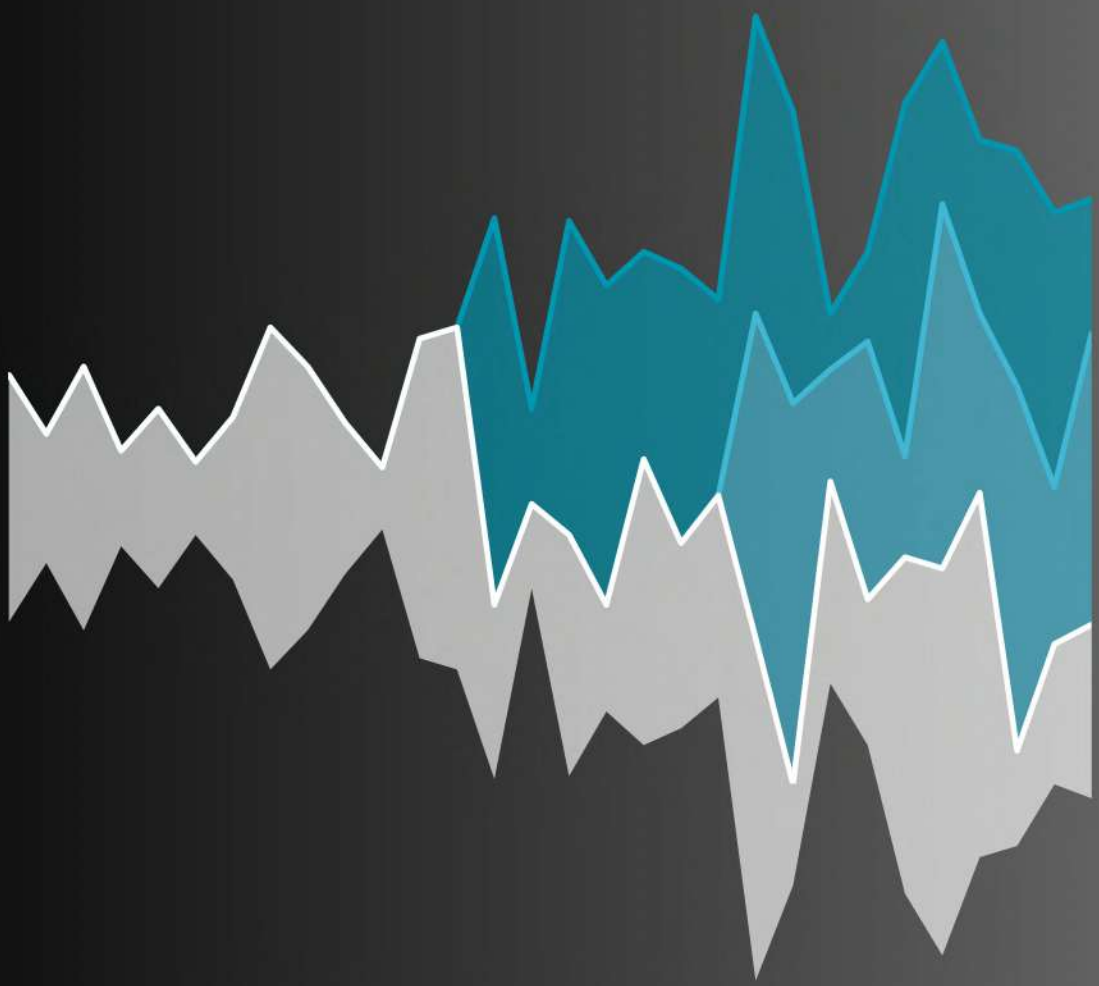
SWAMINATHAN SURESH

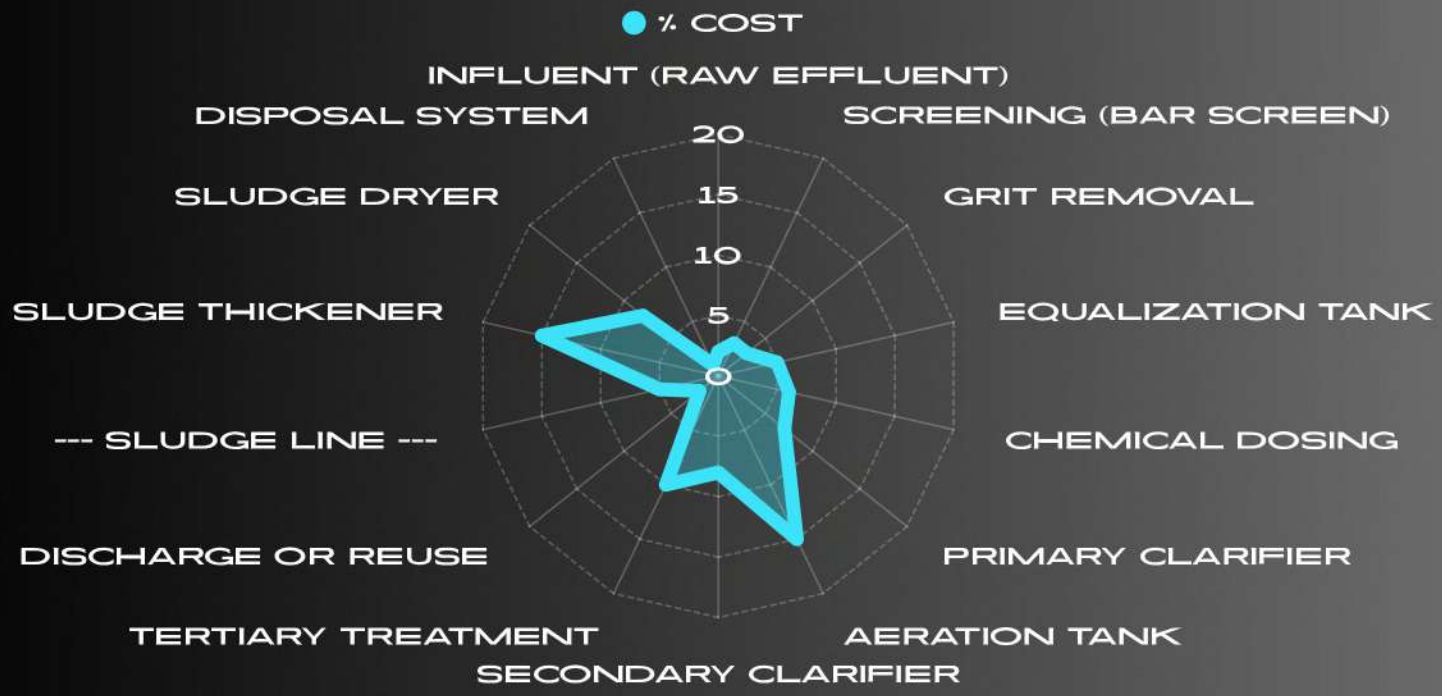
ENGINEERING PORTFOLIO

- SIBUR RUSSIA
- MRPL MANGALORE
- BIHAR STP



PROJECT CONTRIBUTION

PROCSS FLOW AND COST CONTRIBUTION OF EFFLUENT TREATMENT PLANT



PROCSS FLOW AND COST CONTRIBUTION OF DESILANATION WATER TREATMENT PLANT

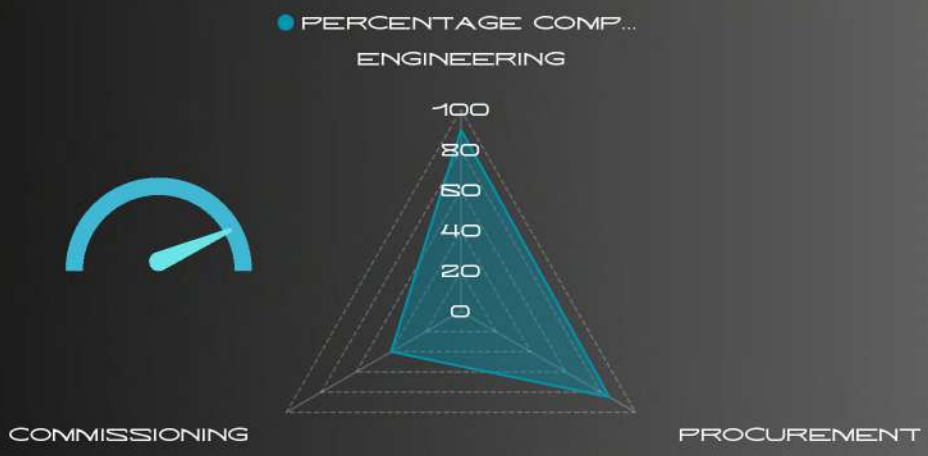
OVERVIEW

PROJECT NAME	• AMUR GAS CHEMICAL COMPLEX EFFLUENT TREATMENT PLANT - RUSSIA • MRPL DESALINATION PLANT - INDIA • DIGHA & KANKARBAGH SEWAGE TREATMENT PLANT - INDIA
PROJECT DATES	START DATE: AUG 18, 2021 END DATE: JAN 4, 2024
BACKGROUND	I'M A MECHANICAL ENGINEER WITH 3+ YEARS OF EPCM EXPERIENCE, HAVING LED DESIGN AND EXECUTION FOR MAJOR WATER TREATMENT PROJECTS IN INDIA AND RUSSIA—HANDLING LAYOUTS, VENDOR COORDINATION, CLIENT APPROVALS, AND FAST-TRACKED COMMISSIONING

PROJECT SPECIFICS - AGCC-SIBUR EFFLUENT TREATMENT PLANT – RUSSIA

PROJECT SCOPE	LED MECHANICAL DESIGN FOR SLUDGE HANDLING IN A HIGH-CAPACITY ETP. FOCUSED ON LAYOUT OPTIMIZATION. VENDOR INTEGRATION. AND PROPOSING IN-HOUSE ENGINEERING SOLUTIONS TO REPLACE COSTLY IMPORTED SYSTEMS.
PROJECT CONSTRAINTS	MANAGED LIMITED VENDOR OPTIONS AND TIGHT EQUIPMENT SPACING (ROOF HEIGHT 7 M). ENSURED SMOOTH LAYOUT PLANNING WHILE COORDINATING WITH RUSSIAN CODE CONSULTANTS AND EXISTING PLANT CONTROL SYSTEMS.
DELIVERABLES	COMPLETED LAYOUT AND SECTIONAL DRAWINGS. VALIDATED IN-HOUSE SLUDGE DRYER DESIGN. PREPARED DATASHEETS AND BOQ. AND ENSURED ALIGNMENT WITH VENDOR AND CODE REQUIREMENTS.
EXPLORATIONS & DECISIONS	PROPOSED A THIRD-PARTY SLUDGE DRYING SOLUTION THAT CUT COSTS BY ~50%. CONDUCTED MULTIPLE LAYOUT ITERATIONS TO ENSURE OPTIMAL EQUIPMENT ACCESS AND SAFETY.

