EVERSOURCE

Project Approval Form

| | |
|---|---|
| **Project Title:** [redacted] Carmel Hill – Subst. Feeder Additions | **Project Number: CD01902** |
| **Date Prepared:** 10/14/2024 | **Company:** Eversource CT |
| **Organization: Electric System Operations** | **Project Category:** OVERLOADS-SPECIFIC PROJECTS |
| **Project Initiator:** [redacted] | **Project Type:** Specific |
| **Initiating Organization:** Distribution | **Capital Investment part of original Op Plan:** Yes |
| **Project Manager:** [redacted] | **Emergency Related Request?** No |
| **Project Sponsor:** [redacted] | **Facility Type** (check all that apply):<br>☐ PTF ☐ non-PTF ☒ Distribution ☐ N/A (General Plant) |
| **Required in service date: 12/31/2025** | |
| **Total Capital Request: $511.2K** | **Authorization Type:** Full Funding |

# 1. Executive Summary

Full funding is being requested for this project at a cost of $511.2K which is 127.2% of the partial funding capital estimate of $401.9K. This project was partially approved on 1/27/2022. There is no scope change on the project. The variance between the full funding and partial funding estimate is due to additional cable being required to complete this project, from about 480' in the partial to 740' used in the field. When this project's partial funding estimate was approved, the substation and as-built drawings were not finalized, which to field conditions that resulted in additional cable and conduit required. The additional length of cable also led to increased labor & indirect costs associated with this project.

The original project was presented as follows:

[redacted]

[redacted]

## 2. Project Cost Summary

Note: Dollar values are in thousands.

| Capital Costs | 2023 Actual | 2024 Actual | 2025 Estimate | Total |
|---|---|---|---|---|
| **Direct Capital Costs** | | | | |
| Internal Labor and Construction Equipment | 0.2 | 2.2 | 18.5 | 20.9 |
| Outside Services | 1.4 | 13.8 | 115.1 | 130.2 |
| Materials | 1.0 | 10.0 | 83.1 | 94.0 |
| Removals | 0.2 | 1.7 | 16.4 | 18.3 |
| Risk and Contingency | 0.0 | 0.0 | 32.2 | 32.2 |
| Other | 0.0 | 0.0 | 0.0 | 0.0 |
| Subtotal – Direct Costs | **2.7** | **27.7** | **265.3** | **295.7** |
| **Indirect Capital Costs** | | | | |
| Indirect/Overheads (including benefits) | 1.9 | 34.1 | 178.4 | 214.4 |
| Capitalized interest or AFUDC, if any | 0.0 | 1.1 | 0.0 | 1.1 |
| Subtotal – Indirect Costs | **1.9** | **35.2** | **178.4** | **215.6** |
| **Total Gross Capital Costs** | **4.6** | **63.0** | **443.7** | **511.2** |
| Customer Contribution | | | | |
| **Total Net Capital Project Costs** | **4.6** | **63.0** | **443.7** | **511.2** |

Explain unique payment provisions, if applicable:

# 3. Technical Justification

## Background, Project Need/Justification, and Project Scope

### a. Background

This project is to support the new switchgear and transformer installation at the Carmel Hill substation. This transformer and switchgear shall be parallel to the existing.

Today all feeders emanate from a single transformer and bus.

### b. Project Need

Adding the duct banks and new cabling for the four additional feeders will set up this substation for additional circuits to accommodate additional load.

Additionally, moving the [redacted]

### c. Project Scope

The scope of this project includes installing ducting and manhole outside of the substation fence with underground cabling through conduit both inside and outside of the substation. Cabling starts at two of the new feeders and is run to the existing [redacted]

# 4. Alternatives Considered

An alternative to this design is to replace all duct banks and existing manhole B in the back of the substation. This is design option #2 in the situation that the existing rear duct banks and manhole B are deemed to be out of code compliance.

# 5. Project Schedule

Add any additional milestones that are pertinent to the project

| Milestone/Phase Name | Estimated Date |
|---|---|
| Preliminary Approval | January 2022 |
| Detailed Design | July 2024 |
| Settings Requested | July 2022 |
| Construction Start Date | January 2025 |
| Construction End Date | December 2025 |

# 6. Regulatory Decisions

N/A

# 7. Codes and Standards

N/A

## 8. Risk and Contingencies

Risk Mitigation:

| Risk Event | Risk Horizon | Likelihood of Occurrence | Risk Mitigation |
|---|---|---|---|
| Actual cost higher than estimated due to scope changes. | 2025 | Low | Included contingency costs in the funding request. Perform detailed Field Analysis and walk down in project development to avoid potential issues. |
| Customer Permission / Siting Council / Municipal approvals | 2025 | Medium | Design to minimize customer impact. Project Preplanning and customer/community outreach. |
| Internal construction resources not available to perform the work. | 2025 | Medium | Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost. |
| Internal engineering resources not available to perform the work. | 2025 | Low | Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost. |

## 9. References

N/A

## 10. Attachments (One Line Diagrams, Images, etc.)

| Attachment | Included in Submittal? |
|---|---|
| A. Load Sheet | *YES* |
| B. Project Needs Statement | *YES* |
| C. One Lines | *YES* |
| D. Partial Funding PAF Form | *YES* |



**Attachment B:** Project Needs Statement

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## Specific Project Proposal - Project #: CD01902

[redacted] Carmel Hill - Substation Additions

**Work Classification**

Category: Line
Type: BLG1
Type Desc: OVERLOADS-SPECIFIC PROJECTS
Work Type:

