

Improvement to
Temporary Drainage Systems
(October 2007)

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Amendments Summary

The amendments on the previous version were in accordance with the IEC's comments via a letter with reference 60022551/C/bihc710291 dated 29 October 07.

	Section	Description
1.	Section 2 – Scope of Works	The additional 3 rd paragraph to explain the difference of this Improvement Plan and other drainage plans submitted or to be submitted.
2.	Section 3.2 Northern Section	Added 3.2.8 to describe the local conditions of Zones A and B.
3.	Section 3.3 Shek Mun Kap Area	Added 3.3.4 to specify the treatment capacities of the 2 WetSep.
4.	Section 3.4 Zone 1 of Southern Section	Added a description of the treatment capacity of the C-Flow®.
5.	Section 4 Resources	Specified the treatment capacities of the WetSep and the C-Flow®.

1. Introduction

The Environmental Permit (EP-170/2003/C) stipulates requirements to produce and to deposit to the EPD drainage proposals showing '*the detail design, layout and capacity of the drainage system, discharge locations and treatment method before discharge*' (Clause 2.4) and '*the detail design of the catchments, drainage systems, sedimentation or filter tanks, oil interceptors and discharge locations*' (Clause 2.5) of the site runoff generated during construction works. This is a revised temporary drainage plan aiming at updating the previously submitted plans in order to show those drainage regimes currently implemented in line with the Project progress.

The whole project site is divided into the Southern and Northern sections to reflect the topographical characteristics which play an important role to determine appropriate adoption of drainage methods. In the commencement of the temporary drainage construction, the CCJV adopted two separate approaches for collection and treatment of the site runoff in the Southern and Northern sections, namely the discrete cross-road drainage systems and the continuous carrier-pipe drainage systems respectively. The two drainage approaches are described in further detail in the following Section 3.

2. Scope of Works

The plan covers the drainage systems within the whole project area which comprises the Southern and Northern sections. The Southern section of the work further splits into 6 areas, namely Zone 1 (South Lantau Road) to Zone 6 (Pak Kung Au). The Northern section are divided into Zone A (Lung Tseng Tau) to Zone F (Pak Kung Au).

The details of the drainage systems are shown in annotated sketches attached with this Plan. The sketches numbers are organized in an order of Zones A to F (TCR/TW/DR/SK063 to SK069) in Northern section and Zones 1 to 6 (TCR/TW/SF052 – 054 & SF057 – 062) in Southern section.

The Improvement Plan provides a description of the mainframe temporary drainage systems applying on an entire project scale. Any construction works which may involve local but additional drainage diversion (for instance, the construction of Straining and Deflection Structures) are not included in this Plan. These drainage plans will be submitted separately for the ET and the IEC endorsement.

3. Temporary Drain Works in Various Areas

3.1 General Temporary Drainage System for Southern Section (Except Zone 1)

- 3.1.1 Site runoff from the Southern Section is largely generated from the washing on the haul road.
- 3.1.2 The haul road was constructed for connecting the work sites all the way through from Zone 1 at the South Lantau Road to Zone 6 at Pak Kung Au. Parallel with the permanent new road, the haul road comprises of temporary bridges over natural catchments.
- 3.1.3 Site run-off flowing along the haul road will be intercepted by horizontal cut-off drains crossing the haul road surface (cross road drains) then into sedimentation tanks and optional oil interception tanks.
- 3.1.4 The sedimentation tanks are made of steel with dimension of 3m x 2m x 2m and partition plates inside the tanks for effective sedimentation. (Sketch TCR/TW/SF055)
- 3.1.5 Where necessary oil interception tanks will be connected with the sedimentation tank in series to enhance the treatment effectiveness. (Sketch TCR/TW/SF056)
- 3.1.6 After the sedimentation, the effluent will be discharged into natural terrains.
- 3.1.7 By means of concrete bunds or catchpits or surface channels, site run-off along the haul road will be more effectively confined and collected by the cut-off drains.
- 3.1.8 The cross road drains and associated sedimentation tanks are to be cleaned in a regularly basis to ensure their effectiveness.
- 3.1.9 The haul road surface is also kept clear of mud to minimise generating silty run-off.
- 3.1.10 Sketches TCR/TW/SF053 – 063 show the distribution of locations of the temporary drains systems in Zone 2 to Zone 6. The Zone 1 facilities are described in the latter separate section.

3.2 General Temporary Drainage System for Northern Section

- 3.2.1 The system in Northern Section comprises a carrier pipe in line with Tung Chung Road from Pak Keng Au downwards to Shek Mun Kap, serving as a collecting pipeline for site runoff.
- 3.2.2 With concrete bunds, catchpits and surface u-channels at various work areas, site runoff generated can be trapped and collected into the carrier pipe.
- 3.2.3 While running into the carrier pipe, the series of *in-situ* concreting sedimentation tanks with partitions inside were constructed and connected to the pipe for purposes of silting and flowrate controls.
- 3.2.4 Subject to site condition, site run-off may be pumped into discrete *in-situ*

- concreting desilting tank(s) for preliminary settlement then into the carrier pipe.
- 3.2.5 Effluent at the carrier pipe will eventually reaches a sedimentation tank at Shek Mun Kap where 2 chemical treatment plants, WetSep, were installed for final treatment. The details of the facilities are described in the next section.
- 3.2.6 Since the underground drainage section between manholes SM27A to SM50 (about Ch.1750 – Ch.2600) completed and the corresponding section of the carrier pipe was to be demolished, the flow collected inside the upstream of the carrier pipe made use of the permanent drainage section towards Shek Mun Kap.
- 3.2.7 The treated effluent will flow into the Wong Lung Hang nullah.
- 3.2.8 Since the construction works in Zones A and B are substantially completed, it is considered that the runoff flowing over the road surfaces in the Zones are not silty. Thus it is not essential for maintaining treatment facilities for surface-run-off generated locally.
- 3.2.9 Sketches TCR/TW/DR/SK063 – 069 show the distribution of locations of the temporary drains systems from Zone A to Zone F.

3.3 Shek Mun Kap Area

- 3.3.1 Located at the Zone B of the Northern Section, Shek Mun Kap area is the downstream of the temporary drainage system and comprises the most sophisticated treatment facilities for tackling the total quantities of effluent in the Northern Section.
- 3.3.2 The treatment facilities include an *in-situ* concreting sedimentation tank with 14m x 3m x 2m as a preliminary filtration and sedimentation process.
- 3.3.3 The effluent inside the preliminary sedimentation tank is pumped into to separate chemical-enhanced treatment plants, namely WetSep, for further treatment.
- 3.3.4 The 2 WetSep have capacities of 30m³/hour and 40m³/hour to treat the incoming site effluent.
- 3.3.5 ~~The WetSep and the associated pumps, where necessary, can be operated continuously to ensure the treatment is adequate to cope with the emergency needs for non-working hours.~~
- 3.3.6 The clean effluent is discharged into Wong Long Heng nullah via existing underground drains.
- 3.3.7 The sketch TCR/TW/DR/SK064 shows the locations of the treatment facilities.

3.4 Zone 1 of Southern Section

- 3.4.1 The Zone 1 area is the southern end of the Project site connecting to the exist South Lantau Road. Different from the Zones 2 – 6 work areas in hilly landscapes,

the site run-off is mainly generated locally within the flattened work area. Cross-road drains in the Zones 2 – 6 are not applicable.

- 3.4.2 There are several temporary catchpits to collect site run-off from which the run-off is pumped into a sump pit.
- 3.4.3 The sump pit is the lowest collection point for all run-off at the Zone 1 area and acts as a function of preliminary sedimentation.
- 3.4.4 The silty run-off is pumped into a mechanical treatment plant, named C-Flow® for final treatment. The treatment system, comprising a generator and submersible pumps and having a capacity of 15m³/hour, can be operated continuously to manage the emergency needs for non-working hours.
- 3.4.5 Silty water will become clean water after the treatment and is discharged from the treatment plant. They are re-used by being pumped into a storage tank for refilling the water lorries or cleaning local haul roads.
- 3.4.6 The sketch TCR/TW/DR/SK052 shows the locations of the treatment facilities.

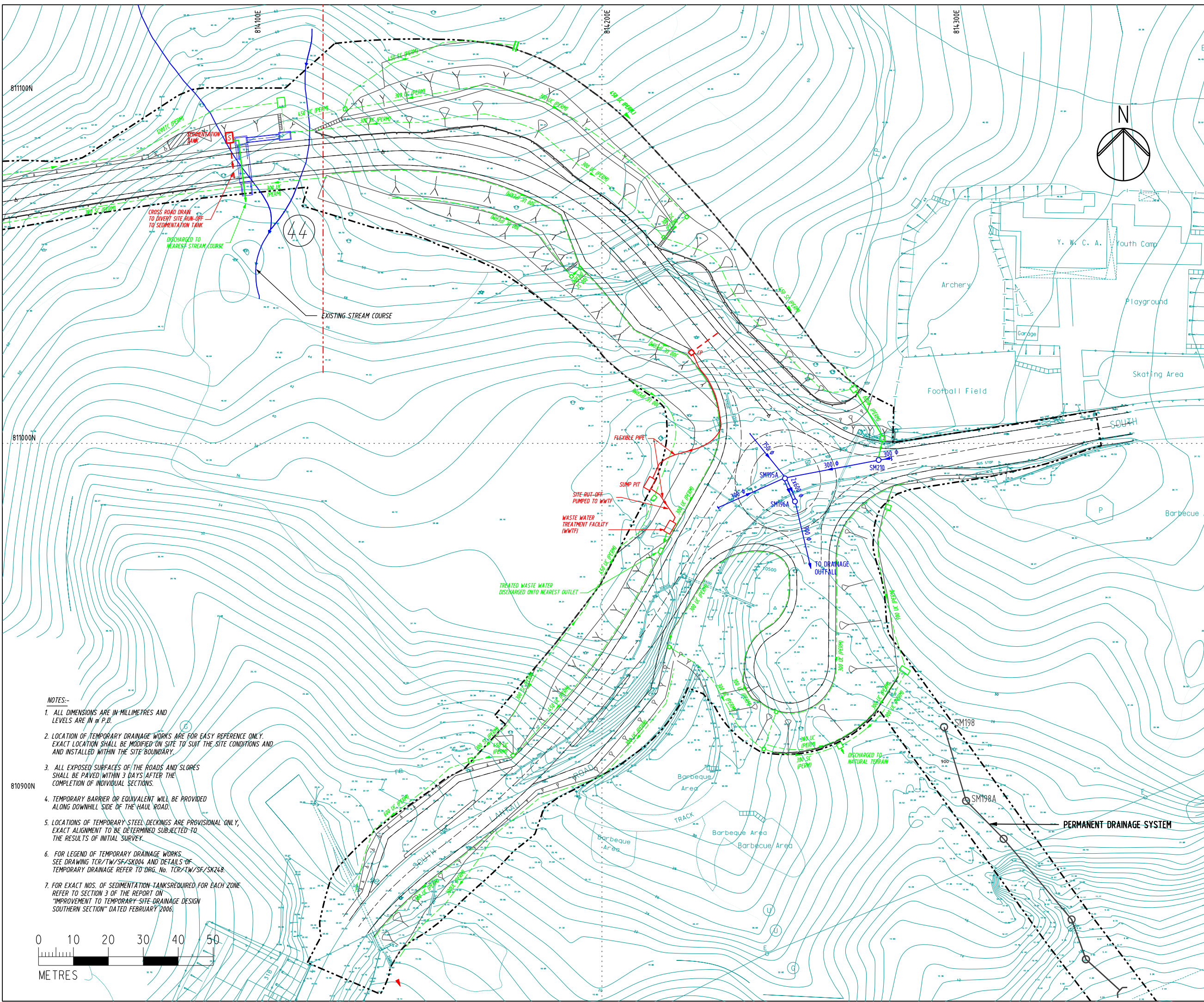
4. Resources

The following table summarizes the plants, equipment or materials for the temporary drainage systems in various areas. The usages will be subject to the actual site conditions and seasonal changes.

Work Areas	Plant / Equipment / Materials
Southern Section	<ul style="list-style-type: none">1. Sedimentation tanks2. Oil interception tanks3. uPVC pipes4. flexible pipes5. Sandbags
Northern Section	<ul style="list-style-type: none">1. 450mm precast concrete pipes2. Plastic corrugated pipes3. <i>In-situ</i> concreting sedimentation tanks4. Sandbags

Work Areas	Plant / Equipment / Materials
Shek Mun Kap	<ol style="list-style-type: none">1. <i>In-situ</i> concreting sedimentation tanks2. Chemical treatment plants namely WetSep, to have treatment capacities of 30m³/hour and 40m³/hour.3. Generator & submersible pumps4. uPVC pipes5. flexible pipes6. Sandbags
Zone 1 of Southern Section	<ol style="list-style-type: none">1. Mechanical treatment plant C-Flow® with a treatment capacity of 15 m³/hour.2. Generator & submersible pumps3. uPVC pipes4. flexible pipes5. Sandbags

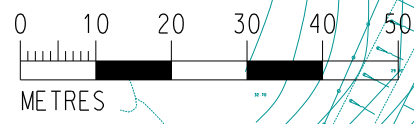
End of Text



LEGEND:

- HINTERLAND CATCHMENT SYSTEM (REV.)
- CONSTRUCTION SITE RUN-OFF CATCHMENT SYSTEM (REV.)
- INTERCEPTING CHANNEL FOR UNPOLLUTED PAVED HAUL ROAD
- - - UC/SC (PERM.) SURFACE CHANNEL (PERMANENT AS TEMP DRAIN)
- - - UC/SC (PERM.)
- - - DITCH CHANNEL
- CONC./FLEXIBLE PIPE
- S SEDIMENTATION TANK
- O OIL INTERCEPTOR
- Z1A CATCHMENT ZONING
- CATCHMENT BOUNDARY

- NOTES:-**
1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN m P.D.
 2. LOCATION OF TEMPORARY DRAINAGE WORKS ARE FOR EASY REFERENCE ONLY. EXACT LOCATION SHALL BE MODIFIED ON SITE TO SUIT THE SITE CONDITIONS AND INSTALLED WITHIN THE SITE BOUNDARY.
 3. ALL EXPOSED SURFACES OF THE ROADS AND SLOPES SHALL BE PAVED WITHIN 3 DAYS AFTER THE COMPLETION OF INDIVIDUAL SECTIONS.
 4. TEMPORARY BARRIER OR EQUIVALENT WILL BE PROVIDED ALONG DOWNHILL SIDE OF THE HAUL ROAD.
 5. LOCATIONS OF TEMPORARY STEEL DECKINGS ARE PROVISIONAL ONLY, EXACT ALIGNMENT TO BE DETERMINED SUBJECTED TO THE RESULTS OF INITIAL SURVEY.
 6. FOR LEGEND OF TEMPORARY DRAINAGE WORKS SEE DRAWING TCR/TW/SF/SK004 AND DETAILS OF TEMPORARY DRAINAGE REFER TO DRG. No. TCR/TW/SF/SK248.
 7. FOR EXACT NOS. OF SEDIMENTATION-TANKS REQUIRED FOR EACH ZONE REFER TO SECTION 3 OF THE REPORT ON "IMPROVEMENT TO TEMPORARY-SITE DRAINAGE DESIGN SOUTHERN SECTION" DATED FEBRUARY 2006.



Rev.	Date	Drn.	Description	Dgn.	Chd.	App'd.
B	OCT/07	VL	TEMPORARY DRAINAGE SYSTEM REVISED			
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED.			

