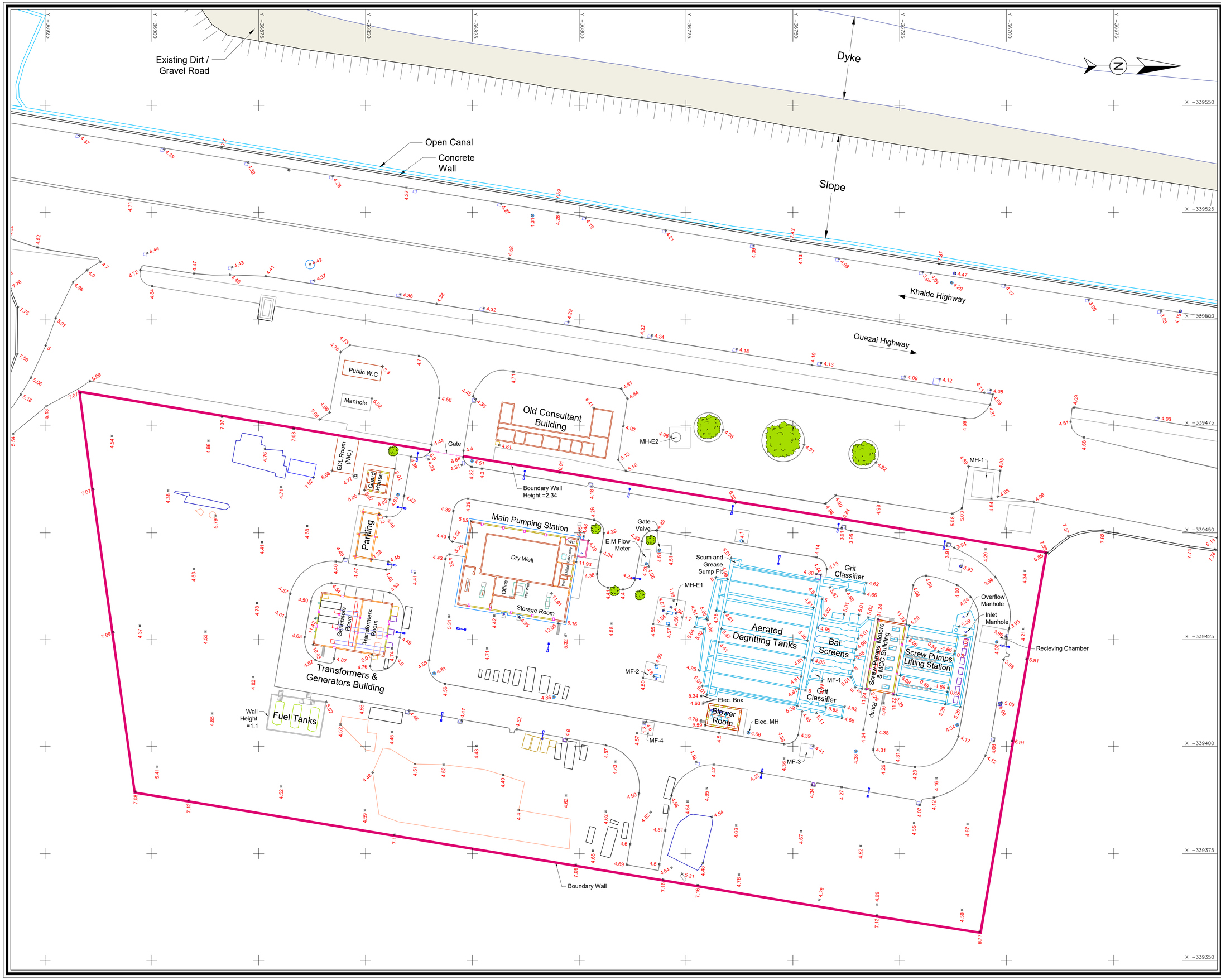


LEGEND:

- Elev — Survey Point
- Tree
- Lamp
- Concrete
- Column
- Diesel Tank
- Door
- Electrical Box
- Gate
- Fuel Tank
- Manhole Storm
- Road
- Sewer Manhole
- Side Walk
- Stairs / Ladder
- Steel Cover
- Transformer
- Water Machine
- Watertank
- Windows
- Building
- Concrete
- Container
- Garbage
- Generator
- Gully
- Manhole
- Pipe
- Scrap
- Wall
- Boundary Wall

LEBANESE REPUBLIC
COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

Expansion and Upgrade of Al-Ghadir Wastewater Treatment Plant Project – Phase I: Design, Build and Operate, Including Sea Outfalls

