the cold storage warehouse scope of work and the refrigeration scope of work will run in parallel and most administrative documents apply to both scopes of work. The Owner's preference is to award the refrigeration separate from the construction of the warehouse.

02/14/14	Issue RFP for D/B GC and D/B RC on www.silviodevelopments.com		
03/04/14	Mandatory Pre-bid meeting for interested D/B GC and D/B RC		
	8:30 - 9:00 Sign in and refreshments		
	9:00 – 11:00 Mandatory Pre-Bid Meeting		
	Holiday Inn @ the Gwinnett Center		
	6310 Sugarloaf Parkway		
	Duluth, GA 30097 770.476.2022		
03/26/14	Last day any questions or RFI's can be submitted.		
04/01/14	Proposals due (D/B GC and D/B RC) no later than 2:00 pm (three hard copies		
	and one electronic) to:		
	SDC offices at 646 B Kentucky Street Scottdale, GA 30079		
April 2014	Shortlist and contractor interviews (D/B GC and D/B RC)		
05/01/14	Award contract, start design (D/B GC and D/B RC)		

The following schedule is provided as a guide but is subject to change.

# PROPOSALS: DESIGN/BUILD GENERAL CONTRACTORS

Written/Electronic proposals for Design/Build General Contractors shall include the following:

- 1. Qualifications:
  - a. Proposed design team members and associated cold storage warehouse design experience
  - b. Proposed Project Manager and Superintendent and associated cold storage warehouse construction experience

- c. Proposed concrete floor contractor and associated cold storage warehouse floor construction experience
- d. Proposed refrigeration sub-contractor and associated cold storage warehouse construction experience (if applicable).
- 2. Outline specifications and clarification of pricing
- 3. Value Engineering alternates
- 4. Completed Bid Form
- 5. References:
  - a. 3 recent clients from within the past 5 years
  - b. 3 past clients from 5 10 years ago
  - c. Bank reference
  - d. Insurance Company reference
- 6. List of facilities with location and age the Owner can visit if the D/B GC is selected for the Short List. Ideally this list will include facilities (located within a 4 hour drive of Atlanta) less than 5 years old, 5-10 years old and greater than 10 years old.
- 7. Company Safety History and EMR
- 8. Copy of Insurance (Design and General Contracting)
- 9. Copy of W-9

Design/Build General Contractor Proposals will be evaluated on a point system based on the following criteria. This will be used to generate a Short List (3+/-) of Design/Build General Contractors who will then be invited to participate in the Interview Process. If submitting a Refrigeration Proposal, it will be evaluated under separate criteria.

	Criteria	Maximum	Comments
		Points (200)	
Α	Price	40	Price comparison after qualifying
			proposals and clarifying pricing
В	Quality of Value Engineering Alternates	10	
С	Experience of Design/Team	25	
D	Experience of PM and Supt.	25	
Ε	Reputation/References	25	6 past cold storage clients (3 from the
			past 5 years and 3 from 5-10 years ago),
			bank reference, insurance company
			reference
F	Experience of Concrete/Floor sub**	35	
G	Ability to provide older facilities to visit	25	
	locally (within 4 hour drive from Atlanta)		
Н	Safety	15	Provide safety record and EMR

\*\* The Owner is placing top priority on the experience of the Concrete Floor Sub-contractor. If the Owner is not satisfied with the <u>Concrete Flooring Contractor cold storage experience</u>, then he may elect to remove that scope of work from the General Contractor and contract the work directly with a concrete flooring sub-contractor. It is **VERY IMPORANT** the proposal address this concern.

Short List General Contractor Interviews will include the following, as desired by the Owner:

# STEP #1 (allow 2 hours per contractor)

General Contractor to make a presentation to include: Key Personnel, Design Team, Concrete Floor Contractor, Project Approach, Experience

Question/Answer session

Cooperation with Refrigeration Contractor, if a partner has not already been identified

# STEP #2 (separate visits)

Visit older facilities with opportunity to speak with the facility and maintenance managers

# SETP #3 (final meeting and/or conference call)

Final review of price – best and final

Once the project has been awarded, the Design Team Representatives, General Contractor Representatives and Refrigeration Representatives will be expected to prepare for and attend weekly project meetings with the Owner and/or the Owner Representatives.

# PROPOSALS: DESIGN/BUILD REFRIGERATION CONTRACTORS

Written/Electronic proposals for Design/Build Refrigeration Contractors shall include the following:

- 1. Qualifications:
  - a. Proposed design team members and associated refrigeration design experience
  - b. Proposed Project Manager and Superintendent and associated refrigeration construction experience
- 2. Outline specifications and clarification of pricing
- 3. Value Engineering alternates
- 4. Completed Bid Form
- 5. References:
  - a. 3 recent clients from within the past 5 years
  - b. 3 past clients from 5 10 years ago
  - c. Bank reference
  - d. Insurance Company reference
- 6. List of facilities with location and age the Owner can visit if the D/B RC is selected for the Short List. Ideally this list will include facilities (located within a 4 hour drive of Atlanta) less than 5 years old, 5-10 years old and greater than 10 years old.
- 7. Company Safety History and EMR

- 8. Copy of Insurance (Design and General Contracting)
- 9. Copy of W-9

Design/Build General Refrigeration Proposals will be evaluated on a point system based on the following criteria. This will be used to generate a Short List (3+/-) of Design/Build Refrigeration Contractors who will then be invited to participate in the Interview Process.