Client

 The Government of the Hong Kong Special Administrative Region Highways Department

Consulting Engineers

 Mott MacDonald
 in Association with
 Halcrow China Ltd MVA Hong Kong Ltd Urbis Ltd
 Milich & Co Archaeological Assessments HDS Preston Ltd

Main Contractor

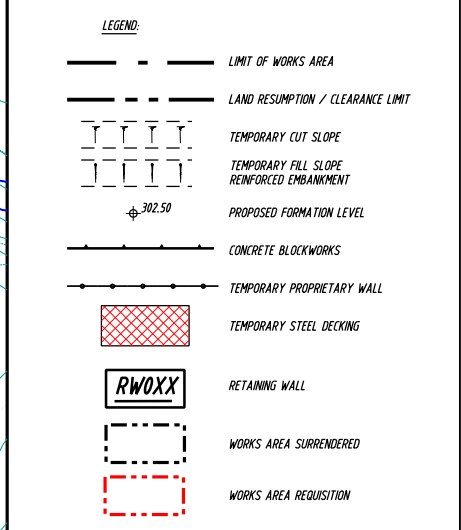
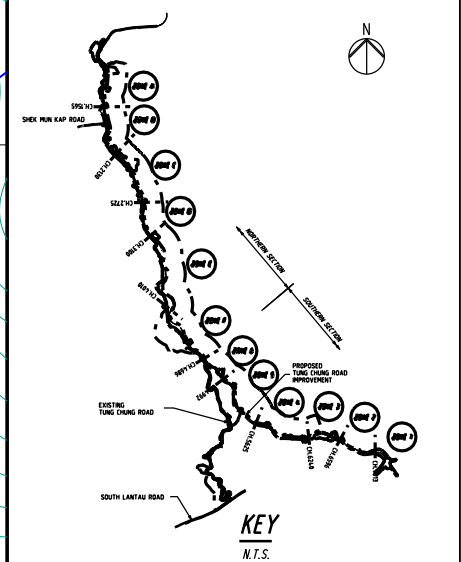
 CCECC & CRWJ Joint Venture

Project
 Contract No. HY/2003/19
 Improvement to Tung Chung Road between Lung Tseng Tau and Cheung Sha

Drg. Title
REVISED TEMPORARY DRAINAGE SYSTEM FOR SOUTHERN SECTION - ZONE 1

Scale :	Designed	Drawn	Checked	Approved
1:1000 @ A3	Date	Date	Date	Date
	JAN/2006	JAN/2006	JAN/2006	JAN/2006

Drawing No. TCR/TW/DR/SK052 Rev. B



B	OCT/07	VL	TEMPORARY DRAINAGE SYSTEM REVISED			
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED.			
Rev.	Date	Drn.	Description	Dgn.	Chd.	App'd.

Client
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 Highways Department

Consulting Engineers
Mott Connell
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 Halcrow China Ltd, MVA Hong Kong Ltd, Milich & Co, Archaeological Assessments, Urbis Ltd, HDS Preston Ltd

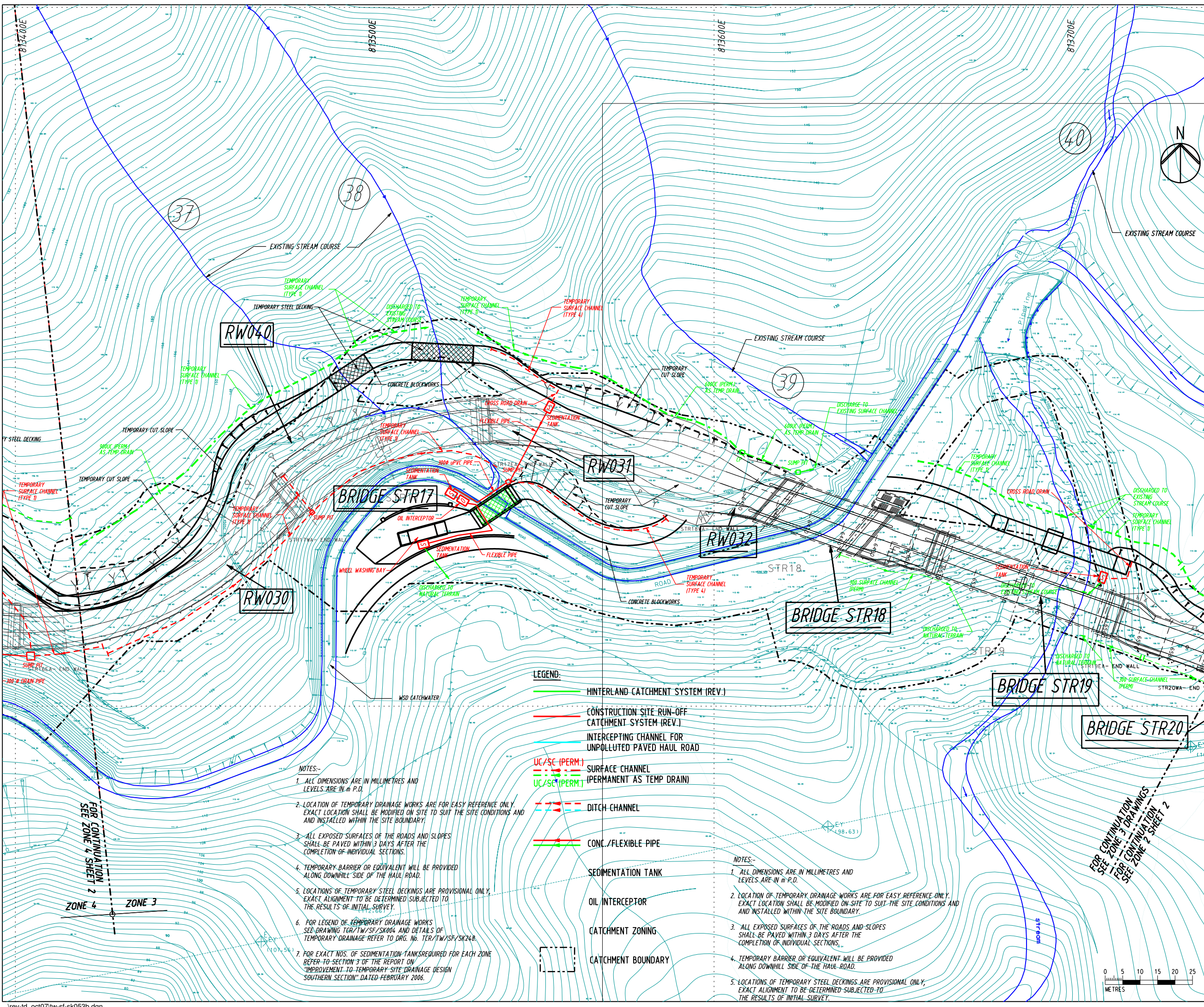
Main Contractor
CCECC & CRWJ
 Joint Venture

Project
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 Improvement to Lung Chung Road between Lung Tseng Tau and Cheung Sha

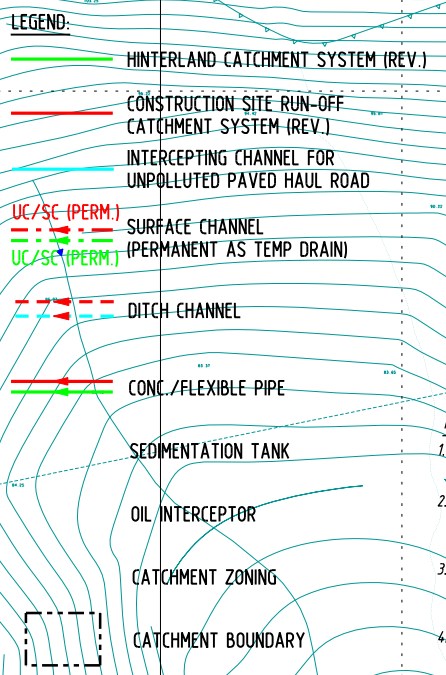
Drg. Title
REVISED TEMPORARY DRAINAGE SYSTEM FOR SOUTHERN SECTION - ZONE 3

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	JAN/2006	JAN/2006	JAN/2006	JAN/2006

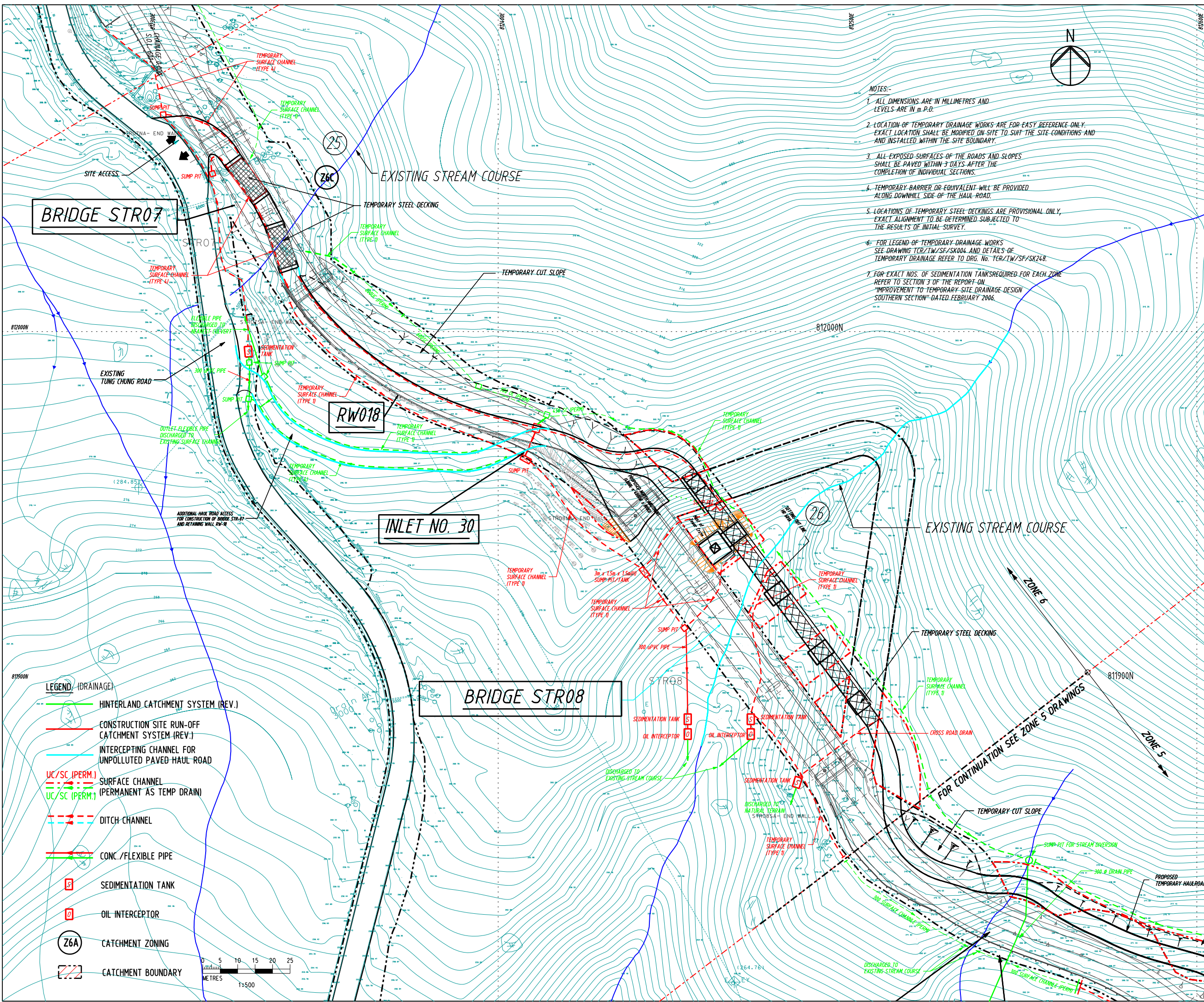
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TCR/TW/DR/SK053	B



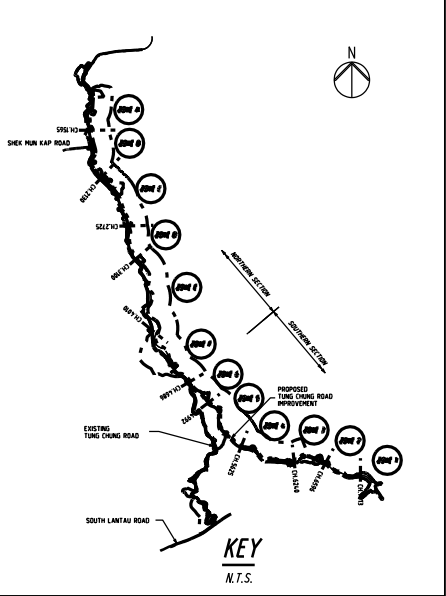
- NOTES:-**
- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN m P.D.
 - LOCATION OF TEMPORARY DRAINAGE WORKS ARE FOR EASY REFERENCE ONLY. EXACT LOCATION SHALL BE MODIFIED ON SITE TO SUIT THE SITE CONDITIONS AND AND INSTALLED WITHIN THE SITE BOUNDARY.
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 - TEMPORARY BARRIER OR EQUIVALENT WILL BE PROVIDED ALONG DOWNHILL SIDE OF THE HAUL ROAD.
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 - FOR LEGEND OF TEMPORARY DRAINAGE WORKS SEE DRAWING TCR/TW/SF/SK004 AND DETAILS OF TEMPORARY DRAINAGE REFER TO DRG. No. TCR/TW/SF/SK248.
 - FOR EXACT NOS. OF SEDIMENTATION TANKS REQUIRED FOR EACH ZONE REFER TO SECTION 3 OF THE REPORT ON "IMPROVEMENT TO TEMPORARY SITE DRAINAGE DESIGN SOUTHERN SECTION" DATED FEBRUARY 2006.



- NOTES:-**
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- LEGEND:
- LIMIT OF WORKS AREA
 - LAND RESUMPTION / CLEARANCE LIMIT
 - - - - - TEMPORARY CUT SLOPE
 - - - - - TEMPORARY FILL SLOPE
 - - - - - REINFORCED EMBANKMENT
 - ⊕ 302.50 PROPOSED FORMATION LEVEL
 - CONCRETE BLOCKWORKS
 - TEMPORARY PROPRIETARY WALL
 - TEMPORARY STEEL DECKING
 - RW0XX RETAINING WALL
 - WORKS AREA SURRENDERED
 - WORKS AREA REQUISITION

Rev.	Date	Drn.	Description	Dgn.	Chd.	App'd.
C	OCT/07	VL	TEMPORARY DRAINAGE SYSTEM REVISED			
B	SEP/06	VL	TEMP DRAIN FOR ADDITIONAL ACCESS IN ZONE 6 ADDED			
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED			

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 Milich & Co Archaeological Assessments HDS Preston Ltd

Main Contractor

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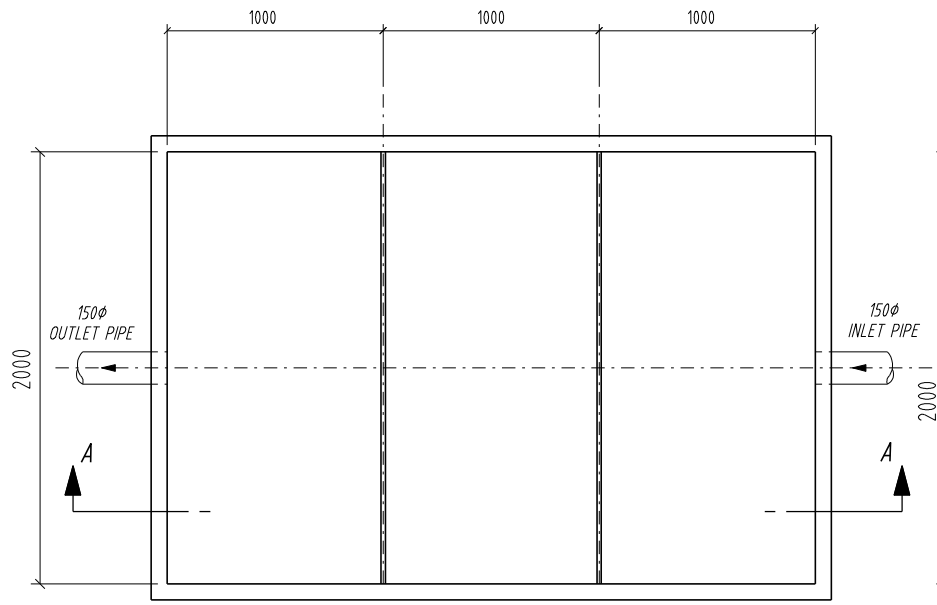
Project
 Contract No. HY/2003/19
 Improvement to Tung Chung Road between Lung Tseng Tau and Cheung Sha

Drg. Title
REVISED TEMPORARY DRAINAGE SYSTEM FOR SOUTHERN SECTION - ZONE 6

Scale :	Designed	Drawn	Checked	Approved
1:1000 @ A3	Date JAN/2006	Date JAN/2006	Date JAN/2006	Date JAN/2006

Drawing No. TCR/TW/SF/054 Rev. C
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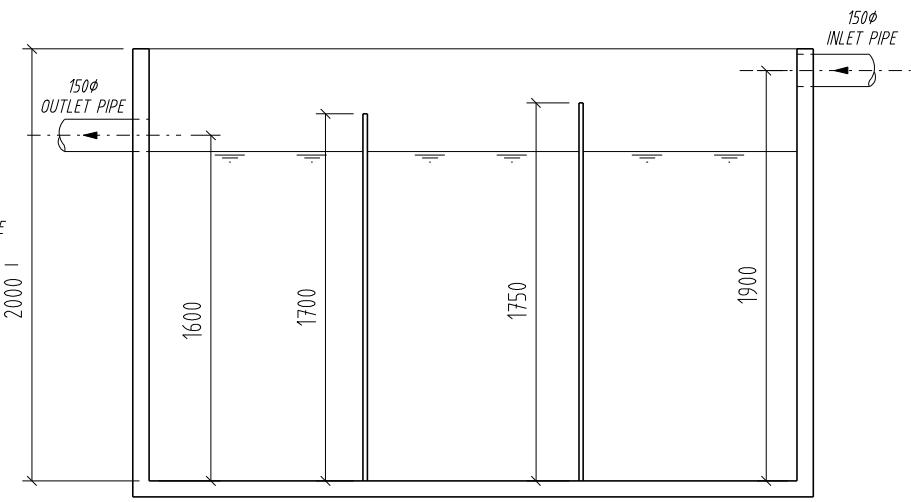
- LEGEND (DRAINAGE)
- HINTERLAND CATCHMENT SYSTEM (REV.)
 - CONSTRUCTION SITE RUN-OFF CATCHMENT SYSTEM (REV.)
 - INTERCEPTING CHANNEL FOR UNPOLLUTED PAVED HAUL ROAD
 - UC/SC (PERM.) SURFACE CHANNEL (PERMANENT AS TEMP DRAIN)
 - UC/SC (PERM.) SURFACE CHANNEL (PERMANENT AS TEMP DRAIN)
 - DITCH CHANNEL
 - CONC./FLEXIBLE PIPE
 - SEDIMENTATION TANK
 - OIL INTERCEPTOR
 - CATCHMENT ZONING (Z6A)
 - CATCHMENT BOUNDARY
- 0 5 10 15 20 25 METRES 1:500



PLAN

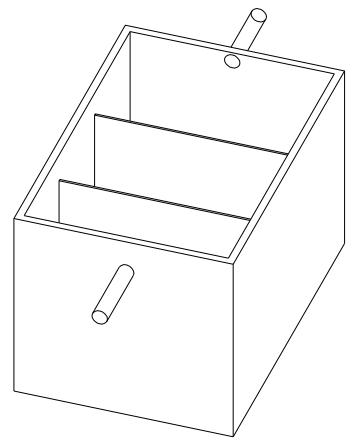
1:25

TYPICAL DETAILS OF SEDIMENTATION TANK



SECTION A - A

1:25



ISOMETRIC VIEW

N.T.S.

