

## YSECTION 01100

### SUMMARY

#### PART 1 GENERAL

##### 1.1 WORK COVERED BY CONTRACT DOCUMENTS

- A. Project Identification: This project is the RSB PHASE 3 "T" BRIDGE RENOVATION AND RML CURTAIN WALL REPLACEMENT PROJECTS.
1. Project Location: Research and Development Facility located on the General Motors Technical Center, 30500 Mound Road, Warren, MI 48090.
  2. Owner: General Motors Company
- B. The work for the RSB Phase 3 "T" Bridge Renovation Project includes complete removal and replacement of the curtain wall system for the entire structure; encasing the existing structural columns in concrete; complete removal and replacement of the roof deck, support angles and roofing system as well as architectural, mechanical, electrical and life safety system upgrades as reflected on the Issued for Bid documents dated 07/31/12. The work contemplated by this Specification and the accompanying Drawings includes, but is not limited to, furnishing all labor, equipment, and material for completing the work. This Summary of Work is intended strictly as an overview, and in no way is meant to relieve the Contractor of any work delineated in the Contract Documents, which may not have been identified herein.
1. The Work includes the following:

#### GENERAL

- The Owner will occupy the buildings adjacent to the "T" Bridge throughout the duration of this project. General tenant access must be maintained between the RAB and RML on at least one level at all times.
- Install and maintain temporary fire retardant and weather tight construction enclosure with access doors continuous around the exterior perimeter of the "T" Bridge.
- Furnish and install plywood protection on poly-iso or extruded polystyrene underneath the entire extent of the exterior weather enclosure to protect the roof.
- Install and maintain temporary protection in the adjacent occupied buildings which become exposed to weather elements as a result of this work.
- Remove the two (2) existing pair of doors on the mezzanine level at RML and RAB. Seal these openings to prevent dust and fume migration into the occupied areas.
- Install and maintain a temporary fire retardant pedestrian enclosure up to the underside of the "T" Bridge mezzanine for daily passage between the RAB and RML.
- Furnish and install one (1) temporary hollow metal door, frame and panic hardware for emergency egress out of the pedestrian enclosure.
- Furnish and install one (1) lighted exit sign at the emergency egress door and temporary lighting in the pedestrian enclosure as required by code for safe passage by GM employees between the RAB and RML.
- Provide all mechanical and electrical sufficient to maintain a safe working environment within the "T" Bridge area.

- Provide all temporary lighting on both sides of the temporary construction barriers as necessary to safely perform the Work within OSHA requirements.
- Provide all temporary heating and/or cooling necessary to maintain job conditions to properly execute the work within material tolerances.
- Maintain utility services to occupied areas throughout the duration of construction. Utility tie-ins will need to be coordinated with the Owner to minimize tenant disruptions and will be scheduled for off-shift hours.
- Given the age of the facility all painted surfaces are considered to be lead based. All lead paint removal will be the responsibility of the Contractor and will be completed by a GM approved abatement contractor.
- Provide all lead paint abatement necessary to complete the demolition of the existing curtain wall system, pack rust removal on steel structure, installation of new curtain wall system and replacement of roofing system. Lead paint abatement is also required when an area or material is being mechanically altered (i.e. torch cutting, welding or grinding).
- All existing curtain wall system caulk, gaskets, sealants, etc. shall be treated as asbestos-containing materials.
- Provide all asbestos abatement necessary to complete demolition of the existing curtain wall system to include construction and removal of negative air enclosures and scaffolding.
- The GM Environmental approved abatement contractor shall be selected to perform this work. The following are the approved bidders and NO ALTERNATE CONTRACTOR WILL BE ALLOWED:
  1. MIS Corporation  
Saginaw, MI 48601  
989-753-5599
  2. National Abatement Corp.  
Flint, MI 48507  
810-736-7911
  3. Next Generation Environmental Inc.  
Ypsilanti, MI 48197  
734-485-4855
  4. Rand Environmental Services, Inc.  
Romulus, MI 48174  
734-442-1100
- The Owner's Agent will obtain the services of a 3<sup>rd</sup> party air monitoring contractor to provide air-monitoring for asbestos abatement and background sampling for lead abatement as deemed necessary. The Contractor is responsible for personal protective monitoring devices to monitor an employee's exposure.
- Develop, furnish and install all lock-out/tag-out placarding for new mechanical and electrical equipment.
- Final detail cleaning for all areas upon completion of work.
- Remove all temporary barriers after completion of work and repair/return building, site and landscaping back to its original condition.
- Live load capacity is limited in certain areas of the building.

## CIVIL

- Saw cut and remove or chip out the existing asphalt and concrete pavement around the base of each "T" Bridge structural column to expose the baseplate and top of existing foundation.
- Prep, prime and paint each structural column base prior to placement of new concrete enclosure.
- Furnish and install rebar as well as form and our new concrete base enclosure at each of the "T" Bridge structural columns.
- Patch in around each new concrete base enclosure with asphalt pavement and expansion joint materials to finish grade elevation.

