512 Cooper's Farm RD

Zone	:	**Paynesville**
Road	:	**512 Cooper's Farm RD**
Coordinates	:	**313694(Easting)**
		690657(Northing)
Ex. Br. Type	:	**None**
Ex. Condition	:	**Impassable by Vehicle in all season**
		Impassable by Walking during heavy Rain
		Passable by Motor Bikes during Dry season
Judgement	:	**Reconstruction**
		• 1 @ 9.0m / RC-Slab Bridge (Integral type)
		• Foundation type / Concrete Piles
		• Alighnment / Follow Existing Alignment
		• Bottom Elevation : Higher than Existing
		• Detour : At Downstream by Pipe + Embankment
Notes	:	**- NOT APPLICABLE -**
		• Access road is not secured at west side

512 Cooper's Farm RD

Photo 1

Photo 2

Photo 3

Photo 4

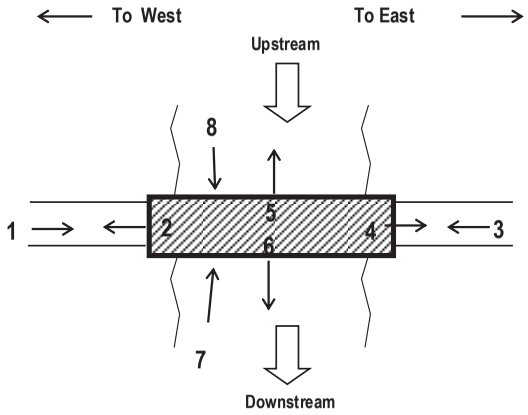


Photo 5

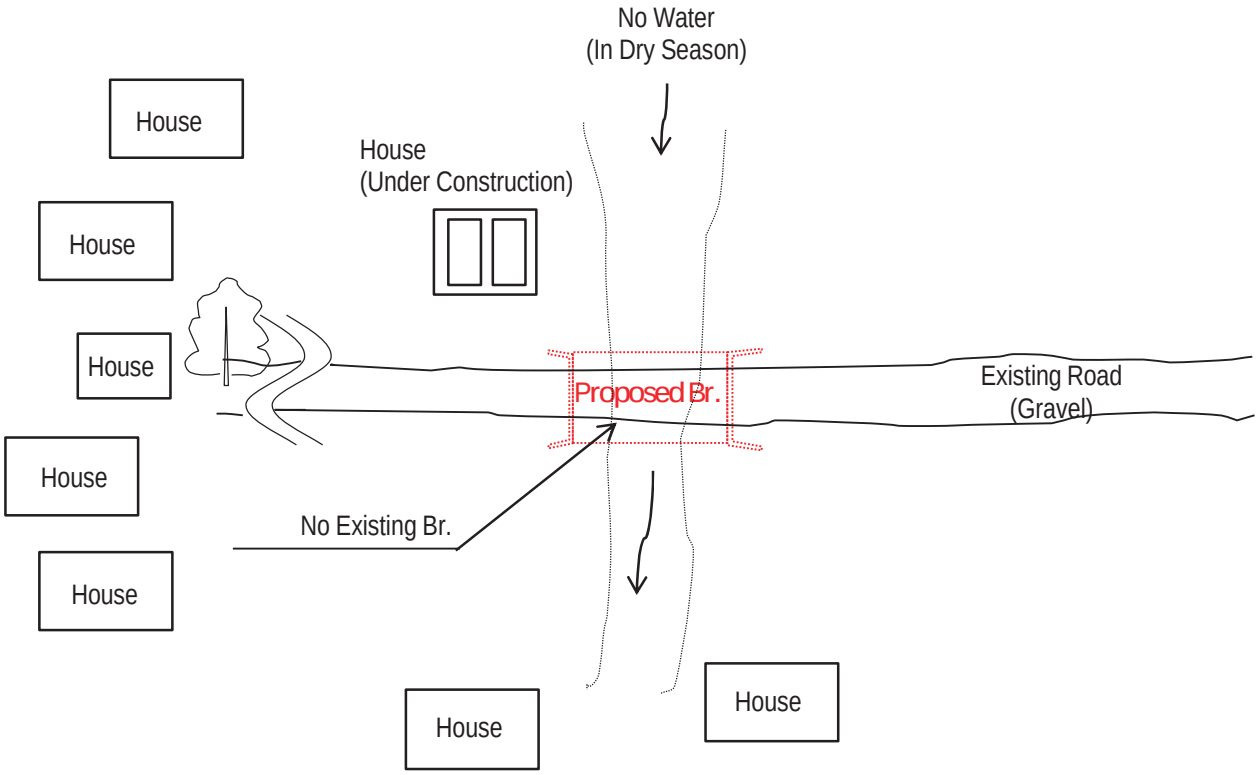
Photo 6

Photo 7

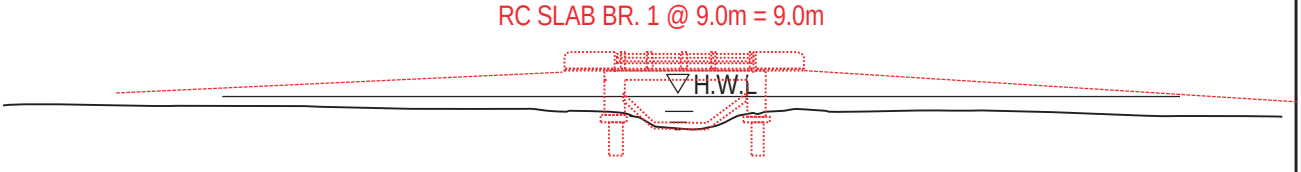
Photo 8

Bridge Name : 512 Cooper's Farm RD

SITE PLAN



SIDE VIEW



601 Louisiana RD

Zone	:	**?**
Road	:	**601 Louisiana RD**
Coordinates	:	**311580(Easting)**
		710626(Northing)
Ex. Br. Type	:	**Timber Bridge**
Ex. Condition	:	**Impassable by Vehicle in all season**
		Impassable by Walking during heavy Rain
		Passable by Motor Bikes during Dry season
Judgement	:	**Reconstruction**
		• 2 @ 12.0m = 24.0m/ RC-Slab Bridge (Integral type)
		• Foundation type / Concrete Piles
		• Re-Alighn to Downstream Side
		• Bottom Elevation : Keep Existing Ground Level at Re-Align position
		• Detour : Utilizing Existing Br.
Notes	:	**- APPLICABLE -**

