



UTSA.Engineering

Leon Valley Baptist Church Recreation Center



Team members



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Project Overview

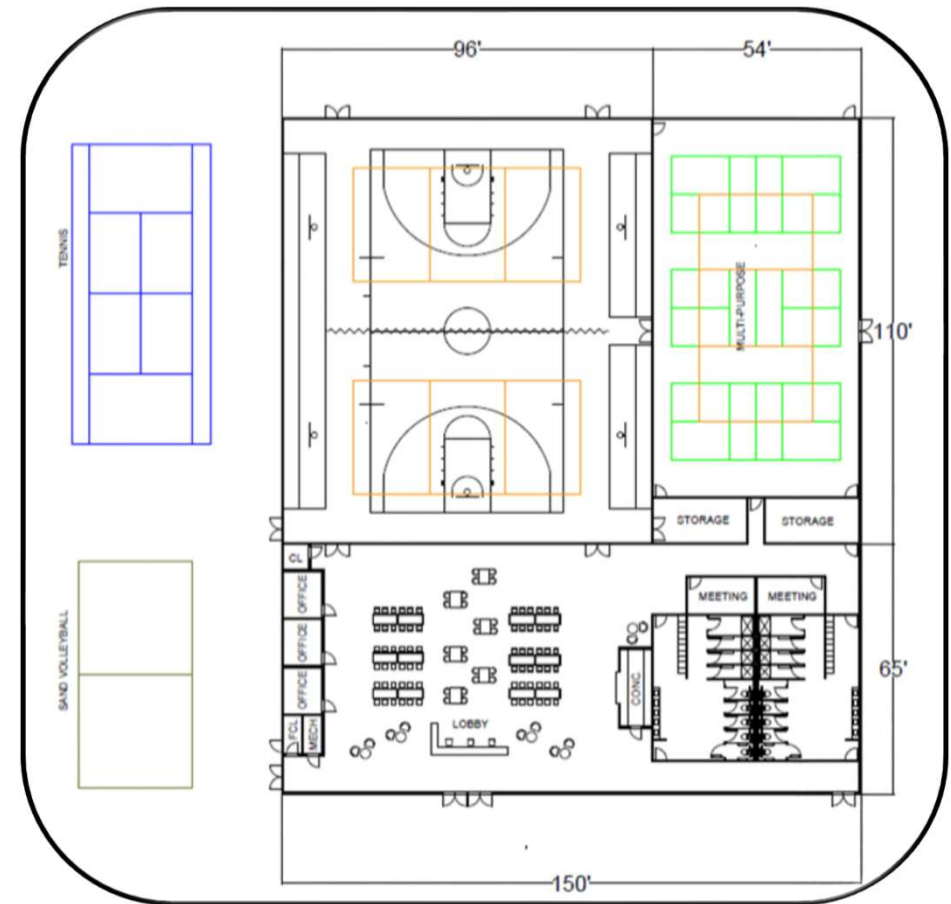


Indoor Amenities:

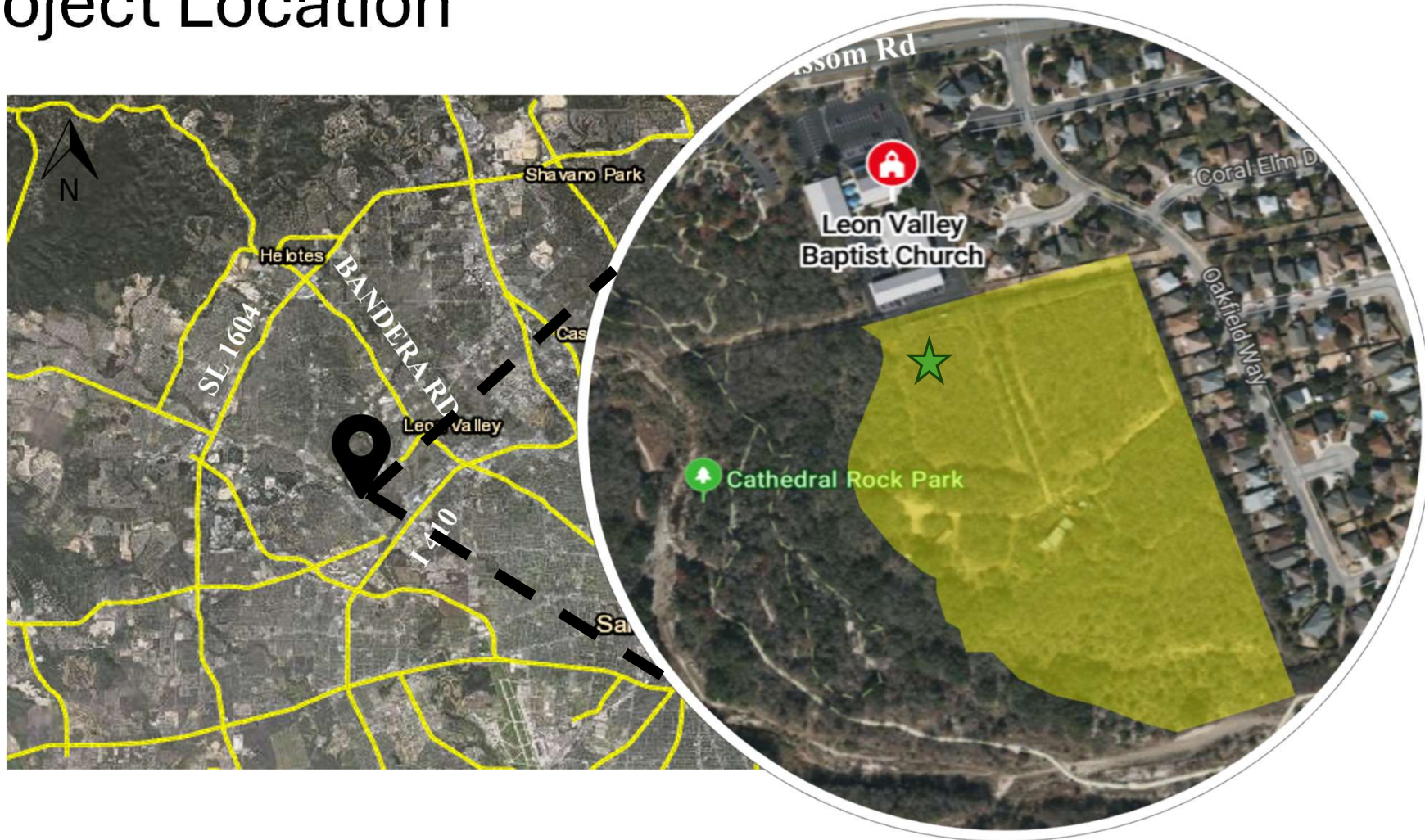
- Indoor Basketball Court
- Pickleball Court
- Multipurpose Rooms
- Bathrooms/Showers
- Lobby & Storage Areas
- ADA Accessibility

Outdoor Amenities:

- Tennis Court
- Sand Volleyball Pit
- Ample Parking

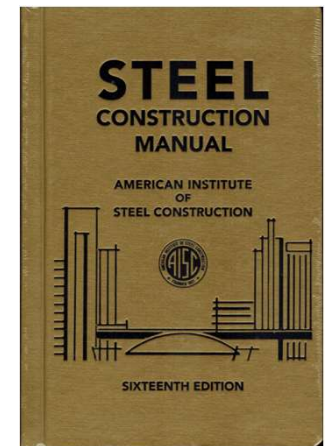
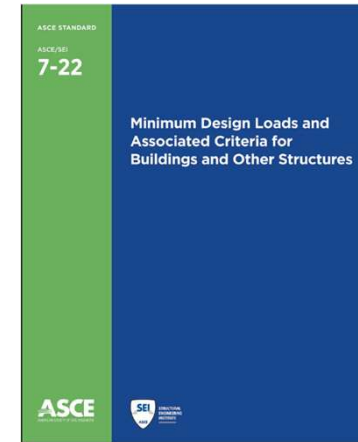
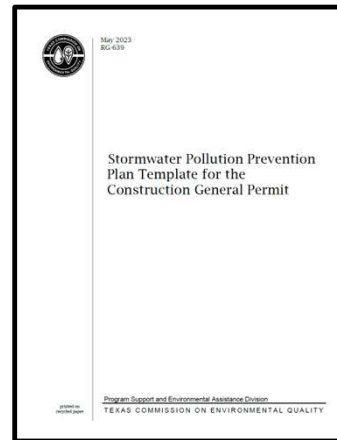
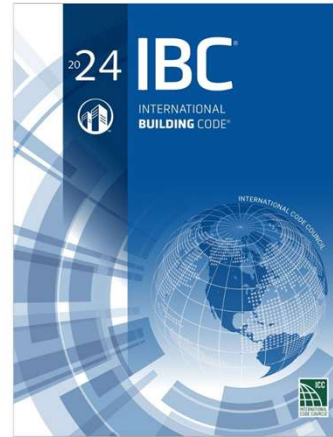


Project Location



Applicable Codes

- COSA Unified Development Code (UDC)
- 2024 International Building Code (IBC)
- ASCE 7-22
- AISC 360-16
- ACI 318-18
- TMS 402
- COSA Storm Water Design Criteria Manual, June 2025
- 2018 International Fire Code
- Texas Accessibility Standards (TAS)
- TCEQ
- FWS
- TPWD

