

الجمهورية اللبنانية

وزارة الثقافة

الملحق رقم 6

المواصفات الفنية

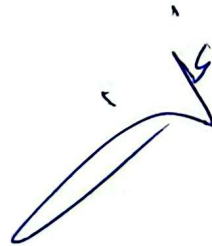
أعمال تأهيل سطح قصر الاونيسكو



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SECTION 011000 - SUMMARY

PART 1- GENERAL

1.01 PROJECT

- A. Project Name: UNESCO Palace Roof Rehabilitation
- B. Employer's Name: Ministry of Culture (MOC).
- C. Engineer's Name: to be appointed by the Employer.
- D. The Project consists of the rehabilitation of the existing roof by removing all unused equipment and re-roofing.

1.02 CONTRACT DESCRIPTION

- A. Contract Type: A single prime contract based on fixed unit prices and re-measured quantities as described in the Contract Documents.

1.03 DESCRIPTION OF ALTERATIONS WORK

- A. Scope of demolition and removal work is indicated on drawings and specified in Section 024100.

1.04 OWNER OCCUPANCY

- A. Employer intends to continue to occupy adjacent portions of the existing building during the entire project period.
- B. Schedule the Work to accommodate Employer occupancy.

1.05 CONTRACTOR USE OF SITE AND PREMISES

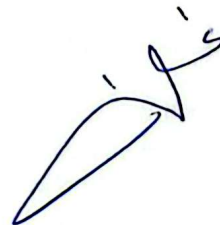
- A. Construction Operations: Limited to areas noted on Drawings.
 - 1. Locate and conduct construction activities in ways that will limit disturbance to site.
- B. Provide access to and from site as required by law and by Employer:
 - 1. Emergency Building Exits During Construction: Keep all exits required by code open during construction period; provide temporary exit signs if exit routes are temporarily altered.
 - 2. Do not obstruct roadways, sidewalks, or other public ways without permit.
- C. Existing building spaces may not be used for storage.
 - 1. Use designated storage area for the purpose of storing removed/dismantled materials and equipment, as directed by the Employer.
- D. Time Restrictions:
 - 1. Refer to Section 015600 Safety and Environmental Requirements
- E. Utility Outages and Shutdown:
 - 1. Limit disruption of utility services to hours the building is unoccupied.
 - 2. Do not disrupt or shut down life safety systems, including but not limited to fire sprinklers and fire alarm system, without 7 days notice to Employer and authorities having jurisdiction.
 - 3. Prevent accidental disruption of utility services to other facilities.

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PART 2- PRODUCTS - NOT USED

PART 3- EXECUTION - NOT USED

END OF SECTION 011000



SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

PART 1- GENERAL

1.01 SECTION INCLUDES

- A. Insurance
- B. General administrative requirements.
- C. Project Manager
- D. Resident Site Supervisor
- E. Preconstruction meeting.
- F. Progress meetings.
- G. Contractor's daily reports.
- H. Photographs of existing situation
- I. Progress photographs.
- J. Submittals for review, information, and project closeout.
- K. Requests for Interpretation (RFI) procedures.
- L. Submittal procedures.

1.02 INSURANCE

- A. Workmen's Compensation Insurance Policy:
 - 1. To be issued by a reputable and accredited institution operating in the Lebanese market since more than 20 years.
 - 2. Policy shall be in accordance with Lebanese Labor Law decree no. 136 dated 16/09/1983.
 - 3. Insurance shall cover all employees, technicians, laborers, day hires of the Contractor, subcontractors, Employer, and Engineer,
 - 4. Insurance shall be against work accidents while engaged directly or indirectly in the construction works.
 - 5. Policy shall be issued to the order of Contractor, Employer, Engineer, and/or contractors and / or subcontractors.
 - 6. Particulars of the insurance policy shall be no less than the following:
 - a. Maximum liability shall be no less than \$25,000 per accident and \$100,000 in the aggregate.
 - b. The insured are to be treated at 2nd class hospitalization (if site workers) or 1st class hospitalization (if engineering or managerial staff) at reputable hospitals.
 - c. Cover shall be extended to include weekends, public holidays, night shifts, and overtime.
 - d. Cover shall be extended to include hernia, lumbago, and muscular strain up to \$5,000.
 - e. Waiver of subrogation against Contractor and/or subcontractors.
 - f. Insured shall be covered while commuting anywhere in Lebanon and from their residence to work places and vice versa.
- B. Third Party Insurance (including Employer's property): Provide and maintain throughout the duration of the Works. The coverage should be in accordance with the following:

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1. To be issued by a reputable and accredited institution operating in the Lebanese market since more than 20 years.
2. Limit of coverage is \$50,000 coverage per occurrence and in the aggregate.
3. Waiver of subrogation against Contractor and/or subcontractors.
4. Cover shall be extended to include weekends, public holidays, night shifts, and overtime.

