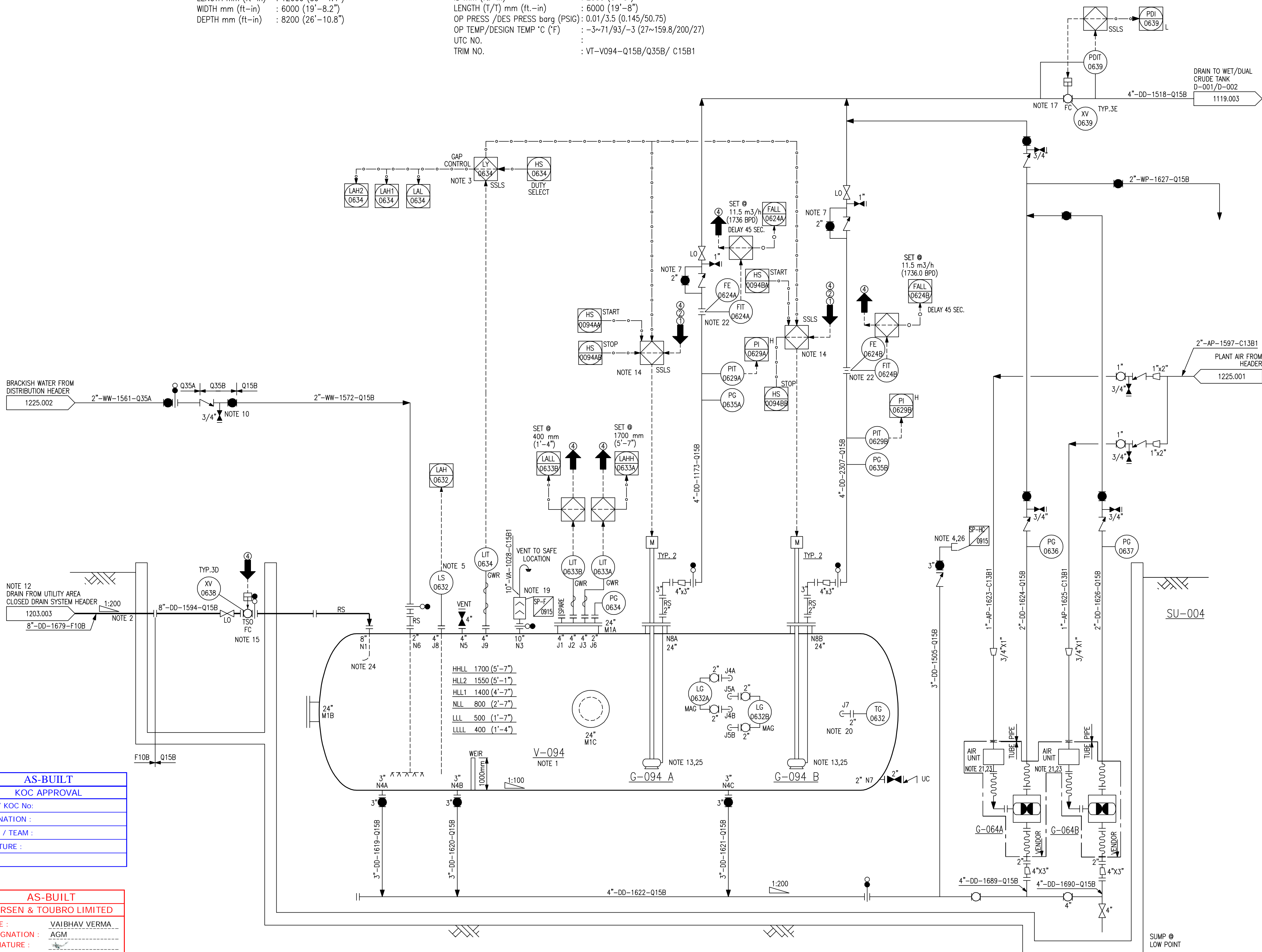


SU-004  
UTILITIES AREA DRAIN VESSEL PIT  
CAPACITY m3 (BBLs) : 590.4 (3713.5)  
LENGTH mm (ft-in) : 12000 (39'-4.4")  
WIDTH mm (ft-in) : 6000 (19'-8.2")  
DEPTH mm (ft-in) : 8200 (26'-10.8")

V-094  
UTILITIES AREA DRAIN VESSEL  
CAPACITY m3 (BBLs) : 21 (132)  
ID mm (ft-in) : 2000 (6'-6")  
LENGTH (T/T) mm (ft-in) : 6000 (19'-8")  
OP PRESS /DES PRESS barg (PSIG) : 0.01/3.5 (0.145/50.75)  
OP TEMP/DESIGN TEMP °C (°F) : -3~71/93/-3 (27~159.8/200/27)  
UTC NO. :  
TRIM NO. : VT-V094-Q15B/Q35B/ C15B1



AS-BUILT  
KOC APPROVAL  
NAME / KOC No.:  
DESIGNATION :  
GROUP / TEAM :  
SIGNATURE :  
DATE :

