SECTION 09 50 00

CEILINGS - METAL PANEL, PLANK, BAFFLE, AND BEAM GRID

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\*\* NOTE TO SPECIFIER \*\* Nelson Architectural Metals; Wall and Ceiling Panels, Column Covers, Storage Solutions.
This section is based on the products of Nelson Architectural Metals, which is located at:
1155 Squires Beach Rd.
Pickering, ON, Canada L1W 3T9
Toll Free Tel: 800-277-6897
Tel: 905-428-2240
Fax: 905-428-2392
Email: [request info (architectural@nelsonindust.com)](https://arcat.com/rfi?action=email&company=Nelson%252BArchitectural%252BMetals&message=RE%253A%2520Spec%2520Question%2520(09500nel)%253A%2520&coid=42037&spec=09500nel&rep=&fax=905-428-2392)
Web: <https://nelsonamd.com>
 [ [Click Here](https://arcat.com/company/nelson-architectural-metals-42037) ] for additional information.
Since 1973 Nelson Industrial has been designing and manufacturing high-quality, precision-fabricated metal products for clients throughout North America. NELSON installations can be found everywhere from McDonald's to BMW; and Toronto International Airport to Harvard University.
At our 100,000 square foot facility in Pickering, ON, Nelson manufactures a comprehensive range of standard and customized products through four divisions.
 - Access Doors.
 - Architectural Metals.
 - Contract Manufacturing.
 - Storage Products.
Nelson's state-of-the-art design software, modern production practices and manufacturing equipment enable us to develop a product from concept through to completion under one roof - ensuring quick and efficient management of aggressive delivery schedules, maximization of resource utilization and prompt response to customer needs.

1. GENERAL
	1. SECTION INCLUDES

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

* + 1. Metal Panel Ceilings: Suspension system and associated components as scheduled.
		2. Metal Plank Ceiling: Suspension system and associated components as scheduled.
		3. Metal Beam Grid Ceilings: Suspension system and associated components as scheduled.
	1. RELATED SECTIONS

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

* + 1. Section 09 21 16.33 - Gypsum Board Area Separation Wall Assemblies.
		2. Section 09 51 23 - Acoustical Tile Ceilings.
		3. Section 23 31 13 - Metal Ducts.
		4. Section 23 37 13 - Diffusers, Registers and Grilles.
		5. Section 26 50 00 - Lighting.
		6. Section 26 51 13 - Interior Lighting Fixtures, Lamps, And Ballasts.
	1. REFERENCES

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

* + 1. American Architectural Manufacturer's Association (AAMA):
			1. AAMA 605.2 - Specification for High Performance Finishes.
		2. Aluminum Association (AA):
			1. AA3005 H26 - Aluminum alloy and temper.
			2. AA3003-H14 - Aluminum alloy and temper.
		3. ASTM International (ASTM):
			1. ASTM A 366/A 366M Standard Specification for Commercial Steel (CS) Sheet, Carbon (0.15 Maximum Percent) Cold-Rolled.
			2. ASTM A635 - Standard Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
			3. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate and Flat Bar.
			4. ASTM A636 - Standard Specification for Nickel Oxide Sinter.
			5. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
			6. ASTM B36/B 36M Standard Specification for Brass Plate, Sheet, Strip, and Rolled Bar.
			7. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
			8. ASTM B221/B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2014.
			9. ASTM C423 - Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method 2017.
			10. ASTM C636/C636M - Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels 2013.
			11. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing 2017.
			12. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
			13. ASTM E90 - Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements 2009 (Reapproved 2016).
			14. ASTM E413 - Classification for Rating Sound Insulation 2016.
			15. ASTM E580/E580M - Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Moderate Seismic Restraint.
	1. SUBMITTALS
		1. Submit under provisions of Section 01 30 00 - Administrative Requirements.
		2. Product Data:
			1. Manufacturer's data sheets on each product to be used.
			2. Preparation instructions and recommendations.
			3. Storage and handling requirements and recommendations.
			4. Typical installation methods.
		3. Shop Drawings: submit shop drawings for reflected ceiling plans and coordinating penetrations and ceiling mounted items. Show the following details:
			1. Details and reflected ceiling plans for the metal ceiling system.
			2. Clearly illustrate all components of the metal ceiling system suspension and components.
			3. System assembly details and connections to building components.
			4. Location of light fixtures, diffusers, speakers and other finish items.
			5. Framing and support details for work supported by ceiling suspension system.
			6. List of materials, dimensions, hanger fastenings and special details.

\*\* NOTE TO SPECIFIER \*\* Delete if not applicable to product type.

* + 1. Verification Samples: For each finish product specified, two samples, minimum size 12 inches (305 mm) square, representing actual product, color and patterns.
		2. Certification:
			1. Submit certificates from Beiling Panel manufacturer attesting that products comply with specified requirements, including finish as specified.
			2. Submit list of projects completed. Projects listed shall be of similar type, scope and size, and shall have all necessary contact information for verification by the owner or Architect of Record.
	1. QUALITY ASSURANCE
		1. Manufacturer Qualifications:
			1. Provide metal ceiling components produced by a single manufacturer with resources adequate to deliver a product of consistent quality in terms of appearance and physical properties for all project scopes and scales without risk of delay or interruption.

\*\* NOTE TO SPECIFIER \*\* Delete the next paragraph if a curved ceiling is not specified.

* + - 1. Provide suspension system components produced by a single manufacturer to provide compatible components for a complete curved metal panel ceiling system installation.
		1. Installer Qualifications:
			1. Installation work to be performed by a firm whose personnel have no less than three years of successful experience on projects of similar size, requirements and complexity.
		2. Regulatory Requirements:
			1. Per ASTM E84:
				1. Flame Spread Performance Rating: Class A.

Flame Spread Index: 25 or less.

Smoke Development Rating: 50 or less

* + - 1. Seismic Requirements: Certified to comply with structural, wind uplift, governing codes, and these specifications requirements.
				1. When required, install bracing for seismic restraint per ASTM E580 and local building code.

\*\* NOTE TO SPECIFIER \*\* Include mock-up if the project size or quality warrant the expense. The following is one example of how a mock-up on 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: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
			1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
			2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
			3. Retain mock-up during construction as a standard for comparison with completed work.
			4. Do not alter or remove mock-up until work is completed or removal is authorized.
	1. DELIVERY, STORAGE AND HANDLING
		1. Store products in manufacturer's unopened packaging until ready for installation clearly labeled with the following information: project number, item number and quantity, manufacturer's name and address, client name and address and site address.
		2. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.
		3. Panels shall be protected with strippable PVC protector. Protector to be removed after complete installation is done to prevent damage to the panel during installation.
		4. Store components in a fully enclosed dry space where they will be protected against damage from moisture, direct sunlight, surface contamination and other construction activities.
		5. Comply with prescribed stacking instructions to prevent damage to the components.
		6. Handle components in a manner to prevent damage to the surfaces and edges and prevent distortion and other physical damage.
	2. 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.
		2. Begin system installation only after spaces are enclosed and weather-tight and after all wet work and overhead work has been completed.
		3. Prior to starting installation, allow materials to reach ambient room temperature and humidity intended to be maintained for occupancy.
		4. Coordinate with other work supported by or penetrating through the ceiling.
	3. EXTRA MATERIALS
		1. Provide extra material, in percentage required, matching installed material, in manufacturer's original packages and clearly labeled as attic stock.