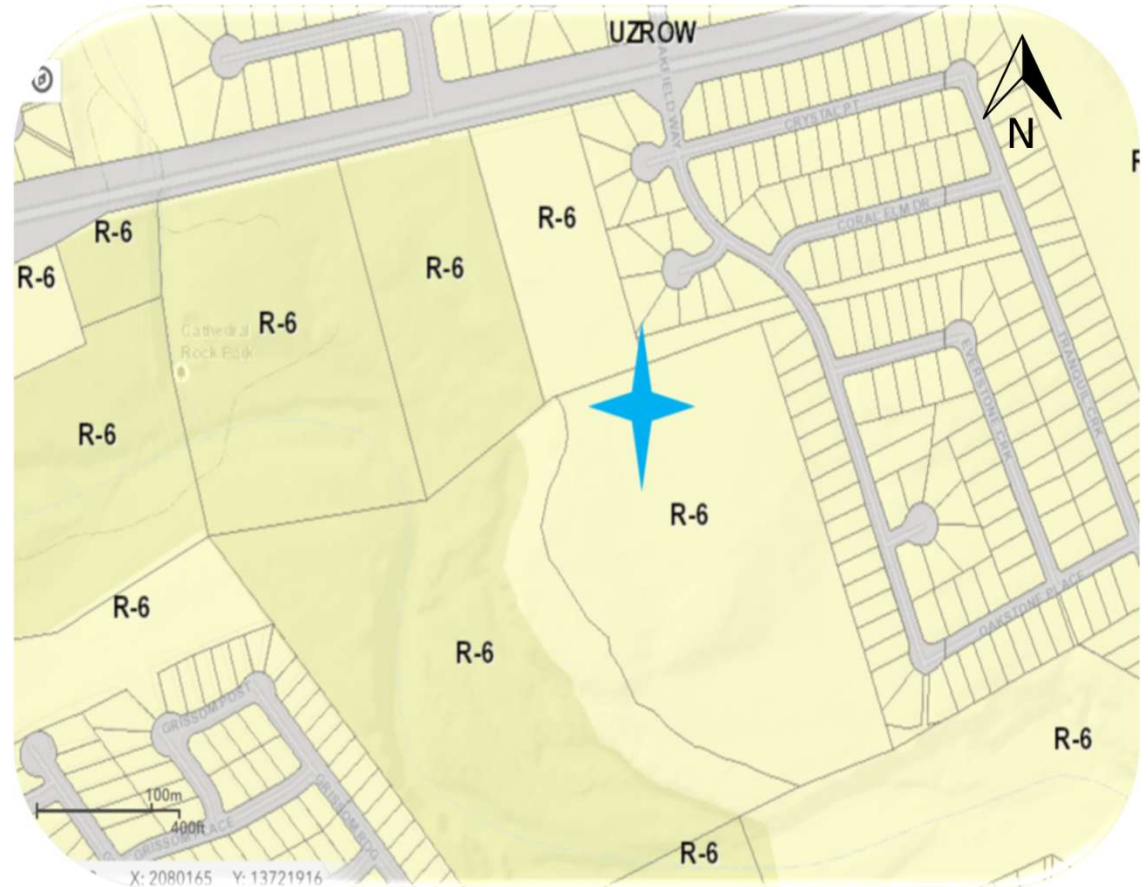


-
- Driveways
- EXISTING DRIVEWAY
- GRISSOM RD
- LEON VALLEY BAPTIST CHURCH
- PROPOSED WEST DITCH
- PROPOSED FIRELANE
- PROPOSED EAST DITCH
- PROPOSED OUTDOOR SAND VOLLEYBALL COURT
- PROPOSED RECREATIONAL FACILITY
- PROPOSED OUTDOOR TENNIS COURT
- N



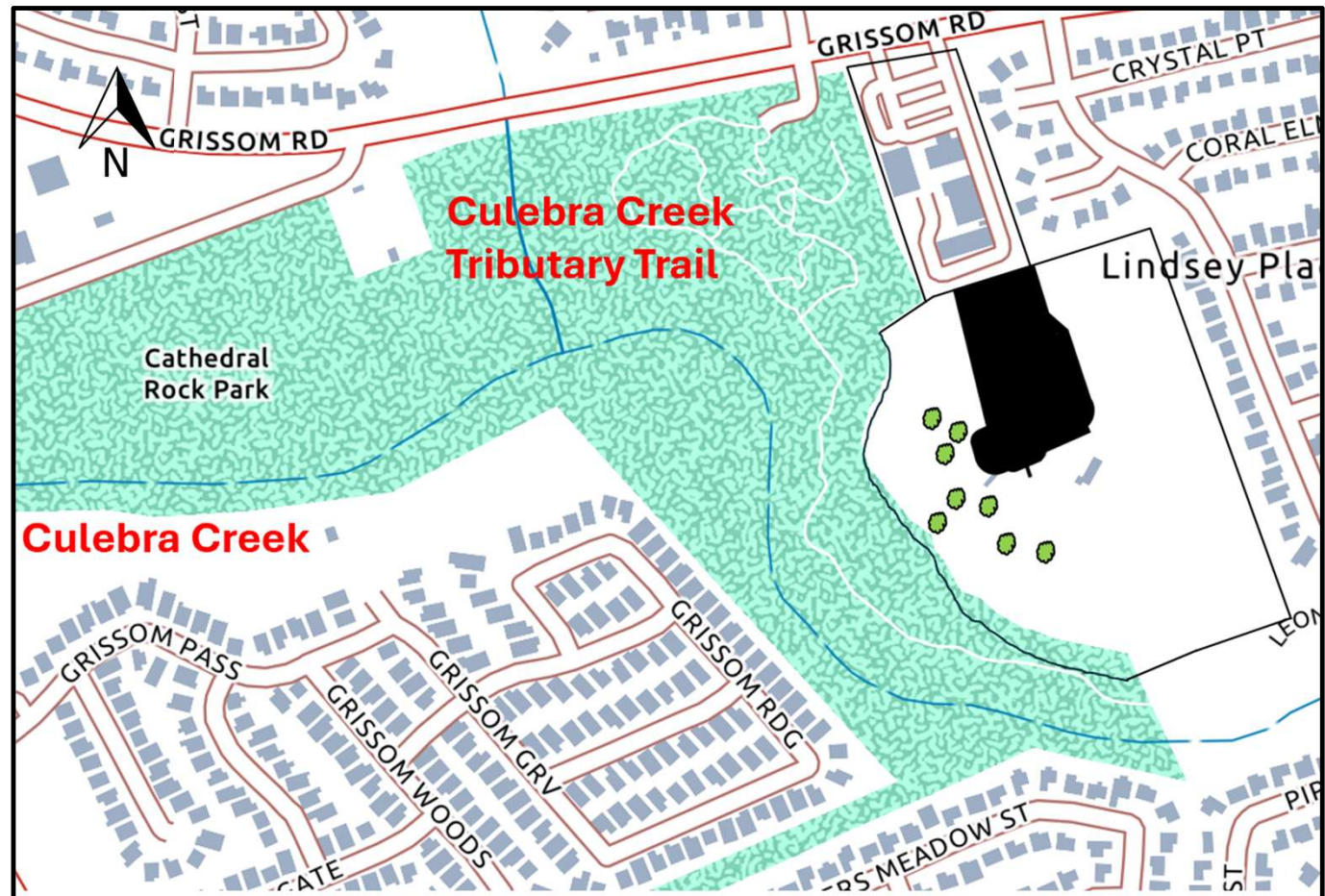
Land Development

- Zoned R-6
- Surrounded by residential & Mixed-residential
- UDC SEC-35-311
- Major Plat/ Church owned property



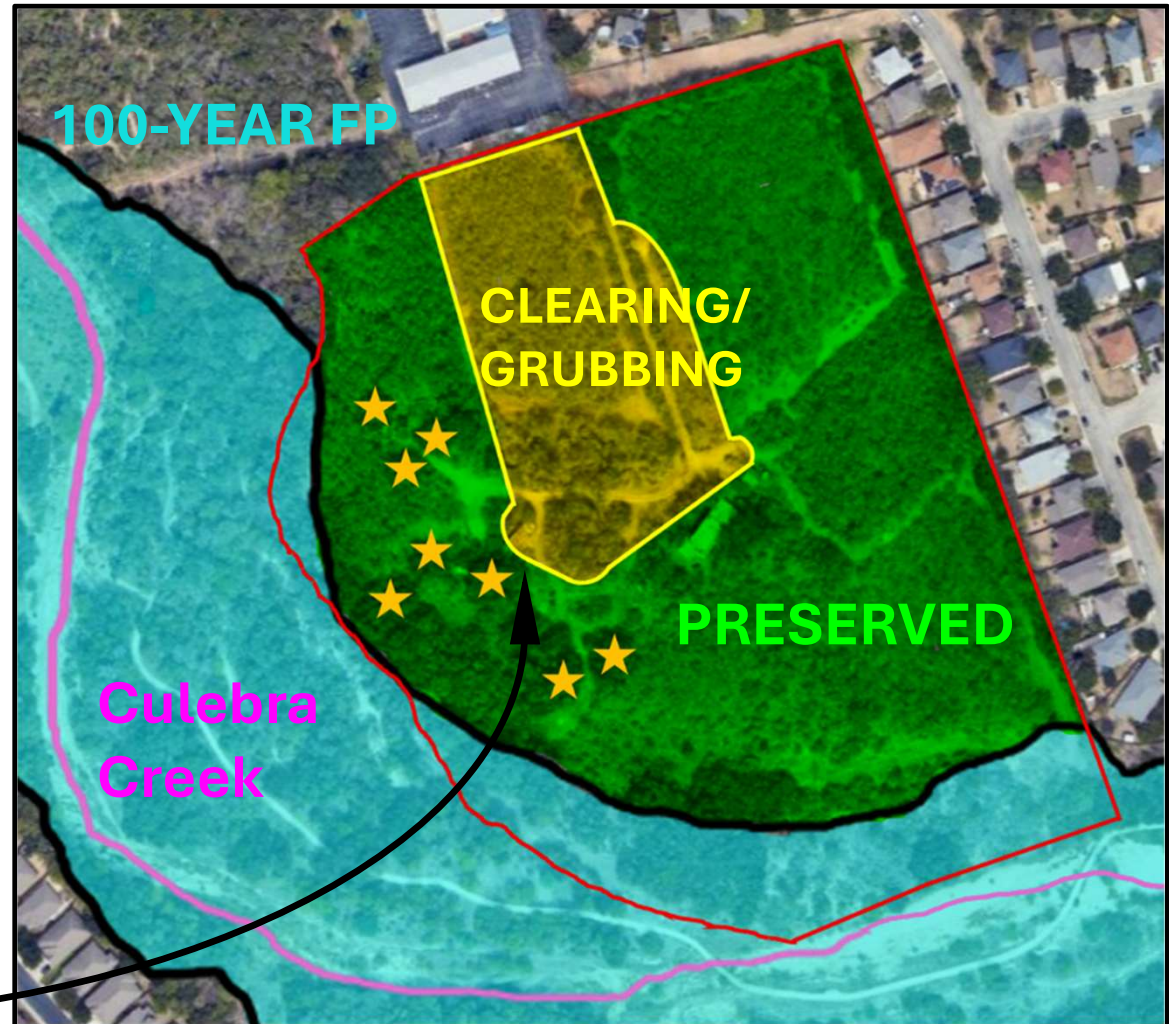
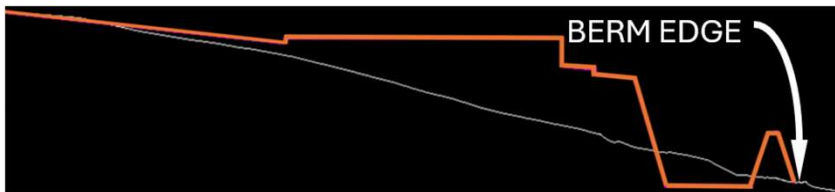
Environmental

- NPS / National Environmental Protection Act 1970
- Clean Water Act 1972 Section 404
- 1 acre +< TCEQ / COSA- General Permit to Discharge under the Texas Pollutant Discharge Elimination System
- SW3P