Photo 1

Photo 2

Photo 3

Photo 4

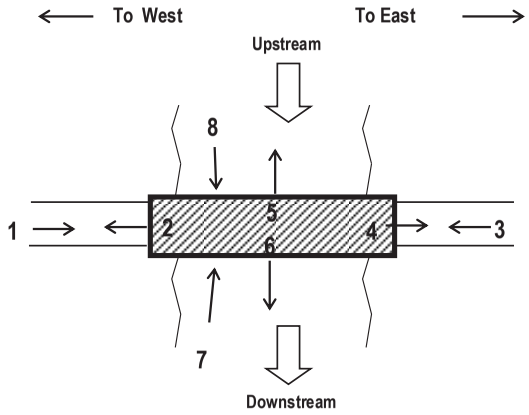


Photo 5

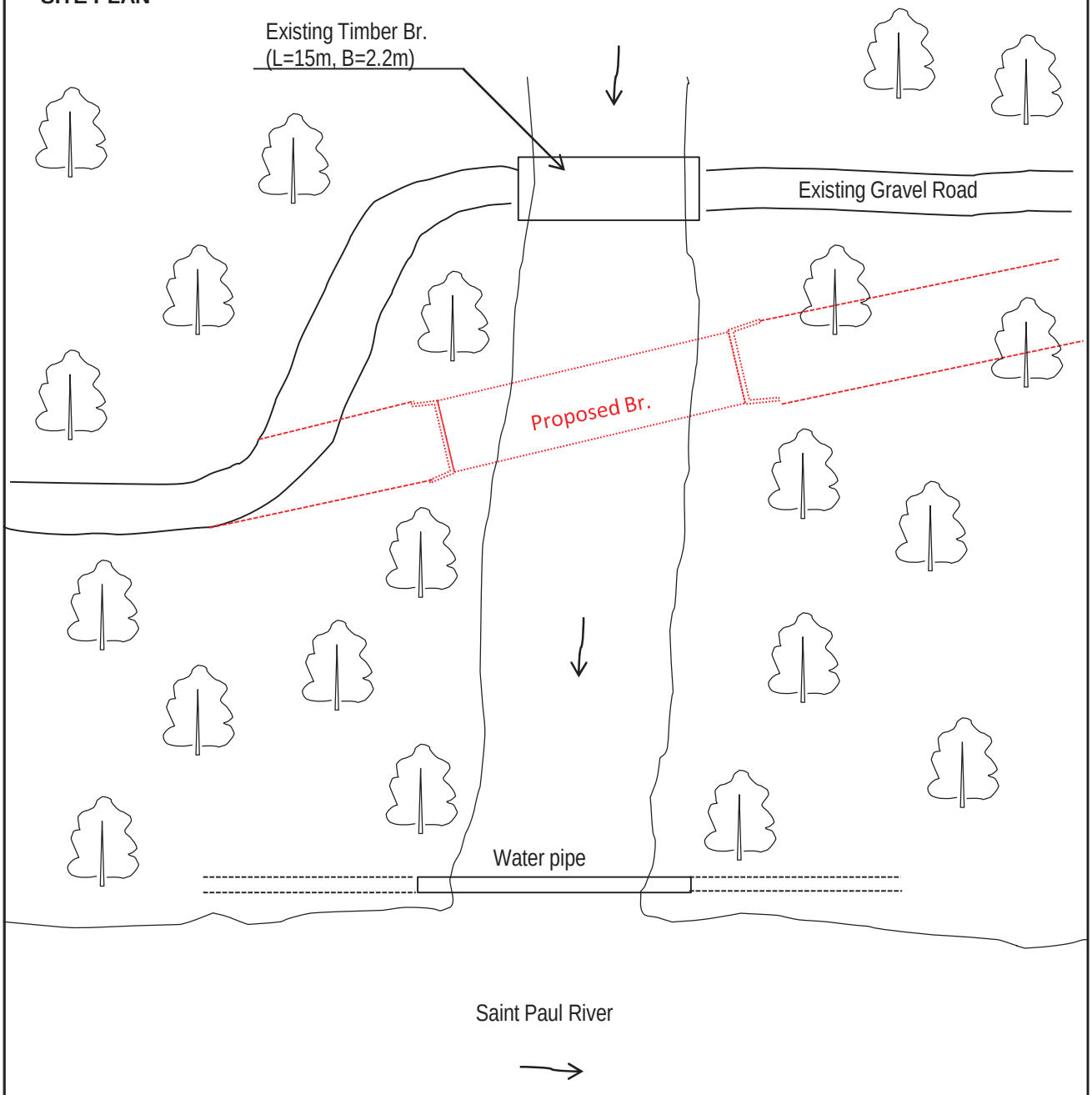
Photo 6

Photo 7

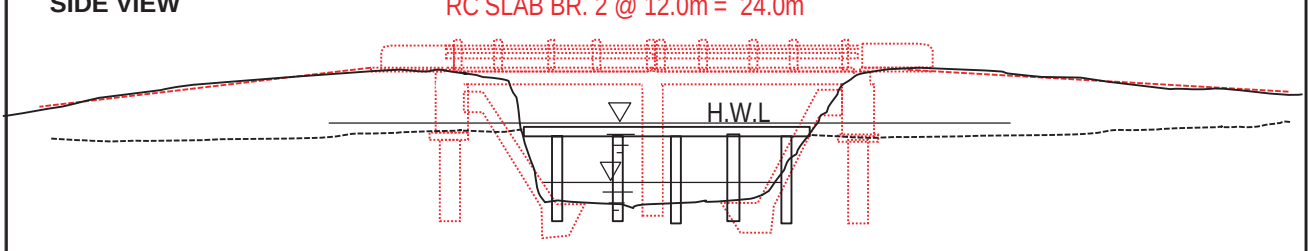
Photo 8

Bridge Name : 601 Louisiana RD

SITE PLAN



SIDE VIEW



602 Clayash Land RD

Zone	:	**?**
Road	:	**602 Clayash Land RD**
Coordinates	:	**307285(Easting)**
		710522(Northing)
Ex. Br. Type	:	**Temporary Steel**
Ex. Condition	:	**Impassable by Walking during heavy Rain**
		Passable by Vehicle during Dry season
Judgement	:	**Reconstruction**
		• 1 @ 13.0m / RC-Slab Bridge (Integral type)
		• Foundation type / Concrete Piles
		• Alignment / Follow Existing Alignment
		• Bottom Elevation : Higher than Existing
		• Detour : At Downstream by Pipe + Embankment
Notes	:	**- NOT APPLICABLE -**
		• Out side of Greater Monrovia

