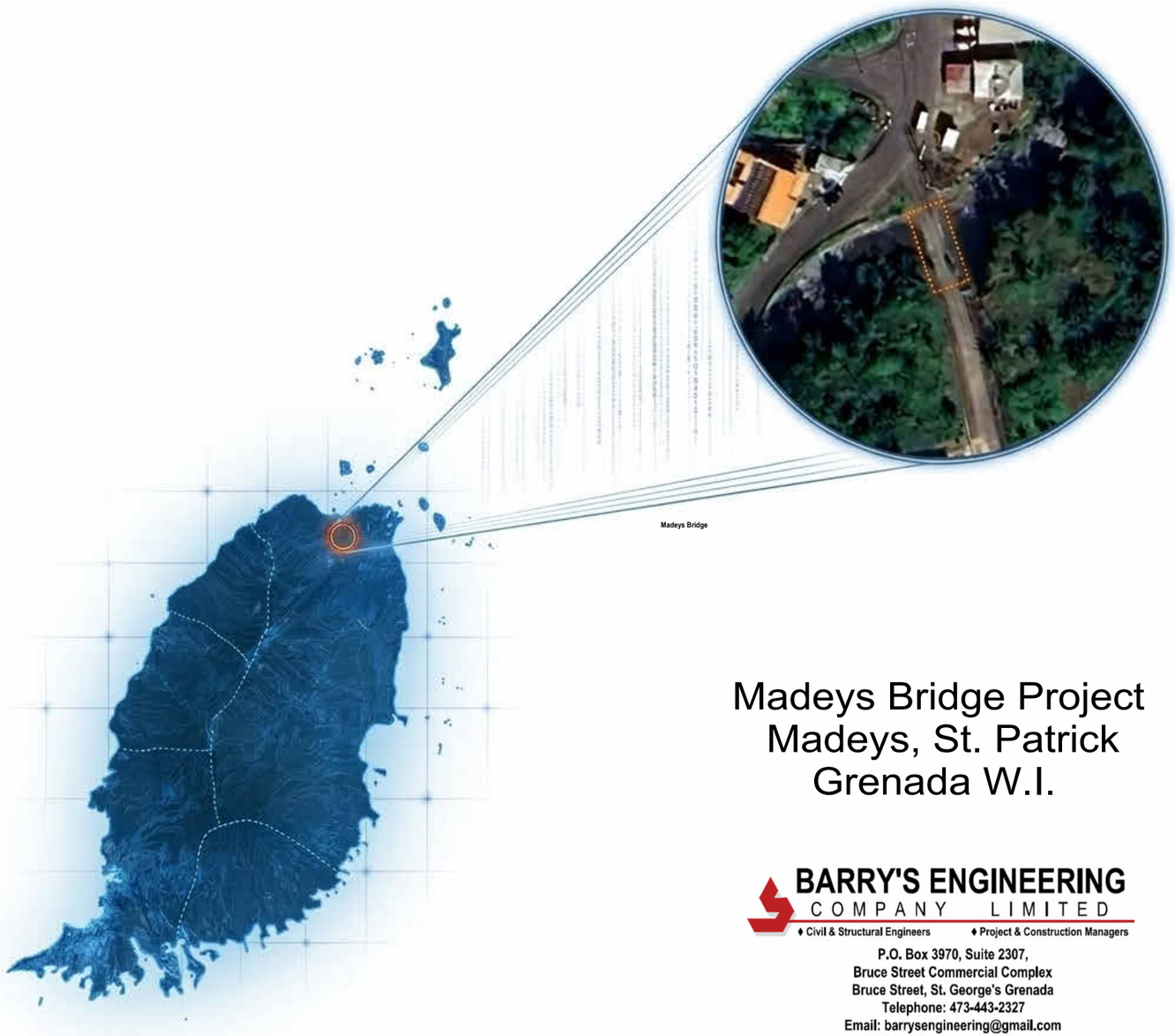
Goverment of Grenada

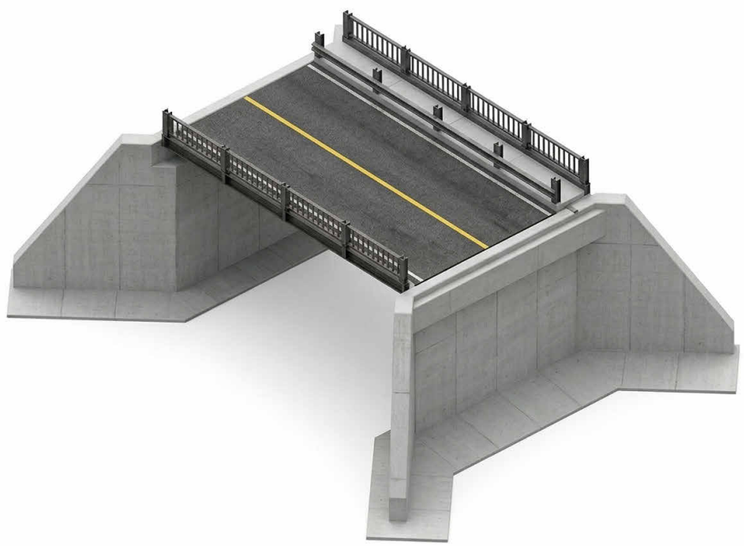
Ministry of Infrastructure, Public Utilities,
Civil Aviation & Transportation.



Madeys Bridge Project
Madeys, St. Patrick
Grenada W.I.

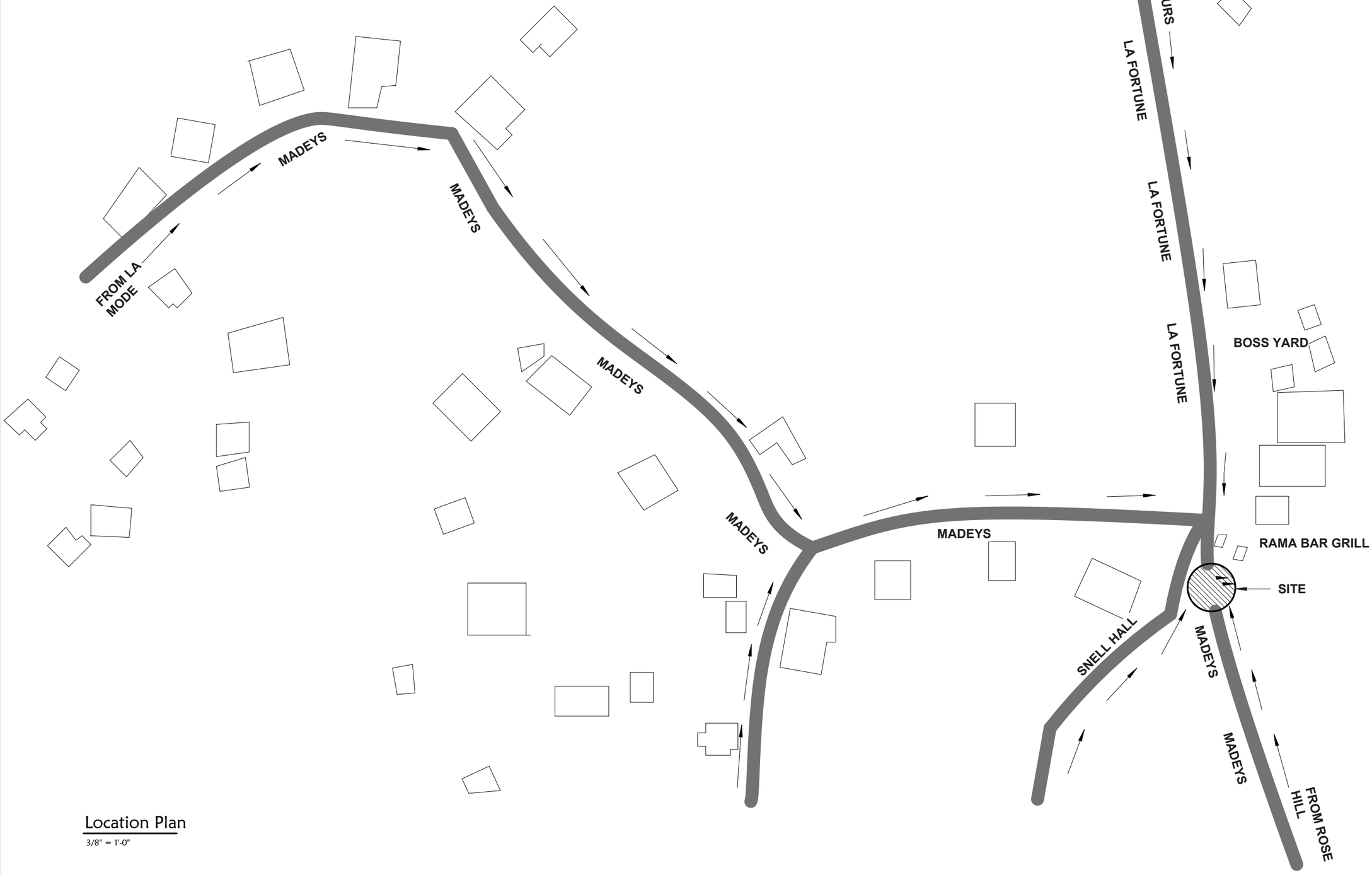
BARRY'S ENGINEERING
COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers

P.O. Box 3970, Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327
Email: barrysengineering@gmail.com
Website: barrysengineering.gd



BARRY'S ENGINEERING
COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
P.O. Box 3970, Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

PROJECT: Proposed Madeys Bridge					PROJECT # BECL-62-2025																		
PROJECT START DATE:		**ISSUE #**																					
		ISSUED DATE	APRIL 2026																				
STANDARD DESIGN INFORMATION		**PURPOSE OF ISSUE**	FOR PPU APPROVAL																				
DRAWING NUMBER :	**DRAWING TITLE**	**FIRST ISSUED**	**REVISIONS**																				
01	Coverpage	✓																					
02	Copyright	✓																					
03	Drawing Index	✓																					
04	Location Plan	✓																					
05	Site Plan	✓																					
	ARCHITECTURAL DRAWINGS:																						
A-01	Architectural Proposal	✓																					
A-D01	Enlarged Location Plan	✓																					
A-D02	Existing Bridge w/ Demolition Plan	✓																					
A-D03	Section 1	✓																					
A-D04	Section 2	✓																					
	CIVIL DRAWINGS:																						
C-01	Surveying Plan	✓																					
C-02	Profile Public Roads	✓																					
C-03	Profile River & Profile Eastern Main Road	✓																					
C-04	Cross Section - Public Road -	✓																					
C-05	Cross Section - River -	✓																					
C-06	Cross Section - Eastern Main Road -	✓																					
C-07	Cross Section - Public Road' -	✓																					
C-08	Proposed Road Alignment Plan	✓																					
C-09	Public Road Alignment	✓																					
C-10	Public Road Cross Section	✓																					
C-11	Access Public Road Cross Section	✓																					
C-12	Headwall Details For Culvert B	✓																					
C-12.1	Headwall Details For Culvert A	✓																					
C-13	Culvert B Cross Sections Details	✓																					
C-13.1	Culvert A Cross Sections Details	✓																					
C-14	Road Cross Sections	✓																					
C-15	Riprap Details	✓																					
C-16	Aproach Slab Section Detail A & Drain Detail	✓																					
C-17	Aproach Slab Section Detail B & Drain Detail	✓																					
C-18	Proposed Roadway Signage	✓																					
	STRUCTURAL DRAWINGS:																						
S-00	Information on Bridge Design	✓																					
S-01	Footing Plan & Section Detail	✓																					
S-01.1	Footing Coordinates	✓																					
S-02	Bridge Abutment & Wing Wall Plan	✓																					
S-03	Abutment Footing Reinforcement & Details	✓																					
S-04	Abutment Wall Reinforcement	✓																					
S-05	Abutment Wall Elevation	✓																					
S-06	Abutment Wall Steel Details	✓																					
S-07	Bridge Beams Floor Plan	✓																					
S-08	Bridge Beams Section Plan	✓																					
S-09	Bridge Beams Section Plan	✓																					
S-10	Bridge Section Plan	✓																					
S-11	Bridge Slab Section Plan	✓																					
S-12	Bridge Slab Section Plan	✓																					
S-13	Bridge Data General Tables	✓																					
S-14	Bridge 3D View Sketch	✓																					
S-15	3D Abutment & Walking Steel Details	✓																					
S-16	Abutment Steel Details	✓																					
S-17	Elastoflex Joint Detail	✓																					
S-18	Gabion Wall	✓																					
S-19	Gabion Wall Location	✓																					



Location Plan

3/8" = 1'-0"

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET TITLE: **Location Plan**

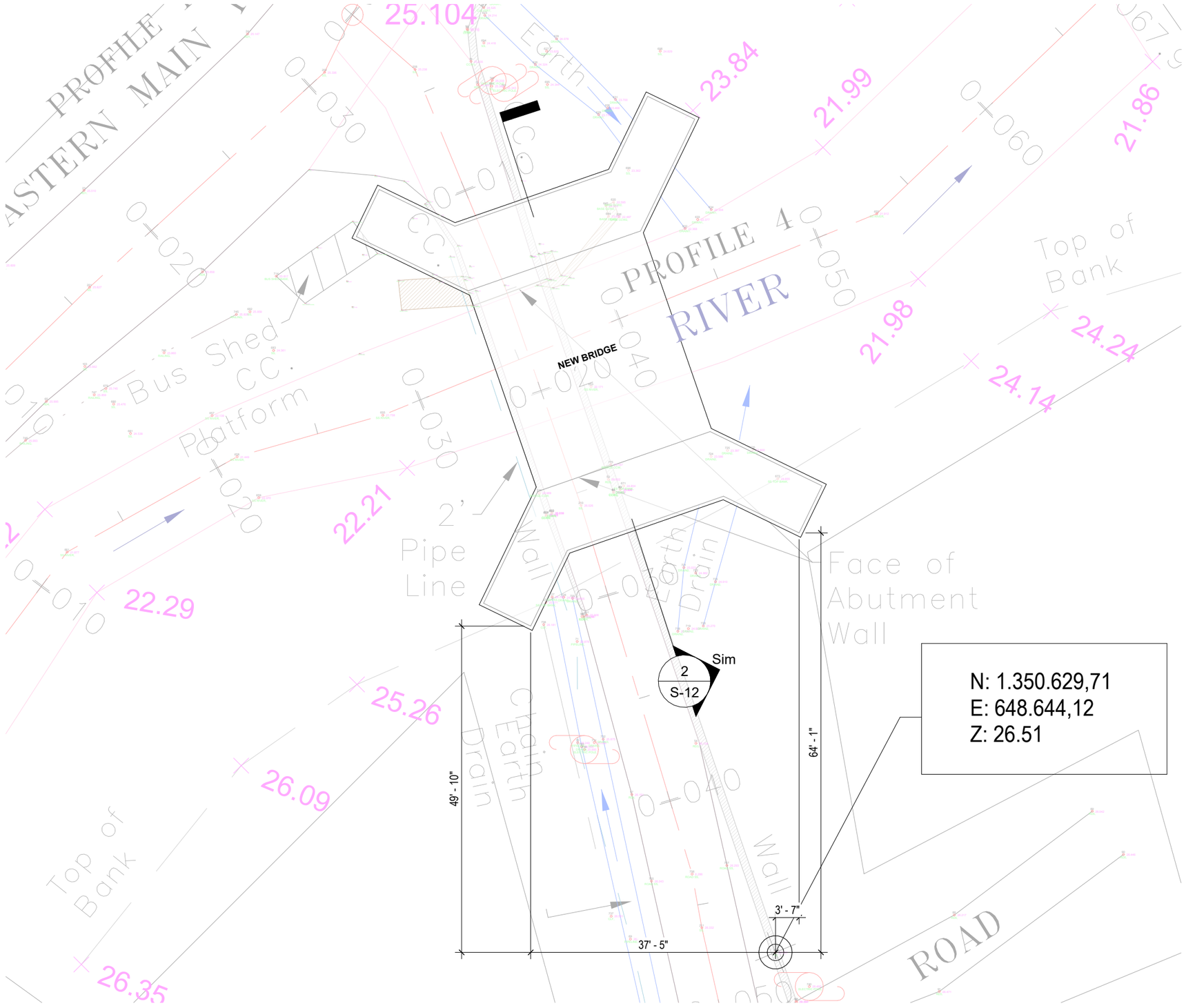
SHEET NO. **04**

BARRY'S ENGINEERING COMPANY LIMITED

♦ Civil & Structural Engineers ♦ Project & Construction Managers

P.O. Box 3970, Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	3/8" = 1'-0"



1 Site Plan
1/16" = 1'-0"

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET NO. **05**

SHEET TITLE: **Site Plan**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
P.O. Box 3970, Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	1/16" = 1'-0"

Existing Madeys Bridge – Current Condition

Proposed Bridge Render – General View

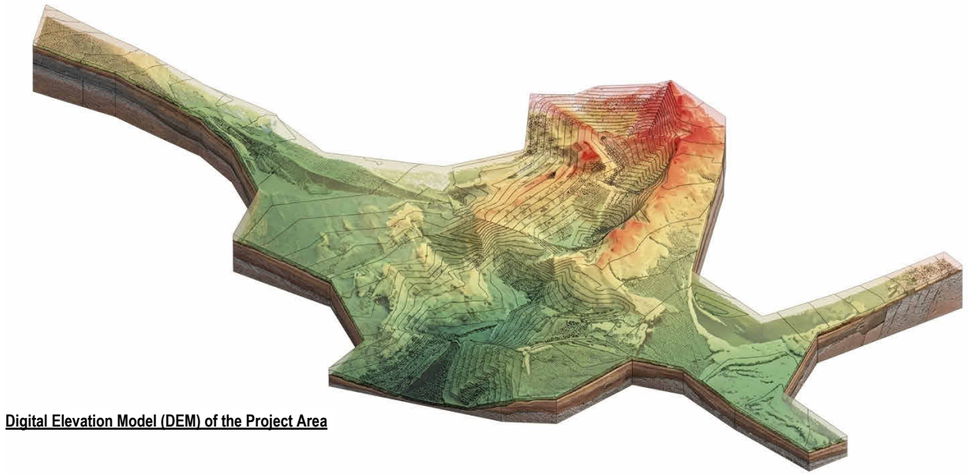
MADEYS BRIDGE

This project involves the demolition of the existing structure known as Madeys Bridge, and the design and construction of a new bridge aimed at significantly improving traffic conditions and safety in the area.

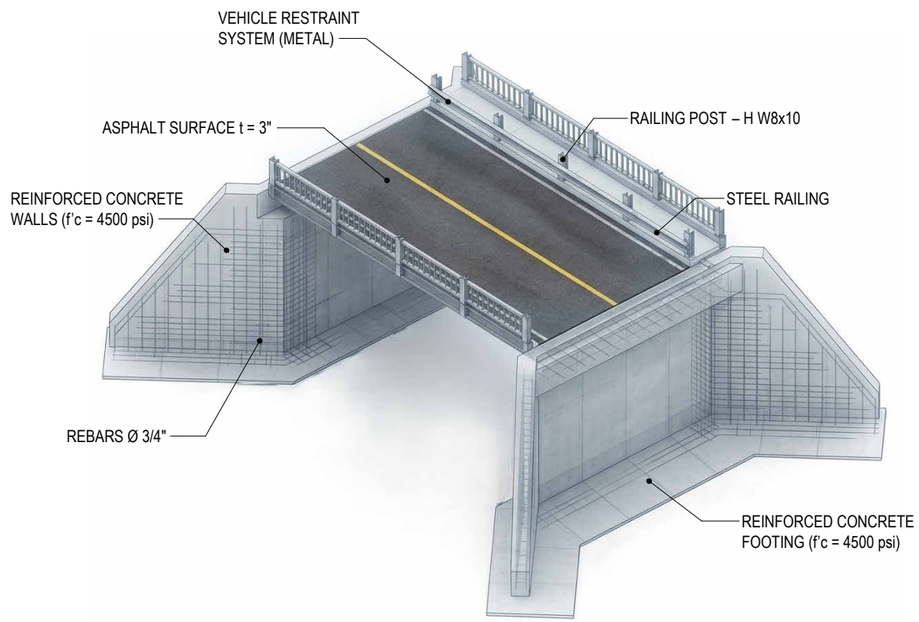
The current bridge consists of a single-lane configuration, which restricts bidirectional traffic flow, resulting in operational inefficiencies traffic delays, and potentially unsafe conditions for users. In response to these issues, a new bridge has been proposed with sufficient carriageway width to accommodate two-way traffic, there by improving traffic flow, reducing delays and enhancing overall user safety.

The new structure has been designed in accordance with modern standards of structural design, road safety, and durability. The proposed bridge will feature a wider deck, incorporating two clearly defined traffic lanes, as well as lateral safety elements (railings or parapets) to ensure user protection.

The design of the new bridge has been developed considering the site 's topographic conditions, expected vehicular loads, hydraulic behavior of the channel, and structural stability criteria. Additionally, constructability aspects have been taken into account to facilitate execution and ensure adequate service life of the structure.



Digital Elevation Model (DEM) of the Project Area



3D Conceptual Model of the Proposed Bridge

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET TITLE: **Architectural Proposal**

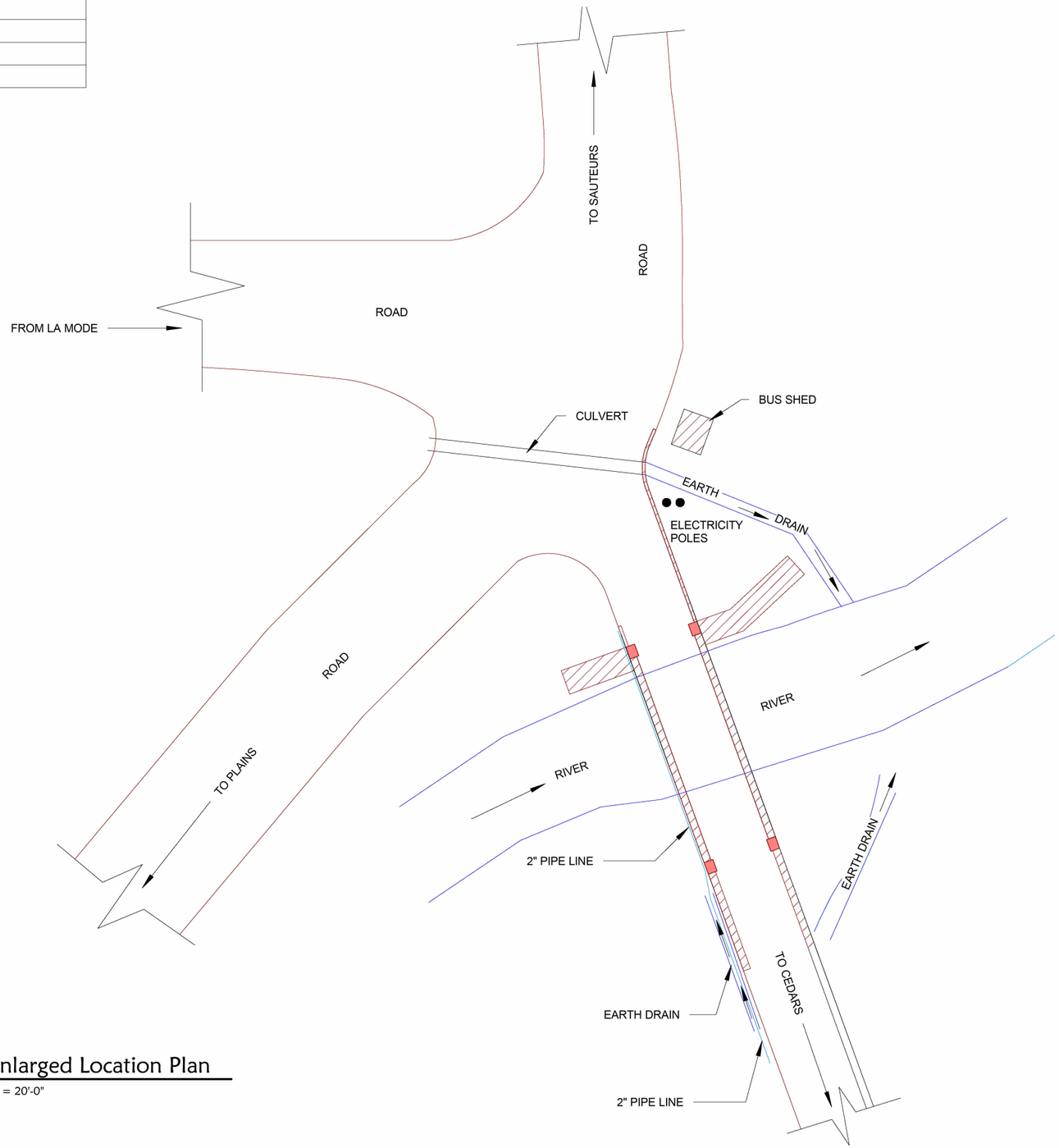
SHEET NO. **A-01**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
P.O. Box 3970, Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	PEDRO SALAYA
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	

General Notes

Symbol	Description
	Existing RC Solid Walls
	Existing Columns
	Existing 2" Water line
	River



Enlarged Location Plan

1" = 20'-0"

PROJECT NAME: **Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick, Grenada**

SHEET TITLE: **Enlarged Location Plan**

SHEET NO. **A-D01**

BARRY'S ENGINEERING COMPANY LIMITED

♦ Civil & Structural Engineers ♦ Project & Construction Managers

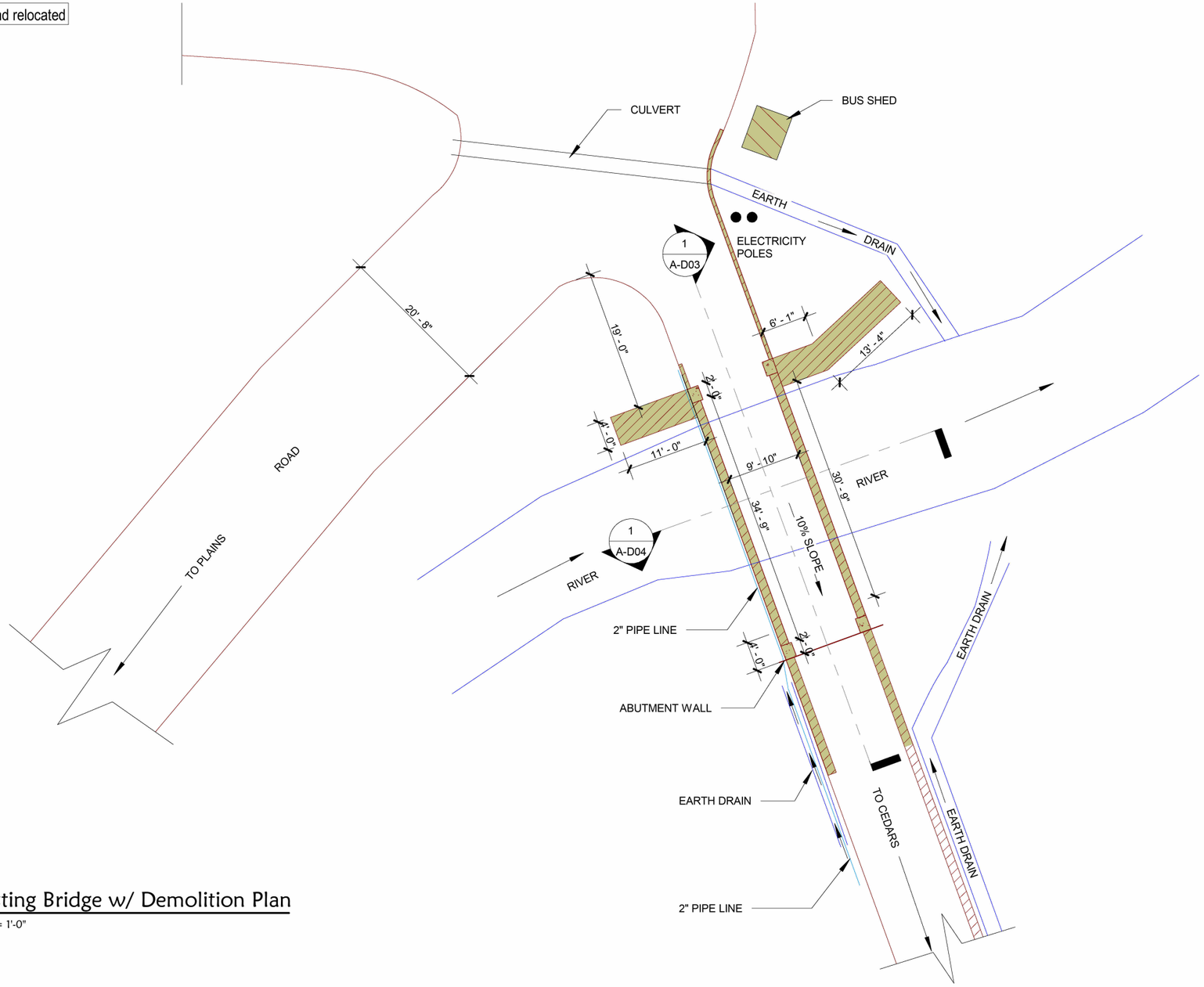
P.O. Box 3970, Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	CELINE CLYNE
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	MARCH 2026
PROJECT #:	BECL-62-2025
SCALE:	As indicated

General Notes

Symbol	Description
	Existing walls to be demolished
	Existing columns to be demolished

N.B.	Bus shed is to be demolished and relocated



Existing Bridge w/ Demolition Plan

1/16" = 1'-0"

PROJECT NAME: Madeys Bridge

PROJECT LOCATION: Madeys, St Patrick, Grenada

SHEET TITLE: Existing Bridge w/ Demolition Plan

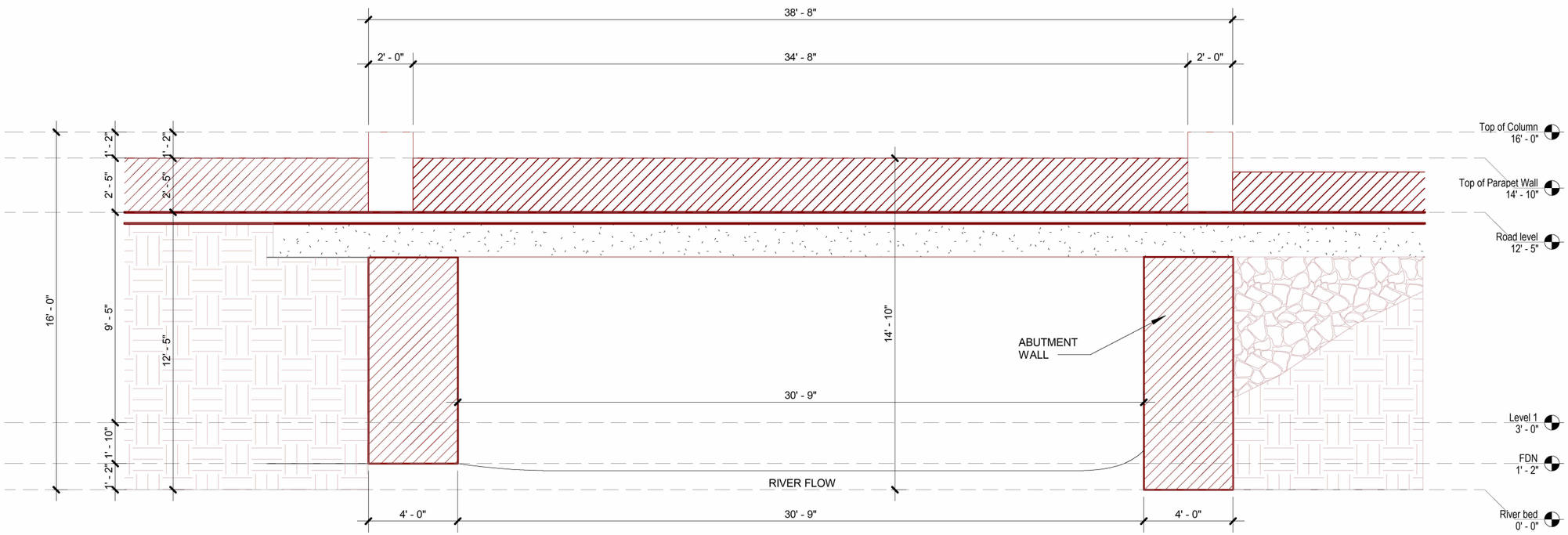
SHEET NO. A-D02

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
P.O. Box 3970, Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	CELINE CLYNE
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	MARCH 2026
PROJECT #:	BECL-62-2025
SCALE:	As indicated

General Notes

Symbol	Description
	Existing RC Solid Walls



Section 1 of Existing Bridge

3/16" = 1'-0"

PROJECT NAME: **Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick, Grenada**

SHEET TITLE: **Section 1 of Existing Bridge**

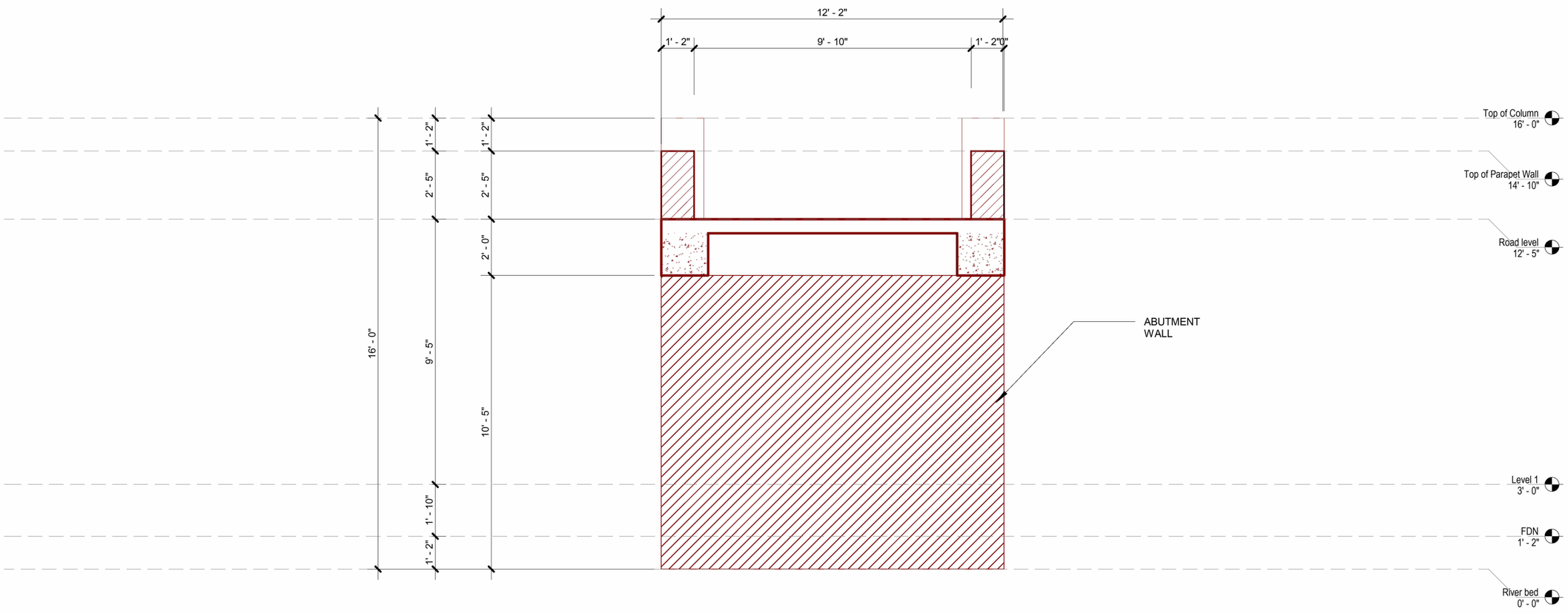
SHEET NO. **A-D03**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
P.O. Box 3970, Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	CELINE CLYNE
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	MARCH 2026
PROJECT #:	BECL-62-2025
SCALE:	As indicated

