SHOP DRAWING REVIEW

- [X] NOT REVIEWED
- [ ] REVIEWED
- [ ] REVIEWED AS NOTED
- [ ] REVISE AND RESUBMIT

This review by Hilditch Architect Inc. is for the sole purpose of ascertaining conformance with the general design concept features only, and does not in any way constitute review of the design of engineering elements which form part of the Contract Documents prepared by others. This review shall not mean that Hilditch Architect Inc. approves the design detail inherent in the shop drawings, responsibility for which shall remain with the Contractor submitting same, and such review shall not relieve the Contractor of his responsibility for errors or omissions in the shop drawings or of his responsibility for meeting all requirements of the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of the work of all trades.

***Hilditch** Architect Inc.*

By: Sasha Stairs

Project No: 1809

Date Rec'd:

Date Rev'd: 2024.12.06

GC/CM: 2024.11.27

Consultant: 2024.12.05

Submittal No. 22

Mixing Station

Project Name:
Neshama Hospice

Owner:
Neshama

Prime Consultant:
Hilditch Architect Inc

General Contractor: Renokrew

SHOP DRAWING SUBMITTAL REVIEW	JOB NAME: Neshama Hospice JOB #: 24-130 DATE: Nov 27, 2024
REVIEWED REJECTED REVIEW & RESUBMIT REVIEW AS NOTED	This review is for general conformance of plans and specifications only. Approvals are subject to subcontractors performance within the confines of the contract documents. Review of dimensions will not serve to relieve the subcontractor of contractual responsibility for any deviation from the contract requirements. SPECIFICATION: 23 08 10 ✓ SHOP DRAWING PRODUCT DATA DOCUMENTATION LETTER RENOKREW TORONTO | OTTAWA CHECKED BY: REVIEWED BY: TOTAL PAGES: 9

SustainGlobe Ltd.

THIS DRAWING REVIEWED SOLELY FOR GENERAL CONFORMITY WITH DESIGN CONCEPTS. QUANTITIES, DETAILS, DIMENSIONS AND DESIGNS INHERENT IN THE SHOP DRAWINGS ARE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY DATA WITH FIELD DIMENSIONS. CONTRACTOR IS SOLELY RESPONSIBLE FOR DESIGN OF MANUFACTURED ITEMS, FABRICATION PROCESSES AND TECHNIQUES OF CONSTRUCTION AND INSTALLATION OF EQUIPMENT.

DATE RECEIVED: November 27, 2024	✓ MECHANICAL ☐ ELECTRICAL ☐ OTHERS
THIS DRAWING IS: ☐ REVIEWED ✓ REVIEWED AS NOTED ☐ REVIEWED AND TO BE RESUBMIT	BY: TL DATE: December 04, 2024 PROJ. NO.: 18031

RENOKREW
TORONTO | OTTAWA

54 Audia Court, Unit 2
Concord, ON L4K 3N5
(905)-738-1400

Submittal 24-256-011

PROJECT NAME	PROJECT ADDRESS	DATE SUBMITTED
NESHAMA HOSPICE 24-256	3 Cadillac Avenue North York, ON M3H 1R9	Nov 26, 2024

TO	FROM
Taranjeet Singh	PAUL LEDDY
COMPANY	COMPANY
1568796 ONTARIO INC. C/A RENOKREW	Consult Mechanical Inc.
EMAIL	EMAIL
taranjeet@renokrew.com	paul.l@consultmechanical.com
ADDRESS	ADDRESS
43 LEPAGE COURT TORONTO, ON M3J 1Z9	54 Audia Court, Unit 2 Concord, ON L4K 3N5

Title

Armstrong mixing Station

Description

Tag TMV Mixing Station Manufacturer Armstrong Model DMC50

Package Items

SPEC	SUBSECTION	ITEM	TYPE
M15 Schedule of Equipment	M15	Schedule of Equipment	Shop Drawings

THE BRAIN® DIGITAL RECIRCULATION VALVE (DRV), DIGITAL MIXING CENTER (DMC), SAGE® (BS) INSTALLATION DETAILS FORM (IDF)

The review and acceptance of the information on the IDF by Armstrong:

1. Approves the order for processing which triggers an e-mail confirmation
2. Indicates that AHWG supports you by endorsing the application
3. Initiates the warranty
4. Delivers a complete, AHWG supported performance guarantee to the final user of the product
5. Drives the relevant point of specification-influence, point of installation and point of order financial allocation if appropiate

Section 1 – Ordering Processing/Tracking Detail:

In order to enter P.O.s and guarantee delivery dates, a technically accurate and complete IDF is required.
Complete this page and email with the Order to hotwater@armstronginternational.com

Point of Order / Sold To: Consult Mechanical *(eg: ABC Mechanical)*

City: Concord State: ON Rep Firm: Preston Phipps Inc.