**Ownership / Management**

AWC: Newtown
Statewide: No
Owner: Smith, Joshua
Manager: Escribano, Eduardo

**Project Information**

Status: Draft
SPS #:
AIS Score:
Associated Projects:
Assignment ID:
Patrol Find ID:

**Budget Summary - Preferred Option**

Use Existing Rear Duct Banks

2023

| ID | Title | Status | Rev # | Contingency | Expenditure Amount | Net Estimate |
|---|---|---|---|---|---|---|
| 4 | Use Existing Manholes w/ New Switchgear | Draft | 0 | 24% | $331,849 | $331,849 |
| 3 | [redacted] | Draft | 0 | 24% | $42,407 | $42,407 |
| 2 | | Draft | 0 | 24% | $36,349 | $36,349 |
| | | | | 2023 Total: | $410,604 | $410,604 |
| | | | | Total Project: | $410,604 | $410,604 |

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## Specific Project Proposal - Project #: CD01902

[redacted]Carmel Hill - Substation Additions

### Project Option Summary

| ID | Description | Segments | Preliminary Estimate | Construction Estimate | Variance | IEEE $/CMS | All (w/Storm) | Prfrd |
|---|---|---|---|---|---|---|---|---|
| O1 | Use Existing Rear Duct Banks | 2,3,4 | $410,604 | $0 | 100% | $0.00 | $0.00 | ☑ |

### Segments

| ID | Title | Preliminary Estimate | Construction Estimate | Variance | IEEE $/CMS | All (w/Storm) |
|---|---|---|---|---|---|---|
| 1 | All New Manholes from new Switchgear | $655,304 | | | $0.00 | $0.00 |
| 2 | [redacted] | $36,349 | | | $0.00 | $0.00 |
| 3 | | $42,407 | | | $0.00 | $0.00 |
| 4 | Use Existing Manholes w/ New Switchgear | $331,849 | | | $0.00 | $0.00 |

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## Specific Project Proposal - Project #: CD01902

[redacted]armel Hill - Substation Additions

### Background / Scope

Issue:

Project Description:

Other Considerations:

Revision / ACT Comments:

If we don't do this project, what will happen?

### Environmental

Water Pollution: No Change  Soil Contamination: No Change  Natural Habitats: No Change

Alternatives considered based on Environmental Impact or Description of Aspects  Oil Spill Risks Considered? ☐

Safety Concerns With This Project? ☐

Explain:

### External Stakeholders

Customer Impact / Involvement

Cust. Impacted:  Approx. Pole Count (NU):

Crit. Cust. Impacted:  Approx. Pole Count (Other):

Adjoining Property Owner Consent Required: ☐  Town Hearing Required: ☐

Other Utility Pole Custodian Area: ☐  Easement Required: ☐

State Highway Permit Required: ☐

Relocation / New Service

New Srvc. Contact:  Requestor Type:

Customer Type:  State Highway Project #:

Request Number:  Route #:

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## Specific Project Proposal - Project #: CD01902

[redacted] Carmel Hill - Substation Additions

Design Alternative CD01902-01

### General Information

Segment: 1 - All New Manholes from new Switchgear Status: Draft

Segment Type: S/S - SWITCHGEAR Town: WOODBURY Budget Year: 2023

Work Type: Other Trimming Required: ☐ In Service Date: 12/31/2023

Description: The scope of materials contained in this project segment begin at the cable terminations in the switchgear cubicles and end at the splice components in the MH designated in the road (2x new feeders) & back behind the substation respectively (2x new feeders).

Design Alternative #1 includes the costs for all manholes ot be replaced.

[redacted]

### Itemized Work List

| ID | Major Grid | Minor Grid | Description of Work to be Performed |
|---|---|---|---|

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## Specific Project Proposal - Project #: CD01902

[redacted] Carmel Hill - Substation Additions

Design Alternative CD01902-01

**Estimate**

| | Preliminary Estimate Summary |
|---|---|
| Revision Number: | 0 |
| Contingency: | 24.00% |
| SubTotal: | $528,471 |
| Contingency Amount: | $126,833 |
| Estimate: | $655,304 |
| Reimbursement: | $0 |
| Net Amount: | **$655,304** |

Description:

| Item Description | CU | [redacted] | Amount |
|---|---|---|---|
| CONDUIT<br>UG-Ductline-up to 12 duct - Traveled Way / Paved<br>6" conduit to new MH behind SS | 16-UG137 | | $40,664.00 |
| CONDUIT<br>UG-Ductline-up to 12 duct - Traveled Way / Paved<br>6" conduit to new MH in Rd. | 16-UG137 | | $109,480.00 |
| ENCLOSURE<br>UG - MANHOLE - Precast<br>8' by 14' manholes | 16-UG139 | | $188,959.20 |
| OTHER<br>OTHER<br>Add the 30% contractors fee | 16-ALL14 | | $143,288.00 |
| UG CABLE<br>DB/UG - 750/1000 - 3-1/C (3ph) Cu<br>UG span to MH behind SS | 16-UG114B | | $33,600.00 |
| UG CABLE<br>DB/UG - 750/1000 - 3-1/C (3ph) Cu<br>UG span to MH in Rd. | 16-UG114B | | $12,480.00 |

**Associated / Impacted Devices**

| Status | Type / SysID | Street / Cross St | Structure / Town | Circuit | Map | Cust | Notes |
|---|---|---|---|---|---|---|---|

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## Specific Project Proposal - Project #: CD01902