#### STRUCTURAL

- Install and maintain any necessary temporary shoring, bracing or structural supports needed to maintain stability of the "T" Bridge structure during the execution of this work.
- Patch and repair any existing abandoned or obsolete penetrations within the "T" Bridge steel structure in preparation for final finishes.
- All existing structural steel columns and header steel will remain in place. Remove all existing lead-based primer and paint.
- Clean, prep and bondo all existing steel surfaces as necessary for final finishes.
- Thoroughly clean all rusted and corroded steel surfaces of pack rust and other foreign matter by chipping and scraping and clean surface with wire brush.
- Clean and prep existing steel surfaces for final finishes.
- Allowance has been established in the base bid for potential re-inforcement of the existing structural columns once the existing base plate and foundation are exposed.
- Shop prime all off-site fabricated steel.
- Furnish and install new steel re-inforcing plates at each location where the new mechanical and electrical systems penetrate the existing W16 x 58 beam.

#### CURTAIN WALL

- The curtain wall system is a historical feature for the Research and Development Complex and all work shall be performed as to not impact the historical designation for the complex and site.
- Due to the historical designation of the curtain wall system, a GM approved glazing contractor shall be selected to perform this work. The following are the approved bidders and **NO ALTERNATE CONTRACTOR WILL BE ALLOWED**:
  1. Madison Heights Glass, Co.  
Ferndale, MI 48220  
248-544-4334
  2. Modern Mirror & Glass Co.  
Roseville, MI 48066  
586-296-1000
- Remove and dispose of all existing curtain wall system as well as attached architectural elements for all elevations to include, but not limited to, vision plate glass, aluminum framing, gaskets, sealants, angles, handrails and support brackets, etc. All components to be removed to expose the existing steel structure.
- Furnish and install new curtain wall system to include new aluminum framing, insulated vision glass, aluminum plates, bar mullions, angels, removable stops, etc. for all elevations.

- Furnish and install new aluminum handrail and support brackets on the interior side for all elevations.
- Furnish and install all new gaskets, sealants, backer rod, etc. to match existing for all elevations. Ensure all sealants, caulk, etc. are to be urethane – NOT SILICONE. Prepare sample mock-up for review and approval prior to commencement of sealant work.
- Furnish and install new drip edge on the exterior side for all elevations.

#### ARCHITECTURAL

- Prep the existing concrete floor on the mezzanine level.
- Furnish and apply Sherwin Williams ceramic carpet floor finish to the concrete floor on the mezzanine level.
- Furnish and apply sealant between the ceramic carpet and edge angle.
- Furnish and apply spray on insulation above the ceiling systems on both levels.
- Furnish and install a gypsum board ceiling on a grid suspension system with control joints on both levels.
- Apply exterior finishing system over the gypsum board on the first floor.
- Prep, prime and finish paint all existing and new steel, angles, etc. on both levels. All exposed and concealed steel as well as interior and exterior surfaces shall be painted.
- Prep, prime and finish paint all ceiling systems on both levels.
- Seal all pipe penetrations.

#### ROOFING

- Patch and repair the existing RSB roof system as required for new mechanical equipment installation.
- Furnish and install new rubber walkway pavers to new mechanical and electrical equipment located on the RSB roof. Patch and repair any existing roof walkway pavers in the immediate work area, as necessary.
- Provide means of safely hoisting materials and equipment onto and off of the T" Bridge roof as well as means of accessing and executing the replacement work.
- Remove and discard of all existing roof drain assemblies, roofing membrane, insulation, roof deck, deck support angles where indicated, aluminum fascias, etc. for the entire "T" Bridge roof area F200A.
- Furnish and install built up nailer along the perimeter edges consisting of 2 x 6 wood studs and batt insulation. Built-up wood nailer is to be secured to substrate with self-drilling fasteners 12" on center.
- Furnish and install new 20 gauge roof deck system for the entire roof area.
- Furnish and install new roof deck support angles at roof transition with connecting buildings and as indicated in roof area F200A.
- Furnish and install ply wood backing and fasteners secured to the steel substrate for securing the new PVC roof membrane system, wood nailer and trim cap.
- Furnish and install tapered polyisocyanurate insulation (1/8" per inch) and necessary saddles and crickets for the entire roof area F200A. Slope insulation to new drains and scuppers.
- Furnish and install a mechanically-fastened 80-mil PVC roof membrane for the entire roof area F200A and terminate to built up wood nailer.
- Furnish and install mechanically-fastened PVC flashing membrane and flashing detail strip with a continuous heat weld.

- Furnish and install PVC coated metal continuous cleat secured to substrate at 18" on center.
- Furnish and install continuous pre-finished aluminum cleat, fascia and trim cap to match the RSB.
- Furnish and install new roof drain assemblies and associated caulking, which shall be connected to existing drain piping.
- Furnish and install new scupper liners, conductor heads and downspouts.
- Design and submit for review and approval a detail for a tapered 60 mil. EPDM roof system with scupper(s) for each transition area with connecting buildings.

