

الشركة المتقدمة لتصنيع المعادن و الزجاج  
Advanced Manufacturing for Metal and Glass

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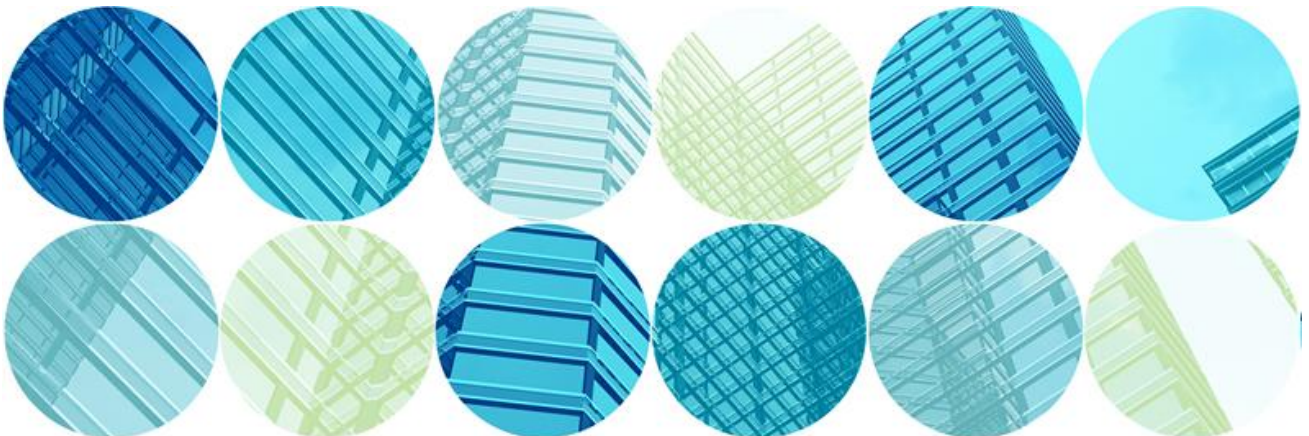
## PROJECT NAME:

Project Client:  
Project Consultant:  
Main Contractor:  
Sub-Contractor:

**AMG COMPANY**

## PREQUALIFICATION DOCUMENT

### (METHOD STATEMENT)



## OPERATING MANUAL

Document No: **AMG-OM-TD-A0-MS-001-00-A**

Date: **27 JULY 2021**

Revision: **00**

Issue Code: **A**

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### 1. Contractor or Sub-contractor Details

Sub-Contractor:

**AMG – Advanced Manufacturing for Metal & Glass Co.**

2<sup>nd</sup> Industrial Area, 16 Street

Dammam – 31414, KSA

013-812 7776

### 2. Scope / Summary of Works

This Method Statement is prepared in accordance with the Aluminum and Glazing related work activities and applies to all work activities associated with this project.

### 3. Programmed Duration of Activities

Detailed project schedule is to be submitted in accordance with the overall project completion schedule date for approval.

### 4. Management Structure/ Resource Responsibilities

The overall works are to be supervised by AMG Co's Project Manager who will report to Client's Construction Managers.

Information and contact detail of the Project Manager is available in the below next section.

### 5. Communication / Contact Details

**AMG Personnel (Proposal):**

Project Manager

Document Controller

Senior HSE Engineer / Officer

For Main Office Support (Dammam):

Technical Manager

Procurement Manager

Production Manager

MO / Document Controller

Jamil Diaz

050 543 0457

### 6. Method Statement

#### 6.1 INTRODUCTION

This Method Statement described the proposed organization, general logistics, and proper installation methodology for the façades works and other associated works of AMG for the project.

Coordination and communication are the vital keys for a proper installation, therefore teamwork is essential, and each member of the teams; from Architect/Consultant to the

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Contractor, to AMG, and to the rest of the subcontractors must understand the needs and the problems of one another (if there is any) to achieve a smooth and efficient works progression.

The purpose of this method statement is to provide and overall understanding of what the works comprise and to ensure this will be implemented properly and carefully monitored on site daily activities. In order of smooth operation this document will be coordinated with the Main Contractor's overall **Construction Program and Planning**.

Note: This is a working document, which may be amending from time to time to suit developments within the works package. Also, it shall be note that specific Safe System of Work (SSOW) and Risk Assessment (RA) will be develop for each of the activities described in this document and that these in turn will be reviewed prior for undertaking the work.

### 6.2 **KEY RESPONSIBILITIES**

#### **PROJECT MANAGER:**

- The responsible for overall installation at site.
- Coordinate with Architect/Consultant and Main Contractor in relation to design issues, site progress, program or schedule of site works, and variations.
- Verify/Discuss RFI's, SI's and other written or verbal instructions from Main Contractor and Architect/Consultant
- Attending scheduled meetings with the Main Contractor and Architect/Consultant.
- Material coordination; ordering and follow up, from issuing orders to production until to site delivery of materials.
- Monitor and execute daily, weekly, and monthly progress report as per project schedule.
- Submit updated work progress and projected site activities to Main Contractor.
- Monitor and implement the PQP of AMG.

