

Exhibit Q: Detailed Design Checklist (Underground Fiber Network)

CNMI Broadband Policy and Development (BPD) Office Broadband Equity, Access, and Deployment (BEAD) Program Subgrant Agreement: Between CNMI BPD and [Subgrantee Name]

Field	Detail
BPD Subgrant Award Identifier	[BPD Assigned ID]
Project Name/Identifier	[Unique Name or Identifier from Exhibit A]
Subgrantee	[Full Legal Name of Subgrantee]

Referenced Network Design Document(s): (List the specific design document name(s), version number(s), and date(s) covered by this checklist) [Document Name / Version / Date] [Document Name / Version / Date]

Purpose: This checklist verifies that the submitted **underground fiber optic Network Design** contains sufficient engineering detail for buried construction, adheres to relevant technical standards and best practices, and aligns with the requirements of the CNMI BEAD Program, particularly the criteria for a **Priority Broadband Project (PBP)**, addressing resilience and reliability. This checklist complements Exhibit P and Exhibit O.

Instructions: Reviewers should verify the presence and adequacy of each listed item within the referenced design documents. Check "Yes," "No," or "N/A." Add comments for clarification or deficiencies.

Item #	Category	Checklist Item Description (CNMI BEAD Alignment)	Yes	No	N/A	Reviewer Comments / Doc Ref
A	Mapping & GIS					
A.1	Base maps	Base maps included (source, date, scale adequate for review)?	[]	[]	[]	

A.2	Proposed routes	Proposed underground fiber routes clearly shown and documented for all BSLs in the PFA?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
A.3	Utilities	Existing major utilities (power, water, sewer, comms) depicted along routes to ensure safe burial separation? (S.U.E. level noted?)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
A.4	ROW/Easements	Public Right-of-Way (ROW) boundaries and required easements (private property access) indicated? Proof of access acquisition must be submitted prior to NTPC.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
A.5	Locations Served	All BSLs and CAIs from Exhibit A accurately plotted on maps.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
A.6	EHP Constraints	Known environmental/historic constraints (e.g., wetlands, HPO sites, coastal zones) noted on maps, demonstrating awareness of the EHP scope,.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
B	OSP - Underground					
B.1	Trenching/Plowing	Trenching/Plowing specifications provided (minimum depth per location type; width)? Specifications must address local soil conditions and typhoon stability.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
B.2	Drilling (HDD)	Directional Drilling (HDD) specifications provided where applicable (depth, profile, frac-out plan)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
B.3	Conduit Specs	Conduit specifications provided (material type, size, SDR rating,	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

		number of conduits). Material must be durable and resistant to saltwater corrosion typical of the CNMI environment,.				
B.4	Access Points	Placement of interspersed conduit access points at regular and short intervals clearly documented along underground routes for interconnection by unaffiliated entities,,.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
B.5	Handhole/Vaults	Handhole/Vault specifications provided (material, size, load rating , placement interval, grounding). Placement and sealing must account for flood zone considerations ,.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
B.6	Site Restoration	Site restoration details specified (compaction standards, surface repair, including paving/concrete standards).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
C	Fiber Cable & Splicing					
C.1	Cable Specs	Fiber optic cable specifications provided (type, construction). Construction must be suitable for buried/conduit deployment and resistant to the CNMI's specific climate threats,,.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
C.2	Optical Loss	End-to-end optical loss budget calculations provided for representative links, confirming design integrity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
C.3	Splice	Splice enclosure specifications provided (type - suitable for underground/vault, environmental rating).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

D	Network Equipment					
D.1	Field Equipment	Field cabinet/FDH/Pedestal specifications provided (size, NEMA rating , security, thermal management). Must demonstrate physical hardening against high winds and corrosion,.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
D.2	OLT/ONT Specs	OLT and ONT specifications provided (make/model, capacity, environmental specs).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
D.3	Powering/ Backup	Backup power plan detailed for all active network components (FDHs, cabinets, huts) including source type and duration sufficient to maintain operation during extended typhoon-related power outages ,.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
D.4	NMS/Monitoring	Network Management System (NMS) considerations addressed for ongoing performance monitoring and outage tracking.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
E	Performance & Testing					
E.1	BEAD Performance	Design supports BEAD performance requirements (100/20 Mbps BSLs and 1 Gbps symmetrical CAs) and $\leq 100 \text{ ms}$ latency,.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
E.2	Construction Test	Construction testing plan included (e.g., OTDR trace requirements, power meter testing) to verify physical integrity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

E.3	Resilience Plan	Documentation of the Disaster Recovery and Preventative Maintenance plans required prior to network operation, including logistics for extended outages.	[]	[]	[]	
F	Standards & Compliance					
F.1	Codes/Standards	Relevant industry standards and CNMI codes cited and followed (e.g., NESC, NEC),.	[]	[]	[]	
F.2	Climate Hardening	Detailed documentation of climate hardening measures (e.g., use of 100% buried fiber, specific NEMA ratings, flood proofing) demonstrating compliance with CNMI PBP Reliability & Resilience criteria,,.	[]	[]	[]	
F.3	SCRM/National Security	Vendor lists and documentation confirming the use of trusted vendors and compliance with the BPD-approved Supply Chain Risk Management (SCRM) Plan (NIST-aligned),.	[]	[]	[]	
F.4	BABA Documentation	Compliance documentation for the Build America, Buy America (BABA) Act is maintained, including the BABA Reporting Subrecipient Tracker detailing Country of Origin for finished manufactured products utilized under the BEAD waiver,.	[]	[]	[]	
F.5	EHP/NEPA Integration	Evidence of coordination with BPD for EHP/NEPA review and commitment to providing data to facilitate the mandatory use of the Environmental Screening and	[]	[]	[]	

		Permitting Tracking Tool (ESAPTT),.				
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Overall Assessment:

[] Design package contains sufficient detail for climate-hardened underground construction and compliance verification.

[] Design package appears to meet all technical and compliance requirements of the BEAD program and Subgrant Agreement for an underground Priority Broadband Project.

[] Deficiencies noted require correction before design approval / NTPC. (See comments above)

Reviewed By: _____

(Name and Title of BPD Reviewer / Engineer)

Signature: _____

Date: _____