City of Bentonville
Bentonville Utility Board Meeting
Tuesday, September 17th – 11:30 am
Bentonville City Hall 305 SW "A" St.
City Council Chambers

AGENDA

Call to Order
Pledge of Allegiance
Attendance
Approval of Minutes: August 20th, 2024

New Business

1. Resolution – Halff Agreement – Hwy 102 Widening – Beau Thompson (page 2-38)
2. Ordinance – Waiver of Bid – 3 ph transformers – Travis Matlock, PE (page 39-40)
3. Ordinance – BEUD Construction Specs update – Travis Matlock, PE (page 41-145)
4. Update – Water & Sewer Projects – Mike Bender, PE/Preston Newbill
5. Adjournment

City of Bentonville, Arkansas Agenda Item Form

Item Details

Council Meeting Date:	9/24/2024	**Submitted By:**	Mike Bender
Phone:	479-271-3140	**For Department(s):**	Water Utilities 503020
Email:	mbender@bentonvillear.com		

Item Type (Check all that apply)

☐ Informational ☐ Bid Award ☑ Enter into an Agreement ☐ Change Order
☐ Recognizing Funds ☑ Budget Adjustment ☐ Waiver of Bid ☐ Emergency Clause
☐ Ordinance ☑ Resolution ☐ Informational

Title, Recommendation & Justification

Title:	Design Agreement with Halff for utility relocations associated with ARDOT Project 090646 (Hwy 102)
Action Recommendation & Justification:	Staff request the Mayor and City Clerk to enter into an agreement with Halff Engineering to perform the design services for the utility adjustments required and related to ARDOT Project 090646 (Hwy 102 Widening). The contract amount is $828,569,65. A portion of the engineering fees will be reimbursed by ARDOT as determined by the reimbursement ratio. Halff Engineering was selected following the city's standard SOQ selection process. A budget adjustment is needed.
Additional Comments for Consideration (Optional):	The City of Bentonville received notice from ARDOT in March to prepare utility adjustment plans associated with ARDOT project 090646– Hwy 102 improvements. This project affects several city water and sewer lines, requiring relocation along the highway corridor. A portion of this project will qualify for reimbursement, but the reimbursement ratio will not be determined until an adjustment plan has been prepared. The City will be required to front expenses until a reimbursement ratio is determined.
Amount for Approval:	$ 828,569.65

Budget Impact

Is this Item Budgeted? ☐ YES ☑ NO ☐ ITEM HAS NO COST ☐ OTHER:_____

Budget Adjustment *(to be completed by Finance when applicable)*

503020-47320	Improvs Other - Water Improv	$ 828,569.65	$
Account Number (ORG-OBJECT)	Account Description	Expense	Revenue
		$	$
Account Number (ORG-OBJECT)	Account Description	Expense	Revenue
		$	$
Account Number (ORG-OBJECT)	Account Description	Expense	Revenue
		$	$
Account Number (ORG-OBJECT)	Account Description	Expense	Revenue

Fund(s) Impacted (check all that apply) ☐ General Fund ☑ Utility Fund ☐ Street Fund ☐ Other(s):_____

Budget Impact Notes for Consideration (Optional):

A portion of this cost will be reimbursed. A PE agreement will be in place with ARDOT.

PROFESSIONAL SERVICES AGREEMENT

PROJECT NAME: Professional Civil Engineering Services for the **R090646 Highway 102 Utilities Relocation** for City of Bentonville Water Utility Department (BWU) ("PROJECT")

THIS AGREEMENT ("AGREEMENT") is made in Benton County, Arkansas, by and between the City of Bentonville, Arkansas, hereinafter referred to as "CITY", and **Halff Associates**, hereinafter referred to as "PROFESSIONAL CONSULTANT" (collectively, the "PARTIES").

The PARTIES have caused this AGREEMENT to be effective this ____day of _____, 20___ ("EFFECTIVE DATE").

RECITALS:

A. WHEREAS, the CITY has a need for professional civil engineering services for the construction of **public water and sewer facilities**; and
B. WHEREAS, The CITY has selected the PROFESSIONAL CONSULTANT and negotiated this AGREEMENT in accordance with the City's Purchasing Policy; and
C. WHEREAS, the CITY wishes to contract for Professional Services; and
D. WHEREAS, The PROFESSIONAL CONSULTANT has the skill, experience, ability, background, certifications and knowledge to provide these services; and
E. WHEREAS, The PROFESSIONAL CONSULTANT wishes to perform such professional services under this AGREEMENT with the CITY.

NOW, THEREFORE, in consideration of the terms in this AGREEMENT, the CITY and PROFESSIONAL CONSULTANT agree to the following:

ARTICLE I - PROJECT DESCRIPTION

The PROJECT shall be as described in APPENDIX A, "Proposal and Scope of Work", attached hereto and incorporated herein by reference.

ARTICLE II - SCOPE OF SERVICE

Upon issuance of a written Notice to Proceed by the CITY, PROFESSIONAL CONSULTANT agrees to provide the CITY the necessary professional services related to the PROJECT, as set forth in APPENDIX A, "Proposal and Scope of Work", attached hereto and incorporated herein by reference.

ARTICLE III - STANDARD OF CARE

PROFESSIONAL CONSULTANT shall at all times material hereto adhere to the generally accepted standard of care typically exhibited by similarly situated professionals performing similar scope(s) of service on projects of like size, scope, nature, cost, schedule, and complexity, at the same time and in the same general regional locale ("Standard of Care").

ARTICLE IV - ADDITIONAL SERVICES

A. Any service outside of the work described herein or included by reference hereto must be pre-approved by the CITY and executed as an AMENDMENT to this AGREEMENT by the Parties prior to any such work being completed; any such AMENDMENT shall be in accordance with the CITY'S purchasing laws and guidelines and may require approval from the Bentonville City Council.

B. PROFESSIONAL CONSULTANT shall make no claims for additional services or changes in the services until an AMENDMENT has been fully executed by the Parties.

ARTICLE V - SCHEDULE OF FEES, SERVICES AND PAYMENT

A. The term of this AGREEMENT shall commence on the EFFECTIVE DATE and shall proceed in accordance with APPENDIX A, "Proposal and Scope of Work", attached hereto and incorporated herein by reference.

B. The cost of this AGREEMENT shall be in accordance with APPENDIX A, more specifically according to the "Fee Schedule Summary" Table.

C. The cost of this AGREEMENT shall not exceed **$828,569.65** without approval by the Bentonville Utility Board and Bentonville City Council.

D. CITY agrees to pay PROFESSIONAL CONSULTANT for all services authorized by inclusion in this AGREEMENT which have been properly performed by PROFESSIONAL CONSULTANT in accordance with this AGREEMENT and approved by CITY.

E. All fees paid to PROFESSIONAL CONSULTANT shall be based on invoices submitted by PROFESSIONAL CONSULTANT for work performed under this AGREEMENT, less any previous payments. PROFESSIONAL CONSULTANT shall submit invoices for services related to this AGREEMENT on a monthly basis.

F. CITY reserves the right to delay, without penalty, any partial payment when, in the opinion of the CITY, PROFESSIONAL CONSULTANT has not made satisfactory progress on the Project based on the SCOPE. If CITY objects to any portion of an invoice, the CITY shall notify PROFESSIONAL CONSULTANT and shall pay all other portions of the invoice which are not in dispute. In the event of dispute, CITY and PROFESSIONAL CONSULTANT shall immediately make every effort to settle the disputed portion of the invoice.

G. In the event that the CITY becomes credibly informed that any representations of PROFESSIONAL CONSULTANT provided in its invoicing are wholly or partially inaccurate, CITY may withhold payment of sums then, or in the future, otherwise due to PROFESSIONAL CONSULTANT until the inaccuracy and the cause thereof is corrected to the CITY's reasonable satisfaction.

H. If the CITY fails to make any payment, not in dispute, due to PROFESSIONAL CONSULTANT within thirty (30) days after receipt of an invoice, then the amount due to the PROFESSIONAL CONSULTANT will increase at the lesser of one percent (1 %) per month or the maximum amount allowed by law after the 30th day. In addition, PROFESSIONAL CONSULTANT may, after giving seven (7) days' written notice to CITY, suspend its services and any deliverables until PROFESSIONAL CONSULTANT has been paid in full for all amounts outstanding more than thirty (30) days.

ARTICLE VI - INSURANCE

A. PROFESSIONAL CONSULTANT shall during the term hereof maintain in full force and effect the following insurance:

1. A comprehensive general liability policy of insurance for bodily injury, death and property damage insuring against all claims, demands or actions relating to the PROFESSIONAL CONSULTANT's performance of services pursuant to this AGREEMENT with a combined single limit of not less than $1,000,000.00 per occurrence and $2,000,000 in the aggregate for injury to persons (including death), and for property damage;

2. A policy of automobile liability insurance covering any vehicles owned and/or operated by PROFESSIONAL CONSULTANT, its officers, agents, and employees, and used in the performance of this AGREEMENT with policy limits of not less than $1,000,000.00 combined single limit and aggregate for bodily injury and property damage;

3. Statutory Worker's Compensation Insurance at the statutory limits and Employers Liability covering all of PROFESSIONAL CONSULTANT's employees involved in the provision of services under this AGREEMENT with policy limit of not less than $1,000,000.00; and

4. Professional Liability/Errors and Omissions coverage covering negligent acts, errors and omissions in the performance of professional services with policy limit of not less than $1,000,000.00.

B. All insurance and certificate(s) of insurance shall contain the following provisions:

1. Include CITY as additional insured as to all applicable coverage with the exception of Workers Compensation Insurance and Professional Liability/Errors and Omissions coverage; and

2. Provide for at least thirty (30) days prior written notice to CITY for cancellation or non-renewal of the insurance;

3. Provide for a waiver of subrogation against CITY for injuries, including death, property damage, or any other loss to the extent the same is covered by the proceeds of insurance, except for Professional Liability/Errors and Omissions coverage.

C. PROFESSIONAL CONSULTANT shall provide 30 day written notice to CITY of any material change of or to the insurance required herein.

D. All insurance companies providing the required insurance shall be authorized to transact business in Arkansas and rated at least "A" by AM Best or other equivalent rating service. A certificate of insurance evidencing the required insurance and all endorsements required by this Agreement shall be submitted prior to commencement of services.

E. In the event that additional or greater insurance requirements are warranted, these requirements shall be included as an Appendix, which will be attached hereto and incorporated by reference.

ARTICLE VII - RIGHT OF ACCESS

A. CITY will obtain and/or furnish right-of-access for PROFESSIONAL CONSULTANT to perform any required studies, surveys, tests or other necessary investigations in relation to the PROJECT.

B. PROFESSIONAL CONSULTANT will take reasonable precautions to minimize damage to the personal or real property in the performance of such surveys, tests, studies and investigations.

C. CITY recognizes that PROFESSIONAL CONSULTANT's operations and use of equipment may unavoidably alter existing conditions or affect the environment at the PROJECT site. The cost of repairing such damage shall be the responsibility of PROFESSIONAL CONSULTANT, at no additional cost to the CITY. In the event that PROFESSIONAL CONSULTANT fails to correct such damages, CITY is entitled to utilize CITY forces or other labor to repair the damage; any costs incurred by CITY for such work shall be deducted from the monies due to PROFESSIONAL CONSULTANT.

ARTICLE VIII - RECORDS AND RETENTION

A. All surveys, studies, proposals, applications, drawings, plans, specifications and other documents, including those in electronic form, prepared by PROFESSIONAL CONSULTANT and its PROFESSIONAL CONSULTANTs, subcontractors, agents, representatives, and/or employees in connection with this AGREEMENT ("PROJECT DOCUMENTS") are intended for the use and benefit of CITY. PROFESSIONAL CONSULTANT and its PROFESSIONAL CONSULTANTs, subcontractors, agents, representatives, and/or employees shall be deemed the authors of their respective part of the PROJECT DOCUMENTS. Notwithstanding anything to the contrary, CITY shall own, have, and retain all rights, title and interest in and to all PROJECT DOCUMENTS, whether in draft form or final form, which are produced at CITY's request or otherwise produced from PROFESSIONAL CONSULTANT's performance of the work described herein for CITY. The CITY's ownership of PROJECT DOCUMENTS shall not apply to PROFESSIONAL CONSULTANT's proprietary standard details that were developed by the PROFESSIONAL CONSULTANT prior to the commencement of this PROJECT.

B. CITY shall have full authority to reuse, reproduce, publish, disclose and distribute PROJECT DOCUMENTS, as needed, according to Arkansas State Law.

C. PROFESSIONAL CONSULTANT shall, upon completion of the services and full payment for the PROFESSIONAL CONSULTANT'S services by the CITY, or earlier termination and appropriate compensation as provided by this AGREEMENT, provide the CITY with all PROJECT DOCUMENTS prepared by PROFESSIONAL CONSULTANT pursuant to this AGREEMENT in formats requested by the CITY.

D. All instruments of service (including plans, specifications, drawings, reports, designs, computations, computer programs, estimates, surveys, other data or work items, etc.) prepared under this AGREEMENT shall be submitted for approval to the CITY. All instruments of service shall be professionally sealed in accordance to applicable laws or at CITY's request.

E. Acceptance and approval of the PROJECT DOCUMENTS by the CITY shall not constitute nor be deemed a release of the responsibility and liability of PROFESSIONAL CONSULTANT, its employees, associates, agents and PROFESSIONAL CONSULTANT's for the accuracy or competency of their designs, working drawings and specifications, or other documents and work; nor shall such approval be deemed to be an assumption of such responsibility by the CITY for any defect in the designs, working drawings and specifications, or other documents prepared by PROFESSIONAL CONSULTANT, its employees, contractor, agents and PROFESSIONAL CONSULTANT's.

F. PROFESSIONAL CONSULTANT will retain the PROJECT DOCUMENTS for a period of three years following project completion. During this three year period, any requests for document recovery and reproduction will be assessed a fee in accordance with PROFESSIONAL CONSULTANT's FEES.

ARTICLE IX - SAFETY

A. CITY agrees to inform PROFESSIONAL CONSULTANT of any applicable site safety procedures and regulations known to CITY as well as any special safety concerns or dangerous conditions at the site of which the CITY is aware, which PROFESSIONAL CONSULTANT shall communicate to its employees. PROFESSIONAL CONSULTANT and its employees shall adhere to such procedures and regulations once notice has been given by the CITY.

B. Unless specifically provided in the SCOPE, PROFESSIONAL CONSULTANT shall not have any responsibility for overall job safety at the site. If in the PROFESSIONAL CONSULTANT's opinion, its field personnel are unable to access required locations or perform required services in conformance with applicable safety standards, PROFESSIONAL CONSULTANT may immediately suspend performance until such safety standards can be attained.

C. PROFESSIONAL CONSULTANT agrees to indemnify and hold harmless the CITY for any safety conditions that may arise out of PROFESSIONAL CONSULTANT's performance of this AGREEMENT.

ARTICLE X - TERMINATION

A. CITY may suspend or terminate this AGREEMENT for cause or without cause at any time by giving written notice to PROFESSIONAL CONSULTANT. In the event suspension or termination is without cause, payment to PROFESSIONAL CONSULTANT, in accordance with the terms of this AGREEEMENT, will be made on the basis of services reasonably determined by the CITY to be satisfactorily performed to the date of suspension or termination. Such payment will be due upon delivery of all instruments of service to CITY.

B. Should the CITY require a modification of this AGREEMENT with the PROFESSIONAL CONSULTANT, and in the event the CITY and PROFESSIONAL CONSULTANT fail to agree upon a modification to this AGREEMENT, the CITY shall have the option of terminating this AGREEMENT and the PROFESSIONAL CONSULTANT's services hereunder at no additional cost other than the payment to PROFESSIONAL CONSULTANT, in accordance with the terms of this AGREEMENT, for the services reasonably determined by the CITY to be properly performed by PROFESSIONAL CONSULTANT prior to such termination date.

C. If, for whatever reason adequate funding is not made available by CITY to support or justify continuation of the level of services to be provided by PROFESSIONAL CONSULTANT under this AGREEMENT, CITY may terminate or reduce the amount of services to be provided by PROFESSIONAL CONSULTANT under this AGREEMENT. In such event, CITY will notify PROFESSIONAL CONSULTANT in writing at least thirty (30) days in advance of such termination or reduction of services for lack of funds.

D. In no event shall the CITY pay to PROFESSIONAL CONSULTANT fees for termination outside of payment for services reasonably determined by the City to be properly performed prior to termination.

ARTICLE XI - INDEMNIFICATION

A. For purposes of this AGREEMENT, PROFESSIONAL CONSULTANT agrees to indemnify, hold harmless the CITY, its officers and employees from any loss, damage, liability or expense, of any nature whatsoever to the extent caused by the negligence, willful misconduct, or other actionable fault of PROFESSIONAL CONSULTANT, its affiliates, subsidiaries, employees, agents, assignees, and subcontractors and their respective employees and agents. PROFESSIONAL CONSULTANT is not required hereunder to defend the CITY, its officers, appointees, employees, or agents from assertions that they were negligent, nor to indemnify and hold them harmless from liability based on the CITY's negligence

B. Nothing contained herein shall waive any governmental immunity CITY may be entitled to by law.

C. This provision shall survive the termination of this AGREEMENT.

ARTICLE XII - CONTINGENCY CLAUSE

A. NOT USED

ARTICLE XIII - RELATIONSHIP OF THE PARTIES

It is understood and agreed by and between the parties that the PROFESSIONAL CONSULTANT, in satisfying the conditions of this AGREEMENT, is acting independently, and that the CITY assumes no responsibility or liabilities to any third party in connection with PROFESSIONAL CONSULTANT's actions. All services to be performed by the PROFESSIONAL CONSULTANT pursuant to this AGREEMENT shall be in the capacity of an Independent Contractor, and not as an agent or employee of CITY. The PROFESSIONAL CONSULTANT shall supervise the performance of its services and shall be entitled to control the manner and means by which its services are to be performed, subject to the terms of this AGREEMENT. There is no intended third party beneficiary to the AGREEMENT and nothing contained herein shall create a contractual relationship with, or any rights in favor of, any third party.

ARTICLE XIV - DISPUTE RESOLUTION

A. CITY and PROFESSIONAL CONSULTANT agree that disputes relative to the services will first be addressed by negotiations between the Parties. If direct negotiations fail to resolve the dispute, the Party initiating the claim that is the basis for dispute may take such steps as it deems necessary to protect its interests; provided, however, that notwithstanding any such dispute, PROFESSIONAL CONSULTANT will proceed with the services as per this AGREEMENT as if no dispute existed, and CITY will continue to make payment for PROFESSIONAL CONSULTANT's completed services; and provided further that no dispute will be submitted to arbitration without both Parties' express written consent.

ARTICLE XV - OPINIONS OF PROBABLE COST

A. Since the PROFESSIONAL CONSULTANT has no control over the cost of labor, materials, equipment or services furnished by others, or over methods of determining prices, or over competitive bidding or market conditions, the PROFESSIONAL CONSULTANT's estimates of PROJECT costs and construction costs provided for herein are to be made on the basis of the PROFESSIONAL CONSULTANT's experience and qualifications and represent the PROFESSIONAL CONSULTANT's judgement in accordance with the "Standard of Care". The PROFESSIONAL CONSULTANT cannot and does not guarantee that proposals, bids or actual PROJECT or construction costs will not vary from estimates prepared by the PROFESSIONAL CONSULTANT.

B. The CITY understands that the construction cost estimates developed by the PROFESSIONAL CONSULTANT do not establish a limit for construction contract amount. If the actual amount of the low construction bid exceeds the construction budget established by the CITY, the PROFESSIONAL CONSULTANT will not be required to re-design the PROJECT or any part thereof without additional compensation.

ARTICLE XVI - APPLICABLE LAWS

PROFESSIONAL CONSULTANT shall comply with all Federal, State, Local laws, ordinances, resolutions, specifications, regulations and all other laws or regulations relating or applicable to service to be performed under this AGREEMENT. Interpretation of this AGREEMENT and disputes arising out of or related to this AGREEMENT will be subject to and governed by the laws of the State of Arkansas. Jurisdiction and venue for any suit arising out of or related to this AGREEMENT will be in the District Court of Benton County, Arkansas.

ARTICLE XVII - PRECEDENCE

This AGREEMENT shall take precedence over any inconsistent or contradictory provisions contained in any proposal, contract, purchase order, requisition, notice to proceed, or any other like document regarding the PROJECT or PROFESSIONAL CONSULTANT's services.

ARTICLE XVIII - SEVERABILITY

A. In the event that one or more provisions contained herein shall, for any reason, be deemed invalid, illegal, void or unenforceable, in whole or in part, the remaining provisions hereof shall remain in full force and effect.

B. In the event that any provision hereof is in conflict with any statutory provision of the State of Arkansas, said provision, which may be in conflict therewith, shall be deemed inoperative, null and void insofar as it may be in conflict therewith, and shall be deemed modified to conform to such statutory provisions; provided, however, that the remaining provisions of this AGREEMENT will be unaffected and will continue to be valid and enforceable.

ARTICLE XIX - SURVIVAL OF OBLIGATIONS

The obligations of the Parties contained in this AGREEMENT, which by their nature survive after the term of the AGREEMENT, shall survive the termination or expiration of this AGREEMENT and continue indefinitely or as otherwise provided by this AGREEMENT.

ARTICLE XX – ENTIRE AGREEMENT

This AGREEMENT, including all documents and Appendices included by reference herein, constitutes the entire agreement between the PARTIES and supersedes all prior agreements, whether oral or written, covering the same subject matter. This AGREEMENT may not be modified or amended except in writing, mutually agreed upon and accepted by both PARTIES to this AGREEMENT.

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The cost of this AGREEMENT including all reimbursable expenses as described in the FEES AND SCHEDULE, **shall not exceed eight hundred twenty-eight thousand five hundred sixty-nine dollars and sixty-five cents ($828,569.65),** unless otherwise approved by the CITY through an official AMENDMENT agreed and executed by CITY and PROFESSIONAL CONSULTANT.

IN WITNESS THEREOF, the CITY and PROFESSIONAL CONSULTANT have executed this AGREEMENT, the EFFECTIVE DATE of which is indicated on page 1 of this AGREEMENT.

CITY OF BENTONVILLE	Halff Associates, Inc
CITY	PROFESSIONAL CONSULTANT
BY	BY
MAYOR	VP / Operations Manager
TITLE	TITLE
	8-20-2024
DATE SIGNED	DATE SIGNED

APPENDIX A

PROPOSAL AND SCOPE OF WORK

PROJECT DESCRIPTION

The Arkansas Department of Transportation (ARDOT) is developing improvement plans to widen State Highway 102, also known as SW 14th Street, from Interstate 49 westerly thru J Street, in Bentonville, AR. Bentonville Water Utilities (BWU) owns, operates, and maintains several water and sewer utility lines along the Highway 102 corridor, which conflict with the planned improvements and require relocation. A portion of these utility lines are understood to have originally been installed in utility easements or City Right of Way, outside of ARDOT rights-of-way, and therefore may have "prior rights", which qualify for reimbursement by ARDOT for the design and relocation costs incurred by BWU.

The existing water and sewer utility lines proposed to be relocated make up the "Project", as indicated on ***Exhibit 1***, and approximated to consists of:

- 14,000+ LF of 2" thru 12" Potable Waterline,
- 4,000+ LF of 2" thru 12" Sanitary Sewer line,
- 25+ Sanitary Sewer Manholes.

The Project will include the conventional design-bid-build delivery method. Additional Services listed in ***Appendix A – Proposal and Scope of Work for Design Phase Services*** and Construction Phase Services listed in ***Appendix B – Proposal and Scope of Work for Construction Phase Services*** and are all excluded from our scope and fee, however, can be added with an amendment to the contract.

Appendix A is organized into three (3) sections as follows:

1. ***Scope***: Including all "Basic" services performed by Halff and required for the project, as well as "Special Services" performed by Halff or subconsultants to Halff, along with the associated "deliverables" of each service. Additional Services and BWU Responsibilities are also listed in this section.
2. ***Schedule:*** Including all Basic and Special services as described herein.
3. ***Fee:*** Including all Basic and Special services and presented as an "hourly, not to exceed" fee amount, with the associated hourly rate schedule. Sub-Consultant invoices will be billed to BWU with no markup.

This proposal and scope of work complies with the guidelines for reimbursement as outlined in ARDOT's Utility Accommodation Policy dated November 16, 2010, and will include verifying compliance with the Buy American Policy. The detailed Proposal and Scope of Work is as follows:

SCOPE OF WORK

Basic Services for the Project include:

1. ***Project Management*** – Project management tasks shall be performed for the duration of the project and shall include the following tasks:

    a. Conduct, or attend, the following project meetings:
        i. Attend up to twelve (12) monthly coordination meetings with BWU.
        ii. Attend up eight (8) meetings with Halff's sub-consultants.
        iii. Attend up six (6) meetings with other utility providers for coordination.
        iv. Attend up four (4) workshops with BWU for review of deliverables.
        v. Attend up to four (4) City of Bentonville meetings associated with other departments review.
    b. Coordinate Proposed Utility Alignment with BWU, ARDOT, Wal-Mart Home Office (WHO), Black Hills Energy (BHE), and other utilities identified within the limits of this project.
    c. Prepare and maintain a project schedule.
    d. Prepare and submit monthly progress reports along with monthly invoices to include project status, recent activities, upcoming activities, action items log, decisions made log, budget updates, schedule updates, and scope changes.
    e. Prepare and submit a bi-weekly project sheet that shows an overview of the proposed project and a summary of the status of the overall project for BWUs use to keep the public informed.
    f. Prepare and maintain project records including, but not limited to, correspondence and documentation of contacts with property owners.
    g. Reimbursement tracking, including receipts (Postage, fuel, lodges, and meals associated with lodging).
    h. Coordination and administration of subcontracts, as required.
        i. Subcontract fees will be invoiced to BWU with no markup.
    i. Project Management Deliverables to include the following:
        i. Agendas and minutes for all meetings.
        ii. Project Sheet, bi-weekly.
        iii. Invoices, project schedule, and project reports, monthly.
    j. All project deliverables will be delivered electronically.

2. **Alignment Study Phase** – The first primary design-related task shall be to perform an Alignment Study for the project, which shall consist of the following tasks:

    a. Perform an initial site visit and conduct a visual survey of the proposed project.

b. Conduct a project kick-off meeting, with BWU, to begin identifying and documenting the project design criteria. Develop a preliminary list of likely required permits.
c. Identify and map all existing water and sewer utility facilities within the limits of the project and locate their position within Rights-Of-Ways and easements.
    i. BWU shall provide all available recorded documentation of the existing utility easements within the project limits.
d. Determine what portion of existing facilities qualifies for reimbursement by ARDOT.
e. Identify any areas that will no longer require utility service after the project's completion.
f. Select a preliminary alignment for the new water and sewer facilities to replace those proposed to be abandoned and/or removed and disposed by the project.
g. Identify any environmental reviews required to be coordinated by Halff.
    i. Halff anticipates a Nationwide Permit. This does not include any environmental investigation efforts. See Additional Services/Exclusions below.
h. Determine permitting requirements to be addressed by Halff.
i. Conduct a workshop with BWU staff, to define the details of the new facilities, such as:
    i. Proposed utility relocation alignment.
    ii. Define easement requirements for the new utility relocations.
    iii. Pipe material and pressure rating, connection points, fire hydrant location, and methods, phasing requirements, and any other issues defined in this Alignment Study.
j. Develop an Opinion of Probable Project Cost (OPPC), including costs for construction, engineering, governmental agency review/ permitting, and land costs associated with easement acquisitions. The OPPC, including all revisions, will exclude contingencies. A breakdown of estimated ARDOT reimbursables will be provided within this OPPC.
k. Deliverables to include a Design Memo and Preliminary Sketch of water and sewer plans, documenting these findings.
l. All deliverables will be delivered electronically.

3. **Design Phase** – Following completion and BWU's acceptance of the Alignment Study, the Design Phase of the project will commence, which shall include the following tasks:

   Please note that Special Service tasks are listed within the Design Phase to specify when these services shall take place, however Special Services will be billed under its specific task.

a. Preliminary Design Plan Set (thru 60%):
    i. Conduct "Special Services", as required (see below for detailed description of these "Special Services"):
        1. Perform a Topographic survey of project.
        2. Perform a Boundary Survey of project.
        3. Perform Subsurface Utility Engineering (SUE).
        4. Conduct Geotechnical investigations.
    ii. Prepare Preliminary design drawings for review, to include:
        1. Design plans shall be created on 24"x36" sheets.
        2. Plan and profile view layout of the proposed and sewer facilities.
        3. Plan and profile view layout of the proposed water facilities.
        4. Proposed connection points and associated details.
        5. Plan and layout for a replacement meter vault located at P St, if required.
        6. Plan for phasing requirements to reduce any utility services downtime associated with the utility relocations.
    iii. Prepare Table of Technical Specifications for items not covered in BWU or Bentonville Street specifications, if any.
    iv. Conduct a field review to coordinate design with any altered field conditions.
    v. Attend a coordination meeting with other consultants and utility providers, see Project Management.
    vi. Submit 60% plan set to BWU for internal review and approval.
    vii. Conduct a review meeting with the BWU staff to review the 60% plan set comments.
    viii. After BWU has reviewed and approved the 60% plan set, Submit the 60% plan set as a Public Infrastructure Improvement Plan (PIIP) to the City's eTrakit portal for the City's review and approval, as well as to other state agencies.
    ix. Update the OPPC.
    x. Deliverables shall include:
        1. Preliminary Design drawings and draft table of specifications.
        2. Updated OPPC, to include an opinion of costs eligible for reimbursement by ARDOT.
    xi. All deliverables will be delivered electronically.

b. Final Design Plan Set (thru 100%):
    i. Conduct "Special Services", as required (see below for detailed description of these "Special Services"):
        1. Conduct Easement Preparation.

2. Perform Easement Acquisition services.

ii. Prepare SWPPP/SWQ plans.
    1. Prepare Stormwater Pollution Prevention Plan for limits of disturbance reflected at completion of 60% plan set.
    2. Assist the City with submission to ADEQ's SEEK portal to submit for and obtain the Notice of Coverage.
    3. Deliverables will include a prepared SWPPP for the City's signature.

iii. Prepare Detailed design drawings for review, to include:
    1. Construction details, in addition to BWU standard details.

iv. Conduct a field review to coordinate design with any altered field conditions.

v. Update the OPPC

vi. Prepare final project manual to include technical specifications, special conditions, front end contract documentation, geotechnical boring logs.

vii. Obtain regulatory approvals and permitting of the project plans and specifications, to include:
    1. BWU final approval and authorization.
    2. City of Bentonville's PIIP Approval.
    3. City of Bentonville's Floodplain Development Permit
    4. ARDOT approval and concurrence.
    5. Arkansas Department of Health.
    6. ADEQ Stormwater, STAA, SWPPP
    7. USACE Nationwide 58 Permit – Pre-Construction Notification (PCN), as required.

viii. Deliverables shall include:
    1. Detailed Final Design Drawings.
    2. Final Project Manual.
    3. Updated OPPC.
    4. Applicable Permits.

ix. All deliverables will be delivered electronically.

c. <u>Bid Phase Services</u>:

i. Compile the project Construction Bid Documents, to include:
    1. Approved Plan Set.
    2. Coordinate with City of Bentonville's Purchasing Department to prepare the "front end" Bid documents, based on BWU standard documents, including bidder's proposal form.
    3. Assemble the Standard Material and Construction specifications published by the City of Bentonville.
    4. Create any additionally required "Technical Specifications".

ii. Prepare response to questions from bidders, as required.
iii. Prepare Addenda and provide to BWU for posting, as necessary.
iv. Assist BWU in the opening, tabulating, and analyzing the bids received.
v. Deliverables shall include:
    1. Electronic copies of Plans and Bid Documents.
    2. Responses to bidder's questions
    3. Addenda
    4. Tabulation of Bids
vi. All deliverables will be delivered electronically.

Special Services for of the Project include:

1. Topographic survey:
    a. Halff Survey Department will coordinate with One-Call to horizontally locate all existing utilities within the identified 104 parcels along the HWY 102 corridor North of R/W +/- 50' x 6000', South of R/W +/- 50'x 6000', and +/-200' North and South of intersecting roads, approximately 15 roads. Utility location and mapping is for horizontal location of above ground and underground utilities only. One-Call Utility heights and/or depths will not be obtained or indicated on the topographic survey (unless provided by SUE). The survey of utilities will be based on tracing and marking by One-Call.
    b. Halff Survey Department will provide Topographic information consisting of 1' contours derived from a digital terrain model and shown in accordance with the National Mapping Standards. Spot elevation at requested areas, Tops of Storm and Sewer Manholes with Invert elevations, size, material, and direction of pipes. The location of utilities by One-Call, trees of 6" breast height diameter or greater (Coniferous or Deciduous), landscape, drives, fences, outlines of existing buildings, finish floor elevation, and location of tie for sewer and water into existing building (if visible or marked by One-Call).
    c. Halff Survey Department will notify owners with certified letters before performing survey field work.
    d. Halff Survey Department deliverable will consist of a DWG base drawing of the Topographic information collected, in the AHTD Survey Coordinate system of North Zone Projected to Ground US Survey Foot (Horizontal Datum NAD83 & Vertical Datum NAVD88)
    e. Base Survey will not meet "Arkansas Minimum Standards for Property Surveys and Plats". (this pertains to a signed seal survey printed in a Paper/PDF format)
    f. Limits of area to be included in the scope of "Topographic Survey" are shown in ***Exhibit I***. If relocation efforts are extended beyond the identified limits, an amendment to the contract will be required.

g. All work will be supervised under a licensed Arkansas Surveyor's direct supervision.
h. **By signing this contract, the client understands and acknowledges that utility mapping is not exact, and it is possible that not all utility lines will be located. Halff is not responsible for miss-marked or unmarked utilities.**

2. Boundary Survey
    a. Halff's Survey Department will survey up to 104 tracts of land, parcels based on the research provided by the Title Company. Crew will locate pertinent monuments to determine the property lines and right-of-way according to the provided deeds, surveys, and recoded plats.
    b. Boundary disputes will not be resolved if discovered during the fieldwork, calculation, and/or plotting of deeds. Halff will best fit property lines to continue with BWU project. If such disputes are discovered, pertaining to easements or location of existing water or sewer lines, it will be brought to BWU attention, and an amendment may be required.
    c. No missing monuments will be set for the +/- 104 parcels.
    d. Limits of area to be included in the scope of "Boundary Survey" are shown in ***Exhibit I***. If relocation efforts are extended beyond the identified limits, and/or a property is split or combined after the initial "Boundary Survey" effort and additional field work is necessary, an amendment to the contract will be required.
    e. Halff's Survey Department deliverable will consist of a DWG base drawing of the Boundary Survey preformed, in the AHTD Survey Coordinate system of North Zone Projected to Ground (US Survey Foot) (Horizontal Datum NAD83 & Vertical Datum NAVD88)
    f. Base Survey will not meet "Arkansas Minimum Standards for Property Surveys and Plats". (this pertains to a signed seal survey printed in a Paper/PDF format)
    g. All work will be supervised under a licensed Arkansas Surveyor 's direct supervision.

3. Subsurface Utility Engineering (SUE), to be conducted by sub-contractor, to include:
    a. Mobilize a vacuum truck at critical utility crossings, identified during the alignment study, to excavate or "pothole" to a maximum of 12 feet, in up to twenty-two (22) locations. If additional potholes are necessary, an amendment to the contract will be required.
    b. Mobilize Halff's survey field crew to gather elevations, diameter, and material type of exposed utilities.
    c. Deliverable shall include an updated topographic survey with the findings listed above.

4. Geotechnical Engineering investigation, to be conducted by sub-contractor, to include:
    a. Drilling up to ten (10) exploratory borings, 10 to 20-ft depth or auger refusal, whichever is less, at identified road bore locations. If additional borings are necessary, an amendment to the contract will be required.
    b. Conduct one (1) site visit to mark proposed boring locations and coordinate access.
    c. Perform laboratory testing to evaluate pertinent physical properties and engineering characteristics of the subgrade strata.
    d. Deliverable shall consist of an engineering report with boring locations, boring logs, laboratory test results, and recommendations for construction consideration.

5. Easement Preparation
    a. Abstracting and Title search
    b. Halff's Survey Department will contract with a Title Company to research and provide up to 104 parcels along the HWY 102 corridor. Halff will request research past the 30-year typical search of records to paten. Title Company will provide easements, subject property deeds, plats known of record, listed tax parcel number, known tax entity, and the existing owner with the mailing address. If additional parcels are determined, an amendment to the contract will be required.
    c. Halff's Survey Department will notify Right of Entry for up to 104 parcel owner/tax person one time by certified mail based on the Title Company research before entering any property for One-Call, topographic, or boundary portion.
    d. Halff's Survey Department will plot up to 104 parcels of the provided plats, subject property deeds, and easements of record provided by the Title Company.
    e. Limits of area to be included in the scope of "Abstracting and Title search are shown in ***Exhibit I***. If relocation efforts are extended beyond the identified limits, an amendment to the contract will be required.
    f. Document Preparation will include:
        i. Halff's Survey Department will provide a location of existing easements, based on information provided by the Title Company, for reimbursement for the relocation of the water and/or sewer line within the area up to 104 parcels of land along the HWY 102 corridor.
        ii. Halff's Survey Department will provide up to 75 Utility Easement Exhibits, based on the determined water and sewer realignments.
        iii. Exhibits will reflect permanent and/or temporary easement limits.
        iv. Halff's Survey Department will provide up to 75 Utility Easement Descriptions, based on the Utility Easement Exhibits described above.

v. Halff's Survey Department will not mark or set temporary or permeant monuments along the proposed easement area.
vi. Limits of area to be included in the scope of "Document Preparation" are shown on the attached ***Exhibit I***. If relocation efforts are extended beyond the identified limits, an amendment may be required.
vii. All work will be supervised under a licensed Arkansas Surveyor's direct supervision.
viii. All required new easement dedication exhibits will be prepared individually and be stamped by a licensed Arkansas Surveyor. Easements will not be dedicated or acquired as part of an easement plat or comprehensive dedication document to be carried through the city platting process.
ix. Utility easement documents will be per Bentonville Standard Dedication form.

g. Record executed easements, as agreements are made, and provided to BWU the filed copy for their records.

6. Acquisitions Services
   a. Initial Appraisal/Valuation Services
      i. Review BWU's easements and construction plans.
      ii. Perform field inspection of the proposed project and collect limited market information in order to determine estimated land and improvements value.
      iii. Conduct appraisal of up to 75 properties.
         1. The appraiser/valuator will contact property owners and conduct property owner's inspections.
            a. This includes inviting the property owners, preferably in writing, to accompany the appraiser/valuator during the appraiser's/valuator's inspection of the property and maintain record of contact in file.
      iv. Determine need for specialty report and advise BWU of the recommendation.
         1. BWU will determine extent of report needed and most efficient and cost-effective method of preparation.
      v. Prepare written notification to BWU of any environmental concerns associated with the acquisition that could require environmental remediation.
      vi. Appraisal/Valuation Updates includes:
         1. Revise, update, or obtain new appraisals/valuations, up to 10 properties.

b. Negotiation Services & Waiver Valuation Services
    i. Prepare and provide Waiver Valuation Reports, if needed, to BWU for administrative review and approval.
    ii. Upon completion of easement appraisals, submit to BWU for approval and concurrence of any reimbursable portion of costs prior to beginning easement negotiations.
    iii. Prepare the appropriate acquisition documents and assemble tract packets for up to 75 properties, in accordance with BWU requirements.
    iv. Prepare an offer letter for signature by the appropriate BWU official or as designated, stating the summary of the basis for the total amount offered.
    v. Present offer letter to the property owner, discuss the offer amount and rationale for compensation and address any concerns. Advise the property owner of their full rights under the laws of eminent domain if no agreement can be reached and condemnation action is necessary.
    vi. Maintain a project log indicating, at a minimum, the dates of the following:
        1. Waiver valuation or appraisal approved, initiation of negotiations, contract signed and recommendations for condemnation.
    vii. Maintain detailed records of all information pertinent to the job:
        1. Ownership addresses, encumbrances, dated and signed negotiator notes, offer letters and contracts.
        2. Negotiator notes should include a record of each contact, offers and counteroffers, property owner requests, opinions, proposed solutions, and recommendations for condemnation.
    viii. Notify BWU if a property owner requests an appraisal in lieu of the waiver valuation presented.
    ix. Collect supporting documents from the property owner necessary to complete the transaction including but not limited to trusts, corporate resolutions, partnership agreements, et al.
    x. As negotiations are completed, review tract packets for completeness, prepare acceptance letters for BWU's execution and distribute tract packets for further handling.
    xi. Submit proposed changes in right of way easements or construction design features arising through negotiations to BWU.
    xii. Submit counteroffers from property owners to BWU with recommendations for acceptance or rejection.
    xiii. Recommend tracts for condemnation to BWU when negotiations prove to no longer be beneficial or when the property owner states they wish to discontinue negotiations.

xiv. Execute Rights of Entry Agreements with property owners as directed by BWU.
xv. Upon completion of easement negotiations, submit to BWU for approval and concurrence of any reimbursable portion of costs prior to executing any easement documents.
xvi. Prepare proper instruments of conveyance and releases upon determination of title status.
xvii. Deliver BWU warrants on negotiated settlements after obtaining proper execution of instruments of conveyance and satisfaction of liens, if needed.
xviii. Record conveyance documents in appropriate county offices or through title company.

Additional Services for of the Project, which are excluded from our scope:

1. Corrosion Engineering/Testing
2. Hydraulic Modeling/Surge Analysis
3. Environmental Reviews
4. Environmental Site Assessments (ESAs)
5. Draft Jurisdictional Determination (DJD) report (wetlands)
6. Historical and Archeological study
7. Threatened and Endangered Habitat Screening
8. Survey Field Layout/Staking
9. Revisions to the Plan Set and/or Specifications due to causes not within Halff's control.
10. Traffic Control Plans
11. Grayed back text within scope (Easement preparation and acquisition services)
12. Right of Way – Title Curative
13. Right of Way – Relocation Assistance Services
14. Right of Way – Property Management Services
15. Right of Way – Condemnation Support Services
16. Appraisers Support in legal disputes.
17. Appraisals/Valuations exceeding 75 properties.
18. Appraisal/Valuation updates exceeding 10 properties.
19. Preparation of Specialty Report to support appraisal efforts.
20. Services required to resolve bid protests or to rebid the project.
21. Assisting BWU or the City of Bentonville with any legal disputes
22. Construction Phase Services
    a. See Appendix B for a proposed Construction Phase Scope of Work – If requested by the City, a Proposal for Construction Phase Services will be added to Halff's contract by amendment.

BWU Responsibilities shall include providing the following project information for Halff's use:

1. All available recorded documentation of the existing utility easements within the project limits.
2. All available record drawings/as-builts within the project corridor.
3. Design information and/or scenario analyses results derived from existing BWU hydraulic model(s).
4. Obtaining Signatures, as needed, from City personnel for submittals and permitting.
5. Provide all necessary forms, templates and other documents needed for the proposed acquisitions and the BWU's funding and closing.
6. Provide Halff with BWU processes including but not limited to Board/Council Resolutions or other internal actions necessary for acquisition, condemnation or other requirements to complete the acquisition and related processes.
7. Provide timely reviews and approval of submissions and responses to questions pertaining to the project and design.

SCHEDULE

1. See Exhibit II

If Halff's services are delayed due to an outside circumstance, Halff shall be entitled to adjust the contract schedule consistent with the number of days delayed.

FEE

1. Total Contract Fee will be **$828,569.65**
    a. **Basic Services Fee**
        i. $498,828.00
    b. **Special Service Fee**
        i. $329,741.65

Please note that Halff executed services will be billed Cost Plus Max (Hourly, Not to Exceed). Rates will be based on current Federal Audited Overhead Rate, updated annually. Halff's Sub-contractor's invoices will be billed to BWU at cost, with no markup.

DESIGNATED REPRESENTATION

The designated representatives for this contract shall be as follows:

Owner - City of Bentonville Water Utilities

Designated Representative	Beau Thompson, AICP Work phone: (479) 271-3140 BThompson@BentonvilleAR.com	3200 SW Municipal Drive Bentonville, AR 72712

Halff Associates

Project Manager	Mr. Patrick Foy, PE Work phone: (479) 579-3968 Cell phone: (479) 212-4028 e-mail: pfoy@halff.com	2407 SE Cottonwood St #1 Bentonville, AR 72712
Principal in Charge	Mr. John Wary, PE Work phone: (479) 579-3967 Cell phone: (479) 721-9965 e-mail: jwary@halff.com	
Project Surveyor	Mr. James S. Aunspaugh, PS Work phone: (479) 379-0323 Cell phone: (501) 319-3408 e-mail: jaunspaugh@halff.com	
Construction Inspection Manager	Mr. John Fry Work phone: (479) 579-3974 Cell phone: (479) 651-8530 e-mail: jfry@halff.com	
QA/QC Manager	Mr. Brian Maurer, PE Work phone (479) 397-0311 Cell phone (479) 883-4573 e-mail: bmaurer@halff.com	5704 Euper Lane, Ste 200 Fort Smith, AR 72903

Bentonville Water Utilities - Hwy 102 Utilities Relocation (R090646) - Fee Estimate

Raw	1.0000
General Overhead + Indirect Cost Multiplier (2022 FAR Audit Rate)	1.9025
Labor Rate Multiplier	**2.9025**
Profit Multiplier (12%)	1.1200
Labor Rate * Profit	**3.2508**
FCCM Rate	0.0075
Project Rate Multiplier [(Labor * Profite) + FCCM Rate]	**3.2583**

	Avg Hourly Billing Rate	$ 115.50	$ 146.50	$ 190.00	$ 229.50	$ 312.67	$ 72.00	$ 91.00	$ 117.00	$ 141.00	$ 213.50	$ 121.00	$ 124.00	$ 150.00	$ 188.00	$ 255.00	$ 200.00	$ 98.00	$ 114.00	$ 126.00	$ 72.00	$ 91.00	$ 112.00	$ 105.00	$ 125.00	$ 158.00	$ 198.00	$ 320.00	Varies	
	Labor Category	Engineer I	Engineer II	Engineer III	Engineer IV	Engineer V	Office Tech I	Office Tech II	Office Tech III	Office Tech IV	Office Tech V	Surveyor I	Surveyor II	Surveyor III	Surveyor IV	Surveyor V	2-man Survey Crew	CEI Srv II	CEI Srv III	CEI Srv IV	Admin I	Admin II	Admin III	Specialist I	Specialist II	Specialist III	Specialist IV	Specialist V	Sub Consultant/Expenses	
Basic Services	**A.1 - Project Management**																													
	A.1.a - Project Meetings			34	170	34																								
	A.1.b - Utility Alignment Coordination		20		40																									
	A.1.c - Project Schedule		70		15																									
	A.1.d - Monthly Progress Reports				42																									
	A.1.e - Bi-Weekly Project Sheet				42																									
	A.1.f - Reimbursement Tracking				35																		8							
	A.1.g - Sub-Contractor Coordination				108																									
	A.1.h - Deliverables Coordination				16																									
	A.1.i - Invoicing				24																		40							
	Man Hours	0	90	34	492	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	48	0	0	0	0	0		**698**
	Sub-Total	$ -	$ 13,185.00	$ 6,460.00	$ 112,914.00	$ 10,630.78	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,376.00	$ -	$ -	$ -	$ -	$ -		**$ 148,565.78**
	A.2 - Alignment Study																													
	A.2.a - Initial Site Visit			4	4	4														8										
	A.2.b - Project Kick-Off Meeting		4	6	6	4				20																				
	A.2.c,d,e - Initial Utility Mapping & Reimubursement Determination			20	20	2				40																				
	A.2.f - Preliminary Alignments			80	16	8				100										16										
	A.2.g,h - Identify Environmental Reviews & Permitting Requirements			4	2	2																								
	A.2.i - BWU Workshop			6	6	4														6										
	A.2.j,k - Design Memorandum Including Initial OPCC		16	16	4	2				16										8										
	Man Hours	0	20	136	58	26	0	0	0	176	0	0	0	0	0	0	0	0	0	38	0	0	0	0	0	0	0	0		**454**
	Sub-Total	$ -	$ 2,930.00	$ 25,840.00	$ 13,311.00	$ 8,129.42	$ -	$ -	$ -	$ 24,816.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 4,788.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -		**$ 79,814.42**
	A.3 - Design Phase																													
	A.3.a.2 - Prepare 60% Plans		50	140	30	30				280										20										
	A.3.a.3 - Conduct Field Review (60%)			4	4	4														4										
	A.3.a.4 - BWU Coordination Meeting for 60% Plans			6	6	4														4										
	A.3.a.7 - Update OPCC (60%)		16		2	4				16										8										
	A.3.b.2 - Prepare 100% Plans		40	60	20	40				100										40										
	A.3.b.4 - Conduct Field Review (Final)			4	4															4										
	A.3.b.5 - Update OPCC (Final)		8		4	2				8										4										
	A.3.b.6.a - Obtain BWU Final Approval of Plans & Specs				20					40																				
	A.3.b.6.b - Obtain ARDOT Approvals				20					40																				
	A.3.b.6.b - Obtain City Approvals				16					32																				
	A.3.b.6.c - ADH Submittal & Approval		20		20	8				40																				
	**ADH Submittal Fee																												$ 500.00	
	A.3.b.6.d - Prepare and Submit SWPPP and/or STAA		16	8	4	8																								
	**ADEQ NOC and STAA Submittal Fees																												$ 400.00	
	A.3.b.6.e - Prepare and Submit Nationwide 58 PCN		16		12	4																								
	A.3.c.1 - Compile Bid Documents			40	40	16																								
	A.3.c.2 - Prepare RFIs			24	24	8																								
	A.3.c.3 - Prepare Addendas				16	8																								
	A.3.c.4 - Bid opening, tabulation, analyzing			4	8	4																								
	Man Hours	0	166	290	250	140	0	0	0	556	0	0	0	0	0	0	0	0	0	84	0	0	0	0	0	0	0	0		**1486**
	Sub-Total	$ -	$ 24,319.00	$ 55,100.00	$ 57,375.00	$ 43,773.80	$ -	$ -	$ -	$ 78,396.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 10,584.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 900.00	**$ 270,447.80**
																													Total Man Hours =	**2638**
																													Total Basic Services Calc'd Fee =	**$ 498,828.00**
Special Services	**A.4.1&2 - Boundary and Topographical Survey**																													
	Field Tasks																													
	Verify/Establihs Control/Coordinate One-call																60													
	Boundary Search																230													
	Topo field work																270													
	Office Tasks																													
	Field Data Processing								65																					
	Research (Deed, flood, zoning, standards)														40															
	sketches and survey requests														45															
	Process data for Topo								70																					
	PM/coordination															70														
	boundary analysis & solution															90														
	Easement Exhibit Preparation								250																					
	**Certified Mailings (189 notifications @ $4.85 each)																												$ 916.65	
	*WACO Title																												$ 45,000.00	
	Man Hours	0	0	0	0	0	0	0	385	0	0	0	0	0	85	160	560	0	0	0	0	0	0	0	0	0	0	0		**1190**
	Sub-Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 45,045.00	$ -	$ -	$ -	$ -	$ -	$ 15,980.00	$ 40,800.00	$ 112,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 45,916.65	**$ 259,741.65**
	A.4.c - SUE Services																													
	Quality Level B (GPR)																80													
	*Crossland Heavy VacTruck																												$34,000	
	Man Hours	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0		**80**
	Sub-Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 16,000.00	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$34,000	**$ 50,000.00**
	A.4.d - Geotechnical Investigation																													
	*McClelland Geotech																												$ 20,000.00	
	Man Hours	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
	Sub-Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 20,000.00	**$ 20,000.00**
	~~A.4.e - Easement Acquisition Services~~																													
	ROW PM (Status Meetings, reports, right of entries, document control, setup)																													
	Title Review and Negotiation Services																													
	**Certified Mailings (150 notifications @ $4.85 each)																													
	*Reed & Associates, Inc - Appraisal Services																													
	Man Hours	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
	Sub-Total	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	**$ -**
																													Total Man Hours =	**1270**
																													Total Special Services Calc'd Fee =	**$ 329,741.65**

* Sub-Consultants have not been retained, only contacted for estimated fees based on review of project. Sub-consultant fees will not be marked up and simply passed through on invoicing

** Anticipated Expenses. Expenses will not be marked up on invoicing.

Total Man Hours = 3908

Total Engineering Services Calc'd Fee = $ 828,569.65

EXHIBIT I

Project Limits

FILE NAME: A:\57000s\57657\001\WWW\CADD\Sheets\57657 UtilitiesRelocationExhibit.dwg DATE: May 16, 2024, TIME: 3:39 PM, USER: ah4929 AVO: XXXXX

1

PROJECT OVERVIEW

PROJECT NO.: 57657
ISSUED: APRIL 2024
DRAWN BY: DR
CHECKED BY: GM
SCALE: AS SHOWN
SHEET TITLE

HALFF ASSOCIATES INC. #470
CERTIFICATE OF AUTHORIZATION
ARKANSAS REGISTERED ENGINEERING

PRELIMINARY
FOR INTERIM REVIEW ONLY

IT IS NOT INTENDED OR REPRESENTED FOR BIDDING, PERMIT, OR CONSTRUCTION PURPOSES. THIS DOCUMENT WAS PREPARED BY OR UNDER THE SUPERVISION OF:

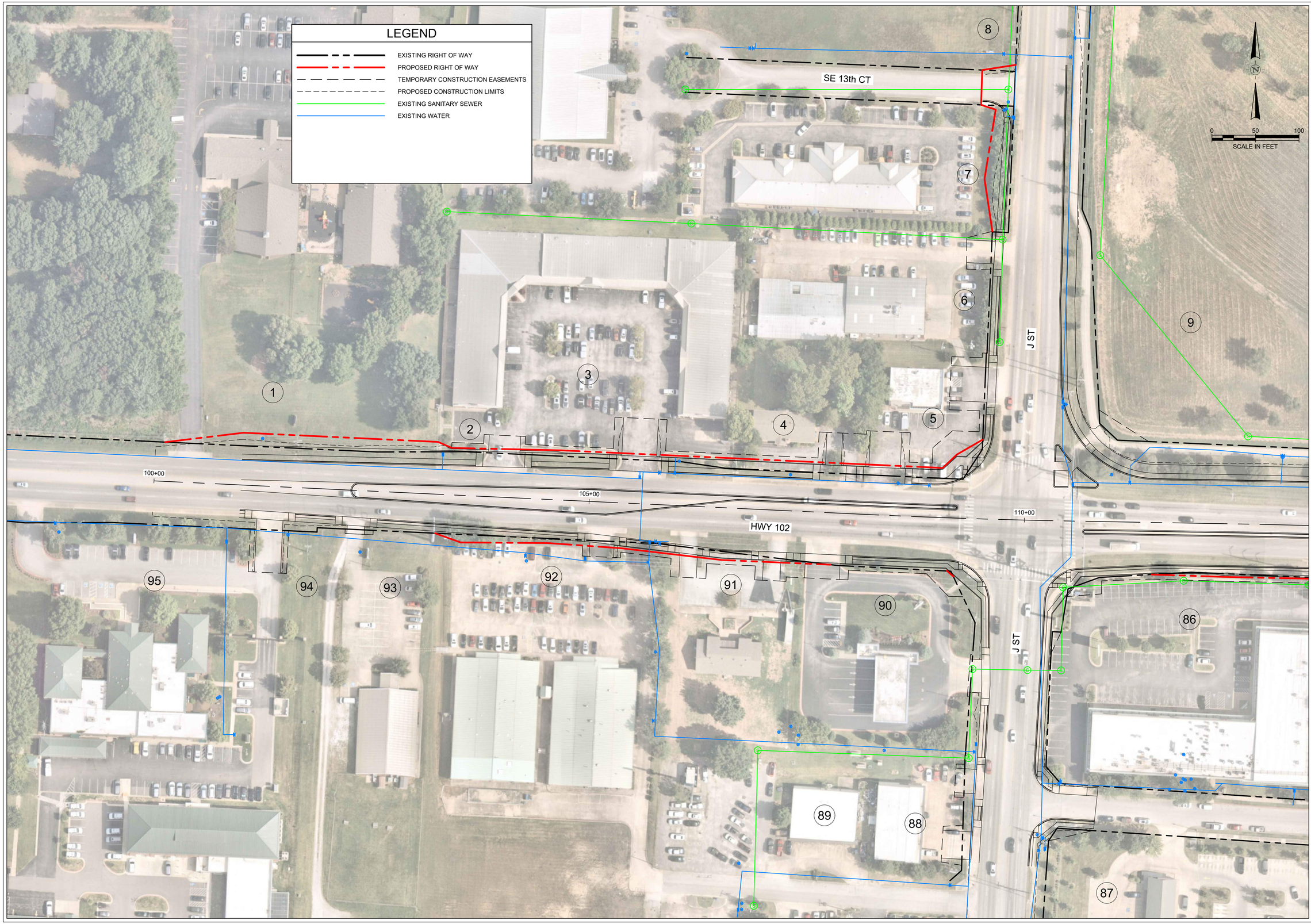
GARRETT J. MUMCHEL 29041
NAME NO.
APRIL 2024
DATE
HALFF ASSOCIATES INC. #470

REVISION		
NO.	DATE	DESCRIPTION

halff
10800 FINANCIAL CENTRE PRWY., SUITE 500
LITTLE ROCK, ARKANSAS 72211
TEL. (501) 801-2690

HIGHWAY 102 IMPROVEMENTS
UTILTIES RELOCATION

BENTONVILLE, ARKANSAS



HIGHWAY 102 IMPROVEMENTS
UTILTIES RELOCATION

BENTONVILLE, ARKANSAS

halff
10800 FINANCIAL CENTRE PKWY - SUITE 500
LITTLE ROCK, ARKANSAS 72211
TEL: (501) 801-2690

REVISION		
NO.	DATE	DESCRIPTION

PRELIMINARY

FOR INTERIM REVIEW ONLY

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND NOT INTENDED FOR REGULATORY APPROVAL, PERMIT, BIDDING OR CONSTRUCTION PURPOSES. THEY WERE PREPARED BY OR UNDER THE SUPERVISION OF:

GARRETT J. McMICHAEL — 20641
NAME — P.E. NO.

