

Appendix B: Organization Standard Construction Specifications



CITY OF DAYTON / DAYNET

GENERAL FTTH DESIGN STANDARDS

Rev #	Date	By
Initial	8/23/2024	JP

CITY OF DAYTON / DAYNET.....	1
GENERAL FTTH DESIGN STANDARDS.....	1
GENERAL NOTES:.....	3
EROSION CONTROL:.....	5
STORMWATER DISCHARGE AUTHORIZATION:.....	6
TRAFFIC CONTROL:.....	7
CONDUIT:.....	7
PULL BOX:.....	9
FIBER OPTIC CABLE:.....	9
PASSIVE CABINETS:.....	10
POWERED CABINETS:.....	10
TYPICALS:.....	11
DIRECTIONAL BORE CROSS-SECTION.....	11
OPEN TRENCH CROSS-SECTION.....	12
GRADE LEVEL HANDHOLE.....	13
UTILITY CROSSING.....	14
VAULT DETAIL.....	15
CONCRETE CUT.....	16
PAVEMENT CUT.....	17
RESTORATION.....	18
SIDEWALK CUT.....	19
SPLICE CLOSURE DETAIL.....	20
DITCH CROSSING.....	21
ODC CONCRETE PAD.....	23
NOTES AND CAUTIONS:.....	24

GENERAL NOTES:

1. The contractor shall reference and use Dayton Texas engineering design standards and details. These can be found in the document file named "20200120 Dayton Texas engineering design standards and specifications PDF".
2. Any and all junction boxes, pull vaults, and or handholes shall not be placed within drainage ditches. Installation should be placed on the parcel side of the ditch, where suitable.
3. The contractor shall be responsible for locating all utilities, whether public or private, before excavation or boring. The information and data shown with respect to existing underground facilities at or contiguous to the site are approximate and based on physical appurtenances observed in the field. The owner and engineer shall not be responsible for the accuracy or the completeness of any such information and data; and, the contractor shall have full responsibility for reviewing and checking all such information and data, locating all underground facilities, coordinating the work with the owners of such underground facilities during construction, for the safety and protection thereof, and for repairing any damage thereto resulting from the work. The cost of all of these will be considered as having been included in the contract price. The contractor shall notify any affected utility companies or agencies in writing at least 48 hours before beginning construction.
 - a. Dayton City 936 258 2354
 - b. Call before you dig 811 or 800-344-8377
 - c. Texas One Call system 800 245 4545
 - d. AT&T 713 918 0043
 - e. Centerpoint (electricity) 713 207 2222
 - f. CenterPoint Energy (gas) 713 659 2111
 - g. Comcast 800 776 9993
 - h. Communicomm cable 9 40 627 3099
 - i. Entergy 800 Entergy
 - j. Sam Houston Electric Co. 800 458 0381
 - k. Oncor, area manager 940 627 4102
 - l. TXU electric and gas 800 242 9113
4. All digging and directional bore operations shall be contained within the right-of-way.
5. The contractor is responsible for obtaining any temporary construction easements necessary.
6. State law requires contractors to call one-call for locates (811), no less than 2 or more than 5 business days before beginning any excavation or demolition. Not all utility agencies/owners are members of the one-call system.
7. The contractor shall field locate existing utility lines to be connected to before commencing work. If a discrepancy exists between the plans and actual field conditions, the contractor shall notify the engineer immediately. The contractor shall take special precautions in the vicinity of any overhead electric lines.
8. The contractor shall abide by the National Electrical Code and any requirements of the owner of the electric line.

9. The contractor shall immediately notify the Dayton City Public Works Director of any damage or changed condition caused by construction activities that may result in a disruption of sanitary sewer service.
10. The contractor shall not commence work before 7:00 am and shall arrange his work so that no machinery or equipment shall be closer than 30 feet to any travel lanes after sunset except as authorized by the owner. No work is allowed on weekends without the written approval of the Dayton City Public Works Department.
11. The contractor shall re-establish any property marker, benchmark, etc., disturbed during construction to its original location and elevation.
12. The contractor shall take all available precautions to control dust. The contractor shall control dust by sprinkling water, or as approved by Dayton City and the Engineer.
13. The contractor shall not place fill or waste material on any private property without prior written agreement with the property owner.
14. All materials and workmanship shall conform to the Dayton City Standards except where modified in these plans or the specifications.
15. The contractor shall abide by all applicable federal, state, and local laws governing excavation. Trench side slopes shall meet Occupational Safety and Health Administration (OSHA) standards that are in effect at the time of construction. Sheeting, shoring, and bracing shall be required when side slope standards are not met. A pull box, meeting OSHA standards, may be acceptable unless negated by groundwater control measures.
16. Until the work is accepted by the owner, the project shall be under the charge and custody of the contractor, and the contractor shall take every necessary precaution against injury and/or damage to the work.
17. The contractor shall immediately repair or replace any damage to private property, including, but not limited to, fences, walls, pavement, grass, and trees, at no additional cost to the owner. This work shall be subsidiary to the cost of the contract unless otherwise noted.
18. The contractor shall install temporary backfill as required for open trenches in established roadways. No open trench will be allowed in existing pavement except during daylight hours and construction operations. Temporary backfill shall be installed to the finished grade of the existing pavement and shall be maintained by the contractor to ensure a smooth driving surface free of rutting and potholes. Repair damaged pavement per specifications.
19. Topsoil replacement is required in all areas where topsoil exists, topsoil shall include the top six (6) inches of trench unless rock depth is less than six (6) inches. Topsoil shall be kept separate from general trench excavated material and shall be placed on top of the trench backfill. The contractor shall remove all rock from the topsoil in cultivated areas.
20. The contractor is responsible for obtaining and submitting a trench safety plan, prepared by a professional engineer in the State of Texas, to the City of Dayton before construction. The contractor is responsible for maintaining trench safety requirements per city, state, and federal requirements, including OSHA, for all trenches. No open trenches shall be allowed overnight without prior written approval of the City.

21. To minimize the impact on landscaping material, the contractor shall exercise caution through landscaping limits during all phases of construction activity. Any landscape material damaged during the construction process shall be replaced in kind at the contractor's expense.
22. All applicable provisions of existing utility easements will be adhered to by the contractor.
23. The contractor shall avoid and/or protect all trees and roots by hand digging as necessary. Any trees, shrubs, or vegetation damaged by the contractor shall be replaced in kind at no cost to the city.
24. Work shall not start until the contractor has all necessary permits from the appropriate governing regulatory agencies, including but not limited to the City of Dayton Public Works, the appropriate railroad, TxDOT, and gas pipeline operators.
25. These plans do not include plans or typicals for railroad, bridge, or waterway crossings. Separate drawings for each crossing will be submitted with permits for each crossing. These areas are designated on the plans with a grey box denoted as "permit areas" in the legend.

EROSION CONTROL:

1. The contractor shall be responsible for all erosion control.
2. The contractor shall comply with all local, state, and federal erosion control and water quality requirements, laws, and ordinances that apply to the construction site land disturbance.
3. Erosion control devices shown on the erosion control plan for the project shall be installed before the start of land disturbance.
4. The contractor is solely responsible for the installation, implementation, maintenance, and effectiveness of all erosion control devices and best management practices (BMPS), and for updating the erosion control plan during construction as field conditions change.
5. The erosion control devices shall remain in place until the area it protect has been permanently stabilized.
6. The contractor shall observe the effectiveness of the erosion control devices and make field adjustments and modifications as needed to prevent sediment from leaving the site. If the erosion control devices do not effectively control erosion and prevent sedimentation from washing off the site, then the contractor shall notify the engineer.
7. Off-site soil borrow, spoil, and storage areas (if applicable) are considered part of the project site and must also comply with the erosion control requirements for this project. This includes the installation of BMPs to control erosion and sedimentation and the establishment of permanent ground cover on disturbed areas before final approval of the project. The contractor is responsible for modifying the SWPPP and erosion control plan to include BMPs for any off-site areas that are not anticipated or shown on the erosion control plan.
8. Contractors shall inspect all erosion control devices, BMPs, disturbed areas, and vehicle entry and exit areas weekly and within 24 hours of all rainfall events of 0.5 inches or greater, and keep a record of this inspection in the SWPPP booklet if applicable, to verify that the devices and erosion control plan are functioning properly.

