Lucky's Market

STANDARD SPECIFICATIONS FOR
NEW STORE REFRIGERATION INSTALLATION

SCOPE:

a. These refrigeration specifications are intended to cover all materials, labor, equipment and services necessary for a complete and proper installation of the refrigeration system as shown on the drawings and hereinafter described.
b. Items To Be Furnished By Owner
   a. Refrigeration rack.
   b. Refrigerant
   c. Cases, self-contained refrigerated equipment, and ice machines.
   d. Evaporators and controls.
   e. Rack-mounted compressor-condensing units including installed liquid dryer shells, sight glasses, suction line filter shell, service valves, vibration eliminators, and pre-wired electrical controls.
   f. Roof enclosure/compressor room, if applicable.
   g. Rooftop-mounted air cooled condensers.
   h. Lucky's will furnish and deliver all refrigerated fixtures, walk-in box coils, compressor units complete with control enclosures (including pre-programmed compressor/defrost controller), air cooled condensers, etc., unless otherwise indicated on drawings.
c. The refrigeration contractor shall supply refrigerant piping, fittings, refrigeration line insulation, and other installation material detailed on the equipment schedule, together with all labor and permits required to do a complete installation and perform the service outlined in this specification and as detailed on drawings. Any additional refrigerant required to meet the requirements of section 10 of these specifications shall be provided to Lucky's at a unit price that is specified by the refrigeration contractor on the bid form. All work performed hereunder by refrigeration contractor or any of its employees, agents or subcontractors that could be expected to release refrigerants into the atmosphere will be done by a certified technician with certified equipment pursuant to and in compliance with all laws, rules, codes and regulations including, without limitation, the Clean Air Act (and similar laws) and all other environmental laws, rules and regulations. Refrigeration contractor must provide Lucky's proof of technician's certification before any work is performed. Performing maintenance, service, repair, or disposal could be expected to release refrigerants only if the activity is expected to violate the integrity of the refrigerant circuit. Activities expected to violate the integrity of the refrigerant circuit include activities such as attaching and detaching hoses and gauges to and from the refrigeration system to add or remove refrigerant or to measure pressure, and adding refrigerant to and removing refrigerant from the refrigeration system. Activities such as painting the refrigeration components, re-wiring an external electrical circuit, replacing insulation on a length of pipe, or tightening nuts and bolts on the refrigeration components are not expected to violate the integrity of the refrigerant circuit.
d. Plumbing, wiring, sheet metal ducts, air handling units, etc., will be installed by others, unless otherwise indicated on drawings. Certain wiring and plumbing necessary for the installation of this refrigeration system shall be done by the electrical and plumbing contractors, but shall be supervised by the refrigeration contractor. All refrigerated case, cooler and freezer coil drain lines are to be included in the refrigeration contract. Sealing around refrigeration lines where they penetrate roof or walls is part of the refrigeration contract.
e. The refrigerated fixtures including walk-in coils, compressor units, cases, condensers, etc., will be received and set in place by the refrigeration contractor. Verify unloading requirements with project manager before submitting bid.
f. All walk-in boxes to be set in place by others.
g. The refrigeration contractor shall also be responsible for starting up, setting temperature controls and checking operation of the self-contained cases and coolers, and bakery retard.

1. DISCREPANCIES:
   a. Should the refrigeration contractor find any discrepancies or omissions from the drawings, specifications, or other documents that would affect the satisfactory operation of the equipment, or should there be any doubt as to the meaning or intent of any part thereof, the refrigeration contractor shall notify Lucky's in writing. Neither Lucky's nor the refrigeration contractor will be responsible for oral instructions.
   b. Bulletins or corrections issued during the time of bidding are to be covered in the proposal and shall become part of the contract document and take precedence over previous instructions.
   c. **Before submitting a bid, each bidder shall carefully examine the Drawings, read the Specifications and all other proposed Contract Documents, and visit the site of the work. Each bidder shall be fully informed prior to bidding as to all existing conditions and limitations under which the work is to be performed, and shall include in the bid a sum to cover all costs of all items necessary to perform the work as set forth in the proposed Contract Documents. No allowance will be made to any bidder because of lack of such examination or knowledge. The submission of a bid will be construed as conclusive evidence that the bidder has made such examination.**
   d. All substitutions of materials specified must be approved by Lucky's in writing, before installation.
   e. No extra charges will be paid without a change order approved by a Lucky's or other authorized representative. Change order invoices shall be submitted to Lucky's Refrigeration Manager immediately following completion of work.
   f. Refrigeration contractor to attend construction meetings at the request of Lucky's Refrigeration Manager.

2. COOPERATION WITH OTHER TRADES:
   a. The refrigeration contractor will cooperate and coordinate with other contractors doing work in the building, and shall keep in touch with other foremen in coordinating their work prior to installation of systems to prevent any conflict, so it will not be necessary to move or change any refrigerant lines, devices, etc.
   b. Where interference exists, the refrigeration contractor shall notify Lucky's before proceeding any further with installation.
   c. All stub-ups shall be checked and coordinated with electrical and plumbing contractors for proper location prior to pouring floor slab, if applicable.
   d. Locations of all equipment support curbs, curbs for refrigeration line support and curbed openings for refrigeration lines through roof shall be verified by refrigeration contractor to match roof plan layout on architectural drawings and the condenser leg dimensions on refrigeration plans. Inform Lucky's project manager of any variations or conflicts.
   e. General contractor is responsible for all trenching, backfill and compaction required for underground refrigerant lines. If applicable the refrigeration contractor shall coordinate the location and layout of trenching with General Contractor.

