HEXATRONIC

WAYS OF WORKING

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Introduction

Purpose

This document outlines the recommended ways of working for Hexatronic. It provided guidelines, methods and standard practices which are both agreed by Ociusnet and Hexatronic.

Who is **Hexatronic**?

Hexatronic enables non-stop connectivity for communities worldwide. They partner with customers across four continents – from telecom operators to network owners – offering cutting-edge fiber technology and solutions for various conditions.

Hexatronic provides a comprehensive range of passive fiber optic infrastructure. Their products, solutions, and services are designed, developed, manufactured, and marketed to work together optimally. Additionally, they act as representatives for leading global manufacturers of specialized tools and equipment. Their ownership of the complete production chain grants them excellent flexibility and enables swift responses to unique customer requests. With a focus on innovation, extensive technical knowledge, a commitment to high-level service, and complete dedication.

Hexatronic diligently works to enhance their offerings. By delivering intelligent and reliable products and system solutions for passive fiber infrastructure, they actively drive digital transformation, benefiting businesses, individuals, and society. The companies within the Hexatronic Group collaborate to develop products and world-class solutions that create opportunities for advancement across the globe.

Scope of Works

Ociusnet Inc., as one of Hexatronic's Design Partners, plays a crucial role in delivering top-notch design solutions to its clients. Their primary responsibility is to ensure that the design solutions they provide align with industry standards, guidelines, and requirements. Ociusnet Inc. strives to meet and exceed the expectations of their clients by offering the best design solutions possible.

The scope of work undertaken by **Ociusnet Inc.** is focused on providing **High-Level Design services.** This involves creating detailed drawings for various aspects of the project, including **Duct Layout, Cable Schematic, Bill of Materials (BoM)/Bill of Quantities (BoQ), and KMZ file**. These deliverables are essential components of the design process and provide valuable information for the implementation and execution of the project.

Hexatronic offers a diverse selection of solutions, tailoring the use of conventional and proprietary technologies to meet the specific demands and permit requirements of different areas and situations as requested by their clients.

Deliverables

1. **Duct Layout**

   Duct Layout Rio Rancho, Sandoval C

   Duct Layout Rio Rancho, Sandoval C

   See Sample >>

2. **Cable Schematic**

   Cable Schematic Rio Rancho, Sandov

   Cable Schematic Rio Rancho, Sandov

   See Sample >>

3. **BOM/BOQ**

   Rio Rancho, Sandoval County, NI

   See Sample >>

4. **KMZ file**

   Rio Rancho, Sandoval County, NI

   See Sample >>

5. **Pre-Sales Design Request**
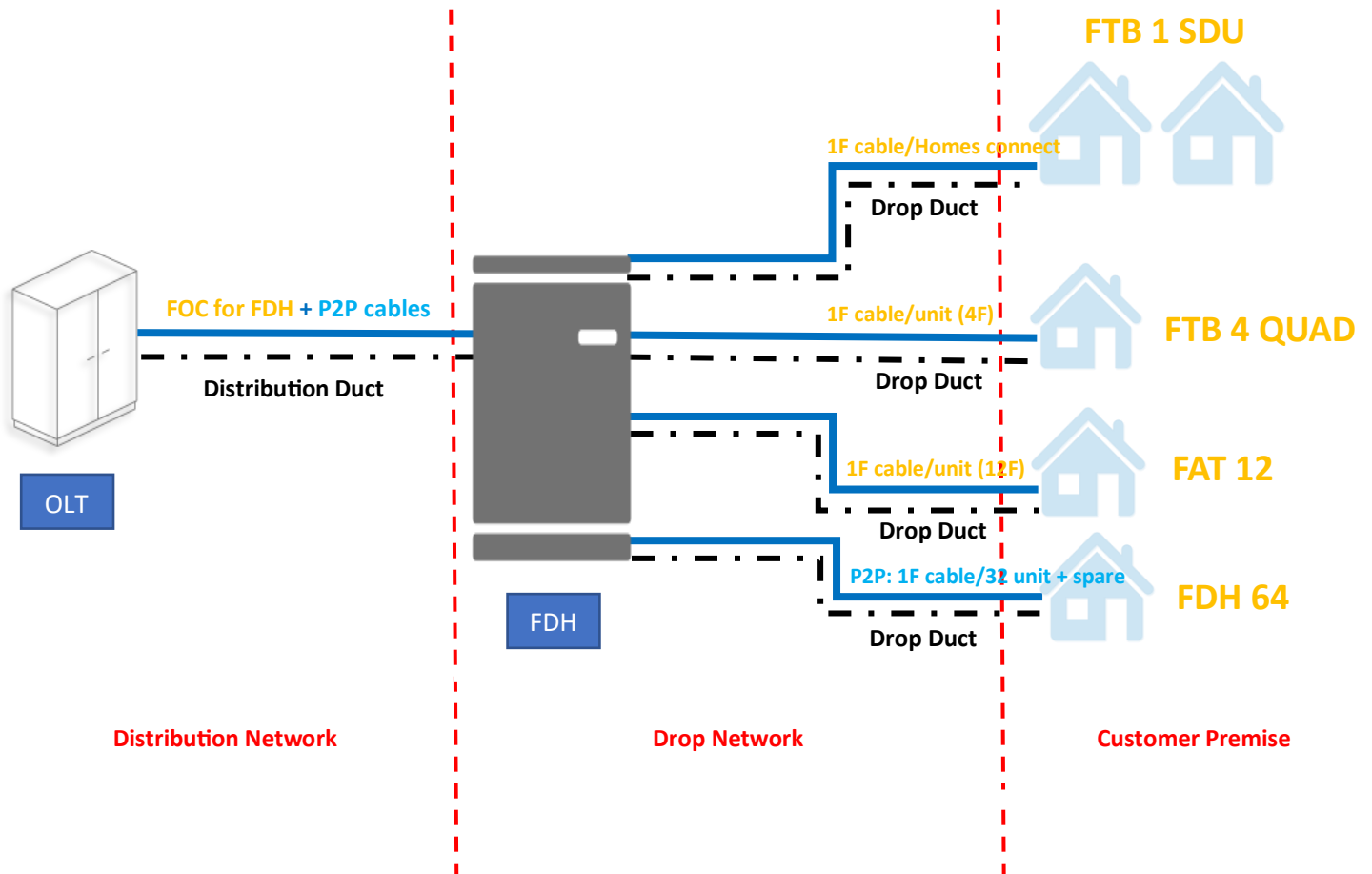

   Pre-Sales Design Request Form v1 - R

   See Sample >>

FTTH High Level Overview

The diagram below shows the High-level design for FTTH Network

FTB 1 SDU

1F cable/Homes connect

Drop Duct

FOC for FDH + P2P cables

FTB 4 QUAD

1F cable/unit (4F)

Distribution Duct

Drop Duct

OLT

1F cable/unit (12F)

FAT 12

Drop Duct

FDH

P2P: 1F cable/32 unit + spare

FDH 64

Drop Duct

Distribution Network　　　　**Drop Network**　　　　**Customer Premise**

Fiber Allocation

Address Class	Address Type	Description	No. Of required Fiber
Residential	SFU	Single Family Unit	1 (P2M)
Residential	QPX	Fourplex	4 (P2M)
Residential	SMDU	Small MDU, 12 residences in one structure	12 (P2M)
Residential	LMDU	30 above or more residences in one structure	Unit/32 +1F spare (P2P)
Other		Club House	1 (P2P)
Other	VAC	Vacant lot	0
Other	CHC	Church/Place of worship	1
Other	GOVT	Government (Post office/fire stations/courthouses)	2
Other	GOVT	Police stations	2
Other	GOVT	Hospital	1
Other	GOVT	School	2
Other	PRIVATE	Large private complex (universities/colleges/business campuses	2
Commercial	SBU	Small Business Unit	2 per unit
Commercial	LCU	Large Commercial Unit	2 per unit
Commercial	SMTU	Small Multi Tenant unit	1
Commercial	MTU	Multi Tenant unit (9-160 units)	(# of units)/32 +2 per structure
Commercial	MTU	Multi Tenant unit (>161-256 units)	(# of units)/32 +4 per structure
Commercial		Warehouse/storage	1

Design Process using AutoCAD

1. **Pre-design**
2. **Design Proper**
3. **Post Design**

1. **Pre-design**

   In this stage, there will be discussion with the client regarding the network design requirements for the new area. The appropriate solution to be implemented, preferred method for civil works installation, preferred infrastructure deployment, and other relevant considerations will be addressed and incorporated into the design. The interaction may take place through email exchanges and virtual discussions.