#### **DOCUMENT CONTROLLER:**

- General paper and documentation works.
- Documents filing as required by QA/QC procedures.
- Receiving and forwarding all transmittals, submittals and correspondences stamped, as required by QA/QC procedures.
- Performed all types of communication.
- Obtaining all technical information, records, and documents upon the request of the Main Contractor, Architect/Consultant, AMG and other trades.
- Preparation for all type of tracking logs and register of submittals, transmittals and correspondences.

#### **SURVEY TEAM:**

- Obtaining reference levels, lines and all type of survey works required to execute the works accurately.
- Coordination with Main Contractor surveyors.
- Check, record and report actual site conditions discrepancies with the approved construction and architectural drawing in relation to survey works.

#### **SITE ENGINEER:**

- Coordination with project manager.
- Coordination with main contractor site engineers and other trades.
- Monitoring the daily site progress.
- Monitoring the quality of works.
- Arranging the access required and implementing the methodologies described and agreed for the execution of the works.

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- Delegating and explaining the activities to Forman and charge in hands working under them.
- Technical assistant to installation teams.
- Arranging for and attending the inspection of works.
- Preparation of daily activity reports and achievement reports.
- Coordination with survey, materials & access teams.

### **QA/QC ENGINEER/INSPECTOR:**

- Ensure the quality procedures of AMG are implemented on site at all times and at all cause.
- Prepare and submit MIR/WIR to the Main Contractor.
- Attend inspection with the Main Contractor and Architect/Consultant.
- Verify and clarify all site instructions given by the Main Contractor/Architect/Consultant.
- Preparation and issuance of internal snagging list to concerned persons.
- Rectification and inspection of snag list.
- Prepare and issue internal NCR to all concerned site persons.
- Rectify and close-out all NCR issued by Architect/Consultants/Main Contractor.
- Record and report all non-conformance to the AMG project manager.
- Inspection of materials delivery as per approved material submittals.

### **QS ENGINEER:**

- Evaluation of monthly progress.
- Preparation of monthly payment application.
- Record the variations to scope of works.
- Monitoring the site budget and expenses.
- Record any delay of work events.

### **HSE ENGINEER / OFFICER:**

- Preparation of external and internal HSE meetings.
- Carrying out routine site inspection.
- Develop / Update safety standards and procedures as required.
- Carrying out incident/accident investigation reports and submission.
- Identifying HSE hazards and carrying out risk assessments.
- Preparation of job safe practices / analysis and get approval.
- Health surveillance of the workers monthly.
- Ensure the provision of PPE at site.
- Put appropriate barricade to make the surrounding area of site safe.

### **SITE FOREMAN:**

- Ensure the installation quality during all façade activities.
- Lead and supervise the construction team.
- Ensure all works and materials are as per approved shop drawings and submittals.
- Ensure the compliance with the Main Contractor's security and safety plan in particular access for personnel and materials.
- Check attendance of all AMG workers including AMG sub-contract (if any).

## **6.3 GENERAL REQUIREMENTS**

The area of installation for the Aluminum and Glazing must be free from any obstruction and other operatives. Slab/Beams edges and masonry opening must be leveled, plumbed, squared and within the required tolerance (Width:  $\pm 10\text{mm}$  | Height:  $\pm 10\text{mm}$ ), otherwise Main Contractor should rectify the concrete opening and turnover to AMG and checked by QA/QC prior to installation. Heads, jambs, and sill must be true details (application of water

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proofing applied to required areas). Areas that shall be covered with aluminum frames must be given a smooth finished. Opening must be free of wet concrete works prior to installation of aluminum frames.

All aluminum frames are protected with protection films. And in case unavoidable concrete works will be done within one (1) meter of the aluminum frames, contractors involved shall cover the said frames with polyethylene sheets or any protective sheets to avoid damages to the installed materials.

Fabricated aluminum and glazing products will be delivered in complete set with good quality, and shall be delivered to site pre-cut, pre-notched, bracketed for both vertical and horizontal frames connection and covered with protective tapes. Fabrication will be supervised and instructed.

A temporary staging area must be made available to AMG where to offload deliveries and from which distribution can be affected.

### 6.3.1 METHODOLOGY AND INSTALLATION SEQUENCE

- a. All panels will be produced according to aluminum supplier's system and as per the required quality finish.
- b. These items are being checked during and after production according to aluminum supplier's quality control system and specifications.
- c. Production and Fabrication tolerances – Shall be taken into consideration.
- d. Repairs if required shall be initiated at the factory. However, minor damage may happen during transportation and/or the installation of the panel, subsequently the approved repair procedures approved by the client will apply at the factory and at site.
- E. Unloading, hoisting, and handling stock in site.

