

**Locally Produced LARGE SECTION
ADVANCED SHEETPILES (ASP) Caisson Piles**

**For
Landslide**

200620

Presented by
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Advanced SheetPiles Sdn Bhd (525461-A)
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Factory :-19, Jalan Industry TMP 13,
Taman Perindustrian Tanjong Minyak Perdana, Melaka
www.advancedsheetpiles.com.my

Advanced SheetPiles

Interlocked Caisson and Ω sheet Piles

LARGE SECTION ADVANCED SHEETPILES (ASP) Caisson Piles for

- Landslide,
- Breakwaters and seawalls
- cantilevered walls etc.,

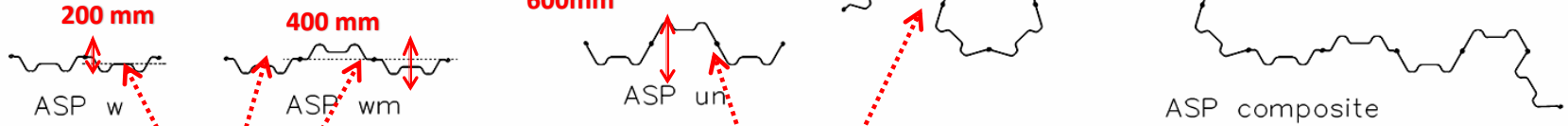
The interlocked structured sheet pile yields very high stiffness and rigidity replace the use of contiguous bored piles-

→ Low COST, high SPEED and large SAFETY

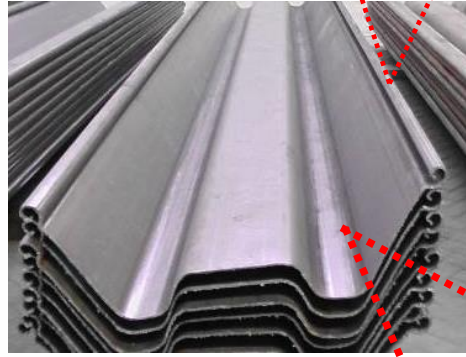
DESCRIPTION OF PRODUCT

Applications of ASP steel sheet piles

Current uses of hot rolled sheet piles excavations



ASP "w" profile

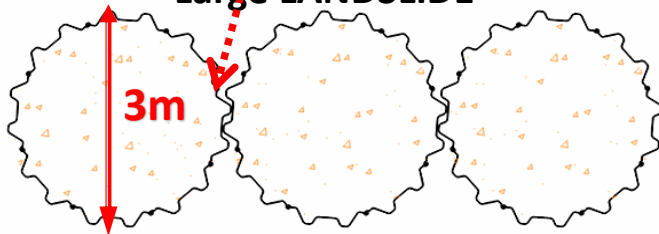


ASP "u" profile

- cold formed interlocks-no welding
- varied interlocking configurations
- high strength to weight ratio

