APPLICATION 106068LO2014C1 – CONDITION 3

PROPOSAL

It is proposed to replace all existing timber single glazed windows within the Coupland 3, Pharmacy and Schunk buildings with new timber with new timber double glazed windows to match the existing in profile, scale and design.

It is proposed to replace all existing metal single glazed windows to the Pharmacy Building with new metal double glazed windows to match the existing in profile scale and design.

It is proposed to repair and refurbish existing timber stained glass windows to the Coupland 3 Building Main Staircase. Likewise, the existing leaded light glazing to the Pharmacy Staircase facing the John Owens Building will also be repaired and refurbished.

DECISION MAKING PROCESS

A Heritage Appraisal document was produced on the appointment of the Design Team, to examine Coupland 3, Pharmacy and Schunk buildings and their settings in order to inform the conservation and redevelopment scheme.

In its introduction, the Heritage Appraisal acknowledged that the buildings were only in partial use or vacant and that the university intended to relocate the School of Law and part of the Directorate of Student Experience within them. The School of Dentistry, which still occupied part of Coupland 3, will remain within the building. The Heritage Appraisal also acknowledged that in order to facilitate these proposals there was also a need to extensively refurbish and upgrade the buildings in order to raise standards in energy efficiency and sustainability, as well as efficient use of space. The Heritage Appraisal therefore sought to inform and help manage this process of change to ensure the national heritage significance of the buildings was appropriately considered from the outset.

As part of the Heritage Appraisal, a Schedule of Significance and Character-Defining Elements was produced. This section of the document identified elements or features of the complex that were deemed important to reading and appreciating the character, values and significance of the buildings. Of particular note were those items identified that facilitate the readability of the buildings as the work of Alfred and Paul Waterhouse and as 19th century university science departments. Fenestration was identified as high to low significance across the complex, dependent on the significance of the elevation in which façade they were found and the quantity of original intact fabric.

Resulting from the Heritage Appraisal, a schedule of historic window fabric was produced, to identify which windows retained original timber or metal frames, those which were original but had been modified and those which had been replaced with modern windows, as well as the quantity of original glass on site. This exercise produced a mixed picture. Of a total 537 window openings surveyed, 5 had been blocked up, 5 could not be accessed, 59 were modern and468 were found to contain original metal or timber frames. However, of the windows containing original frames, 56 had been modified in some way, including removal of glazing bars, replacement of original casements with modern fabric or other modifications to receive extract vents and other services. Remaining original or early glass only comprised 48%

of the total glazing. The majority of the windows are inoperable, being painted or fixed shut, meaning operation was not tested.

On review of the significance of the significance of the fenestration and the quantity of the original fabric, the Design Team alongside the university identified three possible options for dealing with the fenestration within the context of the redevelopment scheme. Each option had its own advantages and disadvantages. The options identified were as follows:

1. Conservation and repair/ refurbishment of original windows and re-glazing where required with single glazing, combined with replacement of modern windows with single glazed units to match the original fenestration patterns.
2. Conservation and repair/ refurbishment of original windows and re-glazing with slim-line double glazed units, combined with replacement of modern windows with slim-line double glazed windows to match the original fenestration patterns.
3. Replacement of existing windows with high quality double glazed facsimiles of the original windows, reinstating original fenestration patterns where inappropriate modern interventions had been made.

The three options were then tested as detailed below to come to a final solution.

Option 1 – Conservation and Repair of existing windows and replacement of modern windows with facsimiles

This option was deemed to be the preferred option from a conservation point of view, enabling the retention of all original historic fabric, regardless of its status as high or low significance. This option would maintain the group value of the fenestration in maintaining the historic integrity of the facades.

However, as referred to earlier in this document, one of the driving factors in the redevelopment scheme is to raise standards in energy efficiency and sustainability. Achieving a BREEAM 'Very Good' rating would aid the university in ensuring the project meets the environmental principles of the NPPF. Retention of the existing single glazed windows would not deliver these objectives due to heat loss resulting in higher carbon emissions due to the extra heating that would be required. User perceptions of the finished scheme would also be affected as thermal comfort would be altered through heat loss in winter and overheating in winter for those users situated adjacent to the external envelope.

Energy efficiency and sustainability have also driven the ventilation strategy for the scheme. Using natural passive ventilation within the building as far as possible requires the users to be able to open and close windows. This strategy also minimises the potential impact on the internal historic building fabric of introducing a heavily serviced mechanical ventilation system into the scheme. From a health and safety point of view, retaining the existing historic single glazing to the windows was deemed less preferable due to risk of breakage and injury to users when opening and closing the windows, and therefore safety glass would need to be introduced to opening sashes. Due to the large number of staff and students using these buildings on a casual basis, it would be difficult for the university to implement a management policy which reduced these risks.

Finally, given the university's large investment in the overall scheme to bring the complex back into full beneficial use, the repair and refurbishment of the existing

windows proved financially unviable and would provide significant impact on the timescales required to bring the building back into optimum use.

Option 2 – Conservation and Repair of existing windows and reglazing with slimline double glazing and replacement of modern windows with facsimiles

This option was deemed to provide a middle road between conservation considerations and the project requirement to deliver energy efficiency and sustainability as mentioned above. Although original glass would be lost, some thermal improvements would be achieved albeit lower than 'regular' double glazing units.

Overall it was considered that slimline double glazing would still cause some issues in meeting a BREEAM 'Very Good' rating and would still not resolve all of the issues relating to thermal comfort mentioned in Option 1.

Finally, similar issues with regards repair and refurbishment of the existing windows being unviable were presented. These costs would be compounded by the alterations to be made to the existing windows to retrofit double glazing units. Retrofitting double glazing to existing windows would essentially be a site exercise rather than a workshop process. This would be a difficult process to manage in terms of quality of work across 468 windows with regards alterations to existing casement frames and beading profiles. and posed concerns regarding longevity of the double glazed unit within individual windows if the quality of individual installations was below par.

Option 3 – Replacement of original and modern windows with double glazed facsimiles

This option was deemed to provide the least favourable option with regards to conserving the historic fabric of the building. Loss of original fabric is to be avoided wherever possible and English Heritage have a long standing position in favour of repairing and refurbishing existing historic windows.

However, in terms of energy efficiency and sustainability this option was preferred, providing the opportunity to provide high specification double glazing units which would improve the thermal performance of the building. Upgrading the windows to high performance double glazing is of extra importance given the limited opportunity to improve the thermal performance of the external walls by insulating.

Additionally, replacement of the windows with double glazed facsimiles allows the university to meet all health and safety requirements with regards utilising safety glass, introducing window opening restrictors which is of high priority for such an organisation. The university has a duty of care to ensure that students and employees are safe within its campus.

Finally, replacement windows will provide the university with a defined lifespan and will reduce the maintenance burden of the building on the university which led to its current state of repair. Replacement windows can be fabricated in a workshop environment and fitted on site, enabling robust quality control procedures to be followed.

The decision taken by the university was that replacement windows were the preferable option for the reasons outlined above.

Purcell produced a Heritage Impact Assessment for this proposal. The level of impact was assessed as 'High Adverse' due to the irreversible loss of original fabric including frames and in some instances original glass. The overall impact on heritage asset as assessed ranged from 'Very Large Adverse' to 'Slight Adverse' depending on the original significance of the window as identified in the original Heritage Appraisal.

Combined with other elements of the refurbishment and upgrading of Coupland 3, the overall impact of the scheme was assessed as 'moderate adverse' which constitutes 'less than substantial harm' to the significance of the complex as per the NPPF.

As defined in section 12 of the NPPF, where proposals are considered to result in harm to an assets significance, paragraphs 133 and 134 set out circumstances in which such harm, substantial or less than substantial could be considered acceptable, These include where demonstration that 'the harm or loss is outweighed by the benefit of bringing the site back into use' (para. 133) and 'harm should be weighed against the public benefits of the proposal, including securing its optimum use' (para. 134).

These objectives are supported by the development. Although the loss of original fabric constitutes loss of original fabric, there are other benefits brought by the scheme. These include reinstating original subdivided spaces internally, external repairs to facades and roofs to prevent further degradation of internal building fabric and continuing the building's legacy as a teaching and learning venue of the University of Manchester.

It should also be reiterated that the new windows will be high quality facsimiles of the originals meaning that the original appearance, profiles and details of the new windows will ensure that internally and externally to the untrained eye, the building will appear the same. Additionally, with the replacement of modern windows and alterations, the original fenestration layout will be able to be read as originally designed.

Further reference to the planning policies considered during the development of the design proposals is provided within the Design and Access Statement. The Heritage Appraisal, Schedule of Historic Window Fabric and Heritage Impact Assessment can be found in the appendices to the Design Access Statement.

REQUEST TO ALTER PROPOSED WINDOW GLAZING FROM APPROVED SPECIFICATION

The specification for the window glazing submitted as part of There has been an increase in public liability due to glazing failure in other locations on campus, created by the significant safety risk of nickel sulphide inclusions embodied within the glass units.

To address this risk and increase the general safety characteristics of glass installed on Campus, the University has dictated that all new glass installations should accommodate toughened or heat strengthened glazing, according to location. Heat strengthened glass is twice as strong as annealed, has increased resistance to wind load and temperature changes and has a breakage pattern of glass pieces which are more likely to remain in place. Toughened glass is 4 times stronger than annealed, has increased resistance to wind load, temperature changes and blunt impact, and has improved breakage characteristics in that it fragments into small pieces when broken.

It is proposed to use toughened glass where required by Building Regulations, but also to further reduce risk by installing toughened glass to areas where users may be waiting, sitting or gathering below. Heat strengthened glass is intended to be used in all other locations.

In toughened glass, because of the higher surface compression and higher core tension it is susceptible to failure due to nickel sulphide inclusions. The University therefore requires that toughened glass used is heat soaked. This process is a destructive method which eliminates the vast majority of glass contaminated with nickel sulphide before it is installed.

The glass manufacturer has confirmed that the use of both heat strengthened and toughened glass requires the use of 6mm glass as a minimum. As a consequence the replacement glazed units are proposed to incorporate 6mm glass to inner and outer panes.

The project window manufacturer has expressed a preference to produce 24mm double glazed units, utilising a 12mm cavity. This is primarily to address their standard timber section stock and testing certification which has been carried out on 24mm glazed units. However, the preference expressed has been to keep the cavity to a mimimum.

We have discussed the cavity size and have been informed by manufacturers including Pilkington that they can't produce smaller cavities, such as 4mm, and advise that the movement in the market is to produce larger cavities for energy and thermal performance benefits. Their `standard` smallest cavity is now 10mm. Saint Gobain have advised that they can produce an 8mm cavity.

It is therefore proposed to utilise the Saint Gobain specification incorporating 6mm glass inner, 8mm cavity, 6mm glass outer, producing a 20mm double glazed unit.

5760 UoM Coupland 3 - Specification

19 April 2016

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L
Windows/Doors/Stairs

L10
Windows/ Rooflights/ Screens/ Louvres

L10 Windows/ Rooflights/ Screens/ Louvres

To be read with Preliminaries/ General conditions.

GENERAL

110 EVIDENCE OF PERFORMANCE

- Certification: Provide independently certified evidence that all incorporated components comply with specified performance requirements.

110A DEMOLITION AND INSTALLATION NOTES

- -All apertures are to be site measured
  - Existing windows, including any secondary glazing and accessories to be removed with minimal impact upon existing surrounding head/cill/jamb construction
  - Head/cills and jambs of existing construction to be made good after installation of windows
  - New window is to be installed in the same position as the removed glazed element, unless indicated otherwise on drawings.
  - Completed installation is to be watertight. Perimeter of frame to be neatly mastic sealed, to mimic existing perimeter detail where applicable or with small triangular fillet of low modulus gun-grade silicone sealant. Sample installation to be submitted for review.
  - Requirement for cavity barriers to be site assessed following window strip out.
  - No visible fixings, either to masonary surround, frame or within the window fabrication itself.
  - Windows to be installed to manufacturers details and recommendation
  - All windows are to incorporate restrictors, allowing maximum opening of 100mm. Confirm with M&E consultant before manufacture
  - M&E consultant is to confirm and approve glazing performance/specification
  - M&E consultant is to confirm and approve ventilation strategy
  - Glazing; Toughened glass is to be used where required to address Building Control requirements and also to further reduce risk by installing where users may be waiting, siting or gathering below. Refer to elevation drawings. Heat strengthened glass is to be used in all other locations.
  - Fully record existing situation (photographic record) for window removal prior to demolition. Submit copy of record to Client/CA

115 TIMBER PROCUREMENT

- Timber (including timber for wood based products): Obtained from well managed forests and/ or plantations in accordance with:
  - The laws governing forest management in the producer country or countries.
  - International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
- Documentation: Provide either:
  - Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied.
  - Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood based products.

120 SITE DIMENSIONS

- Procedure: Before starting work on designated items take site dimensions, record on shop drawings and use to ensure accurate fabrication.
- Designated items: All windows
  Shop drawings to be produced by Contractor. Window design; form, section sizes, profiles, opening strategy etc is to be informed by the existing/removed window and any similar newly installed windows on the project as part of the Phase 1 works.
  Shop drawings then produced are to be submitted to Architect for review prior to fabrication.
  All rooflights; Shop drawings to be produced and submitted to Architect for review prior to fabrication.

140 CONTROL SAMPLES

- Procedure:
  - Finalise component details.
  - Fabricate one of each of the following designated items as part of the quantity required for the project.
  - Obtain approval of appearance and quality before proceeding with manufacturer of the remaining quantity.
- Designated items: Timber Casement window, Timber Sash window, Steel window remedial works to one window
  - Timber window mock up to include glazing and ironmongery.
  - Rooflight.

PRODUCTS

205 WINDOW MATERIALS SPECIFICATION

- Minimum BRE 'Green Guide to Specification Online' rating: A.

250A WOOD WINDOWS Casement and fixed

- Standard: To BS 644.
- Manufacturer: A firm currently registered under a third party quality assurance scheme.
- Exposure category to BS 6375-1/ Design wind load: Structural engineer to advise..
- Operation and strength characteristics: To BS 6375-2.
- Timber: Generally to BS EN 942.
  - Species: Red grandis or equal approved to provide same or better performance, longevity and appearance.
  - Appearance class: J10 for glazing beads, drip mouldings and the like. J40 or better for all other members.
  - Moisture content on delivery: 12-19%.
- Preservative treatment: Organic solvent as section Z12 and WPA Commodity Specification C5; Desired service life 30 years.
- Finish as delivered: Full paint system as section M60. RAL colour of final finish to be confirmed and may be from non-standard selection..
- Glazing details: See Installation Guidance above
  Heat strengthened; OUTER:6mm thk SGG PLANIDUR (heatstrengthened) PLANICLEAR
  PLANITHERM ONE T ONE T – coating applied to surface 2
  CAVITY: 8mm 90% Krypton super spacer
  INNER: 6mm thk SGG PLANIDUR (heatstrengthened) PLANICLEAR

  Heat soaked toughened; OUTER:6mm thk SGG Securit (toughened) PLANICLEAR
  PLANITHERM ONE T ONE T – coating applied to surface 2 HST to BSEN14179
  CAVITY: 8m 90% Krypton super spacer
  INNER: 6mm thk SGG Securit (toughened) PLANICLEAR HST to BSEN14179

  Criteria for both build ups; G value; 48, U value 1.1, Transmittance 69

  White warm edge spacers
  Site glazing utilising hardwood beads.
  - Beading: Internal.
- Ironmongery/ Accessories: New ironmongery on the replacement window is to match the type utilised on the existing window ie like for like replacement.
  All brushed stainless steel grade 316 austenitic
  To each window or opening light as required;
  - Hinges
  - Casement stay
  - Casement window handle/lock;
  - Restrictor (100mm opening)
  - Secondary handles, as required to enable easier opening of larger windows
  - Fanlight catch and pole for high level pivot windows

  Range to be submitted for Client approval.
- Fixing: Bolted to masonry reveal, stainless steel 316 austenitic fixings. Detail to address wind loadings and specific jamb condition. Submit proposals for Structural engineer review.

250B WOOD WINDOWS Sash
Standard: To BS 644.

- Manufacturer: A firm currently registered under a third party quality assurance scheme.
- Exposure category to BS 6375-1/ Design wind load: Structural engineer to advise..
- Operation and strength characteristics: To BS 6375-2.
- Timber: Generally to BS EN 942.
  - Species: Red grandis or equal approved to provide same or better performance, longevity and appearance.
  - Appearance class: J10 for glazing beads, drip mouldings and the like. J40 or better for all other members.
  - Moisture content on delivery: 12-19%.
- Preservative treatment: Organic solvent as section Z12 and WPA Commodity Specification C5; Desired service life 30 years.
- Finish as delivered: Full paint system as section M60. RAL colour of final finish to be confirmed and may be from non-standard selection.
- Glazing details: See Installation Guidance above
  Heat strengthened; OUTER:6mm thk SGG PLANIDUR (heatstrengthened) PLANICLEAR
  PLANITHERM ONE T ONE T – coating applied to surface 2
  CAVITY: 8mm 90% Krypton super spacer
  INNER: 6mm thk SGG PLANIDUR (heatstrengthened) PLANICLEAR

  Heat soaked toughened; OUTER:6mm thk SGG Securit (toughened) PLANICLEAR
  PLANITHERM ONE T ONE T – coating applied to surface 2 HST to BSEN14179
  CAVITY: 8m 90% Krypton super spacer
  INNER: 6mm thk SGG Securit (toughened) PLANICLEAR HST to BSEN14179

  Criteria for both build ups; G value; 48, U value 1.1, Transmittance 69

  White warm edge spacers
  Site glazing utilising hardwood beads.
  - Beading: Internal.
    Ironmongery/ Accessories: Weights, cords, beads etc to enable operation of sash opening system.

    Ironmongery all brushed stainless steel grade 316 austenitic
    New ironmongery on the replacement window is to match the type utilised on the existing window ie like for like replacement.
    To each window or opening light as required;
    - Restrictor (100mm opening)
    - Fitch/sash lock
    - Secondary handles, as required to enable easier opening of larger windows
    Range to be submitted for Client approval

    In addition;
    - Sash removal system, allowing easy removal of both upper and lower sashes for future mainenance.
- Fixing: Bolted to masonry reveal, stainless steel 316 austenitic fixings. Detail to address wind loadings and specific jamb condition. Submit proposals for Structural engineer review.

315A STEEL WINDOWS Refurbishment

- Refer to drawing L(31)38 Steel windows refurbishment scope for summary of typical works required

480A ROOF WINDOWS Mono pitch rooflights up to 2800mm panel length. Various pitches between 15-90°, mono pitch
- 50% of all rooflights are to be openable to suit M&E consultant ventilation strategy

- Manufacturer: Submit proposals.
  - Product reference: Submit proposals
    " Frame: Thermally broken aluminium frame with thermal break of at least 20mm.
    " Frame width: Sightlines between fixed &/or opening profiles to be 50mm or less.
    " Finish: ppc. coated aluminium frame. Colour to be confirmed from full RAL colour range including non standard colours .Qualtiy control of component manufacture: to be manufactured to ISO 9001:2000 .
- Glazing details: ALL toughened glass to be heat soaked.
  FRAGILE SITUATIONS (as identified on roof plan); Double glazed low-e argon filled insulating units, and toughened heat soaked tested (HST) outer pane and laminated inner pane as required to meet Curtain Walling and Cladding Technology TN66/67 impact resistance for fragile installations and for the properties below:
  Light Transmittance LT: 0.56
  Total Solar Energy Transmittance G: 0.36
  Thermal performance U: 1.0 W/m2K

  NON FRAGILE SITUATIONS (as identified on roof plan); Double glazed low-e argon filled insulating units, and toughened heat soaked tested (HST) outer pane and laminated inner pane as required to meet Curtain Walling and Cladding Technology TN66/67 impact resistance for non fragile installations and for the properties below:
  Light Transmittance LT: 0.56
  Total Solar Energy Transmittance G: 0.36
  Thermal performance U: 1.0 W/m2K

  " Thermal transmittance: U value (combined frame including all opening vent framing and glass and perimeter junctions) to be less than 1.7 and proven for the specific rooflight using SAP approved software to comply with Part L of the Building Regulations October 2010. This must include all opening vent framing. Cold bridges must be avoided.
  " Air permeability: Assembly airtight (including vents) to 1m3/h/m2 @ 50 Pascals in accordance with (ATTMA) Air Tightness Testing and Measurement Association best practice recommendation index for school buildings, offices & dwellings. When tested, natural ventilation openings should be closed but not sealed to provide a realistic measurement of the actual leakage.
  " Water permeability: 100% Watertight in sloped orientation (including vents) to 1200 Pascals and with EN12208 Class E1200 rating.
  " Verification of Performance: Rooflight to meet the requirements of EN14351-1:2006 with declaration of conformity and accompanied by a CE Label to prove complete installation has been tested for watertightness, thermal transmittance, air permeability and factory production control. Impact resistance in accordance with Curtain Walling and Cladding Technology (CWCT) TN66/67 for class 2 impact resistance.
  " Ventilation: 50% of panels to open to provide a full length opening vent for natural daily ventilation. Location of opening vents are to be determined by M&E consultant to address their ventilation strategy. Note that certain rooflight systems may not allow adjacent glazed panels to open ie they need to be separated by a fixed panel. All vents to be CE marked.
  " Vent design: Vents to be flush in-line with the glazing. For conservation detailing there should be no visible difference in framing between a fixed panel and an opening vent. Vents to be operated by a single push point high aesthetic electric chain actuator (submit for approval). Actuator to be PPC coated, RAL colour to match rooflight frames. All services to rooflight to be

hidden. .
Controls; Control system to M&E engineer design. Discreet colour coded roof mounted rain sensors required
- Beading: Hermetically sealed unit. Replaced externally .

- Flashings: By window manufacturer to suit , to be continuous with replaced lead flashings and tile/roof covering, which is to replicate the existing roof details. .
- Accessories: Actuator Controls: Control system to be confirmed by M&E consultant. Actuator to be ppc colour coded to match rooflight, and of high aesthetic
  " Wiring supply and commissioning of controls .
- Fixing: To be carried out by a trained and approved installer from manufacturers recommended list
  " Support structure: Rooflight panels to be fitted to the structural frame to Structural engineers design. Size of new structural elements and location when fixed must ensure the overall structural installation is no lower than existing soffit lining or any proposed new lining to the soffit. All continuous structural supports at the cill head and verge, to be provided & fixed by the main contractor. Other requirements; Quality control of component manufacture: system to be manufactured to ISO 9001:2000 .
  Sample rooflight and all associated visible elements to be submitted in an installation mock-up for approval
  Installation to be carried out by a trained and approved installer from manufacturers recommended list. Manufacturer and installer warranty required.
  Overall installation to be weather and watertight
  All services to rooflight to be hidden

480B ROOF WINDOWS MONO PITCH ROOFLIGHTS at 2800 - 3500mm panel length. Various pitches between 15-90°, mono pitch

- 50% of all rooflights are to be openable to suit M&E consultant ventilation strategy Manufacturer: Submit proposals.
- Product reference: Submit proposals
  " Frame: Thermally broken aluminium frame with thermal break of at least 20mm.
  " Frame width: Sightlines between fixed &/or opening profiles to be 50mm or less.
  " Finish: ppc. coated aluminium frame. Colour to be confirmed from full RAL colour range including non standard colours Qualtiy control of component manufacture: to be manufactured to ISO 9001:2000 .

- Glazing details: ALL toughened glass to be heat soaked.
  Triple glazed low-e argon filled insulating glass units, laminated inner pane, toughened low-e mid pane and toughened for the properties below:
  Light Transmittance LT: 0.53
  Total Solar Energy Transmittance G: 0.36
  " Thermal transmittance: Complete rooflight system U-value (combined frame including all opening vent framing and glass and perimeter junctions) to be less than 1 and proven for the specific rooflight using SAP approved software and to comply with Part L of the Building Regulations October 2010. This must include all opening vent framing. Cold bridges must be avoided.
  " Air permeability: Assembly airtight (including vents) to 1m3/h/m2 @ 50 Pascals in accordance with (ATTMA) Air Tightness Testing and Measurement Association best practice recommendation index for school buildings, offices & dwellings. When tested, natural ventilation openings should be closed but not sealed to provide a realistic measurement of the actual leakage.
  " Water permeability: 100% Watertight in sloped orientation (including vents) to 1200 Pascals and with EN12208 Class E1200 rating.
  " Verification of Performance: Rooflight to meet the requirements of EN14351-1:2006 with declaration of conformity and accompanied by a CE Label to prove complete installation has been tested for watertightness, thermal transmittance, air permeability and factory production control.
  " Ventilation: 50% of panels to open to provide a full length opening vent for natural daily ventilation. Location of opening vents are to be determined by M&E consultant to address their ventilation strategy. Note that certain rooflight systems may not allow adjacent glazed panels to open ie they need to be separated by a fixed panel. All vents to be CE marked.
  " Vent design: Vents to be flush in-line with the glazing. For conservation detailing there should be no visible difference in framing between a fixed panel and an opening vent. Vents to be operated by a single push point high aesthetic electric chain actuator (submit for approval). Actuator to be PPC coated, RAL colour to match rooflight frames. All services to rooflight to be hidden. .
  - Beading: Hermetically sealed unit. Replaced externally .
- Flashings: By window manufacturer to suit ,to be continuous with replaced lead flashings and tile/roof covering, which is to replicate the existing roof details. .
- Accessories: Actuator Controls: Control system to be confirmed by M&E consultant. Actuator to be ppc colour coded to match rooflight, and of high aesthetic
  " Wiring supply and commissioning of controls .
- Fixing: To be carried out by a trained and approved installer from manufacturers recommended list
  " Support structure: Rooflight panels to be fitted to the structural frame to Structural engineers design. Size of new structural elements and location when fixed must ensure the overall structural installation is no lower than existing soffit lining or any proposed new lining to

the soffit.
All continuous structural supports at the cill head and verge, to be provided & fixed by the main contractor. Other requirements; Quality control of component manufacture: system to be manufactured to ISO 9001:2000 .
Sample rooflight and all associated visible elements to be submitted in an installation mock-up for approval
Installation to be carried out by a trained and approved installer from manufacturers recommended list. Manufacturer and installer warranty required.
Overall installation to be weather and watertight
All services to rooflight to be hidden

480C ROOF WINDOWS MODULAR GLASS ROOFLIGHTS @ 15° OR LESS

- 50% of all rooflights are to be openable to suit M&E consultant ventilation strategy
  Complete modular glass skylight inclusive of insulated upstand for installation onto flat roofs
  Manufacturer: Submit proposals.
- Product reference: Submit proposals
  " Frame/Finish: External aluminium frames polyester powder coated (p.p.c.) Colour to be confirmed from full RAL colour range including non standard colours. " Edge design: Glass surface raised above frame edge to allow water run off. Glass surface edges have silkscreen frit print to resist UV degradation of the double glazed unit seals. .

• Glazing details: ALL toughened glass to be heat soaked.
FRAGILE SITUATIONS (as identified on roof plan); Double glazed low-e argon filled insulating units, and toughened heat soaked tested (HST) outer pane and laminated inner pane as required to meet Curtain Walling and Cladding Technology TN66/67 impact resistance for fragile installations and for the properties below:
Light Transmittance LT: 0.56
Total Solar Energy Transmittance G: 0.36
Thermal performance U: 1.0 W/m2K
. Design allows for drain and ventilation behind the pane with glazing pads and silicone.
" Thermal transmittance: U-value 1.24W/m2K of complete skylight, proven to EN/ISO100771, 2 EN673 & DS418.
" Air permeability: Airtight to Class 4 rating 600Pa EN/ISO12207 / EN/ISO1026 (2000).
" Water permeability: Watertight to EN 1873
" Acoustics: 34dB sound reduction, tested to EN/ISO717-1/A1
" Ventilation: where required, opening vents with electric actuators are concealed within the kerb All services to rooflight to be hidden. Actuator to be high aesthetic, PPC to match frame colour, submitted for approval.
- Beading: Hermetically sealed unit. Replaced externally .

• Flashings: By window manufacturer to suit , to be continuous with replaced lead flashings and tile/roof covering, which is to replicate the existing roof details .
Accessories: Actuator Controls: Control system to be confirmed by M&E consultant. Actuator to be ppc colour coded to match rooflight
" Wiring supply and commissioning of controls. .

• Fixing: To be carried out by a trained and approved installer from manufacturers recommended list
" Support structure: Rooflight panels to be fitted to the proprietary kerb, to be mounted in position with top inclined within a range of 4° to 15° (fillet wedges as required). Roof membrane is then dressed around kerb, framed glass top secured in position with no system requirements for silicone sealants. All structural requirements to Structural engineers design. Other requirements; Verification of Performance: Rooflight to meet the mandatory requirements of construction products derivative EN14351-1 (European Regulation for glazing effective since 1st Feb 2010) with declaration of conformity and accompanied by a CE label to prove product watertightness, thermal transmittance and air permeability. Factory production control to ISO 9001:2000.
" Impact Safety Standard: Complete unit (glass, frame and kerb assembly) must be tested to CWCT TN66/67 for impact resistance to reduce the likelihood of death or injury caused by falls.
Installation to be carried out by a trained and approved installer from manufacturers recommended list. Manufacturer and installer warranty required.
Sample rooflight and all associated visible elements to be submitted in an installation mock-up for approval
Installation to be carried out by a trained and approved installer from manufacturers

recommended list. Manufacturer and installer warranty required.
Overall installation to be weather and watertight All services to rooflight to be hidden .

EXECUTION

710 PROTECTION OF COMPONENTS
- General: Do not deliver to site components that cannot be installed immediately or placed in clean, dry floored and covered storage.
- Stored components: Stack vertical or near vertical on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.

730 PRIMING/ SEALING
- Wood surfaces inaccessible after installation: Prime or seal as specified before fixing components.

750 BUILDING IN
- General: Not permitted unless indicated on drawings.
  - Brace and protect components to prevent distortion and damage during construction of adjacent structure.

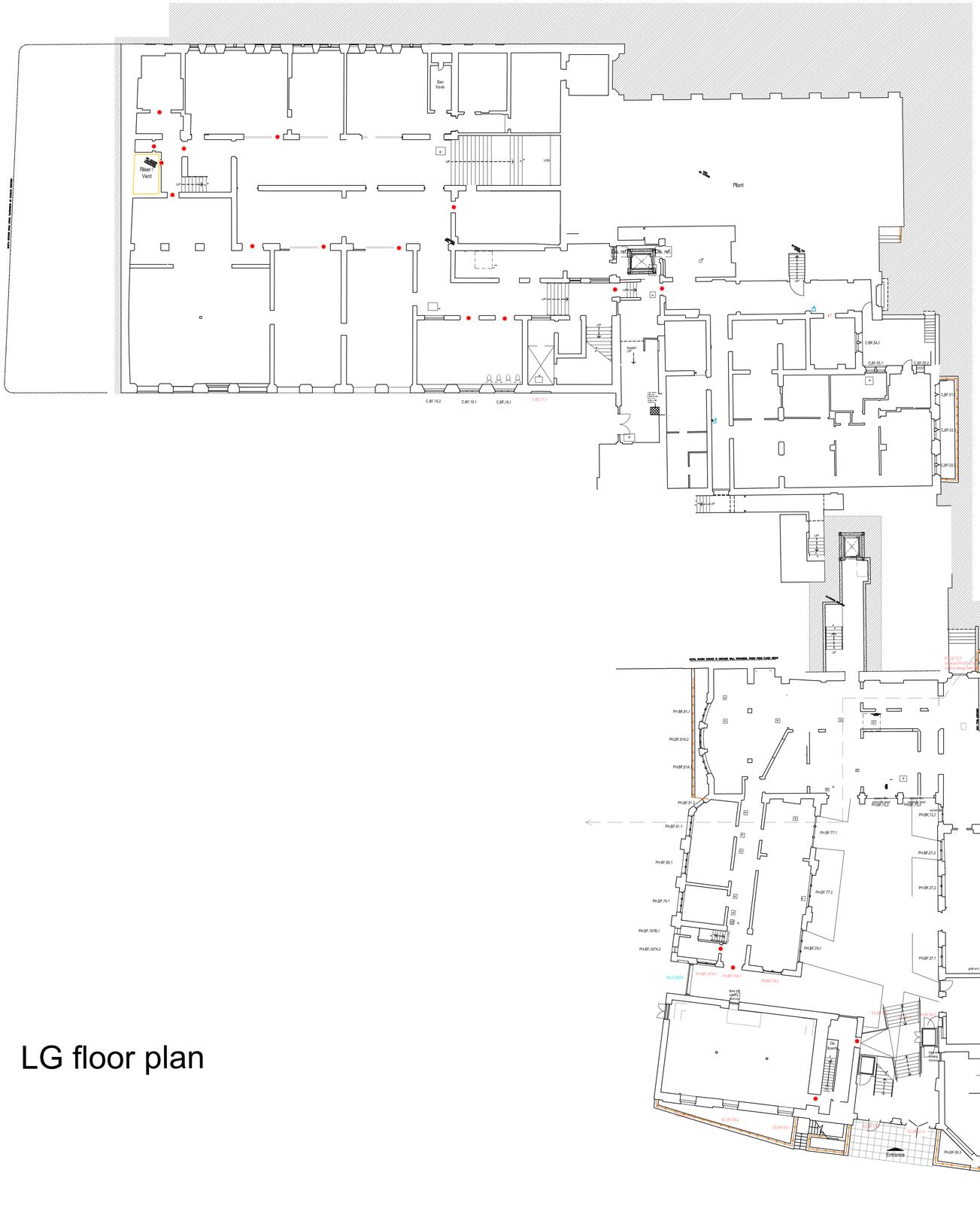
760 REPLACEMENT WINDOW INSTALLATION
- Standard: To BS 8213-4.

765 WINDOW INSTALLATION GENERALLY
- Installation: Into prepared openings.
- Gap between frame edge and surrounding construction:
  - Minimum: recommended by window manufacturer.
  - Maximum: recommended by window manufacturer but no greater than 10mm.
- Distortion: Install windows without twist or diagonal racking.

780 FIXING OF WOOD FRAMES
- Standard: As section Z20.
- Fasteners: stainless steel austenitic, type determined by manufactuer/installer .
  - Spacing: When not predrilled or specified otherwise, position fasteners not more than 150 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 450 mm centres.

810 SEALANT JOINTS
- Sealant:
  - Manufacturer: Contractor's choice.
    Product reference: Contractor's choice.
  - Colour: to match frame.
  - Application: As section Z22 to prepared joints. Finish triangular fillets to a flat or slightly convex profile.

820 IRONMONGERY
- Fixing: Assemble and fix carefully and accurately using fasteners with matching finish supplied by ironmongery manufacturer. Do not damage ironmongery and adjacent surfaces.
- Checking/ Adjusting/ Lubricating: Carry out at Completion and ensure correct functioning.



LG floor plan

NOTES

1. DO NOT SCALE FROM THIS DRAWING.
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3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL RELEVANT ARCHITECTURAL, ELECTRICAL, MECHANICAL AND STRUCTURAL DRAWINGS.

Key

Red no/s: form part of phase 3 works window replacement package

Windows
- All glazing 800mm or less above FFL as indicated on RAF drawings is to be toughened.
- Proposed Plans: L(31)30-35 were referred to in producing this window proposal.
- Where any windows are modern inclusions, the window detail utilized in the replacement should match original windows on the same elevation.
- All new panes are to be glass. Existing louvres are not replaced as louvres.
- Phase 2 contractor is to reinstate all head/cills/ reveals damaged or altered to allow window installation. Detail to exactly match that removed. Contractor to fully photograph/ record existing situation prior to undertaking window installation and provide copy to client/ CA.
- Glass to WCs/ shower/ cleaners etc is to be factory etched to restrict views through but still allow light penetration.
- Window manufacturer to note: where windows pass floor level, glass within the floor / ceiling zone is to be opaque film covered (inside face, color tbc). Once exact ceiling level is known, film to be trimmed to match ceiling underside and leave clear glass below.

Note:
Drawing to be printed in colour.

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS :-

Item	Hazard	Risk
-		

Rev	Description	By	Date	Chk'd	Auth
-	Initial Issue	MC	13.04.2016	KC	

WILSON MASON
Wilson Mason LLP
Upland House
Spring Lane
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DRAFT

Drawing Status: TENDER

Project: UoM Coupland 3 Building Refurbishment

Building Name: Coupland 3

Sub Site Name:

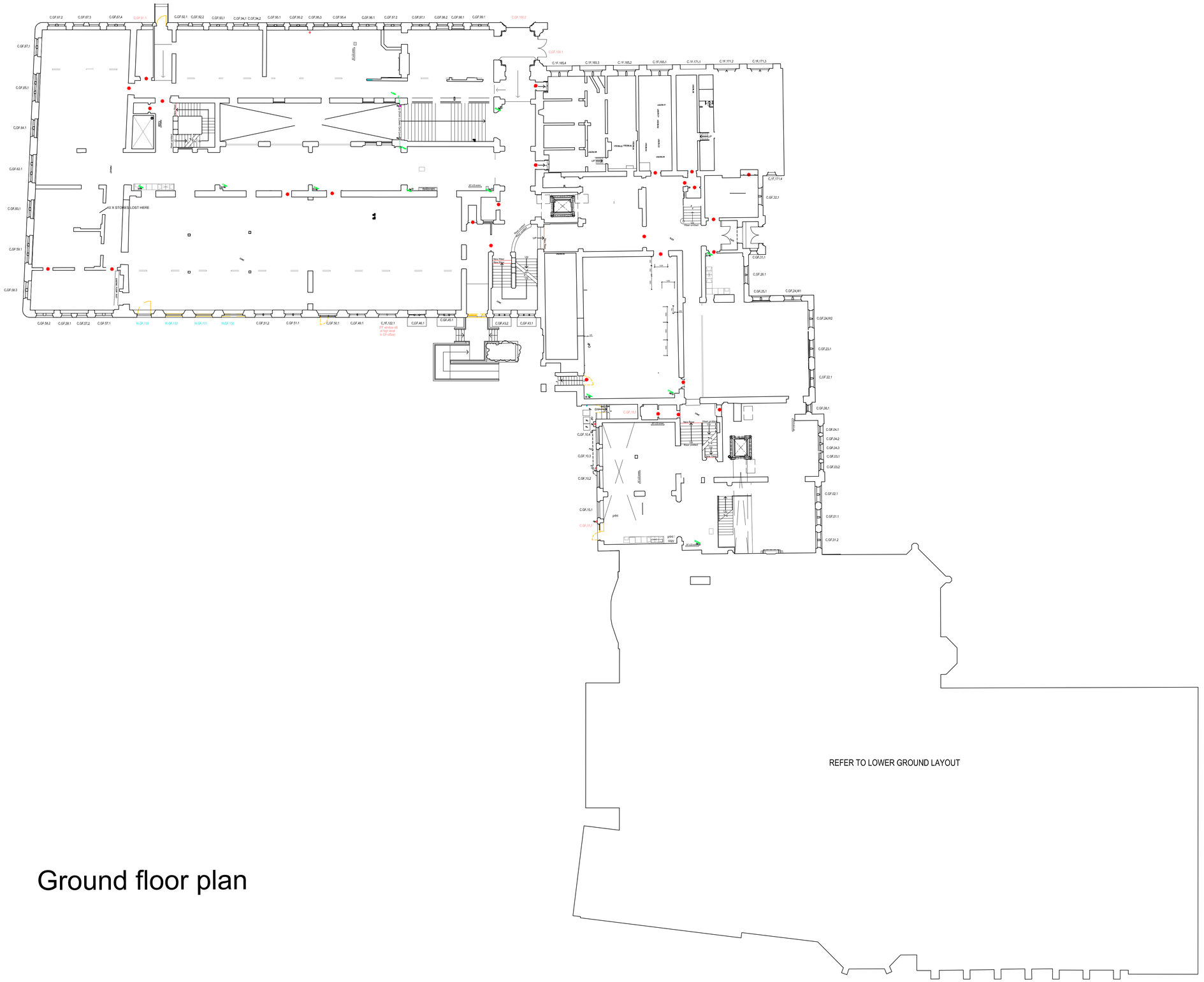
Site Name: University of Manchester

Drawing Title: Lower Ground Floor Plan
Window References

PM	Drawn	Checked	Authorised
	MC	KC	
Scale	Date	Date	Date
1:200 @A1	12.04.2016		

Drawing No.: 5760 L(31)30

Revision: -



Ground floor plan

NOTES

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Note:
Drawing to be printed in colour.

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Item	Hazard	Risk
-		

Rev	Description	By	Date	Chk'd	Auth
-	Initial Issue	MC	13.04.2016	KC	

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Drawing Status: TENDER

Project
UoM Coupland 3 Building Refurbishment

Building Name
Coupland 3

Sub Site Name

Site Name
University of Manchester

Drawing Title
Ground Floor Plan
Window References

PM	Drawn	Checked	Authorised
	MC	KC	
Scale 1:200 @A1	Date 12.04.2016	Date	Date

Drawing No. 5760 L(31)31

Revision -



First floor plan

NOTES

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Key

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Item	Hazard	Risk
-		

Rev	Description	By	Date	Chk'd	Auth
-	Initial Issue	MC	13.04.2016	KC	

WILSON MASON

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Drawing Status: TENDER

Project: UoM Coupland 3 Building Refurbishment

Building Name: Coupland 3

Sub Site Name:

Site Name: University of Manchester

Drawing Title: First Floor Plan
Window References

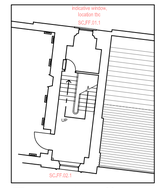
PM	Drawn	Checked	Authorised
	MC	KC	
Scale	Date	Date	Date
1:200 @A1	12.04.2016		

Drawing No.: 5760 L(31)32

Revision: -



Second floor plan



Extract - Schunk
Second floor landing

NOTES

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Item	Hazard	Risk
-		

Rev	Description	By	Date	Chk'd	Auth
-	Initial Issue	MC	13.04.2016	KC	

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Drawing Status: TENDER

Project
UoM Coupland 3 Building Refurbishment

Building Name
Coupland 3

Sub Site Name

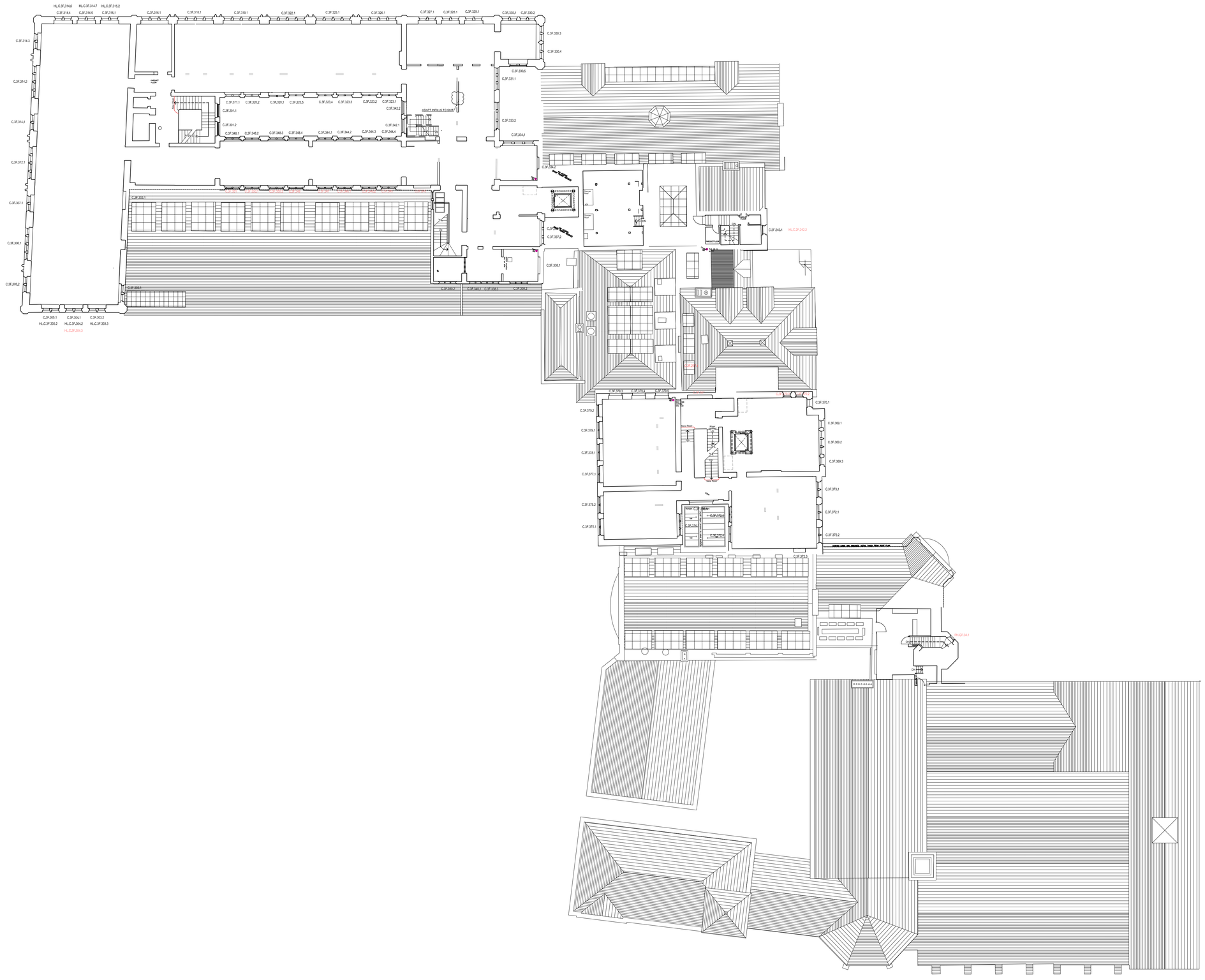
Site Name
University of Manchester

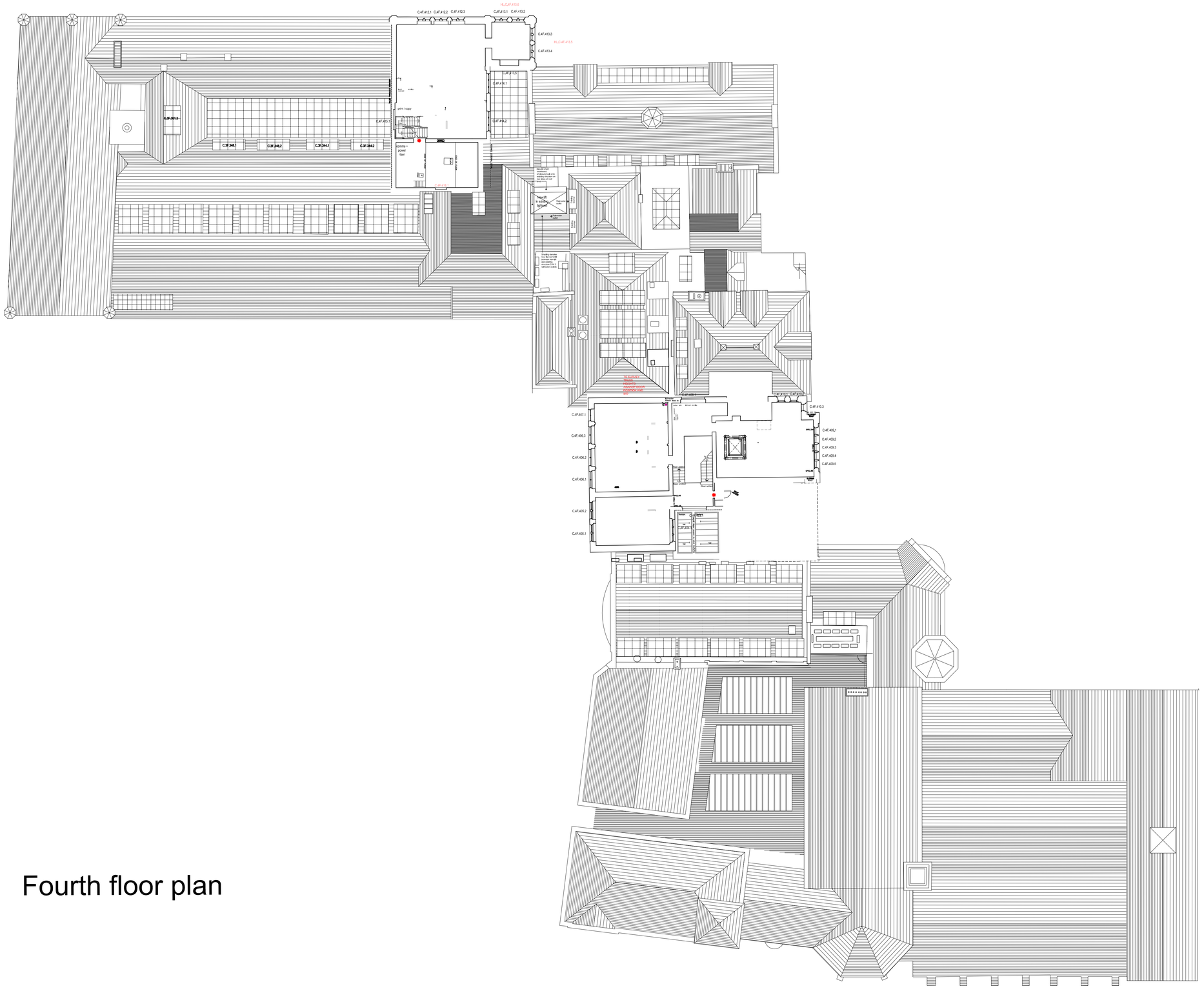
Drawing Title
Second Floor Plan
Window References

PM	Drawn	Checked	Authorised
	MC	KC	
Scale	Date	Date	Date
1:200 @A1	12.04.2016		

Drawing No.
5760 L(31)33

Revision
-


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C.3F.314.1
C.3F.312.1
C.3F.307.1
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C.3F.340.1
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C.3F.305.1
C.3F.304.1
C.3F.303.2
Hi_C.3F.314.6
Hi_C.3F.314.7
Hi_C.3F.315.2
Hi_C.3F.305.2
Hi_C.3F.304.2
Hi_C.3F.303.3
Hi_C.3F.242.2
Hi_C.3F.54.1
ADAPT INFILLS TO SUIT
Down
Up
New Floor
Void
Void
Void



Fourth floor plan

NOTES

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Key

Red no/s: form part of phase 3 works window replacement package

Windows
- All glazing 800mm or less above FFL as indicated on RAF drawings is to be toughened.
- Proposed Plans: L(31)30-35 were referred to in producing this window proposal.
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Item	Hazard	Risk
-		

Rev	Description	By	Date	Chk'd	Auth
-	Initial Issue	MC	13.04.2016	KC	

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DRAFT

Drawing Status: TENDER

Project: UoM Coupland 3 Building Refurbishment

Building Name: Coupland 3

Sub Site Name:

Site Name: University of Manchester

Drawing Title: Fourth Floor Plan
Window References

PM	Drawn	Checked	Authorised
	MC	KC	
Scale: 1:200 @A1	Date: 12.04.2016	Date	Date

Drawing No.: 5760 L(31)35

Revision: -



Typical steel window



Thick paint and hinge detail



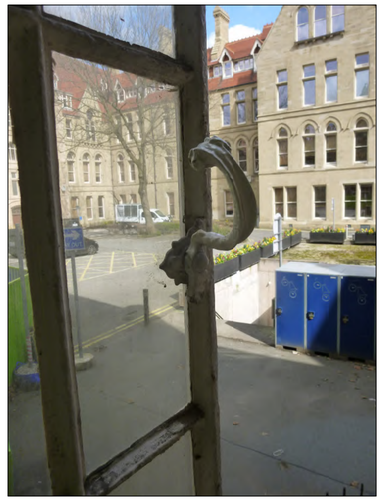
Pivot and high level pull catch mechanism



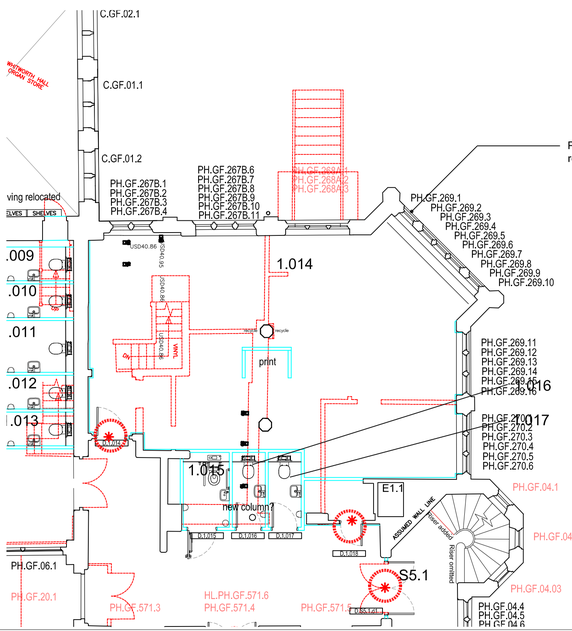
Broken ironmongery



Asscoalted ironmongery and installations



Historic ironmongery



Location Plan
1:50 at A3

Typical scope of repair for steel windows;

- All windows are original and are largely intact and in relatively good order, including the majority of the fittings.
- The glass appears original in a number of locations (either polished plate, machine drawn or cylinder glass), however there are modern float glass inclusions which have likely arisen due to accidental damage or expected breakage over time.
- The steel form of the windows is not visible due to installations of putty and numerous coats of paint hiding the bare steel. This masking has however aided the protection and preservation of the windows and no major corrosion is visible.

- If any major corrosion is however revealed following removal of paint/putty, the steel lugs which are set into stone surrounds supporting the frames and fixed lights will have to be cut with full removal as the only option for remedial of the steel of the window itself.
- The opening lights are to be removed and dealt with in a workshop.

- Old putty and paint completely removed. Glazing putty to be carefully picked out with a knife in situ. Be aware that **lead paint** may have been utilized, even if not in one of the top coats it may be part of an older paint application several layers within.

- Carefully remove glass. Number for reinsertion into original position

- Any corrosion including any under loose paint should be removed back to bright metal with scrapers, wire brush or micro abrasive and immediately primed with a high build etch primer, or scraped and rubbed back to remove loose material and treated with a neutraliser solution.
- Any major pitting can be filled with two part epoxy (car body) filler and sanded smooth before painting.
- Opening operation reinstated to act smoothly and easily as would have been in the original installation, including restoration of hinges and pivots. Any not restorable are to be replaced with matching and historically sympathetic equivalent.

- Broken/damaged ironmongery replaced with matching ironmongery. Retained ironmongery to have thick paint/drips/snots removed by scraping

- Return stored panes to original position. Any existing broken panes are to be replaced with cylinder glass (thickness to match replaced pane). Any historic glass broken during the works are to be replaced with historic equivalent.
- Replace putty using modified putty (glazing compound) to avoid the setting time and over painting issues with traditional putty.

- Repainting specification will depend upon what the existing paint is. If it is traditional oil paint then use a linseed oil based paint. Client to be aware that this may then need regular four or five year maintenance cycles.
- If the old paint is completely removed then utilise a two pack metal paint system.
- If there are areas that the paint cannot be completely removed, any edges between old sound paint and new primer can be feathered smooth before repainting.

- Seal around the frame to the stone externally to be done with traditional burnt sand mastic or stone compatible sealant.
- Once repainted the opening lights to have a silicone weather seal added to improve air tightness.
- Overall installation to be water and weathertight
- A traditional and original method of opening high level and pivot windows to be provided for each window

NOTE:

- Lead in paint, therefore avoid sanding or chemical removal or any other activity which would accentuate any risk from the interaction with and removal of the lead paint
- All products and processes are to be submitted for approval. Sample installations and applications are required to be approved prior to the main works progressing
- All procedures and methodology in carrying out these works are to acknowledge the historic significance of the installation and apply due care and consideration.
- Any damage to window surround caused during the works are to be made good by the contractor, to a standard approved by Conservation Architect and local authority

CLIENT NOTE;

- Due to the existing windows being retained, no restrictors are incorporated.
- As the refurbishment will possibly increase the building airtightness and Phase 3 may increase the internal temperature, it is possible that condensation will form on the inside face of the glass of the existing windows

NOTES

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Item	Hazard	Risk
-		

Rev	Description	By	Date	Chk'd	Auth
-	Initial Issue	MC	19.04.2016	KC	

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Drawing Status
TENDER

Project
UoM Coupland 3 Building Refurbishment

Building Name
Coupland 3

Sub Site Name

Site Name
University of Manchester

Drawing Title
Typical steel window remedial works

PM	Drawn	Checked	Authorised
	MC	KC	
Scale	Date	Date	Date
- @A1	15.04.2016		

Drawing No.
5760 L(31)38

Revision
-



Plastered chamfered cill, jamb and head. Masonry dividing mullion



Plastered jamb and head. Timber window board



Care to avoid damage to masonry or stone elements, such as the stone heads here which the window contines above



Plastered chanfered cill, jamb and head.

Typical window reveals

NOTE:

- Contractor to undertake full photographic delap survey of windows and surrounds, clearly identifying the window perimeter.

-A copy of this record pack is to be provided to Client / CA before works commence

- Sample window installation is to be viewed by relevant design team members to agree method of installation and likely resultant damage required to enable installation.

-Damage to window reveals as a result of window installation is to be made good by contractor.

- For this scope of works, `window reveals` is taken to mean jamb, cill, head and any dividing plaster/masonry mullion.

-Works for making good are to replicate the situation before the window installation was carried out. This will include reinstatement of all associated features such as chamfered reveals, feature dado band inset into plaster, cill boards etc.

-The form and materials used in any remedial works are to replicate those damaged/removed.

