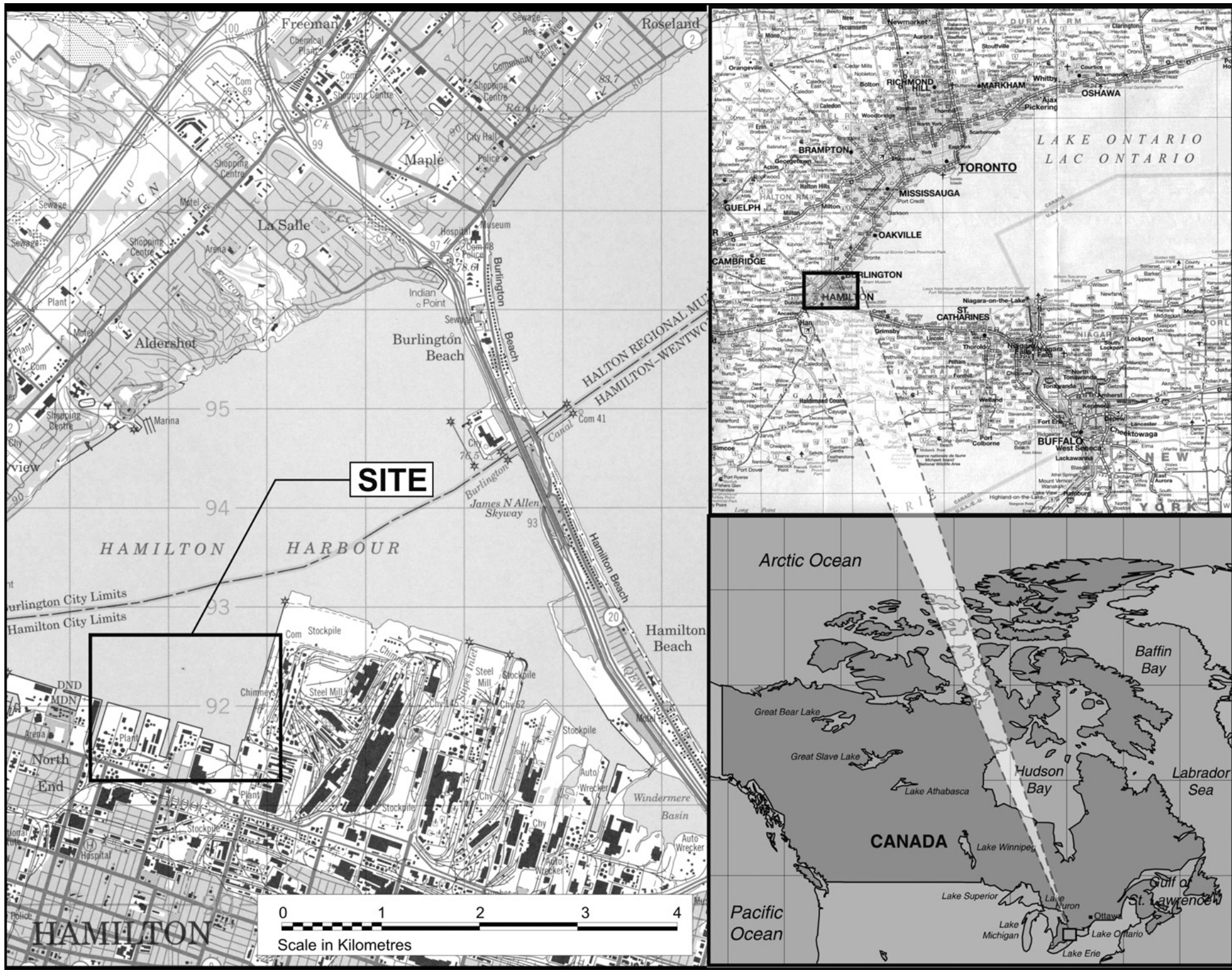


RANDLE REEF SEDIMENT REMEDIATION PROJECT STAGE 1

HAMILTON, ONTARIO



LOCATION PLAN

SCALE: N.T.S.

DRAWING INDEX:

TP-1.0 - TITLE PAGE

TP-1.1 - GENERAL NOTES

C-1.0 - MARINE WORK ZONE PLAN

C-1.1 - STAGING AREA LAYOUT PLAN

C-1.2 - TYP. SITE DETAILS

C-1.3 - FUTURE LAND USE AND LIVE LOAD CAPACITY

S-1.1 - ECF PLAN - EXISTING CONDITIONS AND CONTROL POINTS

S-1.2 - ECF PLAN - NEW WHARF LAYOUT

S-1.3 - ECF SECTIONS - EXISTING STRUCTURES AND NEW CONSTRUCTION

S-1.4 - ECF ELEVATIONS

S-1.5 - ECF ELEVATIONS

S-1.6 - ECF ELEVATIONS

S-1.7 - ECF ELEVATION - INTERNAL CELL WALL

S-1.8 - ECF STEEL DETAILS

S-1.9 - ECF STEEL DETAILS

S-1.10 - ECF STEEL DETAILS

S-1.11 - ECF PUMP PLATFORM DETAILS

S-1.12 - ECF OVERFLOW STRUCTURE DETAILS

S-1.13 - ECF STEEL DETAILS

MA-1.1 - CLASS "B" DREDGING - SEDIMENTS

MA-1.2 - CLASS "B" DREDGING - CLAY

MA-1.3 - MONITORING WELL LAYOUT PLAN AND TYP. DETAILS

MA-1.4 - HISTORIC SAMPLE LOCATIONS

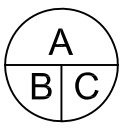
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LEGEND:

revision		date

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A Detail No.
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C drawing no. - where detailed
dessin no. - ou détaillé

project title
titre du projet
HAMILTON **ONTARIO**

**RANDLE REEF SEDIMENT
REMEDICATION PROJECT (STAGE 1)**

drawing title
titre du dessin
TITLE PAGE

drawn by
dessiné par
A.MARCZENKO

designed by
conçu par
B.RIGGS / P.LAMPKIN

approved by
approuvé par

bid
offre
project manager
administrateur
de projets

project date
date du projet
2015-03-27

project no.
no. du projet
R.050927.001

drawing no.
dessiné no.
TP-1.0

Design Criteria

ECF Geotechnical Properties and Requirements

Extracted from Task 2.1.1 – Geotechnical Design Analysis, Randle Reef Sediment Remediation Project, August 31, 2007
Amendment to Geotechnical Basis of Design, Undrained Shear Strength for Earth Pressures, Randle Reef Sediment Remediation Project, August 17, 2010
Documentation of Additional Slope Stability Evaluations, Randle Reef Sediment Remediation Project, December 2010
Updated Global Stability Evaluation of Port Facility, Randle Reef Sediment Remediation Project, March 14, 2011
Geotechnical Investigation, Contaminated Sediment Remediation Project, Randle Reef, Hamilton Harbour, Peto MacCallum Ltd. PML Ref: 13HF033, January 2014
Inferred Soil Properties, Randle Reef Sedimentation Remediation Project, Hamilton, Ontario, InDepth Geotechnical Inc., January 13, 2015

SOIL PARAMETER	FILL MATERIALS						FOUNDATION SOILS			
	QUARRY ROCK	SAND AND GRAVEL CAP	DREDGED FILL CONSOLIDATED TO THE CAP LOAD	DREDGED FILL CONSOLIDATED TO 30kPa PRELOAD	DREDGED FILL CONSOLIDATED TO 60kPa PRELOAD	DREDGED FILL CONSOLIDATED TO 100kPa PRELOAD	UPPER SILTY CLAY	LOWER SILTY CLAY	SAND AND GRAVEL (PORT FACILITY ONLY)	TILL
BULK UNIT WEIGHT (kN/m3)	14.95*	19.6	-	-	-	-	-	-	-	-
SATURATED UNIT WEIGHT (kN/m3)	-	20.4	17.7	17.7	17.7	17.7	19.8	20.5	21.2	21.2
BUOYANT UNIT WEIGHT (kN/m3)	9.33*	10.7	7.9	7.9	7.9	7.9	10.1	10.7	11.5	11.5
UNDRAINED STRENGTH Su (kPa)**	-	-	15.8-2.2EL.	24.8-2.2EL.	33.8-2.2EL.	45.8-2.2EL.	65 kPa at top of layer; 100kPa at bottom of layer	130 kPa at top of layer; 100kPa at bottom of layer	-	150-1000
EFFECTIVE FRICTION ANGLE (DEGREES)	40	35	25	25	25	25	28	28	35	32
EFFECTIVE COHESION INTERCEPT (kPa)	0	0	0	0	0	0	0	0	0	5

NOTES:
* amended following field tests
** EL = Elevation relative to chart datum (m)

Minimum steel sheet pile toe elevations extracted from Task 2.1.1 – Geotechnical Design Analysis Randle Reef Sediment Remediation Project August 31, 2007

Sheet Pile Summary
Steel sheet piles: to CAN/CSA-G40.20/G40.21, grade 350W with the following section modulus (S.M) requirements measured in cm³ per metre of wall (cm³/m):

LOCATION	S.M (cm³/m)	TYPE
Sta 0+000E to 0+300E	3810	1 (Roll Form Group) JZ127.13
Sta 0+300E to 0+928E	2760	2 (Roll Form Group) JZ127
Sta 0+000 to 0+868.3l	1340	3 (Roll Form Group) WEZ95
Cross Walls (#1,2,6-10)	1300	4 (Roll Form Group) EZ95
Cross Walls (#3-5)	1340	3 (Roll Form Group) WEZ95
Overflow structure piling	1300	4 (Roll Form Group) EZ95
Internal cell wall piling	1100	5 (Roll Form Group) EZ80

Design Dredge Depth

Stations	ECF	Design Dredge Depth
0+000E to 0+291.3E		EL.-9.1m
0+291.3E to 0+300E		EL.-9.6m
0+300E to 0+337.4E		EL.-9.3m
0+337.4E to 0+359E		EL.-9.6m
0+359E to 0+389.3E		EL.-9.3m
0+389.3E to 0+591.7E		EL.-8.7m
0+591.7E to 0+649.8E		EL.-9.2m
0+649.8E to 0+762.4E		EL.-9.3m
0+762.4E to 0+802.9E		EL.-9.0m
0+802.9E to 0+927.7E		EL.-7.4m

- GENERAL NOTES:
- 1) BATHYMETRIC DATA IS BASED ON THE CANADIAN HYDROGRAPHIC SERVICE STUDY DATED 2002.
- 2) UPLAND SURVEY DATA ARE FROM MACKAY, MACKAY, AND PETERS LIMITED, OCTOBER 23, 2008. THE UPLAND ELEVATIONS THAT APPEAR IN THE DRAWINGS WERE CONVERTED INTO CHART DATUM FROM THE MACKAY, MACKAY, AND PETERS LIMITED, OCTOBER 23, 2008 SURVEY.
- 3) DRAWING UNITS ARE IN MILLIMETERS (mm), UNLESS OTHERWISE NOTED.
- 4) HORIZONTAL DATUM IS NAD83 (CSRS).
- 5) VERTICAL DATUM IS CHART DATUM I.G.L.D. 1985.
- 6) ALL LOCATIONS REFLECT AVAILABLE INFORMATION AND ARE APPROXIMATE, PROVIDED FOR REFERENCE ONLY AND ARE SUBJECT TO FIELD VERIFICATION.
- 7) RAILWAY TRACKS, UNDERGROUND FACILITIES, POLES, STRUCTURES, AND UTILITIES HAVE BEEN PLOTTED FROM AVAILABLE SURVEYS AND RECORDS, AND THEREFORE, THEIR LOCATIONS MUST BE CONSIDERED APPROXIMATE ONLY. THERE MAY BE OTHER FEATURES, THE EXISTENCE OF WHICH ARE AT PRESENT UNKNOWN. CONTRACTOR TO FIELD VERIFY ALL LOCATIONS.
- 8) THE CONTRACTOR SHALL, AT HIS OWN COST AND EXPENSE, SUSTAIN IN THEIR PLACES AND PERMANENTLY PROTECT FROM DIRECT OR INDIRECT INJURY ANY AND ALL UTILITIES, STRUCTURES, AND PROPERTY IN THE VICINITY OF HIS WORK, WHETHER OVER OR UNDERGROUND, OR WHICH APPEAR WITHIN THE TRENCH OR EXCAVATIONS. EXISTING STRUCTURES INCLUDE BUT ARE NOT LIMITED TO: US STEEL (STELCO) DOCK WALL, STELCO INTAKE, ECF WALLS, PIERS 11, 14 AND 15.
- 9) ANY DAMAGE TO EXISTING INFRASTRUCTURE AND/OR FACILITIES IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE REPAIRED AT NO COST TO HAMILTON PORT AUTHORITY.
- 10) THE CONTRACTOR SHALL COMPLY WITH ENVIRONMENTAL PROTECTION AND ENVIRONMENTAL MONITORING REQUIREMENTS IN ACCORDANCE WITH THE SPECIFICATIONS AND ALL APPLICABLE REGULATIONS, BYLAWS, AND CODES.
- 11) CONTRACTOR SHALL NOT INTERFERE OR HINDER NAVIGATION OR PORT OPERATIONS.
- 12) CONTRACTOR SHALL NOT INTERFERE WITH US STEEL (STELCO) OR HAMILTON PORT AUTHORITY TENANT OPERATIONS.
- 13) CONTRACTOR TO VERIFY ALL STRUCTURE TYPES AND COMPONENTS WITHIN LIMITS OF WORK. SUBMIT FINDINGS TO DEPARTMENTAL REPRESENTATIVE PRIOR TO CONSTRUCTION.
- 14) TIE ROD CROSS SECTIONAL AREA: TYPE #1 = 3168mm² AND TYPE #2 = 2581mm².

ECF - TIE ROD AND WALE SCHEDULE

SSP FACE WALL	TIE RODS	TYPE	TYP. SPACING	WALE SIZE	TYPE
0+000E TO 0+401.2E	63mmØ	1	2540mmC/C	C380x60	1
0+401.2E TO 0+771.5E	57mmØ	2	2540mmC/C	C380x50	2
0+771.5E TO 0+927.7E	63mmØ	1	2540mmC/C	C380x50	2

SSP ANCHOR WALL	WALE SIZE (UPPER)	TYPE
0+000l TO 0+364.7l	C380x60	1
0+364.7l TO 0+700l	C380x50	2
0+700l TO 0+868.3l	C380x50	2

SSP CROSS WALL	WALE SIZE	TYPE
1	C380x60	1
2	C380x60	1
3	C380x50	2
4	C380x50	2
5	C380x50	2
6	C380x50	2
7	C380x50	2
8	C380x60	1
9	C380x60	1
10	C380x60	1

INTERNAL SSP CELL WALL	WALE SIZE	TYPE
	W200x31	3



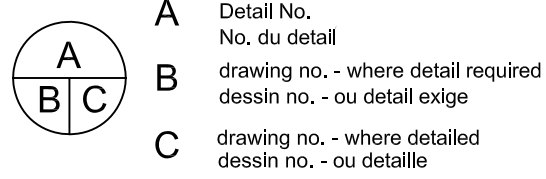
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1240 Commissioner's Road West, Suite 205
London, Ontario N6K 1C7
(519)-657-1040

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LEGEND:

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Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.



project title
titre du projet
HAMILTON ONTARIO

RANDLE REEF SEDIMENT
REMEDIATION PROJECT (STAGE 1)

drawing title
titre du dessin
GENERAL NOTES

drawn by
dessiné par
A.MARCZENKO

designed by
conçu par
B.RIGGS / P.LAMPKIN

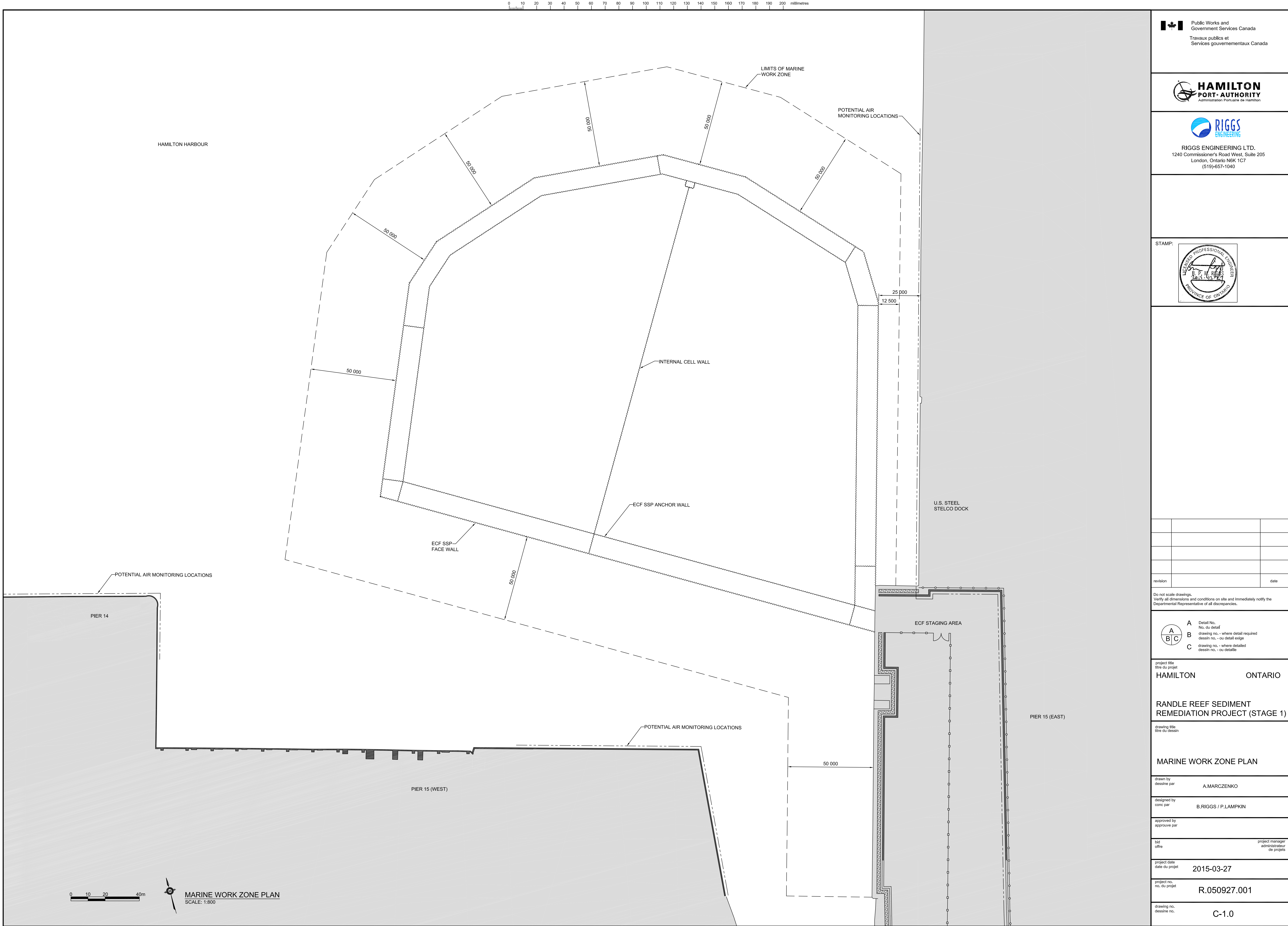
approved by
approuvé par


bid
offre
project manager
administrateur de projets

project date
date du projet
2015-03-27


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no. du projet
R.050927.001

drawing no.
dessiné no.
TP-1.1






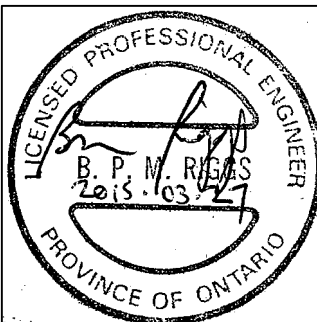
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Government Services Canada
Travaux publics et
Services gouvernementaux Canada



HAMILTON
PORT AUTHORITY
Administration Portuaire de Hamilton



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A

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C

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drawing no. - where detail required
dessin no. - où détail exigé

drawing no. - where detailed
dessin no. - où détaillé

project title
titre du projet

HAMILTONONTARIO

drawing title
titre du dessin

RANDLE REEF SEDIMENT
REMEDIATION PROJECT (STAGE 1)

drawn by
dessiné par

A.MARCZENKO

designed by
conçu par

B.RIGGS / P.LAMPKIN

approved by
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bid
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project manager
administrateur
de projets

project date
date du projet

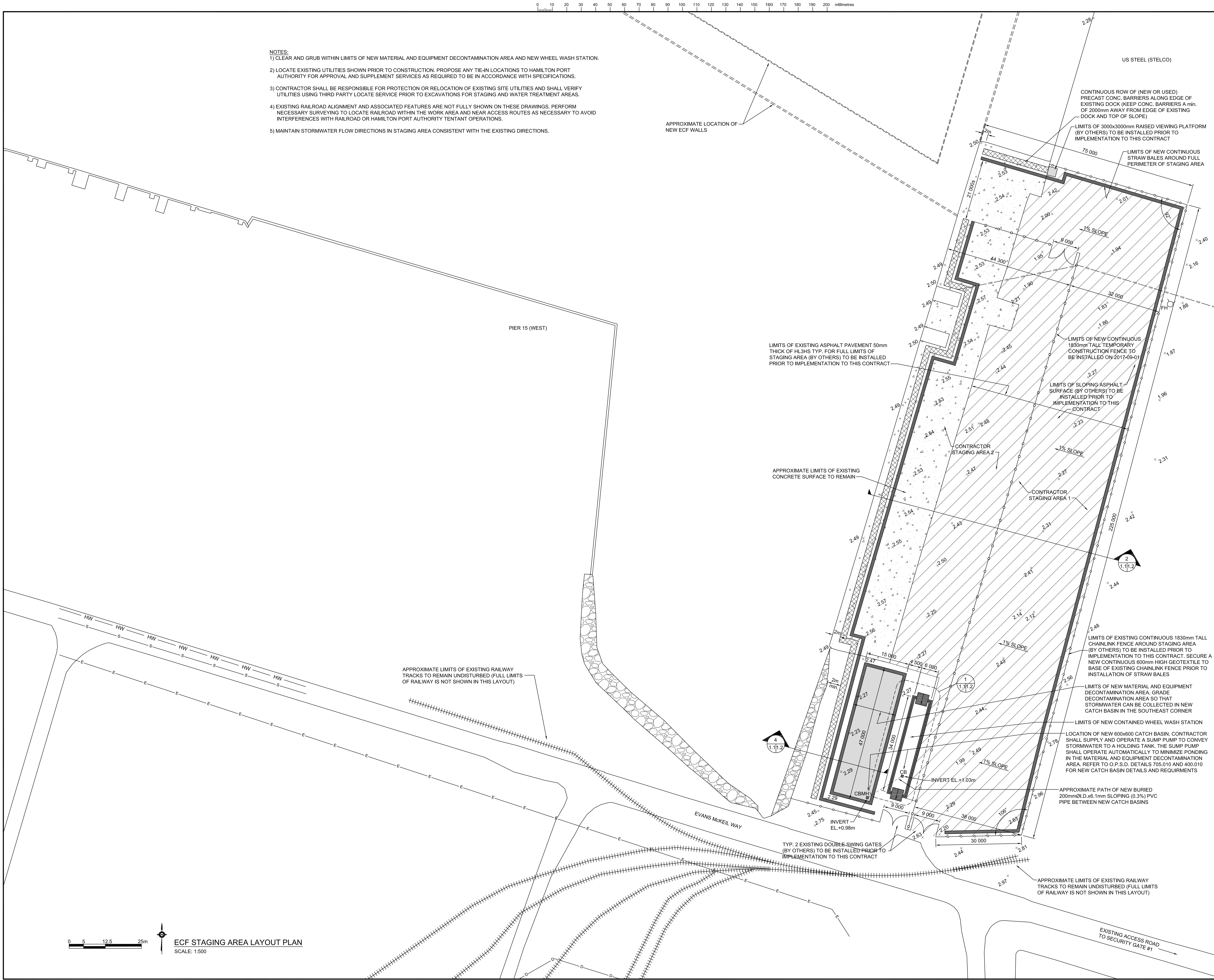
2015-03-27

project no.
no. du projet

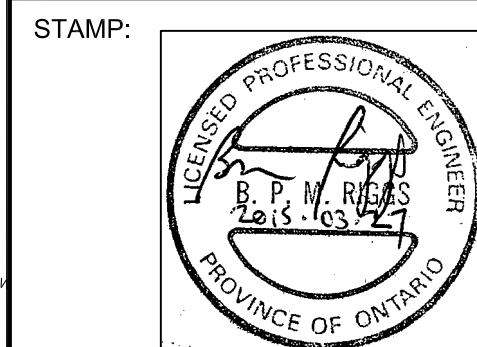
R.050927.001

drawing no.
dessiné no.

C-1.0



- NOTES:
- 1) CLEAR AND GRUB WITHIN LIMITS OF NEW MATERIAL AND EQUIPMENT DECONTAMINATION AREA AND NEW WHEEL WASH STATION.
 - 2) LOCATE EXISTING UTILITIES SHOWN PRIOR TO CONSTRUCTION. PROPOSE ANY TIE-IN LOCATIONS TO HAMILTON PORT AUTHORITY FOR APPROVAL AND SUPPLEMENT SERVICES AS REQUIRED TO BE IN ACCORDANCE WITH SPECIFICATIONS.
 - 3) CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OR RELOCATION OF EXISTING SITE UTILITIES AND SHALL VERIFY UTILITIES USING THIRD PARTY LOCATE SERVICE PRIOR TO EXCAVATIONS FOR STAGING AND WATER TREATMENT AREAS.
 - 4) EXISTING RAILROAD ALIGNMENT AND ASSOCIATED FEATURES ARE NOT FULLY SHOWN ON THESE DRAWINGS. PERFORM NECESSARY SURVEYING TO LOCATE RAILROAD WITHIN THE WORK AREA AND NEAR ACCESS ROUTES AS NECESSARY TO AVOID INTERFERENCES WITH RAILROAD OR HAMILTON PORT AUTHORITY TENTANT OPERATIONS.
 - 5) MAINTAIN STORMWATER FLOW DIRECTIONS IN STAGING AREA CONSISTENT WITH THE EXISTING DIRECTIONS.



- LEGEND:
- EXISTING WATER LINES
 - EXISTING HYDRO LINES
 - EXISTING SANITARY SEWER
 - EXISTING STORM DRAIN
 - EXISTING TEMPORARY FENCE
 - EXISTING CHAINLINK FENCE
 - EXISTING FIRE HYDRANT
 - NEW CATCH BASINS
 - NEW MAINTENANCE HOLE
 - EXISTING ELEVATIONS
 - NEW STRAW BALES
 - NEW CONC. BARRIERS
 - EXISTING VEGETATION LIMITS
 - EXISTING ASPHALT SURFACE
 - EXISTING CONCRETE SURFACE

revision		date

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B	No. du detail
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	drawing no. - where detailed dessin no. - ou détaillé

project title
titre du projet
HAMILTON **ONTARIO**

**RANDLE REEF SEDIMENT
REMEDIATION PROJECT (STAGE 1)**

drawing title
titre du dessin

STAGING AREA LAYOUT PLAN

drawn by
dessiné par **A.MARCZENKO**

designed by
conçu par **B.RIGGS / P.LAMPKIN**

approved by
approuvé par

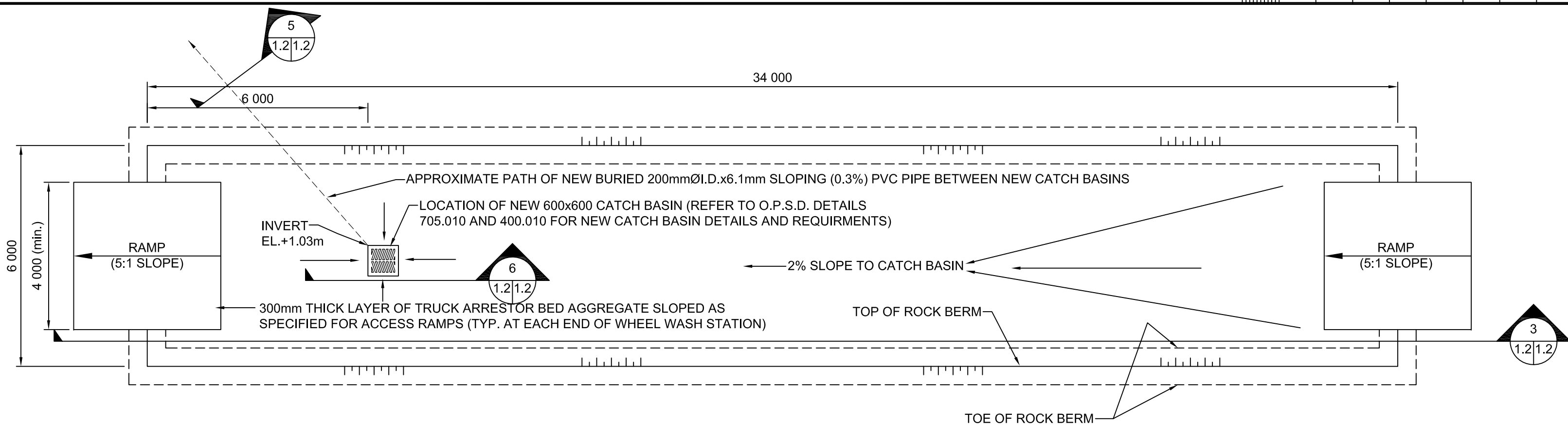
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project date
date du projet **2015-03-27**

project no.
no. du projet **R.050927.001**

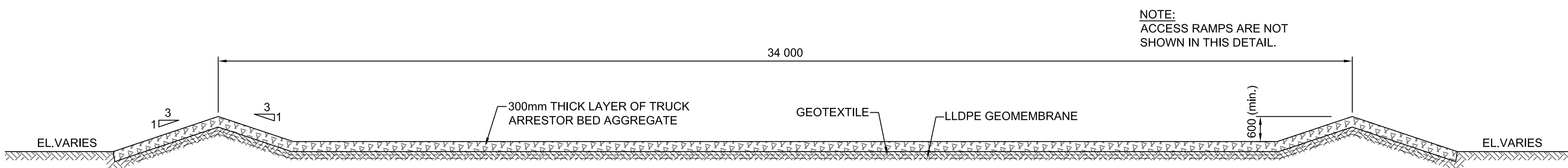
drawing no.
dessiné no. **C-1.1**

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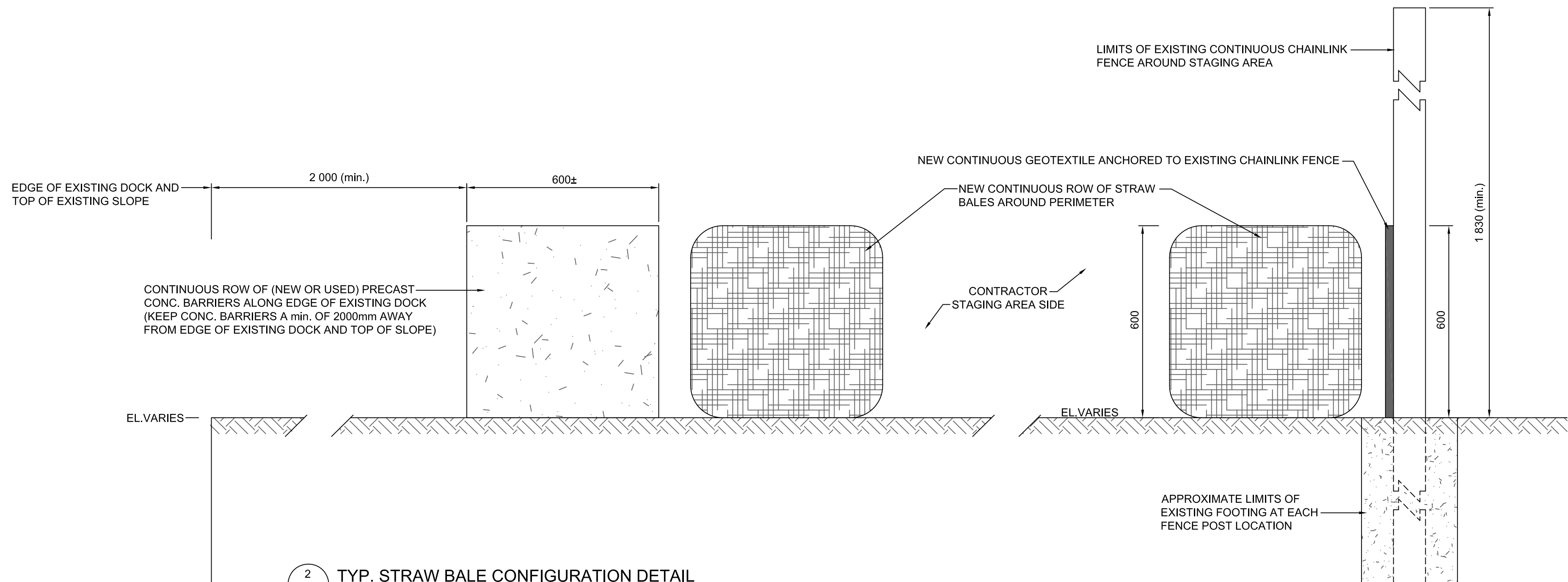


1 WHEEL WASH STATION LAYOUT
SCALE: 1:100

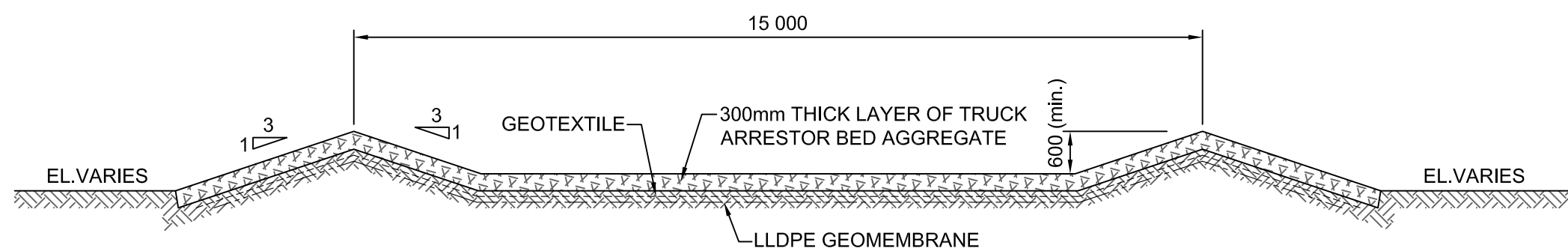
NOTE:
1) WHEEL WASH STATION TO BE SLOPED TOWARD CATCH BASIN (AT 2% SLOPE) TO FACILITATE COLLECTION AND REMOVAL OF WASH FLUIDS. CONTRACTOR TO COLLECT AND MANAGE WASH FLUIDS (WASTE WATER) FROM THE WHEEL WASH STATION.
2) SUBGRADE SURFACE SHALL BE STRIPPED AND GRADED AND SHALL PROVIDE A UNIFORM SURFACE THAT IS FREE OF DELETERIOUS MATERIALS THAT COULD DAMAGE THE LLDPE GEOMEMBRANE (EX. SHARP STONES, WOOD DEBRIS, CONSTRUCTION DEBRIS).



