HAS Shared Parameters

Required Project Data for Asset Management Information Exchange, O&M and Houston Airport End-Users Applications

HOUSTON AIRPORTS

Preface

The HAS (Houston Airport System) comprises three airports: IAH (Intercontinental Houston Airport), HOU (Willian P. Hobby Airport) and EFD (Ellington Airport). The daily operation and maintenance (O&M) of these facilities is conducted throught a Computerized Maintenance Management System (CMMS) called INFOR (HAS Asset Management System) and other end-user application such as Onbase (document management application of record) and OASIS (Online Airport Spatial Information System). HAS uses a vertical workflow to integrate the project information starting with the Autodesk software data exported to GIS, in turn, exported to Infor and end-user applications. The ASIS (Airport Spatial Information System) group is the administrator of the data integration process, maintaining repositories, storing record information, managing spaces and keeping updated the features associated with buildings, utilities, airside, landside, properties, etc.

HAS capitalizes on the technological advantages inherent of the BIM process for incoming projects. Such advantages are clear for the Design and Construction phases. However, the manner in which the Construction team and the A/E manage the BIM files can benefit the Facility Management with an abundance of information embedded in the Model.

Previously, a gap existed between the system elements of a project and much of the associated information necessary to address the building lifecycle for use in end-user applications. As-built CAD drawings produced the shape and location of a project's basic components but no information needed for operation and management (maintenance?). Most of the valuable asset data was either lost in submittal or simply not delivered to HAS even when it had been compiled during the Design and Construction process. BIM can help to close the gap organically. A genuine BIM software can process a considerable amount of data and automate the design or construction processes with less margin of error if set up and handle correctly.

The introduction of BIM technology in the industry introduced the capability of the BIM software to integrate visual information with data produced in the Design, Construction, Commissioning, and Operation stages. The "I" in BIM relates to the concept that all shared information between all parts involved in the process and the data-rich Model created will be used as the basis for maintenance and operation. But the reality is there are a lot of aspects and external elements that may affect the performance of the required data, and the transition to HAS, such as:

- Information from multiple sources, and delivered in different project stages.
- Irrelevant parameters to the O&M program and HAS end-user. Some parameters are only created for design and construction purposes and are not necessary for the building lifecycle.
- Duplicated parameter names with different values.
- Time-cost working on Models cleaning and updating.
- 3^{erd} part software used by AEC (project data is developed and printed outside the approved BIM software).
- Data communication between all stakeholders may fail or may be poor.
- Big Data management.
- HAS standardized names (acronyms, level values, space functions).
- Control how the data is being provided, its quality, or when it is delivered.

Since 2015, the ASIS team has had a natural question about using BIM technologies to close the information gap and enhance the data integration roadmap. We needed a plan to respond to four fundamental questions:

1. What information is needed?
2. How must the information be collected, organized, and exported into ASIS?
3. When must the information be collected, organized, and exported into ASIS?
4. Who is responsible for each of the above actions?

Answering the first question has resulted in the HAS Shared Parameters file. It's the project data that must be collected during the design and construction phases. What is it?

The HAS Shared Parameters is a list of needed data from specific equipment and components that are part of the Asset Management System and Houston Airport end-user applications. They are standardized parameters and value names; they help to avoid confusing information and losing crucial data. The HAS Shared Parameters become part of the HAS BIM requirements for capturing project information for the building lifecycle.

The team interviewed the subject matter experts and HAS asset managers of over 30 disciplines, collected their technical opinions, and finalized the results in the form of matrices on the following pages. Later, numerous iterations took place to clarify, expand or update the list. Finally, a handful of selected projects were chosen to test the application of the parameters. The entire process took five years, and the final is Version five.

There are 17 Systems. Each system contains two parts:

1. Components: These are the physical assets that are part of the Building Lifecycle program that needs active monitoring and management by both HAS Asset Management System and HAS end-user.
2. Parameters: This is the data that HAS Asset Management needs from specific components to operate and maintain HAS facilities and underground utilities.

The main focus of this entire document is the relationships between Components and the associated Parameters. Some data must be applied to all the Components universally. They have been arranged in one sheet and called Ubiquitous Parameters. In some systems, Parameters and Component names are repeated as part of the same function in different systems.

The ASIS team was confronted with a different challenge while attempting to answer the remaining questions. The team gradually realized that the three questions were intertwined. Since any plan must consider:

- The limits and requirements of the contract delivery method.
- Communication and cooperation between the contractor and the designer.

No part of this entire process is fully controllable by HAS ASIS team. For example, the contract delivery method is determined by much larger forces and fundamentally affects how the data is collected and provided to the team. Consequently, the response is a continuous effort. It starts with the BIM/ASIS section in any HAS contracts, developing a BIM Execution Plan for each project, assembling and monitoring workflows and processes, and eventually adding all the data to a set of "Record Models." Again, the BIM process document only responds to the first question: "What information is needed?"

If you have questions, contact the following BIM Managers:

For HAS projects, BIM/ASIS team
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We will be glad to answer all inquiries to the best of our ability.
Thank You

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Processing Parameters and Components

HOUSTON AIRPORTS

Definitions.

Object	Any Revit Family or Civil3D Object that is part of the Model(s) subject to the process. The process does not contain 2D graphics or data Objects such as column grids, planes, levels, etc.
Components	Any Object defined in the Houston Airport System Asset Management Application as a crucial element for the Building Lifecycle and Operation.
Exportable Component (EC)	An Object is considered exportable if the values in the HAS_System and HAS_Component parameters are NOT classified as N/A.
N/A	Not applicable (Object not exportable)
Data Collection Responsible Party	The party contractually responsible for collection of data.
Data Entry Responsible Party	The party contractually responsible for data entry activity.
Data Entry Clerk	Member of staff responsible for entering or updating data into the model

Process.

Reminder 1.	Most special characters shall not be used for the values in the parameters. The ONLY special characteres allowed are the foot mark (known as prime, ', ASCII Code U+02B9), inch mark (known as double prime, ″, ASCII Code U+2023), degree (°), dot (.), dash(-)
Reminder 2.	Data Collection Responsible Party must collect the data assigned and transmit to the Data Entry Responsible Party in the manners agreed between the two parties.
Step 1.	Apply **HAS_Category; HAS_Facility; HAS_Level, HAS_Group** and **HAS_ProjectNumber** to all the Objects in the model ***without any exception*** .
TIP 1.	Designers inherently use multiple levels in Revit. These levels are not necessarily equivalent with HAS_Level values. The Data Entry Responsible Party shall consult with HAS ASIS team before assigning HAS_Level values to Revit families.
Step 2.	Verify if one of the systems defined in Appendix C can be assigned to the Object. In other words, the **HAS_SystemName** parameter must have a value assigned to the Object. If the answer is NO, SET THE VALUE TO N/A and STOP. No more action is needed; go to Step 6. (Start over the process with a new object.) If YES, go to Step 3.
Step 3.	Verify if one of the components defined in Appendix F could be assigned to the Object. *Refer to Appendix G for more clarification* . In other words, the parameter **HAS_ComponentType** must have a value assigned to it (from Component Name column in Appendix F). If the answer is NO, SET THE VALUE TO N/A and STOP. No more action is needed; go to Step 6. (Start over the process with a new object.) If YES, go to Step 4.
Reminder 3.	With both HAS_System and HAS_ComponentType defined for the Object, the Object is now considered an **Exportable Component (EC)**.
Step 4.1.	If the value of HAS_SystemName is set to either BHS, ELEC, FIRE, HVAC, HYDO, or WATR; then check Exportable Component with Appendix D for the HAS_Subsystem value.
Step 4.2.	Apply ***the rest of the Ubiquitous Parameters*** to the Exportable Component, according to the guidance. See Ubiquitous Parameters tab.
Clarification 1.	"***The rest of Ubiquitous Parameters***" in step 4.2 refers to: HAS_Manufacturer; HAS_Model; HAS_ProductPageURL, and HAS_EquipID.
Clarification 2.	If a parameter does not apply to the Exportable Component, the value of that parameter shall be set to N/A.
Step 5.	Go to the relevant **green tab** (on Excel file). Find the appropriate parameters for the Exportable Component and enter the values for it.
Reminder 4.	As described in the process, the Ubiquitous Parameters shall be assigned only to the Exportable Components except for the parameters in Step 1.
Step 6.	Repeat the process for the next Object.

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Ubiquitous Parameters

HAS Ubiquitous Parameters

Parameter	Description	Format	Format Example	Value Range	Comment	Step (Process Page)
HAS_Level	Level	Alphanumeric	L1	Go to Appendix E	**Assigned to ALL the objects in the models.** Refer to Appendix E for more information.	1
HAS_Category	Category	Alphabetic	B	Go to Appendix A	**Assigned to ALL the objects in the models.**	1
HAS_EquipID	Unique combination to identify the equipment.	Alphanumeric	PN525.ELEC.12536, TIP525.HVAC.44111.	Go to Appendix F; The format = Component Code+No.	**Assigned to some of the objects in the model.** **Value format:** Project Number+System Code+No. A) No. is an arbitrary and consecutive number. B) The data entry clerk shall generate the part number. The System Code must be selected from Appendix F. C) The Project Number+Component Code+No. must be: 1. A unique combination in the model, and 2. Maximum 25 characters.	4.2
HAS_Facility	Airport acronym letter designator	Alphabetic	See next column	ONLY one of the three (3) values: **IAH, HOU, EFD**	**Assigned to ALL the objects in the models.**	1
HAS_ProjectNumber	Project number	Alphanumeric	PN.I860, CIP520, TIP320		**Assigned to ALL the objects in the models.**Project Number generated by HAS for each project. Communicate with your HAS Project Manager to obtain the number.	1
HAS_SystemName	Identifies asset system	Alphabetic	HVAC, N/A	Go to Appendix C	**Assigned to some of the objects in the model.** Use the **System Code** values in Appendix C.	2
HAS_ComponentType	Identifies asset component	Alphanumeric	ArtWork, Power Turn 30 deg, Junction Box Connection, Electrical Panel, Pressure Regulator.	Go to Appendix F	**Assigned to some of the objects in the model.** Reminder: Use the Component Name column values in Appendix F.	3
HAS_SubSystem	Element inside system	Alphanumeric	CT, Foam System.	Go to Appendix D	**Applicable to only some of the objects in BHS, ELEC, FIRE, HVAC, HYDO, and WATR systems.** Use the **Subsystem Code** values in Appendix D.	4.1
HAS_Group	Building or airfield ID	Alphanumeric	I.S660A	Go to Appendix B	**Assigned to ALL the objects in the models.**	4.2
HAS_Manufacturer	Make	Alphanumeric	Temtrol, Honeywell		**Assigned to some of the objects in the model.**	4.2
HAS_Model	Manufaturers model	Alphanumeric	CT152635		**Assigned to some of the objects in the model.**	4.2
HAS_ProductPageURL	Link to the product page, cut sheet, data sheet, etc.	Weblink	www.widgets-r-us.com\products\ww1001		**Assigned to some of the objects in the model.**	4.2

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System Code: ARCH

Architectural System

Architectural Components

Comment	Format	Format Example	UOM	Description	Architectural Parameters	Cladding	Ceiling	Canopy	Door	Fence	Floor	Furnishings / Furniture	Handrail	Millwork & Service Counter	Sign	Stair	ArtWork	Wheelchair Ramp	Guard Rail	Curb	Barrier	Wall	Curtain Wall	Roof	Room	Restroom Partition	Automated External Defibrillator	Data Collection Responsible Party	Data Entry Responsible Party
					<< Component Name																								
					<< Component Code	CLDG	CLNG	CNPS	DOOR	FENC	FLOR	FURN	HDRL	MLWK	SIGN	STRS	ARTW	WCR	GRAL	CURB	BARR	WALL	CWAL	ROOF	ROOM	RRPT	AED		
	Alphanumeric	A.C203.1	N/A	Door number is equals to HAS_RoomNumber. Use letter designators attached to numbers when multiple doors open to the same room.	HAS_DoorNumber				●																				
	Alphabetic	Single door, Double door	N/A	See Appendix H	HAS_DoorType				●																				
	Alphanumeric	C.S105.7	N/A	The room numbering of the electrical room that feeds the specific room	HAS_ElecRoom																				●				
	Alphanumeric	Office, Bullpen 1, Lobby	N/A	HVAC zone	HAS_HVACZone																				●				
	Alphanumeric	Aluminium	N/A	Door material	HAS_Material	●	●	●	●	●	●		●	●	●				●										
	Alphanumeric	C.S105.5	N/A	Room numbering of the mechanical room that feeds specific room	HAS_MechRoom																				●				
	Alphanumeric	30'	Foot	Mean Sea Level; Only applies to levels and rooftops. For rooftops, it will measure the ridge.	HAS_MSL																			●					
	Alphanumeric	KEE, TPO, BU	N/A	Roof system name	HAS_RoofSystem																			●					
	Alphanumeric	May 6, 2020	N/A	Roof warranty effective date	HAS_RoofWarrantyEffectiveDate																			●					
	Alphanumeric	May 7, 2040	N/A	Roof warranty expiration date	HAS_RoofWarrantyExpirationDate																			●					
	Alphanumeric	Gate 1, United Club, AA counters, executive office, etc	N/A	The name of the room	HAS_RoomName																				●				
	Alphanumeric	A.C203.1	N/A	Room number as per HAS room number requirements. It is assigned per project, usually during design development phase. Contact HAS ASIS Team	HAS_RoomNumber									●	●	●	●	●							●				
	Alphabetic	Storage	N/A	See Appendix I.	HAS_SpaceFunction																				●				
	Alphanumeric	A.C203.3	N/A	Room numbering of the telecom room that feeds the specific room	HAS_TelecomRoom																				●				
				Refer to Ubiquitous Parameters section	Ubiquitous	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		

