

In Collaboration With



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Building Plan & Management Group

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INTER-AGENCY COORDINATING COMMITTEE (IACC)

- ACCEPTABLE SOLUTIONS FOR COMPLIANCE TO EXTERNAL WORKS REQUIREMENTS WITHIN CONGESTED SITES

Objective

This circular is to share with the industry on acceptable solutions for external works requirements within congested sites.

Background

2 In early 2024, IACC and SIA formed a workgroup to study the external works requirements within congested sites in response to industry feedback on the challenges faced by project teams while trying to comply with the various competing requirements set out by technical agencies.

3 This workgroup was led by SIA and involved representation from the various technical agencies including BCA, LTA, PUB, IMDA, EMA, NEA & NParks as well as trade associations and chambers including IES & ACES. The workgroup studied the structures erected at the external works of congested sites (such as bus shelter, sheltered linkways, external drains, OG boxes and roadside trees etc.) and the various technical requirements across agencies in order to collate various external works scenarios and develop the corresponding eight acceptable solutions.

Acceptable Solutions for Agency Evaluation

4 Please refer to Annex A for the tabulation of the eight external works scenarios for congested sites and their acceptable solutions. Project teams shall demonstrate in the relevant submissions or waiver applications, the limitations of the congested sites for agencies' evaluation of the corresponding acceptable solutions. Adoption of these acceptable solutions helps to expedite agencies' evaluation and approval leading to savings on time and manpower cost for the project teams.

For Clarification

5 We would appreciate it if you could convey the contents of this circular to the members of your organisation. For clarifications, please contact the IACC Secretariat by email to BCA_IACC_Secretariat@bca.gov.sg.

Yours faithfully

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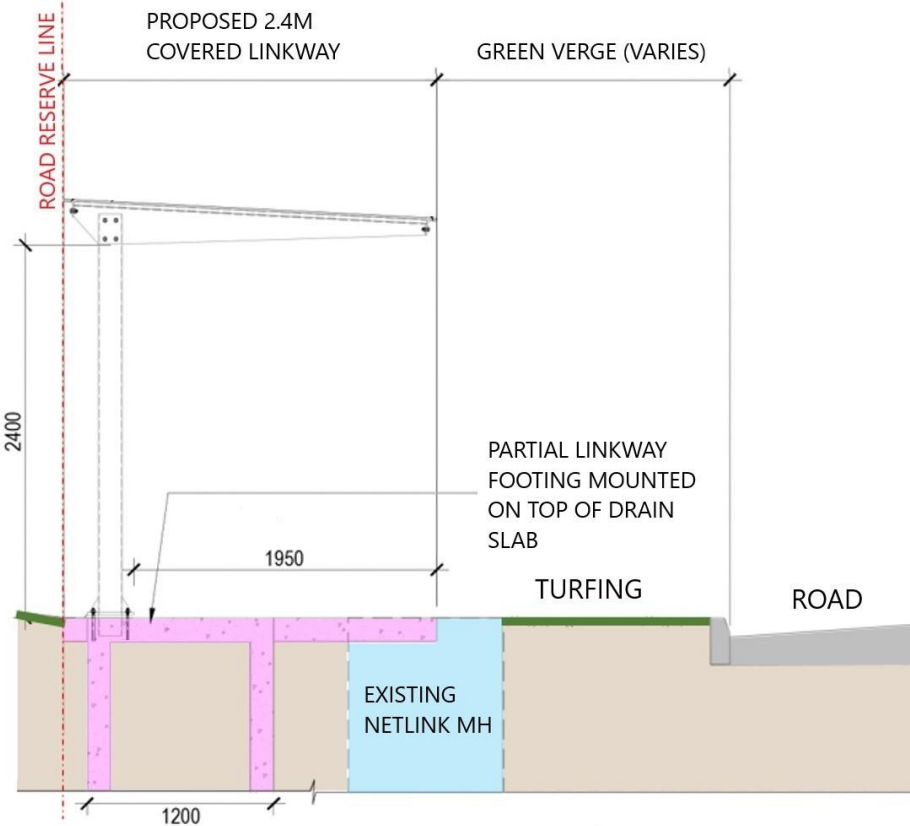
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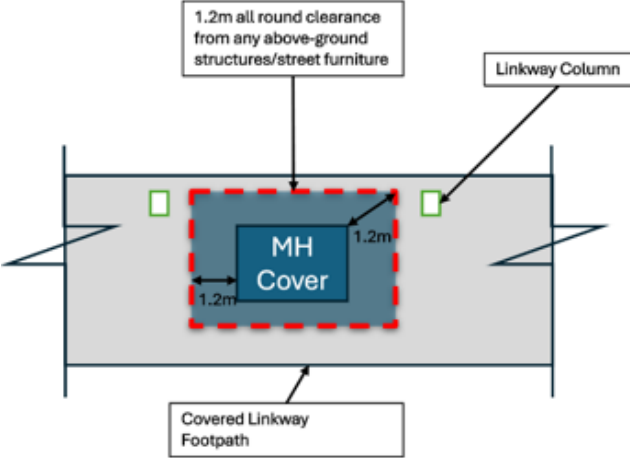
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Encl.

