

DAMAGED ROADS CLEARING & RESTORATION

in South Lebanon *"Marjeyoun Caza"*

Tender Documents
VOLUME 4:
TENDER DRAWINGS
(REV. 03)

AUGUST 2026

ASSOCIATED CONSULTING ENGINEERS (ACE) S.A.L.





DAMAGED ROADS CLEARING & RESTORATION

in South Lebanon ***“Marjeyoun Caza”***

Tender Documents
VOLUME 4:
TENDER DRAWINGS
CAZA MARJEYOUN
(REV. 03)

DRAWING No.

DRAWING TITLE

GENERAL

GN-LOD-001	LOT 4-LIST OF DRAWINGS
GN-MA-002	NABATIYEH CAZA

STANDARD DETAILS

PAVEMENT REPAIR DETAILS

DET-TS-001	TYPICAL CROSS SECTION AND DETAILS FOR ROAD RESTORATION
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TRAFFIC SAFETY & CONTROL DEVICES DETAILS

DET-SA-001	TEMPORARY TRAFFIC SIGNING AND SAFETY DEVICES DETAILS (SHEET 1 OF 2)
DET-SA-002	TEMPORARY TRAFFIC SIGNING AND SAFETY DEVICES DETAILS (SHEET 2 OF 2)
DET-SA-003	SIGNING & MARKING TYPICAL DETAILS-SPECIAL MARKING & REFLECTIVE DETAILS
DET-SA-004	SIGNING & MARKING TYPICAL DETAILS-SIGNS MOUNTING DETAILS

CONCRETE & INCIDENTAL REPAIR DETAILS

DET-IR-001	SAFETY BARRIERS DETAILS-SAFETY BARRIERS DETAILS-STEEL GUARDRAIL (SHEET 1 OF 4)
DET-IR-002	SAFETY BARRIERS DETAILS-SAFETY BARRIERS DETAILS-STEEL GUARDRAIL (SHEET 2 OF 4)
DET-IR-003	SAFETY BARRIERS DETAILS-SAFETY BARRIERS DETAILS-STEEL GUARDRAIL (SHEET 3 OF 4)
DET-IR-004	SAFETY BARRIERS DETAILS-SAFETY BARRIERS DETAILS-STEEL GUARDRAIL (SHEET 4 OF 4)

KEY PLAN

NOTES

LEGEND

FINAL TENDER DOCUMENTS

TENDER DRAWINGS

FILE	DATE	REVISION	DESCRIPTION	CHECKED	PMANAGER

REPUBLIC OF LEBANON



COUNCIL FOR
DEVELOPMENT &
RECONSTRUCTION

المكتب الهندسي الاستشاري - ايس سي بيروت
ASSOCIATED CONSULTING ENGINEERS BEIRUT

DAMAGED ROADS
CLEARING & RESTORATION
in South Lebanon (Marjeyoun Caza)

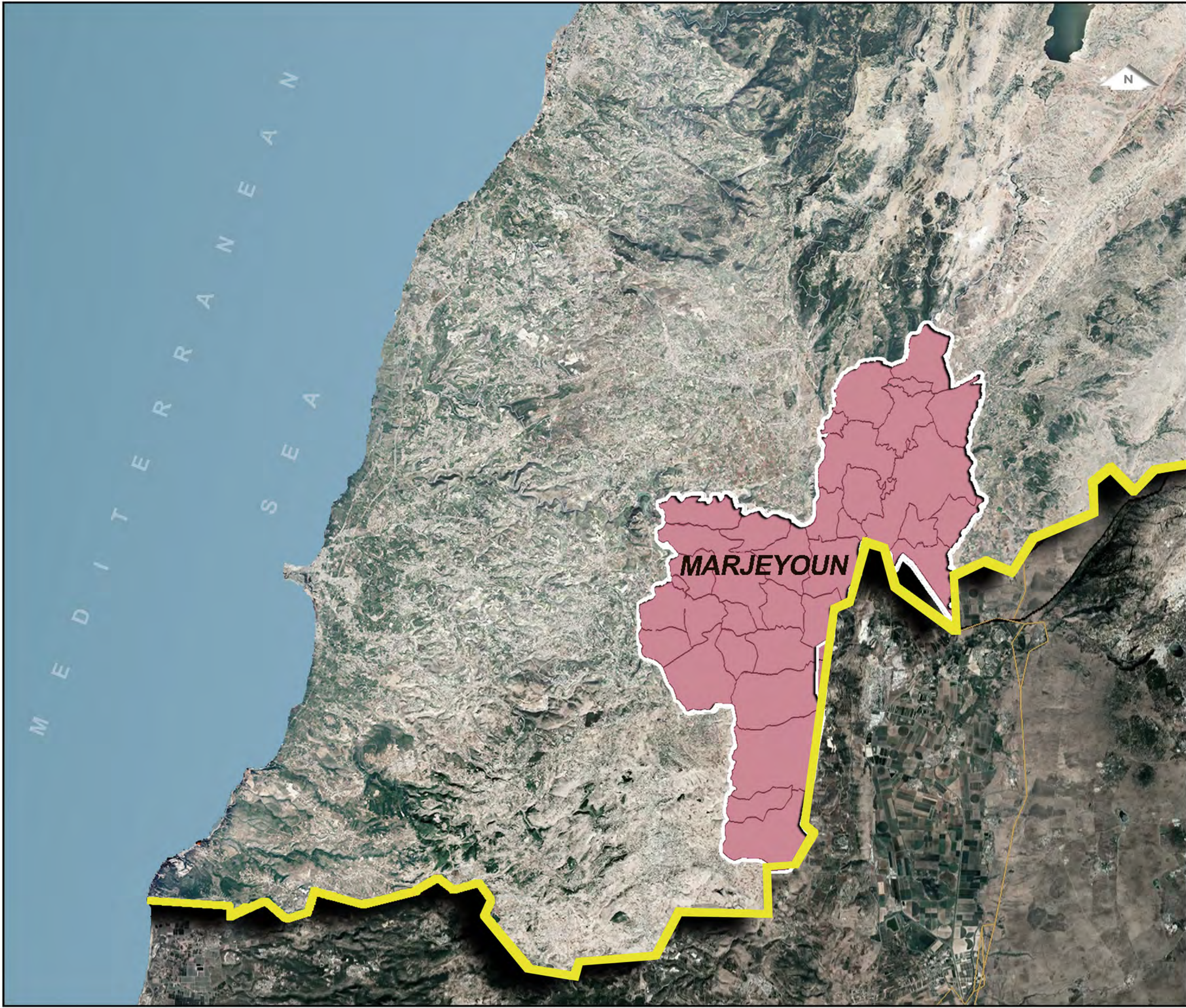
LIST OF DRAWINGS

DATE AUGUST 2026

SCALE N.T.S

Tender Drawings

DRAWING NO. GN-LOD-001 REV 03



KEY PLAN

NOTES

The locations of the Works shown on the Contract Drawings are indicative and provided for Tender purposes only. Prior to the commencement of the Works, the Contractor shall carry out his own site survey to ascertain the exact extents and types of the required restoration works. In addition, the Contractor shall prepare the necessary shop drawings showing the precise locations and types of restoration works, all in accordance with the Contract requirements. Such Shop Drawings shall be submitted to the Engineer for approval within thirty (30) days from the date of the Notice of Commencement of the relevant activity, and no Works shall commence until such approval is obtained.

LEGEND

CLASS A ROADS

AREAS UNDER SCOPE OF WORKS IN MARJEYOUN CAZA

FINAL TENDER DOCUMENTS

TENDER DRAWINGS

No.	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER

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**DAMAGED ROADS
CLEARING & RESTORATION
in South Lebanon (Marjeyoun Caza)**

