



## **GEOSPATIAL DATA DELIVERABLES PROPERTIES GUIDE**



**NOVEMBER 2023**

## **PREFACE**

### **PURPOSE**

The Geospatial Data Deliverables Properties Guide provides a detailed breakdown of the geospatial data schemas associated with storm, water, wastewater, and geotechnical and environmental asset feature classes maintained by the City of Houston. Additionally, this document outlines the new digital data deliverable process enacted by the City and aims to clarify the various steps needed for submitting electronic GIS deliverables.

This document is meant to be read in conjunction with the Infrastructure Design Manual, Chapter 13 – Geospatial Data Deliverables, which provides higher level information regarding GIS datasets maintained by the City. Unlike the IDM, this properties guide will be updated as needed and will not follow a cyclical schedule for revisions. This will allow the various GIS groups at the City of Houston to communicate detailed changes in data to the public as soon as they occur.

### **RESOURCES**

Should any general questions arise about this documentation, please reach out to the Design and Construction Standards Group at the Houston Permitting Center, Office of the City Engineer. Specific questions regarding data schemas and feature class field properties, as well as questions about the new electronic deliverable process can be directed to the GIS IT department.

Design and Construction Standards –

Email: [HPWStandards@houstontx.gov](mailto:HPWStandards@houstontx.gov)

Website: [Design and Construction Standards Website<sup>1</sup>](#)

GIS IT Department –

Email: [GeoLinkCustomers.Help@houstontx.gov](mailto:GeoLinkCustomers.Help@houstontx.gov)

Website: [GeoLink Hub<sup>2</sup>](#)

### **END OF PREFACE**

---

<sup>1</sup> Full weblink: <https://www.houstonpermittingcenter.org/office-city-engineer/design-and-construction-standards>

<sup>2</sup> Full weblink: <https://opendata-cohpwe.hub.arcgis.com/>

## Table of Contents

<u>SECTIONS</u>	<u>PAGE</u>
SECTION 1 – FIELD PROPERTIES .....	7
1.01 OVERVIEW .....	7
1.02 STORM WATER FIELD PROPERTIES .....	7
1.03 WASTEWATER FIELD PROPERTIES .....	11
1.04 WATER FIELD PROPERTIES .....	17
1.05 GEOBORING FIELD PROPERTIES FOR GEOTECHNICAL AND ENVIRONMENTAL BORINGS .....	20
1.06 GEOBORINGTESTRESULTS FIELD PROPERTIES FOR GEOTECHNICAL BORINGS ..	22
1.07 TELECOMMUNICATIONS FIELD PROPERTIES .....	24
SECTION 2 – DOMAIN CODES AND VALUES .....	27
2.01 STORM WATER DOMAINS .....	27
2.02 WASTEWATER DOMAINS .....	34
2.03 WATER DOMAINS .....	36
2.04 GEOTECHNICAL AND ENVIRONMENTAL DOMAINS .....	38
2.05 TELECOMMUNICATIONS DOMAINS .....	39
SECTION 3 – FEATURE CLASS SUBTYPES .....	42
3.01 OVERVIEW .....	42
3.02 STORM WATER SUBTYPES .....	42
3.03 WASTEWATER SUBTYPES .....	43
3.04 WATER SUBTYPES .....	44
SECTION 4 – SUBMISSION PROCESS FOR DIGITAL DELIVERABLES .....	46
4.01 OVERVIEW .....	46
4.02 METADATA SUBMISSION GUIDELINES .....	46
4.03 SUBMISSION PROCESS STEP-BY-STEP .....	46
APPENDIX A – STORM WATER FEATURE CLASS SPECIFICS .....	54
A.1.01 STORM WATER FEATURE CLASS INFORMATION .....	54

## List of Tables

Table 1 – Storm Water Feature Class Fields.....	7
Table 2 – Wastewater Feature Class Fields .....	11
Table 3 – Water Feature Class Fields .....	17
Table 4 – geoBoring Feature Class Fields for Geotechnical and Environmental Borings.....	20
Table 5 – geoBoringTestResults Feature Class Fields for Geotechnical Borings .....	23
Table 6 – AbandonStatus .....	27
Table 7 – AssignedTo .....	27
Table 8 – piPipeMaterial.....	28
Table 9 – piOpenStructureMaterial.....	28
Table 10 – piCouncilDistrict.....	28
Table 11 – piCrossingType .....	29
Table 12 – piDataSourceType.....	29
Table 13 – piDischargePointType.....	29
Table 14 – piFittingType .....	29
Table 15 – YesNo .....	30
Table 16 – piFundingType.....	30
Table 17 – piPipeDiameter .....	30
Table 18 – piDrainType .....	30
Table 19 – piEasementType.....	31
Table 20 – piPipeShape .....	31
Table 21 – AssetManager .....	31
Table 22 – piManholeType .....	31
Table 23 – piDitchOwner & piEasementOwner .....	32
Table 24 – piInletType.....	33
Table 25 – piPipeType .....	33
Table 26 – swNetworkStructureType .....	33
Table 27 – piVirtualLine.....	33
Table 28 – piDetentionType .....	34
Table 29 – sCreation Source .....	34
Table 30 – sData Source Type LINE .....	34
Table 31 – sDatum .....	34
Table 32 – sDownstream Direction .....	35
Table 33 – sJunction Material.....	35
Table 34 – sLifecycle Status .....	35
Table 35 – sOwner .....	35
Table 36 – sPlan Type.....	35
Table 37 – sProject Type_2 .....	36
Table 38 – sProject Type2 .....	36
Table 39 – sType of Manhole .....	36
Table 40 – sWater Line Material .....	36
Table 41 – wCreation Source.....	37
Table 42 – wData Source Type.....	37
Table 43 – wLifecycle Status.....	37
Table 44 – wOwner.....	37

Table 45 – wPlan Type .....	37
Table 46 – wProject Type .....	37
Table 47 – wProject Type2 .....	38
Table 48 – wWater Line Material .....	38
Table 49 – geoYesNo .....	38
Table 50 – geoSampleType Domain .....	38
Table 51 – geoReportType Domain .....	38
Table 52 – CouncilDistrict Domain .....	39
Table 53 – FOCableCompanyName Domain .....	39
Table 54 – FOCMaterial Domain .....	40
Table 55 – FOCOwner Domain .....	40
Table 56 – NodeCompanyName Domain .....	40
Table 57 – NodePoleOwner Domain .....	41
Table 58 – NodePoleStatus Domain .....	41
Table 59 – RepeaterCompanyName Domain .....	41
Table 60 – RepeaterMaterial Domain .....	41
Table 61 – RepeaterPoleStatus Domain .....	41
Table 62 – RepeaterPoleOwner Domain .....	41

### List of Figures

Figure 1 – GIS Electronic Deliverables Webpage (Step 1) .....	47
Figure 2 – GIS Electronic Deliverables Webpage: Login (Step 2) .....	48
Figure 3 – GIS Electronic Deliverables Webpage: Drop-Down Field (Step 3) .....	48
Figure 4 – GIS Electronic Deliverables Webpage: Account Type & Sign In (Step 4 & 5) .....	49
Figure 5 – GIS Electronic Deliverables Webpage: Download Templates (Step 6) .....	50
Figure 6 – GIS Electronic Deliverables Webpage: Select Template (Step 7) .....	50
Figure 7 – GIS Electronic Deliverables Webpage: Upload Submission File (Step 10) .....	51
Figure 8 – GIS Electronic Deliverables Webpage: Receipt Confirmation (Step 15) .....	52
Figure 9 – GIS Electronic Deliverables Webpage: Submission Status (Step 16) .....	52
Figure 10 – GIS Electronic Deliverables Webpage: Status Details (Step 17) .....	53
Figure 11 – Manhole .....	54
Figure 12 – Junction Box .....	54
Figure 13 – Check Valve .....	55
Figure 14 – C and C1 Inlets .....	55
Figure 15 – C2 Inlet .....	56
Figure 16 – Pump Station .....	56
Figure 17 – Detention Pond .....	57
Figure 18 – Drain Node .....	57
Figure 19 – Plug .....	57
Figure 20 – Plug (Aerial) .....	58
Figure 21 – Safety End Treatment .....	58
Figure 22 – Storm Interconnect .....	58
Figure 23 – Outfall with BFP and Outfall .....	58
Figure 24 – Collector .....	59

Figure 25 – Culvert .....	59
Figure 26 – Siphon.....	59
Figure 27 – Outfall.....	59
Figure 28 – Inlet Line .....	59
Figure 29 – Trench Drain.....	60
Figure 30 – Roadside Ditch .....	60
Figure 31 – Earth and Concrete Off-road Channels.....	61
Figure 32 – Detention Pond .....	61
Figure 33 – Underpass with Three Railroad Crossings .....	62

## SECTION 1 – FIELD PROPERTIES

### 1.01 OVERVIEW

1.01.A This section contains tables that alphabetically list all fields associated with the various feature classes for each utility dataset within the City of Houston Public Works Enterprise GIS environment.

1.01.B **The subsequent tables are intended to be used in conjunction with Chapter 13 of the most recent Infrastructure Design Manual.** In order to determine which fields are connected to each feature class, cross-reference the field properties tables in the subsections below with the ‘Information Required’ tables within Chapter 13, Section 4 of the IDM. This should create an overarching picture of the different assets for each utility group, the feature classes used to spatially represent each asset, and the fields that make up each feature class.

### 1.02 STORM WATER FIELD PROPERTIES

1.02.A This section provides a detailed breakdown of all the fields within the City of Houston storm water dataset. Table 1 contains a comprehensive list of all field descriptions, data types, and domain names associated with the various storm water feature classes. For more information regarding feature class specifics for storm water assets, please reference Appendix A – Storm Water Feature Class Specifics at the end of this document.