Point of Installation: Neshama Hospice *(eg: Heinz Ketchup)*

City: North York State: ON Rep Firm: Preston Phipps Inc.

Point of Specification: Sustain Globe Ltd. *(eg: DEF Consulting Engineers)*

City: Richmond Hill State: ON Rep Firm: Preston Phipps Inc.

Other Influence: _____ *(eg: Source of Recommendation)*

Section 2 – Secondary Domestic Water Side

Size: DRV25 ☐ DRV40 ☐ DRV50 ☑ DRV80 ☐

Inlet Hot Water Temperature to DRV: _____ °F

Inlet Hot Water Pressure to DRV: _____ PSI

Inlet Cold Water Temperature to DRV: _____ °F

Inlet Cold Water Pressure to DRV: _____ PSI

Maximum System Demand: _____ GPM

Continuous Recirc to DRV: _____ GPM

DRV25 for Group Control: ☐

Minimum Recirc: Each DRV 25 requires 2 GPM, each DRV 40 requires 5 GPM, and each DRV50/80 requires 10 GPM

SAGE® for BAS Interface

Protocol Options

- ☐ BACnet IP
- ☐ BACnet Metasys N2
- ☑ BACnet MSTP -->Engineer to confirm
- ☐ LonWorks
- ☐ Modbus RTU
- ☐ Modbus TCP

SAGE® for the Web

☐ Complete Sage® IDF
Fee-Based Subscription Options

BACnet MSTP is required per specification

Section 4 – Digital Recirculation Valve (DRV) Setpoint Programming Detail

The Brain® Mixed Water Outlet Temp Setpoint: _____ °F

SAGE® (BS) No ☑ Yes ☐ **If Yes - Select ProtoCessor, or SAGE® for the Web**

Reference Drawing Number: CN56575 Armstrong Model Number: DMC50

List any non-standard options or details here:

_____

_____

_____

Armstrong International – Hot Water Group
Armstrong Hot Water Group, 221 Armstrong Blvd., Three Rivers, MI 49093
Phone: (269) 279-3602 Fax: (269) 279-3130

armstronginternational.com

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THE BRAIN® MODEL DMC50

DIGITAL MIXING CENTER

The Digital Mixing Center (DMC) is designed to be the primary water temperature controller in a recirculating hot water system. DMC50 features a digital recirculation valve (The Brain®).

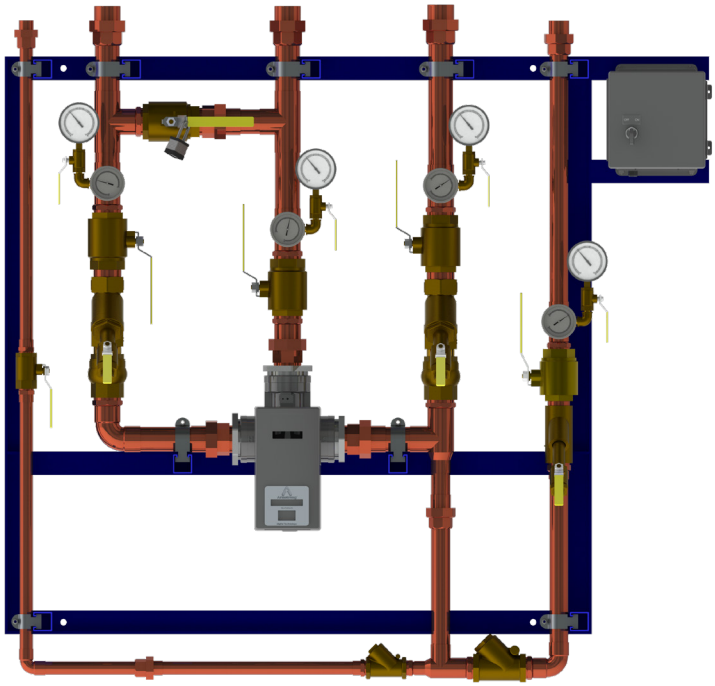
Engineered exclusively for continuously recirculated hot water systems, DMC50 improves system performance and safety by delivering a consistent preset temperature to the points of use.