MARJEYOUN CAZA
CLASS A ROADS
General Layout Plan

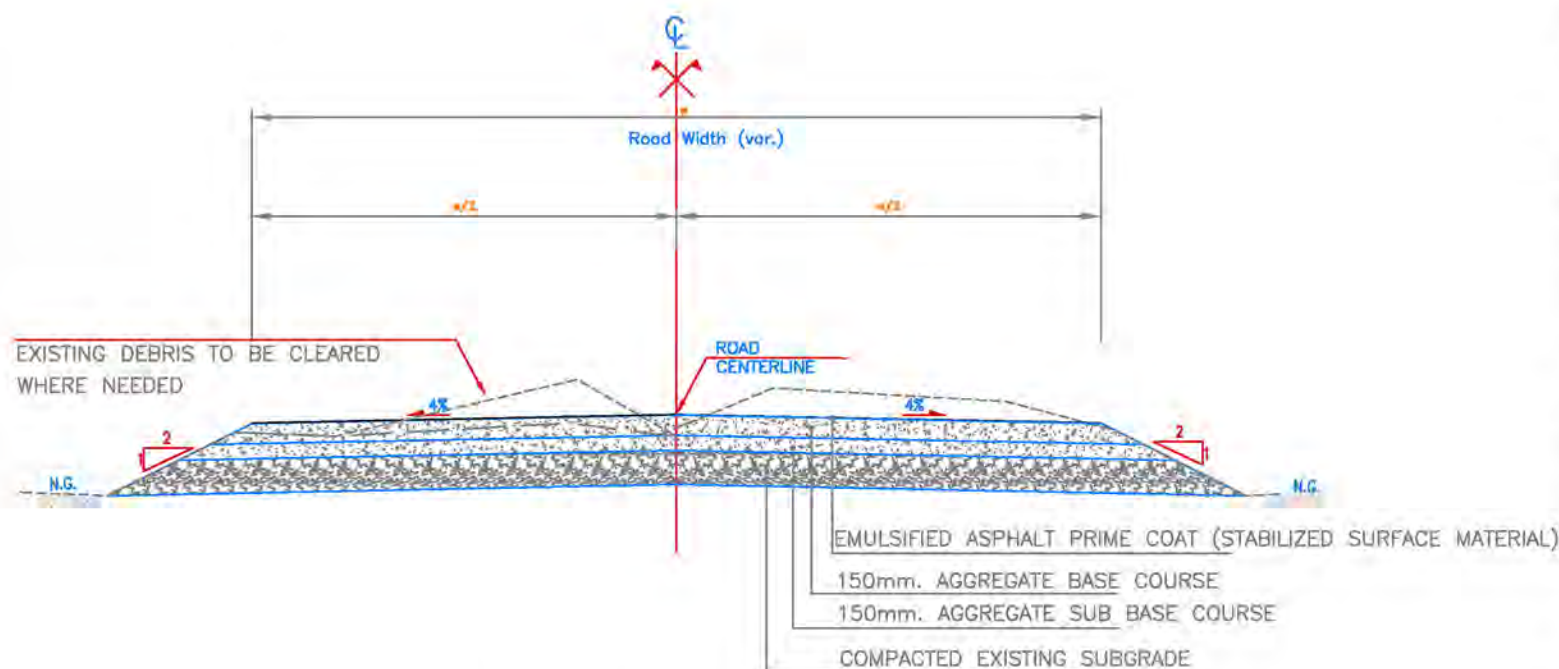
DATE	August 2026
SCALE	
TENDER DRAWINGS	
DRAWING No.	GN-MA-002
REV	03



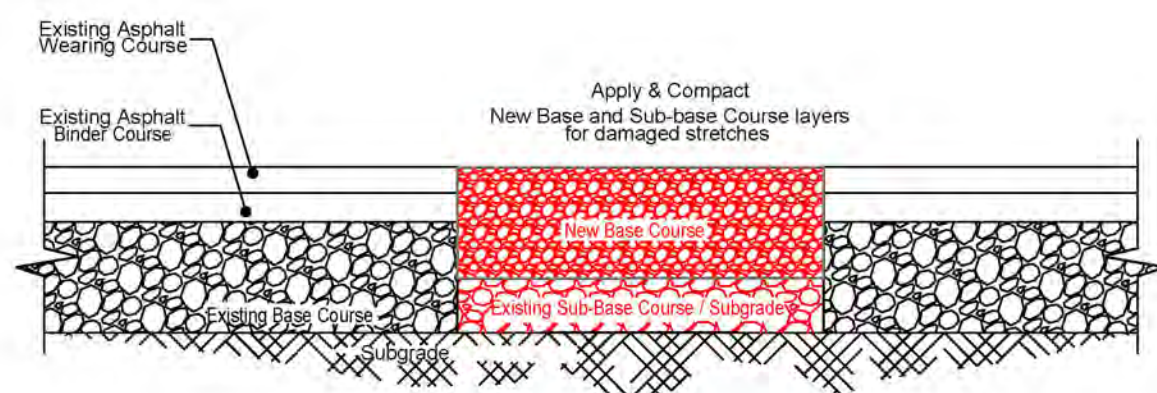
DAMAGED ROADS CLEARING & RESTORATION

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Tender Documents
VOLUME 4:
TENDER DRAWINGS
STANDARD DETAILS
(REV. 03)



STABILIZED ROAD TYPICAL CROSS SECTION



STABILIZED ROAD LONGITUDINAL SECTION

Construction Methodology:

• Step 1: Reopen Roads

Reopen the partially or fully closed roads by removing debris and clearing the roadway. Carry out clearing works where required to restore basic accessibility.

• Step 2: Detailed Inspection

Conduct a thorough inspection of the damaged roads, including all necessary on-site laboratory tests, to determine:

- The exact location of the damaged pavement layers.
- The extent of required road reconstruction through the stabilization process, as detailed in the subsequent steps.

• Step 3: Construction for Gravel Layers

For roads requiring reconstruction, carry out the following:

- Excavation:** Excavate up to 30 cm depth from the existing road level / natural ground level (NGL), removing all damaged pavement layers and subgrade soils. Dispose of the excavated material at an approved dump site.
- Subgrade Preparation:** Inspect the top surface of the subgrade layer and conduct necessary tests to identify any loose material. Remove and replace unsuitable material with suitable borrow material having a CBR > 25.
- Compaction:** Mechanically compact the top layer of the subgrade as specified in the technical specifications.
- Base Course & Sub-base:** Supply and compact a 15 cm thick base course layer and a 15cm sub-base layer in accordance with the technical specifications.

• Step 4: Roadway Finishing

- Shape the roadway to the recommended crown, typically a 2% cross slope on each side, and apply Prime Coat Layer.
- Apply 5 cm of Asphalt Binder Course Layer to enhance Durability and extend the service life of the Roadway.

KEY PLAN

NOTES

- Do not scale from the drawing.
- All dimensions are in millimeters.
- All dimensions and levels to be verified on site by the contractor or his sub-contractor & approved by the engineer.
- The drawing should be read in conjunction with other relevant drawings and all relevant sections of specifications.

LEGEND

FINAL TENDER DOCUMENTS

TENDER DRAWINGS

No.	DATE	REVISION	DESCRIPTION	CHECKED	P-MANAGER

REPUBLIC OF LEBANON

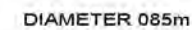


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DAMAGED ROADS CLEARING & RESTORATION in South Lebanon (Marjeyoun Caza)

TYPICAL CROSS SECTION Typical Cross Section & Detail For Road Stabilization	DATE August 2026 SCALE TENDER DRAWINGS DRAWING No. DET-TS-001 REV 03
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SUPPORT IS YELLOW AND SYMBOLS, LETTERS AND LISTEL ARE BLACK



