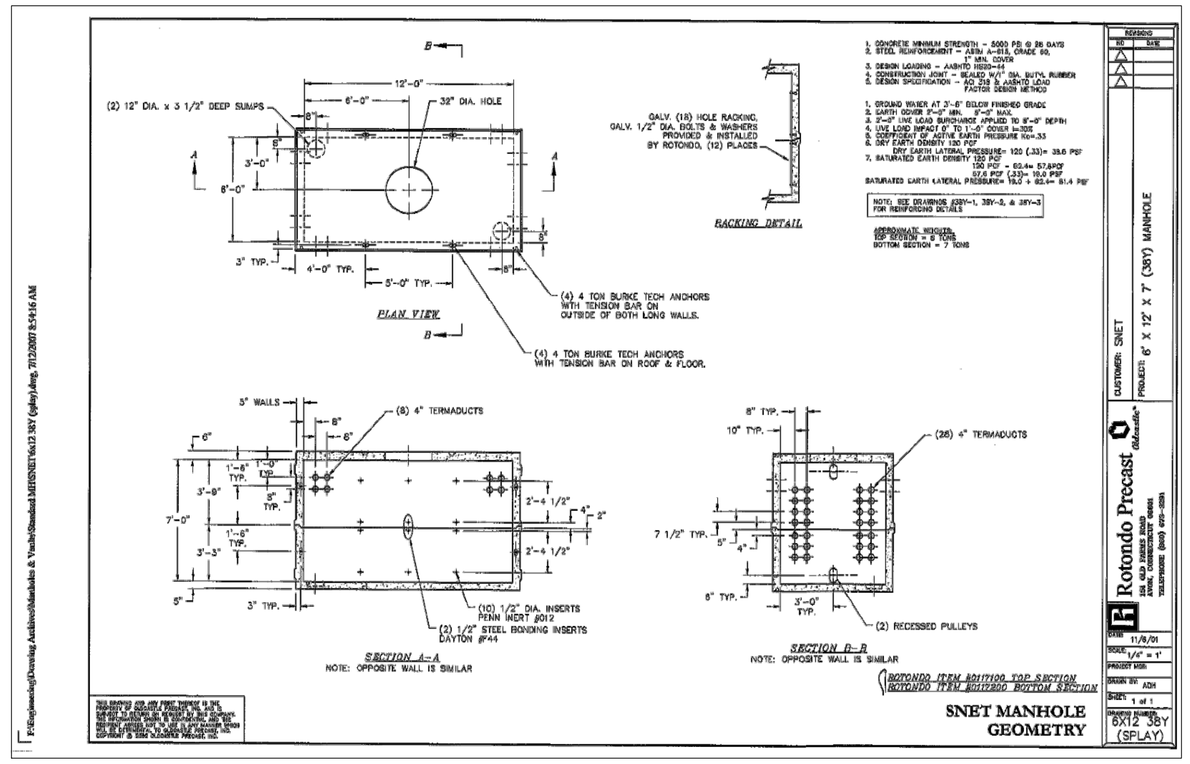
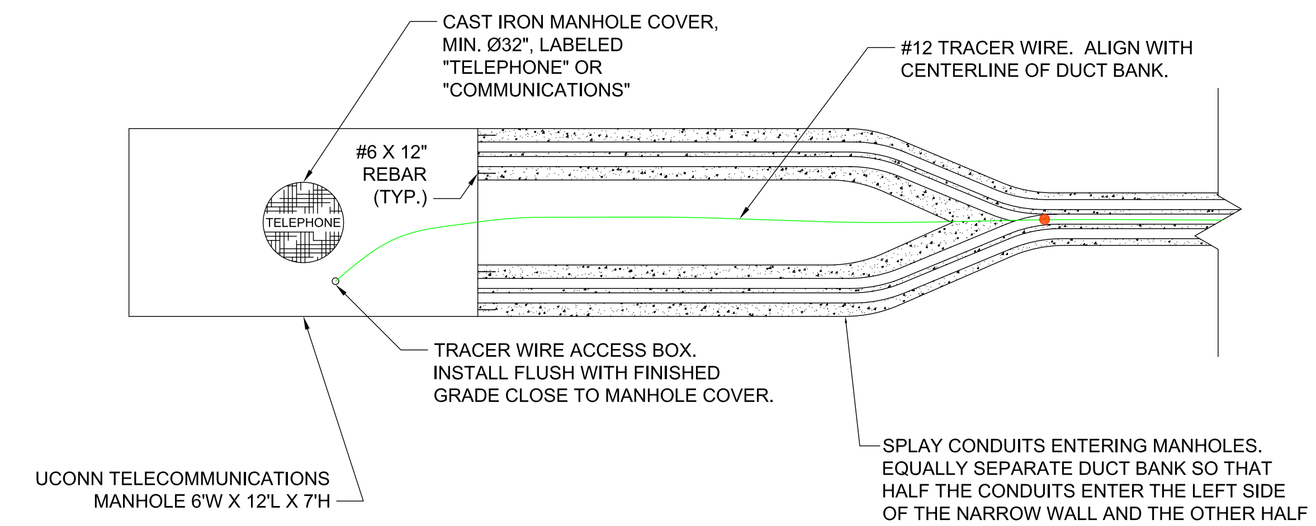


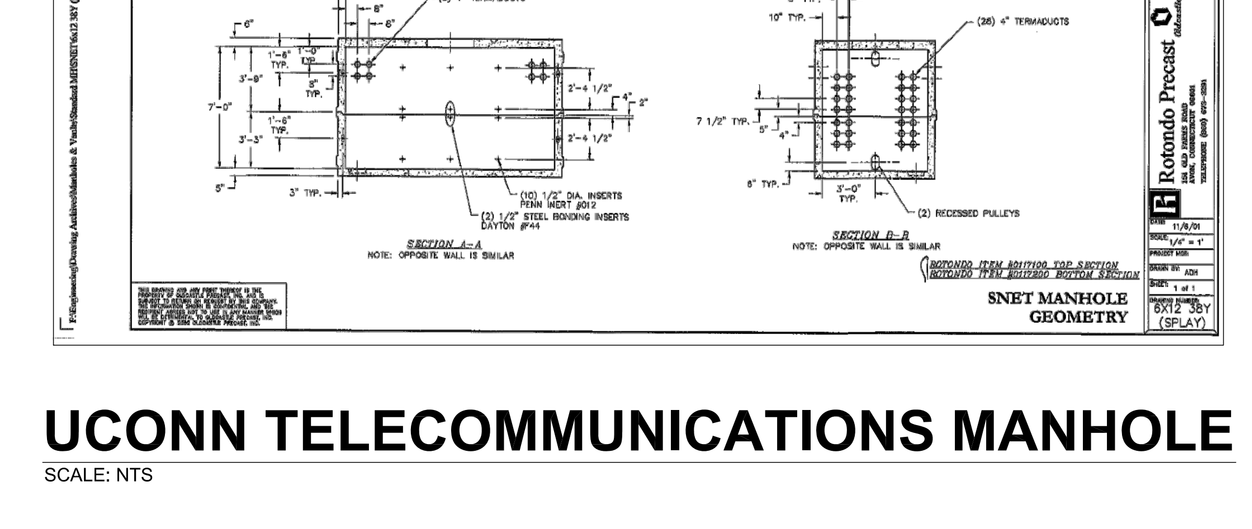
UCONN TELECOMMUNICATIONS MANHOLE

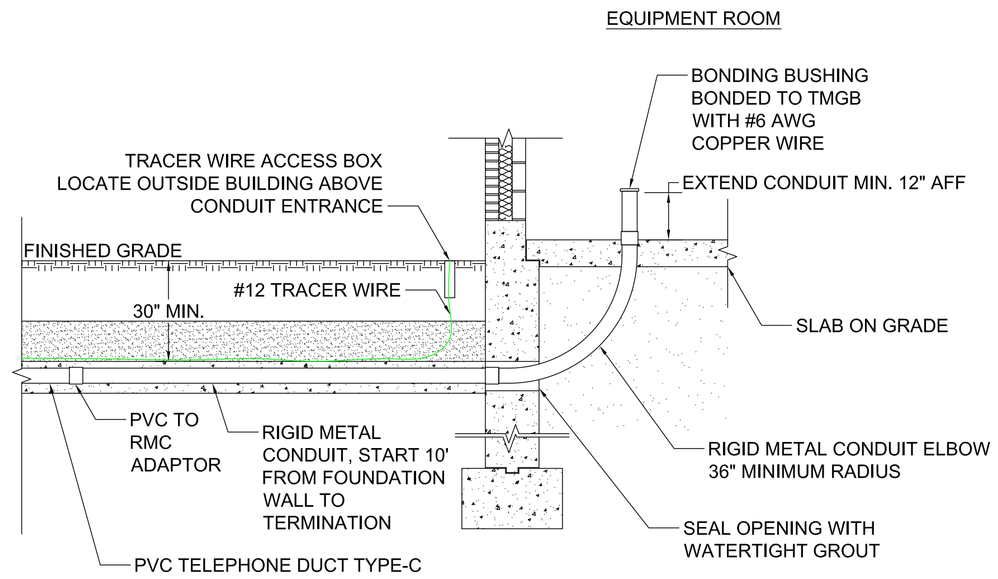
SCALE: NTS

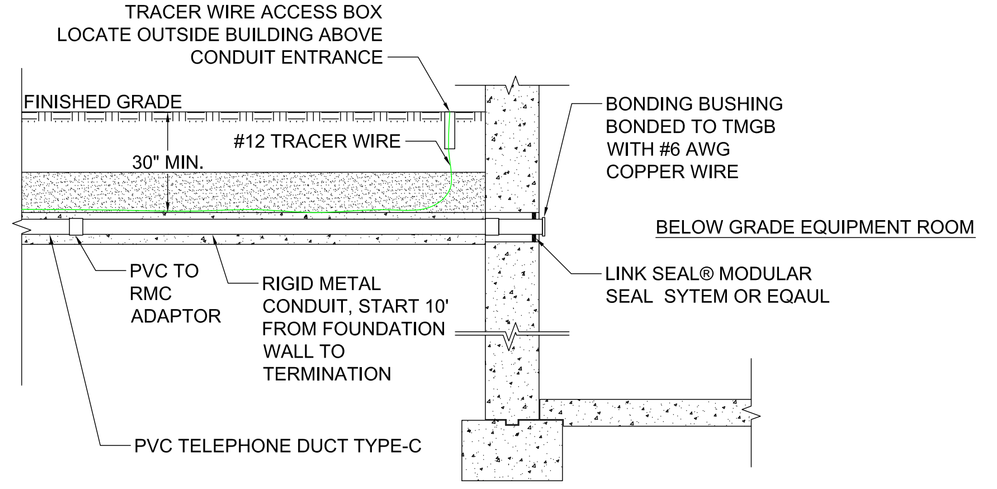


TYPICAL MANHOLE ENTRANCE DETAIL

SCALE: 1/4" = 1'-0"

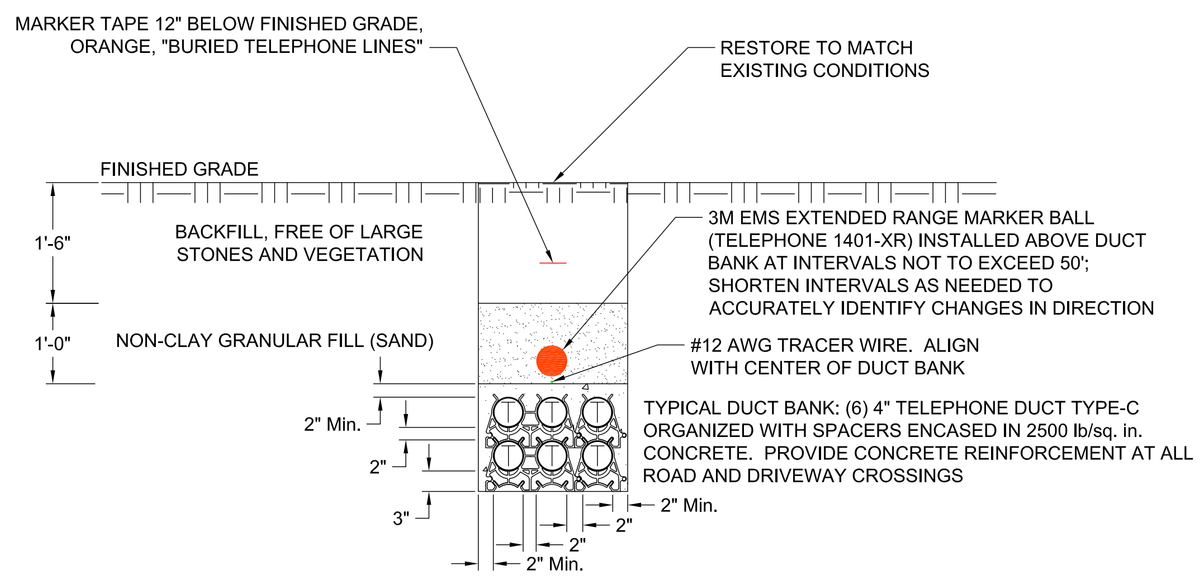






TYPICAL BUILDING ENTRANCE DETAIL

SCALE: 3/8" = 1'-0"



TYPICAL DUCT BANK DETAIL

SCALE: 3/4" = 1'-0"

SPECIFICATIONS:

GENERAL

1. Visit the project location prior to the start of the project; examine and evaluate all existing conditions. Included in this project's Scope of Work are the processes, equipment, services, materials, and labor necessary for the safe, timely, orderly, and proper completion of the project.
2. All measurements are approximate. Verify all dimensions with field conditions.
3. The locations of all underground structures shown here in are according to the best available information. They are not guaranteed to be correct or complete.
4. Do not deviate from these plans without first gaining approval of the University Information Technology Services (UITS) project manager.
5. Arrange to have all utilities identify their positions in the field before starting excavation. "Call-Before-You-Dig" (800) 922-4455.
6. Protect all monuments and bench marks.
7. Protect all plants and trees and their root systems from mechanical and environmental damage during excavation. Backfill root area with soil having texture and fertility to sustain plant life.
8. Unless otherwise noted, maintain the following minimum clearances:

Utility	Crossing	Parallel
Gas Main	12"	30"
Gas Service	12"	12"
Water	12"	18"
Steam	18"	48"
Electric	12"	12"
Storm & San. Sewers	12"	12"

9. Unless otherwise noted, maintain the following minimum buried depths. Measure from the top of the structure to the nearest portion of finished grade:

Structure	Depth
Duct Bank	30"
Manhole	12"

CODES AND STANDARDS

10. All work shall conform to the following codes and standards:
10.1. Connecticut Building Codes with Connecticut 2005 Supplements
10.2. ANSI/NFPA-70 2005 - National Electrical Code (NEC)
10.3. ANSI/IEEE C2 2007 - National Electrical Safety Code (NESC)
10.4. ANSI/IEEE 1100 2005 - Recommended Practice for Powering and Grounding Electronic Equipment (IEEE Emerald Book)
10.5. ANSI/TIA/EIA-569-B - Commercial Building Standard for Telecommunications Pathways and Spaces
10.6. ANSI/TIA/EIA-606-A - The Administration Standard for the Telecommunications Infrastructure of Commercial Buildings
10.7. ANSI-J-STD-607-A - Commercial Building Grounding and Bonding Requirements for Telecommunications
10.8. ANSI/TIA/EIA-758-A - Customer-Owned Outside Plant Telecommunications Cabling Standard
10.9. Telcordia SR1421 - Blue Book, Manual of Construction Proceedures
10.10. Environmental Policies of the University of Connecticut
10.11. Applicable Federal, State, and Municipal codes and policies.
11. Obtain all necessary permits prior to the start of construction

MATERIALS

12. Manhole: 38Y (SPLAY), "J"-type, made of pre-cast concrete with the minimum interior dimensions of 6'W X 12'L X 7'H (Oldcastle Precast Telephone Vault 322UTT38Y or equal, see drawing for details). Provide cast iron rings and covers; load rated H-20; minimum diameter of 32 inches. Covers shall be labeled "TELEPHONE" or "COMMUNICATIONS".
13. Non-Metallic Conduit: Polyvinyl Chloride Conduit (PVC), Telephone Duct Type-"C", designed for direct burial or concrete encasement applications; RUS listed, meets or exceeds the requirements of NEMA TC-10 and Bellcore CAO 8546. Fittings shall match requirements for conduits.
14. Metallic Conduit: Rigid Metal Conduit, steel, ANSI C80.1, Hot Dipped Galvanized interior and exterior, NPT threads, ANSI B1.20.1. Fittings shall match requirements for conduit.
15. Concrete: Encase conduits in concrete having a nominal compression strength of 2500lbs/sq.in. with $\frac{3}{4}$" maximum aggregate crush stone or washed gravel. (Concrete slump size: 6" min., 8" max.).
16. Tracer Wire: Minimum - #12AWG solid copper conductor insulation type THWN (Gas & Oil Resistant).
17. Tracer Wire Access Box: Provide grade level access to each end of the tracer wire. ABS tubular valve box with Cast iron cover, color: Orange, accessible via standard pentagonal key, Tracer wire lug attached to underside of cover. Rated for road surface applications. Install in close proximity to manhole cover with maximum separation of 500' between boxes (e.i. Copperhead Industries, LLC "Snake Pit Magnetized Tracer Box" series or equal)
18. Utility Marker Ball: 3M™ EMS 4" Extended Range 5' Ball Marker - Telephone 1401-XR
19. Conduit Spacers: Carlon "SNAP-N-STACK" SP4W20-2 or equal. Spacers shall maintain a minimum 2" wall-to-wall separation of conduits in all directions and elevate bottom conduits a minimum 3" above trench floor. Maximum spacing between spacers: 7'-0"
20. Muletape: Flat, woven polyester tape with a pulling strength of 1250lbs. Pre-lubricated for easy pulling and durably printed with sequential footage markings. (Neptco or equal).
21. Duct Plugs: Blank duct plugs made of corrosion resistant high-impact plastic. Center rubber washer expands when tightened to prevent water and sediment infiltration; provided with eyelet to secure pull rope. (Tyco Electronics "Jack Moon" or equal).

MANHOLES AND CONDUITS

22. All Duct Banks shall be constructed of concrete encased non-metallic conduit. All bends shall have a minimum radius of 36 inches. Utilize manufactured bends where ever possible. Where bends are performed in the field, protect conduits against kinks or distortion of shape.
23. Feeder and Distribution ducts shall enter on the narrow walls of the manholes. Duct providing Service Laterals to buildings may enter on the long walls.
24. Conduits shall not enter the manhole in the cover chimney.
25. Conduits shall enter manholes perpendicular to the wall
26. Utilize Installed TERMADUCTS for installing conduits into manholes whenever possible. Populate the the lowest knock-outs available to allow for expansion Conduits shall be installed flush with the interior wall of the manhole and shall not protrude into the interior space.
27. Splay conduits entering Telecommunication Manholes. Equally separate duct banks so that half the conduits will enter near the left corner of the narrow wall and the other half will enter near the right corner of the same narrow wall. The splaying of the conduits should start at least 20' from the manhole. Service Lateral ducts are not required to be splayed.
28. Where possible, organize conduits in such a manor as to provide "in-line" or "pull-through" cable installations.
29. Provide #6 X 12" steel reinforcing bars inserted into manhole walls prior to concrete encasement of duct bank.
30. At all road and driveway crossings the duct bank concrete shall be reinforced with engineer designed steel reinforcement.
31. Provide Rigid Metal Conduit at the entrance to each building staring at 10' (min.) outside the foundation wall to termination in the Equipment Room. Bond conduits to the TMGB with a #6 AWG copper ground wire and bonding bushings.
32. Patch walls around conduit entrances with hydraulic cement or watertight grout to prevent water infiltration. Seal all conduit entrances into a below grade building space with a mechanical modular sealing system (Link Seal® or equal).
33. Cement all PVC conduit joints using a PVC primer and solvent cement.
34. All underground conduits shall be encased in concrete. Work concrete to remove all trapped air and insure each conduit is completely surrounded by a minimum 2" of concrete. Allow concrete to cure for at least one hour before backfilling.
35. Seal all conduit ends with blank duct plugs. Secure Muletape to duct plug.