1.03 GENERAL ADMINISTRATIVE REQUIREMENTS

A. Make the following types of submittals to Engineer:

1. Requests for Interpretation (RFI).
2. Requests for substitution.
3. Test and inspection reports.
4. Design data.
5. Manufacturer's instructions and field reports.
6. Applications for payment and change order requests.
7. Progress schedules.
8. Coordination drawings.
9. Correction Punch List and Final Correction Punch List for Substantial Completion.
10. Closeout submittals.

1.04 PROJECT MANAGER

- A. Nominate for Engineer's approval a Project Manager to act as the single point of contact and to represent the Contractor in all project-related activities.
- B. Project Manager is to have 10 years' experience in similar projects.
- C. Project Manager is to remain assigned on full-time basis to the project for the duration of site activities.

1.05 RESIDENT SITE SUPERVISOR

- A. Appoint for Engineer's approval a resident site supervisor to act as the Contractor's site representative.
- B. Site Supervisor is to be present in the premises at all times whenever site works are in progress.
- C. Site Supervisor is to have 15 years' experience in similar project.

PART 2- PRODUCTS - NOT USED

PART 3- EXECUTION

3.01 DAILY CONSTRUCTION REPORTS

- A. Include only factual information. Do not include personal remarks or opinions regarding operations and/or personnel.
- B. In addition to transmitting electronically a copy to Employer and Engineer, submit two printed copies at weekly intervals.
- C. Prepare a daily construction report recording the following information concerning events at Project site and project progress:



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1. Date.
2. High and low temperatures, and general weather conditions.
3. List of subcontractors at Project site.
4. List of separate contractors at Project site.
5. Approximate count of personnel at Project site.
 - a. Include a breakdown for supervisors, laborers, journeymen, equipment operators, and helpers.
6. Major equipment at Project site.
7. Material deliveries.
8. Safety, environmental, or industrial relations incidents.
9. Meetings and significant decisions.
10. Unusual events (submit a separate special report).
11. Stoppages, delays, shortages, and losses. Include comparison between scheduled work activities (in Contractor's most recently updated and published schedule) and actual activities. Explain differences, if any. Note days or periods when no work was in progress and explain the reasons why.
12. Testing and/or inspections performed.
13. List of verbal instruction given by Employer and/or Engineer.
14. Signature of Contractor's authorized representative.

3.02 PHOTOGRAPHS OF EXISTING SITUATION

- A. A Photographic Survey of the existing situation in all accessible areas of the premises is required.
- B. It is the Contractor's responsibility to ensure that no undue damage is incurred on areas within the premises that will not receive any alteration work. The Contractor will restore any damages at his own cost.
- C. It is the Contractor's responsibility to provide any additional photographic record for the existing premises.
- D. Prior to any site mobilization and any work being performed on site, provide photographs clearly documenting the existing conditions and highlighting the elements that deviate from the Employer's Photographic Survey.

3.03 REQUESTS FOR INTERPRETATION (RFI)

- A. Whenever possible, request clarifications at the next appropriate project progress meeting, with response entered into meeting minutes, rendering unnecessary the issuance of a formal RFI.
- B. Preparation: Prepare an RFI immediately upon discovery of a need for interpretation of Contract Documents. Failure to submit a RFI in a timely manner is not a legitimate cause for claiming additional costs or delays in execution of the work.
 1. Prepare a separate RFI for each specific item.
 - a. Review, coordinate, and comment on requests originating with subcontractors and/or materials suppliers.
 - b. Do not forward requests which solely require internal coordination between subcontractors.

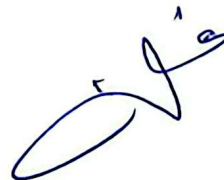
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2. Prepare in a format and with content acceptable to Employer.
- C. Reason for the RFI: Prior to initiation of an RFI, carefully study all Contract Documents to confirm that information sufficient for their interpretation is definitely not included.
- D. Content: Include identifiers necessary for tracking the status of each RFI, and information necessary to provide an actionable response.
- E. Attachments: Include sketches, coordination drawings, descriptions, photos, submittals, and other information necessary to substantiate the reason for the request.
- F. RFI Log: Prepare and maintain a tabular log of RFIs for the duration of the project.
- G. Review Time: Engineer will respond and return RFIs to Contractor within seven calendar days of receipt. For the purpose of establishing the start of the mandated response period, RFIs received after 12:00 noon will be considered as having been received on the following regular working day.