### 6.3.2 MATERIAL PACKING

- a. Panels are prefabricated, assembled, and glazed in the factory of AMG crated in sequence as required for ease of site installation. Panels are packed horizontally onto the steel pallets with steel and timber spacer bar in between each panel to ensure that each panel's self-weight will be transferred to the pallet frame. In some cases, the wooden packing can be done vertically back-to-back panels to optimize their number per shipment.
- b. Each panel shall have an identification label attached. The information contained therein shall consists of the project number, panel number and sequence, floor number, sealant type and date of glazing. Most importantly, it has a quality control sticker.
- c. All used pallets will be cleaned and neatly stacked and strapped daily and ready for back loading to AMG factory via loading platforms, material hoist or tower crane onto the truck for recycle or reuse.
- d. Damaged panels must be removed from project site immediately.



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### 6.3.3 DELIVERY, HOISTING AND STORAGE

- a. Before panels are to be delivered to site, AMG will liaise with the Main Contractor about the delivery schedule of fabricated products to obtain access to the loading area.
- b. On the arrival at site, designated temporary holding or lay-down areas are designated to AMG. The delivered panels on the lay-down areas.
- c. The pallets are landed onto the loading platform on trolleys so that the panels pushed from the loading platform and distributed to their designated location and to suit installation sequence. Otherwise, from the ground floor the fabricated items can be shifted by the monorail/crane prior to installation.
- d. Once the pallet landed the loading platform, AMG team will put the pallet inside the building for distribution to its location.
- e. It is essential that area of installation level is cleared to obstructions so that the panels can be delivered and stacked to its designated location on the floor thus avoiding time constraint due to double handling.
- f. Pallet loading layout plan is very critical. Pallets and panels should be located/stacked nearest to the area of installation to maximize the productivity and double handling.
- g. In general, all pallets shall be stored around the core of the building. As minimum requirements, it is important that the bulk of the MEP materials be arranged and managed properly prior to delivery of panels to maximize the required installation space.
- h. AMG will ensure that material handling team will be available and ready on designated floor to receive delivery and remove empty pallets which should be taken back on the same truck for back loading.

### 6.4 INCOMING MATERIAL CONTROL

Once installation is in full swing, delivery of materials shall be on a continuous basis assuming that all request and permits have been pre-arranged prior to any deliveries. Any problem that the jobsite might encounter in relation to deliveries such as an unavailability of the man-material hoist and equipment material hoist or a temporary staging area shall be coursed through the factory immediately for them to make the necessary adjustment and avoid any hassles for both parties. Panels and fabricated items will be delivered and coordinated to Main Contractor.

Prior to transporting the fabricated items to the designated project site, a Delivery Receipt is prepared to allow the materials to be brought out from the plant to deliver it to the project site. All delivered materials will be inspected by QA/QC prior to endorsement to Main Contractor and Architect/Consultant (if necessary) for Materials Receiving Inspection.

#### 6.4.1 GLASS

Glass panels shall be delivered in two forms, a large quantity of glass maybe delivered in a wooden crate box, resting on A-frame, while lesser quantity maybe delivered just plainly resting on an A-frame with all necessary protection to prevent breakage.

#### 6.4.2 ALUMINUM

Aluminum materials such as mullions, and other pertinent items that are cut in lengths shall be delivered using an open bed truck with wooden interlay at every layer to protect the aluminum from scratches and other unforeseen in-transit damages. Also, these materials shall be covered



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with AMG stickers as an additional protection when delivered at site. Regular inspection report for the extrusion will be submitted to Main Contractor and Architect/Consultant.

### 6.4.3 SEALANT

Silicon sealant will be used in this project:

- DOW Corning 791 and 813 Silicone Weatherproofing Sealant.
- DOW Corning 993 / 895 Silicone Building/Bonding Sealant.

It will be checked in accordance with the specification. The "use by" date is clearly displayed on the product package.

Sealants delivered must have an expiration date of at least four (4) months from its delivery date.

## 6.5 MATERIALS INSPECTION AND STORAGE PROTECTION

### 6.5.1 MATERIALS INSPECTION

**Subject** : **GLASS DELIVERY**  
**Location** : **AMG FACTORY**

#### **Dimension:**

Check the height and width of all delivered glass. Refer to the official cutting list approved and signed. Dimension tolerance is  $\pm 2\text{mm}$ .

#### **Squareness:**

Check the diagnosis of delivered glass. Square and rectangular glass should have equal diagnosis. Difference Tolerances are 6mm thick  $\pm 1.6\text{mm}$ ; 8mm thick  $\pm 2\text{mm}$ .

#### **Edge Defects:**

Check the delivered glass from edge defects. Edge quality should be within the specified criteria.

#### **Thickness:**

Should comply with the approved shop drawing, structural calculations set by Architect/Consultant.

#### **Flaws:**

Check glass from manufacturing flaws. Direction of glass ripples or waves shall be consistent and in conformance with Architectural design and Architect/Consultant visual acceptance criteria.

#### **Inclusions:**

Delivered glass should be free from inclusions. Laminated glass with visible bubbles or nickel sulfide stone in regular glass shall be out rightly rejected.

#### **Scratches:**

Check delivered glass from scratches.

