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*Sanitary Sewer Overflow (SSO) Control  
and Wastewater Facilities Program*

# Equipment and Instrument Tagging Requirements

City of Baton Rouge/Parish of East Baton Rouge  
Department of Public Works



Submitted by

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## 1.1 Introduction

This document provides requirements for equipment and instrument tagging for projects associated with the City of Baton Rouge/Parish of East Baton Rouge (C-P) Sanitary Sewer Overflow (SSO) Control and Wastewater Facilities Program. The term Engineer is defined as an engineering design firm under contract with the C-P and producing engineering design work on the Program. These requirements are provided to encourage consistency in the design approach used by various Engineers.

The primary goal of the equipment and tagging requirements is to establish a methodology that results in consistent equipment names and unique tag numbers for all equipment, instruments, and associated control signals. This will allow all plant and pump station control systems, the system-wide SCADA system, and maintenance management systems to be fully integrated using unique tag numbers for all system components.

While the purpose of these requirements is to assure uniformity, it is not intended to stifle Engineer's creativity, design innovation, and ingenuity. Engineers shall review these requirements and adopt them for design of the facilities for which they are responsible. Engineers are ultimately responsible for their design, and this responsibility is in no way diluted or absolved by these requirements.

It may be necessary for the Engineer to deviate from these requirements. In such cases, the Engineer shall immediately bring this matter to the attention of the Program Manager (PM) by completing and submitting the form included in the Program *Requirements for Engineers*. The PM reserves the right to allow or disallow the deviation from the requirements. If the deviation will impact design contract terms, then a Supplemental Agreement will be negotiated between the Engineer, the PM, and the C-P.

## 1.2 Instrument Tagging

All instruments will be labeled with a unique alpha-numeric tag number. Instrument tag numbers will generally consist of the following components:

Facility Code	ISA designation of process and function	Unit Process Number	Loop Number	Unit Number	Clarifying Abbreviation
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### 1.2.1 Facility Codes

Facility Codes will be as follows:

XXX Pump Station Facility Number  
N North WWTP  
S South WWTP



## 1.2.2 ISA Designation

Instrument Society of America (ISA) designations of process and function must follow Table 1 in ISA Standard 5.1, Instrumentation Symbols and Identification. Some typical examples include:

AIT	Analytical instrument with indicator and transmitter
FE	Flow element
LSH	Level switch high
LT	Level transmitter
PI	Pressure indicator (gauge)

## 1.2.3 Unit Processes Number

Unit processes may be modified based on specific project requirements but must use the following applicable unit process numbers:

05	Raw sewage pumping
07	Equalization pumping and storage
10	Preliminary treatment
20	Primary treatment
30	Trickling filters
35	Solids contact basins
40	Final Settling tanks
50	Disinfection
55	Effluent pumping
60	Gravity thickeners and thickened sludge pumping
65	Thickened sludge mixing tanks
70	Anaerobic digestion
80	Sludge dewatering
90	Miscellaneous support facilities

All collection system pump stations will use the unit process number for raw sewage pumping, 05.

Additional unit process numbers can be created where useful to more clearly differentiate among process equipment and instruments. For example, under preliminary treatment, 10 could be used for screening and 15 for grit removal.

## 1.2.4 Loop Numbers, Unit Numbers, and Clarifying Abbreviations

Loop numbers are generally assigned sequentially within a unit process and define a group of instruments, equipment, and so forth with a specific function.

The unit number is a unique identifying number for parallel equipment and instrumentation. It is primarily used to avoid duplication of instrument numbers and is not always needed.

In accordance with ISA standards, clarifying abbreviations are needed in some cases to fully define the instrument. For example, analytical instruments, such as those designated by AE, AI, or AIT, require a modifier to indicate what variable is being analyzed.



