

|  |  |                                  |                             |
|--|--|----------------------------------|-----------------------------|
|  <p><b>DEENN Engineering Pte Ltd</b><br/>         (A member of Lian Beng Group Ltd)<br/>         29 Harrison Road, Lian Beng Building Singapore 369648<br/>         Tel: 6283 1468 Fax: 6280 9360</p> |  | Ref No                           | DE-DB-BLK 11(3)-FPS-T&C-010 |
|  |  | Date                             | 25/09/2024                  |
| Project : D2019-00162  |  | To: Resident Engineer/ RTO (M&E) |                             |

### REQUEST FOR INSPECTION OF M&E WORKS

We have checked and confirmed that the following works is completed and in order for your inspection

|                                     |  |  |  |
|-------------------------------------|--|--|--|
| Type of Activity<br>(Tick One Only) | <input type="checkbox"/> Slab Casting<br><input type="checkbox"/> Services in Wall | <input type="checkbox"/> Service Risers<br><input checked="" type="checkbox"/> Functional Test | <input type="checkbox"/> Final Inspection<br><input type="checkbox"/> Others |
|-------------------------------------|--|--|--|

*Sprinkler Pump Functional & Performance Test*

|                                     |   |  |  |
|-------------------------------------|---|--|--|
| Type of Services<br>(Tick One Only) | <input type="checkbox"/> Electrical / Tel / SCV<br><input type="checkbox"/> Plumbing / Sanitary<br><input type="checkbox"/> Swimming Pool | <input type="checkbox"/> Gas Installation<br><input checked="" type="checkbox"/> Fire Protection<br><input type="checkbox"/> Lift Installation | <input type="checkbox"/> ACMV<br><input type="checkbox"/> Others |
|-------------------------------------|---|--|--|

LOCATION Blk 3 (ii) Sprinkler pump Room.

|  |                     |
|--|---------------------|
| <u>Gridline</u>                          | <u>Level 1</u>      |
| Drawing Ref: 2019-00162/NWFP-03-02/03-09 | Revision 04         |
|  | No. of Attachment 2 |

|  |                                |              |                       |
|--|--------------------------------|--------------|-----------------------|
| <b>1st Inspection</b>                            |                                |              | Passed / Failed       |
| Date/ Time Submitted                             | 25/09/2024                     | 9:00 AM      | Comments by RTO (M&E) |
| Date/ Time Requested                             | 25/09/2024                     | 10:00 AM     |                       |
| Inspection Date                                  | 25/09/2024                     | Time started |                       |
|  |                                | Time ended   |                       |
| Name and signature of Contractors representative | <i>Sue Jaya</i> <i>Wann Ko</i> |              |                       |

*Ok!*

|  |                         |
|--|-------------------------|
| Name and signature of a Resident Technical Officer (M&E) | <i>Mg Moe Thauk Tun</i> |
|--|-------------------------|

|                       |              |  |                 |                       |
|-----------------------|--------------|--|-----------------|-----------------------|
| <b>2nd Inspection</b> |              |  | Passed / Failed |                       |
| Date/ Time Submitted  |              |  |                 | Comments by RTO (M&E) |
| Date/ Time Requested  |              |  |                 |                       |
| Inspection Date       | Time started |  |                 |                       |
|                       | Time ended   |  |                 |                       |

Name and signature of Contractors representative

Name and signature of a Resident Technical Officer (M&E)

|                       |              |  |                 |                       |
|-----------------------|--------------|--|-----------------|-----------------------|
| <b>3rd Inspection</b> |              |  | Passed / Failed |                       |
| Date/ Time Submitted  |              |  |                 | Comments by RTO (M&E) |
| Date/ Time Requested  |              |  |                 |                       |
| Inspection Date       | Time started |  |                 |                       |
|                       | Time ended   |  |                 |                       |

Name and signature of Contractors representative

Name and signature of a Resident Technical Officer (M&E)



北威消防私人有限公司  
**NORTHWAY FIRE PROTECTION PTE LTD**  
BLK 2 DEFU LANE 10 #04-523 SINGAPORE 539183  
TEL: 6285 2846 FAX: 6285 3409 Email: northway\_fire@singnet.com.sg  
Reg. No: 200413523K • GST No: 20-0413523-K

| PUMP FUNCTIONAL & PERFORMANCE TEST (Jockey Pump) |   | WITNESS BY |    |     |         |
|--|---|------------|----|-----|---------|
| ITEM   | INSPECTION  | Yes        | No | N/A | REMARKS |
| C  | Record & Testing for Jockey Pump                                |            |    |     |         |
| 1  | Pump control panel set to normal condition.                     | /          |    |     |         |
| 2  | Sprinkler Pump 1&2 set to off.                                  | /          |    |     |         |
| 3  | Sprinkler pump 2 M/O/A selector switch set to auto mode.        | /          |    |     |         |
| 4  | Open test valve (test rack) slowly until sprinkler pump starts. | /          |    |     |         |
| 5  | Jockey Pump 'Cut in' Pressure: 90 Psi                           | /          |    |     |         |
| 6  | Jockey Pump 'Cut off' Pressure: 110 Psi                         | /          |    |     |         |
| 7  | Check Jockey pump status to SAP & Mimic Panel                   | /          |    |     |         |
| 8  | Check Jockey Pump Power Failure signal to SAP and Mimic Panel   | /          |    |     |         |
| 9  | Check Jockey Pump Trip signal to SAP and Mimic Panel            | /          |    |     |         |
| 10   | Check Manual Start to Jockey Pump                               | /          |    |     |         |
| 11   | Check Manual Stop to Jockey Pump                                | /          |    |     |         |
| 12   | Check water storage tank High level signal to SAP & Mimic Panel | /          |    |     |         |
| 13   | Check water storage tank Low level signal to SAP & Mimic Panel  | /          |    |     |         |
| REMARKS :  |   |            |    |     |         |