	Criteria	Maximum Points (165)	Comments
Α	Price	40	Price comparison after qualifying proposals and clarifying pricing
В	Quality of Value Engineering Alternates	10	
С	Experience of Design/Team	25	
D	Experience of PM and Supt.	25	
E	Reputation/References	25	6 past cold storage clients (3 from the past 5 years and 3 from 5-10 years ago), bank reference, insurance company reference
F	Ability to provide older facilities to visit locally (within 4 hour drive from Atlanta)	25	
G	Safety	15	Provide safety record and EMR

Short List Refrigeration Contractor Interviews will include the following, as desired by the Owner:

# STEP #1 (allow 1 hour per contractor)

Refrigeration Contractor to make a presentation to include: Key Personnel, Design Team, Project Approach, Experience

Question/Answer session

Cooperation with General Contractor, if a partner has not already been identified

# STEP #2 (separate visits)

Visit older facilities with opportunity to speak with the facility and maintenance managers

# SETP #3 (final meeting and/or conference call)

Final review of price – best and final

Once the project has been awarded, the Design Team Representatives, General Contractor Representatives and Refrigeration Representatives will be expected to prepare for and attend weekly project meetings with the Owner and/or the Owner Representatives.



#### **DESIGN TEAM**

The Design/Builder is responsible for including design and permitting for the scope of work outlined for the construction of the cold storage building. The design and installation of the refrigeration system will be a separate contract direct with the Owner unless the Design/Builder demonstrates a distinct advantage to including it in the Design/Build contract.

The Design Team should include all necessary registered design professionals to complete the scope of work. This will include the architect and structural, mechanical, electrical, plumbing and fire protection engineers. The refrigeration engineer shall be included if the refrigeration is placed under the Design/Builder scope of work.

The Design/Builder is responsible for obtaining all necessary approvals of governmental authorities having jurisdiction over the Project. The refrigeration contractor will be responsible for obtaining all necessary approvals of governmental authorities having jurisdiction over the refrigeration component.

Include resumes or firm credentials for the proposed Design Team within the response to the RFP.

The design agreements shall be between the Design/Builder and the Design Professional. If awarded separate from the construction of the cold storage building, the Design/Build Refrigeration contractor will have a design agreement with a refrigeration engineer.

The Design Team and/or the Design/Builder are responsible for verifying field conditions.

The Design Team and the Refrigeration Engineer will be responsible for coordinating design details and requirements. The Owner Representative will facilitate this coordination by setting a design schedule with critical milestone dates, holding design professionals accountable for meeting deadlines, facilitating the exchange of design criteria and design documents and hosting design coordination meetings. Design professionals will be required to formally acknowledge receipt of information and cooperate fully with the other members of the Design Team. The Owner and Owner Representative will review the construction documents at each critical milestone and as often as needed.

The Design/Build contract will further detail the contractual requirements for the Owner, Design/Builder and Refrigeration Design/Builder.

The Design Team will be responsible for providing CAD and PDF files of all plans to the Owner and Owner Representative at the time plans are submitted for permit. Updates to these files shall be submitted whenever a subsequent revision occurs. As-built drawings, CAD and PDF, shall be submitted to the Owner and Owner Representative at the completion of the project.

# REZONING

The Owner has applied for rezoning from M-1 to M-2. This change in zoning will allow for the cut and repackaging shop to be included in the design. The project is currently working through the process and expected to have the rezoning granted by the end of February 2014.

#### PRELIMINARY DESIGN

This site is located in an area of Gwinnett County which falls under the 2030 Gwinnett County Unified Plan. This guideline, along with Gwinnett County Planning Commission, has significantly influenced the proposed architectural design and elevation of the building. Robert "Bob" Fowler, principle of Fowler Design Associates, was hired to assist with the preliminary design in an effort to meet the requests of the Gwinnett County Planning Commission. Renderings have been included in the RFP and bidders are welcome to contact Bob Fowler at (404) 733-5900 or <a href="mailto:rwfowler@fowlerdesignassociates.com">rwfowler@fowlerdesignassociates.com</a>.

The following Individuals/Firms were also engaged to complete preliminary design on the project and bidders are welcome to contact these firms.

Civil	Jason Houston	Houston Engineering & Surveying	(770) 761-1280
Structural	Mac Willett	Willett Engineering	(770) 270-9484
Architectural	Bob Fowler	Fowler Design Associates	(404) 733-5900
Mechanical	Jerry Kirkpatrick	Kirkpatrick Engineers	(770) 933-8842
Environmental	Denny Dobbs	Dobbs Environmental	(770) 786-2338
Asbestos Survey	Denny Dobbs	Dobbs Environmental	(770) 786-2338



# Angkawijana, LLC REFRIGERATION SYSTEMS 2444 Meadowbrook Parkway

Angkawijana, LLC, (the "Owner") has acquired a manufacturing facility at the address identified above. The Owner is redeveloping the site over the upcoming year (hereinafter the "Project"). The subject work (the "Scope of Work," or "Work") is only one part of the Project. No other part of the Project is covered by this Request for Proposal ("RFP" or "Request"). For representation on daily operation issues, cost tracking, and design coordination, Angkawijana has hired Silvio Develop Company (hereinafter the "Owner's Representative") as their representative for issues arising during construction.

The existing facility is scheduled to be demolished to make way for a new 130,000 SF minus 10 degree freezer /distribution facility. This new distribution building will also house a number of coolers (28-34 degrees), dry storage (60 degrees), and a loading dock ranging from 45 to 50 degrees. Initial design and development plans have been completed and the site plans, generated by Houston Engineering dated 09/05/13, have been approved by Gwinnett County. Currently Demolition and Site packages have been awarded and work is scheduled to begin in February.

Angkawijana, LLC is seeking proposals for a Design/Build refrigeration system to meet the criteria set forth in this RFP. Work will be performed following the initial demolition/site work stages currently awarded at the time this RFP is issued. The new facility design/build project guidelines below are being issued with a goal of award for construction to in June of this year. A final completion date of April 2015 is anticipated for the project.

As noted, this Scope of Work will be, at this time, separate from the building shell contract to be awarded simultaneously by the Owner. It is imperative that this contractor work in conjunction with and with full cooperation for the purposes of coordinating the project to provide the Owner a fully functional, efficient, and reliable building. You have been chosen as a bidder for this project based on your past project performance experience and demonstrated knowledge of refrigerated facilities.

