

Appendix C

Existing Building Preliminary Assessment

1 Commercial and Industrial Buildings

1.1 Specific Building 1 – 20 Manchester Street, Paraparaumu



Figure 1: 20 Manchester St – satellite view

This is a series of portal frame buildings situated on the boundary of the construction designation and shown in Figure 1 and Figure 2. The buildings consist of steel portal frames and precast reinforced concrete walls with steel cladding. Due to the construction type these buildings are not expected to be susceptible to visual cracking in the event of slight differential ground movement.



Figure 2: 20 Manchester St – street view

1.2 Specific Building 2 – 18 Manchester Street, Paraparaumu



Figure 3: 18 Manchester St – satellite view

This is a portal frame building situated on the boundary of the construction designation and shown in Figure 3 and Figure 4. The building is a steel portal frame structure with some precast reinforced concrete walls and steel and a board material cladding. This building is not expected to be susceptible to visual cracking in the event of slight differential ground movement.



Figure 4: 18 Manchester St – street view

1.3 Specific Building 3 – 16 Manchester St, Paraparaumu



Figure 5: 16 Manchester St – satellite view

This is a portal frame building situated on the boundary of the construction designation and shown in Figure 5 and Figure 6. The building is a steel portal frame structure with a concrete block wall on two faces of the building and steel cladding. The concrete block wall is expected to be reinforced. Due to the concrete block walls it is expected the building will be susceptible to visual cracking in the event of slight differential ground movement.



Figure 6: 16 Manchester St – street view

1.4 Specific Building 4 – 12 Manchester Street, Paraparaumu



Figure 7: 12 Manchester St – satellite view.

This is a portal frame building situated on the boundary of the construction designation and shown in Figure 7 and Figure 8. The building is a steel portal frame structure with some precast reinforced concrete walls and steel cladding. This building is not expected to be susceptible to visual cracking in the event of slight differential ground movement.



Figure 8: 12 Manchester St – street view

1.5 Specific Building 5 – 11 Sheffield Street, Paraparaumu



Figure 9: 11 Sheffield St – satellite view

This is a portal frame building situated on the boundary of the construction designation and shown in Figure 9 and Figure 10. The building is a steel portal frame structure with steel cladding and a steel roof. One section of wall approximately 1000mm high was of concrete block construction indicating that there may be more concrete block areas which cannot be seen from the street. Due to the concrete block construction of this building, it is expected that this building will be susceptible to slight differential ground settlement.



Figure 10: 11 Sheffield St – street view, concrete block area highlighted

1.6 Specific Building 6 – 13 Sheffield St, Paraparaumu



Figure 11: 13 Sheffield St – satellite view

This is a portal frame building situated on the boundary of the construction designation and shown in Figure 11 and Figure 12. The building is a steel portal frame structure with precast reinforced concrete walls. The cladding is mainly timber and steel, but there is also a section of brick about 2000m high and 4000mm long on as shown in Figure 12. Due to the brick area visible the building is expected to be susceptible to slight differential ground settlement.



Figure 12: 13 Sheffield St – street view, brick area is highlighted

1.7 Specific Building 7 – 15 Sheffield St, Paraparaumu



Figure 13: 15 Sheffield St – satellite view

This is a portal frame building situated on the boundary of the construction designation and shown in Figure 13 and Figure 14. The building is a steel portal frame structure with no obvious concrete walls and steel cladding. This building is not expected to be susceptible to visual cracking in the event of slight differential ground movement.



Figure 14: 15 Sheffield St – street view

1.8 Specific Building 8 – 17 Sheffield Street, Paraparaumu



Figure 15: 17 Sheffield St – satellite view

This is a series of 1-storey frame structures located on the boundary of the construction designation and shown in Figure 15 and Figure 16. The buildings are steel clad and likely to be steel framed structures (otherwise timber). The buildings are not likely to be susceptible to visual cracking in the event of slight differential ground settlement.



Figure 16: 17 Sheffield St – street view

1.9 Specific Building 9 – 31 Milne Drive, Paraparaumu



Figure 17: 31 Milne Dr – satellite view

This building is a 2-storey structure located on the boundary of the construction designation and shown in Figure 17 and Figure 18. The material used in the structural system of the building is unknown (*may be steel frame with boxed members similar to the front of 23 Milne Dr*), but there is a wall down one side of the building that is plastered and could be reinforced concrete or concrete block and the building has stucco cladding. Due to this the building is expected to be susceptible to visual cracking in the event of slight differential ground settlement



Figure 18: 31 Milne Dr – street view

1.10 Specific Building 10 – 27 Milne Drive, Paraparaumu



Figure 19: 27 Milne Dr – satellite view

This building is located on the boundary of the construction designation and shown in Figure 19 and Figure 20. It is connected to the building at 23 Milne Drive which can be seen on the left of Figure 20. The building is steel portal frame structure with stucco cladding. Due to the stucco it is expected to be susceptible to visual cracking in the event of differential ground movement.



Figure 20: 27 Milne Dr – street view

1.11 Specific Building 11 – 23 Milne Drive, Paraparaumu



Figure 21: 23 Milne Drive – satellite view

This building is located 20m from the boundary of the construction designation and is shown in Figure 21 and Figure 22. It is connected to the building at 27 Milne Drive which can be seen on the right of Figure 22. The building is steel portal frame structure with stucco cladding. Due to the stucco it is expected to be susceptible to visual cracking in the event of differential ground movement.



Figure 22: 23 Milne Drive – street view

1.12 Specific Building 12 – 11 Kodax Place, Paraparaumu



Figure 23: 11 Kodax PI – satellite view.

This building is located on the boundary of the construction designation and is shown in Figure 23 and Figure 24. It is a portal frame structure with stucco cladding. Due to the stucco cladding this building is expected to be susceptible to visual cracking in the event of slight differential ground settlement.



Figure 24: 11 Kodax PI – street view

1.13 Specific Building 13 – 106A Kapiti Road, Paraparaumu



Figure 25: 106A Kapiti Rd – satellite view

This building is located 50m from the construction designation and is shown in Figure 25 and Figure 26. The main structure is a steel portal frame with a smaller concrete block structure attached to it. The main structure has both steel cladding and concrete blocks. The concrete blocks would be expected to be reinforced. Due to the concrete blocks this structure is expected to be susceptible to visual cracking in the event of slight differential ground settlement.



Figure 26: 106A Kapiti Rd – street view

1.14 Specific Building 14 – 106B Kapiti Road, Paraparaumu



Figure 27: 106B Kapiti Rd – Satellite view

These buildings are located 50m from the construction designation and are shown in Figure 27 and Figure 28. The structures consist of a steel portal frame and concrete block and steel cladding. The concrete blocks would be expected to be reinforced. Due to the concrete blocks this structure is expected to be susceptible to visual cracking in the event of slight differential ground settlement.



Figure 28: 106B Kapiti Rd – street view

1.15 Specific Building 15 – 104 Kapiti Road, Paraparaumu



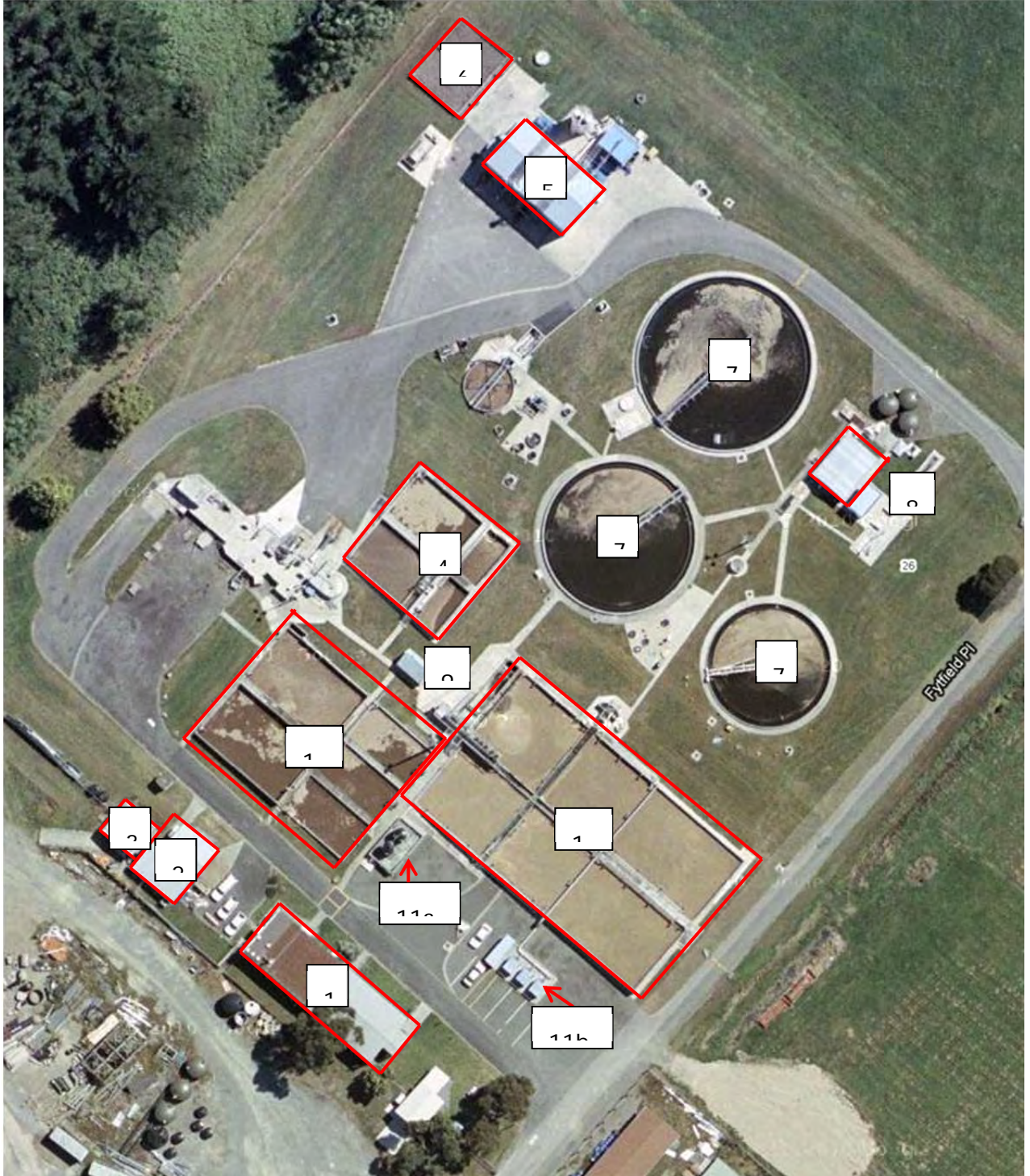
Figure 29: 104 Kapiti Rd – satellite view

This building is located on the boundary of the construction designation and is shown in Figure 29 and Figure 30. It is a steel portal frame structure with steel cladding and a small timber structure on the side. This structure is not expected to be susceptible to visual cracking in the event of slight differential ground movement.



Figure 30: 104 Kapiti Rd – street view

2 KCDC Wastewater Treatment Plant



2.1 Office Building



This 1-storey office building is of both timber and reinforced concrete wall construction. Due to the construction type it is not expected to be susceptible to visual cracking in the event of slight differential ground settlement.

2.2 Storage shed



This 1-storey storage shed is of concrete block construction and is therefore expected to be susceptible to visual cracking in the event of slight differential ground settlement.

