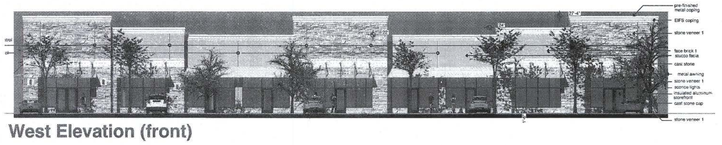
INCLUDE IN PERMIT PACKET

B18-02769

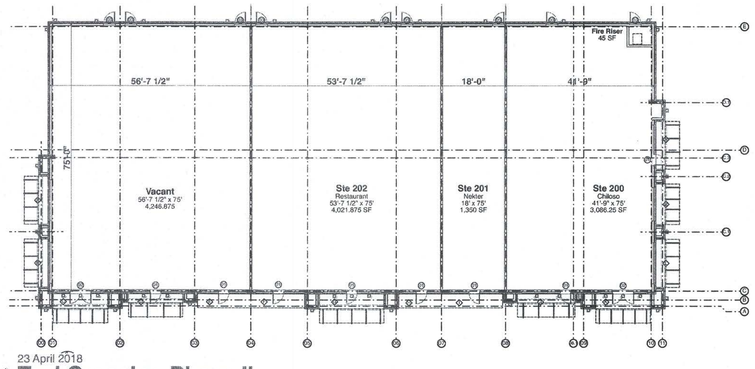
Teel Crossing Phase 2

Main Street (FM 720) @ Teel Parkway
Frisco, Texas 75033
Denton County

FRISCO — Plan Review & Field Inspection Noted
Date 6/12/18 2013
Exceptions Taken
No Exceptions Taken
Submit Updated Drawings
Revise and Resubmit
Comply as Marked Below
See Mark on Drawings
A2.02



West Elevation (front)



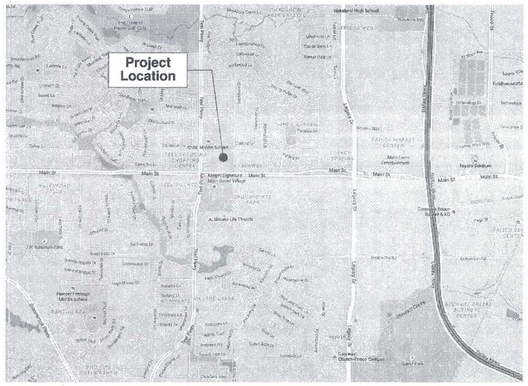
23 April 2018

Teel Crossing Phase II

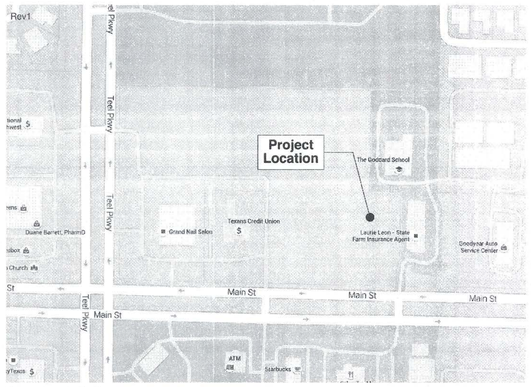
12,750 Leasable Square Feet
Main Street @ Teel Parkway (NE Corner)

Block A, Lot 4

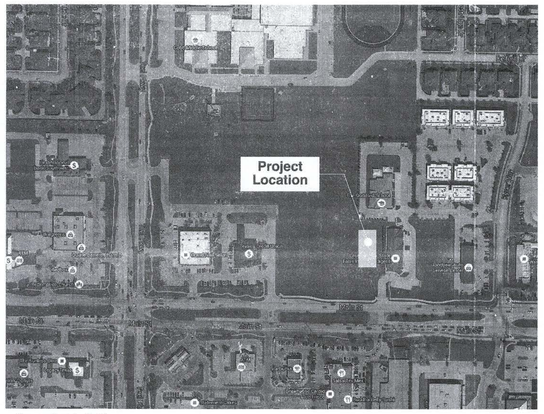
VCM DEVELOPMENT



Vicinity Map



Local Map



Aerial View

GOVERNMENTAL AGENCIES

http://www.friscotexas.gov/departments/planningDevelopment/buildinginspections/Pages/default.aspx

Code Enforcement

Phillip Climer, Chief Building Official
6101 Frisco Square Blvd., 3rd Floor West
Frisco, Texas 75034
Phone: 972.292.5301
Fax: 972.292.5313

City of Frisco Building Codes

2011 ACI Manual of Concrete Practice, ACI318 2012
Annual Book of ASTM Standards, Volume 04.02 Concrete and Aggregates
2014 National Electrical Code (NEC), w/ amendments, eff. 12-16-17, 16-12-101 (PDF)
2013 National Fire Protection Association (NFPA), Standard 13, eff. 01-01-18, 17-11-76 (PDF)
2013 National Fire Protection Association (NFPA), Standard 13R, eff. 01-01-18, 17-11-75 (PDF)
2015 International Building Code (IBC), w/ amendments, eff. 01-01-18, 17-11-78 (PDF)
2015 International Energy Conservation Code (IECC), w/ amendments, 16-12-97 (PDF) (Note: 2015 IECC, Chapter 11 eff. September 2015; commercial standards required November 2016; Minimum Standards, Commercial Green Building Program 08-10-96 (PDF))
2015 International Fire Code (IFC), w/ amendments, eff. 01-01-18, 17-11-77 (PDF)
2015 International Fuel Gas Code (IFGC), w/ amendments, eff. 12-16-16, 16-12-98 (PDF)
2015 International Mechanical Code (IMC), w/ amendments, eff. 12-16-16, 16-12-99 (PDF)
2015 International Plumbing Code (IPC), w/ amendments, eff. 12-16-16, 16-12-100 (PDF)

IBC Code Requirements

Occupancy Classification:	M (Mercantiles) A2 Assembly (Restaurant) SHELL BLDG ONLY	
Type of Construction:	Type II-B/sprinklered	
	Allowable	**Project**
Building Area Mercantile:	12,500 SF tabular	
Allowable Area Increase: Open Area 7,812 SF Sprinkler 25,500 SF	45,812 SF	12,750 sf
Building Height in Stories:	2	1
Building Height in Feet:	55 ft	27' - 4"
No. of Exits Required per Tenant:	2	2
Tenant Separation:	varies per use	TBD

Contractor's Required Check List

Contractor Responsibilities

project documents	**Contractor shall have on desk in job site a copy of the City/County approved plans.**
	Contractor shall have on desk in job site a copy of the Fire Marshall approved plans (if separate from City documents).
	Submit all ALL written comments issued by the City jurisdiction to the Architect and the Civil.
	Contractor shall remove any Drawings not sealed by the Architect or Engineers of record from the site.
	Contractor shall caste a Construction Documents (CD) log listing each document and posting the effective date. Include Addendes, Change Orders and Clarification Drawings. Send copy monthly or as it changes for review by Architect.
tenant documents	**Tenant Lease Exhibits are contained in the Project Manual, become familiar with these documents to understand the required level of finish for each Tenant. Notify Architect immediately of any discrepancies noted between Lease Exhibit, Architectural Plans and Tenant Finish Plans**
	keep CD Log of all pertinent Tenant Finish Drawings, send copy to Architect for verification
	DO NOT initiate construction on any Tenant space until you have a set of checked Tenant Finish Drawings distributed from Architect's Office.
geotechnical	**The Geotechnical Report is contained in the Project Manual, become familiar with it to understand the required level of subgrade preparation required for this project. Notify Architect, Civil Engineer & Geotechnical Engineer immediately of any discrepancies or subgrade issues at the site that are different than noted in the report.**
	DO NOT vary from Subgrade Preparation as documented in the Geotechnical Report, Structural Drawings, Civil Drawings and Specifications w/o written authorization from the Architect, Civil Engineer and Structural Engineer
	General Contractor to provide testing per Specifications. Submit copies of all Construction Testing Reports to Architect, Structural and Civil Engineer immediately upon their publication. DO NOT submit duplicate reports.
changes	**Submit RFIs in writing to the Architect or Civil. Maintain a log of RFIs indicating their status.**
	Submit all Change Requests in writing to Architect and/or Civil for evaluation. DO NOT proceed with any changes to the Work until written authorization has been granted by the Architect and/or Civil and the Owner.
pay applications	**Submit a Schedule of Values to the Architect and Civil Engineer prior to Construction per Specifications**
	DO NOT front load Pay Applications. G703 shall be consistent with Subcontractors/Suppliers Contracts and Lien Waivers
	Submit accurate Pay Applications of Work exectued, inaccurate Pay Applications will be rejected, not adjusted
subcontractors	**Submit a list, including all contact information, of Subcontractors and Suppliers to be used on the project. If Subs or Suppliers change during the course of the Work notify the Architect of the change.**
submittals	**Submit a minimum of 4 Shop Drawings or Submittals for each catagory of Work.**
	Review and stamp the Shop Drawings or Submittals with your comments before submitting them to the Architect for review.
	DO NOT proceed with any phase of construction without approved Shop Drawings or Submittals.
	Submit substitutions for approval if work components vary from those items specified.
	Provide a 4' x 8' mock up of exterior wall for approval by Owner and Architect.
	Architect will prepare a color board for the approval of the Owner from the color samples submitted by the Contractor.
	DO NOT proceed with color selections without the written approval of the Architect.
project management	**Provide and maintain an experienced and qualified Project Superintendent on site throughout the duration of construction.**
	Provide and maintain an experienced and qualified Project Manger in the office throughout the duration of construction.
	Follow the procedures set up in the Project Manual.
	Submit electronic project photos with captions and progress summary reports weekly to the Owner, the Architect and the Civil.

Project Directory

OWNER
Teel Crossing Partners LTD
25 Highland Park Village, Suite 100-494
Dallas, TX 75205

Owner's Contact
Vaughn Miller
VCM Development Group
vaughn@vcmdevelopment.com
214.363.5411

ARCHITECT
Duane Meyers Architect
560 PR 2422
Uncertain, TX 75661
903.484.4040
dmayers@imac.com

STRUCTURAL
BluDoc
1000 Chinaberry Drive, Suite 703
Bossier City, LA 71111
Texas Firm Registration F-18914
318.402.4710

MEP
Frank R. Skipper, P.E.
Professional Engineer
3808 Northridge Court
Irving, TX 75038
214.649.7275
Texas Firm Registration #F-12758
mcbolinger@bydesign.com

CIVIL (under separate Contract)
Clay Moore Engineering
1903 Central Drive, Suite 406
Bedford, TX 76021
817.267.0572

GEOTECH (under separate Contract)
Alpha Testing, Inc.
2709 Wisconsin Street, Suite 100
Dallas, TX 75229

GAZEBO (under separate Contract)
Timber Tech Engineering, Inc
406 South Main Street
Kouts, IN 46347
219.766.2499
Timothy Hoyer, P.E. TX 119625

Construction Document Index

A1.01	Cover Sheet
A2.00	Wells Fargo Out Building
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A2.02	Roof Plan
A2.03	Flatwork Plan
A3.01	Elevations/Storefront
A4.01	Wall Sections/Details
A4.02	Wall Sections/Details
A4.03	Wall Sections/Details
A4.04	Wall Sections/Details
A4.05	Wall Sections/Details
A4.06	Roof Details
ADA1	Accessibility Details
ADA2	Accessibility Details
ADA3	Accessibility Details
ADA4	Accessibility Details
G1.01	Gazebo Plans
G1.02	Gazebo Plans
G1.03	Gazebo Calcs
G1.04	Gazebo Calcs
G1.05	Gazebo Calcs
G1.06	Gazebo Calcs
MEP1	MEP Specifications
MEP2	MEP Schedules & Notes
MEP3	Site Utilities
MEP4	MEP COMCheck
MEP2.0	Wells Fargo Out Building
MP1.1	Mech/Plumbing Plan
MP1.2	Mech/Plumbing Roof Plan
MP2.1	Plumbing Details & Notes
E1.1	Lighting & Circuiting
E2.1	Electrical Panel & Risers
S1.01	Foundation Details
S1.02	Framing Details
S1.02D	Framing Details
S1.03	Framing Elevations
S1.04	Framing Axonometrics
S1.05	Framing Axonometrics
S2.01	Foundation Plan
S2.02	Framing Plan

Duane Meyers
560 PR 2422
Uncertain, TX 75661
903.484.4040
dmayers@imac.com
www.duanemeyers.com

INCLUDE IN PERMIT PACKET

INCLUDE IN PERMIT PACKET

B18-02769

Teel Crossing Phase 2
Frisco, TX
Construction Documents

Revisions

REGISTERED ARCHITECT DUANE MEYERS STATE OF TEXAS
30 April 2018

A1.01

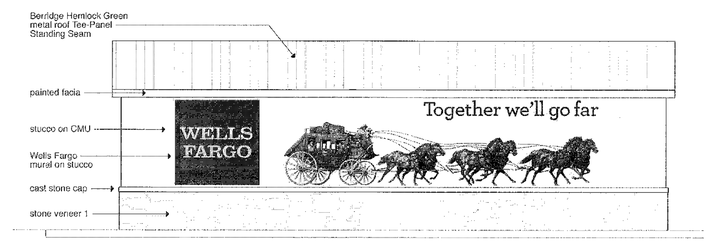
30 April 2018

B18-02769

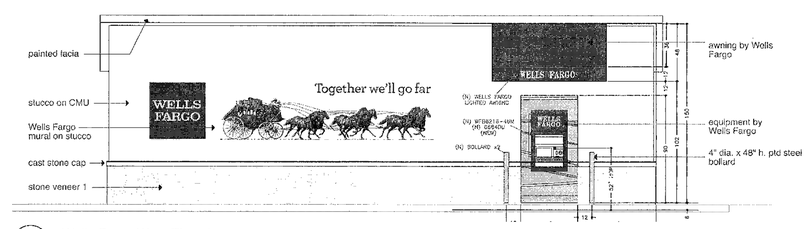
BLUDOT ENGINEERING LLC
HOUSTON, TEXAS
TBPE FIRM # F-14889
www.bludot-engineering.com
info@bludot-engineering.com
713-272-8000

Teel Crossing Phase 2
Frisco, TX
Construction Documents

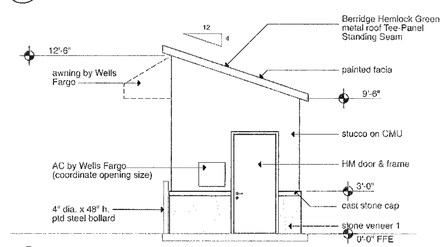
Revisions



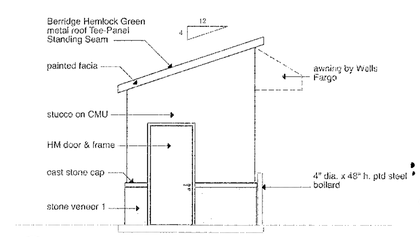
05 Wells Fargo East Elevation
SCALE: 1/4" = 1'-0"



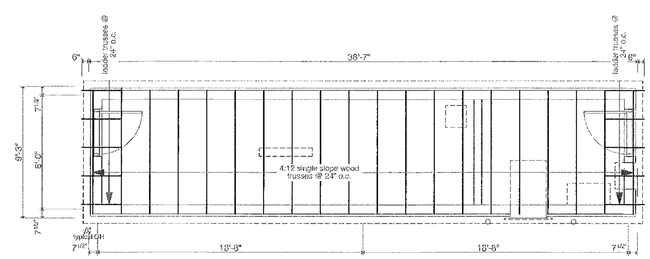
04 Wells Fargo West Elevation
SCALE: 1/4" = 1'-0"



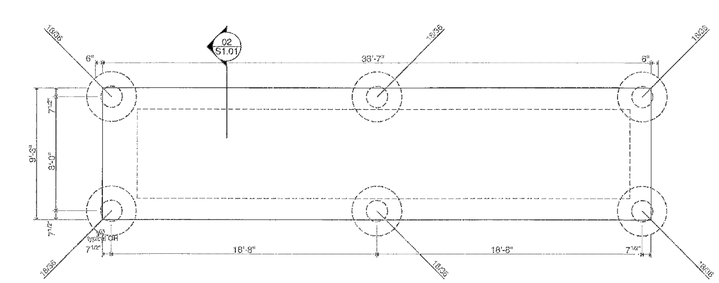
02 Wells Fargo South Elevation
SCALE: 1/4" = 1'-0"



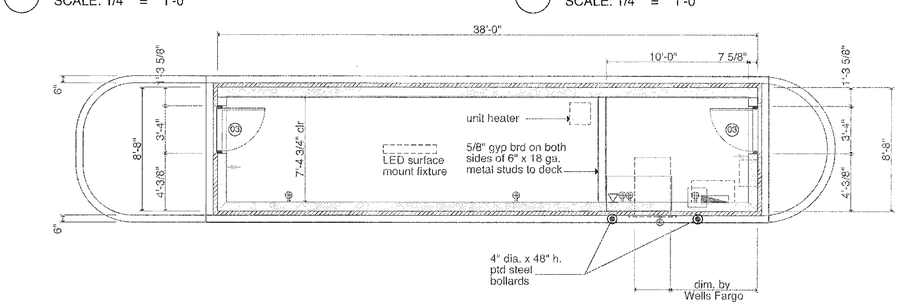
03 Wells Fargo North Elevation
SCALE: 1/4" = 1'-0"



02 Wells Fargo Framing Plan
SCALE: 1/4" = 1'-0"



01 Wells Fargo Foundation Plan
SCALE: 1/4" = 1'-0"



01 Floor Plan Wells Fargo Out Building
SCALE: 1/4" = 1'-0"

This document is released for the purpose of interim review under the authority of Duane Meyers Architect, registration no. 8698 in the State of Texas and is not to be used for construction, bidding or permitting.

S2.00

16 April 2018

Duane Meyers
Jan 12 2018
Orange, TX 77632
409-882-4040
www.duanemeyers.com
dm@meyers@gmail.com

Teel Crossing Phase 2
Frisco, TX
Construction Documents
Revisions

This document is released for the purpose of interim review under the authority of Duane Meyers Architect, registration no. 8698 in the State of Texas and is not to be used for construction, bidding or permitting.

A2.00

16 April 2018

BXUV.U465
Fire Resistance Ratings - ANSI/UL 263

Page Bottom

Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Listed or Classified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered as Classified, Listed, or Recognized.

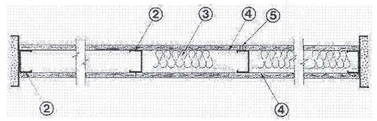
Fire Resistance Ratings - ANSI/UL 263

See General Information for Fire Resistance Ratings - ANSI/UL 263

Design No. U465

June 02, 2008

Nonbearing Wall Rating — 1 HR.



1. **Floor and Ceiling Runners** — (not shown) — Channel shaped runners, 3-5/8 in. wide (min), 1-1/4 in. legs, formed from min No. 25 MSG galv steel, attached to floor and ceiling with fasteners spaced 24 in. OC max.

2. **Steel Studs** — Channel shaped, 3-5/8 in. wide (min), 1-1/4 in. legs, 3/8 in. folded back returns, formed from min No. 25 MSG galv steel spaced 24 in. OC max.

3. **Batts and Blankets*** — (Optional) — Mineral wool or glass fiber batts partially or completely filling stud cavity.

See Batts and Blankets (BZJZ) category for names of Classified companies.

3A. **Fiber, Sprayed*** — As an alternate to Batts and Blankets (Item 3) — Spray applied cellulose material. The fiber is applied with water to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. Nominal dry density of 3.0 lb/ft^3. Alternate application method: The fiber is applied with U.S. Greenfiber LLC Type AD100 hot melt adhesive at a nominal ratio of one part adhesive to 6.6 parts fiber to completely fill the enclosed cavity in accordance with the application instructions supplied with the product. Nominal dry density of 2.5 lb/ft^3.

U S GREENFIBER L L C — Cocoon2 Stabilized or Cocoon-FRM (Fire Rated Material)

3B. **Fiber, Sprayed*** — As an alternate to Batts and Blankets (Item 3) and Item 3A - Spray applied cellulose insulation material. The fiber is applied with water to interior surfaces in accordance with the application instructions supplied with the product. Applied to completely fill the enclosed cavity. Minimum dry density of 4.3 pounds per cubic ft.

NU-WOOL CO INC — Cellulose Insulation

4. **Gypsum Board*** — 5/8 in. thick, 4 ft wide, attached to steel studs and floor and ceiling track with 1 in. long, Type S steel screws spaced 8 in. OC. along edges of board and 12 in. OC in the field of the board. Joints oriented vertically and staggered on opposite sides of the assembly. When attached to Item 6 (resilient channels) or 6A (furring channels), wallboard is screw attached to furring channels with 1 in. long, Type S steel screws spaced 12 in. OC.

AMERICAN GYPSUM CO — Types AG-C, AGX-1

BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO — Type DBX-1.

CANADIAN GYPSUM COMPANY — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

CERTAINTEED GYPSUM INC — Types 1, EGRG, ProRoc Type X, ProRoc Type C.

CERTAINTEED GYPSUM CANADA INC — ProRoc Type C, ProRoc Type X or ProRoc Type Abuse-Resistant.

FEDERAL GYPSUM CO — PlasterRock

G-P GYPSUM CORP, SUB OF GEORGIA-PACIFIC CORP — Types 5, 9, C, DAP, DD, DA, DGG, DS, GPFS6.

LAFARGE NORTH AMERICA INC — Types LGFC2, LGFC2A, LGFC6, LGFC6A, LGFC-C, LGFC-C/A.

NATIONAL GYPSUM CO — Types FSK, FSK-C, FSK-G, FSW-C, FSW-G, FSW, FSW-3, FSW-5, FSW-6.

PABCO GYPSUM — Type PG-C, PG-11 or PG-9.

PANEL REY S A — Type PRX.

SIAM GYPSUM INDUSTRY (SARABURI) CO LTD — Type EX-1

TEMPLE-INLAND FOREST PRODUCTS CORP — Type X, Veneer Plaster Base - Type X, Water Rated - Type X, Sheathing - Type X, Soffit - Type X, TG-C, GreenGlas Type X.

UNITED STATES GYPSUM CO — Type AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

USG MEXICO S A DE C V — Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

4A. **Gypsum Board*** — (As alternate to Item 4) - Nom 5/8 in. thick gypsum panels with beveled, square or tapered edges, applied vertically or horizontally. Vertical joints centered over studs and staggered one stud cavity on opposite sides of studs. Horizontal edge joints and horizontal butt joints on opposite sides of studs need not be staggered or backed. Panels attached to steel studs and floor runner with 1 in. long Type S steel screws spaced 8 in. OC when applied horizontally, or 8 in. OC along vertical and bottom edges and 12 in. OC in the field when panels are applied vertically. When used in widths other than 48 in., gypsum panels to be installed horizontally.

CANADIAN GYPSUM COMPANY — Types AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

CERTAINTEED GYPSUM INC — ProRoc Type X, ProRoc Type C.

CERTAINTEED GYPSUM CANADA INC — ProRoc Type X, ProRoc Type C.

G-P GYPSUM CORP, SUB OF GEORGIA-PACIFIC CORP — Types DAP, DGG.

UNITED STATES GYPSUM CO — T ype AR, C, FRX-G, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

USG MEXICO S A DE C V — Type AR, C, IP-AR, IP-X1, IP-X2, IPC-AR, SCX, SHX, WRC or WRX.

4B. **Gypsum Board*** — (As an alternate to Items 4 or 4A) — Nom 3/4 in. thick, 4 ft wide, installed as described in Item 4A with screw length increased to 1-1/4 in.

CANADIAN GYPSUM COMPANY — Types AR, IP-AR.

UNITED STATES GYPSUM CO — Types AR, IP-AR.

USG MEXICO S A DE C V — Types AR, IP-AR.

4C. **Gypsum Board*** — As an alternate to Items 4, 4A, and 4B - Nom. 5/8 in. thick gypsum panels, with square edges, applied horizontally. Gypsum panels fastened to framing with 1 in. long bugle head steel screws spaced a max 8 in. OC, with last 2 screws 3/4 in. and 4 in. from each edge of board. Horizontal joints need not be backed by steel framing. Horizontal edge joints and horizontal butt joints on opposite sides of studs on interior walls need not be staggered.

TEMPLE-INLAND FOREST PRODUCTS CORP — GreenGlas Type X.

5. **Joint Tape and Compound** — Vinyl, dry or premixed joint compound, applied in two coats to joints and screw heads; paper tape, 2 in. wide, embedded in first layer of compound over all joints. As an alternate, nominal 3/32 in. thick gypsum veneer plaster may be applied to the entire surface of Classified veneer baseboard. Joints reinforced. Paper tape and joint compound may be omitted when gypsum boards are supplied with square edges.

6. **Resilient Channel** — (Optional-Not Shown) — 25 MSG galv steel resilient channels spaced vertically max 24 in. OC, flange portion attached to each intersecting stud with 1/2 in. long type S-12 panhead steel screws.

6A. **Steel Framing Members (Not Shown)*** — As an alternate to Item 3, furring channels and resilient sound isolation clip as described below:

a. **Furring Channels** — Formed of No. 25 MSG galv steel. 2-3/8 in. wide by 7/8 in. deep, spaced 24 in. OC perpendicular to studs. Channels secured to studs as described in Item b. Ends of adjoining channels are overlapped 6 in. and tied together with double strand of No. 18 SWG galv steel wire near each end of overlap. As an alternate, ends of adjoining channels may be overlapped 6 in. and secured together with two self-tapping #6 framing screws, min. 7/16 in. long at the midpoint of the overlap, with one screw on each flange of the channel.

b. **Steel Framing Members*** — Used to attach furring channels (Item a) to studs (Item 1). Clips spaced 48 in. OC., and secured to studs with 1-5/8 in. wafer or hex head Type S steel screw through the center grommet. Furring channels are friction fitted into clips.

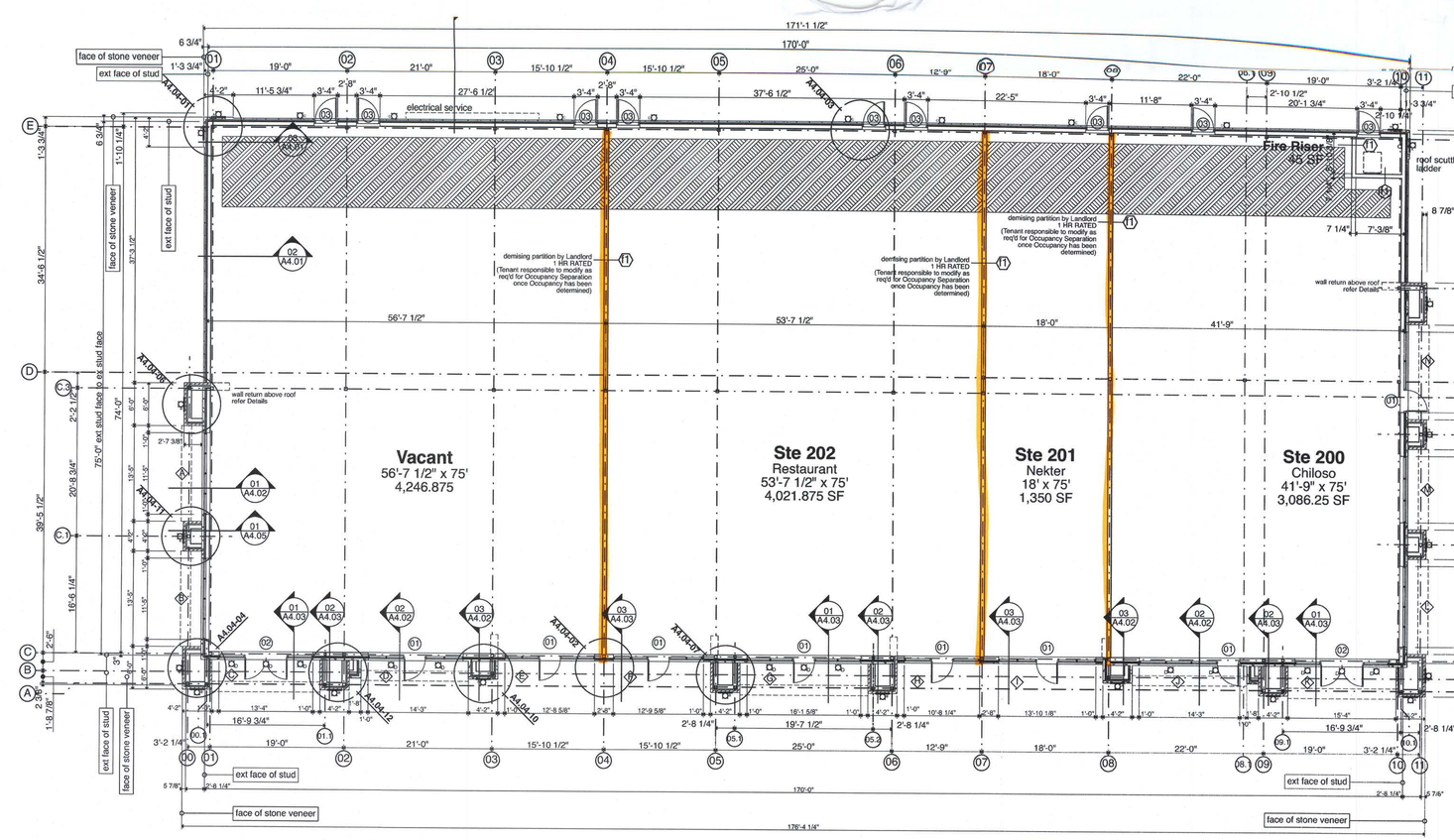
PAC INTERNATIONAL INC — Type RSIC-1.

6B. **Steel Framing Members*** — Optional - Not Shown - Used as an alternate method to attach resilient channels (Item 6). Clips attached at each intersection of the resilient channel and the steel studs (Item 2). Resilient channels are friction fitted into clips, and then clips are secured to the wood stud with min. 1 in. long Type S-12 panhead steel screws through the center hole of the clip and the resilient channel flange.

KEENE BUILDING PRODUCTS CO INC — Type RC Assurance.

7. **Wall and Partition Facings and Accessories*** — (Optional, Not shown) — Nominal 1/2 in. thick, 4 ft wide panels, for optional use as an additional layer on one or both sides of the assembly. Panels attached in accordance with manufacturer's recommendations. When the QR-S10 panel is installed between the steel framing and the UL Classified gypsum board, the required UL Classified gypsum board layer(s) is/are to be installed as indicated as to fastener type and spacing, except that the required fastener length shall be increased by a minimum of 1/2 in. Not evaluated or intended as a substitute for the required layer(s) of UL Classified Gypsum Board.

QUIET SOLUTION INC — Type QuietRock QR-S10.

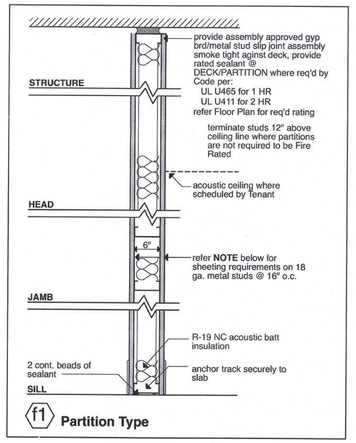


N

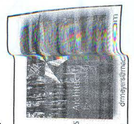
General Plan Notes:

1. Relative Finish Floor Elevation (FFE) 100'-0", refer to Civil Drawings for Datum FFE.
2. Exterior overall dimensions are to exterior face of finish material (brick or stone) at grade unless noted otherwise. Plaster (above) overhangs stone, refer Wall Sections.
3. Refer Plan Section Details for Stud Face to Ext Finish Material Dimensions.
4. Interior dimensions are face of finish to face of finish unless noted otherwise.
5. Contractor to coordinate ALL front and rear door entrance locations with Tenants/Landlord prior to installation.
6. ALL future Tenant restrooms are to be constructed as accessible in accordance with the State of Texas & Federal ADA. Refer to sheets ADA1 through ADA4 for specifics.
7. All Interior Partitions are to be provided by Tenants under separate contract, except @ Fire Riser Room.
8. Refer to Civil Drawings for all paving and flatwork conditions.
9. Denotes "Sidewalk Expansion Joint", refer A4.03-10. Note that all other sidewalk joints shown to be Sidewalk Control Joints
10. Tenants will be responsible for providing:
    a. Interior Partitions except Demising Partition
    b. Gypsum Board at exterior perimeter walls and insulation to be furnished and installed by Landlord's Contractor
11. Lease Lines go to exterior face studs to centerline of demising partitions.

01 Master Floor Plan Phase 2
SCALE: 1/8" = 1'-0"



f1 Partition Type



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Teel Crossing Phase 2
Frisco, TX
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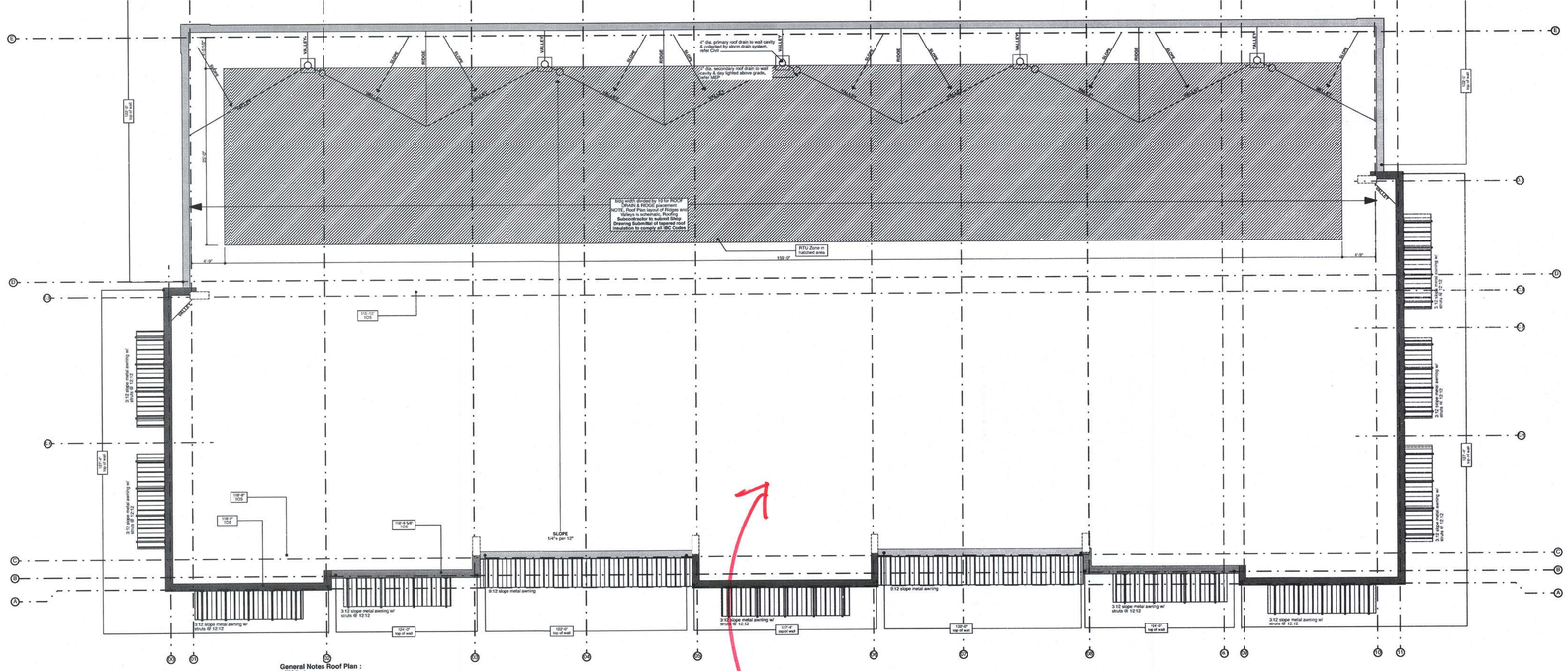
STATE OF TEXAS
30 April 2018

A2.01



General Notes Roof Plan :

1. TPO Roofing
   Roofing to Firestone 60 mil TPO roofing over 1/4" Dens Deck over R-20 rigid polyiso insulation (4" thick as required)
   COLOR: white

2. Roof Drains
   Slope to drain 1/4" per foot
   refer Civil & MEP drawings for discharge details

3. All future roof mounted equipment, locations & weights to be approved by Landlord's Architect/Engineer prior to installation.

4. Pre-finished metal coping to be equal to PacClad Sandstone

5. Metal Awnings to be equal to Berridge Hemlock Green

Structural RTU Mechanical Zones

1. RTU's may be placed in this area from a structural load standpoint.
2. RTU's **MAYNOT** be placed in consecutive joist bays.
3. All future RTU locations & weights to be approved by Landlord's Architect/Engineer prior to installation.

01 Roof Plan Phase 2
SCALE: 1/8" = 1'-0"

FRISCO
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Cool Roof Requirements

In adherence to the City of Frisco's 2015 Comprehensive plan, all commercial and Multifamily projects are subject to the "Cool Roof" requirements-in an effort to lower energy costs and reduce the heat island effect. The US department of energy defines the Solar Reflectance Index (SRI) as; a measure of the roof's ability to reject solar heat, as shown by a small temperature rise.

Commercial and multifamily roofing materials must meet the minimum "Cool Roof" specifications below;

- **Option 1- Energy Star**

For low-slope roofs {2:12}; an initial Solar Reflectance of greater than or equal to 0.65, and a three-year aged Solar Reflectance value of 0.50. For steep-slope roofs: an initial Solar Reflectance of greater than or equal to 0.25, and three-year aged Solar Reflectance value of 0.15.

Energy Star	
Table 1- Specifications for Low-Slope (2:12 or ≤9.46°) Roof Products	
Characteristics	**Performance Specification**
Solar Reflectance	
Initial Solar Reflectance	Greater than or equal to **0.65**
Maintenance of Solar Reflectance	Greater than or equal to **0.50** three (3)years after installation under normal conditions.
Reliability	
Manufacturer warranty for defects in materials and manufacturing	Each company's warranty for ENERGY STAR qualified roof products shall be equal in all material respects to the product warranty offered by the same company for comparable no -ENERGY STAR qualified roof products. A company that sells only ENERGY STAR qualified roof roof products shall offer a warranty that is equal in all material respects to the standard industry warranty for comparable non-ENERGY STAR qualified roof products.
Table 2- Specifications for Steep-Slope (>9.46°) Roof Products	
Characteristics	**Performance Specification**
Energy Efficiency Levels	
Initial Solar Reflectance	Greater than or equal to **0.25**
Maintenance of Solar Reflectance	Greater than or equal to **0.15** three (3)years after installation under normal conditions.
Reliability	
Manufacturer warranty for defects in materials and manufacturing	Each company's warranty for ENERGY STAR qualified roof products shall be equal in all material respects to the product warranty offered by the same company for comparable no -ENERGY STAR qualified roof products. A company that sells only ENERGY STAR qualified roof roof products shall offer a warranty that is equal in all material respects to the standard industry warranty for comparable non-ENERGY STAR qualified roof products.

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There are colored coatings of metal, slate, tile and shingles on the Energy Star Roof Product List . In addition, a product may meet the specifications above without being on the list. Documentation would have to be provided to show compliance with Energy Star.

- **Option 2- IECC** (International Energy Conservation Code)

A three-year aged Solar Reflectance value of 0.55 after installation under normal conditions.

A three-year aged Thermal Emittance value of 0.75 after installation under normal conditions.

A three-year aged Solar Reflectance Index (SRI) of 64 after installation under normal conditions.

IECC (C402.3)	
Solar Reflectance	
Maintenance of Solar Reflectance	Greater than or equal to **0.55** three (3)years after installation under normal conditions.
Thermal Emittance	
Maintenance of Thermal Emittance	Greater than or equal to **0.75** three (3)years after installation under normal conditions.
Energy Efficiency Levels	
Maintenance of Solar Reflectance Index **(SRI)**	Greater than or equal to **64** three (3)years after installation under normal conditions.
C402.3.1 Aged roof solar reflectance. Where an aged Solar reflectance required by section C402.3 is not available, it shall be determined in accordance with **Equation 4-3 below**; $R\{aged\} = [0.2+0.7(R\{initial\}-0.2)]$ where: $R\{aged\}$= the aged solar reflectance. $R\{initial\}$= The initial solar reflectance determined in accordance with CRRC-1 Standard.	

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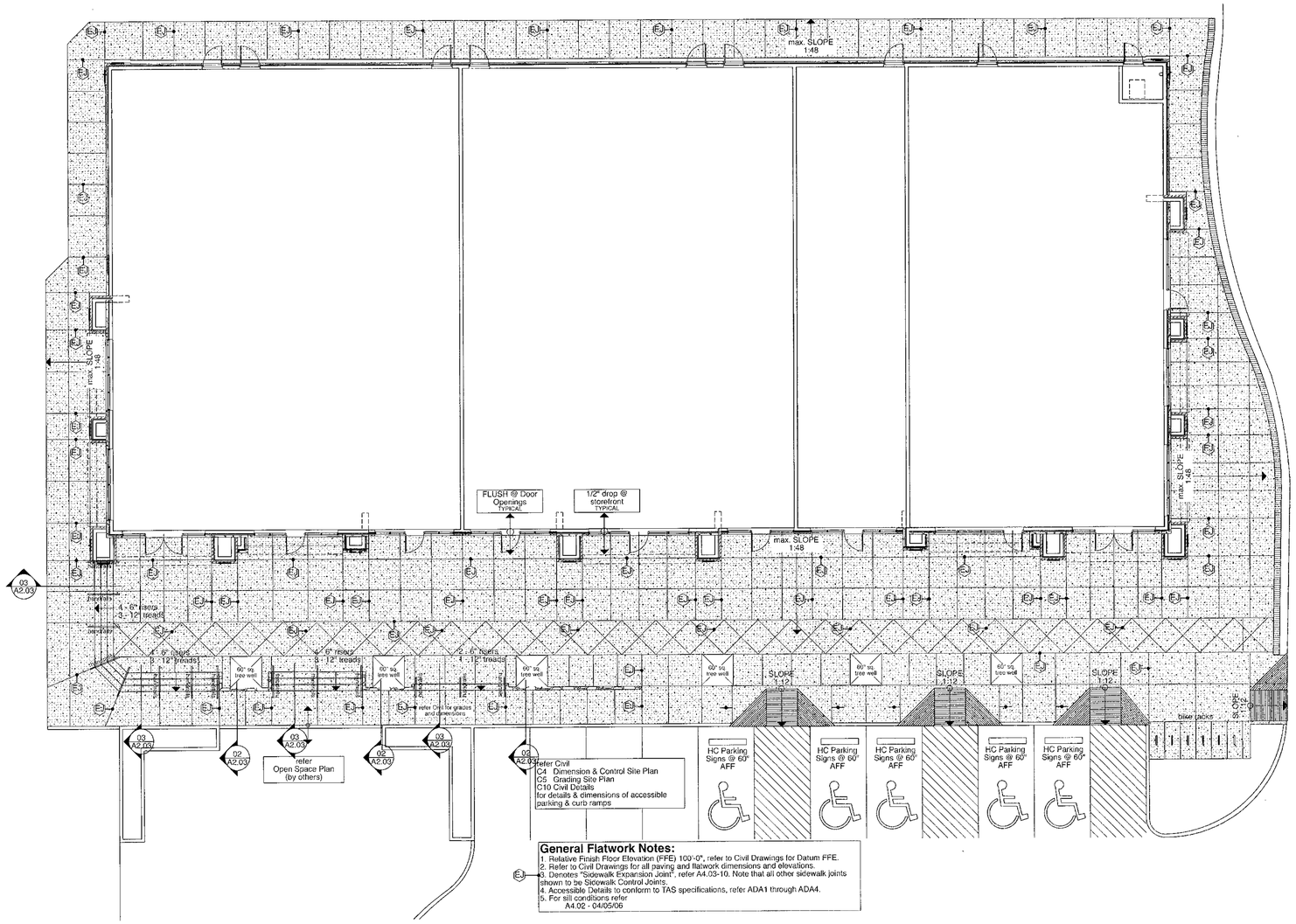
30 April 2018

A2.02

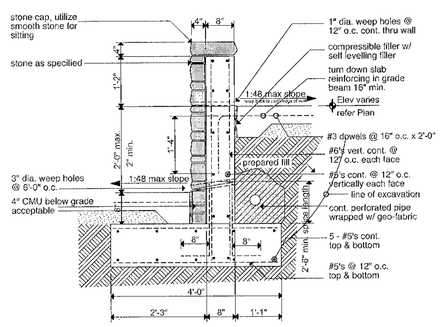
30 April 2018



General Flatwork Notes:

1. Relative Finish Floor Elevation (FFE) 100'-0", refer to Civil Drawings for Datum FFE.
2. Refer to Civil Drawings for all paving and flatwork dimensions and elevations.
3. Denotes "Sidewalk Expansion Joint", refer A4.03-10. Note that all other sidewalk joints shown to be Sidewalk Control Joints.
4. Accessible Details to conform to TAS specifications, refer ADA1 through ADA4.
5. For sill conditions refer A4.02 - 04/05/06

01 Flatwork Plan Phase 2
SCALE: 1/8" = 1'-0"



02 Stone Retaining Wall
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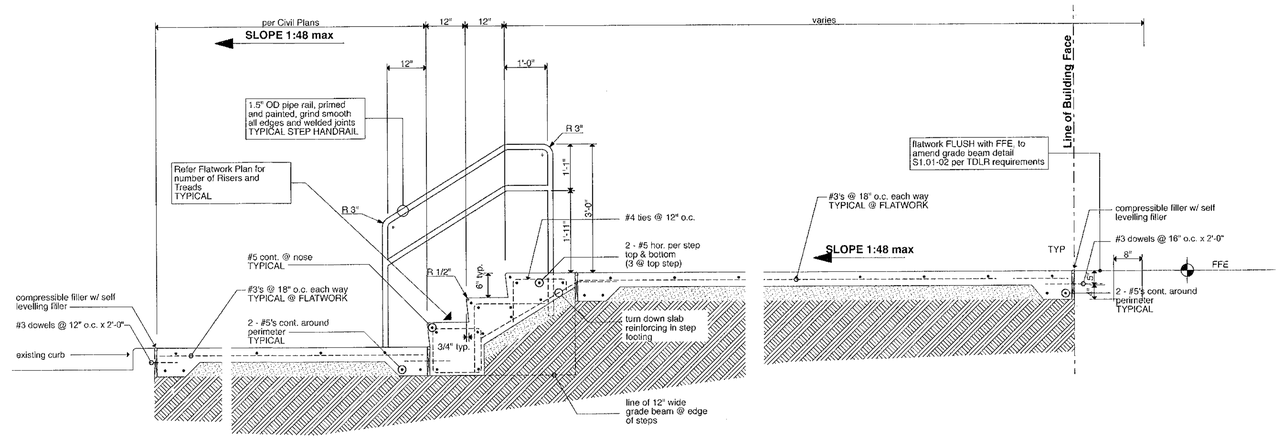

03 Step Details
scale: 3/4" = 1'-0"

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A2.03

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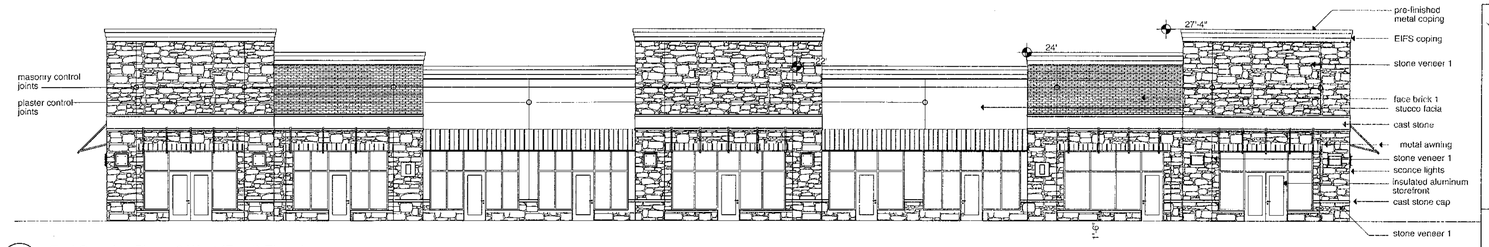
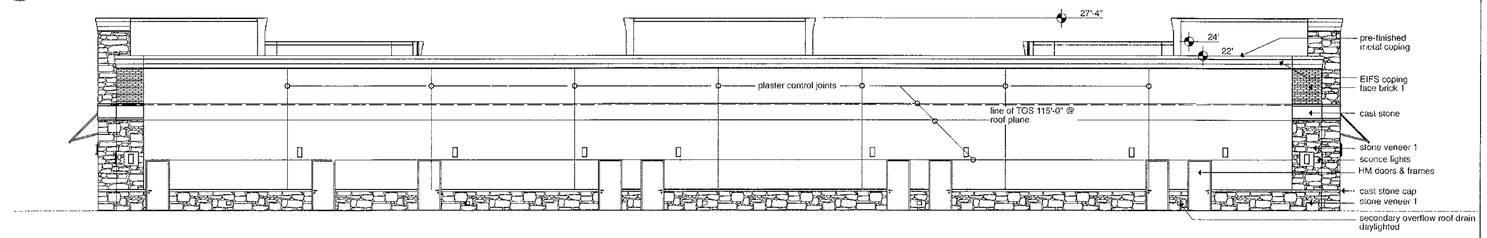


01 Teel Crossing Phase 2 West (Front) Elevation
SCALE: 1/8" = 1'-0"



02 Teel Crossing Phase 2 East (Rear) Elevation
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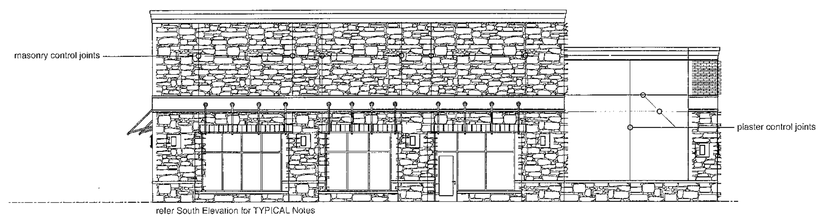

04 Teel Crossing Phase 2 North (Right) Elevation
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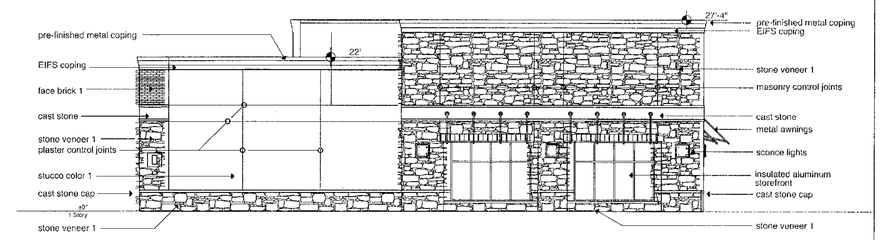
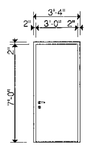


03 Teel Crossing Phase 2 South (Left) Elevation
SCALE: 1/8" = 1'-0"



03 3070 HM
insulated door

3070
2" x 5 3/4" frame
galv. w/ 4" h. head

provide panic device at exit locations

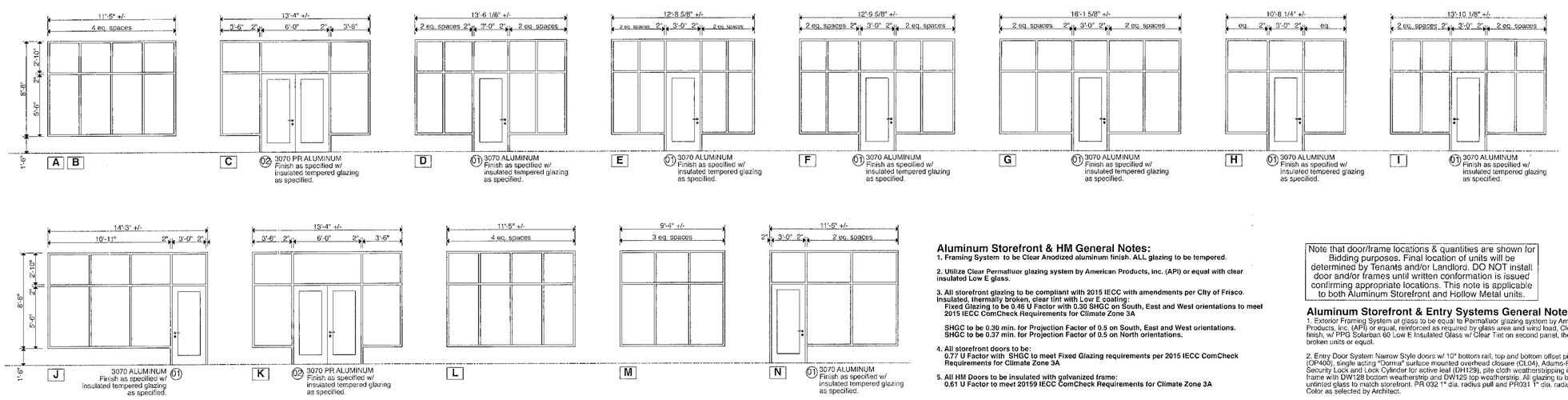
			01 West Elevation (front)		02 East Elevation (rear)		03 North Elevation (left)		04 South Elevation (right)	
Material	Mfg.	Color	Area	Percentage	Area	Percentage	Area	Percentage	Area	Percentage
stone veneer	Custom Stone	Granbury Natural Chopped (blend)	1243	28.9%	552	14.0%	245	14.9%	245	14.9%
cast stone	Better Cast Stone	Sand	216	5.0%	20	0.5%	85	5.2%	85	5.2%
brick veneer	Pine Hall	Tuscany	660	15.3%	42	1.1%	199	12.1%	199	12.1%
stucco	Dryvit	110 Van Dyke	339	7.9%	2882	73.2%	703	42.8%	703	42.8%
aluminum storefront	US Aluminum	clear frame, clear glass	1112	25.8%	0	0.0%	130	7.9%	130	7.9%
metal awning	Berridge	Hemlock Green	282	6.5%	0	0.0%	82	5.0%	82	5.0%
metal coping	Pac Clad	Sandstone	130	3.0%	120	3.0%	65	4.0%	65	4.0%
EIFS (coping)	Dryvit	456 Oyster Shell	325	7.5%	323	8.2%	135	8.2%	135	8.2%
Totals			**4307**	**100.0%**	**3939**	**100.0%**	**1644**	**100.0%**	**1644**	**100.0%**

General Elevation Notes:

1. All mechanical units shall be screened from public view.
2. When permitted, exposed utility boxes and conduits shall be painted to match building.
3. All signage areas and locations are subject to approval by Development Services.
4. Roof access shall be provided internally in Fire Riser Room.

