

**CONTROL PHILOSOPHY OF VEHICLE WHEEL WASHING FACILITY**

THE WATER SUPPLY TO FACILITY COMES FROM:  
 1. SERVICE PIPELINES FEEDING RAW WATER TO THE SOFTENING PLANT.  
 2. RECOVERED, TREATED SEWER WATER FROM THE WASTE WATER TREATMENT WORKS (WWTW) TO THE PLANT.

**LEVEL CONTROL ON THE THREE TANKS**

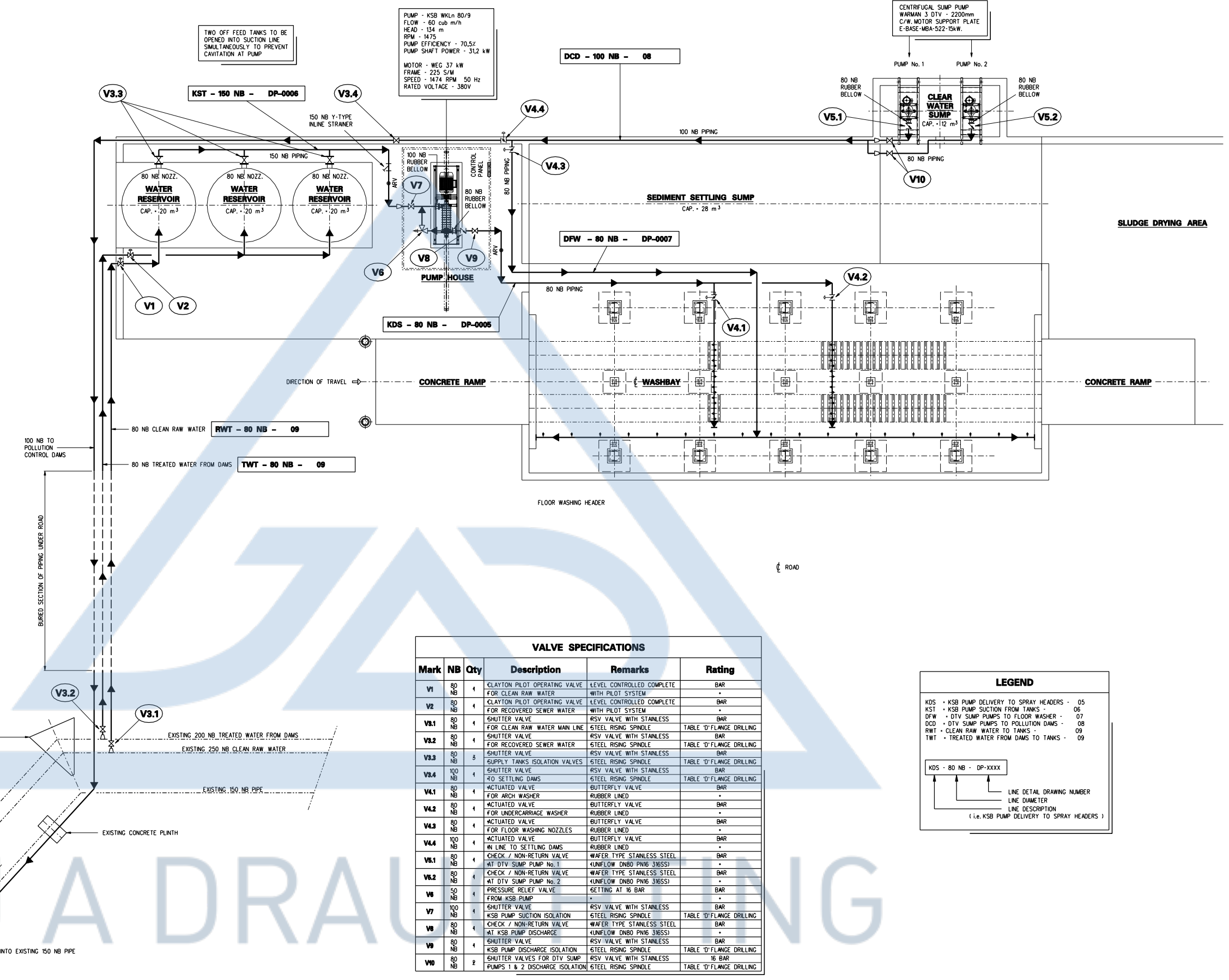
- RECYCLED SEWERAGE
  - 1. 98% LEVEL - CLOSE
  - 2. 95% LEVEL - OPEN
 VALVE NUMBER 2
- CLEAN WATER
  - 1. 40% LEVEL - OPEN
  - 2. 45% LEVEL - CLOSE
 VALVE NUMBER 1