#### **Identification:**

Each glass should have individual marks/tag for monitoring and identification purposes. Markings for Vision and Spandrel Glass should be readable inside and tower right corner.

#### **Storing:**

Should be in place where it would be protected from breakage and damage from effects of moisture including condensation of temperature changes and direct

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exposure to sunlight and other causes. It should also be easily accessed and properly identified. Should be segregated on who comes first to be installed.

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**Subject : ALUMINUM COMPOSITE PANELS**  
**Location : AMG FACTORY**

### **Coating Color:**

Check the color if it corresponds to the color sample which has been approved by Architect/Consultant.

### **Thickness & Width:**

Referred from the Purchase Order must be accurate and do comply the specifications.

### **Identification:**

Each panel should have individual marks/tag for monitoring and identification purposes.

### **Storing:**

Panels should be properly placed in a rack and tagged for easier access in materials sorting; Each bundle should have an individual packing list showing the content.

### **Bundles:**

Packaging bundles should be checked if free from defects and damages that might occur during shipment/handling. Check quantity delivered against quantity declared as per packing list.

\*\*\*\*\*

**Subject : SEALANT DELIVERY**  
**Location : AMG FACTORY**

### **Shelf Life:**

Delivered sealants should have a minimum of four (4) months prior to its expiration date.

### **Packaging conditions:**

Boxes should be free from damage, intact and properly sealed.

### **Manufacturing references:**

Manufacturing date/batch should be readable and remains in place.

### **Cartridges/Tubes:**

Check cartridges/tubes conditions if free from dents and other defects.

### **Storing:**

Sealants should be stored in a clean dry room with a temperature not more than 25 degree centigrade.

\*\*\*\*\*

**Subject : GASKETS/SETTING BLOCKS DELIVERY**  
**Location : AMG FACTORY**

### **Extrusion quality:**

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Delivered gaskets should be in accordance with the approved list of materials and approved shop drawings.

**Identification:**

Boxes should be free from damage, intact and properly sealed.

**Hardness:**

Manufacturing date/batch should be readable and remains in place.

**Storing:**

Should be stored in a clean and dry room and properly placed in a way that profiles should not be deformed or damaged.

\*\*\*\*\*

**Subject : ALUMINUM PROFILES FABRICATED PANELS**  
**Location : AMG FACTORY**

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**Powder Coating Finish:**

Check coated material if it corresponds to the color sample which has been approved by Architect/Consultant.

**Identification:**

All delivered fabricated materials should have its own corresponding part number for easy sorting and assembly reference.

**Storing:**

Each type of fabricated materials should be placed in one rack and properly tagged for easier access in materials sorting/kit; the fabricated materials should be properly stored in a rack using a minimum 1-inch wooden spacer to avoid damaging any painted surfaces. Each crate should have an individual packing list showing the content of every crate or bundle.

**Crates/Bundles:**

Packaging crates or bundles should be checked if free from defects and damages that might occur during shipment/handling. Check quantity delivered against quantity declared as per packing list.

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**Subject : FASTENERS**  
**Location : AMG FACTORY**

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**Sizes and Finish:**

Delivered fasteners should correspond to its specified ordered sizes and finish.

**Mating Bolt, Nuts and Washers:**

A random check should be done by mating delivered bolts, nuts, and washers as per materials or delivery markings/tagging.

**Storing:**

Fasteners should be stored as per sized and finish to easily access during materials distribution and stock monitoring.

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**Subject** : **INSULATION AND FIRESTOPPER DELIVERY**  
**Location** : **AMG FACTORY**

### **Packing:**

Packing should be suitable enough to protect the material during delivery, any defects in the materials are considered unacceptable.

### **Thickness:**

Should comply with the approved specification set by Architect/Consultant and shop drawings, this can also be referred from the Purchase Order; this type of material should remain dry until it is installed at site.

### **Storing:**

Should be placed in a properly maintained store and free from moisture, if these materials become wet, they are no longer usable and no longer acceptable.

## **6.5.2 STORAGE PROTECTION**



## **6.6 MATERIAL REJECTION AT PLANT**

### **6.6.1 METHOD OF CONTROLLING AND STORING "REJECTED" MATERIALS:**

- When discrepancies are found with the supplier's material, each load, and package will be tagged with "WITHHOLD TAG" properly completed and help for disposition. A rejection notice shall be completed and circulated.
- After the tags are attached, a copy of Non-Conformance Report (NCR) is completed and forwarded to the Factory Quality Control.
- The Factory Quality Control Manager will call a meeting with the Design Manager, Plant Manager and Procurement Manager to review the discrepant parts and to make disposition as to "Rework", "Use as Is", "Scrap", or "Return to supplier".