Elevation Finishes:

ALL exterior finishes (including, but not limited to stone, brick, plaster, pre-finished metal coping, storefront and glazing, awnings) to match exactly Teel Crossing Phase One finishes
NO EXCEPTIONS



05 Storefront Door & Frame Elevations
SCALE: 1/4" = 1'-0"

Aluminum Storefront & HM General Notes:

1. Framing System to be Clear Anodized aluminum finish. ALL glazing to be tempered.

2. Utilize Clear Permafluor glazing system by American Products, Inc. (API) or equal with clear insulated Low E glass.

3. All storefront glazing to be compliant with 2015 IECC with amendments per City of Frisco. Insulated, thermally broken, clear tint with Low E coating:
Fixed Glazing to be 0.46 U Factor with 0.30 SHGC on South, East and West orientations to meet 2015 IECC ComCheck Requirements for Climate Zone 3A

SHGC to be 0.30 min. for Projection Factor of 0.5 on South, East and West orientations.
SHGC to be 0.37 min. for Projection Factor of 0.5 on North orientations.

4. All storefront doors to be:
0.77 U Factor with SHGC to meet Fixed Glazing requirements per 2015 IECC ComCheck Requirements for Climate Zone 3A

5. All HM Doors to be insulated with galvanized frame:
0.61 U Factor to meet 20159 IECC ComCheck Requirements for Climate Zone 3A

Note that door/frame locations & quantities are shown for Bidding purposes. Final location of units will be determined by Tenants and/or Landlord. DO NOT install door and/or frames until written conformation is issued confirming appropriate locations. This note is applicable to both Aluminum Storefront and Hollow Metal units.

Aluminum Storefront & Entry Systems General Notes:

1. Exterior Framing System at glass to be equal to Permafluor glazing system by American Products, Inc. (API) or equal, reinforced as required by glass area and wind load. Clear Anodized finish, w/ PPG Solarban 60 Low E Insulated Glass w/ Clear Tint on second panel, thermally broken units or equal.

2. Entry Door System Narrow Style doors w/ 10" bottom rail, top and bottom offset pivot hinges (OP400), single acting "Dorma" surface mounted overhead closure (CL04), Adams-Rite Max Security Lock and Lock Cylinder for active leaf (DH129), pile cloth weatherstripping in door and frame with DW128 bottom weatherstrip and DW129 top weatherstrip. All glazing to be 1/4" untinted glass to match storefront. PR 032 1" dia. radius pull and PR031 1" dia. radius push bar. Color as selected by Architect.

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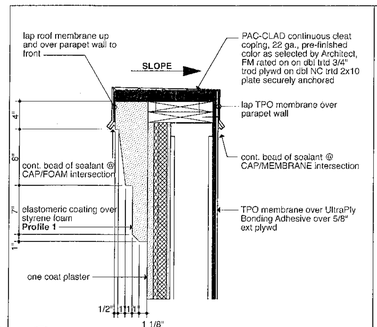
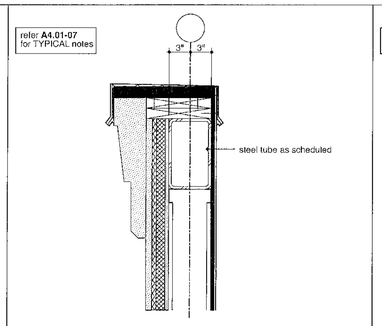
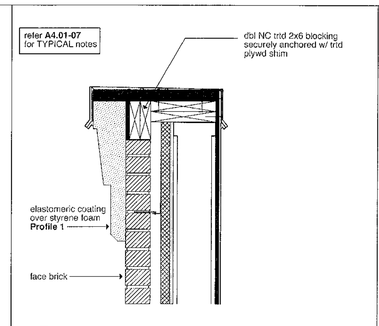


07 Metal Coping @ Plaster Wall Detail
scale: 1 1/2" = 1'-0"



08 Metal Coping @ Plaster Wall Detail
scale: 1 1/2" = 1'-0"



09 Metal Coping @ Brick Wall Detail
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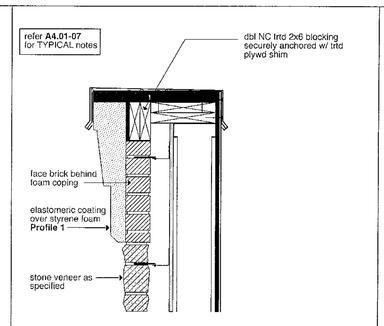

10 Metal Coping @ Stone Wall Detail
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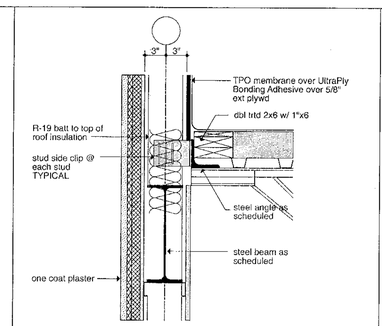

11 Joist Bearing @ Plaster Wall Detail
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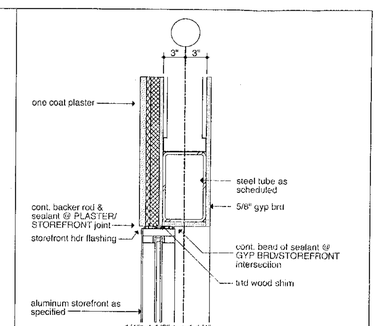

12 Storefront Head @ Plaster Wall Detail
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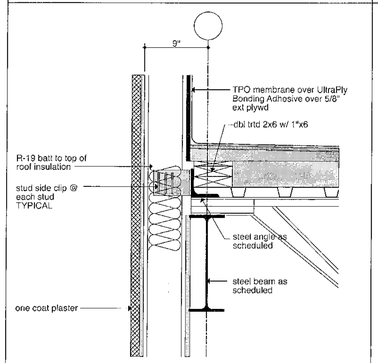
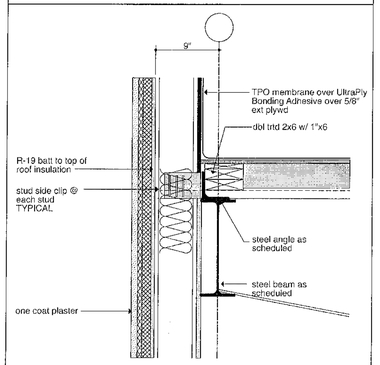


06 Joist Bearing @ Plaster Wall Detail
scale: 1 1/2" = 1'-0"



05 Deck Bearing @ Plaster Side Wall Detail
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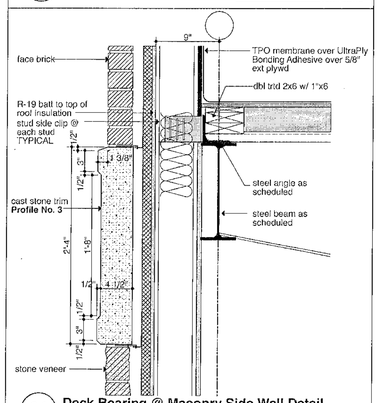

04 Deck Bearing @ Masonry Side Wall Detail
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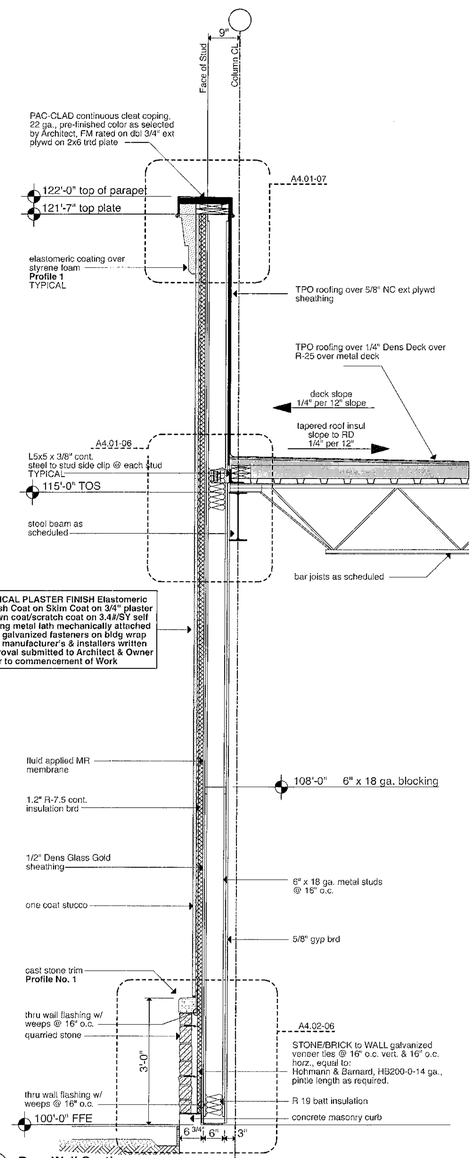

01 Rear Wall Section
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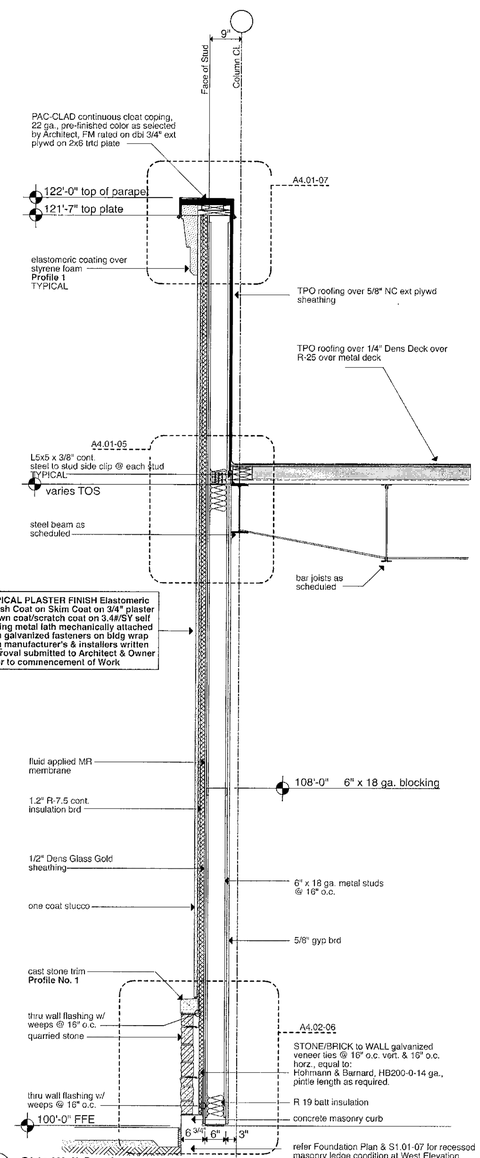

02 Side Wall Section
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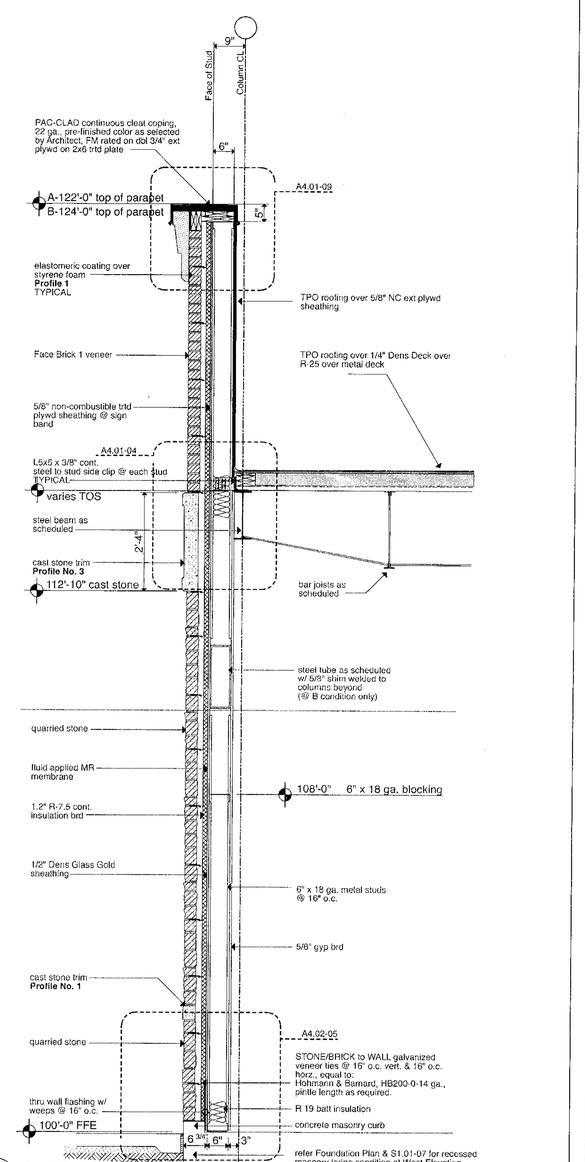

03 Side Pilaster Wall Section
scale: 3/4" = 1'-0"

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REGISTERED ARCHITECT DUANE A. MEYERS 30 April 2018

A4.01

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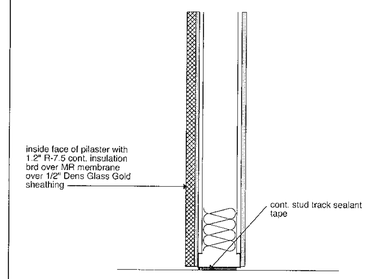
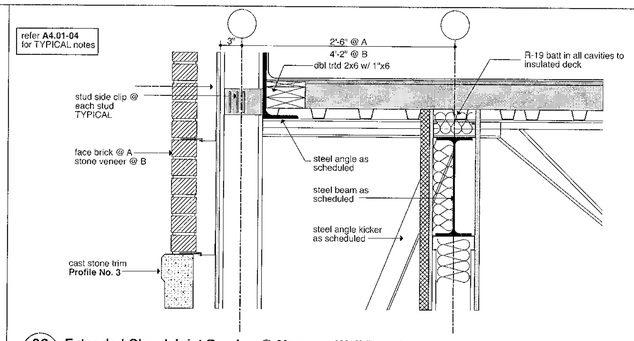


07 Pilaster Sill Wall Detail
scale: 1 1/2" = 1'-0"

refer A4.01-04 for TYPICAL notes



08 AB Extended Chord Joist Bearing @ Masonry Wall Detail
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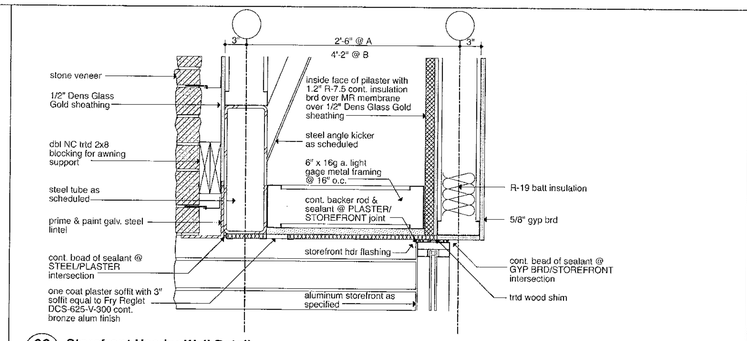

09 AB Storefront Header Wall Detail
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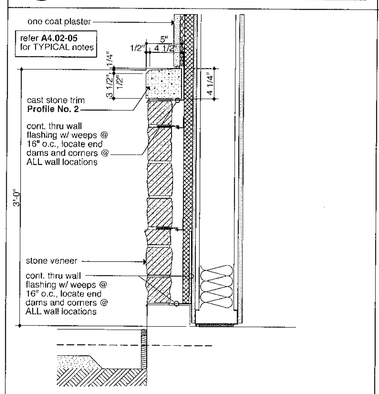

06 Masonry Sill & Wainscot Wall Detail
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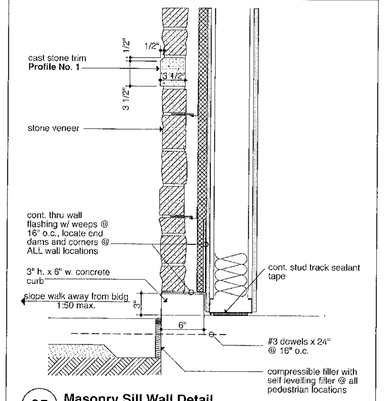
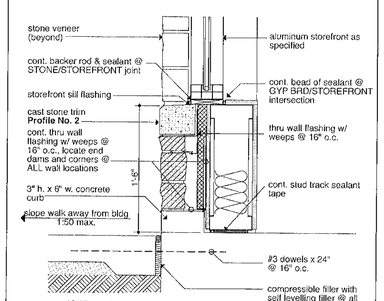


05 Masonry Sill Wall Detail
scale: 1 1/2" = 1'-0"



04 Storefront Sill Wall Detail
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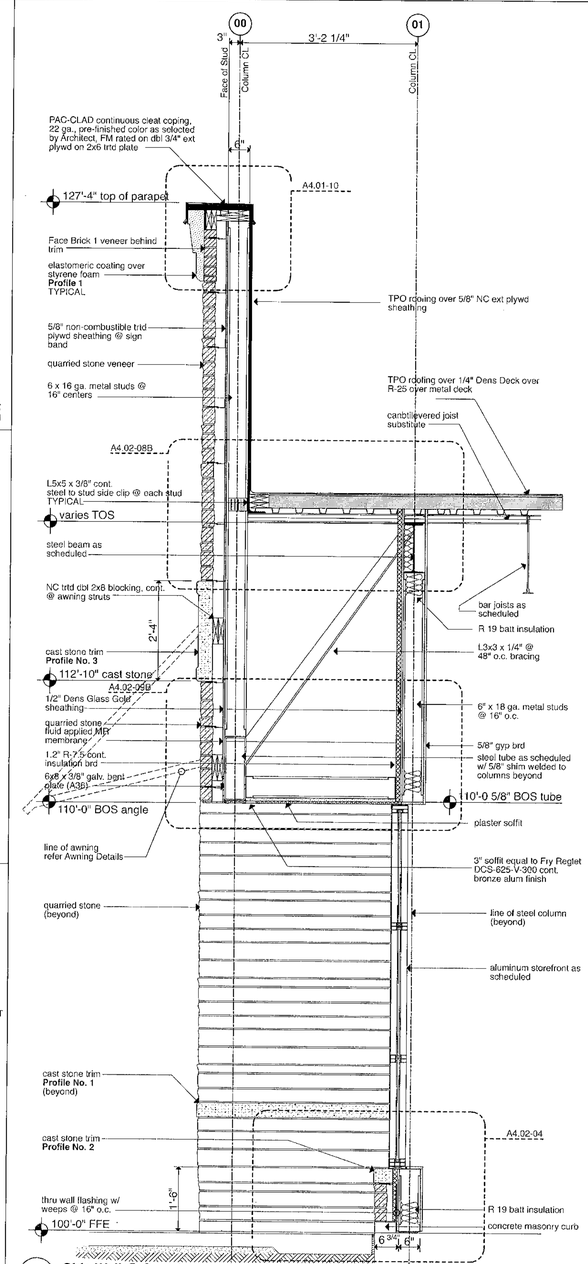
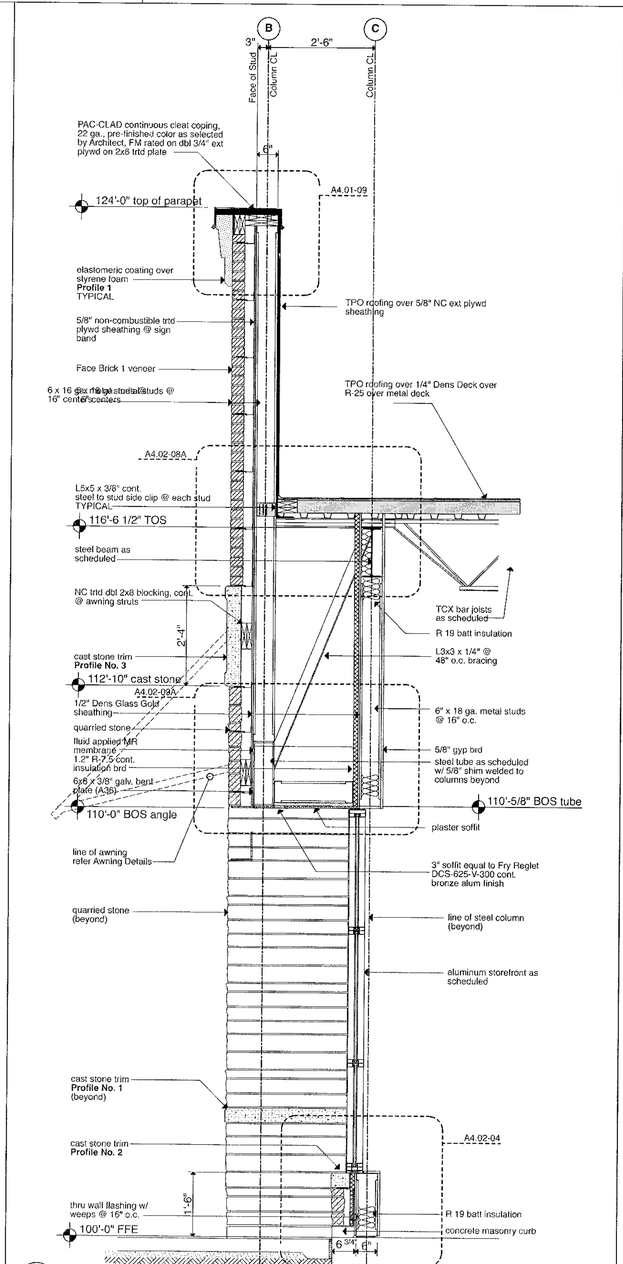
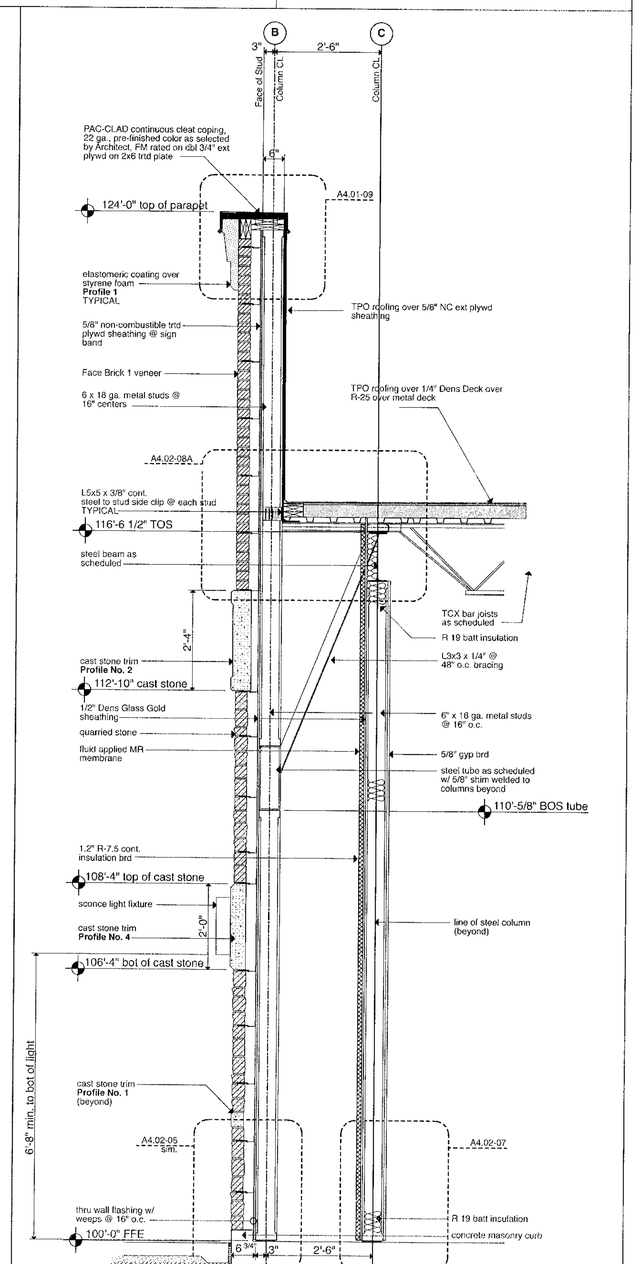


01 Side Wall @ Storefront Wall Section
scale: 3/4" = 1'-0"



02 Front Wall @ Storefront Wall Section
scale: 3/4" = 1'-0"



03 Front Wall @ Pilaster Wall Section
scale: 3/4" = 1'-0"

Duane Meyers
5851 FM 2432
Uncertain, TX 75661
903-424-4042
www.duanemeyers.com
dmeyers@tnet.com

Construction Documents

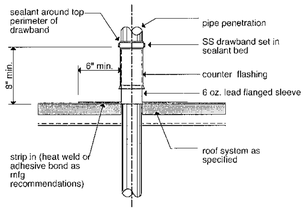
Teel Crossing Phase 2
Frisco, TX

Revisions

REGISTERED ARCHITECT DUANE W. MEYERS STATE OF TEXAS
30 April 2018

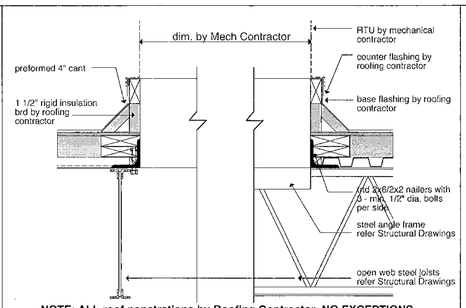
A4.02

30 April 2018



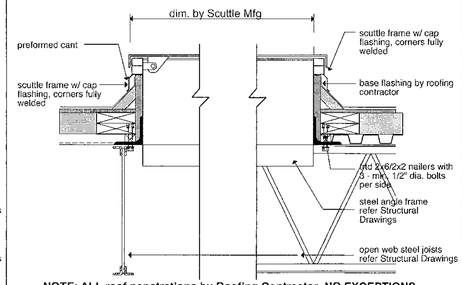
NOTE: ALL roof penetrations by Roofing Contractor NO EXCEPTIONS

07 Typical Roof Penetration - Cylindrical
scale: NTS



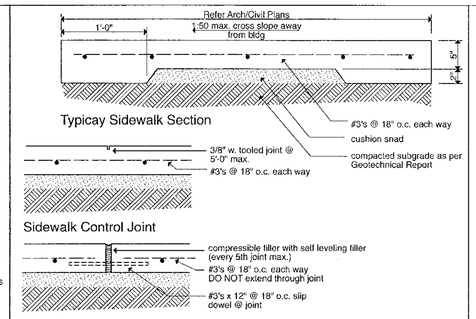
NOTE: ALL roof penetrations by Roofing Contractor NO EXCEPTIONS

08 Typical Roof Equipment Curb Detail
scale: NTS

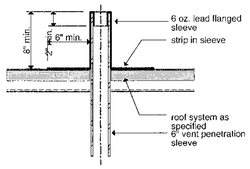


NOTE: ALL roof penetrations by Roofing Contractor NO EXCEPTIONS

09 Typical Roof Scuttle Detail
scale: NTS

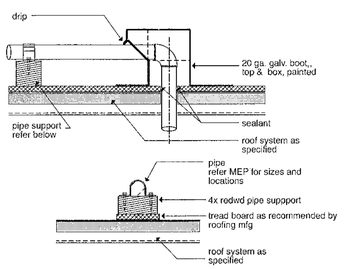


10 Typical Flatwork Details
scale: NTS



NOTE: ALL roof penetrations by Roofing Contractor NO EXCEPTIONS

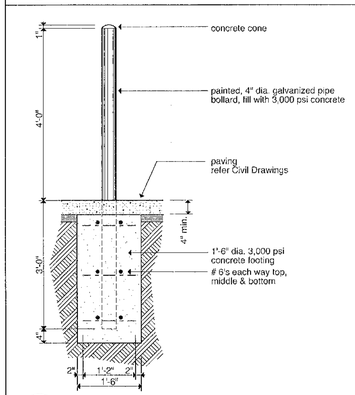
06 Typical Sanitary Roof Vent
scale: NTS



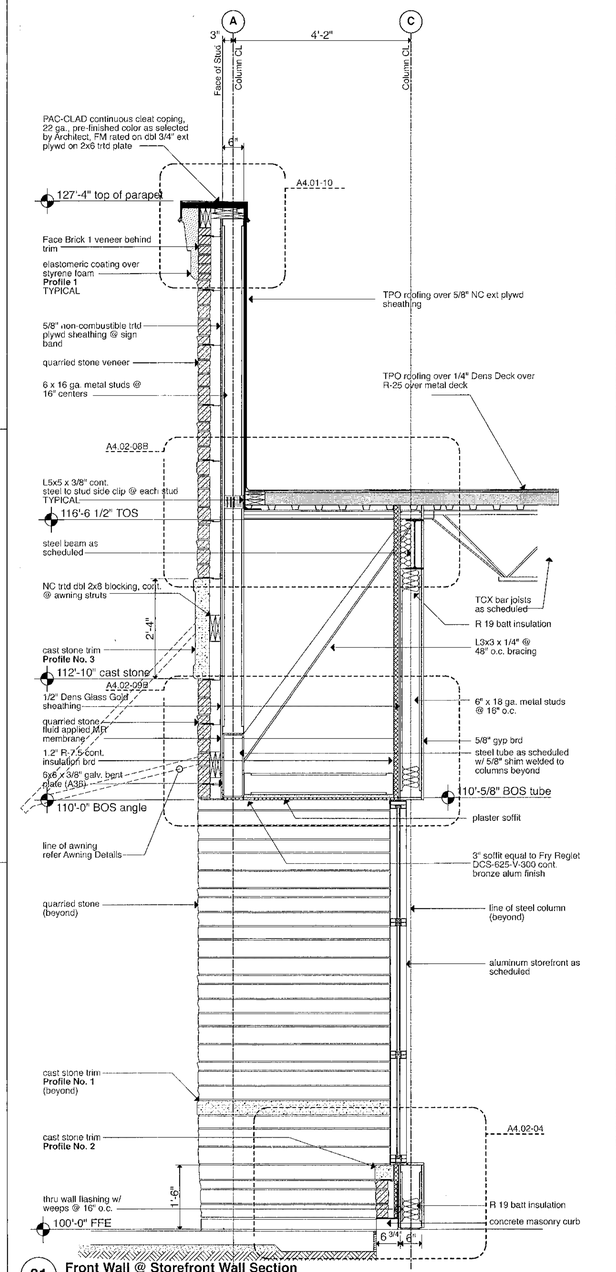
NOTE: ALL roof penetrations by Roofing Contractor NO EXCEPTIONS

Detail included in case a Tenant has a requirement for roof jack. This detail is not applicable at time of original publication.

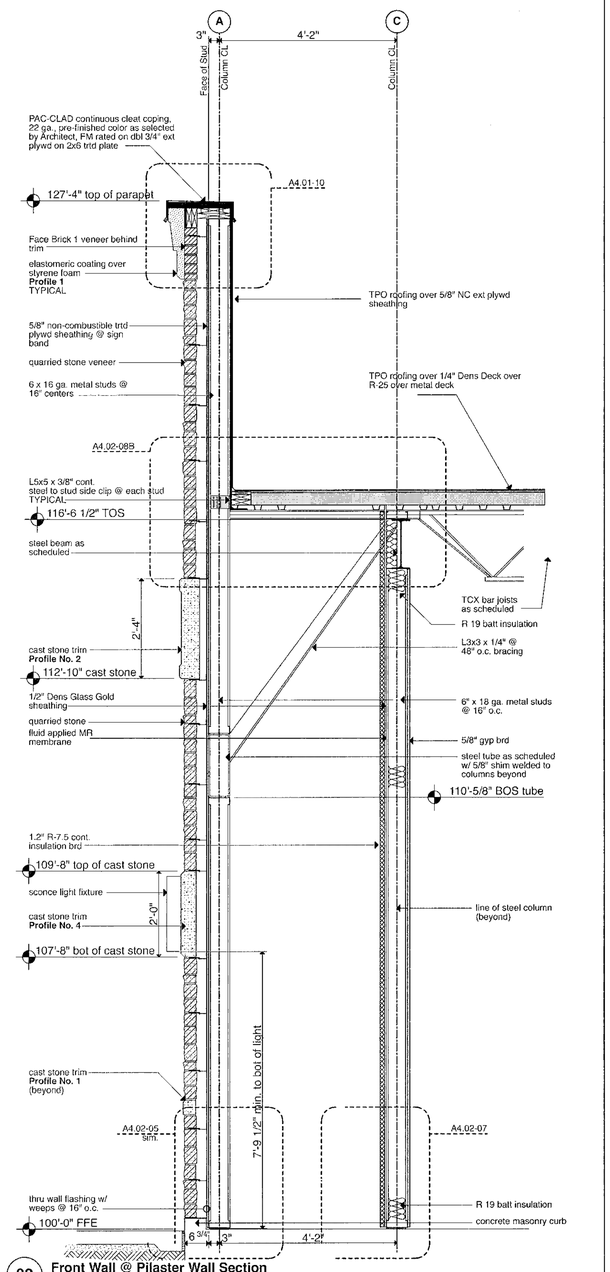
05 Typical Roof Jack/Support Detail
scale: NTS



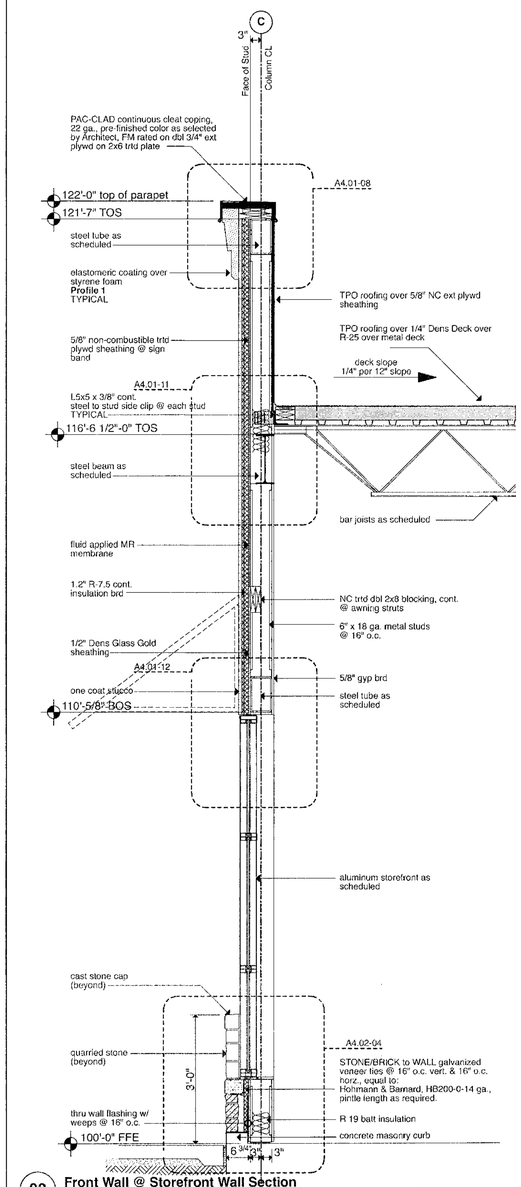
04 Typical Bollard @ Building Detail
scale: NTS



01 Front Wall @ Storefront Wall Section
scale: 3/4" = 1'-0"



02 Front Wall @ Pilaster Wall Section
scale: 3/4" = 1'-0"



03 Front Wall @ Storefront Wall Section
scale: 3/4" = 1'-0"

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903.404.4040
www.duanemeyers.com dmeyers@tmo.com

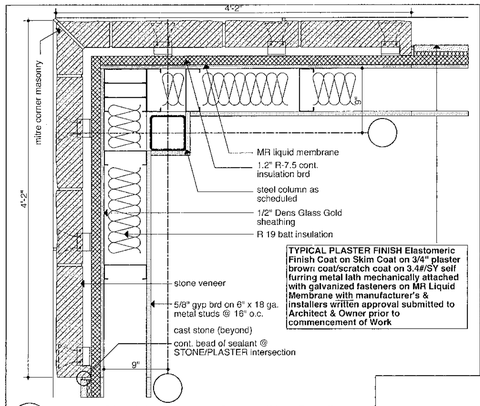
Feel Crossing Phase 2
Frisco, TX
Construction Documents

Revisions

REGISTERED ARCHITECT DUANE N. MEYERS 15453 STATE OF TEXAS
30 April 2018

A4.03

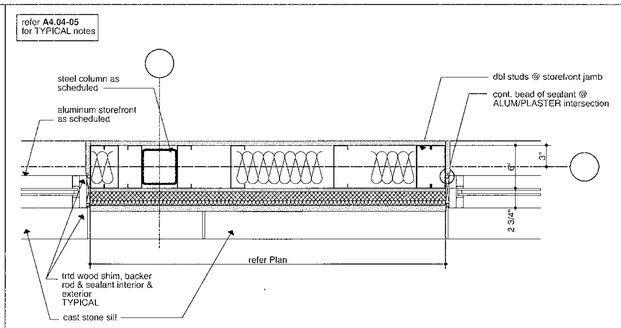
30 April 2018



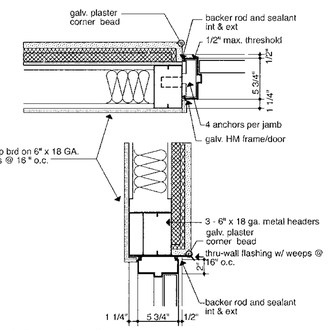
TYPICAL PLASTER FINISH Elastomeric Finish Coat on Skim Coat on 3/4" plaster brown coat/scratch coat on 3.4#/SY self furring metal lath mechanically attached with galvanized fasteners on MR Liquid Membrane with manufacturer's & installers written approval submitted to Architect & Owner prior to commencement of Work

01 Rear to Side Wall Pilaster Corner Plan Detail
scale: 1 1/2" = 1'-0"

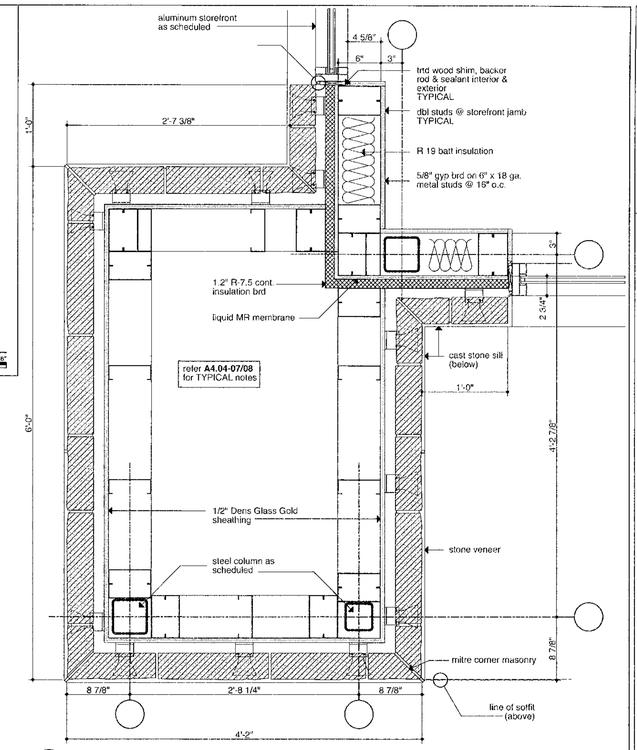
refer A4.04-05 for TYPICAL notes



02 Front Wall Plaster Pilaster Plan Detail
scale: 1 1/2" = 1'-0"

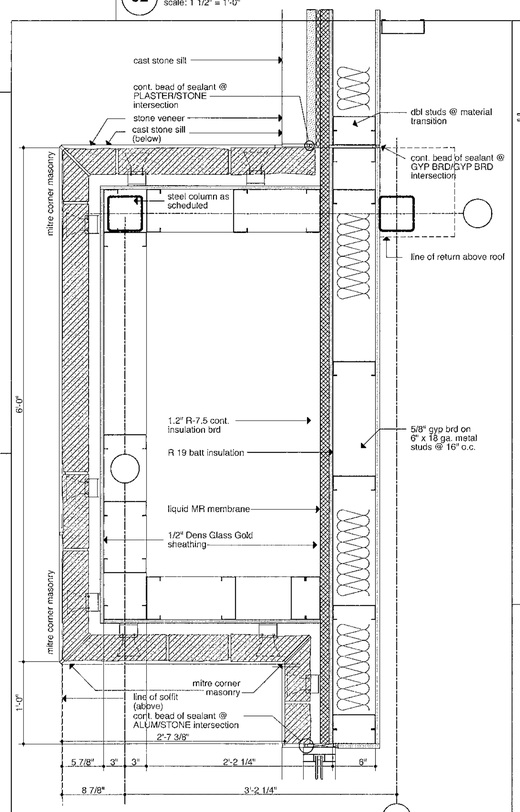


03 HM Door & Frame Detail
scale: 1 1/2" = 1'-0"

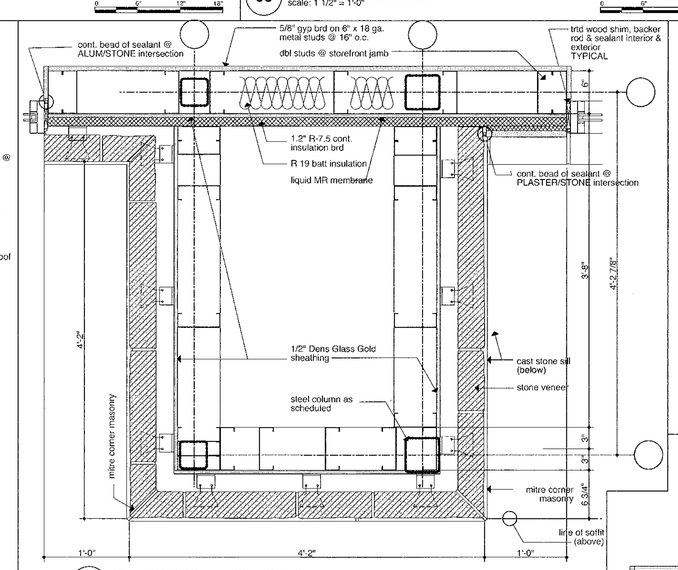


04 Front to Side Wall Corner Pilaster Plan Detail
scale: 1 1/2" = 1'-0"

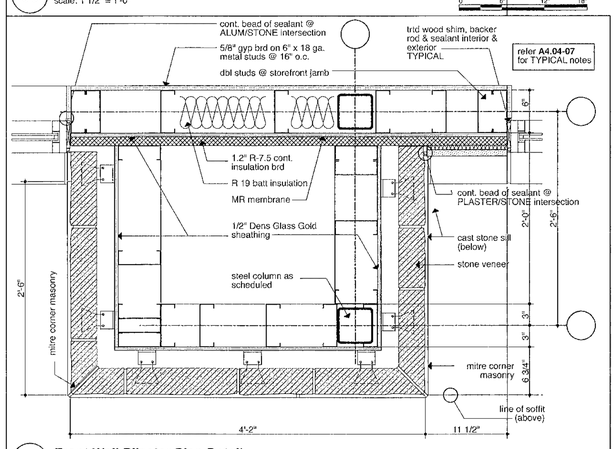
refer A4.04-07/08 for TYPICAL notes



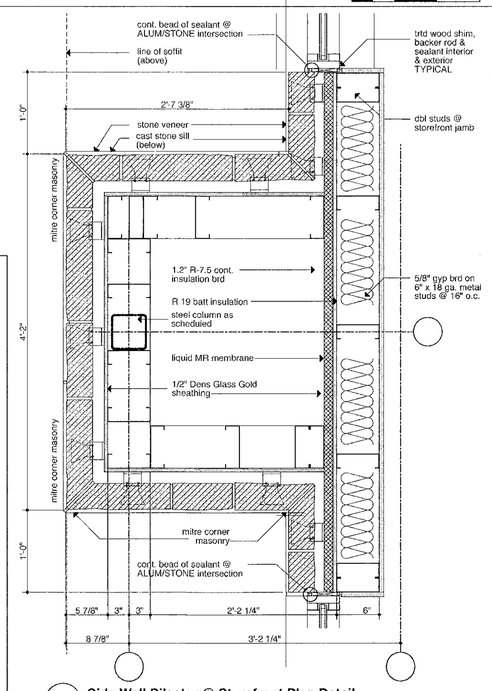
06 Side Wall Pilaster Plan Detail
scale: 1 1/2" = 1'-0"