**OPERATIONAL SEQUENCE FOR W WASHER**

- VEHICLE ENTERS WASH BAY.
- FRONT AXLE WHEELS "LOCK" IN POSITION.  
(BOTH WHEEL LOCK SWITCHES NEED TO BE ACTIVATED FOR PUMP TO START)
- STABILIZED TIME (4 SECONDS) BEFORE PUMP START OR VALVE \*V4.1 TO OPEN.
- PUMP STARTS OR VALVE \*V4.1 OPENS AND OUTSIDE WHEEL ARCHES AND INSIDE OF THE WHEELS ARE SPRAYED CLEAN.
- ACTUATED VALVE \*V4.1 CLOSES AFTER 15-20 SECONDS.  
(PUMP IS STILL ON, WATER IS CIRCULATED, PUMP RELIEF VALVE \*V6 IS OPEN).
- 10 SECOND DELAY ON WHEEL SWITCHES AFTER FRONT AXLE EXITS.  
(ON THE EVENT THAT THE VEHICLE ROLLS BACKWARD, IT WILL KEEP THE SYSTEM FROM WASHING THE FRONT ARCHES AGAIN)
- VEHICLE MOVES FORWARD UNTIL REAR AXLE "LOCKS" IN POSITION.  
STABILIZED TIME (4 SECONDS) BEFORE VALVE \*V4.1 TO OPEN.
- ACTUATED VALVE \*V4.1 OPENS AND OUTSIDE WHEEL ARCHES AND INSIDE OF THE WHEELS ARE SPRAYED CLEAN.  
(OF REAR AXLES).
- ACTUATED VALVE \*V4.1 CLOSES AFTER 15-20 SECONDS.  
(PUMP IS STILL ON, WATER IS CIRCULATED, PUMP RELIEF VALVE \*V6 IS OPEN).
- 10 SECOND DELAY ON WHEEL SWITCHES AFTER REAR AXLE EXITS.  
(ON THE EVENT THAT THE VEHICLE ROLLS BACKWARD, IT WILL KEEP THE SYSTEM FROM WASHING THE REAR ARCHES AGAIN)
- AS SOON AS VEHICLE BREAKS BEAM (LASER) AT A CERTAIN POINT, THE ACTUATED VALVE \*V4.2 OPENS TO ALLOW THE UNDERCARRIAGE TO BE WASHED CLEAN.
- UNDERCARRIAGE WASHING SHOULD ONLY LAST FOR 20 SECONDS AND VALVE \*V4.2 CLOSES THEREAFTER.  
PUMP WILL KEEP ON RUNNING FOR 10 MINUTES BEFORE FINAL SHUT DOWN.  
THIS IS DONE IN ORDER TO PREVENT THE PUMP FROM BEING SUBJECTED TO A CONTINUOUS STOP/START SEQUENCE BETWEEN WASH CYCLES.
- BEAM (LASER) SHOULD BE SITUATED RIGHT AT THE END OF THE WASHER TO PREVENT VALVE \*V4.1 FROM OPENING AGAIN FOR THE NEXT WAITING CAR.  
VALVE \*V4.1 WILL REMAIN CLOSED ONLY WHEN THE WASHED VEHICLE HAS FINISHED BREAKING THE LAST BEAM (LASER) AND THE VEHICLE WAITING TO BE WASHED HAS ACTIVATED BOTH WHEEL SWITCHES.