Caisson, Ω and Γ pile configurations EXCLUSIVELY adapted for :-

Large LANDSLIDE



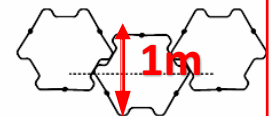
ASP Caisson

Slope failure / river banks



ASP Ω

Road widening

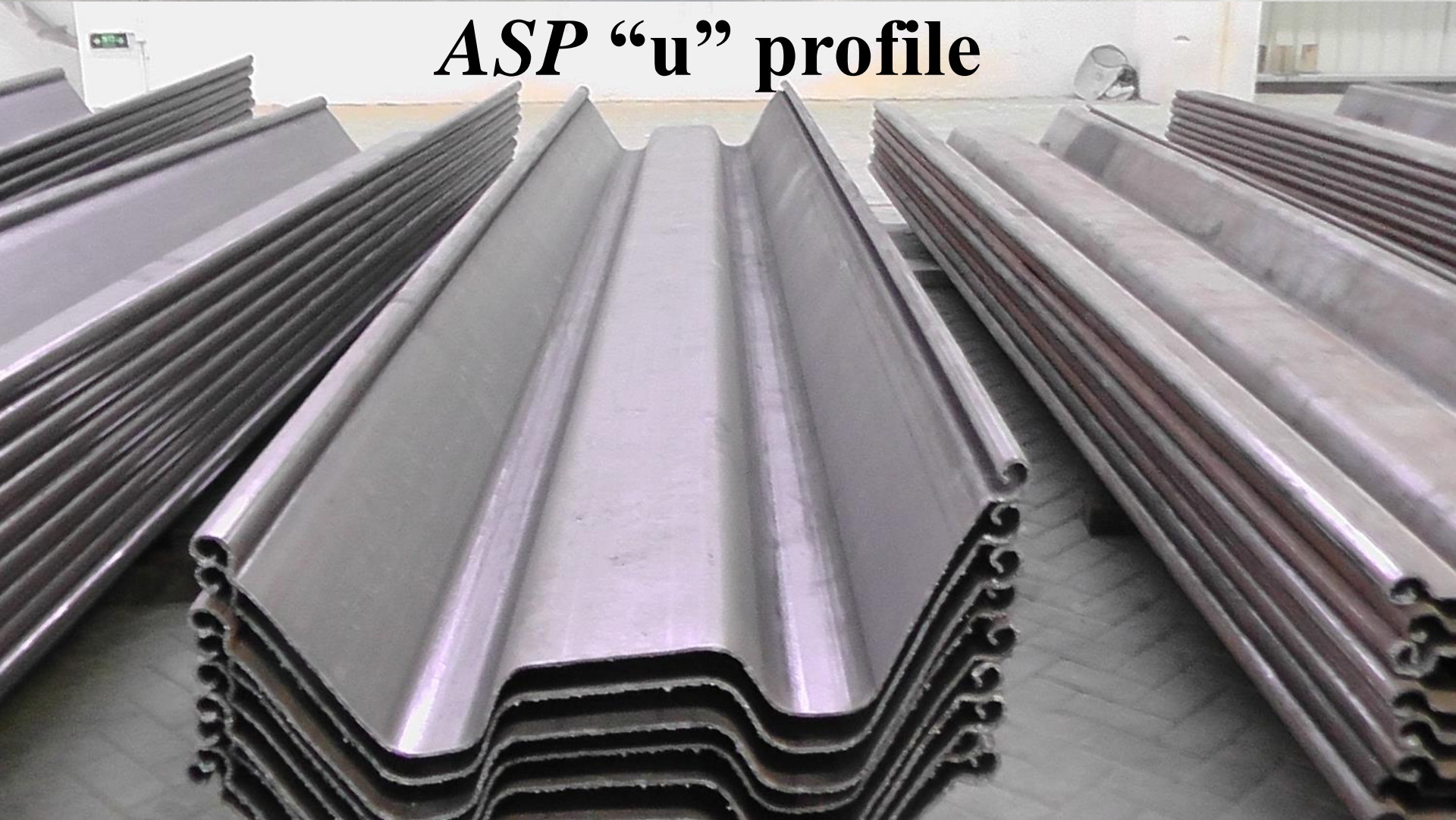


ASP Γ

Advanced SheetPiles-INTERLOCKING SHAPES

Advanced SheetPiles

ASP “u” profile



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ASP “w” profile





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Large Section cold rolling Line