PROJECT STATUS AT TIME OF EXIT

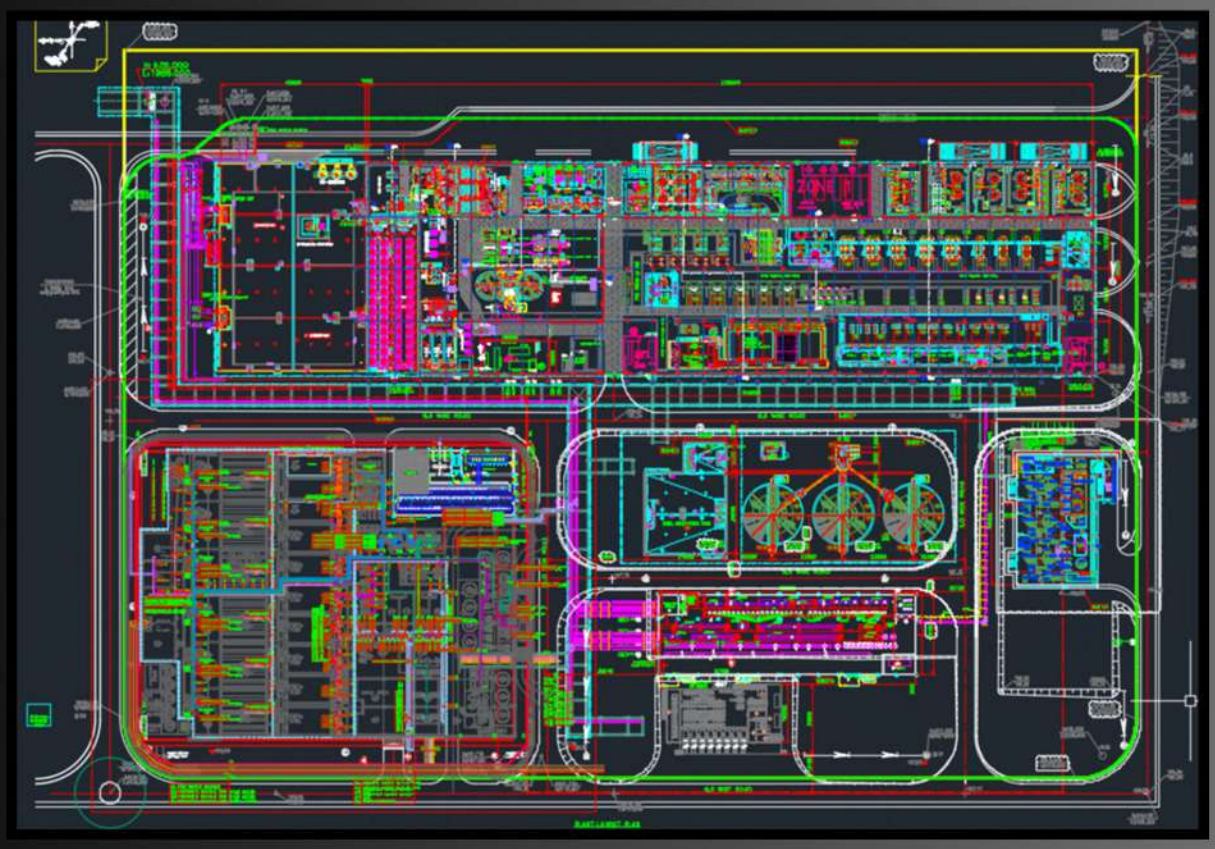


PROJECT DESIGNS

THIS PROJECTINVOLVED THEMECHANICAL LAYOUT DESIGN OF THE SLUDGE TREATMENT SECTION WITHIN A LARGE-SCALE INDUSTRIAL EffIUENT TREATMENT PLANT (ETP) FOR THE AGCC IN RUSSIA. THE OBJECTIVE WAS TO CREATE A COST-EffECTIVE, HIGH-CAPACITY SLUDGE DRYING SOLUTION THAT COMPLIED WITH RUSSIAN DISCHARGE STANDARDS WHILE NAVIGATING CHALLENGES CAUSED BY VENDOR SANCTIONS AND REMOTE EXECUTION.

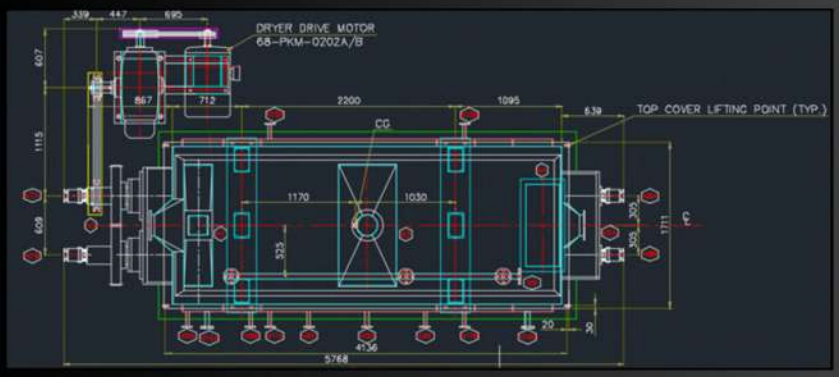
LAYOUT OF SLUDGE DRYING SYSTEM SHOWING EQUIPMENT POSITIONING AND ACCESS CLEARANCES.

2D LAYOUT OF THE SLUDGE TREATMENT ZONE DETAILING EQUIPMENT, SERVICE CORRIDORS, AND PIPE ROUTING—DESIGNED FOR ACCESSIBILITY, MINIMAL CLASHES, AND COMPLIANCE WITH RUSSIAN SAFETY NORMS NORMS.