In addition to the guidelines listed below, additional information for the refrigeration design will be released at a future date via an addendum. This addendum will clarify some items regarding performance specifications for evaporators and condensers, piping sizes, piping insulation requirements, and electrical requirements not fully developed at the time of this RFP release. Notification of the posting of all future addenda will be via email and provide ample time to review and update proposals.

The new freezer/cooler facility shall be constructed in accordance with these Project Guideline Specifications dated February 14th, 2014 and include the following items:

# **SCOPE OF WORK**

- A. Provide a Design/Build refrigeration system for the proposed project. The Refrigeration Contractor shall be responsible for the complete design and installation of the ammonia refrigeration system, and shall provide a fully functional operating system. Drawings shall be prepared and stamped by a Professional Engineer registered in Georgia.
- B. The scope of work shall include, but is not limited to, providing the following:
  - 1. Ammonia system shall be less than 10,000 pounds.
  - 2. Design and installation of a fully functional and complete ammonia refrigeration system that complies with all Owner and regulatory agency requirements.

- 3. All transportation, storage, unloading, moving and rigging of the contractor's equipment.
- 4. Compressors in sizes and quantities necessary to provide adequate peak-load capacity for current design, as well as, for future expansion as shown on the plans.
- 5. The design should allow for one back up compressor to handle demand should a primary compressor require service or repair.
- 6. Evaporator unit coolers in sizes and quantities as necessary to maintain proper temperature and humidity conditions in all freezer and refrigerated spaces with steel unit protection.
- 7. Evaporative Condenser (sized to accommodate future expansion for full build-out) with catwalk, ladders, and stairs.
- 8. Vessels, Pumps and heat exchangers (sized to accommodate future expansion for full build-out).
- 9. All motors for compressors, pumps and fans included in this scope of work.
- 10. All compressor starters and variable frequency drives. Pump and fan starters and drives shall be furnished and installed by refrigeration contractor and located in a motor control center.
- 11. All valves, gauges, thermometers, oil reclamation devices, accessories, and all other equipment required for the complete installation of the refrigeration system.
- 12. All piping including refrigerant, drain, purge, oil, relief, water, gauge and control, and glycol piping.
- 13. Pipe, vessel insulation, and vapor barriers with pvc and aluminum jacketing.
- 14. Pipe, valve and equipment labeling, safety signage and tags.
- 15. Painting of all piping and equipment.
- 16. Sheet metal work and duct work associated to the refrigeration system.
- 17. Concrete bases for all supplied equipment
- 18. Steel supports for all equipment and piping, including hangers, brackets, stands, and guards including necessary support and bracing to meet seismic zone requirements. All exterior steel items shall be galvanized.
- 19. Ammonia detection system.
- 20. Complete under-floor warming system.
- 21. Coordination of all heat tracing of condensate drain lines in rooms below +35 degrees F and evaporator condensate water piping.
- 22. Full charge of refrigerant, oil (low temp if required) for equipment and glycol.
- 23. All refrigeration and water controls including float valves, level controllers, automatic valves, thermal expansion valves, pressure switches, safety controls, thermostats, isolation valves, and all other controls required for complete operating system.
- 24. Control wiring and conduit for refrigeration controls and equipment.
- 25. Computer control system.
- 26. Testing, operation, and instruction.
- 27. Pay for and obtain all necessary and required permits.

# SYSTEM REQUIREMENTS

- A. The system will be designed for local weather conditions as defined by ASHRE.
- B. Submit shop drawings, load calculations, equipment selection calculations, proposed equipment selections, proposed location of all evaporator coils, and a sketch of the refrigeration room indicating proposed locations of equipment and equipment pads.

- C. Provide central ammonia refrigeration system for the current area of refrigerated space as shown on the drawings and make provisions for future expansion as shown on the drawings. All piping mains, vessels, pumps and other equipment shall be sized for the full indicated build-out.
- D. All refrigeration systems shall comply with applicable ASME, ASHRAE, ANSI, federal, state, and local codes, laws, and regulations.
- E. The contractor will submit the following drawings to coordinate with the General Contractor
  - 1. System piping and instrumentation diagrams.
  - 2. Equipment drawings verifying size, weights, and locations.
  - 3. Required field power wiring diagrams for supplied equipment
  - 4. Utility requirements.
- F. Design Criteria:
  - 1. The contractor will provide the calculated loads for the refrigerated rooms as indicated:
    - a. Pick Freezer: -10
    - b. Long Term Storage: -10
    - c. Beef: 34
    - d. Pork: 34
    - e. Chicken: 28
    - f. Oyster/Salmon: 34
    - g. Dry Goods: 60
    - h. Cut Shop: 40
    - i. Loading Dock: 45-50 degrees
  - The freezer and cooler temperatures must be held at ± 3 degrees F and the dock temperatures must be held at ± 3 degrees F of the designed room temperatures; freezers (-10 degrees), coolers (28-34 degrees), dry storage (60 degrees), and a loading dock (45-50 degrees).
  - 3. The system design shall be sized for future expansions as shown on the drawings and as listed:
    - a. Main office (existing to be renovated 22,000 SF)
    - b. Long Term Freezer: 29,000 SF
    - c. Pick Freezer: 58,000 SF
    - d. Secure Cage: 650 SF
    - e. Chicken Cooler: 1900 SF
    - f. Beef Cooler: 1800 SF
    - g. Open Box Cooler: 1400 SF
    - h. Oyster/Salmon Cooler: 1300 SF
    - i. Dry Goods: 4000 SF
    - j. Cut Shop w/ancillary spaces : 4600 SF
    - k. Loading Dock: 15,000 SF
    - I. Battery Charging: 1200 SF
    - m. Maintenance: 2400 SF
    - n. Engine Room: 2300 SF
    - o. Access Corridors: 3300 SF

- p. Warehouse office: 1100 SF (each level)
- q. Future Expansion: Freezer 24,750 SF (-10), Cooler 8,250SF (28)

Current Phase (including office renovation): 150,000 SF Future Expansion: 33,000 SF

- 4. Include future valves for expansion of mains and future equipment.
- 5. Coordinate design with building structural design, mechanical, electrical, plumbing, fire protection and other effected trades.
- 6. Submit an option for an energy management system that will allow for energy savings and efficient operation.