External Works Requirements within Congested Sites

S/N	Scenario	Agency	Requirements	Acceptable Solution within Congested Sites
1	Bus shelter / Linkway on top of Existing Drain	LTA	The proposed structure to be independently supported.	<p>Where there is a lack of road side space for installation of Bus Shelter structure & footings away from existing Drains, Manholes and Trees, the bus shelter/linkway shall be demountable to facilitate quick recovery or repair works.</p> <p>Where there are site constraints, the Bus Shelter / Linkway's columns may be located on the drain top slab if the QP, who is a PE (Civil), can verify with design calculations that:</p> <ul style="list-style-type: none"> (Ai) the structural integrity of the affected drain will not be affected by the additional loading of the linkway structures and (Aii) the existing drain's hydraulic capacity will not be affected. <p>The following dimensions for maintenance and repair access of telecommunications infrastructure are acceptable:</p> <ul style="list-style-type: none"> (Bi) Vertical Clearance: Minimum of 1.8 metres from the top of the telecom manhole cover to any overhead structure to allow adequate headroom for maintenance personnel and equipment. (Bii) Horizontal Clearance: A minimum width of 1.0 metre on each side of the telecom manhole cover to provide sufficient space for access and equipment manoeuvrability. (Biii) Demountable Design Specifications: Any demountable or removable elements should be designed to enable clear and unrestricted access to telecom infrastructure with minimal service disruptions.
		PUB	<p>For a proposed structure to be constructed over a drain or Drainage Reserve, PUB's approval must be sought.</p> <p>The proposed structure must be independently supported and maintain a minimum horizontal distance of 300mm from the drain structure, and a minimum 100mm vertical clearance from the drain cope.</p>	
		IMDA	When installing a bus shelter or linkway above an existing drain, telecommunications infrastructure (such as underground ducts, cables and manholes) must remain accessible for maintenance or repairs.	
		NParks	<p>In the event that the structural integrity of the drain is affected and the footing of the covered linkway is to be located along the green verge, most of the existing roadside trees, especially mature ones, will likely be impacted.</p> <p>To ensure the stability of trees is not compromised, a Certified Arborist (CA) must be engaged to assess the impact of the works on the trees (including their crowns and roots) and to submit an arborist report for NParks' review.</p>	