DATE: APRIL 2024

HALFF ASSOCIATES, INC. #1470

CERTIFICATE OF AUTHORIZATION
HALFF ASSOCIATES INC. #1470
ARKANSAS ENGINEER

PROJECT NO.:	57657
ISSUED:	APRIL 2024
DRAWN BY:	DR
CHECKED BY:	GM
SCALE:	AS SHOWN

SHEET TITLE

UTILTIES EXHIBIT

2

FILE NAME: A:\57000s\57657\001\WW\CADD\Sheets\57657 UtilitiesRelocationExhibit.dwg DATE: May 16, 2024, TIME: 3:39 PM, USER: ah4929 AVO: XXXXX

LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- TEMPORARY CONSTRUCTION EASEMENTS
- PROPOSED CONSTRUCTION LIMITS
- EXISTING SANITARY SEWER
- EXISTING WATER

N

0 50 100
SCALE IN FEET

HWY 102

115+00

120+00

125+00

P ST

O ST

EVERGREEN ST

FLYNT ST

9 10 11 85 84 82 81 83 80 78 77 79 76 75 74 71 70 72 69 73

HIGHWAY 102 IMPROVEMENTS
UTILTIES RELOCATION

BENTONVILLE, ARKANSAS

halff
10800 FINANCIAL CENTRE PRWY - SUITE 500
LITTLE ROCK, ARKANSAS 72211
TEL: (501) 801-2690

REVISION NO.	DATE	DESCRIPTION

PRELIMINARY

FOR INTERIM REVIEW ONLY

THESE DOCUMENTS ARE FOR INTERIM REVIEW AND NOT INTENDED FOR REGULATORY APPROVAL, PERMIT, BIDDING OR CONSTRUCTION PURPOSES. THEY WERE PREPARED BY OR UNDER THE SUPERVISION OF:

GARRETT J. McMICHAEL — 20641
NAME — P.E. NO.

DATE — APRIL 2024

HALFF ASSOCIATES, INC. #1470

CERTIFICATE OF AUTHORIZATION
HALFF ASSOCIATES INC. #1470
ARKANSAS ENGINEER

PROJECT NO.:	57657
ISSUED:	APRIL 2024
DRAWN BY:	DR
CHECKED BY:	GM
SCALE:	AS SHOWN

SHEET TITLE

UTILTIES EXHIBIT

3

FILE NAME: A:\57000s\57657\001\WWWCADD\Sheets\57657 UtilitiesRelocationExhibit.dwg DATE: May 16, 2024, TIME: 3:39 PM, USER: ah4929 AVO: XXXXX

LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- TEMPORARY CONSTRUCTION EASEMENTS
- PROPOSED CONSTRUCTION LIMITS
- EXISTING SANITARY SEWER
- EXISTING WATER

N

0 50 100

SCALE IN FEET

MLK JR. PKWY

CONVAIR ST

LOCKHEAD ST

BOEING AVE

HWY 102

130+00

135+00

140+00

CROUCH ST

S ST

SUNRISE ST

11 12 13 14 15

49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68

HIGHWAY 102 IMPROVEMENTS
UTILTIES RELOCATION

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ARKANSAS-ENGINEER

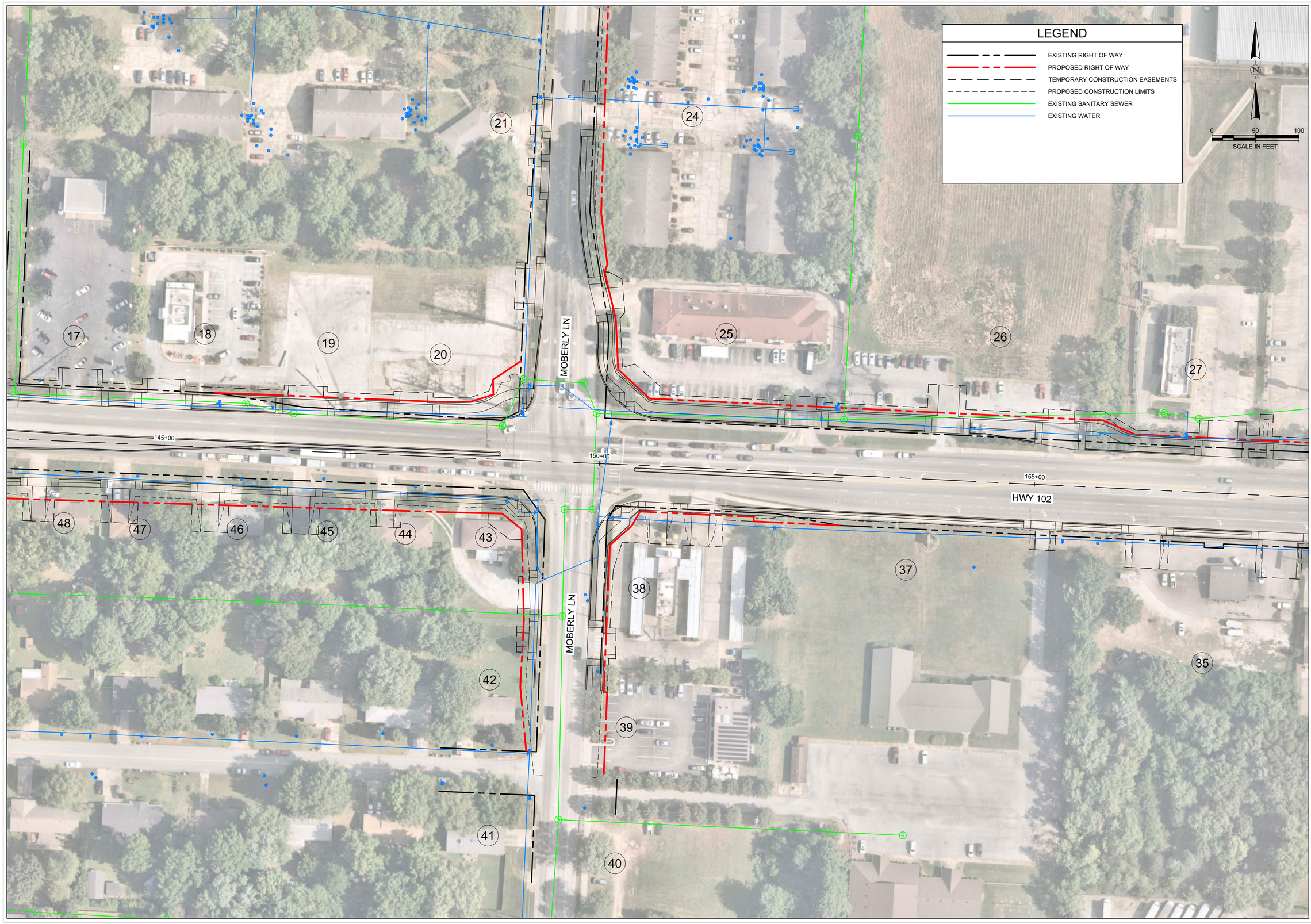
PROJECT NO.:	57657
ISSUED:	APRIL 2024
DRAWN BY:	DR
CHECKED BY:	GM
SCALE:	AS SHOWN

SHEET TITLE

UTILTIES EXHIBIT

4

FILE NAME: A:\57000s\57657\001\WWW\CADD\Sheets\57657 UtilitiesRelocationExhibit.dwg DATE: May 16, 2024, TIME: 3:39 PM, USER: ah4929 AVO: XXXXX



HIGHWAY 102 IMPROVEMENTS
UTILTIES RELOCATION

BENTONVILLE, ARKANSAS

halff
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ARKANSAS-ENGINEER

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DRAWN BY:	DR
CHECKED BY:	GM
SCALE:	AS SHOWN

SHEET TITLE

UTILTIES EXHIBIT

5

FILE NAME: A:\57000s\57657\001\WWWCADD\Sheets\57657 UtilitiesRelocationExhibit.dwg DATE: May 16, 2024, TIME: 3:39 PM, USER: ah4929 AVO: XXXXX

LEGEND

- EXISTING RIGHT OF WAY
- PROPOSED RIGHT OF WAY
- TEMPORARY CONSTRUCTION EASEMENTS
- PROPOSED CONSTRUCTION LIMITS
- EXISTING SANITARY SEWER
- EXISTING WATER

0 50 100
SCALE IN FEET

PHYLIS ST
INTERSTATE 49
HWY 102
160+00
165+00
170+00
171+03
28
29
30
31
32
33
34
36

HIGHWAY 102 IMPROVEMENTS
UTILTIES RELOCATION

BENTONVILLE, ARKANSAS

halff
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ARKANSAS ENGINEER

PROJECT NO.:	57657
ISSUED:	APRIL 2024
DRAWN BY:	DR
CHECKED BY:	GM
SCALE:	AS SHOWN

SHEET TITLE

UTILTIES EXHIBIT

6

FILE NAME: A:\57000s\57657\001\WWW\CADD\Sheets\57657 UtilitiesRelocationExhibit.dwg DATE: May 16, 2024, TIME: 3:39 PM, USER: ah4929 AVO: XXXXX

EXHIBIT II

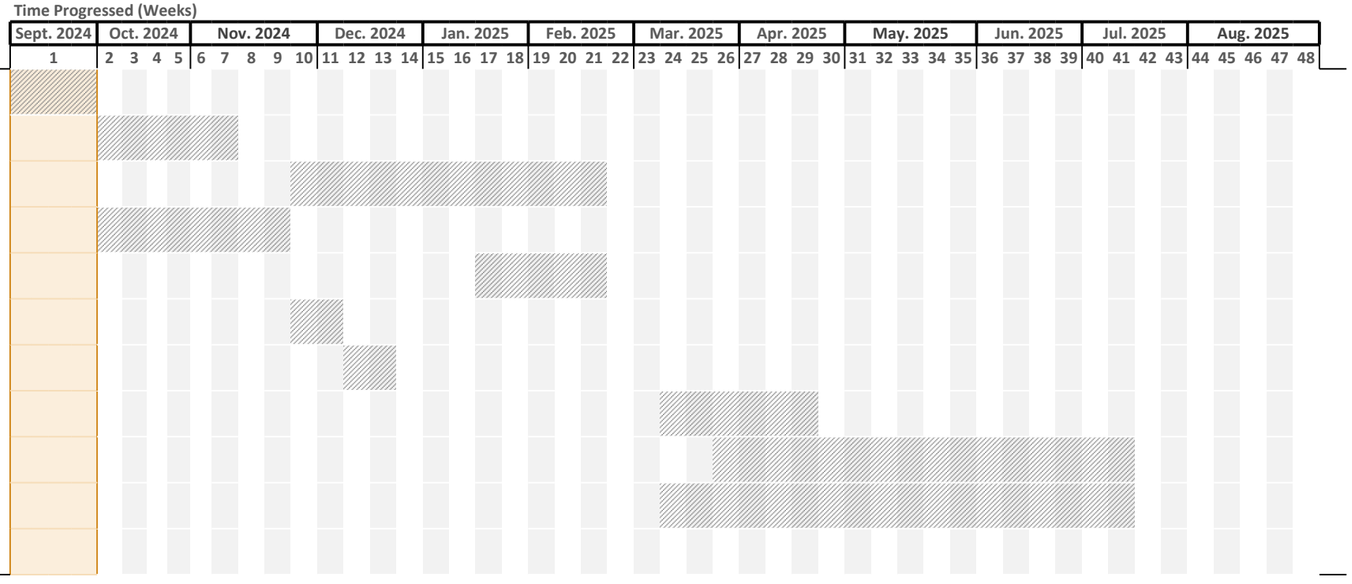
Schedule

Exhibit II - Schedule

Bentonville Water Utilities - R090656 - Hwy 102 Utilities Relocation

Period Highlight: 1 | Plan Duration | Actual Start | % Complete | Actual (beyond plan) | % Complete (beyond plan)

ACTIVITY	PLAN START	PLAN DURATION (WEEKS)	ACTUAL START	ACTUAL DURATION	PERCENT COMPLETE
Notice to Proceed	1	1			0%
Alignment Study Phase (30%)	2	6			0%
Preliminary Design Plan Set (60%)	10	12			0%
Topographic Survey	2	8			0%
Boundary Survey	17	5			0%
SUE Services	10	2			0%
Geotech Investigation	12	2			0%
City Approvals	24	6			0%
State Approvals	26	16			0%
Final Design Plan Set (100%)	24	18			0%
Bid Phase Services	TBD	12			0%



APPENDIX B

Proposal and Scope of Work
For Construction Phase Services

Project Description

The Arkansas Department of Transportation (ARDOT) is developing improvement plans to widen State Highway 102, also known as SW 14th Street, from Interstate 49 westerly thru J Street, in Bentonville, AR. Bentonville Water Utilities (BWU) owns, operates, and maintains several water and sewer utility lines along the Highway 102 corridor, which conflict with the planned improvements and require relocation. A portion of these utility lines are to be relocated per the approved Construction Documents prepared under Appendix A.

The existing utility lines proposed to be relocated make up the "Project", as indicated in the approved Construction Documents prepared under Appendix A. The project will include the conventional design-bid-build delivery method.

This Appendix B, is organized into three (3) sections, as follows:

1. **Scope:** Including all "Basic" services performed by Halff and required for the project, as well as "Special Services" performed by Halff or subconsultants to Halff, along with the associated "deliverables" of each service.
2. **Schedule:** Including all Basic and Special services as described herein.
3. **Fee:** Including all Basic and Special services and presented as an "hourly, not to exceed" fee amount, with the associated hourly rate schedule.

This proposal and scope of work complies with the guidelines for reimbursement as outlined in ARDOT's Utility Accommodation Policy dated November 16, 2010. The detailed Proposal and Scope of Work is as follows:

SCOPE

Basic Services for "Construction Phase Services" include:

1. construction Administration
    a. Attend Pre-Construction Meeting.
    b. Review Submittals.
        i. assume a maximum of 6 submittals.
            1. additional submittals will be considered as additional services.
    c. Review RFI's (Request for Information).
        i. assume a maximum of 1 RFI.
            1. additional submittals will be considered as additional services.
    d. Conduct periodic construction observation (site visits), to confirm general compliance with contract documents.
        i. assume 2 trips per month @ 10 hrs per trip month for 12 months.
    e. Prepare a monthly construction status report, to be submitted along with monthly invoice for Construction Phase Services.
    f. Prepare Construction Change Orders, as required.
    g. Issue Certificate of Substantial Completion.

2. Construction Inspection
    a. Conduct daily construction inspections.
    b. Oversee testing Operations with Contractor and BWU Inspectors.
    c. Issue daily construction reports.
    d. Conduct weekly on-site progress meetings.
    e. Monthly Status Meetings.
    f. Monthly Contractor Pay Application Processing.
    g. Perform a final inspection and prepare a final punch list for Contractor's completion.

3. Project Closeout Services shall include:
    a. Prepare project Record Drawings (As-Builts), per BWU Specifications.
    b. Prepare GIS shapefiles and csv files.
    c. Prepare construction completion documentation.
    d. Review and recommend Contractor's final pay request.
    e. Conduct Final Construction inspection.
    f. Monitor Commissioning services.
    g. Verify completeness and satisfaction with Property Owners.
    h. Issue Certificate of Final Completion.

Special Services for "Construction Phase Services" include:

1. Survey Control Setup

SCHEDULE AND FEE will be provided at time of amendment to the Contract.

City of Bentonville, Arkansas Agenda Item Form

Item Details

Council Meeting Date:	9/24/2024	**Submitted By:**	Travis Matlock
Phone:	479-271-5941	**For Department(s):**	Inventory Warehouse
Email:	tmatlock@bentonvillear.com		

Item Type (Check all that apply)

☐ **Informational** ☐ **Bid Award** ☐ **Enter into an Agreement** ☐ **Change Order**
☐ **Recognizing Funds** ☐ **Budget Adjustment** ☑ **Waiver of Bid** ☑ **Emergency Clause**
☑ **Ordinance** ☐ **Resolution** ☐ **Informational**

Title, Recommendation & Justification

Title:	Ordinance to waive bids to order 3ph transformers
Action Recommendation & Justification:	Approval of an Ordinance to waive competitive bidding to purchase 3ph transformers from AECI, Unit Prices and estimated quantities attached, plus applicable taxes. Due to market volatility and lead times related to these products, it would be neither practical or feasible to solicit competitive bids. Award is based on the low responsive quote per line item, for estimated totals: AECI in the estimated amount of $157,262.00 plus applicable taxes.
Additional Comments for Consideration (Optional):	In the event material prices increase, resulting in a potential cost increase for a transformer, AECI will submit an escalation request for review by the City of Bentonville Electric Utility Director. This measure is not intended to allow any increase in AECI's profit margin, but is solely intended to allow recovery for actual cost increases directly related to increased material cost for the quoted items.
Amount for Approval:	**$** 157,262.00

Budget Impact

Is this Item Budgeted? ☑ **YES** ☐ **NO** ☐ **ITEM HAS NO COST** ☐ **OTHER:**_____

Budget Adjustment *(to be completed by Finance when applicable)*

		$	$
Account Number (ORG-OBJECT)	Account Description	Expense	Revenue
		$	$
Account Number (ORG-OBJECT)	Account Description	Expense	Revenue
		$	$
Account Number (ORG-OBJECT)	Account Description	Expense	Revenue
		$	$
Account Number (ORG-OBJECT)	Account Description	Expense	Revenue

Fund(s) Impacted (check all that apply) ☐ **General Fund** ☐ **Utility Fund** ☐ **Street Fund** ☐ **Other(s):**_____

Budget Impact Notes for Consideration (Optional):

City of Bentonville Electric Utilities Department

Three Phase Pad-Mount Distribution Transformers

Quote Form

Line Item Number	BEUD Inventory Part Number	KVA	Voltage	QTY	Price Each - AECI	Price Each - Techline	Price Each - Irby	AEIC lead time	
1	2044	75	120/208	1	**$12,110.00**	$19,090.00	$17,053.00	12-16 weeks	$12,110.00
2	2045	75	277/480	1	**$12,300.00**	$19,522.00	$16,106.00	12-16 weeks	$12,300.00
3	2012	150	277/480	2	**$14,036.00**	$23,780.00	$26,421.00	12-16 weeks	$28,072.00
4	2013	1500	277/480	2	**$52,390.00**	$99,100.00	$56,000.00	12-16 weeks	$104,780.00
									$157,262.00

Quote Submitted By:_____

City of Bentonville, Arkansas Agenda Item Form

Item Details

Council Meeting Date:	9/24/2024	**Submitted By:**	Travis Matlock
Phone:	479-271-5941	**For Department(s):**	Electric
Email:	tmatlock@bentonvillear.com		

Item Type (Check all that apply)

☐ **Informational** ☐ **Bid Award** ☐ **Enter into an Agreement** ☐ **Change Order**
☐ **Recognizing Funds** ☐ **Budget Adjustment** ☐ **Waiver of Bid** ☑ **Emergency Clause**
☑ **Ordinance** ☐ **Resolution** ☐ **Informational**

Title, Recommendation & Justification

Title:	Updating Bentonville Electric Utility Department Construction Specifications
Action Recommendation & Justification:	The Bentonville Electric Utility Department Construction Requirements are being updated and replace Ordinance 2019-90.
Additional Comments for Consideration (Optional):	
Amount for Approval:	$

Budget Impact

Is this Item Budgeted? ☐ **YES** ☐ **NO** ☑ **ITEM HAS NO COST** ☐ **OTHER:**_____

Budget Adjustment *(to be completed by Finance when applicable)*

		$ Expense	$ Revenue
Account Number (ORG-OBJECT)	Account Description		
		$ Expense	$ Revenue
Account Number (ORG-OBJECT)	Account Description		
		$ Expense	$ Revenue
Account Number (ORG-OBJECT)	Account Description		
		$ Expense	$ Revenue
Account Number (ORG-OBJECT)	Account Description		

Fund(s) Impacted (check all that apply) ☐ **General Fund** ☐ **Utility Fund** ☐ **Street Fund** ☐ **Other(s):**_____

Budget Impact Notes for Consideration (Optional):

BEUD ELECTRIC SPECIFICATIONS

REVISION 5

ELECTRIC DEPARTMENT
CONSTRUCTION OFFICE
3200 SW Municipal Drive
Bentonville AR, 72712

REVISED
September 2024

Insert ordinance here once approved.

REVISION 5 TO BEUD ELECTRIC SPECIFICATIONS
SEPTEMBER 2024

Below are the specifications that were revised from the original document dated February 11, 2014, and approved by City Council on February 25, 2014. Revision 4 of this document was approved on May 28th, 2019. Major changes are listed below. This list does not include minor grammatical edits or clarifications.

SECTION 1

1.3 REMOVED references to Appendices

3.3 REVISED to make statement clearer

3.4 ADDED reference to PDF

3.10.1 REVISED to 8' back of ROW instead of 18' back of curb

3.10.4 ADDED 5' clearance from fence to pole

3.10.7 ADDED 50' clearance to transmission conductors from vegetation.

5.4 REVISED to state CONTRACTOR to pick up material

6.3 REVISED to state CONTRACTOR to pick up material

7.2.1 REVISED to two full working days per 811

7.8.2 REVISED wording to clarify intention

7.9.6 ADDED reference to DS-1403/1404

8.2.5 REVISED to clarify CIC application

10.2.4 ADDED table to clarify sweep requirements for elbows

10.2.11 ADDED 6" sleeves for all road crossing

10.3.1 REVISED to state CONTRACTOR to pick up material

10.3.3 REVISED to swap house/street side due to transformer orientation changing

10.3.6 ADDED "unless otherwise CT metered"

10.4.1 REVISED to state CONTRACTOR to pick up material

10.4.3 REVISED to swap house/street side due to transformer orientation changing

10.4.6 ADDED "unless otherwise CT metered"

10.5.9 Clarified access side is side with doors

10.6.9 Clarified access side is side with doors

10.7.5 Clarified partition blocks instead of wafer board

10.8.2 REVISED to state CONTRACTOR to pick up material

10.8.5 Clarified access side is side with doors

10.9.1 REVISED to state CONTRACTOR to pick up material

10.9.2 Clarified pedestal burial depth

10.9.3 Clarified conduit placement in secondary pedestal

10.10.1 REMOVED “not to exceed 400 feet”

10.11.9 REMOVED “Concrete encasement is not required for service conduit”

10.12 ADDED to retaining walls section

SECTION 2

20.1.9 ADDED service-related to inspections

20.1.11 REVISED statement to meet with New Service Coordinator and removed scenarios

20.2.2 ADDED “unless approved by BEUD prior to installation”

20.2.6 REVISED ground rod depth from 12” to 6”

20.2.8 REVISED to clarify grounding conductor must be continuous

20.3.2 ADDED secondary conduits to this item

20.4.4 ADDED 4” when greater than 100 linear feet to table

20.4.8 REVISED 400 lb mule tape rating to 1250 lb

20.4.12 REVISED wording to clarify conduit placement in the secondary pedestals

20.4.14 /20.4.15 COMBINED and REVISED to match 10.2.4 with table

20.4.16 RENUMBERED to 20.4.15

20.4.17 RENUMBERED to 20.4.16

20.6.2 REVISED reseal charge to be $200

20.6.3 REVISED re-inspection feed to be $150

21.1.7 REMOVED “or different voltage services serving the same building”

21.1.10 REMOVED original statement since it was redundant with 21.1.11. REPLACED with “Buildings shall be allowed use of only one service voltage per building, unless approved in advance by BEUD”.

21.1.17 Clarified greater than 400A services shall be CT metered

23.2.2 Changed maximum distance from pole from 70’ to 40’

24.2.3 REMOVED word “minimum” and ADDED “per NEC”

24.3.2 Changed minimum distance of meter from device from 3’ to 10’

24.4.2 Changed four (4) to two (2) for meter pack requirement.

24.4.5 REMOVED from this revision

24.4.6 RENUMBERED TO 24.4.5

24.4.7 RENUMBERED TO 24.4.6

24.4.6 ADDED Fee per current ordinance

25.3.4 ADDED 46 ft lbs as torque

27.3.2 ADDED 5’ horizontal clearance from water/sewer

SECTION 3

DS #	Edit Summary
DS-1001	Changed 70' max to 40' max
DS-1002	Added notes about continuous ground, ground rod in ditch, and ground rod spacing.
DS-1003	Omitted this drawing, combined notes to DS-1011 unit.
DS-1004	Corrected to show pre-fab pedestal. Added expansion coupler to conduit. Added grounding notes.
DS-1005	Revised drawing due to confusion on "front of house" notes. Added grounding notes.
DS-1006	Revised this so it matches the format of DS-1005 and DS-1007. Updated vertical clearance requirements over roof in detail. Added grounding notes.
DS-1007	Revised drawing due to confusion on "front of house" notes. Removed reference to galvanized rigid steel conduit. Added note about expansion coupler. Revised hatching to make it clearer. Added grounding notes
DS-1008	Removed reference to 600A service in the parallel service details, edited hatching. Added grounding notes
DS-1009	New spec for Address Labeling
DS-1010	Revised dimension on pole distance to 20' min. Removed note about no heated bends. Added ""without BEUD approval" to comment 6. Added Expansion coupler note 7. Cleaned up hatching for clarity. Added grounding notes
DS-1011	Combined old DS-1003 with DS-1011 to create new spec for 200A/400A Free Standing Meter Pedestal. Added grounding notes.
DS-1012	No changes for 2024 revision
DS-1013	Changed service grounding conductor size note 5 and conduit size in note 8. Added grounding notes.
DS-1014	Revised dimension on pole distance to 20' min. Added expansion coupler. Added grounding notes
DS-1015	Added grounding notes
DS-1016	No changes for 2024 revision

DS-1017	Added "hose bib" to list of Not Allowed in Red Hatched Area list
DS-1018	Moved addressing specs to DS-1009, called reference to DS-1009 on this drawing
DS-1019	Changed note on PMSW photo to "Vault Access Hatch"
DS-1020	Omitted original drawing, replaced DS-1020 through DS-1023 with this list
DS-1024	Added unistrut running horizontally behind the metering for support.
DS-1025	Changed outside dimensions
DS-1401	Omit
DS-1402	Revised clearances/conduit routings
DS-1403	Showed clearance from water/sewer as 5' for both primary and secondary, 18" vertical from water/sewer for primary and secondary
DS-1404	Showed bedding 6" above and 4" below on CIC
DS-1405	Changed notes on street/field side
DS-1406	Changed street/field side, rearranged conduits
DS-1407	Changed street/field side, rearranged conduits
DS-1408	Added detail for conduit "window" within opening, clarify rebar stubout, showed rebar in details.
DS-1409	Added detail for conduit "window" within opening, clarify rebar stubout, showed rebar in details.
DS-1410	Revised for clarity on clearance dimensions
DS-1411	Showed conduits stacked 2/2 instead of 4 across, cleaned up hatching for clarity
DS-1412	Showed conduits stacked 2/2 instead of 4 across, cleaned up hatching for clarity
DS-1413	Showed conduits stacked 2/2 instead of 4 across, cleaned up hatching for clarity
DS-1414	Changed stub up from 8" to 4" from bottom of enclosure. Changed pit dimension to 40" wide with gravel up to 4" from top, then topsoil.
DS-1414-1	Changed stub up from 8" to 4" from bottom of enclosure. Changed pit dimension to 54" wide with gravel up to 4" from top, then topsoil.
DS-1415	Highlighted note about anchor bolts, added note to remove exposed Sonatube prior to inspection
DS-1416	Highlighted note about anchor bolts, added note to remove exposed Sonatube prior to inspection
DS-1417	Added note CT meter pedestal to be installed by contractor, turned meter 90 degrees, added notes that conduit to be installed by contractor. Updated dimensions on spade spacing. Added note compression lugs only, no bolted. Changed uprights on meter pedestal to match DS-1011.
DS-1417-1PH	Created new spec for Single Phase CT Service
DS-1418	No change for 2024 revision
DS-1419	No change for 2024 revision
DS-1420	Changed rebar dimension to 12" instead of 2', added 3rd hole on bottom footer
DS-1420A	No change for 2024 revision
DS-1420B	Added 3rd hole on bottom footer
DS-1420C	No change for 2024 revision

PART I

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SECTION 1 GENERAL INFORMATION

1.1 The intent of this publication is to simplify and expedite the process of electric utility construction within the jurisdiction of the City of Bentonville. This publication specifically applies, but is not limited to "Subdivision" and "Large Scale Development". All rules and regulations set forth by the National Electric Code shall be the minimum standard of all construction and development practices to be approved by the Bentonville Electric Utility Department. In such case as the standard specifications herein set forth exceeds the National Electric Code, this document as approved by the City Council of Bentonville, Arkansas shall govern.

1.2 These general and detailed specifications shall govern the handling and installation of conduit and appurtenances for the City of Bentonville Electric Utility Department. Specifications stipulate general requirements for the preparation of reports, plans, specifications, methods of construction, inspection, testing, and final approval of any proposed electric distribution that is within the jurisdiction of Bentonville Electric Utility Department. Any requested deviation from the specifications herein set forth, shall be reviewed on a case by case basis by the BEUD and approved or denied by written authorization of the DIRECTOR.

1.3 Special conditions may arise on projects that are not covered in these specifications or that may require special handling. In case of such special conditions, complete detail as to materials, method of construction or other procedures shall be submitted to the Bentonville Electric Utility Department for review and approval. Where reference is made to a particular industry specification (ASTM, etc) it is hereby understood that reference is made to the latest specification revision in effect.

1.4 These specifications are intended to set forth minimum standards of quality for the construction of electric distribution systems which are to be accepted by the Bentonville Electric Utility Department. These specifications do not replace the ENGINEER'S specifications and contract documents; however, construction of all electric distribution systems must meet these standards of quality as a minimum. The Bentonville Electric Utility Department shall not be responsible nor shall it bear any liability for CONTRACTOR'S means, methods, techniques, sequences or procedures of construction, or the safety precautions and programs incident thereto, nor shall the Bentonville Electric Utility Department be responsible for any actions resulting from direction of the project by a City of Bentonville ENGINEER/INSPECTOR. The Bentonville Electric Utility Department shall not be responsible for the acts or omissions of the CONTRACTOR, Sub-Contractor, supplier, or of any other person or organization performing or furnishing any of the work. Nothing contained in these specifications shall be construed as an endorsement or warranty by the Bentonville Electric Utility Department of any product, material, or workmanship. The Bentonville Electric Utility Department shall not be responsible nor shall it bear any

liability for the durability of any material or method of construction. Material used on any project shall be warranted against defects and workmanship by responsible CONTRACTOR for one calendar year from date of acceptance.

SECTION 2 DEFINITIONS AND ABBREVIATIONS

2.1 BEUD: Refers to the Bentonville Electric Utility Department, under the jurisdiction of the Bentonville City Council, hereinafter referred to as "BEUD"; having full and complete authority to manage, operate, improve, extend and maintain the City electric distribution system.

2.2 CITY ENGINEER: City of Bentonville Engineer.

2.3 DIRECTOR: City of Bentonville Electric Utility Director

2.4 DEVELOPER: Industrial partnership, corporation, or other legal entity such as an improvement district, desiring to construct water and/or sanitary sewer facilities for immediate or contemplated future inclusion in the city system.

2.5 ENGINEER: Individual registered to practice Engineering in the State of Arkansas who is responsible for the preparation of reports, plans, specifications and inspection of the work herein approved.

2.6 CONTRACTOR: The person, firm or corporation with whom the DEVELOPER has entered into an agreement to construct the water, sewer, and/or electric improvements.

2.7 CITY INSPECTOR: City of Bentonville BEUD Inspector responsible for inspection and notification of proposed reconstruction or alterations and inspections involving the City of Bentonville's electric distribution system.

2.8 NORMAL WORK SCHEDULE: The City of Bentonville's normal work schedule is Monday through Friday 7:30 AM to 4:00 PM except HOLIDAYS.

2.9 HOLIDAYS: New Year's Day, Martin Luther King Day, President's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, Friday following Thanksgiving Day, Christmas Eve and Christmas Day.

2.10 SECONDARY: Conduit that is placed from transformer to secondary junction box.

2.11 SERVICE: Conduit that is place from BEUD's device to a meter panel or service connection point.

2.12 CIC: Cable in conduit - refers to primary cable pre-installed in PVC conduit.

2.13 TERMS: "As specified" shall mean as specified by the BEUD in plans, proposals, specifications, and other written instructions.

2.13.1 The term "or equal" shall mean that the proposed material or item shall perform adequately the duties imposed by the general design and is of the same or equal design, substance and junction to that specified by using the name of a product, manufacturer, or vendor. Use of the term "equal" shall mean any party proposing to substitute an "equal" shall obtain an approval from the BEUD. The BEUD shall make final approval of such items or materials judged to be "equal".

2.13.2 The term "these specifications" shall refer to the "BEUD Construction Specifications", latest revision, written by the BEUD. It is the responsibility of the CONTRACTOR, ENGINEER, DEVELOPER or OWNER, etc. to obtain copies and to comply with the latest revision of these specifications.

2.14 Abbreviations used throughout these specifications have meanings as follows:

ASTM.....American Society for Testing and Materials
ANSI.....American National Standards Institute
OSHA .....Occupational Safety and Health Administration

SECTION 3 PLANS AND SPECIFICATIONS

3.1 This section covers the requirements for submittal of plans and specifications to the BEUD in order to obtain approval for the construction and development of future electric extensions.

3.2 The BEUD strongly suggests that the ENGINEER submit proposals to the BEUD prior to formal submittal to the PLANNING DEPARTMENT.

3.3 No electric system extensions and/or modifications may be approved for connection to the City of Bentonville's electric distribution prior to approval of construction plans and specifications by the BEUD. Construction plans and specifications shall conform to the requirements herein. The submission of construction plans for approval shall be accompanied by a statement or letter from the ENGINEER stating that materials and workmanship will be in accordance with these specifications and standard details.

3.4 All plans shall be drawn to a scale suitable for adequately showing the facilities proposed, except as stipulated herein. All drawings shall be on PDF that can be printed on **24" X 36" sheets**. All elevations shall be based on mean sea level. An

overall project map shall be a minimum 24" X 36" and shall depict the entire project and show all proposed conduit and structures. A vicinity map at a scale **of 1" = 2,000'** shall be furnished indicating the location of the project in relation to arterial streets and major highways. Reduced size drawings may be allowed for inspection purposes after all approvals have been obtained.

3.5 Along with the plans, an AutoCAD file of the Utility Plan must be submitted to the BEUD. If the development is a "Subdivision", the BEUD will proceed with a design of the required electrical facilities necessary to serve the development. If the development is a "Large Scale Development", the BEUD will require information about the service size amperage and voltage rating in order to complete the design and choose a transformer and meter size. **DS 1401**

3.6 Any changes from the approved construction plans and specifications shall only be authorized in writing by the CITY ENGINEER and/or DIRECTOR or authorized representative of the BEUD prior to the start of construction. After a proposal is accepted by the BEUD, any deviations to accepted plans shall cause re-submittal to the BEUD. If construction of the electric distribution system is in progress at the time of plan changes, the BEUD reserves the right to halt construction until approval has been obtained.

3.7 Request for deviation or relief from any of the provisions of these specifications shall be submitted in writing to the DIRECTOR. The DIRECTOR may grant a variance if not in conflict with the spirit and intent of the specifications.

3.8 If request for deviation has been submitted, the requested party shall not proceed with any construction or installation of assemblies without the written permission of all applicable approving authorities.

3.9 As a minimum, design and layout shall meet the scale requirements referred to above in **Section 3.4**. In addition, the following principles shall be adhered to when submitting any utility proposal:

3.9.1 All proposed conduit, transformers, junction boxes, streetlights and other appurtenances are to be clearly represented on the plans.

3.9.2 Designated utility design sheets shall be void of contour lines or symbology that conflicts with plan review by the BEUD.

3.10 LOCATION OF BEUD FACILITIES

3.10.1 If the development is a "Subdivision", all BEUD facilities will be located on the front lot line and will be placed 8' back of ROW unless otherwise specified. All risers, transformers, junction boxes will be located on the lot lines and per the BEUD layout. Street lights will be placed at every intersection and per BEUD layout. All conduit sizes will be per the BEUD layout. **DS 1402**

3.10.2 All facilities shall be located within a Utility Easement. The easement shall be a minimum 20' in width. DEVELOPER is responsible for coordinating with the other City of Bentonville departments for location of other city utilities.

3.10.3 If the development is a "Large Scale Development", the ENGINEER will coordinate with the BEUD for the conduit size, location of the transformer, and meter requirements/location.

3.10.4 Any newly constructed structure shall be located 20' away from the face of BEUD 15KV poles and 50' away from face of 69KV/161KV poles unless BEUD approval has been obtained. Fencing must be 5'-0" away from poles.

3.10.5 **All cranes, scaffolding, and other construction equipment must maintain a minimum of 10' away from any energized 15KV overhead conductor per current OSHA standards.**

3.10.6 Contact BEUD at 479-271-3135 before performing ANY grading within 5' of existing or proposed equipment. Failure to contact BEUD will result in charges to Contractor.

3.10.7 Any vegetation must be a minimum of 10' away from the closest distribution conductor and 50' away from the closest transmission conductor.

3.10.8 Electric meter must be located in line of sight from source device.

3.10.9 Concrete/asphalt shall not be placed within 1' of pole unless approved by BEUD.

3.10.10 Residential / commercial style fences, fire hydrants, communications pedestals, and other similar devices must maintain a minimum separation of 5' from poles.

3.10.11 Service equipment must be surface mounted on building. Embedding or covering equipment is not allowed.

3.10.12 Please refer to Bentonville Subdivision Code Section 1400.12 (as currently amended), Landscaping Location and Utility Clearances, for requirements of tree plantings around buried utility lines and utility equipment.

3.11 PLAN APPROVAL

3.11.1 Construction plans shall be submitted to city departments via eTrakit.

3.11.2 These proposals shall meet approval by all officials before construction can begin. Prior to construction, the responsible ENGINEER will be required to schedule a pre-construction meeting with the ENGINEERING DEPARTMENT. The CONTRACTOR and SUB-CONTRACTORS must attend this meeting.

3.12 PREPARATION OF PLANS

3.12.1 All plans, specifications and construction procedures shall conform to the standards as established by the BEUD. All plans and specifications shall be prepared under the supervision of a professional ENGINEER registered in the State of Arkansas. The ENGINEER'S seal and signature shall be affixed to the plans before BEUD approval.

SECTION 4 INSPECTION

4.1 This section covers the requirements of inspection for the construction of electric distribution facilities for both "Subdivisions" and "Large Scale Developments".

4.2 The Responsible ENGINEER who prepared and submitted the construction plans and specifications shall be responsible for construction layout, general direction, resident inspection and final inspection as described in more detail in the following sections. Continuous project responsibility shall be an express condition of plan approval. The ENGINEER'S responsibility shall extend through final inspection approval.

4.3 All electric distribution facilities proposed shall be constructed by a licensed utility CONTRACTOR with the correct classification and inspected by the responsible ENGINEER as defined under definitions. Inspection shall consist of, but not be limited to, periodic visits to the construction site to observe the progress and quality of the executed work to determine if the work is proceeding in accordance with the approved plans and specifications and with the standards set forth by the BEUD. Any defects, deficiencies or irregularities in the work found by the ENGINEER or by the RESIDENT INSPECTOR shall be reported to the CITY INSPECTOR. Such action, as deemed appropriate, and as approved by the DIRECTOR, shall be taken to correct such deficiencies. All work performed, shall always be subject to general inspection by the DIRECTOR or representative. The frequency of visits and the number of hours required for the BEUD personnel shall be governed by the quality of inspection being performed by the ENGINEER and RESIDENT INSPECTOR.

4.4 If deemed necessary by the DIRECTOR to insure conformance with the approved plans and specifications, full time resident inspection may be required during all or

part of the project and shall be performed by qualified personnel under the direct supervision of the ENGINEER. The name(s) of the RESIDENT INSPECTOR shall be furnished to the BEUD; any changes shall be submitted to the BEUD in writing with all contact information included. It shall be the responsibility of the RESIDENT INSPECTOR to safeguard the BEUD'S interest by checking the construction work for compliance with the approved plans, specifications and other standards. The responsible ENGINEER shall provide an inspector for each location within a project that would use more than one conduit laying crew (e.g. two conduit laying crews on two different sites, two inspectors, one for each site). The CITY INSPECTOR or BEUD representative and the RESIDENT INSPECTOR shall witness all test procedures. The RESIDENT INSPECTOR shall provide a documented report of results, conditions, and time of test to the BEUD for its use and approval. If the CONTRACTOR intends to work outside of the normal work schedule or on a holiday, the RESIDENT INSPECTOR shall be required to be on the job site at all times. **See Section 2.**

4.5 ENGINEER shall call for an inspection of primary and secondary trench to ensure proper depth and bedding is placed. ENGINEER shall notify ENGINEERING DEPARTMENT 24 hrs prior to schedule the inspection.

4.6 Any defects, deficiencies or irregularities shall be reported to the ENGINEER. A job diary shall be kept, outlining all aspects of the construction project and shall be made available to the BEUD upon request.

SECTION 5 FINAL INSPECTION PROCEDURES

5.1 Before acceptance of new construction involving electric distribution systems, a physical site inspection will be scheduled by the CITY ENGINEER referred to as a "Final Inspection".

5.2 If the development is a "Subdivision", all lot corners shall be in place and witnessed by a survey marker. Said marker shall bear the number of the respective lot it represents. If lot lines do not coordinate with newly constructed utilities, it shall be the DEVELOPER'S responsibility to make the appropriate adjustments. If said situation exists at time of final inspection, approval shall be withheld until lot lines and utility locations coordinate.

5.3 CONTRACTOR shall notify BEUD a minimum of 30 days before electric facilities are required for BEUD to coordinate the work. If sufficient time is not given to BEUD, installation of electric facilities will be delayed.

5.4 CONTRACTOR shall pick up all designed material same day (no as-needed arrangements). CONTRACTOR shall give 24-hour notice for the pickup of materials. No material shall be received without the material pick up sheet properly filled out

and signed. Transformer pads must be level and the earth pad compacted to prevent settling of equipment. Conduit shall be stubbed up in the block out in the transformer pad and extend three feet (3') above finished grade and capped per Section 10.2.6 and 10.2.8.

5.5 Junction box sleeves and switchgear vaults will be installed by the CONTRACTOR at the location shown on the layout per BEUD.

5.6 Street light foundations shall be located per the BEUD layout, level, and the 2" conduit shall be located in the center of the anchor bolt circle. Refer to **DS 1415/1416** for anchor bolt pattern and orientations. DEVELOPER shall pay for streetlights before a PRECON is granted.

SECTION 6 DELINEATION OF RESPONSIBILITIES

6.1 This section covers the delineation of responsibilities between the DEVELOPER and BEUD during the construction process.

6.2 CONTRACTOR shall be always responsible for area prior to acceptance by City. CONTRACTOR shall take all precautions to prevent damage to the existing electrical distribution system by activities of other trades and utilities.

6.3 CONTRACTOR shall pick up all designed material same day (no as-needed arrangements). CONTRACTOR shall give 24-hour notice for the pickup of materials. No material shall be received without the material pick up sheet properly filled out and signed. Once materials are signed for by the CONTRACTOR, they become the responsibility of the CONTRACTOR. BEUD is not responsible for any theft or vandalism of material once received and signed for.

6.4 If the development is a "Subdivision" the DEVELOPER is responsible for the following:

- Trench, provide, and install all conduit runs (primary, secondary, and streetlight)
- Prepare dirt pad and install prefabricated concrete pads for single phase transformers (provided by BEUD)
- Install secondary pedestals (provided by BEUD)
- Install JB Comcast sleeves for any primary junction boxes (provided by BEUD)
- Prepare earth pad and pour concrete pad for any three phase transformers
- Provide and install vault for any switchgear
- Provide stub outs a minimum of 5' from transformers and secondary pedestals to future lots (marked with t post painted red)
- Provide mule tape per 20.4.8, 2' longer than stub out, secured to conduit cap.
- Provide streetlight foundations with anchor bolts, nuts, washers, and any associated streetlight conduit

- Provide 4-mil polyethylene, 3" wide detectable warning tape, red with black lettering, imprinted with "Caution-Buried Electric Cable Below" above conduits
- Cost of switchgears and streetlights

6.5 It is the CONTRACTOR'S responsibility and imperative that all devices be installed at final grade. If device is not installed final grade, final approval will NOT be given, and the CONTRACTOR shall be responsible for correcting all substandard installments.

6.6 BEUD responsible items for a "Subdivision":

- BEUD will design the layout of the development (conduit location and size, device location, street light location, etc.) during the preliminary plat process
- Once development has been inspected and accepted by BEUD and approved by CITY COUNCIL, BEUD will install wire and devices and energize equipment.
- BEUD will install street lights once they have been paid for by DEVELOPER. Street lights must be paid for before PRECON

6.7 DEVELOPER responsible items for a "Large Scale Development":

- All items applicable to "Subdivision", **See section 6.4.**
- Metering installations. Type of meter will be coordinated during the Large Scale Development Submittal Process
- DEVELOPER shall pay for 100% of the required street lights

6.8 BEUD responsible items for a "Large Scale Development":

- All items applicable to "Subdivision", **See section 6.6.**
- Meter installations. Type of meter will be coordinated during Large Scale Development Submittal Process
- BEUD will install street lights once they have been paid for by DEVELOPER. Streetlights must be paid for before PRECON.