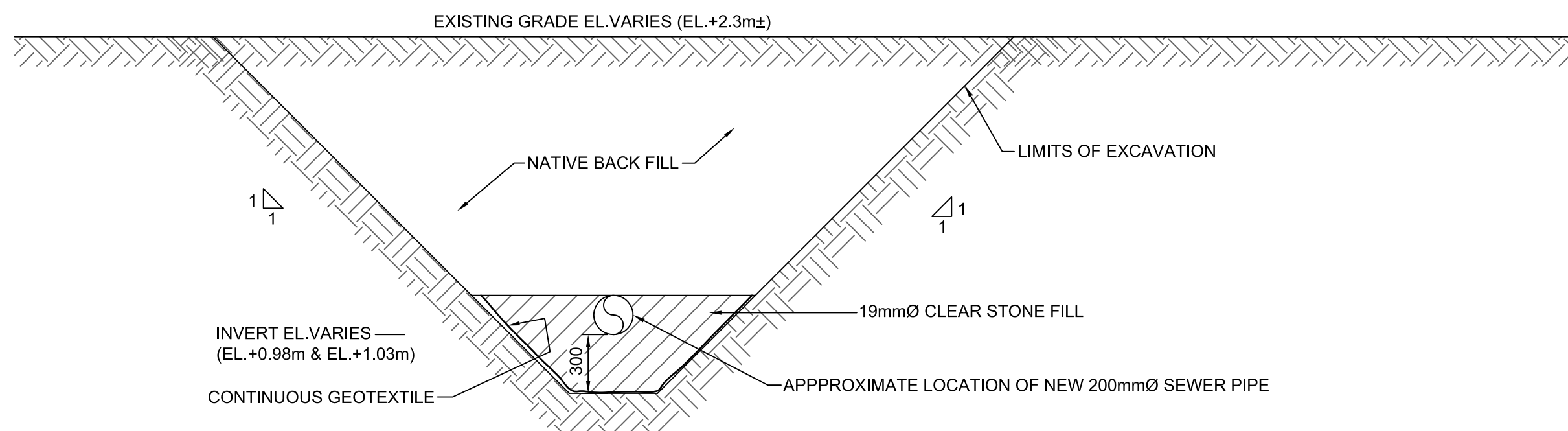
3 WHEEL WASH STATION SECTION
SCALE: 1:100



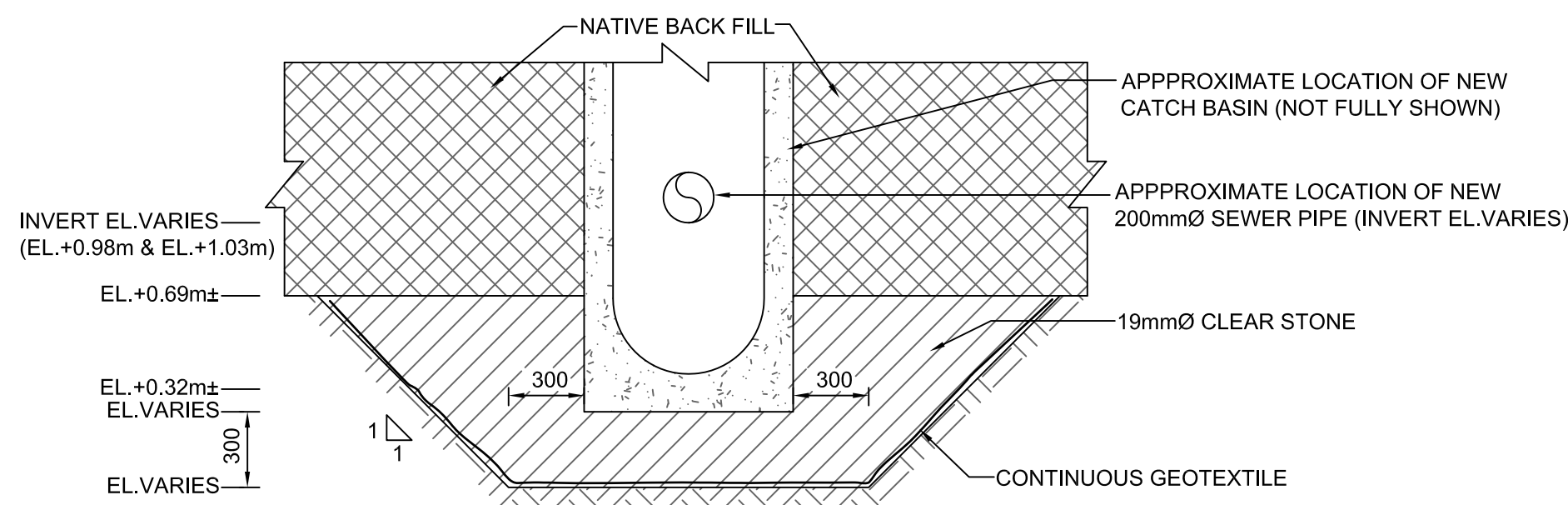
2 TYP. STRAW BALE CONFIGURATION DETAIL
SCALE: 1:10



4 MATERIAL AND EQUIPMENT DECONTAMINATION AREA SECTION
SCALE: 1:100

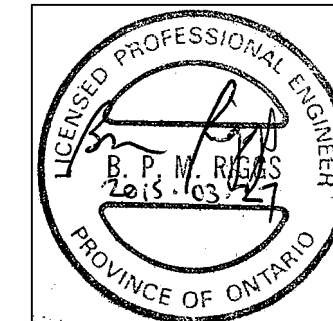


5 TYP. BACKFILL SECTION AT NEW SEWER PIPE LOCATION
SCALE: 1:25



6 TYP. BACKFILL SECTION AT NEW CATCH BASIN LOCATIONS
SCALE: 1:25

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project title
titre du projet
HAMILTON ONTARIO

RANDLE REEF SEDIMENT
REMEDIATION PROJECT (STAGE 1)

drawing title
titre du dessin

TYP. SITE DETAILS

drawn by
dessiné par
A.MARCZENKO

designed by
conçu par
B.RIGGS / P.LAMPKIN

approved by
approuvé par

bid
offre
project manager
administrateur
de projets

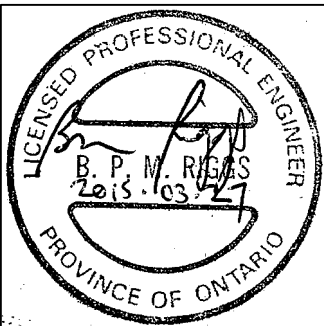
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date du projet
2015-03-27

project no.
no. du projet
R.050927.001

drawing no.
dessiné no.
C-1.2

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STAMP:



revision		date

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B	No. du detail
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	drawing no. - where detailed dessin no. - ou détaillé

project title
titre du projet
HAMILTON **ONTARIO**

**RANDLE REEF SEDIMENT
REMEDIATION PROJECT (STAGE 1)**

drawing title
titre du dessin

**FUTURE LAND USE AND
LIVE LOAD CAPACITY**

drawn by
dessiné par
A.MARCZENKO

designed by
conçu par
B.RIGGS / P.LAMPKIN

approved by
approuvé par

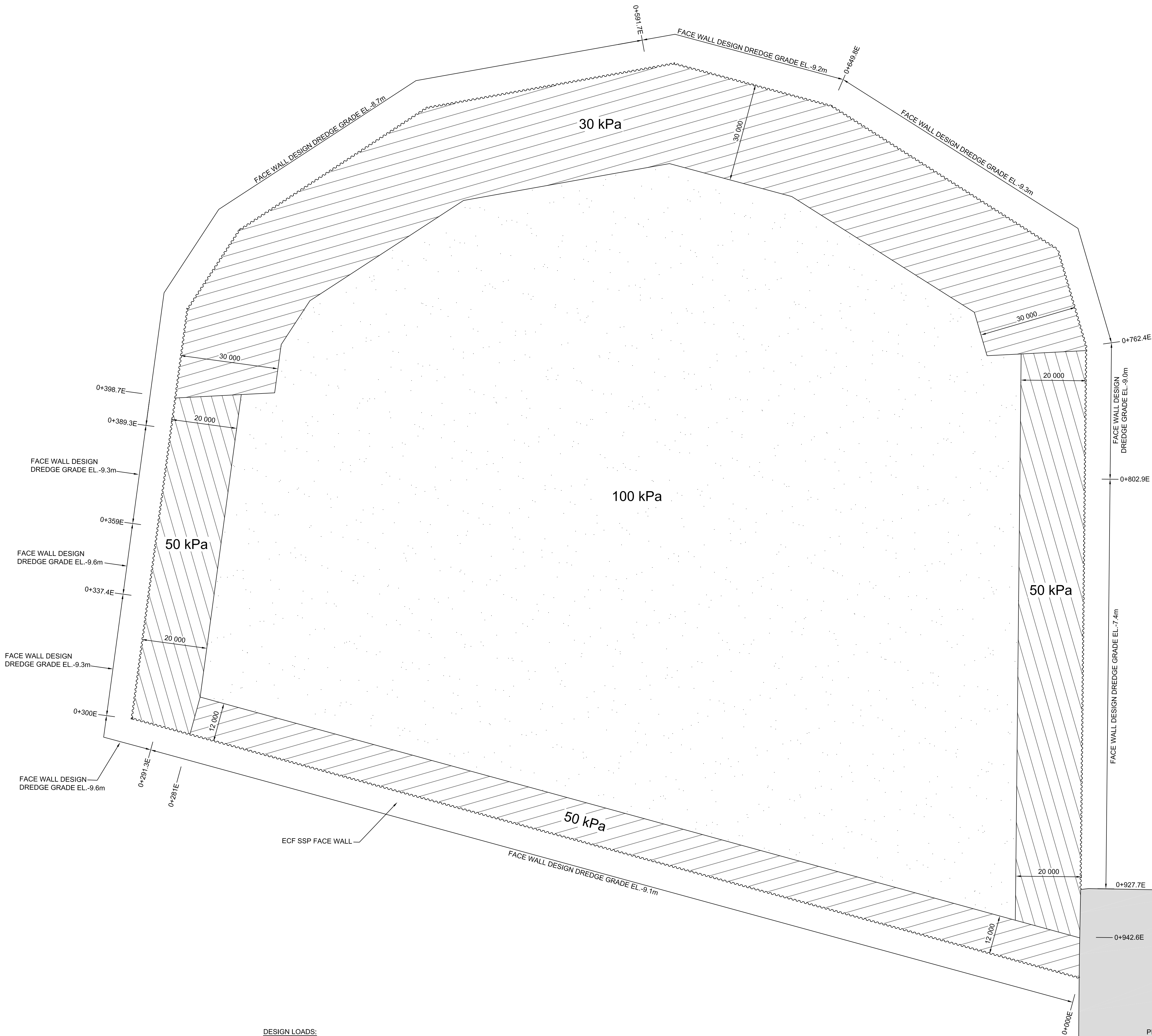
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administrateur
de projets

project date
date du projet
2015-03-27

project no.
no. du projet
R.050927.001

drawing no.
dessiné no.
C-1.3

HAMILTON HARBOUR

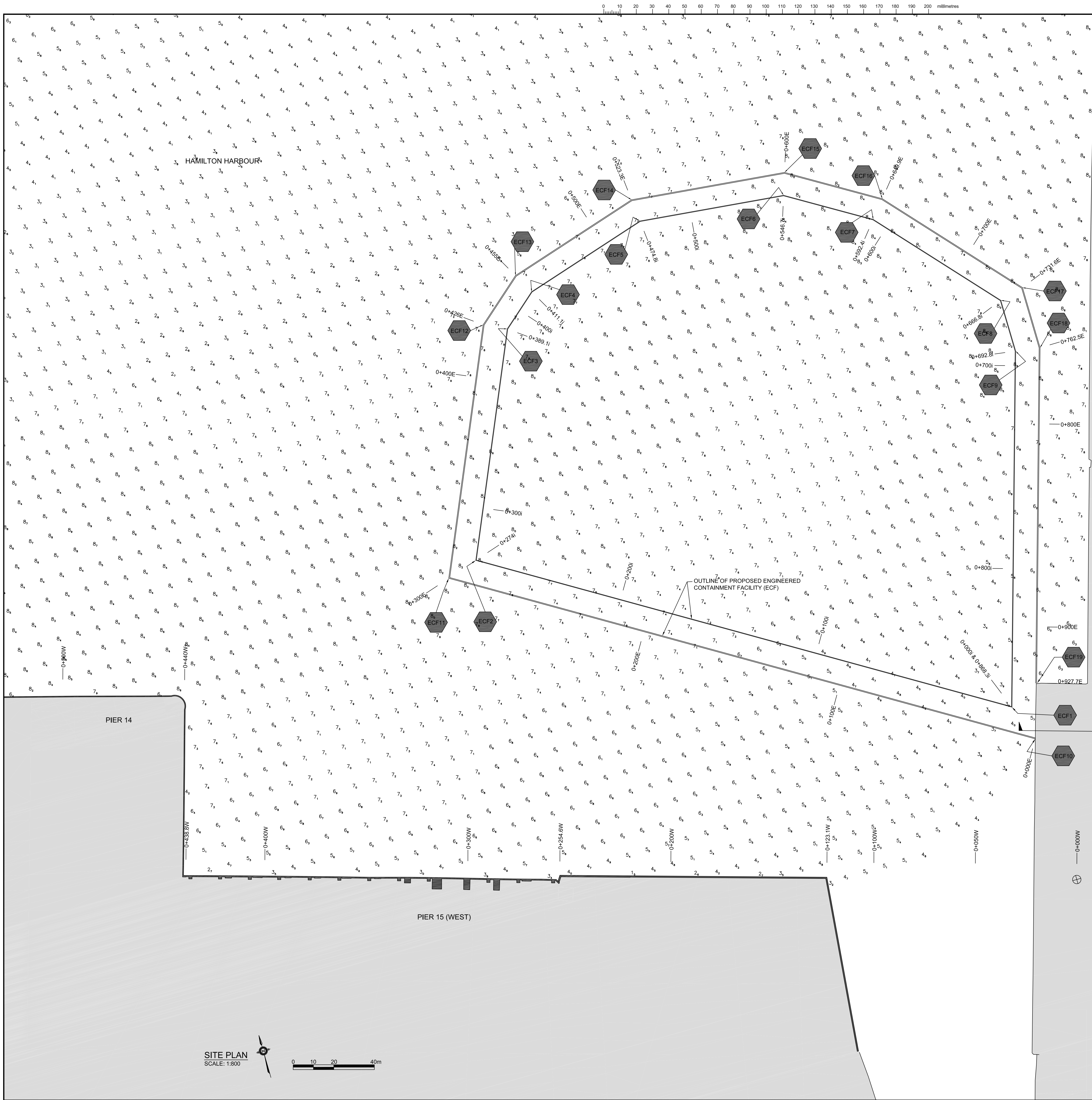


DESIGN LOADS:
IN SERVICE DESIGN LOADS
1) 0+000E TO 0+281E: 50 kPa WITHIN 12 METERS OF THE FACEWALL AND 100 kPa OTHERWISE.
2) 0+281E TO 0+398.7E: 50 kPa WITHIN 20 METERS OF THE FACEWALL AND 100 kPa OTHERWISE.
3) 0+398.7E TO 0+762.4E: 30 kPa WITHIN 30 METERS OF THE FACEWALL AND 100 kPa OTHERWISE.
4) 0+762.4E TO 0+942.6E: 50 kPa WITHIN 20 METERS OF THE FACEWALL AND 100 kPa OTHERWISE.
5) IN SERVICE DESIGN LOADS TO BE CONFIRMED AFTER STAGE 3 CONSTRUCTION MONITORING.

FUTURE LAND USE AND LIVE LOAD CAPACITY SITE PLAN
SCALE: 1:600

0 5 15 30m

PIER 15 (WEST)

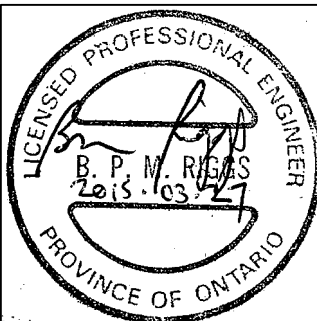


SITE PLAN
SCALE: 1:800

0 10 20 40m

- Soundings are valid only for the date and time they were taken.
- This plan is NOT FOR NAVIGATION
- In the ordinary practice of good seamanship, navigators use updated hydrographic charts for navigation of their vessels.

STAMP:



LEGEND:

DEPTH BELOW CHART DATUM
CONTROL POINTS

- NOTES:
- 1) BATHYMETRIC DATA IS BASED ON THE CANADIAN HYDROGRAPHIC SERVICE STUDY DATED 2002.
 - 2) DRAWING UNITS ARE IN METERS UNLESS NOTED OTHERWISE.
 - 3) HORIZONTAL DATUM IS REFERENCED TO NAD83.
 - 4) SOUNDINGS ARE SHOWN IN METERS BELOW CHART DATUM I.G.L.D. 1985.
 - 5) THE SOUNDING INFORMATION SHOWN REPRESENTS RESULTS OF THE SURVEY MADE ON THE DATES SPECIFIED AND CAN ONLY BE CONSIDERED AS INDICATING THE CONDITIONS AT THAT TIME.

Do not scale drawings.
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A Detail No.
No. du détail
B drawing no. - where detail required
dessin no. - ou détail exigé
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project title
titre du projet
HAMILTON ONTARIO

RANDLE REEF SEDIMENT
REMEDIATION PROJECT (STAGE 1)

drawing title
titre du dessin

ECF, PLAN
EXISTING CONDITIONS
AND CONTROL POINTS

drawn by
dessiné par A.MARCZENKO

designed by
conçu par B.RIGGS / P.LAMPKIN

approved by
approuvé par

bid
offre project manager
administrateur
de projets

project date
date du projet 2015-03-27

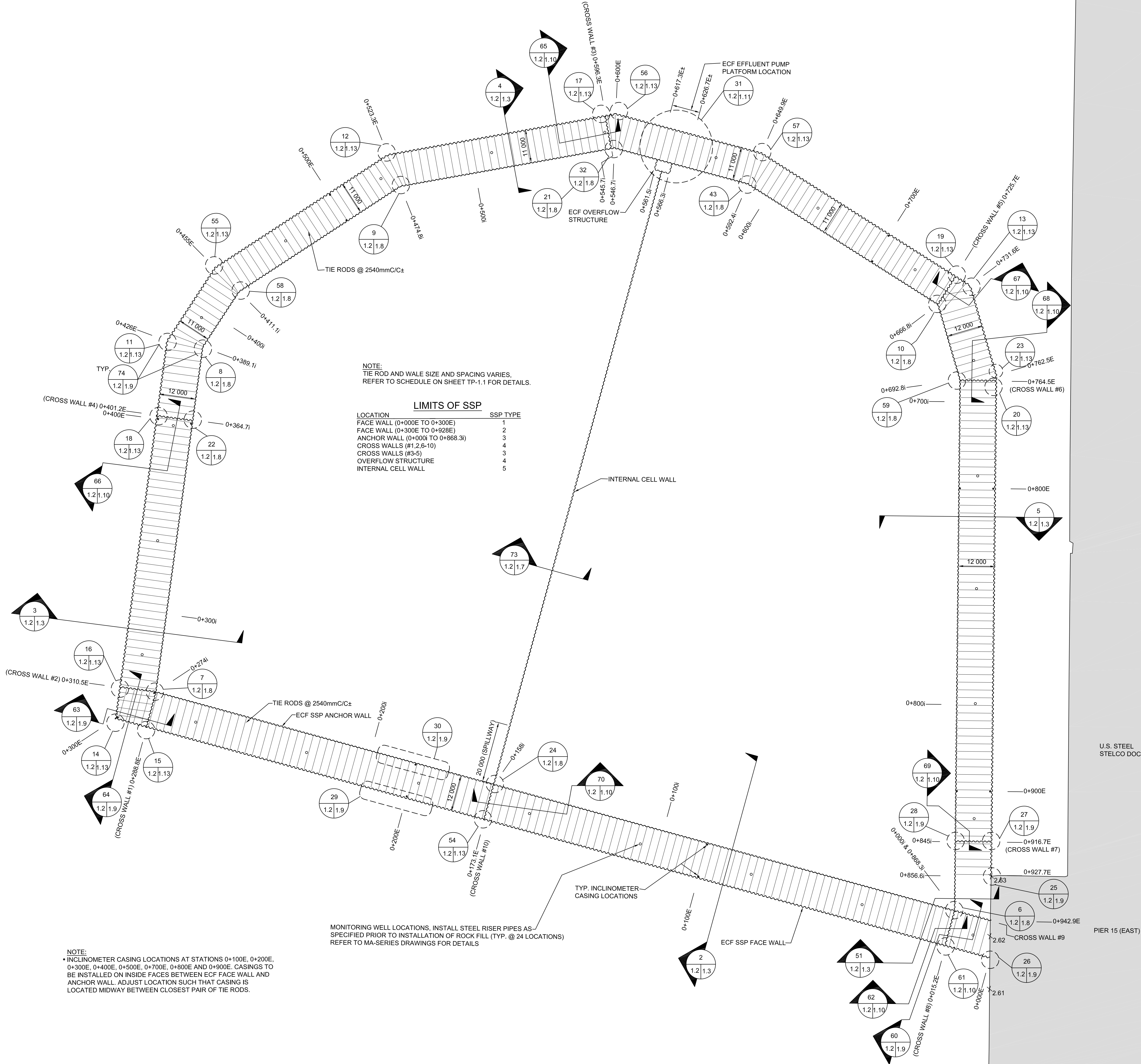
project no.
no. du projet R.050927.001

drawing no.
dessiné no. S-1.1

ENGINEERED CONTAINMENT FACILITY CONTROL POINTS			
POINT NO.	STATION	NORTHING	EASTING
ECF1	0+000I	4,791,653.85	594,738.37
ECF2	0+274I	4,791,796.20	594,504.36
ECF3	0+389.II	4,791,901.57	594,550.71
ECF4	0+411.II	4,791,915.88	594,567.31
ECF5	0+474.8I	4,791,934.65	594,628.22
ECF6	0+546.7I	4,791,927.33	594,699.71
ECF7	0+592.4I	4,791,903.73	594,738.89
ECF8	0+666.8I	4,791,848.10	594,788.32
ECF9	0+692.8I	4,791,822.02	594,788.47
ECF10	0+000E	4,791,635.70	594,745.11
ECF11	0+300E	4,791,791.41	594,489.14
ECF12	0+426E	4,791,906.77	594,539.88
ECF13	0+455E	4,791,925.71	594,561.87
ECF14	0+523.3E	4,791,945.82	594,627.11
ECF15	0+600E	4,791,938.02	594,703.27
ECF16	0+649.9E	4,791,912.29	594,746.00
ECF17	0+731.6E	4,791,851.17	594,800.30
ECF18	0+767.2E	4,791,820.30	594,800.48
ECF19	0+932.7E	4,791,661.89	594,753.28

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 millimetres

HAMILTON HARBOUR



Public Works and
Government Services Canada
Travaux publics et
Services gouvernementaux Canada

HAMILTON
PORT AUTHORITY
Administration Portuaire de Hamilton

RIGGS
ENGINEERING

RIGGS ENGINEERING LTD.
1240 Commissioner's Road West, Suite 205
London, Ontario N6K 1C7
(519)-657-1040

STAMP:



LEGEND:

- ± 2.87 EXISTING ELEVATIONS
○ MONITORING WELL LOCATIONS
● INCLINOMETER CASING LOCATIONS

Do not scale drawings.
Verify all dimensions and conditions on site and immediately notify the
Departmental Representative of all discrepancies.

A Detail No.
No. du détail
B drawing no. - where detail required
dessin no. - ou detail exigé
C drawing no. - where detail
dessin no. - ou detail

project title
titre du projet
HAMILTON ONTARIO

**RANDLE REEF SEDIMENT
REMEDIATION PROJECT (STAGE 1)**

drawing title
titre du dessin
**ECF, PLAN
NEW WHARF LAYOUT**

drawn by
dessiné par
A.MARCZENKO

designed by
conçu par
B.RIGGS / P.LAMPKIN

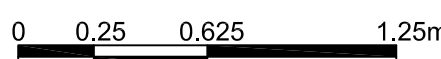
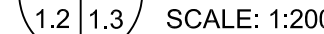
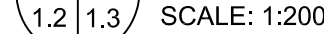
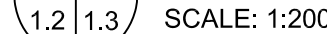
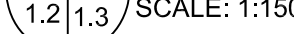
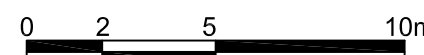
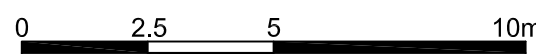
approved by
approuvé par

bid
offre
project manager
administrateur
de projets


project date
date du projet
2015-03-27

project no.
no. du projet
R.050927.001

drawing no.
dessiné no.
S-1.2



Do not scale drawings.
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	A	Detail No. No. du détail
	B	drawing no. - where detail required dessin no. - ou détail exigé
	C	drawing no. - where detailed dessin no. - ou détaillé

project title
titre du projet

HAMILTON ONTARIO

RANDLE REEF SEDIMENT REMEDIATION PROJECT (STAGE 1)

drawing title
titre du dessin

ECF, SECTIONS
EXISTING STRUCTURE AND
NEW CONSTRUCTION

drawn by

dessine par

designed by
ooh ooh

approved by

bid

project date

2015-03-27

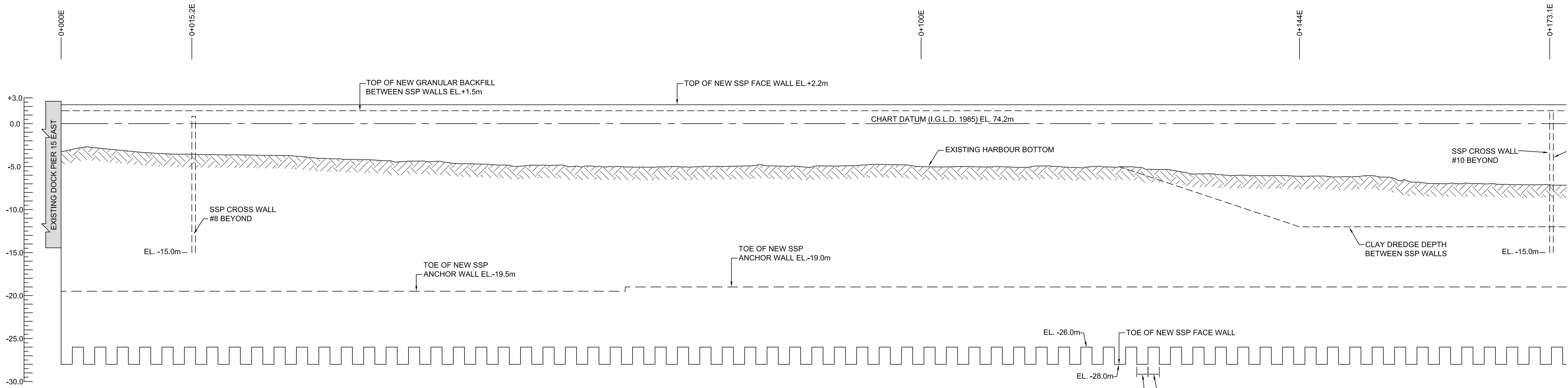
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R.050527.001

drawing no.

dessine no. S-1.3

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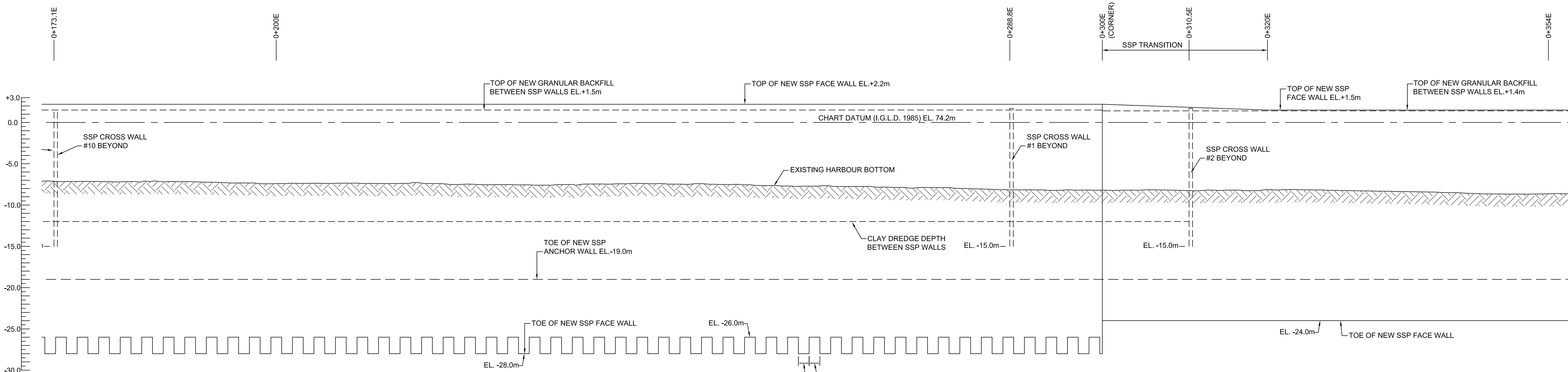


ECF ELEVATION - STATION 0+000E TO 0+173E
SCALE: 1:250



NOTE:
1) TOP OF ANCHOR WALL BEYOND IS NOT SHOWN IN THIS ELEVATION VIEW, REFER TO TYP. SECTIONS FOR DETAILS.
2) REFER TO SHEET S-1.3 FOR TOP ELEVATIONS OF NEW ROCK FILL BETWEEN SSP WALLS.

EL. -26.0m
TOE OF NEW SSP FACE WALL
EL. -28.0m
1 PAIR OF SSP SHEETS (TYP.)
1 PAIR OF SSP SHEETS (TYP.)



ECF ELEVATION - STATION 0+173E TO 0+354E
SCALE: 1:250



NOTE:
1) TOP OF ANCHOR WALL BEYOND IS NOT SHOWN IN THIS ELEVATION VIEW, REFER TO TYP. SECTIONS FOR DETAILS.
2) REFER TO SHEET S-1.3 FOR TOP ELEVATIONS OF NEW ROCK FILL BETWEEN SSP WALLS.

EL. -26.0m
TOE OF NEW SSP FACE WALL
EL. -28.0m
1 PAIR OF SSP SHEETS (TYP.)
1 PAIR OF SSP SHEETS (TYP.)

STAMP:



LEGEND:

revision		date

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A	Detail No.
B	No. du detail
C	drawing no. - where detail required dessin no. - ou detail exigé
C	drawing no. - where detailed dessin no. - ou détaillé

project title
titre du projet
HAMILTON **ONTARIO**

**RANDLE REEF SEDIMENT
REMEDIATION PROJECT (STAGE 1)**

drawing title
titre du dessin
ECF, ELEVATIONS

drawn by
dessiné par
A.MARCZENKO

designed by
conçu par
B.RIGGS / P.LAMPKIN

approved by
approuvé par

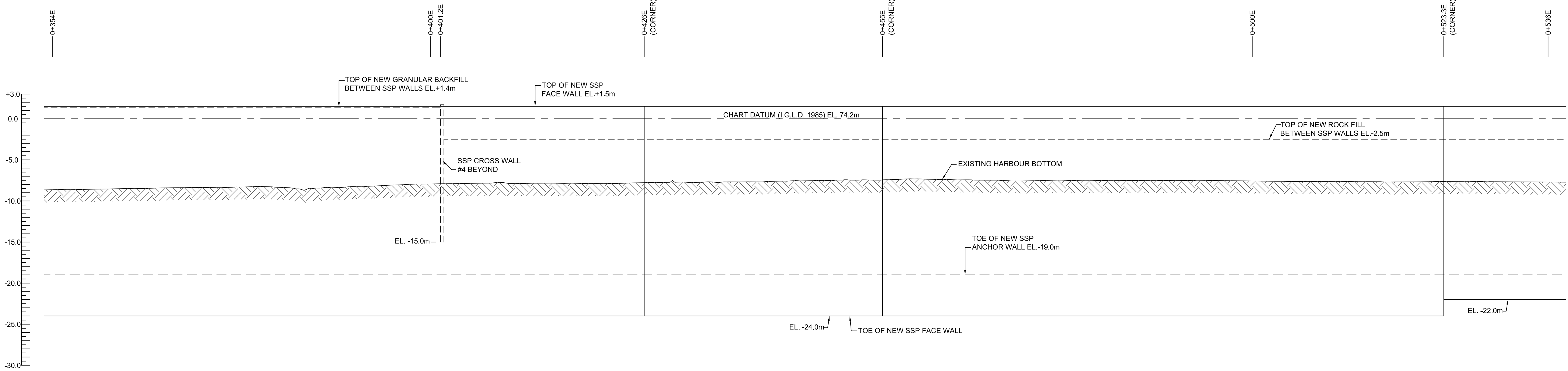
bid
offre
project manager
administrateur
de projets

project date
date du projet
2015-03-27

project no.
no. du projet
R.050927.001

drawing no.
dessiné no.
S-1.4

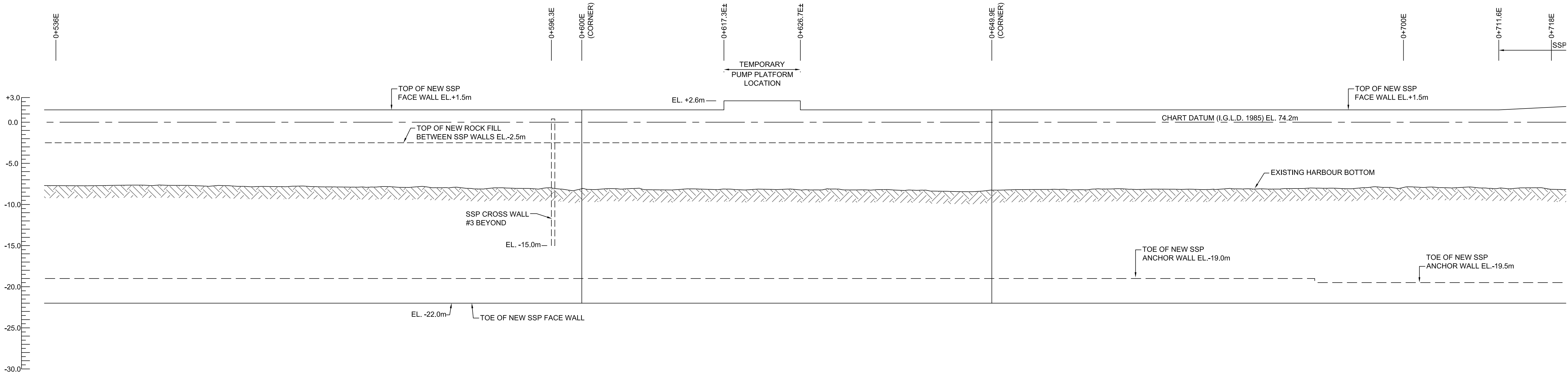
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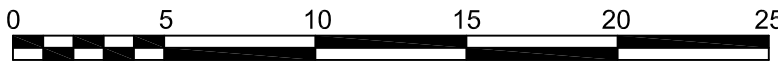
ECF ELEVATION - STATION 0+354E TO 0+536E
SCALE: 1:250



NOTE:
1) TOP OF ANCHOR WALL BEYOND IS NOT SHOWN IN THIS ELEVATION VIEW. REFER TO TYP. SECTIONS FOR DETAILS.
2) REFER TO SHEET S-1.3 FOR TOP ELEVATIONS OF NEW ROCK FILL BETWEEN SSP WALLS.