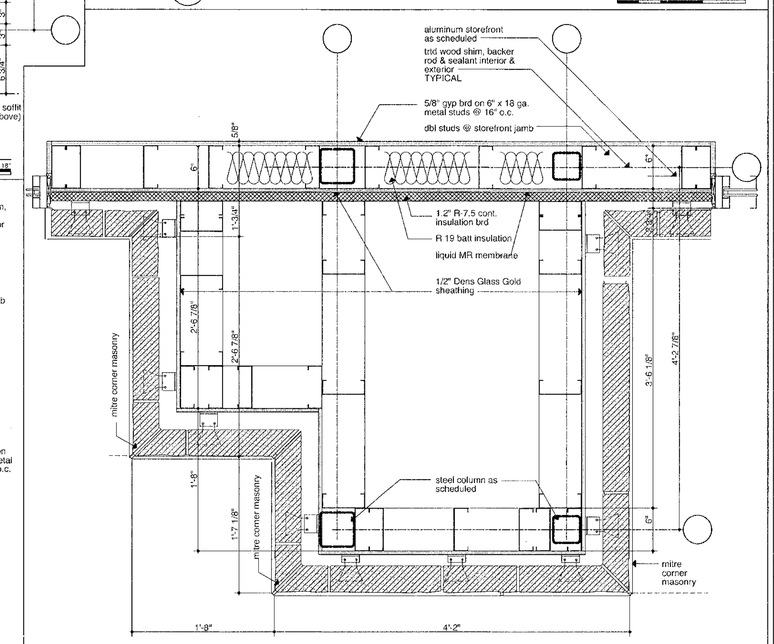
07 Front Wall Pilaster Plan Detail
scale: 1 1/2" = 1'-0"



10 Front Wall Pilaster Plan Detail
scale: 1 1/2" = 1'-0"



11 Side Wall Pilaster @ Storefront Plan Detail
scale: 1 1/2" = 1'-0"



12 Front Wall Pilaster Plan Detail
scale: 1 1/2" = 1'-0"

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www.duanemeyers.com

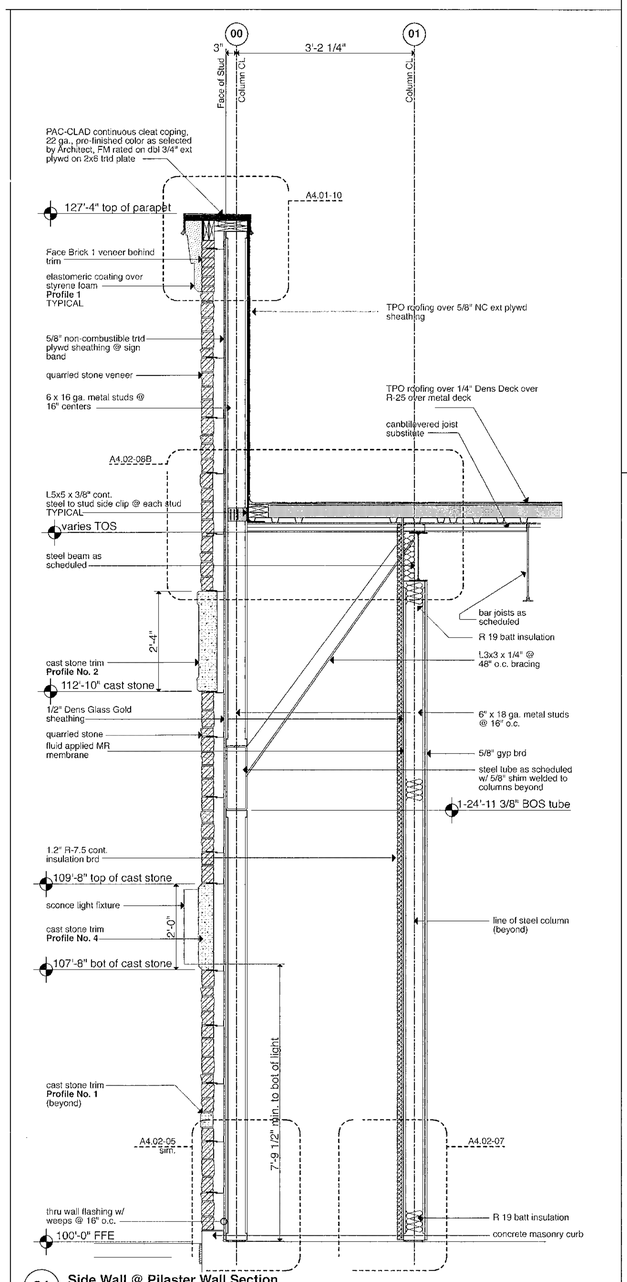
Tee Crossing Phase 2
Frisco, TX
Construction Documents

Revisions

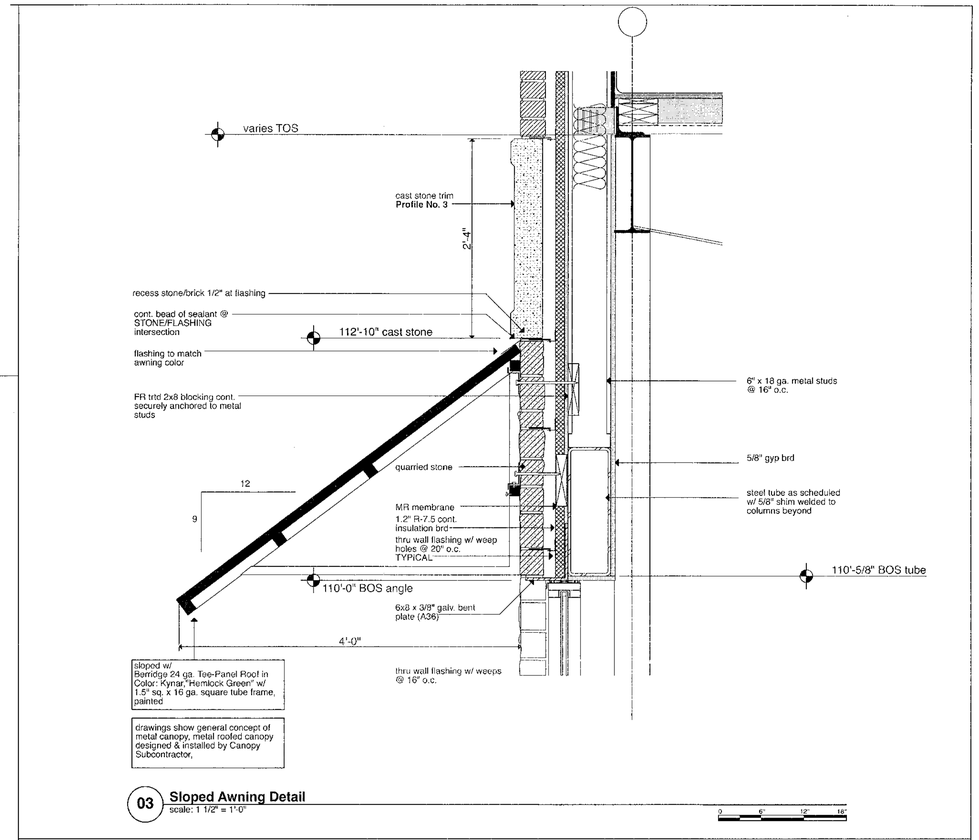
REGISTERED ARCHITECT DUANE MEYERS STATE OF TEXAS
30 April 2018

A4.04

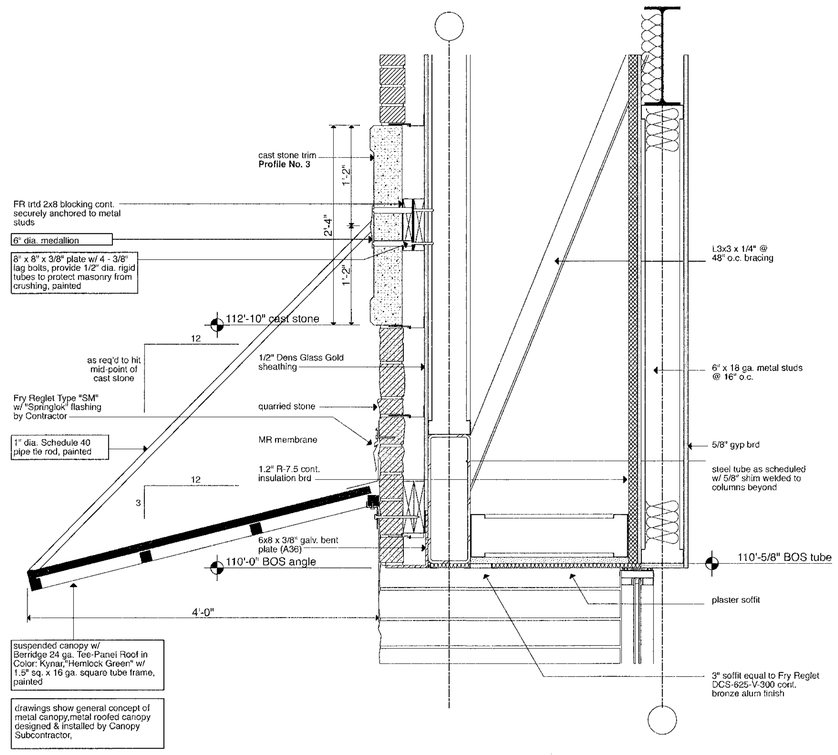
30 April 2018



01 Side Wall @ Pilaster Wall Section
scale: 3/4" = 1'-0"

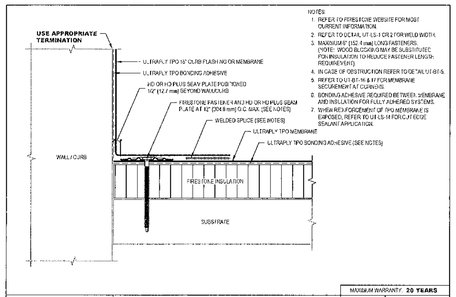


03 Sloped Awning Detail
scale: 1 1/2" = 1'-0"



04 Suspended Awning Detail
scale: 1 1/2" = 1'-0"

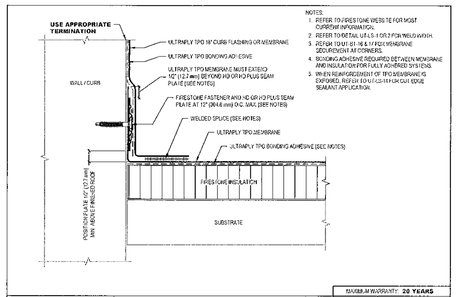
Duane Meyers
Architect
Unit 1 Box 2
Unit 1 Box 2
Unit 1 Box 2



NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
2. REFER TO DETAIL UT-LS-1 OR 2 FOR WELD WIDTH.
3. MAXIMUM 12" (152.4 mm) LONG FASTENERS. (NOTE: WOOD BLOCKING MAY BE SUBSTituted FOR INSULATION TO REDUCE FASTENER LENGTH REQUIREMENTS).
4. IN CASE OF OBSTRUCTION REFER TO DETAIL UT-B1.5.
5. REFER TO UT-B1.16 & 17 FOR MEMBRANE SECUREMENT AT CURBS.
6. BONDING ADHESIVE REQUIRED BETWEEN MEMBRANE AND INSULATION FOR FULLY ADHERED SYSTEMS.
7. WHEN REINFORCEMENT OF TPO MEMBRANE IS EXPOSED, REFER TO UT-LS-14 FOR CUT EDGE SEALANT APPLICATION.

Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.® www.firestonebpcatalog.com	BASE TIE-IN WITH HD SEAM PLATES FASTENED TO DECK	ISSUE/REVISION DATE 1/1/2006	DETAIL NO. UT-BT-1
	ULTRAPLY™ TPO / ACCEPTABLE SYSTEMS: ALL	NOT TO SCALE	

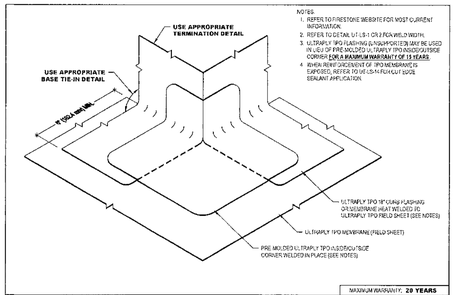
MAXIMUM WARRANTY: 20 YEARS



NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
2. REFER TO DETAIL UT-LS-1 OR 2 FOR WELD WIDTH.
3. REFER TO UT-B1.16 & 17 FOR MEMBRANE SECUREMENT AT CORNERS.
4. BONDING ADHESIVE REQUIRED BETWEEN MEMBRANE AND INSULATION FOR FULLY ADHERED SYSTEMS.
5. WHEN REINFORCEMENT OF TPO MEMBRANE IS EXPOSED, REFER TO UT-LS-14 FOR CUT EDGE SEALANT APPLICATION.

Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.® www.firestonebpcatalog.com	BASE TIE-IN WITH HD SEAM PLATES FASTENED TO WALL / CURB	ISSUE/REVISION DATE 1/1/2006	DETAIL NO. UT-BT-2
	ULTRAPLY™ TPO / ACCEPTABLE SYSTEMS: ALL	NOT TO SCALE	

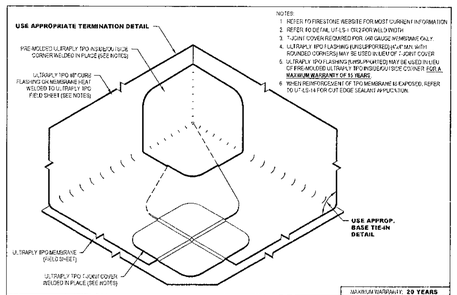
MAXIMUM WARRANTY: 20 YEARS



NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
2. REFER TO DETAIL UT-LS-1 OR 2 FOR WELD WIDTH.
3. ULTRAPLY TPO FLASHING (UNSUPPORTED) MAY BE USED IN LIEU OF PRE-MOLDED ULTRAPLY TPO INSIDE/OUTSIDE CORNER FOR A MAXIMUM WARRANTY OF 15 YEARS.
4. WHEN REINFORCEMENT OF TPO MEMBRANE IS EXPOSED, REFER TO UT-LS-14 FOR CUT EDGE SEALANT APPLICATION.

Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.® www.firestonebpcatalog.com	OUTSIDE CORNER	ISSUE/REVISION DATE 1/1/2006	DETAIL NO. UT-C-1
	ULTRAPLY™ TPO / ACCEPTABLE SYSTEMS: ALL	NOT TO SCALE	

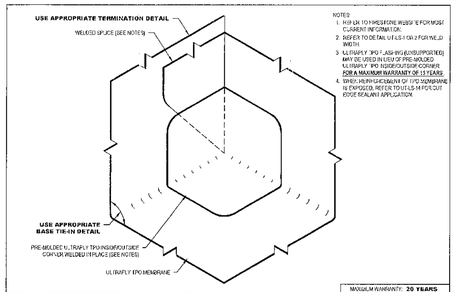
MAXIMUM WARRANTY: 20 YEARS



NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
2. REFER TO DETAIL UT-LS-1 OR 2 FOR WELD WIDTH.
3. T-JOINT COVERS (SHEET FOR 24 GAUGE MEMBRANE) ONLY.
4. ULTRAPLY TPO FLASHING (UNSUPPORTED) (CUT MITER WITH ROUNDED CORNERS) MAY BE USED IN LIEU OF T-JOINT COVER.
5. ULTRAPLY TPO FLASHING (UNSUPPORTED) MAY BE USED IN LIEU OF PRE-MOLDED ULTRAPLY TPO INSIDE/OUTSIDE CORNER FOR A MAXIMUM WARRANTY OF 15 YEARS.
6. WHEN REINFORCEMENT OF TPO MEMBRANE IS EXPOSED, REFER TO UT-LS-14 FOR CUT EDGE SEALANT APPLICATION.

Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.® www.firestonebpcatalog.com	INSIDE CORNER WITH CONTINUOUS WALL FLASHING	ISSUE/REVISION DATE 1/1/2006	DETAIL NO. UT-C-4
	ULTRAPLY™ TPO / ACCEPTABLE SYSTEMS: ALL	NOT TO SCALE	

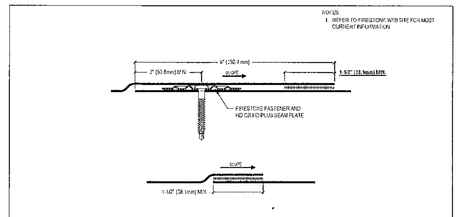
MAXIMUM WARRANTY: 20 YEARS



NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
2. REFER TO DETAIL UT-LS-1 OR 2 FOR WELD WIDTH.
3. ULTRAPLY TPO (UNSUPPORTED) MAY BE USED IN LIEU OF PRE-MOLDED ULTRAPLY TPO INSIDE/OUTSIDE CORNER FOR A MAXIMUM WARRANTY OF 15 YEARS.
4. WHEN REINFORCEMENT OF TPO MEMBRANE IS EXPOSED, REFER TO UT-LS-14 FOR CUT EDGE SEALANT APPLICATION.

Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.® www.firestonebpcatalog.com	INSIDE CORNER	ISSUE/REVISION DATE 1/1/2006	DETAIL NO. UT-C-5
	ULTRAPLY™ TPO / ACCEPTABLE SYSTEMS: ALL	NOT TO SCALE	

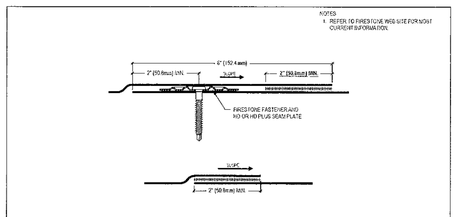
MAXIMUM WARRANTY: 20 YEARS



NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.

Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.® www.firestonebpcatalog.com	LAP SPLICE WITH 1-1/2" AUTOMATIC WELDER	ISSUE/REVISION DATE 1/1/2006	DETAIL NO. UT-LS-1
	ULTRAPLY™ TPO / ACCEPTABLE SYSTEMS: ALL	NOT TO SCALE	

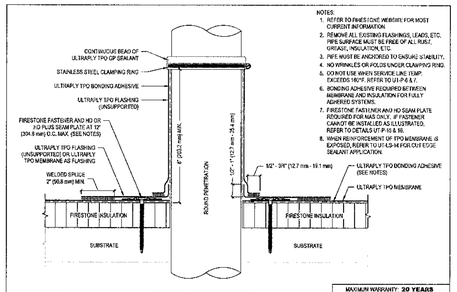
MAXIMUM WARRANTY: 20 YEARS



NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.

Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.® www.firestonebpcatalog.com	LAP SPLICE WITH 2" HAND WELD	ISSUE/REVISION DATE 1/1/2006	DETAIL NO. UT-LS-2
	ULTRAPLY™ TPO / ACCEPTABLE SYSTEMS: ALL	NOT TO SCALE	

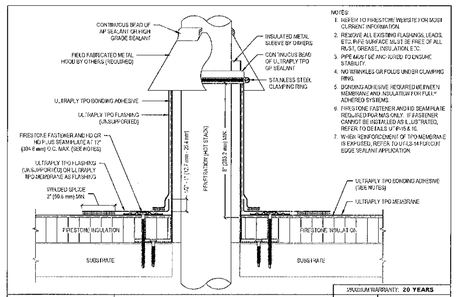
MAXIMUM WARRANTY: 20 YEARS



NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
2. REMOVE ALL EXISTING FLASHINGS, LEADS, ETC. PIPE SURFACE MUST BE FREE OF ALL RUST, GREASE, INSULATION, ETC.
3. PIPE MUST BE ANCHORED TO ENSURE STABILITY.
4. NO WRINKLES OR FOLDS UNDER CLAMPING RING.
5. DO NOT USE WHEN SERVICE LINE TEMP. EXCEEDS 180°F. REFER TO UT-P-5 & 7.
6. BONDING ADHESIVE REQUIRED BETWEEN MEMBRANE AND INSULATION FOR FULLY ADHERED SYSTEMS.
7. FIRESTONE FASTENERS AND HD SEAM PLATE REQUIRED FOR NAIL ONLY. IF FASTENER CANNOT BE INSTALLED AS ILLUSTRATED, REFER TO DETAILS UT-P-5 & 16.
8. WHEN REINFORCEMENT OF TPO MEMBRANE IS EXPOSED, REFER TO UT-LS-14 FOR CUT EDGE SEALANT APPLICATION.

Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.® www.firestonebpcatalog.com	PENETRATION WITH ULTRAPLY TPO FLASHING (UNSUPPORTED)	ISSUE/REVISION DATE 10/25/2010	DETAIL NO. UT-P-4
	ULTRAPLY™ TPO / ACCEPTABLE SYSTEMS: ALL	NOT TO SCALE	

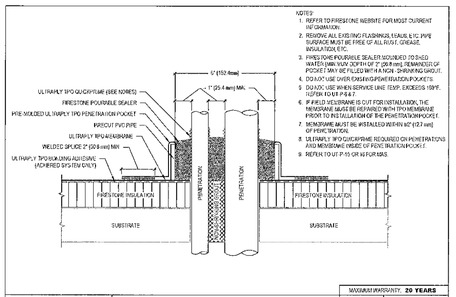
MAXIMUM WARRANTY: 20 YEARS



NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
2. REMOVE ALL EXISTING FLASHINGS, LEADS, ETC. PIPE SURFACE MUST BE FREE OF ALL RUST, GREASE, INSULATION, ETC.
3. PIPE MUST BE ANCHORED TO ENSURE STABILITY.
4. DO NOT USE OVER EXISTING PENETRATION POCKETS.
5. DO NOT USE WHEN SERVICE LINE TEMP. EXCEEDS 180°F. REFER TO UT-P-5 & 7.
6. IF FIELD MEMBRANE IS CUT FOR INSTALLATION, THE MEMBRANE MUST BE REPAIRED WITH TPO MEMBRANE PRIOR TO INSTALLATION OF THE PENETRATION POCKET.
7. MEMBRANE MUST BE INSTALLED WITHIN 10" (12.7 mm) OF PENETRATION.
8. ULTRAPLY TPO FLASHING REQUIRED ON PENETRATIONS AND MEMBRANE EDGES OF PENETRATION POCKET.
9. REFER TO UT-P-15 FOR HOT GRIDDLES.

Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.® www.firestonebpcatalog.com	PENETRATION (HOT STACK) WITH ULTRAPLY TPO FLASHING (UNSUPPORTED)	ISSUE/REVISION DATE 1/1/2006	DETAIL NO. UT-P-6
	ULTRAPLY™ TPO / ACCEPTABLE SYSTEMS: ALL	NOT TO SCALE	

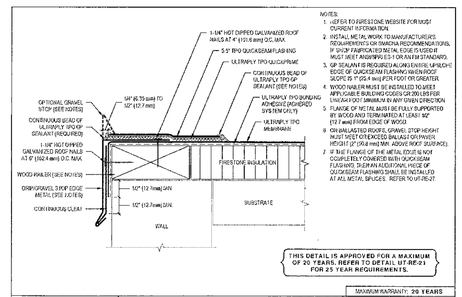
MAXIMUM WARRANTY: 20 YEARS



NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
2. REMOVE ALL EXISTING FLASHINGS, LEADS, ETC. PIPE SURFACE MUST BE FREE OF ALL RUST, GREASE, INSULATION, ETC.
3. FIRESTONE POURABLE SEALER SPECIFIED TO BE USED WITHIN (MIN. WIDTH OF 2" (50.8 mm), REMAINDER OF POCKET MAY BE FILLED WITH NON-SHRINKING GROUT.
4. DO NOT USE OVER EXISTING PENETRATION POCKETS.
5. DO NOT USE WHEN SERVICE LINE TEMP. EXCEEDS 180°F. REFER TO UT-P-5 & 7.
6. IF FIELD MEMBRANE IS CUT FOR INSTALLATION, THE MEMBRANE MUST BE REPAIRED WITH TPO MEMBRANE PRIOR TO INSTALLATION OF THE PENETRATION POCKET.
7. MEMBRANE MUST BE INSTALLED WITHIN 10" (12.7 mm) OF PENETRATION.
8. ULTRAPLY TPO QUICKFLASH REQUIRED ON PENETRATIONS AND MEMBRANE EDGES OF PENETRATION POCKET.
9. REFER TO UT-P-15 FOR HOT GRIDDLES.

Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.® www.firestonebpcatalog.com	PENETRATION WITH TPO PENETRATION POCKET KIT	ISSUE/REVISION DATE 1/1/2006	DETAIL NO. UT-P-8
	ULTRAPLY™ TPO / ACCEPTABLE SYSTEMS: ALL	NOT TO SCALE	

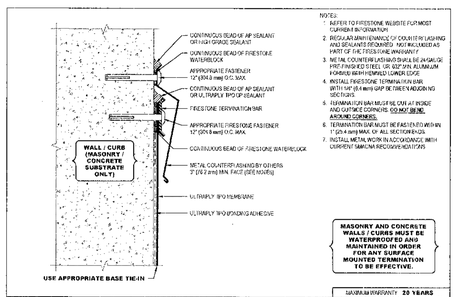
MAXIMUM WARRANTY: 20 YEARS



NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
2. INSTALL METAL WORK TO MANUFACTURER'S REQUIREMENTS OR SMACNA RECOMMENDATIONS, IF SHOP FABRICATED METAL EDGE IS USED IT MUST MEET ANSI/SPRI ES-1 OR ANSI/FM STANDARDS.
3. GP SEALANT IS REQUIRED ALONG ENTIRE UPWIND EDGE OF QUICKSEAM FLASHING WHEN ROOF SLOPE IS 1" (25.4 mm) PER FOOT OR GREATER.
4. WOOD NAILER MUST BE INSTALLED TO MEET APPLICABLE BUILDING CODES OR 200 LBS PER LINEAR FOOT MINIMUM IN ANY OVER DIRECTION.
5. FLANGE OF METAL MUST BE FULLY SUPPORTED BY WOOD AND TERMINATED AT LEAST 10" (17.7 mm) FROM EDGE OF WOOD.
6. ON UNLASHED ROOFS, GRAVEL STOP HEIGHT MUST MEET OTHERWISE BALLAST OR POWER HEIGHT 12" (304.8 mm) MIN. ABOVE ROOF SURFACE.
7. IF THE FLANGE OF THE METAL EDGE IS NOT COMPLETELY COVERED WITH QUICKSEAM FLASHING, THEN AN ADDITIONAL PIECE OF QUICKSEAM FLASHING SHALL BE INSTALLED AT ALL METAL SPLICES. REFER TO UT-RE-21.

Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.® www.firestonebpcatalog.com	ROOF EDGE WITH FASCIA METAL BY OTHERS	ISSUE/REVISION DATE 5/1/2010	DETAIL NO. UT-RE-20
	UltraPly™ TPO / ACCEPTABLE SYSTEMS: ALL	NOT TO SCALE	

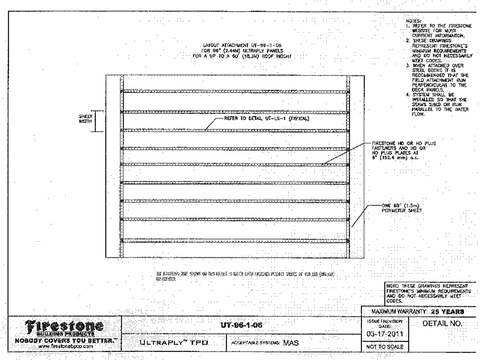
MAXIMUM WARRANTY: 20 YEARS



NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
2. REGULAR MAINTENANCE OF COUNTERFLASHING AND SEALANTS REQUIRED. NOT INCLUDED AS PART OF THE FIRESTONE WARRANTY.
3. METAL COUNTERFLASHING SHALL BE (AS A GUIDE) PRE-FINISHED STEEL, 24 GAUGE MIN. ALUMINUM KYNAR 500 WITH FORMED CORNER EDGE.
4. INSTALL FIRESTONE TERMINATION BAR WITH 1/4" (6.4 mm) GAP BETWEEN ADJOINING SECTIONS.
5. TERMINATION BAR MUST BE CUT AT RIGHT ANGLE AND CUT BACK CORNERS. DO NOT BEND AROUND CORNERS.
6. TERMINATION BAR MUST BE FASTENED WITH MIN. 1" (25.4 mm) MARK OF ALL SECTIONS.
7. INSTALL METAL WORK IN ACCORDANCE WITH CURRENT SMACNA RECOMMENDATIONS.

Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.® www.firestonebpcatalog.com	TERMINATION WITH SURFACE MOUNTED COUNTERFLASHING AND TERMINATION BAR	ISSUE/REVISION DATE 1/1/2006	DETAIL NO. UT-T-6
	ULTRAPLY™ TPO / ACCEPTABLE SYSTEMS: ALL	NOT TO SCALE	

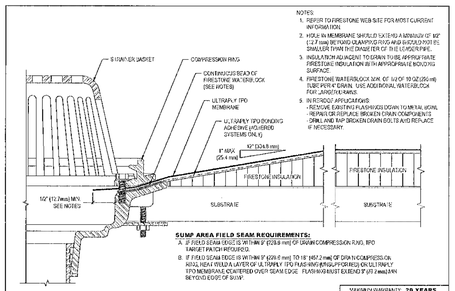
MAXIMUM WARRANTY: 20 YEARS



NOTES:
1. REFER TO THE FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
2. ULTRAPLY TPO REINFORCEMENT OVERLAPS WINDOW REQUIREMENTS ARE NOT NECESSARILY MET.
3. WHEN ATTACHED OVER STEEL DECKS IT IS RECOMMENDED THAT THE FIELD MEMBRANE BE RUN PERPENDICULAR TO THE DECK FLUTES.
4. ALL FASTENERS MUST BE INSTALLED 3/8 INCH THE SIDEWALLS SUCH OR FOR ALL SIDES TO THE WATER FLOW.

Firestone BUILDING PRODUCTS NOBODY COVERS YOU BETTER.® www.firestonebpcatalog.com	UT-96-1-06	ISSUE/REVISION DATE 03-17-2011	DETAIL NO.
	ULTRAPLY™ TPO / ACCEPTABLE SYSTEMS: MAS	NOT TO SCALE	

MAXIMUM WARRANTY: 25 YEARS



NOTES:
1. REFER TO FIRESTONE WEBSITE FOR MOST CURRENT INFORMATION.
2. HOLE IN MEMBRANE SHALL BE SAFE HOLE MINIMUM 12" (12.7 mm) BEYOND COMPRESSION RING AND SHALL NOT BE SMALLER THAN THE DIAMETER OF THE LEADER PIPE.
3. INSULATION ADJACENT TO DRAIN TUBE APPROPRIATE FIRESTONE INSULATION IS IN APPROPRIATE BONDING SURFACE.
4. FIRESTONE WATERLOCK 10" (12.7 mm) OF TPO 10 (250 mm) TUBE PER FT DRAIN. USE ADDITIONAL WATERLOCK FOR LARGER DRAINS.
5. IN REROOF APPLICATIONS
   - REMOVE EXISTING FLASHINGS DOWN TO MATERIAL USING
   - REPAIR OR REPLACE BROKEN DRAIN COMPONENTS
   - DRILL AND TAP BROKEN DRAIN BOLTS AND REPLACE IF NECESSARY.

SUMP AREA FIELD SEAM REQUIREMENTS:
A. IF FIELD SEAM EDGE IS WITHIN 9" (228.6 mm) OF DRAIN COMPRESSION RING, TPO TAPER STRIP REQUIRED.
B. IF FIELD SEAM EDGE IS WITHIN 12" (304.8 mm) TO 18" (457.2 mm) OF DRAIN COMPRESSION RING, NEW FIELD SHEET OVERLAY ULTRAPLY TPO FLASHING (UNSUPPORTED) ON ULTRAPLY TPO MEMBRANE, COUNTERSUNK OVER SEAM EDGE. FLASHING MUST EXTEND 10" (12.7 mm) MIN BEYOND EDGE OF SUMP.

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	ULTRAPLY™ TPO / ACCEPTABLE SYSTEMS: ALL	NOT TO SCALE	

MAXIMUM WARRANTY: 20 YEARS

Duane Meyers
817-791-9402
Uncanny Ideas, Inc.
972-487-4040
www.duanemeyers.com

Tee Crossing Phase 2
Frisco, TX
Construction Documents

Revisions

REGISTERED ARCHITECT
DUANE A. MEYERS
STATE OF TEXAS
30 April 2018

A4.06

30 April 2018

2010 ADA Standards for Accessible Design for Public Accommodations and Commercial Facilities: Title III

CHAPTER 3: BUILDING BLOCKS

301 General
301.1 Scope. The provisions of Chapter 3 shall apply where required by Chapter 2 or where referenced by a requirement in this document.

302 Floor or Ground Surfaces
302.1 General. Floor and ground surfaces shall be stable, firm, and slip resistant and shall comply with 302.
EXCEPTIONS:
1. Within animal containment areas, floor and ground surfaces shall not be required to be stable, firm, and slip resistant.
2. Areas of sport activity shall not be required to comply with 302.

302.2 Carpet. Carpet or carpet tile shall be securely attached and shall have a firm cushion, pad, or backing or no cushion or pad. Carpet or carpet tile shall have a level loop, textured loop, level cut pile, or level cut/uncut pile texture. Pile height shall be 1/2 inch (13 mm) maximum. Exposed edges of carpet shall be fastened to floor surfaces and shall have trim on the entire length of the exposed edge. Carpet edge trim shall comply with 303.

302.3 Openings. Openings in floor or ground surfaces shall not allow passage of a sphere more than 1/2 inch (13 mm) diameter except as allowed in 407.4.3, 409.4.3, 410.4, 810.5.3 and 810.10. Elongated openings shall be placed so that the long dimension is perpendicular to the dominant direction of travel.

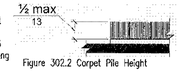

Figure 302.2 Carpet Pile Height

303 Changes in Level
303.1 General. Where changes in level are permitted in floor or ground surfaces, they shall comply with 303.
EXCEPTIONS:
1. Animal containment areas shall not be required to comply with 303.
2. Areas of sport activity shall not be required to comply with 303.

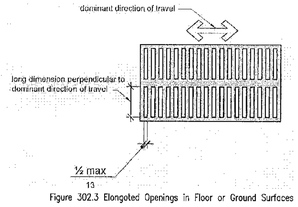

Figure 302.3 Elongated Openings in Floor or Ground Surfaces

303.2 Vertical. Changes in level of 1/4 inch (6.4 mm) high maximum shall be permitted to be vertical.

303.3 Beveled. Changes in level between 1/4 inch (6.4 mm) high minimum and 1/2 inch (13 mm) high maximum shall be beveled with a slope not steeper than 1:2.

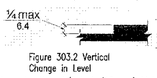

Figure 303.2 Vertical Change in Level

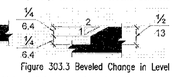

Figure 303.3 Beveled Change in Level

303.4 Ramps. Changes in level greater than 1/2 inch (13 mm) high shall be ramped, and shall comply with 405 or 406.

304 Turning Space
304.1 General. Turning space shall comply with 304.

304.2 Floor or Ground Surfaces. Floor or ground surfaces of a turning space shall comply with 302. Changes in level are not permitted.
EXCEPTION: Slopes not steeper than 1:48 shall be permitted.

304.3 Size. Turning space shall comply with 304.3.1 or 304.3.2.

304.3.1 Circular Space. The turning space shall be a space of 60 inches (1525 mm) diameter minimum. The space shall be permitted to include knee and toe clearance complying with 306.

304.3.2 T-Shaped Space. The turning space shall be a T-shaped space within a 60 inch (1525 mm) square minimum with arms and base 36 inches (915 mm) wide minimum. Each arm of the T shall be clear of obstructions 12 inches (305 mm) minimum in each direction and the base shall be clear of obstructions 24 inches (610 mm) minimum. The space shall be permitted to include knee and toe clearance complying with 306 only at the end of either the base or one arm.

304.4 Door Swing. Doors shall be permitted to swing into turning spaces.

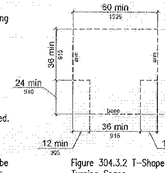

Figure 304.3.2 T-Shaped Turning Space

305 Clear Floor or Ground Space
305.1 General. Clear floor or ground space shall comply with 305.

305.2 Floor or Ground Surfaces. Floor or ground surfaces of a clear floor or ground space shall comply with 302. Changes in level are not permitted.
EXCEPTION: Slopes not steeper than 1:48 shall be permitted.

305.3 Size. The clear floor or ground space shall be 30 inches (760 mm) minimum by 48 inches (1220 mm) minimum.

305.4 Knee and Toe Clearance. Unless otherwise specified, clear floor or ground space shall be permitted to include knee and toe clearance complying with 306.

305.5 Position. Unless otherwise specified, clear floor or ground space shall be positioned for either forward or parallel approach to an element.

305.6 Approach. One full unobstructed side of the clear floor or ground space shall adjoin an accessible route or adjoin another clear floor or ground space.

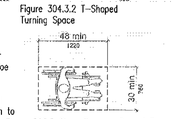

Figure 305.3 Clear Floor or Ground Space

305.7 Maneuvering Clearance. Where a clear floor or ground space is located in an alcove or otherwise confined on all or part of three sides, additional maneuvering clearance shall be provided in accordance with 305.7.1 and 305.7.2.

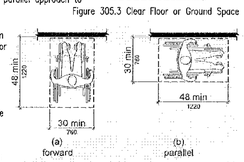

Figure 305.5 Position of Clear Floor or Ground Space

305.7.1 Forward Approach. Alcoves shall be 36 inches (915 mm)wide minimum where the depth exceeds 24 inches (610 mm).

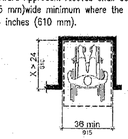

Figure 305.7.1 Maneuvering Clearance in an Alcove, Forward Approach

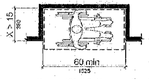

Figure 305.7.2 Maneuvering Clearance in an Alcove, Parallel Approach

305.7.2 Parallel Approach. Alcoves shall be 60 inches (1525 mm) wide minimum where the depth exceeds 15 inches (380 mm).

306 Knee and Toe Clearance
306.1 General. Space under an element is included as part of clear floor or ground space or turning space, the space shall comply with 306. Additional space shall not be prohibited beneath an element but shall not be considered as part of the clear floor or ground space or turning space.

306.2 Toe Clearance.
306.2.1 General. Space under an element between the finish floor or ground and 9 inches (230 mm) above the finish floor or ground shall be considered toe clearance and shall comply with 306.2.

306.2.2 Maximum Depth. Toe clearance shall extend 25 inches (635 mm) maximum under an element.

306.2.3 Minimum Required Depth. Where toe clearance is required at an element as part of a clear floor space, the toe clearance shall extend 17 inches (430 mm) minimum under the element.

306.2.4 Additional Clearance. Space extending greater than 6 inches (150 mm) beyond the available knee clearance at 9 inches (230 mm) above the finish floor or ground shall not be considered toe clearance.

306.2.5 Width. Toe clearance shall be 30 inches (760 mm) wide minimum.

306.3 Knee Clearance.
306.3.1 General. Space under an element between 9 inches (230 mm) and 27 inches (685 mm) above the finish floor or ground shall be considered knee clearance and shall comply with 306.3.

306.3.2 Maximum Depth. Knee clearance shall extend 25 inches (635 mm) maximum under an element at 9 inches (230 mm) above the finish floor or ground.

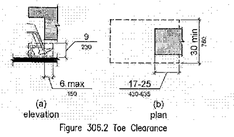

Figure 306.2 Toe Clearance

306.3.3 Minimum Required Depth. Where knee clearance is required under an element as part of a clear floor space, the knee clearance shall be 11 inches (280 mm) deep minimum at 9 inches (230 mm) above the finish floor or ground, and 8 inches (205 mm) deep minimum at 27 inches (685 mm) above the finish floor or ground.

306.3.4 Clearance Reduction. Between 9 inches (230 mm) and 27 inches (685 mm) above the finish floor or ground, the knee clearance shall be permitted to reduce at a rate of 1 inch (25 mm) in depth for each 6 inches (150 mm) in height.

306.3.5 Width. Knee clearance shall be 30 inches (760 mm) wide minimum.

307 Protruding Objects
307.1 General. Protruding objects shall comply with 307.

307.2 Protrusion Limits. Objects with leading edges more than 27 inches (685 mm) and not more than 80 inches (2030 mm) above the finish floor or ground shall protrude 4 inches (100 mm) maximum horizontally into the circulation path.
EXCEPTION: Handrails shall be permitted to protrude 4 1/2 inches (115 mm) maximum.

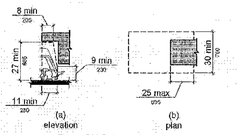

Figure 306.3 Knee Clearance

307.3 Post-Mounted Objects. Free-standing objects mounted on posts or pylons shall overhang circulation paths 12 inches (305 mm) maximum when located 27 inches (685 mm) minimum and 80 inches (2030 mm) maximum above the finish floor or ground. Where a sign or other obstruction is mounted between posts or pylons and the clear distance between the posts or pylons is greater than 12 inches (305 mm), the lowest edge of such sign or obstruction shall be 27 inches (685 mm) maximum or 80 inches (2030 mm) minimum above the finish floor or ground.
EXCEPTION: The sloping portions of handrails serving stairs and ramps shall not be required to comply with 307.3.

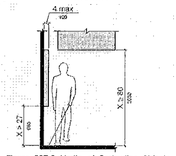

Figure 307.2 Limits of Protruding Objects

307.4 Vertical Clearance. Vertical clearance shall be 80 inches (2030 mm) high minimum. Guardrails or other barriers shall be provided where the vertical clearance is less than 80 inches (2030 mm) high. The leading edge of such guardrail or barrier shall be located 27 inches (685 mm) maximum above the finish floor or ground.
EXCEPTION: Door closers and door stops shall be permitted to be 78 inches (1980 mm) minimum above the finish floor or ground.

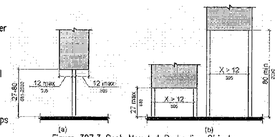

Figure 307.3 Post-Mounted Protruding Objects

307.5 Required Clear Width. Protruding objects shall not reduce the clear width required for accessible routes.

308 Reach Ranges
308.1 General. Reach ranges shall comply with 308.

308.2 Forward Reach.

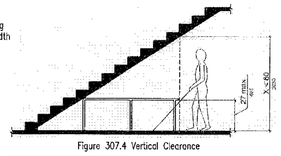

Figure 307.4 Vertical Clearance

308.2.1 Unobstructed. Where a forward reach is unobstructed, the high forward reach shall be 48 inches (1220 mm) maximum and the low forward reach shall be 15 inches (380 mm) minimum above the finish floor or ground.

Children's Reach Ranges		
Forward or Side Reach	High (maximum)	Low (minimum)
Ages 3 and 4	36 in (915 mm)	20 in (510 mm)
Ages 5 through 8	40 in (1015 mm)	18 in (455 mm)
Ages 9 through 12	44 in (1120 mm)	16 in (405 mm)

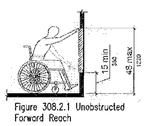

Figure 308.2.1 Unobstructed Forward Reach

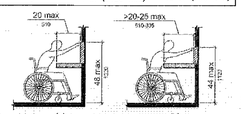

Figure 308.2.2 Obstructed High Forward Reach

308.2.2 Obstructed High Reach. Where a high forward reach is over an obstruction, the clear floor space shall extend beneath the element for a distance not less than the required reach depth over the obstruction. The high forward reach shall be 48 inches (1220 mm) maximum where the reach depth is 20 inches (510 mm) maximum. Where the reach depth exceeds 20 inches (510 mm), the high forward reach shall be 44 inches (1120 mm) maximum and the reach depth shall be 25 inches (635 mm) maximum.

308.3 Side Reach.
308.3.1 Unobstructed. Where a clear floor or ground space allows a parallel approach to an element and the side reach is unobstructed, the high side reach shall be 48 inches (1220 mm) maximum and the low side reach shall be 15 inches (380 mm) minimum above the finish floor or ground.
EXCEPTIONS:
1. An obstruction shall be permitted between the clear floor or ground space and the element where the depth of the obstruction is 10 inches (255 mm) maximum.
2. Operable parts of fuel dispensers shall be permitted to be 54 inches (1370 mm) maximum measured from the surface of the vehicular way where fuel dispensers are installed on existing curbs.

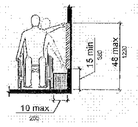

Figure 308.3.1 Unobstructed Side Reach

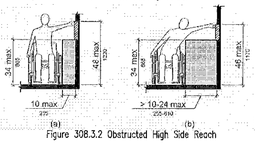

Figure 308.3.2 Obstructed High Side Reach

308.3.2 Obstructed High Reach. Where a clear floor or ground space allows a parallel approach to an element and the high side reach is over an obstruction, the height of the obstruction shall be 34 inches (865 mm) maximum and the depth of the obstruction shall be 24 inches (610 mm) maximum. The high side reach shall be 48 inches (1220 mm) maximum for a reach depth of 10 inches (255 mm) maximum. Where the reach depth exceeds 10 inches (255 mm), the high side reach shall be 46 inches (1170 mm) maximum for a reach depth of 24 inches (610 mm) maximum.

