



Metrolinx Level of Information Need Guide (BIM)

MX-ALM-GDC-001

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Preface

This is the first edition of the Metrolinx Level of Information Need Guide (BIM). The LOIN guidance document offers a well-structured process for determining the appropriate level of detail, dimensionality, location, appearance, parametric behaviour, accuracy, and reliability of the various model elements. Metrolinx's minimum Level of Graphical Detail (LOD) and Level of Information (LOI) requirements are stated in this guidance document and structured with respect to the Metrolinx Asset Data Dictionaries.

This standard is directed at Metrolinx Project Delivery Teams (PDT), Consultants and Designers.

This document was developed by the Metrolinx Asset Lifecycle Management, Asset Management and Maintenance Division.

The Metrolinx Level of Information Need Guide (BIM) is available for external users to download via the Metrolinx public download site: www.metrolinx.com/en/metrolinx-technical-standards

Suggestions for revisions or improvements can be sent to Asset Lifecycle Management, Asset Management and Maintenance Division, Attention: Senior Manager of Asset Lifecycle Management. The Senior Manager of Asset Lifecycle Management ultimately authorizes the changes. A description of the proposed change shall be included along with information on the background of the application and any other useful rationale or justification. Proposals for revisions or improvements shall also include your name, company affiliation (if applicable), email address, and phone number.

June 2025

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1. Acronyms and Abbreviations

Abbreviations used in this document are defined below:

Table 1 - Abbreviations

Abbreviation	Definition
BEP	BIM Execution Plan
BIM	Building Information Model
LOA	Level of Accuracy
LOD	Level of Graphical Detail (Geometry)
LOI	Level of Information
LOIN	Level of Information Need
MAL	Master Asset List
PDT	Project Delivery Team

2. Background

LOIN, or Level of Information Need, is a framework that groups requirements related to geometry, information and documentation in BIM projects. It provides a structured approach to define the level of detail, dimensionality, location, appearance, parametric behaviour, accuracy, and reliability of model elements.

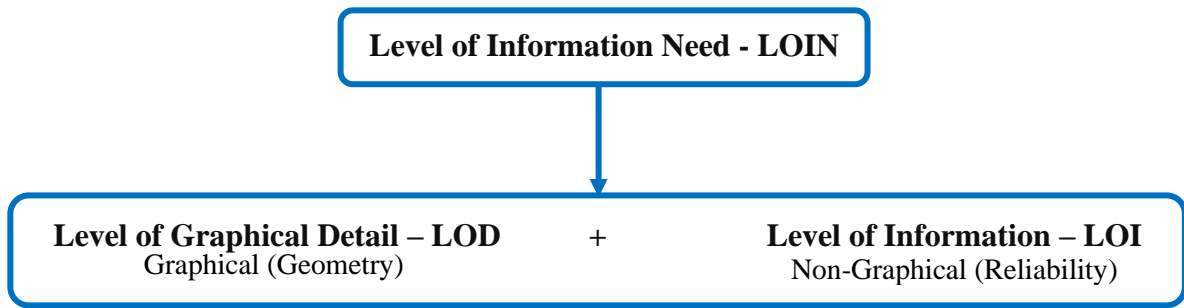


Figure 1: Level of Information Need - LOIN

Table 2 - Levels of LODs and LOIs

Geometry (LOD)	Description	Reliability (on Information) (LOI)	Description
Symbolic	Geometry displaying the existence of a system or element may simply be 2D linework, a symbol, or a massing volume.	Preliminary	Details and information about geometry, properties and function are preliminary. All assumptions made from the geometry will require additional verification.
Generic	Geometry identifiable as a placeholder representing the rough shape and object's general magnitude.	Proposed	Details and information about geometry, properties and function have been considered but not coordinated. Shape, size, location, orientation, quantity, functionality and behaviour can be derived from the model; however, these may be subject to refinement.
Detailed	Geometric extents and shapes necessary to ensure that later modelled components will fit around and within the space available, integrated with major nearby or attached elements.	Coordinated	Details and information about geometry, properties and function are properly defined and coordinated with other disciplines. Shape, size, location, orientation, quantity, functionality and behaviour can be directly measured from the model for construction.
Fabrication	Geometry with sufficient detail to directly fabricate and install from.	As-Built	Verified/validated elements and components to Level of Accuracy: (LOA 10 through 50)

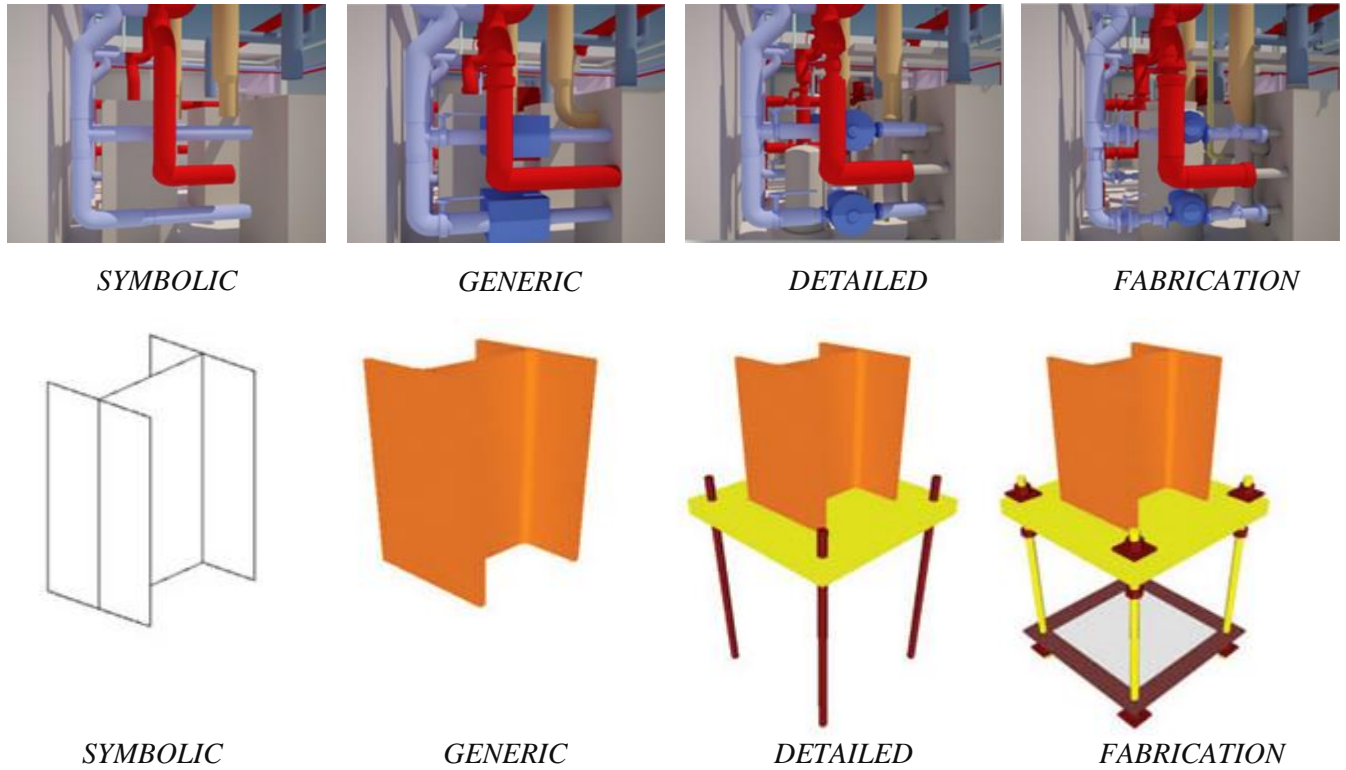


Figure 2: Example of Level of Graphical Detail (LOD) at Various Levels

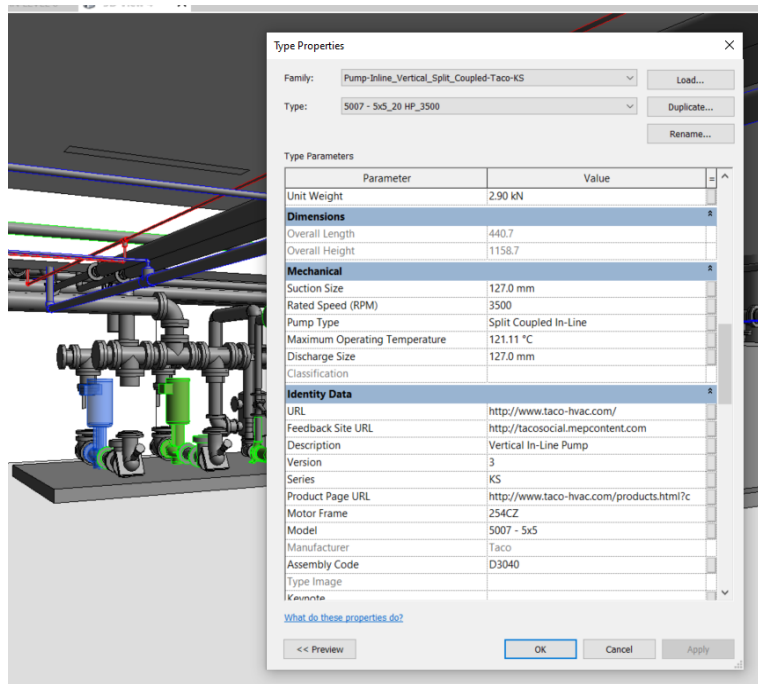


Figure 3: Example of Level of Information (LOI)

3. Instructions

Business-specific protocols need to be followed in conjunction with this guide.

- 1) This LOIN Guide provide minimum requirements for the BIM Objects based on different Asset Classes in regard to the LOD (Level of Graphical Detail) and LOI (Level of Information(reliability)).

4. Instructions Consultant/ Contractor

- 1) Use this guide as a reference and prepare a project-specific LOIN Matrix.
- 2) The Asset Hierarchy and Attribute Table must be read in conjunction with the Asset Class Specific Data Dictionary/MAL available on the [External GO Site](#).
- 3) Project-specific LOIN Matrix must be submitted to the CA for approval and be included in the BEP as an Appendix.
- 4) Consultant/Contractor must define the Uniclass and Unifomat Classification for the objects in their LOIN Matrix and can consult with PDT or Asset Class Owner to understand the level of granularity for the classification.
- 5) If a Consultant/Contractor is using AIA Standards or BIM Forum for Level of Development, Consultant/Contractor can use the table below to map out the different levels between AIA/BIM Forum Levels and LOIN Guide Levels.


Table 3 - Comparison of Different Levels of LODs between AIA/BIMForum/UK Standard vs MX LOIN and Per ISO19650

Per AIA/ BIMForum/UK Standard	Per ISO19650 and Metrolinx LOIN Guide	
LOD (Development)	LoD (Geometry)	Lol (Reliability)
LOD 1/100	Symbolic	Preliminary
LOD 2/200	Symbolic/ Generic	Preliminary
LOD 3/300	Generic/ Detailed	Proposed
LOD 4/350	Detailed	Coordinated
LOD 5/400	Fabricated	Coordinated
LOD 6/500	Fabricated	As-Build

5. LOIN Matrix

The LOIN Matrix defines the LODs and LOIs for mandatory asset as per Metrolinx's Asset Classes at various Program/Project Milestones.

NOTE: The Consultant/Contractor must submit Project Specific LOIN Matrix along with their BEP.

LEVEL OF INFORMATION NEED					<div><div></div><div>METROLINX</div></div> <div>A GUIDE TO DEVELOP THE ASSET INFORMATION MODEL</div> <div><div>Project Information Model (PIM)</div><div>Asset Information Model (AIM)</div></div> <div>M I L E S T O N E S</div> <table><tr><th colspan="2">DESIGN DEVELOPMENT</th><th colspan="4">CONSTRUCTION</th></tr><tr><td>60% DD</td><td>100% DD</td><td>IFC</td><td colspan="3">Handover</td></tr><tr><td>Date</td><td>Date</td><td>Date</td><td colspan="3">Date</td></tr><tr><td>Level of Information Need</td><td>Level of Information Need</td><td>Level of Information Need</td><td colspan="3">Level of Information Need</td></tr></table>								DESIGN DEVELOPMENT		CONSTRUCTION				60% DD	100% DD	IFC	Handover			Date	Date	Date	Date			Level of Information Need	Level of Information Need	Level of Information Need	Level of Information Need		
DESIGN DEVELOPMENT		CONSTRUCTION																																		
60% DD	100% DD	IFC	Handover																																	
Date	Date	Date	Date																																	
Level of Information Need	Level of Information Need	Level of Information Need	Level of Information Need																																	
<div>GEOMETRY (LOD)</div> <div>SYMBOLIC (S) Geometry displaying the existence of a system or element - may simply be 2D linework, a symbol, or a massing volume.</div> <div>GENERIC (G) Geometry identifiable as a placeholder representing the rough shape and object's general magnitude.</div> <div>DETAILED (D) Geometric extents and shapes necessary to ensure that later modeled components will fit around and within the space available, integrated with major nearby or attached elements.</div> <div>FABRICATION (F) Geometry with sufficient detail to directly fabricate and install from.</div>	<div>RELIABILITY (on information) (LOI)</div> <div>PRELIMINARY (Pre)Details and information about geometry, properties and function are preliminary. All assumptions made from the geometry will require additional verification.</div> <div>PROPOSED (Pro)Details and information about geometry, properties and function have been considered but not coordinated. Shape, size, location, orientation, quantity, functionality and behavior can be derived from the model however may be subject to refinement.</div> <div>COORDINATED (Co)Details and information about geometry, properties and function are properly defined and coordinated with other disciplines. Shape, size, location, orientation, quantity, functionality and behavior can be directly measured from the model for construction.</div> <div>AS-BUILT (As) Verified/validated elements and components to Level of Accuracy: (LOA 10 through 50). Asset Data required for O & M of the asset must be stored within the respective model elements.</div>				UNIFORMAT	UNICLASS	SYSTEM/COMPONENT	RELEVANT ATTRIBUTE TABLE	LoD	LoI	LoD	LoI	LoD	LoI	LoD	LoI	Remarks																			
							Civil Structure Systems	Attributes - Civil, Tunnels																												
						En_80_94_05	Arch	Attributes - Civil																												
							Extrados		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required																			
		Intrados		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required																								
	Ss_20_50_30_80	Spandrel Wall		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required																								
	Ss_20_50_10_95	Arch Wings		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required																								
	Ss_20_50_20	Pier		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required																								
		Skewback		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required																								
	Ss_20_50_10	Abutment		G	Pre	G	Pro	D	Co	D	As	Rebar/Reinforcement Model not required																								
	Ss_25_15_60	Parapet		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required																								
	Ef_30_60	Pavement		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required																								
		Bridge System	Attributes - Civil																																	
		Railway Bridge																																		
	EF_20_50_10	Deck																																		
	Pr_25_30_36	Handrail		G	Pre	G	Pro	D	Co	D	As	Rebar/Reinforcement Model not required																								
	Pr_65_70_46	Grounding Wires		G	Pre	G	Pro	D	Co	D	As	Rebar/Reinforcement Model not required																								
	Pr_25_93_45	Curbs		G	Pre	G	Pro	D	Co	D	As	Rebar/Reinforcement Model not required																								
	Pr_20_85_88_06	Deck Slab		G	Pre	G	Pro	D	Co	D	As	Rebar/Reinforcement Model not required																								

	Pr_35_90_09	Expansion Joints		G	Pre	G	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_20_10_30	Super-Structure										
	Ss_20_20_75	Beams		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		Secondary Members		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		Diaphragms		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_25_15_60	Parapets		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_20_50	Sub-Structure										
	Ss_20_50_10	Abutment		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_20_50_25_16	Approach		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Pr_20_85_10	Bearing		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Pr_20_85_13	Footing		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_20_50_20	Pier		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		Road Bridge										
	EF_20_50_10	Deck										
	Pr_25_30_36	Handrail		G	Pre	G	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Pr_65_70_46	Grounding Wires		G	Pre	G	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Pr_25_93_45	Curbs		G	Pre	G	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Pr_20_85_88_06	Deck Slab		G	Pre	G	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Pr_35_90_09	Expansion Joints		G	Pre	G	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_20_10_30	Super-Structure										
	Ss_20_20_75	Beams		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		Secondary Members		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		Diaphragms		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_25_15_60	Parapets		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_20_50	Sub-Structure										
	Ss_20_50_10	Abutment		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_20_50_25_16	Approach		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Pr_20_85_10	Bearing		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Pr_20_85_13	Footing		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_20_50_20	Pier		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		Pedestrian Bridge										
	EF_20_50_10	Deck										
	Pr_25_30_36	Handrail		G	Pre	G	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Pr_65_70_46	Grounding Wires		G	Pre	G	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Pr_25_93_45	Curbs		G	Pre	G	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Pr_20_85_88_06	Deck Slab		G	Pre	G	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Pr_35_90_09	Expansion Joints		G	Pre	G	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_20_10_30	Super-Structure										
	Ss_20_20_75	Beams		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		Secondary Members		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		Diaphragms		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_25_15_60	Parapets		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_20_50	Sub-Structure										
	Ss_20_50_10	Abutment		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_20_50_25_16	Approach		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Pr_20_85_10	Bearing		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required

