

# FOUNDATION SYSTEM FOR GROWSPAN STRUCTURES

## DRAWING INDEX

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www.vectorse.com

DATE: 09/30/2024 DESIGNED: JGC DRAFTER: DAG

REVISIONS	
DATE	DESCRIPTION

**Growspan**  
greenhouse structures

A Division of Engineering Services & Products Co.  
1440 18th Ave. SW  
Dyersville, IA 52040  
www.esapco.com

**TITLE SHEET**

FOUNDATION SYSTEM FOR  
GROWSPAN STRUCTURES

GROWSPAN ORDER NO. 7854894

7801 S 620 RD  
MIAMI, OK 74354-1002  
OTTAWA COUNTY

FOUNDATION FOR 120' X 228'; 60' X 108'  
GROWSPAN BUILDING  
GROWSPAN ORDER NO. 7854894

### CUSTOMER DESIGN APPROVAL

PLEASE SIGN AND CHECK THE APPROPRIATE BOX BELOW THE SIGNATURE AFTER REVIEWING THE DOCUMENTS.

MY SIGNATURE BELOW ACKNOWLEDGES THAT I HAVE READ AND REVIEWED ALL THE SHEETS LISTED IN THE DRAWING INDEX AND AGREE TO THE SPECIFICATIONS SHOWN UNLESS OTHERWISE NOTED.

UPON ACCEPTANCE OF THE DRAWINGS, ANY DEVIATIONS FROM THE SIGNED DRAWINGS AND SPECIFICATIONS OUTLINED IN THE EXECUTED DRAWINGS ARE SUBJECT TO ADDITIONAL CHARGES AND MAY RESULT IN DELAY OF INSTALLATION OR DELIVERY OF YOUR STRUCTURE. A CHANGE ORDER WILL BE ISSUED TO YOU WITH THE OUTLINED ADDITIONAL COST ASSOCIATED WITH THESE CHANGES AND A PROPOSED NEW DELIVERY SCHEDULE.

NO CHANGES WILL BE ACCEPTED UNLESS WE HAVE A CHANGE ORDER SIGNED BY AN AUTHORIZED REPRESENTATIVE.

*Darin Abernathy*

CUSTOMER SIGNATURE DATE

- APPROVE  APPROVE WITH CHANGES

### SITE:

7801 S 620 RD  
MIAMI, OK 74354-1002  
OTTAWA COUNTY

U1382.1045.241

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GENERAL STRUCTURAL NOTES

GENERAL DESIGN NOTES:

STRUCTURAL DESIGN IS BASED ON THE INTERNATIONAL BUILDING CODE, 2015 EDITION AND THE ASCE 7-10 STANDARD

DESIGN LOADS:

WIND:  
 BASIC WIND SPEED: 105 MPH (3-SEC GUST)  
 RISK CATEGORY: I  
 EXPOSURE: C

ROOF LIVE LOAD: 12 PSF

SEISMIC:

SEISMIC DESIGN CATEGORY: B  
 SEISMIC IMPORTANCE FACTOR: 1.0  
 $S_s = 0.125$   $S_1 = 0.077$   
 SITE CLASS: "D"  
 $S_{ms} = 0.133$   $S_{m1} = 0.123$

SNOW:

GROUND SNOW LOAD: 15 PSF  
 FLAT ROOF SNOW LOAD: 8.4 PSF

STEEL MATERIAL NOTES:

- ALL STEEL SHAPES & PLATES SHALL CONFORM w/ ASTM A36, U.N.O.
- ALL BOLTS FOR STEEL-TO-STEEL CONNECTIONS SHALL CONFORM w/ ASTM A325N, U.N.O.
- ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS IN ACCORDANCE w/ THE LATEST VERSION OF THE AMERICAN WELDING SOCIETY AWS D1.1.
- ALL BOLTED CONNECTIONS SHALL BE TIGHTENED TO "SNUG-TIGHT" CONDITION AS DEFINED BY THE AISC MANUAL.
- ALL STEEL SHAPES, PLATES, AND HARDWARE EXPOSED TO WEATHER SHALL BE GALVANIZED, STAINLESS STEEL, OR OTHERWISE PROTECTED FROM WEATHER.