   After addressing and resolving all clarifications, the subsequent step will involve commencing the actual design phase and ensuring timely delivery of the HLD design package.

2. **Design Proper**

   The initial stage involves collecting all accessible data from online sources, including Road Centerlines, Curb lines, Parcel, Building outlines, and Address data. If there is a lack of available data, manual tracing or drawing will be necessary.

   Make sure to assign the correct coordinate system in the dwg file to be used. This reference shall be used in obtaining the correct coordinate system. You may easily capture by searching the county of the area and choosing the unit required.

   Projected_Coordina
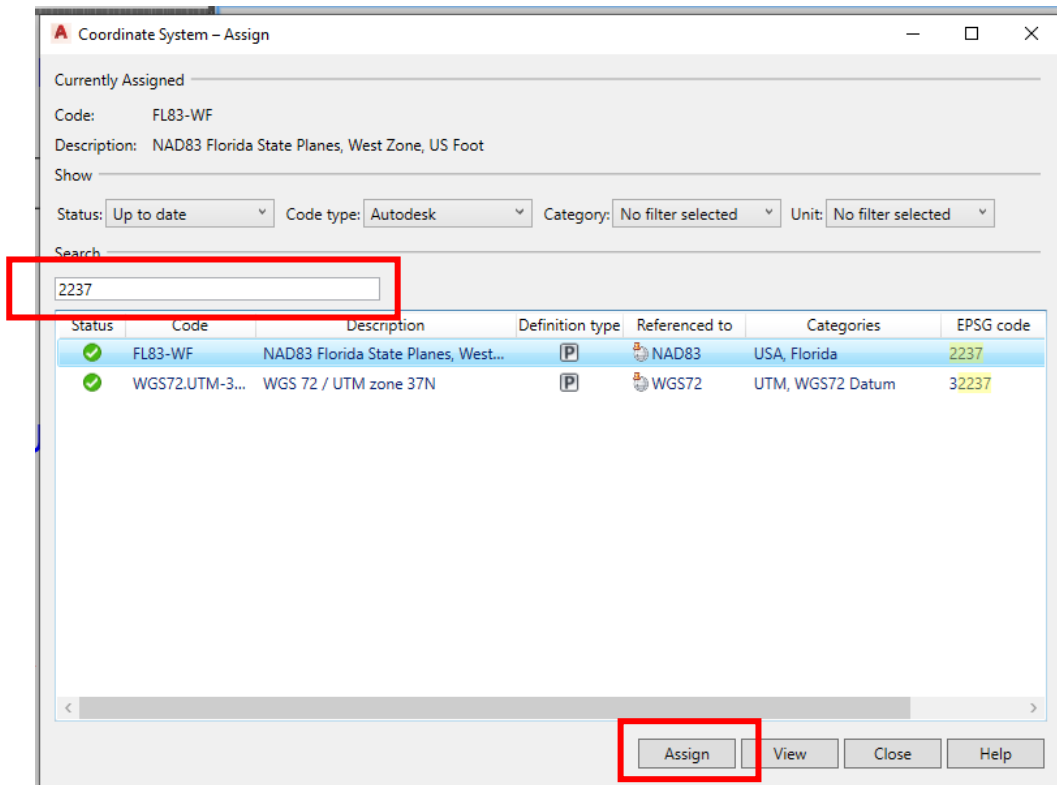   te_Reference_Systen   -   **Projected Coordinate Reference System**

   Duct Layout
   AREANAME, COUNT
   -    Duct Layout dwg file

To assign the coordinate system in the Dwg file, you may enter in the command line **"mapcsassign"** where this image below shows up. Just enter and select the EPSG code obtained from the Projected coordinate reference system and Assign.

It is crucial to appropriately assign the coordinate reference system. To ensure this, once you set the CRS, activate the map aerial, and import the shapefiles downloaded from online sources. These shapefiles or data should align correctly in their respective locations.

See sample image below, parcels, bldg. outlines and street centerlines are placed correctly.
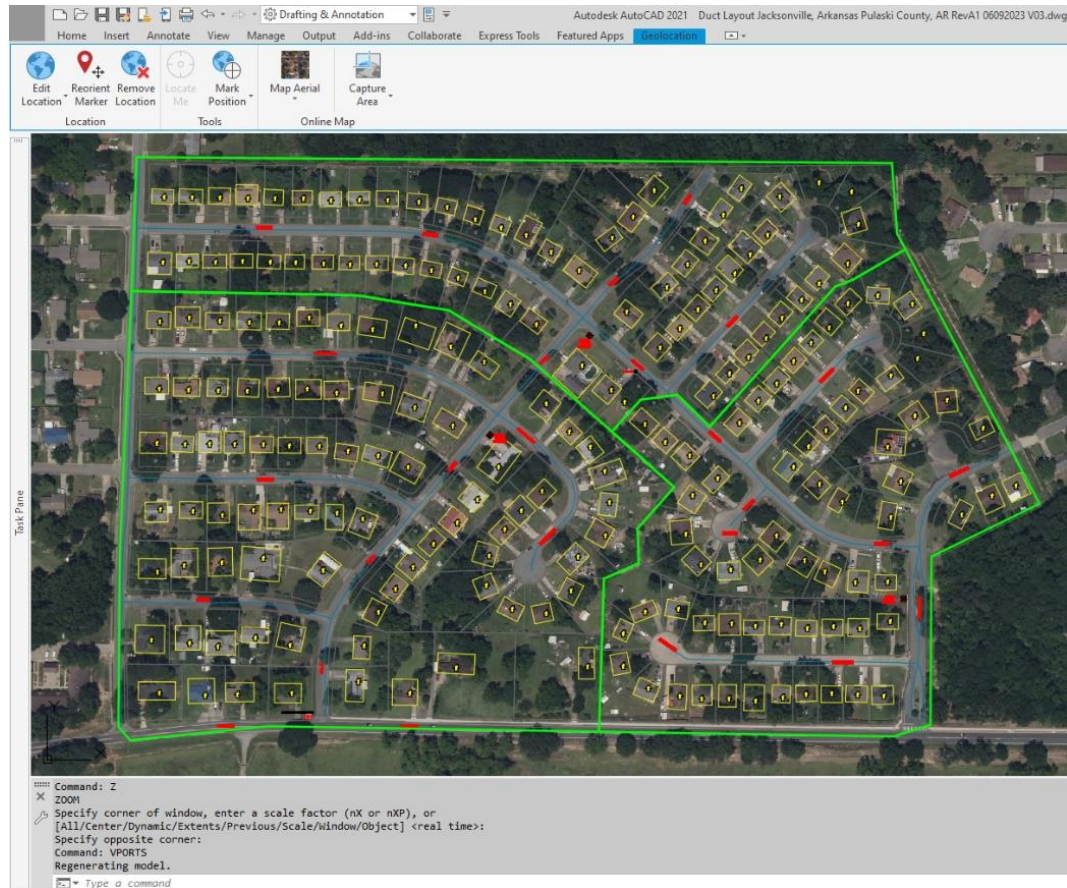
The currently assigned coordinate reference system will dictate the map projection of all structures drawn and created in the dwg file.