Table 1 – Storm Water Feature Class Fields

FieldName	Type / Length	Description	AliasName	DomainName
ABANDONSTATUS	String / 5	Indicates if abandoned or removed	Abandon Status	AbandonStatus
ACTIVEFLAG	Integer (short) / 5	Indicates if the feature is in use/active	Active Flag	BooleanDomain
ADDRESS	String / 100	The street address	Address	
BEDMATERIAL	String / 50	The material on the bed of the detention area or open drain	Bed Material	piOpenStructureMaterial

FieldName	Type / Length	Description	AliasName	DomainName
BNKMATERIAL	String / 50	The material on the bank of the detention area	Bank Material	piOpenStructureMaterial
CHANNELNAME	String / 50	Name of the channel	Channel Name	
COMMENTS	String / 200	Additional information or comments	Comments	
COMPANY	String / 150	Group the project is assigned to	Company	AssignedTo
COUNCILDISTRICT	String / 1	Council District the asset belongs to	Council District	piCouncilDistrict
CROSSINGTYPE	String / 50	The type of crossing at underpass	Crossing Type	piCrossingType
DATASOURCETYPE	String / 5	Type of source data used to capture the information	Data Source Type	piDataSourceType
DEPTH	Double / 8	The depth of the detention area in feet	Depth (in Feet)	
DISCHRGTY	String / 50	The type of storm water discharge point	Discharge Type	piDischargePointType
DOWNDPTH	Double / 8	The downstream depth of the gravity main	Downstream Depth	
DOWNELEV	Double / 8	The downstream elevation where the pipe meets the manhole	Downstream Elevation	
DOWNSTMNODE	String / 25	The downstream storm node Facility ID	Downstream Storm Node	
DRAINAGEAREA	String / 21	Drainage area the asset belongs to	Drainage Area	
FACILITYID	String / 20	Locally assigned Facility Identifier	Facility Identifier	
FITTINGTYPE	String / 50	The type of fitting	Fitting Type	piFittingType
FLOODWARNINGLIGHT	String / 5	Indicates whether there are flood warning lights	Flood Warning Gate?	YesNo
FLOWELEV	Double / 8	Flow Elevation	Flow Elevation	
FUNDINGNUMBER	String / 24	The departments' Funding Number of the project	Funding Number	
FUNDINGTYPE	String / 5	The funding type	Funding Type	piFundingType
HEIGHT	Double / 8	The height of the discharge point or pipe in inches	Height (Inches)	piPipeDiameter



FieldName	Type / Length	Description	AliasName	DomainName
INLETMAT	String / 20	Construction material of inlet	Inlet Construction Material	piPipeMaterial
INLETTYPE	String / 10	Type of inlet	Inlet Type	piInletType
INSTALLDATE	Date / 8	The date the asset was constructed or the date of completion. Note – if no Letter of Substantial Completion then use As-Built Date, then Record Drawing Date, then most recent signature date on plan set. For field verifications use Date of Verification.	Completion Date	
INVERTELEV	Double / 8	The flow elevation at the bottom of the inlet or manhole	Flow Elevation	
LENGTH	Double / 8	Pipe length from the plan	Pipe Length	
LINETYPE	String / 25	The type of open drain or virtual line	Line Type	piDrainType or piVirtualLine
LOCDESC	String / 200	Text description of the geographic location	Location Description	
MAINSHAPE	String / 50	The shape of the gravity main	Main Shape	piPipeShape
MAINTBY	Integer (Short) / 5	Indicates which organization maintains the asset	Managed By	AssetManager
MAINTBY	String / 25	Indicates which organization maintains the asset	Managed By	piDitchOwner or piEasementOwner
MATERIAL	String / 20	Material the asset is manufactured with	Material	piPipeMaterial
MHTYPE	String / 15	The type of manhole	Manhole Type	piManholeType
NAME	String / 200	The name and location description of detention pond	Name	
NAME	String / 20	The name of the facility or location of the network structure	Name	
NAME	String / 100	The name of the underpass	Name	

FieldName	Type / Length	Description	AliasName	DomainName
NUMBEROFCROSSINGS	Integer (Short) / 5	Number of crossings	Number of Crossings	
OWNEDBY	Integer (Short) / 12	Indicates which organization owns the asset	Owned By	AssetOwner
OWNEDBY	String / 25	Indicates which organization owns the asset	OwnedBy	piDitchOwner or piEasementOwner
PIPETYPE	String / 50	The type of storm water pipe	Pipe Type	piPipeType
PLANNUMBER	String / 10	The plan number	Plan Number	
PONDAREA	Double / 8	The area of the detention pond in acres	Area (in Acres)	
PUMPSTATION	String / 5	Indicates whether there is a pump station	Pump Station?	YesNo
RAINGAUGE	String / 5	Indicates whether there is a rain gauge	Rain Gauge?	YesNo
REHABDATE	Date / 8	Date of asset rehabilitation for open drains	Rehabilitation Date	
RIMELEV	Double / 8	The elevation at the top of inlet or manhole	Top Elevation	
ROTATION	Double / 8	Map Symbol Rotation value	Rotation	
SCADA	String / 5	Indicates whether there is a SCADA sensor at underpass	SCADA?	YesNo
SIDEMATERIAL	String / 50	The material on the side of the open drain	Side Material	piOpenStructureMaterial
SLOPE	Double / 8	The slope of the main in percent	Slope (in percent)	null
STRUCTTYPE	String / 30	Type of Sewer Network Structure	Structure Type	swNetworkStructureType
TYPE	String / 25	Utility type for storm drain easements	Utility Type	piEasementType
UFID	String / 20	The numeric FACILITYID, used by other business systems, with network structures	UFID	
UFID	Long / 10	The numeric FACILITYID, used by other business systems	UFID	

FieldName	Type / Length	Description	AliasName	DomainName
UPDEPTH	Double / 8	The upstream depth of the gravity main	Upstream Depth	
UPELEV	Double / 8	The upstream elevation where the pipe meets the manhole	Upstream Elevation	
UPSTMNODE	String / 25	The upstream storm node Facility ID	Upstream Storm Node	
VOLUME	Double / 8	The volume of detention area in acre feet	Volume (Acre Feet)	
WALLMAT	String / 25	Wall Material	Wall Material	piPipeMaterial
WATERSHED	String / 25	Watershed where the retention basin is located	Watershed	
WIDTH	Double / 8	The width of the discharge point or pipe in inches	Width (inches)	piPipeDiameter
WIDTH	Double / 8	The width at the top of the open drain in feet	Width (feet)	

### 1.03 WASTEWATER FIELD PROPERTIES

1.03.A This section provides a detailed breakdown of all the fields within the City of Houston wastewater dataset. Table 2 contains a comprehensive list of all field descriptions, data types, and domain names associated with the various wastewater feature classes.

Table 2 – Wastewater Feature Class Fields

FieldName	Type / Length	Description	AliasName	DomainName
BURIEDDEPTH	Double / 38	Depth, in feet, of cleanout or manhole, as measured from flow elevation to rim elevation	Buried Depth	
CREATIONSOURCE	String / 20	Indicator of assets that were built as part of a Capital Projects contract or DPC agreement	Creation Source	sCreation Source
DATASOURCETYPE	String / 20	If submission includes revisions that are or will be included on final	Data Source Type	sData Source Type LINE

FieldName	Type / Length	Description	AliasName	DomainName
		as-built deliverable to the file room, all features must be tagged with As Built; otherwise, select Plan and Profile		
DATUM	String / 10	Horizontal benchmark information, including datum source for survey control points	Datum	sDatum
DATUM_YEAR	String / 4	Year of the datum reference (adjusted year if applicable)	Datum Year	
DIAMETER	Double / 10	The nominal diameter in inches	Diameter	
DISTANCETO DOWNSTREAM MANHOLE	Double / 38	Distance, in feet, from where the feature connects to the gravity main to the nearest downstream manhole.	Distance To Downstream Manhole	
DOWNSTREAM DIRECTION	String / 5	Relative to the point where the feature connects to a sewer main, the closest cardinal direction of downstream flow.	Downstream Direction	sDownstream Direction
DOWNSTREAMINVERT	Double / 38	In feet and rounded to the nearest hundredth, the elevation of the downstream terminus of the line.	Downstream Invert	
FISCALYEAR	String / 10	Based on the In-Service Date, the fiscal year is defined as July 1 <sup>st</sup> of the previous year to June 30 <sup>th</sup> of the current year.	Fiscal Year	
FLOWELEVATION	Double / 38	In feet and rounded to the nearest hundredth, the elevation of the flow line for the pipe that is conveying	Flow Elevation	

FieldName	Type / Length	Description	AliasName	DomainName
		wastewater away from that manhole.		
GFSORWBS	String / 5		GFS or WBS	sProject Type2
GFSWBSNUMBER	String / 24	As assigned by the Capital Projects Service Line, the number is defined as a 1-character utility code, a 6-character project type code, a 4-character project number code, and a 1-digit phase code. Only required for Capital Improvement Projects.	GFS-WBS Number	
ILMSNUMBER	String / 15	Sometimes called project number, the integrated land management number is always 8 digits, starting with a 2-digit year followed by an assigned 6-digit number.	ILMS Number	
INLETELEVATION	Double / 38	In feet and rounded to the nearest hundredth, the lowest elevation of the flow line for each pipe that is conveying wastewater into that manhole (or network structure). Only flow lines for gravity mains or force mains shall be included.	In Elevation	
INLETELEVATION2	Double / 38	In feet and rounded to the nearest hundredth, the second lowest elevation of the flow line for each pipe that is conveying wastewater into that manhole (or network structure). Only flow lines for	In Elevation 2	

FieldName	Type / Length	Description	AliasName	DomainName
		gravity mains or force mains shall be included.		
INLETELEVATION3	Double / 38	If necessary, the third lowest elevation of the flow line for each pipe that is conveying wastewater into that manhole (or network structure), in feet and rounded to the nearest hundredth. Only flow lines for gravity mains or force mains shall be included. (If more than 3 pipes are flowing into a manhole, additional elevations must be identified in the NOTES field).	In Elevation 3	
INSERVICEDATE	Date / 8	As applicable, the date of final acceptance by the city or the effective date of a substantial completion inspection. Only one date shall be used for the entirety of the project.	In Service Date	
LENGTH	Double / 10		Length	
LIFECYCLESTATUS	String / 5	Each feature shall be tagged with its post-construction use status; Abandoned (still in the ground, but no longer in use), Existing (being used and maintained), or Rehabilitated.	Lifestyle Cycle	sLifecycle Status
MATERIAL	String / 5		Material	sWater Line Material/sJunction Material

FieldName	Type / Length	Description	AliasName	DomainName
NOTES	String / 255	This field is to be used to communicate any discrepancies between the standards outlined in this section and the final digital deliverable. The explanations will receive consideration but will not guarantee acceptance of the feature(s) involved.	Notes	
OWNER	String / 10	Tag each feature as publicly owned or privately owned. If responsibility for maintenance is not with the owner, that must be indicated by selecting the appropriate option in the domain.	Owner	sOwner
PERCENTSLOPE	Double / 38	In percentage form, the slope of the line. If there is a significant deviation from the minimum required slope or the slope as it will be depicted on the plan and profile drawings, indicate as such in the NOTES field.	Percent Slope	
PLANDATE	Date / 8	The date the city granted approval to the most recent revision of the plans used for construction. This is typically the date the director, or the director's designee, signed off on the plan set.	PlanDate	
PLANNUMBER	String / 10	The drawing number assigned to the plan set by the file room.	Plan Number	