3. PROGRESS OF WORK:
   a. Work is to be started as soon as the project conditions will permit and shall be carried continuously during normal working hours or at hours optional to the refrigeration contractor, so as not to interfere with or delay the progress of other contractors, or completion of the project.

4. LAWS, PERMITS, FEES, CERTIFICATION AND INSURANCE:
   a. Refrigeration contractor and its employees, agents and subcontractors will perform all work required hereunder in accordance with all laws, rules, codes and regulations including, without limitation, Section 608 of the Clean Air Act and all amendments or references thereto. The refrigeration contractor's technician must possess a current EPA universal type certification before any work is performed.
   b. Refrigeration contractor shall complete all services, including but not limited to recycling and reclamation activities in accordance with the Code of Federal Regulations - 40 CFR Subpart F. Only Air-Conditioning and Refrigeration Institute (ARI) certified refrigerant cylinders shall be used while evacuating refrigerant and emissions shall not exceed 1.5% of the system full charge capacity. Evacuated refrigerant will become property of the refrigeration contractor, who shall appropriately manage the refrigerant and deliver it to an EPA and ARI certified refrigerant reclamation facility.
   c. The refrigeration contractor shall obtain, pay for and furnish all permits and inspection fees required by local or state ordinances or codes.
   d. The refrigeration contractor shall comply with all local and state codes in jurisdiction. Whenever the specifications and manufacturer's instructions do not meet codes, the codes shall take preference.
   e. The refrigeration contractor will be required to maintain Commercial General Liability insurance coverage in the amount of not less than below for any one accident.

i.	General Aggregate	$2,000,000
ii.	Products- Complete Aggregate	$2,000,000
iii.	Personal & Advertising Injury	$1,000,000
iv.	Each Occurrence	$1,000,000
v.	Fire Damage Legal Liability	$ 50,000
vi.	Medical Expense	$ 5,000

   f. Further, refrigeration contractor shall be required to indemnify, defend and hold harmless to Lucky's for any liability loss or injury of whatsoever nature arising out of the conduct of work by the refrigeration contractor, its agents, subcontractors or employees in a form negating any subrogation rights against Lucky's by the refrigeration contractor's insurance carrier.

5. WORK INCLUDED:
   a. The refrigeration contractor shall receive, unload and set in position all compressor rack or racks, condensers, cases, coils and related items as shown on drawings. Refrigeration contractor to run all refrigeration piping and supply all material. The refrigeration contractor shall provide all equipment necessary for unloading these items. Refrigeration contractor is to assume responsibility for safekeeping of all refrigeration equipment. The equipment and accessories furnished are pre-wired and are purchased with a manufacturer's standard parts warranty.

