



Sutton-on-sea

# Follow-Up Structural Inspection Report 02 on North Colonnade

For East Lindsey District Council

Project number: 60586167  
60586167-ELDC-ACM-REP-0002-P2

13 Nov 2018

## Quality information

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## Revision History

Revision	Revision date	Details	Authorized	Name	Position
P2	09-11-18	First Edition		Brian Ward	Technical Director
P2	13-11-18	Second Edition- Construction dates clarified Pages 5,7,8,11 & 21		Brian Ward	Technical Director

## Distribution List

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1. SCAPE

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## Table of Contents

Executive Summary .....	5
1. Introduction .....	7
2. Site Inspection 02.....	7
3. Visual Observations of Concrete Defects.....	11
4. Recommendations and Conclusions.....	21
Appendix A.....	23
Drawings.....	23
Appendix B.....	26
Summary of Sketch of Visual Concrete Defects.....	26



Photo no 01: North West Elevation of Colonnade

## Executive Summary

AECOM was commissioned by East Lindsey District Council, on 16th August 2018, to undertake a series of structural inspections to the north section of the historic concrete Colonnade which is still open to the public at the Pleasure Gardens, Sutton-on-sea. The assets required to be inspected comprised a single-storey, reinforced-concrete (RC) structure whose east rear spine wall was built abutting the (landside) side of the North Sea shoreline defence structure. The first floor of the structure is at the raised promenade level and currently supports 38 traditional timber-framed, beach huts accessed by two built-in staircases. The west side of the structure faces the Pleasure Gardens and the bowling green situated at a lower ground level. The north colonnade structure also forms a covered way to the north staircase (GL B-E & 1-3) and houses kiosks for an ice-cream shop and café. The concrete beam, slab and column frames structure, which spans over the public access to the north staircase, are showing signs of degradation to the concrete. The brief to AECOM excluded inspection of timber members, beach huts, ancillary equipment and services. For this second visit the Client requested an additional detailed inspection to the inside of the ice cream shop and café as they would be closing down for the winter season.

The aim of the follow-up structural inspection, as recommended in the Condition Report on the Concrete Colonnade by AECOM (Ref 60586167-ELDC-ACM-REP-0002-P2) in June 2018 was to visually inspect and hammer test the RC structure leading to the north staircase. This was to ensure that the route was safe to remain open to the public for another 10 weeks, until robust remedial measures undertaken, or the structure isolated from public use. In addition, the integrity of the temporary safety propping, installed during AECOM's inspection during May 2018, was also undertaken on this follow-up inspection.

As discussed in the earlier Condition Report on the Colonnade by AECOM, the ageing structure is exhibiting common defects for a reinforced concrete design, understood to be constructed between 1948 and 1955 (although anecdotal local reports suggest an earlier inception), and exposed to an aggressive marine environment. For the structure to continue to be used for the benefit of the public, a number of defects will need to be remediated. Some of these defects are currently affecting the safe use of the structure as there is a potential risk of small sections of concrete cover to the reinforcement, being forced off by ferrous oxide expansion from the higher sections of the structure and falling and potentially injuring persons moving close to and/or within the structure. This safety risk is expected to increase with time unless robust remedial measures are undertaken or parts of the structure decommissioned from its present usage. Temporary safety provisions have already been implemented on site in the form of a solid barrier fence and structural props to the enclosed area under the first floor. These temporary provisions separate sections of the structure from public access and will need to be maintained by the client until a remedial proposal is implemented.

The second of these further inspections undertaken on 29<sup>th</sup> October 2018 on the north staircase access revealed that small areas of hollow concrete cover had deteriorated further so that it could become detached along the lower rear edge of the front down-stand beams GLs 1, C-G and these were removed for safety reasons. This spalling concrete was removed as a safety precaution. There were another two small areas of hollow concrete identified on column 1F and on the rear face of down-stand beam GLs 1-2, C-D, respectively.

Four small areas, on three different first floor soffit slabs, on the route to the staircase had deteriorated such that there were small sections of concrete cover that could become detached and were removed for safety reasons.

One cross-beam side face and one staircase side wall, top face had developed an additional small areas of hollow concrete.

A small exposure through the bonded plasterboard ceiling, inside the ice cream kiosk, revealed a hairline crack in the soffit of the roof slab, but no significant spalling. The inspection inside the suspended ceiling in the café revealed four hairline cracks in the roof slab, across the width of the café, which had reportedly leaked water (raining at time of inspection). A steel drip tray that had been fixed to the underside of three of the cracks to collect and drain off the water to overflow pipes. The fourth crack, directly across from the front door of the Café, was displaying damp patches with water globules. Three of the four cracks reflected the repaired cracks on the roof slab at promenade level that were observed during the May 2018 inspections. The drip trays under three of the roof slab cracks prevented close inspection and the assessment of the degree of concrete degradation. A spalled area of concrete under chalet no 2 (GL 2, E-F) was also slowly dripping water onto a pile of previously spalled concrete debris resting on an existing fibre ceiling tile. One of the drain pipes to the drip tray on GL E, 1-2, was leaking such that water was pooling on a ceiling tile situated over the electric deep fat fryers. Although AECOM mopped up the water on the day, the concession manager Mr Brown reported a safety incident to ELDC which was responded to within 3 hours.