REINFORCING STEEL NOTES:

- REINFORCING BARS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-615 GRADE 60.
- ALL REINFORCING BAR BENDS SHALL BE MADE COLD.
- MINIMUM LAP OF WELDED WIRE FABRIC SHALL BE 6 INCHES OR ONE FULL MESH AND ONE HALF, WHICH EVER IS GREATER.
- ALL BARS SHALL BE MARKED SO THEIR IDENTIFICATION CAN BE MADE WHEN THE FINAL IN-PLACE INSPECTION IS MADE.
- REBAR SPLICES ARE TO BE: CLASS "B".
- REINFORCING SPLICES SHALL BE MADE ONLY WHERE INDICATED ON THE DRAWINGS.
- DOWELS BETWEEN FOOTINGS AND WALLS OR COLUMNS SHALL BE THE SAME GRADE, SIZE AND SPACING OR NUMBER AS THE VERTICAL REINFORCING, RESPECTIVELY.

CONCRETE:

- ALL PHASES OF WORK PERTAINING TO THE CONCRETE CONSTRUCTION SHALL CONFORM TO THE "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE" (ACI 318 LATEST APPROVED EDITION) WITH MODIFICATIONS AS NOTED IN THE DRAWINGS AND SPECIFICATIONS.
- REINFORCED CONCRETE DESIGN IS BY THE "ULTIMATE STRENGTH DESIGN METHOD", ACI 318-(LATEST EDITION).
- ALL STRUCTURAL CONCRETE SHALL HAVE A MIN. 28-DAY STRENGTH OF 4000 PSI.
- CONCRETE MIX DESIGN SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL WITH THE FOLLOWING REQUIREMENTS:
  - COMPRESSIVE STRENGTH AT AGE 28 DAYS AS SPECIFIED ABOVE.
  - LARGE AGGREGATE-HARDROCK,  $\frac{3}{4}$ " MAXIMUM SIZE CONFORMING TO ASTM C-33.
  - CEMENT-ASTM C-150, TYPE II PORTLAND CEMENT.
  - MAXIMUM SLUMP 5-INCHES MAX WATER CEMENT RATIO 0.50
  - NO ADMIXTURES, EXCEPT FOR ENTRAINED AIR, AND AS APPROVED BY THE ENGINEER.
- CONCRETE MIXING OPERATIONS, ETC, SHALL CONFORM TO ASTM C-94.
- PLACEMENT OF CONCRETE SHALL CONFORM TO ACI STANDARD 614 AND PROJECT SPECIFICATIONS
- CLEAR COVERAGE OF CONCRETE OVER OUTER REINFORCING BARS SHALL BE AS FOLLOWS: CONCRETE POURED DIRECTLY AGAINST EARTH - 3 INCHES CLEAR STRUCTURAL SLABS -  $\frac{3}{4}$  INCHES CLEAR (TOP AND BOTTOM) FORMED CONCRETE WITH EARTH BACK FILL - 2 INCHES CLEAR
- ALL REINFORCING BARS, ANCHOR BOLTS AND OTHER CONCRETE INSERTS SHALL BE WELL SECURED IN POSITION PRIOR TO PLACING CONCRETE.
- MODULUS OF ELASTICITY OF CONCRETE, WHEN TESTED IN ACCORDANCE WITH ASTM C-460, SHALL BE AT LEAST THE VALUE GIVEN BY THE EQUATIONS IN SECTION 8.5.1. OF ACI 318 FOR THE SPECIFIED 28-DAY STRENGTH.
- SHRINKAGE OF CONCRETE, WHEN TESTED IN ACCORDANCE WITH ASTM C-157, SHALL NOT EXCEED 0.00040 INCHES/INCH.

FOUNDATION NOTES:

1. FOOTINGS ARE DESIGNED BASED ON AN ALLOWABLE SOIL PRESSURE OF 2500 PSF PER THE PROJECT SOILS REPORT. FOOTINGS AND FOUNDATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE SOILS REPORT PREPARED BY:

COMPANY: BUILDING & EARTH SCIENCES  
 JOB #: TU240132  
 DATE: August 28, 2024

- CONTRACTOR SHALL PROVIDE FOR PROPER DE-WATERING OF EXCAVATIONS FROM SURFACE WATER, GROUND WATER, SEEPAGE, ETC.
- FOOTINGS SHALL BE PLACED ACCORDING TO DEPTHS SHOWN ON THE DRAWINGS.
- REFER TO GEOTECHNICAL REPORT FOR SITE PREPARATION, SUBGRADE, EXCAVATION AND FILL.