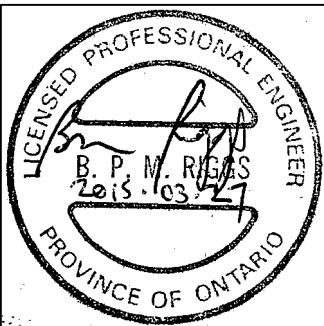


ECF ELEVATION - STATION 0+536E TO 0+718E
SCALE: 1:250



NOTE:
1) TOP OF ANCHOR WALL BEYOND IS NOT SHOWN IN THIS ELEVATION VIEW. REFER TO TYP. SECTIONS FOR DETAILS.
2) REFER TO SHEET S-1.3 FOR TOP ELEVATIONS OF NEW ROCK FILL BETWEEN SSP WALLS.

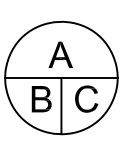
STAMP:



LEGEND:

revision		date

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A Detail No.
No. du détail
B drawing no. - where detail required
dessin no. - ou detail exigé
C drawing no. - where detailed
dessin no. - ou détaillé

project title
titre du projet
HAMILTON **ONTARIO**

**RANDLE REEF SEDIMENT
REMEDATION PROJECT (STAGE 1)**

drawing title
titre du dessin
ECF, ELEVATIONS

drawn by
dessiné par
A.MARCZENKO

designed by
conçu par
B.RIGGS / P.LAMPKIN

approved by
approuvé par

bid
offre
project manager
administrateur
de projets

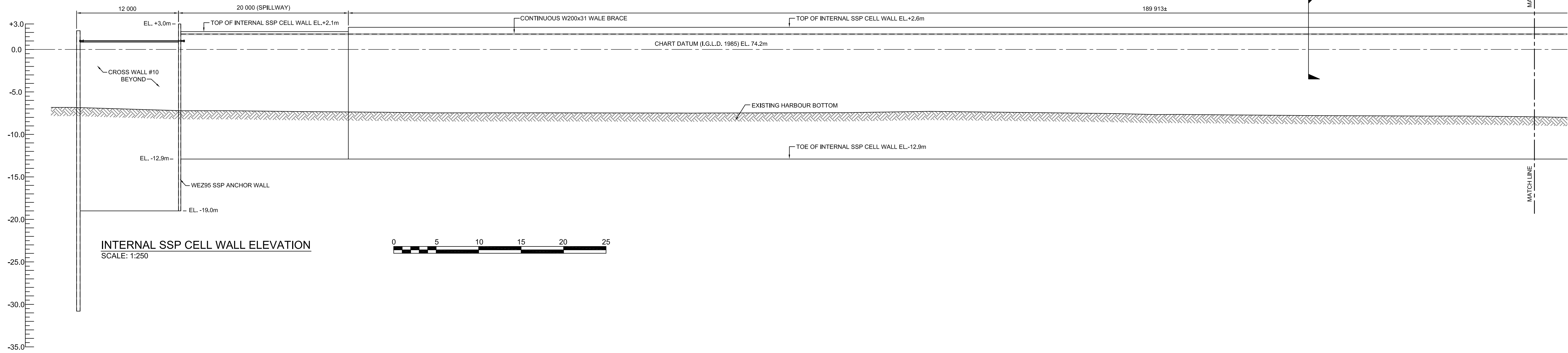
project date
date du projet
2015-03-27

project no.
no. du projet
R.050927.001

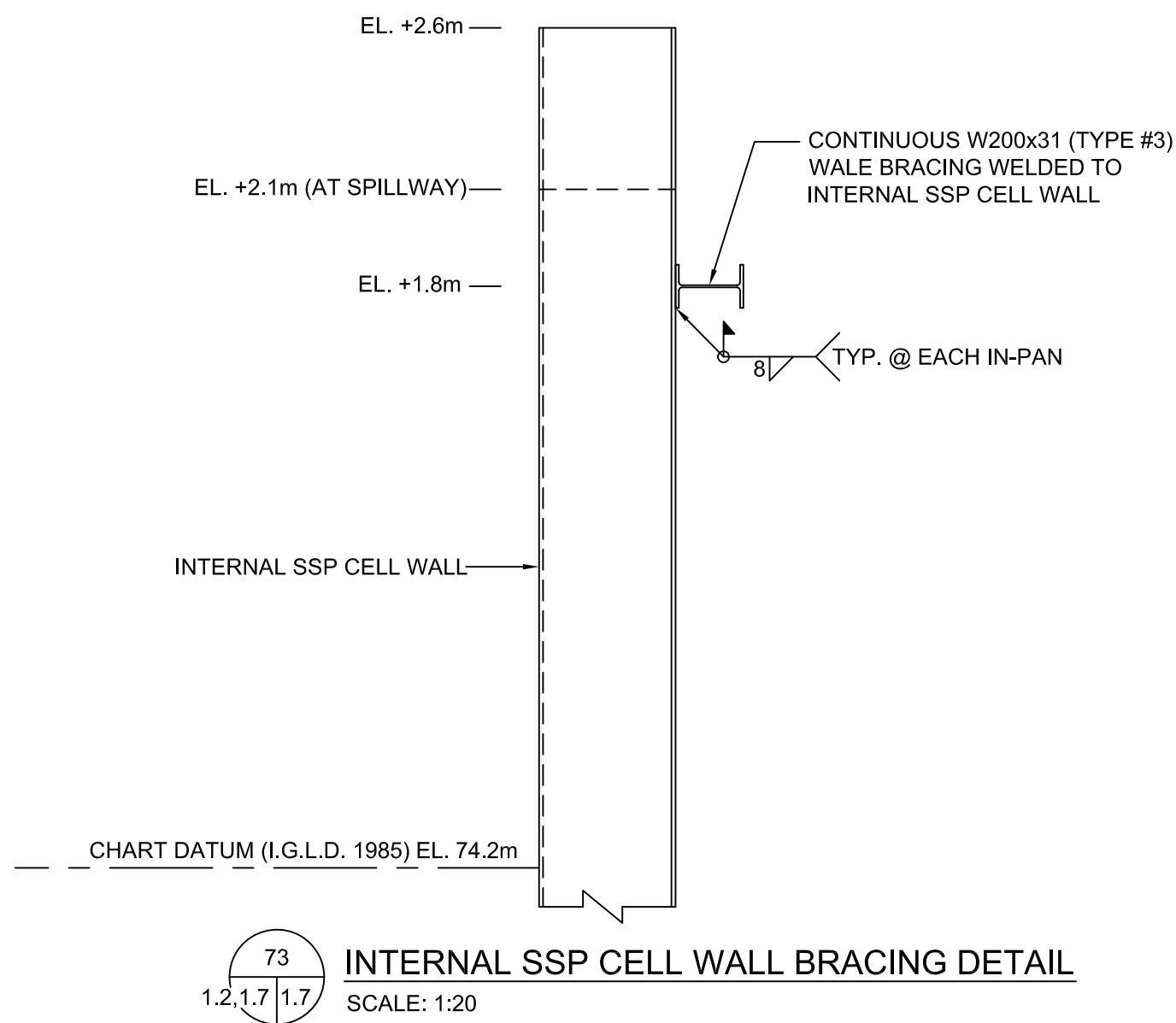
drawing no.
dessiné no.
S-1.5

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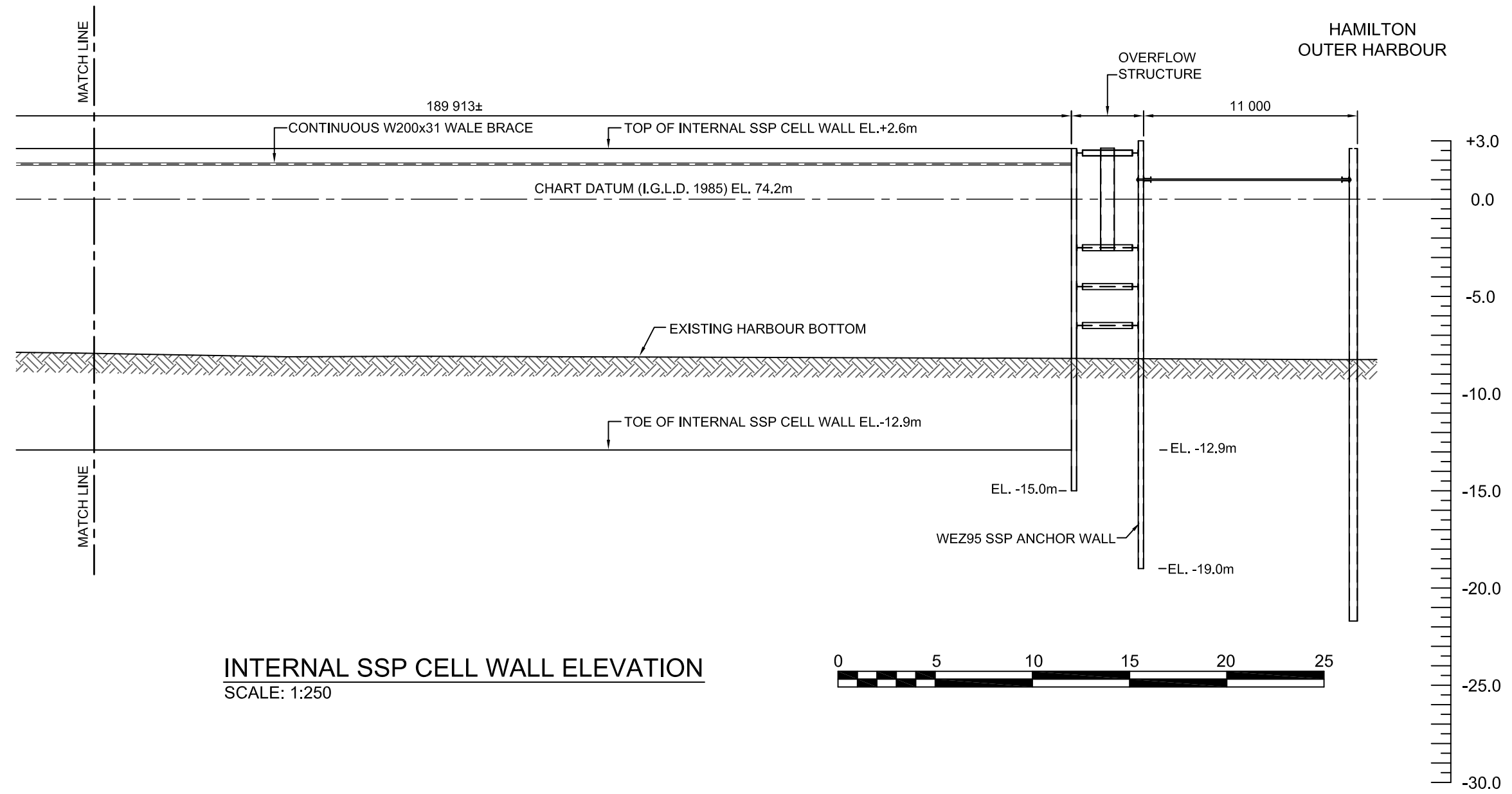
HAMILTON
INNER HARBOUR



INTERNAL SSP CELL WALL ELEVATION
SCALE: 1:250



INTERNAL SSP CELL WALL BRACING DETAIL
SCALE: 1:20



INTERNAL SSP CELL WALL ELEVATION
SCALE: 1:250



Public Works and
Government Services Canada
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Services gouvernementaux Canada



RIGGS ENGINEERING LTD.
1240 Commissioner's Road West, Suite 205
London, Ontario N6K 1C7
(519) 657-1040

STAMP:



LEGEND:

revision	date

Do not scale drawings.
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A	Detail No.
B	drawing no. - where detail required
C	drawing no. - where detailed

project title
titre du projet
HAMILTON ONTARIO

RANDLE REEF SEDIMENT
REMEDICATION PROJECT (STAGE 1)

drawing title
titre du dessin
ECF, ELEVATION
INTERNAL SSP CELL WALL

drawn by
dessiné par
A.MARCZENKO

designed by
conçu par
B.RIGGS / P.LAMPKIN

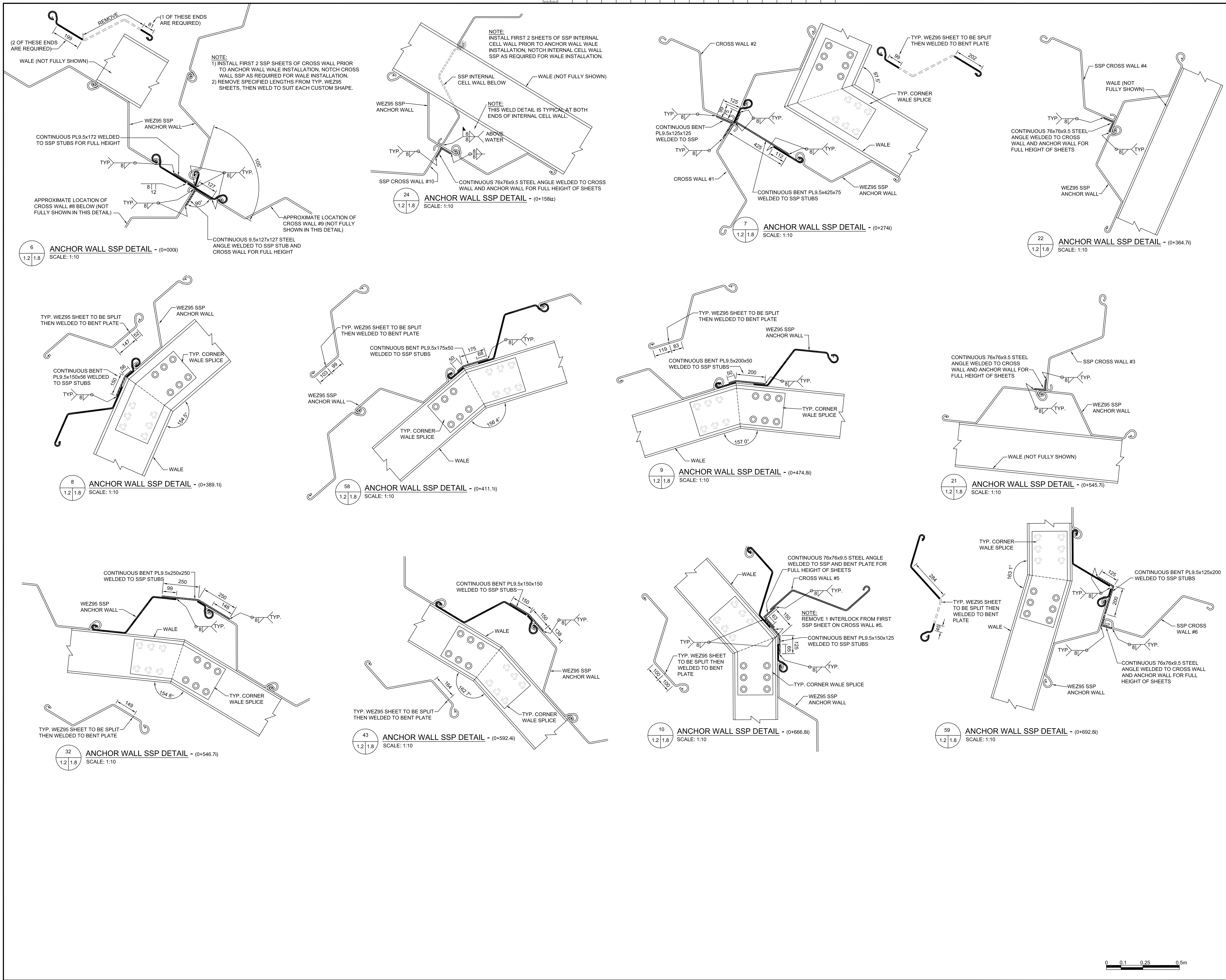
approved by
approuvé par

bid
offre
project manager
administrateur
de projets

project date
date du projet
2015-03-27

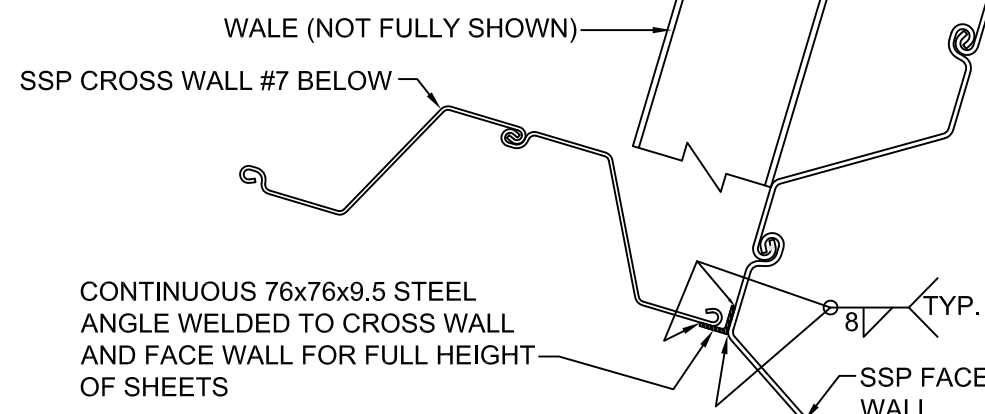
project no.
no. du projet
R.050927.001

drawing no.
dessiné no.
S-1.7

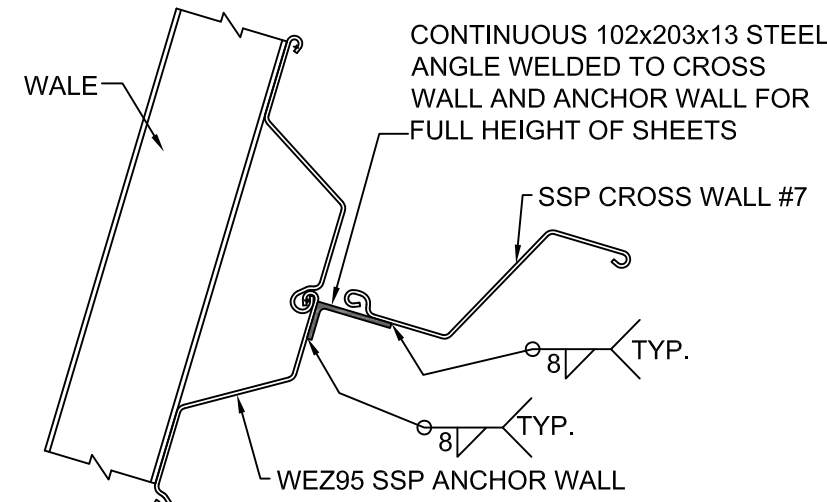


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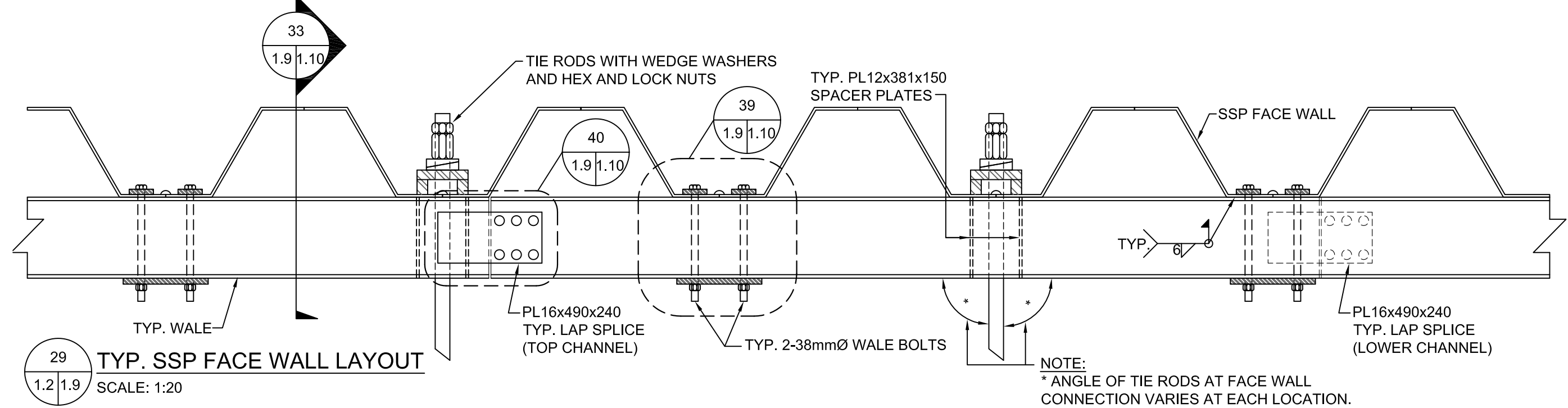
NOTE:
INSTALL FIRST 2 SSP SHEETS OF CROSS WALL
PRIOR TO FACE WALL WALE INSTALLATION.
NOTCH CROSS WALL SSP AS REQUIRED FOR
WALE INSTALLATION.



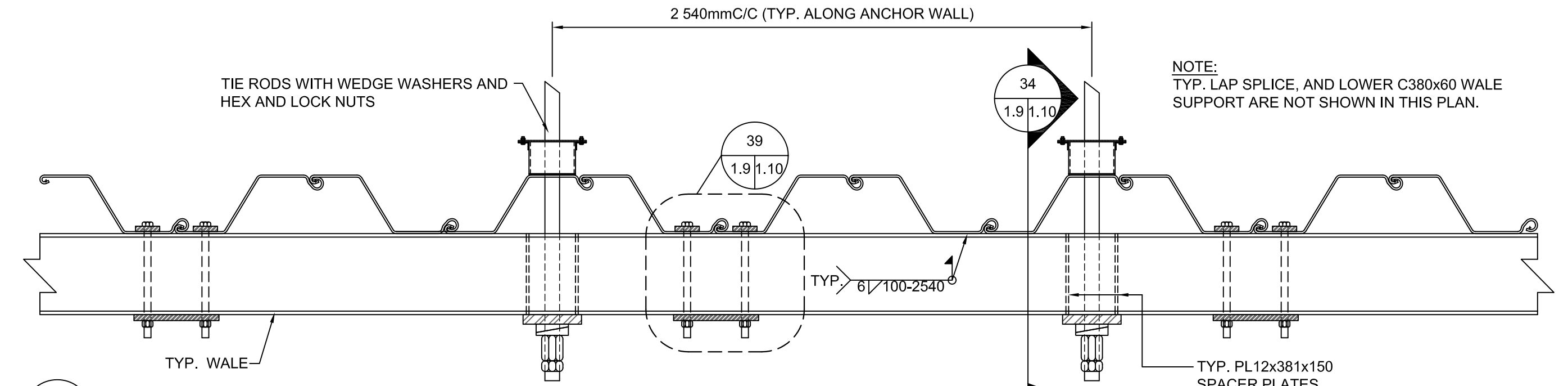
27 FACE WALL SSP DETAIL - (0+916.7E)
SCALE: 1:20



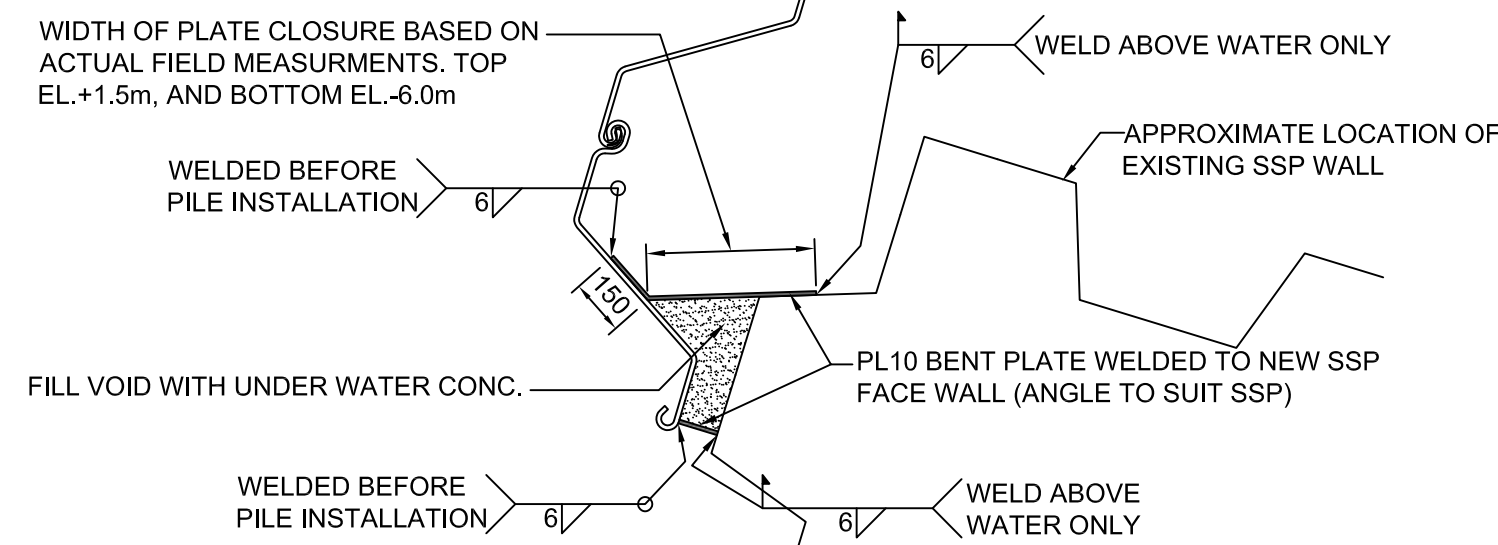
28 ANCHOR WALL SSP DETAIL - (0+845I)
SCALE: 1:20



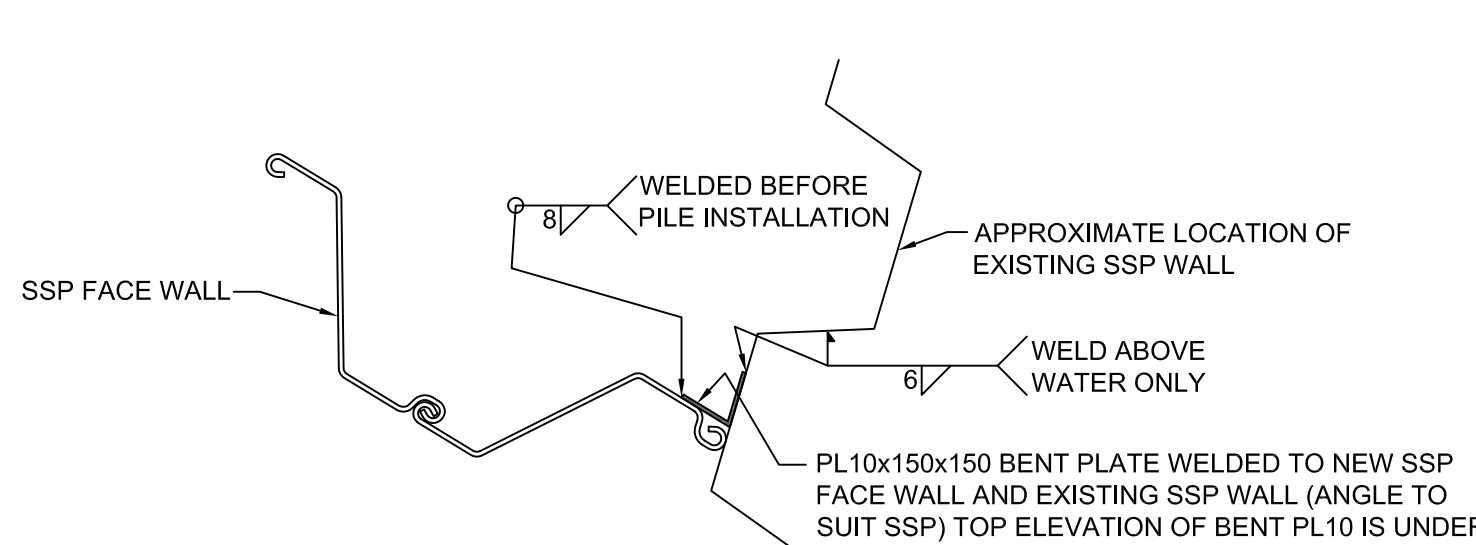
29 TYP. SSP FACE WALL LAYOUT
SCALE: 1:20



30 TYP. SSP ANCHOR WALL LAYOUT
SCALE: 1:20

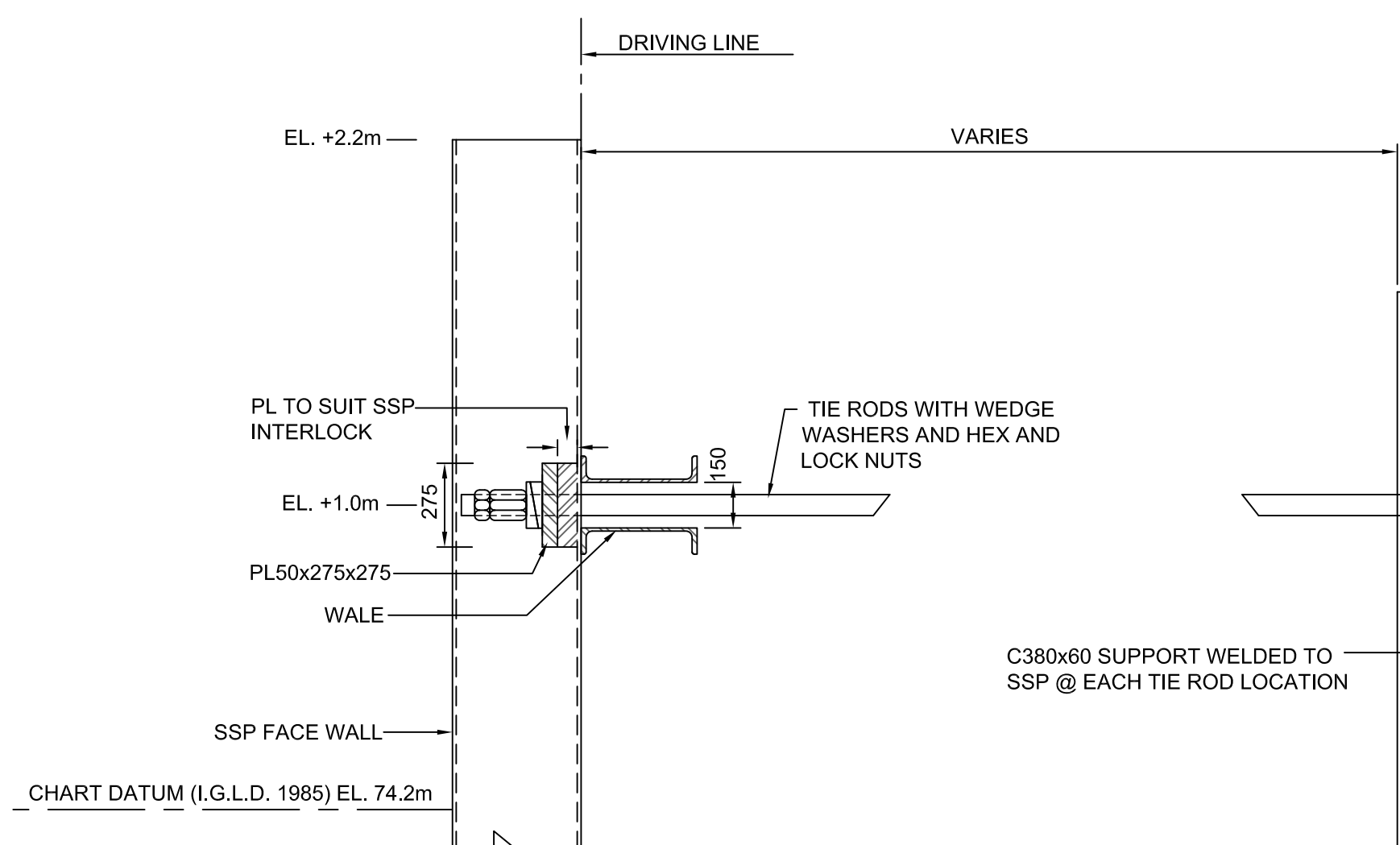


25 FACE WALL SSP DETAIL - (0+927.7E)
SCALE: 1:20

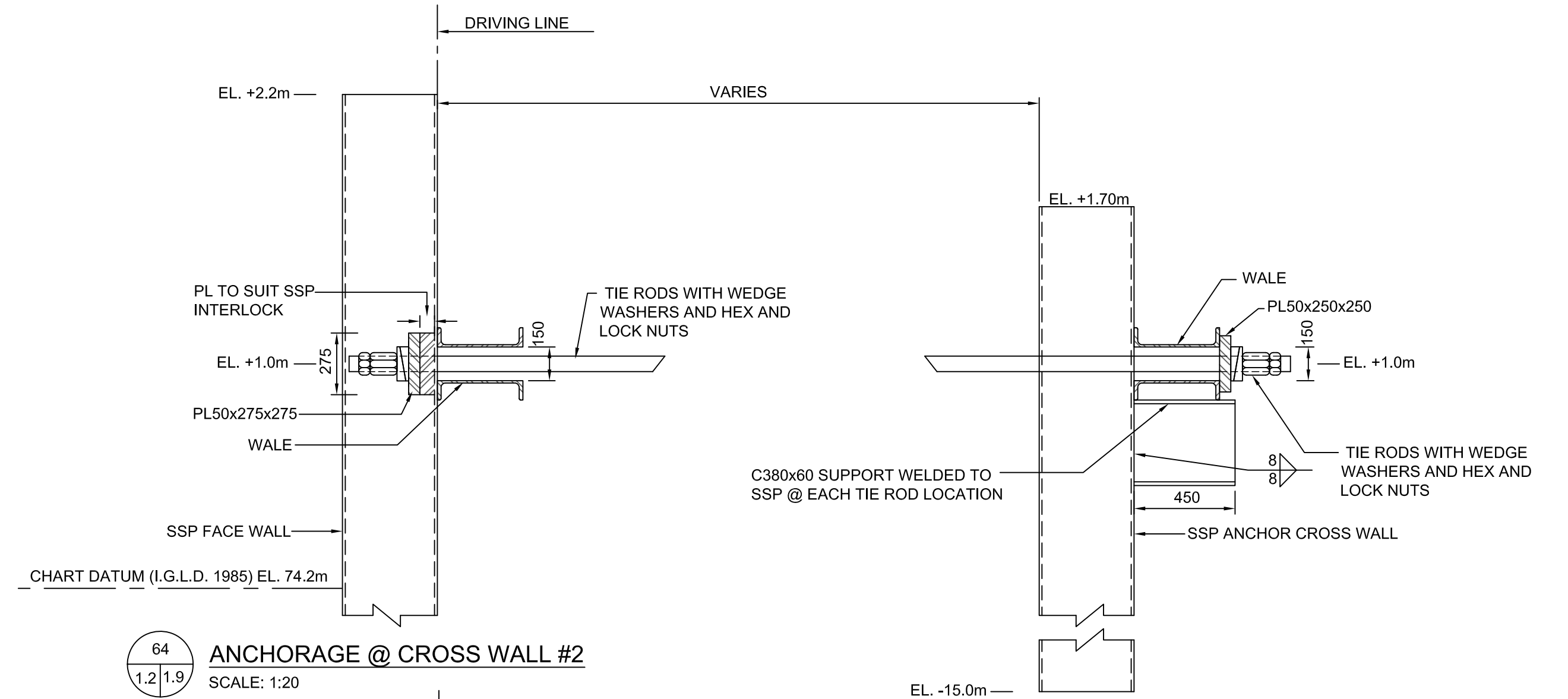
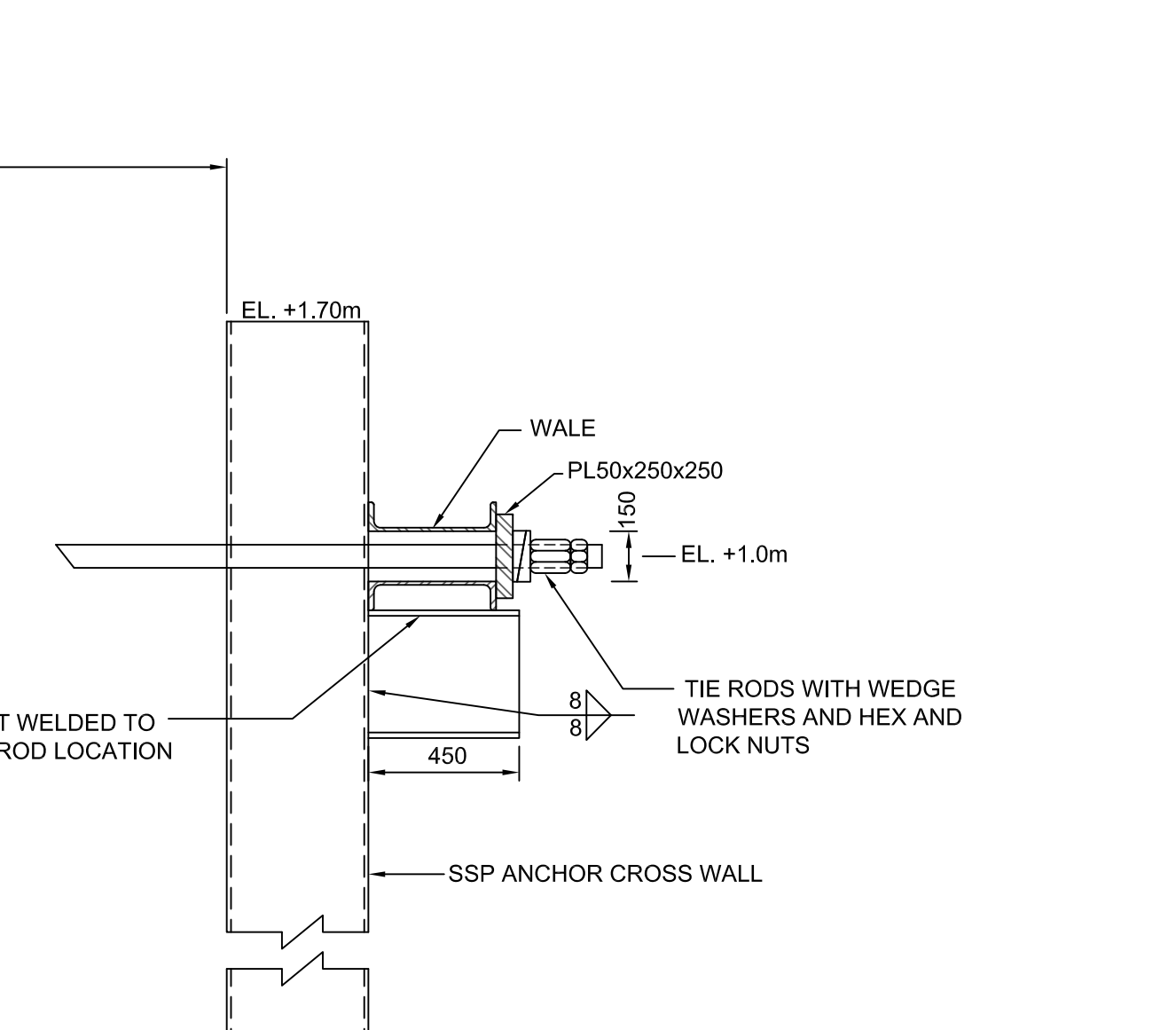