#### FIRE PROTECTION

- The fire protection system is a performance specification and shall include engineering, design, installation, testing and commissioning to meet current City of Warren and General Motors requirements as well as the specified design densities. A final engineered layout, that meets these requirements, along with the hydraulic calculations will be submitted for review and approval by the necessary entities to include General Motors' underwriter
- Furnish and install a new fire protection system to include sprinkler mains, branch lines, hangers, fittings, reducers, sprinkler heads, cover plates, etc. for a complete and functional system
- Tie the new "T" Bridge fire protection system into the existing riser located near Column J-8.

#### MECHANICAL

- Furnish all necessary roof curbs for the mechanical equipment and roof pipe penetrations. Installation of the curbs shall be by the architectural trades under this same contract.
- Furnish and install all specified fan coil units and associated supports and disconnect for each unit. Installation of disconnect shall be by the electrical contractor under this same contract.
- Furnish and install the specified condensing unit and associated starter. Disconnect shall be furnished and installed by the electrical contractor under this same contract.
- Furnish and install a complete HVAC system to include flexible duct connection, gas and refrigerant piping, fittings, valves, tees, hangers, registers, etc. for a complete and functional system.
- Furnish and install all necessary conduit, wire, hangers, control panel etc. for a complete control system to the fan coil and condensing units.
- Tie the new controls system into the existing Siemens building management system located in the REL High Bay area for monitoring of units.
- Furnish and install a condensate drain through the roof for each fan coil unit and fresh air intake with screen through the roof for two (2) fan coil unit.

#### ELECTRICAL

- Remove and dispose of any miscellaneous existing conduit, wire, hangers, light fixture supports, etc. that have been abandoned in place. Any connected devices or equipment shall be removed back to the source.
- Furnish and install a complete power distribution system to include conduit, wire, hangers, junction boxes, disconnects, water proof disconnects, general use and

water proof receptacles, etc. for general power to all levels of the "T" Bridge as well as to all new mechanical equipment.

- Tie the power circuits into the existing power panel located on RSB First Floor near Column Line J-8.
- Furnish and install complete lighting and emergency night lighting system to include all conduit, wire, hangers, light fixtures, relays, occupancy sensors and day light harvesting sensors, photo cells, light zone control panels, etc. for both levels of the "T" Bridge.
- Furnish and install all conduits, wire, hangers, exit signs, etc. for the mezzanine level of the "T" Bridge.
- Tie the general lighting circuits into the existing lighting panel located on RSB First Floor near Column Line J-8.
- Tie the emergency lighting and exit sign circuits into the existing emergency lighting panel located on RSB First Floor near Column Line K-6A.
- Provide any necessary new breakers within the existing power and lighting panels to match the existing.
- Furnish and install all necessary grounding, ground mats, testing, etc. required by code and GM Common System Electrical Standard, even if the requirements are not specifically identified within the bid documents.
- The fire alarm system is a performance specification and shall include all engineering, design, programming, installation and commissioning to meet current City of Warren and General Motors requirements. A final engineered layout that meets these requirements will be submitted for review and approval by the necessary entities to include General Motors' underwriter.
- Furnish and install a complete new fire alarm system to include all conduit, wire, hangers, audio-visual devices, etc.
- Tie the new "T" Bridge fire alarm system into the existing fire alarm panel located in the RSB for reporting back to GM Site Operations.
- Contract with consulting firm to provide a complete short circuit study and necessary hazard calculations.
- Furnish and install all necessary arc flash labeling.
- Furnish and install all field labeling for circuits, receptacles, disconnects, panels, etc.
- Furnish and install new updated typed panel schedules.
- All testing of electrical systems shall be witnessed by the Owner and/or Owner's Agent.

- C. The work for the RML Curtain W Replacement Project includes complete removal and replacement of the curtain wall system between Column Lines 4-12 on the East and West elevations and between Column Lines A-E on the North elevation; complete removal and replacement of the clerestory system between Column Lines 1-12 on the East and West elevations; installation of overhead and pedestrian doors, frames and hardware; complete removal and replacement of the roofing system and selective roof deck replacement; decommissioning, disposal and/or relocation of existing lab equipment and materials within 5'-0" of the curtain wall system; perimeter underground drain tile as reflected on the Issued for Bid documents dated 07/31/12. The work contemplated by this Specification and the accompanying Drawings includes, but is not limited to, furnishing all labor, equipment, and material for completing the work. This Summary of Work is intended strictly as an overview,

and in no way is meant to relieve the Contractor of any work delineated in the Contract Documents, which may not have been identified herein.