-The plaster specification is to be defined once samples have been taken of the existing plaster from reveals. As the building is Listed but not Grade 1, a historic equivalent will be required however there is no obligation to provide an exact match, incorporating details such as horse hair etc

-There is to be no damage to existing masonry or stone work

NOTES

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Item	Hazard	Risk
-		

Rev	Description	By	Date	Chk'd	Auth
-	Initial Issue	MC	19.04.2016	KC	

WILSON MASON

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Upland House
Spring Lane
Samlesbury
e: preston@wilsonmason.co.uk

Drawing Status
TENDER

Project
UoM Coupland 3 Building Refurbishment

Building Name
Coupland 3

Sub Site Name

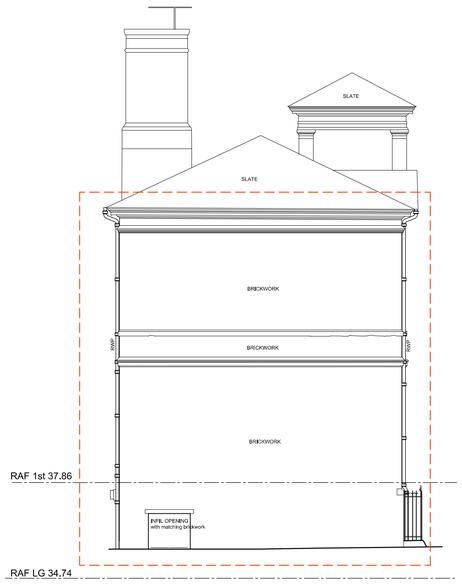
Site Name
University of Manchester

Drawing Title
Reveal remedial works

PM	Drawn	Checked	Authorised
	MC	KC	
Scale - @A3	Date 20.04.2016	Date	Date

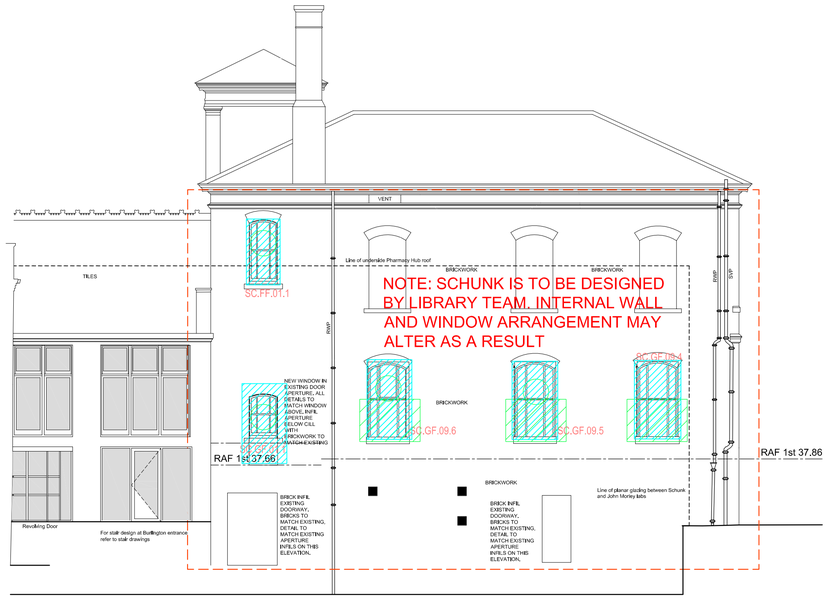
Drawing No.
5760 L(31)39

Revision
-



Datum 33.00m

Elevation 1



Datum 32.00m

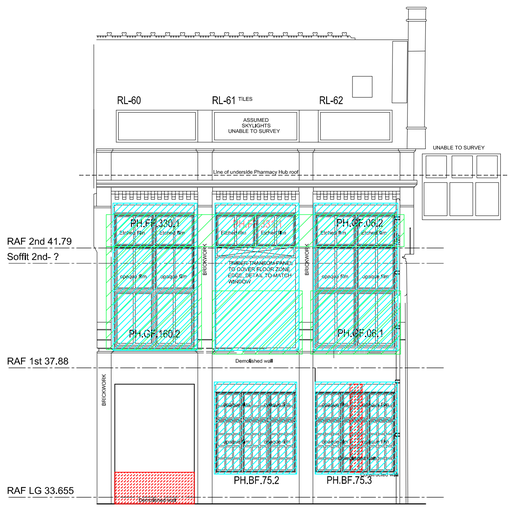
Elevation 2



Datum 32.00m

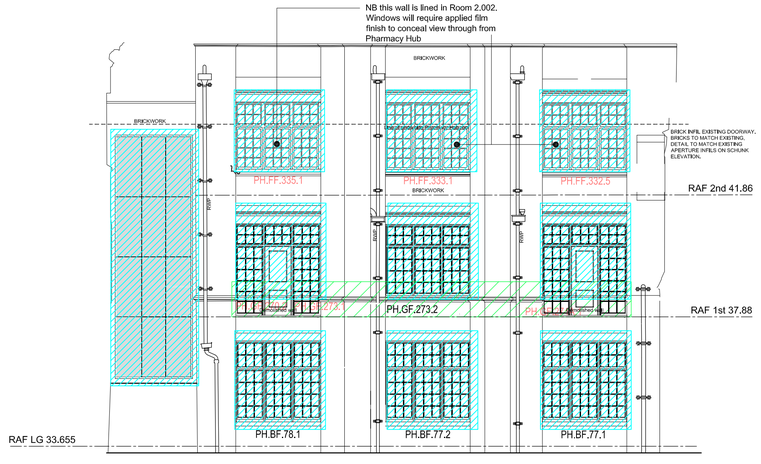
Elevation 3

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SCALE
1:100



Datum 32.00m

Elevation 4



Datum 32.00m

Elevation 5



Datum 33.00m

Elevation 6

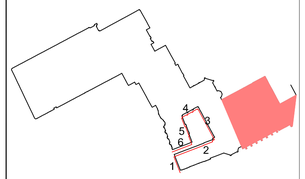
Building layout has been assessed to determine areas where users and public may be seated or stationary and at greater risk should glass to windows above fall.
Glass in hatched zone is heat soaked and toughened thereby incorporating safer breakage characteristics in the event of failure

NOTES

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KEY

Schunk scope of works in abeyance pending library project team review
Areas of toughened glass (Refer to note)



FF.01. (black text) - Phase 2 windows
FF.01. (red text) - Phase 3 windows

TO ASSIST ONLY
The zone likely to fall within building regulations requirement for incorporation of toughened glass (800mm or less AFFL) is shown (green hatch). Further windows may require toughened glass to conform to regulation requirement once the finished detail of the building is known. It is encumbent upon the contractor to ensure compliance with the regulations and procure/install all toughened glass required by the regulations.

Note:
Drawing to be printed in colour.

- All windows to be replaced
- General principle is that replacement windows match arrangement and detail of removed window. Several instances exist however, where the current window is a more modern inclusion. Refer to the elevation drawings which clarifiy what should be installed in these situations.
- Walls to be demolished are in red hatch.

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS :-

-

Item	Hazard	Risk

Rev	Description	By	Date	Chk'd	Auth
04	General update	kc	19/04/2016		
03	Raised Access Floor levels (RAF) added. Obscure glazing identified	DG	2015 06 27	kc	
02	Areas of toughened glass added. Notes added.	si	09 10 2014	kc	
01	Windows in Phase 2 scope outlined. Safety Glazing identified	dg	22 06 2014	kc	
-	Initial Issue	kc	08 09 2014	kc	

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Drawing Status
TENDER

Project
UoM Coupland 3 Building Refurbishment

Building Name
Coupland 3

Sub Site Name

Site Name
University of Manchester

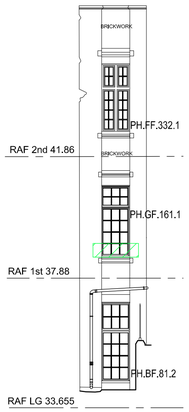
Drawing Title
Proposed Elevations 01

PM	Drawn	Checked	Authorised
	kc		
Scale	Date	Date	Date
1:100 @A1	08.09.2014		

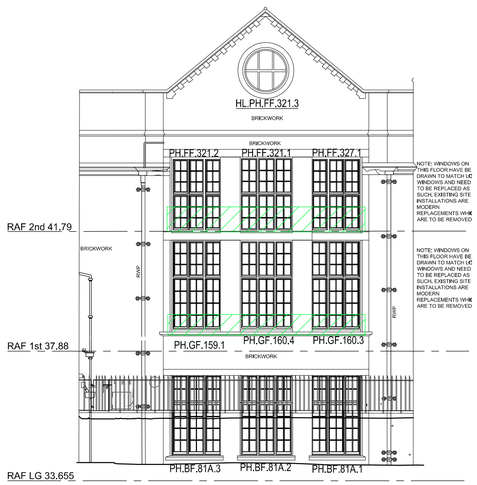
Drawing No.
5760 L(2-)20

Revision
04

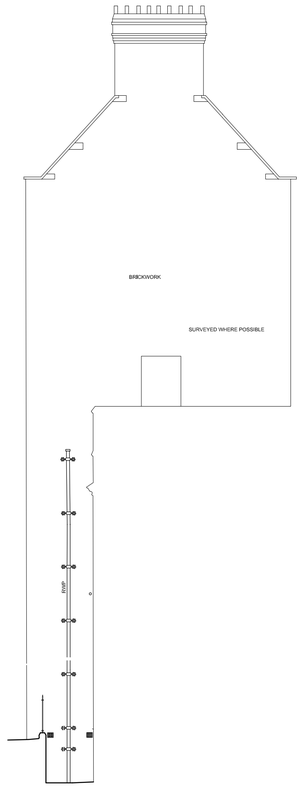
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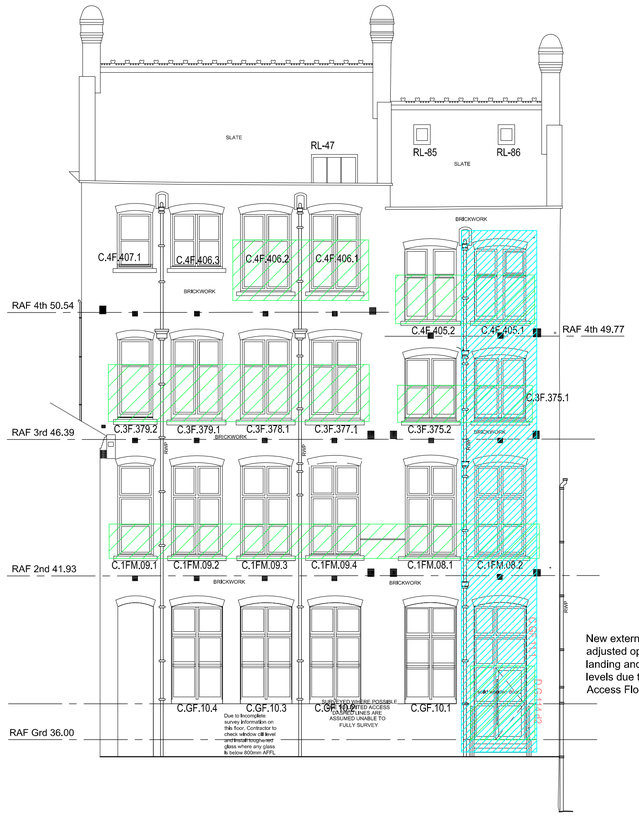
Datum 32.00m
Elevation 8



Datum 32.00m
Elevation 9

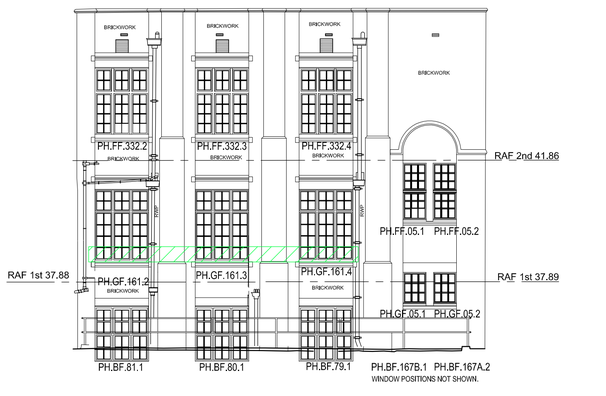


Datum 32.00m
Elevation 10



New external door and window in adjusted opening. External steps, landing and handrail to suit difference in levels due to new internal Raised Access Floor

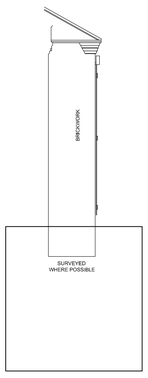
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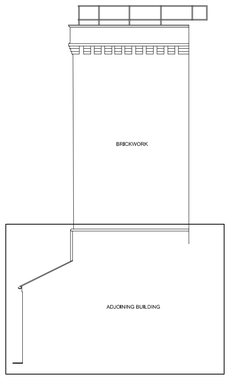
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Elevation 7



Datum 34.00m
Elevation 12

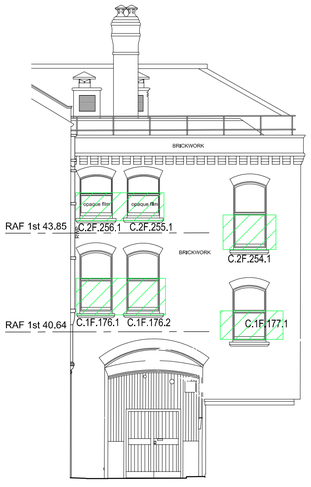


Datum 34.00m
Elevation 13



Datum 34.00m
Elevation 14

Building layout has been assessed to determine areas where users and public may be seated or stationary and at greater risk should glass to windows above fail.
Glass in hatched zone is heat soaked and toughened thereby incorporating safer breakage characteristics in the event of failure



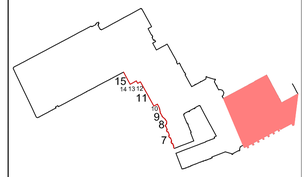
Datum 33.00m
Elevation 15

NOTES

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KEY

Schunk scope of works in abeyance pending library project team review
Areas of toughened glass (Refer to note)



FF.01. (black text) - Phase 2 windows
FF.01. (red text) - Phase 3 windows

TO ASSIST ONLY
The zone likely to fall within building regulations requirement for incorporation of toughened glass (800mm or less AFFL) is shown (green hatch). Further windows may require toughened glass to conform to regulation requirement once the finished detail of the building is known. It is encumbent upon the contractor to ensure compliance with the regulations and procure/install all toughened glass required by the regulations.

Note:
Drawing to be printed in colour.

- All windows to be replaced
- General principle is that replacement windows match arrangement and detail of removed window. Several instances exist however, where the current window is a more modern inclusion. Refer to the elevation drawings which clarifiy what should be installed in these situations.
- Walls to be demolished are in red hatch.

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS :-

-

Item	Hazard	Risk

Rev	Description	By	Date	Chk'd	Auth
04	General update	kc	19/04/2016		
03	Raised access floor levels added. New external door and adjusted window added to Elevation 11	DG	2015 06 26	kc	
02	Areas of toughened glass added. Note added	si	09 10 2014	kc	
01	Windows in Phase 2 scope outlined	dg	22 09 2014	kc	
-	Initial Issue	kc	08 09 2014	ak	

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Drawing Status
TENDER

Project
UoM Coupland 3 Building Refurbishment

Building Name
Coupland 3

Sub Site Name

Site Name
University of Manchester

Drawing Title
Proposed Elevations 02

PM	Drawn	Checked	Authorised
	kc		
Scale	Date	Date	Date
1:100@A1	08.09.2014		

Drawing No.
5760 L(2-)21

Revision
04



Elevation 16

m 0 1 2 3 4 5 6 7 8 9 10
SCALE
1:100

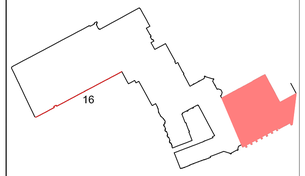
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KEY

Schunk scope of works in abeyance pending library project team review

Areas of toughened glass (Refer to note)



FF.01. (black text) - Phase 2 windows
FF.01. (red text) - Phase 3 windows

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Item	Hazard	Risk
-		

Rev	Description	By	Date	Chk'd	Auth
04	General update	kc	19/04/2016		
03	Ext housing + 2 windows removed - C.BF.21.1 / 2 Exstng + new floor levels added. Ramp modified.	ak	2015 01 23	kc	
02	Areas of toughened glass added. Note added.	si	09 10 2014	kc	
01	Windows in Phase 2 scope outlined	dg	22 09 2014	kc	
-	Initial Issue	kc	08 09 2014	kc	

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Drawing Status
TENDER

Project
UoM Coupland 3 Building Refurbishment

Building Name
Coupland 3

Sub Site Name

Site Name
University of Manchester

Drawing Title
Proposed Elevations 03

PM	Drawn	Checked	Authorised
	kc		
Scale	Date	Date	Date
1:100@A1	08.09.2014		

Drawing No.
5760 L(2-)22

Revision
04



Elevation 17

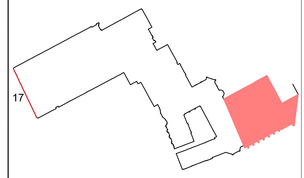
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KEY

Schunk scope of works in abeyance pending library project team review
Areas of toughened glass (Refer to note)



FF.01. (black text) - Phase 2 windows
FF.01. (red text) - Phase 3 windows

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-

Item	Hazard	Risk

Rev	Description	By	Date	Chk'd	Auth
04	General update	kc	19/04/2016		
03	Raised Access Floor levels added	DG	2015 06 27	kc	
02	Areas of toughened glass added. Note added	si	09 10 2014	kc	
01	Windows in Phase 2 scope outlined	dg	22.09.2014	KC	
-	Initial Issue	kc	08.09.2014		

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Drawing Status: TENDER

Project: UoM Coupland 3 Building Refurbishment

Building Name: Coupland 3

Sub Site Name:

Site Name: University of Manchester

Drawing Title: Proposed Elevations 04

PM	Drawn	Checked	Authorised
	kc		
Scale	Date	Date	Date
1:100@A1	08.09.2014		

Drawing No.: 5760 L(2-)23

Revision: 04



Elevation 18

Building layout has been assessed to determine areas where users and public may be seated or stationary and at greater risk should glass to windows above fail.
Glass in hatched zone is heat soaked and toughened thereby incorporating safer breakage characteristics in the event of failure

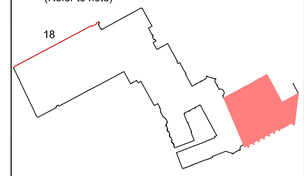
m 0 1 2 3 4 5 6 7 8 9 10
SCALE
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NOTES

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KEY

Schunk scope of works in abeyance pending library project team review
Areas of toughened glass (Refer to note)



FF.01. (black text) - Phase 2 windows
FF.01. (red text) - Phase 3 windows

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IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS :-

-

Item	Hazard	Risk

Rev	Description	By	Date	Chk'd	Auth
05	General update	kc	19/04/2016		
04	Window design to Lower Grd modified to use existing lintels. New window Refs added	ak	2015 03 03	kc	
03	Floor levels added. Fire escape door modified and external steps removed	ak	2015 01 23	kc	
02	Area of toughened glass added. Note added	si	09 10 2014	kc	
01	Windows in Phase 2 scope outlined	dg	22.09.2014	kc	
-	Initial Issue	kc	08.09.2014	ds	

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Drawing Status
TENDER

Project
UoM Coupland 3 Building Refurbishment

Building Name
Coupland 3

Sub Site Name

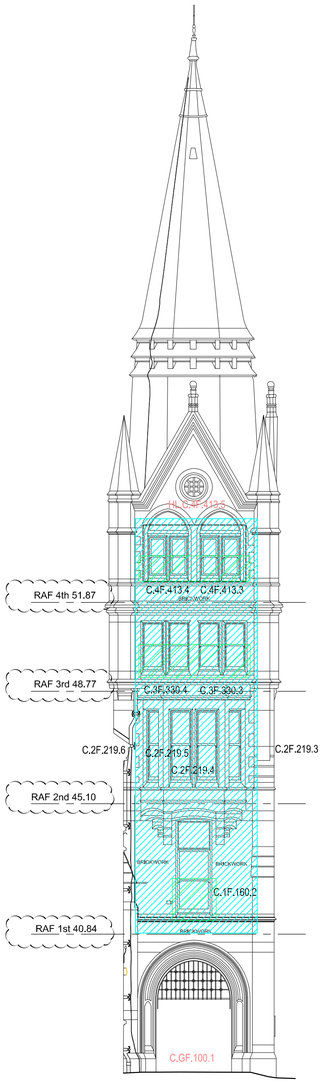
Site Name
University of Manchester

Drawing Title
Proposed Elevations 05

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Scale	Date	Date	Date
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Drawing No.
5760 L(2-)24

Revision
05



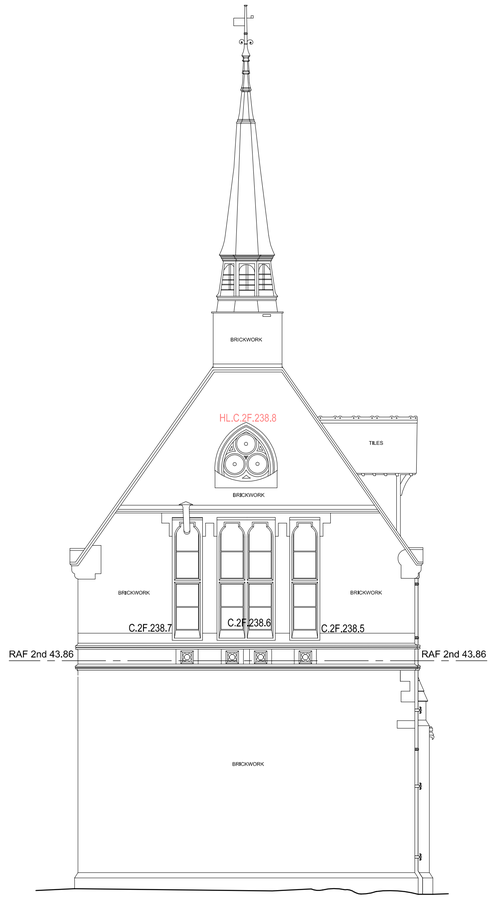
Datum 34.00m

Elevation 19



Datum 34.00m

Elevation 20



Datum 34.00m

Elevation 21

Building layout has been assessed to determine areas where users and public may be seated or stationary and at greater risk should glass to windows above fail.
Glass in hatched zone is heat soaked and toughened thereby incorporating safer breakage characteristics in the event of failure

SCALE m 0 1 2 3 4 5 6 7 8 9 10

1:100

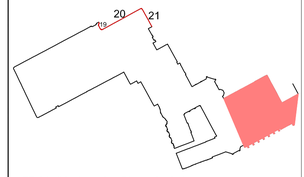
NOTES

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KEY

Schunk scope of works in abeyance pending library project team review

Areas of toughened glass (Refer to note)



FF.01. (black text) - Phase 2 windows
FF.01. (red text) - Phase 3 windows

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- Walls to be demolished in red hatch

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS :-

Item	Hazard	Risk
-		

Rev	Description	By	Date	Chk'd	Auth
04	General update	kc	19/04/2016		
03	Raised Access Floor levels added	DG	2015 06 25	kc	
02	Areas of toughened glass added. Note added	si	09 10 2014	kc	
01	Windows in Phase 2 scope outlined	dg	22.09.2014		
-	Initial Issue	kc	08.09.2014		

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Drawing Status
TENDER

Project
UoM Coupland 3 Building Refurbishment

Building Name
Coupland 3

Sub Site Name

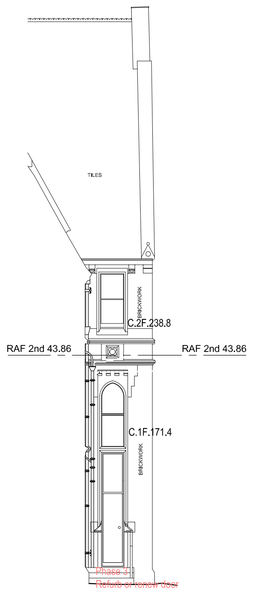
Site Name
University of Manchester

Drawing Title
Proposed Elevations 06

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	kc		
Scale	Date	Date	Date
1:100 @A1	08.09.2014		

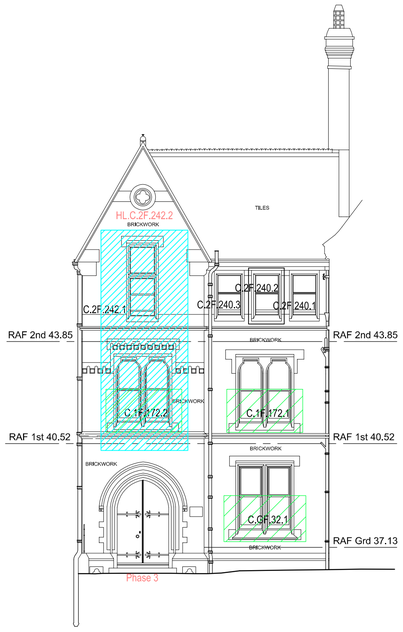
Drawing No.
5760 L(2-)25

Revision
04



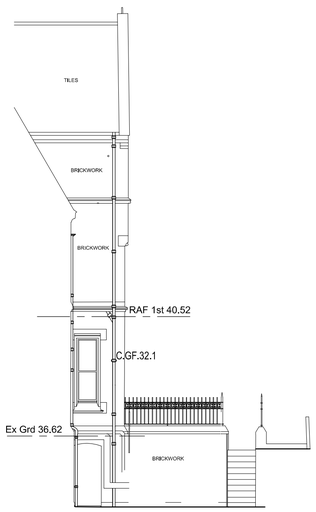
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Elevation 22



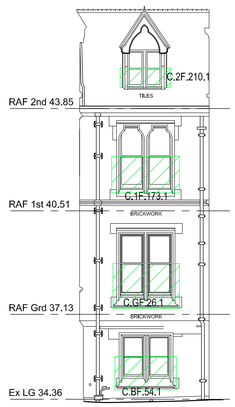
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Elevation 23



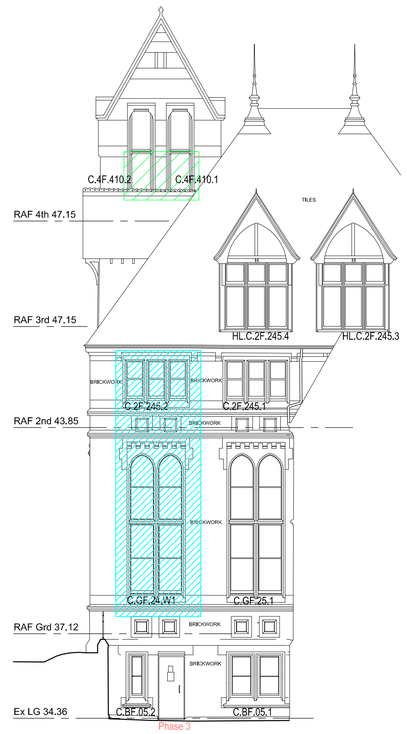
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Elevation 24



Datum 32.00m

Elevation 25



Datum 32.00m

Elevation 26

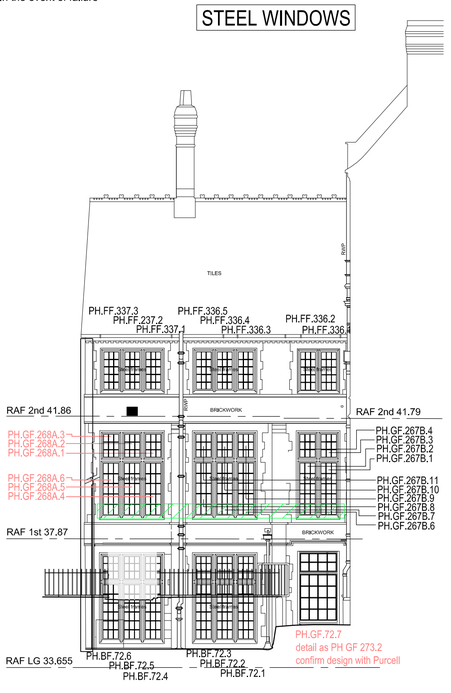
Building layout has been assessed to determine areas where users and public may be seated or stationary and at greater risk should glass to windows above fail.
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Datum 32.00m

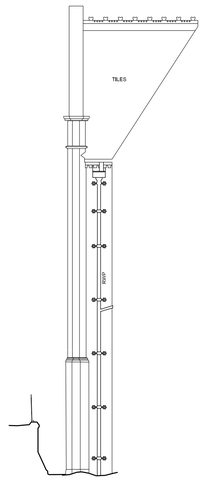
Elevation 27

STEEL WINDOWS



Datum 32.00m

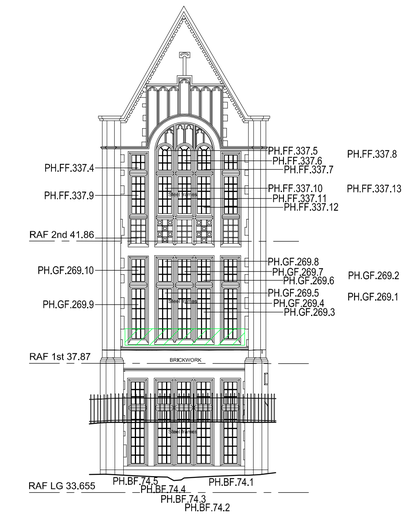
Elevation 28



Datum 32.00m

Elevation 29

STEEL WINDOWS



Datum 32.00m

Elevation 30

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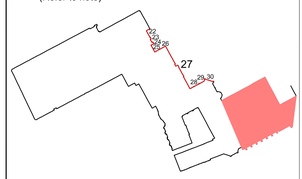
SCALE 1:100

NOTES

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KEY

Schunk scope of works in abeyance pending library project team review
Areas of toughened glass (Refer to note)



FF.01. (black text) - Phase 2 windows
FF.01. (red text) - Phase 3 windows

TO ASSIST ONLY
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Drawing to be printed in colour.

- All windows to be replaced
- General principle is that replacement windows match arrangement and detail of removed window. Several instances exist however, where the current window is a more modern inclusion. Refer to the elevation drawings which clarifiy what should be installed in these situations.
- Walls to be demolished are in red hatch

IN ADDITION TO THE HAZARDS/RISKS NORMALLY ASSOCIATED WITH THE TYPES OF WORK DETAILED ON THIS DRAWING, NOTE THE FOLLOWING SIGNIFICANT RESIDUAL RISKS :-

-

Item	Hazard	Risk

Rev	Description	By	Date	Chk'd	Auth
04	General update	kc	19/04/2016		
03	Raised Access Floor Levels added	DG	2015 06 25	KC	
02	Areas of toughened glass added. Notes added	si	09 10 2014	kc	
01	Windows in Phase 2 scope outlined	dg	22.09.2014	kc	
-	Initial Issue	kc	08.09.2014		

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Wilson Mason LLP
Upland House
Spring Lane
Samlesbury
e: preston@wilsonmason.co.uk

Drawing Status
TENDER

Project
UoM Coupland 3 Building Refurbishment

Building Name
Coupland 3

Sub Site Name

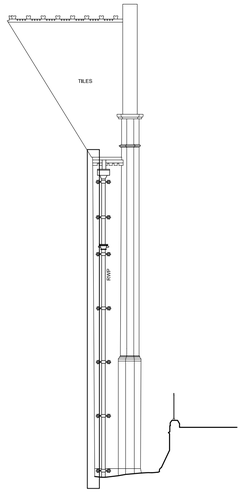
Site Name
University of Manchester

Drawing Title
Proposed Elevations 07

PM	Drawn	Checked	Authorised
	kc		
Scale	Date	Date	Date
1:100@A1	08.09.2014		

Drawing No.
5760 L(2-)26

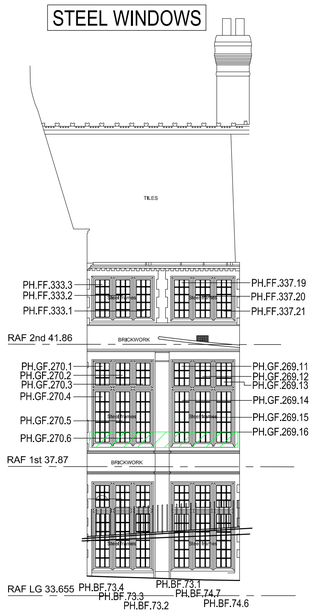
Revision
04



Datum 32.00m

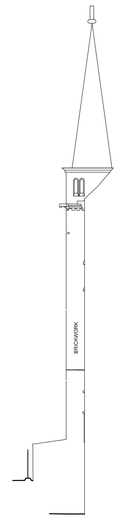
Elevation 31

STEEL WINDOWS



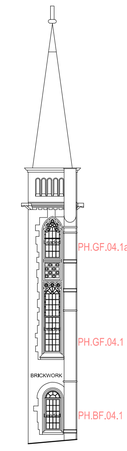
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Elevation 32



Datum 32.00m

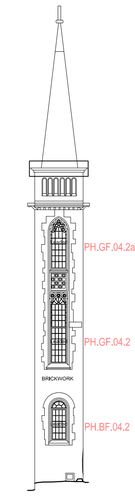
Elevation 33



NOTE: Leaded windows to this stair tower are not to be removed/replaced, they are to be made good

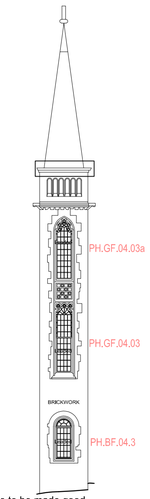
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Elevation 34



Datum 33.00m

Elevation 35



Datum 33.00m

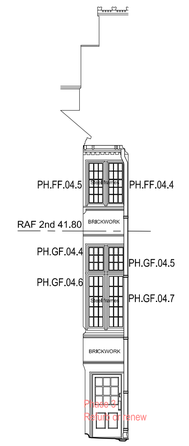
Elevation 36



Datum 32.00m

Elevation 37

STEEL WINDOWS



Datum 32.00m

Elevation 38



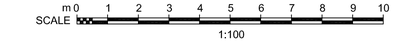
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Elevation 39



Datum 32.00m

Elevation 56



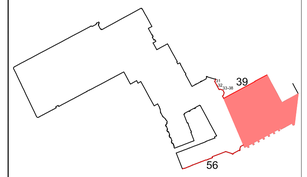
Building layout has been assessed to determine areas where users and public may be seated or stationary and at greater risk should glass to windows above fail.
Glass in hatched zone is heat soaked and toughened thereby incorporating safer breakage characteristics in the event of failure

NOTES

1. DO NOT SCALE FROM THIS DRAWING.
2. ALL MEASUREMENTS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH THE SPECIFICATION AND ALL RELEVANT ARCHITECTURAL, ELECTRICAL, MECHANICAL AND STRUCTURAL DRAWINGS.

KEY

Schunk scope of works in abeyance pending library project team review
Areas of toughened glass (Refer to note)



FF.01. (black text) - Phase 2 windows
FF.01. (red text) - Phase 3 windows

TO ASSIST ONLY
The zone likely to fall within building regulations requirement for incorporation of toughened glass (800mm or less AFFL) is shown (green hatch). Further windows may require toughened glass to conform to regulation requirement once the finished detail of the building is known. It is encumbent upon the contractor to ensure compliance with the regulations and procure/install all toughened glass required by the regulations.

Note:
Drawing to be printed in colour.

- All windows to be replaced
- General principle is that replacement windows match arrangement and detail of removed window. Several instances exist however, where the current window is a more modern inclusion. Refer to the elevation drawings which clarifiy what should be installed in these situations.
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Item	Hazard	Risk

Rev	Description	By	Date	Chk'd	Auth
04	General update	kc	19/04/2016		
03	Raised Access Floor Levels added	DG	2015 06 25	KC	
02	Areas of toughened glass added. Note added.	si	09 10 2014		kc
01	Windows in Phase 2 scope outlined. Areas of safety glazing noted	dg	22.09.2014		
-	Initial Issue	kc	08.09.2014		

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Spring Lane
Samlesbury
e: preston@wilsonmason.co.uk

Drawing Status
TENDER

Project
UoM Coupland 3 Building Refurbishment

Building Name
Coupland 3

Sub Site Name

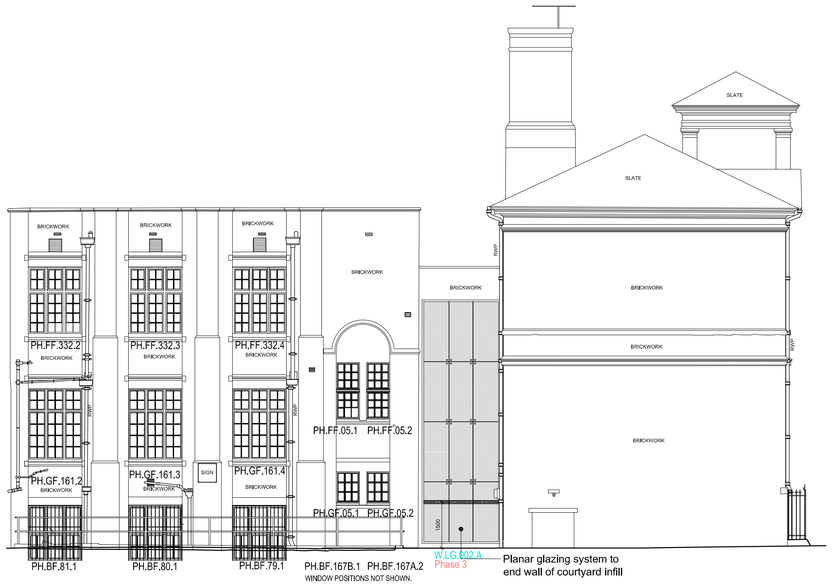
Site Name
University of Manchester

Drawing Title
Proposed Elevations 08

PM	Drawn	Checked	Authorised
	kc		
Scale	Date	Date	Date
1:100@A1	08.09.2014		

Drawing No.
5760 L(2-)27

Revision
04



NOTE: THESE ELEVATIONS ARE COMBINED HERE TO BETTER ILLUSTRATE THE INFIL CURTAIN WALLING WORK, FOR ELEVATION 1 AND 7 WORKS, REFER TO SEPARATE ELEVATIONS

Datum 33.00m

Elevation 7

Datum 33.00m

Elevation 1

NOTE; THESE ELEVATIONS ARE COMBINED HERE TO BETTER ILLUSTRATE THE INFIL CURTAIN WALLING WORK. FOR ELEVATION 1 AND 7 WORKS, REFER TO SEPARATE ELEVATIONS

SCALE m 0 1 2 3 4 5 6 7 8 9 10

1:100

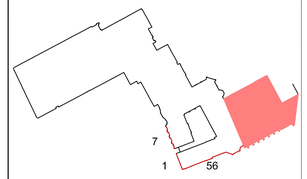
NOTES

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KEY

Schunk scope of works in abeyance pending library project team review

Areas of toughened glass (Refer to note)



FF.01. (black text) - Phase 2 windows
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TO ASSIST ONLY
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Note:
Drawing to be printed in colour.

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-

Item	Hazard	Risk

Rev	Description	By	Date	Chk'd	Auth
04	General update	kc	19/04/2016		
03	Areas of toughened glass added. Note added	si	2014 10 09	kc	
02	Drawing renamed from 2-15	kc	2014 07 15	DS	
01	Elevation treatment to Burlington St entrance revised - planar omitted	AK	2014 06 13	KC	
	ISSUED FOR PLANNING	AK	2014 06 04	KC	

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Spring Lane
Samlesbury
e: preston@wilsonmason.co.uk

Drawing Status
TENDER

Project
UoM Coupland 3 Building Refurbishment

Building Name
Coupland 3

Sub Site Name

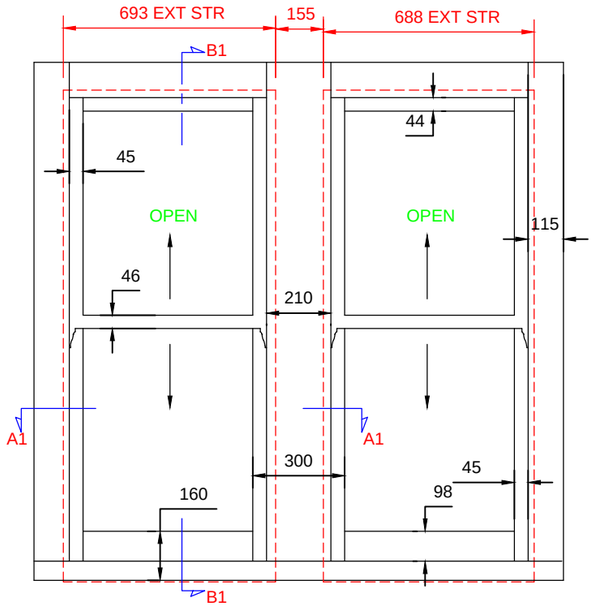
Site Name
University of Manchester

Drawing Title
Proposed Elevations Sheet 10
Elevations 1+7 and 56

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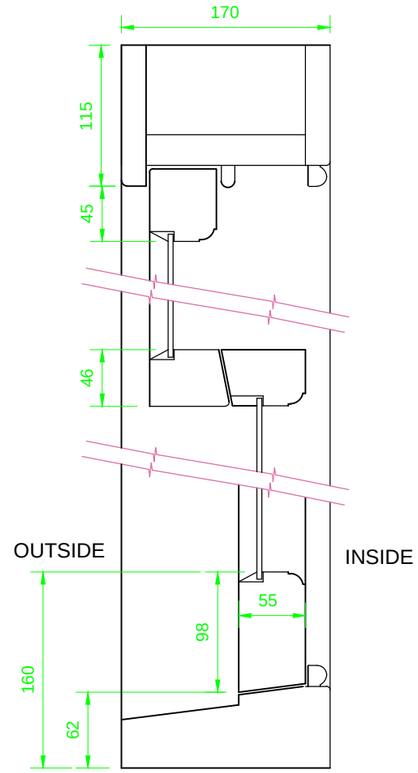
Drawing No.
5760 L(2-)29

Revision
04

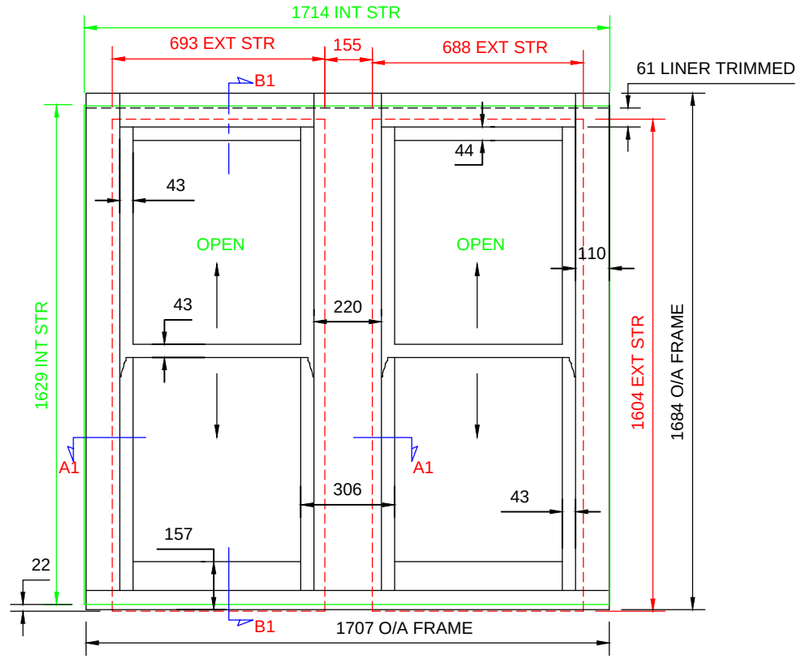


REF C.3F,314.3, C.3F,314.1, C.3F,307.1, C.2F,305.2

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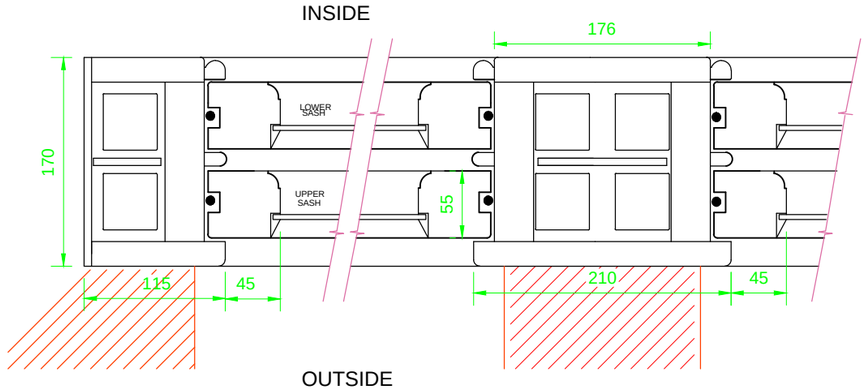


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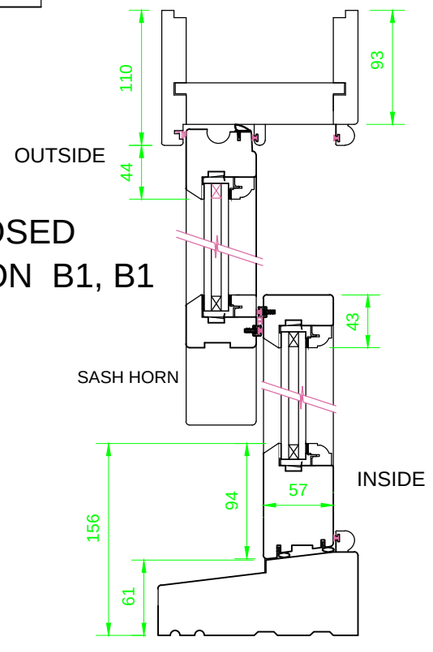


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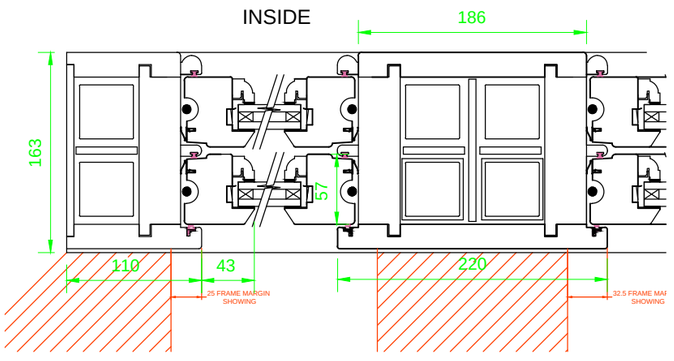


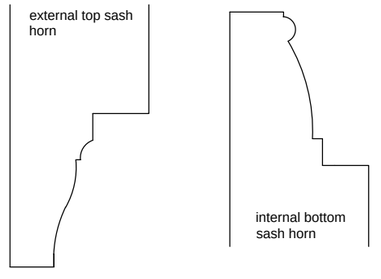
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PROPOSED SECTION A1, A1



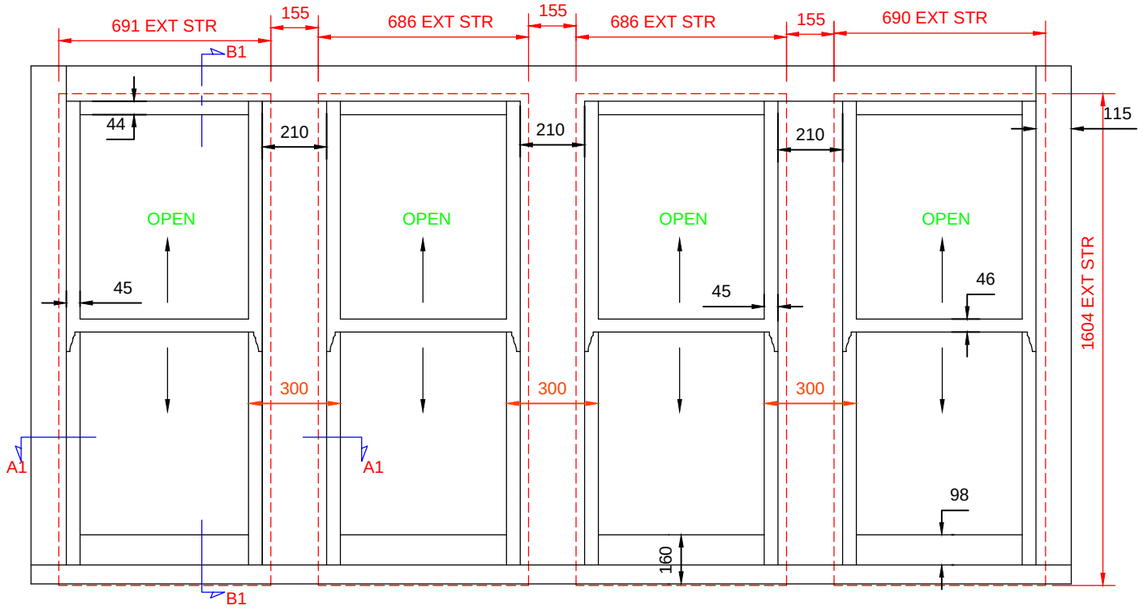


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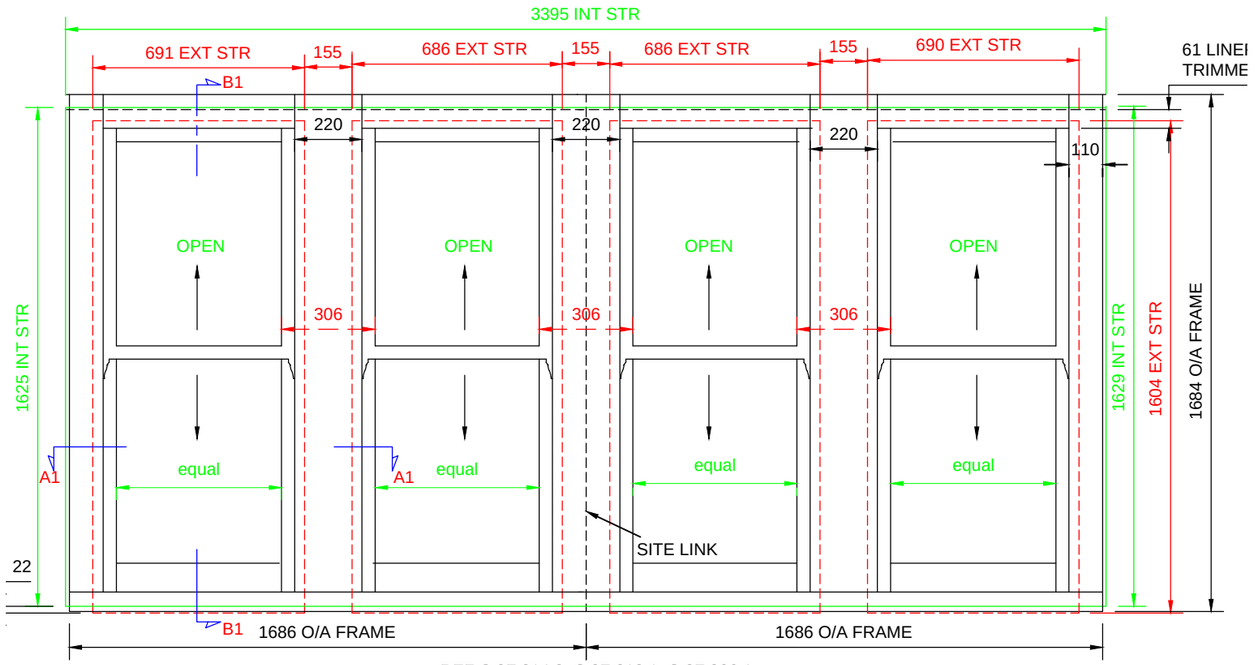
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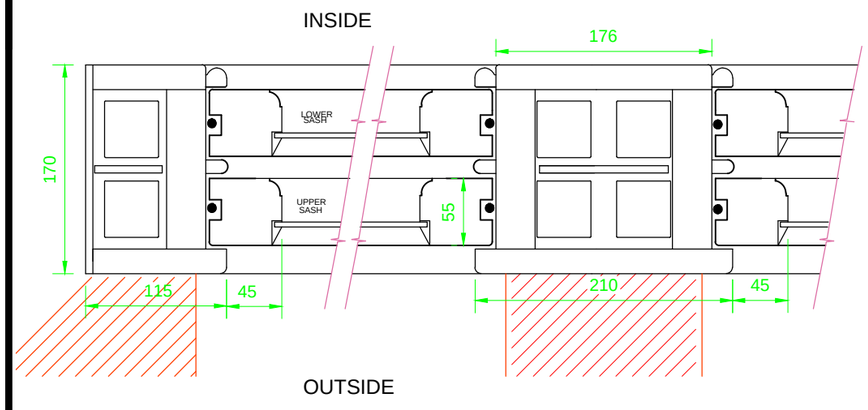
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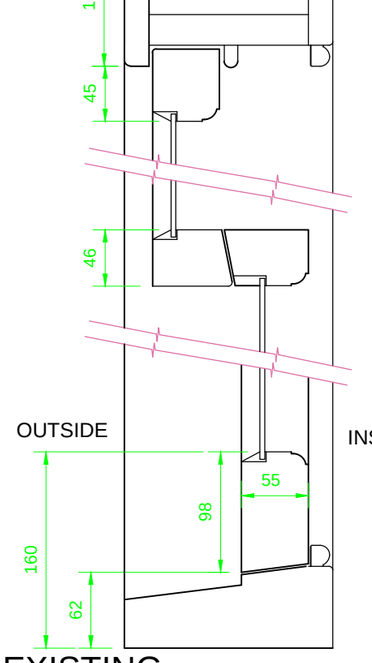


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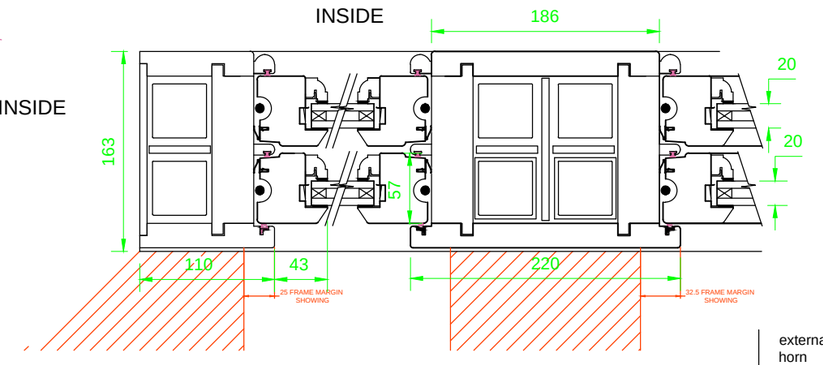


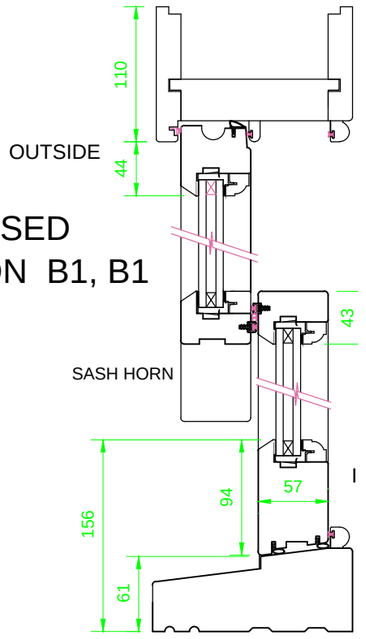
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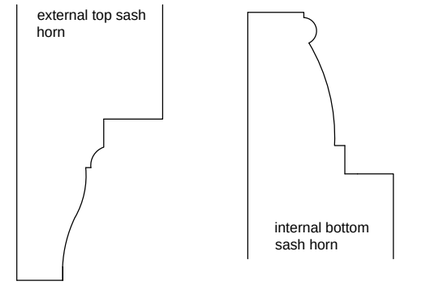
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PROPOSED SECTION A1, A1





PROPOSED SECTION B1, B1

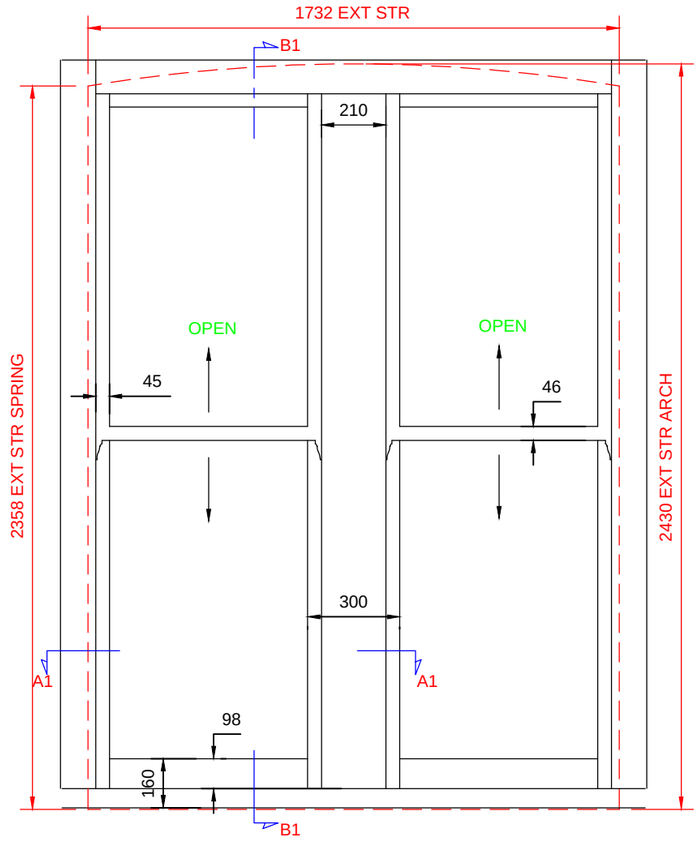


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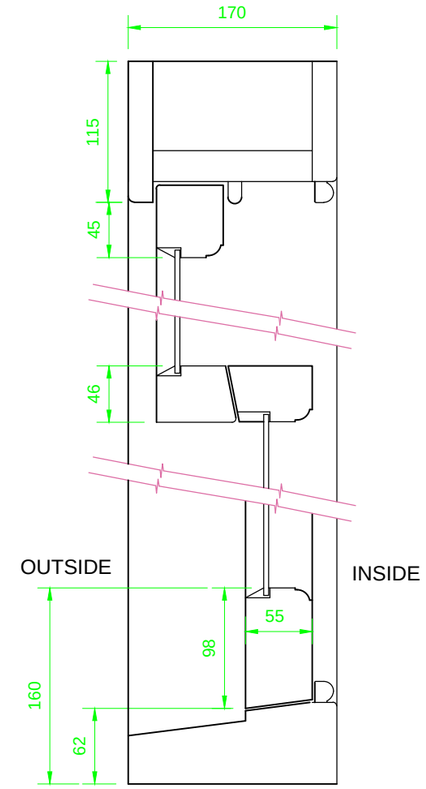
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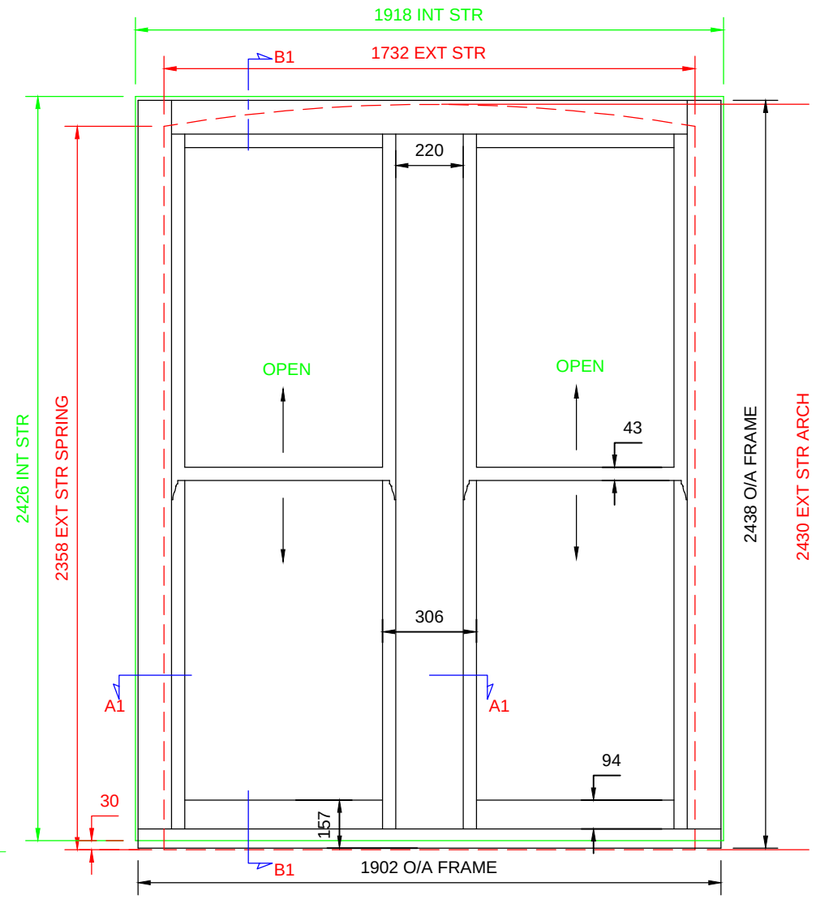
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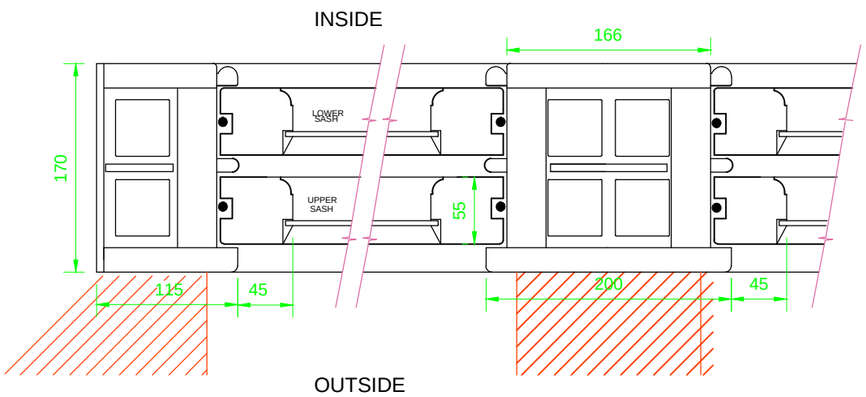
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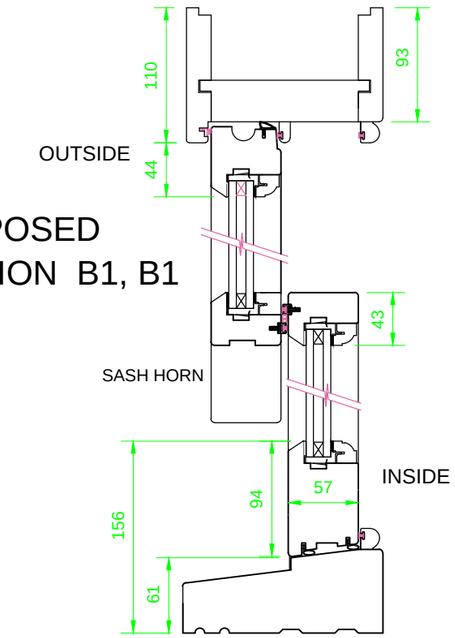
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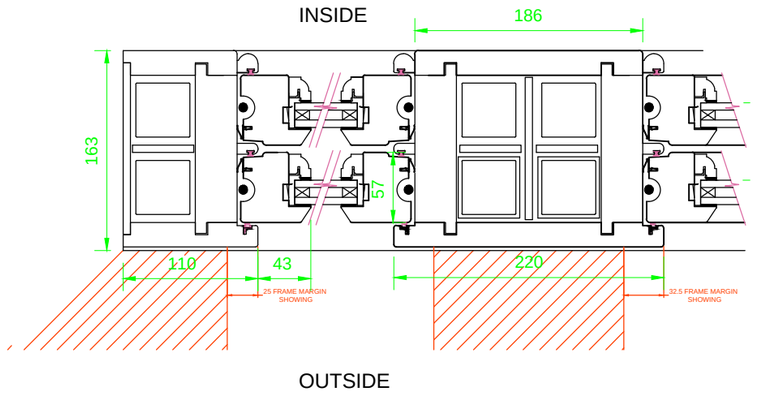