602 Clayash Land RD

Photo 1

Photo 2

Photo 3

Photo 4

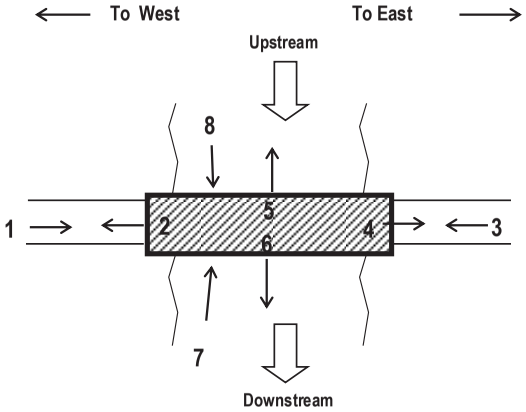


Photo 5

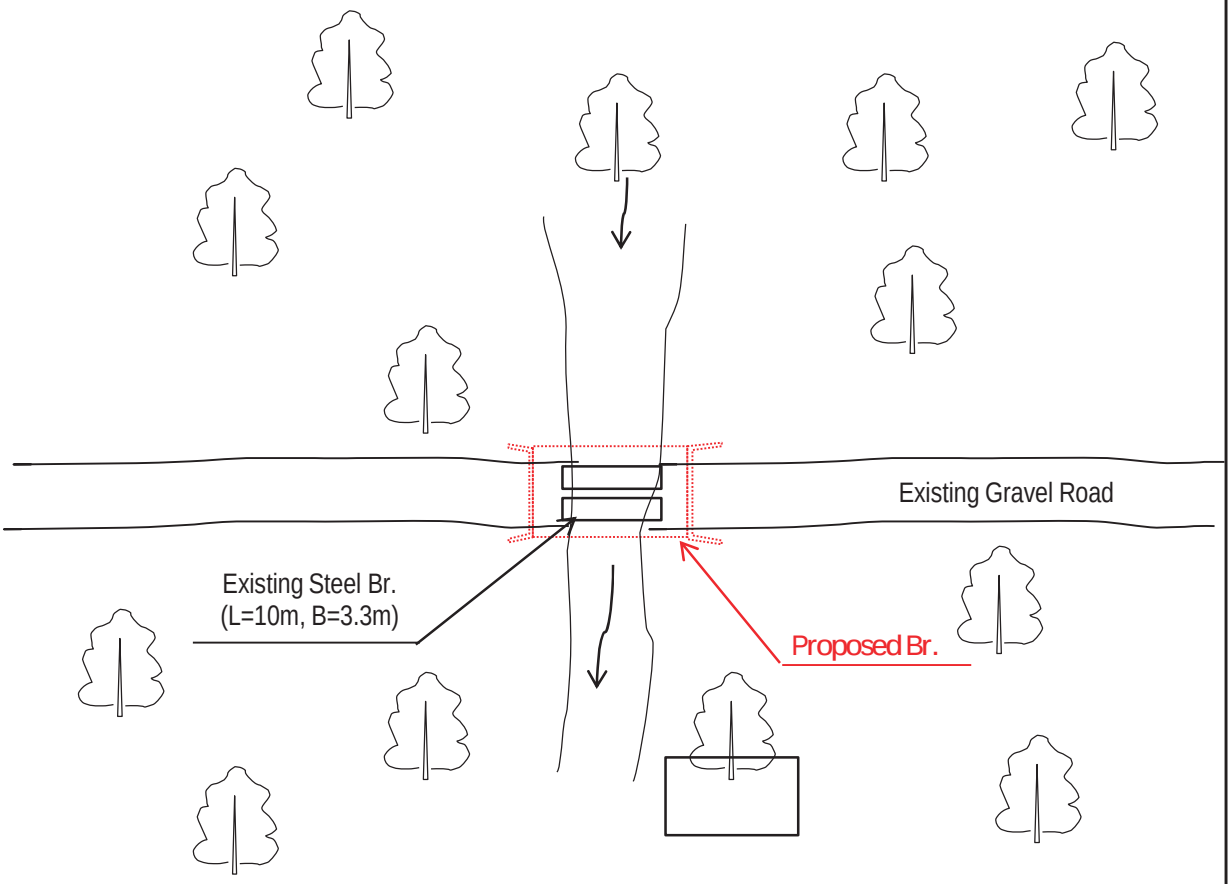
Photo 6

Photo 7

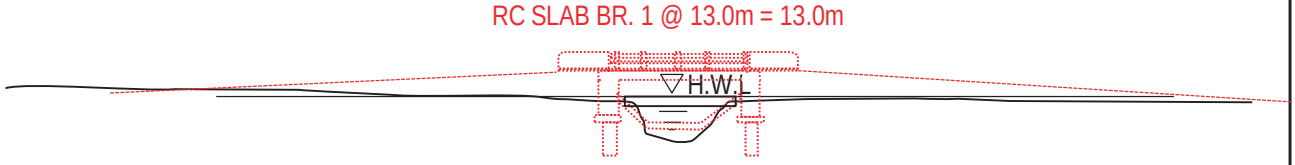
Photo 8

Bridge Name : 602 Clayash Land RD

SITE PLAN



SIDE VIEW



603 Zink Camp Cut RD No.1

Zone	:	**?**
Road	:	**603 Zink Camp Cut RD No.1**
Coordinates	:	**311108(Easting)**
		710845(Northing)
Ex. Br. Type	:	**Pipes (φ 75x3)**
Ex. Condition	:	**Impassable by Walking during heavy Rain**
		Passable by Vehicles during Dry season
Judgement	:	**Reconstruction**
		• 3 @ 9.0m = 27.0m/ RC-Slab Bridge (Integral type)
		• Foundation type / Concrete Piles
		• Re-Alighn to Downstream Side
		• Bottom Elevation : Keep Existing Groud Level at Re-Align position
		• Detour : Utilizing Existing Rd.
Notes	:	**- NOT APPLICABLE -**
		• Out side of Greater Monrovia