2.3 Storage shed



This 1-storey storage shed is of timber and steel construction and therefore is not expected to be susceptible to visual cracking in the event of slight differential ground settlement.

2.4 Tank



This tank is of reinforced concrete construction and sits in the ground. It is not expected to be susceptible to visual cracking in the event of slight differential ground settlement.

2.5 Fuel storage shed



This building consists of two separate structures, one is of steel construction and the other consists of precast concrete panels. Neither of these building types is expected to be susceptible to visual cracking in the event of slight differential ground settlement.

2.6 Organic Filters



This low structure is of concrete block and timber construction and due to the concrete blocks it is expected to be susceptible to visual cracking in the event of slight differential ground settlement.

2.7 Mixing tanks



Each of the three mixing tanks is of similar construction. They consist of reinforced concrete and protrude approximately 5m into the ground. They are not expected to be susceptible to visual cracking in the event of slight differential ground settlement.

2.8 UV treatment shed



This 1-storey building consists of precast concrete panel facades. It is not expected to be susceptible to visual cracking in the event of differential ground settlement.

2.9 Small timber shed



This small 1–storey timber structure is not expected to be susceptible to visual cracking in the event of slight differential ground settlement.

2.10 Concrete tanks



These two large tanks are of similar construction and the main structure consists of reinforced concrete. They are not expected to be susceptible to visual cracking in the event of slight differential ground settlement.

2.11 Small Concrete Block Structures



These two concrete block structures are likely to be susceptible to visual cracking in the event of slight differential ground settlement. Especially 11a (pictured on the left) which has no bracing at the top and is likely to feel a greater effect from any differential ground movement.

2.12 General

There are a number of small concrete tanks at various locations around the site which are of plastic or reinforced concrete construction. These are not expected to be susceptible to slight differential ground and therefore have not been shown individually. Two typical constructions are depicted below.



3 El Rancho

3.1 Kauri Hall



Kauri Hall appears to be a timber or steel portal frame building. Each façade is constructed of a board material that appeared flexible. The entrances that can be seen on the left and right of the above photo consist of columns that have a plaster surface. Due to the slender nature of these columns they are not expected to be susceptible to visual cracking in the event of slight differential ground settlement. The rest of the structure is not expected to be susceptible due to construction type.

3.2 Poplar Lodge



Poplar Lodge is a 1 storey timber building with timber facades. Due to this construction type it is unexpected to be susceptible to visual cracking in the event of slight differential ground settlement.

3.3 Oregon Lodge



Oregon Lodge is a 2-storey timber building with timber facades. Due to this construction type it is unexpected to be susceptible to visual cracking in the event of slight differential ground settlement.

3.4 Willow Lodge and Workshop

Willow Lodge and the Workshop are timber buildings. Due to this construction type it is unexpected to be susceptible to visual cracking in the event of slight differential ground settlement.

3.5 Redwood Hall/Dining Room

This 2-storey structure is constructed from various materials consisting of timber, brick and plaster facades with sections of concrete blocks at the base. Due to the brick, plaster and concrete blocks this structure is expected to be susceptible to visual cracking in the event of slight differential ground settlement.



3.6 Rata Lodge, Rimu Lodge and Toilet Block



These buildings are of timber construction on a concrete slab foundation. They are not expected to be susceptible to visual cracking in the event of slight differential ground settlement.

3.7 Office



The office building has a plaster façade with the rest of the building being clad in a board/timber material. Due to the plaster façade this building is expected to be susceptible to visual cracking in the event of slight differential ground settlement.

3.8 Elm Court

Elm Court is a series of buildings of timber/board construction. It is not expected to be susceptible to visual cracking in the event of slight differential ground settlement.



3.9 Apiti Chapel



This building is of timber construction and is not expected to be susceptible to visual cracking in the event of slight differential ground settlement.

3.10 Staff #2



This building is constructed from both timber and plaster facades. Due to the plaster façade it is expected this building will be susceptible to visual cracking in the event of slight differential ground settlement.

3.11 Cafe



This building is constructed from timber and is not expected to be susceptible to visual cracking in the event of slight differential ground settlement.

3.12 Pinewood Dining and Pinewood Hall



Pinewood Dining and Pinewood Hall both have facades constructed from both brick and concrete block. Due to this these buildings are both expected to be susceptible to visual cracking in the event of slight differential ground settlement.

3.13 Villas



This 2-storey building is of timber construction and therefore is not expected to be susceptible to visual cracking in the event of slight differential ground settlement.

3.14 Caravan Kitchen

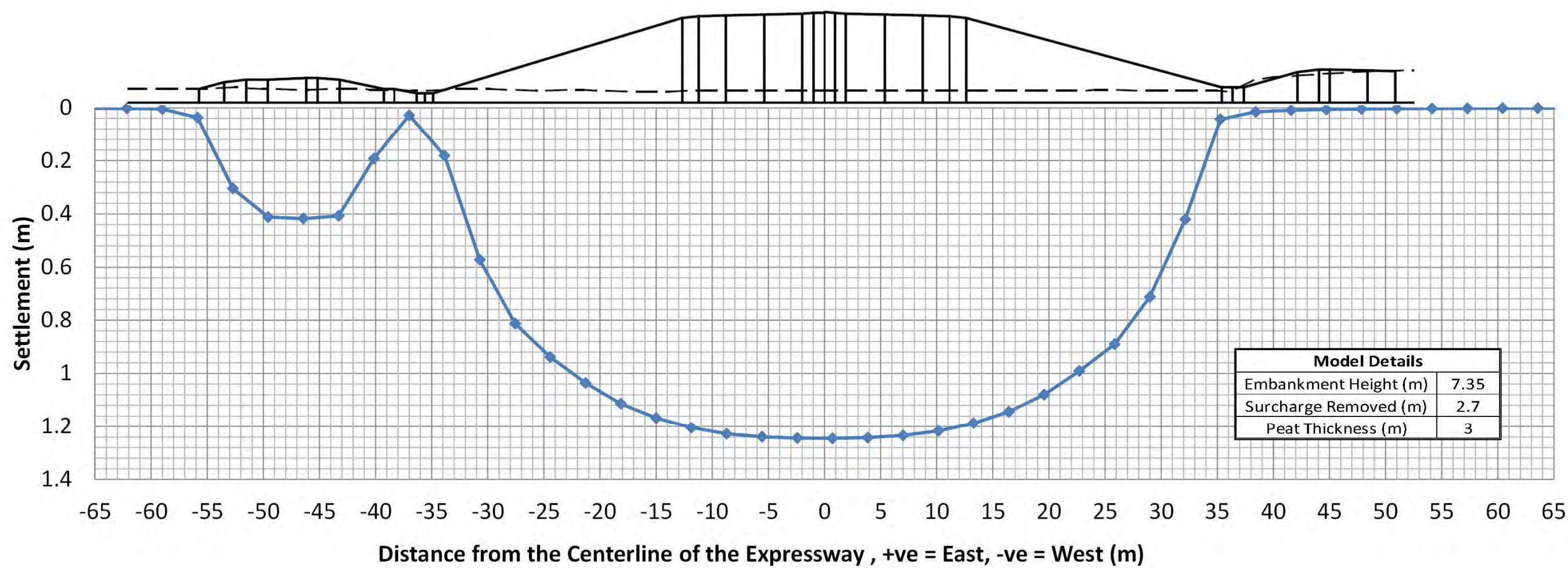
This building was of timber construction and is not expected to be susceptible to visual cracking in the event of slight differential ground settlement.

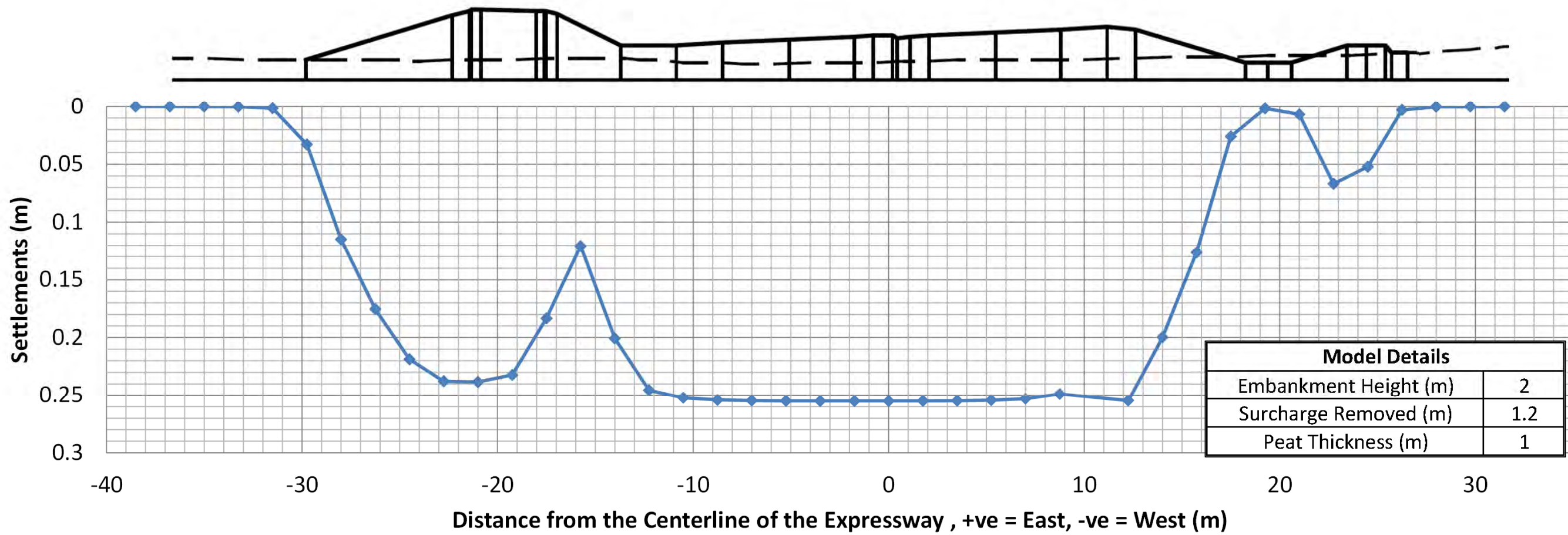
3.15 General

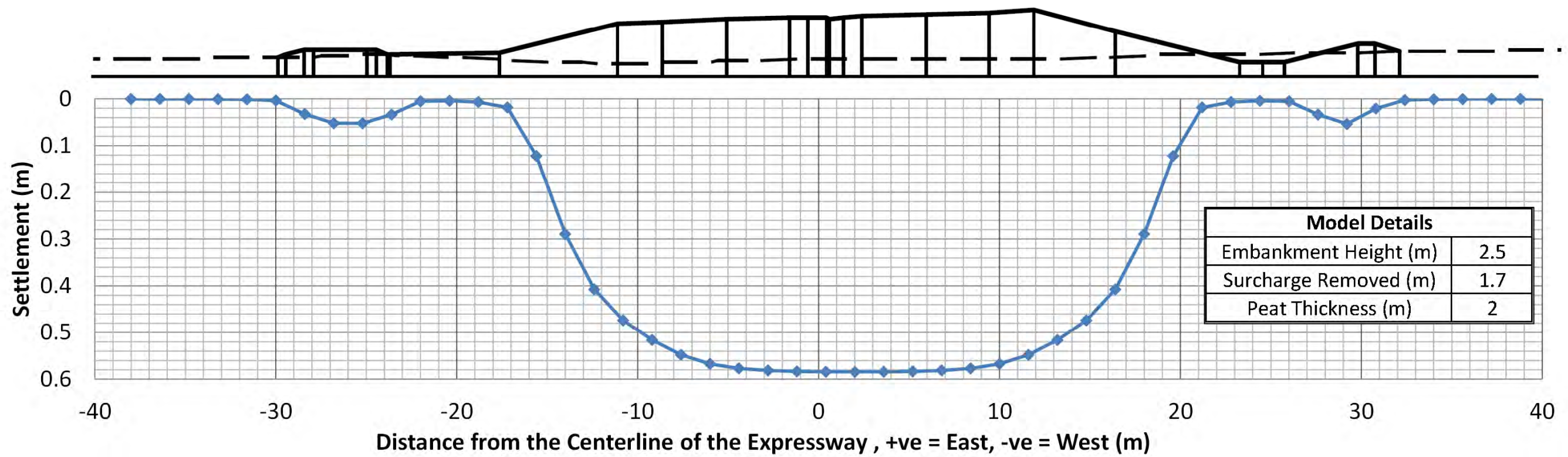
The remaining staff houses appeared to be private, and the few that could be seen were of timber construction. Studios, Family Flats and Baker Lodge appeared to be private and were greater than 100m away from the designation so were not assessed.