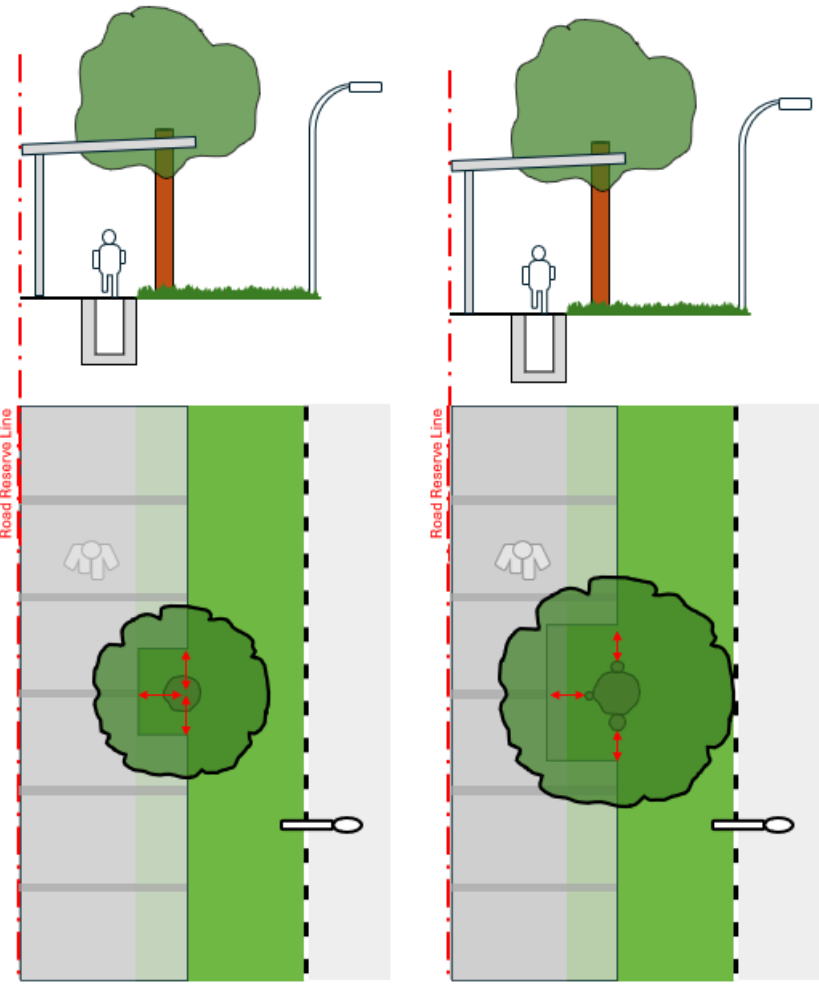
S/N	Scenario	Agency	Requirements	Acceptable Solution within Congested Sites
				<p>If existing trees cannot be retained after exploring all possible options, replacement planting is required. The tree replacement ratio is 1:3, subject to tree species and availability of space. For sensitive areas, NParks may impose instant tree planting or big sapling requirements.</p> <p>PROPOSED 2.4M WIDE COVERED LINKWAY WITH NETLINK TRUST MANHOLE</p>  <p>The diagram illustrates a cross-section of a proposed 2.4m wide covered linkway. On the left, a vertical dashed red line indicates the 'ROAD RESERVE LINE'. The linkway itself is 2.4m wide and has a height of 2400mm. To the right of the linkway is a 'GREEN VERGE (VARIES)'. Below the linkway, a 'PARTIAL LINKWAY FOOTING MOUNTED ON TOP OF DRAIN SLAB' is shown, with a width of 1950mm. An 'EXISTING NETLINK MH' (manhole) is located in the ground, with a width of 1200mm. The ground surface is labeled 'TURFING', and the road surface is labeled 'ROAD'.</p>