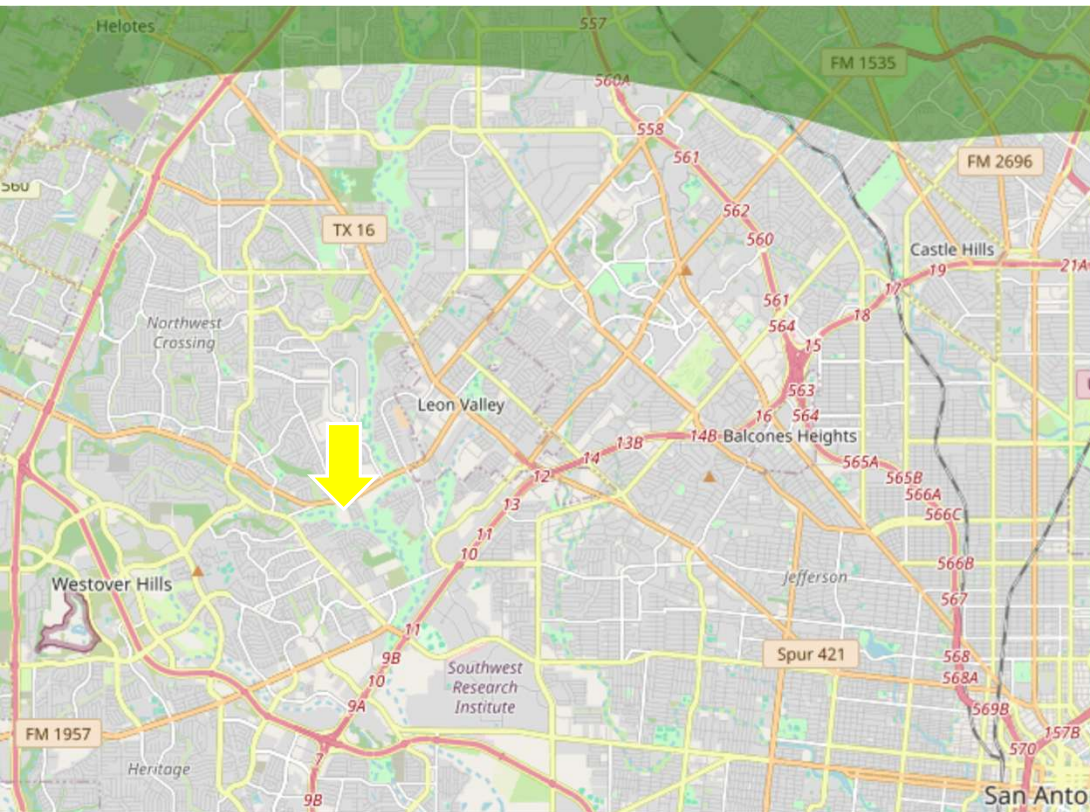
Tree Protection Plan

- TREE REMOVAL PERMIT APPLICATION/STAND DELINEATION
- NON- FLOODPLAIN AREA REQ.= 38%
PROVIDED = 82.5%
- FLOOD PLAIN AREA REQ. = 80%
PROVIDED = 100%
- HERITAGE REQ. = 100%
PROVIDED = 100% (8 TREES)
- NO MITIGATION TREES NECESSARY
- ROOT PROTECTION ZONE: 4' OFFSET
ORANGE FENCING 34' PROVIDED

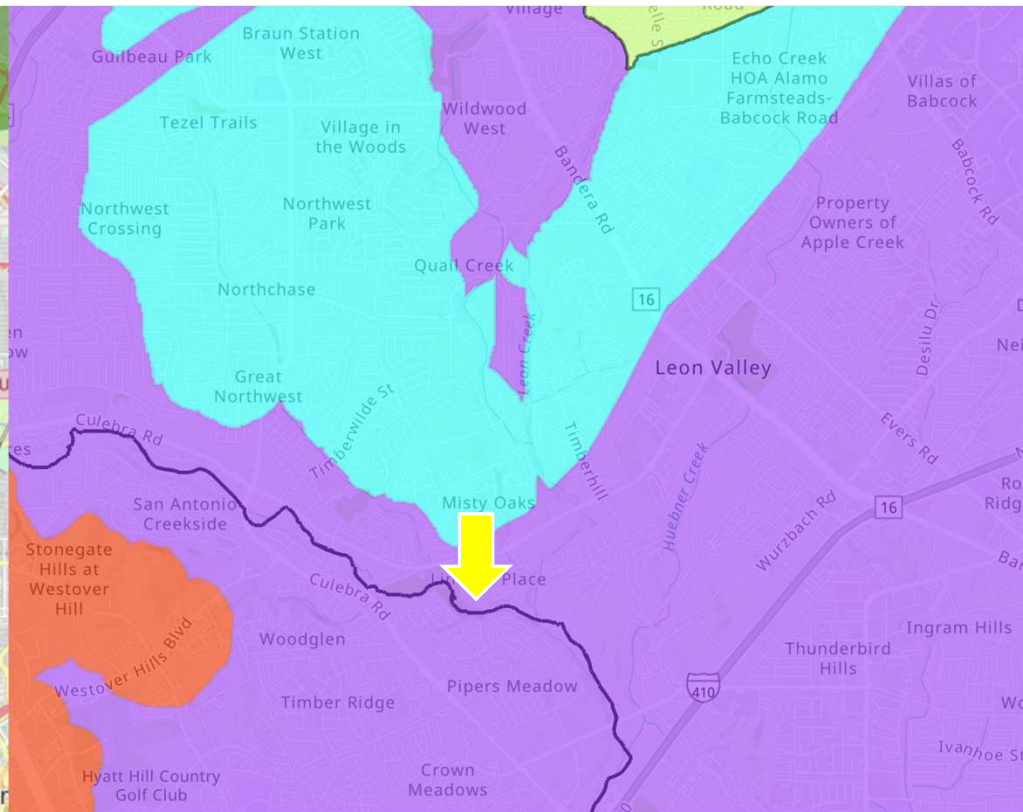


Habitat Compliance Form

NOT WITHIN CRITICAL OR LIKELY HABITAT OF
GOLDEN CHEEKED WARBLER PER TPWD

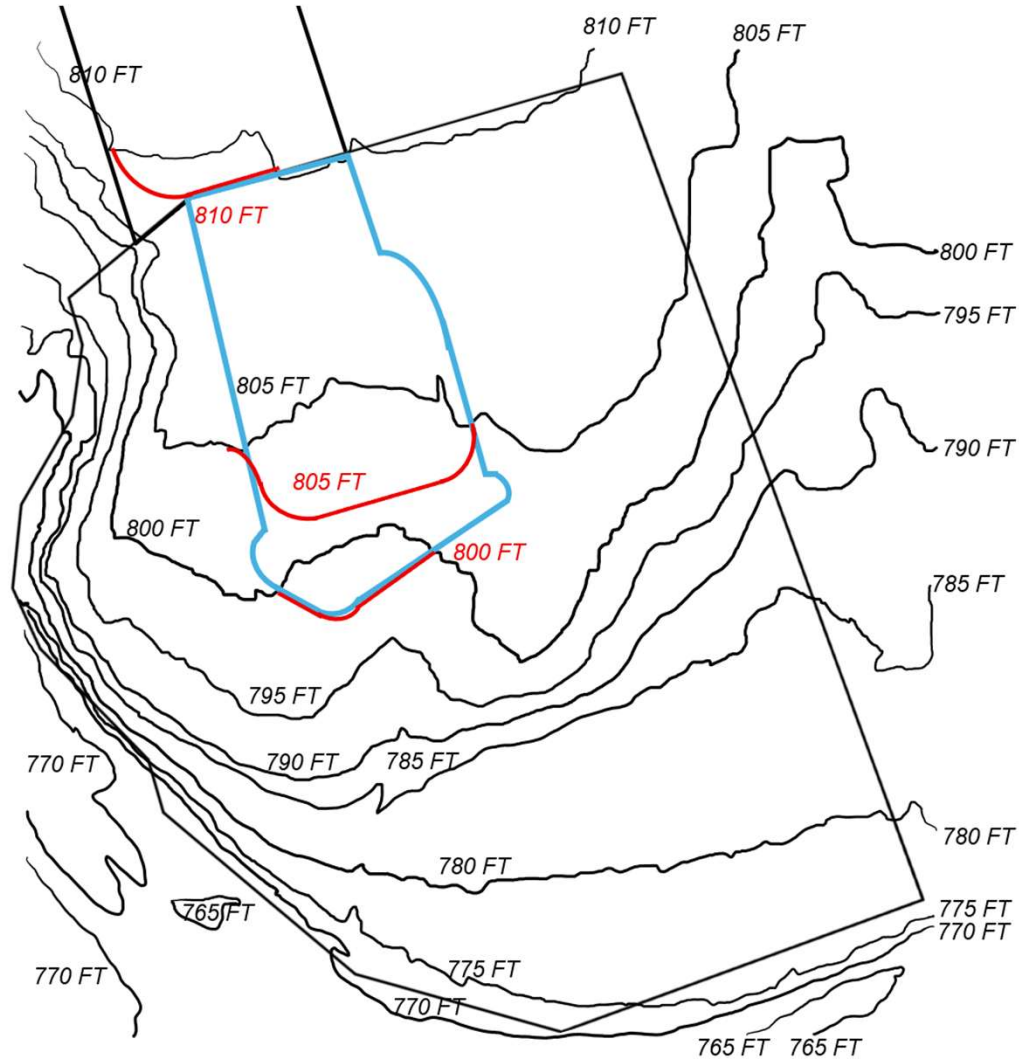


NOT WITHIN KARST ZONES 1 OR 2
PER FWS (ZONE 3B)



Grading

- EXCAVATION: 4453 CY
- FILL: 7891 CY
- 2% PAVEMENT SLOPES
- FLOOR ELEV. = 808.3 FT



Geotechnical

Boring Location Map

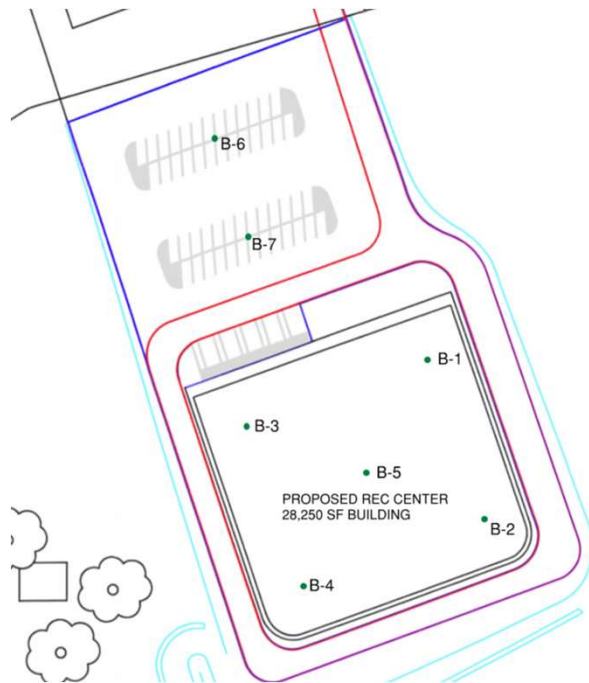


Table 3

Soil Type	Moisture Content Range (%)	Percent Passing a #200 Sieve	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index
Sandy Clay/Clayey Sand	5 to 19	--	48 to 55	20 to 24	27 to 31
Fat Clay	9 to 11	--	55 to 97	21 to 33	34 to 67
Lean Clay/Chalk	3 to 18	98	45 to 60	16 to 23	25 to 42