[redacted] Carmel Hill - Substation Additions

Design Alternative CD01902-02

### General Information

Segment: 2 - [redacted] Carmel Hill - Move 11S14 to 11S4 Status: Draft

Segment Type: S/S - SWITCHGEAR Town: WOODBURY Budget Year: 2023

Work Type: Other Trimming Required: ☐ In Service Date: 12/31/2023

Description: [redacted]

### Itemized Work List

| ID | Major Grid | Minor Grid | Description of Work to be Performed |
|---|---|---|---|

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## Specific Project Proposal - Project #: CD01902

[redacted]Carmel Hill - Substation Additions

Design Alternative CD01902-02

**Estimate**

| | Preliminary Estimate Summary |
|---|---|
| Revision Number: | 0 |
| Contingency: | 24.00% |
| SubTotal: | $29,314 |
| Contingency Amount: | $7,035 |
| Estimate: | $36,349 |
| Reimbursement: | $0 |
| Net Amount: | **$36,349** |

Description:

| Item Description | CU | [redacted] | Amount |
|---|---|---|---|
| SECTIONALIZE | 16-OH39A | | $29,313.60 |
| OH - Recloser Control - setting changes only<br>Change[redacted]abels in (2x) SR, (1x) MR, & (3x) TR Reclosers | | | |

**Associated / Impacted Devices**

| Status | Type / SysID | Street / Cross St | Structure / Town | Circuit | Map | Cust | Notes |
|---|---|---|---|---|---|---|---|

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## Specific Project Proposal - Project #: CD01902

[redacted]Carmel Hill - Substation Additions

Design Alternative CD01902-03

### General Information

Segment: 3 - [redacted]armel Hill - Move 11S13 to 11S1 Status: Draft

Segment Type: S/S - SWITCHGEAR Town: WOODBURY Budget Year: 2023

Work Type: Other Trimming Required: ☐ In Service Date: 12/31/2023

Description: [redacted]

### Itemized Work List

| ID | Major Grid | Minor Grid | Description of Work to be Performed |
|---|---|---|---|

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## Specific Project Proposal - Project #: CD01902

[redacted]armel Hill - Substation Additions

Design Alternative CD01902-03

**Estimate**

| | Preliminary Estimate Summary |
|---|---|
| Revision Number: | 0 |
| Contingency: | 24.00% |
| SubTotal: | $34,199 |
| Contingency Amount: | $8,208 |
| Estimate: | $42,407 |
| Reimbursement: | $0 |
| Net Amount: | **$42,407** |

Description:

| Item Description | CU | [redacted] | Amount |
|---|---|---|---|
| SECTIONALIZE | 16-OH39A | | $34,199.20 |
| OH - Recloser Control - setting changes only<br>Change [redacted]3 labels in (3x) SR, (1x) RR, & (3x) TR Reclosers | | | |

**Associated / Impacted Devices**

| Status | Type / SysID | Street / Cross St | Structure / Town | Circuit | Map | Cust | Notes |
|---|---|---|---|---|---|---|---|

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## Specific Project Proposal - Project #: CD01902

[redacted] Carmel Hill - Substation Additions

Design Alternative CD01902-04

### General Information

Segment: 4 - Use Existing Manholes w/ New Switchgear Status: Draft

Segment Type: S/S - SWITCHGEAR Town: WOODBURY Budget Year: 2023

Work Type: Other Trimming Required: ☐ In Service Date: 12/31/2023

Description: The scope of materials contained in this project segment begin at the cable terminations in the switchgear cubicles and end at the splice components in the MH designated in the road (2x new feeders) & back behind the substation respectively (2x new feeders).

Design Alternative #4 reuses the existing manhole #2 & existing ducting reducing the costs.

[redacted]

### Itemized Work List

| ID | Major Grid | Minor Grid | Description of Work to be Performed |
|---|---|---|---|

Connecticut Light & Power
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## Specific Project Proposal - Project #: CD01902

[redacted] Carmel Hill - Substation Additions

Design Alternative CD01902-04

**Estimate**

| | Preliminary Estimate Summary |
|---|---|
| Revision Number: | 0 |
| Contingency: | 24.00% |
| SubTotal: | $267,620 |
| Contingency Amount: | $64,229 |
| Estimate: | $331,849 |
| Reimbursement: | $0 |
| Net Amount: | **$331,849** |

