

# Lone Star Event Venue

By David Weick, Desi Valdez, John Mendoza, Lauren Huck, Shelby Rivera, & Trinity Schaefer

Department of Civil Engineering, University of Texas at San Antonio, San Antonio, TX



## Land Development & Geotech

### Existing Conditions:

- 25% Protected Trees
- Not Platted
- Not in Karst-Zone
- Not in Golden-Cheeked Warbler Habitat

### Environmental:

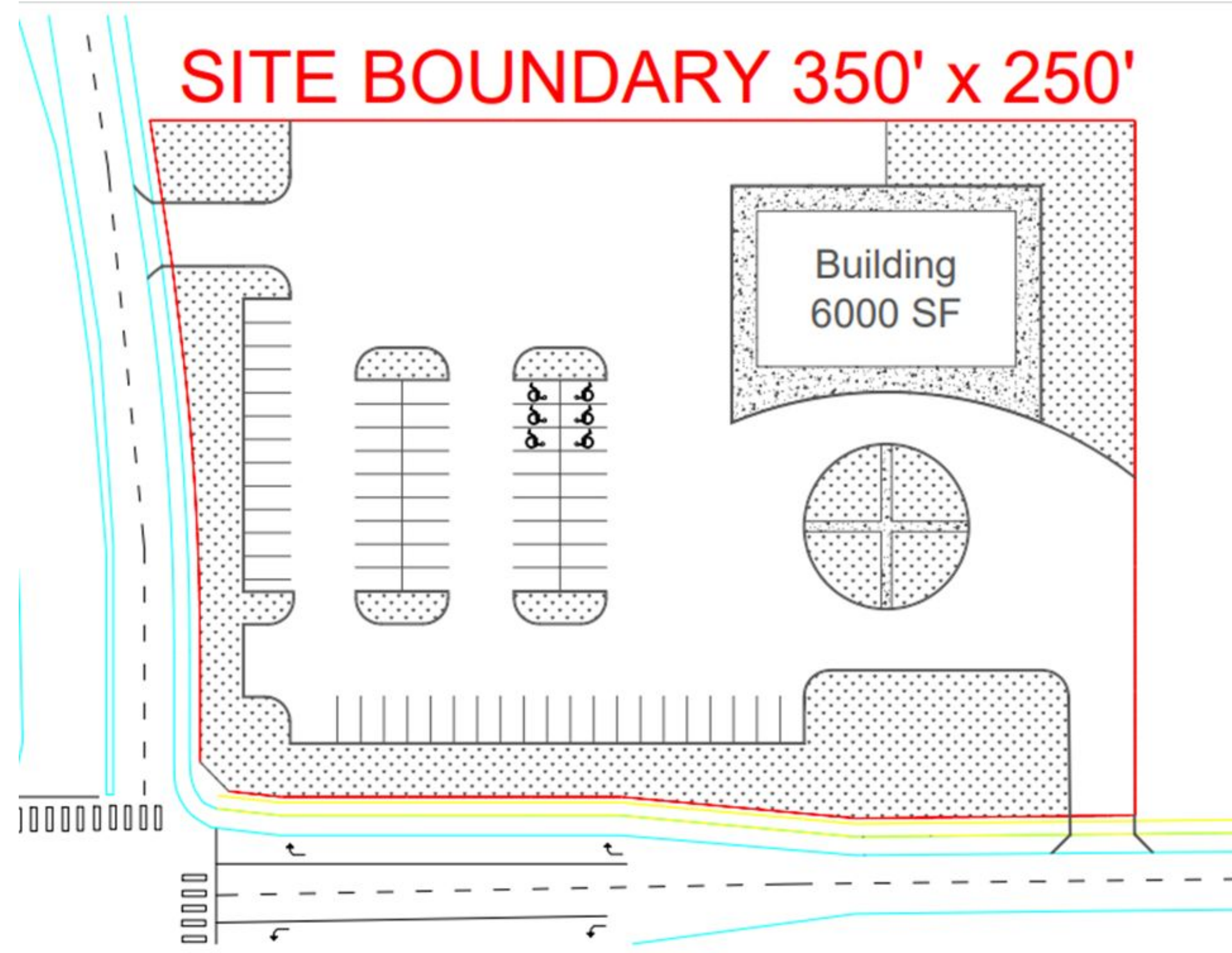
- Phase I ESA Required
- Phase II ESA Not Required
- Submitting Tree Permit