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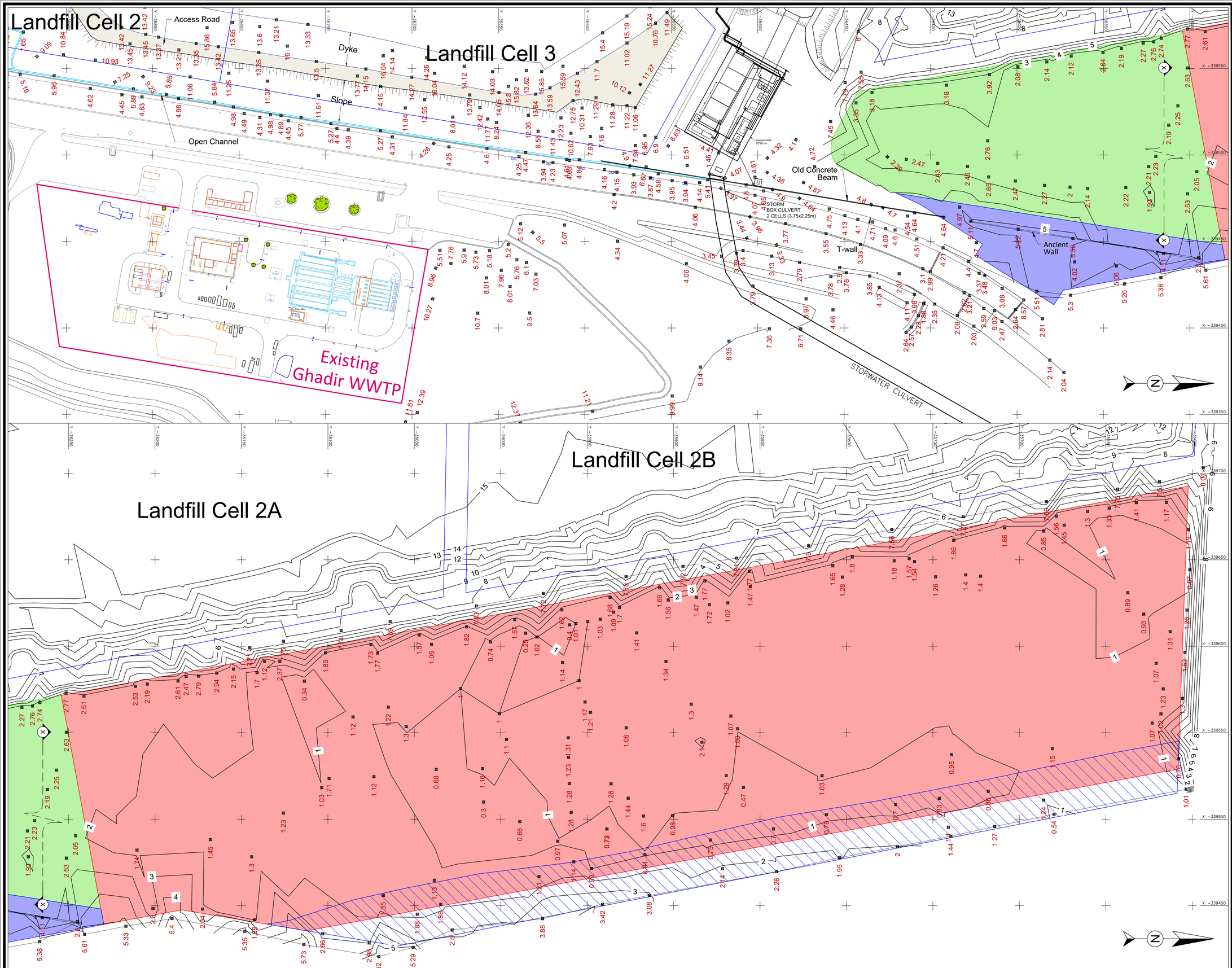
ARTELIA

Topographic Survey

Existing WWTP Site

DRAWN :	H.I
CHECKED :	S.H
APPROVED :	F.L
DATE :	05 March 2025
SCALE :	1:400
FILE NAME	TS-ETP-01

PROJECT	DIVISION	SUB-DIVISION	SHEET	REVISION
L2401DS	TS	ETP	01	0



LEGEND:

- Elev — Survey Point
- Contour Every 1m
- Reclaimed Expansion & Upgrade WWTP Area - Phase 1: 18,226m²
- Reclaimed Expansion & Upgrade WWTP Area - Phase 2: 101,093m²
- WWTP Area Within Setback of 150m From Runway Centerline: 14,870m²
- Ancient Wall Area: 4,726m²

LEBANESE REPUBLIC
COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

Expansion and Upgrade of Al-Ghadir Wastewater Treatment Plant Project – Phase I: Design, Build and Operate, Including Sea Outfalls

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Topographic Survey

New WWTP Site & Connection With Existing WWTP Site

DRAWN :	H.J
CHECKED :	S.H
APPROVED :	F.L
DATE :	05 March 2025
SCALE :	1:1,000
FILE NAME	TS-NTP-02

PROJECT	DIVISION	SUB-DIVISION	SHEET	REVISION
L2401DS	TS	NTP	02	0

Existing WWTP Site

Y =36925
Y =36900
Y =36875
Y =36850
Y =36825
Y =36800
Y =36775
Y =36750
Y =36725
Y =36700
Y =36675
X =339575
X =339550
X =339525
X =339500
X =339475
X =339450
X =339425
X =339400
X =339375

Existing Dirt / Gravel Road
Dyke
Open Canal
Concrete Wall
Slope
Khalde Highway
Ouazai Highway
N

Public W.C
Public WC To be Demolished
Manhole
Old Consultant Building To be Demolished
Old Consultant Building
MH-E2
Gate
EDL Room (NIC)
Gaard House
Boundary Wall Height =2.34
MH-1
Parking
Main Pumping Station
WC
Dry Well
Office
Laboratory
Store
Office
WC
Vent Well
Storage Room
Gate Valve
E.M Flow Meter
Scum and Grease Sump Pit
Grit Classifier
MH-E1
Overflow Manhole
Inlet Manhole
Recieving Chamber
Inlet and Overflow Manholes To be Demolished
Generators Room
Transformers Room
Transformers & Generators Building
Aerated Degritting Tanks
Bar Screens
Screw Pumps Motors & MCC Building
Screw Pumps Lifting Station
Ramp
MF-2
MF-1
Grit Classifier
Elec. Box
Blower Room To be Demolished and Relocated
Blower Room
Elec. MH
MF-4
MF-3
Fuel Tanks To be Demolished and Relocated
Wall Height =1.1
Fuel Tanks
Boundary Wall
Road To be Demolished

LEGEND:

- Structure to be Demolished
- Lamp to be Relocated

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COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

Expansion and Upgrade of Al-Ghadir Wastewater Treatment Plant Project – Phase I: Design, Build and Operate, Including Sea Outfalls