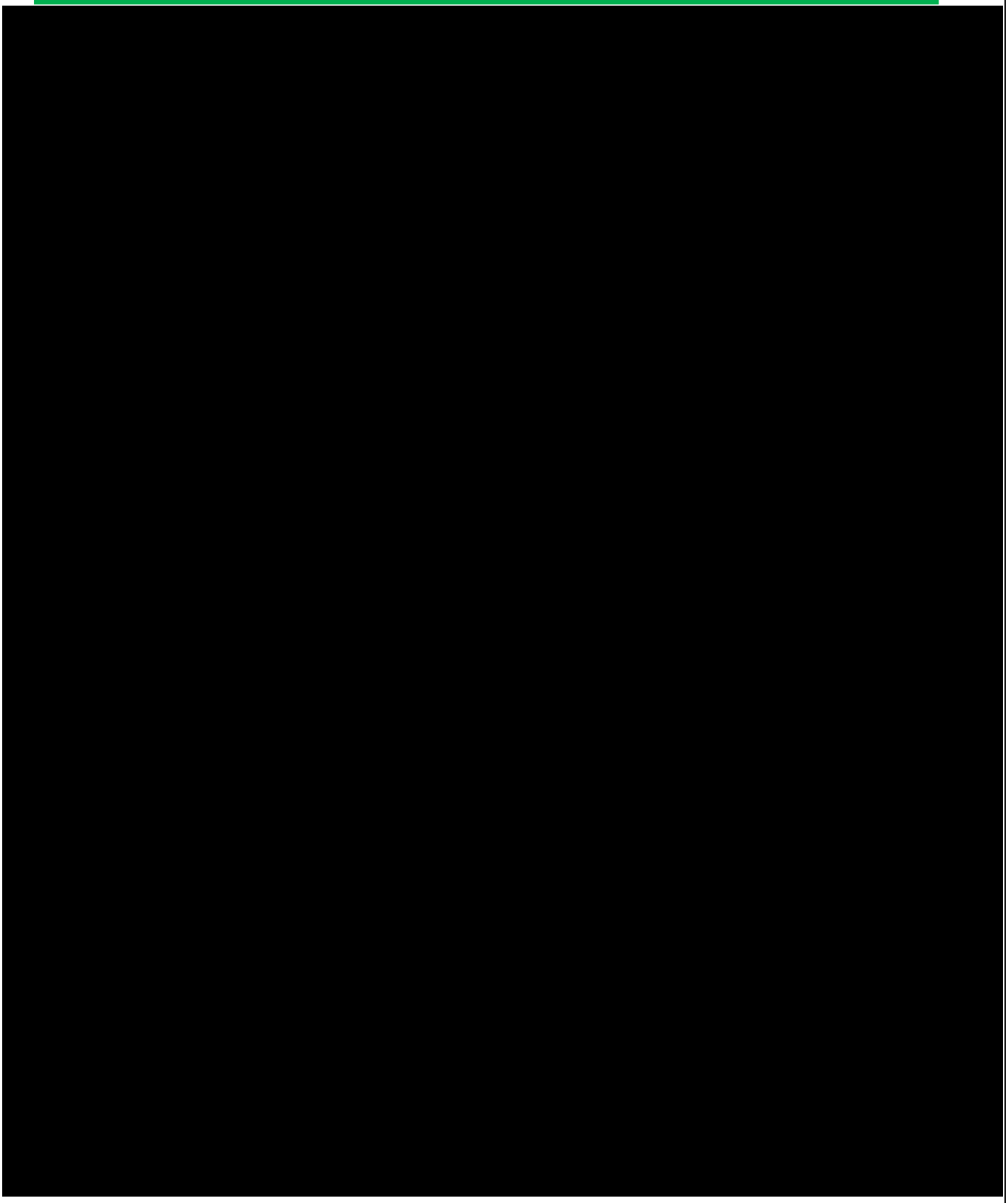
Description:

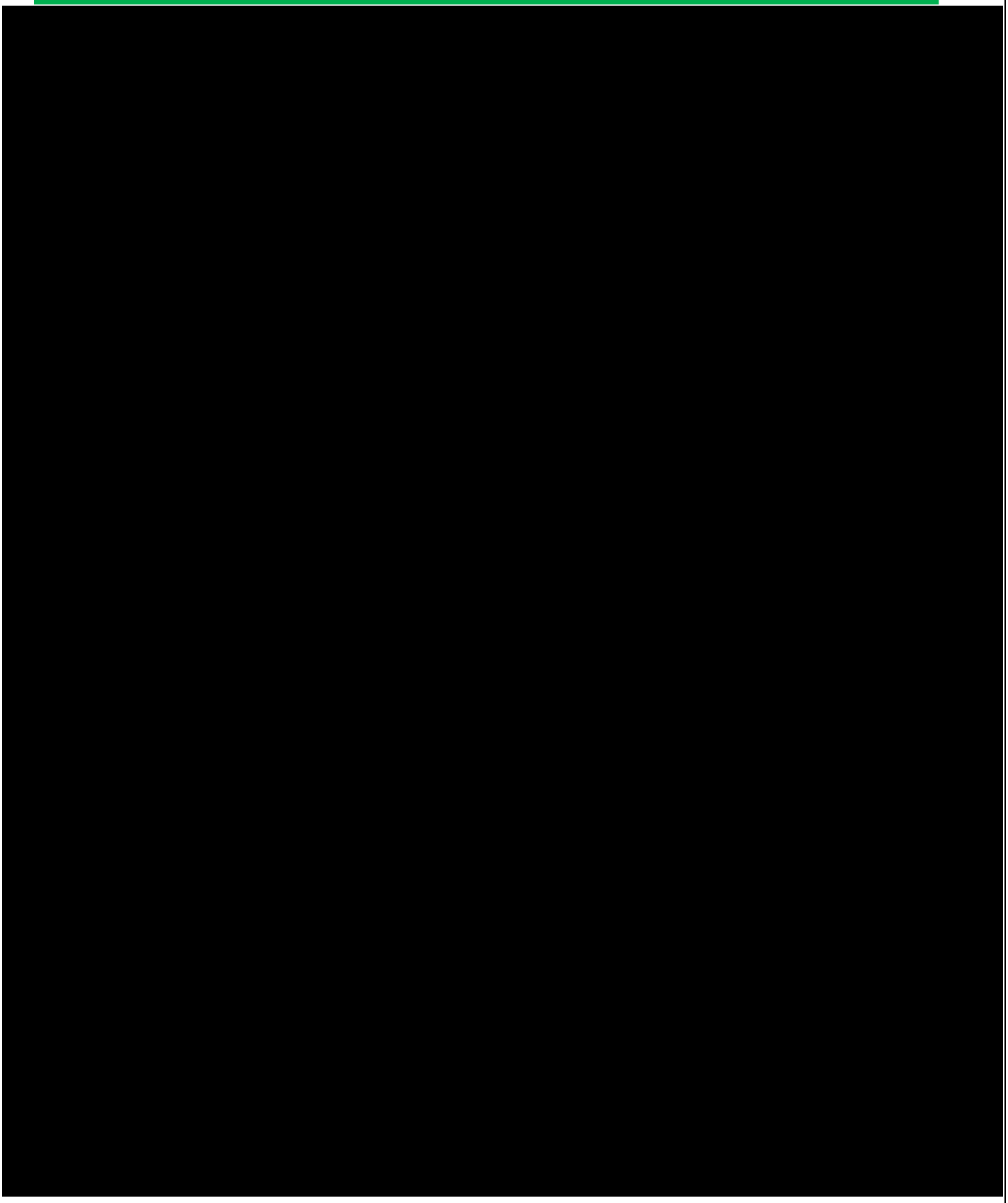
| Item Description | CU | Amount |
|---|---|---|
| CONDUIT<br>UG-Ductline-up to 12 duct - Traveled Way / Paved<br>6" conduit to new MH in Rd. | 16-UG137 | $31,280.00 |
| OTHER<br>OTHER<br>Add 30% contractor fee | 16-ALL14 | $60,363.00 |
| ENCLOSURE<br>UG - MANHOLE - Pour in place<br>Pour in place around existing concrete duct banks | 16-UG140 | $107,976.80 |
| TRAFFIC<br>OH/DB/UG - Traffic Control - Police Officer<br>State Road civil work. | 16-ALL18 | $20,000.00 |
| UG CABLE<br>DB/UG - 750/1000 - 3-1/C (3ph) Cu<br>UG span to MH in Rd. | 16-UG114B | $48,000.00 |