\*\* NOTE TO SPECIFIER \*\* Insert percent of installation materials for attic stock required.

* + - 1. Percentage:\_\_\_ percent.
		1. Deliver extra stock and access tools to owner's representative.
1. PRODUCTS
	1. MANUFACTURERS

\*\* NOTE TO SPECIFIER \*\* "Nuvo"-Series Metal Pan Systems are typically offered for flat and curved installations. Nelson Architectural has been dedicated for years, in supplying high quality metal ceiling panels throughout North America. Our manufacturing method has made us one of the leaders in the ceiling industry, by offering a broad range of standard solutions or custom engineering an ideal system to meet your specific needs. Delete options not required.

* + 1. Acceptable Manufacturer: Nelson Architectural Metals, which is located at:
		1155 Squires Beach Rd.
		Pickering, ON, Canada L1W 3T9
		Toll Free Tel: 800-277-6897
		Tel: 905-428-2240
		Fax: 905-428-2392
		Email: [request info (architectural@nelsonindust.com)](https://arcat.com/rfi?action=email&company=Nelson%252BArchitectural%252BMetals&message=RE%253A%2520Spec%2520Question%2520(09500nel)%253A%2520&coid=42037&spec=09500nel&rep=&fax=905-428-2392);Web: <https://nelsonamd.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 \*\* Delete the entire next article if Metal Pan Ceilings are not required.

* 1. METAL PAN CEILING SYSTEM

\*\* NOTE TO SPECIFIER \*\* NuvoPan - LI Nelson's Lay-In panels uses an exposed standard T-bar grid to create a ceiling with easy lift-up access. The panels can be laid flush on the grid or with a projection below the bottom face of the tee (tegular). These popular panels typically are installed into a flat grid, are easy to install and simple to maintain. The Lay-In variety of design, durability and provision of access to the plenum, gives it a strong position in the marketplace. For a large curved area, these panels can also be applied, in particular if narrow side of panels are placed along a large radius. Delete if not required.

* + 1. NuvoPan Lay-In (LI) Panels Series: Easy lift-up access on exposed T-grid ceilings.
			1. Lay-In panel system in an exposed standard flat T-bar grid creating a ceiling with easy lift-up access. Panels can be laid flush with the grid or with a reveal (tegular); typically up to 2 inches (51 mm). For large curved areas, these panels can also be applied, in particular if short sides of panels are placed along the curve.

\*\* NOTE TO SPECIFIER \*\* Delete material options not required.

* + - 1. Material: Aluminum per ASTM B209.
				1. Alloy and Temper: As recommended by aluminum producer and finisher for type of use and finish indicated.
				2. Not less than the strength and durability properties of 3003-H14.
				3. Minimum Thickness: 0.032 inch (0.81 mm). Thickness may be subject to application.
			2. Material: Galvanized Steel per ASTM A653/A653M-05.
				1. Minimum thickness: 0.032 inch (0.81 mm). Thickness may be subject to application.
			3. Material: Stainless Steel per ASTM A666.
				1. Minimum 0.032 inch (0.81 mm). Thickness may be subject to application.
			4. Accessibility: 100 percent accessible. Every panel may be disengaged with an upward motion.

\*\* NOTE TO SPECIFIER \*\* Delete panel size options not required.

* + - 1. Panel Size: Refer to Reflected Ceiling Plan and schedule for custom sizes.
			2. Panel Size: 12 x 12 inches (305 x 305 mm).
			3. Panel Size: 12 x 24 inches (305 x 610 mm).
			4. Panel Size: 12 x 36 inches (305 x 914 mm).
			5. Panel Size: 12 x 48 inches (305 x 1219 mm).
			6. Panel Size: 12 x 60 inches (305 x 1524 mm).
			7. Panel Size: 24 x 24 inches (610 x 610 mm).
			8. Panel Size: 24 x 48 inches (610 x 1219 mm).

\*\* NOTE TO SPECIFIER \*\* Delete panel joints option not required.

* + - 1. Panel Joints: Flush lay-in; panel face installed in-line with grid level.
			2. Panel Joints: Tegular Lay-in; panel face sits below grid level/

\*\* NOTE TO SPECIFIER \*\* Custom drops are also available. Consult manufacturer for specific application. Delete drop options not required.

* + - * 1. Drop: Refer to Reflected Ceiling Plan and schedule for drops.
				2. Drop: 0.350 inch (9 mm) drop.
				3. Drop: 0.500 inch (13 mm) drop.

\*\* NOTE TO SPECIFIER \*\* Delete if hold down device is not required.

* + - * 1. Tegular lay-in with hold down device; for moderate upward load requirements.
			1. Suspension System: Formed steel or aluminum components in the "T" shape with standard main and cross tees.

\*\* NOTE TO SPECIFIER \*\* Delete width options not required.

* + - * 1. Width: 9/16 inch (14 mm) wide.
				2. Width: 15/16 inch (24 mm) wide.
			1. Hanger wire: Minimum 12 Gauge (2.66 mm) pre-stretched galvanized steel wire. Spacing between hanging points cannot exceed 48 inches (1219 mm) on center on the primary suspension.
			2. Accessories: Manufacture custom panels, trim pieces, moldings and other design particularities to match the ceiling panel material, finish and texture.

\*\* NOTE TO SPECIFIER \*\* NuvoPanel - NT Nelson's Noveltee Series use a standard 15/16 inch (24 mm) T-bar grid, but conceals the grid and provides a monolithic appearance. The panels can be butt joint or have a reveal between each panel. These panels are easy to install and simple to maintain. The Noveltee Series ease of installation using a standard 15/16 inch (24 mm) grid makes it ideal for new construction or even remodeling of existing areas. Delete if not required.

* + 1. NuvoPanel Noveltee (NT) Series: Downward demountable access on concealed T-grid ceilings.
			1. Panel system using standard 15/16 inch (24 mm) T-bar grid, but conceals grid providing a monolithic appearance. The panels can be butt joint or with reveals between panels.

\*\* NOTE TO SPECIFIER \*\* Delete material and finish options not required.

* + - 1. Material: Aluminum per ASTM B209.
				1. Alloy and Temper: As recommended by aluminum producer and finisher for type of use and finish indicated.
				2. Not less than the strength and durability properties of 3003-H14.
				3. Minimum Thickness: 0.032 inch (0.81 mm). Thickness may be subject to application.
			2. Material: Galvanized Steel per ASTM A653/A653M-05.
				1. Minimum thickness: 0.032 inch (0.81 mm). Thickness may be subject to application.
			3. Material: Stainless Steel per ASTM A666.
				1. Minimum 0.032 inch (0.81 mm). Thickness may be subject to application.
			4. Spring Clips: Stamped stainless steel.

\*\* NOTE TO SPECIFIER \*\* Delete panel size options not required.