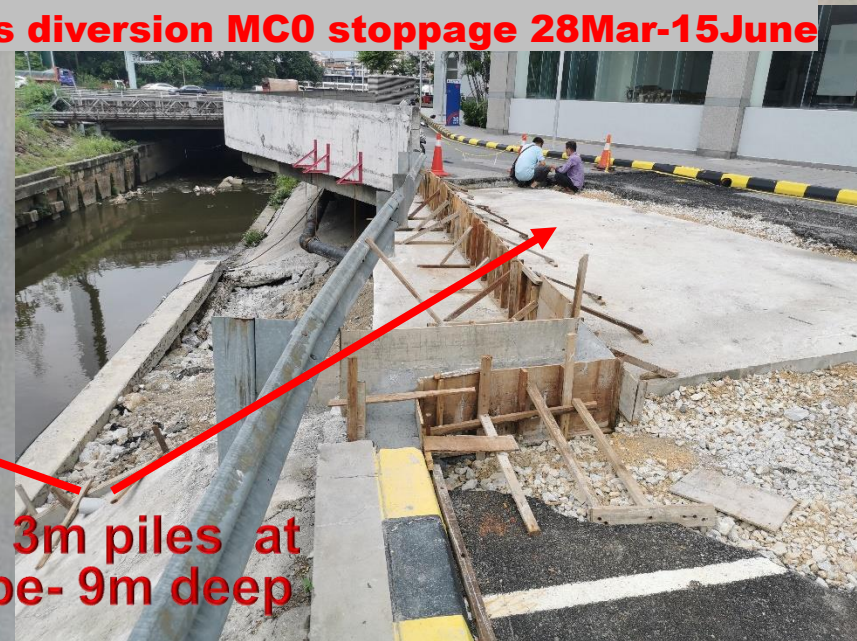
Auto Shot blast and painting Line





River wall slope failure at PJ city along Federal Highway

11Mar -26June 2020 with Temporary services diversion MC0 stoppage 28Mar-15June



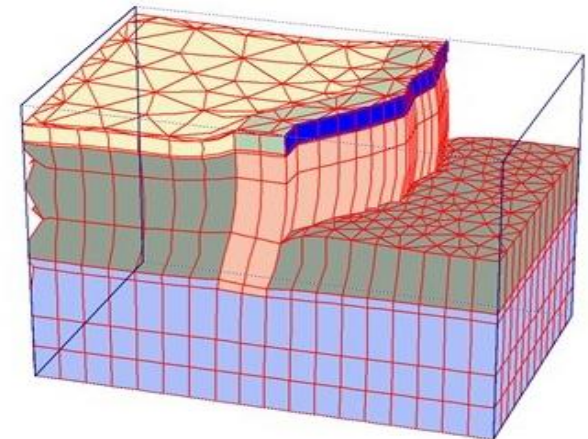
Caisson 3m piles at mid slope- 9m deep



River wall slope failure RECTIFIED at PJ city along Federal Highway

Advanced SheetPiles

Proposed ASP interlocked caisson for Pagoh river wall



Landslide mitigations for Majlis Perbandaran Melaka

15Mar -23June 2020 MC0 stoppage 28Mar-15June



Crest slope
sheet piles



Caisson 3m piles at
mid slope- 9m deep



Toe slope
sheet piles

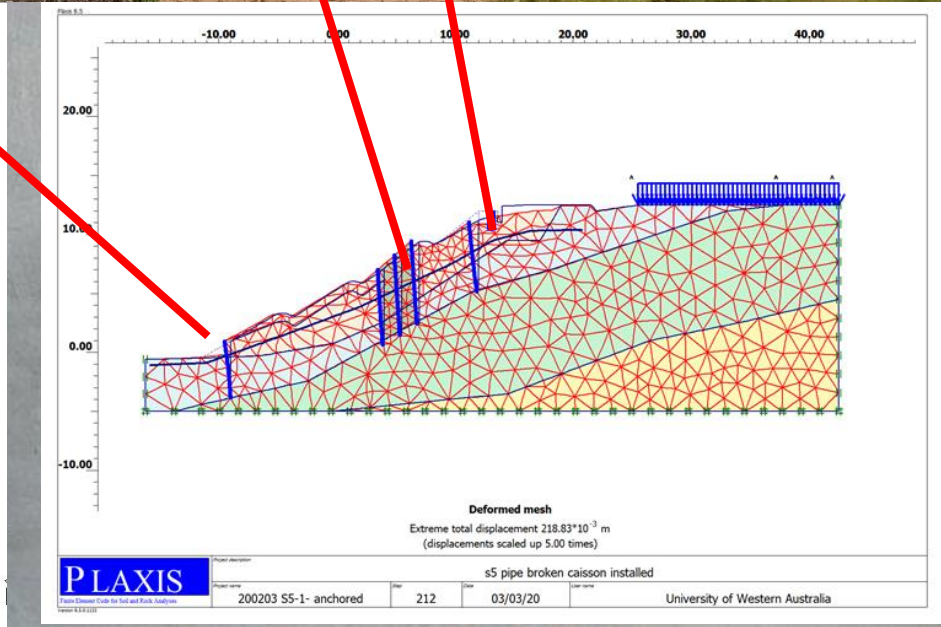
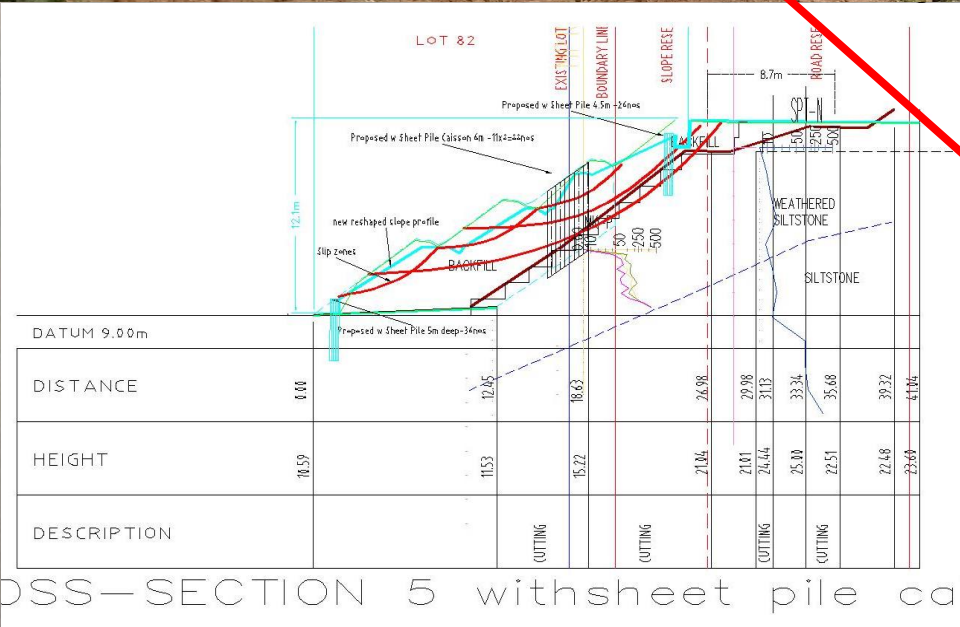
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ASP interlocked caisson as contiguous caisson embedded cantilevered wall