REMARKS:

1. MATERIALS OF THE TANK AND BAFFLES ARE NOT SPECIFIED, BUT SHOULD BE ASSEMBLED WITH ASSURANCE IN WATER-TIGHTNESS.
2. THE ACCUMULATED SILT SHOULD BE CHECKED AND REMOVED AT A FREQUENCY OF TWICE PER WEEK DURING MARCH TO AUGUST AND ONCE EVERY FORTNIGHT FOR OTHER MONTHS.

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HDS Preston Ltd

Main Contractor

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Joint Venture

Project

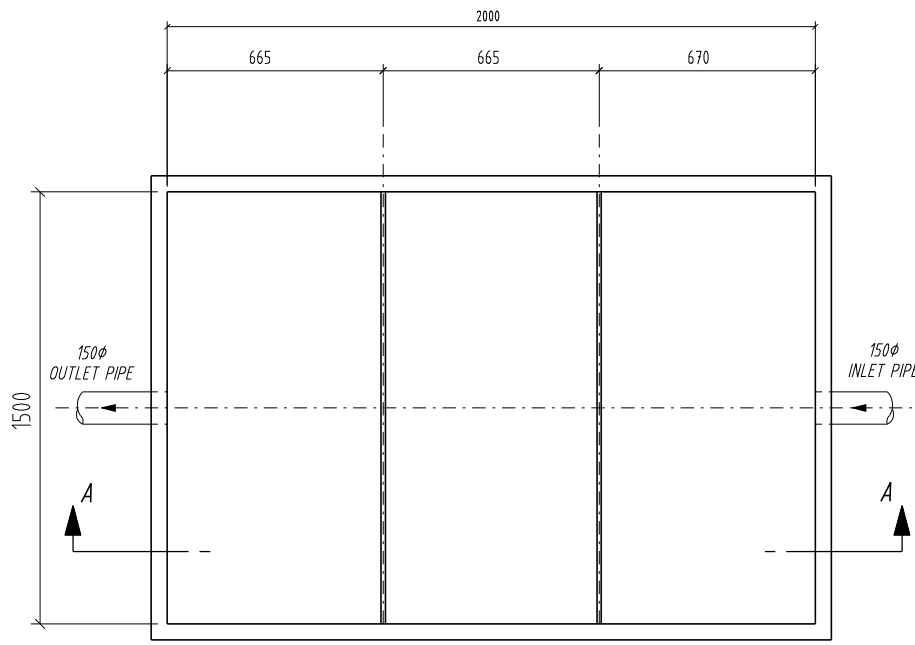
Contract No. HY2003/19
Improvement to Tung Chung Road
between Lung Tseng Tau
and Cheung Sha

Dwg. Title

REVISED TEMPORARY DRAINAGE SYSTEM
FOR SOUTHERN SECTION
DRAINAGE DETAILS
SHEET 1 OF 2

Scale:	Designed BY	Drawn VL	Checked	Approved
1:25 @ A3	Date JAN 2005	Date JAN 2005	Date JAN 2005	Date JAN 2005

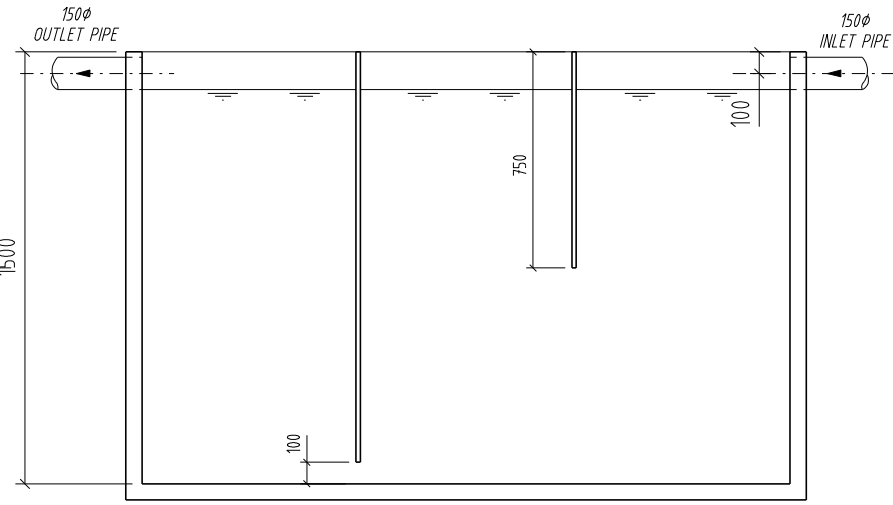
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PLAN

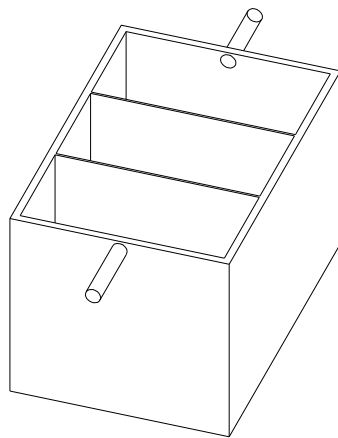
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TYPICAL DETAILS OF OIL INTERCEPTOR



SECTION A - A

1:25



ISOMETRIC VIEW

N.T.S.

REMARKS:

1. THE TANK SHOULD ALWAYS BE FILLED WITH WATER AT LEVEL MORE THAN 100mm ABOVE FROM BOTTOM.
2. OIL ACCUMULATED SHOULD BE SKIMMED AT A FREQUENCY OF ONCE EVERY FORTNIGHT.
3. SKIMMED OIL SHOULD BE DISPOSTED OFF AS CHEMICAL WASTE.
4. MATERIALS OF THE TANK AND THE BAFFLES ARE NOT SPECIFIED, BUT SHOULD BE ASSEMBLED WITH ASSURANCE IN WATER-TIGHTNESS.

Rev.	Date	Des.	Dgn.	Chd.	App'd.

Client

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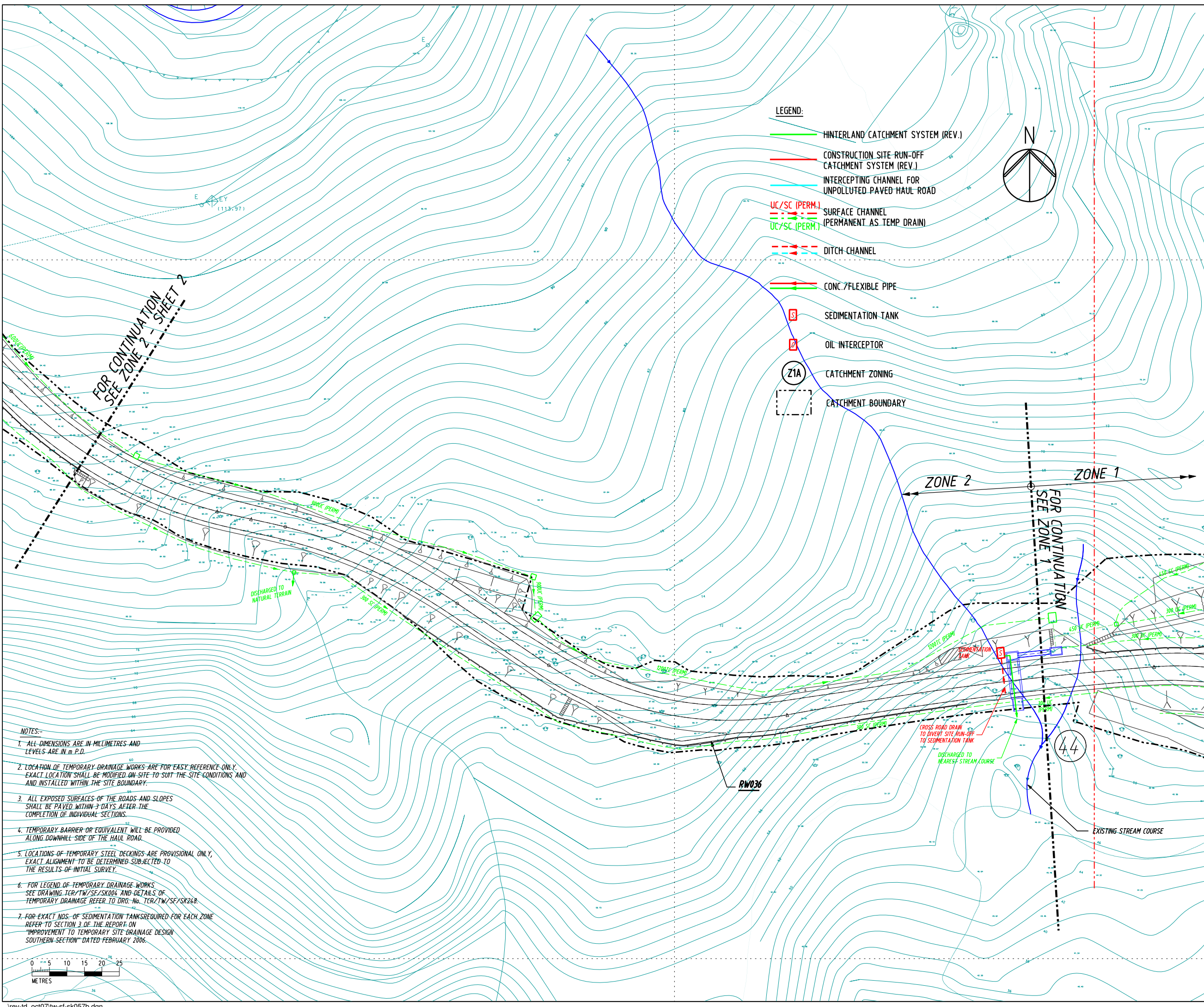
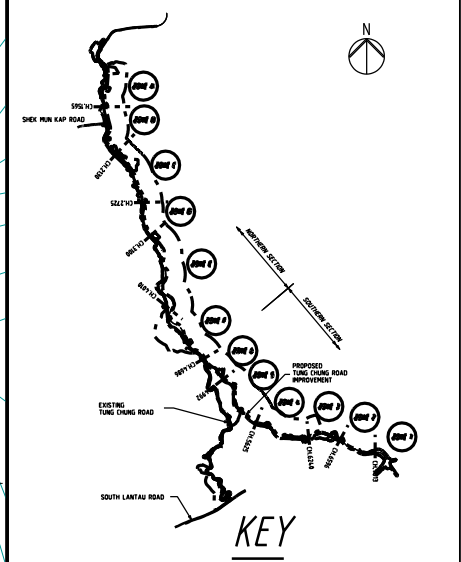
Main Contractor
 CCECC & CRWJ
Joint Venture

Project Contract No. HY200319
Improvement to Tung Chung Road
between Lung Tseng Tau
and Cheung Sha

Dwg. Title
**REVISED TEMPORARY DRAINAGE SYSTEM
FOR SOUTHERN SECTION
DRAINAGE DETAILS**
SHEET 2 OF 2

Scale :	Designed BY	Drawn VL	Checked	Approved
1:25 @ A3	Date JAN 2005	Date JAN 2005	Date JAN 2005	Date JAN 2005

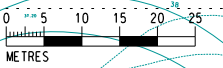
Drawing No. **TCR/TW/SF/056** Rev.



- LEGEND:**
- HINTERLAND CATCHMENT SYSTEM (REV.)
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 - INTERCEPTING CHANNEL FOR UNPOLLUTED PAVED HAUL ROAD
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 - - - DITCH CHANNEL
 - CONC. FLEXIBLE PIPE
 - S SEDIMENTATION TANK
 - O OIL INTERCEPTOR
 - Z1A CATCHMENT ZONING
 - CATCHMENT BOUNDARY

- LEGEND:**
- LIMIT OF WORKS AREA
 - LAND RESUMPTION / CLEARANCE LIMIT
 - TEMPORARY CUT SLOPE
 - TEMPORARY FILL SLOPE
 - PROPOSED FORMATION LEVEL
 - CONCRETE BLOCKWORKS
 - TEMPORARY STEEL DECKING

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B	OCT/07	VL	TEMPORARY DRAINAGE SYSTEM REVISED		
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED.		

Rev.	Date	Drn.	Description	Dgn.	Chd.	App'd.

