Guide Specification for Metal Sales Manufacturing Corporation **TLC Series:** TLC-1, TLC-2, TLC-3, TLC-4, TLC-9, TLC-10, TLC-11, TLC-12, TLC-13, TLC-15 and TLC-16.

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Editor Note: Edit document to suit Project requirements and specifier practice. Specifier notes are shown in blue text like this. Optional text [**is shown in bold with brackets like this**]. Locations where language for Project-specific requirements is to be inserted are shown like this: <**insert language**>. Remove specifier notes and unused optional text in final version of the specification document.

Editor Note: The Construction Specifications Institute (CSI) recommends and supports use of its current MasterFormat section title and numbering system, shown below as SECTION 07 42 13 – METAL WALL PANELS. (If using the earlier MasterFormat 1995 section title and numbering designation, the section may be numbered and titled as SECTION 07410 – METAL ROOF AND WALL PANELS).

SECTION 07 42 13 – METAL WALL PANELS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: [**Metal lap-seam wall panels**] [**with concealed fasteners**] [**metal soffit panels**] [**including trim and accessories**].

Editor Note: Revise paragraph below to suit Project requirements. Add section numbers and titles according to CSI MasterFormat and specifier practice. This paragraph is intended for use when a reader might reasonably expect to find work requirements in this Section, but those requirements are located in another, related section.

B. Related Sections: Section(s) related to this section include:

1. <**Insert Work Title**>: <**Insert Division number**> Section <**Insert Section title**>.

Editor Note: Standards numbers and titles in the article below are provided for specifier information and reference. Retain, edit or delete article to suit specifier practice and Project requirements.

1.2 REFERENCES

A. General: Standards listed by reference form a part of this specification section. Standards listed are identified by issuing authority, abbreviation, designation number, title or other designation. Standards subsequently referenced in this Section are referred to by issuing authority abbreviation and standard designation.

B. ASTM International:

1. ASTM A 653 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

2. ASTM A 792 – Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

3. ASTM A 1011 – Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.

4. ASTM B 209 – Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

5. ASTM D 2244 – Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.

6. ASTM D 4214 – Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.

7. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.

8. ASTM E 283 – Standard Test Method for Determining 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, Doors, Skylights and Curtain Walls 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.

C. Underwriters Laboratories (UL):

1. UL 263 - Fire Tests of Building Construction and Materials.

D. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA): "Architectural Sheet Metal Manual."

1.3 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meetings: Conduct preinstallation meeting to clarify Project requirements, substrate conditions, manufacturer’s installation instructions and manufacturer’s warranty requirements.

1.4 ACTION SUBMITTALS

A. Product Technical Data: For each type of product required, including manufacturer's preparation recommendations, storage and handling requirements, and recommended installation methods.

Editor Note: Retain paragraph below if compliance with USGBC LEED is required. Edit to suit Project requirements and applicable version of LEED.

B. LEED Submittal Documentation:

1. Product Data for applicable materials and resources credits: Indicating percentages by weight of post-consumer and pre-consumer recycled content for products having recycled content. Provide a statement indicating cost for each product having recycled content.

C. Shop Drawings: Showing methods of installation, plans, sections, elevations and details of roof and wall panels, specified loads, flashings, vents, sealants, interfaces with all materials not supplied by the metal panel system manufacturer, and identification of proposed component parts and their finishes. Do not proceed with fabrication prior to approval of shop drawings.

D. Samples: Selection and verification samples for finishes, colors and textures. Submit two complete sample sets of each type of panel, trim, clip and fastener required.

E. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics, criteria and physical requirements.

F. Test and Evaluation Reports: Showing compliance with specified performance characteristics and physical properties.

G. Qualifications Statements: For manufacturer and installer.

Editor Note: Retain paragraph below when system design will be provided by an independent professional engineer.

H. Design Submittal: Comply with performance requirements and design criteria, including analysis data and calculations signed and sealed by a qualified professional engineer.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For installed products including maintenance methods and precautions against cleaning materials and methods detrimental to finishes and performance.

