Highlights of major Highway Construction Projects in Hong Kong
Part I

A General Review of Highway Developments in Hong Kong since the 1950s
Chronological milestones of HK’s Highway development after WWII

1945 – 60

• Basically completion of a paved single lane 2-way roadway network encircling the area of New Territories with limited linkage into the Metro-area

• Development of the first Satellite Town of Tsuen Wan
Chronological milestones (continue)

1960 - 70

- Opening of a West-east run Highway system on the northern part of Kowloon Peninsula (Lung Cheung Rd)
- Opening of the 1st Lion Rock Tunnel (1967)
- Opening of other linking roadway to newly developed areas such as Kwun Tong, Chai Wan and Kwai Chung
Chronological milestones (continue)

1970 - 80

- Opening of the Cross Harbor Tunnel linking HK Island and Kowloon (1972)
- Completion of Container Terminals No. 1 – 4 (throughout the 70s)
- Opening of the 1st Tsing Yi Bridge and gradual development of the Island (74)
- Development of the New Town of Tuen Mun and Shatin and the opening of the Tuen Mun Highway (78)
- Opening of the 2nd Lion Road Tunnel (78)
Chronological milestones (continue)

1980 – 90

• Opening of the East Kowloon Highway (1981)

• Opening of the Tolo Harbor Highway (85)

• Opening of the Light Rail System in the Tuen Mun/Yuen Long Corridor (88)

• Development of the Tuen Mun/Yuen Long and Tai Po/Fanling/sheung Shui Corridor, and the Tseung Kwan O New Town (throughout 80s)
Formation of Tuen Mun New Town in mid 1970s
Development along Tuen Mun-Yuen Long Corridor
Formation of Tai Po New Town in the early 1980s and an aerial view of the district as seen in 2000
Tolo Harbour Highways in late 1990s
Chronological milestones (continue)

1980 – 90

• Opening of the Eastern Harbor Crossing (1989)

• Opening of the 1st section of West Kowloon Corridor between Lai Chi Kok and Mong Kok (88)

• Opening of the Island Eastern Corridor (89)
Chronological milestones (continue)

1990 – 95

- Opening of a series of road tunnels including Tseung Kwan O (90), Shing Mun (90) & Tate’s Cairn (91) tunnels
- Opening of the Kwun Tong Bypass (92)
- Opening of the final phase of the New Territories Circular Road (94)
- Reclamation for the Hung Hom Bay, Central/Wanchai, and West Kowloon Reclamation (mid 90)
- Commencement of the New Airport and the related core projects
Chronological milestones (continue)

1995 – 2000

- Opening of the Lantau Link (Tsing ma /Kap Shui Mun Bridge) and the North Lantau Expressway (1997)
- Opening of the Western Harbor Crossing & West Kowloon Expressway (97)
- Opening of the Route 3 including the Ting Kau Bridge and Tai Lam Tunnel (98)
Major Highway projects completed since 90s

1. Tsuen Wan/Shatin Connection (Route 5, including Shing Mun Tunnel, 1990)
2. Kwun Tong Bypass (1991)
4. Improvement/Widening of Tuen Mun Highway (1996)
7. Route 3 (Country Park Section, including Tai Lam Tunnel (1998)
8. Tsing Yi North Coastal Road (2001)
10. New road (T7) straightening Ma On Shan Road to Sai Sha Road in Ma On Shan (2004)
Major Highway Systems (Highway Strategic Network)
New Route Numbers
Hong Kong-Zhuhai-Macau Bridge

Strategic Cross Boundary Traffic
Major New Highway projects (to be completed before 2008)

1. Deep Bay Link and Shenzhen Western Corridor (early 2007)

2. Widening of Castle Peak Road from Tsuen Wan through Sham Tseng to Siu Lam (mid 2007)

3. Route 9, Tsing Yi to Shatin, (now re-numbered as Rote 8, including the Stonecutter Bridge, 2007)

4. Route 10, North Lantau to Yuen Long, including the Tsing Lung Bridge (suspended for the time being due to overall strategic review)

5. Route 5, Linking section between Tuen Mun Highway and Shing Mun Tunnel (now re-numbered as Route 9)
Part II

Detail understanding of some major Highway projects
Route 3, Country Park Section
Ting Kau Bridge
Elevation of the Ting Kau Bridge and the Approach Section on Ting Kau side
Location plan of the Ting Kau Bridge and the Approach Section
Overall view of the Ting Kau Bridge at her opening in 1998

Ting Kau Bridge is a cable-stay bridge in 3 spans
Construction of the bridge towers

Tsing Yi Tower

Channel Tower

Ting Kau Tower
Tower head for the anchoring of the stay cables
Detail of the tower head with the stay cables in position
Forming the bridge deck using balanced cantilever method with the span stretching out on 2 sides from the tower.
Erect deck girder
Placing of precast plank to form the bridge deck
Final joining of the bridge deck

Bridge approach on Ting Kau side
Route 3, Country Park Section
Works at Ting Kau area
The bridge approach on Ting Kau side