	Pr_20_85_13	<i>Footing</i>		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_20_50_20	<i>Pier</i>		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		Pedestrian Underpass (width ≥ 10ft)		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		Bridge Culvert (width ≥ 10ft)		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		Drainage System	Attributes - Civil									
	Pr_65_52_20	Culverts										If culvert is installed in segments, BIM model must have all the segments and their respective elements
		Head Wall		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		Side Wall		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_20_50_10_95	Wing Wall		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		<i>Embankment</i>			Pre		Pro		Co	D	As	Rebar/Reinforcement Model not required
	Pr_820_85_14_16	Slab		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Pr_820_85_14_17	Base		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		Barrel		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		Manhole		G	Pre	D	Pro	D	Co	D	As	
		Catch Basin		G	Pre	D	Pro	D	Co	D	As	
	Ss_75_30	Signal Structure	Attributes - Civil									
		Signal Bridge		G	Pre	G	Pro	D	Co	D	As	
		Cantilever		G	Pre	G	Pro	D	Co	D	As	
		Signal Mast		G	Pre	G	Pro	D	Co	D	As	
		Low Mast		G	Pre	G	Pro	D	Co	D	As	
	En_80_96_90	Tunnels	Attributes - Tunnels									
		Bored (TBM)		G	Pre	D	Pro	D	Co	D	As	
		Geometry		G	Pre	D	Pro	D	Co	D	As	
		<i>Alignment</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Right of Way/Property</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Clearance Envelope</i>		G	Pre	D	Pro	D	Co	D	As	
		Portals		G	Pre	D	Pro	D	Co	D	As	
		<i>Geo-structures</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Retaining Walls</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Mechanically Stabilized Earth (MSE)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Wing walls</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Lateral support</i>		G	Pre	D	Pro	D	Co	D	As	
		Ancillary Structures		G	Pre	D	Pro	D	Co	D	As	
		<i>Cross Passages (for twin tunnels)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Shafts (Entrance and Exit structures)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Shafts (Ventilation, etc.)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Emergency Exit Buildings (EEB)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Support of Excavation (if permanent function)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Stations</i>		G	Pre	D	Pro	D	Co	D	As	
		Geotechnical Instrumentation & Monitoring		G	Pre	D	Pro	D	Co	D	As	
		<i>Deep benchmarks</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Long-term deformation monitoring instruments</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Long-term groundwater monitoring wells</i>		G	Pre	D	Pro	D	Co	D	As	

		Track Power Substations (TPSS)		G	Pre	D	Pro	D	Co	D	As	
		Track Slab Structure		G	Pre	D	Pro	D	Co	D	As	
		Ground Treatment (pipe umbrella, anchors, etc.)		G	Pre	D	Pro	D	Co	D	As	
		Lining: Precast		G	Pre	D	Pro	D	Co	D	As	
		<i>Precast Concrete Tunnel Lining (PCTL)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Waterproofing gaskets</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Bolts</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Annular grouting</i>		G	Pre	D	Pro	D	Co	D	As	
		Lining: Cast-in-Place		G	Pre	D	Pro	D	Co	D	As	
		<i>Rib and Lagging primary lining</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Shotcreted primary lining</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Waterproofing membrane</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Geotextile Fleece</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Cast-in-Place secondary concrete lining</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Shotcreted secondary lining (alternative)</i>		G	Pre	D	Pro	D	Co	D	As	
		SEM/NATM		G	Pre	D	Pro	D	Co	D	As	
		Geometry		G	Pre	D	Pro	D	Co	D	As	
		<i>Alignment</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Right of Way/Property</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Clearance Envelope</i>		G	Pre	D	Pro	D	Co	D	As	
		Portals		G	Pre	D	Pro	D	Co	D	As	
		<i>Geo-structures</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Retaining Walls</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Mechanically Stabilized Earth (MSE)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Wing walls</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Lateral support</i>		G	Pre	D	Pro	D	Co	D	As	
		Ancillary Structures		G	Pre	D	Pro	D	Co	D	As	
		<i>Cross Passages (for twin tunnels)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Shafts (Entrance and Exit structures)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Shafts (Ventilation, etc.)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Emergency Exit Buildings (EEB)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Support of Excavation (if permanent function)</i>		G	Pre	D	Pro	D	Co	D	As	
		Stations		G	Pre	D	Pro	D	Co	D	As	
		Geotechnical Instrumentation & Monitoring		G	Pre	D	Pro	D	Co	D	As	
		<i>Deep benchmarks</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Long-term deformation monitoring instruments</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Long-term groundwater monitoring wells</i>		G	Pre	D	Pro	D	Co	D	As	
		Track Power Substations (TPSS)		G	Pre	D	Pro	D	Co	D	As	
		Track Slab Structure		G	Pre	D	Pro	D	Co	D	As	
		Ground Treatment (pipe umbrella, anchors, etc.)		G	Pre	D	Pro	D	Co	D	As	
		Lining: Cast-in-Place		G	Pre	D	Pro	D	Co	D	As	
		<i>Rib and Lagging primary lining</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Shotcreted primary lining</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Waterproofing membrane</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Geotextile Fleece</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Cast-in-Place secondary concrete lining</i>		G	Pre	D	Pro	D	Co	D	As	

		<i>Shotcreted secondary lining (alternative)</i>		G	Pre	D	Pro	D	Co	D	As	
		Cut and Cover		G	Pre	D	Pro	D	Co	D	As	
		Geometry		G	Pre	D	Pro	D	Co	D	As	
		<i>Alignment</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Right of Way/Property</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Clearance Envelope</i>		G	Pre	D	Pro	D	Co	D	As	
		Portals		G	Pre	D	Pro	D	Co	D	As	
		<i>Geo-structures</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Retaining Walls</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Mechanically Stabilized Earth (MSE)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Wing walls</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Lateral support</i>		G	Pre	D	Pro	D	Co	D	As	
		Ancillary Structures		G	Pre	D	Pro	D	Co	D	As	
		<i>Cross Passages (for twin tunnels)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Shafts (Entrance and Exit structures)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Shafts (Ventilation, etc.)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Emergency Exit Buildings (EEB)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Support of Excavation (if permanent function)</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Stations</i>		G	Pre	D	Pro	D	Co	D	As	
		Geotechnical Instrumentation & Monitoring		G	Pre	D	Pro	D	Co	D	As	
		<i>Deep benchmarks</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Long-term deformation monitoring instruments</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Long-term groundwater monitoring wells</i>		G	Pre	D	Pro	D	Co	D	As	
		Track Power Substations (TPSS)		G	Pre	D	Pro	D	Co	D	As	
		Track Slab Structure		G	Pre	D	Pro	D	Co	D	As	
		Ground Treatment (pipe umbrella, anchors, etc.)		G	Pre	D	Pro	D	Co	D	As	
		Support of Excavation (if permanent function)		G	Pre	D	Pro	D	Co	D	As	
		<i>Tiebacks</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Secant Piles</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Diaphragm Wall (D-Wall)</i>		G	Pre	D	Pro	D	Co	D	As	
		Tunnel Structure		G	Pre	D	Pro	D	Co	D	As	
		<i>Base Slab</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Structural Walls</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Water Stops</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Waterproofing system</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Precast Concrete Arches</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Arches (alternatives)</i>		G	Pre	D	Pro	D	Co	D	As	
	Ss_75_10_68_68	Communication		G	Pre	G	Pro	D	Co	D	As	
	Pr_60_75_08_02	PA Amplifier		G	Pre	G	Pro	D	Co	D	As	
		Communication Panel		G	Pre	G	Pro	D	Co	D	As	
		Fire System		G	Pre	G	Pro	D	Co	D	As	
		Fire Detection		G	Pre	G	Pro	D	Co	D	As	
		Fire Suppression		G	Pre	G	Pro	D	Co	D	As	
	Ss_65_40	Ventilation		G	Pre	D	Pro	D	Co	D	As	
	Ef_60_40_37	Heat		G	Pre	D	Pro	D	Co	D	As	
	Pr_65_67-16_02	Compressor		G	Pre	G	Pro	D	Co	D	As	

	Pr_65_65_25	Air Duct		G	Pre	D	Pro	D	Co	D	As	
	Pr_65_54	Air Vents		G	Pre	D	Pro	D	Co	D	As	
	Pr_65_67_29	Fan		G	Pre	D	Pro	D	Co	D	As	
	Ss_75_50	Safety		G	Pre	D	Pro	D	Co	D	As	
	SI_20_90_25	Exit Stairs		G	Pre	D	Pro	D	Co	D	As	
		Emergency Egress		G	Pre	D	Pro	D	Co	D	As	
	Ac_90_10_16	Safety Walk Covers		G	Pre	D	Pro	D	Co	D	As	
	Pr_30_59_34	<i>Safety Gate</i>		G	Pre	D	Pro	D	Co	D	As	
	Pr_25_71_57	Noise Barriers	Attributes - Civil	G	Pre	G	Pro	D	Co	D	As	
	Pr_20_93_71	Retaining Wall	Attributes - Civil									
	En_32_40_26	Embankment		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		Ballast Wall		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_20_50_10	Abutments		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
	Ss_30_14_65_83	Subgrade		G	Pre	D	Pro	D	Co	D	As	Rebar/Reinforcement Model not required
		Protection Layer		G	Pre	G	Pro	D	Co	D	As	
	Pr_15_57_35	Geotextile Fabric		G	Pre	G	Pro	D	Co	D	As	
		Drainage	Attributes - Civil									
	Pr_65_52_20	Catchbasin		G	Pre	G	Pro	D	Co	D	As	
		Soaker Pond		G	Pre	G	Pro	D	Co	D	As	
	Pr_65_52_20	Culvert		G	Pre	G	Pro	D	Co	D	As	
	Ss_50_35_06_14	Manhole		G	Pre	G	Pro	D	Co	D	As	
	En_32_95_23	Ditch		G	Pre	G	Pro	D	Co	D	As	
	Ss_50_35_82_41	Inlet		G	Pre	G	Pro	D	Co	D	As	
		Ground Utilities	Attributes - Civil									
		Storm Water Treatment										
	Pr_65_52_01	Manhole		G	Pre	G	Pro	D	Co	D	As	
	Pr_65_52_20	Drainage Catchbasin		G	Pre	G	Pro	D	Co	D	As	
	Ss_50_35_10_08	Subsurface Stormwater Control System (Piping)		G	Pre	G	Pro	D	Co	D	As	
	Pr_65_55_76	Stormwater Oil Grit Separator		G	Pre	G	Pro	D	Co	D	As	
	Pr_65_54	Stormwater Oil Stop Valve		G	Pre	G	Pro	D	Co	D	As	
	Pr_60_50_46_46	Stormwater Fueling Island Spill Tray		G	Pre	G	Pro	D	Co	D	As	
	Pr_65_54_60_20	Stormwater Shutoff Valve		G	Pre	G	Pro	D	Co	D	As	
	Pr_65_55_76_59	Stormwater Oil Water Separator		G	Pre	G	Pro	D	Co	D	As	
		Stormwater Outlaw		G	Pre	G	Pro	D	Co	D	As	
		Stormwater Detention Tank		G	Pre	G	Pro	D	Co	D	As	
	Ss_50_35_80	Storm Sewer										
	Pr_65_55_76	Separator		G	Pre	G	Pro	D	Co	D	As	
	Pr_65_52_20	Drainage Culvert		G	Pre	G	Pro	D	Co	D	As	
	Ss_50_35_06_14	Manhole		G	Pre	G	Pro	D	Co	D	As	
	Pr_65_52_20	Drainage Catchbasin		G	Pre	G	Pro	D	Co	D	As	
	Ss_50_35_10_08	Subsurface Stormwater Control System (Piping)		G	Pre	G	Pro	D	Co	D	As	
	Ss_50_35	Sanitary Sewer										

	Pr_70_55_76_64	Septic Tank		G	Pre	G	Pro	D	Co	D	As	
		Waste Water Lift Station		G	Pre	G	Pro	D	Co	D	As	
	Ss_50_35_06_14	Manhole		G	Pre	G	Pro	D	Co	D	As	
	Ss_50_35_82	Wastewater Collection System (Piping)		G	Pre	G	Pro	D	Co	D	As	
	Pr_75_50_18_17	Control Planel		G	Pre	G	Pro	D	Co	D	As	
	Pr_75_51_17_27	Emergency Stop Button		G	Pre	G	Pro	D	Co	D	As	
	Pr_60_45_90	Mixer		G	Pre	G	Pro	D	Co	D	As	
	Ss_50_75_95	Process Wastewater Treatment System		G	Pre	G	Pro	D	Co	D	As	
	Pr_65_53	Pump		G	Pre	G	Pro	D	Co	D	As	
	Pr_65_55_76	Separator		G	Pre	G	Pro	D	Co	D	As	
		Storage Tank		G	Pre	G	Pro	D	Co	D	As	
		Sump Pit		G	Pre	G	Pro	D	Co	D	As	
	EF_55_70	Water Supply										
	Ss_55_70_95	Domestic Water Distribution System (Piping)		G	Pre	G	Pro	D	Co	D	As	
	Pr_65_54	Check Valve		G	Pre	G	Pro	D	Co	D	As	
	Pr_65_55	Post Indicator Valve		G	Pre	G	Pro	D	Co	D	As	
	Pr_70_55_97_01	Fire Hydrant		G	Pre	G	Pro	D	Co	D	As	
	Ss_50_35_06_14	Manhole		G	Pre	G	Pro	D	Co	D	As	
	Pr_80_51_51_97	Utility Meter		G	Pre	G	Pro	D	Co	D	As	
		Fire Main		G	Pre	G	Pro	D	Co	D	As	
	Pr_65_54_95	Back Flow Preventer		G	Pre	G	Pro	D	Co	D	As	
	Pr_65_54	Check Valve		G	Pre	G	Pro	D	Co	D	As	
	Pr_70_55_98_84	Sprinklers		G	Pre	G	Pro	D	Co	D	As	
	Pr_80_51_51_97	Meters		G	Pre	G	Pro	D	Co	D	As	
		Track	Attributes - Track									
	Ss_80_70_70	Track Bed System										
		Non-Ballasted Track		G	Pre	D	Pro	D	Co	D	As	
	Pr_20_85_88_17	Concrete Slab		G	Pre	D	Pro	D	Co	D	As	
	Pr_20_76_70_70	Double Ties		G	Pre	D	Pro	D	Co	D	As	
	Pr_20_76_71_91	Cast In-place Concrete Turnout & Crossovers		G	Pre	D	Pro	D	Co	D	As	
		Formation		G	Pre	D	Pro	D	Co	D	As	
	Pr_20_85_88_06	Subgrade		G	Pre	D	Pro	D	Co	D	As	
	Pr_15_57_35	Geo-textile		G	Pre	G	Pro	D	Co	D	As	
	Pr_20_85_88	Track Bed		G	Pre	D	Pro	D	Co	D	As	
		Blanket		G	Pre	G	Pro	D	Co	D	As	
	Pr_20_85_88_07	Ballast		G	Pre	G	Pro	D	Co	D	As	
	Pr_20_85_88_17	Concrete Slab		G	Pre	D	Pro	D	Co	D	As	
	Pr_20_85_88_07	Balasted Track Bed		G	Pre	D	Pro	D	Co	D	As	
		Formation		G	Pre	D	Pro	D	Co	D	As	
	Pr_20_85_88_06	Subgrade		G	Pre	D	Pro	D	Co	D	As	
	Pr_20_85_88_06	Sub-ballast		G	Pre	D	Pro	D	Co	D	As	
	Pr_15_57_35	Geotextile Fabric		G	Pre	G	Pro	D	Co	D	As	
	Pr_20_85_88_07	Ballast		G	Pre	D	Pro	D	Co	D	As	