Interlocked 3m diameter caisson pile wall for Landslide



Landslide mitigations for Majlis Perbandaran Melaka



CROSS-SECTION 5 with sheet pile caisson

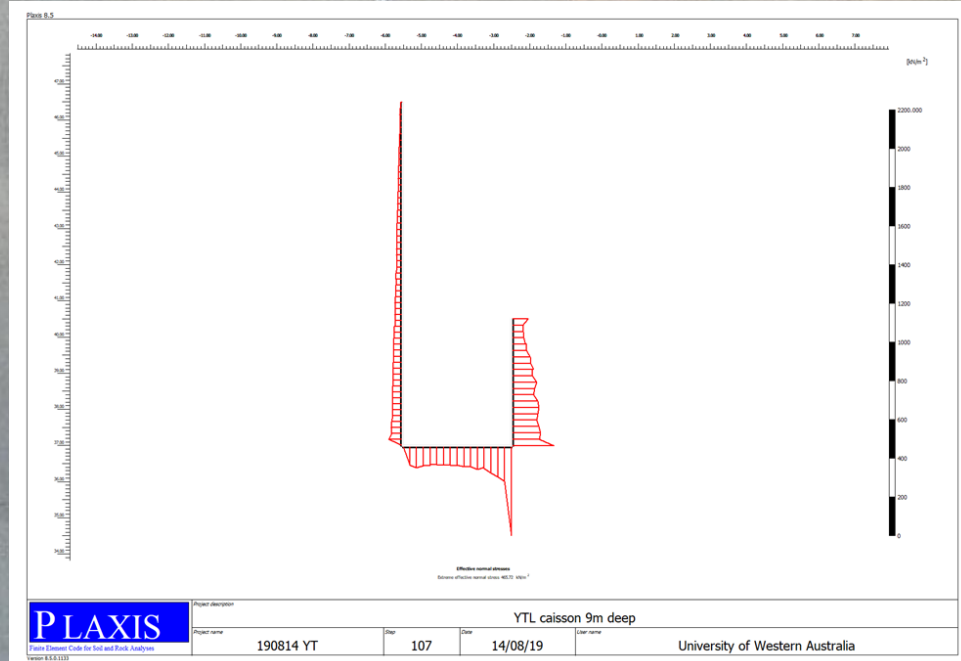
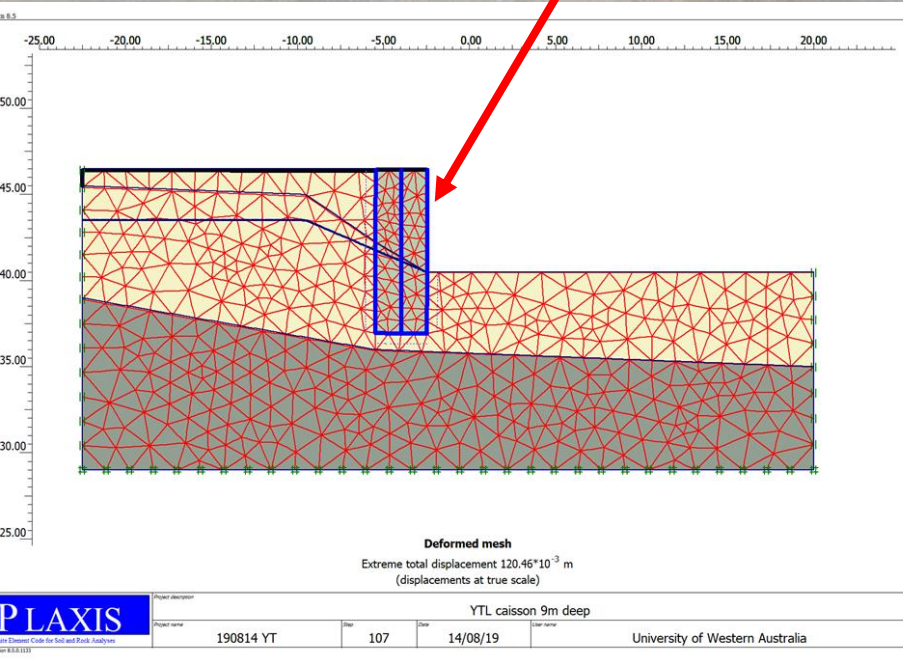
S-wall Slope stabilisation in mudslide



Steep slope at Bukit Tuanku 5 July 2019- 16 July 2019



Caisson 3m piles 9m deep



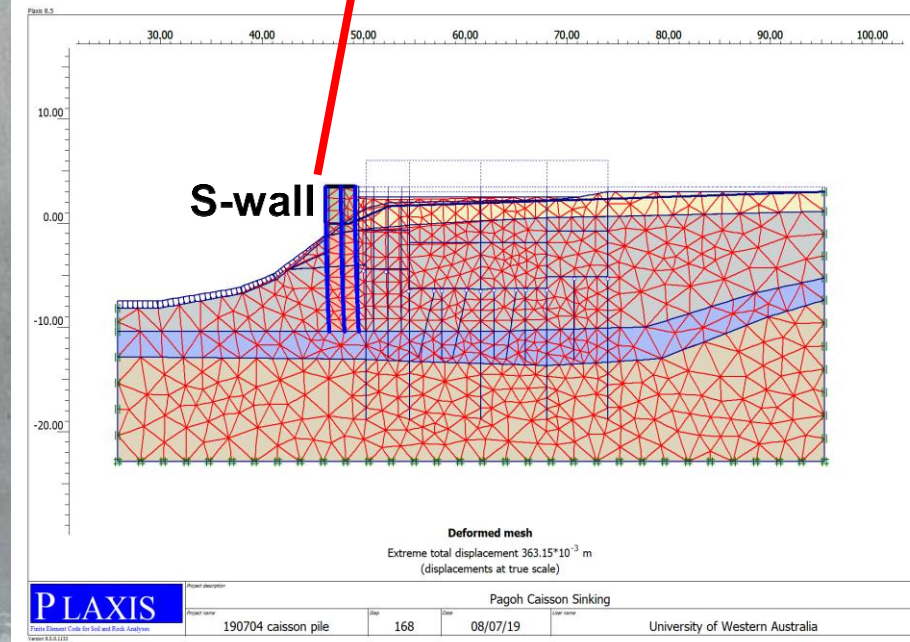
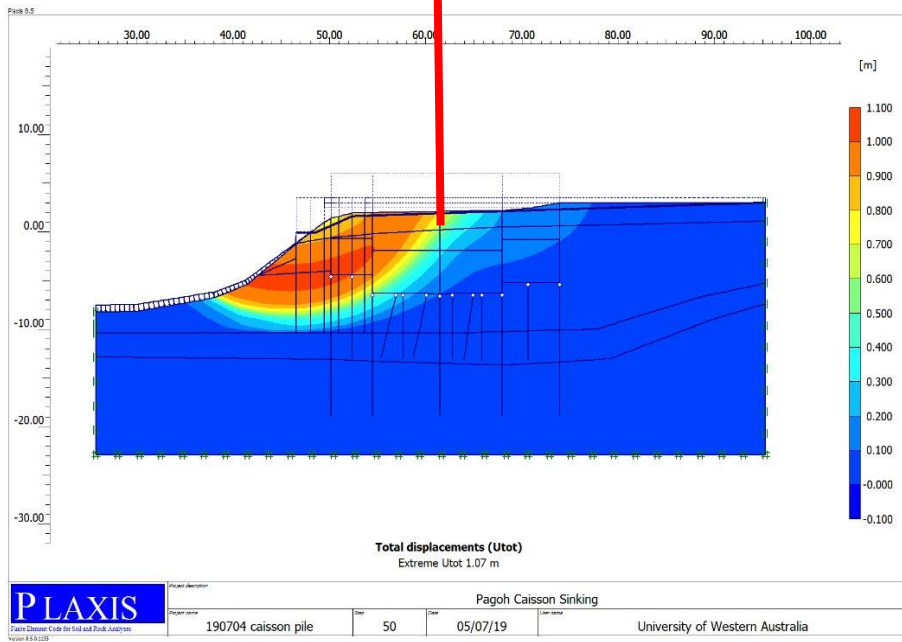
River wall temporary Stiff S-wall river slide protection 7 July 2019