SECTION 7 GENERAL REGULATIONS FOR CONSTRUCTION PURPOSES

7.1 This section outlines minimum construction procedures and standards for the installation of electric distribution systems.

7.2 UNDERGROUND UTILITY NOTIFICATION

7.2.1 It is the CONTRACTOR'S responsibility to notify **"Arkansas One-Call" (811)** two working days in advance of any excavation. Location of utility requests for surveying purposes will be charged to the requesting party. A notice of at least 2 full working days (normal work schedule) should be expected before locates are performed by the BEUD or BEUD contractor.

7.3 ELECTRIC OUTAGES

7.3.1 In the event that the CONTRACTOR must have the electric out of service, the CONTRACTOR shall notify the BEUD and any customers impacted of impending loss of service at least 72 hours in advance. All shutdowns shall be coordinated and scheduled by the BEUD.

7.4 TRENCH DEWATERING

7.4.1 The CONTRACTOR shall install dewatering systems as necessary that will be required to construct the proposed utilities in a manner that will prevent groundwater contamination. Must meet current City of Bentonville Storm Water Regulations.

7.5 LOCATION, ALIGNMENT AND GRADE

7.5.1 The conduit, junction boxes, switchgears, transformers, streetlights, and other appurtenances shall be constructed to conform to the location, line size, material, and grades specified or as shown on the Plans.

7.5.2 Horizontal and vertical control points will be established along or adjacent to the construction area. It shall be the responsibility of the CONTRACTOR to make necessary measurements from these control points in order to maintain the proper alignment and grade of the structures. The CONTRACTOR shall preserve all stakes and markers established by the ENGINEER.

7.6 PUBLIC TRAVEL

7.6.1 The CONTRACTOR shall plan and execute the work to assure minimal interference with normal flow of traffic and pedestrians.

7.6.2 The CONTRACTOR shall be responsible for making provisions for the safe and free passage of persons and vehicles over or around the construction site, both during and after working hours. Such provisions shall be satisfactory with the BEUD, State, County or local authority having jurisdiction within the area of work.

7.6.3 The CONTRACTOR shall notify applicable State, County or local authority before closing or obstructing any public highway, street or road. When state highways that are within the City of Bentonville are to be blocked or obstructed, the CONTRACTOR shall obtain an approved barricade plan from the authority having jurisdiction so that any traffic can be maintained over any construction work in a public highway, street or road. If traffic cannot be maintained on the alignment of the original roadbed or pavement, the CONTRACTOR shall maintain a detour around the construction area. Such detours shall be satisfactory with the BEUD, State, County or local authority.

7.6.4 The CONTRACTOR shall provide and maintain necessary barricades, signs, lights, personal safety equipment, and markers around the construction area to avoid any property damage or personal injury. The CONTRACTOR shall also provide qualified flagmen to direct traffic while working upon a highway, street or road over which traffic must pass.

7.6.5 Excavated areas within the traffic lanes of highways, streets or roads and pedestrian walkways shall be backfilled and compacted with SB2 immediately following conduit installation and the area opened to traffic. Repairs shall be made according to current City of Bentonville Street specifications.

7.6.6 The CONTRACTOR shall make the same provisions as described in **Section 7.6.2** for the passage of vehicular and pedestrian traffic between private property and public highways, streets and roads or other provisions that are satisfactory to the BEUD and the property owners involved.

7.7 SURFACE & SUBSURFACE STRUCTURES LOCATION AND PROTECTION

7.7.1 The BEUD does not guarantee the accuracy or correctness of locations of subsurface structures. It shall be the responsibility of the CONTRACTOR to satisfy himself as to the actual location and nature of subsurface structures.

7.7.2 The CONTRACTOR shall make necessary exploratory excavations to determine the location of underground structures such as pipes, drains, conduits, and other structures. The CONTRACTOR shall be responsible for contacting the respective utility of such structures before excavating in the vicinity of these structures and shall be guided by their instructions.

7.7.3 The CONTRACTOR shall provide adequate protection and support for all surface and subsurface structures or other facilities encountered during the progress of the work. Whenever such structures or facilities are in the same location as the proposed conduit or appurtenances thereto, the CONTRACTOR shall relocate or reconstruct or cause to be relocated or reconstructed, the structure or facility to the satisfaction of the BEUD and utility facility owner. Whenever requested by the BEUD or utility owner, the CONTRACTOR shall provide drawings and other plans for supporting or otherwise safeguarding surface and subsurface structures or other facilities which, in the opinion of the BEUD, or utility or facility owner, may be damaged as a result of the CONTRACTOR'S work.

7.7.4 The CONTRACTOR shall not stop or impede the flow in any pipe, sewer, surface or subsurface drain without making provisions for diverting the flow to the satisfaction of the BEUD.

7.7.5 If any utility facility or structure is damaged during the progress of the work, the CONTRACTOR shall immediately notify the appropriate owner. Repairs shall not be made by the CONTRACTOR without the prior approval of the utility facility or structure owner. The CONTRACTOR shall pay utility owners for the cost of repairing, relocating or replacing any facilities damaged by the CONTRACTOR. In addition, the CONTRACTOR shall provide all assistance available to the utility involved in making repairs under emergency conditions.

7.7.6 The CONTRACTOR shall not open any BEUD device.

7.7.7 All existing transformers, junction boxes, services, and appurtenances shall be blocked or tied in such manner so as to prevent displacement before excavating around these appurtenances.

7.8 PROTECTION OF VEGETATION

7.8.1 The CONTRACTOR shall not remove or disturb any vegetation except that required for the execution of the work.

7.8.2 Unless otherwise specified in these specifications or in the plans, the CONTRACTOR shall replace all sod, shrubs, bushes, trees, and flowers disturbed or removed, that are located upon improved or landscaped public and private property. The CONTRACTOR shall replant vegetation and re-landscape or cause such to be

performed throughout the work area as soon as possible after work is complete. All vegetation damaged during or after removal shall be replaced with healthy vegetation of the same kind or type. All plants shall be replanted in the original location. The CONTRACTOR shall maintain all such replanted vegetation by the application of water, fertilizers, and topsoil. The vegetation shall be cultivated to prohibit the growth of foreign vegetation until a "well developed" root system has been established and transplanted vegetation has overcome the "shock" resulting from transplanting. If any vegetation dies or becomes unhealthy, it shall be replaced by the CONTRACTOR. The contour of the ground shall be left as near the original contour as possible.

7.8.3 The CONTRACTOR shall stabilize all areas where ground surface has been disturbed by electric distribution construction activities to as good or better condition. The BEUD shall approve the method of stabilization.

7.9 EXCAVATION AND PREPARATION OF TRENCH

7.9.1 The CITY INSPECTOR and "Arkansas One-Call System" shall be contacted before excavation shall begin.

7.9.2 All trench excavation side walls greater than 5' in depth shall be sloped, shored, sheeted, braced or otherwise supported by means of sufficient strength to protect the workers within them in accordance with the applicable rules and regulations established for construction by OSHA.

7.9.3 The trench shall be excavated to the alignment and grade specified and only so far in advance of the conduit placement as the BEUD shall permit. Trenches along public streets or roads shall be limited to 300' or less, or as permitted by the governmental authority having jurisdiction. The BEUD may reduce this limit in congested areas.

7.9.4 All trenches shall be backfilled immediately after proper installation of the conduit, warning tape, embedment, and appurtenances.

7.9.5 The trench width may vary and depend upon the depth and the nature of the excavated material encountered. The trench shall be of ample width to permit the conduit to be laid and connected properly and the backfill to be placed and compacted properly. Boulders, large stones, and other rock formation shall be removed to provide a clearance of at least 6" on each side of conduit.

7.9.6 The bottom of the trench shall be prepared to provide a uniform and continuous bearing and support for the conduit on solid undisturbed or compacted soil. **DS-1403/1404**

7.9.6.1 When the bottom of the trench is at sub-grade and is found to be unstable or includes ashes, cinders, refuse, other organic material, or large pieces of inorganic material,

that, in the judgment of the BEUD, should be removed, the CONTRACTOR shall remove all such material to the extent required by the BEUD.

7.9.6.2 When the excavation is carried below or beyond that specified or required due to conditions described in **Section 7.9.6.1**, the CONTRACTOR shall backfill the trench to the proper grade with approved backfill material specified by the BEUD, unless permitted by the BEUD to install the lines and appurtenances at the undercut grade. The backfill shall be accomplished in accordance with that specified by the DEPARTMENT or elsewhere herein.

7.9.7 The use of trench-digging machinery will be permitted except in places where operations of same will cause damage to trees, buildings, or other existing structures above or below the ground; in which case hand methods shall be employed.

7.9.8 Blasting for excavation will be permitted only after the CONTRACTOR secures the approval of the Fire Department and BEUD, and only when proper precautions are taken for the protection of persons and property. The Fire Department will approve the hours of blasting. Any damage caused by blasting shall be repaired by the CONTRACTOR at their expense. The method of transporting, handling, and storage of explosives and blasting procedure shall conform to Federal Regulations, local and state laws, municipal ordinances and shall be approved by the Fire Department in advance.

7.9.9 The CONTRACTOR shall comply with all federal, state and local laws or ordinances with respect to obtaining permits, the deposit of bonds, and all other provisions of such laws and ordinances.

7.9.10 In order to prevent caving when excavating in sand, gravel, sandy soil, or other unstable material the trench shall be adequately sheeted and braced. Where sheeting and bracing is used, the trench width may be increased accordingly. Trench sheeting shall remain in place until the conduit has been laid and jointed. Where slides or cave-ins occur, the CONTRACTOR shall, at his expense, provide proper bedding and support for the conduit to maintain line and grade.

7.9.11 All excavated material stored on the job site shall be stockpiled in a manner which will avoid blocking driveways, streets or sidewalks, and will not endanger workers, pedestrians or travelers. Gutters shall be kept clear or other satisfactory provisions shall be made for street drainage. If local conditions permit their re-use, all surface materials suitable for re-use in restoring the surface shall be kept separate from the general excavation material. Excess material and debris shall be removed promptly.

7.9.12 The CONTRACTOR shall remove the minimum amount of street, driveway, sidewalk, parking lot, or other pavement required to permit installation of the lines or appurtenances as approved and scheduled with the BEUD. The City of Bentonville

Street Department shall require a saw cut for all pavement surfaces in straight lines before removal by the CONTRACTOR.

7.9.13 The CONTRACTOR shall maintain all temporary surfaces in good condition until permanent repairs are complete.

7.10 BORING REGULATIONS AND PROCEDURES

7.10.1 The CONTRACTOR shall inspect the location where encasement structures are to be installed and become familiarized with the conditions under which the work will be performed and with all necessary details as to the orderly prosecution of the work. The omission of any details in the Plans and Specifications for the satisfactory installation of the work in its entirety, which may not appear herein, shall not relieve the CONTRACTOR of full responsibility.

7.10.2 The CONTRACTOR shall satisfy themselves of soil conditions by means they deem necessary; i.e., exploratory boring or exploratory pit excavations at tunnel ends. All such exploratory work shall be done in such a manner as to not jeopardize highway or railroad fill, and shall be satisfactorily backfilled and restored.

7.10.3 The size structure as shown on the Plans is considered as the "minimum acceptable size". If the CONTRACTOR deems that it would be to his advantage to install a larger structure, he may do so subject to the approval of the BEUD.

7.10.4 Encasement structures shall be installed at the grades and alignment shown on the Plans. Deviation shall be permitted only on approval of the BEUD.

7.10.5 When indicated by drawings and specifications, all street, road and highway crossings for water, sewer, or electric installed by the jacking and boring methods shall be in accordance with AHTD standards. Permits for all bores shall be obtained through the Street Department. Refer to permits and licenses S**ection 7.10.12**

7.10.6 Excavation of approach pits and trenches within right-of-way of street, road or highway shall be of sufficient distance from paving to permit traffic to pass without interference. Tamp backfill for approach pits and trenches within right-of-way in layers not greater than 6" thick for entire length and depth of trench or pit. Compact backfill to 95% of maximum density obtained at optimum moisture as determined by **AASHTO T 180-57, Method A**. Mechanical tampers may be used after cover of 12” to 18" has been obtained over top of conduit.

7.10.7 All holes bored shall be bored to proper alignment and grade to within 2" of same diameter as largest outside joint diameter of conduit installed. All conduits shall be installed immediately after a bore has been completed. In no instance shall a bore hole be left open while unattended.

7.10.8 In the event subsurface operations or any other construction operation results in failure or damage to pavement or any other City of Bentonville utility appurtenance, the CONTRACTOR shall repair or replace disturbed or broken area or utility appurtenance at no cost to the City of Bentonville.

7.10.9 Steel casing welds shall be full penetration single butt-welds in accordance with **AWWA C-205 and AWS D7-0-62**.

7.10.10 CONTRACTOR shall use Polywater Bonduit conduit adhesive for any HPDE to PVC joints. Use of PVC to HDPE quick connect coupling is acceptable if first approved by BEUD.

7.10.11 HDPE pipe shall be SDR 13.5 or equivalent. Any other sizes or types must be approved by BEUD prior to use.

7.10.12 Contact BEUD Street Department at (479) 271-3130, option 1 to obtain a Right-of-Way permit for any work that takes place in the City of Bentonville Right-of-Way. Please allow 48 hours for review and additional fees may be required.

7.11 WORK PERFORMED BY BEUD

7.11.1 See **Section 6** for the delineation of work preformed by the CONTRACTOR and work preformed by BEUD.

7.11.2 If damage occurs to the existing electric distribution systems during construction, the BEUD, with its labor forces, will make all repairs to these systems. The CONTRACTOR shall be responsible for reimbursing BEUD for the cost of labor, equipment, materials and overhead.

7.11.3 If the BEUD assists the CONTRACTOR for any reason, the CONTRACTOR shall pay for the cost of this assistance, based on the cost of labor, equipment, materials and overhead.

7.12 CONFINED SPACES

7.12.1 The CONTRACTOR'S attention is called to the requirements for entry into confined spaces as defined by the Current Edition of the **OSHA Standard for Permit Required Confined Spaces, 29 CFR 1910, and Subpart J, which is specifically incorporated herein by reference.**

7.12.2 CONTRACTOR'S responsibilities for entry into any Permit Required Confined Space are:

(a) CONTRACTOR shall obtain from BEUD any available information regarding any hazards of entry operations for a Permit Required Confined Space.

(b) When both BEUD and CONTRACTOR'S personnel are to work in or near a Permit Required Confined Space, CONTRACTOR shall coordinate such work with BEUD (as required in **29 CFR 1910, Subpart J**).

(c) CONTRACTOR shall inform BEUD of type of Permit Required Confined Space Program used by his employees.

(d) CONTRACTOR shall inform BEUD of any hazards confronted or created in a Permit Required Confined Space.

(e) CONTRACTOR is responsible for having knowledge of and complying with all requirements of **29 CFR 1910, Subpart J**.

7.13 PUBLIC EMPLOYEES RIGHT TO KNOW ACT

7.13.1 The CONTRACTOR'S attention is called to the requirements of the **Hazard Communication Standard adopted by OSHA in 29 CFR 1910.1200 and State of Arkansas Act 556 of 1991, Ark. Code Ann. Sec 8-7-1101 et. Seq.: Public Employees Chemical Right to Know Act**.

7.13.2 The CONTRACTOR shall provide to the BEUD a list of all hazardous chemicals and a copy of appropriate Material Safety Data Sheet (MSDS) brought onto property. This information shall be supplied to the BEUD prior to any work being started.

7.13.3 The BEUD will provide the CONTRACTOR a list of hazardous chemicals at any City of Bentonville facility where work is being performed. The location and MSDS information prior to work being started will be provided. The CONTRACTOR will be responsible for disseminating the information to its employees.

7.13.4 The CONTRACTOR is reminded that other obligations are imposed upon employers by the above Standard and Act.

7.14 CLEAN-UP OF JOB SITES

7.14.1 The CONTRACTOR shall remove all materials, equipment, tools, temporary structures, barricades, trees and other vegetation that have been cut or have died as a result of the work from both public and private property along the job site. There shall be no burning on the job site unless approved, in advance, by the Fire Department.

SECTION 8 GENERAL INSTALLATION INFORMATION AND PROCEDURES

8.1 The purpose of this specification is to outline the minimum requirements for the installation electric distribution systems.

8.2 CONDUIT EMBEDMENT

8.2.1 This section covers materials used for embedment of Primary, Secondary and CIC Conduit.

8.2.2 Unless otherwise specified herein or shown on the plans, embedment materials shall be restricted to **Class #67** type bedding.

8.2.3 For PRIMARY conduit, total cover shall be 48” from top of conduit to finished grade. Primary ditch shall have 6” of bedding directly over conduit and 4” of bedding below conduit.

8.2.4 For SECONDARY conduit, total cover shall be 24” from top of conduit to finished grade. Secondary ditch shall have 6” of bedding directly over conduit. Bedding is not required below secondary conduit.

8.2.5 For CIC applications, total cover shall be 48” from top of conduit to finished grade. CIC ditch shall have class 67 bedding 6” directly over conduit and 4” directly under conduit with the option of 18” of class 67 on top of CIC to ribbon.

8.2.6 CONTRACTOR must provide proof of material to match required specifications.

8.3 COMPACTION

8.3.1 All conduit backfill and soil under transformer pads shall be placed in layers of appropriate thickness and compacted using a mechanical, hydraulically-powered vibratory trench compactor or other equivalent equipment. Trench or transformer earth pad backfill is subject to density test as deemed necessary.

8.3.2 In areas where the trench crosses a street, parking lot or driveway, SB-2 crushed stone trench backfill shall be compacted to a minimum of 95% of that of the adjacent soils. **(ASTM D1557-78)**. A minimum of one compaction test per crossing is required.

8.3.3 Ditch line compaction shall follow immediately after trench backfill. Topsoil shall be placed and shaped leaving the ditch line slightly rounded above existing grade.

SECTION 9 ELECTRIC DISTRIBUTION SYSTEM GENERAL INFORMATION

9.1 All trenching shall comply with federal, state, and local regulations.

9.2 All primary conduit runs shall have a minimum of 48" of cover from the top of conduit to final grade. All secondary and streetlight conduits shall have a minimum of 24" of cover from the top of conduit to final grade. **DS 1403 & 1404**

9.3 When 48" depth for primary conduit cannot be achieved due to field conditions, red dyed concrete shall be installed around the full length of conduit that cannot achieve proper depth. Refer to 10.11.9 for full specifications regarding red dyed concrete.

9.4 4-mil polyethylene, 3" wide detectable warning tape, red with black lettering, imprinted with "Caution – Buried Electric Cable Below" shall be placed 18" above primary conduit and 12" above secondary conduit.

9.5 Trench shall be excavated at the location indicated on BEUD's approved electrical design drawing(s). In certain instances, BEUD may choose to stake the trench location at the site.

9.6 BEUD will not accept responsibility for any trenching done prior to obtaining BEUD's approved electric design drawing(s) and/or field indication of the trench location.

9.7 The DEVELOPER must notify BEUD of the schedule for trenching and backfilling to coordinate cable installation by BEUD.

9.8 Transformers shall be located in accordance with applicable insurance regulations and fire codes. **DS 1410**

SECTION 10 ELECTRIC DISTRIBUTION MATERIALS

10.1 These material specifications are intended to set a standard of quality and design for all materials used in the construction of electric distribution and appurtenances. Materials shall be of types listed in these specifications. Materials not specifically authorized in these specifications are forbidden for use in the system unless prior approval is obtained in writing from the DIRECTOR.

10.2 CONDUIT

10.2.1 Developer shall provide and install the conduit in accordance with the layout provided on BEUD's approved electrical layout drawings. Any changes to the layout must be approved by DIRECTOR in writing prior to installation.

10.2.2 The size and number of conduits shall be specified on the layout drawings. All conduits shall be furnished and installed by the CONTRACTOR. Additional conduits may be required for the occupancy of the other utilities.

10.2.3 All conduit runs shall be schedule 40, electrical grade, rigid PVC, nonmetallic and of standard trade size (2", 3", 4", 5" or 6").

10.2.4 Primary Conduit elbows must be long sweep. Secondary Conduit elbows must be short sweep.

Minimum Radius Sweep

Conduit Size	Primary	Secondary
2"	NA	9.5"
3"	48"	13"
4"	48"	16"
5"	60"	NA
6"	60"	NA

10.2.5 Conduit shall be run in a straight and level path. There shall be no abrupt changes in conduit direction, (elevation or sideways) except for bends at pad mounted equipment and for turning-out service lateral conduits to lots or as required per the electric layout. Spacers shall be used where necessary to maintain direction, plumb or spacing of conduit.

10.2.6 All joints are to be cemented and both ends of the run are to be capped (but not glued) with industry approved PVC cap (NO DUCT TAPE) to ensure the conduit remains clean and dry. The ends shall be marked at a point above final grade with a t-post painted red.

10.2.7 A 1,250-lb mule tape shall be installed by the CONTRACTOR for BEUD use in ALL bore pipe installations and ALL conduit runs 600 ft and over. Mule tape shall be secured on each end of the run. CONTRACTOR shall correct any failure of the mule tape.

10.2.8 When mule tape is provided, approved conduit cap shall be Cantex poly plug with pulling eye (Part #5315258 – 2", 5315260 – 3", 5315262 – 4"). Secure mule tape to pulling eye on conduit cap before placing cap on conduit. For all other conduits, provide conduit caps per 10.2.6

10.2.9 CONTRACTOR shall pull a mandrel through each conduit to check and clear blockage. Mandrel shall be furnished by CONTRACTOR.

10.2.10 All primary conduits and stub-ups shall be identified with red spray paint before backfill of ditches and stub-ups shall be 90° to the ground. **DS 1419C**

10.2.11 For applications approved and designed by BEUD, CIC conduit may be installed for PRIMARY. The following are guidelines that determine feasibility to use CIC

- Single phase applications only
- Maximum length of 600' between devices
- Contractor must have personnel on site available to assist with CIC installation.
- Contractor must provide one week's notice to schedule BEUD to install CIC.
- 6", schedule 80 sleeves for all road crossings extending to both ends of ROW

10.2.12 No heated bends shall be used in any run of primary or secondary conduit.

10.3 SINGLE PHASE TRANSFORMER PADS LESS THAN 100 KVA

10.3.1 CONTRACTOR shall pick up all designed material same day (no as-needed arrangements). CONTRACTOR shall give 24-hour notice for the pickup of materials. No material shall be received without the material pick up sheet properly filled out and signed.

10.3.2 Soil (or Class 67 bedding) beneath transformer pad shall be properly compacted to prevent settling of equipment. CONTRACTOR is responsible for ensuring level pads are prepared.

10.3.3 Transformer pad opening shall face the street. From the street side, primary conduit shall be stubbed up in the opening on the right-hand side and secondary conduit shall be stubbed up in the opening on the left-hand side. Conduits shall extend three feet (3') above finished earth grade and capped (but not glued) off to prevent debris from entering conduit. Only approved conduit caps will be allowed (NO DUCT TAPE). **DS 1405 & 1406**

10.3.4 CONTRACTOR shall stub out service conduits a minimum of 5' from transformer in the direction of future structure. See detail **DS-1405** for minimum distance stub out shall be located from property line. Provide mule tape per 20.4.8, 2' longer than stub out, secured to conduit cap. Conduits shall be marked below grade with a red t-post. Refer to Sec. 6.4

10.3.5 There shall be a 120" x 42" clear work area on the access side of the transformer.

10.3.6 BEUD will provide and install transformer and associated wiring / terminations, unless otherwise CT metered.

10.4 SINGLE PHASE TRANSFORMER PADS 100 KVA AND LARGER

10.4.1 CONTRACTOR shall pick up all designed material same day (no as-needed arrangements). CONTRACTOR shall give 24-hour notice for the pickup of materials. No material shall be received without the material pick up sheet properly filled out and signed.

10.4.2 Soil (or Class 67 bedding) beneath transformer pad shall be properly compacted to prevent settling of equipment. CONTRACTOR is responsible for ensuring level pads are prepared. **DS 1405**

10.4.3 Transformer pad opening shall face street. From street side, primary conduit shall be stubbed up in the opening on the right-hand side and secondary conduit shall be stubbed up in the opening on the left-hand side. Conduits shall extend three feet (3') above finished earth grade and capped (but not glued) off to prevent debris from entering conduit. Only approved conduit caps will be allowed (NO DUCT TAPE). **DS 1405 & 1407**

10.4.4 CONTRACTOR shall stub out service conduits a minimum of 5' from transformer in the direction of future structure. See detail DS-1405 for minimum distance stub out shall be located from property line. Provide mule tape per 20.4.8, 2' longer than stub out, secured to conduit cap. Conduits shall be marked above grade with a red t-post. Refer to Sec. 6.4

10.4.5 There shall be a 120" x 48" clear work area on the access side of the transformer.

10.4.6 BEUD will provide and install transformer and associated wiring / terminations unless otherwise CT metered.

10.5 45-1000 kVA THREE PHASE TRANSFORMER PADS

10.5.1 CONTRACTOR shall supply an 84" x 96" x 18" thick reinforced concrete pad with a 54" x 18" opening. **DS 1408**

10.5.2 Soil (or Class 67 bedding) beneath transformer pad shall be properly compacted to prevent settling of equipment. CONTRACTOR is responsible for ensuring level pads are prepared.

10.5.3 All concrete forms and related conduits must be inspected prior to pouring. CONTRACTOR shall call ENGINEERING DEPARTMENT 24 hours in advance to schedule an inspection.

10.5.4 Concrete pad must be a slick finish. A broom finish will not be accepted.

10.5.5 Primary conduit shall be stubbed up in the opening on the primary side (left) and secondary conduit shall be stubbed up in the opening on the secondary side (right) (compartments are not equal size). Conduits shall extend three feet (3') above finished earth grade and capped (but not glued) off to prevent debris from entering conduit. Only industry approved conduit caps will be allowed (NO DUCT TAPE). **DS 1408**

10.5.6 CONTRACTOR shall provide a 12" long #4 rebar stubout in the terminal compartment.

10.5.7 All forms or lifting eyes, inside and out, are required to be removed upon completion.

10.5.8 Finished grade shall be 3" below the top of the transformer pad and graded away from the pad.

10.5.9 There shall be a 120" x 84" clear work area in front of doors of the transformer.

10.5.10 BEUD will provide and install transformer and associated wiring / terminations. If CT Metered, see Metering Section for delineation of responsibilities.

10.6 1500-2500 kVA THREE PHASE TRANSFORMER PADS

10.6.1 CONTRACTOR shall supply an 84" x 96" x 18" thick reinforced concrete pad with a 58" x 18" opening. **DS 1409**

10.6.2 Soil (or Class 67 bedding) beneath transformer pad shall be properly compacted under to prevent settling of equipment. CONTRACTOR is responsible for ensuring level pads are prepared.

10.6.3 All concrete forms and related conduits must be inspected prior to pouring. EOR shall call ENGINEERING DEPARTMENT 24 hours in advance to schedule an inspection.

10.6.4 Concrete pad must be a slick finish. A broom finish will not be accepted.

10.6.5 Primary conduit shall be stubbed up in the opening on the primary side (left) and secondary conduit shall be stubbed up in the opening on the secondary side (right) (compartments are not equal size). Conduits shall extend three feet (3') above finished earth grade and capped (but not glued) off to prevent debris from entering conduit. Only approved conduit caps will be allowed (NO DUCT TAPE). **DS 1409**

10.6.6 CONTRACTOR shall provide a 12" long #4 rebar stubout in the terminal compartment.

10.6.7 All forms or lifting eyes are required to be removed upon completion.

10.6.8 Finished grade shall be 3" below the top of the transformer pad and graded away from the pad.

10.6.9 There shall be a 120" x 84" clear work area in front of doors of the transformer.

10.6.10 BEUD will provide and install transformer and associated wiring / terminations. If CT Metered, see Metering Section for delineation of responsibilities.

10.7 SWITCHGEAR VAULTS

10.7.1 CONTRACTOR shall provide and install a 116" x 76" x 72" deep reinforced concrete box, with a 126" x 86" x 12" deep (with a 90" x 50" opening centered in the footing) reinforced footing. Footing shall be reinforced with #4 @ 12" each way. **DS 1420**

10.7.2 Class 67 bedding shall extend from the bottom of vault holes (to support the conduit entering the vault) to 12" below concrete footing.

10.7.3 CONTRACTOR shall install sealant between foot and bottom section of vault as well as between top and bottom section of vault to help prevent moisture from entering vault.

10.7.4 Finished grade shall be 6" below the top of the vault and the surrounding area must be graded to drain away from the vault.

10.7.5 Vault holes shall be 8” diameter and arranged per **DS 1420**. Developer shall individually cover unused conduit holes with partition blocks on the outside of vault and spray foam in 8" diameter hole on the inside. No industrial adhesive will be allowed to secure blocks to vault.

10.8 JUNCTION BOX SLEEVES

10.8.1 All primary junction boxes, single phase or three phase, require a Concast sleeve to be installed under the equipment. **DS 1411 - 1413**

10.8.2 CONTRACTOR shall pick up all designed material same day (no as-needed arrangements). CONTRACTOR shall give 24-hour notice for the pickup of materials. No material shall be received without the material pick up sheet properly filled out and signed.

10.8.3 Location of the concrete sleeves shall be placed per BEUD’s approved layout.

10.8.4 Finished grade shall be 3” below the top of the vault and the surrounding area must be graded to drain away from the vault.

10.8.5 There shall be a 120” x 78” clear work area in front of door side of the junction box.

10.8.6 BEUD will provide and install junction boxes and associated wiring / terminations.

10.9 SECONDARY PEDESTALS

10.9.1 CONTRACTOR shall pick up all designed material same day (no as-needed arrangements). CONTRACTOR shall give 24-hour notice for the pickup of materials. No material shall be received without the material pick up sheet properly filled out and signed. **DS 1414**

10.9.2 Pedestals shall be buried to the fill line (17”) from the base of the pedestal.

10.9.3 Conduit shall be cut off below access panels on the back of the secondary pedestal to allow room for training wire to terminal blocks of pedestal to allow installation of temporary services.

10.9.4 Backfill around secondary pedestal base must be class 67 stone. 4” of topsoil must be placed on top of the class 67 stone.

10.9.5 CONTRACTOR shall stub out service conduits a minimum of 5’ from pedestal in the direction of future structure. See detail **DS-1414** for minimum distance stub out shall be located from property line. Provide mule tape per 20.4.8, 2’ longer than stub out,

secured to conduit cap. Conduits shall be marked above grade with a red t-post. Refer to Sec. 6.4

10.10 STREET LIGHT FOUNDATIONS

10.10.1 CONTRACTOR will install streetlight foundations according to the BEUD's approved electrical design layout.

10.10.2 If the development requires "Residential Street Lights", the foundations shall meet the following requirements:

- Streetlights will be placed at most intersections, at mid-block, and where specified by BEUD
- Street lights will be placed in the center of the 5-foot green space, or 30" behind back of curb on lot line to center of light base.
- Streetlight foundations shall be installed per **DS 1415**

10.10.3 If the development requires "Commercial Street Lights", the foundations shall meet the following requirements:

- Street lights will be placed at most intersections, and where specified by BEUD.
- Street lights will be placed in the center of the 5-foot green space, or 30" behind back of curb on lot line.
- Streetlight foundations shall be installed per **DS 1416**

10.10.4 In cases where BEUD deems that it is not possible to install the 22' decorative poles due to clearance issues with existing overhead powerlines, the City will provide a cobra head fixture on a wood pole at no cost to the developer.

10.10.5 Any exceptions, alterations or variances to the street light standards and specs must be pre-approved by DIRECTOR.

10.11 CONCRETE STANDARDS

10.11.1 All concrete shall be 3,500 psi at 28 days. 1:2:4 mixture with 6 gal. max water content per sack of cement.

10.11.2 Portland Cement conforming to **ASTM C150, Type 1**, shall be used unless BEUD approves the use of other types.

10.11.3 Water used shall be clean and free from injurious amounts of oil, acids, alkalis, salt, organic matter, or other deleterious substances.

10.11.4 Fine aggregate shall consist of clean, sound, properly graded sand conforming to **ASTM Standard C33 uniformly graded from 100% passing the 3/8" sieve to not more than 8% passing the Number 100 sieve**.

10.11.5 Coarse aggregate shall conform to **ASTM Standard D289**. Coarse aggregate may be either of two sizes, 1 ½" and smaller or ¾" and smaller.

10.11.6 Reinforcing shall be #4 at 12" each way, with a 12" #4 stubout in the terminal compartment for grounding.

10.11.7 Top of foundation to be a minimum 3" above finished grade and troweled to a slick finish. A broom finish will NOT be allowed.

10.11.8 All forms shall be removed before electric items are placed.

10.11.9 Red colored concrete encasement (when conduit depth for primary or secondary cannot be achieved) shall utilize a red pigment integrally mixed into the concrete. Refer to **DS-1404**

10.11.9.1 Dry shake or broadcast coloring agents are not to be used.

10.11.9.2 To achieve a "red" concrete using red dye (iron oxide), a mixture of 100 pounds per 8 cubic yards of concrete is required.

10.11.9.3 Provide 6" of concrete over primary conduit and extend 6" to either side of conduit.

10.11.9.4 Provide 6" of concrete over secondary/service conduit and extend 6" to either side of conduit.

10.12 RETAINING WALLS LESS THAN 3 FT.

10.12.1 Retaining walls will be required around BEUD devices if slope within 5' of equipment changes more than 12" vertically, or there is a substantial vertical increase or decrease in elevation at the 5' boundary. This is per BEUD discretion.

10.12.2 All retaining walls installed around BEUD equipment must be approved by BEUD Engineering, even if not for BEUD Equipment.

10.12.3 Details are to be included in the Civil set of drawings stamped for Construction.

PART II

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SECTION 20 GENERAL INFORMATION

20.1 GENERAL NOTES

20.1.1 Where conflicts exist between this document and other applicable codes, the more stringent document shall apply.

20.1.2 Bentonville Electric Utilities Department will be referred to as BEUD throughout the remainder of this document.

20.1.3 Bentonville Building Inspections Department will be referred to as BI throughout the remainder of this document.

20.1.4 CONTRACTOR and CUSTOMER shall be interpreted as being interchangeable throughout the remainder of this document.

20.1.5 Contact Information for relevant departments / individuals:
a. BEUD – (479) 271-3135
b. BI – (479) 271-3125
c. Warehouse – (479) 271-3145
d. New Service Coordinator – (479) 271-3139

20.1.6 All work to be in accordance with latest version of National Electric Code and all City of Bentonville codes.

20.1.7 BEUD reserves the right to deem any rework of an existing installation acceptable based on existing field conditions.

20.1.8 Before beginning any underground work in the City of Bentonville, contact Arkansas One Call at 811 for locates of existing underground utilities.

20.1.9 All service-related inspections to be scheduled by BI (479-271-3125). BEUD will inspect and approve all yard lines, ditches, and temporary / permanent meter bases. BEUD will only set meter after approval of all inspections.

20.1.10 If service fails inspection, a red sticker will be applied to indicate need for re-inspection. Refer to **Section 20.6** for re-inspection fees.

20.1.11 Contact New Service Coordinator at 479-271-3139. Contractors are required to set up an on-site meeting prior to beginning work for any work on a service.

20.1.12 A licensed electrician shall perform all work.

20.1.13 The minimum size meter base allowed by BEUD for permanent service is 200A (a 100A main breaker in a 200A meter base is acceptable.)

20.2 GROUNDING

20.2.1 All non-current carrying metallic parts to be effectively grounded.

20.2.2 CUSTOMER to furnish and install two (2) 5/8" x 8' driven ground rods, copper or copper clad in two (2) locations per NEC 250.53(A)(2). A UFER ground is an acceptable alternative to installing one (1) of the two (2) required ground rods. The UFER connection must be located adjacent to meter/main combo. The exposed UFER conductor is required to be a 5/8" x 8' copper/copper clad ground rod or #4 bare copper conductor. UFER ground must be ground rod or #4 bare copper. Rebar is not acceptable as a UFER grounding conductor unless approved by BEUD prior to installation.

20.2.3 Upper ends of ground rods shall be located 6" below grade but must be accessible for inspection. Ground rods shall be covered after inspection.

20.2.4 Ground rods shall be installed a maximum of 18" away from building veneer.

20.2.5 Connections to ground rods shall be made with 5/8" copper ground rod clamps. Clamps must be UL listed for direct burial in earth or concrete.

20.2.6 Ground rods to be connected by one continuous solid copper wire. For all structures, top of ground rods are to be driven a minimum of 6" below final grade. Ground rods shall not be covered until after inspection.

20.2.7 Grounding conductor must be installed in conduit from meter to ground level.

20.2.8 Supply minimum grounding conductors from service to ground rod as follows:

a. All temporary services require a #6 solid copper grounding conductor.
b. 200A service requires #6 solid copper grounding conductor
c. 400A service requires #4 solid copper grounding conductor
d. CT Metered service requires #6 solid copper grounding conductor
e. Stranded is acceptable for #2 and greater copper grounding conductors
f. Grounding conductor must be continuous.

20.3 TRENCH

20.3.1 All primary conduit runs shall have a minimum of 48" of cover from the top of conduit to final grade.

20.3.2 All service/secondary conduits shall have a minimum of 24" of cover from the top of conduit to final grade.

20.3.3 Provide 4-mil polyethylene, 3" wide warning tape, red with black lettering, imprinted with "Caution-Buried Electric Cable Below" placed 18" above primary conduit and 12" above service/secondary conduit.

20.3.4 BEUD will not accept responsibility for any trenching done prior to obtaining BEUD's approval of the trench location.

20.3.5 Minimum width of any trench for primary conduit shall be 12"

20.3.6 With BEUD approval, if the terrain is rock, the minimum depth can be reduced to sixteen (16) inches with six (6) inches of concrete cover. Any concrete used as backfill must be dyed red, and trench must be inspected by BEUD before pouring. Refer to **Section 10.11.9** and **DS-1404**.

20.4 CONDUIT

20.4.1 All conduit installed above grade as part of the service entrance must be schedule 80. All other conduit shall be schedule 40, electrical grade, rigid PVC, and non-metallic.

20.4.2 CONTRACTOR to provide and install all conduits from meter base to BEUD source point.

20.4.3 CONTRACTOR shall NOT install conduit to a pole until a standoff is installed by BEUD.

20.4.4 CONTRACTOR will provide conduit based on the following table:

Service Size	Conduit Size Provided by CONTRACTOR
100A (Irrigation, Sign, CATV, TELCO, BEUD approved use)	2"
200A	3"
200A (more than 3 sweeps)	4"
400A	3"
400A	4" WHEN GREATER THAN 100 LINEAR FEET
600A and larger – single meter	SIZED BY CONTRACTOR/ENGINEER
600A and larger – multiple meters	SIZED BY BEUD

20.4.5 Conduit installations with more than three (3) 90-degree elbows in any one service must be approved by BEUD prior to installation.

20.4.6 Conduit shall be installed in a straight line from customer's structure to BEUD facilities. There shall be no abrupt changes in conduit routing, with the exception of elbows installed

perpendicular to grade at pad-mounted equipment, power pole, or point of service at customer's structure. Coordinate with BEUD for non-standard installation.

20.4.7 All conduit joints shall be glued, and exposed end of the run shall be capped (not glued) with industry approved PVC cap to ensure conduit remains clean and dry. No Duct tape will be allowed. For PVC to HDPE joints, use Polywater Bonduit conduit adhesive.

20.4.8 Contractor to provide and install flat, woven, polyester pulling tape with a minimum tensile strength of 1,250 lb in service conduit for BEUD's use to install conductors. BEUD will coil and leave by meter base when done.

20.4.9 Mule tape must be taped to conduit and may not be tied to any existing BEUD facilities.

20.4.10 Conduit shall be clear of any internal obstructions. If BEUD is unable to pull service wire due to obstructions, the CONTRACTOR shall be held responsible and charged for loss of time by BEUD personnel.

20.4.11 If meter base is level or below ground level of BEUD source point, there shall be three (3) one-quarter inch (1/4") holes drilled in the conduit eighteen (18) inches above ground level at the structure.

20.4.12 CONTRACTOR shall stub up conduit into BEUD device:

a. For transformer installations, conduit shall be flush with transformer foundation.
b. For secondary pedestal installations, conduit shall be cut off below access panels on back of secondary pedestal to allow room for training wire to terminal blocks of pedestal to allow installation of temporary services.
c. NOTICE: Contractor shall not install conduit stub ups in energized BEUD equipment without making an appointment to have BEUD personnel present. Failure to schedule an appointment will result in a re-inspection charge per **Section 20.6.**

20.4.13 When conduit must be reduced, one swedged reducer must be used directly below the meter base. Only one reduction in conduit size is allowed. **NO underground swedge allowed.**

20.4.14 Primary Conduit elbows must be long sweep. Secondary Conduit elbows must be short sweep. For applications that require primary conduit, refer to **DS-1403/1404** for details.

Minimum Radius Sweep		
Conduit Size	**Primary**	**Secondary**
2"	NA	9.5"
3"	48"	13"
4"	48"	16"
5"	60"	NA
6"	60"	NA

20.4.15 All conduits shall be inspected prior to covering.

20.4.16 No heated bends allowed in service conduit unless approved in advance by BEUD.

20.5 BACKFILL

20.5.1 For primary conduit, embedment materials shall be restricted to Class #67 type bedding. Installation of bedding shall be 4" under conduit and 6" over conduit. Refer to **DS-1403/1404.**

20.5.2 CONTRACTOR must provide proof of material to match required specifications to BEUD.

20.5.3 Backfill must be free of large rocks and other material that could damage the conduit. Rocks / stones larger than 4" in diameter shall not be used as backfill above crushed rock.

20.5.4 All trenches must be inspected by BEUD before backfilling. Any trench that is covered before inspection will be required to be uncovered for inspection.

20.5.5 Contractor to provide a minimum of one full working day notice with request for inspection to BEUD.

20.6 BEUD EQUIPMENT ACCESS / RESEAL CHARGE

20.6.1 The electric meter is owned by BEUD and must not be disconnected, removed, or relocated except by authorized BEUD personnel.

20.6.2 All meters are sealed by BEUD. Tampering with the meter or with conductors carrying unmetered current and the unauthorized breaking of BEUD's seals is forbidden and will result in a reseal charge of $200.

20.6.3 For a failed inspection, a re-inspection fee of $150 will be applied per Ordinance 2018-36 or current revised version.

20.6.4 If CONTRACTOR needs to access equipment that is sealed by BEUD, contact the main office at 479-271-3135 to schedule an appointment to have the equipment opened. Schedule appointment a minimum of 24 hours in advance.

20.6.5 Failure to schedule an appointment for equipment access will result in a failed inspection and a re-inspection charge as listed in 20.6.3.

20.6.6 Contractor will be charged time, materials and equipment for any damage to BEUD equipment or earth foundation caused by installation of conduit stub ups.

SECTION 21 METERING

21.1 GENERAL REQUIREMENTS

21.1.1 Meter to be on the same side of the building as the source point unless approved by BEUD.

21.1.2 Meter shall be no more than 100' away from source point unless approved by BEUD. Charges will apply for any approved length beyond 100'.

21.1.3 Electric meter must be located in line of sight from source device.

21.1.4 Service equipment must be surface mounted on building. Embedding or covering equipment is not allowed unless approved by BEUD.

21.1.5 For all services, neutral connection is required to first means of disconnect unless otherwise approved by BEUD.

21.1.6 For all services, BEUD will provide the meter.

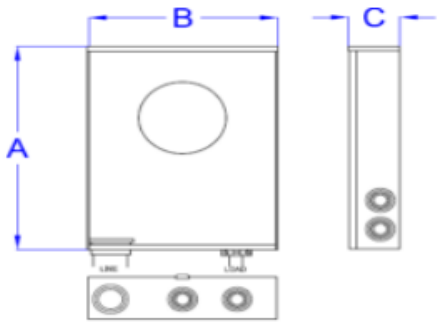
21.1.7 For existing buildings that have more than one service located on different sides of the building, label meter locations per NEC.

21.1.8 Permanent and temporary meter bases supplied by CONTRACTOR **must be ringless in type. Ringed type meter bases will not be accepted**. BEUD will provide a ringless meter base for any CT metered service.

21.1.9 An external shunt trip or disconnect is required on all new meter installations per Ordinance #2009-25 approved by City Council on March 10, 2009. Any service modifications will require that all current specifications and ordinance be applied. A meter/main combo will satisfy this requirement.

21.1.10 Buildings shall be allowed use of only one service voltage unless previously approved by BEUD.

21.1.11 CONTRACTOR to provide an approved meter base per the following table:



Notes:
**ALL 3 PHASE METER BASES

ARE OH/UG WITH A BYPASS LEVER

MINIMUM ACCEPTED METER CAN DIMENSIONS				
SINGLE PHASE				
SERVICE SIZE	**A**	**B**	**C**	**COMMENTS**
200A METER	17"	13"	4.5"	METER SOCKET ONLY
100/200A COMBO	25"	14"	4.5"	SPACE FOR UP TO FOUR BREAKERS.
200A COMBO	25"	14"	5.25"	200A MCB INCLUDED
320A COMBO	36.5"	15"	5.5"	320A MCB INCLUDED

THREE PHASE				
SERVICE SIZE	**A**	**B**	**C**	**COMMENTS**
200A	19"	13"	4.5"	200A METER SOCKET**
320A	34.125"	19"	6.5"	320A METER SOCKET**
200A COMBO	34"	17.375"	5.75"	200A MCB INCLUDED

21.1.12 The following secondary voltages are generally available to customers in the City of Bentonville city limits, but BEUD should be contacted to verify the availability of all voltages.

a. Single-phase, three-wire – 120/240V
b. Single-phase, three-wire – 120/208V (available only where 120/240V is not available. Contact BEUD to discuss prior to permit application)
c. Three-phase, four-wire – 120/208V
d. Three-phase, four-wire – 277/480V

21.1.13 For any 120/208V single phase service, a fifth terminal is required in the meter base.

21.1.14 It is CONTRACTOR's responsibility to determine availability of specific voltage prior to beginning any work.

a. If CONTRACTOR requests three-phase service to a space in a set of suites/units that is currently served with single-phase, CONTRACTOR shall be required to pay for the material and labor cost incurred by BEUD to upgrade the service.
b. If CONTRACTOR requests three-phase service to an existing building that originally had single-phase, but the planned upgrades consider upgrade of the entire building to three-phase, there is no charge.
c. Contact New Service Coordinator to clarify potential charges for a specific location.

21.1.15 All meter bases shall have load-side lugs and shall be capable of accepting up to 350 MCM wire.

21.1.16 Single-phase and three-phase services up to 400A will require a self-contained meter enclosure provided by Contractor. BEUD to provide meter only.

21.1.17 Any single phase or three-phase service greater than 400A shall be CT metered. BEUD to provide meter only.

21.1.18 It is CONTRACTOR's responsibility to account for the appropriate levels of secondary fault current to ensure that protective devices installed will be sized to safely withstand fault levels. Contact BEUD Engineering at 479-271-3135 if there are questions about the available fault current for a specific location.

21.1.19 The requirements for a freestanding meter rack, designed by a Structural PE, are detailed on **DS-1024**. If either of these options cannot accommodate the required electrical equipment, the developer must provide a custom meter rack design stamped by a Structural PE. This drawing must be submitted to BEUD for approval prior to including in the stamped construction drawing set.

SECTION 22 NEW SERVICE / UPGRADE PROCESS

22.1 SETTING UP NEW SERVICE

22.1.1 Contact BEUD New Service Coordinator at (479) 271-3139. CONTRACTOR is required to set up and attend an on-site meeting to discuss the service requirements.

22.1.2 After the on-site meeting, BEUD will design the necessary facilities and notify the electrician of the requirements to proceed.

22.1.3 The CONTRACTOR shall contact BI and complete the electrical permit for work to be performed, i.e. Temporary, Permanent, or Upgrade.

22.1.4 Coordinate with BI to schedule inspections at designated intervals of construction completion. Once the electrical work has been completed, the CONTRACTOR shall contact BI to schedule a final inspection. List of required inspection

a. Temporary service to be setup by Utility Billing
b. Service trench and conduit placement prior to covering
c. Permanent service

22.1.5 BEUD will visit the site to verify the electrical installation complies with all BEUD specifications.

22.1.6 BEUD will only set a meter after all electrical equipment has been installed

22.1.7 BEUD's policy is to set meters in order the inspections are received through Trakit, weather permitting.

22.1.8 BEUD will not energize a service or install a meter until all inspections are passed.

22.1.9 BEUD will place a red sticker in the event that the electrical installation does not comply with BEUD specifications and re-inspection fees will apply per section 20.6

22.1.10 When CONTRACTOR is ready for permanent service, follow steps 22.1.4 to 22.1.9.

22.2 SERVICE UPGRADE

22.2.1 Contact BEUD New Service Coordinator at (479) 271-3139. CONTRACTOR is required to set up and attend an on-site meeting to discuss the upgrade.

22.2.2 After on-site meeting, BEUD will design the necessary facilities and notify the electrician of the requirements to proceed with the upgrade.

22.2.3 CONTRACTOR to follow steps 22.1.3 to 22.1.9 in SETTING UP NEW SERVICE.

SECTION 23 TEMPORARY SERVICES

23.1 GENERAL – TEMPORARY SERVICES

23.1.1 Contractor shall supply one temporary meter set per address for single family dwellings.

23.1.2 Temporary service must be placed in a manner that does not require it to be relocated prior to installing permanent power. Contractor will be billed any costs incurred by BEUD to relocate a temporary service.

23.1.3 Temporary service meter base shall not be attached to BEUD power poles.

23.1.4 CONTRACTOR shall call Arkansas One Call (811) for locates prior to installing temporary meter base to avoid hitting BEUD primary conductors with meter base post or ground rods.

23.1.5 CONTRACTOR to provide ditch or flex conduit from temporary meter base location to service point.

23.1.6 Temporary service conductors may not be larger than #2 AWG triplex - no splices allowed.

23.1.7 Ground rods for temporary meters must be removed by CONTRACTOR prior to final inspection.

23.1.8 In an emergency, an authorized BEUD representative may grant CONTRACTOR the right to run a temporary service in conduit across the top of the ground in order to re-energize a meter base with secondary power. CONTRACTOR shall make the necessary repairs to the permanent service path within 72 hours of the temporary being granted. If after 72 hours,

the permanent repairs have not been made, BEUD will disconnect service until repairs are made. Approval for this scenario must be given by an authorized BEUD representative.

23.2 OVERHEAD – TEMPORARY SERVICES

23.2.1 If temporary meter base is on a CUSTOMER owned pole, CONTRACTOR must extend weatherhead to within 18" of BEUD termination point.