3.04 SUBMITTAL REVIEW

- A. Engineer's actions on items submitted for review:
 1. Authorizing purchasing, fabrication, delivery, and installation:
 - a. "Approved".
 - b. "Approved as Noted, Resubmission not required".
 1. At Contractor's option, submit corrected item, with review notations acknowledged and incorporated.
 - c. "Approved as Noted, Resubmit for Record".
 2. Resubmit corrected item, with review notations acknowledged and incorporated. Resubmit separately, or as part of project record documents.
 2. Not Authorizing fabrication, delivery, and installation:

END OF SECTION 013000



SECTION 013553 - SECURITY PROCEDURES

PART 1- GENERAL

1.01 SECTION INCLUDES

- A. Security measures including entry control, personnel identification, and miscellaneous restrictions.

1.02 RELATED REQUIREMENTS

- A. Section 015600 - Safety and Environmental Requirements

1.03 ENTRY CONTROL

- A. Restrict entrance of persons and vehicles into Project site and existing facilities.
- B. Submit to the Client a list of authorized representatives and personnel, including site workers and technical crews with ID copies.
- C. Allow entrance only to authorized persons with proper identification.
- D. Maintain log of workers and visitors, make available to Employer on request.
- E. Contractor shall control entrance of persons and vehicles related to Employer's operations.

1.04 PERSONNEL IDENTIFICATION

- A. Provide identification badge to each person authorized to enter premises.
- B. Maintain a list of accredited persons, submit copy to Employer on request.

1.05 RESTRICTIONS

- A. Do not allow cameras on site or photographs taken except by written approval of Employer.

PART 2- PRODUCTS - NOT USED

PART 3- EXECUTION - NOT USED

END OF SECTION 013553



SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1- GENERAL

1.01 SECTION INCLUDES

- A. Temporary utilities.
- B. Temporary sanitary facilities.
- C. Temporary Controls: Barriers, enclosures, and fencing.
- D. Security requirements.
- E. Waste removal facilities and services.

1.02 RELATED REQUIREMENTS

- A. Section 013553 - Security Procedures

1.03 TEMPORARY UTILITIES

- A. Provide and pay for all electrical power, lighting, and water required.

1.04 TEMPORARY SANITARY FACILITIES

- A. Use of existing facilities located at Employer's premises is not permitted.

1.05 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to prevent access to areas that could be hazardous to workers or the public, to allow for owner's use of site and to protect existing facilities and adjacent properties from damage from construction operations and demolition.
- B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.
- C. Protect non-owned vehicular traffic, stored materials, site, and structures from damage.

1.06 FENCING

- A. Provide 1.8 m high fence around construction site; equip with vehicular and pedestrian gates with locks.

1.07 SECURITY - SEE SECTION 013553

- A. Provide security and facilities to protect Work, existing facilities, and Employer's operations from unauthorized entry, vandalism, or theft.

1.08 VEHICULAR ACCESS AND PARKING

- A. Coordinate access and haul routes with governing authorities and Employer.
- B. Provide and maintain access to fire hydrants, free of obstructions.
- C. Existing parking areas may be used for construction parking.

1.09 WASTE REMOVAL

- A. Provide waste removal facilities and services as required to maintain the site in clean and orderly condition.
- B. Provide containers with lids. Remove trash from site periodically.
- C. If materials to be recycled or re-used on the project must be stored on-site, provide suitable non-combustible containers; locate containers holding flammable material outside the structure unless otherwise approved by the authorities having jurisdiction.
- D. Open free-fall chutes are not permitted. Terminate closed chutes into appropriate containers with lids.

1.10 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, materials, prior to Date of Substantial Completion inspection.
- B. Clean and repair damage caused by installation or use of temporary work.
- C. Restore existing facilities used during construction to original condition.

PART 2- PRODUCTS - NOT USED

PART 3- EXECUTION - NOT USED

END OF SECTION 015000



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PART 2- PRODUCTS - NOT USED

PART 3- EXECUTION - NOT USED

END OF SECTION 015000



SECTION 015600 - SAFETY AND ENVIRONMENTAL REQUIREMENTS

PART 1- GENERAL

1.01 SECTION INCLUDES

- A. This section covers the safety and environmental requirements governing in the project.