308.3.2 EXCEPTIONS:
1. The top of washing machines and clothes dryers shall be permitted to be 36 inches (915 mm) maximum above the finish floor.
2. Operable parts of fuel dispensers shall be permitted to be 54 inches (1370 mm) maximum measured from the surface of the vehicular way where fuel dispensers are installed on existing curbs.

309 Operable Parts
309.1 General. Operable parts shall comply with 309.

309.2 Clear Floor Space. A clear floor or ground space complying with 305 shall be provided.

309.3 Height. Operable parts shall be placed within one or more of the reach ranges specified in 308.

309.4 Operation. Operable parts shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate operable parts shall be 5 pounds (22.2 N) maximum.
EXCEPTION: Gas pump nozzles shall not be required to provide operable parts that have an activating force of 5 pounds (22.2 N) maximum.

CHAPTER 4: ACCESSIBLE ROUTES

401 General
401.1 Scope. The provisions of Chapter 4 shall apply where required by Chapter 2 or where referenced by a requirement in this document.

402 Accessible Routes
402.1 General. Accessible routes shall comply with 402.

402.2 Components. Accessible routes shall consist of one or more of the following components: walking surfaces with a running slope not steeper than 1:20, doorways, ramps, curb ramps excluding the flared sides, elevators, and platform lifts. All components of an accessible route shall comply with the applicable requirements of Chapter 4.

403 Walking Surfaces
403.1 General. Walking surfaces that are a part of an accessible route shall comply with 403.

403.2 Floor or Ground Surface. Floor or ground surfaces shall comply with 302.
403.3 Slope. The running slope of walking surfaces shall not be steeper than 1:20. The cross slope of walking surfaces shall not be steeper than 1:48.
403.4 Changes in Level. Changes in level shall comply with 303.

403.5 Clearances. Walking surfaces shall provide clearances complying with 403.5.
EXCEPTION: Within employee work areas, clearances on common use circulation paths shall be permitted to be decreased by work area equipment provided that the decrease is essential to the function of the work being performed.

403.5.1 Clear Width. Except as provided in 403.5.2 and 403.5.3, the clear width of walking surfaces shall be 36 inches (915 mm) minimum.
EXCEPTION: The clear width shall be permitted to be reduced to 32 inches (815 mm) minimum for a length of 24 inches (610 mm) maximum provided that reduced width segments are separated by segments that are 48 inches (1220 mm) long minimum and 36 inches (915 mm) wide minimum.

403.5.2 Clear Width at Turn. Where the accessible route makes a 180 degree turn around an element which is less than 48 inches (1220 mm) wide, clear width shall be 42 inches (1065 mm) minimum approaching the turn, 48 inches (1220 mm) minimum at the turn and 42 inches (1065 mm) minimum leaving the turn.
EXCEPTION: Where the clear width at the turn is 60 inches (1525 mm) minimum compliance with 403.5.2 shall not be required.

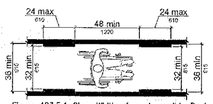

Figure 403.5.1 Clear Width of an Accessible Route

403.5.3 Passing Spaces. An accessible route with a clear width less than 60 inches (1525 mm) shall provide passing spaces at intervals of 200 feet (61 m) maximum. Passing spaces shall be either: a space 60 inches (1525 mm) minimum by 60 inches (1525 mm) minimum; or, an intersection of two walking surfaces providing a T-shaped space complying with 304.3.2 where the base and arms of the T-shaped space extend 48 inches (1220 mm) minimum beyond the intersection.

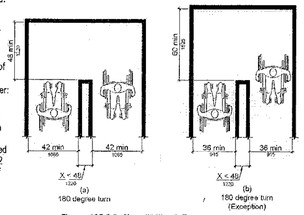

Figure 403.5.2 Clear Width at Turn

403.6 Handrails. Where handrails are provided along walking surfaces with running slopes not steeper than 1:20 they shall comply with 505.

404 Doors, Doorways, and Gates
404.1 General. Doors, doorways, and gates that are part of an accessible route shall comply with 404.
EXCEPTION: Doors, doorways, and gates designed to be operated only by security personnel shall not be required to comply with 404.2.7, 404.2.8, 404.2.9, 404.3.2 and 404.3.4 through 404.3.7.
404.2 Manual Doors, Doorways, and Manual Gates. Manual doors and doorways and manual gates intended for user passage shall comply with 404.2.

404.2.1 Revolving Doors, Gates, and Turnstiles. Revolving doors, revolving gates, and turnstiles shall not be part of an accessible route.

404.2.2 Double-Leaf Doors and Gates. At least one of the active leaves of doorways with two leaves shall comply with 404.2.3 and 404.2.4.

404.2.3 Clear Width. Door openings shall provide a clear width of 32 inches (815 mm) minimum. Clear openings of doorways with swinging doors shall be measured between the face of the door and the stop, with the door open 90 degrees. Openings more than 24 inches (610 mm) deep shall provide a clear opening of 36 inches (915 mm) minimum. There shall be no projections into the required clear opening width lower than 34 inches (865 mm) above the finish floor or ground. Projections into the clear opening width between 34 inches (865 mm) and 80 inches (2030 mm) above the finish floor or ground shall not exceed 4 inches (100 mm).
EXCEPTIONS: 1. In alterations, a projection of 5/8 inch (16 mm) maximum into the required clear width shall be permitted for the latch side stop.
2. Door closers and door stops shall be permitted to be 78 inches (1980 mm) minimum above the finish floor or ground.

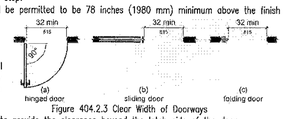

Figure 404.2.3 Clear Width of Doorways

404.2.4 Maneuvering Clearances.
Minimum maneuvering clearances at doors and gates shall comply with 404.2.4. Maneuvering clearances shall extend the full width of the doorway and the required latch side or hinge side clearance.
EXCEPTION: Entry doors to hospital patient rooms shall not be required to provide the clearance beyond the latch side of the door.
404.2.4.1 Swinging Doors and Gates. Swinging doors and gates shall have maneuvering clearances complying with Table 404.2.4.1. (as illustrated on Figures 404.2.4.1)

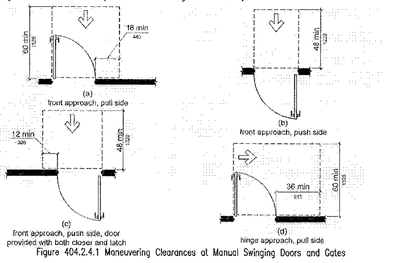

Figure 404.2.4.1 Maneuvering Clearances at Manual Swinging Doors and Gates

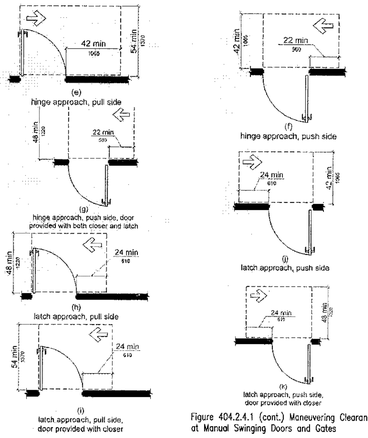

Figure 404.2.4.1 (cont.) Maneuvering Clearances at Manual Swinging Doors and Gates

404.2.4.2 Doorways without Doors or Gates, Sliding Doors, and Folding Doors. Doorways less than 36 inches (915 mm) wide without doors or gates, sliding doors, or folding doors shall have maneuvering clearances complying with Table 404.2.4.2. (as illustrated on Figure 404.2.4.2)

404.2.4.3 Recessed Doors and Gates. Maneuvering clearances for forward approach shall be provided when any obstruction within 18 inches (455 mm) of the latch side of a doorway projects more than 8 inches (205 mm) beyond the face of the door, measured perpendicular to the face of the door or gate.

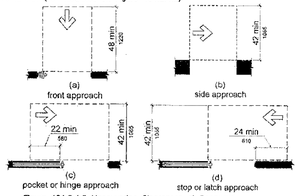

Figure 404.2.4.2 Maneuvering Clearances at Doorways without Doors, Sliding Doors, Gates, and Folding Doors

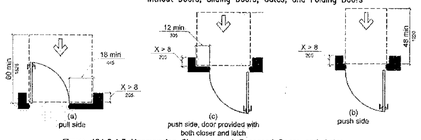

Figure 404.2.4.3 Maneuvering Clearances at Recessed Doors and Gates

404.2.4.4 Floor or Ground Surface. Floor or ground surface within required maneuvering clearances shall comply with 302. Changes in level are not permitted.
EXCEPTIONS:
1. Slopes not steeper than 1:48 shall be permitted.
2. Changes in level at thresholds complying with 404.2.5 shall be permitted.

404.2.5 Thresholds. Thresholds, if provided at doorways, shall be 1/2 inch (13 mm) high maximum. Raised thresholds and changes in level at doorways shall comply with 302 and 303.
EXCEPTION: Existing or altered thresholds 3/4 inch (19 mm) high maximum that have a beveled edge on each side with a slope not steeper than 1:2 shall not be required to comply with 404.2.5.

404.2.6 Doors in Series and Gates in Series. The distance between two hinged or pivoted doors in series and gates in series shall be 48 inches (1220 mm) minimum plus the width of doors or gates swinging into the space.

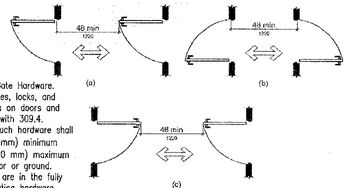

Figure 404.2.6 Doors in Series and Gates in Series

404.2.7 Door and Gate Hardware. Handles, pulls, latches, locks, and other operable parts on doors and gates shall comply with 309.4. Operable parts of such hardware shall be 34 inches (865 mm) minimum and 48 inches (1220 mm) maximum above the finish floor or ground. Where sliding doors are in the fully open position, operating hardware shall be exposed and usable from both sides.
EXCEPTIONS:
1. Existing locks shall be permitted in any location at existing glazed doors without stiles, existing overhead rolling doors or grilles, and similar existing doors or grilles that are designed with locks that are activated only at the top or bottom rail.
2. Access gates in barrier walls and fences protecting pools, spas, and hot tubs shall be permitted to have operable parts of the release of latch on self-latching devices at 54 inches (1370 mm) maximum above the finish floor or ground provided the self-latching devices are not also self-locking devices and operated by means of a key, electronic opener, or integral combination lock.

404.2.8 Closing Speed. Door and gate closing speed shall comply with 404.2.8.

404.2.8.1 Door Closers and Gate Closers. Door closers and gate closers shall be adjusted so that from an open position of 90 degrees, the time required to move the door to a position of 12 degrees from the latch is 5 seconds minimum.

404.2.8.2 Spring Hinges. Door and gate spring hinges shall be adjusted so that from the open position of 70 degrees, the door or gate shall move to the closed position in 1.5 seconds minimum.

404.2.9 Door and Gate Opening Force. Fire doors shall have a minimum opening force allowable by the appropriate administrative authority. The force for pushing or pulling open a door or gate other than fire doors shall be as follows:
1. Interior hinged doors and gates: 5 pounds (22.2 N) maximum.
2. Sliding or folding doors: 5 pounds (22.2 N) maximum.
These forces do not apply to the force required to retract latch bolts or disengage other devices that hold the door or gate in a closed position.

404.2.10 Door and Gate Surfaces. Swinging door and gate surfaces within 10 inches (255 mm) of the finish floor or ground measured vertically shall have a smooth surface on the push side extending the full width of the door or gate. Parts creating horizontal or vertical joints in these surfaces shall be within 1/16 inch (1.6 mm) of the same plane as the other. Cavities created by added kick plates shall be capped.
EXCEPTIONS:
1. Sliding doors shall not be required to comply with 404.2.10.
2. Tempered glass doors without stiles and having a bottom rail or shoe with the top leading edge tapered at 60 degrees minimum from the horizontal shall not be required to meet the 10 inch (255 mm) bottom smooth surface height requirement.
3. Doors and gates that do not extend to within 10 inches (255 mm) of the finish floor or ground shall not be required to comply with 404.2.10.
4. Existing doors and gates without smooth surfaces within 10 inches (255 mm) of the finish floor or ground shall not be required to provide smooth surfaces complying with 404.2.10 provided that if added kick plates are installed, cavities created by such kick plates are capped

404.2.11 Vision Lights. Doors, gates, and side lights adjacent to doors or gates, containing one or more glazing panels that permit viewing through the panels shall have the bottom of at least one glazed panel located 43 inches (1090 mm) maximum above the finish floor.
EXCEPTION: Vision lights with the lowest part more than 66 inches (1675 mm) from the finish floor or ground shall not be required to comply with 404.2.11.

404.3 Automatic and Power-Assisted Doors and Gates. Automatic doors and automatic gates shall comply with 404.3. Full-powered automatic doors shall comply with ANSI/BHMA A156.10 (incorporated by reference, see "Referenced Standards" in Chapter 1). Low-energy and power-assisted doors shall comply with ANSI/BHMA A156.19 (1997 or 2002 edition) (incorporated by reference, see "Referenced Standards" in Chapter 1).

404.3.1 Clear Width. Doorways shall provide a clear opening of 32 inches (815 mm) minimum in power-on and power-off mode. The minimum clear width for automatic door systems in a doorway shall be based on the clear opening provided by all leaves in the open position.

404.3.2 Maneuvering Clearance. Clearances at power-assisted doors and gates shall comply with 404.2.4. Clearances at automatic doors and gates without standby power and serving an accessible means of egress shall comply with 404.2.4.

EXCEPTION: Where automatic doors and gates remain open in the power-off condition, compliance with 404.2.4 shall not be required.

404.3.3 Thresholds. Thresholds and changes in level at doorways shall comply with 404.2.5.

404.3.4 Doors in Series and Gates in Series. Doors in series and gates in series shall comply with 404.2.6.

404.3.5 Controls. Manually operated controls shall comply with 309. The clear floor space adjacent to the control shall be located beyond the arc of the door swing.

404.3.6 Break Out Opening. Where doors and gates without standby power are a part of a means of egress, the clear break out opening at swinging or sliding doors and gates shall be 32 inches (815 mm) minimum when operated in emergency mode.
EXCEPTION: Where manual swinging doors and gates comply with 404.2 and serve the same means of egress compliance with 404.3.6 shall not be required.

404.3.7 Revolving Doors, Revolving Gates, and Turnstiles. Revolving doors, revolving gates, and turnstiles shall not be part of an accessible route.

405 Ramps
405.1 General. Ramps on accessible routes shall comply with 405.
EXCEPTION: In assembly areas, aisle ramps adjacent to seating and not serving elements required to be an accessible route shall not be required to comply with 405.

405.2 Slope. Ramp runs shall have a running slope not steeper than 1:12.
EXCEPTION: In existing sites, buildings, and facilities, ramps shall be permitted to have running slopes steeper than 1:12 complying with Table 405.2 where such slopes are necessary due to space limitations.

Table 405.2 Maximum Ramp Slope and Rise for Existing Sites, Buildings, and Facilities	
Slope (A slope steeper than 1:8 is prohibited.)	Maximum Rise
Steeper than 1:10 but not steeper than 1:8	3 inches (75 mm)
Steeper than 1:12 but not steeper than 1:10	6 inches (150 mm)

405.3 Cross Slope. Cross slope of ramp runs shall not be steeper than 1:48.

405.4 Floor or Ground Surfaces. Floor or ground surfaces of ramp runs shall comply with 302. Changes in level other than the running slope and cross slope are not permitted on ramp runs.

405.5 Clear Width. The clear width of a ramp run and, where handrails are provided, the clear width between handrails shall be 36 inches (915 mm) minimum.
EXCEPTION: Within employee work areas, the required clear width of ramps that are a part of common use circulation paths shall be permitted to be decreased by work area equipment provided that the decrease is essential to the function of the work being performed.

405.6 Rise. The rise for any ramp run shall be 30 inches (760 mm) maximum.

405.7 Landings. Ramps shall have landings at the top and the bottom of each ramp run. Landings shall comply with 405.7.

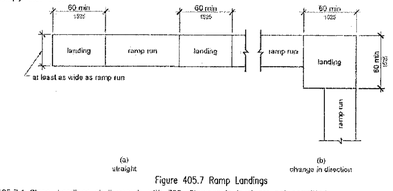

Figure 405.7 Ramp Landings

405.7.1 Slope. Landings shall comply with 302. Changes in level are not permitted.
EXCEPTION: Slopes not steeper than 1:48 shall be permitted.

405.7.2 Width. The landing clear width shall be at least as wide as the widest ramp run leading to the landing.

405.7.3 Length. The landing clear length shall be 60 inches (1525 mm) long minimum.

405.7.4 Change in Direction. Ramps that change directi on between runs at landings shall have a clear landing 60 inches (1525 mm) minimum by 60 inches (1525 mm) minimum.

405.7.5 Doorways. Where doorways are located adjacent to a ramp landing, maneuvering clearances required by 404.2.4 and 404.3.2 shall be permitted to overlap the required landing area.

405.8 Handrails. Ramp runs with a rise greater than 6 inches (150 mm) shall have handrails complying with 505.
EXCEPTION: Within employee work areas, handrails shall not be required where ramps that are part of common use circulation paths are designed to permit the installation of handrails complying with 505. Ramps not subject to the exception to 405.5 shall be designed to maintain a 36 inch (915 mm) minimum clear width when handrails are installed.

405.9 Edge Protection. Edge protection complying with 405.9.1 or 405.9.2 shall be provided on each side of ramp runs and at each side of ramp landings.
EXCEPTIO1. Edge protection shall not be required on ramps that are not required to have handrails and have sides complying with 406.3.
2. Edge protection shall not be required on the sides of ramp landings serving an adjoining ramp run or stairway.
3. Edge protection shall not be required on the sides of ramp landings having a vertical drop-off of 1/2 inch (13 mm) maximum within 10 inches (255 mm) horizontally of the minimum landing area specified in 405.7.

405.9.1 Extended Floor or Ground Surface. The floor or ground surface of the ramp run or landing shall extend 12 inches (305 mm) minimum beyond the inside face of a handrail complying with 505.

405.9.2 Curb or Barrier. A curb or barrier shall be provided that prevents the passage of a 4 inch (100 mm) diameter sphere, where any portion of the sphere is within 4 inches (100 mm) of the finish floor or ground surface.

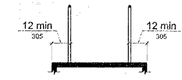

Figure 405.9.1 Extended Floor or Ground Surface Edge Protection

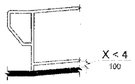

Figure 405.9.2 Curb or Barrier Edge Protection

Duane Meyers
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(817) 416-5000
www.duanemeyers.com

Teel Crossing Phase 2
Frisco, TX
Construction Documents

Revisions

REGISTERED ARCHITECT DUANE K. MEYERS STATE OF TEXAS
30 April 2018

ADA1

30 April 2018

2010 ADA Standards for Accessible Design for Public Accommodations and Commercial Facilities: Title III

CHAPTER 4: ACCESSIBLE ROUTES (cont.)

405.10 Wet Conditions. Landings subject to wet conditions shall be designed to prevent the accumulation of water.

406 Curb Ramps
406.1 General. Curb ramps on accessible routes shall comply with 406, 405.2 through 405.5, and 405.10.

406.2 Counter Slope. Counter slopes of adjoining gutters and road surfaces immediately adjacent to the curb ramp shall not be steeper than 1:20. The adjacent surfaces at transitions at curb ramps to walks, gutters, and streets shall be at the same level.

406.3 Sides of Curb Ramps. Where provided, curb ramp flares shall not be steeper than 1:10.

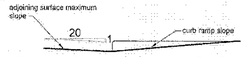

Figure 406.2 Counter Slope of Surfaces Adjacent to Curb Ramps

406.4 Landings. Landings shall be provided at the tops of curb ramps. The landing clear length shall be 36 inches (915 mm) minimum. The landing clear width shall be at least as wide as the curb ramp, excluding flared sides, leading to the landing.
EXCEPTION: In alterations, where there is no landing at the top of curb ramps, curb ramp flares shall be provided and shall not be steeper than 1:12.

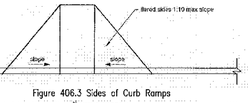

Figure 406.3 Sides of Curb Ramps

406.5 Location. Curb ramps and the flared sides of curb ramps shall be located so that they do not project into vehicular traffic lanes, parking spaces, or parking access aisles. Curb ramps at marked crossings shall be wholly contained within the markings, excluding any flared sides.

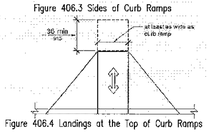

Figure 406.4 Landings at the Top of Curb Ramps

406.6 Diagonal Curb Ramps. Diagonal or corner type curb ramps with returned curbs or other well-defined edges shall have the edges parallel to the direction of pedestrian flow. The bottom of diagonal curb ramps shall have a clear space 48 inches (1220 mm) minimum outside active traffic lanes of the roadway. Diagonal curb ramps provided at marked crossings shall provide the 48 inches (1220 mm) minimum clear space within the markings. Diagonal curb ramps with flared sides shall have a segment of curb 24 inches (610 mm) long minimum located on each side of the curb ramp and within the marked crossing.

406.7 Islands. Raised islands in crossings shall be cut through level with the street or have curb ramps at both sides. Each curb ramp shall have a level area 48 inches (1220 mm) long minimum by 36 inches (915 mm) wide minimum at the top of the curb ramp in the part of the island intersected by the crossings. Each 48 inch (1220 mm) minimum by 36 inch (915 mm) minimum area shall be oriented so that the 48 inch (1220 mm) minimum length is in the direction of the running slope of the curb ramp it serves. The 48 inch (1220 mm) minimum by 36 inch (915 mm) minimum areas and the accessible route shall be permitted to overlap.

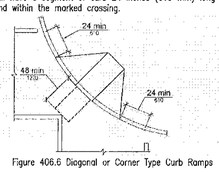

Figure 406.6 Diagonal or Corner Type Curb Ramps

407 Elevators
407.1 General. Elevators shall comply with 407 and with ASME A17.1 (incorporated by reference, see "Referenced Standards" in Chapter 1). They shall be passenger elevators as classified by ASME A17.1. Elevator operation shall be automatic.

407.2 Elevator Landing Requirements. Elevator landings shall comply with 407.2.

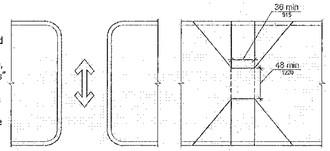

Figure 406.7 Islands in Crossings

407.2.1 Call Controls. Where elevator call buttons or keypads are provided, they shall comply with 407.2.1 and 309.4. Call buttons shall be raised or flush.
EXCEPTION: Existing elevators shall be permitted to have recessed call buttons.

407.2.1.1 Height. Call buttons and keypads shall be located within one of the reach ranges specified in 308, measured to the centerline of the highest operable part.
EXCEPTION: Existing call buttons and existing keypads shall be permitted to be located at 54 inches (1370 mm) maximum above the finish floor, measured to the centerline of the highest operable part.

407.2.1.2 Size. Call buttons shall be 3/4 inch (19 mm) minimum in the smallest dimension.
EXCEPTION: Existing elevator call buttons shall not be required to comply with 407.2.1.2.

407.2.1.3 Clear Floor or Ground Space. A clear floor or ground space complying with 305 shall be provided at call controls.

407.2.1.4 Location. The call button that designates the up direction shall be located c that designates the down direction.
EXCEPTION: Destination-oriented elevators shall not be required to comply with 407.2.1.

407.2.1.5 Signals. Call buttons shall have visible signals to indicate when each call is registered and when each call is answered.
EXCEPTIONS:
1. Destination-oriented elevators shall not be required to comply with 407.2.1.5 provided that visible and audible signals complying with 407.2.2 indicating which elevator car to enter are provided.
2. Existing elevators shall not be required to comply with 407.2.1.5.

407.2.1.6 Keypads. Where keypads are provided, keypads shall be in a standard telephone keypad arrangement and shall comply with 407.4.7.2.

407.2.2 Hall Signals. Hall signals, including in-car signals, shall comply with 407.2.2.

407.2.2.1 Visible and Audible Signals. A visible and audible signal shall be provided at each hoistway entrance to indicate which car is answering a call and the car's direction of travel. Where in-car signals are provided, they shall be visible from the floor area adjacent to the hall call buttons.
EXCEPTIONS:
1. Visible and audible signals shall not be required at each destination-oriented elevator where a visible and audible signal complying with 407.2.2 is provided indicating the elevator car designation information.
2. In existing elevators, a signal indicating the direction of car travel shall not be required.

407.2.2.2 Visible Signals. Visible signal fixtures shall be centered at 72 inches (1830 mm) minimum above the finish floor or ground. The visible signal elements shall be 2 1/2 inches (64 mm) minimum measured along the vertical centerline of the element. Signals shall be visible from the floor area adjacent to the hall call button.
EXCEPTIONS:
1. Destination-oriented elevators shall be permitted to have signals visible from the floor area adjacent to the hoistway entrance.
2. Existing elevators shall not be required to comply with 407.2.2.2.

407.2.2.3 Audible Signals. Audible signals shall sound once for the up direction and twice for the down direction, or shall have verbal annunciators that indicate the direction of elevator car travel. Audible signals shall have a frequency of 1500 Hz maximum. Verbal annunciators shall have a frequency of 300 Hz minimum and 3000 Hz maximum. The audible signal and verbal annunciator shall be 10 dB minimum above ambient, but shall not exceed 80 dB, measured at the hall call button.
EXCEPTIONS:
1. Destination-oriented elevators shall not be required to comply with 407.2.2.3 provided that the audible tone and verbal announcement is the same as those given at the call button or call button keypad.
2. Existing elevators shall not be required to comply with the requirements for frequency and dB range of audible signals.

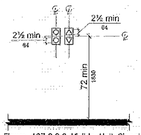

Figure 407.2.2.2 Visible Hall Signals

407.2.2.4 Differentiation. Each destination-oriented elevator in a bank of elevators shall have audible and visible means for differentiation.

407.2.3 Hoistway Signs. Signs at elevator hoistways shall comply with 407.2.3.

407.4.6.4.2 Location. Emergency controls, including the emergency alarm, shall be grouped at the bottom of the panel.
407.4.7 Designations and Indicators of Car Controls. Designations and indicators of car controls shall comply with 407.4.7.
EXCEPTION: In existing elevators, where a new car operating panel complying with 407.4.7 is provided, existing car operating panels shall not be required to comply with 407.4.7.

407.4.7.1 Buttons. Car control buttons shall comply with 407.4.7.1.

407.4.7.1.1 Type. Control buttons shall be identified by tactile characters complying with 703.2.

407.4.7.1.2 Location. Raised character and braille designations shall be placed immediately to the left of the control button to which the designations apply.
EXCEPTION: Where space on an existing car operating panel precludes tactile markings to the left of the controls, markings shall be placed as near to the control as possible.

407.4.7.1.3 Symbols. The control button for the emergency stop, alarm, door open, door close, main entry floor, and phone, shall be identified with tactile symbols as shown in Table 407.4.7.1.3 (refer to 2010 ADA for table).

407.4.7.1.4 Visible Indicators. Buttons with floor designations shall be provided with visible indicators to show that a call has been registered. The visible indication shall extinguish when the car arrives at the designated floor.
407.4.7.2 Keypads. Keypads shall be identified by characters complying with 703.5 and shall be centered on the corresponding keypad button. The number five key shall have a single raised dot. The dot shall be 0.118 inch (3 mm) to 0.120 inch (3.05 mm) base diameter and in other aspects comply with Table 703.3.1.

407.4.8 Car Position Indicators. Audible and visible car position indicators shall be provided in elevator cars.

407.4.8.1 Visible Indicators. Visible indicators shall comply with 407.4.8.1.

407.4.8.1.1 Size. Characters shall be 1/2 inch (13 mm) high minimum.

407.4.8.1.2 Location. Indicators shall be located above the car control panel or above the door.

407.4.8.1.3 Floor Arrival. As the car passes a floor and when a car stops at a floor served by the elevator, the corresponding character shall illuminate.
EXCEPTION: Destination-oriented elevators shall not be required to comply with 407.4.8.1.3 provided that the visible indicators extinguish when the call has been answered.
407.4.8.1.4 Destination Indicator. In destination-oriented elevators, a display shall be provided in the car with visible indicators to show car destinations.

407.4.8.2 Audible Indicators. Audible indicators shall comply with 407.4.8.2.

407.4.8.2.1 Signal Type. The signal shall be an automatic verbal annunciator which announces the floor at which the car is about to stop.
EXCEPTION: For elevators other than destination-oriented elevators that have a rated speed of 200 feet per minute (1 m/s) or less, a non-verbal audible signal with a frequency of 1500 Hz maximum which sounds as the car passes or is about to stop at a floor served by the elevator shall be permitted.
407.4.8.2.2 Signal Level. The verbal annunciator shall be 10 dB minimum above ambient, but shall not exceed 80 dB, measured at the annunciator.

407.4.8.2.3 Frequency. The verbal annunciator shall have a frequency of 300 Hz minimum to 3000 Hz maximum.

407.4.9 Emergency Communication. Emergency two-way communication systems shall comply with 308. Tactile symbols and characters shall be provided adjacent to the device and shall comply with 703.2.

408 Limited-Use/Limited-Application Elevators

408.1 General. Limited-use/limited-application elevators shall comply with 408 and with ASME A17.1 (incorporated by reference, see "Referenced Standards" in Chapter 1). They shall be passenger elevators as classified by ASME A17.1. Elevator operation shall be automatic.

408.2 Elevator Landings. Landings serving limited-use/limited-application elevators shall comply with 408.2.

408.2.1 Call Buttons. Elevator call buttons and keypads shall comply with 407.2.1.

408.2.2 Hall Signals. Hall signals shall comply with 407.2.2.

408.2.3 Hoistway Signs. Signs at elevator hoistways shall comply with 407.2.3.1.

408.3 Elevator Doors. Elevator hoistway doors shall comply with 408.3.

408.3.1 Sliding Doors. Sliding hoistway and car doors shall comply with 407.3.1 through 407.3.3 and 408.4.1.

408.3.2 Swinging Doors. Swinging hoistway doors shall open and close automatically and shall comply with 404, 407.3.2 and 408.3.2.

408.3.2.1 Power Operation. Swinging doors shall be power-operated and shall comply with ANSI/BHMA A156.19 (1997 or 2002 edition) (incorporated by reference, see "Referenced Standards" in Chapter 1).

408.3.2.2 Duration. Power-operated swinging doors shall remain open for 20 seconds minimum when activated.

408.4 Elevator Cars. Elevator cars shall comply with 408.4.
408.4.1 Car Dimensions and Doors. Elevator cars shall provide a clear width 42 inches (1065 mm) minimum and a clear depth 54 inches (1370 mm) minimum. Car doors shall be positioned at the narrow ends of cars and shall provide 32 inches (815 mm) minimum clear width.
EXCEPTIONS:
1. Cars that provide a clear width 51 inches (1295 mm) minimum shall be permitted to provide a clear depth 51 inches (1295 mm) minimum provided that car doors provide a clear opening 36 inches (915 mm) wide minimum.
2. Existing elevator cars shall be permitted to provide a clear width 36 inches (915 mm) minimum, clear depth 54 inches (1370 mm) minimum, and a net clear platform area 15 square feet (1.4 m2) minimum.

408.4.2 Floor Surfaces. Floor surfaces in elevator cars shall comply with 302 and 303.

408.4.3 Platform to Hoistway Clearance. The platform to hoistway clearance shall comply with 407.4.3.

408.4.4 Leveling. Elevator car leveling shall comply with 407.4.4.

408.4.5 Illumination. Elevator car illumination shall comply with 407.4.5.

408.4.6 Car Controls. Elevator car controls shall comply with 407.4.6. Control panels shall be centered on a side wall.

408.4.7 Designations and Indicators of Car Controls. Designations and indicators of car controls shall comply with 407.4.7.

408.4.8 Emergency Communications. Car emergency signaling devices complying with 407.4.9 shall be provided.

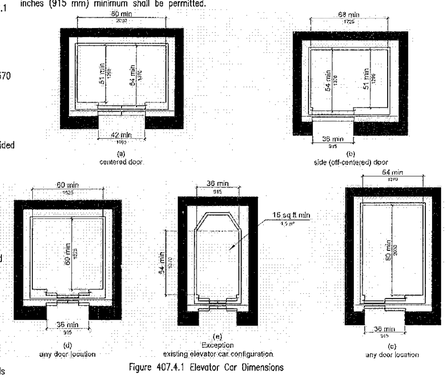

Figure 407.4.1 Elevator Car Dimensions

407.4.2 Floor Surfaces. Floor surfaces in elevator cars shall comply with 302 and 303.

407.4.3 Platform to Hoistway Clearance. The clearance between the car platform sill and the edge of any hoistway landing shall be 1 1/4 inch (32 mm) maximum.

407.4.4 Leveling. Each car shall be equipped with a self-leveling feature that will automatically bring and maintain the car at floor landings within a tolerance of 1/2 inch (13 mm) under rated loading to zero loading conditions.

407.4.5 Illumination. The level of illumination at the car controls, platform, car threshold and car landing sill shall be 5 foot candles (54 lux) minimum.

407.4.6 Elevator Car Controls. Where provided, elevator car controls shall comply with 407.4.6 and 309.4.
EXCEPTION: In existing elevators, where a new car operating panel complying with 407.4.6 is provided, existing car operating panels shall not be required to comply with 407.4.6.

407.4.6.1 Location. Controls shall be located within one of the reach ranges specified in 308.
EXCEPTIONS:
1. Where the elevator panel serves more than 16 openings and a parallel approach is provided, buttons with floor designations shall be permitted to be 54 inches (1370 mm) maximum above the finish floor.
2. In existing elevators, car control buttons with floor designations shall be permitted to be located 54 inches (1370 mm) maximum above the finish floor where a parallel approach is provided.

407.4.6.2 Buttons. Car control buttons with floor designations shall comply with 407.4.6.2 and shall be raised or flush.
EXCEPTION: In existing elevators, buttons shall be permitted to be recessed.

407.4.6.2.1 Size. Buttons shall be 3/4 inch (19 mm) minimum in their smallest dimension.
407.4.6.2.2 Arrangement. Buttons shall be arranged with numbers in ascending order. When two or more columns of buttons are provided they shall read from left to right.

407.4.6.3 Keypads. Car control keypads shall be in a standard telephone keypad arrangement and shall comply with 407.4.7.2.

407.4.6.4 Emergency Controls. Emergency controls shall comply with 407.4.6.4.

407.4.6.4.1 Height. Emergency control buttons shall have their centerlines 35 inches (890 mm) minimum above the finish floor.

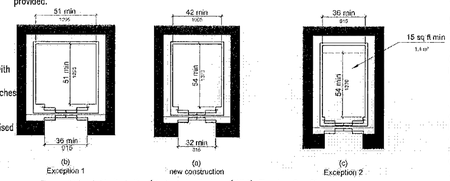

Figure 408.4.1 Limited-Use/Limited-Application (LULA) Elevator Car Dimensions

410 Platform Lifts
410.1 General. Platform lifts shall comply with ASME A18.1 (1999 edition or 2003 edition) (incorporated by reference, see "Referenced Standards" in Chapter 1). Platform lifts shall not be attendant-operated and shall provide unassisted entry and exit from the lift.

410.2 Floor Surfaces. Floor surfaces in platform lifts shall comply with 302 and 303.

410.3 Clear Floor Space. Clear floor space in platform lifts shall comply with 305.

410.4 Platform to Runway Clearance. The clearance between the platform sill and the edge of any runway landing shall be 1 inch (32 mm) maximum.

410.5 Operable Parts. Controls for platform lifts shall comply with 309.

410.6 Doors and Gates. Platform lifts shall have low-energy power-operated doors or gates complying with 404.3. Doors shall remain open for 20 seconds minimum. End doors and gates shall provide a clear width 32 inches (815 mm) minimum. Side doors and gates shall provide a clear width 42 inches (1065 mm) minimum.
EXCEPTION: Platform lifts serving two landings maximum and having doors or gates on opposite sides shall be permitted to have self-closing manual doors or gates.

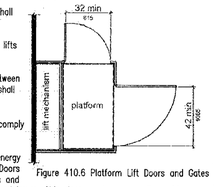

Figure 410.6 Platform Lift Doors and Gates

CHAPTER 5: GENERAL SITE AND BUILDING ELEMENTS

501 General
501.1 Scope. The provisions of Chapter 5 shall apply where required by Chapter 2 or where referenced by a requirement in this document.

502 Parking Spaces

502.1 General. Car and van parking spaces shall comply with 502. Where parking spaces are marked with lines, width measurements of parking spaces and access aisles shall be made from the centerline of the markings.
EXCEPTION: Where parking spaces or access aisles are not adjacent to another parking space or access aisle, measurements shall be permitted to include the full width of the line defining the parking space or access aisle.

502.2 Vehicle Spaces. Car parking spaces shall be 96 inches (2440 mm) wide minimum and van parking spaces shall be 132 inches (3350 mm) wide minimum, shall be marked to define the width, and shall have an adjacent access aisle complying with 502.3.
EXCEPTION: Van parking spaces shall be permitted to be 96 inches (2440 mm) wide minimum where the access aisle is 96 inches (2440 mm) wide minimum.

502.3 Access Aisle. Access aisles serving parking spaces shall comply with 502.3. Access aisles shall adjoin an accessible route. Two parking spaces shall be permitted to share a common access aisle.

502.3.1 Width. Access aisles serving car and van parking spaces shall be 60 inches (1525 mm) wide minimum.

502.3.2 Length. Access aisles shall extend the full length of the parking spaces they serve.

502.3.3 Marking. Access aisles shall be marked so as to discourage parking in them.

502.3.4 Location. Access aisles shall not overlap the vehicular way. Access aisles shall be permitted to be placed on either side of the parking space except for angled van parking spaces which shall have access aisles located on the passenger side of the parking spaces.

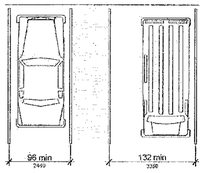

Figure 502.2 Vehicle Parking Spaces

502.4 Floor or Ground Surfaces. Parking spaces and access aisles serving them shall comply with 302. Access aisles shall be at the same level as the parking spaces they serve. Changes in level are not permitted.
EXCEPTION: Slopes not steeper than 1:48 shall be permitted.

502.5 Vertical Clearance. Parking spaces for vans and access aisles and vehicular routes serving them shall provide a vertical clearance of 98 inches (2490 mm) minimum.

502.6 Identification. Parking space identification signs shall include the International Symbol of Accessibility complying with 703.7.2.1. Signs identifying van parking spaces shall contain the designation "van accessible." Signs shall be 60 inches (1525 mm) minimum above the finish floor or ground surface measured to the bottom of the sign.

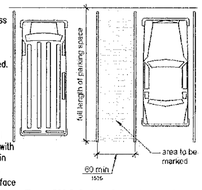

Figure 502.3 Parking Space Access Aisle

502.7 Relationship to Accessible Routes. Parking spaces and access aisles shall be designed so that cars and vans, when parked, cannot obstruct the required clear width of adjacent accessible routes.

503 Passenger Loading Zones
503.1 General. Passenger loading zones shall comply with 503.

503.2 Vehicle Pull-Up Space. Passenger loading zones shall provide a vehicular pull-up space 96 inches (2440 mm) wide minimum and 20 feet (6100 mm) long minimum.

503.3 Access Aisle. Passenger loading zones shall provide access aisles complying with 503 adjacent to the vehicle pull-up space. Access aisles shall adjoin an accessible route and shall not overlap the vehicular way.
503.3.1 Width. Access aisles serving vehicle pull-up spaces shall be 60 inches (1525 mm) wide minimum.

503.3.2 Length. Access aisles shall extend the full length of the vehicle pull-up spaces they serve.

503.3.3 Marking. Access aisles shall be marked so as to discourage parking in them.

503.4 Floor and Ground Surfaces. Vehicle pull-up spaces and access aisles serving them shall comply with 302. Access aisles shall be at the same level as the vehicle pull-up space they serve. Changes in level are not permitted.
EXCEPTION: Slopes not steeper than 1:48 shall be permitted.

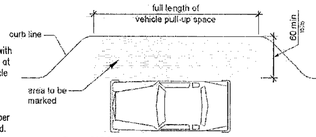

Figure 503.3 Passenger Loading Zone Access Aisle

503.5 Vertical Clearance. Vehicle pull-up spaces, access aisles serving them, and a vehicular route from an entrance to the passenger loading zone, and from the passenger loading zone to a vehicular exit shall provide a vertical clearance of 114 inches (2895 mm) minimum.

504 Stairways
504.1 General. Stairs shall comply with 504.

504.2 Treads and Risers. All steps on a flight of stairs shall have uniform riser heights and uniform tread depths. Risers shall be 4 inches (100 mm) high minimum and 7 inches (180 mm) high maximum. Treads shall be 11 inches (280 mm) deep minimum.

504.3 Open Risers. Open risers are not permitted.

504.4 Tread Surface. Stair treads shall comply with 302. Changes in level are not permitted.
EXCEPTION: Treads shall be permitted to have a slope not steeper than 1:48.

504.5 Nosings. The radius of curvature at the leading edge of the tread shall be 1/2 inch (13 mm) maximum. Nosings that project beyond risers shall have the underside of the leading edge curved or beveled. Risers shall be permitted to slope under the tread at an angle of 30 degrees maximum from vertical. The permitted projection of the nosing shall extend 1 1/2 inches (38 mm) maximum over the tread below.

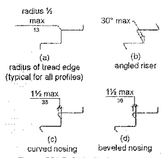

Figure 504.5 Stair Nosings

504.6 Handrails. Stairs shall have handrails complying with 505.

504.7 Wet Conditions. Stair treads and landings subject to wet conditions shall be designed to prevent the accumulation of water.

505 Handrails
505.1 General. Handrails provided along walking surfaces complying with 403, required at ramps complying with 405, and required at stairs complying with 504 shall comply with 505.

505.2 Where Required. Handrails shall be provided on both sides of stairs and ramps.
EXCEPTION: In assembly areas, handrails shall not be required on both sides of aisle ramps where a handrail is provided at either side or within the aisle width.

505.3 Continuity. Handrails shall be continuous within the full length of each stair flight or ramp run. Inside handrails on switchback or dogleg stairs and ramps shall be continuous between flights or runs.
EXCEPTION: In assembly areas, handrails on ramps shall not be required to be continuous in aisles serving seating.

505.4 Height. Top of gripping surfaces of handrails shall be 34 inches (865 mm) minimum and 38 inches (965 mm) maximum vertically above walking surfaces, stair nosings, and ramp surfaces. Handrails shall be at a consistent height above walking surfaces, stair nosings, and ramp surfaces.

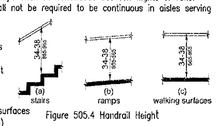

Figure 505.4 Handrail Height

505.5 Clearance. Clearance between handrail gripping surfaces and adjacent surfaces shall be 1 1/2 inches (38 mm) minimum.

505.6 Gripping Surface. Handrail gripping surfaces shall be continuous along their length and shall not be obstructed along their tops or sides. The bottoms of handrail gripping surfaces shall not be obstructed for more than 20 percent of their length. Where provided, horizontal projections shall occur 1 1/2 inches (38 mm) minimum below the bottom of the handrail gripping surface.
EXCEPTIONS:
1. Where handrails are provided along walking surfaces with slopes not steeper than 1:20, the bottoms of handrail gripping surfaces shall be permitted to be obstructed along their entire length where they are integral to crash rails or bumper guards.
2. The distance between horizontal projections and the bottom of the gripping surface shall be permitted to be reduced by 1/8 inch (3.2 mm) for each 1/2 inch (13 mm) of additional handrail perimeter dimension that exceeds 4 inches (100 mm).

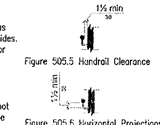

Figure 505.5 Handrail Clearance
Figure 505.6 Horizontal Projections Below Gripping Surface

505.7 Cross Section. Handrail gripping surfaces shall have a cross section complying with 505.7.1 or 505.7.2.
505.7.1 Circular Cross Section. Handrail gripping surfaces with a circular cross section shall have an outside diameter of 1 1/4 inches (32 mm) minimum and 2 inches (51 mm) maximum.

505.7.2 Non-Circular Cross Sections. Handrail gripping surfaces with a non-circular cross section shall have a perimeter dimension of 4 inches (100 mm) minimum and 6 1/4 inches (160 mm) maximum, and a cross-section dimension of 2 1/4 inches (57 mm) maximum.

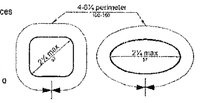

Figure 505.7.2 Handrail Non-Circular Cross Section

505.8 Surfaces. Handrail gripping surfaces and any surfaces adjacent to them shall be free of sharp or abrasive elements and shall have rounded edges.

505.9 Fittings. Handrails shall not rotate within their fittings.

505.10 Handrail Extensions. Handrail gripping surfaces shall extend beyond and in the same direction of stair flights and ramp runs in accordance with 505.10.
EXCEPTIONS:
1. Extensions shall not be required for continuous handrails at the inside turn of switchback or dogleg stairs and ramps.
2. In assembly areas, extensions shall not be required for ramp handrails in aisles serving seating where the handrails are discontinuous to provide access to seating and to permit crossovers within aisles.
3. In alterations, full extensions of handrails shall not be required where such extensions would be hazardous due to plan configuration.

505.10.1 Top and Bottom Extension at Ramps. Ramp handrails shall extend horizontally above the landing for 12 inches (305 mm) minimum beyond the top and bottom of ramp runs. Extensions shall return to a wall, guard, or the landing surface, or shall be continuous to the handrail of an adjacent ramp run.

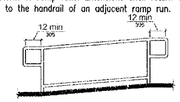

Figure 505.10.1 Top and Bottom Handrail Extension at Ramps

505.10.2 Top Extension at Stairs. At the top of a stair flight, handrails shall extend horizontally above the landing for 12 inches (305 mm) minimum beginning directly above the first riser nosing. Extensions shall return to a wall, guard, or the landing surface, or shall be continuous to the handrail of an adjacent stair flight.

505.10.3 Bottom Extension at Stairs. At the bottom of a stair flight, handrails shall extend at the slope of the stair flight for a horizontal distance at least equal to one tread depth beyond the last riser nosing. Extension shall return to a wall, guard, or the landing surface, or shall be continuous to the handrail of an adjacent stair flight.

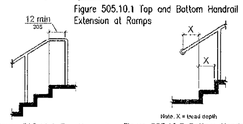

Figure 505.10.2 Top Handrail Extension at Stairs
Figure 505.10.3 Bottom Handrail Extension at Stairs

CHAPTER 6: PLUMBING ELEMENTS & FACILITIES

601 General
601.1 Scope. The provisions of Chapter 6 shall apply where required by Chapter 2 or where referenced by a requirement in this document.

602 Drinking Fountains
602.1 General. Drinking fountains shall comply with 307 and 602.

602.2 Clear Floor Space. Units shall have a clear floor or ground space complying with 305 positioned for a forward approach and centered on the unit. Knee and toe clearance complying with 306 shall be provided.
EXCEPTION: A parallel approach complying with 305 shall be permitted at units for children's use where the spout is 30 inches (760 mm) maximum above the finish floor or ground and is 3 1/2 inches (90 mm) maximum from the front edge of the unit, including bumpers.

602.3 Operable Parts. Operable parts shall comply with 309.

602.4 Spout Height. Spout outlets shall be 36 inches (915 mm) maximum above the finish floor or ground.

602.5 Spout Location. The spout shall be located 15 inches (380 mm) minimum from the vertical support and 5 inches (125 mm) maximum from the front edge of the unit, including bumpers.