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| PUMP FUNCTIONAL & PERFORMANCE TEST (Fire Sprinkler Pump 1) |  | WITNESS BY |          |           |            |
|--|--|------------|----------|-----------|------------|
| INSPECTION NOTICE NO. :                                    |  |            | Northway | Main Con. | Consultant |
| CONSULTANT REPRESENTATIVE :                                |  | Date       | 35/09/24 | / /       | / /        |
| MAIN CON. REPRESENTATIVE :                                 |  | Signature  | Kann Ko  | Jhy       | roye       |
| NORTHWAY REPRESENTATIVE :                                  |  |            |          |           |            |
| EQUIPMENT TYPE.: CE80/20                                   |  |            |          |           |            |
| LOCATION : Blk 3 – Level 1 – Sprinkler Pump Room (BLK-11)  |  |            |          |           |            |
| DRAWING/S NO. : D2019-00162/NWFP-03-02 / 03-09             |  |            |          |           |            |
| ITEM   | INSPECTION   | Yes        | No       | N/A       | REMARKS    |
| A  | Record & Testing for Fire Sprinkler Pump 1                               |            |          |           |            |
| 1  | Pump control panel set to normal condition.                              | /          |          |           |            |
| 2  | Fire Sprinkler pump 2 & Jockey Pump set to off.                          | /          |          |           |            |
| 3  | Fire Sprinkler pump 1 M/O/A selector switch set to auto mode.            | /          |          |           |            |
| 4  | Open test valve (test rack) slowly until sprinkler pump starts.          | /          |          |           |            |
| 5  | Fire Sprinkler Pump 1 'Cut in' Pressure: 70 Psi                          | /          |          |           |            |
| 6  | Check water flow in flow meter:  | /          |          |           |            |
| 7  | Check Sprinkler pump 1 status to SAP & Mimic panel                       | /          |          |           |            |
| 8  | Check Manual Start Fire Sprinkler Pump 1                                 | /          |          |           |            |
| 9  | Check Manual Stop/Reset Fire Sprinkler Pump 1                            | /          |          |           |            |
| 10   | Check lamp test switch   | /          |          |           |            |
| 11   | Check over current trip  | /          |          |           |            |
| 12   | Check the phase sequence main supply failed                              | /          |          |           |            |
| 13   | Check the phase sequence main failure over current trip and reset switch | /          |          |           |            |
| 14   | Check the Sprinkler Pump 1 fail to start alarm                           | /          |          |           |            |
| 15   | Check the Pump battery charger failed alarm                              | /          |          |           |            |
| 16   | Check the common alarm buzzer sound                                      | /          |          |           |            |
| 17   | Check the Sprinkler Pump 1 power failure signal to SAP and Mimic Panel   | /          |          |           |            |
| REMARKS :  |  |            |          |           |            |



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Reg. No: 200413523K • GST No: 20-0413523-K

| PUMP FUNCTIONAL & PERFORMANCE TEST (Fire Sprinkler Pump 2) |  | WITNESS BY |                   |                 |              |
|--|--|------------|-------------------|-----------------|--------------|
| INSPECTION NOTICE NO. :                                    |  |            | Northway          | Main Con.       | Consultant   |
| CONSULTANT REPRESENTATIVE :                                |  | Date       | 25/09/24          | / /             | / /          |
| MAIN CON. REPRESENTATIVE :                                 |  | Signature  | Karen Ko<br>Allen | <i>Karen Ko</i> | <i>Allen</i> |
| NORTHWAY REPRESENTATIVE :                                  |  |            |                   |                 |              |
| EQUIPMENT TYPE.: CE80/20                                   |  |            |                   |                 |              |
| LOCATION : Blk 3 – Level 1 – Sprinkler Pump Room (BLK-11)  |  |            |                   |                 |              |
| DRAWING/S NO. : D2019-00162/NWFP-03-02 / 03-09             |  |            |                   |                 |              |
| ITEM   | INSPECTION   | Yes        | No                | N/A             | REMARKS      |
| B  | Record & Testing for Fire Sprinkler Pump 2                               |            |                   |                 |              |
| 1  | Pump control panel set to normal condition.                              | /          |                   |                 |              |
| 2  | Fire Sprinkler pump 1 & Jockey set to off.                               | /          |                   |                 |              |
| 3  | Fire Sprinkler pump 2 M/O/A selector switch set to auto mode.            | /          |                   |                 |              |
| 4  | Open test valve (test rack) slowly until sprinkler pump starts.          | /          |                   |                 |              |
| 5  | Fire Sprinkler Pump 2 'Cut in' Pressure: 60 Psi                          | /          |                   |                 |              |
| 6  | Check water flow in flow meter:  | /          |                   |                 |              |
| 7  | Check Sprinkler pump 2 status to SAP & Mimic panel                       | /          |                   |                 |              |
| 8  | Check Manual Start Fire Sprinkler pump 2                                 | /          |                   |                 |              |
| 9  | Check Manual Stop/Reset Fire Sprinkler Pump 2                            | /          |                   |                 |              |
| 10   | Check lamp test switch   | /          |                   |                 |              |
| 11   | Check over current trip  | /          |                   |                 |              |
| 12   | Check the phase sequence main supply failed                              | /          |                   |                 |              |
| 13   | Check the phase sequence main failure over current trip and reset switch | /          |                   |                 |              |
| 14   | Check the Sprinkler Pump 2 fail to start alarm                           | /          |                   |                 |              |
| 15   | Check the Pump battery charger failed alarm                              | /          |                   |                 |              |
| 16   | Check the common alarm buzzer sound                                      | /          |                   |                 |              |
| 17   | Check the Sprinkler Pump 2 power failure signal to SAP and Mimic Panel   | /          |                   |                 |              |
| REMARKS :  |  |            |                   |                 |              |