0-3 FAT CLAY–Stiff to very stiff

Plasticity Index:

Boring 1-7 34 to 67

3-6 WHITE CHALK– Stiff to very stiff

Plasticity Index:

Boring 1-7 25 to 42

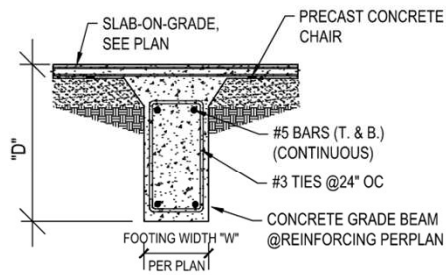
6-15 LEAN CLAY – Very stiff to hard

Plasticity Index:

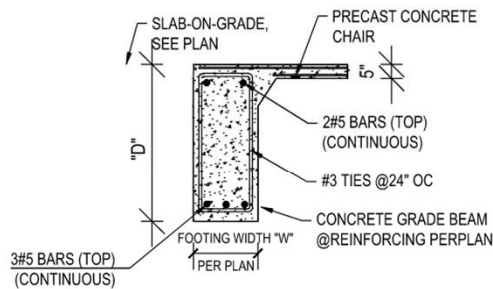
Boring 1-7 25 to 42

STYRON REYES GEOTECHNICAL, LLC 16100 Henderson Pass #160 San Antonio, Texas 78232 Telephone: 210.857.9377		BORING NUMBER B-03 PAGE 1 OF 1										
CLIENT		PROJECT NAME										
PROJECT NUMBER		PROJECT LOCATION										
DATE STARTED 8/13/25		COMPLETED 8/13/25		GROUND ELEVATION		HOLE SIZE 5"						
DRILLING CONTRACTOR BEA		GROUND WATER LEVELS:										
DRILLING METHOD Dry Auger		AT TIME OF DRILLING										
LOGGED BY D. Rocha		CHECKED BY R. Burge		AT END OF DRILLING								
NOTES Groundwater not encountered during drilling operations.		AFTER DRILLING										
DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (ROD)	BLOW COUNTS (N VALUE)	POCKET PEN. (MPa)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	FINES CONTENT (%)
0		Stratum I - Stiff to very stiff, dark grayish brown FAT CLAY (CH)	SS 1		8-6-8 (14)			19	97	30	67	
		Stratum II - Very stiff to hard, white CHALK	SS 2		10-10-12 (22)							
			SS 3		11-14-22 (36)			13	49	23	26	
		Stratum III - Very stiff to hard, tan LEAN CLAY (CL)										
		- with calcareous deposits from 6 to 10 feet	SS 4		11-22-24 (46)							
		- becomes tan and light gray in color below 8 feet										
			SS 5		8-13-16 (29)			18				
		- becomes marly below 12 feet										
			SS 6		17-37-50/3"			12	49	19	30	
15		Bottom of hole at 15.0 feet.										

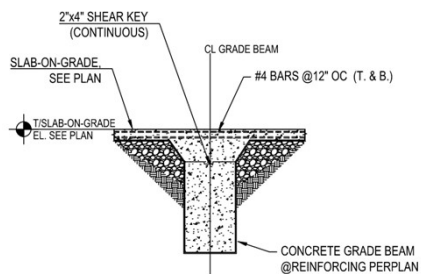
Foundation



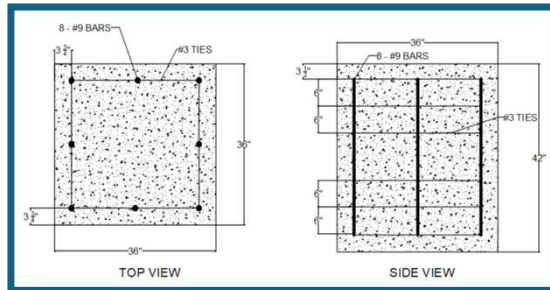
TYP. INTERIOR BEAM DETAIL



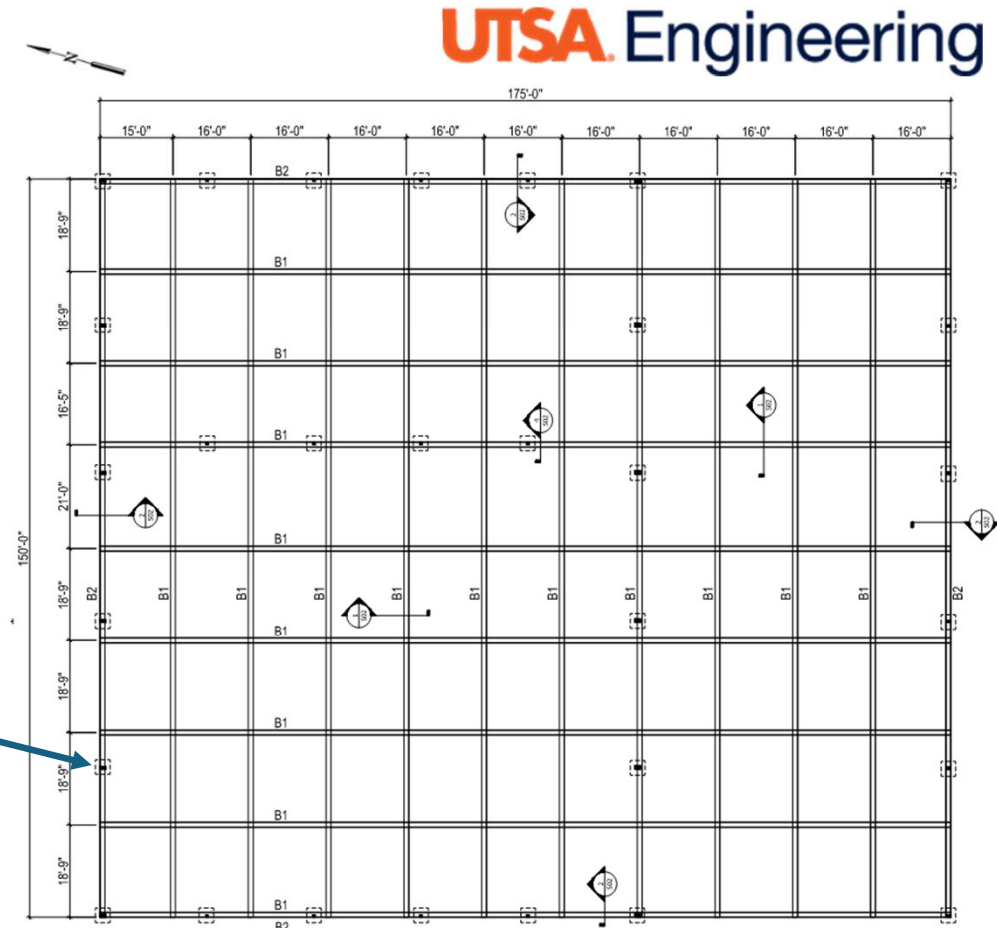
TYP. EXTERIOR BEAM DETAIL



TYP. SLAB-ON-GRADE AT BEAM DETAIL



TYP. PEDESTAL DETAIL



Interior beams 12 in × 24 in.
Each beam includes 4-#5 bars
(2 bottom + 2 top) continuous
Shear reinforcement uses #3 ties @ 24" oc

Exterior beams 12 in × 24 in
Reinforced with 5-#5 bars (2 top + 3 bottom)
continuous
Shear reinforcement consists of #3 ties @ 24" oc

Slab on grade
Slab thickness 5 in
Reinforced with #4 @ 12" oc each direction

Water Resources

Existing and Proposed Site Conditions

Per COSA Storm Water Design Criteria Manual, June 2025

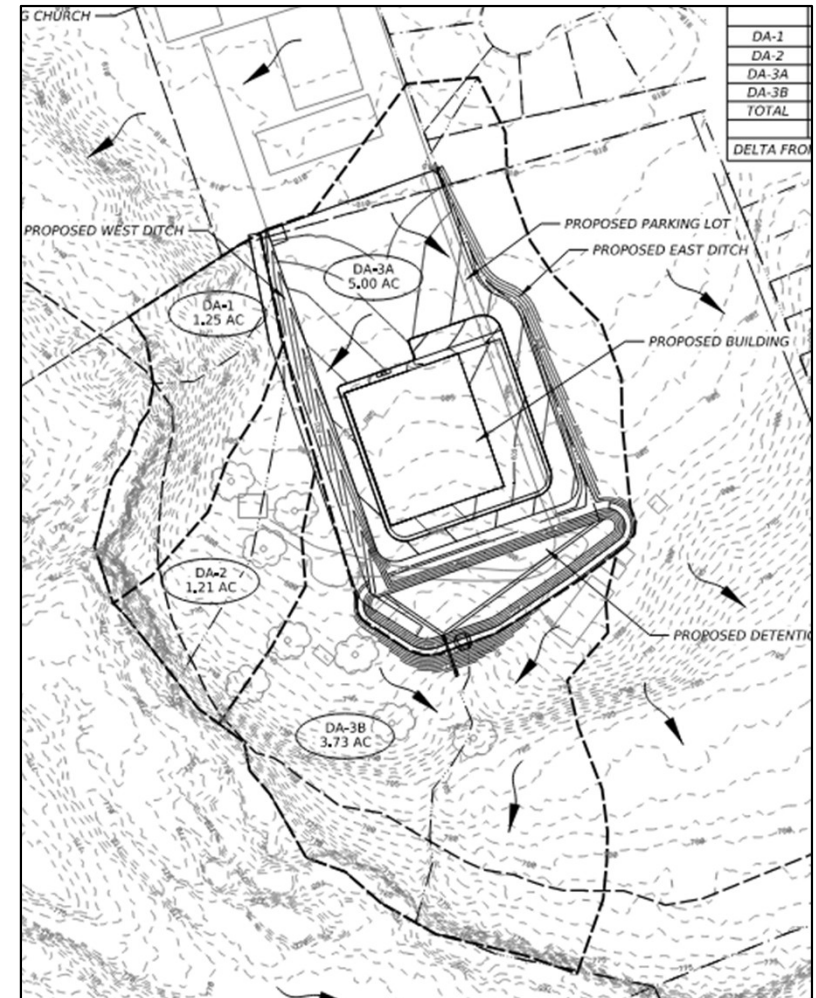
Analyzed 5 yr, 25 yr and 100 yr Storm Intensities

Existing SCS Unit Hydrograph Peak Flow Calculations

Subbasin ID	Area		Base CN	Impervious Cover %	Tc	Q1	Q5	Q25	Q100
	(AC)	(SQMI)			(MIN)	(CFS)	(CFS)	(CFS)	(CFS)
DA-1	1.4	0.00214	76	-	8.4	0.9	2.7	5.4	8.20
DA-2	1.2	0.00191	76	-	7.7	0.8	2.4	5.0	7.50
DA-3A	4.9	0.00759	76	5	11.9	3.6	9.2	17.9	26.50
DA-3B	3.7	0.00583	76	-	5.8	2.7	8.1	16.5	24.90
TOTAL	11.2					8.0	22.4	44.8	67.10

Proposed SCS Unit Hydrograph Peak Flow Calculations

Subbasin ID	Area		Base CN	Impervious Cover %	Tc	Q1	Q5	Q25	Q100
	(AC)	(SQMI)			(MIN)	(CFS)	(CFS)	(CFS)	(CFS)
DA-1	1.3	0.00195	76	-	8.4	0.8	2.4	4.9	7.50
DA-2	1.2	0.00189	76	-	7.7	0.8	2.4	4.9	7.40
DA-3A	5.0	0.00781	80	55	8.1	13.8	22.7	34.5	45.30
DA-3B	3.7	0.00583	76	-	5.8	2.6	7.8	15.9	24.10
TOTAL	11.2					18.0	35.3	60.2	84.30
DELTA FROM EXISTING						10.0	12.9	15.4	17.20



Water Resources

Proposed Detention Pond Plan

Goal: Detain excess runoff from additional impervious pavement.