1. The Work includes the following:

#### GENERAL

- The Owner will occupy the RML immediately adjacent to the Work area throughout the duration of this project. General tenant access must be maintained in the adjacent lab spaces and any disruptions to the occupied areas must be scheduled and coordinated in advance of the disruption.
- Install and maintain temporary fire retardant and weather tight construction enclosures with access doors continuous around the exterior and interior perimeter of the RML First Floor, Mezzanine and Clerestory levels.
- Provide for review and approval an engineered fall protection and interior perimeter enclosure at the RML Clerestory level. The interior Clerestory enclosure shall not impede the use of the existing overhead cranes supporting the Foundry Area.
- Provide a weather tight seal around the existing exhaust stack and the exterior weather enclosure at the clerestory level.
- Furnish and install plywood protection on poly-iso or extruded polystyrene underneath the entire extent of the exterior weather enclosure to protect the roof on both roof levels.
- Provide all mechanical and electrical sufficient to maintain a safe working environment within the Work Areas.
- Provide all temporary lighting on both sides of the temporary construction barriers as necessary to safely perform the Work within OSHA requirements.
- Provide all temporary heating and/or cooling necessary to maintain job conditions to properly execute the work within material tolerances.
- Maintain utility services to occupied areas throughout the duration of construction. Utility tie-ins will need to be coordinated with the Owner to minimize tenant disruptions and will be scheduled for off-shift hours.
- Given the age of the facility all painted surfaces are considered to be lead based. All lead paint removal will be the responsibility of the Contractor and will be completed by a GM approved abatement contractor.
- Provide all lead paint abatement necessary to complete the demolition of the existing curtain wall system, pack rust removal on steel structure, installation of new curtain wall system and replacement of roofing system. Lead paint abatement is also required when an area or material is being mechanically altered (i.e. torch cutting, welding or grinding).
- All existing curtain wall system caulk, gaskets, sealants, etc. shall be treated as asbestos-containing materials.
- Provide all asbestos abatement necessary to complete demolition of the existing curtain wall system to include construction and removal of negative air enclosures and scaffolding.
- The GM Environmental approved abatement contractor shall be selected to perform this work. The following are the approved bidders and NO ALTERNATE CONTRACTOR WILL BE ALLOWED:
  1. MIS Corporation  
Saginaw, MI 48601  
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2. National Abatement Corp.  
Flint, MI 48507  
810-736-7911
  3. Next Generation Environmental Inc.  
Ypsilanti, MI 48197  
734-485-4855
  4. Rand Environmental Services, Inc.  
Romulus, MI 48174  
734-442-1100
- The Owner's Agent will obtain the services of a 3<sup>rd</sup> party air monitoring contractor to provide air-monitoring for asbestos abatement and background sampling for lead abatement as deemed necessary. The Contractor is responsible for personal protective monitoring devices to monitor an employee's exposure.
  - Final detail cleaning for all areas upon completion of work.
  - Remove all temporary barriers after completion of work and repair/return building, site and landscaping back to its original condition.
  - Live load capacity is limited in certain areas of the building.

#### CIVIL

- Saw cut and remove existing concrete and asphalt pavement, walk ways, curbs, etc. along the West elevation from Column Lines 3.5-12 and along the entire extent of the North elevation for new drain tile and tie into existing man holes.
- Remove and dispose of bollards and concrete bases at the existing doors and around equipment foundations.
- Remove and dispose of existing tire stop and associated bases along the West elevation in several locations.
- Remove and dispose of the block cylinder storage area and associated foundations along the West elevation between Column Lines 3-5.
- Remove steel edging strip and stone landscaping strip along the East elevation and partial South elevation.
- Maintain the existing stone landscaping strip along the South elevation except where necessary for the installation of new drain tile.
- Furnish and install drain tile around the entire perimeter of the building to include new concrete curb, perforated drain pipe, geotextile fabric, pea gravel, river rock, etc. as indicated in the detail. Tap the new drain tile into the existing man holes where indicated.
- Back fill all excavated areas, except for new drain tile locations, with engineered backfill and asphalt pavement to finish grade elevation.
- Place engineered back fill and asphalt pavement approach to the vertical lift doors along the North elevation between Column Lines B-C.
- Restore all lawn, landscaping and pavement where damaged as a result of the new work.

#### STRUCTURAL

- Patch and repair any existing abandoned or obsolete penetrations within the RML steel structure in preparation for final finishes.
- All existing structural steel columns and header steel will remain in place. Remove all existing lead-based primer and paint.
- Clean, prep and bondo all existing steel surfaces as necessary for final finishes.



- Thoroughly clean all rusted and corroded steel surfaces of pack rust and other foreign matter by chipping and scraping and clean surface with wire brush.
- Clean and prep existing steel surfaces for final finishes.
- Structural steel repair/reinforcement as necessary for occurrence where pack rust is greater than 1/8" average or 1/4" maximum on flanges and columns in all areas
- Furnish and install all new sill plate and embedded angles to match existing for all elevations.
- Provide new grout in-fill to complete sill plate installation.
- Furnish and install all new T-steel curtain wall mullions at approximately 5'-0" o.c. between the existing structural columns. T-steel has a welded connection at the header steel and a welded connection at the sill plate
- Shop prime all off-site fabricated steel.