602.6 Water Flow. The spout shall provide a flow of water 4 inches (100 mm) high minimum and shall be located 5 inches (125 mm) maximum from the front of the unit. The angle of the water stream shall be measured horizontally relative to the front face of the unit. Where spouts are located less than 3 inches (75 mm) of the front of the unit, the angle of the water stream shall be 30 degrees maximum. Where spouts are located between 3 inches (75 mm) and 5 inches (125 mm) maximum from the front of the unit, the angle of the water stream shall be 15 degrees maximum

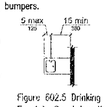

Figure 602.5 Drinking Fountain Spout Location

602.7 Drinking Fountains for Standing Persons. Spout outlets of drinking fountains for standing persons shall be 38 inches (965 mm) minimum and 43 inches (1090 mm) maximum above the finish floor or ground.

603 Toilet and Bathing Rooms
603.1 General. Toilet and bathing rooms shall comply with 603.

603.2 Clearances. Clearances shall comply with 603.2.

603.2.1 Turning Space. Turning space complying with 304 shall be provided within the room.

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Tee Crossing Phase 2
Frisco, TX
Construction Documents

Revisions

REGISTERED ARCHITECT
DUANE K. MEYERS
STATE OF TEXAS
30 April 2018

ADA2

30 April 2018

2010 ADA Standards for Accessible Design for Public Accommodations and Commercial Facilities: Title III

CHAPTER 6: PLUMBING ELEMENTS & FACILITIES (CONT.)

603.2.2 Overlap. Required clear floor spaces, clearance at fixtures, and turning space shall be permitted to overlap.

603.2.3 Door Swing. Doors shall not swing into the clear floor space or clearance required for any fixture. Doors shall be permitted to swing into the required turning space.
EXCEPTIONS:
1. Doors to a toilet room or bathing room for a single occupant accessed only through a private office and not for common use or public use shall be permitted to swing into the clear floor space or clearance provided the swing of the door can be reversed to comply with 603.2.3.
2. Where the toilet room or bathing room is for individual use and a clear floor space complying with 305.3 is provided within the room beyond the arc of the door swing, doors shall be permitted to swing into the clear floor space or clearance required for any fixture.

603.3 Mirrors. Mirrors located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface 40 inches (1015 mm) maximum above the finish floor or ground. Mirrors not located above lavatories or countertops shall be installed with the bottom edge of the reflecting surface 35 inches (890 mm) maximum above the finish floor or ground.

603.4 Coat Hooks and Shelves. Coat hooks shall be located within one of the reach ranges specified in 308. Shelves shall be located 40 inches (1015 mm) minimum and 48 inches (1220 mm) maximum above the finish floor.

604 Water Closets and Toilet Compartments

604.1 General. Water closets and toilet compartments shall comply with 604.2 through 604.8.
EXCEPTION: Water closets and toilet compartments for children's use shall be permitted to comply with 604.9.

604.2 Location. The water closet shall be positioned with a wall or partition to the rear and to one side. The centerline of the water closet shall be 16 inches (405 mm) minimum to 18 inches (455 mm) maximum from the side wall or partition, except that the water closet shall be 17 inches (430 mm) minimum and 19 inches (485 mm) maximum from the side wall or partition in the ambulatory accessible toilet compartment specified in 604.8.2. Water closets shall be arranged for a left-hand or right-hand approach.

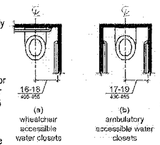

Figure 604.2 Water Closet Location

604.3 Clearance. Clearances around water closets and in toilet compartments shall comply with 604.3.

604.3.1 Size. Clearance around a water closet shall be 60 inches (1525 mm) minimum measured perpendicular from the side wall and 56 inches (1420 mm) minimum measured perpendicular from the rear wall.

604.3.2 Overlap. The required clearance around the water closet shall be permitted to overlap the water closet, associated grab bars, dispensers, sanitary napkin disposal units, coat hooks, shelves, accessible routes, clear floor space and clearances required at other fixtures, and the turning space. No other fixtures or obstructions shall be located within the required water closet clearance.

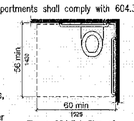

Figure 604.3.1 Size of Clearance at Water Closets

604.4 Seats. The seat height of a water closet above the finish floor shall be 17 inches (430 mm) minimum and 19 inches (485 mm) maximum measured to the top of the seat. Seats shall not be sprung to return to a lifted position.
EXCEPTIONS:
1. A water closet in a toilet room for a single occupant accessed only through a private office and not for common use or public use shall not be required to comply with 604.4.

604.5 Grab Bars. Grab bars for water closets shall comply with 609. Grab bars shall be provided on the side wall closest to the water closet and on the rear wall.
EXCEPTIONS:
1. Grab bars shall not be required to be installed in a toilet room for a single occupant accessed only through a private office and not for common use or public use provided that reinforcement has been installed in walls and located so as to permit the installation of grab bars complying with 604.5.

3. In detention or correction facilities, grab bars shall not be required to be installed in housing or holding cells that are specially designed without protrusions for purposes of suicide prevention.

604.5.1 Side Wall. The side wall grab bar shall be 42 inches (1065 mm) long minimum, located 12 inches (305 mm) maximum from the rear wall and extending 54 inches (1370 mm) minimum from the rear wall.

604.5.2 Rear Wall. The rear wall grab bar shall be 36 inches (915 mm) long minimum and extend from the centerline of the water closet 12 inches (305 mm) minimum on one side and 24 inches (610 mm) minimum on the other side.
EXCEPTIONS:
1. The grab bar shall be permitted to be 24 inches (610 mm) long minimum, centered on the water closet, where wall space does not permit a length of 36 inches (915 mm) minimum due to the location of a recessed fixture adjacent to the water closet.
2. Where an administrative authority requires flush controls for flush valves to be located in a position that conflicts with the location of the rear grab bar, then the rear grab bar shall be permitted to be split or shifted to the open side of the toilet area.

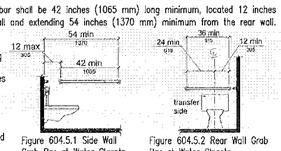

Figure 604.5.1 Side Wall Grab Bar at Water Closets
Figure 604.5.2 Rear Wall Grab Bar at Water Closets

604.6 Flush Controls. Flush controls shall be hand operated or automatic. Hand operated flush controls shall comply with 309. Flush controls shall be located on the open side of the water closet except in ambulatory accessible compartments complying with 604.8.2.

604.7 Dispensers. Toilet paper dispensers shall comply with 309.4 and shall be 7 inches (180 mm) minimum and 9 inches (230 mm) maximum in front of the water closet measured to the centerline of the dispenser. The outlet of the dispenser shall be 15 inches (380 mm) minimum and 48 inches (1220 mm) maximum above the finish floor and shall not be located behind grab bars. Dispensers shall not be of a type that controls delivery or that does not allow continuous paper flow.

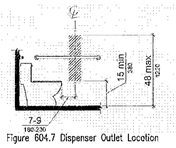

Figure 604.7 Dispenser Outlet Location

604.8 Toilet Compartments. Wheelchair accessible toilet compartments shall meet the requirements of 604.8.1 and 604.8.3. Compartments containing more than one plumbing fixture shall comply with 603. Ambulatory accessible compartments shall comply with 604.8.2 and 604.8.3.

604.8.1 Wheelchair Accessible Compartments. Wheelchair accessible compartments shall comply with 604.8.1.

604.8.1.1 Size. Wheelchair accessible compartments shall be 60 inches (1525 mm) wide minimum measured perpendicular to the side wall, and 56 inches (1420 mm) deep minimum for wall hung water closets and 59 inches (1500 mm) deep minimum for floor mounted water closets measured perpendicular to the rear wall. Wheelchair accessible compartments for children's use shall be 60 inches (1525 mm) wide minimum measured perpendicular to the side wall, and 59 inches (1500 mm) deep minimum for wall hung and floor mounted water closets measured perpendicular to the rear wall.

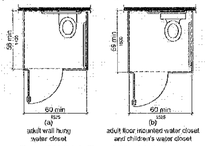

Figure 604.8.1.1 Size of Wheelchair Accessible Toilet Compartment

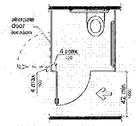

Figure 604.8.1.1 Size of Wheelchair Accessible Toilet Compartment

604.8.1.2 Doors. Toilet compartment doors, including door hardware, shall comply with 404 except that if the approach is to the latch side of the compartment door, clearance between the door side of the compartment and any obstruction shall be 42 inches (1065 mm) minimum. Doors shall be located in the front partition or in the side wall or partition farthest from the water closet. Where located in the front partition, the door opening shall be 4 inches (100 mm) maximum from the side wall or partition farthest from the water closet. Where located in the side wall or partition, the door opening shall be 4 inches (100 mm) maximum from the front partition. The door shall be self-closing. A door pull complying with 404.2.7 shall be placed on both sides of the door near the latch. Toilet compartment doors shall not swing into the minimum required compartment area.

604.8.1.3 Approach. Compartments shall be arranged for left-hand or right-hand approach to the water closet.

604.8.1.4 Toe Clearance. The front partition and at least one side partition shall provide a toe clearance of 9 inches (230 mm) minimum above the finish floor and 6 inches (150 mm) deep minimum beyond the compartment-side face of the partition, exclusive of partition support members. Compartments for children's use shall provide a toe clearance of 12 inches (305 mm) minimum above the finish floor.
EXCEPTION: Toe clearance at the front partition is not required in a compartment greater than 62 inches (1575 mm) deep with a wall-hung water closet or 65 inches (1650 mm) deep with a floor-mounted water closet. Toe clearance at the side partition is not required in a compartment greater than 66 inches (1675 mm) wide. Toe clearance at the front partition is not required in a compartment for children's use that is greater than 65 inches (1650 mm) deep.

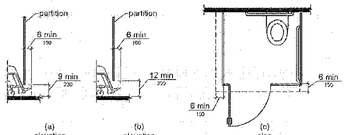

Figure 604.8.1.4 Wheelchair Accessible Toilet Compartment Toe Clearance

604.8.1.5 Grab Bars. Grab bars shall comply with 609. A side-wall grab bar complying with 604.5.1 shall be provided and shall be located on the wall closest to the water closet. In addition, a rear-wall grab bar complying with 604.5.2 shall be provided.

604.8.2 Ambulatory Accessible Compartments. Ambulatory accessible compartments shall comply with 604.8.2.

604.8.2.1 Size. Ambulatory accessible compartments shall have a depth of 60 inches (1525 mm) minimum and a width of 35 inches (890 mm) minimum and 37 inches (940 mm) maximum.

604.8.2.2 Doors. Toilet compartment doors, including door hardware, shall comply with 404, except that if the approach is to the latch side of the compartment door, clearance between the door side of the compartment and any obstruction shall be 42 inches (1065 mm) minimum. The door shall be self-closing. A door pull complying with 404.2.7 shall be placed on both sides of the door near the latch. Toilet compartment doors shall not swing into the minimum required compartment area.

604.8.2.3 Grab Bars. Grab bars shall comply with 609. A side-wall grab bar complying with 604.5.1 shall be provided on both sides of the compartment.

604.8.3 Coat Hooks and Shelves. Coat hooks shall be located within one of the reach ranges specified in 308. Shelves shall be located 40 inches (1015 mm) minimum and 48 inches (1220 mm) maximum above the finish floor.

604.9 Water Closets and Toilet Compartments for Children's Use. Water closets and toilet compartments for children's use shall comply with 604.9

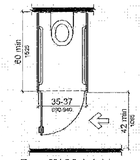

Figure 604.8.2 Ambulatory Accessible Toilet Compartment

Advisory Specifications for Water Closets Serving Children Ages 3 through 12			
	Ages 3 and 4	Ages 5 through 8	Ages 9 through 12
Water Closet Centerline	12 inches	12 to 15 inches	15 to 18 inches
Toilet Seat Height	11 to 12 inches	12 to 15 inches	15 to 17 inches
Grab Bar Height	18 to 20 inches	20 to 25 inches	25 to 27 inches
Dispenser Height	14 inches	14 to 17 inches	17 to 19 inches

604.9.1 Location. The water closet shall be located with a wall or partition to the rear and to one side. The centerline of the water closet shall be 12 inches (305 mm) minimum and 18 inches (455 mm) maximum from the side wall or partition, except that the water closet shall be 17 inches (430 mm) minimum and 19 inches (485 mm) maximum from the side wall or partition in the ambulatory accessible toilet compartment specified in 604.8.2. Compartments shall be arranged for left-hand or right-hand approach to the water closet.

604.9.2 Clearance. Clearance around a water closet shall comply with 604.3.

604.9.3 Height. The height of water closets shall be 11 inches (280 mm) minimum and 17 inches (430 mm) maximum measured to the top of the seat. Seats shall not be sprung to return to a lifted position.

604.9.4 Grab Bars. Grab bars for water closets shall comply with 604.5.

604.9.5 Flush Controls. Flush controls shall be hand operated or automatic. Hand operated flush controls shall comply with 309.2 and 309.4 and shall be installed 36 inches (915 mm) maximum above the finish floor. Flush controls shall be located on the open side of the water closet except in ambulatory accessible compartments complying with 604.8.2.

604.9.6 Dispensers. Toilet paper dispensers shall comply with 309.4 and shall be 7 inches (180 mm) minimum and 9 inches (230 mm) maximum in front of the water closet measured to the centerline of the dispenser. The outlet of the dispenser shall be 14 inches (355 mm) minimum and 19 inches (485 mm) maximum above the finish floor. There shall be a clearance of 1 1/2 inches (38 mm) minimum below the grab bar. Dispensers shall not be of a type that controls delivery or that does not allow continuous paper flow.

604.9.7 Toilet Compartments. Toilet compartments shall comply with 604.8.

605 Urinals

605.1 General. Urinals shall comply with 605.

605.2 Height and Depth. Urinals shall be the stall-type or the wall-hung type with the rim 17 inches (430 mm) maximum above the finish floor or ground. Urinals shall be 13 1/2 inches (345 mm) deep minimum measured from the outer face of the urinal rim to the back of the fixture.

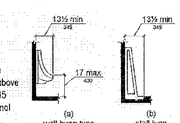

Figure 605.2 Height and Depth of Urinals

605.3 Clear Floor Space. A clear floor or ground space complying with 305 positioned for forward approach shall be provided.

605.4 Flush Controls. Flush controls shall be hand operated or automatic. Hand operated flush controls shall comply with 309.

606 Lavatories and Sinks
606.1 General. Lavatories and sinks shall comply with 606.

606.2 Clear Floor Space. A clear floor space complying with 305, positioned for a forward approach, and knee and toe clearance complying with 306 shall be provided.
EXCEPTIONS:
1. A parallel approach complying with 305 shall be permitted to a kitchen sink in a space where a cook top or conventional range is not provided and to wet bars.
2. A lavatory in a toilet room or bathing facility for a single occupant accessed only through a private office and not for common use or public use shall not be required to provide knee and toe clearance complying with 306.
3. Residential requirements not included.
4. A knee clearance of 24 inches (610 mm) minimum above the finish floor or ground shall be permitted at lavatories and sinks used primarily by children 6 through 12 years where the rim or counter surface is 31 inches (785 mm) maximum above the finish floor or ground.
5. A parallel approach complying with 305 shall be permitted to lavatories and sinks used primarily by children 5 years and younger.
6. The dip of the overflow shall not be considered in determining knee and toe clearances.
7. No more than one bowl of a multi-bowl sink shall be required to provide knee and toe clearance complying with 306.

606.3 Height. Lavatories and sinks shall be installed with the front of the higher of the rim or counter surface 34 inches (865 mm) maximum above the finish floor or ground.
EXCEPTIONS:
1. A lavatory in a toilet or bathing facility for a single occupant accessed only through a private office and not for common use or public use shall not be required to comply with 606.3.

606.4 Faucets. Controls for faucets shall comply with 309. Hand-operated metering faucets shall remain open for 10 seconds minimum.

606.5 Exposed Pipes and Surfaces. Water supply and drain pipes under lavatories and sinks shall be insulated or otherwise configured to protect against contact. There shall be no sharp or abrasive surfaces under lavatories and sinks.

607 Bathtubs

607.1 General. Bathtubs shall comply with 607.

607.2 Clearance. Clearance in front of bathtubs shall extend the length of the bathtub and shall be 30 inches (760 mm) wide minimum. A lavatory complying with 606 shall be permitted at the control end of the clearance. Where a permanent seat is provided at the head end of the bathtub, the clearance shall extend 12 inches (305 mm) minimum beyond the wall at the head end of the bathtub.

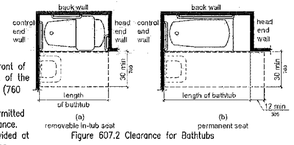

Figure 607.2 Clearance for Bathtubs

607.3 Seat. A permanent seat at the head end of the bathtub or a removable in-tub seat shall be provided. Seats shall comply with 610.

607.4 Grab Bars. Grab bars for bathtubs shall comply with 609 and shall be provided in accordance with 607.4.1 or 607.4.2.
EXCEPTIONS:
1. Grab bars shall not be required to be installed in a bathtub located in a bathing facility for a single occupant accessed only through a private office and not for common use or public use provided that reinforcement has been installed in walls and located so as to permit the installation of grab bars complying with 607.4.

607.4.1 Bathtubs With Permanent Seats. For bathtubs with permanent seats, grab bars shall be provided in accordance with 607.4.1.

607.4.1.1 Back Wall. Two grab bars shall be installed on the back wall, one located in accordance with 609.4 and the other located 8 inches (205 mm) minimum and 10 inches (255 mm) maximum above the rim of the bathtub. Each grab bar shall be installed 15 inches (380 mm) maximum from the head end wall and 12 inches (305 mm) maximum from the control end wall.

607.4.1.2 Control End Wall. A grab bar 24 inches (610 mm) long minimum shall be installed on the control end wall at the front edge of the bathtub.

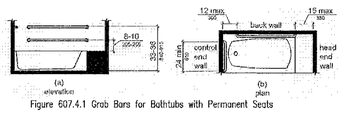

Figure 607.4.1 Grab Bars for Bathtubs with Permanent Seats

607.4.2 Bathtubs Without Permanent Seats. For bathtubs without permanent seats, grab bars shall comply with 607.4.2.

607.4.2.1 Back Wall. Two grab bars shall be installed on the back wall, one located in accordance with 609.4 and other located 8 inches (205 mm) minimum and 10 inches (255 mm) maximum above the rim of the bathtub. Each grab bar shall be 24 inches (610 mm) long minimum and shall be installed 24 inches (610 mm) maximum from the head end wall and 12 inches (305 mm) maximum from the control end wall.

607.4.2.2 Control End Wall. A grab bar 24 inches (610 mm) long minimum shall be installed on the control end wall at the front edge of the bathtub.

607.4.2.3 Head End Wall. A grab bar 12 inches (305 mm) long minimum shall be installed on the head end wall at the front edge of the bathtub.

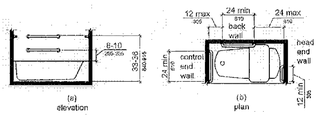

Figure 607.4.2 Grab Bars for Bathtubs with Removable In-Tub Seats

607.5 Controls. Controls, other than drain stoppers, shall be located on an end wall. Controls shall be between the bathtub rim and grab bar, and between the open side of the bathtub and the centerline of the width of the bathtub. Controls shall comply with 309.4.

607.6 Shower Spray Unit and Water. A shower spray unit with a hose 59 inches (1500 mm) long minimum that can be used both as a fixed-position shower head and as a hand-held shower shall be provided. The shower spray unit shall have an on/off control with a non-positive shut-off. If an adjustable-height shower head on a vertical bar is used, the bar shall be installed so as not to obstruct the use of grab bars. Bathtub shower spray units shall deliver water that is 120°F (49°C) maximum.

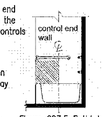

Figure 607.5 Bathtub Control Location

607.7 Bathtub Enclosures. Enclosures for bathtubs shall not obstruct controls, faucets, shower and spray units or obstruct transfer from wheelchairs onto bathtub seats or into bathtubs. Enclosures on bathtubs shall not have tracks installed on the rim of the open face of the bathtub.

608 Shower Compartments

608.1 General. Shower compartments shall comply with 608.

608.2 Size and Clearances for Shower Compartments. Shower compartments shall have sizes and clearances complying with 608.2.

608.2.1 Transfer Type Shower Compartments. Transfer type shower compartments shall be 36 inches (915 mm) by 36 inches (915 mm) clear inside dimensions measured at the center points of opposing sides and shall have a 36 inch (915 mm) wide minimum entry on the face of the shower compartment. Clearance of 36 inches (915 mm) wide minimum by 48 inches (1220 mm) long minimum measured from the control wall shall be provided.

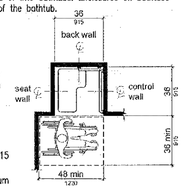

Figure 608.2.1 Transfer Type Shower Compartment Size and Clearance

608.2.2 Standard Roll-In Type Shower Compartments. Standard roll-in type shower compartments shall be 30 inches (760 mm) wide minimum by 60 inches (1525 mm) deep minimum clear inside dimensions measured at center points of opposing sides and shall have a 60 inches (1525 mm) wide minimum entry on the face of the shower compartment.

608.2.2.1 Clearance. A 30 inch (760 mm) wide minimum by 60 inch (1525 mm) long minimum clearance shall be provided adjacent to the open face of the shower compartment.
EXCEPTION: A lavatory complying with 606 shall be permitted on one 30 inch (760 mm) wide minimum side of the clearance provided that it is not on the side of the clearance adjacent to the controls or, where provided, not on the side of the clearance adjacent to the shower seat.

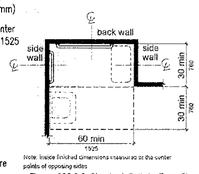

Figure 608.2.2 Standard Roll-In Type Shower Compartment Size and Clearance

608.2.3 Alternate Roll-In Type Shower Compartments. Alternate roll-in type shower compartments shall be 36 inches (915 mm) wide and 60 inches (1525 mm) deep minimum clear inside dimensions measured at center points of opposing sides. A 36 inch (915 mm) wide minimum entry shall be provided at one end of the long side of the compartment.

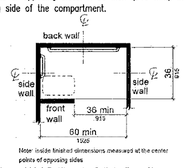

Figure 608.2.3 Alternate Roll-In Type Shower Compartment Size and Clearance

608.3 Grab Bars. Grab bars shall comply with 609 and shall be provided in accordance with 608.3. Where multiple grab bars are used, required horizontal grab bars shall be installed at the same height above the finish floor.
EXCEPTIONS:
1. Grab bars shall not be required to be installed in a shower located in a bathing facility for a single occupant accessed only through a private office, and not for common use or public use provided that reinforcement has been installed in walls and located so as to permit the installation of grab bars complying with 608.3.

608.3.1 Transfer Type Shower Compartments. In transfer type compartments, grab bars shall be provided across the control wall and back wall to a point 18 inches (455 mm) from the control wall.

608.3.2 Standard Roll-In Type Shower Compartments. Where a seat is provided in standard roll-in type shower compartments, grab bars shall be provided on the back wall and the side wall opposite the seat. Grab bars shall not be provided above the seat. Where a seat is not provided in standard roll-in type shower compartments, grab bars shall be provided on three walls. Grab bars shall be installed 6 inches (150 mm) maximum from adjacent walls.

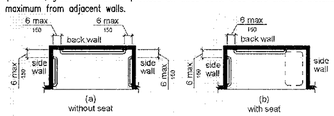

Figure 608.3.2 Grab Bars for Standard Roll-In Type Showers

608.3.3 Alternate Roll-In Type Shower Compartments. In alternate roll-in type shower compartments, grab bars shall be provided on the back wall and the side wall farthest from the compartment entry. Grab bars shall not be provided above the seat. Grab bars shall be installed 6 inches (150 mm) maximum from adjacent walls.

608.4 Seats. A folding or non-folding seat shall be provided in transfer type shower compartments. A folding seat shall be provided in roll-in type showers required in transient lodging guest rooms with mobility features complying with 806.2. Seats shall comply with 610.

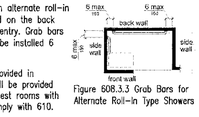

Figure 608.3.3 Grab Bars for Alternate Roll-In Type Showers

608.5 Controls. Controls, faucets, and shower spray units shall comply with 309.4.

608.5.1 Transfer Type Shower Compartments. In transfer type shower compartments, the controls, faucets, and shower spray unit shall be installed on the side wall opposite the seat 38 inches (965 mm) minimum and 48 inches (1220 mm) maximum above the shower floor and shall be located on the control wall 15 inches (380 mm) maximum from the centerline of the seat toward the shower opening.

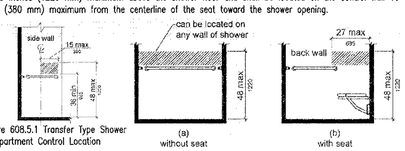

Figure 608.5.1 Transfer Type Shower Compartment Control Location
Figure 608.5.2 Standard Roll-In Type Shower Compartment Control Location

608.5.2 Standard Roll-In Type Shower Compartments. In standard roll-in type shower compartments, the controls, faucets, and shower spray unit shall be located above the grab bar, but no higher than 48 inches (1220 mm) above the shower floor. Where a seat is provided, the controls, faucets, and shower spray unit shall be located on the back wall adjacent to the seat wall and shall be located 27 inches (685 mm) maximum from the seat wall.

608.5.3 Alternate Roll-In Type Shower Compartments. In alternate roll-in type shower compartments, the controls, faucets, and shower spray unit shall be located above the grab bar, but no higher than 48 inches (1220 mm) above the shower floor. Where a seat is provided, the controls, faucets, and shower spray unit shall be located on the side wall adjacent to the seat 27 inches (685 mm) maximum from the side wall behind the seat or shall be located on the back wall opposite the seat 15 inches (380 mm) maximum, left or right, of the centerline of the seat. Where a seat is not provided, the controls, faucets, and shower spray unit shall be installed on the side wall farthest from the compartment entry.

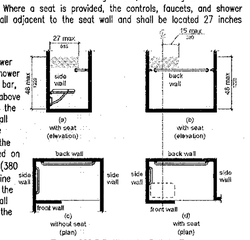

Figure 608.5.3 Alternate Roll-In Type Shower Compartment Control Location

608.6 Shower Spray Unit and Water. A shower spray unit with a hose 59 inches (1500 mm) long minimum that can be used both as a fixed-position shower head and as a hand-held shower shall be provided. The shower spray unit shall have an on/off control with a non-positive shut-off. If an adjustable-height shower head on a vertical bar is used, the bar shall be installed so as not to obstruct the use of grab bars. Shower spray units shall deliver water that is 120°F (49°C) maximum.
EXCEPTION: A fixed shower head located at 48 inches (1220 mm) maximum above the shower finish floor shall be permitted instead of a hand-held spray unit in facilities that are not medical care facilities, long-term care facilities, transient lodging guest rooms, or residential dwelling units.

608.7 Thresholds. Thresholds in roll-in type shower compartments shall be 1/2 inch (13 mm) high maximum in accordance with 303. In transfer type shower compartments, thresholds 1/2 inch (13 mm) high maximum shall be beveled, rounded, or vertical.
EXCEPTION: A threshold 2 inches (51 mm) high maximum shall be permitted in transfer type shower compartments in existing facilities where provision of a 1/2 inch (13 mm) high threshold would disturb the structural reinforcement of the floor slab.

608.8 Shower Enclosures. Enclosures for shower compartments shall not obstruct controls, faucets, and shower spray units or obstruct transfer from wheelchairs onto shower seats.

609 Grab Bars
609.1 General. Grab bars in toilet facilities and bathing facilities shall comply with 609.

609.2 Cross Section. Grab bars shall have a cross section complying with 609.2.1 or 609.2.2.

609.2.1 Circular Cross Section. Grab bars with circular cross sections shall have an outside diameter of 1 1/4 inches (32 mm) minimum and 2 inches (51 mm) maximum.

609.2.2 Non-Circular Cross Section. Grab bars with non-circular cross sections shall have a cross-section dimension of 2 inches (51 mm) maximum and a perimeter dimension of 4 inches (100 mm) minimum and 4.8 inches (120 mm) maximum.

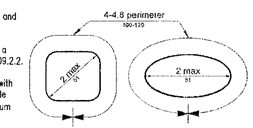

Figure 609.2.2 Grab Bar Non-Circular Cross Section

609.3 Spacing. The space between the wall and the grab bar shall be 1 1/2 inches (38 mm). The space between the grab bar and projecting objects below and at the ends shall be 1 1/2 inches (38 mm) minimum. The space between the grab bar and projecting objects above shall be 12 inches (305 mm) minimum.
EXCEPTION: The space between the grab bars and shower controls, shower fittings, and other grab bars above shall be permitted to be 1 1/2 inches (38 mm) minimum.

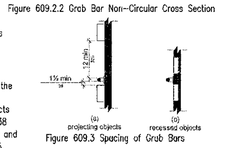

Figure 609.3 Spacing of Grab Bars

609.4 Position of Grab Bars. Grab bars shall be installed in a horizontal position, 33 inches (840 mm) minimum and 36 inches (915 mm) maximum above the finish floor measured to the top of the gripping surface, except that at water closets for children's use complying with 604.9, grab bars shall be installed in a horizontal position 18 inches (455 mm) minimum and 27 inches (685 mm) maximum above the finish floor measured to the top of the gripping surface. The height of the lower grab bar on the back wall of a bathtub shall comply with 607.4.1.1 or 607.4.2.1.

609.5 Surface Hazards. Grab bars and any wall or other surfaces adjacent to grab bars shall be free of sharp or abrasive elements and shall have rounded edges.
609.6 Fittings. Grab bars shall not rotate within their fittings.
609.7 Installation. Grab bars shall be installed in any manner that provides a gripping surface at the specified locations and that does not obstruct the required clear floor space.

609.8 Structural Strength. Allowable stresses shall not be exceeded for materials used when a vertical or horizontal force of 250 pounds (1112 N) is applied at any point on the grab bar, fastener, mounting device, or supporting structure.

610 Seats

610.1 General. Seats in bathtubs and shower compartments shall comply with 610.
610.2 Bathtub Seats. The top of bathtub seats shall be 17 inches (430 mm) minimum and 19 inches (485 mm) maximum above the bathroom finish floor. The depth of a removable in-tub seat shall be 15 inches (380 mm) minimum and 16 inches (405 mm) maximum. The seat shall be capable of secure placement. Permanent seats at the head end of the bathtub shall be 15 inches (380 mm) deep minimum and shall extend from the back wall to or beyond the outer edge of the bathtub.

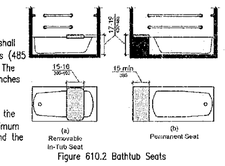

Figure 610.2 Bathtub Seats

610.3 Shower Compartment Seats. Where a seat is provided in a standard roll-in shower compartment, it shall be a folding type, shall be installed on the side wall adjacent to the controls, and shall extend from the back wall to a point within 3 inches (75 mm) of the compartment entry. Where a seat is provided in an alternate roll-in type shower compartment, it shall be a folding type, shall be installed on the front wall opposite the back wall, and shall extend from the adjacent side wall to a point within 3 inches (75 mm) of the compartment entry. In transfer-type showers, the seat shall extend from the back wall to a point within 3 inches (75 mm) of the compartment entry. The top of the seat shall be 17 inches (430 mm) minimum and 19 inches (485 mm) maximum above the bathroom finish floor. Seats shall comply with 610.3.1 or 610.3.2.

610.3.1 Rectangular Seats. The rear edge of a rectangular seat shall be 2 1/2 inches (64 mm) maximum and the front edge 15 inches (380 mm) minimum and 16 inches (405 mm) maximum from the seat wall. The side edge of the seat shall be 1 1/2 inches (38 mm) maximum from the adjacent wall.

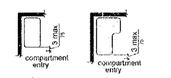

Figure 610.3 Extent of Seat

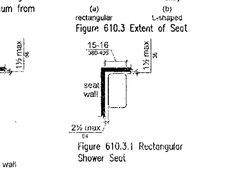

Figure 610.3.1 Rectangular Shower Seat
Figure 610.3.2 L-Shaped Shower Seat

610.3.2 L-Shaped Seats. The rear edge of an L-shaped seat shall be 2 1/2 inches (64 mm) maximum and the front edge 15 inches (380 mm) minimum and 16 inches (405 mm) maximum from the seat wall. The rear edge of the "L" portion of the seat shall be 1 1/2 inches (38 mm) maximum from the wall and the front edge shall be 14 inches (355 mm) minimum and 15 inches (380 mm) maximum from the wall. The end of the "L" shall be 22 inches (560 mm) minimum and 23 inches maximum (585 mm) from the main seat wall.

610.4 Structural Strength. Allowable stresses shall not be exceeded for materials used when a vertical or horizontal force of 250 pounds (1112 N) is applied at any point on the seat, fastener, mounting device, or supporting structure.

611 Washing Machines and Clothes Dryers

611.1 General. Washing machines and clothes dryers shall comply with 611.

611.2 Clear Floor Space. A clear floor or ground space complying with 305 positioned for parallel approach shall be provided. The clear floor or ground space shall be centered on the appliance.

611.3 Operable Parts. Operable parts, including doors, lint screens, and detergent and bleach compartments shall comply with 309.

611.4 Height. Top loading machines shall have the door to the laundry compartment located 36 inches (915 mm) maximum above the finish floor. Front loading machines shall have the bottom of the opening to the laundry compartment located 15 inches (380 mm) minimum and 36 inches (915 mm) maximum above the finish floor.

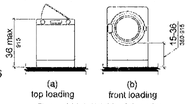

Figure 611.4 Height of Laundry Compartment Opening

612 Saunas and Steam Rooms

612.1 General. Saunas and steam rooms shall comply with 612.

612.2 Bench. Where seating is provided in saunas and steam rooms, at least one bench shall comply with 903. Doors shall not swing into the clear floor space required by 903.2.
EXCEPTION: A readily removable bench shall be permitted to obstruct the turning space required by 612.3 and the clear floor or ground space required by 903.2.

612.3 Turning Space. A turning space complying with 304 shall be provided within saunas and steam rooms.

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Tee Crossing Phase 2
Frisco, TX
Construction Documents

Revisions

REGISTERED ARCHITECT
DUANE W. MEYERS
STATE OF TEXAS
30 April 2018

ADA3

30 April 2018

2010 ADA Standards for Accessible Design for Public Accommodations and Commercial Facilities: Title III

CHAPTER 7: COMMUNICATION ELEMENTS AND FEATURES

701 General
701.1 Scope. The provisions of Chapter 7 shall apply where required by Chapter 2 or where referenced by a requirement in this document.
702 Fire Alarm Systems
702.1 General. Fire alarm systems shall have permanently installed audible and visible alarms complying with NFPA 72 (1999 or 2002 edition) (incorporated by reference, see "Referenced Standards" in Chapter 1), except that the maximum allowable sound level of audible notification appliances complying with section 4–3.2.1 of NFPA 72 (1999 edition) shall have a sound level no more than 110 dB at the minimum hearing distance from the audible appliance. In addition, alarms in guest rooms required to provide communication features shall comply with sections 4–3 and 4–4 of NFPA 72 (1999 edition) or sections 7.4 and 7.5 of NFPA 72 (2002 edition).
EXCEPTION: Fire alarm systems in medical care facilities shall be permitted to be provided in accordance with industry practice.

703 Signs
703.1 General. Signs shall comply with 703. Where both visual and tactile characters are required, either one sign with both visual and tactile characters, or two separate signs, one with visual, and one with tactile characters, shall be provided.

703.2 Raised Characters. Raised characters shall comply with 703.2 and shall be duplicated in braille complying with 703.3. Raised characters shall be installed in accordance with 703.4.

703.2.1 Depth. Raised characters shall be 1/32 inch (0.8 mm) minimum above their background.

703.2.2 Case. Characters shall be uppercase.

703.2.3 Style. Characters shall be sans serif. Characters shall not be italic, oblique, script, highly decorative, or of other unusual forms.

703.2.4 Character Proportions. Characters shall be selected from fonts where the width of the uppercase letter "O" is 55 percent minimum and 110 percent maximum of the height of the uppercase letter "I".

703.2.5 Character Height. Character height measured vertically from the baseline of the character shall be 5/8 inch (16 mm) minimum and 2 inches (51 mm) maximum based on the height of the uppercase letter "I".
EXCEPTION: Where separate raised and visual characters with the same information are provided, raised character height shall be permitted to be 1/2 inch (13 mm) minimum.

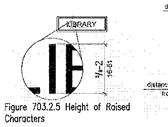

Figure 703.2.5 Height of Raised Characters

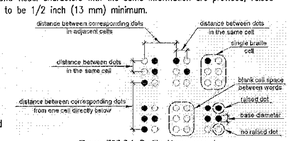

Figure 703.3.1 Braille Measurement

703.2.6 Stroke Thickness. Stroke thickness of the uppercase letter "I" shall be 15 percent maximum of the height of the character.

703.2.7 Character Spacing. Character spacing shall be measured between the two closest points of adjacent raised characters within a message, excluding word spaces. Where characters have rectangular cross sections, spacing between individual raised characters shall be 1/8 inch (3.2 mm) minimum and 4 times the raised character stroke width maximum. Where characters have other cross sections, spacing between individual raised characters shall be 1/16 inch (1.6 mm) minimum and 4 times the raised character stroke width maximum at the base of the cross sections, and 1/8 inch (3.2 mm) minimum and 4 times the raised character stroke width maximum at the top of the cross sections. Characters shall be separated from raised borders and decorative elements 3/8 inch (9.5 mm) minimum.

703.2.8 Line Spacing. Spacing between the baselines of separate lines of raised characters within a message shall be 135 percent minimum and 170 percent maximum of the raised character height.

703.3 Braille. Braille shall be contracted (Grade 2) and shall comply with 703.3 and 703.4.

703.3.1 Dimensions and Capitalization. Braille dots shall have a domed or rounded shape and shall comply with Table 703.3.1. The indication of an uppercase letter or letters shall only be used before the first word of sentences, proper nouns and names, individual letters of the alphabet, initials, and acronyms.

Table 703.3.1 Braille Dimensions

Measurement Range	Minimum in Inches to Maximum in Inches
Dot base diameter	0.059 (1.5 mm) to 0.063 (1.6 mm)
Distance between two dots in the same cell	0.090 (2.3 mm) to 0.100 (2.5 mm) measured center to center
Distance between corresponding dots in adjacent cells	0.241 (6.1 mm) to 0.300 (7.6 mm)measured center to center
Dot height	0.025 (0.6 mm) to 0.037 (0.9 mm)
Distance between corresponding dotsfrom one cell directly below	0.395 (10 mm) to 0.400 (10.2 mm)measured center to center

703.3.2 Position. Braille shall be positioned below the corresponding text. If text is multi-lined, braille shall be placed below the entire text. Braille shall be separated 3/8 inch (9.5 mm) minimum from any other tactile characters and 3/8 inch (9.5 mm) minimum from raised borders and decorative elements.
EXCEPTION: Braille provided on elevator car controls shall be separated 3/16 inch (4.8 mm) minimum and shall be located either directly below or adjacent to the corresponding raised characters or symbols.

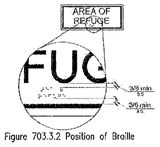

Figure 703.3.2 Position of Braille

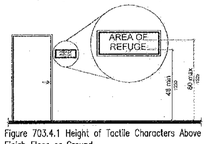

Figure 703.4.1 Height of Tactile Characters Above Finish Floor or Ground

703.4 Installation Height and Location. Signs with tactile characters shall comply with 703.4.

703.4.1 Height Above Finish Floor or Ground. Tactile characters on signs shall be located 48 inches (1220 mm) minimum above the finish floor or ground surface, measured from the baseline of the lowest tactile character and 60 inches (1525 mm) maximum above the finish floor or ground surface, measured from the baseline of the highest tactile character.
EXCEPTION: Tactile characters for elevator car controls shall not be required to comply with 703.4.1.

703.4.2 Location. Where a tactile sign is provided at a door, the sign shall be located alongside the door at the latch side. Where a tactile sign is provided at double doors with one active leaf, the sign shall be located on the inactive leaf. Where a tactile sign is provided at double doors with two active leafs, the sign shall be located to the right of the right hand door. Where there is no wall space at the latch side of a single door or at the right side of double doors, signs shall be located on the nearest adjacent wall. Signs containing tactile characters shall be located so that a clear floor space of 18 inches (455 mm) minimum by 18 inches (455 mm) minimum, centered on the tactile characters, is provided beyond the arc of any door swing between the closed position and 45 degree open position.
EXCEPTION: Signs with tactile characters shall be permitted on the push side of doors with closers and without hold-open devices.

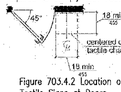

Figure 703.4.2 Location of Tactile Signs at Doors

703.5 Visual Characters. Visual characters shall comply with 703.5.
EXCEPTION: Where visual characters comply with 703.2 and are accompanied by braille complying with 703.3, they shall not be required to comply with 703.5.2 through 703.5.9.

703.5.1 Finish and Contrast. Characters and their background shall have a non-glare finish. Characters shall contrast with their background with either light characters on a dark background or dark characters on a light background.

703.5.2 Case. Characters shall be uppercase or lowercase or a combination of both.

703.5.3 Style. Characters shall be conventional in form. Characters shall not be italic, oblique, script, highly decorative, or of other unusual forms.

703.5.4 Character Proportions. Characters shall be selected from fonts where the width of the uppercase letter "O" is 55 percent minimum and 110 percent maximum of the height of the uppercase letter "I".

703.5.5 Character Height. Minimum character height shall comply with Table 703.5.5. Viewing distance shall be measured as the horizontal distance between the character and an obstruction preventing further approach towards the sign. Character height shall be based on the uppercase letter "I".

Table 703.5.5 Visual Character Height

Height to Finish Floor or Ground From Baseline of Character	Horizontal Viewing Distance	Minimum Character Height
40 inches (1015 mm) to less than or equal to 70 inches (1780 mm)	less than 72 inches (1830 mm)	5/8 inch (16 mm)
	72 inches (1830 mm) and greater	5/8 inch (16 mm), plus 1/8 inch (3.2 mm) per foot (305 mm) of viewing distance above 72 inches (1830 mm)
Greater than 70 inches (1780 mm) to less than or equal to 120 inches (3050 mm)	less than 180 inches (4570 mm)	2 inch (51 mm)
	180 inches (4570 mm) and greater	2 inches (51 mm), plus 1/8 inch (3.2 mm) per foot (305 mm) of viewing distance above 180 inches (4570 mm)
Greater than 120 inches (3050 mm)	less than 20 feet (6400 mm)	3 inch (75 mm)
	21 feet (6400 mm) and greater	3 inches (75 mm), plus 1/8 inch (3.2 mm) per foot (305 mm) of viewing distance above 21 feet (6400 mm)

703.5.6 Height From Finish Floor or Ground. Visual characters shall be 40 inches (1015 mm) minimum above the finish floor or ground.
EXCEPTION: Visual characters indicating elevator car controls shall not be required to comply with 703.5.6.

703.5.7 Stroke Thickness. Stroke thickness of the uppercase letter "I" shall be 10 percent minimum and 30 percent maximum of the height of the character.

703.5.8 Character Spacing. Character spacing shall be measured between the two closest points of adjacent characters, excluding word spaces. Spacing between individual characters shall be 10 percent minimum and 35 percent maximum of character height.

703.5.9 Line Spacing. Spacing between the baselines of separate lines of characters within a message shall be 135 percent minimum and 170 percent maximum of the character height.

703.6 Pictograms. Pictograms shall comply with 703.6.

703.6.1 Pictogram Field. Pictograms shall have a field height of 6 inches (150 mm) minimum. Characters and braille shall not be located in the pictogram field.

703.6.2 Finish and Contrast. Pictograms and their field shall have a non-glare finish. Pictograms shall contrast with their field with either a light pictogram on a dark field or a dark pictogram on a light field.

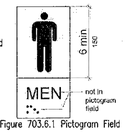

Figure 703.6.1 Pictogram Field

703.6.3 Text Descriptors. Pictograms shall have text descriptors located directly below the pictogram field. Text descriptors shall comply with 703.2, 703.3 and 703.4.

703.7 Symbols of Accessibility. Symbols of accessibility shall comply with 703.7.

703.7.1 Finish and Contrast. Symbols of accessibility and their background shall have a non-glare finish. Symbols of accessibility shall contrast with their background with either a light symbol on a dark background or a dark symbol on a light background.

703.7.2 Symbols.

703.7.2.1 International Symbol of Accessibility. The international Symbol of Accessibility shall comply with Figure 703.7.2.1.

703.7.2.2 International Symbol of TTY. The international Symbol of TTY shall comply with Figure 703.7.2.2.

703.7.2.3 Volume Control Telephones. Telephones with a volume control shall be identified by a pictogram of a telephone handset with radiating sound waves on a square field such as shown in Figure 703.7.2.3.

703.7.2.4 Assistive Listening Systems. Assistive listening systems shall be identified by the International Symbol of Access for Hearing Loss complying with Figure 703.7.2.4.

Figure 703.7.2.1 International Symbol of Accessibility

Figure 703.7.2.2 International Symbol of TTY

Figure 703.7.2.3 Volume Control Telephone

Figure 703.7.2.4 International Symbol of Access for Hearing Loss

704 Telephones

704.1 General. Public telephones shall comply with 704.

704.2 Wheelchair Accessible Telephones. Wheelchair accessible telephones shall comply with 704.2.

704.2.1 Clear Floor or Ground Space. A clear floor or ground space complying with 305 shall be provided. The clear floor or ground space shall not be obstructed by bases, enclosures, or seats.

704.2.1.1 Parallel Approach. Where a parallel approach is provided, the distance from the edge of the telephone enclosure to the face of the telephone unit shall be 10 inches (255 mm) maximum.

704.2.1.2 Forward Approach. Where a forward approach is provided, the distance from the front edge of a counter within the telephone enclosure to the face of the telephone unit shall be 20 inches (510 mm) maximum.

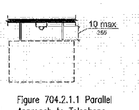

Figure 704.2.1.1 Parallel Approach to Telephone

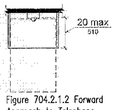

Figure 704.2.1.2 Forward Approach to Telephone

704.2.2 Operable Parts. Operable parts shall comply with 309. Telephones shall have push-button controls where such service is available.

704.2.3 Telephone Directories. Telephone directories, where provided, shall be located in accordance with 309.

704.2.4 Cord Length. The cord from the telephone to the handset shall be 29 inches (735 mm) long minimum.

704.3 Volume Control Telephones. Public telephones required to have volume controls shall be equipped with a receive volume control that provides a gain adjustable up to 20 dB minimum. For incremental volume control, provide at least one intermediate step of 12 dB of gain minimum. An automatic reset shall be provided.

704.4 TTYs. TTYs required at a public pay telephone shall be permanently affixed within, or adjacent to, the telephone enclosure. Where an acoustic coupler is used, the telephone cord shall be sufficiently long to allow connection of the TTY and the telephone receiver.

704.4.1 Height. When in use, the touch surface of TTY keypads shall be 34 inches (865 mm) minimum above the finish floor.
EXCEPTION: Where seats are provided, TTYs shall not be required to comply with 704.4.1.

704.5 TTY Shelf. Public pay telephones required to accommodate portable TTYs shall be equipped with a shelf and an electrical outlet within or adjacent to the telephone enclosure. The telephone handset shall be capable of being placed flush on the surface of the shelf. The shelf shall be capable of accommodating a TTY and shall have 6 inches (150 mm) minimum vertical clearance above the area where the TTY is to be placed.

705 Detectable Warnings

705.1 General. Detectable warnings shall consist of a surface of truncated domes and shall comply with 705.

705.1.1 Dome Size. Truncated domes in a detectable warning surface shall have a base diameter of 0.9 inch (23 mm) minimum and 1.4 inches (36 mm) maximum, a top diameter of 50 percent of the base diameter minimum to 65 percent of the base diameter maximum, and a height of 0.2 inch (5.1 mm).

705.1.2 Dome Spacing. Truncated domes in a detectable warning surface shall have a center-to-center spacing of 1.6 inches (41 mm) minimum and 2.4 inches (61 mm) maximum, and a base-to-base spacing of 0.65 inch (17 mm) minimum, measured between the most adjacent domes on a square grid.