DATE	August 2026
SCALE	
TENDER DRAWINGS	
DRAWING No.	REV
DET-SA-001	03

WARNING SIGNS TYPE AK

SIDE 0.70 m



AK2



AK3



AK4



AK5



200 m

AK3+KM1



AK14



AK17



AK22



AK14+KM9+KM2
EXAMPLE

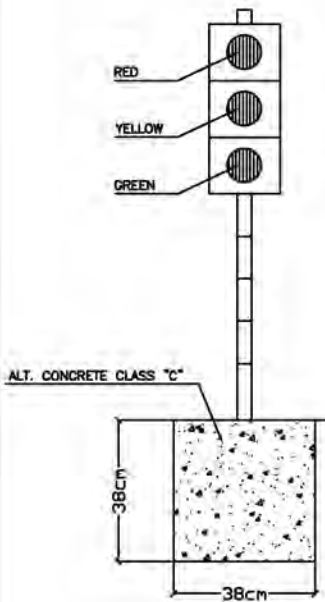


AK5+KM9

TEMPORARY LIGHTS

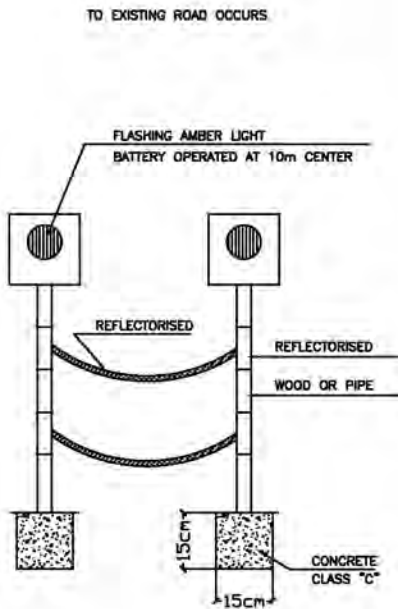
TEMPORARY TRAFFIC LIGHTS

AT START AND AT END OF EVERY DIVERSION OR TEMPORARY WORK BATTERY OPERATED OR BY GENERATOR



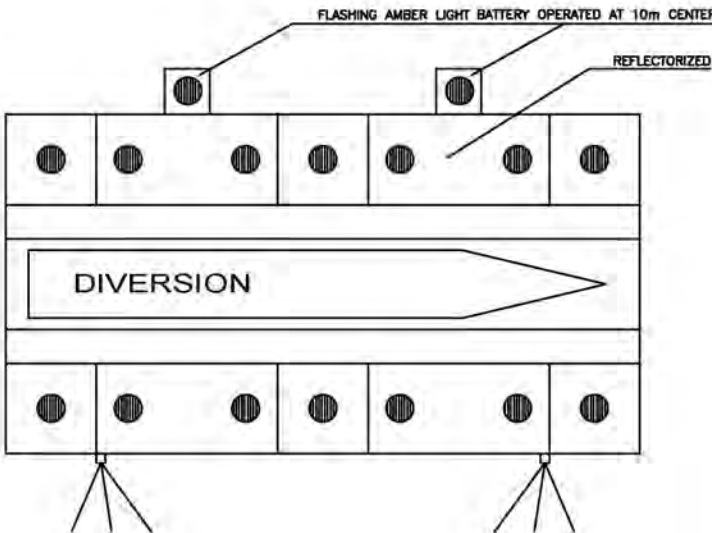
TEMPORARY DELINEATORS

TO BE PLACED ALL THE LENGTH OF ANY DIVERSION OR WHEREVER WORK ADJACENT TO EXISTING ROAD OCCURS



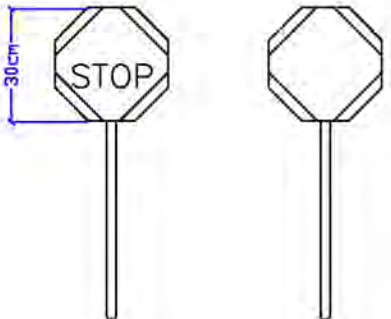
BARRICADE

AT DIVERSION AT EACH SIDE

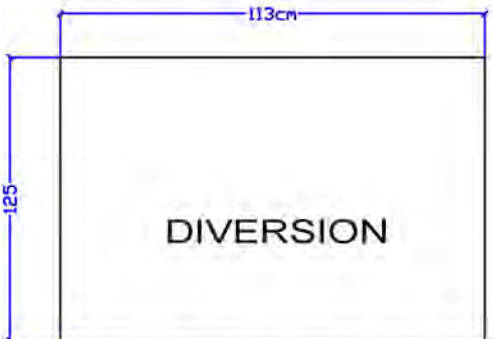


BY FLAGMEN

STANDARD SIGNS PADDLE



WARNING SIGNS TYPE KC



PROVIDE AT 500m ,200m AND 100m LEFT AND RIGHT

DIVERSION SIGN



DEAD END SIGN



PROVIDE AT 500m ,200m AND 100m LEFT AND RIGHT

WORKS AHEAD SIGN

KEY PLAN

NOTES

- All dimensions are in centimeters unless otherwise indicated.
- Temporary signboards shall be conform with specifications
- The contractor shall prepare and submit the temporary detours drawings for approval by the engineer.

LEGEND

FINAL TENDER DOCUMENTS

TENDER DRAWINGS

No	DATE	REVISION	DESCRIPTION	CHECKED	P-MANAGER

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DAMAGED ROADS CLEARING & RESTORATION in South Lebanon (Marjeyoun Caza)

STANDARD DETAILS
Temporary Traffic Signaling
& Safety Devices Details
(Sheet 2 of 2)

DATE	August 2026
SCALE	
TENDER DRAWINGS	
DRAWING No.	DET-SA-002
REV	03

MARKER POST

KEY PLAN

MARKER POST AT INTERSECTION J3
(WITH REFLECTORISING CLIP)



METALLIC PILE



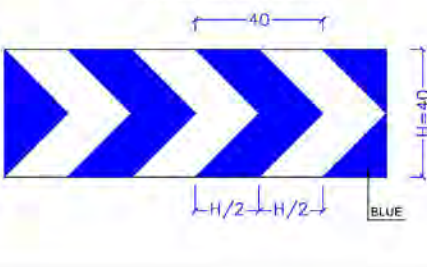
MARKER POST J1
(WITHOUT REFLECTORISING CLIP)



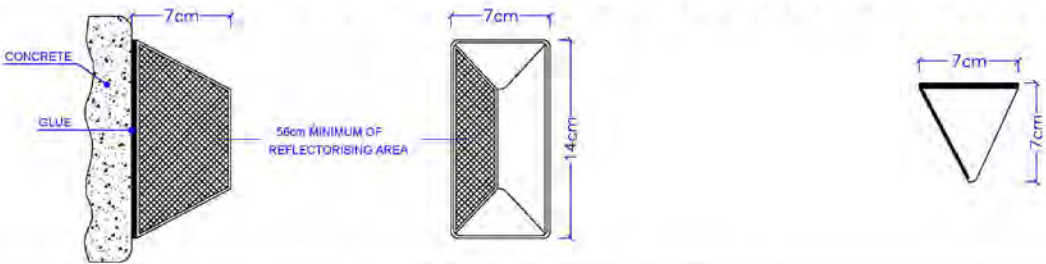
MARKER POST J5



MARKER POST J4



1 - WAY RETROREFLECTIVE MARKER



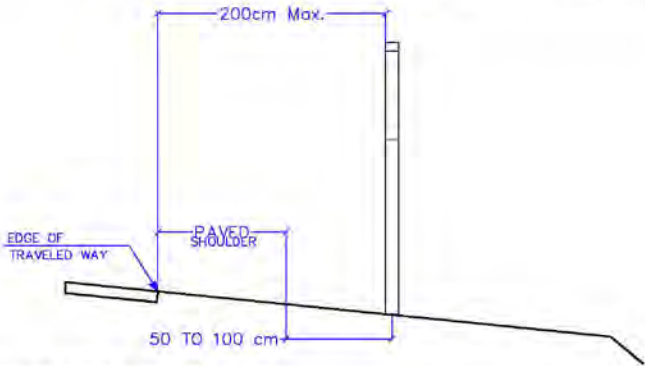
DELINEATORS



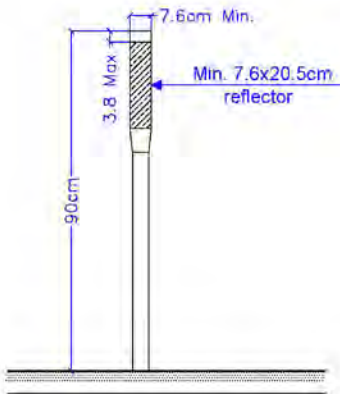
S: DELINEATOR SPACING
R: RADIUS OF BEND

R(m)	600	300	270	240	210	180	120	90	75	60	50	45	30	15
S(m)	50	28	26.5	23	21	19	17	14.5	13	11	10	9	7.5	6

DELINEATOR SPACING AT HORIZONTAL CURVES



DELINEATOR POSITIONING



POST MOUNTED DELINEATOR

NOTES

- Unless otherwise mentioned, all dimension are in centimeters.
- All paint marking shall be thermoplastic type.

