



俊和-中國中鐵-中鐵大橋局聯營
CHUN WO - CRGL - MBEC JOINT VENTURE

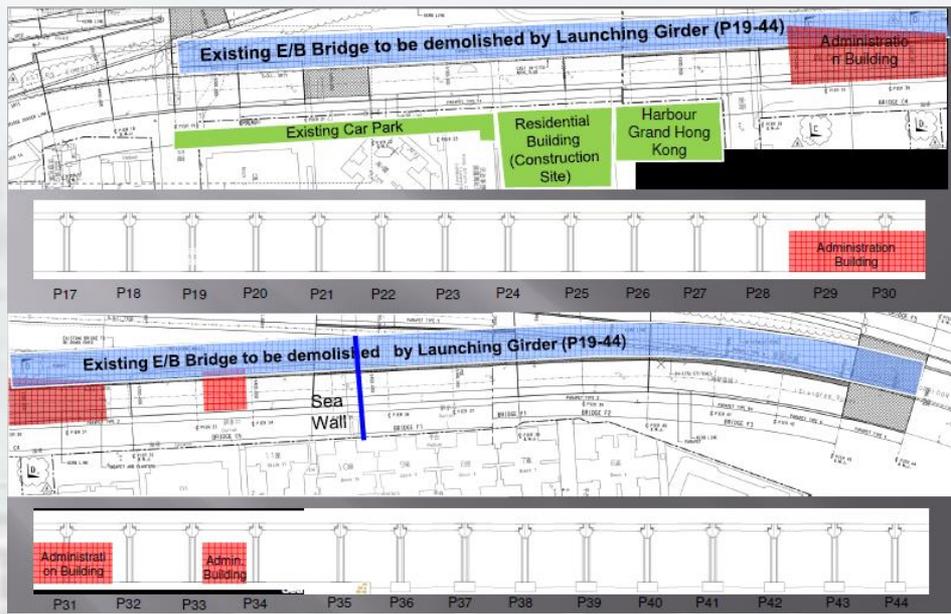


Contract No. HY/2009/19 **Central - Wan Chai Bypass – Tunnel (North Point Section) and Island Eastern Corridor Link**



Temporary Works Excellence Award 2017 (Civil Engineering Works) - Demolition of Existing Island Eastern Corridor (IEC) Eastbound Bridge (By Launching Girder)

General Layout of IEC



Risk Identification at Planning Stage



Special Features or Constraints of the site



1. Very close to residential area, hotel, school and FEHD Depot
2. Limited working space for demolition of existing bridge
3. No lane closure of west bound traffic
4. The demolition of bridge beam is extremely close to New IEC traffic

1. Collapse of Launching Girder
2. Falling Object
3. Fall from Height

Design Stage

1. Construction Method

- Demolition by coring, saw cutting & wire cutting
- Lifting by Launching Girder (LG)

2. Selection of supplier & Special Contractor

- YWL (Launching Girder)
- Kingland (Bridge Demolition)

3. Safety Devices of LG

- a) Provision of guard railing and toe board to prevent falling from height & falling object
- a) Permit to work system
- c) Hoisting Weight Limiter to control the load
- d) Safe access
- e) Hydraulic Caliper Disc Brake to shut down the winches when emergency stop the girder.
- f) Prevent over scroll switch



Installation of Launching Girder

ME. No. : 610MS/
Revision : 0
Date : 17 Nov 16



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CHUN WO - CRGL - MBEC JOINT VENTURE

Contract No. HY/2009/19
Central - Wan Chai Bypass -
Tunnel (North Point Section) and Island Eastern Corridor Link

METHOD STATEMENT

FOR

LGB-M Assembly Work Between Pier 44 ~

(Rev.0)

Prepared by	Reviewed by	Reviewed by	Reviewed by	Reviewed by	Approved
 Senior Engineer (Terence Tsau)	 Section Agent (Charles Yeung)	 Construction Manager (Andy Chan)	 Environmental / QA Manager (M.H. Isa)	 Safety Manager (H K Leung)	 Deputy Agent (Eric Fong)

Endorsed By

Dr. Chan Wai Yu
Director
ME(Eng, PLD, MOKSI, RP)(C)-87005586
for W T Chen & Associates Ltd



1. Difficulties in Installation on site

- Too close to New IEC Traffic Lane
- Some Components of Launching Girder is too long
- The limited land reserve in construction site

2. Compliance with the New Safety Guideline Issued by Labour Department

- Lifting Supervisor has been appointed
- Competent Person & Workman for (Erection/Re-erection, Dismantling & Relocation) have been appointed

* Lifting supervisor, CP & CW (EDR) have been trained before the installation. The relevant workers to be familiar with the whole operation and design of the Launching Girder.