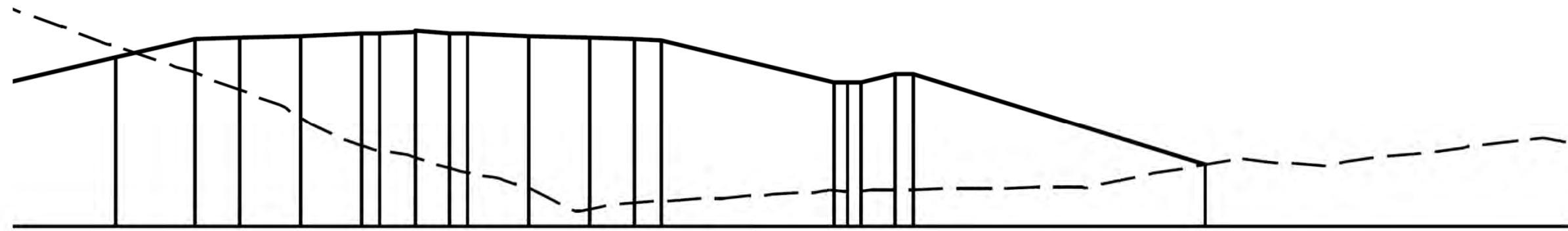
Appendix D

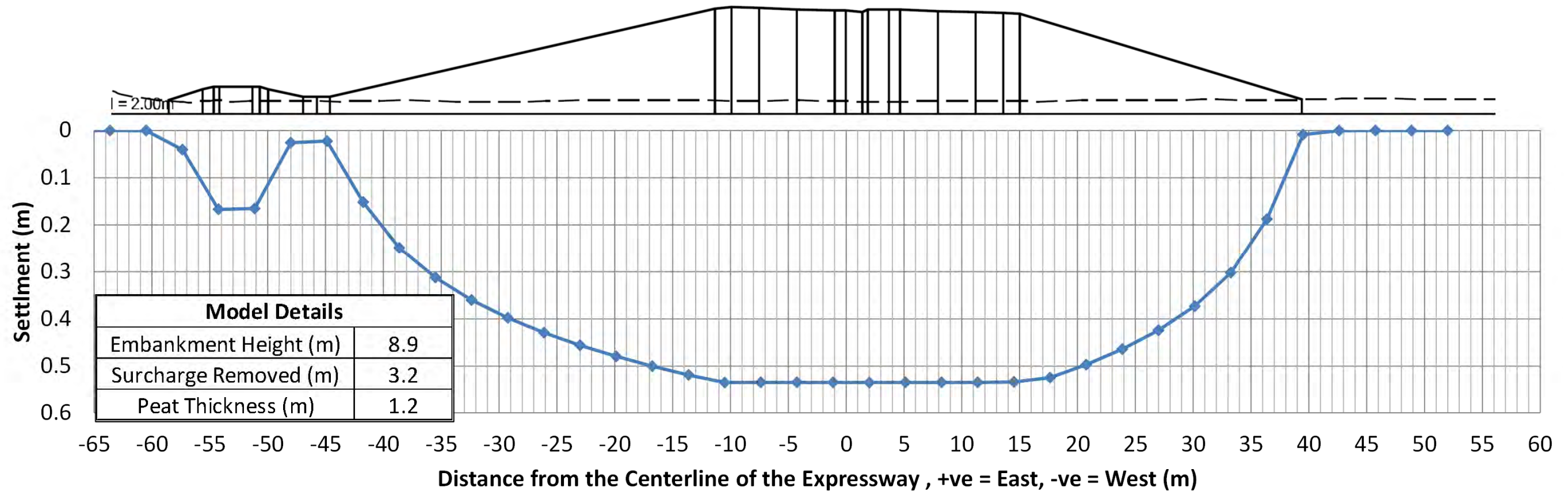
Predicted Embankment Settlements

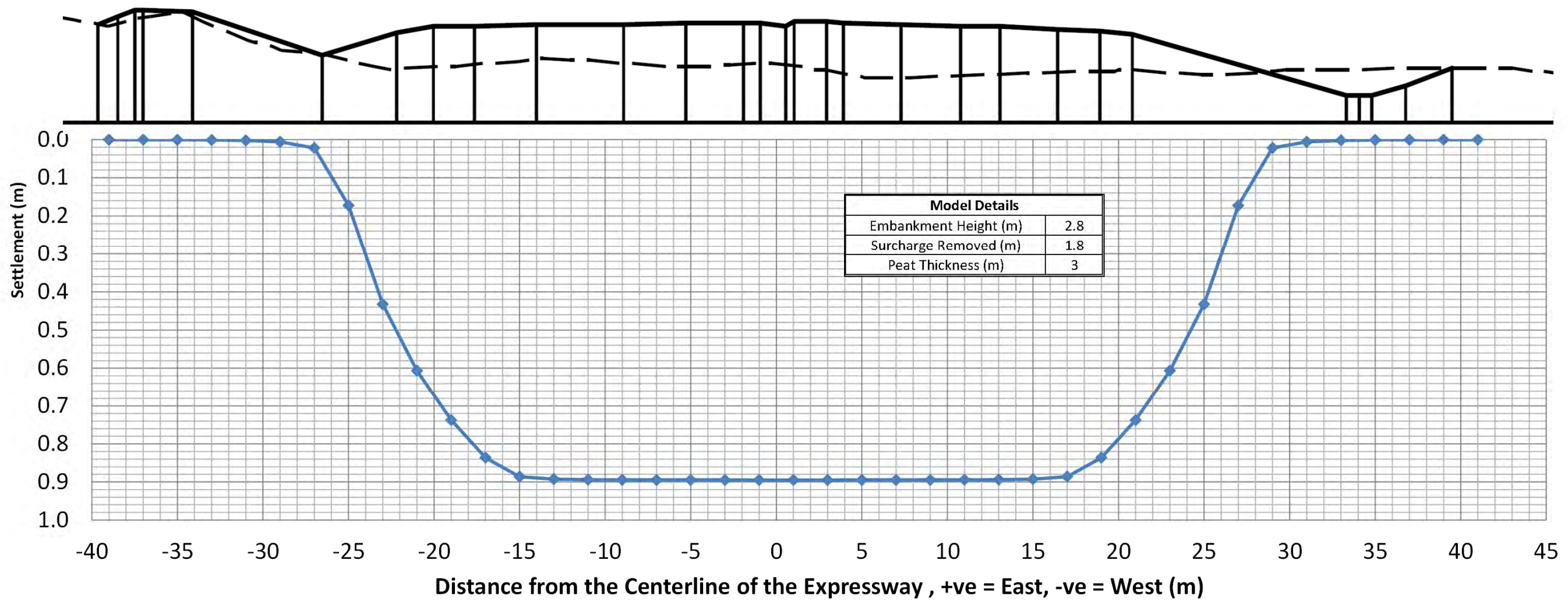


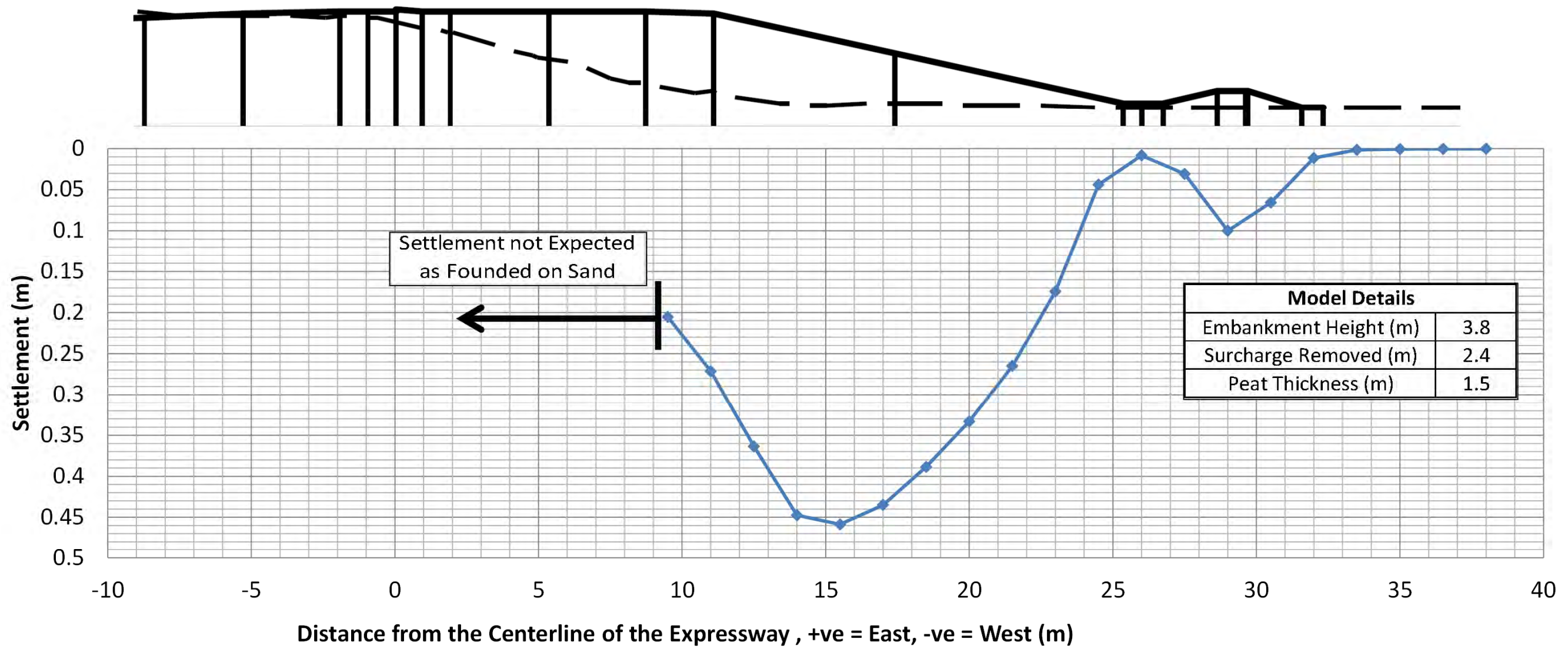


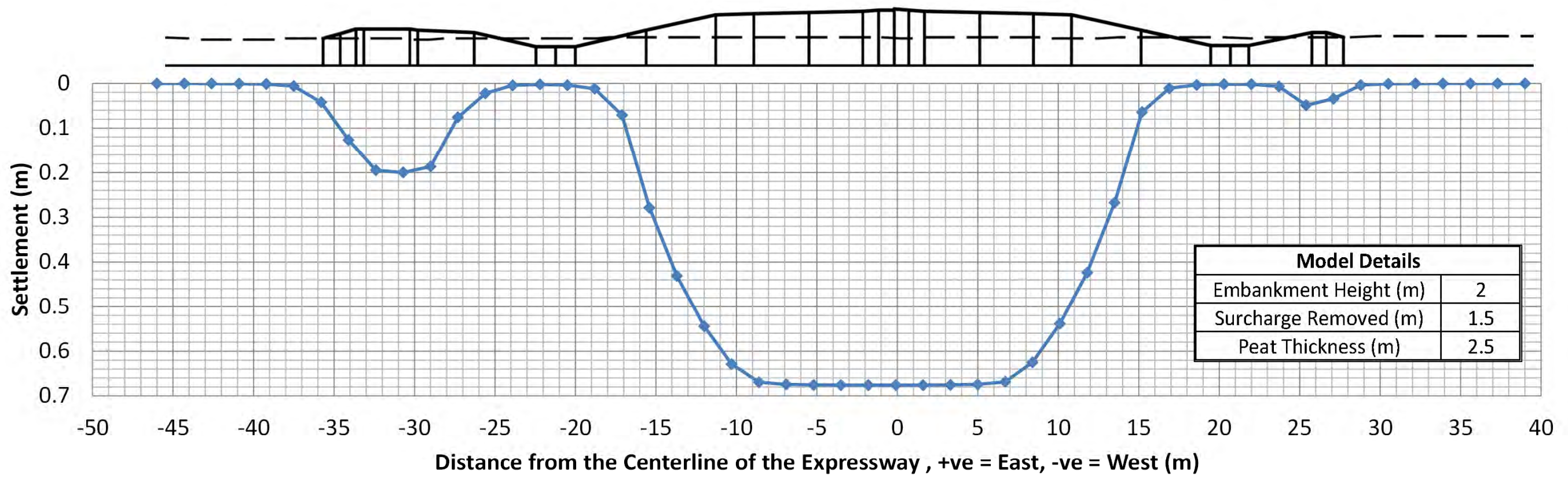