BEFORE

Slope cracks

AFTER

S-wall

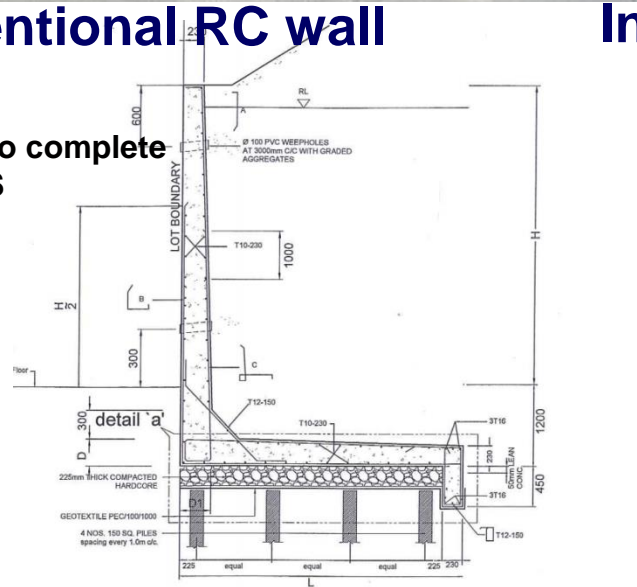


ASP Caisson Pile for landslide

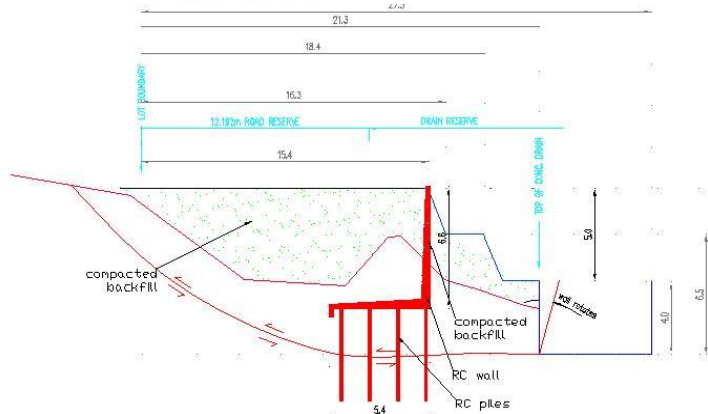
Slope Failure remediation at Bukit Sentosa

Conventional RC wall

- 6 months to complete
- Lower FOS



TYPICAL SECTION

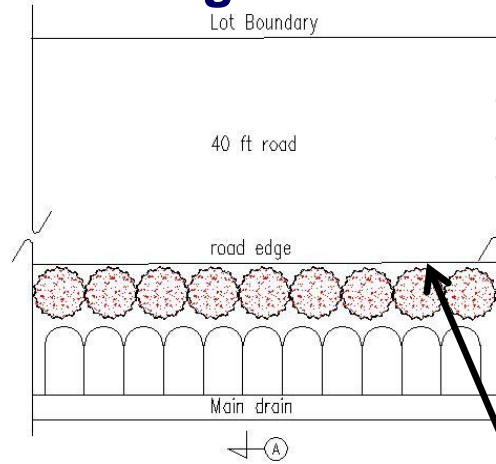


Chainage 60.000
Cut Area 0.000 Fill Area 72.480

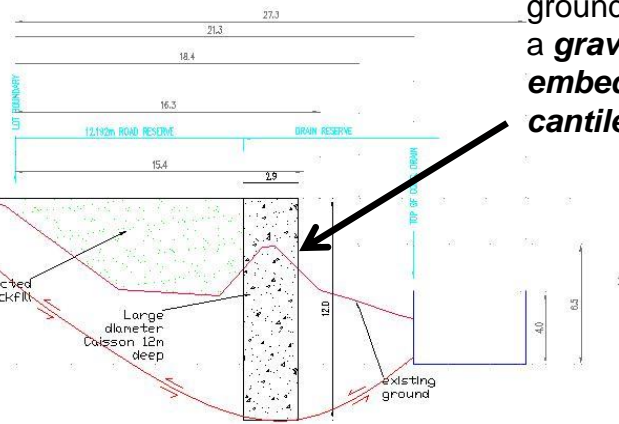
Proposed RC cantilevered piled wall

Interlocked Contiguous SheetPile Caisson

- 1 months to complete
- higher FOS
- Safer in construction



Plan View of Contiguous Caisson wall



Chainage 60.000
Cut Area 0.000 Fill Area 72.480

Proposed Steel Contiguous Caisson wall (section A)

ASP "w" caisson driven into hard ground to acts as a **gravity cell** and **embedded cantilevered wall**.