      If any part or piece of equipment is found to be defective or contains improper components, it shall be the responsibility of the refrigeration contractor to secure a replacement from manufacturer and install it without charge to Lucky's. Questions concerning manufacturers' warranty procedures should be directed to the appropriate manufacturer's representative. The refrigeration contractor shall check each piece of refrigeration equipment as it arrives at the store and if any arrives in a damaged condition, the refrigeration contractor shall:
   b. Obtain inspection report, in duplicate, from carrier.
   c. Notify Owner and refrigerated fixture supplier immediately.
   d. Make no repairs until authorized to do so.
   e. Unloading, uncrating, setting and assembling walk-in coolers and freezers.
   f. Cases and coils shall be installed as required by manufacturer's recommendations. Refrigeration contractor shall be responsible for leveling and aligning cases, installing trim, and setting shelves before acceptance. The refrigeration contractor shall further be responsible for vacuum cleaning all dirt, scraps of materials and packing material from the inside of each case, wiping down inside of each case, removing all taping on fluorescent lights and shelving, cleaning outside of each case and removing all crating material from premises and leaving the area broom clean. **No case frame or bracing shall be cut to accommodate improperly located stub-ups. If refrigeration contractor cuts the case support without consent of Lucky's Refrigeration Manager, they shall be responatible to replace the case.**
   g. Refrigerated cases shall be set and leveled with all joints properly caulked and pulled together as tight as possible. Case shims shall be galvanized steel. Wood is not acceptable. Cases shall be trimmed out completely with all inspection plates and screws in place and then cleaned inside and out.
   h. The cooler and freezer coils will be furnished by Lucky's and installed by refrigeration contractor. Install evaporators 16 inches from the rear wall in walk-in coolers and freezers [confirm with Owner's Representative].The refrigeration contractor shall provide hangers and blocking necessary to support coils. All coils shall be double nuted, with 3/8 all thread. The 1-5/8 uni-strut that is supporting the coils needs to span 3 panels. No wood allowed. All penetration to be foamed and siliconed.
   i. Upon completion of installation, refrigeration contractor shall provide plastic covered 2" three ring binders with copies of installation instructions for each refrigerated case model and each walk-in box coil model.
   j. Refrigeration contractor shall furnish and install sheet metal close-offs at ends of case line-ups. See refrigeration floor plan for case lineups involved and this sheet for details. **Closure finishes to match adjacent case surfaces (i.e., brushed stainless steel or electrostatic painted metal). Coordinate finish with Lucky's Project Manager.**
   k. Refrigeration contractor shall furnish and install 1/2" - #16 gauge expanded metal closures over top of gap between back-to-back case line-ups, between walls and the back of cases that are not part of under case return air systems, and between gondolas and the back of cases to prevent objects from falling between the cases. Fasten closure to top of cases with galvanized metal screws and washers.
   l. Refrigeration contractor to furnish and install PVC sch-40 or copper drain lines for cases and copper only for coils. Coolers or Freezers below 32 degrees to have heat tape. Also copper drain on coils to have unions to service and clean coil. This heater shall be the elf-regulating type such as Frostex-RSI, Rachem, or equal. It is the contractor's responsibility to make sure the drain line heater is operating properly. All freezer drain lines are to be insulated with 3/4" pipe insulation. Refrigeration contractor to verify local code requirements. Refrigeration Installation Contractor is responsible for all condensate lines for all equipment (refrigerated cases, prep rooms, coolers, freezers, mechanical air handlers, etc.). Condensate lines for all walk-in coolers will be run out of Type L copper tubing, and all case drains shall be PVC Schedule 40 unless otherwise required by local code. Piping shall be of at least 3/4" I.D. or 7/8" O.D. with a threaded dielectric union installed directly to the coil. P-Traps shall be installed outside walk-ins. If drain outlet is smaller than size stated above, adapt to this size immediately after tying to coil.
   m. Copper condensate drain piping may be soft-soldered with 50/50 type no-lead solder only (no other piping may be soldered). To prevent internal contamination of the lines, limit the soldering paste or flux to the minimum required. Flux only the male portion of the connection, never the female.
   n. Drains in walk-in freezers and meat cooler will exit walk-in as quickly as possible at no less than a 30 degree angle to bottom of drain pan and are to be wrapped with ... tape and ¾" insulation. Drain shall standoff walk-in wall. If plastic jackets are not required then paint all copper drain lines inside coolers and prep rooms in white. Coordinate protection of lines outside the coolers, freezers with General contractor. Contractor shall be responsible for all condensate drain lines from the fixture to the floor drain hubs.
   o. Ensure all produce seafood case drain lines are insulated prior to installing kit plate covers. Check factory installation work and correct faults such as lines rubbing, loose strapping, loose electrical connections, install spray hose on Produce cases. Water hooked up by plumber.
   p. Clean all machine racks and compressor room floor of oil, dirt, used refrigeration parts, gas cylinders, etc.
   q. Refrigeration contractor shall furnish and install 18 gauge T-430 mirrored finish stainless steel cover for wedge void between cases. Cover to start at finished floor in front and end at finished floor in rear.
   r. Line voltage electrical conduit and wire from power panels to termination points identified in Electrical drawings.
   s. Refrigeration Contractor also remains responsible for extending power conduit/wiring from termination points identified in Electrical drawings to the remaining cases in each lineup. Generally, this is the first case in a lineup for each refrigeration system.
   t. Refrigeration Contractor remains responsible for all terminations on all remote refrigerated cases (including power for fans, lighting, anti-sweat heaters, defrost, etc.) sales area heating and air conditioning complete (including heat reclaim coils).
   u. Refrigeration Contractor completes the refrigeration piping of heat reclaim coils. [Refrigeration Contractor remains responsible for final connection of the CPC HVAC controls.
   v. Compressor room fans and their respective starters, line voltage controlling and protecting devices and louvers, to be wired back the Rack Manufactured supplied Exhaust and Alarm Panel.
   w. Refrigeration Contractor will remain responsible for running low voltage interlock/control wiring [in conduit provided by Div. 16 Electrical Contractor] from 24V contactor [for EF and motorized damper generally located within Motor Room] to dedicated terminals in compressor rack control panel.
   x. All sheet metal and duct work done and provided by HVAC contractor.

6. ON SITE DAMAGE:
   a. In all events, it shall be Contractor's responsibility to fully protect all parts of its work from damage until final acceptance by Owner. All damages or defective work shall be replaced at Contractor's expense.
   b. Contractor shall be responsible for any damage that is caused by its work or workmen, but not for damage caused by others, unless expressly specified in the specifications.

7. CASE SETTING:
   a. Set all cases level, end to end, back to back, and in line. Install shims at every vertical support with galvanized ... where floor condition requires.
   b. Contractor will ... 3" gap between the wall and the back of the cases.
   c. Apply ample amounts of Butyl or equivalent, approved by Owner, caulking compound at case joints. Caulking in low temperature and meat cases is especially critical. Once equipment is joined, do not shift ... without breaking and resealing joints.
   d. Bottom case rails are not to be cut.
   e. It will be the responsibility of Contractor to hang all case shelving, check all case light connections, and place ... all refrigerated cases and monitor set design temperatures. (Detailed list of shelf placement ... cases will be furnished if you are the successful bidder.
   f. Coordinate with superintendent to stub pipes into cases during case setting.