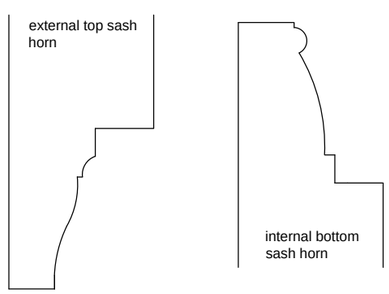
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PROPOSED
SECTION B1, B1

PROPOSED SECTION A1, A1



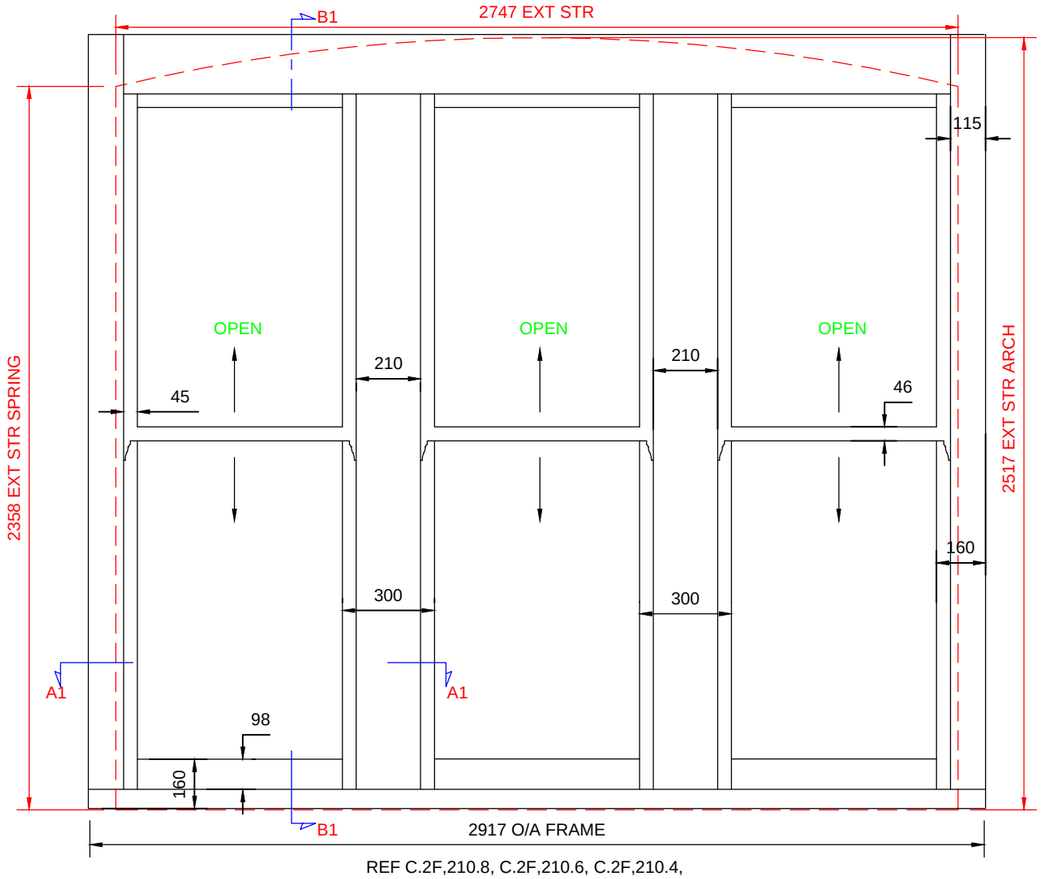


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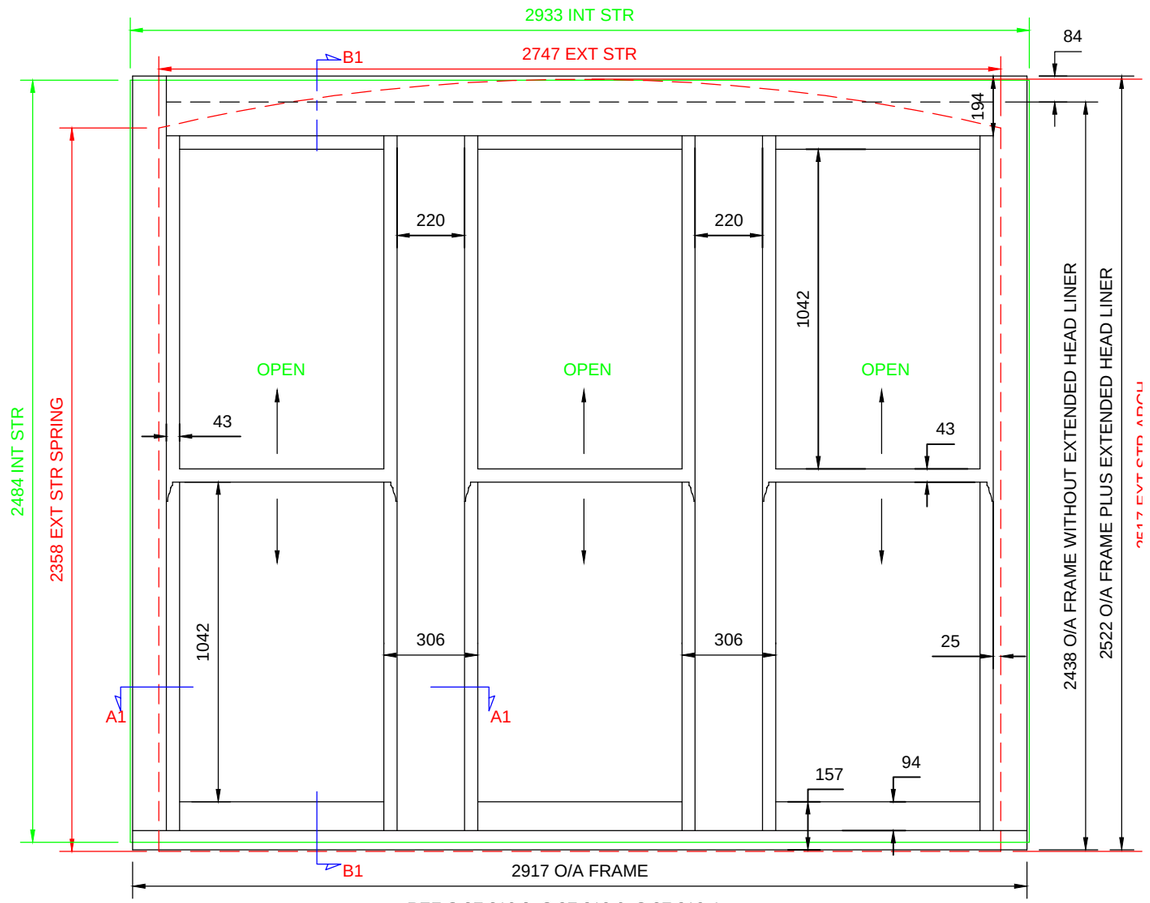
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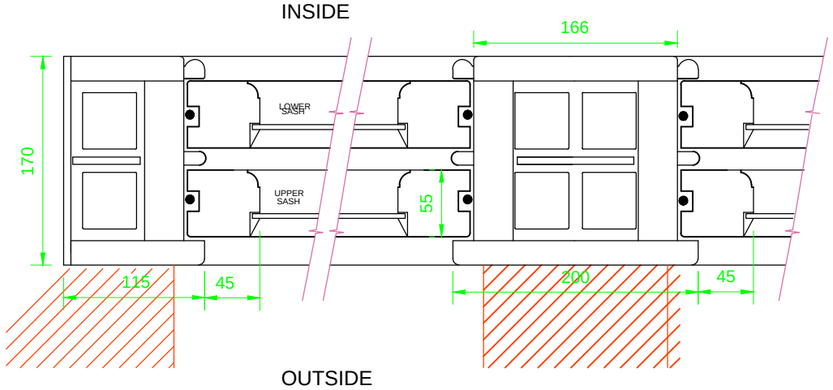
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PROPOSED ELEVATION

INSIDE



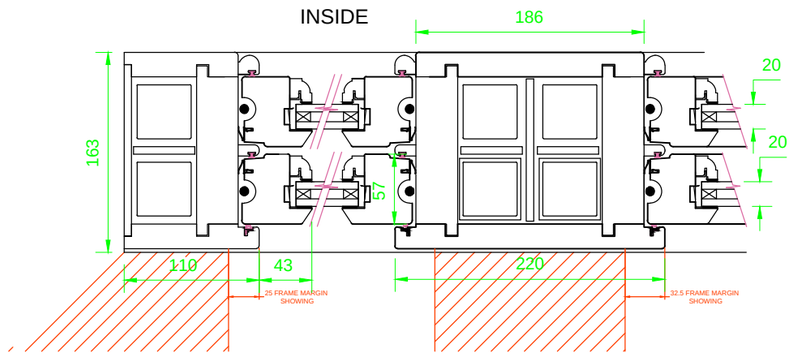
OUTSIDE

EXISTING SECTION A1, A1

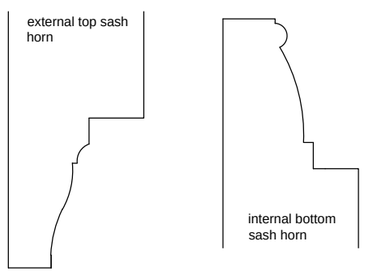
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PROPOSED SECTION A1, A1

INSIDE



OUTSIDE



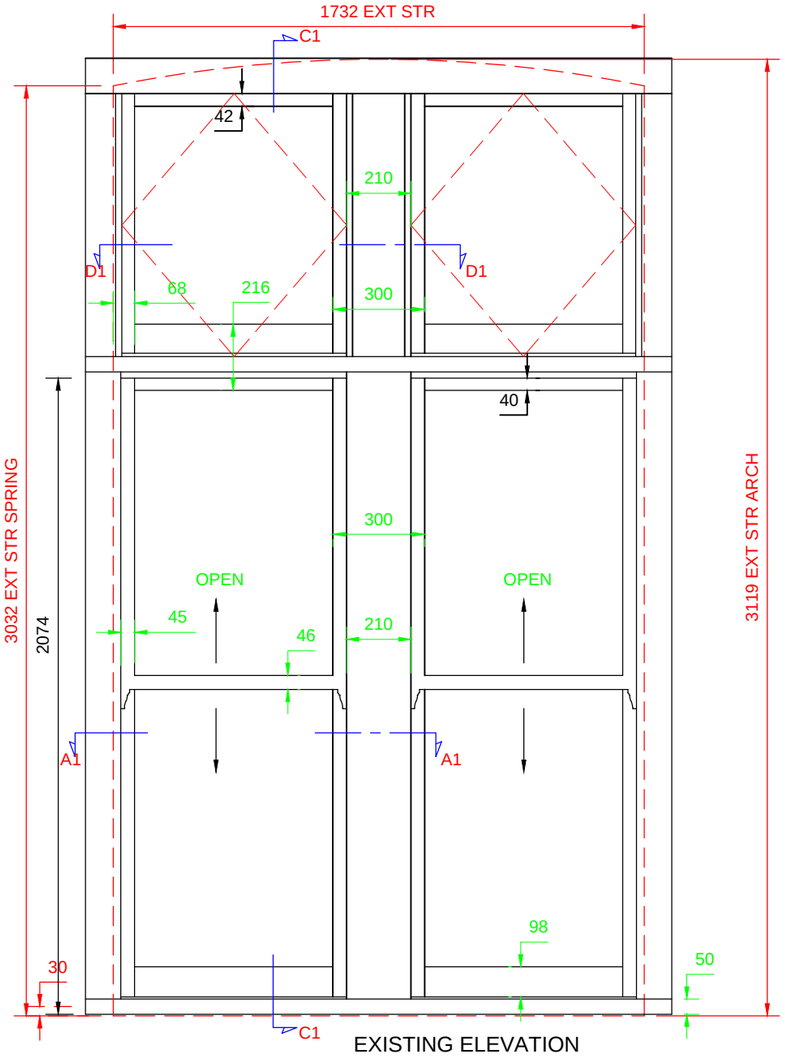
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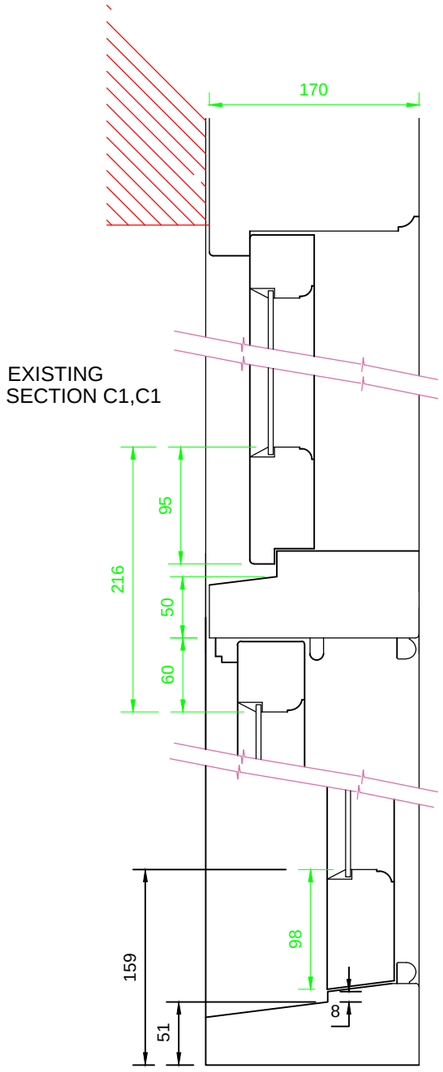
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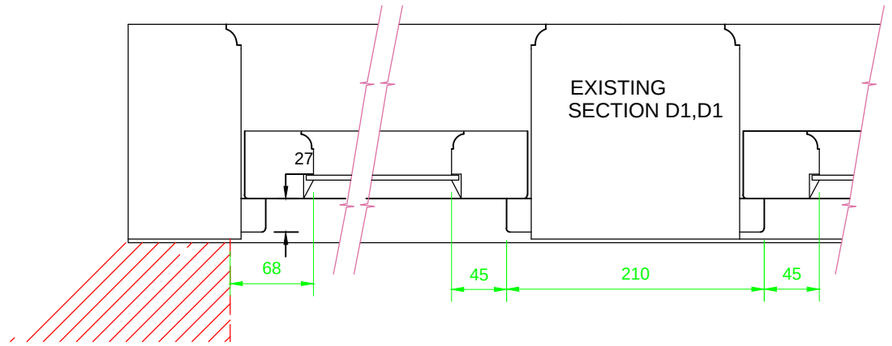
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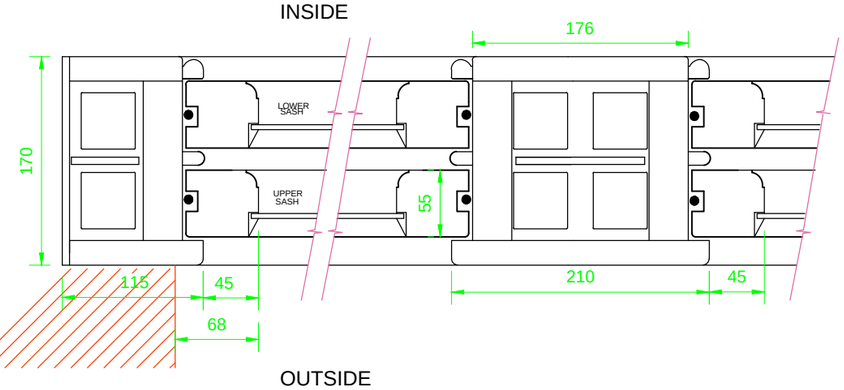
EXISTING ELEVATION



EXISTING
SECTION C1,C1



INSIDE



OUTSIDE

EXISTING SECTION A1, A1

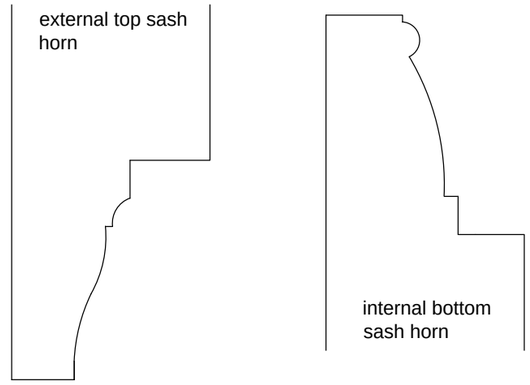
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C.1F,157.1, C.1F,157.2,
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DOUBLE SASH DETAILS FOR ALL THESE REFERENCE.
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TRIPLE SASH DETAILS FOR ALL THESE REFERENCES.
REF C1F,142.1, C.1F,139.1, C.1F,136/7.1
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2. TRIPLE FRAMES WITH HAVE A ADDITIONAL MULLION DETAIL AS DRAWN.

READ WITH OD155-01-06 & 07 (FOR PROPOSED SECTION DETAILS).



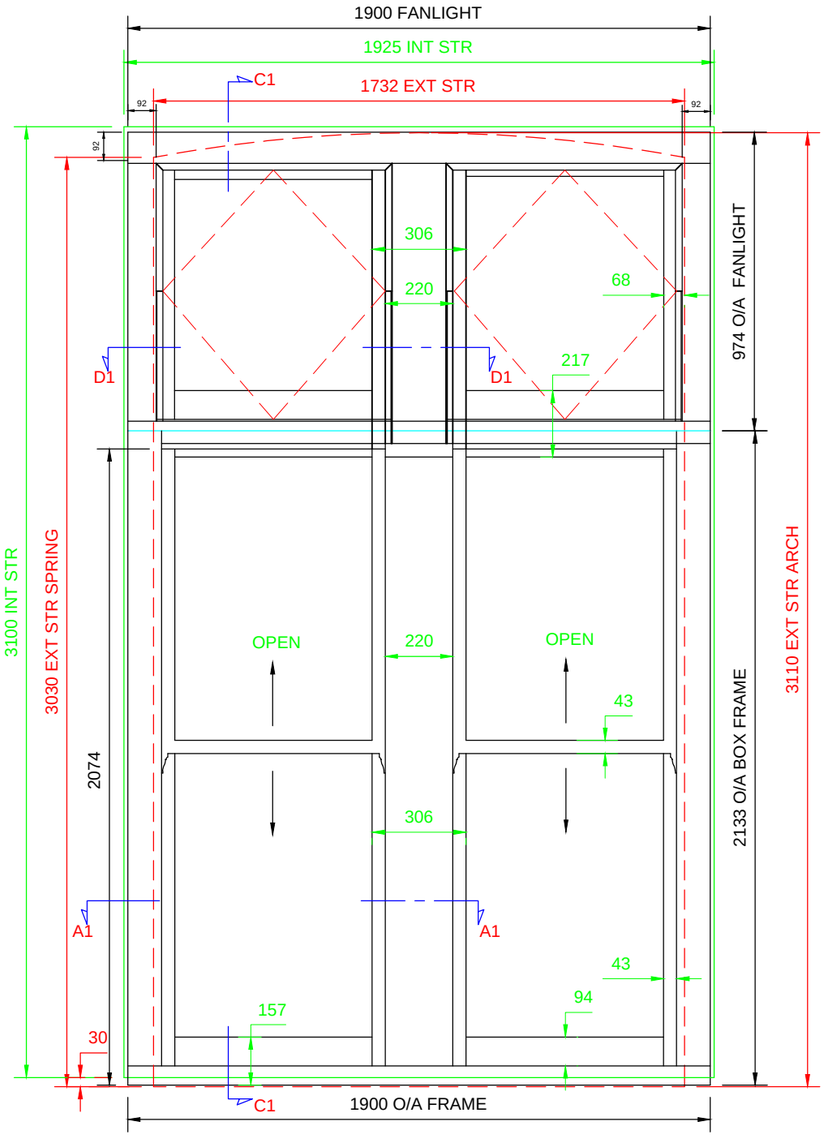
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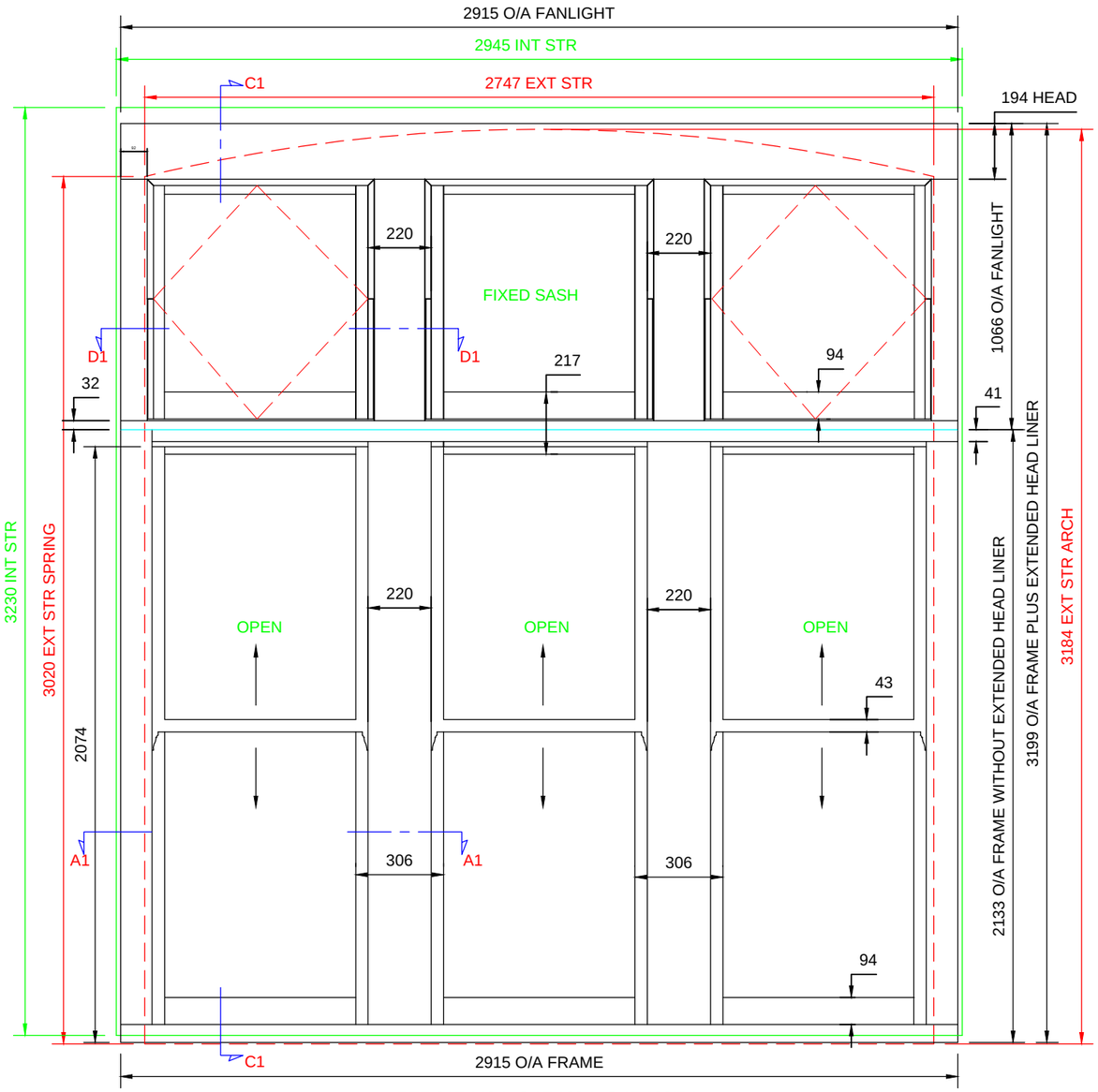
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PIVOT WINDOW FANLIGHT



REF C.1F,143.1, C.1F,141.1, C.1F,138.1, C.1F,135.1,

PROPOSED ELEVATION



REF C1F,142.1, C.1F,139.1, C.1F,136/7.1

PROPOSED ELEVATION

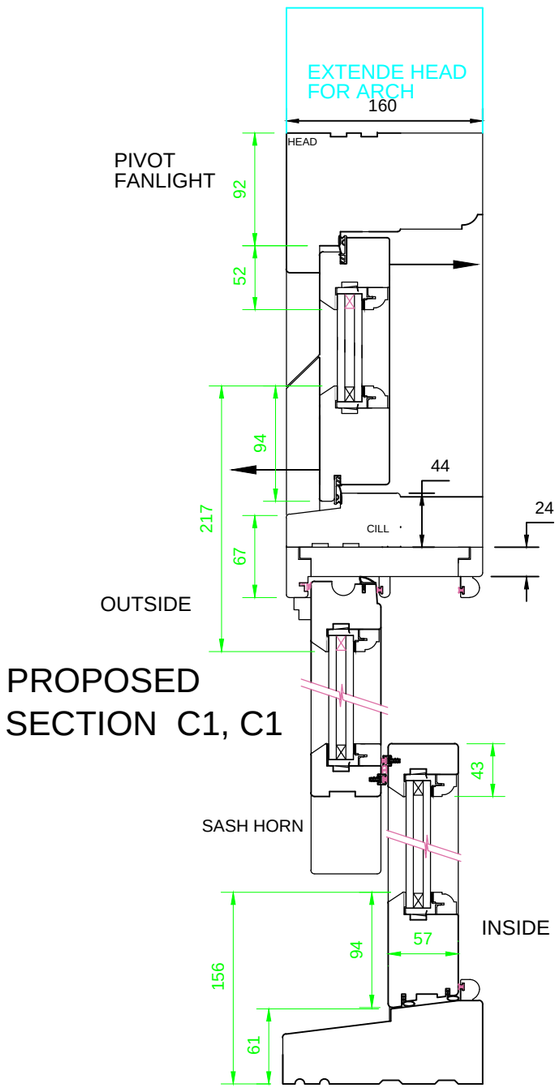
READ WITH OD155-01-07 (FOR PROPOSED SECTION DETAILS).
READ WITH OD155-01-05 (FOR EXISTING SECTION DETAILS).

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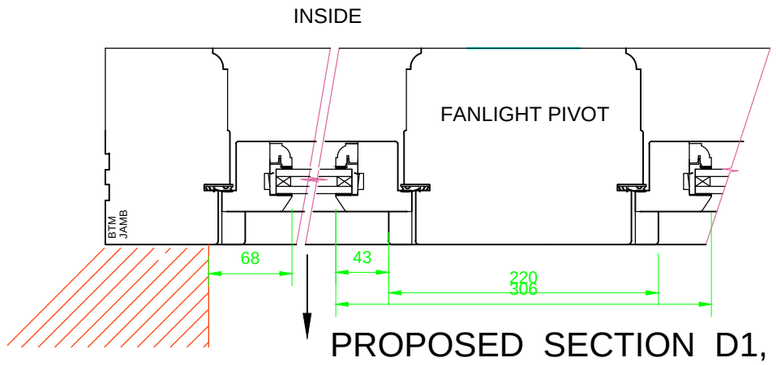
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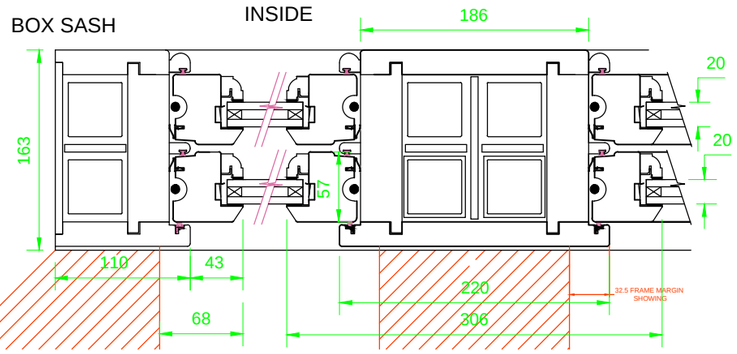
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PROPOSED
SECTION C1, C1



PROPOSED SECTION D1, D1

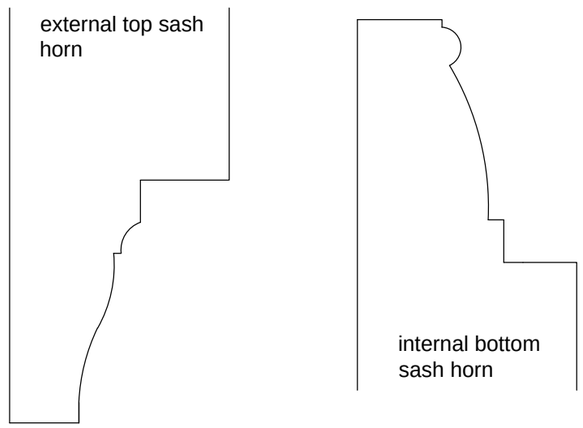


PROPOSED SECTION A1, A1

SINGLE SASH DETAILS FOR ALL THESE REFERENCES.
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REF C.1F,143.1, C.1F,141.1, C.1F,138.1, C.1F,135.1,C.1F,135.1

TRIPLE SASH DETAILS FOR ALL THESE REFERENCES.
REF C1F,142.1, C.1F,139.1, C.1F,136/7.1
REF C.GF,65.1, C.GF,62.1, C.GF,59.1



FOR PROPOSED ELEVATIONS REFER TO OD155-01-06

FOR EXISTING DETAILS REFER TO OD155-01-05

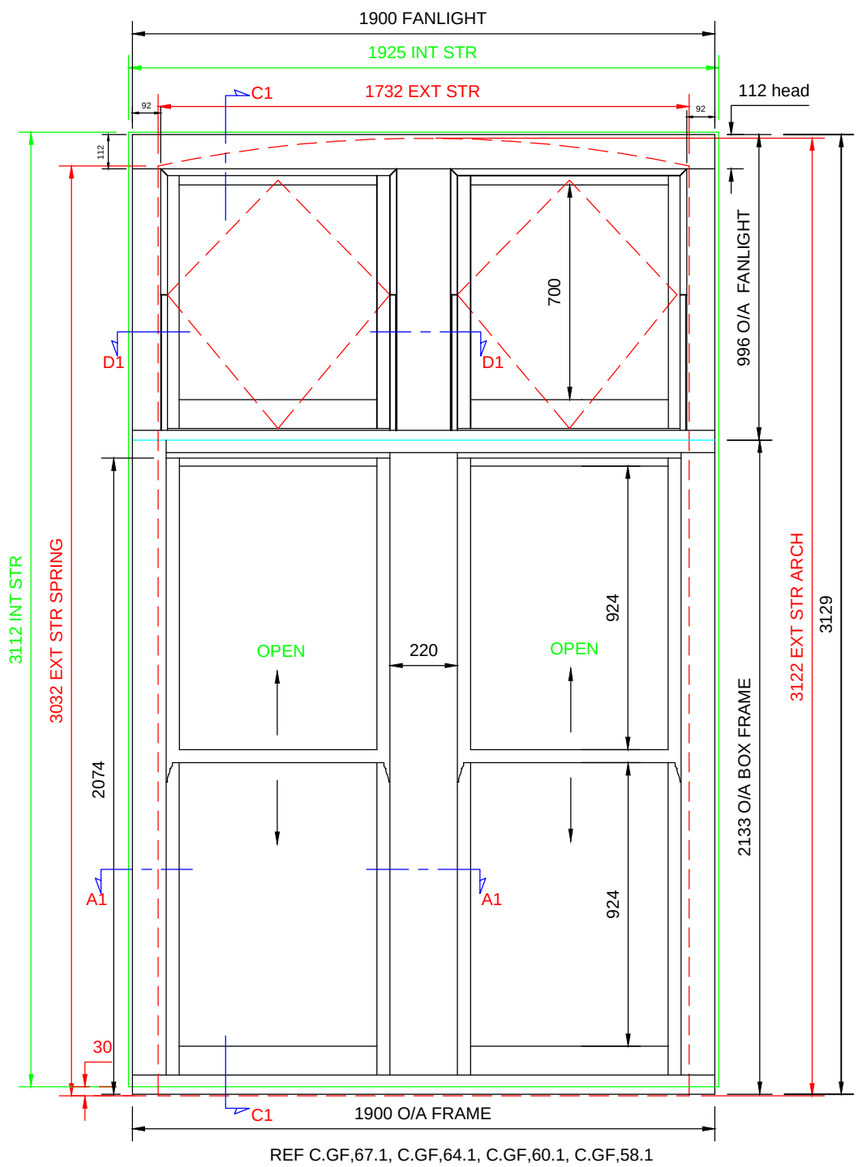
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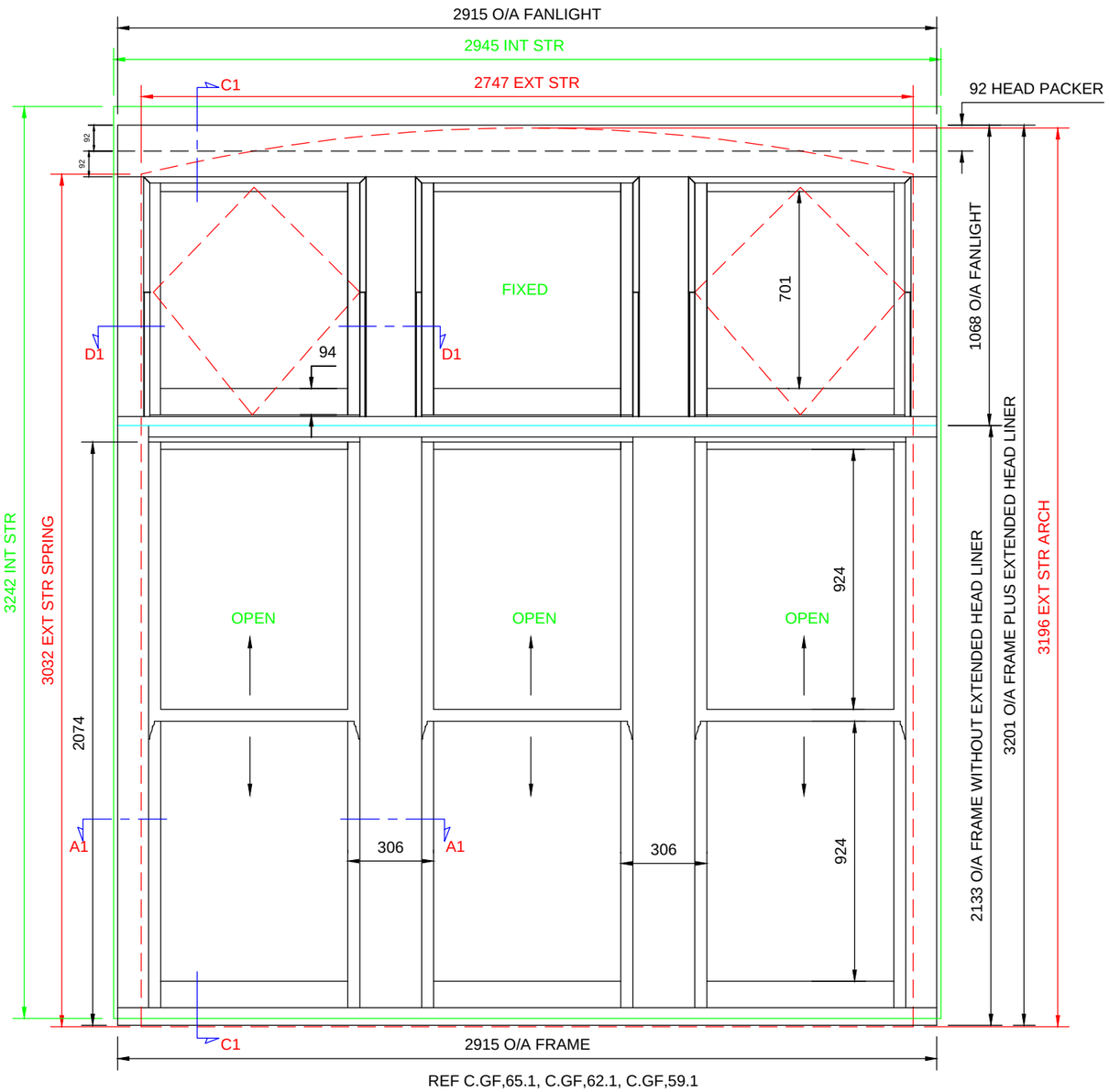
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PIVOT WINDOW FANLIGHT



PROPOSED ELEVATION



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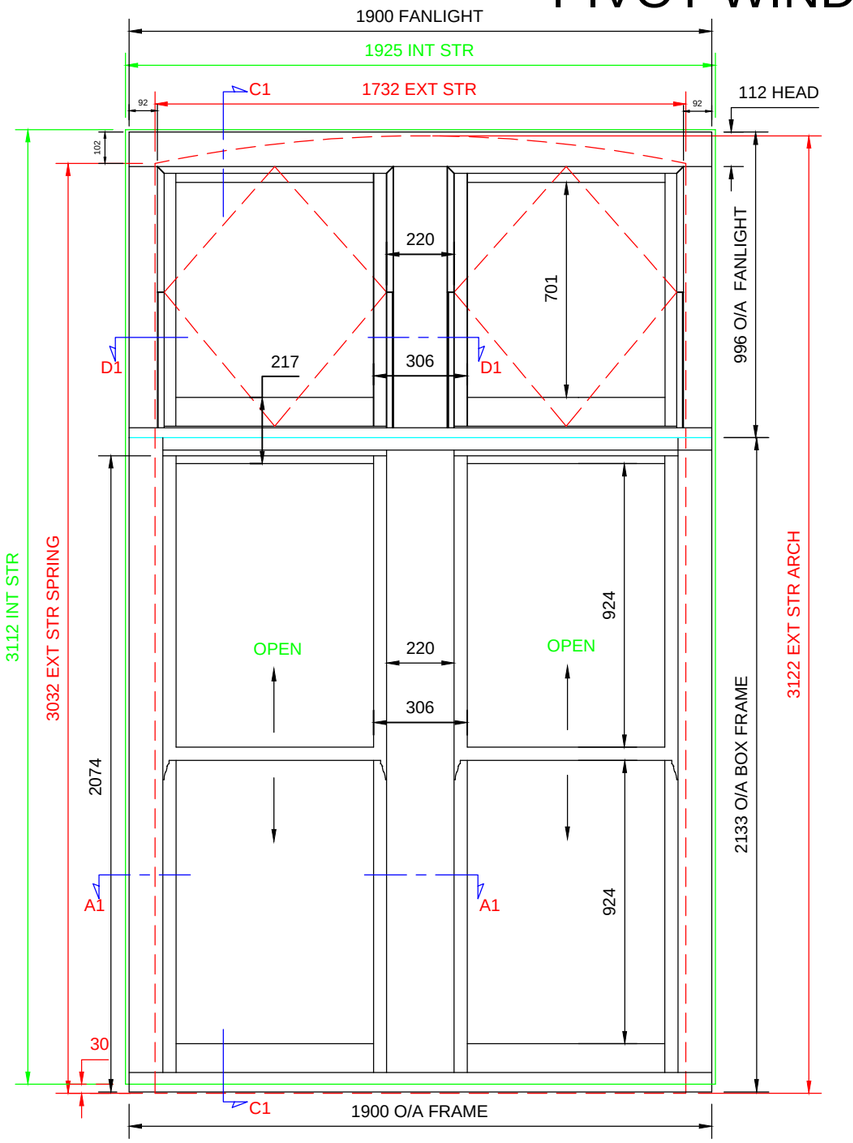
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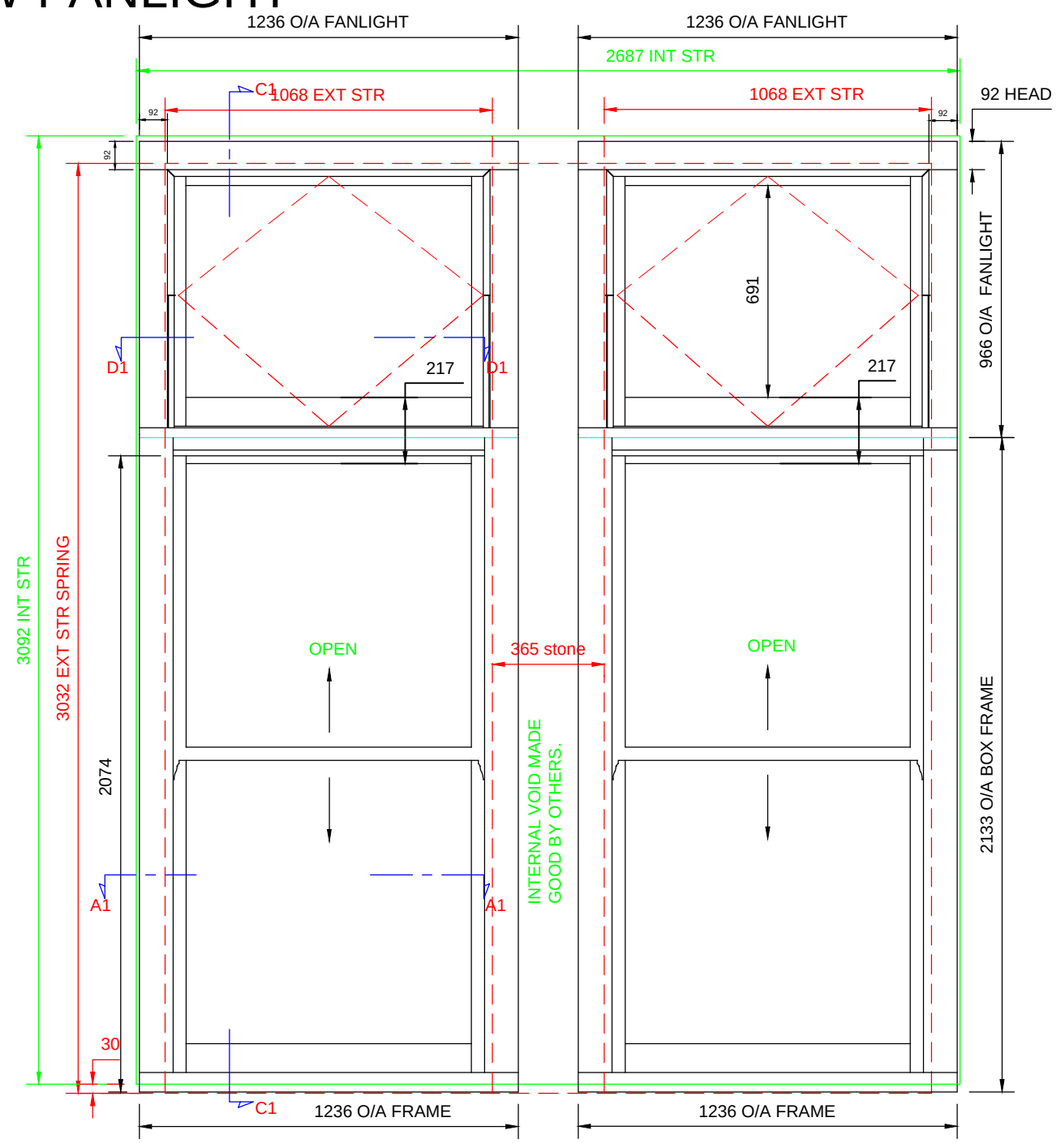
FOR EXISTING DETAILS REFER TO OD155-01-05

PIVOT WINDOW FANLIGHT



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PROPOSED ELEVATION



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PROPOSED ELEVATION

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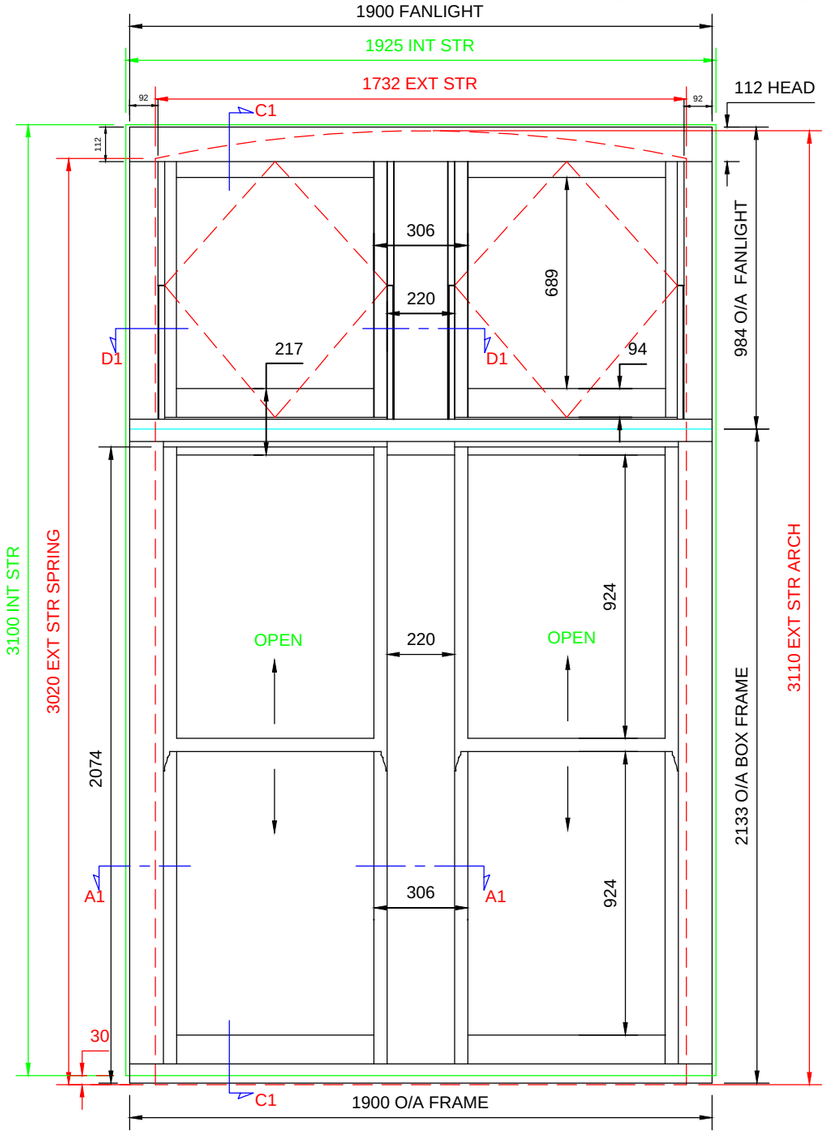
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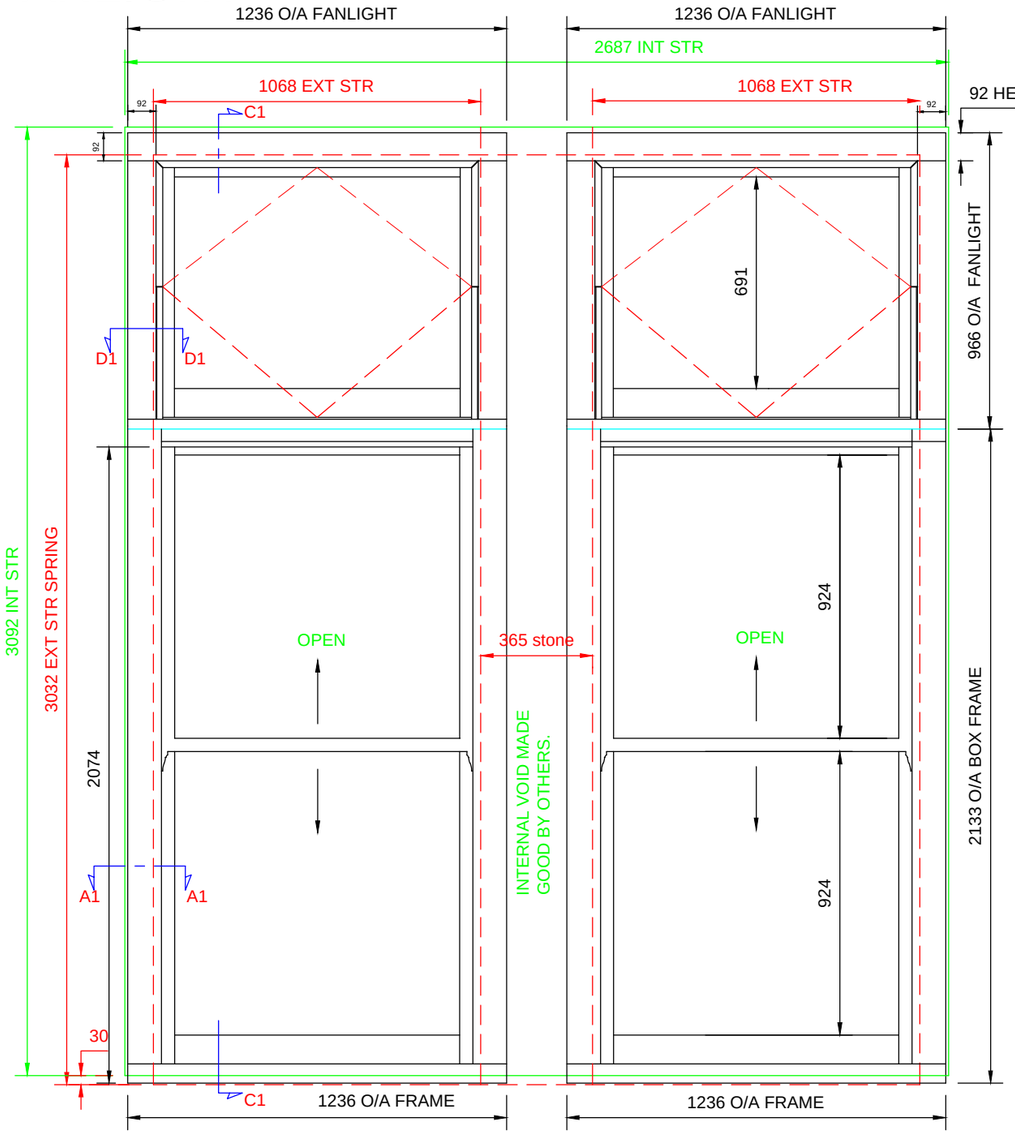
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PIVOT WINDOW FANLIGHT



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PROPOSED ELEVATION



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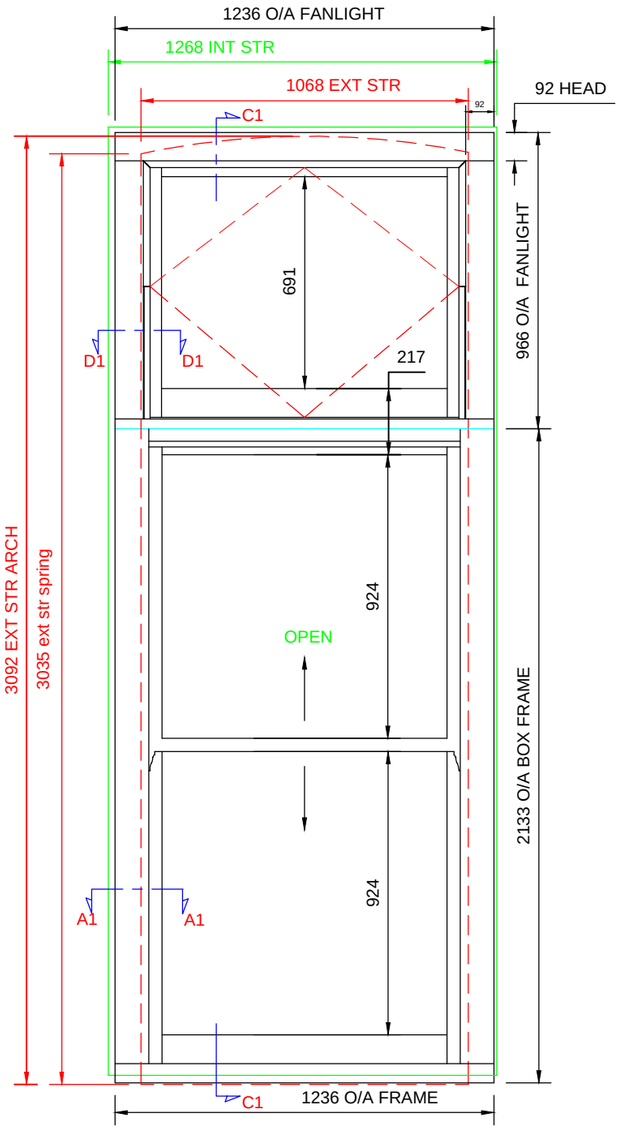
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PIVOT WINDOW FANLIGHT



C.1F,160.1, C.1F,160.2, C.1F,135.3,

PROPOSED ELEVATION

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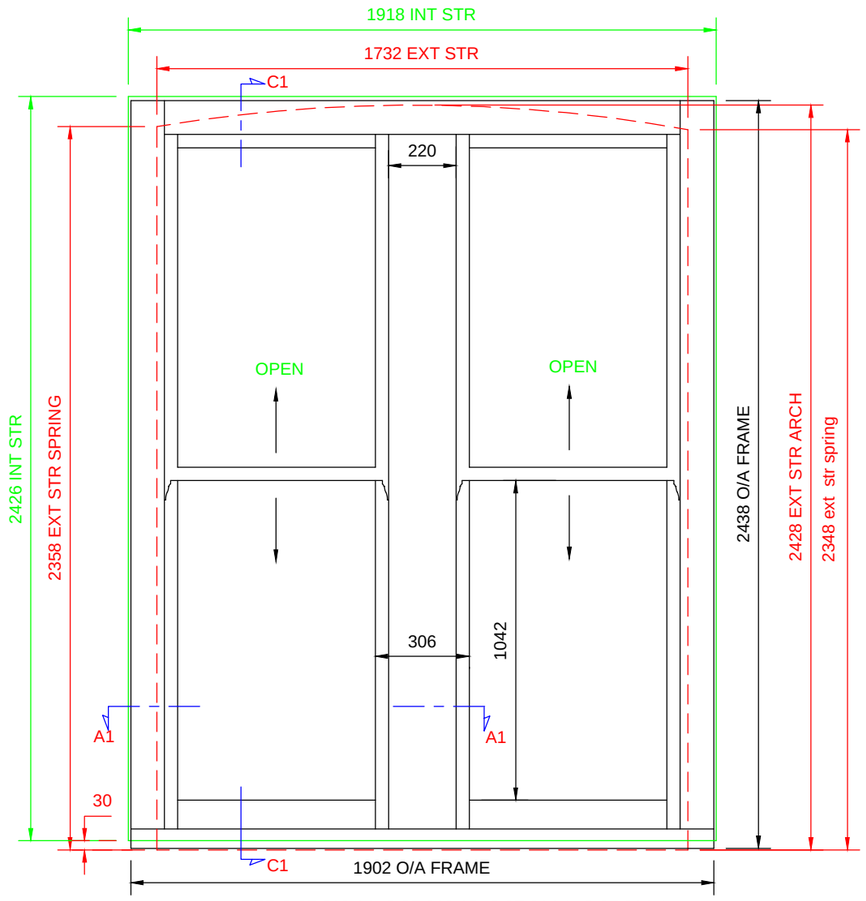
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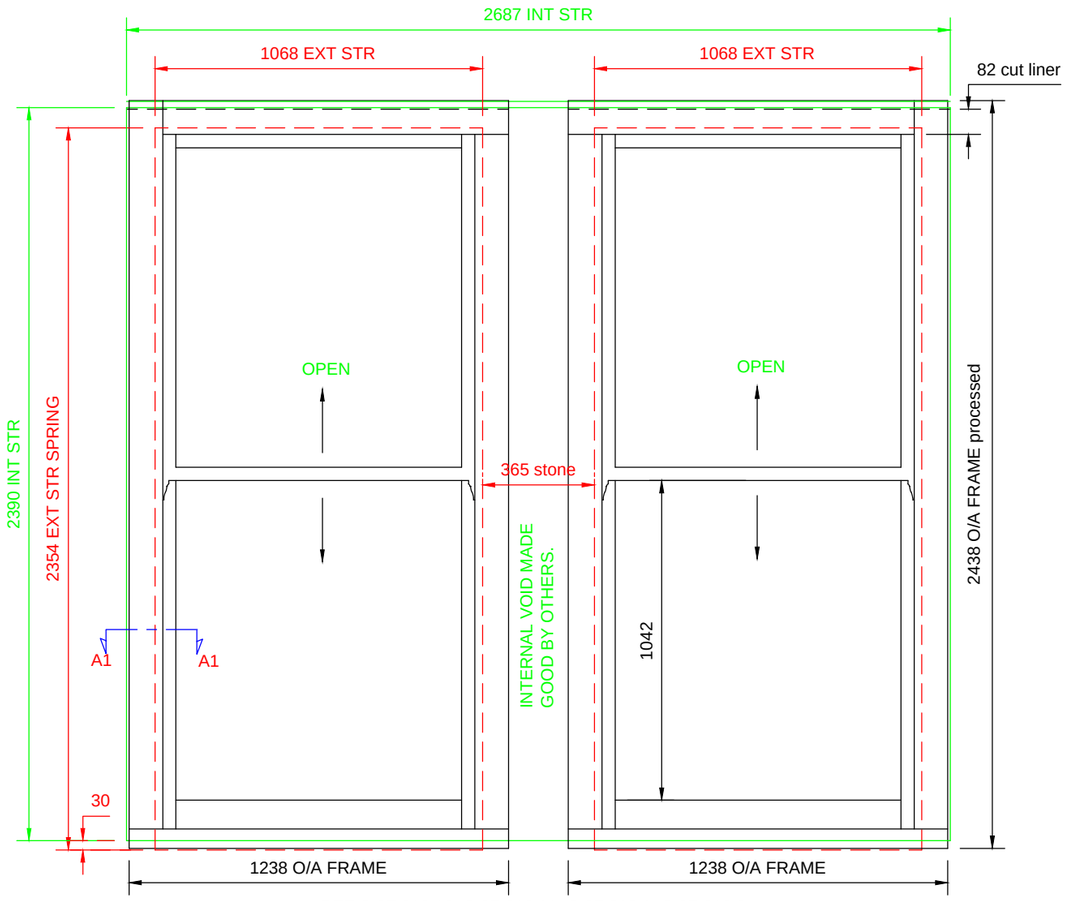
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PROPOSED ELEVATION



REF C.2F,210.10, C.2F,210.11, C.2F,212.1, C.2F,212.2
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PROPOSED ELEVATION

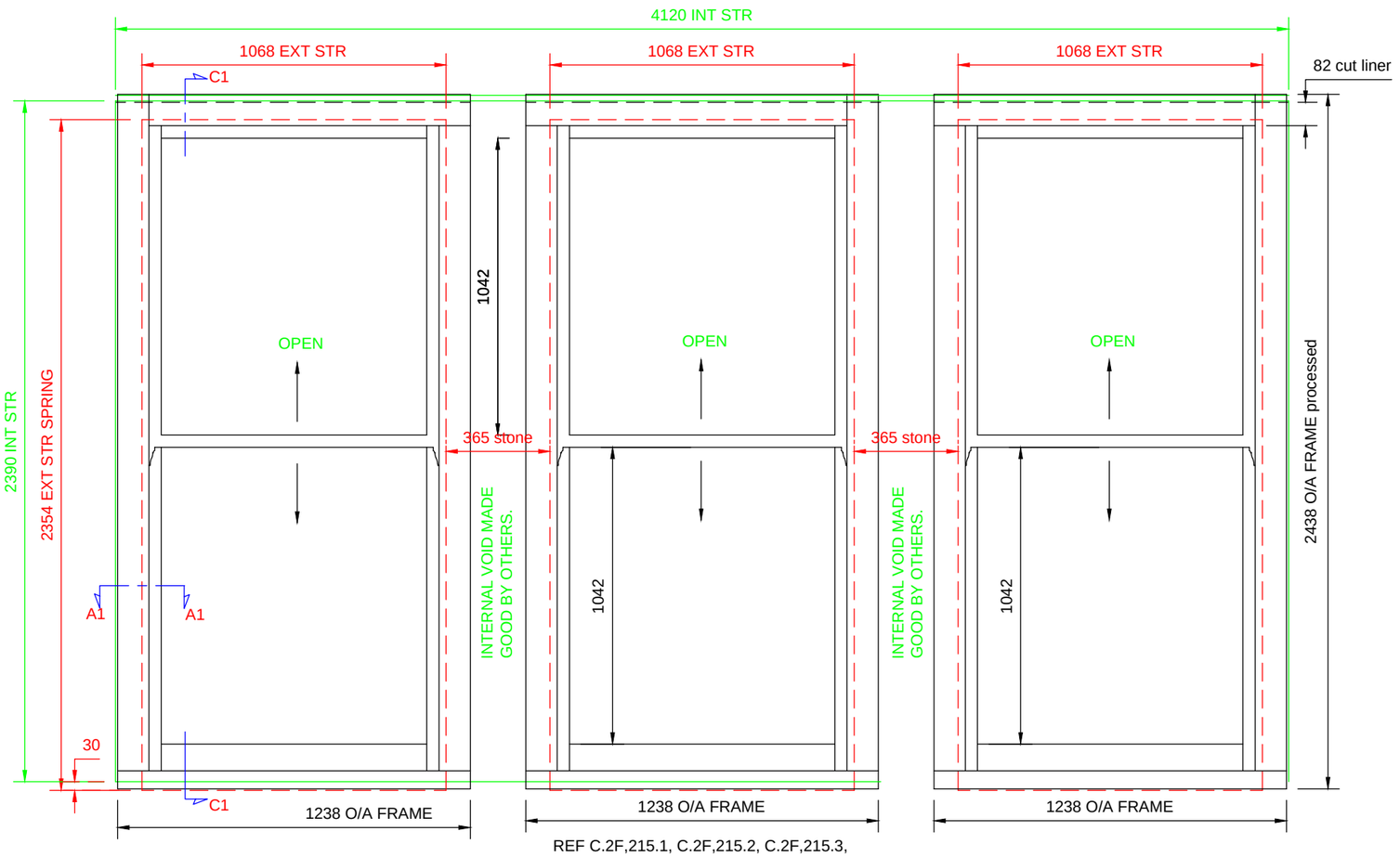
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REF C.2F,215.1, C.2F,215.2, C.2F,215.3,

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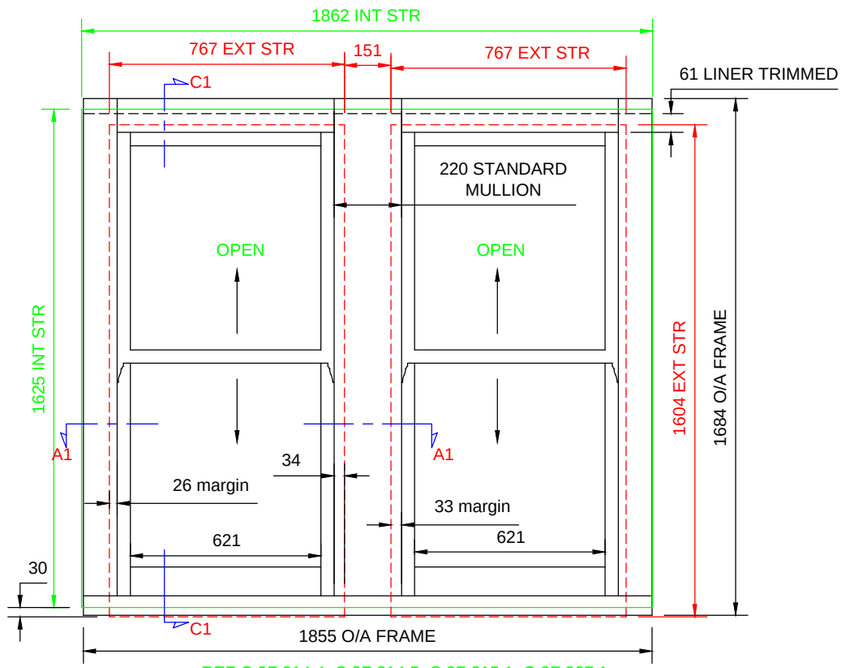
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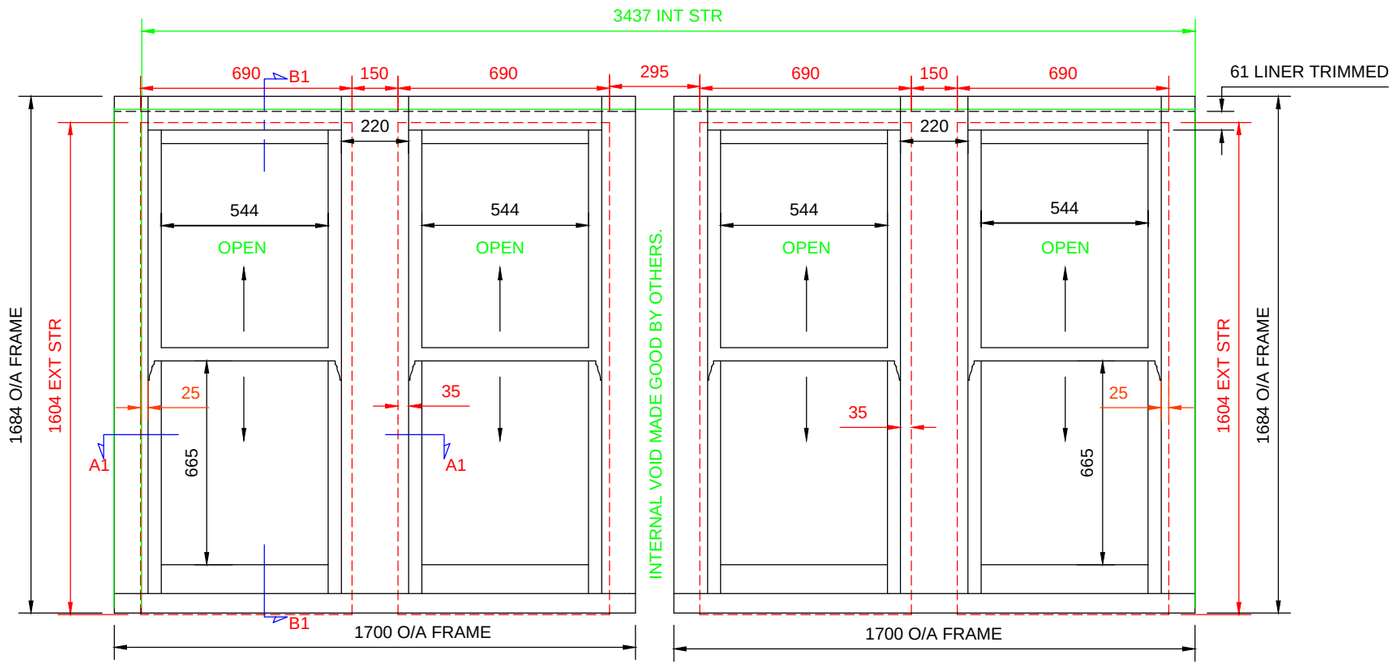
READ WITH OD155-01-02 (FOR SECTION DETAILS).