Advanced SheetPiles

For cantilever retaining wall height 4m



CONVENTIONAL



Large interlocked ASP Ω

solutions Ω wall for retaining failures



Large interlocked ASP Ω sheet pile wall used to stabilized slope failure

Slope Slip protection at GJH Melaka housing estate



Rectangular Caisson Breakwater

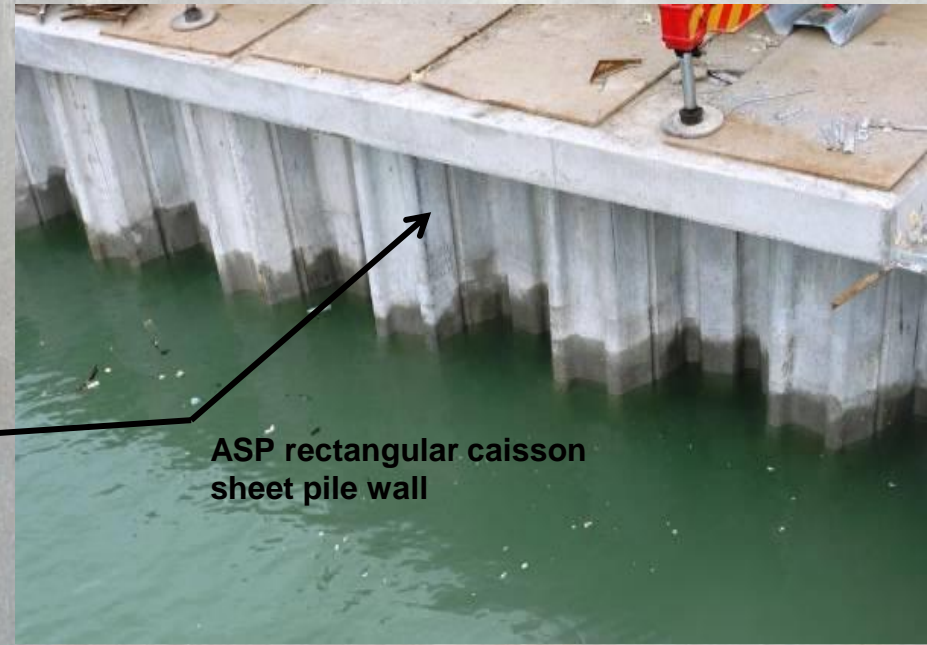


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Rectangular Caisson Breakwater