* + - 1. Panel Size: Refer to Reflected Ceiling Plan and schedule for custom sizes.
			2. Panel Size: 12 x 12 inches (305 x 305 mm).
			3. Panel Size: 12 x 24 inches (305 x 610 mm).
			4. Panel Size: 12 x 36 inches (305 x 914 mm).
			5. Panel Size: 24 x 24 inches (610 x 610 mm).
			6. Panel Size: 24 x 48 inches (610 x 1219 mm).
			7. Panel Size: 30 x 30 inches (762 x 762 mm).
			8. Panel Size: 36 x 36 inches (914 x 914 mm).
			9. Panel Size: 48 x 48 inches (1219 x 1219 mm).

\*\* NOTE TO SPECIFIER \*\* Delete panel joints not required.

* + - 1. Panel Joints: Butt (closed) joint.
			2. Panel Joints: Beveled 3/8 inch (8 mm).
			3. Panel Joints: Reveal between panels.

\*\* NOTE TO SPECIFIER \*\* Delete reveal Joint options not required.

* + - * 1. Reveal: Up to 1/4 inch (6 mm) width by 1 1/2 inches (38 mm) depth.
				2. Reveal: 1/2 inch (13 mm) width by 1/2 inch (12 mm) depth.
				3. Reveal: As indicated on drawings.
			1. Suspension System:
				1. Primary Suspension: Roll formed main and cross tees 15/16 inch (24 mm) wide.
				2. Secondary Suspension: 12 Gauge (2.66 mm) pre-stretched galvanized steel wire. Spacing between hanging points on main tees cannot exceed 48 inches (1219 mm) on center.
			2. Accessories:
				1. Trim.
				2. Moldings.
			3. Manufacture custom panels, trim pieces, moldings and other design particularities to match the ceiling panel material, finish and texture.

\*\* NOTE TO SPECIFIER \*\* NuvoPanel - HO Nelson's Hook-On Series use a common 3 inch (76 mm) deep J-channel at each panel joint line in one direction only. The J-channel is attached to a secondary support channel, typically a standard 15/16 inch (24 mm) tee-bar grid or common black iron. The system provides a concealed grid and mostly used where plank style panels are desired. Panels can be butt jointed or have up to 1/4 inch (6 mm) reveal between each panel, typically in long length of the panel. These popular panels are easy to install and removed individually by lifting upward for excess to plenum. The Hook-On Series' variety of design, durability, is ideal for all interior applications. Delete if not required.

* + 1. NuvoPanel Hook-On (HO) Series: Upward demountable panel access on concealed J-grid.
			1. Panel System using a common 3 inch (76 mm) deep J-channel at each panel joint line in one direction only. The J-channel is attached to a secondary support channel, typically a standard 15/16 inch (24 mm) T-bar grid or common Black Iron. System provides a concealed grid similar to the Snap-In System but mostly used for plank type panels. Panels can be butt jointed or have 1/4 inch (6 mm) reveal between each panel, typically in long length of the panel. Panels install and removed by lifting panel upward for access to plenum.

\*\* NOTE TO SPECIFIER \*\* Delete material and finish options not required.

* + - 1. Material: Aluminum per ASTM B209.
				1. Alloy and Temper: As recommended by aluminum producer and finisher for type of use and finish indicated.
				2. Not less than the strength and durability properties of 3003-H14.
				3. Minimum Thickness: 0.050 inch (1.27 mm) Thickness may be subject to application.
			2. Material: Galvanized Steel per ASTM A653/A653M-05.
				1. Galvanized: Zinc-Coated.
				2. Galvannealed: Zinc-Iron Alloy-Coated.
				3. Minimum thickness: 0.050 inch (1.27 mm. Thickness may be subject to application.
			3. Material: Stainless Steel per ASTM A666.
				1. Minimum 0.050 inch (1.27 mm). Thickness may be subject to application.

\*\* NOTE TO SPECIFIER \*\* Delete panel size not required.

* + - 1. Panel Size: Refer to Reflected Ceiling Plan and schedule for custom sizes.
			2. Panel Size (WxL): 12 x 48 to 144 inches (305 x 1220 to 3658 mm).
			3. Panel Size (WxL): 24 x 48 to 144 inches (610 x 1220 to 3658 mm).

\*\* NOTE TO SPECIFIER \*\* Delete panel joint options not required.

* + - 1. Panel Joints: Butt (closed) joint.
			2. Panel Joints: Reveal between panels 1/8 inch (3 mm) c/w. gasket.
			3. Panel Joints: Reveal between panels 1/4 inch (6 mm) c/w gasket.
			4. Suspension System:
				1. Primary Suspension: 14 Gauge (1.98 mm) galvanized 2-1/2 inch (64 mm) J-channel for attachment to secondary suspension noted below or similar. Spacing of J-channels to match panel widths.
				2. Secondary Suspension: 14 Gauge (1.98 mm) galvanized hanger angle 1-1/4 x 1-1/4 x 4 inch (32 x 32 x 102 mm) for attachment to black iron on maximum 48 inch (1220 mm) perpendicular center to J-channel, or standard main and cross tees minimum 15/16 inch (24 mm) wide.
			5. Accessories:
				1. Trim.
				2. Moldings.
			6. Manufacture custom panels, trim pieces, moldings and other design particularities to match the ceiling panel material, finish and texture.

\*\* NOTE TO SPECIFIER \*\* NuvoPanel - TSP Nelson's Torsion Spring Panel System features a monolithic design that gives a 100 percent downward accessibility, making it perfect for interior or exterior use, suitable for both flat and curved installations. Every panel can be demountable with a downward motion followed by the compression of the torsion spring(s) from the slotted tee bar. The system incorporates a concealed grid consisting of pre-slotted extruded aluminum 1-1/2 inch by 1-1/2 inch (38 mm by 38 mm) tee and cross members with hanger wire or attachment to an "Uptight" clip for engagement to a secondary grid (black iron). For exterior applications. The system can be engineered to various degrees of uplift and suction pressures. Delete if not required.

* + 1. NuvoPanel TSP Interior Series: Downward demountable with torsion spring access on extruded T-grid ceilings.
			1. Panel System featuring a monolithic design with 100 percent downward accessibility. Ideal for interior or exterior systems with high end ceilings or soffits. Suitable for flat and curved installations. Every panel can be demountable with a downward motion followed by compression of the torsion springs from the slotted tee bar. System incorporates a concealed grid consisting of pre-slotted extruded aluminum 1-1/2 x 1-1/2 inch (38 x 38 mm) tee and cross members with hanger wire or attachment to a secondary grid (black iron). Can be engineered to various degrees of uplift and suction pressures.

\*\* NOTE TO SPECIFIER \*\* Delete material and finish options not required.

* + - 1. Material: Aluminum per ASTM B209.
				1. Alloy and Temper: As recommended by aluminum producer and finisher for type of use and finish indicated.
				2. Not less than the strength and durability properties of 3003-H14.
				3. Minimum Thickness: 0.032 inch (0.81 mm). Thickness may be subject to application.
			2. Material: Galvanized Steel per ASTM A653/A653M-05.
				1. Minimum thickness: 0.032 inch (0.81 mm). Thickness may be subject to application.
			3. Material: Stainless Steel per ASTM A666.
				1. Minimum 0.032 inch (0.81 mm). Thickness may be subject to application.
			4. Spring Clips: Stamped stainless steel.