## DIEPPE BARRACKS (BLK 3)

### SPRINKLER PUMP

#### CUT-IN/CUT-OUT PRESSURE

| PUMP                             | CUT-IN PRESSURE<br>(PSI) | CUT-OUT<br>PRESSURE<br>(PSI) |
|----------------------------------|--------------------------|------------------------------|
| JOCKEY PUMP                      | 90                       | 110                          |
| SPRINKLER ELEC.<br>PUMP (PUMP 1) | 70                       | Manual Off                   |
| SPRINKLER ELEC.<br>PUMP (PUMP 2) | 60                       | Manual Off                   |

Churning Pressure: 85 PSI

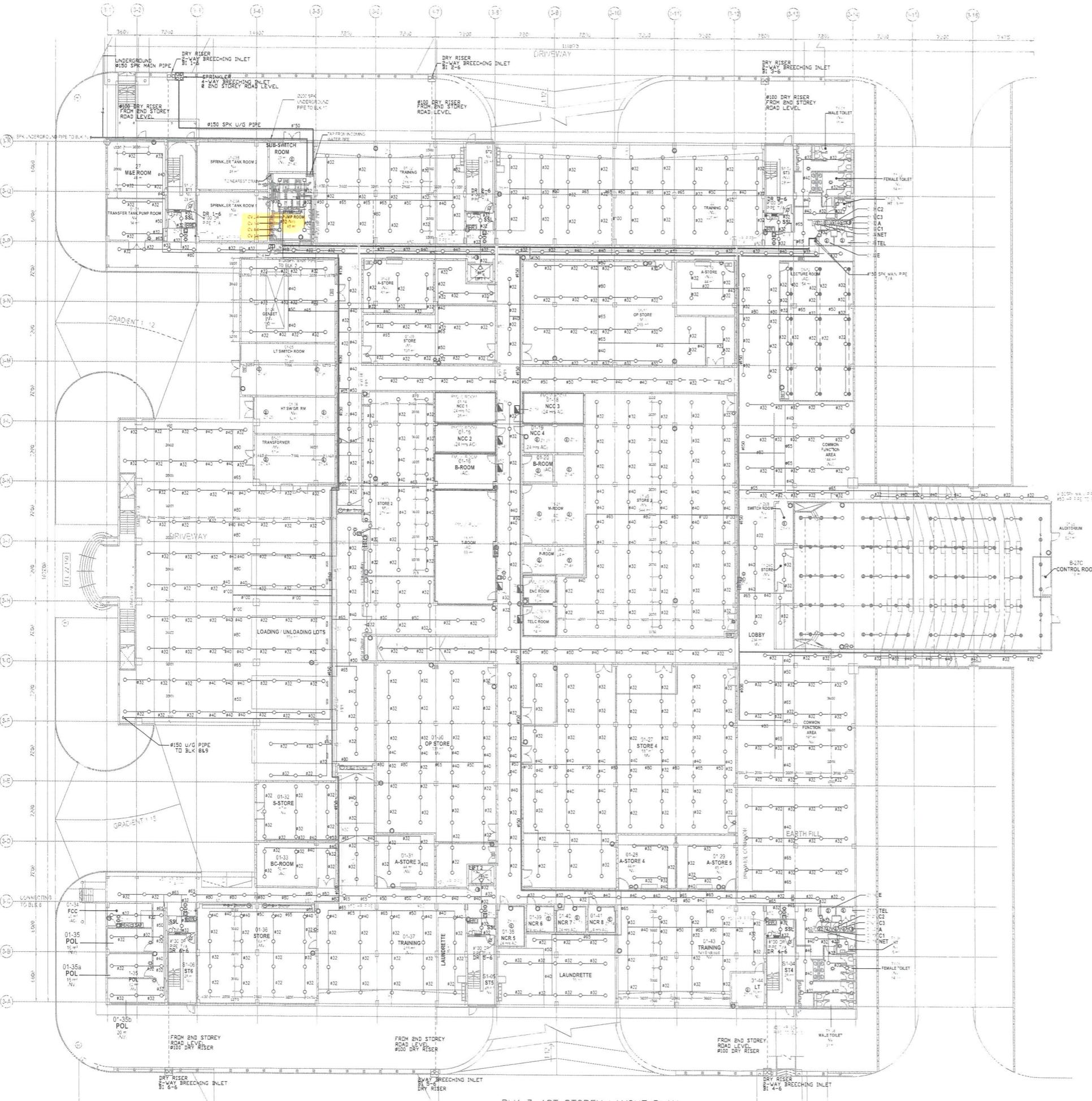
**DIEPPE BARRACK (BLK 3, BLK2)**  
**SPRINKLER CONTROL VALVE FLOW/PRESSURE**

| CONTROL VALVE NO. | AREA SERVED   | HAZARD GROUP | DESIGN FLOW (L/MIN)* | DESIGN PRESSURE -KPA* (PSI) | ACTUAL RUNNING PRESSURE -KPA* (PSI) |
|-------------------|---|--------------|----------------------|-----------------------------|-------------------------------------|
| CV 1-4            | BLK 3<br>-1 <sup>st</sup> Storey<br>(Training Rm/ Toilet/ SSSL/ Corridor/<br>Mess/ Store/ Conference/ Planning)                               | OH III       | 1152                 | 148 KPA<br>(22 PSI)         |                                     |
| CV 2-4            | BLK 3<br>-2 <sup>nd</sup> Storey & 3 <sup>rd</sup> Storey<br>(Office & Rest Rm/<br>Toilets/SSL/Corridor/Mess/Offices/Conf<br>erence/Planning) | OH II        | 1150                 | 306 KPA<br>(44 PSI)         |                                     |
| CV 3-4            | BLK 3<br>-4 <sup>th</sup> /5 <sup>th</sup> /6 <sup>th</sup> & Roof Storey<br>(Bunks/ Corridors/ Clothes/ Drying Area/<br>SSL/ Toilets)        | OH I         | 1102                 | 367 KPA<br>(53 PSI)         |                                     |
| CV 4-4            | BLK 2<br>-1 <sup>st</sup> /2 <sup>nd</sup> /3 <sup>rd</sup> & Roof Storey<br>(Bunks/ Corridors/ Clothes/ Drying Area/<br>SSL/ Toilets)        | OH I         | 1208                 | 274 KPA<br>(40 PSI)         |                                     |

## DIEPPE BARRACK (BLK 4)

### SPRINKLER CONTROL VALVE FLOW/PRESSURE

| CONTROL VALVE NO. | AREA SERVED   | HAZARD GROUP | DESIGN FLOW (L/MIN)* | DESIGN PRESSURE -KPA* (PSI) | ACTUAL RUNNING PRESSURE -KPA* (PSI) |
|-------------------|---|--------------|----------------------|-----------------------------|-------------------------------------|