AS-BUILT  
LARSEN & TOUBRO LIMITED  
NAME : VAIBHAV VERMA  
DESIGNATION : AGM  
SIGNATURE :  
DATE : 28-Nov-2018  
DEPT/ DIVISION : ENGINEERING

530-G-064 A/B NOTE 16  
UTILITY AREA DRAIN VESSEL PIT PUMP  
FLOWRATE m3/hr (BPD) : 6 (905.7)  
DRIVER POWER KW (HP) : N/A  
DIFF PRESS ΔP barg (PSIG) : 5 (72.5)  
S.G. @ OP OT : 0.984~1.174  
FLUID VISCOSITY @ PT CP : 51.6  
OP PRESS/DES PRESS barg (PSIG) : 5/11.55 (72.5/167.52)  
OP TEMP/DESIGN TEMP °C (°F) : 15~55/93/-3 (59~131/200/27)  
UTC NO. :  
TRIM NO. : G064A/B-Q15B

530-G-094 A/B NOTE 16  
UTILITIES AREA DRAIN VESSEL PUMP  
FLOWRATE m3/hr (BPD) : 28 (4227)  
DRIVER POWER KW (HP) : 30 (40.2)  
DIFF PRESS ΔP barg (PSIG) : 5.4 (78.3)  
S.G. @ OP OT : 0.847~1.17  
FLUID VISCOSITY @ PT CP : 51.66  
OP PRESS/DES PRESS barg (PSIG) : 5.41/14.4 (78.46/208.8)  
OP TEMP/DESIGN TEMP °C (°F) : -3~71/93/-3 (27~159.8/200/27)  
UTC NO. :  
TRIM NO. : G094A/B-Q15B

## GENERAL NOTES:

- FOR STANDARD SYMBOLS AND NOMENCLATURE SEE DRAWINGS 50489-530-020-PID-1104.001 & .002.
- ALL EQUIPMENT NUMBERS SHOWN ON THIS P&ID ARE PRECEDED BY 530-.
- ALL INSTRUMENT NUMBERS SHOWN ON THIS P&ID ARE PRECEDED BY 030-.
- FOR TYPICAL INSTRUMENT CONNECTION SBDV, XV, MOV & ESDV DETAILS SEE DRAWINGS 50489-530-020-PID-1106.002, .003, .004, .005, .006 & .007.
- FOR MISCELLANEOUS PIPING TYPICAL VALVING, DRAINAGE & GENERAL ARRANGEMENT OF LEVEL INSTRUMENTS, PUMPS, STRAINERS & CONTROL VALVES SEE DRAWINGS 50489-530-020-PID-1108.010 TO 1108.013.
- DRAWING NUMBERS SHOWN IN P&ID CONTINUATION BOXES ARE ABBREVIATED SHOWING DRAWING SEQUENTIAL NUMBERS ONLY. THE FULL FORM OF THE DRAWING NUMBER IS 50489-530-020-PID-XXXX.SHT.NO.
- FOR MATERIAL SELECTION DIAGRAM SEE DRAWINGS 50489-530-020-MSD-1001.001 TO 1023.
- DETAIL NUMBERING FOR CI, SC, CC & CP SEE DRAWING 50489-530-020-PID-1108.003.
- PAINING & COATING ARE IN ACCORDANCE WITH KOC-P-001.
- LOW POINT DRAIN & HIGH POINT VENT ARE INDICATED IN P&ID.
- FOR CAUSE & EFFECT REFER DOC. NO. 50489-530-020-PHL-1009.
- FOR ALARM VALUES REFER DOC. NO. 50489-530-020-SUM-1006.