General Notes

Symbol	Description
	Existing RC Solid Walls



Section 2 of Existing Bridge

1/4" = 1'-0"

PROJECT NAME: Madeys Bridge

PROJECT LOCATION: Madeys, St Patrick, Grenada

SHEET TITLE: Section 2 of Existing Bridge

SHEET NO. A-D04

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
P.O. Box 3970, Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	CELINE CLYNE
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	MARCH 2026
PROJECT #:	BECL-62-2025
SCALE:	As indicated

1 Surveying Plan
1" = 30'-0"

LEGEND

- CENTER LINE / PROFILE ALIGNMENT
- TOP OF BANK
- ABUTMENT WALL
- WING WALL
- CC. BRIDGE WALL
- ELECTRICITY POLE
- TEMPORARY BENCH MARK
- PIPE LINE
- FENCE LINE
- GUARD RAILING
- EARTH DRAIN

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

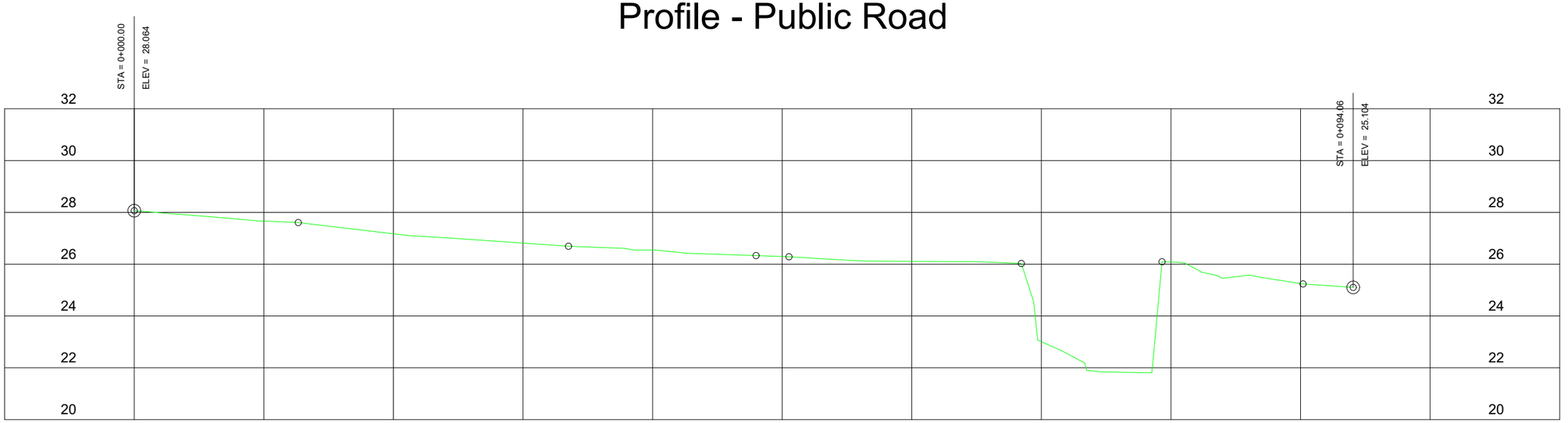
SHEET TITLE: **Surveying Plan**

SHEET NO. **C-01**

BARRY'S ENGINEERING COMPANY LIMITED
♦Civil & Structural Engineers ♦Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

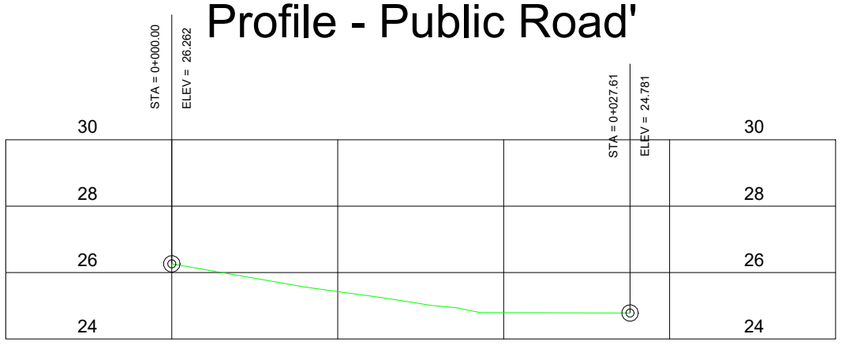
DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	1" = 30'-0"

Profile - Public Road



CHAINGE	0+010	0+000	0+010	0+020	0+030	0+040	0+050	0+060	0+070	0+080	0+090	0+100	0+110
EXISTING GROUND		28.06 28.064	27.66 27.663	27.17 27.172	26.81 26.814	26.54 26.544	26.30 26.296	26.11 26.108	23.01 23.007	26.08 26.085	25.25 25.253		

Profile - Public Road'



CHAINGE	0+000	0+010	0+020	0+030
EXISTING GROUND	26.26 26.262	25.43 25.427	24.79 24.792	

1 Profiles
1" = 30'-0"

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

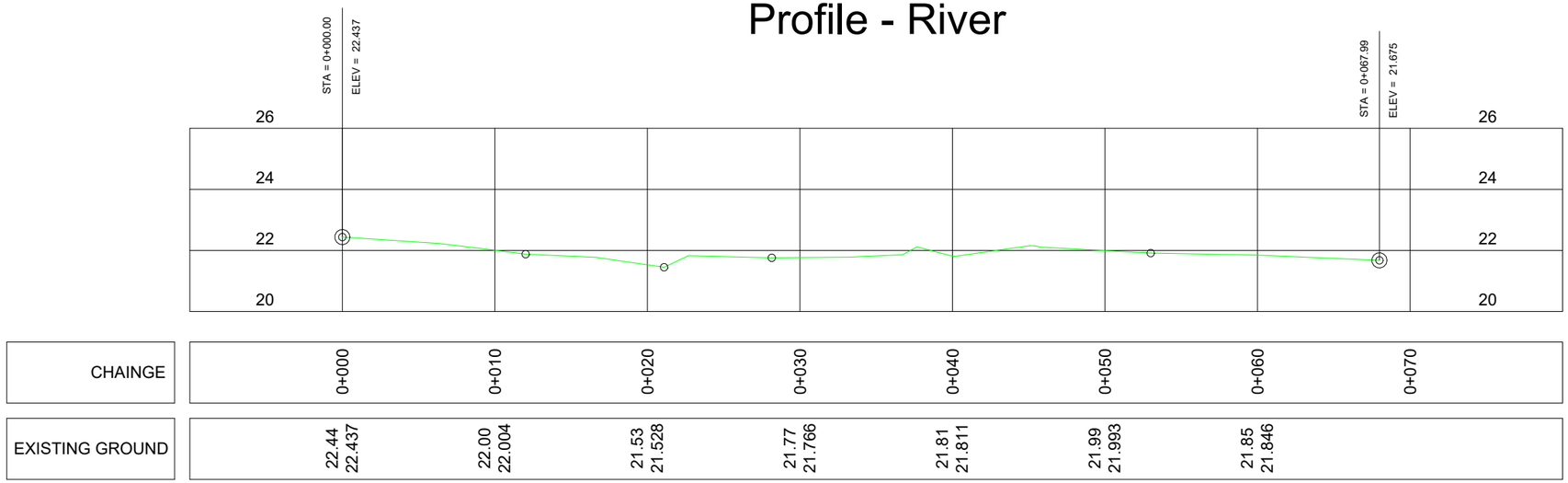
SHEET TITLE: **Profile Public Roads**

SHEET NO. **C-02**

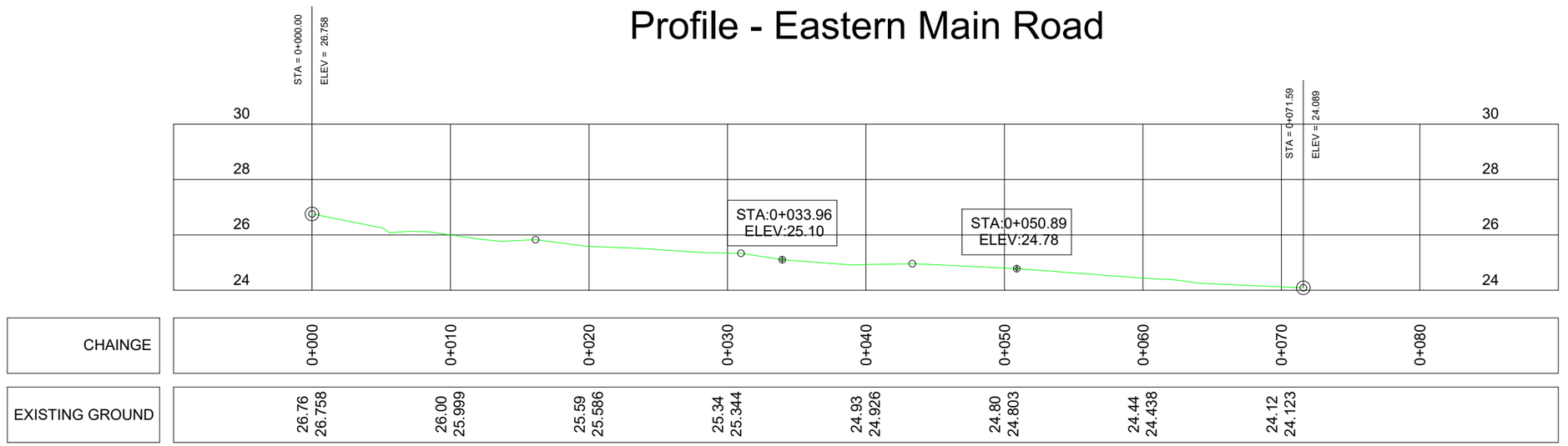
BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	1" = 30'-0"

Profile - River



Profile - Eastern Main Road



1 Profiles
1" = 30'-0"

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

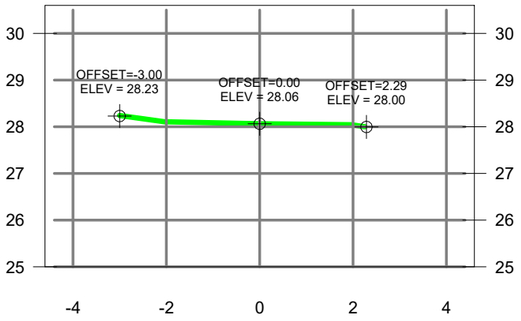
SHEET TITLE: **Profile River & Profile Eastern Main Road**

SHEET NO. **C-03**

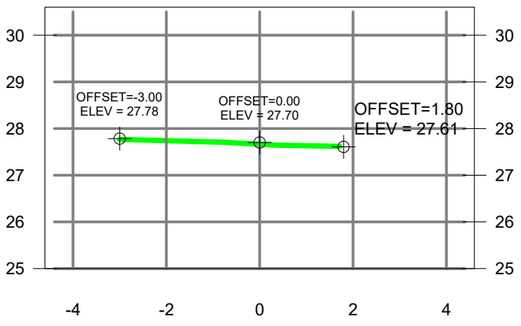
BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALUENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	1" = 30'-0"

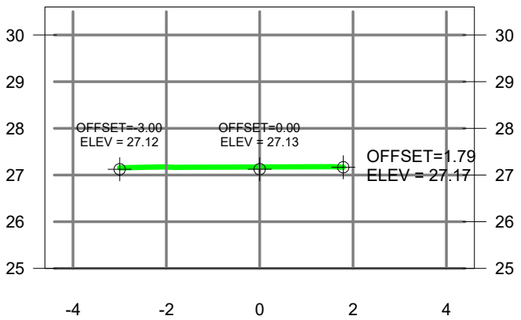
0+000.00



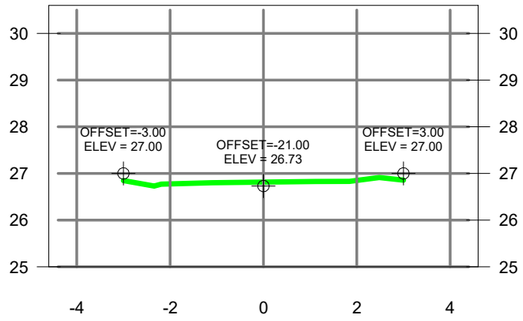
0+010.00



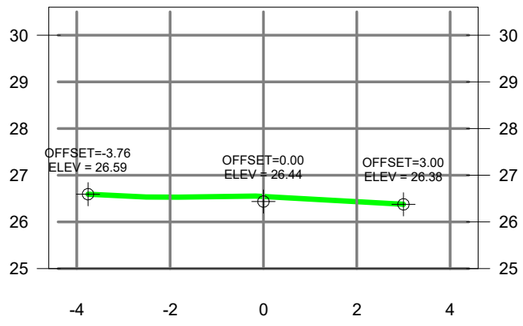
0+020.00



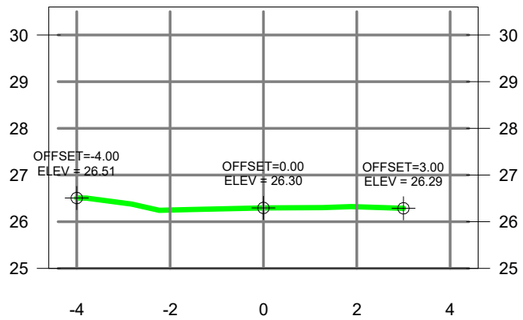
0+030.00



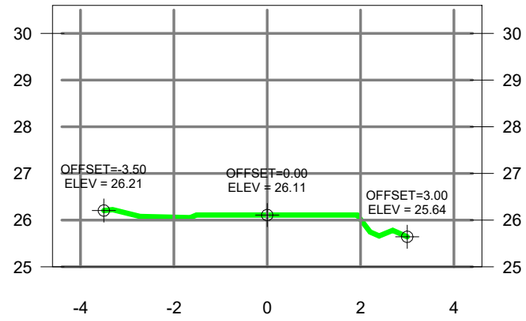
0+040.00



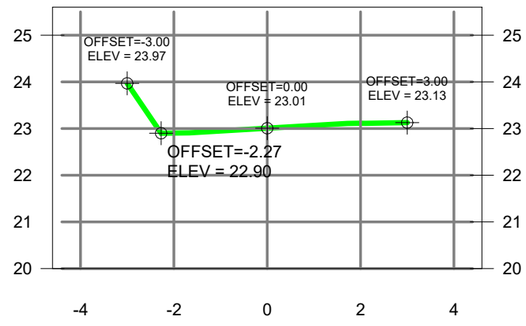
0+050.00



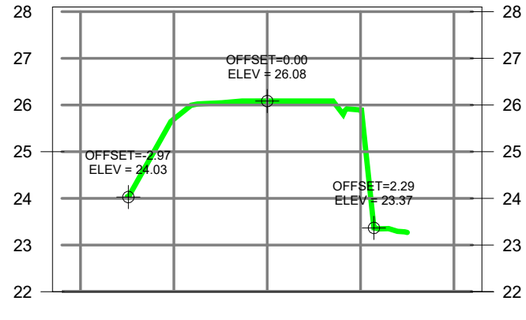
0+060.00



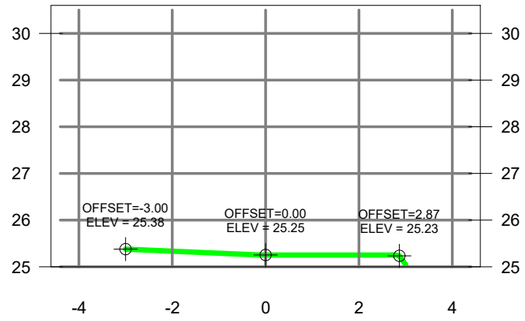
0+070.00



0+080.00



0+090.00



1 Cross Section - Public Road -
3/32" = 1'-0"

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

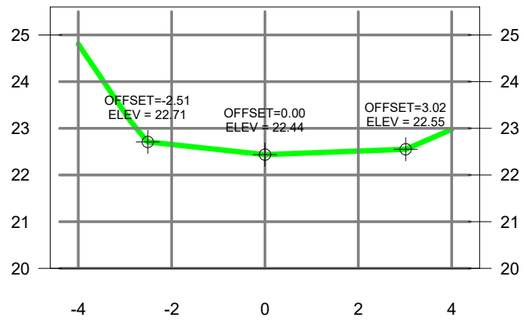
SHEET TITLE: **Cross Section - Public Road -**

SHEET NO. **C-04**

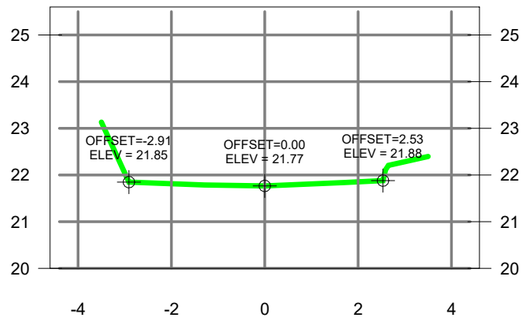
BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	3/32" = 1'-0"

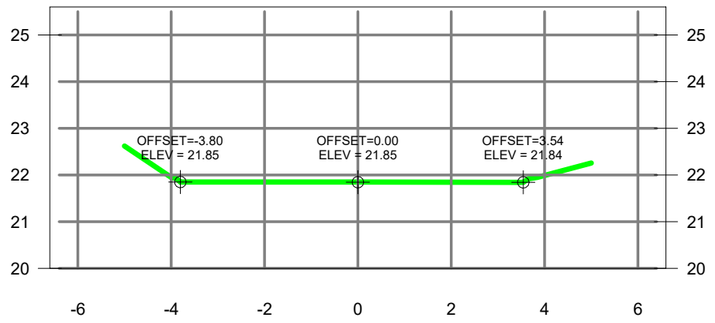
0+000.00



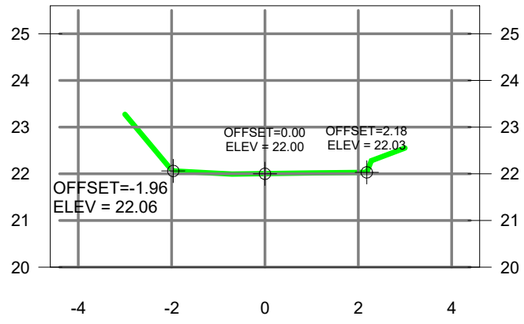
0+030.00



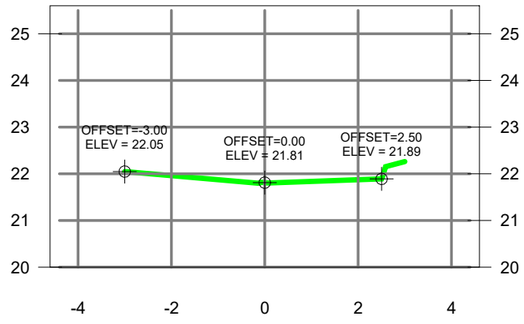
0+060.00



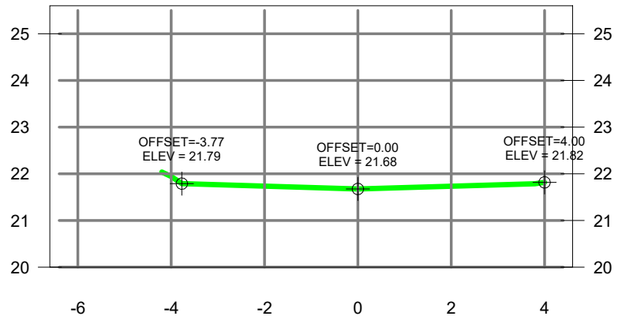
0+010.00



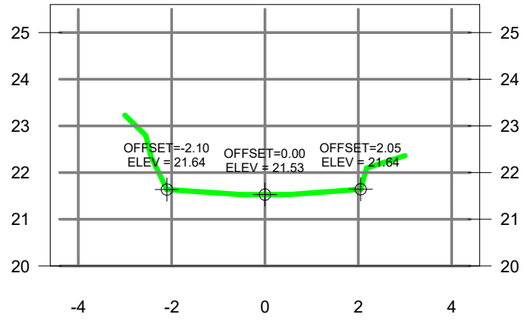
0+040.00



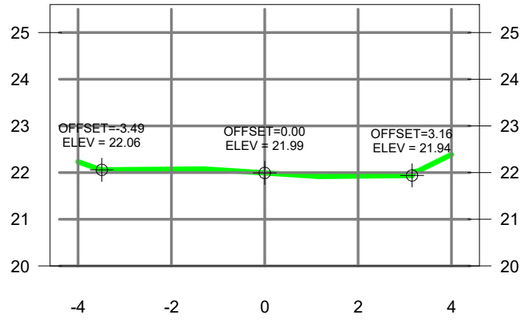
0+067.99



0+020.00



0+050.00



1 Cross Section River
3/32" = 1'-0"

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

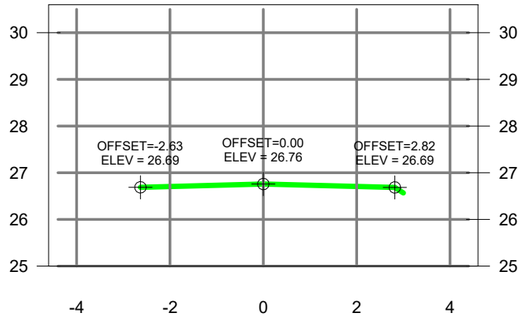
SHEET NO. **C-05**

SHEET TITLE: **Cross Section - River -**

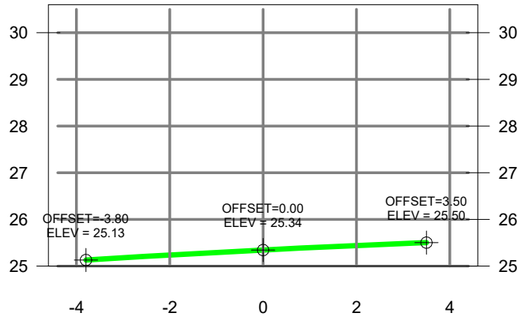
BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	3/32" = 1'-0"

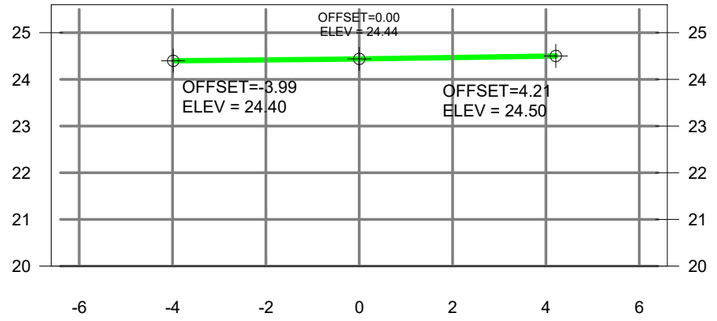
0+000.00



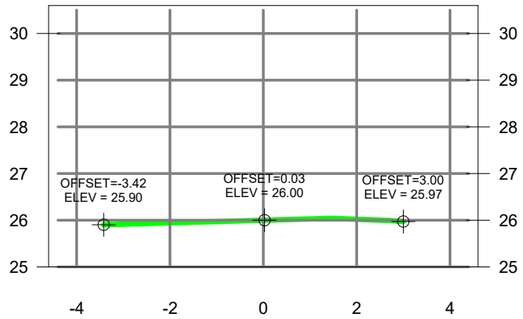
0+030.00



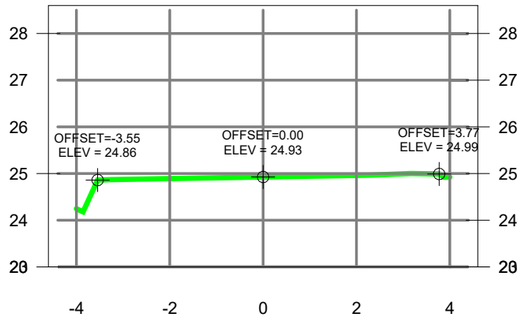
0+060.00



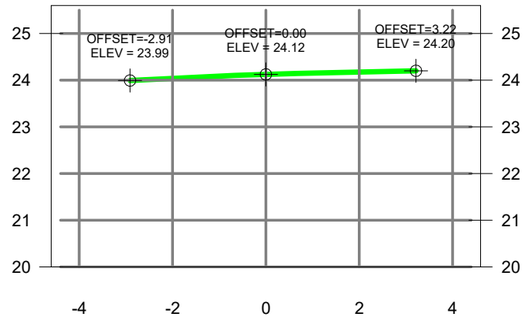
0+010.00



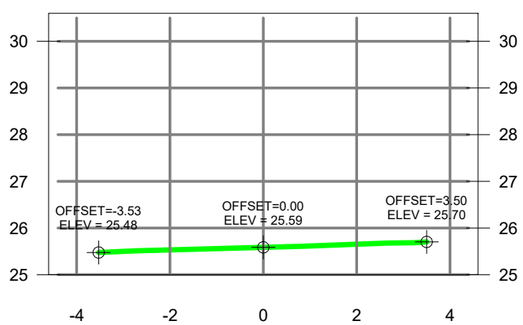
0+040.00



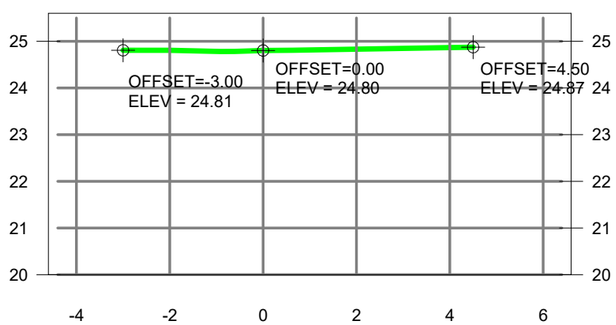
0+070.00



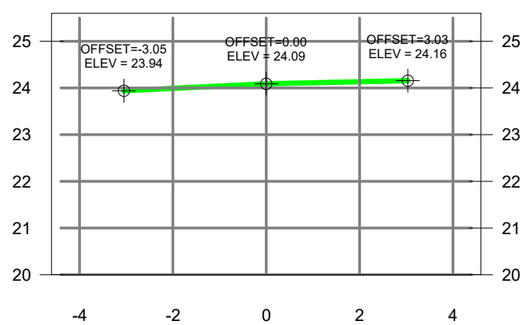
0+020.00



0+050.00



0+071.59



1 Cross Section - Eastern Main Road -
3/32" = 1'-0"

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

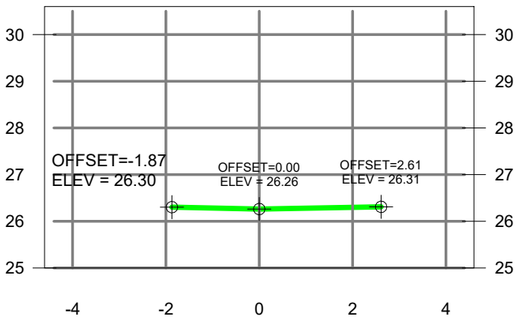
SHEET NO. **C-06**

SHEET TITLE: **Cross Section - Eastern Main Road -**

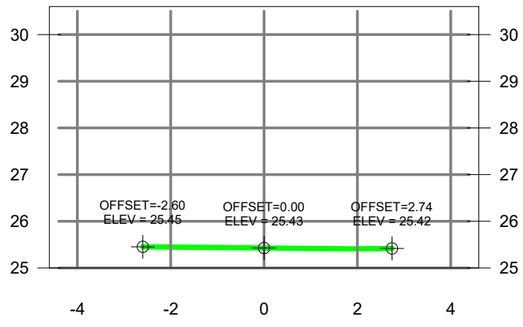
BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	3/32" = 1'-0"

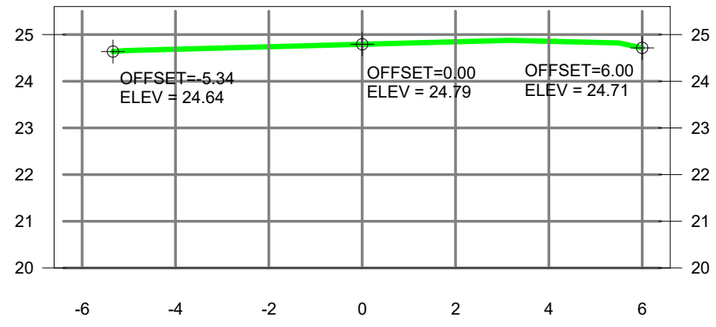
0+000.00



0+010.00



0+020.00



1 Cross Section - Public Road' -
3/32" = 1'-0"

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

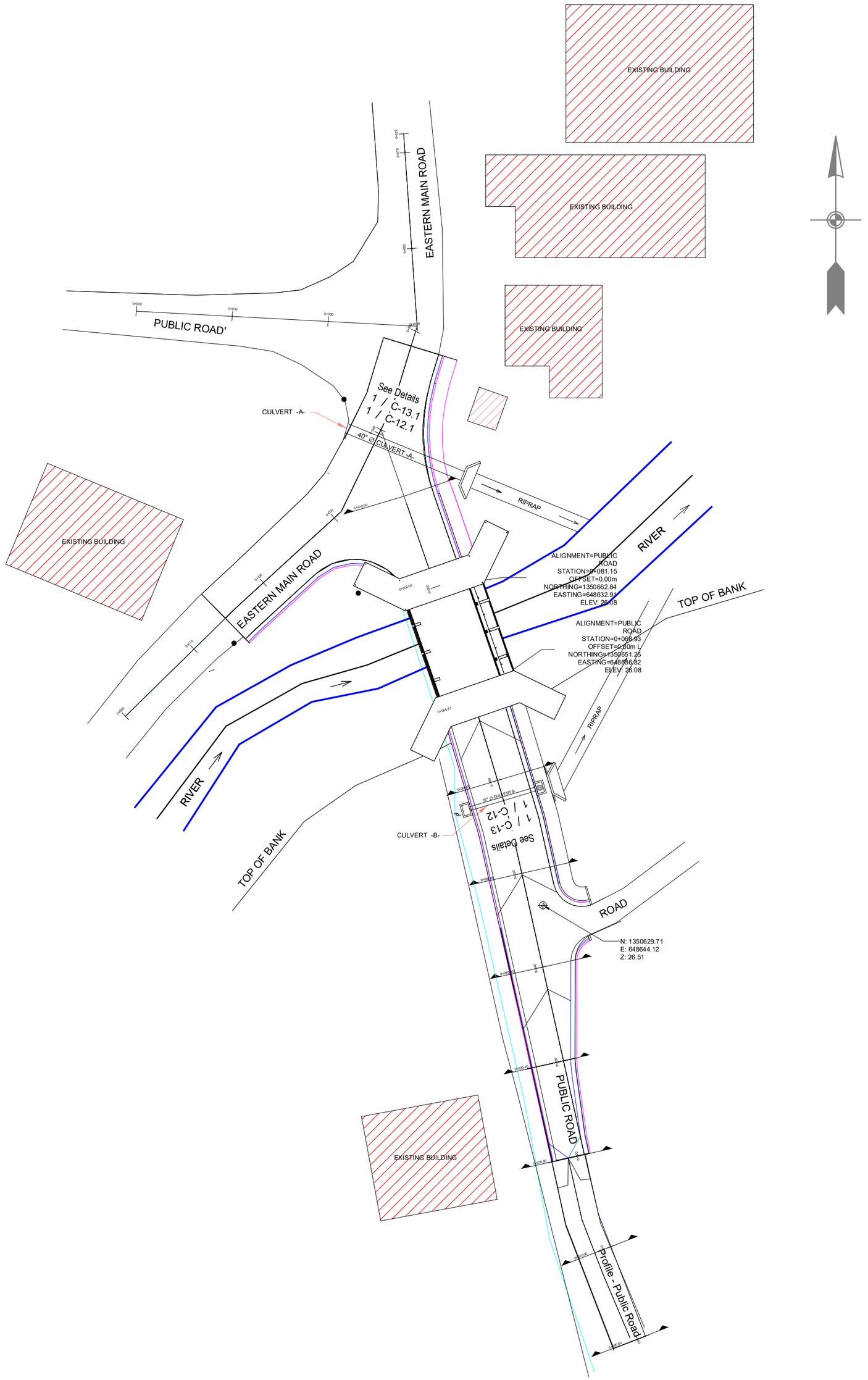
SHEET NO. **C-07**

SHEET TITLE: **Cross Section - Public Road' -**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	3/32" = 1'-0"

1 Road Alignment Plan
1/32" = 1'-0"



DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	1/32" = 1'-0"

BARRY'S ENGINEERING
COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

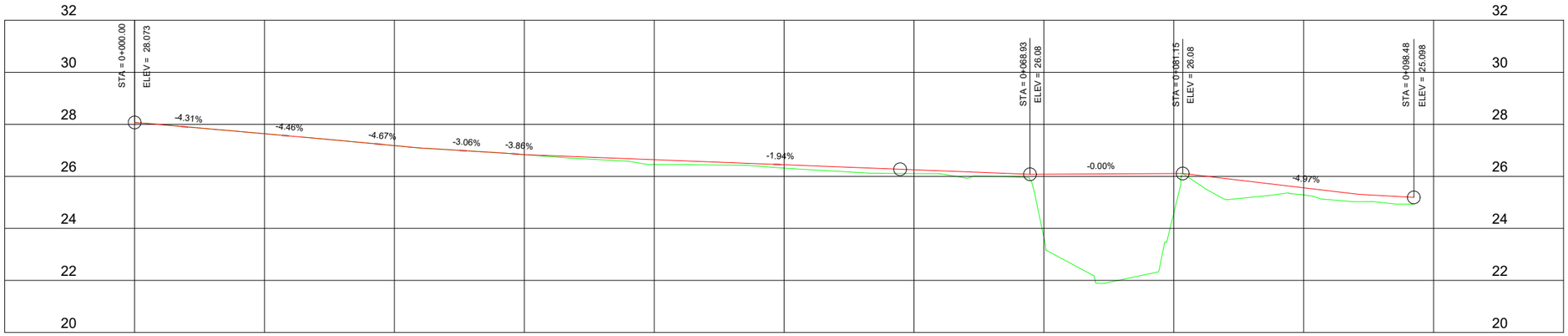
PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET TITLE: **Proposed Road Alignment Plan**