**OPERATIONAL SEQUENCE FOR DIRTY WATER**

- 70% SUMP LEVEL - START DTV PUMP.
  - 5% SUMP LEVEL - STOP DTV PUMP.
  - DTV PUMPS STARTS RANDOMLY (ALTERNATE BETWEEN THE TWO TO ENSURE BOTH PUMPS DO WORK).
- AFTER EVERY 8-10th WASHING CYCLE, THE VALVE \*V4.4 TO THE SETTLING DAMS CLOSES AND VALVE \*V4.3 OPENS TO ALLOW 1-2 MINUTES OF RAMP FLOOR WASHING.
  - AFTER 1-2 MINUTES, VALVE \*V4.3 FOR THE NOZZLES CLOSES AND VALVE \*V4.4 OPENS TO ALLOW FOR THE WATER TO BE PUMPED TO THE SETTLING DAMS AGAIN.



**VALVE SPECIFICATIONS**

| Mark | NB     | Qty | Description   | Remarks  | Rating                    |
|------|--------|-----|---|--|---------------------------|
| V1   | 80 NB  | 4   | CLAYTON PILOT OPERATING VALVE FOR CLEAN RAW WATER           | LEVEL CONTROLLED COMPLETE WITH PILOT SYSTEM          | BAR                       |
| V2   | 80 NB  | 4   | CLAYTON PILOT OPERATING VALVE FOR RECOVERED SEWER WATER     | LEVEL CONTROLLED COMPLETE WITH PILOT SYSTEM          | BAR                       |
| V3.1 | 80 NB  | 4   | SHUTTER VALVE FOR CLEAN RAW WATER MAIN LINE                 | RSV VALVE WITH STAINLESS STEEL RISING SPINDLE        | TABLE 'D' FLANGE DRILLING |
| V3.2 | 80 NB  | 4   | SHUTTER VALVE FOR RECOVERED SEWER WATER                     | RSV VALVE WITH STAINLESS STEEL RISING SPINDLE        | TABLE 'D' FLANGE DRILLING |
| V3.3 | 80 NB  | 5   | SUPPLY TANKS ISOLATION VALVES                               | STEEL RISING SPINDLE                                 | TABLE 'D' FLANGE DRILLING |
| V3.4 | 100 NB | 4   | SHUTTER VALVE TO SETTLING DAMS                              | RSV VALVE WITH STAINLESS STEEL RISING SPINDLE        | TABLE 'D' FLANGE DRILLING |
| V4.1 | 80 NB  | 4   | ACTUATED VALVE FOR ARCH WASHER                              | BUTTERFLY VALVE RUBBER LINED                         | BAR                       |
| V4.2 | 80 NB  | 4   | ACTUATED VALVE FOR UNDERCARRIAGE WASHER                     | BUTTERFLY VALVE RUBBER LINED                         | BAR                       |
| V4.3 | 80 NB  | 4   | ACTUATED VALVE FOR FLOOR WASHING NOZZLES                    | BUTTERFLY VALVE RUBBER LINED                         | BAR                       |
| V4.4 | 100 NB | 4   | IN LINE TO SETTLING DAMS                                    | BUTTERFLY VALVE RUBBER LINED                         | BAR                       |
| V5.1 | 80 NB  | 4   | CHECK / NON-RETURN VALVE AT DTV SUMP PUMP No. 1             | WAFFER TYPE STAINLESS STEEL (UNFLOW DN80 PN16 316SS) | BAR                       |
| V5.2 | 80 NB  | 4   | CHECK / NON-RETURN VALVE AT DTV SUMP PUMP No. 2             | WAFFER TYPE STAINLESS STEEL (UNFLOW DN80 PN16 316SS) | BAR                       |
| V6   | 50 NB  | 4   | PRESSURE RELIEF VALVE FROM KSB PUMP                         | SETTING AT 16 BAR                                    | BAR                       |
| V7   | 100 NB | 4   | SHUTTER VALVE KSB PUMP SUCTION ISOLATION                    | RSV VALVE WITH STAINLESS STEEL RISING SPINDLE        | TABLE 'D' FLANGE DRILLING |
| V8   | 80 NB  | 4   | CHECK / NON-RETURN VALVE AT KSB PUMP DISCHARGE              | WAFFER TYPE STAINLESS STEEL (UNFLOW DN80 PN16 316SS) | BAR                       |
| V9   | 80 NB  | 4   | SHUTTER VALVE KSB PUMP DISCHARGE ISOLATION                  | RSV VALVE WITH STAINLESS STEEL RISING SPINDLE        | TABLE 'D' FLANGE DRILLING |
| V10  | 80 NB  | 2   | SHUTTER VALVES FOR DTV SUMP PUMPS 1 & 2 DISCHARGE ISOLATION | RSV VALVE WITH STAINLESS STEEL RISING SPINDLE        | TABLE 'D' FLANGE DRILLING |