Proceed to import shapefiles downloaded from online sources.

You may use the command **"mapimport"** in importing the shapefiles. Make sure these files are in ESRI Shapefile type. If the available data are in other forms, convert first into shapefile.
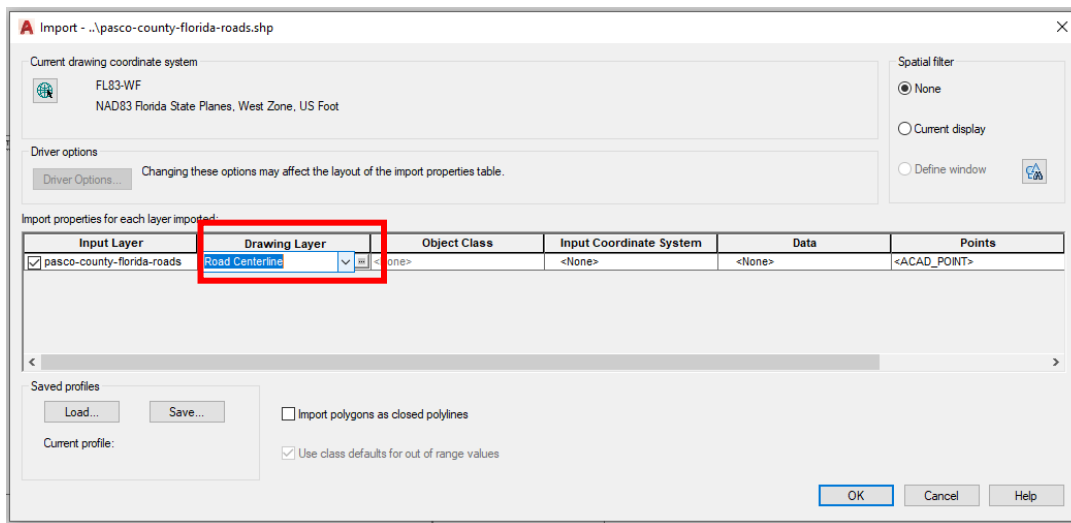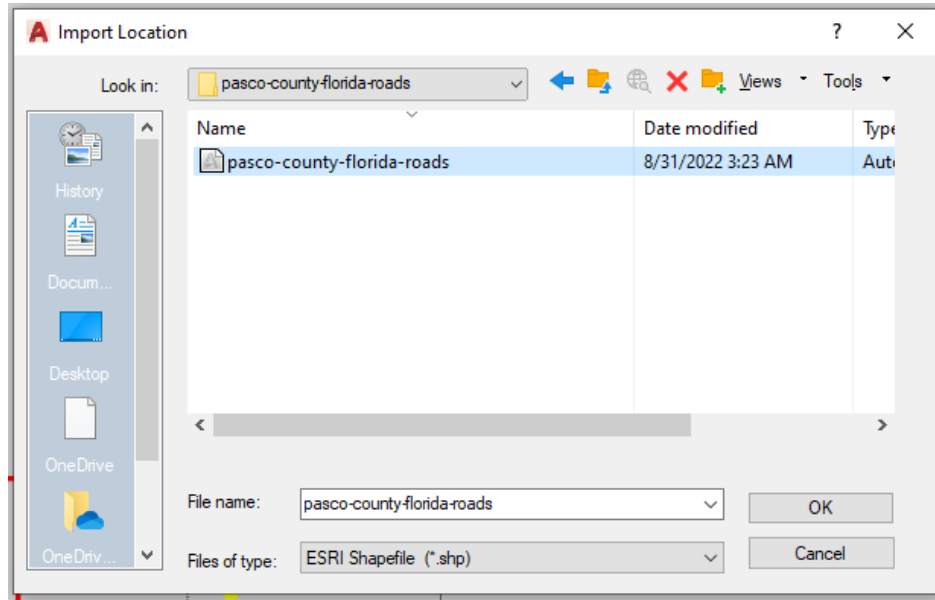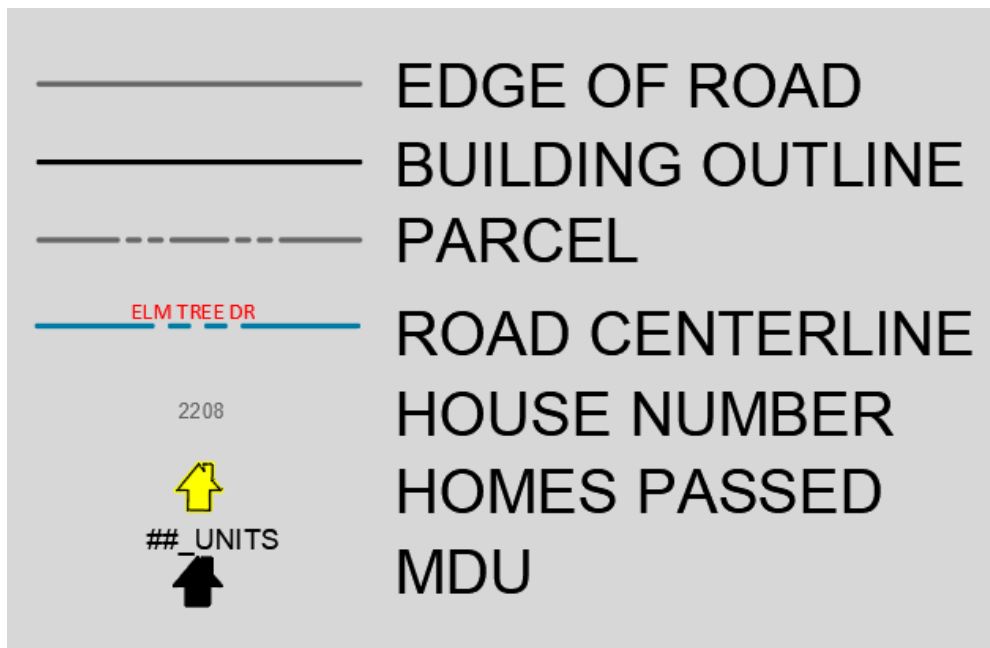

Drawing layer should be changed to the target layer defined in the drawing template. In this case, the shapefiles for road should be drawn into Road Centerline.

Should there be relevant information needed to include, make sure to add its attributes.

1. Set the drawing layer into the target defined layer.
2. Add the relevant data.
3. Create object data.
4. Choose which object data table to be used.
5. Select Ok.
6. Choose the correct block symbol for the layer.

7. Select Ok.

All available data should be imported in the CAD dwg file. Follow the same steps for Curb Lines, Parcel, Bldg. Outlines, Road Centerlines and Address data.

In many cases, curb lines are not readily available online, manual drawing and tracing is often required.

Below image is the layers and symbol used for land base preparation.

EDGE OF ROAD

BUILDING OUTLINE

PARCEL

ROAD CENTERLINE

HOUSE NUMBER

HOMES PASSED

MDU

Placing of FDH Cabinet and Boundary

Evaluate the entire area to ensure optimal utilization of FDH cabinet and Splitters. Take into consideration the boundaries and cabinets, ensuring they are strategically placed to achieve excellent network solution.