Innovative digital technology resists “temperature creep” during periods of zero system demand which eliminates the requirement for manual throttling valves, supplementary RTD or a temperature actuated switch to control the pump.

Energy efficient, low temperature loss systems can be implemented by the ability of DMC50 to operate with a system return differential of just 1° F below set point.

User safety and overall system health is maintained by a series of programmable temperature alerts, onboard operational self-diagnostics, and a thermal disinfection option.

DMC50 is a complete pre-piped assembly inclusive of isolation valves, check valves, strainers, thermometers, and pressure gauges, and is provided with five connection points for simplified installation.



The Brain® Digital Mixing Center DMC50

DMC50 Performance Chart: Pressure Drop (in PSIG) to Flow Rate (in GPM)							
DRV50	Pressure Drop (PSIG)				Minimum System Draw-Off	Minimum Flow Rate	C_v
	5	10	15	20			
GPM	94	133	163	188	0 GPM	10 GPM	42

DMC50 Performance Chart: Pressure Drop (in BARG) to Flow Rate (in LPM)							
DRV50	Pressure Drop (BARG)				Minimum System Draw-Off	Minimum Flow Rate	K_v
	0.3	0.7	1.0	1.4			
LPM	355.8	503.5	617	711.1	0 LPM	38 LPM	36.33

Designs, materials, weights, and performance ratings are approximate and subject to change without notice. Visit **armstrong**international.com for the most up-to-date information.

THE BRAIN® MODEL DMC50

TECHNICAL SPECIFICATIONS

General		
Protection	NEMA 3S, IPX4	
Ambient Temperature	Minimum Ambient Temperature: 35°F (2°C)	Maximum Ambient Temperature: 122°F (50°C)
Ambient Humidity	95% Non-Condensing	
Installation Environment	Suitable for indoor use only	
Materials	Valve: Stainless Steel, Electronics Module: PC / ABS	
Safety	Seven fail-safe cold triggers supported by integral self-diagnostics and a programmable over-temp limit	
Connections		
DRV Connections	2” NPT	
Hot & Cold Water Inlet Connections	2” SWT	
Mixed Water Outlet Connections	2” SWT	
Recirc. Mixed Return Connection	1-1/2” SWT	
Return to Heater Connection	1” SWT	
Pressures		
Inlet Supply Pressures	Max. Pressure (DRV): 200 psi / 1379 kPA = 13.8 bar	Minimum Pressure: 20 psi / 138 kPA = 1.5 bar
	Max. Pressure (Manifold): 150 psi / 1034 kPA = 10.3 bar	
Supply Pressure Differential	Nominally equal	
Temperatures		
Hot Water Supply Temperature	Maximum Inlet Hot Supply Temperature: 185°F (85°C)	Minimum Inlet Hot Supply Temperature: 5°F (2°C) above DRV set point
Cold Water Supply Temperature	Minimum Inlet Cold Supply Temperature: 35.6°F (2°C)	
Min. Recirculation Temperature Loss	1°F (≤ 1°C)	
Min. Continuous Recirculation Flow	10 GPM (38 LPM)	
Recirculation Circuit		
Minimum Distance to First Outlet	25 ft (7.6 m)	
Electrical		
Power Supply	120 - 240V AC - 50/60 Hz	
Supply Fuse / Circuit Breaker	Grounding required (Switched Type 3 Amp - no plug; 15 Amp Grounding-type receptacle - plug)	
Battery	Qty (2) CR - P2 6V	
Configurable Settings		
Set Point Range	81°F to 158°F (27°C to 70°C)	
High Temperature Alert	Minimum of 2°F (1°C) above DRV set point	
High Temperature Error	5°F (2°C) above DRV set point	
Thermal Disinfection Temperature	Programmable range of 158°F to 185°F (70°C to 85°C)	
Thermal Disinfection Set-Up	Disinfection Duration: ≤ 100 minutes	Disinfection Cool Down Duration: ≤ 30 hours
Units of Measure	Degrees Fahrenheit (°F) or Degrees Celsius (°C)	