#### CURTAIN WALL

- The curtain wall system is a historical feature for the Research and Development Complex and all work shall be performed as to not impact the historical designation for the complex and site.
- Due to the historical designation of the curtain wall system, a GM approved glazing contractor shall be selected to perform this work. The following are the approved bidders and NO ALTERNATE CONTRACTOR WILL BE ALLOWED:
  5. Madison Heights Glass, Co.  
Ferndale, MI 48220  
248-544-4334
  6. Modern Mirror & Glass Co.  
Roseville, MI 48066  
586-296-1000
- Remove and dispose of all existing curtain wall system on all elevations to include, but not limited to, porcelain panels, "Hammer" and vision glass, frames, gaskets, aluminum trim caps, etc.
- Remove and dispose of all T-steel curtain wall system mullions.
- Remove and dispose of all bottom sill plate and embedded angle and grout in-fill.
- Remove and dispose of all existing aluminum framed screens on the exterior side of the curtain wall.
- Pre-purchased materials are staged in C-containers located in the R&D Courtyard. The unloading, sorting and transportation to work area shall be included as part of this quotation
- Install all new pre-purchased porcelain panels, insulated "Hammer", vision glass, and steel window frames for all elevations.
- Furnish and install all new aluminum trim caps to match existing for all elevations.
- Furnish and install all new gaskets, sealants, backer rod, etc. to match existing for all elevations. Ensure all sealants, caulk, etc. are to be urethane – NOT SILICONE. Prepare sample mock-up for review and approval prior to commencement of sealant work.
- Install all new pre-purchased doors, frames, and hardware in the locations as specified on the contract drawings. Connection of power as well as installation and commissioning of card readers as required will be by the successful Curtain Wall Contractor.
- Install all new pre-purchased vertical lift door, frame, supports, and hardware in the location as specified. Connection of power as well as installation and

commissioning of card readers along with glazing and caulking for this door will be by the successful Curtain Wall Contractor.

#### ARCHITECTURAL

- Remove and properly dispose of ACM floor tile and associated mastic within the limits of the interior demolition for all floors.
- Remove and properly dispose of the ACM counter tops and fume hoods within the limits of the interior demolition or to the nearest joint just beyond for all floors.
- Remove and dispose of all existing millwork base cabinets, upper wall cabinets, shelving units, etc. within the limits of the interior demolition for all levels.
- Remove all window blinds and supports along the curtain wall system for all levels.
- Remove and dispose of the existing glazed brick structure to include the mezzanine steel deck, railings, stairs, access ladders, knee wall, etc. at the former sand storage area along Column Line A between Column Lines 9-10.
- Remove and salvage the Hauserman partition panel to the closest joint either within or just outside of the limits of the interior demolition for all floors.
- Remove and dispose of all existing pedestrian doors, frames, hardware and security for all levels.
- Remove and dispose of existing overhead doors and track along the West elevation between Column Lines 11-12 and along the North elevation between Column Lines B-C.
- Remove and salvage the existing grille for the overhead door along the North elevation between Column Lines B-C for re-installation.
- Cut a new door opening into the existing glazed brick wall on the First Floor near Column Line A-11 for future elevator equipment room.
- Remove the existing lockers and benches as indicated in the Locker Rooms. Take care in removing the lockers as not to damage for future re-installation under separate contract.
- Remove and dispose existing concrete locker bases to 1'-0" outside of the limits of interior demolition for all levels.
- Remove and dispose of existing plaster ceiling to 1'-0" outside of the limits of interior demolition for all levels. Re-support the cut edge. Remove all ceiling materials, framing, hangers, etc. within the limits of the interior demolition.
- Remove and dispose of existing acoustical or metal pan ceiling systems back to the main or first tee outside of the limits of interior demolition for all levels. Re-support as necessary. Remove all ceiling materials, grid, hangers, etc. within the limits of the interior demolition.
- Repair, tuck point and clean the existing glazed brick where indicated.
- Disconnect, remove and dispose of the existing test booth in Lab 2-217 to include the walls, ceiling, doors, steel mezzanine, ladders, framing, etc.
- Prime and paint all interior and exterior surfaces of sill, cap plates, columns, mullions, header steel, etc. to match existing.

#### ROOFING

- Provide means of safely hoisting materials and equipment onto and off of the RML roof as well as means of accessing and executing the replacement work
- Removal and disposal of existing built-up roofing, flashings, insulation, and related metal flashings and accessories.