#### Applicable Codes

- A. The work shall be completed in accordance with these specifications and the base floor plan provided and architectural elevations provided by Fowler Design Associates.
- B. All work shall be completed in accordance with the requirements of the following entities:
- C. Gwinnett County, State of Georgia, FDA, USDA, OSHA, ASME and ASHRE.

#### **Permits and Fees**

A. The Design/Builder shall coordinate permitting and pay all permit and impact fees direct to the governing body.

Sheet Name	Sheet #	Dated	By
Existing Building Drawings '90,'92, &	Various	Various	A.R. Weeks & Assoc.
'93			
Cover Sheet	C-1	09-05-13	Houston Engineering
Overall Plan	C-2	09-05-13	Houston Engineering
Demolition Plan	C-3	09-05-13	Houston Engineering
Site Paving & Drainage Plan	C-4	09-05-13	Houston Engineering
Site Coometry & Litility Dian	СГ	00.05.12	Houston Engineering
Site Geometry & Othity Plan	C-5	09-05-13	Houston Engineering
Frosion Control – Phase 1	C-6	09-05-13	Houston Engineering
	00	05 05 15	
Erosion Control – Phase II	C-7	09-05-13	Houston Engineering
			5 5
Erosion Control – Phase III	C-8	09-05-13	Houston Engineering
Erosion Control Notes	C-9	09-05-13	Houston Engineering
Pipe Profiles & Construction Details	C-10	09-05-13	Houston Engineering

#### **Drawings and Specifications**

Tree Planting Plan	L-1	09-05-13	Houston Engineering
Tree Planting Details	L-2	09-05-13	Houston Engineering
Site Survey	1	05-20-13	Houston Engineering
Building Floor Plans	A1.1-1.6	02-14-14	Constructive Ingenuity
Existing Footprint + New Footprint	A1.1	02-14-14	Constructive Ingenuity
Architectural Renderings		02-12-14	Fowler Design Associates, Inc.
Phase I environmental report	115 pages	02-28-13	Dobbs Environmental
Phase II Asbestos Survey	22 pages	01-21-14	Enviroprobe, LLC
Project Safety Requirements	12 pages	02-10-14	Constructive Ingenuity
Contractor E-Verify Documents	2 pages		

- A. Complete working drawings shall be furnished for review prior to the start of construction.
- B. Design/Build working drawings shall bear the seal of licensed engineers of the State of Georgia. The Design/Builder shall be responsible for the cost of any code required changes made by the AHJ.
- C. No deviations from the approval plans and specifications shall be permitted without written authorization except for minor dimensional changes.

# INSURANCE

- A. Angkawijana shall provide Builder's Risk Insurance for the project.
- B. Contractor shall furnish Angkawijana, LLC and A&D Foods with a Certificate of Insurance that includes coverage and minimum limits as follows:
- C. Professional Liability Insurance: \$1,000,000.
- D. Worker's Compensation: Employers Liability, whether required by statute or not, for a limit of not less than \$500,000 bodily injury by accident, each accident/ \$500,000 bodily injury by disease, policy limit/\$500,000 bodily injury by disease, each employee, or if greater, in the amounts required by statute.
- E. Commercial General Liability (occurrence format, including Completed Operations, Broad Form Property Damage and Contractual Liability for the Indemnification Agreement that will be in the subcontract).

\$1,000,000.00.....Bodily Injury \$1,000,000.00....Property Damage

F. Automobile Liability: \$1,000,000.00 Per Incident

#### G. Excess Umbrella Policy: \$3,000,000.00

- H. Additional Insured's: Contractor shall endorse Commercial General Liability, Auto Liability and Umbrella Excess Liability policies to name Angkawijana, LLC, A&D Foods, Silvio Developments, and Constructive Ingenuity as additional insured's on a primary and non-contributory basis for current, ongoing and completed operations for three (3) years after Final Completion of the Project.
- I. Subrogation: Contractor and subcontractor and its insurance carrier(s) waive all rights of subrogation against the Owner, A&D Foods, and their officers, directors, shareholders, employees, agents, or appointed representatives (Silvio Development and Constructive Ingenuity) unless restricted by state statutes.
- Indemnity: Contractor and subcontractor hereby agree to indemnify, defend and hold Owner, all J. subsidiary and affiliated entities of Owner, any lender with a security interest in the Project, and each of their respective members, managers, partners, agents, representative, trustees, directors, officers, shareholders and employees, and each of them (collectively, "Indemnified Parties") harmless from and against any and all demands, claims, suits and causes of action, liability, costs, incidental and consequential damages, expenses, settlements, and judgments, including without limitation court costs and attorney's fees whether arising at law or equity, in connection with or arising out of: (i) the performance by Subcontractor or any of its employees, subcontractors, suppliers or anyone else for whom Contractor or subcontractor is responsible ("Subcontractor Parties") of Subcontractor's Work; (ii) any breach by Subcontractor of this Agreement; or (iii) the failure by Subcontractor or any Subcontractor Parties to comply with all applicable laws; or (iv) any liens or other encumbrances on the Work or Owner's property, arising out of Subcontractor's failure to pay any of its subcontractors or suppliers; (v) any alleged violation or infringement of patent, copyright or other intellectual property rights by Subcontractor or any Subcontractor Party (collectively or individually, "Claims"); or (vi) property damage or destruction (including loss of use resulting there from), bodily injury, sickness, disease, or death. Notwithstanding the foregoing, Contractor and Subcontractor shall be liable for Claims in connection with consequential damages only to the extent OWNER is held liable for or actually incurs such damages.
- K. Subcontractors: Contractor agrees to obligate its subcontractors, if any, to maintain the same types, levels and terms of insurance coverage as required of Contractor, and Subcontractor shall indemnify and hold harmless Contractor and Owner should it fail to do so.
- L. Form of Policies: All policies shall be written on the ISO form, CG0001, July 1998 or newer edition.
- M. Insurance certificate must specify job name.
- N. This information is required upon the return of the signed contract.
- O. This Contractor will not be allowed to begin work on the job site until the insurance requirements have been met and the owner representative has received the certificate.