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System Code: BHS

Baggage Handlings System

Comments	Format	Format Example	UOM	Description	Parameter	CONT	BHS	MCP	MOTO	VFD	VSU	MER	PT30	PT45	PT90	PT180	CD	FD	SD	MU	HCD I	HSD I	HSD II	HSD III	ATR	RCP	ELPN	Data Collection Responsible Party	Data Entry Responsible Party
						Controls and Instrumentation	Baggage Handling System	Master Control Panel	Motor	Variable Frequency Drive	Verti Sort Unit	Merge	Power Turn 30 deg.	Power Turn 45 deg.	Power Turn 90 deg.	Power Turn 180 deg.	Carousel	Fire Door	Security Door	Make-Up Unit	High Capacity Diverter	High Speed Diverter I	High Speed Diverter II	High Speed Diverter III	Automatic Tag Reader	Remote Control Panel	Electrical Panel	<< Component Name		
						CONT	BHS	MCP	MOTO	VFD	VSU	MER	PT30	PT45	PT90	PT180	CD	FD	SD	MU	HCD I	HSD I	HSD II	HSD III	ATR	RCP	ELPN	<< Component Code		
	Alphanumeric	23A	Ampere	Electric Current Rating	HAS_Amp		●	●	●	●																●			
	Numeric	10	AWG	American Wire Gauge	HAS_AWG		●	●																					
Bar code is created and provided by HAS.	Alphanumeric	I.B.E645.BHS16	N/A	Bar codes that the asset management department assigns to specific components	HAS_BarCode	●	●	●	●																		●		
	Alphanumeric	30 Hz	Hertz	Baggage Belt Frequency	HAS_BeltFrequency		●			●																			
	Alphanumeric	13000'	Foot	Baggage Belt Length	HAS_BeltLength		●				●	●	●	●	●	●													
	Alphanumeric	ETDI-06	N/A	Baggage Belt section number (unique Identifier)	HAS_BeltLineID		●			●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		
	Alphanumeric	20 FPM	Foot per Minute	Baggage Belt Speed	HAS_BeltSpeed		●				●	●	●	●	●	●													
	Alphanumeric	2'	Foot	Baggage Belt Width	HAS_BeltWidth		●				●	●	●	●	●	●													
	Alphanumeric	8500 Bags/hour	Bags per Hour	Quantity of Bags	HAS_BHSCapacity												●												
	Alphanumeric	A 11	N/A	Breaker number inside the panel	HAS_BreakerNumber		●	●	●		●							●	●		●	●	●	●					
	Alphanumeric	E12	N/A	Electrical Circuit Number	HAS_Circuit		●	●			●																		
	Alphanumeric	5kw	Kilowatt	Energy Consumption	HAS_DemandKW		●		●	●																			
	Numeric	3	N/A	Equipment Voltage Phase	HAS_ElecPhase				●								●												
	Alphanumeric	C.C201.3	N/A	Room numbering of the electrical room that feeds specific electrical panel, etc	HAS_ElecRoom			●																			●		
	Alphanumeric	Rubber	N/A	Material	HAS_Material		●				●	●	●	●	●	●													
	Alphanumeric	40HP	Horse Power	Rated horsepower	HAS_MotorHP		●		●		●	●	●	●	●	●	●												
	Alphanumeric	2EHA	N/A	Electrical Panel Name ID	HAS_Panel		●	●	●	●	●							●			●	●	●	●		●	●		
	Alphabetic	Portes, Transnorm	N/A	Type of Power Turn	HAS_PowerturnType								●	●	●	●													
	Alphanumeric	2EHB	N/A	From what electrical panel power is fed	HAS_SupplyFrom																						●		
	Alphanumeric	208v	Volt	Operating Voltage	HAS_Volt		●	●	●	●	●	●	●	●	●	●	●	●	●	●									
	Alphabetic	Incline, Decline and Transport	N/A	Belt position (horizontal, transport or inclined)	HAS-BHSType		●	●																					
				Refer to Ubiquitous Parameters section	Ubiquitous	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		

Baggage Handlers Components

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System Code: ELEC

Electrical System

Electrical Components

Comment	Format	Format Example	UOM	Description	Parameter	Alarm	Breaker	Power Cable	Casing	Controls and Instrumentation	Ductbank, Electric Utility	Electrical Panel	Electrical Switch Gear	Generator	Junction Box	Lighting	Emergency Light	Manhole	Meter	Motor	Electrical Outlet	Rack, Electric Utility	Sensor	Switch	Transformer	Uninterruptible Power Supply	Vault	<< Component Name
						ALRM	BRKR	CABL	CSNG	CONT	DUBK	ELPN	ELSG	GENR	JUNB	LITE	EMLI	MHOL	METR	MOTO	OUTL	RACK	SNSR	SWCH	XFMR	UPS	VALT	<< Component Code
	Alphanumeric	5A	Ampere	Electric Current	**HAS_Amp**		●	●				●	●	●					●	●				●	●			
	Numeric	10	AWG	American Wire Gauge	**HAS_AWG**			●																				
Bar code is created and provided by HAS.	Alphanumeric	I.B.E645.ELEC0057	N/A	Bar codes that the asset management department assigns to specific components	**HAS_BarCode**		●			●	●	●	●	●	●				●	●		●		●	●	●	●	
	Alphanumeric	A 11	N/A	Breaker number inside the panel	**HAS_BreakerNumber**	●	●	●				●		●		●	●			●	●		●	●	●	●		
	Alphanumeric	E12	N/A	Circuit Number	**HAS_Circuit**	●	●	●				●				●	●			●	●	●	●	●		●		
	Alphanumeric	C.C201.3	N/A	Room numbering of the electrical room that feeds specific equipment.	**HAS_ElecRoom**																●			●				
	Alphanumeric	10A	Ampere	Rated Input Electric Current	**HAS_InputAmp**							●													●			
	Alphanumeric	220V	Volt	Rated Input Volt	**HAS_InputVolt**																				●			
	Alphanumeric	13kVA	Kilo Volt-Ampere	KVA Rating	**HAS_KVA**																				●			
	Alphanumeric	40HP	Horse Power	Rated horsepower	**HAS_MotorHP**															●								
	Alphanumeric	15A	Ampere	Rated Input Electric Current	**HAS_OutputAmp**							●		●											●			
	Alphanumeric	225V	Volt	Rated Output Volt	**HAS_OutputVolt**									●											●			
	Alphanumeric	2EHA	N/A	Electrical Panel Name ID	**HAS_Panel**	●				●		●		●		●	●	●		●	●			●	●	●		
	Numeric	3	N/A	Numbers of Poles	**HAS_PolesQty**							●	●	●						●					●			
	Numeric	0.8	N/A	Power Factor	**HAS_PowerFactor**									●						●					●			
	Alphanumeric	E26	Edison Screw Base	Type of Socket	**HAS_SocketType**											●	●											
	Alphanumeric	2EHB	N/A	From what electrical panel power is fed	**HAS_SupplyFrom**							●																
	Alphanumeric	208v	Volt	Operating Voltage	**HAS_Volt**	●	●	●		●		●	●	●		●	●		●	●	●		●	●	●	●		
	Alphanumeric	80w	Watt	Rated Wattage	**HAS_Wattage**											●	●			●						●		
				Refer to Ubiquitous Parameters section	**Ubiquitous**	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	

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System Code: FIRE

Fire System

Comment	Format	Format Example	UOM	Description	Fire Parameters	Alarm	Cable	Electrical Panel	Fire Alarm Control	Piping	Pump	Sensor	Sprinkler	Standpipe (Fire)	Tanks	Valve	Smoke detector	Warning lights	Pull Box	Emergency Voice Alarm Communication System	Air Compressor	Fire Door	Fire extinguisher	<< Component Name	<< Component Code	Data Collection Responsible Party	Data Entry Responsible Party
						Fire Components																			ALRM	CABL	ELPN	FACP	PIPE	PUMP	SNSR	SPRK	STAN	TANK	VALV	SMOK	WLIG	PUBX	EVAC	ACMP	FIDR	FIEX				
	Alphanumeric	23A	Ampere	Electric current	HAS_Amp						●					●					●						
Bar code is created and provided by HAS.	Alphanumeric	I.B.E645.FIRE0057	N/A	Bar codes that the Asset Management assigns to specific components	HAS_BarCode	●		●	●		●				●						●						
	Alphanumeric	E12	N/A	Source electrical circuit	HAS_Circuit			●	●		●							●	●	●	●						
	Alphanumeric	A.C203.1	N/A	Door number; Equals to HAS_RoomNumber. Use letters when multiple doors open to the same room.	HAS_DoorNumber																	●					
	Alphabetic	Single door, Double door	N/A	See Appendix H	HAS_DoorType																	●					
	Numeric	3	N/A	Equipment Voltage Phase	HAS_ElecPhase						●																
	Alphanumeric	B.N201.1.3	N/A	Room numbering of the electrical room that feeds specific equipment	HAS_ElecRoom			●	●		●							●			●						
	Alphabetic	Class A, Class B, Class C, Class D, Class K		NFPA class	HAS_FireExtinguisherClass																		●				
	Alphanumeric	10"	Inch	Size In	HAS_InletSize						●				●	●											
	Alphanumeric	Copper-L	N/A	Material composition	HAS_Material					●					●							●					
	Alphanumeric	B.C203.1	N/A	Room numbering of the mechanical room where the specific component is tied, controlled, or fed	HAS_MechRoom			●	●		●										●						
	Alphanumeric	80HP	Horse Power	Rated horsepower	HAS_MotorHP						●										●						
	Alphanumeric	6"	Inch	Size of the outlet	HAS_OutletSize						●				●						●						
	Alphanumeric	2EHA	N/A	Electrical Panel Name ID	HAS_Panel	●		●	●		●						●	●	●	●	●						
	Alphanumeric	1/2"	Inch	Pipe Diameter	HAS_PipeSize					●			●														
	Alphanumeric	1660Psi	Pounds per Square Inch	Operating Pressure	HAS_Pressure					●				●	●												
	Alphanumeric	50GPM	Foot	Flow Capacity	HAS_PumpCapacity						●																
	Alphanumeric	5042685KOL	N/A	Manufacturer serial number	HAS_SerialNumber						●										●						
	Alphanumeric	2EHB	N/A	From what electrical panel power is fed	HAS_SupplyFrom			●																			
	Alphanumeric	60G	Gallon	Tank Size	HAS_TankSize										●												
	Alphabetic	Recirculation pump, dry valve, gate valve, lubricated air compressor, pendent sprinkler heads,etc	N/A	Component Type. Class, description, or characteristics that distinguish component groups by function types or mechanisms.	HAS_Type						●		●			●					●						
	Alphanumeric	225V	Volt	Operating Voltage	HAS_Volt						●										●						
	Alphabetic	Dry,Wet	N/A	Wet or Dry System	HAS_Wet/Dry					●						●							●				
				Refer to Ubiquitous Parameters section	Ubiquitous	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				

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System Code: CONV

Convenyance System

Comment	Format	Format Example	UOM	Description	Parameter	Elevator (ELEV)	Electrical Panel (ELPN)	Escalator (ESCA)	Hoistway (HWAY)	Oil Tank (OTNK)	Control Panel (CPNL)	Motor (MOTO)	Moving Sidewalk (MVSW)	Data Collection Responsible Party	Data Entry Responsible Party
						<< Conveyance Components / Component Name / Component Code									
	Alphanumeric	23A	Ampere	Electric current rating	HAS_Amp	●		●			●	●	●		
	Numeric	10	AWG	American Wire Gauge	HAS_AWG	●	●	●			●	●	●		
Bar code is created and provided by HAS.	Alphanumeric	I.B.E645.ELEV13	N/A	Bar codes that the Asset Management assigns to specific components	HAS_BarCode	●	●	●					●		
	Alphanumeric	E12	N/A	Electrical circuit number	HAS_Circuit	●	●	●			●	●	●		
This value is provided by HAS.	Alphanumeric	A-1	N/A	Consecutive number assigned to each elevator	HAS_ConveyanceNumber	●		●					●		
	Alphanumeric	5kw	Kilowatt	Energy consumption	HAS_DemandKW	●		●					●		
	Alphanumeric	C.C201.3	N/A	Room numbering of the electrical room that feeds specific equipment.	HAS_ElecRoom	●	●	●					●		
	Alphanumeric	Public/Private	N/A	Function	HAS_ElevFunction	●									
	Alphabetic	Traction Elevators, Hydraulic Elevator		Types of hoist mechanisms	HAS_HoistType	●			●						
	Alphanumeric	C.C303	N/A	Room numbering of the mechanical room where the specific component is tied, controlled, or fed	HAS_MechRoom	●		●			●		●		
	Alphanumeric	40HP	Horse Power	Rated horsepower	HAS_MotorHP	●		●				●	●		
	Alphabetic	Dry	N/A	Dry or submergible in oil	HAS_MotorType	●						●			
	Alphanumeric	2EHA	N/A	Electrical panel name ID	HAS_Panel	●	●	●			●	●	●		
	Alphanumeric	90fpm	Foot per minute	Running speed	HAS_Speed	●		●					●		
	Alphanumeric	2EHB	N/A	From what electrical panel power is fed	HAS_SupplyFrom		●								
	Alphanumeric	200G	Gallon	Tank size	HAS_TankSize					●					
	Alphanumeric	50'	Foot	Travel distance	HAS_TravelDistance	●		●	●				●		
	Alphanumeric	208v	Volt	Operating voltage	HAS_Volt	●	●	●			●	●	●		
	Alphanumeric	3000 Lbs	Pound	Elevator weight capacity	HAS_WeightCapacity	●									
				Refer to Ubiquitous Parameters section	Ubiquitous	●	●	●	●	●	●	●	●		