Pond Top: 801.00'

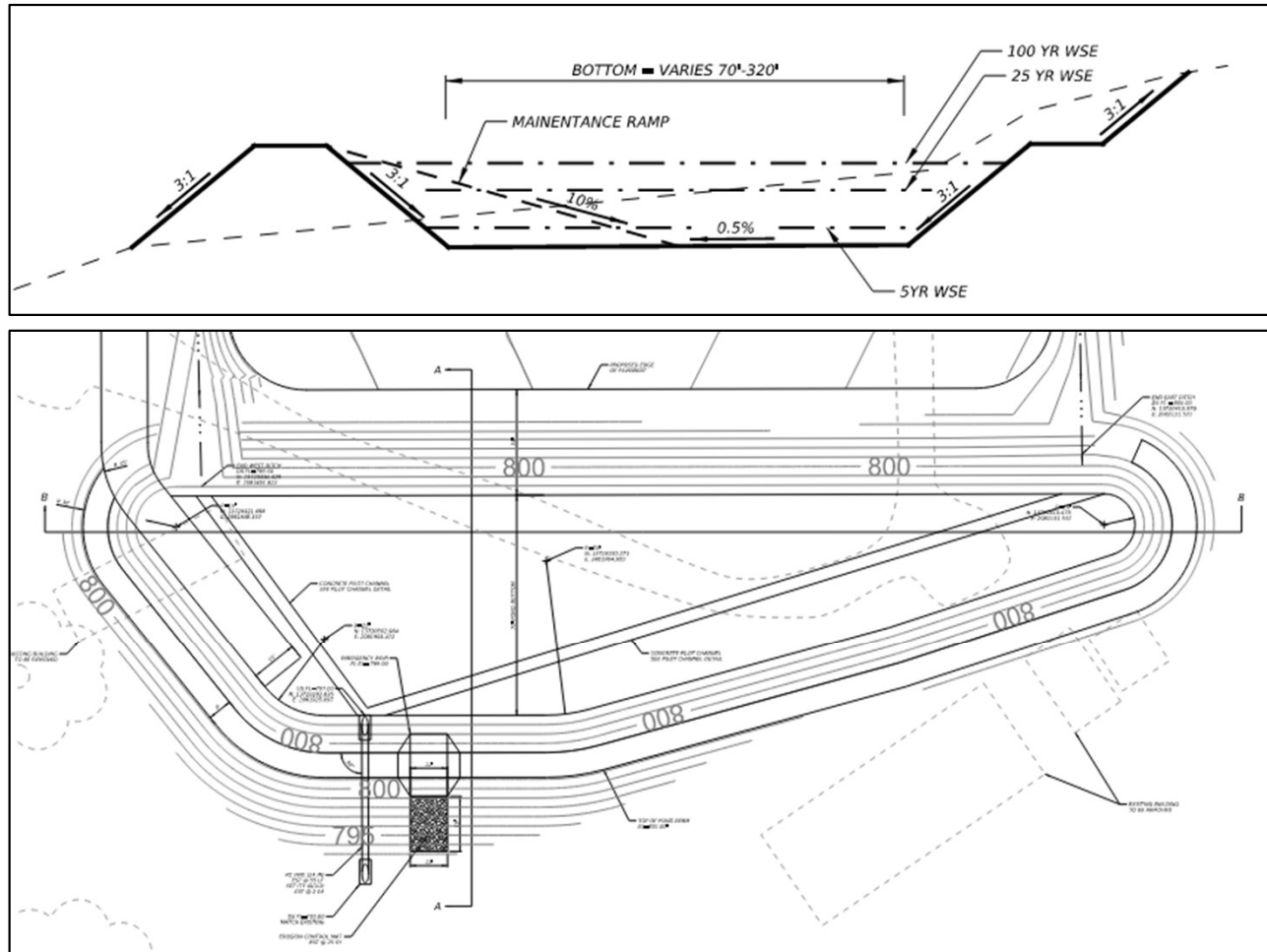
Pond Bottom: 797.00'

Emergency Weir: 800.00'

Freeboard: 0.90'

Outlet: 18" RCP

Receiving Ditches analyzed and sized using Rational Method and Flow Master. Consisting of a grass-lined section and 6:1 sides.



Water Resources

Proposed Detention Pond
Hydrology and Hydraulics

Designed using HEC-HMS 4.12.

Hydrograph Shown is
100 yr storm at 6-hour duration

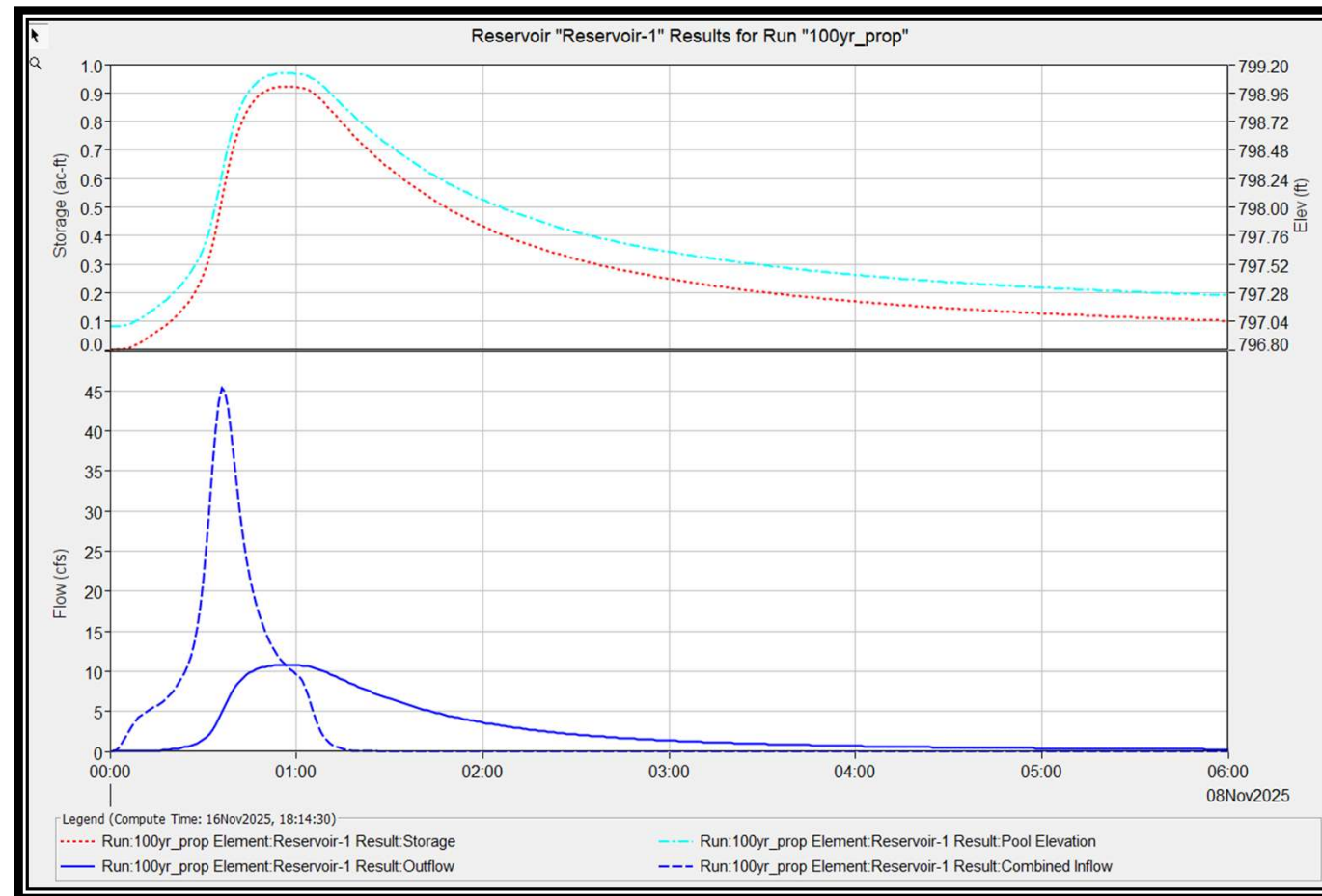
Peak Inflow of 45.3 cfs at 36 mins.

Peak Pond Water Surface
Elevation 799.10' at 55 mins.