	Pr_20_85_72	Ties		G	Pre	D	Pro	D	Co	D	As	
	Pr_20_85_72_89	Wood		G	Pre	D	Pro	D	Co	D	As	
	Pr_20_85_72_21/22	Concrete Slab		G	Pre	D	Pro	D	Co	D	As	
	Pr_20_85_72_85	Steel		G	Pre	D	Pro	D	Co	D	As	
	Pr_20_85_72_18	Composite		G	Pre	D	Pro	D	Co	D	As	
		Fastening & Fixing System		G	Pre	G	Pro	D	Co	D	As	
	Pr_20_29_70	Fastening System		G	Pre	G	Pro	D	Co	D	As	
		Tie Plates with Spikes on Wood ties		G	Pre	G	Pro	D	Co	D	As	
		Tie Plates with Elastic Fasteners on Wood ties		G	Pre	G	Pro	D	Co	D	As	
		Elastic Fasteners with Shoulders on Concrete Ties		G	Pre	G	Pro	D	Co	D	As	
		Elastic Fasteners on Steel Ties		G	Pre	G	Pro	D	Co	D	As	
		Elastic Fasteners on Composite Ties		G	Pre	G	Pro	D	Co	D	As	
	Ss_80_70	Rail System		G	Pre	D	Pro	D	Co	D	As	
	Pr_20_76_70	Rail (Running)		G	Pre	D	Pro	D	Co	D	As	
		Guard Rail		G	Pre	D	Pro	D	Co	D	As	
	Pr_20_76_71_91	Turnouts		G	Pre	D	Pro	D	Co	D	As	
		Third Rail		G	Pre	D	Pro	D	Co	D	As	
		Signals	Attributes - Signals									
		Cable		G	Pre	D	Pro	D	Co	D	As	
		Ethernet		G	Pre	D	Pro	D	Co	D	As	
		Fiber		G	Pre	D	Pro	D	Co	D	As	
		Cameras		G	Pre	D	Pro	D	Co	D	As	
		CCTV Camera		G	Pre	D	Pro	D	Co	D	As	
		Cards		G	Pre	D	Pro	D	Co	D	As	
		Bi Simulation Coupler		G	Pre	D	Pro	D	Co	D	As	
		Input Card		G	Pre	D	Pro	D	Co	D	As	
		I/O Card		G	Pre	D	Pro	D	Co	D	As	
		Communication Interface		G	Pre	D	Pro	D	Co	D	As	
		CPU		G	Pre	D	Pro	D	Co	D	As	
		Display Card		G	Pre	D	Pro	D	Co	D	As	
		Power Card		G	Pre	D	Pro	D	Co	D	As	
		IXC-20S Personality		G	Pre	D	Pro	D	Co	D	As	
		CWD Supply Card		G	Pre	D	Pro	D	Co	D	As	
		Track Card		G	Pre	D	Pro	D	Co	D	As	
		Power Supply Card		G	Pre	D	Pro	D	Co	D	As	
		Data Recorder		G	Pre	D	Pro	D	Co	D	As	
		DAX		G	Pre	D	Pro	D	Co	D	As	
		Output Card		G	Pre	D	Pro	D	Co	D	As	
		Field Interface Board		G	Pre	D	Pro	D	Co	D	As	
		Ground Fault Detector ElectroLogIXS		G	Pre	D	Pro	D	Co	D	As	
		Memory		G	Pre	D	Pro	D	Co	D	As	
		Micro HBD		G	Pre	D	Pro	D	Co	D	As	
		Micro HWD		G	Pre	D	Pro	D	Co	D	As	
		Network Cards		G	Pre	D	Pro	D	Co	D	As	
		PLC		G	Pre	D	Pro	D	Co	D	As	
		Transceiver		G	Pre	D	Pro	D	Co	D	As	
		Comms Manager		G	Pre	D	Pro	D	Co	D	As	

		BCP Comms Manager		G	Pre	D	Pro	D	Co	D	As	
		WAG		G	Pre	D	Pro	D	Co	D	As	
		WCP Comms Manager		G	Pre	D	Pro	D	Co	D	As	
		Control Systems		G	Pre	D	Pro	D	Co	D	As	
		Code Unit		G	Pre	D	Pro	D	Co	D	As	
		Communication Manger		G	Pre	D	Pro	D	Co	D	As	
		Control/Alarms		G	Pre	D	Pro	D	Co	D	As	
		Controls		G	Pre	D	Pro	D	Co	D	As	
		Emergency Control Systems		G	Pre	D	Pro	D	Co	D	As	
		Indicators		G	Pre	D	Pro	D	Co	D	As	
		Interlock Forced Drop Lock		G	Pre	D	Pro	D	Co	D	As	
		Interlocker		G	Pre	D	Pro	D	Co	D	As	
		Interlocker HVCC		G	Pre	D	Pro	D	Co	D	As	
		Interlocker Indicators		G	Pre	D	Pro	D	Co	D	As	
		Interlocker Lever		G	Pre	D	Pro	D	Co	D	As	
		Interlocker Locking Bed		G	Pre	D	Pro	D	Co	D	As	
		Interlocker LVCC		G	Pre	D	Pro	D	Co	D	As	
		Interlocker Mechanical Indication		G	Pre	D	Pro	D	Co	D	As	
		Interlocker Mechanical Timer		G	Pre	D	Pro	D	Co	D	As	
		Interlocker Slot		G	Pre	D	Pro	D	Co	D	As	
		Interlocker Tower		G	Pre	D	Pro	D	Co	D	As	
		Local Control Panel		G	Pre	D	Pro	D	Co	D	As	
		Locking Bed		G	Pre	D	Pro	D	Co	D	As	
		Mechanical Indication		G	Pre	D	Pro	D	Co	D	As	
		Solid State Crossing Controller		G	Pre	D	Pro	D	Co	D	As	
		Track Circuit		G	Pre	D	Pro	D	Co	D	As	
		VMICS		G	Pre	D	Pro	D	Co	D	As	
		Detection Sensors		G	Pre	D	Pro	D	Co	D	As	
		Ballast Integrity		G	Pre	D	Pro	D	Co	D	As	
		Dragging Equipment Detector		G	Pre	D	Pro	D	Co	D	As	
		Floats		G	Pre	D	Pro	D	Co	D	As	
		Gas Sensor		G	Pre	D	Pro	D	Co	D	As	
		Ground Fault Detector		G	Pre	D	Pro	D	Co	D	As	
		Heat Detector		G	Pre	D	Pro	D	Co	D	As	
		High Water Detector		G	Pre	D	Pro	D	Co	D	As	
		Hot Wheel Detector		G	Pre	D	Pro	D	Co	D	As	
		Distribution Panel		G	Pre	D	Pro	D	Co	D	As	
		208V Distribution Panel		G	Pre	D	Pro	D	Co	D	As	
		600V Distribution Panel		G	Pre	D	Pro	D	Co	D	As	
		M240 Distribution Panel		G	Pre	D	Pro	D	Co	D	As	
		Electric Panel		G	Pre	D	Pro	D	Co	D	As	
		Load Center		G	Pre	D	Pro	D	Co	D	As	
		Electrical Protection		G	Pre	D	Pro	D	Co	D	As	
		Circuit Breaker		G	Pre	D	Pro	D	Co	D	As	
		Surge Arrestor		G	Pre	D	Pro	D	Co	D	As	
		Equipment House		G	Pre	D	Pro	D	Co	D	As	
		Bungalow Structure		G	Pre	D	Pro	D	Co	D	As	

		Substation Structure		G	Pre	D	Pro	D	Co	D	As	
		Event Recording		G	Pre	D	Pro	D	Co	D	As	
		Event Recorder		G	Pre	D	Pro	D	Co	D	As	
		Extender Module		G	Pre	D	Pro	D	Co	D	As	
		I/O Module		G	Pre	D	Pro	D	Co	D	As	
		Switch FlexStack Module		G	Pre	D	Pro	D	Co	D	As	
		Fire Protection Equipment		G	Pre	D	Pro	D	Co	D	As	
		Fire Suppression System		G	Pre	D	Pro	D	Co	D	As	
		Gate Mechanism		G	Pre	D	Pro	D	Co	D	As	
		Gate Mechanism		G	Pre	D	Pro	D	Co	D	As	
		Gate Mechanism Motor		G	Pre	D	Pro	D	Co	D	As	
		Hold Clear		G	Pre	D	Pro	D	Co	D	As	
		Grounding / Bonding		G	Pre	D	Pro	D	Co	D	As	
		Grounding Grid		G	Pre	D	Pro	D	Co	D	As	
		Hot Box		G	Pre	D	Pro	D	Co	D	As	
		Axle Scanner		G	Pre	D	Pro	D	Co	D	As	
		Hot Wheel Barring Scanner		G	Pre	D	Pro	D	Co	D	As	
		Ultra Sonic		G	Pre	D	Pro	D	Co	D	As	
		Wheel Impact Load Detector		G	Pre	D	Pro	D	Co	D	As	
		HVAC System		G	Pre	D	Pro	D	Co	D	As	
		Air Conditioner		G	Pre	D	Pro	D	Co	D	As	
		Heating Unit		G	Pre	D	Pro	D	Co	D	As	
		IDLOOP		G	Pre	D	Pro	D	Co	D	As	
		IDLOOP		G	Pre	D	Pro	D	Co	D	As	
		Lighting		G	Pre	D	Pro	D	Co	D	As	
		Power-off Light		G	Pre	D	Pro	D	Co	D	As	
		Metering Systems		G	Pre	D	Pro	D	Co	D	As	
		Electrical Meter		G	Pre	D	Pro	D	Co	D	As	
		Gas Meter		G	Pre	D	Pro	D	Co	D	As	
		Propane Meter		G	Pre	D	Pro	D	Co	D	As	
		Water Meter		G	Pre	D	Pro	D	Co	D	As	
		Modems		G	Pre	D	Pro	D	Co	D	As	
		LTE		G	Pre	D	Pro	D	Co	D	As	
		Paradyne		G	Pre	D	Pro	D	Co	D	As	
		Ruggedcom (Siemens)		G	Pre	D	Pro	D	Co	D	As	
		Network Switch		G	Pre	D	Pro	D	Co	D	As	
		Cisco Catalyst 2960 PoE Switch		G	Pre	D	Pro	D	Co	D	As	
		Cisco Nexus 3048 Access Switch		G	Pre	D	Pro	D	Co	D	As	
		Cisco Nexus 3172TQ LAN Switch		G	Pre	D	Pro	D	Co	D	As	
		Core Switch		G	Pre	D	Pro	D	Co	D	As	
		Director Switch		G	Pre	D	Pro	D	Co	D	As	
		Interconnect		G	Pre	D	Pro	D	Co	D	As	
		Network Transfer Switch		G	Pre	D	Pro	D	Co	D	As	
		Power Distribution		G	Pre	D	Pro	D	Co	D	As	
		DC Load Distribution Panel		G	Pre	D	Pro	D	Co	D	As	
		Power D-Rails		G	Pre	D	Pro	D	Co	D	As	
		Transfer Switch		G	Pre	D	Pro	D	Co	D	As	

		Power D-Rails		G	Pre	D	Pro	D	Co	D	As	
		Power D-Rails		G	Pre	D	Pro	D	Co	D	As	
		Power Supply		G	Pre	D	Pro	D	Co	D	As	
		100 KW Generator		G	Pre	D	Pro	D	Co	D	As	
		AC/DC Converter		G	Pre	D	Pro	D	Co	D	As	
		Battery		G	Pre	D	Pro	D	Co	D	As	
		Battery		G	Pre	D	Pro	D	Co	D	As	
		Battery		G	Pre	D	Pro	D	Co	D	As	
		Battery		G	Pre	D	Pro	D	Co	D	As	
		Charger		G	Pre	D	Pro	D	Co	D	As	
		Cisco Catalyst 2960 PoE Switch Power Supply		G	Pre	D	Pro	D	Co	D	As	
		Cisco Nexus 3048 Access Switch Power Supply		G	Pre	D	Pro	D	Co	D	As	
		DC/AC Inverter		G	Pre	D	Pro	D	Co	D	As	
		DC/DC Converter		G	Pre	D	Pro	D	Co	D	As	
		Energy Management System		G	Pre	D	Pro	D	Co	D	As	
		Flywheel UPS		G	Pre	D	Pro	D	Co	D	As	
		Gas		G	Pre	D	Pro	D	Co	D	As	
		Generator Tank		G	Pre	D	Pro	D	Co	D	As	
		Hot Swap Rectifier		G	Pre	D	Pro	D	Co	D	As	
		Panduit Blanking Panel		G	Pre	D	Pro	D	Co	D	As	
		UPS Battery		G	Pre	D	Pro	D	Co	D	As	
		VMICS Power Supply		G	Pre	D	Pro	D	Co	D	As	
		Radios		G	Pre	D	Pro	D	Co	D	As	
		Antenna		G	Pre	D	Pro	D	Co	D	As	
		ATCS/BCP Base Communications Package		G	Pre	D	Pro	D	Co	D	As	
		ATCS/MCP Mobile Communications Package		G	Pre	D	Pro	D	Co	D	As	
		Base Commnications Package		G	Pre	D	Pro	D	Co	D	As	
		Base Station Radio		G	Pre	D	Pro	D	Co	D	As	
		BCM Controller		G	Pre	D	Pro	D	Co	D	As	
		Communication Equipment Radio		G	Pre	D	Pro	D	Co	D	As	
		DC/DC Convertor Radio		G	Pre	D	Pro	D	Co	D	As	
		DTMF		G	Pre	D	Pro	D	Co	D	As	
		Mobile Radio		G	Pre	D	Pro	D	Co	D	As	
		Polly phaser		G	Pre	D	Pro	D	Co	D	As	
		Radio		G	Pre	D	Pro	D	Co	D	As	
		Radio Broadcast Transmission Tower		G	Pre	D	Pro	D	Co	D	As	
		RF Duplexer		G	Pre	D	Pro	D	Co	D	As	
		Wayside Communications Package		G	Pre	D	Pro	D	Co	D	As	
		Wayside Inspection System		G	Pre	D	Pro	D	Co	D	As	
		Relays		G	Pre	D	Pro	D	Co	D	As	
		Type AC Vane Relay		G	Pre	D	Pro	D	Co	D	As	
		TYPE B2 DC Relay		G	Pre	D	Pro	D	Co	D	As	
		TYPE B DC Relay		G	Pre	D	Pro	D	Co	D	As	
		Type B Thermal Relay		G	Pre	D	Pro	D	Co	D	As	
		Bungalow Relay		G	Pre	D	Pro	D	Co	D	As	
		SCD Cube Relay		G	Pre	D	Pro	D	Co	D	As	
		DC Neutral Relay		G	Pre	D	Pro	D	Co	D	As	

		DC Polarized Neutral Relay		G	Pre	D	Pro	D	Co	D	As	
		DC Relays		G	Pre	D	Pro	D	Co	D	As	
		Flasher Relay		G	Pre	D	Pro	D	Co	D	As	
		TYPE K2 DC Relay		G	Pre	D	Pro	D	Co	D	As	
		Type K4 DC Relay		G	Pre	D	Pro	D	Co	D	As	
		TYPE K6 DC Relay		G	Pre	D	Pro	D	Co	D	As	
		Type K Polar Relay		G	Pre	D	Pro	D	Co	D	As	
		Overlay Relay		G	Pre	D	Pro	D	Co	D	As	
		Polar Relay		G	Pre	D	Pro	D	Co	D	As	
		Power Off		G	Pre	D	Pro	D	Co	D	As	
		Switch control Biased Relay		G	Pre	D	Pro	D	Co	D	As	
		Thermal Relay		G	Pre	D	Pro	D	Co	D	As	
		Timer Relay		G	Pre	D	Pro	D	Co	D	As	
		TYPE B DC Relay Track Biased		G	Pre	D	Pro	D	Co	D	As	
		Track Biased Relay DC		G	Pre	D	Pro	D	Co	D	As	
		Track Circuit		G	Pre	D	Pro	D	Co	D	As	
		SCADA		G	Pre	D	Pro	D	Co	D	As	
		SCADA		G	Pre	D	Pro	D	Co	D	As	
		SCD SCADA		G	Pre	D	Pro	D	Co	D	As	
		Security		G	Pre	D	Pro	D	Co	D	As	
		ABLOY Locks		G	Pre	D	Pro	D	Co	D	As	
		Electric Lock Case		G	Pre	D	Pro	D	Co	D	As	
		Equipment House Security		G	Pre	D	Pro	D	Co	D	As	
		Server		G	Pre	D	Pro	D	Co	D	As	
		Aserver		G	Pre	D	Pro	D	Co	D	As	
		Blade Server		G	Pre	D	Pro	D	Co	D	As	
		OCG Server		G	Pre	D	Pro	D	Co	D	As	
		OCG Translator		G	Pre	D	Pro	D	Co	D	As	
		Rack Server		G	Pre	D	Pro	D	Co	D	As	
		SFP Fiber Modular		G	Pre	D	Pro	D	Co	D	As	
		Access Switch - SFP Module Multimode LC 10GB		G	Pre	D	Pro	D	Co	D	As	
		EMC Data Domain - SFP Module Multimode LC 10GB		G	Pre	D	Pro	D	Co	D	As	
		Fiber Channel Switching Module		G	Pre	D	Pro	D	Co	D	As	
		PoE Switch - SFP Module Multimode LC 10GB		G	Pre	D	Pro	D	Co	D	As	
		SAN Fiber Switch		G	Pre	D	Pro	D	Co	D	As	
		Transceiver module for MMF		G	Pre	D	Pro	D	Co	D	As	
		Signals		G	Pre	D	Pro	D	Co	D	As	
		Blue Flag		G	Pre	D	Pro	D	Co	D	As	
		Signal		G	Pre	D	Pro	D	Co	D	As	
		Signal Mechanism		G	Pre	D	Pro	D	Co	D	As	
		Signal Head		G	Pre	D	Pro	D	Co	D	As	
		LED		G	Pre	D	Pro	D	Co	D	As	
		Tri-Colour LED		G	Pre	D	Pro	D	Co	D	As	
		Signal Mast		G	Pre	D	Pro	D	Co	D	As	
		Snow Clearing Device		G	Pre	D	Pro	D	Co	D	As	
		Cold		G	Pre	D	Pro	D	Co	D	As	