Geographical conditions often affect the boundaries being created. It is important to avoid natural boundaries when establishing crossings. Hexatronic offers a variety of equipment that will be suitable for agreed network solution. Most of the previous Hexatronic designs used FDH capable of storing 3x1:32 splitters or 96 end user connections capacity.

The positioning of the FDH is also dependent on the planned leg bundles. It is advisable to locate the FDH at corners whenever possible and should have easy street access. However, if this is not feasible, it is important to ensure that the FDH does not create any obstructions and adheres to the restrictions and limitations imposed by the required deployment and solutions.
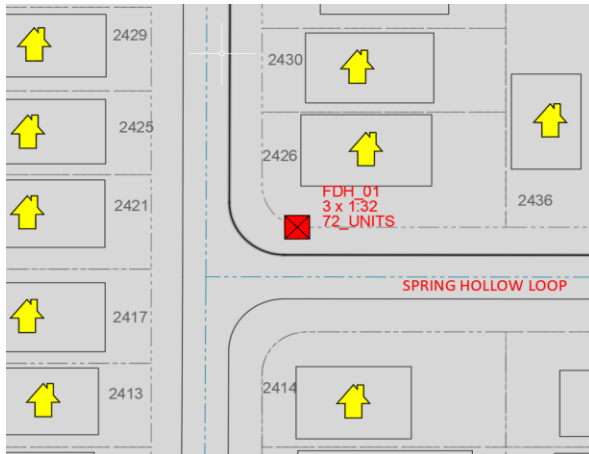
Fiber Distribution Hub (FDH)

- 96 end user connections with microducts or drop cables.

- Up to 96/192* Fiber splices

- Extremely lightweight and robust design

- Corrosion Resistant Aluminum

- Handles all type of cables or micro ducts.

- Mid-span storage for distribution cable

- Can be installed directly into ground or above concrete manhole.

Fiber Access Terminal, Indoor

- Up to 64 end-users

- The closure handles both 5 mm and 7 mm microducts. 3 mm microducts can be installed using the optional accessory.

- **Type:** Plastic, wall mount, IP54

- **Dimensions:** 500x 76x182 mm

- **Capacity:** up to 64 end users (SC)
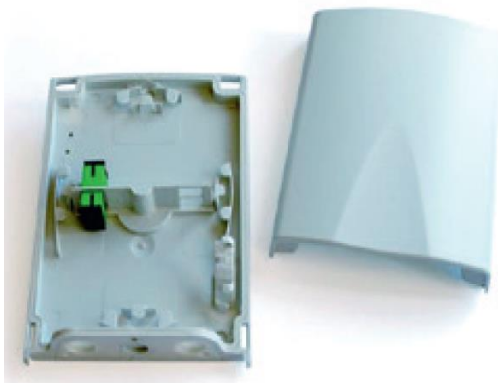
FTB (Fiber Termination Box) Indoor/outdoor

- Designed for termination of Fibers outside premises in FTTx applications.

- The box terminates and protects fiber or duct connections for the final drop cabling.

- Type: Polycarbonate, wall mount, IP 54

- Dimensions: 190x130x45 mm

- Capacity: 4xSC

Routelines

Routeline is either Aerial or Underground. Below are the legends being used for routelines.
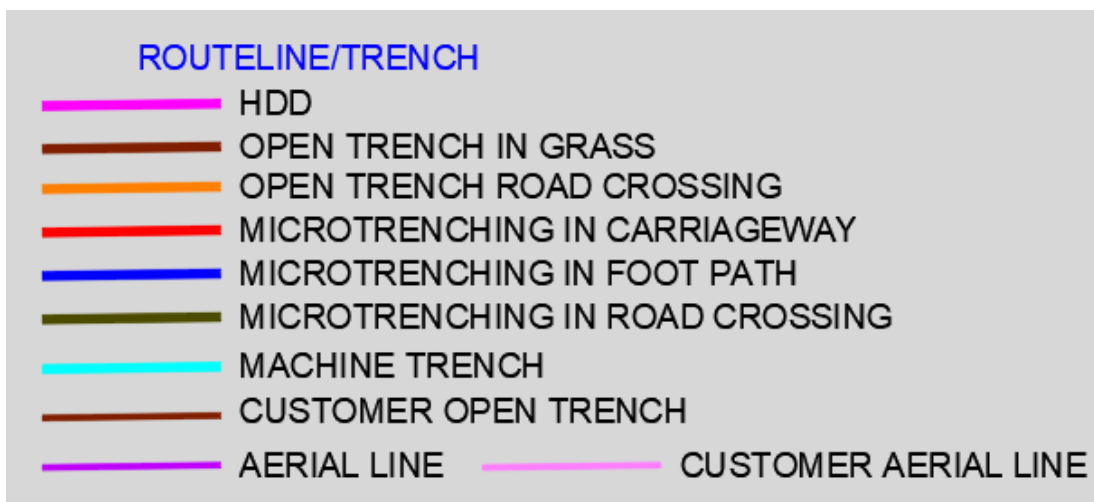
For **Underground deployment**, route is drawn 3 ft off the curb or edge of pavement.

The Fulton Ridge Philosophy is the very common solution employed in the previous designs, which involves having a single main line on one side of the road, crossing only when necessary to provide service to homes on the opposite side. See image below as sample.