1.02 GENERAL REQUIREMENTS

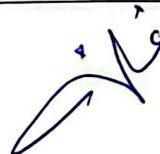
- A. Maintain full compliance with these requirements throughout the duration of the project.
- B. Maintain full compliance with governing laws and regulations in the locality of the project.
- C. Ensure that all Contractor's representatives are familiarized with these requirements and fully understand and abide by them.
- D. Take all measures necessary, whether mentioned explicitly, implied, or not mentioned in these requirements, to ensure the safety of all personnel, authorized visitors, and concerned individuals on the project.
- E. Take all measures necessary, whether mentioned explicitly, implied, or not mentioned in these requirements, to ensure upkeep of environmental conditions in and around the site.
- F. Avoid damage or nuisance to neighboring properties and individuals.

1.03 MANDATORY COMPLIANCE WITH SAFETY & ENVIRONMENTAL REQUIREMENTS

- A. Ensure compliance with these requirements of subcontractors, personnel, and concerned individuals throughout the execution of the project.
- B. Comply with the Engineer's written and verbal instructions pertaining to these requirements as soon as practicable upon their issuance.
- C. Whenever Contractor is required to obtain public permit(s), Engineer's approval, or similar, such permit or approval shall not relieve the Contractor from his obligations under these and other Contract Documents.
- D. Instructions related to safety and environmental requirements and pertaining to these Specifications shall not entitle Contractor to additional time and cost remuneration.
- E. Implement a positive and constructive approach towards safety and environmental matters throughout Contractor's organization.

1.04 NON-COMPLIANCE WITH SAFETY & ENVIRONMENTAL REQUIREMENTS

- A. The Engineer may request a local suspension of the works in case of non-compliance with these requirements until such conditions are met that warrant resumption.
- B. The Engineer may, at his discretion, notify Contractor of deductions applicable to the Contractor's payments as stipulated below. Such notice shall specify the location, nature, period, amount of deduction, and remedy of each occurrence. The notice shall also specify a reasonable deadline within which the Contractor is required to remedy the situation.



C. Failure of the Contractor to comply with the Engineer's notice shall result in the deduction of the indicated amounts repeatedly until compliance of the Contractor is met.

D. Deductions from payment shall be as follows:

1. Type A - occurrences related to safety of personnel: USD 500/occurrence/day
2. Type B - occurrences related to environmental control: USD 100/occurrence/day

E. An occurrence is defined as the incidence of one element of non-compliance in one location. The definition of an "occurrence" shall be at the Engineer's discretion and in accordance with these requirements.

F. The maximum cumulative amount to be deducted from the Contractor's payment is 1% of the Contract Price. The Client is entitled to terminate the Contract beyond such a limit.

G. The Engineer and/or Employer may, upon written notice to the Contractor, arrange for third parties to provide the measures, equipment, items, or works necessary to achieve compliance with these requirements. Such actions shall not diminish the Contractor's obligations under the Contract Documents.

1.05 SAFETY OFFICER

A. Appoint a full-time Safety Officer who shall be responsible for compliance with these requirements and coordinating with the delegated authority(ies) to take any action or measure necessary for their comprehensive implementation.

B. Safety Officer shall be held accountable for compliance with these requirements.

C. Safety Officer shall conduct daily site safety inspections to ensure that these requirements are met. His observations shall be recorded in a site diary which will be kept available for the Engineer's review.

1.06 SAFETY REPORTING

A. Report any accident or dangerous occurrence to the Engineer.

B. Reportable accidents or dangerous occurrences shall include accidents (or the potentiality of accidents) to persons which result in medical intervention or in an interruption in the work.

C. Include witness statements and relevant information (diagrams, plans, photos, official reports, etc.).

D. Comply with local legal and statutory requirements governing in the event of an accident to persons or property.

E. Report to the Engineer any accidents or dangerous occurrences observed on the site and related to these requirements.

1.07 SIGNAGE

A. Provide adequate signage in clear English and Arabic letters indicating a hazardous substances or dangerous situations.

B. Provide instructions in English and Arabic about the handling of hazardous substances or dangerous situations.

1.08 FIRST AID FACILITIES

- A. Maintain adequate first aid facilities on site at all times throughout the duration of the project.
- B. Maintain personnel trained in first aid on site at all times throughout the duration of the project.
- C. Liaise with appointed medical facility and ensure immediate notification and dispatching of emergency medical staff when necessary.