B. Warranty: Warranty documents required in this section.

Editor Note: Coordinate article below with Division 01 Closeout Submittals Section.

1.6 MAINTENANCE MATERIAL

A. Extra Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 01 Closeout Submittals Section.

Editor Note: Revise paragraph below specifying size and percentage as required for project.

1. Quantity: Furnish quantity of <**Insert description of units**> units equal to <**Insert percentage**> percent of amount installed. <**Insert any additional requirements**>.

2. Delivery, Storage and Protection: Comply with Owner’s requirements for delivery, storage and protection of extra materials.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Provider of advanced installer training.

2. Minimum of ten years of experience in manufacturing metal wall panel systems.

3. Provider of products produced in a permanent factory environment with fixed roll-forming equipment.

B. Installer Qualifications:

1. At least five years of experience in the installation of metal wall panels.

2. Experience on at least five projects of similar size, type and complexity as this Project that have been in service for a minimum of two years with satisfactory performance of the wall panel system.

3. Employer of workers for this Project who are competent in techniques required by manufacturer for installation indicated and who shall be always supervised when material is being installed.

Editor Note: Retain paragraph below for assemblies constructed either onsite or offsite required for review of construction, coordination of work of multiple sections, testing, or observation of operation. Mock-ups, when accepted or approved, establish standards by which work will be judged.

C. Mock-Ups: Install at Project site a mock-up using required products and manufacturer's approved installation methods. Obtain Owner and Architect approval of finish, color, texture, pattern, trim, fasteners and quality of installation before proceeding with further work.

1. Size: <**Insert mock-up size requirements**>.

2. Maintenance: Maintain mock-up during construction for quality comparison. Remove and lawfully dispose of mock-up construction when no longer required.

3. Incorporation: Mock-up may be incorporated into final construction upon Owner approval.

Editor Note: Retain paragraph below when a preinstallation conference is required.

D. Preinstallation Conference: Conduct a preinstallation conference <**Insert location and other requirements**>.

Editor Note: Retain, edit or delete paragraph below to suit Project requirements.

E. Fire Resistance Ratings: Determined by testing identical products and assemblies according to UL 263 and ASTM E 84 by a testing agency acceptable to authorities having jurisdiction.

1. Flame-Spread Index: [**25 (Class A)**] [**200 (Class C)**] <**Insert index value**> or less.

1.8 DELIVERY, STORAGE AND HANDLING

A. General: Comply with manufacturer’s current printed product storage recommendations.

B. Delivery: Deliver materials in manufacturer’s original, unopened, undamaged containers with identification labels intact.

C. Storage: Store materials above ground, under waterproof covering, protected from exposure to harmful weather conditions and at temperature and humidity conditions recommended by manufacturer. Provide proper ventilation of metal panel system to prevent condensation build-up between each panel and trim or flashing component. Tilt stack to drain in wet conditions. Remove strippable plastic film before storage under high-heat conditions. Store products in manufacturer's unopened packaging until just prior to installation.

D. Handling: Exercise caution in unloading and handling metal panel system to prevent bending, warping, twisting and surface damage.

Editor Note: Coordinate article below with Conditions of the Contract and with Division 01 Closeout Submittals (Warranty) Section.

1.9 WARRANTY

A. Special Exposed Panel Finish Warranty: Manufacturer's standard form PVDF Fluorocarbon System Warranty for film integrity, chalk rating and fade rating in which manufacturer agrees to repair or replace panels that show evidence of deterioration within specified warranty period.

1. Deterioration shall include but is not limited to:

a. Color fading of more than 5 Hunter units when tested according to ASTM D 2244.

b. Chalking more than a No. 8 rating when tested according to ASTM D 4214.

c. Cracking, checking, peeling or failure of paint to adhere to bare metal.

2. Warranty Period: Film integrity for 45 years and chalk and fade rating for 35 years from date of Substantial Completion.

3. Manufacturer’s warranty may exclude surface deterioration due to physical damage and exposure to salt air environments.

Editor Note: Retain paragraph below only if a separate installer warranty is required and edit to suit Project requirements.