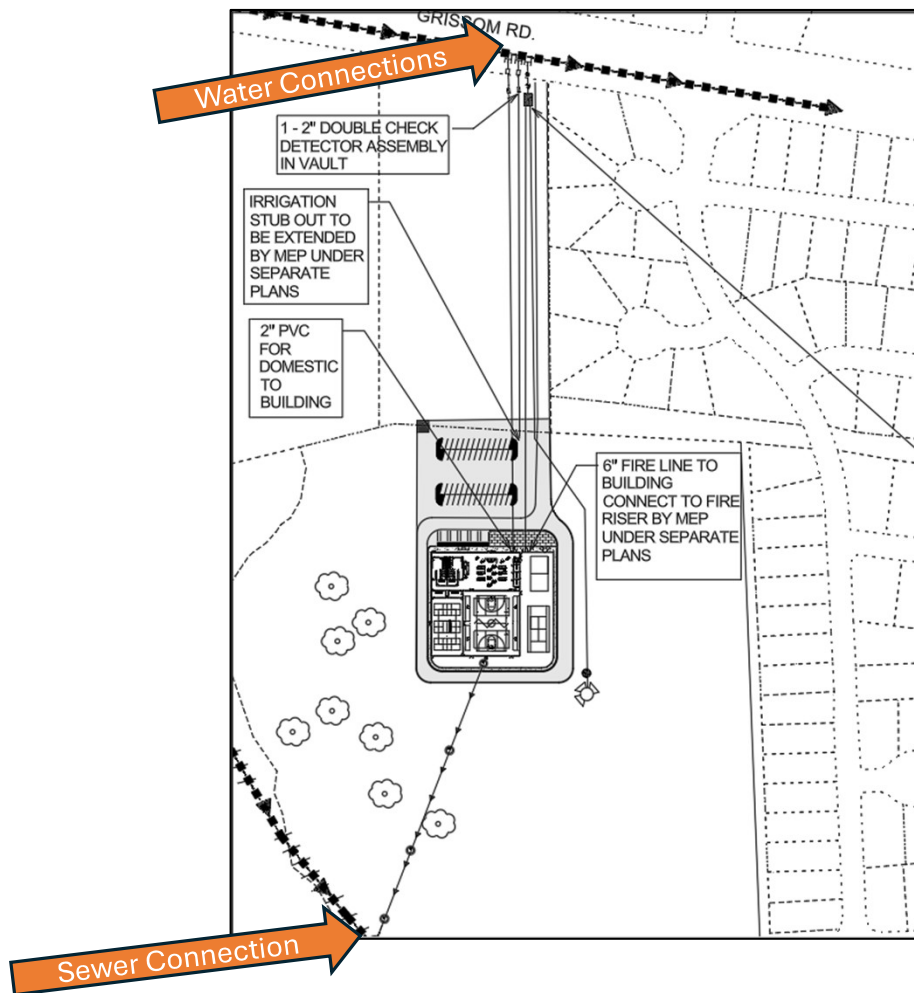
POND ELEVATION/STORAGE SUMMARY

Elevation (FT)	Incremental Volume (CF)	Cumulative Volume (CF)	Acre Feet	Surface Area (SF)	Acre
797.00	0.77	0.77	0.00	16632.43	0.38
797.50	8576.69	8577.46	0.20	17679.55	0.41
798.00	9104.33	17681.79	0.41	18742.08	0.43
798.50	9639.00	27320.79	0.63	19818.56	0.45
799.00	10180.76	37501.55	0.86	20909.07	0.48
799.50	10729.57	48231.12	1.11	22013.78	0.51
800.00	11285.29	59516.41	1.37	23132.56	0.53
800.50	11848.45	71364.86	1.64	24265.58	0.56
801.00	12418.55	83783.41	1.92	25412.73	0.58

Storm	WSE (FT)	Peak Inflow (CFS)	Peak Discharge (CFS)
5 YR	798.20	22.70	4.70
25 YR	798.70	34.50	8.00
100 YR	799.10	45.30	10.80



Utilities



Utility Services & Sizing:

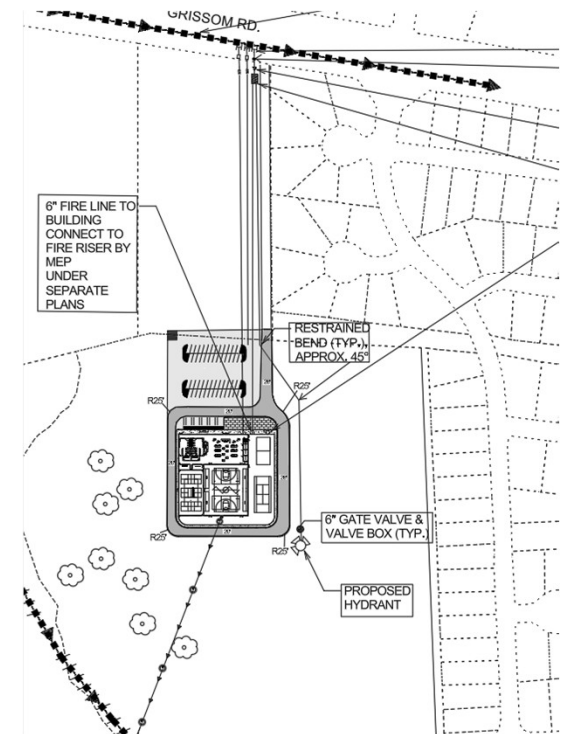
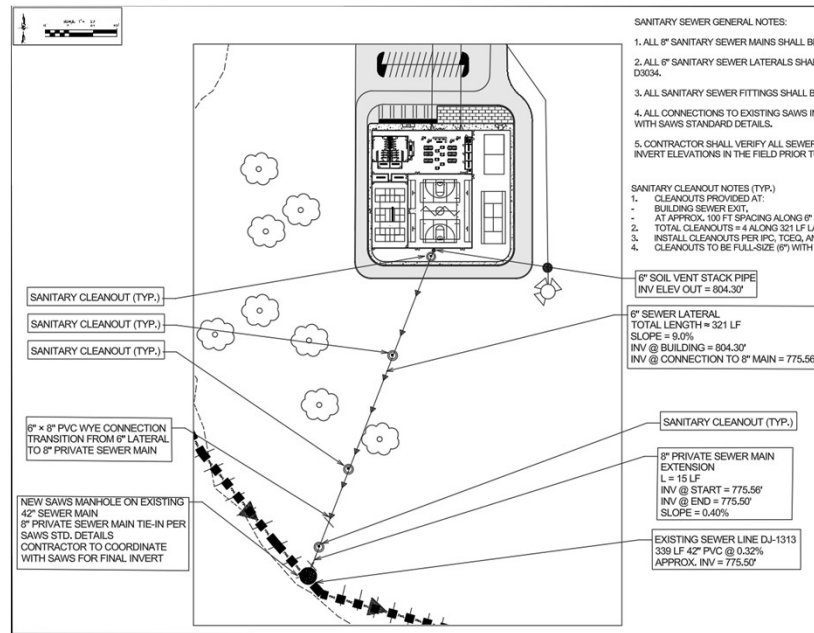
- 2" domestic water line ($Q = 57\text{gpm}$)
- 2" irrigation water line ($Q = 60\text{gpm}$)
- 6" fire line to fire riser room for sprinklers & on-site hydrant
- 6" sanitary sewer lateral (40 EDUs)
- Electrical service underground to the building

Irrigation design flow of 60 gpm is based on commercial rotor zone sizing, where 18-24 heads operating at 2-3gpm per head (Irrigation Association/Manufacturer Specs)

Domestic 2" line sized using IPC Table E103.3(2)&(3) ($152\text{ FU} = 57\text{gpm}$)

6" fire line required per IFC/NFPA for 1500 gpm fire flow for 2 hours

Utilities



Sanitary flow based on TCEQ chapter 217:
(15 gpd/person)
Occupancy based on IBC table 1004.5
(50 SF/person)

Water & Sewer Main Connections:

- Connect to the **existing 8-in SAWS water main** on Grissom Road to serve the 2" domestic, 2" irrigation, and 6" fire line (≈670 ft to the building).
- Install **15 ft of new 8-in private sewer main** to tie the building's 6" lateral into the existing 42" SAWS sewer main.

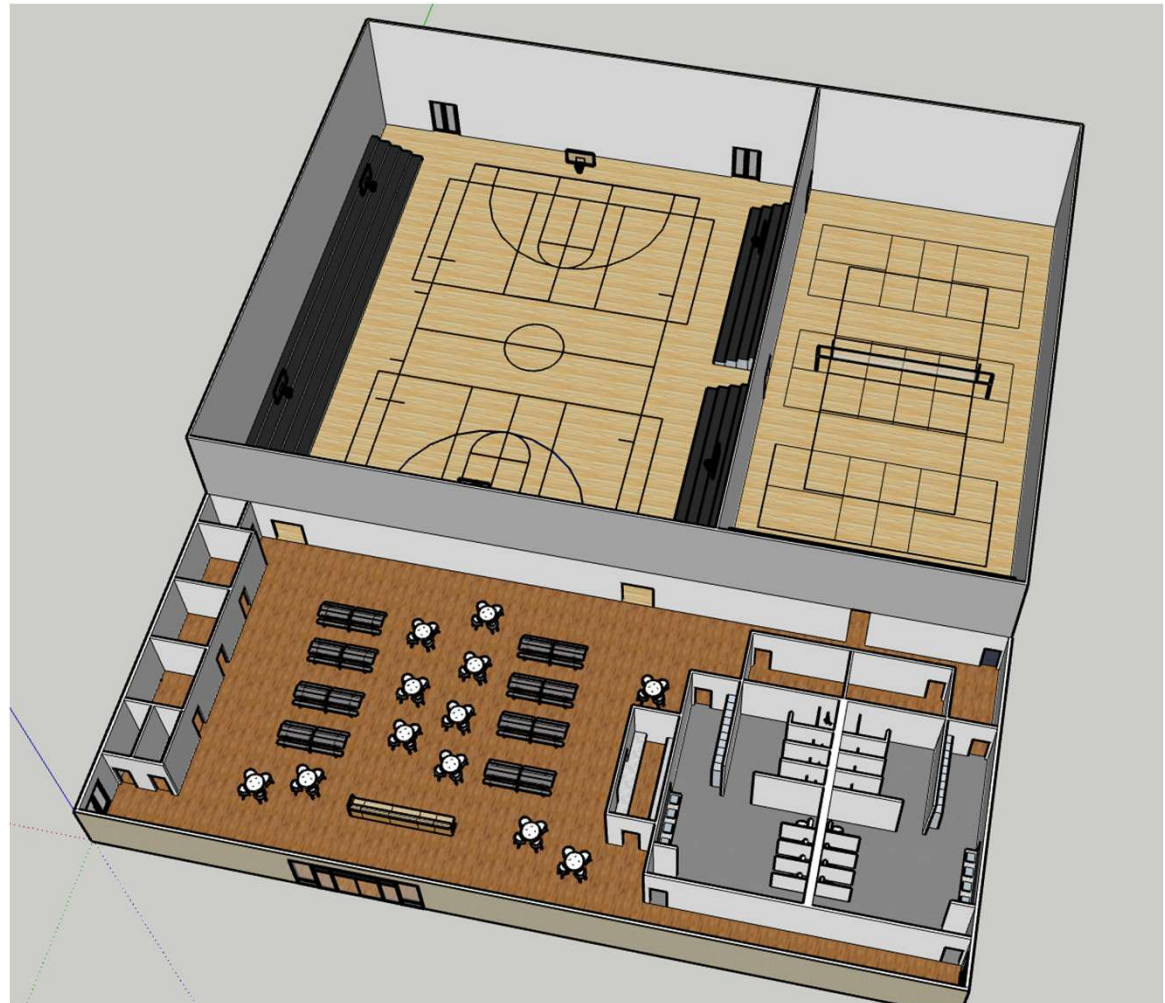
Structural

Structure

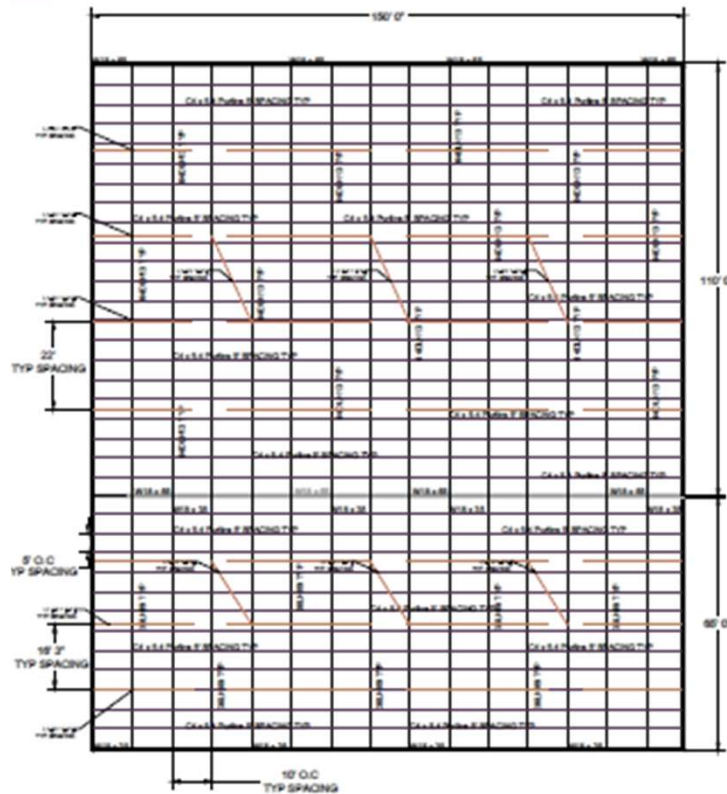
- Lobby/Entrance- 150' x 65' x 12'
- Gym- 150' x 110' x 35'
- 1:96 Pitched roof
- Steel Structure with some masonry exterior