FieldName	Type / Length	Description	AliasName	DomainName
PLANTYPE	String / 20	If the city assigned a plan set a THD number (at present, a 3-digit number), then PLANTYPE shall be Texas Highway Department (THD). Otherwise, Plan and Profile (P) shall be selected.	Plan Type	sPlan Type
PROJECTNUMBER	String / 24	Sometimes called receipt number or permit number, this is a 7-digit number assigned by the city engineer's office. In the case of a TxDOT job, the number follows the format #####-##-####.	Project Number	
PROJECTTYPE	String / 30	If a project number is assigned by the city engineer's office, the project type is Permit Number (PN). If the project number is assigned by TxDOT, the project type is Control Section Job (CSJ).	ProjectType	sProject Type_2
RIMELEVATION	String / 38	The elevation, in feet, of the top of the cover of the manhole.	Rim Elevation	
SIZEOFCOVER	String / 5	The diameter of the cover of the manhole, in inches.	Cover Diameter	
SUBTYPECD	Integer / 10		Subtype	Various
TYPE	String / 25	If a specific kind of manhole was installed, it must be indicated here. Otherwise, standard manhole shall be selected.	Type	sType of Manhole
UPSTREAMINVERT	Double / 38	In feet and rounded to the nearest hundredth, the elevation of the	Upstream Invert	



FieldName	Type / Length	Description	AliasName	DomainName
		upstream terminus of the line.		

#### 1.04 WATER FIELD PROPERTIES

- 1.04.A This section provides a detailed breakdown of all the fields within the City of Houston water dataset. Table 3 contains a comprehensive list of all field descriptions, data types, and domain names associated with the various water feature classes.

Table 3 – Water Feature Class Fields

FieldName	Type / Length	Description	AliasName	DomainName
CREATIONSOURCE	String / 20	Indicator of assets that were built as part of a Capital Projects contract or DPC agreement.	Creation Source	wCreation Source
DATASOURCETYPE	String / 20	If submission includes revisions that are or will be included on final as built deliverable to the file room, all features must be tagged with As Built; otherwise, select Plan and Profile.	Data Source Type	wData Source Type
DIAMETER	Double / 10	The nominal diameter in inches.	Diameter	
FISCAL_YEAR	String / 10	Based on the In-Service Date, the fiscal year is defined as July 1 <sup>st</sup> of the previous year to June 30 <sup>th</sup> of the current year.	Fiscal Year	
GFSORWBS	String / 5		GFS or WBS	wProject Type2
GFSWBSNUMBER	String / 24	Assigned by the Capital Projects Service Line, this number is defined as a 1-character utility code, a 6-character project type code, a 4-	GFS-WBS Number	

FieldName	Type / Length	Description	AliasName	DomainName
		character project number code, and a 1-digit phase code. Only required for Capital Improvement Projects.		
GROUNDCOVER	Double / 7	In feet, the minimum cover for the water main.	Ground Cover	
HYDRANTLEADDIAMETER	Double / 38	In inches, the diameter of the lead line that connects a fire hydrant to the main.	Hydrant Lead Size	
ILMSNUMBER	String / 15	Sometimes called project number, the integrated land management number is always 8-digits, starting with a 2-digit year followed by an assigned 6-digit number.	ILMS Number	
INSERVICEDATE	Date / 8	The date of final acceptance by the city or the effective date of a substantial completion inspection. Only one date shall be used for the entirety of a project.	In Service Date	
LARGEMAINDIAMETER	Double / 7		Large Main Diameter	
LENGTH	Double / 10		Length	
LIFECYCLESTATUS	String / 5	Each feature shall be tagged with its post-construction use status; Abandoned (still in the ground, but no longer in use) or Existing (being used and maintained).	Lifecycle Status	wLifecycle Status
MATERIAL	String / 5		Material	wWater Line Material
MAINDIAMETER	Double / 10	In inches, the diameter of the main line to which	Main Diameter	

FieldName	Type / Length	Description	AliasName	DomainName
		a meter or hydrant is tied.		
NOTES	String / 255	This field is to be used to communicate any discrepancies between the standards outlined in this section and the final digital deliverable. The explanations will receive consideration but will not guarantee acceptance of the feature(s) involved.	Notes	
OWNER	String / 10	Tag each feature as publicly owned or privately owned. If responsibility for maintenance is not with the owner, that detail must be indicated by selecting the appropriate option in the domain.	Owner	wOwner
PLANDATE	Date / 8	The date the city granted approval to the most recent revision of the plans used for construction. This is typically the date the director, or the director's designee, signed off on the plan set.	Plan Date	
PLANNUMBER	String / 10	The drawing number assigned to the plan set by the file room.	Plan Number	
PLANTYPE	String / 30	If the city assigned a plan set a THD number (at present a 3-digit number), then PLANTYPE shall be Texas Highway Department (THD). Otherwise, Plan and Profile (P) shall be selected.	Plan Type	wPlan Type

FieldName	Type / Length	Description	AliasName	DomainName
PROJECTNUMBER	String / 24	Sometimes called job number, this is currently a 5-digit number assigned by the city engineer's office. In the case of a TxDOT job, the number follows the format #####-##-###.	Project Number	
PROJECTTYPE	String / 30	If a project number is assigned by the city engineer's office, the project type is City Job (J). If the project number is assigned by TxDOT, the project type is Control Section Job (CSJ).	Project Type	wProject Type
SERVICEADDRESS	String / 50	On meters, the address of the property being served. This includes the address number and, in all caps, street name.	Service Address	
SMALLMAINDIAMETER	Double / 7		Small Main Diameter	
SUBTYPECD	Integer / 10		Subtype	Various

## 1.05 GEOBORING FIELD PROPERTIES FOR GEOTECHNICAL AND ENVIRONMENTAL BORINGS

1.05.A This section provides a detailed breakdown of all the fields within the City of Houston geoBoring dataset. Table 4 contains a comprehensive list of all field descriptions, data types, and domain names associated with this feature class.

Table 4 – geoBoring Feature Class Fields for Geotechnical and Environmental Borings

FieldName	Type / Length	Description	AliasName	DomainName
PROJECTID	Text / 50	Unique ID for the project populated	Project ID	

FieldName	Type / Length	Description	AliasName	DomainName
		by the consultant based on report type, year, the project WBS number, and bore ID. Format is: ReportTypeYear_WBSNumber_Bore ID		
WBSNUMBER	Text / 25	City of Houston assigned number for the project	WBS Number	
PROJECTNAME	Text / 250	City of Houston assigned project name	Project Name	
REPORTTYPE	Text / 5	The report classification content either geotechnical or environmental	Report Type	geoReportType
REPORTSIGNEDDATE	Date	Date the report was signed	Report Signed Date	
CONSULTANTNAME	Text / 250	Name of the firm who produced the report	Consultant Name	
BOREID	Text / 25	Alphanumeric unique identification number assigned to the boring location	Bore ID	
X*	Double	Horizontal coordinate	X	
Y*	Double	Vertical coordinate	Y	
LATITUDE**	Double	Geographic coordinate in decimal degrees format measured North and South of the equator.	Latitude	
LONGITUDE**	Double	Geographic coordinate in decimal degrees format measured East and West of the prime meridian.	Longitude	
SURFACEELEV	Double	Vertical measurement of the height of the land surface (Feet)	Surface Elevation	
DEPTH	Double	Total distance from the top of the surface elevation to	Depth	

FieldName	Type / Length	Description	AliasName	DomainName
		the bottom of the boring (Feet)		
WATERENCOUNTERED	Text / 50	Measurement in Feet at which water was first encountered at the time of drilling	Water Encountered	
WATERLEVEL	Text / 50	Measurement in Feet of the water level 15-20 minutes after water was first encountered	Water Level	
READINGDATE	Date	Date at which the water level measurement in Feet was read 24 hours or more after drilling completed	Reading Date	
WATERLEVELREADING	Text / 50	The water level measurement in Feet read 24 hours or more after drilling completed	Water Level Reading	
CONTAMINATION	Short	Yes/No field to flag whether or not contamination was detected	Contamination	dYesNo
DRILLEDDATE	Date	Date the boring was drilled	Drilled Date	

\*The field is only required for geotechnical borings and is not a requirement for environmental borings.

\*\*The field is only required for environmental borings and/or test results and is not a requirement for geotechnical borings.

## 1.06 GEOBORINGTESTRESULTS FIELD PROPERTIES FOR GEOTECHNICAL BORINGS

- 1.06.A This section provides a detailed breakdown of all the fields within the City of Houston geoBoringTestResults dataset. Table 5 contains a comprehensive list of all field descriptions, data types, and domain names associated with this feature class.

Table 5 – geoBoringTestResults Feature Class Fields for Geotechnical Borings

FieldName	Type / Length	Description	AliasName	DomainName
PROJECTID	Text / 50	Unique ID for the project populated by the consultant based on report type, year, the project WBS number, and bore ID. Format is: ReportTypeYear_WBSNumber BoreID	Project ID	
WBSNUMBER	Text / 25	City of Houston assigned number for the project	WBS Number	
PROJECTNAME	Text / 250	City of Houston assigned project name	Project Name	
CONSULTANTNAME	Text / 250	Name of firm who produced the report	Consultant Name	
REPORTSIGNEDDATE	Date	Date the report was signed	Report Signed Date	
BOREID	Text / 25	Alphanumeric unique identification number assigned to the boring location	Bore ID	
SAMPLENO	Text / 25	The unique identification number for the sample	Sample Number	
SAMPLEDEPTHTOP	Double	Top depth of the boring in Feet	Sample Depth Top	
SAMPLEDEPTHBTM	Double	Bottom depth of the boring in Feet	Sample Depth Bottom	
SAMPLETYPE	Text / 5	Type of sample taken	Sample Type	geoSampleType
SPT	Double	Standard penetration test (SPT) measurement in blows/Feet	SPT	
WATERCONTENT	Double	Percent water content in sample	Water Content	
DRYDENSITY	Double	Dry density of sample measured in pounds per cubic foot (pcf)	Dry Density	
ATTERBERGLIMITSLL	Double	Atterberg limits – Liquid Limit (%)	Atterberg Limits LL	
ATTERBERGLIMITSPL	Double	Atterberg limits – Plastic Limit (%)	Atterberg Limits PL	
ATTERBERGLIMITSPI	Double	Atterberg limits – Plasticity Index (%)	Atterberg Limits PI	
PERPASSSIEVE200	Double	Percent passing sieve 200 (%)	Percent Passing Sieve 200	
TSFUNCONFCOMPTEST	Double	Shear strength (TSF) unconfined compression test	TSF UC Test	

FieldName	Type / Length	Description	AliasName	DomainName
TSFUUTEST	Double	Shear strength (TSF) triaxial compression (UU) test	TSF UU Test	
TSFCONFININGPRESS	Double	Shear strength (TSF) Confining pressure TSF	TSF Confining Pressure	
TSFTORVANE	Double	Shear strength (TSF) torvane	TSF Torvane	
TSFPOCKETPENETROMETER	Double	Shear strength (TSF) pocket penetrometer	TSF Pocket Penetrometer	
TYPEOFMATERIAL	Text / 250	Type of soil material.  For geotechnical borings refer to ASTM D2487.  For environmental borings refer to ASTM D2488.	Type of Material	
PID*	Double	Photoionization Detector (PID) value (ppm)	PID	

\*The field is only required for environmental borings and/or test results and is not a requirement for geotechnical borings.