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System Code: FUEL

Fuel System

Comment	Format	Format Example	UOM	Description	Fuel Parameters	Fuel Components: Meter	Pipe	Pump	Tank	Valve	Emergency Fuel Shut off	Electrical Panel	<<Component Name	Data Collection Responsible Party	Data Entry Responsible Party
						METR	PIPE	PUMP	TANK	VALV	EFSO	ELPN	<<Component Code		
	Alphanumeric	23A	Ampere	Electric Current	HAS_Amp			●		●					
Bar code is created and provided by HAS.	Alphanumeric	I.B.E645.FUEL.0057	N/A	Bar codes that the Asset Management assigns to specific components	HAS_BarCode	●		●	●	●	●	●			
	Alphanumeric	L1	N/A	Breaker number inside the panel	HAS_BreakerNumber			●		●					
	Alphanumeric	E12	N/A	Source Electrical Circuit	HAS_Circuit			●		●					
	Numeric	3	N/A	Equipment Voltage Phase	HAS_ElecPhase			●							
	Alphanumeric	B.N201.1.3	N/A	Room numbering of the electrical room that feeds specific electrical panel.	HAS_ElecRoom							●			
	Alphanumeric	GAS	N/A	Type of Fuel	HAS_FuelType	●	●	●	●	●	●				
	Alphanumeric	10"	Inch	Size of inlet	HAS_InletSize			●		●					
	Alphanumeric	Aluminiun	N/A	Material Composition	HAS_Material		●		●						
	Alphanumeric	80HP	Horse Power	Rated horsepower	HAS_MotorHP			●							
	Alphanumeric	6"	Inch	Size of outlet	HAS_OutletSize			●							
	Alphanumeric	2EHA	N/A	Electrical Panel Name ID	HAS_Panel			●		●		●			
	Alphanumeric	1/2"	Inch	Pipe Diameter	HAS_PipeSize		●								
	Alphanumeric	1660Psi	Pounds per Square Inch	Fluid Pressure	HAS_Pressure			●							
	Alphanumeric	50GPM	Gallons per Minute	Flow Capacity	HAS_PumpCapacity			●							
	Alphanumeric	5042685KOL	N/A	Manufacturer serial number	HAS_SerialNumber			●							
	Alphanumeric	2EHB	N/A	From what electrical panel power is fed	HAS_SupplyFrom							●			
	Alphanumeric	200G	Gallon	Tank Size	HAS_TankSize				●						
	Alphanumeric	225V	Volt	Operating Voltage	HAS_Volt			●		●					
				Refer to Ubiquitous Parameters section	Ubiquitous	●	●	●	●	●	●	●			

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System Code: HVAC

Heating, Ventilation, and Air Conditioning System

Comment	Format	Format Example	UOM	Description	Parameter
	Alphanumeric	300CFM	Cubic Foot per Minute	Flow	HAS_AirFlow
	Alphanumeric	200 °F	Fahrenheit	Temperature	HAS_AirTemperature
	Alphanumeric	30A	Ampere	Electric Current	HAS_Amp
Bar code is created and provided by HAS.	Alphanumeric	I.B.E645.HVAC.0057	N/A	Bar codes that the Asset Management assigns to specific components	HAS_BarCode
	Alphanumeric	F1	N/A	Breaker number inside the panel	HAS_BreakerNumber
	Alphanumeric	E12	N/A	Source Electrical Circuit	HAS_Circuit
	Alphanumeric	22000BTU	British Thermal Unit	Capacity of Cooling	HAS_CoolingCapacity
	Alphanumeric	5kwh	Kilowatt	Energy Consumption	HAS_DemandKW
	Alphabetic	Ceiling Diffuser, Wall Diffuser, Floor Diffuser	N/A	Location of the Air Diffuser	HAS_Diffuser Type
	Alphanumeric	22"	Inch	Duct size	HAS_DuctSize
	Numeric	3	N/A	Equipment Voltage Phase	HAS_ElecPhase
	Alphanumeric	C.C201.3	N/A	Room numbering of the electrical room that feeds specific equipment	HAS_ElecRoom
	Alphabetic	Gas	N/A	Electicity or Gas	HAS_EnergySource
	Alphabetic	Propeller	N/A	Type of Fan	HAS_FanType
	Numeric	9	N/A	Quantity	HAS_FilterQty
	Alphanumeric	1" Pleated, Merv 8, Multiples	N/A	Based on manufacture description (Name or filter model). For equipment with multiple filters, the parameter value will be "Multiple"	HAS_FilterType
	Alphanumeric	18000 BTU	British Thermal Unit	Capacity of Heating	HAS_HeatingCapacity
	Alphanumeric	Zone 3	N/A	Served Area	HAS_HVACZone
	Alphanumeric	22"	Inch	Size of inlet	HAS_InletSize
	Alphanumeric	Aluminiun	N/A	Material	HAS_Material
	Alphanumeric	B.C203.1	N/A	Room numbering of the mechanical room where the specific component is tied, controlled, or fed	HAS_MechRoom
	Alphanumeric	80HP	Horse Power	Rated horsepower	HAS_MotorHP
	Alphanumeric	26"	Inch	Size of Outlet	HAS_OutletSize
	Alphanumeric	2EHA	N/A	Electrical Panel Name ID	HAS_Panel
	Alphanumeric	1/2"	Inch	Nominal Pipe Size	HAS_PipeSize
	Alphanumeric	5042685KOL	N/A	Manufacturer serial number	HAS_SerialNumber
	Alphanumeric	2EHB	N/A	From what electrical panel power is fed	HAS_SupplyFrom
	Alphanumeric	60G	Gallon	Tank Size	HAS_TankSize
	Alphanumeric	225V	Volt	Operating Voltage	HAS_Volt
	Alphanumeric	1660Psi	Pounds per Square Inch	Water Pressure	HAS_Water Pressure
	Alphanumeric	150GPM	Gallons per Minute	Flow Capacity	HAS_WaterFlowRate
				Refer to Ubiquitous Parameters section	Ubiquitous

HVAC Components

<<Component Name	Air Handling Unit	Air Vent Line	Air Diffuser	Automatic Air Damper	Backflow Preventer	Condensate Pump Discharge	Cooling Tower	Duct Access Panel	Ductwork	Exhaust Fan	Fan Coil Unit	HVAC Controller/VFD (variable frecuency drive)	Outside Air Damper	Outside Air Intake
Parameter / <<Component Code	AHU	AIRV	AIRD	AAD	BAKF	CPD	CT	DAP	DUCT	EFAN	FCU	HVCC	OAD	OAI
HAS_AirFlow	●						●		●	●	●			
HAS_AirTemperature							●							
HAS_Amp	●						●			●	●			
HAS_BarCode	●			●	●	●	●			●	●	●	●	●
HAS_BreakerNumber	●						●			●	●			
HAS_Circuit	●					●	●			●	●			
HAS_CoolingCapacity	●						●				●			
HAS_DemandKW	●									●	●			
HAS_Diffuser Type			●											
HAS_DuctSize									●					
HAS_ElecPhase	●										●			
HAS_ElecRoom	●					●				●	●	●		
HAS_EnergySource														
HAS_FanType										●				
HAS_FilterQty	●						●				●			
HAS_FilterType	●						●				●			
HAS_HeatingCapacity	●										●			
HAS_HVACZone	●										●			
HAS_InletSize														
HAS_Material														
HAS_MechRoom	●						●					●		
HAS_MotorHP	●						●				●			
HAS_OutletSize														
HAS_Panel	●					●	●			●	●			
HAS_PipeSize														
HAS_SerialNumber	●						●							
HAS_SupplyFrom														
HAS_TankSize														
HAS_Volt	●						●			●	●			
HAS_Water Pressure							●							
HAS_WaterFlowRate														
Ubiquitous	●	●	●	●	●	●	●	●	●	●	●	●	●	●

<<Component Name	Outside Air Pretreat Unit	Piping	Pump	Sensor	Supply Air Fan	Tank	Thermostat	Electric Duct Heater	Unit Heater	Rooftop Unit	Split System	Variable Air Volume	Relief hood	Electric Panel		
Parameter / <<Component Code	OAPU	PIPE	PUMP	SNSR	SAF	TANK	TSTA	EDH	UH	RTU	SPLT	VAV	REHO	ELPN	Data Collection Responsible Party	Data Entry Responsible Party
HAS_AirFlow	●				●											
HAS_AirTemperature																
HAS_Amp	●		●		●			●	●	●	●	●				
HAS_BarCode	●		●		●	●		●	●	●	●	●	●	●		
HAS_BreakerNumber	●		●		●			●	●	●	●	●		●		
HAS_Circuit	●		●	●	●		●	●	●	●	●	●		●		
HAS_CoolingCapacity	●									●	●					
HAS_DemandKW	●		●					●		●	●					
HAS_Diffuser Type																
HAS_DuctSize																
HAS_ElecPhase			●						●	●	●	●				
HAS_ElecRoom	●		●		●			●	●	●	●	●		●		
HAS_EnergySource									●							
HAS_FanType												●				
HAS_FilterQty	●									●	●					
HAS_FilterType	●									●	●					
HAS_HeatingCapacity	●							●	●	●	●					
HAS_HVACZone	●							●	●	●	●	●				
HAS_InletSize			●													
HAS_Material						●										
HAS_MechRoom	●		●							●		●		●		
HAS_MotorHP	●		●													
HAS_OutletSize			●													
HAS_Panel	●		●	●	●		●	●	●	●	●	●		●		
HAS_PipeSize		●														
HAS_SerialNumber	●		●							●	●	●				
HAS_SupplyFrom														●		
HAS_TankSize						●										
HAS_Volt	●		●		●			●	●	●	●	●				
HAS_Water Pressure			●													
HAS_WaterFlowRate		●														
Ubiquitous	●	●	●	●	●	●	●	●	●	●	●	●	●	●		

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System Code: GSE

Ground Support Equipment

						Equipment Components					
						Ground Power Unit	Pre-Conditioned Air	Passenger Boarding Bridge	Visual Docking Guidance System	Electrical Panel	<< Component Name
Comment	Format	Format Example	UOM	Description	Parameter	GPU	PCA	PBB	VDGS	ELPN	<< Component Code
	Alphanumeric	23A	Ampere	Electric Current	HAS_Amp	●	●	●	●		
Bar code is created and provided by HAS.	Alphanumeric	I.B.E645.GTSE.0057	N/A	Bar codes that the Asset Management assigns to specific components	HAS_BarCode	●	●	●	●	●	
	Alphanumeric	L1	N/A	Breaker number inside the panel	HAS_BreakerNumber	●	●	●	●		
	Alphanumeric	E12	N/A	Source Electrical Circuit	HAS_Circuit	●	●	●	●		
	Alphanumeric	90 TONS	British Thermal Unit	Capacity of Cooling	HAS_CoolingCapacity		●				
	Alphanumeric	5kW	Kilowatt	Energy Consumption	HAS_DemandKW	●	●				
	Alphanumeric	B.N201.1.3	N/A	Room numbering of the electrical room that feeds specific electrical panel	HAS_ElecRoom					●	
	Alphanumeric	D5	N/A	Terminal gate number	HAS_GateNumber	●	●	●	●		
	Alphanumeric	18000 BTU	British Thermal Unit	Capacity of Heating	HAS_HeatingCapacity		●				
	Alphanumeric	13kVA	Kilo Volt-Ampere	KVA Rating	HAS_KVA	●	●				
	Alphanumeric	80HP	Horse Power	Rated horsepower	HAS_MotorHP		●				
	Alphanumeric	2EHA	N/A	Electrical Panel Name ID	HAS_Panel	●	●	●	●		
	Alphanumeric	2EHB	N/A	From what electrical panel power is fed	HAS_SupplyFrom					●	
	Alphanumeric	225V	Volt	Operating Voltage	HAS_Volt	●	●	●	●		
				Refer to Ubiquitous Parameters section	Ubiquitous	●	●	●	●	●	

Data Collection Responsible Party	Data Entry Responsible Party

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System Code: HYDO

Hydronic System

Comment	Format	Format Example	UOM	Description	Parameter	Hydronic Components: Piping (PIPE)	Pump (PUMP)	Valve (VALV)	Expansion Tank (TANK)	Water Gauge (GAUG)	Boiler (BOIL)	Chiller (CHILL)	Cooling Tower (CTW)	Electric Panel (ELPN)	Data Collection Responsible Party	Data Entry Responsible Party
	Alphanumeric	25A	Ampere	Electric current	HAS_Amp		●	●			●	●	●			
Bar code is created and provided by HAS.	Alphanumeric	I.B.E645.HYDO0057	N/A	Bar codes that the Asset Management assigns to specific components	HAS_BarCode		●	●	●		●	●	●	●		
	Alphanumeric	L1	N/A	Breaker number inside the panel	HAS_BreakerNumber		●	●			●	●	●			
	Alphanumeric	50Ton	Tons to measure cooling capacity. British Thermal Unit	Capacity of Chill	HAS_CHWCapacity							●	●			
	Alphanumeric	E12	N/A	Source Electrical Circuit	HAS_Circuit		●	●			●	●	●			
	Numeric	3	N/A	Equipment Voltage Phase	HAS_ElecPhase		●					●	●			
	Alphanumeric	B.N201.1.3	N/A	Room numbering of the electrical room that feeds specific equipment	HAS_ElecRoom		●							●		
	Alphanumeric	Gas/Electricity	N/A	Electicity or Gas	HAS_EnergySource						●					
	Alphanumeric	1" Pleated	N/A	Based on manufacture description (Name or filter model). For equipment with multiple filters, the parameter value will be "Multiple"	HAS_FilterType								●			
	Alphanumeric	10GPM	Gallons per Minute	Flow	HAS_FlowRate						●	●	●			
	Alphanumeric	18000 BTU	British Thermal Unit	Capacity of heating	HAS_HeatingCapacity						●					
	Alphanumeric	15"	Inch	Size of inlet	HAS_InletSize		●	●			●	●	●			
	Alphanumeric	Carbon Steel	N/A	Material Composition	HAS_Material	●			●							
	Alphanumeric	B.C203.1	N/A	Room numbering of the mechanical room where the specific component is tied, controlled, or fed	HAS_MechRoom		●	●	●		●	●	●	●		
	Alphanumeric	40HP	Horse Power	Rated horsepower	HAS_MotorHP		●					●	●			
	Alphanumeric	20"	Inch	Size of Outlet	HAS_OutletSize		●				●	●	●			
	Alphanumeric	2EHA	N/A	Electrical panel name ID	HAS_Panel		●	●			●	●	●			
	Alphanumeric	4"	Inch	Nominal Pipe Size	HAS_PipeSize	●										
	Alphanumeric	50GPM	Gallons per Minute	Flow Capacity	HAS_PumpCapacity		●									
	Alphanumeric	5042685KOL	N/A	Manufacturer serial number	HAS_SerialNumber		●				●	●	●			
	Alphanumeric	80 °F	Fahrenheit	Return Chill Water Temperature	HAS_ReturnCHWTemp							●				
	Alphanumeric	90 °F	Fahrenheit	Return Hot Water Temperature	HAS_ReturnHWTemp						●					
	Alphanumeric	80 °F	Fahrenheit	Supply Chill Water Temperature	HAS_SupplyCHWTemp							●				
	Alphanumeric	150 °F	Fahrenheit	Supply Hot water Temperature	HAS_SupplyHWTemp						●					
	Alphanumeric	2EHB	N/A	From what electrical panel power is fed	HAS_SupplyFrom									●		
	Alphanumeric	Recirculation pump, gate valve, globe valve, compression tank	N/A	Component Type. Class, description, or characteristics that distinguish component groups by function types or work mechanisms.	HAS_Type		●	●	●	●	●	●	●			
	Alphanumeric	225V	Volt	Operating voltage	HAS_Volt		●	●			●	●	●			
	Alphanumeric	1660Psi	Pounds per Square Inch	Water Pressure	HAS_WaterPressure		●			●	●	●				
				Refer to Ubiquitous Parameters section	Ubiquitous	●	●	●	●	●	●	●	●	●		

<<Component Name

<<Component Code

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System Code: IRRG

Irrigation System

Comment	Format	Format Example	UOM	Description	Parameter	Irrigation Components: Piping (PIPE)	Valve (VALV)	Irrigation Controler (ITME)	Backflow Device (BAKF)	Meter (METR)	Zone (ZONE)	Electric Panel (ELPN)	Data Collection Responsible Party	Data Entry Responsible Party
Bar code is created and provided by HAS.	Alphanumeric	I.B.E645.HYDO0057	N/A	Bar codes that the Asset Management assigns to specific components	**HAS_BarCode**							●		
	Alphanumeric	A11	N/A	Breaker number inside the panel	**HAS_BreakerNumber**			●						
	Alphanumeric	E12	N/A	Source electrical circuit	**HAS_Circuit**			●						
	Alphanumeric	22"	Inch	Size of inlet	**HAS_InletSize**		●		●					
	Alphanumeric	Zone 3	N/A	Served area	**HAS_IrrigationZone**	●	●				●			
	Alphanumeric	3'	Foot	Length	**HAS_Length**	●								
	Alphanumeric	PVC	N/A	Material Composition	**HAS_Material**	●								
	Alphanumeric	2EHA	N/A	Electrical Panel Name ID	**HAS_Panel**			●						
	Alphanumeric	5"	Inch	Nominal Pipe Size	**HAS_PipeSize**	●				●				
	Alphabetic	Main pipe	N/A	Main pipe or secondary pipe	**HAS_PipeType**	●								
	Alphanumeric	2EHB	N/A	From what electrical panel power is fed	**HAS_SupplyFrom**							●		
	Alphanumeric	225V	Volt	Operating voltage	**HAS_Volt**			●						
				Refer to Ubiquitous Parameters section	**Ubiquitous**	●	●	●	●	●	●	●		

<< Component Name

<< Component Code

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System Code: IT

Information Technology System

Information Technology Components

Comments	Format	Format Example	UOM	Description	Parameter	ALRM	COND	CTRY	ELPN	CARD	CMRA	MATV	HHOL	MHOL	SNSR	BEAC	WIAP	ERRCS	DLET	PWAC	Data Collection Responsible Party	Data Entry Responsible Party
						Alarm	Conduit (New Only, 4" or More)	Cable Tray	Electrical Panel	Card Reader	Camera	MATV (Set Top Box Location)	Handhole	Manhole	Sensor (Restroom)	Beacon (Bluetooth)	Wireless Access Point	ERRCS	Data Outlet	Access Control Panel	<< Component Name	
																					<< Component Code	
	Alphabetic	Duress Button, AED, Door Contact	N/A	Type of alarm device	HAS_AlarmType	●																
	Alphanumeric	24 pairs	N/A	Quantity of cables	HAS_CableQ												●					
	Alphanumeric	Out side plan single mode	N/A	Type of cable used	HAS_CableType							●					●					
	Alphanumeric	4k	Mega Pixel	Resolution of the camera	HAS_CameraResolution						●											
	Alphanumeric	fixed, PTZ, 360, outdoor, etc.	N/A	Type of Camera	HAS_CameraType						●											
	Numeric	24, 48, etc	Amount	Capacity of port	HAS_Capacity						●											
	Alphanumeric	R40, Biometric with Temperature, Biometric	N/A	Type of card reader	HAS_CardReaderType					●												
	Alphanumeric	E12	N/A	Electrical circuit number	HAS_Circuit				●									●		●		
	Numeric	5	Amount	Quantity of conduits in pathway	HAS_ConduitQ								●	●								
	Alphanumeric	2"	Inch	Size of conduits in pathway	HAS_ConduitSize		●															
	Alphanumeric	3125926' 7 73/128"	DMS	Revit coordinate N/E	HAS_CoordinateEast								●	●								
	Alphanumeric	13923732' 8 91/256"	DMS	Revit coordinate N/E	HAS_CoordinateNorth								●	●								
	Alphanumeric	C.N203.3	N/A	Room numbering of the electrical room that feeds specific electrical panel	HAS_ElecRoom				●													
	Alphabetic	Stabilized Sand	N/A	Pathway containment material	HAS_Encasement		●															
	Alphanumeric	02-06, RU22	N/A	Equipment mounting	HAS_EQUIPMountingLocation												●			●		
	Alphanumeric	Antennae, RU, BDA, Power Supplies	N/A	Type of ERRCS equipment	HAS_ERRCSType													●				
	Alphanumeric	20"	Inch	Depth of handhole and manhole	HAS_HDeep								●	●								
	Alphanumeric	O1-03/RU24	N/A	IT panel name	HAS_ITPanel					●	●	●			●		●			●		
	Alphanumeric	Metal/PVC/ENT	N/A	Material	HAS_Material		●															
	Alphabetic	Wall	N/A	Place of mounting	HAS_MountType						●						●	●		●		
	Alphanumeric	WPC-2005	N/A	Unique identify for each device	HAS_Name					●	●	●	●	●		●	●	●		●		
	Alphanumeric	HAS, UA,CBP, etc.	N/A	Owner of the device, component, etc.	HAS_Owner		●			●	●	●			●	●	●			●		
	Alphanumeric	2EHA	N/A	Electrical panel name ID	HAS_Panel				●			●								●		
	Alphabetic	Ductbank	N/A	Category; i.e., Ductbank, Direct Buried	HAS_PathType								●	●								
	Alphanumeric	C.N203.3.1	N/A	Room number access	HAS_RoomNum	●				●	●	●			●	●	●	●	●	●		
	Alphanumeric	F202016	N/A	Manufacturer serial number	HAS_SerialNumber					●	●	●				●	●					
	Alphanumeric	Manhole, IDF	N/A	Where the loop is located	HAS_SlackLoopLocation																	
	Alphanumeric	MH-500	N/A	Location, room number, room name, manhole number	HAS_SpliceClosure																	
	Alphanumeric	2EHB	N/A	From what electrical panel power is fed	HAS_SupplyFrom				●													
	Alphanumeric	IDF 203.3	N/A	Room numbering of the telecom room that feeds the specific component.	HAS_TelecomRoom	●	●		●	●	●	●			●		●	●	●	●		
	Exclusive Disjunction	Yes/No	N/A	Priority or security level	HAS_TSAPriority					●	●											
	Alphanumeric	20V	Voltage	Operating voltage	HAS_Volt					●	●											
				Refer to Ubiquitous Parameters section	Ubiquitous	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		

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System Code: PNEU

Pneumatic System

Comment	Format	Format Example	UOM	Description	Parameter	Air Release Valve (AIRV)	Piping (PIPE)	Valve (VALV)	Compressor (COMP)	Air Tank (TANK)	Gauge (GAUG)	Pressure Regulator (PREG)	Filter (FILT)	Electrical Panel (ELPN)	Data Collection Responsible Party	Data Entry Responsible Party
						Pneumatic Components								<<Component Name		
						AIRV	PIPE	VALV	COMP	TANK	GAUG	PREG	FILT	ELPN <<Component Code		
	Alphanumeric	30CFM	Cubic Foot per Minute	Flow	HAS_AirFlow			●	●							
	Alphanumeric	1220Psi	Pounds per Square Inch	Pressure of air	HAS_AirPressure				●	●						
	Alphanumeric	15A	Amperes	Electric Current	HAS_Amp				●							
	Alphanumeric	I.B.E645.PNEU057	N/A	Bar codes that the Asset Management assigns to specific components	HAS_BarCode			●	●	●	●	●	●	●		
	Alphanumeric	L1	N/A	Breaker number inside the panel	HAS_BreakerNumber				●							
	Alphanumeric	E12	N/A	Source Electrical Circuit	HAS_Circuit				●							
	Alphanumeric	50GPM	Gallons per Minute	Flow capacity	HAS_CompressorCapacity				●							
	Alphanumeric	B.N201.1.3	N/A	Room numbering of the electrical room that feeds specific electrical panel	HAS_ElecRoom									●		
	Alphabetic	Gas	N/A	Electicity or gas	HAS_EnergySource				●							
	Alphanumeric	Type 370	N/A	Based on manufacturer description (Name or filter model). For equipment with multiple filters, the parameter value will be "Multiple"	HAS_FilterType								●			
	Alphanumeric	3"	Inch	Size In	HAS_InletSize	●		●		●	●	●	●			
	Alphanumeric	Carbon Steel	N/A	Material Composition	HAS_Material		●			●						
	Alphanumeric	B.C203.1	N/A	Room numbering of the mechanical room where the specific component is tied, controlled, or fed	HAS_MechRoom				●	●				●		
	Alphanumeric	40HP	Horse Power	Rated horsepower	HAS_MotorHP				●							
	Alphanumeric	2EHA	N/A	Electrical Panel Name ID	HAS_Panel				●							
	Alphanumeric	1/2"	Inch	Nominal pipe size	HAS_PipeSize		●									
	Alphanumeric	2EHB	N/A	From what electrical panel power is fed	HAS_SupplyFrom									●		
	Alphabetic	Reservoir	N/A	Type of tank	HAS_TankType					●						
	Alphanumeric	225V	Volt	Operating voltage	HAS_Volt				●							
				Refer to Ubiquitous Parameters section	Ubiquitous	●	●	●	●	●	●	●	●	●		

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System Code: NGAS

Natural Gas System

							Natural Gas Components					
							Alarm	Meter	Piping	Valve	Pressure Regulator	<<Component Name
Comment	Format	Format Example	UOM	Description	Parameter		ALRM	METR	PIPE	VALV	PREG	<<Component Code
Bar code is created and provided by HAS.	Alphanumeric	I.B.E645.NGAS0057	N/A	Bar codes that the Asset Management assigns to specific components	HAS_BarCode			●				
	Alphanumeric	22"	Inch	Size of inlet	HAS_InletSize					●	●	
	Alphanumeric	3'	Foot	Length (segment)	HAS_Length				●			
	Alphanumeric	Copper	N/A	Material	HAS_Material				●			
	Alphanumeric	5"	Inch	Nominal pipe size	HAS_PipeSize				●			
	Alphanumeric	150Psi	Pounds per Square Inch	Pressure	HAS_Pressure				●			
				Refer to Ubiquitous Parameters section	Ubiquitous		●	●	●	●	●	

Data Collection Responsible Party	Data Entry Responsible Party

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System Code: SANI

Sanitary System

SANITARY Component List

Comment	Format	Format Example	UOM	Description	Parameter	Backflow Preventer (BAKF)	Clean Out (CLNO)	Grease Trap (GINT)	Interceptor Structure (INTS)	Manhole (MHOL)	Piping (PIPE)	Pump (PUMP)	Sump (SUMP)	Sample Well (SWEL)	Triturator (TRIT)	Valve (VALV)	Joint Bend (JBND)	Floor Drain (FLDR)	Toilet (TOIL)	Urinal (URIN)	Electrical Panel (ELPN)	Data Collection Responsible Party	Data Entry Responsible Party
	Alphanumeric	30A	Ampere	Electric Current	**HAS_Amp**							●			●								
Bar code is created and provided by HAS.	Alphanumeric	I.B.E645.SANIO059	N/A	Bar codes that the Asset Management assigns to specific components	**HAS_BarCode**							●			●						●		
	Alphanumeric	F1	N/A	Breaker number inside the panel	**HAS_BreakerNumber**							●			●						●		
	Alphanumeric	E12	N/A	Source Electrical Circuit	**HAS_Circuit**							●			●						●		
	Alphanumeric	9'	foot	(depth) from ground to bottom	**HAS_Depth**					●					●								
	Numeric	3	N/A	Equipment Voltage Phase	**HAS_ElecPhase**							●			●								
	Alphanumeric	B.N201.1.3	N/A	Room numbering of the electrical room that feeds specific electrical panel	**HAS_ElecRoom**							●			●						●		
	Alphanumeric	20'	Foot	For pipes outside the building: Length of the pipes between manholes	**HAS_Length**						●												
	Numeric	3	N/A	Identifier Number(HAS will provide the number)	**HAS_LiftStationNumber**							●											
	Alphanumeric	PVC	N/A	Material composition	**HAS_Material**				●		●				●								
	Alphanumeric	7'x7', 15'	foot	Diameter or rectangular size	**HAS_MHSize**					●													
	Alphanumeric	2EHA	N/A	Electrical Panel Name ID	**HAS_Panel**							●			●								
	Alphanumeric	7'	Foot	(depth) from ground to invert	**HAS_PipeDepth**					●	●												
	Alphanumeric	5"	Inch	Nominal Pipe Size	**HAS_PipeSize**	●	●	●			●				●	●	●	●					
	Alphanumeric	50GPM	Gallons per Minute	Flow Capacity	**HAS_PumpCapacity**							●											
	Alphanumeric	5042685KOL	N/A	Manufacturer serial number	**HAS_SerialNumber**							●											
	Alphanumeric	1%	%	Pipe slope	**HAS_Slope**						●												
	Alphanumeric	2EHB	N/A	From what electrical panel power is fed	**HAS_SupplyFrom**																●		
	Alphanumeric	225V	Volt	Operating Voltage	**HAS_Volt**							●			●								
	Alphanumeric	60'	Foot	Depth of the wells	**HAS_WellDepth**									●									
	Alphanumeric	25'	Foot	Diameter of wells	**HAS_WellDiameter**									●									
				Refer to Ubiquitous Parameters section	**Ubiquitous**	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		

<< Component Name

<< Component Code

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System Code: STRL

Structural System

Structural Component List

Comment	Format	Format Example	UOM	Description	Parameter	Stair	Foundation	Column	Girder	Beam	Bearing Wall	Slab	Bracing	<<Component Name	Data Collection Responsible Party	Data Entry Responsible Party
						STRS	FND	COL	GRD	BEAM	BWALL	SLAB	BRA	<<Component Code		
	Alphabetic	W (welded) or B (bolted)	N/A	Connection Type	HAS_Connection			●	●	●	●	●	●			
	Alphanumeric	10"	Inch	Member Size	HAS_Diameter		●	●				●	●			
	Alphabetic	Shallow,Deep, Pile, grade beam, pier, turndown.	N/A	Foundation Type	HAS_FoundationType		●									
	Alphanumeric	10',10"	Match Revit UOM	Member Size. (For concrete beams/griders height is considered from bottom to top of the slab)	HAS_Height		●	●	●	●	●	●	●			
	Alphanumeric	10'	Foot	Member Size	HAS_Length		●	●	●	●	●	●	●			
	Alphanumeric	Concrete, Steel	N/A	Structural Material	HAS_Material	●	●	●	●	●	●	●	●			
	Alphanumeric	30'	Foot	Mean Sea Level. Measurement of the highest point	HAS_MSL							●				
	Alphabetic	Pre-T, Post-T, Reinf	N/A	Reinforcement Type	HAS_Reinforcement		●	●	●	●	●	●				
	Alphanumeric	1/4" or 10 gauge	Inch	Member Size	HAS_Thickness		●	●	●	●		●	●			
	Alphanumeric	10"	Inch	Member Size	HAS_Width		●	●	●	●	●	●	●			
				Refer to Ubiquitous Parameters section	Ubiquitous	●	●	●	●	●	●	●	●			

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System Code: STRM

Storm System

Storm Component List

Comment	Format	Format Example	UOM	Description	Parameter	Clean Out (CLNO)	Culvert (CULV)	Ditch (DTCH)	Inlet (INLT)	Manhole (MHOL)	Outfall (OUTF)	Piping (PIPE)	Detention Pond (POND)	Sample Well (SWEL)	RooF Drain (RFDR)	Downspout Nozzle (DOWP)	Interceptor (INCP)	Oil Water Separator (OWS)	Catch Basin (CBSN)	Electrical Panel (ELPN)	Pump (PUMP)	Data Collection Responsible Party	Data Entry Responsible Party
						<<Component Name																	
						<<Component Code																	
	Alphanumeric	30A	Ampere	Electric Current	HAS_Amp																●		
Bar code is created and provided by HAS.	Alphanumeric	I.B.E645.STRM0057	N/A	Bar codes that the Asset Management assigns to specific components	HAS_BarCode													●		●	●		
	Alphanumeric	A 11	N/A	Breaker number inside the panel	HAS_BreakerNumber																●		
	Alphanumeric	E12	N/A	Circuit Number	HAS_Circuit																●		
	Alphanumeric	9'	foot	Detention Pond Nominal Dept (measured from ground to bottom)	HAS_Depth					●			●						●				
	Numeric	3	N/A	Equipment Voltage Phase	HAS_ElecPhase																●		
	Alphanumeric	B.N201.1.3	N/A	Room numbering of the electrical room that feeds specific electrical panel	HAS_ElecRoom															●	●		
	Alphanumeric	Trench Drains	N/A	Type of Inlet	HAS_InletType				●														
	Alphanumeric	25'-2"	Foot	Invert Elevation	HAS_InvertElevation		●	●			●	●											
	Alphanumeric	20'	Foot	for pipes outside buildings: Length of the pipes between manhold	HAS_Length							●	●				●						
	Alphanumeric	PVC	N/A	Material Composition	HAS_Material	●	●		●	●	●	●			●	●							
	Alphanumeric	96"	Inch	Manhole Size	HAS_MHSize					●													
	Alphabet	Precast concrete	N/A	Type of Manhole	HAS_MHType					●													
	Alphabet	Gravity Plate Separator, Parallel Plate Gravity Separators,Flotation Separators, Hydrocyclone Water Oil Separator System	N/A	Type of process to remove oil and other pollutants from water	HAS_OilWaterSeparatorType													●					
	Alphanumeric	Outfall 001	N/A	Outfall number that is discharged from specific storm drain. TPDES (Texas Pollution Discharge Elimination System)	HAS_OutFallNumber														●				
	Alphanumeric	2EHA	N/A	Electrical Panel Name ID	HAS_Panel																●		
	Alphanumeric	5"	Inch	Nominal Pipe Size	HAS_PipeSize	●					●	●		●	●	●	●	●					
	Alphabet	Recirculation pump, sump	N/A	Component Type. Class, description, or characteristics that distinguish component pumps by function types or work mechanisms.	HAS_PumpType																●		
	Alphanumeric	5042685KOL	N/A	Manufacturer serial number	HAS_SerialNumber																●		
	Alphanumeric	0.01%	%	Pipe slope	HAS_Slope		●	●			●	●											
	Alphanumeric	2EHB	N/A	From what electrical panel power is fed	HAS_SupplyFrom															●			
	Alphanumeric	225V	Volt	Operating Voltage	HAS_Volt																●		
	Alphanumeric	100'	Foot	Detention Pond Nominal Width	HAS_Width								●										
				Refer to Ubiquitous Parameters section	Ubiquitous	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		

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System Code: WATR

Water System

Comment	Format	Format Example	UOM	Description	Parameter	BAKF	TLWH	HYDR	METR	MHOL	PIPE	PUMP	SINK	SNSR	SUMP	TANK	VALV	GAUG	WH	EMEW	DWFO	ELPN	Data Collection Responsible Party	Data Entry Responsible Party
						WATER Components																		
						Backflow Preventer	Tankless Water Heater	Hydrant	Meter	Handhold	Piping	Pump	Sink	Sensor	Sump	Tank	Valve	Water Gauge	Water Heater	Emergency Eye Wash	Drinking Water Fountain	Electrical Panel		
						<<Component Name																		
						<<Component Code																		
	Alphanumeric	5A	Ampere	Electric Current	HAS_Amp		●					●							●					
Bar code is created and provided by HAS.	Alphanumeric	I.B.E645.WATR0057	N/A	Bar codes that the Asset Management assigns to specific components	HAS_BarCode				●			●				●		●	●		●			
	Alphanumeric	L1	N/A	Breaker number inside the panel	HAS_BreakerNumber		●					●							●					
	Alphanumeric	E12	N/A	Source Electrical Circuit	HAS_Circuit		●					●							●					
	Numeric	3	N/A	Equipment Voltage Phase	HAS_ElecPhase							●												
	Alphanumeric	B.N201.1.3	N/A	Room numbering of the electrical room that feeds specific electrical panel, pump, etc	HAS_ElecRoom							●										●		
	Alphabet	Gas	N/A	Electricity or Gas	HAS_EnergySource		●												●					
	Alphanumeric	250 °F	Fahrenheit	Capacity of Heating	HAS_HeatingCapacity		●												●					
	Alphanumeric	10"	Inch	Size of inlet	HAS_InletSize	●	●	●				●				●	●		●					
	Alphanumeric	8.5"	Inch	Outside diameter of Insulation in inches	HAS_InsulationSize						●													
	Alphanumeric	200 °F	Fahrenheit	Temperature Entering	HAS_LeavingHWTemperature		●												●					
	Alphanumeric	3'	Foot	Length	HAS_Length						●													
	Alphanumeric	PVC	N/A	Material Composition	HAS_Material						●		●			●	●							
	Alphanumeric	40HP	Horse Power	Rated horsepower	HAS_MotorHP							●												
	Alphanumeric	6"	Inch	Size of outlet	HAS_OutletSize			●				●				●								
	Alphanumeric	2EHA	N/A	Electrical Panel Name ID	HAS_Panel		●					●					●		●		●			
	Alphanumeric	5"	Inch	Nominal Pipe Size	HAS_PipeSize		●	●	●		●													
	Alphanumeric	50GPM	Gallons per Minute	Flow Capacity	HAS_PumpCapacity							●												
	Alphanumeric	5042685KOL	N/A	Manufacturer serial number	HAS_SerialNumber							●												
	Alphanumeric	2EHB	N/A	From what electrical panel power is fed	HAS_SupplyFrom																	●		
	Alphanumeric	60G	Gallon	Tank Size	HAS_TankSize											●								
	Alphabet	Recirculation pump, butterfly, gate valve, globe valve, conventional water heater, etc	N/A	Component Type. Class, description, or characteristics that distinguish component groups by function types or work mechanisms.	HAS_Type							●			●	●								
	Alphanumeric	225V	Volt	Operating Voltage	HAS_Volt		●					●							●					
	Alphanumeric	150GPM	Gallons per Minute	Flow Capacity	HAS_WaterFlowRate		●	●			●	●												
	Alphanumeric	150Psi	Pounds per Square Inch	Pressure	HAS_WaterPressure		●				●								●					
				Refer to Ubiquitous Parameters section	Ubiquitous	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		

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HAS_Category

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01. These values are fixed. No other value can be added to the table. HAS will notify you if there is a change in the values.

Value	Description	Data
A	Airside	Runway, Taxiway, Apron, Lights, Navaids, etc.
B	Buildings	Includes Terminals, Central Plant, Offices, Hangers, etc.
C	Commercial Properties	Includes Ground Leases, Buildings, Easements, etc.
F	Fleet	Fleet, Equipments, Stockpiles, etc.
G	Geodetic	Includes Benchmarks, PACS, SACS, etc.
L	Landside	Roads, Parking, Signage, etc.
P	People Movers	ITT and APM, etc.
U	Underground Utilities	Includes utility systems five feet outside of building boundaries (Water, Storm, Sanitary, Electricity, etc)

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Appendix B	HAS_Group
Read Before Proceed:	01. These values are constantly being added. If you do not see your project's relevant code, consult with HAS groug. 02.

IAH Building Groups

East Side

I_B_Group_Code	I_B_Group_List
I.E273.A	RIDF RADIO ROOM COMPOUND
I.E273.B	RIDF RADIO ROOM TOWER
I.E263.A	HIA NO. 3 COMPOUND(PUMP STATION)
I.E110A	UNITED AIRLINES - FLIGHT TRAINING FACILITY
I.E120A	FCC TOWER
I.E150A	TOWER #2 FACILITY - FAA CONTROL TOWER AND ELECTRIC SUPPORT
I.E160A	CONTROL TOWER #2 - FAA CONTROL TOWER
I.E182A	AIRPORT SERVICE CENTER - PARKING GARAGE
I.E184A	AIRPORT SERVICE CENTER - PARKING GARAGE
I.E210A	UNITED AIRLINES - CHELSEA / FLIGHT KITCHEN NO. 3
I.E220A	UNITED AIRLINES - FLIGHT KITCHEN NO. 2
I.E222A	UNITED AIRLINES - OUT OF SERVICE AIRCRAFT HANGAR BUILDING G - UNITED
I.E230A	NATIONAL MAINTENANCE - SCHEDULE FOR DEMOLITION - NATIONAL MAINTENANCE FACILITY
I.E232A	SCHEDULE FOR DEMOLITION - NATIONAL RAC
I.E234A	UNITED AIRLINES - WIDE BODY AIRCRAFT MAINTENANCE HANGAR BUILDING E
I.E260A	AIRPORT SERVICE CENTER - SUPPLY WHARHOUSE
I.E262A	AIRPORT SERVICE CENTER - PHYSICAL PLANTS MAINTENANCE
I.E270A	VEHICLE FUEL ISLAND - VEHICLE FUEL ISLE
I.E271A	ARFF STATION 92 - PARKING BOOTH
I.E272A	CAR WASH
I.E280A	AIRPORT SERVICE CENTER - AIRFIELD AND GROUNDS MAINTENANCE
I.E290A	ARFF STATION 92
I.E310A	UNITED AIRLINES - BUILDING A & B STORAGE WAREHOUSE
I.E330A	UNITED AIRLINES - BUILDING C
I.E334A	UNITED AIRLINES - PROGRAM MANAGEMENT OFFICE
I.E335A	UNITED MAINTENANCE FACILITY - WAREHOUSE FACILITY NO. 1
I.E336A	FAA - FAA MAINTENANCE BUILDING/ ESU
I.E337A	UNITED AIRLINES - PROGRAM MANAGEMENT OFFICE
I.E339A	UNITED AIRLINES
I.E340A	HOUSTON AIRPORT SYSTEM OFFICE - OFFICE BUILDING - AIRPORT OPERATIONS
I.E370A	GENERAL SERVICES FACILITY (GSF)
I.E410A	FAA - AIR TRAFFIC CONTROL
I.E430A	LIVE STOCK EXPORT - ANIMAL PENS
I.E432A	LSG SKY CHEF - FLIGHT KITCHEN NO. 4
I.E440A	HERTZ MAINTENANCE - SCHEDULE FOR DEMOLITION - HERTZ MAINTENZNCE FACILITY
I.E442A	TAXI STAGING BUILDING
I.E444A	STORAGE BUILDING NO. 3
I.E446A	OFFICE BUILDING - FINANCE GT & ADMIN - OFFICE BUILDING
I.E448A	HERTZ MAINTENANCE - SCHEDULE FOR DEMOLITION - HERTZ MAINTENZNCE FACILITY
I.E510A	USPS - HOUSTON INTERIM AIR MAIL CENTER
I.E511A	SECURITY GUARD STATION
I.E512A	UNITED PARCEL SERVICE - BUSH INT. CARGO CENTER
I.E520A	MLR - BUSH INT. CARGO CENTER
I.E530A	LYNX5 - BUSH INT. CARGO CENTER
I.E532A	TELECOM / MDF BUILDING
I.E550A	ARFF STATION 63
I.E630A	ANIMAL PORT, US CUSTOMS, CA 3, EXECUTIVE SECURITY - CARGO BUILDING R
I.E631A	TECHNICAL SERVICE DIVISION - RECEIVING WAREHOUSE
I.E632A	TECHNICAL SERVICE DIVISION - DISTRIBUTION WAREHOUSE
I.E633A	TECHNICAL SERVICE DIVISION - STORAGE BUILDING
I.E634A	TECHNICAL SERVICE DIVISION - SEPTIC TANK
I.E635A	TECHNICAL SERVICE DIVISION - STORAGE
I.E640A	TAZMANIAN, ISAG - CARGO BUILDING P
I.E642A	CARGO BUILDING N
I.E644A	HOUSTON CELLULAR TELEPHONE - SIGNAL TOWER
I.E645A	IDO BUILDING (INFRASTRUCTURE DIVISION OFFICE)
I.E646A	HAS - IT / FINANCE - CARGO BUILDING Q
I.E648A	WAREHOUSE
I.E650A	CARGO BUILDING M - AT CORNER OF WILCLAYTON AND LEE RD.
I.E651A	WAREHOUSE - OFFICE
I.E652A	OLD RENTAL CAR OFFICE - ABANDONED BUILDING
I.E660A	SECURITY GUARD STATION
I.E670A	FAA - AIR TRAFFIC CONTROL / ANTENA
I.E860A	FAA - AIR TRAFFIC CONTROL
I.E862A	FAA - AIR TRAFFIC CONTROL
I.E960A	WASTE WATER PUMP STATION - CONTROL BUILDING

North Side

I_B_Group_Code	I_B_Group_List
I.N122A	SECURITY GUARD STATION
I.N132A	SECURITY GUARD STATION
I.N160A	CITY OF HOUSTON - WATER FACILITY CHEMICAL STORAGE
I.N162A	CITY OF HOUSTON - WATER FACILITY ELECTRIC VAULT
I.N180A	LIFT STATION #3
I.N182A	UNITED AIRLINES - LINE EQUIPMENT MAINTENANCE BUILDING
I.N184A	UNITED AIRLINES - B CHECK HANGER
I.N260A	UNITED AIRLINES - COVERED PARKING
I.N262A	UNITED AIRLINES - MAIL SORT FACILITY
I.N290A	UNITED AIRLINES - GSE AND MAINTENANCE HANGAR
I.N360A	FAA - GLIDE SLOPE
I.N362A	FAA - GLIDE SLOPE
I.N390A	FAA - GENERATOR FOR APPROACH LIGHT CONTROL
I.N392A	FAA - GENERATOR FOR APPROACH LIGHT CONTROL
I.N394A	FAA - LOCALIZER FOR 8R RUNWAY
I.N480A	FAA - AIR TRAFFIC CONTROL
I.N520A	NORTH ELECTRIC VAULT - NORTH ELECTRIC VAULTRUNWAY LIGHT CONTROL/GENERATOR "NORTH"
I.N560A	LIFT STATION 7 - SANITARY SEWER LIFT STATION
I.N590A	FEDERAL INSPECTION SERVICES - ONE-STOP CARGO FACILITY
I.N592A	TRAMMEL CROW COMPANY - CARGO
I.N680A	FEDERAL INSPECTION FACILITY - AIR CARGO INSPECTION FACILITIES
I.N710A	FAA - AIR TRAFFIC CONTROL
I.N740A	FAA - AIR TRAFFIC CONTROL / ANTENA
I.N760A	FAA - REMOTE TRANSMITTING RECEIVER / FAA 26R ALSF SUBSTATION
I.N820A	FAA - REMOTE TRANSMITTING RECEIVER (RTR) / ANTENA

South Side

I_B_Group_Code	I_B_Group_List
I.S108A	WAREHOUSE
I.S130A	SOUTH VAULT - RUNWAY LIGHT CONTROL
I.S140A	LIFT STATION NO. 2 - LIFT STATION 2
I.S350A	FAA - AIR TRAFFIC CONTROL
I.S390A	FAA - AIR TRAFFIC CONTROL
I.S420A	RENTAL CAR MAINTENANCE FACILITY - AVIS, HERTZ, NATIONAL, ENTERPRISE, DOLLARS, ALAMO-BUILDING C
I.S422A	RENTAL CAR MAINTENANCE FACILITY - AVIS, HERTZ, NATIONAL, ENTERPRISE, DOLLARS, ALAMO-BUILDING D
I.S430A	RENTAL CAR MAINTENANCE FACILITY - AVIS, HERTZ, NATIONAL, ENTERPRISE, DOLLARS, ALAMO-BUILDING B
I.S432A	RENTAL CAR MAINTENANCE FACILITY - ALAMO OFFICE
I.S434A	RENTAL CAR MAINTENANCE FACILITY - ALAMO CARWASH
I.S436A	RENTAL CAR MAINTENANCE FACILITY - ALAMO VACUUM / FUEL
I.S440A	RENTAL CAR MAINTENANCE FACILITY - HERTZ MANTENANCE FACILITY
I.S442A	RENTAL CAR MAINTENANCE FACILITY - HERTZ MANTENANCE FACILITY
I.S470A	FAA - TRAFFIC CONTROL
I.S480A	UNITED AIRLINES - FLIGHT SIMULATOR
I.S482A	UNITED AIRLINES
I.S490A	ATLANTIC/ TRAJEN - FBO'S TERMINAL / OFFICE
I.S492A	ATLANTIC/ FBO NETWORK - EXXON CORPORATE HANGAR
I.S494A	ATLANTIC HOUSTON INTERNUNITED - MAINTENANCE HANGAR
I.S496A	GROUND SERVICE EQUIPMENT
I.S498A	UNITED AIRLINES - SHUTTLE BUS PICK-UP STATION
I.S530A	RENTAL CAR MAINTENANCE FACILITY - NATIONAL VACUUM / FUEL
I.S532A	RENTAL CAR MAINTENANCE FACILITY - NATIONAL CAR WASH
I.S534A	RENTAL CAR MAINTENANCE FACILITY - DOLLARS CAR WASH
I.S540A	RENTAL CAR MAINTENANCE FACILITY - AVIS MAINTENANCE FACILITY
I.S541A	RENTAL CAR MAINTENANCE FACILITY - AVIS MAINTENANCE FACILITY
I.S542A	RENTAL CAR MAINTENANCE FACILITY - NATIONAL OFFICE
I.S543A	RENTAL CAR MAINTENANCE FACILITY - DOLLARS VACUUM / FUEL
I.S544A	RENTAL CAR MAINTENANCE FACILITY - DOLLARS MAINTENANCE FACILITY
I.S545A	RENTAL CAR MAINTENANCE FACILITY - THRIFTY OFFICE
I.S546A	RENTAL CAR MAINTENANCE FACILITY - THRIFTY VACUUM / FUEL
I.S547A	RENTAL CAR MAINTENANCE FACILITY - ENTERSPRISE / ADVANTAGE CAR WASH
I.S548A	RENTAL CAR MAINTENANCE FACILITY - ENTERSPRISE / ADVANTAGE OFFICE
I.S549A	SECURITY GUARD - ENTERSPRISE / ADVANTAGE SECURITY GUARD
I.S560A	CONSOLIDATED RENTAL CAR FACILITY - TOP FLOOR, BUS LOADING/UNLOADING
I.S570A	SHELL OIL COMPANY - CORPORATE AVIATION FACILITY NO. 2
I.S580A	UNITED AIRLINES - RESERVATIONS CENTER
I.S582A	UNITED AIRLINES - TRAINING BUILDING
I.S584A	MARATHON OIL COMPANY - CORPORATE AVIATION FACILITY NO. 3
I.S650A	FAA - DAY CARE FACILITY
I.S660A	HAS ADMINISTRATION BUILDING - HAS ADMINISTRATION BUILDING
I.S662A	HAS ADMINISTRATION SERVICE BUILDING
I.S664A	CHARTWAY FEDERAL CREDIT UNION - CREDIT UNION BUILDING
I.S666A	HAS IT SERVICE BUILDING
I.S670A	ATLANTIC AVIATION - ATLANTIC AVIATION HANGAR
I.S671A	COH PWE - WASTE WATER PUMP STATION
I.S672A	ATLANTIC AVIATION - COVER PARKING
I.S674A	AFCD AV-CENTER - CORPORATE AVIATION FACILITY NO. 13
I.S676A	ATLANTIC AVIATION
I.S686A	WAREHOUSE
I.S750A	FAA - BUILDING "A" ADMINISTRATIVE OFFICES
I.S760A	CONOCO PHILLIPS - CORPORATE AVIATION FACILITY NO. 11
I.S762A	ARAMCO - CORPORATE AVIATION FACILITY NO. 1
I.S764A	ARAMCO - WAREHOUSE FACILITY NO. 2
I.S766A	STORAGE FACILITY - CONTRACTOR STORAGE FACILITY
I.S768A	STORAGE FACILITY - CONTRACTOR STORAGE FACILITY
I.S770A	FAA - AIR TRAFFIC CONTROL
I.S780A	FAA - AIR TRAFFIC CONTROL
I.S840A	ECO PARKING - SHUTTLE BUS PICK-UP STATION
I.S842A	ECO PARKING - SHUTTLE BUS PICK-UP STATION
I.S850A	ECO PARKING - ROOF TOP
I.S870A	FAA - AIR TRAFFIC CONTROL
I.S930A	TRACON BUILDING
I.S940A	ECO PARKING - OFFICES
I.S942A	ECO PARKING - SHUTTLE BUS PICK-UP STATION
I.S950A	ECO PARKING - BREAK ROOM
I.S952A	ECO PARKING - TOLL BOOTH
I.S954A	ECO PARKING - SHUTTLE BUS PICK-UP STATION
I.S960A	CENTERPOINT GAS STATION #32
I.S980A	ANTENNA BUILDING
I.S982A	OFFICE - WAREHOUSE
I.S984A	BOOTH COVER

West Side

I_B_Group_Code	I_B_Group_List
I.W170A	TERMINAL E
I.W190A	TERMINAL F/S FACILITY - FEDERAL INSPECTION SERVICES
I.W270.A	TERMINAL C - PARKING AREA, GARAGE
I.W272A	TERMINAL C
I.W280A	F/S PARKING COMPLEX - TERMINAL F/S PARKING COMPLEX
I.W290A	TERMINAL D
I.W290B	TERMINAL D WEST CONCOURSE
I.W290C	TERMINAL D - CBIS Building
I.W320A	LIFT STATION #6 - STORM SEWER LIFT STATION
I.W321A	FAA - REMOTE TRANSMITTING RECEIVER
I.W360A	MARRIOTT HOTEL - PARKING GARAGE FOR MARRIOTT HOTES
I.W361A	MARRIOTT HOTEL - MARRIOTT HOTEL SOUTH TOWER
I.W362A	MARRIOTT HOTEL - MARRIOTT HOTEL GARAGE, NORTH TOWER
I.W364A	TUNNEL ENTRANCE 6 - UNDERGROUND TUNNEL EXIT TO TRAIN & HOTEL
I.W366A	TRASH COMPACTOR NO.10 - GARBAGE COMPACTOR
I.W370A	TERMINAL C - PARKING AREA 5
I.W372A	UNITED TUG SERVICES
I.W374A	TRASH COMPACTOR NO.9 - GARBAGE COMPACTOR
I.W376A	PARKING TOLL BOOTH
I.W410A	UNITED EXPRESS JET AIRLINES - AIRCRAFT MAINTENANCE HANGAR
I.W411A	SECURITY GUARD STATION
I.W412A	UNITED EXPRESS JET AIRLINES
I.W414A	NEW WEST ELECTRICAL VAULT - ELECTRIC VAULT
I.W420A	FEDERAL EXPRESS - CARGO BUILDING J
I.W430A	AERO TERM - CARGO BUILDING F
I.W432A	UNITED CARGO BUILDING - CARGO BUILDING H
I.W433A	UNITED CARGO BUILDING - ELECTRIC VAULT
I.W434A	AERO TERM - CARGO BUILDING 8
I.W436A	AERO TERM - CARGO BUILDING 7
I.W438A	AERO TERM - CARGO BUILDING E
I.W440A	CENTRAL PLANT
I.W442A	ELECTRICAL VAULT - SWITCHGEAR BUILDING
I.W444A	COOLING TOWER #2, #3, &#4
I.W445A	COMMAND CENTER - COMMAND CENTER
I.W446A	CITY OF HOUSTON - WATER PLANT
I.W272.A	C KNUCKEL
I.W280.A	F/S EXPANSION
I.W448A	AERO HOUSTON CENTRAL LP - CARGO BUILDING 9
I.W460A	ABOVE GROUND PEOPLE MOVER(APM) - APM MAINTENANCE FACILITY
I.W461A	PARKING BOOTH
I.W462A	TERMINAL B
I.W464A	TUNNEL ENTRANCE 5 - UNDERGROUND TUNNEL EXIT TO TRAIN & HOTEL
I.W530A	AERO TERM - CARGO BUILDING G
I.W532A	WEST ELECTRICAL VAULT - ELECTRIC VAULT
I.W540A	AERO HOUSTON CENTRAL LP - CARGO BUILDING 10
I.W544A	AERO HOUSTON CENTRAL LP - CARGO BUILDING D
I.W548A	AERO TERM - CARGO BUILDING 11
I.W560A	TERMINAL A/B PARKING GARAGE
I.W562A	TERMINAL A
I.W563A	PARKING TOLL BOOTH
I.W564A	APM PDS BUILDING
I.W610A	ANADARKO PETROLEUM CORP. - CORPORATE AVIATION
I.W612A	WASTE MANAGEMENT - CORPORATE AVIATION
I.W614A	LANDMARK AVIATION - FIXED BASE OPERATOR
I.W615A	LANDMARK AVIATION - OPERATIONS
I.W620A	ENRON CORPORATION - CORPORATE AVIATION - WATERBURY PROPERTIES HANGER
I.W660A	FAA - CONTROL TOWER NO. 1
I.W661A	FAA - SECURITY GUARD STATION
I.W662A	FAA - OFFICE
I.W680A	FAA - AIR TRAFFIC CONTROL / ANTENA
I.W681A	FAA - AIR TRAFFIC CONTROL
I.W690A	LANDMARK AVIATION - SHOP
I.W710A	KENNEL - DOG KENNEL
I.W711A	LANDMARK AVIATION - SHOP
I.W720A	BURLINGTON RESOURCES - CORPORATE AVIATION
I.W722A	APACHE CORPORATION - COVERED PARKING
I.W730A	ARFF STATION 99
I.W731A	COH PWE - WASTE WATER PUMP STATION
I.W770A	FAA - EXISTING FAA NAVAID TO REMAIN ACTIVE
I.W780A	ARFF STATION 54
I.W781A	FAA - LIFT STATION FOR THE FIRE STATION
I.W782A	FAA - AIR TRAFFIC CONTROL / ANTENA
I.W783A	FAA - AIR TRAFFIC CONTROL / ANTENA
I.W790A	LIFT STATION 8 - STORM WATER LIFT STATION 8
I.W791A	AIRFIELD AND GROUNDS FACILITY
I.W850A	ALLIED AVIATION - FUEL FARM AND OFFICES
I.W851A	SECURITY GUARD STATION
I.W852A	FAA - AIR TRAFFIC CONTROL
I.W870A	FAA - AIR TRAFFIC CONTROL
I.W890A	FAA - FAA 8L ALSF SUBSTATION
I.W950A	ALLIED AVIATION - FUEL FARM AND OFFICES
I.W951A	ALLIED AVIATION
I.W960A	FAA - AIR TRAFFIC CONTROL
I.W290.D	STIRILLE CORRIDOR
I.W271.A	UNITED AIRLINE PMO

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Appendix B-1	HAS_Group
Read Before Proceed:	01. These values are constantly being added. If you do not see your project's relevant code, consult with HAS grouq. 02.

HOU-EFD Building Groups

HOU Building Groups	
H_B_Group_Code	**H_B_Group_List**
H.E160A	HAWKER BEECHCRAFT
H.E220A	HELICOPTER PAD - HPD
H.E230A	HELICOPTER PAD - HPD
H.E232A	WING AVIATION
H.E240A	SIGNATURE FLIGHT SUPPORT
H.E242A	ABCO AVIATION
H.E252A	SIGNATURE FLIGHT SUPPORT
H.E256A	STARFLITE
H.E260A	SIGNATURE FLIGHT SUPPORT
H.E320A	SOUTHWEST AIRLINES
H.E330A	STARFLITE AVIATION
H.E340A	AMERICAN INT'L REALTY GROUP
H.E350A	SPECTRA ENERGY SERVICES
H.E360A	TOYOTA
H.E370A	ENTERPRISE FBO
H.E382A	JET AVIATION
H.E390A	JET AVIATION
H.E392A	VERTEX
H.N310A	HOUSTON AIRPORT SYSTEM
H.N320A	SERVISAIR AND SHELL OIL COMPANY
H.N322A	NORTH ELECTRICAL VAULT
H.N323A	SERVISAIR AND SHELL OIL COMPANY
H.N324A	HOUSTON AIRPORT SYSTEM
H.N325A	ALAMO / NATIONAL RENTAL MAINTENANCE
H.N331A	JETWAY MAINTENANCE
H.N332A	BUDGET RENTAL ADMINISTRATION BLDG
H.N333A	AVIS RENTAL ADMINISTRATIVE BLDG
H.N336A	TAXI CAB STAGING
H.N337A	Hansel Phelps Office
H.N342A	FIRE DEPARTMENT
H.N344A	PARKING GARAGE
H.N345A	ELECTRIC SERVICE BUILDING
H.N346A	SATELLITE CENTRAL UTILITY PLANT
H.N347A	RTR D - FAA
H.N350A	TERMINAL BUILDING
H.N352A	PARKING GARAGE
H.N354A	NEW PARKING GARAGE
H.N360A	PARKING TOLL BOOTH
H.N361A	HOUSTON AIRPORT SYSTEM
H.N362A	HOUSTON AIRPORT SYSTEM
H.N365A	HOUSTON AIRPORT SYSTEM
H.N370A	HOUSTON AIRPORT SYSTEM
H.N371A	HOUSTON AIRPORT SYSTEM
H.N372A	SOUTHWEST AIRLINES CARGO
H.N380A	ATLANTIC AVIATION CORPORATION
H.N392A	RTR D - FAA
H.N394A	RTR D - FAA
H.S250A	SOUTH ELEC VAULT
H.S252A	HCC HOLDING
H.S262A	FAA / PDC/US CUSTOMS
H.S270A	ARFF STA 81
H.S272A	SCI
H.S290A	FAA LOCALIZER
H.S340A	WILSON AIR CENTER
H.S342A	WILSON AIR CENTER
H.S344A	WILSON AIR CENTER
H.S350A	HCC HOLDING
H.S352A	CHS
H.S354A	WILSON AIR CENTER
H.S371A	A & G
H.S376A	A & G
H.S377A	A & G ELEC BLDG
H.S380A	RTR B - FAA
H.S412A	HOUSTON AIRPORT SYSTEM
H.S430A	RTR D - FAA
H.S432A	RTR D - FAA
H.S470A	HAS - VEHICLE FUELING STATION
H.S471A	HAS
H.W250A	FEDERAL AVAIATION ADMINISTRATION
H.W310A	FAA
H.W312A	8901 HANGER INC/MILLION AIR HANGAR
H.W320A	8901 HANGER INC/MILLION AIR HANGAR
H.W321A	8901 HANGER INC/MILLION AIR HANGAR
H.W322A	HAMS AVIATION/MILLION AIR HANGAR
H.W330A	STAR FLIGHT
H.W332A	MILLION AIR
H.W340A	UNITED AIRLINES
H.W342A	UNITED AIRLINES
H.W344A	ATCT
H.W350A	UNITED AIRLINES
H.W352A	HOUSTON AERONAUTICAL HERITAGE SOCIETY
H.W360A	HANGAR #11
H.W362A	MILION AIR
H.W370A	HOUSTON AERONAUTICAL
H.W382A	HOUSTON AERONAUTICAL HERITAGE SOCIETY

EFD Building Groups	
E_B_Group_Code	**E_B_Group_List**
E.E420	FAA MALSR CONTROL BLDG.
E.E430	GLIDE SLOPE & TOUCH DOWN RVR
E.N340	GLIDE SLOPE ANTENNA AND SHELTER BLDG
E.N450	EMERGENCY GENERATOR
E.N452	STORAGE
E.N452A	STORAGE
E.N452B	STORAGE
E.N455	NAVAID
E.N460	MAINTENANCE FACILITY
E.N462	MAINTENANCE FACILITY
E.N530	EMERGENCY GENERATOR BUILDING
E.S132	EMERGENCY GENERATOR BUILDING
E.S132A	EMERGENCY GENERATOR BUILDING
E.S396	INTEGRATADED AIRLINE SERVICES, INC.
E.S450	EMERGENCY GENERATOR BUILDING
E.S452	EMERGENCY GENERATOR BUILDING
E.S460	NAVAID
E.S480	WAREHOUSE
E.S481L	UTILITY SHED
E.S482	RESTROOM
E.S483	LOCALIZER
E.S484	AUTOMOTIVE SHOP
E.S486	DAF STORAGE WAREHOUSE
E.S488	TENANT STORAGE BUILDING
E.S661	LOCALIZER (SOUTH SIDE US SHELTER)
E.W310	T-HANGAR A
E.W312	T-HANGAR B
E.W324	CITY OWNED T-HANGARS
E.W326	CITY OWNED T-HANGARS
E.W332	BUILDING
E.W334	CITY OWNED T-HANGARS
E.W336	CITY OWNED T-HANGARS
E.W340	BOMASADA FLIGHT OPERATIONS (PRIVATE CBO)
E.W342	AIR TRAFFIC CONTROL TOWER (ATC)
E.W440	COH AVIATION DEPARTMENT

Airfield Groups

IAH Airfield Groups	
I_A_Group_Code	**I_A_Group_List**
R.15L - 33R	Runway 15L-33R
R.15R - 33L	Runway 15R-33L
R.8L - 26R	Runway 8L-26R
R.8R-26L	Runway 8R-26R
R.9-27	Runway 9-27
T.CC	Taxiway CC
T.EA	Taxiway EA
T.EB	Taxiway EB
T.EC	Taxiway EC
T.ED	Taxiway ED
T.EE	Taxiway EE
T.FA	Taxiway FA
T.FB	Taxiway FB
T.FC	Taxiway FC
T.FD	Taxiway FD
T.FE	Taxiway FE
T.FG	Taxiway FG
T.FH	Taxiway FH
T.FJ	Taxiway FJ
T.FK	Taxiway FK
T.NA	Taxiway NA
T.NB	Taxiway NB
T.NB	Taxiway NB
T.NC	Taxiway NC
T.NE	Taxiway NE
T.NF	Taxiway NF
T.NG	Taxiway NG
T.NH	Taxiway NH
T.NJ	Taxiway NJ
T.NK	Taxiway NK
T.NL	Taxiway NL
T.NN	Taxiway NN
T.NP	Taxiway NP
T.NR	Taxiway NR
T.NS	Taxiway NS
T.R2	Taxiway R2
T.RA	Taxiway RA
T.RA	SD BRIDGE
T.RB	Taxiway RB
T.SA	Taxiway SA
T.SB	Taxiway SB
T.SC	Taxiway SC
T.SF	Taxiway SF
T.SG	Taxiway SG
T.SH	Taxiway SH
T.SJ	Taxiway SJ
T.SK	Taxiway SK
T.WA	Taxiway WA
T.WB	Taxiway WB
T.WC	Taxiway WC
T.WD	Taxiway WD
T.WE	Taxiway WE
T.WF	Taxiway WF
T.WG	Taxiway WG
T.WH	Taxiway WH
T.WJ	Taxiway WJ
T.WK	Taxiway WK
T.WL	Taxiway WL
T.WM	Taxiway WM
T.WN	Taxiway WN
T.WP	Taxiway WP
T.WQ	Taxiway WQ
T.WR	Taxiway WR
T.WS	Taxiway WS
T.WT	Taxiway WT
T.WU	Taxiway WU
T.WV	Taxiway WV
T.WW	Taxiway WW
T.WZ	Taxiway WZ

HOU Airfield Groups	
H_A_Group_Code	**H_A_Group_List**
AFLD	Airfield General
R.13L-31R	Runway 13L/31R
R.13R-31L	Runway 13R/31L
R.17-35	Runway 17/35
R.4-22	Runway 4/22
T.B	Taxiway B
T.C	Taxiway C
T.D	Taxiway D
T.E	Taxiway E
T.F	Taxiway F
T.G	Taxiway G
T.G1	Taxiway G1
T.G2	Taxiway G2
T.G3	Taxiway G3
T.H	Taxiway H
T.H1	Taxiway H1
T.H2	Taxiway H2
T.J	Taxiway J
T.K	Taxiway K
T.K1	Taxiway K1
T.K2	Taxiway K2
T.L	Taxiway L
T.M	Taxiway M
T.M1	Taxiway M1
T.M3	Taxiway M3
T.N	Taxiway N
T.P	Taxiway P
T.P1	Taxiway P1
T.Q	Taxiway Q
T.R	Taxiway R
T.Y	Taxiway Y
T.Z	Taxiway Z

EFD Airfield Groups	
E_A_Group_Code	**E_A_Group_List**
R.17L/35R	RUNWAY 17L/35R
R.17R/35L	RUNWAY 17R/35L
R.4/22	RUNWAY 4/22
T.A	TAXIWAY A
T.B	TAXIWAY B
T.C	TAXIWAY C
T.D	TAXIWAY D
T.E	TAXIWAY E
T.F	TAXIWAY F
T.G	TAXIWAY G
T.H	TAXIWAY H
T.J	TAXIWAY J
T.K	TAXIWAY K

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Appendix C — HAS_SystemName

Read Before Proceed:

01. This appendix lists only the systems that contain both parameters and components. Other systems which do not contain any parameter or component assigned do not apply to any Revit family or Civil3D objects. HAS may add to the table, in which case you will be notified.
02. The System tabs (colored green) on this Excel file match this table.

System Code- Use this value for the parameter.	System Description
ARCH	Architectural
BHS	Baggage Handling
CONV	Conveyance
ELEC	Electrical
FIRE	Fire Protection
FUEL	Fuel
GSE	Ground Support Equipment
HVAC	Heating Ventilation and Air Conditioning
HYDO	Hydronic
IRRG	Irrigation
IT	IT (Information Technology)
NGAS	Natural Gas
PNEU	Pneumatic Utility
SANI	Sanitary Sewer
STRL	Structural
STRM	Storm Water
WATR	Water

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Appendix D — HAS_SubSystem

Read Before Proceed:

System	Subsystem Description	SubSystem Code Use this value for the parameter.
BHS	Clear Bag Line	CB
BHS	Claim Feed	CF
BHS	Clear Line Main	CLM
BHS	Curbside	CS
BHS	Computer Tomography	CT
BHS	Computer Tomography Clear Line	CTCL
BHS	Computer Tomography Main	CTM
BHS	Explosive Detection Trace Main	EDTM
BHS	Explosive Trace Detection	ETD
BHS	Explosive Tracking Device Clear Line	ETDCL
BHS	In Bound Conveyor	IB
BHS	Manual Encode Conveyor	ME
BHS	Manual Input Conveyor	MIC
BHS	Main Line	ML
BHS	Out Bound	OB
BHS	Out of Gauge	OOG
BHS	Odd Size or Oversize	OS
BHS	Odd Size Inbound	OSIB
BHS	On Screen Resolution	OSR
BHS	On Screen Resolution Clear Line	OSRCL
BHS	Purge Conveyor	PC
BHS	Suspect Bag Line	SB
BHS	Ticket Counter	TC
BHS	Tub Return	TR
BHS	Transfer Conveyor	TX
BHS	Cross Over Conveyor	XO
ELEC	Lighting	LIGHTING
ELEC	Power	POWER
FIRE	Wet System	WET SYSTEM
FIRE	Dry System	DRY SYSTEM
FIRE	Foam System	FOAM SYSTEM
FIRE	Gas System	GAS SYSTEM
FIRE	Preaction System	PREACTION SYSTEM
FIRE	Deluge System	DELUGE SYSTEM
HVAC	Return	RETURN
HVAC	Supply	SUPPLY
HVAC	Exhaust	EXHAUST
HVAC	Condensate Pipe (drain pipe)	CONDENSATE PIPE
HYDO	Chilled Water Supply	CHWS
HYDO	Chilled Water Return	CHWR
HYDO	Hot Water Return	HWR
HYDO	Hot Water Supply	HWS
HYDO	Condenser Water Supply	CWS
HYDO	Condenser Water Return	CWR
SANI	Vent	VENT
SANI	Sanitary	SANI
WATR	Domestic Cold Water	CW
WATR	Domestic Hot Water	HW

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Appendix E | HAS_Level

Read Before Proceed:

Level	Description
L0	Outside Building
L1	1st Floor
L2	2nd Floor
L3	3rd Floor
L4	4th Floor
L5	5th Floor
L6	6th Floor
L7	7th Floor
L8	8th Floor
RF	Roof
AT	Attic
M1	Mezzanine Floor
M2	Mezzanine Floor
B1	Basement
B2	Sub-Basement
B3	Sub-Basement

Note: Elements outside buildings are considered on Level 0 (L0), For any questions related to levels and scope, contact the ASIS group representative.

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Appendix F — HAS_ComponentType

Read Before Proceed:

01. The information here is also duplicated in row 11 of system tabs, found for ease of use when applying to HAS-ComponentType.

SYSTEM: ARCH

Component Code (Applies to HAS_EquipID)	Component Type (Applies to HAS_ComponentType)
AED	Automated External Defibrillator
ARTW	ArtWork
BARR	Barrier
CLDG	Cladding
CLNG	Ceiling
CNPS	Canopy
CURB	Curb
CWAL	Curtain Wall
DOOR	Door
FENC	Fence
FLOR	Floor
FURN	Furnishings / Furniture
GRAL	Guard Rails
HDRL	Handrails
MLWK	Millwork & Service Counters
ROOF	Roof
ROOM	Room
RRPT	Restroom Partition
SIGN	Sign
STRS	Stairs
WALL	Wall
WCR	Wheel Chair Ramp

SYSTEM: BHS

Component Code (Applies to HAS_EquipID)	Component Type (Applies to HAS_ComponentType)
CONT	Controls and Instrumentation
BHS	Baggage Handling System
MCP	Master Control Panel
MOTO	Motor
VFD	Variable Frequency Drive
VSU	Verti Sort Unit
MER	Merge
PT30	Power Turn 30 deg.
PT45	Power Turn 45 deg.
PT90	Power Turn 90 deg.
PT180	Power Turn 180 deg.
CD	Carousel
FD	Fire Door
SD	Security Door
MU	Make-Up Unit
HCD I	High Capacity Diverter
HSD I	High Speed Diverter I
HSD II	High Speed Diverter II
HSD III	High Speed Diverter III
ATR	Automatic Tag Reader
RCP	Remote Control Panel
ELPN	Electrical Panel

SYSTEM: CONV

Component Code (Applies to HAS_EquipID)	Component Type (Applies to HAS_ComponentType)
CPNL	Control panel
ELEV	Elevator System
ELPN	Electrical Panel
ESCA	Escalator System
HWAY	HoistWay
MOTO	Motor
MVSW	Moving side walk
OTNK	Oil Tank

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SYSTEM: ELEC

Component Code (Applies to HAS_EquipID)	Component Type (Applies to HAS_ComponentType)
ALRM	Alarm
BRKR	Breaker
CABL	Cable
CONT	Controls and Instrumentation
CSNG	Casing
DUBK	Ductbank, Electric Utility
ELPN	Electrical Panel
ELSG	Electrical Switch Gear
EMLI	Emergency Light
GENR	Generator
JUNB	Junction Box Connection
LITE	Lighting
METR	Meter
MHOL	Manhole
MOTO	Motor
OUTL	Electrical Oulet
RACK	Rack, Electric Utility
SNSR	Sensor
SWCH	Switch
UPS	Uninterruptible Power Supply
VALT	Vault
XFMR	Transformer

SYSTEM: FIRE

Component Code (Applies to HAS_EquipID)	Component Type (Applies to HAS_ComponentType)
ACMP	Air Compressor
ALRM	Alarm
CABL	Cable
ELPN	Electrical Panel
EVAC	Emergency Voice Alarm Communication System
FACP	Fire Alarm Control
FIEX	Fire Extinguisher
PIPE	Piping
PUBX	Pull Box
PUMP	Pump
SMOK	Smoke Detector
SNSR	Sensor
SPRK	Sprinkler
STAN	Standpipe (Fire)
TANK	Tank
VALV	Valve
WLIG	Warning Light

SYSTEM: FUEL

Component Code (Applies to HAS_EquipID)	Component Type (Applies to HAS_ComponentType)
EFSO	Emergency Fuel Shut Off
ELPN	Electrical Panel
METR	Meter
PIPE	Piping
PUMP	Pump
TANK	Tank
VALV	Valve

SYSTEM: GTSE

Component Code	Component Type (Applies to HAS_ComponentType)
ELPN	Electrical Panel
GPU	Ground Power Unit
PBB	Passenger Boarding Bridge
PCA	Pre-Conditioned Air
VDGS	Visual Docking Guidance System

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SYSTEM: HVAC

Component Code (Applies to HAS_EquipID)	Component Type (Applies to HAS_ComponentType)
AAD	Automatic Air Damper
AHU	Air Handling Unit
AIRL	Air Vent Line
BAKF	Backflow Preventer
CPD	Condensate Pump Discharge
CT	Cooling Tower
DAP	Duct Access Panel
DUCT	Ductwork
EDH	Electric Duct Heater
EFAN	Exhaust Fan
ELPN	Electrical Panel
FCU	Fan Coil Unit
HVCC	HVAC Controller
OAD	Outside Air Damper
OAI	Outside Air Intake
OAPU	Outside Air Pre-treat Unit
PIPE	Piping
PUMP	Pump
REHO	Relief hood
RTU	Rooftop Unit
SAF	Supply Air Fan
SNSR	Sensor
SPLT	Split System
TANK	Tank
TSTA	Thermostat
UH	Unit Heater
VAV	Variable Air Volume

SYSTEM: HYDO

Component Code (Applies to HAS_EquipID)	Component Type (Applies to HAS_ComponentType)
BOIL	Boiler
CHILL	Chiller
CTW	Cooling Tower
ELPN	Electrical Panel
GAUG	Water Gauge
PIPE	Piping
PUMP	Pump
TANK	Expansion Tank
VALV	Valve

SYSTEM: IRRG

Component Code (Applies to HAS_EquipID)	Component Type (Applies to HAS_ComponentType)
BAKF	Backflow Device
ELPN	Electrical Panel
ITME	Irrigation Controller
METR	Meter
PIPE	Piping
VALV	Valve
ZONE	Zone

SYSTEM: IT

Component Code (Applies to HAS_EquipID)	Component Type (Applies to HAS_ComponentType)
ALRM	Alarm
BEAC	Beacon
CTRY	Cable Tray
CARD	Card Reader
CMRA	Camera
COND	Conduit
DLET	Data Outlet
ELPN	Electrical Panel
HHOL	Handhole
MATV	Master Antenna Television
MHOL	Manhole
NETS	Network Switch
PWAC	Access Control Panel
SNSR	Sensor
ERRCS	Emergency Responder Radio Communications Systems
WIAP	Wireless Access Point

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SYSTEM: NGAS

Component Code (Applies to HAS_EquipID)	Component Type (Applies to HAS_ComponentType)
ALRM	Alarm
METR	Meter
PIPE	Piping
PREG	Pressure Regulator
VALV	Valve

SYSTEM: PNEU

Component Code (Applies to HAS_EquipID)	Component Type (Applies to HAS_ComponentType)
AIRV	Air Release Valve
COMP	Compressor
ELPN	Electrical Panel
FILT	Filter
GAUG	Gauge
PIPE	Piping
PREG	Pressure Regulator
TANK	Air Tank
VALV	Valve

SYSTEM: SANI

Component Code (Applies to HAS_EquipID)	Component Type (Applies to HAS_ComponentType)
BAKF	Backflow Preventer
CLNO	Clean Out
ELPN	Electrical Panel
FLDR	Floor Drain
GINT	Grease Trap
INTS	Interceptor Structure
JBND	Joint Bend
MHOL	Manhole
PIPE	Piping
PUMP	Pump
SUMP	Sump
SWEL	Sample Well
TOIL	Toilet
TRIT	Triturator
URIN	Urinal
VALV	Valve

SYSTEM: STRL

Component Code (Applies to HAS_EquipID)	Component Type (Applies to HAS_ComponentType)
BEAM	Beams
BRA	Bracing
BWALL	Bearing Walls
COL	Columns
FND	Foundation
GRD	Girders
SLAB	Slabs
STRS	Stairs

HOUSTON AIRPORTS

SYSTEM: STRM

Component Code (Applies to HAS_EquipID)	Component Type (Applies to HAS_ComponentType)
CBSN	Catch Basin
CLNO	Clean Out
CULV	Culvert
DOWP	Downspout Nozzle
DTCH	Ditch
ELPN	Electrical Panel
INCP	Interceptor
INLT	Inlet
MHOL	Manhole
OUTF	Outfall
OWS	Oil Water Separator
PIPE	Piping
POND	Pond
PUMP	Pump
RFDR	Roof Drain
SWEL	Sample Well

SYSTEM: WATR

Component Code (Applies to HAS_EquipID)	Component Type (Applies to HAS_ComponentType)
BAKF	Backflow Preventer
ELPN	Electrical Panel
GAUG	Water Gauge
HHOL	Handhole
HYDR	Hydrant
METR	Meter
MHOL	Manhole
PIPE	Piping
PUMP	Pump
SINK	Sink
SNSR	Sensor
SUMP	Sump
TANK	Tank
TLWH	Tankless Water Heater
VALV	Valve
WH	Water Heater
EMEW	Emergency Eye Wash

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Appendix G	Note
Read Before Proceed:	**01. Some of the components inherently could be attributed to multiple systems. To clarify the issue, this table defines to what system the component belongs according to HAS requirements.** **02. A rule of thumb is that a component shall be assigned to the system it serves unless explained in this appendix. For example, if an electrical panel serves mechanical equipment, it shall be set to the HVAC system.** **03. If the data entry clerk has any doubts or confusion about which system the component will be assigned, she or he must immediately consult with the project BIM Manager.**

Component	Description	System
Sink		WATR
Toilet		SANI
Urinal		SANI
Restroom Partition		ARCH

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Appendix H — HAS_DoorType

Read Before Proceed:

01. This table may be modified at any time.
02. If a door does not fall within any of the below types, the data entry clerk shall immediately notify and consult with the HAS ASIS team.

Door Type	Description
Single Door	
Swinging Door	
Double Door	
Dutch Door	
Slide Door	
Roll-Up Door	
Bifold Door	
Pocket Door	
Pivot Door	
Revolving door	
Accordion Door	

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For aditional spaces, refer to OmniClass table 13, Table 13 FLAT tab.

Appendix I

HAS_Space Funtion

Read Before Proceed:

01. The information on this appendix supersedes the Table 13 OmniClass. In other words, only use Table 13 if there is no information available in this appendix.
02. If you need to use Table 13 data, consult with HAS ASIS to assign a space function code for the chosen space function.

Space Function Code	Description
AMNS	Airport Maintenance Shop
ASVG	Airport Services Garage
BGHL	Baggage Handling
BGLB	Baggage Lobby
BATT	Battery Room
BRER	Break Room
BSOF	Business Office
VOID	Closed In Room Space
CLST	Closet
VIPC	Club / VIP Room
COMM	Communication
CNSN	Concession
CONF	Conference Room
CROM	Control Room
PRINT	Copy / Print
CORR	Corridor
CUBC	Cubicle
DPLG	Departure Lounge
DINN	Dinning
ELEC	Electrical Room
ELEV	Elevator
ESC	Escalator
XTAR	Exhibit Area
FREST	Family restroom
FISV	Federal Inspection Services
FOOD	Food Preparation
HOLD	Holdroom
IDF	IDF
JNTL	Janitorial
JTBG	Jet Bridge
LBBY	Lobby
LOCK	Locker Room
MAIL	Mail Room
MDF	MDF
MECL	Mechanical Closet
MECH	Mechanical Room
OFFC	Office Room
PKRP	Parking Ramp
PKTP	Parking Toll Plaza
PSHR	Passenger Holdroom
RECP	Reception
REST	Restroom
RETS	Retail Store
SCCP	Security Checkpoint
SCOF	Security Office
SVEL	Service Elevator
SHAF	Shaft
STR	Stair
STOR	Storage
TCOA	Ticketing Counter Area
TCOQ	Ticketing Counter Queuing
TLOB	Ticketing Lobby
TOFF	Ticketing Office
TRNG	Training Room
TRAM	Tram
UNK	UNKNOWN
VEST	Vestibule
DORM	Dormitory

For aditional spaces, refer to OmniClass table 13, Table 13 FLAT tab.

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