| CV 1-1            | BLK 4<br>-2 <sup>ND</sup> Storey & 3 <sup>RD</sup> Storey<br>(10 Men Bunk Room) | OH I         | 1188                 | 210 KPA<br>(30.5 PSI)       |                                     |
|                   |   |              |                      |                             |                                     |



**SHOP DRAWING REVIEW**

**DSTA PROJECT TEAM**

|  |                                 |
|--|---------------------------------|
| <input type="checkbox"/> NO COMMENT        | PROJECT OFFICER :<br>DATE :     |
| <input type="checkbox"/> WITH COMMENT      | PROJECT OFFICER :<br>DATE :     |
| <input type="checkbox"/> REVISE & RESUBMIT |                                 |
| <input type="checkbox"/> REJECTED          | Non-compliance to specification |

**ID ARCHITECTS**  
SELECT CONSULTING ARCHITECT  
ID ARCHITECTS PTE LTD

**ida**

**M&E CONSULTANTS**  
**PdcConsultants Pte Ltd**  
23 NEW INDUSTRIAL ROAD #06-03  
SOUTHEAST BUSINESS CENTRE SINGAPORE 532629  
TEL: 6444 7748  
FAX: 6444 7141

DATE RECEIVED:  RECEIVED BY:

DATE RETURNED:

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 TO REVISE & RESUBMIT  REJECTED & RESUBMIT

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• THIS REVIEW IS FOR GENERAL ARRANGEMENT ONLY AND DOES NOT EXTEND TO DIMENSIONS OF SETTING OUT OF THE WORKS AND DOES NOT RELEASE THE CONTRACTOR OR HIS RESPONSIBLES TO ENSURE WORKS IN FULL COMPLIANCE WITH THE SPECIFICATION, OTHER DRAWINGS AND STATUTORY REQUIREMENTS HAVING JURISDICTION OVER THE INSTALLATION.

**DSTA**  
Defence Science & Technology Agency

**VYNNA PEH SEOH CHIN**

HOD (Army Camps) Edmund Teo Project No.: D2019-00162  
Kuan Wei Senior Programme Manager

**DEENN ENGINEERING PTE LTD**  
29 Harrison Road, Lion Beng Building, Singapore 369648  
TEL: 6283 1468 FAX No. 6280 9360  
e-mail: lianbengconstr@pacific.net.sg  
Website: www.lianbeng.com.sg

**ARCHITECT CONSULTANT:**  
**ID ARCHITECTS PTE LTD**  
3-Horizon Junction Plaza #03-01  
Horizon Plaza, 100 Beach Road  
Singapore 199544  
Tel: 6225 6222 Email: general@idarchitects.com.sg  
www.idarchitects.com.sg

**STRUCTURE CONSULTANT:**  
**TW-ASIA Consultants Pte Ltd**

**M&E Consultant:**  
**PdcConsultants Pte Ltd**  
MECHANICAL & ELECTRICAL  
23 New Industrial Road #06-03  
SOUTHEAST BUSINESS CENTRE  
SINGAPORE 532629  
t: 6444 7748 f: 6444 7141  
e: contact@pdccgrs.com