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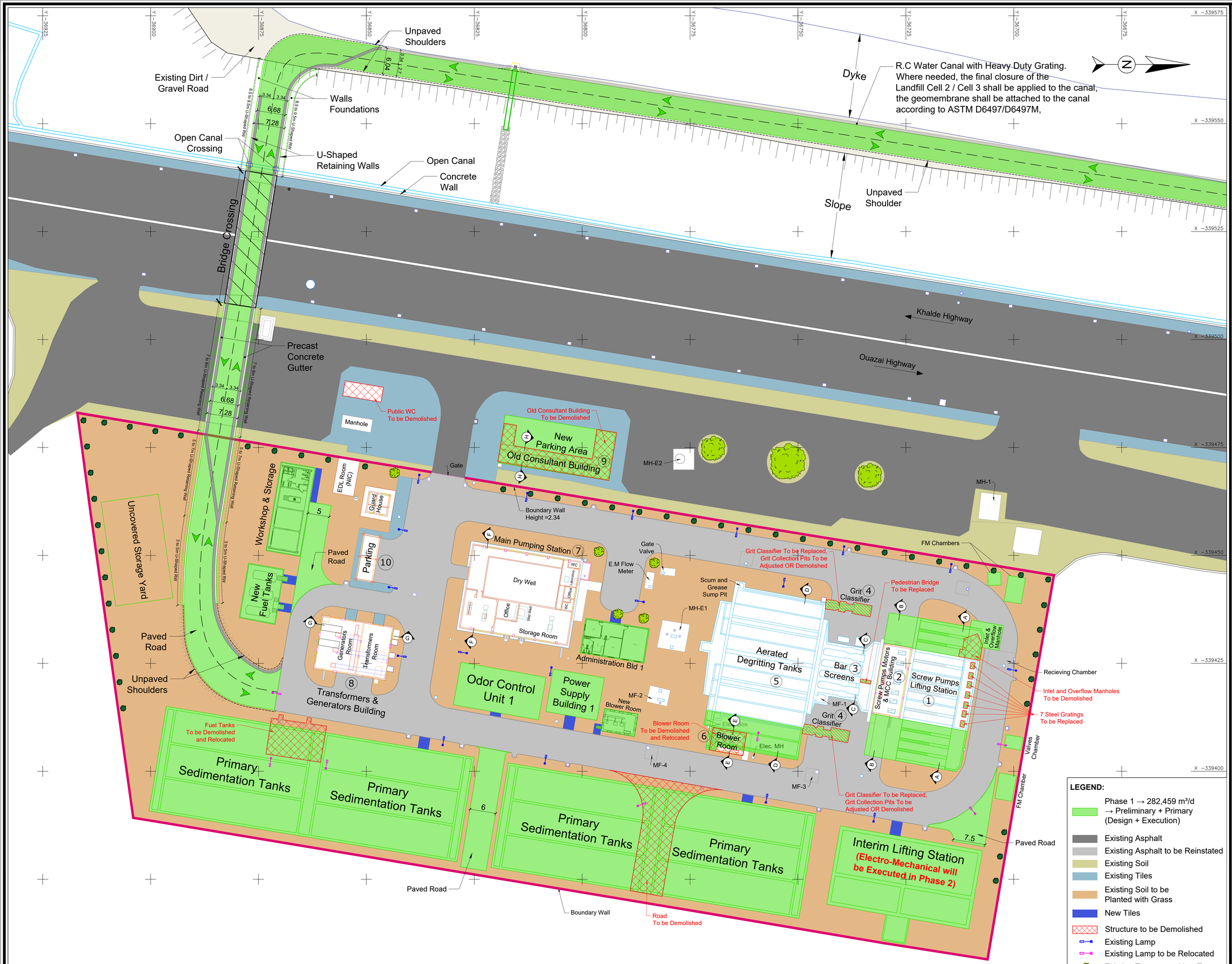
Existing WWTP Site

Demolition Plan

DRAWN :	H.J
CHECKED :	S.H
APPROVED :	F.L
DATE :	05 March 2025
SCALE :	1:400
FILE NAME	ETP-DP-01

PROJECT	DIVISION	SUB-DIVISION	SHEET	REVISION
L2401DS	ETP	DP	01	0

A1 Size



PROPOSED REHABILITATION WORKS:

- For structures Nb. (1) to Nb. (9), refer to Sections (1 of 3), (2 of 3) and (3 of 3).

- Guard House: No rehabilitation works are proposed, since it is fully under rehabilitation by others (Unicef).

For Exterior works:

- **Parking (10):**
  - Demolish existing reinforced concrete beams.
  - Repair reinforced concrete columns.
  - construct new reinforced concrete beams.
  - Construct a steel canopy.
  - Implement a new uncovered parking area at the location of the old consultant building.
- General cleaning and rearrangement for all the existing plant area in coordination with BMLWE, including: Transport not useful materials to approved damping site, rearrange needed useful materials in one location in the WWTP yard, deliver useful materials to other BMLWE stores.
- Demolish and transport to approved damping sites the old public W.C structure.
- Demolish and transport to approved damping site the existing 3 fuel tanks having a capacity of 15m³ each, including concrete ground slab.
- Provide and install 3 new fuel tanks (15m³ each) including reinforced concrete pad, fuel containment and steel canopy.
- Repair and repaint concrete where needed in the exterior open area, excluding the fence (Curbstones, ground slabs, manholes cover slabs, parapets, ...).
- Treat and repaint rusted steel where needed in the exterior open area (Grills, access covers, ...).
- Install new curbstones where needed or replacing damaged parts.
- Install new tiles where needed or replacing damaged parts.
- Provide an asphalt reinstatement layer for all the existing internal roads.
- Provide and install grass inside the plant area, outside roads, tiles areas and constructions.
- Provide and plant a mix of about 50 trees (Palm, pin, cyprus, juniper, ...).
- Replace exterior lighting projectors with new waterproof projectors (LED projectors (10) and solar powered projectors (20)) including repair, where needed the existing pylones and fixation.
- Achieve a full maintenance of the existing security / control systems, and replacement where needed, including cameras, cables, software...