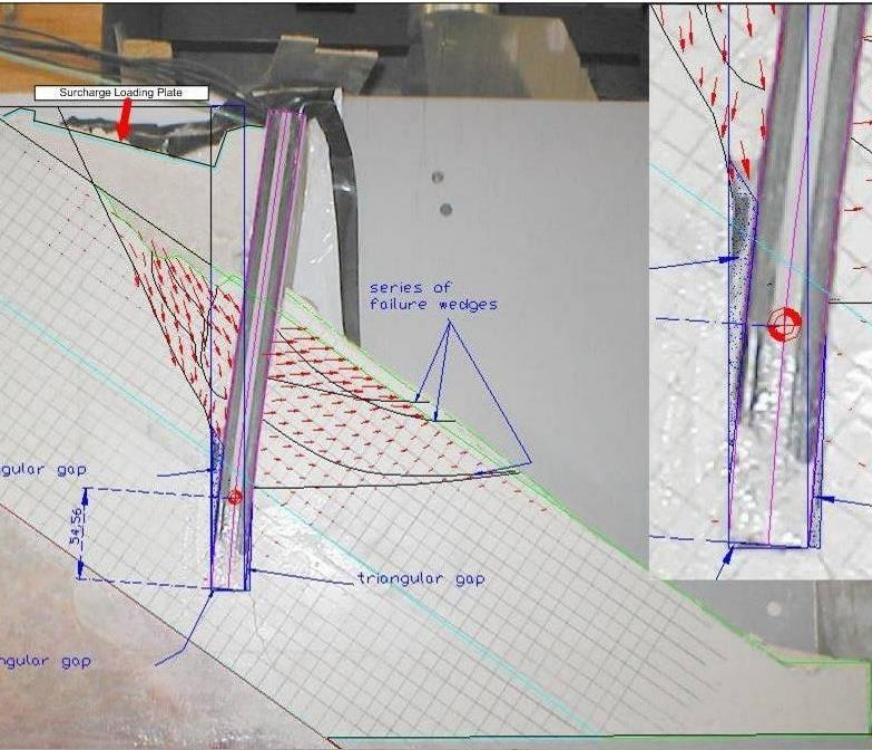
Rectangular Caisson Breakwater



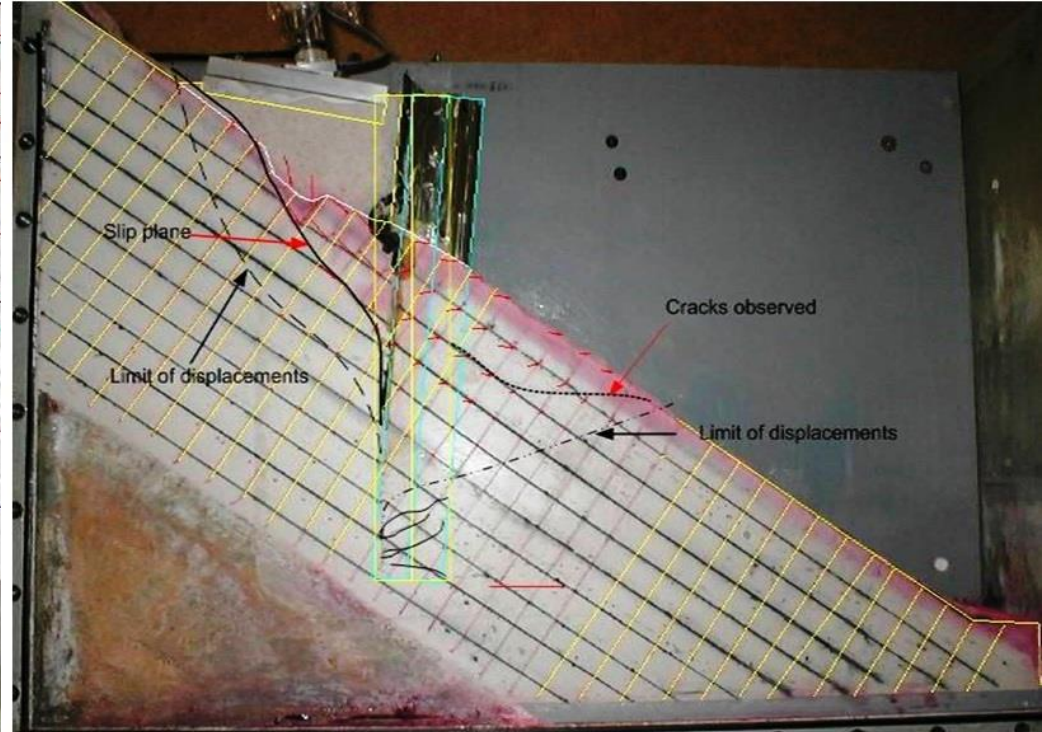
ASP rectangular caisson
sheet pile wall

ASP as a Breakwater at Tanjong Tokong

UWA centrifuge test @ 1:30 scale



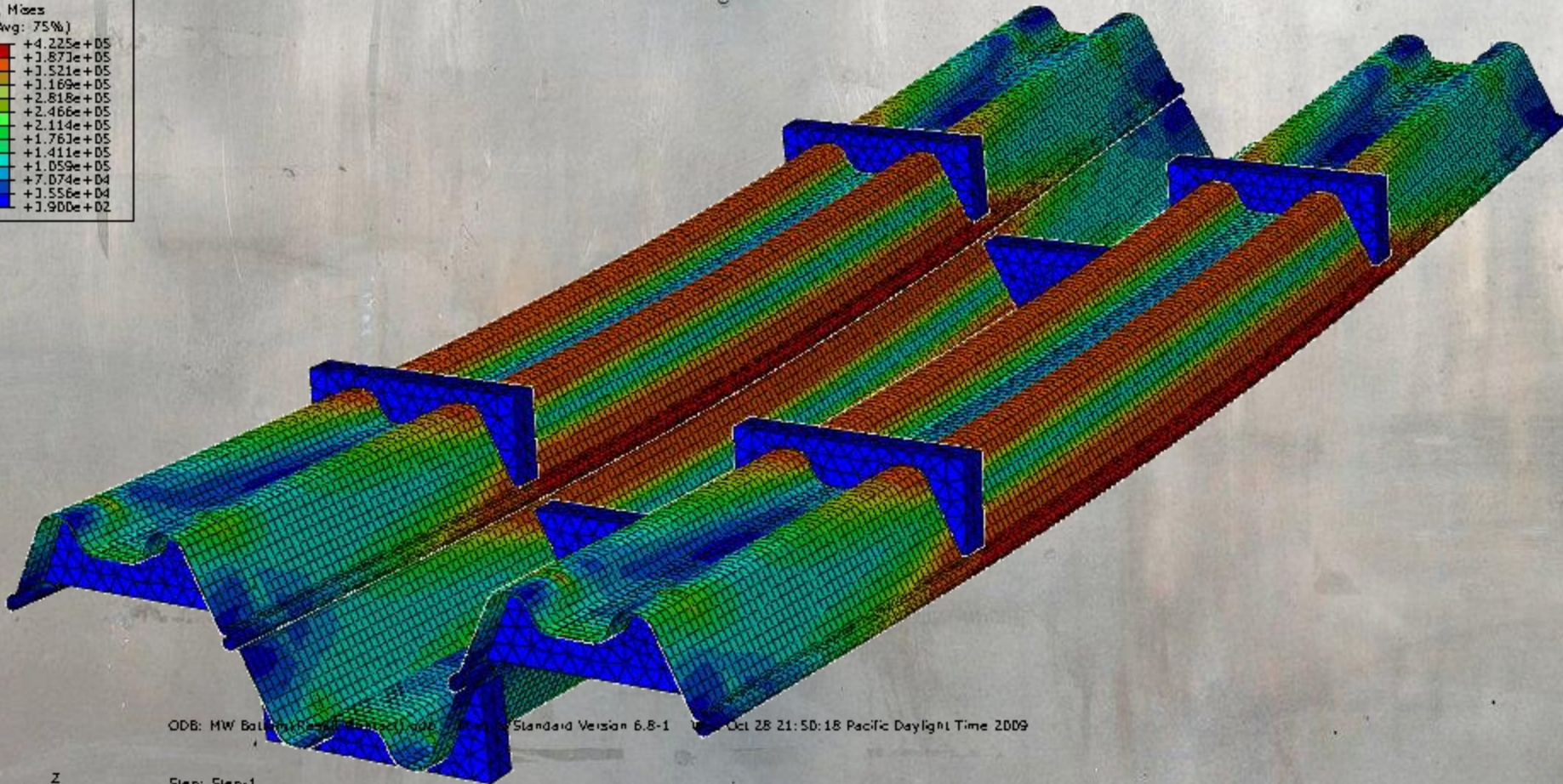
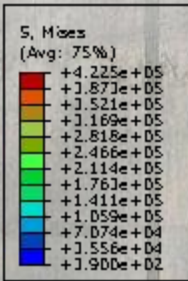
Concrete diaphragm wall