... MISCELLANEOUS:
   ... Hot Water Tank
   ... is to be responsible for the complete refrigeration installation of the hot water ... tank, including controls. Contractor will elevate the tank and will provide an overflow pan. Contractor is responsible for all labor and materials for refrigerant piping. The GC's plumbing contractor will provide the labor/material to pipe the domestic water supply, return, and blowdown for the heat reclaim tank.

b) Ice Flaker
   a. Contractor shall be responsible for complete unloading, uncrating and installation (including drain lines) of ice machine. Startup of the ice machine is to be done by Contractor.
c) Refurbished Cases supplied by Lucky's
   a. These case will need to have temp sensors installed by the installing contractor. The sensor will be supplied in a ship loose box with OEM rack.
d) Rear Load Case Close off:
   a. All rear-load dairy cases are to be neatly flashed with galvanized/embossed steel panels [typical of those used for cooler boxes] and sealed with silicone sealant (all penetrations) as required by Owner Representative, except in areas where legs or castors are required.
e) Refrigeration contractor to run all control wiring for Refrigeration, Leak Detection, light level sensors. Electrical contractor runs low voltage from sales floor lighting back to lighting panel.

2. Cooler Close Offs:
   a. All Meat/Seafood, Bakery, and Deli cases are to be flashed to the floor. Install stainless flashing with angle behind rear splashguard panel. Seal the stainless flashing to the floor with silicone sealant. Meet with Owner's Representative for specific requirements
3. GC Requirements:
   a. The GC will receive and unload any self-contained equipment.
   b. This Refrigeration Contractor will uncrate and install any self-contained refrigeration equipment.
   c. Refrigeration Contractor will work with Owner's representative to seal any gaps to include those in between any millwork, coolers, cases, walls, etc. due to refrigeration installation.
   d. Refrigeration Contractor to provide temporary cover over any refrigeration roof penetrations until the General Contractor installs rain hood curbs.
   e. Steel condenser support are to be furnished by others. The Refrigeration Contractor is to confirm that the support steel allow the condenser rack to be placed and secured as indicated. Refrigeration Contractor is to verify steel condenser support rack(s) layout prior to condenser delivery. In hurricane zones or areas with wind restraint requirements, such as Florida, Louisiana, Texas and other states on the Gulf Coast, Contractor shall securely weld or bolt condenser legs to steel support rack(s) to withstand 150 mph winds.
   f. General Contractor to do all trenching and backfilling, refrigeration contractor only to lay pipe and sleeves
4. REFRIGERATION LINES:
   a. Materials
      i. All refrigerant piping shall be refrigeration grade, cleaned, sealed and capped. Main runs of piping are to be type "L" or "K" , AC&R, cleaned and capped, hard drawn copper. Branches to case and cooler coils to be hard drawn copper type"L"or "K." Direction changes shall be made with long radius wrought copper fittings in all lines. **Short radius 90º or 45º ells are not acceptable.** Fittings shall be manufactured by Mueller Brass Co , Superior Valve Co., or NIBCO.
      ii. All welded joints shall be made up using 15% silver "Silphos." Use 45% to 56% silver "Easy Flo" on sweat valves and other control devices.
      iii. Any flare nuts required shall be of the short forged or frost proof type.
      iv. Commercial grade nylon stop nuts are to be used on all clamps. Support channels shall be "Unistrut" P-4000 or heavier. Clamps shall be in the "Unistrut" series P-2024 to 2043. Alternate channel "Super Strut" A-1200, B-1200, A-1202, B-1202 with series A-716 O.D. clamps, "Wesanco Inc." W-200, W-500 Channel with series W-6229 to W-6243 O.D. clamps, or 5-1/2" x 1-5/8" 16 gauge galvanized steel "C" stud.
      v. All discharge and drain lines from compressor rack to condenser and heat reclaim coil shall be clamped with Hydra-Zorb type clamps with hi-temperature inserts. All overhead suction and liquid lines shall be secured with Hydra-Zorb type clamps unless on overhead horizontal runs using trapeze hangers with insul guard saddles, should be secured to the unistrut with zip screw.
      vi. Piping insulation shall be Armacell "Armaflex" or Rubatex "Insul-Tube 180". Any insulation that is exposed to the sales floor shall be black unless called out on prints to be white in color, all other insulation does not have a specific color requirement. All joints to be sealed with Armacell #520, Rubatex R-374 white latex paint or Rubatex "R-320" adhesive. Heat Reclaim lines shall be insulated with Armacell "HT/Armaflex" or equivalent Rubatex insulation.
      vii. If project is in seismic zone, piping and equipment must be braced, supported and installed to comply with location requirements.
      viii. Clamp all vertical lines and lines from and to condenser with unistrut at least every 6'. All horizontal lines need to be supported with unistrut at least every 8'.
      ix. Under no conditions are copper pipes to touch each other, solid structure, sharp edges, other metals, foreign objects, etc. When necessary to cross pipes, they are instead to be offset or insulated (and properly supported) to insure no copper to copper contact (or contact with other metals). Protect RL from rubbing points inside (No Armaflex on pipe in case) and under cases. Nylon or plastic spacer (as manufactured by Hydra-Zorb) shall be used between un-insulated tubing and clamps to prevent line chafing.