Continued on next page

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THE BRAIN® MODEL DMC50

TECHNICAL SPECIFICATIONS

Connectivity	
Modbus RTU	RS-485 port for connection to building automation systems (BAS) operating on Modbus RTU protocol
SAGE® Module	RS-485 port for connection to SAGE® module with Modbus TCP, BACnet TCP/IP, BACnet MSTP, or LonWorks protocessor *Note: Protocessors for other BAS protocols may be available upon request*
SAGE® Subscription	Real-time monitoring, recording, and documentation dashboard for Armstrong Hot Water Systems
Standards and Approvals	
ASSE 1017	Certified & Listed
CSA B125.3-11	Compliant
UL	Listed
CE	Listed

Designs, materials, weights, and performance ratings are approximate and subject to change without notice. Visit **armstrong**international.com for the most up-to-date information.

THE BRAIN® MODEL DMC50

WRITTEN SPECIFICATIONS

Category: The Brain®

Type: Digital Mixing Center

Model: Model DMC50

Part 1 - GENERAL

1.0 Digital Mixing Center

1.1 One (1) Digital Recirculation Valve (DRV) shall be supplied pre-piped and pressure-tested as a lead-free Digital Mixing Center (DMC) complete with hot water inlet, cold water inlet, mixed water outlet, recirculation return inlet, and return to heater connections.

1.2 DMC50 shall comprise of (1) DRV50 pre-wired to an electrical panel, isolation valves, strainers, check valves, thermometers, and pressure gauges assembled on Type L copper with hot water bypass securely mounted on a carbon steel frame with industrial grade enamel paint.

2.0 Digital Recirculation Valve

2.1 DRV shall have four thermistors integral of the mixing valve body that measure the cold water and recirculation return inlet, hot water inlet, mixed water outlet, and over-temp safety measures.

2.2 DRV mixing valve body shall be of 316L stainless steel, mixing valve proportioner of 316L stainless steel, and a NEMA 3S electronics enclosure.

2.3 DRV50 shall have 2” inlet and outlet connections that will deliver 133 gpm @ 10 psid.

2.4 DRV shall be capable of + / - 2°F control during high, low, or extended periods of zero demand on the system, with a continuous recirculation of >10 gpm. Temperature control shall be achieved without aquastat-like control of the recirculation pump.

2.5 DRV setpoint shall be configured by the factory to customer specification. DRV shall be field adjustable.

3.0 DRV50 shall have the following operational specifications:

3.1 + / - 2°F (1°C) water temperature control

3.2 1°F minimum mixed water outlet to recirculated return inlet differential (system temperature loss)

3.3 Minimum continuous recirculation of 10 gpm

3.4 Automatic shutoff of hot water upon cold water inlet supply failure

3.5 Automatic shutoff of hot water flow in the event of a power failure

3.6 Programmable setpoint range of 81°F - 158°F (27°C - 70°C)

3.7 Programmable thermal disinfection mode

3.8 Programmable 1st level hi/lo temperature alert display

3.9 Programmable temperature error level for safety shutdown

4.0 DRV50 shall have the following connectivity specifications:

4.1 Modbus RS-485 port for connection to building automation system (BAS) operating on Modbus RTU protocol

4.2 RS-485 port for connection to SAGE® module with Modbus TCP, BACnet TCP/IP, BACnet MSTP, or LonWorks protocessor
Note: Protocessors for other BAS protocols available upon request

5.0 DRV shall be certified to ASSE 1017, UL listed, and conform to CSA B125.

6.0 Warranty

6.1 DRV shall have a 5-year warranty on all components, with the exception of batteries and O-rings.

6.2 Pre-piped DMC components shall have a 2-year warranty from date of installation, but not longer than 27 months from date of shipment.

Designs, materials, weights, and performance ratings are approximate and subject to change without notice. Visit **armstrong**international.com for the most up-to-date information.