Certificate Holder: Angkawijana, LLC 65 Crestridge Dr, Suwanee, GA 30024

#### **QUALITY ASSURANCE**

A. The Refrigeration Contractor will be responsible for providing a complete Process Safety Management training class with all phases of OSHA and EPA requirements. Training Owner personnel on the PSM is required. It is recommended that unless the Refrigeration Contractor has personnel dedicated to implementing and maintaining a PSM, that the Refrigeration Contractor contract with a company that regularly engages in setting up the program and training on the PSM program. This cost must be included in the Refrigeration Contractors bid. The Refrigeration contractor must verify any other government regulations are completed.

- B. This contractor will be responsible for setting up the PSM and supplying it to the Owner.
- C. This contractor will be responsible for developing the building evacuation plan.

#### WARRANTY

- A. The refrigeration system will be guaranteed by the refrigeration contractor to reliably maintain the design temperatures for a period of one (1) year
- B. The insulation system will be guaranteed by Refrigeration Contractor for a 2-year period after system acceptance.
- C. The glycol system shall be guaranteed by the Refrigeration Contractor for a 5-year period after system acceptance.

# PRODUCTS

# **EQUIPMENT AND MATERIALS**

- A. It is the sole responsibility of the contractor to arrange for shipping dates, actual delivery to the job site, unloading storage, and placement of all equipment, piping, insulation and other materials and accessories required for the completion of the project.
- B. All materials and valves in the specified categories shall be supplied by a common manufacturer.
- C. Materials shall comply with specification and be suitable for the services intended and substances held.
- D. Each major item of equipment shall have the manufacturer's name, address, serial and model number, and date of manufacture on a plate securely attached to the item.

# **COMPRESSOR PACKAGES**

- A. Compressor Type, Manufacturer, model number, quantity, tonnage, suction pressure and temperature, discharge pressure and temperature, suction and discharge connections, oil pump horsepower, rpm, voltage and accessories shall be indicated on the refrigeration system evaluation sheet.
- B. Compressor packages shall be sized for maximum efficiency over all suction pressure ranges and all system loads expected. Provide an option for variable frequency drives for compressors where energy savings can be realized under design conditions. Compressor packages shall be designed for operation with anhydrous ammonia refrigerant at temperatures and pressures required.

# EVAPORATIVE CONDENSER

- A. The evaporative condensers shall have hot dipped galvanized steel coil and be sized to accommodate the future build out of the facility.
- B. The evaporative condensers shall be capable of maintaining a condensing temperature that is within 15<sup>°</sup> F of the design wet bulb temperature for the location as defined by ASHRAE while all the compressors (current and future) in the system are running at 100% capacity at the design conditions.
- C. The evaporative condensers shall be supplied with isolating, purge, relief lines, and pan heaters.
- D. The evaporative condensers shall be serviced by an integral water sump in temperate climates, remote in others, and pumps located in the compressor room. Provide one (1) full capacity back-up water pump.
- E. Provide a fully automatic non-chemical water treatment system for the evaporative condenser water system to control bacteria, scale, rust and all other impurities which may be present. Selected system manufacturer shall provide a written statement that the selected system will work for the expected supply water quality.
- F. The evaporative condensers must be complete with Chemgrate (slip resistant) steps for lower platform, ladder, and catwalk for access to spray nozzles and eliminators.
- G. Evaporative condenser fans shall have inverter-duty premium efficiency motors and contractor shall offer option to be connected to variable frequency drives to modulate all fan speeds.
- H. Condensers shall have individual drives for each fan.
- I. Condensers shall have a minimum of two coils. Each coil shall be installed with isolating and purge valves at each inlet and outlet. Hydrostatic relief protection shall be provided to protect each coil from "liquid lock-up expansion".
- J. Condensers shall have high performance spray nozzles with a 360<sup>o</sup> spray pattern.

# **CONDENSER WATER PUMPS**

- A. Condenser freeze protection to be based on 99% ASHRAE Winter Design. Electric sump heat is required.
- B. The Design/Builder for the shell shall be responsible for supplying and installing all required heat trace; however this Contractor shall be responsible for the timely and accurate information for the amount and size requirements of all heat trace to be installed.

# **VESSELS**

- A. Pressure Vessels: Pressure vessels shall be ASME designed and stamped. The inlet and outlet connections shall be no less than one line size larger than current requirement. Vessels with design operating pressures below 100 PSIG shall be constructed for 250-PSI design working pressure and 300-PSI design working pressure for operating pressures above 100 PSIG.
  - 1. Accumulator and Recirculators shall be field erected with clearances adequate for safe maintenance, proper clearance for insulation, and be supplied with oil recovery piping, which is equipped with an automatic spring return drain valve.
  - 2. Vessels shall be provided with an external liquid level indicating column which has (4) reflex lens visual indicators with frost shields and an adjustable level sensing unit for controlling low level cutout, low level alarm, operating level control and high level alarm.

A fixed position electromechanical flow switch shall be installed to provide high-level cutout protection.

- 3. Recirculators and accumulators shall be designed for a maximum of 100 feet per minute separation velocity when the liquid level is at the high-level cut-out level and compressors are running at 100% load. Vessels shall be sized to total building build out of refrigeration tonnages for each suction level.
- 4. Each recirculator and/or accumulator shall have surge capacity equal to 80% of the total volume of the current and future evaporators to be connected to it.
- 5. High pressure or pilot receivers: Receivers shall be provided with an external liquid level indicating column with a minimum of (3) reflex lens visual indicators and a level sensing unit.

