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| Version | Date | Description of Revisions |
| 1 | November 1, 2011 | Standard Specification Release |
| 2 | April 17, 2015 | General Formatting |
| 3 | May 11, 2021 | Revisions throughout to reflect obsolescence of Hach 1720E turbidimeter and replacement with TU5 series (BM) |
| 4 | June 13, 2022 | 2.2 Tagging requirement revised (BM) |

NOTE:

This is a CONTROLLED Document. Any documents appearing in paper form are not controlled and should be checked against the on-line file version prior to use.

**For each project the consulting engineer is responsible for the correct application of the specifications and for updating and modifying all highlighted items, as well as updating and modifying those sections that are directly applicable to the project. All updates and modifications to this standard document are to be highlighted to the Region for review and acceptance on each project.**

**Notice:** This Document hardcopy must be used for reference purpose only.

**The on-line copy is the current version of the document.**

# GENERAL

## General

### This Section includes additional requirements to those set forth in Section 13105 – Process Control: General Instrumentation Requirements. Where a conflict exists between requirements, the Contractor shall adhere to the more stringent requirement.

### The Contractor shall clearly identify on the shop drawings any deviation from the Specification Section.

### The Contractor shall provide the following O&M documentation: manufacturers’ printed O&M documentation; installation instructions; specifications; operation manuals, including electrical drawings, and plumbing diagrams; sales literature; materials; and training materials as applicable.

### The Contractor shall provide two copies of the manufacturer’s warranties.

### The Contractor shall provide, through the instrumentation supplier, turbidity analyzers, complete and operable in accordance with the Contract Documents.

## Related Sections

### [Under "Related Sections", identify other Sections that are related to, and/or dependent on, the work results or information specified elsewhere. The list should be limited to Sections with specific information that the reader might expect to find in this Section, but is specified elsewhere. For example, if hardware for aluminum entrances is specified in the aluminum entrance Section, a cross-reference would be appropriate in the finish hardware Section. The purpose of this cross-referencing is for information only, to aid in finding those other requirements—not to define the scope of the Section.

### Cross-referencing here may also be used to coordinate assemblies or systems whose components may span multiple Sections and which must meet certain performance requirements as an assembly or system.

### This Section is to be completed/updated during the design development by the Consultant. If it is not applicable to the Section for the specific project it may be deleted.]

### [List Sections specifying installation of products supplied but not installed under this Section and indicate specific items.]

### Section [\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_]: Execution requirements for ...[item]... specified under this Section.

### [List Sections specifying products installed but not supplied under this Section and indicate specific items.]

### Section [\_\_\_\_\_\_ – \_\_\_\_\_\_\_\_\_\_\_\_]: Product requirements for ...[item]... for installation under this Section.

### [List Sections specifying related requirements.]

### Sections:

#### Section 01425 – Computerized Maintenance Management System Data Requirements

#### Section 01430 – Operation and Maintenance Data

#### Section 01600 – Material and Equipment

#### Section 01740 – Cleaning

#### Section 01810 – Equipment Testing and Facility Commissioning

#### Section 01820 – Demonstration and Training

#### Division 01 – General Requirements (insert applicable specifications)

#### Division 11 – Equipment (insert applicable specifications)

#### Division 15 – Mechanical (insert applicable specifications)

#### Division 13 – SCADA and Instrumentation (insert applicable specifications)

#### Product requirements for [item]... for installation under this Section.

## Submittals

### The Contractor shall provide the following O&M documentation: manufacturers’ printed O&M documentation; installation instructions; specifications; operation manuals, including electrical drawings, and plumbing diagrams; sales literature; materials; and training materials as applicable.

### The Contractor shall furnish copies of the manufacturer’s warranties.

### Comply with the detailed requirements for instrument submittal requirements in Section 13105 – General Instrumentation Requirements.

### Comply with the requirements of Division 1.

### Submit working drawings for all equipment specified in Division 13 for review by the Consultant before ordering or fabrication.

### Provide a complete listing of recommended spares for each type of supplied equipment.

### Provide all necessary licenses, permits, approvals and certificates required in order to complete the work.

## Measurement and Payment

*[Choose one of the following payment language provisions that best suits the individual project.*

*If this Section is not specifically referenced by an item in the Bid Form, please use the following language:*

.1 The work of this Section will not be measured separately for payment. All costs associated with the work of this Section shall be included in the Contract Price.

*OR If this Section is specifically referenced in the Bid Form, use the following language and identify the relevant item in the Bid Form:*

.1 All costs associated with the work of this Section shall be included in the price(s) for Item No(s). \_\_\_ in the Bid Form.

*If the work of this Section is to be measured and paid for by several different methods, please amend the standard wording given above to reflect the different methods of measurement and payment.*]

## Warranty

### Refer to Division 1, the Articles of Agreement and the General Conditions for warranty details. Where a conflict exists between these requirements and additional requirements within Division 13, the Contractor shall meet the more stringent requirement.

### The warranty for products supplied under this section shall be by a local Canadian distributor in the Province of Ontario.

