SECTION 08 51 13

ALUMINUM WINDOWS

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\*\* NOTE TO SPECIFIER \*\* DeSCo Architectural Inc.; Aluminum Window products.  
.  
This section is based on the products of DeSCo Architectural Inc., which is located at:  
716 3rd St. S. E.  
De Smet, SD 57231  
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Web: <http://www.descoarc.com>   
 [ [Click Here](https://www.arcat.com/arcatcos/cos31/arc31938.html) ] for additional information.  
Since 1970, DeSCo has earned its reputation as a high-quality, service-oriented manufacturer of a diverse line of architectural windows. DeSCo's five lines of aluminum windows have been engineered to ensure high performance in a wide variety of applications - schools, hospitals, office buildings, institutional buildings, and churches - in both new construction and retrofit projects. DeSCo windows are manufactured to industry-leading standards, using only the finest materials available.

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Aluminum Project Out Windows.
    2. Aluminum Project In Windows.
    3. Aluminum Casement Windows.
    4. Aluminum Fixed Windows.
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 07 27 26 - Fluid-Applied Membrane Air Barriers .
    2. Section 07 90 00 - Joint Protection.
    3. Section 08 83 13 - Mirrored Glass Glazing.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. AAMA/NWWDA 101/I.S.2 - Voluntary Specifications for Aluminum, Vinyl (PVC), and Wood Windows and Glass Doors.
    2. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum.
    3. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
    4. AAMA 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels
    5. AAMA 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels
    6. AAMA 2605 - Voluntary Specification Performance Requirements for Superior Performance Organic Coatings on Aluminum Extrusions and Panels.
    7. ASTM 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
    8. ASTM E 283 - Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
    9. ASTM E 330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors by Uniform Static Air Pressure Difference.
    10. ASTM E 331 - Standard test method for water penetration of exterior windows, skylights, doors, and curtain walls by uniform static air pressure difference.
    11. ASTM F 588 - Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact
  1. DESIGN / PERFORMANCE REQUIREMENTS
     1. Test Units
        1. Air, water and structural test unit shall conform to size and configuration requirements specified by AAMA/NWWDA 101/I.S. 2-97.

\*\* NOTE TO SPECIFIER \*\* Select the paragraph for the window Series specified and delete those that are not applicable.

* + 1. Test Procedures and Performance (i65 Series)
       1. Standards: Windows shall conform to AAMA/NWWDA 101/I.S. 2-11 requirements for Class AP-AW100 or C-AW100.
       2. Air Infiltration Test: Test unit in accordance with ASTM E 283 with an air pressure difference of 6.24 psf. Air infiltration shall not exceed .10 cfm per foot of perimeter crack length.
       3. Water Resistance Test: Test unit in accordance with ASTM E 331 at static pressure difference of 15.00 psf with no water leakage.
       4. Uniform Load Deflection Test: Test unit in accordance with ASTM E 330 at 100 psf.
       5. Condensation Resistance Test (CRF): Test unit for thermal performance in accordance with AAMA 1503- 98 with condensation resistance factor of at least 60.
       6. Thermal Transmittance Test (Conductive U-Value): Test unit in accordance with AAMA 1503-98 with U- value of 0.43 or less.
       7. Forced Entry Resistance Test: Unit tested in accordance with ASTM F 588 for Type B Grade 40.
    2. Test Procedures and Performance (i85 Series)
       1. Standards: Windows shall conform to AAMA/NWWDA 101/I.S. 2-11 requirements for Class AP-AW100 or C-AW100.
       2. Air Infiltration Test: Test unit in accordance with ASTM E 283 with an air pressure difference of 6.24 psf. Air infiltration shall not exceed .10 cfm per foot of perimeter crack length.
       3. Water Resistance Test: Test unit in accordance with ASTM E 331 at static pressure difference of 15.00 psf with no water leakage.
       4. Uniform Load Deflection Test: Test unit in accordance with ASTM E 330 at 100 psf.
       5. Condensation Resistance Test (CRF): Test unit for thermal performance in accordance with AAMA 1503- 98 with condensation resistance factor of at least 60.
       6. Thermal Transmittance Test (Conductive U-Value): Test unit in accordance with AAMA 1503-98 with U- value of 0.43 or less.
       7. Forced Entry Resistance Test: Unit tested in accordance with ASTM F 588 for Type B Grade 10.
  1. SUBMITTALS
     1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
     2. Product Data: Manufacturer's data sheets on each product to be used, including:
        1. Preparation instructions and recommendations.
        2. Storage and handling requirements and recommendations.
        3. Installation methods.
     3. Shop Drawings: Show dimensions of aluminum windows, elevations, details of all window sections, anchorage and installation details, hardware, and interface with other products.