## 1.07 TELECOMMUNICATIONS FIELD PROPERTIES

1.07.A This section provides a detailed breakdown of all the fields within the City of Houston Telecommunications dataset. Table 3 contains a comprehensive list of all field descriptions, data types, and domain names associated with the various Telecommunications feature classes.

FieldName	Type / Length	Description	AliasName	DomainName
CABLEID	Text / 255	The unique identification number assigned to each fiber optic cable.	Cable ID	
COMPANYNAME	Text / 255	The name of the company applying for a permit. The applicant name provided on the application.	Company Name	FOCableCompanyName NodeCompanyName RepeaterCompanyName
COUNCILDISTRICT	Text / 1	The name of the council district the feature falls within	Council District	CouncilDistrict



FieldName	Type / Length	Description	AliasName	DomainName
DEPTH	Double / 10	The depth, in US feet, of the fiber optic cable.	Depth	
ADDRESS	Text / 255	The street address associated with the feature.	Address	
FROMSTREET	Text / 255	For a line feature, the from street indicates the nearest intersecting street where the linear feature begins.	From Street	
ILMSNUMBER	Long / 10	Sometimes called project number, the integrated land management number is always 8-digits, starting with a 2-digit year followed by an assigned 6-digit number.	ILMS Number	
LATITUDE	Double	Geographic coordinate in decimal degrees format measured North and South of the equator.	Latitude	
LENGTH	Double / 10	The length, in US feet, of the fiber optic cable.	Length	
LONGITUDE	Double	Geographic coordinate in decimal degrees format measured East and West of the prime meridian.	Longitude	
MATERIAL	Text / 255	Type of material used to construct the feature.	Material	FOCMaterial RepeaterMaterial
NODENAME	Text / 255	The unique identification string for each DAS node.	Node Name	
NODENUMBER	Long / 10	Starting at 1, this is the count of each node within the project. If there are 5 nodes in the project, each node has a number between 1 and 5.	Node Number	

FieldName	Type / Length	Description	AliasName	DomainName
OWNER	Text / 255	The name of the company that owns the fiber optic cable.	Owner	FOCOwner
POLEELEVATION	Double / 10	The height of the pole.	Pole Elevation	
POLEID	Text / 255	The unique identification number for each pole.	Pole ID	
POLESTATUS	Text / 255	The pole status is either new or existing.	Pole Status	NodePoleStatus RepeaterPoleStatus
POLEOWNER	Text / 255	Name of the company that owns the pole; this could differ from the name of the company that owns the node on the pole.	Pole Owner	NodePoleOwner RepeaterPoleOwner
STREETNAME	Text / 255	The street name that the fiber optic cable runs down.	Street Name	
TOSTREET	Text / 255	For a line feature, the to street indicates the nearest intersecting street where the linear feature ends.	To Street	
ZIPCODE	Text / 5	The zip code that the feature falls within.	Zip Code	

## SECTION 2 – DOMAIN CODES AND VALUES

### 2.01 STORM WATER DOMAINS

- 2.01.A This section provides a comprehensive list of all the domain codes and values within the City of Houston storm water dataset. Tables 6 through 28 show each domain name, with its subsequent codes and code descriptions, associated with the various storm water feature classes.

Table 6 – AbandonStatus

Code	Description
AP	Abandoned In Place
REM	Removed
ID	Incorrect Digitization – No Spatial Change

Table 7 – AssignedTo

Code	Description
AGS	Applied Geotech Solutions
TCI	Texas Correctional Industries
WTE	WatEarth
COH	City of Houston
PAR	Parsons
CIP	CIP Digital Deliverable

\*If company name is missing, a code will be assigned as new names are added.

Table 8 – piPipeMaterial

<b>Code</b>	<b>Description</b>
BR	Brick
CT	Clay Tile
CP	Concrete (Non-reinforced)
CMP	Corrugated Metal
FRP	Fiberglass Reinforced
HDPE	High Density Polyethylene
MRC	Monolithic Reinforced Concrete
OTH	Other
PVC	Polyvinyl Chloride
RCP	Reinforced Concrete
SP	Steel
UNK	Unknown

Table 9 – piOpenStructureMaterial

<b>Code</b>	<b>Description</b>
CP	Concrete
EARCP	Earth & Concrete
EAR	Earthen
OTH	Other
UNK	Unknown

Table 10 – piCouncilDistrict

<b>Code</b>	<b>Description</b>
A	A
B	B
C	C
D	D
E	E
F	F
G	G
H	H
I	I
J	J
K	K

Table 11 – piCrossingType

<b>Code</b>	<b>Description</b>
Railroad	Railroad
Road	Road
Other	Other

Table 12 – piDataSourceType

<b>Code</b>	<b>Description</b>
AB	As Built
BM	Block Map
CS	Contracted Survey
EX	Existing
FV	Field Verified
Metro	Metro
P	Plan Set
TM	Taps and Meters
THD	Texas Highway Department
UN	Unknown
WD	Water Drawing

Table 13 – piDischargePointType

<b>Code</b>	<b>Description</b>
Outfall	Outfall
Outfall with BFP	Outfall with BFP
Roadside Discharge Point	Roadside Discharge Point

Table 14 – piFittingType

<b>Code</b>	<b>Description</b>
Collection Point	Collection Point
Drain Node	Drain Node
Plug	Plug
Reducer	Reducer
Safety End Treatment	Safety End Treatment
Storm Interconnect	Storm Interconnect
Other	Other

Table 15 – YesNo

<b>Code</b>	<b>Description</b>
Yes	Yes
No	No
Partly	Partly
Offset	Offset

Table 16 – piFundingType

<b>Code</b>	<b>Description</b>
ILMS	ILMS
WBS	WBS
GFS	GFS

Table 17 – piPipeDiameter

<b>Code</b>	<b>Description</b>
Min	4
Max	168

Table 18 – piDrainType

<b>Code</b>	<b>Description</b>
Bridge	Bridge
Irrigation Canal	Irrigation Canal
Low Flow Pilot Channel	Low Flow Pilot Channel
Off-road Channel	Off-road Channel
Rain Garden	Rain Garden
Railroad Open Drain	Railroad Open Drain
Roadside Ditch	Roadside Ditch
Swale	Swale
Unknown	Unknown

Table 19 – piEasementType

<b>Code</b>	<b>Description</b>
DR	Drainage
ELC	Electric Line
GAS	Gas Pipeline
HWY	Highway Right-of-Way
RR	Railroad
RDST	Road/Street
SS	Sanitary Sewer
TEL	Telecommunication
WL	Waterline
URW	Unimproved Right of Way
STM	Storm Sewer
UTL	Utility
UNK	Unknown

Table 20 – piPipeShape

<b>Code</b>	<b>Description</b>
RND	Round
ARCH	Arch
BOX	Box
Other	Other
Unknown	Unknown

Table 21 – AssetManager

<b>Code</b>	<b>Description</b>
1	City
-1	Private
-2	Other

Table 22 – piManholeType

<b>Code</b>	<b>Description</b>
Junction Box	Junction Box
Stormceptor	Stormceptor
Standard	Standard Manhole
MH with BFP	Manhole with Backflow Preventer
Sample Well Basin	Sample Well Basin

Table 23 – piDitchOwner & piEasementOwner

<b>Code</b>	<b>Description</b>
Army Corps of Engineers	Army Corps of Engineers
Bay Area Land Co.	Bay Area Land Co.
Bridge	Bridge
Center Point	Center Point
Chelford City MUD	Chelford City MUD
City of Deer Park	City of Deer Park
City of Laporte	City of Laporte
City of League City	City of League City
City of Pasadena	City of Pasadena
City of Seabrook	City of Seabrook
City of Webster	City of Webster
Clear Brook City MUD	Clear Brook City MUD
Clear Lake City	Clear Lake City
COH	COH
COH Bridge	COH Bridge
COH Parks	COH Parks
COH Roadside	COH Roadside
COH Storm Sewer	COH Storm Sewer
COH Enclosed	COH Enclosed
Ellington Airforce Base	Ellington Airforce Base
Fort Bend County	Fort Bend County
Harris County	Harris County
HCFC	HCFC
HOU Airport System	HOU Airport System
Montgomery County	Montgomery County
NASA	NASA
Other	Other
Private	Private
State of Texas	State of Texas
To Be Verified	To Be Verified
TXDOT	TXDOT
Union Pacific	Union Pacific
Waller County	Waller County



Table 24 – piInletType

<b>Code</b>	<b>Description</b>
A	A Inlet
B	B Inlet
BB	BB Inlet
C	C Inlet
C1	C1 Inlet
C2	C2 Inlet
D	D Inlet
E	E Inlet
H2	H2 Inlet
Other	Other

Table 25 – piPipeType

<b>Code</b>	<b>Description</b>
Collector	Collector
Culvert	Culvert
Driveway	Driveway Culvert
InletLine	InletLine
Outfall	Outfall
Overflow	Overflow
Railroad	Railroad Culvert
Siphon	Siphon
TrenchDrain	TrenchDrain
Walkway	Walkway Culvert

Table 26 – swNetworkStructureType

<b>Code</b>	<b>Description</b>
Pump Station	Pump Station
Detention Pond	Detention Pond
Virtual Junction	Virtual Junction

Table 27 – piVirtualLine

<b>Code</b>	<b>Description</b>
Virtual Line	Standard Virtual Line
Detention Pond	Detention Pond
Channel	Virtual Line from Outfall to Channel

Table 28 – piDetentionType

Code	Description
Detention Pond	Detention Pond
Rain Garden	Rain Garden

## 2.02 WASTEWATER DOMAINS

- 2.02.A This section provides a comprehensive list of all the domain codes and values within the City of Houston wastewater dataset. Tables 29 through 40 show each domain name, with its subsequent codes and code descriptions, associated with the various wastewater feature classes.