### NOTES:

- VESSEL IS LOCATED BELOW GRADE IN A PIT TO ACCOMMODATE GRAVITY DRAINS.
- DRAIN LINES AND HEADERS FROM ABOVE GROUND EQUIPMENT RUN UNDERGROUND WITH A SLOPE TO THE DRAIN SUMP FOR SELF DRAINING.
- G-094 A/B PUMPS ARE CAP CONTROLLED AS FOLLOWS:
  - LAH2 SET @ 1550 mm (5'-1") : START STANDBY PUMP BY SSLS
  - LAH1 SET @ 1400 mm (4'-7") : START DUTY PUMP BY SSLS
  - LAL SET @ 500 mm (1'-7") : STOP DUTY STANDBY PUMPS BY SSLS
- FAILURE OF DUTY PUMP : START STANDBY PUMP, DUTY PUMP IN LOCAL, START STANDBY PUMP ON DEMAND
- HHLL IN WET OR DRY/WET TANKS : INHIBIT START OF PUMPS  
STOP DUTY AND STANDBY PUMPS
- CONNECTION FOR REMOVAL OF SLUDGE/BACK FLUSHING.
- TUNING FORK TYPE INSTRUMENT TO DETECT SAND BUILD UP. (SET AT 700mm)
- ALL LOCAL INSTRUMENTS ARE ABOVE GROUND LEVEL AND ACCESSIBLE AT A SAFE LOCATION.
- FOR BACK FLUSHING OF PUMP WHEN PUMP IS TRIPPED BY STRAINER PLUGGING.
  - FLUSHING CONNECTIONS ARE PROVIDED AT END OF COLLECTION HEADERS AND AT ANY CHANGES IN DIRECTION OF UNDERGROUND PIPE OVER 90°.
  - ADDITIONAL CLEANING FACILITIES ARE PROVIDED AT ANY CHANGE IN DIRECTION 45° AND AT A MAXIMUM OF 60 METRE INTERVALS ON STRAIGHT RUN.
  - EQUIPMENT ISOLATION VALVES ARE SHOWN ON UPSTREAM P&ID's.
- DELETED
- SPRING LOADED BALL VALVE.
- DELETED
- PRESSURISED & GRAVITY DRAINS ARE SEGREGATED INTO SEPARATE HEADERS. REFER TO RELEVANT DRAWINGS FOR DRAIN COLLECTION AND ROUTING.
- MINIMUM SUBMERGENCE IS 380mm FROM THE BOTTOM OF THE VESSEL.
- DURING SHUTDOWN LEVEL-1 AND 2, EMERGENCY GENERATOR SUPPLIES POWER TO THESE PUMPS, SO PUMPS CAN RUN AFTER THE RELATIVE ESD LOGICS ARE RESET.
- WHEN LEVEL MEASURED BY LIT-0634 IS COMING AT LOW, VALVE IS RESET AUTOMATICALLY.
- ONE PUMP OPERATING AND ONE PUMP ON STAND-BY.
- A. TO PREVENT BACK FLOW VALVE TO OPEN WHEN UPSTREAM PRESSURE EXCEEDS DOWNSTREAM PRESSURE.  
B. WHEN PUMP(S) ARE RUNNING PDAL ACROSS XV SHALL NOT STOP THE PUMPS.  
C. NO PUMP RUNNING AUTOMATICALLY CLOSE THE XV.  
D. PUMP(S) RUNNING & IN FIXED TIME IF XV OPEN FEED BACK IS NOT RECEIVED, STOP THE PUMP.
- DELETED.
- VENT TO SAFE LOCATION ARE AS PER KOC-G-002.
- TG-0632 IS LOCATED BELOW LLL.
- AIR UNIT IS KEPT AT PLATFORM OUTSIDE THE PIT.
- STRAIGHT LENGTH REQUIREMENT FOR ORIFICE FLOW METER ARE 20D UPSTREAM & 5D DOWNSTREAM.
- ADEQUATE PIPING SUPPORT ARE PROVIDED TO AVOID OR MINIMIZE VIBRATION.
- INLET PIPE ELBOW DISTRIBUTOR WITH IMPINGEMENT PLATE.
- FOR AUTO GREASING UNIT REFER, 50489-530-020-PID-1108.004.
- PIT WATER SHALL BE REMOVED BY VACUUM TRUCK USING SLUDGE/BACK FLUSHING LINE (3"-DD-1505-Q15B).

Z2	ISSUED FOR AS-BUILT	BAK/SSI	AKG	SRA	RAK	28.11.18
Z1	ISSUED FOR AS-BUILT	BAK/SSI	AKG	SRA	RAK	08.10.18
Z0	ISSUED FOR AS-BUILT	BAK/SSI	AKG	SRA	RAK	26.08.18
01	ISSUED FOR CONSTRUCTION	BAK/SSI	AKG	SRA	RAK	08.12.16
0	ISSUED FOR CONSTRUCTION	HSB/VSA	AKG	SRA	RAK	29.03.16
D	ISSUED INCORPORATED CLIENT COMMENTS	JSI/CHS	AKG	SRA	RAK	23.12.15
C	ISSUED INCORPORATED CLIENT COMMENTS	BAK/ABY	AKG	SRA	RAK	16.10.15
0C	ISSUED INCORPORATED CLIENT COMMENTS	JSI/VSA	AKG	SRA	RAK	01.06.15
B	ISSUED INCORPORATED CLIENT COMMENTS	JSI/VSA	AKG	SRA	RAK	20.02.15
A	ISSUED FOR APPROVAL	JSI/ABY	AKG	SRA	RAK	11.12.14
REV.	DESCRIPTION	DRAWN	CHECKED	HOD	PEM	DATE

### CONTRACTOR REVISION

**KUWAIT OIL CO.**  
**K. S. C.**  
شركة نفط الكويت  
ش.م.ك.  
Kuwait Petroleum Corporation  
A Subsidiary of Kuwait Petroleum Corporation

CONTRACTOR DETAILS:-  
**LARSEN & TOUBRO LIMITED**  
FARIDABAD

PROJECT TITLE:-  
NEW GATHERING CENTRE GC-30  
IN NORTH KUWAIT

DOCUMENT TITLE:-  
PIPING & INSTRUMENTATION DIAGRAM  
UTILITIES AREA DRAIN VESSEL (V-094) & PUMPS (G-094A/B)

PROJECT NO.	DRAWING NO.	REV.	KOC DRG. NO.	REV.
EF1902	CONTRACTOR DRG. NO.	50489-530-020-PID-1205.008	Z2	
	SHEET NO. 8 OF 12		SHEET NO.	
	COMPANY DRG. NO.	EF1902-530-DCO-PID-0205.00	REV.	
	SHEET NO.		A	