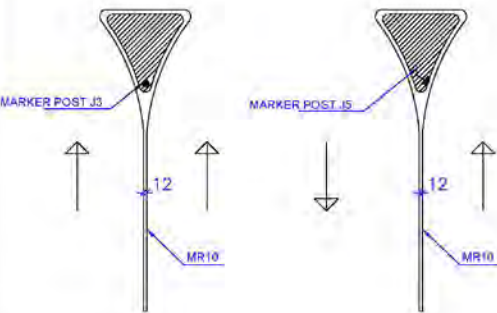
LEGEND

FINAL TENDER DOCUMENTS

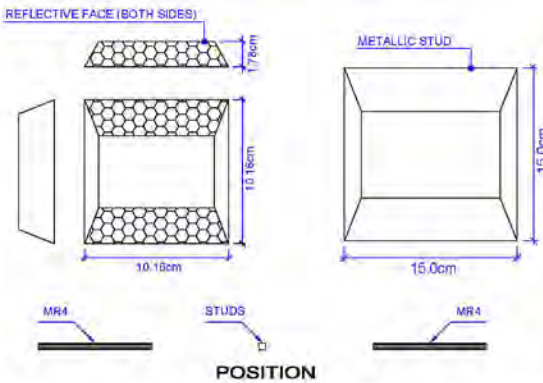
TENDER DRAWINGS

No	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER

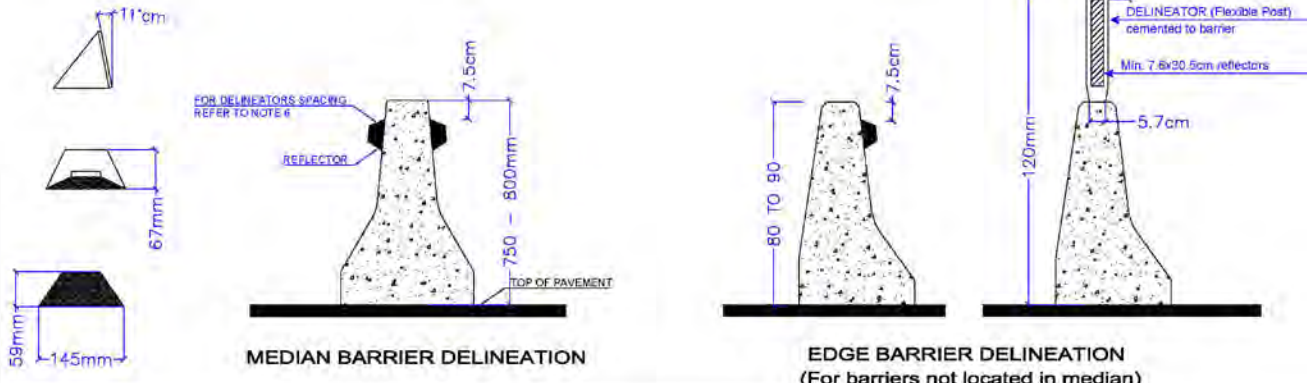
DIRECTIONAL ISLANDS



PAVEMENT STUDS



NEW JERSEY BARRIER REFLECTOR



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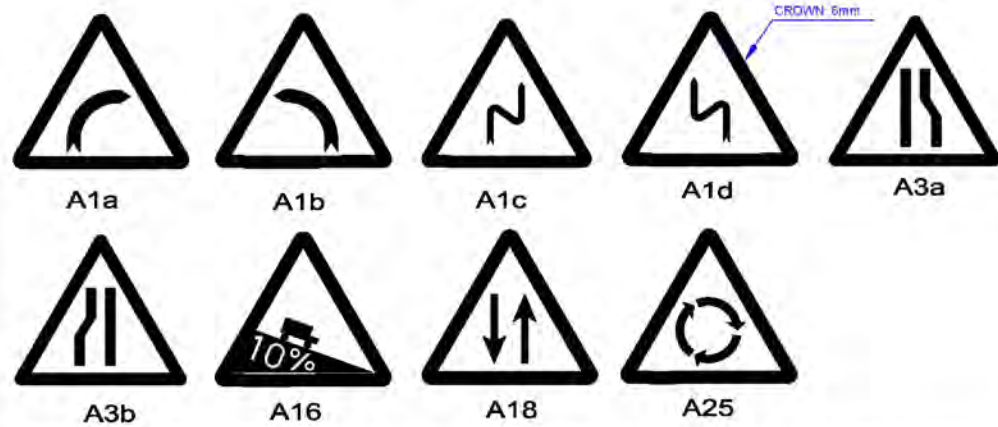
DAMAGED ROADS
CLEARING & RESTORATION
in South Lebanon (Marjeyoun Caza)

STANDARD DETAILS

SIGNING & MARKING TYPICAL DETAILS
SPECIAL MARKING & REFERENCE DETAILS

DATE	AUGUST 2026
SCALE	As Shown
TENDER DRAWINGS	
DRAWING No.	DET-SA-003
REV	03

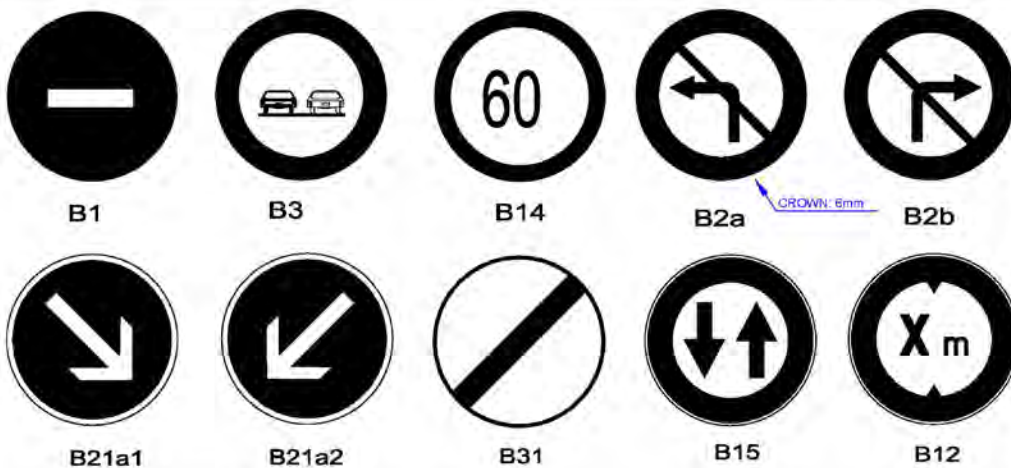
DANGER SIGNBOARDS



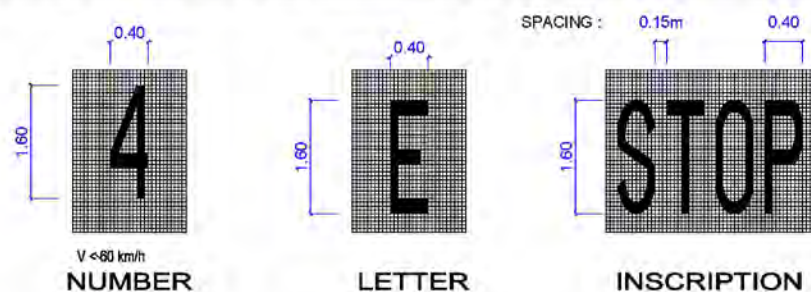
INTERSECTION SIGNBOARDS



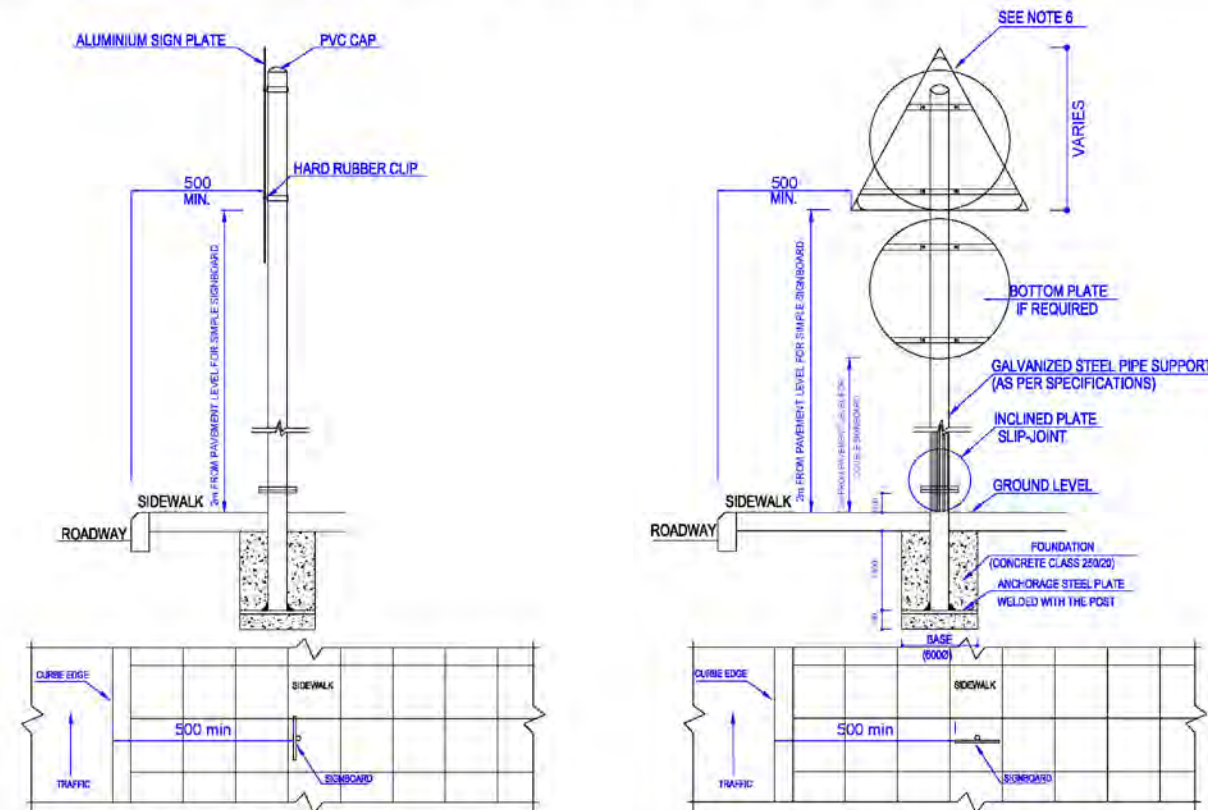
PRESCRIPTION SIGNBOARDS



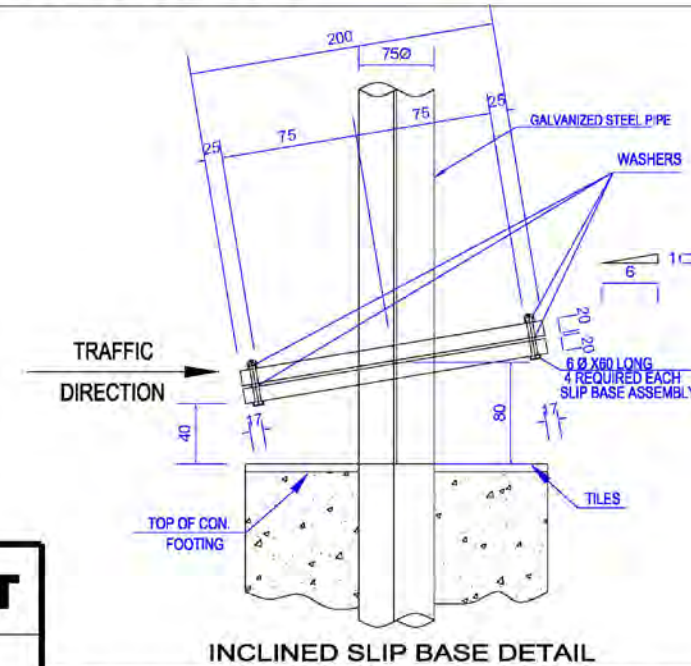
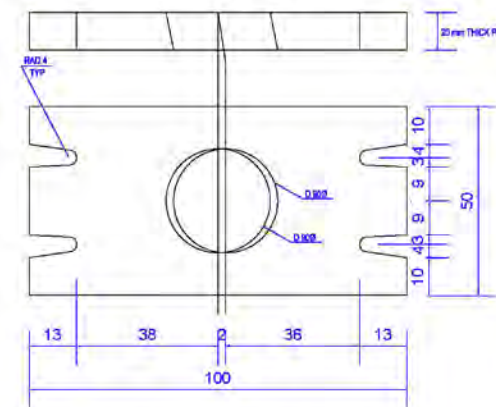
NUMBERS AND LETTERS EXAMPLES