705.1.3 Contrast. Detectable warning surfaces shall contrast visually with adjacent walking surfaces either light-on-dark, or dark-on-light.

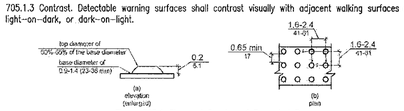

Figure 705.1 Size and Spacing of Truncated Domes

705.2 Platform Edges. Detectable warning surfaces at platform boarding edges shall be 24 inches (610 mm) wide and shall extend the full length of the public use areas of the platform.

706 Assistive Listening Systems
706.1 General. Assistive listening systems required in assembly areas shall comply with 706.

706.2 Receiver Jacks. Receivers required for use with an assistive listening system shall include a 1/8 inch (3.2 mm) standard mono jack.

706.3 Receiver Hearing-Aid Compatibility. Receivers required to be hearing-aid compatible shall interface with telecoils in hearing aids through the provision of neckloops.

706.4 Sound Pressure Level. Assistive listening systems shall be capable of providing a sound pressure level of 110 dB minimum and 118 dB maximum with a dynamic range on the volume control of 50 dB.

706.5 Signal-to-Noise Ratio. The signal-to-noise ratio for internally generated noise in assistive listening systems shall be 18 dB minimum.

706.6 Peak Clipping Level. Peak clipping shall not exceed 18 dB of clipping relative to the peaks of speech.

707 Automatic Teller Machines and Fare Machines

707.1 General. Automatic teller machines and fare machines shall comply with 707.

707.2 Clear Floor or Ground Space. A clear floor or ground space complying with 305 shall be provided.
EXCEPTION: Clear floor or ground space shall not be required at drive-up only automatic teller machines and fare machines.

707.3 Operable Parts. Operable parts shall comply with 309. Unless a clear or correct key is provided, each operable part shall be able to be differentiated by sound or touch, without activation.
EXCEPTION: Drive-up only automatic teller machines and fare machines shall not be required to comply with 309.2 and 309.3.

707.4 Privacy. Automatic teller machines shall provide the opportunity for the same degree of privacy of input and output available to all individuals.

707.5 Speech Output. Machines shall be speech enabled. Operating instructions and orientation, visible transaction prompts, user input verification, error messages, and all displayed information for full use shall be accessible to and independently usable by individuals with vision impairments. Speech shall be delivered through a mechanism that is readily available to all users, including but not limited to, an industry standard connector or a telephone handset. Speech shall be recorded or digitized human, or synthesized.
EXCEPTIONS:
1. Audible tones shall be permitted instead of speech for visible output that is not displayed for security purposes, including but not limited to, asterisks representing personal identification numbers.

2. Advertisements and other similar information shall not be required to be audible unless they convey information that can be used in the transaction being conducted.

3. Where speech synthesis cannot be supported, dynamic alphabetic output shall not be required to be audible.

707.5.1 User Control. Speech shall be capable of being repeated or interrupted. Volume control shall be provided for the speech function.
EXCEPTION: Speech output for any single function shall be permitted to be automatically interrupted when a transaction is selected.

707.5.2 Receipts. Where receipts are provided, speech output devices shall provide audible balance inquiry information, error messages, and all other information on the printed receipt necessary to complete or verify the transaction.
EXCEPTIONS:
1. Machine location, date and time of transaction, customer account number, and the machine identifier shall not be required to be audible.
2. Information on printed receipts that duplicates information available on-screen shall not be required to be presented in the form of an audible receipt.
3. Printed copies of bank statements and checks shall not be required to be audible.

707.6 Input. Input devices shall comply with 707.6.

707.6.1 Input Controls. At least one tactilely discernible input control shall be provided for each function. Where provided, key surfaces not on active areas of display screens, shall be raised above surrounding surfaces. Where membrane keys are the only method of input, each shall be tactilely discernable from surrounding surfaces and adjacent keys.

707.6.2 Numeric Keys. Numeric keys shall be arranged in a 12-key ascending or descending telephone keypad layout. The number five key shall be tactilely distinct from the other keys.

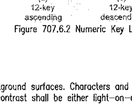

Figure 707.6.2 Numeric Key Layout

707.6.3 Function Keys. Function keys shall comply with 707.6.3.

707.6.3.1 Contrast. Function keys shall contrast visually from background surfaces. Characters and symbols on key surfaces shall contrast visually from key surfaces. Visual contrast shall be either light-on-dark or dark-on-light.
EXCEPTION: Tactile symbols required by 707.6.3.2 shall not be required to comply with 707.6.3.1.

707.6.3.2 Tactile Symbols. Function key surfaces shall have tactile symbols as follows: Enter or Proceed key: raised circle; Clear or Correct key: raised left arrow; Cancel key: raised letter ex; Add Value key: raised plus sign; Decrease Value key: raised minus sign.

707.7 Display Screen. The display screen shall comply with 707.7.
EXCEPTION: Drive-up only automatic teller machines and fare machines shall not be required to comply with 707.7.1.

707.7.1 Visibility. The display screen shall be visible from a point located 40 inches (1015 mm) above the center of the clear floor space in front of the machine.

707.7.2 Characters. Characters displayed on the screen shall be in a sans serif font. Characters shall be 3/16 inch (4.8 mm) high minimum based on the uppercase letter "I". Characters shall contrast with their background with either light characters on a dark background or dark characters on a light background.

707.8 Braille Instructions. Braille instructions for initiating the speech mode shall be provided. Braille shall comply with 703.3.

708 Two-Way Communication Systems
708.1 General. Two-way communication systems shall comply with 708.

708.2 Audible and Visual Indicators. The system shall provide both audible and visual signals.

708.3 Handsets. Handset cords, if provided, shall be 29 inches (735 mm) long minimum.

CHAPTER 8: SPECIAL ROOMS, SPACES AND ELEMENTS

801 General

801.1 Scope. The provisions of Chapter 8 shall apply where required by Chapter 2 or where referenced by a requirement in this document.

802 Wheelchair Spaces, Companion Seats, and Designated Aisle Seats
802.1 Wheelchair Spaces. Wheelchair spaces shall comply with 802.1.

802.1.1 Floor or Ground Surface. The floor or ground surface of wheelchair spaces shall comply with 302. Changes in level are not permitted.
EXCEPTION: Slopes not steeper than 1:48 shall be permitted.

802.1.2 Width. A single wheelchair space shall be 36 inches (915 mm) wide minimum Where two adjacent wheelchair spaces are provided, each wheelchair space shall be 33 inches (840 mm) wide minimum.

802.1.3 Depth. Where a wheelchair space can be entered from the front or rear, the wheelchair space shall be 48 inches (1220 mm) deep minimum. Where a wheelchair space can be entered only from the side, the wheelchair space shall be 60 inches (1525 mm) deep minimum.

802.1.4 Approach. Wheelchair spaces shall adjoin accessible routes. Accessible routes shall not overlap wheelchair spaces.
802.1.5 Overlap. Wheelchair spaces shall not overlap circulation paths.

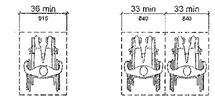

Figure 802.1.2 Width of Wheelchair Spaces in Assembly Areas

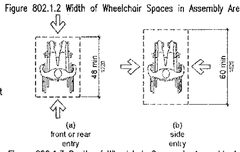

Figure 802.1.3 Depth of Wheelchair Spaces in Assembly Areas

802.2 Lines of Sight. Lines of sight to the screen, performance area, or playing field for spectators in wheelchair spaces shall comply with 802.2.

802.2.1 Lines of Sight Over Seated Spectators. Where spectators are expected to remain seated during events, spectators in wheelchair spaces shall be afforded lines of sight complying with 802.2.1.

802.2.1.1 Lines of Sight Over Heads. Where spectators are provided lines of sight over the heads of spectators seated in the first row in front of their seats, spectators seated in wheelchair spaces shall be afforded lines of sight over the heads of seated spectators in the first row in front of wheelchair spaces.

802.2.1.2 Lines of Sight Between Heads. Where spectators are provided lines of sight over the shoulders and between the heads of spectators seated in the first row in front of their seats, spectators seated in wheelchair spaces shall be afforded lines of sight over the shoulders and between the heads of seated spectators in the first row in front of wheelchair spaces.

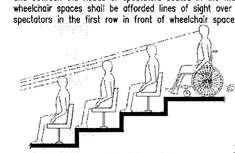
Figure 802.2.1.1 Lines of Sight Over the Heads of Seated Spectators

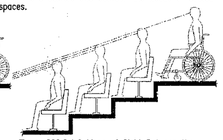
Figure 802.2.1.2 Lines of Sight Between the Heads of Seated Spectators

802.2.2 Lines of Sight Over Standing Spectators. Where spectators are expected to stand during events, spectators in wheelchair spaces shall be afforded lines of sight complying with 802.2.2.

802.2.2.1 Lines of Sight Over Heads. Where standing spectators are provided lines of sight over the heads of spectators standing in the first row in front of their seats, spectators seated in wheelchair spaces shall be afforded lines of sight over the heads of standing spectators in the first row in front of wheelchair spaces.

802.2.2.2 Lines of Sight Between Heads. Where standing spectators are provided lines of sight over the shoulders and between the heads of spectators standing in the first row in front of their seats, spectators seated in wheelchair spaces shall be afforded lines of sight over the shoulders and between the heads of standing spectators in the first row in front of wheelchair spaces.

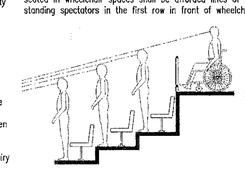
Figure 802.2.2.1 Lines of Sight Over the Heads of Standing Spectators

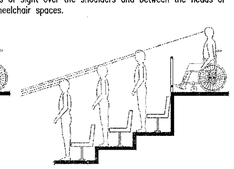
Figure 802.2.2.2 Lines of Sight Between the Heads of Standing Spectators

802.3 Companion Seats. Companion seats shall comply with 802.3.

802.3.1 Alignment. In row seating, companion seats shall be located to provide shoulder alignment with adjacent wheelchair spaces. The shoulder alignment point of the wheelchair space shall be measured 36 inches (915 mm) from the front of the wheelchair space. The floor surface of the companion seat shall be at the same elevation as the floor surface of the wheelchair space.

802.3.2 Type. Companion seats shall be equivalent in size, quality, comfort, and amenities to the seating in the immediate area. Companion seats shall be permitted to be movable.

802.4 Designated Aisle Seats. Designated aisle seats shall comply with 802.4.

802.4.1 Armrests. Where armrests are provided on the seating in the immediate area, folding or retractable armrests shall be provided on the aisle side of the seat.

802.4.2 Identification. Each designated aisle seat shall be identified by a sign or marker.

803 Dressing, Fitting, and Locker Rooms
803.1 General. Dressing, fitting, and locker rooms shall comply with 803.

803.2 Turning Space. Turning space complying with 304 shall be provided within the room.

803.3 Door Swing. Doors shall not swing into the room unless a clear floor or ground space complying with 305.3 is provided beyond the arc of the door swing.

803.4 Benches. A bench complying with 903 shall be provided within the room.

803.5 Coat Hooks and Shelves. Coat hooks provided within the room shall be located within one of the reach ranges specified in 308. Shelves shall be 40 inches (1015 mm) minimum and 48 inches (1220 mm) maximum above the finish floor or ground.

804 Kitchens and Kitchenettes

804.1 General. Kitchens and kitchenettes shall comply with 804.

804.2 Clearance. Where a pass through kitchen is provided, clearances shall comply with 804.2.1. Where a U-shaped kitchen is provided, clearances shall comply with 804.2.2.
EXCEPTION: Spaces that do not provide a cooktop or conventional range shall not be required to comply with 804.2.

Advisory 804.2 Clearance. Clearances are measured from the furthest projecting face of all opposing base cabinets, counter tops, appliances, or walls, excluding hardware.

804.2.1 Pass Through Kitchen. In pass through kitchens where counters, appliances or cabinets are on two opposing sides, or where counters, appliances or cabinets are opposite a parallel wall, clearance between all opposing base cabinets, counter tops, appliances, or walls within kitchen work areas shall be 40 inches (1015 mm) minimum. Pass through kitchens shall have two entries.

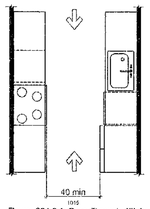

Figure 804.2.1 Pass Through Kitchens

804.2.2 U-Shaped. In U-shaped kitchens enclosed on three contiguous sides, clearance between all opposing base cabinets, counter tops, appliances, or walls within kitchen work areas shall be 60 inches (1525 mm) minimum.

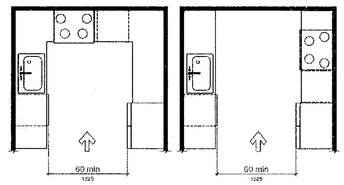

Figure 804.2.2 U-Shaped Kitchens

804.3 Kitchen Work Surface. In residential dwelling units required to comply with 809, at least one 30 inches (760 mm) wide minimum section of counter shall provide a kitchen work surface that complies with 804.3.
804.3.1 Clear Floor or Ground Space. A clear floor space complying with 305 positioned for a forward approach shall be provided. The clear floor or ground space shall be centered on the kitchen work surface and shall provide knee and toe clearance complying with 306.
EXCEPTION: Cabinetry shall be permitted under the kitchen work surface provided that all of the following conditions are met:
(a) the cabinetry can be removed without removal or replacement of the kitchen work surface;
(b) the finish floor extends under the cabinetry; and
(c) the walls behind and surrounding the cabinetry are finished.

804.3.2 Height. The kitchen work surface shall be 34 inches (865 mm) maximum above the finish floor or ground.
EXCEPTION: A counter that is adjustable to provide a kitchen work surface at variable heights, 29 inches (735 mm) minimum and 36 inches (915 mm) maximum, shall be permitted.

804.3.3 Exposed Surfaces. There shall be no sharp or abrasive surfaces under the work surface counters.
804.4 Sinks. Sinks shall comply with 606.
804.5 Storage. At least 50 percent of shelf space in storage facilities shall comply with 811.

804.6 Appliances. Where provided, kitchen appliances shall comply with 804.6.

804.6.1 Clear Floor or Ground Space. A clear floor or ground space complying with 305 shall be provided at each kitchen appliance. Clear floor or ground spaces shall be permitted to overlap.

804.6.2 Operable Parts. All appliance controls shall comply with 309.
EXCEPTIONS:
1. Appliance doors and door latching devices shall not be required to comply with 309.4.

2. Bottom-hinged appliance doors, when in the open position, shall not be required to comply with 309.3.

804.6.3 Dishwasher. Clear floor or ground space shall be positioned adjacent to the dishwasher door. The dishwasher door, in the open position, shall not obstruct the clear floor or ground space for the dishwasher or the sink.

804.6.4 Range or Cooktop. Where a forward approach is provided, the clear floor or ground space shall provide knee and toe clearance complying with 306. Where knee and toe space is provided, the underside of the range or cooktop shall be insulated or otherwise configured to prevent burns, abrasions, or electrical shock. The location of controls shall not require reaching across burners.

804.6.5 Oven. Ovens shall comply with 804.6.5.

804.6.5.1 Side-Hinged Door Ovens. Side-hinged door ovens shall have the work surface required by 804.3 positioned adjacent to the latch side of the oven door.

804.6.5.2 Bottom-Hinged Door Ovens. Bottom-hinged door ovens shall have the work surface required by 804.3 positioned adjacent to one side of the door.

804.6.5.3 Controls. Ovens shall have controls on front panels.

804.6.6 Refrigerator/Freezer. Combination refrigerators and freezers shall have at least 50 percent of the freezer space 54 inches (1370 mm) maximum above the finish floor or ground. The clear floor or ground space shall be positioned for a parallel approach to the space dedicated to a refrigerator/freezer with the centerline of the clear floor or ground space offset 24 inches (610 mm) maximum from the centerline of the dedicated space.

805 Medical Care and Long-Term Care Facilities
805.1 General. Medical care facility and long-term care facility patient or resident sleeping rooms required to provide mobility features shall comply with 805.

805.2 Turning Space. Turning space complying with 304 shall be provided within the room.

805.3 Clear Floor or Ground Space. A clear floor space complying with 305 shall be provided on each side of the bed. The clear floor space shall be positioned for parallel approach to the side of the bed.

805.4 Toilet and Bathing Rooms. Toilet and bathing rooms that are provided as part of a patient or resident sleeping room shall comply with 603. Where provided, no fewer than one water closet, one lavatory, and one bathtub or shower shall comply with the applicable requirements of 603 through 610.

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Tee Crossing Phase 2
Frisco, TX

Construction Documents

Revisions

REGISTERED ARCHITECT
DUANE MEYERS
STATE OF TEXAS
30 April 2018

ADA4

30 April 2018

20' Octagon Wood Gazebo for:

Teel Crossing Shopping Center
3288 Main Street
Frisco, TX 75033

DESIGN ENGINEER:

timbertech
ENGINEERING

East: 22 Denver Road, Suite B Denver, PA 17517
717.336.2750 Fax: 717.336.2753
West: 406 S Main Street, PO Box 508 Kouts, IN 46347
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Drawing Index

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Page 4 - Cross Section A/4
Page 5 - Detail A-A/5, Detail B-B/5
Page 6 - Detail C-C/6, Detail D-D/6
Page 7 - Hand Rail Elevation
Page 8 - Angle "A1", Angle "A2", Angle "A3", "T" Assembly

GENERAL NOTES

All notes do not necessarily apply due to different requirements on each project. This plan is intended to reflect only the structural design of this building. The contractor shall review all applicable local, state, and federal building codes prior to the start of construction to ensure building conformance. Timber Tech Engineering, Inc. is not responsible for information pertaining to this project if not shown on drawings or listed below. Revisions to the plans shall be approved by engineer of record.

DESIGN REQUIREMENTS

1. Governing Code:
   Including, not limited to: IBC 2009
2. Dead Loads:
   A. Roof 5 psf
   B. Floor n/a psf
   C. Other n/a psf
3. Live Loads:
   A. Roof (See also note #4) 50.4 psf
   B. Floor n/a psf
   C. Other n/a psf
4. Snow Loads:
   A. Ground Snow (Pg) 30 psf
   B. Flat Roof Snow (Pf) 22.4 psf
   C. Snow Exposure Factor (Ce) 1.0
   D. Snow Load Importance Factor (I) 1.0
   E. Unbalanced Snow
      i. Windward Roof 0 psf
      ii. Leeward Roof 36 psf
5. Wind Load
   A. Basic Wind Speed (V) 146 mph
   B. Wind Load Importance Factor (I) 1.0
   C. Wind Exposure Category C
   D. Enclosure Category Open
6. Earthquake Design Data:
   (Analysis based on equivalent lateral force procedure)
   A. Spectral Response Acceleration at 1 sec, S 0.09
   B. Spectral Response Acceleration at short periods, S 0.17
   C. Seismic Occupancy Category 1
   D. Occupancy Importance Factor, I 1.0
   E. Site Class D
   F. Seismic Design Category D
   G. Basic Structural System
      Cantilevered Column: Timber Frame
   H. Response Modification Factor (R) 1.5
   I. Deflection Amplification Factor (Cd) 1.5

WOOD

1. General Requirements
   A. Structural wood members and connections shall be of sufficient size or capacity to carry all design loads without exceeding the allowable design values specified in "The National Design specification for Wood Construction" (NDS), and its "Supplement" by the American Forest and Paper Association (AF&PA).
   B. Wood members used for load supporting purposes shall have the grade mark of a lumber grading agency certified by the American Lumber Standards Committee.
2. Dimension Lumber
   A. All lumber species, graded visually or mechanically, shall comply with the NDS by AF&PA, and the "American Softwood Lumber Standard" (PS 20) by the U.S. Department of Commerce.
   B. The minimum grade and species for posts, beams, headers, and other primary structural members shall be Dense Select Structural Southern Pine, unless specified otherwise.
   C. Lumber used for secondary framing shall be #1 Southern Yellow Pine (SYP) or better.
   D. Post frame headers shall be two-span continuous beams with an multiple ply headers overlapping so that the butt joints for each ply do not occur at the same post.
   E. Mechanically laminated columns shall conform with ANSI/ASAE EP 559.
3. Pressure Preservative Treatment (PPT)
   A. Pressure treatment to be performed according to the American Wood Preservers' Association (AWPA) standards.
   B. Pressure treated members shall have the inspection mark of an agency accredited by the American Lumber Standards Committee.
   C. Preservative: Ammonia Copper Quaternary ammonia (ACQ) or Copper Boron Azole (CBA)
   D. Minimum waterborne treatment retention shall be 0.4 pcf for members above ground, and 0.6 pcf for members in contact with earth.
   E. Treat indicated items and the following:
      1. Wood members exposed to weather or insect infestation.
      2. Wood members in direct contact with earth or concrete.
      3. Wood members exposed to high moisture content (>19% for dimension lumber, >16% for glued laminated timber).
      4. Wood members less than 12 inches above grade.
   F. Field treat newly exposed wood where cutting, drilling or notching pressure treated lumber.
   G. Metal connectors used in treated wood shall be hot-dip galvanized as per ASTM A153-01a.
4. Connections shall be designed and constructed according to the NDS by AF&PA and shall conform to the following:
   A. The minimum connection shall be two 12 penny nails, or as detailed on the drawings.
   B. Other connections as per standard construction practice.

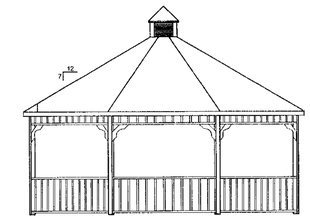
Structural System Designed for clear wind flow conditions with blockage less than or equal to 50% only. Open structure shall not have objects below the roof which inhibit wind flow by creating more than 50% blockage as per ASCE 7-05 Figure 6-18B Note2.

Design Reaction Chart	
Max. uplift at column base	1000 lbs
Max. downward force at column base	3075 lbs
Max. shear at column base	175 lbs

TTE DRAWING NUMBER: E124-18

04/23/18 TIMOTHY R. ROYER 119825

Timothy R. Royer, P.E. TX Eng.# 119825
Expiration Date: 03/31/2019



Elevation

SCALE 1/4"=1'-0"

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Timothy R. Royer TX Eng. Cert # 119825
Expiration Date: 03-31-2019

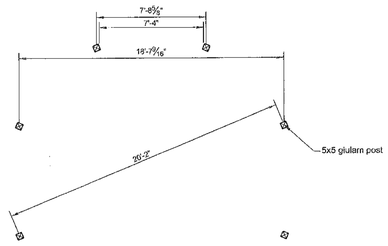
Contractor:
Country Lane Woodworking
191 Jalyn Drive
New Holland, PA 17557
PH: (717) 351-9250

Drawing Title:
Elevation

Project:
20' Wood Octagon Gazebo
with a Pinnacle Roof for:
Teel Crossing Shopping Center
3288 Main Street
Frisco, TX 75033

Revision	Date	By

Drawing Number: E124-18	Page 1 of 8
Engineered by: T. Royer	Start Date: 4/20/18
Drafted by: K. Salyer	Current Date: 4/23/18



Post Layout Plan

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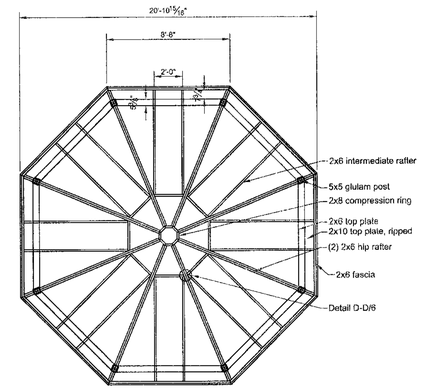

Roof Framing Plan

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Drawing Title:
Roof Framing Plan

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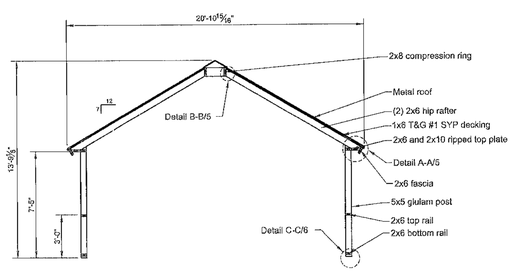

Cross Section A/4

SCALE 1/4"=1'-0"

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Drawing Title:
Cross Section A/4

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Drawing Number: E124-18	Page 4 of 8
Engineered by: T. Royer	Start Date: 4/20/18
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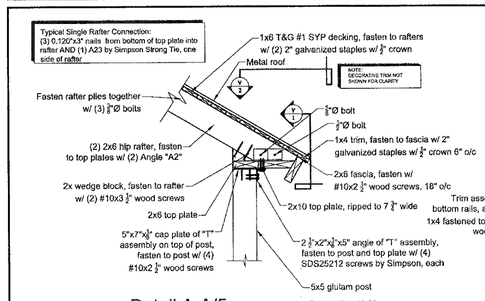
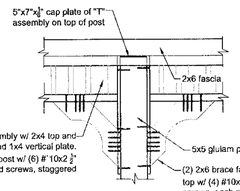
Typical Single Rafter Connection:
(3) 0.120"x3" nails from bottom of top plate into rafter AND (1) A23 by Simpson Strong Tie, one side of rafter



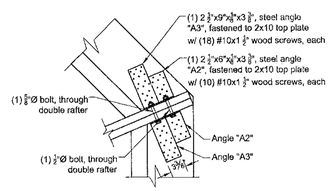
Detail A-A/5

Scale 1" = 1'-0"



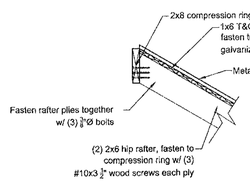
View 1 Detail A-A/5

Scale 1" = 1'-0"



View 2 Detail A-A/5

Scale 1" = 1'-0"



Detail B-B/5

Scale 1" = 1'-0"

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Drawing Title:
Detail A-A/5
Detail B-B/5

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Drawing Number: E124-18	Page 5 of 8
Engineered by: T. Royer	Start Date: 4/20/18
Drafted by: K. Salyer	Current Date: 4/23/18

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Teel Crossing Phase 2 Wells Fargo
Frisco, TX Construction Documents

Revisions

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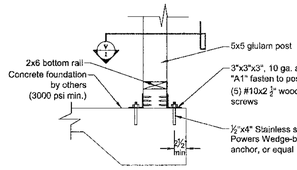
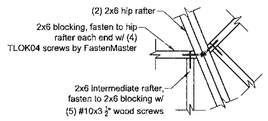
30 April 2018



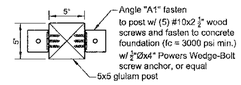
Detail C-C/6
No Floor

Scale 1" = 1'-0"



Detail D-D/6

Scale 1" = 1'-0"



View 1 Detail C-C/6

Scale 1 ½" = 1'-0"

No Floor

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TIMOTHY R. ROYER
TIMOTHY R. ROYER
TX Reg. No. 119825
Expiration Date: 03-31-2019

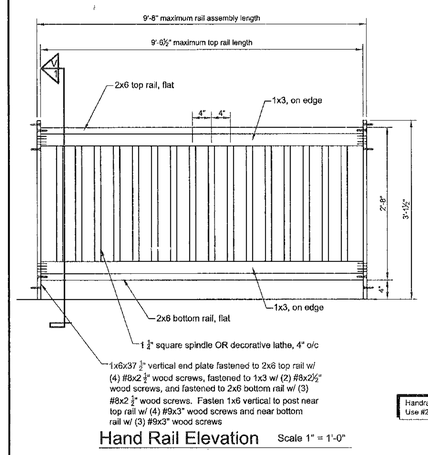
Contractor:
Country Lane Woodworking
191 Jalyn Drive
New Holland, PA 17557
PH: (717) 354-9250

Drawing Title:
Detail C-C/6
Detail D-D/6

Project:
20' Wood Octagon Gazebo
with a Pinnacle Roof for:
Teel Crossing Shopping Center
3288 Main Street
Frisco, TX 75033

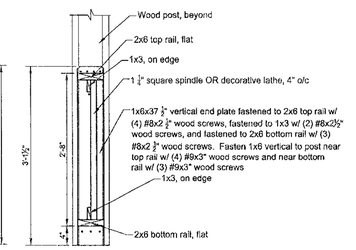
Revisions	Date	By

Drawing Number: 1124-18	Page 6 of 8
Engineer for: T. Royer	Start Date: 4/20/18
Drafted By: K. Sylver	Certified Date: 4/23/18



Hand Rail Elevation

Scale 1" = 1'-0"



View 1 Hand Rail Elevation

Scale 1" = 1'-0"

Handrail Material Note:
Use #2 SYP for the top rail and bottom rail

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Drawing Title:
Hand Rail Elevation

Project:
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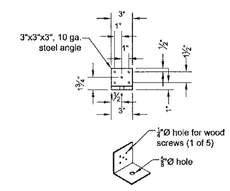
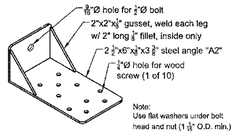


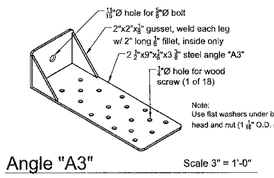
Angle "A1"

Scale 1 ½" = 1'-0"



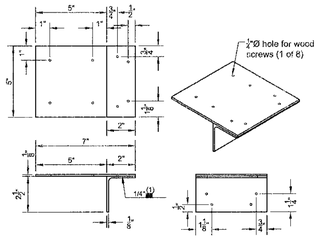
Angle "A2"

Scale 3" = 1'-0"



Angle "A3"

Scale 3" = 1'-0"



"T" Assembly

Scale 3" = 1'-0"

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TX Reg. No. 119825
Expiration Date: 03-31-2019

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Drawing Title:
Angle "A1"
Angle "A2"
Angle "A3"
"T" Assembly

Project:
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Revisions	Date	By

Drawing Number: 1124-18	Page 8 of 8
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Drafted By: K. Sylver	Certified Date: 4/23/18

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Teel Crossing Phase 2 Wells Fargo
Frisco, TX Construction Documents

Revisions

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30 April 2018

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CALCULATION PACKET

TTE # 104-18

PROJECT NAME AND LOCATION	20' Octagon Gazebo for Teel Crossing Shopping Center in Frisco, TX
PROJECT DESCRIPTION	Design Calculations according to IBC 2009 (ASCE 7-05) for a 20' Wood Octagon Gazebo with Pinnacle Roof
DATE	April 23, 2018
FOR	Country Lane Woodworking 191 Jalyn Dr. New Holland, PA 17557 717-351-0250
CERTIFIED BY	Timothy R. Royer, P.E. 22 Denver Road Suite B Denver, PA 17517 Phone: (717) 335-2750 Fax: (717) 335-2753 tr@timbertechengineering.com

04/23/18
TIMOTHY R. ROYER
E-24-18
TIMOTHY R. ROYER
17025
STATE OF PENNSYLVANIA
Timothy R. Royer, P.E. TX Cert # 19025
Expiration Date: 12/31/2019

ASCE 7-05 Load Calculations

Project Name: 20' Octagon Pinnacle Roof Gazebo

Method 2 - Analytical Procedure - Low-Rise Building

Building Inputs:

Length Parallel to Ridge, D (length, typ)	20	ft	Basic Wind Speed, V	146	mph
Length Normal to Ridge, L (width, typ)	20	ft			
Eave Height, e	8	ft	Topographic Factor, K_{zt}	1.00	
Building Midheight, h	10.9	ft	Enclosure: Open Building		
Roof Pitch (rise per 12 units of run)	7	in/ft	Wind Directionality Factor, K_d	0.85	
Occupancy Category	II		Roof Overhang (ft)	0	
Exposure Category	C				

Calculation Inputs:

Definitions:

Case A - Wind Direction Normal to Roof Ridge, Pressure Coefficients Vary With Roof Angle.
Case B - Wind Direction Parallel to Ridge, Pressure Coefficients are Constant for all Roof Angles.
Interior Zones - Zones 1 - 6 Below
Edge Zones - Zones 1E - 4E Below

Intermediate Calculations:

Importance Factor, I	1.00	Table 6-1	Calculated Roof Angle 30.3 deg
Nom. Height of Atmospheric Boundary (z_g)	900		Internal Pres. Coefficient, GC_{pi} 0 0
Vel. Press. Exp. Coefficient, K_z	0.85		Gust Effect Factor: 0.85
3-s Gust Speed Power Law Exponent (α)	9.5		Velocity Pressure, $q_{z(h)}$ 39.4 psf

Wind Load Results:

A. Main Wind Force Resisting System: ASCE7-05, Figure 6-18 Equation: $p = q_{z(h)}[(GC_{pf}) - (GC_{pi})]$

Note: The calculated pressures are based upon Basic Wind Speed, V	Wind Normal to Ridge P (psf)				Wind Parallel to Ridge P (psf)			
	Cn	1*	II**	III*	Cn	1*	II**	III*
Clear - Windward	1.30	44	44	44	-0.60	-20	-20	-20
Clear Leeward	0.21	10	10	10	-0.60	-20	-20	-20
Obstructed Windward	-0.29	-7	-7	-7	-0.90	-33	-33	-33
Obstructed Leeward	-1.09	-37	-37	-37	-0.90	-33	-33	-33

B. Components and Cladding: ASCE7-05, Figure 6-19 Equation: $p = q_{z(h)}[(GC_{pn}) - (GC_{pi})]$

Dwellers C&C Zones, a = 3 ft

Tributary Area: 10 ft² Zone	GC_{pn}	P (psf) 1*	II**	III*	Tributary Area: 10 ft² Zone	GC_{pn}	P (psf) 1*	II**	III*
Zone 1	1.3	51	51	51	Zone 1	-1.2	-47	-47	-47
Zone 2 and 3	2.0	79	79	79	Zone 2	-1.8	-71	-71	-71
					Zone 3	-1.8	-71	-71	-71

* Internal Pressure Positive ** Internal Pressure Negative ~ Internal Pressure Zero

Floor Dead Load

Floor Dead Load = 5 psf

Roof Dead Load

Deck Load = 5 psf + self weight of wood framing

Floor Live Load

Minimum Floor Live Load = 40 psf (ASCE 7-05, Table 4-1)

Minimum Roof Live Load

Total (on horizontal projection) 20 psf (ASCE 7-05, Table 4-1)

Snow Load Chart

A. Flat-Roof Snow Load, pf

Equation: $p_f = 0.7(C_e)(C_t)(I)(p_g)$

			Notes
Ground Snow Load, p_g:	60	psf	Figure 7-1
Exposure Factor, C_e:	1.0		Table 7-2 Partially exposed roof
Thermal Factor, C_t:	1.2		Table 7-3 Unheated building
Importance Factor, I:	1.0		Table 7-1

p_f = 50.4 psf

B. Sloped-Roof Snow Load, ps

Equation: $p_s = (C_s)(p_f)$

		Notes
All Other Surfaces		
Roof Slope Factor, Cs:	1.000	Figure 7-2

p_s = 50.4 psf

C. Unbalanced Roof Snow Load

ASCE 7-05 Figure 7-5
Leeward Unbalanced = p_s

Windward Unbalanced = 0 psf
Leeward Unbalanced = 60.0 psf

Seismic Load Chart For Regions With Flat Roof Snow Load of More Than 30 psf

Building and Site Inputs:

Site Class	D		
Basic Structural System:			
All other structural systems:			
Cantilevered Timber Column			
Seismic Design Category	D	*(ASCE 7-05, 11.6)*	

Calculation Inputs:

Spectral Response Acceleration, S_s	0.11	
Spectral Response Acceleration, S_1	0.17	
Response Modification Factor, R	1.5	
Deflection Amplification Factor, C_d	1.5	
Eave Height (ft), h_n	8	
Weight of structure (lbs)	2015	*(See V-3 Report)*
Effective Weight of Snow Load (lbs)	2888	*(ASCE 7-05, 12.7.2)*
Effective Seismic Weight (lbs), W	5003	

Intermediate Calculations and Automated Inputs: ...ontal Point Load at Eave, F_n

Occupancy Category	II	
Occupancy Importance Factor, I_E	1	
S_{DS}	0.73	
S_{D1}	0.26	
S_{MS}	0.46	
S_{M1}	0.13	
C_T	0.02	
C_u	1.543	
Acceleration Site Coefficient, F_a	1.6	
Velocity Site Coefficient, F_v	2.32	
App. Fund. Period, T_a	0.10	
Fundamental Period, T	0.15	
Seismic Coefficient, C_s	0.12	
$C_{s\ min}$	0.01	
$C_{s\ max}$	0.09	
Redundancy Factor, ρ	1.30	
Seismic Base Shear, V =	732 lbs	
Seismic Horizontal Load Effect, E_h	952 lbs	
Seismic Vertical Load Effect, E_v	112 lbs	
Seismic Horizontal Load, $0.7E_h$ =	666 lbs*	
Seismic Vertical Load, $0.7E_v$ =	79 lbs*	(+/-)
Wind Horizontal Load on Building	1996 lbs**	
Wind Vertical Load on Building	1719 lbs**	
Story Drift	2.83 in**	
Overall Horizontal Stiffness, k_h	705 lb/in***	

Seismic Ductility Requirements Check:

Actual Story Drift, δ_{xe} =	1.27 in, average	
Amplified Story Drift, δ_x =	1.91 in	
Allowable Story Drift, Δ_a =	*1.92 in, TT3 12-1*	

**Values from Visual Analysis Report

$\delta_x < \Delta_a$ <OK> ***k_h = Total Horizontal Wind Load / Story Drift

** For compare the wind load vs. seismic load effects on the building, the seismic load effect, E, is reduced by 0.7 per ASCE 7-05 Load Combination Commentary so it was done in all Allowable Stress Design load combinations. However, when applying the seismic load effects in Visual Analysis or other design software, to avoid using the 0.7 reduction twice, use the UNREDUCED Seismic Horizontal and Vertical Load Effects, E_h and E_v.*

Horizontal Wind Load Is Greater Than Horizontal Seismic Load
Vertical Wind Load Is Greater Than Vertical Seismic Load

Seismic Load Chart For Regions With Flat Roof Snow Load of 30 psf or Less

Building and Site Inputs:

Site Class	D	
Basic Structural System:		
All other structural systems:		
Cantilevered Timber Column		
Seismic Design Category	D	*(ASCE 7-05, 11.6)*

Calculation Inputs:

Spectral Response Acceleration, S_s	0.21	
Spectral Response Acceleration, S_1	0.20	
Response Modification Factor, R	1.5	
Deflection Amplification Factor, C_d	1.5	
Height to Highest Level (ft), h_n	8	
Weight of structure (lbs)	2015	*(See V-3 Report)*
Effective Weight of Snow Load (lbs)	0	*(ASCE 7-05, 12.7.2)*
Effective Seismic Weight (lbs), W	2015	

Intermediate Calculations and Automated Inputs: ...ontal Point Load at Eave, F_n

Occupancy Category	II	
Occupancy Importance Factor, I_E	1	
S_{DS}	0.53	
S_{D1}	0.26	
S_{MS}	0.43	
S_{M1}	0.30	
C_T	0.02	
C_u	1.399	
Acceleration Site Coefficient, F_a	1.5	
Velocity Site Coefficient, F_v	1.97	
App. Fund. Period, T_a	0.10	
Fundamental Period, T	0.13	
Seismic Coefficient, C_s	0.24	
$C_{s\ min}$	0.02	
$C_{s\ max}$	1.57	
Redundancy Factor, ρ	1.30	
Seismic Base Shear, V =	733 lbs	
Seismic Horizontal Load Effect, E_h	951 lbs	
Seismic Vertical Load Effect, E_v	239 lbs	
Seismic Horizontal Load, $0.7E_h$ =	666 lbs*	
Seismic Vertical Load, $0.7E_v$ =	154 lbs*	(+/-)
Wind Horizontal Load on Building	1996 lbs**	
Wind Vertical Load on Building	1719 lbs**	
Story Drift	2.83 in**	
Overall Horizontal Stiffness, k_h	705 lb/in***	

Seismic Ductility Requirements Check:

Actual Story Drift, δ_{xe} =	1.27 in, average	
Amplified Story Drift, δ_x =	1.91 in	
Allowable Story Drift, Δ_a =	*1.92 in, TT3 12-1*	

**Values from Visual Analysis Report

$\delta_x < \Delta_a$ <OK> ***k_h = Total Horizontal Wind Load / Story Drift

** For compare the wind load vs. seismic load effects on the building, the seismic load effect, E, is reduced by 0.7 per ASCE 7-05 Load Combination Commentary so it was done in all Allowable Stress Design load combinations. However, when applying the seismic load effects in Visual Analysis or other design software, to avoid using the 0.7 reduction twice, use the UNREDUCED Seismic Horizontal and Vertical Load Effects, E_h and E_v.*

Horizontal Wind Load Is Greater Than Horizontal Seismic Load
Vertical Wind Load Is Greater Than Vertical Seismic Load

Wind Load Application

WIND LOAD ON RAFTERS

Unobstructed Wind Pressures		Obstructed Wind Pressures	
Windward Roof =	61.3 psf	Windward Roof =	-6.6 psf
Leeward Roof =	10.4 psf	Leeward Roof =	-36.6 psf
Sidewalls =	-20.1 psf	Sidewalls =	-35.4 psf

WIND LOAD ON ROOF DECKING FOR STRENGTH DESIGN

Clear Wind Flow		Obstructed Wind Flow	
Components and Cladding Pressure =	51.2 psf	Components and Cladding Suction =	-70.9 psf
Load Reduction Factor =	5.5 in	Load Tributary Width=	5.5 in
Wind Load on Decking Board =	23.5 psf	Wind Load on Decking Board =	-32.48 psf

WIND LOAD ON ROOF DECKING FOR DEFLECTION ANALYSIS

Clear Wind Flow		Obstructed Wind Flow	
Components and Cladding Pressure =	51.2 psf	Components and Cladding Suction =	-70.9 psf
Load Reduction Factor =	0.7	Load Reduction Factor =	0.7
(IBC Table 1604.3, Footnote f)	35.8 psf	*(IBC Table 1604.3, Footnote f)*	-49.6 psf
Load Tributary Width=	5.5 in	Load Tributary Width=	5.5 in
Wind Load on Decking Board =	16.4 psf	Wind Load on Decking Board =	22.78 psf

Roof Dead Load and Snow Load Application

Roof Dead Load = 5.0 psf
Balanced Roof Snow Load = 50.4 psf
Unbalanced Windward Roof Snow Load = 0 psf
Unbalanced Leeward Roof Snow Load = 60.0 psf

Snow Load Application on Roof Decking

Roof Board Dimension, Spacing, and Angle

Roof Board Spacing, s	5.5	in
Roof Board Angle Position, θ	30.3	deg

Snow Loading Perpendicular to Roof Decking

Unbalanced Snow Loading, p_s	60.0	psf	*(unbalanced snow loading at top of roof)*
Snow Load Perpendicular to Roof, w_s	20.5	psf	($w_s = p_s \cos^2\theta$)

Snow Load Perpendicular to Single Roof Board = 20.5 psf

Seismic Load Application

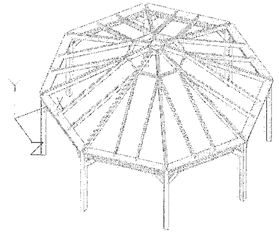
Horizontal Seismic Effect on Roof, E_h =	952	
Vertical Seismic Effect on Roof, E_v =	*Insignificant, ignore*	

For simplicity, the horizontal seismic effect is applied at each sidewall post as a concentrated point load, lbs

Total Number of Point Loads, N_h=	8	
Horizontal Point Load at Each Doubled Rafter =	119	lbs

Horizontal Point Load at Each Doubled Rafter = 119 lbs

20' Octagon Pinnacle Roof
TIMBER TECH ENGINEERING, INC., Travis McDaniel
Nov 03, 2016, 09:11 AM
IES VisualAnalysis 12.00.0020



20' Octagon Pinnacle Roof
TIMBER TECH ENGINEERING, INC., Travis McDaniel
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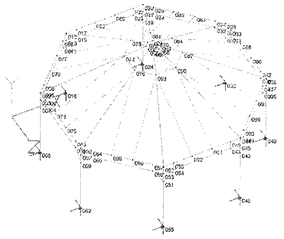
IES VisualAnalysis 12.00.0020



20' Octagon Pinnacle Roof
TIMBER TECH ENGINEERING, INC., Travis McDaniel
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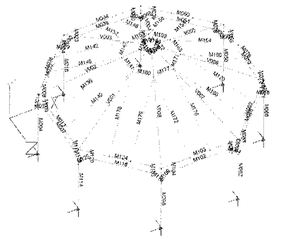
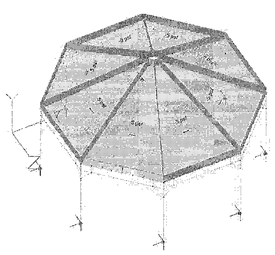
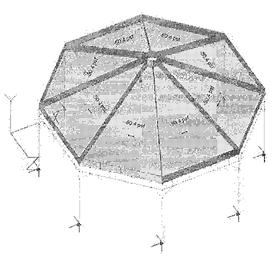


20' Octagon Pinnacle Roof
TIMBER TECH ENGINEERING, INC., Travis McDaniel
Nov 03, 2016, 09:13 AM
Load Case: 7L
IES VisualAnalysis 12.00.0020



20' Octagon Pinnacle Roof
TIMBER TECH ENGINEERING, INC., Travis McDaniel
Nov 03, 2016, 09:17 AM
Load Case: 5
IES VisualAnalysis 12.00.0020



20' Octagon Pinnacle Roof
TIMBER TECH ENGINEERING, INC., Travis McDaniel
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Load Case: 5
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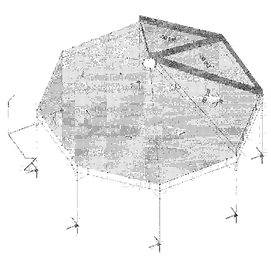
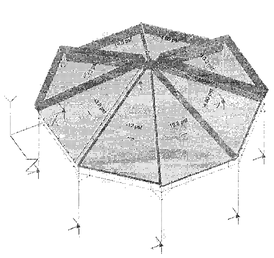
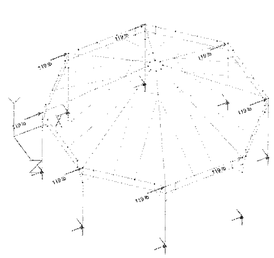


20' Octagon Pinnacle Roof ASCE 7-05
TIMBER TECH ENGINEERING, INC., Travis McDaniel
Nov 03, 2016, 09:20 AM
Load Case: WA5
IES VisualAnalysis 12.00.0020



20' Octagon Pinnacle Roof
TIMBER TECH ENGINEERING, INC., Travis McDaniel
Nov 03, 2016, 09:14 AM
Load Case: EHX
IES VisualAnalysis 12.00.0020



Duane Meyers
6913 Pitt Street
Dallas, TX 75214
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www.duanemeyers.com

Teel Crossing Phase 2
Frisco, TX
Construction Documents

Revisions

This document is released for the purpose of interim review under the authority of Duane Meyers Architect registration no. 6556 in the State of Texas and may not be used for construction, bidding or permitting.

G1.03

30 April 2018

WoodWorks® Software for Wood Design

COMPANY	PROJECT
May 2, 2012 09:30	1x6 F&G Decking for 20ft/Octagon.wwb

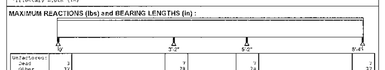
Design Check Calculation Sheet
Sspr 9.3

LOADS:

Load	Type	Distribution	Ref-erence	Location (ft) Start	End	Magnitude Start	End	Unit
Load1	Dead	Full Area	4x			4.00	4.00	psf
Load2	Dead	Full Area	4x			40.00	40.00	psf
Load3	Live	Full Area	4x			40.00	40.00	psf

*Eccentricity NCDS (in)

MAXIMUM REACTIONS (lbs) and BEARING LENGTHS (in) :



Unfactored:					
Dead	3	9	9		12
Live	37	74	74		111
Factored:					
NDS LC#5	41	83	83		124
Uplift	-29	-83	-83		-124
Bearing:					
Load Comb	#2	#2	#2		#2
Length	0.50	0.50*	0.50*		0.50*
Min	0.50	0.50	0.50		0.50

*Min. bearing length for joists is 1.0" for exterior supports and 1.0" for intermediate supports

Cl. Decking, SYP, No. 1, 1x6"
Heat joint spaced at 0.0" o/c.
Lateral support: top= full, bottom= at supports, Oblique angle: 90.0 [deg]. Repetitive factor: applied where permitted (refer to online help).