1.09 PERSONAL PROTECTION

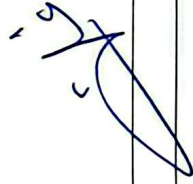
- A. Maintain an adequate stock of personal equipment for the use of all site personnel and visitors including hard helmets, safety goggles, safety gloves, anti-static safety shoes, mufflers, harnesses, etc.
- B. Ensure that all personal safety equipment is certified by and compliant with locally governing regulations. If no local regulations exist, the Engineer shall be considered the authority of reference.
- C. Ensure that hard helmets and anti-static safety shoes are worn throughout the site at all times during the project.
- D. Ensure that safety goggles are worn at least by personnel carrying out hammering, chipping, grinding, insulation handling, spray painting, welding, and other activities with the potential for eye injuries.
- E. Ensure that safety gloves are worn at least by personnel carrying out steel reinforcement handling, work with corrosive or toxic, materials, acids, and other activities with the potential for skin damage.
- F. Ensure that all safety shoes are reinforced (steel toe) and anti-static.
- G. Ensure that mufflers are worn at least by personnel carrying out activities with high noise levels (90 decibels and above).
- H. Ensure that all personnel carrying out work on scaffolding shall wear safety belts at all times throughout the duration of the project.

1.10 LADDERS

- A. Use only manufactured ladders meeting applicable local regulations and the Engineer's approval.
- B. Do not use ladders made on the site.
- C. Maintain ladders steps clean and free of dust and oil at all time throughout the duration of the project.

1.11 EDGES AND OPENINGS

- A. Equip all floor edges, riser openings, elevator shafts, etc. with secure railing to the Engineer's approval.
- B. In case no railing is possible, keep site personnel clear of the unsecure edge by preventive means (e.g. locked access doors to the floor, etc.). Provide warning signs.



1.12 SITE ELECTRICAL FACILITIES

- A. Comply with locally governing regulations related to temporary electrical installations. If no local regulations exist, the Engineer shall be considered the authority of reference.
- B. Erect temporary electrical facilities by qualified technicians supervised by an electrical engineer.
- C. Periodically inspect and maintain temporary electrical facilities.
- D. Use only properly earthed electrical power equipment.
- E. Use only sheathed wired and securely fastened power sockets.
- F. Keep all equipment clear of running water.

1.13 WELDING TOOLS

- A. Use only equipment in sound working condition. No depleted equipment is allowed on the site.
- B. Ensure that only trained personnel carry out welding activities.
- C. Store flammable material in secure locations accessible only by designated personnel.
- D. Use spark arrestors on all gas welding equipment.

1.14 FIRE PROTECTION AND PREVENTION

- A. Generally, take all measures necessary to prevent the outbreak of fire on the project site.
- B. Train personnel in the use of the extinguishers.
- C. Provide vendor's verifications and certifications at the specified time interval; replace or recharge as appropriate after use.
- D. Turn off fuel-burning engines during re-fueling.
- E. Provide adequate ventilation where solvents or volatile agents are used to prevent the accumulation of flammable vapors.
- F. Store flammable substances away from electrical wires and emergency escapes routes.

1.15 DEMOLITIONS

- A. Submit a detailed method statement for each demolition activity to the Engineer.
- B. Use only manual means. The use of explosives is not allowed on the project.

1.16 POLLUTION

- A. Maintain the site clean from debris and rubbish at all times throughout the duration of the project.
- B. Take all measures necessary to limit pollution from dust and any air-borne materials throughout the duration of the project.
- C. Cover all vehicle-carried material with proper sheet to prevent discharge on the street.
- D. Comply with locally applicable regulations related to removal and disposal of waste and refuse material from the site.
- E. No waste shall be burned on site.

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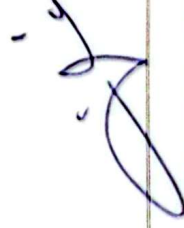
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- F. Where excavation activities are ongoing, provide exit gate from the site with a pressurized water jet cleaning station. Remove accumulated excavated material from pneumatic tyres to avoid its discharge on the street.
- G. Maintain site methods that minimize, to the extent possible, noise and disruption to neighbors. Use only equipment in good condition and equipment with adequate silencers. Schedule work during working hours.