B. Special Warranty: Installer's standard form in which installer agrees to repair or replace metal wall panels that fail due to poor workmanship or faulty installation within the specified warranty period.

1. Warranty Period: <**Insert number of years**> years from date of Substantial Completion.

PART 2 PRODUCTS

Editor Note: Add product features, performance characteristics, material standards, and descriptions as applicable. Use of such phrases as "or equal" or "approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "equal" products.

Editor Note: Retain article below when Metal Sales TLC Series (TLC-1, TLC-2, TLC-3, TLC-4, TLC-9, TLC-10, TLC-11, TLC-12, TLC-13, TLC-14, TLC-15 and TLC-16) metal wall panels are required. Edit to suit project requirements.

2.1 METAL WALL PANELS

Editor Note: Contact manufacturer for more information.

A. Basis of Design Product: Subject to compliance with requirements provide Metal Sales Manufacturing Corporation; TLC Series [**TLC-1**] [**TLC-2**] [**TLC-3**] [**TLC-4**] [**TLC-9**] [**TLC-10**] [**TLC-11**] [**TLC-12**] [**TLC-13**] [**TLC-14**] [**TLC-15**] [**TLC-16**].

B. Substitution Limitations: [**No substitutions**] [**All other manufacturers: Submit substitution request in accordance with Section 012500 - "Substitution Procedures"**] <**Insert limitations**>.

Editor Note: Edit to suit Project requirements and coordinate with "Performance Criteria" paragraphs below.

C. Product Options:

1. Panel Coverage: 12 inches (304.8 mm).

2. Panel Depth: 1-1/2 inches (38.1 mm).

Editor Note: Industry designation for material thickness is moving away from "gauge" to decimal thickness in inches. Metal Sales Manufacturing Corporation recommends use of minimum thickness requirements: 0.0236 inch (0.60 mm) for 24 gauge, 0.0296 inch (0.75 mm) for 22 gauge and 0.0356 inch (0.904 mm) for 20 gauge

.

Editor Note: Retain sub-paragraph below when aluminum-zinc alloy-coated steel sheet panels are required. Available thickness varies with panel profile. TLC panels 20 gauge maximum. Select AZ50 for painted material or AZ55 for unpainted material.

3. Material: 24ga or 22 ga, Aluminum-zinc alloy-coated steel sheet, ASTM A 792, [**AZ50**] [**AZ55**] coating designation, structural quality, Grade 50, [**0.0236 inch (0.60 mm)**] [**0.0296 inch (0.75 mm)**] minimum thickness.

4. 20ga, Zinc-coated steel sheet, ASTM A 653, [G90] coating designation, structural quality, Grade 50, [**0.0356 inch (0.904 mm)**] minimum thickness.

Editor Note: Retain sub-paragraph below when aluminum sheet panels are required

5. Material: Aluminum sheet, ASTM B 209, [**0.032 inch (0.81 mm)**] [**0.040 inch (1.02 mm)**] minimum thickness.

6. Finish: [**PVDF (Kynar 500 or Hylar 5000)**] [**Multi-pass PVDF**] [**Marblique**] [**Plastisol**] [**Polyester**].

7. Side Lap: Tongue-in-Groove.

8. Attachment: Concealed, direct fastened.

9. Perforation: [**None**] <**Insert requirements**>.

10. Color: [**As selected by Architect from manufacturer's standard colors**] <**Insert color**>.

2.2 STRUCTURAL PERFORMANCE

Editor Note: Edit subparagraph below to suit Project requirements.

A. Structural Performance Criteria: <**Insert requirements for wind loads and deflection limits**>.

Editor Note: Retain this article if required. Insert requirements for vapor retarders, board insulation, mineral fiber blanket insulation, metal building insulation and other materials.

2.3 FIELD-INSTALLED THERMAL INSULATION

A. General: Refer to and coordinate with requirements in Division 07 - Thermal Insulation.

B. Products: <**Insert requirements**>.

Editor Note: Retain this article if required. Insert appropriate paragraphs in this article for metal wall panel assemblies requiring miscellaneous metal framing. Related products might include hat-shaped furring channels, cold-rolled channels, Z-shaped and C-shaped channels, angles, struts and related fasteners.