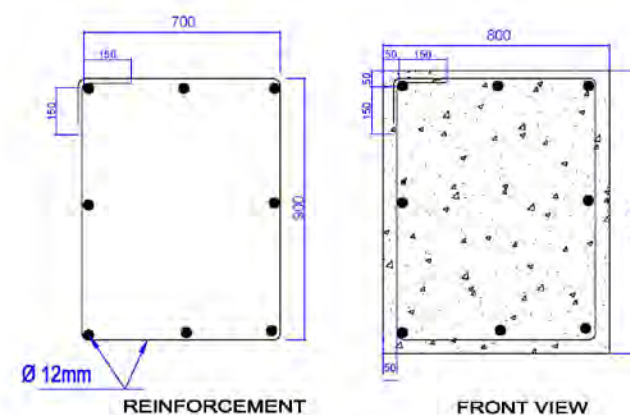
SIGN MOUNTED (SINGLE OR DOUBLE)



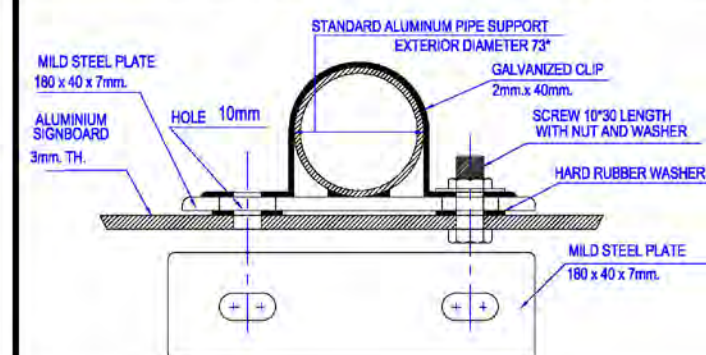
SLIP BASE DETAILS



FOOTING REINFORCEMENT



ASSEMBLING FOR FIXATION



KEY PLAN

NOTES

- 1- THE SIGNBOARDS USED WILL BE IN CONFORMITY WITH EUROPEAN CODES.
- 2- THE SIGNBOARDS DIMENSIONS IN (mm) ARE:
- TRIANGULAR
- CIRCULAR
- SQUARE
- OCTAGON
- 3- THE WHITE SURFACE FOR SIGNBOARDS IS REFLECTORISING.
- 4- IT IS TO BE INSURED THAT THE SOIL BEARING CAPACITY BELOW THE FOUNDATION IS 100 KNm² OR HIGHER.
- 5- FACTOR OF SAFETY IS TO BE 1.50 AGAINST OVERTURNING:
700 (SIDE)
650 (DIAMETER)
500 (SIDE)
600 (APOTHEME)
- 6- STEEL REINFORCEMENT FOR FOOTING SHALL CONFORM TO ASTM A615, GRADE 60 OR EQUIVALENT.

LEGEND

FINAL TENDER DOCUMENTS

TENDER DRAWINGS

No	DATE	REVISION	DESCRIPTION	CHECKED	P. MANAGER

REPUBLIC OF LEBANON



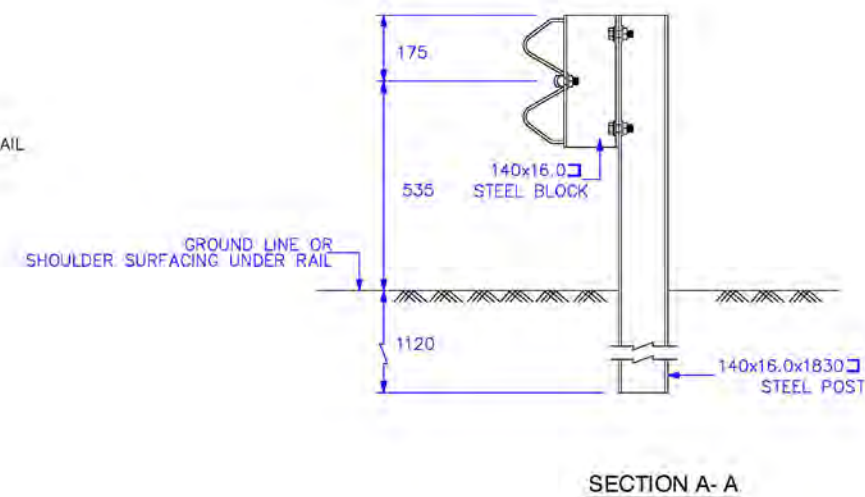
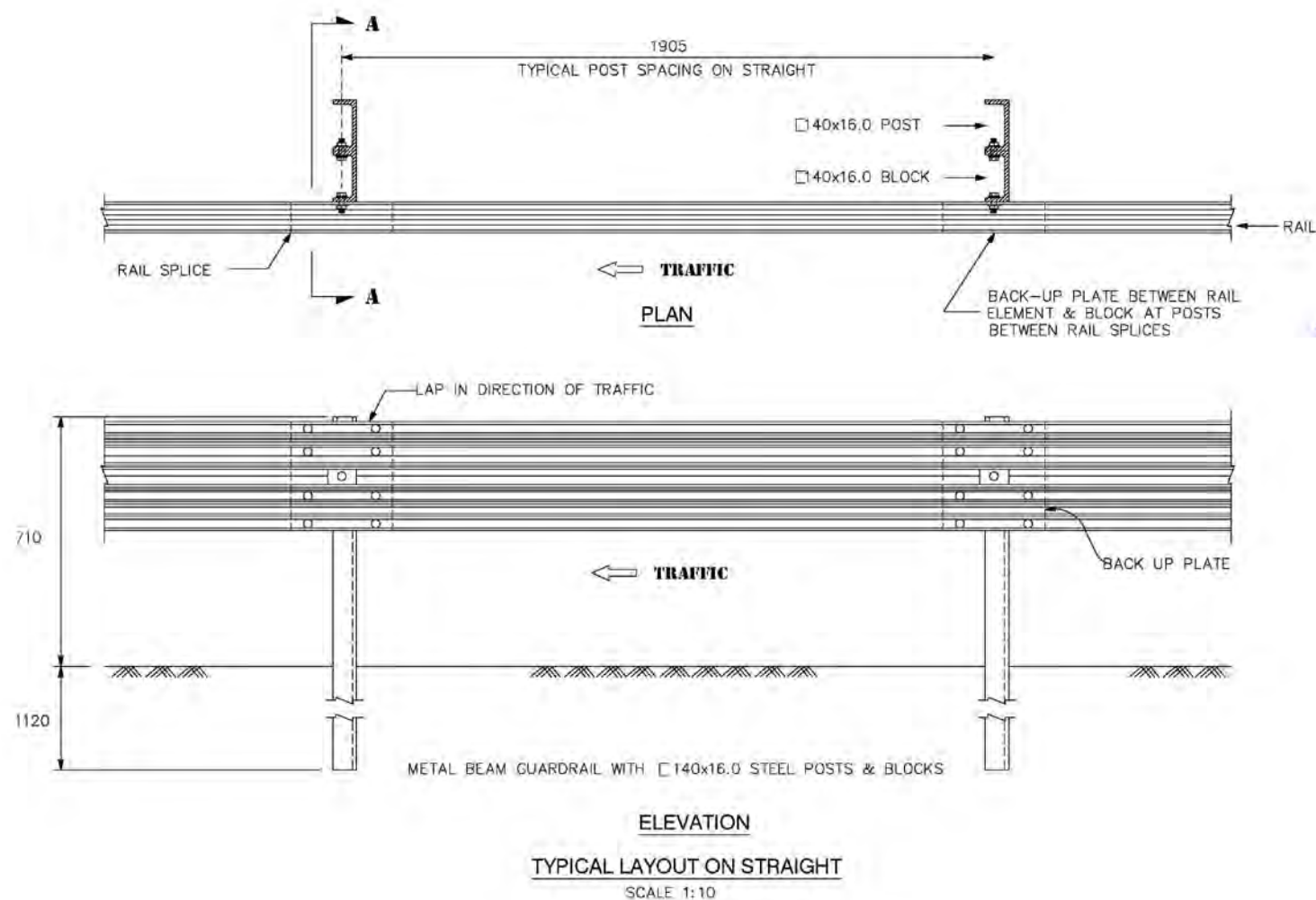
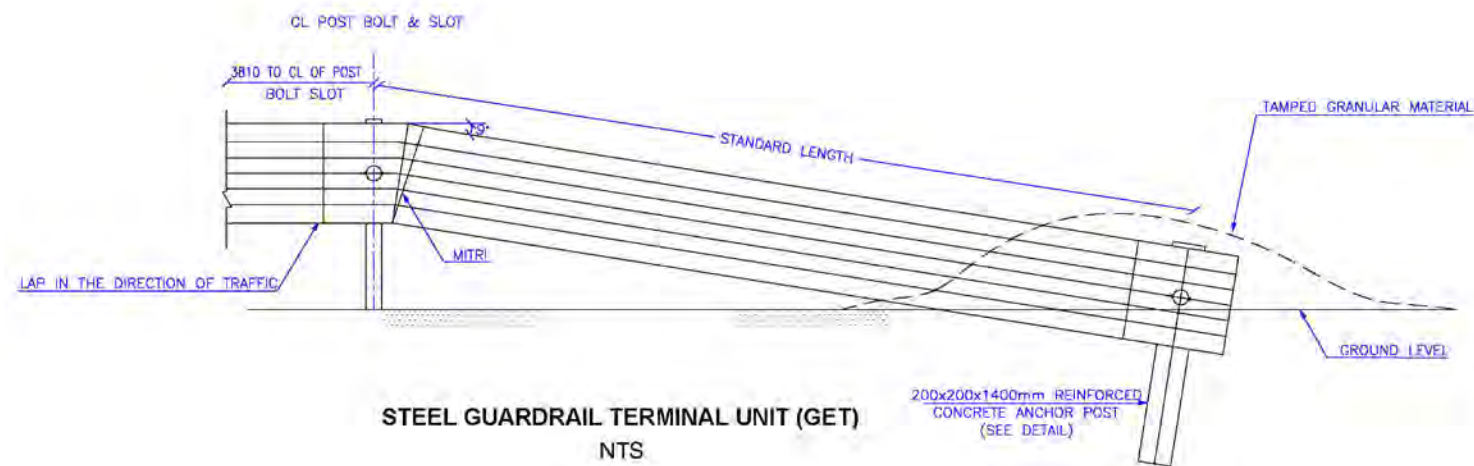
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DAMAGED ROADS CLEARING & RESTORATION in South Lebanon (Marjeyoun Caza)