		Hot		G	Pre	D	Pro	D	Co	D	As	
		Rail Heater		G	Pre	D	Pro	D	Co	D	As	
		SCD Module		G	Pre	D	Pro	D	Co	D	As	
		SCD Motor		G	Pre	D	Pro	D	Co	D	As	
		Soft Starter (SCD/EMS)		G	Pre	D	Pro	D	Co	D	As	
		Stations		G	Pre	D	Pro	D	Co	D	As	
		Pumping Station		G	Pre	D	Pro	D	Co	D	As	
		Switch Modular		G	Pre	D	Pro	D	Co	D	As	
		Switch Modular		G	Pre	D	Pro	D	Co	D	As	
		Switch Protection		G	Pre	D	Pro	D	Co	D	As	
		Electric Lock Controller		G	Pre	D	Pro	D	Co	D	As	
		Switch Circuit Controller		G	Pre	D	Pro	D	Co	D	As	
		Switches		G	Pre	D	Pro	D	Co	D	As	
		Dual Control Switch		G	Pre	D	Pro	D	Co	D	As	
		Electric Lock		G	Pre	D	Pro	D	Co	D	As	
		Power Switch		G	Pre	D	Pro	D	Co	D	As	
		Track Circuits		G	Pre	D	Pro	D	Co	D	As	
		AC		G	Pre	D	Pro	D	Co	D	As	
		DC		G	Pre	D	Pro	D	Co	D	As	
		ElectroLogIXS Track Circuit		G	Pre	D	Pro	D	Co	D	As	
		Frequency		G	Pre	D	Pro	D	Co	D	As	
		Genrakode		G	Pre	D	Pro	D	Co	D	As	
		GEO		G	Pre	D	Pro	D	Co	D	As	
		Overlay		G	Pre	D	Pro	D	Co	D	As	
		TD4		G	Pre	D	Pro	D	Co	D	As	
		Track Filter		G	Pre	D	Pro	D	Co	D	As	
		Wayside Track Circuit		G	Pre	D	Pro	D	Co	D	As	
		Transformer		G	Pre	D	Pro	D	Co	D	As	
		High Voltage		G	Pre	D	Pro	D	Co	D	As	
		Low Voltage		G	Pre	D	Pro	D	Co	D	As	
		Warning Device		G	Pre	D	Pro	D	Co	D	As	
		Constant Warning Device		G	Pre	D	Pro	D	Co	D	As	
		Crossing Warning Device		G	Pre	D	Pro	D	Co	D	As	
		Electrification	Attributes - Elec									
		Supply										
		Utility Supply										
		Conductor		S	Pre	G	Pro	D	Co	D	As	
		Insulators		S	Pre	G	Pro	D	Co	D	As	
		MV/HV Feeder Cable		S	Pre	G	Pro	D	Co	D	As	
		Mid Span Opener (MSO)		S	Pre	G	Pro	D	Co	D	As	
		Substation Fence Grounding		S	Pre	G	Pro	D	Co	D	As	
		Structures		G	Pre	D	Co	D	Co	D	As	
		Dead End Tower Structure		G	Pre	D	Co	D	Co	D	As	
		Disconnect Switch		G	Pro	D	Co	D	Co	D	As	
		MV/HV Disconnect Switch		G	Pro	D	Co	D	Co	D	As	
		Load Break Disconnect Switch		G	Pro	D	Co	D	Co	D	As	

		Non Load Break Disconnect Switch		G	Pro	D	Co	D	Co	D	As	
		Ground Switch		G	Pro	D	Co	D	Co	D	As	
		Transformer		G	Pro	D	Co	D	Co	D	As	
		MV/HV Breaker		G	Pro	D	Co	D	Co	D	As	
		Power Cabinets		S	Pre	G	Pro	D	Co	D	As	
		Utility Patch Panel		S	Pre	G	Pro	D	Co	D	As	
		Utility Real Time Automation Controller		S	Pre	G	Pro	D	Co	D	As	
		TPSS/SS										
		HV/MV Switchgear		G	Pro	D	Co	D	Co	D	As	
		ATS/Manual Transfer Switch		G	Pre	D	Co	D	Co	D	As	
		AC/DC Switchgear		G	Pro	D	Co	D	Co	D	As	
		Utility Meter Cabinet		G	Pro	D	Co	D	Co	D	As	
		HV Instrument Transformer (CT, PT, CVT, 230V)		G	Pro	D	Co	D	Co	D	As	
		Gantry Structure		S	Pre	G	Pro	D	Co	D	As	
		Station Gantry		S	Pre	G	Pro	D	Co	D	As	
		Trackside Gantry		S	Pre	G	Pro	D	Co	D	As	
		Instrument Transformer on Gantry		S	Pre	G	Pro	D	Co	D	As	
		Gantry Insulators		S	Pre	G	Pro	D	Co	D	As	
		Stray Current Drainage Panel		G	Pro	D	Co	D	Co	D	As	
		Mobile Generator, Generator, generator receptacle		G	Pro	D	Co	D	Co	D	As	
		Battery Systems		G	Pro	D	Co	D	Co	D	As	
		AC/DC Panels		G	Pro	D	Co	D	Co	D	As	
		Uninterruptable Power Supply (UPS)		G	Pro	D	Co	D	Co	D	As	
		Substation Building and Related Systems		G	Pro	D	Co	D	Co	D	As	
		Lighting System		G	Pro	D	Co	D	Co	D	As	
		HVAC System		G	Pro	D	Co	D	Co	D	As	
		Security System		G	Pro	D	Co	D	Co	D	As	
		Fire Alarm System		G	Pro	D	Co	D	Co	D	As	
		Traction Power Substations (TPSS)		G	Pro	D	Co	D	Co	D	As	
		Transformer		G	Pro	D	Co	D	Co	D	As	
		Rectifier Unit		G	Pro	D	Co	D	Co	D	As	
		Lightning Protection		G	Pro	D	Co	D	Co	D	As	
		Auxiliary Transformers, CTs PTs		G	Pro	D	Co	D	Co	D	As	
		Mobile Unit Substation		G	Pro	D	Co	D	Co	D	As	
		Circuit Breaker		G	Pro	D	Co	D	Co	D	As	
		Voltage Limiting Device		G	Pro	D	Co	D	Co	D	As	
		Switching Stations		G	Pro	D	Co	D	Co	D	As	
		Service Disconnect Switch		G	Pro	D	Co	D	Co	D	As	
		Negative Disconnect Switch		G	Pro	D	Co	D	Co	D	As	
		OCS Disconnect/By Pass Switches AC/DC		G	Pro	D	Co	D	Co	D	As	
		Paralleling Stations		G	Pro	D	Co	D	Co	D	As	
		Overhead/Underground Cables		S	Pre	G	Pro	D	Co	D	As	
		Traction Feeder Facility		S	Pre	G	Pro	D	Co	D	As	
		Traction Wayside Power Cabinets		S	Pre	G	Pro	D	Co	D	As	
		RTU Cabinet		S	Pre	G	Pro	D	Co	D	As	
		Building/room information		S	Pre	G	Pro	D	Co	D	As	

		Buswork and supports		S	Pro	G	Co	D	Co	D	As	
		Substation Control Room		S	Pro	G	Co	D	Co	D	As	
		Substation Control Cabinet		S	Pro	G	Co	D	Co	D	As	
		Emergency Trip System		S	Pro	G	Co	D	Co	D	As	
		Cable Routing: Trays, Ducts, Raceways, Wireways & Components		S	Pro	G	Co	D	Co	D	As	
		Harmonic Control Device		S	Pro	G	Co	D	Co	D	As	
		Distribution										
		Routing										
		Overhead		S	Pre	G	Pro	D	Co	D	As	
		Underground		S	Pre	G	Pro	D	Co	D	As	
		Connections/Terminations		S	Pre	G	Pro	D	Co	D	As	
		Wires and Cables		S	Pre	G	Pro	G	Co	G	As	
		Cable Sealing Compound		G	Pre	G	Pro	G	Co	G	As	
		Catenary										
		OCS Pole		G	Pre	G	Pro	D	Co	D	As	
		OCS Foundation		G	Pre	G	Pro	D	Co	D	As	
		Overhead Contact Wire		S	Pre	G	Pro	G	Co	G	As	
		ATF Conductors		S	Pro	G	Co	D	Co	D	As	
		Trolley Feeders		S	Pre	G	Pro	D	Co	D	As	
		Messenger Wire		S	Pre	G	Pro	G	Co	G	As	
		Cantilever		G	Pre	G	Pro	D	Co	D	As	
		Registration Arm		G	Pre	G	Pro	D	Co	D	As	
		Steady Arm		G	Pre	G	Pro	D	Co	D	As	
		Stitch Wire		S	Pre	G	Pro	G	Co	G	As	
		Jumpers/Continuity Bonds		G	Pre	D	Pro	D	Co	D	As	
		Droppers and Clips		G	Pre	G	Pro	D	Co	D	As	
		Clamps and Castings		G	Pre	G	Pro	D	Co	D	As	
		OCS Rigid Rail		G	Pre	G	Pro	D	Co	D	As	
		OCS Hardware		G	Pre	G	Pro	D	Co	D	As	
		OCS Support Assemblies		G	Pre	G	Pro	D	Co	D	As	
		Pull off Span Wire		G	Pre	G	Pro	G	Co	G	As	
		Overlap, Crossover and Turnout		G	Pre	D	Pro	D	Co	D	As	
		OCS Transition		G	Pre	D	Pro	D	Co	D	As	
		Tensioning Devices										
		Tension Wheels		G	Pre	G	Pro	D	Co	D	As	
		Counterweights		G	Pre	G	Pro	D	Co	D	As	
		Spring Tensioners		G	Pre	G	Pro	D	Co	D	As	
		Gas Tensioners		G	Pre	G	Pro	D	Co	D	As	
		Anchoring Devices										
		Mid-Point Anchors		G	Pre	G	Pro	D	Co	D	As	
		Guy Anchors		G	Pre	G	Pro	D	Co	D	As	
		Fixed Termination Anchors		G	Pre	G	Pro	D	Co	D	As	
		Insulators										
		Section Insulators		G	Pre	D	Pro	D	Co	D	As	

		Stay Arm/Bracket Insulators		G	Pre	D	Pro	D	Co	D	As	
		Strain/Tension Insulators		G	Pre	D	Pro	D	Co	D	As	
		Portal Insulators		G	Pre	D	Pro	D	Co	D	As	
		Third Rail Insulators		G	Pre	D	Pro	D	Co	D	As	
		Pantograph/Roofline Insulators		G	Pre	D	Pro	D	Co	D	As	
		Disconnect Switches										
		Load Break Switch		G	Pre	G	Pro	D	Co	D	As	
		Manual Disconnect Switch		G	Pre	G	Pro	D	Co	D	As	
		Motorized Disconnect Switch		G	Pre	G	Pro	D	Co	D	As	
		3-Way Disconnect Switch		G	Pre	G	Pro	D	Co	D	As	
		Hookstick Switch		G	Pre	G	Pro	D	Co	D	As	
		Magnetic Disconnect Switch		G	Pre	G	Pro	D	Co	D	As	
		Grounding & Bonding										
		Grounding										
		Bonding Connections		G	Pro	D	Co	D	Co	D	As	
		Conductors		S	Pro	G	Co	D	Co	D	As	
		Grounding Rods/plates		G	Pro	D	Co	D	Co	D	As	
		Test Well/handholes		S	Pre	D	Co	D	Co	D	As	
		Ground Fault Relays		G	Pro	D	Pro	D	Co	D	As	
		Surge Arrestors		S	Pro	G	Co	D	Co	D	As	
		Protection										
		Substation Metering and Relaying		S	Pre	G	Co	D	Co	D	As	
		<i>Transformer/Auto Transformer Protection Relays</i>		S	Pre	G	Co	D	Co	D	As	
		<i>Relaying and Control</i>		S	Pre	G	Co	D	Co	D	As	
		<i>Incoming/Feeder/Catenary/Return</i>		S	Pre	G	Co	D	Co	D	As	
		<i>Substation VT, PT, CVT indoor/outdoor</i>		S	Pre	G	Co	D	Co	D	As	
		Emergency Trip System		S	Pre	G	Co	D	Co	D	As	
		<i>Emergency Alarm Station (EAS)</i>		S	Pre	G	Co	D	Co	D	As	
		Facilities										
		Platforms										
		<i>Exposed Metal Grounding</i>		S	Pre	D	Co	D	Co	D	As	
		<i>Counterpoise Wire</i>		S	Pre	G	Co	G	Co	G	As	
		<i>Impedance Bonds</i>		G	Pro	D	Co	D	Co	D	As	
		Yards										
		<i>Buildings</i>		S	Pre	G	Pro	D	Co	D	As	
		<i>Fueling Stations</i>		S	Pre	G	Pro	D	Co	D	As	
		<i>Signs Pedestrian Bridges</i>		S	Pre	G	Co	D	Co	D	Co	
		<i>Wayside Power Stations</i>		S	Pre	G	Co	D	Co	D	As	
		Fences, Bridges and Tunnels										
		<i>Bonding and Grounding</i>		G	Pro	D	Co	D	Co	D	As	
		<i>Flash Plates and Hardware</i>		S	Pro	G	Co	G	Co	G	As	
		<i>Electrification Protective Barriers</i>		G	Pre	D	Pro	D	Co	D	As	
		Return Circuit										
		<i>Static Wire</i>		G	Pro	G	Co	G	Co	G	As	
		<i>Track Bonds</i>		G	Pro	D	Co	D	Co	D	As	

		<i>Rails</i>		G	Pro	D	Co	D	Co	D	As	
		<i>Stray Current Drainage Panel</i>		G	Pro	D	Co	D	Co	D	As	
		<i>Negative Disconnect Switch (NDS)</i>		G	Pro	D	Co	D	Co	D	As	
		<i>Rail Ground Switch (RGS)</i>		G	Pro	D	Co	D	Co	D	As	
		Substations										
		<i>Grounding</i>		G	Pro	G	Co	D	Co	D	As	
		<i>Connections</i>		G	Pro	G	Co	D	Co	D	As	
		<i>Conductors, Cables and Bus pipes</i>		G	Pro	G	Co	D	Co	D	As	
		<i>Lightning Arrester Jumpers</i>		S	Pre	G	Co	D	Co	D	As	
		<i>Connections and Bushing</i>		G	Pro	G	Co	D	Co	D	As	
		<i>HV Transmission Circuits</i>		G	Pro	G	Co	D	Co	D	As	
		<i>Transformers</i>		G	Pro	G	Co	D	Co	D	As	
		<i>Switchgears</i>		G	Pro	G	Co	D	Co	D	As	
		<i>Insulators</i>		G	Pre	G	Co	D	Co	D	As	
		<i>Breakers</i>		G	Pro	G	Co	D	Co	D	As	
		<i>Relay</i>		S	Pro	G	Co	D	Co	D	As	
		<i>Disconnect/Bypass Switch & Fuses</i>		S	Pro	G	Co	D	Co	D	As	
		<i>SF6 Gas Alarm</i>		S	Pro	G	Co	D	Co	D	As	
		<i>Interlocks</i>		S	Pro	G	Co	D	Co	D	As	
		Control										
		Communication										
		SCADA		S	Pre	G	Pro	D	Co	D	As	
		<i>Station Control Cabinet (SCC)</i>		G	Pre	D	Co	D	Co	D	As	
		<i>HMI Marshalling Panel</i>		G	Pre	D	Co	D	Co	D	As	
		Emergency Controls		G	Pre	G	Pro	D	Co	D	As	
		<i>Emergency Trip Control Cabinet</i>		G	Pro	D	Co	D	Co	D	As	
		Trip Relays		S	Pre	G	Co	D	Co	D	As	
		<i>Uninterruptable Power Supply (UPS)</i>		G	Pro	G	Co	G	Co	G	As	
		Battery & Charger		G	Pre	G	Co	G	Co	G	As	
		Rolling Stock Monitoring		G	Pre	G	Pro	D	Co	D	As	
		Smart Devices, Relays & Metering										
		<i>Current/Potential Transformers</i>		S	Pro	G	Co	G	Co	D	As	
		<i>Relays</i>		S	Pro	G	Co	G	Co	D	As	
		Safety and Security Systems		S	Pre	G	Pro	G	Co	G	As	
		Control Panels		G	Pro	G	Co	G	Co	G	As	
		<i>Breakers</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Switches</i>		S	Pre	G	Pro	G	Co	G	As	
		Facilities	Attributes - Facilities									
		Stations										
		Building										
		Room Interior										
		<i>Access Ladder</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Door</i>		G	Pre	G	Pro	D	Co	D	As	
		<i>Fixed Furniture</i>		S	Pre	S	Pro	G	Co	G	As	
		<i>Fixed Garbage Bin</i>		S	Pre	S	Pro	G	Co	G	As	