\*\* NOTE TO SPECIFIER \*\* Delete selection samples if colors have already been selected.

* + 1. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
    2. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.
    3. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
    4. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic cleaning and maintenance of all components.
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Minimum ten years experience producing aluminum windows of the type specified.
     2. Installer Qualifications: Use installers that are experienced and skilled in the installation of aluminum windows of the type specified.

\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
       1. Finish areas designated by Architect.
       2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
       3. Refinish mock-up area as required to produce acceptable work.
  1. DELIVERY, STORAGE, AND HANDLING
     1. Store products in manufacturer's unopened packaging until ready for installation.
     2. Store and handle windows and other components in strict compliance with manufacturer's instructions.
     3. Protect units against damage from the elements, construction activities and other hazards before, during, and after installation.
  2. SEQUENCING
     1. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.
     2. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
  3. PROJECT CONDITIONS
     1. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.
  4. WARRANTY
     1. Provide manufacturer's limited 5 year warranty against defects in workmanship and materials.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: DeSCo Architectural Inc., which is located at: 716 3rd St. S. E.; De Smet, SD 57231; Toll Free Tel: 800-952-5534; Tel: 605-854-9126; Fax: 605-854-9127; Email: [request info (sales@descoarc.com)](https://admin.arcat.com/users.pl?action=UserEmail&company=DeSCo+Architectural+Inc.&coid=31938&rep=&fax=605-854-9127&message=RE:%20Spec%20Question%20(08520des):%20%20&mf=); Web: <http://www.descoarc.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

\*\* NOTE TO SPECIFIER \*\* Edit the following General paragraphs as required and applicable to project LEED requirements. Coordinate project locations for applicable regional credits. Delete the paragraphs that are not applicable or if LEED is not applicable.

* 1. MATERIALS
     1. Aluminum Extrusions: 6063 T-5 alloy with minimum ultimate tensile strength of 22,000 PSI.
     2. Sheet Aluminum: ASTM B 209; 5005 alloy, H15 or H34 temper.
     3. Fasteners: Aluminum, stainless steel or other materials warranted by the manufacturer to be non-corrosive and compatible with aluminum window members, trim, hardware, anchors and other components of the window units.
     4. Glazing: Coordinate with glass and glazing materials as follows:
        1. Insulated and sheet glass as specified in Section 08 83 13 - Mirrored Glass Glazing.

\*\* NOTE TO SPECIFIER \*\* Select the Aluminum Windows required for the project from the following paragraphs and delete those that are not applicable.

* 1. ALUMINUM WINDOWS
     1. i65 Series
        1. General:
           1. Frame Depth: 2-9/16 inches (65 mm).
           2. Typical Material Thickness: .094 inch.
           3. Frame Construction: Tubular.

Frame corners mitered, crimped and epoxy welded. Mullions mortise and tenon.

Corners weather sealed with sealant.

Units are re-glazable from the interior with re-useable snap in stops.

* + - * 1. Sash Construction:

Sash corners mitered, crimped and epoxy welded.

Corners weather sealed with sealant.

Dual weather strip with closed cell foam.

Units are re-glazable from the interior with re-useable snap in stops.

* + - * 1. Thermal Break: Thermal break provided by a continuously extruded, multi-directional 25 percent glass fiber reinforced 6/6 polyamide nylon (Strip). Aluminum window framing members separated with a locking mechanical connection to the Thermal Strip(s) by properly knurling the aluminum cavity and crimping the strip(s) into place to create a composite thermal barrier assembly. Structural performance values of the Thermal Barrier assembly to meet specific product/project design criteria or at a minimum certified testing criteria and procedures as described by the AAMA TIR-A8 performance standards. Other thermal barrier assemblies such as rolled-in PVC, single or bi directional glass fiber-reinforced polyamides, or pour-and-debridged polyurethane systems will not be accepted.
        2. Glazing Thickness: 1/4 inch, 1 inch and 1-3/4 inches (6 mm, 25 mm and 44 mm)
        3. Weatherstrip: Closed cell Santoprene foam encapsulated by a seamless Santoprene elastomeric skin.
      1. Project-Out:
         1. Specs:

AAMA Designation: P-HC100; P-AW100

ASTM F 588 (Forced Entry) Grade 10

U-Value-0.43

Water Resistance: 15 PSF

* + - * 1. Size Limitations:

With cam handles - Minimum Size 14 inches wide by 14 inches high. Maximum Size 60 inches wide by 36 inches high.