STANDARD DETAILS

SIGNING & MARKING TYPICAL DETAILS
SIGNS MOUNTING DETAILS

DATE: AUGUST 2026
SCALE: As Shown
TENDER DRAWINGS
DRAWING No. DET-SA-004
REV 03



NOTES

- Unless otherwise mentioned, all dimensions are in millimeters.
- The rail and posts of parapet shall be closed sections presenting no visible seam welds or exposed bolt heads.
- The contractor shall ensure the proper installation of the posts and rails using tools and procedure recommended by the manufacturer.
- Execution contractor has to submit shop drawings related to new safety barriers, showing exact locations & Levels, for engineer approval.
- Alignment of new safety barriers shall be parallel to the road alignment.
- Top Level of new safety barriers shall, at some degrees, compensate any weaving in the existing road profile.
- Barrier terminal unit to be provided at the edge of new safety barriers as directed by the engineer.
- Parabolic flare shall be used, where possible, on main road only

FINAL TENDER DOCUMENTS

TENDER DRAWINGS

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**DAMAGED ROADS
CLEARING & RESTORATION**
in South Lebanon (Marjeyoun Caza)

STANDARD DETAILS

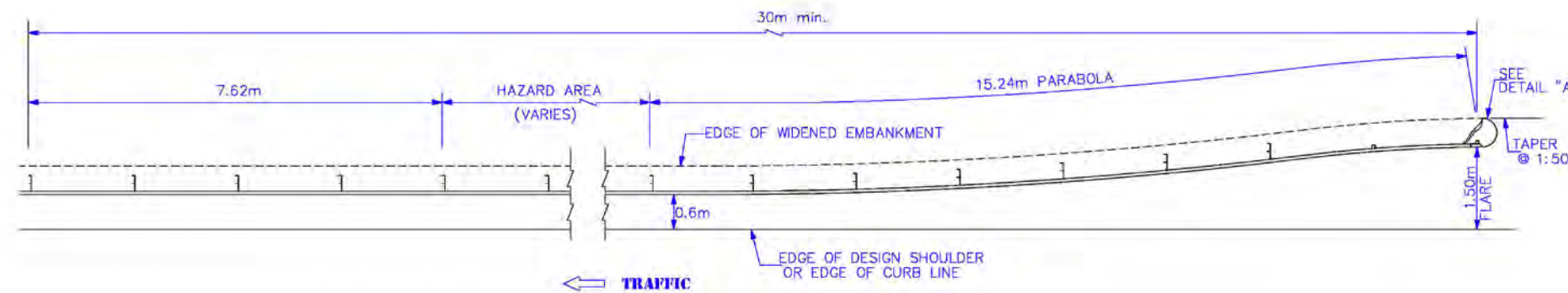
PAVEMENT REPAIR DETAILS
SAFETY BARRIERS DETAILS
STEEL GUARDRAIL (SHEET 1 OF 4)