603 Zink Camp Cut RD No.1

Photo 1

Photo 2

Photo 3

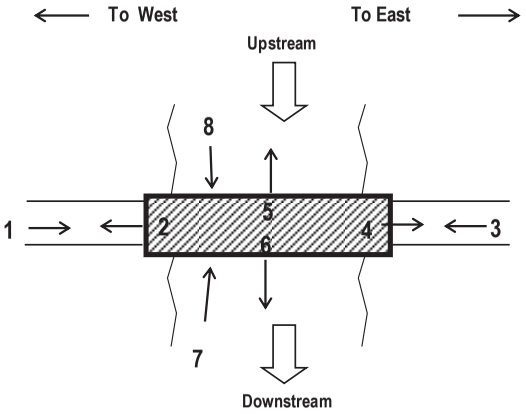


Photo 4

Photo 5

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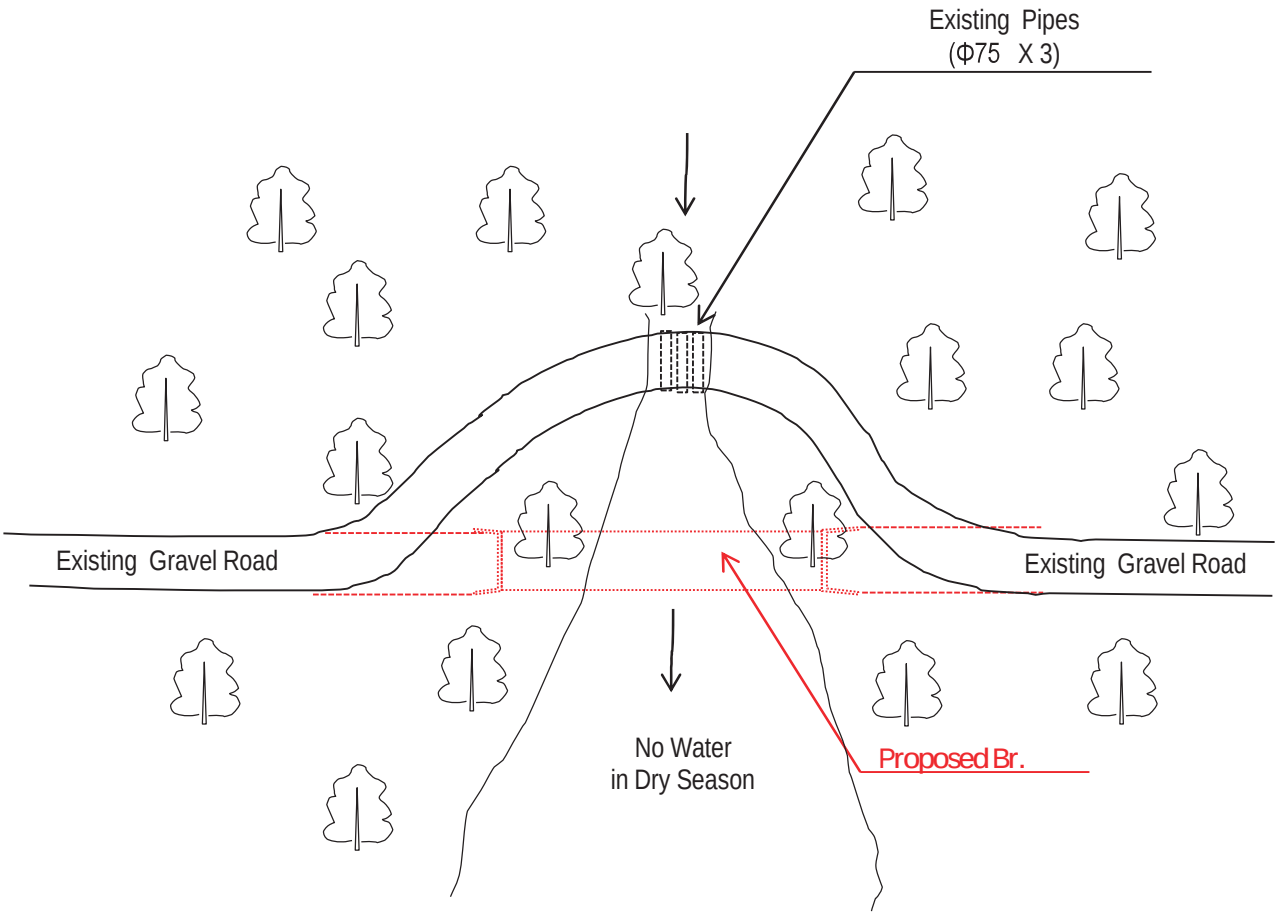
Photo 7

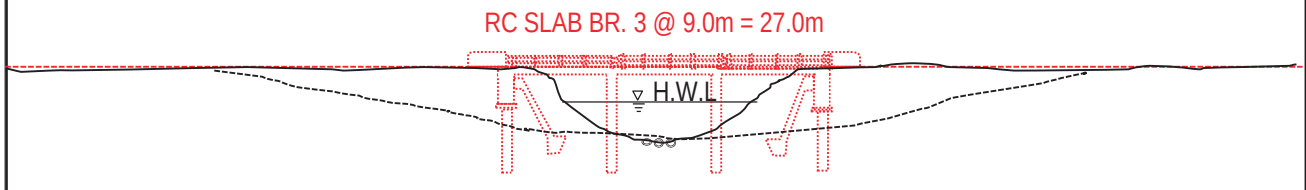
Photo 8

Bridge Name : 603 Zink Camp Cut RD No.1

SITE PLAN



SIDE VIEW



604 Zink Camp Cut RD No.2

Zone	:	**?**
Road	:	**604 Zink Camp Cut RD No.2**
Coordinates	:	**310757(Easting)**
		711438(Northing)
Ex. Br. Type	:	**Timber Slab + Steel Girder**
Ex. Condition	:	**Impassable by Walking during heavy Rain**
		Passable by Vehicles during Dry season
Judgement	:	**Reconstruction**
		• 2 @ 12.0m = 24.0m/ RC-Slab Bridge (Integral type)
		• Foundation type / Concrete Piles
		• Re-Alighn to Downstream Side
		• Bottom Elevation : Keep Existing Groud Level at Re-Align position
		• Detour : Utilizing Existing Rd.
Notes	:	**- NOT APPLICABLE -**
		• Out side of Greater Monrovia