**Sub contractor:**  
**NORTHWAY FIRE PROTECTION PTE LTD**  
BLK 2 DEFLU LANE 10, #04-523  
SINGAPORE 539183  
TEL: 6285 2846 FAX: 6285 3409  
EMAIL: northway\_fire@singnet.com.sg

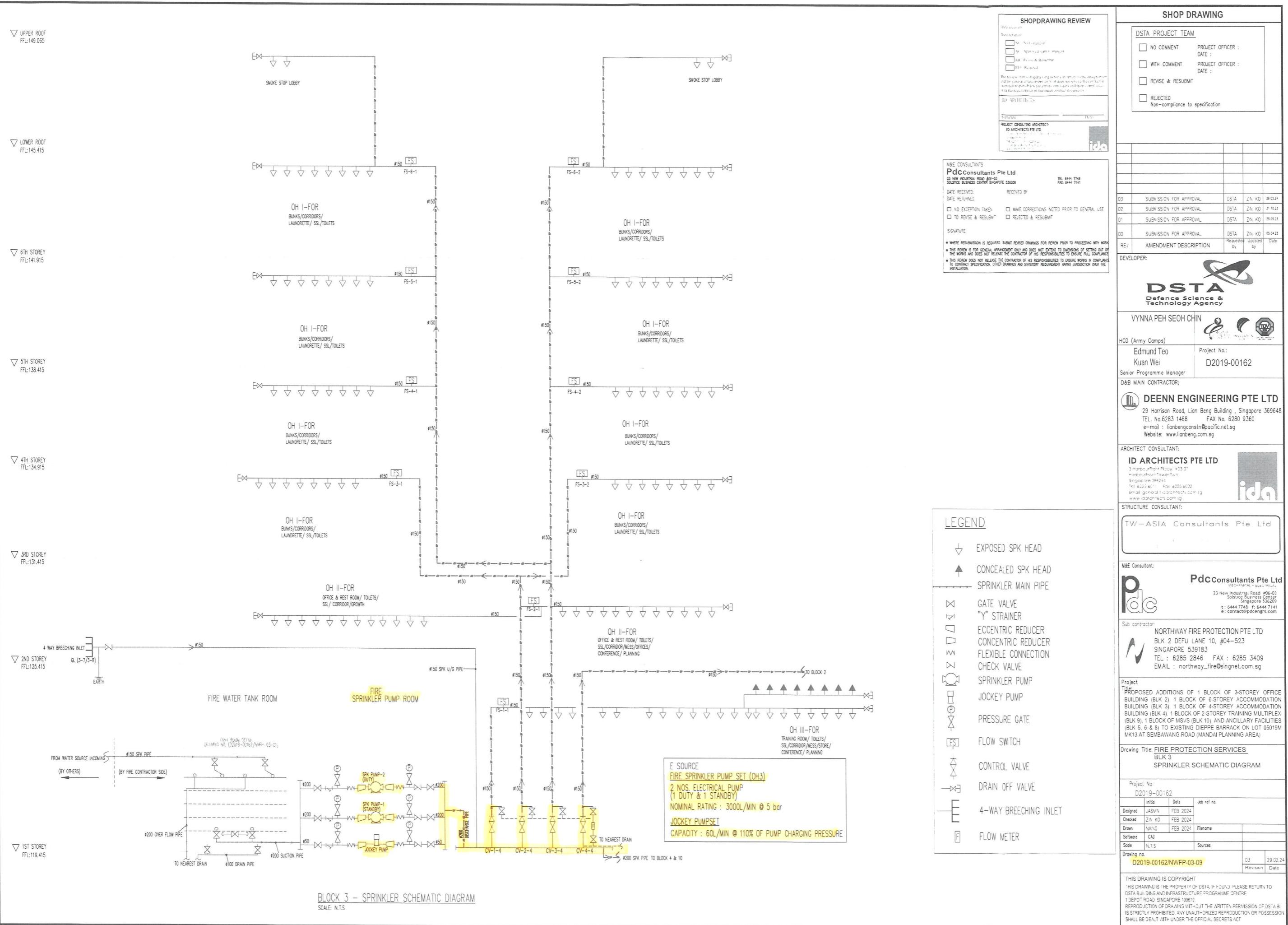
**Project Title:** PROPOSED ADDITIONS OF 1 BLOCK OF 3-STORY OFFICE BUILDING (BLK 2) 1 BLOCK OF 6-STORY ACCOMMODATION BUILDING (BLK 3), 1 BLOCK OF 4-STORY ACCOMMODATION BUILDING (BLK 4) 1 BLOCK OF 2-STORY TRAINING MULTIPLEX (BLK 9) 1 BLOCK OF MVS (BLK 10), AND ANCILLARY FACILITIES (BLK 5, 6 & 8) TO EXISTING DIEPPE BARRACK ON LOT 05019M MK13 AT SEMBAWANG ROAD (MANDAI PLANNING AREA)