26 FACE WALL SSP DETAIL - (0+000E)
SCALE: 1:20

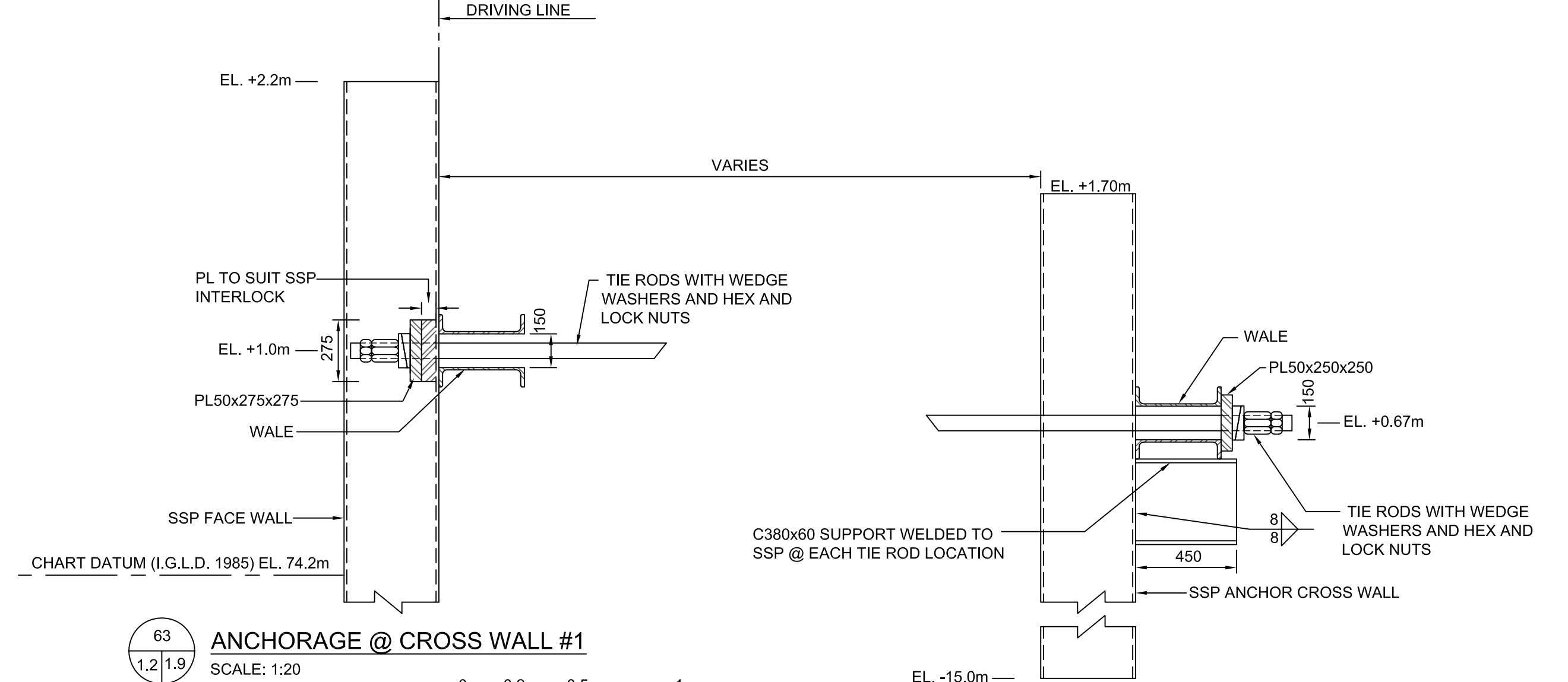
NOTE:
1) CONTINUOUS WALE IS NOT SHOWN IN THIS DETAIL.
2) DEMOLISH EXISTING CONC. PARAPET AS REQUIRED
FOR NEW SSP INSTALLATION.



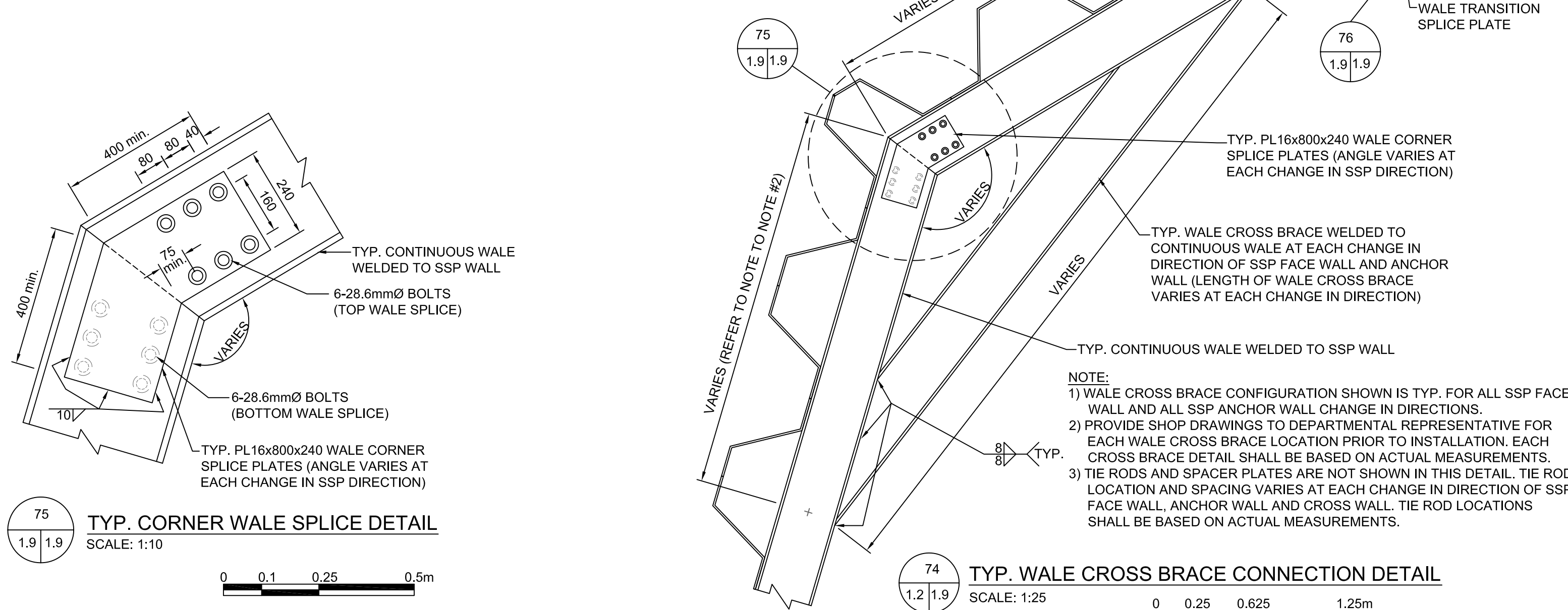
60 ANCHORAGE @ CROSS WALL #9
SCALE: 1:20



64 ANCHORAGE @ CROSS WALL #2
SCALE: 1:20

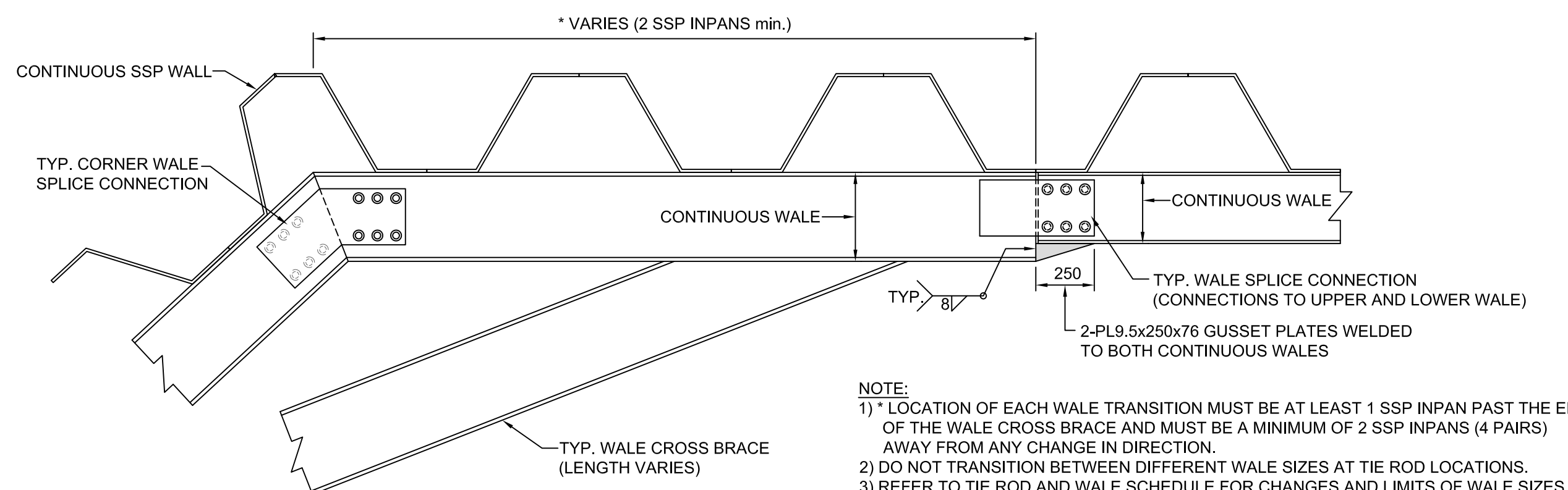


63 ANCHORAGE @ CROSS WALL #1
SCALE: 1:20



75 TYP. CORNER WALE SPLICE DETAIL
SCALE: 1:10

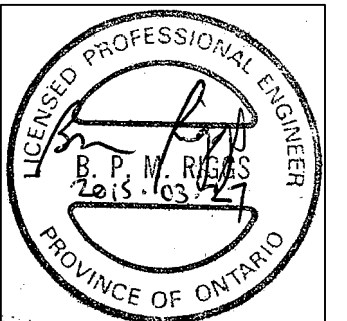
74 TYP. WALE CROSS BRACE CONNECTION DETAIL
SCALE: 1:25



76 TYP. WALE TRANSITION SPLICE DETAIL
SCALE: 1:20

NOTE:
1) * LOCATION OF EACH WALE TRANSITION MUST BE AT LEAST 1 SSP INSPAN PAST THE END
OF THE WALE CROSS BRACE AND MUST BE A MINIMUM OF 2 SSP INSPANS (4 PAIRS)
AWAY FROM ANY CHANGE IN DIRECTION.
2) DO NOT TRANSITION BETWEEN DIFFERENT WALE SIZES AT TIE ROD LOCATIONS.
3) REFER TO THE ROD AND WALE SCHEDULE FOR CHANGES AND LIMITS OF WALE SIZES.

STAMP:



LEGEND:

NOTE:
1) PROVIDE SHOP DRAWINGS TO
DEPARTMENTAL REPRESENTATIVE FOR SSP
WALL INSTALLATION. EACH CUSTOM SSP
CORNER, AND WALE DETAIL, WILL BE BASED
ON ACTUAL MEASUREMENTS. MINOR
MODIFICATIONS TO ACCOMMODATE FIELD
MEASUREMENTS WILL BE CONSIDERED.

2) CONTINUOUS STEEL ANGLE (SIZE VARIES)
TYPICAL CONNECTION IS REQUIRED AT BOTH
ENDS OF ALL SSP CROSS WALLS.

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Departmental Representative of all discrepancies.

A	Detail No.
B	drawing no. - where detail required
C	drawing no. - where detail detailed

project title
titre du projet
HAMILTON ONTARIO

RANDLE REEF SEDIMENT
REMEDIATION PROJECT (STAGE 1)