Back feed should be avoided. All drops should be orientated in the forward direction from FDH to Customer Premise.
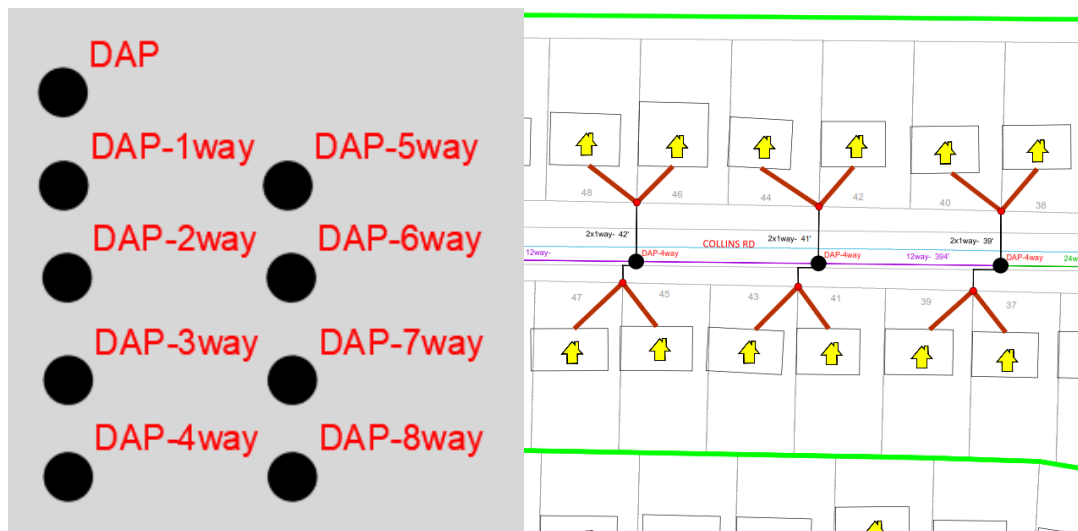
For **Aerial deployment**, route should be snapped on every utilized pole.
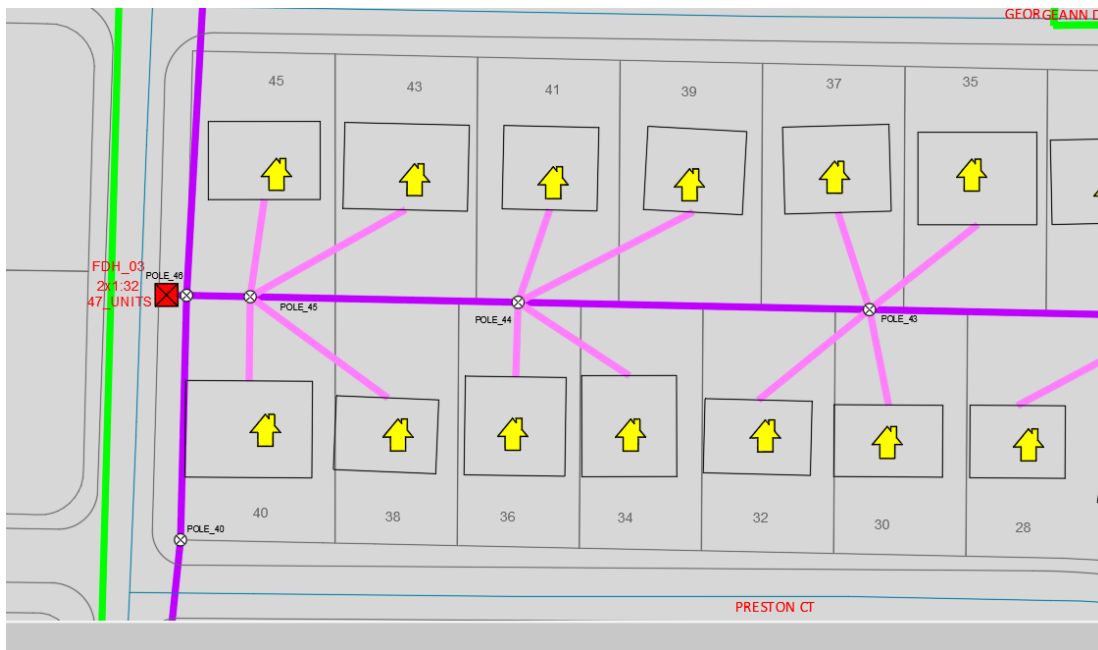
For **Hexatronic Underground deployment,**

Placing of Structures: DAP, FLOWERPOT, HANDHOLE

Duct Access Point is sometimes known as Duct Branch Closure (DBC). This is intended for fast and easy branching of micro duct assemblies. Currently we are using DAP, DAP-1way, DAP-2way, DAP-3way, DAP-4way.

A **Flowerpot** facilitates convenient access to underground fiber. It can be positioned to serve the purpose of sharing between two parcels or for a single parcel. Typically, it is placed in between the parcels.

Vacant lots may or may not be given provision. This depends on the client's instructions.

.

Handholes are installed as necessary, and it is essential for a meet-me point to have a handhole.

For **Hexatronic Aerial deployment,**

Duct Branch Closure with Gelwrap is only placed as needed in the construction phase. This means that duct branch closures intended for customers access to multiduct will only be placed upon service activation to customer.

DBC

Duct Branch Closure (Gelwrap)

Duct Branch Closure, Gel

Easy-to-use fast to install closure for branching microduct assemblies to individual microducts. The closure can be used underground or for aerial installations. The closure uses "gel-seal" technology for quick and safe installation.

DESIGN: Duct branch closure, gel
TYPE: Aerial or underground branching, IP67
CAPACITY: Up to 4x1-way branch off (aerial), up to 2x1-way branch off (underground)
LENGTH: 250 or 350 mm

Divisible Seals, for 5-7 mm Microducts		For Microduct Assemblies	Application	Pack qty
Product No.	**Product Name**	ø (mm)		pcs
NDE45122/1	12x Duct Branch, Gel, 250 mm	20 - 38	Aerial	1x12
NDE45122/3	12x Duct Branch, Gel, 350 mm	20 - 38	Aerial or underground	1x12
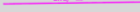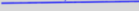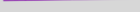
Microducts

Underground solutions require utilization of bundle ducts. When placing 2 bundles in same leg, it should not overlap and should be 3ft distance apart.

In situations where a 1x12way and 1x24way are present in the same leg, it is recommended to exhaust the 12way bundle first before utilizing the 24way bundle. Tapering is also considered when placing the duct.

Depending on the method of deployment, the ducts to be utilized may vary. Typical Hexatronic design employs 12F Stingray feeder via 7/3.5mm micro duct. Whereas active ethernet solution would require bigger duct size depending on the viper cable to be used.

1x7/3.5mm will fan out of the bundle duct (from the DAP) toward the customer.

SINGLE 10/8mm DB	SINGLE 7/3.5mm DB
SINGLE 5/3.5mm DB	2 WAY 7/3.5mm DB
2 WAY 5/3.5mm DB	4 WAY 7/3.5mm DB
4 WAY 5/3.5mm DB	7 WAY 7/3.5mm DB
7 WAY 5/3.5mm DB	12 WAY 7/3.5mm DB
12 WAY 5/3.5mm DB	19 WAY 7/3.5mm DB
19 WAY 5/3.5mm DB	24 WAY 7/3.5mm DB
24 WAY 5/3.5mm DB	1 WAY 14/10mm DB
1" PIPE	1 WAY 16/12mm DB
2" PIPE	
4" PIPE	
Existing Pipe	

Placing Lateral Connections

Lateral connection originates from DAP to Flowerpot.

Placing Customer Trench

CUSTOMER OPEN TRENCH

If a building outline is available, create a direct line from the flowerpot to the edge of the building outline. In the absence of a building outline, terminate the line at the SDU block.

Cables

Air blown Fiber will be used for cable works installation method.

The maximum point to point blowing distance is 1km or 3,280 ft. For midpoint blowing = 2km or 6500 ft (Still for verification)

12F stingray or 24F micro cable are appropriate for feeder to the FDH under PON deployment. While Viper cables are appropriate for feeder to the FDH under Active Ethernet deployment.

2F fiber originates from FDH going to the customer. It should be laid along its duct.

Drop distance to limited to 1500'.

Loop Provision

50 ft. coil in the meet-me point for UG deployment.

25 ft. coil for Aerial deployment

2F-##'	2F ABF
4F-##'	4F ABF
12F-##	12F ABF
24F-##'	24F MICROCABLES
48F-##	48F MICROCABLES
72F-##'	72F MICROCABLES
96F-##'	96F MICROCABLES
144F-##	144F MICROCABLES
288F-##	288F MICROCABLES
432F-##	432F MICROCABLES

Labels and annotations

Accurate labeling of ducts, including their respective lengths, is essential. The label should be positioned at the starting point of the duct and another label should be provided at its endpoint. The length on the label in the end point does not need to be included. Duct labels should be present at each transition point.

It is crucial to ensure precise labeling of the Fiber Distribution Hub (FDH), including the number of splitters to be employed and the total number of homes passed (HP) to be served by the cabinet. Place the labels in the most readable manner.

`
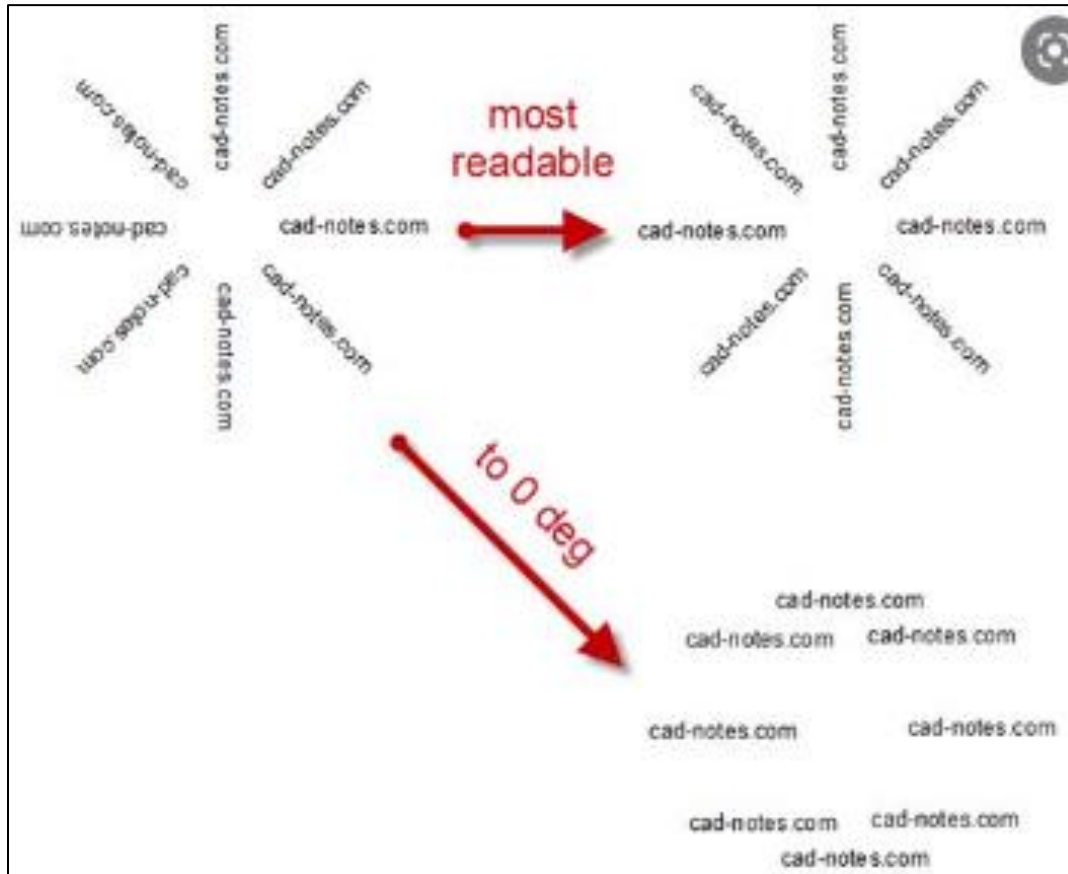
Cable Schematic Diagram – visual representation that depicts the connections of FDH Cabinets within the network. The cable size and length on each segment, and FDH serving no. and units are shown here.
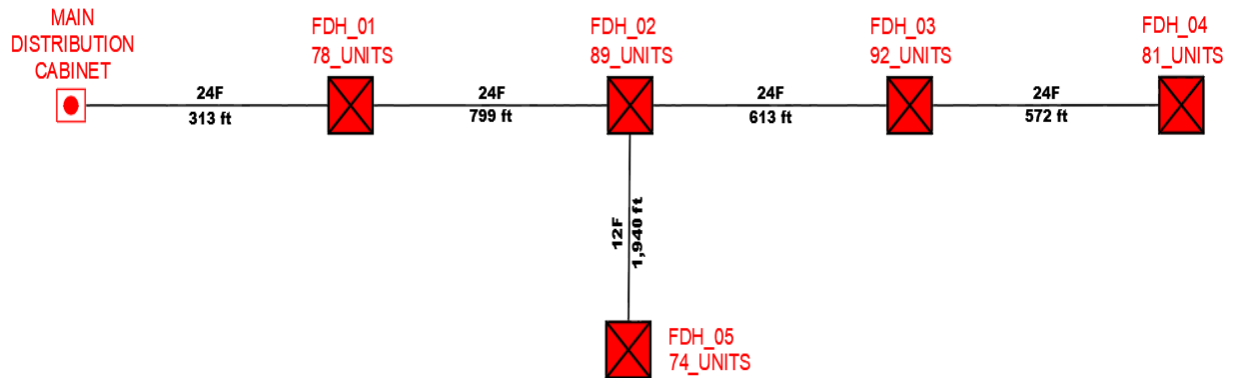
Bill of Materials/ Bill of Quantities – comprehensive list of materials, components and quantities required to construct the designed network solution. It is composed of three sheets comprising of BOQ from Engineer, Trenching Worksheet and Drop Placement Worksheet

BOQ from Engineer is where the summary of materials is shown. See image below with their remarks.

AREA: Seven Oaks, Wesley Chapel, Pasco County, FL, USA			Area name of the design
1. OVERVIEW	**UNIT**	**QTY**	
Number of Household Passed	UNIT	QTY	SDU count
Single Dwelling Units	pcs	72	
Townhome Buildings with 4 or Less Units	pcs	0	
Townhome Units for Buildings with 4 or less Units	pcs	0	MDU count
Townhome/Apartment Buildings with 5 to 12 Units	pcs	0	
Townhome/Apartment Units for Buildings with 5 to 12 Units	pcs	0	
Commercial Units	pcs	0	
Total Units to be Connected	pcs	72	
2. CIVIL WORKS	**UNIT**	**QTY**	Sum should be equal to Microducts
Open Trench	UNIT	QTY	
Microduct Footage in Trench	ft	0	
Additional Microducts in Same Trench	ft	0	
Horizontal Directional Drilling (HDD)	UNIT	QTY	
Microduct Footage in HDD	ft	4,446	Populated from Trenching
Additional Microducts in Same HDD	ft	1,620	and Drop Placement Worksheet
Placement of Microduct in Existing Conduit	UNIT	QTY	
Microduct Footage in Existing Conduit	ft	0	
Additional Microducts in Same Existing Conduit	ft	0	
3. MATERIALS	**UNIT**	**QTY**	
Air blown Fiber	UNIT	QTY	
2F	ft	25,083	Total length of 2F cable
4F	ft	0	
8F	ft	0	
12F	ft	2,230	Total length of 12F cable
Cabinets and Branch closures	UNIT	QTY	
FDH Pedestal – 48 End user	pcs	0	
FDH Pedestal – 96 End user	pcs	0	
FDH Cabinet – 96 End user	pcs	1	Total Number of FDH used
FDH Cabinet – 288 End user	pcs	0	
Install 1:32 splitter (short tail)	pcs	3	Total Number of splitter used
Install 1:32 splitter (long tail)	pcs	0	
Duct Branch Closure (DBC- 4Way)	pcs	0	
Duct Branch Closure (DBC- 8Way)	pcs	0	
Flower Pot (Toby Box)	pcs	36	Total Number of Flowerpots used
Fiber Termination Box (4 port)	pcs	0	
Microducts	UNIT	QTY	Sum should be equal to Civil Works
1 x 7/3.5 Single Microduct	ft	3,562	Total length of 1way + Drop placement worksheet
4 x 7/3.5 Multiduct	ft	0	
7 x 7/3.5 Multiduct	ft	0	
12 x 7/3.5 Multiduct	ft	1,406	Total length of 12way used
19 x 7/3.5 Multiduct	ft	0	
24 x 7/3.5 Multiduct	ft	1,098	Total length of 24way used
4. CUSTOMER	**UNIT**	**QTY**	
Customer Trench	UNIT	QTY	
Property Line to ONT	ft	2,117	Total length of Customer trench
Customer Ducts	UNIT	QTY	(From Drop Placement worksheet)
1 x 7/3.5 Single Microduct	ft	2,117	Total length of 1way in Customer trench
2.1 CIVIL WORKS	**UNIT**	**QTY**	(From Drop Placement worksheet)
Pits	UNIT	QTY	
Amount of pits in the area	pcs	0	Total number of Bore pits
3.1 MATERIALS	**UNIT**	**QTY**	
Traditional Duct	UNIT	QTY	
2" Duct in HDD	ft	0	Total length of 2"
4" Duct in HDD	ft	0	and 4"Duct used
Cabinets and Branch closures	UNIT	QTY	
FAT64	pcs	0	
Duct Access Point (DAP)	pcs	0	
Duct Access Point (DAP- 1Way)	pcs	0	
Duct Access Point (DAP- 2Way)	pcs	12	Total number of DAP used
Duct Access Point (DAP- 3Way)	pcs	0	
Duct Access Point (DAP- 4Way)	pcs	12	
Microducts	UNIT	QTY	
1 x 14/10 Microduct	ft	0	
1 x 16/12 Multiduct	ft	0	
Micro Cables	UNIT	QTY	
72F	ft	0	Total length of cable
144F	ft	0	
288F	ft	0	
Cabinets and Branch closures	UNIT	QTY	
Duct Access Point (DAP- 6Way)	pcs	0	