**Drawing Title:** FIRE PROTECTION SERVICES  
BLK 3  
1ST STOREY PLAN

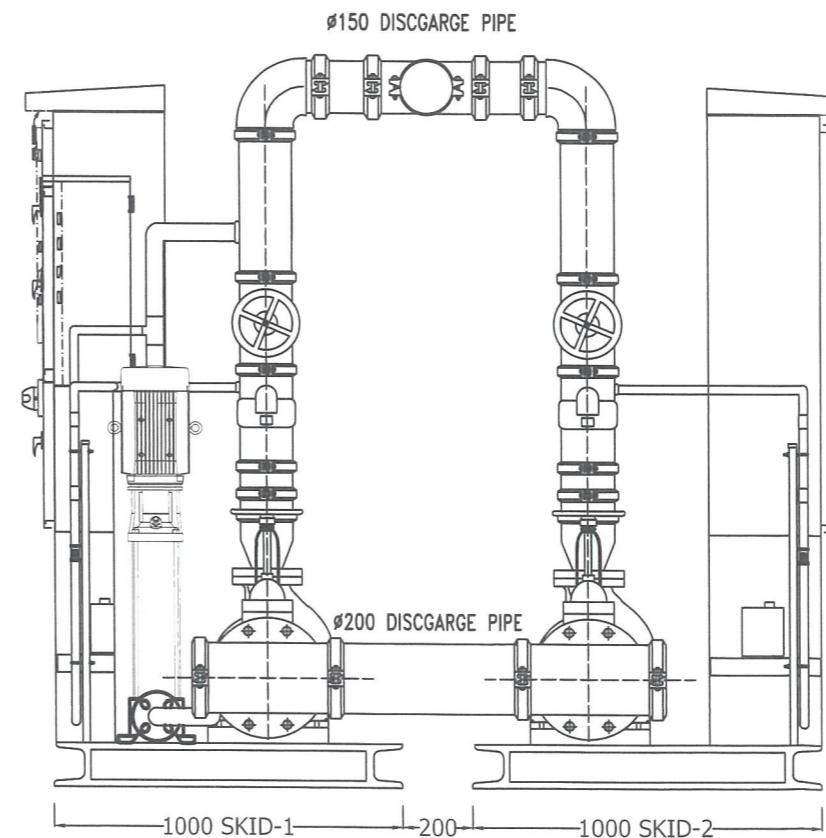
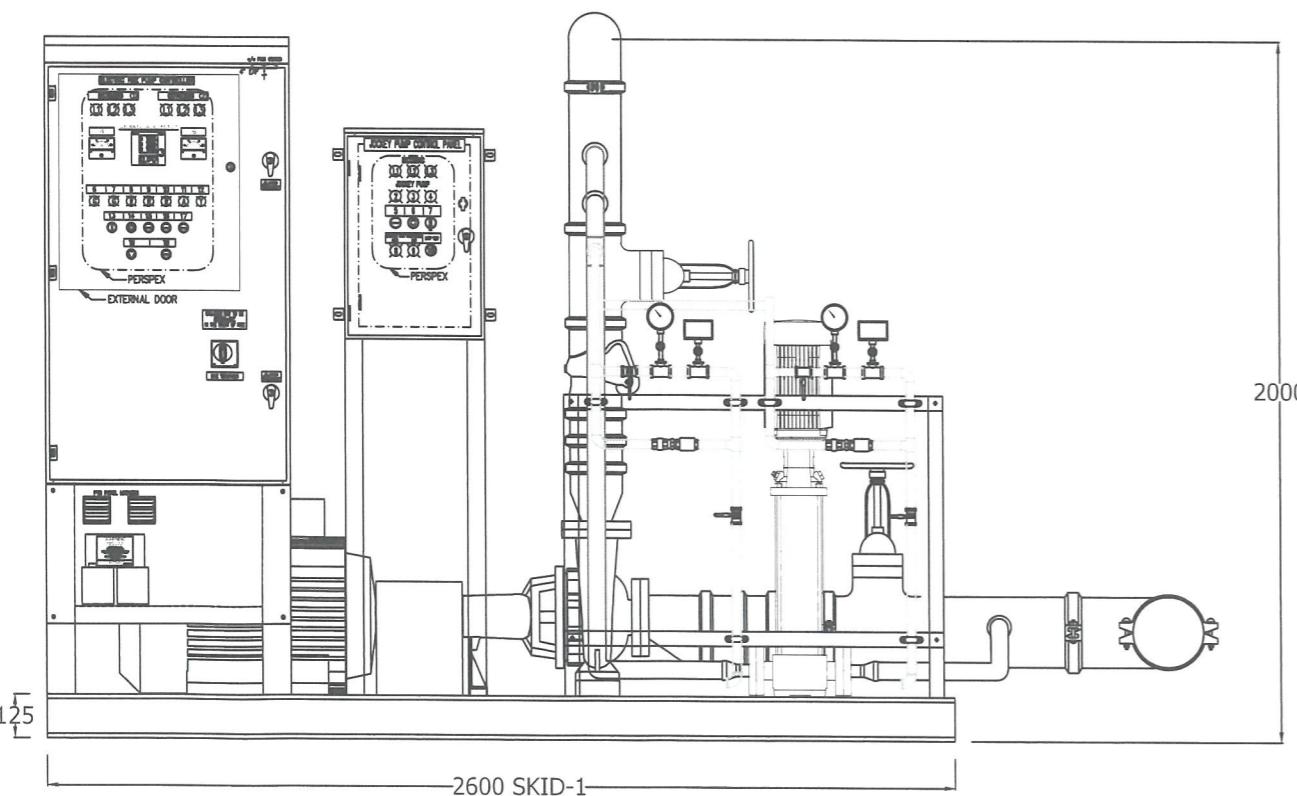
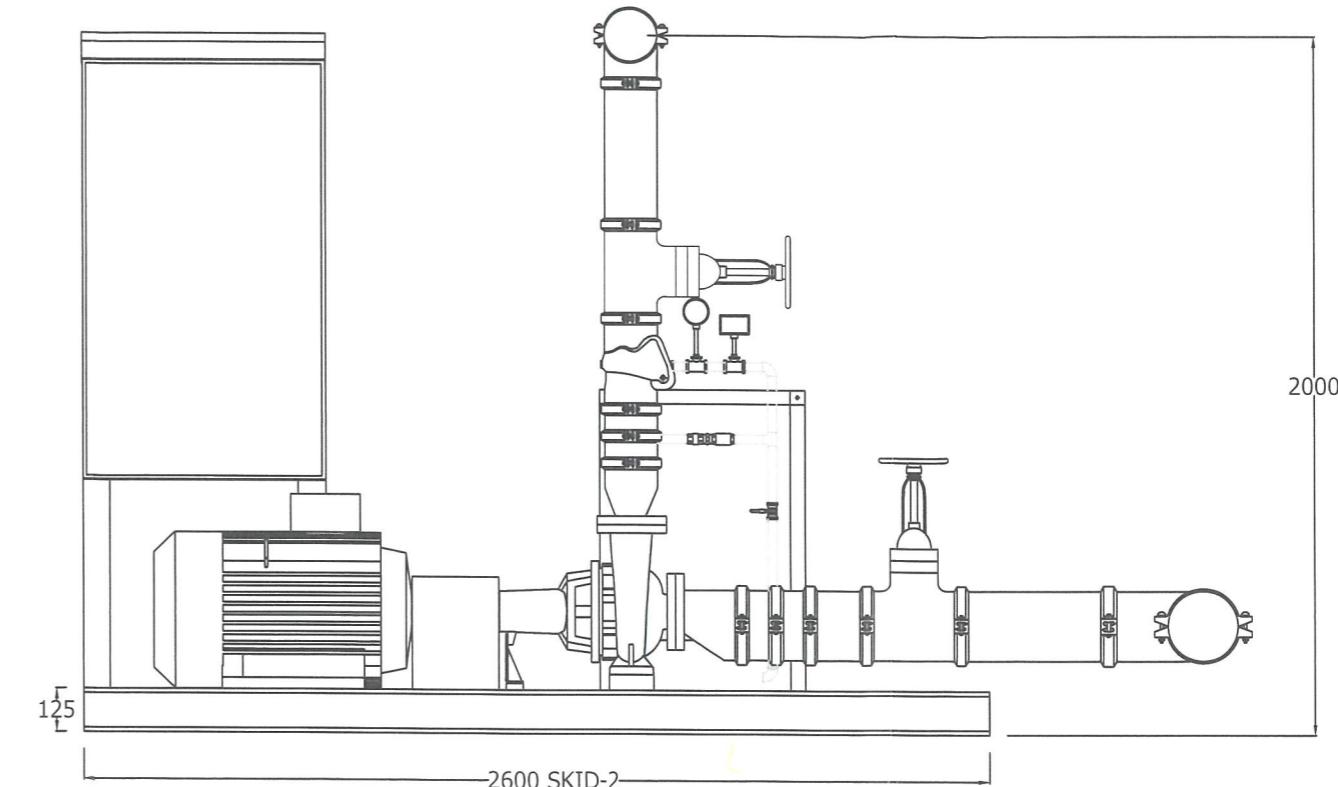
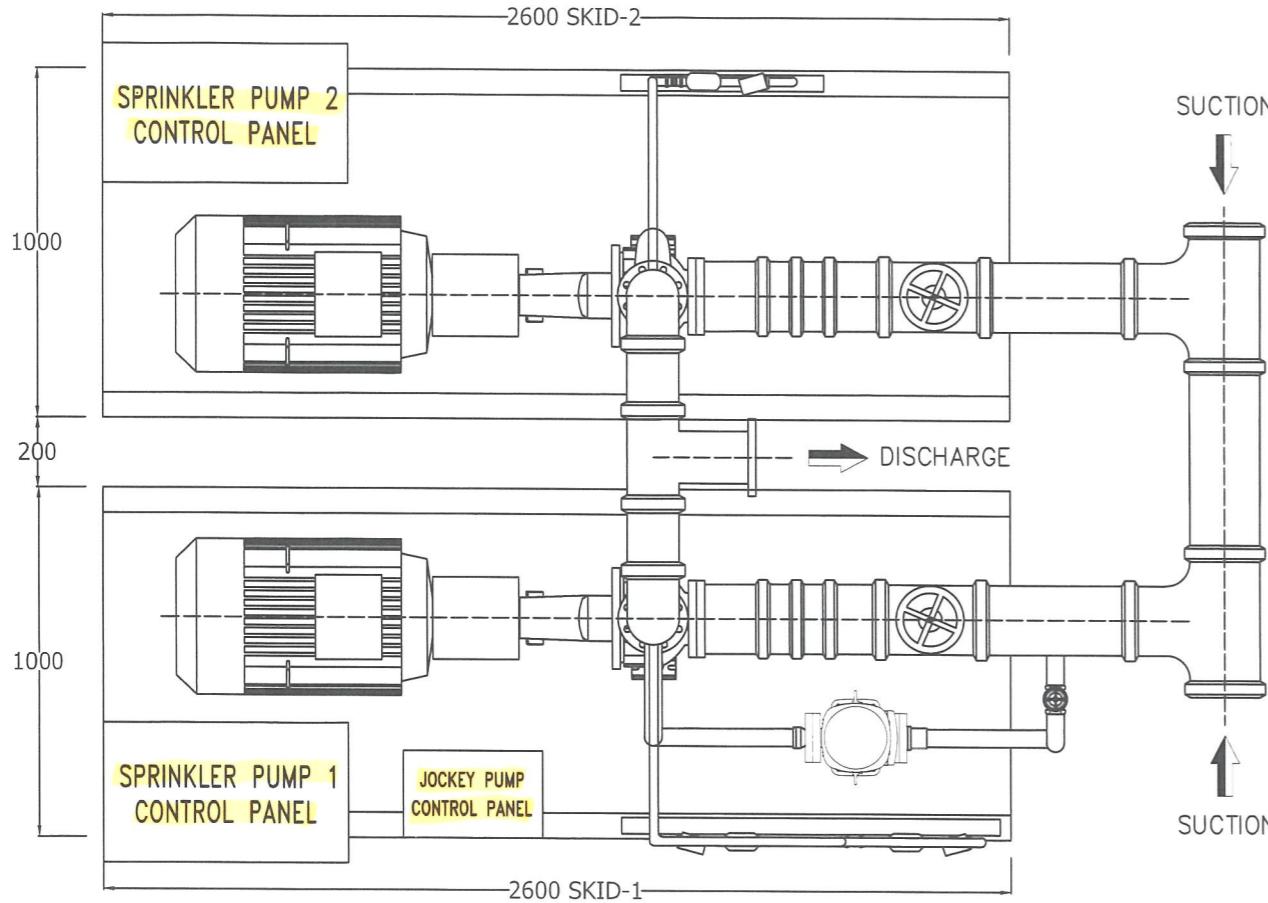
**Project No:** D2019-00162  
Initial:  Date:  Job ref no.:   
Designed: JASVIN MAY 2024  
Checked: ZN KO MAY 2024  
Draw: NANG MAY 2024 Filename:   
Software: CAD  
Scale: 1:250 Sources:   
Drawing no: D2019-00162/NWFP-03-02 Revision:  Date: 20.05.24