drawing title
titre du dessin

ECF,
STEEL DETAILS

drawn by
dessiné par

A.MARCZENKO

designed by
conçue par

B.RIGGS / P.LAMPKIN

approved by
approuvé par

bid
offre

project manager
administrateur
de projets

project date
date du projet

2015-03-27

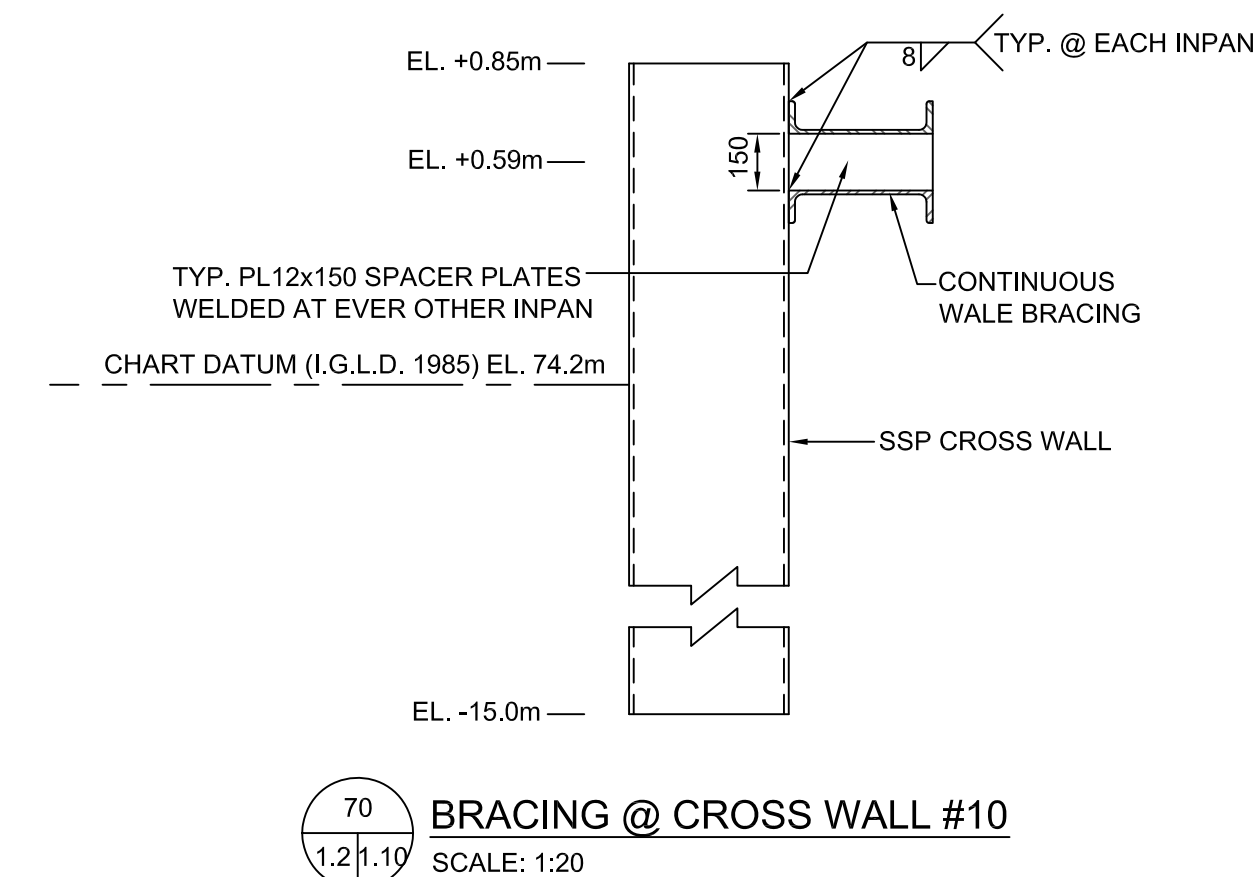
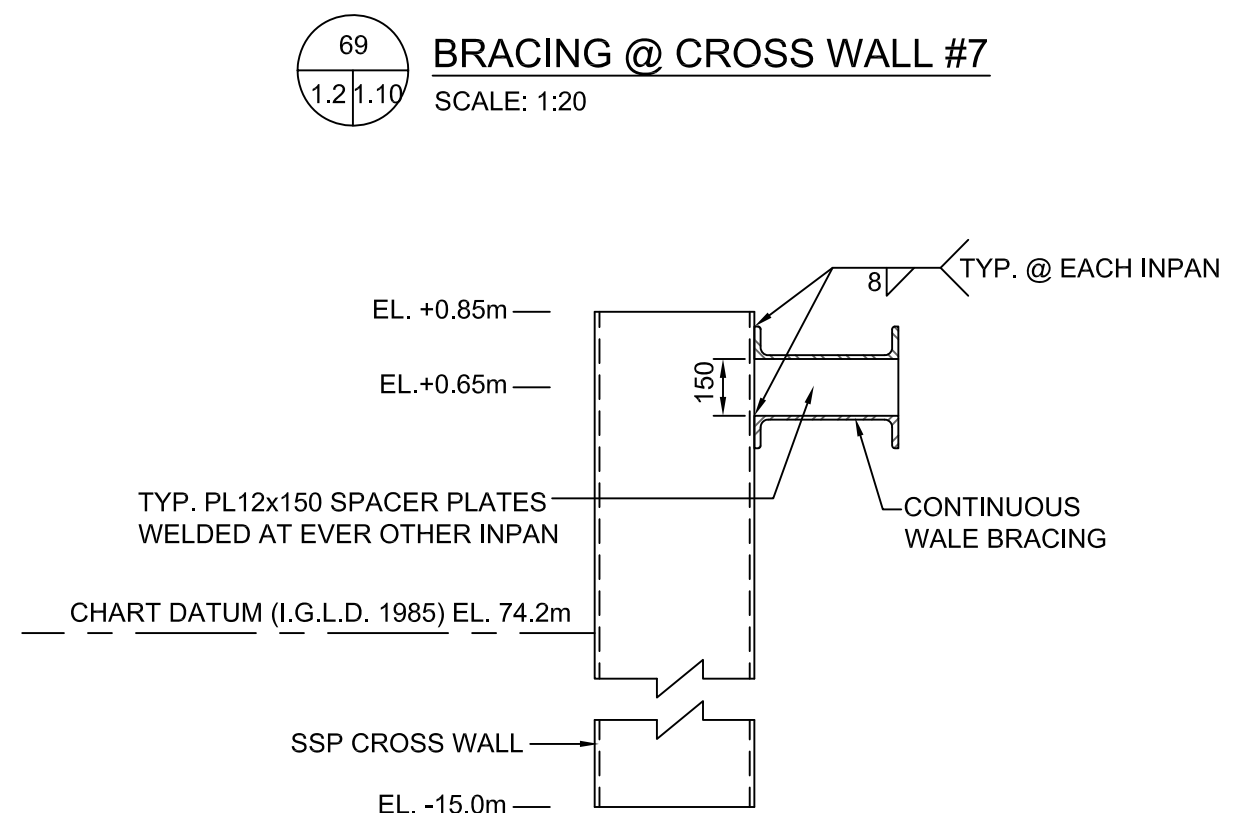
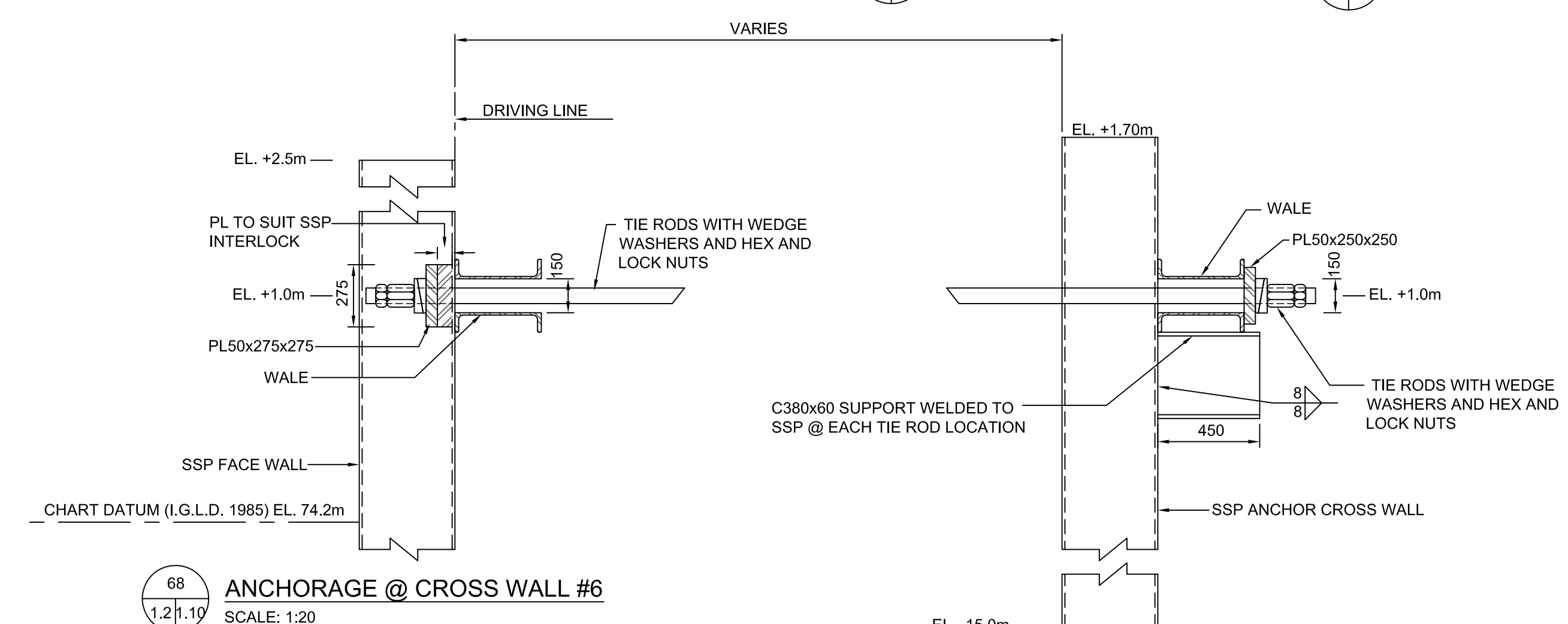
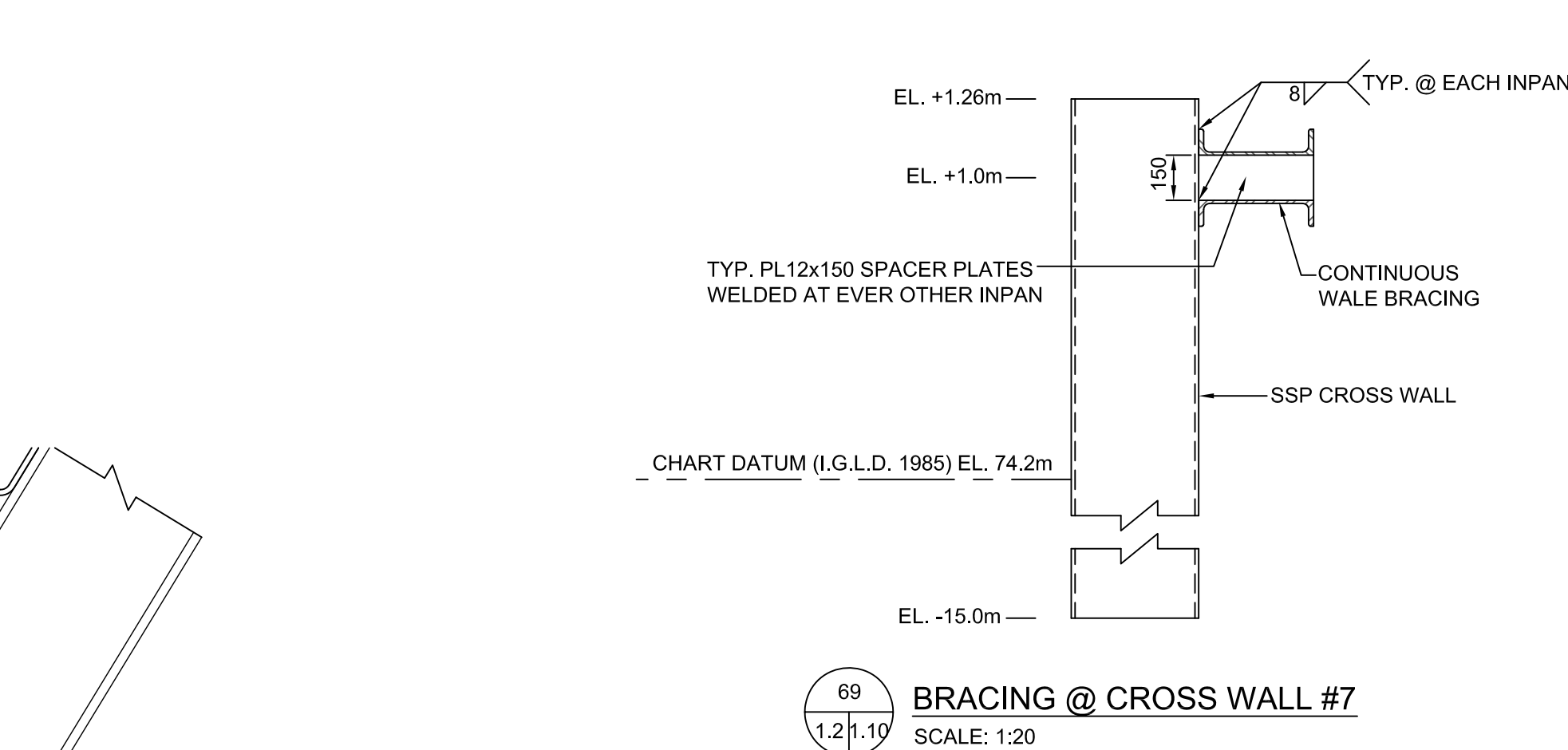
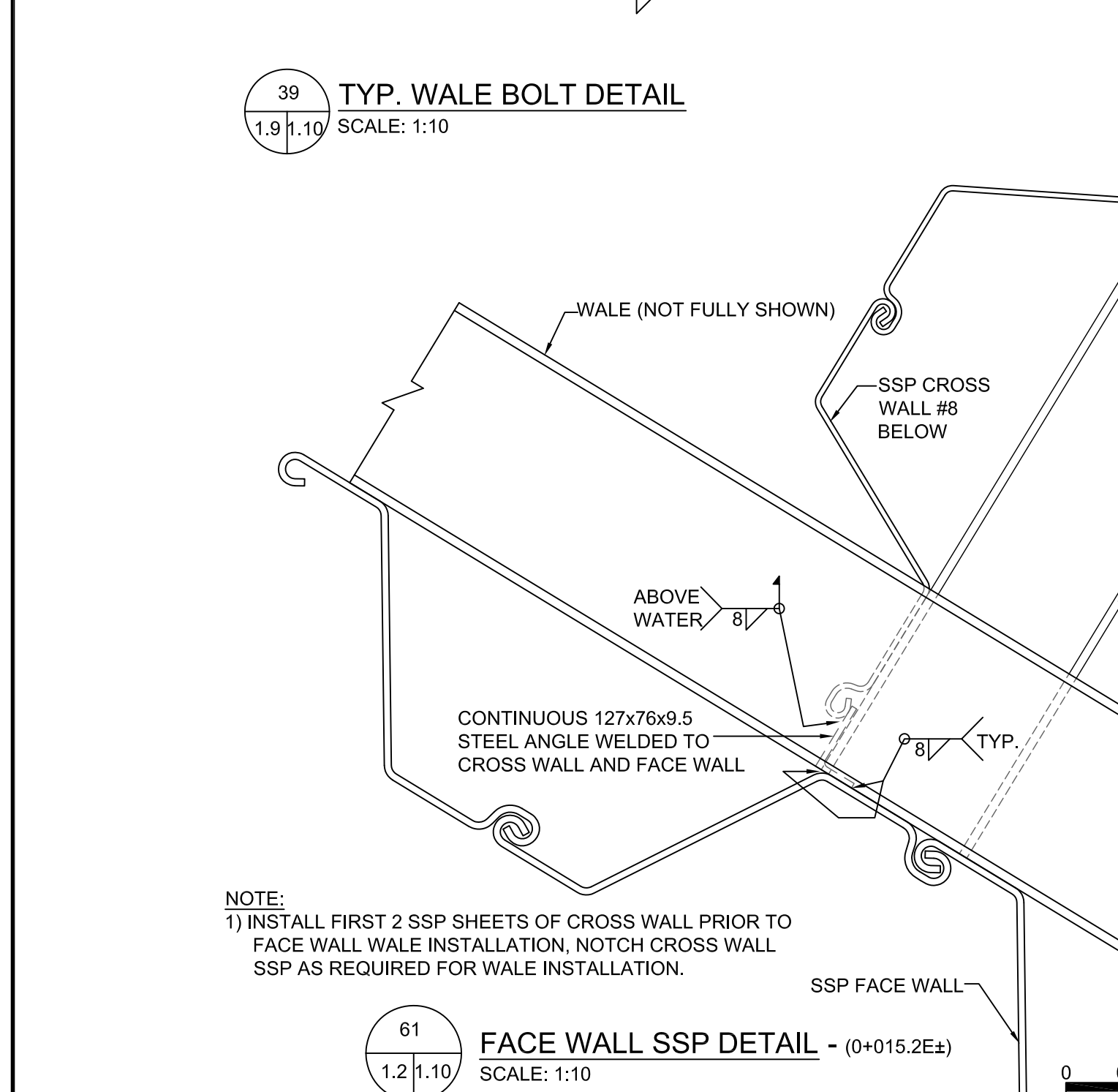
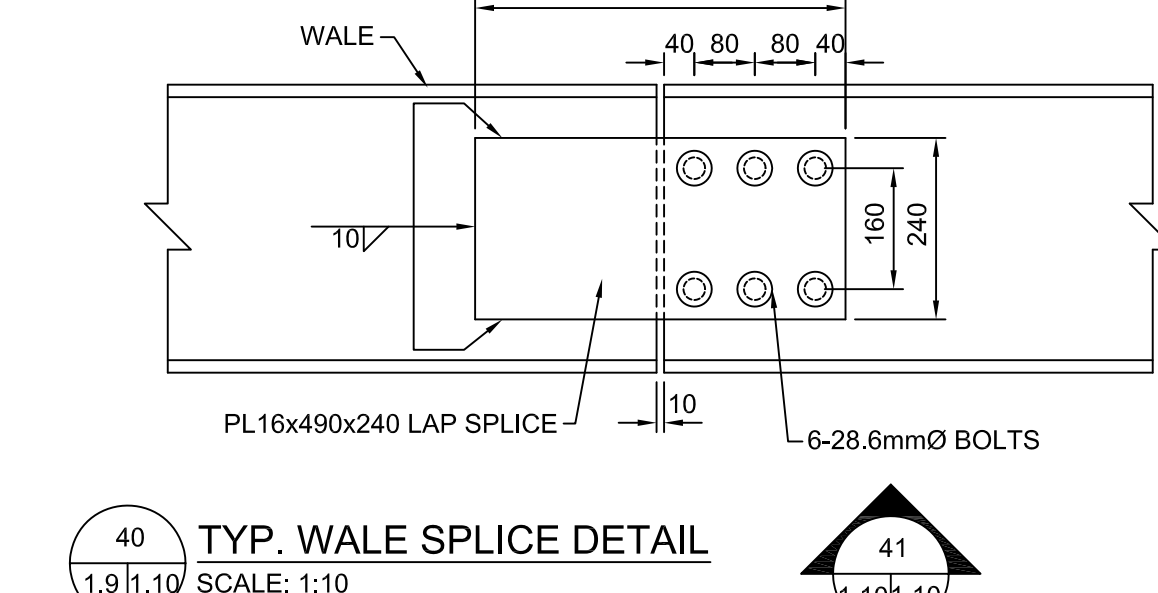
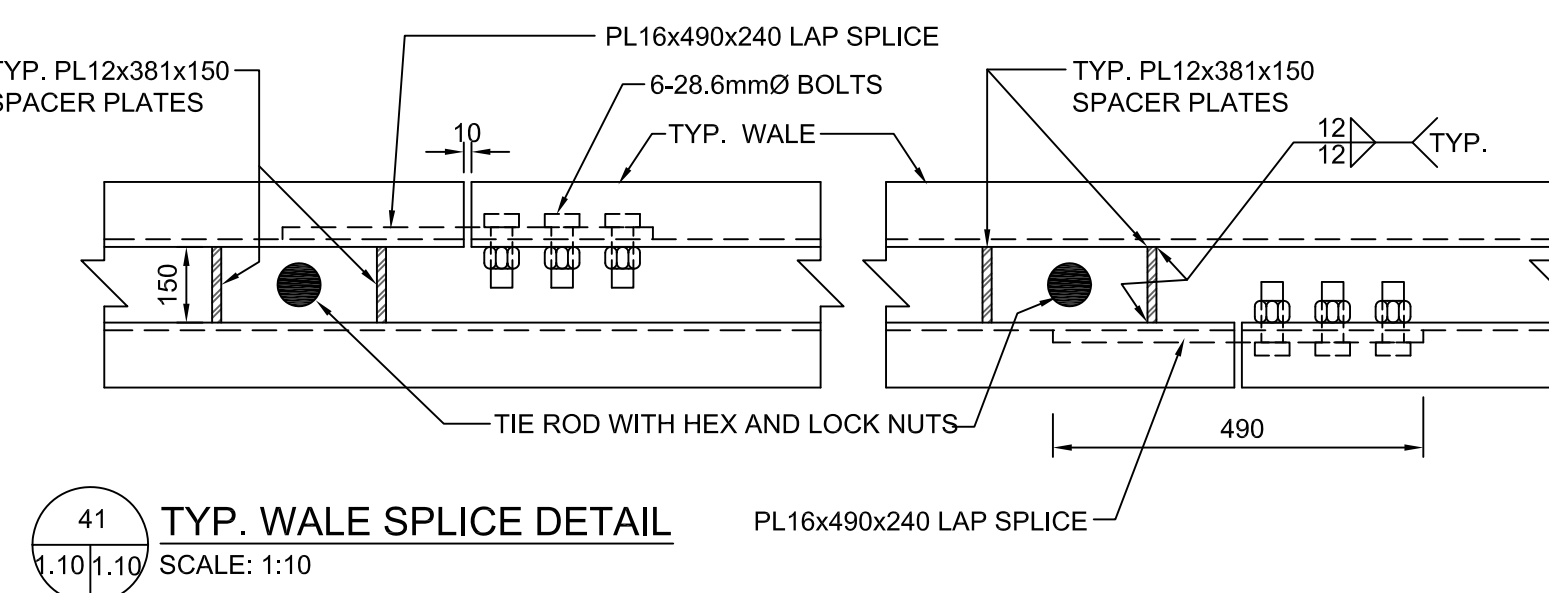
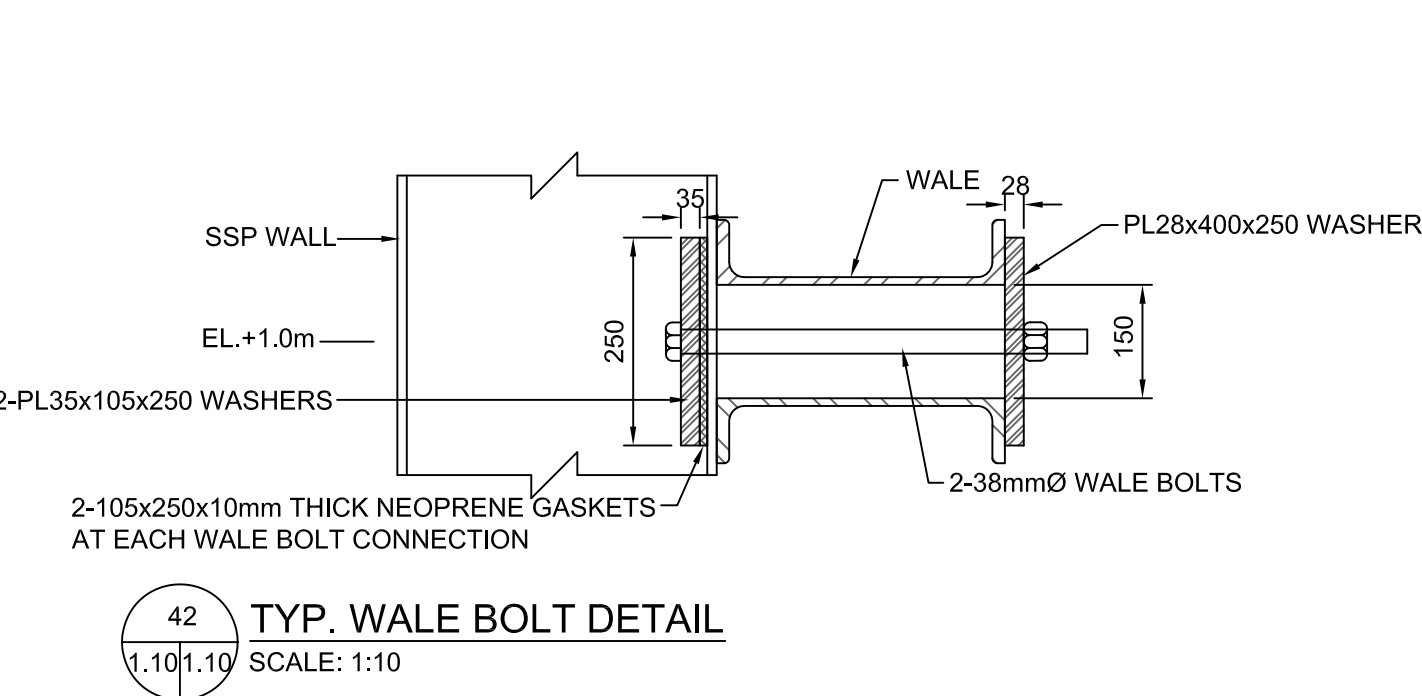
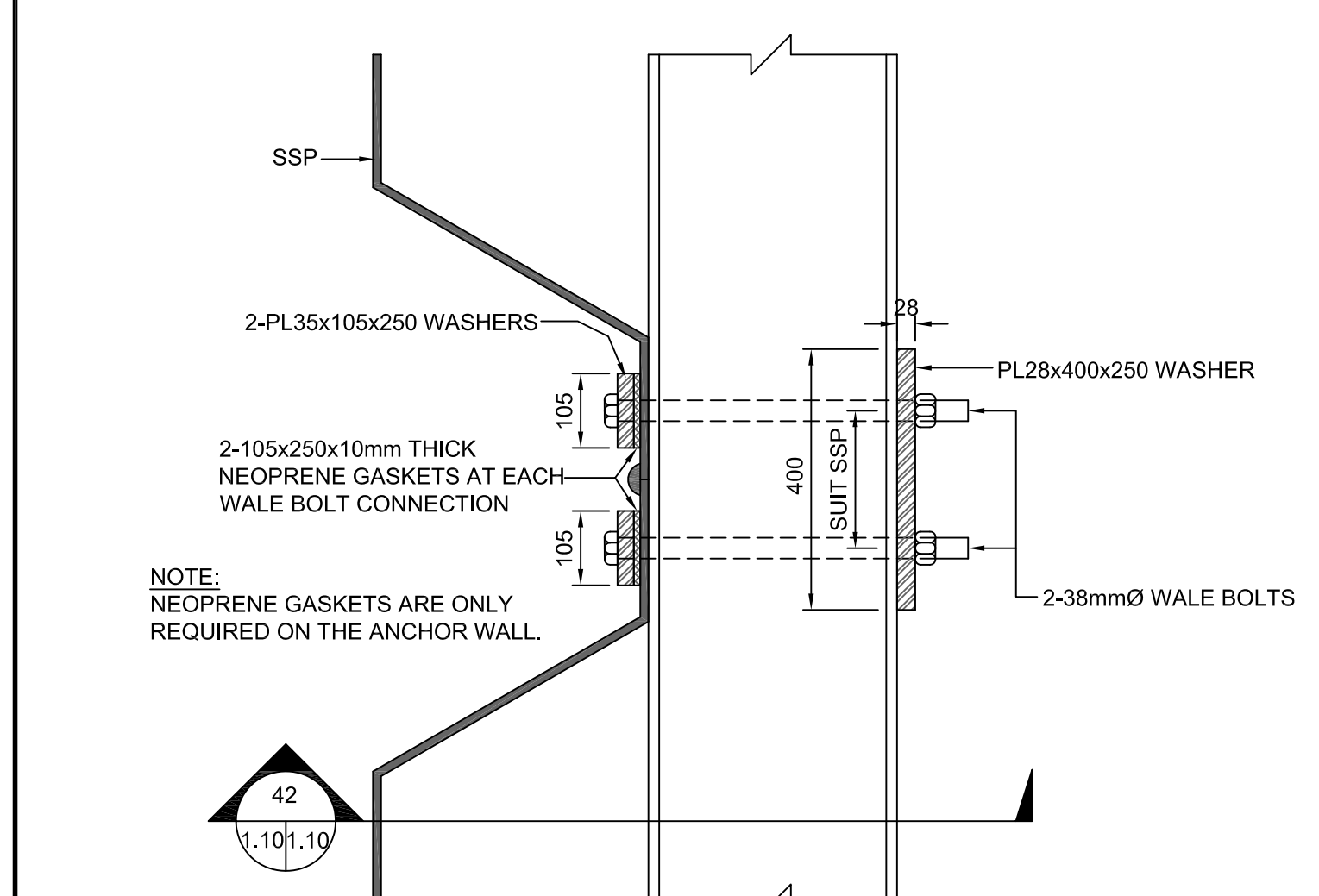
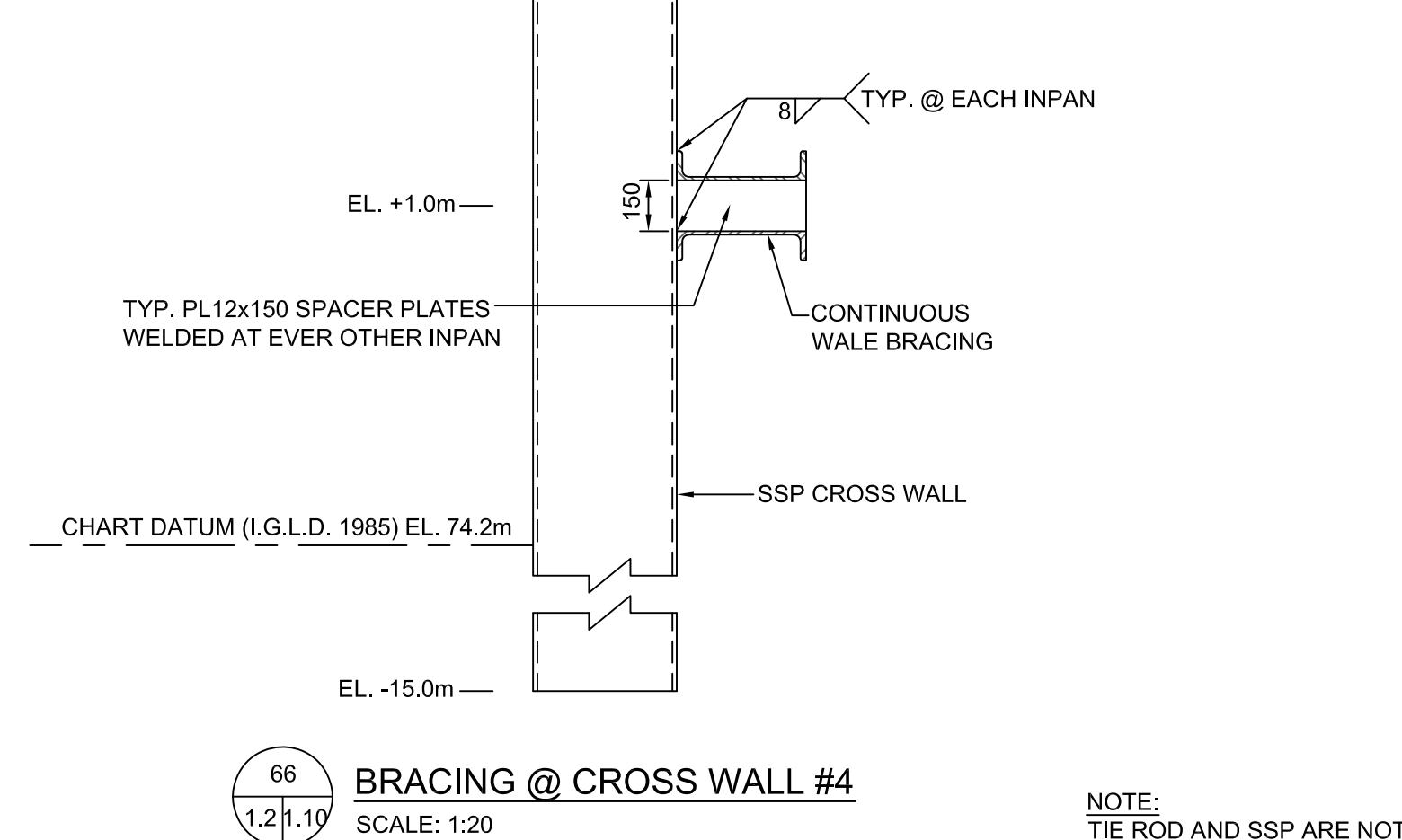
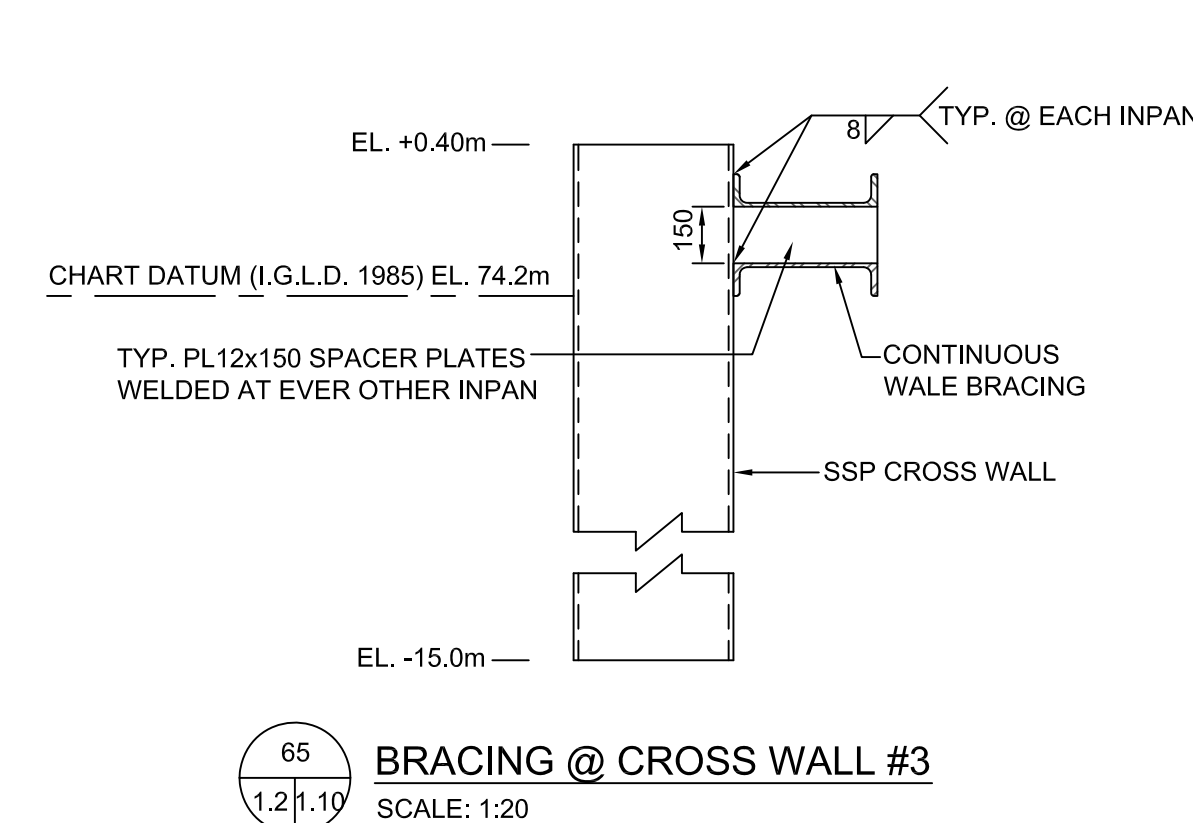
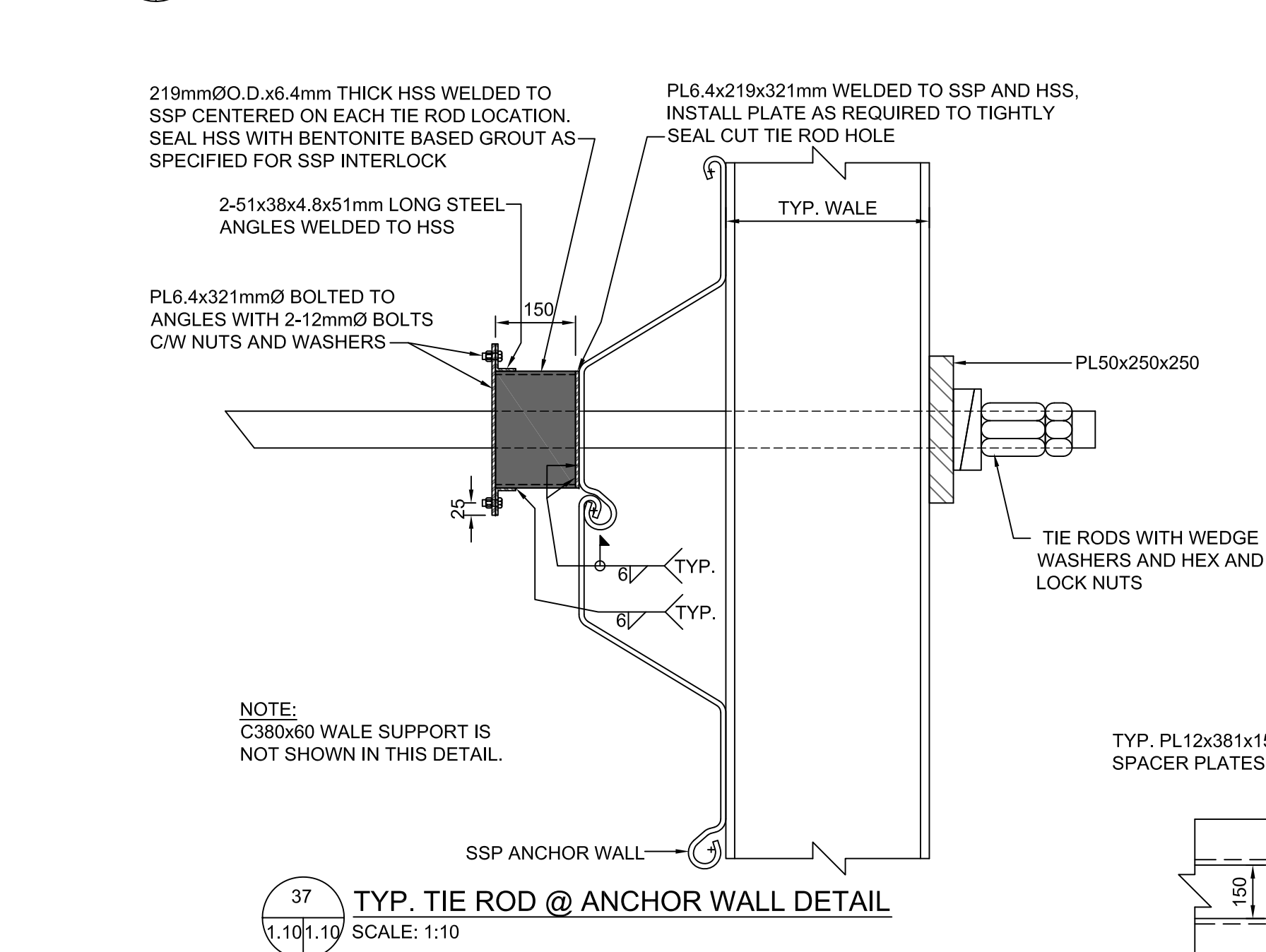
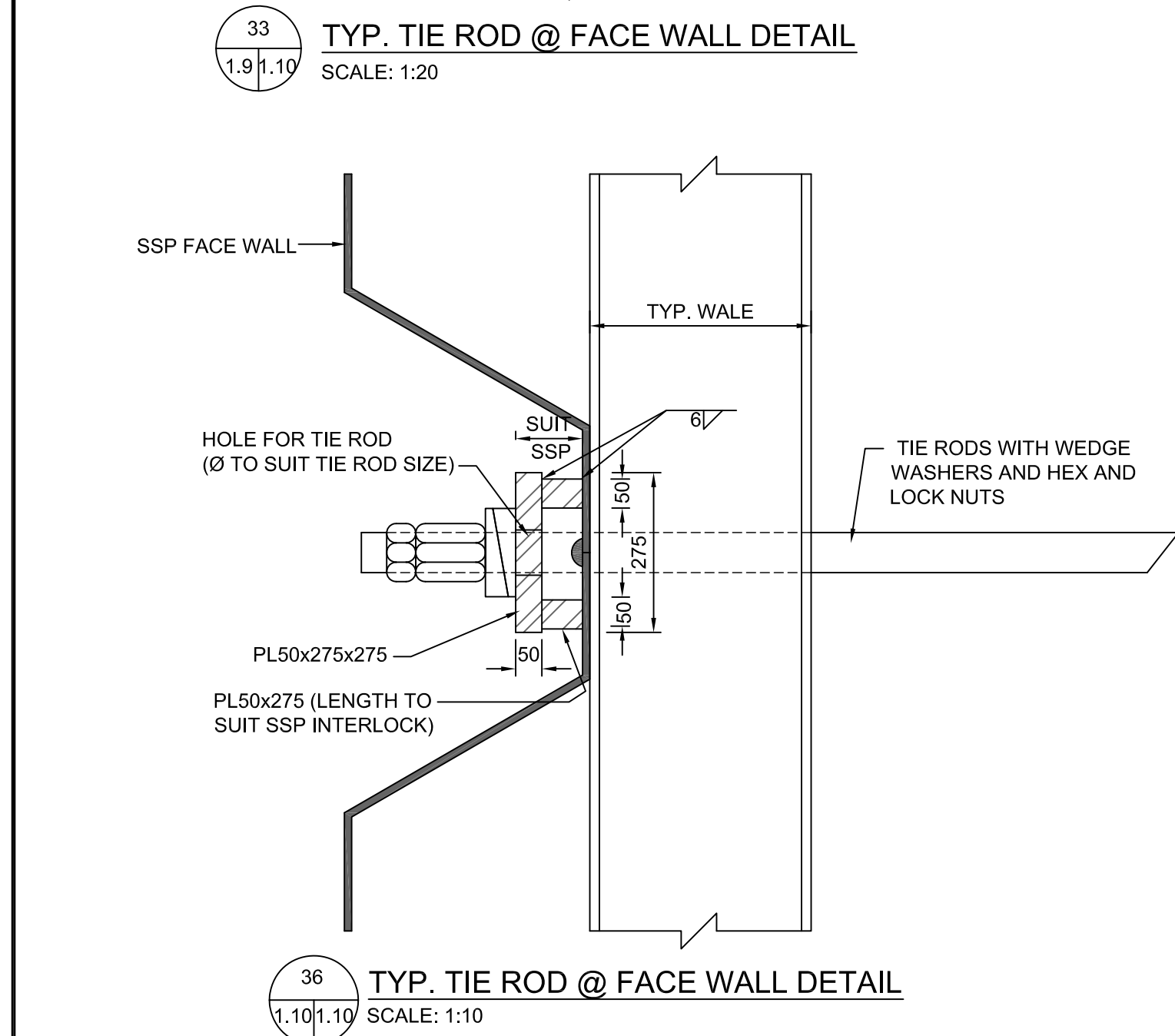
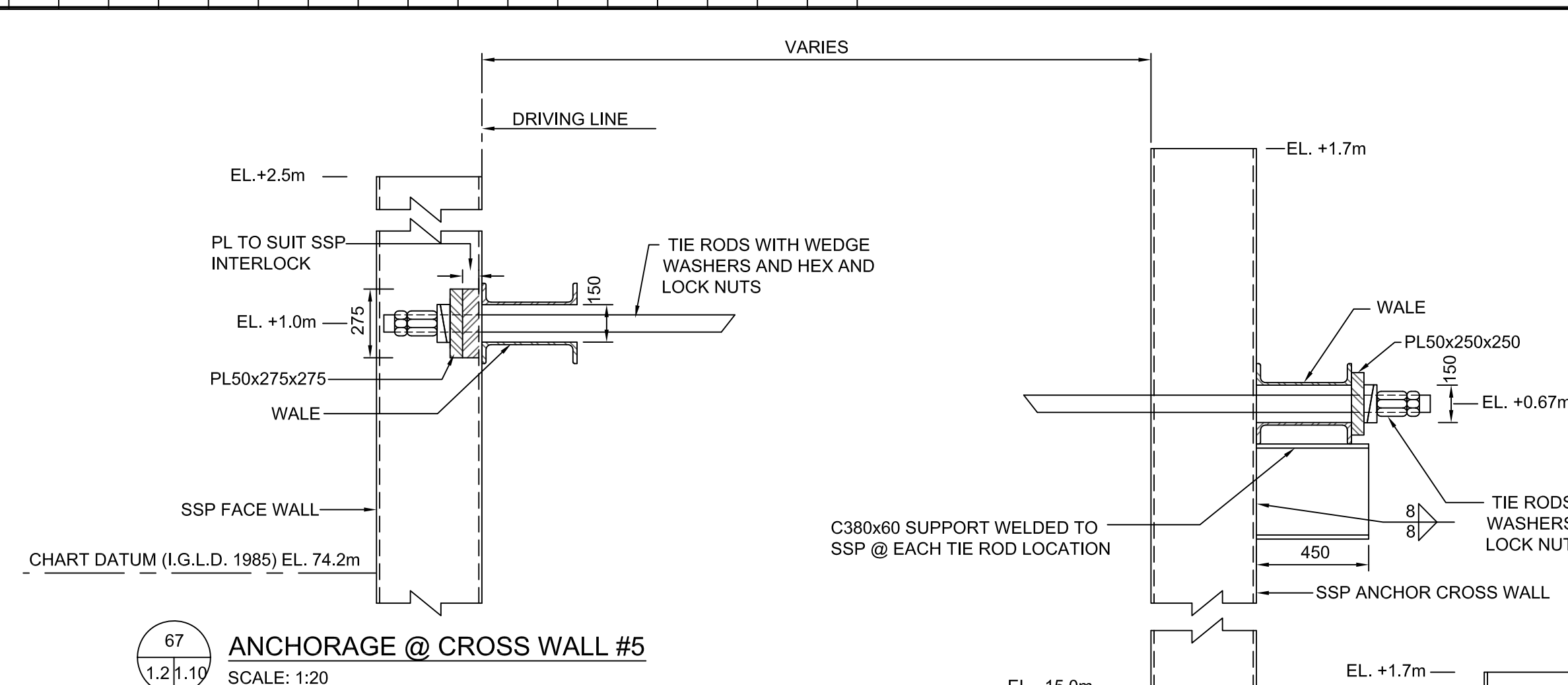
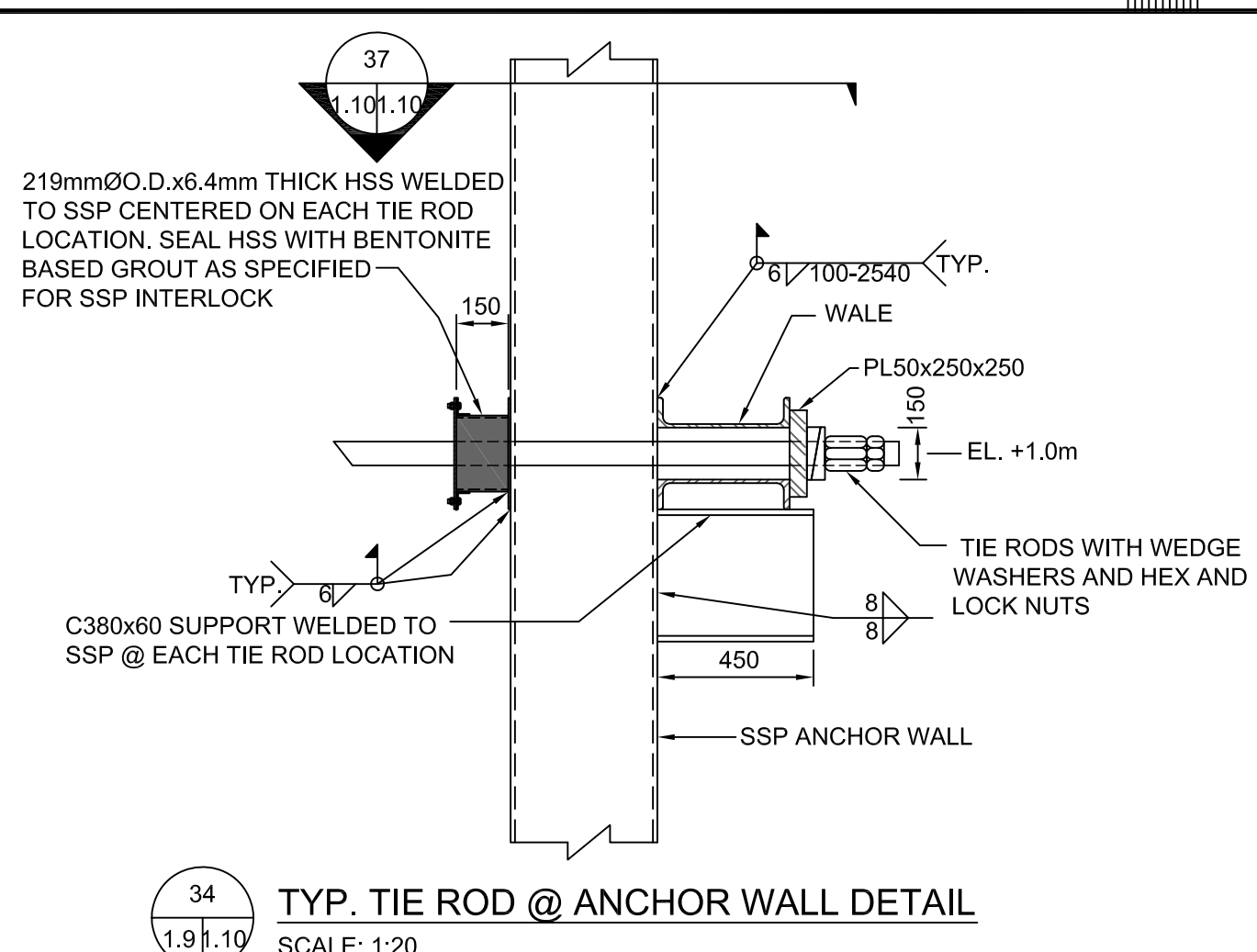
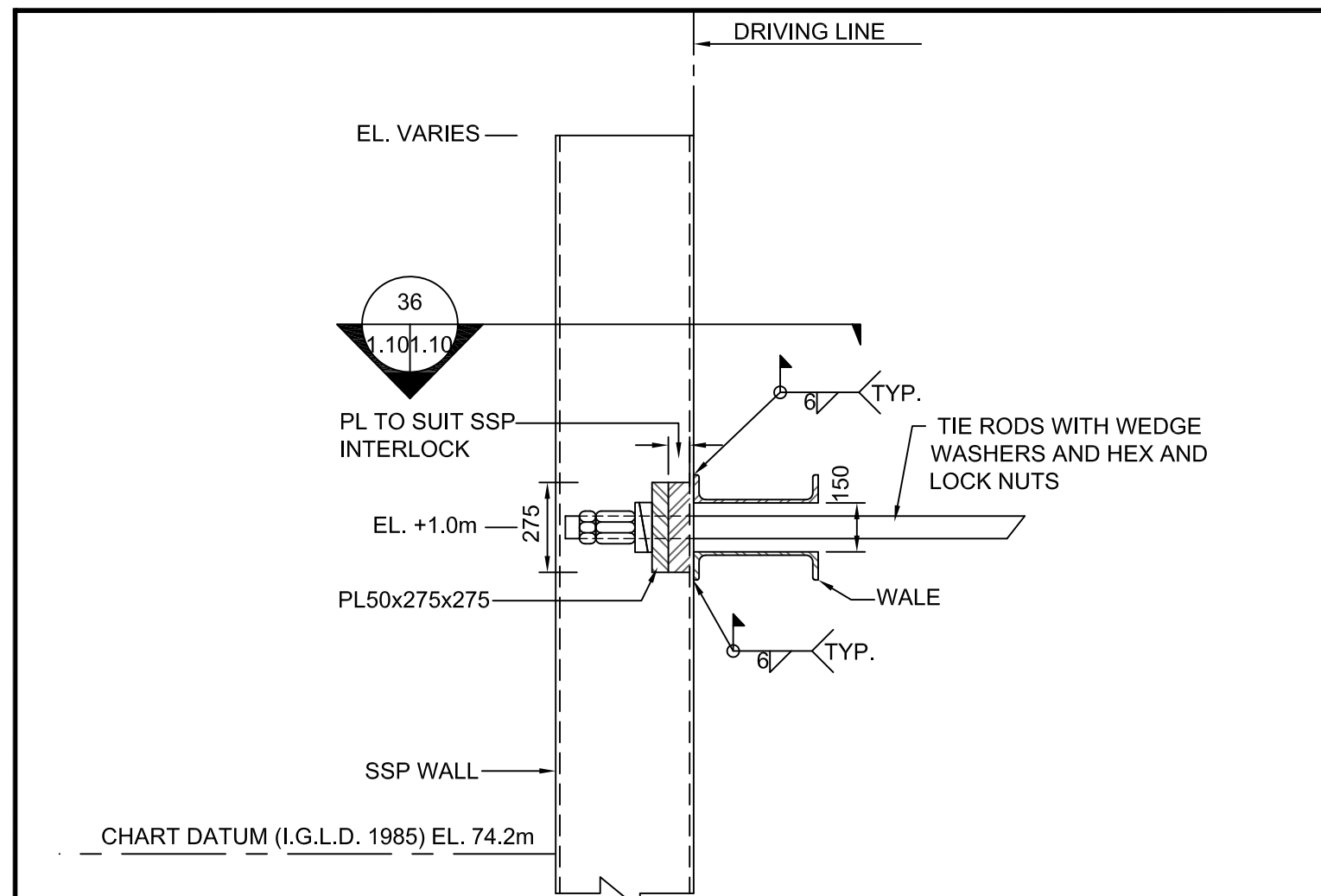
project no.
no. du projet

R.050927.001

drawing no.
dessiné no.