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- If the material is rejected during fabrication, it will be placed in an area controlled by the Material Handling designated as "Rejected Material Storage".
- The Factory Quality Control Manager will check the rejected material storage area on a daily basis and will inspect the material which has been rejected. The material will be stamped with the inspector's rejection stamped date. The rejected material will not be moved or handled by anyone other than the Material Handling personnel after it has been placed in the Rejected Material Storage room.
- Once material has been rejected, NCR will be produced giving all the applicable information, including disposition. After completing the NCR, the Factory Quality Control Manager will proofread the report, sign it and issue in accordance with the approved distribution list.
- Procurement will agree disposition and inform the Production Control and QC Department accordingly. If materials are to be returned to supplier, Production Control will prepare "Supplemental Shipping Manifest" with reference to the NCR number.

### 6.6.2 SMALL REJECTION

- Check with the material handling excess inventory. If overstock is available, use as replacement towards material and make disposition on NCR with "OS" marking before the Serial Number and issue to inventory and Factory Quality Control only.
- If excess material is not available, disposition should be noted in NCR as "Replace" and make total distribution. Production and Inventory Control will review future material releases that require the particular extrusion in question to help Procurement expedite replacement of rejected materials.
- If material is to be worked at supplier's expense, Production Control will make out necessary rework ticket.

### 6.6.3 IN-HOUSE REJECTION

- Any discrepancy in material will result that all parts will be identified with a "WITHHOLD TAG" and thereafter held for disposition.
- Quality Control will call a meeting to review the discrepancies and determine a course of action. (i.e., "Reality of work", "Replace", "Rejected", "Waiver", or "Hold").
- Reworked parts must be re-inspected with results entered on the NCR and gained off by the applicable Department Head.

## 6.7 FABRICATION, ASSEMBLY AND GLAZING

AMG will fabricate the Aluminum and Glazing items in accordance with the specifications, approved shop drawings, and structural design calculations, using only skilled working team and proper methods and equipment. All parts of the fabricated items should be identified after fabrication by piece marks clearly indicating their location on the building in conformance with the schedule shown on the approved drawings, then all elements on the glass façade, whether loose members or assembled unit, must be carefully packed to protect them from damage in transit and must be delivered to the job in accordance with the established schedule.

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### 6.7.1 ALUMINUM FRAMES

#### 6.7.1.1 MACHINING

All aluminum sections will be fabricated in accordance with the fabrication drawing issued. Cut sections will be marked with a part code for proper identification. Prior to any cutting, notching and drillings, aluminum sections will be provided with a plastic protective tape to avoid scratches. Worktables to be used are protected with rubber matting to avoid scratches on the aluminum sections.

#### 6.7.1.2 INSPECTION / TOLERANCES

To define acceptable (manufacturing) tolerance, such as not specified in fabrication or submission drawings, procedural will apply to all fabricated parts or assembles that are produced by AMG or purchased.

In controlling the measure tape, the Quality Control will verify the accuracy of each tape received; against calibrated 100-cm straight edge of QA office. Tapes within 0.50 mm accuracy will be accepted. Tapes that do not meet these criteria shall be returned to vendor for replacement.

The following list of operations has been complied with the applicable tolerances, is as follows:

OPERATION	TOLERANCE
Saw Length	+0, -0.50mm
Shear Size	+0, -0.50mm
Squareness of Sheared sheet	± 1 degree
Hole Size	+0, -0.50mm
Hole Location	+0, -0.50mm
Mill Cuts	+0, -0.50mm
Bend Size	+0, -0.50mm
Angularity (Bending Sheet Metal)	± 1 degree
Radius Size	+0, -0.50mm
Welded parts location	+0, -0.50mm
Stud Weld Location	+0, -0.50mm

### 6.8 GLASS BONDING AND GLAZING (when required)

Glass panes bonded to aluminum frames using the approved silicone DOW Corning 993 / 895 Silicone Building Sealant (in the factory Bonding Area).

#### 6.8.1 FINAL INSPECTION AND RELEASE

Visual inspection by QA/QC is necessary to check scratches on glass and aluminum section. If scratches are found, the product will not be release. Rectification procedure shall be submitted. Ensure that silicon is properly applied on the fabricated items and gaskets are accurately installed. Inspect the correctness of the code.

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If the above complied the standard and is concurred by aluminum supplier, then the panel is ready for release.

### **6.9 PACKAGING / DELIVERY / PROTECTION (UCW)**

Fabricated items and other materials delivered at project site are subject to inspection. Materials delivered are checked for proper palliating number and sequencing. Checked for proper protection of the panels and for scratches and damages.

### **6.10 SITE INSTALLATION**

#### **6.10.1 GENERAL REQUIREMENTS**

##### **SUMMARY OF SITE REQUIREMENTS AND INSTALLATION PRE-REQUISITES**

The site will require a lot of planning and coordination to prepare the site for panel installation. A meeting with the Main Contractor team must be held to determine the location of the following site requirements. All these activities must be organized to proceed with the preparation of the site.

The following activities will require the full cooperation of Main Contractor before this statement can be applied.