Considerations

- IBC 2024, ASCE 7-22, AISC 360, SJI, TMS 402
- $D = 16.3\text{psf}$, $L = 12\text{psf}$, $S = 14\text{psf}$ $W = 23.3\text{psf}$
- $1.2D + 1.6S$ (control) = **42.4psf**
- Lateral Loading = **23.3psf**
- Axial load to columns = 58.4k, 102.4, 160.8k

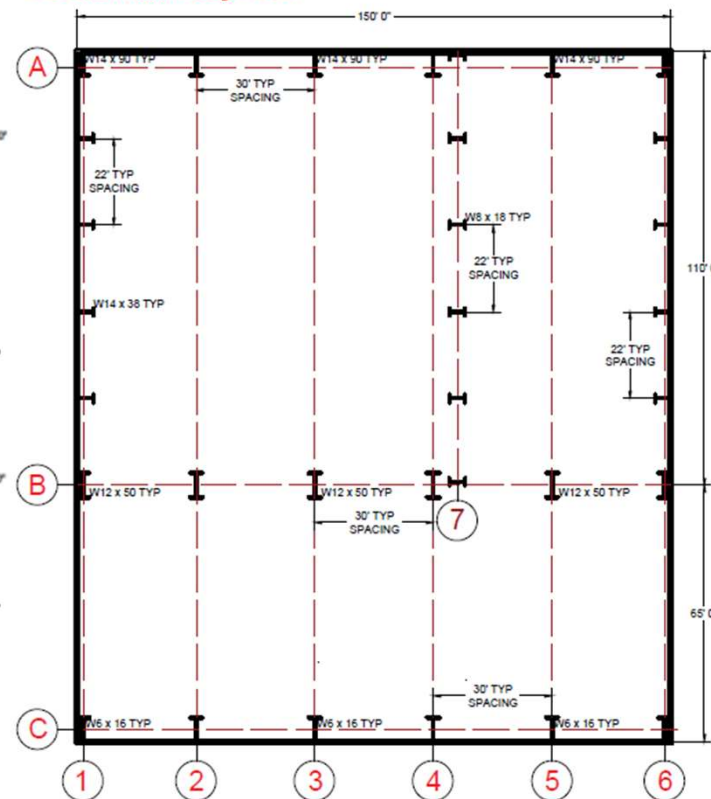


Structural



Roof Plan

Column Layout



Members

- Purlins
 - C4 x 5.4, 5' O.C
- Trusses
 - 64DLH13, 10' O.C
 - 36LH09, 10' O.C
- Girders
 - W18 x 65
 - W18 x 35
- Columns
 - W14 x 90, 30' spacing
 - W12 x 50, 30' spacing
 - W6 x 16, 30' spacing
 - W14 x 38, 22' spacing
 - W8 x 18, 22' spacing

Structural

Bracing

• Truss

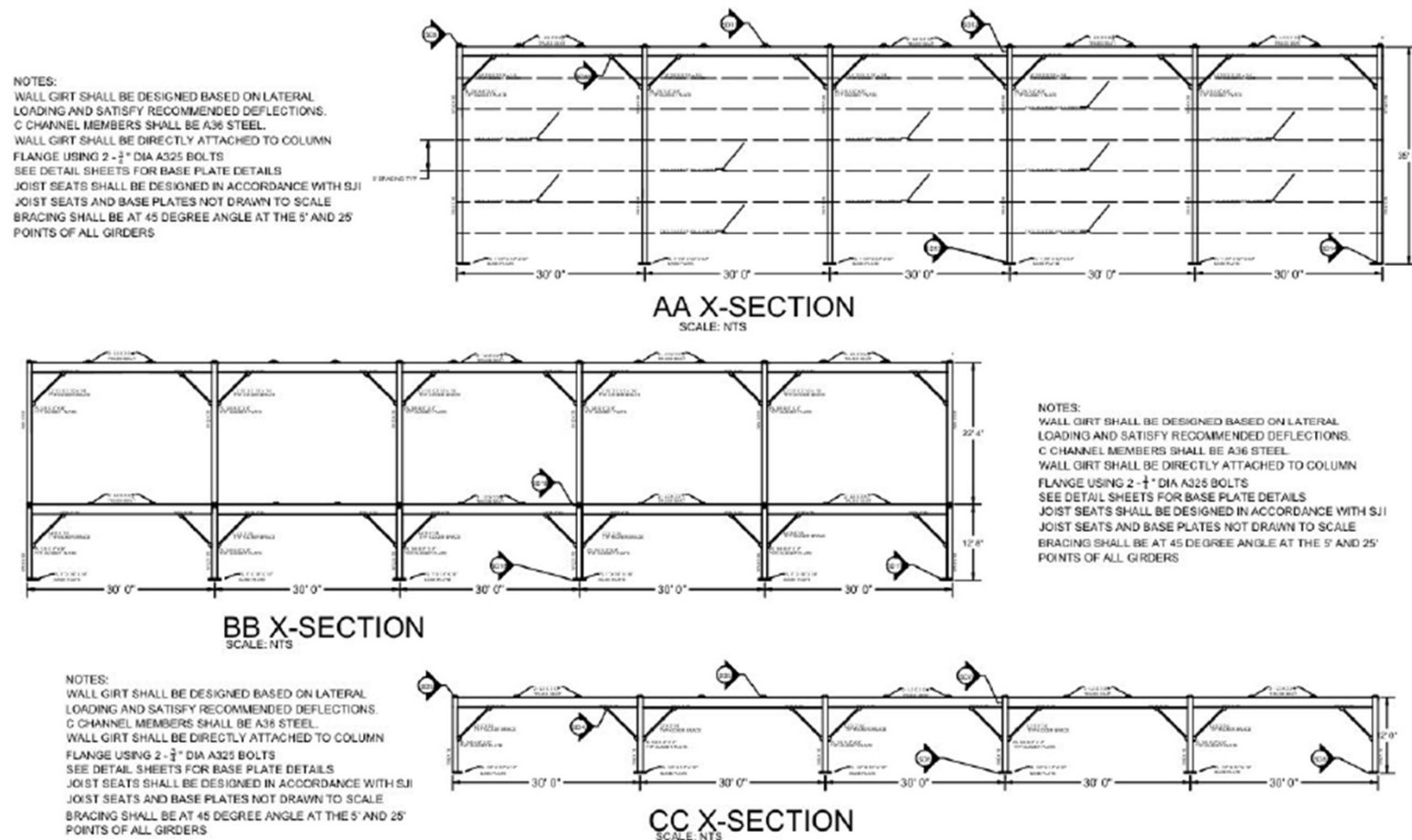
- L 1 ½ x 1 ½ x 1/8
- 0.2S, 0.25S
- Diagonal every 4

• Girders

- L2 x 2 x ¼
- L2 ½ x 2 ½ x ¼
- PL 3/8 x 6" x 8"
- A325 ½", ¾" bolts

• Wall girts

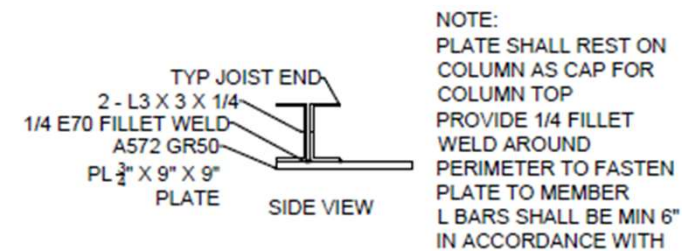
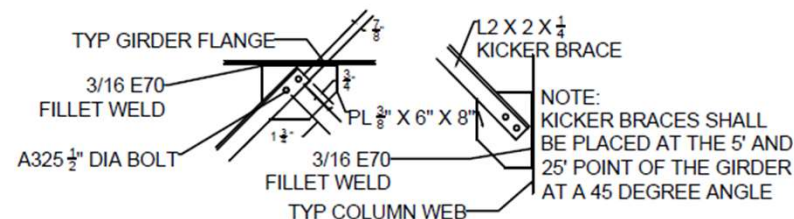
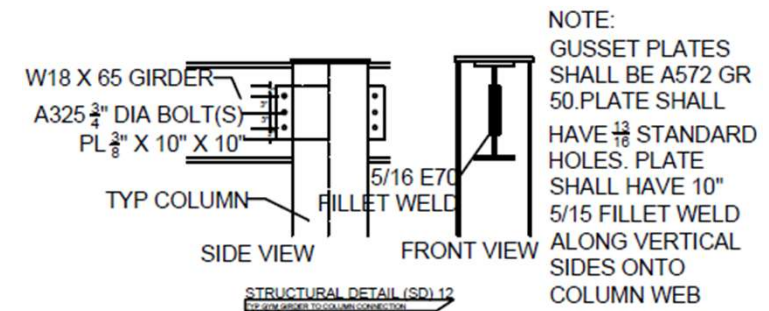
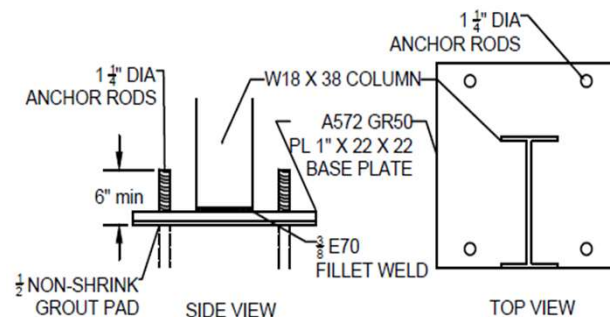
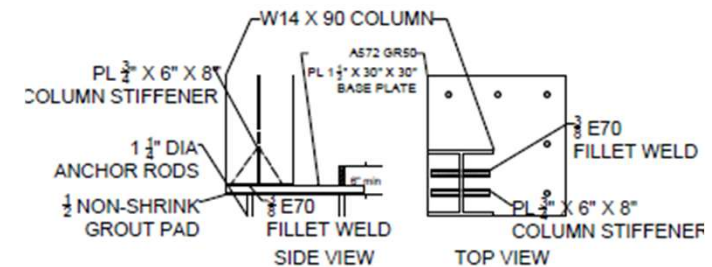
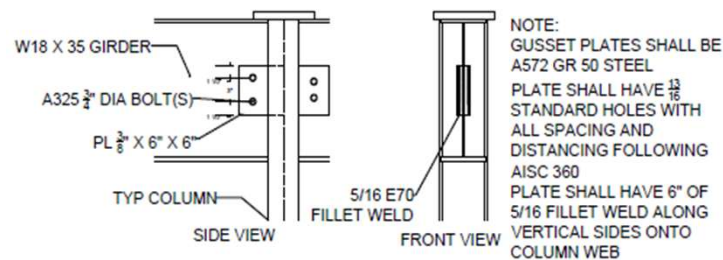
- 5' O.C
- C8 x 11.5
- C6 x 10.6
- C4 x 5.4
- 2 – ¾" A325 bolts