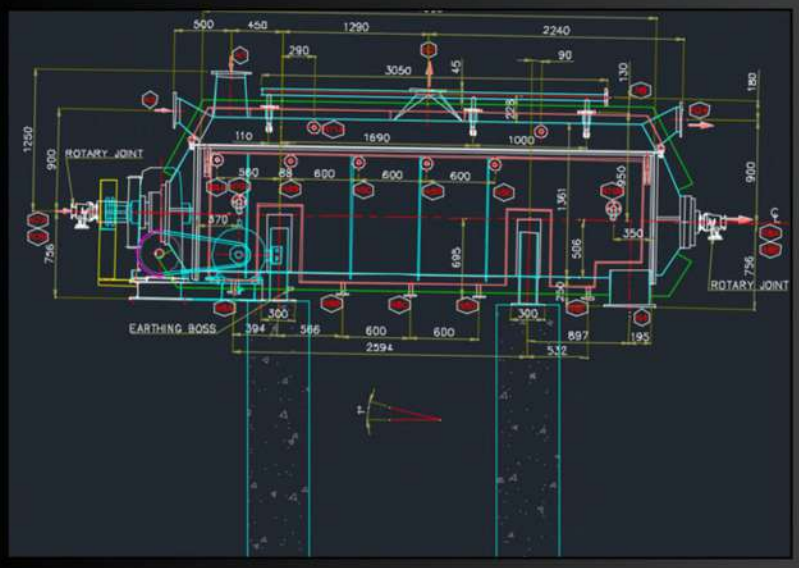


COMPONENT SPOTLIGHT: SLUDGE DRYER – GA & ASSEMBLY DRAWINGS

PADDLE DRYER

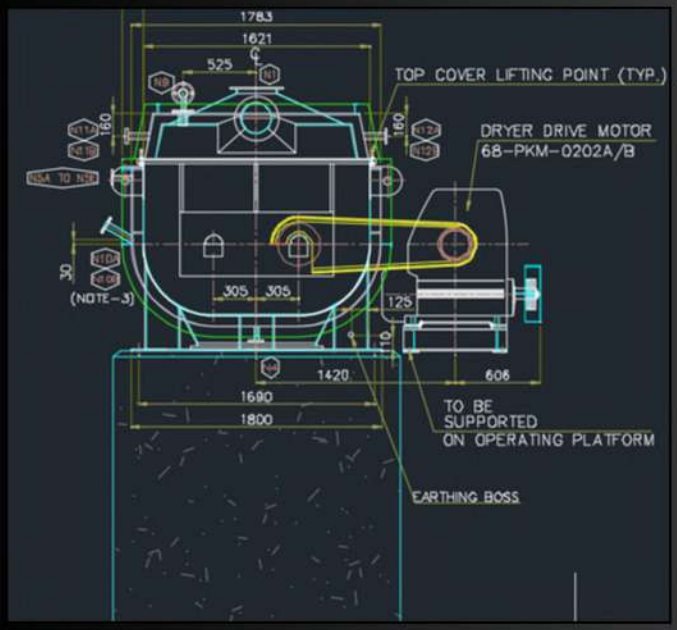


PLAN



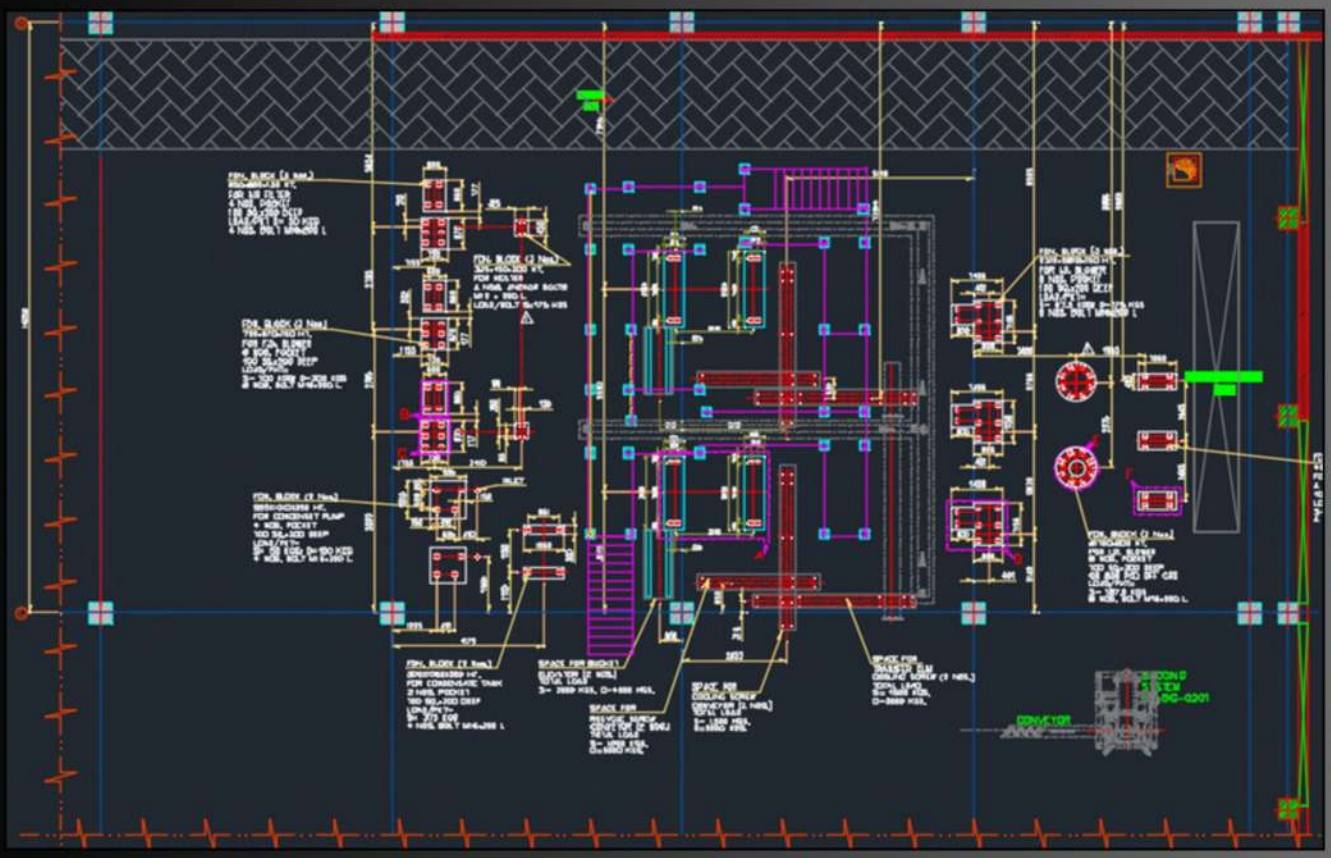
SECTION

DEVELOPED DETAILED GA AND ASSEMBLY DRAWINGS FOR THE SLUDGE DRYER, COVERING INLET/OUTLET DUCTS, STEAM CHAMBER, DRIVE, SUPPORTS, AND DISCHARGE CHUTE. THE DESIGN ENSURED CLEAR COORDINATION AMONG VENDORS, SITE TEAMS, AND STRUCTURAL ENGINEERS. COMPONENTS WERE MODULAR FOR EASY TRANSPORT AND ALIGNED WITH RELIABILITY, THERMAL EFFICIENCY, AND MAINTENANCE ACCESS.



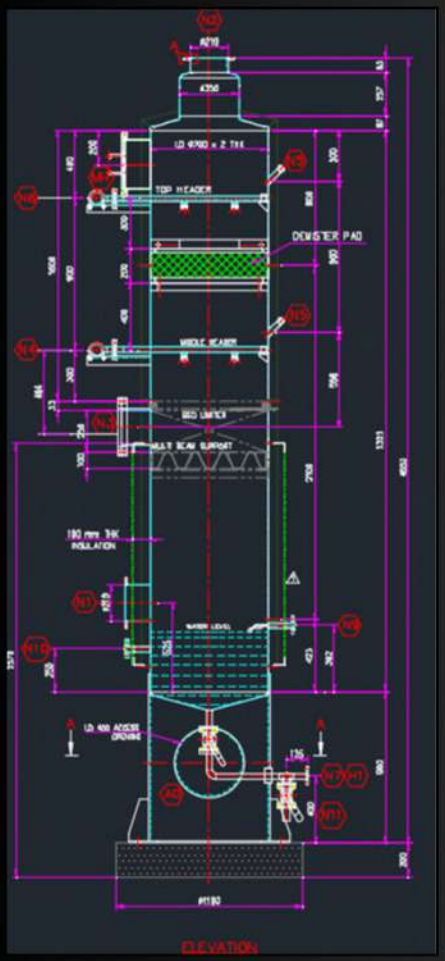
SIDEVIEW

THIS GA PROVIDES AN OVERVIEW OF THE SLUDGE DRYER'S KEY COMPONENTS, INCLUDING THE SHELL, STEAM INLET, DRIVE ASSEMBLY, AND ACCESS PLATFORMS. IT ESTABLISHES SPATIAL FOOTPRINT, CLEARANCE ZONES, AND SERVICE ACCESS.



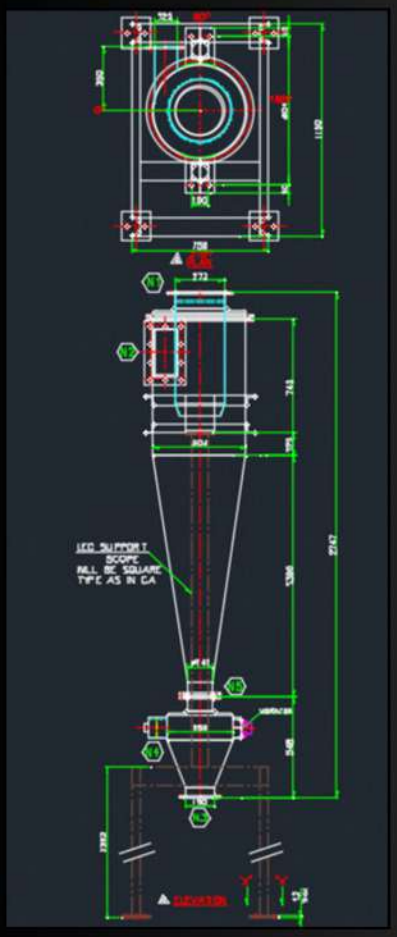
THIS DRAWING DETAILS THE CONCRETE FOUNDATION AND ANCHOR BOLT LAYOUT FOR THE SLUDGE DRYER. IT ENSURES STRUCTURAL STABILITY, LOAD DISTRIBUTION, AND PRECISE ALIGNMENT FOR EQUIPMENT INSTALLATION ON SITE.

SCRUBBER GENERAL ARRANGEMENT (GA)



THE SCRUBBER GA SHOWS THE VERTICAL fIOW DESIGN USED FOR GAS SCRUBBING POST- CYCLONE SEPARATION. IT INCLUDES NOZZLE ARRANGEMENTS, DEMISTER PAD HOUSING, AND SERVICE PLATFORMS FOR INSPECTION AND MAINTENANCE.

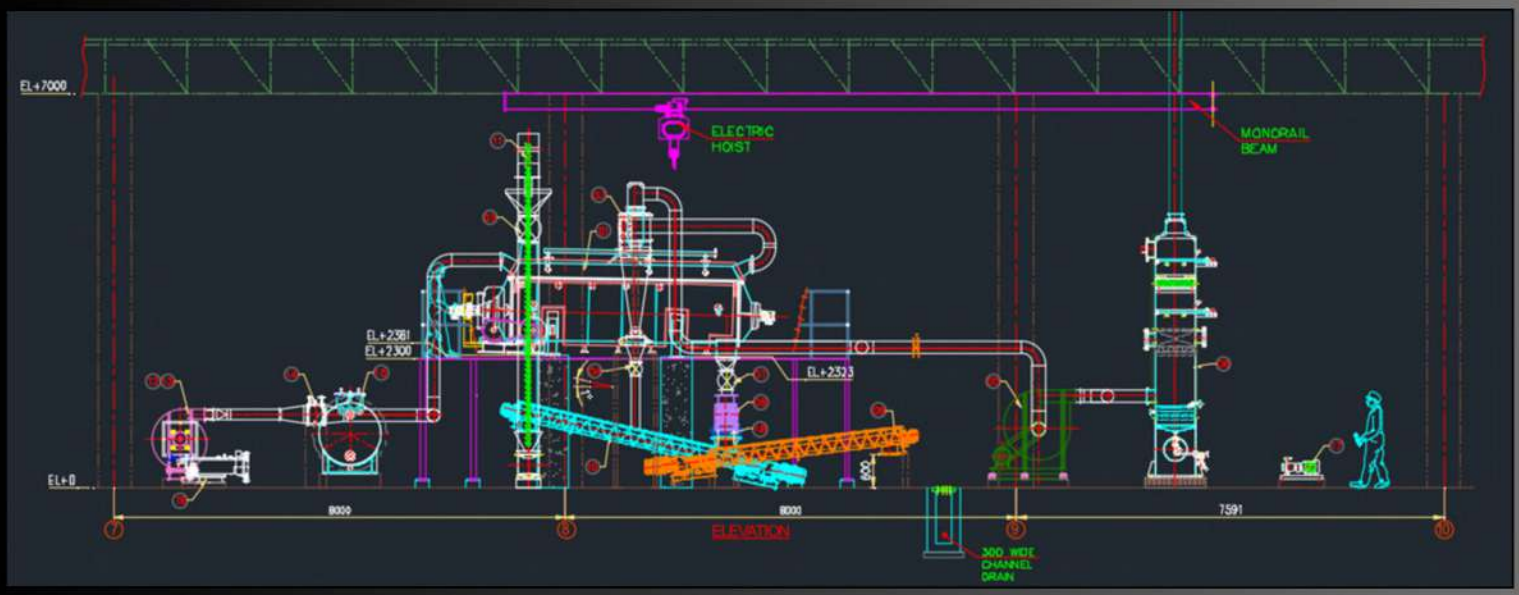
CYCLONE SEPARATOR



THE CYCLONE SEPARATOR DRAWING ILLUSTRATES THE INTERNAL GEOMETRY, INLET/OUTLET ORIENTATION, AND MOUNTING ARRANGEMENT. IT WAS DESIGNED TO SEPARATE fiNE PARTICULATES FROM EXHAUST GASES PRIOR TO SCRUBBER ENTRY.

OVERALL ELEVATION VIEW

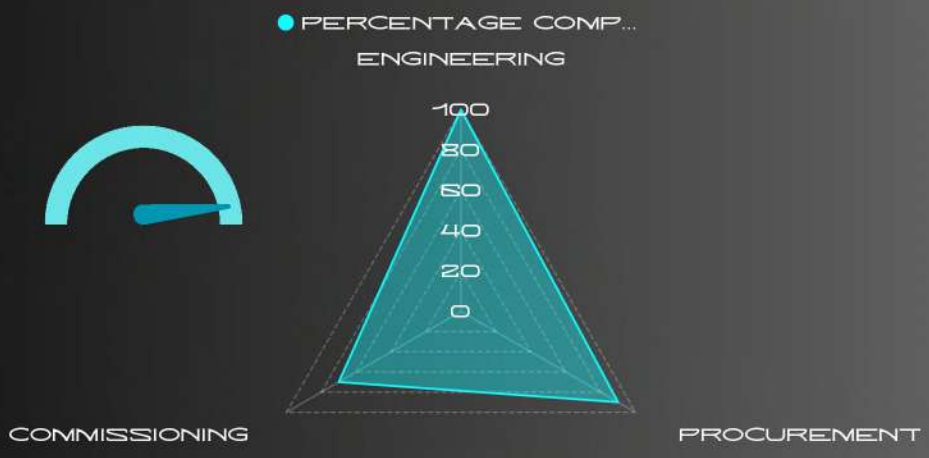
THE ELEVATION DRAWING SHOWS VERTICAL ALIGNMENT OF ALL UNITS, HIGHLIGHTING INTERCONNECTIONS BETWEEN THE DRYER, CYCLONE SEPARATOR, AND SCRUBBER. IT WAS CRUCIAL FOR CLASH CHECKING AND CONSTRUCTION SEQUENCING.