### Geotechnical & Foundation:

- Highly expansive clays found on site
- Limestone found in samples
- Foundation:
  - 5" slab-on-grade
  - Long direction beams: 1 - #5 top, 2 - #6 bottom
  - Short direction beams: 1 - #7 top, 2 - #6 bottom

Locations	Fill Classification	Possible Soil Types	Gradation	Additional Requirements
General site grading in building areas	Select fill	SC, CL	50% Minimum passing No. 4 sieve	Liquid limit < 35 4-5 Plasticity Index < 15
Building Pad and Pavement	Flexible Base	-	Grade 1 or 2 in coordination with TxDOT Standard Specifications Item 247	Type A, B, C, or D in coordination with TxDOT Standard Specifications Item 247
Outside planned structure	General fill (dry)	-	Largest particle or clod to be less than 6 inches	Compacted moisture content during placement should be within 0 to 4 percentage points above optimum.
	General fill (granular)	-	100% passing 3 inch sieve	Compacted moisture content during placement should be within -2 to +2 percentage points above optimum.

## PROPOSED DESIGN SITE PLAN AND EXISTING CONDITIONS



## Drainage

### Initial Analysis of Existing Conditions:

- Edwards Aquifer Contributing Zone within the Transition Zone
- Minimal Severity Flood Zone
- Not in the Mandatory Detention Area
  - Was NOT necessary to design a detention pond.

### Design Analysis:

- Rational Method to find Runoff, Q= CIA

Existing Drainage Area	2 YR RUNOFF (CFS)	5 YR RUNOFF (CFS)	10 YR RUNOFF (CFS)F	100 YR RUNOFF (CFS)F
EX 1	95.521	113.12	129.89	196.84
EX 2	20.80	24.53	27.94	42.44

Proposed Drainage Area	2 YR RUNOFF (CFS)	5 YR RUNOFF (CFS)	10 YR RUNOFF (CFS)F	100 YR RUNOFF (CFS)F
OS 1	95.521	113.12	129.89	196.84
OS 2	14.04	16.46	18.54	27.04
DA 1	11.96	12.92	16.06	23.69

### Solution & Ultimate Condition:

- Add grass to the back and right side of the building to reduce amount of water coming onto our site
- Install a Sawtooth Curb in the South West corner of the lot to reduce the amount of flow leaving the site, so the runoff will not be negatively impacting the intersection of Bentley Wells and W. Hausman Rd.

	Total Sq Footage	Total Acreage	Total Impervious Cover (Sq. Footage)	Total Impervious Cover (Ac.)	Total Impervious Cover (%)	Total Pervious Cover (Sq. Footage)	Total Pervious Cover (Ac.)	Total Pervious Cover (%)
Existing	87500	2.00	0	0	0	87500	2.00	100

	Total Sq Footage	Total Acreage	Total Impervious Cover (Sq. Footage)	Total Impervious Cover (Ac.)	Total Impervious Cover (%)	Total Pervious Cover (Sq. Footage)	Total Pervious Cover (Ac.)	Total Pervious Cover (%)
Proposed	87500	2.00	62790	1.43	71.76	24710	0.57	28.24

## Transportation

### Nearby Road Details:

- Hausman Rd
  - 4 lanes, 2 each way at 45 mph
  - LOS B (11.9 pc/hr/ln AM Peak, 15.7 pc/hr/ln)
  - Secondary Arterial
    - Entrance ramps permitted
  - COSA Right-of-Way
  - AADT Growth Rate (6.52%)