2.4 MISCELLANEOUS METAL FRAMING

 A. General: <**Insert requirements**>.

B. Products: <**Insert requirements**>.

1. Material: [**ASTM A 1011 Steel, Grade 55, Class 2, 55 ksi minimum yield strength, with red oxide finish**] [**ASTM A 653 Steel, Grade 55, Class 2, 55 ksi minimum yield strength, with G90 hot-dipped galvanized finish**].

Editor Note: Retain this article if required. Insert appropriate paragraphs in this article for accessory components of metal wall panel assemblies made or approved by manufacturer. Related products might include trims, copings, fascia, corners, closures, clips, flashings, sealants, gaskets, fillers, closure strips, and other items.

2.5 ACCESSORIES

 A. General: <**Insert requirements**>.

B. Products: <**Insert requirements**>.

1. Basis of Design Product: Subject to compliance with requirements provide Metal Sales Manufacturing Corporation.

2. Color: [**As indicated by manufacturer's product designations**] [**As selected by Architect from manufacturer's full product range**] <**Insert color**>.

2.6 SOURCE QUALITY CONTROL

A. Source: Obtain metal wall panels, trim and other accessories from a single manufacturer.

B. Quality Control: Obtain metal wall panels, trim and other accessories from a manufacturer capable of providing on-site technical support and installation assistance.

PART 3 EXECUTION

Editor Note: Retain paragraph below if installation by approved installers is required.

3.1 INSTALLERS

A. <**Insert acceptable installers and contact information**>.

3.2 PREPARATION

A. Miscellaneous Framing: Install furring, angles, sub-purlins, and other miscellaneous wall panel support members and anchorage according to metal wall panel manufacturer's recommendations.

3.3 THERMAL INSULATION INSTALLATION

Editor Note: Retain paragraph below if installation of polyethylene vapor retarder is required.

A. Polyethylene Vapor Retarder: <**Insert requirements**>.

Editor Note: Retain paragraph below if installation of board insulation is required.

B. Board Insulation: <**Insert requirements**>. Comply with installation requirements in Division 07 Section "Thermal Insulation."

Editor Note: Retain paragraph below if installation of blanket insulation is required.

C. Blanket Insulation: <**Insert requirements**>. Comply with installation requirements in Division 07 Section "Thermal Insulation."

3.4 METAL WALL PANEL INSTALLATION

A. General: Comply with panel manufacturer’s installation instructions including but not limited to special techniques, interface with other work, and integration of systems.

B. Fasten metal wall panels to supports with concealed clips at each standing-seam joint at location, spacing, and using proper fasteners as recommended by panel manufacturer.

C. Tolerances: <**Insert requirements**>.

3.5 ACCESSORY INSTALLATION

A. General: Install accessories using techniques recommended by manufacturer and which will assure positive anchorage to building and weather tight mounting. Provide for thermal movement. Coordinate installation with flashings and other components.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and the SMACNA "Architectural Sheet Metal Manual." Provide concealed fasteners where possible and install units to true level. Install work with laps, joints, and seams that will be permanently watertight.

Editor Note: Retain article below if manufacturer site visits are required and edit to suit Project requirements. Consult with manufacturer for services required and establish number and duration of periodic site visits with Owner and manufacturer. Coordinate paragraph below with Division 01 Quality Assurance Section.

3.6 FIELD QUALITY CONTROL

A. Manufacturer’s Field Services: If requested by Owner, provide manufacturer’s field service consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer’s instructions.

1. Site Visits: <**Insert requirements for site visits**>.

3.7 CLEANING

A. Remove temporary coverings and protection of adjacent work areas.

B. Repair or replace any installed products that have been damaged.

C. Clean installed panels in accordance with manufacturer’s instructions prior to Owner’s acceptance.

D. Remove and lawfully dispose of construction debris from Project site.

3.8 PROTECTION

A. Protect installed product and finish surfaces from damage during construction.

END OF SECTION 07 42 13 – METAL WALL PANELS