NOTES:

- The presented dimensions and the above mentioned proposed rehabilitation works shall be confirmed by the bidder during the bid phase through site visit for a better evaluation of the existing status, consequently enabling more accurate estimation of the quantities and costs.

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Expansion and Upgrade of Al-Ghadir Wastewater Treatment Plant Project – Phase I: Design, Build and Operate, Including Sea Outfalls

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Existing WWTP Site

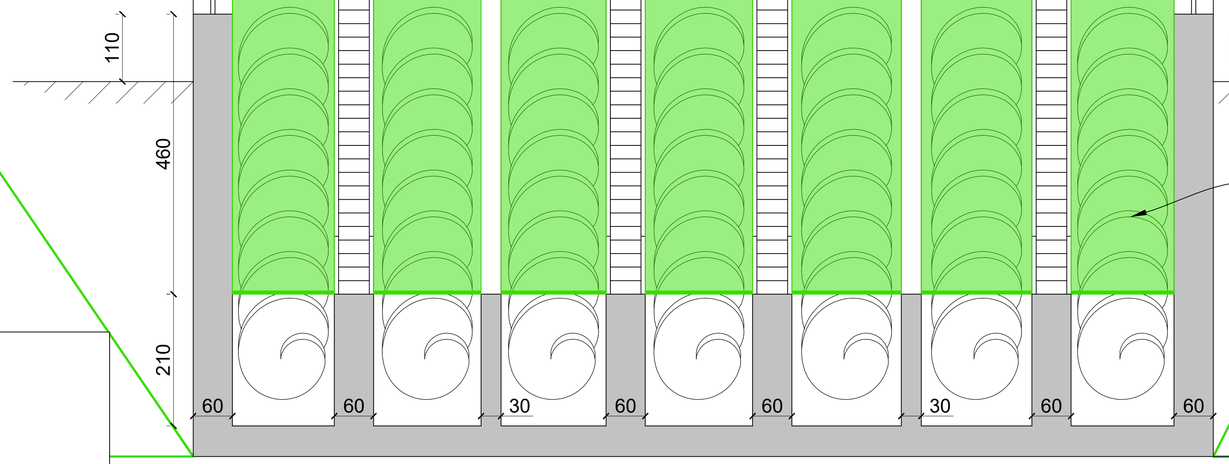
Rehabilitation & Expansion Plan

DRAWN :	H.J
CHECKED :	S.H
APPROVED :	F.L
DATE :	05 March 2026
SCALE :	1:400
FILE NAME	ETP-REP-02

PROJECT	DIVISION	SUB-DIVISION	SHEET	REVISION
L2401DS	ETP	REP	02	0

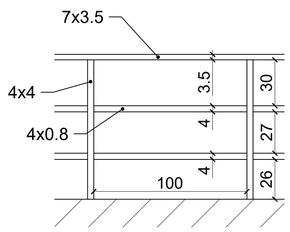
Extension for 4 Additional Screw Pumps with all related needed construction works (Basin, covered channels, stairs, handrails, gratings, ...)

Extension for 3 Additional Screw Pumps with all related needed construction works (Basin, covered channels, demolition of existing inlet and overflow chambers, connection with the main inlet sewer and overflow pipes, stairs, handrails, gratings, ...)

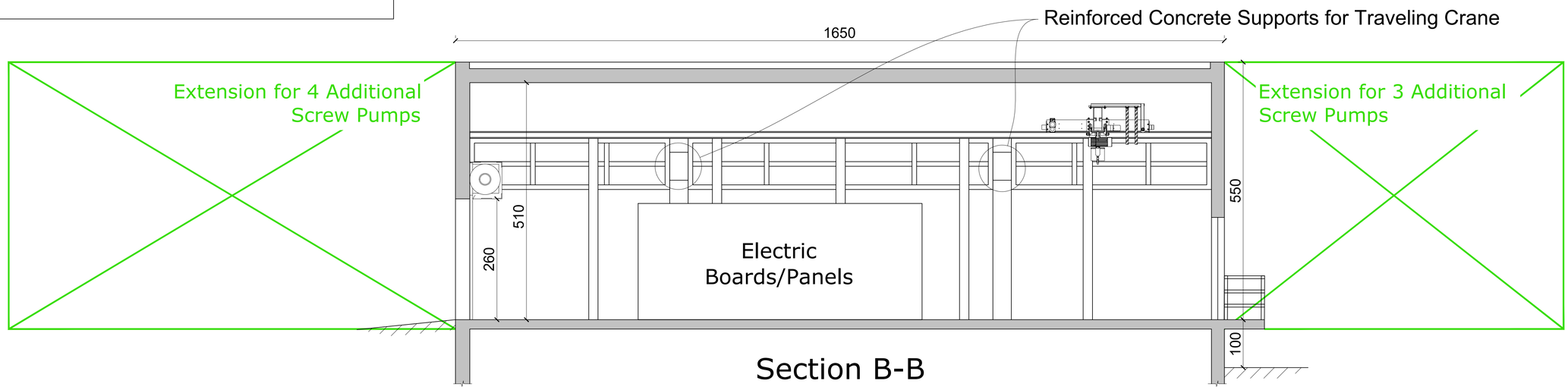


Section A-A

(1) Screw Pumps Lifting Station (To be Rehabilitated & Extended)



Typical Existing Handrail Detail



Section B-B

(2) Screw Pumps Motors & MCC Building (To be Rehabilitated & Extended)

PROPOSED REHABILITATION WORKS:

1. Screw Pumps Lifting Station:
   - Concrete repairs (Stairs, walls, roof slab beside penstocks).
   - Repaint concrete faces (Down to 4.8m depth).
   - Replace steel gratings (7).
   - Aluminum covers to be installed for odor control.
   - Extension for 7 new screw pumps (including all needed earthworks, concrete works, finishing works, and MEP works).