With roto operators - Minimum Size 24 inches wide by 16 inches high. Maximum Size 60 inches wide by 36 inches high.

* + - * 1. Screens: Frame shall be constructed of 6063 T-5 alloy extruded aluminum.

Fiberglass 18x16 Mesh

Aluminum 18x16 Mesh

* + - * 1. Hardware:

Standard: Cam handles and 4-bar stainless steel balanced arms.

Optional: Custodial locks, locking handles, pivot shoe roto operators, push bars, friction adjusters, limited opening device, limit stops, ADA hardware or screens as specified.

* + - 1. Project-In:
         1. Specs:

AAMA Designation: P-HC100; P-AW100

ASTM F 588 (Forced Entry) Grade 10

U-Value 0.41

Water Resistance: 15 PSF

* + - * 1. Size Limitations:

With cam handles - Minimum Size 14 inches wide by 14 inches high. Maximum Size 60 inches wide by 36 inches high.

* + - * 1. Flat Screens: Frame shall be constructed of 6063 T-5 alloy extruded aluminum.

Fiberglass 18x16 Mesh

Aluminum 18x16 Mesh

* + - * 1. Hardware:

Standard: Cam handles with concealed 4-bar stainless steel balanced arms.

Optional: Custodial locks, locking handles, pivot shoe roto operators, push bars, friction adjusters, limited opening device, limit stops, ADA hardware or screens as specified.

* + - 1. Casement
         1. Specs:

AAMA Designation: C-HC100; C-AW100

ASTM F 588 (Forced Entry) Grade 10

U-Value 0.43

Water Resistance: 15 PSF

* + - * 1. Size Limitations:

With roto operators - Minimum Size 16 inches wide by 24 inches high. Maximum Size 36 inches wide by 60 inches high.

* + - * 1. Flat Screens: Frame shall be constructed of 6063 T-5 alloy extruded aluminum.

Fiberglass 18x16 Mesh

Aluminum 18x16 Mesh

* + - * 1. Hardware:

Standard: Cam handles and 4-bar stainless steel balanced arms.

Optional: Concealed 4-bar stainless steel balanced arms or egress hinges, cam handles, custodial locks, friction adjustors, limited opening devices, limit stops or screens as specified.

* + - 1. Fixed:
         1. Specs:

AAMA Designation: F-HC100; F-AW100

ASTM F 588 (Forced Entry) Grade 10

U-Value: 0.29

Water Resistance: 15 PSF

* + - * 1. Size Limitations:

Minimum Size 14 inches wide by 14 inches tall. Maximum Size (Contact DeSCo Architectural, Inc.)

* + - 1. Accessories:
         1. Extruded Aluminum Sill:

5 inches deep

3-1/2 inches deep

* + - * 1. Two Piece Mullion Cover: Aluminum
        2. Snap Trim:

1-3/4 inches by 3/4 inch

1-1/2 inch by 1-1/2 inch

3-1/2 inch by 1 inch

* + 1. i85 Series
       1. General:
          1. Frame Depth: 3-3/8 inches (85 mm).
          2. Typical Material Thickness: .094 inch.
          3. Frame Construction: Tubular.

Frame corners mitered, crimped and epoxy welded. Mullions mortise and tenon.

Corners weather sealed with sealant.

Units are re-glazable from the interior with re-useable snap in stops.

* + - * 1. Sash Construction:

Sash corners mitered, crimped and epoxy welded.

Corners weather sealed with sealant.

Dual weather strip with closed cell foam.

Units are re-glazable from the interior with re-useable snap in stops.