PROPOSED ELEVATION



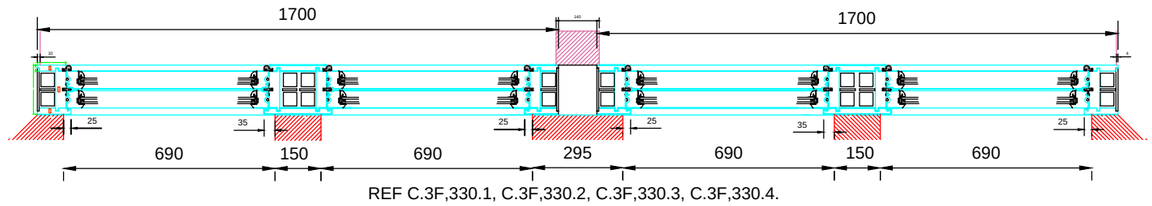
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READ WITH OD155-01-01 (FOR SECTION DETAILS).



REF C.3F,330.1, C.3F,330.2, C.3F,330.3, C.3F,330.4.

PROPOSED ELEVATION



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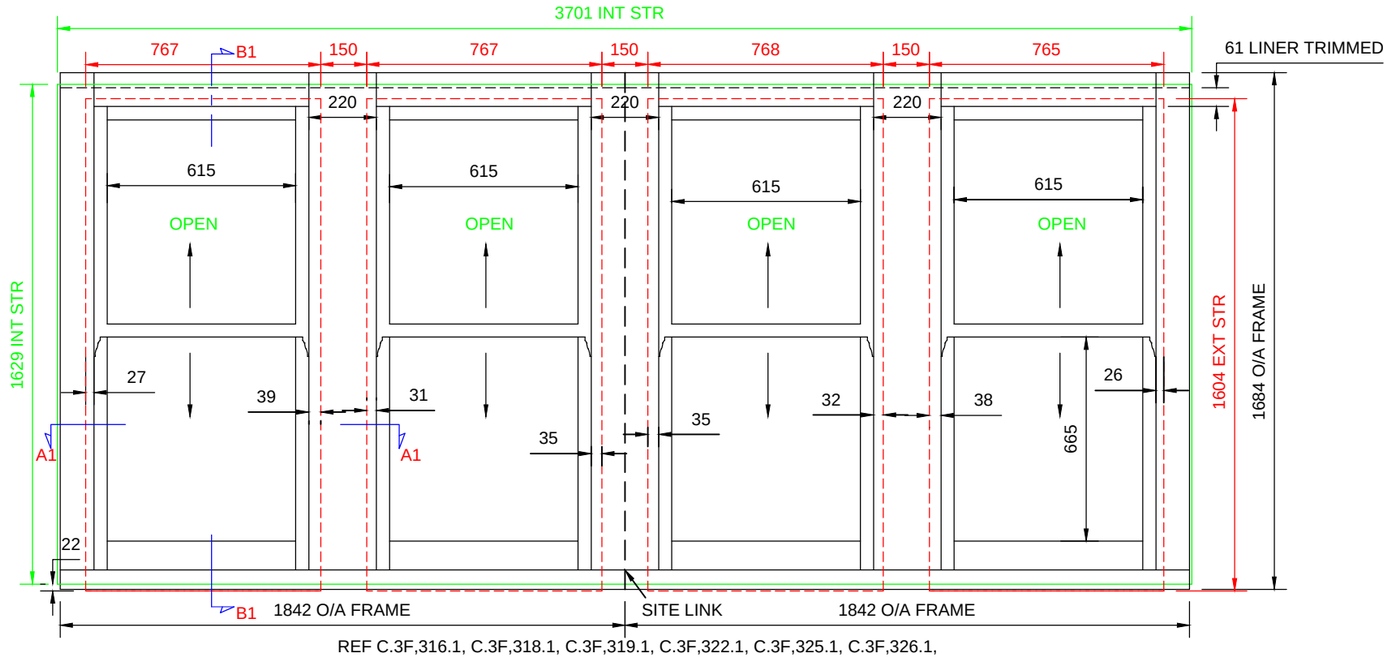
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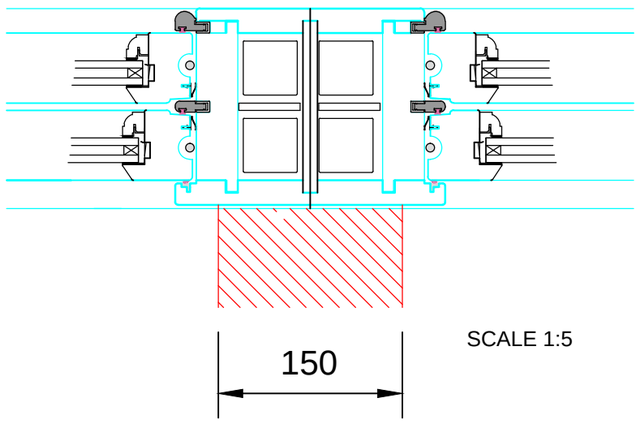
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PROPOSED ELEVATION

READ WITH OD155-01-02 (FOR EXISTING & PRPOSED SECTION DETAILS).



SCALE 1:5

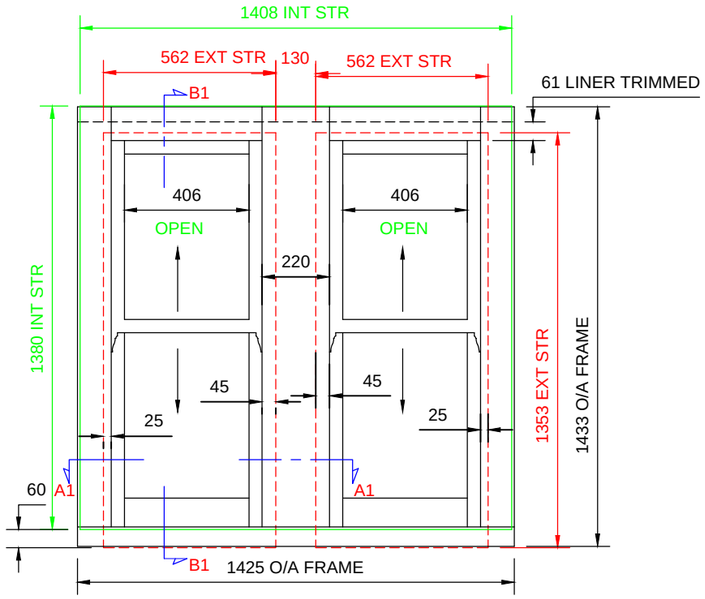
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title BOX SASH WINDOW
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY

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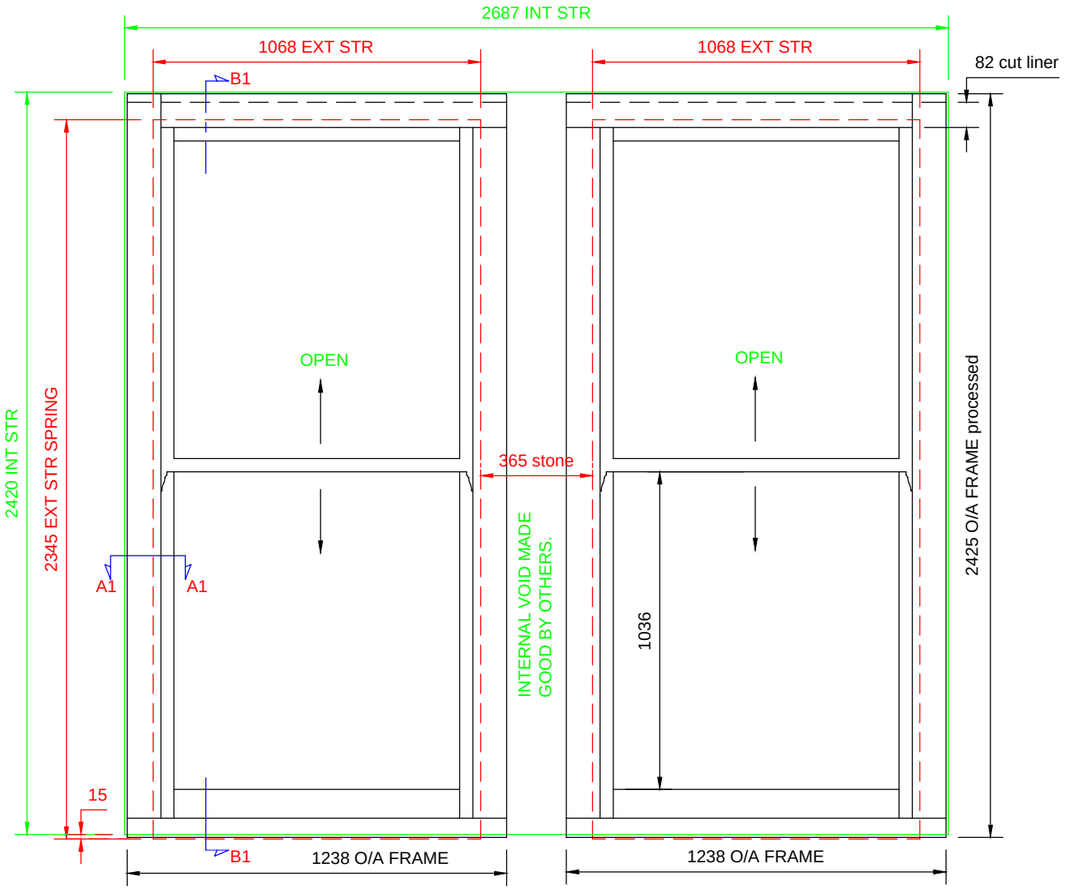
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REF HLC.3F,314.6, HLC.3F,314.7, HLC.3F,315.2, C.4F,412.1,
C.4F,412.2, C.4F,412.3, C.4F,413.1, C.4F,413.2, C.4F,413.3, C.4F,413.4

PROPOSED ELEVATION

READ WITH OD155-01-01
(FOR EXISTING & PROPOSED SECTION DETAILS).



REF C.2F,210.1, C.2F,210.2

PROPOSED ELEVATION

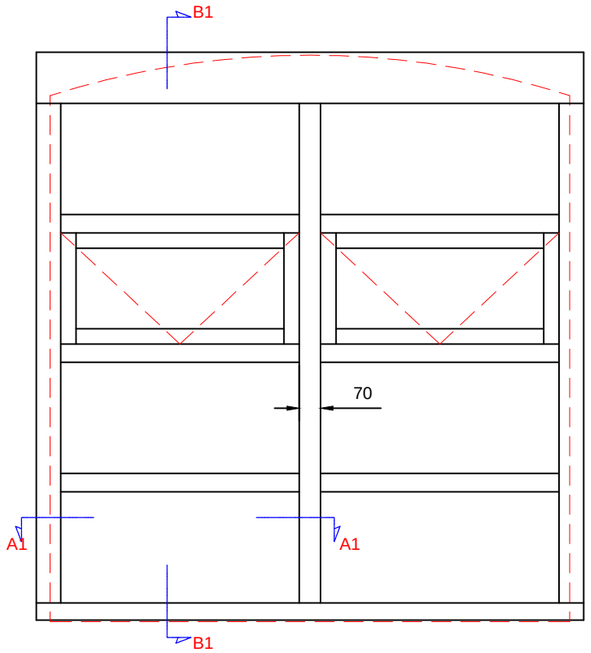
READ WITH OD155-01-03
(FOREXISTING & PROPOSED SECTION DETAILS).

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title BOX SASH WINDOW GRAHAM CONSTRUCTION MANCHESTER UNIVERSITY								

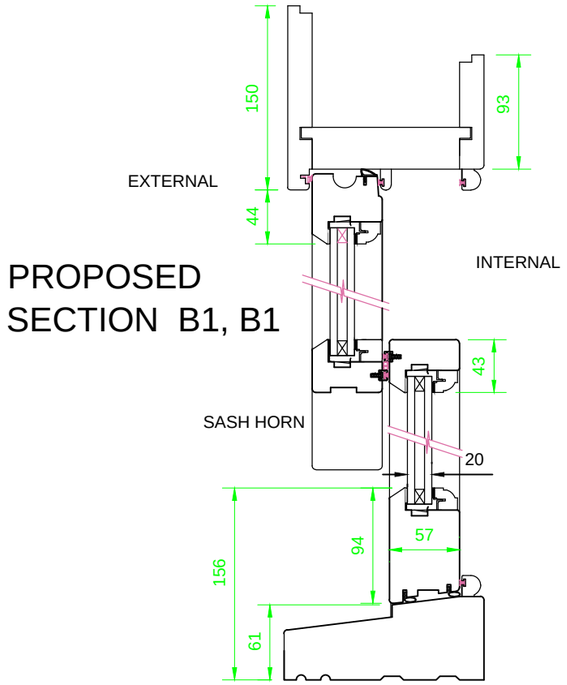
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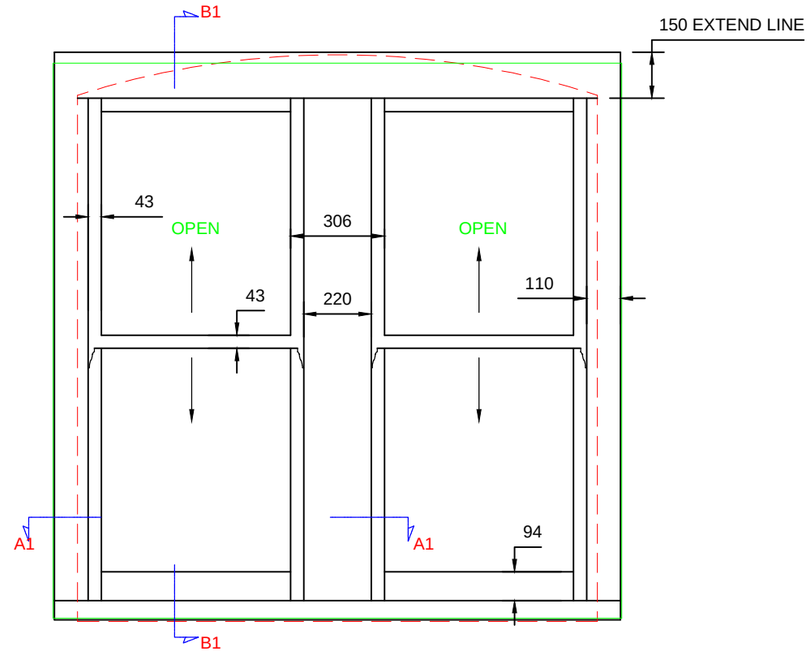


REF C.4F, 406.3
EXISTING WINDOW ON SITE

EXISTING ELEVATION

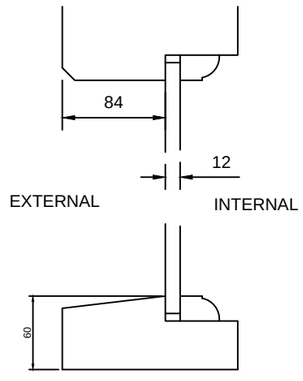


PROPOSED
SECTION B1, B1

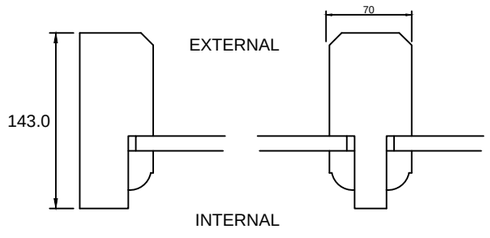


REF C.4F, 406.3
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL (NO WINDOW BOARD GROOVE.
150mm HEAD LINER EXTENSION. EXTERNAL ONLY
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

PROPOSED ELEVATION



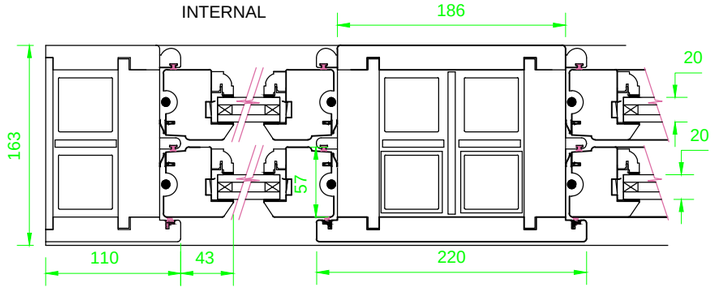
EXISTING SECTION A1, A1

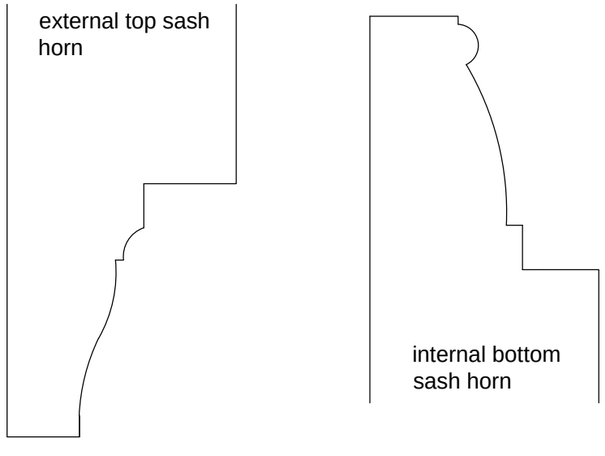


EXISTING SECTION B1, B1

THE EXISTING WINDOW AT TIME OF SITE SURVEY
IS NOT THE ACTUAL WINDOW WHEN BUILT.
WE FEEL THIS WOULD OF BEEN A BOX SASH
TYPE AS PROPOSED.

PROPOSED SECTION A1, A1



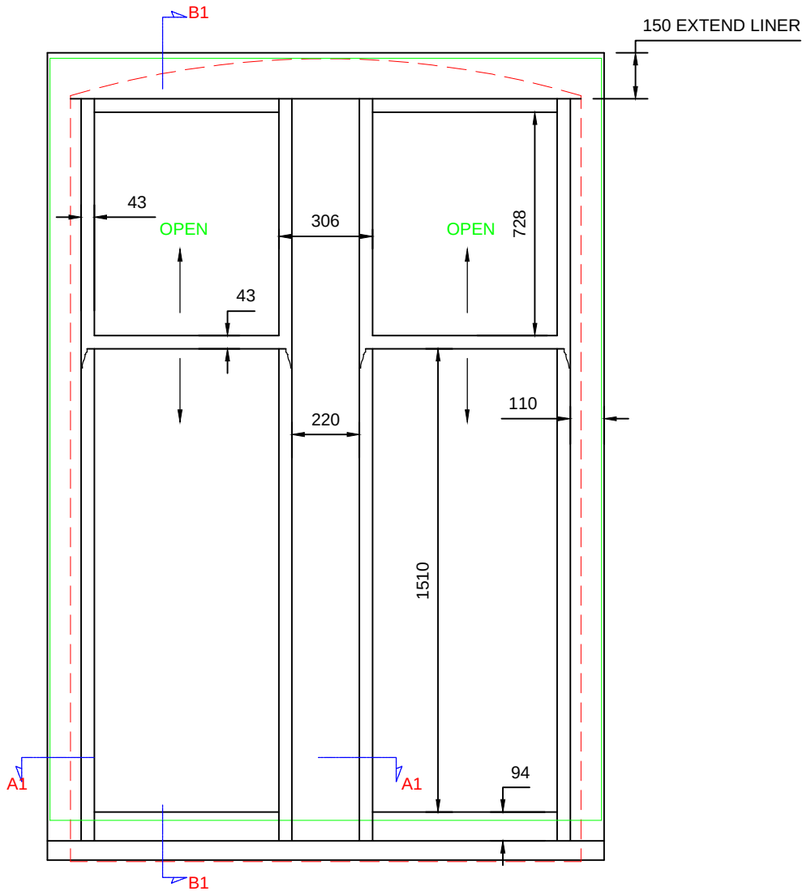


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title Batch 2 Windows GRAHAM CONSTRUCTION MANCHESTER UNIVERSITY, Coupland Street								

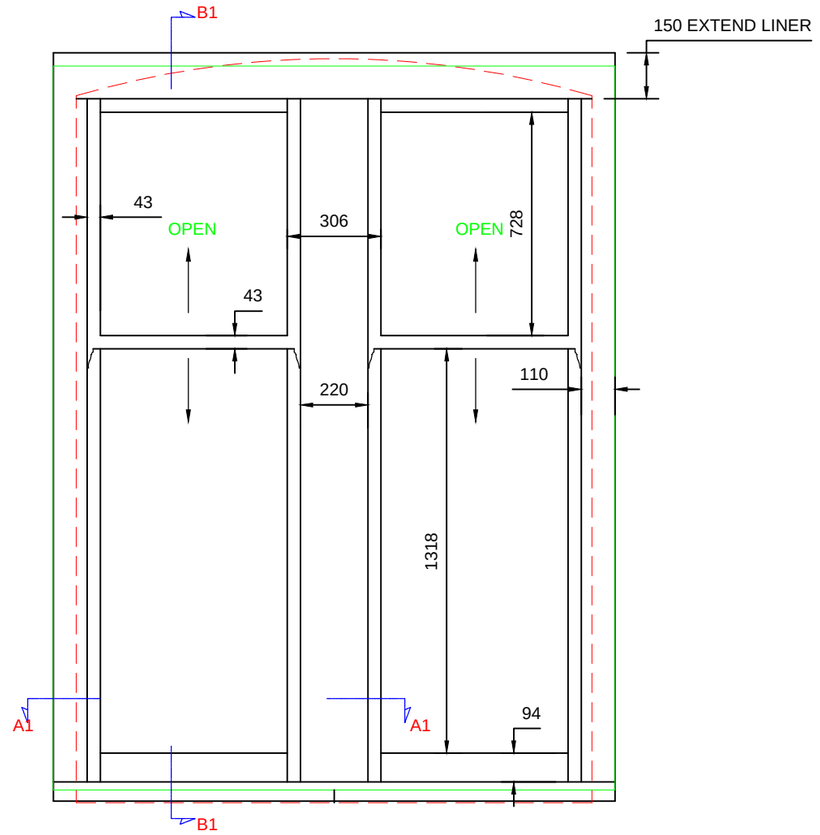
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REF C.4F, 406.2, C.4F, 406.1
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL (NO WINDOW BOARD GROOVE.
150mm HEAD LINER EXTENSION. EXTERNAL ONLY
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

PROPOSED ELEVATION



REF C.4F, 405.2, C.4F, 405.1
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL (NO WINDOW BOARD GROOVE.
150mm HEAD LINER EXTENSION. EXTERNAL ONLY
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

PROPOSED ELEVATION

THE EXISTING WINDOW AT TIME OF SITE SURVEY
IS NOT THE ACTUAL WINDOW WHEN BUILT.
WE FEEL THIS WOULD OF BEENA BOX SASH
TYPE AS PROPOSED.

READ WITH DWG OD155C-01-01 FOR THE EXISTING WINDOW SECTIONS AND ELEVATION.

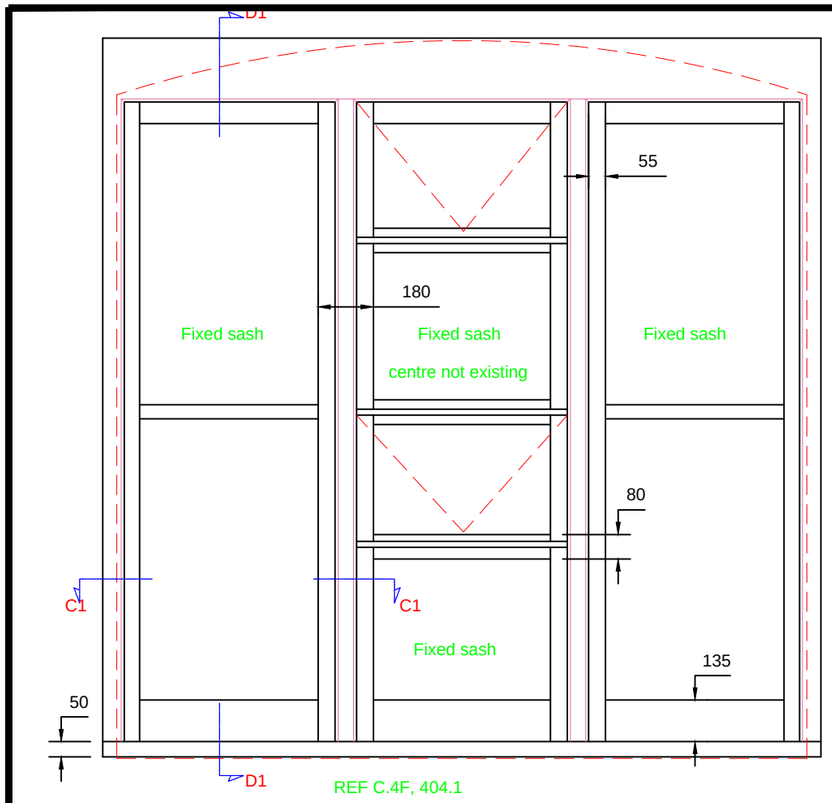
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title Batch 2 Windows
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

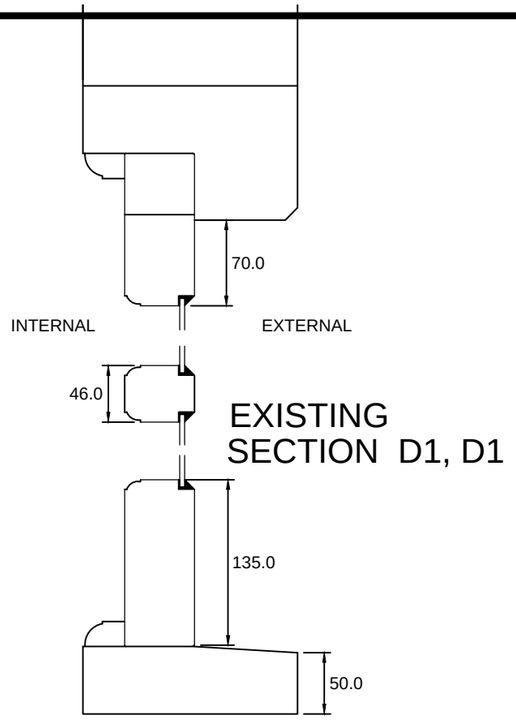
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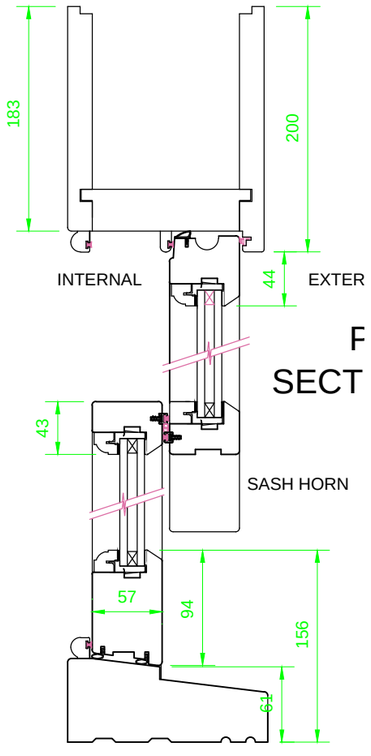


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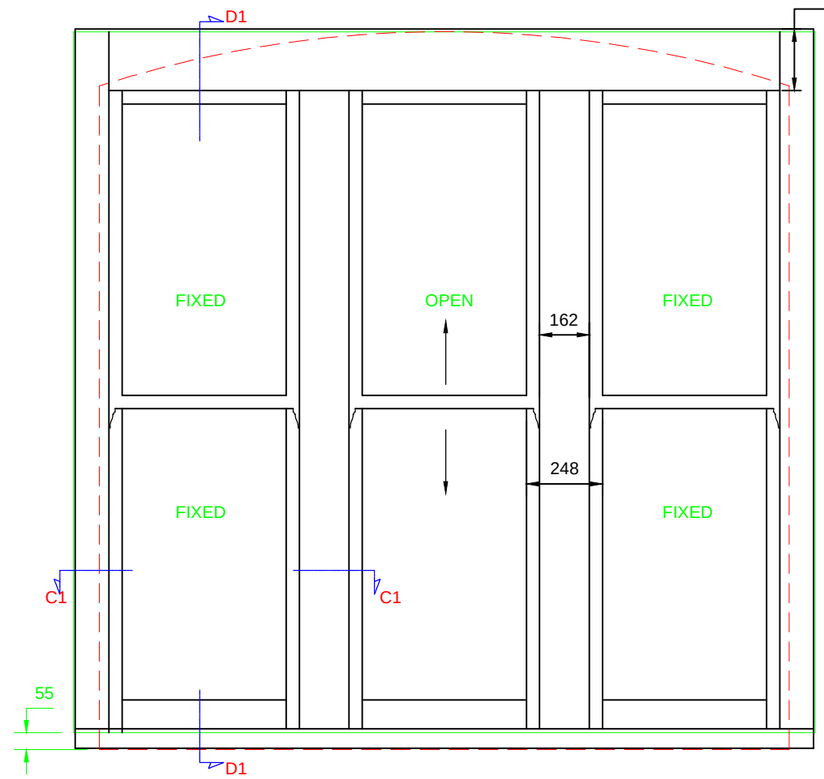
EXISTING ELEVATION



EXISTING SECTION D1, D1



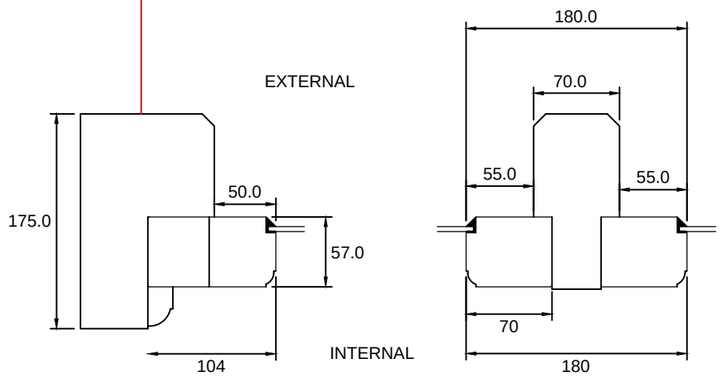
SECT



REF C.4F, 404.1
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL (NO WINDOW BOARD GROOVE.
200mm HEAD LINER EXTENSION. EXTERNAL ONLY
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

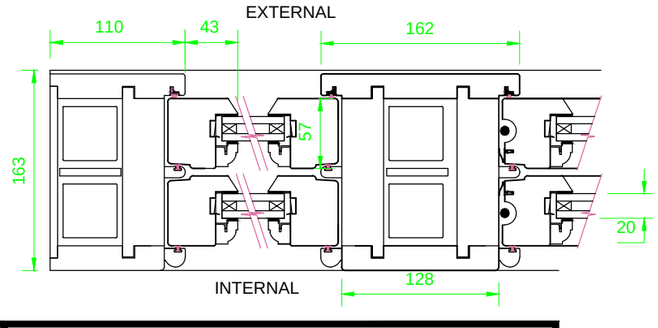
PROPOSED ELEVATION

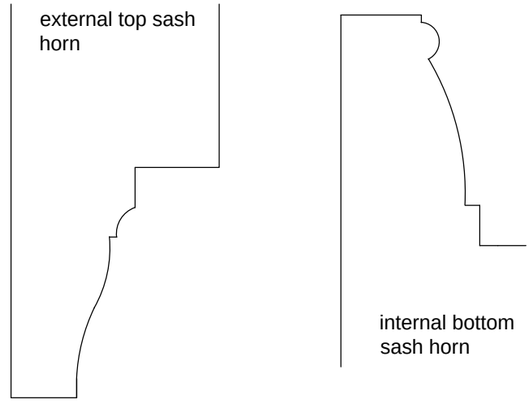
EXISTING SECTION C1, C1



THE EXISTING WINDOW AT TIME OF SITE SURVEY
IS NOT THE ACTUAL WINDOW WHEN BUILT.
WE FEEL THIS WOULD OF BEENA BOX SASH
TYPE AS PROPOSED.

PROPOSED SECTION C1, C1





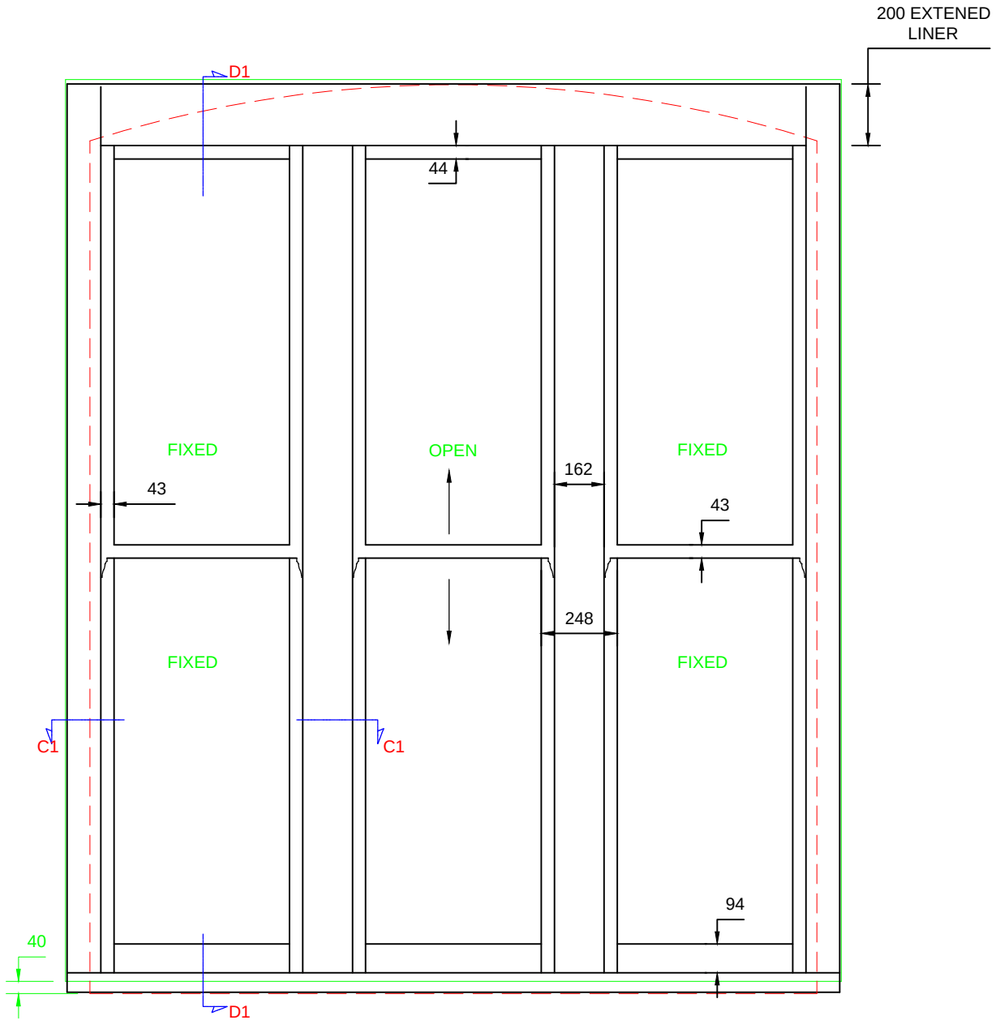
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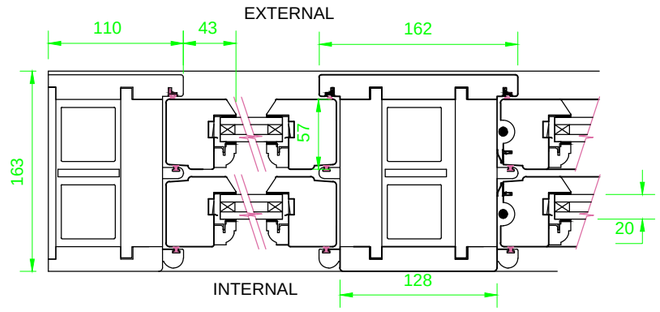
title Batch 2 Windows
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

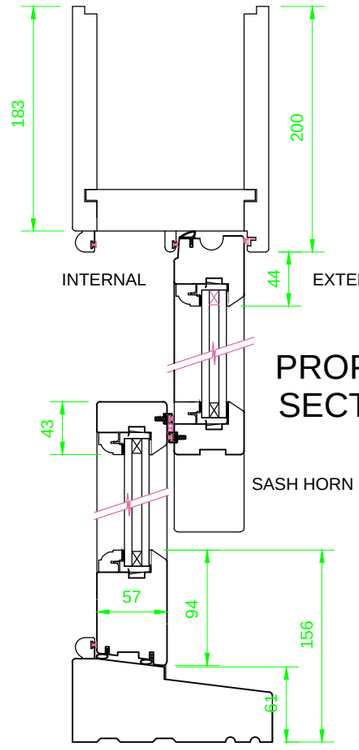
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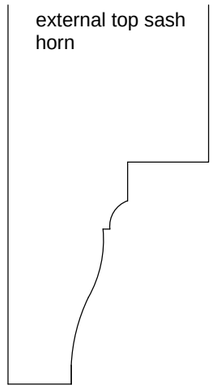


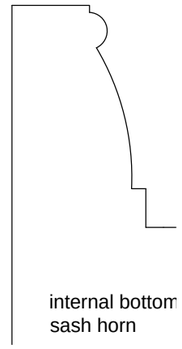
PROPOSED SECTION C1, C1





PROPOSED SECTION D1, D1





REF C.4F, 403.1
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL (NO WINDOW BOARD GROOVE.
200mm HEAD LINER EXTENSION. EXTERNAL ONLY
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

THE EXISTING WINDOW AT TIME OF SITE SURVEY IS NOT THE ACTUAL WINDOW WHEN BUILT. WE FEEL THIS WOULD OF BEENA BOX SASH TYPE AS PROPOSED.

PROPOSED ELEVATION

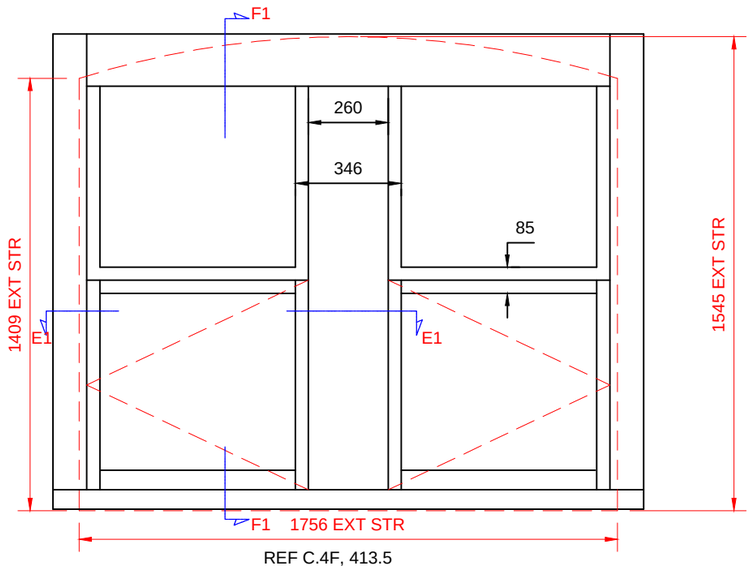
READ WITH DWG OD155C-01-03 FOR THE EXISTING/PROPOSED WINDOW SECTIONS AND ELEVATION.

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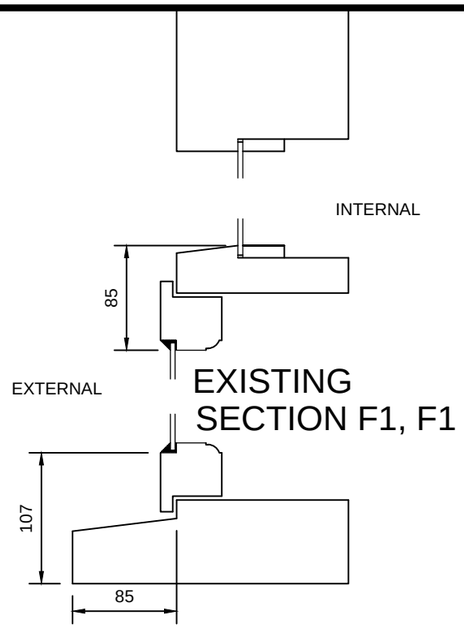
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title Batch 2 Windows GRAHAM CONSTRUCTION MANCHESTER UNIVERSITY, Coupland Street								

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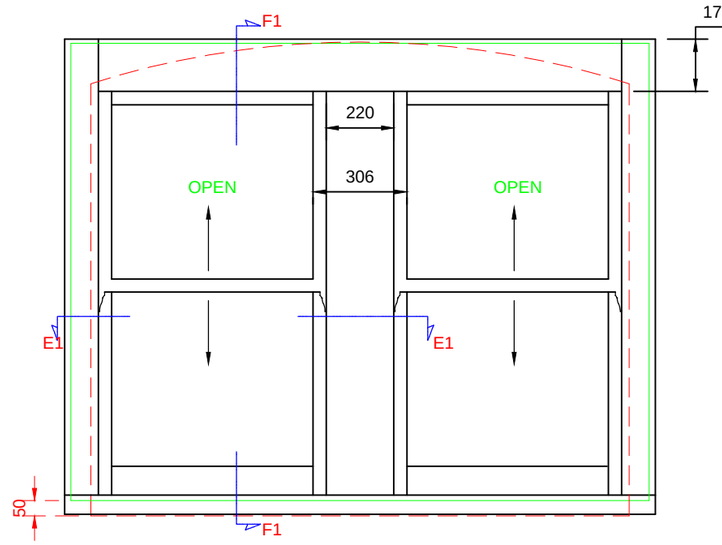
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EXISTING ELEVATION

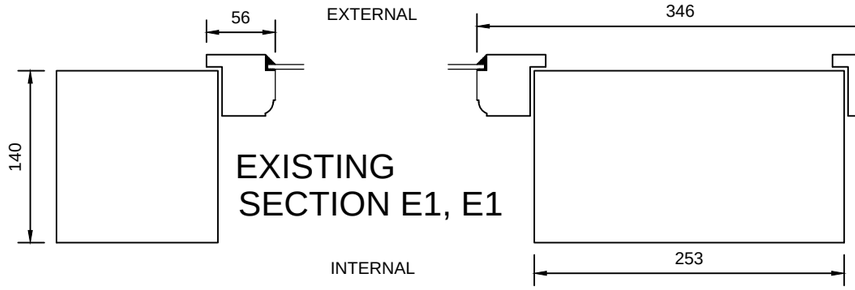


EXISTING
SECTION F1, F1



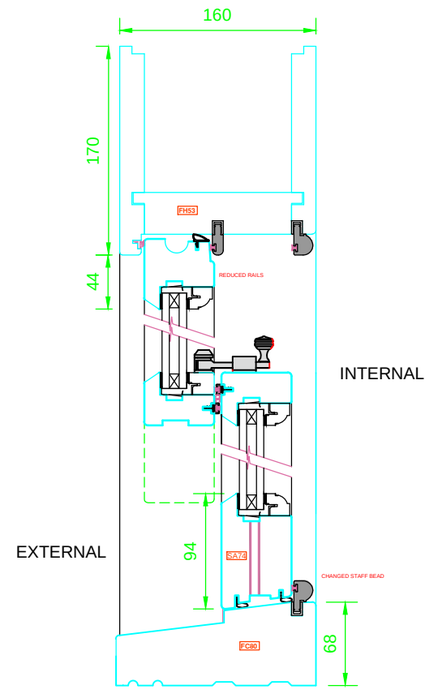
REF C.4F, 413.5
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
85mm CILL EXTENSION.
170mm HEAD LINER EXTENSION.
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

PROPOSED ELEVATION



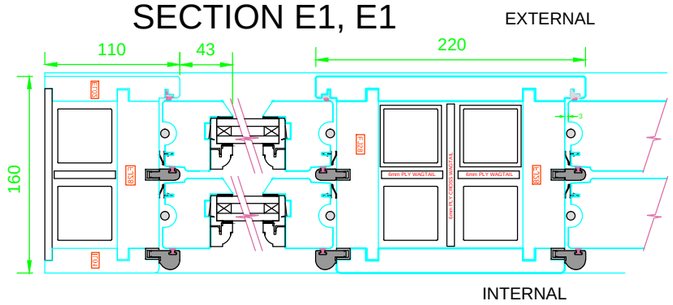
EXISTING
SECTION E1, E1

THIS DETAIL IS NOT AN EXISTING WINDOW.
THERE ARE BOX SASH FRAMES IN THIS ROOM FOR
C.4F.413.1 TO 413.4 WHICH ARE CORRECT.



PROPOSED
SECTION F1, F1

PROPOSED
SECTION E1, E1



NEW FRAME TO BE PUT BACK AS A BOX SASH
WINDOW TO MATCH C.4F.413.1 TO 413.4
IN THE SAME ROOM.

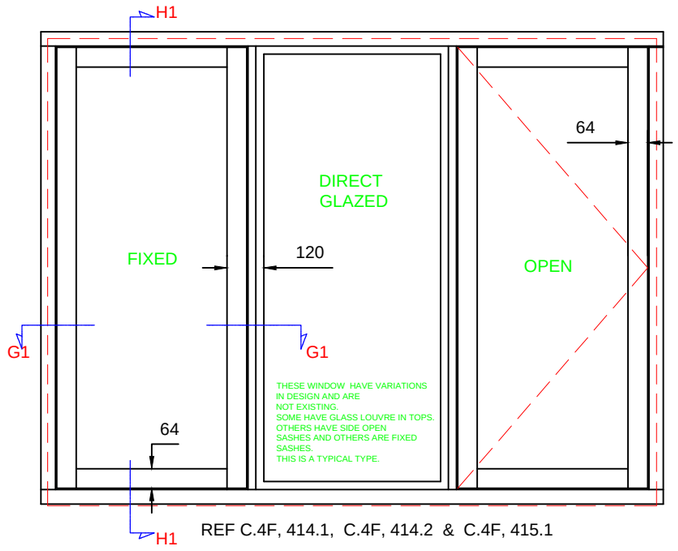
SASH HORN DETAILS AS
OD155C-01-04

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title Batch 2 Windows GRAHAM CONSTRUCTION MANCHESTER UNIVERSITY, Coupland Street								

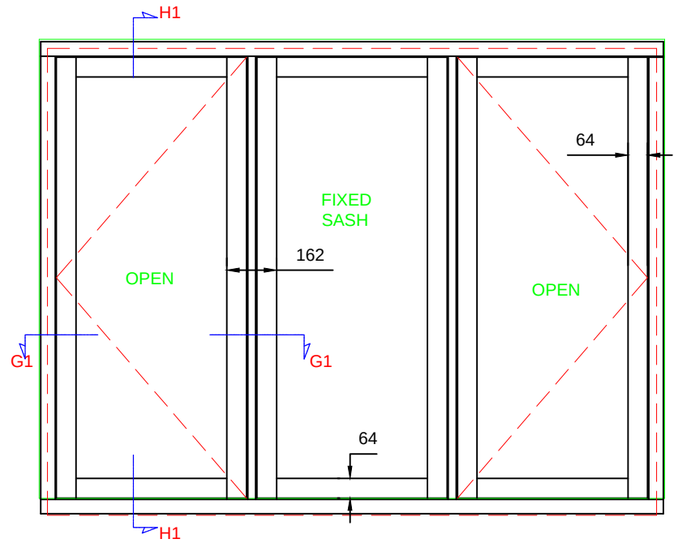
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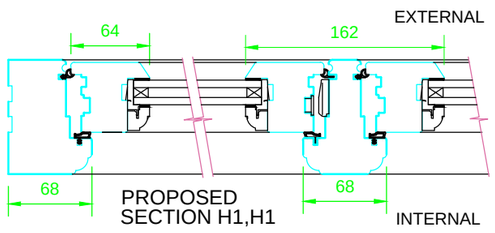
REF C.4F, 414.1, C.4F, 414.2 & C.4F, 415.1
.