Trenching Worksheet – this is where bundle ducts and feeder ducts are listed.

FDH	Phase	Section	Duct Count	Multiduct in Open Trench	Additional Multiduct in Same Open Trench	Multiduct in HDD	Additional Multiduct in Same HDD	Multiduct in Existing Conduit	Additional Multiduct in Same Existing Conduit	Totals
1			1x7/3.5	0	0	1658	0	0	0	1,658
1			24x7/3.5	0	0	237	0	0	0	237
1			12x7/3.5	0	0	285	0	0	0	285
1			24x7/3.5	0	0	312	53	0	0	365
1			12x7/3.5	0	0	262	0	0	0	262
1			12x7/3.5	0	0	0	285	0	0	285
1			24x7/3.5	0	0	481	15	0	0	496
1			12x7/3.5	0	0	259	0	0	0	259
1			12x7/3.5	0	0	0	315	0	0	315
Totals				0	0	3,494	668	0	0	4,162

Microduct size used.

Multiduct length in HDD

Multiduct length in same route

Total duct length

Drop Placement Worksheet – this is where drop ducts originating from DAP going to customers are listed.

FDH	Address	Property Line to ONT	Drop in Open Trench to Property Line	Additional drop in Open Trench to Property Line	Drop in HDD	Additional drop in HDD	Drop in Existing Conduit	Additional drop in Same Existing Conduit	Totals
1	2408 SPRING HOLLOW LOOP	26	0	0	0	27	0	0	27
1	2431 SPRING HOLLOW LOOP	29	0	0	33	0	0	0	33
1	2409 SPRING HOLLOW LOOP	29	0	0	0	33	0	0	33
1	2404 SPRING HOLLOW LOOP	30	0	0	27	0	0	0	27
1	2400 SPRING HOLLOW LOOP	26	0	0	0	27	0	0	27
1	2405 SPRING HOLLOW LOOP	29	0	0	33	0	0	0	33
1	2403 SPRING HOLLOW LOOP	27	0	0	0	33	0	0	33
1	2352 SPRING HOLLOW LOOP	33	0	0	37	0	0	0	37
1	2348 SPRING HOLLOW LOOP	28	0	0	0	37	0	0	37
1	2353 SPRING HOLLOW LOOP	30	0	0	33	0	0	0	33
1	2349 SPRING HOLLOW LOOP	30	0	0	0	33	0	0	33
1	2344 SPRING HOLLOW LOOP	28	0	0	18	0	0	0	18
1	2340 SPRING HOLLOW LOOP	24	0	0	0	18	0	0	18
1	2336 SPRING HOLLOW LOOP	24	0	0	18	0	0	0	18
1	2332 SPRING HOLLOW LOOP	24	0	0	0	18	0	0	18
1	2328 SPRING HOLLOW LOOP	24	0	0	19	0	0	0	19
1	2324 SPRING HOLLOW LOOP	27	0	0	0	19	0	0	19
1	2320 SPRING HOLLOW LOOP	25	0	0	19	0	0	0	19
1	2316 SPRING HOLLOW LOOP	26	0	0	0	19	0	0	19
1	2312 SPRING HOLLOW LOOP	37	0	0	88	0	0	0	88
1	2306 SPRING HOLLOW LOOP	27	0	0	0	88	0	0	88
Total		2117	0	0	952	952	0	0	1,904

FDH Number

Address Number + Street name

Customer Trench Length

Length from DAP to Flowerpot

Length from DAP to Flowerpot in same route

Total

Creating KMZ

Export the required layers into shapefile by individually selecting the desired layers using the quick select method. Once done with creating shapefiles, you can now import these into google earth ang modify the symbols and their properties.

1Hexatronic - KML Symbols-Design Pro
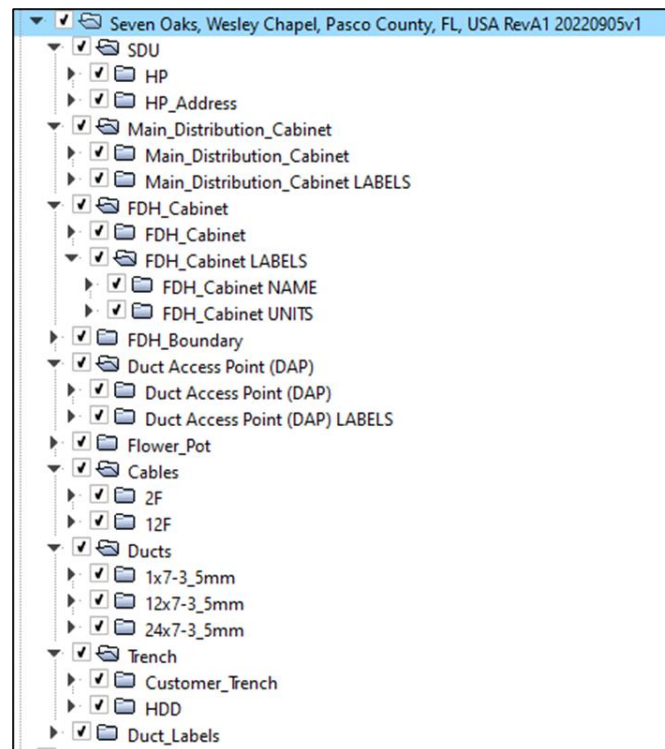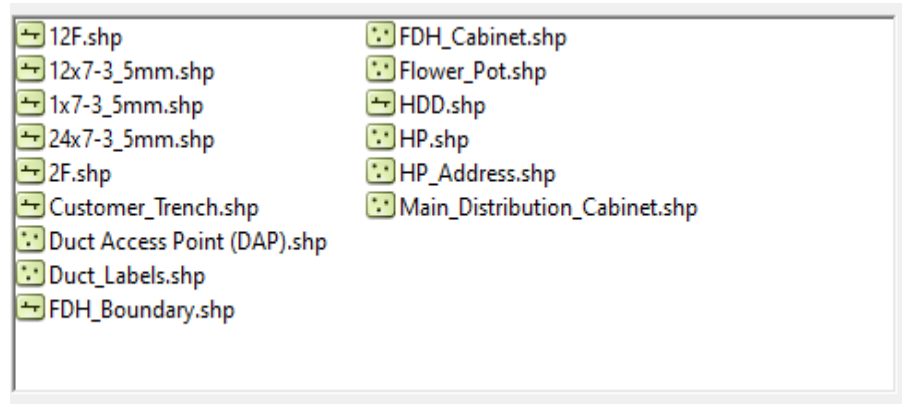
Pre-Sales Design Request Form - a document used in the pre-sales phase of a business to gather information and requirements from a potential customer or client regarding their specific design needs or preferences. It serves as a structured way for the sales team or design department to collect relevant details before creating a customized solution or proposal.