	2015	2016	2017	2018	Growth %	2040 AADT
Hausman Rd	1,199	1,488	1,482	1,482	6.52%	5,948

- Bentley Wells
  - 4 lanes at 40 mph
  - COSA Right-of-Way

### Traffic Impact Analysis (LU Code 435):

- From ITE Trip Generation Manual (7th): less than +76 PHT
- TIA waived for this project

### Parking:

- 60 parking spots (10 maximum for 6000 GSF building)
- 4 accessible spots, 2 of which are van accessible

## Utilities

### Water:

- 12" PVC Main (Extension needed)
- 10.34 EDUs: 2" Meter, 2" Service Line
- Irrigation: 5/8" Meter, 3/4" Service Line

### Wastewater:

- 12" PVC Main (Extension needed)
- 15 EDUs: 6" Lateral Diameter

### Fire Protection:

- 2000 gpm Fire Flow: 6" Diameter
- 2 Hydrants, Fire Apparatus Access Points, Means of Egress
- Wet Sprinkler System

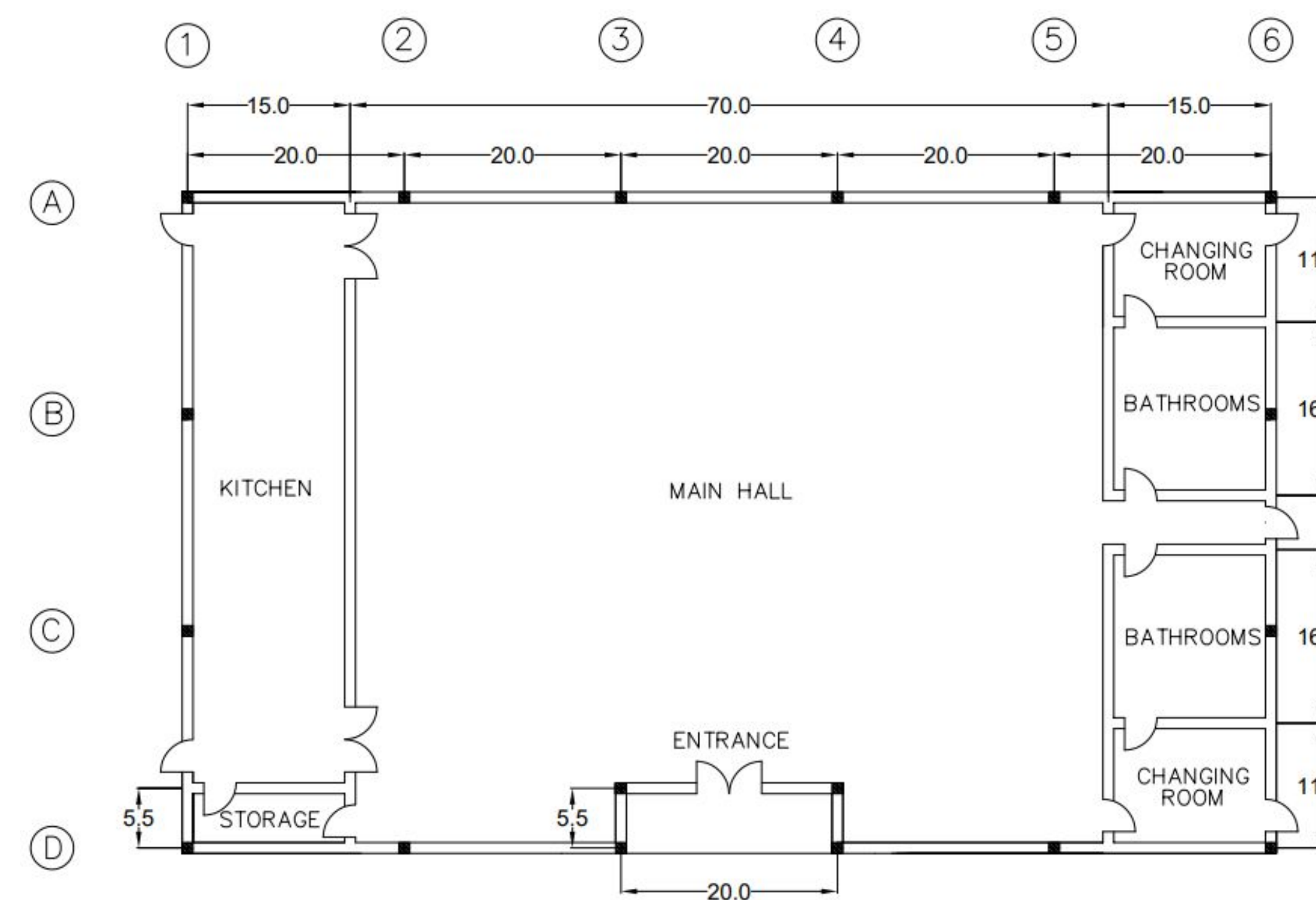
### Dry Utilities:

- Electrical: CPS (No Gas)
- Telecommunications: Spectrum

## STRUCTURAL & DESIGN ANALYSIS

Our design will use Double Howe steel trusses to span the entire width of the building to avoid placing columns on the inside of the building creating a large main hall free of obstructions. The square footage of this venue will be 6000, with a length of 100' and a width of 60'.

- Roof
  - Gable roof with a height of 10' and a slope of a ratio of 1:3
  - 10 roof panels (5 on each side), 18 gauge steel deck
  - Roof panels will be bolted to MC-shape purlins
- Trusses
  - Double angles spaced 20' apart, supporting the purlins
- Beams and Columns
  - Beams and Columns will be W-shapes
  - Columns will be spaced 20' apart
- Connections
  - Purlin to purlin connection uses a 8"x12" plate (t= 3/8")
    - Four 7/8" diameter bolts (all bolts are Group A)
  - Purlin to truss connections, two 7/8" diameter bolts
  - Chord to web connections
    - Webs use two 7/8" diameter bolts
    - Chords use three 1 1/8" diameter bolts
  - Beam to column connections
    - Two angles L3 1/2 x 3 1/2 x 1/2 with a length of 6"
    - Four 7/8" diameter bolts for each angle
  - Bracing to column connection uses a 9"x9" plate (t= 3/8")
    - Two 7/8" diameter bolts. The gusset plate will be welded to the column with a 1/4" weld



## Cost Estimate

Land (23 Acres)	\$13,671,330.00	Structural Members:	40 MC10x22	\$285.60	Total Building Cost	\$724,350.20
Easement	\$800.00		72 2L5 1/2 x 3 1/2 x 3/4	\$1,667.52	Total Labor (30%):	\$217,305.06
Taxes on Land	\$350,489.71		54 2L3 1/2 x 3 1/2 x 1/2	\$831.60		
Plat	\$2,225.00		10 W10x33	\$9,352.90		
Impact Fees	\$125,385.00		18 W10x39	\$15,410.70		
Asphalt Material	\$152,500.00		12 L4x4x3/4	\$333.12		
Driveways	\$6,000.00		18 Gauge Steel Deck	\$60,083.28	<b>Total Estimated Construction Cost</b>	<b>\$15,250,384.97</b>

## TEAM MEMBERS

PM/Land Development - John Mendoza      Drainage Engineer - Shelby Rivera  
Structural Engineer - Lauren Huck      Transportation Engineer - David Weick  
Geotechnical Engineer - Desi Valdez      Utilities Engineer - Trinity Schaefer

## ACKNOWLEDGEMENTS

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## REFERENCES

1. COSA Storm Water Design Criteria Manual & COSA Website
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4. ASCE 7-16
5. ACI 318-19
6. IBS 2018
7. AISC Steel Construction Manual, 15th edition
8. IFC 2018
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11. SAWS Guide To Development (Updated 2020)
12. San Antonio, Texas UDC (Updated 2022)