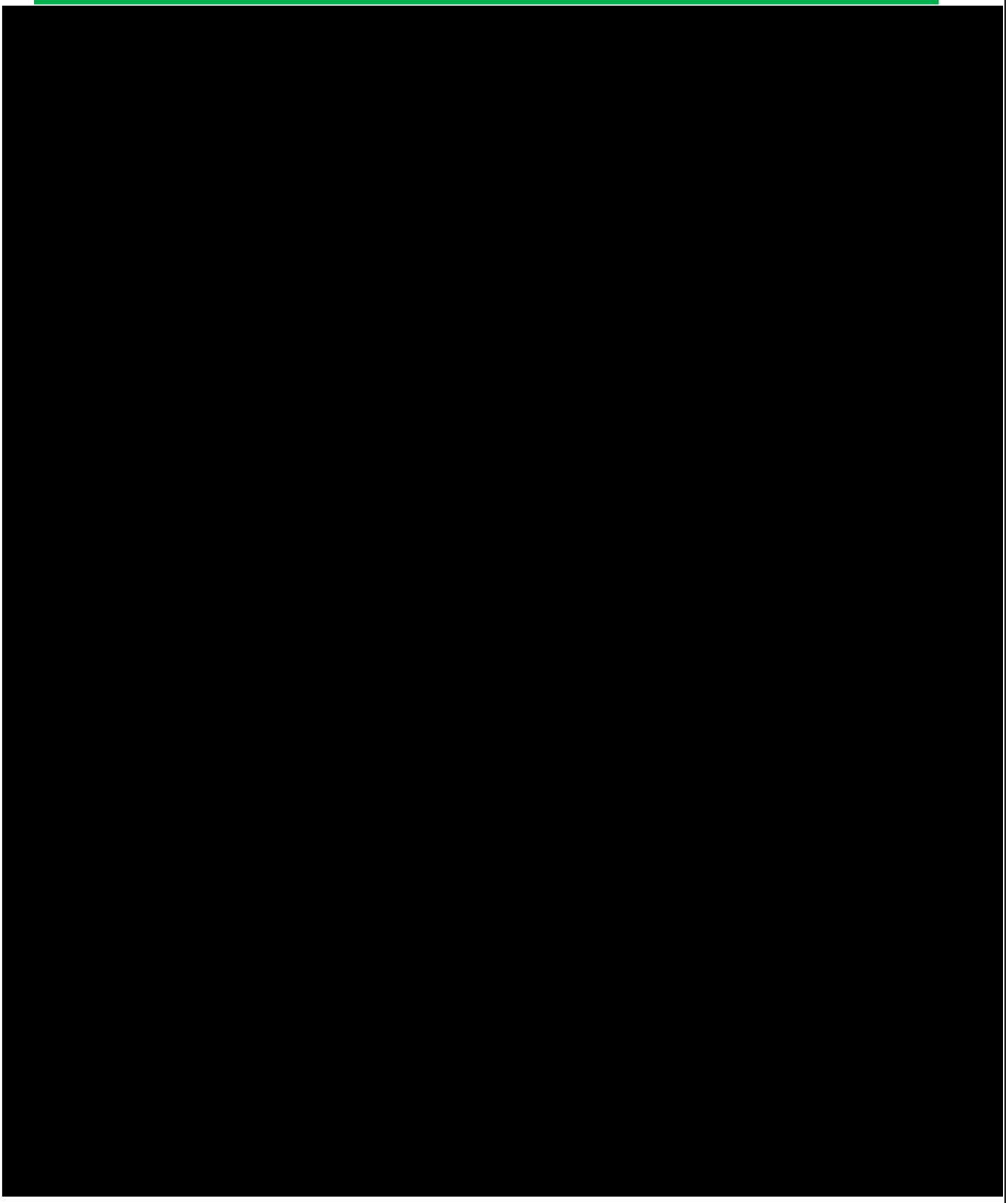
[redacted]