DATE AUGUST 2026

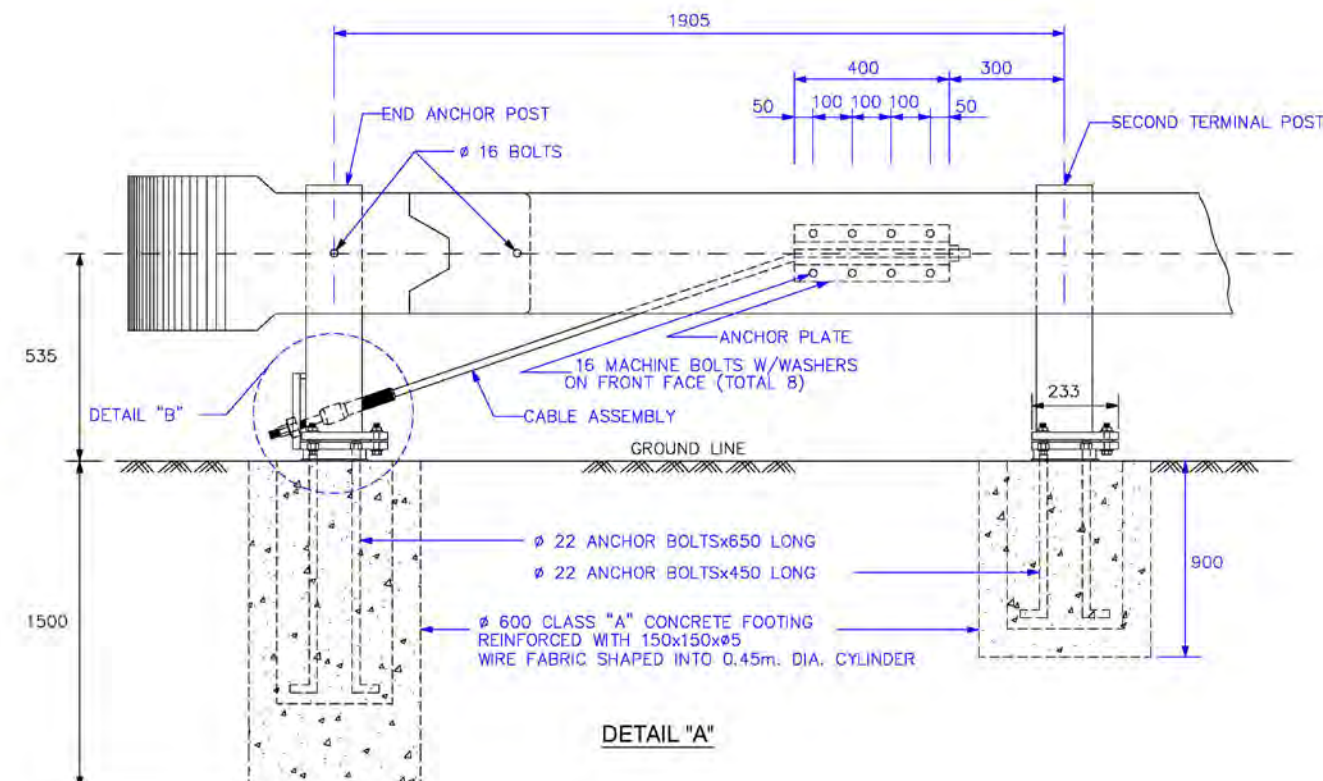
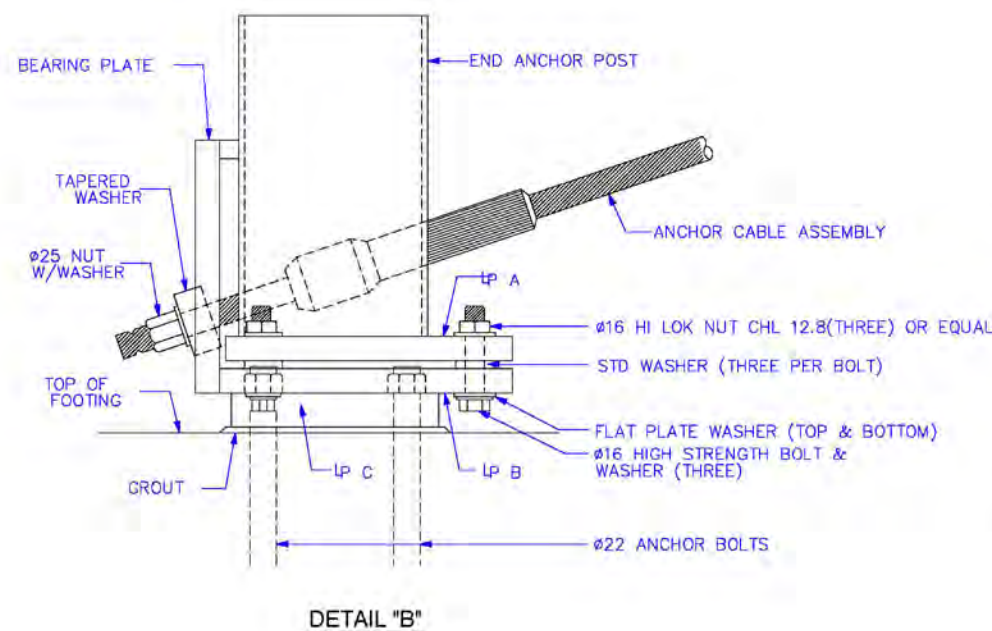
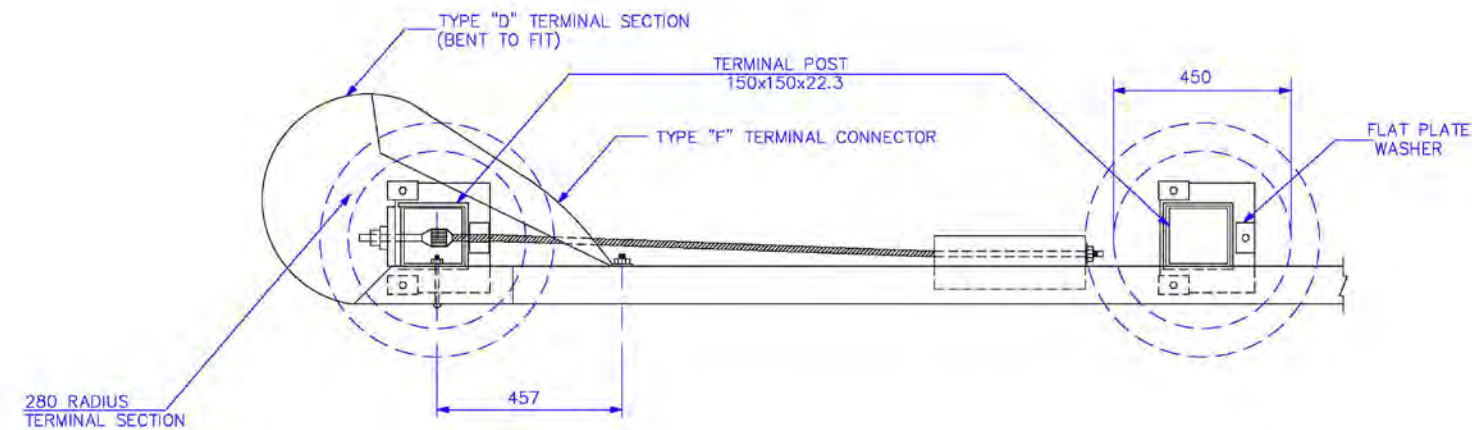
SCALE As Shown

TENDER DRAWINGS

DRAWING No. DET-IR-001 REV 03



TYPICAL PLACEMENT DETAIL
(N.T.S.) (DIMENSIONS IN METERS)



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REPUBLIC OF LEBANON



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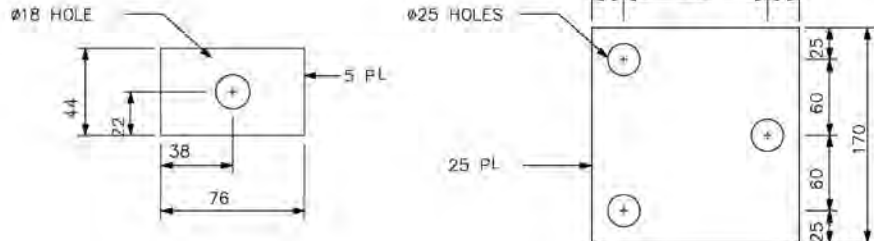
DAMAGED ROADS CLEARING & RESTORATION in South Lebanon (Marjeyoun Caza)

STANDARD DETAILS

PAVEMENT REPAIR DETAILS
SAFETY BARRIERS DETAILS
STEEL GUARDRAIL (SHEET 2 OF 4)

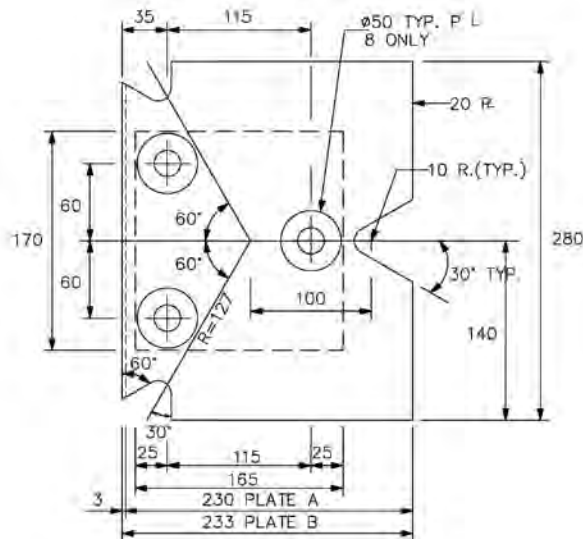
DATE AUGUST 2026
SCALE As Shown
TENDER DRAWINGS
DRAWING No. DET-1R-002
REV 03