2. Screw Pumps Motors & MCC Building:
   - Concrete repairs (Columns, beams, traveling crane supports, ...)
   - Repaint interior and exterior faces.
   - Replace earthing and lightning system.
   - Replace lamps and fixtures.
   - Install new fire extinguishers.
   - Extension for 7 new screw pumps (including all needed earthworks, concrete works, finishing works, and MEP works).

NOTES:

- The rehabilitation of the hand rails and all metallic outdoor, steel cabinets for electrical control panels, doors and windows and louvers are not included in the proposed works since they are involved in the project under implementation by Unicef.
- The presented dimensions and the above mentioned proposed rehabilitation works shall be confirmed by the bidder during the bid phase through site visit for a better evaluation of the existing status, consequently enabling more accurate estimation of the quantities and costs.
- All Dimensions are in centimeters.

LEBANESE REPUBLIC
COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

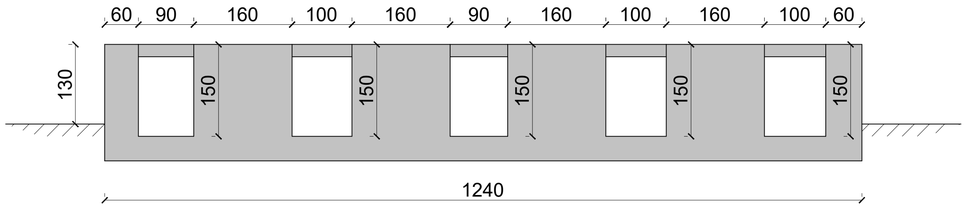
Expansion and Upgrade of Al-Ghadir Wastewater Treatment Plant Project – Phase I: Design, Build and Operate, Including Sea Outfalls

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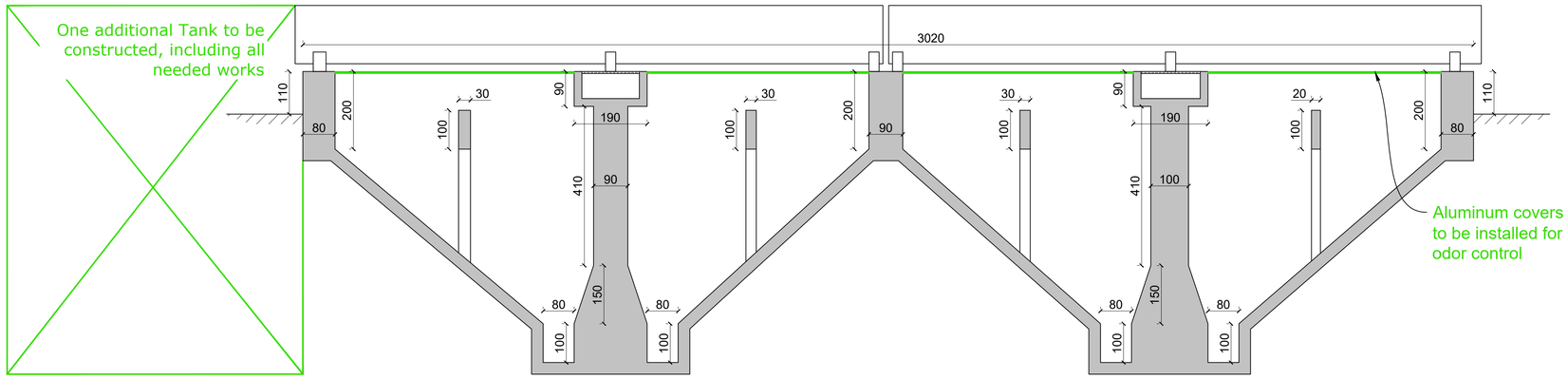
Existing WWTP Site	DRAWN : H.I
	CHECKED : S.H
	APPROVED : F.L
	DATE : 05 March 2025
	SCALE : 1:50; 1:20
Sections (1 of 3)	FILE NAME ETP-S1-03

PROJECT	DIVISION	SUB-DIVISION	SHEET	REVISION
L2401DS	ETP	S1	03	0



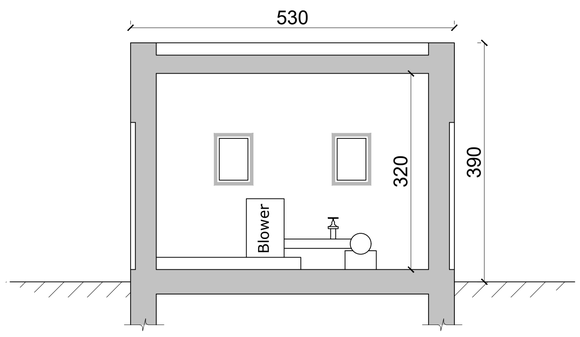
Section C-C
(3) Bar Screens (To be Rehabilitated)

Scale : 1:50



Section D-D
(5) Aerated Degritting Tanks (To be Rehabilitated & Extended)

Scale : 1:75



Section E-E
(6) Blower Room
(To be Demolished /Relocated)

Scale : 1:50

PROPOSED REHABILITATION WORKS:

3. Bar Screens:
   - Replace pedestrian concrete bridge.
   - Replace concrete cover slab part above ventilation grill.
   - Repair concrete and plaster.
   - Install missing gratings.
   - Treat / repair and repaint rusted gratings.
   - Aluminum covers to be installed for odor control.

4. Grit Classifiers:
   - Demolish existing two grit classifiers structures.
   - Provide minor civil works as needed for the installation of new metallic grit classifiers.

5. Aerated Degritting Tanks:
   - Demolish existing blower room located beside the aerated degritting tanks.
   - Construct an additional aerated degritting tank, at the eastern side, as extension to the existing 4 tanks structure (including all needed earthworks, concrete works, finishing works, and MEP works).
   - Repair concrete (at rails fixations for movable bridge, ...)
   - Replace concrete pedestals (3 units) for movable bridge braking system.
   - Paint internal and external concrete faces.
   - Install new steel gratings where missing in the existing structure.
   - Treat and paint rusted steel (channels gratings covers, rails and fixations, ...).
   - Aluminum covers to be installed for odor control.