- In Roof Area F152, the bituminous flashings and strip-ins are classified as Category 1 regulated materials and contain non-friable asbestos.
- In Roof Areas F150, F152, the white roof board material beneath the elevated, sloped metal roofing at the building walls is classified as a Category 2 regulated material and contains non-friable asbestos.
- Localized replacement of deteriorated steel roof decking in Roof Area F150.
- Removal and disposal of elevated metal walk ways in Roof Areas F150 and F152.
- Removal and disposal of roof drain assemblies for all roof areas.
- Where directed, remove existing stacks/equipment penetrating the four-foot wide elevated metal roofing area along the east side of Roof Area F150 and along the west side of Roof Area F152 and at other locations. Some stacks/equipment will be discarded and some will be salvaged for re-installation at locations directed by the Owner. Temporary support for stacks/equipment and temporary protection over openings created by stack/equipment removal may also be required.
- After removing the stacks/equipment penetrating the metal roofing areas, remove and dispose of the metal roofing and underlying roof board, roof insulation, steel deck and structural supports which form four-foot wide elevated area.
- Where directed, remove, temporary support, and possible relocation of additional rooftop stacks/equipment before or after installation of the new roof system.
- Installation of new roof insulation, polyvinylchloride (PVC) roof membrane and related PVC flashings, metal flashings and accessories
- Furnish and install new rubber walkway pavers to new mechanical and electrical equipment located on the RSB roof. Patch and repair any existing roof walkway pavers in the immediate work area, as necessary.
- Furnish and install built up nailer along the perimeter edges consisting of 2 x 6 wood studs which is to be secured to substrate with self-drilling fasteners 12" on center.
- Furnish and install new 20 gauge roof deck system and plywood substrate where indicated in Roof Area F150 as well as in the entire areas where the metal roofing system has been demolished.
- Furnish and install ply wood backing and fasteners secured to the steel substrate for securing the new PVC roof membrane system, wood nailer and trim cap.
- Furnish and install tapered polyisocyanurate insulation (1/8" per inch) and necessary saddles and crickets for the entire roof area. Slope insulation to new drains.
- Furnish and install a fully-adhered 80-mil PVC roof membrane for the entire roof area and terminate to built up wood nailer.
- Furnish and install fully-adhered PVC flashing membrane and flashing detail strip with a continuous heat weld.
- Furnish and install PVC coated metal continuous cleat secured to substrate at 18" on center.
- Furnish and install continuous pre-finished aluminum cleat, fascia and trim cap to match the RSB.
- Furnish and install new roof drain assemblies and associated caulking, which shall be tied into the existing roof conductor.

#### FIRE PROTECTION

- Cut and cap the existing fire protection piping just beyond the limits of the interior demolition for all levels. Cap at main, where feasible, taking into account the fire

protection system must remain operational for active lab areas. Remove all piping, sprinkler heads, hangers, etc. within the limits of the interior demolition.

#### MECHANICAL

- Disconnect, remove and salvage all mechanical systems to the existing Liebert air condition and condensing units located along the West elevation between Column Lines 4-5. Save all components for reinstallation.
- Cut and cap existing supply and return ductwork just beyond the limits of the interior demolition for all levels. Remove all duct work, diffusers, grilles, hangers, etc. within the limits of the interior demolition.
- Remove and dispose of all existing mechanical louvers, screens and blank off panels for all levels.
- Clean, remove and dispose of existing obsolete exhaust fans where indicated to include associated duct work, support framing, curbing, piping, etc.
- Cut, cap and remove water coolers for all levels. Cap piping back at main. Capture any refrigerants into approved waste disposal containers. Remove all piping, valves, hangers, supports, etc.
- Cut, cap and remove fume hood, canopy hood, or equipment exhaust systems within the limits of the interior demolition for all levels. Cap duct work back at main. Remove all ductwork, hangers, etc. for the entire extent.
- Cut, cap, remove and dispose of the radiant heat systems along the curtain wall system for all levels. Cap piping at floor level. Remove all enclosure covers, piping, fin tube, supports, etc. within the limits of the interior demolition.
- Cut, cap and removal all existing mechanical systems along the curtain wall system or within the limits of the interior demolition for all levels to include compressed air, heating hot water, sanitary, drains, vents, city water, natural gas, etc. Cap at the nearest valves or at main. Remove all piping, valves, hangers, etc.

#### ELECTRICAL

- Remove abandoned cable vaults on the first floor.
- Relocate the electrical to the Redford Carver near Column Line A-11 and mount in an alternate location or on a Uni-strut rack to maintain services to the equipment.
- Disconnect power and controls to the existing overhead door along the North elevation between Column Lines B-C. Existing circuitry to remain for new vertical lift door and controls.
- Disconnect and remove power and controls to the existing overhead door along the West elevation between Column Lines 11-12. Disconnect at the power source. Remove all associated control panels, disconnects, conduit, wire, hangers, junction boxes, etc.
- Disconnect, remove and dispose of the power to the exterior sand silo. Disconnect at the nearest junction box or at power source. Remove all associated conduit, wire, hangers, junction boxes, etc.
- Disconnect, remove and salvage the electrical to the existing Liebert air condition and condensing units located along the West elevation between Column Lines 4-5. Save all components for reinstallation.
- Disconnect, remove and properly dispose of surface mounted and recessed light fixtures within the limits of the interior demolition or where indicated for all levels. Disconnect at the nearest junction box or at power source. Remove all associated conduit, wire, hangers, junction boxes, etc.