\*\* NOTE TO SPECIFIER \*\* Delete panel size options not required.

* + - 1. Panel Size: Refer to Reflected Ceiling Plan and schedule for custom sizes.
			2. Panel Size: 24 x 24 inches (610 x 610 mm).
			3. Panel Size: 24 x 48 inches (610 x 1219 mm).
			4. Panel Size: 24 x 60 inches (610 x 1524 mm).
			5. Panel Size: 24 x 72 inches (610 x 1829 mm).

\*\* NOTE TO SPECIFIER \*\* Delete panel joints not required.

* + - 1. Panel Joints: Butt (closed) joint.
			2. Panel Joints: Beveled 3/8 inch (8 mm).
			3. Panel Joints: Reveal between panels.

\*\* NOTE TO SPECIFIER \*\* Delete reveal Joint options not required.

* + - * 1. Reveal: Up to 1/4 inch (6 mm) width by 1 1/2 inches (38 mm) depth.
				2. Reveal: 1/2 inch (13 mm) width by 1/2 inch (12 mm) depth.
				3. Reveal: As indicated on drawings.
			1. Suspension System:
				1. Primary Suspension: Extruded aluminum T-bar components of 6063-T5 alloy meeting structural requirements as defined in ASTM 635 and ASTM 636 for direct hung ceilings.

When required for application install required bracing for seismic restraint in accordance with ASTM E580 and local building code.

* + - * 1. Secondary Suspension: 18 Gauge 0.050 inch (1.27 mm) galvanized Uptite hanger brackets for attachment to minimum 1-1/2 inch (38.1 mm) black iron on max. 48 inch (1220 mm) perpendicular center to main tees or minimum 12 Gauge (2.66 mm) pre-stretched galvanized steel wire or threaded rods. Spacing between hanging points on main tees not to exceed 48 inches (1219 mm) on center.
				2. Main Tees: 1-1/2 x 1-1/2 inch (38 x 38 mm) factory indexed and slotted to accept cross members and panel mounted torsion springs.
				3. Cross Members: 18 Gauge 0.050 inch (1.27 mm) thick channels.

Lengths: Nominal 24 inches (610 mm) or length required to suit panel width.

Ready to connect to main tees using pre-indexed locator holes for attachment with screws.

* + - 1. Accessories:
				1. Trim.
				2. Moldings.
			2. Manufacture custom panels, trim pieces, moldings and other design particularities to match the ceiling panel material, finish and texture.

\*\* NOTE TO SPECIFIER \*\* NuvoPanel - TSP Exterior Series. Nelson's Torsion Spring Panel System is ideal for interior or exterior system for high end ceilings or soffits, suitable for flat and curved installations. Delete if not required.

* + 1. TSP Exterior Series: Downward demountable with torsion spring access on extruded T-grid ceilings.
			1. A monolithic design giving 100 percent downward accessibility, making it an ideal interior or exterior system for high end ceilings or soffits. Suitable for flat and curved installations. Every panel can be demountable with a downward motion followed by compression of the torsion springs from the slotted tee bar. The system incorporates a concealed grid consisting of pre-slotted extruded aluminum 1-1/2 x 1-1/2 inch (38 x 38 mm) tee and cross members with hanger wire or attachment to a secondary grid (black iron). System can be engineered to various degrees of uplift and suction pressures, making it ideal for exterior use.

\*\* NOTE TO SPECIFIER \*\* Delete material and finish options not required.

* + - 1. Material: Aluminum per ASTM B209.
				1. Alloy and Temper: As recommended by aluminum producer and finisher for type of use and finish indicated.
				2. Not less than the strength and durability properties of 3003-H14.
				3. Minimum Thickness: 0.050 inch (1.27 mm) Thickness may be subject to application.
			2. Material: Galvanized Steel per ASTM A653/A653M-05.
				1. Galvanized: Zinc-Coated.
				2. Galvannealed: Zinc-Iron Alloy-Coated.
				3. Minimum thickness: 0.050 inch (1.27 mm). Thickness may be subject to application.
			3. Material: Stainless Steel per ASTM A666.
				1. Minimum 0.050 inch (1.27 mm). Thickness may be subject to application.

\*\* NOTE TO SPECIFIER \*\* For panels sizes or wind loads greater than this please contact Nelson for a specific design.

* + - 1. Wind Design: Panels of up to 8 sq ft (0.74 sq m) must be capable of withstanding a downward pressure of 25 psf (1.2 kPa) when supported on maximum 24 inch (610 mm) centers.

\*\* NOTE TO SPECIFIER \*\* Delete panel size options not required.

* + - 1. Panel Size: Refer to Reflected Ceiling Plan and schedule for custom sizes.
			2. Panel Size: 24 x 24 inches (610 x 610 mm).
			3. Panel Size: 24 x 36 inches (610 x 914 mm).
			4. Panel Size: 24 x 48 inches (610 x 1219 mm).

\*\* NOTE TO SPECIFIER \*\* Delete panel joint options not required.

* + - 1. Panel Joints: Butt (closed) joint.
			2. Panel Joints: Beveled 3/8 inch (8 mm).
			3. Panel Joints: Reveal between panels.

\*\* NOTE TO SPECIFIER \*\* Delete reveal Joint options not required.

* + - * 1. Reveal: Up to 1/4 inch (6 mm) width by 1 1/2 inches (38 mm) depth.
				2. Reveal: 1/2 inch (13 mm) width by 1/2 inch (12 mm) depth.
				3. Reveal: As indicated on drawings.
			1. Suspension System:
				1. Primary Suspension: Extruded aluminum T-bar components of 6063-T5 alloy meeting structural requirements as defined in ASTM 635 and ASTM 636 for direct hung ceilings.

When required for application install required bracing for seismic restraint in accordance with ASTM E580 and local building code.

* + - * 1. Secondary Suspension: 18 Gauge .050 inch (1.27 mm) galvanized Uptite hanger brackets for attachment to minimum 1-1/2 inch (38.1 mm) black iron on maximum 48 inch (1220 mm) perpendicular center to main tees.
				2. Main Tees: 1-1/2 x 1-1/2 inch (38 x 38 mm) factory indexed and slotted to accept cross members and panel mounted torsion springs.
				3. Cross Members: 18 Gauge 0.050 inch (1.27 mm) thick channels.

Lengths: Nominal 24 inches (610 mm) or length required to suit panel width.

Ready to connect to main tees using pre-indexed locator holes for attachment with screws.

* + - 1. Accessories:
				1. Trim.
				2. Moldings.
			2. Manufacture custom panels, trim pieces, moldings and other design particularities to match the ceiling panel material, finish and texture.

\*\* NOTE TO SPECIFIER \*\* NuvoPanel - TSP Curved Series. Nelson's Torsion Spring Panel System is an ideal interior or exterior system. Delete if not required.

* + 1. TSP Curved:
			1. A monolithic design giving 100 percent downward accessibility, making it an ideal interior or exterior system for high end ceilings or soffits. Suitable for flat and curved installations. Every panel is demountable with a downward motion followed by compression of the torsion springs from the slotted tee bar. The system incorporates a concealed grid consisting of pre-slotted extruded aluminum 1-1/2 x 1-1/2 inch (38 x 38 mm) tee and cross members with hanger wire or attachment to a secondary grid (black iron). System can be engineered to various degrees of uplift and suction pressures, making it ideal for exterior use.