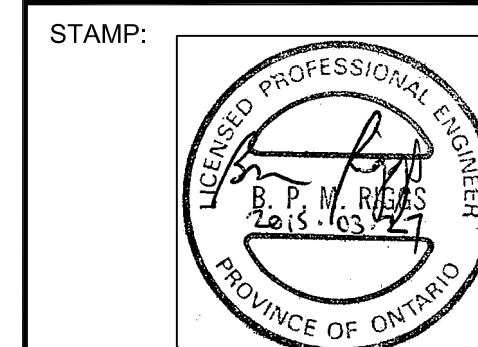
S-1.9

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0 0.1 0.25 0.5m

0 0.2 0.5 1m



LEGEND:

revision	date

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C	drawing no. - where detail required
C	dessin no. - ou détail exigé
C	drawing no. - where detailed
C	dessin no. - ou détaillé

project title
titre du projet
HAMILTON ONTARIO

RANDLE REEF SEDIMENT
REMEDIATION PROJECT (STAGE 1)

drawing title
titre du dessin
ECF,
STEEL DETAILS

drawn by
dessiné par
A.MARCZENKO

designed by
conçu par
B.RIGGS / P.LAMPKIN

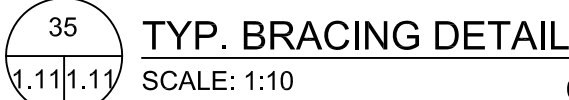
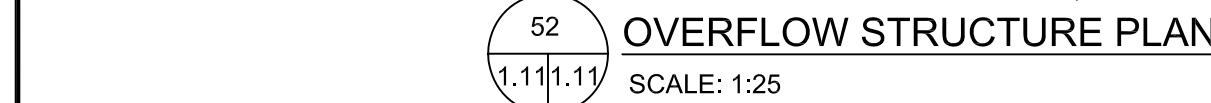
approved by
approuvé par

bid
offre
project manager
administrateur de projets

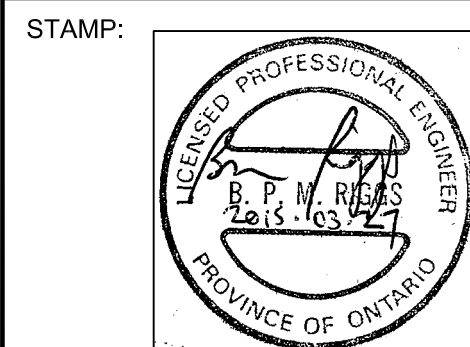
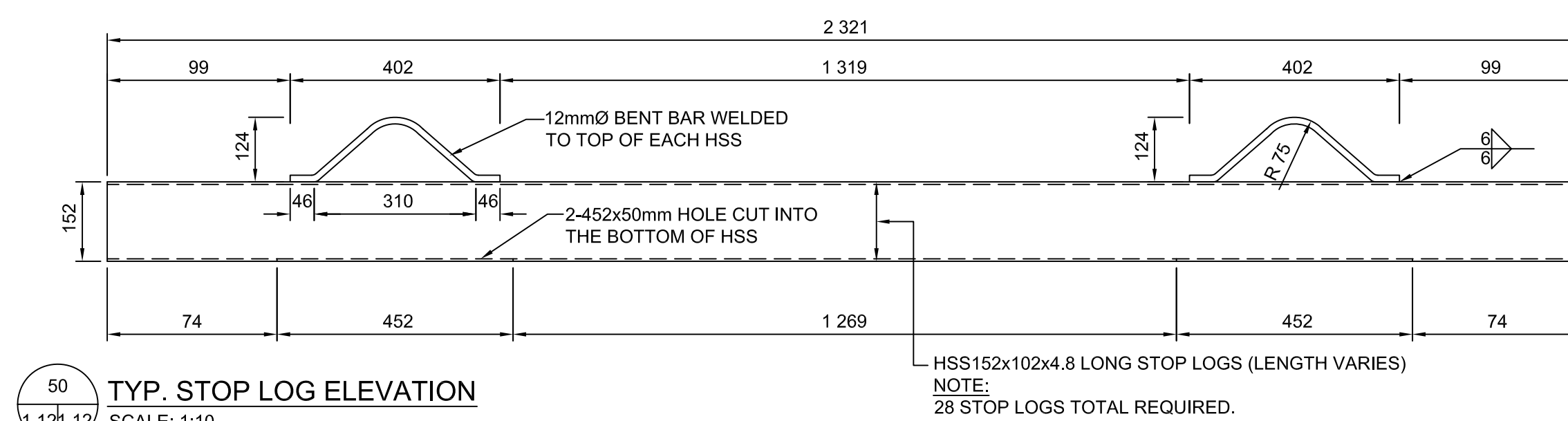
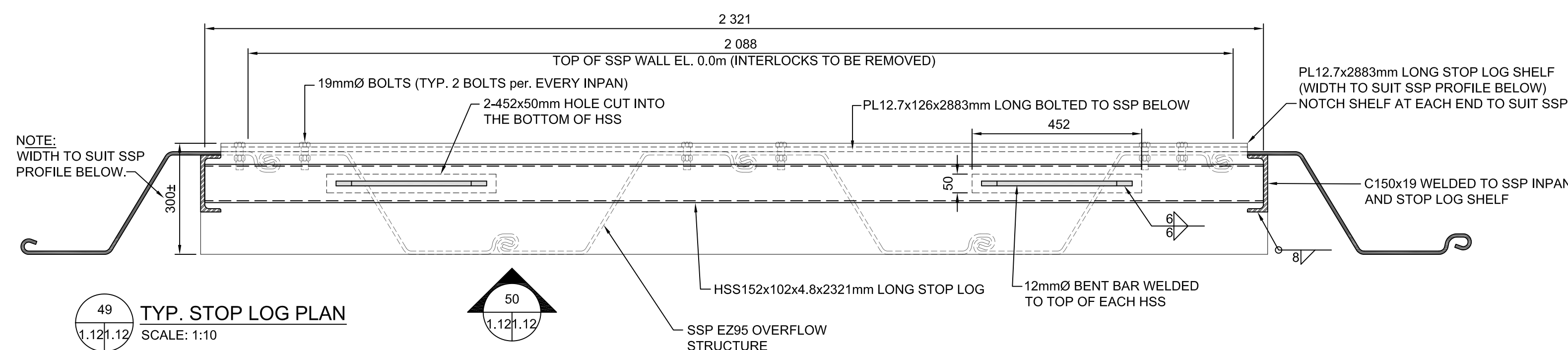
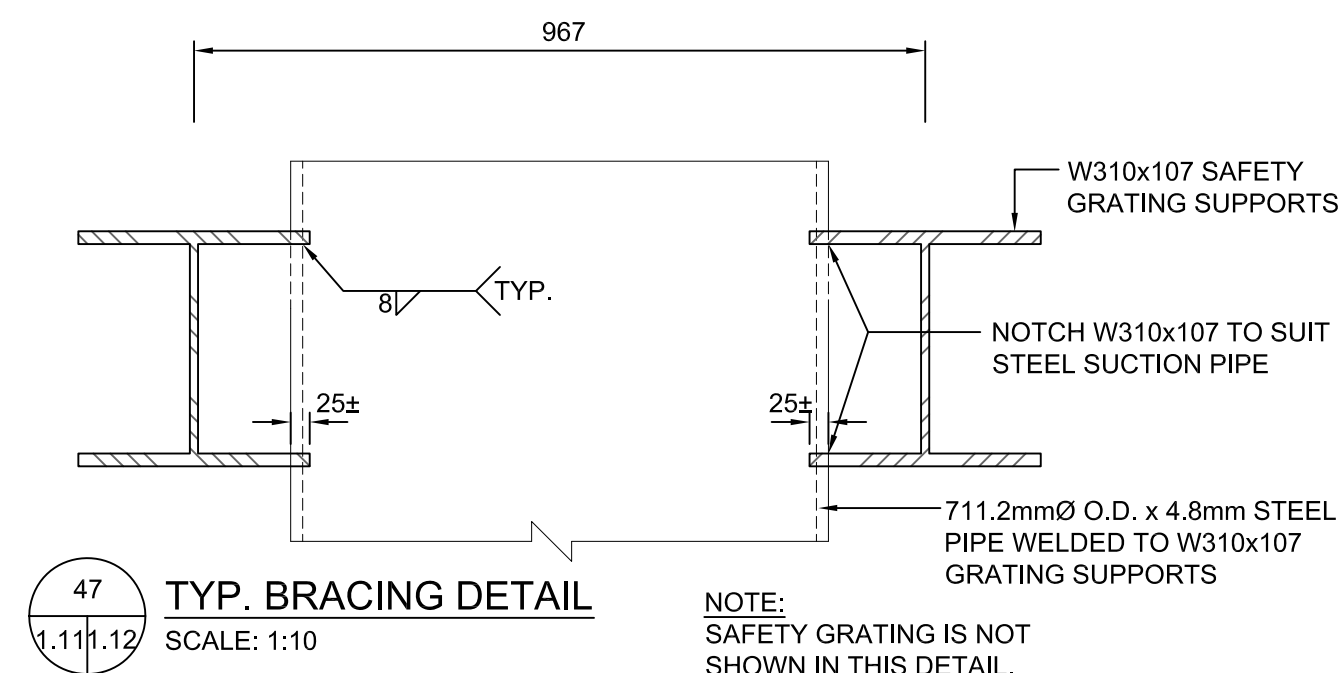
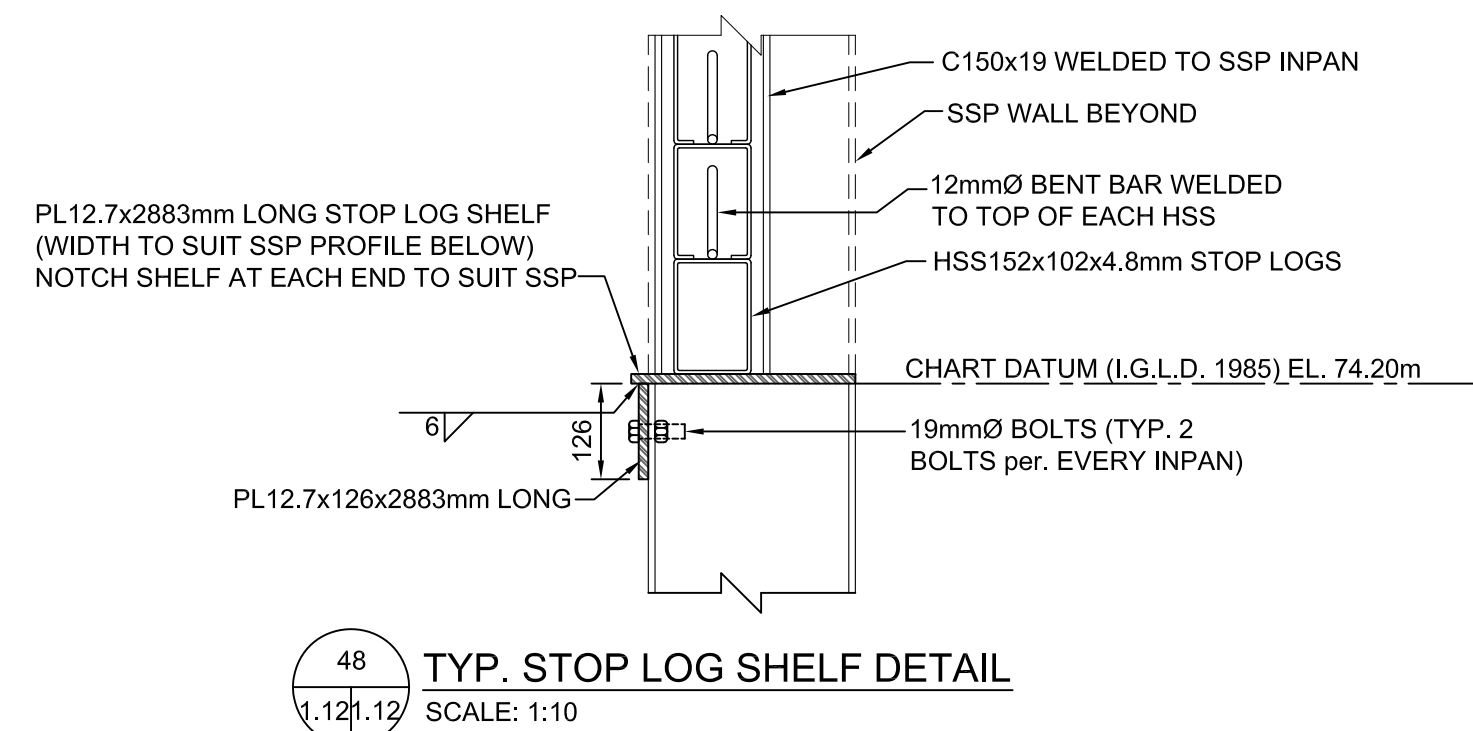
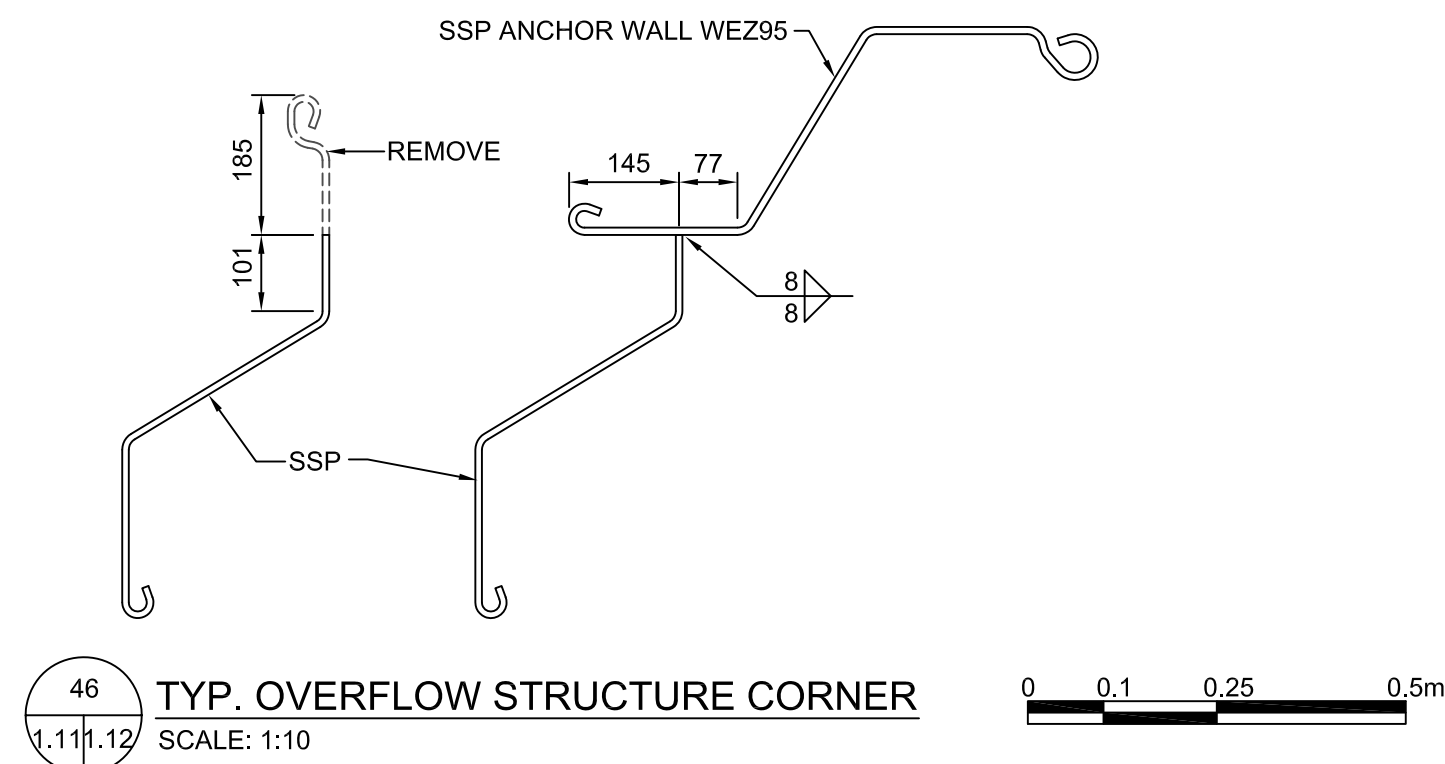
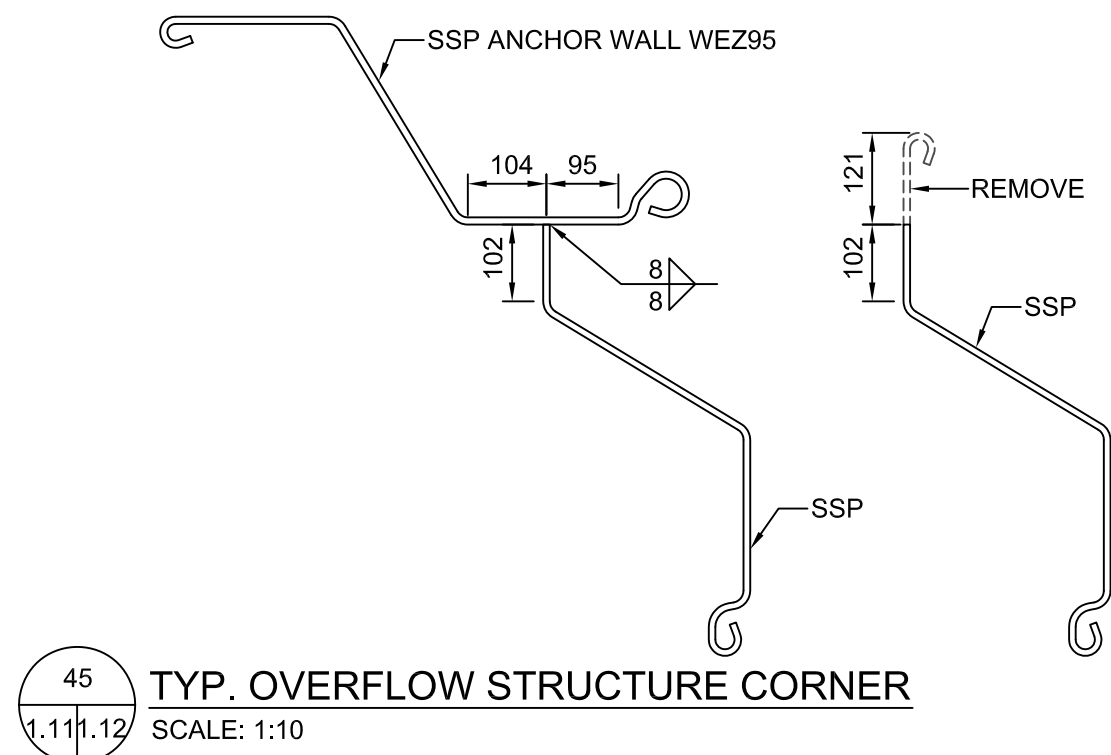
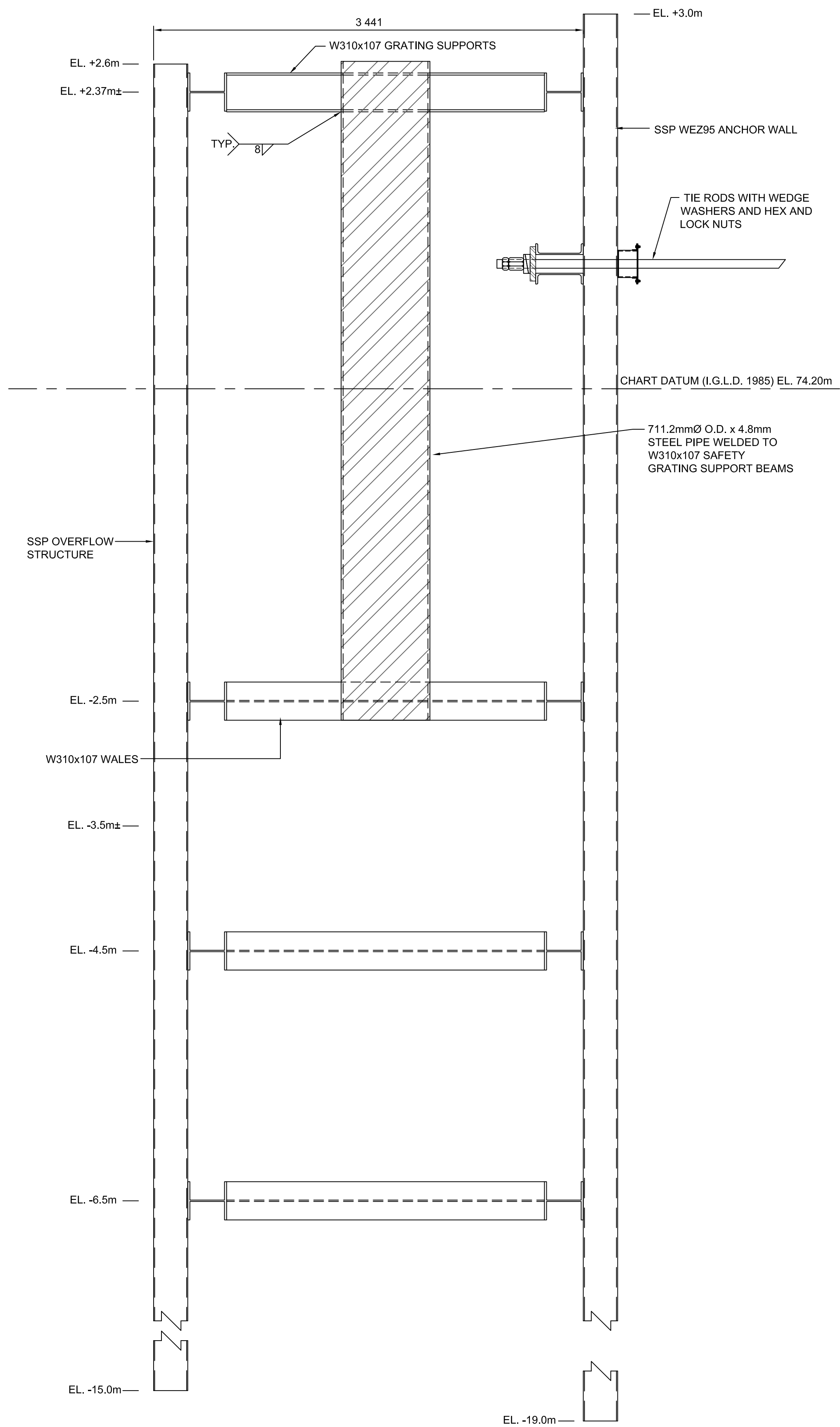
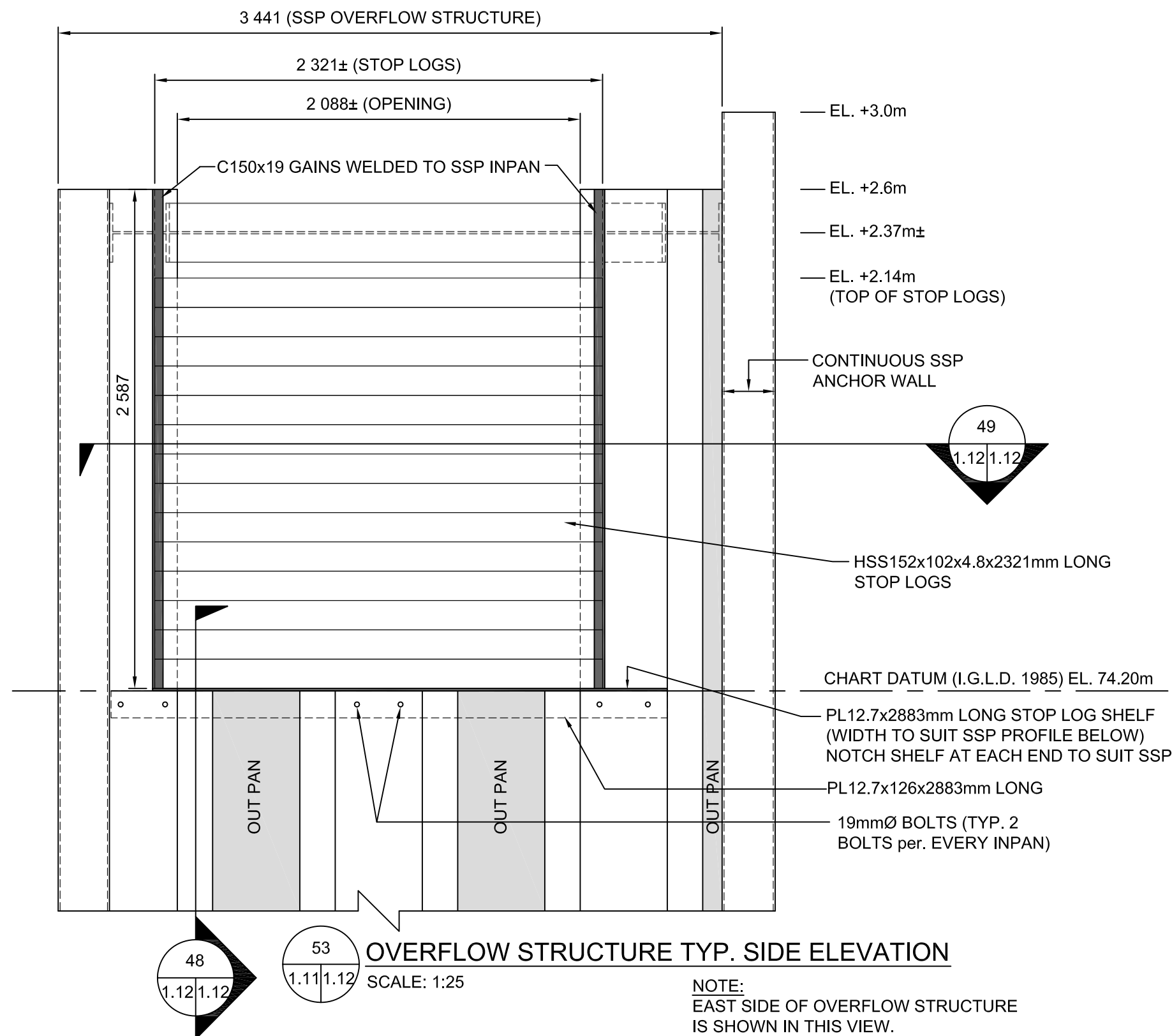
project date
date du projet
2015-03-27

project no.
no. du projet
R.050927.001

drawing no.
dessiné no.
S-1.10



0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 millimetres



LEGEND:

revision	date

Do not scale drawings.
Verify all dimensions and conditions on site and immediately notify the
Departmental Representative of all discrepancies.

A	Detail No.
B	drawing no. - where detail required
C	drawing no. - where detailed

project title
titre du projet
HAMILTON ONTARIO

RANDLE REEF SEDIMENT
REMEDIATION PROJECT (STAGE 1)