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| LEGEND |                         |  |
|--------|-------------------------|--|
| SIP    | SUB ALARM PANEL         |  |
| MMIC   | MASTER MIMIC PANEL      |  |
| FA     | FIRE ALARM BELL         |  |
| MCP    | MANUAL CALL POINT       |  |
| SL     | STROBE LIGHT            |  |
| SD     | SMOKE DETECTOR          |  |
| HD     | HEAT DETECTOR           |  |
| HRC    | HOSE REEL C/W CABINET   |  |
| HRD    | HOSE REEL DRUM          |  |
| HRP    | HOSE REEL PIPE          |  |
| DRV    | DRY RISER LANDING VALVE |  |
| DRP    | DRY RISER PIPE          |  |
| SH     | STAND BY HOSE           |  |
| FE     | FIRE EXTINGUISHER       |  |
| ESH    | EXPOSED SPK HEAD        |  |
| COF    | CUT OFF SPK             |  |
| SWSP   | SIDEWALL SPK            |  |
| CSPH   | CONCEALED SPK HEAD      |  |
| RFS    | ROYAL FLUSH SPK         |  |
| SPP    | SPRINKLER MAIN PIPE     |  |
| SPR    | SPRINKLER RANGE PIPES   |  |
| CV     | CONTROL VALVE           |  |
| FS     | FLOW SWITCH             |  |
| FM200  | FM200 PANEL             |  |
| 2WI    | 2-WAY BRECHING INLET    |  |
| 4WI    | 4-WAY BRECHING INLET    |  |
| M      | MODULE                  |  |



TOP VIEW



| FITTING MATERIAL LIST ON THE MODULAR SET |                                 |                     |
|--|---------------------------------|---------------------|
| S/N                                      | DESCRIPTION                     | BRAND / MAKE        |
| 1.                                       | GATE VALVE                      | VICTAULIC/MECH/GLEN |
| 2A.                                      | RIGID COUPLING                  | MECH/ CHINA         |
| 2B.                                      | FLEXIBLE COUPLING               | VICTAULIC/ UK       |
| 3.                                       | CHECK VALVE                     | VICTAULIC/MECH/GLEN |
| 4.                                       | STEEL PIPE GRB (2" /4" /6" /8") | STS/ SINGAPORE      |
| 5.                                       | 4" PRESSURE GUAGE               | GLEN/ CHINA         |
| 6.                                       | PRESSURE SWITCH                 | DANFOSS/ DEMARK     |
| 7.                                       | -                               | -                   |

FRONT VIEW

SIDE VIEW

| PUMP MODEL    | KBL,CE80-20                  | CAPACITY    | 3000L/MIN        | COUPLING TYPE |          |      | SPRINKLER PUMP MODULAR SETS |    |
|---------------|------------------------------|-------------|------------------|---------------|----------|------|-----------------------------|----|
| PUMP MATERIAL | CAST IRON CASING, BRONZE IMP | TOTAL HEAD  | 5BAR             | APPROX. WT.   | 3150 KG  |      | SHOP DRAWING                |    |
| MOTOR MODEL   | 45KW                         | MOTOR FRAME | 225M             | SPEED         | 2950 RPM |      |                             |    |
| REMARKS       | PRELIMINARY ONLY             | SUPPLY      | AC 415V/3PH/50HZ |               | REV      | DATE | DESCRIPTION                 | BY |