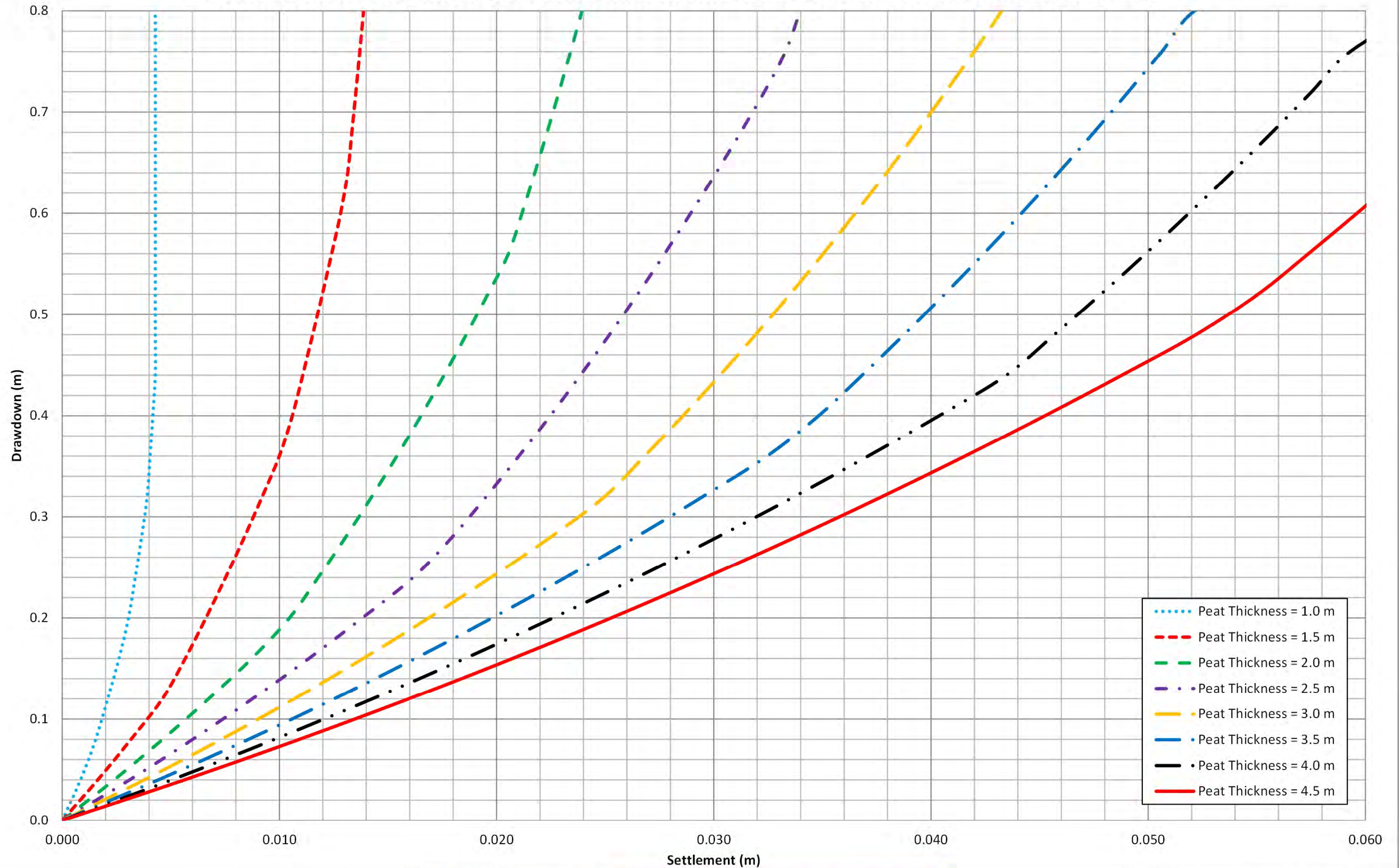




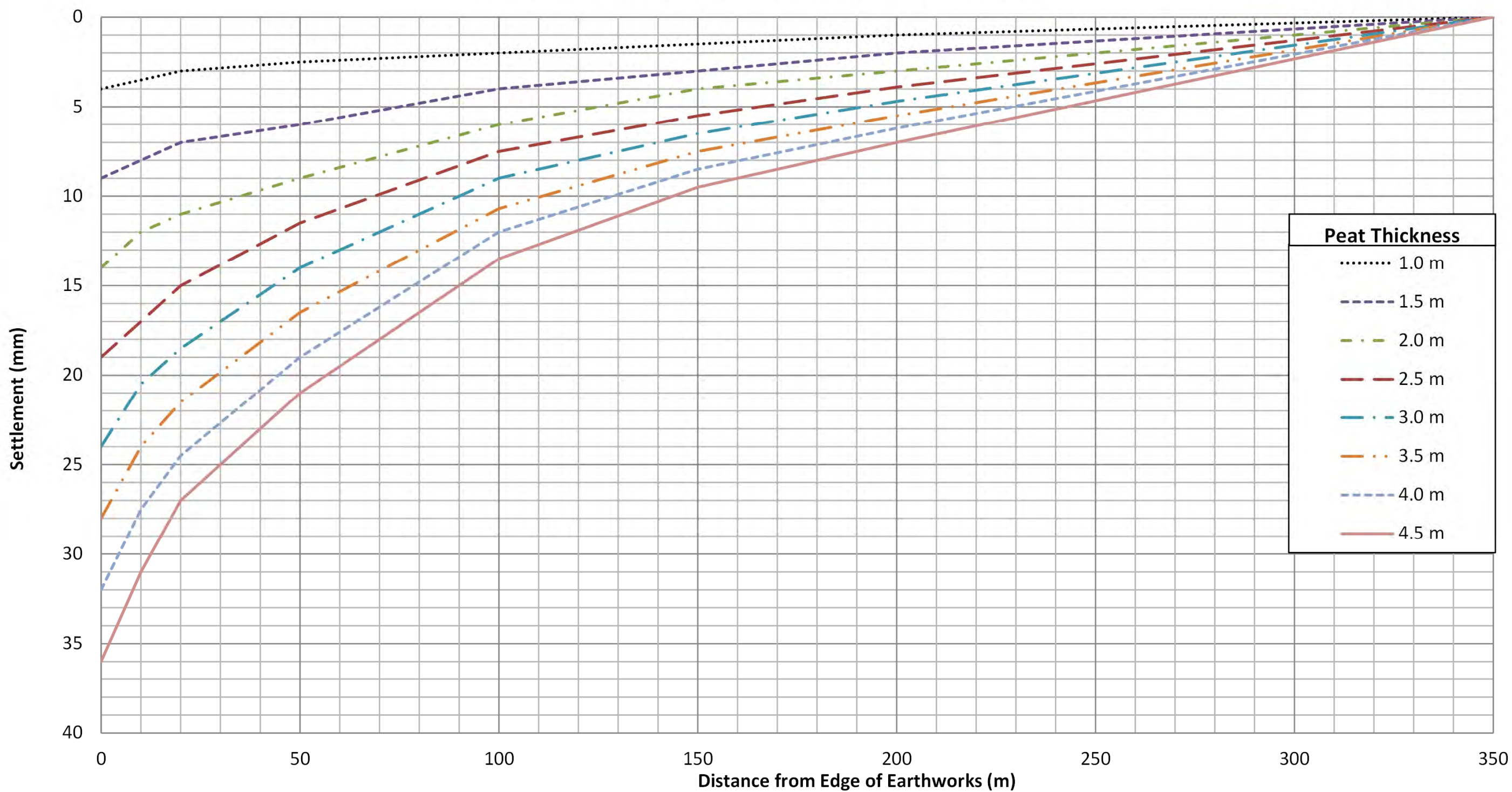
Appendix E

Predicted Groundwater Drawdown Settlements

Groundwater Drawdown versus Settlement for Different Peat Thicknesses (Base Case)