EXISTING ELEVATION



REF C.4F, 414.1,C.4F, 414.2 & C.4F, 415.1
STANDARD CASEMENT OPEN OUT.
OVOLO PROFILE WITH SQUARE CILL.
FIXED CENTRE SASH.
SIDE SWING OPENING SASHES.
FLUSH CILL
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

PROPOSED ELEVATION

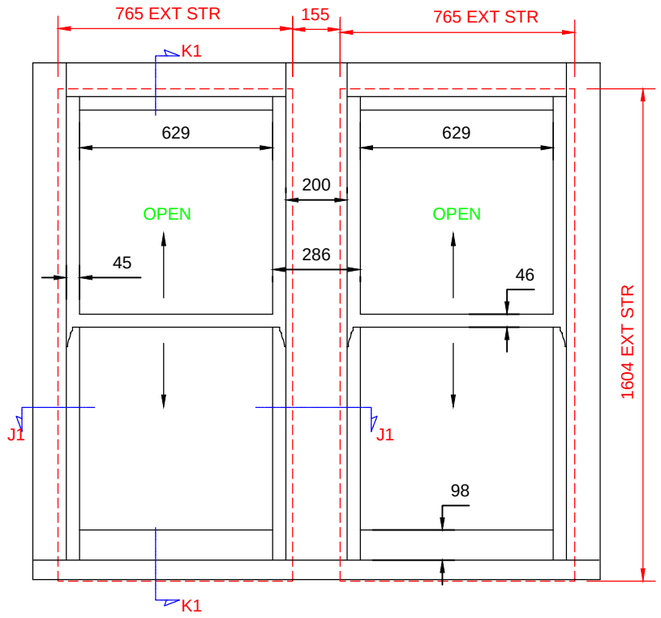


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title Batch 2 Windows GRAHAM CONSTRUCTION MANCHESTER UNIVERSITY, Coupland Street								

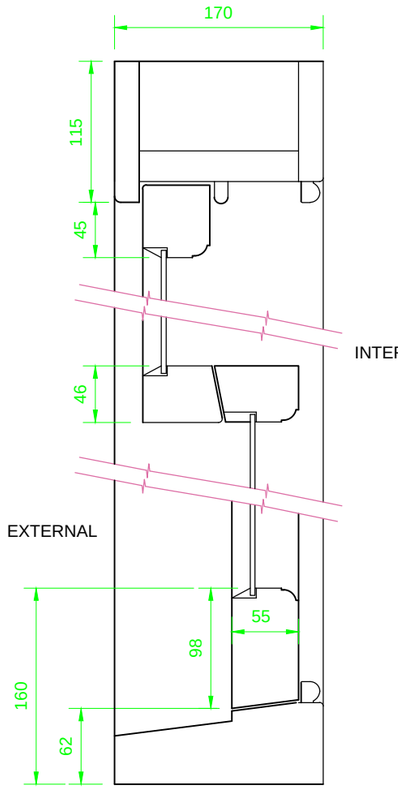
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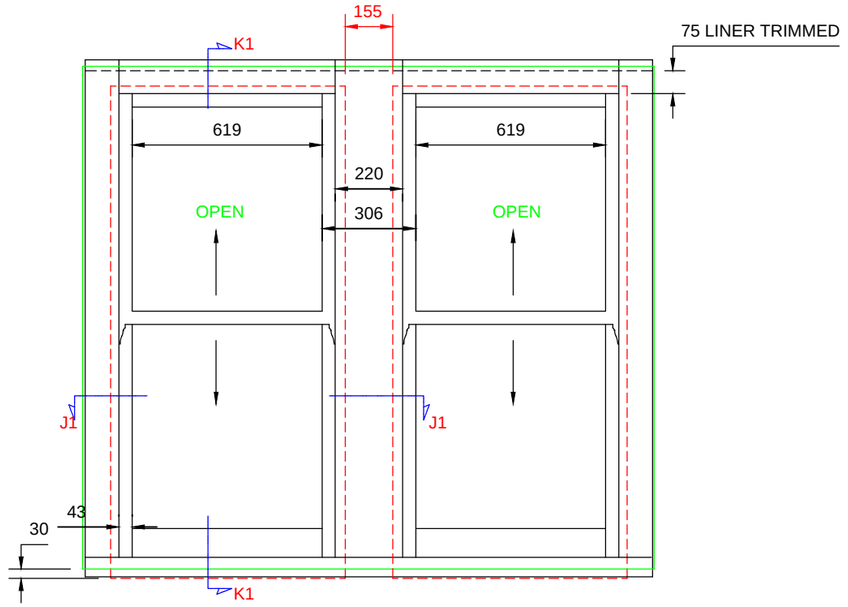


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EXISTING ELEVATION



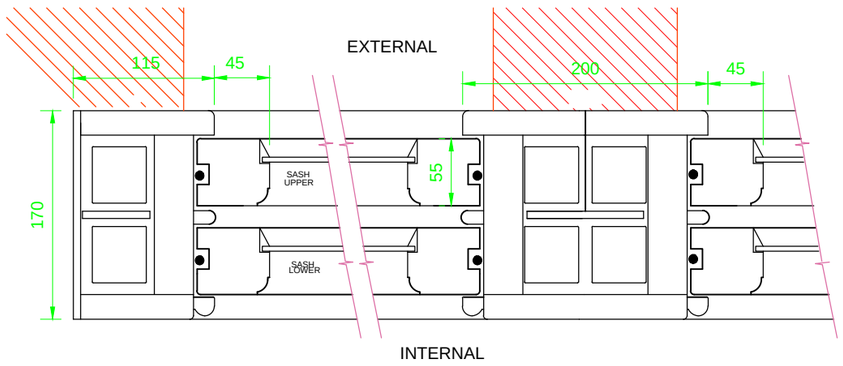
EXISTING SECTION K1,K1



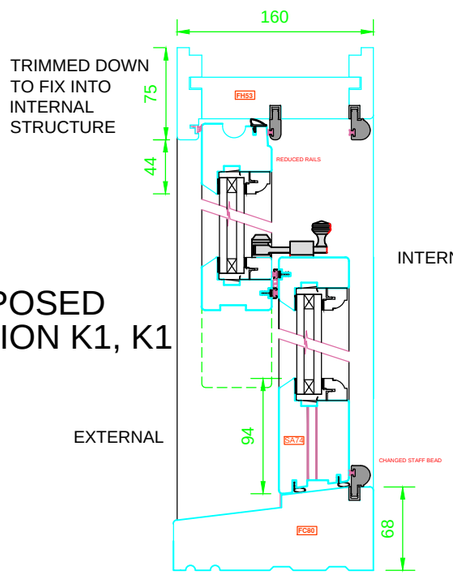
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PROPOSED ELEVATION

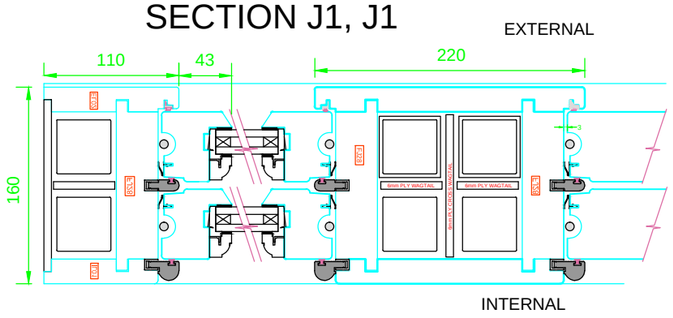
EXISTING SECTION J1, J1

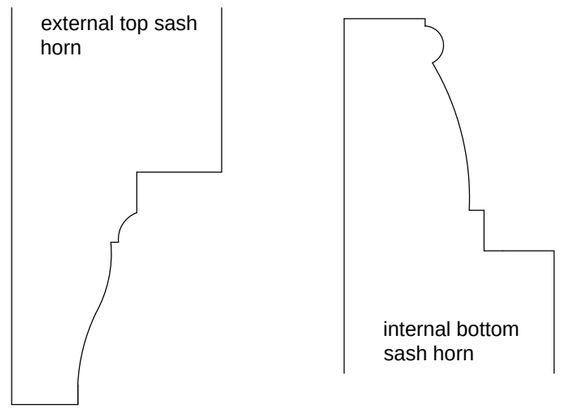


PROPOSED SECTION K1, K1



PROPOSED SECTION J1, J1



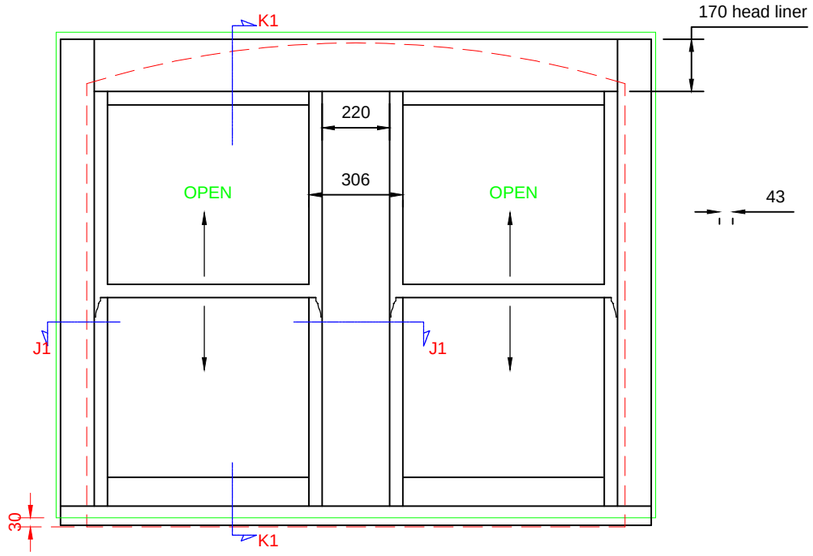


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approved by			revision	A	rev	by	date	description
sign			date	17-02-2015	A	OTD	23-06-15	UPDATED
date			drn OTD	scale 1:20/1:5				
title Batch 2 Windows GRAHAM CONSTRUCTION MANCHESTER UNIVERSITY, Coupland Street								

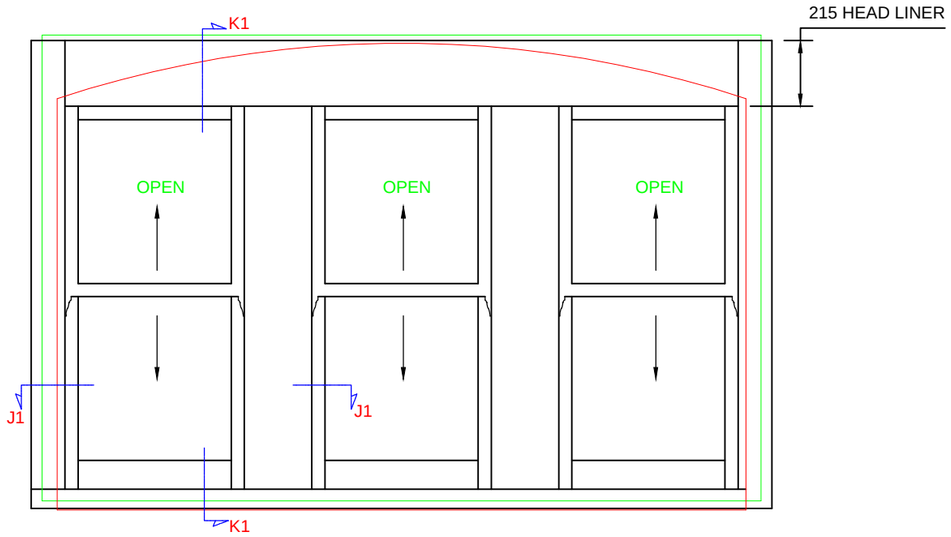
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REF C.3F, 330.5
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
85mm CILL EXTENSION.
170mm HEAD LINER EXTENSION.
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

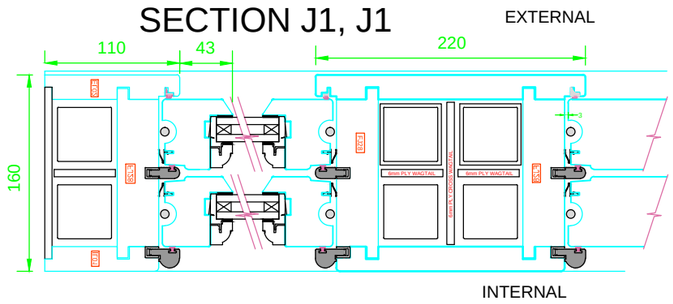
PROPOSED ELEVATION



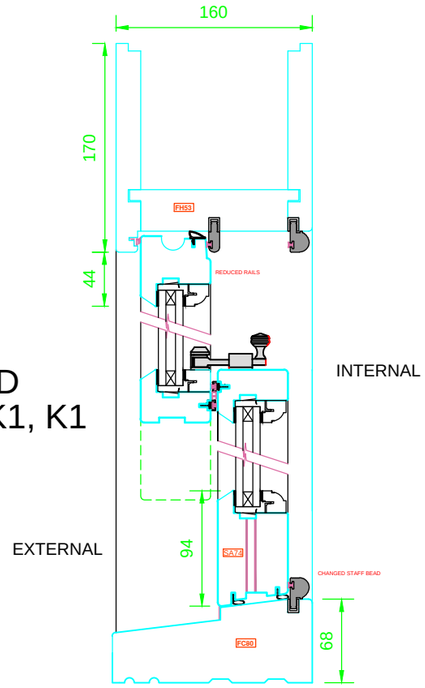
REF C.3F,331.1,
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
85mm CILL EXTENSION.
215mm HEAD LINER EXTENSION.
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

PROPOSED ELEVATION

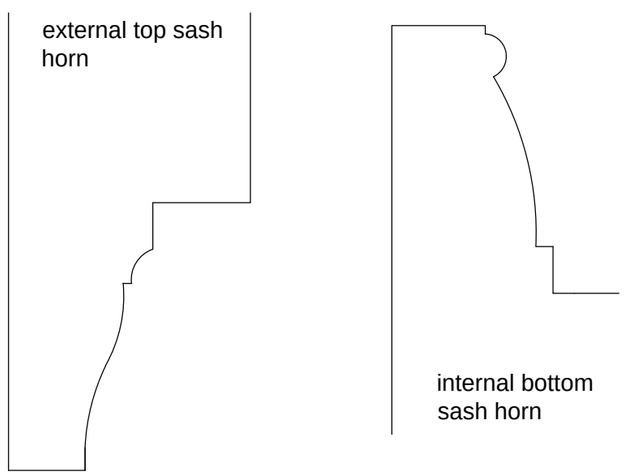
PROPOSED SECTION J1, J1



PROPOSED SECTION K1, K1



READ WITH DWG OD155C-01-07 FOR THE EXISTING/PROPOSED WINDOW SECTIONS AND ELEVATION.

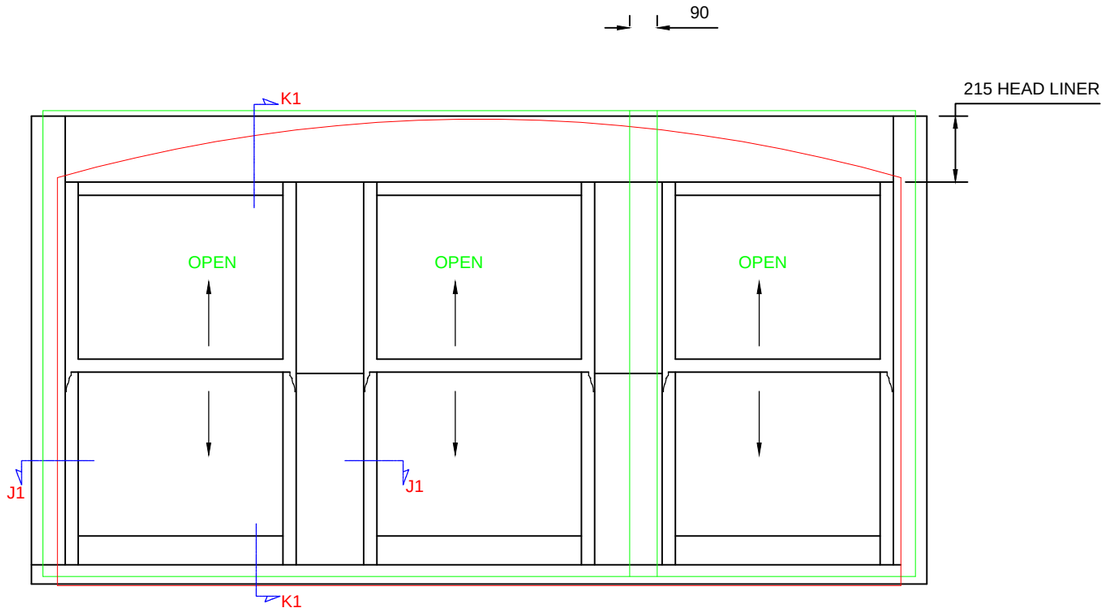


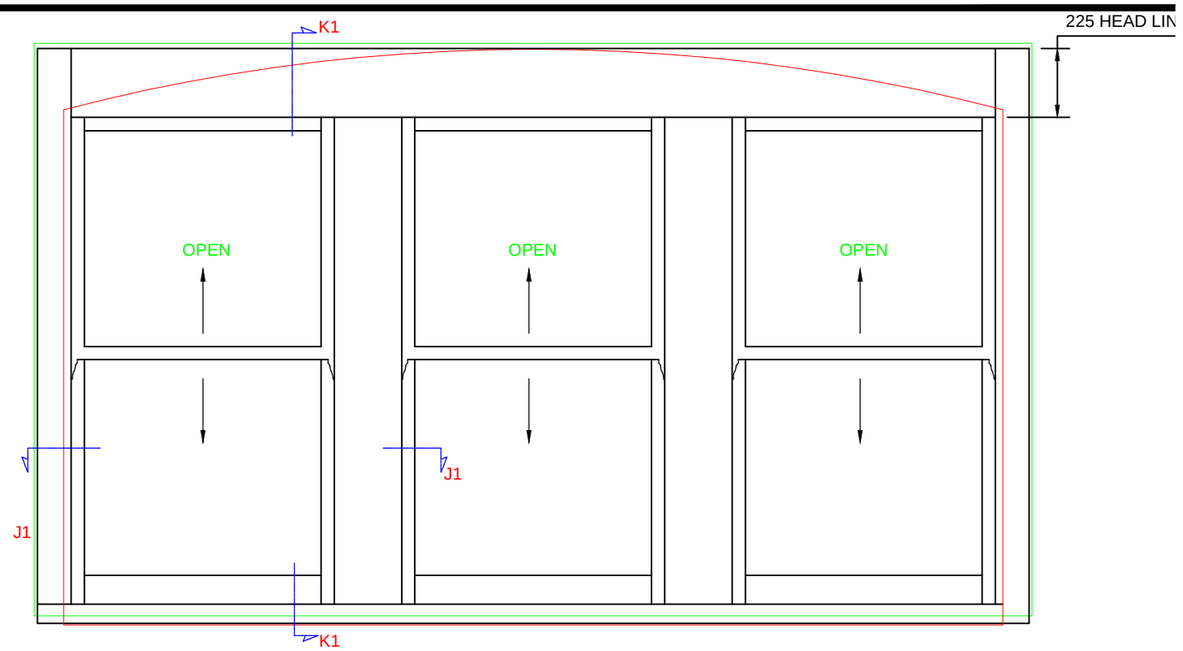
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title Batch 2 Windows GRAHAM CONSTRUCTION MANCHESTER UNIVERSITY, Coupland Street								

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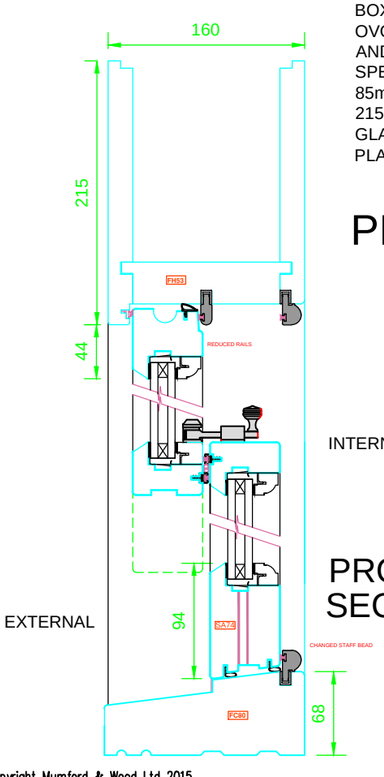




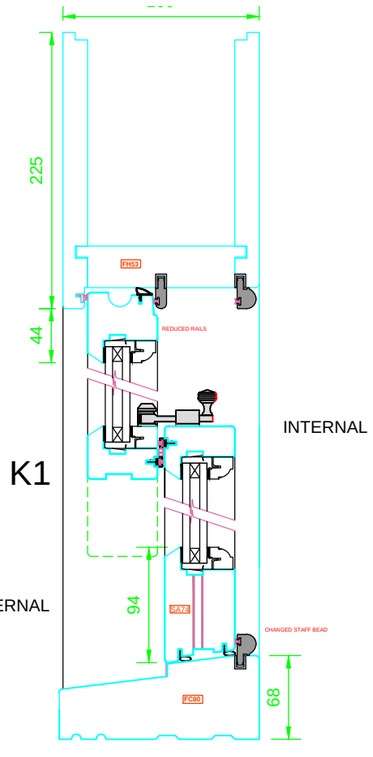
REF C.3F,333.2,

BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
85mm CILL EXTENSION.
215mm HEAD LINER EXTENSION.
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

PROPOSED ELEVATION



PROPOSED SECTION K1, K1



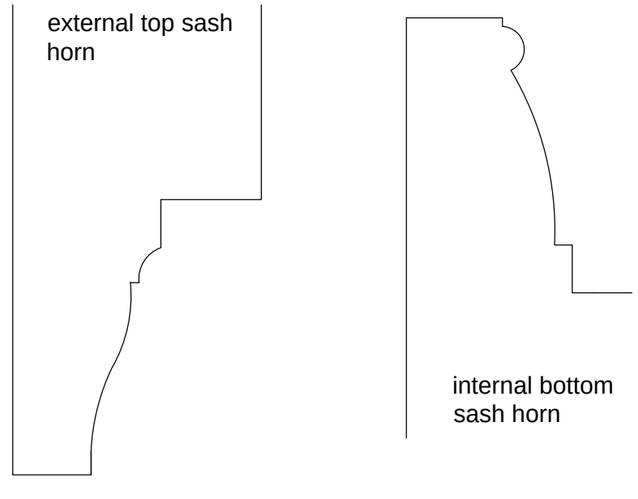
PROPOSED SECTION JK1, K1

REF C.3F,334.1,

BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
85mm CILL EXTENSION.
215mm HEAD LINER EXTENSION.
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

PROPOSED ELEVATION

READ WITH DWG OD155C-01-07 FOR THE EXISTING/PROPOSED WINDOW SECTIONS AND ELEVATION.



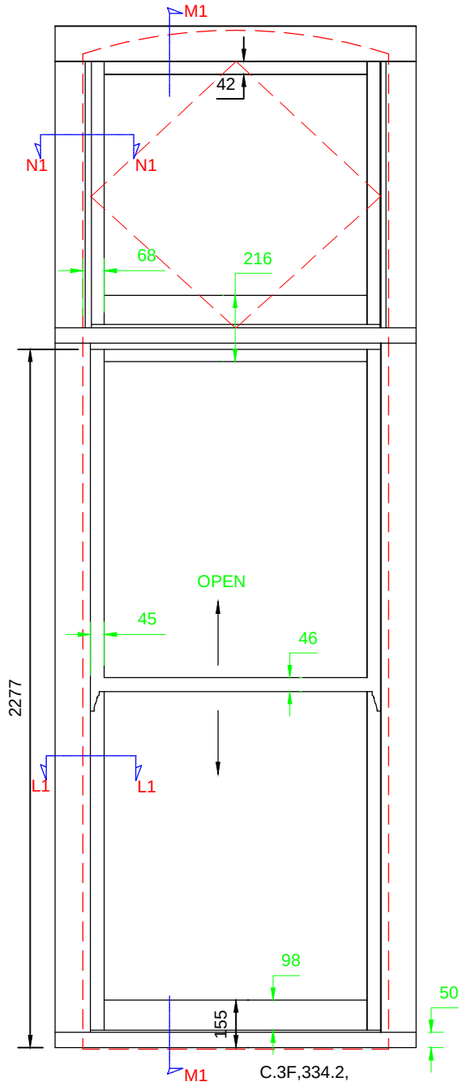
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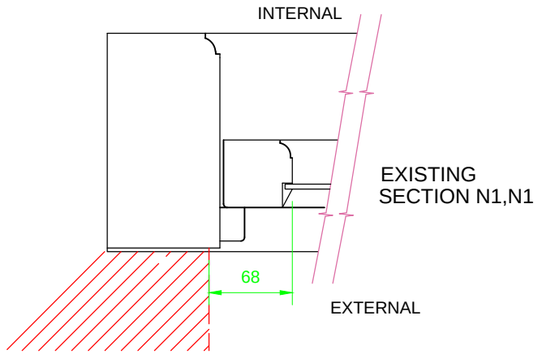
title Batch 2 Windows
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

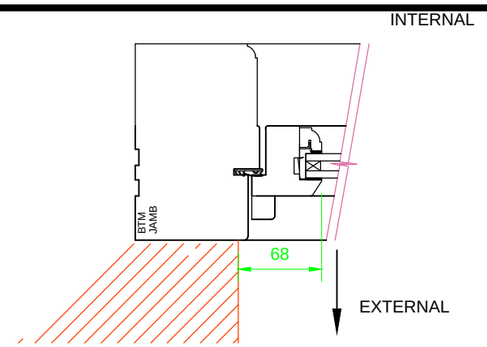
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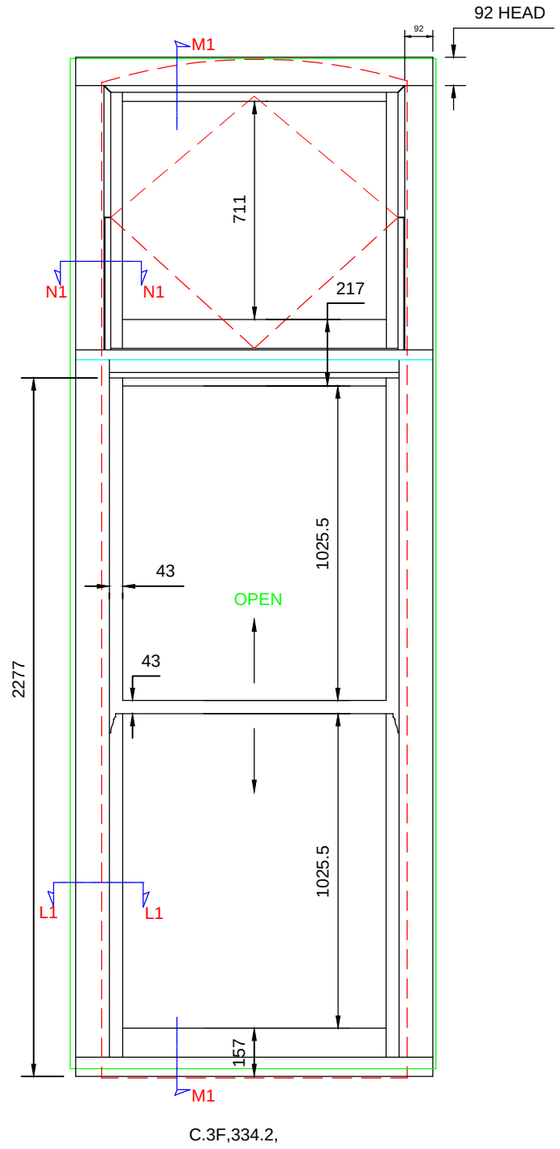


EXISTING ELEVATION

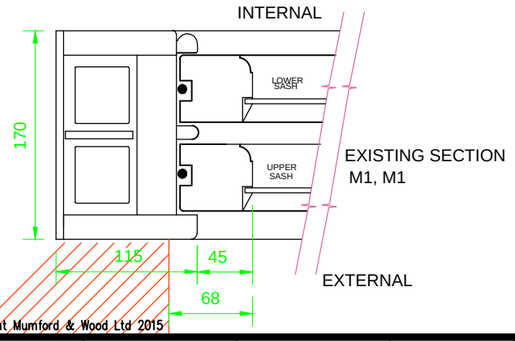


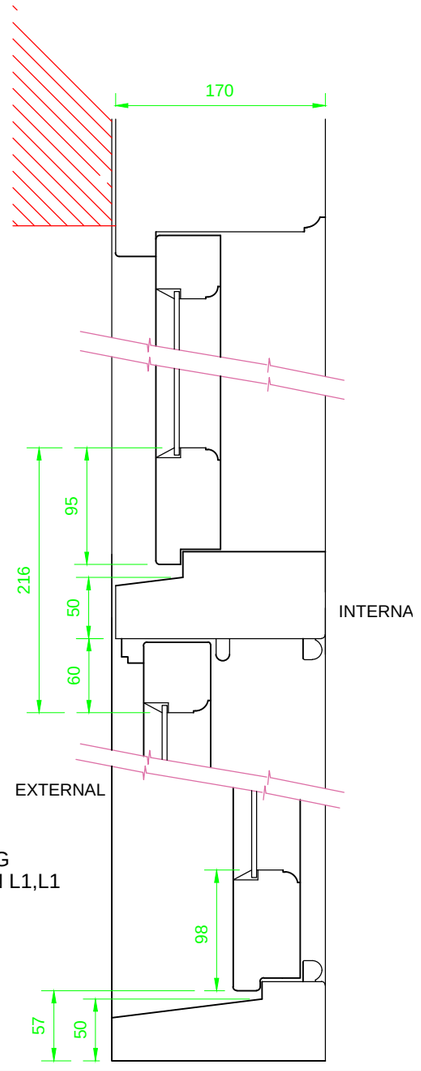


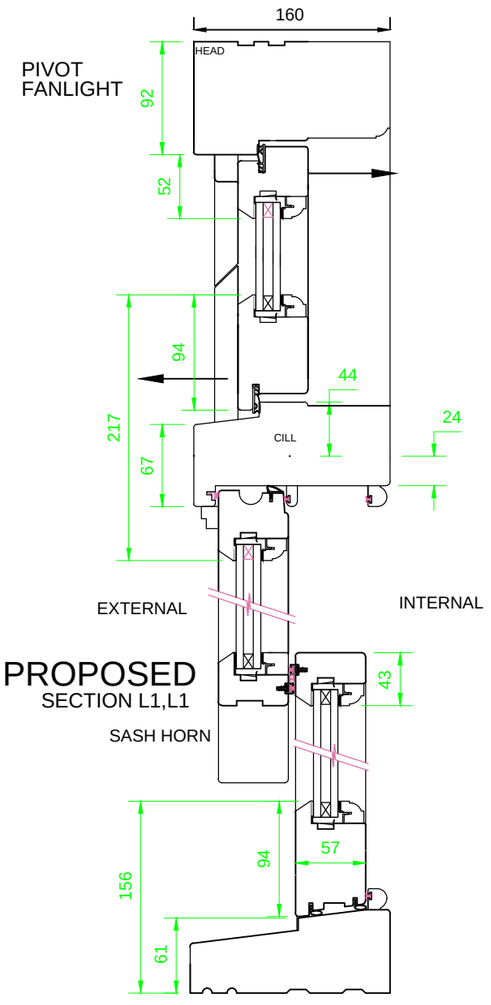
PROPOSED SECTION N1,N1

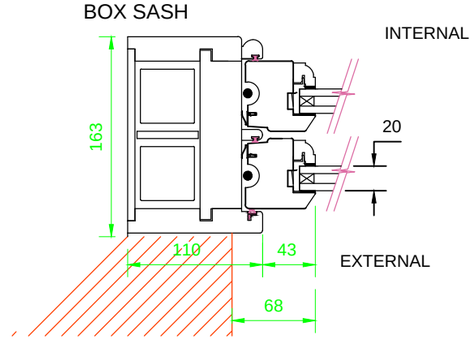


PROPOSED ELEVATION









PROPOSED SECTION M1,M1

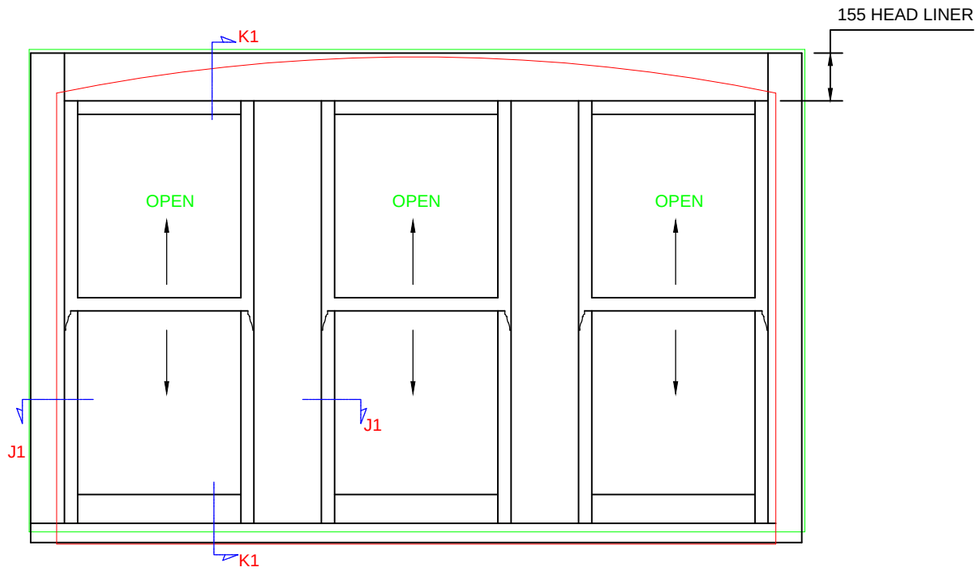
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title Batch 2 Windows
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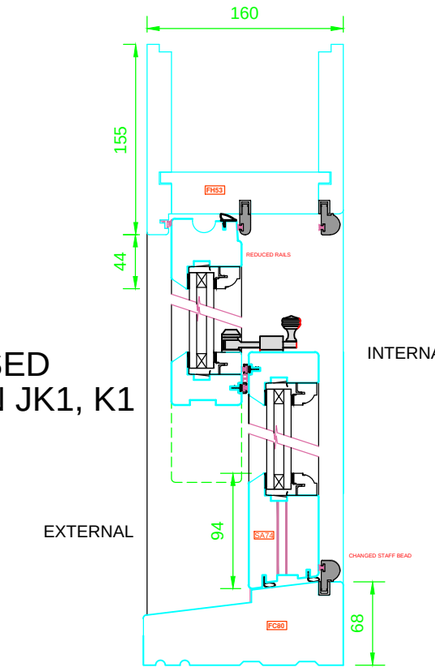
REF C.3F,337.1, C.3F,337.2, = ONE WINDOW ONLY WITH 2 REF

BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
85mm CILL EXTENSION.
215mm HEAD LINER EXTENSION.
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

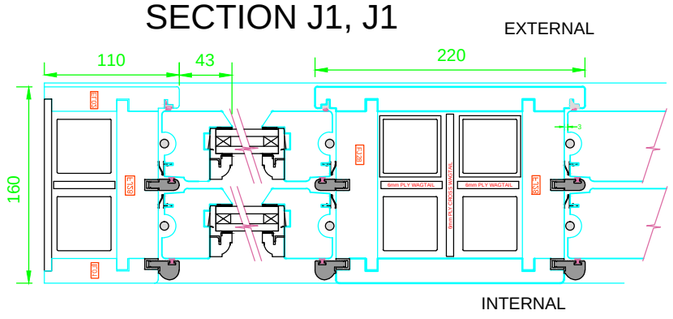
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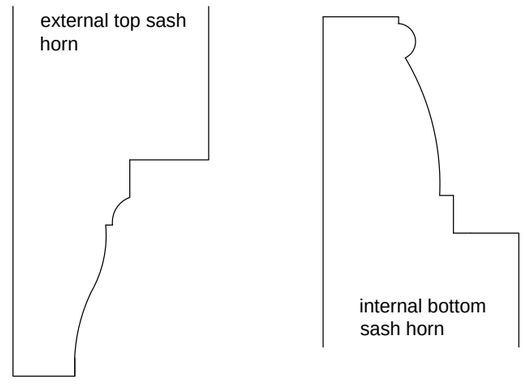
READ WITH OD155C-01-07

PROPOSED
SECTION JK1, K1



PROPOSED
SECTION J1, J1



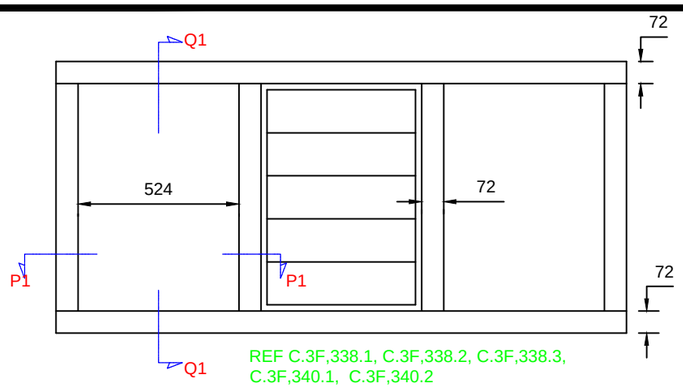


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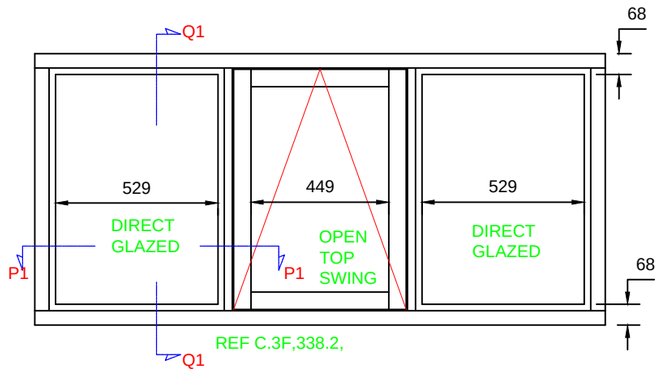
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title Batch 2 Windows GRAHAM CONSTRUCTION MANCHESTER UNIVERSITY, Coupland Street								

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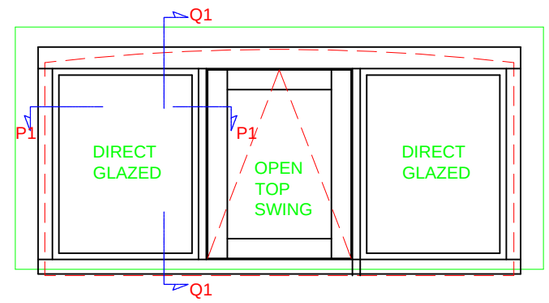
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Tiptree, Essex CO5 0LX
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EXISTING ELEVATION

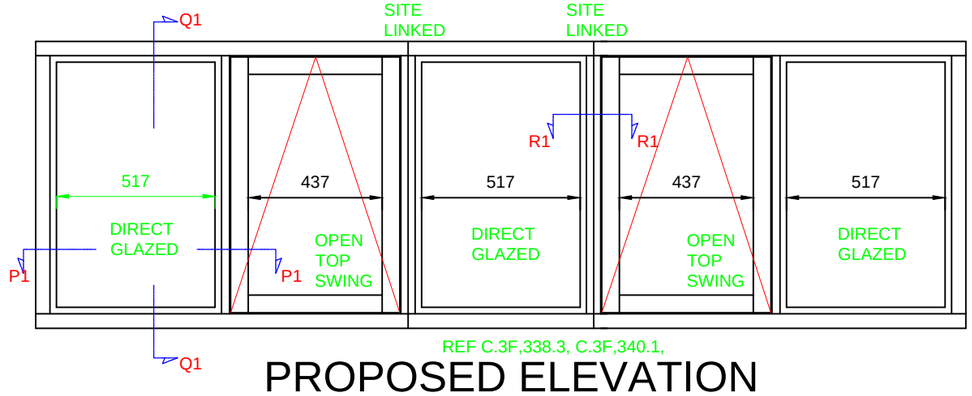


PROPOSED ELEVATION

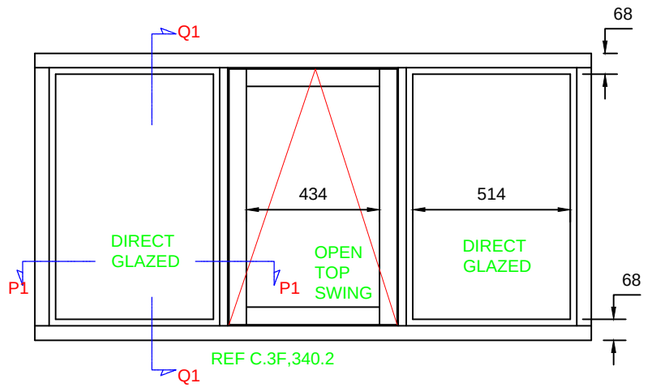


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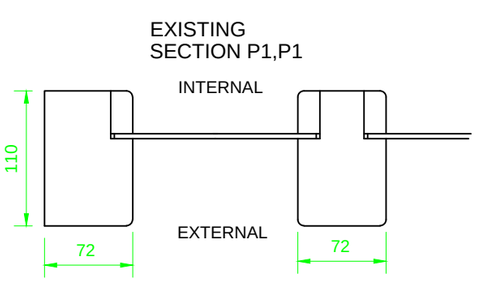
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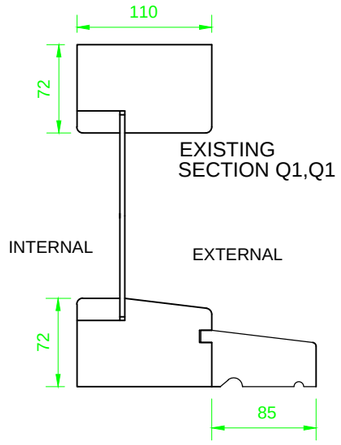


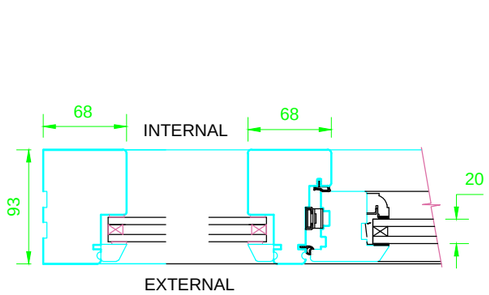
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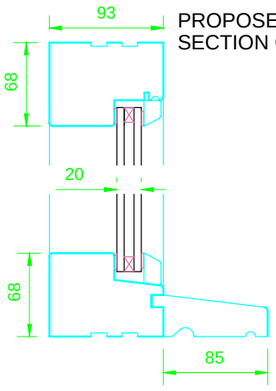
PROPOSED ELEVATION



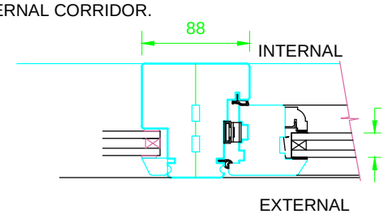




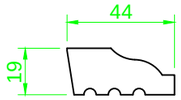
PROPOSED SECTION P1,P1



SITE LINKED BECAUSE
OF MANUAL HANDLE
AS THE WINDOW WILL
NOT FIT THROUGH
INTERNAL CORRIDOR.



PROPOSED SECTION R1,R1



ARCHITRAVE FOR EXTERNAL
COVERING AROUND WINDOWS.

1 NO @ 3.1M
5 NO @ 2.0M

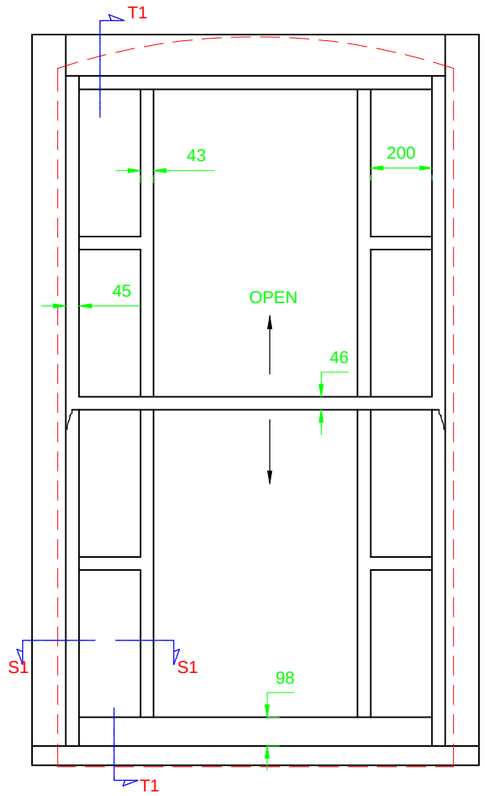
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title Batch 2 Windows
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

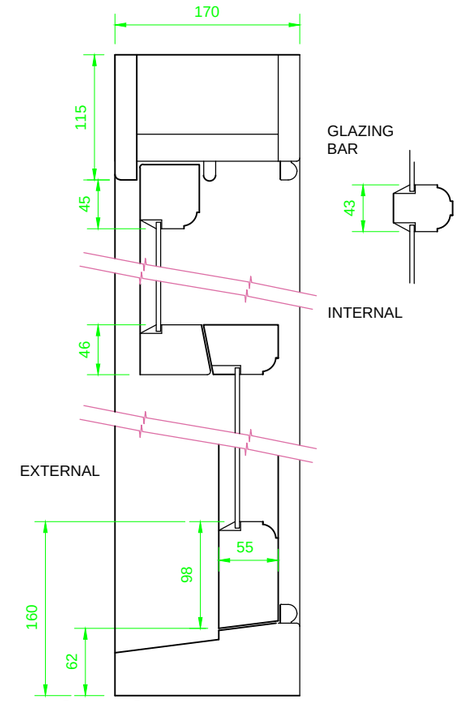
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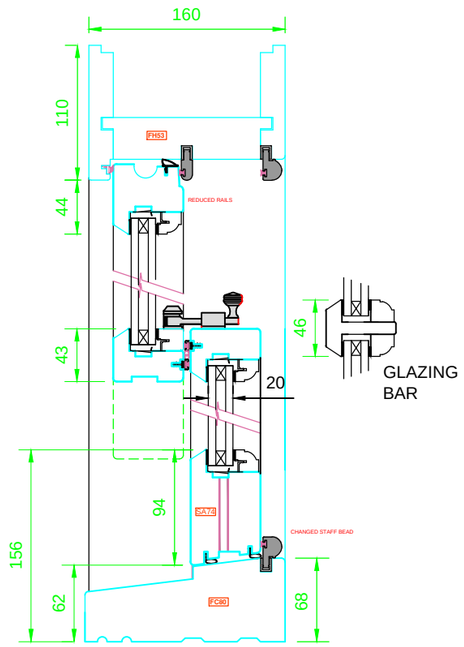


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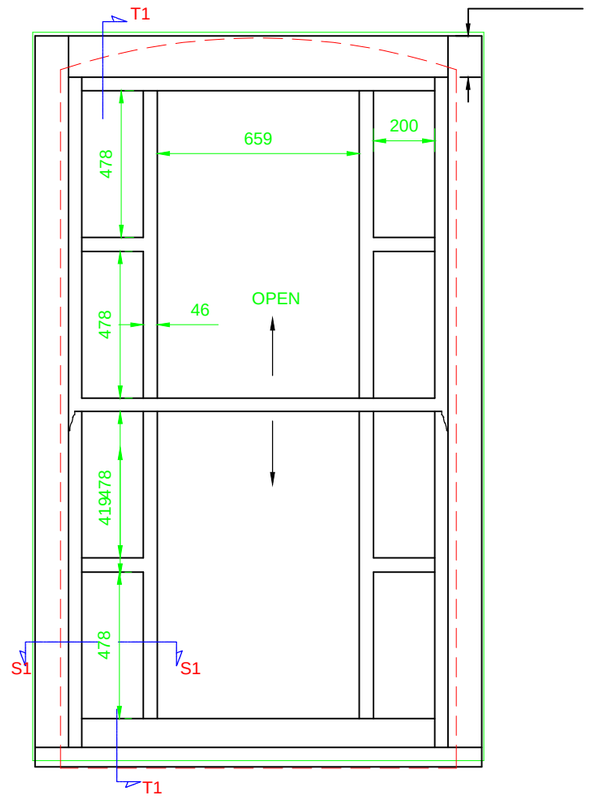
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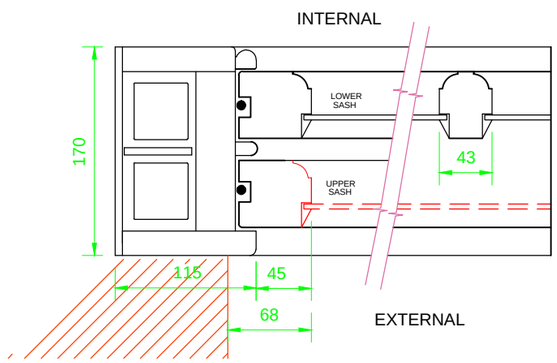


EXISTING SECTION T1,T1



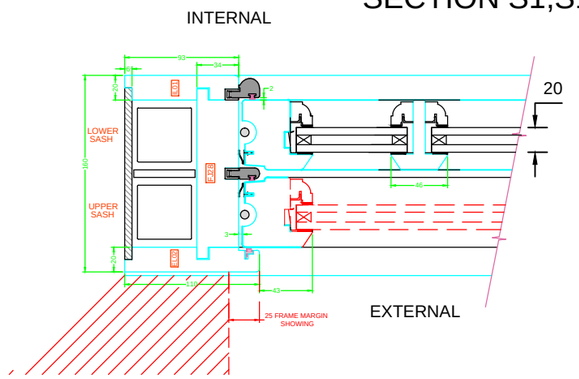
PROPOSED SECTION T1,T1





EXISTING SECTION S1, S1

PROPOSED SECTION S1,S1



REF C.3F,301.1

BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL FOR BOTH SASHES
FLUSH CILL
46mm TRUE BAR
GLASS 6mm TOUGH8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

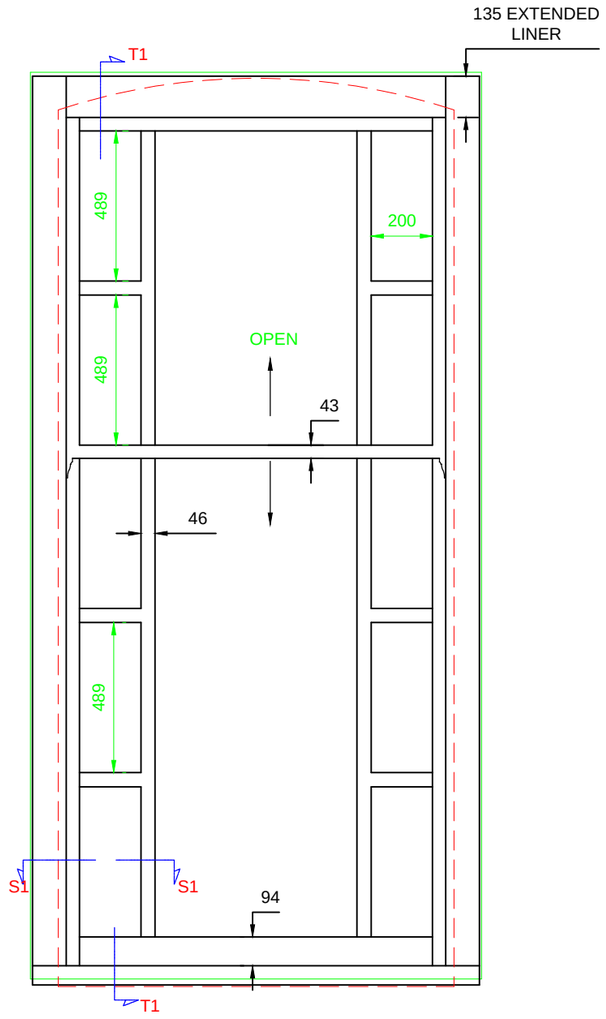
PROPOSED ELEVATION

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title Batch 2 Windows GRAHAM CONSTRUCTION MANCHESTER UNIVERSITY, Coupland Street								

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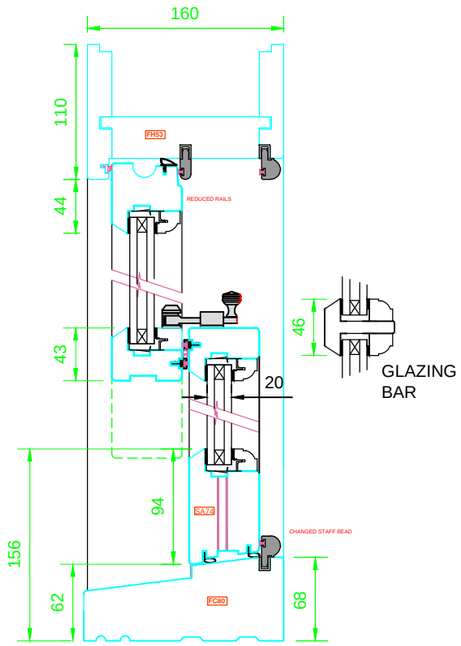
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REF C.3F,301.2

BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL FOR BOTH SASHES
FLUSH CILL
46mm TRUE BAR
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

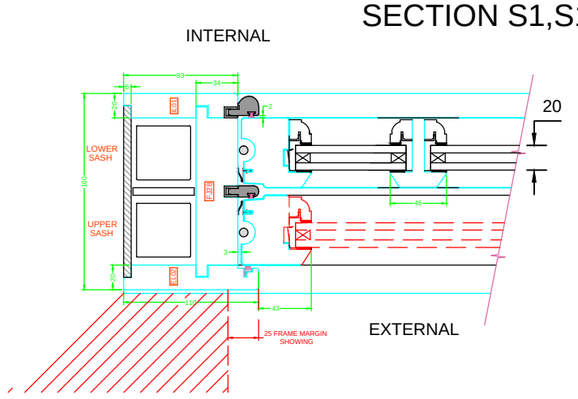
PROPOSED ELEVATION



PROPOSED
SECTION T1,T1

READ WITH OD155C-01-13
FOR EXISTING WINDOW DETAILS.

PROPOSED
SECTION S1,S1

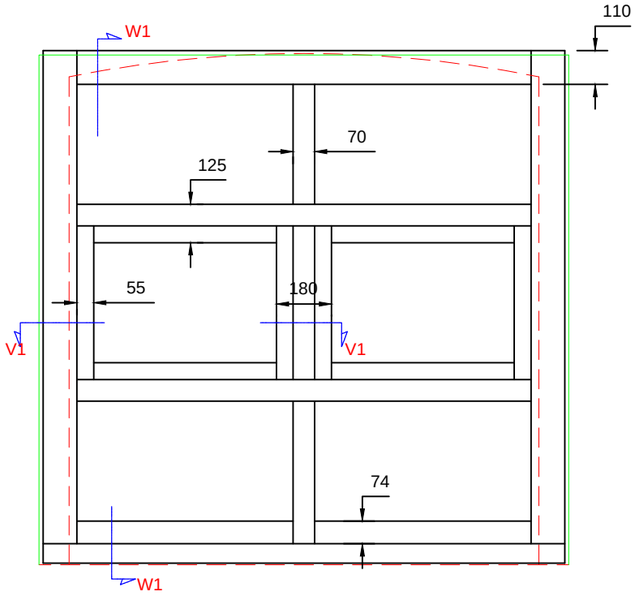


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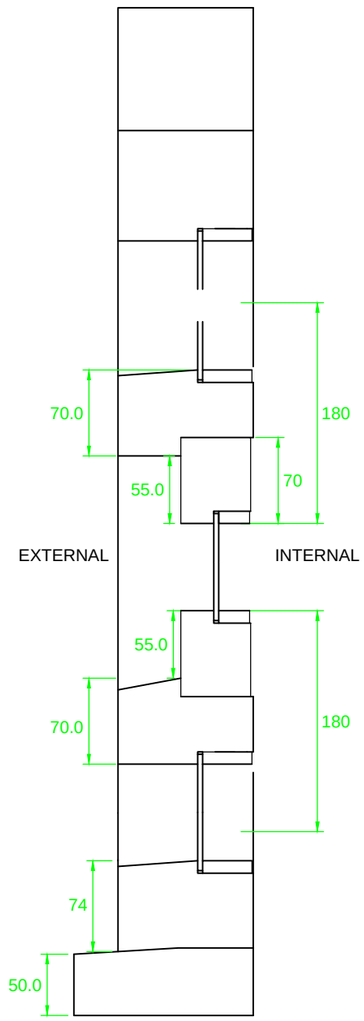
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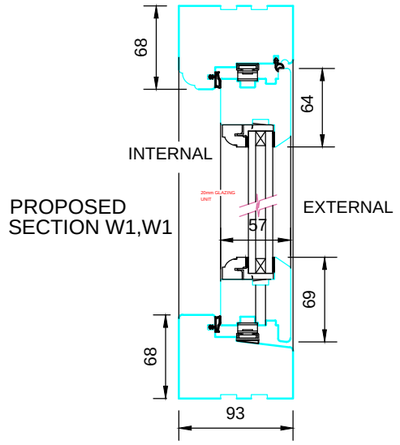


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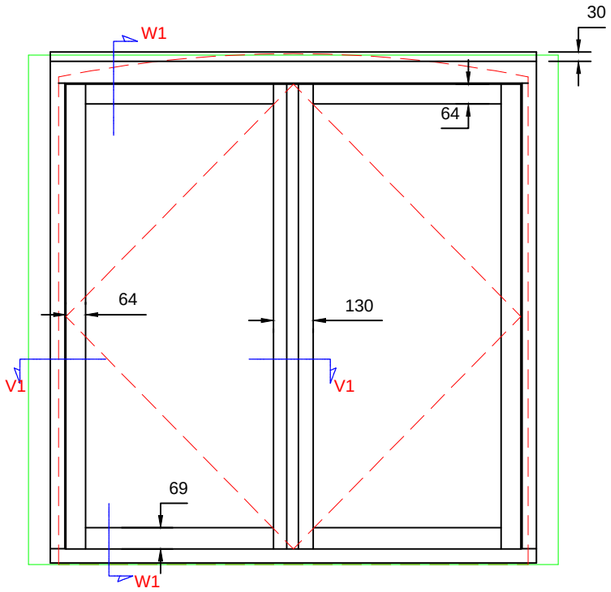
EXISTING ELEVATION



EXISTING SECTION W1, W1



PROPOSED SECTION W1,W1

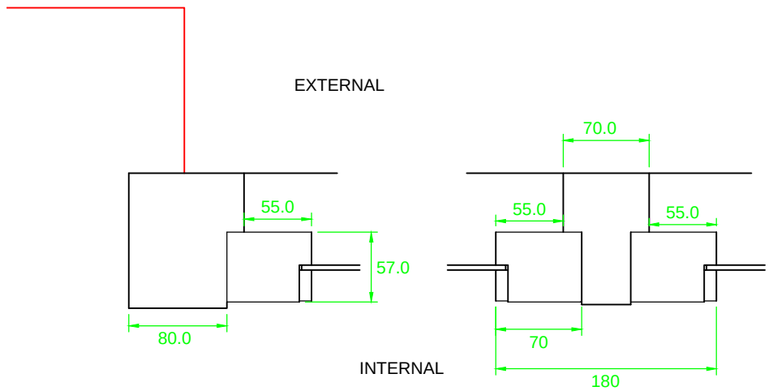


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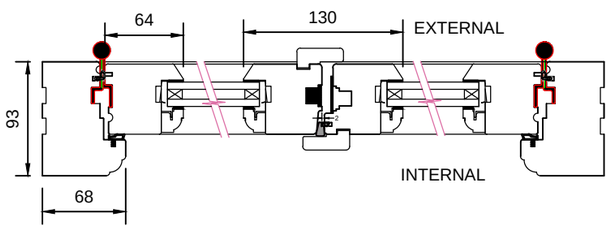
FRENCH CASEMENT WINDOW
OVOLO FRAME PROFILE.
OVOLO PROFILE 64mm TOP RAIL
AND STILES AND 69mm BOTTOM RAIL.
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

PROPOSED ELEVATION

EXISTING SECTION V1, V1



PROPOSED SECTION V1,V1



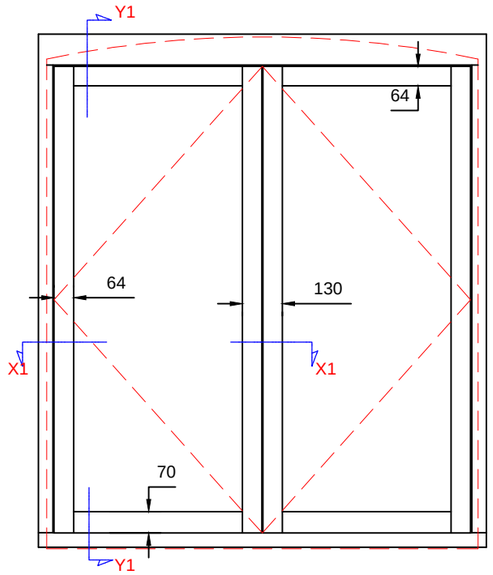
SIDE HUNG CASEMENT
(EVIDENCED BY HISTORIC PHOTOS).
DETAILS TO MATCH C.3F.342.1 & C.3F.342.2 AS AGREED.

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title Batch 2 Windows GRAHAM CONSTRUCTION MANCHESTER UNIVERSITY, Coupland Street								

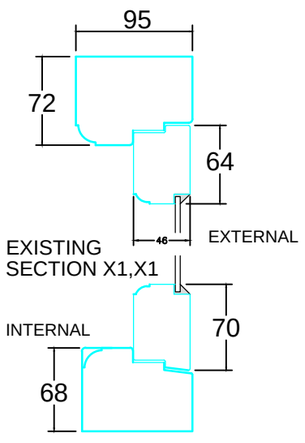
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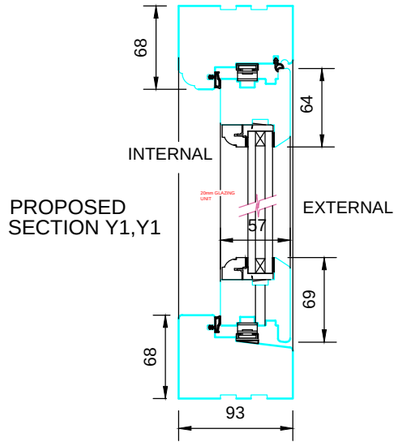
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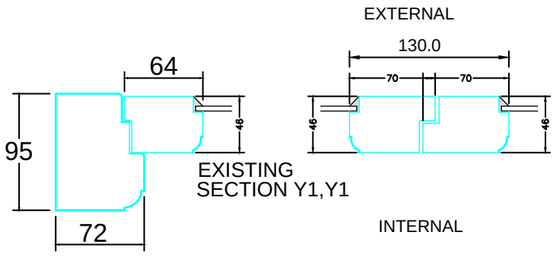


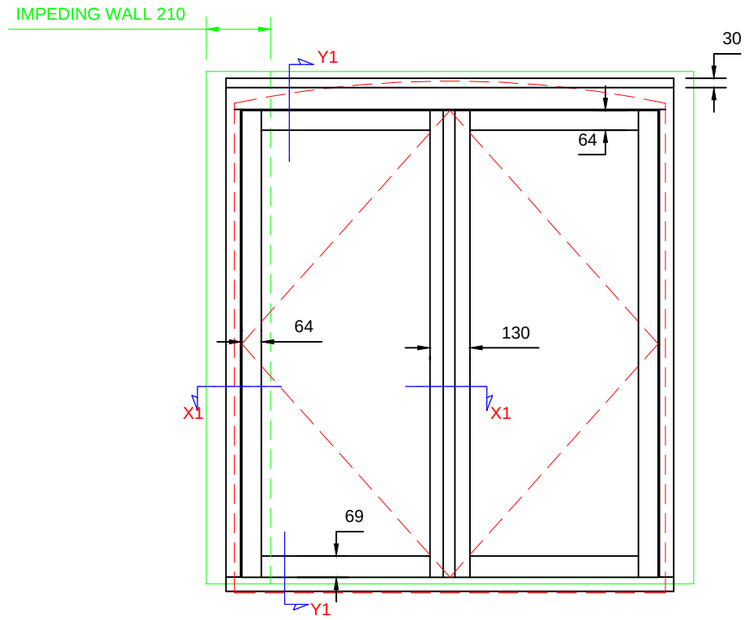
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EXISTING ELEVATION



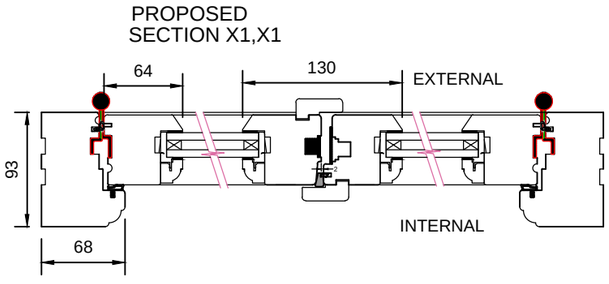






REF C.3F,342.1, C.3F,342.2
FRENCH CASEMENT WINDOW
OVOLO FRAME PROFILE.
OVOLO PROFILE 64mm TOP RAIL
AND STILES AND 69mm BOTTOM RAIL.
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

PROPOSED ELEVATION

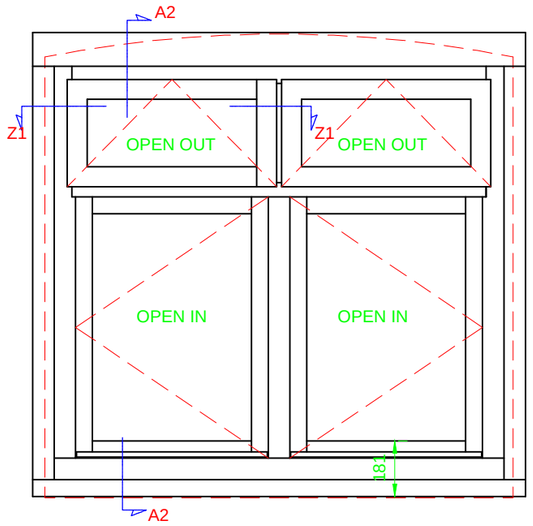


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title Batch 2 Windows GRAHAM CONSTRUCTION MANCHESTER UNIVERSITY, Coupland Street								

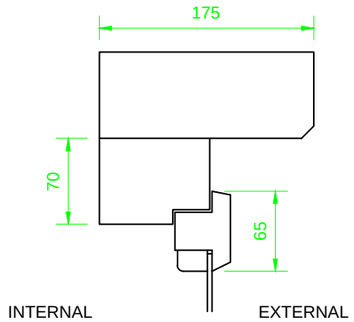
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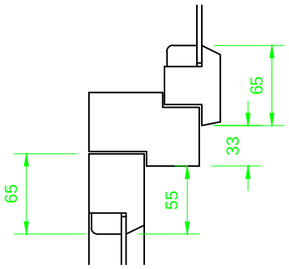
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Web: www.mumfordwood.com

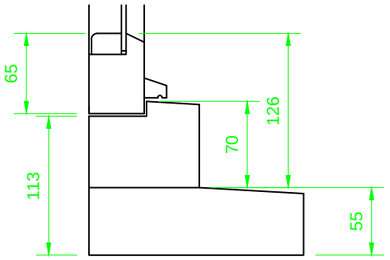


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THESE ARE NOT ORIGINAL WINDOWS.