Since the Café continues to be leased to the concession the waterproofing to these defects should be considered for improvement in the short term. Should the water ingress continue it will cause additional structural problems over time.

In the toilet at the back of the café a large piece (0.5m square) of spalled concrete on the soffit of the roof slab was being partly held in place by the steel drip tray and its fixings. This piece of concrete was too large for AECOM to safely remove on the day and the concessions were advised not to use the toilet until the hazard had been removed. AECOM referred the safety hazard to ELDC so that they could arrange safe removal and allow the safe use of the toilet. AECOM requested ELDC to take photos after the spalled concrete had been removed so that the structural condition of the slab could be reviewed.

The recommendation from the inspection was that the walkway to the north staircase could remain open for public use for another 10 weeks i.e. till 9th January 2019, when another inspection is recommended.



## 1. Introduction

AECOM was commissioned by East Lindsey District Council, under the SCAPE consultancy framework agreement, on 16th August 2018, to undertake a series of six structural inspections to the north section of the historic concrete Colonnade which is still open to the public, at the Pleasure Gardens, Sutton-on-sea. The assets required to be inspected comprised a single-storey, reinforced-concrete (RC) structure whose east rear (spine) wall was built abutting the (landside) side of the North Sea defence structure, which is owned by the Environment Agency. The first floor of the structure is at the raised promenade level to the North Sea and currently supports 38 timber-framed beach huts. The west side of the structure faces the Pleasure Gardens and the bowling green at a lower ground level.

The existing colonnade structure is sub-divided into three sections by movement joints which broadly divided the structure up into a northern section, Central section (GL N to Y-Z), and the Southern section (GL Y-Z to MM), supporting privately owned beach huts, numbered 30 to 39. A three flight public access staircase to the promenade, is incorporated into the northern and central sections of the structure.

The north colonnade structure forms a covered way to the north staircase (GL B-E & 1-3) to the promenade, and to kiosks for an ice cream shop and café. It is understood that the concrete colonnade structure was built between 1948 and 1955 (although anecdotal local reports suggest an earlier inception). The promenade slabs, fascia and transfer beams which span over the public access to the north staircase are showing pronounced signs of degradation. The brief to AECOM excluded inspection of timber members, beach huts, ancillary equipment and services. In addition, the integrity of the temporary safety propping installed during AECOM's inspection during May 2018 was also verified on the first inspection. For the second visit the Client requested an additional detailed inspection to the inside of the ice cream shop and café as they closed for the winter season.

The aim of the follow-up structural inspections, recommended in the Condition Report on the Concrete Colonnade by AECOM (Ref 60586167-ELDC-ACM-REP-0002-P2) in June 2018 was to visually inspect and hammer test the RC structure on the route to the north staircase. This inspection was to ensure that the route was safe to remain open to the public for another 10 weeks, until robust remedial measures undertaken, or the structure isolated from public use. This follow-up inspections should be done by an appropriately qualified person, on a regular 10 weekly basis from the 20th June 2018.

The first further structural inspection was undertaken by AECOM on the 20<sup>th</sup> August 2018 and the second inspection was undertaken on the 29<sup>th</sup> October 2018.

## 2. Site Inspection 02

In preparation for the follow-up site inspection, East Lindsey DC arranged for the through route to the north- staircase to be barriered off from public access, by their framework contractor, 'Gelders'. The concessions in the ice cream kiosk and café had just stopped regular trading to the public during the day of the inspection on 29<sup>th</sup> October 2018. ELDC arranged for the café to be opened up to allow AECOM to inspect the RC slab soffit, above the internal suspended ceiling. In addition, ELDC arranged for a 600mm square opening to be cut in the insulated plasterboard ceiling in the ice cream kiosk. On the day of the inspection the weather was cold, overcast with occasional light showers.

Detailed records, material samples and photographs were obtained from site and have been incorporated in the Report.

A typical plan and cross-section sketch has been developed for the northern section, and a second typical section for the central and southern sections has been developed and included in Appendix A. The current visible concrete defects to the structural elements in the concrete structure leading to the north staircase have been added to the defect sketches included in AECOM's earlier Condition Report and an updated copy included in Appendix B.

To help assess the integrity of the structure, hammer acoustic tests on the concrete surfaces were undertaken during the inspection.