PROJECT SPECIFICS - MANGALORE REFINERY DESALINATION PLANT-INDIA

PROJECT SCOPE	EXECUTED MECHANICAL DESIGN FOR A 30 MLD SWRO PLANT SUPPORTING REFINERY OPERATIONS. HANDLED LAYOUT PLANNING, MATERIAL SELECTION, AND MULTI-DISCIPLINE CLIENT APPROVALS.
PROJECT CONSTRAINTS	FACED TIGHT REFINERY TIMELINES, LIMITED SPACE FOR NEW SYSTEMS, AND HIGH SALINITY REQUIRING CORROSION-RESISTANT MATERIALS AND COMPACT LAYOUTS.
DELIVERABLES	GA DRAWINGS, PIPING LAYOUTS, DATASHEETS, BOMS, VENDOR COORDINATION, AND CLIENT-CLEARED DESIGN DOCUMENTATION.
EXPLORATIONS & DECISIONS	FINALISED MODULAR LAYOUT TO REDUCE SITE WORK AND SPEED UP PHASED CONSTRUCTION.

PROJECT STATUS AT TIME OF EXIT

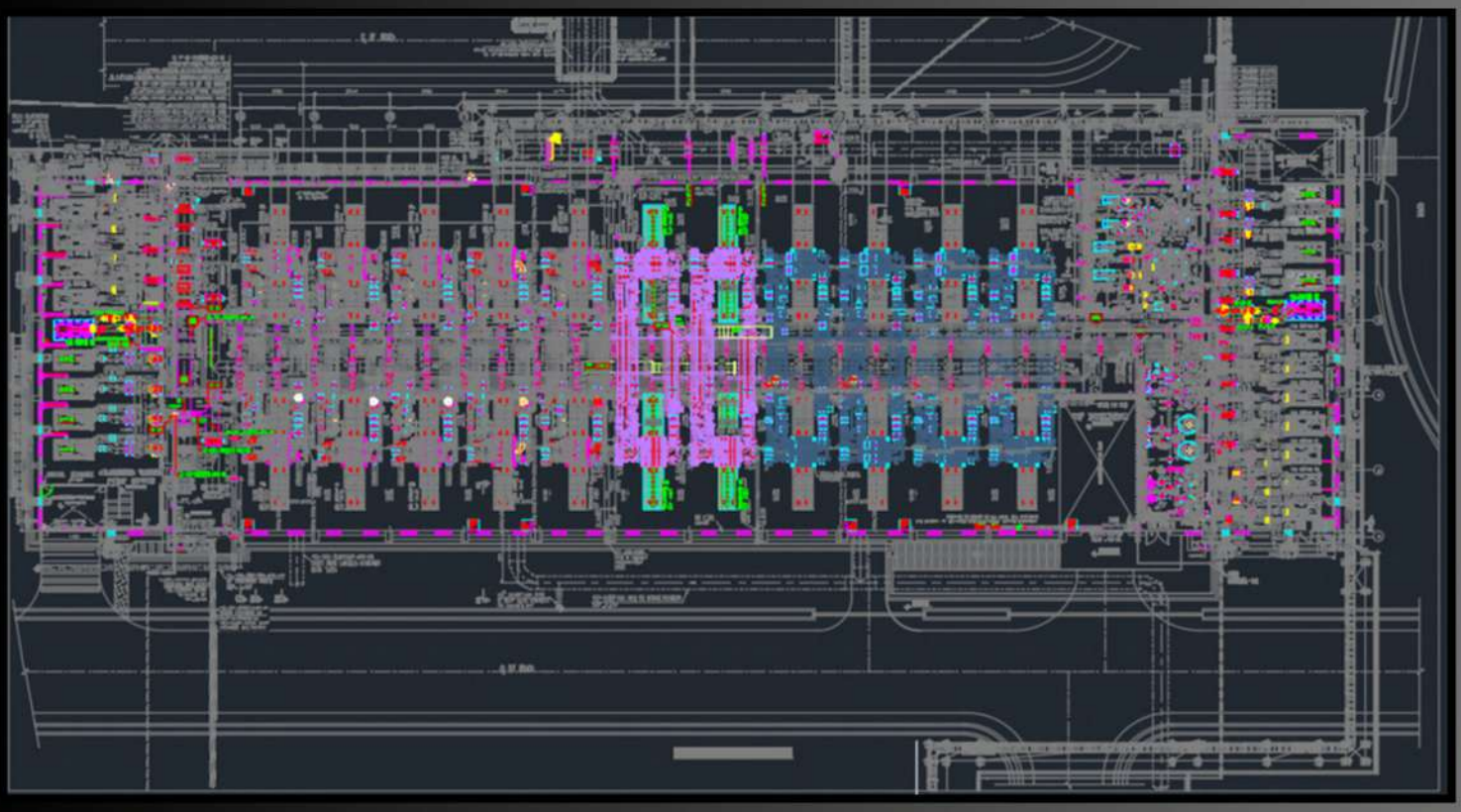


PROJECT DESIGNS

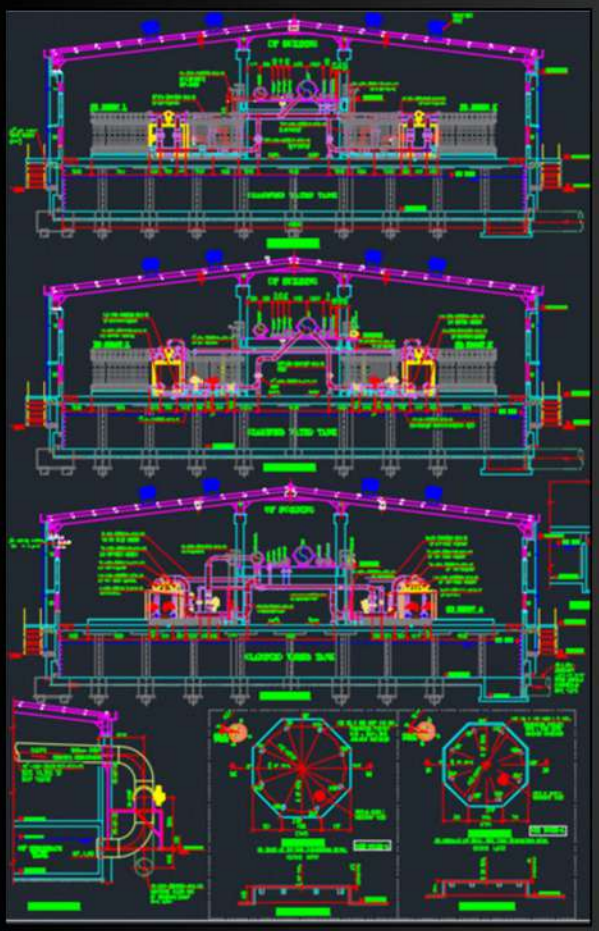
LED MECHANICAL LAYOUT DESIGN FOR A 40 MLD SWRO PLANT SUPPORTING REFINERY OPERATIONS. FOCUSED ON EQUIPMENT PLACEMENT, PIPING, AND MAINTENANCE ACCESS IN TIGHT UTILITY CORRIDORS.

UF SHED (ULTRAFILTRATION UNIT)

SERVES AS A PRE-TREATMENT STAGE TO REMOVE SOLIDS AND MICROORGANISMS, ENHANCING RO MEMBRANE PERFORMANCE AND LIFESPAN.