6. Blower Room:
   - Demolish existing blower room building including:
     - Transport to approved damp site all not useful material.
     - Store in the plant or deliver to other BMLWE stores needed material.
   - Construct a new blower room, with same dimensions, at new location as shown on the plan view drawing (including all needed earthworks, concrete works, finishing works, and MEP works).

NOTES:

- The rehabilitation of the hand rails and all metallic outdoor, steel cabinets for electrical control panels, doors and windows and louvers are not included in the proposed works since they are involved in the project under implementation by Unicef.
- The presented dimensions and the above mentioned proposed rehabilitation works shall be confirmed by the bidder during the bid phase through site visit for a better evaluation of the existing status, consequently enabling more accurate estimation of the quantities and costs.
- All Dimensions are in centimeters.

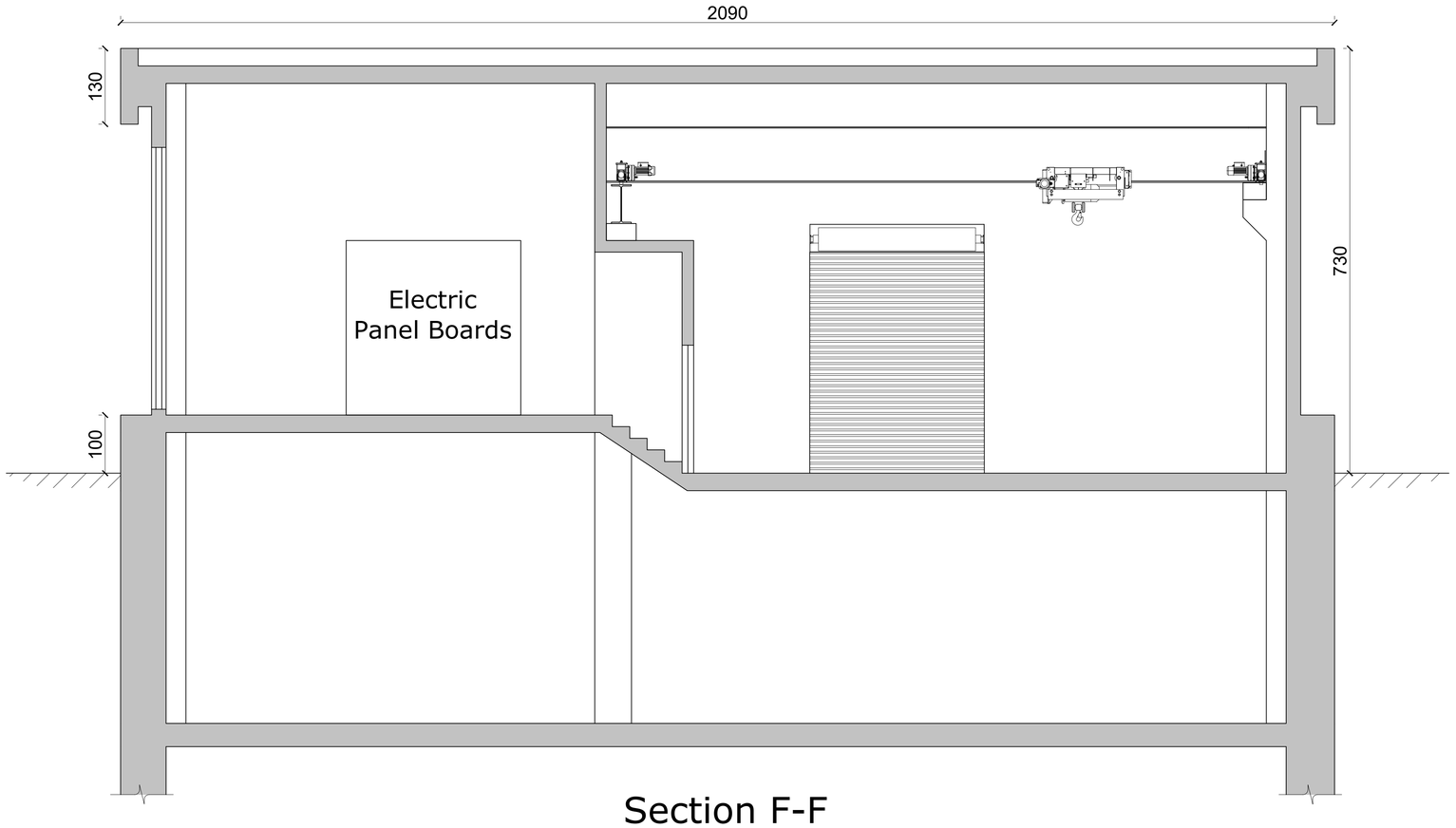
LEBANESE REPUBLIC
COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

Expansion and Upgrade of Al-Ghadir Wastewater Treatment Plant Project – Phase I: Design, Build and Operate, Including Sea Outfalls