Pre-sales Design Request

Description

This document is a template form for a FTTX pre sales design request. The intent of this document is to achieve structured WoW between Hexatronic USA and the design team at Ociusnet Philippines. Try to fill in as many fields as possible in the document. This is in order to achieve as accurate a pre sales design and related documents as possible.

• Design Request Form from Hexatronic USA revision type shall be R1, R2 or R3 etc.

• Questions based on a request clarification coming from the Ociusnet design team, the revision shall be named RQ1, RQ2, and RQ3 etc.

• Answer to questions from the Ociusnet the document gets another revision name: R1 > RQ1 >R2

• Questions based on a request clarification coming from the Ociusnet design team the revision shall be named RQ1, RQ2, and RQ3 etc.

• Answers to questions from the Ociusnet team, the document gets another revision name: R1 --> RQ1 --> R2

Communication between Hexatronic USA and design team at Ociusnet Philippines

In order to avoid extended mail correspondence between Hexatronic USA and the design team at Ociusnet Philippines that might consist of large size files like design drawings and solution descriptions a "work folder" will be set up at the Ociusnet NAS and access will be provided to appointed persons in the current project.

All related files such as Maps, Designs, Design Requests, Design Request Questions, SIR and Solution descriptions etc. shall be uploaded in following folder and according to following structure:

Design Request Form;
ociusnet:External Access>USA>Hexatronic>Files TO Ociusnet>Pre-Sales Design>"Project Name">Design Request

Input data;
ociusnet:External Access>USA>Hexatronic>Files TO Ociusnet>Pre-Sales Design>"Project Name">Input

All completed files will be placed in the following folders;
ociusnet:External Access>USA>Hexatronic>Files FROM Ociusnet>Pre-Sales Design>"Project Name">Output

NOTE! All uploaded files shall be updated with revision number and revision date

DESIGN SCOPE INFORMATION

	Hexatronic	Ociusnet
GEOGRAPHIC AREA INFORMATION (City, State, Area):	Rio Rancho, Sandoval County, New Mexico, USA	
DESIGN REQUEST PROJECT NAME:	Rio Rancho, New Mexico	
TYPE OF NETWORK (FTTH/FTTA/FTTC, MAN/LAN/TRUNK):	FTTH	
DESIGN REQUEST RESPONSIBLE (Hexatronicl):	Dennis Masters	
OCIUSNET MANAGER:		
TYPE OF DESIGN (Pre-Sales, HLD-High Level,LLD-Detailed):	HLD	
TIMELINE (Design required by date):	As soon as possible.	
NO.OF HOMES PASS/NO.OF HOMES CONNECTED:	414/0	
RESOURCE REQUIRED (LEAD DESIGN/DRAFTSMAN):	Lead Design	
OPPURTUNITY ID:		
STAFFING AGREEMENT OR PURCHASE REQUEST:		
ESTIMATED DESIGN HOURS:		

SERVICE ASSIGNMENT SPECIFICATION

INPUT/OUTPUT OVERVIEW	Hexatronic	Ociusnet
EXISTING INPUT INFORMATION PROVIDED BY HEXATRONIC WITH THE DESIGN REQUEST (Ex: AutoCAD, GIS MAP, Shapefile, KMZ, KML)	Plat Map	
REQUESTED OUTPUT INFORMATION (Ex: BoQ in Excel,Design in PDF, VISIO,GOOLE EARTH for Preliminary Review, AutoCAD in Final Output plus Design Description,Link Budget)	BoQ in Excel, Design in PDF	
REQUESTED LEVEL OF DESIGN OUTPUT (Fiber Duct Route Plan, ODN Plan, Cabinet and closure location, Fiber splice schematics and Duct allocation schematics Duct Allocation)	Fiber Duct Route Plan. Use the new Hexatronic template.	
DENOMINATION AND SYMBOL DEFINITION	All items will be expressed in feet.	
OTHER RELEVANT INFORMATION ABOUT THE AREA AND INFORMATION TO CONSIDER IN THE DESIGN ASSIGNMENT	Use person(s) who have designed for Hexatronic in the past.	

NETWORK DESIGN REQUIREMENTS

NETWORK BASELINE	Hexatronic	Ociusnet
*AREA LOCATION INFORMATION (Ex: Area Name,Street Names, Coordinates, Google Earth adress etc)	Rio Rancho, Sandoval County, New Mexico, USA	
*TYPE OF AREA (Brief description Ex: SDU,MDU, COMMERCIAL)	SDU	
*TYPE OF NETWORK BACKHAUL, METRO ACCESS,FTTH,FTTC, FTTA	FTTH	
*HOMES CONNECT OR HOMES PASSED DESIGN (Ex: Level of HP	Homes Passed Design - 0% Take Rate	
*SPLITTER RATIO AND SPLITTER TOPOLOGY	No	
*REDUNDANCY REQUIRED	No	
*BROWNFIELD/GREENFIELD	Greenfield	
*EXISTING INFRASTRUCTURE	None	
*Exisitng aerial infrastructure (to be used or not)	No	
*Existing underground duct infrastructure (to be used or not)	No	
*Existing underground direct burried cables (follow existing	No	
PREFERRED INFRASTRUCTURE DEPLOYMENT(Yes/No)		
*Aerial	No	
*Underground Duct Installed	Yes	
*Underground Direct Buried	No	
PREFFERED CIVIL WORKS INSTALLATION METHOD	No	
*Machine Trench		
*Open Trench	No	
*Microtrench	No	
*MiniTrench	No	
*HDD	Yes	
PREFFERED CABLE WORKS INSTALLATION METHOD (Ex: Air Blown Fiber, Conventional cables or Pre-Terminated cables/systems)	Air Blown Fiber - Tight protected (dual sheath) microducts	

The client provides this form, and Ociusnet Inc. must provide the essential information and reflect all the changes from the original requirements.

Level of Effort – the amount of time, resources, and effort required to complete a task or project. This LOE is established based on the previously completed designs. It is subject to change depending on the complexity of the solution. Innovations may also greatly affect the LOE.

Level of Effort - Hexatronic - 370 HP

	Activities	Hour	Mins	Days
	Discussion & Meetings	1:30:00	90	0.21
	Basemap Preparation	6:00:00	360	0.86
	Placing FDH Cabinet & Creating FDH Boundary	2:00:00	120	0.29
	Creating Routeline (Distribution & Drop)	8:30:00	510	1.21
	Placing Toby Box, DAP, DBC, Handhole, Etc.	4:30:00	270	0.64
	Attributes & Labeling	7:00:00	420	1
HLD	BOM	7:00:00	420	1
	Cable Schematic	0:30:00	30	0.07
	Publishing of All Drawings	1:30:00	90	0.21
	Conversion of DWG file to KMZ file	0:20:00	20	0.05
	Alignment of Symbols at KMZ file	4:00:00	240	0.57
	QA Self Assessment	1:30:00	90	0.21
	QA Checking	2:00:00	120	0.29
	QA Revision	1:00:00	60	0.14
TOTAL		47:20:00	2840	6.76

7.68 MINS/HP
1.69 DAYS/CABINET