Table 29 – sCreation Source

Code	Description
CIP	Capital Improvement Project
DPC	Developer Participation Contract

Table 30 – sData Source Type LINE

Code	Description
AB	As Built
P	Plan and Profile

Table 31 – sDatum

Code	Description
HCFnnnn	Harris County Flood Control
COHnnnn	City of Houston
THDnnnn	Texas Highway Dept
USGSnnnn	U.S. Geological Survey
CORPnnnn	U.S. Army Corp of Engrs
UCGSnnnn	U.S. Coastal and Geodetic Survey
NGSnnnn	National Geodetic Survey

Table 32 – sDownstream Direction

<b>Code</b>	<b>Description</b>
S	South
E	East
W	West
N	North

Table 33 – sJunction Material

<b>Code</b>	<b>Description</b>
FBGL	Fiberglass
CONC	Concrete

Table 34 – sLifecycle Status

<b>Code</b>	<b>Description</b>
A	Abandoned
E	Features Being Used and Maintained
R	Rehabilitated

Table 35 – sOwner

<b>Code</b>	<b>Description</b>
C	City Owned & Maintained
CP	City Owned & Privately Maintained
P	Privately Owned & Maintained
PC	Privately Owned & City Maintained

Table 36 – sPlan Type

<b>Code</b>	<b>Description</b>
P	Plan and Profile
THD	Texas Highway Department

Table 37 – sProject Type\_2

<b>Code</b>	<b>Description</b>
CSJ	Control Section Job
PN	Permit Number

Table 38 – sProject Type2

<b>Code</b>	<b>Description</b>
WBS	Work Business Structure

Table 39 – sType of Manhole

<b>Code</b>	<b>Description</b>
CR	Corrosion Resistant
FMD	Force Main Discharge
SMRT	Smart
STAN	Standard

Table 40 – sWater Line Material

<b>Code</b>	<b>Description</b>
DIP	Ductile Iron
ESC	Extra Strength Clay
FRP	Fiberglass Reinforced Pipe
PEP	Polyethylene Pipe (includes High Density)
PLP	Plastic-Lined Concrete Pipe
PVC	Polyvinyl Chloride
RCP	Reinforced Concrete Pipe

## 2.03 WATER DOMAINS

- 2.03.A This section provides a comprehensive list of all the domain codes and values within the City of Houston water dataset. Tables 41 through 48 show each domain name, with its subsequent codes and code descriptions, associated with the various water feature classes.

Table 41 – wCreation Source

Code	Description
CIP	Capital Improvement Project
DPC	Developer Participation Contract

Table 42 – wData Source Type

Code	Description
AB	As Built
P	Plan and Profile

Table 43 – wLifecycle Status

Code	Description
A	Abandoned
E	Features Being Used and Maintained

Table 44 – wOwner

Code	Description
C	City Owned & Maintained
CP	City Owned & Privately Maintained
P	Privately Owned & Maintained
PC	Privately Owned & City Maintained

Table 45 – wPlan Type

Code	Description
P	Plan and Profile
THD	Texas Highway Department

Table 46 – wProject Type

Code	Description
CSJ	Control Section Job
JOB	City Job

Table 47 – wProject Type2

<b>Code</b>	<b>Description</b>
WBS	Work Business Structure

Table 48 – wWater Line Material

<b>Code</b>	<b>Description</b>
DI	Ductile Iron
FRP	Fiberglass Reinforced Pipe
PVC	Polyvinyl Chloride
STL	Steel

## 2.04 GEOTECHNICAL AND ENVIRONMENTAL DOMAINS

- 2.04.A This section provides a comprehensive list of all the domain codes and values within the City of Houston geotechnical and environmental datasets. Tables 49 through 51 show each domain name, with its subsequent codes and code descriptions, associated with the various geotechnical and environmental feature classes.

Table 49 – geoYesNo

<b>Code</b>	<b>Description</b>
0	No
1	Yes

Table 50 – geoSampleType Domain

<b>Code</b>	<b>Description</b>
UD	Undisturbed Sample
SS	Split Spoon Sample
AG	Auger Cuttings
SPT	Standard Penetration Test

Table 51 – geoReportType Domain

<b>Code</b>	<b>Description</b>
GEO	Geotechnical
ENV	Environmental

2.05 TELECOMMUNICATIONS DOMAINS

- 2.04.A This section provides a comprehensive list of all the domain codes and values within the City of Houston telecommunications datasets. Tables 52 through 62 show each domain name, with its subsequent codes and code descriptions, associated with the various telecommunication feature classes.

Table 52 – CouncilDistrict Domain

Code	Description
A	A
B	B
C	C
D	D
E	E
F	F
G	G
H	H
I	I
J	J
K	K

Table 53 – FOCableCompanyName Domain

Code	Description
AT&T	AT&T
3D Design & Engineering	3D Design & Engineering
Aspen Utility	Aspen Utility
Black & Veatch	Black & Veatch
Cobb Fendley	Cobb Fendley
Comcast	Comcast
Crown Castle	Crown Castle
Eagle Eye Permitting	Eagle Eye Permitting
Faccini Engineering	Faccini Engineering
Golden Field Services	Golden Field Services
HRS and Associates	HRS and Associates
Kimley-Horn	Kimley-Horn
Konstant Engineering	Konstant Engineering
Legion Engineering	Legion Engineering
Midtown Engineers	Midtown Engineers
QuantaTelecom	QuantaTelecom
Tachus	Tachus
The Permit Getters	The Permit Getters
TDC2	TDC2

United Engineers	United Engineers
WGI Engineers	WGI Engineers

\*If company name is missing, a code will be assigned as new names are added.

Table 54 – FOCMaterial Domain

Code	Description
LSZH	Low smoke, zero halogen
PE	Polyethylene
PUR	Polyurethane
PVC	Polyvinyl Chloride

Table 55 – FOCOwner Domain

Code	Description
AT&T	AT&T
Comcast	Comcast
Crown Castle	Crown Castle
Ezee Fiber	Ezee Fiber
FiberLight	FiberLight
Level 3 Communications	Level 3 Communications
MCIMetro	MCIMetro
Phonoscope Fiber	Phonoscope Fiber
PS LIGHTWAVE	PS LIGHTWAVE
Tachus	Tachus
Verizon Wireless	Verizon Wireless
Zayo	Zayo

\*If owner name is missing, a code will be assigned as new names are added.

Table 56 – NodeCompanyName Domain

Code	Description
AT&T	AT&T
AnSCO & Associates	AnSCO & Associates
Cobb Fendley	Cobb Fendley
Crown Castle	Crown Castle
KGI Wireless	KGI Wireless
Mobilitie	Mobilitie
P. Marshall & Associates	P. Marshall & Associates
TDC2	TDC2
Verizon Wireless	Verizon Wireless
Zayo	Zayo

\*If company name is missing, a code will be assigned as new names are added.



Table 57 – NodePoleOwner Domain

<b>Code</b>	<b>Description</b>
AT&T	AT&T
CenterPoint Energy	CenterPoint Energy
Crown Castle	Crown Castle
Mobilitie	Mobilitie
Verizon Wireless	Verizon Wireless
Zayo	Zayo

\*If owner name is missing, a code will be assigned as new names are added.

Table 58 – NodePoleStatus Domain

<b>Code</b>	<b>Description</b>
New	New
Existing	Existing

Table 59 – RepeaterCompanyName Domain

<b>Code</b>	<b>Description</b>
AT&T	AT&T
Cobb Fendley	Cobb Fendley
P. Marshall & Associates	P. Marshall & Associates
Verizon Wireless	Verizon Wireless

\*If company name is missing, a code will be assigned as new names are added.

Table 60 – RepeaterMaterial Domain

<b>Code</b>	<b>Description</b>
Steel	Steel
Wood	Wood

Table 61 – RepeaterPoleStatus Domain

<b>Code</b>	<b>Description</b>
New	New
Existing	Existing

Table 62 – RepeaterPoleOwner Domain

<b>Code</b>	<b>Description</b>
AT&T	AT&T
FiberLight	FiberLight
Verizon Wireless	Verizon Wireless

\*If owner name is missing, a code will be assigned as new names are added.

## SECTION 3 – FEATURE CLASS SUBTYPES

### 3.01 OVERVIEW

- 3.01.A The following sections list the various subtypes that can be utilized for each feature class per each utility group dataset.

### 3.02 STORM WATER SUBTYPES

#### 3.02.A Manhole

1. Standard Manhole
2. Junction Box
3. Stormceptor
4. Manhole with Backflow Preventer
5. Sample Well Basin

#### 3.02.B Inlet

1. A Inlet
2. B Inlet
3. BB Inlet
4. C Inlet
5. C1 Inlet
6. C2 Inlet
7. D Inlet
8. E Inlet
9. H2 Inlet
10. Other

#### 3.02.C Network Structure

1. Pump Station
2. Detention Pond
3. Virtual Junction

#### 3.02.D Fitting

1. Drain Node
2. Plug
3. Reducer
4. Safety End Treatment
5. Storm Interconnect
6. Other
7. Collection Point

- 3.02.E      Discharge Point
1.      Outfall
  2.      Outfall with BFP
  3.      Roadside Discharge Point

- 3.02.F      Gravity Main
1.      Collector
  2.      Culvert
  3.      Siphon
  4.      Outfall
  5.      Inlet Line
  6.      Trench Drain
  7.      Overflow
  8.      Driveway Culvert
  9.      Walkway Culvert
  10.     Railroad Culvert

- 3.02.G      Open Drain
1.      Roadside Ditch
  2.      Off-road Channel
  3.      Swale
  4.      Low Flow Pilot Channel
  5.      Rain Garden

3.03      WASTEWATER SUBTYPES

- 3.03.A      Casing
1.      Casing

- 3.03.B      Cleanout
1.      Cleanout

- 3.03.C      Fitting
1.      Interconnect
  2.      Plug
  3.      Stack
  4.      Star Tap
  5.      Wye