Armstrong®

THE BRAIN® MODEL DMC50

CONNECTIVITY

The Brain® and SAGE®

SAGE® works seamlessly with The Brain® as it analyzes data to track behavior and performance as an integral component of a hot water system operation protocol which complies with a standard of care.

The Brain® and every derivative assembly is supplied with an integral RS-485 serial port. This port provides a direct connection to Building Automation Systems that operate on a **Modbus RTU** protocol.

The RS-485 port is also deployed for direct connection to an optionally supplied Building System (BS) Module.

SAGE® Options

SAGE® for Building Automation Systems (BAS) – BS Module available with BAS specific ProtoCessor cards for connection to systems which operate on **Modbus TCP**, **BACnet™ TCP/IP**, **BACnet™ MSTP**, or **LonWorks™** protocols.

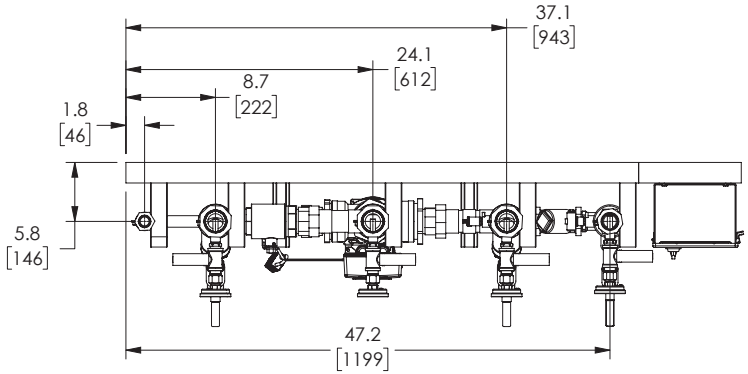
SAGE® for Mobile Connectivity - Featuring smart hot water system dashboard monitoring, secure remote programming, multi-location view, temperature and system diagnostic alerts, with unlimited digital documentation and automated report generation.

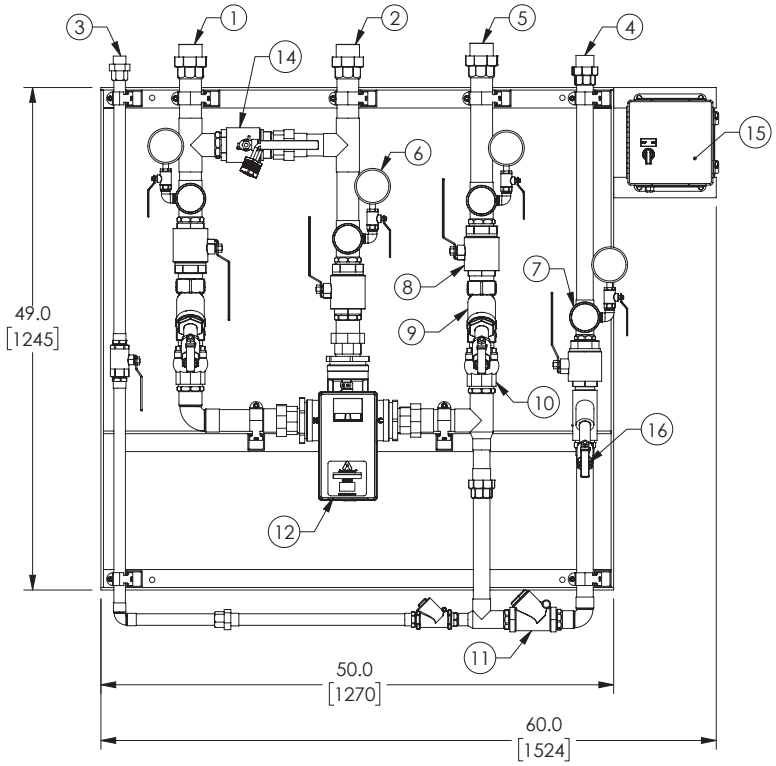
Mobile connectivity may be enabled by a customer activated no-term subscription.