\*\* NOTE TO SPECIFIER \*\* Delete material and finish options not required.

* + - 1. Material: Aluminum per ASTM B209.
				1. Alloy and Temper: As recommended by aluminum producer and finisher for type of use and finish indicated.
				2. Not less than the strength and durability properties of 3003-H14.
				3. Minimum Thickness: 0.040 inch (1.016 mm) Thickness may be subject to application.
			2. Material: Galvanized Steel per ASTM A653/A653M-05.
				1. Galvanized: Zinc-Coated.
				2. Galvannealed: Zinc-Iron Alloy-Coated.
				3. Minimum thickness: 0.040 inch (1.016 mm). Thickness may be subject to application.
			3. Material: Stainless Steel per ASTM A666.
				1. Minimum 0.040 inch (1.016 mm). Thickness may be subject to application.

\*\* NOTE TO SPECIFIER \*\* Delete panel size options not required.

* + - 1. Panel Size: Refer to Reflected Ceiling Plan and schedule for custom sizes.
			2. Panel Size: 24 x 24 inches (610 x 610 mm).
			3. Panel Size: 24 x 48 inches (610 x 1219 mm).
			4. Panel Size: 24 x 72 inches (610 x 1829 mm).

\*\* NOTE TO SPECIFIER \*\* Delete panel joint option not required.

* + - 1. Panel Joints: Butt (closed) joint.
			2. Panel Joints: Reveal between panels.

\*\* NOTE TO SPECIFIER \*\* Delete reveal Joint options not required.

* + - * 1. Reveal: Up to 1/4 inch (6 mm) width by 1 1/2 inches (38 mm) depth.
				2. Reveal: 1/2 inch (13 mm) width by 1/2 inch (12 mm) depth.
				3. Reveal: As indicated on drawings.
			1. Suspension System:
				1. Primary Suspension: Factory brake formed and slotted aluminum channels typically running perpendicular to curve of ceiling.

Aluminum Type: 3003-H14 alloy meeting structural requirements as defined by ASTM 635 and ASTM 636 for direct hung ceilings.

When required for application install bracing for seismic restraint in accordance with ASTM E 580 and local building code.

* + - * 1. Secondary Suspension: 12 Gauge pre-stretched galvanized steel wire or threaded rods; by contractor. Spacing between hanging points on curved main tees cannot exceed 48 inches (1219 mm) on center.
			1. Accessories:
				1. Trim.
				2. Moldings.
			2. Manufacture custom panels, trim pieces, moldings and other design particularities to match the ceiling panel material, finish and texture.

\*\* NOTE TO SPECIFIER \*\* Delete if not required.

* + 1. TSP NUVO Plank Panel Series:
			1. Materials: Aluminum: 3003-H14 alloy suitable for paint or Ourborite, a faux wood finish, or 5005-H14 alloy, used with anodized finishes.
				1. Typical Thickness: 20 Ga; 0.032 inches (0.8 mm).
				2. Finish: Baked polyester powder.
				3. Finish: Two coat fluoropolymer coatings by PPG or Valspar.
				4. Finish: Three coat fluoropolymer coatings by PPG or Valspar.
				5. Finish: Ourborite faux wood veneer. Also Class I or II anodic finishes.

\*\* NOTE TO SPECIFIER \*\* Other panel sizes are available. Contact manufacturer for more information.

* + - 1. Panel Size: (WxH): 24 x 96 inches (610 x 2438 mm)
			2. Panel Lengths: Available up to 10 ft. (3048 mm). Non panelized options available.
			3. Suspension: Designed to attach onto a standard 1-1/2 inch (38 mm) tee bar grid. Alterations can be made to allow for tab-and-slot and hook-on assemblies.

\*\* NOTE TO SPECIFIER \*\* acoustic panels are optional. Delete if not required.

* + - 1. Acoustic Panels: Perforated.

\*\* NOTE TO SPECIFIER \*\* Limited to type of material and gauge chosen. Presently Nelson offers more than fifty different perforation patterns ranging from diagonal, staggered to straight as well as round, square and oblong holes..

* + - * 1. Perforation Patterns: \_\_\_\_\_\_
				2. Perforation Holes: \_\_\_\_\_\_\_\_.
				3. Acoustical Material: Black pre-laminated fleece (SoundTex) bonded to inside surfaces of baffles.

\*\* NOTE TO SPECIFIER \*\* NuvoPlank - T+S Nelson's Plank Series, a tongue and slot system, mirrors the monolithic look of the Hook-On Series, but provide maximum durability in terms of uplift and suction pressures. The Plank Series is typically a progressive system but can be designed to provide intermediate access to plenum through means of access strips or incorporating access doors. System is ideal for large canopy or soffit applications where the need for access to plenum is limited, and durability is premium. Delete if not required.

* + 1. T+S Series: A progressive system with limited downward demountable access on concealed grid while keeping a linear look.
			1. A tab and slot system, combining the monolithic look of the Hook-On Series, yet provides maximum durability in terms of uplift and suction pressures. The Plank Series is typically a progressive system that can be designed to provide access to plenum through means of access strip placed at appropriate intervals or incorporating access doors. Ideal for large canopy or soffit areas where the need for access to plenum is limited.

\*\* NOTE TO SPECIFIER \*\* Delete material and finish options not required.

* + - 1. Material: Aluminum per ASTM B209.
				1. Alloy and Temper: As recommended by aluminum producer and finisher for type of use and finish indicated.
				2. Not less than the strength and durability properties of 3003-H14.
				3. Minimum Thickness: 0.064 inch (1.63 mm) Thickness may be subject to application.
			2. Material: Galvanized Steel per ASTM A653/A653M-05.
				1. Galvanized: Zinc-Coated.
				2. Galvannealed: Zinc-Iron Alloy-Coated.
				3. Minimum thickness: 0.064 inch (1.63 mm). Thickness may be subject to application.
			3. Material: Stainless Steel per ASTM A666.
				1. Minimum 0.064 inch (1.63 mm). Thickness may be subject to application.

\*\* NOTE TO SPECIFIER \*\* For wind loads greater than this please contact Nelson for a specific design.

* + - 1. Wind Load Design: Designed to withstand 30 psf (1.44 kPa) of positive or negative wind pressure when panels are supported at 24 inches (610 mm) on center.

\*\* NOTE TO SPECIFIER \*\* Delete panel size options not required.

* + - 1. Panel Size: Refer to Reflected Ceiling Plan and schedule for custom sizes.
			2. Panel Size (WxL): 12 to 24 x 12 to 120 inches (305 to 610 x 305 to 3048 mm)
			3. Panel Joints: Butt joint.
			4. Suspension System:
				1. Primary Suspension: 0.040 inch (1.0 mm) furring channel 1 x 2.5 inches (25 x 64 mm). Furring Channel Spacing: 36 inches (914 mm) on center maximum. Attach planks to furring channels using specified self-tapping screws.
				2. Secondary Suspension: Horizontal steel members attached directly to solid vertical hangers running perpendicular to primary suspension (furring channels). Sizes and spacing between members to be determined by a professional engineer.
			5. Accessories:
				1. Trim.
				2. Moldings.
			6. Manufacture custom panels, trim pieces, moldings and other design particularities to match the ceiling panel material, finish and texture.
		1. NuvoMesh Expanded Metal Mesh Ceiling Panels:

\*\* NOTE TO SPECIFIER \*\* Delete material and finish options not required.