PART 2- PRODUCTS - NOT USED

PART 3- EXECUTION – NOT USED

END OF SECTION 015600



SECTION 024100 - DEMOLITION

PART 1- GENERAL

1.01 SECTION INCLUDES

A. Selective demolition of built site elements.

1. Dismantling and removal of existing roof-mounted chillers, air handling units (AHUs), pumps, ductwork, piping, valves, fittings, insulation, and associated accessories.
 2. Isolation and disconnection of all electrical power and control cabling associated with the HVAC systems.
 3. Draining and disposal of chilled water and condensate lines.
 4. Safe recovery and storage of refrigerant gases.
 5. Lifting, removal, and storage (where designated on the Drawings) of salvageable equipment.
 6. Removal and disposal of redundant ducts, pipes, fittings, and insulation.
 7. Preservation of duct stubs (MELs) for reconnection to new equipment.
- ##### B. Removal of existing utilities and utility structures.

1.02 RELATED REQUIREMENTS

- A. Section 011000 - Summary: Limitations on Contractor's use of site and premises.
- B. Section 015000 - Temporary Facilities and Controls: Site fences, security, protective barriers, and waste removal.

1.03 DEFINITIONS

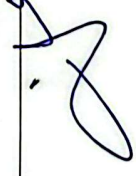
- A. Demolition: Dismantle, raze, destroy or wreck any building or structure or any part thereof.
- B. Remove: Detach or dismantle items from existing construction and dispose of them off site, unless items are indicated to be salvaged or reinstalled.
- C. Remove and Salvage: Detach or dismantle items from existing construction in a manner to prevent damage. Clean, package, label and deliver salvaged items to Employer in ready-for-reuse condition.

1.04 REFERENCE STANDARDS

- A. ASHRAE Standard 15 – Safety Standard for Refrigeration Systems.
- B. OSHA / EN Safety Standards for Lifting and Rigging.
- C. ISO 5149 – Refrigerating Systems – Safety and Environmental Requirements.
- D. Local Environmental Regulations for refrigerant recovery and disposal.
- E. Local Municipality and Building Authority Safety Requirements for crane operations.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Submit the following before commencement:



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1. Method Statement for dismantling works.
 2. Risk Assessment and Safety Plan.
 3. Lift Plan and Crane Certificates.
 4. Certificates of Calibration for lifting gear and tools
 5. Waste Disposal Plan and Environmental Compliance Certificates.
 6. Refrigerant Recovery Log.
- C. Site Plan: Indicate:
1. Areas for temporary and permanent placement of removed materials.
- D. Project Record Documents: Accurately record actual locations of capped and active utilities and subsurface construction.

1.06 QUALITY ASSURANCE

- A. All dismantling works shall be executed under the supervision of qualified mechanical and electrical engineers designated by the Contractor and approved by the Employer.
- B. All lifting operations shall be supervised by a certified rigger and crane operator.
- C. Daily toolbox meetings shall be conducted to review safety procedures.

PART 2- PRODUCTS – NOT USED

PART 3- EXECUTION

3.01 PREPARATION

- A. Conduct site survey of all equipment, connections, and lifting points.
- B. Identify and mark all services to be retained for reconnection.
- C. Coordinate dismantling schedule with waterproofing activity.
- D. Obtain necessary permits for lifting, electrical isolation, and hot works.

3.02 DISMANTLING PROCEDURES

A. Electrical Isolation and Disconnection

1. Isolate, lock, and tag all electrical supplies before dismantling.
2. Disconnect and cap all cables using insulated tools.
3. Secure and label cable ends to avoid accidental energization.

B. Draining and Fluid Recovery

1. Drain chilled water circuits completely and discharge into designated drains.
2. Recover refrigerant from chillers into approved cylinders by certified technicians.
3. Cap and seal all disconnected pipes.

C. Mechanical Dismantling

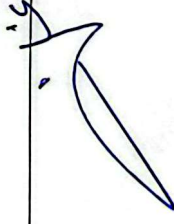
1. Disconnect chilled water piping, leaving stubs for future connection.
2. Disconnect ductwork from AHUs and preserve main duct stubs (MELs).
3. Remove pumps, AHUs, and chillers sequentially using cranes.
4. Cut pipes and ducts into manageable lengths for removal and disposal.
5. Remove supports, hangers, and insulation materials.