SPECIAL INSPECTIONS / QUALITY ASSURANCE:

- SPECIAL INSPECTIONS SHALL BE REQUIRED FOR:
  - CONCRETE MIX DESIGN & STRENGTH
  - FORMWORK SHAPE, LOCATION, & DIMENSIONS
  - REINFORCEMENT TYPE & PLACEMENT
  - FOUNDATION EXCAVATION
  - ANCHORAGE TYPE & PLACEMENT
  - PERIODIC SPECIAL INSPECTION OF ALL POST-INSTALLED ANCHORAGE TO CONCRETE PER MFR. RECOMMENDATIONS AND APPLICABLE ICC-ES REPORT
- THE OWNERS SHALL EMPLOY SPECIAL INSPECTORS WHO SHALL PROVIDE ADDITIONAL INSPECTIONS DURING CONSTRUCTION IN ACCORDANCE WITH INTERNATIONAL BUILDING CODE SECTION 17.
- ALL SPECIAL INSPECTIONS SHALL BE PERFORMED BY AN INDEPENDENT CERTIFIED INSPECTOR FROM AN ESTABLISHED TESTING AGENCY, LICENSED AND APPROVED BY THE BUILDING DEPARTMENT
- THE BUILDING OFFICIAL OR AUTHORIZED REPRESENTATIVE MAY PERFORM THE INSPECTIONS LISTED ABOVE TO SATISFY THE SPECIAL INSPECTION REQUIREMENTS SO LONG AS THEY ARE QUALIFIED TO DO SO.
- THE TESTING AGENCY SHALL SEND COPIES OF ALL STRUCTURAL TESTING AND INSPECTION REPORTS DIRECTLY TO VECTOR STRUCTURAL ENGINEERING AND ALL INTERESTED PARTIES.
- STRUCTURAL TESTING IS NOT REQUIRED.
- ALL REPORTS SHALL BE DISTRIBUTED ON A MONTHLY BASIS TO THE ENGINEER OF RECORD, OWNER, CONTRACTOR, AND TO THE BUILDING OFFICIAL.
- NO STRUCTURAL OBSERVATION IS REQUIRED. HOWEVER, THE ENGINEER OF RECORD RESERVES THE RIGHT TO MAKE FIELD OBSERVATIONS DURING CONSTRUCTION APPROXIMATELY ONCE PER WEEK.