604 Zink Camp Cut RD No.2

Photo 1

Photo 2

Photo 3

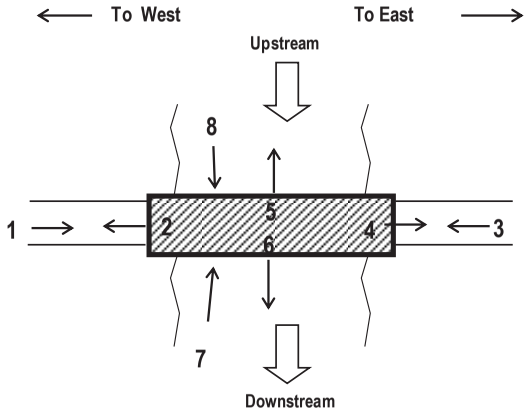


Photo 5

Photo 4

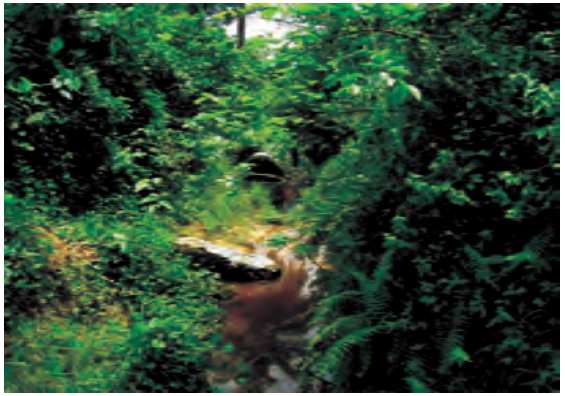


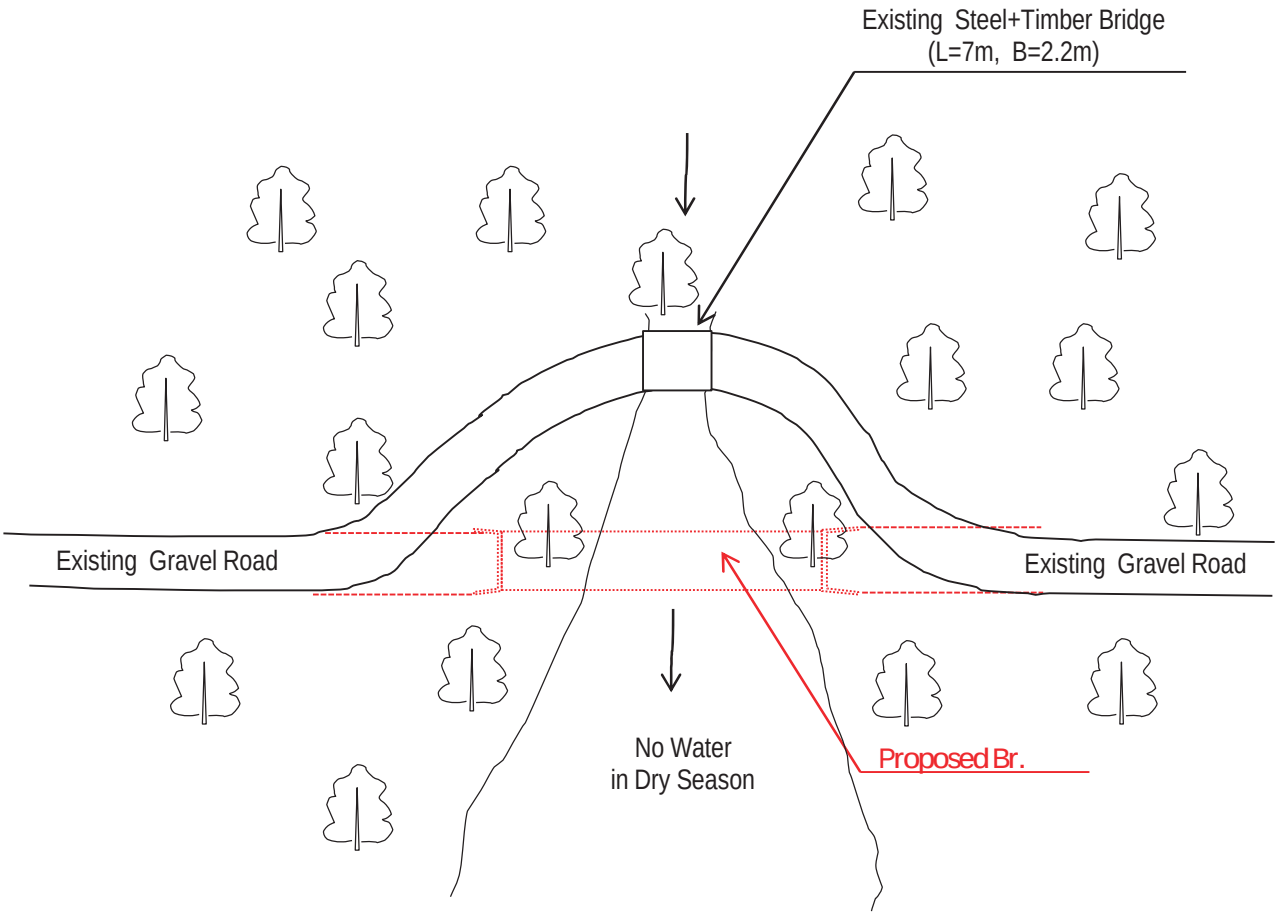
Photo 6

Photo 7

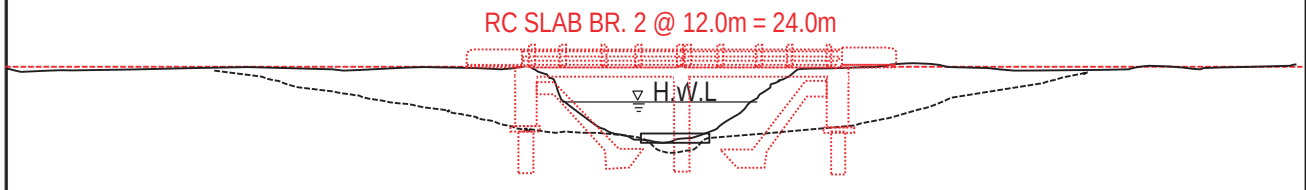
Photo 8

Bridge Name : 604 Zink Camp Cut RD No.2

SITE PLAN



SIDE VIEW



605 Kpoon Town RD

Zone	:	**?**
Road	:	**605 Kpoon Town RD**
Coordinates	:	**310827(Easting)**
		713476(Northing)
Ex. Br. Type	:	**Log Bridge**
Ex. Condition	:	**Impassable by Walking during heavy Rain**
		Passable by Walking during Dry season
Judgement	:	**Reconstruction**
		• 2 @ 9.0m = 18.0m/ RC-Slab Bridge (Integral type)
		• Foundation type / Concrete Piles
		• Alighnment / Follow Existing Alignment
		• Bottom Elevation : Higher than Existing
		• Detour : Utilizing Existing Detour at Downstream Side
Notes	:	**- NOT APPLICABLE -**
		• Out side of Greater Monrovia