23.2.2 CUSTOMER owned pole shall be located a minimum of 10’ and a maximum of 40’ away from BEUD pole.

23.2.3 Refer to **DS-1001** for detail for a Braced Temporary Pole.

23.3 UNDERGROUND – TEMPORARY SERVICES

23.3.1 CONTRACTOR to furnish conductors and flexible conduit along top of ground to BEUD source point.

23.3.2 Provide 3’ of additional exposed conductors for termination, coiled up by device.

23.3.3 BEUD will terminate conductors to source point.

23.3.4 Temporary meter base to be located a minimum of 3’, a maximum of 6’ away from BEUD device.

23.3.5 Refer to **DS-1002** for underground temporary detail and acceptable locations for temporary and ground rods.

SECTION 24 SELF-CONTAINED SERVICE

24.1 GENERAL – SELF-CONTAINED SERVICE

24.1.1 This section applies to the following:
a. Single-phase self-contained service, 400A and below
b. Three-phase self-contained service, 400A and below

24.1.2 For self-contained service, BEUD to supply service wire, connectors, and meter. All other materials to be supplied and installed by CONTRACTOR.

24.1.3 For all new 200-400A residential services, a meter / main combo pack is required.

24.1.4 CONTRACTOR shall be responsible for making final connections from meter base (load side) to service main (line side). BEUD will provide and terminate secondary conductors from BEUD service point to meter base (line side).

24.1.5 For 480V self-contained services, BEUD requires a separate meter disconnect to be located between the meter and BEUD's equipment. Refer to **DS-1012**

a. BEUD will provide this meter disconnect to CONTRACTOR to install.
b. CONTRACTOR to schedule pickup at Electric Warehouse. Contact Project Designer to request Work Order to schedule pick up of equipment.
c. Device will provide no overcurrent protection.
d. Enclosure shall be lockable and sealed under the exclusive control of BEUD.

24.2 OVERHEAD – SELF-CONTAINED SERVICE

24.2.1 For overhead self-contained service, BEUD to supply service wire dead-end clamp.

24.2.2 CONTRACTOR shall provide eye bolt or mast clamp.

24.2.3 Services attached to a building must be structurally connected to the building using a minimum 3/8" eye bolt with 2 1/4" square washer, and service entrance must be rigid electrical conduit per NEC.

24.2.4 Service shall not be connected to meter riser unless mast is routed through the roof.

24.2.5 For services mounted on the side of the house, weatherhead must be installed a minimum of 3' and a maximum of 15' from the front corner of the house nearest BEUD service point.

24.2.6 Service entrance on a mast through the roof must be minimum 2" galvanized rigid electrical conduit.

a. No couplings above the roof line.
b. BEUD reserves the right to require CONTRACTOR to upsize service mast conduit size based on secondary conductor tensions.

24.2.7 Contact BEUD for bracing/guying requirements for any mast that extends more than 3' above the roof.

24.2.8 For Residential applications, CONTRACTOR to provide service conductors with sufficient length to extend a minimum of 36" from the weatherhead.

24.2.9 For Commercial applications, CONTRACTOR to provide service conductors with sufficient length to extend a minimum of 48" from the weatherhead.

24.2.10 Neutral conductor must be insulated and identified in weatherhead. Un-insulated neutral conductors are not allowed.

24.2.11 **Screw in "house knob" style connections are not allowed.**

24.2.12 Refer to **DS-1005** for overhead applications with service attached to house.

24.2.13 Extend service mast through the roof for an overhead service when two feet (2') of clearance between service conductor and building cannot be maintained. Refer to **DS-1006**.

24.2.14 Refer to **DS-1008** for commercial overhead service

24.3 UNDERGROUND – SELF-CONTAINED SERVICE

24.3.1 Refer to **Section 1** for trench/conduit and backfill requirements.

24.3.2 For 200A freestanding services, meter base shall be located a minimum of 10' and a maximum of 100' away from BEUD device. Refer to **DS-1011**

24.3.3 For CATV and TELCO applications that require a 100A prefabricated meter pedestal, Refer to **DS-1004.**

24.3.4 The bottom-left side of underground meter bases is reserved for BEUD use only. The CONTRACTOR's service must exit the meter base out the bottom-right, side, or back for underground meter bases. The CONTRACTOR's service conductor cannot exit the left side area of an underground meter base and shall not obstruct BEUD's bottom-left entry area into the base.

24.3.5 BEUD shall provide and install underground service wire for all self-contained meters.

24.3.6 CONTRACTOR to contact BEUD 24 hours in advance to schedule opening of devices to install service conduit. Access to BEUD devices without BEUD personnel present is strictly prohibited and will result in re-inspection fee per **Section 20.6**.

24.3.7 Refer to **DS-1007** for 200A residential underground service detail.

24.3.8 Refer to **DS-1010** and **DS-1011** for details for typical commercial applications.

24.4 MULTIPLE METER LOCATIONS – SELF-CONTAINED SERVICE

24.4.1 All locations that utilize grouped meters in a meter pack arrangement shall be approved by BEUD prior to installation.

24.4.2 A meter pack is required on all multi-residential dwellings of two (2) units or more.

24.4.3 CONTRACTOR to provide and install all mechanical lugs necessary for conductor termination. These lugs are required to be installed before BEUD will energize service.

24.4.4 The CONTRACTOR shall submit a drawing of the proposed meter arrangement of apartment complex, duplex, or office suite showing addresses per the City of Bentonville Mapping Department with dimensions of meter pack arrangement.

24.4.5 CONTRACTOR shall label each meter with specific address information.

24.4.6 BEUD will verify address/suite label on meter pack corresponds to correct meter/main breaker on multipack. A separate fee applies for this verification step as established by current revision of approved Ordinance.

SECTION 25 CURRENT TRANSFORMER (CT) METERED SERVICE

25.1 GENERAL – CT SERVICE

25.1.1 Current transformer (CT) metering shall be required for the following scenarios:
a. Single phase service greater than 400A
b. Three phase service greater than 400A

25.1.2 BEUD shall provide meter base, meter pedestal, meter, and associated CT and PT wiring. Customer to install CT metering pedestal provided by BEUD.

25.1.3 For single-phase transformers, CTs will cover two of the usable holes, leaving four positions for customer connections.

25.1.4 For three phase transformers, usable positions are available as follows:
a. 45KVA - 5 positions
b. 75KVA – 7 positions
c. 150-1000 KVA– 11 positions
d. 1500-2500 KVA– 13 positions

25.2 OVERHEAD – CT SERVICE

25.2.1 Refer to **Section 24.2** for applicable overhead requirements.

25.2.2 Maximum overhead service allowed is 800A.

25.2.3 CT Cabinet required for any overhead CT service. Provide per the following table:

Overhead Wall Mounted (208V or 480V)				
Amperage	**Manf**	**Part Number**	**H x W x D**	**DS #**
600	AMP	BEDCT6-4L-PGRY	48"x36"x15"	DS-1020
800	AMP	BEDCT8-4L-PGRY	48"x36"x15"	DS-1020

25.2.4 BEUD will supply conductor to weatherhead.

25.2.5 CONTRACTOR shall provide all load conductors from weather head to CUSTOMER service equipment.

25.2.6 BEUD will terminate service at transformer, connection at weatherhead and source side of conductor in CT Cabinet.

25.2.7 CONTRACTOR shall terminate all load side conductors in CT cabinet and provide all conductors from CT cabinet to service equipment.

25.2.8 Point of attachment for service shall be located a minimum of 18" and a maximum of 36" from weatherhead.

25.2.9 CONTRACTOR responsible for terminating conductors at CUSTOMER service equipment.

25.2.10 Refer to **DS-1013** for overhead commercial service details.

25.2.11 Line conductors shall enter on top left of CT cabinet.

25.2.12 Load conductors shall exit on bottom right or side of CT cabinet.

25.3 UNDERGROUND – CT SERVICE

25.3.1 CONTRACTOR shall supply all secondary runs from BEUD transformer to service entrance when CTs are installed in the transformer. Customer shall not install customer owned wire before transformer is set by BEUD.

25.3.2 CONTRACTOR to provide 2" PVC schedule 80 conduit, 24" deep conduit from transformer pad to meter pedestal location. Meter pedestal must be 12" from edge of transformer pad and 48" from face of transformer pad. Refer to **DS-1417 / 1417-1**

25.3.3 CONTRACTOR to provide bare #6 copper wire buried in same trench beside 2" conduit with six feet (6') of length coiled at each end. Refer to **DS-1417 / 1417-1**

25.3.4 For all underground three phase CT metered services, CONTRACTOR is responsible for providing and terminating the 2-hole compression lugs along with **silicon bronze** hex nuts, (2) flat washers, (1) lock washer and hex bolts of required length torqued to 46 ft lbs.

25.4 UNDERGROUND – CT SERVICE WITH AUXILIARY ENCLOSURE

25.4.1 A CONTRACTOR supplied CT cabinet shall be required for an underground service when the development is served from a transformer that has multiple accounts.

25.4.2 CT cabinets 600A-1200A shall be wall mounted. Refer to **DS-1014** to installation details.

25.4.3 CT cabinets 1600A and greater shall be pad mounted. Refer to **DS-1015** for foundation and installation details.

25.4.4 BEUD shall provide meter, meter base, CTs, and associated CT and potential wiring.

25.4.5 CONTRACTOR shall provide and install CT cabinet, main disconnect, mounting frame, and ground rod. CONTRACTOR shall install meter base (provided by BEUD) in location requested by BEUD.

25.4.6 CONTRACTOR shall provide and install line and load lugs in CT cabinet.

25.4.7 CONTRACTOR shall supply load conductors.

25.4.8 BEUD will supply and terminate line conductors on the transformer side and the line side of the CT cabinet.

25.4.9 CONTRACTOR will terminate load side of CTs and conductor at CUSTOMER service equipment.

25.4.10 CONTRACTOR shall provide CT cabinet per the following table:

Underground Wall Mounted (208V or 480V)				
Amperage	**Manf**	**Part Number**	**H x W x D**	**DS #**
600	AMP	BEDSB6-4-A-CT-PGRY	48"x33"x12"	DS-1021
800	AMP	BEDSB8-4-A-CT-PGRY	48"x33"x12"	DS-1021
1200	AMP	BEDSB12-4-A-CT-PGRY	48"x33"x12"	DS-1021
Underground Pad Mounted (480V)				
1600	AMP	BEDSCC16-4A-CT	60"x39"x24"	DS-1022
2000	AMP	BEDSCC20-4A-CT	60"x51"x24"	DS-1023
2500	AMP	BEDSCC25-4A-CT	60"x51"x24"	DS-1023
3000	AMP	BEDSCC30-4A-CT	60"x51"x24"	DS-1023
4000	AMP	BEDSCC40-4A-CT	60"x51"x24"	DS-1023

PGRY suffix specifies powder coat painted grey,
All SCC cabinets are powder coat painted green

SECTION 26 STANDBY GENERATOR

26.1 GENERAL

26.1.1 BEUD must be notified of plans to install standby generating equipment for emergency use.

26.1.2 Contact New Service Coordinator at 479-271-3139 to schedule a meeting to discuss any generator connections and provide approval of the method of connection.

26.1.3 Wiring of generator must be installed so that no connection can occur between BEUD's service and the CONTRACTOR's generator. CONTRACTOR must install an automatic transfer switch to isolate the generator feed from the utility feed.

26.1.4 All work associated with generator installations must be performed by a licensed electrician and in accordance with the NEC.

26.1.5 CONTRACTOR must acquire a permit and have a documented inspection.

26.1.6 Any installations that are found to be installed without proper authorization will be subject to a $200 fine.

SECTION 27 CLEARANCES

27.1 GENERAL

27.1.1 Refer to **DS-1410** for pad mount transformer clearance requirements

27.1.2 Refer to **DS-1016** for detail of secondary conductor clearances

27.1.3 Refer to **DS-1017** for meter location clearance requirements.

27.1.4 Refer to **DS-1018** for multiple meter height requirements.

27.2 VERTICAL SECONDARY CLEARANCES

27.2.1 Over state highway – 18'.

27.2.2 Over city street / alley / driveway – 16'

27.2.3 Over spaces subject to pedestrian or restricted traffic only – 12'

27.2.4 Over balconies / porches / decks – 11'

27.2.5 Over roof accessible to pedestrians – 11'

27.2.6 Over roof not accessible to pedestrians – 3.5'

27.3 HORIZONTAL SECONDARY CLEARANCES

27.3.1 From Building – 5', no wind, 3.5' when displaced by wind.

27.3.2 From water / sewer – 5'

27.4 VERTICAL SEPARATION BETWEEN ELECTRIC & OTHER UTILITIES WHEN CROSSING

27.4.1 Primary conduit from water/sewer main – 18"

27.4.2 Secondary / service conduit from water/sewer – 12"

27.4.3 BEUD conduit clearance to gas – 12". Contact Black Hills Energy to determine if there are more stringent clearance requirements based on the type of gas line.

PART III

DRAWING	REVISIONS	PAGE
Braced Temporary Service Pole	REV 5 – 7/2024	DS-1001
Temporary Underground Service	REV 5 – 7/2024	DS-1002
Not Used in Revision 5		DS-1003
100A Meter Pedestal (CATV & TELCO only)	REV 5 – 7/2024	DS-1004
100A/200A Residential Overhead Service	REV 5 – 7/2024	DS-1005
100A/200A Residential Overhead Service - Mast thru Roof		DS-1006
100A/200A Residential Underground Service	REV 5 – 7/2024	DS-1007
Commercial Overhead Service for Self-Contained Metering	REV 5 – 7/2024	DS-1008
Address Label Specifications	REV 5 – 7/2024	DS-1009
Underground Service for Self-Contained Metering	REV 5 – 7/2024	DS-1010
Underground Service for Self-Contained, Freestanding Metering	REV 5 – 7/2024	DS-1011
Commercial Service 480V Disconnect Self-Contained Metering	REV 5 – 7/2024	DS-1012
Commercial Overhead Service for CT Metering	REV 5 – 7/2024	DS-1013
Underground Service for CT Metering, Freestanding	REV 5 – 7/2024	DS-1014
1600A-4000A Pad Mount CT Enclosure	REV 5 – 7/2024	DS-1015
Secondary Conductor Clearance Requirements		DS-1016
Meter Clearance Requirements	REV 5 – 7/2024	DS-1017
Multiple Meter Installation Requirements	REV 5 – 7/2024	DS-1018
Landscaping Requirements	REV 5 – 7/2024	DS-1019
CT Cabinet Part Numbers	REV 5 – 7/2024	DS-1020
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Not Used in Revision 5		DS-1023
Single Phase Freestanding Meter Rack	REV 5 – 7/2024	DS-1024
Streetlight Contactor Panel	REV 5 – 7/2024	DS-1025
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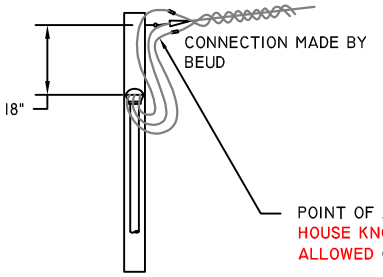
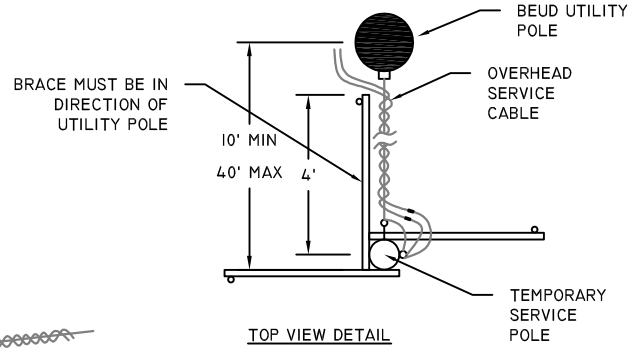
Subdivision Utility Placement Specifications	REV 5 – 7/2024	DS-1402
Electric Trench Detail Sheet 1	REV 5 – 7/2024	DS-1403
Electric Trench Detail Sheet 2	REV 5 – 7/2024	DS-1404
Single Phase Transformer Site Requirements	REV 5 – 7/2024	DS-1405
Single Phase Transformer Pad – Smaller than 100 kVa	REV 5 – 7/2024	DS-1406
Single Phase Transformer Pad – 100 kVa and larger	REV 5 – 7/2024	DS-1407
Three Phase Transformer Pad – 45-1000 kVa	REV 5 – 7/2024	DS-1408
Three Phase Transformer Pad – 1500-2500 kVa	REV 5 – 7/2024	DS-1409
Clearance Specifications for Pad Mounted Equipment		DS-1410
Single Phase Junction Box Sleeve	REV 5 – 7/2024	DS-1411
Three Phase 200 A Primary Junction Box Sleeve	REV 5 – 7/2024	DS-1412
Three Phase 600 A Primary Junction Box Sleeve	REV 5 – 7/2024	DS-1413
Secondary Junction Box		DS-1414
Secondary Three Phase Junction Box		DS-1414-1
Street Light Foundation for 12’ Residential Lights	REV 5 – 7/2024	DS-1415
Street Light Foundation for 22’ Commercial Lights	REV 5 – 7/2024	DS-1416
Transformer Pad & Meter Configuration for 1PH CT Service	REV 5 – 7/2024	DS-1417-1PH

DRAWING	REVISIONS	PAGE
Transformer Pad and Meter Configuration for CT's on Spades	REV 5 – 7/2024	DS-1417
Pipe Bollard Detail		DS-1418
Conduit Installation Details		DS-1419
Pad Mount Switchgear Vault Assembly	REV 5 – 7/2024	DS-1420
Pad Mount Switchgear Vault – Footer		DS-1420A
Pad Mount Switchgear Vault – Bottom Sleeve	REV 5 – 7/2024	DS-1420B
Pad Mount Switchgear Vault – Top Sleeve		DS-1420C

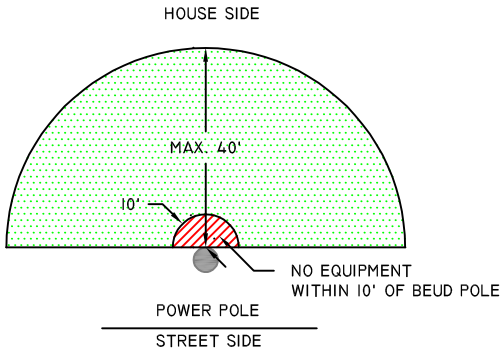


POLE TOP DETAIL



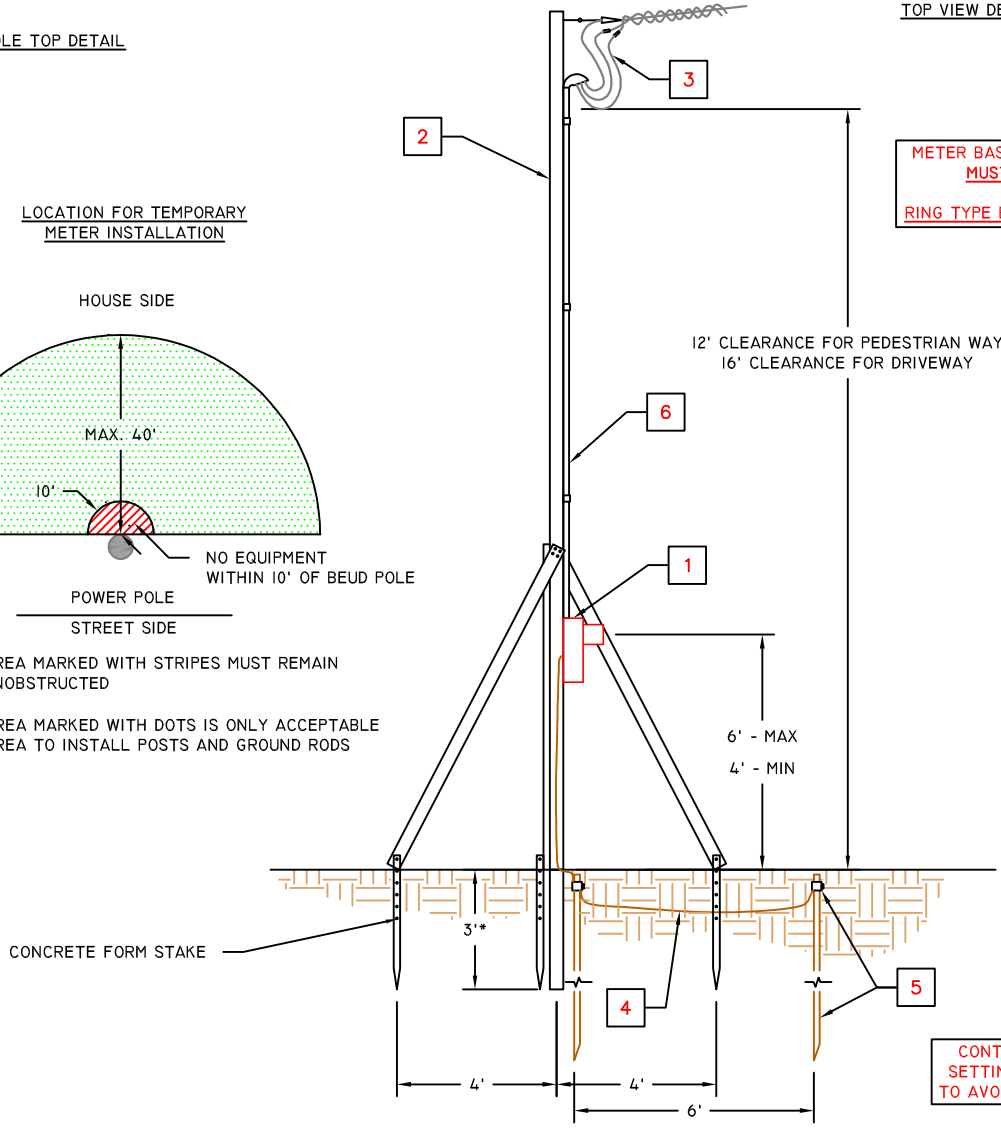
TOP VIEW DETAIL

LOCATION FOR TEMPORARY METER INSTALLATION



AREA MARKED WITH STRIPES MUST REMAIN UNOBSTRUCTED

AREA MARKED WITH DOTS IS ONLY ACCEPTABLE AREA TO INSTALL POSTS AND GROUND RODS



METER BASES SUPPLIED BY CONTRACTOR MUST BE RINGLESS IN TYPE.

RING TYPE BASES WILL NOT BE ACCEPTED.

CONTACT ONE-CALL PRIOR TO SETTING POLE OR GROUND RODS TO AVOID UNDERGROUND UTILITIES

NOTES: #

1. RINGLESS METER SOCKET FURNISHED AND INSTALLED BY CUSTOMER USING MINIMUM (2) 2 IN WOOD SCREWS. SEAL ALL HOLES. METER PROVIDED BY BEUD.
2. PROVIDE A MINIMUM 4"X4" STRUCTURE THAT PROVIDES ADEQUATE CLEARANCES FOR SPECIFIC INSTALLATION THAT IS STRUCTURALLY SOUND.
3. MINIMUM CONDUCTORS ALLOWED #6 COPPER OR #4 ALUMINUM, NEUTRAL SHALL BE IDENTIFIED. MINIMUM LENGTH OF CONDUCTOR EXTENDING 2 FEET.
4. GROUNDING CONDUCTOR MINIMUM SIZE #6 SOLID COPPER AND SHALL BE BURIED. GROUNDING CONDUCTOR MUST BE CONTINUOUS.
5. CUSTOMER TO FURNISH AND INSTALL (2) 5/8" DIA. X 8' DRIVEN GROUND RODS, COPPER OR COPPER CLAD. 2 LOCATIONS PER NEC 250.53(A)(2). USE COPPER OR BRONZE GROUND ROD CONNECTORS OR CLAMPS.
6. GALVANIZED RIGID STEEL, IMC, OR PVC SCHEDULE 80 CONDUIT.

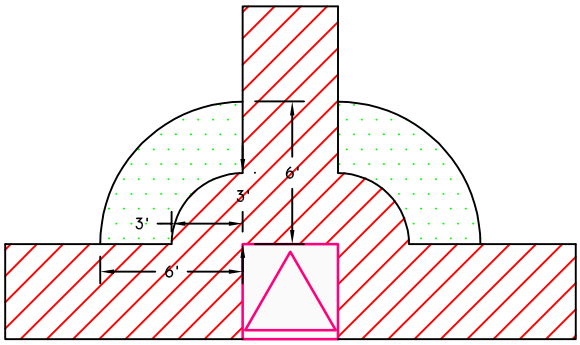
THE CITY OF BENTONVILLE

BRACED TEMPORARY SERVICE POLE

REV 5 - 2024

DS-1001*

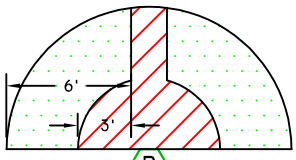
ACCEPTABLE LOCATIONS FOR TEMPORARY METER INSTALLATION



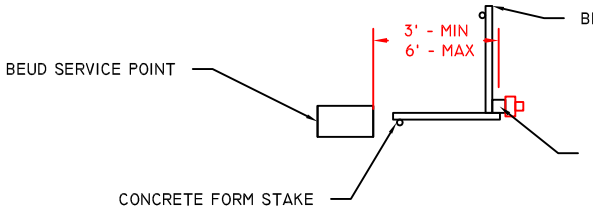
STREET SIDE

AREA MARKED WITH STRIPES MUST REMAIN UNOBSTRUCTED

AREA MARKED WITH DOTS IS ONLY ACCEPTABLE AREA TO INSTALL POSTS AND GROUND RODS



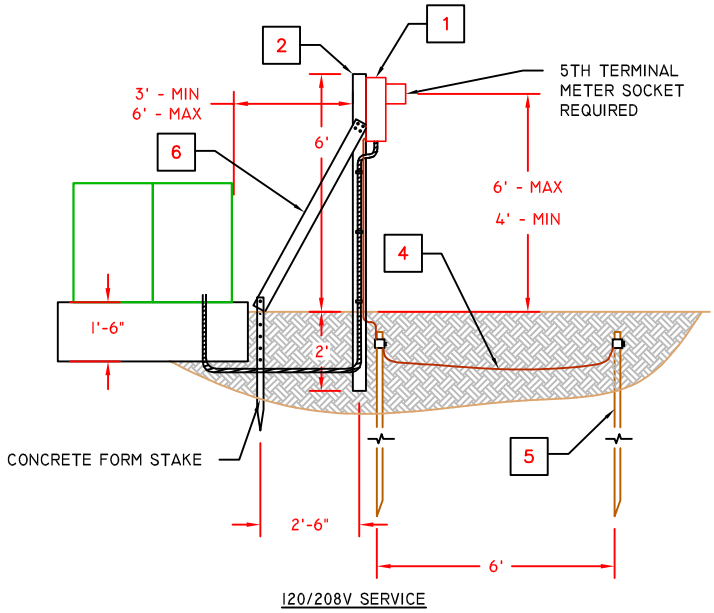
STREET SIDE



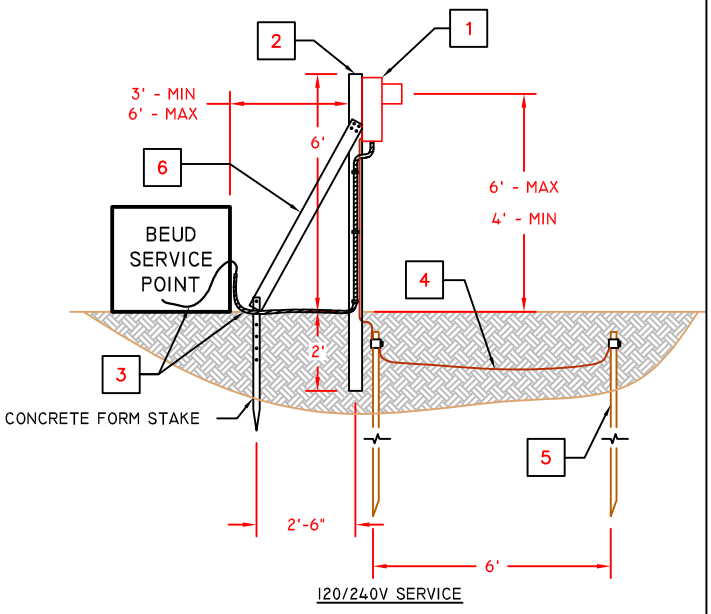
TOP VIEW DETAIL

METER BASES SUPPLIED BY CONTRACTOR MUST BE RINGLESS IN TYPE.

RING TYPE BASES WILL NOT BE ACCEPTED.



120/208V SERVICE



120/240V SERVICE

CONTACT ONE-CALL PRIOR TO SETTING POLE OR GROUND RODS TO AVOID UNDERGROUND UTILITIES

CONTACT BEUD 24 HOURS IN ADVANCE TO SCHEDULE OPENING OF EQUIPMENT TO INSTALL CONDUITS.

NOTES: #

1. RINGLESS METER SOCKET FURNISHED AND INSTALLED BY CUSTOMER. ENTRANCE TO METER SOCKET SHALL BE WATERPROOF. METER PROVIDED BY BEUD.
2. CUSTOMER TO FURNISH AND INSTALL PENTA TREATED 8' PINE POLE OR 4"X4" POST. NO RAILROAD TIES ACCEPTED.
3. MINIMUM CONDUCTORS ALLOWED #6 COPPER OR #4 ALUMINUM. MAXIMUM #2 TRIPLEX. NEUTRAL SHALL BE IDENTIFIED. CONTRACTOR TO FURNISH CONDUCTORS AND FLEXIBLE CONDUIT TO BEUD SERVICE POINT. PROVIDE ADDITIONAL 3' OF EXPOSED CONDUCTORS FOR TERMINATION. NO SPLICES OR TAPS SHALL BE LOCATED IN THE CONDUCTOR.
4. GROUNDING CONDUCTOR MINIMUM SIZE #6 SOLID COPPER AND SHALL BE BURIED. GROUNDING CONDUCTOR MUST BE CONTINUOUS.
5. CUSTOMER TO FURNISH AND INSTALL (2) 5/8" DIA. X 8' DRIVEN GROUND RODS, COPPER OR COPPER CLAD. 2 LOCATIONS PER NEC 250.53(A)(2). USE COPPER OR BRONZE GROUND ROD CONNECTORS OR CLAMPS. GROUND RODS MAY BE LAID IN A DITCH THAT MEETS 30" DEPTH REQUIREMENT OF NEC 250.53 (A)(4). GROUND RODS MUST BE 6' APART PER NEC 250.53 (A)(3)
6. BRACES MUST NOT BE INSTALLED AS TO OBSTRUCT UTILITY CONNECTION POINT OPENING

THE CITY OF BENTONVILLE

TEMPORARY UNDERGROUND SERVICE

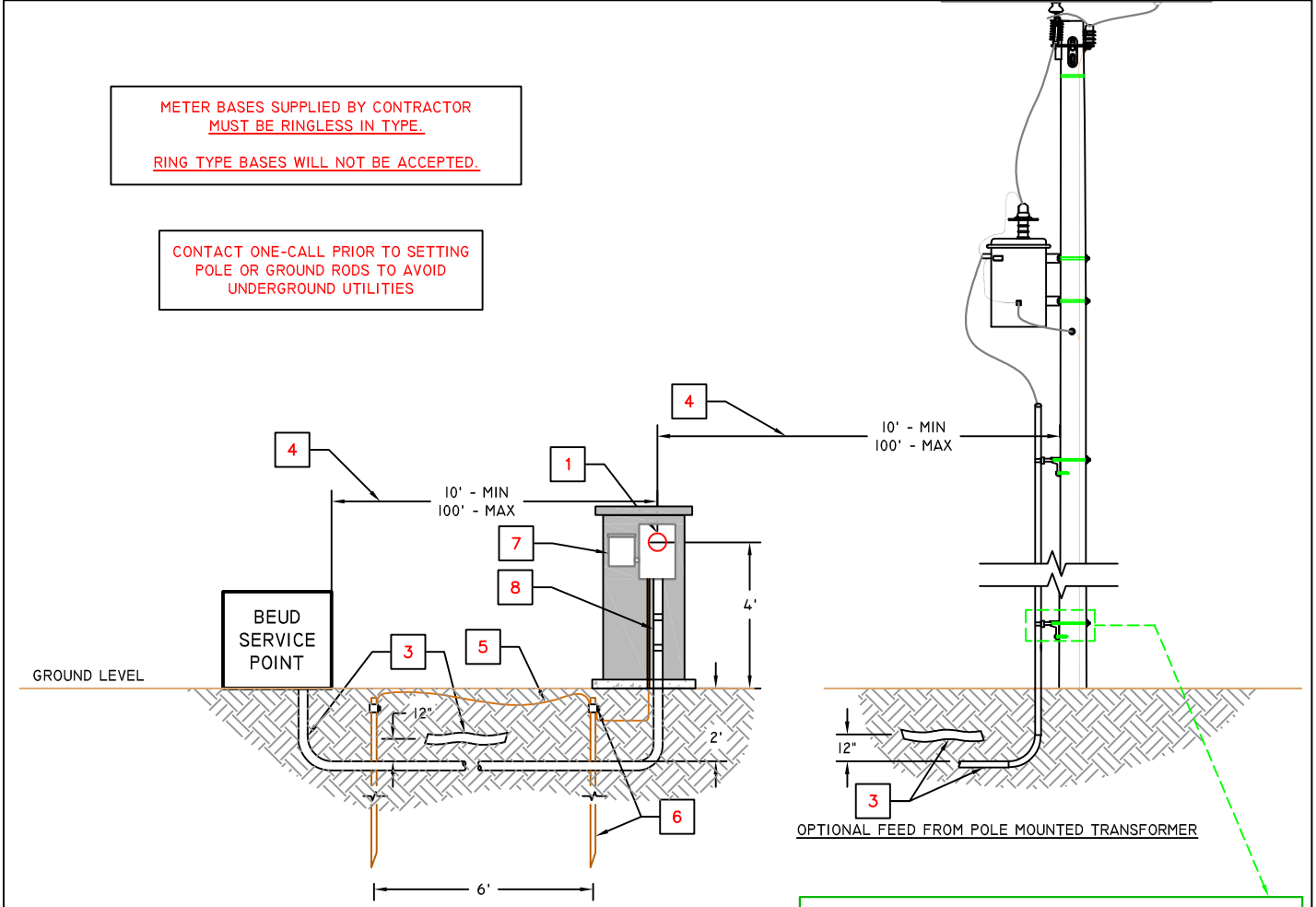
REV 5 - 2024

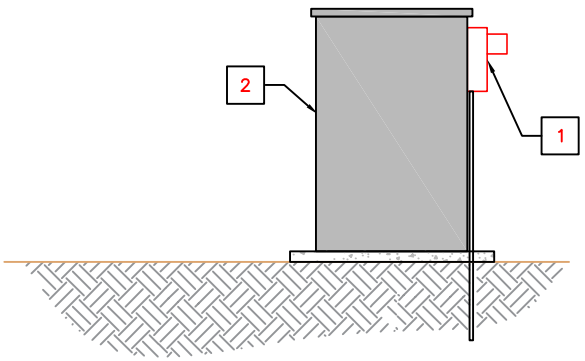
DS-1002*

METER BASES SUPPLIED BY CONTRACTOR
MUST BE RINGLESS IN TYPE.

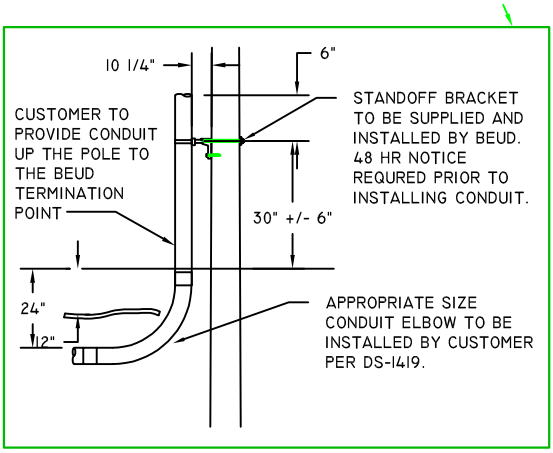
RING TYPE BASES WILL NOT BE ACCEPTED.

CONTACT ONE-CALL PRIOR TO SETTING POLE OR GROUND RODS TO AVOID UNDERGROUND UTILITIES





SIDE VIEW



CONDUIT STANDOFF ON POLE

NOTES: #

1. RINGLESS METER SOCKET AND PEDESTAL INSTALLED BY CUSTOMER. ENTRANCE TO METER SOCKET SHALL BE WATERPROOF. METER PROVIDED BY BEUD.
2. PREFABRICATED PEDESTAL PROVIDED BY CUSTOMER.
3. CUSTOMER TO FURNISH AND INSTALL 2" OR 3" SCHEDULE 40 CONDUIT TO BEUD SECONDARY PEDESTAL, TRANSFORMER, OR POLE. CAUTION RIBBON MUST BE INSTALLED 12" ABOVE ALL SECONDARY CONDUITS.
4. CLEARANCE REQUIRED BETWEEN PEDESTAL AND BEUD SERVICE POINT: 10' MIN FROM UG DEVICE OR POLE, MAX. DISTANCE 100' UNLESS APPROVED BY BEUD.
5. GROUNDING CONDUCTOR SIZE #6 SOLID COPPER AND SHALL BE BURIED. GROUNDING CONDUCTOR MUST BE INSTALLED IN CONDUIT FROM METER TO GROUND LEVEL. GROUNDING CONDUCTOR MUST BE CONTINUOUS.
6. CUSTOMER TO FURNISH AND INSTALL (2) 5/8" DIA. X 8' DRIVEN GROUND RODS, COPPER OR COPPER CLAD. 2 LOCATIONS PER NEC 250.53(A)(2). USE COPPER OR BRONZE GROUND ROD CONNECTORS OR CLAMPS. GROUND RODS MAY BE LAID IN A DITCH THAT MEETS 30" DEPTH REQUIREMENT OF NEC 250.53(A)(4). GROUND RODS MUST BE 6' APART PER NEC 250.53(A)(3).
7. CUSTOMER TO PROVIDE UL SERVICE DISCONNECT.
8. EXPANSION COUPLER TO BE INSTALLED BETWEEN GROUND LEVEL AND METER BASE.

THE CITY OF BENTONVILLE

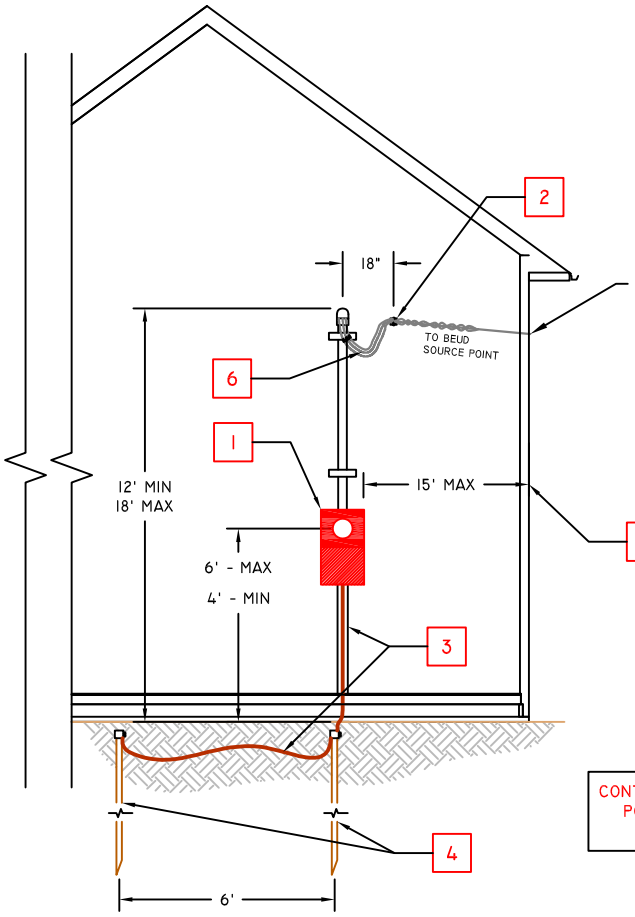
100A PREFABRICATED METER PEDESTAL (CATV & TELCO)

REV 5 - 2024

DS-1004*

METER BASES SUPPLIED BY CONTRACTOR
MUST BE RINGLESS IN TYPE.

RING TYPE BASES WILL NOT BE ACCEPTED.



MUST MAINTAIN REQUIRED NESC VERTICAL CLEARANCE WITH SERVICE CONDUCTOR FROM BEUD SOURCE POINT TO HOUSE ATTACHMENT POINT.

18' OVER HIGHWAY
16' OVER CITY STREET, ALLEY OR DRIVEWAY
12' OVER PEDESTRIAN ONLY AREAS.

CONTACT ONE-CALL PRIOR TO SETTING POLE OR GROUND RODS TO AVOID UNDERGROUND UTILITIES

NOTES: #

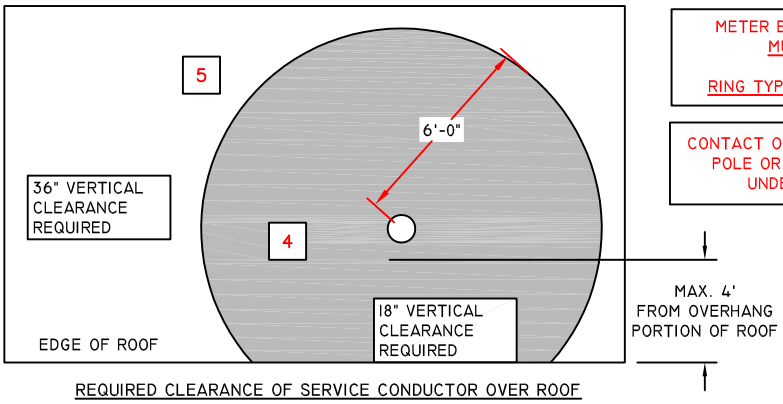
1. RINGLESS METER/MAIN COMBO PROVIDED AND INSTALLED BY CUSTOMER. ENTRANCE TO METER SOCKET SHALL BE WATERPROOF. METER PROVIDED BY BEUD.
2. SERVICES ATTACHED TO A BUILDING MUST BE STRUCTURALLY CONNECTED TO THE BUILDING USING A MINIMUM 3/8" EYE BOLT WITH 2 1/4" SQUARE WASHER. SERVICE ENTRANCE MUST BE MINIMUM 1 1/4" ELECTRICAL CONDUIT FOR 100A SERVICE AND 2" ELECTRICAL CONDUIT FOR 200A SERVICE. SERVICE SHALL NOT BE CONNECTED TO METER RISER. SCREW TYPE SERVICE WIREHOLDERS OR KNOBS WILL NOT BE ACCEPTED.
3. GROUNDING CONDUCTOR SIZE #6 SOLID COPPER AND SHALL BE BURIED. GROUNDING CONDUCTOR MUST BE INSTALLED IN 1/2" CONDUIT FROM METER TO GROUND LEVEL. GROUNDING CONDUCTOR MUST BE CONTINUOUS.
4. CUSTOMER TO FURNISH AND INSTALL (2) 5/8" DIA. X 8' DRIVEN GROUND RODS, COPPER OR COPPER CLAD. 2 LOCATIONS PER NEC 250.53(A)(2). USE COPPER OR BRONZE GROUND ROD CONNECTORS OR CLAMPS. GROUND RODS MUST BE 6' APART PER NEC 250.53(A)(3).
5. METER/MAIN COMBO TO BE INSTALLED A MAXIMUM OF 15' FROM CORNER OF HOME NEAREST BEUD CONNECTION POINT.
6. CUSTOMER IS REQUIRED TO EXTEND CONDUCTORS FROM WEATHERHEAD A MINIMUM 3'.

THE CITY OF BENTONVILLE

RESIDENTIAL OVERHEAD SERVICE

REV 5 - 2024

DS-1005*

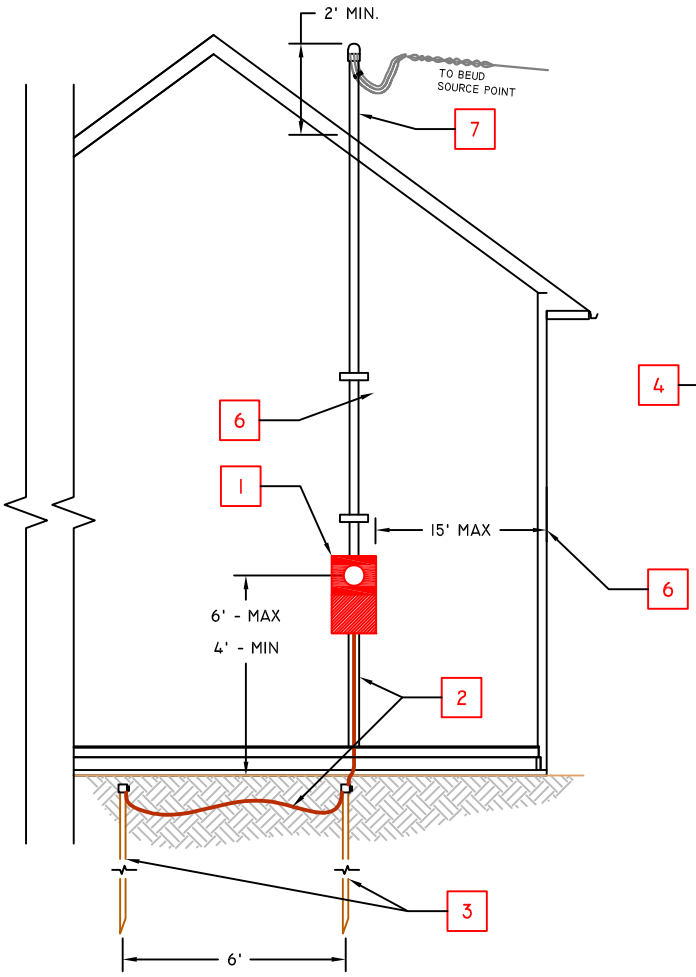


REQUIRED CLEARANCE OF SERVICE CONDUCTOR OVER ROOF

METER BASES SUPPLIED BY CONTRACTOR MUST BE RINGLESS IN TYPE.

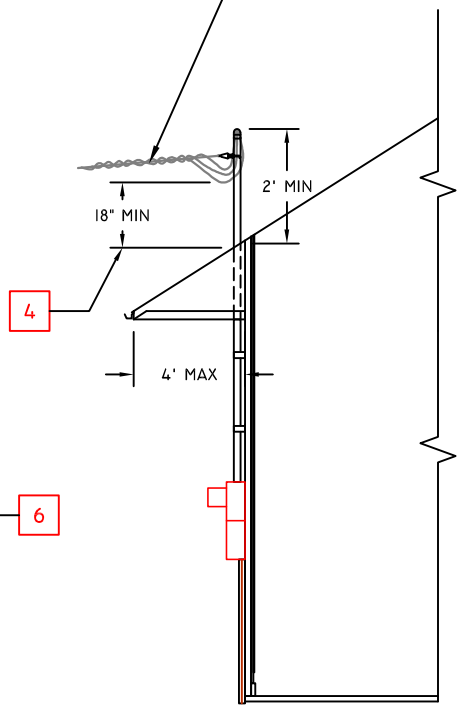
RING TYPE BASES WILL NOT BE ACCEPTED.

CONTACT ONE-CALL PRIOR TO SETTING POLE OR GROUND RODS TO AVOID UNDERGROUND UTILITIES



MUST MAINTAIN REQUIRED NESC VERTICAL CLEARANCE WITH SERVICE CONDUCTOR FROM BEUD SOURCE POINT TO HOUSE ATTACHMENT POINT.

18' OVER HIGHWAY
16' OVER CITY STREET, ALLEY OR DRIVEWAY
12' OVER PEDESTRIAN ONLY AREAS.



METER CAN SIDE VIEW DETAIL

NOTES: #

1. RINGLESS METER/MAIN COMBO PROVIDED AND INSTALLED BY CUSTOMER. ENTRANCE TO METER SOCKET SHALL BE WATERPROOF. METER PROVIDED BY BEUD.
2. GROUNDING CONDUCTOR SIZE #6 SOLID COPPER AND SHALL BE BURIED. GROUNDING CONDUCTOR MUST BE INSTALLED IN 1/2" CONDUIT FROM METER TO GROUND LEVEL. GROUNDING CONDUCTOR MUST BE CONTINUOUS.
3. CUSTOMER TO FURNISH AND INSTALL (2) 5/8" DIA. X 8' DRIVEN GROUND RODS, COPPER OR COPPER CLAD. 2 LOCATIONS PER NEC 250.53(A)(2). USE COPPER OR BRONZE GROUND ROD CONNECTORS OR CLAMPS. GROUND RODS MUST BE 6' APART PER NEC 250.53(A)(3)
4. MUST MAINTAIN 18" VERTICAL CONDUCTOR CLEARANCE WITHIN 6' RADIUS OF MAST.
5. MUST MAINTAIN 36" MINIMUM VERTICAL CONDUCTOR CLEARANCE OUTSIDE OF 6'-0" RADIUS OF SERVICE MAST.
6. METER/MAIN COMBO TO BE INSTALLED A MAXIMUM OF 15' FROM CORNER OF HOME NEAREST BEUD CONNECTION POINT.
7. SERVICE ENTRANCE MAST MUST BE MINIMUM 2" GALVANIZED RIGID ELECTRICAL CONDUIT. NO COUPLINGS ABOVE THE ROOF LINE. CUSTOMER TO PROVIDE AND INSTALL SERVICE MAST CLAMP. MASTS GREATER THAN 3', CONTACT BEUD FOR REQUIREMENTS.

THE CITY OF BENTONVILLE

RESIDENTIAL OVERHEAD SERVICE MAST THROUGH ROOF

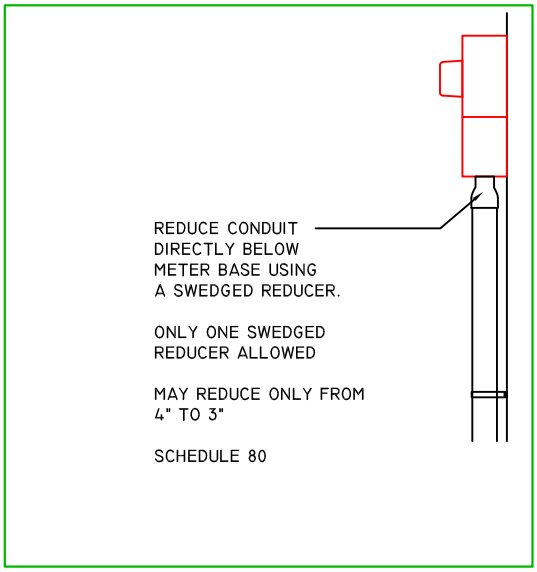
REV 5 - 2024

DS-1006*

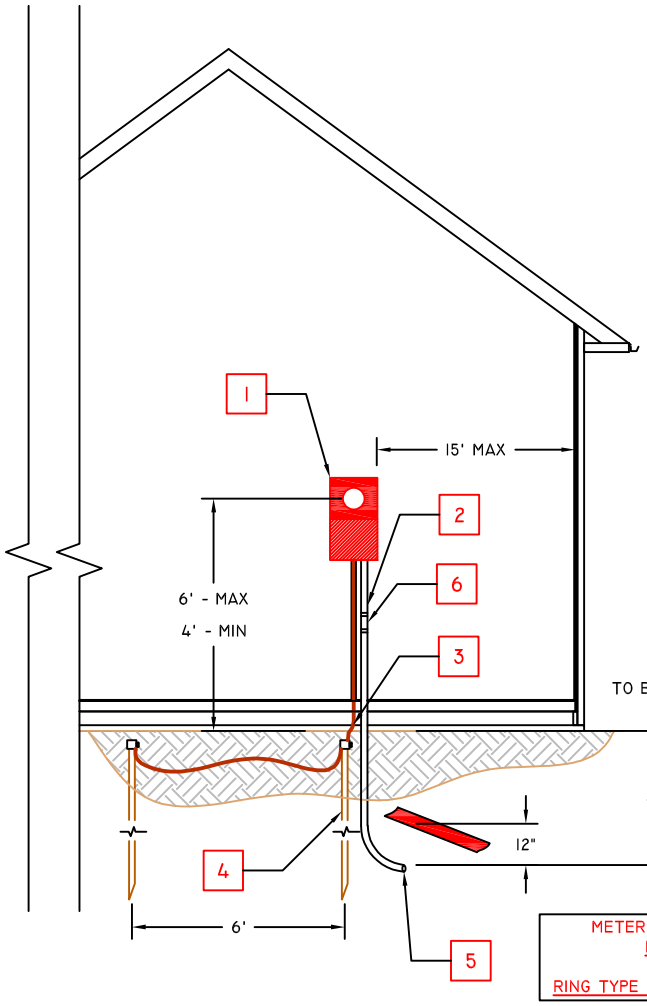
CONTACT ONE-CALL PRIOR TO SETTING POLE OR GROUND RODS TO AVOID UNDERGROUND UTILITIES

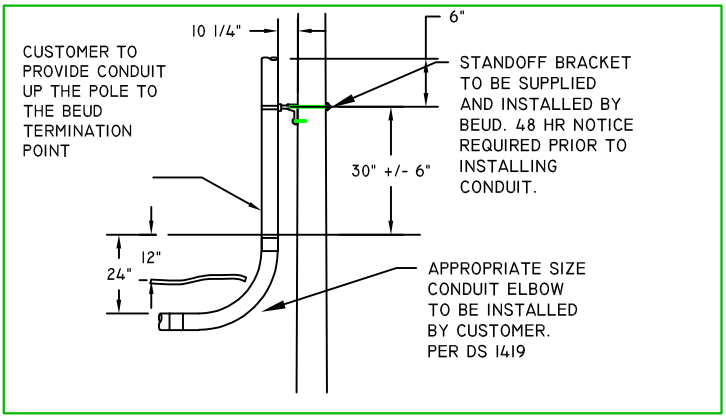
NOTE: ANY EXCAVATION WITHIN 18" OF BEUD EQUIPMENT SHALL BE DUG BY HAND ONLY. BEUD PERSONNEL MUST BE ON SITE DURING EXCAVATION.