Analysis vs. Allowable Stress (psi) and Deflection (in) using NDS 2005 :

Criterion	Analysis Value	Design Value	Unity Check
Shear	fv = 32	Fv' = 150	fv/Fv' = 0.21
	Fv2 = 0	Fv' = 150	Fv2/Fv' = 0.00
Bending(+)	fb = 32	Fb' = 2914	fb/Fb' = 0.11
	fb2 = 0	Fb2' = 2914	fb2/Fb2' = 0.00
Bending(-)	fb = 32	Fb' = 2914	fb/Fb' = 0.11
	fb2 = 0	Fb2' = 2914	fb2/Fb2' = 0.00
Live Load Defl'n	0.05 = L/2880	0.33 = L/360	0.15
Total Defl'n	0.05 = L/2880	0.50 = L/240	0.10

ADDITIONAL DATA:

Factors: KD CD CM CL CL CF Cfu Cr Ctot Ci Cn CcE
Fv' 90 1.00 1.00 1.00 - - - - 1.00 1.00 1.50 2
Fbr' 96 1.00 1.00 1.00 - - - - 1.00 1.00 - 2
Fb+' 1250 1.15 1.00 1.00 1.000 1.000 1.00 1.15 1.00 1.00 - 2
Fb-' 1250 1.15 1.00 1.00 1.000 1.000 1.00 1.15 1.00 1.00 - 2
Fc|' 1350 1.15 1.00 1.00 0.924 1.000 1.00 1.15 1.00 1.00 - 2
Fpr|' 1250 1.15 1.00 1.00 1.000 1.000 1.00 1.15 1.00 1.00 - 2
Fcp' 565 - 1.00 1.00 - - - - 1.00 1.00 - 2
E' 1.42 million 1.00 1.00 - - - - 1.00 1.00 - 2
Emin' 0.42 million 1.00 1.00 - - - - 1.00 1.00 - 2

Shear : LC #2 = 0.15, V = 32, V design = 32 lbs
Bending(+): LC #2 = 0.11, M = 24 lbft
Bending(-): LC #2 = 0.11, M = 24 lbft
Deflection: LC #1 = 0.50 (0.34)
Live Load Defl'n = 0.05 in
LL = 36.00 in-lbs Dead = 4.00 in-lbs
Total Deflection = 1.36(Dead Load Deflection) + Live Load Deflection.
Embed Drive Screw Pwind Pshear Ltrend Live Concentrated
All D's are listed in the Analysis output
Load Combinations: ASCE 7-05

Timber Tech Engineering, Inc 16 of 59

DESIGN NOTES:
1. Please verify that the default deflection limits are appropriate for your application.
2. Conditions or Cantilevered Beams: NDS Clause 4.2.5.3 requires that normal grading provisions be amended to the middle 3/3 of 2 span beams and to the full length of cantilevers and other spans.
3. Sawn lumber bending members shall be laterally supported according to the provisions of NDS Clause 4.4.1.

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HIP RAFTER TO TENSION RING CONNECTION - HORIZONTAL SHEAR

Axial Force (lbs)	F_a	-2843	(-) Compression, (+) Tension
Shear Force (lbs)	V_u	337	(+) Gravity, (-) Uplift
Angle with Horizontal (deg)	θ	22.38	
Load on Connection (lbs)	V_3	2482	$\leftarrow V_3 = (F_a \cos\theta + V_u \sin\theta)$
BOLTS - WOOD TO STEEL PLATES - DOUBLE SHEAR - NDS, ASD			
Fastener of bolts	N	1	$F_{v\parallel,par}$ 8160
Bolt Diameter (in)	D	0.5	$F_{v\perp,par}$ 3825
Main Member Thickness (in)	t_m	3	F_{em} 5477
Side Member Thickness (in)	t_s	0.125	K_θ 0.833
Dowel Bearing Strength (psi)	F_{em}	87000	F_{es} 1.000
Bolt Yield Strength (psi)	F_{yb}	45000	$1+R_e$ 1.583
Max Angle Load to Grain (deg)	θ	25	$2+R_e$ 2.583
Specific Gravity	G	0.55	k_1 13.645
Reference Lateral Design Value (Z)	Z	1323	k_2 9.920
Duration Factor	C_D	1.15	R_d 1.323
Geometry Factor	C_Δ	1	IV 1818
Wet Service Factor	C_{Wg}	1	
Adjusted Lateral Design Value (lbs)	Z'	1522	$Z'=Z \times C_D \times C_M \times C_M \times C_\Delta \times C_t$
Total Allowable Connection Capacity (lbs)	V	1522	$\leftarrow V=NZ'$
BOLTS - WOOD TO STEEL PLATES - DOUBLE SHEAR - NDS, ASD			
Number of bolts	N	1	$F_{v\parallel,par}$ 8160
Bolt Diameter (in)	D	0.625	$F_{v\perp,par}$ 3243
Main Member Thickness (in)	t_m	3	F_{em} 5208
Side Member Thickness (in)	t_s	0.125	R_d 0.661
Dowel Bearing Strength (psi)	F_{em}	87000	K_θ 1.069
Bolt Yield Strength (psi)	F_{yb}	45000	$1+R_e$ 1.001
Max Angle Load to Grain (deg)	θ	25	$2+R_e$ 2.001
Specific Gravity	G	0.55	k_1 17.059
Reference Lateral Design Value (Z)	Z	2025	k_2 12.327
Duration Factor	C_D	1.15	R_d 2.059
Geometry Factor	C_Δ	1	IV 2797
Wet Service Factor	C_{Wg}	1	
Adjusted Lateral Design Value (lbs)	Z'	2305	$Z'=Z \times C_D \times C_M \times C_M \times C_\Delta \times C_t$
Total Allowable Connection Capacity (lbs)	V	2305	$\leftarrow V=NZ'$
Actual/Allowable =	2482 / 3828	=	0.65 < 1.0 PASS

Timber Tech Engineering, Inc 18 of 59

WOOD SCREWS - STEEL TO WOOD - SHEAR - NDS, ASD

Screw Size	#	10	F_{yb} 80000 k_3 6.361
Number of screws	N	4	$F_{ss,par}$ 5526 $F_{ss,per}$ 61800
Screw Diameter (in)	D	0.19	$F_{ss,par}$ 5526 $F_{ss,per}$ 61800
Screw Length (in)	L	3.5	F_{em} 5526 F_{em} 5526
Thickness of Steel Plate Member (in)	t_s	0.125	R_e 0.699 D_r 0.152
Thickness of Wood Member (in)	t_m	1.5	R_t 11.000 t_m 524.9
Screw Penetration into main member (in)	p	2	K_θ 2.200 k_1 533.7
Minimum Allowed Penetration, p_{min} = 6D	p_{min}	1.1	p 1.4 II 217.7
Specific Gravity of Side Member	G_s	0.55	$1+R_e$ 1.1 III$_m$ 232.6
Specific Gravity of Main Member	G_m	0.55	$2+R_e$ 2.1 III$_s$ 145.3
Lateral Design Value (lbs)	Z	145	k_1 0.492 IV 127
Duration Factor	C_D	1.15	θ 0 D_r 0.152
Toe Nail Factor	C_{tn}	1	
End Grain Factor	C_{eg}	0.67	
Wet Service Factor	C_{Wg}	1	
Adjusted Lateral Design Value (lbs)	Z'	98	$Z'=Z \times C_D \times C_{tn} \times C_{eg} \times C_{Wg} \times C_t$
Total Allowable Connection Capacity (lbs)	V	98	$\leftarrow V=NZ'$
Actual/Allowable =	128 / 589	=	0.30 < 1.0 PASS

Timber Tech Engineering, Inc 19 of 59

HIP RAFTER TO TENSION RING CONNECTION - UPLIFT

Axial Force (lbs)	F_a	1061	(-) Compression, (+) Tension
Shear Force (lbs)	V_u	230	(+) Gravity, (-) Uplift
Angle with Horizontal (deg)	θ	22.38	
Load on Connection (lbs)	W_3	608	$\leftarrow W_3 = (F_a \cos\theta - V_u \cos\theta)$ (value must be positive)
BOLTS - WOOD TO STEEL PLATES - DOUBLE SHEAR - NDS, ASD			
Number of bolts	N	1	$F_{v\parallel,par}$ 8160
Bolt Diameter (in)	D	0.5	$F_{v\perp,par}$ 3825
Main Member Thickness (in)	t_m	3	F_{em} 5477
Side Member Thickness (in)	t_s	0.125	K_θ 0.833
Dowel Bearing Strength (psi)	F_{em}	87000	F_{es} 1.000
Bolt Yield Strength (psi)	F_{yb}	45000	$1+R_e$ 1.583
Max Angle Load to Grain (deg)	θ	25	$2+R_e$ 2.583
Specific Gravity	G	0.55	k_1 13.645
Reference Lateral Design Value (Z)	Z	1323	k_2 9.920
Duration Factor	C_D	1.15	R_d 1.323
Geometry Factor	C_Δ	1	IV 1818
Wet Service Factor	C_{Wg}	1	
Adjusted Lateral Design Value (lbs)	Z'	1522	$Z'=Z \times C_D \times C_M \times C_M \times C_\Delta \times C_t$
Total Allowable Connection Capacity (lbs)	V	1522	$\leftarrow V=NZ'$
BOLTS - WOOD TO STEEL PLATES - DOUBLE SHEAR - NDS, ASD			
Number of bolts	N	1	$F_{v\parallel,par}$ 8160
Bolt Diameter (in)	D	0.625	$F_{v\perp,par}$ 3243
Main Member Thickness (in)	t_m	3	F_{em} 5208
Side Member Thickness (in)	t_s	0.125	R_d 0.661
Dowel Bearing Strength (psi)	F_{em}	87000	K_θ 1.069
Bolt Yield Strength (psi)	F_{yb}	45000	$1+R_e$ 1.001
Max Angle Load to Grain (deg)	θ	25	$2+R_e$ 2.001
Specific Gravity	G	0.55	k_1 17.059
Reference Lateral Design Value (Z)	Z	2025	k_2 12.327
Duration Factor	C_D	1.15	R_d 2.059
Geometry Factor	C_Δ	1	IV 2797
Wet Service Factor	C_{Wg}	1	
Adjusted Lateral Design Value (lbs)	Z'	2305	$Z'=Z \times C_D \times C_M \times C_M \times C_\Delta \times C_t$
Total Allowable Connection Capacity (lbs)	V	2305	$\leftarrow V=NZ'$
Actual/Allowable =	608 / 3828	=	0.16 < 1.0 PASS

Timber Tech Engineering, Inc 20 of 59

WOOD SCREWS - WITHDRAWAL - NDS, ASD

Screw Size	#	10	
Number of screws	N	56	
Screw Diameter (in)	D	0.19	
Screw Length (in)	L	1.5	
Width of Side Member (in)	w	0.125	
Screw Penetration into main member (in)	p	1.375	
Specific Gravity	G	0.55	
Reference Withdrawal Design Value	W	164	
Duration Factor	C_D	1.6	
Wet Service Factor	C_{Wg}	1	
Adjusted Withdrawn Capacity (lbs)	W	262	$W'=W \times C_D \times C_t \times C_{Wg}$
Total Connection Capacity (lbs)	P	20161	$\leftarrow P=NpW$
Actual/Allowable =	608 / 20161	=	0.03 < 1.0 PASS

Note: if a certain adjustment factor is not shown, its value is assumed to be 1.0

HIP RAFTER AT PEAK CONNECTION - VERTICAL SHEAR

Axial Force (lbs)	F_a	-1323	(-) Compression, (+) Tension
Shear Force (lbs)	V_u	829	(+) Gravity, (-) Uplift
Angle with Horizontal (deg)	θ	22.38	
Load on Connection (lbs)	V_3	178	$\leftarrow V_3 = (F_a \cos\theta + V_u \cos\theta)$
WOOD SCREWS - WOOD TO WOOD - SHEAR - NDS, ASD			
Screw Size	#	10	F_{yb} 80000 k_3 1.073
Number of screws	N	6	$F_{ss,par}$ 5526 k_3 1.073
Screw Diameter (in)	D	0.19	$F_{ss,par}$ 5526 $F_{ss,par}$ 5526
Screw Length (in)	L	3	F_{em} 5526 $F_{em,par}$ 5526
Width of Side Member (in)	t_s	1.5	R_e 1.000 F_{es} 5526
Width of Main Member (in)	t_m	3.5	R_t 1.000 t_m 572.6
Screw Penetration into main member (in)	p	1.5	K_θ 2.200 k_1 572.6
Minimum Allowed Penetration, p_{min} = 6D	p_{min}	1.1	p 2.0 II 281.5
Specific Gravity of Side Member	G_s	0.55	$1+R_e$ 2.0 III$_m$ 237.2
Specific Gravity of Main Member	G_m	0.55	$2+R_e$ 3.0 III$_s$ 205
Lateral Design Value (lbs)	Z	205	k_1 0.844 IV 127
Duration Factor	C_D	1.15	θ 0 D_r 0.152
Toe Nail Factor	C_{tn}	1	
End Grain Factor	C_{eg}	0.67	
Wet Service Factor	C_{Wg}	1	
Adjusted Lateral Design Value (lbs)	Z'	158	$Z'=Z \times C_D \times C_{tn} \times C_{eg} \times C_{Wg} \times C_t$
Total Allowable Connection Capacity (lbs)	V	589	$\leftarrow V=NZ'$
Actual/Allowable =	178 / 589	=	0.30 < 1.0 PASS

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TYPICAL SINGLE RAFTER TO TENSION RING CONNECTION - HORIZONTAL SHEAR

Axial Force (lbs)	F_a	539	(-) Compression, (+) Tension
Shear Force (lbs)	V_u	374	(+) Gravity, (-) Uplift
Angle with Horizontal (deg)	θ	39.26	
Load on Connection (lbs)	V_3	604	$\leftarrow V_3 = (F_a \cos\theta + V_u \sin\theta)$
NAILS - WOOD TO WOOD - SHEAR - NDS, ASD		10d	Adjustment Factor Calculations
Nail Size			K_D 2.2
Number of nails	N	3	
Nail Diameter (in)	D	0.12	F_{yb}(psi) 100000
Nail Length (in)	L	3	$2+R_e$ = 3.0
Width of Side Member (in)	t_s	1.5	$1+2R_e$ = 3.0
Width of Main Member (in)	t_m	3.5	t_s = 1.06
Nail Penetration into main member (in)	p	1.5	R_d = 1.06
Minimum Allowed Penetration, p_{min} = 6D	p_{min}	0.7	F_{em} = 5526
Specific Gravity of Side Member	G_s	0.55	F_{es} = 5526
Specific Gravity of Main Member	G_m	0.55	p = 1.5
Lateral Design Value (lbs)	Z	89	(controlling yield value) p = 1.50
Duration Factor	C_D	1.6	$1+R_e$ = 2.0
Wet Service Factor	C_M	1	t_m 492
Temperature Factor	C_t	1	R_t 159
Toe Nail Factor	C_{tn}	1	III$_s$ 159
End Grain Factor	C_{eg}	1	IV 89
Adjusted Lateral Design Value (lbs)	Z'	142	$Z'=Z \times C_D \times C_M \times C_t \times C_{tn} \times C_{eg}$
Total Allowable Lateral Capacity (lbs)	V	426	$V=NZ'$
A23 Bracket By SIMPSON STRONG-TIE			
Number of Brackets	N	1	
Specific Gravity of Wood Member	SG	0.55	
Design Value per Bracket (lbs)		565	
Duration Factor	C_D	1	1.6 Already Applied
Wet Service Factor	C_{Wg}	1	
Total Allowable Lateral Capacity (lbs)	Z	565	
Actual/Allowable =	426 / 565	=	0.75 PASS
Actual/Allowable =	604 / 391	=	0.61 < 1.0 PASS

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TYPICAL SINGLE RAFTER TO TENSION RING CONNECTION - UPLIFT

Axial Force (lbs)	F_a	361	(-) Compression, (+) Tension
Shear Force (lbs)	V_u	-13	(+) Gravity, (-) Uplift
Angle with Horizontal (deg)	θ	39.26	
Load on Connection (lbs)	W_3	193	$\leftarrow W_3 = (F_a \cos\theta - V_u \cos\theta)$ (value must be positive)
NAILS - WITHDRAWAL - NDS, ASD			
Nail Size		10d	*Note: if a certain adjustment factor is not shown, its value is assumed to be 1.0*
Number of nails	N	3	
Nail Diameter (in)	D	0.12	
Nail Length (in)	L	3	
Width of Side Member (in)	t_s	1.5	
Width of Main Member (in)	t_m	3.5	
Nail Penetration into main member (in)	p	1.5	
Specific Gravity	G	0.55	
Reference Withdrawal Design Value (lbs)	W	37	
Duration Factor	C_D	1.6	
Toe Nail Factor	C_{tn}	1	
Wet Service Factor	C_{Wg}	1	
Adjusted Withdrawal Capacity (lbs)	W'	59	$W'=W \times C_D \times C_t \times C_{tn} \times C_{Wg}$
Total Connection Capacity (lbs)	P	267	$\leftarrow P=NpW$
Actual/Allowable =	193 / 267	=	0.72 < 1.0 PASS

TYPICAL SINGLE RAFTER AT PEAK CONNECTION - VERTICAL SHEAR

Axial Force (lbs)	F_a	799	(-) Compression, (+) Tension
Shear Force (lbs)	V_u	255	(+) Gravity, (-) Uplift
Angle with Horizontal (deg)	θ	30.26	
Load on Connection (lbs)	V_3	642	$\leftarrow V_3 = (F_a \cos\theta + V_u \cos\theta)$
WOOD SCREWS - WOOD TO WOOD - SHEAR - NDS, ASD			
Screw Size	#	10	F_{yb} 80000 k_3 1.043
Number of screws	N	5	$F_{ss,par}$ 5526 k_3 1.073
Screw Diameter (in)	D	0.19	$F_{ss,par}$ 5526 $F_{ss,par}$ 5526
Screw Length (in)	L	3.5	F_{em} 5526 $F_{em,par}$ 5526
Width of Side Member (in)	t_s	1.5	R_e 1.000 F_{es} 5526
Width of Main Member (in)	t_m	3.5	R_t 1.333 t_m 762.5
Screw Penetration into main member (in)	p	2	K_θ 2.200 k_1 572.6
Minimum Allowed Penetration, p_{min} = 6D	p_{min}	1.1	p 2.0 II 281.5
Specific Gravity of Side Member	G_s	0.55	$1+R_e$ 2.0 III$_m$ 290.9
Specific Gravity of Main Member	G_m	0.55	$2+R_e$ 3.0 III$_s$ 205
Lateral Design Value (lbs)	Z	127	k_1 0.492 IV 127
Duration Factor	C_D	1.6	θ 0 D_r 0.152
Toe Nail Factor	C_{tn}	1	
End Grain Factor	C_{eg}	1	
Wet Service Factor	C_{Wg}	1	
Adjusted Lateral Design Value (lbs)	Z'	197	$Z'=Z \times C_D \times C_{tn} \times C_{eg} \times C_{Wg} \times C_t$
Total Allowable Connection Capacity (lbs)	V	733	$\leftarrow V=NZ'$
Actual/Allowable =	642 / 733	=	0.88 < 1.0 PASS

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TYPICAL RAFTER TO BLOCK CONNECTION - SHEAR

Shear Force (lbs)	V_u	392	Down (+), Up (-)
Total Load (lbs)		392	
WOOD SCREWS - WOOD TO WOOD - SHEAR - NDS, ASD			
Screw Size	#	10	F_{yb} 80000 k_3 1.041
Number of screws	N	5	$F_{ss,par}$ 5526 k_3 1.073
Screw Diameter (in)	D	0.19	$F_{ss,par}$ 5526 $F_{ss,par}$ 5526
Screw Length (in)	L	3.5	F_{em} 5526 $F_{em,par}$ 5526
Width of Side Member (in)	t_s	1.5	R_e 1.000 F_{es} 5526
Width of Main Member (in)	t_m	3.5	R_t 1.333 t_m 733.5
Screw Penetration into main member (in)	p	2	K_θ 2.200 k_1 572.6
Minimum Allowed Penetration, p_{min} = 6D	p_{min}	1.1	p 2.0 II 281.5
Specific Gravity of Side Member	G_s	0.55	$1+R_e$ 2.0 III$_m$ 281.5
Specific Gravity of Main Member	G_m	0.55	$2+R_e$ 3.0 III$_s$ 205
Lateral Design Value (lbs)	Z	127	k_1 0.492 IV 127
Duration Factor	C_D	1.6	θ 0 D_r 0.152
Toe Nail Factor	C_{tn}	1	
End Grain Factor	C_{eg}	0.67	
Wet Service Factor	C_{Wg}	1	
Adjusted Lateral Design Value (lbs)	Z'	137	$Z'=Z \times C_D \times C_{tn} \times C_{eg} \times C_{Wg} \times C_t$
Total Connection Capacity (lbs)	P	3211	$\leftarrow P=NpW$
Actual/Allowable =	392 / 3211	=	0.12 < 1.0 PASS

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BLOCK TO HIP RAFTER CONNECTION - SHEAR

Resultant Force (lbs)	R	800	Down (+), Up (-)
Total Load (lbs)		800	
FASTENERS BY FASTEN MASTER - SHEAR - WOOD TO WOOD (ESR-1974)			
Designation		HUS6	
Number of screws	n	8	
Screw Diameter (in)	D	0.188	
Screw Length (in)	L	1	
Width of Side Member (in)	t_s	1.375	
Width of Main Member (in)	t_m	5	
Screw Penetration into main member (in)	p	2.625	
Specific Gravity of Side Member	G_s	0.55	
Specific Gravity of Main Member	G_m	0.55	
Angle Load to Grain, α_{load} (degrees)		0	
Lateral Design Value (lbs)	Z	803	(ESR-1974)
Duration Factor	C_D	1.15	
Load Grain Factor	C_{eg}	1	
Toe Nail Factor	C_{tn}	1	
Geometry Factor	C_Δ	1	
Wet Service Factor	C_{Wg}	1	
Depth Penetration Factor	C_d	1	
Adjusted Lateral Design Value (lbs)	Z'	902	$Z'=Z \times C_D \times C_{eg} \times C_{tn} \times C_\Delta \times C_{Wg} \times C_d$
Total Allowable Connection Capacity (lbs)	V	1210	$V=NZ'$
Actual/Allowable =	800 / 1210	=	0.71 < 1.0 PASS

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TENSION RING AT SPLICE

Total Load (lbs)		1891	
WOOD SCREWS - STEEL TO WOOD - SHEAR - NDS, ASD			
Screw Size	#	10	F_{yb} 80000 k_3 6.361
Number of screws	N	38	$F_{ss,par}$ 5526 $F_{ss,par}$ 61800
Screw Diameter (in)	D	0.19	$F_{ss,par}$ 5526 $F_{ss,par}$ 61800
Screw Length (in)	L	1.5	F_{em} 5526 F_{em} 5526
Thickness of Steel Plate Member (in)	t_s	0.125	R_e 0.699 D_r 0.152
Thickness of Wood Member (in)	t_m	1.5	R_t 11.000 t_m 324.9
Screw Penetration into main member (in)	p	1.375	K_θ 2.200 k_1 537.7
Minimum Allowed Penetration, p_{min} = 6D	p_{min}	1.1	p 1.4 II 217.7
Specific Gravity of Wood Member	G	0.55	$1+R_e$ 1.1 III$_m$ 232.6
Lateral Design Value (lbs)	Z	145	$2+R_e$ 2.1 III$_s$ 145.3
Duration Factor	C_D	1.15	k_1 0.468 IV 122.7
End Grain Factor	C_{eg}	1	θ 0.520 D_r 0
Toe Nail Factor	C_{tn}	1	
Wet Service Factor	C_{Wg}	1	
Adjusted Lateral Design Value (lbs)	Z'	167	$Z'=Z \times C_D \times C_{eg} \times C_{tn} \times C_{Wg} \times C_t$
Total Allowable Connection Capacity (lbs)	V	4678	$\leftarrow V=NZ'$
Actual/Allowable =	1891 / 4678	=	0.40 < 1.0 PASS

TENSION IN COMPRESSION RING AT SPLICE

Total Load (lbs)		908	
WOOD SCREWS - WOOD TO WOOD - SHEAR - NDS, ASD			
Screw Size	#	10	F_{yb} 80000 k_3 1.041
Number of screws	n_1	5	$F_{ss,par}$ 5526 k_3 1.073
Screw Diameter (in)	D	0.19	$F_{ss,par}$ 5526 $F_{ss,par}$ 5526
Screw Length (in)	L	3.5	F_{em} 5526 F_{em} 5526
Width of Side Member (in)	t_s	1.5	R_e 1.000 F_{es} 5526
Width of Main Member (in)	t_m	3.5	R_t 1.333 t_m 762.5
Screw Penetration into main member (in)	p	2	K_θ 2.200 k_1 572.6
Minimum Allowed Penetration, p_{min} = 6D	p_{min}	1.1	p 2.0 II 281.5
Specific Gravity of Side Member	G_s	0.55	$1+R_e$ 2.0 III$_m$ 290.9
Specific Gravity of Main Member	G_m	0.55	$2+R_e$ 3.0 III$_s$ 205
Lateral Design Value (lbs)	Z	127	k_1 0.492 IV 127
Duration Factor	C_D	1.15	θ 0 D_r 0.152
Toe Nail Factor	C_{tn}	1	
End Grain Factor	C_{eg}	0.67	
Wet Service Factor	C_{Wg}	1	
Adjusted Lateral Design Value (lbs)	Z'	204	$Z'=Z \times C_D \times C_{tn} \times C_{eg} \times C_{Wg} \times C_t$
Total Allowable Connection Capacity (lbs)	V	1020	$\leftarrow V=NZ'$
Actual/Allowable =	908 / 1020	=	0.89 < 1.0 PASS

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TENSION RING TO POST CONNECTION HORIZONTAL SHEAR CONNECTION

Load on Connection (lbs)		693	
WOOD SCREWS - STEEL TO WOOD - SHEAR - NDS, ASD			
Screw Size	#	10	F_{yb} 80000 k_3 6.361
Number of screws	N	4	$F_{ss,par}$ 5529 $F_{ss,par}$ 61800
Screw Diameter (in)	D	0.19	$F_{ss,par}$ 5529 $F_{ss,par}$ 61800
Screw Length (in)	L	2.5	F_{em} 5529 F_{em} 61800
Thickness of Steel Plate Member (in)	t_s	0.125	R_e 0.699 D_r 0.152
Thickness of Wood Member (in)	t_m	3.5	R_t 19.600 t_m 968.7
Screw Penetration into main member (in)	p	2.375	K_θ 2.200 k_1 533.7
Minimum Allowed Penetration, p_{min} = 6D	p_{min}	1.1	p 2.4 II 307.1
Specific Gravity of Wood Member	G	0.55	$1+R_e$ 1.1 III$_m$ 378.3
Lateral Design Value (lbs)	Z	145	$2+R_e$ 2.1 III$_s$ 145.3
Duration Factor	C_D	1.6	k_1 0.693 IV 172.7
End Grain Factor	C_{eg}	0.67	θ 0.492 D_r 0
Toe Nail Factor	C_{tn}	1	
Wet Service Factor	C_{Wg}	1	
Adjusted Lateral Design Value (lbs)	Z'	156	$Z'=Z \times C_D \times C_{eg} \times C_{tn} \times C_{Wg} \times C_t$
Total Allowable Connection Capacity (lbs)	V	623	$\leftarrow V=NZ'$
SDS SIMPSON SCREWS - WITHDRAWAL (ESR-2236)			
Number of screws	N	4	
Screw Diameter (in)	D	0.242	*Note: if a certain adjustment factor is not shown, its value is assumed to be 1.0*
Screw Length (in)	L	4.02	
Thread Length (in)	L_t	2.94	
Width of Side Member (in)	t_s	0.125	
Width of Main Member (in)	t_m	3.5	
Screw Penetration into main member (in)	p	3.5	
Thread Penetration into main member (in)	p_t	2.75	
Specific Gravity	G	0.55	
Reference Withdrawal Design Value	W	172	(ESR-2236)
Duration Factor	C_D	1.6	
Wet Service Factor	C_{Wg}	1	
Adjusted Withdrawal Capacity (lbs)	W'	275	$W'=W \times C_D \times C_t \times C_{Wg}$
Total Connection Capacity (lbs)	P	3027	$\leftarrow P=NpW$
Actual/Allowable =	693 / 3027	=	0.23 < 1.0 PASS
Actual/Allowable =	693 / 3850	=	0.19 < 1.0 PASS

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TENSION RING TO POST CONNECTION UPLIFT WITHDRAWAL CONNECTION

Load on Connection (lbs)		327	
SDS SIMPSON SCREWS - SHEAR - STEEL TO WOOD (ESR-2236)			
Number of screws	N	4	
Screw Diameter (in)	D	0.242	
Screw Length (in)	L	4.02	
Thickness of Steel Plate (in)	t_s	0.125	
Thickness of Wood Member (in)	t_m	3.5	
Screw Penetration into main member (in)	p	2.375	
Specific Gravity of Wood Member	G	0.55	
Lateral Design Value (lbs)	Z	305	(ESR-2236)
Duration Factor	C_D	1.6	
End Grain Factor	C_{eg}	1	
Toe Nail Factor	C_{tn}	1	
Geometry Factor	C_Δ	1	(ESR-2236)
Wet Service Factor	C_{Wg}	1	
Adjusted Lateral Design Value (lbs)	Z'	524	$

POST TO POST BASE BRACKET VERTICAL SHEAR CONNECTION (NO FLOOR)

Load on Connection (lbs)		10.8				
WOOD SCREWS - STEEL TO WOOD - SHEAR - NDS, ASD						
Screw Size	#	10	F_{yb}	80000	k_3	7.163
Number of screws	N	10	$F_{ms,par}$	5526	$F_{ms,ser}$	61800
Screw Diameter (in)	D	0.19	$F_{ms,perp}$	5526	$F_{ms,perp}$	61800
Screw Length (in)	L	2.5	F_{ss}	5526	F_{ss}	61800
Thickness of Steel Plate Member (in)	t_s	0.105	R_s	0.089	D_s	0.152
Thickness of Wood Member (in)	t_m	3.5	R_m	22.810	I_m	914.3
Screw Penetration into main member (in)	p	2.205	K_D	2.200	I_s	468.3
Minimum Allowed Penetration, p_{min} = 6D	p_{min}	1.1	p	2.4	II	309.5
Specific Gravity of Wood Member	G	0.55	$1+R_e$	1.1	III_m	381.2
Lateral Design Value (lbs)	Z	137	$2+R_e$	2.1	III_s	137.4
Duration Factor	C_D	1.6	k_1	0.824	IV	172.7
End Grain Factor	C_{eg}	1	k_2	0.492	θ	0
Toe Nail Factor	C_{tn}	1				
Wet Service Factor	C_M	0.7				
Adjusted Lateral Design Value (lbs)	Z'	154	$Z'=Z \times C_D \times C_{eg} \times C_{tn} \times C_M \times C_i$			
Total Allowable Connection Capacity (lbs)	V	1539	← V=NZ'			
Actual/Allowable = 11 + 1539	=	0.01	<	1.0	PASS	

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POST TO DOUBLE FLOOR JOIST HORIZONTAL SHEAR CONNECTION

Load on Connection (lbs)		206				
WOOD SCREWS - STEEL TO WOOD - SHEAR - NDS, ASD						
Screw Size	#	10	F_{yb}	80000	k_3	7.163
Number of screws	N	12	$F_{ms,par}$	5526	$F_{ms,ser}$	61800
Screw Diameter (in)	D	0.19	$F_{ms,perp}$	5526	$F_{ms,perp}$	61800
Screw Length (in)	L	2.5	F_{ss}	5526	F_{ss}	61800
Thickness of Steel Plate Member (in)	t_s	0.105	R_s	0.089	D_s	0.152
Thickness of Wood Member (in)	t_m	3.5	R_m	22.810	I_m	914.3
Screw Penetration into main member (in)	p	2.205	K_D	2.200	I_s	468.3
Minimum Allowed Penetration, p_{min} = 6D	p_{min}	1.1	p	2.4	II	309.5
Specific Gravity of Wood Member	G	0.55	$1+R_e$	1.1	III_m	381.2
Lateral Design Value (lbs)	Z	137	$2+R_e$	2.1	III_s	137.4
Duration Factor	C_D	1.6	k_1	0.824	IV	172.7
End Grain Factor	C_{eg}	0.67	k_2	0.492	θ	0
Toe Nail Factor	C_{tn}	1				
Wet Service Factor	C_M	0.7				
Adjusted Lateral Design Value (lbs)	Z'	192	$Z'=Z \times C_D \times C_{eg} \times C_{tn} \times C_M \times C_i$			
Total Allowable Connection Capacity (lbs)	V	1237	← V=NZ'			
Actual/Allowable = 206 + 1237	=	0.17	<	1.0	PASS	

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FLOOR TO BASE ANGLE VERTICAL SHEAR CONNECTION (WITH FLOOR)

Load on Connection (lbs)		10.8				
WOOD SCREWS - STEEL TO WOOD - SHEAR - NDS, ASD						
Screw Size	#	10	F_{yb}	80000	k_3	6.994
Number of screws	N	10	$F_{ms,par}$	5526	$F_{ms,ser}$	61800
Screw Diameter (in)	D	0.19	$F_{ms,perp}$	5526	$F_{ms,perp}$	61800
Screw Length (in)	L	1.5	F_{ss}	5526	F_{ss}	61800
Thickness of Steel Plate Member (in)	t_s	0.134	R_s	0.089	D_s	0.152
Thickness of Wood Member (in)	t_m	4	R_m	19.194	I_m	521.5
Screw Penetration into main member (in)	p	1.366	K_D	2.200	I_s	572.2
Minimum Allowed Penetration, p_{min} = 6D	p_{min}	1.1	p	1.4	II	217.9
Specific Gravity of Wood Member	G	0.55	$1+R_e$	1.1	III_m	231.4
Lateral Design Value (lbs)	Z	143	$2+R_e$	2.1	III_s	149.2
Duration Factor	C_D	1.6	k_1	0.381	IV	172.7
End Grain Factor	C_{eg}	1	k_2	0.523	θ	0
Toe Nail Factor	C_{tn}	1				
Wet Service Factor	C_M	0.7				
Adjusted Lateral Design Value (lbs)	Z'	192	$Z'=Z \times C_D \times C_{eg} \times C_{tn} \times C_M \times C_i$			
Total Allowable Connection Capacity (lbs)	V	1671	← V=NZ'			
Actual/Allowable = 11 + 1671	=	0.01	<	1.0	PASS	

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2x6 FLOOR BLOCKING TO POST UPLIFT CONNECTION

Load on Connection (lbs)		10.8		
NAILS - WOOD TO WOOD - SHEAR - NDS, ASD				
Nail Size		16d		Intermediate Calculations
Number of nails	N	12		K_D 2.2
Nail Diameter (in)	D	0.135		F_{yb} (psi) 90000
Nail Length (in)	L	3.25		$2+R_e$ 3.0
Width of Side Member (in)	t_s	1.5		$1+2R_e$ 3.0
Width of Main Member (in)	t_m	4		k_1 1.05
Nail Penetration into main member (in)	p	1.75		k_2 1.07
Minimum Allowed Penetration, p_{min} = 6D	P_{min}	0.8		F_{ss} = 5526
Specific Gravity of Side Member	G_s	0.55		F_{sm} = 5526
Specific Gravity of Main Member	G_m	0.55		R_e = 1.0
Lateral Design Value (lbs)	Z	112	(controlling yield value)	g = 1.75
Duration Factor	C_D	1.6		$1+R_e$ = 2.0
Wet Service Factor	C_M	1		t_s 5.00
Temperature Factor	C_t	1		III_s 208
Toe Nail Factor	C_{tn}	1		III_m 182
End Grain Factor	C_{eg}	1		IV 112
Adjusted Lateral Design Value (lbs)	Z'	180	$Z'=Z \times C_D \times C_M \times C_t \times C_{eg} \times C_{tn}$	
Total Allowable Lateral Capacity (lbs)	V	1311	V=NZ'	
Actual/Allowable = 11 + 1311	=	0.01	<	1.0 PASS

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2x6 FLOOR SKIRT BOARD TO POST UPLIFT CONNECTION (SCREWS)

Load on Connection (lbs)		10.8				
WOOD SCREWS - WOOD TO WOOD - SHEAR - NDS, ASD						
Screw Size	#	10	F_{yb}	80000	k_3	1.041
Number of screws	N	5	$F_{ms,par}$	5526	k_1	1.073
Screw Diameter (in)	D	0.19	$F_{ms,par}$	5526	$F_{ms,par}$	5526
Screw Length (in)	L	1.5	F_{ss}	5526	$F_{ms,par}$	5526
Width of Side Member (in)	t_s	1.5	R_s	1.000	F_{ss}	5526
Width of Main Member (in)	t_m	3	R_m	1.333	I_m	203.5
Screw Penetration into main member (in)	p	2	K_D	2.200	I_s	572.6
Minimum Allowed Penetration, p_{min} = 6D	P_{min}	1.1	p	2.0	II	281.5
Specific Gravity of Side Member	G_s	0.55	$1+R_e$	2.0	III_s	205.0
Specific Gravity of Main Member	G_m	0.55	$2+R_e$	3.0	III_m	205
Lateral Design Value (lbs)	Z	127	k_1	0.492	IV	127
Duration Factor	C_D	1.6		$1+R_e$ = 2.0		
Wet Service Factor	C_M	1	θ	0	Q_s	0.152
Temperature Factor	C_t	1				
End Grain Factor	C_{eg}	0.67				
Toe Nail Factor	C_{tn}	1				
Adjusted Lateral Design Value (lbs)	Z'	96	$Z'=Z \times C_D \times C_{eg} \times C_t \times C_{tn} \times C_M \times C_i$			
Total Allowable Connection Capacity (lbs)	V	478	← V=NZ'			
Actual/Allowable = 11 + 478	=	0.02	<	1.0	PASS	

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POST TO DOUBLED FLOOR JOIST UPLIFT CONNECTION

Load on Connection (lbs)		11				
WOOD SCREWS - STEEL TO WOOD - SHEAR - NDS, ASD						
Screw Size	#	8	F_{yb}	90000	k_3	6.728
Number of screws	N	12	$F_{ms,par}$	5526	$F_{ms,par}$	61800
Screw Diameter (in)	D	0.164	$F_{ms,par}$	5526	$F_{ms,par}$	61800
Screw Length (in)	L	1.5	F_{ss}	5526	F_{ss}	61800
Thickness of Steel Plate Member (in)	t_s	0.105	R_s	0.089	D_s	0.131
Thickness of Wood Member (in)	t_m	3.5	R_m	13.286	I_m	459.0
Screw Penetration into main member (in)	p	1.395	K_D	2.200	I_s	396.4
Minimum Allowed Penetration, p_{min} = 6D	P_{min}	1.0	p	1.4	II	188.0
Specific Gravity of Wood Member	G	0.55	$1+R_e$	1.1	III_m	200.1
Lateral Design Value (lbs)	Z	111	$2+R_e$	2.1	III_s	111.2
Duration Factor	C_D	1.6	k_1	0.495	IV	136.1
End Grain Factor	C_{eg}	1	k_2	0.514	θ	0
Toe Nail Factor	C_{tn}	1				
Wet Service Factor	C_M	0.7				
Adjusted Lateral Design Value (lbs)	Z'	135	$Z'=Z \times C_D \times C_{eg} \times C_{tn} \times C_M \times C_i$			
Total Allowable Connection Capacity (lbs)	V	1495	← V=NZ'			
Actual/Allowable = 11 + 1495	=	0.01	<	1.0	PASS	

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POST TO POST BASE BRACKET HORIZONTAL SHEAR CONNECTION (NO FLOOR)

Load on Connection (lbs)		206				
WOOD SCREWS - STEEL TO WOOD - SHEAR - NDS, ASD						
Screw Size	#	10	F_{yb}	90000	k_3	7.163
Number of screws	N	10	$F_{ms,par}$	5526	$F_{ms,par}$	61800
Screw Diameter (in)	D	0.19	$F_{ms,par}$	5526	$F_{ms,par}$	61800
Screw Length (in)	L	1.5	F_{ss}	5526	F_{ss}	61800
Thickness of Steel Plate Member (in)	t_s	0.134	R_s	0.089	D_s	0.152
Thickness of Wood Member (in)	t_m	3.5	R_m	13.286	I_m	530.8
Screw Penetration into main member (in)	p	1.395	K_D	2.200	I_s	440.3
Minimum Allowed Penetration, p_{min} = 6D	P_{min}	1.1	p	1.4	II	218.1
Specific Gravity of Wood Member	G	0.55	$1+R_e$	1.1	III_m	231.4
Lateral Design Value (lbs)	Z	137	$2+R_e$	2.1	III_s	137.4
Duration Factor	C_D	1.6	k_1	0.495	IV	172.7
End Grain Factor	C_{eg}	1	k_2	0.521	θ	0
Toe Nail Factor	C_{tn}	1				
Wet Service Factor	C_M	0.7				
Adjusted Lateral Design Value (lbs)	Z'	154	$Z'=Z \times C_D \times C_{eg} \times C_{tn} \times C_M \times C_i$			
Total Allowable Connection Capacity (lbs)	V	1539	← V=NZ'			
Actual/Allowable = 206 + 1539	=	0.13	<	1.0	PASS	

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FLOOR TO BASE ANGLE HORIZONTAL SHEAR CONNECTION (WITH FLOOR)

Load on Connection (lbs)		206				
WOOD SCREWS - STEEL TO WOOD - SHEAR - NDS, ASD						
Screw Size	#	10	F_{yb}	80000	k_3	6.994
Number of screws	N	10	$F_{ms,par}$	5526	$F_{ms,par}$	61800
Screw Diameter (in)	D	0.19	$F_{ms,par}$	5526	$F_{ms,par}$	61800
Screw Length (in)	L	1.5	F_{ss}	5526	F_{ss}	61800
Thickness of Steel Plate Member (in)	t_s	0.134	R_s	0.089	D_s	0.152
Thickness of Wood Member (in)	t_m	4	R_m	19.194	I_m	521.5
Screw Penetration into main member (in)	p	1.366	K_D	2.200	I_s	572.2
Minimum Allowed Penetration, p_{min} = 6D	P_{min}	1.1	p	1.4	II	217.9
Specific Gravity of Wood Member	G	0.55	$1+R_e$	1.1	III_m	231.4
Lateral Design Value (lbs)	Z	143	$2+R_e$	2.1	III_s	149.2
Duration Factor	C_D	1.6	k_1	0.381	IV	172.7
End Grain Factor	C_{eg}	1	k_2	0.523	θ	0
Toe Nail Factor	C_{tn}	1				
Wet Service Factor	C_M	0.7				
Adjusted Lateral Design Value (lbs)	Z'	192	$Z'=Z \times C_D \times C_{eg} \times C_{tn} \times C_M \times C_i$			
Total Allowable Connection Capacity (lbs)	V	1671	← V=NZ'			
Actual/Allowable = 206 + 1671	=	0.12	<	1.0	PASS	

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2x6 FLOOR SKIRT BOARD TO POST UPLIFT CONNECTION (NAILS)

Load on Connection (lbs)		10.8		
NAILS - WOOD TO WOOD - SHEAR - NDS, ASD				
Nail Size		12d		Intermediate Calculations
Number of nails	N	9		K_D 2.2
Nail Diameter (in)	D	0.12		F_{yb} (psi) 100000
Nail Length (in)	L	3.25		$2+R_e$ 3.0
Width of Side Member (in)	t_s	1.5		$1+2R_e$ 3.0
Width of Main Member (in)	t_m	4		k_1 1.04
Nail Penetration into main member (in)	p	1.75		k_2 1.06
Minimum Allowed Penetration, p_{min} = 6D	P_{min}	0.7		F_{ss} = 5526
Specific Gravity of Side Member	G_s	0.55		F_{sm} = 5526
Specific Gravity of Main Member	G_m	0.55		R_e = 1.0
Lateral Design Value (lbs)	Z	115	(controlling yield value)	g = 1.75
Duration Factor	C_D	1.6		$1+R_e$ = 2.0
Wet Service Factor	C_M	1		t_s 452
Temperature Factor	C_t	1		III_s 183
Toe Nail Factor	C_{tn}	1		III_m 159
End Grain Factor	C_{eg}	0.67		IV 89
Adjusted Lateral Design Value (lbs)	Z'	97	$Z'=Z \times C_D \times C_M \times C_t \times C_{eg} \times C_i$	
Total Allowable Lateral Capacity (lbs)	V	590	V=NZ'	
Actual/Allowable = 11 + 600	=	0.02	<	1.0 PASS

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POST BASE BRACKET TO CONCRETE CONNECTION

Total Shear Load (lbs)		206		
Total Uplift Load (lbs)		10.5		
UPLIFT: 1/2" x 4" Powers Wedge-Bolt (Screw Anchor)				
Quantity of Anchors	N	2		
Diameter of Anchor, in	D	0.5		
Minimum Embedment into Concrete, in	E_m	4		
Ultimate Concrete Strength, psi	f_c	3000		
Allowable Unadjusted Capacity of One Anchor		1460		
Edge Adjustment Factor		1		
Spacing Adjustment Factor		1		
Other Adjustment Factor		1		
Allowable Adjusted Capacity of Connection		2920		
Actual/Allowable = 11 + 2920	=	0.00	<	1.0 PASS
SHEAR: 1/2" x 4" Powers Wedge-Bolt (Screw Anchor)				
Quantity of Anchors	N	2		
Diameter of Anchor, in	D	0.5		
Minimum Embedment into Concrete, in	E_m	4		
Minimum Concrete Strength, psi	f_c	3000		
Allowable Unadjusted Capacity of One Anchor		250		
Edge Adjustment Factor		1		
Spacing Adjustment Factor		1		
Other Adjustment Factor		1		
Allowable Adjusted Capacity of Connection		500		
Actual/Allowable = 206 + 500	=	0.35	<	1.0 PASS

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ROOF SHEATHING TO RAFTER CONNECTION

Tributary Area (sf)	A_T	1		
Dead Load (psf)	D	8		
Wind Uplift Load (psf)	W	80	ASCE 7	
Load on Connection (lbs)		79	0.6D+W	
STAPLES - WITHDRAWAL - Table 2, NFR 272				
Nail Size		0.063 x 2		Note: If a certain adjustment factor is not shown, its value is assumed to be 1.0
Number of nails	N	2		
Nail Diameter (in)	D	0.063		
Nail Length (in)	L	2		
Width of Side Member (in)	t_s	0.4375		
Width of Main Member (in)	t_m	1.5		
Nail Penetration into main member (in)	p	1.5		
Specific Gravity	G	0.55		
Reference Withdrawal Design Value (lbs)	W	33		
Duration Factor	C_D	1.6		
Toe Nail Factor	C_{tn}	1		
Wet Service Factor	C_M	1		
Adjusted Withdrawal Capacity (lbs)	W'	52	$W'=W \times C_D \times C_t \times C_g \times C_{tn}$	
Total Connection Capacity (lbs)	P	157	← P=NW'	
Actual/Allowable = 79 + 157	=	0.42	<	1.0 PASS