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**GENERAL NOTES**

FOUNDATION SYSTEM FOR  
 GROWSPAN STRUCTURES

GROWSPAN ORDER NO. 7854894

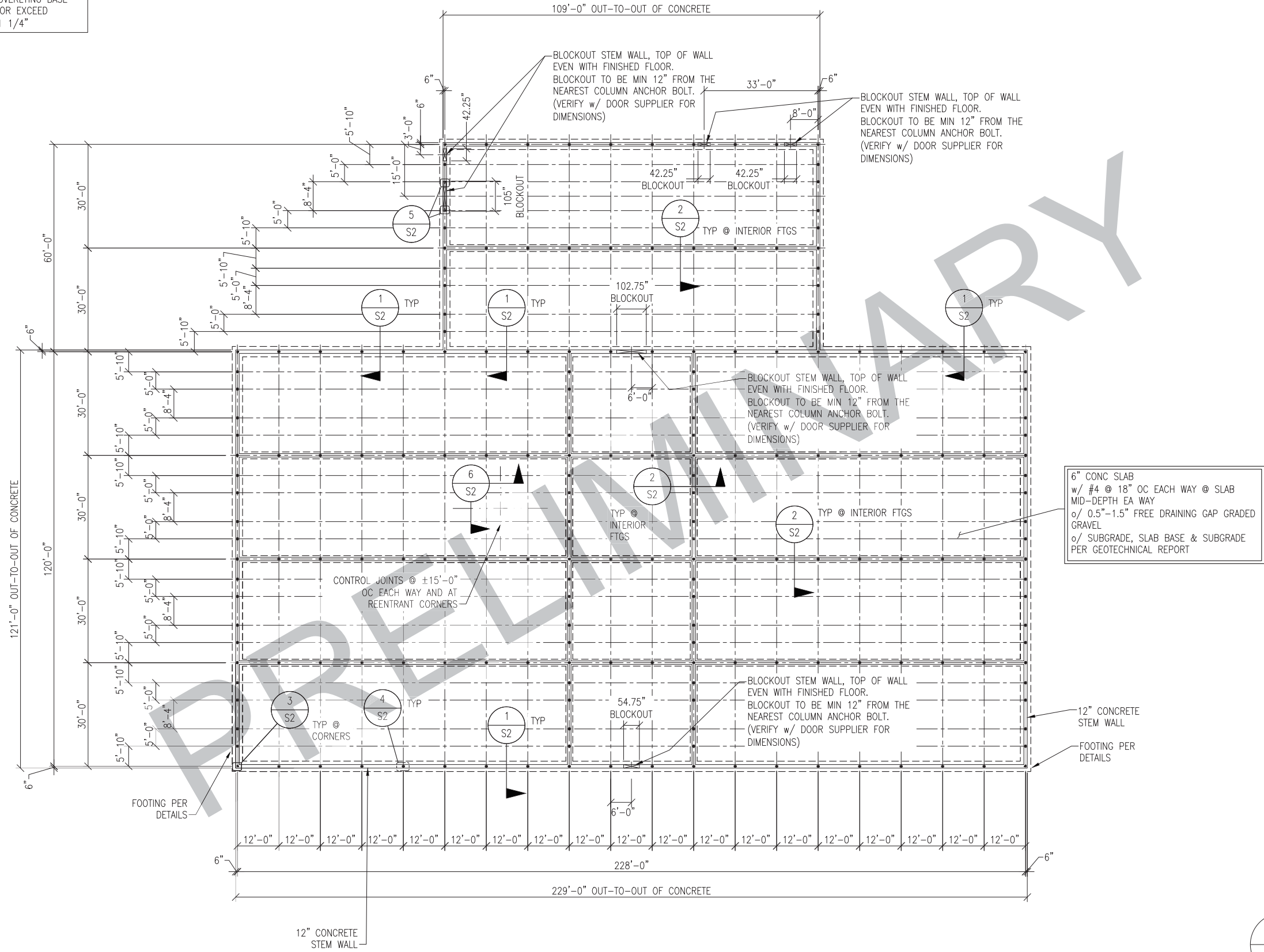
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PRELIMINARY

- FOUNDATION NOTES:**
1. CONTRACTOR SHALL VERIFY ALL DIMENSIONS WITH STEEL BUILDING DRAWINGS PRIOR TO CONSTRUCTION.
  2. ALL DIMENSIONS ON THIS SHEET REFERENCE CENTER OF STEEL BASE PLATES OR OUTSIDE OF EXTERIOR WALLS.
  3. SHIM PLATES MAY BE USED TO SLOPE THE BUILDING FOR DRAINAGE. SHIM PLATES MUST FULLY SUPPORT OVERLYING BASE PLATES. SHIM PLATE DIMENSIONS SHALL MATCH OR EXCEED OVERLYING BASE PLATES. MAX SHIM HEIGHT = 1 1/4"