		<i>Railing</i>		S	Pre	G	Pro	G	Co	G	As	
		Guard Rail		S	Pre	G	Pro	G	Co	G	As	
		Hand Rail		S	Pre	G	Pro	G	Co	G	As	
		<i>Overhead Door</i>		G	Pre	G	Pro	D	Co	D	As	
		<i>Room Interior</i>		G	Pre	G	Pro	D	Co	D	As	
		Flooring		G	Pre	G	Pro	D	Co	D	As	
		Ceiling		G	Pre	G	Pro	D	Co	D	As	
		<i>Stairway</i>		S	Pre	G	Pro	D	Co	D	As	
		<i>Window System</i>		G	Pre	G	Pro	D	Co	D	As	
		<i>Walls and Partition Walls</i>		G	Pre	G	Pro	D	Co	D	As	
		Services										
		<i>Conveying</i>										
		Crane		S	Pre	G	Pro	G	Co	G	As	
		Elevator		S	Pre	G	Pro	D	Co	D	As	
		<i>Electrical</i>										
		Battery Powered Emergency Lighting and Exit Lighting		S	Pre	G	Pro	G	Co	G	As	
		Circuit Breaker Enclosure		S	Pre	G	Pro	G	Co	G	As	
		Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Electric Heat Trace System		S	Pre	G	Pro	G	Co	G	As	
		Emergency Generator		S	Pre	G	Pro	G	Co	G	As	
		Fuse Disconnect		S	Pre	G	Pro	G	Co	G	As	
		Grounding and Lightning Protection System		S	Pre	G	Pro	G	Co	G	As	
		Hand Dryer		S	Pre	G	Pro	G	Co	G	As	
		Lighting		S	Pre	G	Pro	D	Co	D	As	
		<i>Interior Lighting</i>		S	Pre	G	Pro	D	Co	D	As	
		<i>Exterior Lighting</i>		S	Pre	G	Pro	D	Co	D	As	
		Lighting Control System		S	Pre	G	Pro	G	Co	G	As	
		Load Bank		S	Pre	G	Pro	G	Co	G	As	
		Distribution Conduits/boxes		S	Pre	G	Pro	D	Co	D	As	Conduits ≥ 50mm
		Distribution Cable Tray		S	Pre	G	Pro	D	Co	D	As	
		Low Voltage Distribution System		S	Pre	G	Pro	G	Co	G	As	
		Low Voltage Panel Board		S	Pre	G	Pro	G	Co	G	As	
		Low Voltage Transformer		S	Pre	G	Pro	G	Co	G	As	
		Medium/High Voltage Distribution System		S	Pre	G	Pro	G	Co	G	As	
		Medium/High Voltage Transformer		S	Pre	G	Pro	G	Co	G	As	
		Motor Control Centers (MCC)		S	Pre	G	Pro	G	Co	G	As	
		Rectifier		S	Pre	G	Pro	G	Co	G	As	
		Switchboard		S	Pre	G	Pro	G	Co	G	As	

		Switchgear		S	Pre	G	Pro	G	Co	G	As	
		Transfer Switch		S	Pre	G	Pro	G	Co	G	As	
		Uninterruptable Power Supply		S	Pre	G	Pro	G	Co	G	As	
		<i>Static Bypass</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Rectifier</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Battery</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Inverter</i>		S	Pre	G	Pro	G	Co	G	As	
		Utility Meters		S	Pre	G	Pro	G	Co	G	As	
		<i>Fire Detection</i>										
		Fire Alarm System		S	Pre	G	Pro	G	Co	G	As	
		Fire Alarm Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Notification Application Circuit		S	Pre	G	Pro	G	Co	G	As	
		Smoke Detection Sensors		S	Pre	G	Pro	G	Co	G	As	
		Pull Stations		S	Pre	G	Pro	G	Co	G	As	
		Strobe		S	Pre	G	Pro	G	Co	G	As	
		Horn		S	Pre	G	Pro	G	Co	G	As	
		Bell		S	Pre	G	Pro	G	Co	G	As	
		<i>Fire Suppression</i>										
		System		S	Pre	G	Pro	G	Co	D	As	
		Wet-Pipe Sprinkler System		S	Pre	G	Pro	G	Co	D	As	
		Dry-Pipe Sprinkler System		S	Pre	G	Pro	G	Co	D	As	
		Clean Agent Suppression System		S	Pre	G	Pro	G	Co	D	As	
		Preaction System		S	Pre	G	Pro	G	Co	D	As	
		Preaction Compressor		S	Pre	G	Pro	G	Co	D	As	
		Fire Extinguisher Cabinets		S	Pre	G	Pro	G	Co	D	As	
		Fire Extinguishers		S	Pre	G	Pro	G	Co	D	As	
		<i>Health and Safety</i>										
		Emergency Defibrillator		S	Pre	S	Pro	G	Co	G	As	
		Emergency Plumbing Fixture		S	Pre	S	Pro	G	Co	G	As	
		Fall Arrest System		S	Pre	S	Pro	G	Co	G	As	
		First Aid Kit		S	Pre	S	Pro	G	Co	G	As	
		Portable Emergency Eyewash		S	Pre	S	Pro	G	Co	G	As	
		Spill Kits Station		S	Pre	S	Pro	G	Co	G	As	
		<i>HVAC</i>										
		Air Handling Unit		S	Pre	G	Pro	G	Co	G	As	
		Air-Conditioning - Condenser		S	Pre	G	Pro	G	Co	G	As	
		Air-Conditioning - Indoor Evaporator		S	Pre	G	Pro	G	Co	G	As	
		Balancing Valve		S	Pre	G	Pro	G	Co	G	As	
		Boiler		S	Pre	G	Pro	G	Co	G	As	

		Building Automation Controls		S	Pre	G	Pro	G	Co	G	As	
		Chiller		S	Pre	G	Pro	G	Co	G	As	
		Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Door Air Curtain		S	Pre	G	Pro	G	Co	G	As	
		Duct Heater		S	Pre	G	Pro	G	Co	G	As	
		Expansion Tank		S	Pre	G	Pro	G	Co	G	As	
		Fan		S	Pre	G	Pro	G	Co	G	As	
		Fan Coil		S	Pre	G	Pro	G	Co	G	As	
		Filter		S	Pre	G	Pro	G	Co	G	As	
		Furnace		S	Pre	G	Pro	G	Co	G	As	
		Gas Detection System		S	Pre	G	Pro	G	Co	G	As	
		Gas Distribution - Main Valve		S	Pre	G	Pro	G	Co	G	As	
		Gas Distribution Piping System		S	Pre	G	Pro	D	Co	D	As	
		Glycol Make-Up System		S	Pre	G	Pro	G	Co	G	As	
		Heat Exchanger		S	Pre	G	Pro	G	Co	G	As	
		Heat Recovery Unit		S	Pre	G	Pro	G	Co	G	As	
		Humidifier		S	Pre	G	Pro	G	Co	G	As	
		HVAC Air Distribution System		S	Pre	G	Pro	D	Co	D	As	
		HVAC Piping System		S	Pre	G	Pro	D	Co	D	As	
		Hydronic System Water Treatment		S	Pre	G	Pro	G	Co	G	As	
		Manual Valve		S	Pre	G	Pro	G	Co	G	As	≥ 50mm
		Motor Operated Valve and Actuator		S	Pre	G	Pro	G	Co	G	As	≥ 50mm
		Pressure Reducing Valve (PRV)		S	Pre	G	Pro	G	Co	G	As	≥ 50mm
		Pressure Regulating Valve (PGV)		S	Pre	G	Pro	G	Co	G	As	≥ 50mm
		Pressure Relief Valve (PRFV)		S	Pre	G	Pro	G	Co	G	As	≥ 50mm
		Pump		S	Pre	G	Pro	G	Co	G	As	
		Separator		S	Pre	G	Pro	G	Co	G	As	
		Storage Tank		S	Pre	G	Pro	G	Co	G	As	
		Terminal Heater		S	Pre	G	Pro	G	Co	G	As	
		Utility Meters		S	Pre	G	Pro	G	Co	G	As	
		Variable Air Volume Unit		S	Pre	G	Pro	G	Co	G	As	
		Plumbing										
		Backflow Prevention		S	Pre	G	Pro	G	Co	G	As	
		Check Valve		S	Pre	G	Pro	G	Co	G	As	
		Cleaning Solution Dispenser		S	Pre	G	Pro	G	Co	G	As	
		Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Domestic Water Distribution System		S	Pre	G	Pro	D	Co	D	As	
		Expansion Tank		S	Pre	G	Pro	G	Co	G	As	
		Filter		S	Pre	G	Pro	G	Co	G	As	

		Hot Water Heater		S	Pre	G	Pro	G	Co	G	As	
		Manual Valve		S	Pre	G	Pro	G	Co	G	As	≥ 50mm
		Plumbing Fixture		S	Pre	G	Pro	G	Co	G	As	
		Plumbing Fixture - Fountains		S	Pre	G	Pro	G	Co	G	As	
		Pressure Reducing Valve (PRV)		S	Pre	G	Pro	G	Co	G	As	≥ 50mm
		Pressure Relief Valve (PRFV)		S	Pre	G	Pro	G	Co	G	As	
		Pump		S	Pre	G	Pro	G	Co	G	As	
		Separator		S	Pre	G	Pro	G	Co	G	As	
		Storage Tank		S	Pre	G	Pro	G	Co	G	As	
		Strainer		S	Pre	G	Pro	G	Co	G	As	
		Sump Pit		S	Pre	G	Pro	G	Co	G	As	
		Utility Meters		S	Pre	G	Pro	G	Co	G	As	
		UV Water Sterilization		S	Pre	G	Pro	G	Co	G	As	
		Waste Water Collection System		S	Pre	G	Pro	D	Co	D	As	
		Waste Water Lift Station		S	Pre	G	Pro	G	Co	G	As	
		Water Softener		S	Pre	G	Pro	G	Co	G	As	
		Process Systems										
		Air Compressor		S	Pre	G	Pro	G	Co	G	As	
		Floor Heating/ Snow Melting System		S	Pre	G	Pro	G	Co	G	As	
		Fuel Distribution System		S	Pre	G	Pro	D	Co	D	As	
		Gas Distribution - Main Valve		S	Pre	G	Pro	D	Co	D	As	
		Pressure Regulating Valve (PGV)		S	Pre	G	Pro	G	Co	G	As	≥ 50mm
		Pressure Tank - Air Compressor		S	Pre	G	Pro	G	Co	G	As	
		Communication										
		Data System		S	Pre	G	Pro	G	Co	G	As	
		Voice System		S	Pre	G	Pro	G	Co	G	As	
		Audio-Video System		S	Pre	G	Pro	G	Co	G	As	
		Electronic Safety & Security-Acess Control		S	Pre	G	Pro	G	Co	G	As	
		Electronic Safety & Security Intrusion Control		S	Pre	G	Pro	G	Co	G	As	
		Monitoring System (CCTV)		S	Pre	G	Pro	G	Co	G	As	
		Shell										
		Access Ladder		G	Pre	G	Pro	G	Co	G	As	
		Door		G	Pre	G	Pro	D	Co	D	As	
		Overhead Door		G	Pre	G	Pro	D	Co	D	As	
		Exterior Wall		G	Pre	G	Pro	D	Co	D	As	
		Railing		S	Pre	G	Pro	G	Co	G	As	
		Guard Rail		S	Pre	G	Pro	G	Co	G	As	
		Hand Rail		S	Pre	G	Pro	G	Co	G	As	

		Roof		G	Pre	G	Pro	D	Co	D	As	
		Flat Roof		G	Pre	G	Pro	D	Co	D	As	
		Sloped Roof		G	Pre	G	Pro	D	Co	D	As	
		Parapet Wall		G	Pre	G	Pro	D	Co	D	As	
		Window System		G	Pre	G	Pro	D	Co	D	As	
		Canopy		G	Pre	G	Pro	D	Co	D	As	
		Foundation/Piers		G	Pre	G	Pro	D	Co	D	As	
		Columns		G	Pre	G	Pro	D	Co	D	As	
		Beams and Purlins		G	Pre	G	Pro	D	Co	D	As	
		Enclosure		G	Pre	G	Pro	D	Co	D	As	
		Structure										
		Substructure		G	Pre	G	Pro	D	Co	D	As	
		Footings		G	Pre	G	Pro	D	Co	D	As	
		Foundations		G	Pre	G	Pro	D	Co	D	As	
		Wall Foundations		G	Pre	G	Pro	D	Co	D	As	
		Piles		G	Pre	G	Pro	D	Co	D	As	
		Piers		G	Pre	G	Pro	D	Co	D	As	
		Slab on Grade		G	Pre	G	Pro	D	Co	D	As	
		Grade Beams		G	Pre	G	Pro	D	Co	D	As	
		Superstructure		G	Pre	G	Pro	D	Co	D	As	
		Vertical Members (Columns & Shear Walls)		G	Pre	G	Pro	D	Co	D	As	
		Horizontal Members (Slabs & Beams)		G	Pre	G	Pro	D	Co	D	As	
		Parking Structure										
		Room Interior										
		Access Ladder		S	Pre	G	Pro	G	Co	G	As	
		Bollard		S	Pre	G	Pro	G	Co	G	As	
		Door		G	Pre	G	Pro	D	Co	D	As	
		Fixed Furniture		S	Pre	S	Pro	G	Co	G	As	
		Fixed Garbage Bin		S	Pre	S	Pro	G	Co	G	As	
		Railing		S	Pre	G	Pro	G	Co	G	As	
		Guard Rail		S	Pre	G	Pro	G	Co	G	As	
		Hand Rail		S	Pre	G	Pro	G	Co	G	As	
		Overhead Door		G	Pre	G	Pro	D	Co	D	As	
		Room Interior		G	Pre	G	Pro	D	Co	D	As	
		Flooring		G	Pre	G	Pro	D	Co	D	As	
		Ceiling		G	Pre	G	Pro	D	Co	D	As	
		Stairway		S	Pre	G	Pro	D	Co	D	As	
		Window System		G	Pre	G	Pro	D	Co	D	As	
		Walls and Partition Walls		G	Pre	G	Pro	D	Co	D	As	
		Services										
		Conveying										
		Elevator		S	Pre	G	Pro	D	Co	D	As	
		Electrical										

		Battery Powered Emergency Lighting and Exit Lighting		S	Pre	G	Pro	G	Co	G	As	
		Circuit Breaker Enclosure		S	Pre	G	Pro	G	Co	G	As	
		Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Electric Heat Trace System		S	Pre	G	Pro	G	Co	G	As	
		Emergency Generator		S	Pre	G	Pro	G	Co	G	As	
		Fuse Disconnect		S	Pre	G	Pro	G	Co	G	As	
		Grounding and Lightning Protection System		S	Pre	G	Pro	G	Co	G	As	
		Hand Dryer		S	Pre	G	Pro	G	Co	G	As	
		Lighting		S	Pre	G	Pro	D	Co	D	As	
		<i>Interior Lighting</i>		S	Pre	G	Pro	D	Co	D	As	
		<i>Exterior Lighting</i>		S	Pre	G	Pro	D	Co	D	As	
		Lighting Control System		S	Pre	G	Pro	G	Co	G	As	
		Load Bank		S	Pre	G	Pro	G	Co	G	As	
		Distribution Conduits/boxes		S	Pre	G	Pro	D	Co	D	As	Conduits ≥ 50mm
		Distribution Cable Tray		S	Pre	G	Pro	D	Co	D	As	
		Low Voltage Distribution System		S	Pre	G	Pro	G	Co	G	As	
		Low Voltage Panel Board		S	Pre	G	Pro	G	Co	G	As	
		Low Voltage Transformer		S	Pre	G	Pro	G	Co	G	As	
		Medium/High Voltage Distribution System		S	Pre	G	Pro	G	Co	G	As	
		Medium/High Voltage Transformer		S	Pre	G	Pro	G	Co	G	As	
		Motor Control Centers (MCC)		S	Pre	G	Pro	G	Co	G	As	
		Rectifier		S	Pre	G	Pro	G	Co	G	As	
		Switchboard		S	Pre	G	Pro	G	Co	G	As	
		Switchgear		S	Pre	G	Pro	G	Co	G	As	
		Transfer Switch		S	Pre	G	Pro	G	Co	G	As	
		Uninterruptable Power Supply		S	Pre	G	Pro	G	Co	G	As	
		<i>Static Bypass</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Rectifier</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Battery</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Inverter</i>		S	Pre	G	Pro	G	Co	G	As	
		Utility Meters		S	Pre	G	Pro	G	Co	G	As	
		<i>Fire Detection</i>										
		Fire Alarm System		S	Pre	G	Pro	G	Co	G	As	
		Fire Alarm Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Notification Application Circuit		S	Pre	G	Pro	G	Co	G	As	
		Smoke Detection Sensors		S	Pre	G	Pro	G	Co	G	As	
		Pull Stations		S	Pre	G	Pro	G	Co	G	As	
		Strobe		S	Pre	G	Pro	G	Co	G	As	
		Horn		S	Pre	G	Pro	G	Co	G	As	