# HEAT EXCHANGER UNDER FLOOR WARMING

- A. Provide heat exchanger for underfloor glycol heating to prevent floor heaving.
- B. The design of the glycol system shall be to provide maximum heat transfer the subgrade for the design conditions of the freezer temperatures.
- C. Glycol lines installed shall be spaced no more than four feet (4'-0") apart and shall have no joints under the slab. All glycol lines are to run continuous through the slab.
- D. This contractor shall provide resistance temperature detectors (RTDs) in the slab to monitor each glycol loop.
- E. It will be the responsibility of this contractor to install and verify the system is operational during the installation of the mud slab and shall confirm the system is operational once the mud slab has cured.
- F. This contractor shall have men onsite during the installation of all mud slabs to watch and verify no damage occurs to the installed system.
- B. The heat exchanger can be shell/tube or plate/frame type. The design, construction, testing and inspection will be in accordance with ASME Code Section VIII, Div. 1. The heat exchanger will be intended for ammonia/propylene glycol operation.
- C. Each circuit will have its own flow meter and isolation valves.
- D. All under floor heating systems shall carry a five (5) year warranty. Any cost bore by the Owner for the repair of floor heaving due to a failed glycol system shall be paid for by this contractor.

# **EVAPORATOR AIR UNITS**

- A. The evaporator coils will be hot dipped galvanized steel coils with insulated drain pans. Face velocities in rooms operating above 32 degrees F will be selected to prevent moisture carry-over. Evaporator coil units shall be sized on sensible heat method for capacities. Total heat method is an unacceptable sizing method.
- B. All cooler/dock evaporators shall have a hot gas defrost drain pan and coil regardless of operating temperature. This will allow easy room temperature change in the future.
- C. Each evaporator coil shall have its own individual control and defrost valves groups with isolation valves on both sides of all control valves.
- D. Refrigeration contractor shall provide heat tracing on the condensate drain lines regardless of temperature.

- E. All air units shall be selected per OSHA acceptable noise levels (max 79 db).
- F. Evaporator fans shall have inverter-duty premium efficiency motors and contractor shall offer an option for variable frequency drives to modulate fan speeds.
- G. In freezers, stainless steel coil and axial propeller fans shall be provided. Freezer coils shall not exceed 25 rated tones of refrigeration (TR) per hanging evaporator or 3 fins per inch. Provide fused disconnects for each fan motor and hot gas defrost of both the coil and pan. Size for liquid re-circulation, frosted coil, 10° F differential maximum, bottom feed, 1,160 rpm maximum, and no more than 0.4-motor-hp per TR of capacity.
- H. In coolers and docks, stainless steel coil and axial propeller fans shall be provided. Cooler coils shall not exceed 20 TR per evaporator or 4-fins per inch. Provide internally protected fan motors, and hot-gas defrost of both coil and pan -- size for liquid re-circulation, frosted coil, for a 10° F differential maximum.
- I. Provide individual temperature and defrost control of each evaporator in Freezers & Coolers.
- J. Provide galvanized steel angle framework, supported from the roof structure, approximately 12" below the bottom of evaporators and extending at least 12" beyond the footprint of the evaporator and its interconnecting piping. Coordinate with evaporator supplier to accommodate easy access for maintenance. Paint the bottom steel beams safety yellow.

# **CONTROL PANEL**

- A. Each component of the refrigeration system to be designed shall be controlled by a single integrated program that is tailored to meet the needs of the system specified.
- B. The contractor and the control system supplier shall monitor physically and/or via modem the operation of the refrigeration system at minimum as follows:
  - 1. Start up through 60 days: daily
  - 2. 60 through 180 days: weekly
- C. The Contractor shall verify proper operation and control of the refrigeration system and be responsible to make or have made by the control supplier all adjustments to the programming necessary for correct and efficient operation and to minimize power consumption.
- D. The central control panel shall include "fail safe" electromechanical "high/low level" stop control with adjustable time delays configured such that the compressors and refrigeration pumps with safety devices specified.
- E. The system shall have a dial-out program
- F. System control and monitoring software shall incorporate start, stop, defrost, emergency shutdown, and any other system sequence or interlock as recommended by the Refrigeration System Engineer. It shall start and stop the entire refrigeration system automatically on demand or in the event of a power failure and shall cycle compressors, condenser fans and pumps, evaporators, and refrigerant pumps as required to maintain proper temperatures and pressures with a minimum run time. It shall execute and archive for five years all variables as and communicate directly with each compressor microprocessor for remote monitoring or control as required.
- G. Warranty: Provide two-years of general software support service for problem diagnosis, finetuning and program modifications. Two-year warranty for all hardware components shall also be included.

- H. Ammonia detector system shall provide analog inputs to computer control system such that individual pre-alarms and alarms maybe set at different levels. One sensor shall be provided for each refrigerated space with a maximum of one sensor per 15,000 sq. ft. Equipment room shall be supplied with two sensors. The relief vent line must have a sensor also.
- Control system shall be interfaced with Owner furnished security system (ADT, Honeywell, etc.) and be capable of the four following individual alarms "Ammonia Leak", "High Room Temperature", "Control/Monitoring System or Power Failure", "Refrigeration System Failure".
- J. Control system must adjust temperatures and pressures to accommodate "peak" times with the power company.
- K. Control system shall monitor and control the water treatment system.
- L. An emergency stop push button will be mounted and wired by the exit door of the refrigeration equipment room. In the event of an emergency, the power will be turned off to all refrigeration equipment and liquid solenoid valves in a closed position.

# SAFETY EQUIPMENT

- A. Refrigeration Contractor shall recommend location of emergency shower/eye wash station that shall be furnished and installed by the design/build contractor.
- B. All rooms will have auditable and visual alarming supplied by the refrigeration contractor.