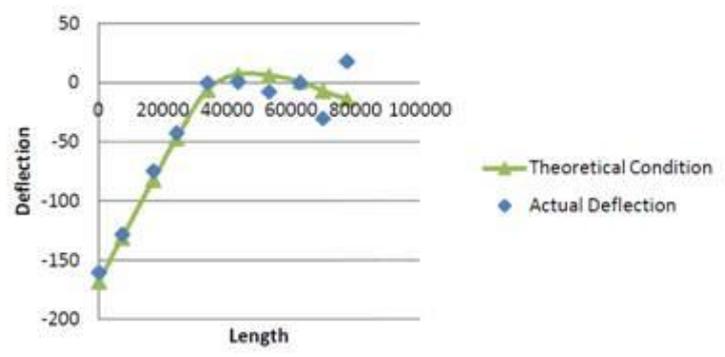
Testing and Commissioning

Front Cantilever Loading Test for A

Date: 7/Feb/2017

Survey Point	Theoretical Point Coords.			ordinates before FL is Engag			ordinates after FL is Engage			Adjusted Deflection Z'(mm)	Actual Deflection z''(mm)	Theoretical Condition			Difference (%)
	X(m)	Y(m)	Z(m)	X(m)	Y(m)	Z(m)	X(m)	Y(m)	Z(m)			x(mm)	y(mm)	z(mm)	
1a	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.155	160	-160	-5	55	-168	4.60%
2a	7.283	-0.045	0.000	7.283	-0.045	-0.015	7.282	-0.045	0.103	113	-128	-5	42	-131	1.72%
3a	16.980	-0.090	0.000	16.980	-0.090	-0.024	16.979	-0.088	0.045	51	-74	-5	25	-82	4.49%
4a	24.175	-0.118	0.000	24.175	-0.118	-0.038	24.176	-0.114	0.000	4	-42	-4	13	-47	2.72%
5a	33.792	-0.164	0.000	33.792	-0.164	-0.058	33.795	-0.159	-0.051	-58	0	-1	1	-6	3.57%
6a	43.310	-0.186	0.000	43.310	-0.186	-0.119	43.316	-0.179	-0.125	-120	1	2	-3	7	-3.86%
7a	52.984	-0.200	0.000	52.984	-0.200	-0.190	52.989	-0.195	-0.196	-182	-8	3	-3	6	-8.11%
8a	62.603	-0.231	0.000	62.603	-0.231	-0.244	62.610	-0.226	-0.249	-244	0	4	-1	1	-0.60%
9a	69.769	-0.260	0.000	69.769	-0.260	-0.321	69.776	-0.257	-0.322	-291	-30	5	2	-7	-13.81%
10a	77.236	0.000	0.000	77.236	0.000	1.213	77.242	0.000	1.209	1195	18	3	5	-14	19.08%

Deflection for A-side Points

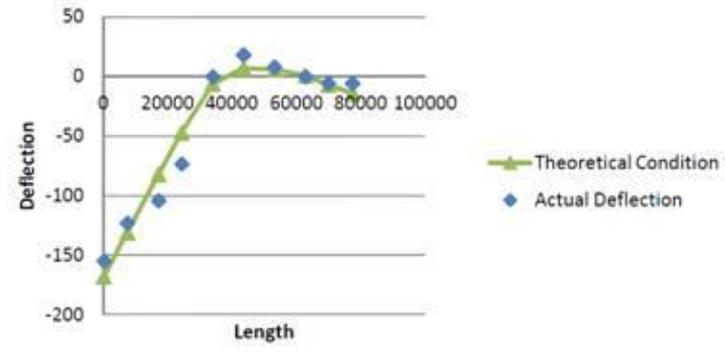


Front Cantilever Loading Test for B

Date: 7/Feb/2017

Survey Point	Theoretical Point Coords.			ordinates before FL is Engag			ordinates after FL is Engage			Adjusted Deflection Z'(mm)	Actual Deflection z''(mm)	Theoretical Condition			Difference (%)
	X(m)	Y(m)	Z(m)	X(m)	Y(m)	Z(m)	X(m)	Y(m)	Z(m)			x(mm)	y(mm)	z(mm)	
1b	0.143	6.482	0.000	0.143	6.482	0.017	0.144	6.479	0.185	172	-155	-5	55	-168	7.83%
2b	7.427	6.466	0.000	7.427	6.466	-0.001	7.427	6.465	0.127	122	-123	-5	42	-131	4.72%
3b	17.129	6.441	0.000	17.129	6.441	-0.048	17.129	6.444	0.029	56	-104	-5	25	-82	-13.17%
4b	24.330	6.409	0.000	24.330	6.409	-0.066	24.331	6.415	-0.022	8	-73	-4	13	-47	-15.65%
5b	33.939	6.370	0.000	33.939	6.370	-0.058	33.943	6.375	-0.050	-58	0	-1	1	-6	3.57%
6b	43.522	6.316	0.000	43.522	6.316	-0.105	43.527	6.324	-0.113	-123	18	2	-3	7	6.71%
7b	53.137	6.272	0.000	53.137	6.272	-0.180	53.143	6.279	-0.191	-188	8	3	-3	6	1.26%
8b	62.759	6.245	0.000	62.759	6.245	-0.253	62.767	6.248	-0.259	-253	0	4	-1	1	-0.60%
9b	69.925	6.227	0.000	69.925	6.227	-0.308	69.933	6.231	-0.311	-302	-6	5	2	-7	0.83%
10b	77.416	6.505	0.000	77.416	6.505	1.139	77.425	6.507	1.133	1144	-6	3	5	-14	5.00%