NOTE: CALL 479-271-3135 24 HOURS IN ADVANCE TO SCHEDULE OPENING OF BEUD EQUIPMENT.



DETAIL A - REDUCING CONDUIT INTO METER BASE





DETAIL B - CONDUIT STANDOFF ON POLE

METER BASES SUPPLIED BY CONTRACTOR
MUST BE RINGLESS IN TYPE.

RING TYPE METER BASES WILL NOT BE ACCEPTED.

NOTES: #

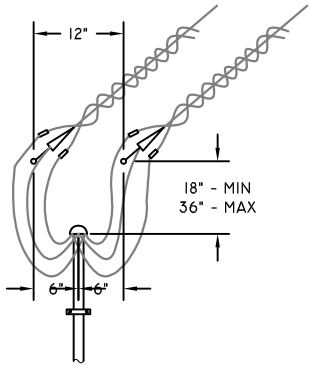
1. RINGLESS METER/MAIN COMBO PROVIDED AND INSTALLED BY CUSTOMER. MUST BE MOUNTED WITHIN 15' OF EDGE OF STRUCTURE CLOSEST TO BEUD UTILITY SERVICES. METER PROVIDED BY BEUD.
2. IMC OR PVC SCHEDULE 80 CONDUIT. REDUCE CONDUIT DIRECTLY BELOW METER BASE USING A SWEDGED REDUCER. ONLY ONE SWEDGED REDUCER ALLOWED UNLESS APPROVED BY BEUD IN WRITING. SEE DETAIL "A".
3. GROUNDING CONDUCTOR SIZE #6 SOLID COPPER AND SHALL BE BURIED. GROUNDING CONDUCTOR MUST BE INSTALLED IN 1/2" IMC OR PVC SCHEDULE 80 CONDUIT FROM METER TO GROUND LEVEL. GROUNDING CONDUCTOR MUST BE CONTINUOUS.
4. CUSTOMER TO FURNISH AND INSTALL (2) 5/8" DIA. X 8' DRIVEN GROUND RODS, COPPER OR COPPER CLAD. 2 LOCATIONS PER NEC 250.53(A)(2). USE COPPER OR BRONZE GROUND ROD CONNECTORS OR CLAMPS. GROUND RODS MAY BE LAID IN A DITCH THAT MEETS 30" DEPTH REQUIREMENT OF NESC 250.53(A)(4). GROUND RODS TO BE 6' APART PER NEC 250.53(A)(3).
5. CUSTOMER TO FURNISH AND INSTALL 3" CONDUIT USING 12" RADIUS SWEEPS TO BEUD SECONDARY PEDESTAL, TRANSFORMER OR POLE. CAUTION RIBBON MUST BE INSTALLED 12" ABOVE ALL UNDERGROUND SECONDARY CONDUITS. SEE DETAIL "B" FOR CONDUIT STANDOFF REQUIREMENTS AT POLE.
6. EXPANSION COUPLER TO BE INSTALLED BETWEEN GROUND LEVEL AND METER BASE

THE CITY OF BENTONVILLE

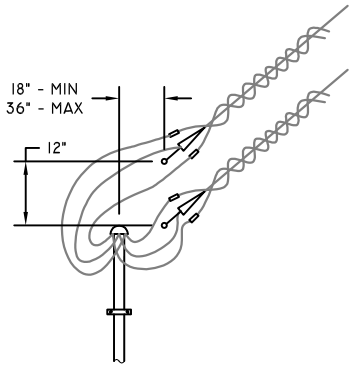
RESIDENTIAL UNDERGROUND SERVICE

REV 5 - 2024

DS-1007*



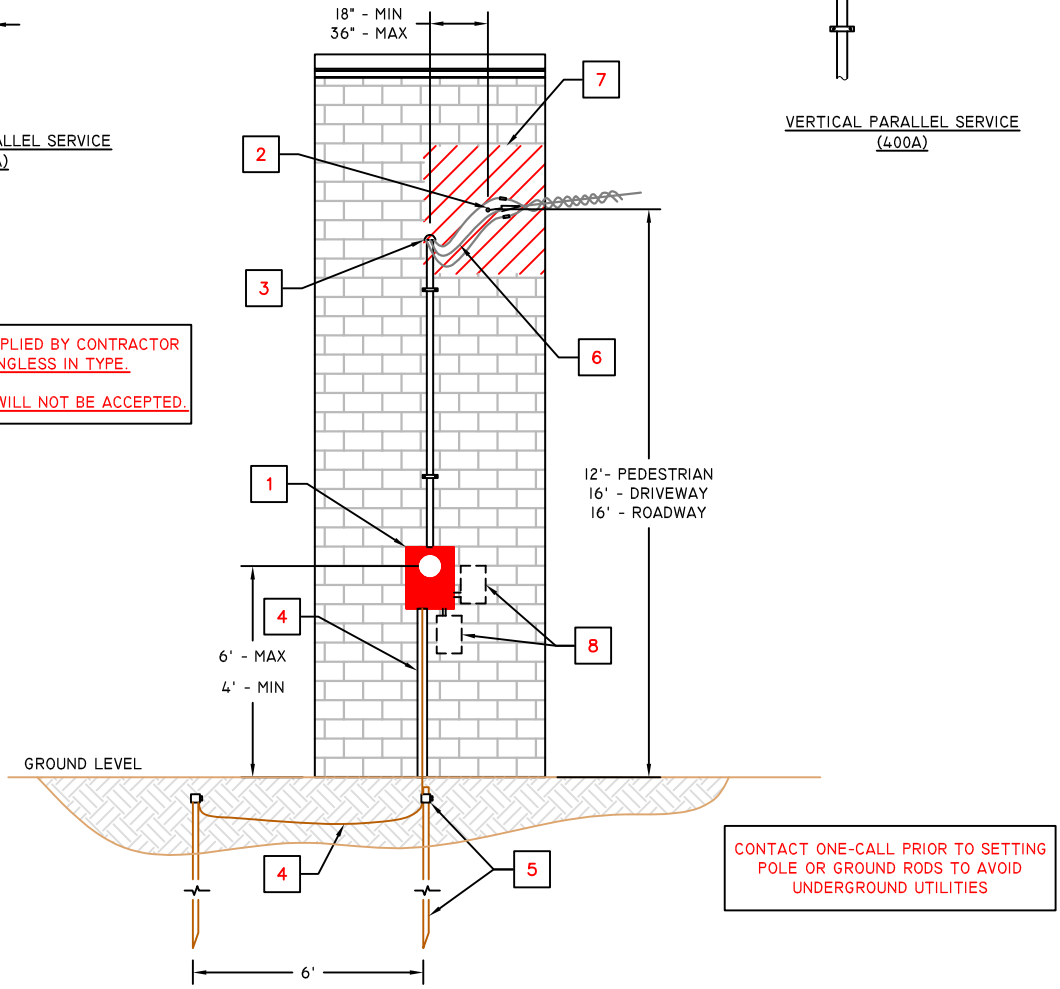
HORIZONTAL PARALLEL SERVICE
(400A)



VERTICAL PARALLEL SERVICE
(400A)

METER BASES SUPPLIED BY CONTRACTOR
MUST BE RINGLESS IN TYPE.

RING TYPE BASES WILL NOT BE ACCEPTED.



CONTACT ONE-CALL PRIOR TO SETTING
POLE OR GROUND RODS TO AVOID
UNDERGROUND UTILITIES

NOTES: #

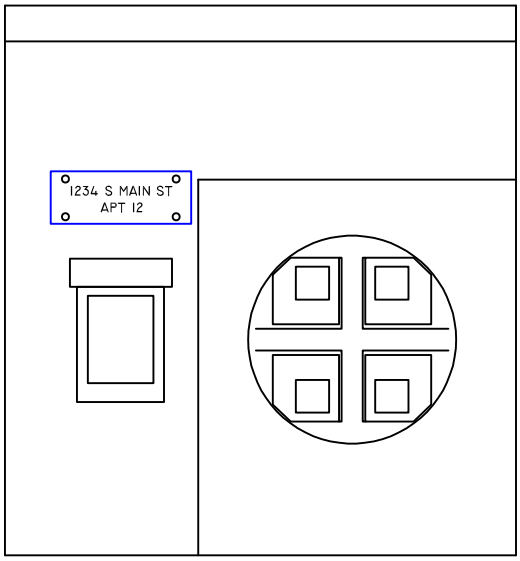
1. RINGLESS METER SOCKET INSTALLED BY CUSTOMER. ENTRANCE TO METER SOCKET SHALL BE WATERPROOF. METER PROVIDED BY BEUD.
2. SERVICES ATTACHED TO A BUILDING MUST BE STRUCTURALLY CONNECTED TO THE BUILDING USING A MINIMUM 3/8" EYE BOLT WITH 2 1/4" SQUARE WASHER. SERVICE ENTRANCE MUST BE MINIMUM 2" ELECTRICAL CONDUIT. SERVICE SHALL NOT BE CONNECTED TO METER RISER.
3. SERVICE WEATHERHEAD TO BE WITHIN 18" MIN AND 36" MAX OF POINT OF ATTACHMENT.
4. GROUNDING CONDUCTOR SHALL BE #6 SOLID COPPER FOR 200A OR #4 SOLID COPPER FOR 400A, AND SHALL BE BURIED. GROUNDING CONDUCTOR MUST BE INSTALLED IN 1/2" CONDUIT FROM METER TO GROUND LEVEL. GROUNDING CONDUCTOR MUST BE CONTINUOUS.
5. CUSTOMER TO FURNISH AND INSTALL (2) 5/8" DIA. X 8' DRIVEN GROUND RODS, COPPER OR COPPER CLAD. 2 LOCATIONS PER NEC 250.53(A)(2). USE COPPER OR BRONZE GROUND ROD CONNECTORS OR CLAMPS. GROUND RODS MUST BE 6' APART PER NEC 250.53(A)(3).
6. CUSTOMER TO PROVIDE 4' OF CONDUCTOR FROM WEATHERHEAD.
7. NO CATV OR TELCO ATTACHMENTS ALLOWED WITHIN 40" OF BEUD ATTACHMENT POINT(S). SHOWN BY HATCHED AREA.
8. OPTIONAL POSITIONS FOR MAIN DISCONNECT OR SHUNT TRIP.

THE CITY OF BENTONVILLE

COMMERCIAL OVERHEAD SERVICE FOR SELF CONTAINED METERING

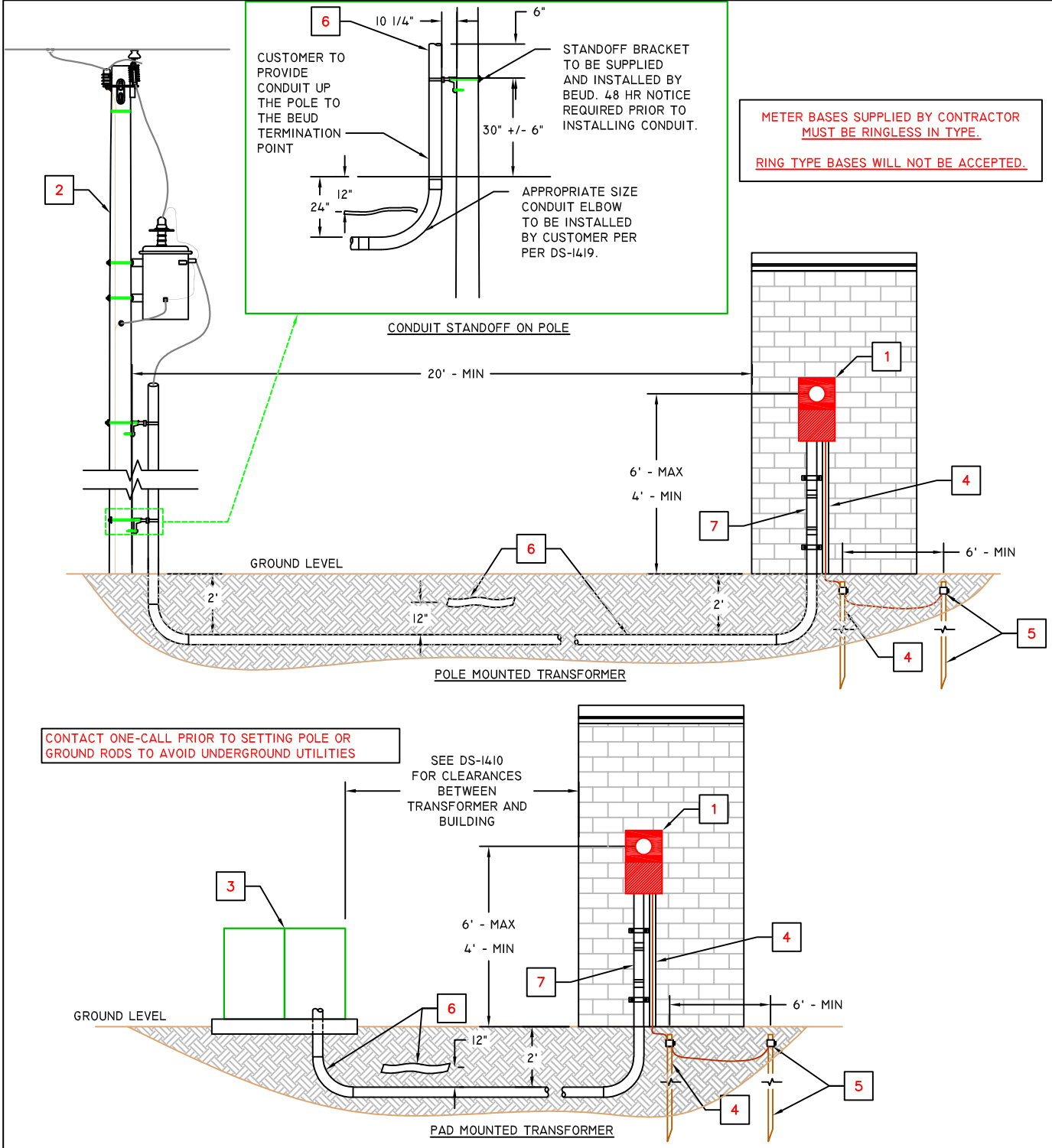
REV 5 - 2024

DS-1008*



ADDRESS LABEL SPECIFICATIONS

1. ENGRAVED PHENOLIC LABELS SHALL BE USED.
2. LABELS SHALL HAVE PLAIN BLOCK LETTER OR NUMBER WITH A CONTRASTING BACKGROUND
3. BLOCK LETTERS ARE TO BE A MINIMUM OF 1" IN HEIGHT.
4. LABELS SHALL CLEARLY INDICATE CORRESPONDING UNIT SERVED BY EACH METER.
5. LABELS WILL NOT BE PLACED SUCH THAT THEY OBSCURE ANY INFORMATION PRINTED OR LABELED ON THE EQUIPMENT.
6. POSITION THE LABEL SO THAT IT IS READILY VISIBLE AND THAT IT IS OBVIOUS WHAT EQUIPMENT THE LABEL DESCRIBES.
7. LABELS SHALL BE SMOOTHLY ATTACHED TO THE METERING EQUIPMENT WITH NO OVERLAPS, PROTRUSIONS OR SHARP EDGES AND CORNERS.
8. LABELS SHALL BE APPLIED NEATLY AND NEVER APPLIED OVER EXISTING PHENOLIC LABELS.
9. LABELS MAY HAVE SELF-ADHESIVE BACKS TO AID IN INSTALLATION, BUT EACH LABEL SHALL HAVE AT LEAST 2 HOLES (LARGER LABELS MUST HAVE 4 HOLES) AND BE SECURED TO THE PIECE OF EQUIPMENT WITH APPROPRIATE SIZED POP-RIVETS OR SCREWS TO KEEP THE LABEL FROM BEING UNINTENTIONALLY REMOVED.
10. ALL LABELS SHALL BE INSTALLED AND SECURED WITH POP-RIVETS OR SCREWS BEFORE THEY WILL BE ACCEPTED BY THE CITY OF BENTONVILLE.
11. USE CAUTION WHEN DRILLING AND INSTALLING POP-RIVETS OR SCREW TO AVOID ACCIDENTAL CONTACT WITH CONDUCTORS.



NOTES: #

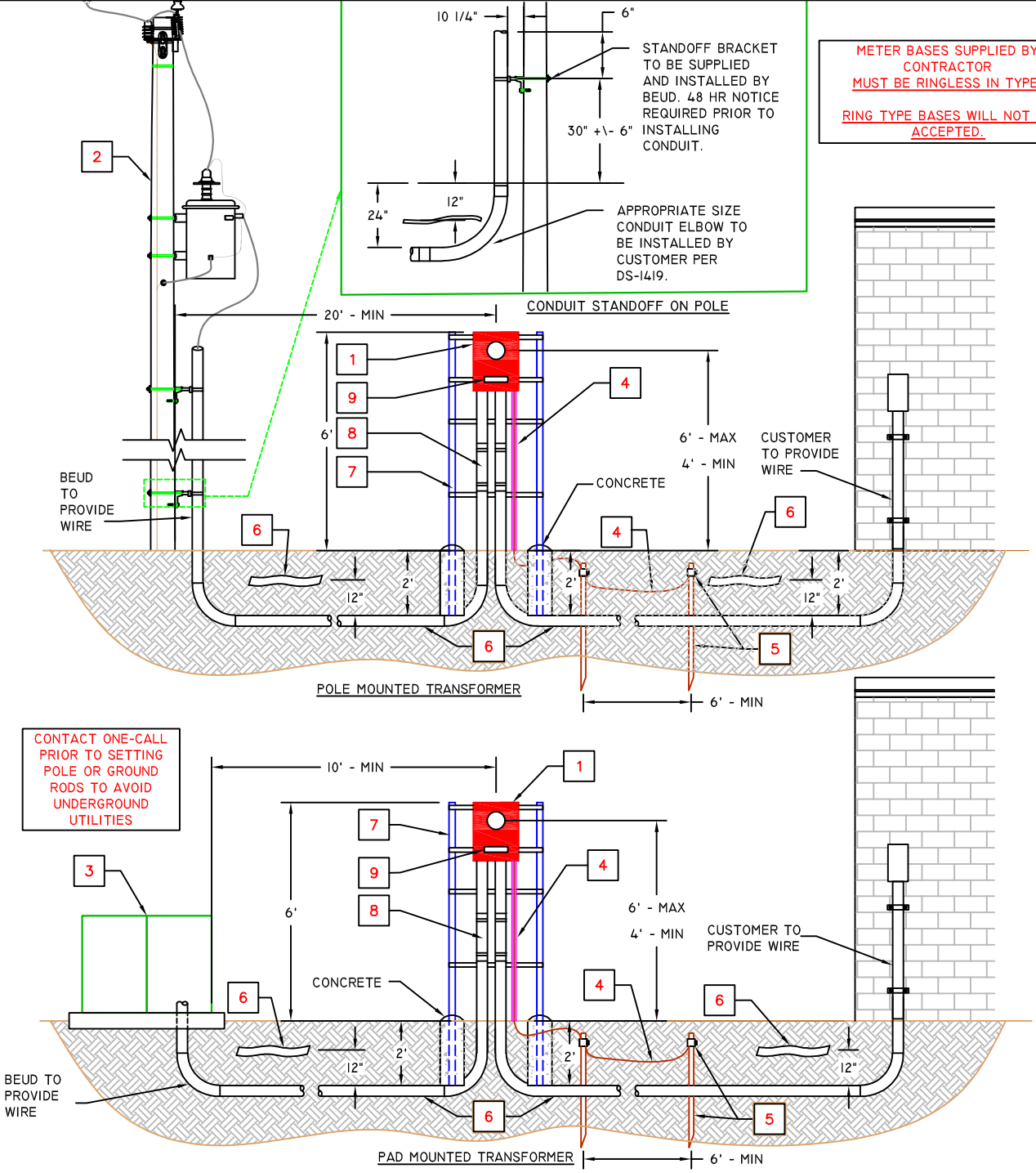
1. RINGLESS METER/MAIN COMBO PROVIDED AND INSTALLED BY CUSTOMER. ENTRANCE TO METER SOCKET SHALL BE WATERPROOF. METER PROVIDED BY BEUD.
2. BEUD WILL PROVIDE POLE AT PREARRANGED TERMINATION POINT FOR CONDUIT.
3. BEUD WILL MAKE ALL TERMINATIONS WITHIN THE EXISTING ENCLOSURE.
4. GROUNDING CONDUCTOR SHALL BE #6 SOLID COPPER FOR 200A OR #4 SOLID COPPER FOR 400A, AND SHALL BE BURIED. GROUNDING CONDUCTOR MUST BE INSTALLED IN 1/2" CONDUIT FROM METER TO GROUND LEVEL. GROUNDING CONDUCTOR MUST BE CONTINUOUS.
5. CUSTOMER TO FURNISH AND INSTALL (2) 5/8" DIA. X 8' DRIVEN GROUND RODS, COPPER OR COPPER CLAD. 2 LOCATIONS PER NEC 250.53(A)(2). USE COPPER OR BRONZE GROUND ROD CONNECTORS OR CLAMPS. GROUND RODS MAY BE LAID IN A DITCH THAT MEETS 30" DEPTH REQUIREMENT OF NEC 250.53(A)(4). GROUND RODS MUST BE 6' APART PER NEC 250.53(A)(3).
6. CUSTOMER TO PROVIDE AND INSTALL SECONDARY CONDUIT AS REQUIRED: 3" MINIMUM. CONTACT BEUD 48 HOURS PRIOR TO INSTALLATION OF CONDUIT. EXTEND CONDUIT 6" ABOVE STAND-OFF. CAUTION RIBBON MUST BE INSTALLED 12" ABOVE ALL SECONDARY UNDERGROUND CONDUITS. NO HEATED BENDS ALLOWED WITHOUT BEUD APPROVAL.
7. EXPANSION COUPLER TO BE INSTALLED BETWEEN GROUND LEVEL AND METER BASE.

THE CITY OF BENTONVILLE

UNDERGROUND SERVICE FOR SELF CONTAINED METERING

REV 5 - 2024

DS-1010*



NOTES: #

1. RINGLESS METER SOCKET INSTALLED BY CUSTOMER. ENTRANCE TO METER SOCKET SHALL BE WATERPROOF. METER AND CONDUCTORS FROM SERVICE POINT TO METER PROVIDED BY BEUD. CUSTOMER TO PROVIDE UL LISTED SERVICE DISCONNECT.
2. BEUD WILL PROVIDE POLE AT PREARRANGED TERMINATION POINT FOR CONDUIT.
3. BEUD WILL MAKE ALL TERMINATIONS WITHIN THE ENCLOSURE.
4. GROUNDING CONDUCTOR SHALL BE #6 SOLID COPPER FOR 200A OR #4 SOLID COPPER FOR 400A, AND SHALL BE BURIED. GROUNDING CONDUCTOR MUST BE INSTALLED IN 1/2" CONDUIT FROM METER TO GROUND LEVEL. GROUNDING CONDUCTOR MUST BE CONTINUOUS.
5. CUSTOMER TO FURNISH AND INSTALL (2) 5/8" DIA. X 8' DRIVEN GROUND RODS, COPPER OR COPPER CLAD. 2 LOCATIONS PER NEC 250.53(A)(2). USE COPPER OR BRONZE GROUND ROD CONNECTORS OR CLAMPS. GROUND RODS MAY BE LAID IN A DITCH THAT MEETS 30" DEPTH REQUIREMENT OF NEC 250.53(A)(4). GROUND RODS MUST BE 6' APART PER NEC 250.53(A)(3).
6. CUSTOMER TO PROVIDE AND INSTALL SECONDARY CONDUIT AS REQUIRED. CAUTION RIBBON MUST BE INSTALLED 12" ABOVE SECONDARY UNDERGROUND CONDUITS. NO HEATED BENDS ALLOWED WITHOUT BEUD APPROVAL.
7. RACK TO BE CONSTRUCTED FROM MINIMUM 3" X 3" X 1/4" GALVANIZED OR POWDER COATED ANGLE IRON IN CONCRETE, 3" UNI-STRUT, 2" RIGID PIPE, OR EQUIVALENT MATERIAL APPROVED BY BEUD PRIOR TO CONSTRUCTION.
8. EXPANSION COUPLER TO BE INSTALLED BETWEEN GROUND LEVEL AND METER BASE.
9. ADDRESS LABELS TO BE ATTACHED PER DS-1009 REQUIREMENTS.

THE CITY OF BENTONVILLE

UNDERGROUND SERVICE FOR 200A or 400A SELF-CONTAINED, FREE-STANDING METERING

REV 5 - 2024

DS-1011*

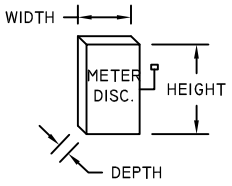
METER BASES SUPPLIED BY CONTRACTOR MUST BE RINGLESS IN TYPE.

RING TYPE BASES WILL NOT BE ACCEPTED.

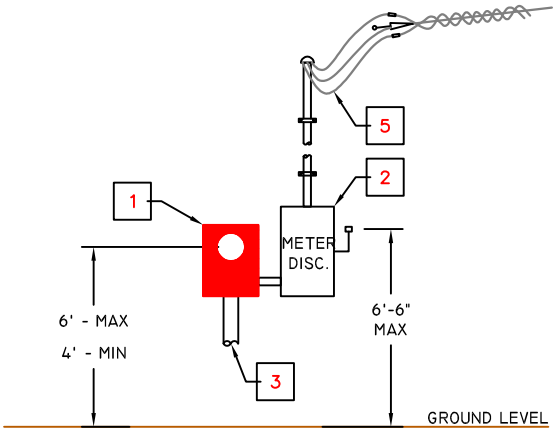
480V DISCONNECT PART NUMBERS

200A: BEUD INVENTORY #11442
MFR PART NUMBER HU364NRB

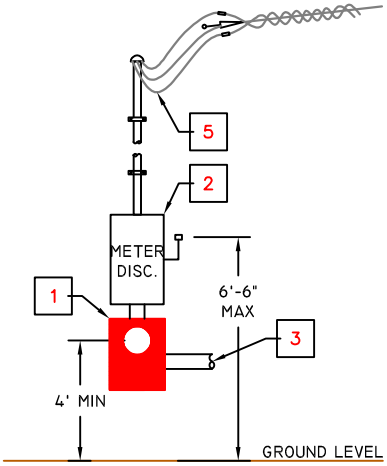
400A: BEUD INVENTORY #11443
MFR PART NUMBER HU365NR



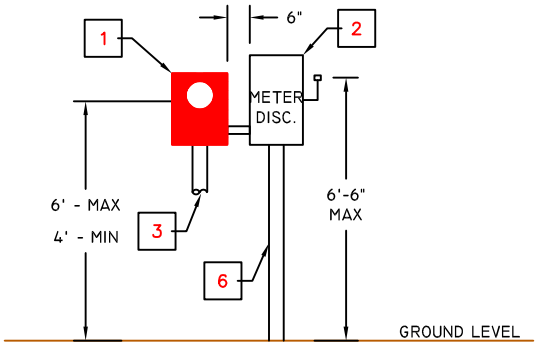
METER DISC. DIMENSIONS (INCHES)		
AMPS	200	400
HEIGHT	29-1/4	50-1/4
WIDTH	17-1/4	27-5/8
DEPTH	8-1/2	9-1/2



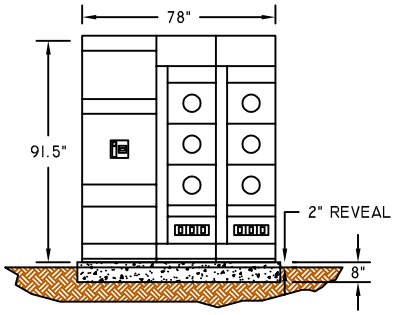
OVERHEAD SERVICE



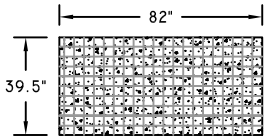
OVERHEAD SERVICE
ALTERNATE ARRANGEMENT



UNDERGROUND SERVICE



SQUARE D QED SWITCHBOARD OPTION
REQUIRES CONCRETE FOUNDATION 82" X 39.5" X 8"
WITH 2" REVEAL ABOVE FINAL GRADE.
EMBED 4" WIRE MESH IN CONCRETE.



GENERAL GROUNDING NOTE:

THE GROUNDING ELECTRODE CONDUCTOR CONNECTION SHALL BE MADE AT ANY ACCESSIBLE POINT FROM THE LOAD END OF THE SERVICE DROP OR SERVICE LATERAL TO AND INCLUDING THE TERMINAL OR BUS TO WHICH THE GROUNDED SERVICE CONDUCTOR IS CONNECTED AT THE SERVICE DISCONNECTING MEANS.

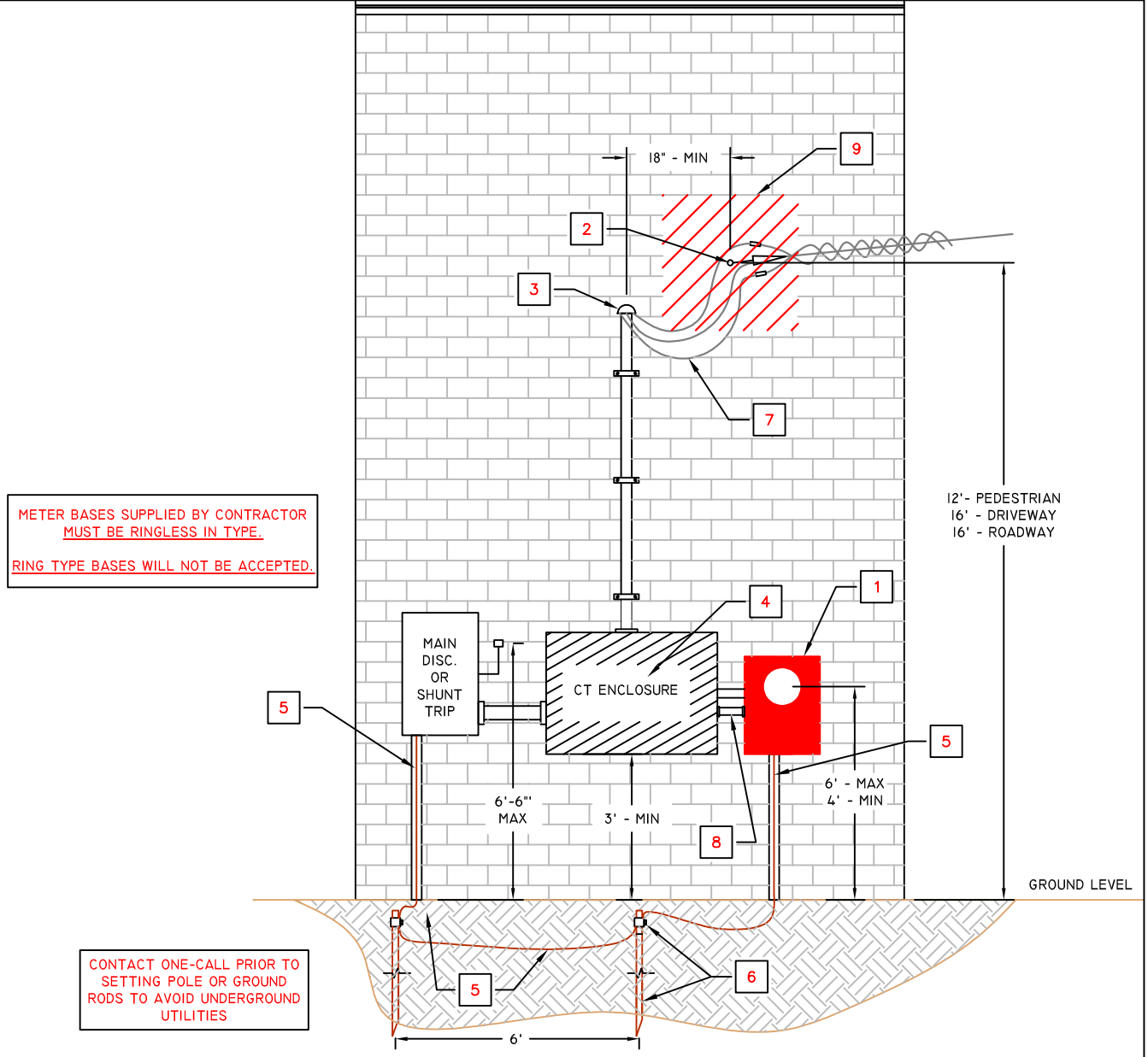
NOTES: #

1. METER SOCKET INSTALLED BY CUSTOMER. ENTRANCE TO METER SOCKET SHALL BE WATERPROOF. METER PROVIDED BY BEUD.
2. METER DISCONNECT (DISC) PROVIDED BY BEUD AND INSTALLED BY CUSTOMER.
3. TO SERVICE DISCONNECT.
4. METER DISCONNECT (DISC), METER SOCKET AND CUSTOMER PROVIDED SERVICE DISCONNECT ENCLOSURES MUST BE CONNECTED TO GROUND RODS WITH APPROPRIATELY SIZED CONDUCTOR PER LATEST EDITION OF NEC ADOPTED BY ARKANSAS.
5. CUSTOMER TO PROVIDE CONDUCTORS FROM DISCONNECT TO WEATHERHEAD. EXTEND CONDUCTORS FROM WEATHERHEAD A MINIMUM 4'.
6. BEUD SHALL PROVIDE CONDUCTORS TO LINE SIDE OF METER DISCONNECT.

THE CITY OF BENTONVILLE

COMMERCIAL SERVICE
480V METER DISCONNECT
SELF CONTAINED METERING

DS-1012



NOTES: #

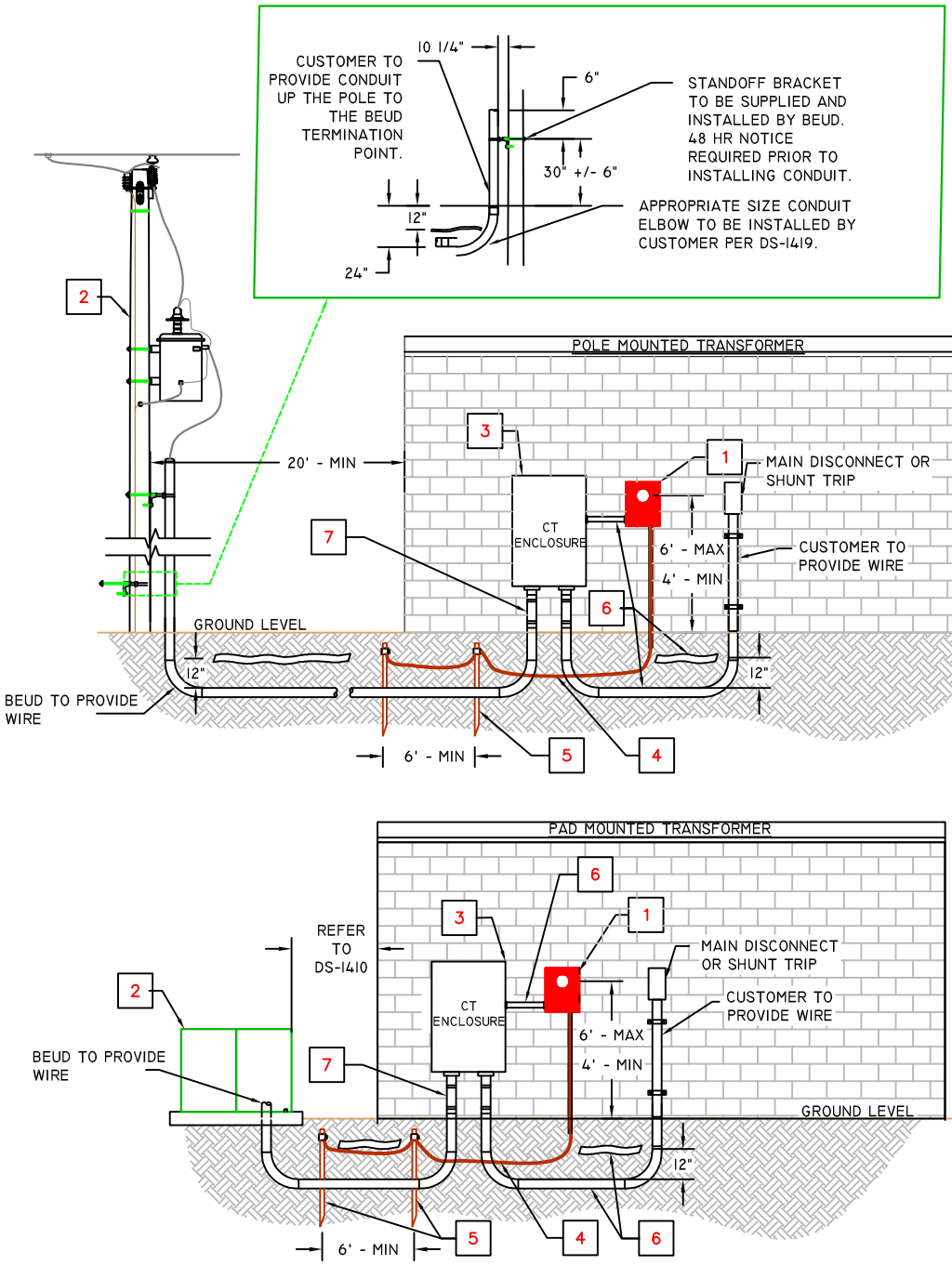
1. RINGLESS METER SOCKET INSTALLED BY CUSTOMER. ENTRANCE TO METER SOCKET SHALL BE WATERPROOF. METER PROVIDED BY BEUD.
2. SERVICES ATTACHED TO A BUILDING MUST BE STRUCTURALLY CONNECTED TO THE BUILDING USING A MINIMUM 5/8" EYE BOLT WITH 2 1/4" SQUARE WASHER AND SERVICE ENTRANCE MUST BE MINIMUM 2" ELECTRICAL CONDUIT. SERVICE SHALL NOT BE CONNECTED TO METER RISER.
3. SERVICE WEATHERHEAD TO BE WITHIN 18" MIN AND 36" MAX OF POINT OF ATTACHMENT.
4. AUXILIARY CT CABINET TO BE PROVIDED BY CUSTOMER. CONTACT BEUD FOR SIZE DETERMINATION. REFERENCE DS-1015 FOR AUXILIARY CT CABINET SPECIFICATIONS.
5. SERVICE GROUNDING CONDUCTOR SIZE: #4 SOLID COPPER
   METER GROUNDING CONDUCTOR SIZE (SOLID COPPER): #6 SOLID COPPER
   GROUNDING CONDUCTOR SHALL BE BURIED. GROUNDING CONDUCTOR MUST BE CONTINUOUS.
6. CUSTOMER TO FURNISH AND INSTALL (2) 5/8" DIA. X 8' DRIVEN GROUND RODS, COPPER OR COPPER CLAD. 2 LOCATIONS PER NEC 250.53(A)(2). USE COPPER OR BRONZE GROUND ROD CONNECTORS OR CLAMPS. GROUND RODS MUST BE 6' APART PER NEC 250.53(A)(3).
7. CUSTOMER TO PROVIDE 4' OF CONDUCTOR FROM WEATHERHEAD.
8. CUSTOMER TO PROVIDE A 2" CONDUIT FOR CT METERING AS REQUIRED.
9. NO ATTACHMENTS ALLOWED WITHIN 40" OF BEUD ATTACHMENT POINT(S). SHOWN BY HATCHED AREA.

THE CITY OF BENTONVILLE

COMMERCIAL OVERHEAD SERVICE WITH CT METERING

REV 5 - 2024

DS-1013*



NOTES

CONTACT ONE-CALL PRIOR TO SETTING POLE OR GROUND RODS TO AVOID UNDERGROUND UTILITIES

IF CT CABINET IS REQUESTED TO BE MOUNTED ON A FREE STANDING RACK, A STRUCTUAL DRAWING STAMPED BY A PROFESSIONAL ENGINEER SHALL BE SUPPLIED TO BEUD FOR REVIEW AND APPROVAL.

CONTRACTOR TO SUPPLY ALL LINE AND LOAD LUGS WITH CT CABINET.

NOTES: #

1. RINGLESS METER SOCKET PROVIDED BY BEUD AND INSTALLED BY CONTRACTOR. ENTRANCE TO METER SOCKET SHALL BE WATERPROOF. METER AND CONDUCTORS FROM SERVICE POINT TO METER PROVIDED BY BEUD. CUSTOMER TO PROVIDE UL LISTED SERVICE DISCONNECT.
2. BEUD WILL PROVIDE POLE OR TRANSFORMER AT PREARRANGED TERMINATION POINT FOR CONDUIT.
3. CUSTOMER TO PROVIDE AND INSTALL ENCLOSURE PER SPECS, ENCLOSURE GROUND LUG, SERVICE DISCONNECT AND GROUND RODS. CUSTOMER SHALL PROVIDE ALL LOAD CONDUCTORS FROM CT CABNET TO SERVICE EQUIPMENT. REFER TO BEUD SERVICE GUIDELINE SECTION 25.2 FOR CT ENCLOSURE SPECIFICATIONS.
4. GROUND ROD CONDUCTOR (SOLID COPPER): #6 AND SHALL BE BURIED. SERVICE GROUNDING CONDUCTOR AS REQUIRED BY NEC. GROUNDING CONDUCTOR MUST BE CONTINUOUS.
5. CUSTOMER TO FURNISH AND INSTALL (2) 5/8" DIA. X 8' DRIVEN GROUND RODS, COPPER OR COPPER CLAD. 2 LOCATIONS PER NEC 250.53(A)(2). USE COPPER OR BRONZE GROUND ROD CONNECTORS OR CLAMPS. GROUND RODS MAY BE LAID IN DITCH THAT MEETS 30" DEPTH REQUIREMENT OF NEC 250.53(A)(4). GROUND RODS MUST BE 6' APART PER NEC 250.53(A)(3).
6. CUSTOMER TO PROVIDE AND INSTALL SECONDARY CONDUIT. CONTACT BEUD 48 HOURS PRIOR TO INSTALLATION OF CONDUIT. CAUTION RIBBON MUST BE INSTALLED 12" ABOVE SECONDARY UNDERGROUND CONDUITS.
7. EXPANSION COUPLER TO BE INSTALLED BETWEEN GROUND LEVEL AND METER BASE.

THE CITY OF BENTONVILLE

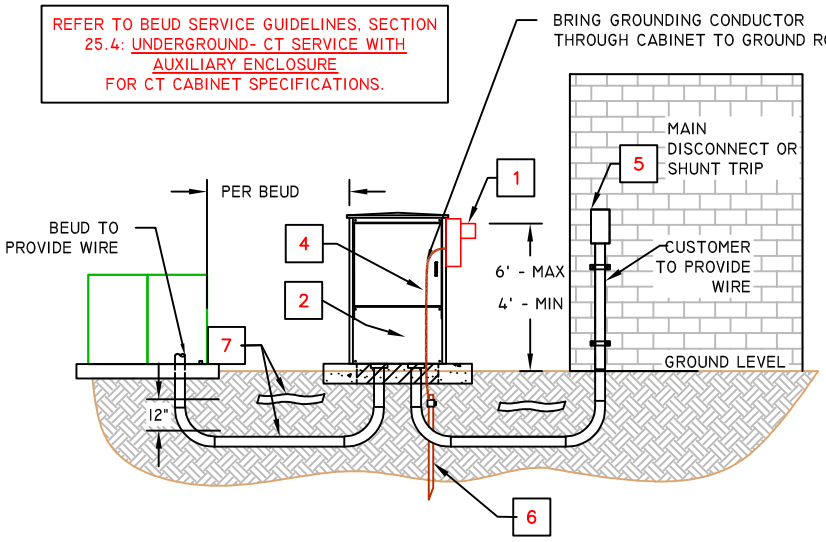
UNDERGROUND SERVICE
WALL MOUNTED CT METERING, 600-1200A

REV 5 - 2024

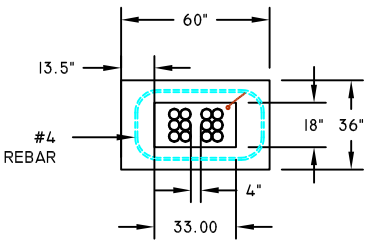
DS-1014*

1600A CT METERED SYSTEM- PAD MOUNTED

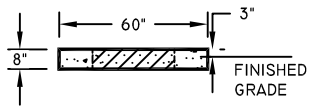
REFER TO BEUD SERVICE GUIDELINES, SECTION 25.4: UNDERGROUND- CT SERVICE WITH AUXILIARY ENCLOSURE FOR CT CABINET SPECIFICATIONS.



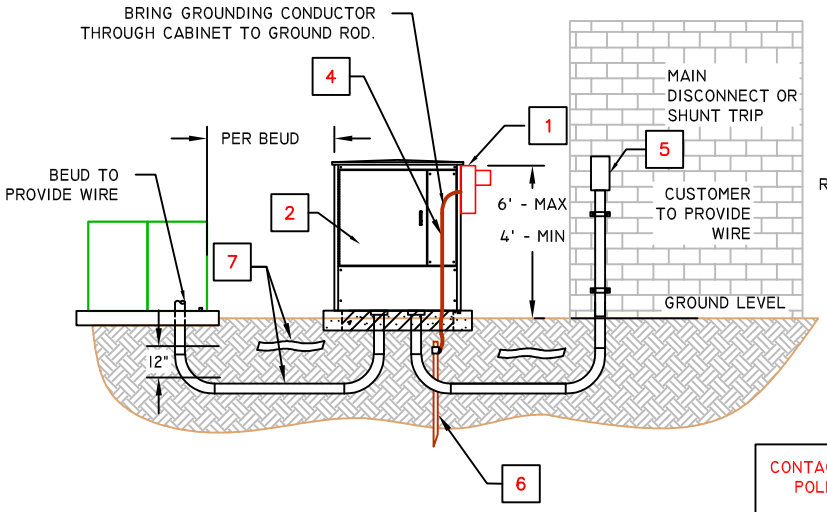
PLAN VIEW - PAD DIMENSIONS



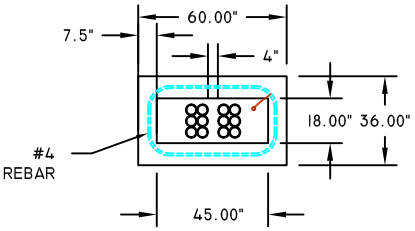
PROFILE VIEW - PAD DIMENSIONS



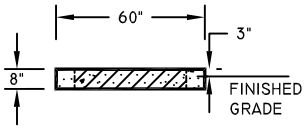
2000A-4000A CT METERED SYSTEM- PAD MOUNTED



PLAN VIEW - PAD DIMENSIONS



PROFILE VIEW - PAD DIMENSIONS



CONTACT ONE-CALL PRIOR TO SETTING POLE OR GROUND RODS TO AVOID UNDERGROUND UTILITIES

NOTES:

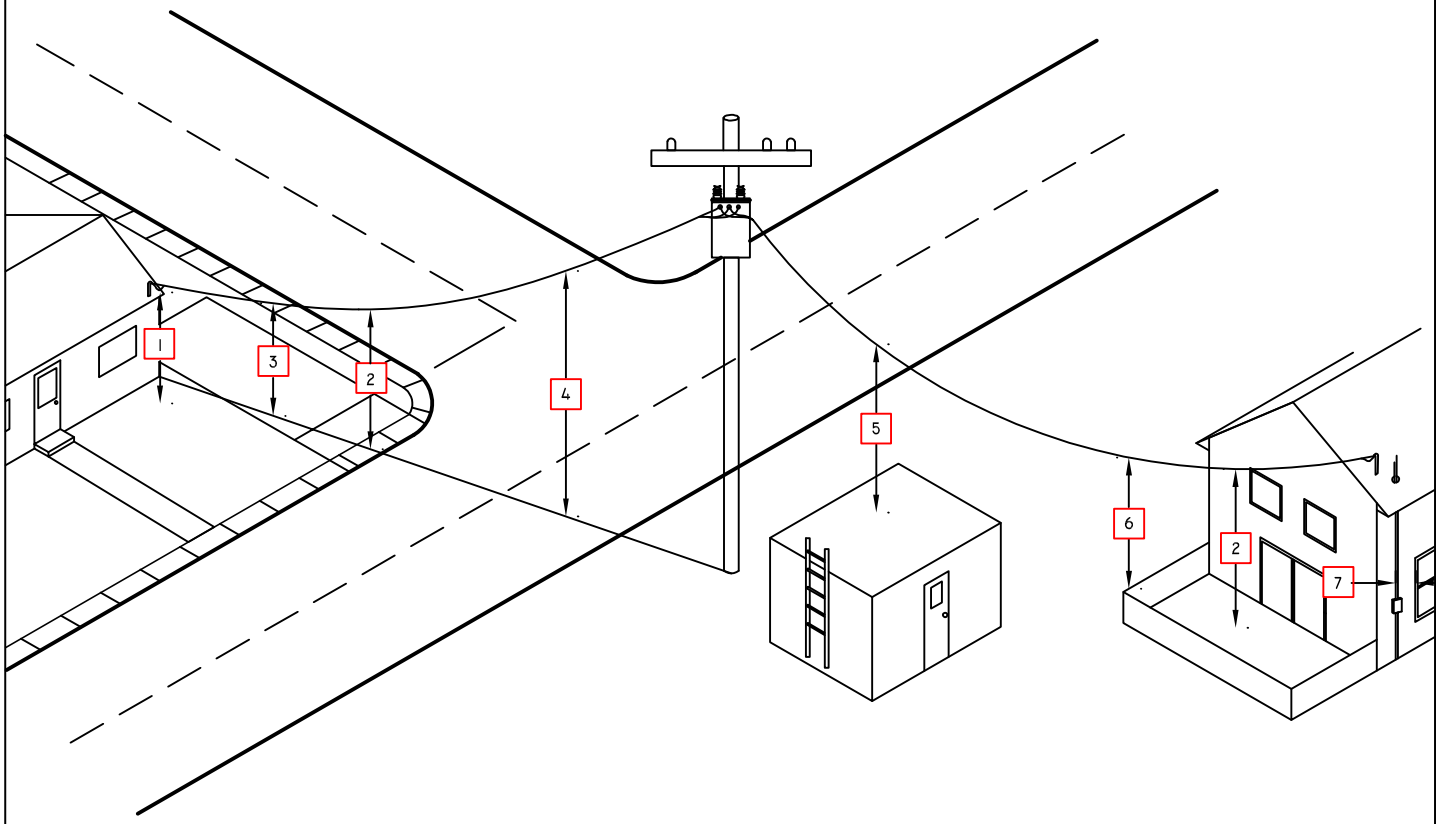
1. RINGLESS METER SOCKET PROVIDED AND INSTALLED BY BEUD. ENTRANCE TO METER SOCKET SHALL BE WATERPROOF. METER PROVIDED BY BEUD.
2. CUSTOMER TO PROVIDE AND INSTALL ENCLOSURE PER SPECS, ENCLOSURE GROUND LUG, SERVICE DISCONNECT, AND GROUND RODS. CUSTOMER SHALL PROVIDE ALL LOAD CONDUCTORS FROM CT CABNET TO SERVICE EQUIPMENT. REFER TO BEUD SERVICE GUIDELINE SECTION 25.2 FOR CT ENCLOSURE SPECIFICATIONS.
3. CUSTOMER TO GROUND AND BOND CT ENCLOSURE TO SYSTEM NEUTRAL.
4. GROUND ROD CONDUCTOR SIZE (SOLID COPPER): #6 AND SHALL BE BURIED. SERVICE GROUNDING CONDUCTOR AS REQUIRED BY NEC AT FIRST MEANS OF DISCONNECT. GROUNDING CONDUCTOR MUST BE CONTINOUS.
5. MAIN DISCONNECT OR SHUNT TRIP LOCATION SHOULD BE COORDINATED WITH FIRE DEPARTMENT.
6. CUSTOMER TO FURNISH AND INSTALL 5/8" DIA. X 8' DRIVEN GROUND ROD, COPPER OR COPPER CLAD. USE COPPER OR BRONZE GROUND ROD CONNECTORS OR CLAMPS. GROUND ROD MAY BE LAID IN DITCH THAT MEETS 30" DEPTH REQUIREMENT OF NEC 250.53(A)(4).
7. CUSTOMER TO PROVIDE AND INSTALL SECONDARY CONDUIT. CONTACT BEUD 48 HOURS PRIOR TO INSTALLATION OF CONDUIT. CAUTION RIBBON MUST BE INSTALLED 12" ABOVE SECONDARY UNDERGROUND CONDUITS.
8. CUSTOMER TO PROVIDE AND INSTALL UL APPROVED SERVICE DISCONNECT SIZED PER NEC FOR SERVICE AMPERAGE RATING AND SHORT-CIRCUIT CURRENT RATING.
9. BEUD TO PROVIDE CONDUCTOR TO CT CABNET, CT WIRING AND CONNECTIONS BETWEEN CT AND METER SOCKET.