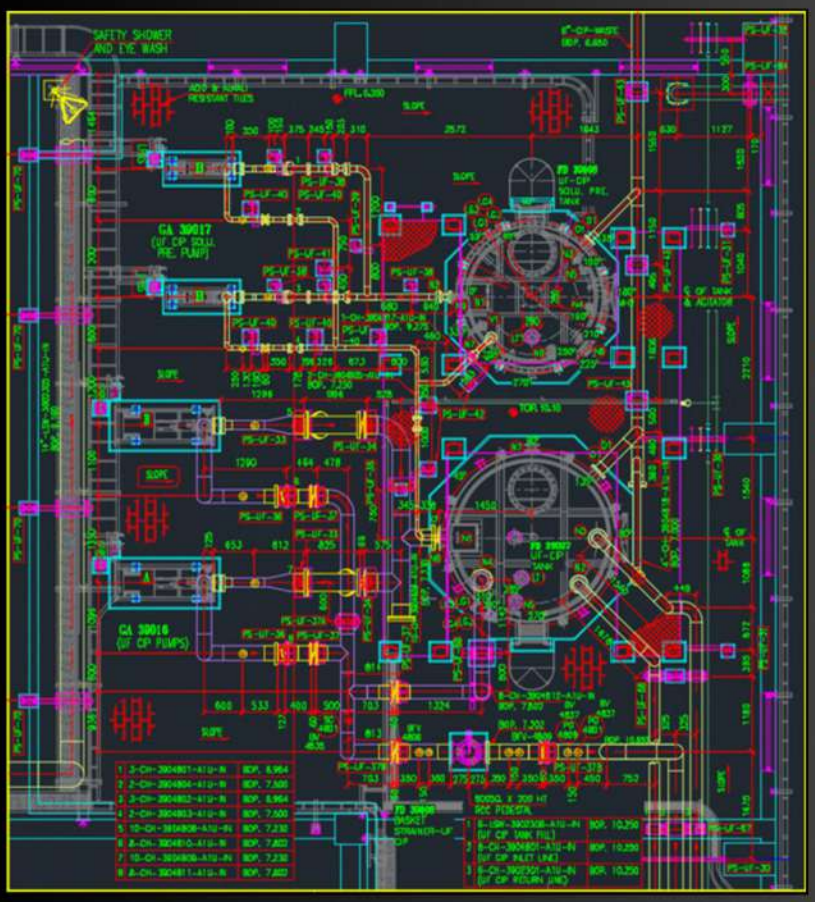


ELEVATION OF UF SKID HAVING SECTIONS OF HEADER AND BACKWASH PIPES



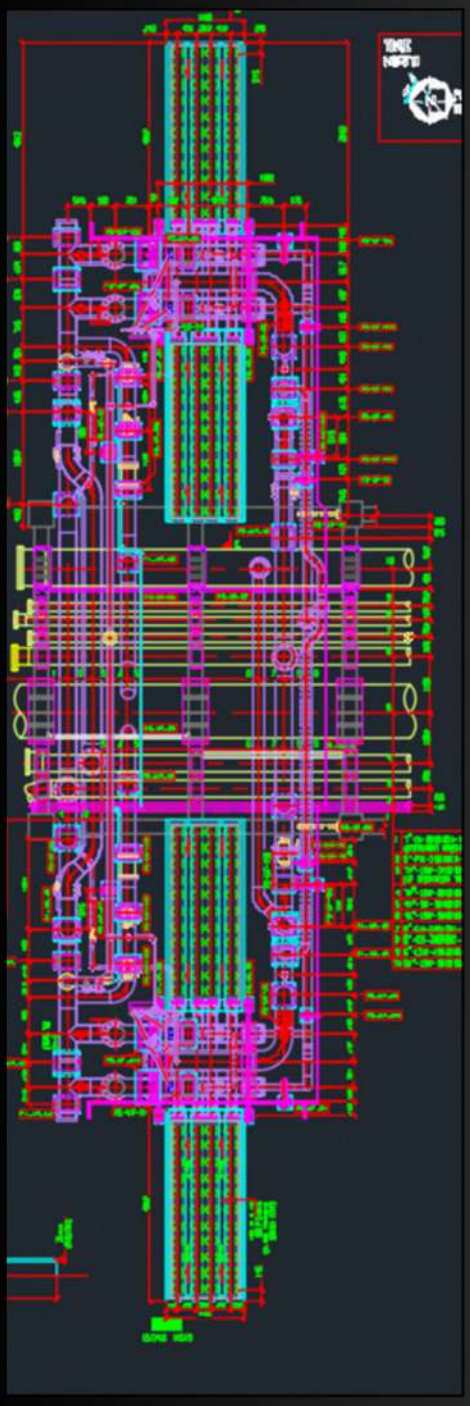
THE ELEVATION DRAWING DISPLAYS THE VERTICAL ARRANGEMENT OF THE ULTRAFILTRATION SKID COMPONENTS. IT HIGHLIGHTS FRAME HEIGHT, MEMBRANE HOUSING ALIGNMENT, AND PIPING LEVELS. THIS VIEW SUPPORTS STRUCTURAL COORDINATION AND ACCESS PLANNING.

NOZZEL ORIENTATION OF THE CHEMICAL DOSING TANKS AT THE UF BUILDING



THIS DRAWING SHOWS THE TOP VIEW OF THE DOSING TANK WITH ALL NOZZLE PLACEMENTS CLEARLY MARKED. IT ENSURES ACCURATE ALIGNMENT FOR CHEMICAL INLET/OUTLET, OVERFLOW, AND VENT LINES. PROPER ORIENTATION AVOIDS CLASHES AND SIMPLIFIES INSTALLATION.

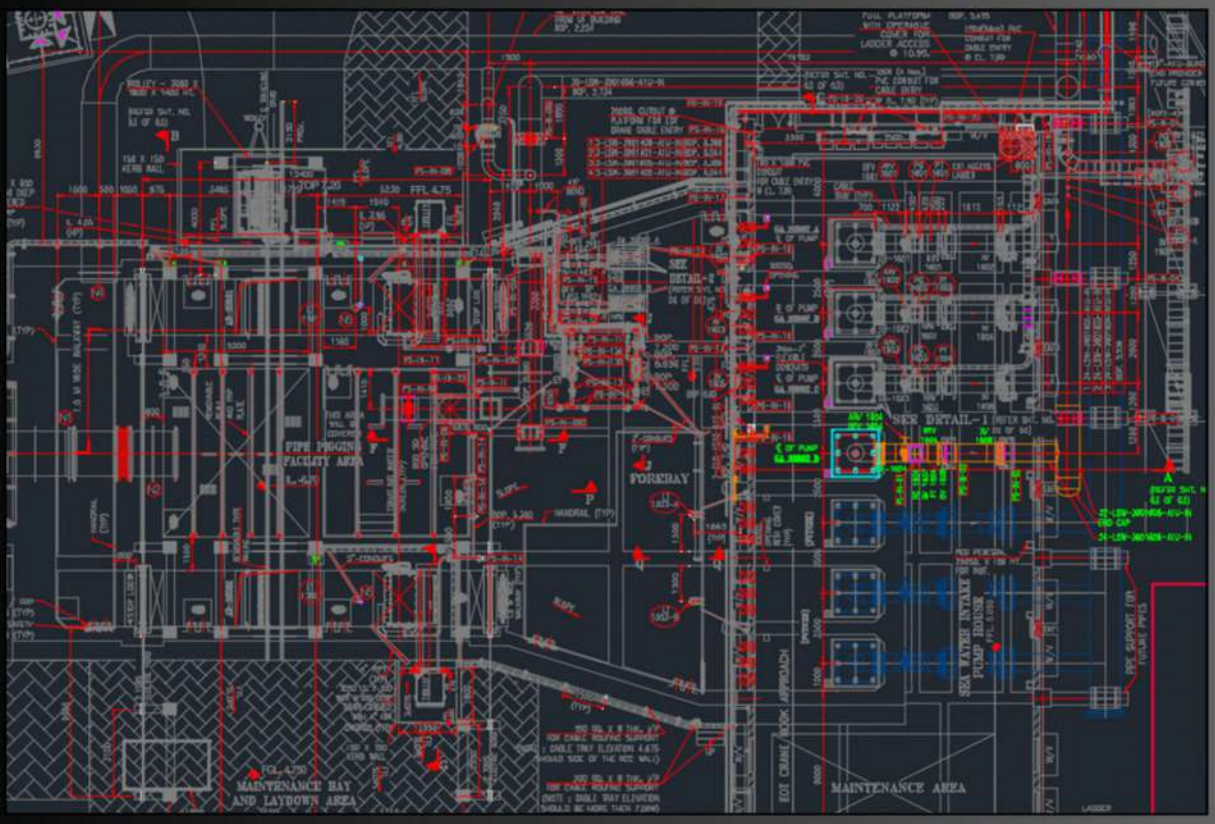
INDIVIDUAL SKID PLAN VIEW 1/10 SKIDS



THE PLAN VIEW OUTLINES THE LAYOUT OF EACH UF SKID WITH CLEAR SPACING BETWEEN UNITS. IT INCLUDES VALVE POSITIONS, PIPE ROUTES, AND OPERATOR ACCESS ZONES. THIS DRAWING WAS CRUCIAL FOR MAINTENANCE PLANNING AND PIPING COORDINATION. THE SKID HAS MANY GROUPS OF FILTERS WHICH SPANS THROUGH A 100M DISTANCE INSIDE THE SITE.

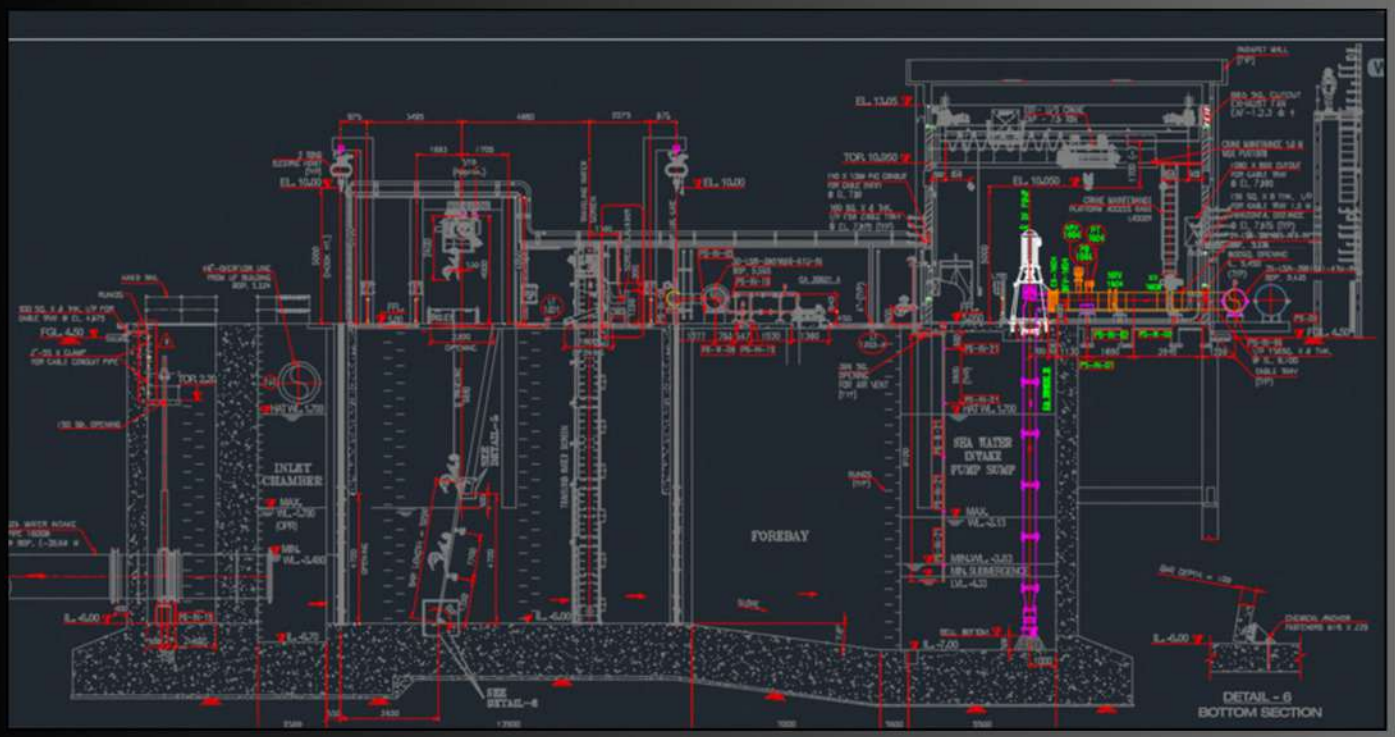
SEA WATER INTAKE SUMP

THE INTAKE CHAMBER LAYOUT DETAILS THE ENTRY ZONE FOR RAW SEAWATER. IT SHOWS FLOW DIRECTION, SCREEN CHANNELS, AND GATE POSITIONS. THE DESIGN ENSURES SMOOTH FLOW AND DEBRIS SEPARATION BEFORE TREATMENT.