Deflection for B-side Points



1. Deflection checking has been conducted by YWL.
2. Ensure that the overall structural, mechanical and electric components of the equipment have been maintained in a safe and serviceable condition and are functioning properly according to the original specifications.
3. Deflection on front cantilever converges to the theoretical deflection.
4. There are points at rear of truss (A side & B side) are scattering around theoretical values.
5. The deflection on site converges to the theoretical deflection. LGB-M deflection is acceptable.

Inspection and Maintenance

INDEPENDENT CHECKING ENGINEER
CONSTRUCTION CHECK CERTIFICATE FOR TEMPORARY
(SCC Clause 26 & PS 1.109)

CONSTRUCTION CERT.

Contract No. HY/2009/19
Central - Wan Chai Bypass - Tunnel (North Point Section) and Island Eastern

INDEPENDENT CHECKING ENGINEER
CONSTRUCTION CHECK CERTIFICATE FOR TEMPORARY WORKS
(SCC Clause 26 & PS 1.109)

CONSTRUCTION CERT. NO.: CC/MAR/338

Contract No. HY/2009/19
Central - Wan Chai Bypass - Tunnel (North Point Section) and Island Eastern Corridor Link

Description of Temporary Works: LGB-M for Bridge Demolition (Rear Leg Installation at P41)
(Design Cert No. DCMAR/121A)

Description of Temporary Works: LGB-M Main Support Tie Down at Pier 42
(Design Cert No. DCMAR/121)

Drawings No. 12107/LGBM/D/2011
12107/LGBM/D/2013

Report No.	12107-LGBM-DES-101 Rev-	12107-LGAM-D-2012A
Drawings No.	12107-LGBM-D-2000B 12107-LGBM-D-2001 12107-LGBM-D-2005B 12107-LGBM-D-2006A 12107-LGBM-D-2007 12107-LGBM-D-2011A 12107-LGBM-D-2012 12107-LGBM-D-2013 12107-LGBM-D-2016A 12107-LGBM-D-2021B 12107-LGBM-D-2022A	12107-LGAM-D-2013 12107-LGB-03-01- 12107-LGB-03-01-01- 12107-LGB-03-02- 12107-LGB-03-02-01- 12107-LGB-03-03- 12107-LGB-03-03-01-

We certify that the Temporary Works described above have been constructed in accordance with the design which was certified under design certificate no. DCMAR/121 and on behalf of the Contractor on 31/12/2017 (date) and by the checking engineer:

Date: 11 Jan 2017 Signed: (Signature) (Name) (Position)

for and on behalf of Chun Wo - CRGL - MBEC Joint Venture (Contractor)

Date: 11 Jan 2017 Signed: (Signature) (Name) (Position)

We certify that the Temporary Works described above have been constructed in accordance with the design which was certified under design certificate no. DCMAR/121A and on behalf of the Contractor on 23/2/2017 (date) and by the checking engineer on 23/2/2017 (date)

Date: 6 May 2017 Signed: (Signature) (Name) (Position)

for and on behalf of Chun Wo - CRGL - MBEC Joint Venture (Contractor)

Date: 6 May 2017 Signed: (Signature) (Name) (Position)

- ICE check has been carried out for the whole launching girder e.g.:
 - Design of the method statement
 - Before use
 - Main Support tie down in each location

Item	Check Item	Check Status	Date	Remarks
1	Check all temporary works are in place and secured.	Yes/No	23 Feb 2017	
2	Check all temporary works are in place and secured.	Yes/No	23 Feb 2017	
3	Check all temporary works are in place and secured.	Yes/No	23 Feb 2017	

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8	Check all temporary works are in place and secured.	Yes/No	23 Feb 2017	
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12	Check all temporary works are in place and secured.	Yes/No	23 Feb 2017	
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- Checking system has been established for the launching procedures. e.g.:
 - Pre-use checking after installation
 - LG Maintenance Daily Checklist
 - Main Support Maintenance Monthly Checklist
 - Winches Maintenance Monthly Checklist
 - Front (Rear) Leg Maintenance Monthly Checklist