SHEET NO. **C-08**

ALIGNMENT - PUBLIC ROAD



CHAINGE	0+010	0+000	0+010	0+020	0+030	0+040	0+050	0+060	0+070	0+080	0+090	0+100	0+110
EXISTING GROUND		28.05 28.049	27.64 27.639	27.18 27.182	26.83 26.835	26.45 26.454	26.32 26.317	26.11 26.109	23.64 23.641	24.59 24.587	25.29 25.287		
Fill			0.00	0.00	0.00	0.19	0.13	0.14	2.43	1.42	0.23		

1 Alignment Public Road
1/32" = 1'-0"

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

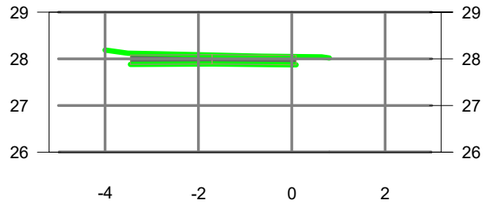
SHEET TITLE: **Public Road Alignment**

SHEET NO. **C-09**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

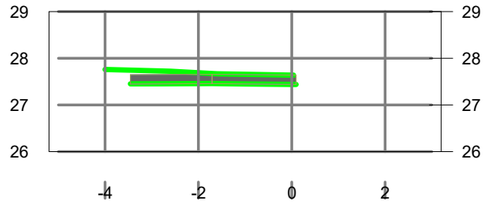
DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ADRIANA UROSA
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	1/32" = 1'-0"

0+000.03



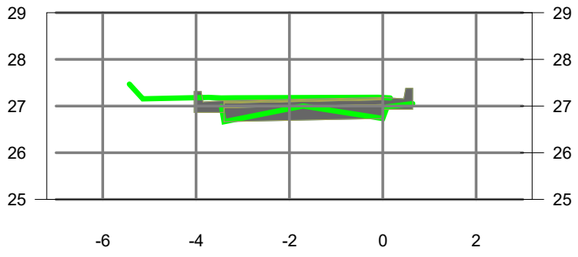
Material(s) at Station 0+000.03			
Material Name	Area	Volume	Cumulative Volume
CUT	0.00	0.00	0.00
FILL	0.00	0.00	0.00

0+010.00



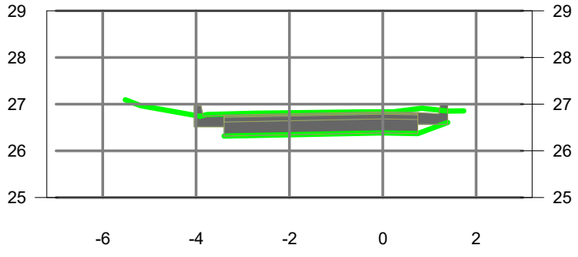
Material(s) at Station 0+010.00			
Material Name	Area	Volume	Cumulative Volume
CUT	0.00	0.00	0.00
FILL	0.00	0.00	0.00

0+020.00



Material(s) at Station 0+020.00			
Material Name	Area	Volume	Cumulative Volume
CUT	0.00	0.00	0.00
FILL	0.00	0.00	0.00

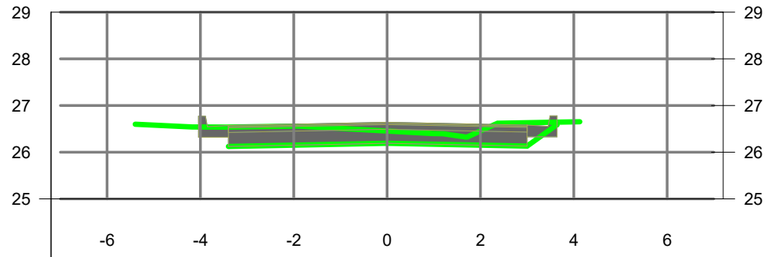
0+030.00



Material(s) at Station 0+030.00			
Material Name	Area	Volume	Cumulative Volume
CUT	0.00	0.00	0.00
FILL	0.00	0.00	0.00

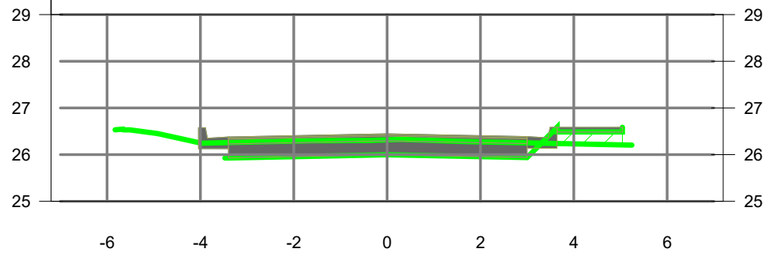
1 Public Road - Cross Section - 3/32" = 1'-0"

0+040.00



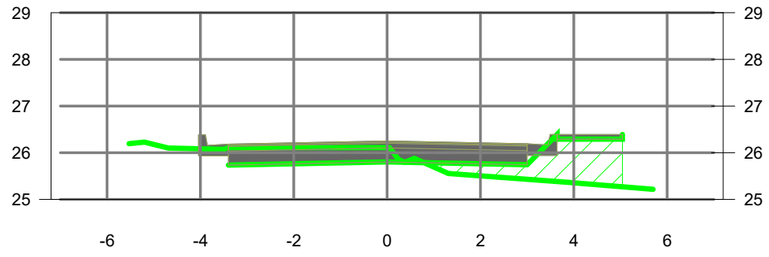
Material(s) at Station 0+040.00			
Material Name	Area	Volume	Cumulative Volume
CUT	0.00	0.00	0.00
FILL	0.00	0.00	0.00

0+050.00



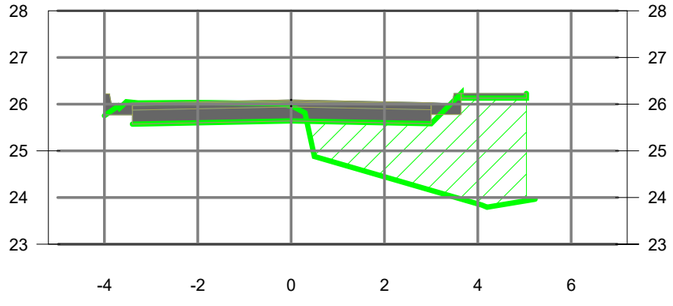
Material(s) at Station 0+050.00			
Material Name	Area	Volume	Cumulative Volume
CUT	0.00	0.00	0.00
FILL	0.43	2.13	2.13

0+060.00



Material(s) at Station 0+060.00			
Material Name	Area	Volume	Cumulative Volume
CUT	0.00	0.00	0.00
FILL	2.28	13.89	16.02

0+068.37



Material(s) at Station 0+068.37			
Material Name	Area	Volume	Cumulative Volume
CUT	0.00	0.00	0.00
FILL	7.13	39.39	55.41

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

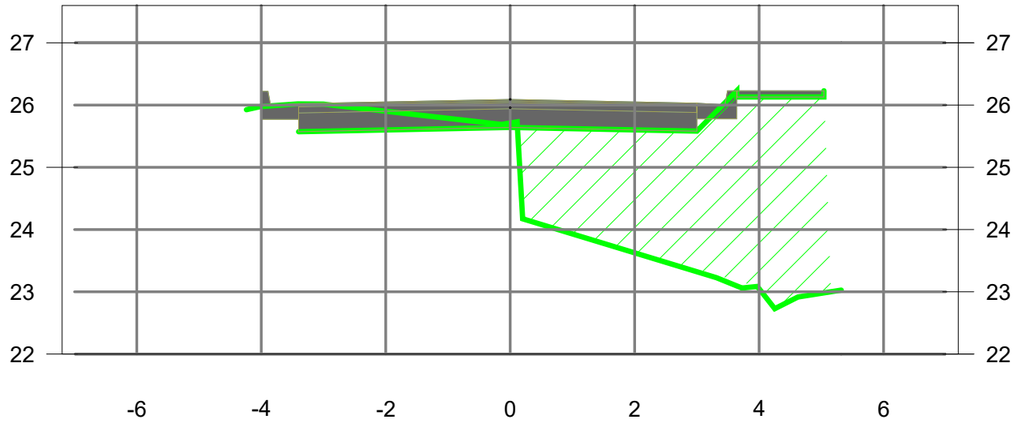
SHEET NO. **C-10**

SHEET TITLE: **Public Road Cross Section**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

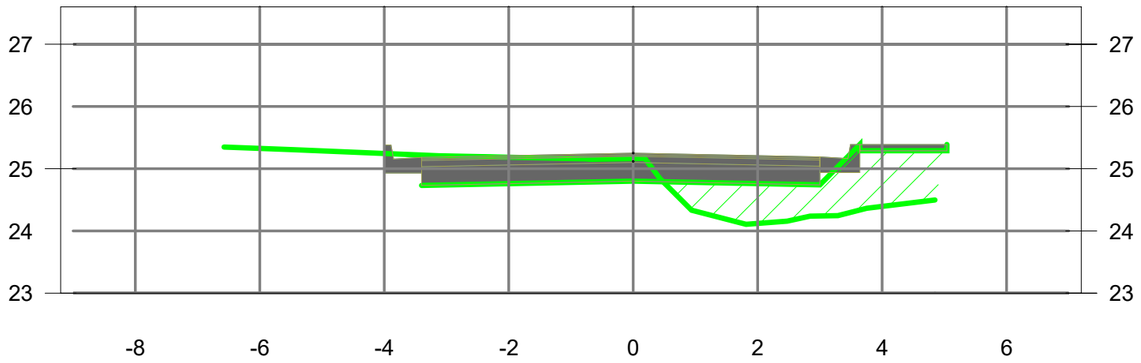
DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ADRIANA UROSA
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	3/32" = 1'-0"

0+000.00



Material(s) at Station 0+040.00			
Material Name	Area	Volume	Cumulative Volume
CUT	0.00	0.00	0.00
FILL	11.53	0.00	0.00

0+010.00



Material(s) at Station 0+040.00			
Material Name	Area	Volume	Cumulative Volume
CUT	0.00	0.00	0.00
FILL	2.88	72.05	72.05

1 Access Public Road - Cross Section -
1/8" = 1'-0"

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

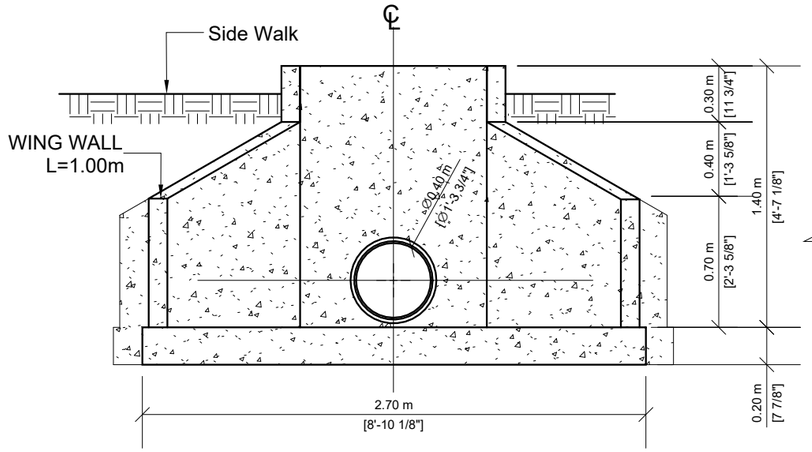
SHEET TITLE: **Access Public Road Cross Section**

SHEET NO. **C-11**

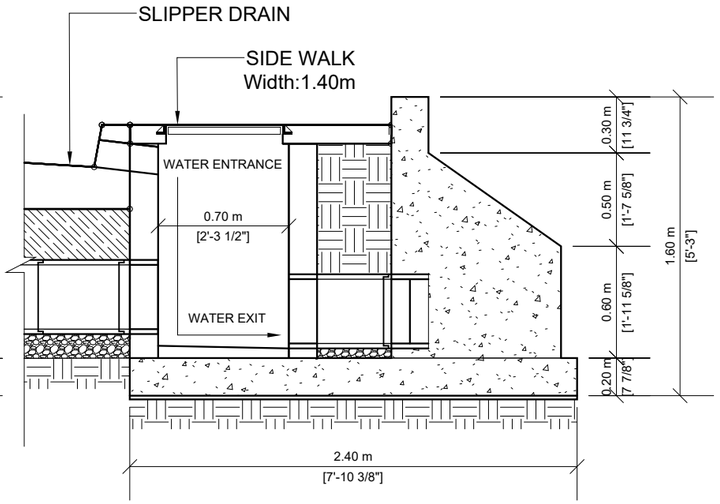
BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ADRIANA UROSA
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	1/8" = 1'-0"

SUMMARY OF MAIN DIMENSIONS	
PIPE DIAMETER	∅ 16"
HEADWALL HEIGHT	1.60 m
WALL WIDTH (FRONT)	1.00 m
WALL THICKNESS	0.20 m
BASE WIDTH	3.00 m
BASE SLAB THK.	0.30 m
WING WALL LENGTH	1.00 m (Each)



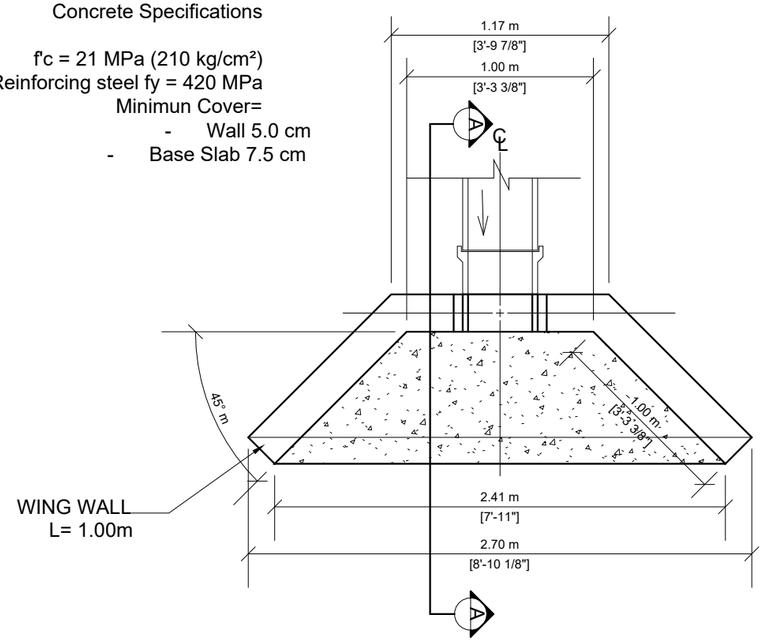
FRONT ELEVATION



SECTION A-A

Concrete Specifications

f'c = 21 MPa (210 kg/cm²)
Reinforcing steel fy = 420 MPa
Minimun Cover=
- Wall 5.0 cm
- Base Slab 7.5 cm

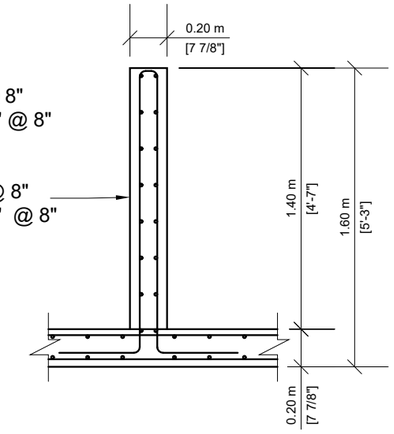


PLAN VIEW

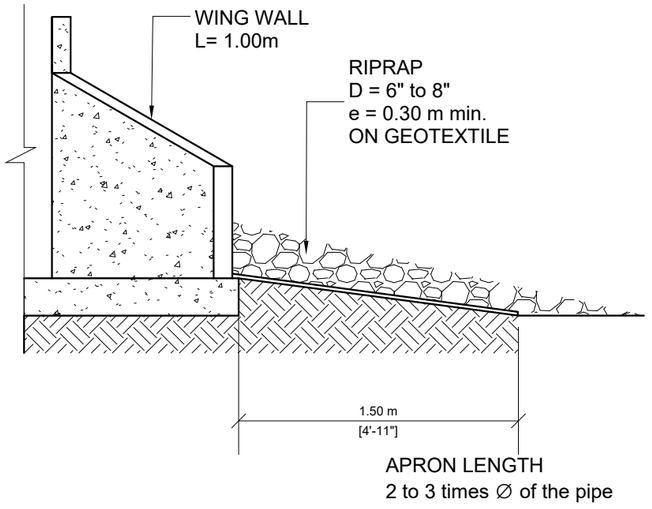
WALL:
Vertical Steel ∅ 1/2" @ 8"
Horizontal Steel ∅ 1/2" @ 8"

WING WALL:
Vertical Steel ∅ 1/2" @ 8"
Horizontal Steel ∅ 1/2" @ 8"

BASE SLAB
Steel both direction
∅ 1/2" @ 8"



WALL AND WINGS REINFORMENT



EROSION PROTECTION

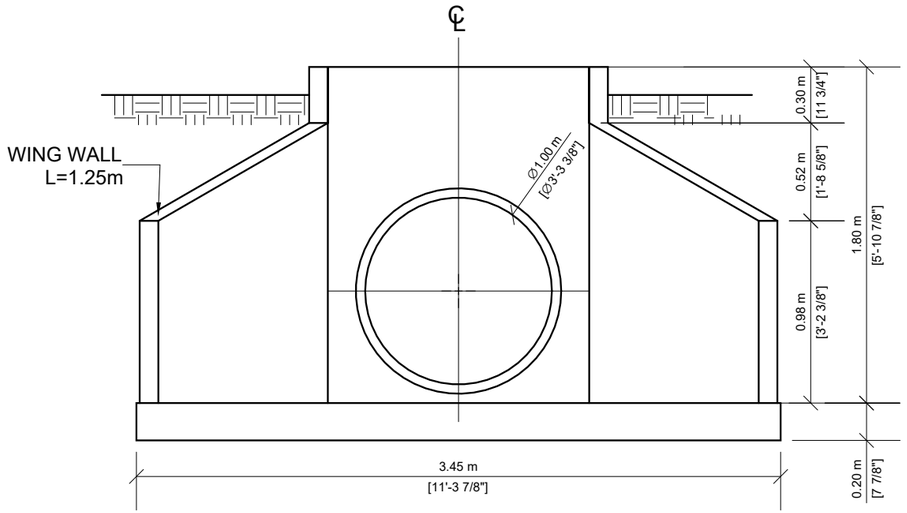
GENERAL NOTES:
- All dimensions are in meter, unless other wise noted.
- The headwall must be founded on firm ground, below the estimated scour depth.
- Compact the backfill in lifts of 20-30 cm at 95% Proctor.
- The joins between the pipe and concrete must be sealed to prevent infiltration and internal erosion.
- Check alignment of pipe and invert elevation before concrete placement.

PROJECT NAME: Proposed Madeys Bridge
PROJECT LOCATION: Madeys, St Patrick Grenada
SHEET TITLE: Headwall Details For Culvert B
SHEET NO. C-12

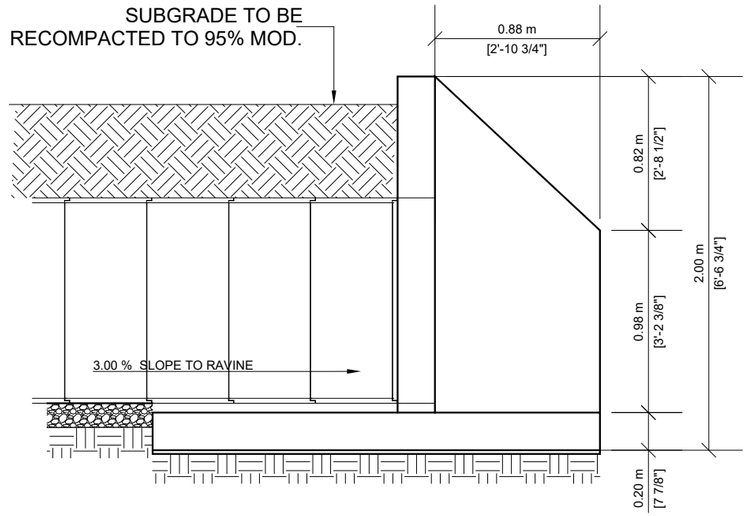
BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ADRIANA UROSA
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	3/8" = 1'-0"

SUMMARY OF MAIN DIMENSIONS	
PIPE DIAMETER	∅ 40"
HEADWALL HEIGHT	1.60 m
WALL WIDTH (FRONT)	1.00 m
WALL THICKNESS	0.20 m
BASE WIDTH	3.00 m
BASE SLAB THK.	0.30 m
WING WALL LENGTH	1.00 m (Each)



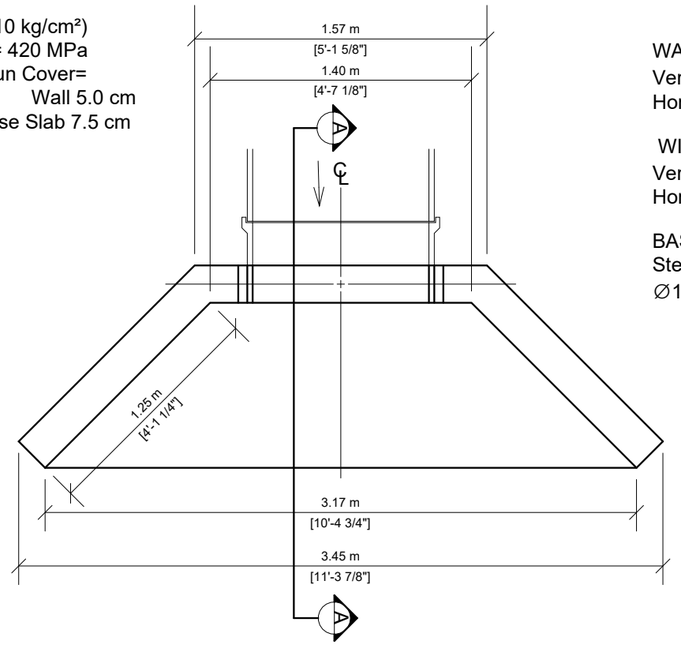
FRONT ELEVATION



SECTION A-A

Concrete Specifications

f'c = 21 MPa (210 kg/cm²)
Reinforcing steel fy = 420 MPa
Minimun Cover=
- Wall 5.0 cm
- Base Slab 7.5 cm

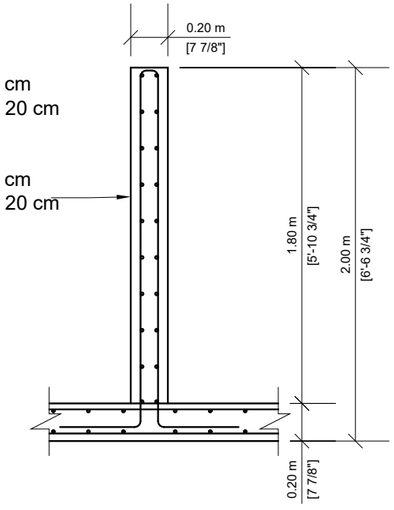


PLAN VIEW

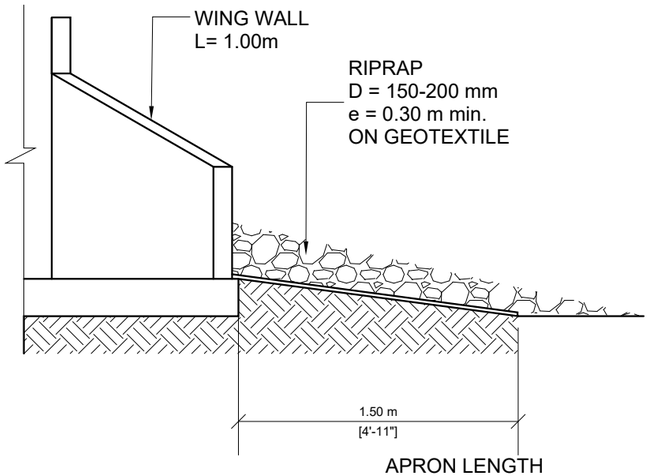
WALL:
Vertical Steel ∅12 mm @ 20 cm
Horizontal Steel ∅12 mm @ 20 cm

WING WALL:
Vertical Steel ∅12 mm @ 20 cm
Horizontal Steel ∅12 mm @ 20 cm

BASE SLAB
Steel both direction
∅12 mm @ 20 cm



WALL AND WINGS REINFORMENT



EROSION PROTECTION

GENERAL NOTES:
- All dimensions are in meter, unless other wise noted.
- The headwall must be founded on firm ground, below the estimated scour depth.
- Compact the backfill in lifts of 20-30 cm at 95% Proctor.
- The joins between the pipe and concrete must be sealed to prevent infiltration and internal erosion.
- Check alignment of pipe and invert elevation before concrete placement.

PROJECT NAME: **Proposed Madeys Bridge**

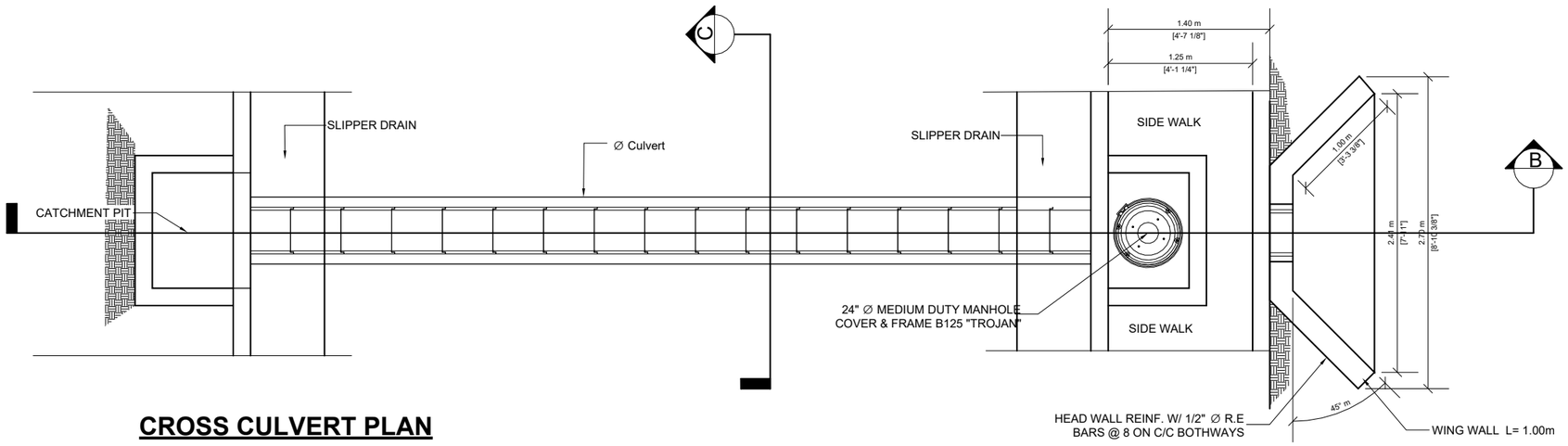
PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET TITLE: **Headwall Details For Culvert A**

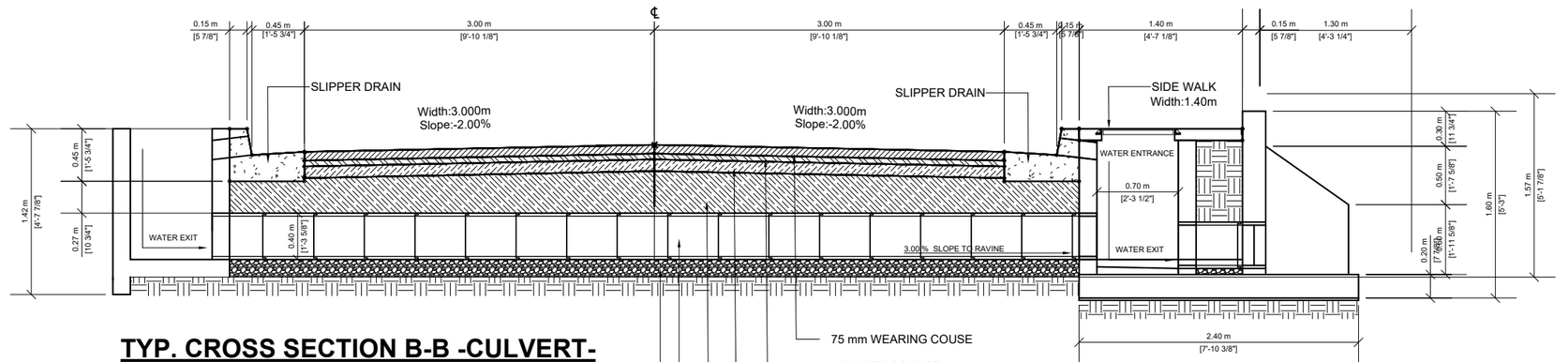
SHEET NO. **C-12.1**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

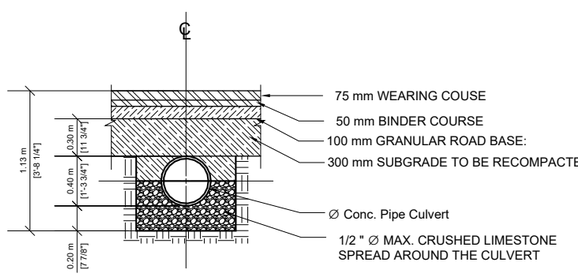
DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ADRIANA UROSA
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	3/8" = 1'-0"



CROSS CULVERT PLAN



TYP. CROSS SECTION B-B -CULVERT-



SECTION C-C

GENERAL NOTES:
- All dimensions are in meter, unless other wise noted.
- Compact the backfill in lifts of 20-30 cm at 95% Proctor.
- The joins between the pipe and concrete must be sealed to prevent infiltration and internal erosion.
- Check alignment of pipe and invert elevation before concrete placement.

PROJECT NAME: **Proposed Madeys Bridge**

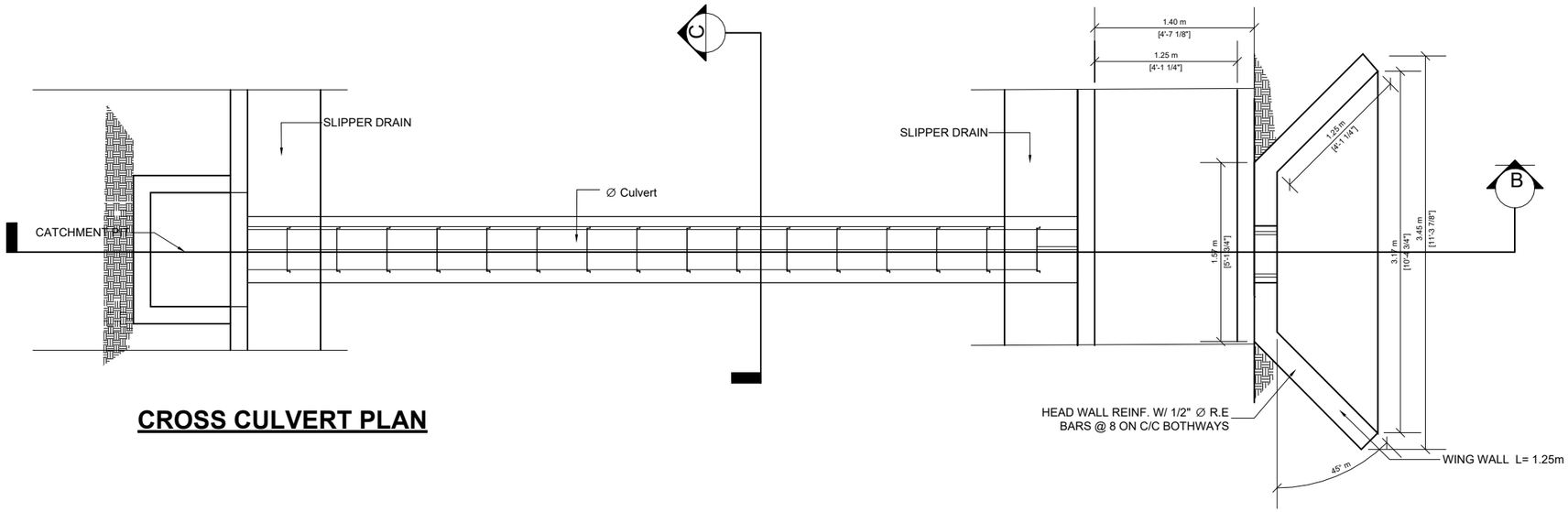
PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET TITLE: **Culvert B Cross Sections Details**

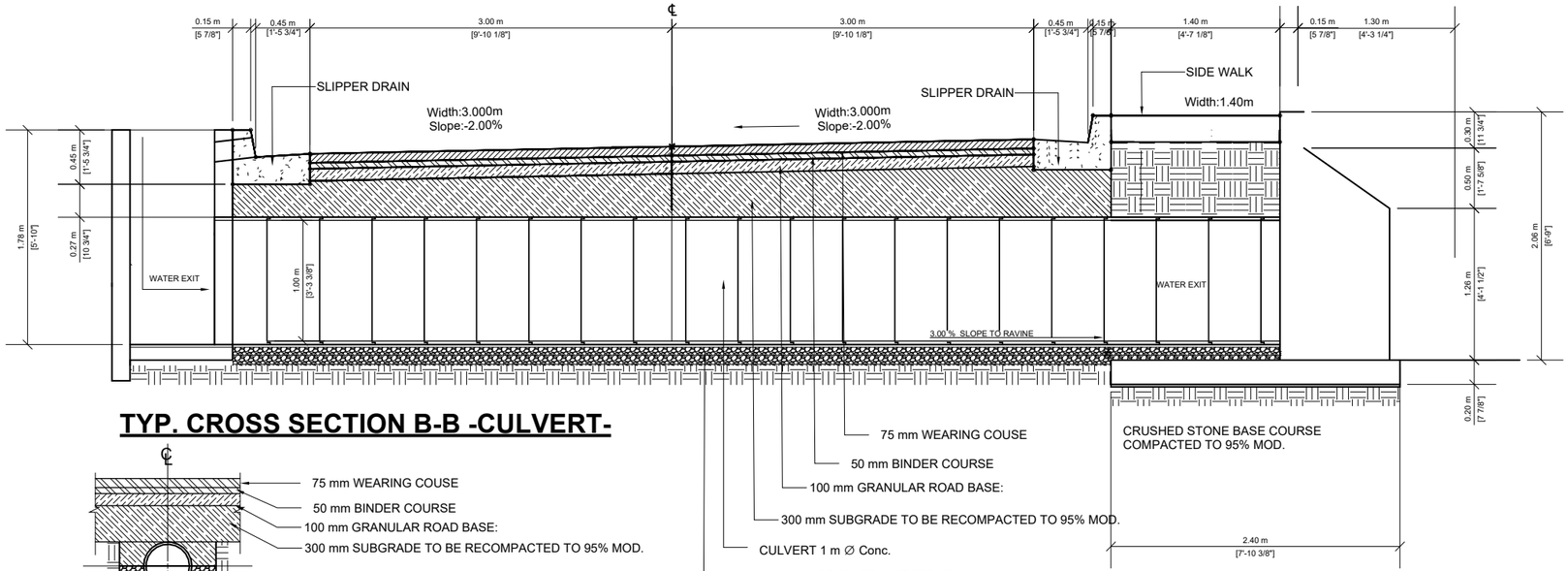
SHEET NO. **C-13**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

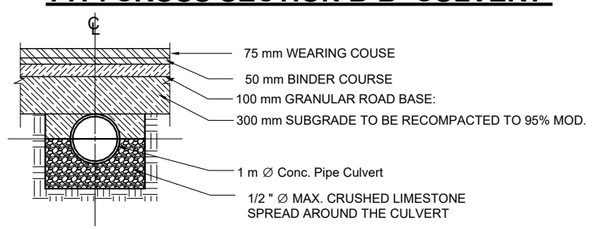
DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ADRIANA UROSA
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	1/4" = 1'-0"



CROSS CULVERT PLAN



TYP. CROSS SECTION B-B -CULVERT-



SECTION C-C

GENERAL NOTES:
- All dimensions are in meter, unless other wise noted.
- Compact the backfill in lifts of 20-30 cm at 95% Proctor.
- The joins between the pipe and concrete must be sealed to prevent infiltration and internal erosion.
- Check alignment of pipe and invert elevation before concrete placement.