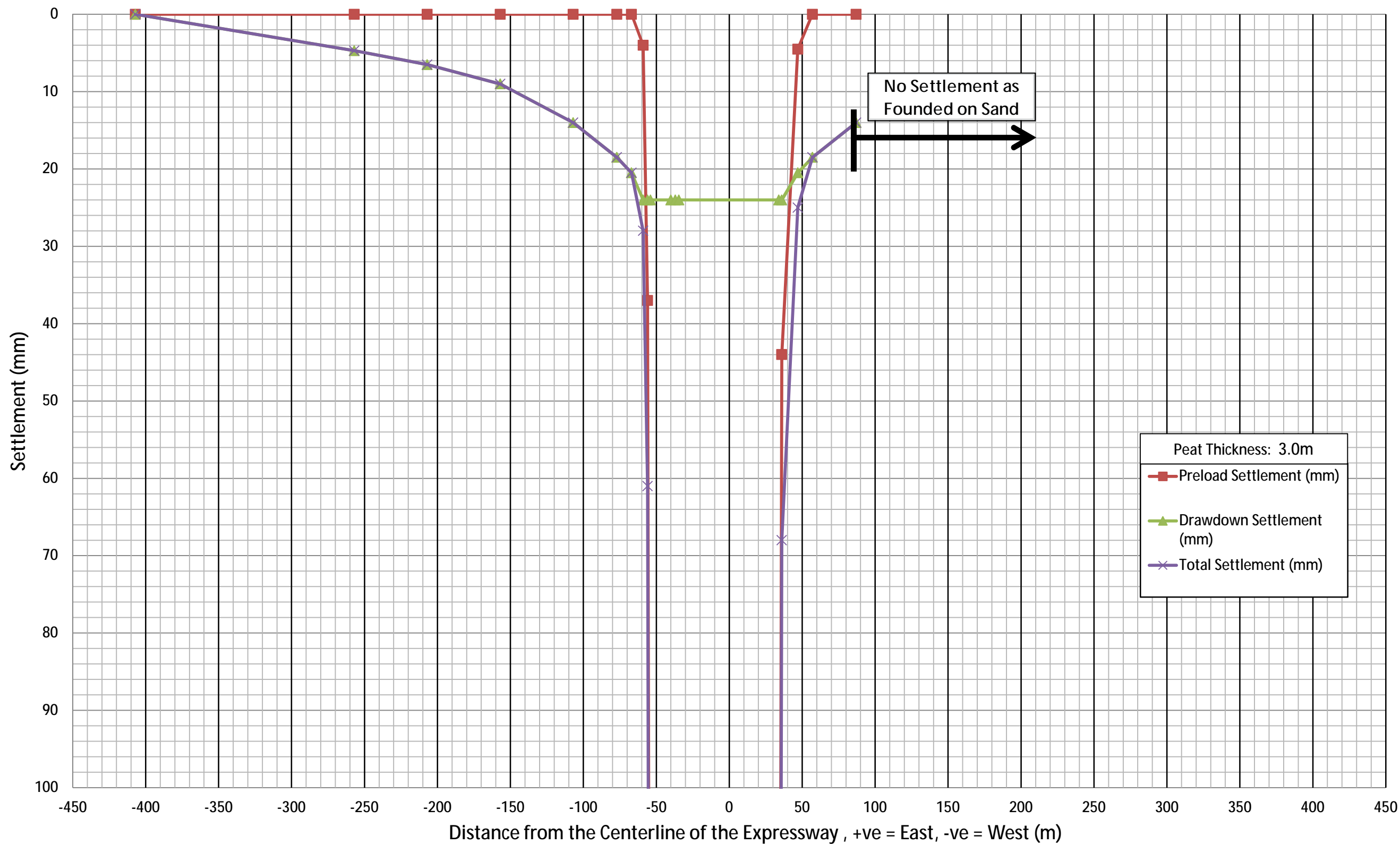
Calculated Drawdown Settlement versus Distance