# AMMONIA DETECTION SYSTEM

- A. Provide anhydrous ammonia leak detection equipment as necessary to provide an audible alarm for the equipment room in accordance with OSHA. Leak detection equipment shall be capable of detecting presence of ammonia in concentrations and connected to the energy management and control system. Provide an extra set of auxiliary contacts for control for auxiliary equipment.
- B. Ammonia Detection system shall signal the Refrigeration Equipment Room exhaust fan to turn on when ammonia lower explosive limit exceeds 25%, and shall signal the Refrigeration control system to shut down the Refrigeration system when the lower explosive limit exceeds 50%. Provide additional contracts for connection to Owner furnished security system. Provide testing, calibration and documentation on all new and existing sensors for insurance purposes.
- C. In all refrigerated areas provide detection units. Connect all sensors to the computer control system.
- D. The refrigeration contractor shall supply and install a solid-state ammonia leak detector in the refrigeration machine room. The adjustable set point detector shall be capable of sensing 25 PPM and above. The detector shall be non-radioactive and shall also be capable of functioning as a smoke detector. All detector components shall be Underwriters Laboratories approved.
- E. Ammonia detectors shall also have normally open and normally closed set of contacts to be used by Contractor for the machine room ventilation system.
- F. The Refrigeration Contractor shall supply and install 120VAC/1PH/60Hz control wiring to power the detector.

# FLUID CHARGES

A. A complete charge of refrigerant shall be installed for the system. The Contractor will replace all refrigerant loss due to leaks caused by their work during the first one hundred eighty (180) days of the warranty period.

# **PIPE AND VALVE IDENTIFICATION**

- A. Provide all pipe identification and valve tagging that is required and/or recommended by the government, the International Institute for Ammonia Refrigeration, and the local PSM program. All labels and tags shall be located and sized to be "readable" from a reasonable distance, and without climbing a ladder. Component labels are to be a minimum size of 5.75" x 32" and shall have 2.5" text height.
- B. At all outdoor locations, or where pipe surface temperature is from -40° F to 250° F, or where markers are exposed to UV radiation, chemicals, acids or daily wash downs, Contractors shall provide preprinted, coiled/strap-on, color coded pipe markers.
- C. Valve tags shall be a minimum of two inch (2") square, rigid lexan valve tag with yellow background and black text. All tags are to include a stainless steel eyelet to prevent the tag fastener from damaging the tag. Attach tag with stainless steel wire meter seals.

# **DRAIN LINE HEATERS**

A. Install self-limiting heater cable for all drain lines in freezers or coolers, and in exterior locations.

# EXECUTION INSTALLATION

- A. Ammonia Piping. Use ASTM A-106, Grade A or B, or A-53, Grade A or B refrigeration grade black steel pipe, cleaned and capped. Provide Schedule-80 for 2" or less, Schedule-40 above 2" thru 8" and standard weight above 8", seamless for 1-1/2" or less; electric resistance welded for 2" or more; type F (furnace-welded/butt-welded) is NOT ACCEPTABLE for any size; Use socket weld pipe fittings from ¾" through 2" except where larger is available for connecting to valves and butt weld pipe fittings for 2-1/2" and above; welded joints for 1" or above; long radius elbows; and standard refrigerant fittings of forged carbon steel. All welding is to be performed by welders certified to the Contractor's certified welding procedure. A copy of Contractor's certified welding procedure is to be submitted to the Owner and Owner's representative prior to commencing work and a copy is to be provided in the operations manuals. Properly protect piping from contamination and thoroughly clean all sections.
- B. Valves
  - 1. Hand valves shall, where practical, have stems horizontal. No valves shall be installed with stem below the horizontal position.
  - 2. Weld in valves will be installed per the manufacturer's instructions with particular care to prevent overheating damage to seals and seats.
  - 3. Solenoid and control valves shall be located in an upright position. All removable caps replaced and tightened after adjustment. Solenoids valves located outside shall be equipped with weather protection shields.
  - 4. After initial testing all control valve strainers shall be removed, drained of oil and dirt and cleaned before replacing. Repeat after 30 days of operation and more often if needed.
  - 5. Hand valves shall be located as close to control valves as practical.

- C. Relief Valve and Piping
  - 1. All relief valves shall be installed with unions at both inlet and outlet connections.
  - 2. Support piping on discharge side of relief valve so no strain is exerted on valve.
  - 3. Design relief valve outlet piping and headers per SMC, ANSI/ASHRAE 15, and IIAR/ANSI code requirements.
  - 4. Refrigeration contractor shall size relief piping system as defined by applicable codes. The contractor will submit the calculations and relief piping diagram showing all relief points, flow capacities, and line sizes.
- D. Pipe Fittings
  - 1. Joints between galvanized pipes shall be threaded.
  - 2. Joints in plastic pipe shall be made using methods and materials required by pipe manufacturer.
  - 3. Threaded joints shall be sealed using compounds or materials compatible with application.
  - 4. Piping subject to expansion, contraction or vibration shall be installed with loops or swing joints.