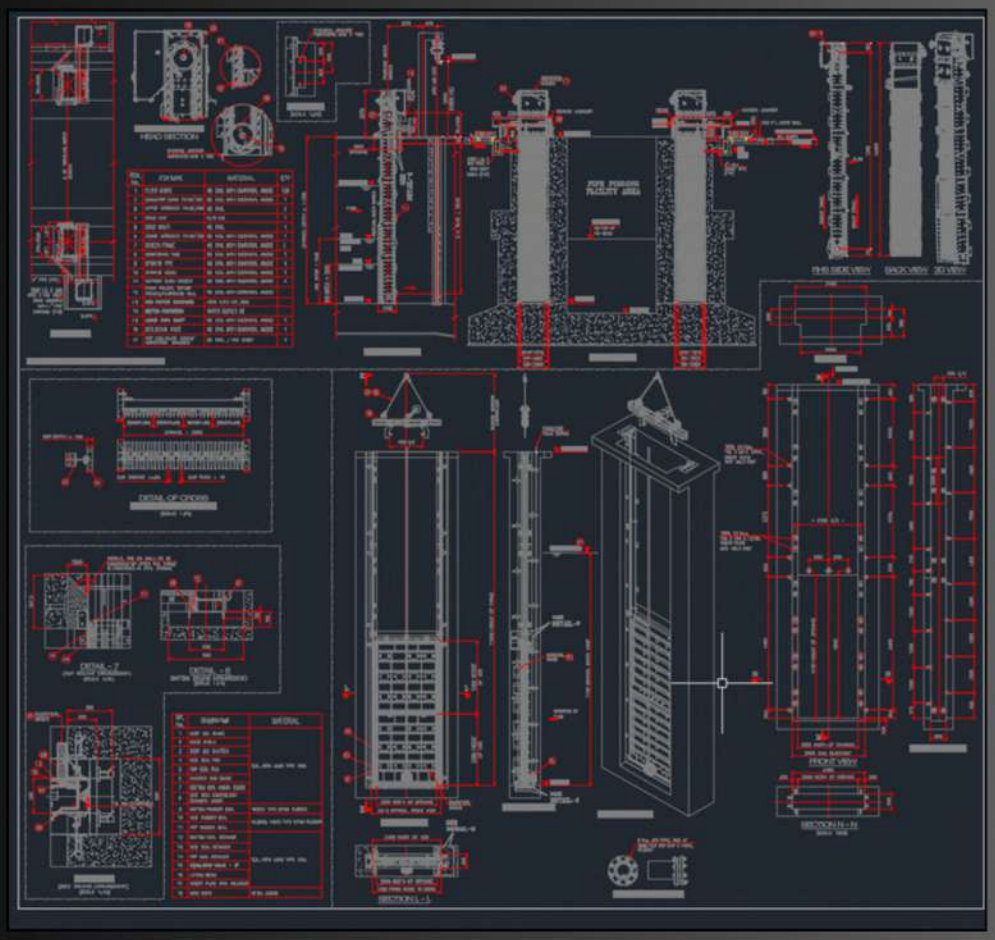
ELEVATION SEA WATER INTAKE SUMP

THIS ELEVATION ILLUSTRATES THE DEPTH PROFILE OF THE INTAKE STRUCTURE. IT INCLUDES WATER LEVELS, SCREEN PLACEMENTS, AND WALL SECTIONS. IT SUPPORTS CIVIL INTEGRATION AND HYDRAULIC PERFORMANCE CHECKS.

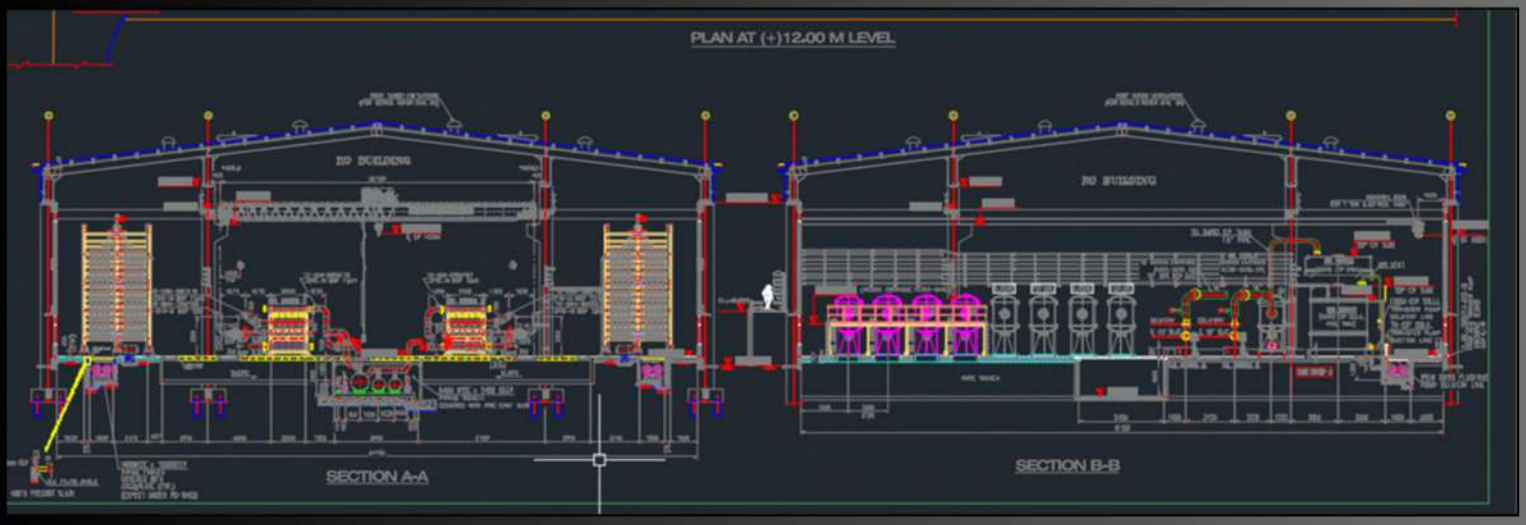


INTAKE TRASH SCREEN GENERAL ARRANGMENT DRAWING

INSTALLED AT THE INTAKE, THE MECHANICAL SCREEN FILTERS LARGE DEBRIS FROM SEAWATER. THE DRAWING SHOWS SCREEN BARS, RAKE MECHANISMS, AND CHAIN DRIVES. THIS COMPONENT PROTECTS DOWNSTREAM EQUIPMENT FROM CLOGGING OR DAMAGE.