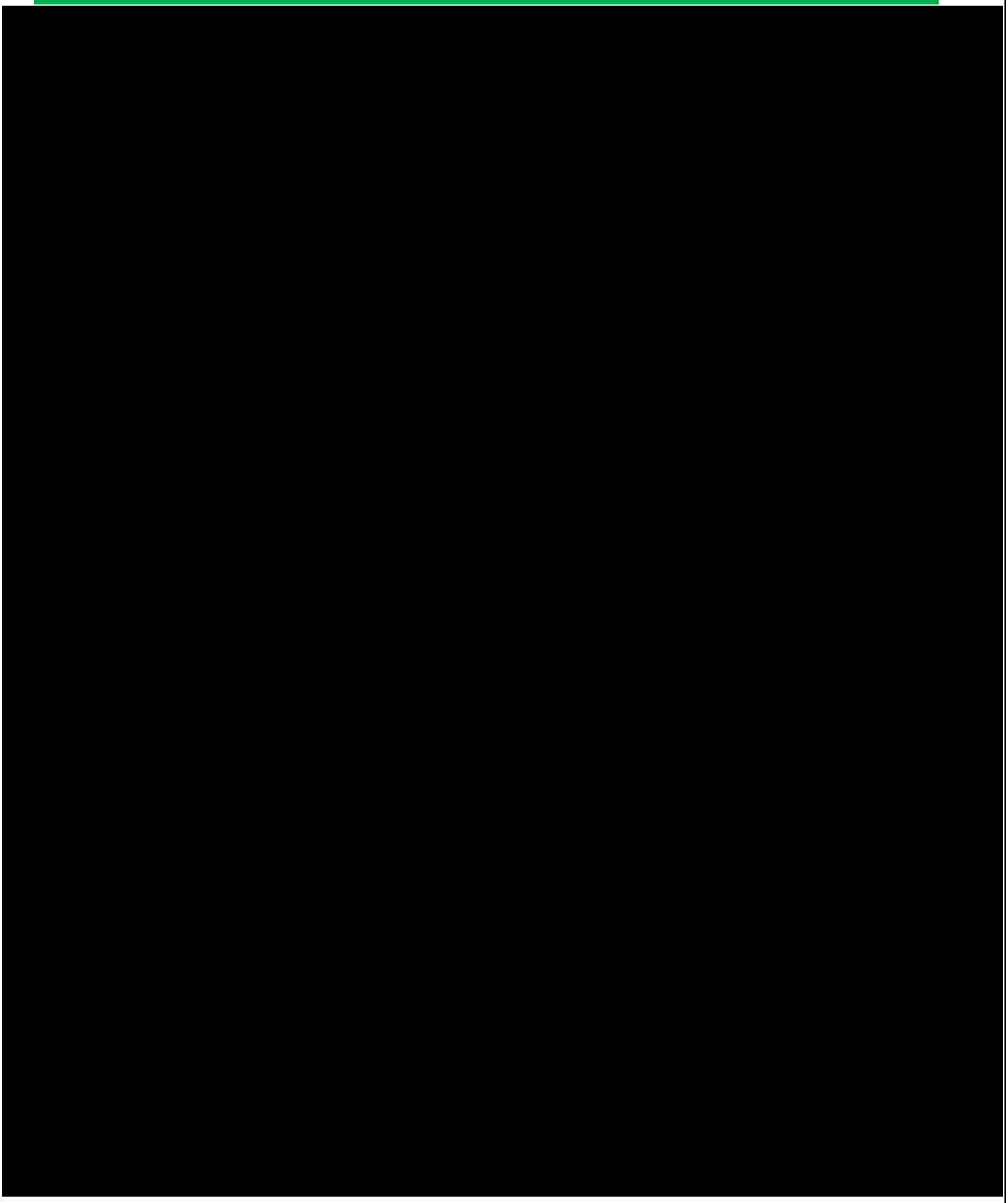
**Associated / Impacted Devices**

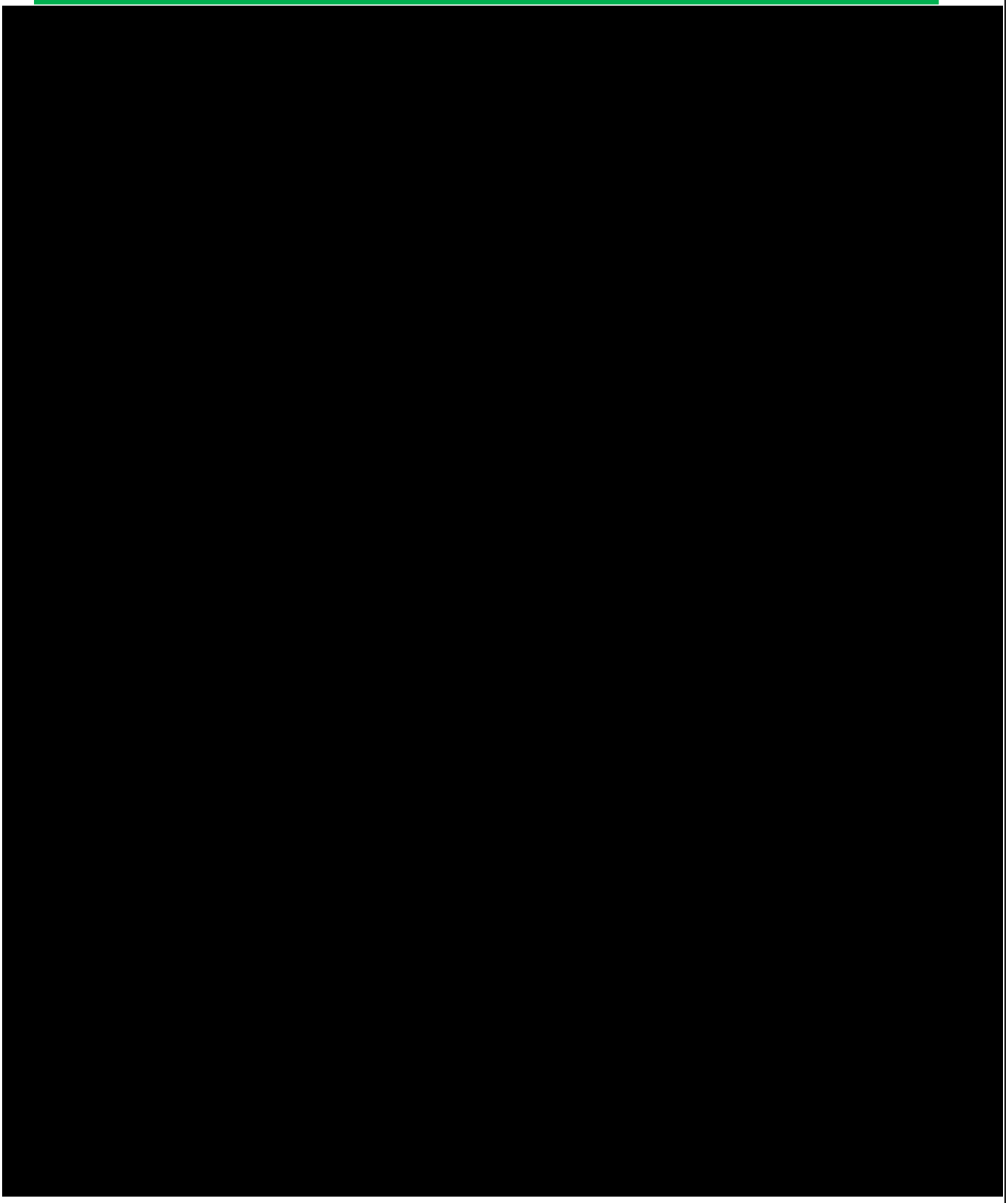
| Status | Type / SysID | Street / Cross St | Structure / Town | Circuit | Map | Cust | Notes |
|---|---|---|---|---|---|---|---|