# EVACUATION AND SYSTEM CHARGING

- A. The contractor will be responsible for providing the necessary operational charges of the following:
  - 1. Ammonia refrigerant
  - 2. Glycol
  - 3. Lubricating oil and grease
  - 4. Any other required fluids necessary for system start up.
- B. The system will NOT be charged with refrigerant until:
  - 1. All necessary government approvals are available.
  - 2. All material and component test certificates and documentation confirming satisfactory completion of pressure tests are available.
  - 3. All pressure testing is satisfactorily completed.
  - 4. All safety equipment is in place and personnel are sufficiently trained to safely respond to an ammonia leak.
- D. Ammonia: Provide a full charge of anhydrous refrigeration grade ammonia into the refrigeration system.
- E. Oil: Provide lubricating oil and grease for all equipment in accordance with the current recommendations of the equipment manufacturer.
- F. Any defects due to materials or workmanship occurring during testing shall be immediately and properly corrected at no additional cost to the Owner.
- G. Notify the Owner, Owner's Representative, and Design Builder in advance, in writing, regarding time and date of all tests.
- H. Evacuation Plan

# **TESTING, START-UP, INSTRUCTIONS**

- A. TESTING
  - 1. The contractor shall provide all pressure gauges, thermometers and flow instruments and materials required to perform the following tests:

- a. Compressor-condenser-evaporator load balance test
- b. Operation and function test of all automatic valves and controls
- 2. The refrigeration contractor and the electrical control contractor must be present together in verifying the controls. After the systems are complete and ready for operation, both contractors will perform the following operations:
  - a. Establish the accuracy of all temperatures and pressure measurement signals being indicated by the control system.
  - b. Determine that all digitally controlled valves are operating properly.
  - c. Adjust all temperature and pressure regulator valves and all liquid control valves for proper equipment and zone operation.
  - d. Properly adjust and verify correct operation of all compressor safeties, vessel safeties, and any pressure level or temperature control devices provided.
- 3. A written report prepared by the refrigeration contractor of the above procedures shall be provided to the Owner's representative for review and approval. The approved version of this written report shall be incorporated into the final Instruction and Operations Manual.
- Provide all modifications and upgrades and training to Owners process safety management program and comply with Government regulations before any tie-ins occur. In case of no PSM program in place contractor is responsible for its creation before system start-up
- B. START-UP PREPARATION
  - a. The following items must be in place and operational prior to start-up commencing:
  - b. Contractor Safety Talk
  - c. Dedicated working phone line to refrigeration equipment room for computer.
  - d. Emergency exhaust system, continuous exhaust system and make-up air louvers wired and functional
  - e. Mechanical room lights and emergency exits and life safety (i.e. eye wash, fire extinguishers, fire alarm, building alarm, etc.) in place and operational.
  - f. Fire protection sprinkler piping finished in compressor room and flow test in freezer complete.
  - g. Safe access to the roof.
  - h. Water to mechanical room at required pressures and piping within ten (10) feet of final equipment connections.
  - i. Mechanical room must be lockable.
  - j. Fire Department on notice and available for training.
  - k. Emergency evacuation and personnel in place and additional responsibility delegated if using local authorities (local hazmat, local fire department, etc,).
  - I. In-house personnel responsible for refrigeration available for training and owner orientation.
  - m. Safety training of all contractors before ammonia is delivered.
  - n. 480V/120V power wiring complete and available to RMCC/PLC and compressor starters.
  - o. Equipment pads poured.
  - p. Safety and first aid posters mounted in compressor room.
    - a. Contractor shall be responsible for coordinating all required safety posters and notifications as required by code. Multiple copies may be placed based on line of site and visibility in the space.

- C. START-UP
  - 1. As the system becomes ready, the contractor shall furnish the services of competent and experienced personnel who will place the plant into operation, running a complete test of equipment installed under this contract.
  - 2. During this period, personnel designated by the owner will be instructed to the proper maintenance and operating procedures of all equipment and components used in the refrigeration system, and will assist in the start-up, testing and balancing of the system.
  - 3. When rooms and equipment have been cooled to design temperatures, the contractors operating personnel shall remain in attendance, not less than fourteen (14) consecutive days, or until the system is functioning as designed.
  - 4. Certificate of substantial completion establishing warranty period will not be issued until all systems are operating as intended and to the satisfaction of the Owner.
  - 5. The contractor shall have a factory representative from the compressor manufacturer present for a minimum of 1 week, 24 hours during the start-up period.

# FINAL INSPECTION

- A. At the completion of commissioning, the Owner's representative will conduct a final inspection during which any of the above tests may be repeated at the discretion of the Owner.
- B. This inspection will not be made until the commissioning procedure is satisfactorily completed and all clean-up work has progressed to the stage where the system is in a fit condition for commencement of production.
- C. The refrigeration system will only be accepted by the Owner after satisfactory completion of this inspection.
- D. Prior to release of any retainage, Contractor shall provide three (3) copies of all operation and maintenance manuals. Include: an index; system design/operation description; list of all major equipment including make, model, serial number, design conditions and design capacities; list of recommended spare parts; contractor's written warranty with expiration date; contact persons; 24-hour telephone numbers; extended warranties; all approved shop drawings, cut sheets, and installation/operation/maintenance brochures; ASME vessel certifications; control wiring diagram; schedule of recommended preventive maintenance; and proposed daily log form. Clearly mark out all inapplicable portions of brochures/cut sheets, and any other required information.
- E. Final copies of the as-built plans shall be provided in CAD and PDF formats.

# PROTECTION OF ROOF

- A. The contractor must exercise extreme care in any activity involving contact with the installed roof membrane.
- B. No activity on the roof will be permitted without protection of the roof. Construct plywood protective runways across the roof for moving and installing equipment. Start runways at the point of origin of any equipment placed on the roof, and terminate at the point of installation of this equipment on a curb or base.
- C. At the completion of work or when directed by the Owners representative, completely remove neatly and cleanly without damage to roofing system, these protective items, and runways.

- D. Any gouges, tears, punctures, and errors in cuts by the refrigeration contractor will be the responsibility of the contractor. All repairs necessary to bring the roofing system to its original condition will be made by the roofing contractor and back-charged to the contractor responsible for the damage.
- E. When welding is required above membrane roofing, fire proof blankets will be placed under the welding area to prevent damage to roof membrane.
- F. All damage to roof membrane from welding or other activities shall be repaired by the roofing contractor with all costs of repair borne by the contractor responsible for the damage as assessed by the on-site Owner's representative.

# CLEAN-UP

- A. During the period of construction, the contractor will keep their work area reasonably clean and free from accumulated waste materials and other debris resulting from the work.
- B. At the end of construction all excess materials will be removed and the areas occupied during construction left brush clean.