		Bell		S	Pre	G	Pro	G	Co	G	As	
		<i>Fire Suppression</i>										
		System		S	Pre	G	Pro	G	Co	D	As	
		Wet-Pipe Sprinkler System		S	Pre	G	Pro	G	Co	D	As	
		Dry-Pipe Sprinkler System		S	Pre	G	Pro	G	Co	D	As	
		Clean Agent Suppression System		S	Pre	G	Pro	G	Co	D	As	
		Preaction System		S	Pre	G	Pro	G	Co	D	As	
		Preaction Compressor		S	Pre	G	Pro	G	Co	D	As	
		Fire Extinguisher Cabinets		S	Pre	G	Pro	G	Co	D	As	
		<i>Fire Extinguishers</i>		S	Pre	G	Pro	G	Co	D	As	
		<i>Health and Safety</i>										
		Eyewash Station		S	Pre	G	Pro	G	Co	G	As	
		<i>HVAC</i>										
		Air Handling Unit		S	Pre	G	Pro	G	Co	G	As	
		Air-Conditioning - Condenser		S	Pre	G	Pro	G	Co	G	As	
		Air-Conditioning - Indoor Evaporator		S	Pre	G	Pro	G	Co	G	As	
		Balancing Valve		S	Pre	G	Pro	G	Co	G	As	
		Boiler		S	Pre	G	Pro	G	Co	G	As	
		Building Automation Controls		S	Pre	G	Pro	G	Co	G	As	
		Chiller		S	Pre	G	Pro	G	Co	G	As	
		Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Door Air Curtain		S	Pre	G	Pro	G	Co	G	As	
		Duct Heater		S	Pre	G	Pro	G	Co	G	As	
		Expansion Tank		S	Pre	G	Pro	G	Co	G	As	
		Fan		S	Pre	G	Pro	G	Co	G	As	
		Fan Coil		S	Pre	G	Pro	G	Co	G	As	
		Filter		S	Pre	G	Pro	G	Co	G	As	
		Furnace		S	Pre	G	Pro	G	Co	G	As	
		Gas Detection System		S	Pre	G	Pro	G	Co	G	As	
		Gas Distribution - Main Valve		S	Pre	G	Pro	G	Co	G	As	
		Gas Distribution Piping System		S	Pre	G	Pro	D	Co	D	As	
		Glycol Make-Up System		S	Pre	G	Pro	G	Co	G	As	
		Heat Exchanger		S	Pre	G	Pro	G	Co	G	As	
		Heat Recovery Unit		S	Pre	G	Pro	G	Co	G	As	
		Humidifier		S	Pre	G	Pro	G	Co	G	As	
		HVAC Air Distribution System		S	Pre	G	Pro	D	Co	D	As	
		HVAC Piping System		S	Pre	G	Pro	D	Co	D	As	
		Hydronic System Water Treatment		S	Pre	G	Pro	G	Co	G	As	
		Manual Valve		S	Pre	G	Pro	G	Co	G	As	≥ 50mm
		Motor Operated Valve and Actuator		S	Pre	G	Pro	G	Co	G	As	≥ 50mm

		Pressure Reducing Valve (PRV)		S	Pre	G	Pro	G	Co	G	As	≥ 50mm
		Pressure Regulating Valve (PGV)		S	Pre	G	Pro	G	Co	G	As	≥ 50mm
		Pressure Relief Valve (PRFV)		S	Pre	G	Pro	G	Co	G	As	≥ 50mm
		Pump		S	Pre	G	Pro	G	Co	G	As	
		Separator		S	Pre	G	Pro	G	Co	G	As	
		Terminal Heater		S	Pre	G	Pro	G	Co	G	As	
		Utility Meters		S	Pre	G	Pro	G	Co	G	As	
		Variable Air Volume Unit		S	Pre	G	Pro	G	Co	G	As	
		Plumbing										
		Backflow Prevention		S	Pre	G	Pro	G	Co	G	As	
		Check Valve		S	Pre	G	Pro	G	Co	G	As	
		Cleaning Solution Dispenser		S	Pre	G	Pro	G	Co	G	As	
		Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Domestic Water Distribution System		S	Pre	G	Pro	D	Co	D	As	
		Expansion Tank		S	Pre	G	Pro	G	Co	G	As	
		Filter		S	Pre	G	Pro	G	Co	G	As	
		Hot Water Heater		S	Pre	G	Pro	G	Co	G	As	
		Manual Valve		S	Pre	G	Pro	G	Co	G	As	≥ 50mm
		Plumbing Fixture		S	Pre	G	Pro	G	Co	G	As	
		Pressure Reducing Valve (PRV)		S	Pre	G	Pro	G	Co	G	As	≥ 50mm
		Pressure Relief Valve (PRFV)		S	Pre	G	Pro	G	Co	G	As	
		Pump		S	Pre	G	Pro	G	Co	G	As	
		Separator		S	Pre	G	Pro	G	Co	G	As	
		Strainer		S	Pre	G	Pro	G	Co	G	As	
		Sump Pit		S	Pre	G	Pro	G	Co	G	As	
		Utility Meters		S	Pre	G	Pro	G	Co	G	As	
		UV Water Sterilization		S	Pre	G	Pro	G	Co	G	As	
		Waste Water Collection System		S	Pre	G	Pro	G	Co	G	As	
		Waste Water Lift Station		S	Pre	G	Pro	D	Co	D	As	
		Process Systems										
		Air Compressor		S	Pre	G	Pro	G	Co	G	As	
		Compressed Air Distribution System		S	Pre	G	Pro	D	Co	D	As	
		Diesel Storage Tank		S	Pre	G	Pro	G	Co	G	As	
		Floor Heating/ Snow Melting System		S	Pre	G	Pro	D	Co	D	As	
		Fuel Distribution System		S	Pre	G	Pro	G	Co	D	As	
		Pressure Regulating Valve (PGV)		S	Pre	G	Pro	G	Co	G	As	≥ 50mm
		Storage Tank		S	Pre	G	Pro	G	Co	G	As	
		Shell										

		Access Ladder		G	Pre	G	Pro	G	Co	G	As	
		Door		G	Pre	G	Pro	D	Co	D	As	
		Overhead Door		G	Pre	G	Pro	D	Co	D	As	
		Exterior Wall		G	Pre	G	Pro	D	Co	D	As	
		Railing		S	Pre	G	Pro	G	Co	G	As	
		Guard Rail		S	Pre	G	Pro	G	Co	G	As	
		Hand Rail		S	Pre	G	Pro	G	Co	G	As	
		Roof		G	Pre	G	Pro	D	Co	D	As	
		Flat Roof		G	Pre	G	Pro	D	Co	D	As	
		Sloped Roof		G	Pre	G	Pro	D	Co	D	As	
		Parapet Wall		G	Pre	G	Pro	D	Co	D	As	
		Window System		G	Pre	G	Pro	D	Co	D	As	
		Traffic Barrier		S	Pre	G	Pro	G	Co	G	As	
		Canopy		G	Pre	G	Pro	D	Co	D	As	
		Foundation/Piers		G	Pre	G	Pro	D	Co	D	As	
		Columns		G	Pre	G	Pro	D	Co	D	As	
		Beams and Purlins		G	Pre	G	Pro	D	Co	D	As	
		Enclosure		G	Pre	G	Pro	D	Co	D	As	
		Structure										
		Substructure		G	Pre	G	Pro	D	Co	D	As	
		Footings		G	Pre	G	Pro	D	Co	D	As	
		Foundations		G	Pre	G	Pro	D	Co	D	As	
		Wall Foundations		G	Pre	G	Pro	D	Co	D	As	
		Piles		G	Pre	G	Pro	D	Co	D	As	
		Piers		G	Pre	G	Pro	D	Co	D	As	
		Slap on Grade		G	Pre	G	Pro	D	Co	D	As	
		Grade Beams		G	Pre	G	Pro	D	Co	D	As	
		Superstructure		G	Pre	G	Pro	D	Co	D	As	
		Parking Deck Protection System		G	Pre	G	Pro	D	Co	D	As	
		Parking Structure Deck		G	Pre	G	Pro	D	Co	D	As	
		Parking Structure Framing		G	Pre	G	Pro	D	Co	D	As	
		Parking Structure Slab on Grade		G	Pre	G	Pro	D	Co	D	As	
		Pedestrian Bridge										
		Room Interior										
		Access Ladder		S	Pre	G	Pro	G	Co	G	As	
		Door		G	Pre	G	Pro	D	Co	D	As	
		Fixed Furniture		S	Pre	S	Pro	G	Co	G	As	
		Fixed Garbage Bin		S	Pre	S	Pro	G	Co	G	As	
		Railing		S	Pre	G	Pro	G	Co	G	As	
		Guard Rail		S	Pre	G	Pro	G	Co	G	As	
		Hand Rail		S	Pre	G	Pro	G	Co	G	As	
		Room Interior		G	Pre	G	Pro	D	Co	D	As	
		Flooring		G	Pre	G	Pro	D	Co	D	As	
		Ceiling		G	Pre	G	Pro	D	Co	D	As	

		Stairway		S	Pre	G	Pro	D	Co	D	As	
		Shell										
		Door		G	Pre	G	Pro	D	Co	D	As	
		Exterior Wall		G	Pre	G	Pro	D	Co	D	As	
		Roof		G	Pre	G	Pro	D	Co	D	As	
		Flat Roof		G	Pre	G	Pro	D	Co	D	As	
		Sloped Roof		G	Pre	G	Pro	D	Co	D	As	
		Railing		S	Pre	G	Pro	G	Co	G	As	
		Hand Rail		S	Pre	G	Pro	G	Co	G	As	
		Guard rail		S	Pre	G	Pro	G	Co	G	As	
		Window System		G	Pre	G	Pro	D	Co	D	As	
		Structural										
		Superstructure		G	Pre	G	Pro	D	Co	D	As	
		Bent/ Pier		G	Pre	G	Pro	D	Co	D	As	
		Bridge		G	Pre	G	Pro	D	Co	D	As	
		Bridge Bearing		G	Pre	G	Pro	D	Co	D	As	
		Bridge Deck Structure		G	Pre	G	Pro	D	Co	D	As	
		Bridge Deck Surface Protection System		G	Pre	G	Pro	D	Co	D	As	
		Bridge Earth Retention System		G	Pre	G	Pro	D	Co	D	As	
		Bridge Span		G	Pre	G	Pro	D	Co	D	As	
		Substructure		G	Pre	G	Pro	D	Co	D	As	
		Footings		G	Pre	G	Pro	D	Co	D	As	
		Foundations		G	Pre	G	Pro	D	Co	D	As	
		Wall Foundations		G	Pre	G	Pro	D	Co	D	As	
		Piles		G	Pre	G	Pro	D	Co	D	As	
		Piers		G	Pre	G	Pro	D	Co	D	As	
		Pile/Pier Cap		G	Pre	G	Pro	D	Co	D	As	
		Slap on Grade		G	Pre	G	Pro	D	Co	D	As	
		Grade Beams		G	Pre	G	Pro	D	Co	D	As	
		Services										
		Conveying										
		Elevator		S	Pre	G	Pro	G	Co	G	As	
		Electrical										
		Battery Powered Emergency Lighting and Exit Lighting		S	Pre	G	Pro	G	Co	G	As	
		Electric Heat Trace System		S	Pre	G	Pro	G	Co	G	As	
		Fuse Disconnect		S	Pre	G	Pro	G	Co	G	As	
		Lighting		S	Pre	G	Pro	G	Co	G	As	
		Interior Lighting		S	Pre	G	Pro	G	Co	G	As	
		Exterior Lighting		S	Pre	G	Pro	G	Co	G	As	
		Lighting Control System		S	Pre	G	Pro	G	Co	G	As	
		Distribution Conduits/boxes		S	Pre	G	Pro	D	Co	D	As	Conduits ≥ 50mm
		Distribution Cable Tray		S	Pre	G	Pro	D	Co	D	As	

		Low Voltage Distribution System		S	Pre	G	Pro	G	Co	G	As	
		Low Voltage Panel Board		S	Pre	G	Pro	G	Co	G	As	
		Low Voltage Transformer		S	Pre	G	Pro	G	Co	G	As	
		Rectifier		S	Pre	G	Pro	G	Co	G	As	
		Uninterruptable Power Supply		S	Pre	G	Pro	G	Co	G	As	
		<i>Static Bypass</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Rectifier</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Battery</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Inverter</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Fire Detection</i>										
		Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Fire Detection System		S	Pre	G	Pro	G	Co	G	As	
		<i>Fire Protection</i>										
		Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Fire Extinguisher		S	Pre	G	Pro	G	Co	G	As	
		<i>Health & Safety</i>										
		Spill Kits Station		S	Pre	G	Pro	G	Co	G	As	
		<i>HVAC</i>										
		Air-Conditioning - Condenser		S	Pre	G	Pro	G	Co	G	As	
		Air-Conditioning - Indoor Evaporator		S	Pre	G	Pro	G	Co	G	As	
		Duct Heater		S	Pre	G	Pro	G	Co	G	As	
		Fan		S	Pre	G	Pro	G	Co	G	As	
		Air Distribution System		S	Pre	G	Pro	D	Co	D	As	
		Terminal Heater		S	Pre	G	Pro	G	Co	G	As	
		Variable Air Volume Unit		S	Pre	G	Pro	G	Co	G	As	
		<i>Plumbing</i>										
		Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Domestic Water Distribution System		S	Pre	G	Pro	D	Co	D	As	
		Pedestrian Tunnel										
		Room Interior										
		<i>Door</i>		G	Pre	G	Pro	D	Co	D	As	
		<i>Railing</i>		S	Pre	G	Pro	G	Co	G	As	
		Hand Rail		S	Pre	G	Pro	G	Co	G	As	
		<i>Room Interior</i>		G	Pre	G	Pro	D	Co	D	As	
		Flooring		G	Pre	G	Pro	D	Co	D	As	
		Ceiling		G	Pre	G	Pro	D	Co	D	As	
		Services										
		<i>Conveying</i>										
		Elevator		S	Pre	G	Pro	G	Co	G	As	
		<i>Electrical</i>										

		Battery Powered Emergency Lighting and Exit Lighting		S	Pre	G	Pro	G	Co	G	As	
		Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Electric Heat Trace System		S	Pre	G	Pro	G	Co	G	As	
		Fuel Emergency Shutoff Valve		S	Pre	G	Pro	G	Co	G	As	
		Fuse Disconnect		S	Pre	G	Pro	G	Co	G	As	
		Grounding and Lightning Protection System		S	Pre	G	Pro	G	Co	G	As	
		Lighting		S	Pre	G	Pro	G	Co	G	As	
		<i>Interior Lighting</i>		S	Pre	G	Pro	G	Co	G	As	
		Lighting Control System		S	Pre	G	Pro	G	Co	G	As	
		Distribution Conduits/boxes		S	Pre	G	Pro	D	Co	D	As	Conduits ≥ 50mm
		Distribution Cable Tray		S	Pre	G	Pro	D	Co	D	As	
		Low Voltage Distribution System		S	Pre	G	Pro	G	Co	G	As	
		Low Voltage Panel Board		S	Pre	G	Pro	G	Co	G	As	
		Low Voltage Transformer		S	Pre	G	Pro	G	Co	G	As	
		Medium/High Voltage Transformer		S	Pre	G	Pro	G	Co	G	As	
		Motor Control Centers (MCC)		S	Pre	G	Pro	G	Co	G	As	
		Switchboard		S	Pre	G	Pro	G	Co	G	As	
		Switchgear		S	Pre	G	Pro	G	Co	G	As	
		Transfer Switch		S	Pre	G	Pro	G	Co	G	As	
		Uninterruptable Power Supply		S	Pre	G	Pro	G	Co	G	As	
		<i>Static Bypass</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Rectifier</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Battery</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Inverter</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Fire Detection</i>										
		Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Fire Detection System		S	Pre	G	Pro	G	Co	G	As	
		<i>Fire Protection</i>										
		Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Fire Extinguisher		S	Pre	G	Pro	G	Co	G	As	
		<i>HVAC</i>										
		Air-Conditioning - Condenser		S	Pre	G	Pro	G	Co	G	As	
		Air-Conditioning - Indoor Evaporator		S	Pre	G	Pro	G	Co	G	As	
		Boiler		S	Pre	G	Pro	G	Co	G	As	
		Building Automation Controls		S	Pre	G	Pro	G	Co	G	As	
		Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Duct Heater		S	Pre	G	Pro	G	Co	G	As	
		Expansion Tank		S	Pre	G	Pro	G	Co	G	As	