605 Kpoon Town RD

Photo 1

Photo 2

Photo 3

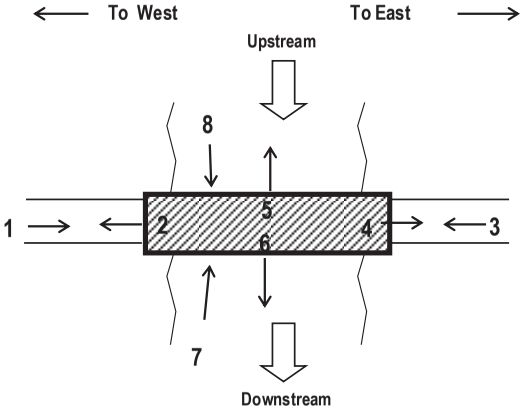


Photo 4

Photo 5

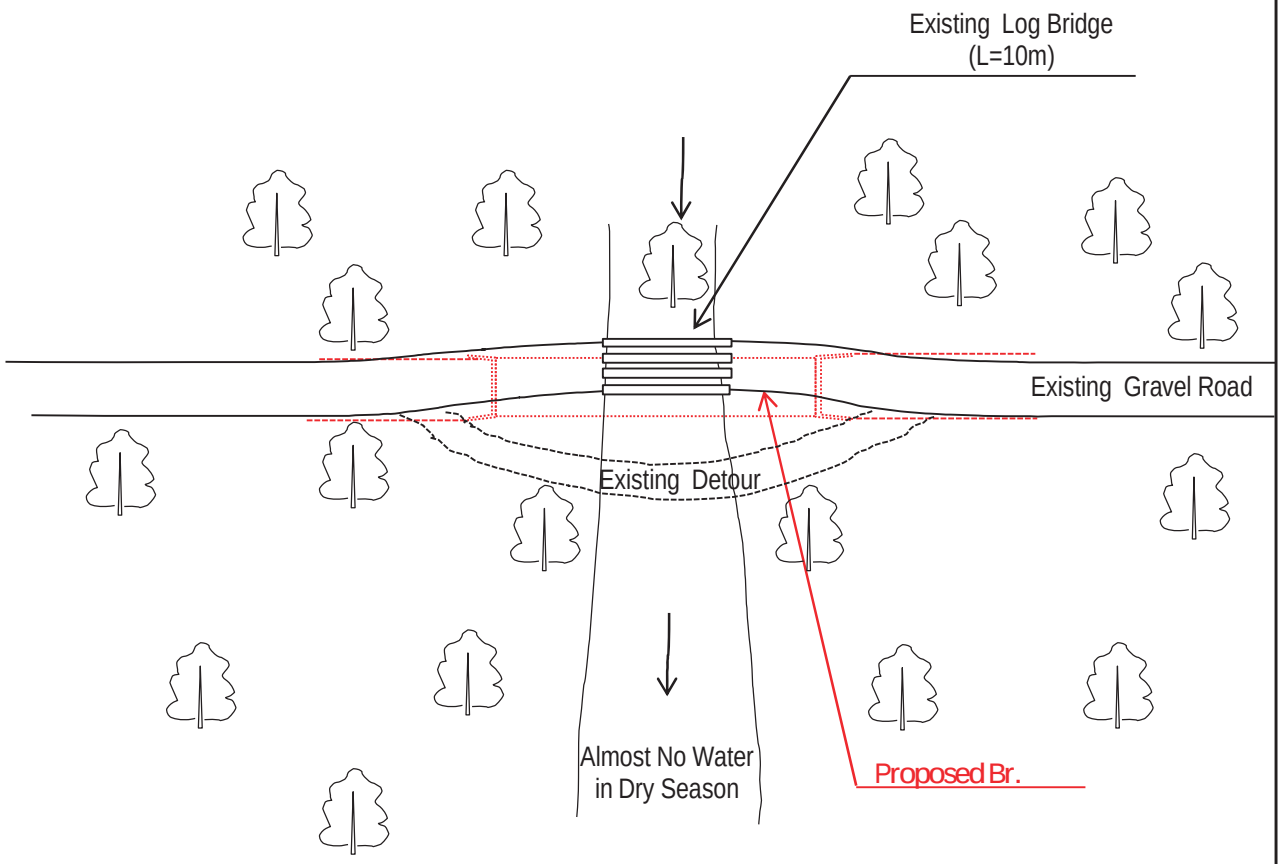
Photo 6

Photo 7

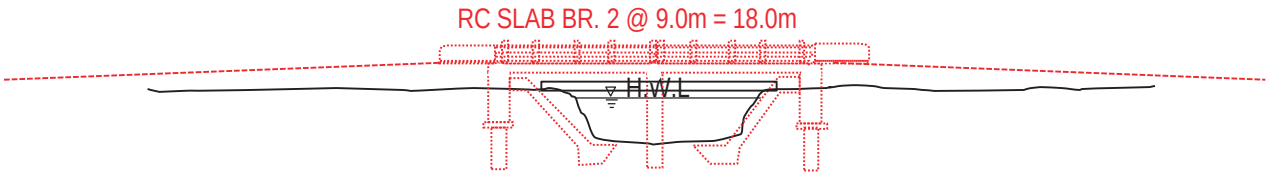
Photo 8

Bridge Name : 605 Kpoon Town RD

SITE PLAN



SIDE VIEW



3/22 MPW Mr Sloot 打合

REPUBLIC OF LIBERIA

MINISTRY OF PUBLIC WORKS

Lynch Street
P. O. Box 9011
Monrovia, Liberia

Draft

Technical Specification

And

Working Drawing

2010

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INTRODUCTION

The Ministry of Public Works as technical arm of government is producing this manual containing specification and working drawing of short span bridges, culverts and typical road cross section. This is intended to guide NGOs, contractors, and other partners that are involved with rehabilitation of roads and construction of bridges and culverts.

Accordingly, the Ministry is advising that all construction of bridges, box culverts, reinforce circular culverts observe these specifications and guidelines herein. Bridges that span are more than 50 feet will be design base on case by case bases.

OBJECTIVE

It is the purpose of this manual to provide all the necessary procedural, guidance, dimension and material specification for the construction of small bridges and culverts. It contained standardize drawing of short span bridge, single and multiple box culverts, reinforce circular culverts and typical cross section for primary, secondary and feeder roads. It is intended to guide NGOs, contractors and other partners that are involved with road rehabilitation and bridge construction.

DEFINITION:

- Primary Roads- are highway leading from the capitol to varies county headquarters and bounders.
- Secondary Roads – are roads leading form the primary road to district headquarters. Neighborhood road with the width of 30'-0' are considered in this category.
- Feeder Roads- are road leading form the secondary or primary road to villages or town. This is also consider as farm to market roads.

Technical Specification (AASMTO)