- The location of the cranes for material shifting (if required).
  - The location and level of the access system, scaffoldings, monorails (if any).
  - Temporary staging area.
  - The location of the landing platforms.
  - The location of the man and material hoist.
  - The storage area of the glass units and accessories.
  - The location of the access equipment
  - The access within the building
  - The position of voids
  - The monorail feasibility and installation, (if any)
- a. Site installation will be carried out in accordance with the requirement of the contract program and under the supervision of AMG Project Engineer/Site Engineers/Site Supervisors and Foremen.
  - b. AMG will carry out the erection to undertake the installation of interior glazed curtain wall, entrance façade, interior glazing, glass partitions, composite metal cladding, doors of different types, balustrades, and railings according to the Main Contractor's plan; and capable to supply the manpower required to follow the contract program and possible requested modification.
  - c. Appropriate installation and lifting equipment to be provided where required. A vacuum glass lifter will be provided and utilized for shifting and fixing large sized glasses on high and sloping areas in conjunction with a hoist system.
  - d. A site survey to check structures and dimensions of preceding works by other contractors will be agreed prior to start any erection activity. Arrangement will be made with the Construction Manager for the allocation of site accommodation, access storage facilities and another site attendance as defined in the contract agreement.



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### 6.10.2 SITE SURVEY AND SETTING OUT

- a. AMG will check the grid points of each floor relative to each floor, given by the Main Contractor to ensure the accuracy of the setting-out throughout the project. All floors will be required prior to the start of work with grid and datum lines established by the Main Contractor for reference. All discrepancies outside the agreed tolerance from the contract that will arise in the setting-out will be notified through the Main Contractor and awaits any further instruction to AMG to proceed if necessary.
- b. Gridlines and offset datum lines are to be established by the Main Contractor. AMG will establish off-set line that will serve as control point for the installation of brackets and curtain wall.
- c. From the base lines, center of mullions/brackets are marked and square-off to the perimeter of the building.
- d. Relative to the level, benchmarks are to be provided at either concrete core wall or columns by the Main Contractor on each floor.

### 6.10.3 BRACKET INSTALLATION

Brackets shall be designed accordingly for specific use according to location conforming to material specifications and approval.

The bracket shall be mounted at the soffit (or face) of slab and at the base floor to hold the aluminum framings and steel support framings using approved fasteners, where all fixings shall have tolerances in three directions; for in & out, elevation and lateral tolerances which shall be specified in the ITP.

- a. Prepare and set up access equipment (scaffolding, optional access platform: scissor lift) in the required working area. Provide the necessary lifeline along the perimeter and toe boards on edges.
- b. Identify the correct bracket type and quantity according to location and deliver brackets to the workplace.
- c. Provide a safety line to secure all loose equipment i.e. hand tools, etc. that will be used at the workplace.
- d. In case of any discrepancy at concrete works, inform Main Contractor immediately for correction especially if there is a need for chipping works, taking into consideration that the slabs are post tension.
- e. Required locations of brackets shall be marked by AMG Survey Team. On straight façade, it is possible to install key brackets at certain intervals and provide chalk line marks connecting two installed brackets.
- f. For proper fixing and to ensure bracket's full contact with the concrete surface, the area must be cleaned and freed from any kind of obstructions like accumulated dirt and hardened concrete spills. In case of any concrete bulges which are beyond the allowable tolerances, Main Contractor shall be informed immediately for necessary correction.
- g. Drill holes to correct diameter and depth and at correct location to avoid touching the cables of the post tension slabs. Drills become worn with use and need to be replaced at intervals.
- h. Install the bracket. Prior to tightening of bolts, make sure that the bracket is in right position. Adjust position and level according to survey markings and key bracket. Ensure the plumpness and horizontal alignment of the brackets.
- i. Edge distances and depth of anchorage for each type and size of anchor bolts shall be stipulated and followed according to the manufacturer's specified requirement.

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- j. Install the bracket. Prior to tightening of bolts, make sure that the bracket is in right position. In some cases where required bracket location is unattainable due to recede or uneven concrete edges, shims shall be provided between the gaps as close as possible to the bolt.
- k. Tighten all bolts to the required torque using calibrated torque spanner in accordance with the anchor bolt manufacturer's recommendation.
- l. Site Engineer or Supervisor to record that the brackets have been fixed correctly using an internal quality checklist from for each level.
- m. QA/QC Engineer to re-check randomly and once verified correct, advises AMG Operatives to proceed further with the installation of aluminum frames and members.
- n. AMG will install the primary and secondary aluminum brackets prior to panel installation (for Curtain Wall).
- o. Brackets shall be delivered on site to suit the construction program by a flatbed truck and delivered via material hoist or tower crane to a designated and pre-determined storage area on the floor slab for distribution to each floor as required.
- p. AMG will inspect and will notify the Main Contractor regarding all unacceptable concreted edges so that the rectification works will be carried-out prior to bracket installation.
- q. AMG will not commence on works that has any deviation or change made to the approved shop drawings.
- r. Once the rectification is done, the bracket will then be installed based on the previously surveyed position. This process needs to be done prior to the installation of panel. Brackets are aligned to the set-out mark and check the vertical.