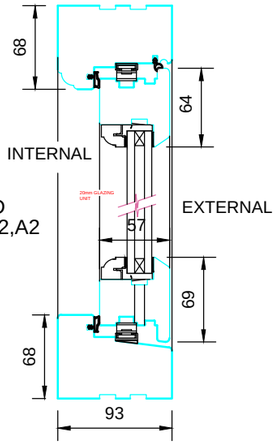
ORIGINAL ELEVATION



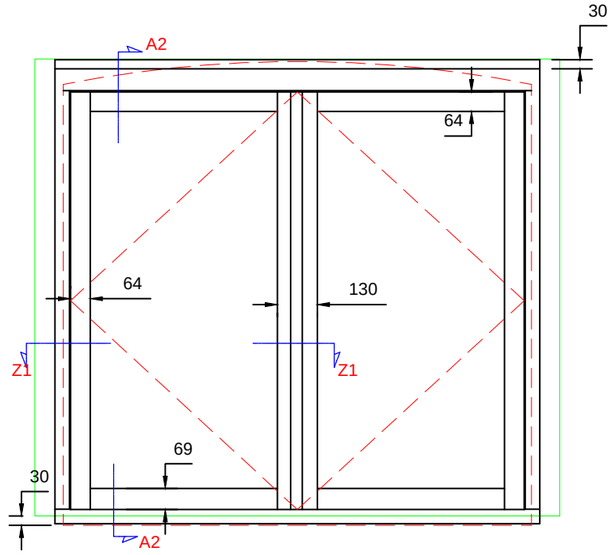




EXISTING
SECTION A2, A2



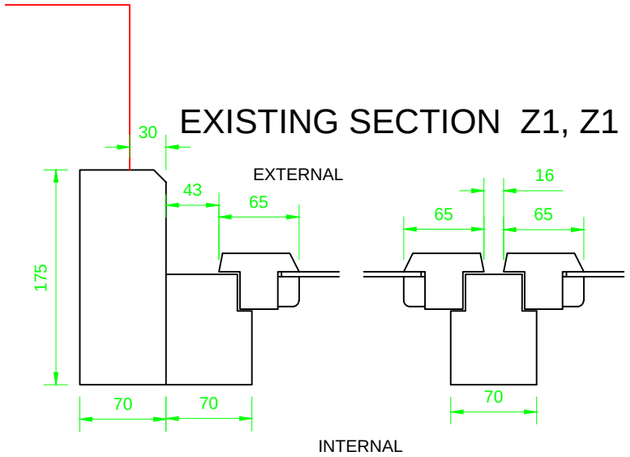
PROPOSED
SECTION A2,A2



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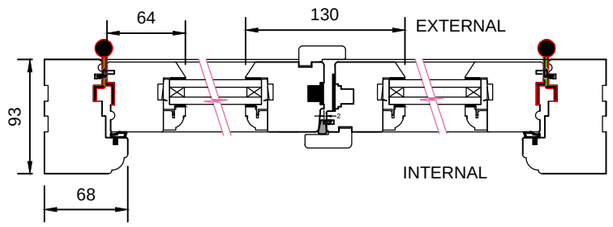
FRENCH CASEMENT WINDOW
OVOLO FRAME PROFILE.
OVOLO PROFILE 64mm TOP RAIL
AND STILES AND 69mm BOTTOM RAIL.
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

PROPOSED ELEVATION



EXISTING SECTION Z1, Z1

PROPOSED
SECTION Z1,Z1



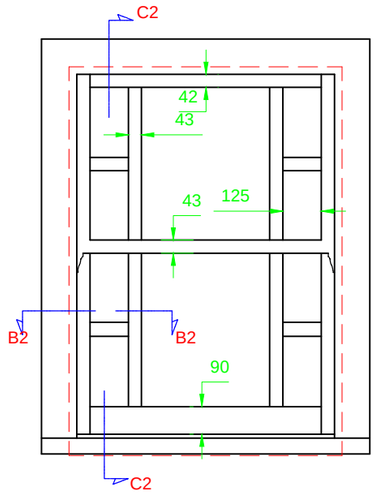
SIDE HUNG CASEMENT
(EVIDENCED BY HISTORIC
PHOTOS).
DETAILS TO MATCH C.3F.342.1 & C.3F.342.2
AS AGREED.

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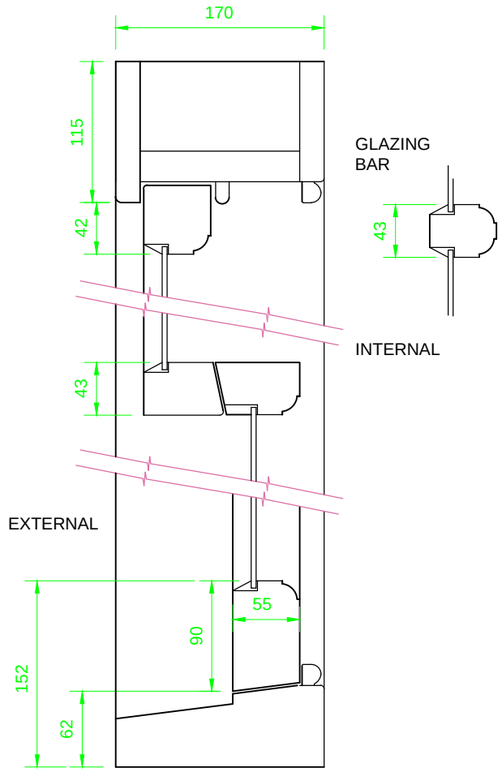
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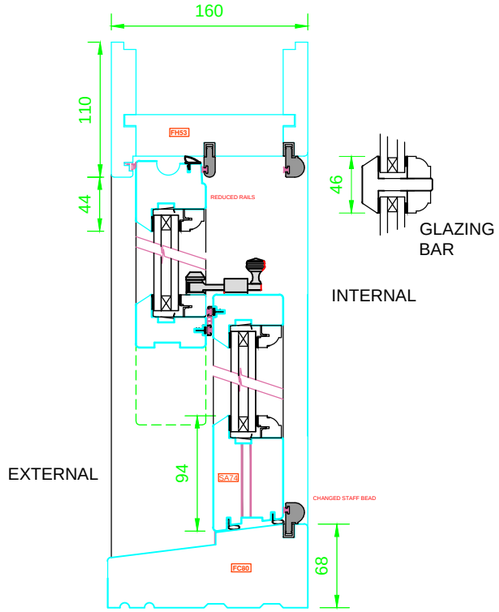


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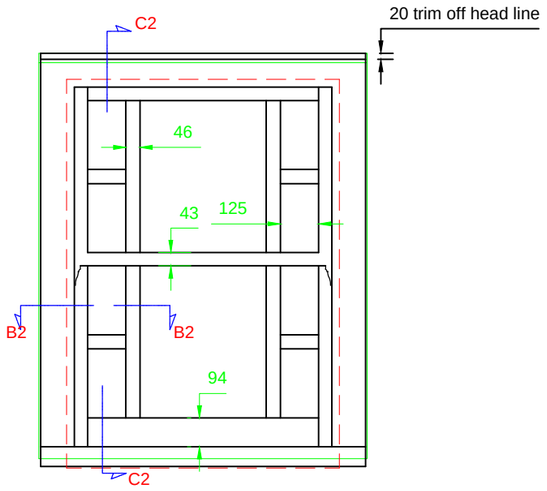
EXISTING ELEVATION



EXISTING SECTION C2,C2



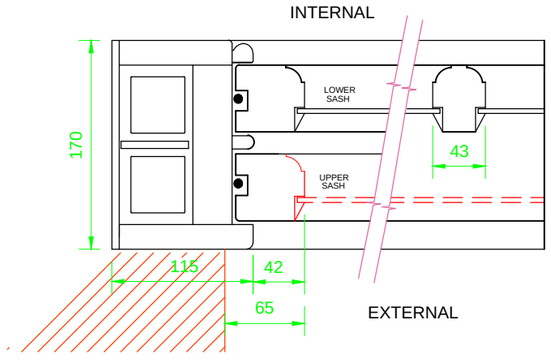
PROPOSED SECTION C2, C2



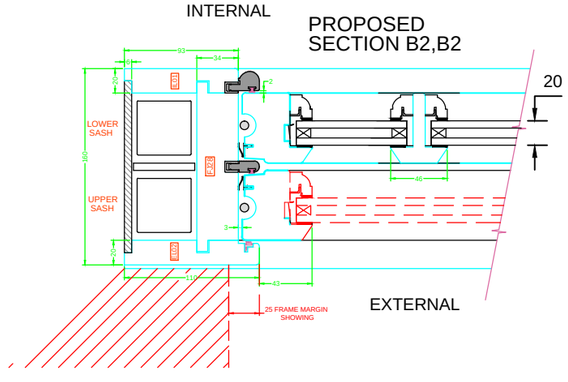
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C.2F,205.4, C.2F,205.3, C.2F,205.2, C.2F,205.1,

BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL FOR BOTH SASHES
FLUSH CILL
46mm TRUE GLAZING BARS
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

PROPOSED ELEVATION



EXISTING SECTION B2, B2

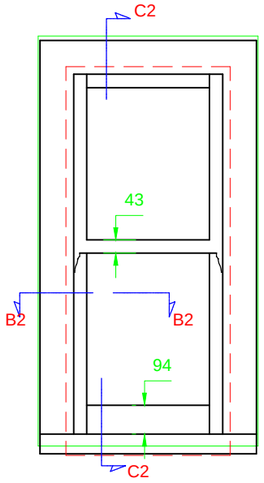


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title Batch 2 Windows GRAHAM CONSTRUCTION MANCHESTER UNIVERSITY, Coupland Street								

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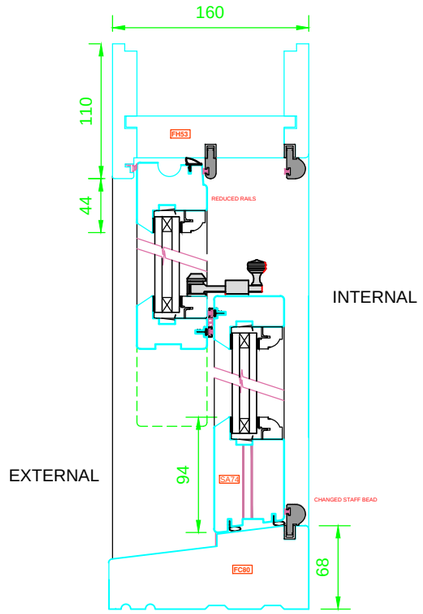
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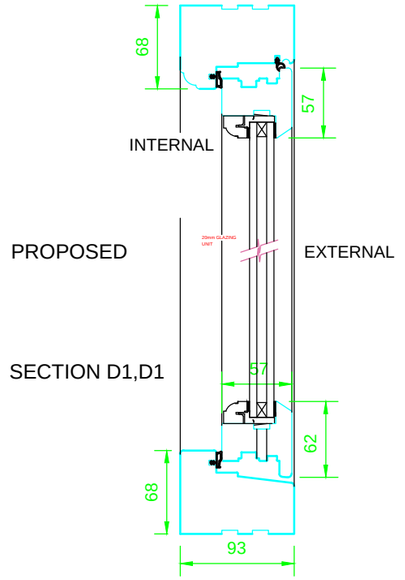
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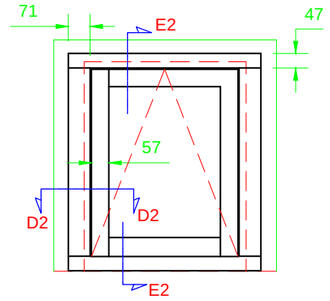
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL FOR BOTH SASHES
FLUSH CILL
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

PROPOSED ELEVATION



PROPOSED
SECTION C2, C2





REF C.2F,203.1

CASEMENT WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES. 62mm BOTTOM RAIL
TOP SWING OPEN OUT.
FLUSH CILL
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

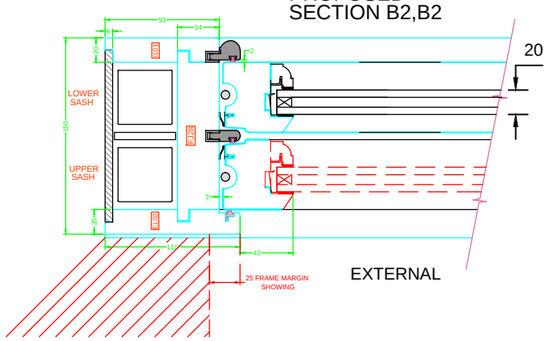
THE WINDOW ON SITE IS NOT AN EXISTING FRAME
AND HAS GLASS LOUVRES FOR VENTILATION.

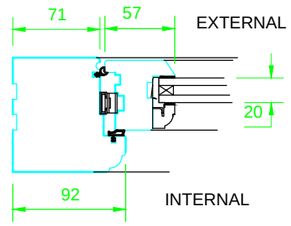
WE HAVE MADE THIS A TOP SWING CASEMENT
BECAUSE OF THE SIZE WHICH GIVES VENTILATION

PROPOSED ELEVATION

INTERNAL

PROPOSED
SECTION B2,B2





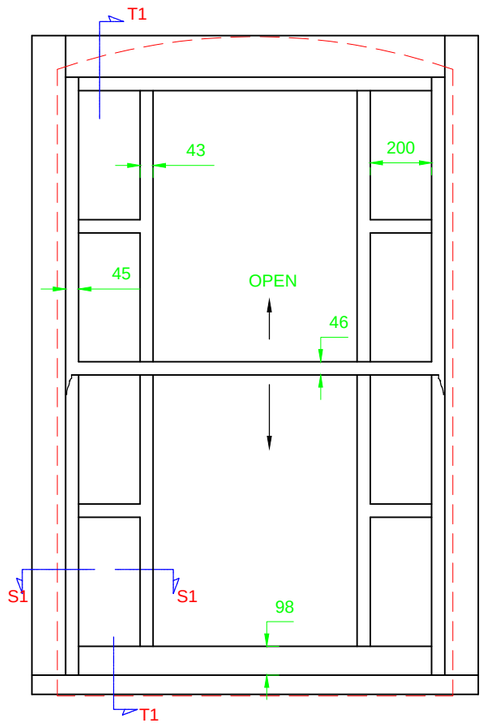
PROPOSED
SECTION E1,E1

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title Batch 2 Windows GRAHAM CONSTRUCTION MANCHESTER UNIVERSITY, Coupland Street								

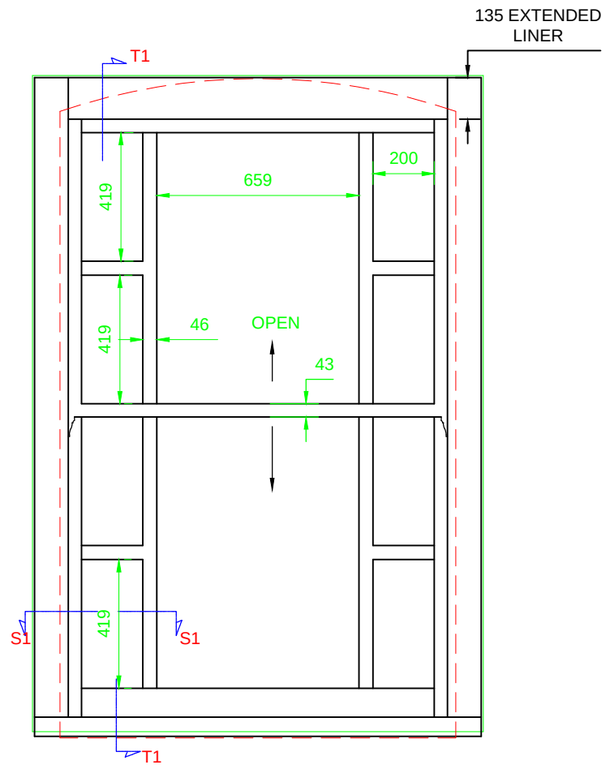
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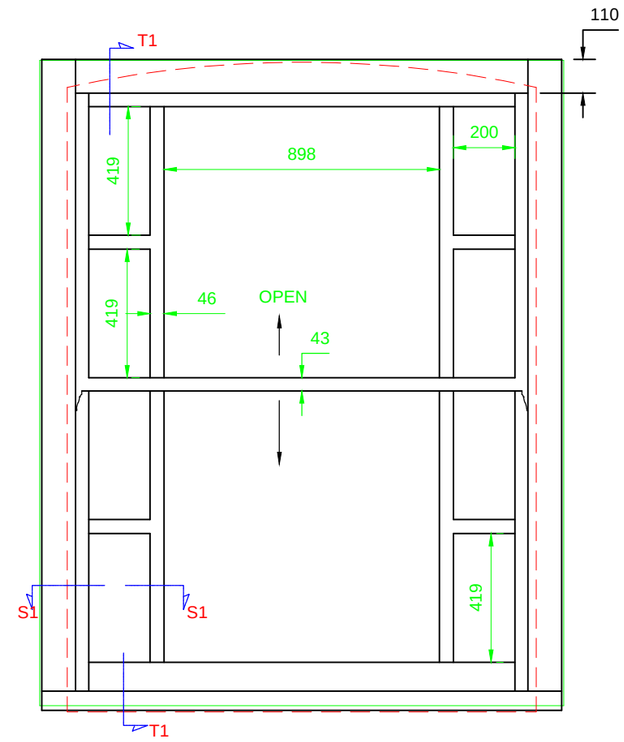
REF C.2F,268.2, C.2F,268.1

EXISTING WINDOW



PROPOSED WINDOW

REF C.2F,268.2, C.2F,268.1
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL FOR BOTH SASHES
FLUSH CILL
46mm TRUE BAR
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).



PROPOSED WINDOW

REF C.2F,211.1, C.2F,211.2,C.2F,214.1, C.2F,214.2,
C.2F,215.1, C.2F,215.2, C.2F,215.3, C.2F,216.1,

BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL FOR BOTH SASHES
FLUSH CILL
46mm TRUE BAR
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

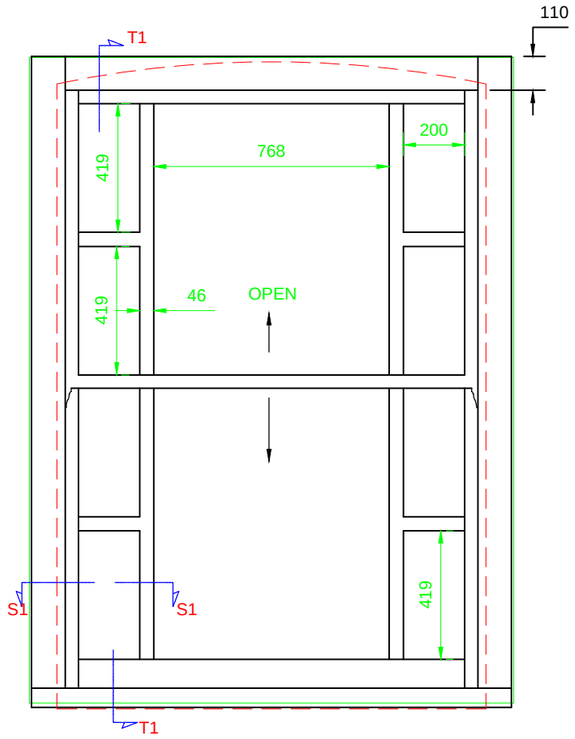
read with OD155C-01-13 for section details and existing frame type

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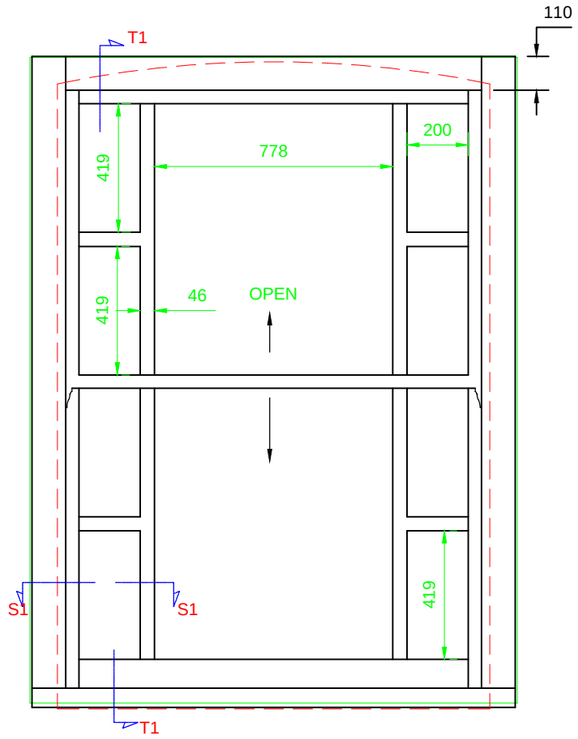
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date			drn OTD	scale 1:20/1:5				
title Batch 2 Windows GRAHAM CONSTRUCTION MANCHESTER UNIVERSITY, Coupland Street								

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REF C.2F,267.1, C.2F,267.2
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL FOR BOTH SASHES
FLUSH CILL
46mm TRUE BAR
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).



REF C.2F,266.1, C.2F,266.2, C.2F,265.1, C.2F,265.2,
C.2F,264.1, C.2F,264.2, C.2F,263.1, C.2F,263.2

BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL FOR BOTH SASHES
FLUSH CILL
46mm TRUE BAR
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

Read with OD155C-01-13 for section details and existing frame type

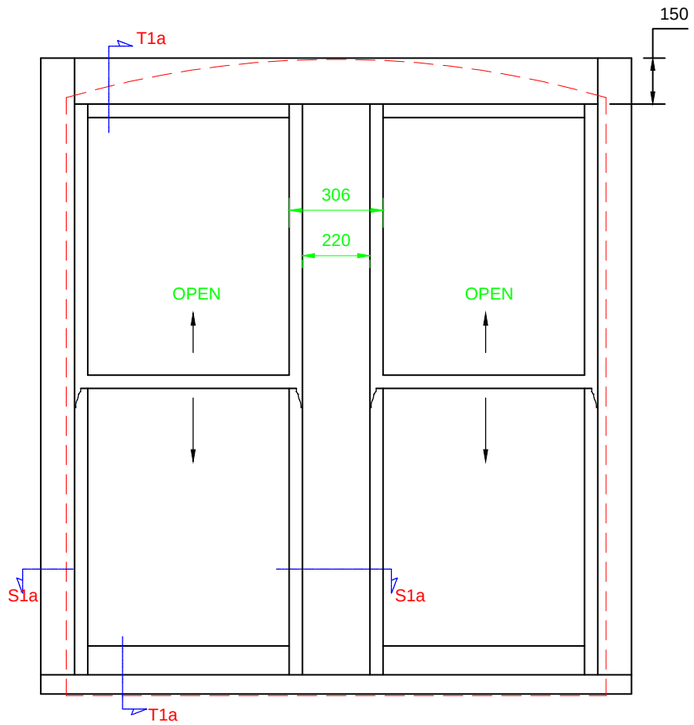
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date			drn OTD	scale 1:20/1:5				

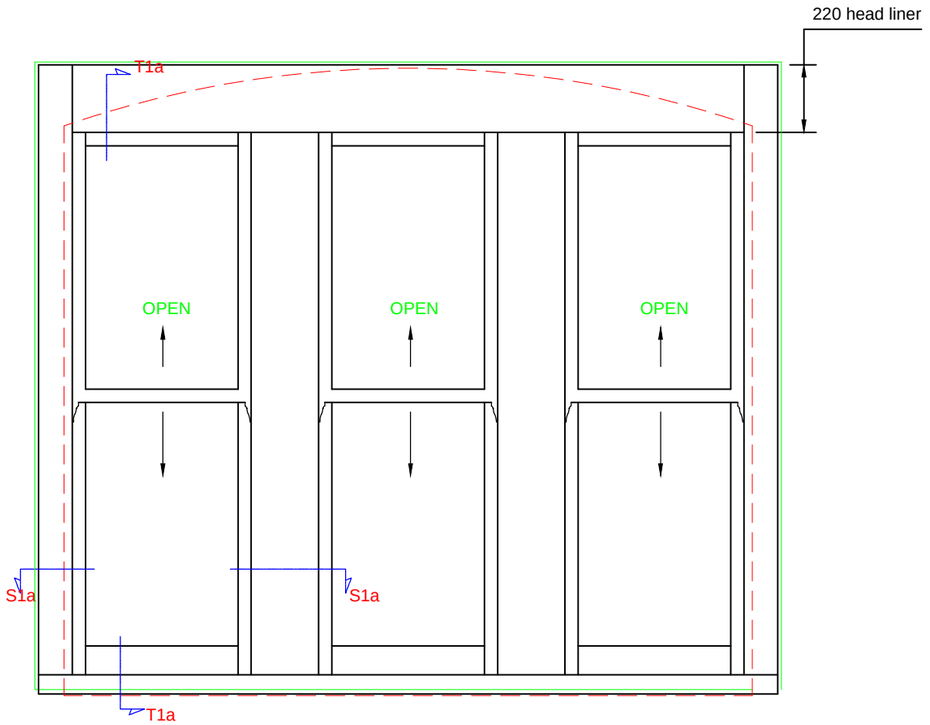
title Batch 2 Windows
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

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REF C.2F,219.7
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL FOR BOTH SASHES
FLUSH CILL
46mm TRUE BAR
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).



REF C.2F,220.1
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL FOR BOTH SASHES
FLUSH CILL
46mm TRUE BAR
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

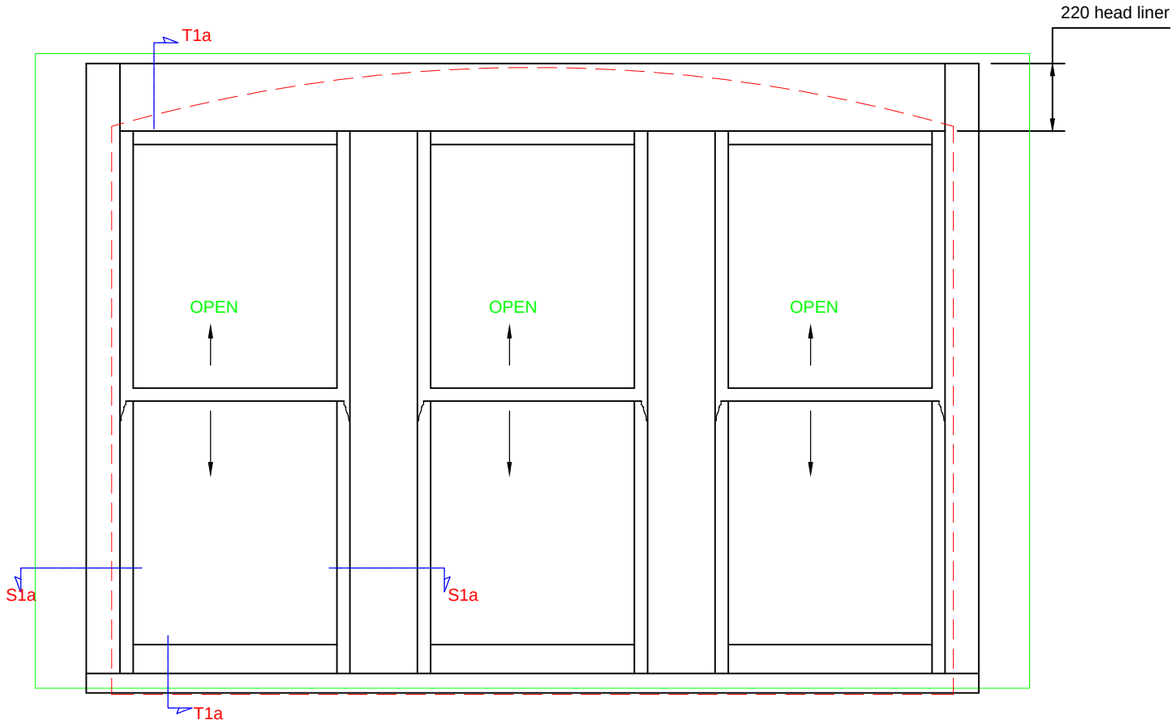
read with OD155C-01-13 for section details and existing frame type (no true bar)

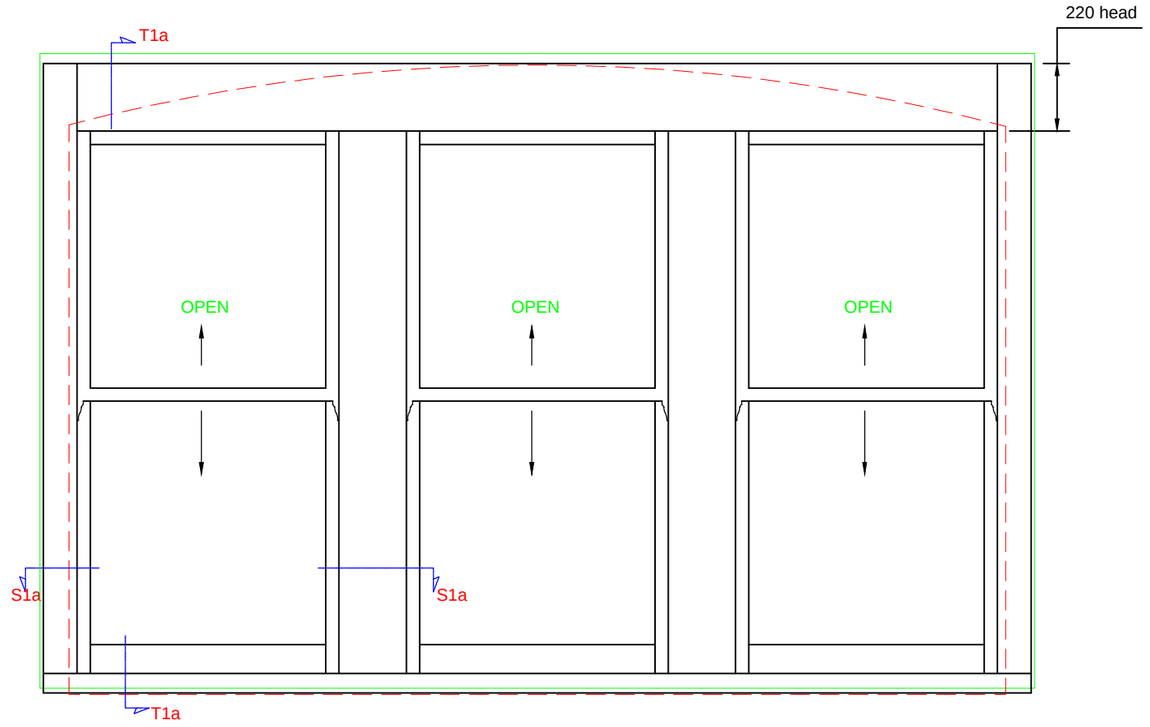
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title Batch 2 Windows								
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REF C.2F,222.1
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL FOR BOTH SASHES
FLUSH CILL
46mm TRUE BAR
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

REF C.2F,224.1
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL FOR BOTH SASHES
FLUSH CILL
46mm TRUE BAR
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

Read with OD155C-01-13 for section details and existing frame type (no true bar)

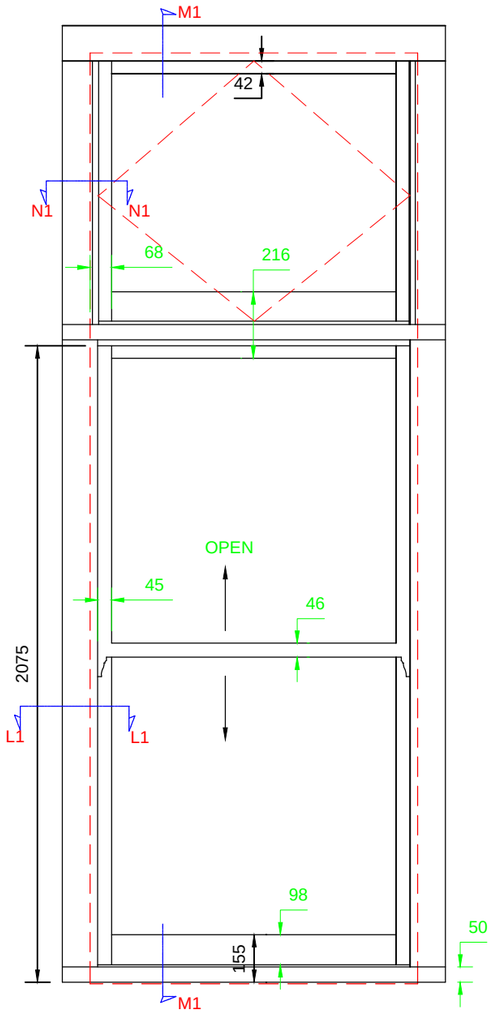
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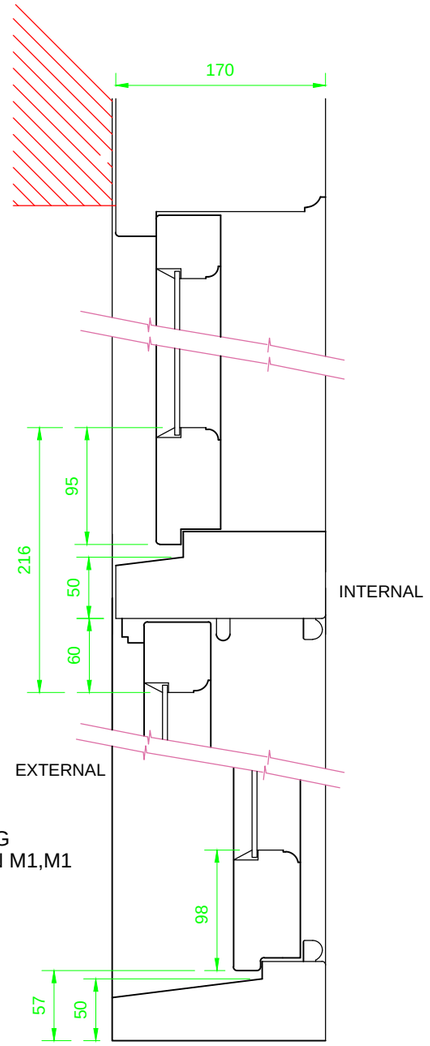
title Batch 2 Windows
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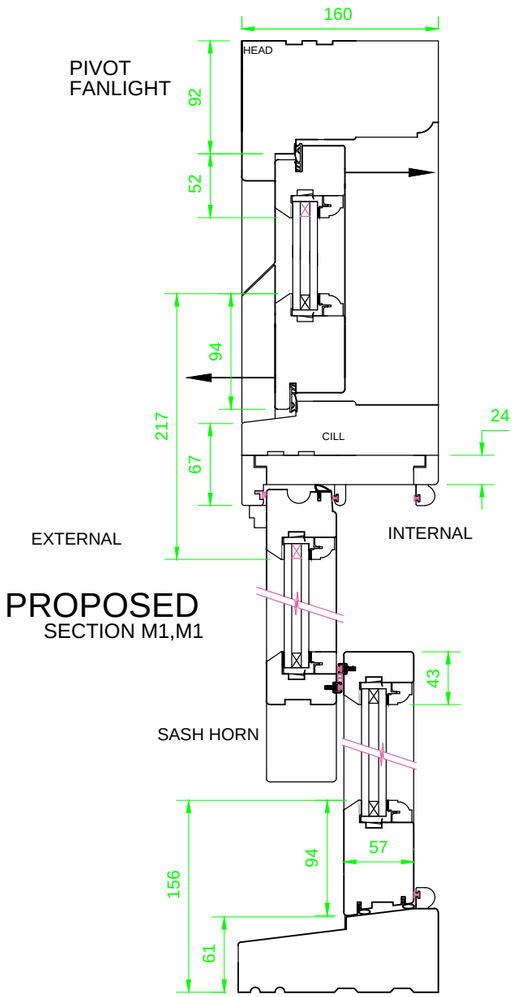
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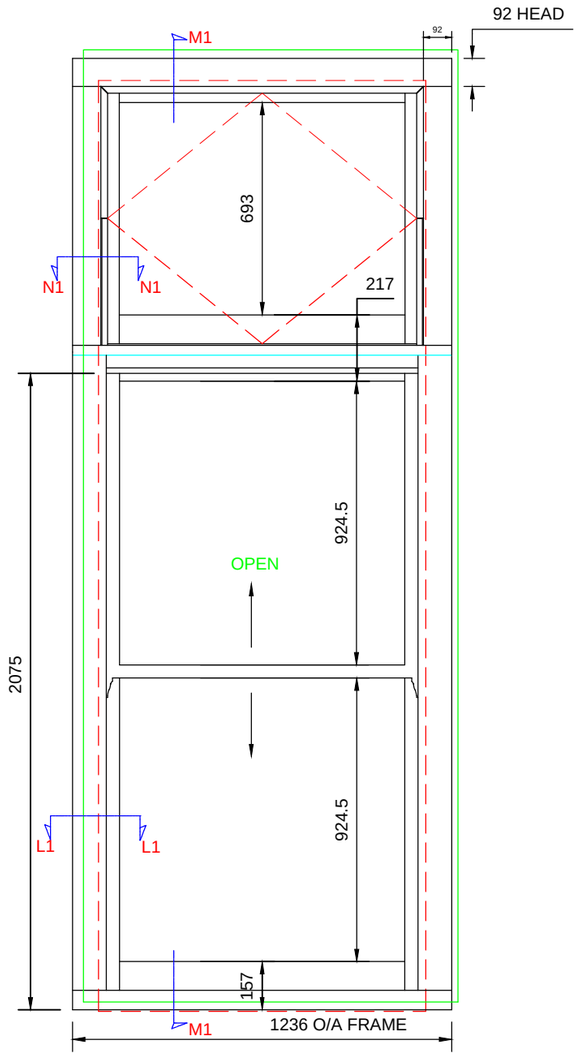
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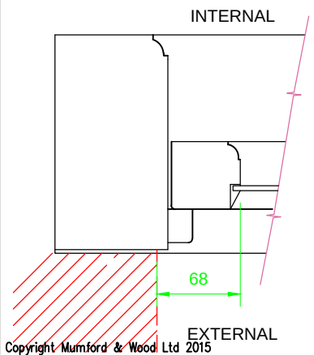
EXISTING
SECTION M1,M1



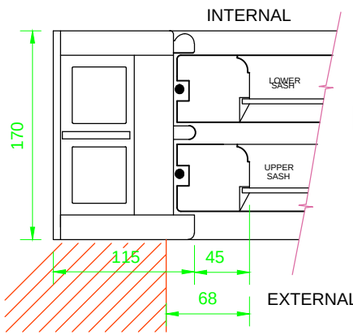
PROPOSED
SECTION M1,M1



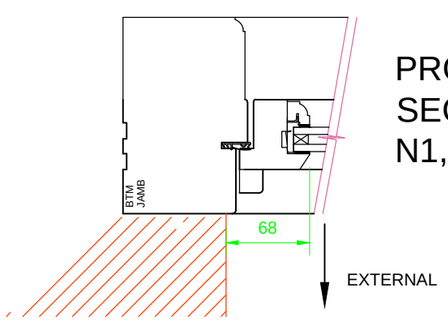
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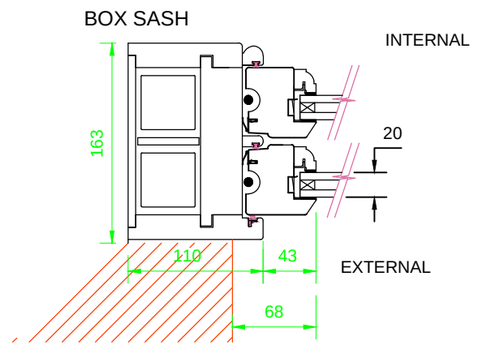
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SECTION
N1, N1



EXISTING
SECTION
L1, L1



PROPOSED
SECTION
N1,N1



PROPOSED SECTION L1,L1

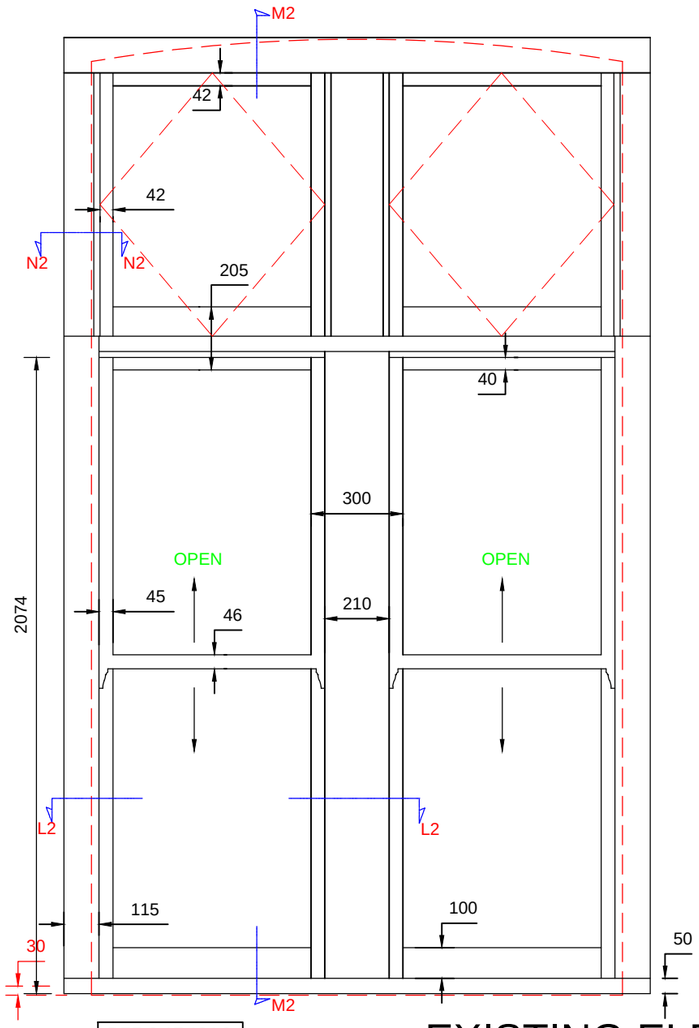
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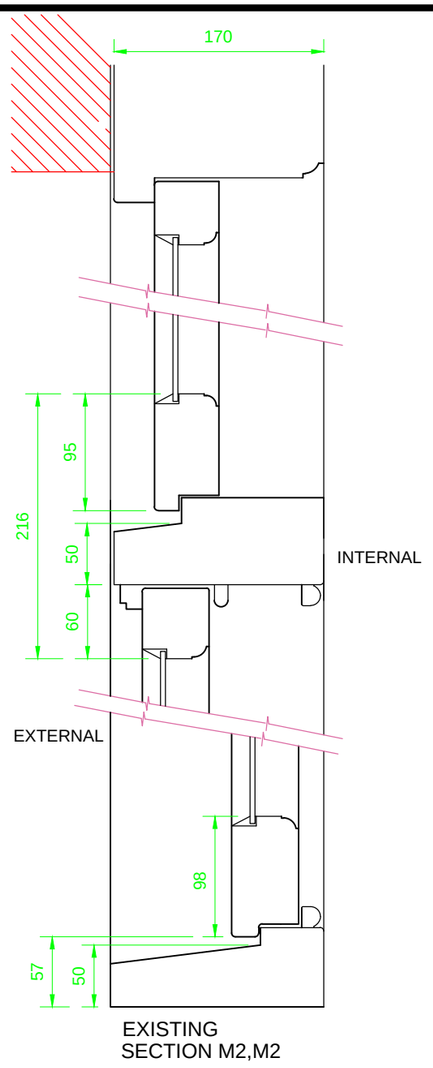
title Batch 2 Windows
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

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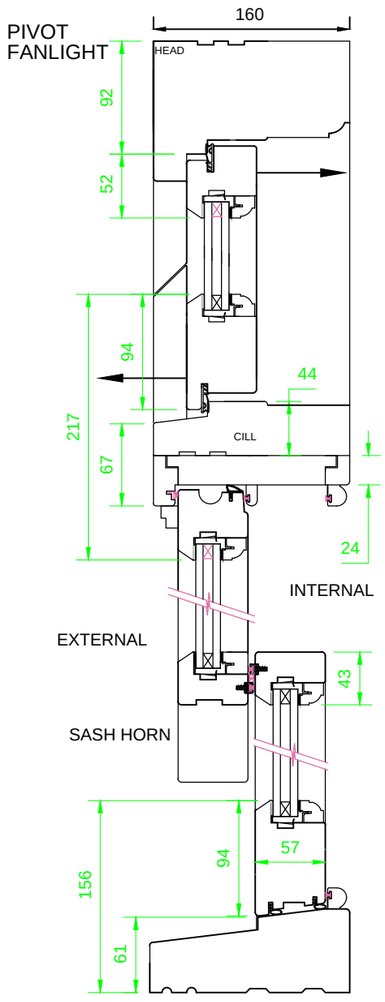
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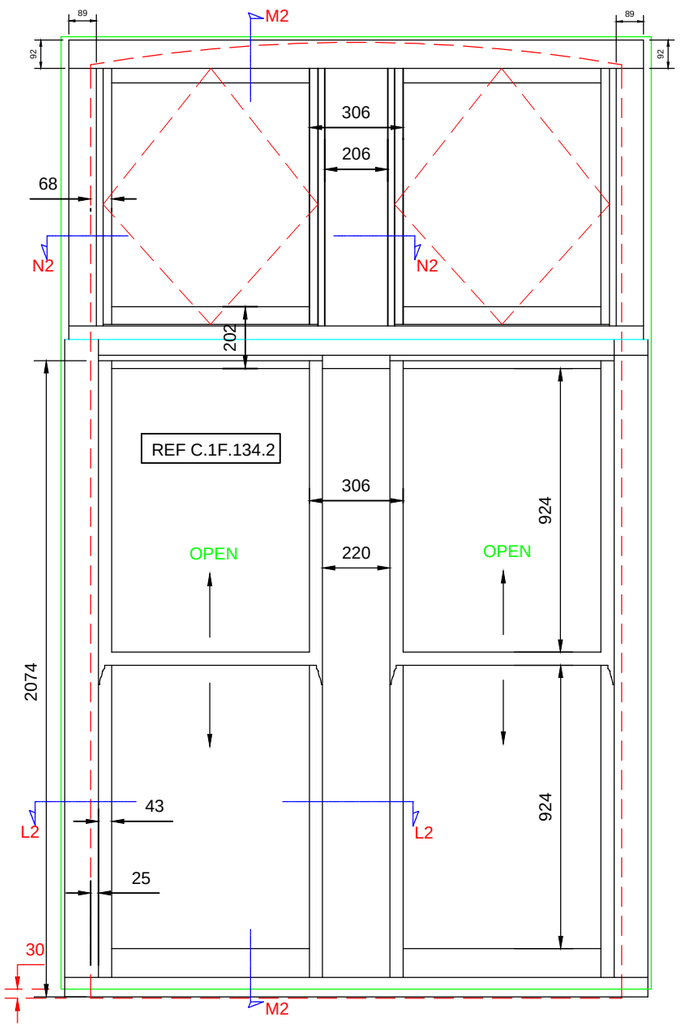
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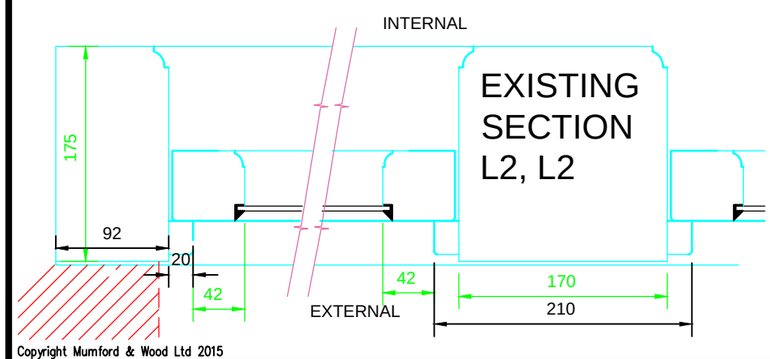


EXISTING
SECTION M2,M2

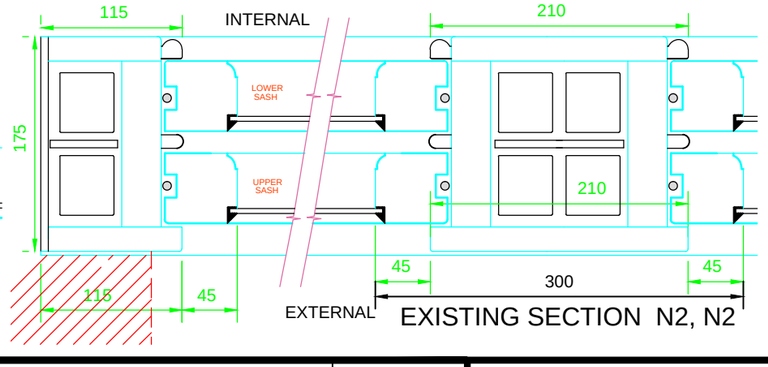


PROPOSED
SECTION M2,M2

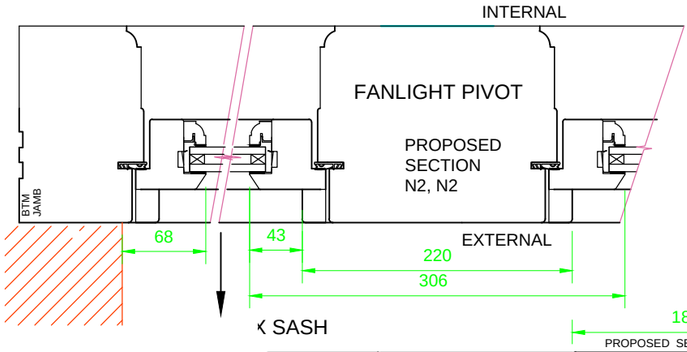




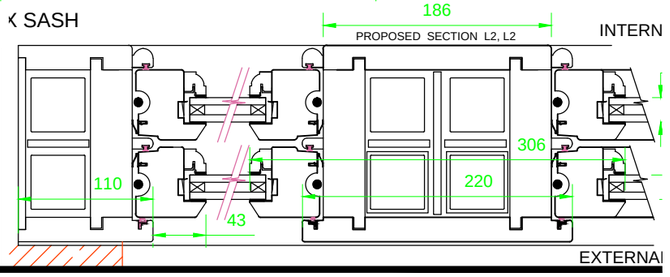
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SECTION
L2, L2



EXISTING SECTION N2, N2



PROPOSE
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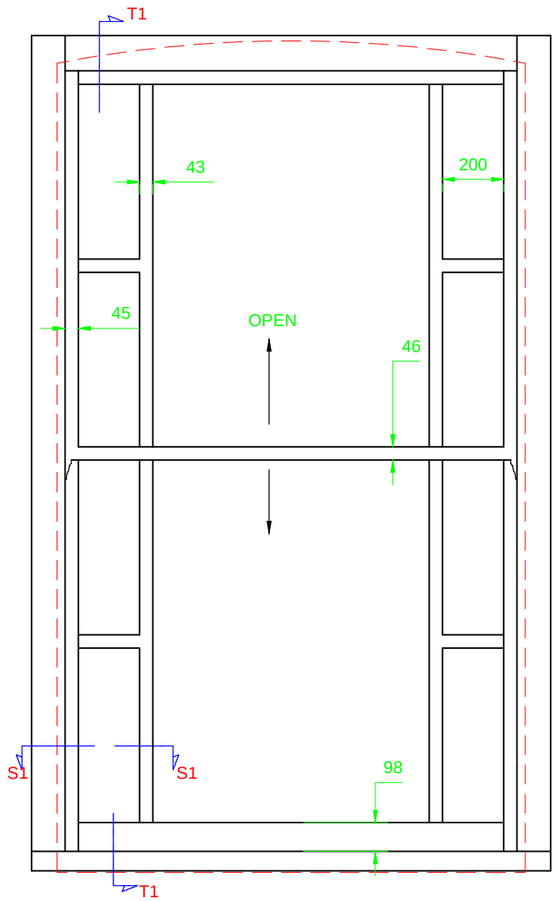


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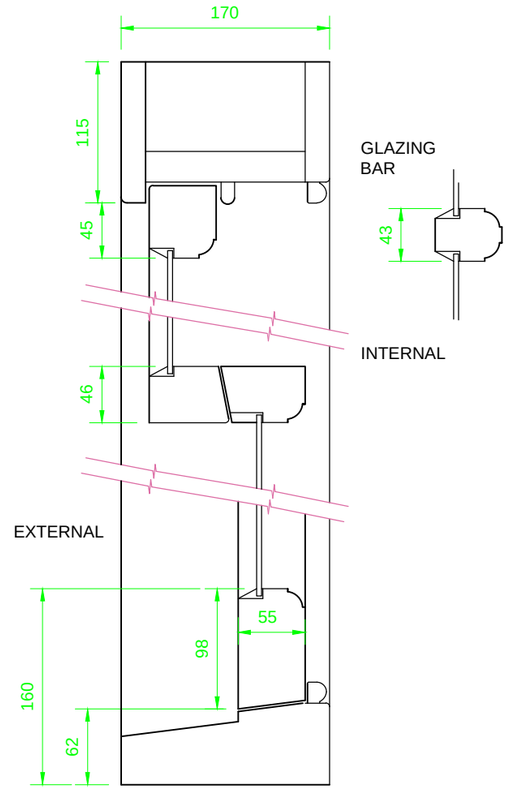
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Web: www.mumfordwood.com

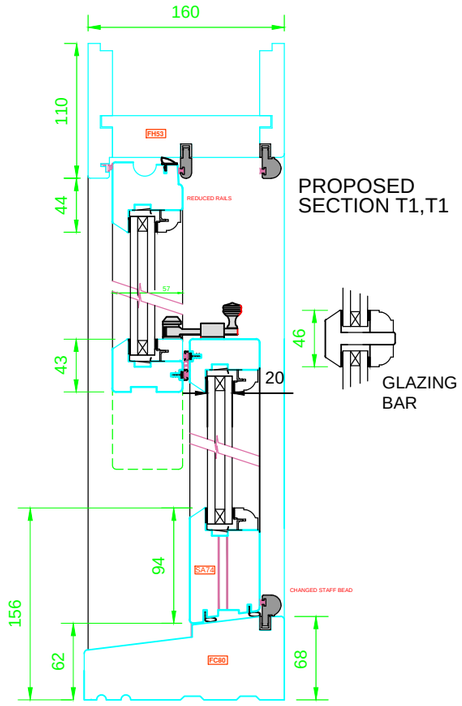


REF C.1F,144.3, C.1F,144.2, C.1F,144.1, C.1F,150.5, C.1F,150.4, C.1F,150.3, C.1F,150.2,

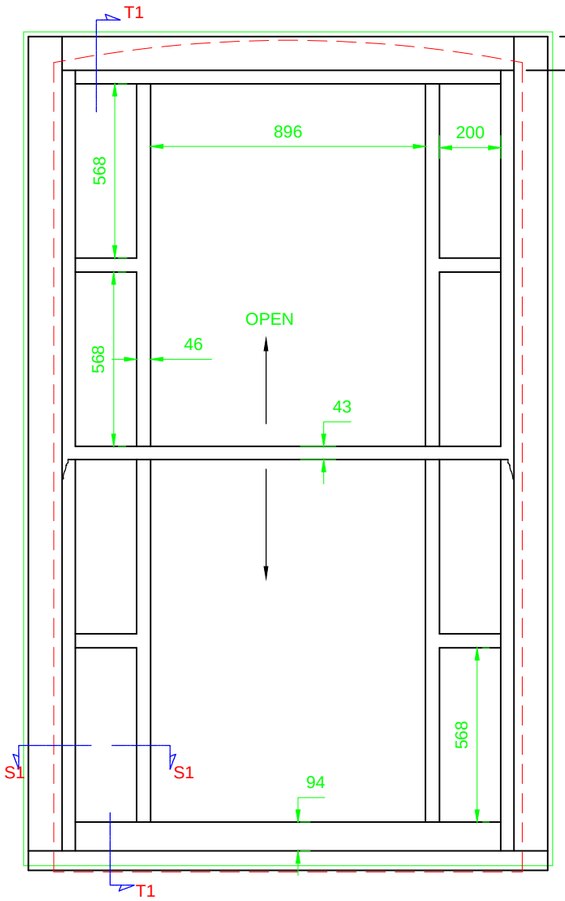
EXISTING ELEVATION



EXISTING SECTION T1,T1



PROPOSED SECTION T1,T1

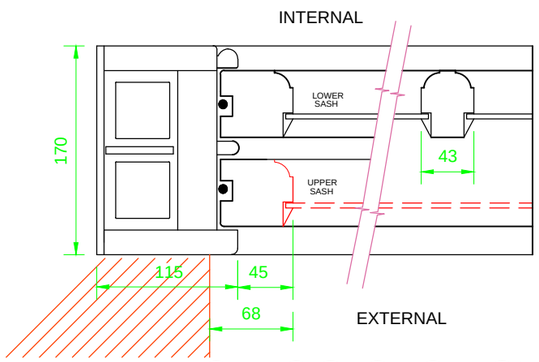


11
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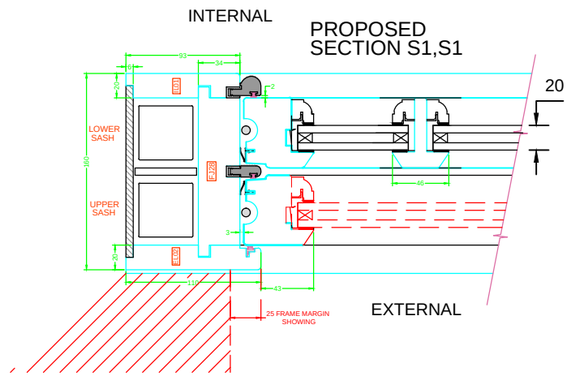
PROPOSED ELEVATION

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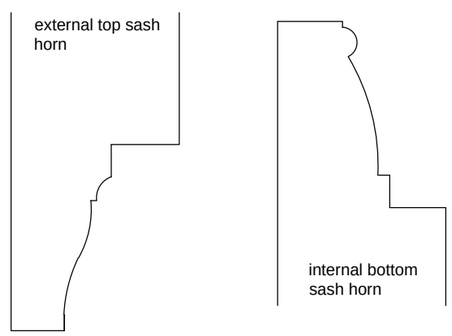
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL FOR BOTH SASHES
FLUSH CILL
46mm TRUE BAR
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).