Tuen Mun Highway
Construction of the approach bridge (650m in the form of viaduct)
Aerial view of the approach and the slip road heading TK Bridge
Construction of the approach viaduct using balanced cantilever method (traveling form)
Crossing over of the approach viaduct onto Tuen Mun Highway

Alignment of the approach viaduct
Section between Ting Kau and Tai Lam Tunnel – 600m roadway cutting through a 70m-high rocky hill

Original rock profile
Rock cutting process

Conveyor system for rock disposal
Route 3, Country Park Section
Tai Lam Tunnel
Connection of the Tai Lam Tunnel - Tunnel portal on Ting Kau side (South)
Tunnel constructed using drill-and-blast method
Forming the tunnel lining and interior fitting out at the final stage
Route 3, Country Park Section

Works at Kam Tin area
North Section of Route 3 at Kam Tin
Route 3 at Au Tau Interchange
Forming the interchange using precast launching system
Hung Hom By-pass
Layout of the Hung Hom By-pass routing
Erection of the elevated roadway using precast box-girder by a launching gantry
Standard box-girder segment for forming the bridge deck
Placing the segment onto the column head for onward erection
Holding down and tensioning of the segment
A section of viaduct passing over sea water near the Mail Centre
Viaduct near the Mail Centre
Work at servicing traffic – slip junction to Gascoigne Road
Working very close to servicing railway track – forming the junction to Prince Margaret Road
Work over very busy servicing roadway at junction of Hong Chong Road and Chatham Road
Work over very busy servicing roadway at junction of Hong Chong Road and Chatham Road
Tsing Yi North Coastal Road
Location map of the Tsing Yi North Coastal Road
The road system at its completion in early 2002
Overview of the construction at the early stage in 2000
Formation to cut into the slope for the construction of the piers for the elevation road deck
Forming the elevated road deck using box girders and install by launching machine
Detail of the launching machine and the operation system
Improvements to Island Eastern Corridor section between North Point Interchange and Sai Wan Ho
Forming of bored pile on sea along existing elevated roadway of the Eastern Corridor
Formation of bored piles (1.5m) using reverse circulation drill (RCD)
Associated work – relocation of an existing pier and replacing it by a new one
Construction of the pier column
Using precast beam to form the deck
Deck detail before placing the concrete topping
Route 8 (previous numbered Route 9)
From Tsing Yi to Shatin
Alignment of Route 8 (from Tsing Yi to Lai Chi Kok)
Route 8 at Tsing Yi near the concourse of Tsing Ma Bridge
Route 8 at Tsing Yi near the concourse of Tsing Ma Bridge
Erection of the precast girder to form the viaduct using tie-down hoisting gantry
South Portal of Nam Wan Tunnel (facing Container Terminal 9)

Alignment of R8 (to Stonecutter Bridge)
Alignment of Route 8 (Ngong Shuen Chau Viaduct)
Route 8 crossing Route 3 (West Kowloon Expressway)
Route 8 crossing Route 3 (West Kowloon Expressway)
Construction of the piers for the viaduct
Portal beam and the pier head segments
Launching Machine used for the construction of the viaduct
Working close to Route 3
Route 8 prepare to cross Route 3 as seen in April and August 2004
Alignment of Route 8
(Lai Chi Kok Viaduct)
Route 8 Lai Chi Kok Section crossing existing Cheung Sha Wan/Lai Chi Kok Road
Route 8 Lai Chi Kok Section crossing existing Cheung Sha Wan/Lai Chi Kok Road
Construction of portal beams within Cheung Sha Wan/Lai Chi Kok Road
Route 8 crossing Ching Cheung Road at Butterfly Valley before entering into the Eagle’s Nest Hill
Route 8 and the associated roadwork crossing Ching Cheung Road and Castle Peak Road

Alignment of Route 8

2-lane carriageway dismantled to give way for the new slip road
Land forming for the approach road into the Eagle’s Nest Tunnel
Joining Route 8 to the existing road system in Tai Wai
Cutting and retaining the slope along Tai Po Road to give way for the Route 8 approach.
Work Progress of Route 8 in Tai Wai

Existing Tai Po Road
Forming the interchange at Tai Wai as seen in early 2004
Route 8 – covered tunnel box along the railway track opposite KCRC Tai Wai Depot
Route 8 – a slip road leading to the Tai Wai inner roads crossing the rail track outside Shatin Height Tunnel
Alignment of Route 8 (Eagle’s Nest Tunnel)
Entrance Portal to Shatin Height Tunnel
Entrance Portal to Eagle’s Nest Tunnel
Formwork gantry for the forming of the tunnel lining
Steel fixing for the tunneling lining
Other work gantry for tunnel works
Deep Bay Link

Contract divided into two main portion:

1. The South Section – on the south side of Castle Peak Road including interchange systems to Yuen Long Highway

2. The North Section – on the north side of Castle Peak Road up to the linking bridge of HK-Shenzhen Western Corridor approach including interchange at Ha Tsuen and Yick Yuen
The project includes:

(a) construction of a 5.4-kilometre dual three-lane carriageway linking the Hong Kong-Shenzhen Western Corridor at its landing point in Ngau Hom Shek with the Yuen Long Highway at Lam Tei;

(b) construction of two interchanges respectively at Lam Tei and Ha Tsuen

(c) construction of turnaround facilities with weighing station, vehicle recovery base and helipad at Ha Tsuen Interchange;

(d) construction of a traffic control surveillance system, associated civil, structural, electrical and mechanical, geotechnical, landscape and drainage works, fire services, water works, environmental mitigation measures etc.
Works along the Yuen Long Highway to form the interchange
Falsework erected over Yuen Long Highway to form the slip road entering into the elevated carriageway of Deep Bay Link
Large-scale falsework erected to facilitate the construction of the elevated carriageway in the Yuen Long Highway interchange constructed using in-situ method.
Overview of the launching gantry over Lam Tei site
Construction of the viaduct using in-situ method by the help of an extensible formwork hung by a gantry frame and work in a balanced cantilever arrangement.
Forming the portal beams of viaduct between Ha Chuen and Tsing Chuen Wai (about 50 spans)
Viaduct crossing Castle Peak Road at Lam Tei as seen in March 2005
Viaduct crossing Castle Peak Road at Lam Tei as seen in June 2005
Viaduct at Tsing Chuen Wai working just within 80m from the village houses
Viaduct crossing the Castle Peak Road and West Rail at Tsing Chuen Wai
Forming the viaduct using 2 different types of launching gantry
Forming a span of viaduct by placing the precast segment on propped supports
Portal and abutment joining the viaduct of Western Corridor
HK Shenzhen Western Corridor
Works at Deep Bay as seen in October 2004
Works at Deep Bay as seen in June 2005
Forming the bore-pile for the pier of the viaduct
Forming the pile cap of the pier
Installation of box-girder using DEAL Launching gantry
Installation of box-girder using MBEC Lifting frame
Installation of box-girder using MBEC Lifting frame
Installation the precast segment using VSL Lifting girder
Construction of the viaduct with the use of various types of Launching equipments
Construction of the viaduct as seen on the Temporary Access Bridge
Cable-stay bridge to form the navigation main span

Main Span

- 210m Long
- 13 nos. of stay cable
Lifting the pier-head module onto the pier
Placing the pier-head module onto the pier (side span)
Side span of the cable-stay bridge with the steel deck in position
Bridge tower and the cable pylon on the bridge deck
Section between Tsuen Wan and Ting Kau
Large-scale slope-cutting along the east bank of the original Castle Peak Road formed a major component in this portion of contract
Final stage of the extension work near Yau Kam Tau
Section between Sham Tseng and Ting Kau
Slope-cutting and bank-filling formed part of the widening design on this portion of extension contract.
Widening of the road bank by land-filling and retained by earth-reinforced wall
Straightening of a road bend by rock cutting near Lido Bay
Strengthening of the road bend by a new arch bridge section under the Ting Kau Bridge.
Traffic diversion at section under the Ting Kau Bridge with the new and old road alignment at the interfacing point
Section between Sham Tseng and Siu Lam
Widening of the road section by filling up and side supported using various types of retaining structures.
Dredging and Reclamation work near Tai Lam Kok
Marine works to form bored piles for a section of 800m viaduct over the sea outside Siu Lam
Forming the pier for the viaduct
Other Associated Works
Noise barrier enclosure
Drainage and storm water discharge
Salisbury Road Underpass
Coverage of Works

Portion entrusted to KCRC includes

(i) construction of a 370m long, dual 2-lane underpass along Salisbury Road at its Junction with Chatham Road South;

(ii) relocation of an existing 4.5m wide pedestrian subway across Salisbury Road;

(iii) widening of Salisbury Road from Wing On Plaza to Nathan Road; and

(iv) associated road reconstruction, traffic signalization, drainage, water and landscaping works.

Portion being carried out by the Government includes

(i) widening of Salisbury Road from Nathan Road to Canton Road; and

(ii) associated road reconstruction, traffic signalization, drainage, water and landscaping works,
Highway projects using Launching Gantry

Kwun Tong Bypass (1 machine, 1990-91)
Route 3 – Kwai Chung Section (3 machines, 1995-6)
   1 for beam launching, 1 underslung type for airport railway and 1 for Ramble Channel viaduct
Route 3 – Country Park Section at Au Tau (1 machine, 1998)
Hung Hom Bypass (1 machine, 1997-98)
Tsing Yi North Coastal Road (1 machine, 2000-01)
Ma On Shan T7 (1 machine, 2002-03)
R8, Stonecutter viaduct (2 machines, 2003-05)
R8, Cheung Sha Wan Viaduct (1 machine, 2005)
R8, Shatin Height (1 machine, 2005)
T3/R8 at Tai Wai (1 machine, 2004-05)
Deep Bay Link at Lam Tei (2 machine, 2004-05)
Deep Bay Link north section (2 machines, 2004-05)
HK Shenzhen Western Corridor (1 machine, 2004-05)
End of Presentation