- Disconnect and remove back to the nearest source all electrical devices (recessed and surface mounted) as well as surface mounted raceways and wire ways along the curtain wall system or within the limits of the interior demolition for all levels. Disconnect at the nearest junction box or at power source. Remove all associated conduit, wire, hangers, junction boxes, mounting brackets, etc.
  - Disconnect and remove all surface mounted voice data raceways and drops along the curtain wall system or within the limits of the interior demolition for all levels. Remove all raceways, cabling, supports, bridging rings, etc. back to the data cabinets.
  - Disconnect and remove all obsolete voice cables and punch down blocks within the limit of the interior demolition of Room 2-207. Coordination will be needed with GM IT on the relocation of any active circuits.
  - Disconnect and remove all security devices along the curtain wall system or within the limits of the interior demolition for all levels. Disconnect at the nearest junction box or at power source. Remove all associated conduit, wire, hangers, junction boxes, etc.
  - There are some existing light fixtures, electrical devices, communication devices, security panels, VFDs, power or controls for lab equipment, etc. indicated to be removed and relocated beyond the limits of the interior demolition for all levels. Remove all associated conduit, wire, hangers, junction boxes, etc. left behind as a result of the device relocation.
  - Disconnect and remove all controls and power to existing fume hoods, canopy hoods, exhaust fans, and specified lab equipment within the limits of the interior demolition for all levels. Disconnect at the nearest junction box or at power source. Remove all associated conduit, wire, hangers, junction boxes, etc.
  - Disconnect and remove all controls and power to existing mechanical equipment to be disposed of within the limits of the interior demolition for all levels. Disconnect at the nearest junction box or at power source. Remove all associated conduit, wire, hangers, junction boxes, etc.
  - Existing grounding bus and connections along the curtain wall system within the Substation Room shall remain. Install on a Uni-strut support system with insulators.
  - Furnish and install exterior light fixtures at each of the perimeter pedestrian and vertical lift doors. Field investigate available power source from within the local area.
  - Furnish and install power, controls and security at the new vertical lift door along the North elevation between Column Lines B-C. Extend existing circuitry for power connection and field investigate additional power sources and security from available circuitry within the local area.
  - Furnish and install all necessary arc flash labeling.
  - Furnish and install all field labeling for circuits, receptacles, disconnects, panels, etc.
  - Furnish and install new updated typed panel schedules.
- D. Mock-Up: A full-size, physical example of one bay is to be assembled for each building to illustrate finishes and materials. Mock-ups are used to demonstrate aesthetic effects, qualities of materials and execution, and to review construction, coordination, testing, or operation; they are not Samples. Mock-ups establish the standard by which the Work will be judged. Refer to Section 01400 Quality Requirements for further details of mock-up requirements.

1. Contractor shall pay close attention to the quality and workmanship of the materials as well as installation of the replacement T-steel to ensure the gaps on either side of the porcelain panels and glass are within a tolerance of 1/2" or less.

## 1.2 CONTRACTS

- A. Project will be constructed under a general construction contract.

## 1.3 CODES AND ORDINANCES

- A. All work shall conform to the latest edition of applicable national, state, and local codes as well as any administrative authority having jurisdiction.

## 1.4 WORK UNDER OTHER CONTRACTS

- A. Separate Contract: Owner has awarded, or is in the process of awarding, a separate contract(s) for performance of certain construction operations at the Project site. Those operations will be conducted simultaneously with work under this Contract. This contract(s) includes the following:
  1. Air Monitoring: A separate contract will be awarded to the successful bidder for air monitoring services related to RSB "T" Bridge Renovation and RML Curtain Wall Replacement asbestos and lead paint abatement activities, as needed.
  2. RSB Loading Dock 7 Renovation: A separate contract has been awarded to Brenca Contractors for performing the renovation of the existing Loading Dock 7 and adjacent freight elevator area to include civil, architectural and structural modifications as well as complete infrastructure upgrades.
  3. RSB Loading Dock 7 Nitrogen Piping Reconfiguration: A separate contract has been awarded to Praxair for the installation of a new scale and manifold nitrogen dispensing station as well as reconfiguring the nitrogen piping from the existing storage tanks into the renovated Loading Dock 7 area.
  4. RML Freight Elevator Upgrades: A separate contract has been awarded to Otis Elevator, through Knight Facilities, for upgrading the existing RML freight elevator to include new hydraulic pumping units, controllers, elevator doors, etc.
- B. Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract.