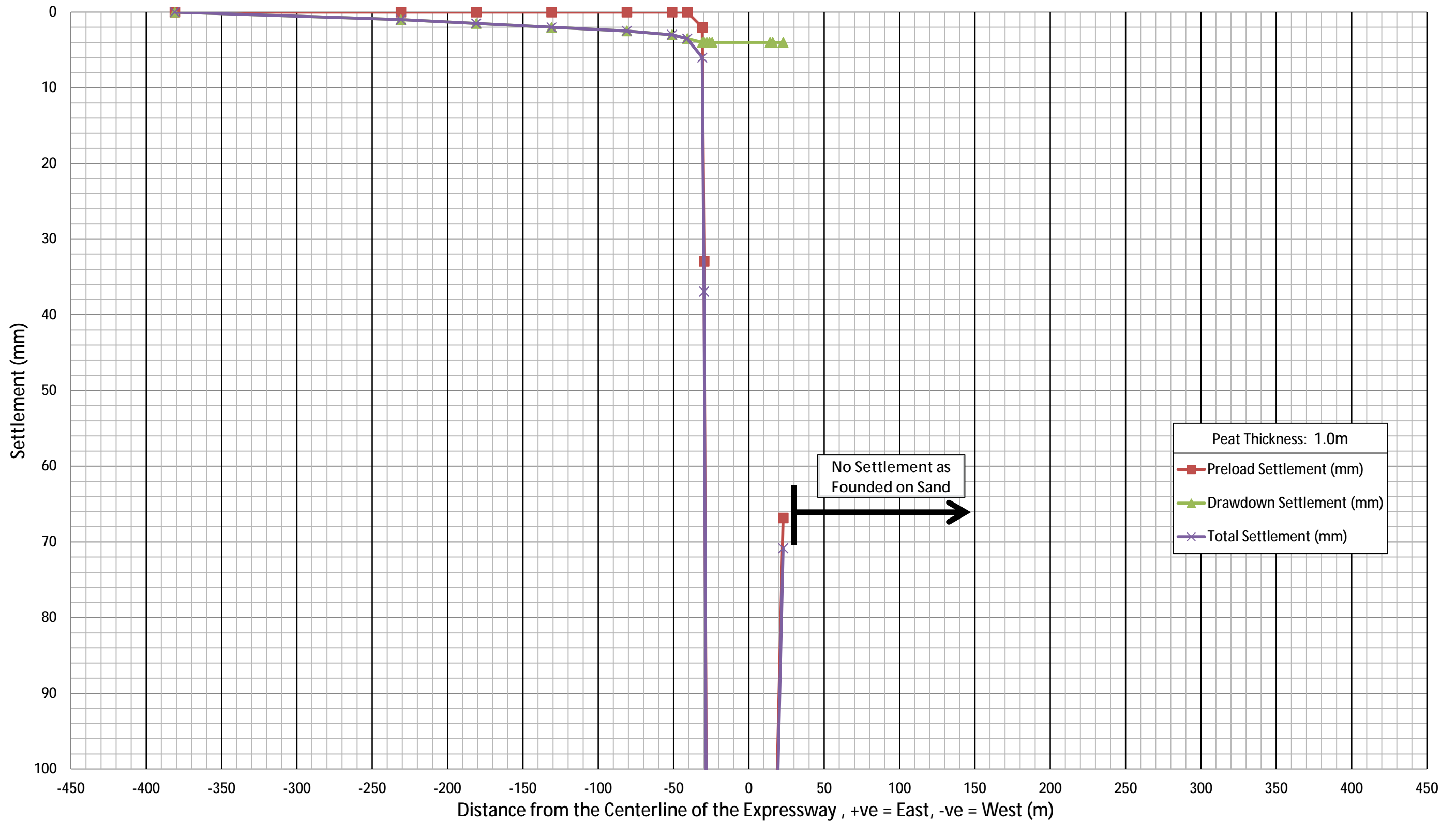
Appendix F

Predicted Combined Settlements

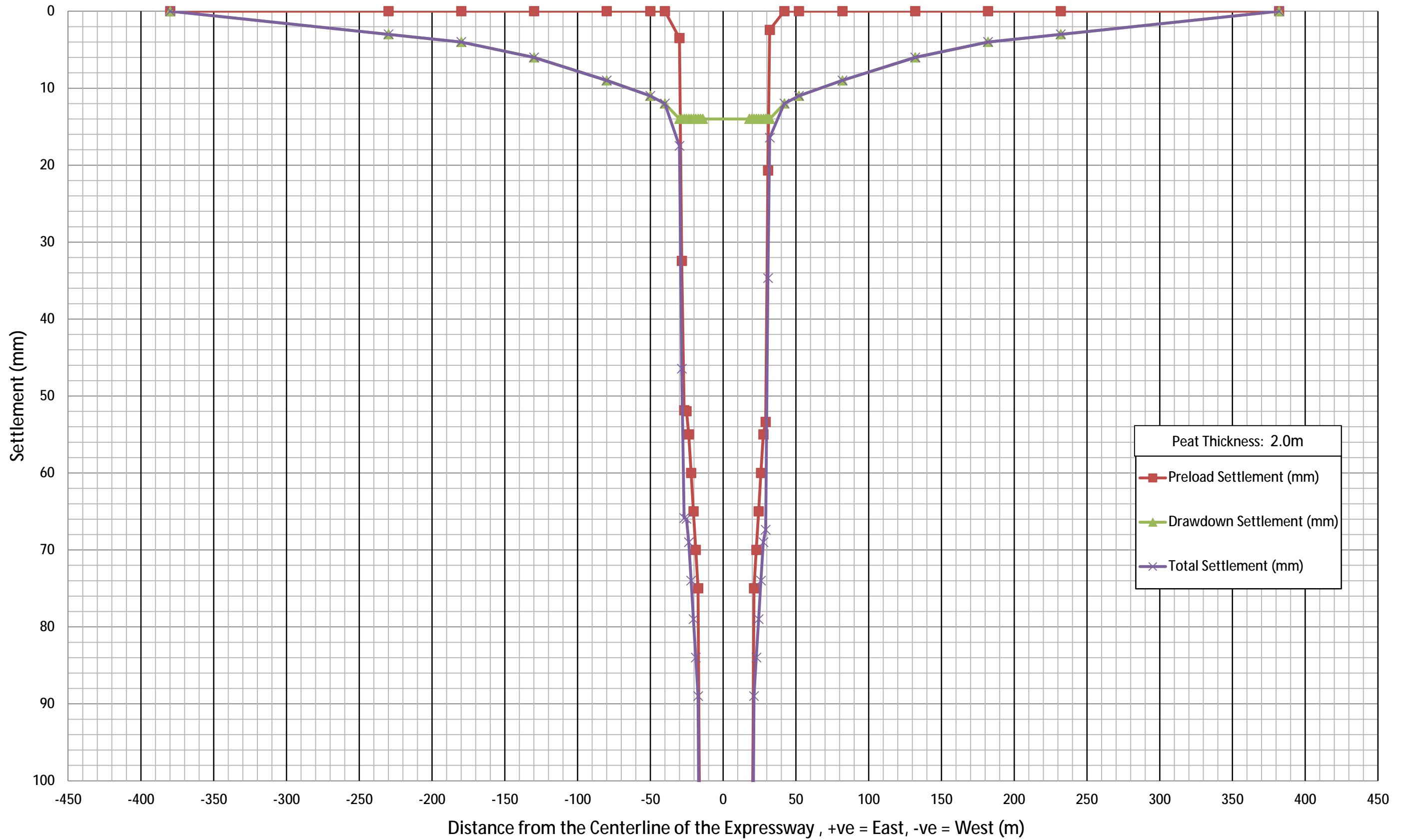
CH 2450 Calculated Total Settlements



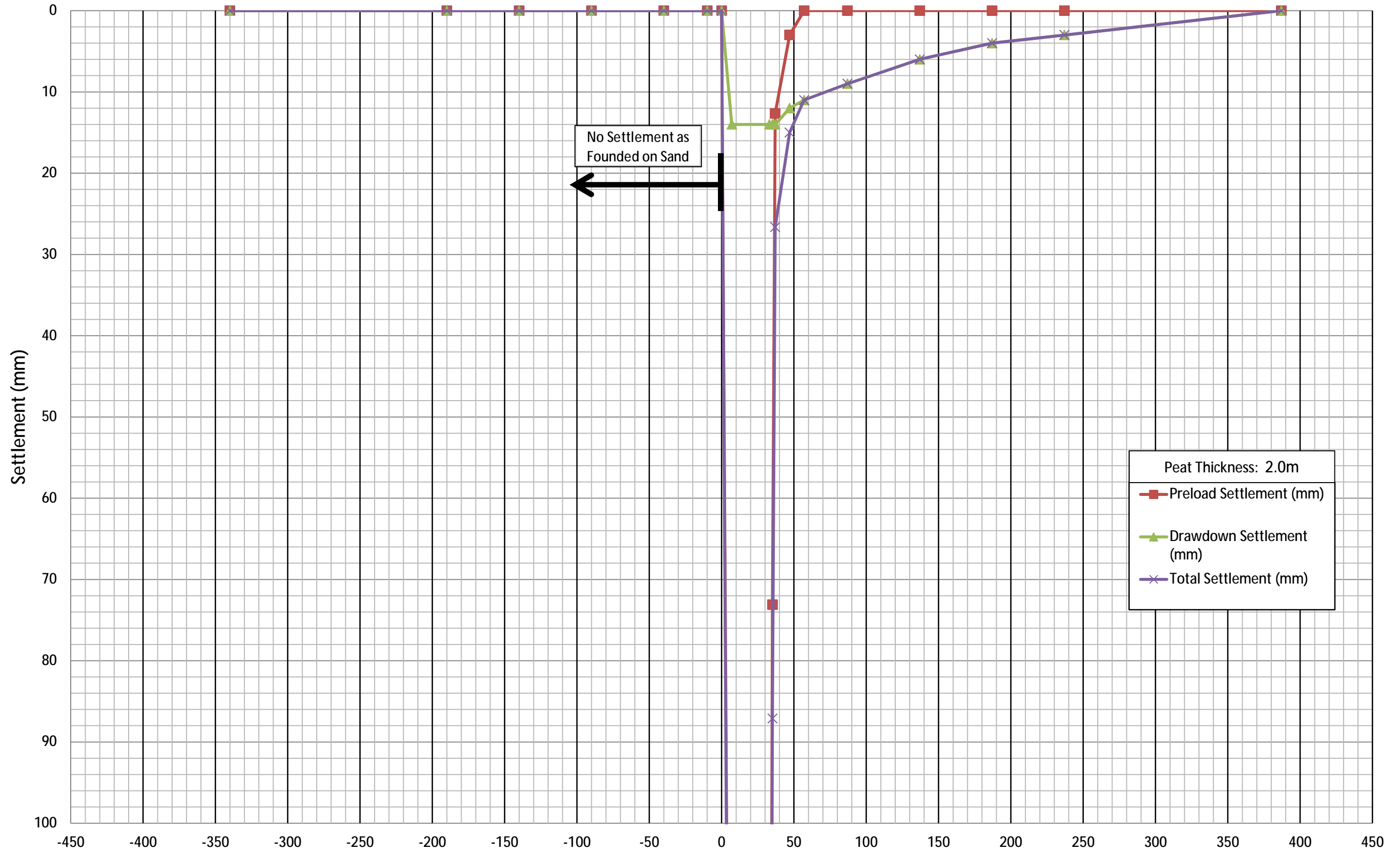
CH 3050 Calculated Total Settlements



CH 3600 Calculated Total Settlements



CH 4300 Calculated Total Settlements



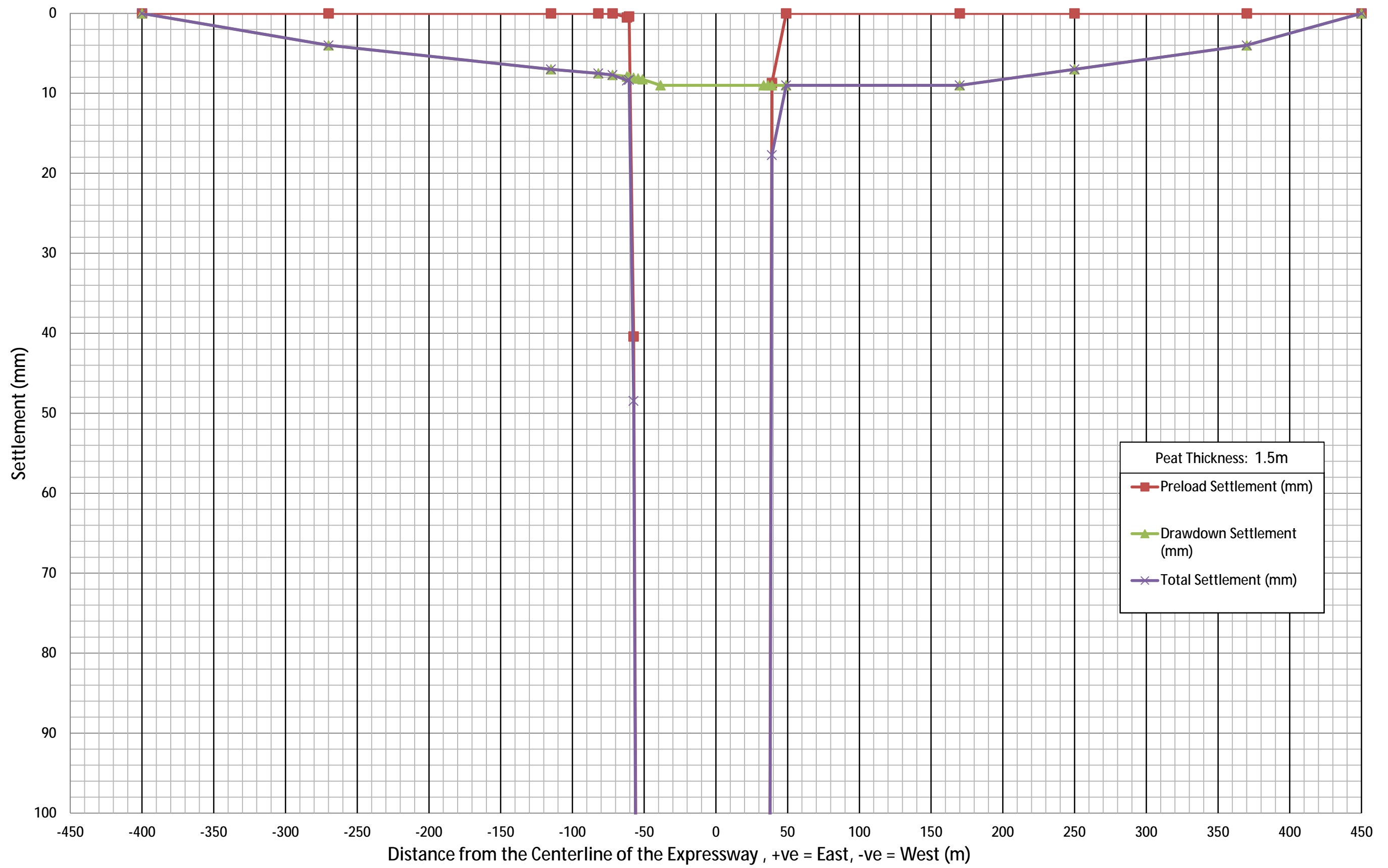
No Settlement as
Founded on Sand

Peat Thickness: 2.0m

- Preload Settlement (mm)
- Drawdown Settlement (mm)
- Total Settlement (mm)

Distance from the Centerline of the Expressway , +ve = East, -ve = West (m)