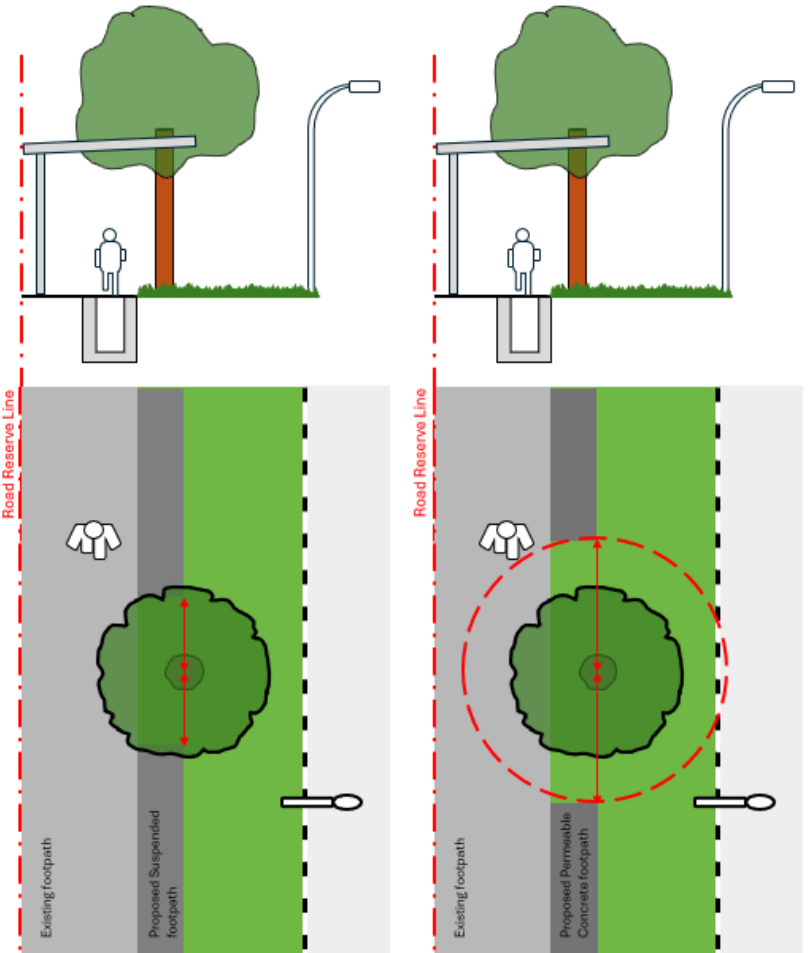
S/N	Scenario	Agency	Requirements	Acceptable Solution within Congested Sites
2	Linkway on top of telecom manhole	LTA IMDA	<p>No manhole within footpath.</p> <p>1.2m all round clearance from any above-ground structures/street furniture.</p> <p>Pipe testing to be conducted before and after linkway construction to ensure no damage to existing ducts. Cost of pipe test will be chargeable.</p>  <p>The diagram illustrates a plan view of a manhole cover (MH Cover) located within a covered linkway footpath. A red dashed rectangle indicates a 1.2m clearance zone around the manhole cover. Labels include '1.2m all round clearance from any above-ground structures/street furniture', 'Linkway Column', 'MH Cover', and 'Covered Linkway Footpath'.</p>	<p>Where there are congested underground services such that shifting of telecom manhole cover is not possible, it shall be lowered / raised to flush with the adjacent footpath level and the telecom manhole slab/cover shall comply to the requirement stated in SS 485:2022 (Specification for slip resistance classification of pedestrian surface materials)</p> <p>The slab covering the telecom manhole shall be a non-structural slab for ease of maintenance access. There shall be no structures attached to the telecom manhole. Any adjacent structures shall be independently supported.</p> <p>The design should ensure that the manhole cover remains accessible for routine inspections or emergency repairs. The slab must not exert any additional load on the manhole, and its material should allow for easy removal. To prevent service interruptions, a clear working space around the manhole for telecom personnels during cable-pulling operations is essential. Safety measures, such as proper marking, should be put in place to avoid accidents related to open manholes.</p>
3	Alignment of covered drain to the centre of the drainage reserve	PUB	<p>The rationale for placing a drain in the middle of the drainage reserve is so that there is sufficient horizontal clearance to drive in sheet-piles when the drains need to be reconstructed.</p>	<p>Where there are physical impediments such as other existing underground services or other spatial constraints on site, the drain can be aligned nearer to either edge of the drainage reserve. QP is required to provide the minimum horizontal clearance of:</p> <ul style="list-style-type: none"> (Ai) 0.3m from drain structure to adjacent development boundary line (for internal width of drain >1.2m to 4.5m), and (Aii) 0.6m from drain structure to adjacent development boundary line (for internal width of drain >4.5m).