9. Site entry and exits shall be maintained in a condition that will prevent the tracking and flowing of sediment and dirt onto off-site roadways. All sediment and dirt from the site that is deposited onto an off-site roadway shall be removed immediately.
10. The contractor is responsible for removing all silt and debris from the affected off-site roadways that are a result of the construction, as requested by the owner and the City of Dayton. At a minimum, this should occur once per day for the off-site roadways.
11. All fines imposed for sediment or dirt discharged from the site shall be paid by the responsible contractor
12. Temporary seeding or other approved stabilization shall be initiated within 14 days of the last disturbance of any area unless additional construction in the area is expected within 21 days of the last disturbance.
13. The contractor shall follow good housekeeping practices during construction, always cleaning up dirt, loose material, and trash as construction progresses.
14. Upon completion of fine grading, all surfaces of disturbed areas shall be permanently stabilized. Stabilization is achieved when the area is either covered by permanent impervious structures, such as buildings, sidewalks, pavement, or a uniform perennial vegetative cover.
15. The contractor shall revegetate unpaved areas disturbed by construction before acceptance of the project. Revegetation shall consist of seed sowing, straw mulching, fertilizing, and watering. Revegetation shall be acceptable when vegetation achieves one (1) inch in height, with 85% coverage and no greater than 10 square feet bare. This item shall be considered a subsidiary cost to the project, and no additional compensation shall be allowed.

STORMWATER DISCHARGE AUTHORIZATION:

1. The contractor shall comply with all TCEQ and EPA stormwater pollution prevention requirements.
2. The contractor shall comply with the requirements of the TCEQ general permit to discharge under the Texas Pollutant Discharge Elimination System, TXR 150000.
3. The contractor shall ensure that all primary operators submit a NOI to TCEQ at least seven days before commencing construction (if applicable), or if using electronic submittal, before commencing construction. All primary operators shall provide a copy of the signed NOI to the operator of any MS4 (typically the City) receiving discharge from the site.
4. The contractor shall be responsible for the implementation of the stormwater pollution prevention plan (SWPPP) if applicable, including posting site notices, inspections, documentation, and submission of any information required by the TCEQ and EPA (e.g, NOI).
5. All contractors and subcontractors providing services related to the SWPPP shall sign the required contractor certification statement acknowledging their responsibilities as specified in the SWPPP.

6. A copy of the SWPPP, including NOI, site notice, contractor certifications, and any revisions, shall be submitted to the City of Dayton by the contractor and shall be retained onsite during construction.
7. A notice of termination (NOT) shall be submitted to the TCEQ by any primary operator within 30 days after all soil disturbing activities at the site have been completed and a uniform vegetative cover has been established on all unpaved areas and areas not covered by structures, a transfer of operational control has occurred, or the operator has obtained alternative authorization under a different permit. A copy of the notice shall be provided to the operator of any MS4 receiving discharge from the site.

TRAFFIC CONTROL:

1. The contractor shall prepare a traffic control plan for the entire project. The contractor will submit the traffic control plan to the owner and engineer before commencing construction activities. The contractor is responsible for maintaining the controls identified in the plan and changes to the plan once construction begins. No additional payment will be allowed for compliance with the project traffic control plan. No additional payment will be allowed for compliance with requests for a TxDOT inspector, if applicable.
2. Barricades and signs shall be placed in such a manner as not to interfere with the sight distance of drivers entering the roadways or side streets. To facilitate lane shifting, barricades and signs used in lane closures or traffic staging may be erected and mounted on portable supports. The design of these supports shall conform to the manual on uniform traffic control devices and shall be subject to the approval of the engineer.
3. All traffic control devices (signs, markings, Barricades, etc.) used to warn motorists of the construction activity must conform to the latest version of the manual on uniform traffic control devices and are subject to the approval of Dayton Public Works.
4. Barricades and warning signs, as appropriate, are to be placed in stockpiles to adequately warn motorists. At all stockpiles that are less than 30 feet from the edge of any travel lane, a Class III barricade shall be erected immediately in front of or at each end if required. When a stockpile site equals or exceeds 100 feet in length, one object marker (OM-HP) per 100 feet shall be placed alongside the stockpile.

CONDUIT:

1. The fiber optic conduit network shall be maintained at a constant horizontal and vertical location as shown in the roadway cross sections of the roadway plans, drainage plans, structure plans, and other plan components of this project.
2. Potential utility conflicts are shown on the map. This is to aid the contractor in identifying areas that need extra precaution.
3. If constant horizontal and vertical locations cannot be maintained based on existing utilities or obstacles conduit shall maintain a minimum depth of 36 inches and a

minimum distance of 5 feet horizontal separation from all utilities and 12 inches vertical separation from all utilities.

4. If unable to keep the required distance from the edge of the pavement, minimum depth, and distance from existing utilities, notify the project manager immediately.
5. Conduit runs shall not exceed 270° of bends or per manufacturer recommendations between manholes or junction boxes.
6. The HDPE conduit entering a proposed fiber optic pull box shall not exceed a 45-degree entry angle or per manufacturer recommendations.
7. The contractor shall install maximum laying lengths of HDPE conduit, eliminating connections or joints in between conduit runs. A City of Dayton representative's prior approval is required for any connections joined with either electrofusion coupling or using any other manufacturer's recommendations.
8. All empty fiber optic conduits shall be capped and furnished with a pull string for future use. If damage has occurred to the conduit, the contractor shall replace the entire length of the conduit between the corresponding junction boxes or enclosures.
9. In accordance with N.E.C., identify all circuits, fiber, and equipment with "lamacoid tags".
10. The tone wire shall be connected continuously through each pull box with a copper split bolt for continuity testing and splicing. The tone wire shall have a minimum of 5 ft spare in each pull box.
11. Ground rods will be placed in pull boxes no more than 2,000' apart. All dead-end vaults and vaults with more than two paths shall have a ground rod installed.
12. Ground rods shall be 8 ft all-copper rods and placed at the bottom of the pull box.
13. Ground rods shall have a bonding clamp installed on them with a minimum of 15 ft of 12 AWG tone wire connected to the bonding clamp. The tone wire from the ground is not to be connected to the continuous tone wire except at dead-end pull boxes.
14. Upon completion, the contractor shall demonstrate that the wire is continuous and unbroken through the entire run of the duct by providing full signal conductivity (including splices). If the wire is broken, the contractor shall repair or replace it.
15. Raised markers indicating fiber optic cable buried below shall be installed at no more than 2,000' apart. All dead-end vaults and vaults with more than two paths shall have a raised marker installed.
16. All new underground conduits shall be properly sealed at both ends with approved duct plugs to prevent the entry of dust, dirt, or moisture.
17. All conduit trenches and potholes shall be backfilled completely to provide a safe crossing by the end of each working day or whenever the work zone becomes inactive. The contractor shall not open any area that cannot be backfilled in the same day/night operation.
18. It should be noted that no test borings were made where conduit runs are to be installed by jacking or trenching. It shall be the contractor's responsibility to examine job site conditions before submitting bid proposals.
19. All HDPE conduit shall be smooth outside and have a rating of SDR-11 or thicker. All PVC conduit rated schedule 40 or thicker.
20. If an open trench is used, early protection warning tape shall be placed 12 inches above the conduit.

PULL BOX:

1. The fiber optic cable installation techniques and procedures shall be as specified by the cable manufacturer and shall be such that the optical and mechanical characteristics of the cables are not degraded at the time of installation. The central strength member and aramid yarn shall be attached directly to the pulling eye during cable pulling. "Basket grip" or "Chinese finger" type attachments to the cable outer tensile rating shall be used on all pulls.
2. Pull boxes and lids shall have a minimum ANSI/SCTE 77-2017 tier 5 designation for vaults placed in grass or non-paved areas. For sidewalk applications, pull boxes and lids shall have a minimum ANSI/SCTE 77-2017 tier 8 designation.
3. This plan does not call for any pull boxes to be placed on roadways or bridges. The contractor shall notify the engineer and project manager immediately if a pull box needs to be placed on a roadway or driveway.

FIBER OPTIC CABLE:

1. The fiber optic cable installation techniques and procedures shall be as specified by the cable manufacturer and shall be such that the optical and mechanical characteristics of the cables are not degraded at the time of installation. The central strength member and aramid yarn shall be attached directly to the pulling eye during cable pulling. "Basket grip" or "Chinese finger" type attachments to the cable outer tensile rating shall be used on all pulls.
2. The contractor is responsible for all cable pull plans. When using pulling equipment to install cable, measures shall be taken to ensure that the maximum rated cable load (MCRL) is not exceeded.
3. All fiber optic cable installation procedures shall be in accordance with the manufacturer's recommendations and industry standards.
4. The contractor shall coordinate with the project manager before disconnecting any fibers and all fiber splicing.
5. Under no circumstances shall energized cable be placed in the same conduit or pull box as fiber optic cable.
6. Fiber count is specified on the plans. Single-mode all-dielectric fiber should be used. No armored cable shall be used. Cable grounding is not necessary for dielectric cables. Tails from patch panels, cabinets, and pop sites shall be all dielectric.
7. Once the cable has been installed into splice closures, follow the manufacturer's recommendations to ensure a proper seal of the closure.
8. For main access fiber, leave 100ft of slack from conduit to conduit. For lateral access fiber, leave 55ft of slack from the end of the conduit. Route main lateral and drop cables together from the conduit to closures. Do not exceed the minimum cable bend radius. Conduits must not extend more than 2" above gravel.

9. All fiber optic cables shall be tested via OTDR after splicing is complete. Splice results shall be supplied to the project manager for the City of Dayton's approval. Testing standards are specified in the RFP for this project.
10. Splice sheets, closure size, and specifications will be supplied in a separate plan set.
11. Butt splices for reel ends are not designated on the design. Vaults with reel end butt splices shall be designated on as-builts.
12. Multi-dwelling units (MDUs) and trailer parks will have fiber designated for each unit. The fibers will be designated in a splice closure in the right-of-way. This design does not take any fiber optic cable onto private property to serve MDUs or trailer parks.

PASSIVE CABINETS:

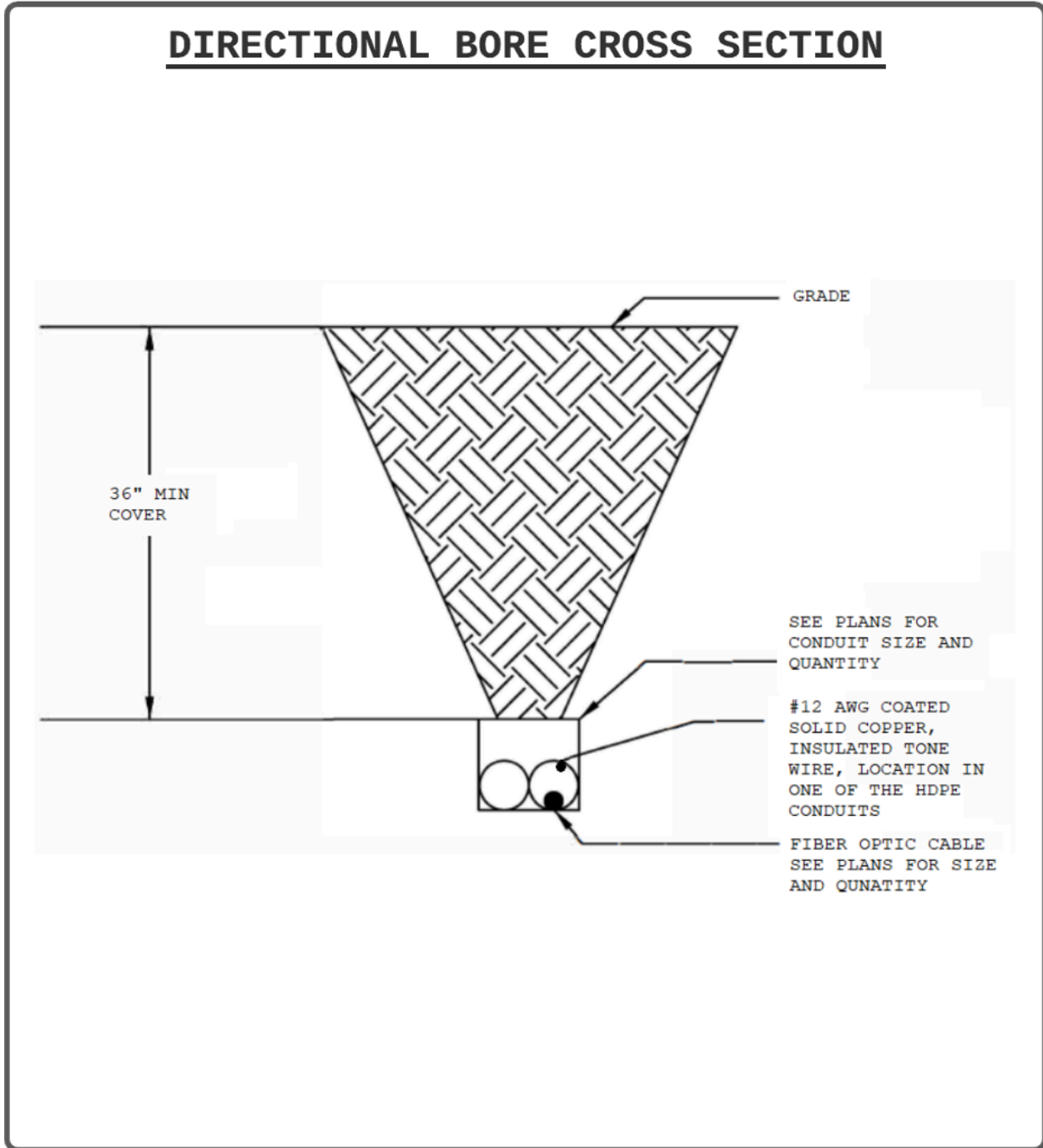
1. Passive cabinets shall be mounted to vaults and risers delivered with the cabinets. These vaults will be pre-drilled and have cable entrance holes precut. Follow the manufacturer's directions for installing and mounting vaults.
2. Vaults for passive cabinets should follow the same typical for all other vaults.

POWERED CABINETS:

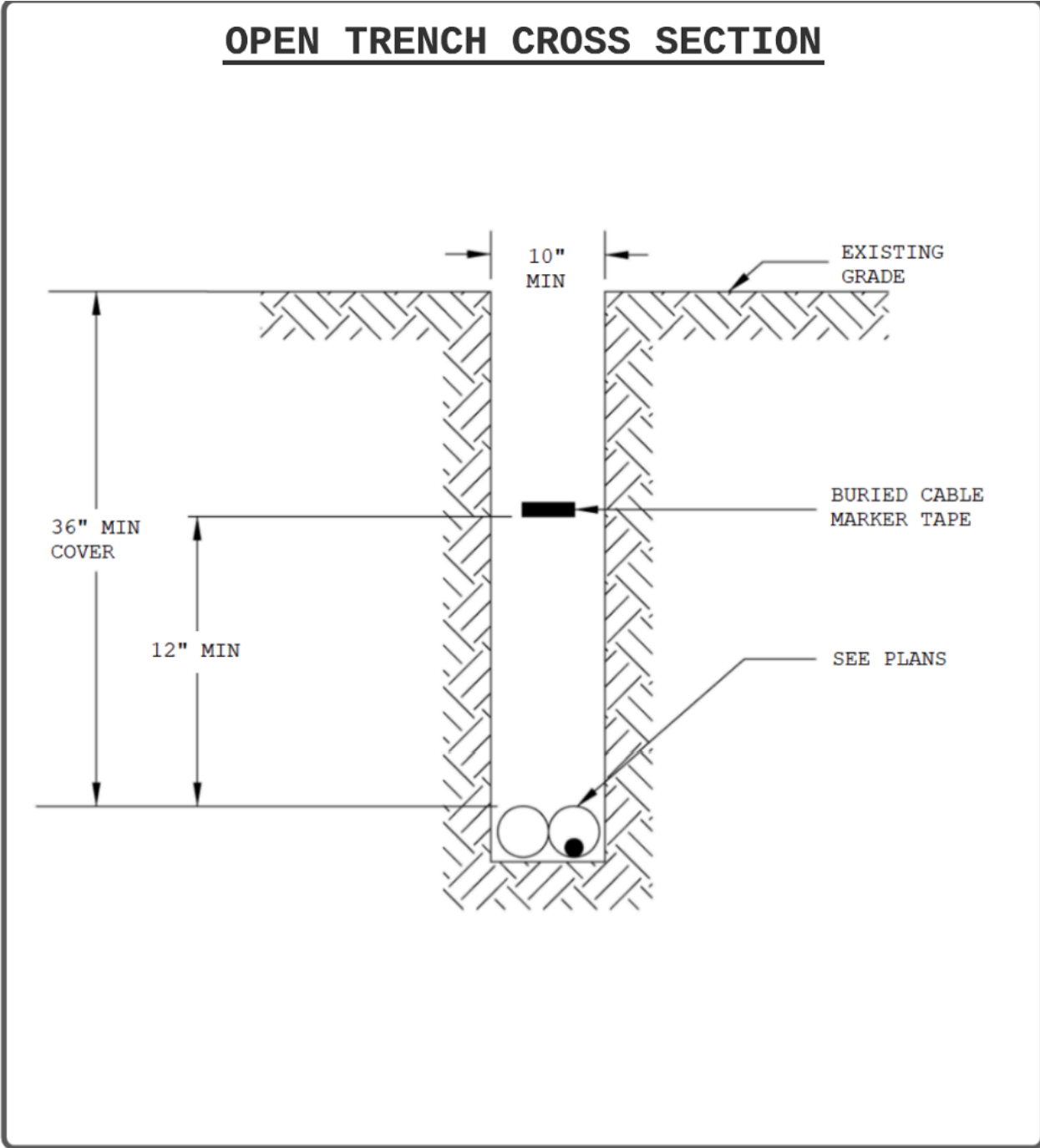
1. All powered cabinets called for in these plans require a concrete pad.
2. Construct the pad with perimeter dimensions of 72 x 54 inches.
3. Construct the pad with a minimum height of 6 inches.
4. Construct the pad with a maximum of 2 inches above-grade exposure.
5. Use the ODC pad typically to provide exact mounting stud and conduit locations.
6. Use rebar or wire mesh inside the form to improve pad strength.
7. Cast the pad from a single concrete pour. Do not make multiple pours.
8. Ensure that the pad is smooth and level across its entire surface.
9. Use a 2" conduit for all outside plant cables.
10. For all ODC installations, there will be a standard LCP cabinet installed. The LCP vault can be used to splice all fiber. The plans will show the location of both the ODC pad and the LCP vault. Run 2" conduit from 5.53" x 15" opening in the pad to the LCP vault.
11. Install 8' x 5/8" copper ground rod in 5.53" x 15" opening in pad. The wire connecting the cabinet's main ground bar to the ground rod should be a 6-awg or larger bare copper ground wire.
12. Use grey 2" sch 40 stick conduit for the AC power cable. The conduit should be run to a pedestal or pole for utility power.

TYPICALS:

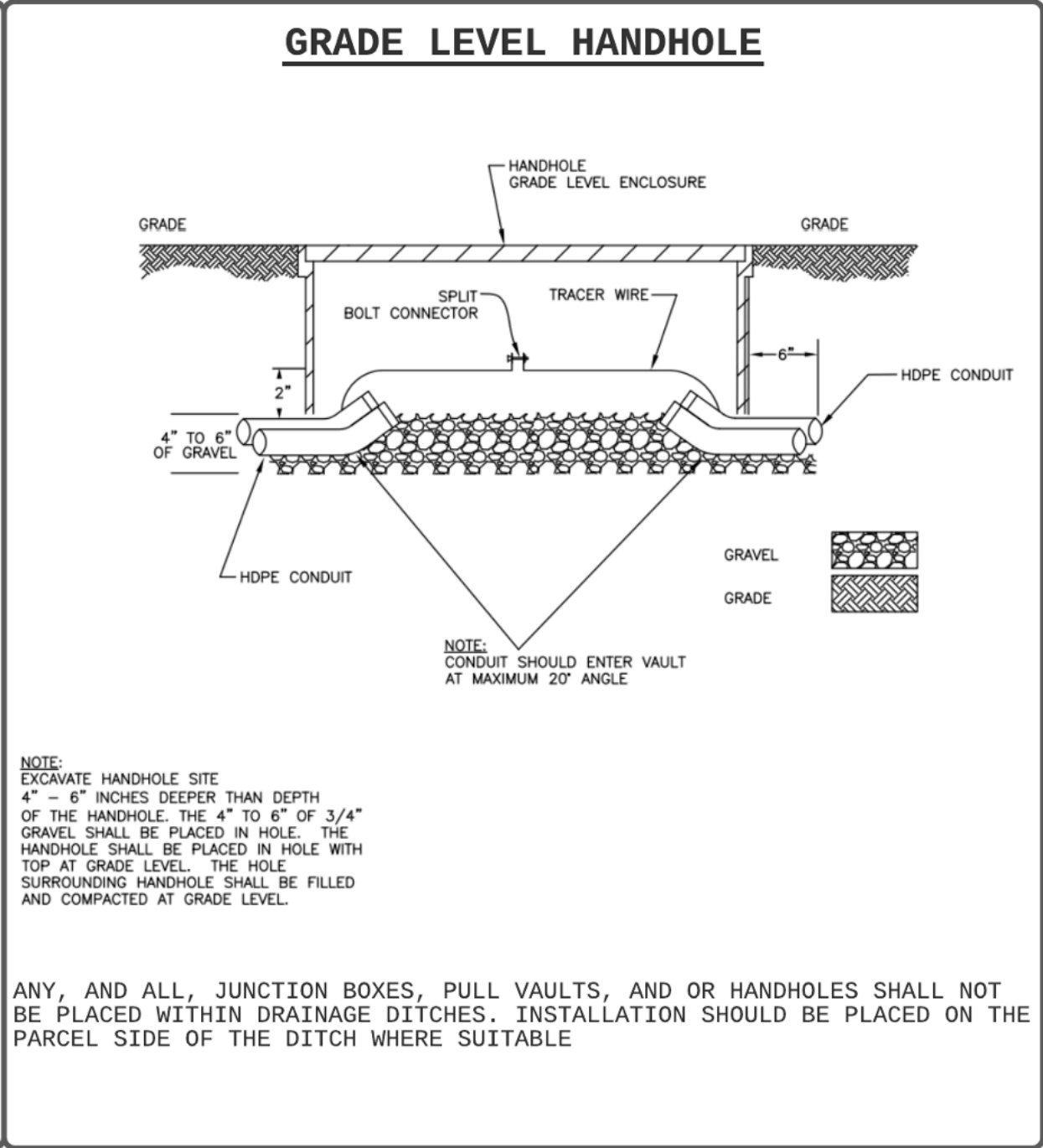
DIRECTIONAL BORE CROSS-SECTION



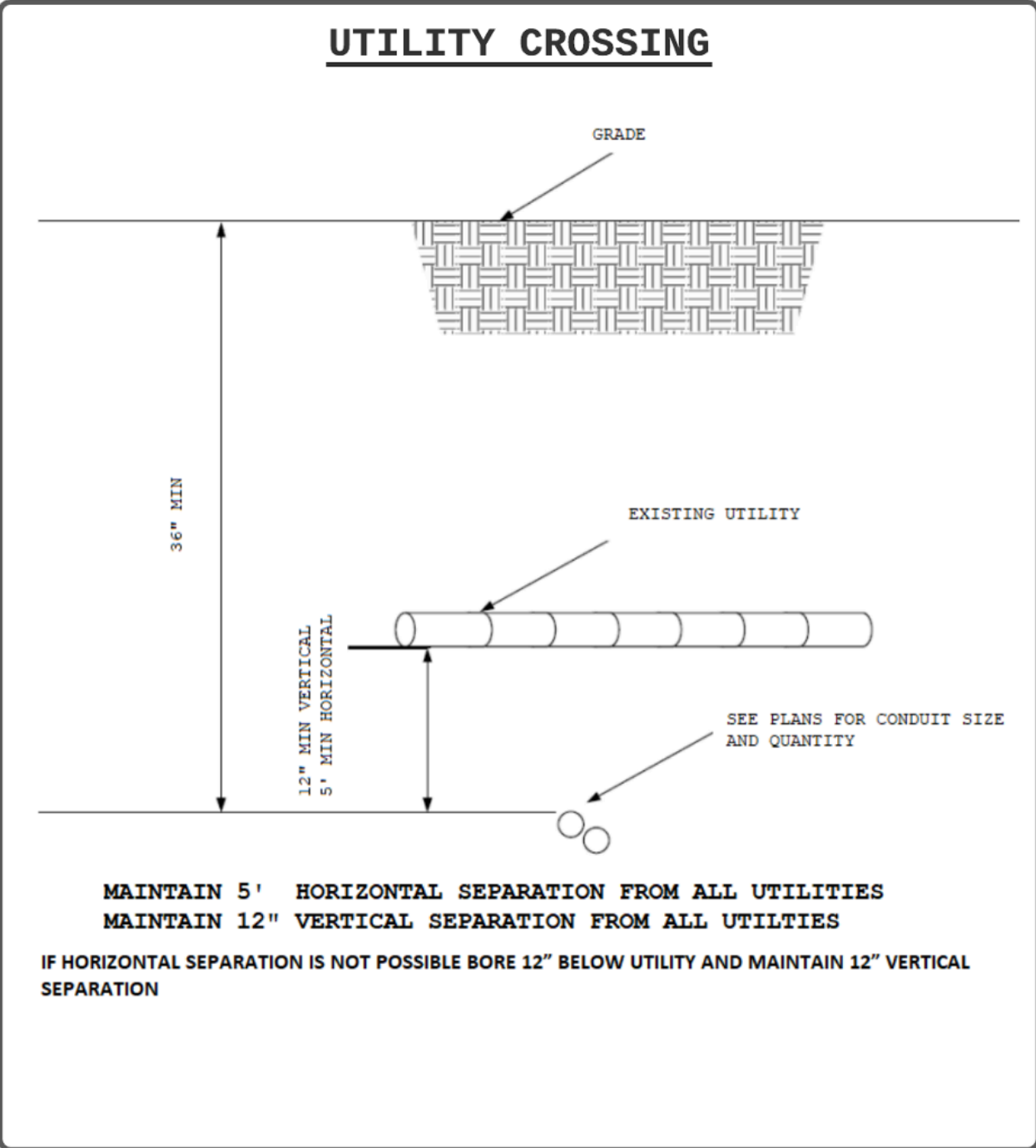
OPEN TRENCH CROSS-SECTION



GRADE LEVEL HANDHOLE

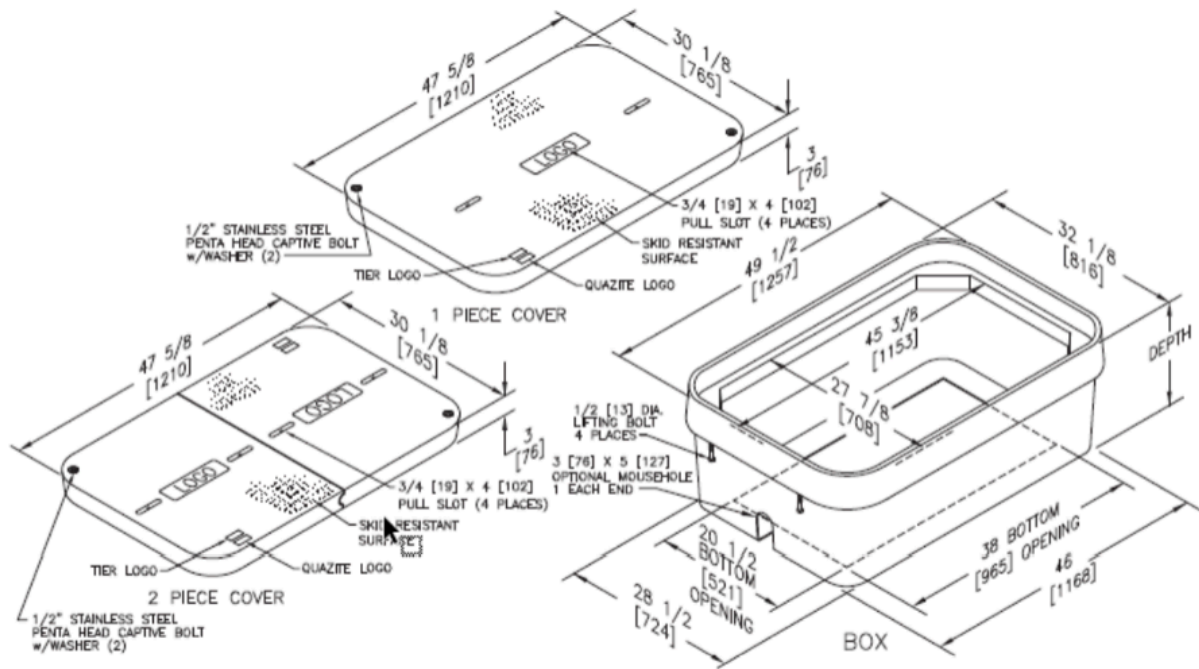


UTILITY CROSSING



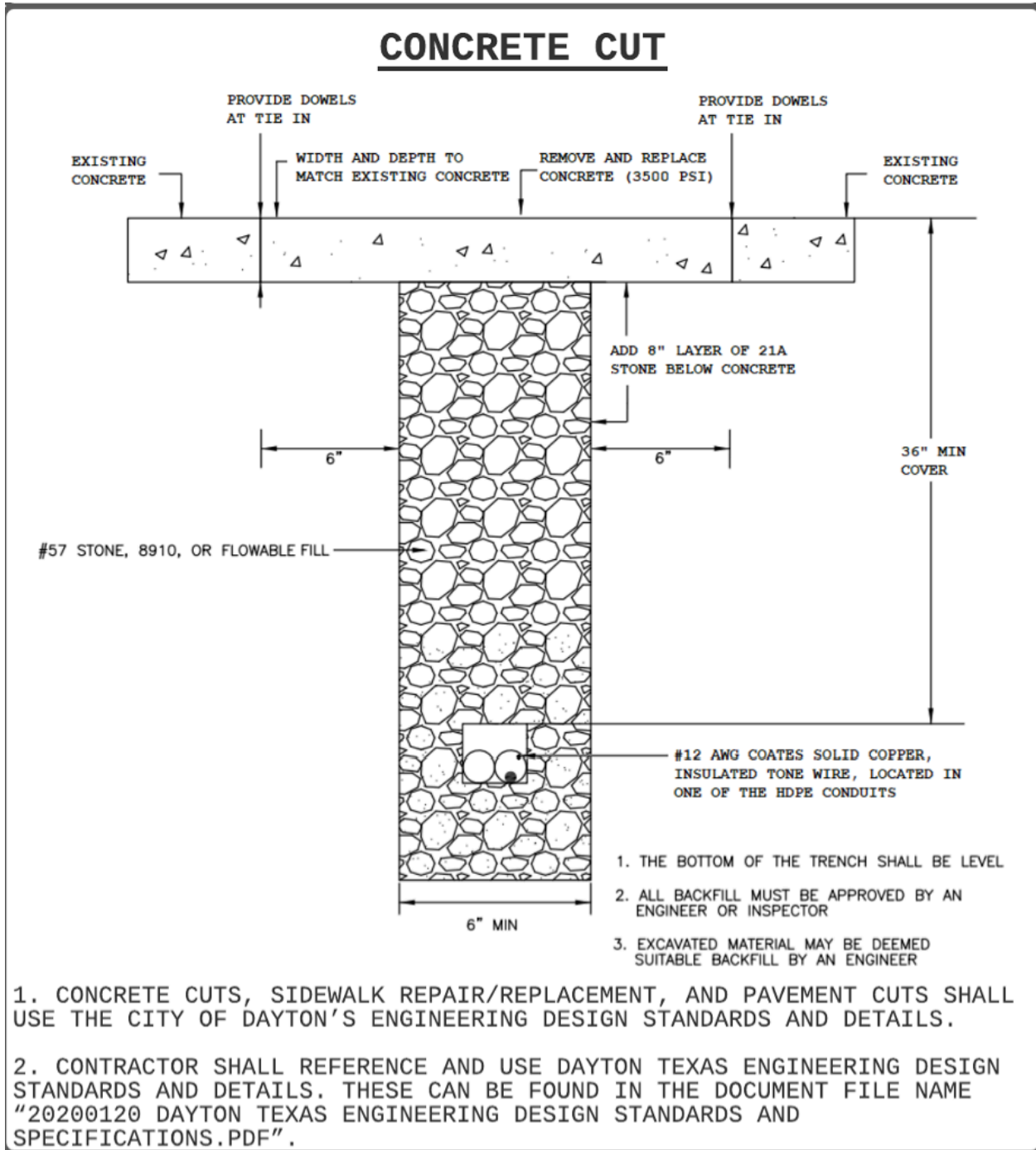
VAULT DETAIL

VAULT DETAIL

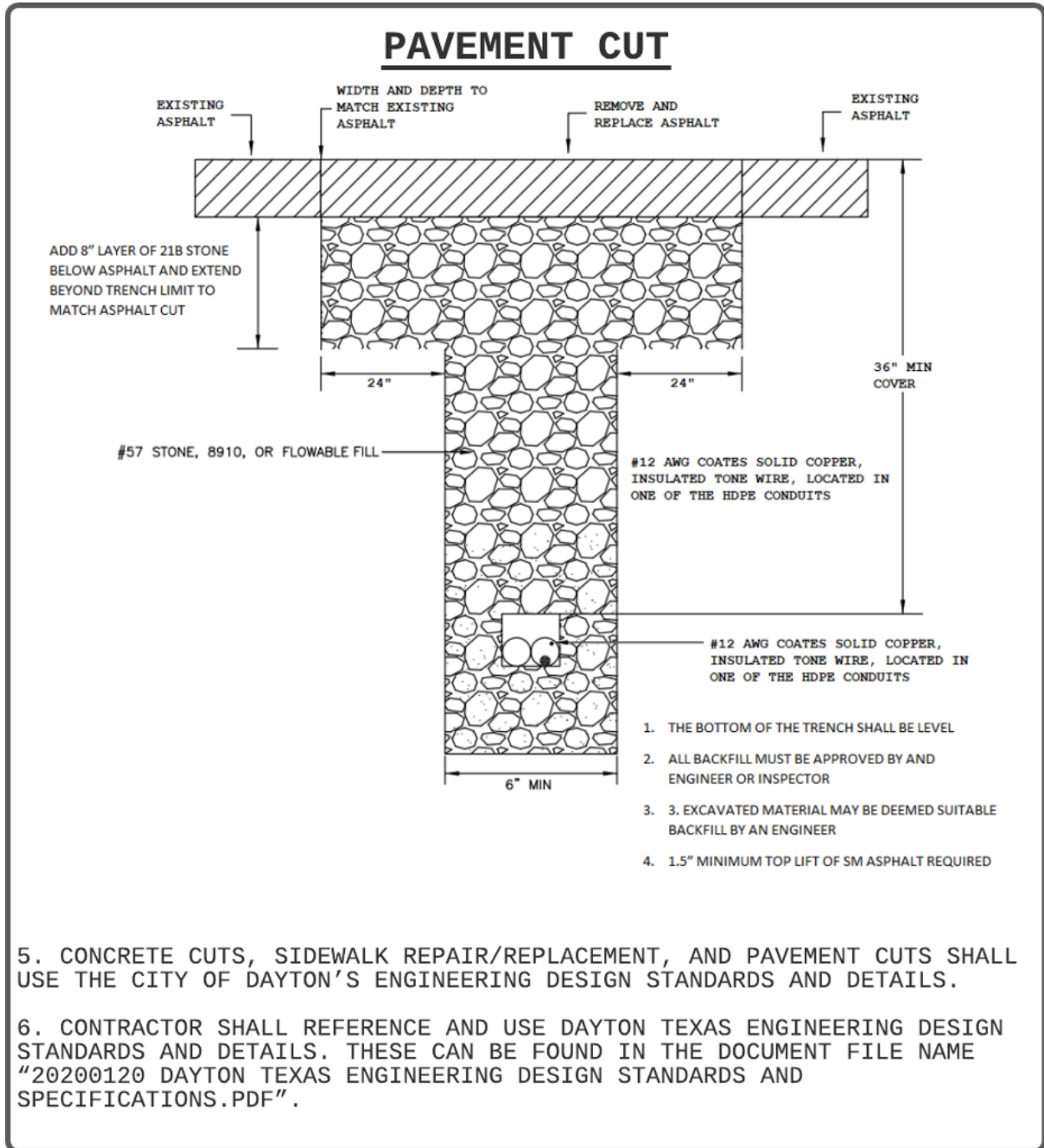


ANY, AND ALL, JUNCTION BOXES, PULL VAULTS, AND OR HANDHOLES SHALL NOT BE PLACED WITHIN DRAINAGE DITCHES. INSTALLATION SHOULD BE PLACED ON THE PARCEL SIDE OF THE DITCH WHERE SUITABLE

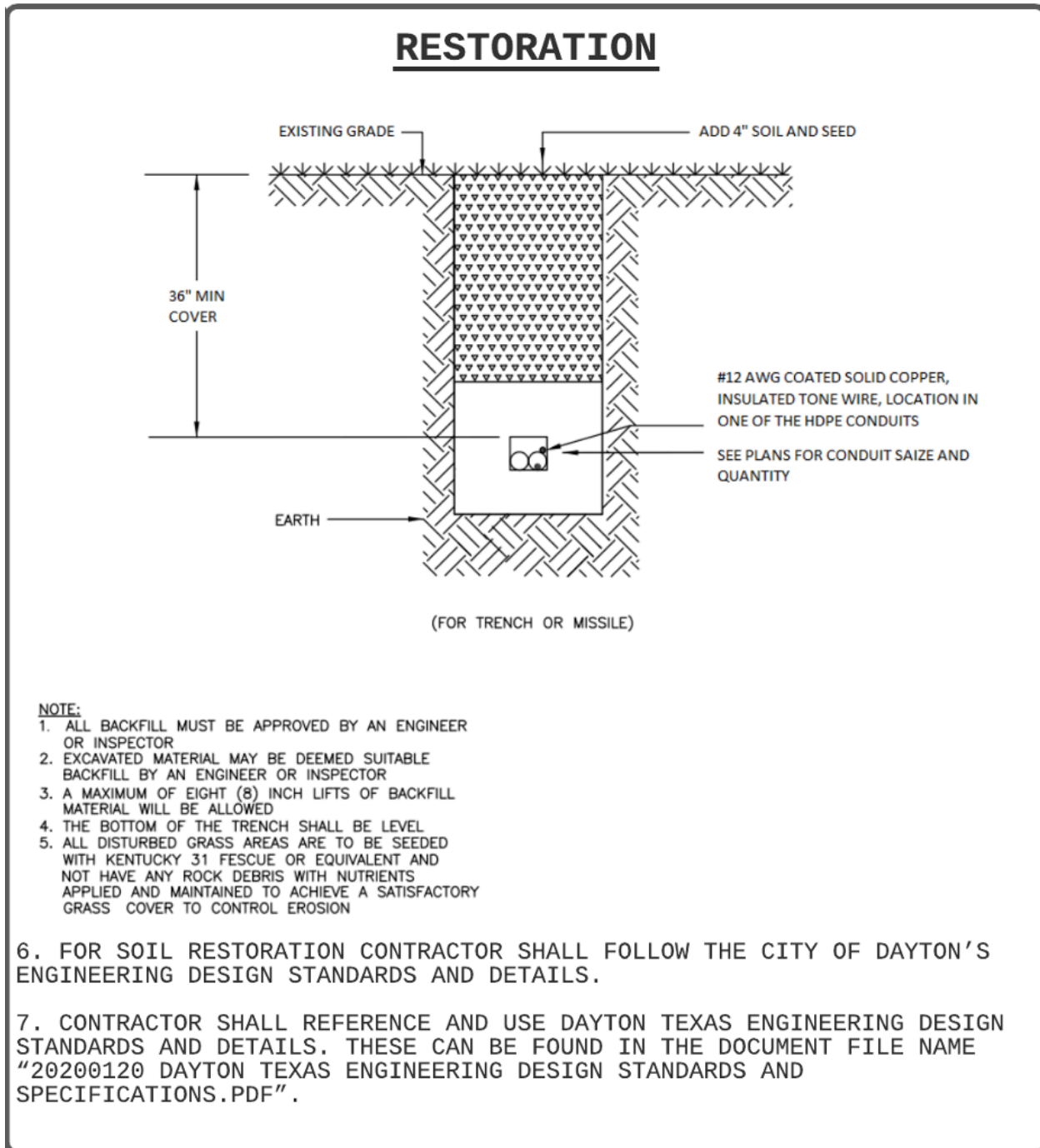
CONCRETE CUT



PAVEMENT CUT

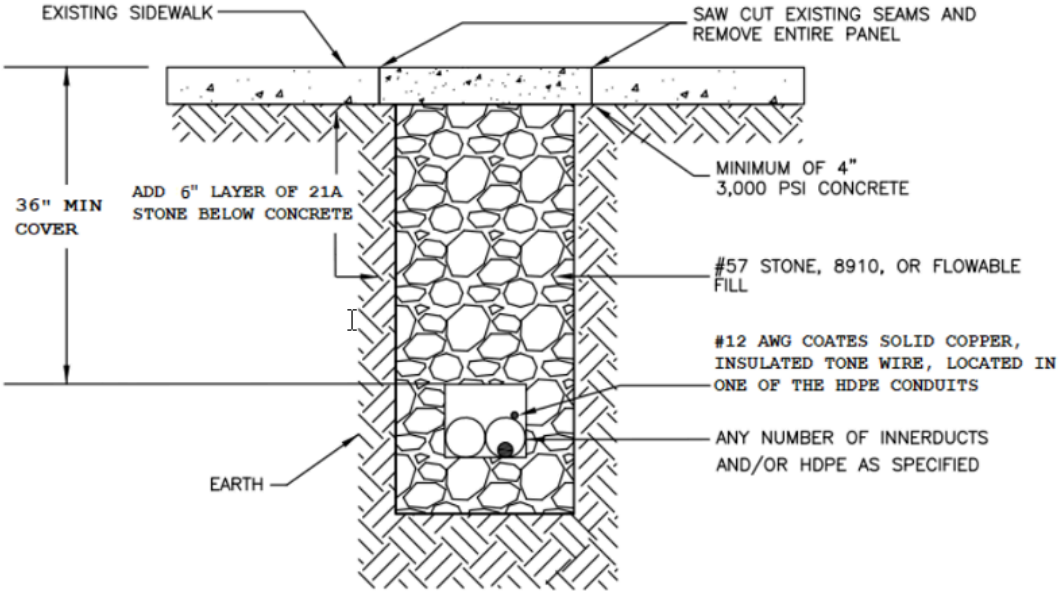


RESTORATION



SIDEWALK CUT

SIDEWALK CUT



- NOTE:**
- 1. SAW CUT SIDEWALK EDGES ALONG EXISTING SEAMS
 - 2. REMOVE ENTIRE SIDEWALK PANEL, JOINT TO JOINT
 - 3. THE NEW CONCRETE SIDEWALK SHALL BE PLACED LEVEL AND FLAT TO MATCH EXISTING
 - 4. THE FINISH SHALL MATCH EXISTING SIDEWALK
 - 5. CONCRETE THICKNESS SHALL MATCH EXISTING SIDEWALK

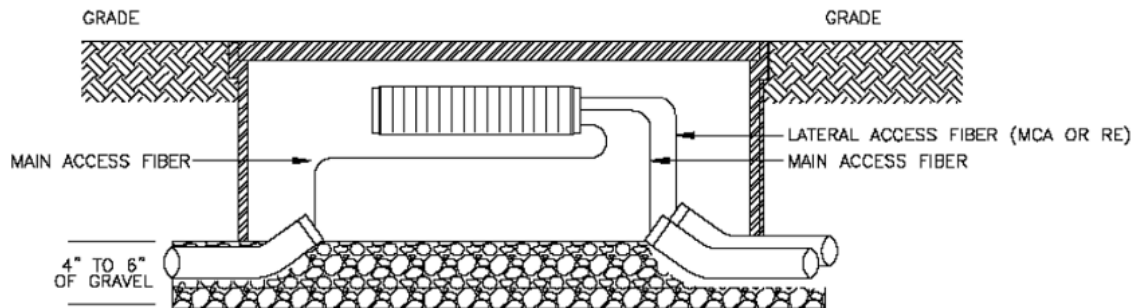
- NOTE:**
- 1. BOTTOM OF TRENCH SHALL BE LEVEL

- 2. CONCRETE CUTS, SIDEWALK REPAIR/REPLACEMENT, AND PAVEMENT CUTS SHALL USE THE CITY OF DAYTON'S ENGINEERING DESIGN STANDARDS AND DETAILS.
- 3. CONTRACTOR SHALL REFERENCE AND USE DAYTON TEXAS ENGINEERING DESIGN STANDARDS AND DETAILS. THESE CAN BE FOUND IN THE DOCUMENT FILE NAME "20200120 DAYTON TEXAS ENGINEERING DESIGN STANDARDS AND SPECIFICATIONS.PDF".

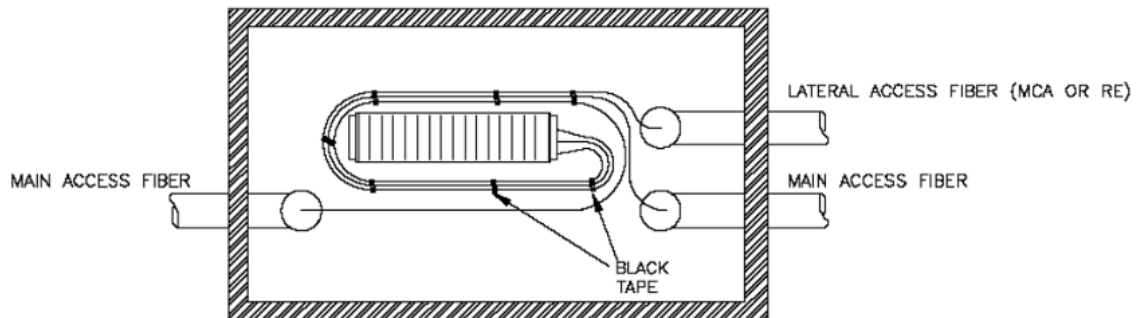
SPLICE CLOSURE DETAIL

SPLICE CLOSURE DETAIL

CONCEPTUAL SIDE VIEW



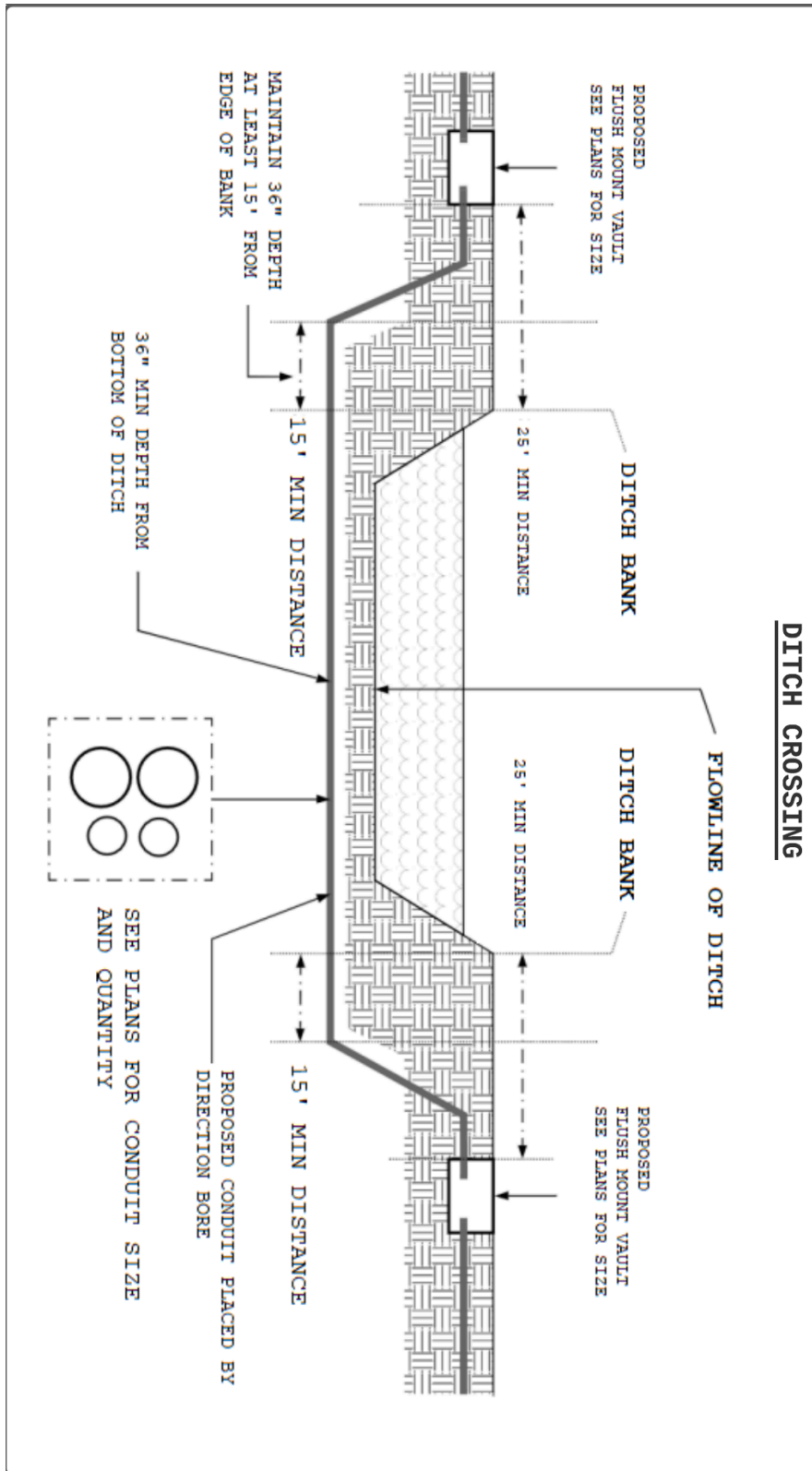
ROUTING TOP VIEW



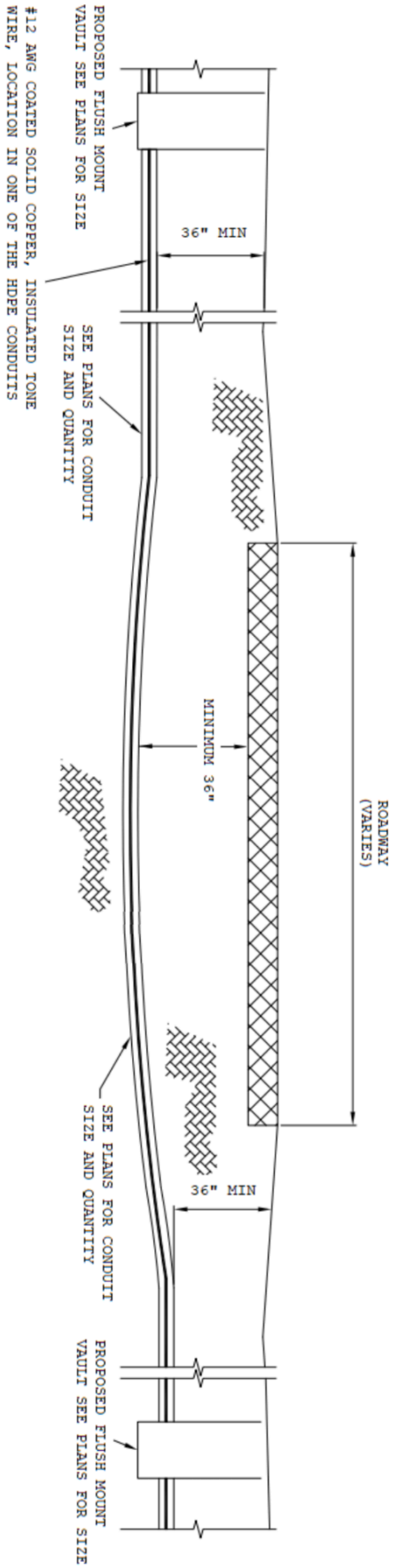
NOTE:

1. FOR MAIN ACCESS FIBER LEAVE 100FT OF SLACK FROM CONDUIT TO CONDUIT. FOR LATERAL ACCESS FIBER LEAVE 55 FT OF SLACK FROM ENDO OF CONDUIT. ROUTE MAIN, LATERAL AND DROP CABLES TOGETHER FROM CONDUIT TO CLOSURES. DO NOT EXCEED MINIMUM CABLE BEND RADIUS. CONDUIT MUST NOT EXTEND MORE THAN 2" ABOVE GRAVEL
2. J-HOOK WIRE SUPPORTS SHALL BE SECURELY ATTACHED TO THE JUNCTION BOX WITH A BOTH AND NUT WITH A NEOPRENE WASHER OR AN EXPANSION FITTING. ONE J-HOOK PER WALL SHALL BE INSTALLED FOR ALL 30X48X36 VAULTS

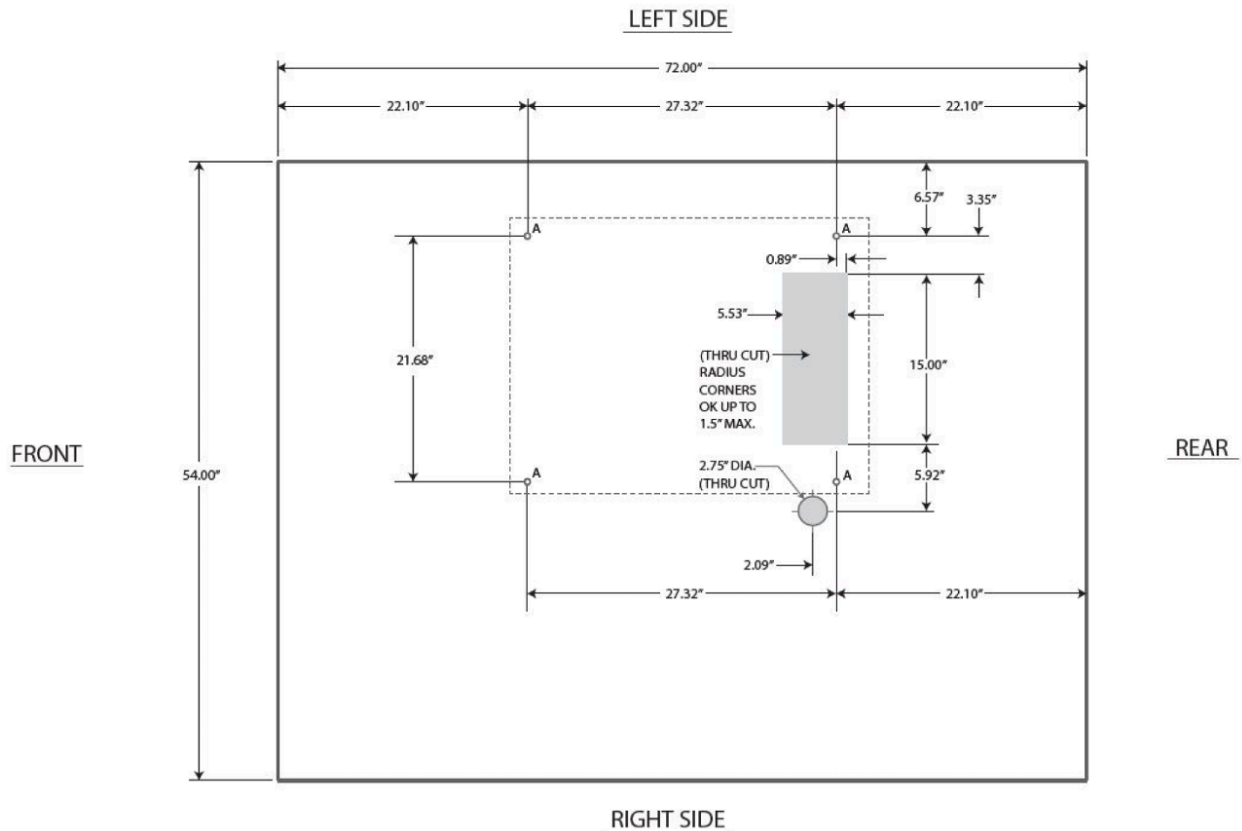
DITCH CROSSING



ROAD CROSSING



ODC CONCRETE PAD



**A= 1/2-13 MOUNTING STUDS OR INSERT
NOT TO EXCEED 1. 5" PROTRUSION ABOVE PAD**

- A Clearfield Fieldsmart Fiberflex 2000 cabinet will be placed on the pad. Follow manufacturer's instructions for constructing the concrete pad.
- Electrical, testing, splicing, and turn-up of the cabinet are outside the scope of this planset.
- The contractor shall use the supplied cast-in-place template for conduit and mounting screw placement. The cast-in-place template is shipped with the Clearfield Fieldsmart Fiberflex 2000 cabinet.
- Install 72" x 54" concrete pad approximately 30ft from ditch in row
- Construct the pad with a minimum height of 6 inches using 3,000 psi concrete
- Construct the pad with a maximum of 2 inches above-grade exposure.
- Use rebar or wire mesh inside the form to improve pad strength.
- Cast the pad from a single concrete pour. Do not make multiple pours.
- Ensure that the pad is smooth and level across its entire surface.
- Install a 30" x 48" LCP vault approximately 2ft to the left of the ODC pad
- Run (2) 2" conduits from 5.5" x 15" through cut-in pad to LCP vault
- Install 8ft copper ground wire in a 5.5" x 15" through cut
- Run (1) 2" sch 40 grey stick conduit to the utility meter placed by the utility. The power meter is planned to be on the right-hand side of the pad.

- All conduits shall be 36" deep.

NOTES AND CAUTIONS:

1. CAUTION: The contractor is to locate & verify all existing utilities before construction by potholing. Utility and row-on plans are represented by records information, surface-level field surveys, and facility owners responding to sue tickets.
2. Before construction, call Texas811.org (toll-free) at 1-800-344-8377 or 811 for the location of underground utilities.
3. Note: All conduits to be placed at a minimum depth of 36" unless otherwise noted
4. Handholes shall not be placed within drainage ditches. Installation should be placed on the parcel side of the ditch where suitable.