5. Installation
   a. The liquid and suction refrigeration lines from the compressor to the fixture shall be of the size designated and run generally as shown on refrigeration drawings. Heat reclaim line sizes shall match discharge lines. All under slab suction lines and other suction lines with vertical risers longer than 6 ft. to have a "P" type oil trap installed. Reduce vertical risers as shown on schedule. Oil trap to be size of horizontal line. Riser greater than 16ft, inverted should be added to the riser. See prints.
   b. All suction lines from evaporators to oil traps or in direction of compressor shall be sloped 1/2" per every 18 ft. The case coil branch suction lines shall enter the top half of the main suction line to prevent oil or any liquid refrigerant from affecting downstream evaporators. Use tees, ells, couplings and bushings when making up case coil connections. Refrigerant lines shall be run as tight as possible to bottom of roof structure.
   c. All piping shall be installed to provide expansion joints and contraction without harm to system.
   d. Piping passing through concrete shall be provided with PVC sleeves with 1" clearance all around and encased in 12" sections of additional insulation. Refrigeration contractor shall foam in all openings where refrigeration lines penetrate walls, roof, etc. Refrigeration contractor shall be responsible for all patchwork of holes in walls and ceiling caused solely by installation of refrigerant lines. Piping passing through slabs, fire-rated walls and ceilings shall be sealed with fire-rated materials approved by the local jurisdiction.
   e. Refrigeration contractor shall be responsible for all coring/boring of walls or floors for refrigeration line penetrations.
   f. Suction lines for Medium temperature systems shall have 3/4" wall thickness insulation from fixture or coil outlet to the compressor unless otherwise noted on plans. Suction lines for Low temperature systems shall have 1" wall thickness insulation from fixture or coil outlet to the compressor. All discharge lines to heat reclaim coil and water heater shall be insulated with 1/2" wall thickness insulation.
   g. All liquid lines to be insulated with 1/2" wall thickness insulation. Insulation may be slipped over piping or split. Where suction lines continue through clamps, insulation shall be foamed installation over clamps.
   h. Extreme care shall be taken to keep the entire system clean and dry during installation. Nitrogen gas shall flow through the piping being welded to prevent scaling during the welding operation. Flow meter should be installed on Nitrogen bottle. At the direction of Lucky's Refrigeration Manager, refrigeration contractor shall cut and replace maximum of three welded fittings to allow for inspection of proper nitrogen use. If oxidation is present at any one of the fittings inspected, refrigeration contractor shall replace all fittings as directed.
   i. If Lucky's specifications, instructions, project managers, or laws, ordinances, rules, regulations, or any public authority require any work to be specially tested, approved or inspected-Contractor shall give Owner timely notice of its readiness for inspection.
   j. In order to verify the use of dry nitrogen during brazing operations as specified, an Owner inspector may have the refrigeration contractor cut out five (5) randomly selected joints. The joints will be inspected for oxidation. For each joint, which shows evidence of oxidation and noncompliance, an additional five (5) joints will be removed and inspected. If four (4) or more of five (5) joints indicates noncompliance, it will be assumed that all joints are defective therefore all joints will be reworked. Contractor will be responsible for reworking all joints removed for inspection.
   k. Refrigeration lines to cooler and freezer boxes shall be run on top of boxes, or as directed by Lucky's Refrigeration Manager. Penetrate box at each coil location. Provide "P" trap and connect coil. Do not insulate liquid lines inside box.
   l. Compressor units, condensers and coils shall be located as indicated on the plans. Refrigeration contractor to furnish and install 1/4" neoprene pad under each air-cooled condenser leg and secure air-cooled condenser to support curb with 1/2" **galvanized** bolt with neoprene washer under flat washer at each leg.

6. TESTING AND INSPECTION:
   a. The refrigeration contractor shall notify Lucky's Refrigeration Manager ... weeks in advance that some portion of the system is under test and ready for inspection.
   b. All refrigeration lines under the floor shall be tested and inspected prior to ... All stub-up risers from the floor to be siphosed off and ... with refrigerant, ... the dry nitrogen cylinder shall be attached to piping ... applied per applicable code requirements (minimum 360 psi) and all joints given ... electronic halogen leak detector test. The applied pressure shall remain overnight ... approval of these tests shall be made by Lucky's. Overhead lines ... be tested in an ... manner. When the refrigerant connections have been completed at cases, test the ... of the system to 150 psi (or higher as required by code) with all other valves open. ... test to be accomplished by charging refrigerant into the port in the liquid shut-off ... the receiver to raise the pressure in the system to 10 to 20 psi. Dry nitrogen ... introduced to raise ... pressure to the required test pressure. A pressure regulating valve shall be attached to the ... cylinder to reduce pressure of the gas to 150 psi or higher as required by code. ... joints shall then be carefully tested for leaks, using an electronic leak detector. ... shall be sent to Lucky's. inspected prior to backfilling if backfilling is required. Record of pressures ... forwarded to Lucky's refrigeration manager before connecting risers.
   c. ... racks, refrigeration contractor responsible to verify all set-points programmed into rack controller and make any necessary modifications. Energy management contractor will make three ... site visits (coordinate with General Contractor for ... dates). Refrigeration contractor is required to meet with energy management contractor when on site, for training, programming issues, or any questions pertaining to proper operation of the system. Energy management control technical support is available at ... number listed on the compressor racks.
   d. Prior to starting the rack ... power to the rack, contractor is responsible to make sure all the electrical connections in the rack panel and compressors are all tighriend.If remote defrost panel is supplied by Rack Manufacturer, the contractor show as check all connections as well.