PROJECT NAME: **Proposed Madeys Bridge**

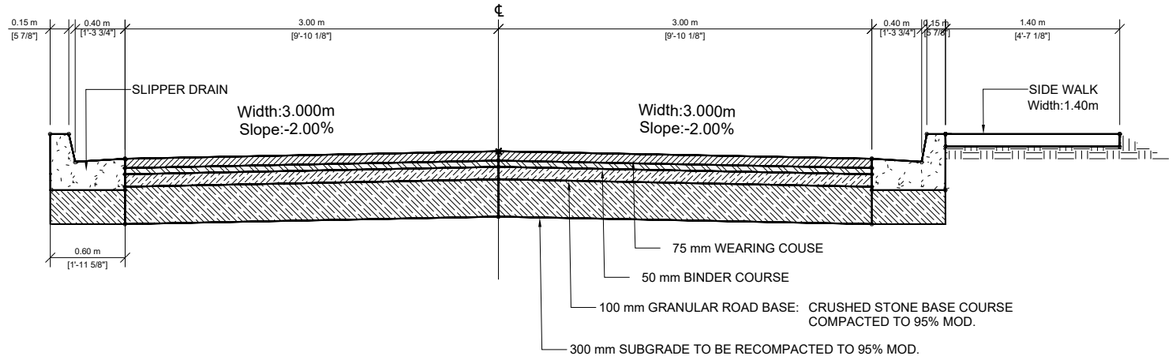
PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET TITLE: **Culvert A Cross Sections Details**

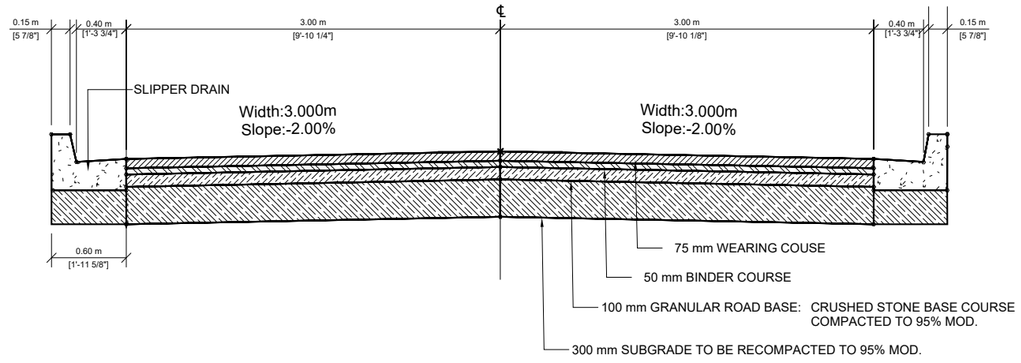
SHEET NO. **C-13.1**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

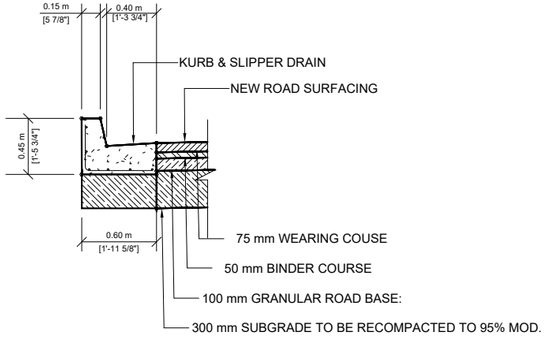
DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ADRIANA UROSA
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	1/4" = 1'-0"



TYP. CROSS SECTION -A-



TYP. CROSS SECTION -B-



TYP. SLIPPER DRAIN CROSS-SECTION

GENERAL NOTES:

- All dimensions are in meter, unless other wise noted.
- Pavement desing based on light to medium traffic
- Minimun Compaction: 95% Proctor.
- Paviment Crossfall: 2%
- Provide culverts as shown for drainage.

PAVEMENT STRUCTURE	
LAYERS	**THICKNESS**
ASPHALT WEARING COURSE	75 mm
ASPHALT BINDER COURSE	50 mm
CRUSHED STONE BASE COURSE	100 mm
COMPACTED SUBBASE	300 mm
TOTAL PAVEMENT THICKNESS	525 mm

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET NO. **C-14**

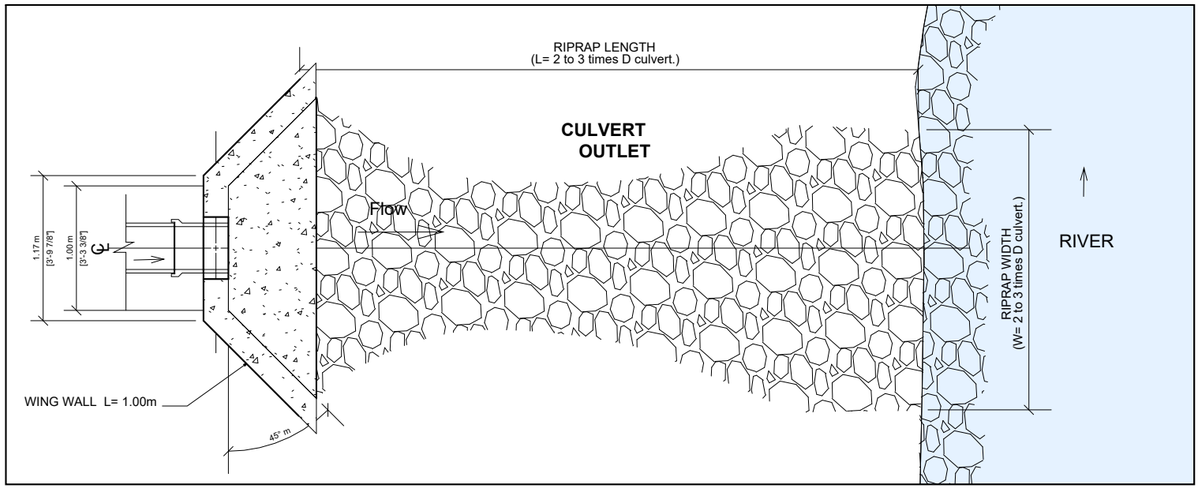
SHEET TITLE: **Road Cross Sections**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

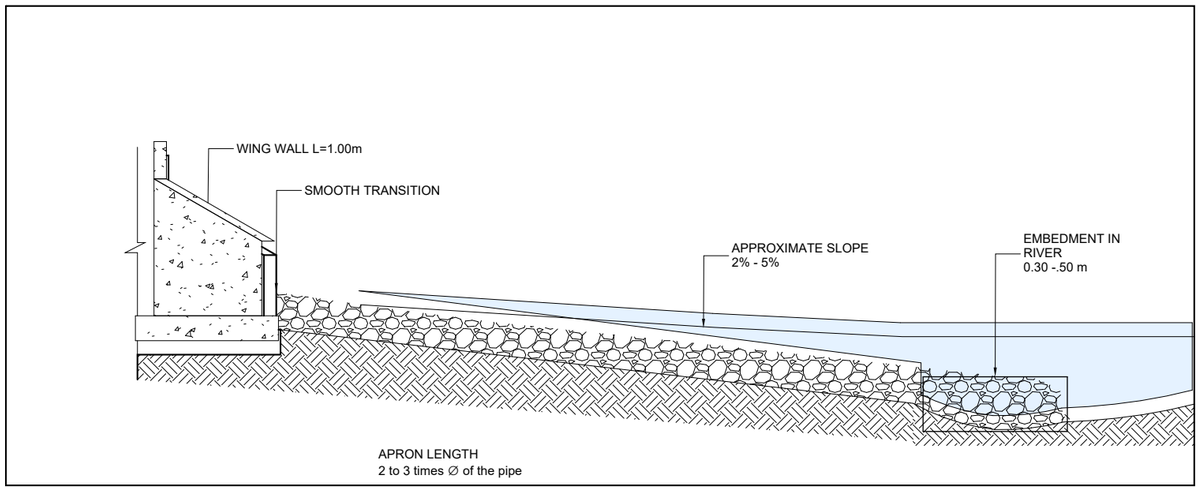
DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ADRIANA UROSA
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	1/4" = 1'-0"

RIPRAP FROM CULVERT OUTLET TO RIVER

GENERAL PLAN VIEW



GENERAL PLAN VIEW



AASHTO REFERENCE

AASHTO LRFD Bridge Design Specification (9 Th Edition)

Section 3.1 - Hydraulic Design of Highway Culverts

Section 3.10.6 Erosion Control at Culvert Outlets

"Outlets for culvert discharging to natural channels shall be designed with erosion protection. Riprap is an acceptable method of protection against erosion in the channel, The Riprap shall be designed to prevent scour and erosion of the channel and banks."

RIPRAP DESIGN ACCORDING TO AASTHO

The minimum stone size shall be determined using the equation (ASD):

$$D = \frac{K\ V^2}{(S_s - 1)\ g}$$

Where:
D = Mean stone diameter (m)
V = Flow velocity (m/s)
S_s= Specific gravity of stone (≈2.65)
g = Acceleration due to gravity (9.81 m/s²)
K = Coefficient (depends on flow type and placement)

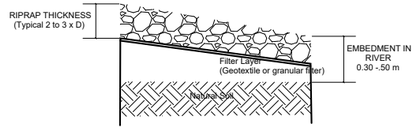
- K = 2.0 (uniform flow)
- K = 1.5 (contracted flow)
- K = 1.2 (turbulent flow)

GENERAL AASHTO SPECIFICATIONS

- The Riprap design thickness (T) shall be: 2 to 3 x D
- Minimum Riprap length (L): 3 to 5 times the culvert diameter (measured from the outlet).
- Minimum width (W): 2 to 3 times the culvert diameter or extend to the stable channel bank.
- Filter (geotextile or granular layer) shall be placed under the riprap.
- Embedment in the natural channel: 0.30 to 0.50 m minimum.

IMPORTANT NOTES

- Riprap shall be well grade and angular.
- Place filter (non-woven geotextile or granular filter) under the riprap.
- Embedment in the river prevents scour at the downstream end.
- Length and width may be adjusted base on hydraulic conditions.



TYPICAL CROSS SECTION

PROJECT NAME: Proposed Madeys Bridge

PROJECT LOCATION: Madeys, St Patrick Grenada

SHEET TITLE: Riprap Details

SHEET NO. C-15

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ADRIANA UROSA
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	1/4" = 1'-0"

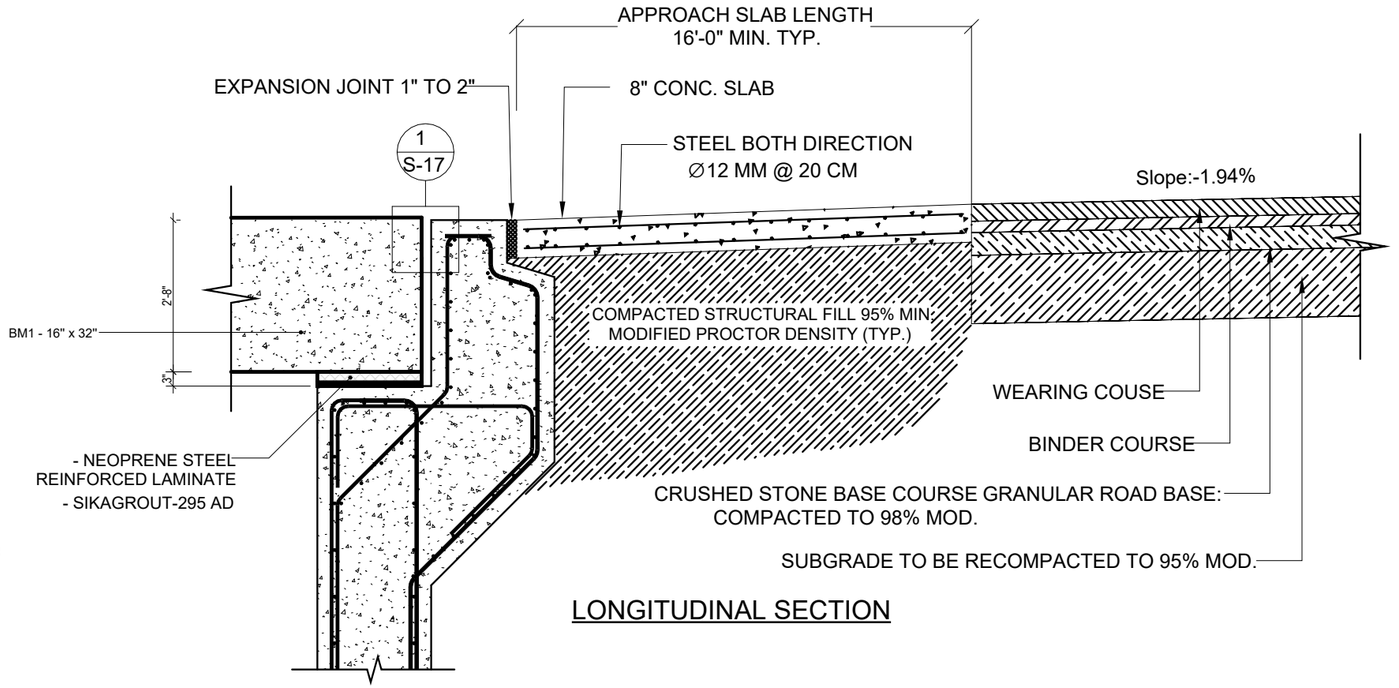
TYPICAL BRIDGE APPROACH TRANSITION DETAIL

ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

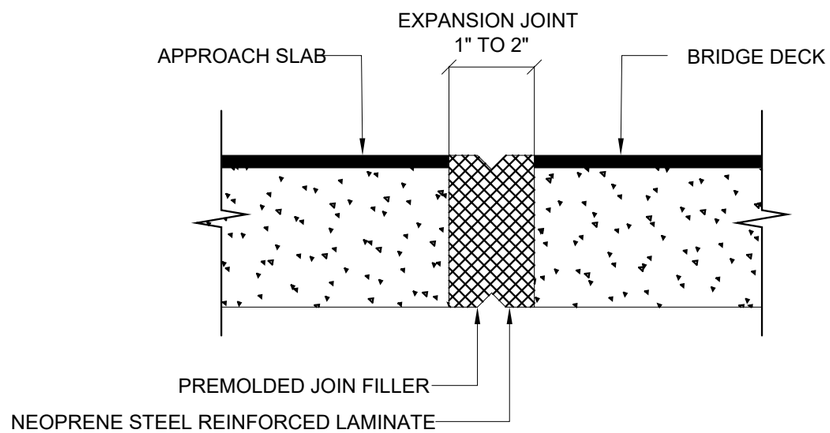
APPROACH SLAB REINFORMENT	
SLAB THICKNESS	**8" (TYP.)**
LONGITUDINAL REINFORCEMENT (TOP)	∅ 1/2" @ 8" O.C
LONGITUDINAL REINFORCEMENT (BOTTOM)	∅ 1/2" @ 8" O.C
TRANSVERSE REINFORCEMENT	∅ 1/2" @ 8" O.C
CONCRETE STRENGTH	f'c = 4000 psi (28 MPa) MIN.
COVER TO REINFORCEMENT	2" MIN.

NOTES:

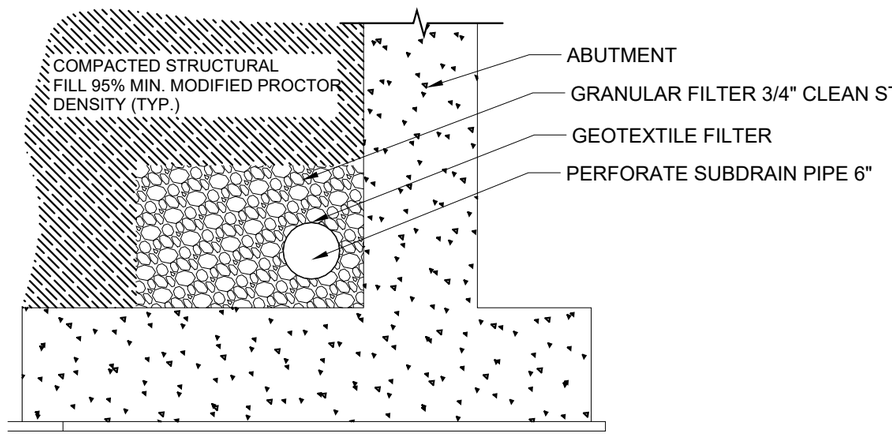
1. APPROACH SLAB SHALL BE CONSTRUCTED MONOLITHICALLY WITH THE APPROACH PAVEMENT.
2. APPROACH SLAB LENGTH MAY BE INCREASED AS REQUIRED BY SITE CONDITION TO LIMIT DIFFERENTIAL SETTLEMENT TO ACCEPTABLE LEVELS.
3. COMPACT ALL STRUCTURAL FILL IN MAXIMUM 8" LIFTS.
4. PROVIDE DRAINAGE SYSTEM O PREVENT WATER ACCUMULATION BEHIND THE ABUTMENT.
5. REFER TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 3.8 APPROACH SLABS AND BACKFILL



LONGITUDINAL SECTION



EXPANSION JOIN DETAIL



SUBDRAIN DETAIL

1 Aproach Slab Section Detail A
3/8" = 1'-0"

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET TITLE: **Aproach Slab Section Detail A & Drain Detail**

SHEET NO. **C-16**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALUENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	3/8" = 1'-0"

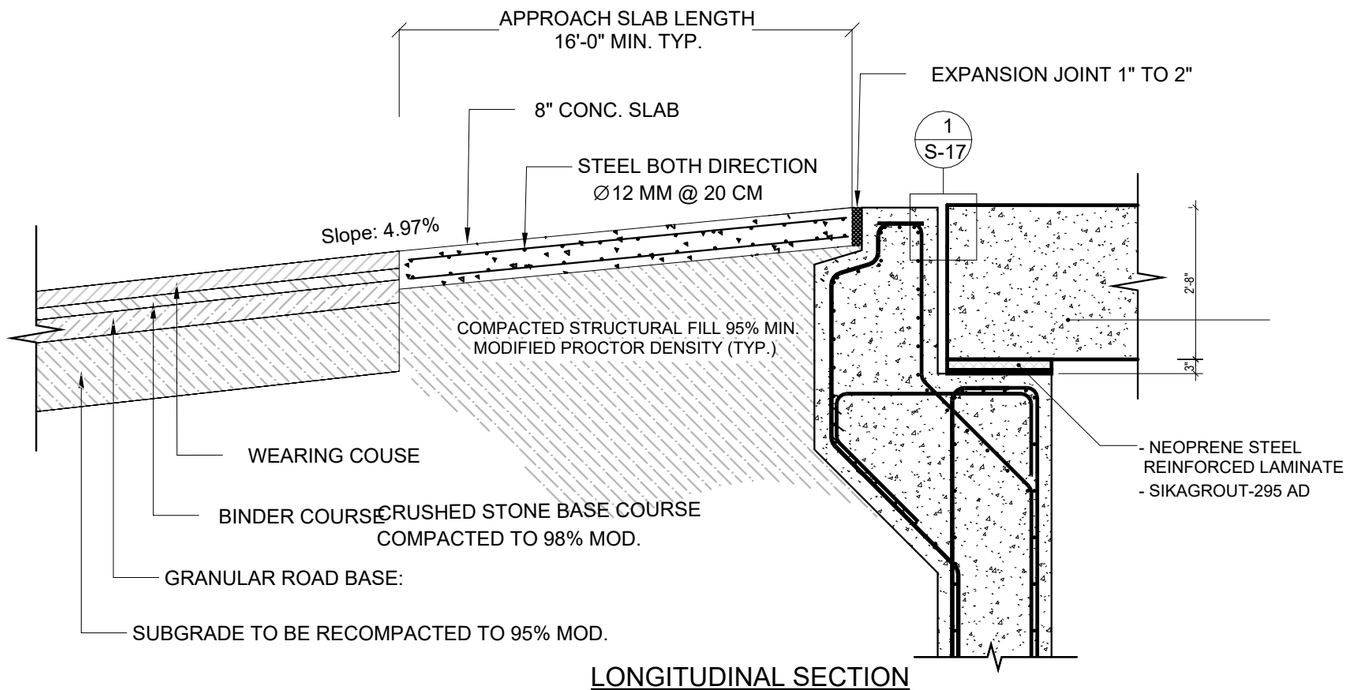
TYPICAL BRIDGE APPROACH TRANSITION DETAIL

ACCORDING TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS

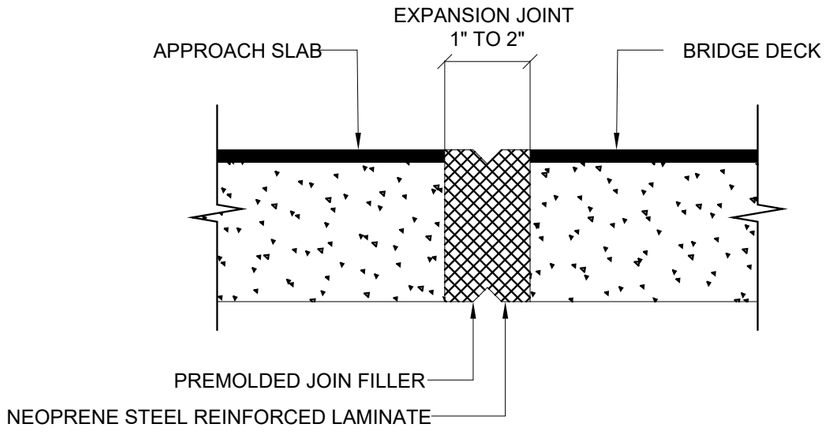
APPROACH SLAB REINFORMENT	
SLAB THICKNESS	**8" (TYP.)**
LONGITUDINAL REINFORCEMENT (TOP)	∅ 1/2" @ 8" O.C
LONGITUDINAL REINFORCEMENT (BOTTOM)	∅ 1/2" @ 8" O.C
TRANSVERSE REINFORCEMENT	∅ 1/2" @ 8" O.C
CONCRETE STRENGTH	f'c = 4000 psi (28 MPa) MIN.
COVER TO REINFORCEMENT	2" MIN.

NOTES:

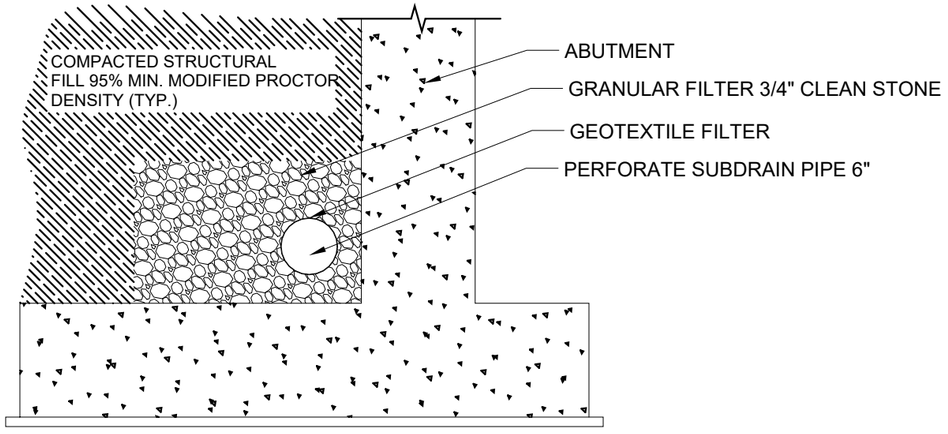
1. APPROACH SLAB SHALL BE CONSTRUCTED MONOLITHICALLY WITH THE APPROACH PAVEMENT.
2. APPROACH SLAB LENGTH MAY BE INCREASED AS REQUIRED BY SITE CONDITION TO LIMIT DIFFERENTIAL SETTLEMENT TO ACCEPTABLE LEVELS.
3. COMPACT ALL STRUCTURAL FILL IN MAXIMUM 8" LIFTS.
4. PROVIDE DRAINAGE SYSTEM O PREVENT WATER ACCUMULATION BEHIND THE ABUTMENT.
5. REFER TO AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS SECTION 3.8 APPROACH SLABS AND BACKFILL



LONGITUDINAL SECTION



EXPANSION JOIN DETAIL



SUBDRAIN DETAIL

1 Aproach Slab Section Detail B
3/8" = 1'-0"

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET TITLE: **Aproach Slab Section Detail B & Drain Detail**

SHEET NO. **C-17**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	3/8" = 1'-0"

TECHNICAL DESCRIPTION OF THE PROPOSED ROADWAY SIGNAGE – MADEYS BRIDGE AREA

The present traffic signage proposal has been developed with the objective of improving road safety, optimizing traffic channelization, and reducing vehicular conflict points at the intersection and roadway approaches near Madeys Bridge, considering the existing geometric conditions and constraints associated with the structure (lane narrowing and bridge crossing).

The design is based on the guidelines established by the American Association of State Highway and Transportation Officials (AASHTO), specifically in accordance with:

- A Policy on Geometric Design of Highways and Streets (Green Book)
- Complementary criteria from the Manual on Uniform Traffic Control Devices (MUTCD)

1. Pavement Markings (Horizontal Signage)

The following elements are proposed:

a. Double solid yellow centerlines:
Installed along bridge approaches and merging areas to prohibit overtaking maneuvers and maintain separation of opposing traffic flows, particularly in zones with restricted visibility and reduced roadway width.

b. Painted channelizing islands:
These features comply with AASHTO channelization principles aimed at organizing traffic flow and reducing driver decision complexity.

c. Stop lines:
Located on secondary approaches prior to entering the main roadway to enforce right-of-way control and improve intersection safety.

d. Lane reduction markings:
Progressively applied in advance of the bridge to warn drivers of geometric transitions.

2. Vertical Signage

The strategic placement of regulatory and warning signs is proposed to reinforce driver awareness:

a. "Narrow Bridge" warning signs:
Installed in both directions of travel to indicate reduced roadway width at the bridge, in accordance with MUTCD standards.

b. "Lane Reduction" signs:
Placed along the approaches to alert drivers to the reduction in available lanes.

c. "Turn Left" signs:
Used to guide and regulate permitted turning movements within the channelized intersection.

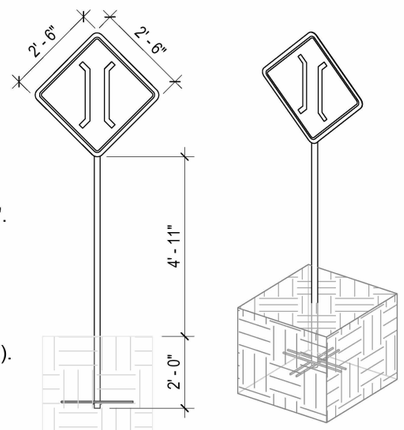
d. "Speed Reduction" signs:
Installed to encourage drivers to reduce speed prior to entering the critical bridge zone.

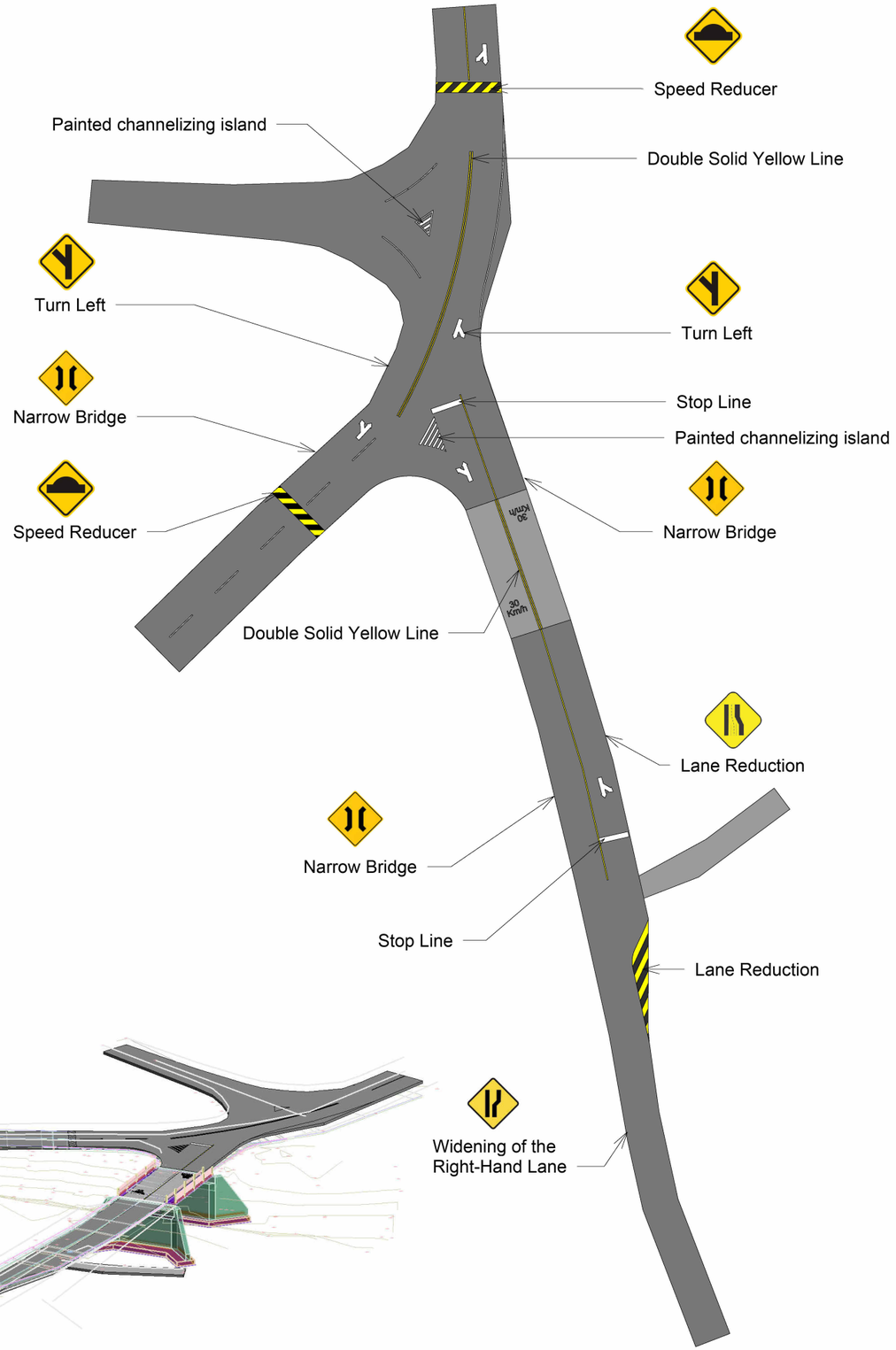
TECHNICAL SPECIFICATIONS: VERTICAL TRAFFIC SIGN (AASHTO)

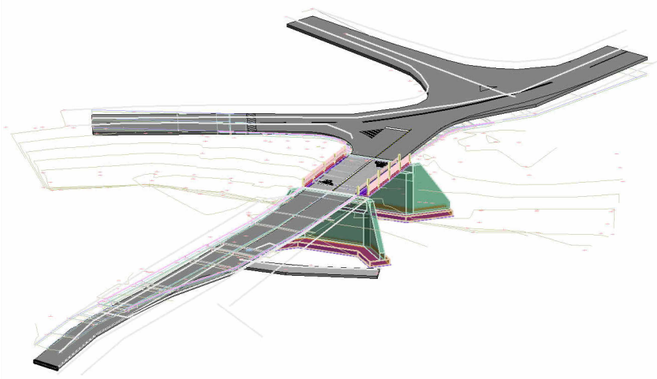
1. STRUCTURAL SUPPORT:
   - Profile: Hot-dip galvanized steel per ASTM A53 Grade B or ASTM A123 (Pipe / U-Channel).
   - Safety: Must include a Breakaway System certified under MASH / NCHRP 350 criteria.

2. FOUNDATION & ANCHORAGE:
   - Concrete: 3000 psi. Min. dimensions: 1'-3 3/4" X 1'-3 3/4" X 1'-3 3/4".
   - Anchorage: Steel crossbar at post base embedded in concrete to prevent rotation and uplift.

3. SIGN PANEL:
   - Substrate: Aluminum alloy 6061-T6, 2.0 mm thickness.
   - Reflectivity: High-intensity sheeting Type IV or higher (ASTM D4956).
   - Hardware: Stainless steel bolts with neoprene washers to prevent galvanic corrosion.







PROJECT NAME: Proposed Madeys Bridge

PROJECT LOCATION: Madeys, St Patrick Grenada

SHEET TITLE: Proposed Roadway Signage

SHEET NO. C-18

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	PEDRO SALAYA
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-062-2025
SCALE:	N/A

BRIDGE DESIGN INFORMATION:

1. GENERAL:

A. THE APPROVAL OF THE ENGINEER MUST BE SECURED FOR ALL CIVIL AND STRUCTURAL SUBSTITUTIONS.
B. DRAWING SHALL NOT BE SCALED.
C. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS BEFORE WITH ANY WORK, AND SHALL REPORT ANY DISCREPANCIES TO THE ENGINEER.
D. NOTICE FOR INSPECTION SHALL BE GIVEN AS FOLLOWS:
- 48 HOURS PRIOR TO COMMENCEMENT OF WORK.
- 24 HOURS BEFORE EXCAVATION ARE COVERED UP.
- 24 HOURS BEFORE CONCRETE IS POURED.
- 24 HOURS BEFORE ANY MATERIAL IS LAID.
- 24 HOURS BEFORE ANY DRAIN, SEWER OR CONDUITS ARE COVERED.