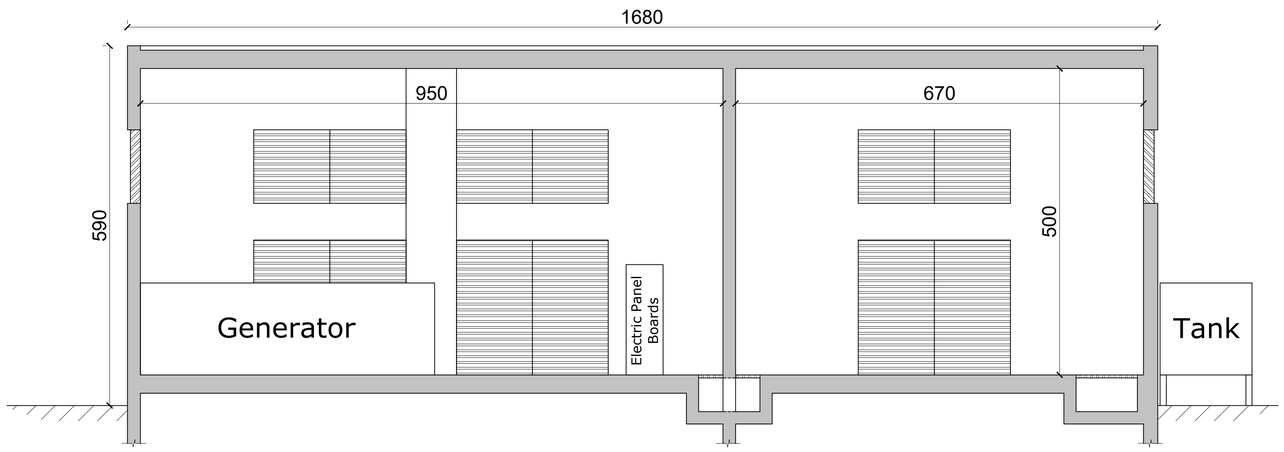
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Existing WWTP Site	DRAWN : H.I CHECKED : S.H APPROVED : F.L DATE : 05 March 2025 SCALE : 1:50; 1:75; 1:50
Sections (2 of 3)	FILE NAME ETP-S2-04

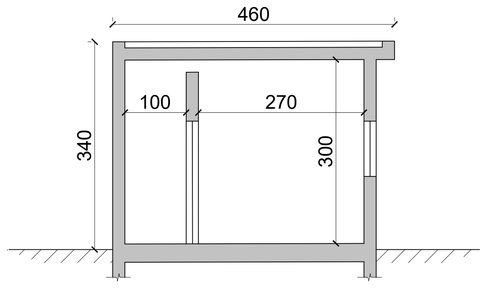
PROJECT	DIVISION	SUB-DIVISION	SHEET	REVISION
L2401DS	ETP	S2	04	0



Section F-F
(7) Main Pumping Station (To be Rehabilitated)



Section G-G
(8) Power Supply Building 1
(To be Rehabilitated)



Section H-H
(9) Old Consultant Building
(To be Demolished)

PROPOSED REHABILITATION WORKS:

7. Main Pumping Station:
   - Repair concrete in the exterior aspects (Columns, walls, roof drainage elements, ...)
   - Demolish the damaged roof parapet and reconstruct a roof parapet starting from the roof ceiling level, excluding the current downward parapet extension.
   - Repaint exterior concrete faces
   - Repair and extend roof waterproofing to the upper parapet faces.
   - Replace lamps and fixtures.
   - Replace all earthing and lightning system.
   - Replace rusted fire extinguisher units (10 new units).
   - Replace defective ACs (4 new units).

8. Power Supply Building 1:
   - Minor concrete repair where needed.
   - Repaint interior and exterior concrete and plaster faces.
   - Replace solid steel channels covers (10).
   - Treat and paint existing solid steel channels covers.
   - Treat and paint rusted steel fuel tanks.
   - Replace all earthing and lightning system.
   - Replace lamps and fixtures.
   - Install new fire extinguishers.

9. Old Consultant Building:
   - Demolish the old consultant building and transport to approved damping sites all not useful / damaged material or equipment.
   - Store in the plant or deliver to other BMLWE stores any useful material or equipment.
   - Because of the danger structural condition, special safety measures shall be provided during all above works.

NOTES:

- The rehabilitation of the hand rails and all metallic outdoor, steel cabinets for electrical control panels, doors and windows and louvers are not included in the proposed works since they are involved in the project under implementation by Unicef.
- The presented dimensions and the above mentioned proposed rehabilitation works shall be confirmed by the bidder during the bid phase through site visit for a better evaluation of the existing status, consequently enabling more accurate estimation of the quantities and costs.
- All Dimensions are in centimeters.

LEBANESE REPUBLIC
COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

Expansion and Upgrade of Al-Ghadir Wastewater Treatment Plant Project – Phase I: Design, Build and Operate, Including Sea Outfalls

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Existing WWTP Site	DRAWN : H.J CHECKED : S.H APPROVED : F.L DATE : 05 March 2025 SCALE : 1:50
Sections (3 of 3)	FILE NAME ETP-S3-05

PROJECT	DIVISION	SUB-DIVISION	SHEET	REVISION
L2401DS	ETP	S3	05	0

LEGEND:

Phase 1 → 282,459 m³/d
→ Preliminary + Primary (Design + Execution)

Unpaved Shoulders
Existing Dirt / Gravel Road
Walls Foundations
Open Canal Crossing
U-Shaped Retaining Walls
Open Canal
Concrete Wall
Dyke
R.C Water Canal with Heavy Duty Grating. Where needed, the final closure of the Landfill Cell 2 / Cell 3 shall be applied to the canal, the geomembrane shall be attached to the canal according to ASTM D6497/D6497M,
Slope
Unpaved Shoulder
Bridge Crossing
Precast Concrete Gutter
Khalde Highway
Ouazai Highway
Uncovered Storage Yard
Workshop & Storage
EDL Room (NIC)
Guard House
Paved Road
Parking
New Fuel Tanks
Generators Room
Transformers Room
Transformers & Generators Building
Gate
New Parking Area
Boundary Wall Height =2.34
MH-E2
Main Pumping Station
Dry Well
Office
Storage Room
Laboratory
WC
Wet Well
E.M Flow Meter
Gate Valve
Scum and Grease Sump Pit
MH-E1
Administration Bld 1
Odor Control Unit 1
Power Supply Building 1
MF-2
New Blower Room
MF-1
MF-3
MF-4
Aerated Degritting Tanks
Grit Classifier
Bar Screens
Elec. Box
Elec. MH
Screw Pumps Motors & MCC Building
Screw Pumps Lifting Station
Inlet & Overflow Manhole
Recieving Chamber
FM Chambers
MH-1
Valves Chamber
FM Chamber
Primary Sedimentation Tanks
Primary Sedimentation Tanks
Primary Sedimentation Tanks
Primary Sedimentation Tanks
Interim Lifting Station
(Electro-Mechanical will be Executed in Phase 2)
Paved Road
Boundary Wall
Manhole