7. EVACUATING SYSTEMS:
   a. The refrigeration contractor shall advise Lucky's Refrigeration Manager two (2) weeks in advance of when the evacuation of systems is started so the evacuating procedures can be checked.
   b. Contractor shall notify Owner in writing at least seven (7) days in advance of any test so that Owner may be present for the test if desired. Failure to notify Owner will result in having to repeat the test. All refrigeration lines under floor shall be tested at 300 psig and inspected prior to backfilling if backfilling is required. Record of pressures ... forwarded to Lucky's refrigeration manager before connecting risers.
   c. All refrigeration lines shall be tested ... and hold a minimum of 250 psig for ... hours before connecting to cases/walk-ins. ... refrigeration lines shall be tested with and hold a minimum of 150 psig, maximum 200 ... lower if manufacturer ... coils or cases limits pressure test). Final pressure test shall be completed with the compressor suction and discharge valves closed, and all other valves in the system open, with the exception of the transducers which must be kept closed during pressure testing and evacuation procedures. (If local codes require higher ..., such must be complied with). Sufficient liquid refrigerant (448) shall be charged into the system to raise the pressure to 35 psig, and dry nitrogen added to obtain the desired test pressure. Leak testing shall be performed with Inficon D-TEK Electronic Leak Detector. Refrigeration piping will not be acceptable unless it is leak tight. If any leaks are found, isolate the leaks, discharge the gas and repair the leaks, and then repeat the test. When testing has been completed, release all pressure, using an environmentally safe procedure. If test of overhead and ... is not possible before connecting to the rack, the rack shall be pressure tested before the system is connected. If there are leaks found on the rack, repairs will be made on a time and material basis according to a quoted rate and markup. Results of all pressure tests will be forwarded to Lucky's refrigeration manager.
   d. After the system has been thoroughly leak checked install a min of 10 CFH vacuum pump, or multiple pumps in parallel that achieve 20 CFH, and evacuate both high and low side to 500 microns. Break vacuum with appropriate refrigerant vapor to 0 psi. Pull a second vacuum to 250 microns and break vacuum with refrigerant to be used in system.
   e. Evacuate systems from the following locations:
      i. Suction Manifold
      ii. Liquid Manifold
      iii. Discharge
   f. The system shall hold 250 microns for 24 hours. This will have to be verified by an Owner Representative. Raise the system pressure to 2 psig with refrigerant, and remove the vacuum. NOTE: EXTREMELY IMPORTANT THAT HIGH PRESSURES AND LOW VACUUM NOT BE PULLED ON TRANSDUCERS (provide with hand valve).
   g. Oil should be added and all filters and driers installed for the final pulled. Once oil is added Crank Case should be powered up on all compressor to boil off any moisture in the oil.

15. CHARGING AND LUBRICATION & START UP:
   a. Each system shall be charged with refrigerant as indicated on drawings. Stores opening from April through September shall have the receivers charged to the 30 percent. Stores opening October through March shall have the receiver charged to 20 percent (with the heat reclaim system operating if applicable). These are the minimum acceptable quantities. No liability shall be absolved from the refrigeration contractor if additional quantities are necessary for the proper operation of the system. Any gas lost during the warranty period shall be replaced at no charge to satisfy these requirements.
   b. Compressors shall be checked for proper oil level. All refrigerant oil added to compressors shall be delivered to the location in sealed containers and shall be per compressor manufacturer's recommendation. Add oil to the system to maintain 1/4 to 1/2 site glass.
   c. Check manufacturer's requirements for lubrication before operating equipment. Lubricate equipment only when recommended by manufacturer.
   d. Unless specifically counter-indicated by compressor manufacturer, add RL32-3MAF, EMKARATE polyester oil to each compressor and oil separator and oil accumulator in the field, after the system has been evacuated. Check all compressors for proper oil level and if necessary, adjust. Add sufficient oil to bring the level to the center of the oil reservoir. Refrigeration Manufacture shall supply all oil to the jobsite separate from equipment and in factory sealed, unopened containers.
   e. Check high and low pressure control cut-in and cut-out points.
   f. Low pressure relay shall be adjusted not to interfere with electronic pressure control. Adjust as needed. Check compressor oil control.
   g. During start up Contractor shall check all defrost, fan, light, compressor and condenser circuits for amperage draw as listed in refrigeration schedule. Any readings that are considerably higher or lower, as described in manufacturer's specifications, than listed shall be checked out with General Contractor's electrician for proper wiring.
   h. After the system has been in operation for a minimum of 7 days, all expansion valve strainers must be cleaned.
   i. Check the system operating temperatures and defrost time. The length and number of defrost cycles shall be set in accordance with case manufacturers' recommendations and Owner provided schedule of defrost.
   j. A final defrost schedule shall be provided to the store manager during week of grand opening as well added to the door of the rack. All work within start-up procedure needs to be recorded in log book kept in the motor room.
   k. After the compressor is started, continue charging until system has sufficient refrigerant for proper operation. During start-up, no compressor is to be left operating unattended and unwatched until the system is properly charged with refrigerant and oil.
   l. All receivers should be charged initially to 35% with air heat reclaim turned on, one system in defrost, and all condenser fan controls set properly.
   m. After initial leaks are repaired and at direction of Lucky's Refrigeration Manager, increase this charge to at least 50%. These levels are to be maintained throughout the warranty period. If at the end of the warranty period the receiver level has dropped, Contractor will completely re-check the system for leaks with an Inficon Detek leak detector.
   n. All leaks will be repaired and the system brought back to the specified charge levels at no cost to Owner.