### **6.11 CONTINUATION OF PANEL INSTALLATION UPON SECURING APPROVAL FROM ARCHITECT/CONSULTANT**

- The installation of panels shall proceed generally in a clockwise sequence. Two groups will simultaneously be installing two locations at a time.
- The loading area either from ground floor or specified floor will also be installed prior to starting on the next higher floor.
- The last panel shall be installed similarly to the above; this shall be installed in vertical position to engage on the gutter stack joint of the lower panel.

### **6.12 DEGLAZING PROCEDURE**

Prepare the glass for replacement and set it up on the designated floor. Once all the interior capping is removed, and exterior aluminum trims, start removing the sealant on interior face of the glass using utility knife and deglazing knife. Position the glass sucker on the center of the glass for both interior and exterior side. While holding the glass from the inside, remove the glass by tilting its sideways, slowly taking it inside the building. Place removed glass on the designated A-frame. Clean the perimeter of the aluminum with clean cloth. Remove sealant residue using spatula or knife and once again clean with a clean cloth. Remove all damage gaskets and setting blocks. All items removed shall be clean thoroughly to ensure proper sealant adhesion.

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### 6.13 REMOVAL OF PROTECTIVE FILMS

Removal of the protective films from aluminum panels/frames shall be done as soon as possible or within 45 days after the installation to avoid the glue elements of protective film remain on the surface of panel.

- Carefully use a scraping knife to lift the edges of the film and peel it off.
- Do not use excessive force when attempting to scrape the film or permanent damage to the frame may occur.
- Use a soft cloth and warm-soapy water to remove (if there is) residue remains on the frame.

## 7. Inspection and Test Plan (ITP)

Refer to Section "18" (AMG – Quality Plan)

## 8. Plant and Equipment

### 8.1 CRADLE WORKING PLATFORM

Temporary Platform to be used for installation/rectification of light materials. The Third-party safety certification is a must prior to the installation of cradle working platform. (See sub-section 8.1.3)

#### 8.1.1 SAFETY OPERATION REGULATION

- The cradle should be operated and maintained by a trained qualified person.
- The operator should have a required PPE.
- The Operator shall have the full body harness fastened with a rope grab of a separate lifeline.
- Lifeline should be fixed independently other than of cradle bracket.
- Separate grab for each person for anchoring the full body harness.
- Display the SWL, not overload the cradle.
- The load shall evenly distribute inside the cradle.
- Consider the wind speed of maximum 30 kmph.
- Fix the platform as per manufacturer instruction. It is not allowed to mix the parts with the different manufacturer.
- While normal operation, it is prohibited to manually break or safety lock.
- It is necessary to press the starting button to move platform after the limit switch or emergency button being pressed.
- When limit switch is activated, the operation platform will be halted and alarm will ring, lower the platform promptly to have the limit switch away from the limit stopper.
- It is not allowed to use ladders or boxes or other tools from the cradle to obtain increased height.
- It is not allowed to use cradle as an elevator to shift people and materials.
- If hoist is blocked somewhere during the operation, it is not allowed to move forcedly. Placed the platform first and eliminate the trouble.
- In case a rope breakage, keep calm by taking anti dropping measures by fastening platform with adjacent structure.
- In case of power break during operation, shut down the control power first. Use the manual descending lever to bring down the platform.

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- No high voltage line within 10 meters.
- Consider adverse weather condition of dust storm, fog, and wind speed 30 kmph.
- Make sure that welding slag/spark will not damage steel rope.
- Remove all obstacles from cradle away.
- Consider over and underneath hazards.
- Need proper access and egress, do not jump from windows and from other cradles.
- Cut off power and close the control before cleaning.
- Do not allow water to go inside motor, safety lock, electromagnetic break, and control box.
- Do the preventive maintenance and paste color coded sticker.

### 8.1.2 DAILY CHECK

- Reliability of the safety lock.
- Emergency stop, and limit switch.
- Reliability of the electromagnetic break.
- Manual descending device.
- Steel rope, rope clamp, and connections.
- Trail lift about 1 to 2 meters before using.

### 8.1.3 LOAD TESTING AND THIRD-PARTY CERTIFICATION

- Load testing and 3<sup>rd</sup> party certification for the cradle shall be secured in six months validity, in every relocation, and after any repair.





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Certification: 20454218  
SOS No. 8421152