LEBANESE REPUBLIC
COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

Expansion and Upgrade of Al-Ghadir Wastewater Treatment Plant Project – Phase I: Design, Build and Operate, Including Sea Outfalls

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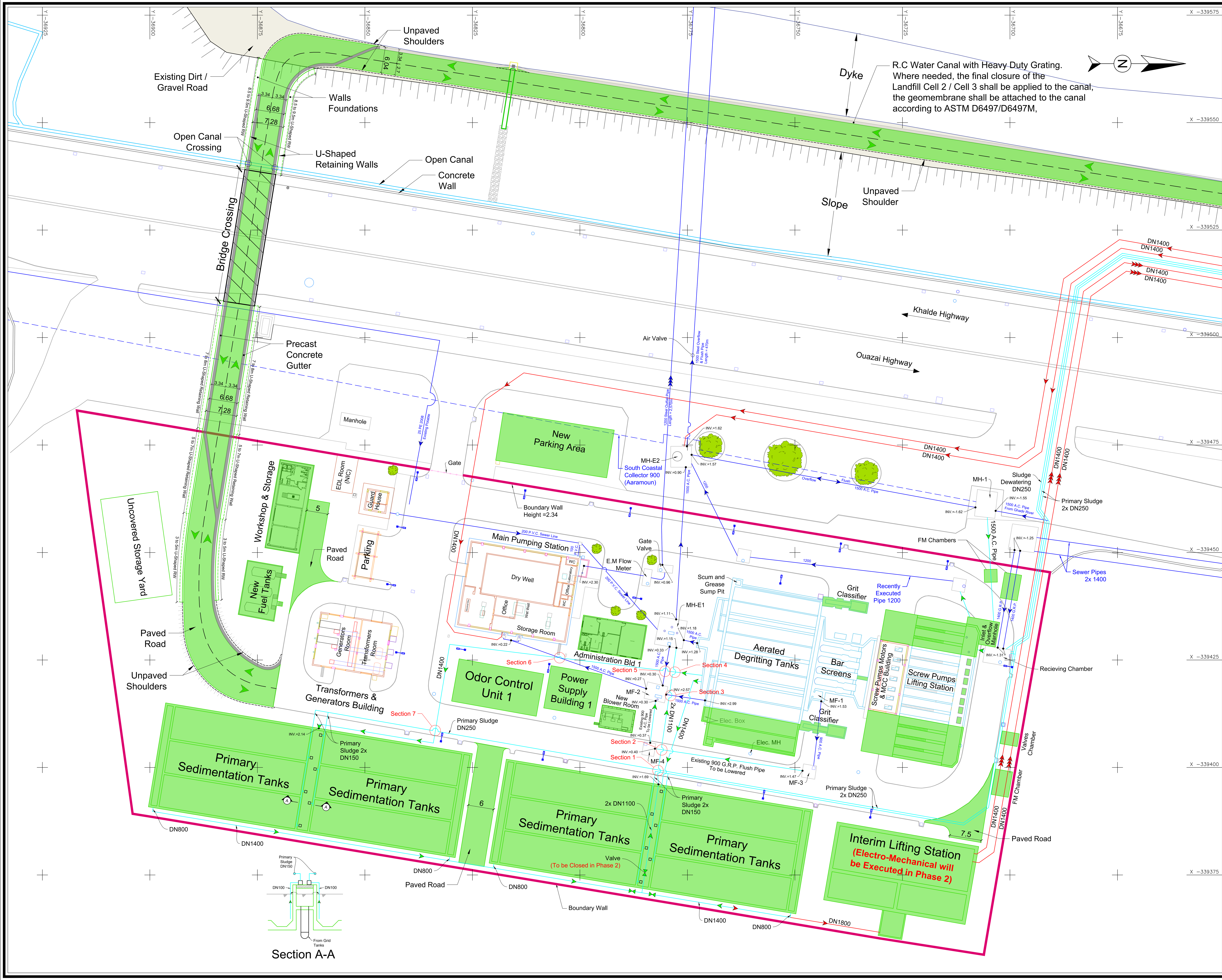
ARTELIA

Existing WWTP Site

Setting Out Plan

DRAWN :	H.J
CHECKED :	S.H
APPROVED :	F.L
DATE :	05 March 2025
SCALE :	1:400
FILE NAME	ETP-SOP-06

PROJECT	DIVISION	SUB-DIVISION	SHEET	REVISION
L2401DS	ETP	SOP	06	0



LEGEND:

- Phase 1 → 282,459 m³/d → Preliminary + Primary (Design + Execution)
- Existing Pipe
- Proposed Pipe (Phase 1) (Design + Execution)
- Proposed Pipe (Phase 2) (Design Only)

NOTES:

1. The data (levels, diameters, materials, ...) of the existing pipes need to be verified by the Contractor on site prior to execution (Trial pits, ...).

LEBANESE REPUBLIC COUNCIL FOR DEVELOPMENT AND RECONSTRUCTION

Expansion and Upgrade of Al-Ghadir Wastewater Treatment Plant Project – Phase I: Design, Build and Operate, Including Sea Outfalls

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Existing WWTP Site

General Piping Layout

DRAWN :	H.I
CHECKED :	S.H
APPROVED :	F.L
DATE :	05 March 2025
SCALE :	1:400
FILE NAME	ETP-GPL-07

PROJECT	DIVISION	SUB-DIVISION	SHEET	REVISION
L2401DS	ETP	GPL	07	0

A1 Size