drawing title
titre du dessin
ECF,
OVERFLOW STRUCTURE DETAILS

drawn by
dessiné par
A.MARCZENKO

designed by
conçu par
B.RIGGS / P.LAMPKIN

approved by
approuvé par

bid
offre
project manager
administrateur de projets

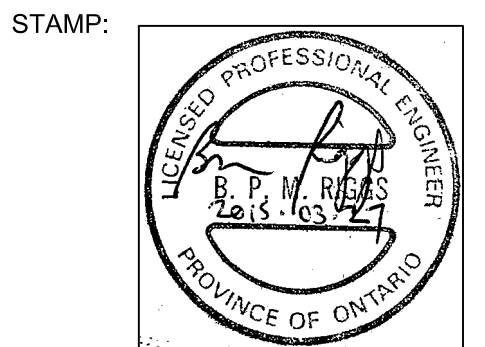
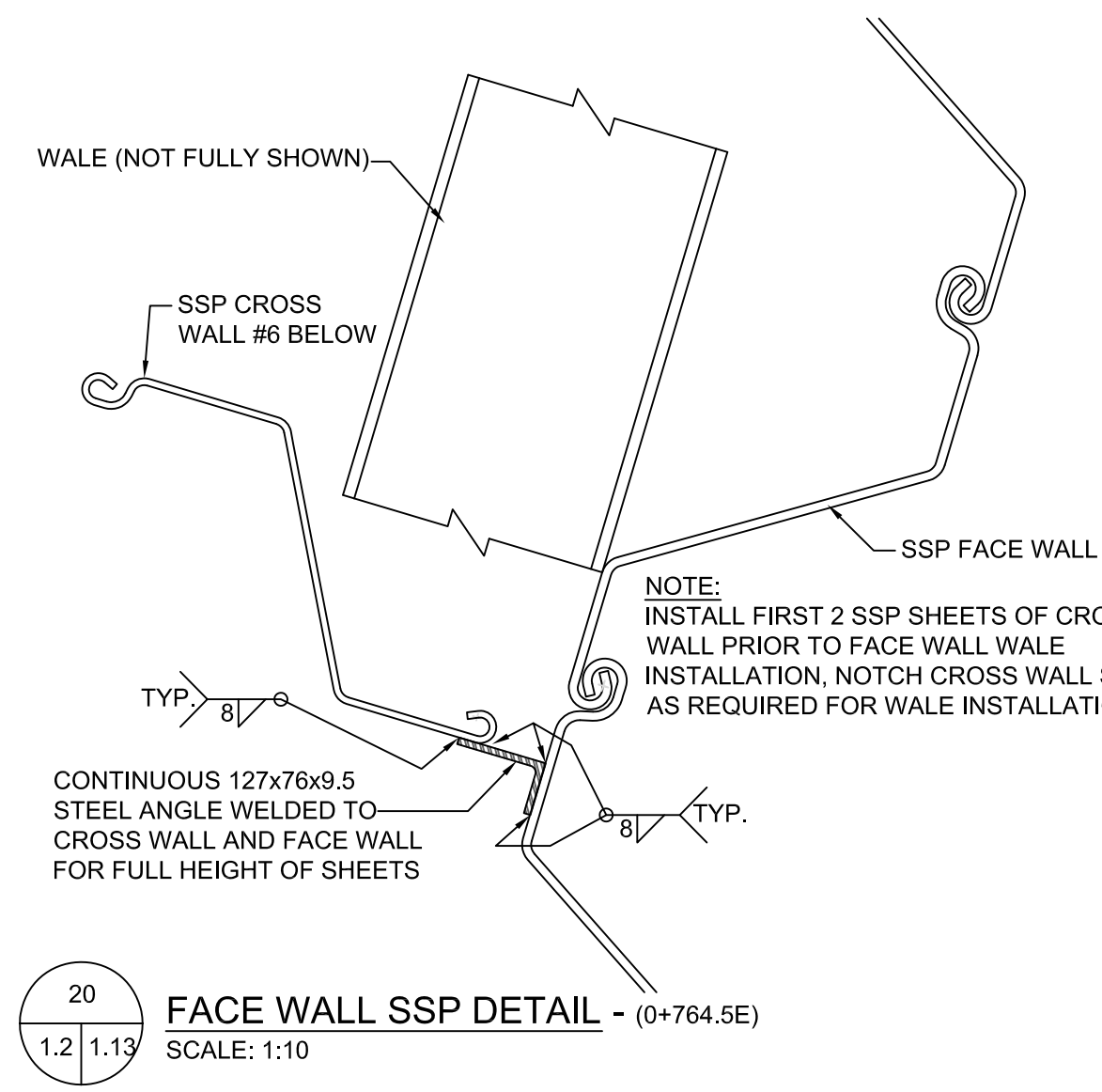
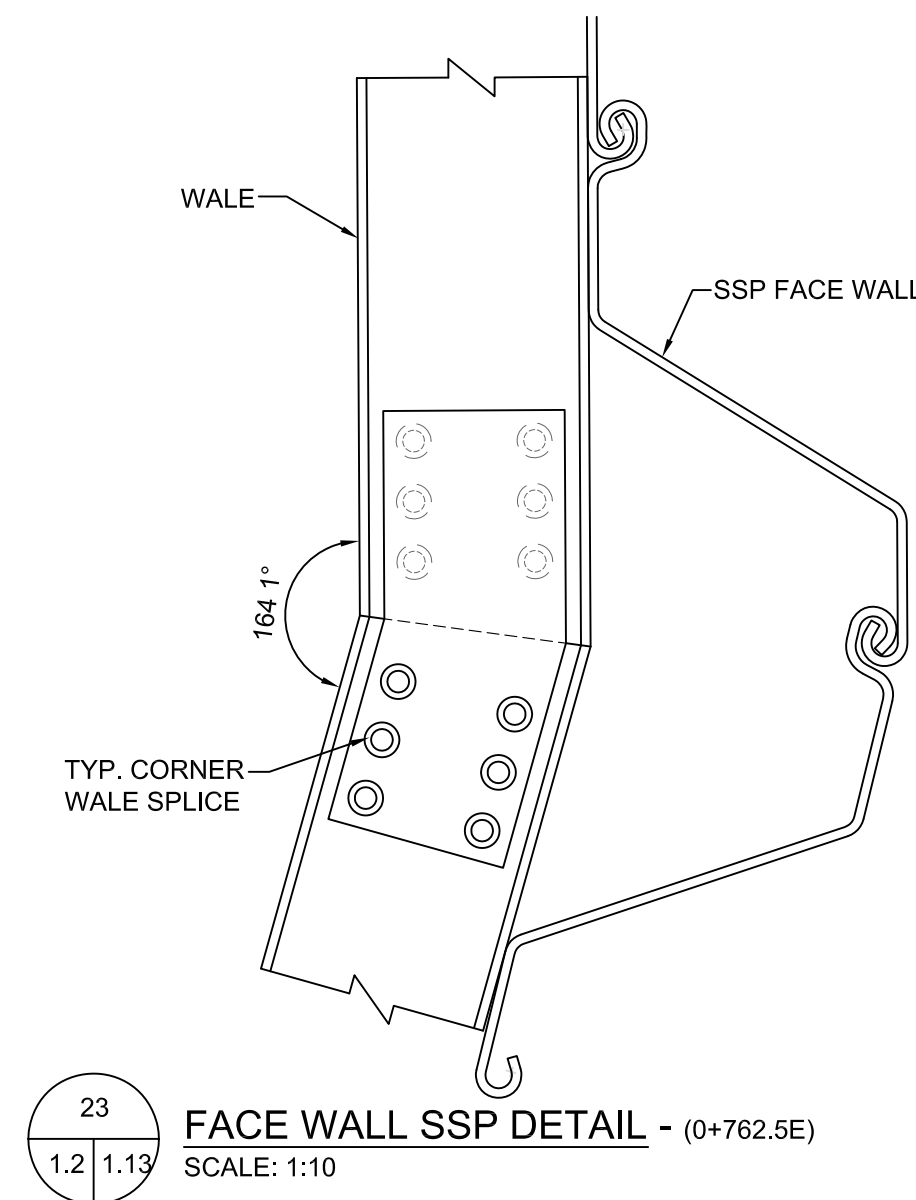
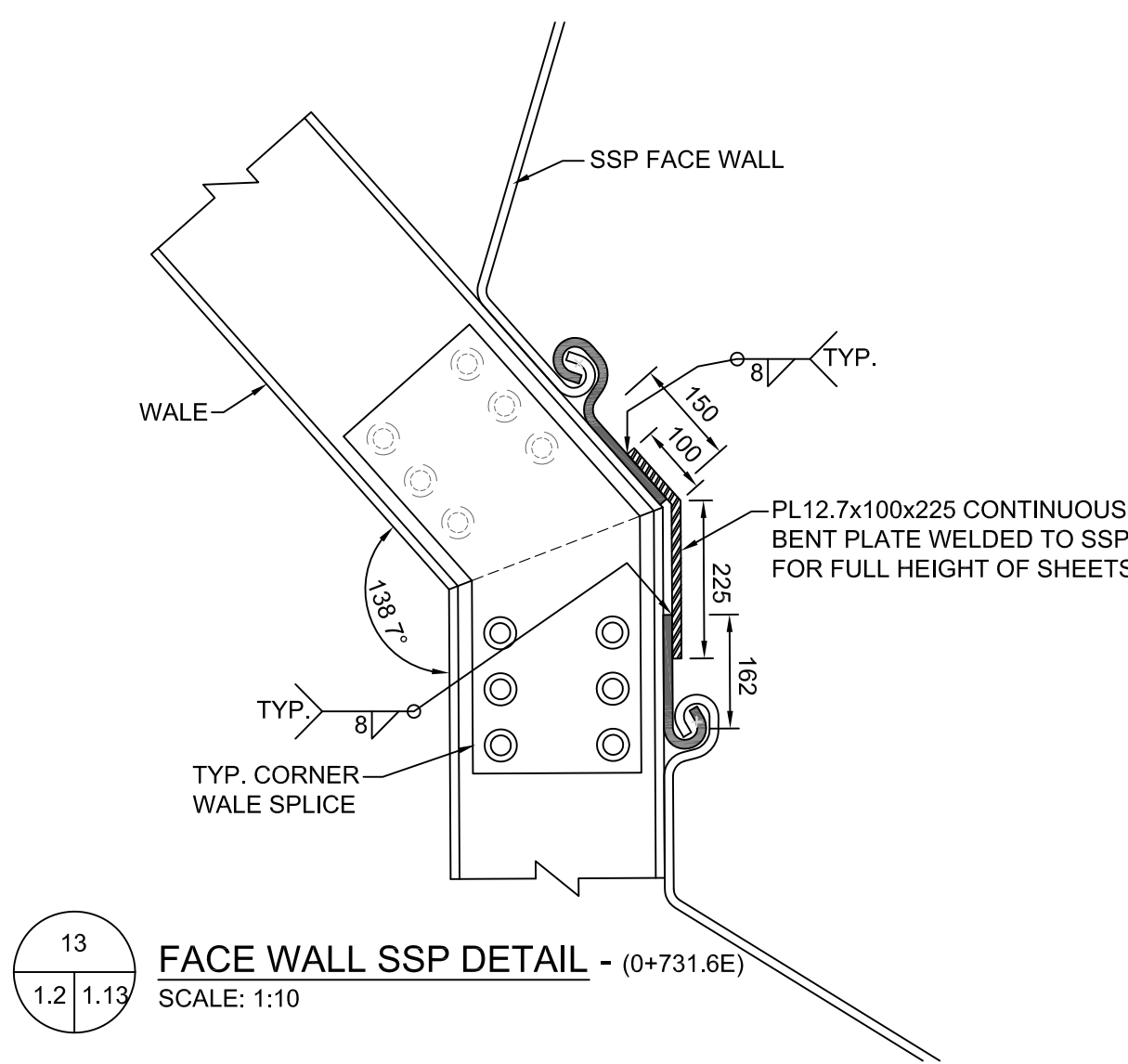
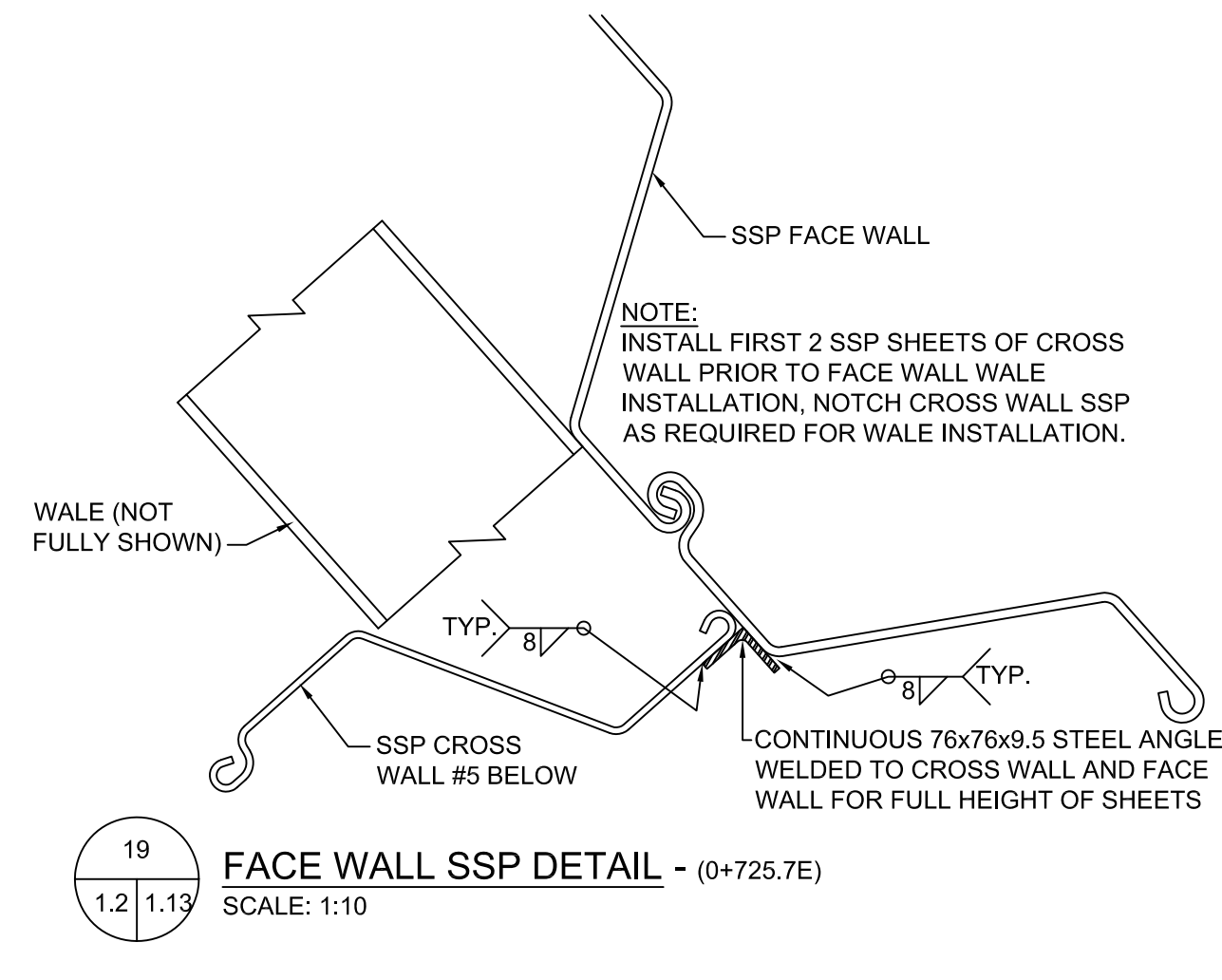
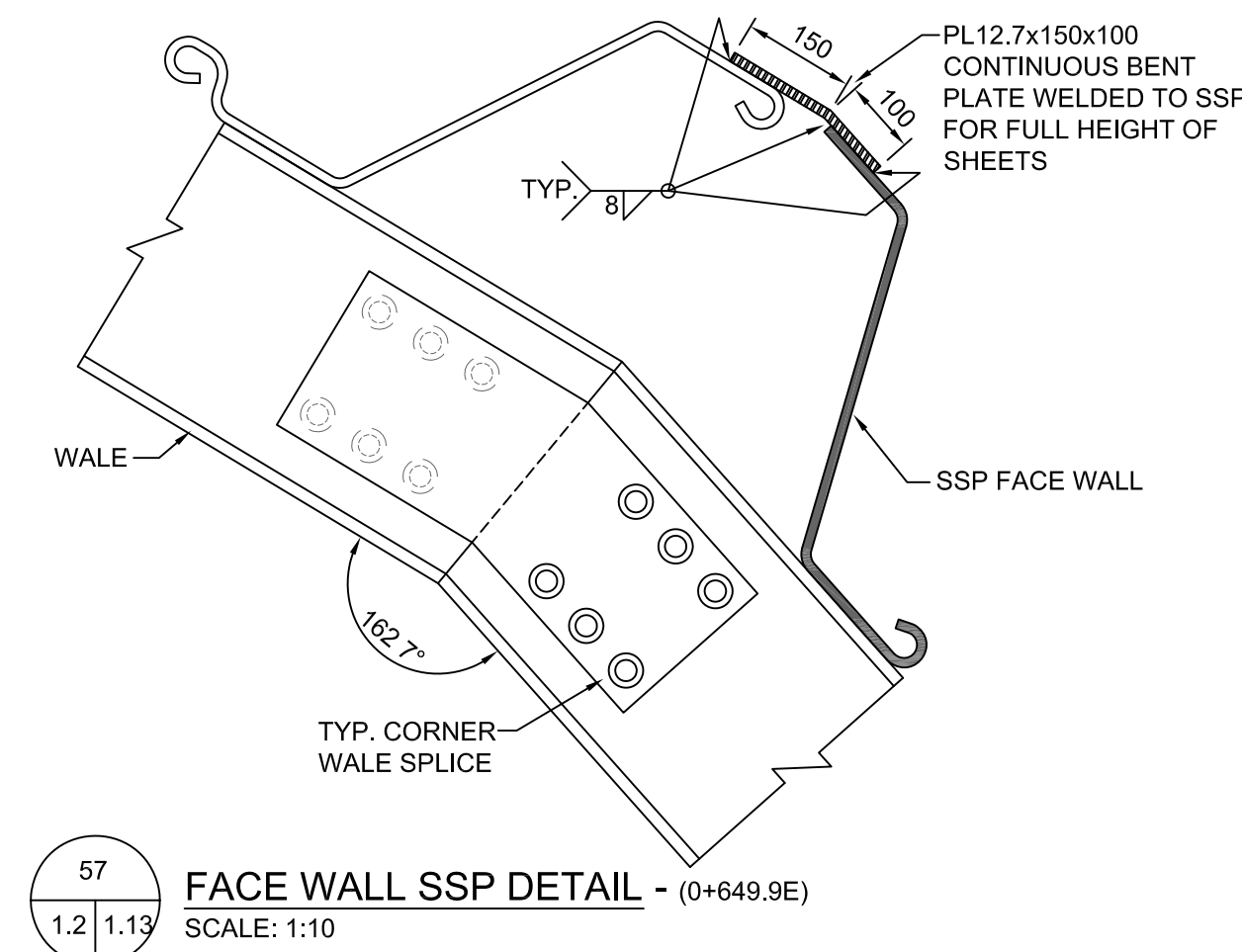
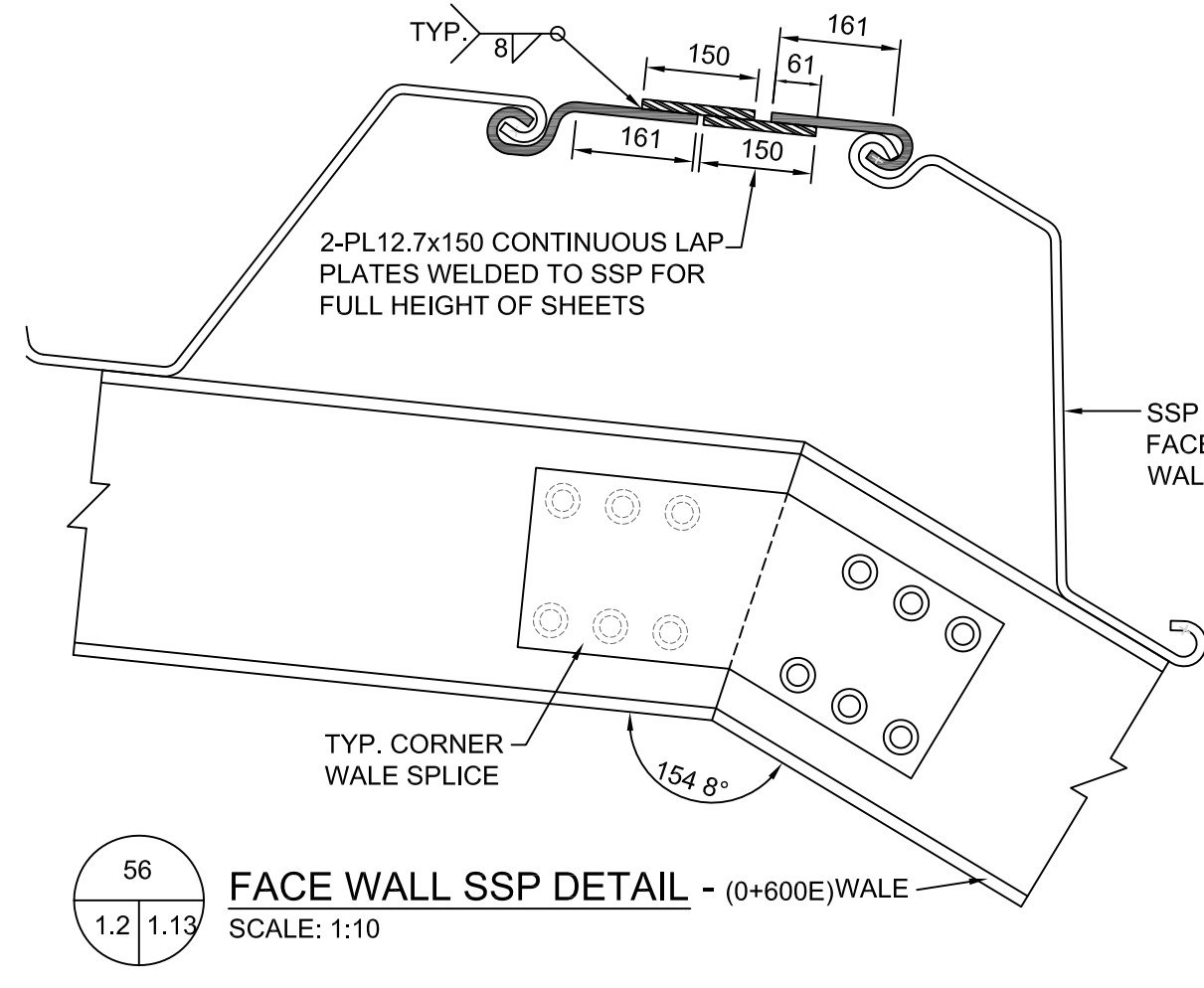
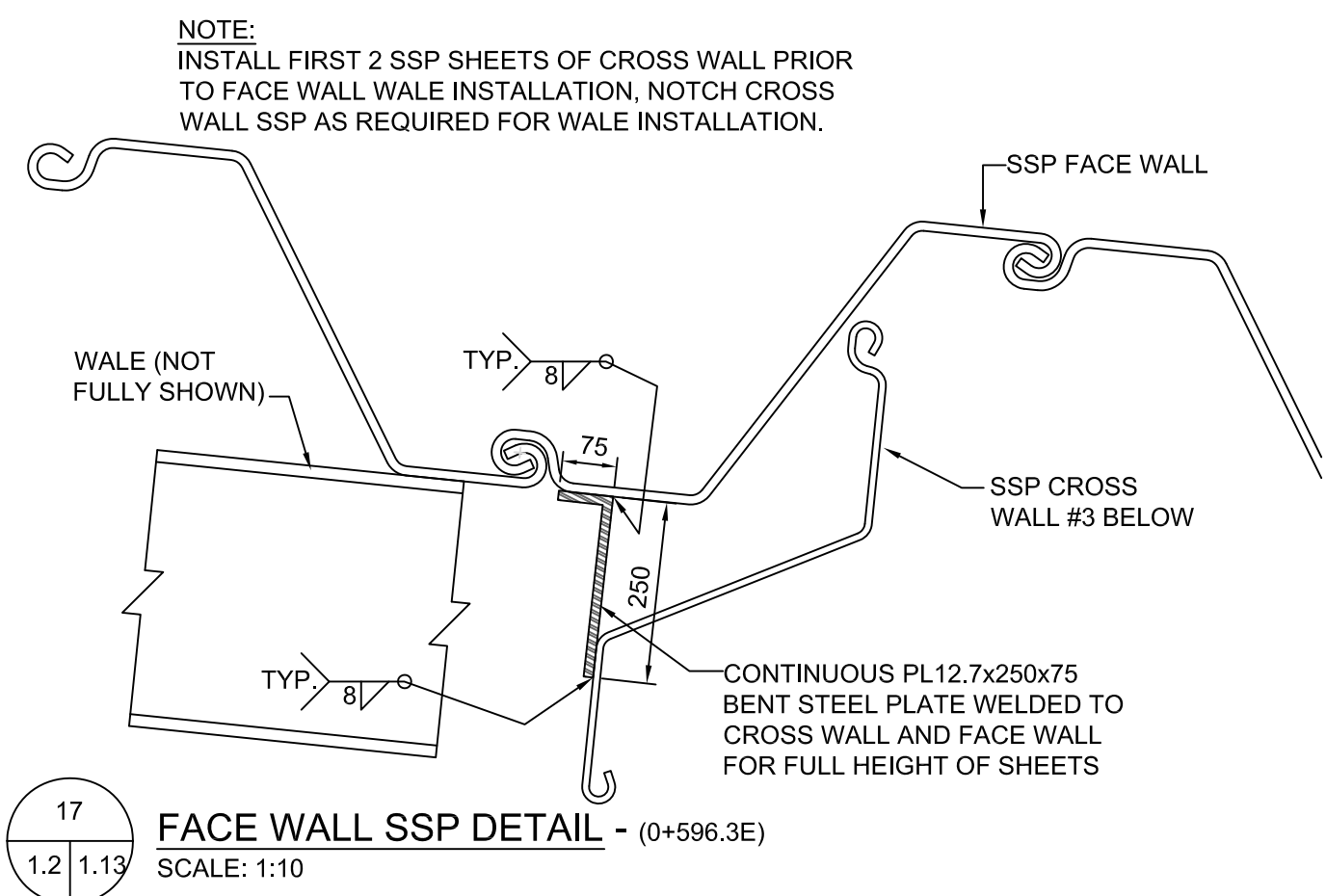
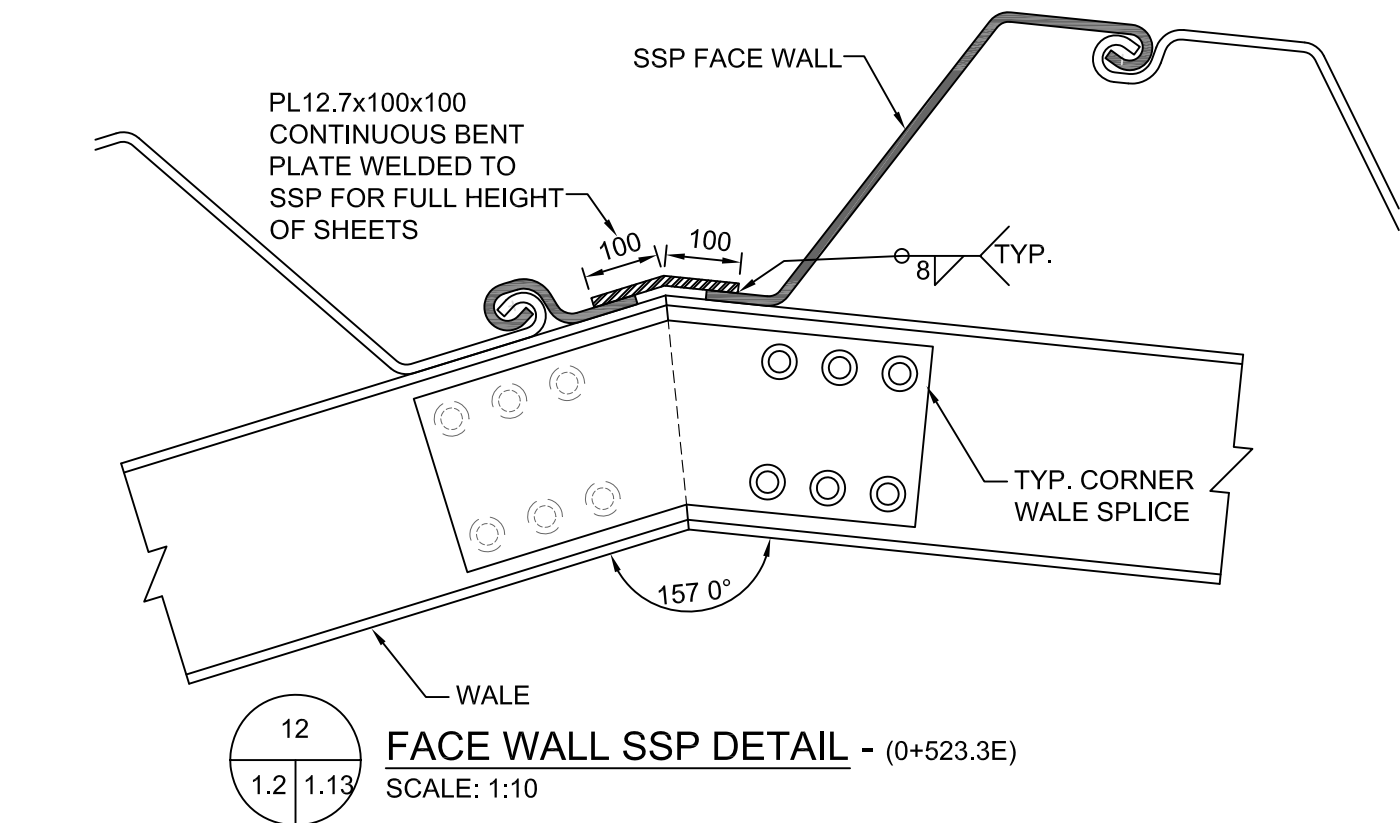
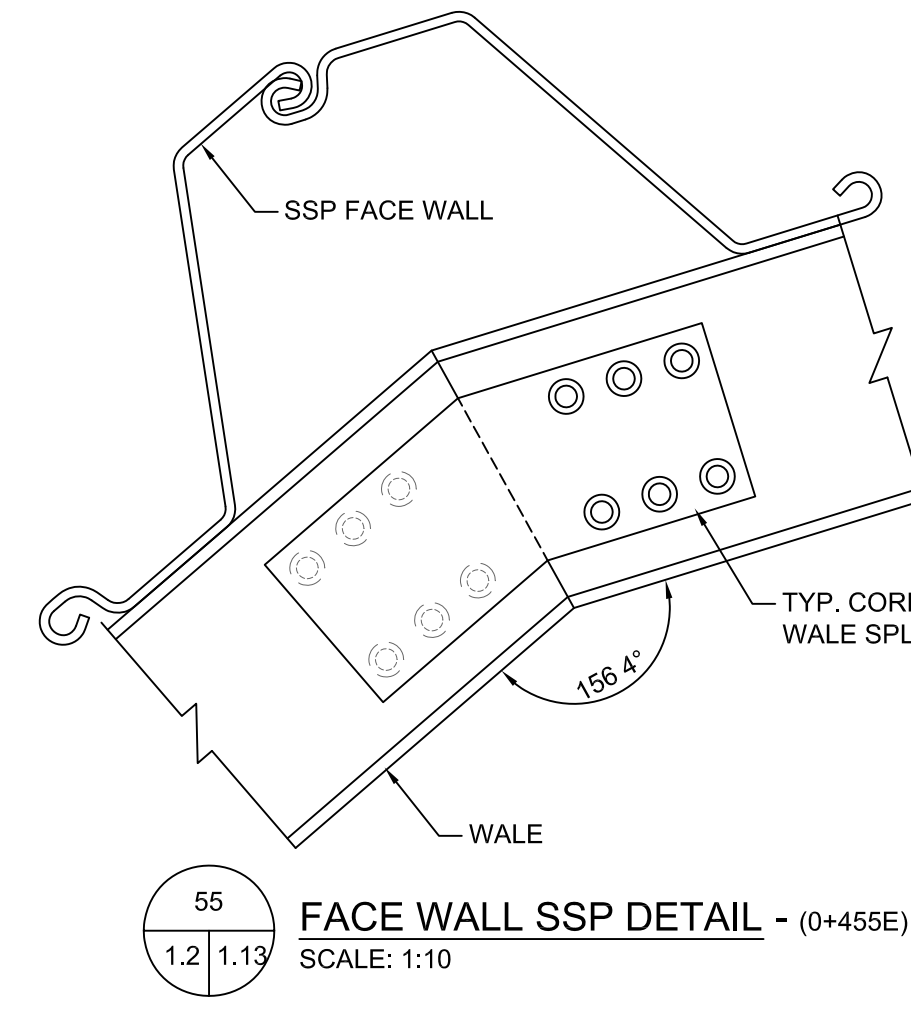
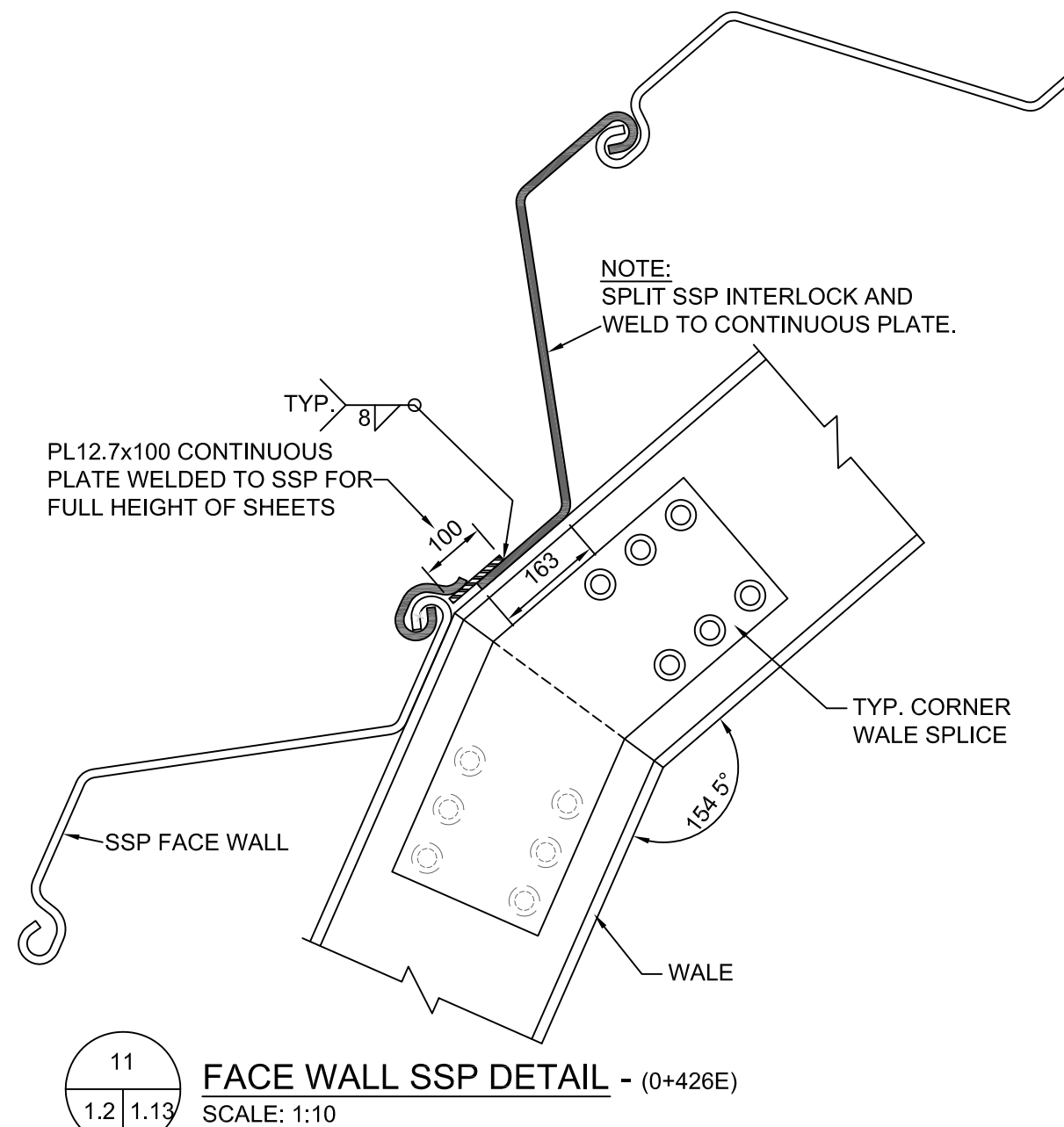
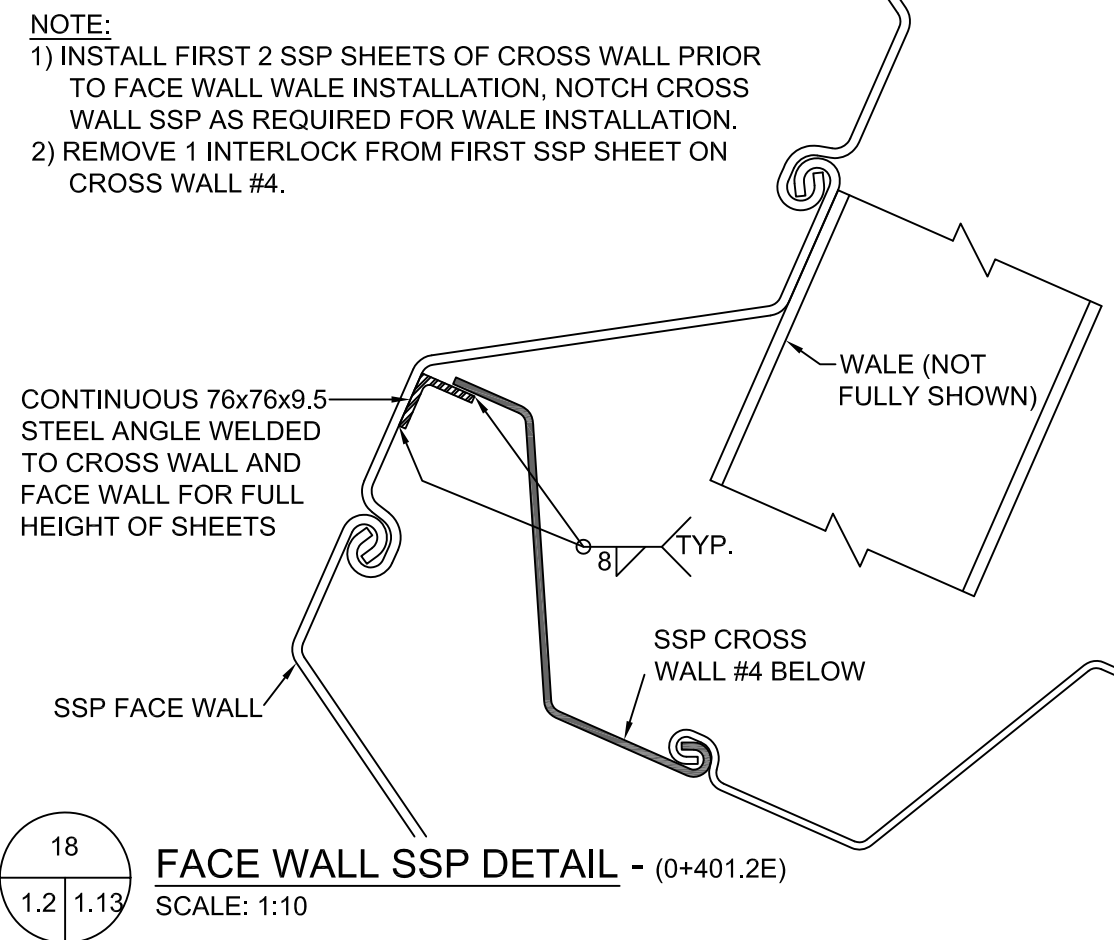
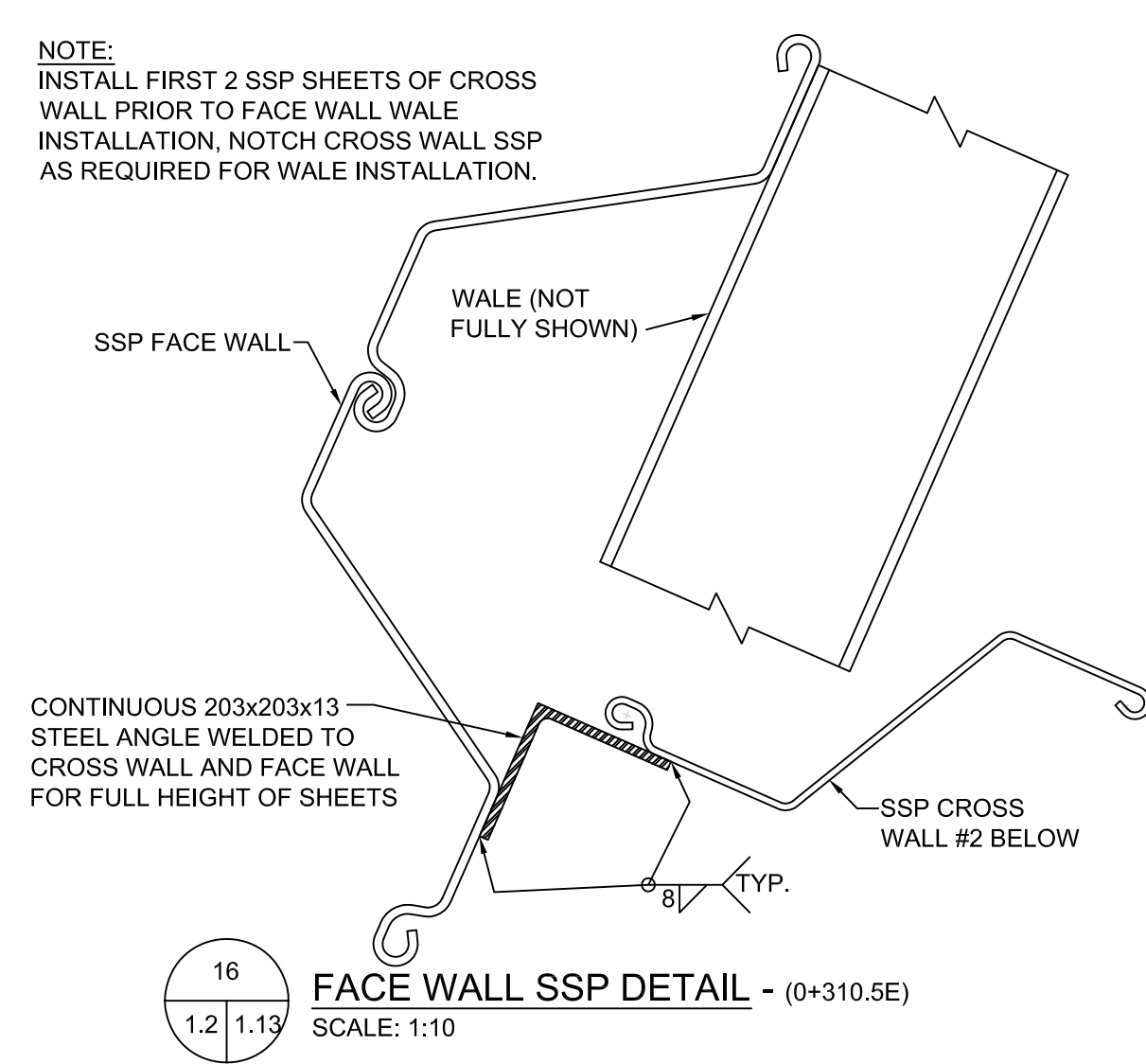
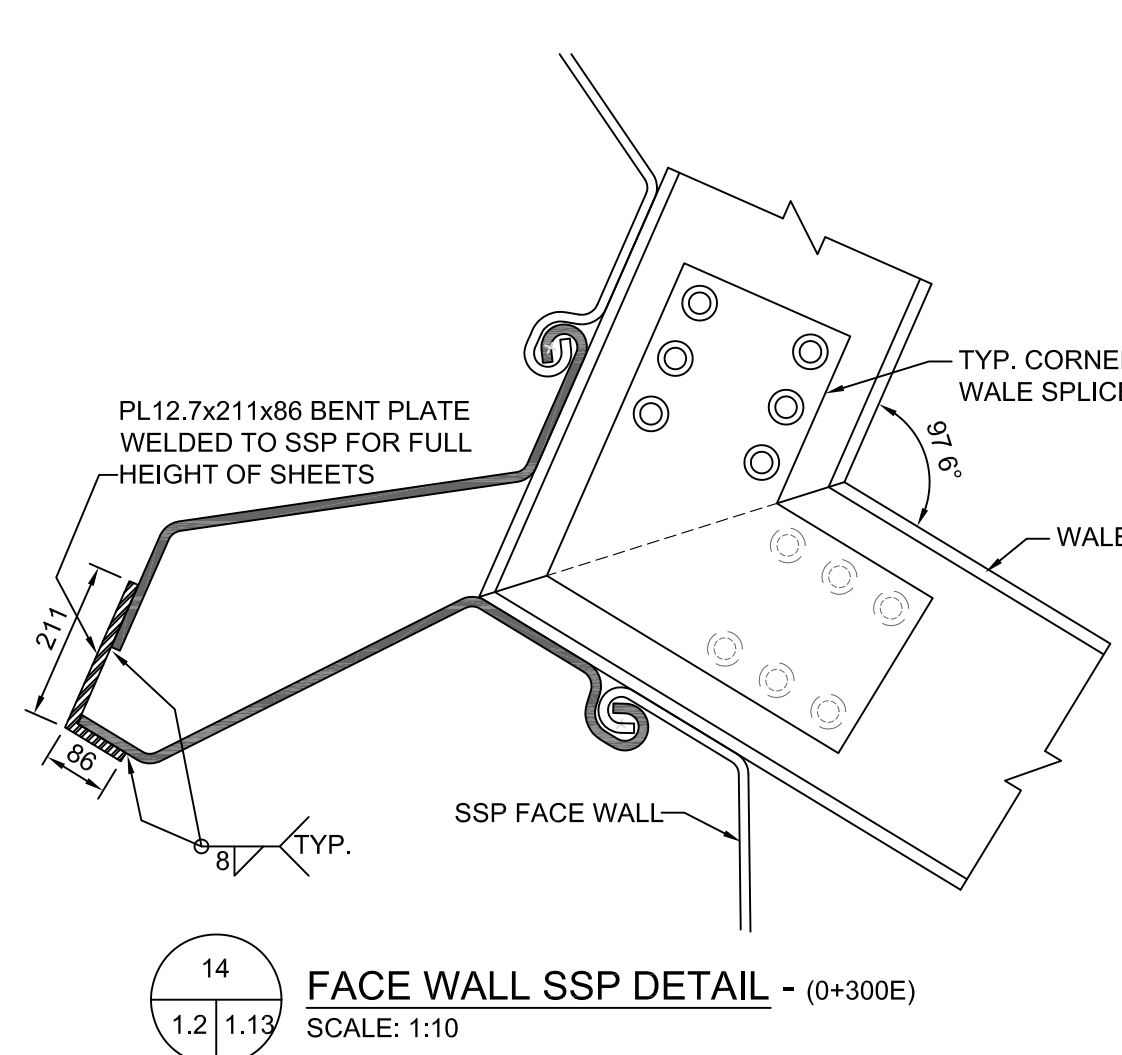
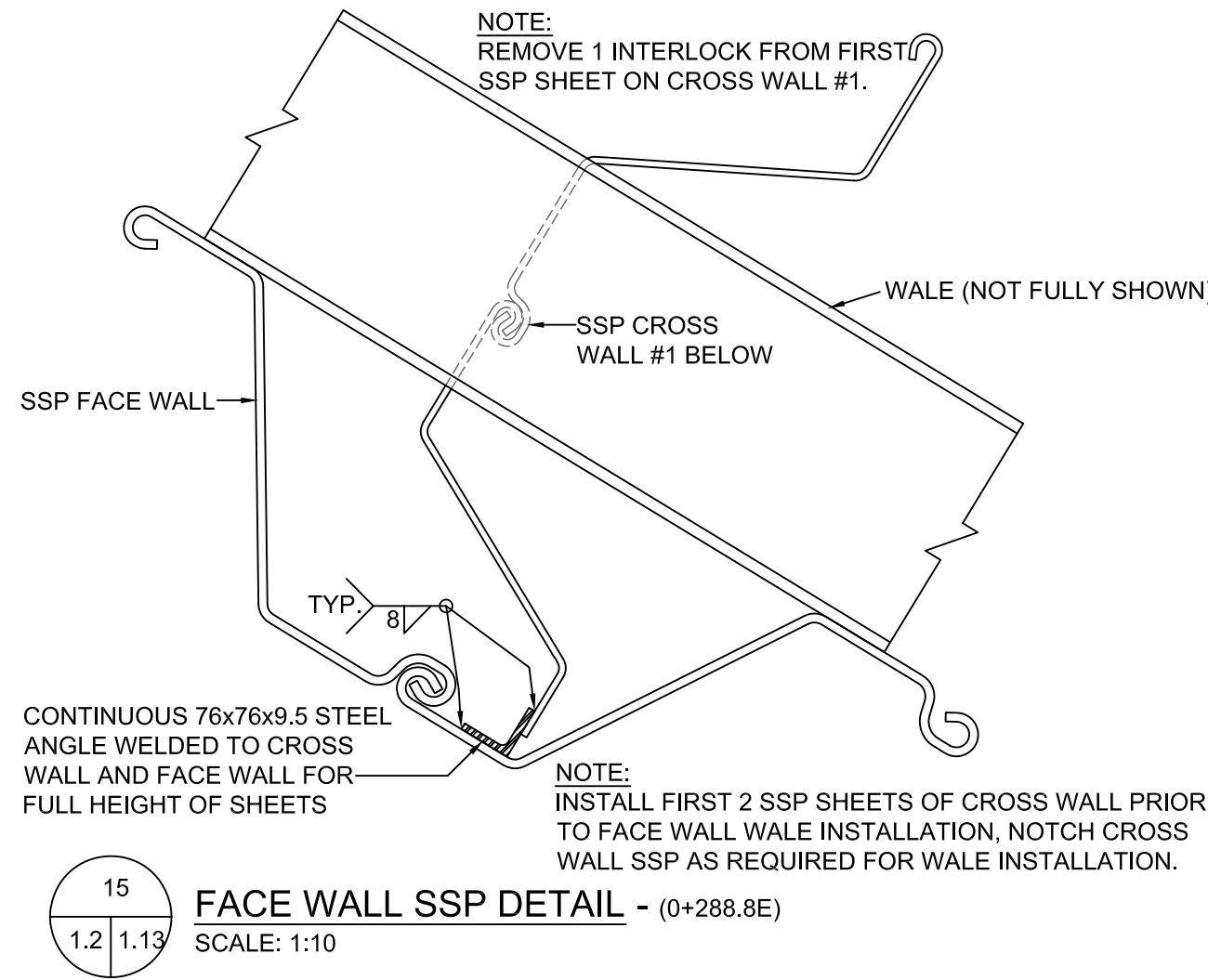
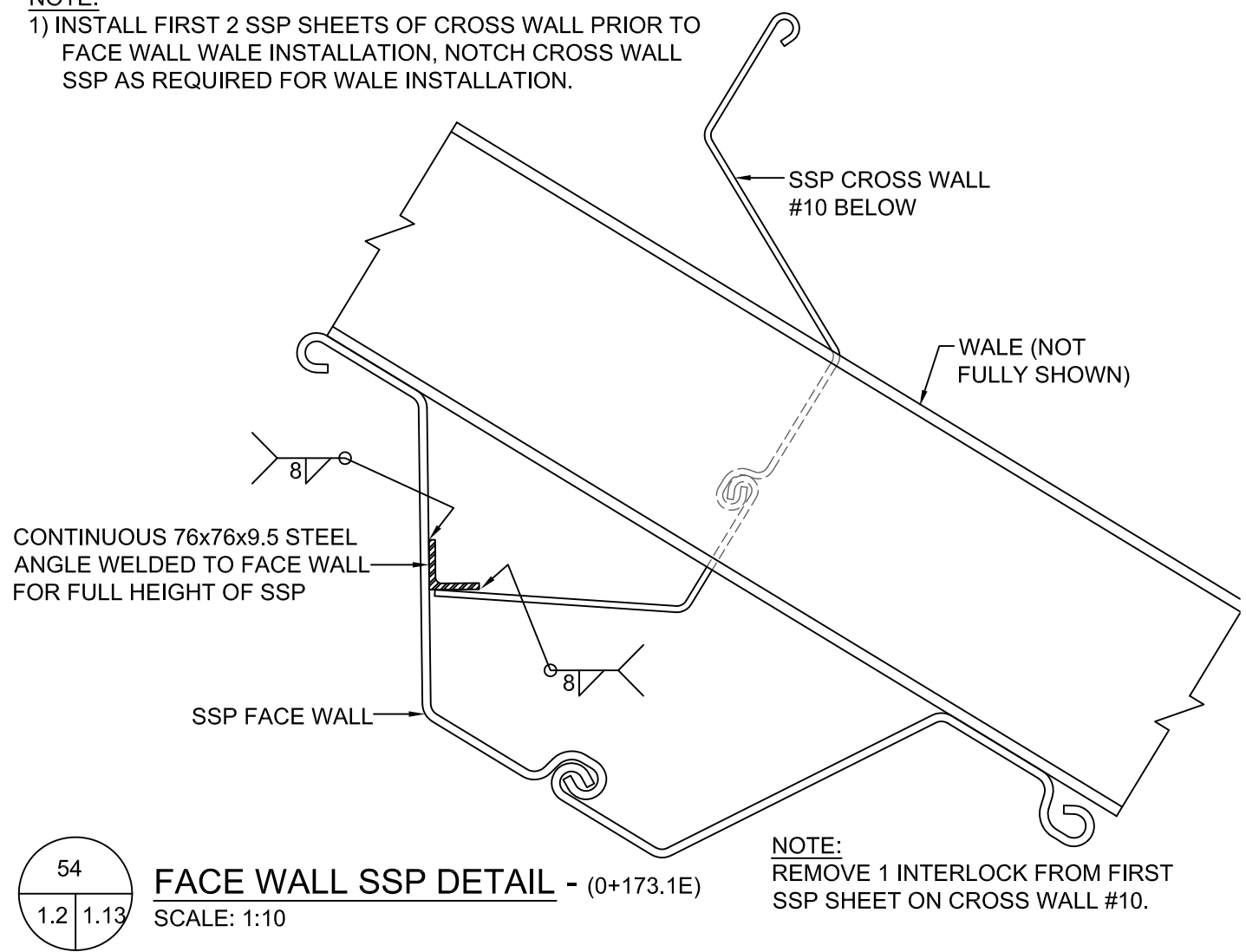
project date
date du projet
2015-03-27