THE CITY OF BENTONVILLE

1600A - 4000A PAD MOUNT CT ENCLOSURE

REV 5 - 2024

DS-1015*



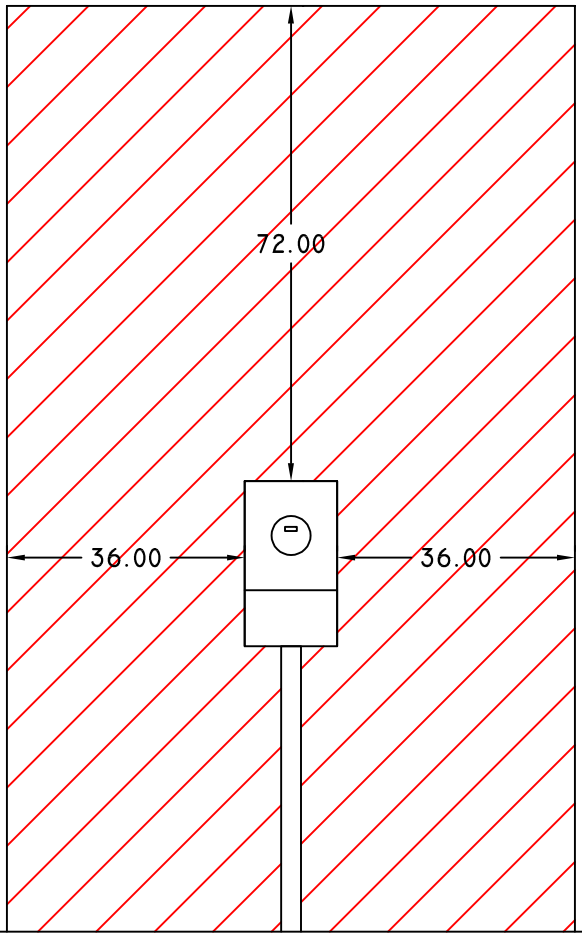
NOTES: #

1. 12' MINIMUM VERTICAL CLEARANCE (INCLUDING DRIP LOOP) OVER RESIDENTIAL PROPERTY ACCESSIBLE TO PEDESTRIANS ONLY. REFER TO NESC TABLE 232-1 IF BUILDING HEIGHT DOES NOT ALLOW THIS CLEARANCE.
2. 12' MINIMUM VERTICAL CLEARANCE OVER RESIDENTIAL PROPERTY ACCESSIBLE TO PEDESTRIANS. NESC TABLE 231-1
3. 16' MINIMUM VERTICAL CLEARANCE OVER RESIDENTIAL PRIVATE DRIVEWAYS.. NESC TABLE 231-1
4. 16' MINIMUM VERTICAL CLEARANCE OVER ROADS, STREETS, AND OTHER AREAS SUBJECT TO TRUCK TRAFFIC. NEC 230.24(B)(4)
5. 11' MINIMUM VERTICAL CLEARANCE OVER ADJACENT, ACCESSIBLE ROOFS. NESC TABLE 234-1.
6. 11' MINIMUM VERTICAL CLEARANCE OVER ATTACHED BALCONIES, PORCHES, OR DECKS READILY ACCESSIBLE TO PEDESTRIANS. NESC 234(C)(3)(D)(1)
7. 3' MINIMUM VERTICAL AND HORIZONTAL CLEARANCE FROM WINDOW OR DOOR OPENINGS. NESC 234(C)(3)(D)(1)

THE CITY OF BENTONVILLE

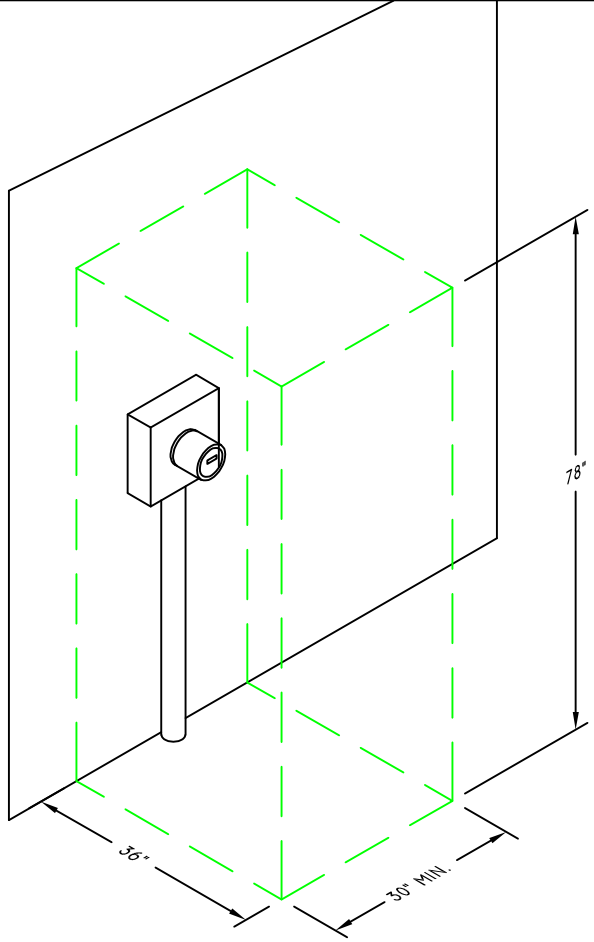
SECONDARY CONDUCTOR CLEARANCE REQUIREMENTS

DS-1016



NOT ALLOWED WITHIN RED HATCHED AREA:

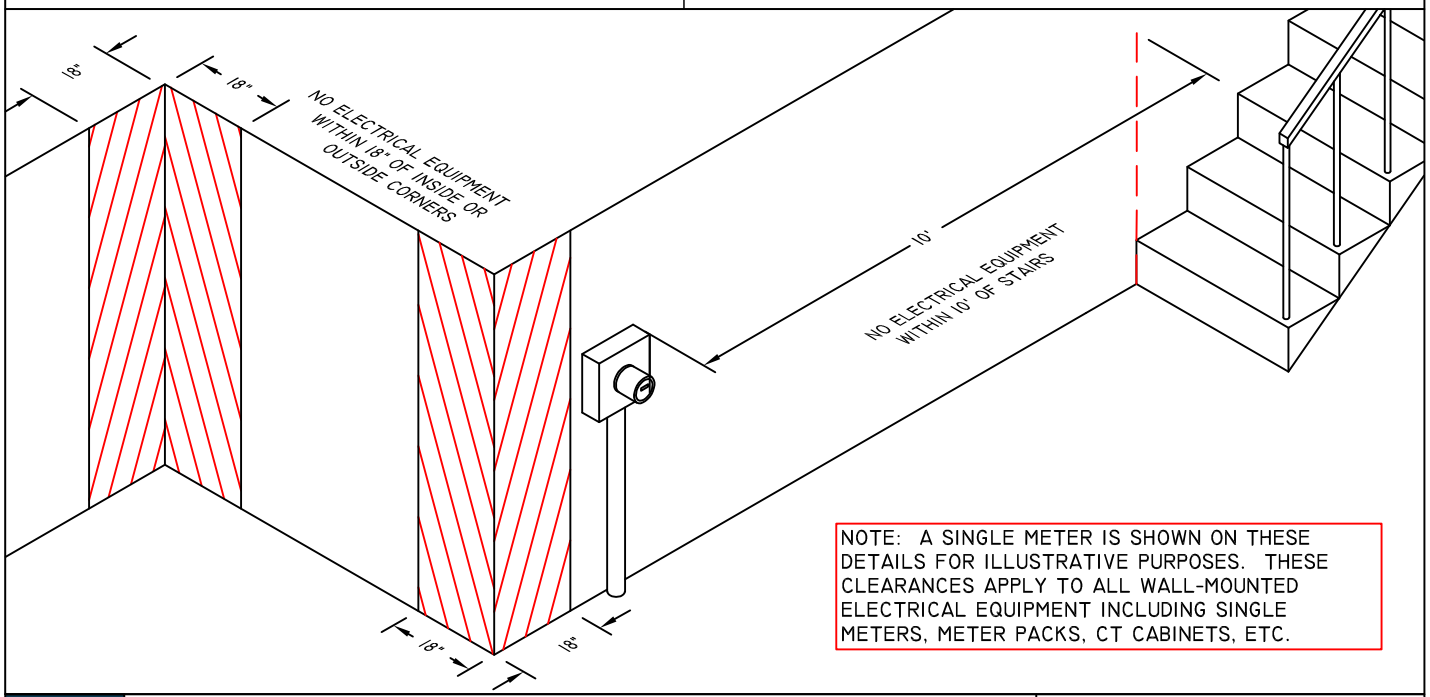
- DOORS
- WINDOWS THAT PROVIDE EGRESS
- GAS METERS
- CATV/TELCO EQUIPMENT
- HVAC EQUIPMENT
- VENTILATION LOUVERS
- HOSE BIB



SAFE WORKING CLEARANCE ZONE

THESE AREAS MUST BE KEPT CLEAR AND UNOBSTRUCTED AS A SAFE WORKING CLEARANCE ZONE.

MINIMUM 30" HORIZONTAL CLEARANCE REFERS TO ANY EQUIPMENT LESS THAN 30" WIDE. FOR EQUIPMENT GREATER THAN 30" WIDE, THE CLEARANCE ZONE EXTENDS TO THE WIDTH OF THE EQUIPMENT.



NOTE: A SINGLE METER IS SHOWN ON THESE DETAILS FOR ILLUSTRATIVE PURPOSES. THESE CLEARANCES APPLY TO ALL WALL-MOUNTED ELECTRICAL EQUIPMENT INCLUDING SINGLE METERS, METER PACKS, CT CABINETS, ETC.

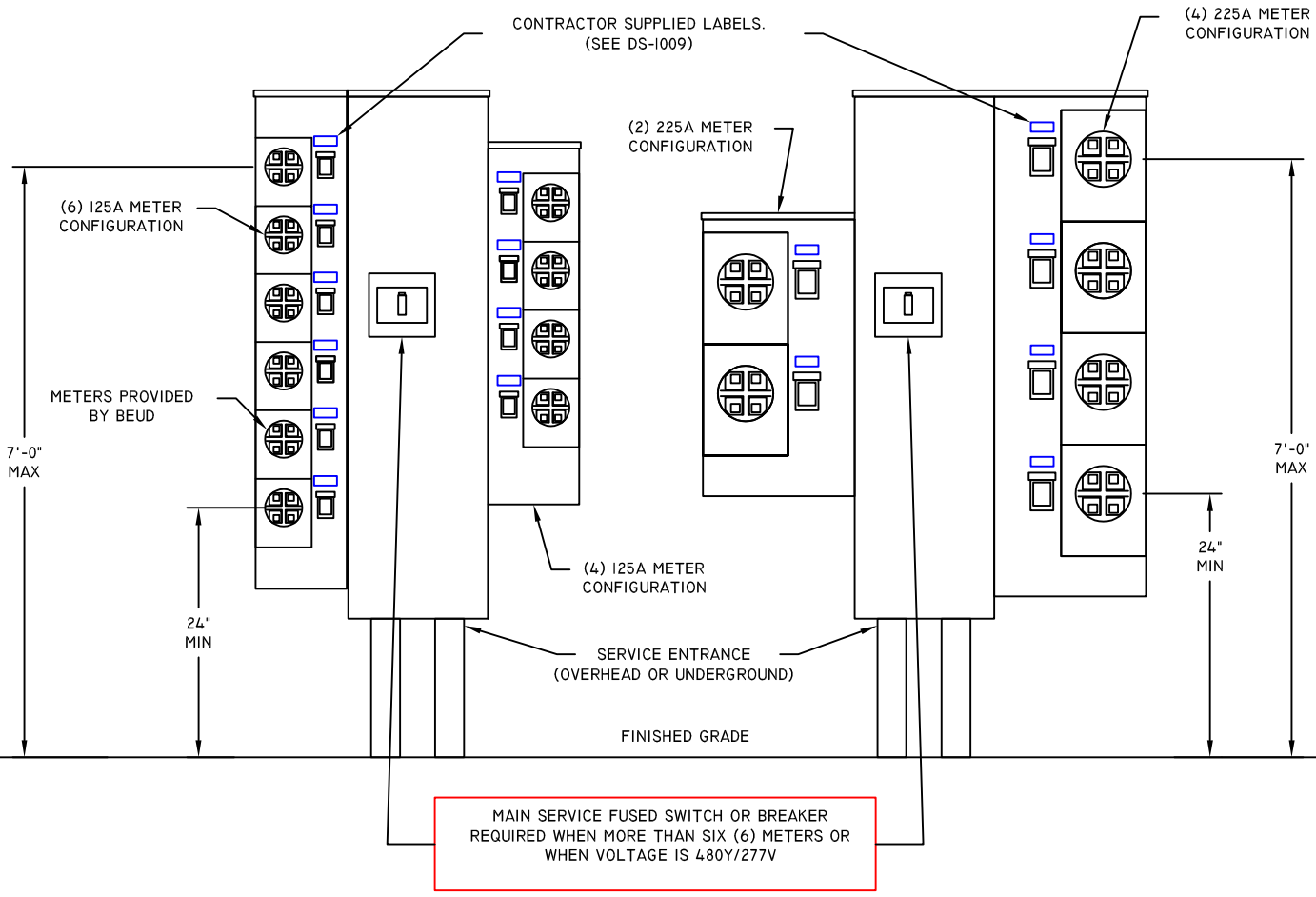
THE CITY OF BENTONVILLE

METER CLEARANCE REQUIREMENTS

REV. 5 - 2024

DS-1017*

NOTE: CONTRACTOR TO PROVIDE AND INSTALL ALL MECHANICAL LUGS.



MAIN SERVICE FUSED SWITCH OR BREAKER REQUIRED WHEN MORE THAN SIX (6) METERS OR WHEN VOLTAGE IS 480Y/277V

THE CITY OF BENTONVILLE

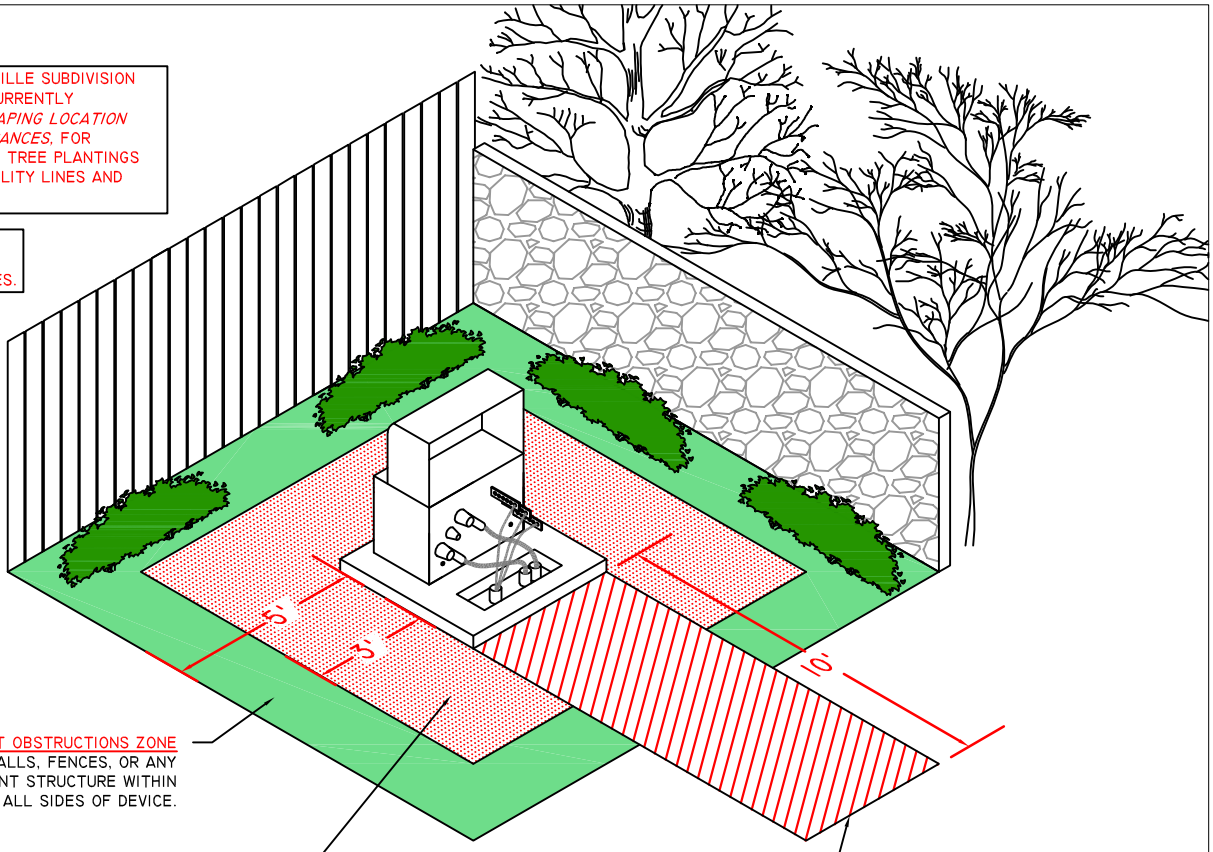
MULTIPLE METER INSTALLATION REQUIREMENTS

REV. 5 - 2024

DS-1018*

REFER TO BENTONVILLE SUBDIVISION CODE 1400.12 (AS CURRENTLY AMENDED), *LANDSCAPING LOCATION AND UTILITY CLEARANCES*, FOR REQUIREMENTS FOR TREE PLANTINGS AROUND BURIED UTILITY LINES AND EQUIPMENT.

REFER TO DS-1410 FOR CLEARANCES AROUND STRUCTURES.



5' NO PERMANENT OBSTRUCTIONS ZONE
NO TREES, WALLS, FENCES, OR ANY OTHER PERMANENT STRUCTURE WITHIN 5' ON ALL SIDES OF DEVICE.

3' NO LANDSCAPING ZONE
NO PLANTS OR SHRUBS WITHIN 3' ON ALL SIDES OF DEVICE.

10' WORKING ZONE
10' CLEAR AREA MUST BE MAINTAINED ACROSS WIDTH OF DEVICE ON OPENING SIDE. (MAY BE REDUCED TO 6' FOR SECONDARY PEDESTALS.)

PADMOUNT SWITCHGEAR - MAINTAIN 5' CLEARANCE FROM ACCESS DOOR SIDE OF DEVICE.

THREE-PHASE PRIMARY JUNCTION BOX

THREE-PHASE PADMOUNT TRANSFORMER

SINGLE-PHASE PADMOUNT TRANSFORMER

SECONDARY PEDESTAL

THE CITY OF BENTONVILLE ELECTRIC UTILITIES

LANDSCAPING SEPARATION REQUIREMENTS

REV. 5 - 2024

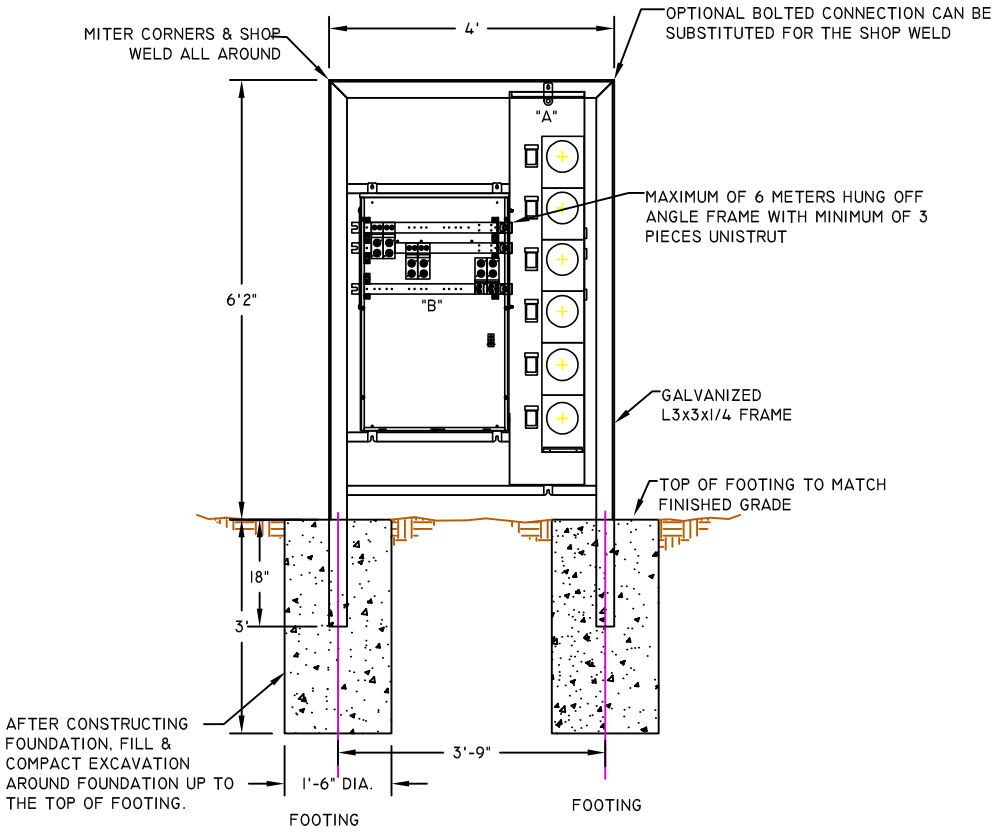
DS-1019*

CT Cabinet Part Numbers					
WALL-MOUNTED CABINET FOR OVERHEAD CT SERVICE					
Ampacity	Part Number	Cabinet	Height	Width	Depth
600	BEDCT6-4L-PGRY	CR48SL	48	36	15
800	BEDCT8-4L-PGRY	CR48SL	48	36	15
WALL-MOUNTED CABINET FOR UNDERGROUND CT SERVICE					
Ampacity	Part Number	Cabinet	Height	Width	Depth
600	BEDSB6-4-A-CT-PGRY	CL48	48	33	12
800	BEDSB8-4-A-CT-PGRY	CL48	48	33	12
1200	BEDSB12-4-A-CT-PGRY	CL48	48	33	12
PAD-MOUNTED CABINET FOR UNDERGROUND CT SERVICE					
Ampacity	Part Number	Cabinet	Height	Width	Depth
1600	BEDSCC16-4-A-CT	N/A	60	36	24
2000	BEDSCC20-4-A-CT	N/A	60	51	24
2500	BEDSCC25-4-A-CT	N/A	60	51	24
3000	BEDSCC30-4-A-CT	N/A	60	51	24
4000	BEDSCC40-4-A-CT	N/A	60	51	24

NOTES:

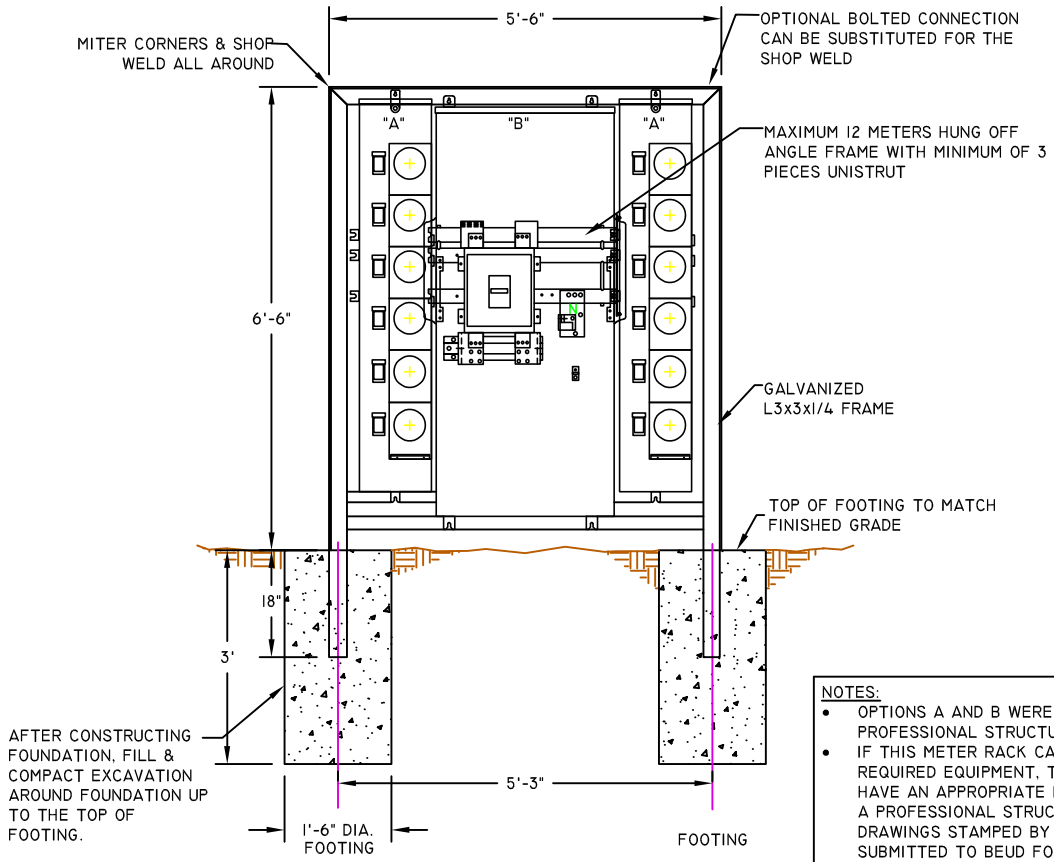
- CT CABINETS ARE REQUIRED IF A TRANSFORMER IS FEEDING A CT SERVICE AND A NON-CT SERVICE, OR MULTIPLE CT SERVICES.
- BEUD WILL PROVIDE CT'S INSIDE CABINET.
- CONTRACTOR TO PROVIDE CABINET AND ALL LINE AND LOAD LUGS INSIDE CABINET.
- THIS LIST REPLACES ANY REFERENCES TO PREVIOUS SPECS DS-1021, DS-1022, AND DS-1023.

OPTION A - UP TO 6 METERS



OPTION B - UP TO 12 METERS

UNISTRUT 1-5/8" WIDE



NOTES:

- OPTIONS A AND B WERE DESIGNED BY A PROFESSIONAL STRUCTURAL ENGINEER.
- IF THIS METER RACK CANNOT ACCOMODATE THE REQUIRED EQUIPMENT, THE DEVELOPER MUST HAVE AN APPROPRIATE METER RACK DESIGNED BY A PROFESSIONAL STRUCTURAL ENGINEER. DESIGN DRAWINGS STAMPED BY THE ENGINEER MUST BE SUBMITTED TO BEUD FOR REVIEW PRIOR TO INSTALLATION.
- FOR BOTH OPTIONS, GROUNDING SHALL BE PER NEC TABLE 250.122

THE CITY OF BENTONVILLE

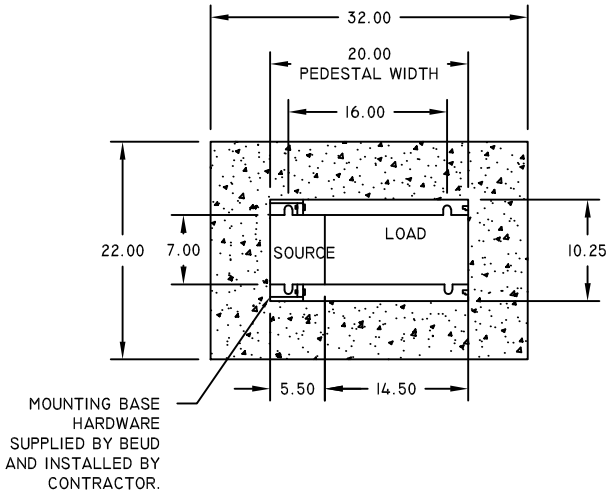
SINGLE PHASE FREE STANDING METER RACK

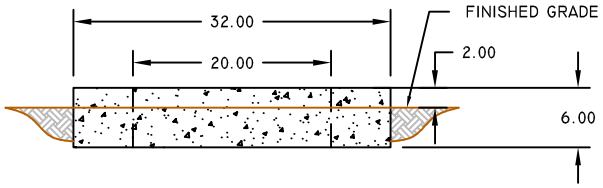
REV 5 - 2024

DS-1024*

MOUNTING BASE DETAIL

BEUD INVENTORY #1886
MFR PART NUMBER CP-20-PAD





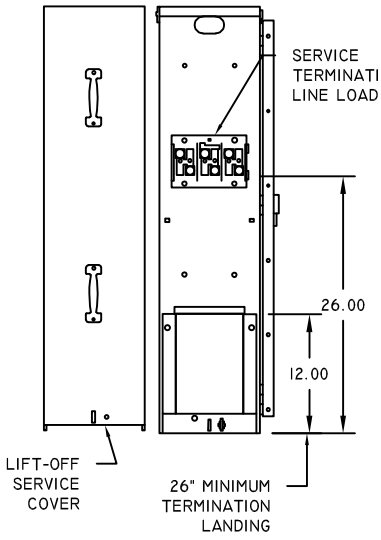
MOUNTING BASE AND HARDWARE IS SUPPLIED BY BEUD AND INSTALLED BY CONTRACTOR.

ALL HARDWARE STAINLESS STEEL

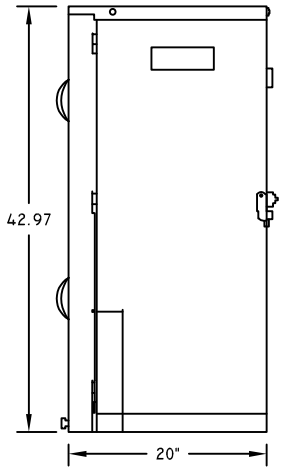
CONTACTOR PANEL

BEUD INVENTORY #1887
MFR PART NUMBER CPA30111SPSP1

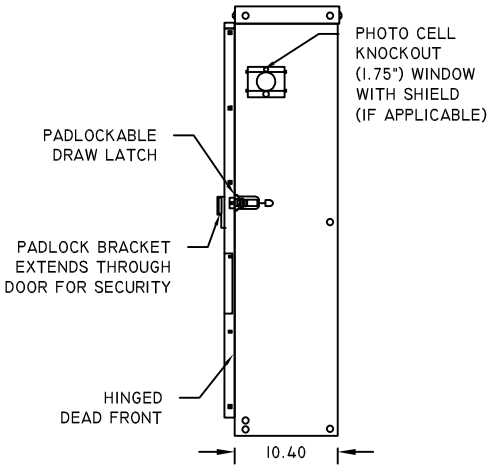
LEFT VIEW



FRONT VIEW



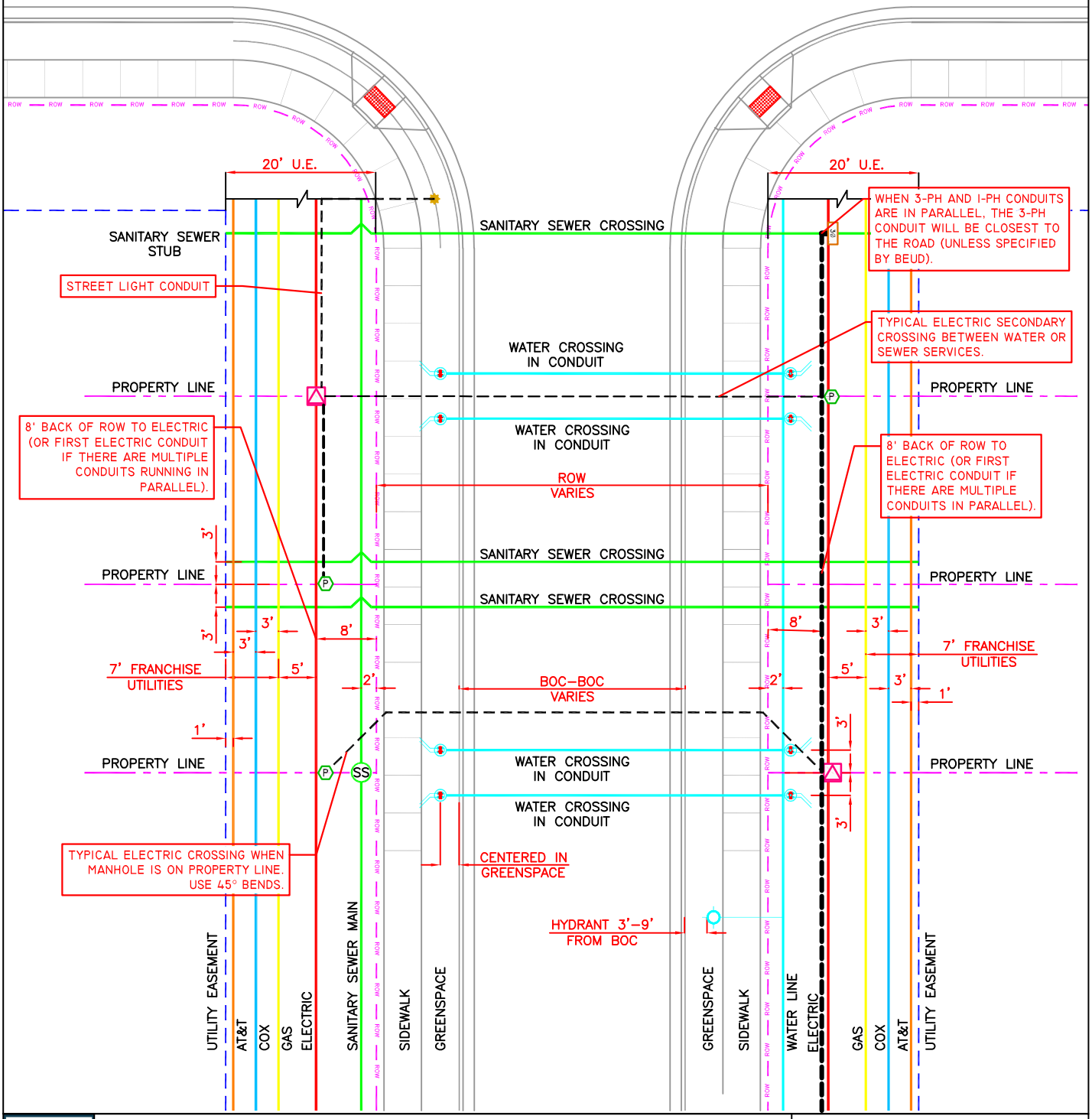
RIGHT VIEW



NOT IN USE FOR REVISION 5

UTILITY SEPARATIONS:

10' HORZ. BETWEEN WATER & SANITARY SEWER
18" VERT. BETWEEN WATER & SANITARY SEWER
5' HORZ. BETWEEN ELECTRIC & WATER OR SANITARY SEWER (MAIN LINES, NOT SERVICES)
6" MIN VERT. BETWEEN ELECTRIC & WATER OR SANITARY SEWER
12" MIN. HORZ. BETWEEN ELECTRIC AND FRANCHISE UTILITIES
12" MIN. VERT. BETWEEN SECONDARY CONDUIT AND WATER OR SANITARY SEWER



THE CITY OF BENTONVILLE

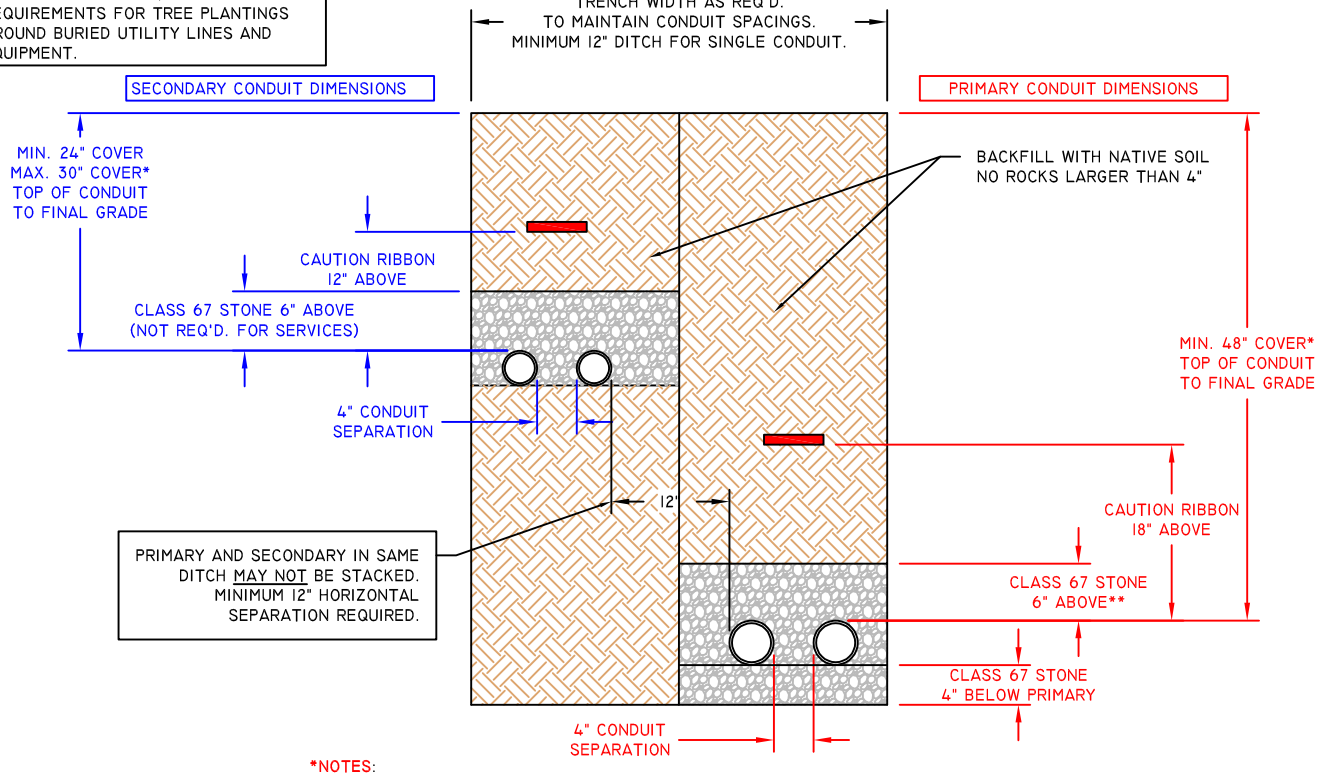
SUBDIVISION UTILITY PLACEMENT SPECIFICATIONS

REV 5 - 2024

DS-1402*

TYPICAL ELECTRIC CONDUIT TRENCH IN GREEN SPACE

REFER TO BENTONVILLE SUBDIVISION CODE SECTION 1400.12 (AS CURRENTLY AMENDED), *LANDSCAPING LOCATION AND UTILITY CLEARANCES*, FOR REQUIREMENTS FOR TREE PLANTINGS AROUND BURIED UTILITY LINES AND EQUIPMENT.

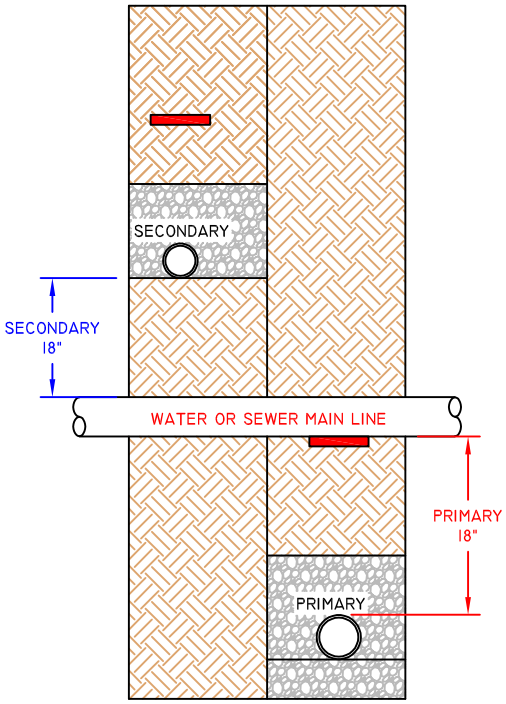


*NOTES:

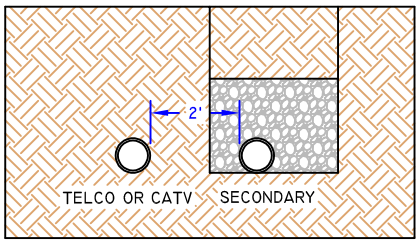
* ANY VARIANCE IN CONDUIT DEPTH FROM GIVEN DIMENSIONS MUST BE APPROVED BY BEUD.

** 18" OF CLASS 67 STONE MAY BE USED BETWEEN TOP OF PRIMARY CONDUIT AND CAUTION RIBBON IN LIEU OF 6" OF CLASS 67 GRAVEL AND 12" OF BACKFILL. SB-2 IS NOT ALLOWED.

VERTICAL SEPARATION BETWEEN ELECTRIC CONDUITS CROSSING WATER OR SEWER MAIN LINE

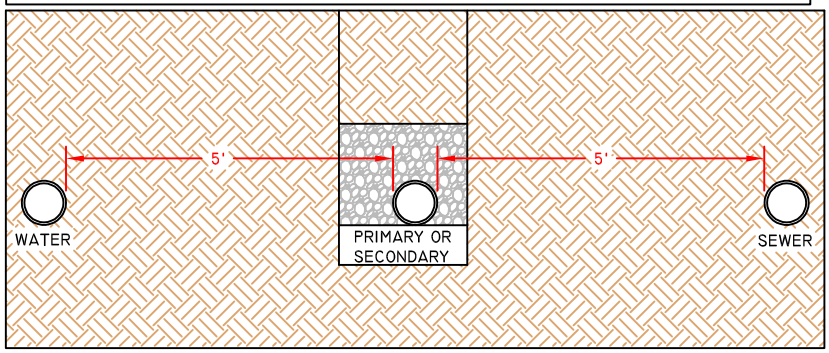


HORIZONTAL SEPARATION FOR TELCO OR CATV CONDUITS



BEUD CLEARANCE FROM CONDUIT TO GAS LINES IS MINIMUM 12". CONTACT BLACK HILLS ENERGY TO DETERMINE IF THERE ARE MORE STRINGENT CLEARANCE REQUIREMENTS BASED ON THE TYPE OF GAS LINE.

HORIZONTAL SEPARATION FOR ELECTRIC CONDUITS RUNNING PARALLEL TO WATER OR SEWER



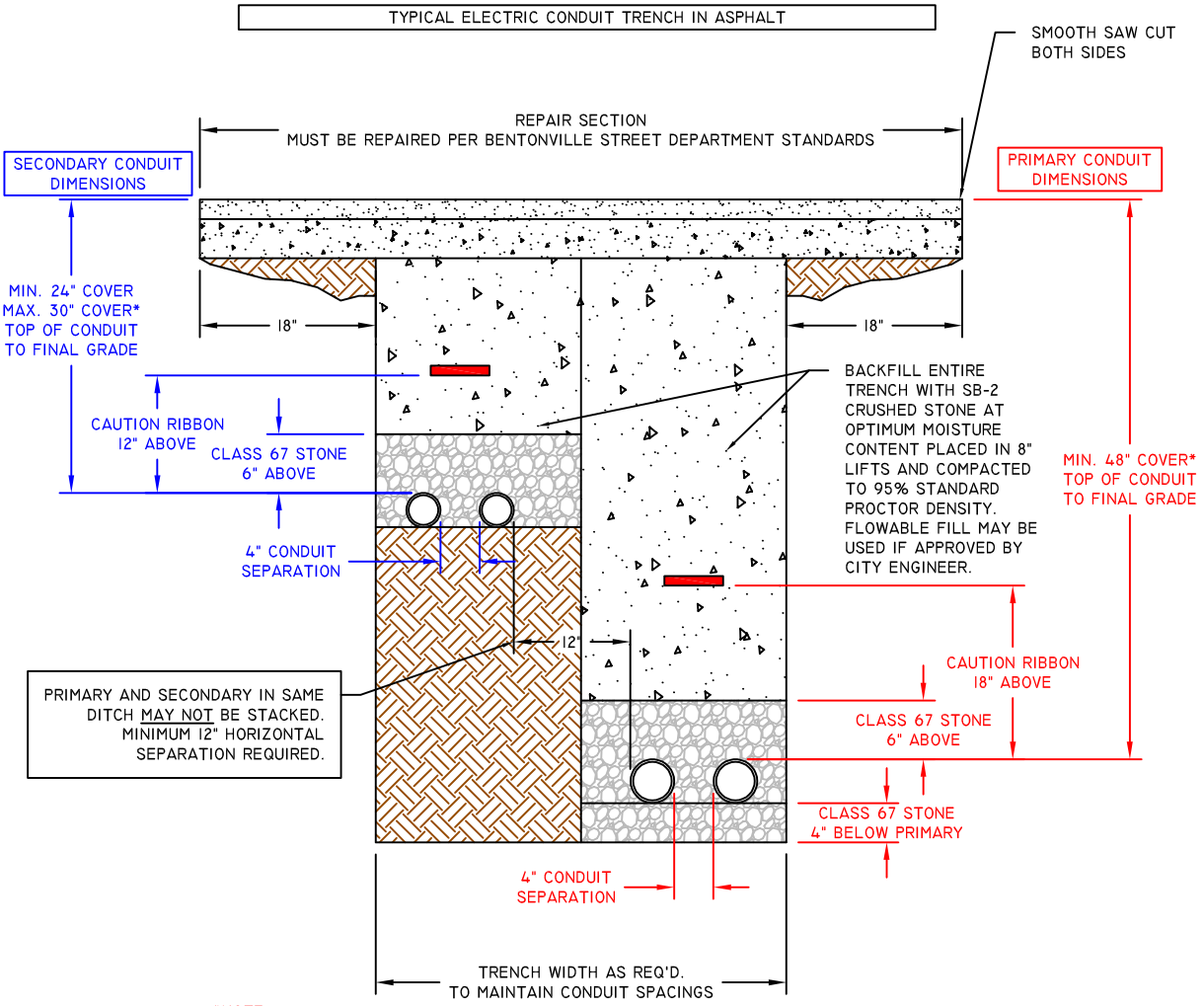
THE CITY OF BENTONVILLE

ELECTRIC TRENCH DETAILS SHEET 1

REV 5 - 2024

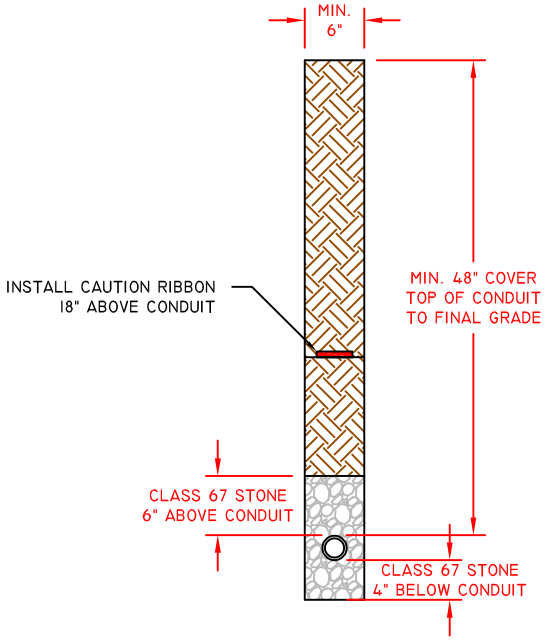
DS-1403*

TYPICAL ELECTRIC CONDUIT TRENCH IN ASPHALT



*NOTE:
* ANY VARIANCE IN CONDUIT DEPTH FROM GIVEN DIMENSIONS MUST BE APPROVED BY BEUD.

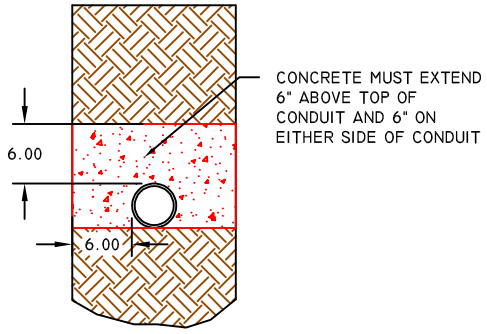
TYPICAL ELECTRIC CONDUIT TRENCH CONDUCTOR IN CONDUIT (CIC)



18" OF CLASS 67 STONE MAY BE USED BETWEEN TOP OF CONDUIT AND CAUTION RIBBON IN LIEU OF 6" OF CLASS 67 STONE AND 12" OF BACKFILL. SB-2 IS NOT ALLOWED.