Safety procedures / measures during demolition of U-beam structure



1. Anchorage points & Fall Arresting System has been provided for working at height and working on the crosshead and U-beam
2. Coring & Saw Cut works has been provided guarding, PPE and noise barriers.
3. Provide the lookout man, red flags and highlighted warning notices around the lifting zone

Specific Safety Training and Permit to Work System

YWL Engineering Pte Ltd

Certificate of Attendance

This is to certify that

Cheung Wai Hung

Has attended the following training course:

Title: Plant Specific and Site Specific Training on the Operation of Launching Girders

Date: 19 September 2016

Time: 1:00pm to 3:00pm

Venue: Meeting Room, G/F Site Office at Oil Street, Chun Wo – CRGL – MBEC Joint Venture



James Lok Ying Ming
Plant Manager
YWL Engineering Pte Ltd
Designer/Manufacturer of Launching Girder



- Plant Specific and Site Specific Training on the Operations of Launching Girder has been conducted by the Supplier – YWL.
- The relevant workers to be familiar with the whole operation and design of the Launching Girder.
- LG work permit has been displayed on the relevant worker's helmet.

Dismantle of Launching Girder

Lifting the LG's components by 400ton Crawler Crane



超吊的操作許可證 HY/2009/119

1. 基本資料
 許可證有效日期至: (總長 2 天) 日期: 14 / 5 / 2017 時間: 18:00
 有關工程及位置: D18-D18 Bridge Demolition
 車架/種類: 履帶式 吊車式 橋樑 其它:
 噸數: (G.M.) (S.M.) (L.M.) 400 Ton 軌距: 14.5m
 操作員姓名: 黃文強 號數: 18
 監工姓名: 簡福基 號數: 18
 2. 吊裝及潛在危險
 吊裝工程: 公眾地方/行人徑 有障礙 鄰近的工程
 斜坡: 泥路
 地面軟土: 樹木
 凹凸不平的地面: 墊石
 架空電線: 鐵手 其他:
 地面設施: 鄰近有機械
 填裝開閉的危險分析表
 3. 負載量
 最大的負載物重量: 138 噸 最長的吊升距離: 12 米
 4. 檢查表
 機械的吊裝合格證書 (表格 1.2 至 5):
 吊車吊的軌距: 裝置 不裝置
 知識或技能的證書及負載量: 裝置 不裝置
 吊裝處若能設於其 (包括檢查地面情況): 裝置 不裝置
 吊裝處 (腳車) 是否完全擱開: 裝置 不裝置
 使用吊機吊裝負載物, 吊機各部分不在負載物底下: 裝置 不裝置
 5. 操作許可
 經評估吊裝範圍內的潛在危險以及負載物的重量, 本人相信所用機械能夠安全地吊升負載物, 故准予進行工作。
 操作員: 黃文強 號數: 18 日期: 2017-5-20
 6. 檢查員
 本人奉命檢查, 明白必須對超吊操作負責, 同時亦明白超吊範圍內的潛在危險, 並已採取妥善的安全預防措施。本人認
 為所用機械能夠吊升負載物, 而且可以繼續安全操作。
 操作員: 黃文強 號數: 18 日期: 2017-5-20
 7. IV 類工程/地工工程師
 本人認評估結果與實際情況相符, 並已採取所需的安全預防措施。本人相信所用機械能夠吊升負載物, 而且可以繼續安
 全操作。
 IV 管工: 簡福基 號數: 18 日期: 2017-5-20
 8. 地工工程師
 姓名: 號數: 日期:

Lifting permit for the lifting operations

MS No: E10MS079
 Revision: 0
 Date: 24 Mar 17

俊和-中國中鐵-中鐵大橋局聯營
 CHUN WO - CRGL - MBEC JOINT VENTURE

Contract No. HY2009/19
 Central - Wan Chai Bypass -
 Tunnel (North Point Section) and Island Eastern Corridor Link

METHOD STATEMENT
 FOR
 LGB Disassembly Work Between Pier 33 ~ Pier 35
 (Rev.0)

Prepared by	Reviewed by	Reviewed by	Reviewed by	Reviewed by	Approved by	Endorsed by
Senior Engineer (Terence Tsun)	Assistant Construction Manager (Wingo Wong)	Construction Manager (Andy Chan)	Environmental / QA Manager (M.H. He)	Safety Manager (H K Leung)	Deputy Project Manager (William Luk)	Site Agent (David Lau)

Method Statement & Risk Assessment for dismantle the LG



Firm ground testing the ground bearing capacity / firmness to prevent lifting failures caused by supporting ground not being firm enough

Effectiveness

1. **No Accident & Near Miss Cases occurred since the LG assembled**
2. **No complaint by public, client & consultant**

- The End -

Thank You