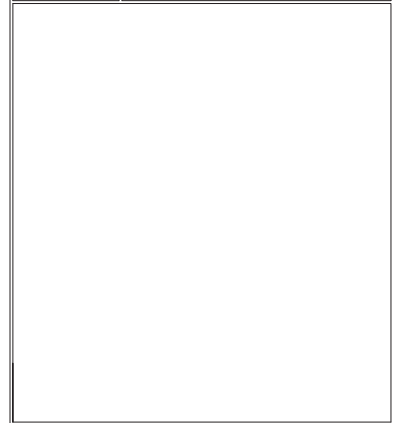


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**GROWSPAN**  
 greenhouse structures  
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**FOUNDATION PLAN**  
 FOUNDATION SYSTEM FOR  
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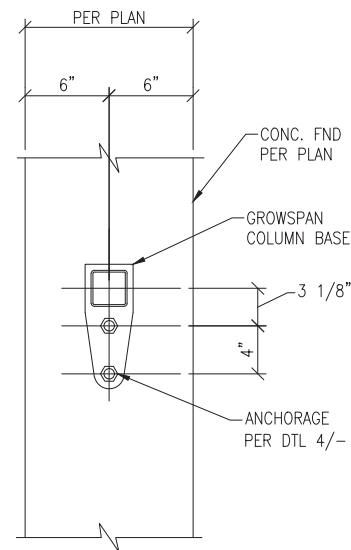
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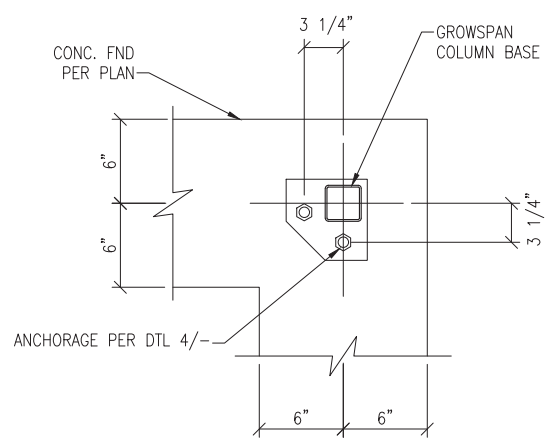
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**DOOR COLUMN BASE ANCHORAGE**

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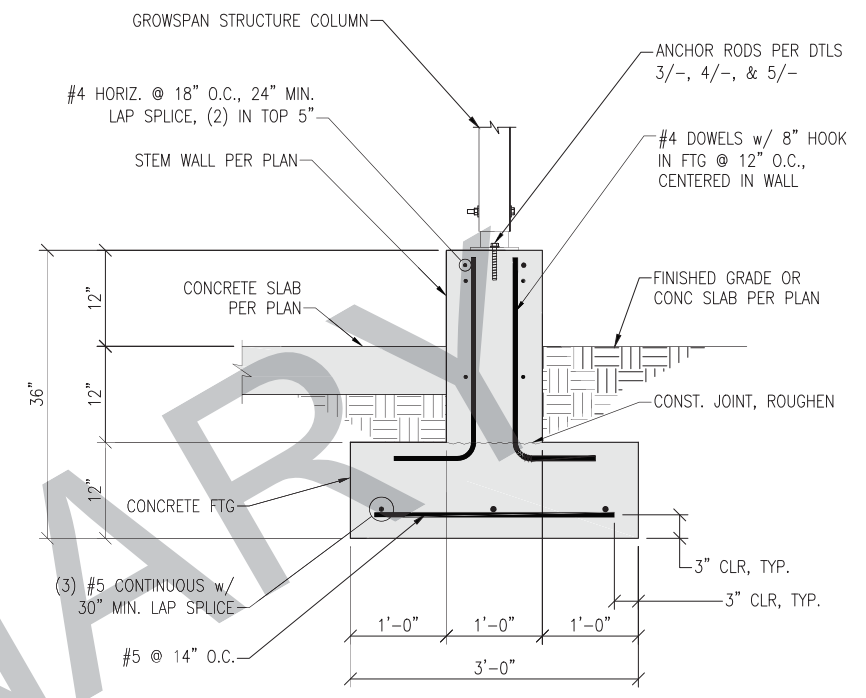
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**CORNER COLUMN BASE ANCHORAGE**

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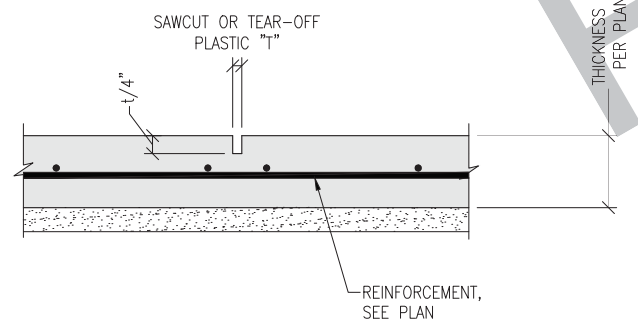
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**SECTION AT EXTERIOR WALLS & INTERIOR SIDEWALL**

N.T.S.