Structural

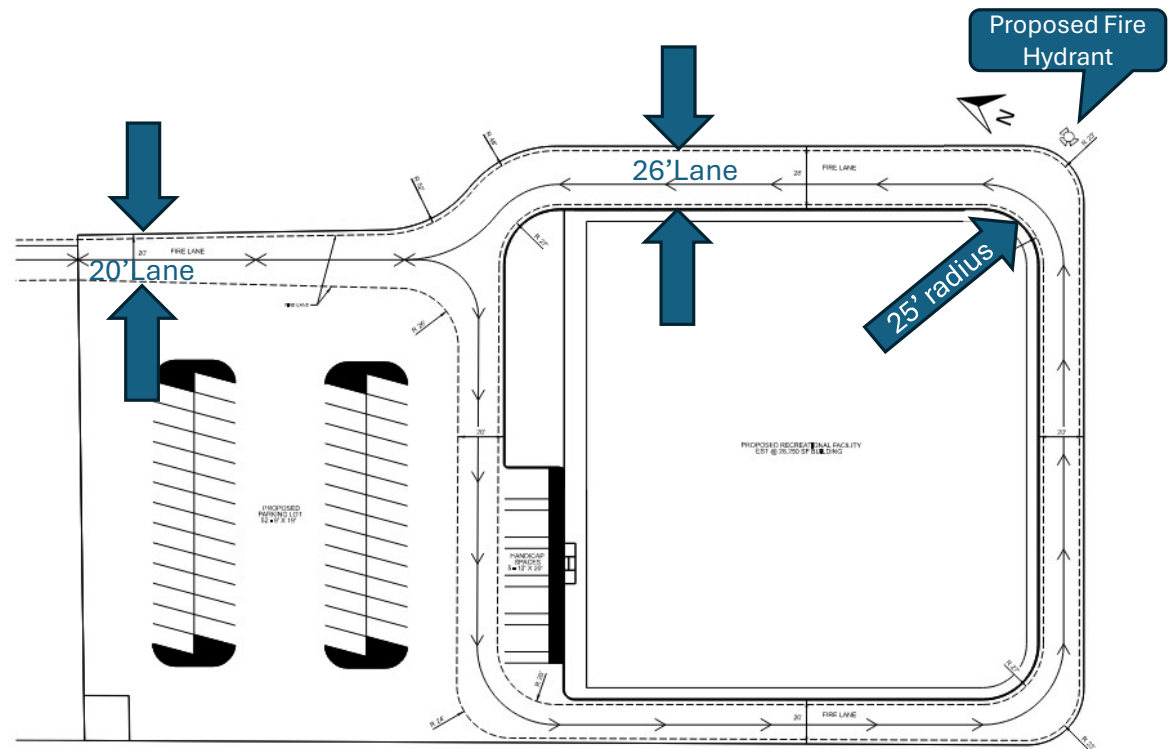
Connections

- **Truss seat**
 - Plate seat
 - Angle Irons
 - Fillet weld
- **Girder – Column**
 - (2) Gusset plate
 - Fillet weld
 - A325 Bolts
- **Column - Base Plate**
 - Base plate
 - Anchor rods
 - Fillet weld
 - Stiffeners



Fire protection plan

- Two existing fire hydrants located on Grissom Rd
- Proposing one fire hydrant
 - Southeast corner
- Building is fully sprinkled
- Meets minimum 20' lane width, 25' inner, & outer radii
 - 26' Fire Lane Access near proposed hydrant
- Per 2018 IFC 507.5.1, meets:
 - Hose pull by hand – 200 LF
 - Hose pull by truck – 550 LF



Transportation

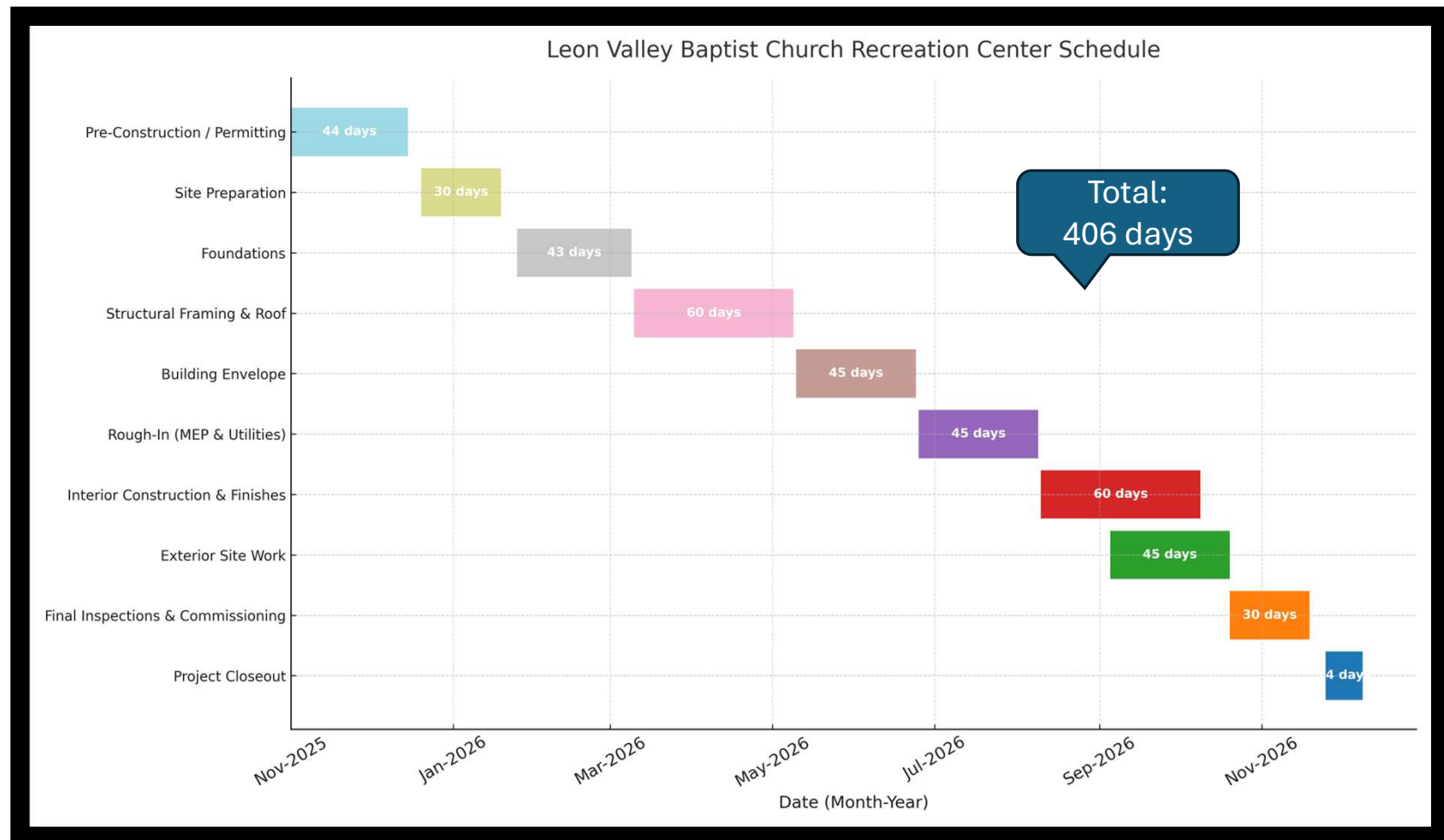
- 52 Parking Spaces (2.0 per 1,000 sf)
 - 5 ADA-compliant
- Traffic Impact Analysis: 66 PHT < 76 Trips
 - No TIA report required
- COSA Rough Proportionality Worksheet:
 - Utilizes existing driveway infrastructure
 - No off-site roadway or intersection improvements warranted

Use Classification	Minimum Vehicle Spaces	Maximum Vehicle Spaces
Recreational Facility (ITE 495)	1.5 per 1,000 sf	10 per 1,000 sf
Recreational Facility (26,250 sf)	40	262

Traffic Impact Analysis (TIA) Threshold Worksheet						
Complete this form as an aid to determine if your project requires a Traffic Impact Analysis Study in accordance with UDC 35-502(b)(2), ITE 11th Edition.						
Project Name: Leon Valley Baptist Recreational Center			Worksheet Prepared by: Conrad Montes			
Project Location: 7980 Grissom Road, San Antonio TX			Company: Lone Star Engineering		☐ Owner	☒ Owner's Agent
Email: lonestarengineering@lonestar.com			Address: 1234 UTSA Boulevard		Date:	
Jurisdiction: ☒ COSA ICL ☐ COSA ETJ ☐ Other:			Associated Record Type: ☐ Zoning ☐ MDP ☐ Plat		☒ Building Permit	
TIA Record Number (if applicable):			Associated Record Number:			
Proposed Type of Development:			Critical Peak Hour: PM		☐ Peak Hour Override: PM	
Land Use	ITE Code	Project Size	Unit	Peak Hour Trip Rate	Peak Hour Trips (PHT)	
Recreational Community Center	495	26.25	1,000 SF GFA	2.5	66	
Previous Development on Site:			Critical Peak Hour:		☐ Peak Hour Override:	
Land Use	ITE Code	Project Size	Unit	Peak Hour Trip Rate	Peak Hour Trips (PHT)	
Total Trips: Please ensure land uses for all lots/parcels are included in the above sections.						
Proposed Development	Previous Development	Difference in PHT		If there is an increase of 76 PHT and an increase of 10% of the total PHT, a new TIA is required		
66		66 100%				

The rates and critical peak hour are automatically calculated in this section based on the linear rates of ITE 11th edition. To change the automatic peak hour calculator, check the Peak Hour Override box and input the correct peak hour. For custom or additional fields, please use the second page of the worksheet.

Schedule





LONE STAR
ENGINEERING

Thank you!

Questions?