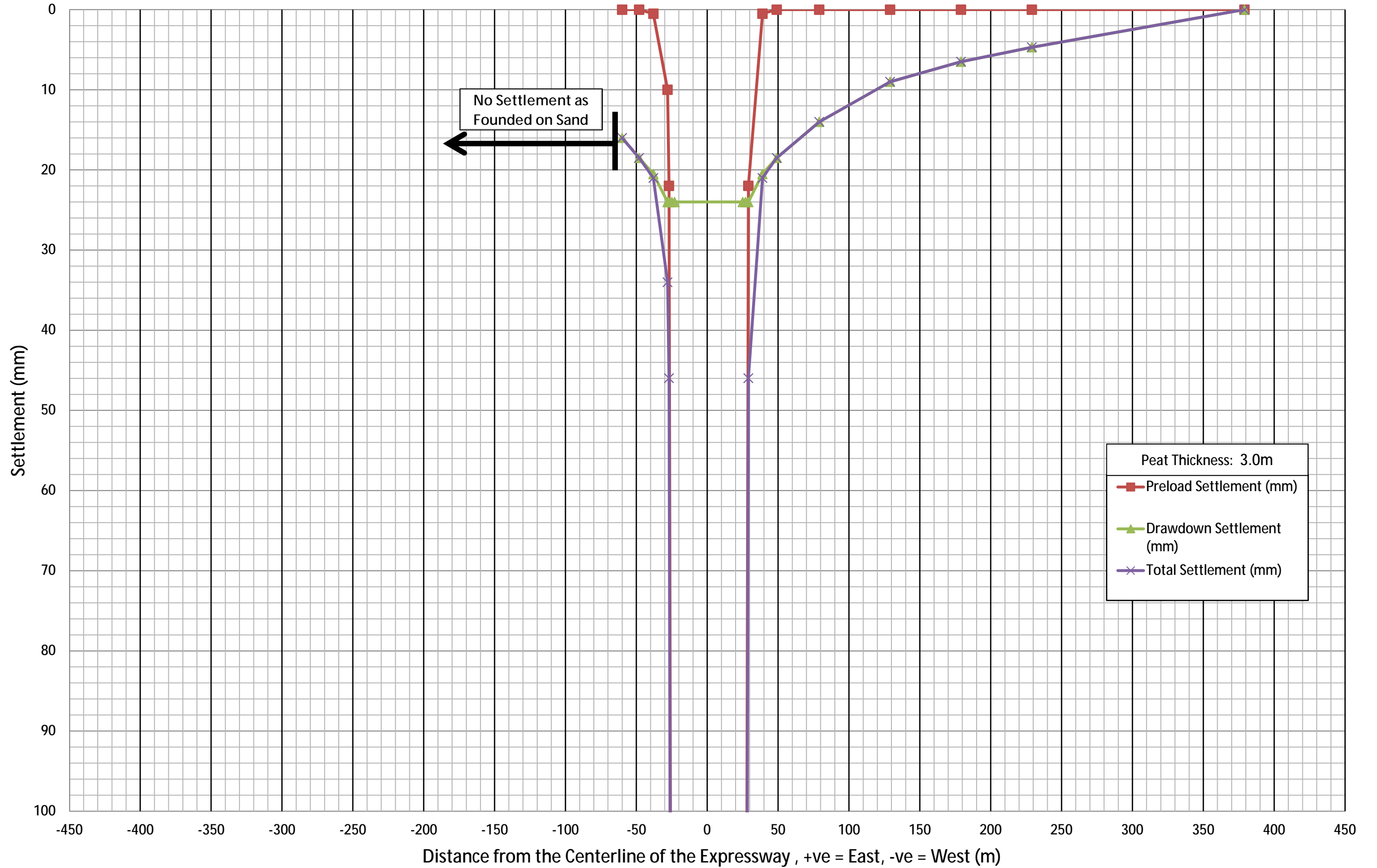
CH 5300 Calculated Total Settlements



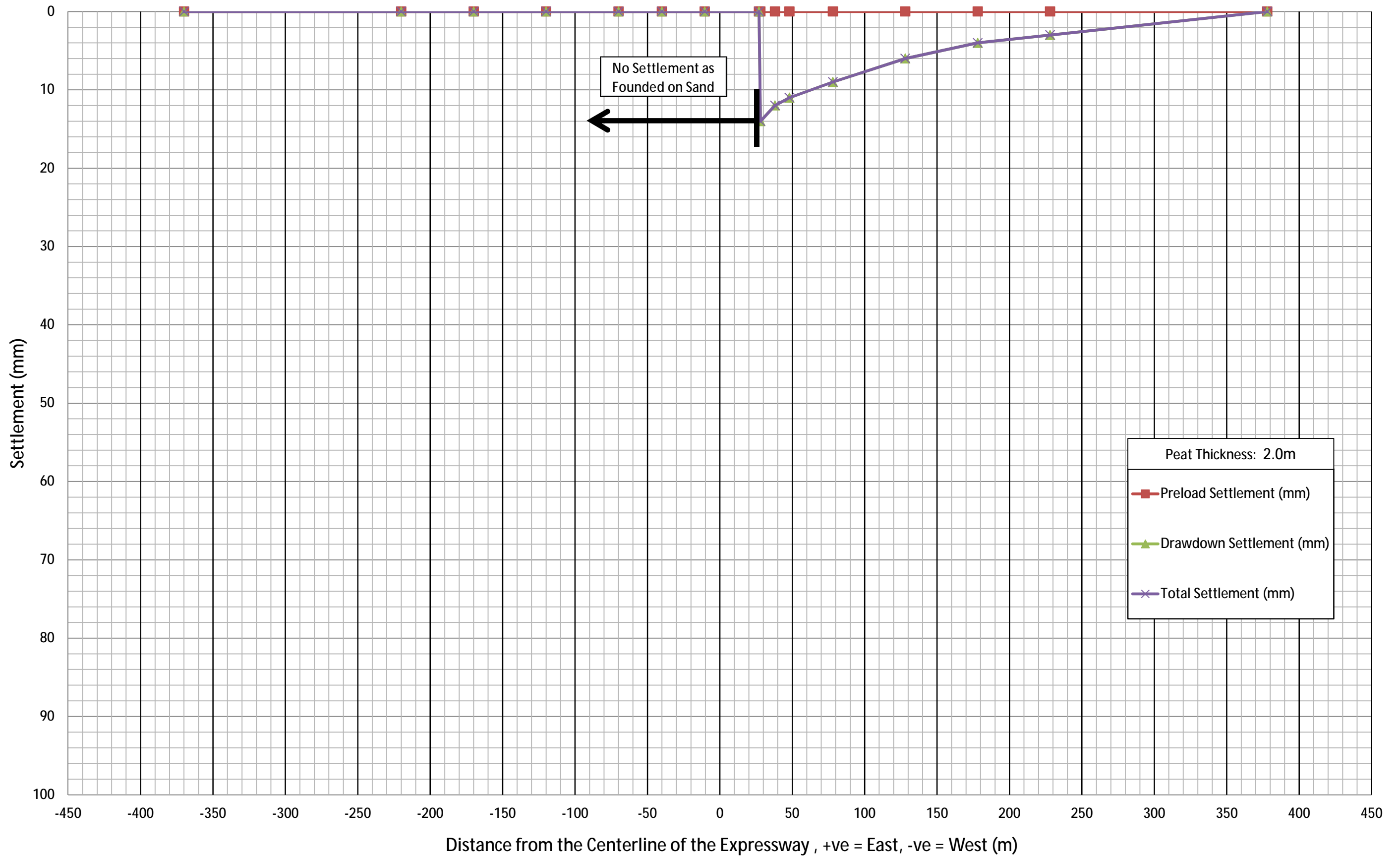
Peat Thickness: 1.5m

- Preload Settlement (mm)
- Drawdown Settlement (mm)
- Total Settlement (mm)