3.03.D Force Main

1. Force
2. Sludge

3.03.E Gravity Main

1. Small Diameter Main
2. Large Diameter Main
3. Siphon
4. LS Pump Line

3.03.F Manhole

1. Junction Box
2. Manhole

3.03.G Network Structure

1. Lift Station
2. Private Pump Station
3. Treatment Plants
4. Wet Weather Facility

3.03.H Service Lead

1. Service Lead

3.03.I Valve

1. Air Valve
2. Air Valve in Manhole

3.04 WATER SUBTYPES

3.04.A Casing

1. Casing

3.04.B Control Valve

1. Air Valve
2. Blow Off
3. Air Release Valve Inside Manhole
4. Air Release Valve Inside Vault
5. Drain Valve in Manhole

- 3.04.C      Fitting
  - 1.      Line Interconnect
  - 2.      Plug
  - 3.      Reducer
  - 4.      Tap Sleeve
  - 5.      Water Logical Node
- 3.04.D      Hydrant
  - 1.      Fire Hydrant
- 3.04.E      Lateral Service
  - 1.      Hydrant Lead
  - 2.      Fire Line
- 3.04.F      Meter
  - 1.      Meter
  - 2.      Unmetered Sprinkler
- 3.04.G      Pressure Reducing Station
  - 1.      Pressure Reducing Station in Vault
- 3.04.H      Pump Pressure Main
  - 1.      Distribution Main
  - 2.      Transmission Main
  - 3.      Well Collection
- 3.04.I      Sampling Station
  - 1.      Test Station
- 3.04.J      System Valve
  - 1.      Butterfly
  - 2.      Butterfly Valve in Manhole
  - 3.      Gate
  - 4.      Hydrant Gate Valve
  - 5.      Valve from Tapping Sleeve

## SECTION 4 – SUBMISSION PROCESS FOR DIGITAL DELIVERABLES

### 4.01 OVERVIEW

- 4.01.A The Houston Public Works Department has committed significant resources and efforts towards implementing a Value-Added Enterprise-Wide GIS Electronic Project Delivery Process. Implementing this new program will have substantial benefits to how Houston Public Works traditionally required contractors to deliver their project information. It will modernize the delivery process and it will reduce the man hours needed to create the project information from the engineering as-built drawings. This will result in having a more up to date and reliable GIS inventory while also making the information available quicker. This new delivery approach has proven to be sound and is likely to show continued growth and success. Please note, all electronic project data deliverables must still adhere to the requirements and standards outlined in the City of Houston’s Infrastructure Design Manual.

### 4.02 METADATA SUBMISSION GUIDELINES

- 4.02.A For each feature class submitted to the City of Houston as part of the electronic deliverable package detailed in this section, up-to-date and accurate metadata should be included. This entails the following:
1. Description of the data
  2. Date processed
  3. Data source, including the coordinate reference system the data is collected in
  4. Methods used to process and load the data
  5. Any notes or additional specific information needed to better understand the data should be included

### 4.03 SUBMISSION PROCESS STEP-BY-STEP

- 4.03.A The process to submit GIS data to the City of Houston involves a few main steps that have been designed to be easy and quick to execute –
1. Navigate to the new GIS Electronic Deliverables URL and create an account or use a City of Houston Microsoft Azure account to login
  2. Download asset specific templates in the form of empty file geodatabase feature classes. Save these templates and load project-specific data into

- them using software like ArcGIS Pro or FME (\*note – the schemas of these templates cannot be modified).
3. Upload the filled-in feature classes to the GIS Electronic Deliverables URL in order to officially submit GIS data to the City of Houston for inclusion in their databases.
  4. Continually log back into the GIS Electronic Deliverables site to check on the status of submissions. Emails will be sent when submissions are passed or rejected due to topological errors, non-conforming schemas, etc.
  5. If a submission fails, fix the issues identified in the rejection email and re-upload the submission to the GIS Electronic Deliverables site, using the Submission ID received from the initial submission.

4.03.B Detailed step-by-step instructions with pictures regarding the submission process for electronic files can be found below:

- Step 1. Open Google Chrome or Microsoft Edge and navigate to the [GIS Electronic Deliverables URL](#)<sup>3</sup>



Figure 1 – GIS Electronic Deliverables Webpage (Step 1)

- Step 2. Click on “Login”.

<sup>3</sup> Full Weblink: <https://hpgisapps.houstontx.gov/eddeliverables>

The screenshot shows the login page for the GIS Electronic Deliverables system. On the left, the Houston Public Works logo is at the top, followed by the text "GIS ELECTRONIC DELIVERABLES". Below this, it asks "HAVE A VALID ACCOUNT?" and "SELECT THE TYPE OF ACCOUNT:" with a dropdown menu. On the right, a blue sidebar contains the text "DON'T HAVE AN ACCOUNT? REGISTER HERE." and a dark blue box with white text stating: "You will receive an email from the City of Houston once your registration has been processed." Or even just "You will receive an email once your registration has been processed." Below this is an orange "REGISTER" button.

Figure 2 – GIS Electronic Deliverables Webpage: Login (Step 2)

Step 3. Click on the drop-down field.

This screenshot shows the same login page as Figure 2, but with the dropdown menu open. A red arrow points to the dropdown field. The menu lists the following options: Contractor, Traffic Contractor, Water Contractor, City Administrator, and City Employee.

Figure 3 – GIS Electronic Deliverables Webpage: Drop-Down Field (Step 3)



Step 4. Select your account type.

The figure consists of two screenshots of the 'HOUSTON PUBLIC WORKS GIS ELECTRONIC DELIVERABLES' webpage. Both screenshots show the same header and a right-hand sidebar with a blue background. The sidebar contains the text 'DON'T HAVE AN ACCOUNT? REGISTER HERE.' and a dark blue box with white text stating: 'You will receive an email from the City of Houston once your registration has been processed.' Or even just 'You will receive an email once your registration has been processed.' Below this is an orange 'REGISTER' button.

The left-hand area of the screenshots shows the sign-in process. The top screenshot shows a dropdown menu for 'City Employee' and a dark blue 'SIGN IN' button. The bottom screenshot shows a dropdown menu for 'Contractor', followed by input fields for 'USERNAME OR EMAIL' and 'PASSWORD', and a dark blue 'SIGN IN' button.

Figure 4 – GIS Electronic Deliverables Webpage: Account Type & Sign In (Step 4 & 5)

Step 5. If you have a City of Houston Azure (Microsoft) Identity sign-in, click the “SIGN IN” button. If you are an ILMS Contractor or have registered directly with Electronic Deliverables, fill out the “USERNAME/EMAIL” and “PASSWORD” fields, then click “SIGN IN”.

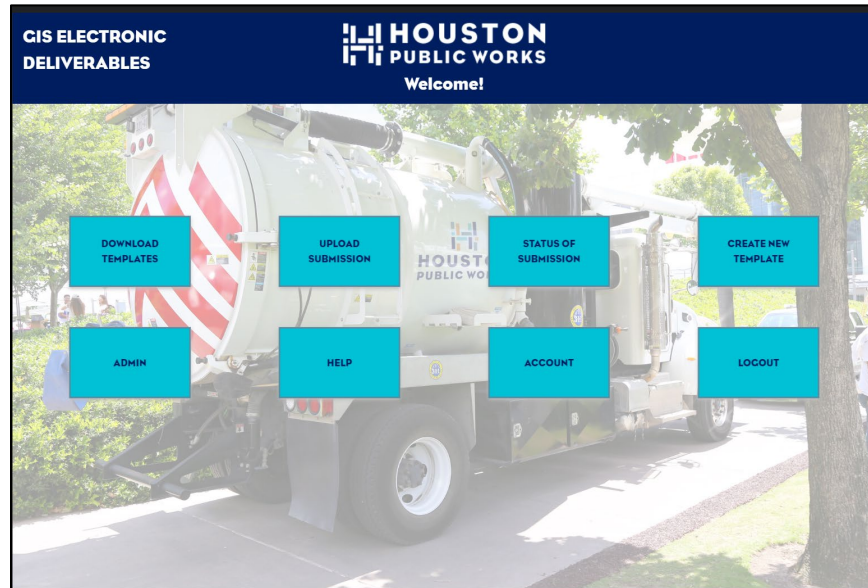


Figure 5 – GIS Electronic Deliverables Webpage: Download Templates (Step 6)

Step 6. Click on “DOWNLOAD TEMPLATES” to find available GIS templates for submitting electronic deliverables.

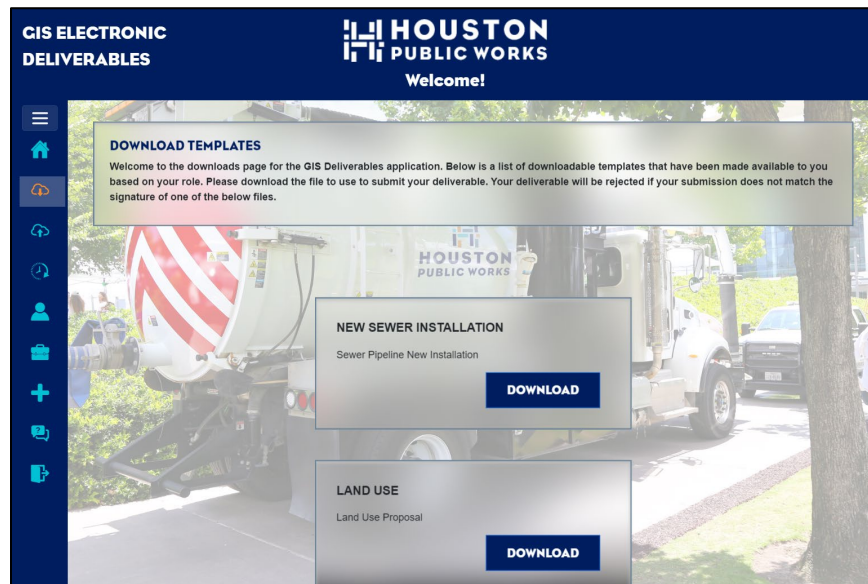




Figure 6 – GIS Electronic Deliverables Webpage: Select Template (Step 7)

Step 7. Select the template for your assigned project and click “DOWNLOAD”

Step 8. Use an external tool like ArcGIS Pro to edit the template file and add your submission data, and save as a new file.