6. Demolish concrete bases, remove and cart-away debris to approved dump site.
- D. Lifting and Removal
 1. Lift equipment using certified cranes and rigging gear.
 2. Ensure all lifting points are checked for structural stability.
 3. Lower dismantled equipment to ground level and transport to designated storage area.
- E. Storage and Disposal
 1. Store salvaged equipment (chillers, pumps, AHUs) in designated yard for future tender/reuse.
 - a. Protect stored equipment with tarps, secure for weather and elements.
 2. Dispose of non-reusable ducts, pipes, and fittings in licensed waste facilities.
 3. Submit waste disposal certificates to the Engineer.
 4. Hazardous materials (insulation, oils, refrigerant residues) shall be handled per environmental laws.
- F. Documentation: Submit the following upon completion:
 1. As-built documentation showing retained stubs and MELs.
 2. Certificates for refrigerant recovery and waste disposal.
 3. Dismantling Completion Report with photographic records.

3.03 GENERAL PROCEDURES AND PROJECT CONDITIONS

- A. Comply with applicable codes and regulations for demolition operations and safety of adjacent structures and the public.
 1. Obtain required crane permits, truck licenses, debris site authorizations, etc.
 2. Take precautions to prevent catastrophic or uncontrolled collapse of structures to be removed; do not allow worker or public access within range of potential collapse of unstable structures.
 3. Provide, erect, and maintain temporary barriers and security devices.
 4. Conduct operations to minimize effects on and interference with adjacent structures and occupants.
 5. Do not close or obstruct roadways or sidewalks without permits from authority having jurisdiction.
 6. Conduct operations to minimize obstruction of public and private entrances and exits. Do not obstruct required exits at any time. Protect persons using entrances and exits from removal operations.
 7. Obtain written permission from owners of adjacent properties when demolition equipment will traverse, infringe upon, or limit access to their property.
- B. Do not begin removal until receipt of notification to proceed from Employer.
- C. Protect existing structures and other elements to remain in place and not removed.
 1. Provide bracing and shoring.
 2. Prevent movement or settlement of adjacent structures.



AS

3. Stop work immediately if adjacent structures appear to be in danger.

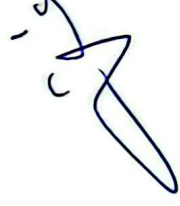
3.04 EXISTING UTILITIES

- A. Coordinate work with utility companies. Notify utilities before starting work, comply with their requirements, and obtain required permits.
- B. Protect existing utilities to remain from damage.
- C. Do not disrupt public utilities without permit from authority having jurisdiction.
- D. Do not close, shut off, or disrupt existing life safety systems that are in use without at least 7 days prior written notification to Employer.
- E. Do not close, shut off, or disrupt existing utility branches or take-offs that are in use without at least 3 days prior written notification to Employer.
- F. Locate and mark utilities to remain; mark using highly visible tags or flags, with identification of utility type; protect from damage due to subsequent construction, using substantial barricades if necessary.
- G. Remove exposed piping, valves, meters, equipment, supports, and foundations of disconnected and abandoned utilities.

3.05 DEBRIS AND WASTE REMOVAL

- A. Remove debris, junk, and trash from site.
- B. Leave site in clean condition, ready for subsequent work.
- C. Clean up spillage and wind-blown debris from public and private lands.

END OF SECTION 024100



SECTION 075200 - MODIFIED BITUMINOUS MEMBRANE ROOFING

PART 1- GENERAL

1.01 SECTION INCLUDES

- A. Modified bituminous roofing membrane, conventional application.

1.02 RELATED REQUIREMENTS

- A. Section 024100 - Demolitions

1.03 REFERENCE STANDARDS

- A. EN 12311-1:1999 - Flexible sheets for waterproofing - Part 1.
B. EN 1109:2013 - Flexible sheets for waterproofing.
C. EN 12730:2015 - Flexible sheets for waterproofing.
D. EN 965:1995 - Geotextiles and geotextile-related products.
E. EN 964-1:1995 - Geotextiles and geotextile-related products.
F. EN ISO 10319:2015 - Geosynthetics — Wide-width tensile test.
G. EN ISO 12236:2006 - Static puncture test (CBR test).
H. EN ISO 12958-1: Geotextiles and geotextile-related products — Determination of water flow capacity in their plane — Part 1.
I. EN ISO 13438: Geosynthetics — Screening test method for determining the resistance of geotextiles and geotextile-related products to oxidation.
J. EN 1928:2000 - Flexible sheets for waterproofing.
K. EN 12310-1:1999: Flexible sheets for waterproofing - Part 1: Bitumen sheets for waterproofing - Determination of resistance to tearing.
L. EN 13948 (2007): Flexible sheets for waterproofing - Bitumen, plastic and rubber sheets for roof waterproofing - Determination of resistance to root penetration.