E. WORKMANSHIP SHALL CONFORM TO BS 8000.
F. ABBREVIATIONS:
- REINF.....REINFORCED
- AC OR A/C.....AIR CONDITIONING
- CONC.....CONCRETE
- H.C.B.....HOLLOW CONCRETE BLOCK
- O.C.....ON CENTER
- C/C.....CENTER TO CENTER
- DIA. / ∅.....DIAMETER
- DN.....DOWN
- DWG / DRWG.....DRAWING
- F.F.L.....FINISH FLOOR LEVEL
- HORIZ.....HORIZONTAL
- REF.....REFERENCE
- RE.....REINFORCEMENT
- VERT.....VERTICAL
- W/.....WITH
- @.....AT

2. RELEVANT BUILDING REGULATIONS AND DESIGN CODES:

- GRENADA BUILDING CODE
- 2006 INTERNATIONAL BUILDING CODE
- 2006 INTERNATIONAL RESIDENTIAL CODE
- AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS
- ACI 318 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE

3. INTENDED USE OF STRUCTURE : BRIDGE

4. FIRE RESISTANCE REQUIREMENTS : 1 HOUR FOR ALL ELEMENTS

5. GENERAL LOAD CONDITIONS:

Axle Configuration: HS-20 (AASHTO)
- Axle 1 (Front): 3,629 kg (8,000 lbs).
- Axle 2 (Drive): 14,515 kg (32,000 lbs).
- Axle 3 (Trailer): 14,515 kg (32,000 lbs).
- Gross Weight: 32,659 kg (approx. 72,000 lbs, often rounded to 36 tons or 20 short tons for the base “H” load).

Axle Spacing:
- Distance between Axles 1 and 2: 4.27 m (14 ft).
- Distance between axles 2 and 3: Variable between 4.27 m (14 ft) and 9.14 m (30 ft) to maximize torque.
- Wheel Load: 16,000 lbs (7,257 kg) per wheel on the rear axles, based on an 18-wheel truck.

6. WIND LOAD CONDITIONS:
- SPEED: 40 M/S
- FACTORS: S1 = 1.0, S2 = 0.83
  S3 = 1.0, CF = 1.0

7. SEISMIC CONDITIONS:
- PGA (475 years): 0.20 –0.30 g
- PGA (2475 years): 0.35 –0.50 g
- Ss: 0.5–1.2 g
- S1: 0.15–0.50 g
  - Site factors
  - AASHTO spectrum
  - Site Class D

7. EXPOSURE CONDITIONS
- SEVERE (EXTERNAL)
- MILD (INTERNAL)

8. FOUNDATION TYPE :
- REINFORCED CONCRETE FOOTINGS TO COLUMNS AND WALLS
- ALL FOOTING SHALL BE PLACED ON FIRM, APPROVED, MATERIAL. BACKFILL SHALL BE COMPACTED UNLESS OTHERWISE NOTED.
- ALL UNSUITABLE MATERIAL TO BE EXCAVATED & REPLACED WITH PROPERLY COMPACTED FILL AS DIRECTED BY THE ENGINEER.

9. MATERIALS DATA :
- GRADE 40 WITH 20mm MAXIMUM AGGREGATE
- CHARACTERISTICS STRENGTH - MAIN BARS, Fy = 460 KN/m ^{2}
- CHARACTERISTICS STRENGTH - LINK BARS, Fy = 250 KN/m ^{2}
- CHARACTERISTICS STRENGTH - REINFORCED CONCRETE, Fcu = 4500 PSI AT 28 DAYS.
- SELF WEIGHT OF REINFORCED CONCRETE = 24 KN/m ^{2}

10. CONCRETE :
- AGGREGATE TO COMPLY WITH REQUIREMENTS OF BS 882.
- CEMENT TO COMPLY WITH REQUIREMENTS OF BS 12.
- MINIMUM CEMENT CONTENT 240 Kg PER CUBIC METER.
- MAXIMUM AGGREGATE SIZE3 / 4"
- MAXIMUM CEMENT - WATER RATIO 65%

11. REINFORCEMENT:
- REINFORCEMENT TO COMPLY WITH REQUIREMENTS OF ASTM GRADE 60
- FOR HIGH DEFORMED BARS (Fy = 410 N/mm²).
- FOR PLAIN ROUND MILD STEEL (Fy = 250 N/mm²).
- COVER TO REINFORCEMENT:- SLAB: 1"- BEAM:2"- COLUMN: 2"- BURIED CONCRETE: 3"
- CONCRETE TO FOUNDATION & GROUND BEAMS TO HAVE MINIMUM CUBE STRENGTH OF 4000 PSI AT 28 DAYS.
- CONCRETE TO UPPER FLOOR & COLUMNS TO HAVE A MINIMUM CUBE STRENGTH OF 4000 PSI AT 28 DAYS.
- STEEL REINFORCEMENT TO BE COLD WORKED DEFORMED BARS TO BS 4461 OR OTHER APPROVED, WITH BENDING STRESS OF: " Y " BARS - 66 KSI AND " R " BARS - 33 KSI.
- LAPS:
  - MINIMUM LAP FOR 3/8" ∅ = 1'-6"
  - MINIMUM LAP FOR 1/2" ∅ = 2'-0"
  - MINIMUM LAP FOR 5/8" ∅ = 2'-6"
  - MINIMUM LAP FOR 3/4" ∅ = 3'-0"
  - MINIMUM LAP FOR 1" ∅ = 4'-0"
  - MINIMUM LAP FOR 1-1/4" ∅ = 5'-0"
- NO WELDING OF REINFORCEMENTS PERMITTED.
- Y - HIGH TENSILE STEEL
- R - MILD STEEL

STANDARD MESH FABRIC FOR CONCRETE REINFORCEMENT:

	BS 4483 REF.	MESH SIZE NOMINAL PITCH OF WIRES		WIRE DIAMETER		CROSS SECTIONAL AREA PER METER WIDTH		NOMINAL MASS PER METER
		MAIN (mm)	CROSS (mm)	MAIN (mm)	CROSS (mm)	MAIN (mm)	CROSS (mm)	(Kg)
1	A393	200	200	10	10	393	393	6.16
2	A252	200	200	8	8	252	252	3.95
3	A193	200	200	7	7	193	193	3.02
4	A142	200	200	6	6	142	142	2.22
5	A98	200	200	5	5	98	98	1.54
6	A65	200	200	4.87	4.87	65	65	...
7	A66	200	200	4.43	4.43	66	66	...
8	A610	200	200	4	4	...	...	...

12. STEEL WORKS:
- ALL STEEL FABRICATION IN ACCORDANCE WITH THE REQUIREMENTS OF:
  - BS 449 PART 2 (1969)
  - BS 449 PART 2 (1965)
  - BS 4190
  - BS 4395 PART 1 (1969)
  - BS 5136 PART 2 (1974)
- CHIP AND WIRE BRUSH ALL WELDS THOROUGHLY BEFORE PAINTING.
- SHOP COAT PRIMER (TWO COATS ON WELDS) COMPATIBLE WITH TWO COATS OF APPROVED EPOXY FINISH OR AS DIRECTED

13. BLOCKWORK:

A. ALL CONCRETE BLOCKS SHALL BECLASS A TO BS 6073. AVERAGE GROSS CRUSHING STRENGTH SHALL BE A MINIMUM OF 711 PSI (4.9 N/mm) WHEN TESTED TO BS 6073.
B. MORTAR SHALL COMPLY WITH THE REQUIREMENTS OF BS 4721
C. MORTAR SHALL BY VOLUME CONSIST OF ONE PART CEMENT TO THREE PARTS SAND, WITH SUFFICIENT WATER TO ENSURE WORKABILITY.
D. ALL BLOCKS SHALL BE LAID ON A FULL BED OF MORTAR AND ALL JOINTS SHALL BE COMPLETELY FILLED WITH MORTAR.
E. ALL WALLS SHALL BE REINFORCED AS INDICATED ON THE DRAWINGS WITH AS APPROVED MESH FABRIC.
F. ALL JOINTS TO BE FINISHED FLUSH, UNLESS OTHERWISE NOTED
G. VERTICAL PIPES AND CONDUITS MAY BE PLACED IN UNREINFORCED BLOCKWORK CORES. NO CUTTING OF BLOCKS MAY BE UNDERTAKEN FOR THE PLACEMENT OF PIPES AND CONDUITS WITHOUT THE ENGINEERS APPROVAL.
H. MINIMUM WALL REINFORCEMENT:
  - 8" WALL = 1-12mm (1 / 2" ∅) BAR AT 16" C/C VERTICAL & 1-12mm (1 / 2" ∅) BAR AT 24" C/C HORIZONTAL.
  - 6" WALL = 1-12mm (1 / 2" ∅) BAR AT 24" C/C VERTICAL & 1-12mm (1 / 2" ∅) BAR AT 24" C/C HORIZONTAL.
  - 4" WALL = 1-12mm (1 / 2" ∅) BAR AT 36" C/C VERTICAL & 1-10mm (3 / 8" ∅) BAR AT 24" C/C HORIZONTAL.

- POUR GROUT INTO ALL CORES BELOW GROUND & ALL REINFORCEMENT CORES ABOVE GROUND FLOOR LEVEL.
- LIQUID GROUT - 1 CEMENT : 3 WATER : 4 SAND (1:3:4)
- A MINIMUM OF 1-10mm (3 / 8" ∅)BAR TO BE PLACED IN THE CORNER AND AT EACH SIDE OF AN OPENING.

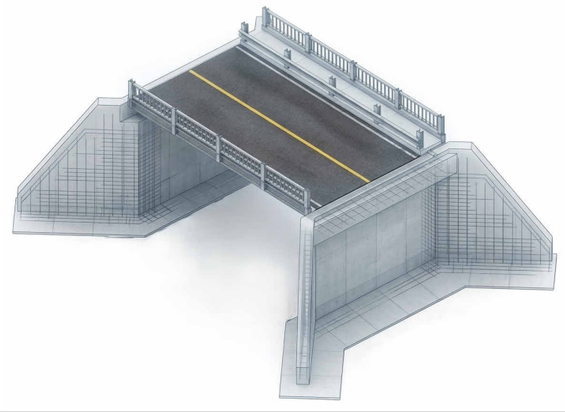
14. DRAINAGE:

A. RAINWATER PIPES AND FITTINGS, STORMWATER PIPES AND FITTINGS, SOIL AND FITTINGS SHALL BE PLASTIC TO BS 4576
B. ROOF OUTLETS SHALL BE TERRAIN 2171.4 DOMES ROOF OUTLETS OR OTHER APPROVED EQUAL

15. STRUCTURAL STEELWORK:

A. STEEL SHALL BE GRADE 43 TO BS 4360
B. I-SECTIONS, TEES AND CHANNELS SHALL BE TO BS 4
- ANGLES AND HOLLOW SECTIONS SHALL BE TO BS 4848
- BOLTS AND NUTS SHALL BE GRADE 4.6 TO BS 4190

C. ALL MATERIALS SHALL BE CLEANED AND PRIMED BEFORE DELIVERY
D. COLUMN BASES SHALL BE PACKED TO THE CORRECT LEVEL WITH STEEL WEDGES AND GROUTED WITH AN APPROVED GROUT



PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET TITLE: **Information on Bridge Design**

SHEET NO. **S-00**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	PEDRO SALAYA
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	

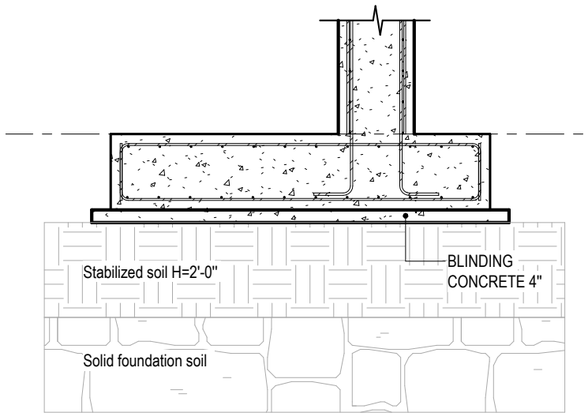
REINFORCING STEEL IN FOUNDATIONS

Comment	Type	Material	Bar Length	Waste(10%)	**Total Bar Length**	**Total (Lb)**
ARM-FOOT-STB	3/4''	Rebar, ASTM A615, Grade 60	2,739'-7"	273'-11 1/2"	3,013'-6 1/2"	4520.31 lb
ARM-FOOT-INF-TR	5/8''	Rebar, ASTM A615, Grade 60	1,698'-0"	169'-9 5/8"	1,867'-9 5/8"	1942.51 lb
ARM-FOOT-LONG-BOTT	5/8''	Rebar, ASTM A615, Grade 60	1,491'-4"	149'-1 5/8"	1,640'-5 5/8"	1706.09 lb
ARM-FOOT-LONG-TOP	5/8''	Rebar, ASTM A615, Grade 60	1,463'-0"	146'-3 5/8"	1,609'-3 5/8"	1673.67 lb
ARM-FOOT-STB	5/8''	Rebar, ASTM A615, Grade 60	793'-0"	79'-3 5/8"	872'-3 5/8"	907.19 lb
ARM-FOOT-SUP-TR	5/8''	Rebar, ASTM A615, Grade 60	1,759'-6"	175'-11 3/8"	1,935'-5 3/8"	2012.87 lb
			9,944'-5"	994'-5 1/4"	10,938'-10 1/4"	12762.64 lb

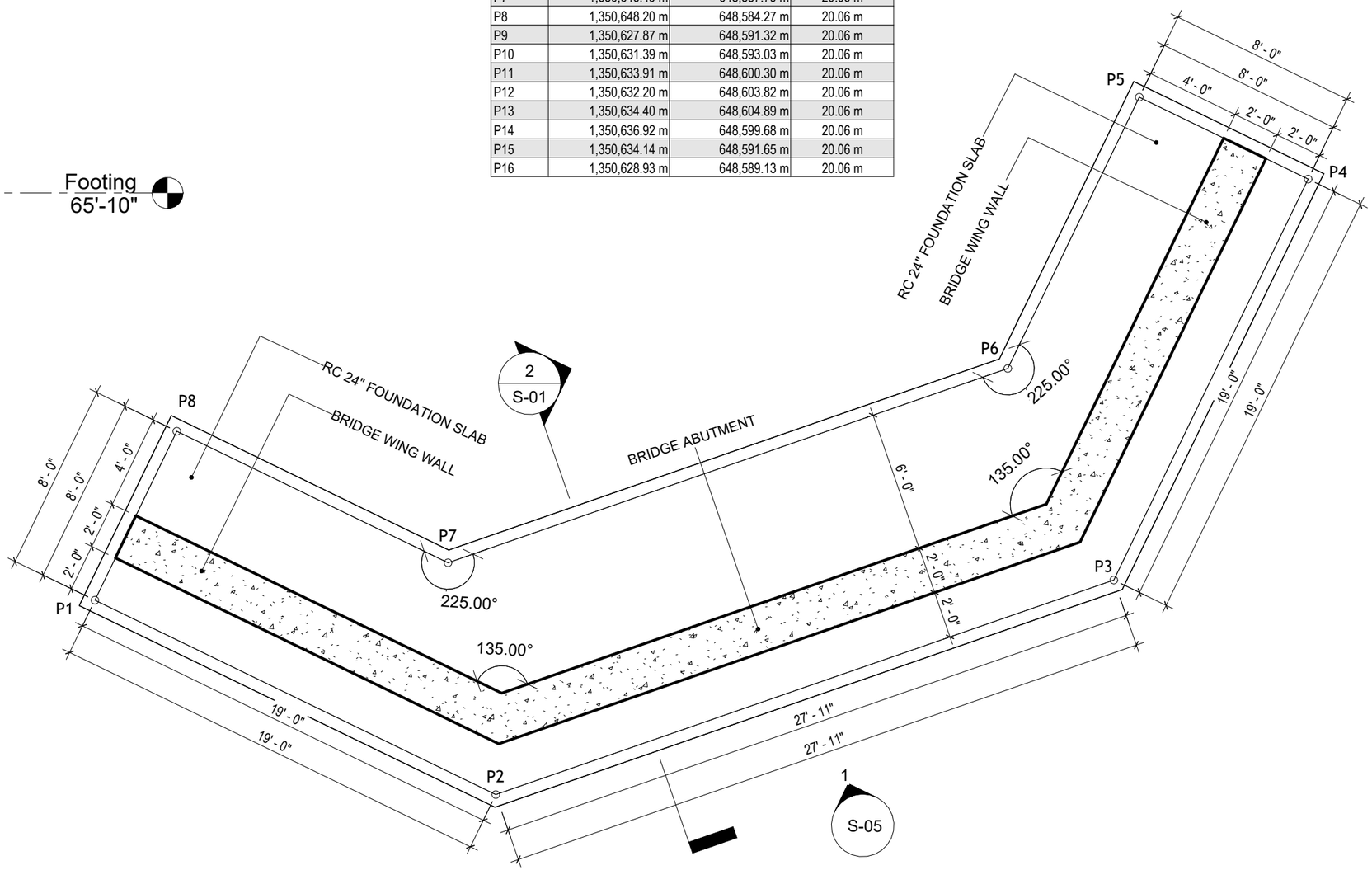
COORDINATES

Mark	Coordinate (N)	Coordinate (E)	Elevation Z
P1	1,350,646.01 m	648,583.20 m	20.06 m
P2	1,350,643.48 m	648,588.41 m	20.06 m
P3	1,350,646.27 m	648,596.44 m	20.06 m
P4	1,350,651.47 m	648,598.96 m	20.06 m
P5	1,350,652.54 m	648,596.77 m	20.06 m
P6	1,350,649.01 m	648,595.06 m	20.06 m
P7	1,350,646.49 m	648,587.79 m	20.06 m
P8	1,350,648.20 m	648,584.27 m	20.06 m
P9	1,350,627.87 m	648,591.32 m	20.06 m
P10	1,350,631.39 m	648,593.03 m	20.06 m
P11	1,350,633.91 m	648,600.30 m	20.06 m
P12	1,350,632.20 m	648,603.82 m	20.06 m
P13	1,350,634.40 m	648,604.89 m	20.06 m
P14	1,350,636.92 m	648,599.68 m	20.06 m
P15	1,350,634.14 m	648,591.65 m	20.06 m
P16	1,350,628.93 m	648,589.13 m	20.06 m

Datum (m):
BM
N: 1.350.629,71
E: 648.644,12
Z: 26.51



2 Footing Section Detail
1/4" = 1'-0"



1 Footing Floor Plan
3/16" = 1'-0"

PROJECT NAME: **Proposed Madeys Bridge**
PROJECT LOCATION: **Madeys, St Patrick Grenada**
SHEET TITLE: **Footing Plan & Section Detail**
SHEET NO. **S-01**

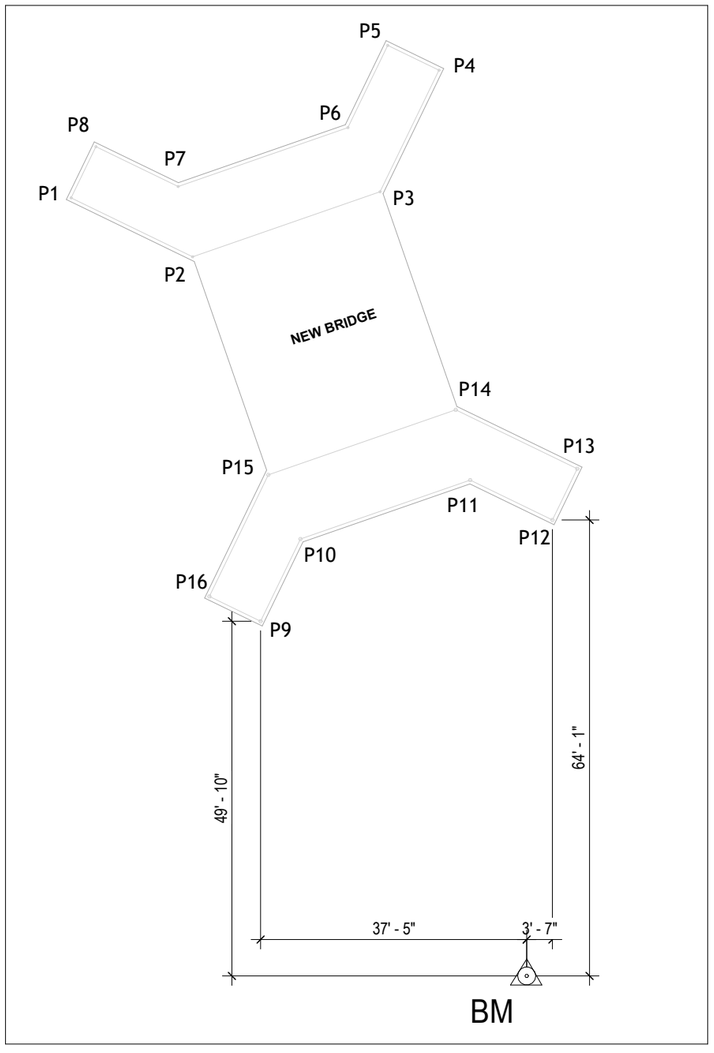
BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

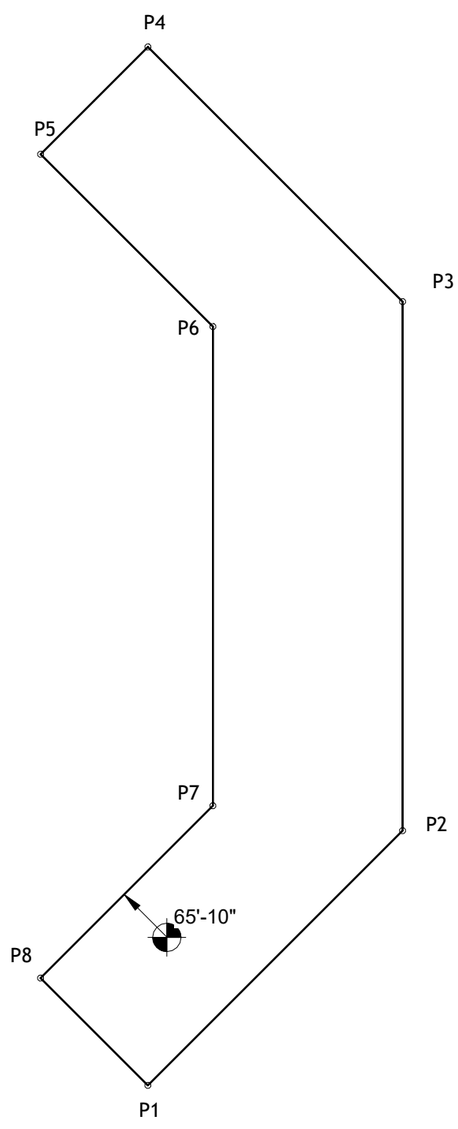
DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	Como se indica

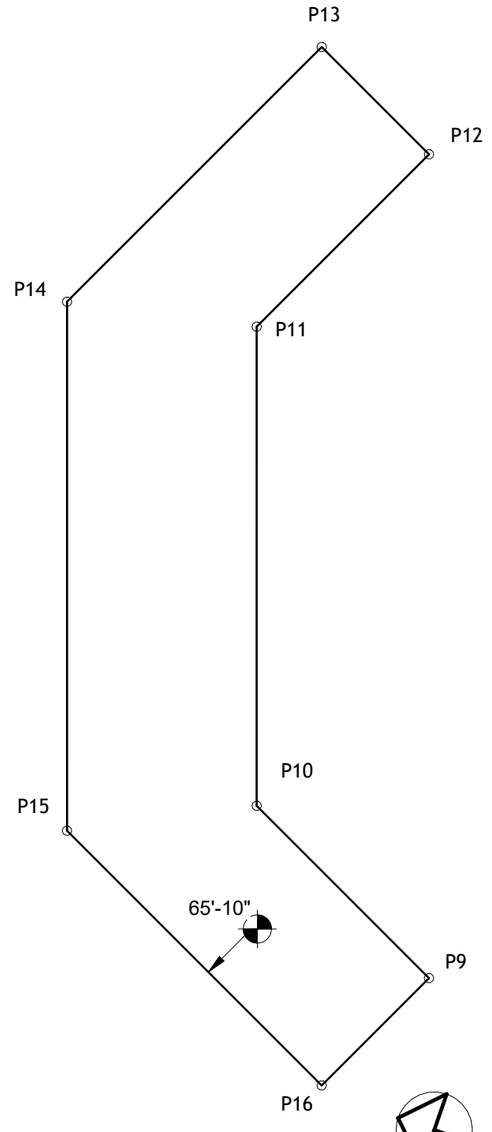
COORDINATES

Mark	Coordinate (N)	Coordinate (E)	Elevation Z
P1	1,350,646.01 m	648,583.20 m	20.06 m
P2	1,350,643.48 m	648,588.41 m	20.06 m
P3	1,350,646.27 m	648,596.44 m	20.06 m
P4	1,350,651.47 m	648,598.96 m	20.06 m
P5	1,350,652.54 m	648,596.77 m	20.06 m
P6	1,350,649.01 m	648,595.06 m	20.06 m
P7	1,350,646.49 m	648,587.79 m	20.06 m
P8	1,350,648.20 m	648,584.27 m	20.06 m
P9	1,350,627.87 m	648,591.32 m	20.06 m
P10	1,350,631.39 m	648,593.03 m	20.06 m
P11	1,350,633.91 m	648,600.30 m	20.06 m
P12	1,350,632.20 m	648,603.82 m	20.06 m
P13	1,350,634.40 m	648,604.89 m	20.06 m
P14	1,350,636.92 m	648,599.68 m	20.06 m
P15	1,350,634.14 m	648,591.65 m	20.06 m
P16	1,350,628.93 m	648,589.13 m	20.06 m

Datum (m):
BM
N: 1.350.629,71
E: 648.644,12
Z: 26.51







1 Footing Coordinates
1/8" = 1'-0"

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET TITLE: **Footing Coordinates**

SHEET NO. **S-01.1**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	Como se indica

Notes:

1 - SikaGrout ® - 295

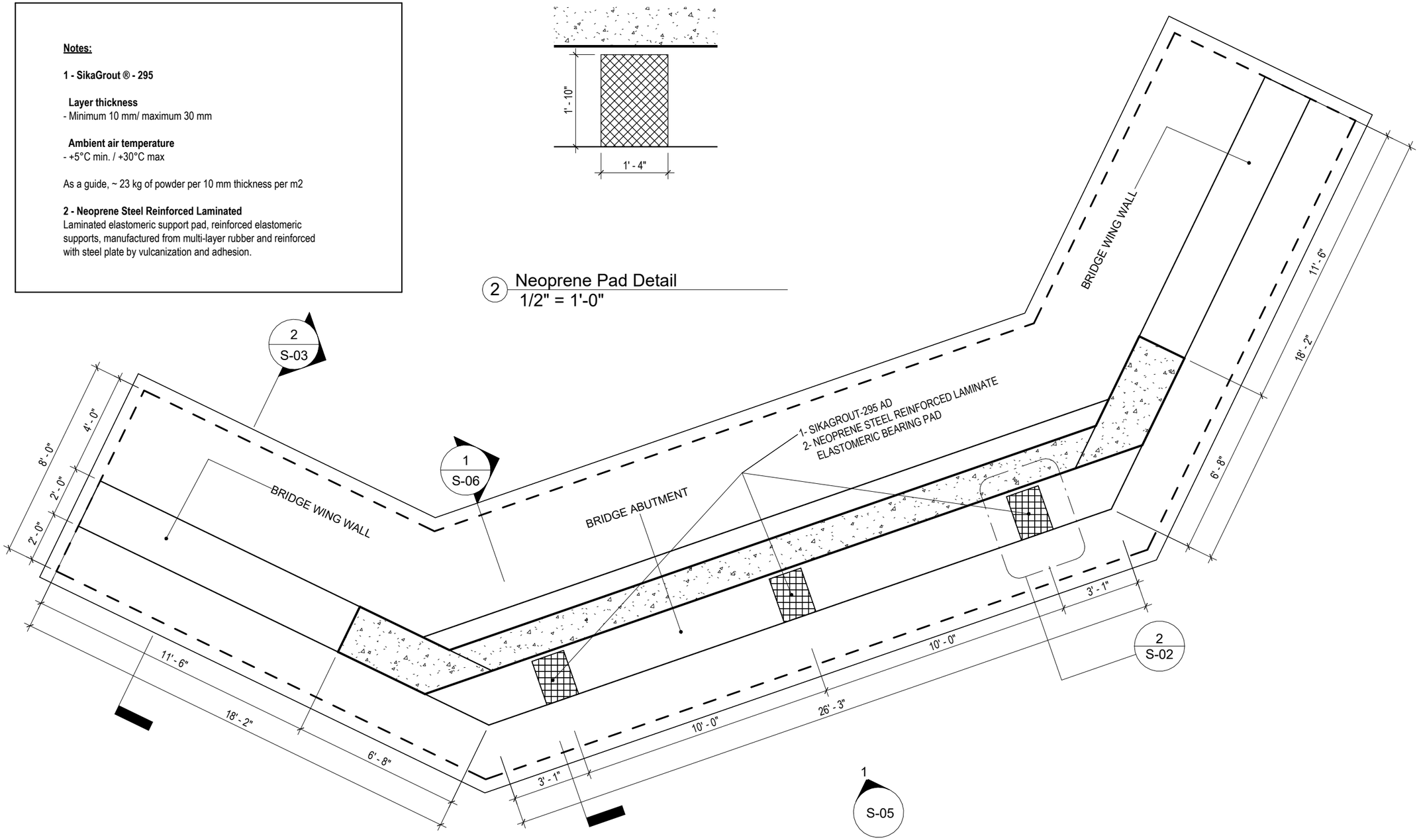
Layer thickness
- Minimum 10 mm/ maximum 30 mm

Ambient air temperature
- +5°C min. / +30°C max

As a guide, ~ 23 kg of powder per 10 mm thickness per m2

2 - Neoprene Steel Reinforced Laminated
Laminated elastomeric support pad, reinforced elastomeric supports, manufactured from multi-layer rubber and reinforced with steel plate by vulcanization and adhesion.