		Fan		S	Pre	G	Pro	G	Co	G	As	
		Gas Detection System		S	Pre	G	Pro	D	Co	D	As	
		Gas Distribution - Main Valve		S	Pre	G	Pro	D	Co	D	As	
		Gas Distribution Piping System		S	Pre	G	Pro	D	Co	D	As	
		Glycol Make-Up System		S	Pre	G	Pro	D	Co	D	As	
		HVAC Air Distribution System		S	Pre	G	Pro	D	Co	D	As	
		HVAC Piping System		S	Pre	G	Pro	D	Co	D	As	
		Manual Valve		S	Pre	G	Pro	G	Co	G	As	
		Motor Operated Valve and Actuator		S	Pre	G	Pro	G	Co	G	As	
		Pressure Reducing Valve (PRV)		S	Pre	G	Pro	G	Co	G	As	
		Pressure Regulating Valve (PGV)		S	Pre	G	Pro	G	Co	G	As	
		Pump		S	Pre	G	Pro	G	Co	G	As	
		Separator		S	Pre	G	Pro	G	Co	G	As	
		Terminal Heater		S	Pre	G	Pro	G	Co	G	As	
		<i>Plumbing</i>										
		Backflow Prevention		S	Pre	G	Pro	G	Co	G	As	
		Check Valve		S	Pre	G	Pro	G	Co	G	As	
		Cleaning Solution Dispenser		S	Pre	G	Pro	G	Co	G	As	
		Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Domestic Water Distribution System		S	Pre	G	Pro	D	Co	D	As	
		Expansion Tank		S	Pre	G	Pro	G	Co	G	As	
		Filter		S	Pre	G	Pro	G	Co	G	As	
		Hot Water Heater		S	Pre	G	Pro	G	Co	G	As	
		Motor Operated Valve and Actuator		S	Pre	G	Pro	G	Co	G	As	
		Plumbing Fixture		S	Pre	G	Pro	G	Co	G	As	
		Pressure Reducing Valve (PRV)		S	Pre	G	Pro	G	Co	G	As	
		Pump		S	Pre	G	Pro	G	Co	G	As	
		Strainer		S	Pre	G	Pro	G	Co	G	As	
		Sump Pit		S	Pre	G	Pro	G	Co	G	As	
		Waste Water Collection System		S	Pre	G	Pro	D	Co	D	As	
		Waste Water Lift Station		S	Pre	G	Pro	G	Co	G	As	
		Shell										
		<i>Door</i>		G	Pre	G	Pro	D	Co	D	As	
		<i>Exterior Wall</i>		G	Pre	G	Pro	D	Co	D	As	
		<i>Railing</i>		G	Pre	G	Pro	G	Co	G	As	
		Guard Rail		G	Pre	G	Pro	G	Co	G	As	
		Hand Rail		G	Pre	G	Pro	G	Co	G	As	
		<i>Roof</i>		G	Pre	G	Pro	D	Co	D	As	

		Flat Roof		G	Pre	G	Pro	D	Co	D	As	
		Sloped Roof		G	Pre	G	Pro	D	Co	D	As	
		Window System		G	Pre	G	Pro	D	Co	D	As	
		Tunnel Barrel		G	Pre	G	Pro	D	Co	D	As	
		Substructure		G	Pre	G	Pro	D	Co	D	As	
		Superstructure		G	Pre	G	Pro	D	Co	D	As	
		Tunnel Structure		G	Pre	G	Pro	D	Co	D	As	
		Platform										
		Bus Platform										
		Battery Powered Emergency Lighting and Exit Lighting		S	Pre	G	Pro	G	Co	G	As	
		Bollard		S	Pre	G	Pro	G	Co	G	As	
		Bus Platform		S	Pre	G	Pro	D	Co	D	As	
		Canopy		G	Pre	G	Pro	D	Co	D	As	
		Foundation/Piers		G	Pre	G	Pro	D	Co	D	As	
		Columns		G	Pre	G	Pro	D	Co	D	As	
		Beams and Purlins		G	Pre	G	Pro	D	Co	D	As	
		Enclosure		G	Pre	G	Pro	D	Co	D	As	
		Door		G	Pre	G	Pro	D	Co	D	As	
		Electric Heat Trace System		S	Pre	G	Pro	G	Co	G	As	
		Fire Extinguisher		S	Pre	G	Pro	G	Co	G	As	
		Fixed Furniture		S	Pre	G	Pro	G	Co	G	As	
		Fixed Garbage Bin		S	Pre	G	Pro	G	Co	G	As	
		Floor Heating/ Snow Melting System		S	Pre	G	Pro	G	Co	G	As	
		Railing		S	Pre	G	Pro	G	Co	G	As	
		Guard Rail		S	Pre	G	Pro	G	Co	G	As	
		Hand Rail		S	Pre	G	Pro	G	Co	G	As	
		Lighting		S	Pre	G	Pro	G	Co	G	As	
		Lighting Standard		S	Pre	G	Pro	G	Co	G	As	
		Manhole		S	Pre	G	Pro	D	Co	D	As	
		Platform Edge Tile		S	Pre	G	Pro	D	Co	D	As	
		Rail Mini Accessibility Platform		S	Pre	G	Pro	D	Co	D	As	
		Shelter		S	Pre	G	Pro	D	Co	D	As	
		Sprinkler System		S	Pre	G	Pro	D	Co	D	As	
		Terminal Heater		S	Pre	G	Pro	G	Co	G	As	
		Rail Platform										
		Air-Conditioning - Indoor Evaporator		S	Pre	G	Pro	G	Co	G	As	
		Battery Powered Emergency Lighting and Exit Lighting		S	Pre	G	Pro	G	Co	G	As	
		Canopy		G	Pre	G	Pro	D	Co	D	As	
		Foundation/Piers		G	Pre	G	Pro	D	Co	D	As	
		Columns		G	Pre	G	Pro	D	Co	D	As	
		Beams and Purlins		G	Pre	G	Pro	D	Co	D	As	
		Enclosure		G	Pre	G	Pro	D	Co	D	As	

		Door		G	Pre	G	Pro	D	Co	D	As	
		Fixed Furniture		S	Pre	G	Pro	G	Co	G	As	
		Fixed Garbage Bin		S	Pre	G	Pro	G	Co	G	As	
		Floor Heating/ Snow Melting System		S	Pre	G	Pro	G	Co	G	As	
		Fuse Disconnect		S	Pre	G	Pro	G	Co	G	As	
		Railing		S	Pre	G	Pro	G	Co	G	As	
		Guard Rail		S	Pre	G	Pro	G	Co	G	As	
		Hand Rail		S	Pre	G	Pro	G	Co	G	As	
		Lighting		S	Pre	G	Pro	G	Co	G	As	
		Lighting Standard		S	Pre	G	Pro	G	Co	G	As	
		Low Voltage Distribution System		S	Pre	G	Pro	D	Co	D	As	
		Low Voltage Panel Board		S	Pre	G	Pro	G	Co	G	As	
		Manhole		S	Pre	G	Pro	G	Co	G	As	
		Platform Edge Tile		S	Pre	G	Pro	D	Co	D	As	
		Rail Mini Accessibility Platform		S	Pre	G	Pro	D	Co	D	As	
		Rail Platform		S	Pre	G	Pro	D	Co	D	As	
		Shelter		S	Pre	G	Pro	D	Co	D	As	
		Terminal Heater		S	Pre	G	Pro	G	Co	G	As	
		Utility Pole		S	Pre	G	Pro	G	Co	G	As	
		Roads and Grounds										
		Grounds										
		Bollard		S	Pre	G	Pro	G	Co	G	As	
		Canopy		G	Pre	G	Pro	D	Co	D	As	
		Foundation/Piers		G	Pre	G	Pro	D	Co	D	As	
		Columns		G	Pre	G	Pro	D	Co	D	As	
		Beams and Purlins		G	Pre	G	Pro	D	Co	D	As	
		Enclosure		G	Pre	G	Pro	D	Co	D	As	
		Culvert Apron		G	Pre	G	Pro	D	Co	D	As	
		Diesel Storage Tank		S	Pre	G	Pro	G	Co	G	As	
		Fence		G	Pre	G	Pro	D	Co	D	As	
		Fixed Furniture		S	Pre	G	Pro	G	Co	G	As	
		Fixed Garbage Bin		S	Pre	G	Pro	G	Co	G	As	
		Gate		G	Pre	G	Pro	D	Co	D	As	
		Railing		S	Pre	G	Pro	G	Co	G	As	
		Guard Rail		S	Pre	G	Pro	G	Co	G	As	
		Hand Rail		S	Pre	G	Pro	G	Co	G	As	
		Lighting		S	Pre	G	Pro	G	Co	G	As	
		Lighting Standard		S	Pre	G	Pro	G	Co	G	As	
		Manhole		S	Pre	G	Pro	D	Co	D	As	
		Retaining Wall		G	Pre	G	Pro	D	Co	D	As	
		Shed		G	Pre	G	Pro	D	Co	D	As	
		Utility Meters		S	Pre	G	Pro	G	Co	G	As	
		Utility Pole		S	Pre	G	Pro	G	Co	G	As	
		Grounds Electrical										

		<i>Electrical Distribution</i>										
		Control Panel		S	Pre	G	Pro	G	Co	G	As	
		Emergency Generator		S	Pre	G	Pro	G	Co	G	As	
		Fuse Disconnect		S	Pre	G	Pro	G	Co	G	As	
		Grounding and Lightning Protection System		S	Pre	G	Pro	G	Co	G	As	
		Load Bank		S	Pre	G	Pro	G	Co	G	As	
		Distribution Conduits/boxes		S	Pre	G	Pro	D	Co	D	As	Conduits ≥ 50mm
		Low Voltage Distribution System		S	Pre	G	Pro	G	Co	G	As	
		Low Voltage Panel Board		S	Pre	G	Pro	G	Co	G	As	
		Low Voltage Transformer		S	Pre	G	Pro	G	Co	G	As	
		Manhole		S	Pre	G	Pro	D	Co	D	As	
		Medium/High Voltage Transformer		S	Pre	G	Pro	G	Co	G	As	
		Vehicle Charging Unit		S	Pre	G	Pro	G	Co	G	As	
		<i>Ground Lighting</i>		S	Pre	G	Pro	G	Co	G	As	
		Lighting Standard		S	Pre	G	Pro	G	Co	G	As	
		Ground Utilities										
		<i>Sanitary Sewer</i>										
		Manhole		S	Pre	G	Pro	D	Co	D	As	
		Septic Tank		S	Pre	G	Pro	D	Co	D	As	
		Storage Tank		S	Pre	G	Pro	G	Co	G	As	
		Sanitary Pipe Network		G	Pre	G	Pro	D	Co	D	As	
		<i>Storm Sewer</i>										
		Drainage Catch basin		G	Pre	G	Pro	D	Co	D	As	
		Drainage Culvert Barrel		G	Pre	G	Pro	D	Co	D	As	
		Manhole		G	Pre	G	Pro	D	Co	D	As	
		Separator		S	Pre	G	Pro	D	Co	D	As	
		Subsurface Stormwater Control System		G	Pre	G	Pro	D	Co	D	As	
		Storm Pipe Network		G	Pre	G	Pro	D	Co	D	As	
		<i>Water Supply</i>		G	Pre	G	Pro	D	Co	D	As	
		Fire Hydrants		G	Pre	G	Pro	D	Co	D	As	
		Water Supply Pipe Network		G	Pre	G	Pro	D	Co	D	As	
		Parking Lot										
		<i>Parking Area</i>										
		Parking Area		G	Pre	G	Pro	D	Co	D	As	
		<i>Traffic Barrier</i>										
		Traffic Barrier		G	Pre	G	Pro	D	Co	D	As	
		Process Systems										
		<i>Fuel Distribution System</i>										
		Storage Tank		S	Pre	G	Pro	G	Co	G	As	
		Fuel Pipe Network		G	Pre	G	Pro	D	Co	D	As	
		<i>Site Electrical Utilities</i>										
		Utility Pole		S	Pre	G	Pro	G	Co	G	As	

		Roadways										
		<i>Bus Loop</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Roadway</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Traffic Barrier</i>		S	Pre	G	Pro	G	Co	G	As	
		Walkway										
		<i>Door</i>		G	Pre	G	Pro	D	Co	D	As	
		<i>Fixed Furniture</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Fixed Garbage Bin</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Railing</i>		S	Pre	G	Pro	G	Co	G	As	
		Guard Rail		S	Pre	G	Pro	G	Co	G	As	
		Hand Rail		S	Pre	G	Pro	G	Co	G	As	
		<i>Lighting</i>		S	Pre	G	Pro	G	Co	G	As	
		Lighting Standard		S	Pre	G	Pro	G	Co	G	As	
		<i>Pedestrian Walk way</i>		S	Pre	G	Pro	D	Co	D	As	
		<i>Shelter</i>		S	Pre	G	Pro	D	Co	D	As	
		<i>Stairway</i>		S	Pre	G	Pro	D	Co	D	As	
		Bus Garage Facilities										
		Main Building		G	Pre	D	Pro	D	Co	D	As	
		Windshield Cart		G	Pre	D	Pro	D	Co	D	As	
		Process Systems		G	Pre	D	Pro	D	Co	D	As	
		<i>Bulk Fluids Systems</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Fuel Distribution System</i>		G	Pre	D	Pro	D	Co	D	As	
		Check Valve		G	Pre	D	Pro	D	Co	D	As	
		Fuel flow meter; Fuel Bay		G	Pre	D	Pro	D	Co	D	As	
		Fuel Relief/Slop tank		G	Pre	D	Pro	D	Co	D	As	
		Storage Tank		G	Pre	D	Pro	D	Co	D	As	
		<i>Wash System</i>		G	Pre	D	Pro	D	Co	D	As	
		Bus Wash System North		G	Pre	D	Pro	D	Co	D	As	
		Bus Wash System South		G	Pre	D	Pro	D	Co	D	As	
		Pressure washer		G	Pre	D	Pro	D	Co	D	As	
		Room Interior		G	Pre	D	Pro	D	Co	D	As	
		<i>Access Ladder</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Door</i>		G	Pre	G	Pro	D	Co	D	As	
		<i>Fixed Furniture</i>		S	Pre	S	Pro	G	Co	G	As	
		<i>Fixed Garbage Bin</i>		S	Pre	S	Pro	G	Co	G	As	
		<i>Railing</i>		S	Pre	G	Pro	G	Co	G	As	
		Guard Rail		S	Pre	G	Pro	G	Co	G	As	
		Hand Rail		S	Pre	G	Pro	G	Co	G	As	
		<i>Overhead Door</i>		G	Pre	G	Pro	D	Co	D	As	
		<i>Room Interior</i>		G	Pre	G	Pro	D	Co	D	As	
		Flooring		G	Pre	G	Pro	D	Co	D	As	
		Ceiling		G	Pre	G	Pro	D	Co	D	As	
		<i>Stairway</i>		S	Pre	G	Pro	D	Co	D	As	
		<i>Window System</i>		G	Pre	G	Pro	D	Co	D	As	
		<i>Walls and Partition Walls</i>		G	Pre	G	Pro	D	Co	D	As	
		Structure										