Ω sheet pile wall

Centrifuge test proves Ω sheet pile wall has a higher performance than concrete diaphragm wall of the same stiffness.

analysis



ODB: MW Ball Bearing Analysis.aba Standard Version 6.8-1 Oct 28 21:50:18 Pacific Daylight Time 2009



Step: Step-1
Increment: 18; Step Time = 0.1340
Primary Var: S, Mises
Deformed Var: U Deformation Scale Factor: +1.000e+00

testing @ Uitm Shah Alam using 1:1 scale



Photo 3.0 : Shows sample during test



Photo 4.0 : Shows sample after test

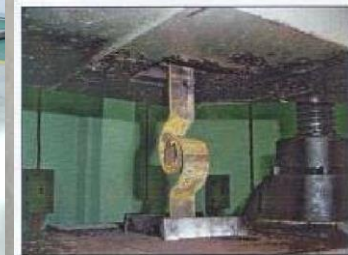


Photo 1.0 : Shows sample during test



Photo 2.0 : Shows sample after test

ASP flexural test has achieved that predicted ultimate stress

DESCRIPTION OF Interlock TECHNOLOGY-2

strength comparison between cold and hot formed Interlock

ASP Interlock Compression Test		
Grade 345 Mpa	345	MPa
thickness	3.9	mm
width	29.3	mm
ultimate compression	3.3	kN
Ulti compression of f_y	8.4%	



39.4

Arcelor AZ18 F1630 Interlock Tension Test		
Grade SW430GP	510	MPa
thickness	9.9	mm
width	25.1	mm
ultimate compression	20.1	kN
Ultimate Tension of f_y	15.9%	



126.7

ASP Interlock Tension Test		
Grade 345 Mpa	345	MPa
thickness	3.9	mm
width	29.3	mm
ultimate compression	5.95	kN
Ultimate Tension of f_y	15.1%	



39.4

Arcelor PCZ18 F1631 Interlock Tension Test		
Grade SW430GP	510	MPa
thickness	9.4	mm
width	25.1	mm
ultimate compression	48.8	kN
Ultimate Tension of f_y	40.5%	



120.3

Extracted from Sirim ref test report :
JD2009504027/SQAS/CBMT/T.REC/MSL/14

Arcelor H1700 F1632 Interlock Tension Test		
Grade SW430GP	510	MPa
thickness	9.6	mm
width	25.1	mm
ultimate compression	22.4	kN
Ultimate Tension of f_y	18.2%	



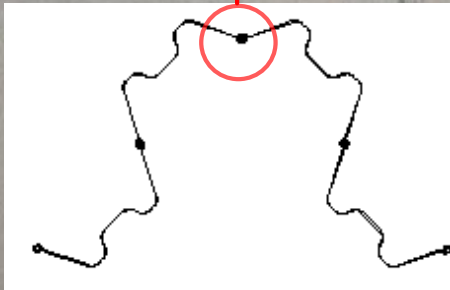
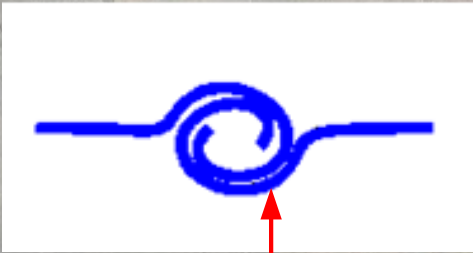
122.9

Extracted from STORK ref certificate report:
MKW 05-1630/32 dated 2005-10-07

DESCRIPTION OF Interlock TECHNOLOGY-1

ASP is

- Cold formed without welding
- Low cost production
- High strength to weight ratio
- Light weight but large walls
- Exclusive for cantilevered walls



ASP $w=94 \text{ kg/m}^2$
 $Z = 5611 \text{ cm}^3/\text{m}$
 $I = 284,836 \text{ cm}^4/\text{m}$

Others is

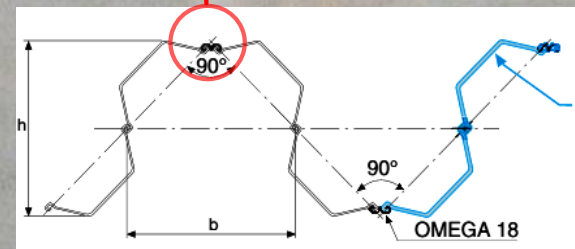
- manually formed,
- welded interlocks without tension nor compression interlocks



ESC $w=277 \text{ kg/m}^2$
 $Z = 5990 \text{ cm}^3/\text{m}$
 $I = 244,810 \text{ cm}^4/\text{m}$

Imported sheet piles is

- HOT Rolled
- high starting cost
- Mass production
- Need struts for deep walls



AU14 Ω $w=153 \text{ kg/m}^2$
 $Z = 5075 \text{ cm}^3/\text{m}$
 $I = 275,830 \text{ cm}^4/\text{m}$

BACKGROUND OF R&D-6 ; IP patents obtained

List of patent s received so far

- Australia ; AU2002100117 (2002) "connector"
- China; ZL 03801345.2(2003) "connector"
- Japan; 4351066 (2003) "connector"
- Malaysia; MY-134175-A "Thin wall sheet pile for use in retaining wall and slope stabilization"
- Singapore 200401244-9 (2003) "connector"
- America; US7877959 B2(2011) "connector"

New automatic shot blast cleaning and epoxy coating line