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The Government of the Hong Kong Special Administrative Region
 Highways Department

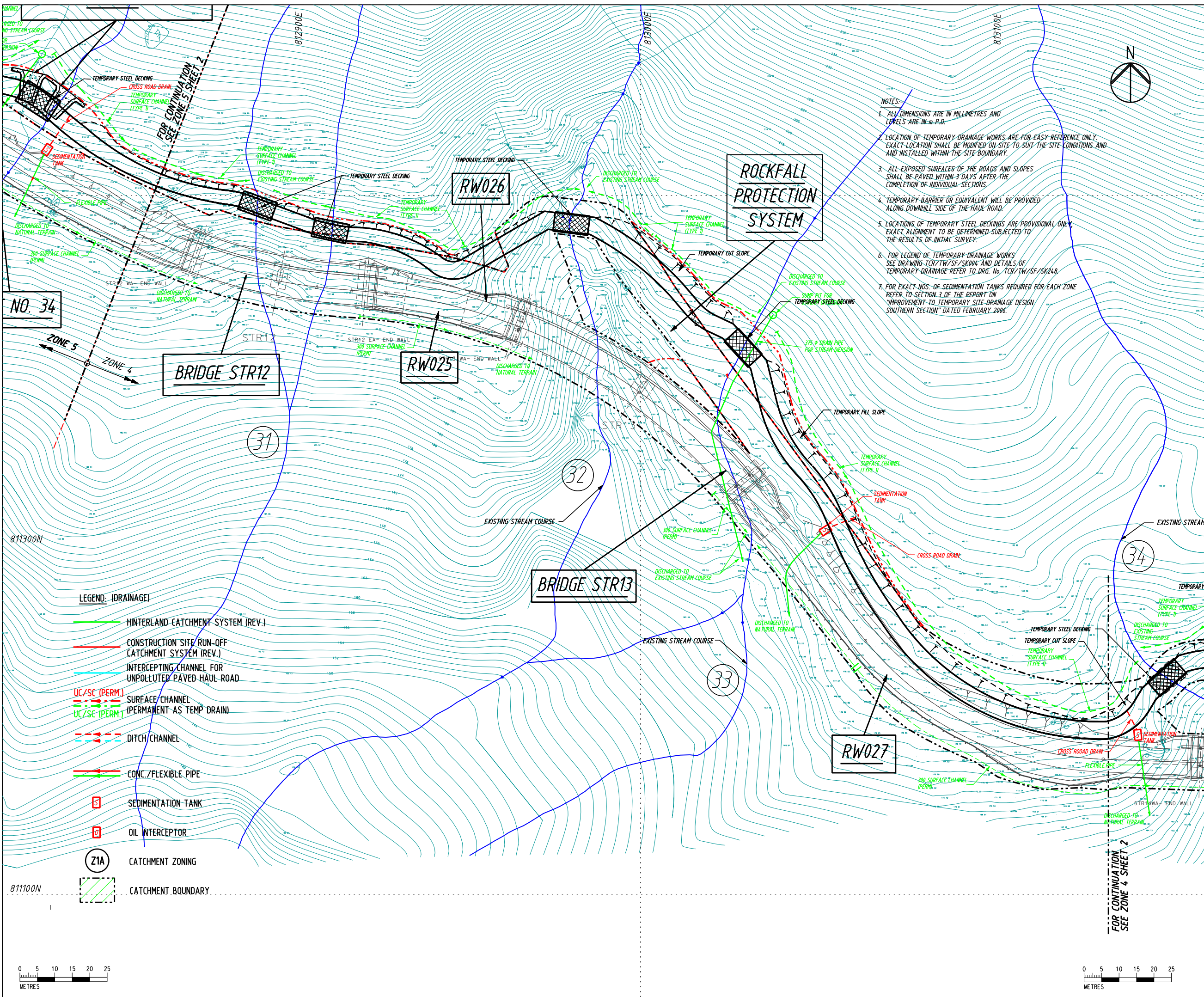
Consulting Engineers
Mott Connell
 in Association with
 Halcrow China Ltd MVA Hong Kong Ltd Urbis Ltd
 Milich & Co Archaeological Assessments HDS Preston Ltd

Main Contractor
CCECC & CRWJ
 Joint Venture

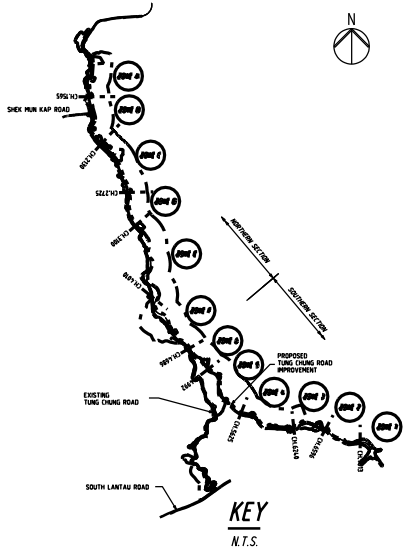
Project
 Contract No. HY200319
 Improvement to Tung Chung Road between Lung Tseng Tau and Chung Sha

Drg. Title
REVISED TEMPORARY DRAINAGE SYSTEM FOR SOUTHERN SECTION - ZONE 2 SHEET 1

Scale :	Designed LWC	Drawn VL	Checked	Approved
1:1000 @ A3	Date JAN 2006	Date JAN 2006	Date JAN 2006	Date JAN 2006
Drawing No.	TCR/TW/SF/057			Rev. B



- NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN M.P.D.
 2. LOCATION OF TEMPORARY DRAINAGE WORKS ARE FOR EASY REFERENCE ONLY. EXACT LOCATION SHALL BE MODIFIED ON SITE TO SUIT THE SITE CONDITIONS AND INSTALLED WITHIN THE SITE BOUNDARY.
 3. ALL EXPOSED SURFACES OF THE ROADS AND SLOPES SHALL BE PAVED WITHIN 3 DAYS AFTER THE COMPLETION OF INDIVIDUAL SECTIONS.
 4. TEMPORARY BARRIER OR EQUIVALENT WILL BE PROVIDED ALONG DOWNHILL SIDE OF THE HAUL ROAD.
 5. LOCATIONS OF TEMPORARY STEEL DECKINGS ARE PROVISIONAL ONLY. EXACT ALIGNMENT TO BE DETERMINED SUBJECT TO THE RESULTS OF INITIAL SURVEY.
 6. FOR LEGEND OF TEMPORARY DRAINAGE WORKS SEE DRAWING TCR/TW/SF/SK004 AND DETAILS OF TEMPORARY DRAINAGE REFER TO DRG. No. TCR/TW/SF/SK248.
 7. FOR EXACT NOS. OF SEDIMENTATION TANKS REQUIRED FOR EACH ZONE REFER TO SECTION 3 OF THE REPORT ON "IMPROVEMENT TO TEMPORARY SITE DRAINAGE DESIGN SOUTHERN SECTION" DATED FEBRUARY 2006.



- LEGEND:
- LIMIT OF WORKS AREA
 - LAND RESUMPTION / CLEARANCE LIMIT
 - TEMPORARY CUT SLOPE
 - TEMPORARY FILL SLOPE
 - REINFORCED EMBANKMENT
 - 302.50 PROPOSED FORMATION LEVEL
 - CONCRETE BLOCKWORKS
 - TEMPORARY PROPRIETARY WALL
 - TEMPORARY STEEL DECKING
 - RWOXX RETAINING WALL
 - WORKS AREA SURRENDERED
 - WORKS AREA REQUISITION

- LEGEND: (DRAINAGE)
- HINTERLAND CATCHMENT SYSTEM (REV.)
 - CONSTRUCTION SITE RUN-OFF CATCHMENT SYSTEM (REV.)
 - INTERCEPTING CHANNEL FOR UNPOLLUTED PAVED HAUL ROAD
 - UC/SC (PERM) SURFACE CHANNEL (PERMANENT AS TEMP DRAIN)
 - UC/SC (PERM) DITCH/CHANNEL
 - CONC./FLEXIBLE PIPE
 - S SEDIMENTATION TANK
 - O OIL INTERCEPTOR
 - Z1A CATCHMENT ZONING
 - CATCHMENT BOUNDARY

Rev.	Date	Drn.	Description	Dgn.	Chd.	App'd.
C	OCT/07	VL	TEMPORARY DRAINAGE SYSTEM REVISED			
B	JAN/07	VL	REVISED AS CLOUDED.			
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED.			

Client
The Government of the Hong Kong Special Administrative Region
 Highways Department

Consulting Engineers
Mott Connell
 in Association with
 Halcrow China Ltd, MVA Hong Kong Ltd, Archaeological Assessments, Urbis Ltd, HDS Preston Ltd

Main Contractor
CCECC & CRWJ
 Joint Venture

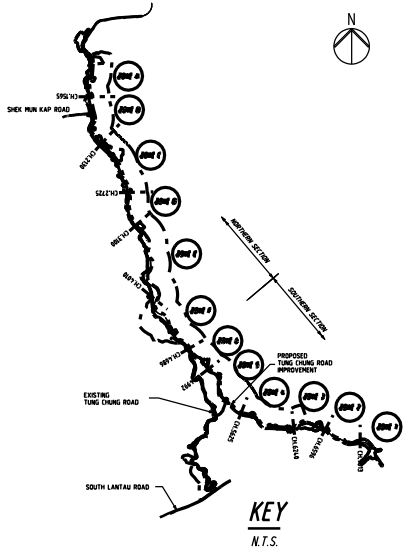
Project
 Contract No. HY/2003/19
 Improvement to Lung Chung Road between Tung Tseng Tau and Chung Sha

Drg. Title
TEMPORARY DRAINAGE ARRANGEMENT FOR SOUTHERN SECTION - ZONE 4 SHEET 1

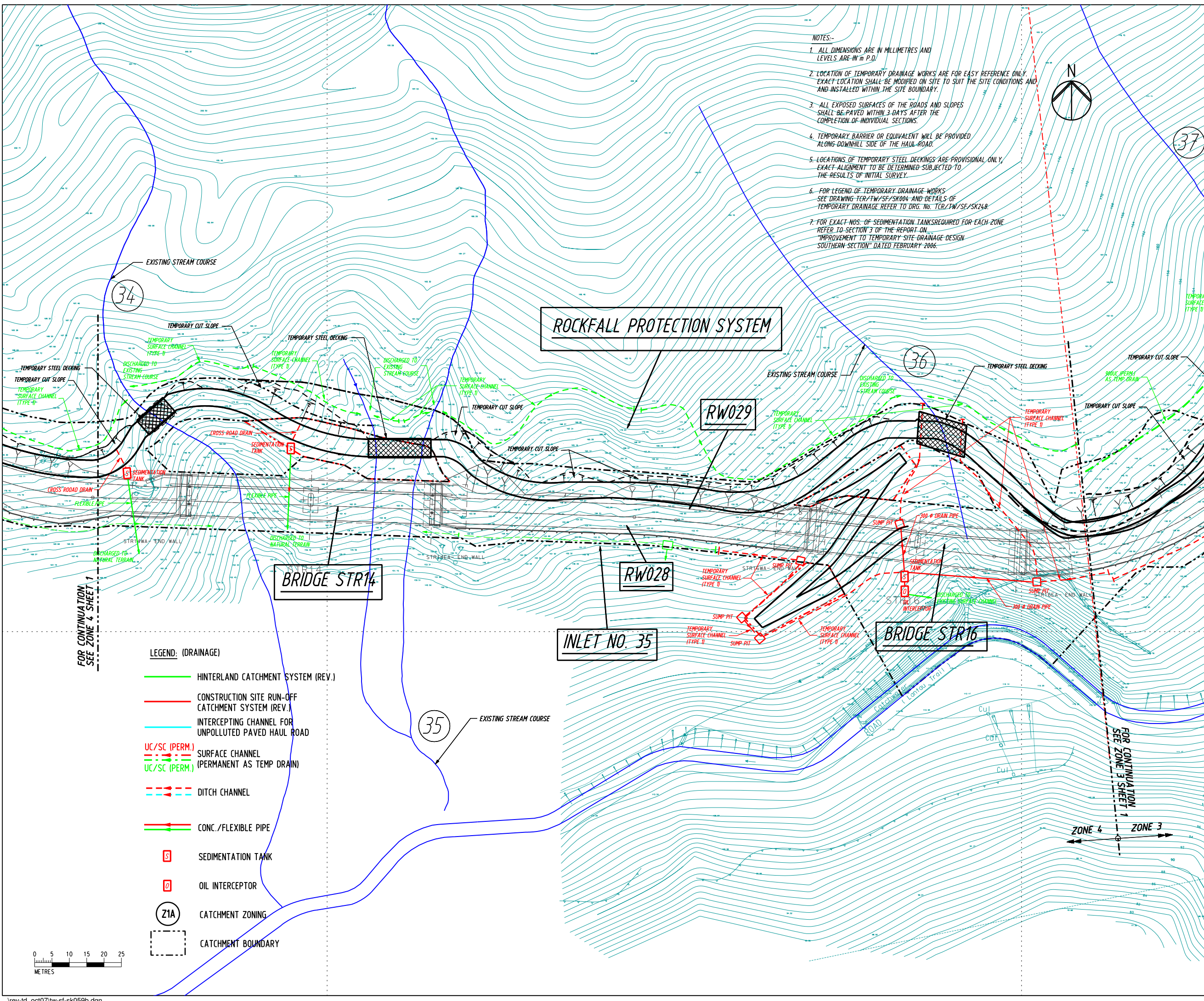
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1:1000 @ A3	Date 01/2006	Date 01/2006	Date 01/2006	Date 01/2006

Drawing No. **TCR/TW/SF/058** Rev. **C**

- NOTES:-
1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN m P.D.
 2. LOCATION OF TEMPORARY DRAINAGE WORKS ARE FOR EASY REFERENCE ONLY. EXACT LOCATION SHALL BE MODIFIED ON SITE TO SUIT THE SITE CONDITIONS AND AND-INSTALLED WITHIN THE SITE BOUNDARY.
 3. ALL EXPOSED SURFACES OF THE ROADS AND SLOPES SHALL BE PAVED WITHIN 3-DAYS AFTER THE COMPLETION OF INDIVIDUAL SECTIONS.
 4. TEMPORARY BARRIER OR EQUIVALENT WILL BE PROVIDED ALONG DOWNHILL SIDE OF THE HAUL ROAD.
 5. LOCATIONS OF TEMPORARY STEEL DECKINGS ARE PROVISIONAL ONLY. EXACT ALIGNMENT TO BE DETERMINED SUBJECT TO THE RESULTS OF INITIAL SURVEY.
 6. FOR LEGEND OF TEMPORARY DRAINAGE WORKS SEE DRAWING TCR/TW/SF/SK004 AND DETAILS OF TEMPORARY DRAINAGE REFER TO DRG. No. TCR/TW/SF/SK248.
 7. FOR EXACT NOS. OF SEDIMENTATION TANKS REQUIRED FOR EACH ZONE REFER TO SECTION 3 OF THE REPORT ON "IMPROVEMENT TO TEMPORARY SITE DRAINAGE DESIGN SOUTHERN SECTION" DATED FEBRUARY 2006.



ROCKFALL PROTECTION SYSTEM



LEGEND:

	LIMIT OF WORKS AREA
	LAND RESUMPTION / CLEARANCE LIMIT
	TEMPORARY CUT SLOPE
	TEMPORARY FILL SLOPE
	REINFORCED EMBANKMENT
	PROPOSED FORMATION LEVEL
	CONCRETE BLOCKWORKS
	TEMPORARY PROPRIETARY WALL
	TEMPORARY STEEL DECKING
	RETAINING WALL
	WORKS AREA SURRENDERED
	WORKS AREA REQUISITION

LEGEND: (DRAINAGE)

	HINTERLAND CATCHMENT SYSTEM (REV.)
	CONSTRUCTION SITE RUN-OFF CATCHMENT SYSTEM (REV.)
	INTERCEPTING CHANNEL FOR UNPOLLUTED PAVED HAUL ROAD
	UC/SC (PERM.) SURFACE CHANNEL (PERMANENT AS TEMP DRAIN)
	DITCH CHANNEL
	CONC./FLEXIBLE PIPE
	SEDIMENTATION TANK
	OIL INTERCEPTOR
	CATCHMENT ZONING
	CATCHMENT BOUNDARY

Rev.	Date	Drn.	Description	Dgn.	Chd.	App'd.
B	OCT/07	VL	TEMPORARY DRAINAGE SYSTEM REVISED			
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED.			