ELECTRIC CONDUIT WITH RED-DYED CONCRETE ENCASEMENT

USE OF CONCRETE ENCASEMENT REQUIRES APPROVAL FROM BEUD ENGINEERING



NOTES:
- RED PIGMENT MUST BE INTEGRALLY MIXED INTO THE CONCRETE. DRY SHAKE OR BROADCAST COLORING AGENTS ARE NOT ALLOWED.
- TO ACHIEVE "RED-DYED" CONCRETE - USE IRON OXIDE AT 100 LB PER 8 CUBIC YARDS OF CONCRETE.

PER BEUD SPEC 10.11.9, THE USE OF RED-DYED CONCRETE IS ONLY APPLICABLE TO PRIMARY AND SECONDARY CONDUITS - NOT SERVICES.

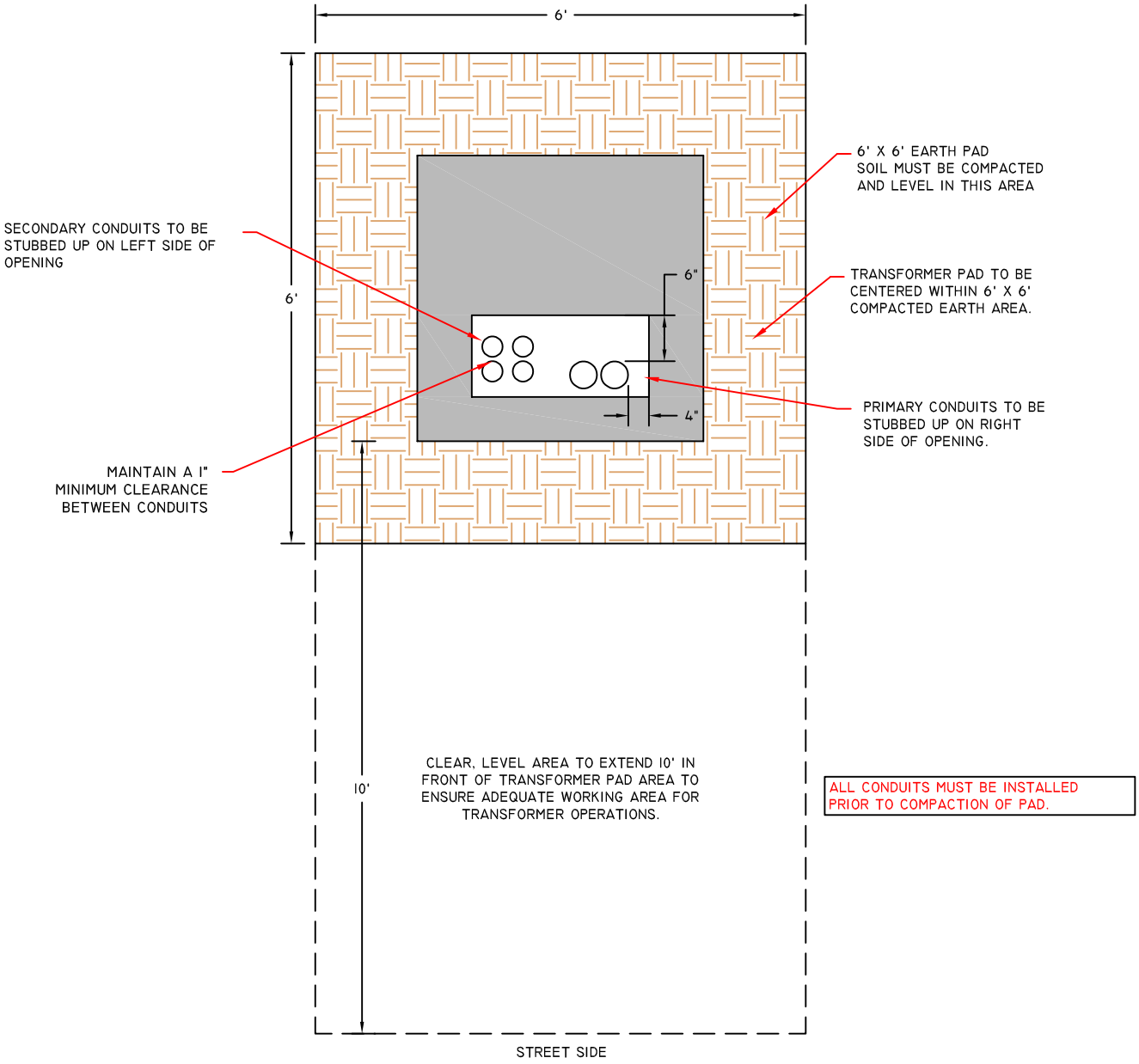
THE CITY OF BENTONVILLE

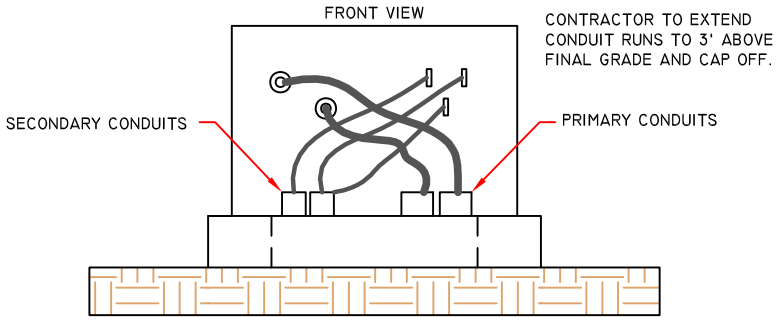
ELECTRIC TRENCH DETAILS SHEET 2

REV 5 - 2024

DS-1404*

PLAN VIEW HOUSE SIDE





THE CITY OF BENTONVILLE

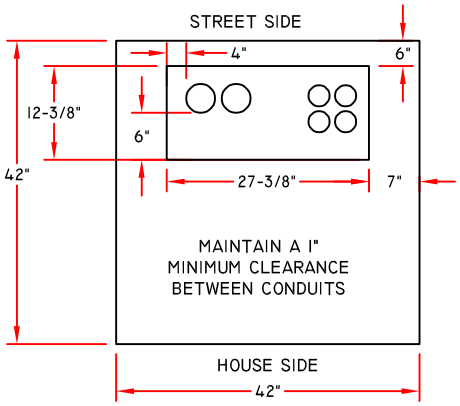
SINGLE PHASE TRANSFORMER SITE REQUIREMENTS

REV 5 - 2024

DS-1405*

FOR CT APPLICATIONS, A MAXIMUM OF FOUR (4) CONDUITS ALLOWED UNLESS APPROVED BY BEUD.

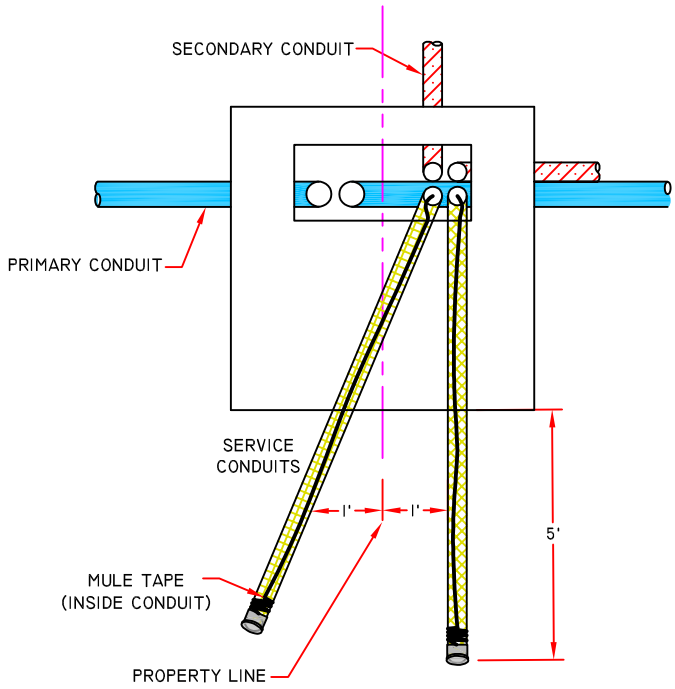
PLAN VIEW - PAD DIMENSIONS

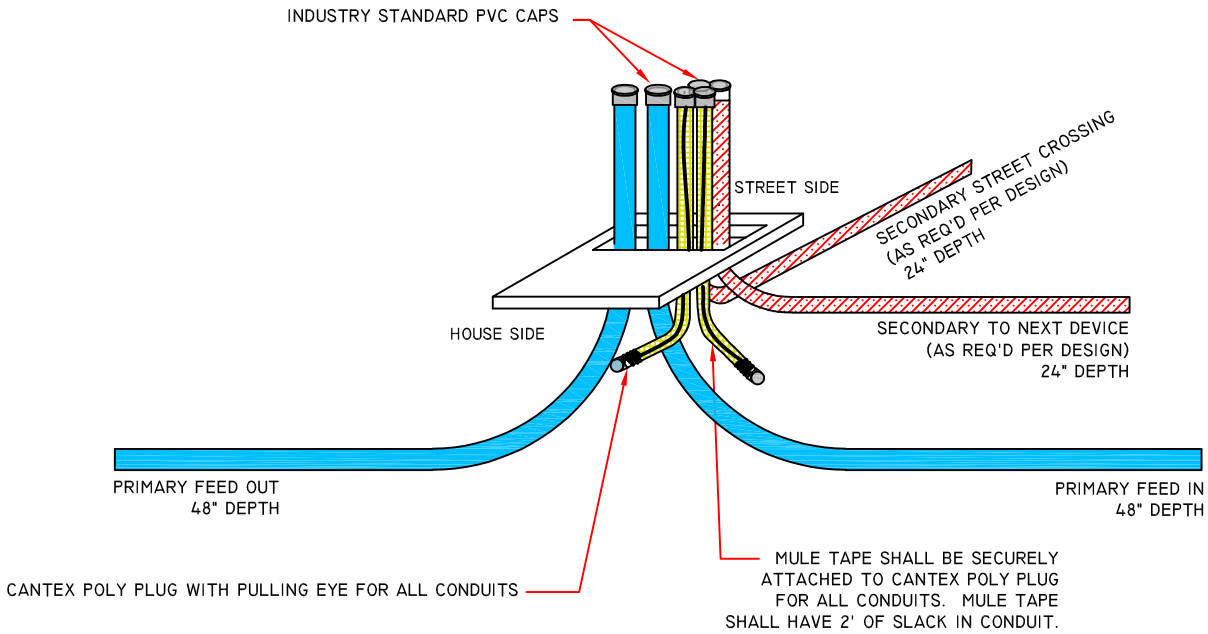


ACTUAL NUMBER OF CONDUITS WILL VARY BASED ON BEUD DESIGN FOR EACH INSTALLATION.

FOR ZERO LOT LINE APPLICATIONS, REFER TO BEUD LAYOUT FOR STUB OUT LOCATIONS.

PLAN VIEW - CONDUIT LAYOUT





THE CITY OF BENTONVILLE

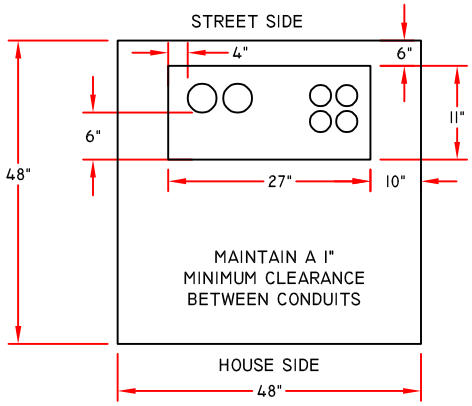
SINGLE PHASE TRANSFORMER PAD SMALLER THAN 100 kVA

REV 5 - 2024

DS-1406*

FOR CT APPLICATIONS, A MAXIMUM OF FOUR (4) CONDUITS ALLOWED UNLESS APPROVED BY BEUD.

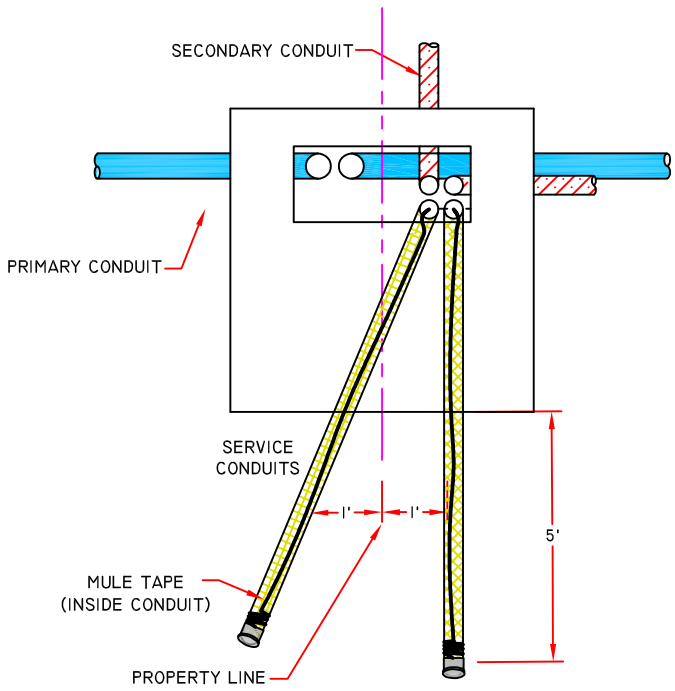
PLAN VIEW - PAD DIMENSIONS

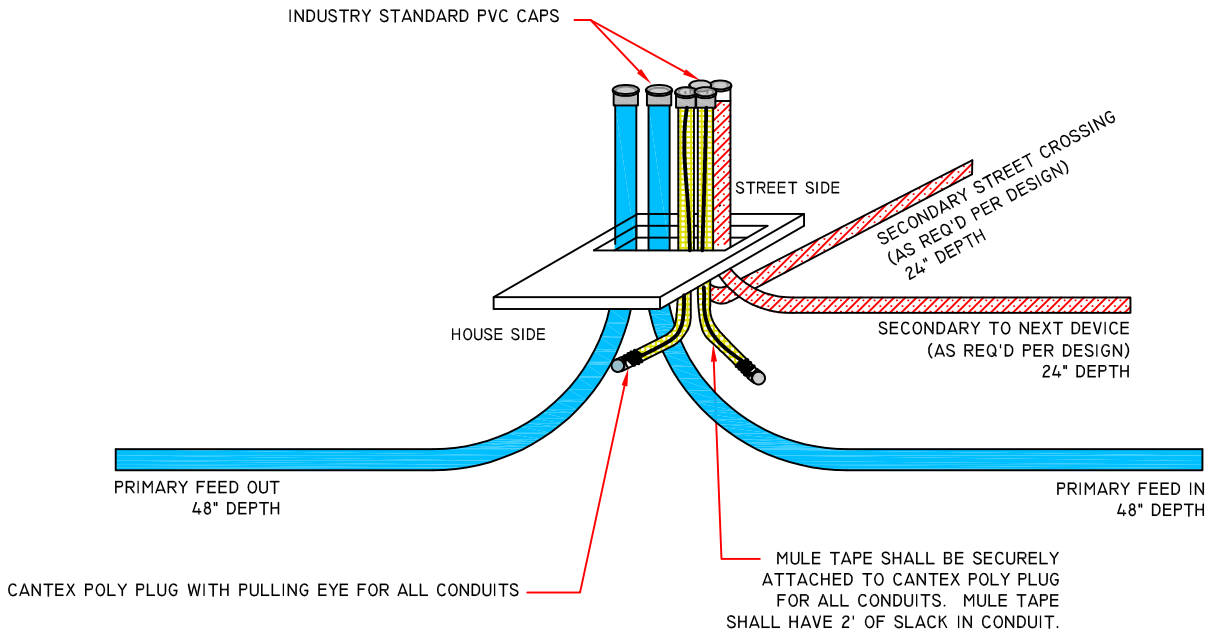


ACTUAL NUMBER OF CONDUITS WILL VARY BASED ON BEUD DESIGN FOR EACH INSTALLATION.

FOR ZERO LOT LINE APPLICATIONS, REFER TO BEUD LAYOUT FOR STUB OUT LOCATIONS.

PLAN VIEW - CONDUIT LAYOUT





THE CITY OF BENTONVILLE

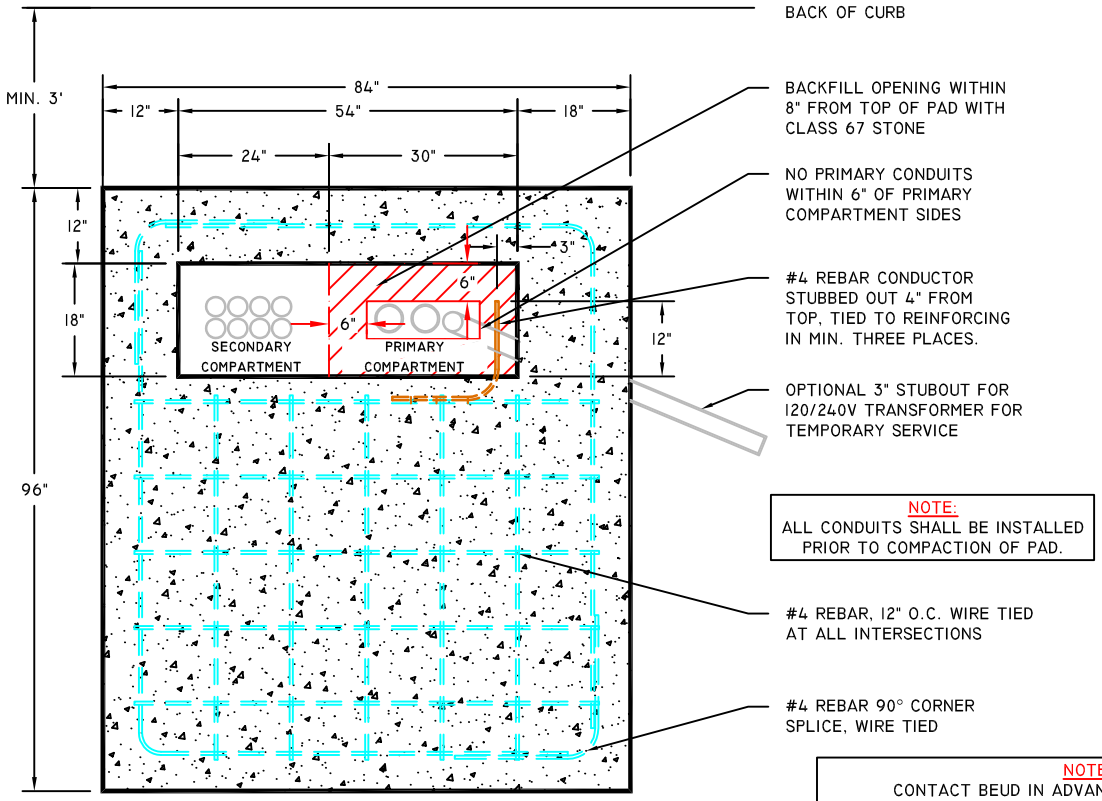
SINGLE PHASE TRANSFORMER PAD 100 kVA AND LARGER

REV 5 - 2024

DS-1407*

MAP SYMBOL

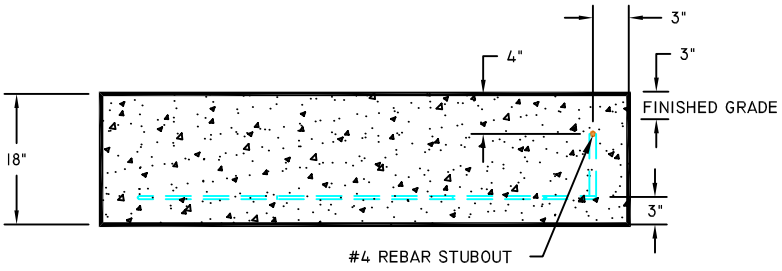
IF EQUIPMENT IS LOCATED WITHIN 3' OF BACK OF CURB, BOLLARDS ARE REQUIRED.
SEE PLANS FOR LOCATIONS. SEE DS-1418 FOR BOLLARD DETAIL.

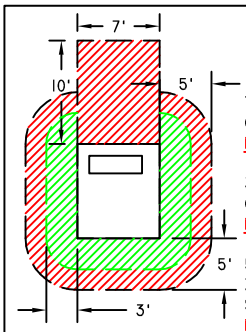


NOTE:
ALL CONDUITS SHALL BE INSTALLED PRIOR TO COMPACTION OF PAD.

NOTE:
CONTACT BEUD IN ADVANCE IF THERE WILL BE CONCRETE POURED ADJACENT TO ANY SIDE OF THE TRANSFORMER PAD.

CONTRACTOR NOTE:
TRANSFORMER COMPARTMENTS ARE NOT EQUAL SIZE.
KEEP CONDUITS ON CORRECT SIDE OF OPENING.

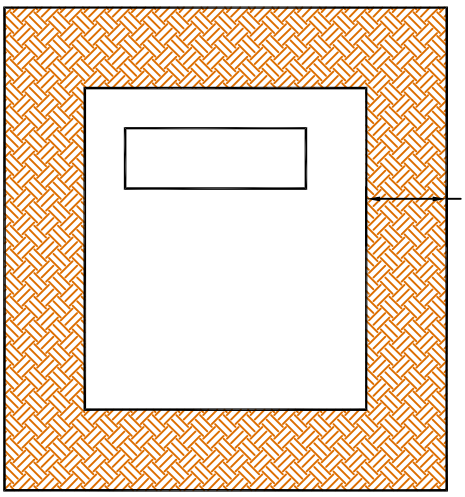


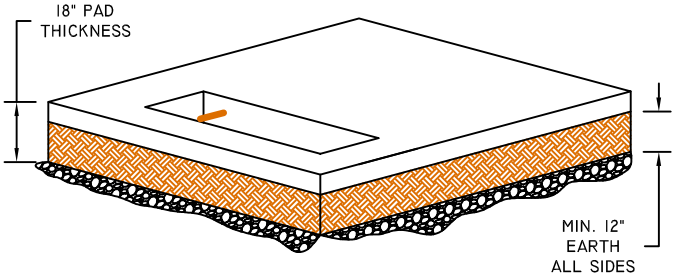


7' X 10' CLEAR WORK AREA REQUIRED ON ACCESS SIDE OF CABINET.
NO OBSTRUCTIONS OR LANDSCAPING

3' NO LANDSCAPING ZONE ON ALL OTHER SIDES OF CABINET.
NO SHRUBS/PLANTS

5' NO PERMANENT OBSTRUCTIONS ZONE REQUIRED ON ALL OTHER SIDES OF CABINET.
NO WALLS, FENCES, TREES, ETC.





TRANSFORMER PAD SHALL BE 18" THICK TO MEET NESC 94.8.6.
NO COPPER GROUND RING IS REQUIRED IF THE CONCRETE DEPTH BELOW GRADE IS AT LEAST 12". CLASS 67 STONE IS ACCEPTABLE UNDER THE PAD AS LONG AS THERE IS AT LEAST 12" OF EARTH EXTENDING 2' ON ALL FOUR SIDES OF THE TRANSFORMER PAD. IF THERE IS NOT 2' OF COMPACTED EARTH ON ALL FOUR SIDES OF TRANSFORMER PAD, A THICKER PAD MAY BE REQUIRED IN ORDER TO MEET GROUNDING REQUIREMENTS.

THE CITY OF BENTONVILLE

THREE PHASE TRANSFORMER PAD
45-1000 kVA

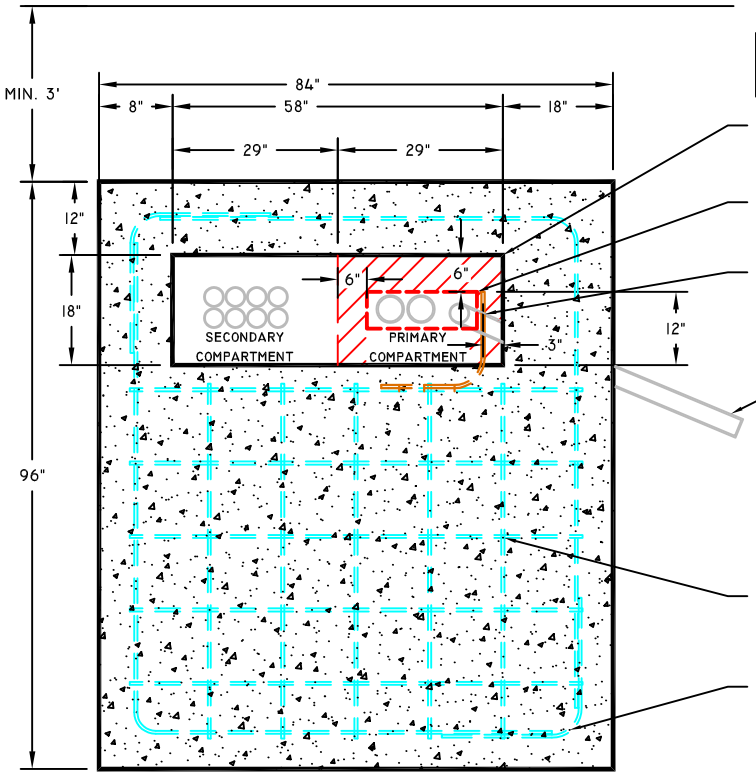
REV 5 - 2024

DS-1408*

MAP SYMBOL

30

IF EQUIPMENT IS LOCATED WITHIN 3' OF BACK OF CURB, BOLLARDS ARE REQUIRED.
SEE PLANS FOR LOCATIONS. SEE DS-1418 FOR BOLLARD DETAIL.



NOTE:
ALL CONDUITS SHALL BE INSTALLED PRIOR TO COMPACTION OF PAD.

BACKFILL OPENING WITHIN 8" FROM TOP OF PAD WITH CLASS 67 STONE

NO PRIMARY CONDUITS WITHIN 6" OF PRIMARY COMPARTMENT SIDES

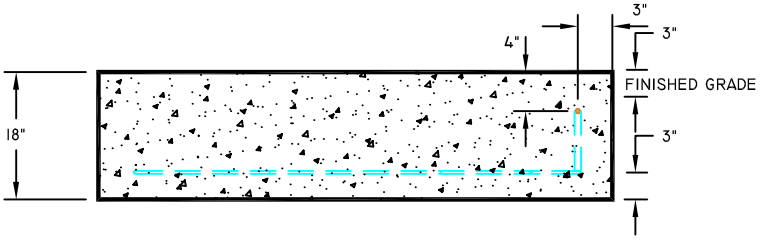
#4 REBAR CONDUCTOR STUBBED OUT 4" FROM TOP OF PAD, TIED TO REINFORCING IN MIN. THREE PLACES

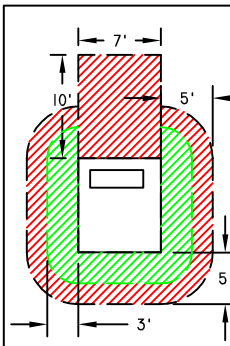
OPTIONAL 3" STUBOUT FOR 120/240V TRANSFORMER FOR TEMPORARY SERVICE

NOTE:
CONTACT BEUD IN ADVANCE IF THERE WILL BE CONCRETE POURED ADJACENT TO ANY SIDE OF THE TRANSFORMER PAD.

#4 REBAR, 12" O.C. WIRE TIED AT ALL INTERSECTIONS

#4 REBAR 90° CORNER SPLICE, WIRE TIED

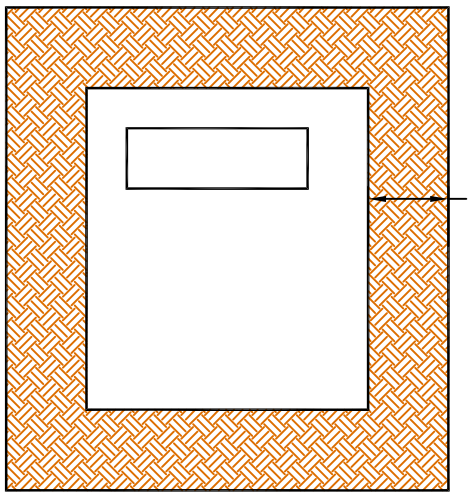




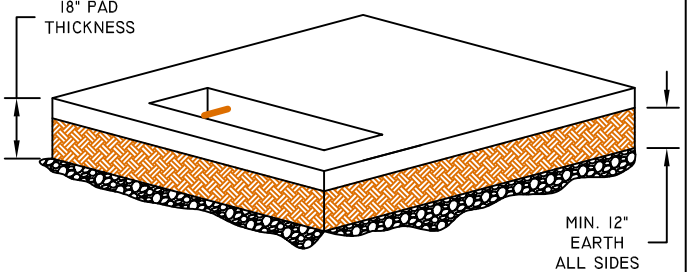
7' X 10' CLEAR WORK AREA REQUIRED ON ACCESS SIDE OF CABINET.
NO OBSTRUCTIONS OR LANDSCAPING

3' NO LANDSCAPING ZONE ON ALL OTHER SIDES OF CABINET.
NO SHRUBS/PLANTS

5' NO PERMANENT OBSTRUCTIONS ZONE REQUIRED ON ALL OTHER SIDES OF CABINET.
NO WALLS, FENCES, TREES, ETC.



2'-0" COMPACTED EARTH ON ALL SIDES OF PAD



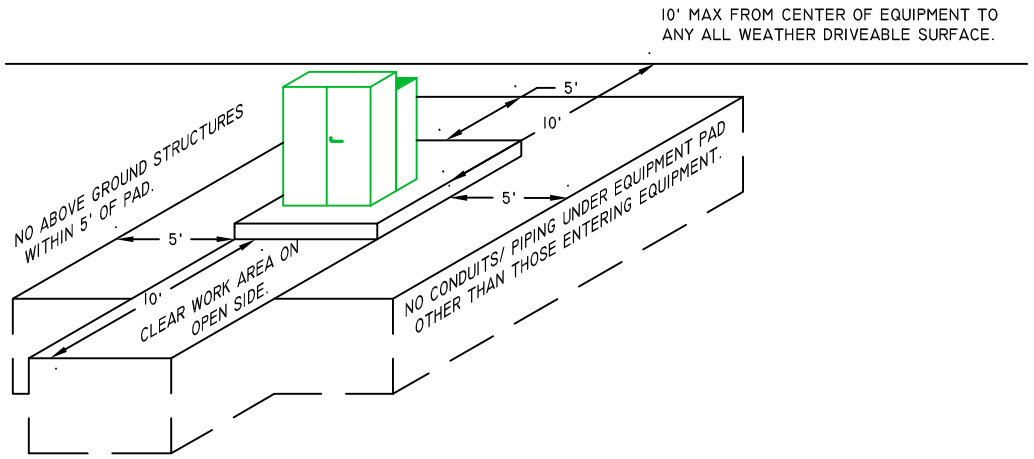
TRANSFORMER PAD SHALL BE 18" THICK TO MEET NESC 94.8.6.
NO COPPER GROUND RING IS REQUIRED IF THE CONCRETE DEPTH BELOW GRADE IS AT LEAST 12". CLASS 67 STONE IS ACCEPTABLE UNDER THE PAD AS LONG AS THERE IS AT LEAST 12" OF EARTH EXTENDING 2' ON ALL FOUR SIDES OF THE TRANSFORMER PAD. IF THERE IS NOT 2' OF COMPACTED EARTH ON ALL FOUR SIDES OF TRANSFORMER PAD, A THICKER PAD MAY BE REQUIRED IN ORDER TO MEET GROUNDING REQUIREMENTS.

THE CITY OF BENTONVILLE

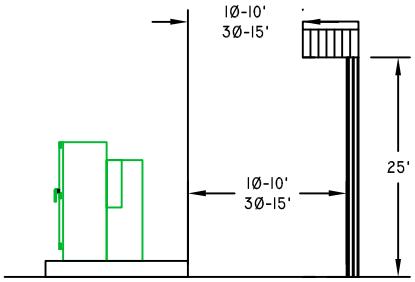
THREE PHASE TRANSFORMER PAD 1500-2500 kVA

REV 5 - 2024

DS-1409*

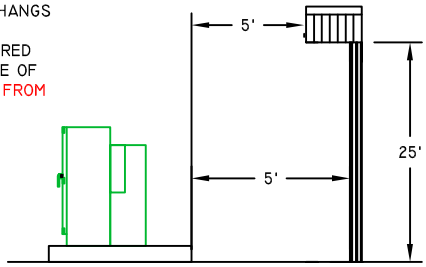


HORIZONTAL CLEARANCES FROM BUILDING WALL



NON-FIRE RESISTIVE WALL

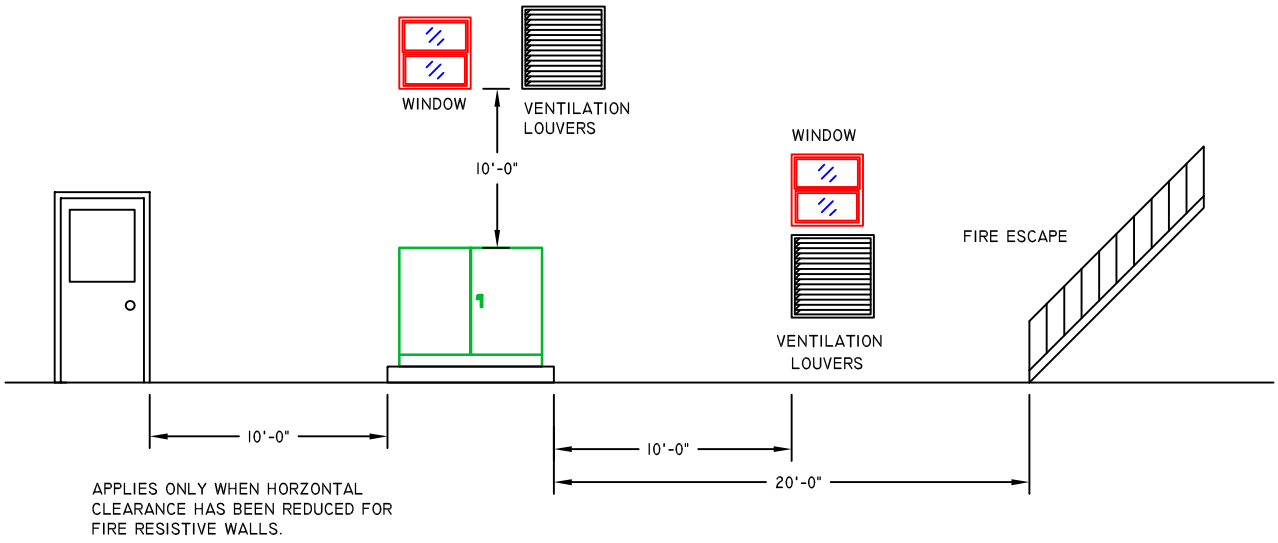
FOR BUILDING EAVES OR OVERHANGS WITHIN 25'-0" ABOVE GROUND, CLEARANCES SHALL BE MEASURED HORIZONTALLY FROM THE EDGE OF THE EAVE OR OVERHANG, NOT FROM FACE OF THE BUILDING.



FIRE RESISTIVE WALL

CAN REDUCE CLEARANCE TO 5' HORIZONTALLY FROM WALL, BUT MUST MAINTAIN RADIAL CLEARANCE REQUIREMENTS FROM VENTILATION, DOORS, WINDOWS, AND FIRE ESCAPES.

RADIAL CLEARANCES FROM WINDOWS, VENTILATION, DOORS, AND FIRE ESCAPES



APPLIES ONLY WHEN HORZONTAL CLEARANCE HAS BEEN REDUCED FOR FIRE RESISTIVE WALLS.

NOTES:

1. FIRE RESISTIVE WALLS ARE CONSIDERED TO BE BRICK AND MASONRY STRUCTURES AS DEFINED BY BY LATEST REVISION OF FIRE CODE.
2. LIQUID FLOW OF AREA SURROUNDING TRANSFORMER SHOULD BE AWAY FROM BUILDING.
3. CLEARANCES ARE MEASURED FROM PAD EDGE TO BUILDING WALL, OPENING, OVERHANG, OR FIRE ESCAPE.
4. TRANSFORMERS SHALL NOT OBSTRUCT THE FIRE LANE.
5. IT IS THE OWNER'S RESPONSIBILITY TO COMPLY WITH ANY INSURANCE REGULATIONS AFFECTING THE PREMISES.
6. SEE DS-1019 FOR LANDSCAPE SEPARATION REQUIREMENTS.

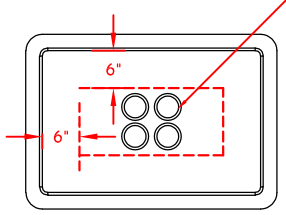
THE CITY OF BENTONVILLE

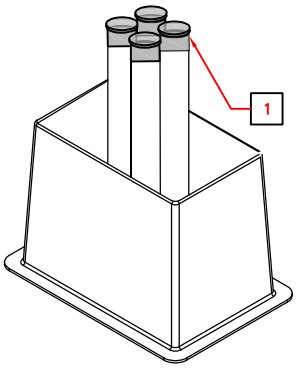
CLEARANCE SPECIFICATIONS FOR PADMOUNTED TRANSFORMERS

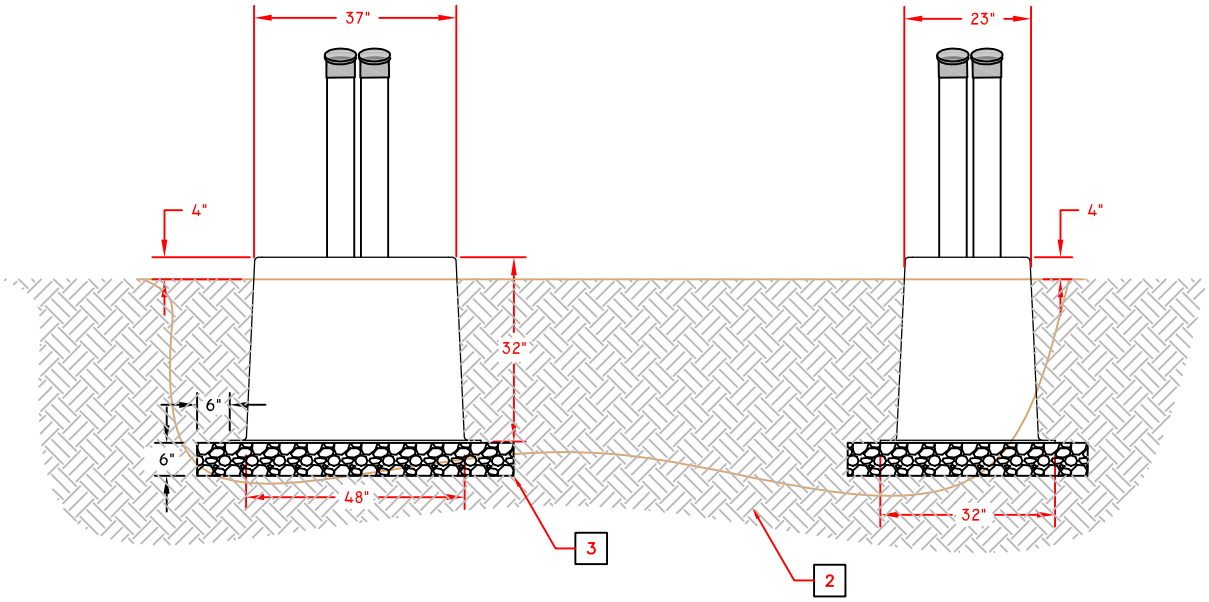
REV 5 - 2024

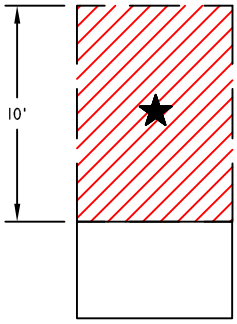
DS-1410*

MAP SYMBOL









NOTES:

1. CONDUITS SHALL BE STUBBED UP AND CAPPED 3' ABOVE TOP OF SLEEVE.
2. SOIL BELOW SLEEVE SHALL BE COMPACTED AND LEVEL.
3. 6" OF CLASS 67 GRAVEL SHALL BE PLACED IN THE BOTTOM OF THE EARTH BOX, EXTENDING 6" BEYOND EDGE OF SLEEVE.
4. MARK GROUND ROD PLACEMENT IN BOTTOM OF SLEEVE WITH WOODEN STAKE TO MISS BURIED CONDUIT RUNS.
5. 10' CLEAR WORK AREA REQUIRED ON ACCESS SIDE OF CABINET. NO OBSTRUCTIONS.

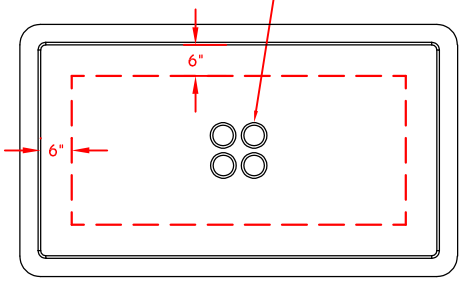
THE CITY OF BENTONVILLE

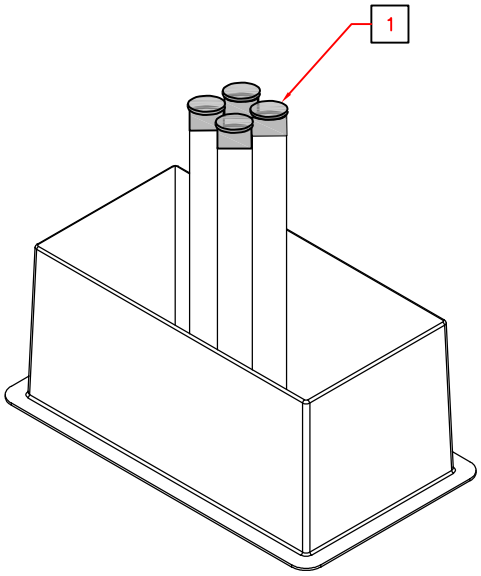
SINGLE PHASE PRIMARY JUNCTION BOX SLEEVE

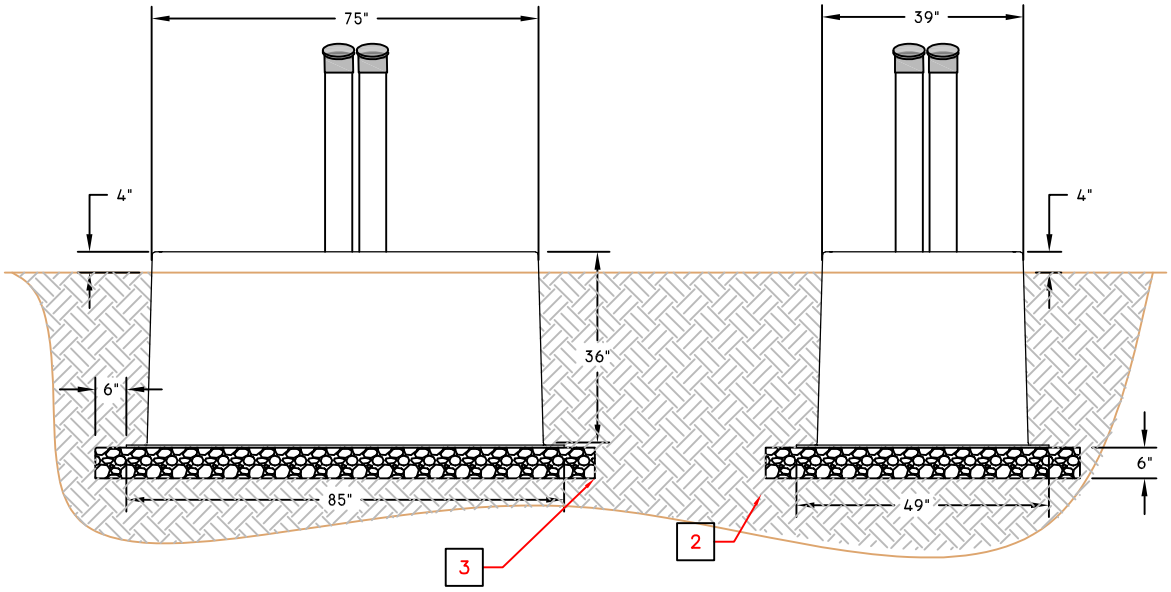
REV 5 - 2024

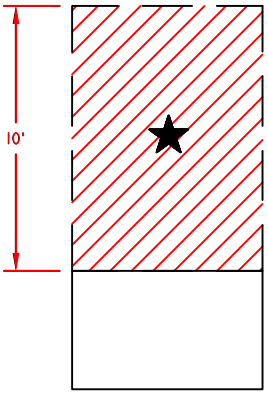
DS-1411*

MAP SYMBOL 3Ø









NOTES:

1. CONDUITS SHALL BE STUBBED UP AND CAPPED 3' ABOVE TOP OF SLEEVE.
2. SOIL BELOW SLEEVE SHALL BE COMPACTED AND LEVEL.
3. 6" OF CLASS 67 GRAVEL SHALL BE PLACED IN THE BOTTOM OF THE EARTH BOX, EXTENDING 6" BEYOND EDGE OF SLEEVE.
4. MARK GROUND ROD PLACEMENT IN BOTTOM OF SLEEVE WITH WOODEN STAKE TO MISS BURIED CONDUIT RUNS.
5. 10' CLEAR WORK AREA REQUIRED ON ACCESS SIDE OF CABINET. NO OBSTRUCTIONS.

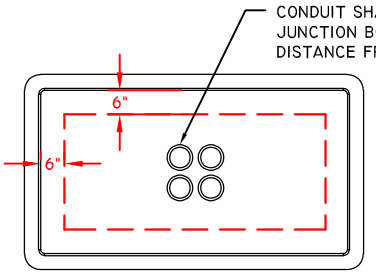
THE CITY OF BENTONVILLE

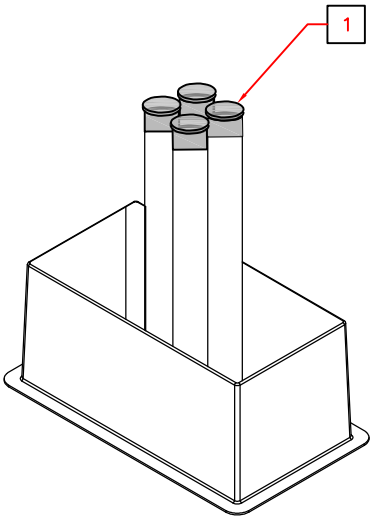
THREE PHASE 200A PRIMARY JUNCTION BOX SLEEVE

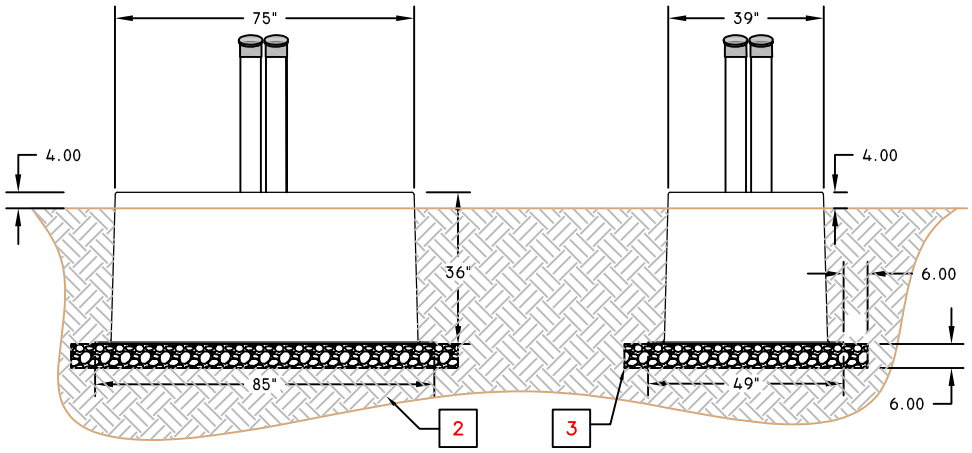
REV 5 - 2024

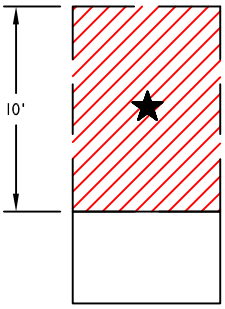
DS-1412*

MAP SYMBOL 3Ø









NOTES:

1. CONDUITS SHALL BE STUBBED UP AND CAPPED 3' TOP OF SLEEVE.
2. SOIL BELOW SLEEVE SHALL BE COMPACTED AND LEVEL.
3. 6" OF CLASS 67 GRAVEL SHALL BE PLACED IN THE BOTTOM OF THE EARTH BOX, EXTENDING 6" BEYOND EDGE OF SLEEVE.
4. MARK GROUND ROD PLACEMENT IN BOTTOM OF SLEEVE WITH WOODEN STAKE TO MISS BURIED CONDUIT RUNS.
5. 10' CLEAR WORK AREA REQUIRED ON ACCESS SIDE OF CABINET. NO OBSTRUCTIONS.

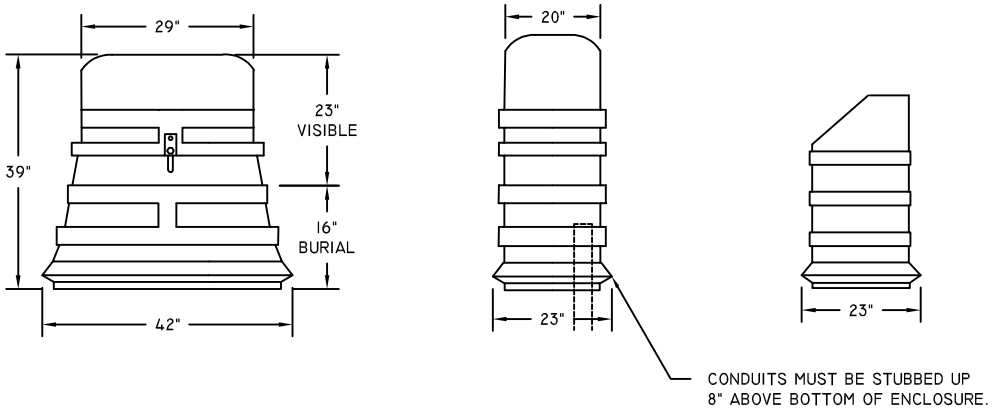
THE CITY OF BENTONVILLE

THREE PHASE 600A PRIMARY JUNCTION BOX SLEEVE

REV 5 - 2024

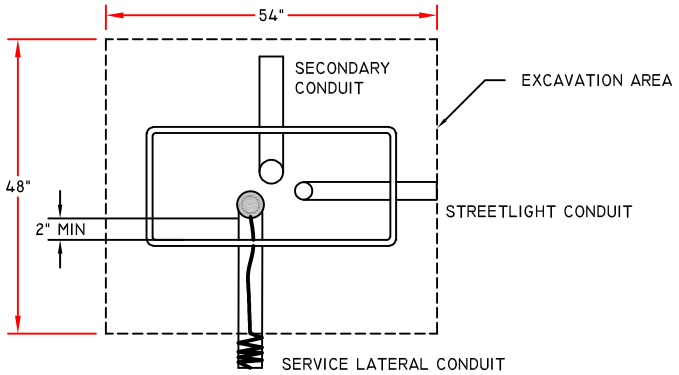
DS-1413*

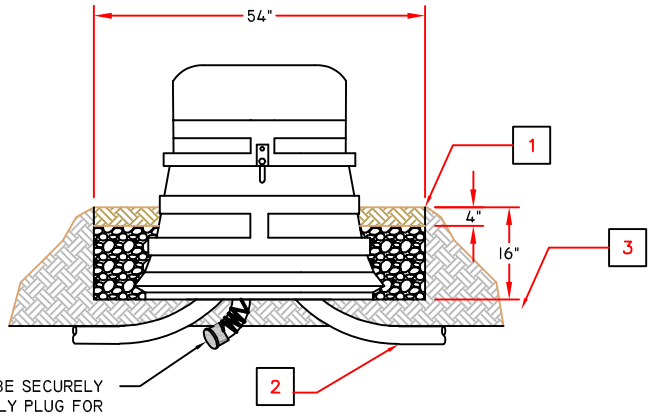
MAP SYMBOL 30



PLAN VIEW - CONDUIT LAYOUT

ALL CONDUIT SHALL BE A MIN. 2" OFF INSIDE WALL





MULE TAPE SHALL BE SECURELY ATTACHED TO CANTEX POLY PLUG FOR ALL CONDUITS. MULE TAPE SHALL HAVE 2' OF SLACK INSIDE CONDUIT.