## 1.5 OWNER-FURNISHED PRODUCTS

- A. Owner will furnish all of the porcelain encased insulated panels, clear vision glass, "Hammer" glass, Hope's steel window frames, vertical lift door, and FRP pedestrian doors and hardware for the RML Building ONLY. The Contractor's Work includes providing support systems to uncrate, relocate and install all necessary plumbing, mechanical, and electrical connections.
  1. The materials have already been delivered to the site and are staged within storage containers in the R&D Dock 7 courtyard area.
  2. Contractor shall inspect delivered items for damage prior to handling and installation
  3. If Owner-furnished items are damaged, defective, or missing, Owner will arrange for replacement.
  4. Owner will arrange for manufacturer's field services and for delivery of manufacturer's warranties to Contractor.

5. Contractor shall review Shop Drawings, Product Data, and Samples and return them to Construction Manager noting discrepancies or anticipated problems in use of product.
6. Contractor is responsible for unloading, handling and transporting Owner-furnished items from the storage containers to the installation site.
7. Contractor is responsible for protecting Owner-furnished items from damage during storage and handling, including damage from exposure to the elements.
8. If Owner-furnished items are damaged as a result of Contractor's operations, Contractor shall repair or replace them.

#### 1.6 JOB CONDITIONS

- A. Prior to proposal submission, examine the project site in accordance with the requirements of the General Conditions to ascertain existing conditions under which the work is to be performed, and become familiar with all requirements necessary for the proper performance of the Work.
- B. Start of work indicates acceptance of all existing conditions and work in place.

#### 1.7 GENERAL SCOPE OF WORK AND REQUIREMENTS

- A. Provide all labor, materials, equipment, supervision and services required to execute and complete, including but not limited to, all items of work in connection with furnishing and installing the work as generally indicated in this section, including incidental items to effect a finished and complete job, even though such items are not particularly mentioned herein.
- B. The project consists of the work as indicated on the Contract drawings and Specifications.
- C. Prior to starting work, the Contractor shall inspect the existing conditions and notify the Construction Manager and Owner of any discrepancies from the bid information.
- D. The work shall be conducted with prime consideration given to the requirements specified herein, and to this end the Contractor shall maintain close coordination and cooperation with the Owner at all times.
- E. Work shall be carried out in such a way as to cause minimum annoyance and inconvenience to the Owner.
- F. Coordination and cooperate with work of other trades involved in the connecting, installation, rerouting, and/or maintenance of existing active and inactive mechanical or electrical lines, pipes, conduits, fixtures, etc.
- G. Provide and maintain temporary protection or barricades as required to prevent injury to personnel and the public due to operations specified herein.
- H. Utilities or services that are encountered shall be protected against damage until removed, relocated, or abandoned. Provided notification to the Owner prior to commencing any work around existing services or utilities. Major utilities cannot be shut down during the Owner's normal operating hours. All shutdowns shall be scheduled and coordinated with the Owner during off-hours.

- I. The Contractor shall observe safety procedures for working on various electrical systems, including, but not limited to, the use of safety tags, safety locks and grounding devices.
- J. The Contractor shall supply all temporary utilities (electrical power, lighting, compressed air, water, etc.) that are not available, or cannot be made available at the work site, as required to complete the work of this contract.

#### 1.8 OWNER'S AGENT'S REFERENCED DOCUMENTS

- A. The Contractor is responsible for obtaining and conforming to referenced General Motors standards, specifications and guidelines, which can be obtained from the following:
  - 1. The following documents can be obtained through Boise Cascade Office Products (586) 758-7750.
    - a. SAE HS-1738, SAE Electrical Standard for Industrial Machinery Supplement to NFPA 79
    - b. Office Planning and Design Guidelines, GM-2300
    - c. Specification SL1.0, General Motors Corporation Sound Level Specification for the Purchase of Machinery and Equipment (GM-1619)
  - 2. All other GM WFG reference materials can be obtained via the intranet/internet.
    - a. GM employees and Contract personnel may access these documents by the way of the intranet through Socrates.
    - b. All others may access these documents by visiting [www.gmsupplypower.com](http://www.gmsupplypower.com).
    - c. If you are not already registered with GM Supply Power, you may do so by going to [www.gmsupplypower.com](http://www.gmsupplypower.com) and selecting the "Register" button. Complete and submit the form for the Supplier Enrollment as directed. Allow two weeks for approval and receipt of your I.D. and Password.

#### 1.9 INDUSTRY STANDARDS

- A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.
- B. Publication Dates: Comply with standards in effect as of the date of the Contract Documents, unless otherwise indicated.
- C. Conflicting Requirements: Where compliance with 2 or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Architect/Engineer for a decision before proceeding.
  - 1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to Architect/Engineer, Owner or Construction Manager for a decision before proceeding.



- D. Copies of Standards: Each entity engaged in construction on the Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.
1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source and make them available on request.
- E. Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. Where abbreviations and acronyms are used in the Specifications or other Contract Documents, they mean the recognized name of a trade association, standards-generating organization, authorities having jurisdiction, or other entity applicable to the context of the text provision. Refer to Gale Research Inc.'s "Encyclopedia of Associations", which is available in most libraries.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION 01100

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