		<i>Substructure</i>		G	Pre	G	Pro	D	Co	D	As	
		Footings		G	Pre	G	Pro	D	Co	D	As	
		Foundations		G	Pre	G	Pro	D	Co	D	As	
		Wall Foundations		G	Pre	G	Pro	D	Co	D	As	
		Piles		G	Pre	G	Pro	D	Co	D	As	
		Piers		G	Pre	G	Pro	D	Co	D	As	
		Slab on Grade		G	Pre	G	Pro	D	Co	D	As	
		Grade Beams		G	Pre	G	Pro	D	Co	D	As	
		<i>Superstructure</i>		G	Pre	G	Pro	D	Co	D	As	
		Vertical Members (Columns & Shear Walls)		G	Pre	G	Pro	D	Co	D	As	
		Horizontal Members (Slabs & Beams)		G	Pre	G	Pro	D	Co	D	As	
		Shell		G	Pre	D	Pro	D	Co	D	As	
		<i>Access Platform</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Door</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Roll Up FireDoor</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Door Air Curtain</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Overhead Door</i>		G	Pre	D	Pro	D	Co	D	As	
		Services		G	Pre	D	Pro	D	Co	D	As	
		<i>Air Monitoring System</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Gas Detection System</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>BAS</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Compressed Air Distribution System</i>		G	Pre	D	Pro	D	Co	D	As	
		Air Compressor		G	Pre	D	Pro	D	Co	D	As	
		Compressed Air-Storage Tank		G	Pre	D	Pro	D	Co	D	As	
		<i>Conveying</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Electrical</i>		G	Pre	D	Pro	D	Co	D	As	
		UPS		G	Pre	D	Pro	D	Co	D	As	
		Control Panel		G	Pre	D	Pro	D	Co	D	As	
		Lighting Control System		G	Pre	D	Pro	D	Co	D	As	
		<i>Fire Detection</i>		G	Pre	D	Pro	D	Co	D	As	
		<i>Fire Protection</i>		G	Pre	D	Pro	D	Co	D	As	
		Sprinkler System		G	Pre	D	Pro	D	Co	D	As	
		Fire Extinguisher		G	Pre	D	Pro	D	Co	D	As	
		Fire Hydrants		G	Pre	D	Pro	D	Co	D	As	
		<i>Health and Safety</i>		S	Pre	G	Pro	G	Co	G	As	
		Emergency Defibrillator		S	Pre	G	Pro	G	Co	G	As	
		First Aid Kit		S	Pre	G	Pro	G	Co	G	As	
		Spill Kits		S	Pre	G	Pro	G	Co	G	As	
		<i>HVAC</i>		S	Pre	G	Pro	G	Co	G	As	
		Bus Exhaust System		S	Pre	G	Pro	G	Co	G	As	
		Air-Conditioning- Condenser		S	Pre	G	Pro	G	Co	G	As	
		Air Handling Unit		S	Pre	G	Pro	G	Co	G	As	
		Boiler; Glycol Heating		S	Pre	G	Pro	G	Co	G	As	
		Boiler; Hot Water Heating		S	Pre	G	Pro	G	Co	G	As	

		Fan		S	Pre	G	Pro	G	Co	G	As	
		Floor Heating/ Snow Melting System		S	Pre	G	Pro	G	Co	G	As	
		Gas Detect		S	Pre	G	Pro	G	Co	G	As	
		Heater		S	Pre	G	Pro	G	Co	G	As	
		HVAC Air Distribution System		S	Pre	G	Pro	G	Co	G	As	
		<i>Lifting Devices</i>		S	Pre	G	Pro	G	Co	G	As	
		Crane		S	Pre	G	Pro	G	Co	G	As	
		Elevator		S	Pre	G	Pro	G	Co	G	As	
		In Ground Hoist		S	Pre	G	Pro	G	Co	G	As	
		Jack Stand		S	Pre	G	Pro	G	Co	G	As	
		Portable Column Lift		S	Pre	G	Pro	G	Co	G	As	
		<i>Plumbing</i>		S	Pre	G	Pro	G	Co	G	As	
		Plumbing Fixture		S	Pre	G	Pro	G	Co	G	As	
		<i>Toilet</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Faucet</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Urinal</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Fountains</i>		S	Pre	G	Pro	G	Co	G	As	
		Backflow Prevention		S	Pre	G	Pro	G	Co	G	As	
		Emergency Eyewash		S	Pre	G	Pro	G	Co	G	As	
		Hot Water Heater		S	Pre	G	Pro	G	Co	G	As	
		Pump		S	Pre	G	Pro	G	Co	G	As	
		Roads and Grounds		S	Pre	G	Pro	G	Co	G	As	
		Grounds Electrical		S	Pre	G	Pro	G	Co	G	As	
		<i>Electrical Distribution</i>		S	Pre	G	Pro	D	Co	D	As	
		<i>Grounds Lighting</i>		S	Pre	G	Pro	G	Co	G	As	
		Grounds		S	Pre	G	Pro	G	Co	G	As	
		<i>Gate</i>		S	Pre	G	Pro	G	Co	G	As	
		Grounds Utilities		S	Pre	G	Pro	D	Co	D	As	
		<i>Sanitary Sewer</i>		S	Pre	G	Pro	D	Co	D	As	
		<i>Storm Sewer</i>		S	Pre	G	Pro	D	Co	D	As	
		<i>Water Supply</i>		S	Pre	G	Pro	D	Co	D	As	
		Parking Lot		S	Pre	G	Pro	G	Co	G	As	
		Process Systems		S	Pre	G	Pro	G	Co	G	As	
		<i>Bulk Fluid Systems</i>		S	Pre	G	Pro	D	Co	D	As	
		<i>Fuel Distribution System</i>		S	Pre	G	Pro	D	Co	D	As	
		Roadways		S	Pre	G	Pro	G	Co	G	As	
		Salt Dome		S	Pre	G	Pro	G	Co	G	As	
		Walkway		S	Pre	G	Pro	G	Co	G	As	
		Rail Facilities		The Rail Facilities follows same Asset Hierarchy as Stations along with their specialized Process Systems								
		Process Systems										
		Locomotive Wash System										
		<i>Water Distribution System</i>		S	Pre	G	Pro	D	Co	D	As	
		<i>Wastewater Distribution System</i>		S	Pre	G	Pro	D	Co	D	As	
		<i>Compressed Air</i>		S	Pre	G	Pro	G	Co	G	As	
		<i>Chemical Distribution System</i>		S	Pre	G	Pro	D	Co	D	As	

[illegible]

6. Asset Class Specific Attributes

The asset-specific attributes listed in the following sections are required for the asset classes along with all the generic/standard attributes for the assets (BIM Objects) and custom fields stated in their respective Metrolinx's MAL/Data Dictionaries available on External GO Site

The following **TYPE** codes must be used for Attribute data throughout the Asset Classes.

Value Type codes:

Pl	predefined list
Nu	numeric
Ft	free text (mx 255 characters)
Da	date (mm/dd/yyyy)
Me	memo (free text 1gb limit)

Asset Type Codes:

- Location/Where (W)** - Information relating to the location of the asset
- Information (I)** - Historic information about the asset, i.e., source, date submitted, version etc.
- Attributes (A)** - Factual information about the asset UAID, dimensions etc.
- Relationships (R)** - Relationship to other assets.
- Links (L)** - Links to other data sources or systems

6.1 Civil Structure Systems

Asset Class Name: Civil Structure Systems

Reference Document: Mx's Civil Asset Information and Data Dictionary (MX-ALM-DIC-001)
Mx's Asset Information Standard (MX-ALM-STD-001)

Attribute Name	Asset Type	Value Type	Unit/type	Definition
Name /Title	A	Pl	Name	The name or title of the asset
Description	I	Ft	Text	Description of the asset and its function
Start Mile	W	Nu	Number (mile)	Start Mile of a linear asset
End Mile	W	Nu	Number (mile)	End Mile of a Linear Asset
Owner	A	Ft	Name	Owner of Asset / Responsible for
Location	A	Ft	Name	The name of the asset's physical location
System	A	Pl	Text	Signal, Hazard Detection, etc.
Asset ID	A	Ft	Text	Unique ID
Date of Delivery	I	Da	Date	Date format as per Metrolinx
Date of Installation	I	Da	Date	Date format as per Metrolinx
Date of Warranty	I	Da	Date	Date format as per Metrolinx
Commission Date	A	Da	Date	Date format as per Metrolinx
Expected Service Life	A	Nu	Number (Years)	Expected Services life in years
Replacement Value	A	Nu	Value in CAD	Replacement Cost of the Asset in Canadian Dollars
Next Higher Assembly	A	Ft	Text	Component code/description
Document Reference	L	Ft	Text	Link to specific file
Maintenance	I	Ft	Text	Tools specifically needed for maintenance

6.2 Drainage & Ground Utilities

Asset Class Name: Drainage & Ground Utilities

Reference Document: Mx's Civil Asset Information and Data Dictionary (MX-ALM-DIC-001)
Mx's Asset Information Standard (MX-ALM-STD-001)

Attribute Name	Asset Type	Value Type	Unit/type	Definition
Service Status	A	Pl	Name	Owner of Asset
Height	w	Nu	Number (m)	Columns
Width	W	Nu	Number (m)	Width of Room, beams, etc.
Length	W	Nu	Number (m)	Room / Beam length
Start Mile	W	Nu	Number (Mile)	Start Mile of a linear asset
End Mile	W	Nu	Number (Mile)	End Mile of a Linear Asset
Owner	A	Pl	Name	Owner of Asset / Responsible for
System	A	Pl	Text	Doors, Brakes, Compressed Air, etc.
Software	A	Ft	Text	Software vendor and version details
Asset ID	A	Pl	Text	Unique ID
Serial Number	A	Ft	Text	Alpha numeric
Manufacturer Part Number	A	Ft	Text	Alpha numeric
Date of Delivery	I	Da	Date	Date format as per Metrolinx
Date of Installation	I	Da	Date	Date format as per Metrolinx
Date of Warranty	I	Da	Date	Date format as per Metrolinx
Date of Warranty Expiry	I	Da	Date	Date format as per Metrolinx
Commission Date	A	Da	Date	Date format as per Metrolinx
Drawing Reference	I	Ft	Ref ID	MX Drawing reference system
Next Higher Assembly	A	Ft	Text	Component code/description
Expected Service Life	A	Nu	Number (Years)	Expected Services life in years
Replacement Value	A	Nu	Value in CAD	Replacement Cost of the Asset in Canadian Dollars
Installed Position	A	Ft	Text	Serial number to identify into which is installed
Document Reference	L	Ft	Text	Link to specific file

6.3 Tunnels

Asset Class Name: Tunnels

Reference Document: Mx's Civil Asset Information and Data Dictionary (MX-ALM-DIC-001)
Mx's Asset Information Standard (MX-ALM-STD-001)

Attribute Name	Asset Type	Value Type	Unit/type	Definition
Start Mile	A	Nu	Number (Mile)	Start Mile of a Linear Asset
End Mile	A	Nu	Number (Mile)	End Mile of a linear Asset
Chainage	W	Nu	Location	Chainage reference related to Asset
Owner	A	Pl	Name	Owner of Asset
Length	A	Nu	Metres	Horizontal length measured along the centre line of the asset between the start and the finish of the asset
Commission Date	A	Da	Date	Date format as per Metrolinx
Expected Service Life	A	Nu	Number (Years)	Expected Services life in years
Replacement Value	A	Nu	Value in CAD	Replacement Cost of the Asset in Canadian Dollars

6.4 Tracks

Asset Class Name: Tracks

Reference Document: Mx's Track Asset Information and Data Dictionary (MX-ALM-DIC-003)
Mx's Asset Information Standard (MX-ALM-STD-001)

Attribute Name	Asset Type	Value Type	Unit/type	Definition
Start Mile	A	Nu	Number (Mile)	Start Mile of a Linear Asset
End Mile	A	Nu	Number (Mile)	End Mile of a linear Asset
Track ID	A	PI	Track Reference	Track Reference
Owner	A	PI	Name	Owner of Asset
Length	A	Nu	Metres	Horizontal length measured along the centre line of the asset between the start and the finish of the asset
Commission Date	A	Da	Date	Date format as per Metrolinx
Expected Service Life	A	Nu	Number (Years)	Expected Services life in years
Replacement Value	A	Nu	Value in CAD	Replacement Cost of the Asset in Canadian Dollars

6.5 Signals

Asset Class Name: Signals

Reference Document: Mx's Signals Asset Information and Data Dictionary (MX-ALM-DIC-002)
Mx's Asset Information Standard (MX-ALM-STD-001)

Attribute Name	Asset Type	Value Type	Unit/type	Definition
Name /Title	A	Pl	Name	The name or title of the asset
Description	I	Ft	Text	Description of asset and its function
Manufacturer/ vendor	A	Ft	Name	Name of the manufacturer of the asset
Serial Number	W	Nu	Number (m)	Manufacturers Serial number
Manufacturer's Part Number	A	Nu	Number	Manufacturers Part number
Software	A	Ft	Text	Software vendor and version details
Start Mile	W	Nu	Number (Mile)	Start Mile of a linear asset
End Mile	W	Nu	Number (Mile)	End Mile of a Linear Asset
Owner	A	Pl	Name	Owner of Asset / Responsible for
Location	A	Pl	Name	Name of the asset's physical location
System	A	Pl	Text	Signal, Hazard Detection, etc.
Asset ID	A	Pl	Text	Unique ID
Date of Delivery	I	Da	Date	Date format as per Metrolinx
Date of Installation	I	Da	Date	Date format as per Metrolinx
Date of Warranty	I	Da	Date	Date format as per Metrolinx
Commission Date	A	Da	Date	Date format as per Metrolinx
Expected Service Life	A	Nu	Number (Years)	Expected Services life in years
Replacement Value	A	Nu	Value in CAD	Replacement Cost of the Asset in Canadian Dollars
Next Higher Assembly	A	Ft	Text	Component code/description
Document Reference	L	Ft	Text	Link to specific file
Maintenance	I	Ft	Text	The tools that are specifically needed to maintain this particular asset

6.6 Facilities (Includes Stations, Bus and Rail Facilities)

Asset Class Name: Facilities

Reference Document: Mx's Facilities Asset Information and Data Dictionary (MX-ALM-DIC-004, 005, 006)
Mx's Asset Information Standard (MX-ALM-STD-001)

Attribute Name	Asset Type	Value Type	Unit/type	Definition
Service Status	A	Pl	Name	'in service' or 'not in service'
Height	W	Nu	Number (m)	Columns
Width	W	Nu	Number (m)	Width of Room, beams, etc.
Length	W	Nu	Number (m)	Room / Beam length
Start Mile	W	Nu	Number (mile)	Start Mile of a linear asset
End Mile	W	Nu	Number (mile)	End Mile of a Linear Asset
Owner	A	Pl	Name	Owner of Asset / Responsible for
System	A	Pl	Text	Doors, Brakes, Compressed Air, etc.
Software	A	Ft	Text	Software vendor and version details
Asset ID	A	Pl	Text	Unique ID
Serial Number	A	Ft	Text	Alpha numeric
Manufacturer Part Number	A	Ft	Text	Alpha numeric
Date of Delivery	I	Da	Date	Date format as per Metrolinx
Date of Installation	I	Da	Date	Date format as per Metrolinx
Date of Warranty	I	Da	Date	Date format as per Metrolinx
Date of Warranty Expiry	I	Da	Date	Date format as per Metrolinx
Commission Date	A	Da	Date	Date format as per Metrolinx
Drawing Reference	I	Ft	Ref ID	MX Drawing reference system
Expected Service Life	A	Nu	Number (Years)	Expected Services life in years
Replacement Value	A	Nu	Value in CAD	Replacement Cost of the Asset in Canadian Dollars
Next Higher Assembly	A	Ft	Text	Component code/description
Installed Position	A	Ft	Text	Serial number to identify into which is installed
Document Reference	L	Ft	Text	Link to specific file

6.7 Electrification

Asset Class Name: Electrification

Reference Document: Mx's Electrification and Plant Asset Data Dictionary (MX-ALM-DIC-007)
Mx's Asset Information Standard (MX-ALM-STD-001)

Attribute Name	Asset Type	Value Type	Unit/type	Definition
Name /Title	A	Pl	Name	The name or title of the asset
Description	I	Ft	Text	Description of asset and its function
Manufacturer/ vendor	A	Ft	Name	Name of the manufacturer of the asset
Serial Number	W	Nu	Number (m)	Manufacturers Serial number
Manufacturer's Part Number	A	Nu	Number	Manufacturers Part number
Software	A	Ft	Text	Software vendor and version details
Start Mile	W	Nu	Number (mile)	Start Mile of a linear asset
End Mile	W	Nu	Number (mile)	End Mile of a Linear Asset
Owner	A	Pl	Name	Owner of Asset / Responsible for
Location	A	Pl	Name	Name of the asset's physical location
System	A	Pl	Text	Incoming Power Supply, Traction Power, OCS, Grounding, etc.
Asset ID	A	Pl	Text	Unique ID
Date of Delivery	I	Da	Date	Date format as per Metrolinx
Date of Installation	I	Da	Date	Date format as per Metrolinx
Date of Warranty	I	Da	Date	Date format as per Metrolinx
Commission Date	A	Da	Date	Date format as per Metrolinx
Expected Service Life	A	Nu	Number (Years)	Expected Services life in years
Replacement Value	A	Nu	Value in CAD	Replacement Cost of the Asset in Canadian Dollars
Next Higher Assembly	A	Ft	Text	Component code/description
Document Reference	L	Ft	Text	Link to specific file
Maintenance	I	Ft	Text	The tools that are specifically needed to maintain this particular asset