EXISTING SECTION S1, S1



PROPOSED SECTION S1,S1



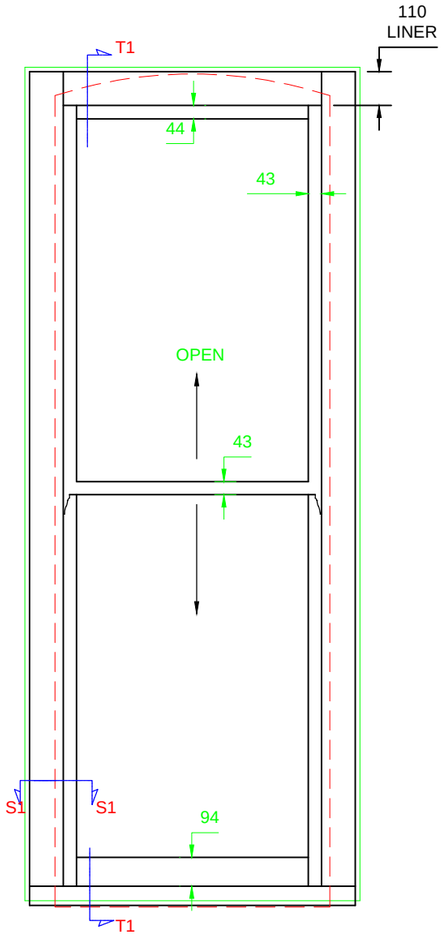
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title Batch 2 Windows GRAHAM CONSTRUCTION MANCHESTER UNIVERSITY, Coupland Street								

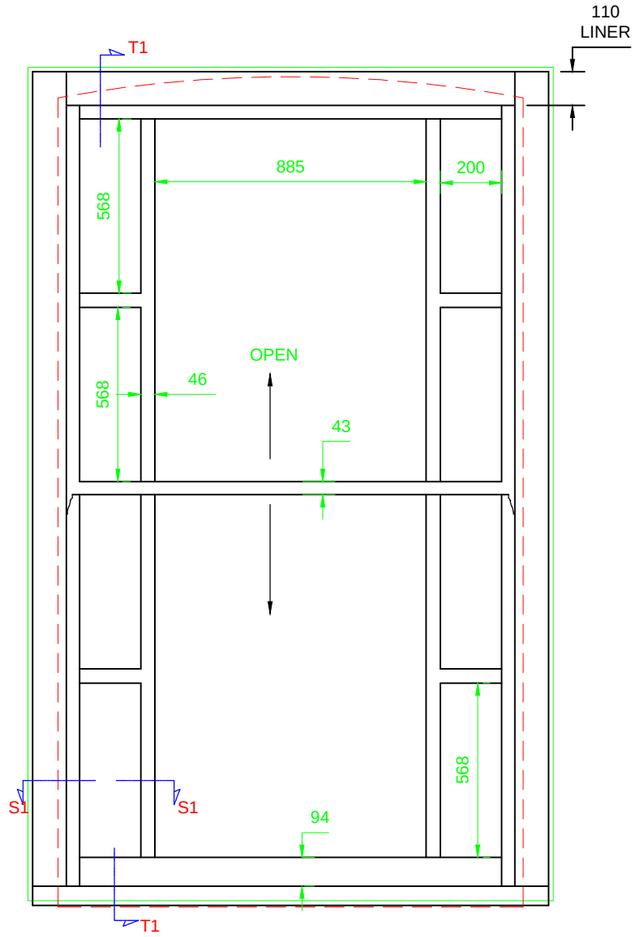
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PROPOSED ELEVATION



REF C.1F,150.1
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL FOR BOTH SASHES
FLUSH CILL
46mm TRUE BAR
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).



REF C.1F,179.1, C.1F,179.2
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL FOR BOTH SASHES
FLUSH CILL
46mm TRUE BAR
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

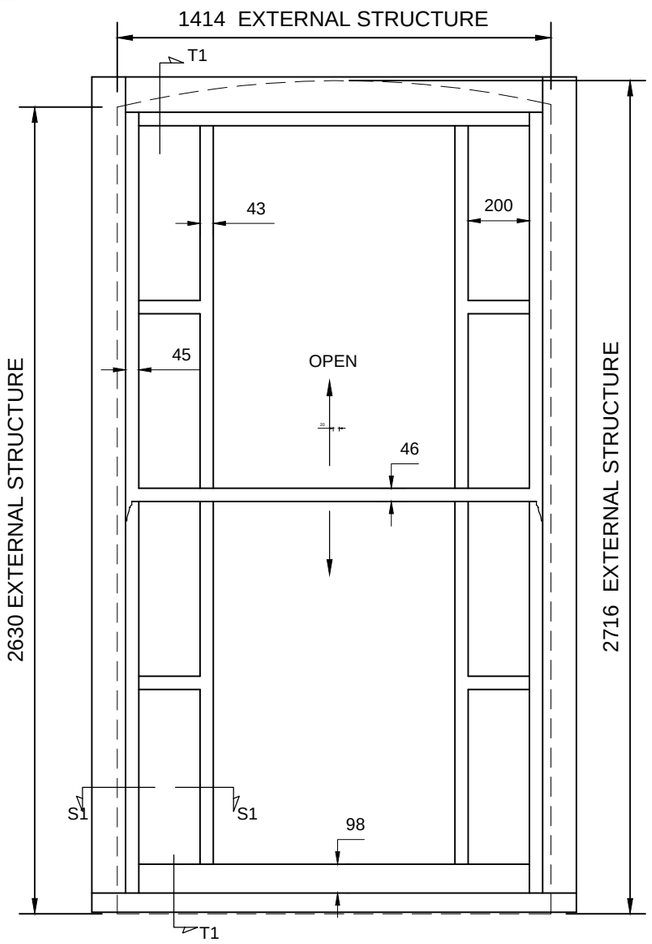
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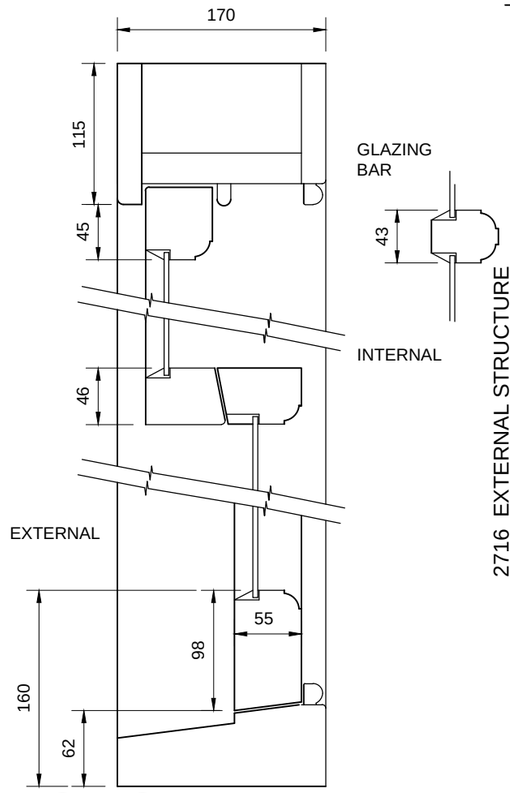
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title Batch 2 Windows GRAHAM CONSTRUCTION MANCHESTER UNIVERSITY, Coupland Street								

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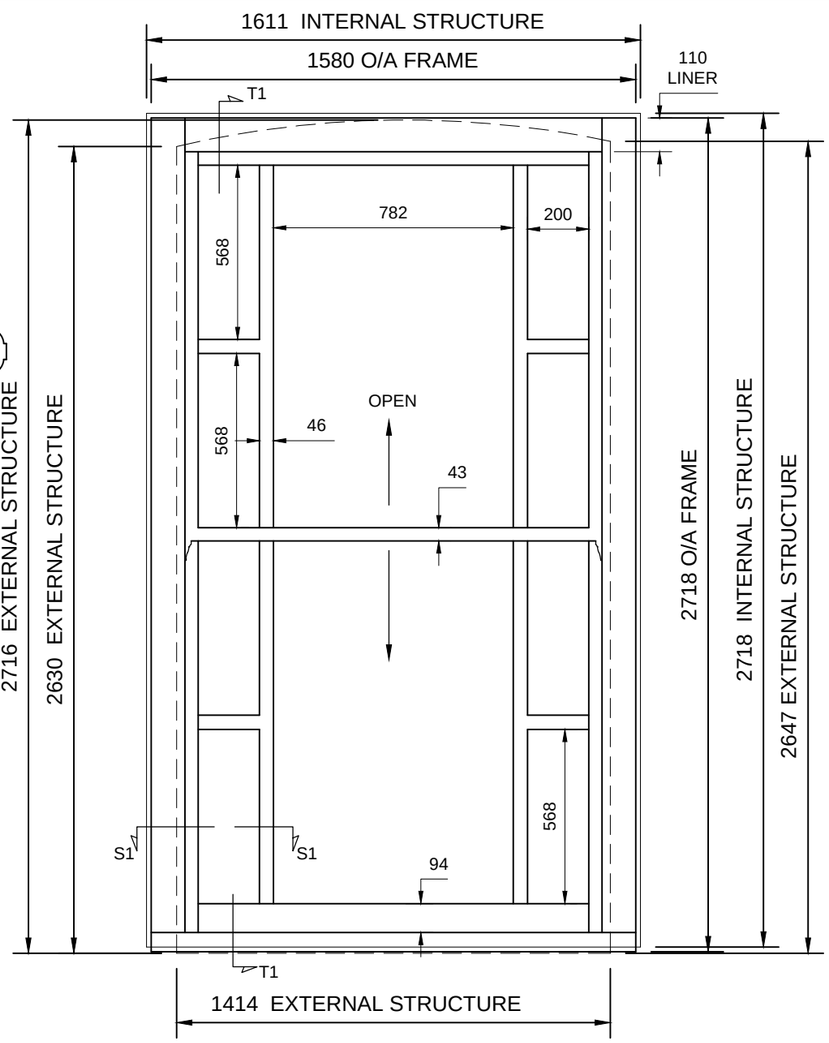
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REF C.1F,187.1, C.1F,187.2, C.1F,187.3, C.1F,187.4,
C.1F,188.1, C.1F,188.2, C.1F,188.3, C.1F,188.4,

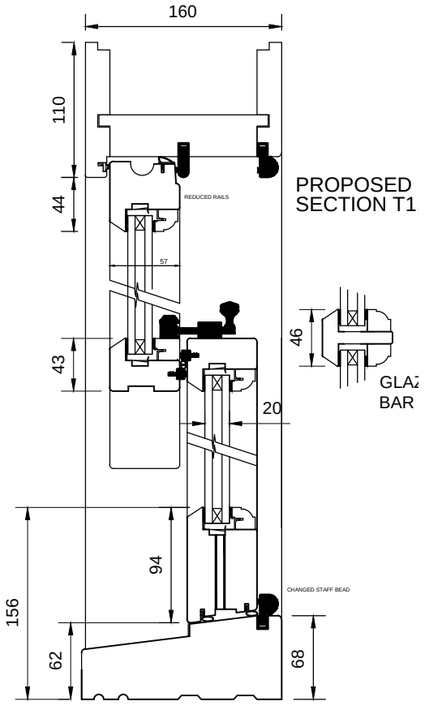


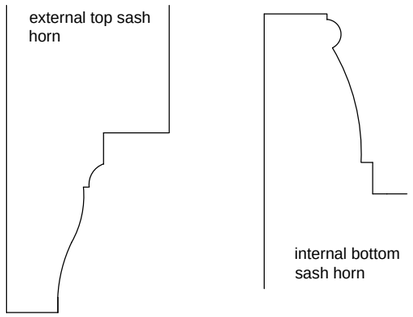
EXISTING
SECTION T1,T1



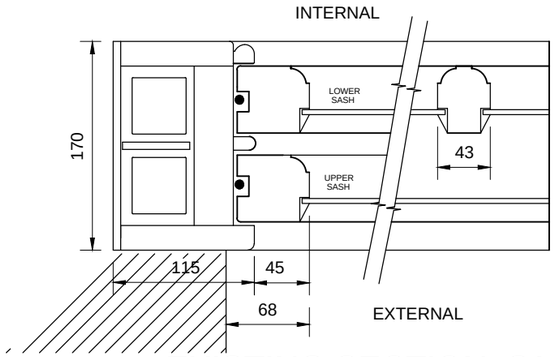
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C.1F,188.1, C.1F,188.2, C.1F,188.3, C.1F,188.4,

BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL FOR BOTH SASHES
FLUSH CILL
46mm TRUE BAR
GLASS 6mm TOUGH/12mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).



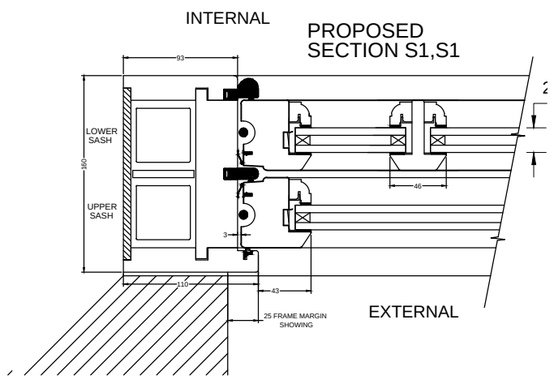


EXISTING ELEVATION



EXISTING SECTION S1, S1

PROPOSED ELEVATION



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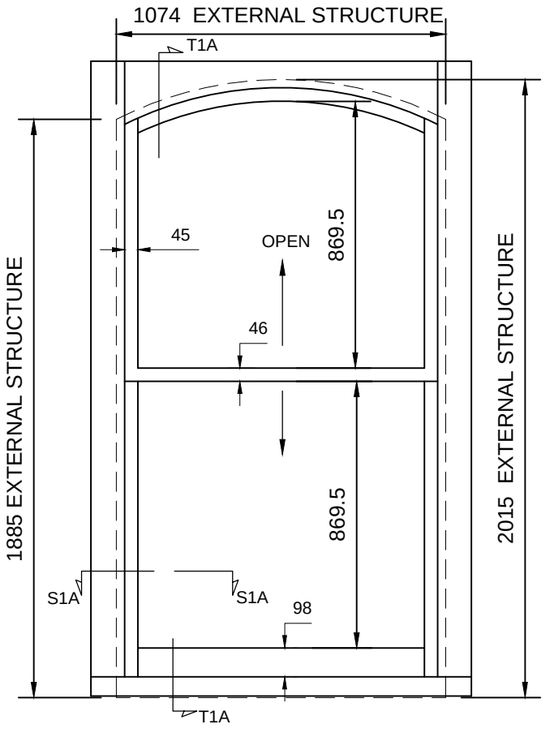
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approved by			revision	
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title BATCH 1
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rev	by	date	description

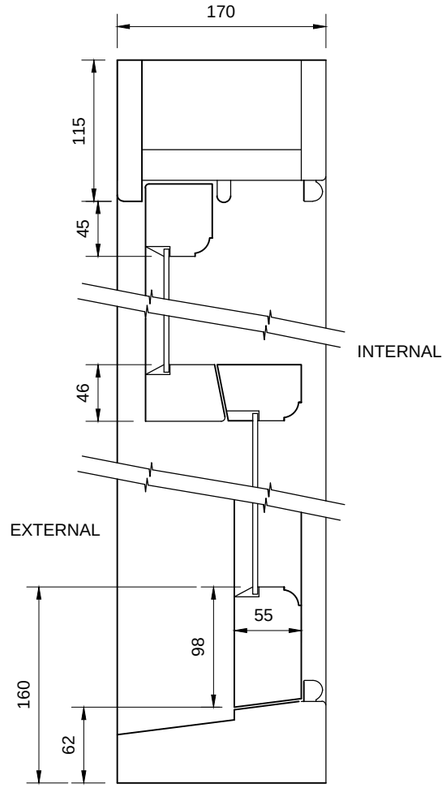
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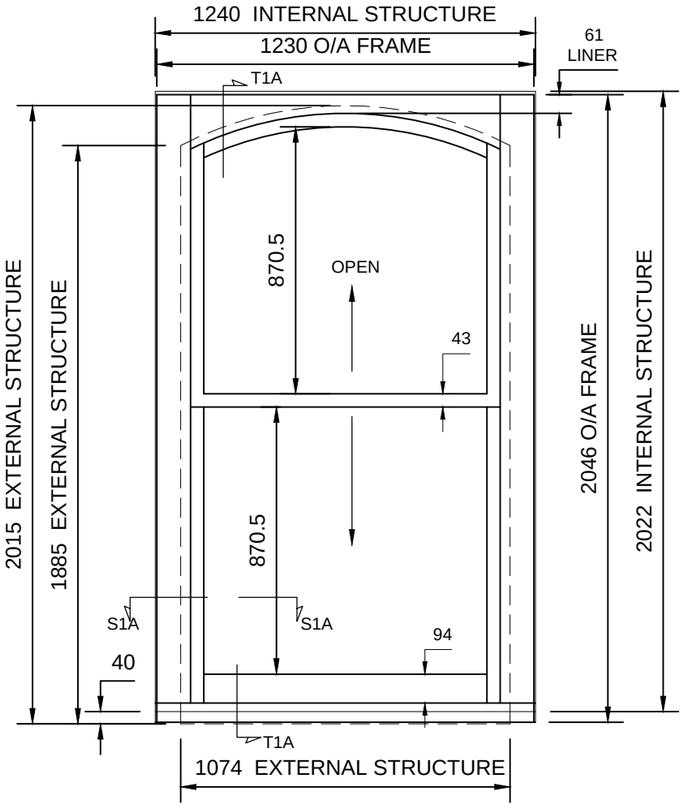


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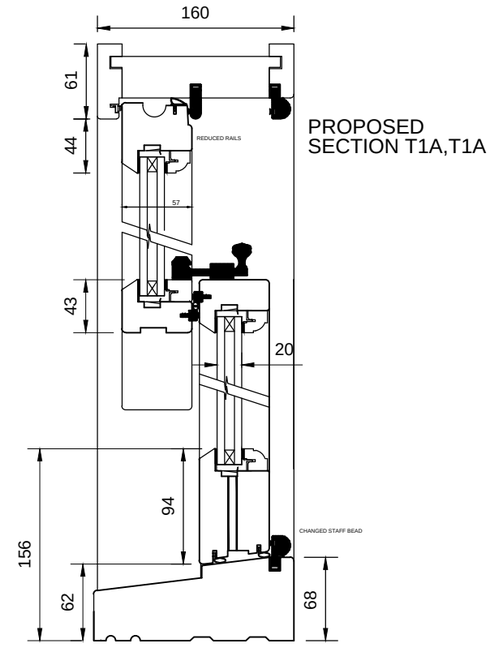


EXISTING
SECTION T1A,T1A



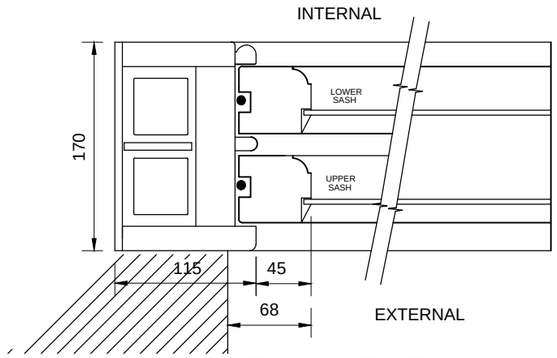
REF C.1F,176.1, C.1F,176.2,

BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
NO SASH HORN DETAIL
FLUSH CILL
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

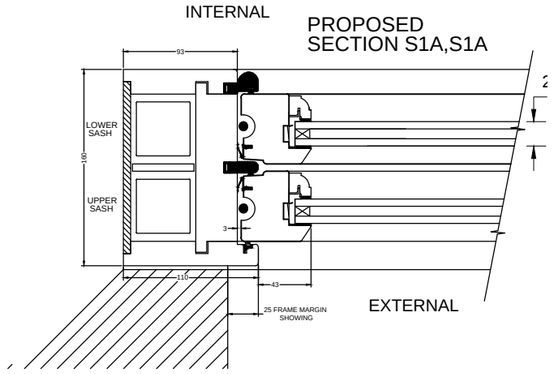


PROPOSED
SECTION T1A,T1A

PROPOSED ELEVATION



EXISTING SECTION S1A, S1A



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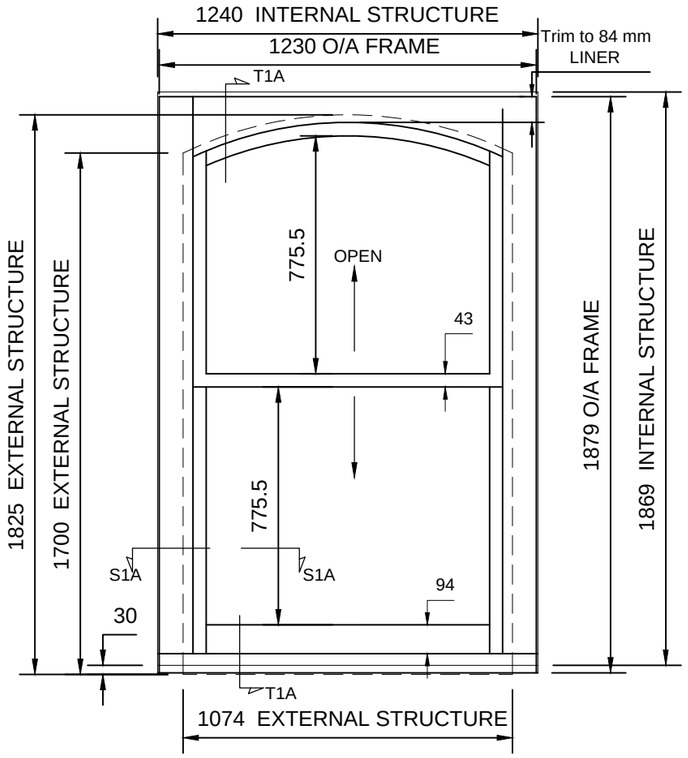
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sign			date	09/06/15
date			drn OTD	scale 1:20 / 1:5

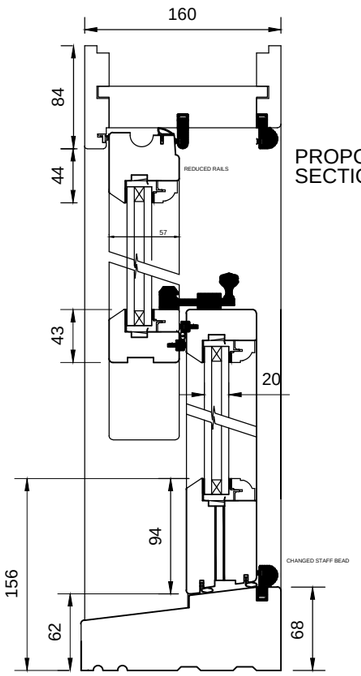
title BATCH 2
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

REVISIONS			
rev	by	date	description

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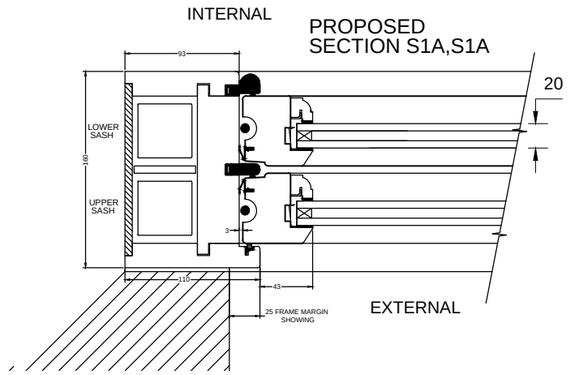


PROPOSED
SECTION T1A,T1A

PROPOSED ELEVATION

REF C.1F,177.1,

BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
NO SASH HORN DETAIL
FLUSH CILL
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).



PROPOSED
SECTION S1A,S1A

FOR EXISTING ELEVATION
PLEASE SEE OD-155-D-01-02

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sign			date	09/06/15
date			drn OTD	scale 1:20 / 1:5

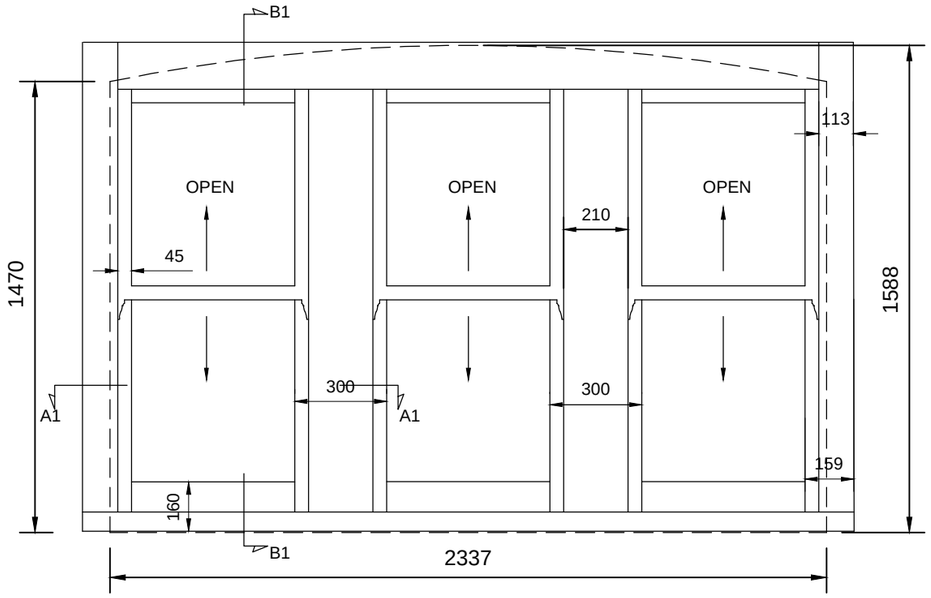
title BATCH 2
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

REVISIONS

rev	by	date	description

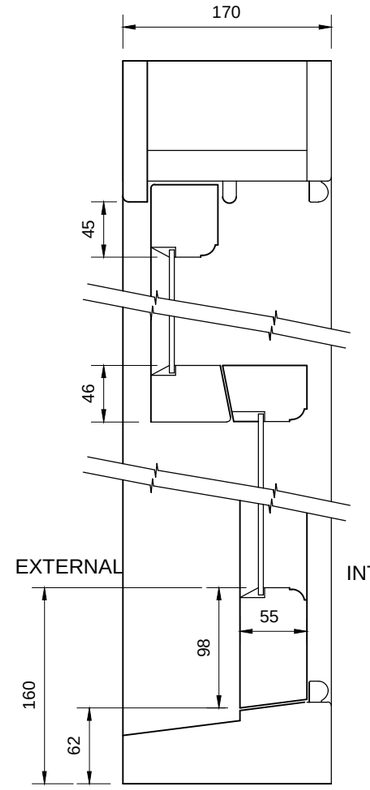
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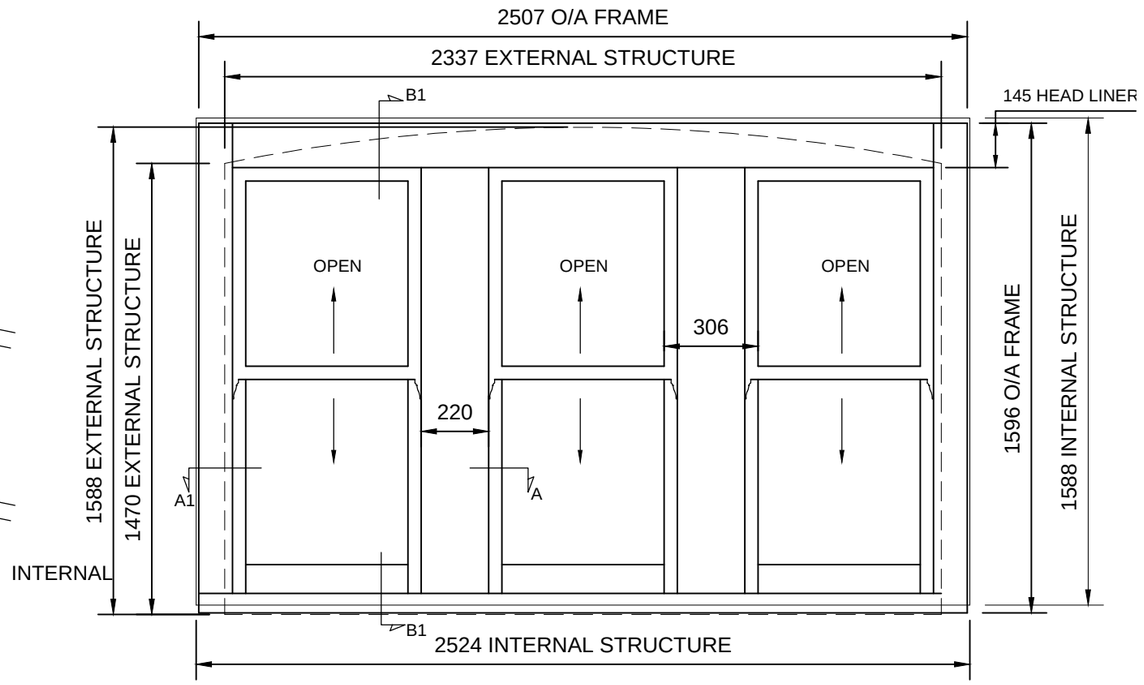


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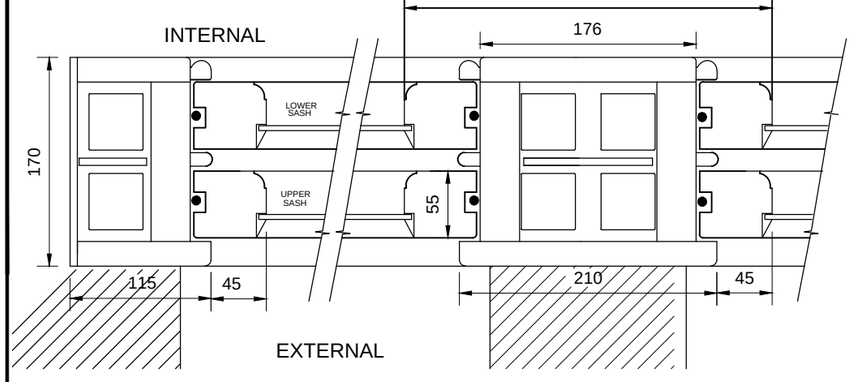


EXISTING
SECTION B1, B1

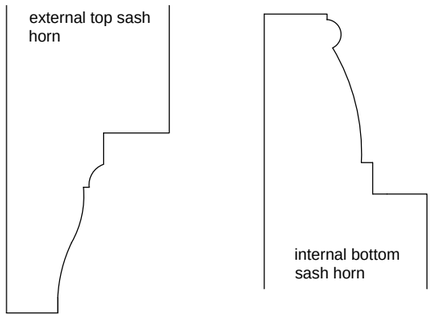


REF C.3F,334.2,
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL
145mm HEAD LINER EXTENSION.
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

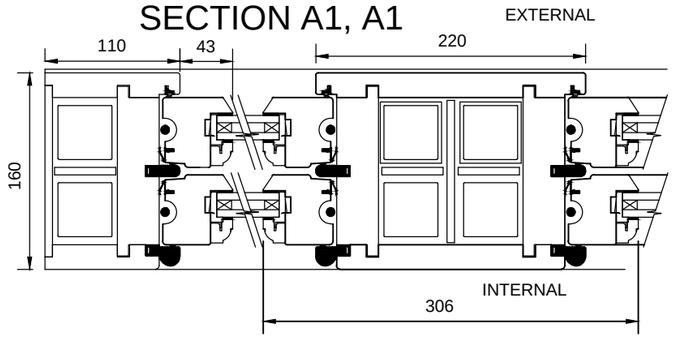
PROPOSED ELEVATION

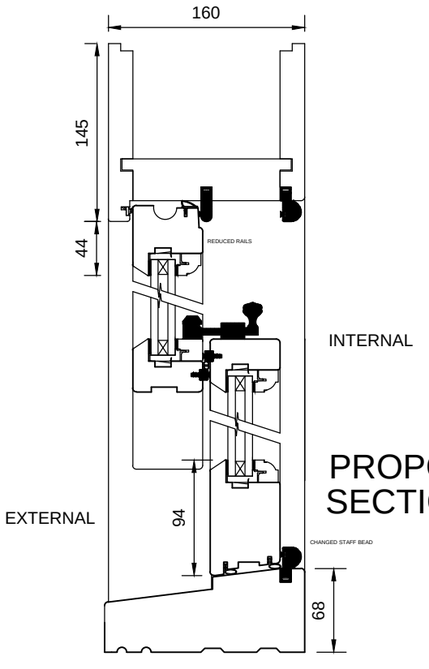


EXISTING SECTION A1, A1



PROPOSED
SECTION A1, A1





PROPOSED
SECTION B1, B1

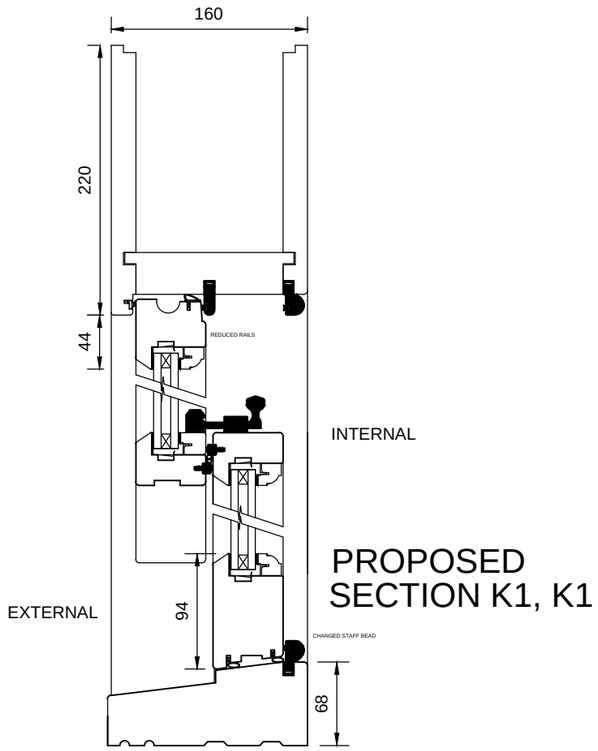
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GRAHAM CONSTRUCTION								
MANCHESTER UNIVERSITY, Coupland Street								

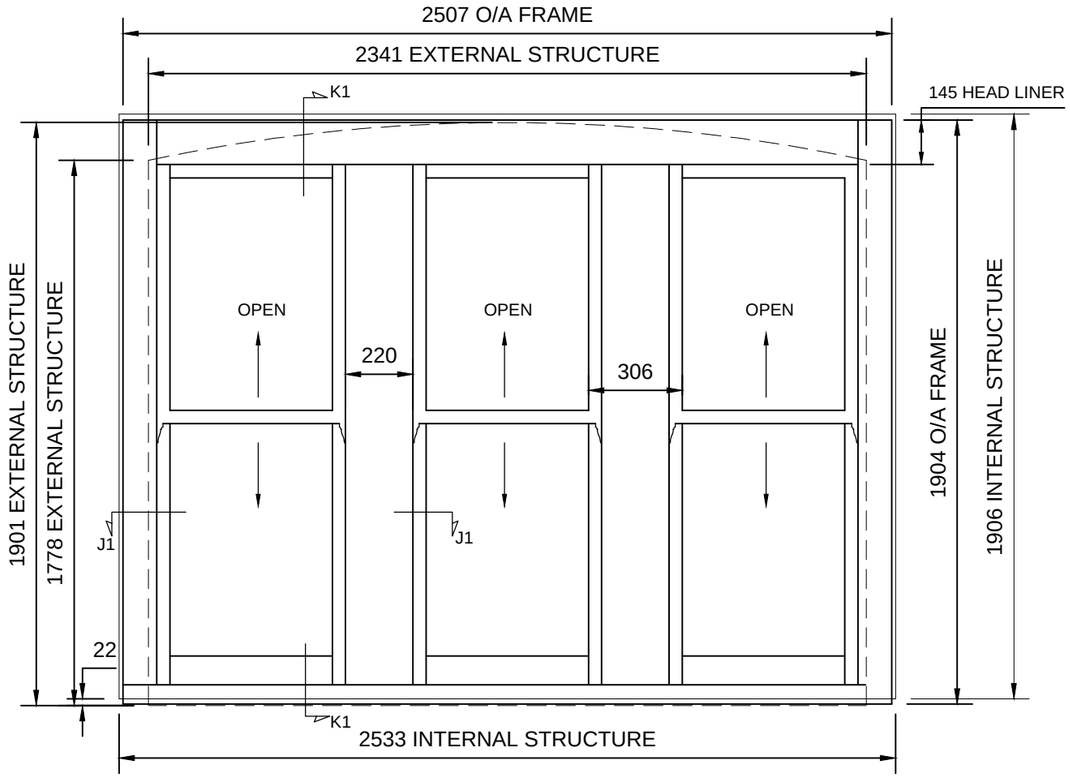
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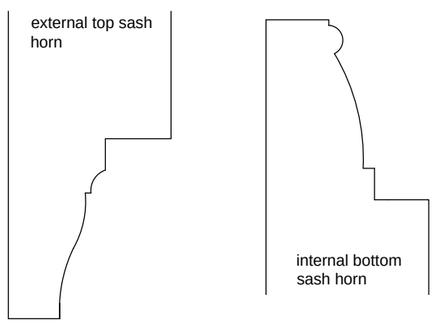


PROPOSED
SECTION K1, K1

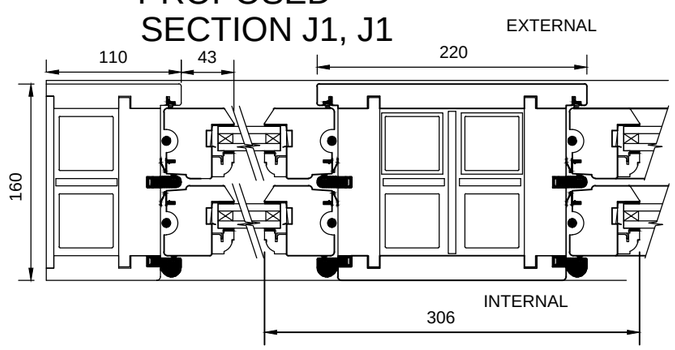


PROPOSED ELEVATION

REF C.2F,224.2,
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL
145mm HEAD LINER EXTENSION.
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).



PROPOSED
SECTION J1, J1



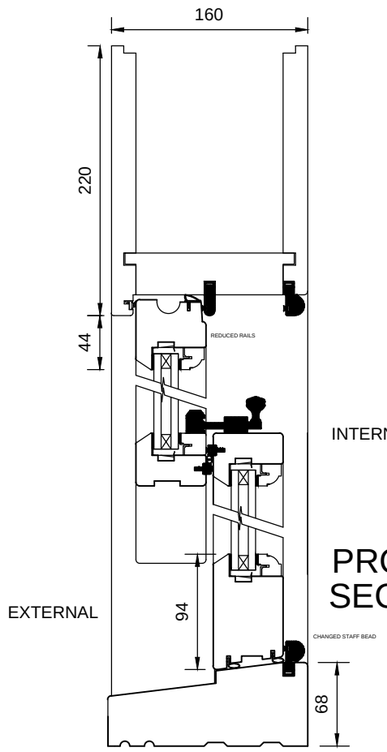
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sign			date	03-06-2015				
date			drn OTD	scale 1:20 / 1:5				
title BATCH 3								
GRAHAM CONSTRUCTION								
MANCHESTER UNIVERSITY, Coupland Street								

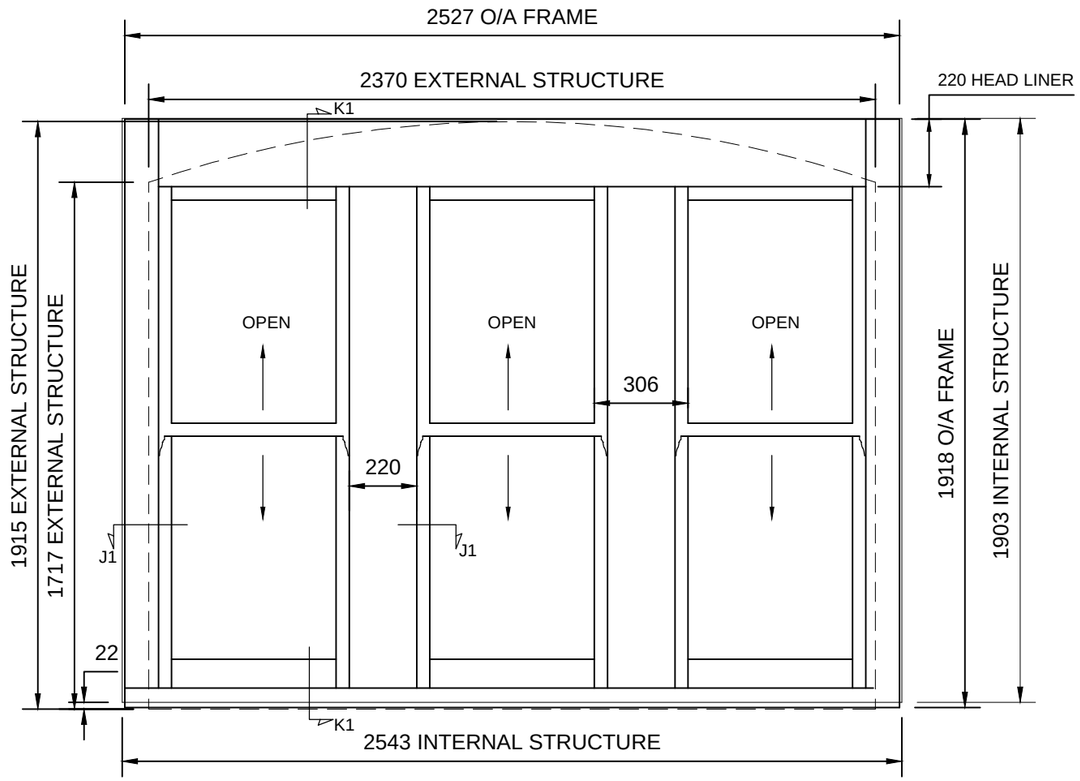
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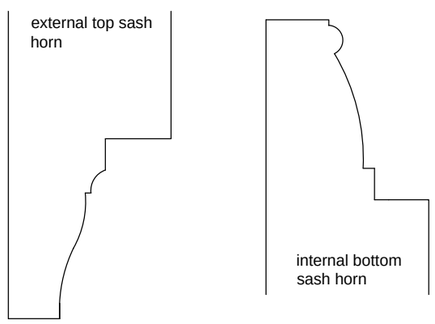


PROPOSED
SECTION K1, K1

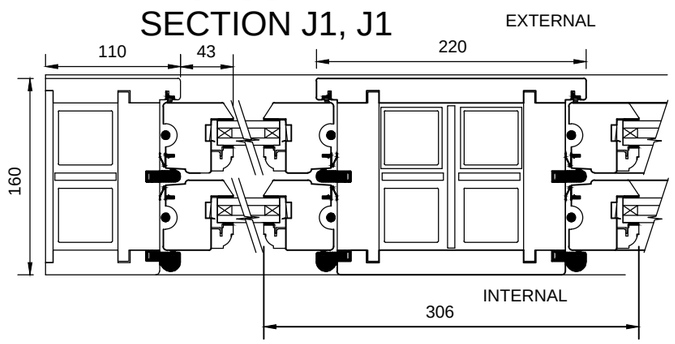


PROPOSED ELEVATION

REF C.3F,367 PHASE 2
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL
145mm HEAD LINER EXTENSION.
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).



PROPOSED
SECTION J1, J1



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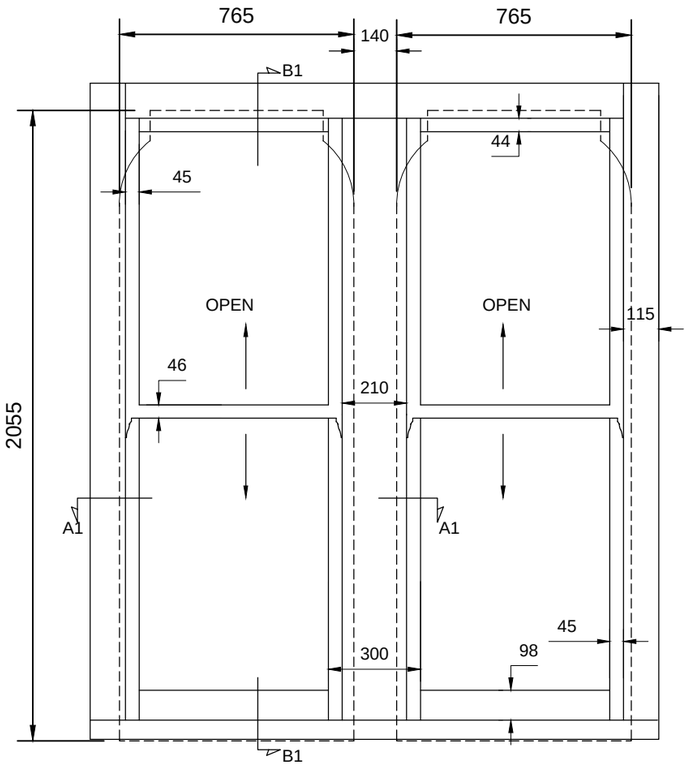
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title BATCH 3
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

REVISIONS			
rev	by	date	description

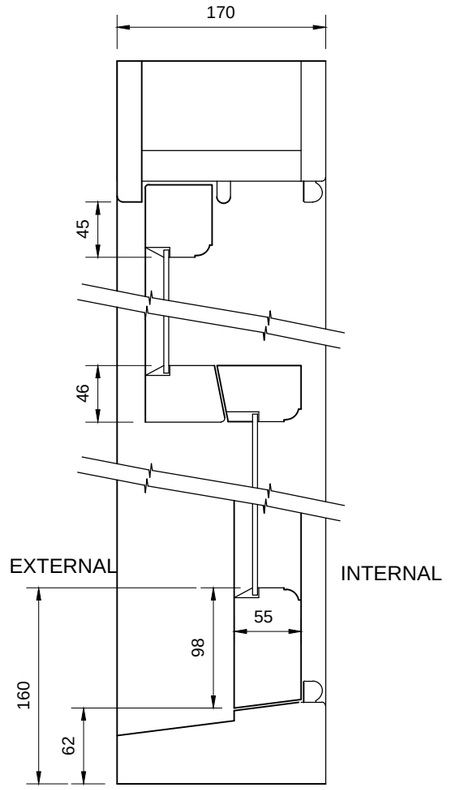
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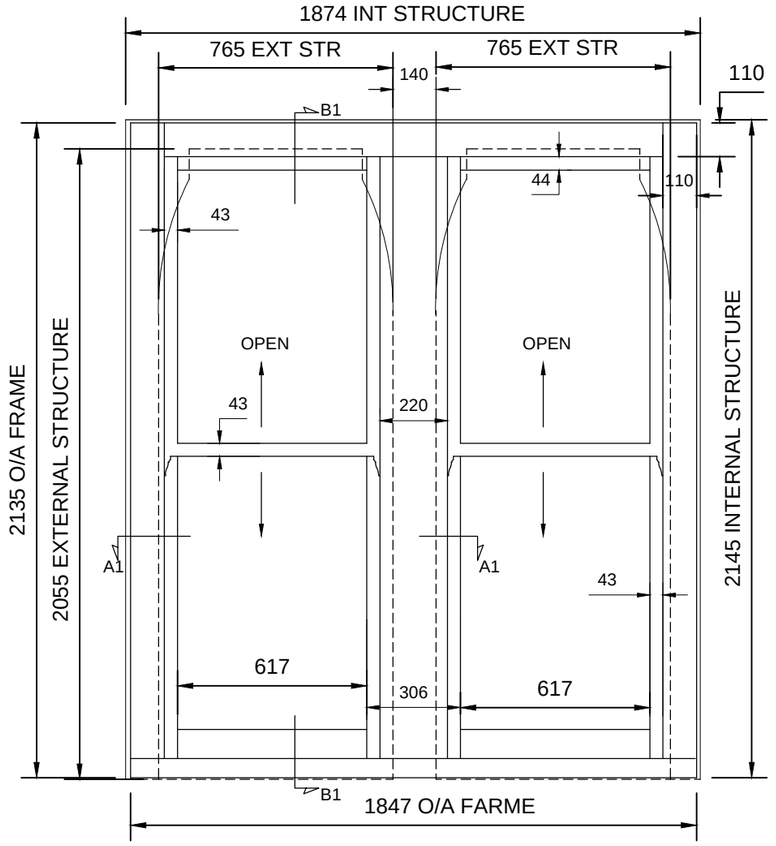


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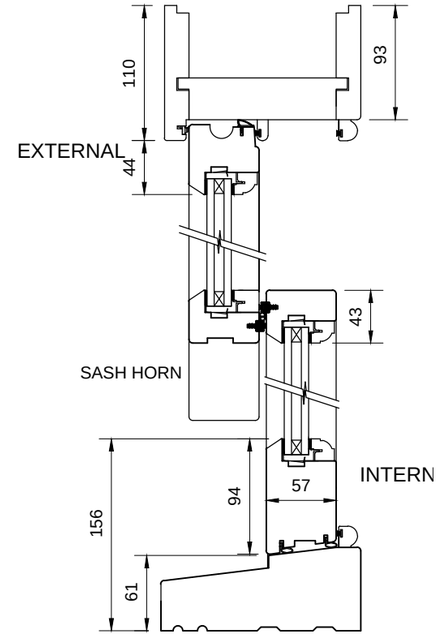
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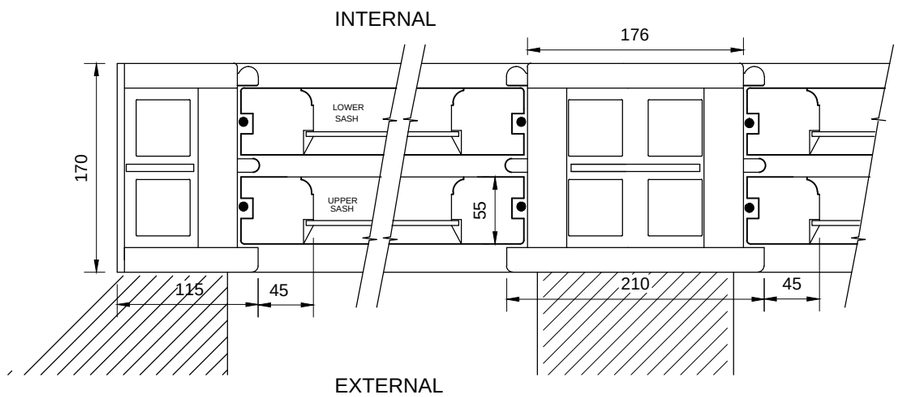


REF C.1F,172.1, C.1F,172.2, C.1F,173.1.

BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
NO SASH HORN DETAIL
FLUSH CILL
46mm TRUE BAR
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

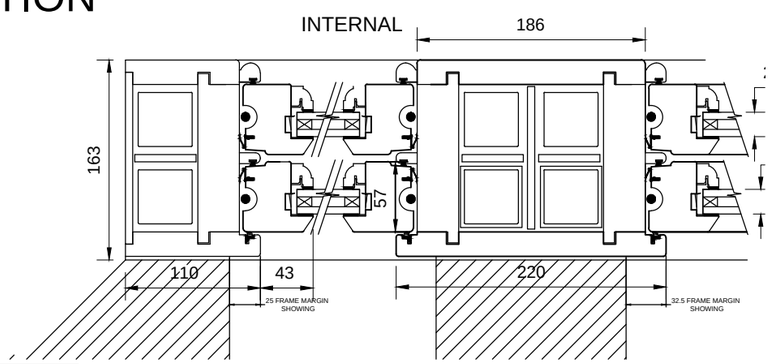
PROPOSED SECTION B1, B1





PROPOSED ELEVATION

PROPOSED SECTION A1, A1

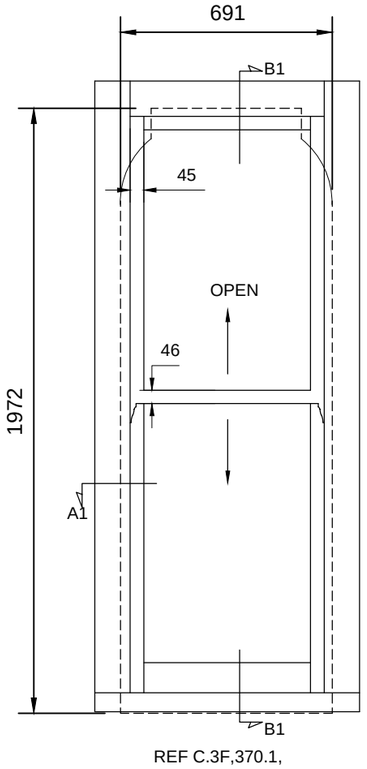


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GRAHAM CONSTRUCTION								
MANCHESTER UNIVERSITY, Coupland Street								

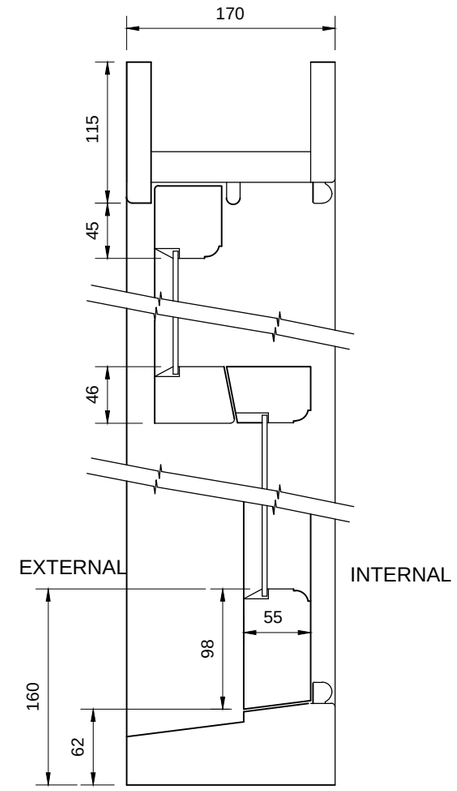
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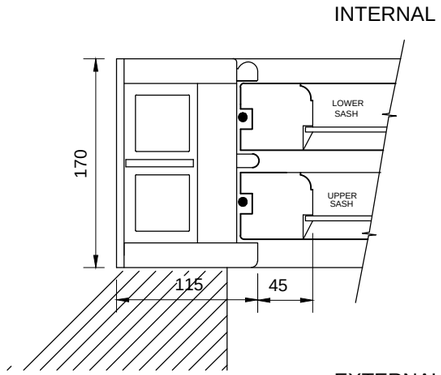


REF C.3F,370.1,

EXISTING SECTION B1, B1

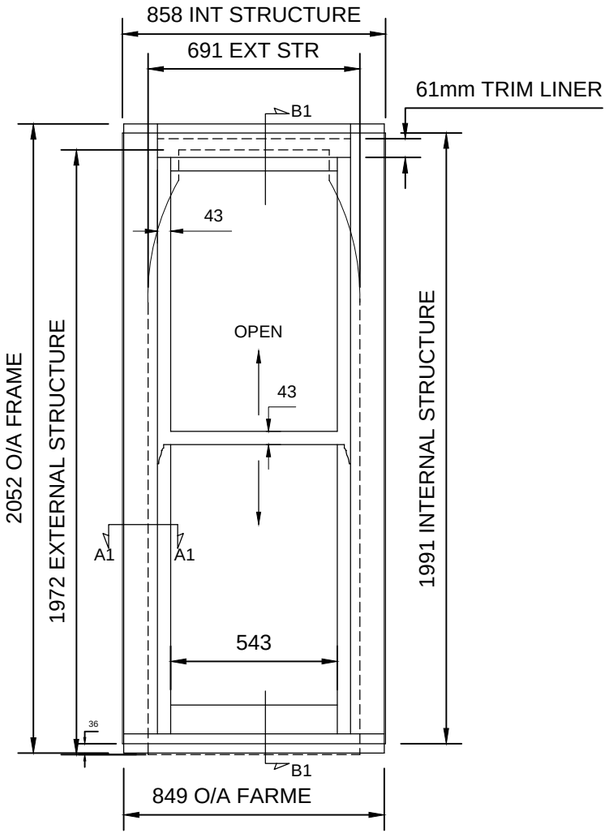


EXISTING ELEVATION



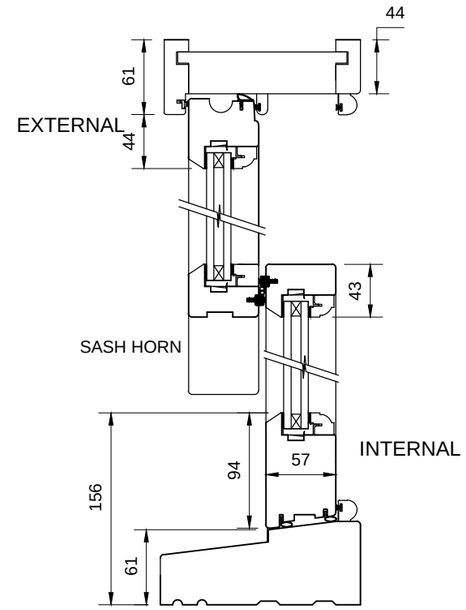
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PROPOSED ELEVATION

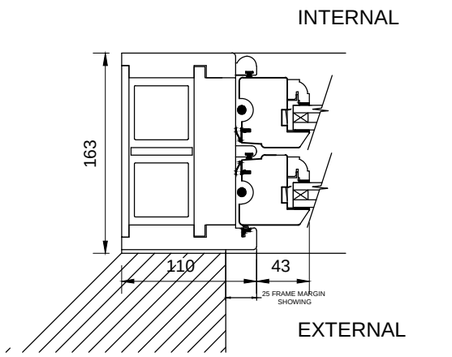


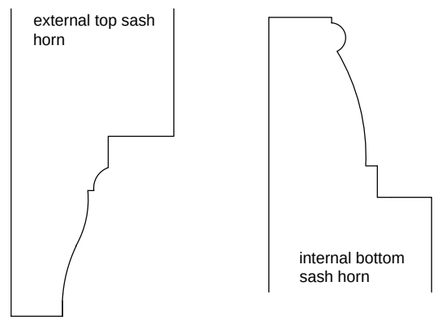
REF C.3F,370.1, C.3F,370.2, C.3F,370.3,
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

PROPOSED SECTION B1, B1



PROPOSED SECTION A1, A1





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sign			date	09/06/15
date			drn OTD	scale 1:20 / 1:5

title BATCH 5
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

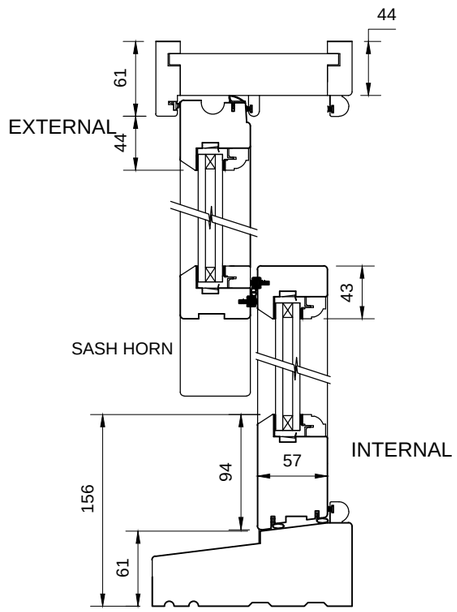
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rev	by	date	description

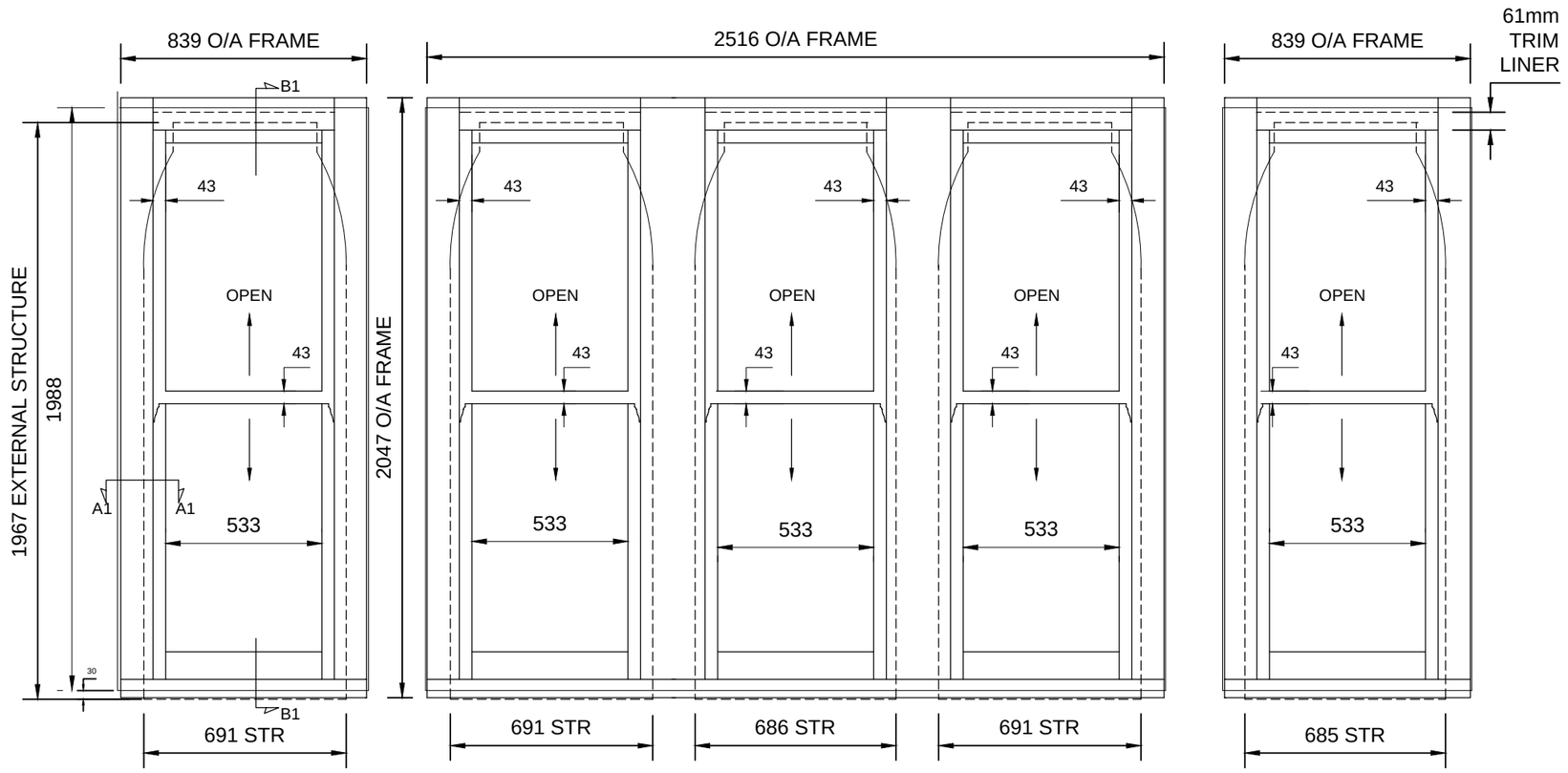
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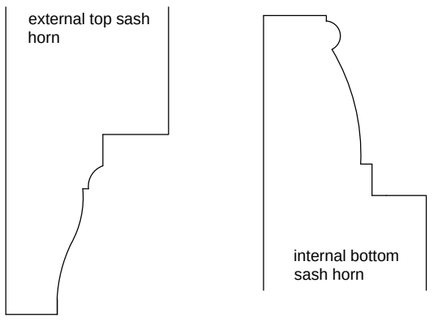
PROPOSED
SECTION B1, B1

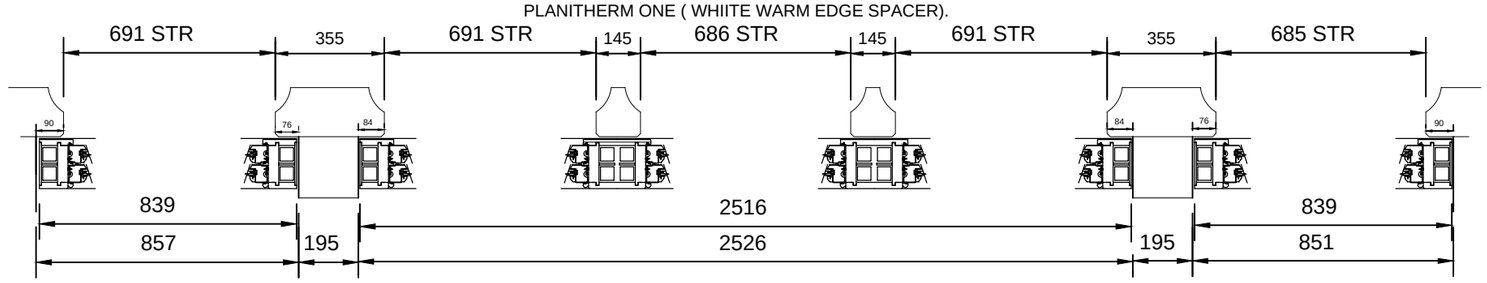




PROPOSED ELEVATION

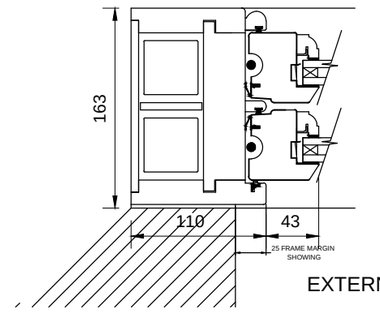
REF C.3F,369.1, C.3F,369.2, C.3F,369.3
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).