Client

The Government of the Hong Kong Special Administrative Region Highways Department

Consulting Engineers

Mott Connell
in Association with
Halcrow China Ltd MVA Hong Kong Ltd Urbis Ltd
Milichich & Co Archaeological Assessments HDS Preston Ltd

Main Contractor

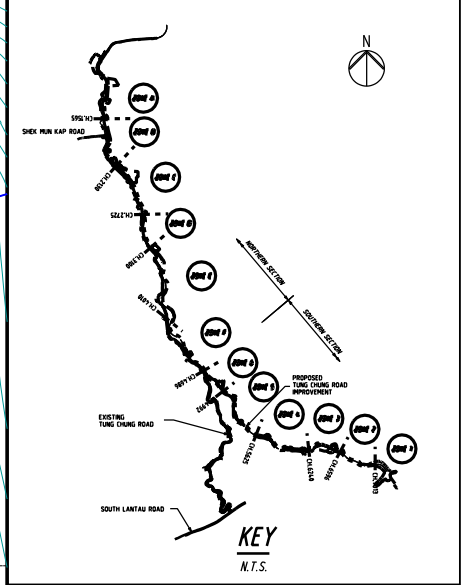
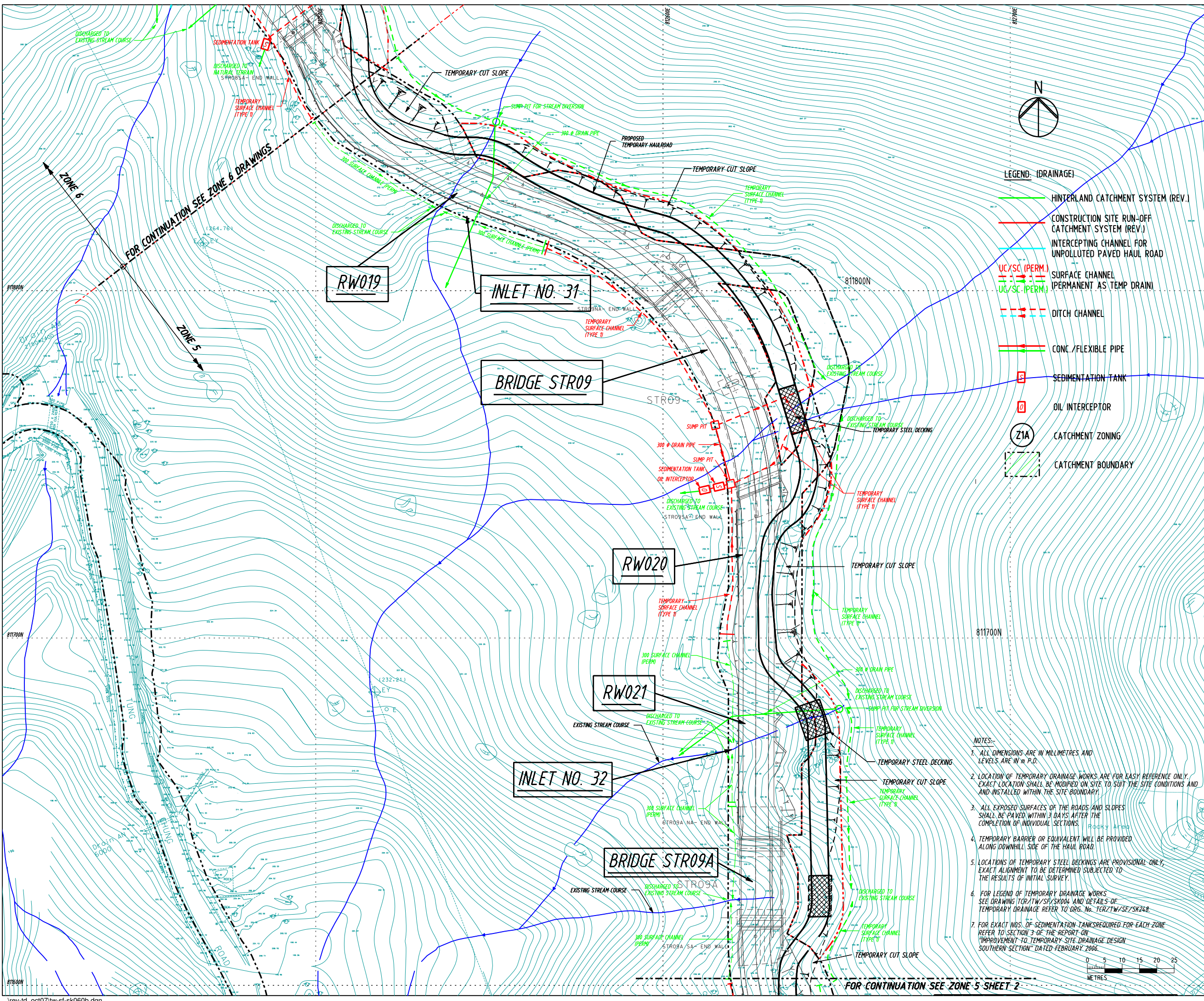
CCECC & CRWJ Joint Venture

Project
Contract No. HY/2003/19
Improvement to Tung Chung Road between Lung Tseng Tau and Chung Sha

Drg. Title
TEMPORARY DRAINAGE ARRANGMENT FOR SOUTHERN SECTION - ZONE 4 SHEET 2

Scale :	Designed	Drawn	Checked	Approved
1:1000 @ A3	Date	Date	Date	Date
	01/2006	01/2006	01/2006	01/2006

Drawing No. TCR/TW/SF/059 Rev. B



- LEGEND: (DRAINAGE)**
- HINTERLAND CATCHMENT SYSTEM (REV.)
 - CONSTRUCTION SITE RUN-OFF CATCHMENT SYSTEM (REV.)
 - INTERCEPTING CHANNEL FOR UNPOLLUTED PAVED HAUL ROAD
 - - - UC/SC (PERM.)
 - - - UL/SC (PERM.)
 - - - SURFACE CHANNEL (PERMANENT AS TEMP DRAIN)
 - - - DITCH CHANNEL
 - CONC./FLEXIBLE PIPE
 - S SEDIMENTATION TANK
 - O OIL INTERCEPTOR
 - Z1A CATCHMENT ZONING
 - CATCHMENT BOUNDARY

- LEGEND:**
- LIMIT OF WORKS AREA
 - LAND RESUMPTION / CLEARANCE LIMIT
 - TEMPORARY CUT SLOPE
 - TEMPORARY FILL SLOPE
 - REINFORCED EMBANKMENT
 - PROPOSED FORMATION LEVEL
 - CONCRETE BLOCKWORKS
 - TEMPORARY PROPRIETARY WALL
 - TEMPORARY STEEL DECKING
 - RETAINING WALL
 - WORKS AREA SURRENDERED
 - WORKS AREA REQUISITION

Rev.	Date	Drn.	Description	Dgn.	Chd.	App'd.
B	01/07	VL	TEMPORARY DRAINAGE SYSTEM REVISED			
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED.			

Client

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Consulting Engineers

 Mott Connell
 in Association with
 Halcrow China Ltd MVA Hong Kong Ltd Urbis Ltd
 Milichich & Co Archaeological Assessments HDS Preston Ltd

Main Contractor

 CCECC & CRWJ Joint Venture

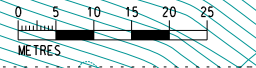
Project
 Contract No. HY/2003/19
 Improvement to Tung Chung Road between Lung Tseng Tau and Cheung Sha

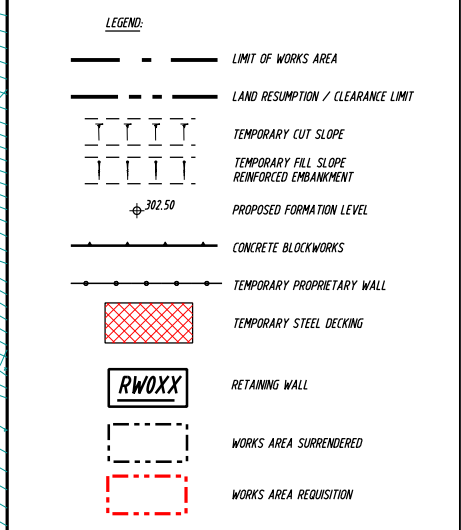
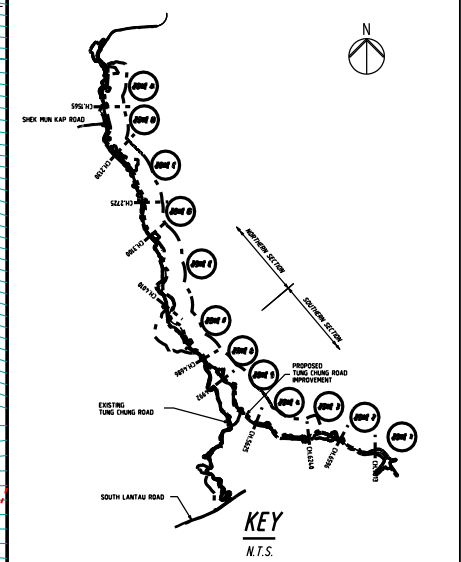
Drg. Title
 TEMPORARY DRAINAGE ARRANGEMENT FOR SOUTHERN SECTION - ZONE 5 SHEET 1

Scale:	Designed	Drawn	Checked	Approved
1:1000 @ A3	Date	Date	Date	Date
	01/2006	01/2006	01/2006	01/2006

Drawing No. TCR/TW/SF/060 Rev. B
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- NOTES:-**
- ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN m P.D.
 - LOCATION OF TEMPORARY DRAINAGE WORKS ARE FOR EASY REFERENCE ONLY. EXACT LOCATION SHALL BE MODIFIED ON SITE TO SUIT THE SITE CONDITIONS AND INSTALLED WITHIN THE SITE BOUNDARY.
 - ALL EXPOSED SURFACES OF THE ROADS AND SLOPES SHALL BE PAVED WITHIN 3 DAYS AFTER THE COMPLETION OF INDIVIDUAL SECTIONS. Rocky Area
 - TEMPORARY BARRIER OR EQUIVALENT WILL BE PROVIDED ALONG DOWNHILL SIDE OF THE HAUL ROAD.
 - LOCATIONS OF TEMPORARY STEEL DECKINGS ARE PROVISIONAL ONLY. EXACT ALIGNMENT TO BE DETERMINED SUBJECT TO THE RESULTS OF INITIAL SURVEY.
 - FOR LEGEND OF TEMPORARY DRAINAGE WORKS SEE DRAWING TCR/TW/SF/SK004 AND DETAILS OF TEMPORARY DRAINAGE REFER TO DRG. No. TCR/TW/SF/SK242.
 - FOR EXACT NOS. OF SEDIMENTATION TANKS REQUIRED FOR EACH ZONE REFER TO SECTION 3 OF THE REPORT ON "IMPROVEMENT TO TEMPORARY SITE DRAINAGE DESIGN SOUTHERN SECTION" DATED FEBRUARY 2006.





C	OCT/07	VL	TEMPORARY DRAINAGE SYSTEM REVISED		
B	MAY/06	VL	REVISED AS CLOUDED.		
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED.		

Client

 The Government of the Hong Kong Special Administrative Region Highways Department

Consulting Engineers

 Mott Connell
 in Association with
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Main Contractor

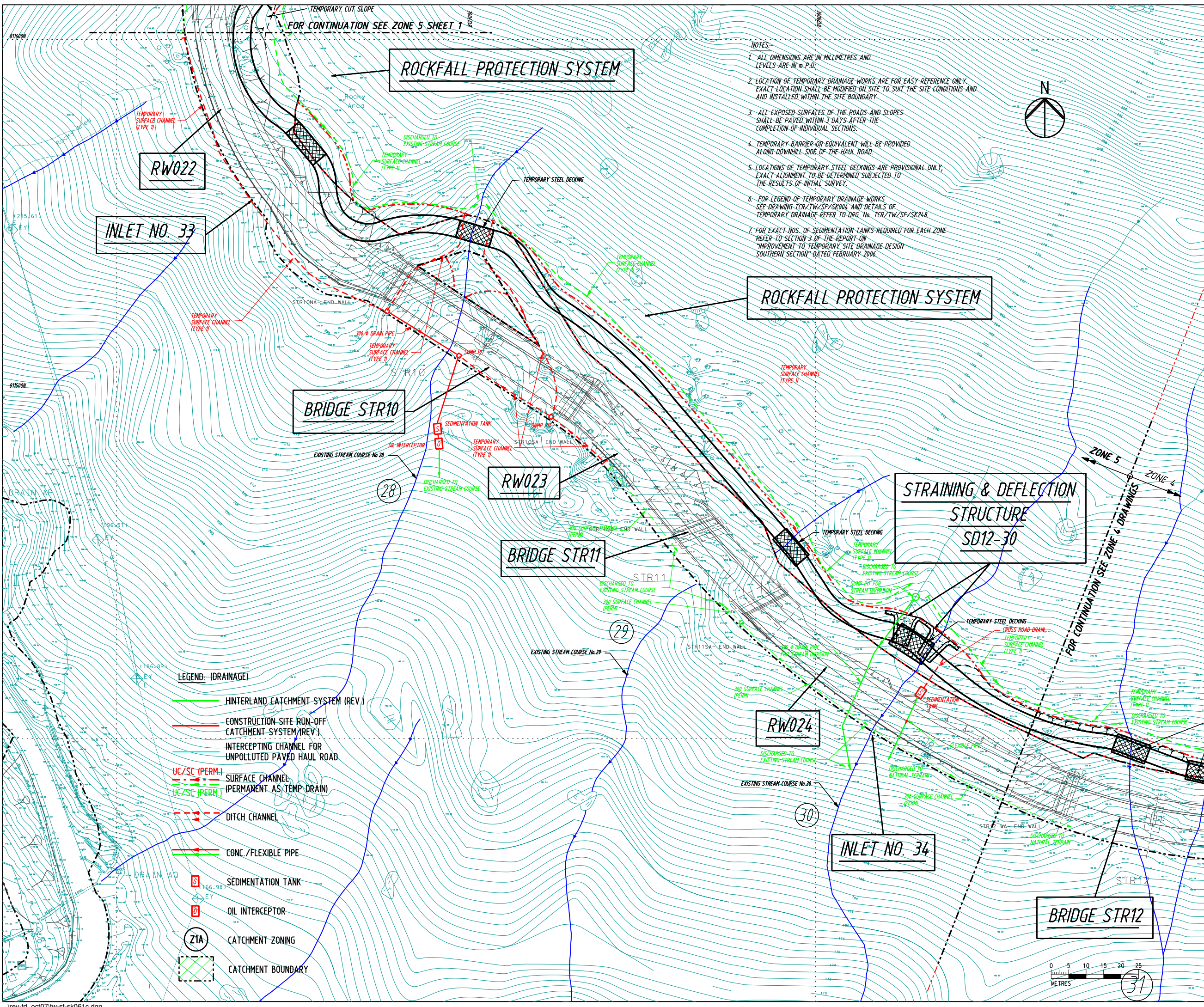
 CCECC & CRWJ Joint Venture

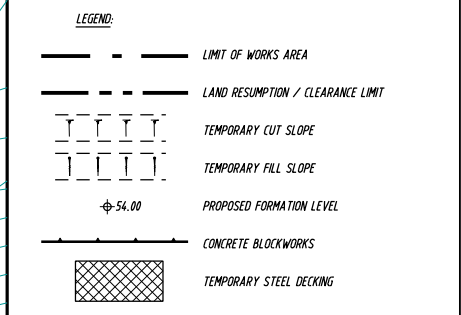
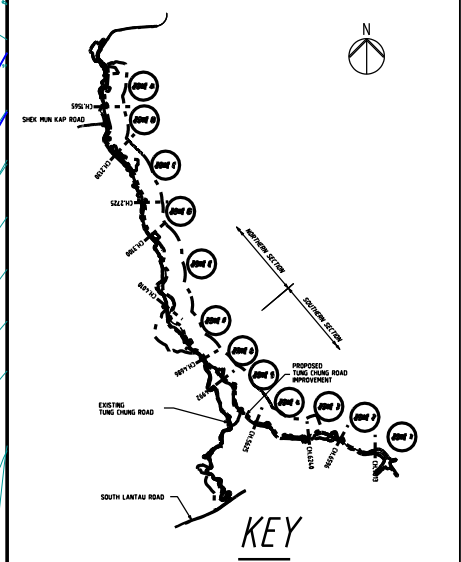
Project
 Contract No. HY/2003/19
 Improvement to Tung Chung Road between Lung Tseng Tau and Cheung Sha

Drg. Title
TEMPORARY DRAINAGE ARRANGEMENT FOR SOUTHERN SECTION - ZONE 5 SHEET 2

Scale :	Designed	Drawn	Checked	Approved
1:1000 @ A3	Date 01/2006	Date 01/2006	Date 01/2006	Date 01/2006

Drawing No. TCR/TW/SF/061 Rev. C





Rev.	Date	Drn.	Description	Dgn.	Chd.	App'd.
B	OCT/07	VL	TEMPORARY DRAINAGE SYSTEM REVISED			
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED.			