**LEGEND**

- KDS - KSB PUMP DELIVERY TO SPRAY HEADERS - 05
- KST - KSB PUMP SUCTION FROM TANKS - 06
- DFW - DTV SUMP PUMPS TO FLOOR WASHER - 07
- DCD - DTV SUMP PUMPS TO POLLUTION DAMS - 08
- RWT - CLEAN RAW WATER TO TANKS - 09
- TWT - TREATED WATER FROM DAMS TO TANKS - 09

KDS - 80 NB - DP-xxxx  
 LINE DETAIL DRAWING NUMBER  
 LINE DIAMETER  
 LINE DESCRIPTION  
 (i.e. KSB PUMP DELIVERY TO SPRAY HEADERS)

**REVISIONS**

| REV No | DATE | DESCRIPTION | DRG No. | DESCRIPTION |
|--------|------|-------------|---------|-------------|
|        |      |             |         |             |
|        |      |             |         |             |

**REFERENCE DRAWINGS**

| DRG No. | DESCRIPTION |
|---------|-------------|
|         |             |
|         |             |

**JA DRAUGHTING**  
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**CONTRACTOR APPROVAL**

PROFESSIONAL ENGINEER

NAME \_\_\_\_\_

SIGNATURE \_\_\_\_\_

REG. NUMBER \_\_\_\_\_

DATE \_\_\_\_\_

CONTRACTOR MANAGER

SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_

**EXAMPLE NOT FOR MANUFACTURE**

THIS DRAWING IS THE PROPERTY OF \_\_\_\_\_

DRAWN BY \_\_\_\_\_

CHECK BY \_\_\_\_\_

**DISCIPLINE RATIFICATION**

| DISCIPLINE      | SIGNATURE | DATE |
|-----------------|-----------|------|
| PROCESS         |           |      |
| MECHANICAL      |           |      |
| CIVIL           |           |      |
| STRUCTURAL      |           |      |
| ELECTRICAL      |           |      |
| INSTRUMENTATION |           |      |
| SHE             |           |      |

**PROJECT APPROVAL**

| SIGNATURE | DATE |
|-----------|------|
|           |      |
|           |      |

**CLIENT APPROVAL**

| SIGNATURE | DATE |
|-----------|------|
|           |      |
|           |      |

WWS

**EXAMPLE ENGINEERING - CIVIL**  
**LDV MAINTENANCE**  
**WASHING OF LDV's**  
**FLOW DIAGRAM FOR WHEEL WASHER PLANT**

SCALE: N.T.S.

SHEET OF \_\_\_\_\_

AA

PRINT AS OVERSIZE