NOTES:

1. EXCAVATE A 54" W X 48" H X 16" D PIT CENTERED IN A 7' X 7' CLEAR, LEVEL AREA. PEDESTAL SHALL NOT BE SITUATED IN A LOW AREA OR SWALE THAT WOULD CAUSE WATER TO COLLECT IN PIT.
2. CONTRACTOR TO USE ONLY SHORT SWEEP ELBOWS.
3. BACKFILL PIT WITH CLASS 67 GRAVEL TO WITHIN 4" OF TOP. BACKFILL LAST 4" OF PIT WITH TOPSOIL.

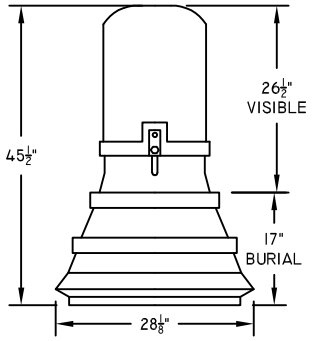
THE CITY OF BENTONVILLE

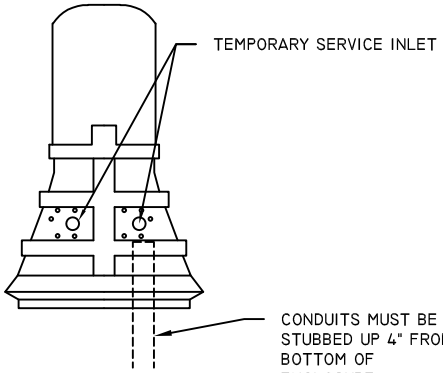
THREE PHASE SECONDARY JUNCTION BOX

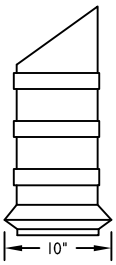
REV 5 - 2024

DS-1414-1*

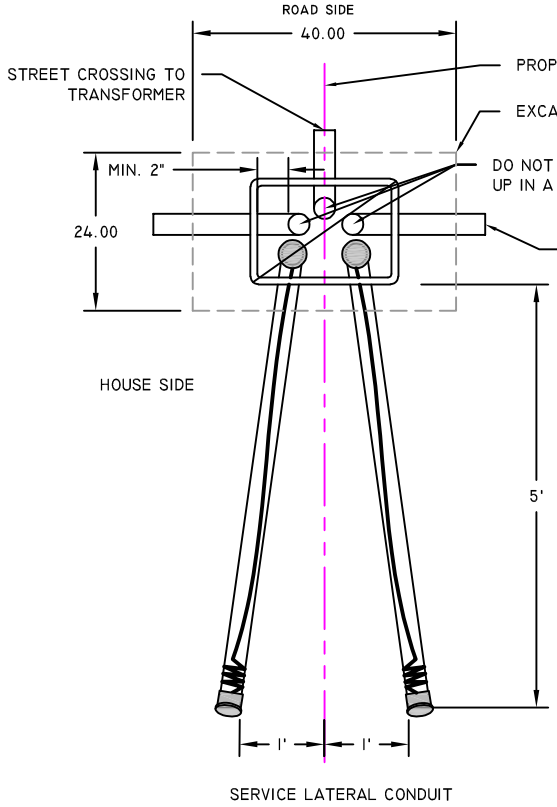
MAP SYMBOL



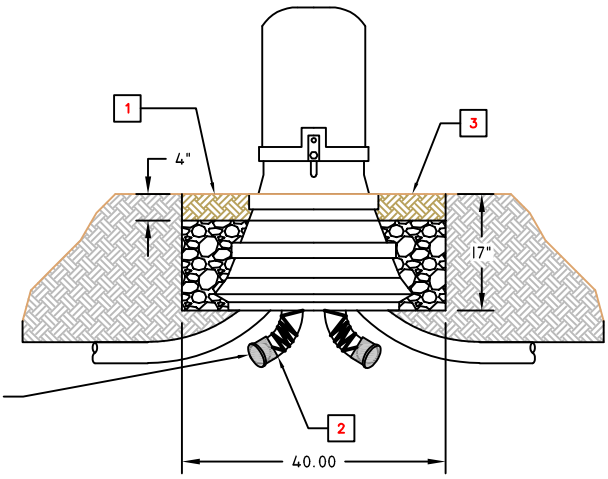




PLAN VIEW- CONDUIT LAYOUT



ALL CONDUIT SHALL BE A MIN. 2" OFF INSIDE WALL



MULE TAPE SHALL BE SECURELY ATTACHED TO CANTEX POLY PLUG FOR ALL CONDUITS. MULE TAPE SHALL HAVE 2" OF SLACK INSIDE CONDUIT.

NOTES:

1. EXCAVATE A 40" W X 24" H X 17" D PIT CENTERED IN A 5' X 5' CLEAR, LEVEL AREA. PEDESTAL SHALL NOT BE SITUATED IN A LOW AREA OR SWALE THAT WOULD CAUSE WATER TO COLLECT IN PIT.
2. CONTRACTOR TO USE ONLY SHORT SWEEP ELBOWS.
3. BACKFILL PIT WITH CLASS 67 GRAVEL. TOP 4" OF FILL TO BE TOPSOIL.

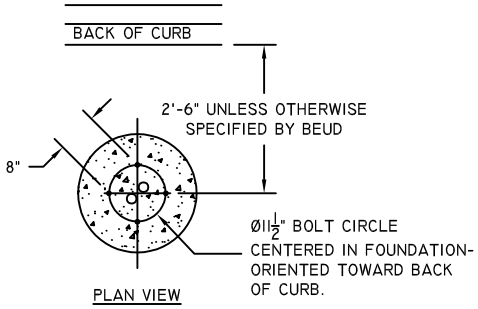
THE CITY OF BENTONVILLE

SECONDARY JUNCTION BOX

REV 5 - 2024

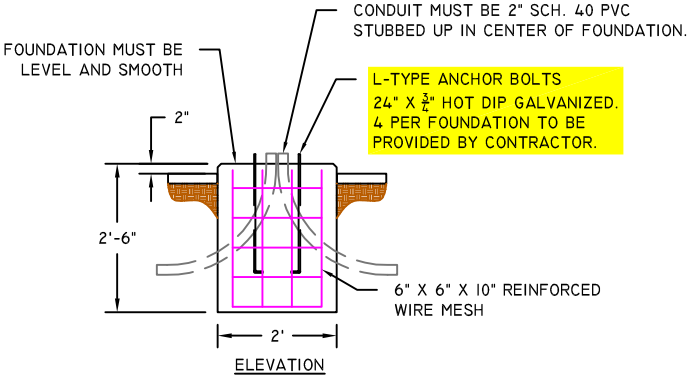
DS-1414*

DS-1415A - STANDARD FOUNDATION

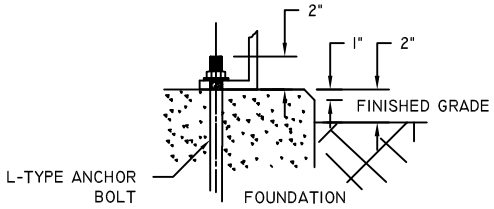


PLAN VIEW

NOTE: REMOVE EXPOSED SONATUBE PRIOR TO INSPECTION OF FOUNDATION.



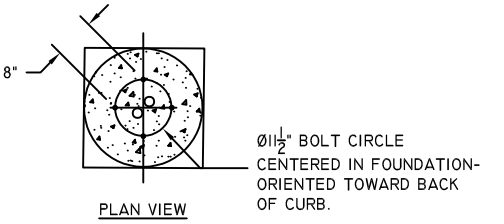
ELEVATION



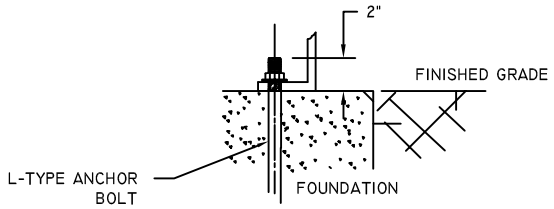
POLE BASE & FOUNDATION CUT-AWAY
(NOT TO SCALE)

DS-1415B DOWNTOWN CORE

CONTRACTOR NOTE:
ONLY USE THIS DETAIL WHEN BEUD DESIGN CALLS FOR "DS-1415 DOWNTOWN CORE"

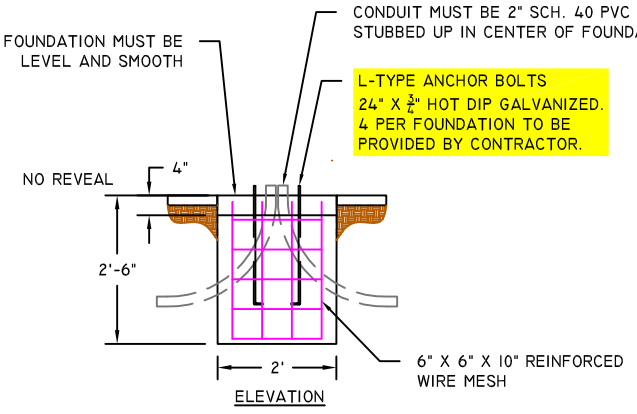


PLAN VIEW



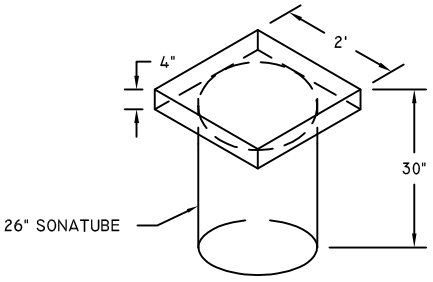
POLE BASE & FOUNDATION CUT-AWAY
(NOT TO SCALE)

NOTE: REMOVE EXPOSED SONATUBE PRIOR TO INSPECTION OF FOUNDATION.



ELEVATION

INSTALL ROUND SONATUBE FORM TO WITHIN 4" OF TOP ELEVATION. FORM A 24" SQUARE TOP ON THE SONATUBE TO MATCH THE ELEVATION OF SIDEWALK. SET SONATUBE, FORM SQUARE TOP, AND POUR FOUNDATION WITH ONE POUR FOR STRENGTH & STABILITY.



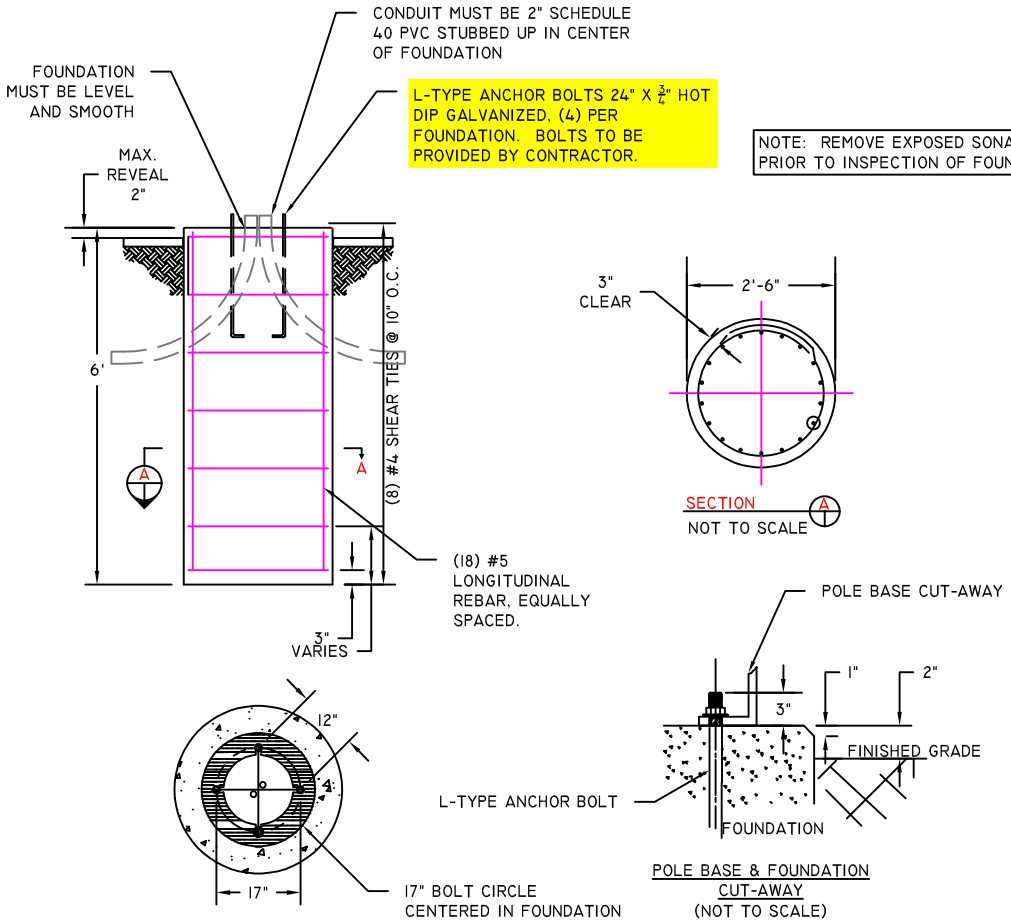
THE CITY OF BENTONVILLE

STREET LIGHT FOUNDATION
FOR 12' RESIDENTIAL LIGHTS

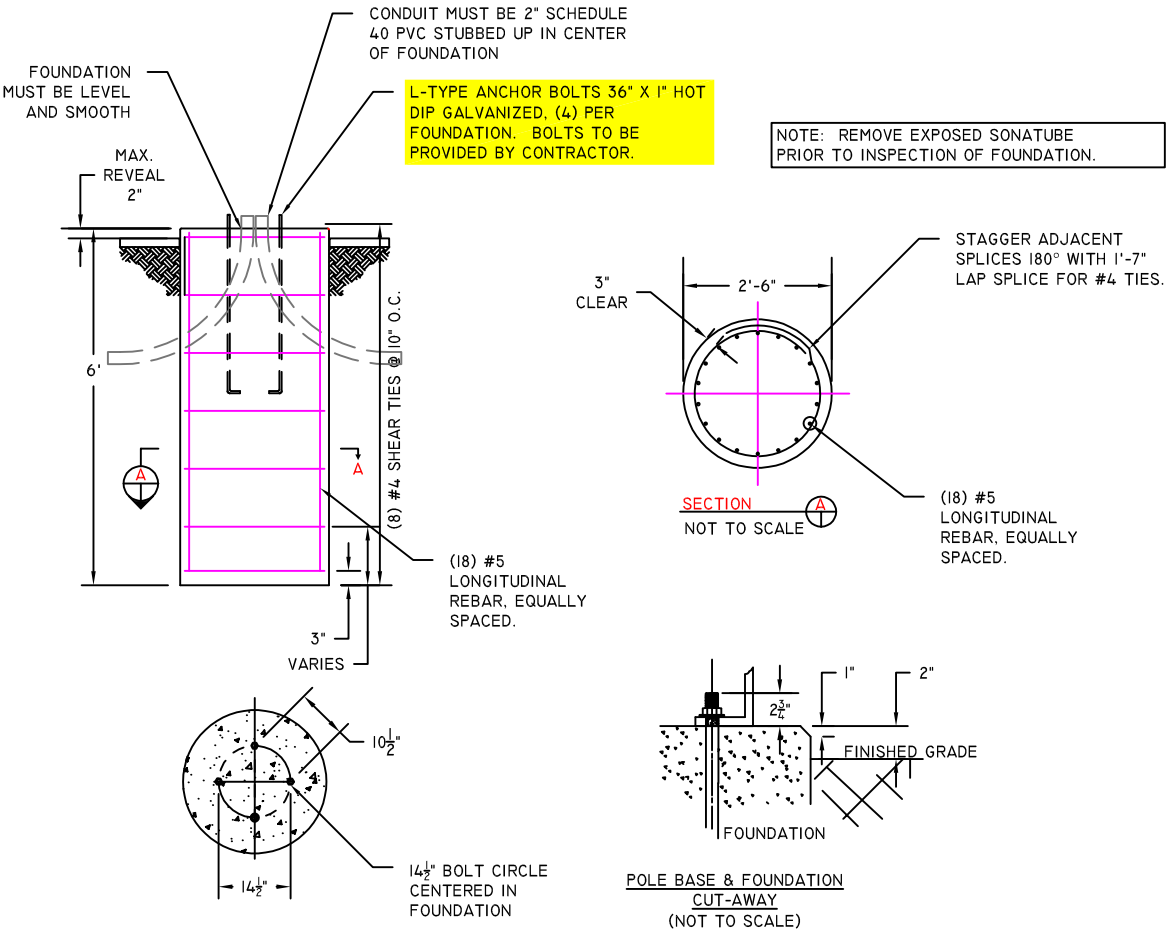
REV 5 - 2024

DS-1415*

DS-1416A - 22' COMMERCIAL LIGHTS



DS-1416B - 30' COMMERCIAL LIGHTS

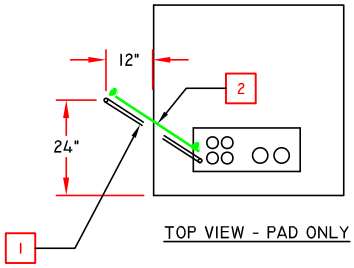


THE CITY OF BENTONVILLE

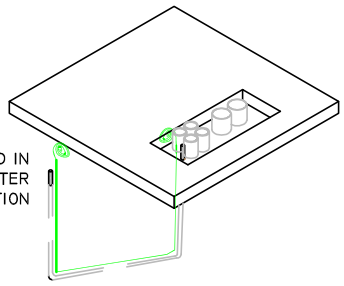
STREET LIGHT FOUNDATION FOR 22' AND 30' COMMERCIAL LIGHTS

REV 5 - 2024

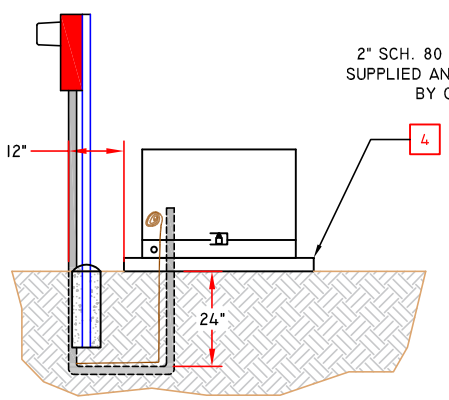
DS-1416*



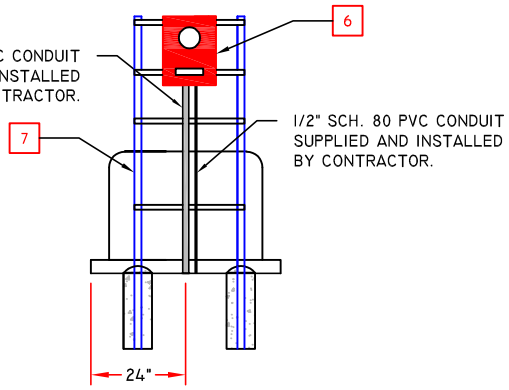
TOP VIEW - PAD ONLY



NO CONDUITS ALLOWED IN THE AREA DUE TO METER PEDESTAL INSTALLATION



FRONT VIEW



SIDE VIEW

1. 2" SCHEDULE 80 PVC CONDUIT FOR METERING TO BE INSTALLED BY CONTRACTOR. MUST BE STUBBED UP 12" FROM SIDE OF TRANSFORMER PAD AND 24" FROM FRONT EDGE OF TRANSFORMER PAD.
2. #6 BARE SOLID COPPER FOR GROUNDING TO BE INSTALLED BY CONTRACTOR. MUST BE DIRECT BURIED OUTSIDE 2" SCH 80 PVC CONDUIT IN THE SAME DITCH WITH MIN. 6 FT LENGTH COILED AT EACH END.
3. ELECTRICAL CONTRACTOR REQUIRED TO LAND SECONDARY CONDUCTORS IN TRANSFORMER. CALL BEUD 24-HOURS IN ADVANCE TO SCHEDULE TRANSFORMER OPENING TO LAND SECONDARIES. BEUD REPRESENTATIVE MUST BE PRESENT DURING WORK.
4. CONTRACTOR TO INSTALL PREFABRICATED SINGLE PHASE TRANSFORMER PAD AS INDICATED BY BEUD DESIGN.
5. COORDINATE WITH BEUD IF CONCRETE WILL BE POURED ANYWHERE ADJACENT TO THE TRANSFORMER PAD.
6. CT METER CAN TO BE PROVIDED BY BEUD.
7. RACK TO BE CONSTRUCTED FROM MINIMUM 3" X 3" X 1/4" GALVANIZED OR POWDER COATED ANGLE IRON IN CONCRETE, 3" UNI-STRUT, 2" RIGID PIPE, OR EQUIVALENT MATERIAL APPROVED BY BEUD PRIOR TO CONSTRUCTION.

RECOMMENDED TIGHTENING TORQUE VALUES
FOR UTILCO DUAL RATED SOCKET SCREW CONNECTORS

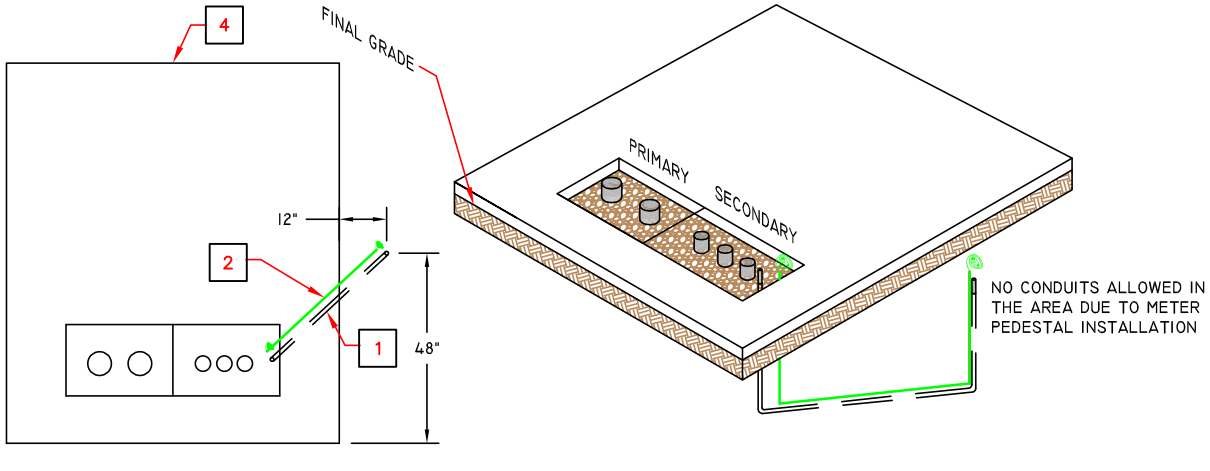
Wire Size AL or CU	Torque in-lb	Torque ft-lb
#14 AWG to #3 AWG	120	10
#2 AWG to 350 kcmil	240	20
400 kcmil to 750 kcmil	360	30
800 kcmil to 1000 kcmil	480	40

THE CITY OF BENTONVILLE

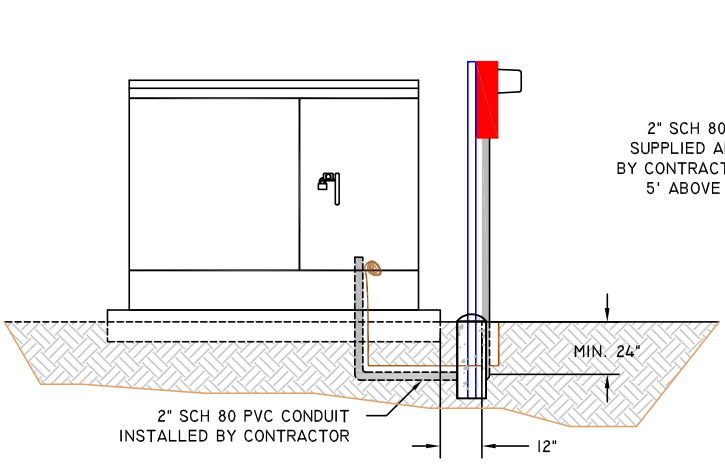
TRANSFORMER PAD AND METER CONFIGURATION FOR SINGLE PHASE CT SERVICE WITH CT'S ON SPADES

REV 5 - 2024

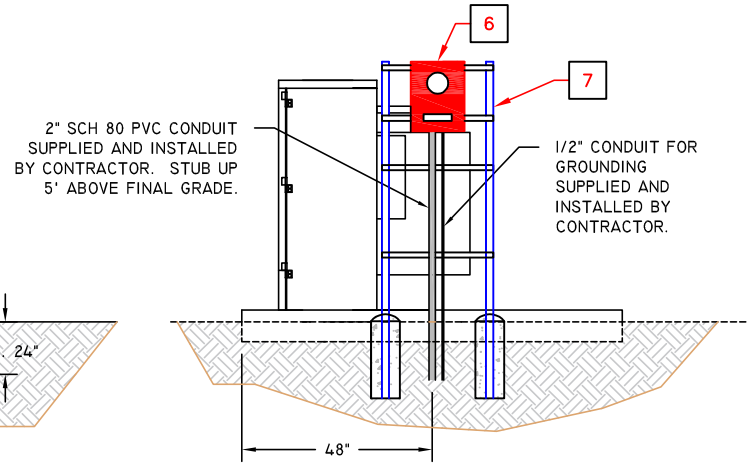
DS-1417-1PH*



TOP VIEW (PAD ONLY)

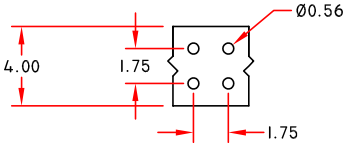


FRONT VIEW



SIDE VIEW

1. 2" SCHEDULE 80 PVC CONDUIT FOR METERING TO BE INSTALLED BY CONTRACTOR. MUST BE STUBBED UP 12" FROM SIDE OF CONCRETE PAD AND 48" FROM FRONT EDGE OF CONCRETE PAD.
2. #6 BARE SOLID COPPER FOR GROUNDING TO BE INSTALLED BY CONTRACTOR. MUST BE DIRECT BURIED OUTSIDE 2" SCH 80 PVC CONDUIT IN THE SAME DITCH WITH MIN. 6 FT LENGTH COILED AT EACH END.
3. ELECTRICAL CONTRACTOR REQUIRED TO LAND SECONDARY CONDUCTORS IN TRANSFORMER WITH TWO HOLE TERMINAL LUGS USING (2) 1/2" SILICON BRONZE HEX BOLTS AND NUTS, (4) SILICON BRONZE FLAT WASHERS, (2) SILICON BRONZE LOCK WASHERS PER LUG. (BOLT LENGTH AS REQUIRED). 1/2" SILCON BRONZE BOLTS 46 FT-LB TORQUE DRY, 25 FT-LB TORQUE LUBRICATED. COMPRESSION LUGS ONLY, NO BOLTED LUGS.
4. CONTRACTOR TO OBTAIN CORRECT MEASUREMENTS FOR CONCRETE PAD FROM CITY OF BENTONVILLE ELECTRIC UTILITIES DEPARTMENT.
5. COORDINATE WITH BEUD IF CONCRETE WILL BE POURED ANYWHERE ADJACENT TO THE TRANSFORMER PAD.
6. CT METER CAN TO BE PROVIDED BY BEUD.
7. RACK TO BE CONSTRUCTED FROM MINIMUM 3" X 3" X 1/4" GALVANIZED OR POWDER COATED ANGLE IRON IN CONCRETE, 3" UNI-STRUT, 2" RIGID PIPE, OR EQUIVALENT MATERIAL APPROVED BY BEUD PRIOR TO CONSTRUCTION.



TRANSFORMER SPADE HOLE SPACING DETAIL
SPADE THICKNESS AND NUMBER OF HOLES VARIES BY TRANSFORMER SIZE.

TRANSFORMER SIZE (KVA)	USEABLE POSITIONS	SPADE THICKNESS
45	5	0.38"
75	7	0.5"
150-1000	11	0.5"
1500-2000	13	0.5"
2500	13	0.75"

THE CITY OF BENTONVILLE

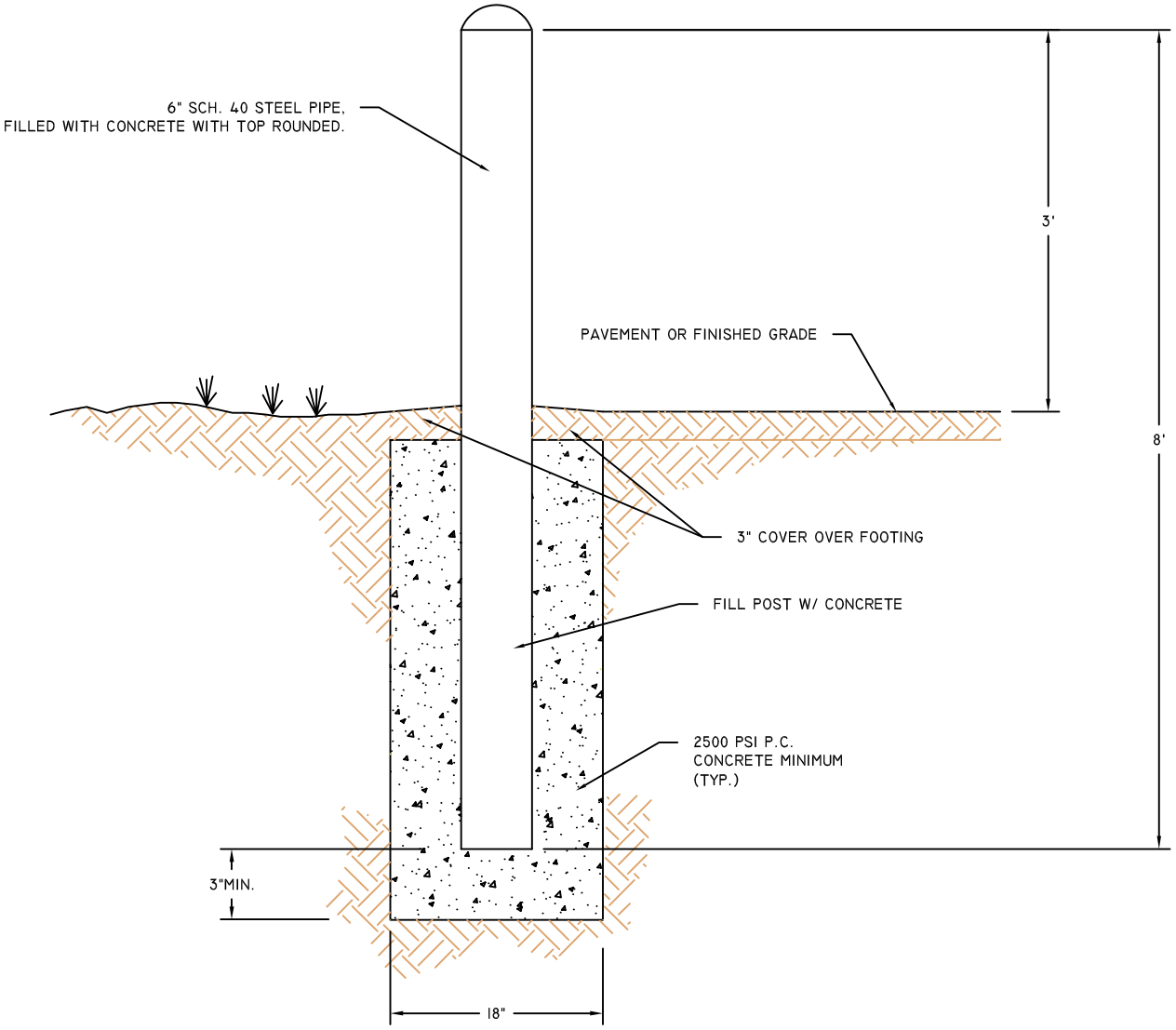
TRANSFORMER PAD AND METER CONFIGURATION FOR CT'S ON SPADES

REV 5 - 2024

DS-1417*

NOTE: IF EQUIPMENT IS 3' OR LESS FROM BACK OF CURB, BOLLARDS ARE REQUIRED. (SEE PLANS FOR LOCATIONS)

ALL PIPES SHALL BE PAINTED TRAFFIC YELLOW

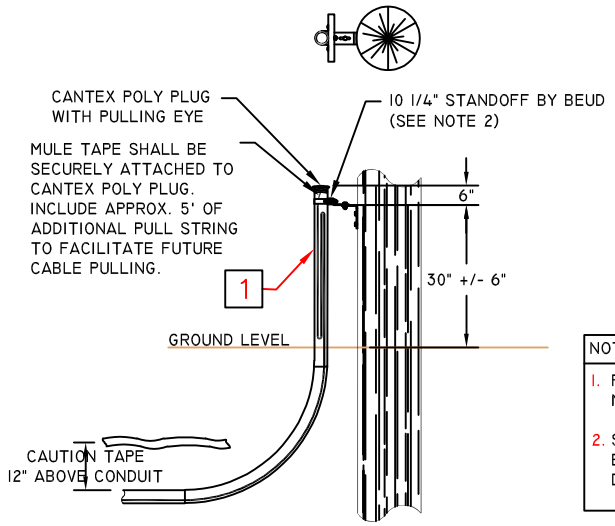


THE CITY OF BENTONVILLE

PIPE BOLLARD DETAIL

DS-1418

DS-1419A - CONDUIT STANDOFF



ELBOW SIZE

CONDUIT SIZE	PRIMARY	SECONDARY	SERVICE
2"	N/A	9.5"	9.5"
3"	48"	13"	13"
4"	48"	16"	16"
5"	60"	N/A	N/A
6"	60"	N/A	N/A

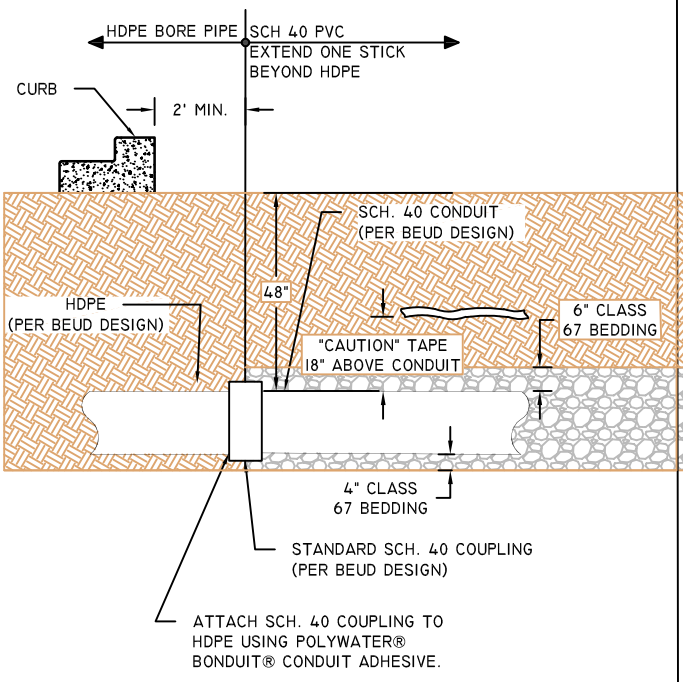
NOTES: #

1. FOR 200A SERVICE, MIN. 3" CONDUIT REQUIRED. FOR 400A SERVICE MIN. 4" CONDUIT REQUIRED.
2. STAND-OFF WILL BE SUPPLIED AND INSTALLED BY CITY OF BENTONVILLE ELECTRIC DEPARTMENT. CALL 479-271-3135 PRIOR TO DIGGING TO CONFIRM CORRECT POLE AND STAND-OFF LOCATION.

DS-1419B - HDPE BORE PIPE TO PVC SCHEDULE 40 CONDUIT

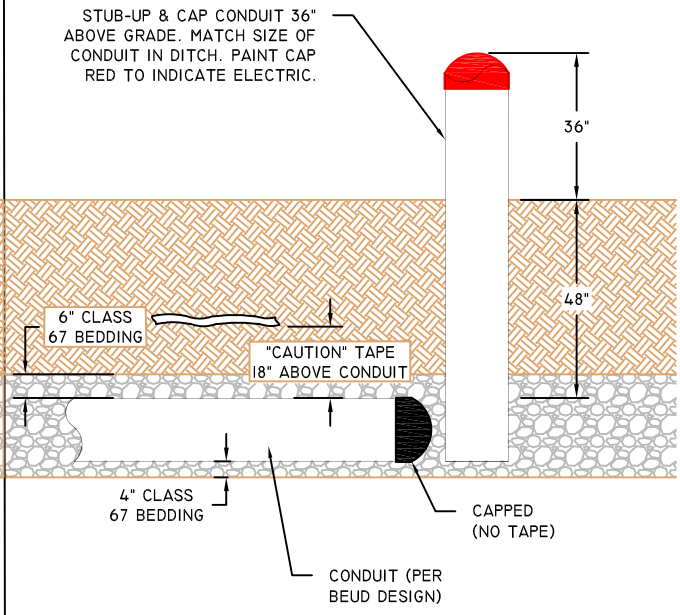
CONTRACTOR TO INSTALL ONE STICK SCH 40 PVC WHEN INSTALLING HDPE BORE PIPE.

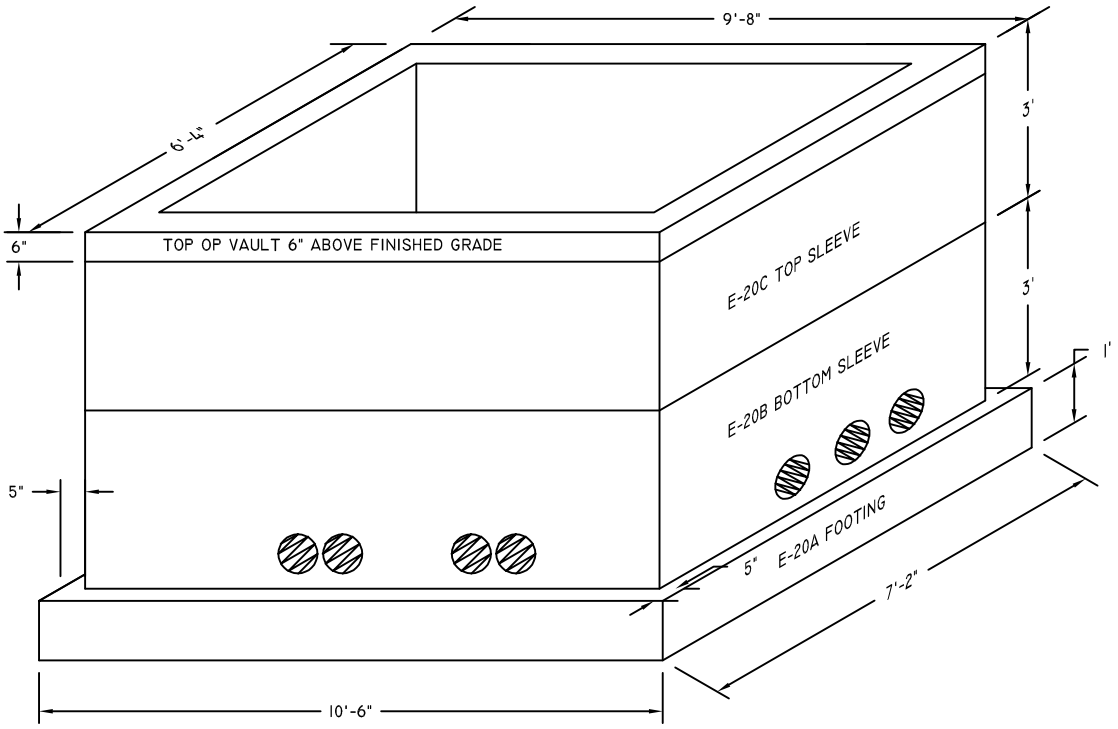
18" OF CLASS 67 GRAVEL MAY BE USED BETWEEN TOP OF CONDUIT AND CAUTION RIBBON IN LIEU OF 6" OF CLASS 67 GRAVEL AND 12" OF BACKFILL.

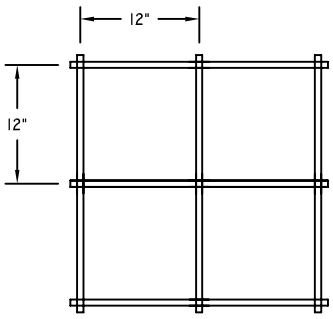


DS-1419C - CONDUIT STUB-UP

18" OF CLASS 67 GRAVEL MAY BE USED BETWEEN TOP OF CONDUIT AND CAUTION RIBBON IN LIEU OF 6" OF CLASS 67 GRAVEL AND 12" OF BACKFILL.







STEEL REINFORCING GRID REQUIRED USING
#4 REBAR AT 12" O.C. THROUGHOUT

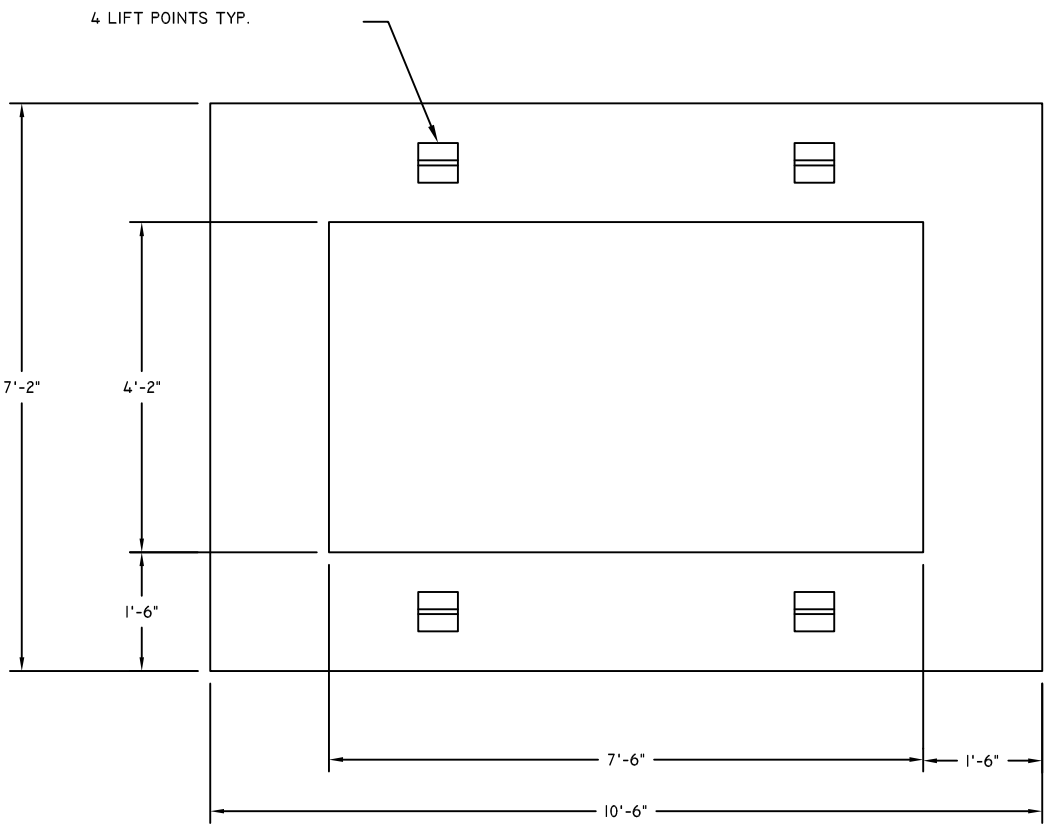
CONTRACTOR SHALL COVER EACH UNUSED
HOLES INDIVIDUALLY. NO GLUE SHALL BE USED.

THE CITY OF BENTONVILLE

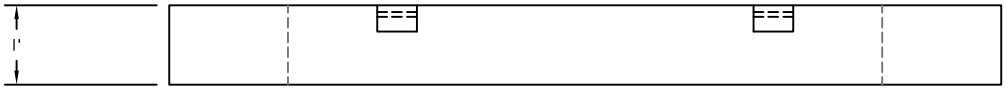
PADMOUNT SWITCHGEAR VAULT ASSEMBLY

REV 5 - 2024

DS-1420



TOP VIEW



FRONT VIEW

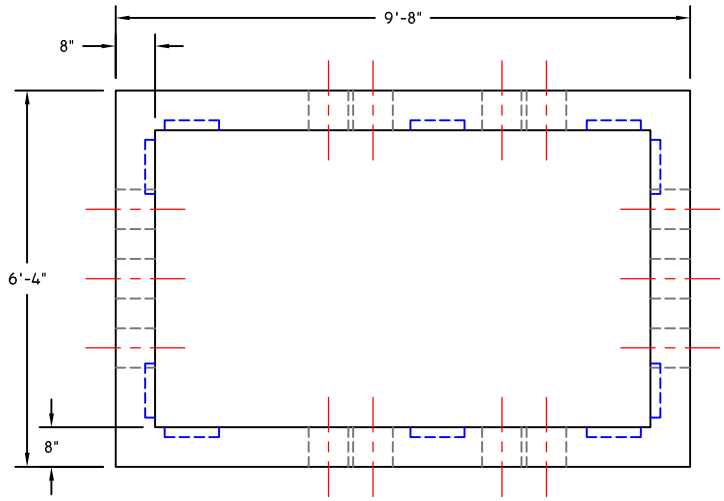
NOTE: CLASS 67 STONE MUST NOT BE INSTALLED ANY HIGHER THAN 2" FROM TOP OF FOOTING.

FOOTER WEIGHT: 3,200 LBS

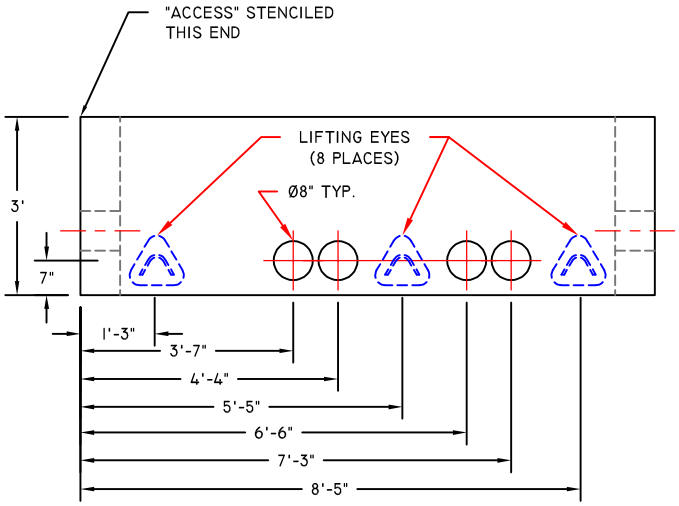
THE CITY OF BENTONVILLE

PADMOUNT SWITCHGEAR VAULT FOOTER

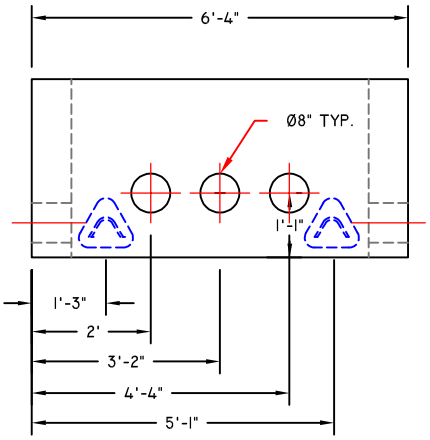
DS-1420A



TOP VIEW



FRONT VIEW



SIDE VIEW

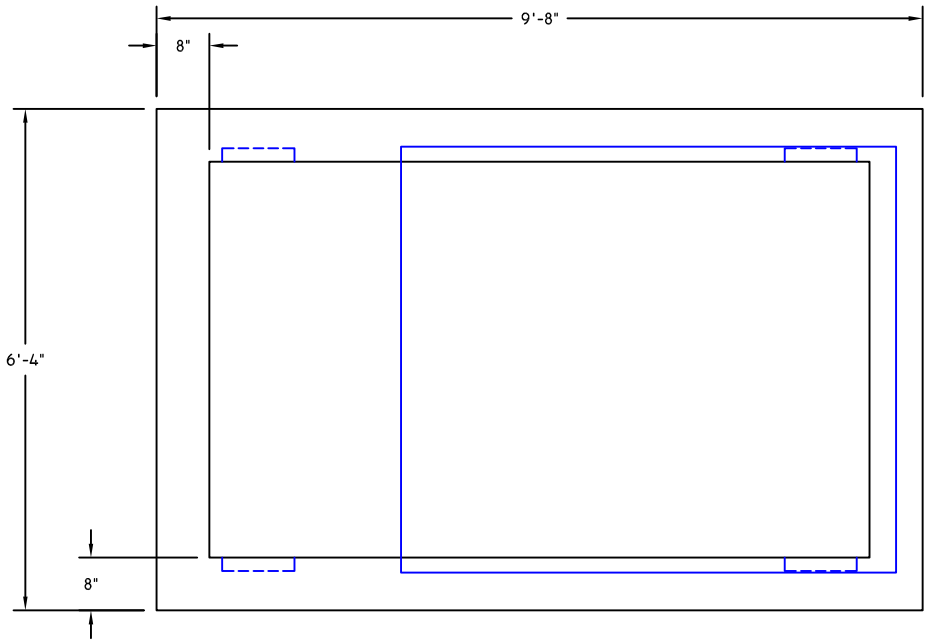
BOTTOM SLEEVE WEIGHT: 8,900 LBS

THE CITY OF BENTONVILLE

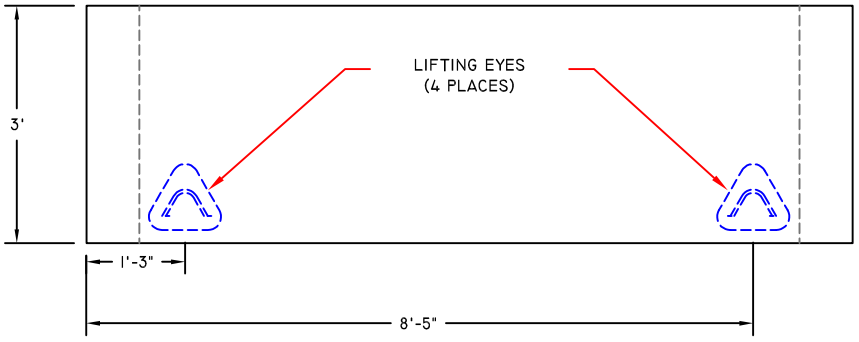
PADMOUNT SWITCHGEAR BOTTOM SLEEVE

REV 5 - 2024

DS-1420B*



TOP VIEW



FRONT VIEW

TOP SLEEVE WEIGHT: 9,200 LBS