- Step 9. Click the  upload icon, or expand the menu by clicking on the  3 horizontal lines and click “UPLOAD NEW SUBMISSION”

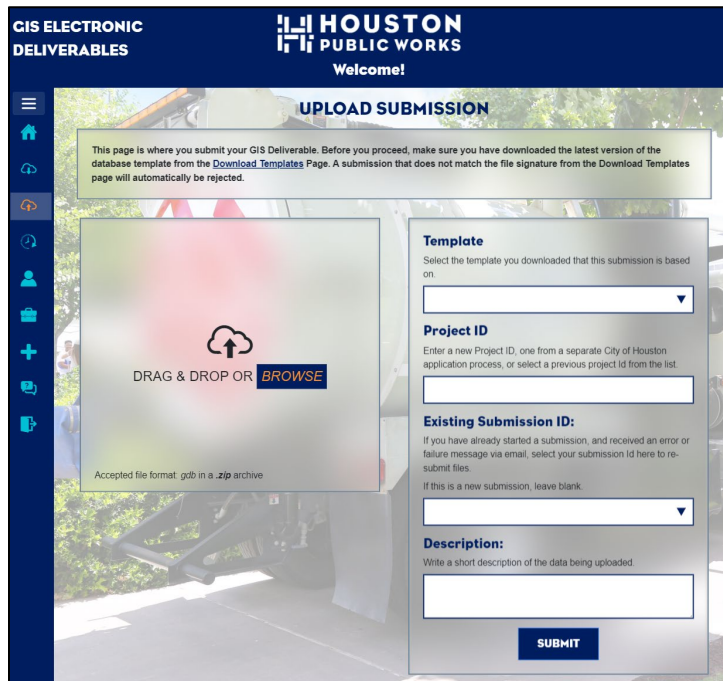


Figure 7 – GIS Electronic Deliverables Webpage: Upload Submission File (Step 10)

- Step 10. Drag in or click “BROWSE” and select your submission file. Your file is immediately scanned for any known viruses. If something is detected, you will get a warning right away that the file is corrupted.
- Step 11. Select the same template you downloaded in the “Template” drop-down.
- Step 12. In “Project ID”, enter the City-assigned Project ID (e.g., iPermits ID).
- Step 13. If you are re-uploading a failed submission, enter the submission ID of your previous submission, otherwise leave blank.
- Step 14. Enter a description that will help city officials identify and recognize your submission.

Step 15. Click “Submit”. You should see the following “THANK YOU” screen.

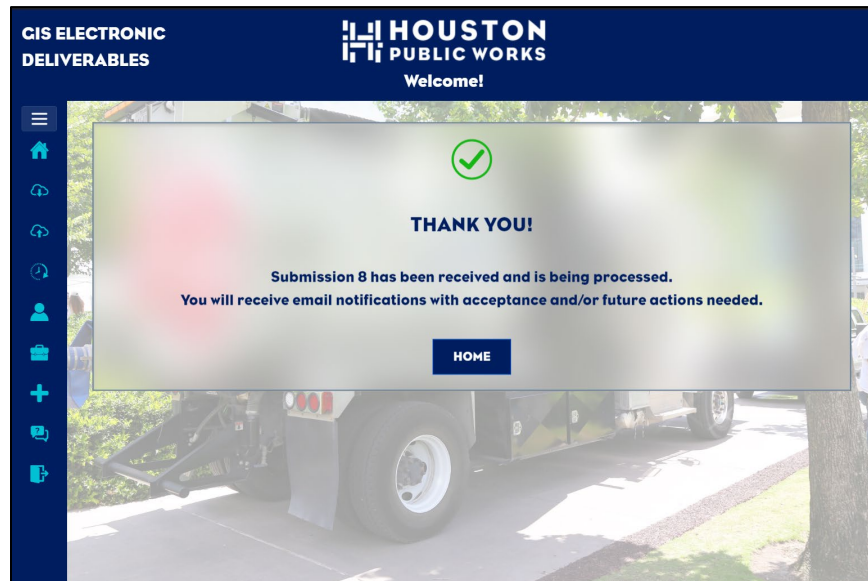



Figure 8 – GIS Electronic Deliverables Webpage: Receipt Confirmation (Step 15)

Step 16. You will receive email updates about the status of your submission. You may also track a submission by clicking on the  icon or expanding the menu and selecting “STATUS OF SUBMISSIONS”.

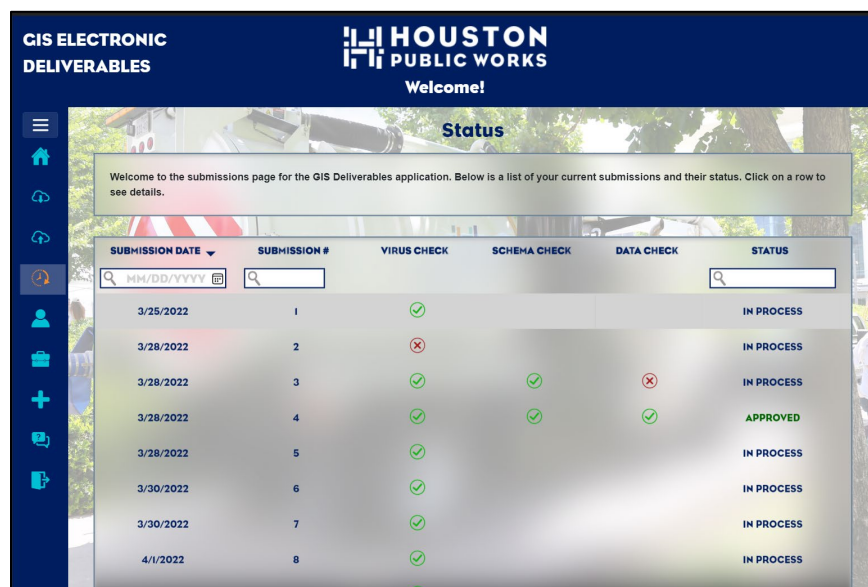


Figure 9 – GIS Electronic Deliverables Webpage: Submission Status (Step 16)

Step 17. Click on a row and scroll down to see the status details.

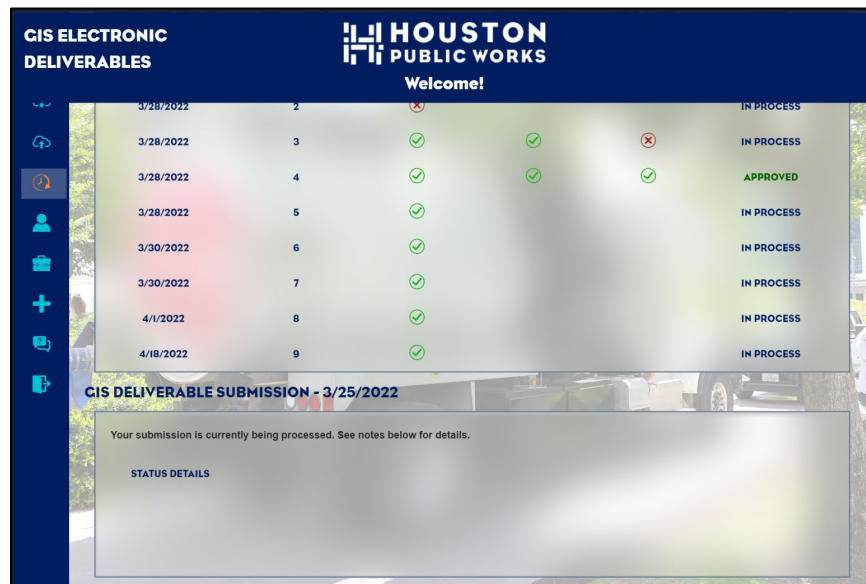


Figure 10 – GIS Electronic Deliverables Webpage: Status Details (Step 17)

Step 18. In addition to the virus scan, files are compared against the appropriate template schema, and evaluated for correct data.

Step 19. When your submission has been fully processed and approved, you will get an email confirmation. If any issues are found, you will also receive an email about the issues and how to correct them. After correcting issues, repeat from step 9 above, being sure to use the same “Submission ID” that you were providing after the original upload.

## APPENDIX A – STORM WATER FEATURE CLASS SPECIFICS

### A.1.01 STORM WATER FEATURE CLASS INFORMATION

A.1.01.A Additional Information for some storm water feature classes is provided in this section.

#### 1. Manhole

- a. The storm manhole feature class has four types: manhole, junction box, stormceptor, and manhole with backflow preventer.

##### (1) Standard Manhole and Junction Box

- (a) Figures 1 and 2 show the two common types in a plan set. Junction Boxes are made from reinforced concrete.

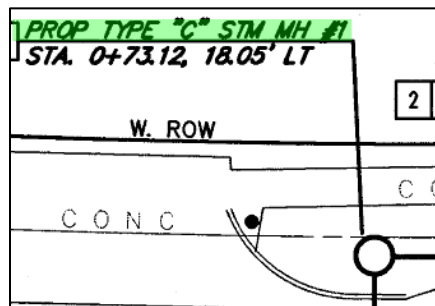


Figure 11 – Manhole

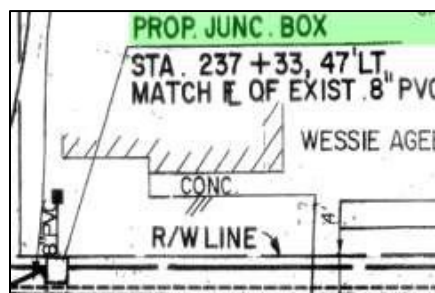


Figure 12 – Junction Box

- (2) Stormceptor is a special kind of manhole utilized for storm water pollution prevention. It would be identified in the plan set.
- (3) Manhole with backflow preventer will have a gate valve, check valve or equivalent device. If the gravity main has a Tideflex valve or similar device this information would still be identified on the upstream manhole as a manhole with backflow preventer.



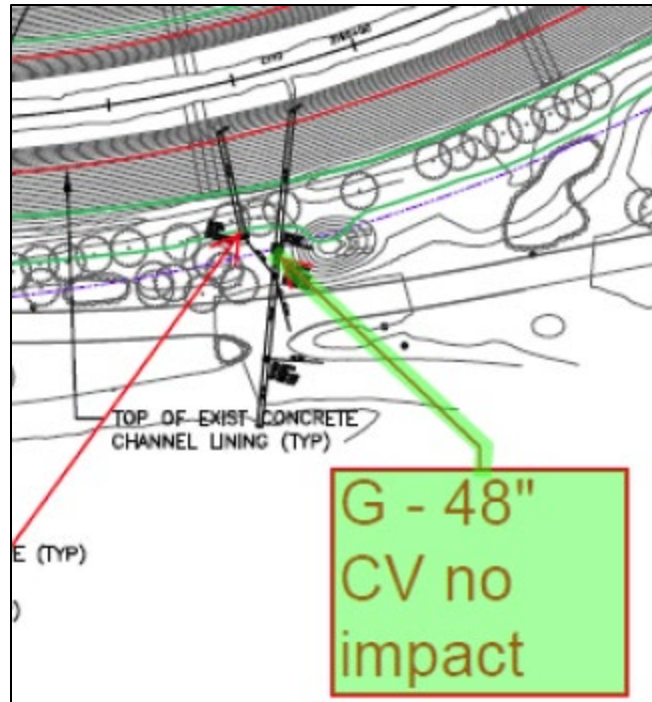


Figure 13 – Check Valve

2. Inlet

- a. The storm inlet feature class has ten types. Nine of the types are considered standard. If any inlet is encountered that is not the standard nine, it will be identified as Other. Also, of note is the C Inlet; C1 is a C with one extension, a C2 is a C with two extensions. Inlets are typically made from concrete.