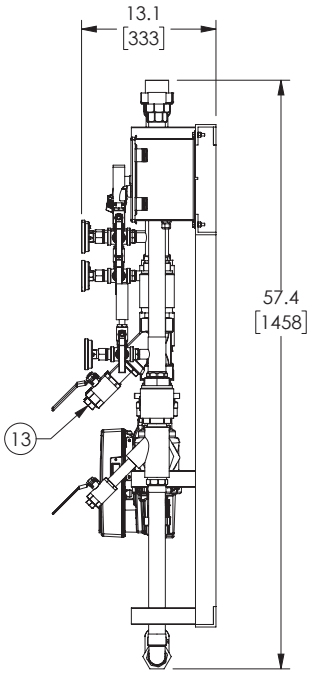
Optional Building System (BS) Module

Adding a suffix “BS” to The Brain® DRV (example: DRV25BS) will automatically add SAGE®, the supplemental hardware and software required to maximize the connectivity features of Armstrong digital technology.

Designs, materials, weights, and performance ratings are approximate and subject to change without notice. Visit **armstrong**international.com for the most up-to-date information.



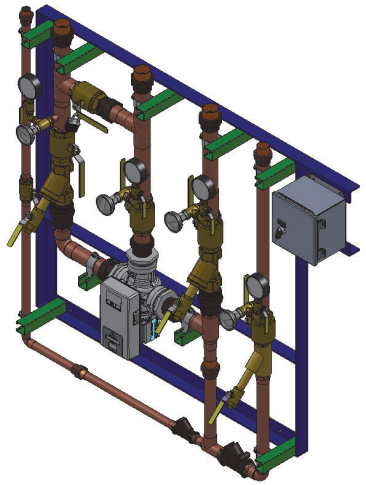




APPROVAL

BY:_____ DATE:_____

- ☐ APPROVED, PROCEED WITH FABRICATION
- ☐ APPROVED AS NOTED, PROCEED WITH FABRICATION IN ACCORDANCE WITH COMMENTS
- ☐ DISAPPROVED, DO NOT FABRICATE



PROJECT NAME :

TAG :

ITEM NO.	DESCRIPTION	QTY	CONNECTION
1	HOT WATER INLET	1	2" SWT
2	MIXED WATER OUTLET	1	2" SWT
3	RETURN TO HEATER	1	1" SWT
4	RECIRC RETURN INLET	1	1-1/2" SWT
5	COLD WATER INLET	1	2" SWT
6	PRESSURE GAUGE	4	
7	THERMOMETER	4	
8	BALL VALVE	3	
9	STRAINER	2	
10	SPRING CHECK VALVE	2	
11	SWING CHECK VALVE	2	
12	DRV50	1	2" NPT
13	BLOW DOWN	2	1" NPT
14	SERVICE BY-PASS(NORMALLY CLOSED)	1	
15	ELECTRICAL PANEL	1	110VAC @ 0.7A
16	BLOW DOWN	1	3/4" NPT

ITEM	MATERIAL
PIPING	COPPER TYPE "L"

NOTE(S):

1. ALL DIMENSIONS +/- 0.5[13] UNLESS OTHERWISE SHOWN.
2. COMPLETE ASSEMBLY LEAD FREE COMPLIANT - THE WETTED SURFACE OF THIS PRODUCT CONTACTED BY CONSUMABLE WATER CONTAINS LESS THAN ONE QUARTER OF ONE PERCENT (0.25%) OF LEAD BY WEIGHT.
3. PACKAGE INCLUDES ALL REQUIRED INLET CHECK VALVES AND STRAINERS ON DOMESTIC SIDE.
4. DRV AND ELECTRIC PANEL ARE PRE-WIRED TO PROVIDE A SINGLE ELECTRICAL LANDING POINT AT THE PANEL.
5. REFERENCE ARMSTRONG PART NO. D40811

DO NOT SCALE DRAWING
TOLERANCES UNLESS OTHERWISE SPECIFIED
DIMENSIONING ENGLISH [mm]
FRACTIONAL ± 1/64
ANGULAR: ± 2
DECIMAL .XXXX ± .0005 (IN.) ----- (MM)
.XXX ± .005 .010
.XX ± .015 .10
.X ---------- .3

Armstrong

	NAME	DATE
DRAWN	Jega Theesan	03/13/2015
RELEASED		

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DMC50 2 SWT 2 SWT 1-1/2 SWT CPR

MATERIAL CN56575 | REV J | DWG. SALES | SHEET 1 OF 1