## 1.3 Equipment Naming and Tagging

All major equipment, gates, and valves will also receive a unique tagging number that will consist of the following components:

Facility Code	Equipment designation	Unit Process Number	Loop Number	Unit Number
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The facility codes, unit process numbers, loop numbers, and unit numbers will be as defined in Section 2 for instruments. Equipment designations will include the following:

ARV	Air release valve
AVRV	Air and vacuum release valve
G	Gate
M	Mechanical equipment
P	Pump
T	Tank
PCV	Pressure control valve
PRV	Pressure regulating valve
PSV	Pressure relief valve
V	Manual valve

Additional equipment designations may be established subject to approval by the PM.

Valves with automatic actuators will be given an ISA designation similar to instruments. For Open/Close valves, the letters will be FV. For modulating control valves, the letters will be FCV.

In addition to tag numbers, major equipment will also be given names that can be used, primarily by operations staff, to refer to the equipment. For example, if there are four raw sewage pumps, they would typically be given the names, Raw Sewage Pump 1 through Raw Sewage Pump 4, with the numbers the same as the loop numbers.

## 1.4 Design Presentation

Instrument and equipment tag numbers and names must be used consistently throughout the design drawings and specifications.

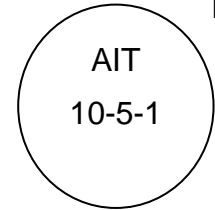
### 1.4.1 Instruments

Instruments and their tag numbers will be shown on the drawings using the graphical standards included in ISA Standard 15.1. A typical instrument “bubble” is shown in Exhibit 1.



The bubble in Exhibit 1 includes the following tag number components:

AIT ISA designation of process and function  
 10 Unit Process Number  
 5 Loop Number  
 1 Unit Number  
 DO Clarifying Abbreviation



DO

The clarifying abbreviation “DO” in this case stands for dissolved oxygen. All clarifying abbreviations must be defined in the instrumentation and control (I&C) legend drawings.

Actuated valves will also be designated using the bubble in Exhibit 1 using FV as the ISA designation for Open/Close valves and FCV for modulating control valves.

Note that the facility code is not included as part of the instrument bubbles on the drawings, however, it is acceptable to include the facility code. On projects with many instruments, not including the facility codes will simplify drawing preparation. However, if facility codes are not included, a note should be included in the I&C legend or drawings that clearly identifies the applicable facility codes.

When referring to instruments in the specifications, the tag number “AIT\_10\_05\_01\_DO” shall be used for the instrument included in Exhibit 1.

Note that the tag number again does not include the facility code but a general note must be included to note the applicable code. If a project contains multiple facilities, such as several pump stations, it would be preferable to list the facility codes as part of the tag numbers in the specifications to avoid confusion.

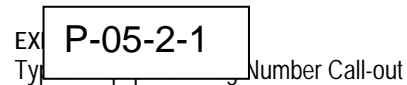
Note that these tag numbers will also be used to identify control signals and I/O points in the plant and pump station control and SCADA systems. In these applications, the facility codes must be included.

## 1.4.2 Equipment

Equipment, valves and other items that do not receive instrument tag numbers will also receive unique tag numbers. Tag numbers will be called out on the drawings using the format shown in Exhibit 2.

The call-out in Exhibit 2 includes the following tag number components:

P Equipment designation (Pump)  
 05 Unit Process Number  
 2 Loop Number  
 1 Unit Number



Again, note that the facility code is not included. Use of the facility code for equipment should be as discussed for instruments.





In many cases, equipment numbers will not require separate unit numbers. In the above example, if there are four raw sewage pumps in unit process 05, which is raw sewage pumping, they could be designated P-05-1 through P-05-4. However, if there are other pumps included in unit process 05, unit numbers would be needed to differentiate between the groups of pumps.

When referring to equipment in the specifications, the tag number "P-05-2-1" shall be used, as listed in Exhibit 2.

If the equipment tag number is listed in a database for software programming or other applications, the tag number should be similar to the format for instruments. Assuming that the tag number in Exhibit 2 is located in the South WWTP, the tag number shall be written as "S\_P\_05\_02\_01."