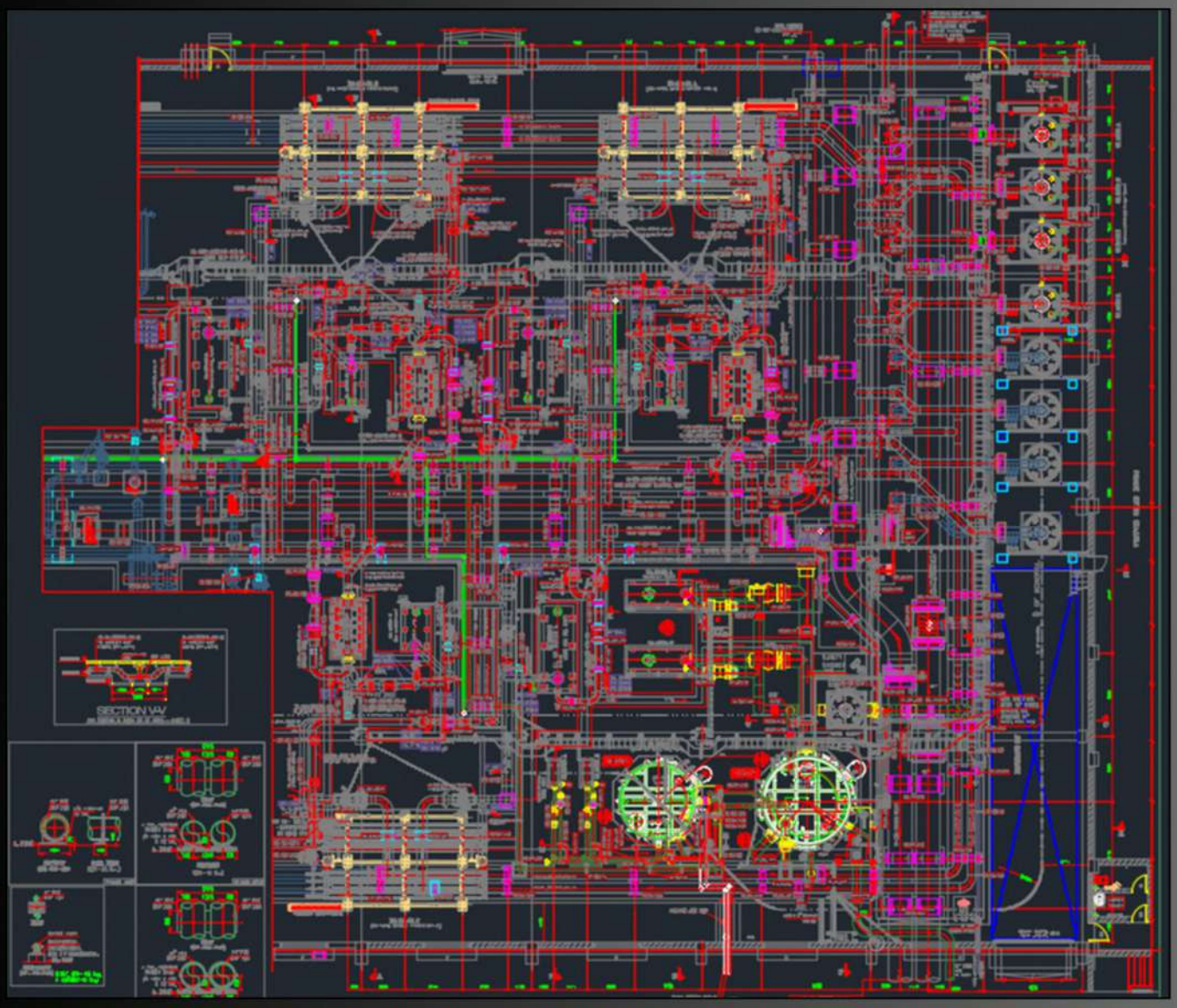


SEA WATER REVERSE OSMOSIS DESIGN DRAWING



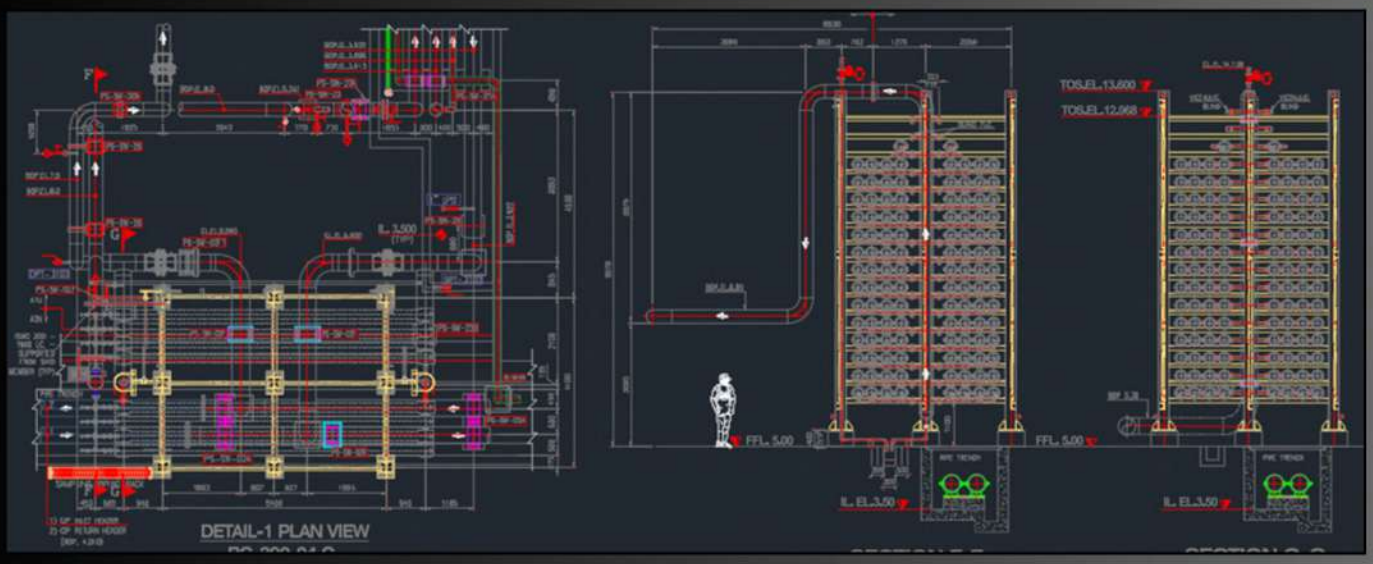
THE PLAN VIEW OF THE SEAWATER REVERSE OSMOSIS (SWRO) SYSTEM OUTLINES THE PLACEMENT OF MEMBRANE RACKS, HP PUMPS, CIP LINES, AND CHEMICAL DOSING UNITS. PIPE ROUTING, ACCESS PATHWAYS, AND INSTRUMENTATION ARE CLEARLY MARKED. THIS DRAWING ENSURES SEAMLESS INTEGRATION WITH UPSTREAM UF SYSTEMS AND DOWNSTREAM PRODUCT WATER LINES.

SEA WATER REVERSE OSMOSIS DESIGN DRAWING PLAN VIEW



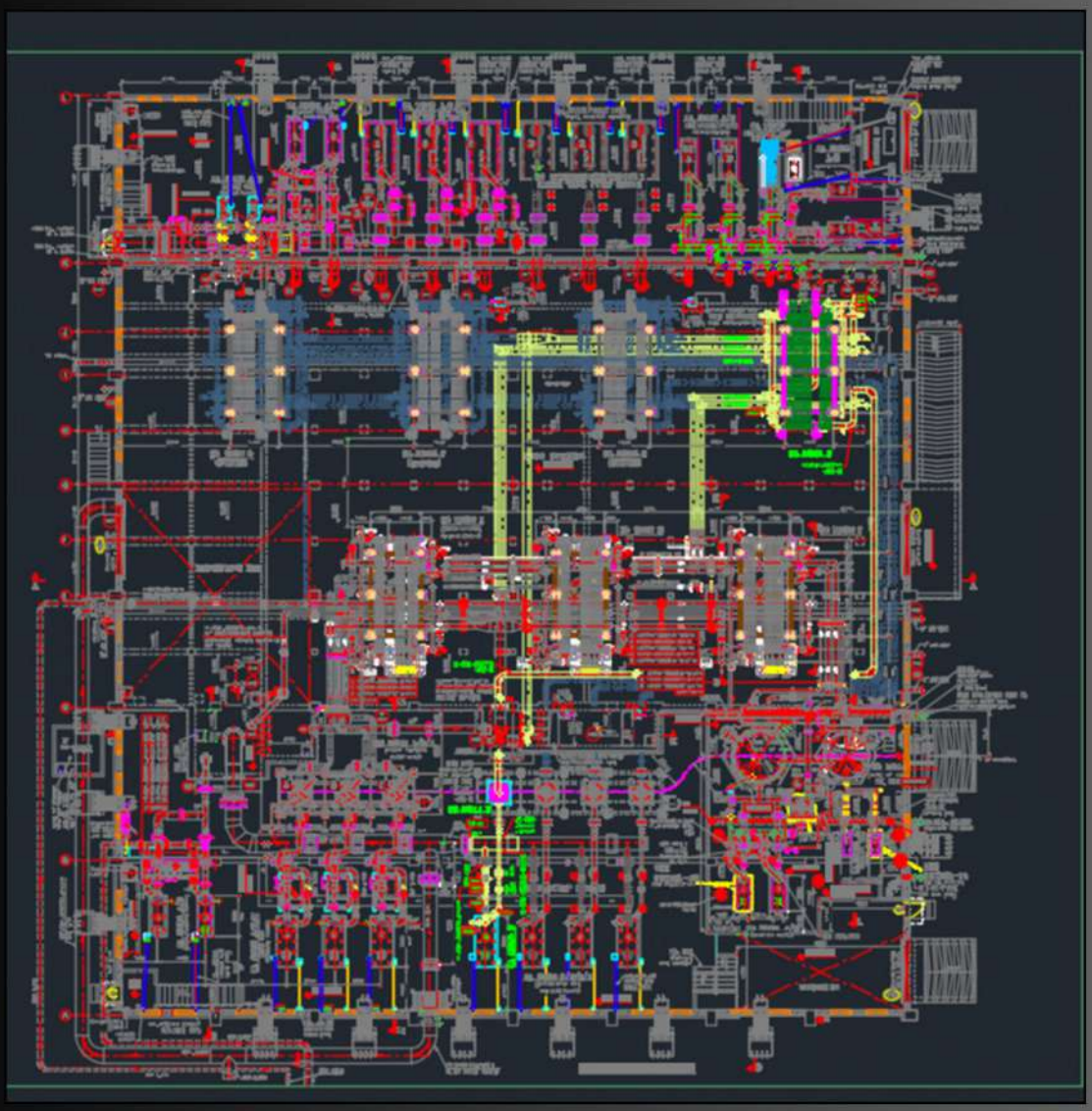
SEA WATER REVERSE OSMOSIS DESIGN DRAWING ELEVATION VIEW

THIS ELEVATION DRAWING PRESENTS THE VERTICAL PROFILE OF THE SWRO SKID AND ASSOCIATED PIPING. IT HIGHLIGHTS EQUIPMENT HEIGHT, PRESSURE VESSEL STACKING, AND INTERCONNECTING SUPPORT STRUCTURES. THE VIEW AIDS IN CLEARANCE CHECKS, STRUCTURAL PLANNING, AND OPERATOR ACCESSIBILITY.



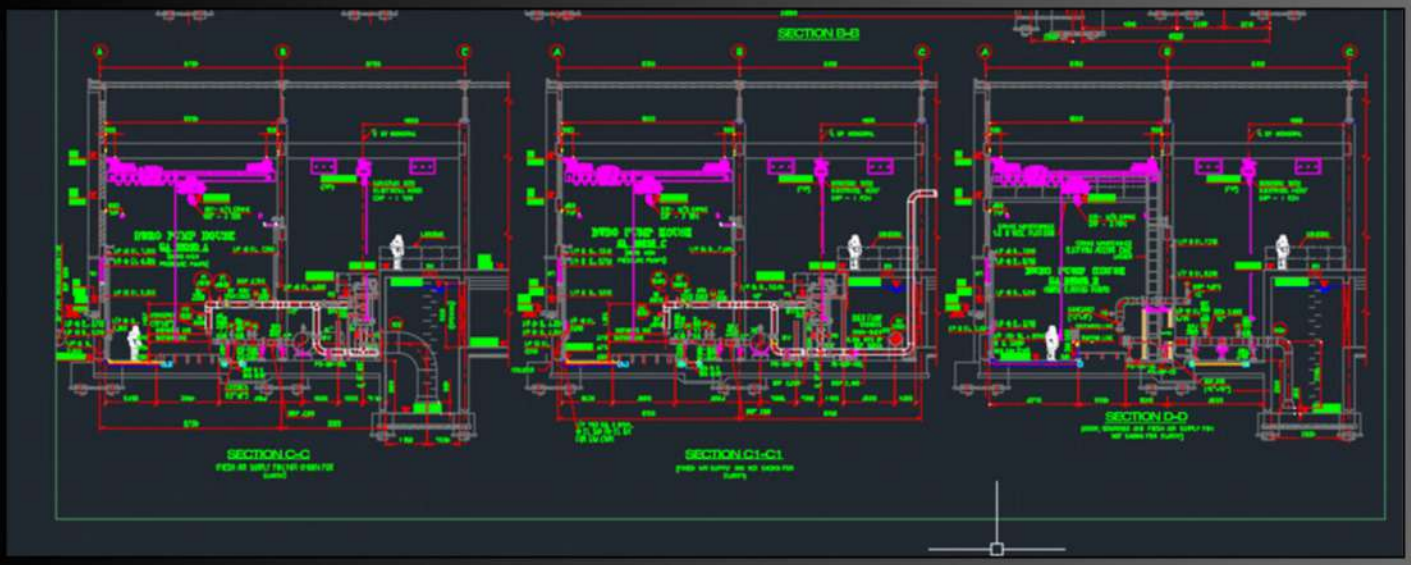
BRACKISH WATER REVERSE OSMOSIS DESIGN DRAWING PLAN VIEW

THE BRACKISH WATER RO (BWRO) PLAN SHOWS THE LAYOUT OF PRESSURE VESSELS, FEED PUMPS, AND CONCENTRATE DISCHARGE LINES. IT EMPHASIZES COMPACT ARRANGEMENT DUE TO LIMITED UTILITY SPACE. INSTRUMENTATION POINTS AND VALVE ACCESSIBILITY ARE ALSO INCORPORATED FOR OPERATIONAL EASE.