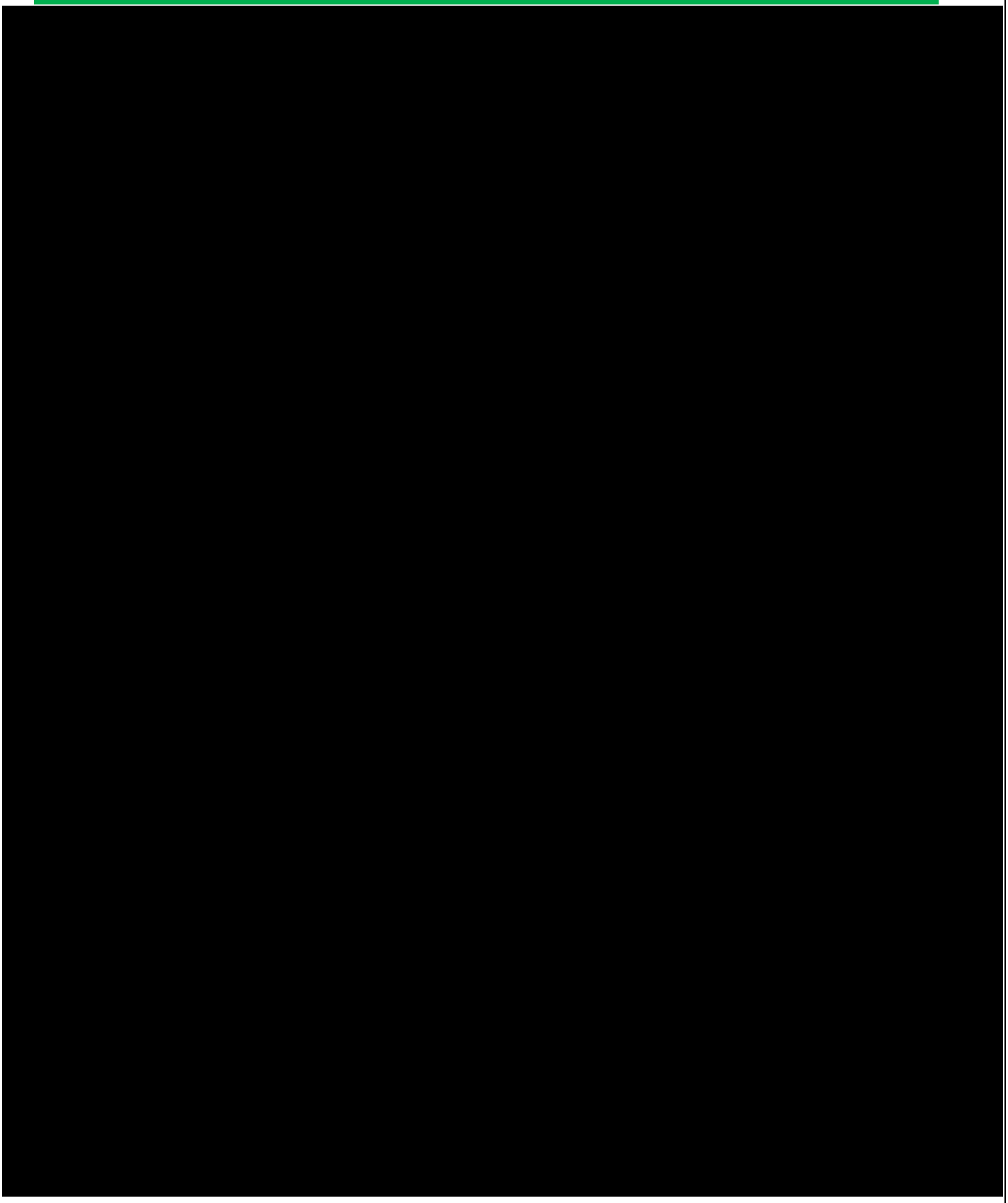












**Attachment D:** Partial Funding PAF Form

## Operations Project Authorization Form

| | |
|---|---|
| **Project Title:** [redacted]Carmel Hill – Subst. Feeder Additions | **Project Number: CD01902** |
| **Date Prepared:** 09/17/2021 | **Company:** Eversource CT |
| **Organization: Electric Field Operations** | **Class(es) of Plant:** D Line |
| **Project Initiator:** [redacted] | **Project Category: Line** |
| **Project Manager:** [redacted] | **Project Type:** Specific |
| **Project Sponsor:** [redacted] | **Capital Investment part of original Operating Plan:** No |
| **Estimated in service date: 12/31/2024** | **Emergency Related Request?** No |
| **Eng./Constr. Resources Budgeted?** No | **Facility Type** (check all that apply)**:** ☐ PTF ☐ non-PTF X Distribution |
| **Total Gross Capital Request: $401,884.42** | **Authorization Type:** Initial Funding |

### Executive Summary

There are four additional feeders being added to the [redacted]. This project includes the distribution department responsibilities for underground ducting, UG cabling, and manhole from the substation feeders/duct banks/manholes to the existing circuits along with conduit for two spare circuits. Inspections have been done on the existing duct banks in the rear of the substation leading to manhole B and they are up to code and size to remain in use.

This project will run new underground 1000 Cu cabling in one of the two new substation duct banks from two of the feeders going north. The new cabling will continue through the existing duct banks behind the substation transmission infrastructure to the existing manhole B to feed the [redacted]

Additionally, this project will bury two new duct banks southeast of the substation fence to connect from the new substation conduit inside the fence to intercept existing duct banks on the east side of Carmel Hill Road with a new "poured in place" manhole. One of these two additional duct banks is for future use. New underground 1000 Cu cabling will be run in one of these duct banks to connect from the new feeder to feed the existing [redacted] through the new poured in place manhole. [redacted]

## Project Costs Summary

| Capital Costs | Year 2022 | Year 2023 | Year 2024+ | Total |
|---|---|---|---|---|
| **Direct Capital Costs** | | | | |
| Internal Labor and Construction Equipment | $15 | $0 | $0 | $15 |
| Outside Services | $143 | $0 | $0 | $143 |
| Materials | $44 | $0 | $0 | $44 |
| Removals | $23 | $0 | $0 | $23 |
| Risk and Contingency | $20 | $0 | $0 | $20 |
| Other | $0 | $0 | $0 | $0 |
| Subtotal | **$245** | **$0** | **$0** | **$245** |
| **Indirect Capital Costs** | | | | |
