|  |  |
| --- | --- |
| **Contract** | Combined Services Heating Hot Water and Chilled Water Pipework |
| **Document Title** | Combined Services Heating Hot Water and Chilled Water Pipework Hydrostatic Pressure Test |
| **Document No.** | AES-NZ1005-STE-ITP-PMT-0023 |
| **Process** | Combined Services - Hydrostatic Pressure Testing |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Action** | **Position** | **Name** | **Signature** | **Date** |
| **Prepared by** | AE Smith Supervisor | Michael Simpson |  |  |
| **Approved by** | AE Smith Project Manager | S. Minnaar |  |  |
| **Reviewed by** | CPB Quality Team |  |  |  |
| **Approved by** | CPB Services Manger |  |  |  |
| **Accepted by** | CPB Engineer |  |  |  |
|  |  |  |  |  |

**1. SOCPE OF WORKS:**

This scope of works comprises the provision of the equipment & documentation for the Combined Services Heating Hot Water and Chilled Water Pipework Hydrostatic Pressure Testing of the combined ring main pipework;

Quality records, test results, reports and measurements**2. REFERENCED DOCUMENTATION:**

Specifications:

|  |  |  |  |
| --- | --- | --- | --- |
|  | NZT5007-STE-MSSP-0001 | 4 | Mechanical Services Specification |
|  | AS 4041:2006 |  | Pressure Piping |

Drawings:

|  |  |  |  |
| --- | --- | --- | --- |
|  | AES-NZ1005-STE-SHD-MEC-1101   * In sequence to –   AES-NZ1005-STE-SHD-MEC-1142 |  | In-Ground Mechanical Piping Trench Sequence ST… |

**3. DEFINITION OF TERMS:**

|  |  |
| --- | --- |
| Conformance Record | Record submitted by AE Smith to CPB of the evidence pertaining to each lot which demonstrates that the specified requirements for that lot have been met |
| Hold Point | An identified point in a process past which AE Smith shall not proceed without a direction from CPB |
| Lot | A portion of material or a section of the Works which has been constructed and/or supplied under essentially uniform conditions and contains material of essentially uniform quality, or A single finished item of work which includes several materials and/or work types (e.g. a pit in place) |
| Witness Point | An identified point in a construction process at which an activity is observed |

**4. INSPECTION AND TEST PLAN:**

Responsible: SE-AE Smith / Downer Site Engineer, SUP-AE Smith / Downer Supervisor, SRV-Surveyor

Method: DR-Document review, FM-Field measure, FT-Field test, M-Monitoring, S-Survey, V-Visual

Record: FTR-Field test report, LTR-Laboratory test report, TDS-Technical data sheet, QCC-Quality control checklist

| **#** | **Inspection and Test Control Point** | **Resp.** | **Referenced Documentation** | **Conformance Criteria** | **Method** | **Frequency** | **Ctrl Point** | | **Records** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **WP** | **HP** |
| **1.0** | **MATERIAL COMPLIANCE** | | | | | | | | |
| 1.1 | RDM & Consent Approval | CPB | RDM Tracker Consent Tracker | RDM approval tracker Consent approval tracker | Document Review | By Building/  Site Wide |  | CPB | Receipt of Approval by Client |
| 1.2 | General | SE | NZT5007-STE-MSSP-0001 | For all materials, a certificate of compliance shall be provided to the Client Rep. before the materials are incorporated into the works.   * Specifications & QA Documents Approved * Drawings are confirmed * Equipment fit for purpose | DR | Each material |  | CPB | Aconex approval  Incoming Inspection Checklists  Drawing Register |
| **2.0** **CONNECT PUMP TO HHW & CHW RING MAINS** | | | | | | | | | |
| 2.1 | Accept delivery of pump to site | SUP |  | 1. Check pump is rated for pressure test 2. Check all supplied attachments are correct and in good order 3. Check fluid levels & fill as necessary | V | Once | AE Smith |  | Check sheet |
| 2.2 | Connect pump to CHW & CHW ring mains | SUP | NZT5007-STE-MSSP-0001 | Confirm connections are safe and correct | V | Once | AE Smith |  | Check Sheet |
| 2.3 | Connect calibrated gauges for pressure test | SUP | NZT5007-STE-MSSP-0001  AS 4041:2006 | Confirm position is correct, gauge is in good order for test & calibrated | V + DR | Each test | AE Smith |  | Check Sheet  +  Document |
| **3.0** | **HYDROSTATIC TEST (STAGE ONE)** | | | | | | | | |
| 3.1 | Fill CHW & HHW ring mains with domestic water | SUP |  | Completely fill closed loop system with water releasing all air | V | Every time system is opened | AE Smith |  | Check  Sheet |
| 3.2 | Gradually increase system pressure to 10 bar | SUP | NZT5007-STE-MSSP-0001  AS 4041:2006 | Slowly raise system pressure to 10 bar  Checking for any signs of leaks or pressure drops | V+M | Constantly Monitored | AE Smith |  | Check sheet |
| 3.3 | Hold 10 bar pressure for 2 hours  (***START*** WITNESSED) | SUP | NZT5007-STE-MSSP-0001  AS 4041:2006 | Record ***START*** time & photograph gauge  All relevant parties to witness starting pressure of 10 bar | V+M | Once | AE Smith | AE Smith /  CPB /  IR | Check  Sheet  +  Photos |
| 3.4 | Hold 10 bar pressure for 2 hours  (***END*** WITNESSED) | SUP | NZT5007-STE-MSSP-0001  AS 4041:2006 | Record ***FINISH*** time & photograph gauge  All relevant parties to witness starting pressure of 10 bar | V+M | Once | AE Smith | AE Smith /  CPB /  IR | Check  Sheet  +  Photos |
| 3.5 | Pressure released or reduced for next test | SUP |  | Supervisor to ensure energy (pressure) is only stored while under test | V+M | Once | AE Smith |  | Check Sheet |
| **4.0 HYDROSTATIC TEST (STAGE TWO)** | | | | | | | | | |
| 4.1 | Ensure pressure is 7 bar for second stage of test | SUP | NZT5007-STE-MSSP-0001  AS 4041:2006 | Ensure system pressure has been reduced from previous test to 7 bar  **Or**  Gradually raise to 7 bar | V+M | Constantly Monitor | AE Smith |  | Check Sheet |
| 4.2 | Hold 7 bar pressure for 24 hours  (***START*** WITNESSED) | SUP | NZT5007-STE-MSSP-0001  AS 4041:2006 | Record ***START*** time & photograph gauge  All relevant parties to witness starting pressure of 7 bar | V+M | Once | AE Smith | AE Smith /  CPB /  IR | Check  Sheet  +  Photos |
| 4.3 | Hold 7 bar pressure for 24 hours  (***FINISH*** WITNESSED) | SUP | NZT5007-STE-MSSP-0001  AS 4041:2006 | Record ***FINISH*** time & photograph gauge  All relevant parties to witness starting pressure of 7 bar | V+M | Once | AE Smith | AE Smith /  CPB /  IR | Check  Sheet  +  Photos |
| 4.4 | Discharge pressure  leave system in a safe state | SUP |  | Discharge system pressure, ensure area is left in a safe state meeting site requirement | V+M | Once | AE Smith |  | Check  Sheet |
| **5.0 COMPLETION RECORDS** | | | | | | | | | |
| 12.1 | Testing Results | SE  SUP | NZT5007-STE-MSSP-0001  AS 4041:2006 | All pipework pressure test reports shall be provided | DR | Each lot | AE Smith | AE Smith /  CPB /  IR | Check  Sheet |