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4	Bus shelter within sewer setback	PUB	Structures shall not be built over sewers and shall maintain a distance away from the sewers (i.e. sewer setback distance) so that future access to the sewers for maintenance/repair purpose is not impeded.	<p>Where there are space or terrain constraints such that diversion is not possible or relocation of the bus shelter is not possible, the proposed structure may co-locate with the sewer if a reinforced concrete trench is provided to house the sewer.</p> <p>Alternatively, the bus shelter shall be designed to be fully demountable. If the footing is unable to be sited outside of the sewer setback, the QP shall provide a method statement for PUB's consideration on how the affected sewer can be accessed for future repair / maintenance.</p> <p>This approach applies to other structures erected at congested sites too, such as sheltered linkways.</p>
5	Location of covered linkway relative to roadside elements	LTA	<p>A minimum of 1.8m clear width at covered linkways is required to allow for 2 wheelchairs to pass each other.</p> <p>The covered linkway width shall be minimum 2.4m.</p> <p>The minimum clear distance between the linkway roof eave and outer edge of the road kerb shall be 600mm.</p>	<p>For areas with severe site constraints, including physical space (due to the presence of lamp post, mature trees etc.) or terrain limitations, narrower linkway roof widths at localised areas may be allowed subject to a minimum clear footpath width of 1.2m.</p> <p>Options to retain mature trees should be explored. Where roadside trees are affected, a tree planting verge with minimum 2.0m width and 2.0m depth should be provided for replacement planting. This verge should be free of encumbrance and devoid of underground services.</p>
		NParks	<p>To retain mature trees, QP should explore the following (non-exhaustive) options:</p> <ul style="list-style-type: none"> (i) Use adjoining land (ii) Create minimum 2.0m clearance distance from the linkway roof eave to centre of the trees, subject to Certified Arborist's assessment (iii) Provide suspended footpath to prevent major roots from being cut (iv) Deck over existing open drain/canal 	<p>For the conservation of roadside trees, a narrower width of the covered linkway may be considered. The linkway roof eaves should meet the following minimum clearance distance of:</p> <ul style="list-style-type: none"> (Ai) 600mm from the centre of tree; and (Aii) 300mm from any tree branches, subject to Certified Arborist's assessment. <p>A minimum clearance of 200mm all around the lamp post is acceptable to manage the maintenance and replacement of the lamp post where required</p>

S/N	Scenario	Agency	Requirements	Acceptable Solution within Congested Sites
		IMDA	<p>Narrower width allowances for covered linkways near roadside elements like lamp posts should still ensure that telecom cables, ducts, and manholes remain accessible. Minimum clearance requirements around telecom manholes, should be maintained for safe and efficient maintenance. Telecommunication providers may require site-specific assessments to confirm that the installation of linkways does not impede future infrastructure upgrades.</p>	
6	Location of OG Box (OGB) relative to roadside elements	SPPG	<p>A minimum clearance of 1.0m is required from the OGB to the road kerb. This is to prevent road users as well as maintenance personnel working nearby from hitting the OGB structure.</p>	<p>For sites with limited road side table space, a minimum clearance of 600mm from the OGB to the road kerb of minor roads may be allowed.</p> <p><u>General Information</u> <i>OGB are generally installed 200-300mm away from the edge of the walkway as a safety buffer to prevent pedestrians from accidentally knocking into it causing electrocution.</i> <i>OGB are installed at 0.6m to 1m away from the road kerb to allow maintenance personnel working space and to act as a safety buffer from motorists.</i></p>