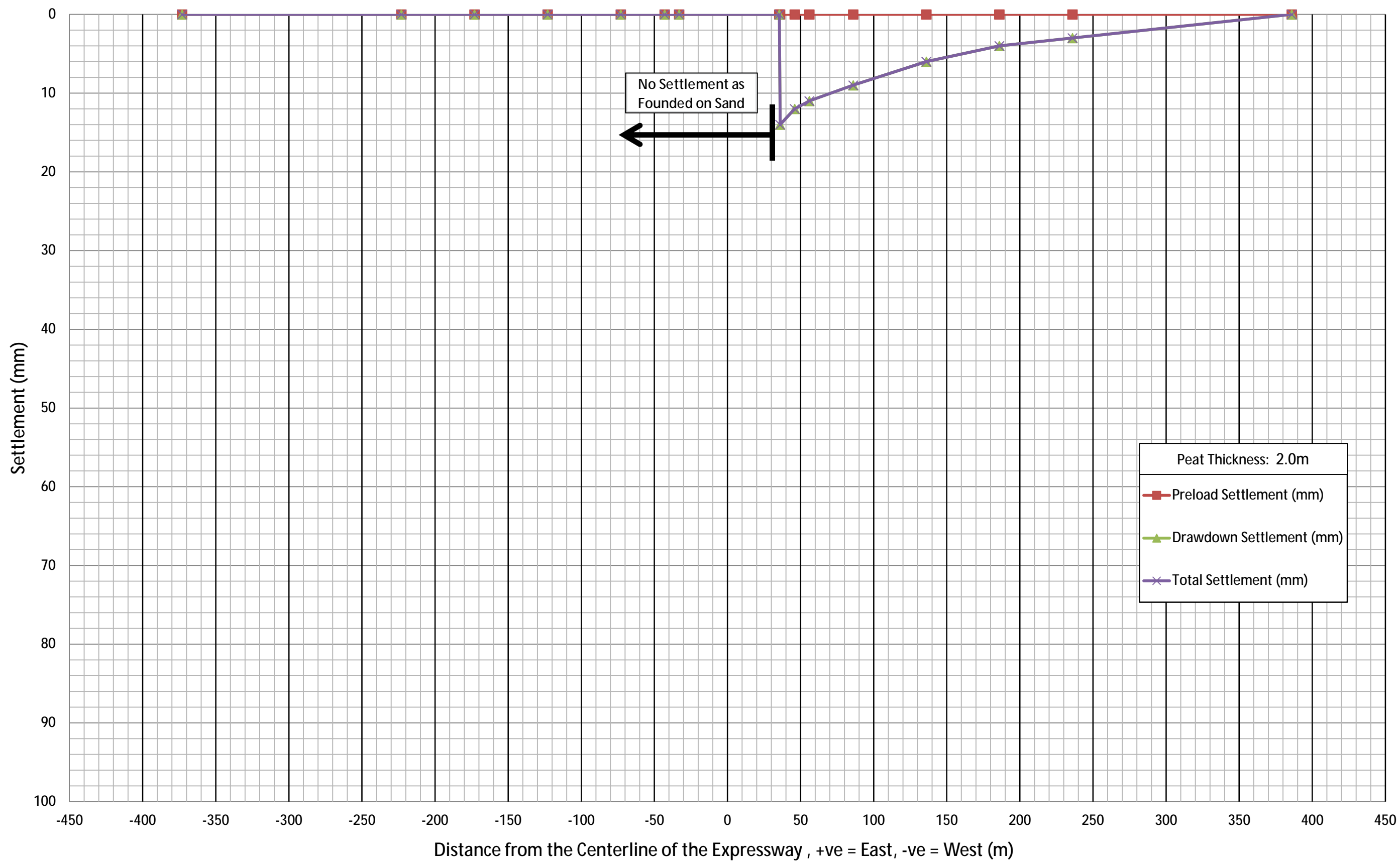
CH 6000 Calculated Total Settlements



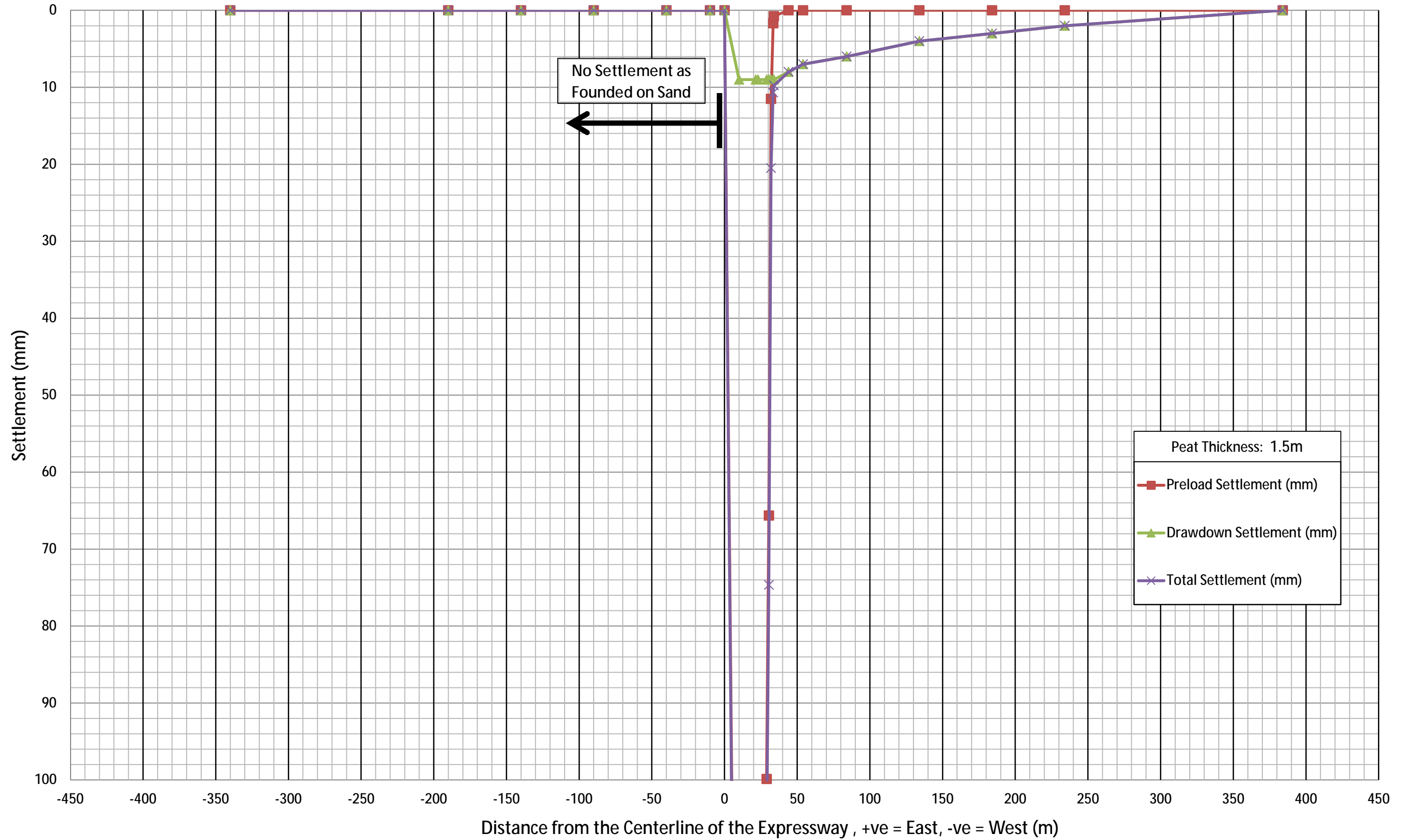
CH 6140 Calculated Total Settlements



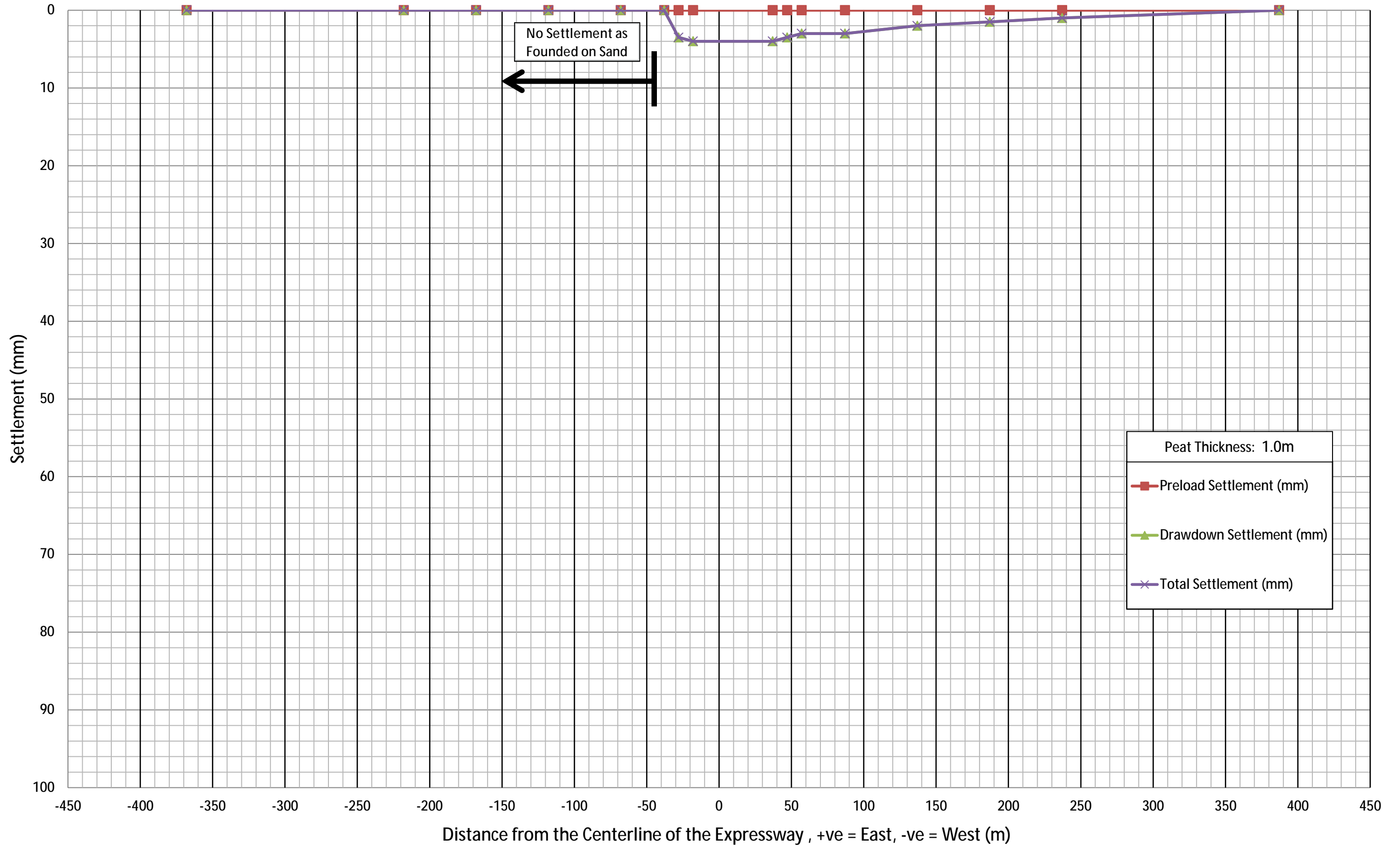
CH 6500 Calculated Total Settlements



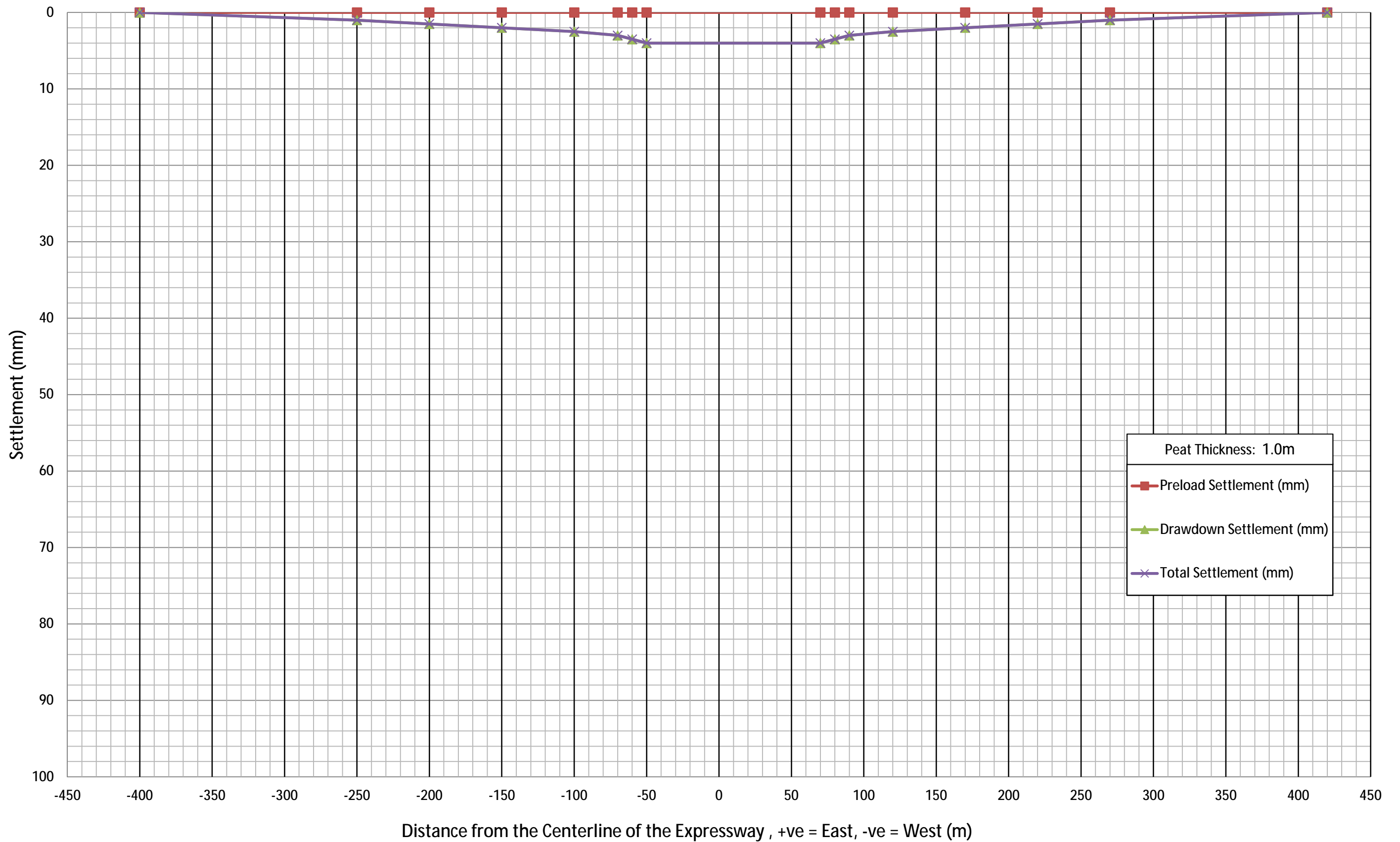
CH 8900 Calculated Total Settlements



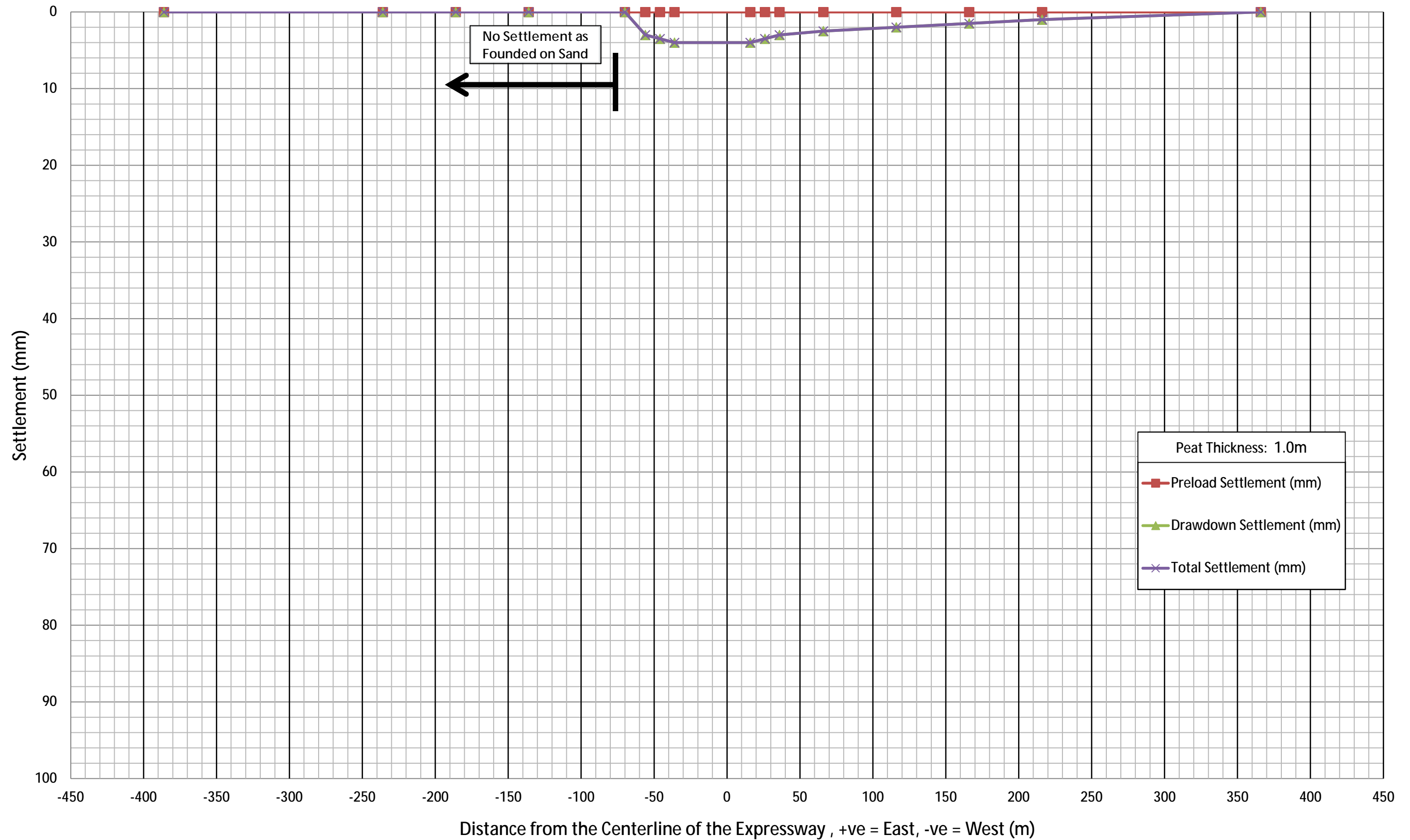
CH 11200 Calculated Total Settlements



CH 11700 Calculated Total Settlements



CH 14400 Calculated Total Settlements



CH 16000 Calculated Total Settlements