Client
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 Highways Department

Consulting Engineers
Mott Connell
 in Association with
 Halcrow China Ltd MVA Hong Kong Ltd Urbis Ltd
 Milich & Co Archaeological Assessments HDS Preston Ltd

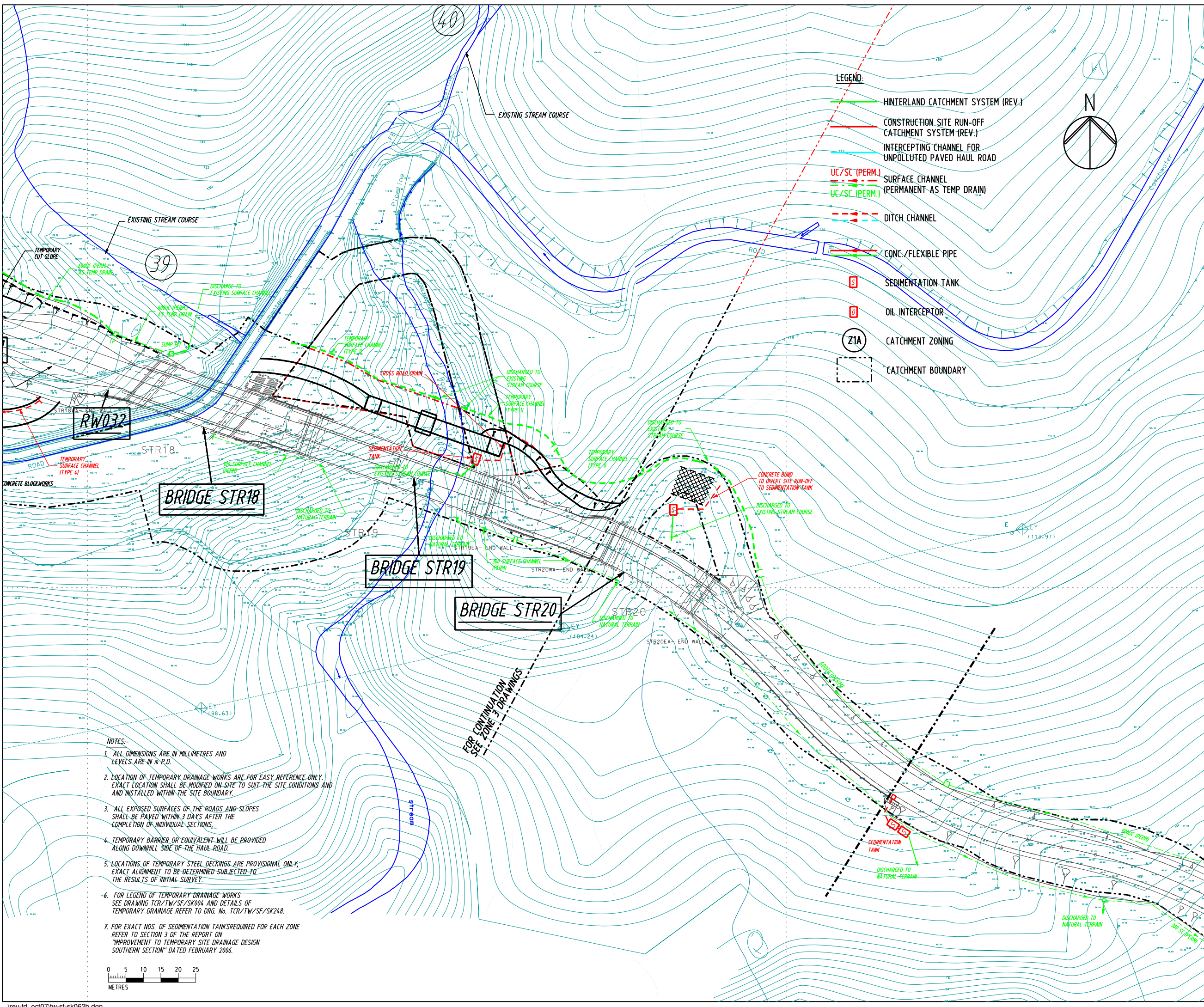
Main Contractor
CCECC & CRWJ
 Joint Venture

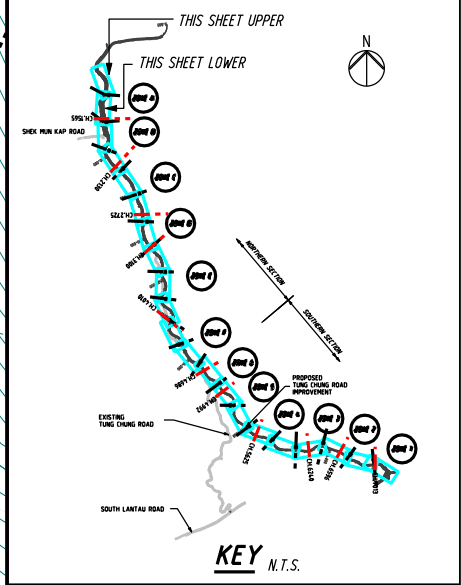
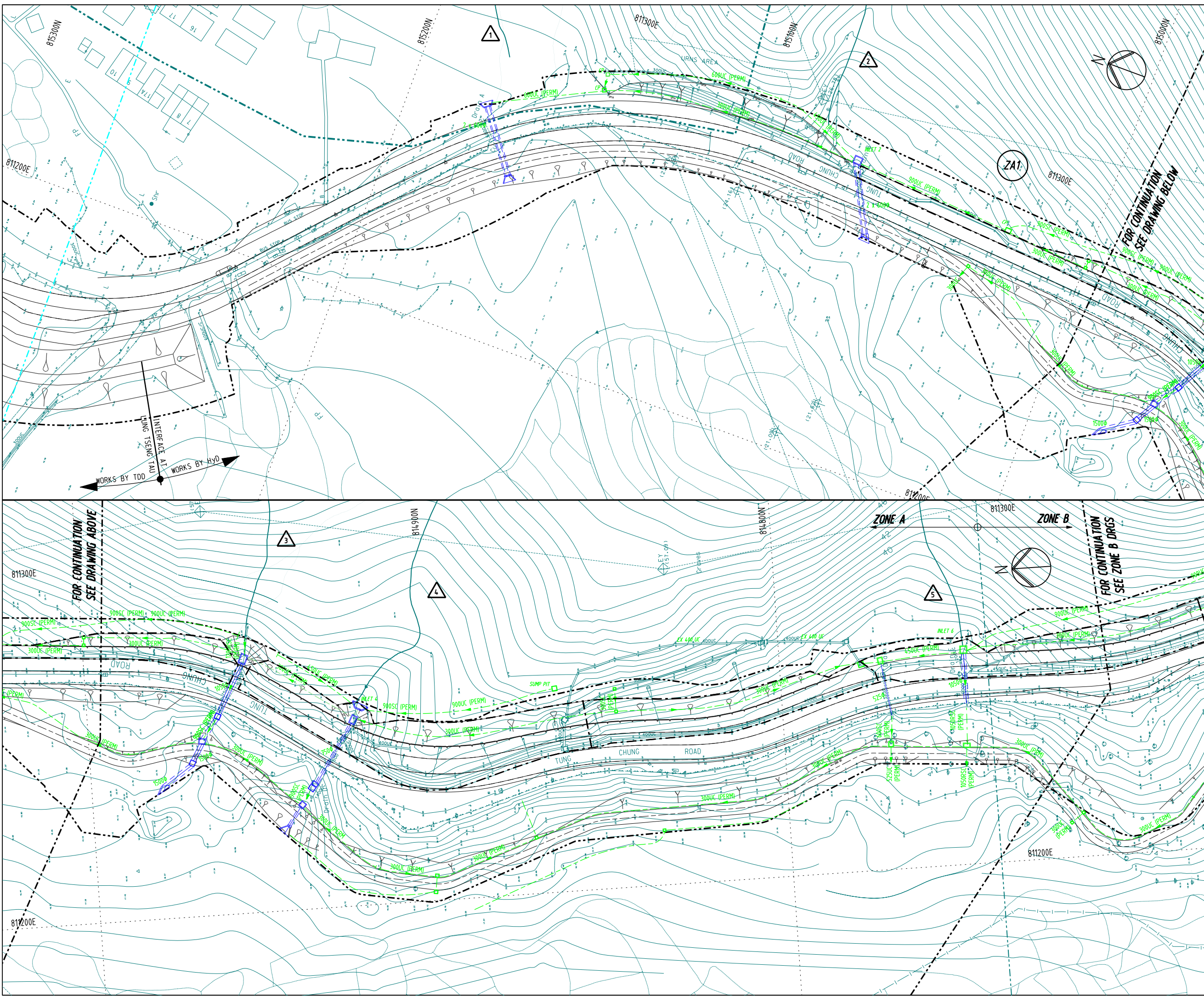
Project
 Contract No. HY200319
 Improvement to Tung Chung Road
 between Lung Tseng Tau
 and Cheung Sha

Drg. Title
**REVISED TEMPORARY DRAINAGE SYSTEM
 FOR SOUTHERN SECTION
 - ZONE 2 SHEET 2**

Scale:	Designed	Drawn	Checked	Approved
1:1000 @ A3	LWC	VL	VL	VL
	Date	Date	Date	Date
	JAN 2006	JAN 2006	JAN 2006	JAN 2006

Drawing No. TCR/TW/SF/062 Rev. B





- NOTES:**
- FOR NOTES AND LEGEND REFER TO DRAWING No. TCR/TS/SF/SK070.
 - LOCATIONS OF TANKS AND PITS ARE FOR EASY INDICATION ONLY AND WOULD BE INSTALLED WITHIN SITE BOUNDARY.

Rev.	Date	Drn.	Description	Dgn.	Chd.	App'd.
C	OCT/07	VL	TEMPORARY DRAINAGE SYSTEM REVISED			
B	JAN/07	VL	PERMANENT DRAINAGE SYSTEM COMPLETED AND SERVES AS TEMPORARY DRAINAGE SYSTEM			
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED.			

Client

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Consulting Engineers

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 in Association with
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 Milich & Co Archaeological Assessments HDS Preston Ltd

Main Contractor

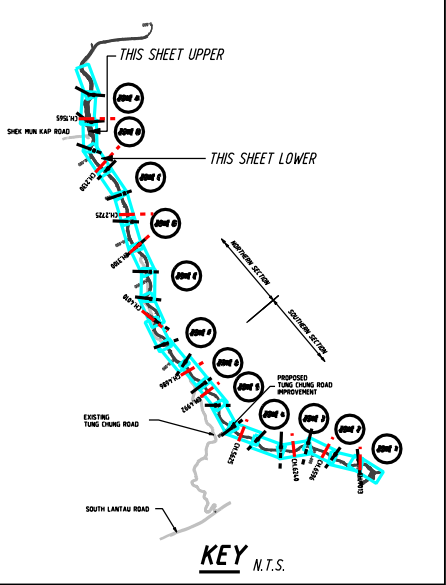
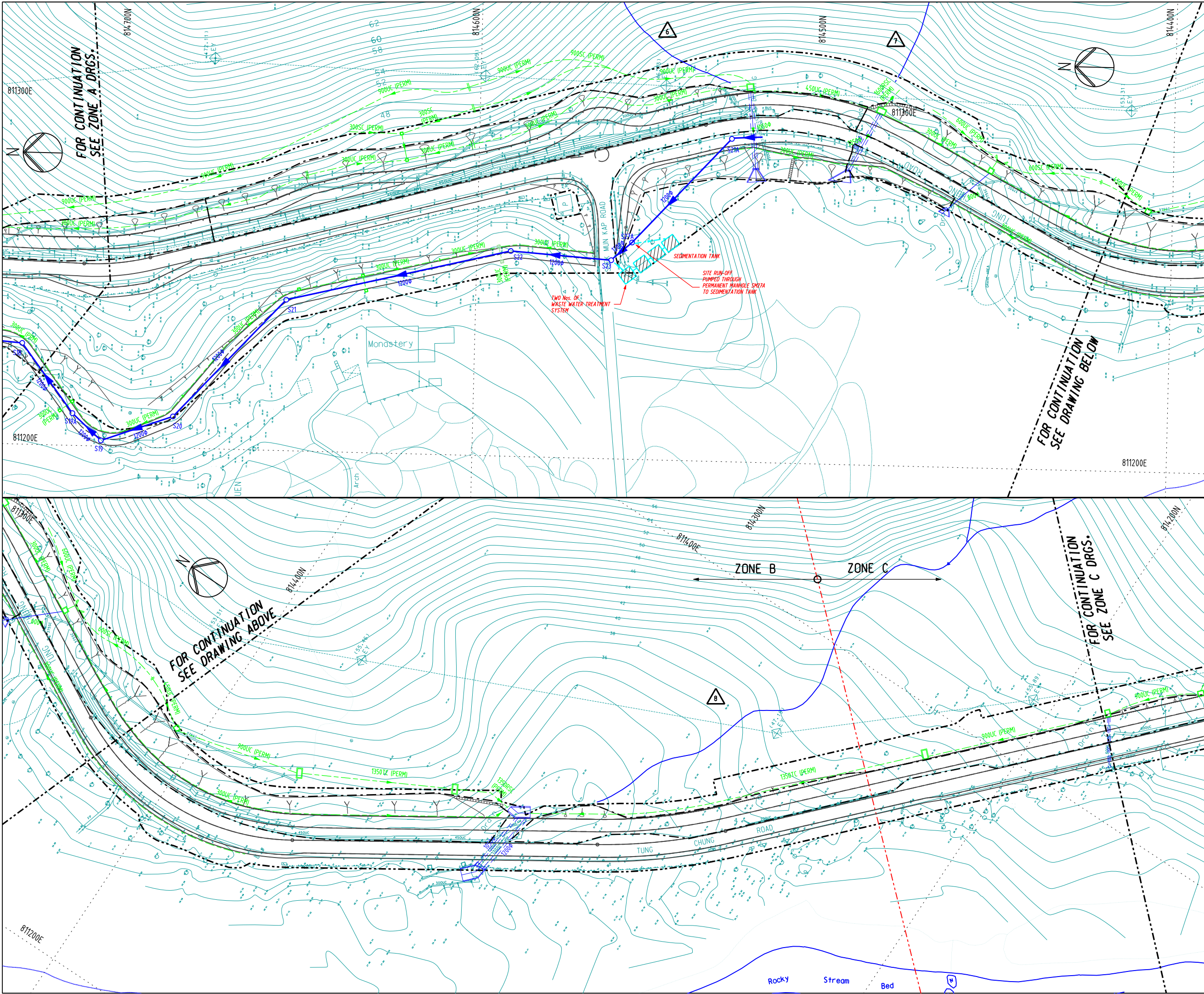
 CCECC & CRWJ Joint Venture

Project
 Contract No. HY/200319
 Improvement to Tung Chung Road between Lung Tseng Tau and Cheung Sha

Drg. Title
REVISED TEMPORARY DRAINAGE SYSTEM FOR NORTHERN SECTION - ZONE A

Scale :	Designed	Drawn	Checked	Approved
1:1000 @ A3	Date FEB/2006	VL Date FEB/2006	Date FEB/2006	Date FEB/2006

Drawing No. **TCR/TW/SF/SK063** Rev. **C**



NOTES:
 1. FOR NOTES AND LEGEND REFER TO DRAWING No. TCR/TS/SF/SK070.
 2. LOCATIONS OF TANKS AND PITS ARE FOR EASY INDICATION ONLY AND WOULD BE INSTALLED WITHIN SITE BOUNDARY.

C	OCT/07	VL	TEMPORARY DRAINAGE SYSTEM REVISED			
B	JAN/07	VL	PERMANENT DRAINAGE SYSTEM COMPLETED AND SERVES AS TEMPORARY DRAINAGE SYSTEM			
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED.			
Rev.	Date	Dwn.	Description	Dgn.	Chd.	App'd.

Client
 The Government of the Hong Kong Special Administrative Region
 Highways Department

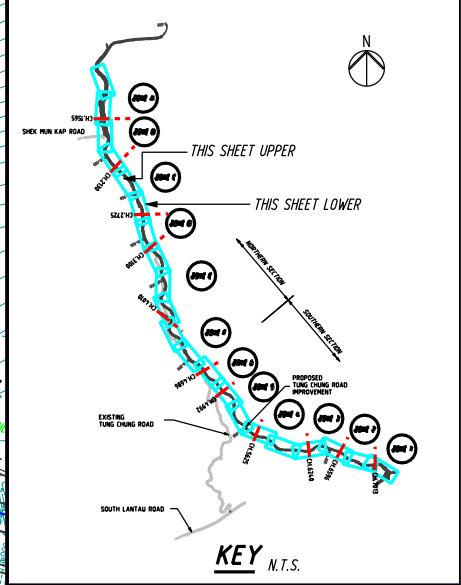
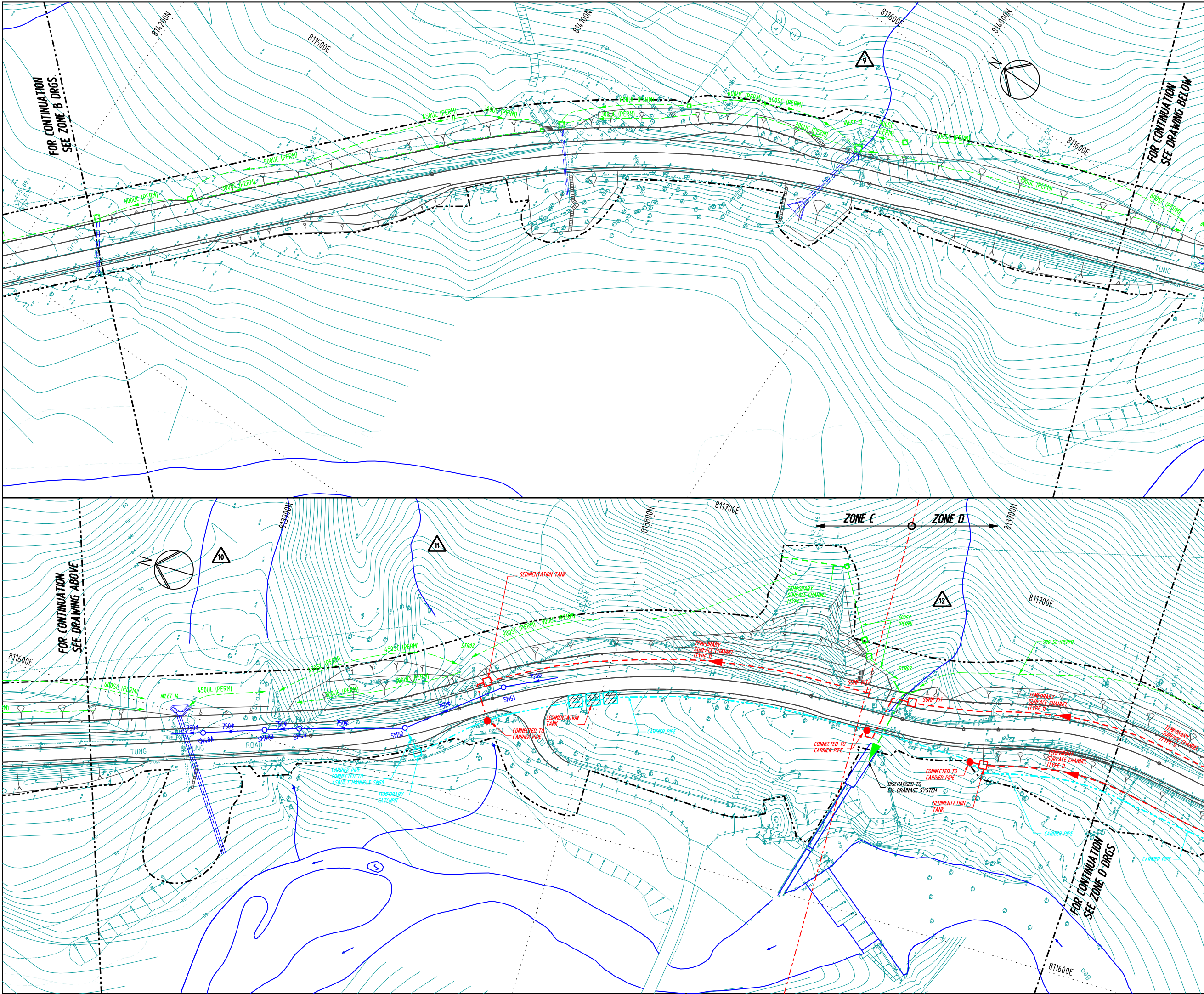
Consulting Engineers
m Mott **McC**
 in Association with
 Halcrow China Ltd MVA Hong Kong Ltd Urbis Ltd
 Milich & Co Archaeological Assessments HDS Preston Ltd