TRAFFIC & SAFETY

36. Provide signs, barricades, drums, traffic cones, fencing, delineators, and traffic control officers to maintain a safe "WORK ZONE", insure safe traffic patterns, and restrict public access to the work site.
37. Coordinate work schedule with UITS project manager to maintain building access and minimize traffic disruptions.
38. Provide shoring and exercise safe trenching practices as required by OSHA.

BACKFILL

39. Place tracer wire on top and along the centerline of duct bank.
40. The first 12" of fill shall be sand or other granular material tamped using lightweight equipment such as pneumatic or vibrating tampers.
41. Install Utility Marker Balls above duct bank at intervals not exceed 50' when duct bank is in a straight line. Shorten intervals as appropriate to accurately identify changes in direction.
42. Backfill shall be free from large stones, frozen materials, wood, and other extraneous materials.
43. Place backfill in layers not exceed 6". Thoroughly compact each layer.
44. Place a plastic marking tape above the duct bank and 12" below finished grade. The plastic tape shall clearly indicate that there is a buried Telecommunications Utility Structure below.

RESTORATION AND EROSION PROTECTION

45. Cut back all concrete and bituminous concrete surfaces 1'-6"
46. Restore all disturbed footpaths, walkways, sidewalks, driveways and roadways to match existing materials and depths ("Like-for-Like").
47. Refer to University Design Guide and Standards, Div 2, Sect 500.A for type and thickness of roadway base surface courses.
48. When laterally crossing under a concrete sidewalk with a duct bank, replace/restore no less than "Full Square" increments of walkway (e.i. Dummy Joint to Dummy Joint or Dummy Joint to Expansion Joint). Provide a felt expansion joint at each abutting joint.
49. Refer to University Design Guide and Standards, Div 2, Sect 500.B for details on concrete paving for permanent sidewalks.
50. Provide erosion and sediment controls along the entire length of the excavation.

TESTING AND AS-BUILT DOCUMENTATION

51. Rod and mandrel each conduit and provide a 1250lbs test "Muletape".
52. Utilizing a 3M "Dynatel" locating tool, identify the duct bank's path by both tracer wire and marker balls. The UITS project manager must be present for this test.
53. Provide as-built Autodesk AutoCAD drawings that accurately provide the following information:
53.1. The installed duct bank's location
53.2. Callouts showing a cross-section detail of each duct bank segment
53.3. Wall-to-wall conduit distances
53.4. Triangulation references from permanent landmarks to various points of the duct bank
53.5. GIS coordinates of each Manhole cover and Utility Marker Ball location along the duct bank's path
53.6. Manhole wall elevation drawings showing conduit identifiers and locations.

FOR INFORMATIONAL USE ONLY; NOT FOR BID OR CONSTRUCTION.

Architect/Engineer:
Physical Infrastructure Planning
196 Auditorium Road, U-3138
Storrs, CT 06269-3138
Telephone: (860) 486-1234

REVISIONS

Index No.	Date	Description

UNIVERSITY OF CONNECTICUT
INFORMATION TECHNOLOGY SERVICES
STORRS, CONNECTICUT

Drawing Title: DUCT BANK DETAILS
Date: MARCH 2011
Scale: AS NOTED
Project Name: TELECOMMUNICATIONS
Drawn by: WSV
Approved by:
Drawing No.: **TU4.0**
Project No.:
Work Order Number:

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