| Indirect/Overheads (including benefits) | $149 | $0 | $0 | $149 |
| Capitalized interest or AFUDC, if any | $8 | $0 | $0 | $8 |
| Subtotal | **$157** | **$0** | **$0** | **$157** |
| Total Customer Contribution | | | | |
| **Total Capital Project Costs** | **$402** | **$0** | **$0** | **$402** |

## Technical Justification:

### Project Need Statement

Adding the duct banks and new cabling for the four additional feeders will set up this substation for additional circuits to accommodate additional load.

Additionally, moving the [redacted] respectfully will allow this circuit to be powered using this substation's new largest transformer.

### Project Objectives

[redacted]

## Project Scope

The scope of this project includes installing ducting and manhole outside of the substation fence with underground cabling through conduit both inside and outside of the substation. Cabling starts at two of the new feeders and is run to the existing [redacted]

## Background

This project is to support the new switchgear and transformer installation at the Carmel Hill substation. This transformer and switchgear shall be parallel to the existing.

Today all feeders emanate from a single transformer and bus.

## Alternatives Considered:

An alternative to this design is to replace all duct banks and existing manhole B in the back of the substation. This is design option #2 in the situation that the existing rear duct banks and manhole B are deemed to be out of code compliance.

## Regulatory Approvals:

*Are Regulatory body approvals needed for the project?*

No

## Project Schedule

| Milestone/Phase Name | Estimated Date |
|---|---|
| Preliminary Approval | January 2022 |
| Detailed Design | July 2022 |
| Settings Requested | July 2022 |
| Construction Start Date | Ongoing |
| Construction End Date | January 2024 |

## Risks and Risk Mitigation Plans

| Risk Event | Risk Horizon | Likelihood of Occurrence | Risk Mitigation |
|---|---|---|---|
| Actual cost higher than estimated due to scope changes. | 2022 | Low | Included contingency costs in the funding request. Perform detailed Field Analysis and walk down in project development to avoid potential issues. |
| Customer Permission / Siting Council / Municipal approvals | 2022 | Medium | Design to minimize customer impact. Project Preplanning and customer/community outreach. |
| Internal construction resources not available to perform the work. | 2022 | Medium | Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost. |
| Internal engineering resources not available to perform the work. | 2022 | Low | Plan internal resources to perform the work. Use competitive bidding to ensure lowest outside labor cost. |