2 Neoprene Pad Detail
1/2" = 1'-0"



1 Abutment Plan
1/4" = 1'-0"

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET TITLE: **Bridge Abutment & Wing Wall Plan**

SHEET NO. **S-02**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	Como se indica

ABUTMENT FOOTING REBARS

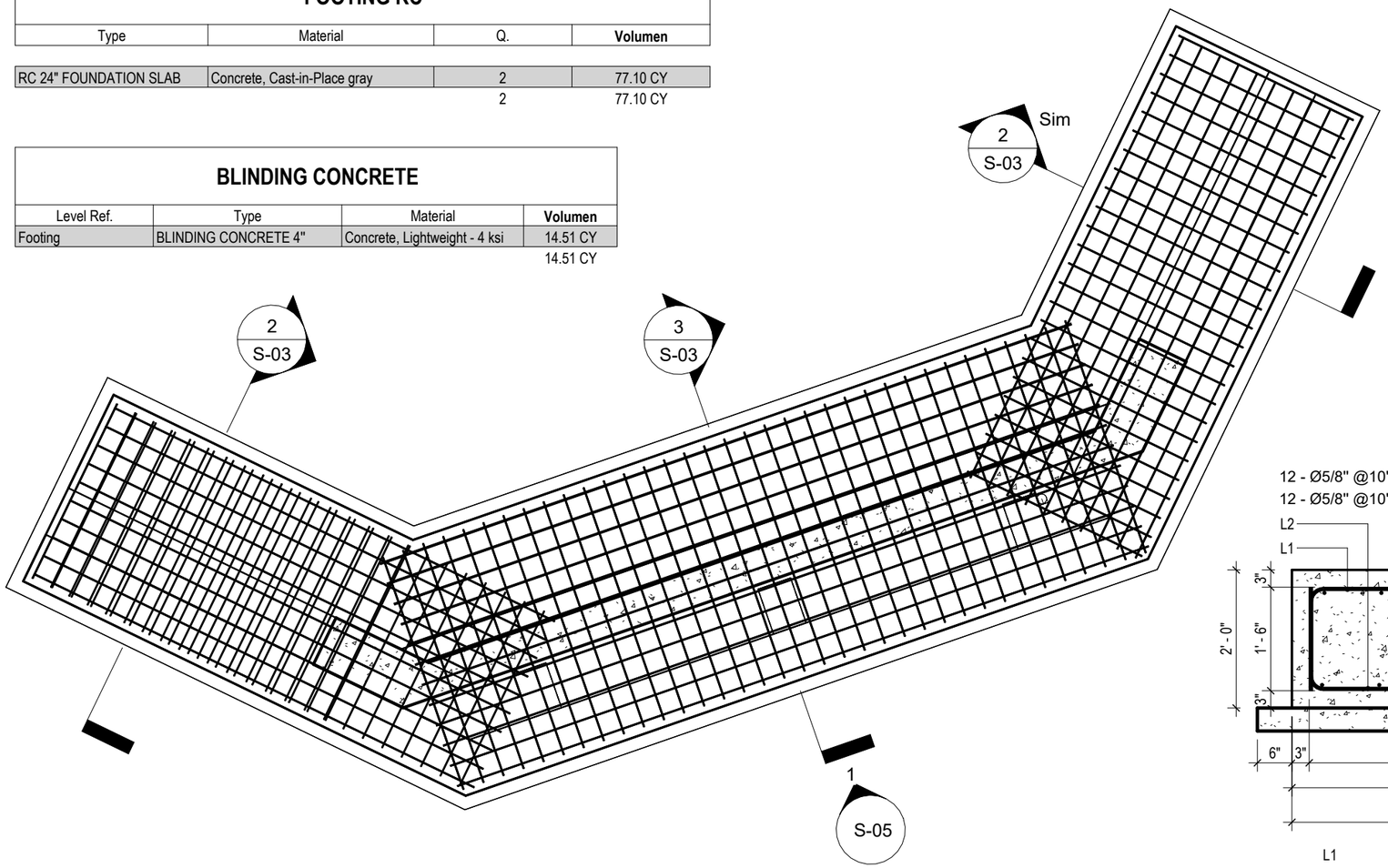
Comment	Type	Material	Bar Length	Waste(10%)	**Total Bar Length**	**Total (Lb)**
ARM-FOOT-INF-TR	5/8"	Rebar, ASTM A615, Grade 60	1,698'-0"	169'-9 5/8"	1,867'-9 5/8"	1942.51 lb
ARM-FOOT-LONG-BOTT	5/8"	Rebar, ASTM A615, Grade 60	1,491'-4"	149'-1 5/8"	1,640'-5 5/8"	1706.09 lb
ARM-FOOT-LONG-TOP	5/8"	Rebar, ASTM A615, Grade 60	1,463'-0"	146'-3 5/8"	1,609'-3 5/8"	1673.67 lb
ARM-FOOT-STB	<varía>	Rebar, ASTM A615, Grade 60	3,532'-7"	353'-3 1/8"	3,885'-10 1/8"	5427.50 lb
ARM-FOOT-SUP-TR	5/8"	Rebar, ASTM A615, Grade 60	1,759'-6"	175'-11 3/8"	1,935'-5 3/8"	2012.87 lb
			9,944'-5"	994'-5 1/4"	10,938'-10 1/4"	12762.64 lb

FOOTING RC

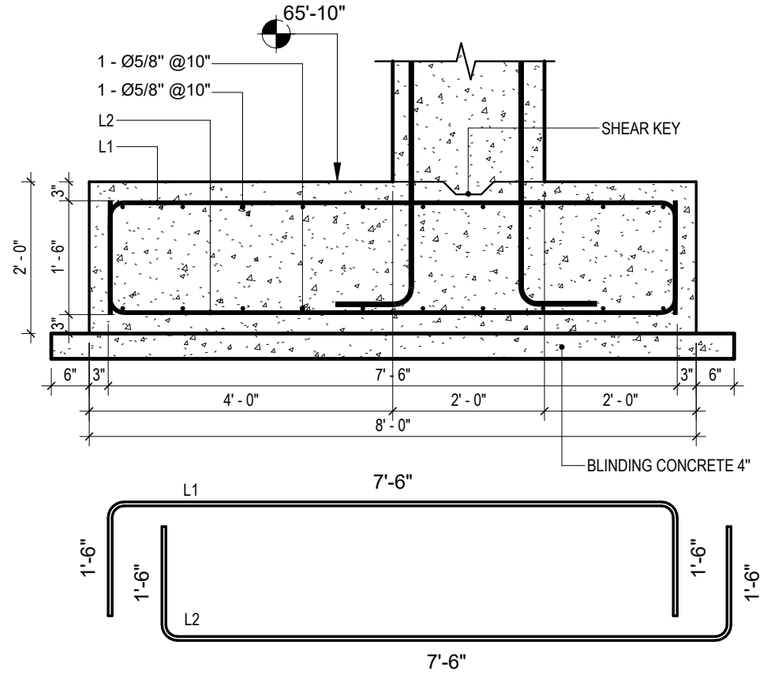
Type	Material	Q.	**Volumen**
RC 24" FOUNDATION SLAB	Concrete, Cast-in-Place gray	2	77.10 CY
		2	77.10 CY

BLINDING CONCRETE

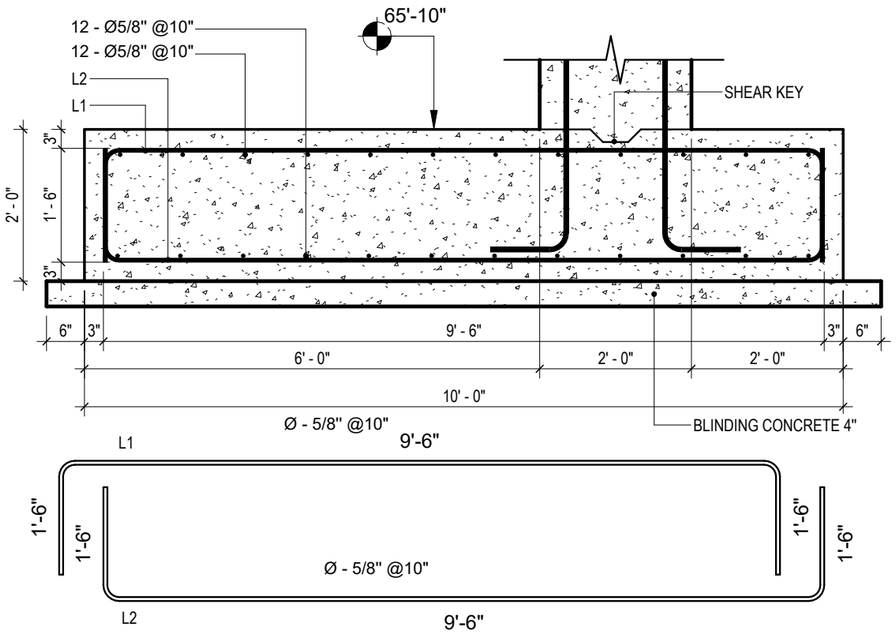
Level Ref.	Type	Material	**Volumen**
Footing	BLINDING CONCRETE 4"	Concrete, Lightweight - 4 ksi	14.51 CY
			14.51 CY



1 Abutment Footing Reinforcement Floor Plan
3/16" = 1'-0"



2 Section Footing Detail
1/2" = 1'-0"



3 Section Footing Detail
1/2" = 1'-0"

N

PROJECT NAME: Proposed Madeys Bridge

PROJECT LOCATION: Madeys, St Patrick Grenada

SHEET TITLE: Abutment Footing Reinforcement & Details

SHEET NO. S-03

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

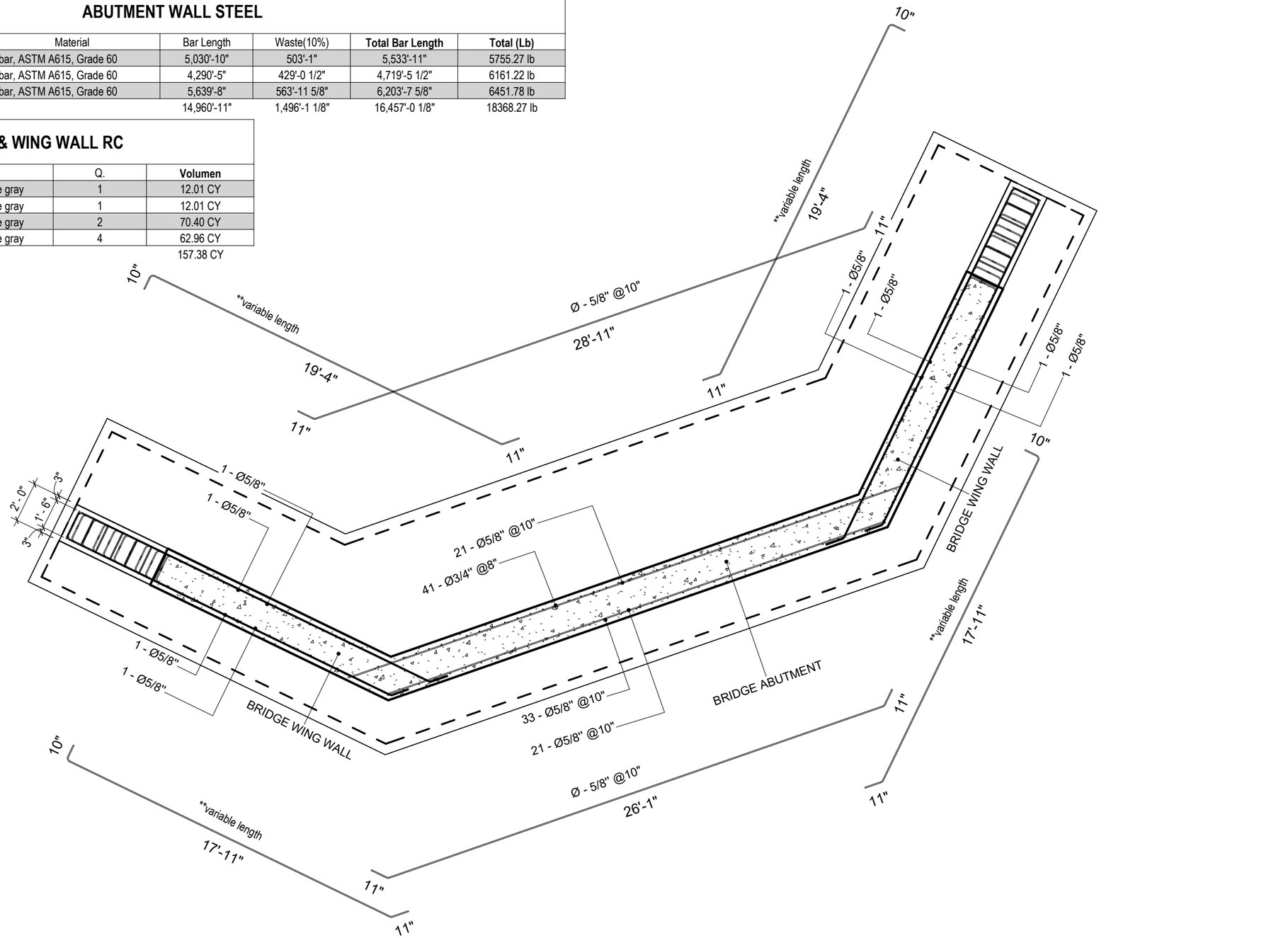
DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	Como se indica

ABUTMENT WALL STEEL

Comment	Type	Material	Bar Length	Waste(10%)	**Total Bar Length**	**Total (Lb)**
ARM-WALL-HOR	5/8"	Rebar, ASTM A615, Grade 60	5,030'-10"	503'-1"	5,533'-11"	5755.27 lb
ARM-WALL-VERT	<varía>	Rebar, ASTM A615, Grade 60	4,290'-5"	429'-0 1/2"	4,719'-5 1/2"	6161.22 lb
ARM-WALL-WING	5/8"	Rebar, ASTM A615, Grade 60	5,639'-8"	563'-11 5/8"	6,203'-7 5/8"	6451.78 lb
			14,960'-11"	1,496'-1 1/8"	16,457'-0 1/8"	18368.27 lb

ABUTMENT & WING WALL RC

Type	Material	Q.	**Volumen**
BRAKETS	Concrete, Cast-in-Place gray	1	12.01 CY
BRAKETS	Concrete, Cast-in-Place gray	1	12.01 CY
BRIDGE ABUTMENT	Concrete, Cast-in-Place gray	2	70.40 CY
BRIDGE WING WALL	Concrete, Cast-in-Place gray	4	62.96 CY
			157.38 CY



1 Abutment Wall Reinforcement Floor Plan
3/16" = 1'-0"

N

PROJECT NAME: **Proposed Madeys Bridge**

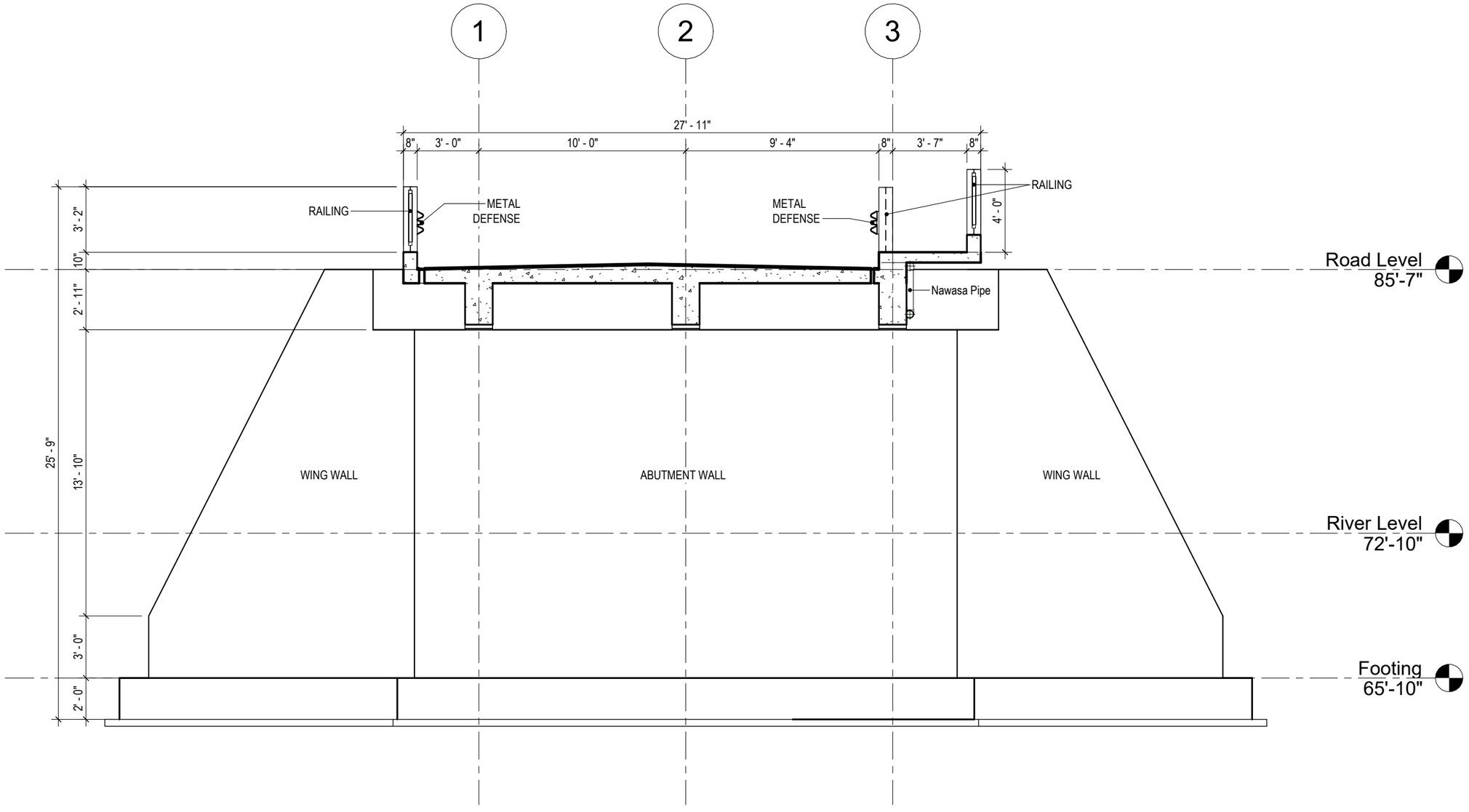
PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET NO. **S-04**

SHEET TITLE: **Abutment Wall Reinforcement**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALUENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	3/16" = 1'-0"



1 Abutment Wall Elevation
3/16" = 1'-0"

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

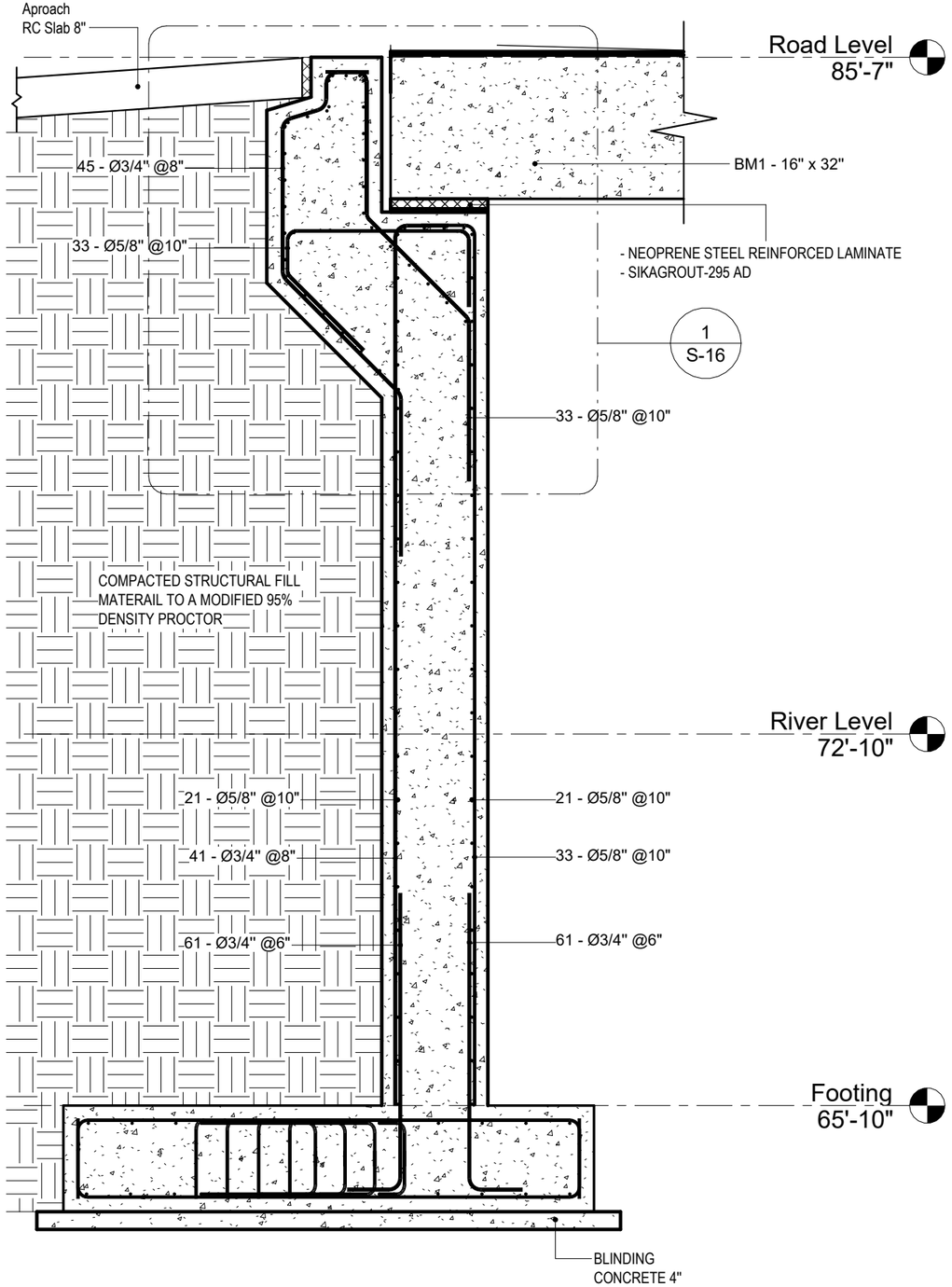
SHEET NO. **S-05**

SHEET TITLE: **Abutment Wall Elevation**

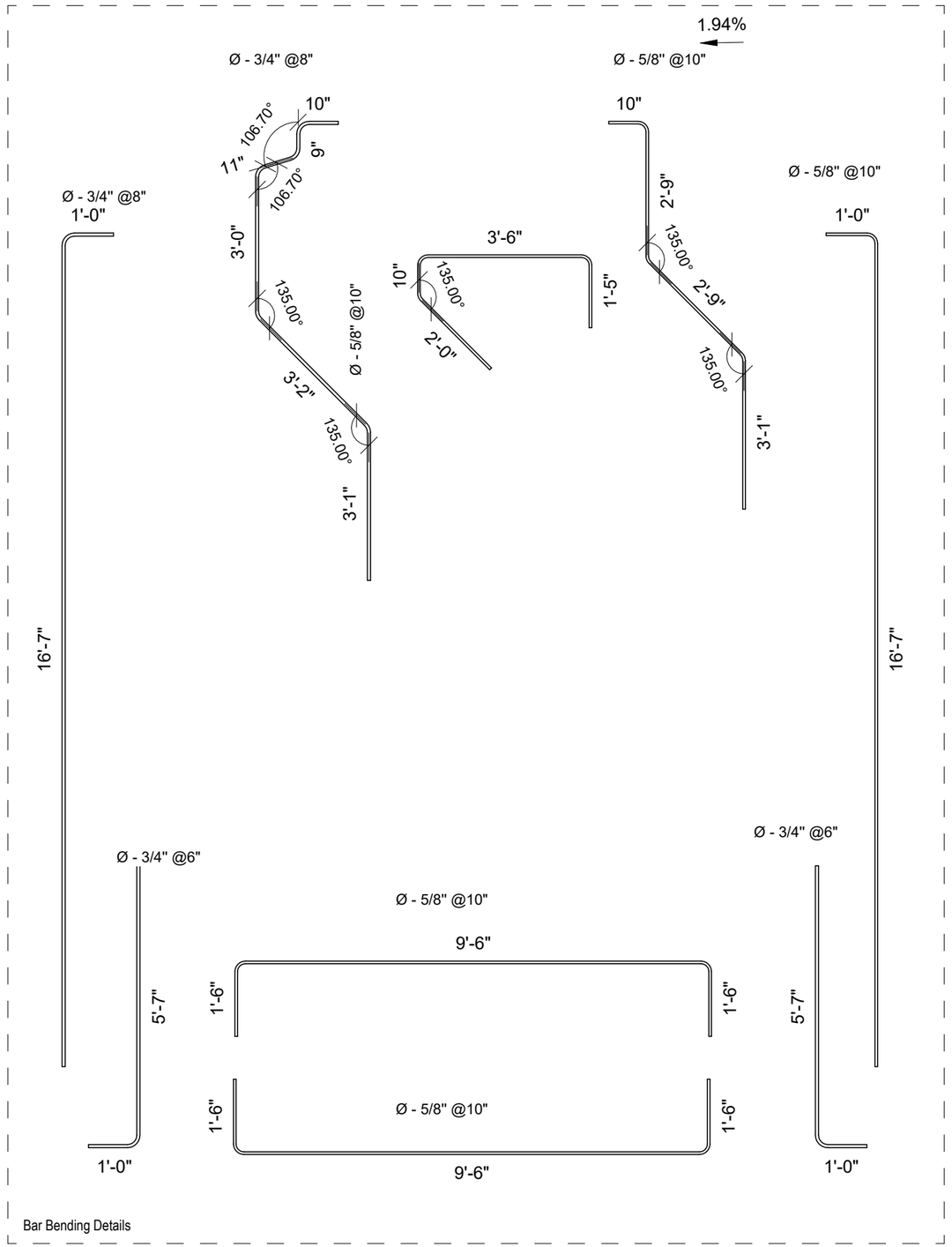
BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	3/16" = 1'-0"

View Detail
1 / C-17
Aproach
RC Slab 8"



1 Abutment Wall Steel Details
3/8" = 1'-0"



Bar Bending Details

PROJECT NAME: **Proposed Madeys Bridge**

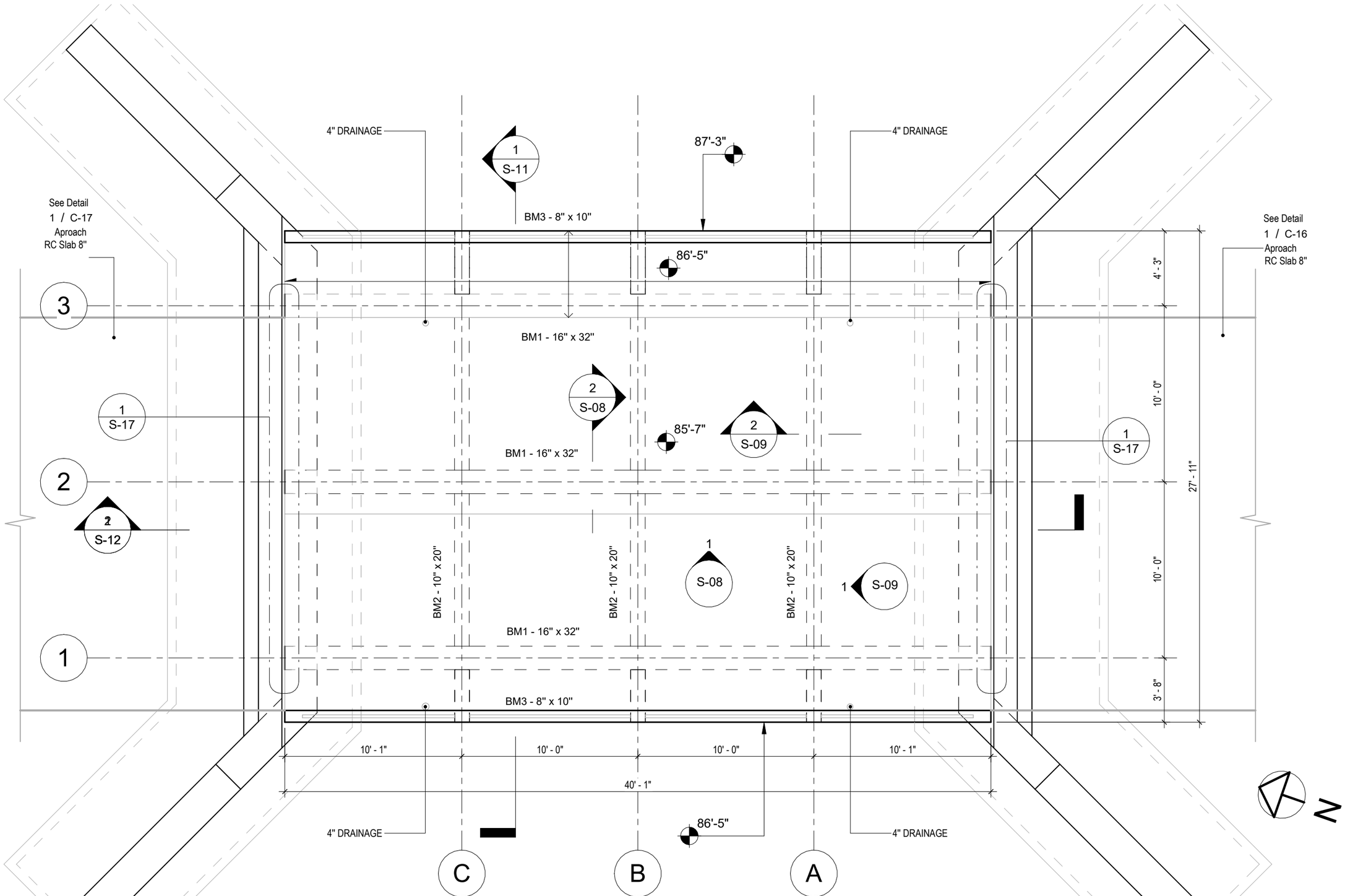
PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET TITLE: **Abutment Wall Steel Details**

SHEET NO. **S-06**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	3/8" = 1'-0"



1 Bridge Beams
3/16" = 1'-0"

PROJECT NAME: **Proposed Madeys Bridge**

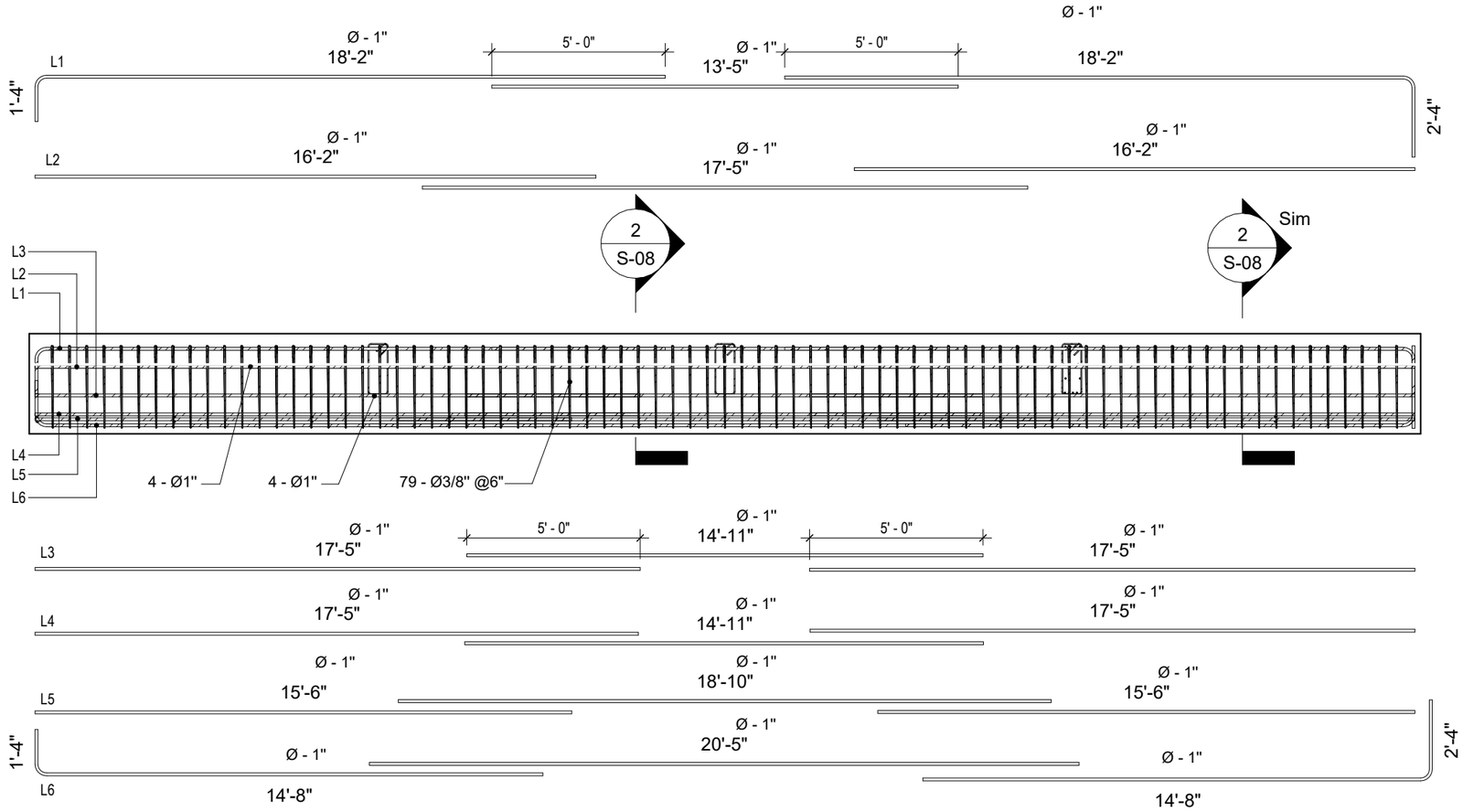
PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET TITLE: **Bridge Beams Floor Plan**

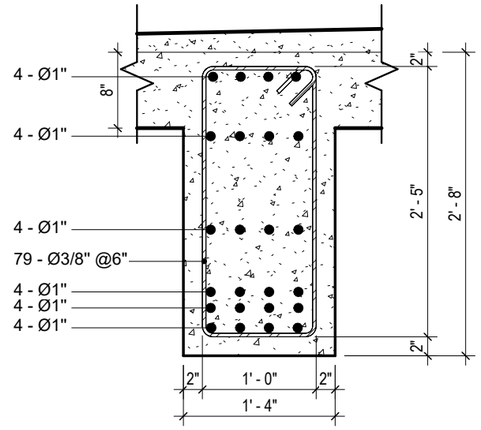
SHEET NO. **S-07**

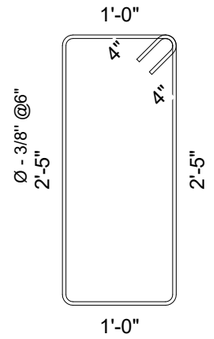
BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALUENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	3/16" = 1'-0"



1 Beam BM1 Details
1/4" = 1'-0"





2 Section BM1
3/4" = 1'-0"

BEAMS STEEL BM1 - BM2 - BM3

Host	Comment	Type	Material	Bar Length	Waste(10%)	**Total Bar Length**	**Total (Lb)**
Armazón estructural	ARM-BEAM	5/8"	Rebar, ASTM A615, Grade 60	621'-10"	62'-2 1/4"	684'-0 1/4"	711.38 lb
				621'-10"	62'-2 1/4"	684'-0 1/4"	711.38 lb
Armazón estructural	ARM-BEAM	3/8"	Rebar, ASTM A615, Grade 60	2,402'-5"	240'-2 7/8"	2,642'-7 7/8"	1004.21 lb
Armazón estructural	ARM-BEAM-CANTILIVER	3/8"	Rebar, ASTM A615, Grade 60	164'-6"	16'-5 3/8"	180'-11 3/8"	68.76 lb
				2,566'-11"	256'-8 1/4"	2,823'-7 1/4"	1072.97 lb
Armazón estructural	ARM-BEAM	1/2"	Rebar, ASTM A615, Grade 60	243'-8"	24'-4 3/8"	268'-0 3/8"	179.58 lb
Armazón estructural	ARM-BEAM-CANTILIVER	1/2"	Rebar, ASTM A615, Grade 60	243'-8"	24'-4 3/8"	268'-0 3/8"	179.58 lb
				487'-4"	48'-8 3/4"	536'-0 3/4"	359.16 lb
Armazón estructural	ARM-BEAM	1"	Rebar, ASTM A615, Grade 60	3,661'-0"	366'-1 1/4"	4,027'-1 1/4"	10752.36 lb
				3,661'-0"	366'-1 1/4"	4,027'-1 1/4"	10752.36 lb
				7,337'-1"	733'-8 1/2"	8,070'-9 1/2"	12895.87 lb

PROJECT NAME: **Proposed Madeys Bridge**

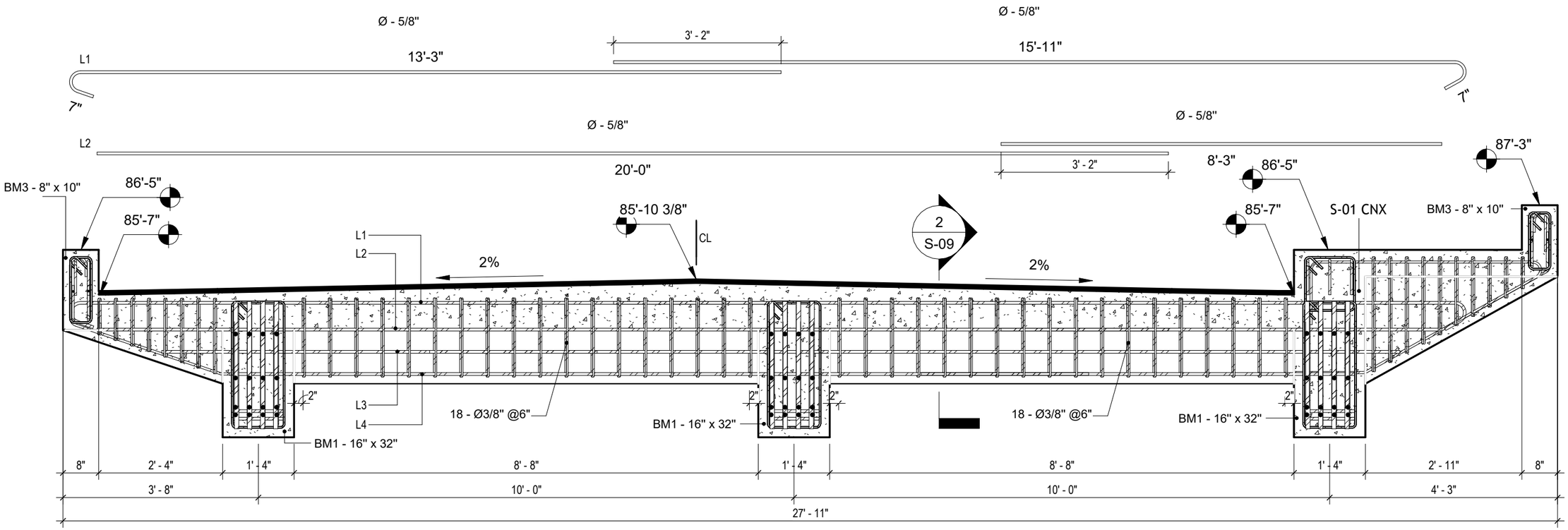
PROJECT LOCATION: **Madeys, St Patrick Grenada**

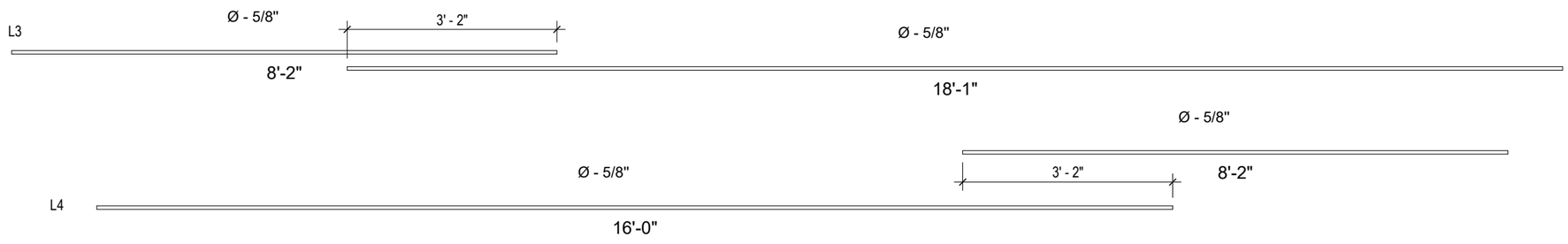
SHEET NO. **S-08**

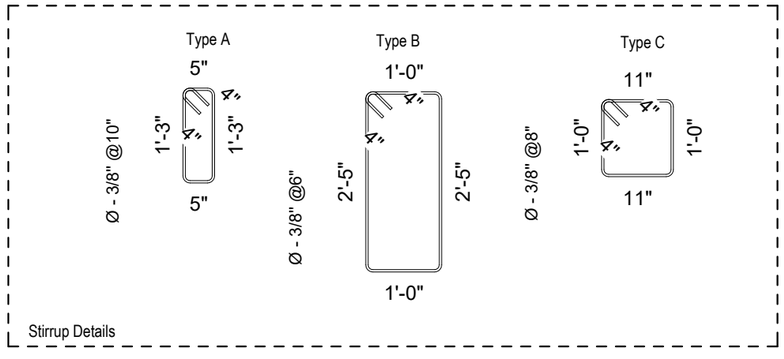
SHEET TITLE: **Bridge Beams Section Plan**

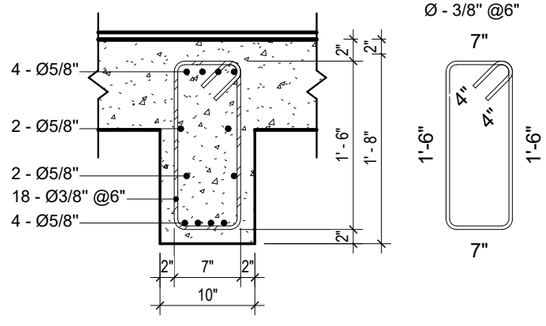
BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	Como se indica









1 Beam BM2 Details
1/2" = 1'-0"

2 Section BM2
3/4" = 1'-0"

PROJECT NAME: Proposed Madeys Bridge

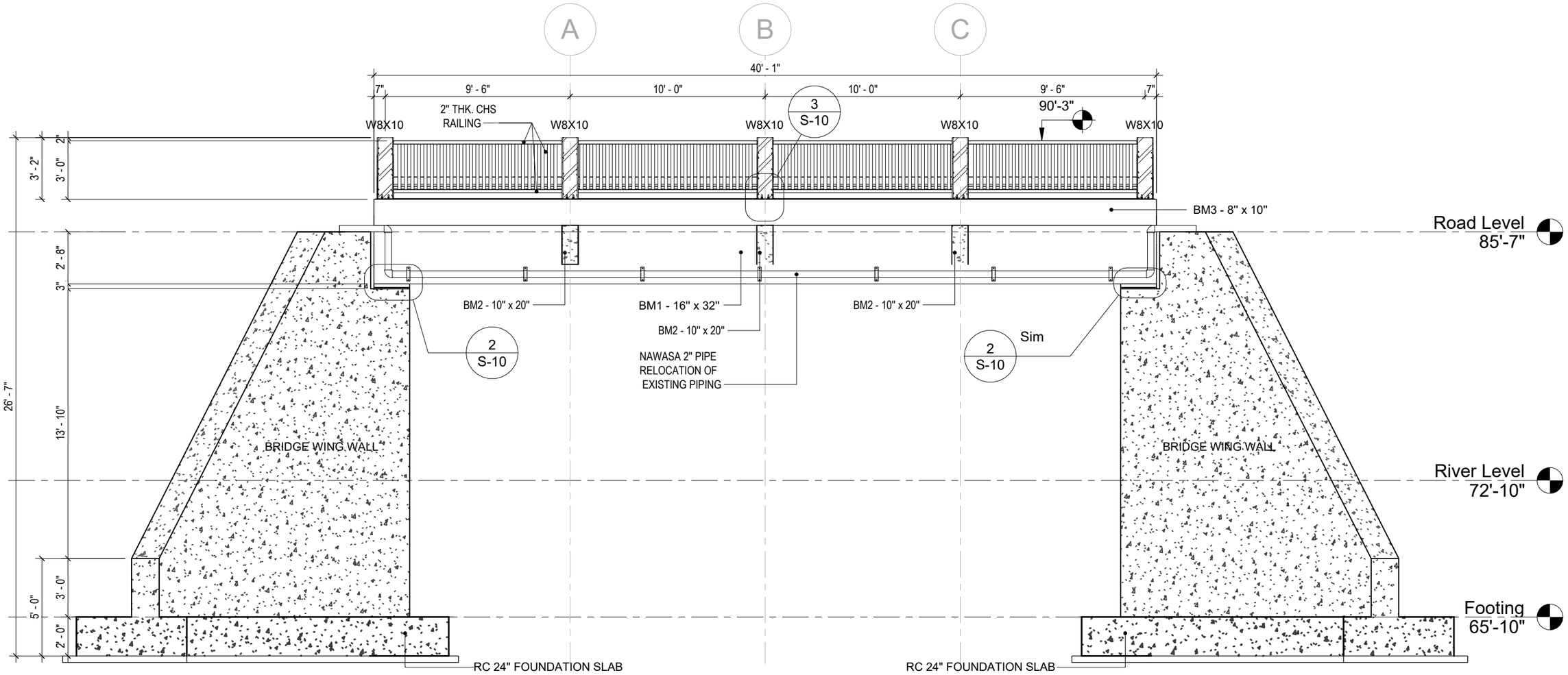
PROJECT LOCATION: Madeys, St Patrick Grenada

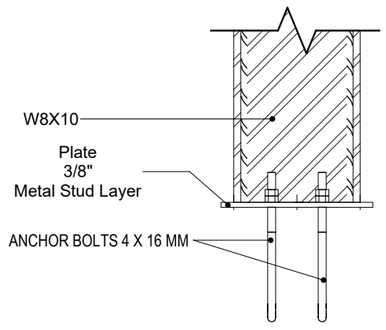
SHEET TITLE: Bridge Beams Section Plan

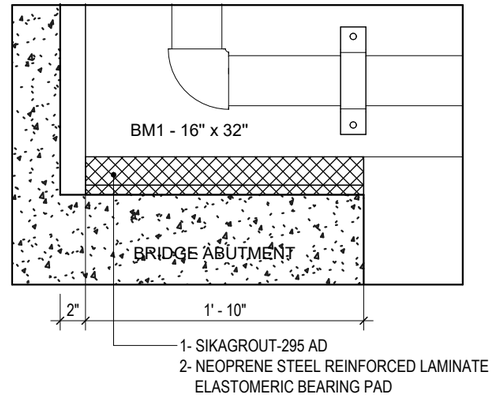
SHEET NO. S-09

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	Como se indica







1 Bridge Section
3/16" = 1'-0"

3 Base Plate Detail
1" = 1'-0"

2 Neoprene Pad Detail
1" = 1'-0"

PROJECT NAME: Proposed Madeys Bridge

PROJECT LOCATION: Madeys, St Patrick Grenada

SHEET TITLE: Bridge Section Plan

SHEET NO. S-10

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	Como se indica

SLAB STEEL

Host	Comment	Type	Material	Bar Length	Waste(10%)	**Total Bar Length**	**Total (Lb)**
Suelo		5/8"	Rebar, ASTM A615, Grade 60	201'-8"	20'-2"	221'-10"	230.71 lb
Suelo	ARM-BEAM	5/8"	Rebar, ASTM A615, Grade 60	121'-8"	12'-2"	133'-10"	139.19 lb
				323'-4"	32'-4"	355'-8"	369.89 lb
Suelo	ARM-BEAM-CANTILIVER	3/8"	Rebar, ASTM A615, Grade 60	260'-7"	26'-0 3/4"	286'-7 3/4"	108.92 lb
				260'-7"	26'-0 3/4"	286'-7 3/4"	108.92 lb
Suelo	ARM-BEAM-CANTILIVER	1/2"	Rebar, ASTM A615, Grade 60	123'-0"	12'-3 5/8"	135'-3 5/8"	90.65 lb
Suelo	ARM-SLAB-BOTT	1/2"	Rebar, ASTM A615, Grade 60	4,294'-3"	429'-5 1/8"	4,723'-8"	3164.86 lb
Suelo	ARM-SLAB-TOP	1/2"	Rebar, ASTM A615, Grade 60	4,270'-7"	427'-0 3/4"	4,697'-8 1/4"	3147.45 lb
Suelo	ARM-SLAB-WALK-BOTT	1/2"	Rebar, ASTM A615, Grade 60	926'-9"	92'-8 1/8"	1,019'-5 1/8"	683.01 lb
Suelo	ARM-SLAB-WALK-REINF	1/2"	Rebar, ASTM A615, Grade 60	259'-3"	25'-11 1/8"	285'-2 1/8"	191.07 lb
Suelo	ARM-SLAB-WALK-TOP	1/2"	Rebar, ASTM A615, Grade 60	855'-4"	85'-6 3/8"	940'-10 3/8"	630.38 lb
				10,729'-2"	1,072'-11"	11,802'-1 1/2"	7907.42 lb
				11,313'-1"	1,131'-3 3/4"	12,444'-5 1/8"	8386.24 lb

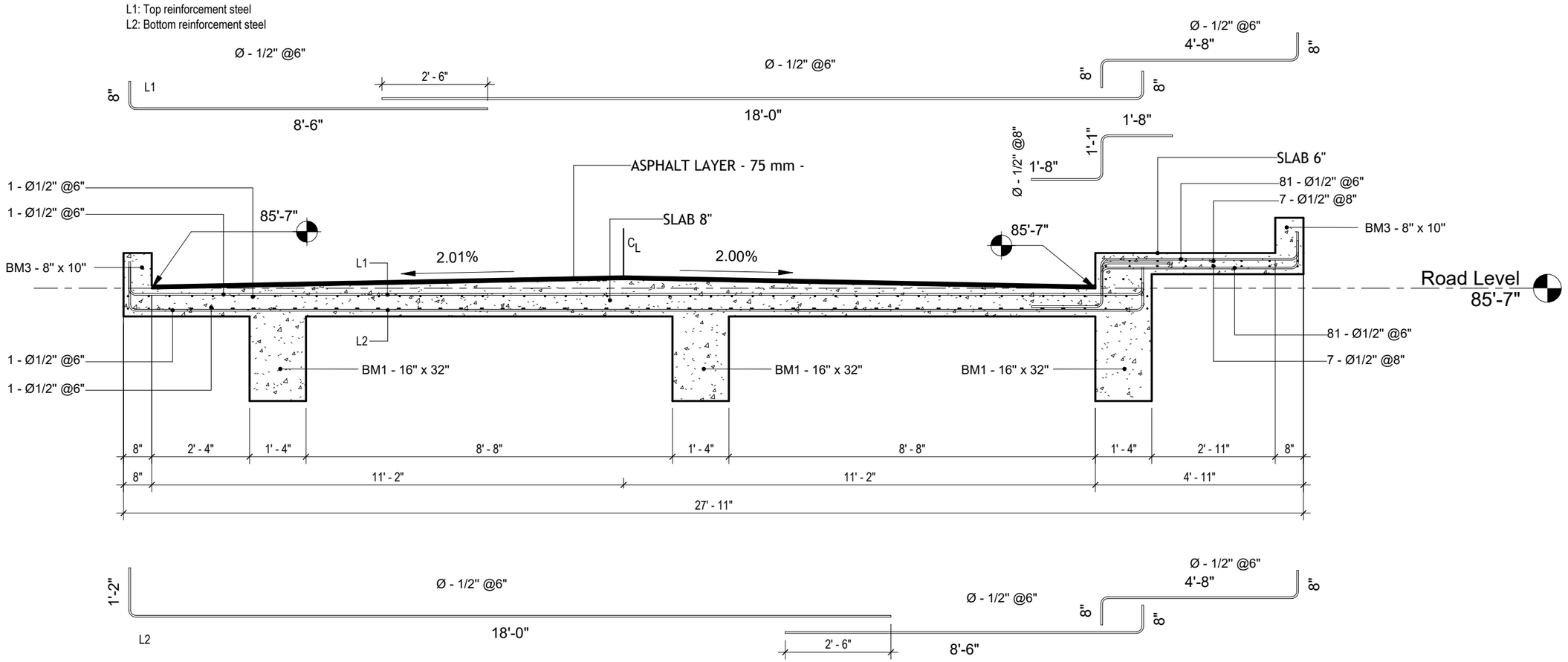
SLAB RC

Level Ref.	Type	Material	**Volumen**
Road Level	ROAD LAYER SLOPE	Concrete, Cast-in-Place gray	3.65 CY
Road Level	S-01 CNX	Concrete, Cast-in-Place gray	0.66 CY
Road Level	SLAB 6"	Concrete, Cast-in-Place gray	3.66 CY
Road Level	SLAB 8"	Concrete, Cast-in-Place gray	24.07 CY
			32.03 CY

ASPHALT LAYER 75 MM

Minimum according to AASTHO (Key Considerations for the Caribbean)

- Wearing course ← 30 – 40 mm Dense-graded mix / SMA / PMB
- Intermediate layer / binder ← 30 – 40 mm (protection + leveling)
- Waterproof membrane ← 3 – 6 mm (spray-applied o sheet membrane)



1 Slab Section Plan
3/8" = 1'-0"

PROJECT NAME: **Proposed Madeys Bridge**

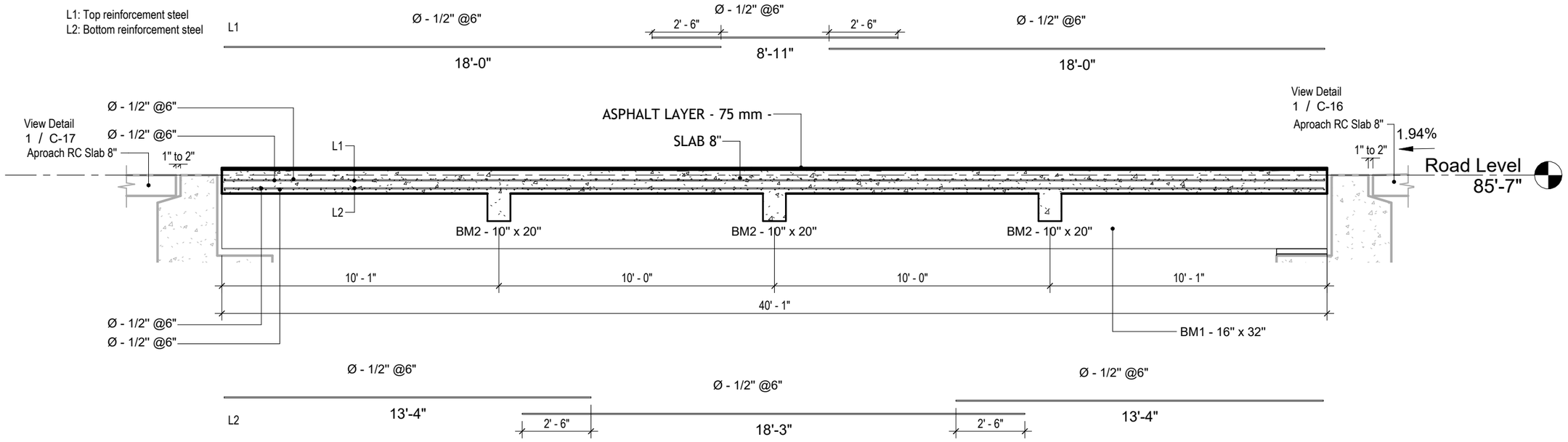
PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET NO. **S-11**

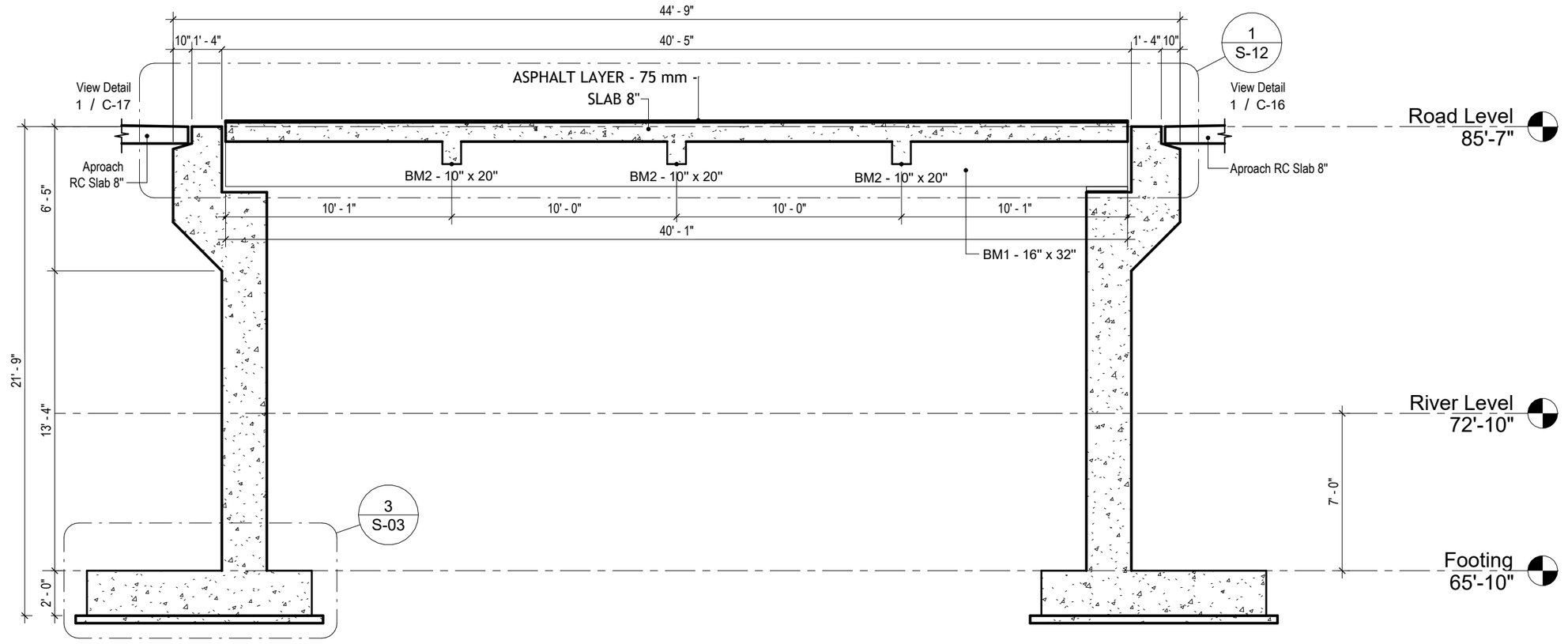
SHEET TITLE: **Bridge Slab Section Plan**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	3/8" = 1'-0"



1 Slab Section Plan
1/4" = 1'-0"



2 Section 2
3/16" = 1'-0"

PROJECT NAME: Proposed Madeys Bridge
PROJECT LOCATION: Madeys, St Patrick Grenada
SHEET TITLE: Bridge Slab Section Plan
SHEET NO. S-12

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALUENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	Como se indica

GENERAL STEEL

Host	Comment	Type	Material	Bar Length	Waste(10%)	**Total Bar Length**	**Total (Lb)**
Suelo		5/8"	Rebar, ASTM A615, Grade 60	201'-8"	20'-2"	221'-10"	230.71 lb
Armazón estructural	ARM-BEAM	5/8"	Rebar, ASTM A615, Grade 60	621'-10"	62'-2 1/4"	684'-0 1/4"	711.38 lb
Suelo	ARM-BEAM	5/8"	Rebar, ASTM A615, Grade 60	121'-8"	12'-2"	133'-10"	139.19 lb
Cimentación estructural	ARM-FOOT-INF-TR	5/8"	Rebar, ASTM A615, Grade 60	1,698'-0"	169'-9 5/8"	1,867'-9 5/8"	1942.51 lb
Cimentación estructural	ARM-FOOT-LONG-BOTT	5/8"	Rebar, ASTM A615, Grade 60	1,491'-4"	149'-1 5/8"	1,640'-5 5/8"	1706.09 lb
Cimentación estructural	ARM-FOOT-LONG-TOP	5/8"	Rebar, ASTM A615, Grade 60	1,463'-0"	146'-3 5/8"	1,609'-3 5/8"	1673.67 lb
Cimentación estructural	ARM-FOOT-STB	5/8"	Rebar, ASTM A615, Grade 60	793'-0"	79'-3 5/8"	872'-3 5/8"	907.19 lb
Cimentación estructural	ARM-FOOT-SUP-TR	5/8"	Rebar, ASTM A615, Grade 60	1,759'-6"	175'-11 3/8"	1,935'-5 3/8"	2012.87 lb
Muro	ARM-WALL-HOR	5/8"	Rebar, ASTM A615, Grade 60	5,030'-10"	503'-1"	5,533'-11"	5755.27 lb
Muro	ARM-WALL-VERT	5/8"	Rebar, ASTM A615, Grade 60	1,814'-2"	181'-5"	1,995'-7"	2075.41 lb
Muro	ARM-WALL-WING	5/8"	Rebar, ASTM A615, Grade 60	5,639'-8"	563'-11 5/8"	6,203'-7 5/8"	6451.78 lb
				20,634'-8"	2,063'-5 5/8"	22,698'-1 5/8"	23606.06 lb
Armazón estructural	ARM-BEAM	3/8"	Rebar, ASTM A615, Grade 60	2,402'-5"	240'-2 7/8"	2,642'-7 7/8"	1004.21 lb
Armazón estructural	ARM-BEAM-CANTILIVER	3/8"	Rebar, ASTM A615, Grade 60	164'-6"	16'-5 3/8"	180'-11 3/8"	68.76 lb
Muro	ARM-BEAM-CANTILIVER	3/8"	Rebar, ASTM A615, Grade 60	219'-0"	21'-10 3/4"	240'-10 1/2"	91.53 lb
Suelo	ARM-BEAM-CANTILIVER	3/8"	Rebar, ASTM A615, Grade 60	260'-7"	26'-0 3/4"	286'-7 3/4"	108.92 lb
				3,046'-6"	304'-7 3/4"	3,351'-1 1/2"	1273.43 lb
Cimentación estructural	ARM-FOOT-STB	3/4"	Rebar, ASTM A615, Grade 60	2,739'-7"	273'-11 1/2"	3,013'-6 1/2"	4520.31 lb
Muro	ARM-WALL-VERT	3/4"	Rebar, ASTM A615, Grade 60	2,476'-3"	247'-7 1/2"	2,723'-10 1/2"	4085.81 lb
				5,215'-10"	521'-7"	5,737'-5"	8606.13 lb
Armazón estructural	ARM-BEAM	1/2"	Rebar, ASTM A615, Grade 60	243'-8"	24'-4 3/8"	268'-0 3/8"	179.58 lb
Armazón estructural	ARM-BEAM-CANTILIVER	1/2"	Rebar, ASTM A615, Grade 60	243'-8"	24'-4 3/8"	268'-0 3/8"	179.58 lb
Muro	ARM-BEAM-CANTILIVER	1/2"	Rebar, ASTM A615, Grade 60	256'-3"	25'-7 1/2"	281'-10 1/2"	188.86 lb
Suelo	ARM-BEAM-CANTILIVER	1/2"	Rebar, ASTM A615, Grade 60	123'-0"	12'-3 5/8"	135'-3 5/8"	90.65 lb
Suelo	ARM-SLAB-BOTT	1/2"	Rebar, ASTM A615, Grade 60	4,294'-3"	429'-5 1/8"	4,723'-8"	3164.86 lb
Suelo	ARM-SLAB-TOP	1/2"	Rebar, ASTM A615, Grade 60	4,270'-7"	427'-0 3/4"	4,697'-8 1/4"	3147.45 lb
Suelo	ARM-SLAB-WALK-BOTT	1/2"	Rebar, ASTM A615, Grade 60	926'-9"	92'-8 1/8"	1,019'-5 1/8"	683.01 lb
Suelo	ARM-SLAB-WALK-REINF	1/2"	Rebar, ASTM A615, Grade 60	259'-3"	25'-11 1/8"	285'-2 1/8"	191.07 lb
Suelo	ARM-SLAB-WALK-TOP	1/2"	Rebar, ASTM A615, Grade 60	855'-4"	85'-6 3/8"	940'-10 3/8"	630.38 lb
				11,472'-9"	1,147'-3 3/8"	12,620'-0 3/4"	8455.44 lb
Armazón estructural	ARM-BEAM	1"	Rebar, ASTM A615, Grade 60	3,661'-0"	366'-1 1/4"	4,027'-1 1/4"	10752.36 lb
				3,661'-0"	366'-1 1/4"	4,027'-1 1/4"	10752.36 lb
				44,030'-9"	4,403'-0 7/8"	48,433'-10"	52693.41 lb

STEEL COLUMNS

Level Ref	Type	Material	Q.	Length	**Total Length**
C3X5					
Road Level	C3X5	Steel ASTM A572	5	1'-1"	5'-5"
			5		5'-5"
W8X10					
Road Level	W8X10	Steel ASTM A572	15	3'-1 5/8"	47'-0 3/8"
			15		47'-0 3/8"
			20		52'-5 3/8"

STEEL CONECTIONS

Tipo	Familia y tipo	Q.
Base Plate	Pletina base: Base Plate	15
		15

SLAB RC

Level Ref.	Type	Material	**Volumen**
Road Level	ROAD LAYER SLOPE	Concrete, Cast-in-Place gray	3.65 CY
Road Level	S-01 CNX	Concrete, Cast-in-Place gray	0.66 CY
Road Level	SLAB 6"	Concrete, Cast-in-Place gray	3.66 CY
Road Level	SLAB 8"	Concrete, Cast-in-Place gray	24.07 CY
			32.03 CY

BEAMS RC

Level Ref.	Type	Material	**Volumen**
Road Level	BM1 - 16" x 32"	Concrete, Cast-in-Place gray	3.96 CY
Road Level	BM1 - 16" x 32"	Concrete, Cast-in-Place gray	3.96 CY
Road Level	BM1 - 16" x 32"	Concrete, Cast-in-Place gray	3.96 CY
Road Level	BM2 - 10" x 20"	Concrete, Cast-in-Place gray	0.53 CY
Road Level	BM2 - 10" x 20"	Concrete, Cast-in-Place gray	0.53 CY
Road Level	BM2 - 10" x 20"	Concrete, Cast-in-Place gray	0.53 CY
Road Level	BM3 - 8" x 10"	Concrete, Cast-in-Place gray	0.83 CY
Road Level	BM3 - 8" x 10"	Concrete, Cast-in-Place gray	0.83 CY
			15.14 CY

ABUTMENT & WING WALL RC

Type	Material	Q.	**Volumen**
BRAKETS	Concrete, Cast-in-Place gray	1	12.01 CY
BRAKETS	Concrete, Cast-in-Place gray	1	12.01 CY
BRIDGE ABUTMENT	Concrete, Cast-in-Place gray	2	70.40 CY
BRIDGE WING WALL	Concrete, Cast-in-Place gray	4	62.96 CY
			157.38 CY

BLINDING CONCRETE

Level Ref.	Type	Material	**Volumen**
Footing	BLINDING CONCRETE 4"	Concrete, Lightweight - 4 ksi	14.51 CY
			14.51 CY

RAILING

Level Ref.	Type	**Length**
Road Level	Bridge Handrail	71'-2 3/4"
		71'-2 3/4"

DEFENSE

Tipo	Q.	Material Comment
Rejilla Hierro colado alto trafico 4 inches	1	
Vehicle defense	1	Galvanized Steel
Vehicle defense	1	Galvanized Steel

PROJECT NAME: **Proposed Madeys Bridge**

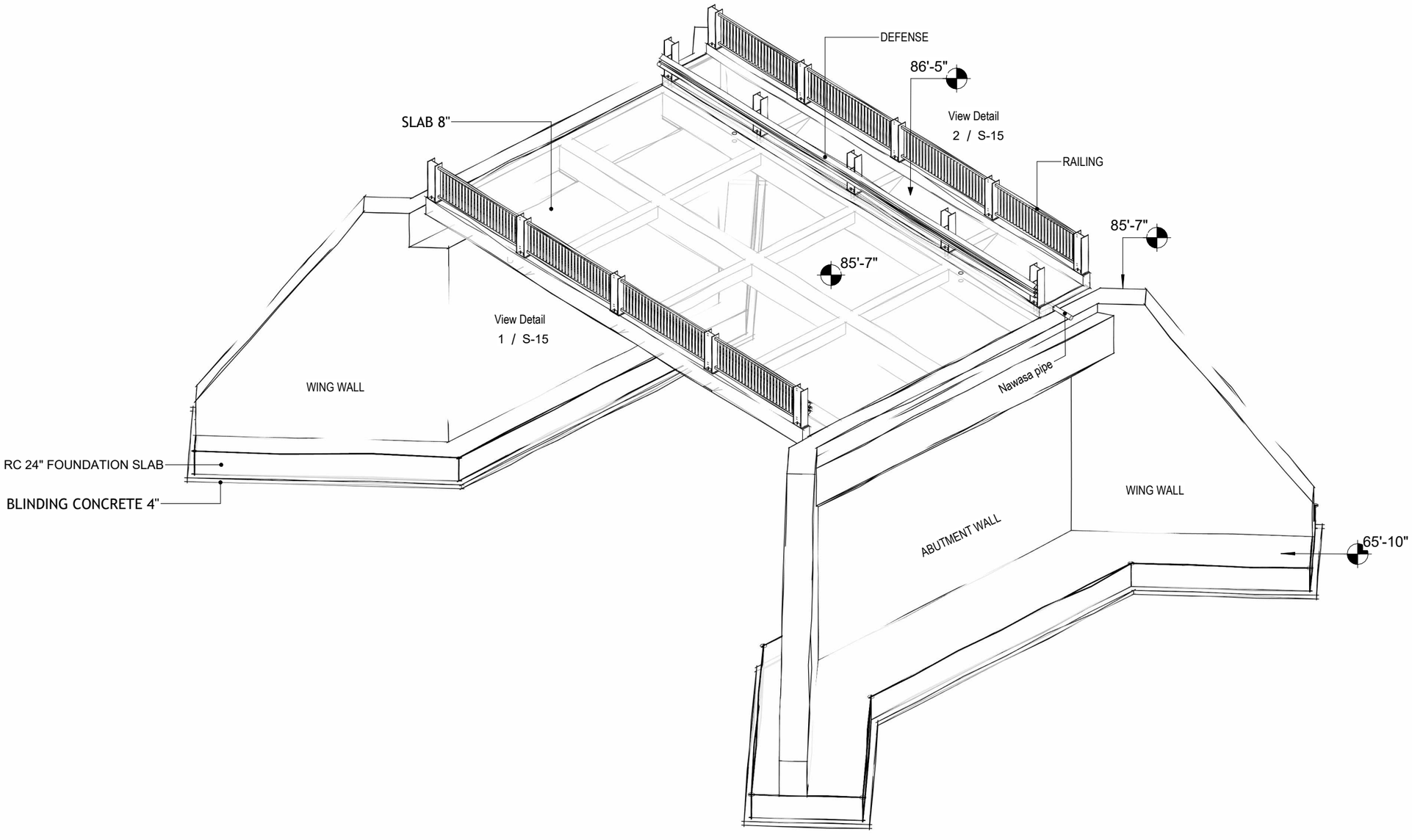
PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET NO. **S-13**

SHEET TITLE: **Bridge Data General Tables**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY: BARRY'S ENGINEERING CO. LTD.
DRAWN BY: ERICK ALIENDRES
CHECKED BY: PEDRO SALAYA
APPROVED BY: LESLIE BARRY
DATE: 24/03/2026
PROJECT #: BECL-62-2025
SCALE:



1 3D Bridge Sketch View

PROJECT NAME: **Proposed Madeys Bridge**

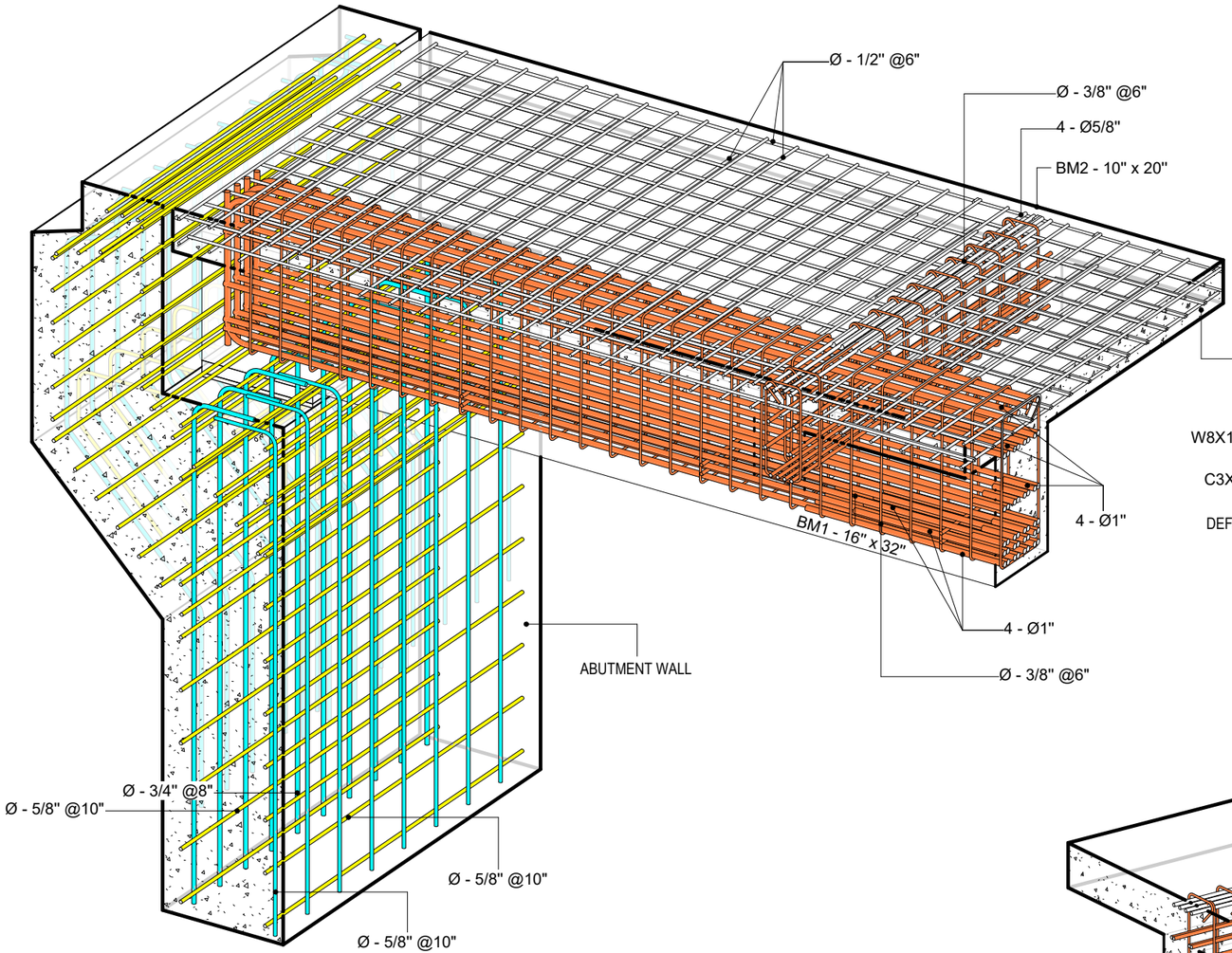
PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET TITLE: **Bridge 3D View Sketch**

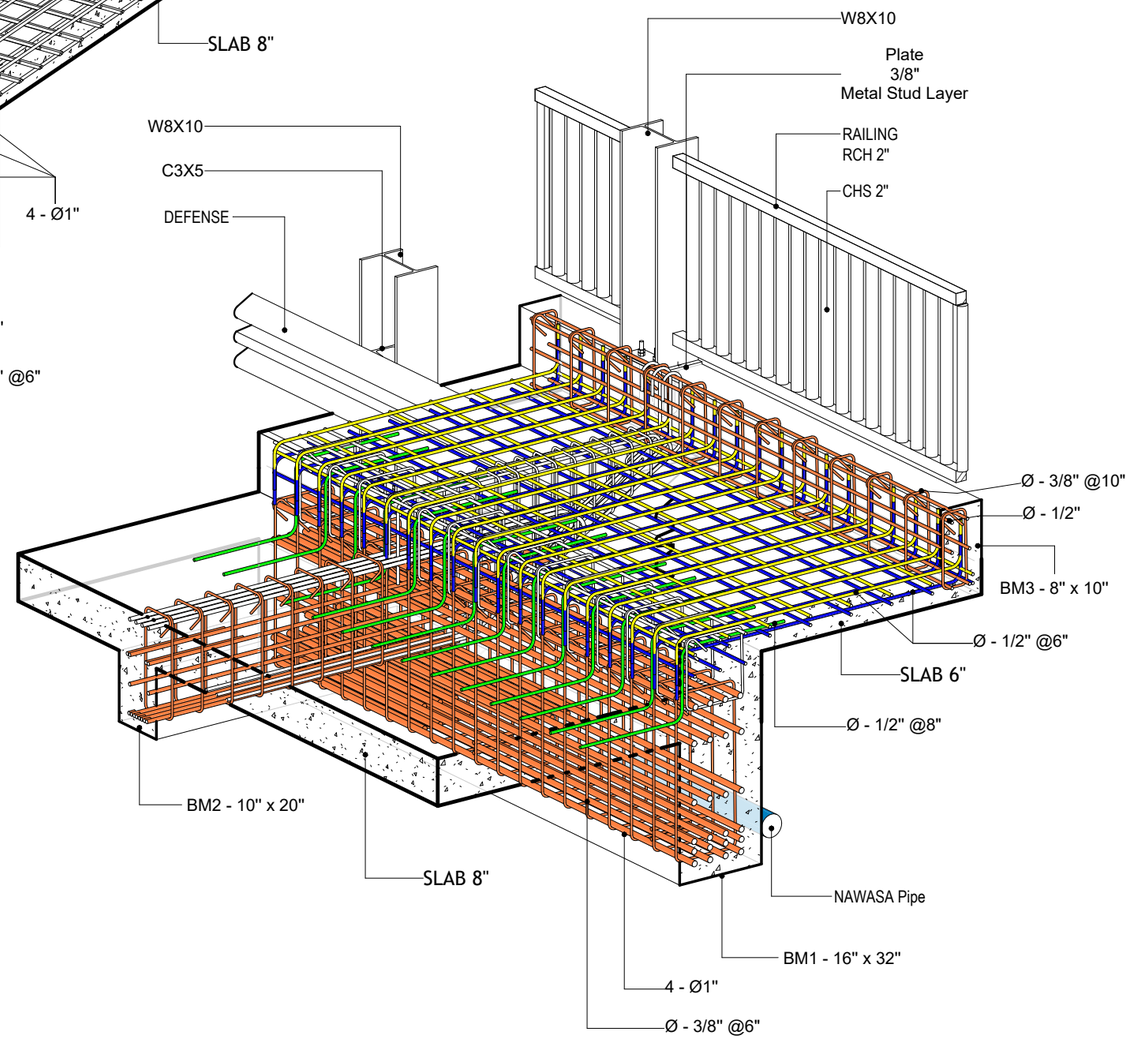
SHEET NO. **S-14**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	



1 3D Abutment Reinforcing Steel Detail



2 3D Walking Reinforcing Steel Detail

PROJECT NAME: **Proposed Madeys Bridge**

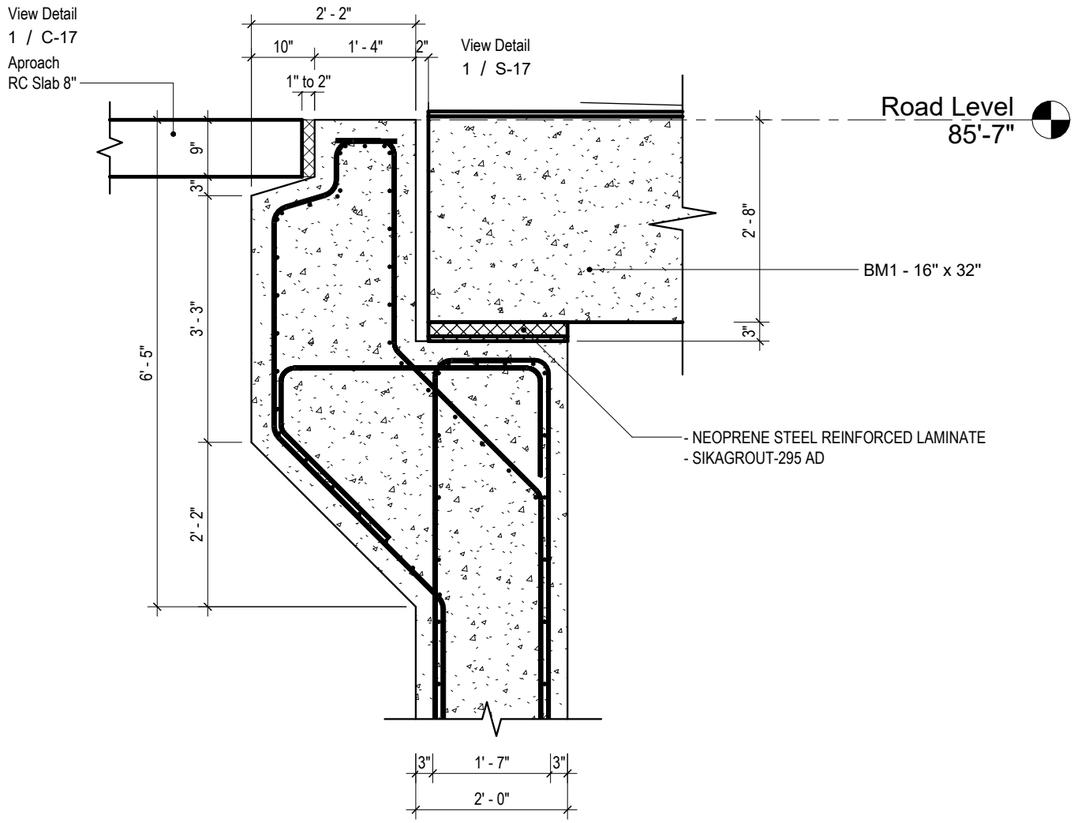
PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET NO. **S-15**

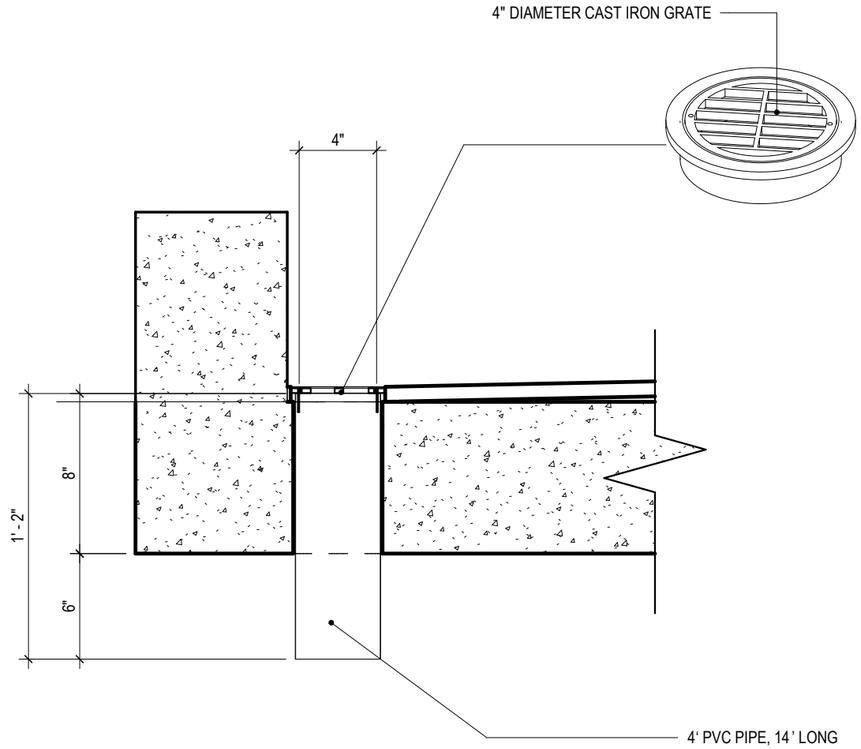
SHEET TITLE: **3D Abutment & Walking Steel Details**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALLENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	



1 Abutment Detail
1/2" = 1'-0"



2 Drainage Detail
1 1/2" = 1'-0"

TECHNICAL NOTE – ABUTMENT AND BEAM BEARING DETAIL

This detail illustrates the configuration of the bridge abutment and the bearing system designed to transfer loads from the main girders to the substructure. The system is intended to ensure proper load distribution while accommodating controlled deformations cargas, temperatura, and shrinkage effects. The primary structural element shown is the reinforced concrete abutment, which includes the bearing seat where the bridge girders will rest. On this surface, a support system composed of a reinforced neoprene pad and a layer of self-leveling grout is provided.

Components and function of the bearing system:

- **Steel-reinforced neoprene bearing (Neoprene Steel Reinforced Laminate):** This element serves as the direct support for the bridge girders. The neoprene acts as an elastomeric bearing, providing controlled flexibility and enhancing the durability of the structural system.
- **Self-leveling grout layer (Sikagrout-295 AD):** A layer of high-strength self-leveling grout is specified beneath the neoprene bearing. This grout must be installed strictly in accordance with the manufacturer's specifications, including proper surface preparation, thickness control, and curing procedures.

TECHNICAL NOTE – BRIDGE DECK DRAINAGE DETAIL

This detail corresponds to a point drainage system designed for the efficient evacuation of rainwater accumulated on the bridge deck. The superstructure is provided with properly defined longitudinal and/or transverse slopes, which direct surface runoff toward four (4) collection strategically distributed along the deck, where drainage units such as the one described herein are installed.

Each drainage unit consists of the following main components:

- **Heavy-duty cast iron grate:** designed to withstand vehicular traffic loads while ensuring efficient surface water intake and preventing the entry of large debris that could obstruct the system.
- **4-inch diameter PVC pipe, 14 inches in length:** partially embedded within the thickness of the bridge deck slab, functioning as a conduit to discharge stormwater the structure.
- **6-inch projection below the slab:** the pipe extends below the underside of the deck to discharge water directly into the river, preventing water from spreading along the underside of the slab.

PROJECT NAME: **Proposed Madeys Bridge**

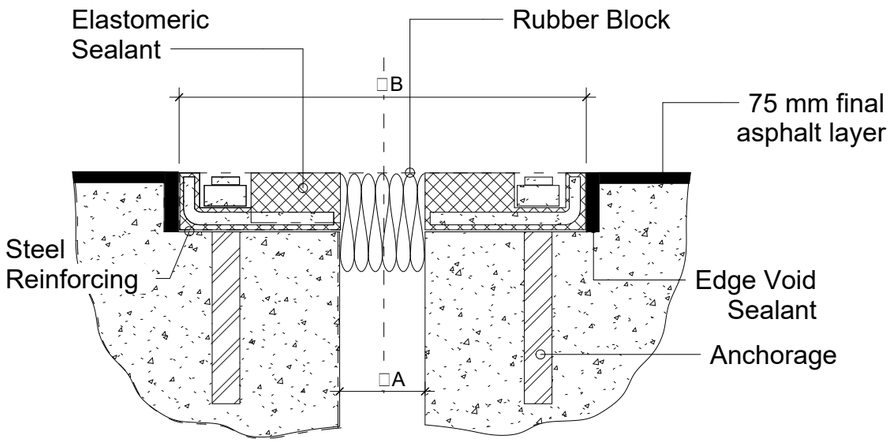
PROJECT LOCATION: **Madeys, St Patrick Grenada**

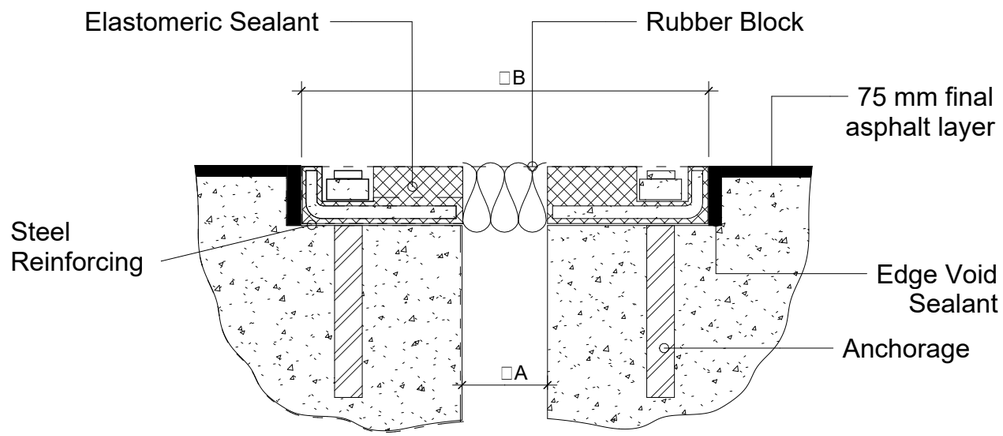
SHEET TITLE: **Abutment Steel Details**

SHEET NO. **S-16**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	ERICK ALIENDRES
CHECKED BY:	PEDRO SALAYA
APPROVED BY:	LESLIE BARRY
DATE:	24/03/2026
PROJECT #:	BECL-62-2025
SCALE:	Como se indica





MOVEMENT TABLE

MODEL NUMBER	JOINT OPENING A						SYSTEM WIDTH B			
	MIN.		MAX.		TOTAL		MIN.		MAX.	
	IN.	MM	IN.	MM	IN.	MM	IN.	MM	IN.	MM
EFJ-225	1.OOO	25	2.250	57	1.3	32	9.000	229	10.250	260

1 Wabo Elastoflex Sealant
1/4" = 1'-0"

FOR BEST RESULTS

Install when concrete substrate is clean, sound, dry, and cured (14 day minimum).

• Do not install if the joint's anticipated movement will exceed the system's movement range.

• Protect the work area with appropriate plastic sheeting.

• Minimize splice points by installing seals in longest possible continuous lengths.

• Do not allow any of the components to freeze prior to installation. Store all components out of direct sunlight in a clean, dry location between 50˚F (10˚C) and 90˚F (32˚C).

• Shelf life of chemical components is 1 year.

• Periodically inspect the applied material and repair localized areas as needed. Consult a Watson Bowman Acme representative for additional information.

• Make certain the most current version of the product data sheet is being used. Please consult the website (www.wbacorp.com) or contact a customer service representative.

• Proper application is the responsibility of the user. Field visits by Watson Bowman Acme personnel are for the purpose of making technical recommendations only and not for supervising or providing quality control on the jobsite.

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET TITLE: **Elastoflex Joint Detail**

SHEET NO. **S-17**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY: BARRY'S ENGINEERING CO. LTD.
DRAWN BY: ERICK ALIENDRES
CHECKED BY: PEDRO SALAYA
APPROVED BY: LESLIE BARRY
DATE: 24/03/2026
PROJECT #: BECL-62-2025
SCALE: 1/4" = 1'-0"

TECHNICAL NOTE – GABION WALL SYSTEM DESCRIPTION

The proposed gabion wall system has a total length of 136 ft and is located along the riverbank in an area subject to hydraulic influence, particularly during periods of intense rainfall.

The structure consists of modular gabion units measuring 3 ft × 3 ft × 3 ft, composed of rock-filled wire mesh baskets. These units are arranged in a stepped configuration, as shown in the elevation and 3D section, to enhance global stability and improve resistance against lateral earth pressures and hydraulic forces.

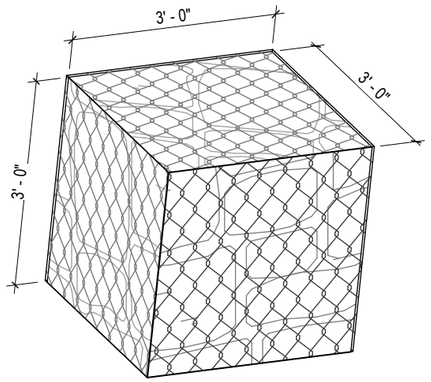
A continuous 8-inch thick concrete leveling pad is provided at the base of the wall. This element ensures proper alignment during installation, uniform load distribution, and improved overall stability of the system. The foundation level is set below the existing ground level to mitigate risks associated with scour and potential undermining.

At the rear of the gabion wall, a granular drainage layer (gravel backfill) is placed, with a maximum thickness of 3 ft at the top section, tapering downward in accordance with the wall geometry. This drainage layer serves to facilitate proper water dissipation and reduce hydrostatic pressure buildup behind the structure.

The river water level indicated in the drawing corresponds to the maximum level reached during extreme rainfall events in the rainy season.

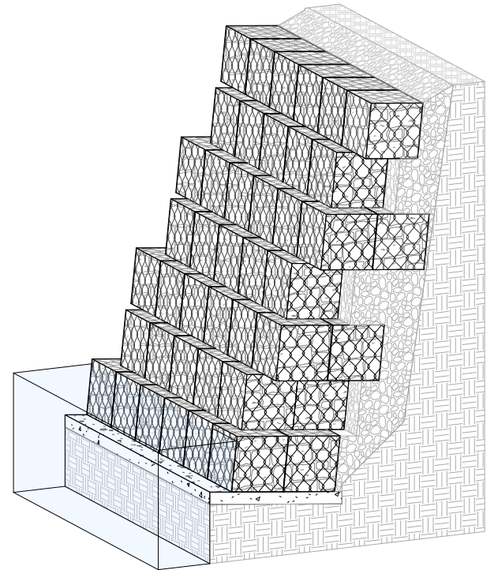
Additionally, the wall incorporates an approximate 6° inward inclination (≈ 1H:10V) relative to the vertical, oriented toward the retained soil. This geometric configuration improves the overall structural response by optimizing load transfer and increasing resistance to overturning and sliding.

Furthermore, localized sections of the wall include double-row gabion arrangements extending into the retained soil mass, forming deeper segments that act as stabilizing zones. These sections enhance the effective base width and provide additional passive resistance, contributing to improved performance under higher loading conditions and hydraulic influence.

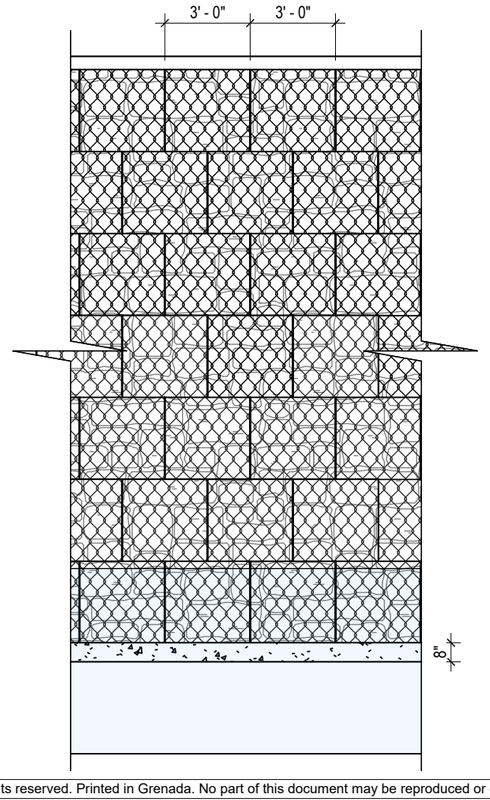


CUBE

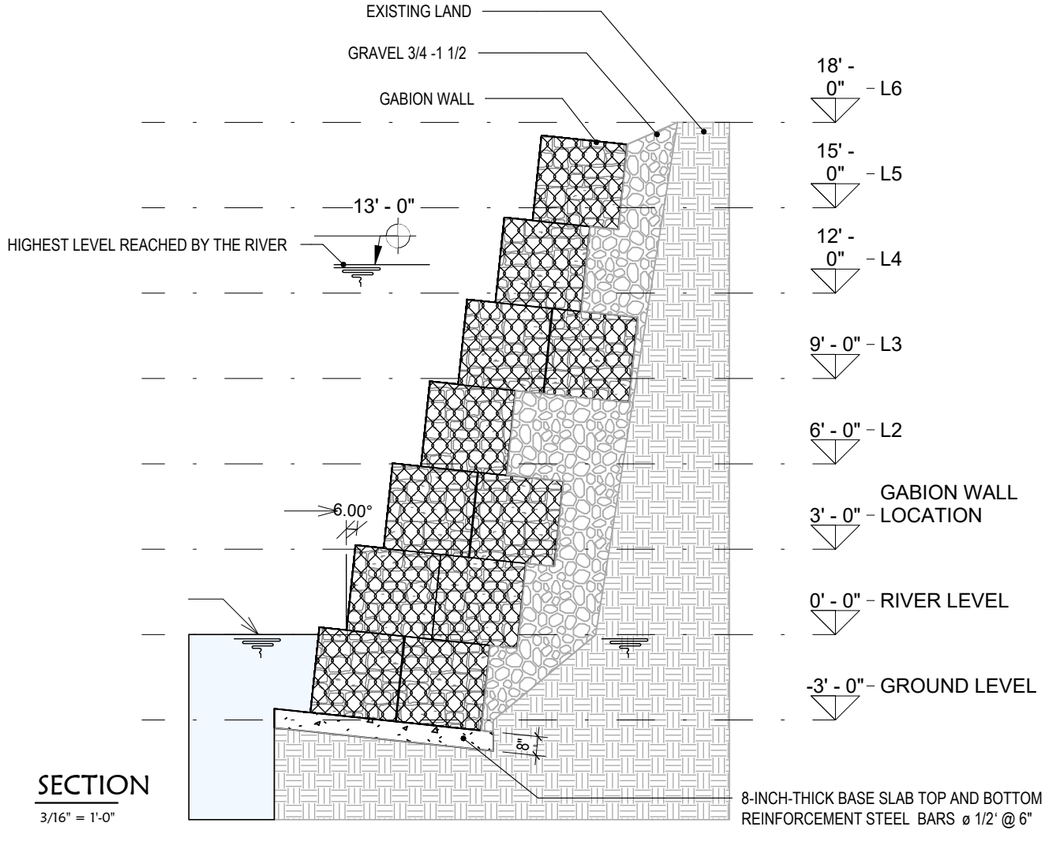
EXPLODED VIEW



3D SECTION



FRONT
3/16" = 1'-0"



SECTION
3/16" = 1'-0"

PROJECT NAME: Proposed Madeys Bridge

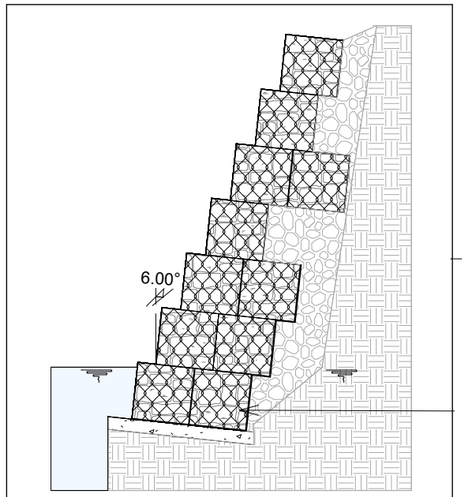
PROJECT LOCATION: Madeys, St Patrick Grenada

SHEET NO. S-18

SHEET TITLE: Gabion Wall

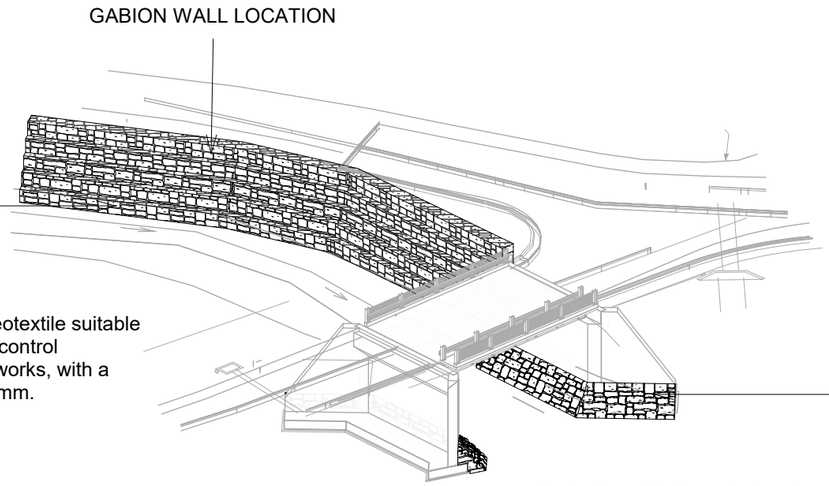
BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

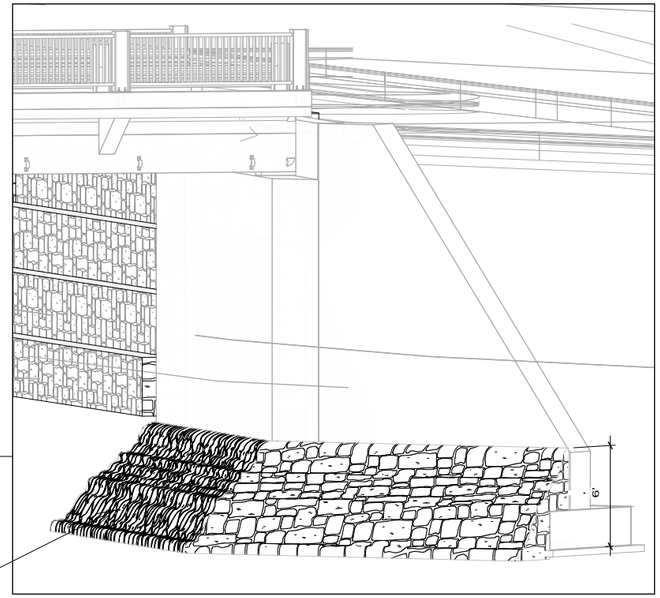
DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	PEDRO SALAYA
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	12/08/25
PROJECT #:	BECL-062-2025
SCALE:	As shown



GABION WALL SECTION

Geotextile: non-woven geotextile suitable for drainage and erosion control applications in hydraulic works, with a nominal thickness of 2.0 mm.





Protection of bridge abutments using riprap to reduce erosion and scour

TECHNICAL NOTE – GABION WALL SYSTEM (LOCATION AND DESCRIPTION)

The proposed gabion wall is located along the riverbank adjacent to the bridge, in an area subject to hydraulic influence during periods of intense rainfall. The wall extends approximately 136 ft the river edge, providing protection against erosion and scour while stabilizing the embankment and adjacent infrastructure.

The system is composed of 3 ft × 3 ft × 3 ft rock-filled wire mesh gabions arranged in a stepped configuration, improving resistance to lateral earth pressures and hydraulic forces. The wall includes an 8-inch thick concrete leveling pad at its base, founded below ground level to reduce the risk of undermining.

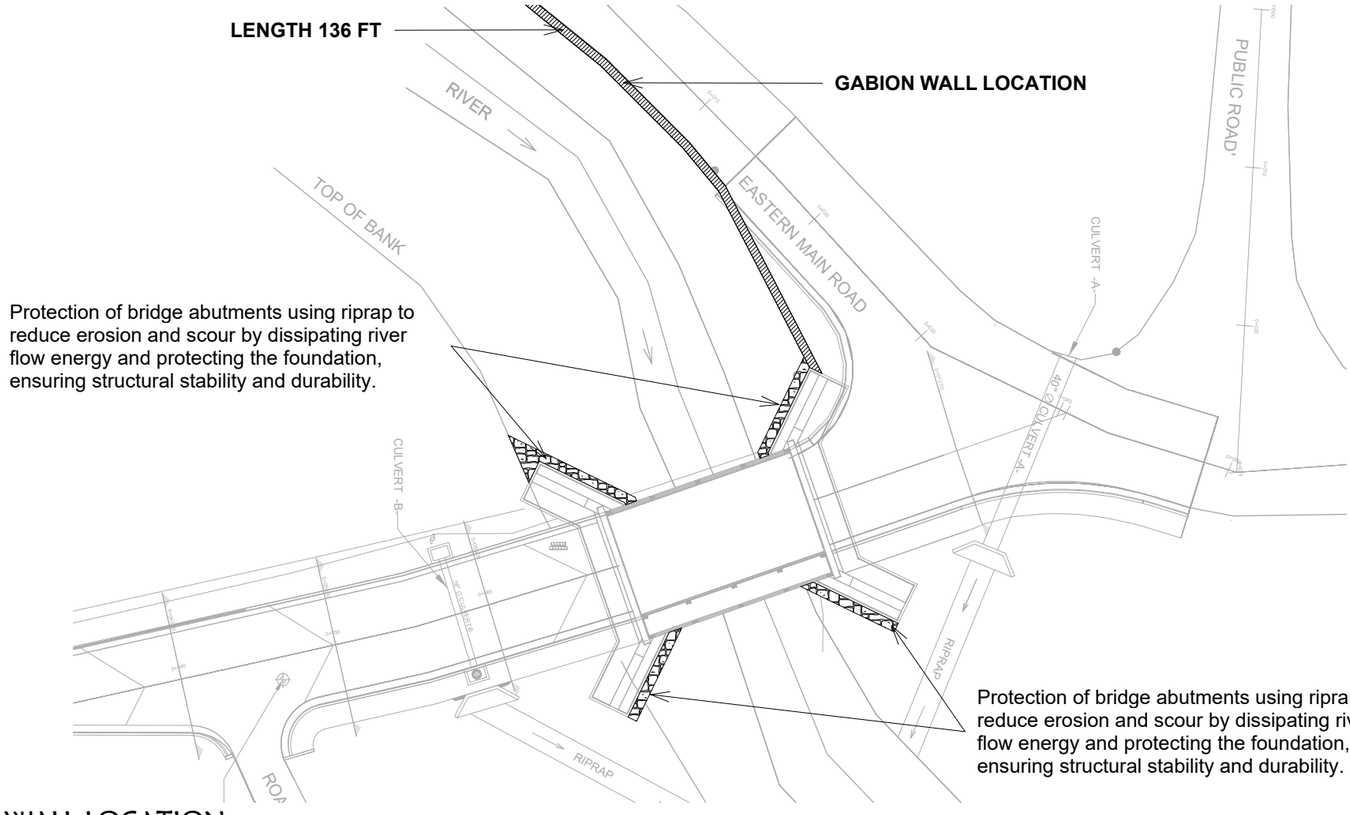
A granular drainage layer is placed behind the wall to facilitate water dissipation and reduce hydrostatic pressure. The structure is designed with an approximate 6° inward inclination (1H:10V) to enhance stability against sliding and overturning.

Hydraulic Scour Mitigation: Provision of erosion protection at the toe and front face of the gabion wall through the placement of rock armoring or gabion mattresses over a continuous filtering geotextile layer, extending a minimum of 9.0 ft from the base of the structural element, in order to mitigate scour and soil loss due to hydraulic action.

Incorporation of larger-diameter rocks at the foundation zone compared to those used in the rest of the system, in accordance with the hydraulic design parameters, increasing resistance against drag forces and flow turbulence.

Application of this protection system across the first three (3) lower sections or segments of the wall, corresponding to the areas directly exposed to flow action.

Riprap Protection: Riprap shall be installed at the base of the bridge abutments and along the slope adjacent to the channel in order to control erosion and reduce scour. The riprap protection shall extend vertically to a height of approximately 6 ft measured from the base of the bridge abutment.



GABION WALL LOCATION

1" = 160'-0"

PROJECT NAME: **Proposed Madeys Bridge**

PROJECT LOCATION: **Madeys, St Patrick Grenada**

SHEET TITLE: **Gabion Wall Location**

SHEET NO. **S-19**

BARRY'S ENGINEERING COMPANY LIMITED
♦ Civil & Structural Engineers ♦ Project & Construction Managers
Suite 2307,
Bruce Street Commercial Complex
Bruce Street, St. George's Grenada
Telephone: 473-443-2327/473-456-2888
Email: barrysengineering@gmail.com
Website: barrysengineering.gd

DESIGN BY:	BARRY'S ENGINEERING CO. LTD.
DRAWN BY:	PEDRO SALAYA
CHECKED BY:	ERICK ALIENDRES
APPROVED BY:	LESLIE BARRY
DATE:	12/08/25
PROJECT #:	BECL-062-2025
SCALE:	As shown