### TEST CERTIFICATE FOR CRADLE

NAME AND ADDRESS OF OWNER	M/s. AMG.		
LOCATION OF EQUIPMENT	Rafal living site, King Fahad street, Riyadh, KSA		
(1) TYPE OF TEST & DESCRIPTION OF EQUIPMENT	Through inspection of cradle machine, BYW, HOIST, type: 630 motor, suspended by two cantilever beam with counter weight 700 for each beam, wire dia. 8.3mm, (d) north elevation.		
(2) SERIAL NUMBER OR IDENTIFYING MARK	3002 - 121971 - C#05		
(3) DATE & PLACE OF MANUFACTURE	2012 //	Made in china	
(4) LIFTING HEIGHT	207 m //	Length = 9.0 m	
THIS FORM IS BASED ON BS EN 1808:1999+A1:2010			
OPERATIONAL TEST DETAILS	Condition	OPERATIONAL TEST DETAILS	Condition
EMERGENCY DEVICES CONDITION	Good	INTER LOCKING MECHANISMS AND LOAD SUSTAINING DEVICES	Good
WIRE ROPE CONDITION, DRUMS & BEARINGS	Good	MOTOR'S CONDITION	Good
LOAD TEST DETAILS	VALUES		
(5) SAFE WORKING LOAD (S.W.L) (Kg.)	300 KCG		
(6) PROOF LOAD APPLIED (Kg.)	375 KCG		
DEFECTS NOTED AFTER LOAD TEST	NONE		
(7) Name & address of public service, association, company, Firm or person making the test & examination. { Eng. Ali Salatheeden }			
(8) Position of signatory of public service, association, company or firm named above. { Test Engineer }			
I Certify that The above appliance, together with its accessory attachment, was tested by a competent person in the manner described in the relevant standards, that a careful examination of the said appliance by the person said in row (7) above, after the test showed that it had withstood the proof load without injury or permanent deformation & that the (SWL) of the said appliance is as shown in row (5) above.			
The equipment should be re-tested after six months!			
Issue Date:	03/01/2018	Signature:	Eng. Ali Salatheeden
Expiry Date:	03/07/2018	Designation:	Test Engineer

We are approved under ISO / IEC 17020  
مكتبنا المعتمد بموجب المواصفة رقم 197142712282 - 197142712282 - 197142712282  
مكتبنا في الرياض رقم 197142712282 - 197142712282 - 197142712282  
ab@kiasafety.com

(Basket/Cradle/Test Certificate)



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### 8.2 GLASS SUCTION (MANUAL AND ELECTRICAL)



Use to **manually** lift glazing for installation and shifting. (when panels/items are not too heavy to handle)



(**Electrical Glass Sucker** - Use to lift heavy panels/items and when manual lifting is not easy)

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### 8.3 WELDING MACHINE (For hot works)



*Hot works may be applied if welding and grinding are needed.*

## 9. Special Scaffold / Access Equipment

- Proper railing should be provided for stairs.
- All openings, building edges, must be barricaded in proper way.
- All work platforms to be use must be of good condition and properly in placed. Must be secured and stable.
- Damaged planks are not allowed and be removed on site.
- Ensure all materials are secure to prevent it from rolling or failing.
- No climbing on the scaffolding members / pipes.

## 10. Training and Competency Personnel

All heavy operators such as but not limited to Mobile crane, Manlift, working under AMG supervision require valid certifications testifying to their competency. Copies of all documents are available upon request. Any hired in drivers or operators shall comply with these guidelines.

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## 11. First Aid and Emergency Arrangements (Including fall arrest)

### 11.1 PROVISION OF FIRST AID FACILITIES

- Site operatives shall provide a suitable first aid kit box, this will be provided and maintained and be in positions which are easily reached by site operatives.
- The first aid kit supply shall be always kept in a sanitary condition. Minimum requirements shall include the following: a gauge, bandage, antiseptic lotion, alcohol, first aid bandage; the first aid kit should be dust-tight supply cabinet.
- This cabinet shall be placed under the charge of the foreman (first aid attendant) who shall ensure the cabinet is always well stocked. Authorized first aid attendant shall be capable of taking charge in an emergency, calling assistance from Main Contractor and tendering the injured for first aid treatment.
- AMG representatives will coordinate with Main Contractor for the location and provision of the dedicated emergency vehicle, properly supplied and marked, to transport injured personnel to the nearest designated health care facility.

### 11.2 PERSONAL PROTECTIVE EQUIPMENT

- Installation team and other workers those working at height to be provided with tested full body harness as per ANSI standard.
- Life-line system shall be implemented.

## 12. Advised Any Permits to Work Required (Hot works, Confined spaces, Excavation, Electrical)

The Work Permit System incorporates procedures commonly used in industrial facilities to ensure that necessary communication takes place and hazards are controlled.

AMG erection activities do not require a long period of welding and cutting activities; thus, it is based as per scope of work. However, in such cases in any heat producing activities are involved, we may be using the Main Contractor' standard hot work permit as an important tool in maintaining a safe work environment whenever it is required in a restricted area.

## 13. Environmental Considerations

Not applicable.

## 14. Waste Management

Will be carried out in accordance with the Main Contractor Waste Management Plan.

## 15. Hazardous Substances –

Not applicable.



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### 16. Any Special Storage Requirements

Storeroom for Special Tools (Power Tools and Hand Tools) to be used for installation of Aluminum and Glazing works.

### 17. Testing and Commissioning

N/A

### 18. Supporting Documents

- Risk Assessment – Attached
- Inspection & Test Plan (ITP) – Attached
- Checklists – Attached
- Organization Chart – Attached
- Quality Plan – Attached
- HSE Plan – Attached