* + - * 1. Thermal Break: Thermal break provided by a continuously extruded, multi-directional 25 percent glass fiber reinforced 6/6 polyamide nylon (Strip). Aluminum window framing members separated with a locking mechanical connection to the Thermal Strip(s) by properly knurling the aluminum cavity and crimping the strip(s) into place to create a composite thermal barrier assembly. Structural performance values of the Thermal Barrier assembly to meet specific product/project design criteria or at a minimum certified testing criteria and procedures as described by the AAMA TIR-A8 performance standards. Other thermal barrier assemblies such as rolled-in PVC, single or bi directional glass fiber-reinforced polyamides, or pour-and-debridged polyurethane systems will not be accepted.
        2. Glazing Thickness: 1 inch and 1-3/4 inches (25 mm and 44 mm)
        3. Weatherstrip: Closed cell Santoprene foam encapsulated by a seamless Santoprene elastomeric skin.
      1. Project-Out:
         1. Specs:

AAMA Designation: P-HC100; P-AW100

ASTM F 588 (Forced Entry) Grade 10

U-Value 0.29

Water Resistance: 15 PSF

* + - * 1. Size Limitations:

With cam handles - Minimum Size 14 inches wide by 14 inches high. Maximum Size 60 inches wide by 36 inches high.

With roto operators - Minimum Size 24 inches wide by 18 inches high. Maximum Size 60 inches wide by 36 inches high.

* + - * 1. Wicket Screens: Frame shall be constructed of 6063 T-5 alloy extruded aluminum.

Fiberglass 18x16 Mesh

Aluminum 18x16 Mesh

* + - * 1. Hardware:

Standard: Cam handles with concealed 4-bar stainless steel balanced arms.

Optional: Custodial locks, spring latch, pole ring handles, locking handles, friction adjusters, limited opening device, limit stops, ADA hardware or screens as specified.

* + - 1. Project-In:
         1. Specs:

AAMA Designation: P-HC 100, P-AW100

ASTM F 588 (Forced Entry) Grade 10

U-Value 0.38

Water Resistance: 15 PSF

* + - * 1. Size Limitations:

With cam handles - Minimum Size 14 inches wide by 14 inches high. Maximum Size 60 inches wide by 36 inches high.

* + - * 1. Flat Screens: Frame shall be constructed of 6063 T-5 alloy extruded aluminum.

Fiberglass 18x16 Mesh

Aluminum 18x16 Mesh

* + - * 1. Hardware:

Standard: Cam handles with concealed 4-bar stainless steel balanced arms.

Optional: Custodial locks, spring latch, pole ring handles, locking handles, friction adjusters, limited opening device, limit stops, ADA hardware or screens as specified.

* + - 1. Casement
         1. Specs:

AAMA Designation: C-HC100; C-AW100

ASTM F 588 (Forced Entry) Grade 10

U-Value 0.39

Water Resistance: 15 PSF

* + - * 1. Size Limitations:

With roto operators - Minimum Size 16 inches wide by 24 inches high. Maximum Size 36 inches wide by 60 inches high.

* + - * 1. Flat Screens: Frame shall be constructed of 6063 T-5 alloy extruded aluminum.

Fiberglass 18x16 Mesh

Aluminum 18x16 Mesh

* + - * 1. Hardware:

Standard: Cam handles with concealed 4-bar stainless steel balanced arms.

Optional: Custodial locks, spring latch, pole ring handles, locking handles, friction adjusters, limited opening device, limit stops, ADA hardware or screens as specified.

* + - 1. Fixed:
         1. Specs:

AAMA Designation: F-HC100; F-AW100

ASTM F 588 (Forced Entry) Grade 10

U-Value: 0.29

Water Resistance: 15 PSF

* + - * 1. Size Limitations:

Minimum Size 14 inches wide by 14 inches tall. (Maximum Size - Contact DeSCo Architectural, Inc.)

* + - 1. Accessories:
         1. Extruded Aluminum Sill:

5 inches deep

3-1/2 inches deep

* + - * 1. Two Piece Mullion Cover: Aluminum
        2. Snap Trim:

1-3/4 inches by 3/4 inch

1-1/2 inch by 1-1/2 inch

3-1/2 inch by 1 inch

* 1. FABRlCATlON
     1. Shop Assembly: Fabricate and assemble units with joints only at intersection of aluminum members with uniform hairline joints; rigidly secure, and seal in accordance with manufacturer's written recommendations.
     2. Hardware shall be installed in accordance with the manufacture's written instructions.
     3. Fabricate components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
     4. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof where required.
     5. Prepare components to receive anchor devices. Fabricate anchors.
     6. Arrange fasteners and attachments to ensure concealment from view.
     7. Prepare components with internal reinforcement for operating hardware.
     8. Permit internal drainage weep holes and channels to migrate moisture to exterior. Furnish internal drainage of glazing spaces to exterior through weep holes.
     9. Assemble insect screen frame, miter and reinforce frame corners. Fit mesh taut into frame and secure. Fit frame with four spring loaded steel pin retainers.
     10. Weatherstrip all operable units.
     11. Factory glaze window units. Install glass in accordance with Section 08 83 13 - Mirrored Glass Glazing, to glazing method required to achieve performance criteria.