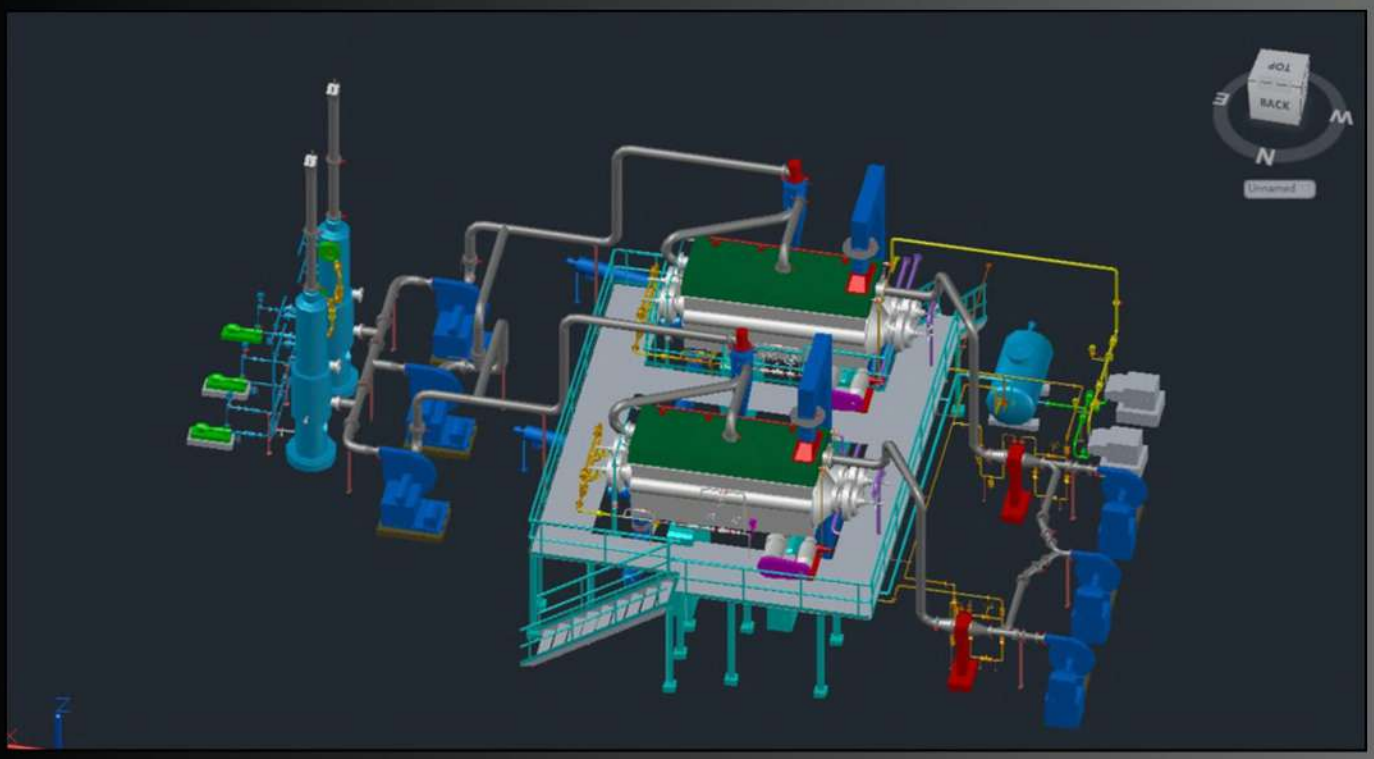


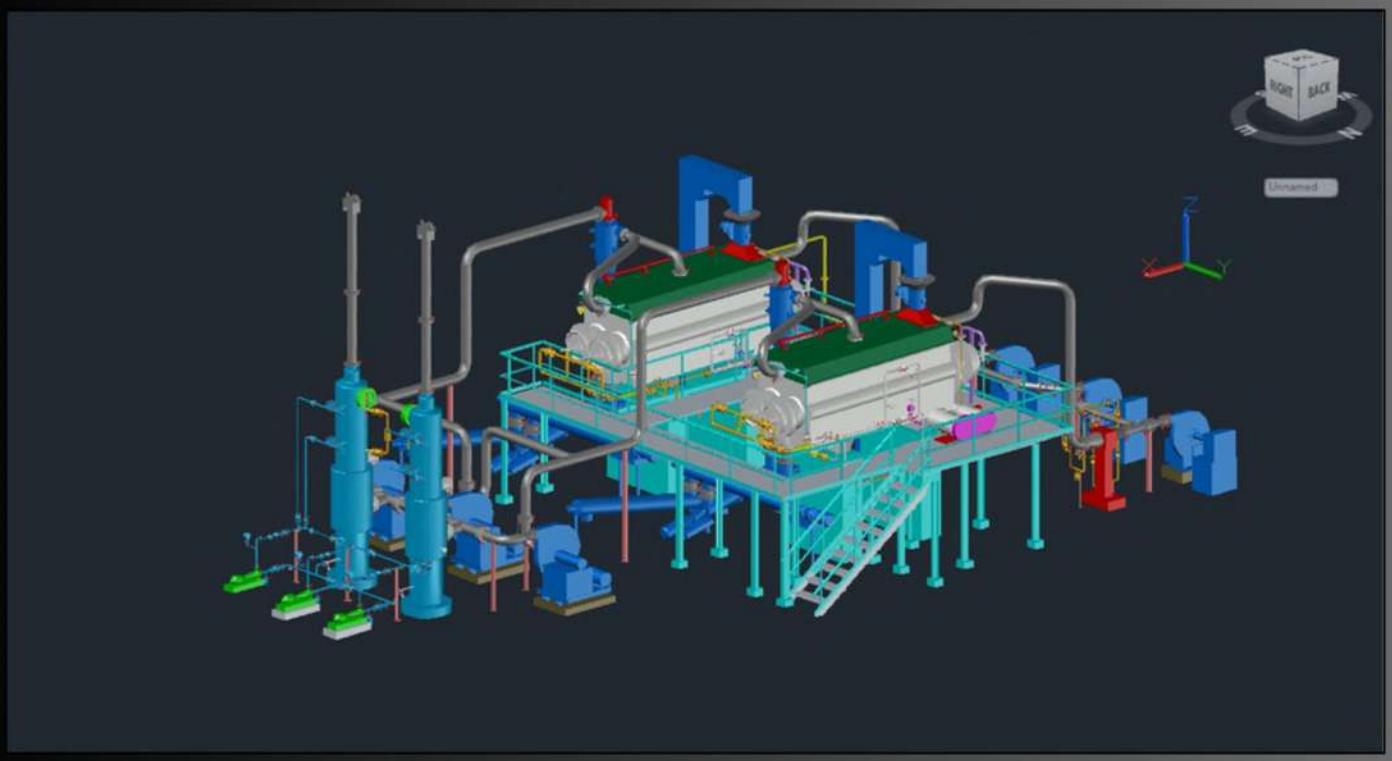
BRACKISH WATER REVERSE OSMOSIS DESIGN DRAWING ELEVATION VIEW

THIS ELEVATION DRAWING ILLUSTRATES THE VERTICAL LAYOUT OF THE BWRO MEMBRANE UNITS AND AUXILIARY PIPING. IT HELPS VISUALIZE PUMP SUCTION/DISCHARGE LEVELS, SUPPORT FRAMES, AND PANEL POSITIONS. THE DRAWING SUPPORTS FABRICATION AND ALIGNMENT DURING INSTALLATION.



3D MODEL SAMPLES OF PADDLE DRYER , ETP SIBUR RUSSIA




RIGHT
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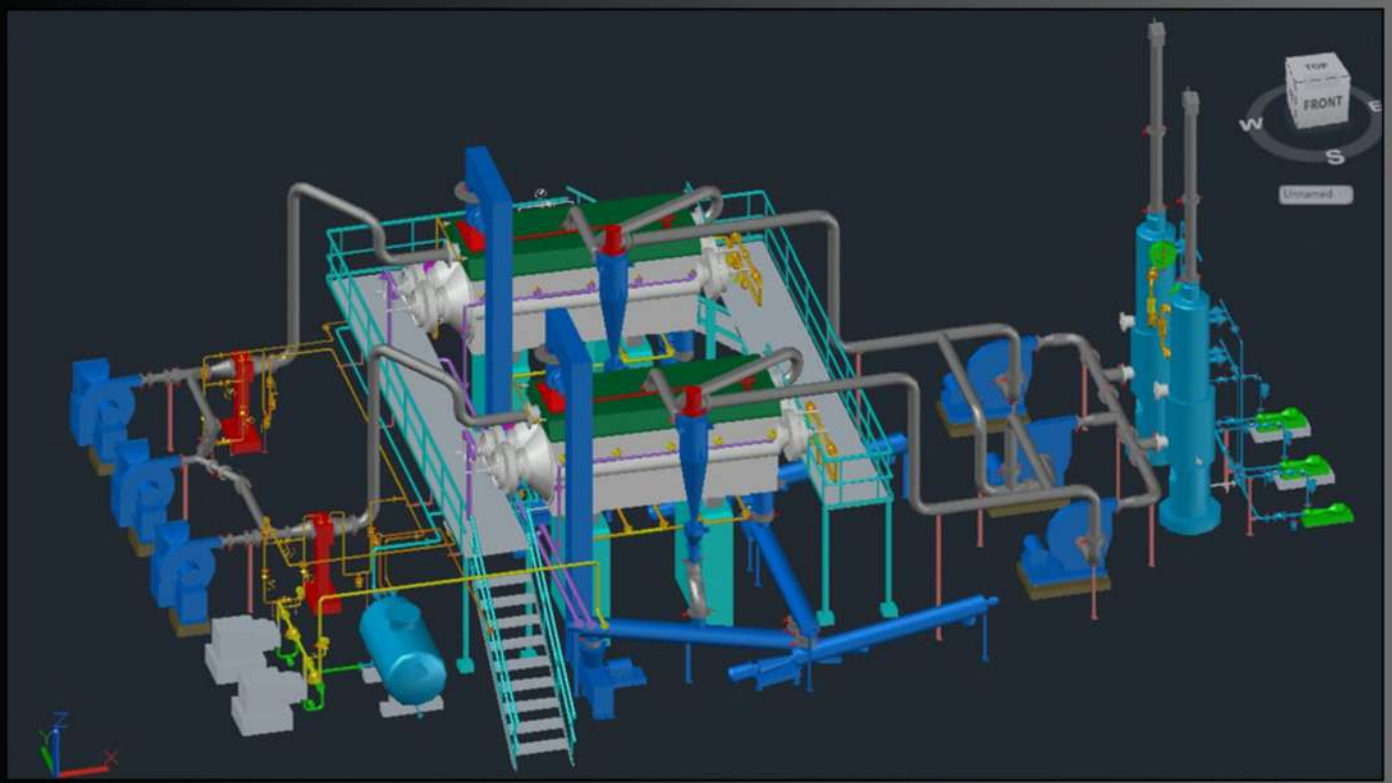
TOP
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