S/N	Scenario	Agency	Requirements	Acceptable Solution within Congested Sites
7	Location of Trees relative to roadside elements	NParks	Minimum 2.0m clear width and 2.0m clear depth of green verge (free from encumbrances) is required for tree planting.	<p>For sites with space available only for shrub planting (1.0m wide and below), covered linkway columns should be located on the side of the green verge to facilitate trellis planting.</p> <p>For sites with existing roadside trees, kinks along the covered linkway to accommodate the trees should be explored. Trees at these kinks shall be replaced if they are removed in the future.</p> <p>The minimum clearance distance of roadside elements to trees are set out in NParks' Guidelines on Greenery Provision and Tree Conservation for Developments. For any deviation, a Certified Arborist should be engaged to provide assessment and recommendation.</p> <p>QPs are advised to make a pre-submission consultation with NParks for any alternative proposal.</p> <p>For the conservation of roadside trees, a narrower width of the covered linkway may be considered. The linkway roof eaves should meet the following minimum clearance distance of:</p> <ul style="list-style-type: none"> (Ai) 600mm from the centre of tree; and (Aii) 300mm from any tree branches, subject to Certified Arborist's assessment. <p>See Figure 1.</p> <p>The proposed footpath should meet the following minimum clearance distance of:</p> <ul style="list-style-type: none"> (Bi) 1.0m from centre of tree to suspended footpath; and (Bii) 2.0m radius from centre of tree to permeable concrete footpath, subject to Certified Arborist's assessment. <p>This is to allow more space for trees to grow and mature. Suspended footpath should be explored where applicable.</p> <p>See Figure 2.</p>

S/N	Scenario	Agency	Requirements	Acceptable Solution within Congested Sites
				<p>Figure 1</p>  <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> Min. 600mm from the centre of tree </div> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> Min 300mm from any tree branches </div>

S/N	Scenario	Agency	Requirements	Acceptable Solution within Congested Sites
				<p>Figure 2</p>  <p>Min 1.0m from the centre of the tree to suspended footpath</p> <p>Min 2.0m radius from the centre of the tree to permeable concrete footpath</p>

S/N	Scenario	Agency	Requirements	Acceptable Solution within Congested Sites
8	Diversion of existing services away from rigid pavement due to road widening, in scenarios where there is insufficient space to divert to the other side of the carriageway	EMA	<p>Gas pipelines are not recommended to be laid under rigid pavement due to the followings:</p> <ul style="list-style-type: none"> (i) Detection of any gas leak is impeded. Undetected / un-reported gas leak may lead to accumulation of escaped gas under the rigid pavement. (ii) Access to the gas pipe under rigid pavement for troubleshooting and repairs would be challenging and take longer time. (iii) Longer lane closure duration will be required for breaking of the rigid pavement (subject to LTA's approval) for access to the gas pipeline; and subsequently for reinstatement and curing upon completion of work on the gas pipeline. 	<p><u>Gas Pipelines</u> Where there is insufficient space to divert the gas pipe away from the proposed rigid pavement, an acceptable solution is to lay the section of gas pipeline with a metal sleeve under a rigid pavement. The metal sleeve shall extend beyond the edge of the rigid pavement so that, in the event of a gas leak, accumulation of escape gas under the rigid pavement may be prevented.</p> <p><u>Telecommunications Infrastructure</u> If there is limited corridor and diversion of telecom is not possible, please note the requirements as follows:</p> <ul style="list-style-type: none"> (Ai) Pipe top-up is required (with costs to be borne by the requesting party) (Aii) Pipe testing must be conducted both before and after the construction of the rigid pavement.
		IMDA	Before any rigid pavement is cast, thorough testing of existing telecommunications infrastructure must be conducted to ensure that no cables or ducts have been damaged during the streetworks.	

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