project no.
no. du projet
R.050927.001

drawing no.
dessiné no.
S-1.12

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 millimetres

NOTE:
1) INSTALL FIRST 2 SSP SHEETS OF CROSS WALL PRIOR TO FACE WALL WALE INSTALLATION, NOTCH CROSS WALL SSP AS REQUIRED FOR WALE INSTALLATION.



LEGEND:

NOTE:
1) PROVIDE SHOP DRAWINGS TO DEPARTMENTAL REPRESENTATIVE FOR SSP WALL INSTALLATION. EACH CUSTOM SSP CORNER, AND WALE DETAIL WILL BE BASED ON ACTUAL MEASUREMENTS. MINOR MODIFICATIONS TO ACCOMMODATE FIELD MEASUREMENTS WILL BE CONSIDERED.
2) CONTINUOUS STEEL ANGLE (SIZE VARIES) TYPICAL CONNECTION IS REQUIRED AT BOTH ENDS OF ALL SSP CROSS WALLS.

Do not scale drawings.
Verify all dimensions and conditions on site and immediately notify the Departmental Representative of all discrepancies.

revision	date

project title
titre du projet
HAMILTON ONTARIO

RANDLE REEF SEDIMENT
REMEDIATION PROJECT (STAGE 1)

drawing title
titre du dessin

ECF,
STEEL DETAILS

drawn by
dessiné par
A.MARCZENKO

designed by
conçu par
B.RIGGS / P.LAMPKIN

approved by
approuvé par

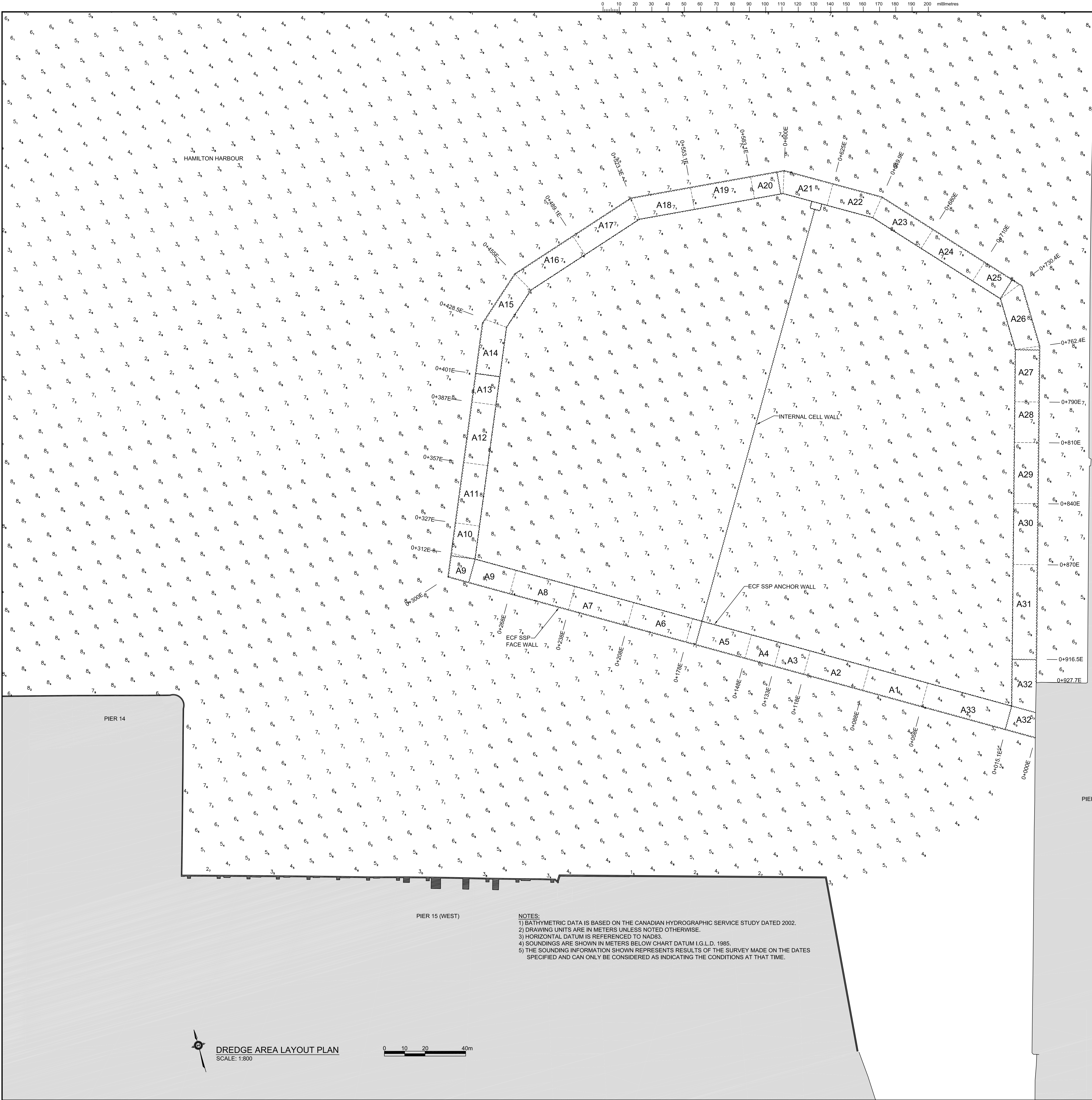
bid
offre
project manager
administrateur de projets

project date
date du projet
2015-03-27

project no.
no. du projet
R.050927.001

drawing no.
dessiné no.
S-1.13

0 0.1 0.25 0.5m



LEGEND	
DREDGE AREA	DREDGE GRADE (m)
A1	-9
A2	-9
A3	-9
A4	-11.1
A5	-10.5
A6	-10
A7	-9
A8	-8.8
A9	-9.2
A10	-9.2
A11	-9.5
A12	-9.5
A13	-9
A14	-9
A15	-9.5
A16	-10
A17	-10
A18	-9.4
A19	-9.4
A20	-9.4
A21	-9.4
A22	-9.4
A23	-10
A24	-10
A25	-10
A26	-10
A27	-12
A28	-12
A29	-12
A30	-12
A31	-12
A32	-9
A33	-9

- 0+204.6±N (STELCO OFFFALL)
— 0+200N
- U.S. STEEL
STELCO DOCK
- 0+129±N (STELCO BAY INTAKE)
— 0+123.4±N (STELCO OFFFALL #2)
— 0+113.5±N (STELCO BAY INTAKE)
— 0+916.5E
— 0+100N
— 0+099±N (STELCO OFFFALL #1)

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada

HAMILTON
PORT AUTHORITY
Administration Portuaire de Hamilton

RIGGS
ENGINEERING
RIGGS ENGINEERING LTD.
1240 Commissioner's Road West, Suite 205
London, Ontario N6K 1C7
(519)-657-1040

- Soundings are valid only for the date and time they were taken.
- This plan is NOT FOR NAVIGATION
- In the ordinary practice of good seamanship, navigators use updated hydrographic charts for navigation of their vessels.

STAMP:

LEGEND:

8₃ DEPTH BELOW CHART DATUM

----- DREDGE AREA LIMITS

A# DREDGE AREA ID CODE

revision		date

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A Detail No.
B No. du detail
C drawing no. - where detail required
dessin no. - ou detail exigé
drawing no. - where detailed
dessin no. - ou detaillé

project title
titre du projet

HAMILTONONTARIO

RANDLE REEF SEDIMENT
REMEDATION PROJECT (STAGE 1)

drawing title
titre du dessin

CLASS "B" DREDGING - SEDIMENTS
DREDGE AREA LAYOUT PLAN

drawn by
dessiné par

A.MARCZENKO

designed by
conçu par

B.RIGGS / P.LAMPKIN

approved by
approuvé par

bid
offre

project manager
administrateur de projets

project date
date du projet

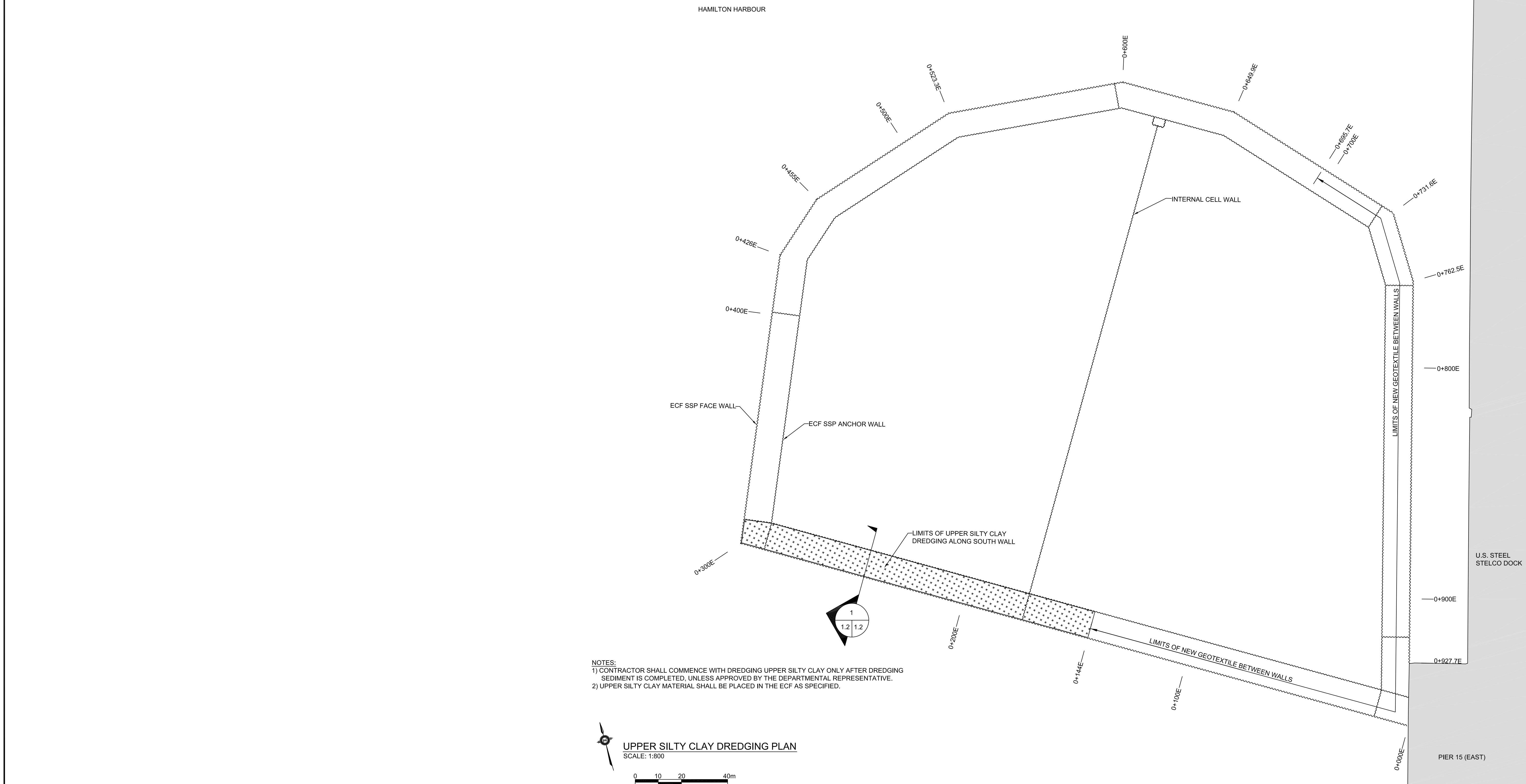
2015-03-27

project no.
no. du projet


R.050927.001

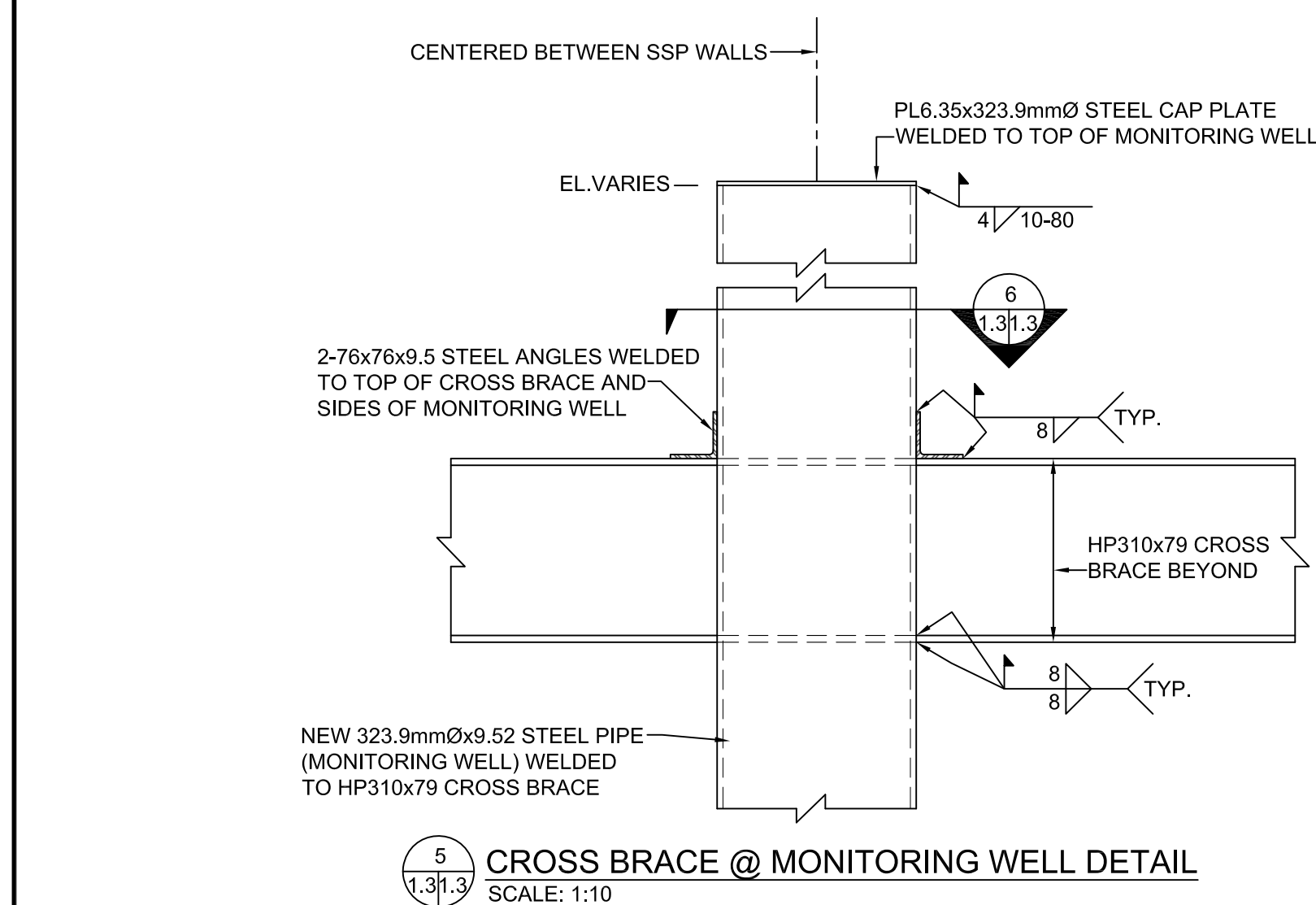
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dessiné no.

MA-1.1

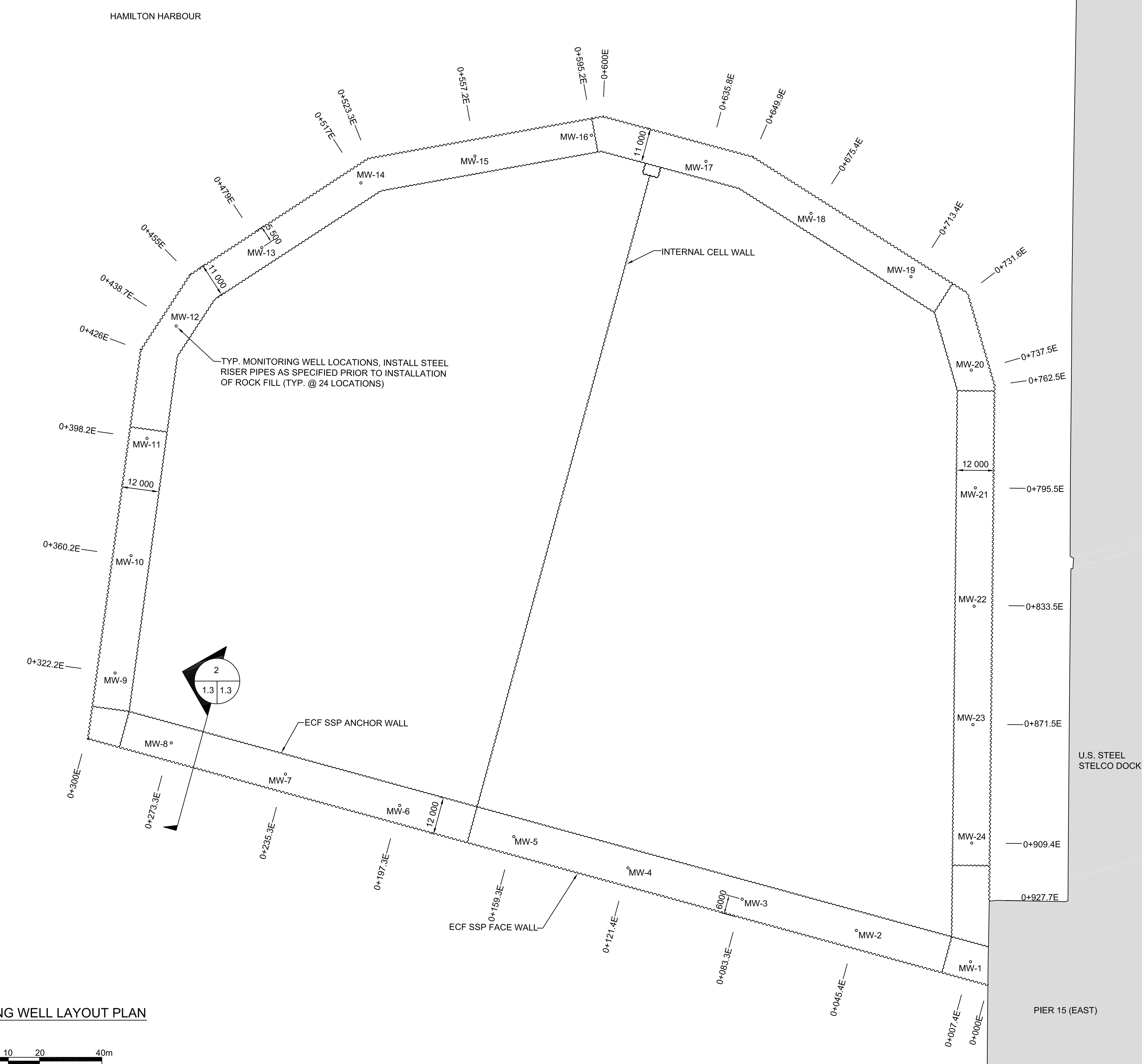
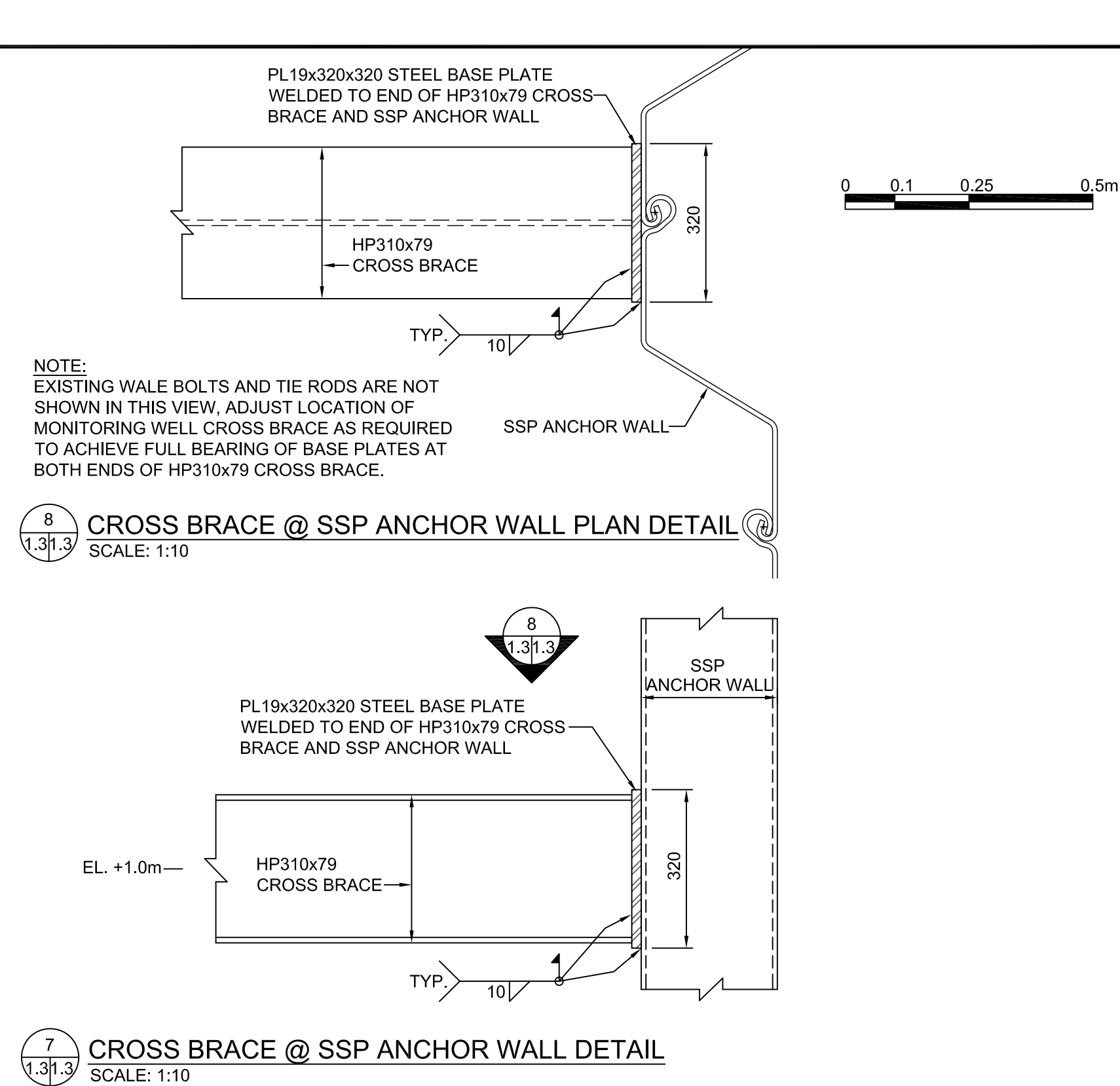


UPPER SILTY CLAY DREDGING PLAN
SCALE: 1:800





MONITORING WELL ID		STATION LOCATION	
MW-1	0+007.4E	MW-13	0+479E
MW-2	0+045.4E	MW-14	0+517E
MW-3	0+083.3E	MW-15	0+557.2E
MW-4	0+121.4E	MW-16	0+595.2E
MW-5	0+159.3E	MW-17	0+635.8E
MW-6	0+197.3E	MW-18	0+675.4E
MW-7	0+235.3E	MW-19	0+713.4E
MW-8	0+273.3E	MW-20	0+737.5E
MW-9	0+322.2E	MW-21	0+795.5E
MW-10	0+360.2E	MW-22	0+833.5E
MW-11	0+398.2E	MW-23	0+871.5E
MW-12	0+438.7E	MW-24	0+909.4E



0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 millimetres

HAMILTON HARBOUR

ECF SSP FACE WALL

ECF SSP ANCHOR WALL

INTERNAL CELL WALL

U.S. STEEL
STELCO DOCK

PIER 15 (EAST)

PIER 15 (WEST)

HISTORIC SAMPLE LOCATIONS
SCALE: 1:600

0 5 15 30m



Public Works and
Government Services Canada
Travaux publics et
Services gouvernementaux Canada



HAMILTON
PORT AUTHORITY
Administration Portuaire de Hamilton



RIGGS ENGINEERING LTD.
1240 Commissioner's Road West, Suite 205
London, Ontario N6K 1C7
(519)-657-1040

STAMP:



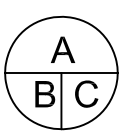
LEGEND:

● HISTORIC SAMPLE LOCATIONS

SAMPLE ID CODE

03-45
SAMPLE NUMBER THAT YEAR (ex. #45)
YEAR SAMPLE WAS TAKEN (ex. 2003)

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A Detail No.
No. du détail
B drawing no. - where detail required
dessin no. - où détail exigé
C drawing no. - where detailed
dessin no. - où détaillé

project title
titre du projet
HAMILTON **ONTARIO**

**RANDLE REEF SEDIMENT
REMEDIATION PROJECT (STAGE 1)**

drawing title
titre du dessin

HISTORIC SAMPLE LOCATIONS

drawn by
dessiné par **A.MARCZENKO**

designed by
conçu par **B.RIGGS / P.LAMPKIN**

approved by
approuvé par

bid
offre project manager
administrateur
de projets

project date
date du projet **2015-03-27**

project no.
no. du projet **R.050927.001**

drawing no.
dessiné no. **MA-1.4**