* + - 1. Aluminum: 003-H14 alloy Flat expanded metal mesh.
				1. Minimum thickness 16 ga; 0.052 inch (1.32 mm)
				2. Finish: Baked polyester powder enamel.

Color: As determined by the Architect from Manufacturer's standard range.

* + - * 1. Finish: Two coat fluoropolymer coatings by PPG or Valspar.

Color: As determined by the Architect from Manufacturer's standard range.

* + - * 1. Finish: Three coat fluoropolymer coatings by PPG or Valspar.

Color: As determined by the Architect from Manufacturer's standard range.

* + - * 1. Finish: Gray polyester prime for field painting.
			1. Carbon Steel: Cold Rolled C1008 Flat expanded metal mesh.
				1. Minimum thickness 18 ga; 0.047 inch (1.19 mm).
				2. Finish: Baked polyester powder enamel.

Color: As determined by the Architect from Manufacturer's standard range.

* + - * 1. Finish: Gray polyester prime for field painting.
			1. Stainless Steel: Typically provided uncoated.
				1. Type 304 flat expanded metal mesh.

Minimum thickness 18 Ga; 0.050 inches (1.27 mm).

Finish: Decorative brushed.

* + - * 1. Type 316 flat expanded metal mesh.

Minimum thickness 18 Ga; 0.050 inches (1.27 mm).

Finish: Decorative brushed.

* + - 1. Dimensions (WxH): Up to 44 x 92 inch (1118 x 2337 mm) inclusive of frame.
			2. Panel Mounting: Lay-in systems.
			3. Panel Mounting: Clip-on; torsion spring systems.
			4. Panel Mounting: Hook-on systems.
			5. Panel Mounting: Tab-and-slot type systems.
			6. Acoustics: Sound absorbing acoustical insulation. Superior NRC values can be achieved via acoustical insulation batts applied on-site.

\*\* NOTE TO SPECIFIER \*\* For complete mesh pattern and panel design options please contact your Nelson Sales Representative to assist with your project design..

* + - 1. Patterns and Designs: \_\_\_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* This article accompanies all prior article in this specification except expanded metal panels. Delete if not required..

* 1. METAL PANEL FABRICATION
		1. Brake form metal panel to fit specified grid module from sheet metals selected for their surface flatness, smoothness, and freedom from surface blemishes where exposed to view in finished unit.
		2. Do not use materials whose exposed surfaces exhibit pitting, seam marks, variations in flatness exceeding those permitted by referenced standards for stretched-leveled metal sheet, stains, discolorations or other imperfections.

\*\* NOTE TO SPECIFIER \*\* Delete the next paragraph if TSP Series ceilings are not specified.

* + 1. Factory attach torsion springs and associated attachment brackets with a minimum of two connections.

\*\* NOTE TO SPECIFIER \*\* Select accessibility constraints. Only T+S Series has limited access, all others are 100 percent accessible.

* + 1. Design system to be 100 percent accessible.
		2. System has limited access at selected locations.
		3. Metal Panel Finish:

\*\* NOTE TO SPECIFIER \*\* Custom finishes such as coil coated, or fluoropolymer are also available.

* + - 1. Finish: Baked polyester powder enamel finish complying with coating manufacturer's written instruction for pre-treatment, application, baking and minimum paint thickness.

\*\* NOTE TO SPECIFIER \*\* Select from Nelson's standard polyester powder enamel color chart. Custom colors available upon request. Insert color required.

* + - 1. Color: \_\_\_\_\_\_\_\_.
			2. Color: As determined by the Architect from Manufacturer's standard range.
			3. Color: As noted and scheduled on the Drawings.
		1. Surface Pattern:

\*\* NOTE TO SPECIFIER \*\* Delete surface pattern options not required. Delete 12 of the next 13 included paragraphs. For a complete list of Nelson's standard perforation patterns, request a copy of Nelson's "Perforations Patterns" data sheet. Additionally Nelson can provide custom perforation patterns upon request. Patterns shown below are a sample from our standard data sheet of the more popular patterns.

* + - 1. Flat: No Surface Pattern.
			2. Straight Pattern No. 3: 0.125 inch (3.17 mm) diameter holes, 0.250 inch (6.35 mm) centers, having a 20 percent open area.
			3. Straight Pattern No. 4: 0.187 inch (4.76 mm) diameter holes, 0.375 inch (9.53 mm) centers, having a 20 percent open area.
			4. Straight Pattern No. 5: 0.250 inch (6.35 mm) diameter holes, 0.500 inch (12.70 mm) centers, having a 20 percent open area.
			5. Diagonal Pattern No. 9: 0.094 inch (2.38 mm) diameter holes, 0.187 inch (4.76 mm) centers, having a 20% open area.
			6. Diagonal Pattern No. 10: 0.138 inch (3.50 mm) diameter holes, 0.266 inch (6.75 mm) centers, having a 20% open area.
			7. Staggered Pattern No. 13: 0.125 inch (3.17 mm) diameter holes, 0.250 inch (6.35 mm) centers, having a 23 percent open area.
			8. Staggered Pattern No. 14: 0.187 inch (4.76 mm) diameter holes, 0.375 inch (9.53 mm) centers, having a 23 percent open area.
			9. Staggered Pattern No. 15: 0.250 inch (6.35 mm) diameter holes, 0.500 inch (12.70 mm) centers, having a 23 percent open area.
			10. Straight Pattern No. 18: 0.250 inch (6.35 mm) square holes, 0.500 inch (12.70 mm) centers, having a 25 percent open area.
			11. Straight Pattern No. 20: 0.500 inch (12.70 mm) square holes, 1.00 inch (25.40 mm) centers, having a 25 percent open area.
			12. Straight Pattern No. 23: 0.125 inch (3.17 mm) by 1.25 inch (31.75 mm) oblong holes on 0.500 inch (12.70 mm) by 1.750 inch (44.45 mm) centers, having a 15 percent open area.
			13. Straight Pattern No. 24: 0.125 inch (3.17 mm) by 2.50 inch (63.50 mm) oblong holes on 0.500 inch (12.70 mm) by 3.500 inch (88.90 mm) centers, having a 15 percent open area.

\*\* NOTE TO SPECIFIER \*\* Delete if Acoustical Panels are not required.

* + 1. Acoustic Material for Perforated Acoustical Panels:
			1. Acoustical Fleece: 0.008 inch (0.2 mm) thick SoundTex by Freudenberg. Non-woven black acoustical textile laminated on back of panel. Class A fire rated.
			2. Perforation Pattern:

\*\* NOTE TO SPECIFIER \*\* Delete two of the next three paragraphs or all three if NRC ratings are not required. NRC values are based on 16 inches (400 mm) space between panel face and the above slab. The values are meant as a guide only. Expect some variance dependent upon actual site conditions. Plenum space less than 12 inches (300 mm) will noticeably reduce effectiveness of acoustical fleece.