1. Concrete stress at 28 days is 3,000 psi
2. Steel yield stress is equal to 36,000 psi (mild yield steel)
3. Concrete cover in soil is 3 inches
4. Minimum steel lap is 30 inches
5. Minimum soil pressure is 3,000 psi
6. Concrete mix ration is 1:1 ½:2
7. Coarse aggregate ¼'' – ½''
8. Blinding coarse mix ration 1:3:4
9. Scour protection should be considered if necessary by using rip rap, or gabion bucket and vegetation.
10. Twin or multiple cell box culverts should be used where the horizontal opening is move than 13 feet or 4 m.
11. Where there is an establish stream, the culvert should follow the existing alignment unless the alignment can be improved.
12. The gradient of the culvert should be the same as the gradient of the stream.
13. Foundation:-
    - **Uneven foundation** – When the excavation crosses soft or hard spots, the foundation should be made as uniform as possible by excavating rock, clay pocket etc. below the proposed foundation level and replacing it with good selected material.
    - **Soft foundation** – All soft unstable material should be excavated and backfill to foundation level with sand/gravel mixture, crush stone or other suitable material.
    - **Swamp foundation** – Where deep unstable foundations are encountered which cannot be stabilized with granular material, timber fasines can be used to spread the load.
    - **Rock foundation** – Rock should be excavated to at least 10 inches or 250 mm below the foundation level and side enough to prevent the pipe resting directly on rock at any point.

The vertical profile of the road over the bridge should be determine once the high flood level, floating debris a navigation clearance are know. The bridge should preferably be constructed either to a level profile in a constant longitudinal gradient. This is required by road alignment. The bridge or culvert should be alignment with the road and approaches should be at least 250 feet.

12. Minimum compaction for carriageway should be 95% and base coarse 98%.

PRIMARY AND SECONDARY ROADS