# PRODUCTS

## Sensor

### The low range online laser turbidimeter consists of a Class 1 650nm (EPA) or 850 nm (ISO) laser light source and 360° x 90° detection system with predictive diagnostics designed to continuously monitor turbidity in a sample stream.

### Continuous particle removal using a vortex created by the fluid path.

### Range: 0 to 10 NTU for turbidity units.

### Light Source: Class 2 laser product, with embedded 650 nm (EPA 0.43 mW) or Class 1 laser product, with embedded 850 nm (ISO), max. 0.55 mW (complies with IEC/EN 60825-1 and to 21 CFR 1040.10 in accordance with Laser Notice No. 50)

### Mounting: Vertical surface mounted

### Accuracy: ±2% or 0.01 NTU from 0 - 40 NTU

### Resolution: 0.0001 NTU / FNU / TE/F / FTU / EBC

### Repeatability: Better than 1% of reading or ±0.002 NTU

### Sampling line: 12 mm or larger corrosion resistant sampling line

## Transmitter

### Front panel keypad for parameter selection and calibration data entry.

### Set-up and calibration from user programmable and/or predetermined choices accessible from menu prompts.

### Two alarms with adjustable set-points, isolated output SPDT contacts, 5 amp 120 VAC.

### NEMA 4X corrosive resistant housing and mounting hardware.

### Equipment tag wired to transmitter in accordance with Section 01080 – Process Equipment Location Tagging.

## Acceptable Manufacturers

### Acceptable manufacturers are listed in the following table in order of preference. The design has been completed around the first named supplier. The contractor is responsible for all costs associated with any changes required to the design to accommodate one of the other manufacturers.

|  |  |  |
| --- | --- | --- |
| Preference | Manufacturer | Model |
| 1 | Hach Company | TU5300 with sc200 |
| 2 | Or Equivalent |  |
| 3 |  |  |

### The Contractor is to select the appropriate options to suit the application and the requirements of the specification.

### Where other manufacturers are provided, they are to meet the performance specifications of the first named manufacturer.

## Turbidity Analyzers

|  |  |
| --- | --- |
| **Service:** | Low Turbidity Levels |
| **Process:** |  |
| Tag Name: | XXYYZZ\_PROC\_EQUIP |
| Installation DWG: | 13180A |
| Fluid: | Final Water |
| Temp min/max: | 0 to 25 °C |
| Press min/max: | 0 to 100 kPa |
| Flow min/max: | 0 to 40 L/sec |
| Turbidity: | 0 to 10 NTU |
| **Device Data:** |  |
| Model: | TU5300sc Turbidmeter with sc200 Controller |
| Manufacturer: | HACH |
| Part Number: | LXV445.99.23122 (Turbidimeter)  LXV404.99.00552 (Controller) |
| **Accessories:** |  |
| Extension Cable, 7.7m: | 5796000 |
| Stablcal Calibration Set: | LZY835 |
| Maintenance Kit for TU5300sc: Module: | LZY907.91.00002 |
| Replacement Vial for TU5300sc: | LZY834 |
| Tubing for TU5300 sc: | LZY911 |
| Desiccant Cartridge for TU5300sc: | LZY876 |
|  | *Additional added as necessary* |

# EXECUTION

## General

### The following installation requirements are in addition to or deviations from the requirements set forth for instrumentation in Section 13105 – Process Control: General Instrumentation Requirements.

#### Locate the sample point to minimize unnecessary dead time in the turbidity analysis. Take care to ensure the sample is representative of the process stream.

#### Provide a floor drain next to the analyzer. Provide all required process connections, valves, pressure / flow regulators, and miscellaneous mounting hardware not provided with analyzer. Select type and material for the application.

#### Install a sample withdrawal valve next to the analyzer so samples can be taken for calibration checks.

#### The Contractor shall provide a source of clean water and necessary valves so the sample line and probe can be back flushed.

#### Ensure that the system is on-line 24 hours before start up and calibration for adequate warm up.

#### Provide a one (1) year supply of spare parts.

#### The Contractor shall provide their own Formazine calibration kit to calibrate analyzers (20 NTU).

#### Sample Flow; 100 to 1000 mL/min; optimal flow rate 200 to 500mL/min

#### Sample Pressure; Max. 6 bar (87 psi) compared to air at sample temperature range of 0 to 40 °C (32 to 104 °F)

#### The Contractor shall supply and install all required process connections, valves, pressure / flow regulators, and miscellaneous mounting hardware not provided with analyzer.

#### Sample unit shall incorporate a built-in bubble trap to effectively purge the sample of entrapped air prior to measurement.

#### Control unit shall be capable of offsetting the turbidity of pure water to read 0.0000 on particle free water.

#### A bubble rejection circuit shall eliminate measurement spikes due to transient sample conditions.

#### Mount the transmitter unit at grade in a readily accessible location to facilitate maintenance and calibration.

#### Transmitter/electronics not mounted/installed indoors must be installed within fiberglass enclosure with viewing window, thermostat and heater. Panel heater to be powered from separate circuit than the instrument.

**END OF SECTION**