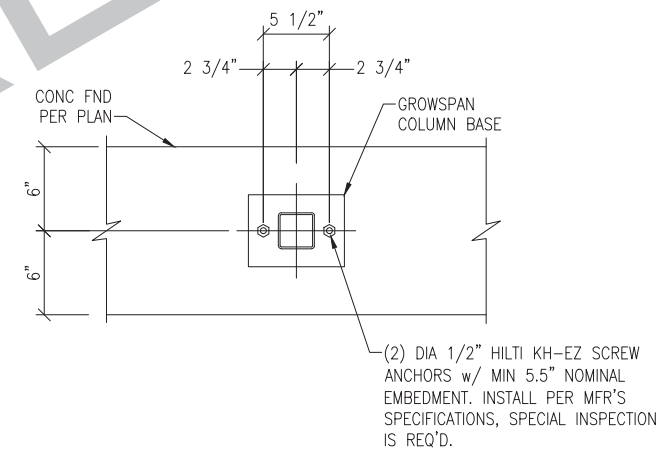
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**SLAB CONTROL JOINT**

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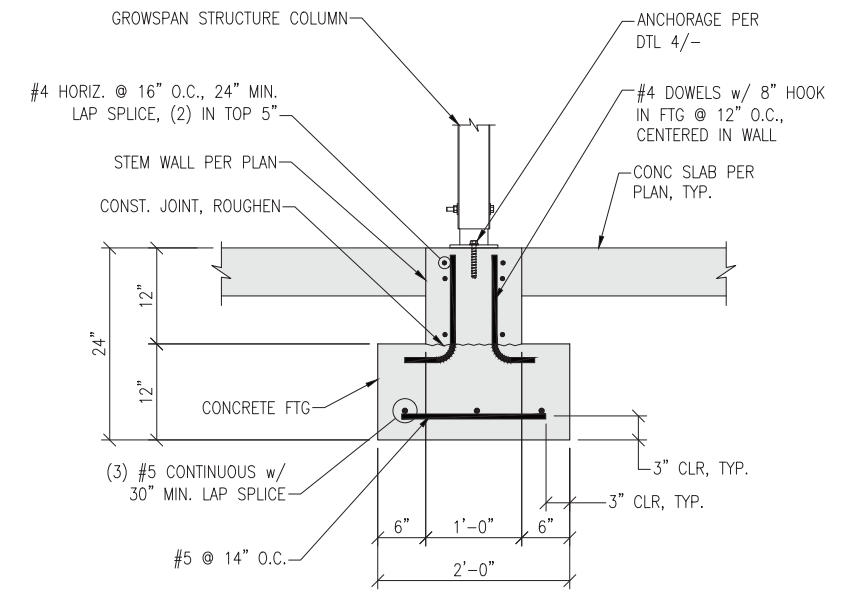
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**ANCHOR POST BASE ANCHORAGE**

N.T.S.

4



**TYPICAL SECTION AT INTERIOR WALL**

N.T.S.

2

**DETAILS**

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**STRUCTURE REACTIONS**

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**ANCHOR POST REACTION DATA**

CONTROLLING ASD REACTIONS TO CONSIDER AT TYPICAL ANCHOR POST BASES	
MAXIMUM GRAVITY (KIPS)	9.8
MAXIMUM NET UPLIFT (KIPS)	3.8
MAXIMUM HORIZONTAL (KIPS)	1.6
MAXIMUM MOMENT (FT-K)	0.2

**ENDWALL COLUMN REACTION DATA**

CONTROLLING ASD REACTIONS TO CONSIDER AT TYPICAL ENDWALL COLUMN BASES	
MAXIMUM GRAVITY (KIPS)	3.4
MAXIMUM NET UPLIFT (KIPS)	2.0
MAXIMUM HORIZONTAL (KIPS)	0.9
MAXIMUM MOMENT (FT-K)	0.2

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