* + - * 1. Open Area: 10 to 15 percent. SoundTex Fleece Layer: NRC 0.65.
				2. Open Area: 15 to 20 percent. SoundTex Fleece Layer: NRC 0.70.
				3. Open Area: 20 to 25 percent. SoundTex Fleece Layer: NRC 0.75.

\*\* NOTE TO SPECIFIER \*\* Class "A" per ASTM-84, 1.5 mil thick polyethylene and polyvinyl chloride (PVC) are standard. Available in black, white and clear facings. Some building codes require polyethylene due to its melting characteristics. Delete if not required.

* + - 1. Fully Encapsulated Acoustical Pads: Glass wool fiber completely sealed in incombustible bag and installed with accordion pad spacers placed between the panel back and acoustical pad.

\*\* NOTE TO SPECIFIER \*\* NRC 0.60 to 0.95 dependent upon perforation pattern. Delete if not required.

* + - * 1. 1-1/2 inches (38 mm) thick by 3/4 lbs per cu ft (.05 kg per cu m) density fully encapsulated acoustical pads: NRC as tested with perforation pattern scheduled.

\*\* NOTE TO SPECIFIER \*\* Delete fully encapsulated pads options not required.

* + - 1. Fully Encapsulated Pads: 1.5 inches (38 mm), 3/4 lbs per cu ft (0.05 kg per cu m) density insulation. R value of 5.0.
			2. Fully Encapsulated Pads: 3/4 lbs per cu ft (0.05 kg per cu m) density insulation, thickness as required. R value of 20.
			3. Fully Encapsulated Pads: 3/4 lb. per cu ft (0.05 kg per cu m) density insulation, thickness as required. R value of 30.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required.

* 1. BEAM GRID CEILING SYSTEMS

\*\* NOTE TO SPECIFIER \*\* NuvoGrid: Nelson's Beam Grid Series system is made up of brake formed beams from aluminum or satin galvanized steel, in sizes from 2 inch by 2 inch (50 mm by 50 mm) and up, that interlock to form a visual space grid. The Grid Series system offers flexibility in design choices, module sizes, finishes and plenum masking view, which can create both a decorative and functional open ceiling environment.

* + 1. NuvoGrid: Beam Series system a plenum masking system consisting of brake formed channels (Beams).

\*\* NOTE TO SPECIFIER \*\* Delete material options not required.

* + - 1. Material: Aluminum per ASTM B209.
				1. Alloy and Temper: As recommended by aluminum producer and finisher for type of use and finish indicated.
				2. Not less than the strength and durability properties of 3003-H14.
				3. Minimum Thickness: 0.032 inch (0.81 mm). Thickness may be subject to application.
			2. Material: Galvanized Steel per ASTM A653/A653M-05.
				1. Galvanized: Zinc-Coated.
				2. Galvannealed: Zinc-Iron Alloy-Coated.
				3. Minimum thickness: 0.032 inch (0.81 mm). Thickness may be subject to application.

\*\* NOTE TO SPECIFIER \*\* Delete beam height options not required.

* + - 1. Beam Height: 2 inches (51 mm) nominal.
			2. Beam Height: 4 inches (102 mm) nominal.
			3. Beam Height: \_\_\_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* Delete beam width options not required.

* + - 1. Beam Width: 2 inches (51 mm) nominal.
			2. Beam Width: 4 inches (102 mm) nominal.
			3. Beam Width: \_\_\_\_\_\_\_\_\_.

\*\* NOTE TO SPECIFIER \*\* Select Grid Size. Delete three of the next four paragraphs and insert size if not listed.

* + - 1. Grid Size: Refer to Reflected Ceiling Plan and schedule for custom grid sizes.
			2. Grid Size: 24 x 24 inches (610 x 610 mm).
			3. Grid Size: 36 x 36 inches (914 x 914 mm).
			4. Grid Size: 48 x 48 inches (1220 x 1220 mm).
			5. Grid Size: 60 x 60 inches (1524 x 15240 mm).
			6. Grid Size: \_\_\_ x \_\_\_ inches (\_\_\_ x \_\_\_ mm).
			7. Suspension: 12 gauge pre-stretched galvanized steel wire or 1/4 inch (6 mm) diameter threaded rods (by contractor). Spacing between hanging points on main beams cannot exceed 48 inches (1219 mm) on center. Provide hanger and corner brackets including beam splices as necessary to suspend ceiling grid.
			8. Accessories:
				1. Trim.
				2. Moldings.
			9. Manufacture custom panels, trim pieces, moldings and other design particularities to match the ceiling panel material, finish and texture.

\*\* NOTE TO SPECIFIER \*\* Delete article if not required.

* 1. LINEAR METAL CEILINGS (BAFFLES)
		1. Linear Metal Ceiling System: Panels and baffles, suspension members, trim, and accessories as required to provide a complete system.
			1. Performance and Design Requirements:
				1. Ensure light fixtures will not induce eccentric loads.
				2. Where components may induce rotation of ceiling system components, provide stabilizing reinforcement.
				3. Support imposed loads of indicated items without eccentric loading of supports.
				4. Maximum Deflection: 1/360 of span.
				5. Resist seismic load by using practices specified in ASTM E580.
				6. Surface Burning Characteristics: Flame spread index of Class 1 or Class A, when tested in accordance with ASTM E84.
			2. Components:
				1. Linear Metal Panels:

Type: Torsion spring panel; downward accessible flat panels.

Size and Configuration: As indicated on drawings.

Perforations:

Pattern: \_\_\_\_\_

Open Area: \_\_\_\_\_ percent.

* + - * 1. Linear Metal Baffles: Suspended vertically from suspension members.

Profile: Beam shaped.

Spacing: \_\_\_\_\_ inch (\_\_\_\_\_ mm) reveal between baffles.

Perforations: \_\_\_\_\_\_\_.

Material: Aluminum extrusions, ASTM B221/B221M.

Material: Aluminum sheet, ASTM B209/B209M).

Finish: Anodized. Color: As determined by the Architect from manufacturer's standard range.

* + - * 1. Acoustical Backer: Manufacturer's standard non-woven fabric; as required to achieve specified acoustic performance.
				2. Edge Molding, Expansion Joints, and Splices: Same material, thickness, and finish as linear panels.
				3. End Caps: Formed metal; same color and finish as sight-exposed surfaces of linear panels.
				4. Accessories: Stabilizer bars as required for suspended grid system; sight-exposed surfaces same color and finish as sight-exposed surfaces of linear panels.
				5. Suspension Members: Formed steel sections, with integral attachment points; galvanized finish; size and type to suit application, seismic requirements, and ceiling system flatness requirement specified.
				6. Suspension Wire: Steel, annealed, galvanized finish, 9 gage, 0.1144 inch ( 2.91 mm) diameter.
				7. Suspension Wire: Size and type as required for application, seismic requirements, and ceiling system flatness requirement specified.
				8. Subgirt Members: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G90/Z275 coating; formed to resist imposed loads and to provide attachment for linear ceiling and accessories.
				9. Subgirt Members: Prime painted steel sheet, formed to resist imposed loads and to provide attachment for linear ceiling and accessories.
				10. Insulation: Specified in Section 07 21 19 - Foamed-In-Place Insulation0.
				11. Insulation: ASTM C665, preformed glass fiber batt; friction fit, complying with the following:

Thermal Resistance: \_\_\_\_ R-value (\_\_\_\_ RSI-value ).