Figure 14 – C and C1 Inlets



Figure 15 – C2 Inlet

### 3. Network Structure

- a. The network structure feature class has only three types: pump station, detention pond, and virtual junction. Virtual Junctions are utilized to connect features where no other physical structure such as a detention pond or pump station exists and serves to maintain system connectivity.

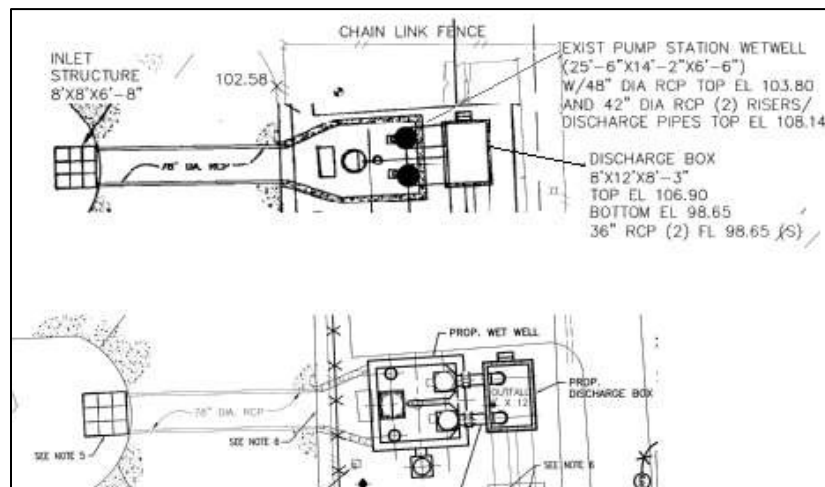


Figure 16 – Pump Station

- b. In Figure 8, two low flow pilot channels are connected to another low flow pilot channel at a detention pond network structure.





Figure 17 – Detention Pond

#### 4. Fitting

- a. The fitting feature class has six types. If any fitting is encountered that is not the standard six it will be identified as Other. Drain nodes are also used when the outfall of the system does not connect to another system.

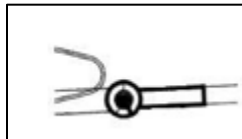


Figure 18 – Drain Node

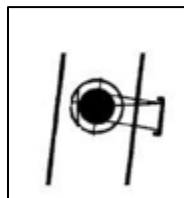


Figure 19 – Plug



Figure 20 – Plug (Aerial)

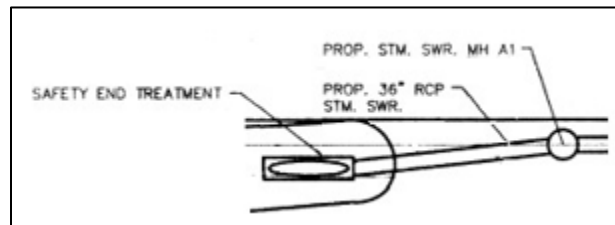


Figure 21 – Safety End Treatment

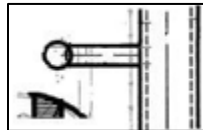


Figure 22 – Storm Interconnect

## 5. Discharge Point

- a. The fitting feature class has three types. Headwalls with Structure and Headwalls without Structure are identified as Outfalls with BFP (Backflow Preventer) and Outfall, respectively. An Outfall may have riprap. Locations where a roadside ditch drains into off-road channel or other storm water feature are identified as Roadside Discharge Point.

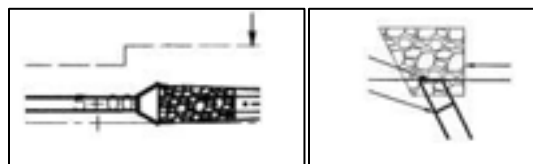


Figure 23 – Outfall with BFP and Outfall

## 6. Storm Sewer (Gravity Main)

- a. The gravity main feature class has seven types. The following figures illustrate each type as found in a plan set.

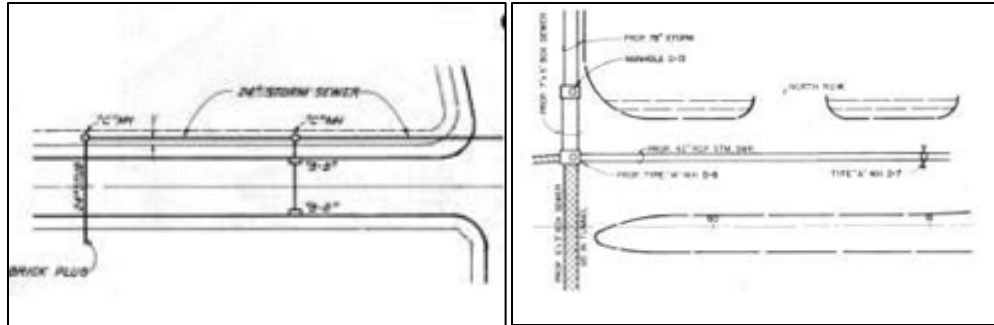


Figure 24 – Collector

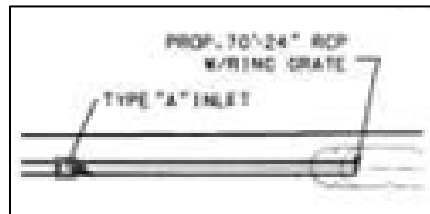


Figure 25 – Culvert

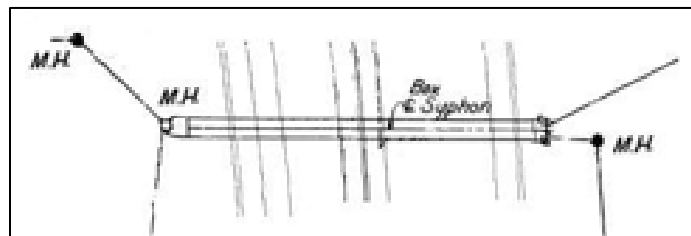


Figure 26 – Siphon

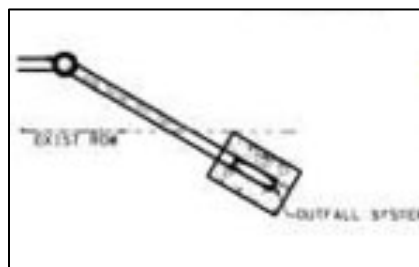


Figure 27 – Outfall

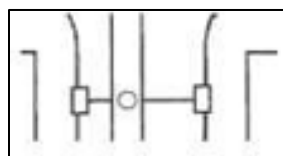


Figure 28 – Inlet Line

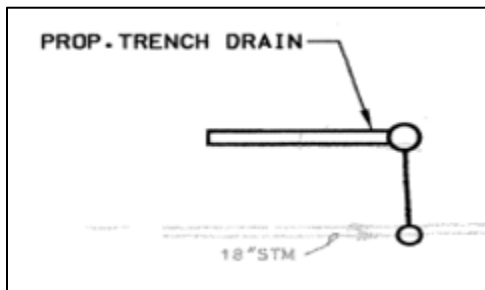


Figure 29 – Trench Drain

## 7. Open Drain

- a. The open drain feature has seven types. The two major types are **roadside ditch** and **off-road channel**. The bridge type is used to maintain connectivity in the system when the off-road ditch passes under a bridge. Storm sewer is used when the off-road ditch enters a storm sewer system which has no Plan Set. It serves as a place holder until additional information is collected over storm sewer. Once additional information is collected the storm sewer is removed from the open drain and added to the gravity main feature class. Swale is used when an off-road channel is converted to a storm sewer, but a very shallow ditch is left to collect water into inlets above the storm sewer. Irrigation canals are not maintained by City of Houston but are identified to maintain connectivity in the system. Any off-road channels which need additional field verification and research are identified as Unknown.



Figure 30 – Roadside Ditch



Figure 31 – Earth and Concrete Off-road Channels

8. Polygon Storm Sewer Feature Class

- a. Detention ponds and storm sewer easements are polygon features which do not participate in the geometric network but are assets tracked by SWO. Easements not maintained by SWO are also digitized for historical information.

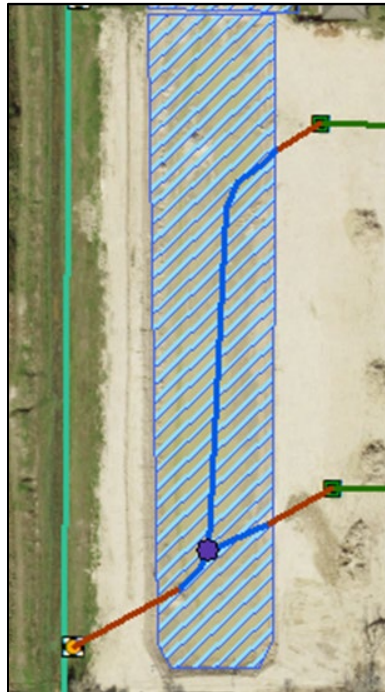


Figure 32 – Detention Pond



9. Abandoned and Removed Features

- a. When a feature is abandoned or removed (will be stated in Plan Set); the feature is copied and pasted into the appropriate abandoned feature class and given the appropriate status in the ABANDONSTATUS Field. For example, when a manhole is found in gravity line which requires splitting the line, the original line is removed (it is moved to the swAbandonedGravityMain with the status removed), then two new lines are created.

10. Underpass

- a. Underpasses are point features that do not participate in the geometric network but are critical assets tracked by SWO. The underpass fields are used to track various flood warning devices. Also, the number and type of crossings at an underpass as tracked.



Figure 33 – Underpass with Three Railroad Crossings