8. ADJUSTMENT OF CONTROLS AND RECORDING:
   a. The controls shall be set to maintain the following temperatures, or as case manufacturer recommends. The refrigeration contractor shall be responsible for proper case, cooler and freezer temperatures from start-up through the warranty period.

Cooler & Freezer

Bakery Freezer	-20°F	box temp.
Grocery Freezer	-20°F	box temp.
Dairy Cooler	25°F	box temp.
Produce Cooler	30°F	box temp.
Meat Cooler	18°F	box temp.
Cut Room	35°F	box temp
Deli Cooler	25°F	box temp.

   a. The refrigeration contractor shall advise Lucky's in advance when the systems are to be given final inspection.
   b. If pre-programmed defrost times don't keep a clear coil, adjust times and durations to maintain a clear coil. Report any major change in defrost time or duration to Lucky's.
   c. During start-up the refrigeration contractor shall check all defrost, fan, light and compressor circuits for amperage draw as listed in the refrigeration schedule. Contractor to verify all programs and set-points in controller are operating properly. Modify as needed. Any readings that are considerably higher or lower than listed, shall be checked out with electrician for improper wiring. Refrigeration contractor shall check and tighten all electrical connections in refrigeration control panel and other components on compressor racks, cases and coils. Refrigeration contractor to provide a schedule of actual defrost fan, light and compressor amp readings to Lucky's.
   d. For any system giving consistent problems, the refrigeration contractor shall make 24 hour recordings of case or coil supply and return air temperature and compressor head and suction pressures for each system. Indicate defrost periods on chart. Copies of recordings shall be sent to Lucky's.

12. IDENTIFICATION OF SYSTEM:
   a. Cooler case and freezer labels shall include system number only. Labels shall be 1 1/2" wide X 3/4" high with 3/8" letters engraved through white face to black core. Labels shall be 1/16" thick and have hole at each end for screws to hold label in place. Case labels to be located on front panel at lower right hand corner of each case. Cooler and freezer labels shall be mounted on box at latch side, clear of door frame 60" high. Refrigeration contractor to furnish new labels for all cases, coolers and freezers.
   b. Refrigeration contractor shall furnish three (3) 24" x 18" plastic fronted frames. One frame to be for Refrigeration Schedule (R6A) and one for the refrigeration floor plan (R3A)and the last for the mezzanine plan(sheet R6A). Schedule and floor plans shall show as-built conditions and location of all thermostats, solenoid valves and other controls so they can be easily located for service. Frames to be secured to machine room wall where they can be easily read. Confirm location with Lucky's representative. Obtain clean, reduced drawings from Lucky's.

13. CHECK OUT:
   a. Contractor shall be responsible for the proper adjustment of all controls in the system, including the controls of each refrigeration circuit, air temperature controls in the machine room, and such other controls as may be required.
   b. The compressor controls shall be set to maintain the discharge ... temperatures specified by the R-S drawing.
   c. Set the controls to maintain the above temperatures at the location indicated before stocking. After stocking, but before store use, ... temperatures ... and readjust the controls required to obtain the temperature specified.
   d. Follow ice flaker manufacturer's ... to set the ... static expansion valve and ... evaporator pressure regulator (EPR ...) by ice machine manufacturer to ensure ice is grown and harvesting properly.
   e. Final superheat to be set after cases have been merchandised ... Grand Opening.
   f. All defrost terminations will be set with an accurate electronic thermometer. Calibrate all thermometers ... accurate electronic thermometer.
   g. During 7 day ... after store opening and prior to ... for final payment, Contractor shall provide as-built for the ... drawings. Include ... locations on these drawings. Rack ... wiped down ... as it was when it was delevered. All control ... on the rack ... by the Rack OEM should be cleaned out of ... const ...

14. Grand Opening:
   a. ... Contractor ... keep one qualified, EPA certified mechanic on the premises for a minimum of eight hours per day and ready to handle emergencies connected with his work from the time he begins start-up through Store Opening day. Owner has the right to have Contractor replace the mechanic if Owner thinks the present mechanic is failing to respond.
   b. Prior to Store Opening day, the Contractor must submit to Owner the name or names of local refrigeration service companies that will be authorized to handle its warranty service. This is also to be posted in the office of the store. The information should be neatly typed on an 8 x 11 card and fully explained to the store manager.