1.04 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
B. Product Data: Provide manufacturer's catalog data for membrane and bitumen materials, and any related accessories.
C. Samples: Submit two samples 300 by 300 mm in size illustrating granule surfaced sheet.
D. Submit sample of proposed flashing material.
E. Manufacturer's qualification statement.
F. Installer's qualification statement.
G. Warranty: Submit manufacturer warranty and ensure forms have been completed in Employer's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum fifteen years of documented experience.

- B. Installer Qualifications: Company specializing in performing the work of this section with minimum fifteen years documented experience.

1.06 FIELD CONDITIONS

- A. Do not apply roofing membrane when environmental conditions are outside the ranges recommended by manufacturer.
- B. Do not apply roofing membrane during unsuitable weather.
- C. Do not apply roofing membrane when ambient temperature is below 5 degrees C.
- D. Do not apply roofing membrane to damp or frozen deck surface or when precipitation is expected or occurring.
- E. Do not expose materials vulnerable to water or sun damage in quantities greater than can be weatherproofed the same day.
- F. Schedule applications so that no partially completed sections of roof are left exposed at end of workday.

1.07 WARRANTY

- A. Provide 5-year manufacturer's material and labor warranty to cover failure to prevent penetration of water.

PART 2- PRODUCTS

2.01 MANUFACTURERS

- A. Modified Bituminous Membrane Roofing:

- 1. Bituseal Elastomeric Polymer Bitumen membrane (SBS);
- 2. Or approved equivalent.

2.02 MEMBRANE AND SHEET MATERIALS

- A. Membrane: Polymer modified asphalt, reinforced with nonwoven fabric; granule surfaced; with the following characteristics:

- 1. Reinforcement: Non-woven reinforced polyester fabric.
- 2. Compound: Elastomeric polymer bitumen (SBS).
- 3. 4mm thick.
- 4. Top finish: Slate.
- 5. Lower finish: PE Film.
- 6. Application method: Blowtorch.
- 7. Tensile Strength EN 12311-1 (L/T): 500/400 N/50mm².
- 8. Flexibility at Low Temperature EN1109: -15 degrees C.
- 9. Creep EN1296/1110: 100 degrees C.
- 10. Load Resistance EN12730: 10Kg.

PART 3- EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify deck is supported and secure.

- C. Verify deck is clean and smooth, flat, free of depressions, waves, or projections, properly sloped and suitable for installation of roof system.
- D. Verify deck surfaces are dry and free of snow or ice.
- E. Verify that roof openings, curbs, and penetrations through roof are solidly set, and cant strips are in place.

3.02 INSTALLATION - MEMBRANE

- A. Install modified bituminous membrane roofing system in accordance with manufacturer's recommendations.
- B. Install membrane; lap and seal edges and ends permanently waterproof.
- C. Install smooth, free from air pockets, wrinkles, fish-mouths, or tears. Ensure full bond of membrane to substrate.
- D. At end of day's operation, install waterproof cut-off. Remove cut-off before resuming roofing.
- E. At intersections with vertical surfaces:
 - 1. Extend membrane over cant strips and up a minimum of 203 mm onto vertical surfaces.
 - 2. Apply flexible flashing over membrane.
- F. Around roof penetrations, mop in and seal flanges and flashings with flexible flashing.
- G. Coordinate installation of roof drains and sumps and related flashings.

3.03 FIELD QUALITY CONTROL

- A. Provide daily on-site attendance of roofing manufacturer's representative during installation of this work.
- B. Conduct flood testing of each roof portion by ponding of 50mm deep water.
 - 1. Arrange to separate each portion of the work area by sand or cement ridges of sufficient height.
 - 2. Provide water by own means (not from Employer's local source).
 - 3. Arrange to temporarily block roof drains for the duration of the test.
 - 4. Flood test the roof for 24 hours.

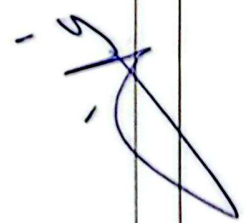
3.04 CLEANING

- A. Remove bituminous markings from finished surfaces.
- B. In areas where finished surfaces are soiled by bitumen or other source of soiling caused by work of this section, consult manufacturer of surfaces for cleaning advice and comply with their documented instructions.
- C. Repair or replace defaced or damaged finishes caused by work of this section.

3.05 PROTECTION

- A. Protect installed roofing and flashings from construction operations.
- B. Where traffic must continue over finished roof membrane, protect surfaces using durable materials.

END OF SECTION 075200

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