PROPOSED SECTION A1, A1

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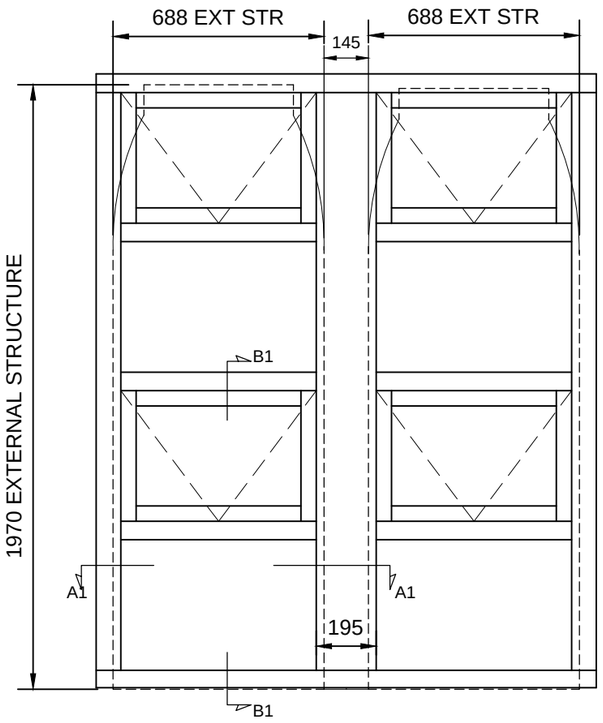
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sign			date	03-06-2015
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title BATCH 5
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

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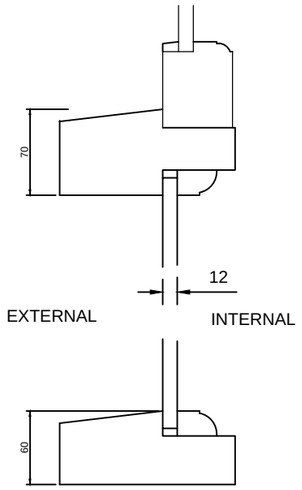
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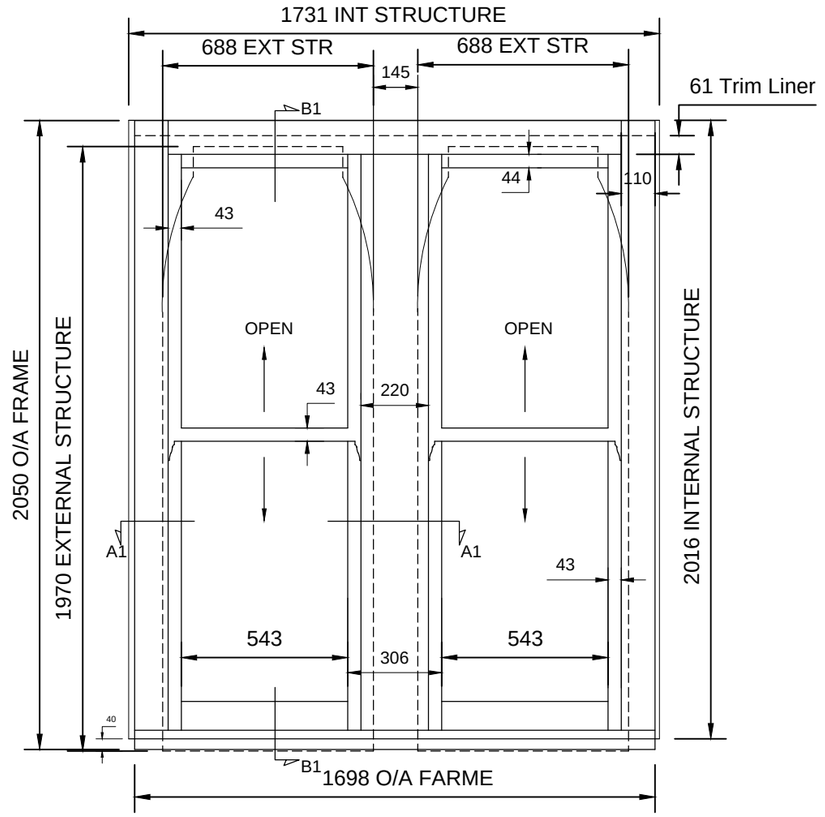
REF C.3F,173.1, C.3F,172.1, C.3F,172.2

Existing windows are not correct as all this elevation should be Box sash windows.

EXISTING ELEVATION

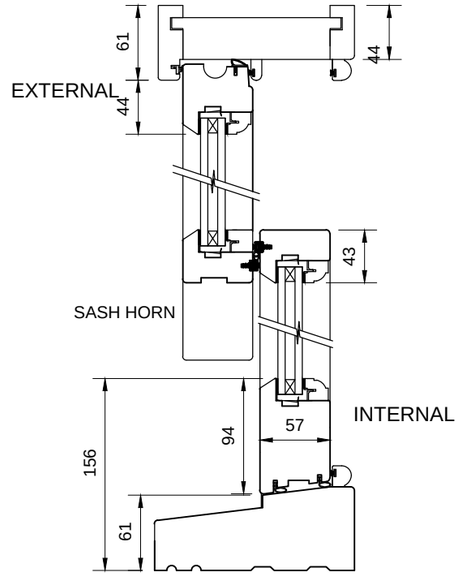


EXISTING SECTION B1, B1



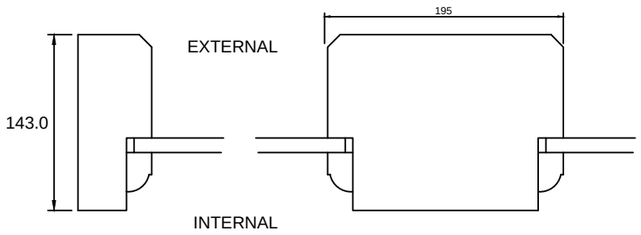
REF C.3F,173.1, C.3F,172.1, C.3F,172.2
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH PLANITHERM ONE (WHIITE WARM EDGE SPACER).

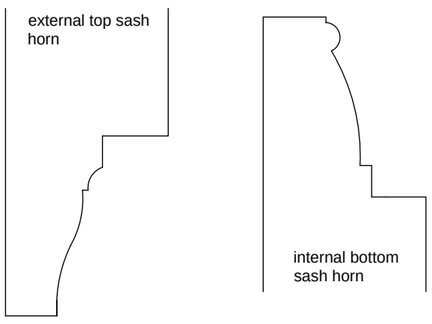
PROPOSED SECTION B1, B1



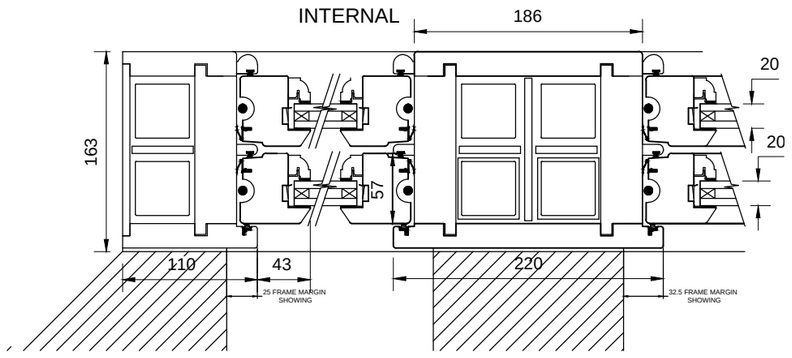
PROPOSED ELEVATION

EXISTING SECTION A1, A1





PROPOSED SECTION A1, A1



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title BATCH 6
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

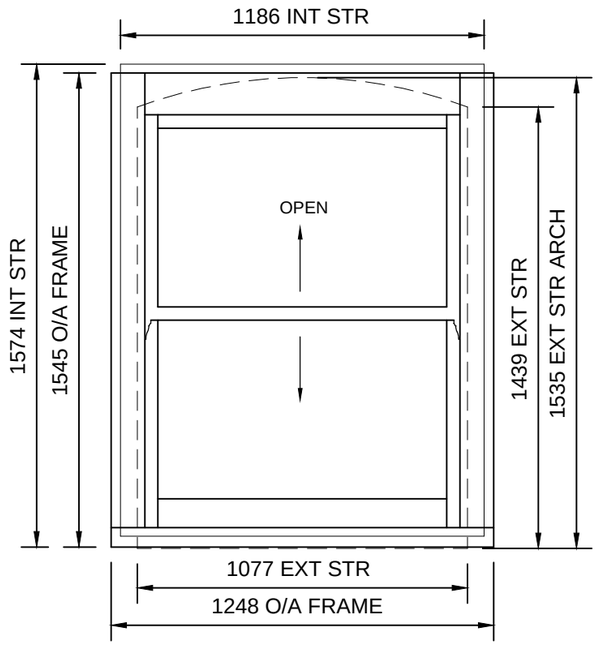
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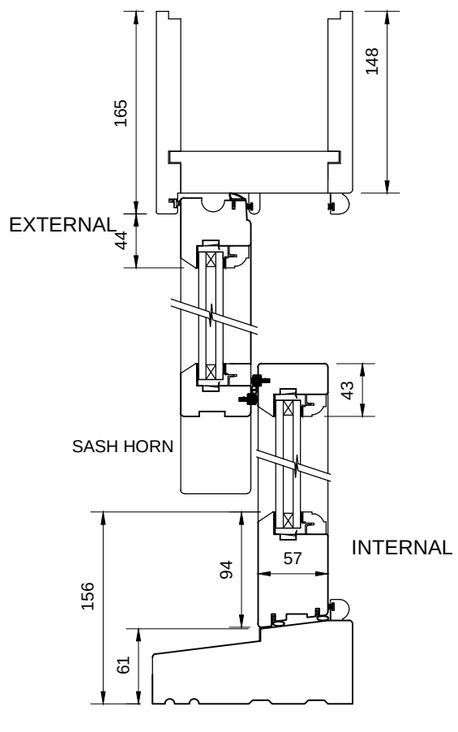
FOR EXISTING ELEVATION
PLEASE SEE OD-155-D-01-10



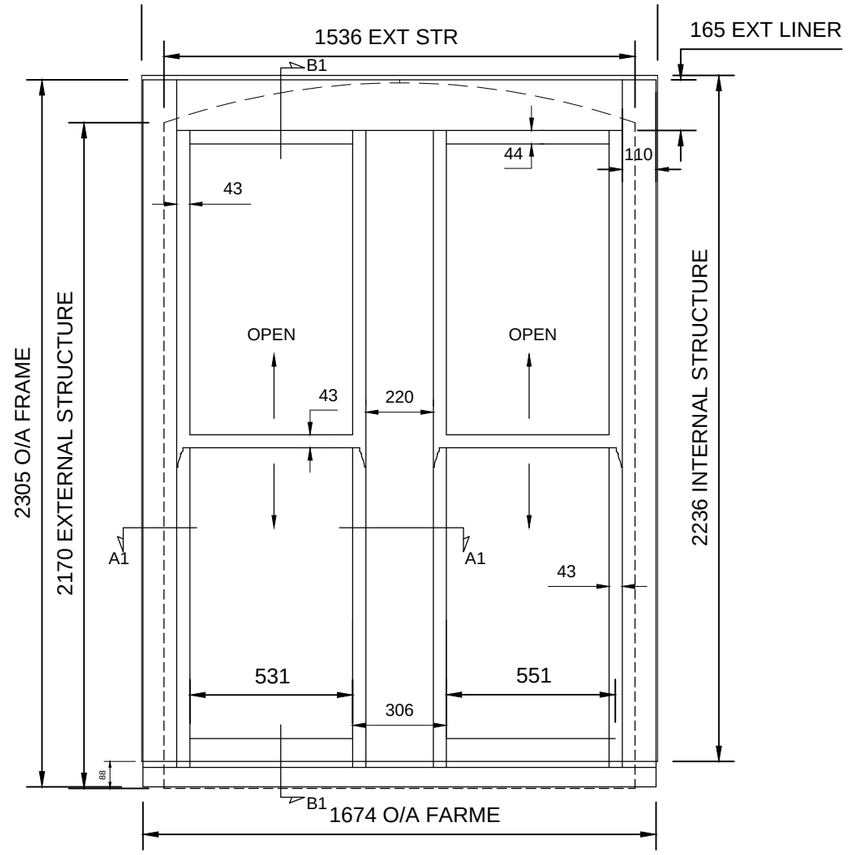
REF C.3F,172.3
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).
EXISTING WINDOW IS A CASEMENT AS C3F 372.2
WHICH IS INCORRECT.

PROPOSED ELEVATION

PROPOSED
SECTION B1, B1

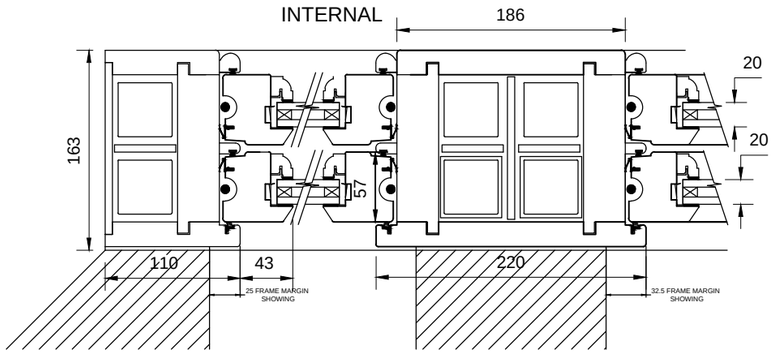


PROPOSED ELEVATION

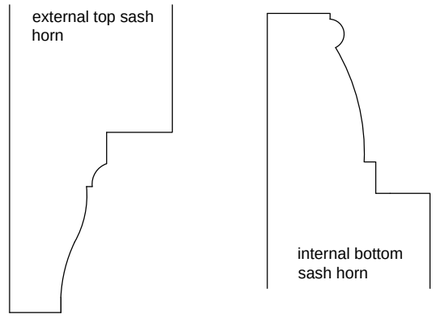


REF C.3F,172.4, C.3F,172.5
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).
EXISTING WINDOW IS A CASEMENT AS C3F 372.2
WHICH IS INCORRECT.

PROPOSED SECTION A1, A1



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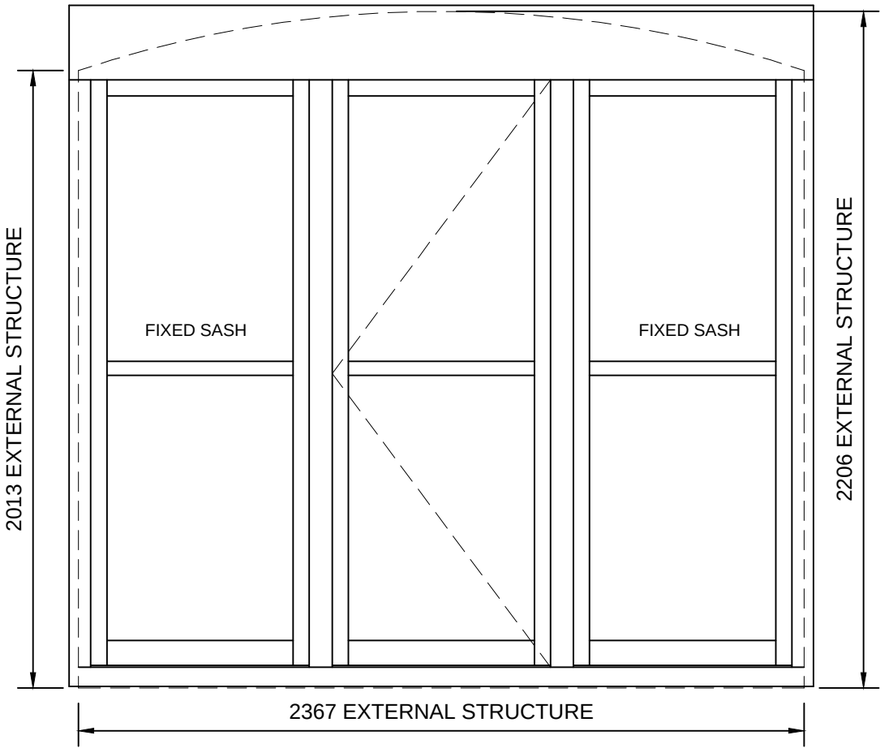
title BATCH 6
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

REVISIONS

rev	by	date	description

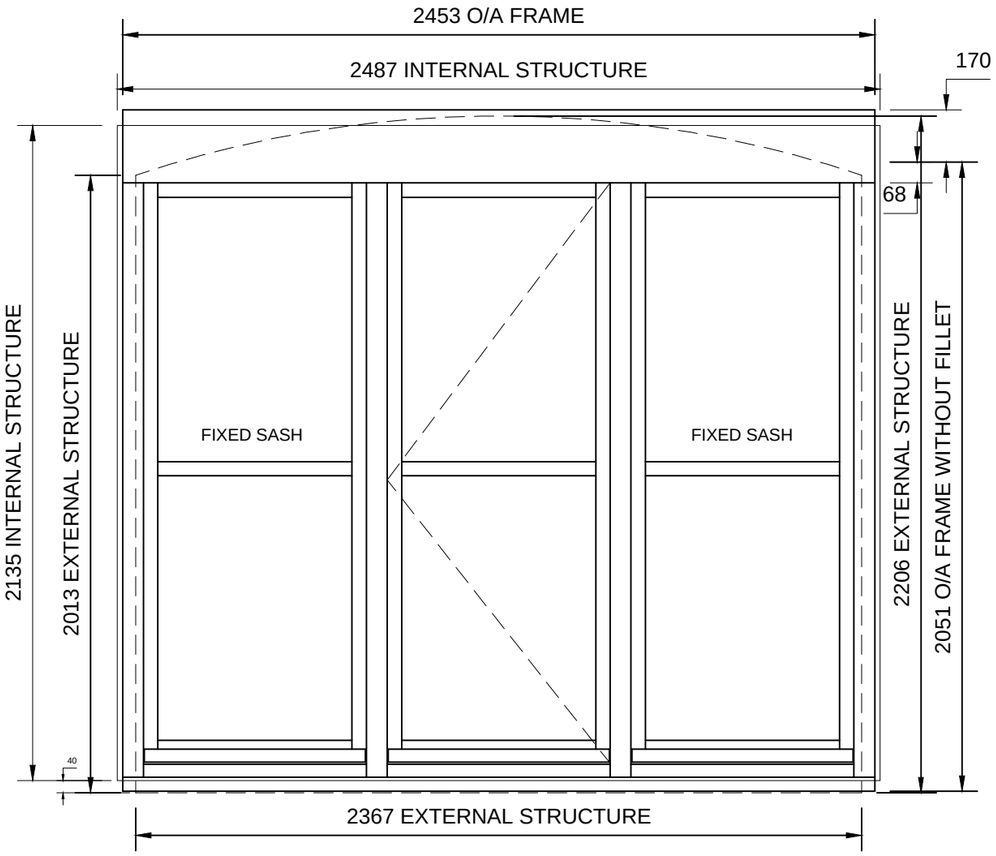
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REF C.3F,366.1

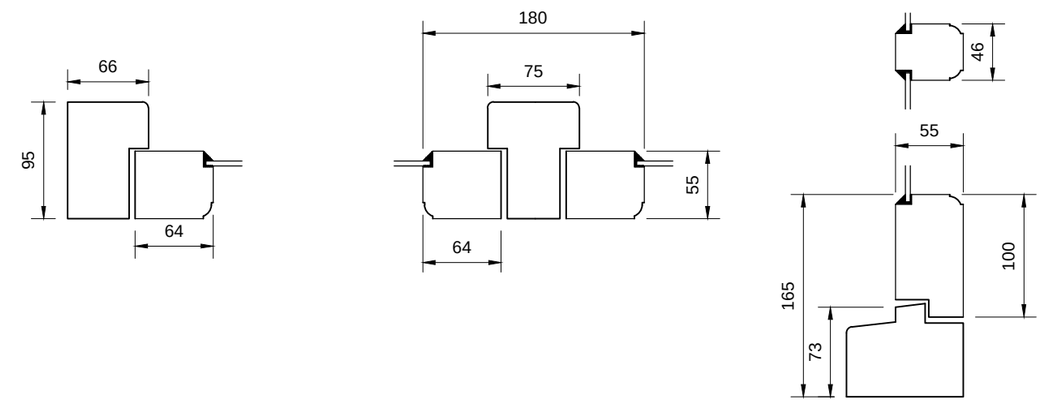
EXISTING ELEVATION

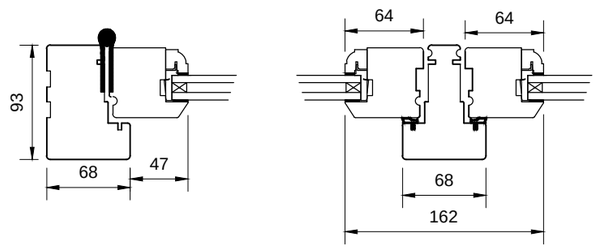


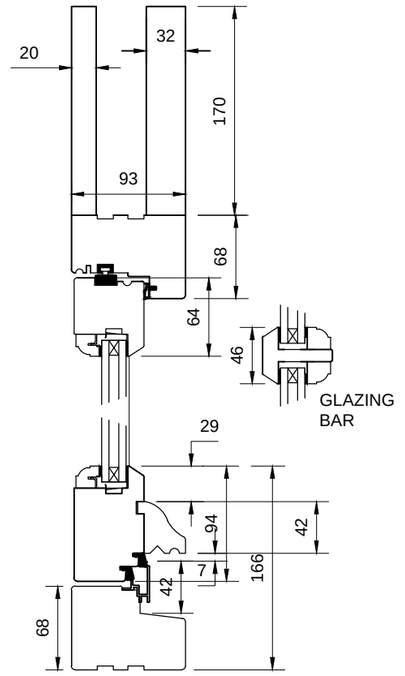
REF C.3F,366.1

CASEMENT WINDOW
OVOLO PROFILE 64mm TOP RAIL
AND STILES.94mm BOTTOM RAIL.
FIXED SIDE LIGHTS / OPEN IN SASH
68mm SQUARE FRAME. SPECIAL 170mm HEAD FILLET.
FLUSH CILL
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

PROPOSED ELEVATION







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sign			date	09/06/15
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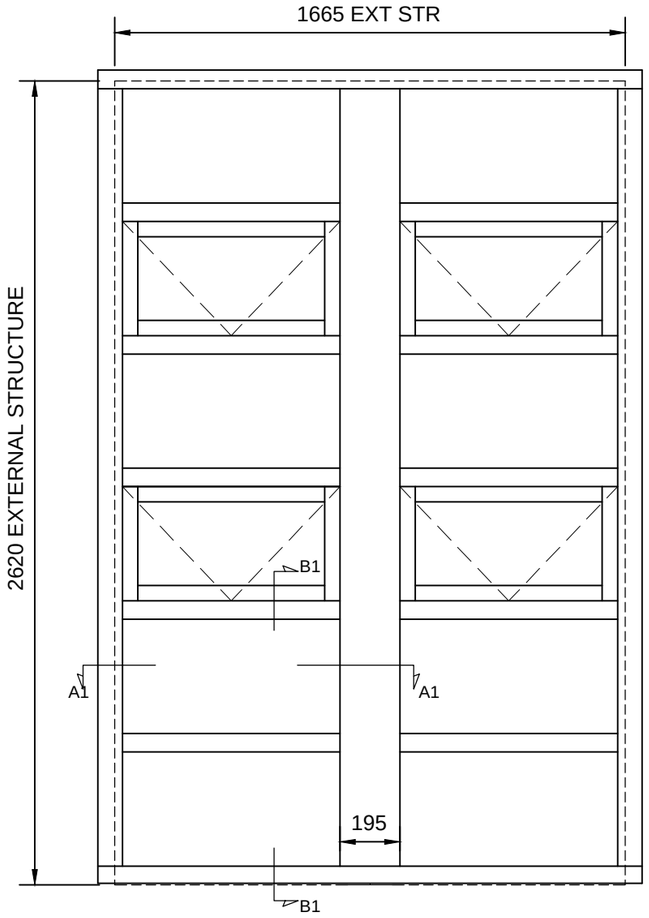
title BATCH 7
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

REVISIONS

rev	by	date	description

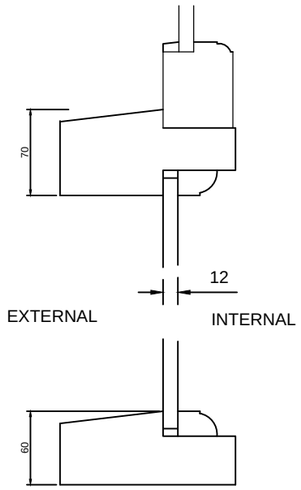
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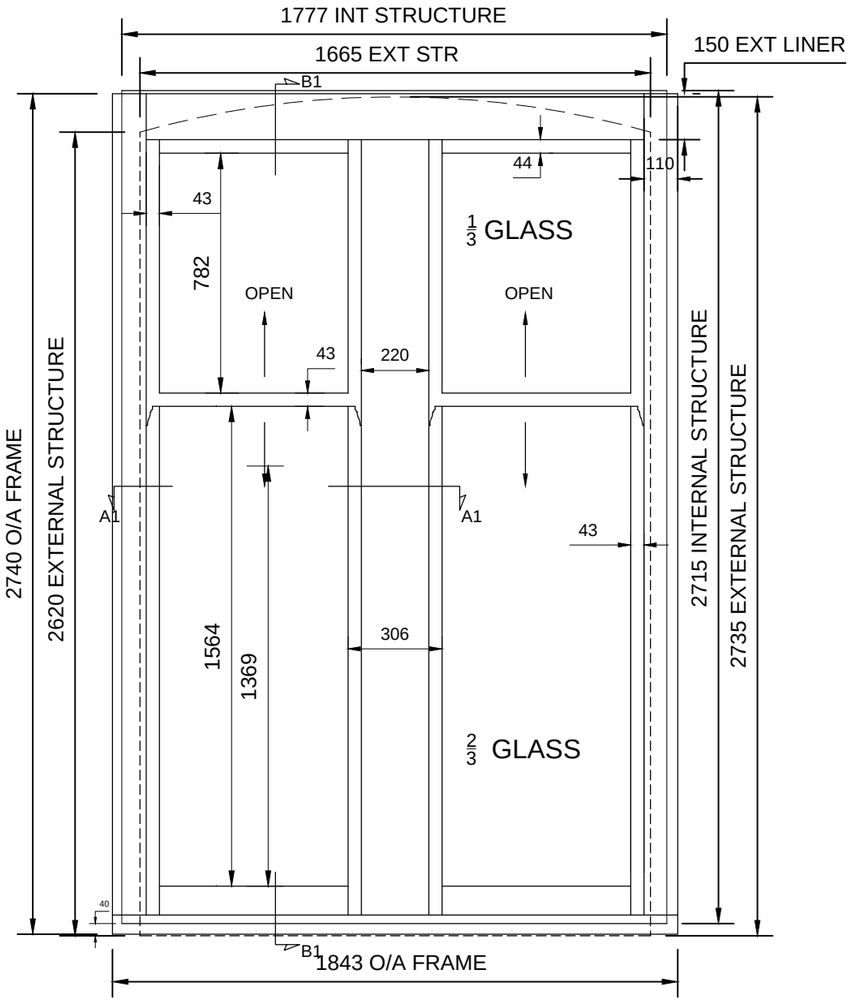


REF C.3F,177.1, C.3F,178.1, C.3F,179.1

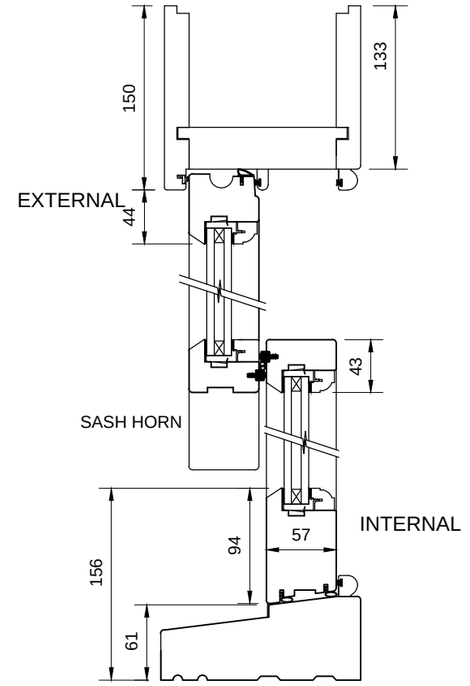
Existing windows are not correct as all this elevation should be Box sash windows.



EXISTING SECTION B1, B1



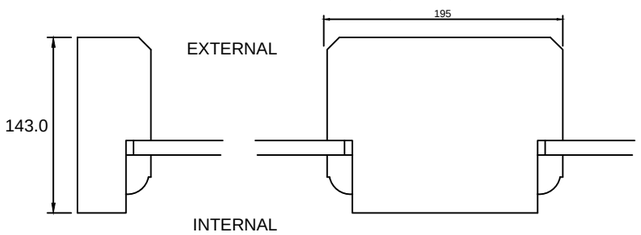
PROPOSED SECTION B1, B1

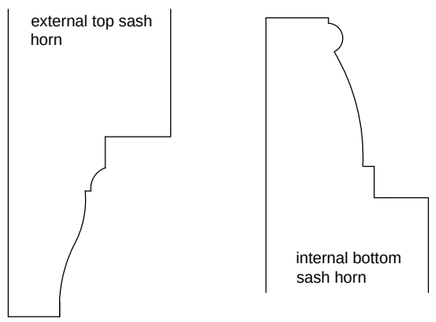


REF C.3F,177.1, C.3F,178.1, C.3F,179.1

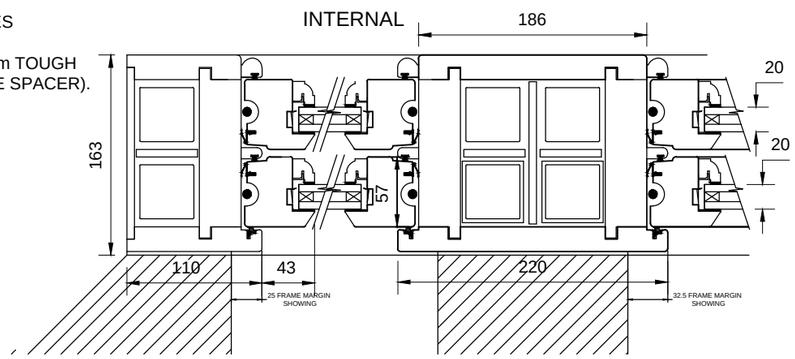
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH PLANITHERM ONE (WHIITE WARM EDGE SPACER).

EXISTING SECTION A1, A1





PROPOSED SECTION A1, A1



EXISTING ELEVATION

PROPOSED ELEVATION

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title BATCH 8
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

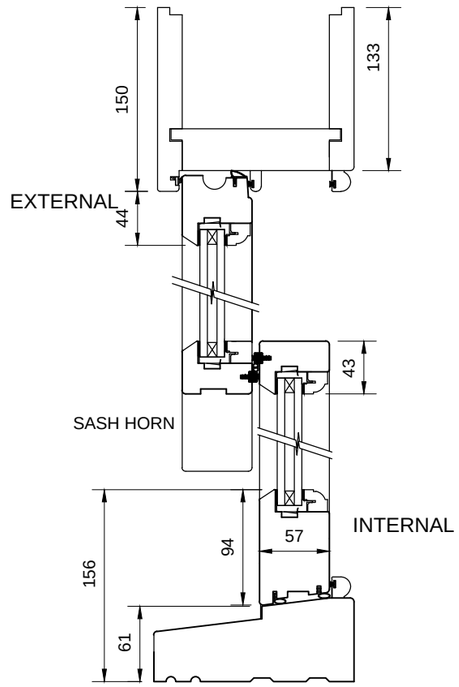
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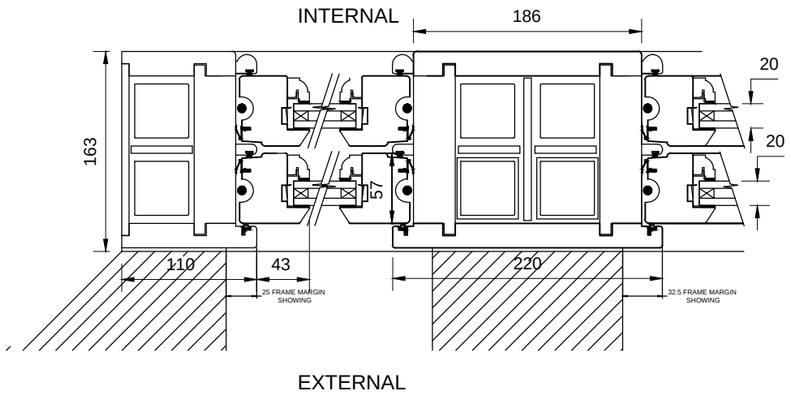
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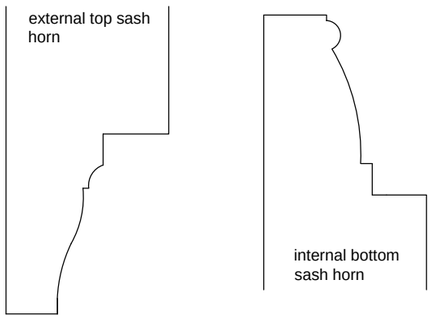
FOR EXISTING ELEVATION
PLEASE SEE OD-155-D-01-13

PROPOSED SECTION B1, B1

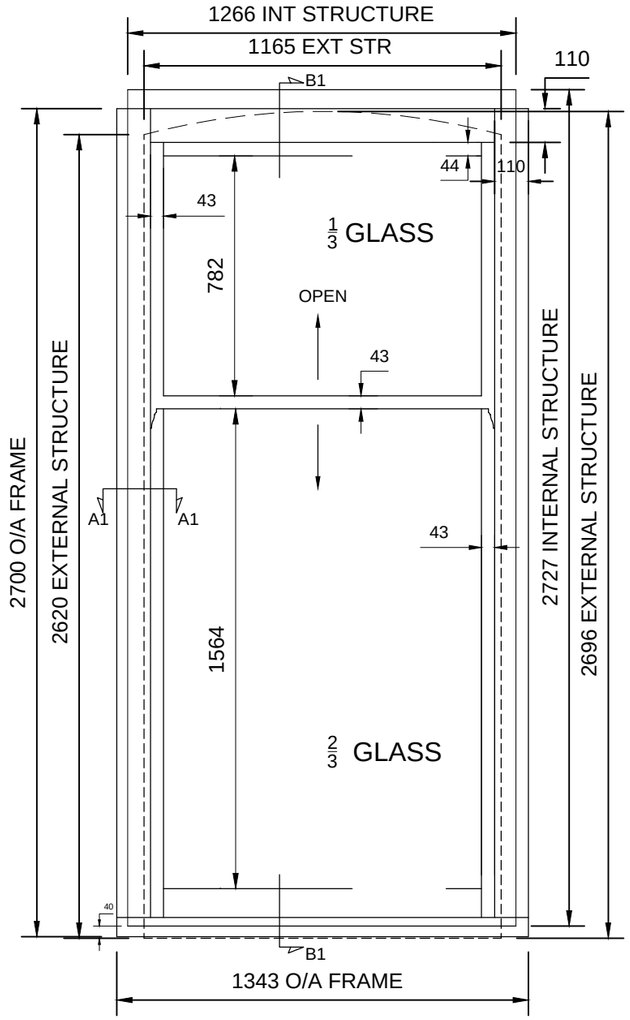


PROPOSED SECTION A1, A1





PROPOSED ELEVATION



REF C.3F,179.2

BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL
GLASS 6mm TOUGH/8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

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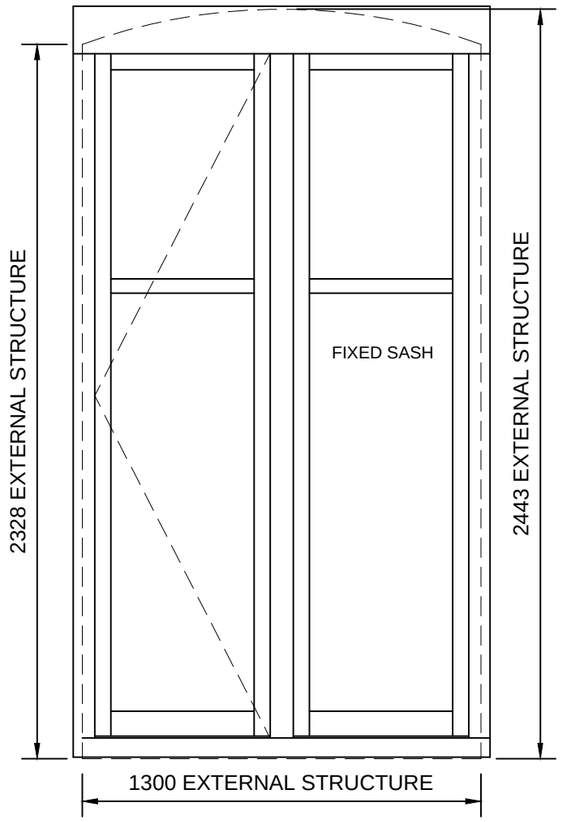
title BATCH 8
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

REVISIONS

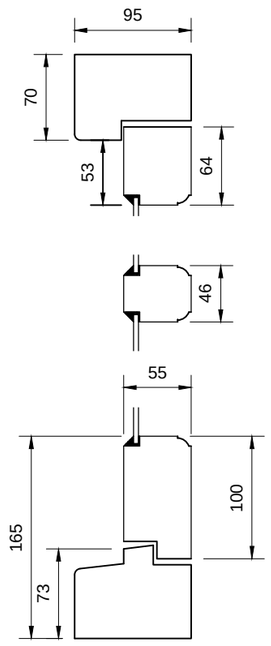
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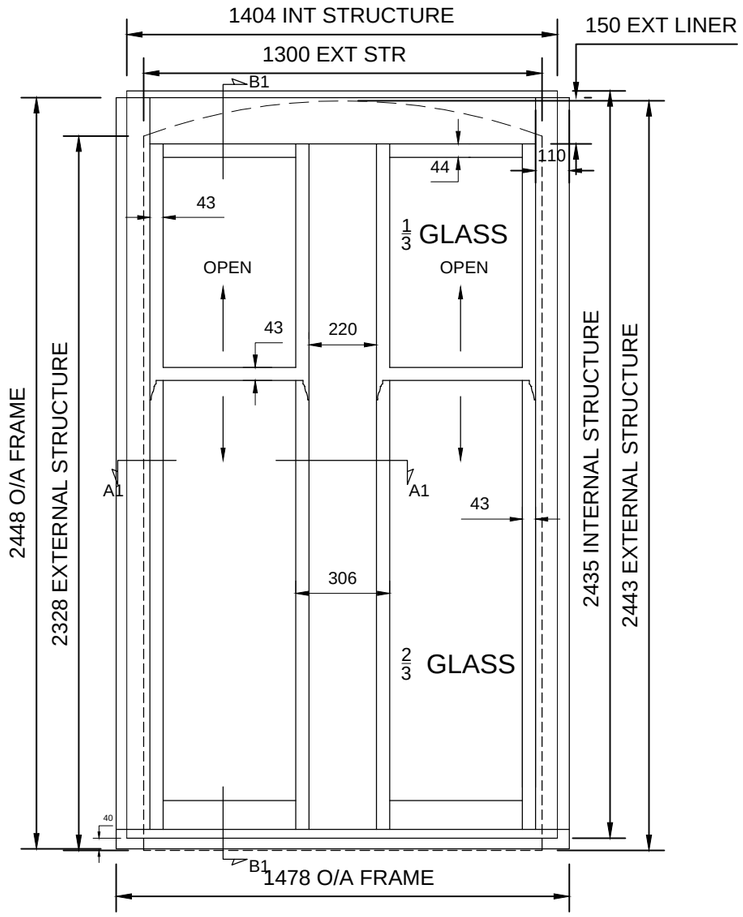
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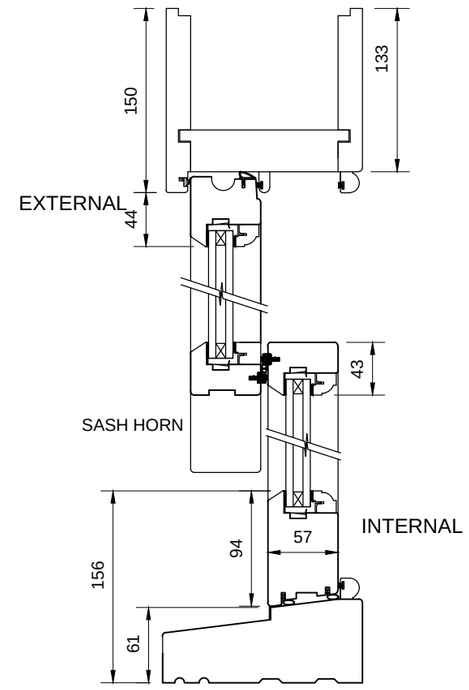
REF C.3F,379.3, C.3F,379.4, C.3F,379.5



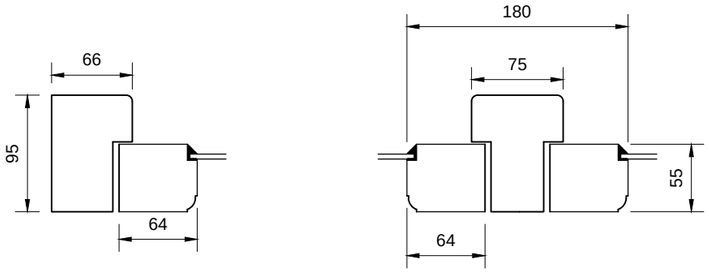


REF C.3F,379.3, C.3F,379.4, C.3F,379.5
BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL
GLASS 6mm TOUGH8mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).
EXISTING WINDOWS ARE CASEMENT AS C3F 379.1
WHICH IS INCORRECT. tHESE SHOULD BE BOX SASH
WINDOWS TO MATCH ELEVATION 11

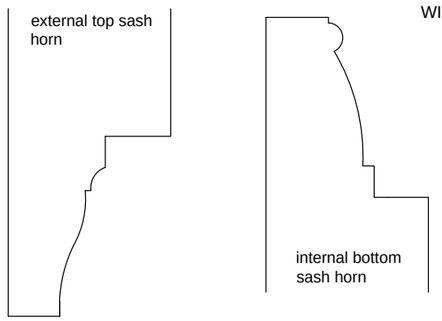
PROPOSED SECTION B1, B1



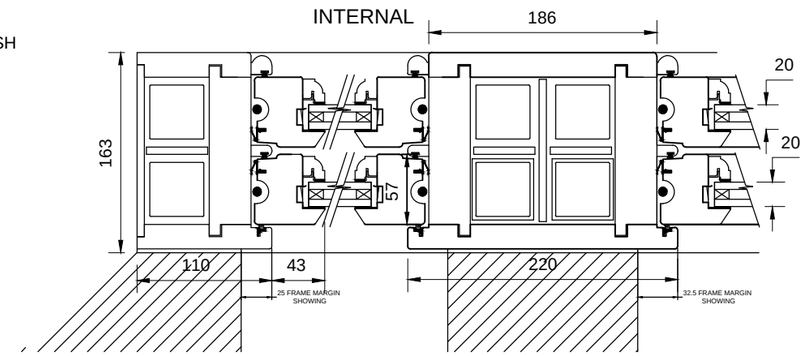
PROPOSED ELEVATION



EXISTING ELEVATION



PROPOSED SECTION A1, A1



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sign			date	09/06/15
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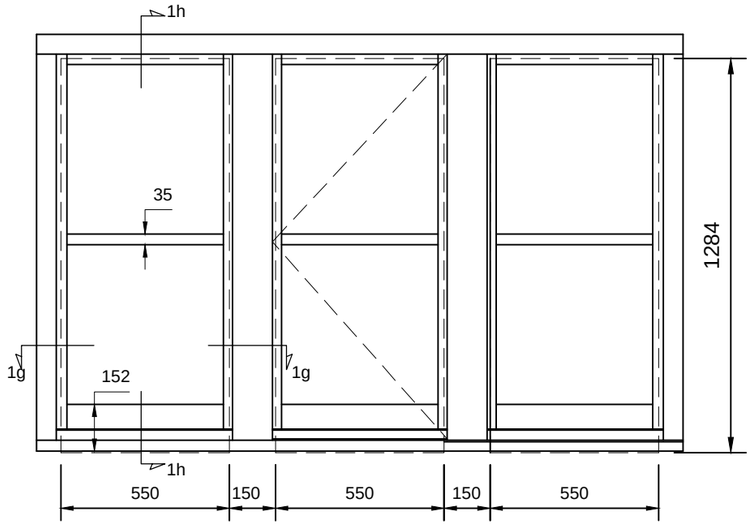
title BATCH 9
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

REVISIONS

rev	by	date	description

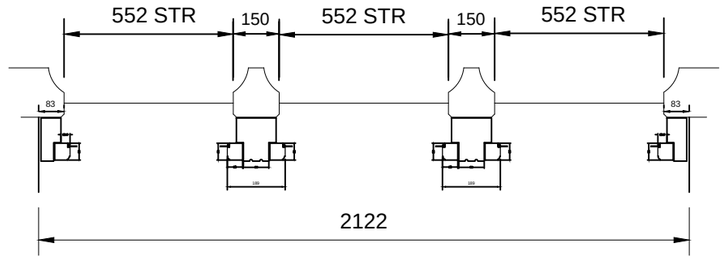
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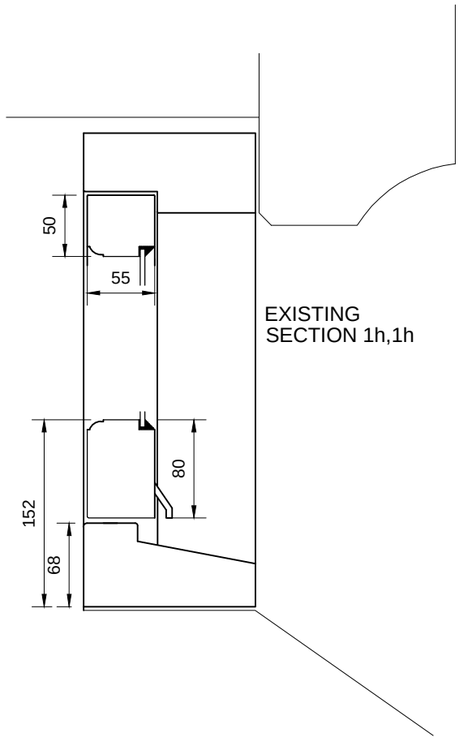
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Tower Business Park, Kelvedon Road,
Tiptree, Essex CO5 0LX
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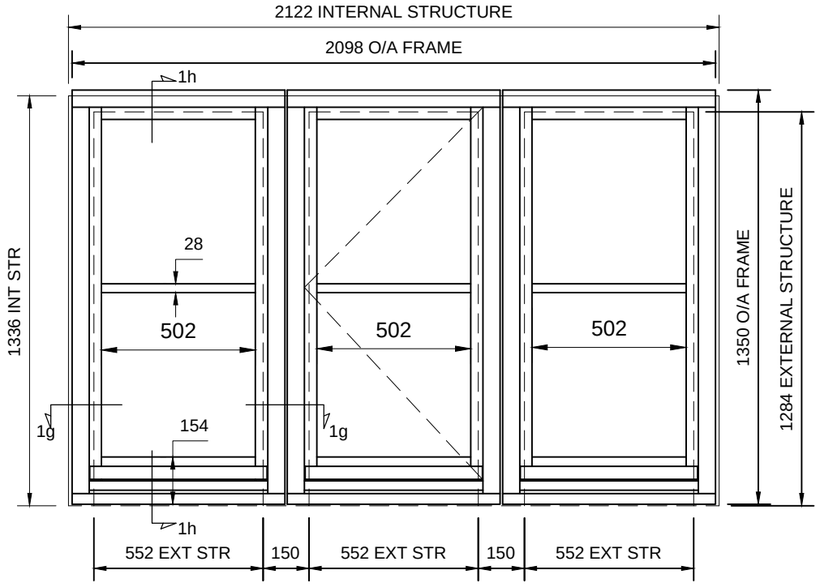


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EXISTING ELEVATION

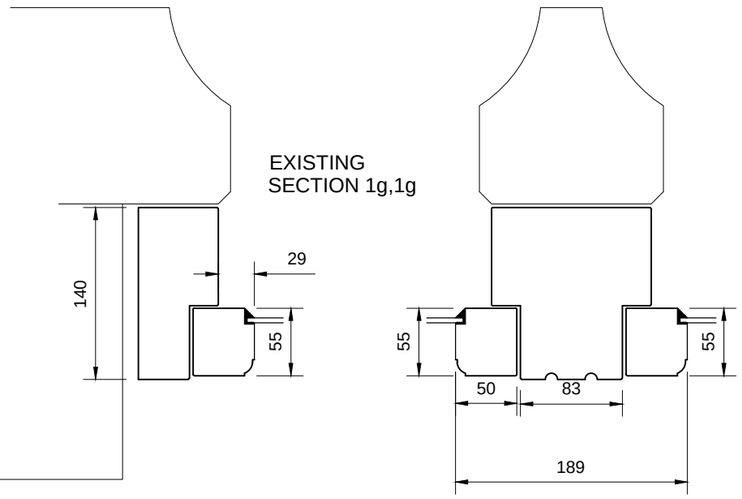


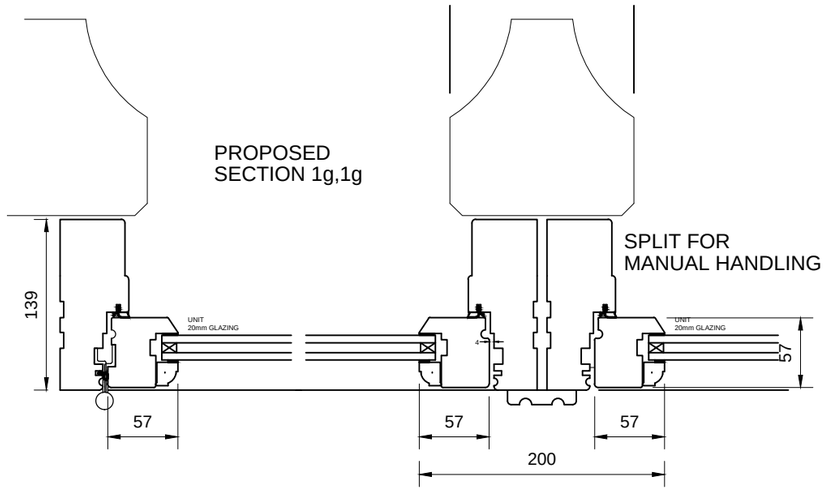


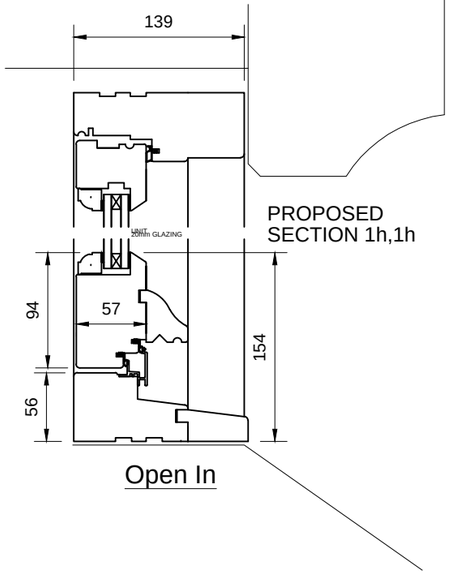


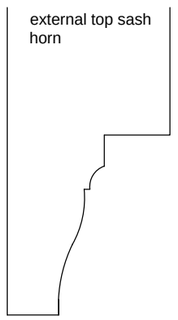
REF C.2F,245.1, C.2F,245.2, C.2F,245.3, C.2F,245.4, C.2F,245.5,
CASEMENT WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.94mm BOTTOM RAIL.
FIXED SIDE LIGHTS / OPEN IN SASH
56mm SQUARE FRAME.
139mm FRAME DEPTH & EXTENDED CILL
GLASS 6mm TOUGH/12mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

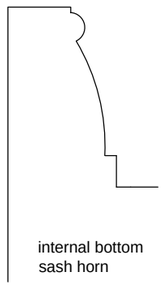
PROPOSED ELEVATION











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approved by			revision	
sign			date	09/06/15
date			drn OTD	scale 1:20 / 1:5

title BATCH 10
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

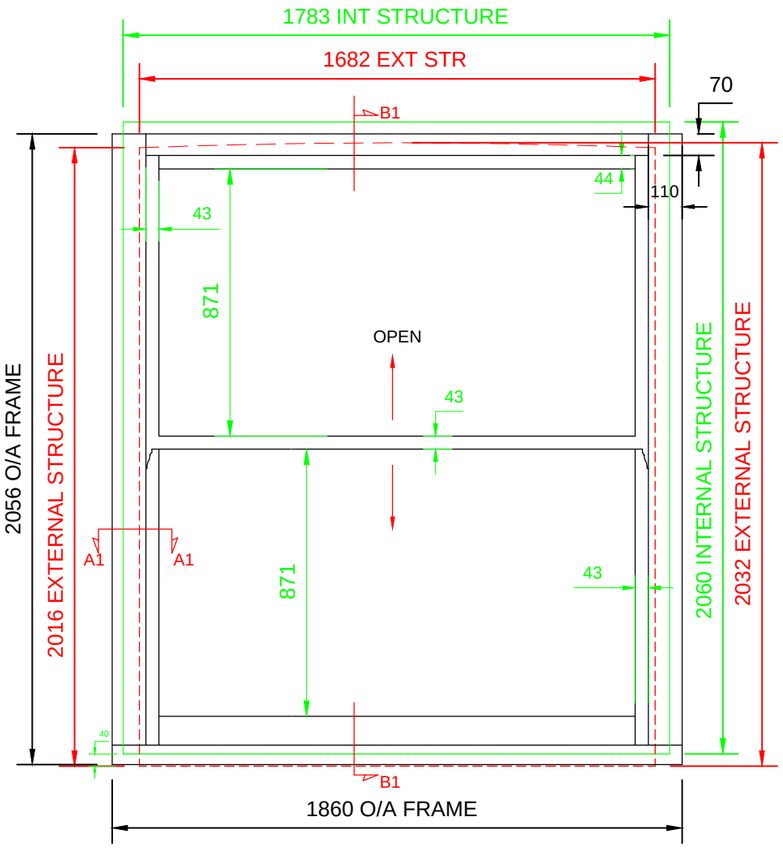
REVISIONS

rev	by	date	description

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READ WITH OD155D-01-13 FOR SECTION DETAILS



REF C.3F,175.1, C.3F,175.2

BOX SASH WINDOW
OVOLO PROFILE 57mm TOP RAIL
AND STILES.
SPECIAL HORN DETAIL TO BOTH SASHES
FLUSH CILL
GLASS 6mm TOUGH/12mm KRYPTON/ 6mm TOUGH
PLANITHERM ONE (WHIITE WARM EDGE SPACER).

PROPOSED ELEVATION

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approved by			revision	
sign			date	03-11-2015
date			drn OTD	scale 1:20

title BATCH 11
GRAHAM CONSTRUCTION
MANCHESTER UNIVERSITY, Coupland Street

REVISIONS

rev	by	date	description

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