The safety of the structure after the current inspection was a prime concern given the degree of degradation that the RC structure had suffered, over its 60 to 70 year life (Although anecdotal local reports suggest parts could be

approximately ten years older) in the aggressive coastal marine environment. The safety precautions adopted during the first inspection works was to prop the more severely degraded concrete beams and slabs with steel adjustable props. The critical beams propped during the inspection included fascia beam GL 1, G to H, either side of a half lap joint; the beam across the stair access GL 2, Z-AA and longitudinal beam GL 1 to 2, LL-MM. Owing to the risk of smaller sections of concrete being forced from the surface due to rust formation on the steel reinforcement and potentially falling onto the public, a substantial temporary solid timber barrier had been constructed by ELDC along GL 1 to separate the structure from the public until the structure is remediated, or sections taken out of service. As part of further safety precautions the timber chalets were being removed from the central section of the colonnade by ELDC during the day of the second inspection. Whether any additional safety precautions works are likely to be required, is still under review by ELDC.

During the first inspection, the temporary structural props were inspected and found to be secured against unauthorised person interference.

During the inspections by AECOM all the visible loose concrete that could detach was removed.

The second inspection, of the north stair promenade access revealed that three small areas, of previously identified hollow concrete cover, had deteriorated so that it could become detached along the lower rear edge of the front down-stand beams GLs 1, C-G and these were removed for safety reasons. There were another two small areas of hollow concrete identified on column 1F and on the rear face of down-stand beam, (GLs 1-2, C-D). Four small areas on three different soffit slabs on the route to the stairs had deteriorated such that there were small sections of concrete cover that could become detached and were removed for safety reasons. One cross beam side face and one stair wall top face had an additional area of hollow concrete. Refer to Sketch of visual defects in Appendix B.

In the small exposure (0.6m square) through the direct bonded, insulated plasterboard ceiling, above the rear entrance door inside the ice cream kiosk, revealed a hairline crack in the soffit of the roof slab, but no significant spalling or water staining. Black stains from the reported earlier fire in the café, (circa 2008), were still present on the slab soffit, but no evidence was observed of significant heat damage to the concrete.



Photo no 2. Ice cream kiosk showing plasterboard ceiling, prior to exposure (near GLs C, 1-2).



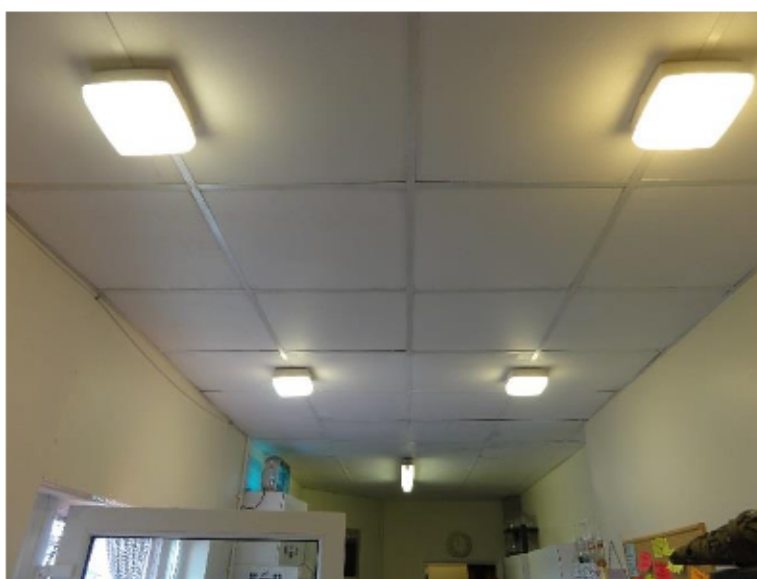


**Photo no 3. Exposure in insulated plasterboard ceiling near GL C, 1-2 of ice cream kiosk showing hairline crack in soffit of roof slab.**

The inspection inside the suspended ceiling of the café revealed four hairline cracks in the soffit of the roof slab, across the full width of the café, which were leaking water into steel drip trays that had been fixed to the underside of three of the cracks. The fourth crack directly across from the main front doors was showing, damp patches on the ceiling with globules of water. No preformed construction joints observed in the soffit of the roof slab over the café.

A spalled area of concrete under chalet no 2 (GL 2, E-F) was also dripping water onto a pile of previously spalled concrete (approx. 1.5kg) resting on the existing fibre ceiling tile. One of the drain pipe connections to the drip tray near GL E, 1-2 was leaking such that water was pooling on a ceiling tile situated over the electric deep fat fryers. Although AECOM mopped up the water on the day, the concession manager, Mr Brown, reported a safety incident to ELDC which was responded to within 3 hours.

In the toilet at the back of the café a large piece (0.5m square) of spalled concrete from the roof slab was being partly held in place by steel drip tray and its fixings. This piece of concrete was too large for AECOM to safely remove on the day and the concessions tenants were advised not to use the toilet until the hazard had been removed. AECOM referred the safety hazard to ELDC so that they could arrange safe removal and allow safe use of the toilet. AECOM requested ELDC to take photos after the spalled concrete had been removed so that the structural condition of the slab could be reviewed.



**Photo no 4. Suspended Ceiling in Café prior to exposures.**



**Photo no 5. Slab soffit above suspended ceiling in Cafe showing spalled concrete to the RHS.**



**Photo no 6. Slab soffit above suspended ceiling in Cafe showing services & steel drip trays fixed under leaking cracks through roof slab.**

### 3. Visual Observations of Concrete Defects

The defects observed were similar to the defects found elsewhere on the structure during the condition inspection in May 2018 and were typical of an old RC structure built 60 - 70 years ago (Although anecdotal local reports suggest parts could be approximately ten years older). The significance of the inadequate (shallow) concrete cover thicknesses specified to the embedded unprotected steel reinforcement were not generally appreciated in an aggressive marine environment at this time. In addition, a number of different types and quality concrete patch repairs had been undertaken to earlier defects, at various times, and a number of these had started to fail by becoming debonded. The observed loose (spalled) concrete was removed during the inspection to protect public, survey team and later inspectors whilst on site.

The RC elements inspected comprised rectangular cross-section columns supporting continuous spanning rectangular cross-section fascia beams, on GL 1, and simple supported cross-beams spanning between columns and the vertical sea defence revetment on GL 3. In addition, there were one and two-way spanning RC slabs spanning between fascia beams, cross beams, and sea defence revetment.

Visual and hammer test of the spalled area of the half-lap joint at GL 1, G-H revealed that the concrete to the right hand side (RHS) of the joint had cracked further and was removed for safety as it was outside the protection barrier.



Photo no 7. Half-lap joint on fascia beam GL 1, G-H, showing area of further spalling on RHS



Photo no 8. Close up of spalled concrete from Half-lap joint on fascia beam GL 1, G-H



Visual and hammer test inspection of the spalled area on the inside edge of the arched soffit, fascia beam on GL 1, D-E revealed an increase in spalled area of cracked concrete on the soffit edge of the beam, which was removed as a precautionary measure because it was over the access to the north staircase. At the spalled concrete location the reinforcement had suffered surface rusting but no significant loss of cross-section to bar diameter.



Photo no 9. Further spalled concrete cover from down-stand arched soffit fascia beam GL 1, D-E.



Photo no 10. Close up of spalled concrete from down-stand arched soffit fascia beam GL 1, D-E

Visual and hammer test inspection of the spalled area on the inside edge of the arched soffit fascia beam on grid line 1, C-D revealed a small increase in spalled area of cracked concrete on the lower edge of the beam, which

was removed as a precautionary measure because it was over the access to the north staircase and ice cream kiosk. At the spalled concrete location the reinforcement had suffered surface rusting but no significant loss of cross-section to bar diameter.



**Photo no 11. Small increase in concrete spalling area to edge of down-stand fascia beam at GL 1, C-D near Ice-cream kiosk.**

Inspection of the cross beam on GL 2, C-D revealed a further small area of spalled concrete on the soffit which when hammer tested further released some loose aggregate particles from within the cracked concrete, which was removed for safety reasons.



**Photo no 12. Cross beam GL 2 C-D further concrete spalling. Reinforcement corroded with only a slight loss of cross section.**



On the top edge of the RC wall to the north staircase (GL 3, C-D), a small area of concrete was tested as hollow adjacent to the spalled area of concrete (near the base of the balustrade standard), on the north east corner.



**Photo no 13. Top of stair wall alongside north staircase (GL 3, C-D), hollow concrete detected adjacent to RHS of concrete spalling.**

Inspection of the first floor soffit slab between GLs 1-2, D-E, revealed a further small area of hollow concrete which on further hammer testing, cracked and was removed as a precautionary safety measure. The spalled area is on the line of a hairline crack between two existing spalled areas. At the spalled concrete locations, the bar reinforcement had suffered some rusting but no significant loss of cross-section to bar diameter.



**Photo no 14. Soffit of slab GLs 1-2, D-E, further shallow spalling on a hairline crack. Reinforcement corroded with a small loss of cross sectional area.**

Inspection of the first floor soffit slab between GLs 1-2, D, revealed a further area of hollow concrete, adjacent to a spalled area, which on further hammer testing cracked and was removed as a precautionary safety measure. The spalled area is on the line of a hairline crack between an internal wall and the fascia beam GL 1. At the spalled concrete locations, the bar reinforcement had suffered some rusting but no significant loss of cross-

section to bar diameter. This crack appeared to be slightly damp suggesting that the repaired cracks on the upper surface may be starting to be ineffective.



Photo no 15. Soffit of slab at crack GLs D, 1-2, concrete crack and spalling.

Visual and hammer test inspection of the first floor soffit slab between GLs 1-2, C-D, along a previously identified crack and previous concrete repair, revealed some further hollow concrete which on further investigation cracked and was removed as a precautionary safety measure. At the spalled concrete location the reinforcement had suffered corrosion and detectable loss of cross section to bar diameters.



Photo no 16. Soffit of slab at GLs 1-2, C-D showing spalled concrete, corroded reinforcement with loss of cross section.

Visual and hammer test inspection of the first floor soffit slab between GLs 1-2, C-D along a previously identified crack revealed some minor spalling but no damp concrete.



**Photo no 17. Hairline crack in slab soffit at GLs 1-2, C-D with some minor rust stains and spalling.**

A small exposure through the bonded plasterboard ceiling, inside the ice cream kiosk, revealed a hairline crack in the soffit slab but no significant spalling.



**Photo no 18. Exposure in plasterboard ceiling to ice-cream kiosk showing hairline crack in slab soffit at GLs 1-2, B-C with some minor spalling. Black staining damage reported to be from an earlier fire.**

A small exposure through the bonded plasterboard ceiling, inside the ice cream kiosk, revealed a hairline crack in the soffit slab but no significant spalling or dampness. The inspection inside the suspended ceiling in the café



revealed four hairline cracks in the roof slab, across the width of the café, which had reportedly leaked water (raining at time of inspection). A steel drip trays that had been fixed to the underside of three of the cracks to collect and drain off the water to overflows. The fourth crack, directly across from the front door of the Café, was displaying damp patches with globules of water on the surface. Three of the four cracks reflected the repaired cracks on the roof slab at promenade level that were observed during the May 2018 inspections. The drip trays under three of the roof slab cracks prevented close inspection and the assessment of concrete degradation.



**Photo no 19. Crack through roof slab above Café with damp patches at GL 1-2, E-F.**

One of the drain pipes to the drip tray on GL E, 1-2, was leaking such that water was pooling on a ceiling tile situated over the electric deep fat fryers. Although AECOM mopped up the water, on day, the concession manager Mr Brown reported a safety incident to ELDC which was responded to within 3 hours. Since the Café continues to be leased to the concession the waterproofing to these defects should be considered for improvement in the short term. Should the water ingress continue it will cause additional structural problems over time.



**Photo no 20. Crack through roof slab above Café with steel drip tray at GL 1-2, E-F. Drain pipe from drip tray leaking water onto ceiling tile above electric deep fat fryer.**

**Potential safety hazard unless resolved by ELDC.**



**Photo no 21. Crack through roof slab above Café freezer with steel drip tray at GL 1-2, D-E.**

In the toilet, at the back of the Café, a large piece (0.5m square) of spalled concrete on the soffit of the roof slab was being held in place by the steel drip tray and its small fixings. This piece of concrete was too large for AECOM to safely remove on the day and was referred to ELDC to remove this safety hazard, so that the toilet could be used safely. AECOM requested ELDC to take photos after the spalled concrete had been removed so that the structural condition of the slab could be reviewed.



**Photo no 22. Crack through roof slab above Café internal toilet, with steel drip tray (approx. GL 1-2, D-E.)**

**Potential safety hazard unless resolved by ELDC.**





**Photo no 23. Spalling and a dripping water leak in ceiling void of Café at GL 2, E-F**

A spalled area of concrete on the roof slab soffit situated under chalet no 2 (GL 2, E-F) was also dripping water (raining at time of inspection) onto a pile of previously spalled concrete (approx. 1.5kg) resting on the existing fibre ceiling tile.



**Photo no 24. Spalling and a dripping water leak in ceiling void of Café at GL 2, E-F above internal block wall and under chalet no 2.**



**Photo no 25. Repaired cracks in slab at promenade level which approximately correspond with cracks in Garden Café ceiling below. (GL 1-2-3, D-F).**

## 4. Recommendations and Conclusions

Following on from the Condition Inspection undertaken by AECOM in May 2018, on the Concrete Colonnade at Sutton Pleasure Gardens, a further structural inspection of the north section of the Concrete Colonnade near the north staircase was undertaken on 29th October 2018, as it was still in use by the public. Following a review of the findings, we would make the following recommendations.

The ageing structure is exhibiting common defects for a reinforced concrete design understood to be constructed between 1948 and 1955 (Although anecdotal local reports suggest an earlier inception) and exposed to an aggressive marine environment. For the structure to be used for the benefit of the public over the coming decades, a number of defects would need to be remediated. Some of these defects are serious and currently affecting the safe use of the structure, as there is a potential risk of small sections of concrete cover to the embedded steel reinforcement being forced off, by ferrous oxide expansion, from the high sections of the structure and falling and potentially injuring persons moving close to and/or within the structure. This safety risk is expected to increase with time unless robust remedial measures are undertaken or parts of the structure decommissioned from its present usage. The temporary safety provisions that have already been implemented on site in the form of solid physical barrier fences and structural props to the enclosed area under the first floor, and separating sections of the structure from public access, will need to be continually inspected and maintained until a remedial proposal is implemented.

The first floor fascia beams, internal transfer beams, and slabs, which span over the public access to the north staircase to the promenade, which are currently not closed off from the public, are showing signs of concrete degradation. We would therefore recommend that these are continually inspected for safety, by an engineer with appropriate structural experience, at least every 10 weeks, starting from 20<sup>th</sup> August 2018.

The second of these further inspections undertaken on 29<sup>th</sup> October 2018 on the north staircase access revealed that small areas of hollow concrete had deteriorated further such that the lower rear edge of the front down-stand beams GLs 1, C-G was spalling and becoming detached. This spalling concrete was removed as a safety precaution. There were another two small areas of hollow concrete identified on column 1F and on the rear face of down-stand beam, GLs 1-2, C-D. Four small areas, in the soffit of three different first floor slabs en-route to the staircase, had deteriorated such that there were small sections of concrete cover that could become detached (following hammer test) and were removed for safety reasons. One cross-beam side face and one stair wall top face had developed an additional area of hollow concrete.

A small exposure through the bonded plasterboard ceiling, inside the ice cream kiosk, revealed a hairline crack in the soffit of the roof slab, but no significant spalling. The inspection inside the suspended ceiling in the café revealed four hairline cracks in the roof slab, across the width of the café, which had leaked water (raining at time of inspection). Steel drip trays that had been fixed to the underside of three of the cracks to collect and drain off the water to overflow pipes. The fourth crack, near the front door of the Café, was displaying damp patches with water globules on the surface. Three of the four cracks reflected approximately the repaired cracks on the roof slab at promenade level that were observed during the May 2018 inspections. The drip trays under three of the roof slab cracks prevented close inspection and the assessment of concrete degradation. A spalled area of concrete under chalet no 2 (GL 2, E-F) was also dripping water onto a pile of previously spalled concrete resting on an existing fibre ceiling tile. One of the drain pipes to the drip tray on GL E, 1-2, was leaking such that water was pooling on a ceiling tile situated over the electric deep fat fryers. Although AECOM turned the electric off and mopped up the water on day the concession manager Mr Brown reported a safety incident to ELDC, which was responded to within 3 hours. Since the Café continues to be leased to the concession the waterproofing to these defects should be considered for improvement in the short term. Should the water ingress continue it will cause additional structural problems over time.

In the toilet, at the back of the Café, a large piece (0.5m square) of spalled concrete from the roof slab was being held in place by the steel drip tray and its small fixings. This piece of concrete was too large for AECOM to safely remove on the day and was referred to ELDC to remove this safety hazard so that the toilet could be safely used. AECOM requested ELDC to take photos after the spalled concrete had been removed so that the structural safety condition of the roof slab could be reviewed.

The recommendation from the inspection was that the walkway to the north stairs could remain open for public use for another 10 weeks i.e. till 9 January 2019, when another structural inspection is recommended. The first floor promenade slab over this area should remain free of permanent loading and the recent planning application for a further beach hut/office in this area should be reconsidered.

Should the Council require further additional structural design, contract management or site supervision of specific remedial measures AECOM would be pleased to offer their professional services.

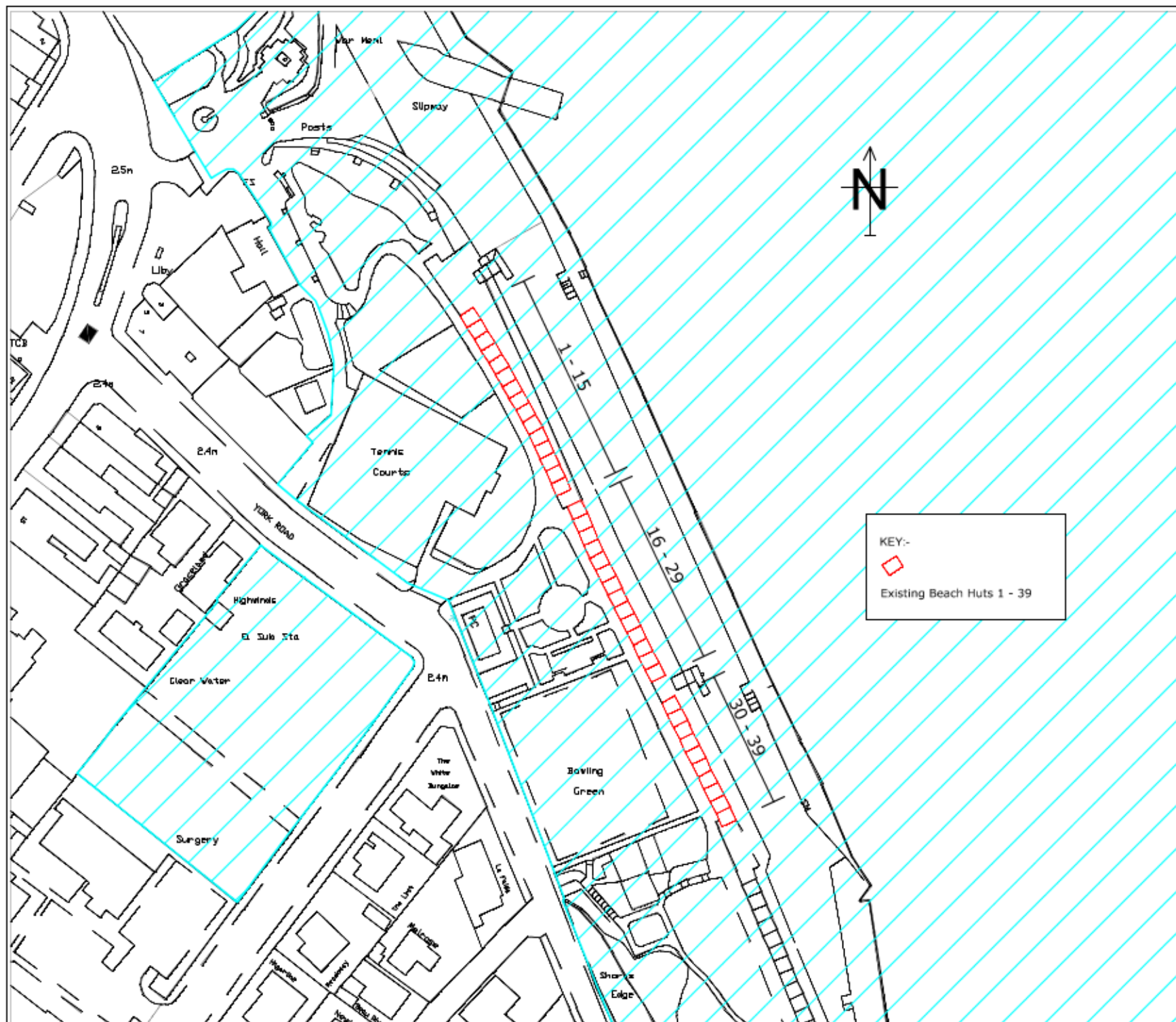
## Appendix A

### Drawings

Location Plan Figure 1

Typical Sections Figure 2





## NOTES

Do not scale from this drawing, use figured dimensions.  
All dimensions to be checked on site before work commences. All errors and omissions to be reported to the architect / supervising officer.

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Revisions



**East Lindsey**  
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## Property and Technical Services

**Project Title:**  
Beach Hut Redevelopment  
Promenade,  
Sutton on Sea

**Drawing Title:**  
Site location plan  
Beach Huts  
1-15, 16-29, 30-39

**Drawn by:** MA

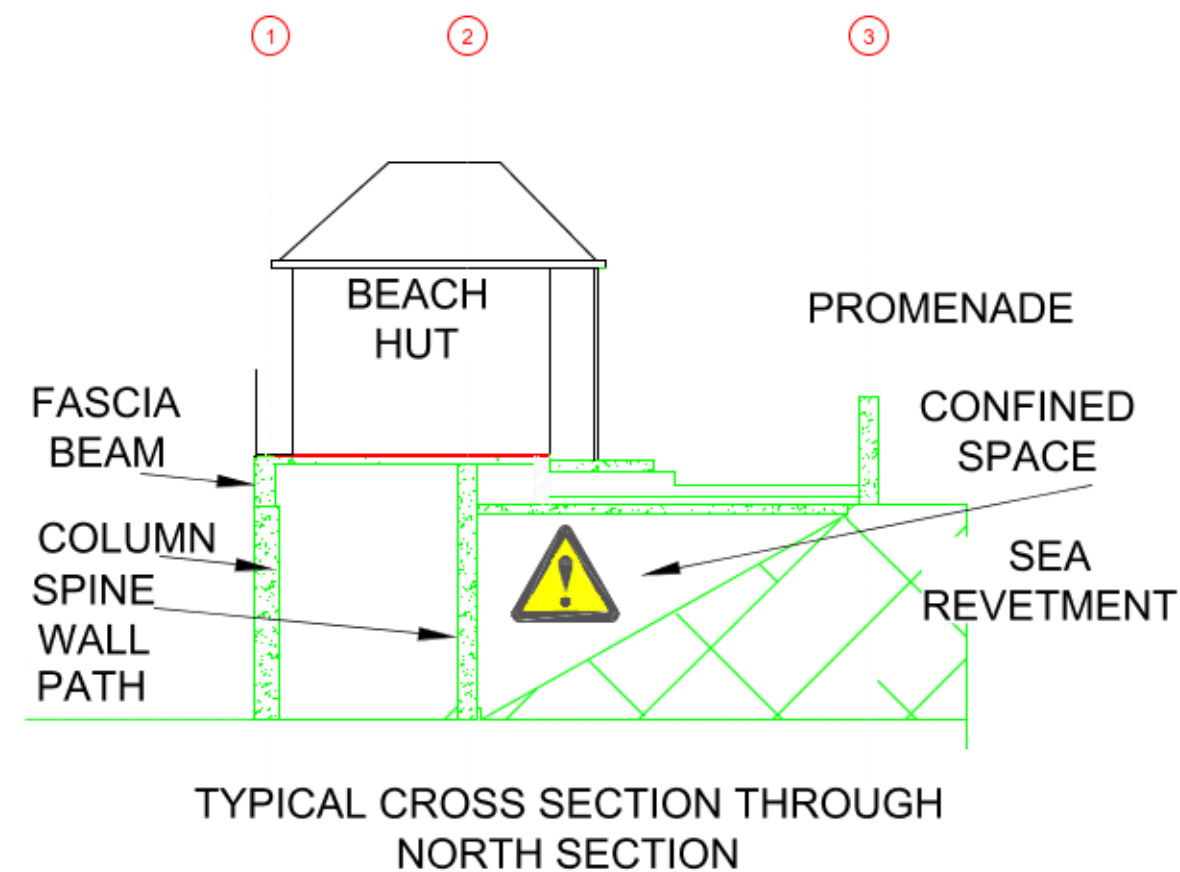
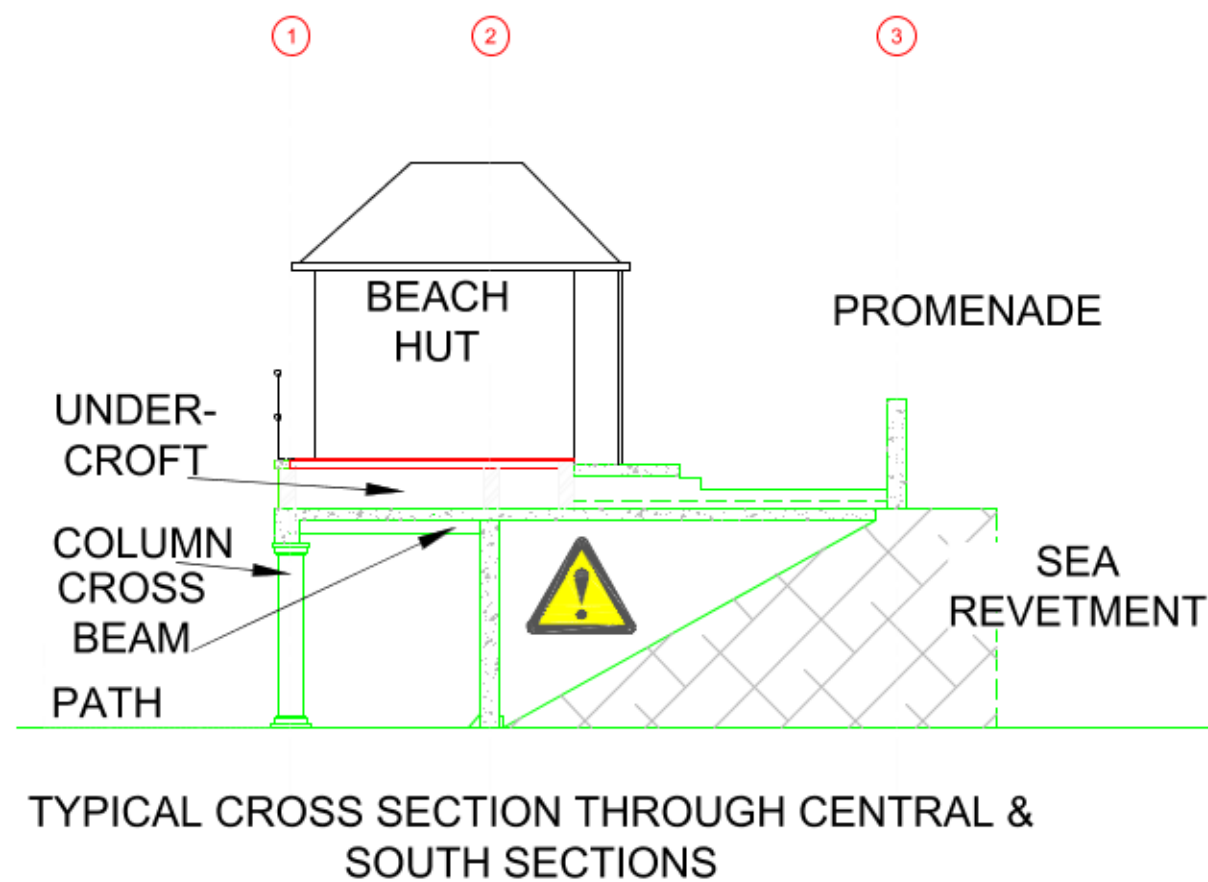
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**Date:**  
Mar 2018

**Dwg No:**  
172/2025/02

**Rev:**  
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## Appendix B

### Summary of Sketch of Visual Concrete Defects

Plan Figure 3 Rev B

Elevations Figure 4 Rev B