Batt Size: \_\_\_\_ x \_\_\_\_ inch (\_\_\_\_ x \_\_\_\_ mm).

Facing: Unfaced.

Facing: Faced on one side with foil.

* + - * 1. Touch-up Paint For Concealed Items: Zinc rich type.
			1. Fabrication:
				1. Shop cut linear panels to accommodate mechanical and electrical items.
				2. Factory-form internal and external corners of same material, thickness, finish, and profile to match exposed linear panels ; back brace internal corners.
		1. NUVO Metal Baffles Ceiling System:
			1. Aluminum: 3003-H14 alloy suitable for paint or Ourborite finish.
				1. Typical Thickness: 20 Ga; 0.032 inches (0.8 mm).
				2. Finish: Baked polyester powder or two or three coat fluoropolymer coatings by PPG or Valspar.

Color: \_\_\_\_\_\_\_\_.

Color: As determined from the Architect from Manufacturer's standard range.

* + - * 1. Finish: Ourborite faux wood veneer.

Wood Type: \_\_\_\_\_\_\_\_.

Wood Type: As determined by the Architect from Manufacturer's standard range.

* + - 1. Aluminum: 5005-H14 alloy, used with anodized finishes.
				1. Typical Thickness: 20 Ga; 0.032 inches (0.8 mm).
				2. Finish: Anodized, Class I
				3. Finish: Anodized, Class II
				4. Anodized Color: As determined from manufacturer's standard range.
			2. Typical Thickness: 20 Ga; 0.032 inches (0.8 mm).
			3. Baffle Cross Sections (WxH): 2 x 4 inches (51 x 102 mm mm)
			4. Baffle Cross Sections (WxH): 2 x 6 inches (51 x 152 mm).
			5. Baffle Cross Sections (WxH): \_\_\_ x \_\_\_ inches (\_\_\_ x \_\_\_ mm).

\*\* NOTE TO SPECIFIER \*\* Baffles are available in any length up to 10 ft ( mm).

* + - 1. Baffle Lengths (inches/mm): \_\_\_\_\_\_\_\_ are available up to 10 ft (3048 mm)

\*\* NOTE TO SPECIFIER \*\* acoustic baffles are optional. Delete if not required.

* + - 1. Acoustic Baffles: Perforated.

\*\* NOTE TO SPECIFIER \*\* Limited to type of material and gauge chosen. Presently Nelson offers more than fifty different perforation patterns ranging from diagonal, staggered to straight as well as round, square and oblong holes..

* + - * 1. Perforation Patterns: \_\_\_\_\_\_
				2. Perforation Holes: \_\_\_\_\_\_\_\_.
				3. Acoustical Material: Black pre-laminated fleece (SoundTex) bonded to inside surfaces of baffles.
			1. Suspension: Designed to attach onto a standard 15/16 inch (24 mm) tee bar grid with a simple pre-mounted baffle clip arrangement.
	1. METAL SECURITY CEILINGS

\*\* NOTE TO SPECIFIER \*\* Designed For Multiple Building Applications Including: Prisons, Police Stations, Courthouses, Health and Care Facilities, Military Barracks, Customs and Border Patrol Facilities, and Short Term Restraint and Secure Rooms.

* + 1. NUVO Guard Engineered and Adaptable Metal Security Ceilings: Variable gauge panels and planks. Specially designed suspension system with tamper resistant frames and grids. Integrates ACUDOR security access panels when required. High Acoustical Values without compromising security or ceiling integrity.
			1. Standards Compliance:
				1. ASTM E84 - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
				2. AAMA 605.2 - Specification for High Performance Finishes.
				3. ASTM A366/A366M - Standard Specification for Commercial Steel (CS) Sheet, Carbon (0.15 Maximum Percent) Cold-Rolled.
				4. ASTM A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
				5. ASTM B36/B36M - Standard Specification for Brass Plate, Sheet, Strip, and Rolled Bar.
				6. ASTM B 209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
			2. Ceiling Type: Panel.
				1. Panel Size: 24 x 24 inch (610 x 610 mm).
				2. Panel size: 24 x 48 inch (610 x 1219 mm).
				3. Panel Size: \_\_\_ x \_\_\_ inch (\_\_\_ x \_\_\_ mm).
				4. Material: Aluminum.
				5. Material: Galvanized steel.
			3. Ceiling Type: Plank.
				1. Plank Size: 12 inch (305 mm).
				2. Plank Size: 18 inch (457 mm).
				3. Material: Aluminum.
				4. Material: Galvanized steel.

\*\* NOTE TO SPECIFIER \*\* Limited to type of material and gauge chosen. Presently Nelson offers more than fifty different perforation patterns ranging from diagonal, staggered to straight as well as round, square and oblong holes..

* + - * 1. Perforation Patterns: \_\_\_\_\_\_
				2. Perforation Holes: \_\_\_\_\_\_\_\_.
			1. Finish: Baked polyester powder enamel finish complying with coating manufacturer's written instruction for pre-treatment, application, baking and minimum paint thickness.

\*\* NOTE TO SPECIFIER \*\* Select from Nelson's standard polyester powder enamel color chart. Custom colors available upon request. Insert color required.

* + - * 1. Color: \_\_\_\_\_\_\_\_.
				2. Color: As determined by the Architect from Manufacturer's standard range.
				3. Color: As noted and scheduled on the Drawings.
			1. Insulation: Factory adhered Black Soundtex pre-laminated fleece acoustical Insulation for high NRC values. Bonded to the non-exposed surface of the ceiling insert. Class A Flame Spread Rating as tested to ASTM E84.

\*\* NOTE TO SPECIFIER \*\* Latches and Locks are optional. Delete if not required.

* + - * 1. Tamperproof security cam latches, cylinder lock and key.

Master Keying: Prepared doors for rim or mortise cylinder locks.

* + - * 1. Struts: Compression type.
				2. Wall Channels: Heavy gauge. Panels to remain in place when an upward force on exposed side is applied
1. EXECUTION
	1. EXAMINATION
		1. Do not begin installation until substrates have been properly prepared.
		2. 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. Verify and confirm ceiling layouts by actual field measurements to balance borders and minimize out-of square conditions. Coordinate all work that penetrates the ceiling.
		3. Ceiling systems shall be centered and balanced spacing, unless indicated otherwise.
		4. Cutouts for lights, speakers, sprinklers or other items shall be factory cut. Cutouts, when done on-site, shall be done by the ceiling installer.
	3. INSTALLATION
		1. Install in accordance with manufacturer's instructions.
	4. PROTECTION
		1. Adjust ceiling components to provide a consistent finish and appearance in conformity with pre-established tolerances and requirements. Panels showing signs of damage, either in finish or in form shall be replaced. Exposed surfaces shall be cleaned of any dirt, grease, fingerprints and marks and other imperfections with cleaning materials recommended by the manufacturer.
		2. Protect installed products until completion of project.
		3. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION