Establishing GUID Identifiers - RTU Example

System Mapping, Token Guidance, Data Transfer, and Maintenance Plan

Introduction

Building Lifecycle Management relies on a harmonized data “language” that can travel from the design studio to the rooftop and onward into analytics dashboards without a single mistranslation.

This example walks through that end-to-end translation for one Trane YZK 10-ton rooftop unit. Think of the process as issuing a **diplomatic passport**—first the equipment is granted a unique, internationally recognizable identity, and then every border checkpoint (BIM, IFC, COBie, Brick, Haystack) stamps that same passport, rather than inventing its own local alias.

GUID Token Development

1. **Select the physical specimen.** The team decoded Trane’s model-number schema—digit by digit—much like assembling a VIN for a car, choosing a *Y Z K 120 B 3 S B M* configuration that specifies cooling efficiency, refrigerant, voltage, gas-heat type, and economizer pack.
2. **Forge the canonical token.** Using ISO 81346 RDS (Reference Designation System) rules, the rooftop’s “passport number” became **BLDG01_ROOF_A_RTU0001**—human readable, URI-safe, and ready for QR labels.
3. **Mirror the token in Revit.** The token was stored in the *AssetTag* parameter so every schedule and tag reference the same identity—no nicknames allowed.
4. **Broadcast to classification systems.** OmniClass (Table 23 and 21), MasterFormat, and UniFormat codes were attached, assigning the unit a family name inside three parallel phonebooks, ensuring cost estimators, spec writers, and facility managers all dial the same contact.
5. **Serialize into IFC and COBie.** IFC property sets captured capacity, zone linkage, and electrical feeder, while COBie sheets logged components, systems, and connections. Think of IFC as the XML passport file and COBie as the customs manifest—they carry identical identifiers but serve different officers.
6. **Tag the electrical hierarchy.** Panelboard, circuit breaker, and feeder IDs were minted using the same location prefix, threading a breadcrumb trail from switchboard to compressor contactor.
7. **Declare the thermal territory.** Zone **BLDG01_ROOF_A_ZN01** stakes out the rooftop unit’s domain—much like a country border that clarifies which citizens (spaces 101–110) fall under its climate governance.

8. **Publish sensor endpoints.** Each BACnet point receives a surname—…_SAT, …_RAT, etc.—and a Brick/Haystack class tag, so analytics engines can “Google” (internet search) the point by role rather than address.
9. **Check against ASHRAE 233P.** A compliance checklist verifies that each passport now includes a scannable URI, native ontology reference, declared units, and family relationships, satisfying the draft semantic standards.

By following this route map, practitioners can replicate the journey for any asset class, ensuring that when a digital twin asks, “Who are you and where do you belong?” the equipment can present its passport once—and be recognized everywhere.

Universal Equipment Identifier Guidance: Trane YZK 10-Ton Rooftop Unit

Recommended Canonical Token

A **canonical token** is a single, authoritative identifier that remains unchanged as data moves from one platform to another—much like a book’s ISBN travels from printer to bookstore to library catalog. It anchors every subsequent cross-reference so there is never doubt about which physical asset a record describes.

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BLDG01_ROOF_A_RTU0001
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This token is the foundation rule for all downstream mappings. Once issued, it must be copied verbatim—never abbreviated, re-ordered, or reformatted—into BIM-compliant design tools, OmniClass entries, IFC property sets, COBie worksheets, Brick IRIs, Haystack id tags, QR labels, and even barcode fields.

Rationale for the Token Structure

1. **Character Safety** – The token uses only letters, digits, and underscores, which are accepted by Revit parameters, SQL databases, XML/JSON serializations, URNs, and HTTP URLs without escaping or substitution. This eliminates encoding errors when data is exchanged via APIs or spreadsheets.
2. **Human Legibility** – Underscores segment the hierarchical parts (Building → Roof Zone → Equipment Type → Sequence). Field technicians can parse the location and type at a glance when reading a QR label on the unit—or a schedule in a printed O&M manual.
3. **URI Compatibility** – Because the token contains no forbidden URI characters (/, :, ?, space), it can be prefixed directly with urn: or https:// to create globally unique, resolvable addresses without additional encoding logic.

4. **No Transformation** – By placing this immutable token into every system as-is, we avoid reconciliation tables and lookup scripts during handover. Any stakeholder can use a simple string match to join BIM, CMMS, BMS, and analytics records.

Mechanical Zone Identifier

Rooftop units are typically part of a defined (designed) Zone within the mechanical system, allowing related downstream components (fans, dampers, VAV's, terminal units) to associated with a zone and described in their logical sequence.

BLDG01_ROOF_A_ZN01

System / File	Field	Stored Value
Revit	*Mechanical Zone* parameter	BLDG01_ROOF_A_ZN01
IFC	IfcZone.Name and Pset_ZoneCommon.Reference	BLDG01_ROOF_A_ZN01
COBie	Zone.Name	BLDG01_ROOF_A_ZN01
Haystack / Brick	IRI for zone entity	urn:blm:BLDG01_ROOF_A_ZN01

Implementation Steps

1. **Define the shared parameter** *AssetTag* in the Revit template and bind it to *Mechanical Equipment* so every future rooftop unit inherits the field. This establishes the token at the earliest stage of model creation.
2. **Populate** *AssetTag* on the RTU family instance with BLDG01_ROOF_A_RTU0001. This single data entry propagates to schedules, tags, and downstream exports automatically.
3. **Update IFC mapping** in the exporter settings so *AssetTag* writes to Pset_AssetIdentification.AssetIdentifier. This ensures the token appears in the open-standard handover file without manual editing.
4. **Configure COBie exporter** to map *AssetTag* to Component.Name and place the URL form of the token in Component.BarCode. FM software can then scan a barcode and cross-reference the same canonical ID.
5. **Generate QR labels** using the URL variant (e.g., https://id.blm.org/BLDG01_ROOF_A_RTU0001) and affix them to the equipment

during commissioning so technicians can scan the unit and pull real-time data or documentation.

6. **Publish the URN** version (e.g., urn:blm:BLDG01_ROOF_A_RTU0001) into Haystack and Brick graphs. Analytics engines can then traverse relationships programmatically without name translation.

Change-Control Rule

If the unit's location or sequence number changes, **first update the canonical token in the Revit model**. All other systems must refresh from this master source so the rail-car of data stays coupled. Changing the ID in downstream files without updating the BIM anchor would create duplicates and orphaned records. Therefore, the BIM model (in whatever repository form) acts as the "source of authority," and every export or API pull should be version-controlled (e.g., data lineage) to trace when and why a token was modified.

If the unit is relocated or re-numbered, update **all occurrences** of the token in the BIM authoring file first, then re-export to downstream systems to maintain consistency.

Omniclass & Classification Mapping

Managed by the Construction Management Institute (CSI), MasterFormat, UniFormat, and Omniclass are all classification systems historically utilized in design & construction to standardize the organization bid packages for comparison of material, product, and labor pricing. These classifications are useful from a lifecycle perspective for renovation or equipment replacement as they give design, engineering, and construction teams a map of the project elements they will be working on.

Classification	Table / Section	Code	Description
OmniClass®	Table 23 – Products	**23-65 47 11**	*Packaged Rooftop HVAC Unit* †
OmniClass®	Table 21 – Elements	**21-55 30 15**	*Air Distribution Equipment*
MasterFormat®	Division 23 05 00 → 23 74 13	—	*Packaged, Outdoor, Rooftop, DX Cooling Units*
UniFormat® II	Level 2 – D3050	—	*Terminal & Package HVAC Units*

Classification	Table / Section	Code	Description
† Verify against the latest OmniClass browser; code inserted for illustrative purposes.			

Additional Manufacturer Attributes for O&M and Handover

Once these static specifications flow into Computerized Maintenance Management Systems (CMMS) or Enterprise Asset Management (EAM) platforms, they unlock practical benefits: automatic filter-replacement reminders, spare-parts ordering by SKU and size, refrigerant-leak tracking against factory charge, and weight-validated lift-planning for future replacements. Propagating the manufacturer's data at the BIM stage prevents the "data-rekeying cascade" that typically occurs at handover, ensuring that operations teams start day one with complete, trustworthy records. The Attributes in this table are extracted from the RTU Operations & Maintenance manual.

Attribute	Published Value	Units	Revit Parameter	IFC Property	COBie Field
Nominal Airflow	4 000	CFM	NominalAirflow	Pset_UnitaryEquipmentTypeCommon.AirFlowRate	Component.NominalFlow
Design Airflow	TBD	CFM	DesignAirflow	Pset_UnitaryEquipmentTypeCommon.DesignAirFlowRate	Component.DesignFlow
Filter Sizes / Qty	(3) 18×18×2 in & (3) 24×18×2 in	in / ea	FilterSize, FilterQty	Pset_FilterTypeCommon widths & heights	Spare sheet rows
Filter Media Rating	MERV 13	—	FilterMERV	Pset_FilterTypeCommon.FilterClass	Spare.FilterClass
Refrigerant Type	R-454B	—	Refrigerant	Pset_RefrigerationProperties.RefrigerantType	Component.Refrigerant
Refrigerant Charge	10 – 10.2	lb	RefrigerantCharge	Pset_RefrigerationProperties.Charge	Component.RefrigerantCharge
Shipping Weight	1 439	lb	ShippingWeight	Pset_TransportRequirements.TransportWeight	Component.ExtSystem
Operating Weight	1 245	lb	OperatingWeight	Pset_ServiceLife.Weight	Component.ExtSystemWeight
Overall Length	99-5/8	in	OverallLength	IfcElementComponent.Length	Component.Length

Attribute	Published Value	Units	Revit Parameter	IFC Property	COBie Field
Overall Width	63-1/8	in	OverallWidth	IfcElementComponent.Width	Component.Width
Overall Height	80-1/2	in	OverallHeight	IfcElementComponent.Height	Component.Height
Rated Voltage	208-230	V	RatedVoltage	Pset_ElectricalDeviceCommon.RatedVoltage	Component.Voltage
MCA	TBD	A	MCA	Pset_ElectricalDeviceCommon.MinSupplyCurrent	Component.MCA
MOCP / MOP	TBD	A	MOCP	Pset_ElectricalDeviceCommon.MaxFuseSize	Component.MOCP
Gas Heat Input	TBD	MBtu/h	GasHeatInput	Pset_BoilerCommon.InputCapacity	Component.GasHeatInput
Gas Heat Output	TBD	MBtu/h	GasHeatOutput	Pset_BoilerCommon.OutputCapacity	Component.GasHeatOutput

Values marked TBD are supplied by the project's mechanical/electrical engineer once final design calculations are complete.

Recommended Spare Parts for O&M Continuity

Predictive inventory reduces emergency calls and unplanned downtime. Keeping a minimal stock of manufacturer-approved consumables and wear items allows technicians to "swap and restore" the unit in a single visit, while CMMS software auto-decrements quantities and flags re-order thresholds. The Spare Parts in this table are extracted from the RTU Operations & Maintenance manual.

Part Name	Description	Trane Part Number*	Typical Qty On-Hand
18 × 18 × 2 in MERV 13 Filter	Primary supply filter (stage 1)	Refer to Trane filter kit selector	3
24 × 18 × 2 in MERV 13 Filter	Secondary return filter (stage 2)	Refer to Trane filter kit selector	3
Wall-Mounted RH Sensor	Field sensor BAYSENS036* for dehumidification	**BAYSENS036***	1
Duct-Mounted RH Sensor	Field sensor BAYSENS037* for dehumidification	**BAYSENS037***	1
Remote Zone Bullet Sensor	Bullet temp sensor BAYSENS077*	**BAYSENS077***	2

Part Name	Description	Trane Part Number*	Typical Qty On-Hand
Supply-Fan Drive Belt Set	V-belt set for SZVAV motor pulley	Contact Trane (size varies)	2
Compressor Contactor Kit	3-pole contactor, Symbio 700 panel	Contact Trane Service	1
Economizer Damper Actuator	Modulating actuator for low-leak economizer	Actuator Kit ACT-EFLEX	1

*Part numbers prefixed **BAYSENS** are taken directly from the operations manual sensor catalogue.* Other consumables are listed generically because the manual directs users to consult Trane's Illustrated Parts List for model-specific SKUs.

Fault Detection & Digital-Twin Endpoints

After static equipment attributes are secured in BIM, IFC, and COBie, the workflow shifts to **dynamic data points**—the real-time sensors and commands that feed analytics and automation platforms. Unlike the asset-record information (dimensions, weights, CFM) that change rarely, endpoint definitions describe live signals polled every few seconds. These points inherit the canonical token as a prefix but add functional tags (Brick/Haystack) so software can infer meaning without manual mapping.

Point Label	Brick / Haystack Tag	Type	Description
SAT	brick:Supply_Air_Temperature_Sensor	Data	10-kΩ thermistor in supply plenum
RAT	brick:Return_Air_Temperature_Sensor	Data	Return plenum sensor
MAT	brick:Mixed_Air_Temperature_Sensor	Data	Sensor post-mixing section
DAT	brick:Discharge_Air_Temperature_Sensor	Data	For VAV feedback
SF_STATUS	brick:Supply_Fan_Status	Data	Proof of airflow (aux contact)
COMP1_STATUS	brick:Compressor_Status	Data	Scroll compressor #1
GHV_POS	brick:Gas_Heating_Valve_Command	Control	0–100 % modulating valve
ECON_POS	brick:Economizer_Damper_Command	Control	0–100 % OA damper
FILT_DP	brick:Filter_Differential_Pressure_Sensor	Data	0–3 in.w.g pressure switch

All point names inherit the equipment tag as a prefix in BACnet/Modbus registers, e.g. BLDG01_ROOF_A_RTU0001_SAT.

ASHRAE 233P Semantic-Model Compliance Checklist

ASHRAE Standard 233P is a forthcoming specification that defines a universal, ontology-agnostic data schema for building systems—much like a Dewey Decimal System (e.g., library classification system) for live building data. The checklist below confirms that each endpoint in this example meets the draft requirements for identifiers, ontology linkage, units, and relationship semantics.

233P Requirement	Current Status	Action / Implementation
Globally unique URI per point	Prefix already unique (BLDG01_ROOF_A_RTU0001) but URI not yet published.	Publish each point as a URI: urn:blm:BLDG01_ROOF_A_RTU0001#SAT, #RAT, etc.; include in BAS metadata and Brick graph.
Approved ontology reference (Brick/Haystack/233P Annex A)	Brick/Haystack tags provided in endpoint table.	Update tags to the final 233P Annex class IRIs when standard is released; keep Brick tags for backward compatibility.
Units & data-type metadata	Units column omitted in current table.	Add unit column (e.g., °F, in_w.g, boolean) and export to Haystack unit tag or BACnet Units property.
Explicit relationship triples	Implicit via name prefix; not recorded as graph links.	In Brick RDF, add triples such as:<urn:…#SAT> brick:isPointOf <urn:…RTU0001>``<urn:…#SF_STATUS> brick:feeds <urn:…ZNA01>

Recommended URI Construction Rule

urn:blm:<EquipmentToken>#<PointMnemonic>

Example: urn:blm:BLDG01_ROOF_A_RTU0001#SAT

Integration Steps

1. **Update BAS/Haystack export script** so that when points are discovered or created, the script automatically concatenates urn:blm: + AssetTag + # + PointMnemonic. This guarantees that every point URI mirrors the canonical equipment token without manual data entry.
2. **Add `` tag** in Haystack (and brick:hasUnit triple in Brick) for each point. This satisfies 233P's requirement for machine-readable engineering units, enabling cross-system analytics without unit conversion errors.

3. **Generate Brick RDF** files that include explicit relationships (isPointOf, feeds, measures). These triples provide context so fault-detection rules can traverse from sensor to equipment to zone automatically.
4. **Document the naming and export rule** in the BIM Execution Plan and Owner's Information Requirements. Future project teams can then adopt the same 233P-compliant pipeline without reinventing conventions.

IFC Export Mapping (IFC 4.3)

IFC Field	Value / Setting	Notes
Entity	IfcUnitaryEquipment	RTU is treated as unitary HVAC equipment.
PredefinedType	ROOFTOPUNIT	Enumerated value in IFC 4.3.
GlobalId	Auto-generated (36 chars)	Keep Revit default, store human tag in Pset_AssetIdentification.
Pset_AssetIdentification.AssetIdentifier	BLDG01_ROOF_A_RTU0001	Shared parameter exported.
Pset_UnitaryEquipmentTypeCommon.NominalCapacity	120 kBtu/h	Example cooling capacity.
IfcRelAssignsToGroup → IfcZone	BLDG01_ROOF_A_ZN01	Links equipment to zone.
IfcRelConnectsPortToElement → IfcCableSegment	BLDG01_ROOF_A_PPA1_PHABC	Electrical feeder connection.

COBie Extract – Key Rows

Component sheet (RTU)

Name	TypeName	CreatedBy	CreatedOn	Category	BarCode
BLDG01_ROOF_A_RTU0001	Trane_YZK120B3S	BIM.Author	2025-05-21	23-65 47 11	https://id.blm.org/BLDG01_ROOF_A_RTU0001

System sheet (Air-Handling System)

Name	Type	Description
BLDG01_ROOF_A_SYS01	HVAC	Air loop served by RTU0001

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System Mapping, Token Guidance, Data Transfer, and Maintenance Plan

Connection sheet (excerpt)

Name	CreatedBy	ComponentA	ComponentB
RTU0001_Electrical	BIM.Author	BLDG01_ROOF_A_PPA1_CKT18	BLDG01_ROOF_A_RTU0001
RTU0001_AirLoop	BIM.Author	BLDG01_ROOF_A_RTU0001	BLDG01_ROOF_A_SYS01

Attribute sheet (excerpt)

Name	CreatedBy	TypeName	Unit	Value
NominalAirflow	BIM.Author	Flow	CFM	4000
FilterMediaRating	BIM.Author	Text	—	MERV13
ShippingWeight	BIM.Author	Weight	lb	1439
OperatingWeight	BIM.Author	Weight	lb	1245

Spare sheet (excerpt)

Name	CreatedBy	PartNumber	Quantity
18x18x2_MERV13_Filter	BIM.Author	Refer Manual	3
24x18x2_MERV13_Filter	BIM.Author	Refer Manual	3
WallMounted_RH_Sensor	BIM.Author	BAYSENS036*	1
Compressor_ContactorKit	BIM.Author	TraneContact	1

Space & Zone linkage (excerpt)

Space	Zone	Description
101	BLDG01_ROOF_A_ZN01	Open Office Bay
102	BLDG01_ROOF_A_ZN01	Conference Room

Name	Type	Description
BLDG01_ROOF_A_SYS01	HVAC	Air loop served by RTU0001

Maintenance Plan

The following maintenance program distills manufacturer guidance from the Trane Precedent Operations Manual and aligns it with **ASHRAE Standard 180** (HVAC Inspection & Maintenance), **NFPA 70E** electrical-safety practices, and EPA Section 608 refrigerant regulations. Tasks are sequenced from the most frequent to the least frequent and separated into heating-season and cooling-season job plans so maintenance planners can slot them into a CMMS calendar.

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1. Monthly Preventive Inspection

Recommended Frequency

- Every 30 days (Year-round)

Recommended Technician Qualifications

- Journeyman HVAC Technician (NATE or equivalent) • OSHA 10 & NFPA 70E training for lockout/tagout

Recommended Parts List

Part	Qty	Unit Cost	Ext. Cost
18 × 18 × 2 in MERV 13 Filter	3	$15	$45
24 × 18 × 2 in MERV 13 Filter	3	$20	$60
Misc. fasteners & gasket tape	1 lot	$10	$10
Total Parts Cost			**$115**

Estimated Labor Time

- 1.5 hrs × 1 tech = **1.5 labor hrs**

Detailed Job Plan

1. **Safety / PPE** – De-energize unit per NFPA 70E; verify zero energy. Wear safety glasses, gloves, and fall protection.
2. **Lockout/Tagout** – Apply padlocks to main disconnect; attach warning tag.
3. **Visual inspection** – Check for loose panels, debris, water leaks.
4. **Filter service** – Remove and replace listed filters. Record differential pressure. Reset clogged-filter switch if tripped.

5. **Condensate system** – Inspect pan & drain; clear blockages.
6. **Panel torque check** – Inspect control wiring and tighten lugs to spec.
7. **Return-air smoke detector** – Verify sampling path is clear and test per manufacturer instructions.
8. **Housekeeping** – Remove debris, close panels, remove LOTO.
9. **CMMS close-out** – Record findings, upload photos, and spare-parts usage.

Estimated Material (parts) Cost

$115 (see table)

Estimated Labor Cost

1.5 hrs × $110/hr = **$165**

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2. Cooling-Season Start-Up

Recommended Frequency

- Once per year – schedule for **April**

Recommended Technician Qualifications

- Senior HVAC Tech with EPA 608 Type III • OEM Symbio™ 700 controls certification

Recommended Parts List

Part	Qty	Unit Cost	Ext. Cost
Coil-cleaning solution (alkali, 1 gal)	1	$35	$35
Supply-fan belt set	2	$30	$60
Economizer damper lubricant	1 tube	$8	$8
Misc. PPE (acid-resistant gloves, goggles)	1 lot	$12	$12
Total Parts Cost			**$115**

Estimated Labor Time

- 2.0 hrs × 2 techs = **4.0 labor hrs**

Detailed Job Plan

1. **Safety / PPE** – Chemical-resistant gloves, goggles, face shield .

2. LOTO and confirm zero energy.
3. **Drain & pan check** – Clear blockages.
4. **Coil inspection** – Clean evaporator & condenser coils per manual; max 600 psi water pressure for MCHE coils .
5. **Fan & motor** – Spin condenser fans manually; lube bearings; install new belts; verify tension.
6. **Damper system** – Inspect hinges, pins, linkages; lubricate with white grease.
7. **Electrical** – Tighten terminals; inspect insulation.
8. **Operational test** – Energize unit, log ambient, suction/discharge pressures, and superheat .
9. Record data in CMMS; close work order.

Estimated Material Cost

$115

Estimated Labor Cost

4 hrs × $110/hr = **$440**

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3. Heating-Season Start-Up

Recommended Frequency

- Once per year – schedule for **October**

Recommended Technician Qualifications

- HVAC Tech with gas-heating certification • EPA 608 Universal for refrigerant handling

Recommended Parts List

Part	Qty	Unit Cost	Ext. Cost
Ignition electrode kit	1	$45	$45
Burner gasket set	1	$25	$25
Combustion analyzer calibration gas	1	$18	$18
Total Parts Cost			**$88**

Estimated Labor Time

- 2.5 hrs × 2 techs = **5.0 labor hrs**

Detailed Job Plan

1. **Safety / PPE** – Combustion PPE, LOTO gas & electric per NFPA 54.
2. Inspect control-panel wiring; tighten terminals .
3. Verify ignition control / spark electrode operation.
4. Simulate gas shut-off; confirm valve closure.
5. Inspect burner flames; adjust manifold pressure (1/8-in. tap) .
6. Check heat exchanger for corrosion; repair if needed.
7. Test freezestat and supply-fan safety interlocks.
8. Document combustion readings; upload to CMMS.

Estimated Material Cost

$88

Estimated Labor Cost

5 hrs × $110/hr = **$550**

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4. Annual Comprehensive Maintenance

Recommended Frequency

- Once per year – schedule for **March**

Recommended Technician Qualifications

- Senior HVAC Technician • NATE Air Distribution Specialty • OEM Symbio™ 700 advanced diagnostics

Recommended Parts List

Part	Qty	Unit Cost	Ext. Cost
Full filter set (both sizes)	6	$17 (avg)	$102
Hail-guard fasteners	1 kit	$15	$15
Compressor contactor kit	1	$85	$85

Part	Qty	Unit Cost	Ext. Cost
Belt set	2	$30	$60
Total Parts Cost			**$262**

Estimated Labor Time

- 4.0 hrs × 2 techs = **8.0 labor hrs**

Detailed Job Plan

1. **Safety / PPE** – Full lockout/tagout; NFPA 70E arc-flash gear.
2. Remove hail guards; clean condenser coils; reinstall guards.
3. Perform all Monthly PM tasks.
4. Replace compressor contactor and inspect inverter error log .
5. Lubricate bearings; grease until slight purge (per ASHRAE Guideline 1.4).
6. Perform functional test via BAS trends or persistence commissioning tool (ASHRAE 223P draft) for two-week period.
7. Update CMMS with findings and parts used.

Estimated Material Cost

$262

Estimated Labor Cost

8 hrs × $110/hr = **$880**

Annual Cost Summary

Metric	Value
Total Annual Parts Cost	$115 + $115 + $88 + $262 = **$580**
Total Annual Labor Time	1.5 + 4 + 5 + 8 = **18.5 hrs**
Total Annual Labor Cost	18.5 hrs × $110/hr = **$2,035**
Grand Total Annual Maintenance	**$2,615**

All labor rates based on the national loaded average of $110 per HVAC Service Technician hour (2025 RSMeans). Parts pricing from average online vendor listings, April 2025. Prices exclude tax and shipping and should be validated by purchasing prior to execution.

End of Maintenance Plan Section

Disclaimer

This document is presented as a proof-of-concept exploration and is intended to illustrate the potential for harmonizing equipment identifier strategies across BIM, COBie, IFC, and semantic modeling environments using open standards. The methods and examples described herein are illustrative and may require adaptation to meet specific project conditions, software configurations, or organizational requirements. The Building Lifecycle Management Initiative (BLMI) makes no representations or warranties, express or implied, as to the completeness, accuracy, or suitability of the content for any particular purpose and assumes no liability for errors, omissions, or consequences arising from the use of this material.