\*\* NOTE TO SPECIFIER \*\* Select the following finish paragraphs required and delete the ones not required.

* 1. FINISHES
     1. Shop finish aluminum window components as follows"
        1. Architectural Class II Anodic (204-R1) AA M12-C22-A31 Thickness to be .4 mil and shall conform to AAMA 611.
           1. Color: Clear Anodized (Standard)
        2. Architectural Class I Anodic (215-R1) AA M12-C22-A41 Thickness to be .7 mil and shall conform to AAMA 611.
           1. Color: Clear Anodized.
        3. Architectural Class I Anodic with electrostatically deposited color AA-M12-C22-A44. Thickness to be .7 mil and shall conform to AAMA 611.
           1. Color: Dark Bronze Anodized.
           2. Color: Medium Bronze Anodized.
           3. Color: Black Anodized.
           4. Color: As selected by Architect from manufacturer's standard colors.
        4. Baked acrylic enamel organic finish electrostatically applied over pretreated aluminum. Finish shall be a one coat, one bake paint system with a .8 mil minimum overall dry film thickness and shall conform to AAMA 2603-98.
           1. Color: Bronze Paint.
           2. Color: White Paint.
           3. Color: As selected by Architect from manufacturer's standard colors.
        5. High performance organic finish electrostatically applied over pretreated aluminum. Finish shall be based on 50 percent fluoropolymer resin and be applied as a two coat, two bake paint system with a 1.2 mil minimum thickness and shall conform to AAMA 2604. (Some colors may require a clear protective topcoat to protect the pigmented coating.
           1. Color: As selected by Architect from manufacturer's custom colors.
        6. High performance organic finish electrostatically applied over pretreated aluminum. Finish shall be based on 70 percent fluoropolymer resin and be applied as a two coat, two bake paint system with a 1.2 mil minimum thickness and shall conform to AAMA 2605. (Some colors may require a clear protective topcoat to protect the pigmented coating.
           1. Color: As selected by Architect from manufacturer's custom colors.

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until substrates have been properly prepared.
      2. Verify that openings are dimensionally correct and within allowable tolerances.
      3. Openings must be plumb, level, and clean.
      4. Verify that anchoring surface is in accordance with approved shop drawings.
      5. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
   2. PREPARATION
      1. Clean surfaces thoroughly prior to installation.
      2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
   3. INSTALLATION
      1. Install in accordance with manufacturer's instructions.
      2. Plumb and align window faces in a single plane for each wall plane.
      3. Erect windows and materials square and true adequately anchored to maintain positions permanently when subjected to normal thermal and building movement and specified wind loads.
      4. Furnish and apply sealants to provide a weathertight installation at all joints and intersections and at opening perimeters. Wipe off excess material and leave all exposed surfaces and joints clean and smooth.
      5. Glass and glazing shall conform to and be set in accordance with the specifications and drawings to provide a satisfactory, fully leak free installation.
      6. Install vapor barrier materials and insulation between window perimeter and adjoining collateral materials and/or existing wall barriers to assure continuity (optional).
      7. Aluminum shall be insulated from direct contact with steel, masonry concrete or non- compatible materials by bituminous paint, zinc chromate primer or other suitable insulating material.
      8. Adjust units for proper operation.
      9. Set members to provide a weather tight construction.
      10. After completion of window installation, windows shall be inspected, put into working order and left clean, free of labels, dirt or other substances.
   4. CLEANING
      1. Protect installed products until completion of project.
      2. After installation, remove all sealants, caulking, and other materials from all surfaces, including adjacent work.
      3. Thoroughly clean window frames, casings, and glass using materials and methods recommended by the window and glass manufacturer that do not cause defacement of work.
   5. PROTECTION
      1. Protect installed products until completion of project.
      2. Touch-up, repair or replace damaged products before Substantial Completion.
   6. SCHEDULES

\*\* NOTE TO SPECIFIER \*\* Retain Paragraph below if required to suit project requirements. Identify products by name on the Drawings or use this paragraph to define the location of each type of material to be used. The following are some examples of schedule references. Edit as required to suit project or delete and identify products on the Drawings.

* + 1. :
    2. :

END OF SECTION