15. SERVICE:
   a. The refrigeration contractor shall provide a certified technician who shall remain at the store at least ... during ... of business following completion of the installation.
   b. Lucky's ... check all fixture temperatures and defrost periods before opening of the store for business ... refrigeration contractor shall make adjustments as needed.
   c. Anytime refrigerant is added to any system, a "Refrigerant Incident/Status Report" shall be completed and filed in the Refrigerant Record Binder. Binder to be supplied by Lucky's and placed by contractor in a secure location accessible to both contractor and Store Director, preferably in the Machine Room

WARRANTY:
   a. The refrigeration contractor shall provide any necessary labor, materials, refrigerant and incidental expenses to maintain the temperatures outlined in section of this specification from initial start-up and for a period of 1 year from grand opening day without additional cost to Lucky's. Refrigeration contractor's service company shall send copies of work orders covering all work done during warranty periods to store and copies to Lucky's. If the refrigeration contractor does not have a service company within a 50-mile radius of the project, another service company may be hired for this period at the refrigeration contractor's expense. The refrigeration contractor shall notify Project Manager and Store Director of the contractor responsible for warranty service in writing prior to grand opening. Lucky's has final approval of Service Company to perform warranty work.
   b. A check up on the operation of the equipment shall be made by the refrigeration contractor every 30 days during the 90-day warranty. Inspection reports shall be mailed Lucky's. Final payment may be withheld pending receipt of inspections and service reports.
   c. It will be Contractor's responsibility to obtain the replacement parts during the 1-year warranty period. Any charges resulting from a manufacturer's problems are to be handled by Contractor directly with the manufacturer.
   d. Contractor shall warrant leaks due to improper installation including any piping under the floor for a period of one (1) year from store opening. Contractor to provide any labor and material (including refrigerant) to remedy any installation issues.
   e. In the event Contractor fails to respond to emergency calls or fails to perform required maintenance during the warranty period, Owner shall have the right to have the problem corrected or maintenance completed by another contractor or Owner's own service members. In this case, Contractor agrees to pay Owner the invoiced amount of the services performed plus fifteen percent (15%) or, in the case of work completed by an Owner service member, pay time and material.
   f. After Store Opening and as close as possible to the 1-year mark after opening, the Contractor and Owner representative will perform an onsite walkthrough for the complete refrigeration system at a date/time specified by the Owner representative. The Contractor's representative(s) will include either the startup technician or lead mechanic that completed this installation. If the Contractor subcontracts the warranty, both the installation representative(s) and the warranty subcontractor representative will need to be present at that walkthrough. During that walkthrough, the Contractor shall make a complete inspection of its work and make necessary corrections or adjustments. The completed punch list shall be sent to Lucky's Market, Attention Construction Department, for verification of completion. Owner shall be notified of these inspections forty-eight (48) hours prior to them being made. It is the intention of Owner that all punch list/field report items be complete prior to Store Opening.
   g. The 1-year inspection is to include necessary lubrication, leak test of all joints, flares nuts, and tightening of all strapping s may be necessary. Leak test will be performed on the small leak setting of a (Inficon) leak detector. No other leak detector is acceptable.
   h. Contractor guarantees that the liquid line drier and suction filters shall be changed, and oil filters will be replaced 24hrs after start up. After the first 30 days of Grand Opening, the owner has the right to sample liquid/vapor oil at any time and installation is not accepted unless independent lab tests done by owner shows that samples are free of contamination. Contractor is responsible for replacement of filters, driers and oil until results are acceptable.
   i. At the 1-year inspection, Contractor will inspect the suction filters and replace them (only if necessary), and change the liquid drier and oil strainers. All filter and drier cores are to remain in the motor room for inspection by an Owner representative. Upon said inspection, Contractor will dispose of all contaminated material in an environmentally safe manner. If at any time during the 1-year period the oil is abnormally dirty, the oil and filters will be changed every seven (7) days until such time the system is clean.
   j. At the end of the warranty period, Contractor shall certify in a letter to Owner that all equipment and materials installed r connected by Contractor (or Contractor's Subcontractors) are functioning properly. The Contractor shall specifically certify that all systems are free of leaks and are maintaining satisfactory temperatures at normal control adjustments, that the fans are sequenced to maintain a steady condensing temperature and pressure on all units at all times, that all fans on all refrigeration equipment are rotating properly, and that there are not any abnormal air currents or other unusual store conditions which are adversely affecting the operation of the equipment. The Contractor is required to submit the warranty letter prior to invoicing for retainage. At the end of the one (1) year warranty period, any issues not corrected to the satisfaction of the Owner will require a warranty extension until properly resolved.
   k. Contractor's service company shall send copies of work orders for work done during warranty periods to Owner within thirty (30) days of completed work.

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SALES PERSON
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PROJECT MANAGER

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All plumbing and electrical and refrigeration drawings are furnished as a guide to assist the Architect and the Customer with new fixtures and as operating requirements only. Hussmann assumes no further responsibility. All specifications including refrigeration equipment and line sizing are subject to change without notice. The use of this drawing for structural or architectural purposes is not authorized. It is the responsibility of the Architect, Structural, Electrical and Mechanical Engineers to verify and coordinate accuracy of all dimensions and refrigeration line sizing with contractors at the job site and insure that installations conform to specifications and all applicable codes.

REVISIONS

1	N. RENTERIA	05.07.18	REVISED VOLTAGE PER CUSTOMER
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10			
11			
12			

DATE: 05.05.18
SCALE:
DRAWN BY: N. RENTERIA
CHK'D BY: ----
APRV'D BY: ----
PLAN: 82419ER1-9_EMS1-4.dwg

LUCKY'S MARKET
THE PROMENADE AT NAPLES CENTRE
NEW STORE
6424 NAPLES BLVE., SUITE 601 NAPLES, FL

REFRIGERATION INSTALLATION SPECS

SHEET
R6B

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