RAIL, POST, BLOCK & PLATE DETAILS

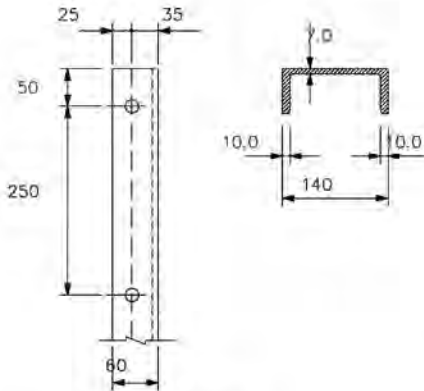


FLAT PLATE WASHER

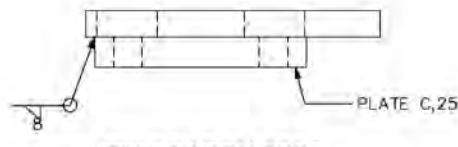
BASE PLATE C



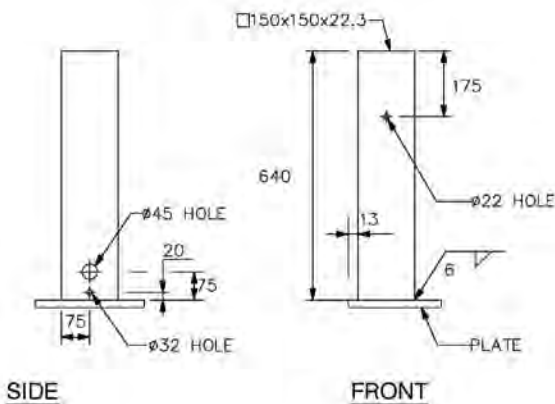
BASE PLATE A & B



140x16.0 STEEL POST

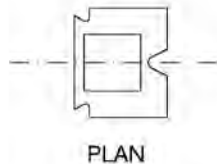


FOUNDATION POST

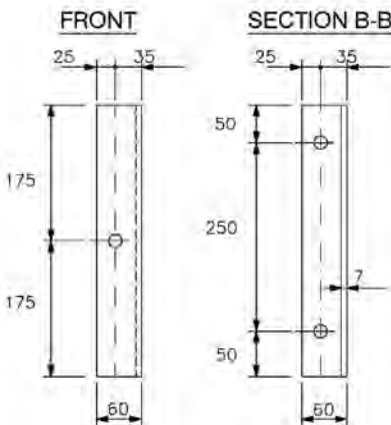


SIDE

FRONT

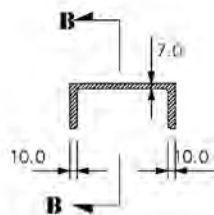


TERMINAL POST

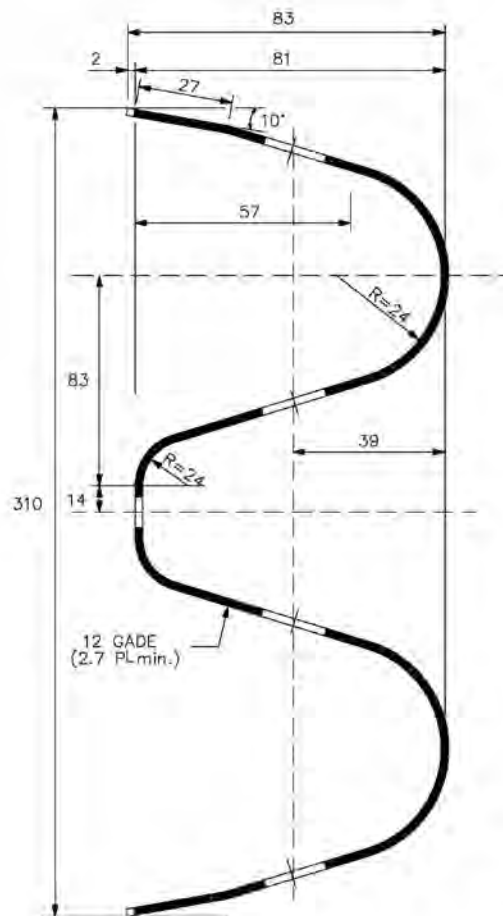


FRONT

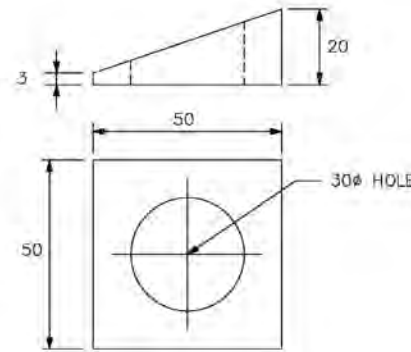
SECTION B-B



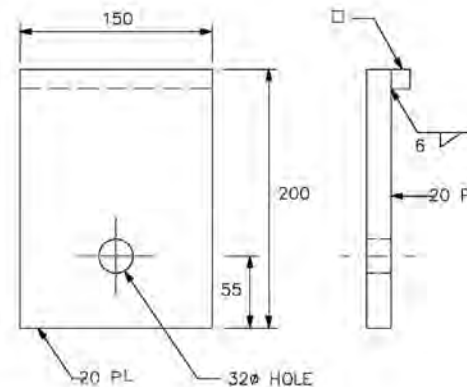
□ 140x16.0 STEEL BLOCK



SECTION THRU
RAIL ELEMENT



TAPPERED WASHER



BEARING PLATE

- ## NOTES
-
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 - Parabolic flare shall be used, where possible, on main road only

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TENDER DRAWINGS

No	DATE	REVISION	DESCRIPTION	CHECKED	P.MANAGER

REPUBLIC OF LEBANON

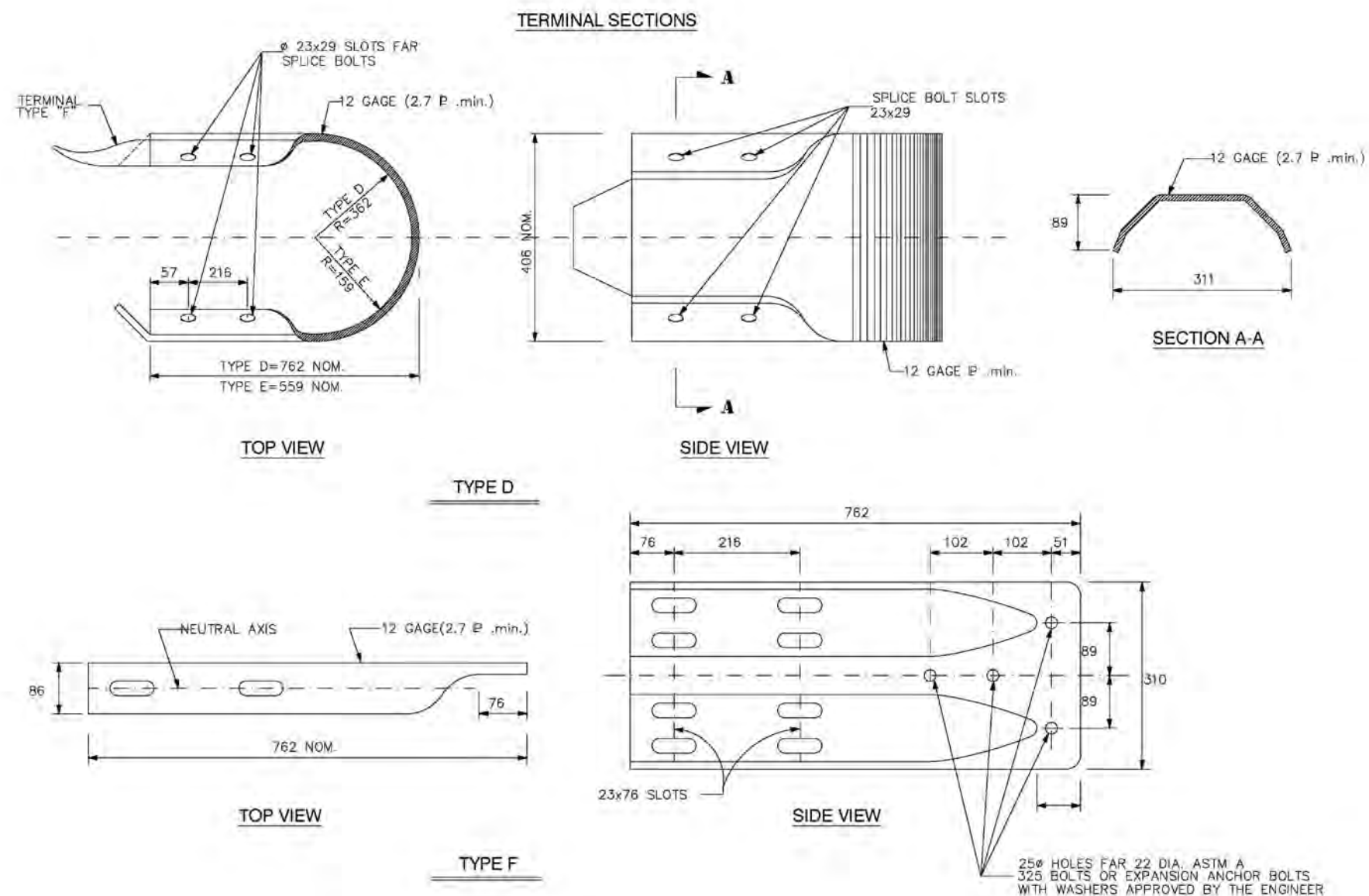


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ASSOCIATED CONSULTING ENGINEERS BEIRUT

DAMAGED ROADS CLEARING & RESTORATION *in South Lebanon (Marjeyoun Caza)*

STANDARD DETAILS PAVEMENT REPAIR DETAILS SAFETY BARRIERS DETAILS STEEL GUARDRAIL (SHEET 3 OF 4)	DATE	AUGUST 2026
	SCALE	As Shown
	TENDER DRAWINGS	
	DRAWING NO.	REV
	DET-IR-003	03



NOTES

- Unless otherwise mentioned, all dimensions are in millimeters.
- The rail and posts of parapet shall be closed sections presenting no visible seam welds or exposed bolt heads.
- The contractor shall ensure the proper installation of the posts and rails using tools and procedure recommended by the manufacturer.
- Execution contractor has to submit shop drawings related to new safety barriers, showing exact locations & Levels, for engineer approval.
- Alignment of new safety barriers shall be parallel to the road alignment.
- Top Level of new safety barriers shall, at some degrees, compensate any weaving in the existing road profile.
- Barrier terminal unit to be provided at the edge of new safety barriers as directed by the engineer.
- Parabolic flare shall be used, where possible, on main road only

FINAL TENDER DOCUMENTS

TENDER DRAWINGS

No.	DATE	REVISION	DESCRIPTION	CHECKED	P. MANAGER

REPUBLIC OF LEBANON



المكتب الهندسي الاستشاري - بيروت
ASSOCIATED CONSULTING ENGINEERS - BEIRUT

**DAMAGED ROADS
CLEARING & RESTORATION**
in South Lebanon (Marjeyoun Caza)

STANDARD DETAILS

DATE AUGUST 2026

SCALE As Shown

PAVEMENT REPAIR DETAILS
SAFETY BARRIERS DETAILS
STEEL GUARDRAIL (SHEET 4 OF 4)

TENDER DRAWINGS

DRAWING No. DET-IR-004 REV 03