Main Contractor
CCECC & CRWJ
 Joint Venture

Project
 Contract No. HY/200319
 Improvement to Tung Chung Road
 between Lung Tseng Tau
 and Cheung Sha

Drg. Title
**REVISED TEMPORARY DRAINAGE SYSTEM
 FOR NORTHERN SECTION - ZONE B**

Scale : 1:1000 @ A3	Designed	Drawn	Checked	Approved
	Date FEB/2006	VL Date FEB/2006	Date FEB/2006	Date FEB/2006



- NOTES:**
- FOR NOTES AND LEGEND REFER TO DRAWING No. TCR/TS/SF/SK070.
 - LOCATIONS OF TANKS AND PITS ARE FOR EASY INDICATION ONLY AND WOULD BE INSTALLED WITHIN SITE BOUNDARY.

C	OCT/07	VL	TEMPORARY DRAINAGE SYSTEM REVISED			
B	JAN/07	VL	PERMANENT DRAINAGE SYSTEM COMPLETED AND SERVES AS TEMPORARY DRAINAGE SYSTEM			
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED.			
Rev.	Date	Drn.	Description	Dgn.	Chd.	App'd.

Client

 The Government of the Hong Kong Special Administrative Region Highways Department

Consulting Engineers

 Mott Connell
 in Association with
 Halcrow China Ltd MVA Hong Kong Ltd Urbis Ltd
 Milich & Co Archaeological Assessments HDS Preston Ltd

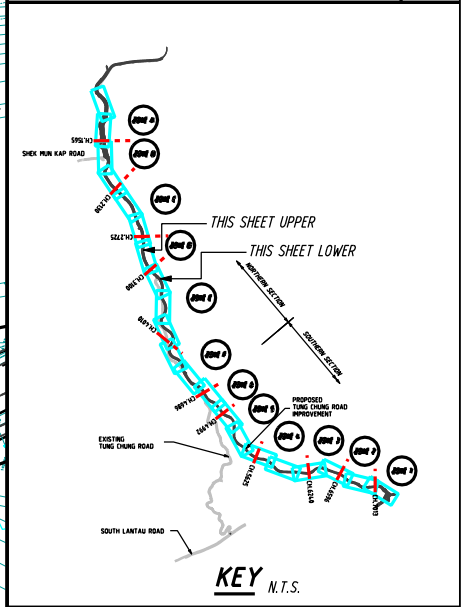
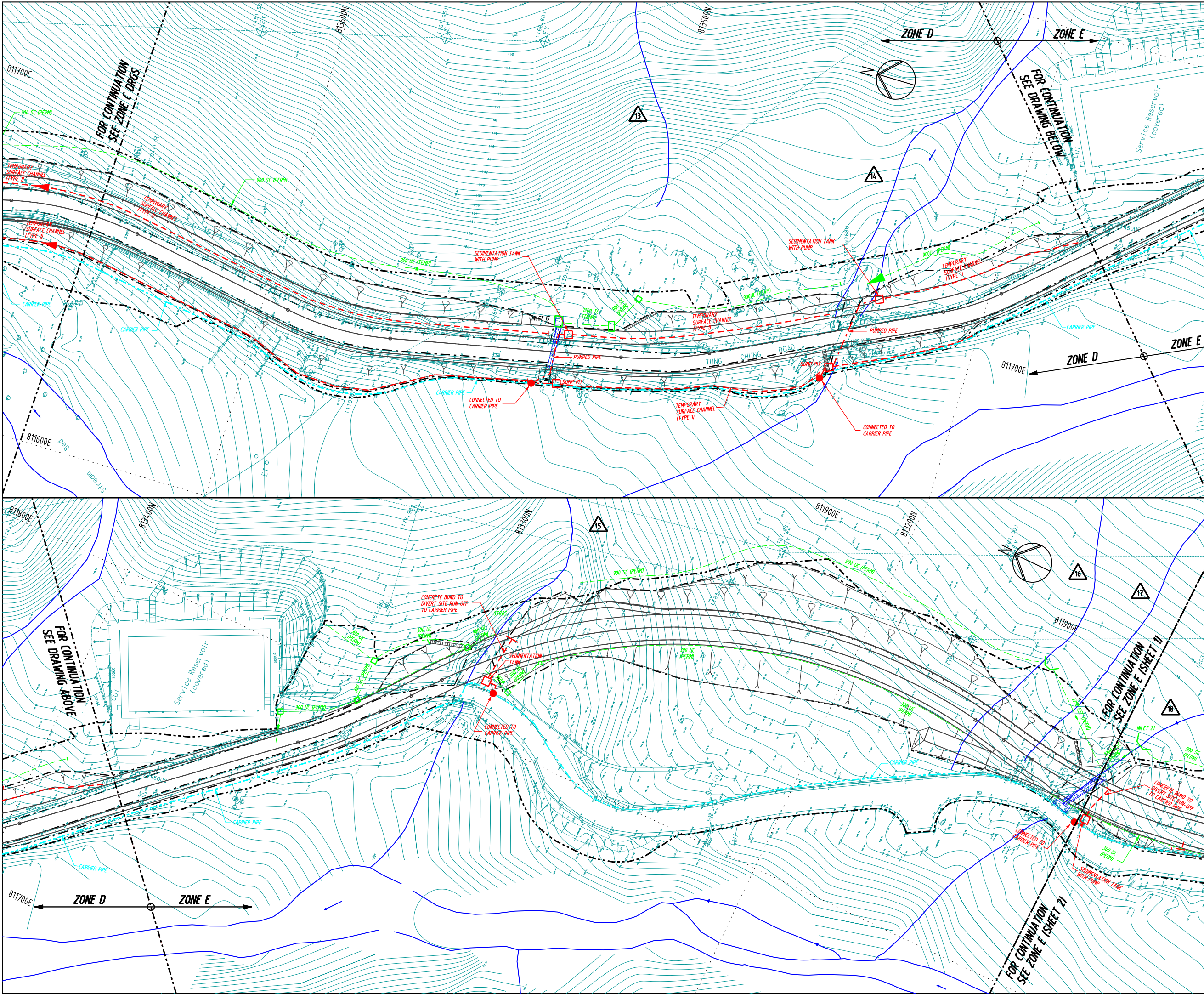
Main Contractor

 CCECC & CRWJ Joint Venture

Project
 Contract No. HY/2003/19
 Improvement to Tung Chung Road between Lung Tseng Tau and Cheung Sha

Drg. Title
REVISED TEMPORARY DRAINAGE SYSTEM FOR NORTHERN SECTION - ZONE C

Scale :	Designed	Drawn	Checked	Approved
1:1000 @ A3	Date	VL	Date	Date
	FEB/2006	FEB/2006	FEB/2006	FEB/2006
Drawing No.	TCR/TW/SF/SK065			Rev. C
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- NOTES:**
- FOR NOTES AND LEGEND REFER TO DRAWING No. TCR/TS/SF/SK070.
 - LOCATIONS OF TANKS AND PITS ARE FOR EASY INDICATION ONLY AND WOULD BE INSTALLED WITHIN SITE BOUNDARY.

Rev.	Date	Drn.	Description	Dgn.	Chd.	App'd.
B	OCT/07	VL	TEMPORARY DRAINAGE SYSTEM REVISED			
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED.			

Client
The Government of the Hong Kong Special Administrative Region
 Highways Department

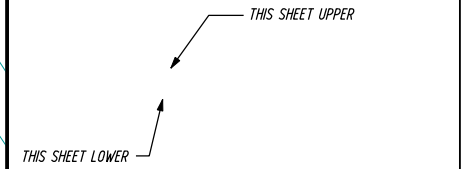
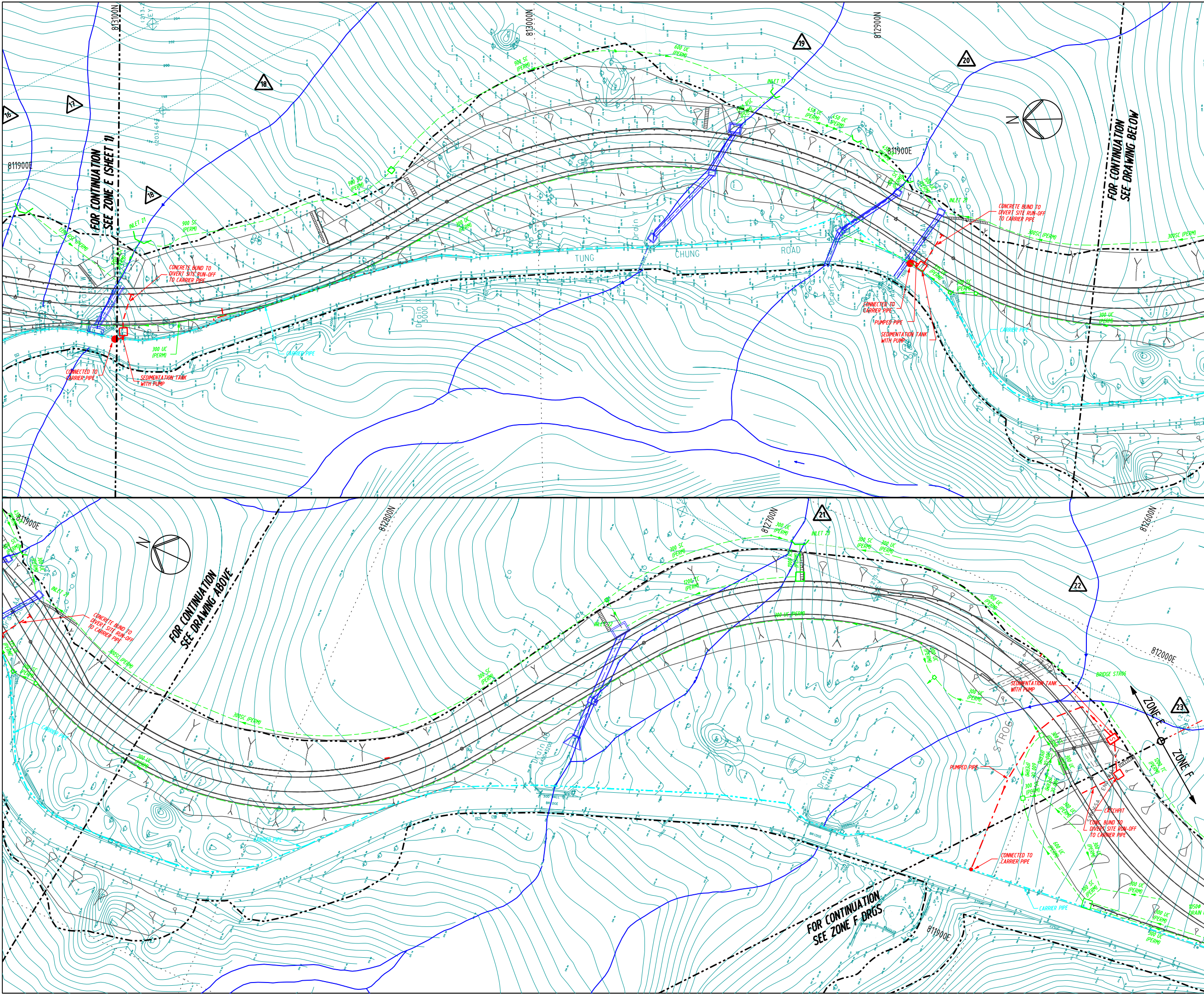
Consulting Engineers
Mott Connell
 in Association with
 Halcrow China Ltd MVA Hong Kong Ltd Archaeological Assessments Urbis Ltd HDS Preston Ltd

Main Contractor
CCECC & CRWJ
 Joint Venture

Project
 Contract No. HY/2003/19
 Improvement to Tung Chung Road between Lung Tseng Tau and Chung Sha

Drg. Title
REVISED TEMPORARY DRAINAGE SYSTEM FOR NORTHERN SECTION - ZONE D & ZONE E (SHEET 1)

Scale:	Designed	Drawn	Checked	Approved
1:1000 @ A3	Date	Date	Date	Date
	FEB/2006	FEB/2006	FEB/2006	FEB/2006
Drawing No.	TCR/TW/SF/SK066			Rev. B
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KEY N.T.S.

- NOTES:**
- FOR NOTES AND LEGEND REFER TO DRAWING No. TCR/TS/SF/SK070.
 - LOCATIONS OF TANKS AND PITS ARE FOR EASY INDICATION ONLY AND WOULD BE INSTALLED WITHIN SITE BOUNDARY.

B	OCT/07	VL	TEMPORARY DRAINAGE SYSTEM REVISED			
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED.			
Rev.	Date	Drn.	Description	Dgn.	Chd.	App'd.

Client

 The Government of the Hong Kong Special Administrative Region Highways Department

Consulting Engineers

 Mott Connell
 in Association with
 Halcrow China Ltd MVA Hong Kong Ltd Urbis Ltd
 Milich & Co Archaeological Assessments HDS Preston Ltd

Main Contractor

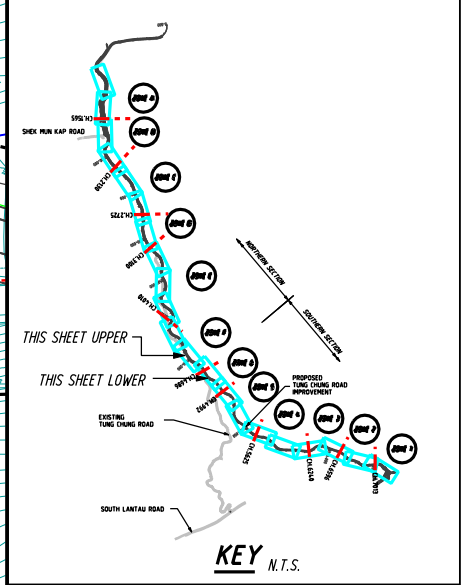
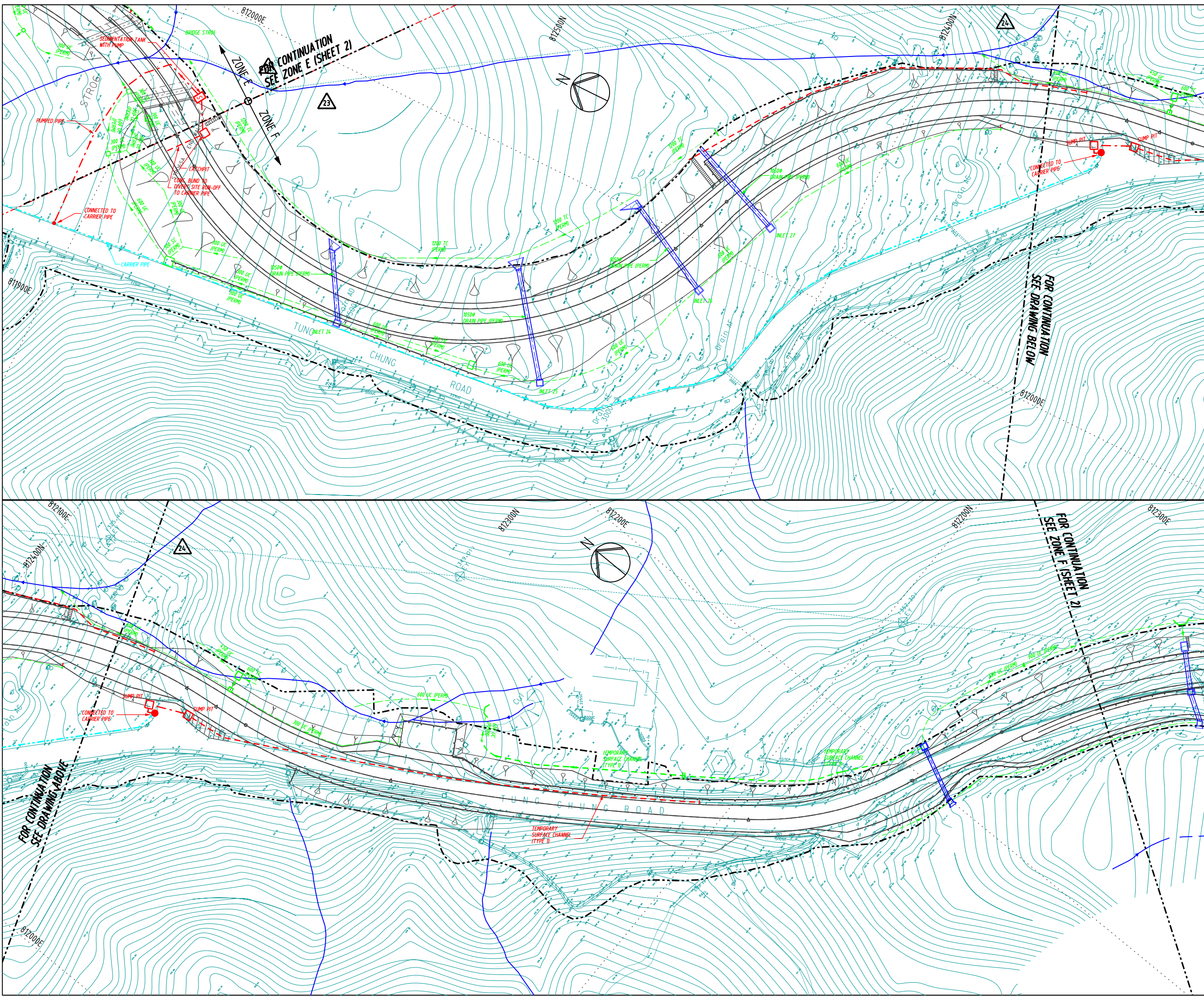
 CCECC & CRWJ Joint Venture

Project
 Contract No. HY200319
 Improvement to Tung Chung Road between Lung Tseng Tau and Cheung Sha

Drg. Title
REVISED TEMPORARY DRAINAGE SYSTEM FOR NORTHERN SECTION - ZONE E (SHEET 2)

Scale:	Designed	Drawn	Checked	Approved
1:1000 @ A3	Date	Date	Date	Date
	FEB/2006	FEB/2006	FEB/2006	FEB/2006

Drawing No. **TCR/TW/SF/SK067** Rev. **B**



NOTES:
 1. FOR NOTES AND LEGEND REFER TO DRAWING No. TCR/TS/SF/SK070.
 2. LOCATIONS OF TANKS AND PITS ARE FOR EASY INDICATION ONLY AND WOULD BE INSTALLED WITHIN SITE BOUNDARY.

Rev.	Date	Drn.	Description	Dgn.	Chd.	App'd.
B	OCT/07	VL	TEMPORARY DRAINAGE SYSTEM REVISED			
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED.			

Client

 The Government of the Hong Kong Special Administrative Region Highways Department

Consulting Engineers

 Mott Connell
 in Association with
 Halcrow China Ltd MVA Hong Kong Ltd Urbis Ltd
 Milich & Co Archaeological Assessments HDS Preston Ltd

Main Contractor

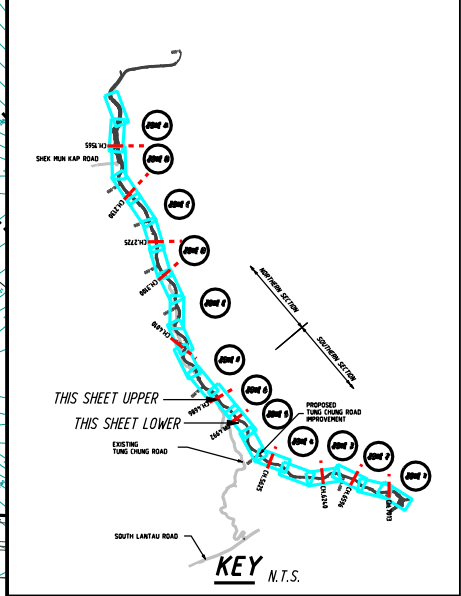
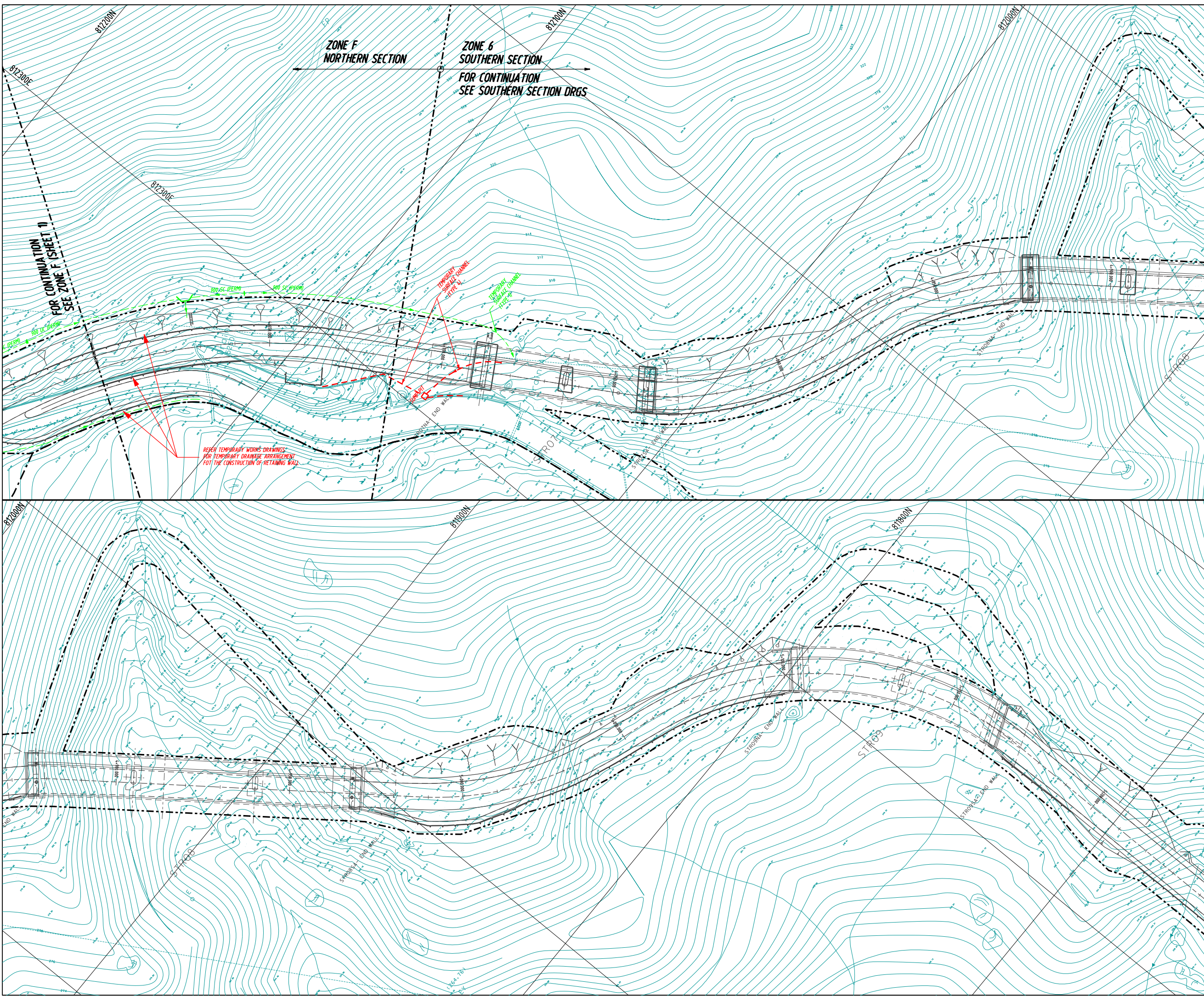
 CCECC & CRWJ Joint Venture

Project
 Contract No. HY200319
 Improvement to Tung Chung Road between Lung Tseng Tau and Chung Sha

Drg. Title
REVISED TEMPORARY DRAINAGE SYSTEM FOR NORTHERN SECTION - ZONE F (SHEET 1)

Scale :	Designed	Drawn	Checked	Approved
1:1000 @ A3	Date	Date	Date	Date
	FEB/2006	FEB/2006	FEB/2006	FEB/2006

Drawing No. **TCR/TW/SF/SK068** Rev. **B**



NOTES:
 1. FOR NOTES AND LEGEND REFER TO DRAWING No. TCR/TS/SF/SK070.
 2. LOCATIONS OF TANKS AND PITS ARE FOR EASY INDICATION ONLY AND WOULD BE INSTALLED WITHIN SITE BOUNDARY.

Rev.	Date	Drn.	Description	Dgn.	Chd.	App'd.
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED.			

Client

 The Government of the Hong Kong Special Administrative Region Highways Department

Consulting Engineers

 Mott Cornell
 in Association with
 Halcrow China Ltd MVA Hong Kong Ltd Urbis Ltd
 Milich & Co Archaeological Assessments HDS Preston Ltd

Main Contractor

 CCECC & CRWJ Joint Venture

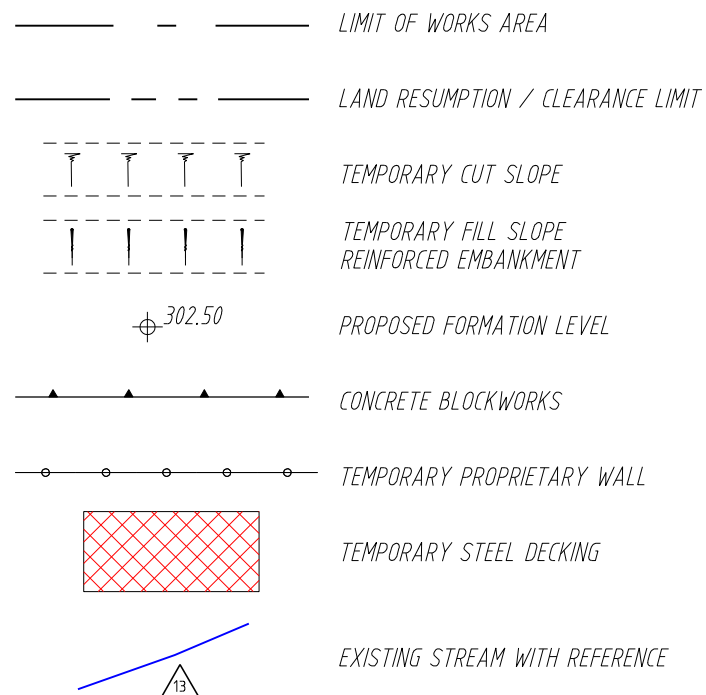
Project
 Contract No. HY/2003/19
 Improvement to Tung Chung Road between Lung Tseng Tau and Cheung Sha

Drg. Title
REVISED TEMPORARY DRAINAGE SYSTEM FOR NORTHERN SECTION - ZONE F (SHEET 2)

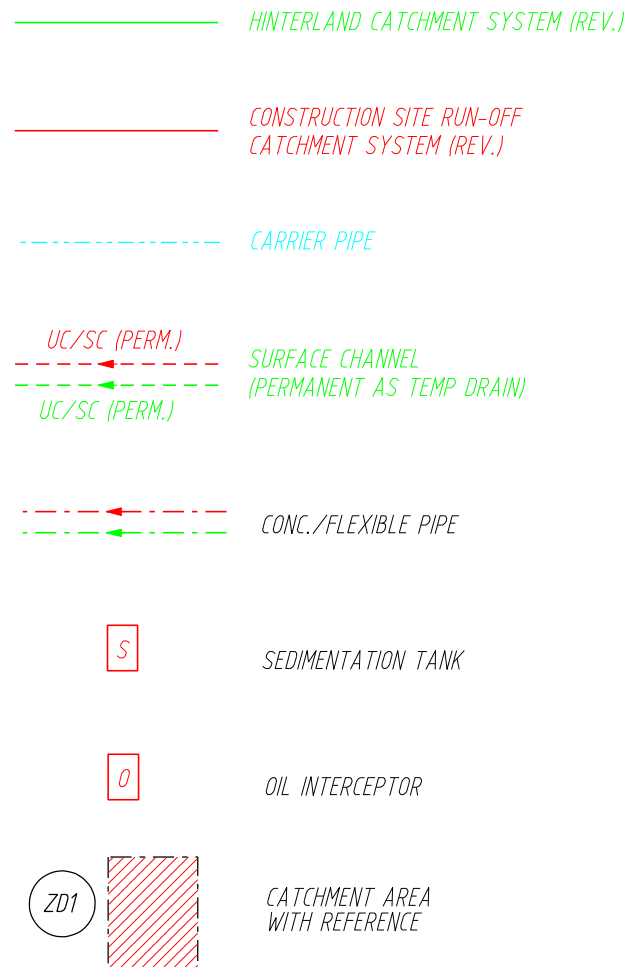
Scale :	Designed	Drawn	Checked	Approved
1:1000 @ A3	Date FEB/2006	VL Date FEB/2006	Date FEB/2006	Date FEB/2006

Drawing No. **TCR/TW/SF/SK069** Rev. **B**

LEGEND:



LEGEND: (DRAINAGE)



NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES AND LEVELS ARE IN m P.D.
2. EXACT LOCATION OF TEMPORARY DRAINAGE WORKS SHALL BE MODIFIED ON SITE TO SUIT THE SITE CONDITIONS AND SHALL BE INSTALLED WITHIN THE SITE BOUNDARY.
3. FOR DETAILS OF TEMPORARY DRAINAGE REFER TO DRG. No. TCR/TW/SF/SK248.
4. ALL EXPOSED SURFACES OF THE ROADS AND SLOPES SHALL BE PAVED WITHIN 3 DAYS AFTER THE COMPLETION OF INDIVIDUAL SECTIONS.
5. TEMPORARY BARRIER OR EQUIVALENT WILL BE PROVIDED ALONG DOWNHILL SIDE OF THE HAUL ROAD.
6. LOCATIONS OF TEMPORARY STEEL DECKINGS ARE PROVISIONAL ONLY, EXACT ALIGNMENT TO BE DETERMINED SUBJECTED TO THE RESULTS OF INITIAL SURVEY.
7. FOR EXACT NOS. OF SEDIMENTATION TANKS REQUIRED FOR EACH ZONE REFER TO SECTION 3 OF THE REPORT ON "IMPROVEMENT TO TEMPORARY SITE DRAINAGE DESIGN NORTHERN SECTION" DATED FEBRUARY 2006.

Rev.	Date	Drn.	Description	Dgn.	Chd.	App'd.
A	MAY/06	VL	ERM COMMENT DATED 22/MAR/2006 INCORPORATED.			

Client

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 Milich & Co Archaeological Assessments HDS Preston Ltd

Main Contractor

 CCECC & CRWJ Joint Venture

Project
 Contract No. HY200319
 Improvement to Tung Chung Road between Lung Tseng Tau and Cheung Sha

Drg. Title
 TEMPORARY DRAINAGE ARRANGEMENT
 GENERAL NOTES AND LEGEND

Scale :	Designed	Drawn	Checked	Approved
1:1000 @ A3	Date FEB/2006	VL Date FEB/2006	Date FEB/2006	Date FEB/2006

Drawing No. TCR/TW/SF/SK070 Rev. A