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ROOF SHEATHING TO RAFTER CONNECTION - OPTION 2

Tributary Area (sf)	A_T	1		
Dead Load (psf)	D	8		
Wind Uplift Load (psf)	W	80	ASCE 7	
Load on Connection (lbs)		79	0.6D+W	
NAILS - WITHDRAWAL - NDS, ASD				
Nail Size		8d		Note: If a certain adjustment factor is not shown, its value is assumed to be 1.0
Number of nails	N	2		
Nail Diameter (in)	D	0.113		
Nail Length (in)	L	2		
Width of Side Member (in)	t_s	0.4375		
Width of Main Member (in)	t_m	1.5		
Nail Penetration into main member (in)	p	1.5		
Specific Gravity	G	0.55		
Reference Withdrawal Design Value (lbs)	W	36		
Duration Factor	C_D	1.6		
Toe Nail Factor	C_{tn}	1		
Wet Service Factor	C_M	1		
Adjusted Withdrawal Capacity (lbs)	W'	58	$W'=W \times C_D \times C_t \times C_g \times C_{tn}$	
Total Connection Capacity (lbs)	P	116	← P=NW'	
Actual/Allowable = 79 + 116	=	0.47	<	1.0 PASS

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HAND RAIL: TOP RAIL TO VERTICAL PLATE CONNECTION

Length of Hand Rails (ft)		5.75	
Required Point Load Anywhere (lbs)		200	(horizontal or vertical directions)
Required Uniformly Distributed Load (plf)		50	(horizontal or vertical directions)
Load on Connection (lbs)		200	
WOOD SCREWS - WOOD TO WOOD - SHEAR - NDS, ASD			
Screw Size	#	8	F_{yb} 90000 k_3 1.045
Number of screws	N	3	$F_{ms,par}$ 5526 k_1 1.235
Screw Diameter (in)	D	0.164	$F_{ms,par}$ 5526 $F_{ms,par}$ 5526
Screw Length (in)	L	2.5	F_{ss} 5526 $F_{ms,par}$ 5526
Width of Side Member (in)	t_s	0.75	R_s 1.000 F_{ss} 5526
Width of Main Member (in)	t_m	2	R_m 2.333 I_m 575.8
Screw Penetration into main member (in)	p	1.75	K_D 2.200 I_s 246.8
Minimum Allowed Penetration, p_{min} = 6D	P_{min}	1.0	p 1.8 II 193.2
Specific Gravity of Side Member	G_s	0.55	$1+R_e$ 2.0 III_m 200.9
Specific Gravity of Main Member	G_m	0.55	$2+R_e$ 3.0 III_s 102
Lateral Design Value (lbs)	Z	100	k_1 0.783 IV 100
Duration Factor	C_D	1	θ 0 Q_s 0.131
Toe Nail Factor	C_{tn}	1	
End Grain Factor	C_{eg}	0.67	
Wet Service Factor	C_M	1	
Adjusted Lateral Design Value (lbs)	Z'	67	$Z'=Z \times C_D \times C_{eg} \times C_{tn} \times C_M \times C_i$
Total Allowable Connection Capacity (lbs)	V	292	← V=NZ'
Actual/Allowable = 200 + 292	=	0.69	< 1.0 PASS

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HAND RAIL: BOTTOM RAIL TO VERTICAL PLATE CONNECTION

Length of Hand Rails (ft)		5.75	
Required Point Load Anywhere (lbs)		50	(load from spindles)
Required Uniformly Distributed Load (plf)		50	(horizontal or vertical directions)
Load on Connection (lbs)		50	
WOOD SCREWS - WOOD TO WOOD - SHEAR - NDS, ASD			
Screw Size	#	8	F_{yb} 90000 k_3 1.045
Number of screws	N	3	$F_{ms,par}$ 5526 k_1 1.235
Screw Diameter (in)	D	0.164	$F_{ms,par}$ 5526 $F_{ms,par}$ 5526
Screw Length (in)	L	2.5	F_{ss} 5526 $F_{ms,par}$ 5526
Width of Side Member (in)	t_s	0.75	R_s 1.000 F_{ss} 5526
Width of Main Member (in)	t_m	2	R_m 2.333 I_m 575.8
Screw Penetration into main member (in)	p	1.75	K_D 2.200 I_s 246.8
Minimum Allowed Penetration, p_{min} = 6D	P_{min}	1.0	p 1.8 II 193.2
Specific Gravity of Side Member	G_s	0.55	$1+R_e$ 2.0 III_m 200.9
Specific Gravity of Main Member	G_m	0.55	$2+R_e$ 3.0 III_s 102
Lateral Design Value (lbs)	Z	100	k_1 0.783 IV 100
Duration Factor	C_D	1	θ 0 Q_s 0.131
Toe Nail Factor	C_{tn}	1	
End Grain Factor	C_{eg}	0.67	
Wet Service Factor	C_M	1	
Adjusted Lateral Design Value (lbs)	Z'	67	$Z'=Z \times C_D \times C_{eg} \times C_{tn} \times C_M \times C_i$
Total Allowable Connection Capacity (lbs)	V	135	← V=NZ'
Actual/Allowable = 50 + 135	=	0.37	< 1.0 PASS

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HAND RAIL: VERTICAL PLATE TO MAIN POST CONNECTION - NEAR TOP RAIL

Length of Hand Rails (ft)		5.75	
Required Point Load Anywhere (lbs)		200	(horizontal or vertical directions)
Required Uniformly Distributed Load (plf)		50	(horizontal or vertical directions)
Load on Connection (lbs)		200	
WOOD SCREWS - WOOD TO WOOD - SHEAR - NDS, ASD			
Screw Size	#	8	F_{yb} 90000 k_3 1.045
Number of screws	N	3	$F_{ms,par}$ 5526 k_1 1.235
Screw Diameter (in)	D	0.164	$F_{ms,par}$ 5526 $F_{ms,par}$ 5526
Screw Length (in)	L	2.5	F_{ss} 5526 $F_{ms,par}$ 5526
Width of Side Member (in)	t_s	0.75	R_s 1.000 F_{ss} 5526
Width of Main Member (in)	t_m	2	R_m 2.333 I_m 575.8
Screw Penetration into main member (in)	p	1.75	K_D 2.200 I_s 246.8
Minimum Allowed Penetration, p_{min} = 6D	P_{min}	1.0	p 1.8 II 193.2
Specific Gravity of Side Member	G_s	0.55	$1+R_e$ 2.0 III_m 200.9
Specific Gravity of Main Member	G_m	0.55	$2+R_e$ 3.0 III_s 102
Lateral Design Value (lbs)	Z	100	k_1 0.783 IV 100
Duration Factor	C_D	1	θ 0 Q_s 0.131
Toe Nail Factor	C_{tn}	1	
End Grain Factor	C_{eg}	1	
Wet Service Factor	C_M	1	
Adjusted Lateral Design Value (lbs)	Z'	100	$Z'=Z \times C_D \times C_{eg} \times C_{tn} \times C_M \times C_i$
Total Allowable Connection Capacity (lbs)	V	201	← V=NZ'
Actual/Allowable = 200 + 201	=	0.99	< 1.0 PASS

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HAND RAIL: VERTICAL PLATE TO MAIN POST CONNECTION - NEAR BOTTOM RAIL

Length of Hand Rails (ft)		5.75	
Required Point Load Anywhere (lbs)		50	(load from spindles)
Required Uniformly Distributed Load (plf)		50	(horizontal or vertical directions)
Load on Connection (lbs)		50	
WOOD SCREWS - WOOD TO WOOD - SHEAR - NDS, ASD			
Screw Size	#	8	F_{yb} 90000 k_3 1.045
Number of screws	N	2	$F_{ms,par}$ 5526 k_1 1.235
Screw Diameter (in)	D	0.164	$F_{ms,par}$ 5526 $F_{ms,par}$ 5526
Screw Length (in)	L	2.5	F_{ss} 5526 $F_{ms,par}$ 5526
Width of Side Member (in)	t_s	0.75	R_s 1.000 F_{ss} 5526
Width of Main Member (in)	t_m	2	R_m 2.333 I_m 575.8
Screw Penetration into main member (in)	p	1.75	K_D 2.200 I_s 246.8
Minimum Allowed Penetration, p_{min} = 6D	P_{min}	1.0	p 1.8 II 193.2
Specific Gravity of Side Member	G_s	0.55	$1+R_e$ 2.0 III_m 200.9
Specific Gravity of Main Member	G_m	0.55	$2+R_e$ 3.0 III_s 102
Lateral Design Value (lbs)	Z	100	k_1 0.783 IV 100
Duration Factor	C_D	1	θ 0 Q_s 0.131
Toe Nail Factor	C_{tn}	1	
End Grain Factor	C_{eg}	1	
Wet Service Factor	C_M	1	
Adjusted Lateral Design Value (lbs)	Z'	100	$Z'=Z \times C_D \times C_{eg} \times C_{tn} \times C_M \times C_i$
Total Allowable Connection Capacity (lbs)	V	201	← V=NV'
Actual/Allowable = 50 + 201	=	0.25	< 1.0 PASS

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APPENDIX A

Visual Analysis Results

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Nodes
Member Elements
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Project: 20' Octagon Pinnacle Roof ASCE 7-05
Travis McDaniel, TIMBER TECH ENGINEERING, INC. November 03, 2016
P:\Country Lane 1371\9137-730 & E254-16 NJ\Calcs\

Nodes

Node	X	Y	Z	Fix DX	Fix DY	Fix DZ	Fix RX	Fix RY	Fix RZ	Section?
	ft	ft	ft							
001	0.00	6.17	5.66	No	No	No	No	No	No	No
002	0.00	8.00	5.66	No	No	No	No	No	No	No
003	0.00	7.17	5.66	No	No	No	No	No	No	No
004	0.00	7.17	6.66	No	No	No	No	No	No	No
005	0.71	7.17	4.75	No	No	No	No	No	No	No
006	0.00	0.00	5.66	Yes	Yes	Yes	No	No	No	No
007	0.00	7.17	13.18	No	No	No	No	No	No	No
008	0.71	8.00	4.75	No	No	No	No	No	No	No
009	0.00	8.00	6.66	No	No	No	No	No	No	No
010	0.00	0.00	13.18	No	No	No	No	No	No	No
011	5.46	6.17	0.00	No	No	No	No	No	No	No
012	5.46	8.00	0.00	No	No	No	No	No	No	No
013	5.46	7.17	0.00	No	No	No	No	No	No	No
014	4.75	7.17	0.71	No	No	No	No	No	No	No
015	5.46	7.17	0.00	No	No	No	No	No	No	No
016	5.46	0.00	0.00	Yes	Yes	Yes	No	No	No	No
017	5.46	8.00	0.00	No	No	No	No	No	No	No
018	4.75	8.00	0.71	No	No	No	No	No	No	No
019	13.18	6.17	0.00	No	No	No	No	No	No	No
020	13.18	8.00	0.00	No	No	No	No	No	No	No
021	13.18	7.17	0.00	No	No	No	No	No	No	No
022	12.18	7.17	0.00	No	No	No	No	No	No	No
023	13.68	7.17	0.71	No	No	No	No	No	No	No
024	13.18	0.00	0.00	Yes	Yes	Yes

		Supplement 13 (Visual) Dense Select Structural							
M139	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	073	074	7.99	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M140	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	075	076	7.99	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M141	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	074	076	3.60	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M142	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	077	078	7.99	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M146	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	079	074	7.99	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M147	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	078	074	2.00	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M148	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	080	081	7.99	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M152	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	082	078	7.99	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M153	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	081	078	2.00	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M154	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	083	084	7.99	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M158	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	085	081	7.99	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M159	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	084	081	2.00	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M160	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	086	087	7.99	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M164	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	088	084	7.99	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M165	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	087	084	2.00	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M166	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	089	090	7.99	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M170	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	091	087	7.99	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M171	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	090	087	2.00	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M172	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	092	093	7.99	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M176	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	094	090	7.99	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M177	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	093	090	2.00	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M178	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	095	078	7.99	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M179	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	096	093	7.99	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
M180	SS2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	076	093	2.00	Free	Free
		Supplement 13 (Visual) Dense Select Structural							
V001	2-ply 2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	010	055	10.71	Free	Rigid
		Supplement 13 (Visual) Dense Select Structural							
V002	2-ply 2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	032	056	10.71	Free	Rigid
		Supplement 13 (Visual) Dense Select Structural							
V003	2-ply 2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	012	072	10.71	Free	Rigid
		Supplement 13 (Visual) Dense Select Structural							
V004	2-ply 2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	020	071	10.71	Free	Rigid
		Supplement 13 (Visual) Dense Select Structural							
V005	2-ply 2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	028	070	10.71	Free	Rigid
		Supplement 13 (Visual) Dense Select Structural							
V006	2-ply 2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	036	069	10.71	Free	Rigid
		Supplement 13 (Visual) Dense Select Structural							
V007	2-ply 2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	044	068	10.71	Free	Rigid

		Supplement 13 (Visual) Dense Select Structural					
V008	2-ply 2x6	Southern Pine DSS (5'-6" wide) NDS Lumber	052	057	10.71	Free	Rigid
		Supplement 13 (Visual) Dense Select Structural					

Load Cases

Load Case	Design Checks	Seismic Type	Results	Analyze?	Envelope?
LC1	-NA-	-NA-	Yes	Yes	No
LC2&X	-NA-	-NA-	Yes	Yes	No
LC15	-NA-	-NA-	Yes	Yes	No
LC16	-NA-	-NA-	None	No	No
LC19	-NA-	-NA-	Yes	Yes	No
LC21&D+.7D	Allowable (ASD)	-NA-	Yes	Yes	No
LC26&D+.7E+.7*X	Allowable (ASD)	-NA-	Yes	Yes	No
LC29&D+W+.7*X	Allowable (ASD)	-NA-	Yes	Yes	No
LC30&D+.75(L+W)+.7*X	Def. 'Other'	-NA-	Yes	Yes	No
LC31&D+.75(L+.75W)+	Allowable (ASD)	-NA-	Yes	Yes	No
LC40&D+F	Allowable (ASD)	-NA-	Yes	Yes	No
LC43&D+H+F+.75(.7E+L+H)+X	Allowable (ASD)	-NA-	Yes	Yes	No
LC44&D+H+F+.75(.7E+L+S)+X	Allowable (ASD)	-NA-	Yes	Yes	No
LC45&D+H+F+.75(L+S)	Allowable (ASD)	-NA-	Yes	Yes	No
LC46&D+H+F+.75(W+L+S)+X	Allowable (ASD)	-NA-	Yes	Yes	No
LC47&D+H+F+.75(W+L+S)+X	Allowable (ASD)	-NA-	Yes	Yes	No
LC48&D+H+F+.7E+X	Allowable (ASD)	-NA-	Yes	Yes	No
LC49&D+H+F+S	Allowable (ASD)	-NA-	Yes	Yes	No
LC50&D+H+F+W+X	Allowable (ASD)	-NA-	Yes	Yes	No
LC51&H	Def. 'Other'	-NA-	Yes	Yes	No
LC52&D+H+R	Def. 'Other'	-NA-	Yes	Yes	No
LC53&D+S	Def. 'Other'	-NA-	Yes	Yes	No
LC54&D+S	Allowable (ASD)	-NA-	Yes	Yes	No
LC55&seismic x+X	Def. 'Other'	-NA-	Yes	Yes	No
LC56&seismic	Def. 'W or S'	-NA-	Yes	Yes	No
LC57&Wind x+X	Def. 'W or S'	-NA-	Yes	Yes	No

Load Combination Summary

Equation Combination: 6D+.7D
Design Category: Allowable (ASD)
Combination: 6.000
Contributing Cases & Source
D (D)

Equation Combination: .8D+.7E +X
Design Category: Allowable (ASD)
Combination: 0.800 + 0.700 +X
Contributing Cases & Source
D (D)
E+X (E+X)

Equation Combination: .6D+W+X
Design Category: Allowable (ASD)
Combination: 0.600 + W+X
Contributing Cases & Source
D (D)
W+X (W+X)

Equation Combination: 0.75(D+L+W) +X
Design Category: Deflections
Combination: 0.750 + 0.750+X
Contributing Cases & Source
D (D)
W+X (W+X)

Equation Combination: D+.75Sur+.75Wx+
Design Category: Allowable (ASD)
Combination: D + 0.750 + 0.750+X
Contributing Cases & Source
D (D)
Su (S)
Wx+ (Wx+)

Equation Combination: D+F
Design Category: Allowable (ASD)
Combination: D
Contributing Cases & Source
D (D)

Equation Combination: D+H+F+.75(.7E+L+Lr) +X
Design Category: Allowable (ASD)
Combination: D + 0.750 + 0.530+X
Contributing Cases & Source
D (D)
E+X (E+X)

Equation Combination: D+H+F+.75(.7E+L+S) +X
Design Category: Allowable (ASD)
Combination: D + 0.750 + 0.530+X
Contributing Cases & Source
D (D)
S (S)
E+X (E+X)

Equation Combination: D+H+F+.75(W+L+Lr) +X
Design Category: Allowable (ASD)
Combination: D + 0.750+X
Contributing Cases & Source
D (D)
W+X (W+X)

Equation Combination: D+H+F+.75(W+L+S) +X
Design Category: Allowable (ASD)
Combination: D + 0.750 + 0.750+X
Contributing Cases & Source
D (D)
S (S)
W+X (W+X)

Equation Combination: D+H+F+.7E +X
Design Category: Allowable (ASD)
Combination: D + 0.700+X
Contributing Cases & Source
D (D)
E+X (E+X)

Equation Combination: D+H+F+S
Design Category: Allowable (ASD)

Combination: D + S
Contributing Cases & Source
D (D)
S (S)

Equation Combination: D+H+F+W+X
Design Category: Allowable (ASD)
Combination: D + W+X
Contributing Cases & Source
D (D)
W+X (W+X)

Equation Combination: D+L
Design Category: Deflections
Combination: 1.000
Contributing Cases & Source
D (D)

Equation Combination: D+R
Design Category: Deflections
Combination: D
Contributing Cases & Source
D (D)

Equation Combination: D+S
Design Category: Deflections
Combination: 1.000
Contributing Cases & Source
D (D)
S (S)

Equation Combination: D+Su
Design Category: Allowable (ASD)
Combination: D + S
Contributing Cases & Source
D (D)
Su (S)

Equation Combination: Seismic x+X
Design Category: Deflections
Combination: 0.+X
Contributing Cases & Source
E+X (E+X)

Equation Combination: Snow
Design Category: Deflections
Combination: S
Contributing Cases & Source
S (S)

Equation Combination: Wind x+X
Design Category: Deflections
Combination: W+X
Contributing Cases & Source
W+X (W+X)

Design Groups

Group/Mesh	Elements	LL Factor	Unity	Design Shape	Overstrength
Blocking	8	1.00	0.60	SS2x6	No
Columns	6	1.00	0.22	SS4x6	No

Compression Ring	6	1.00	0.65	SS2x8	No		
Top Rafter	8	1.00	0.43	2-ply 2x6	No		
Horizontal Rail	8	1.00	0.87	SS2x3	No		
Rafters	16	1.00	0.43	SS2x6	No		
Tension Ring	6	1.00	0.60	SS2x10	No		
Verticals	16	1.00	0.09	SS2x3	No		
1" Brace	16	1.00	0.04	2-ply 2x6	No		

Nodal Displacements (Extreme Rows Only)

Node	Result Case Name	DX	DY	DZ	RX	RY	RZ
		in	in	in	deg	deg	deg
012	.6D+W+X	1.51	-0.00	-0.60	0.02	-0.29	-0.79
047	.6D+W+X	1.51	0.17	0.02	0.19	-0.01	-0.52
052	.6D+W+X	1.51	-0.00	0.60	-0.02	-0.29	0.79
056	.6D+W+X	0.00	0.00	0.00	0.04	-0.27	-1.12
074	D+H+F+.75(W+L+S)+X	1.28	-0.23	0.61	0.04	0.02	-0.39
077	D+H+F+W+X	1.53	-0.03	0.02	0.21	0.00	-0.13
084	D+.75Sur+.75Wx+	1.01	-0.12	0.60	-0.05	-0.09	-0.22
084	D+Su	0.22	-0.23	0.00	-0.05	-0.05	-0.35
087	D+.75Sur+.75Wx+	1.01	-0.12	-0.60	0.04	0.09	0.22
090	.6D+W+X	1.55	0.08	-0.01	-0.05	0.15	0.56
090	.6D+W+X	1.51	-0.06	0.02	0.02	-0.03	0.53
096	D+H+F+W+X	1.53	0.03	-0.02	-0.21	-0.03	-0.13

Member Extreme Results

Member	Fx (lb)	Vy (lb)	Vz (lb)	Mx (lb)	My (lb)	Mz (lb)
	lb	lb	lb	lb-ft	lb-ft	lb-ft
M024	-2181.75 (49)	-505.26 (47)	-606.97 (56)	6.31 (54)	-237.06 (56)	-90.05 (49)
M004	163.54 (1)	327.17 (49)	380.96 (50)	29.23 (50)	538.79 (56)	428.35 (47)
M007	76.87 (57)	0.00 (44)	3.13 (56)	4.65 (49)	4.07 (55)	0.49 (54)
M007	1401.39 (47)	0.00 (1)	3.16 (1)	4.65 (49)	2.05 (54)	12.63 (47)
M002	-449.73 (49)	0.00 (50)	0.00 (1)	13.09 (47)	0.00 (1)	0.00 (1)
M009	0.00 (44)	0.00 (54)	0.00 (54)	-0.61 (51)	0.00 (54)	0.00 (54)
M009	-574.75 (47)	0.00 (50)	-0.00 (1)	-0.61 (51)	0.00 (1)	0.00 (1)
M009	16.21 (2)	0.00 (54)	0.00 (1)	13.09 (47)	0.00 (1)	0.00 (54)
M012	-851.37 (38)	-365.58 (47)	-295.41 (56)	-0.00 (1)	-121.11 (47)	-0.00 (1)
M012	1891.08 (49)	365.58 (47)	295.53 (47)	0.00 (49)	249.39 (47)	1893.38 (47)
M012	421.37 (47)	-1.98 (1)	0.00 (54)	-4.55 (1)	-0.00 (54)	-0.00 (49)
M013	95.74 (2)	1.98 (1)	0.00 (55)	9.57 (55)	0.00 (55)	0.78 (1)
M014	535.81 (49)	-1.98 (50)	0.00 (54)	-0.87 (56)	-0.00 (54)	-0.00 (50)
M014	956.62 (19)	1.98 (1)	0.00 (55)	4.85 (54)	0.00 (55)	0.00 (54)
M014	-2181.75 (49)	-1648.29 (39)	-327.17 (49)	-13.24 (54)	-223.13 (47)	-444.00 (39)
M018	236.28 (19)	932.59 (39)	299.70 (47)	64.63 (39)	39.16 (49)	1179.55 (39)
M022	-356.13 (2)	-6.01 (13)	-34.19 (56)	-1.11 (1)	-8.87 (19)	-72.31 (1)
M022	1327.31 (47)	1.43 (54)	84.35 (19)	21.82 (19)	93.32 (56)	-21.82 (56)
M022	-189.74 (49)	0.00 (54)	3.60 (54)	0.00 (54)	0.00 (54)	0.00 (54)
M023	1036.68 (19)	0.00 (47)	0.00 (19)	-0.67 (51)	0.00 (19)	0.00 (47)
M024	8.14 (47)	0.00 (56)	-0.00 (56)	-3.47 (56)	0.00 (56)	0.00 (56)
M024	-32.33 (51)	0.00 (54)	0.00 (54)	8.88 (49)	0.00 (54)	0.00 (54)
M026	-599.33 (19)	-417.73 (47)	-337.18 (47)	-0.00 (1)	-57.50 (56)	-374.18 (19)
M028	1891.10 (49)	316.61 (49)	495.37 (47)	0.49 (54)	494.90 (47)	1159.19 (47)
M029	-1324.22 (47)	-1.98 (56)	-0.00 (56)	-4.92 (19)	-0.00 (56)	-0.00 (19)
M029	-20.82 (51)	1.98 (54)	0.00 (54)	12.29 (54)	0.00 (54)	0.70 (54)
M030	-620.32 (49)	-1.98 (54)	0.00 (19)	45.40 (55)	0.00 (19)	0.00 (54)
M030	1763.32 (19)	1.98 (56)	0.00 (19)	13.49 (54)	0.00 (47)	0.00 (56)
M031	-2181.75 (49)	-1232.52 (39)	-327.17 (49)	-22.73 (54)	-215.42 (49)	-327.09 (39)
M034	354.47 (19)	455.21 (55)	284.84 (49)	55.55 (55)	34.08 (47)	1649.37 (55)
M038	-1334.49 (19)	-7.11 (55)	-42.92 (55)	-11.21 (54)	-131.60 (19)	-24.37 (19)
M038	-1226.10 (47)	-7.79 (54)	42.92 (54)	-13.14 (55)	-24.29 (55)	16.62 (55)

M039	-469.78 (54)	-0.00 (19)	-0.00 (54)	-10.55 (47)	-0.00 (54)	-0.00 (19)	
M039	526.39 (19)	0.00 (54)	0.00 (19)	-0.67 (51)	0.00 (19)	0.00 (54)	
M040	-379.78 (47)	-0.00 (19)	-0.00 (54)	-10.55 (19)	-0.00 (54)	-0.00 (19)	
M040	-32.33 (51)	0.00 (54)	0.00 (54)	9.88 (49)	0.00 (54)	0.00 (54)	
M044	0.62 (2)	-318.01 (49)	-387.74 (49)	-5.83 (19)	-569.14 (19)	-810.10 (19)	
M044	1851.08 (49)	393.11 (47)	569.14 (19)	1.51 (54)	545.81 (47)	899.39 (49)	
M045	-1447.61 (47)	-1.98 (55)	-0.00 (55)	-47.27 (19)	-0.00 (49)	-0.00 (19)	
M045	-20.82 (51)	1.98 (54)	-0.00 (19)	-9.78 (54)	0.00 (54)	0.00 (54)	
M046	-650.08 (54)	-1.98 (55)	-0.00 (19)	-23.61 (55)	-0.00 (19)	-0.00 (55)	
M046	1963.41 (19)	1.98 (54)	0.00 (54)	11.37 (54)	0.00 (54)	0.70 (54)	
M050	-2181.75 (49)	-562.08 (47)	-179.87 (55)	-407.16 (39)	-228.47 (49)	-1149.37 (39)	
M050	554.94 (55)	284.41 (49)	491.19 (55)	21.16 (39)	115.15 (2)	509.11 (55)	
M054	4137.74 (19)	-4.16 (19)	-15.22 (19)	-0.00 (54)	-52.79 (19)	-15.22 (19)	
M054	974.26 (41)	2.29 (54)	99.28 (55)	17.93 (55)	97.83 (55)	14.31 (54)	
M055	-622.78 (41)	-20.05 (55)	-15.01 (54)	-10.01 (54)	0.00 (55)	-5.00 (19)	
M055	-20.33 (51)	0.00 (54)	0.09 (54)	-0.24 (1)	0.00 (54)	0.00 (54)	
M055	-905.21 (41)	0.00 (19)	-0.00 (54)	-4.04 (19)	-0.00 (19)	-0.00 (19)	
M056	-32.33 (51)	0.00 (54)	0.00 (54)	11.05 (54)	0.00 (55)	0.00 (54)	
M056	-1338.26 (1)	-413.12 (54)	-361.43 (41)	-2.35 (19)	-466.53 (19)	-360.31 (19)	
M092	2909.33 (47)	317.71 (54)	523.87 (41)	-1.47 (54)	522.24 (41)	1168.90 (54)	
M095	1419.46 (41)	-1.98 (55)	-0.00 (19)	-24.50 (19)	-0.00 (19)	-0.00 (19)	
M101	-50.87 (51)	1.98 (54)	0.00 (54)	16.50 (54)	0.00 (54)	0.70 (54)	
M102	-753.38 (41)	-1.98 (1)	0.00 (54)	-0.13 (49)	-0.00 (54)	-0.00 (49)	
M102	-50.87 (51)	1.98 (1)	0.00 (19)	-0.45 (51)	0.00 (19)	0.70 (1)	
M106	-2181.75 (49)	-602.08 (41)	-471.13 (39)	-2.13 (39)	-113.13 (55)	-228.42 (49)	
M106	555.94 (55)	284.41 (49)	178.87 (55)	9.87 (54)	407.56 (39)	509.13 (55)	
M107	-449.49 (54)	-0.00 (19)	4.62 (54)	6.47 (54)	2.79 (54)	2.46 (1)	
M112	915.34 (54)	0.00 (54)	4.10 (55)	6.47 (47)	5.85 (55)	7.34 (55)	
M121	906.13 (41)	0.00 (19)	-0.00 (54)	-11.05 (54)	-0.00 (55)	-0.00 (19)	
M121	-32.33 (51)	0.00 (54)	0.00 (54)	5.84 (54)	0.00 (54)	0.00 (54)	
M122	532.81 (41)	0.00 (19)	0.00 (54)	0.78 (55)	-0.00 (54)	0.00 (19)	
M122	-32.33 (51)	0.00 (54)	0.00 (55)	-10.01 (54)	0.00 (55)	0.00 (54)	
M126	139.30 (57)	-382.66 (54)	-274.69 (41)	-0.00 (55)	-181.13 (41)	-141.01 (55)	
M126	313.04 (54)	-382.66 (54)	-274.69 (41)	-0.00 (1)	379.09 (41)	1092.21 (54)	
M027	-753.42 (41)	-1.98 (55)	-0.00 (54)	-11.37 (54)	-0.00 (54)	-0.00 (55)	
M027	50.87 (51)	1.98 (54)	0.00 (19)	9.15 (47)	0.00 (54)	0.70 (54)	
M028	-1419.46 (41)	-1.98 (55)	0.00 (19)	-15.96 (54)	-0.00 (19)	-0.00 (19)	
M028	-50.87 (51)	1.98 (54)	0.00 (54)	24.21 (54)	0.00 (54)	0.70 (54)	
M032	-2181.75 (49)	-1332.50 (39)	-284.47 (49)	-56.56 (55)	-194.10 (47)	-277.99 (39)	
M032	354.33 (19)	455.52 (55)	327.17 (49)	22.73 (54)	228.42 (49)	1649.61 (55)	
M035	-1137.73 (19)	-2.28 (54)	-69.23 (55)	-17.85 (55)	-92.73 (19)	-15.22 (19)	
M035	974.18 (41)	7.11 (13)	69.23 (55)	14.21 (54)	-135.15 (55)	16.96 (55)	
M103	-834.23 (47)	-0.00 (55)	-0.00 (54)	-9.85 (49)	-0.00 (54)	-0.00 (55)	
M103	-32.33 (51)	0.00 (54)	0.00 (55)	3.41 (1)	0.00 (55)	0.00 (54)	
M104	-449.74 (49)	-0.00 (47)	-0.00 (54)	0.67 (51)	-0.00 (47)	-0.00 (1)	
M104	1059.82 (19)	-0.00 (54)	0.00 (19)	16.39 (44)	0.00 (19)	0.00 (1)	

M108	0.00 (2)	-303.13 (41)	-669.17 (19)	-1.51 (54)	-849.17 (19)	-816.80 (19)	
M108	1891.08 (49)	318.61 (49)	787.72 (19)	1.51 (54)	545.53 (47)	929.29 (49)	
M109	-633.22 (49)	-1.98 (54)	-0.00 (55)	-13.46 (54)	-0.00 (47)	-0.00 (54)	
M109	1740.40 (19)	-1.98 (55)	0.00 (19)	40.47 (55)	-0.00 (55)	0.70 (55)	
M113	-1324.37 (47)	-1.98 (55)	-0.00 (55)	-12.39 (54)	-0.00 (55)	-0.00 (19)	
M113	-50.87 (51)	1.98 (54)	0.00 (54)	42.63 (19)	0.00 (54)	0.70 (54)	
M114	-2181.75 (49)	-505.26 (47)	-380.96 (50)	-53.24 (39)	-536.33 (55)	-90.15 (49)	
M114	163.54 (1)	327.17 (49)	867.20 (56)	6.31 (54)	237.13 (50)	428.35 (47)	
M114	350.33 (1)	-1.43 (54)	-54.37 (19)	-31.09 (19)	-0.00 (19)	-12.68 (19)	
M118	1677.27 (47)	5.01 (19)	35.33 (56)	8.87 (19)	99.33 (55)	22.17 (55)	
M119	-574.20 (47)	0.00 (54)	-0.00 (19)	-13.95 (47)	-0.00 (19)	-0.00 (55)	
M119	69.21 (55)	0.00 (54)	0.00 (49)	0.24 (55)	0.00 (43)	0.00 (54)	
M120	-449.73 (49)	-0.00 (54)	-0.00 (54)	0.67 (51)	-0.00 (54)	-0.00 (19)	
M120	314.61 (2)	0.00 (54)	0.00 (19)	13.05 (47)	0.00 (19)	0.00 (54)	
M124	-555.26 (19)	-495.43 (47)	-495.43 (47)	-0.49 (54)	-374.27 (19)	-149.93 (2)	
M124	1891.10 (49)	411.13 (47)	337.37 (47)	1.51 (50)	454.94 (47)	1164.95 (47)	
M125	635.54 (49)	0.00 (54)	-0.96 (56)	-4.98 (54)	0.00 (55)	0.00 (55)	
M125	955.69 (19)	1.98 (54)	0.00 (54)	37.68 (55)	0.00 (54)	0.70 (54)	
M128	1311.07 (47)	1.98 (54)	-0.00 (54)	-5.57 (49)	0.00 (19)	0.00 (54)	
M128	95.74 (55)	1.98 (55)	0.00 (55)	4.56 (19)	0.00 (54)	0.70 (55)	
M129	-1232.52 (49)	-2.57 (56)	-54.37 (19)	-31.09 (19)	-0.00 (19)	-12.68 (19)	
M129	1221.58 (2)	0.63 (54)	0.00 (54)	6.09 (19)	56.20 (56)	339.29 (19)	
M130	-2181.75 (49)	-485.50 (51)	-269.57 (41)	269.57 (41)	-219.76 (41)	-1704.74 (49)	
M130	853.79 (2)	196.23 (54)	0.00 (49)	11.88 (55)	234.48 (41)	253.93 (2)	
M131	-2202.99 (49)	-407.59 (47)	-315.59 (39)	-61.64 (50)	85.82 (2)	-1304.73 (49)	
M131	0.00 (2)	487.46 (54)	0.00 (49)	42.06 (41)	202.92 (55)	52.18 (55)	
M131	-2909.33 (47)	-292.35 (39)	-573.93 (2)	0.00 (49)	-121.91 (2)	-1704.73 (49)	
M132	307.74 (2)	-64.32 (55)	0.00 (49)	-199.26 (41)	-199.26 (41)	-135.45 (51)	
M132	-2655.07 (41)	-0.98 (47)	-0.00 (44)	-0.00 (47)	-0.00 (37)	-1704.72 (49)	
M133	-549.34 (19)	0.97 (50)	0.98 (19)	0.00 (55)	192.59 (55)	-125.40 (2)	
M133	-2909.62 (47)	-404.16 (54)	0.00 (49)	-200.49 (41)	-121.81 (55)	-1704.71 (49)	
M134	242.98 (19)	250.34 (50)	575.96 (55)	150.95 (41)	150.95 (41)	1149.45 (2)	
M134	-2262.66 (49)	-497.40 (54)	0.00 (49)	-42.05 (41)	-364.25 (41)	-1704.72 (49)	
M135	0.00 (2)	489.24 (50)	169.19 (49)	169.19 (49)	262.92 (2)	52.18 (55)	
M135	-2262.66 (49)	-196.23 (54)	-0.00 (49)	-11.88 (2)	-278.77 (41)	-1704.71 (49)	
M138	853.79 (2)	-404.59 (50)	1304.73 (49)	269.88 (41)	234.47 (41)	253.93 (55)	
M138	13.10 (51)	-392.37 (47)	-0.00 (55)	-20.31 (47)	-0.00 (49)	0.00 (1)	
M139	-741.24 (47)	-0.00 (47)	-0.00 (54)	0.96 (55)	-0.00 (2)	913.35 (47)	
M140	12.10 (51)	-392.37 (47)	0.00 (2)	-0.18 (55)	-0.00 (2)	0.00 (1)	
M141	621.24 (2)	116.87 (47)	0.00 (49)	20.21 (47)	0.00 (49)	1045.41 (55)	
M141	0.00 (1)	-1.79 (1)	-0.84 (1)	-0.00 (46)	-0.40 (1)	0.00 (1)	
M142	0.00 (1)	-1.79 (1)	-0.84 (1)	-0.00 (46)	-0.40 (1)	0.00 (1)	
M142	-342.51 (2)	-254.19 (49)	-0.00 (50)	-20.31 (47)	-0.00 (19)	-0.00 (55)	
M142	345.32 (2)	254.19 (49)	0.00 (50)	1.12 (51)	0.00 (50)	599.33 (49)	
M146	12.10 (51)	-254.19 (49)	-0.00 (19)	-11.84 (2)	0.00 (50)	0.00 (1)	
M146	621.24 (2)	116.87 (47)	0.00 (49)	16.63 (49)	0.00 (54)	599.33 (49)	
M147	0.00 (1)	-1.79 (54)	-0.84 (54)	-4.18 (1)	-0.42 (54)	-0.00 (54)	
M147	0.00 (1)	-1.79 (50)	0.84 (50)	23.18 (41)	0.00 (50)	0.00 (50)	
M148	-696.38 (19)	-254.19 (49)	-0.00 (19)	-22.21 (47)	-0.00 (19)	-271.92 (19)	
M148	315.31 (49)	333.99

DIVISION 15 - MECHANICAL

I. GENERAL

A. MECHANICAL WORK SHALL CONFORM TO THE FOLLOWING CODES:

1. ALL LOCAL CITY, COUNTY, AND STATE CODES
2. ABBC ASSOCIATE AIR BALANCE COUNCIL
3. ADC AIR DIFFUSION COUNCIL
4. AGA AMERICAN GAS ASSOCIATION
5. AHCA AIR HOVING AND CONTROL ASSOCIATION
6. ANSI AMERICAN NATIONAL STANDARDS INSTITUTE
7. ASHRAE AMERICAN SOCIETY OF HEATING, REFRIGERATION, AND AIR CONDITIONING ENGINEERS
8. ASHE AMERICAN SOCIETY OF MECHANICAL ENGINEERS
9. ASTM AMERICAN SOCIETY OF TESTING MATERIALS
10. AWHA AMERICAN WATER WORKS ASSOCIATION
11. NFPA NATIONAL FIRE PROTECTION ASSOCIATION
12. OSHA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
13. UL UNDERWRITERS' LABORATORIES
14. SMACNA SHEET METAL AND AIR CONDITIONING NATIONAL ASSOCIATION
15. GVI GAS VENT INSTITUTE, EDITION 10-A
16. IN CASE OF DIFFERENCES BETWEEN BUILDING CODES, SPECIFICATIONS, STATE LAWS, LOCAL ORDINANCES, INDUSTRY STANDARDS, UTILITY COMPANY REGULATIONS, AND THE CONTRACT DOCUMENTS, THE MOST STRINGENT SHALL GOVERN. SHOULD THE CONTRACTOR PERFORM ANY WORK THAT DOES NOT COMPLY WITH THE REQUIREMENTS OF THE APPLICABLE BUILDING CODES, SPECIFICATIONS, STATE LAWS, LOCAL ORDINANCES, INDUSTRY STANDARDS, AND ORDINANCES, INDUSTRY STANDARDS, AND UTILITY COMPANY REGULATIONS, SHE SHALL BEAR ALL COST ARISING IN CONNECTING THESE DEFICIENCIES.

B. UNLESS SPECIFICALLY DESIGNATED OTHERWISE, THIS CONTRACTOR SHALL FURNISH AND/OR INSTALL EACH AND EVERY ITEM OF EQUIPMENT SHOWN OR DESCRIBED, TOGETHER WITH ALL COMPONENTS AND INCIDENTALS (MATERIAL LABOR, FEES, TRANSPORTATION, TOOLS, STORAGE, CUTTING PATCHING, TRENCHING, CLEAN-UP, ETC.) NECESSARY TO COMPLETE THE WORK WITH NO ADDITIONAL EXPENSE TO OWNER.

C. LOCATIONS, QUANTITIES AND OTHER MEASUREMENTS OF THE BUILDING AND EQUIPMENT ARE OFFERED AS A GENERAL GUIDE ONLY, WITHOUT GUARANTEE AS TO COMPLETE ACCURACY. THE CONTRACTOR SHALL EXAMINE THE DRAWINGS AND EQUIPMENT AND VERIFY (TO HIS OWN SATISFACTION) ALL CONDITIONS AND THEIR RELATIONS AND EFFECT REQUIRED FOR A COMPLETE AND CORRECTLY OPERATING MECHANICAL SYSTEM.

D. EACH CONTRACTOR SHALL VISIT THE SITE, ASCERTAIN THE CONDITIONS TO BE MET THEREIN IN INSTALLING THE WORK, AND MAKE DUE PROVISIONS FOR SAME IN HIS BID SUM. FAILURE TO COMPLY WITH THIS REQUIREMENT SHALL NOT BE CONSIDERED AS JUSTIFICATION FOR THE OMISSION OF WORK, FAULTY WORK OR FOR PAYMENT OF EXTRA COMPENSATION.

E. WHERE THE PRODUCT OF A SINGLE MANUFACTURER'S NAME IS GIVEN, NO SUBSTITUTIONS SHALL BE CONSIDERED OR ACCEPTED.

F. AT ALL TIMES, TAKE CARE TO PROTECT APPARATUS FROM DAMAGE. ADEQUATELY PROTECT STORED APPARATUS AT THE SITE. PROVIDE TARPAULINS OR OTHER PROTECTION COVERING AS REQUIRED TO THE SATISFACTION OF THE OWNER.

G. LOCATE ALL EQUIPMENT, FIXTURES, PIPING, DUCTWORK, ETC., APPROXIMATELY AS SHOWN IN GENERAL LOCATION SHOWN, BUT CONFORM TO ALL STRUCTURAL AND FINISH CONDITIONS OF BUILDING. REFER TO ARCHITECTURAL/STRUCTURAL DRAWINGS AND COORDINATE WITH GENERAL CONTRACTOR PRIOR TO STARTING WORK. CONTRACTOR SHALL PROVIDE ADDITIONAL SUPPORTS, HANGERS, OPENINGS, ETC., AS REQUIRED FOR A COMPLETE INSTALLATION. CONTRACTOR SHALL COORDINATE ALL CLEARANCES, LOCATIONS, AND REQUIREMENTS WITH OTHER TRADES AS REQUIRED. ALL EQUIPMENT SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS, IN FULL ACCORDANCE WITH ALL APPLICABLE CODES HAVING JURISDICTION.

H. COOPERATE WITH OTHER CONTRACTORS TO KEEP THE AREA CLEAN AND FREE OF UNNECESSARY MATERIALS OR DEBRIS. WHEN WORK IS COMPLETE, REMOVE ALL TOOLS, SCAFFOLDING, MACHINERY, AND DEBRIS. BROOM SWEEP THE AREA.

I. COOPERATE WITH THE OWNER AND GENERAL CONTRACTOR TO MEET CONSTRUCTION SCHEDULES. COOPERATE IN ESTABLISHING THESE SCHEDULES AND AVOID DELAYING OTHER CONTRACTORS.

J. PREPARE AS-BUILT DRAWINGS INDICATING ACTUAL ROUTINGS OF UNDERSLAB PIPING INCLUDING LABELING OF EACH LINE SHOWING SIZE, SERVICE, VALVE LOCATIONS, ETC.

K. IDENTIFY EACH MECHANICAL EQUIPMENT, ETC., WITH AN ENGRAVED PLASTIC LABEL STATING NUMBER, SERVICE, LOCATION, ETC.

L. AT TIME OF FINAL INSPECTION, TEST ALL CONNECTIONS, OPERATION OF ALL EQUIPMENT, ETC., ALL EQUIPMENT, AND SYSTEMS SHALL BE DEMONSTRATED TO PERFORM PROPERLY.

M. THIS CONTRACTOR WARRANTS TO THE OWNER ALL LABOR AND MATERIALS FURNISHED UNDER THIS CONTRACT FOR A PERIOD OF ONE (1) YEAR FOLLOWING DATE OF RECEIPT OF SATISFACTORY ACCEPTANCE. CONTRACTOR SHALL WARRANT TO REPAIR ALL DEFECTS IN MATERIAL.

N. ANY OMISSIONS OR ERRORS FOUND BY THE CONTRACTOR SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT SO THAT AN ADDENDUM MAY BE ISSUED BEFORE BIDDING. ANY OMISSIONS OR ERRORS FOUND AFTER BIDDING WILL BE AT THE EXPENSE OF THE CONTRACTOR.

II. HEATING, AIR CONDITIONING AND VENTILATION

A. SCOPE OF WORK

1. PROVIDE ALL LABOR, MATERIALS, EQUIPMENT, FEES AND PERMITS, AND PAY ALL COSTS CONNECTED WITH THE INSTALLATION OF COMPLETE HEATING AND AIR CONDITIONING SYSTEMS.
2. IT IS THE INTENT OF THIS SPECIFICATION AND OF THE PLANS TO PROVIDE COMPLETE INSTALLATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FURNISH ALL ITEMS OF MATERIAL AND LABOR AND ALL OTHER COSTS TO COMPLETE THE CONTRACT WITHIN THE INTENT OF THIS SPECIFICATION AND THE PLANS EVEN THOUGH EACH AND EVERY ITEM NECESSARY IS NOT SPECIFICALLY MENTIONED OR SHOWN.
3. SUBMIT SHOP DRAWINGS AND/OR MANUFACTURER'S BROCHURES ON AIR CONDITIONING EQUIPMENT, EXHAUST FANS, AIR DEVICES, AND VENTILATORS.
4. WORK INCLUDED BUT NOT INCLUSIVE: THE MECHANICAL HVAC SYSTEM REQUIRED FOR THIS WORK AS INDICATED ON THE DRAWINGS AND INCLUDES, BUT IS NOT LIMITED TO:
   a. PACKAGE ROOFTOP HVAC UNITS, INCLUDING PRE-FAB FACTORY CURBS, STARTERS, SMOKE DETECTORS, ETC., COMPLETE WITH ALL SPECIALTIES.
   b. SPLIT-SYSTEM HVAC UNITS, INCLUDING CONDENSING UNITS, DX COILS, AIR HANDLING UNITS, REFRIGERANT PIPING, ETC., COMPLETE WITH ALL SPECIALTIES.
   c. EXHAUST FANS, MAKE-UP FANS, INCLUDING PRE-FAB FACTORY CURBS, STARTERS, ETC., COMPLETE WITH ALL SPECIALTIES.
   d. INSTALLATION OF ALL OWNER FURNISHED EQUIPMENT AND ALL KITCHEN EXHAUST HOOD.
   e. ALL SUPPLY, RETURN, MAKE-UP, VENTILATION, AND EXHAUST DUCTWORK, INCLUDING DISTRIBUTION, DAMPERS, PLENUMS, TURNING VANES, GRILLES, REGISTERS, AND DIFFUSERS.
   f. TEMPERATURE CONTROL SYSTEM AND 24V WIRING.
   g. THERMAL AND ACOUSTIC INSULATION OF DUCTS.
   h. INSPECTION, TESTING, AND BALANCING OF HVAC.
   i. VIBRATION ISOLATION DEVICES

B. MATERIALS AND WORKMANSHIP

1. AIR CONDITIONING EQUIPMENT:
   a. AIR CONDITIONING EQUIPMENT SHALL BE OF CAPACITIES, CHARACTERISTICS, SIZE, ETC., AS INDICATED AND SCHEDULED ON THE DRAWINGS.
   b. COOLING SECTION SHALL INCLUDE REFRIGERATION COMPRESSOR, COOLING COILS, CONDENSATE COILS, CONDENSER, FAN, REFRIGERANT PIPING SYSTEM, CONTROLS, ETC.
   c. HEATING SECTIONS AND ACCESSORIES SHALL BE AS SCHEDULED.
   d. UNITS SHALL BE COMPLETE WITH THERMOSTAT (HEAT/COOL/OFF/FAN/ON/AUTO). LOCATE AS INDICATED ON PLANS.
2. EXHAUST FANS AND MAKE-UP FANS:
   a. EXHAUST AND MAKE-UP FANS SHALL BE OF CAPACITIES, CHARACTERISTICS, SIZES, ETC., AS INDICATED AND SCHEDULED ON THE DRAWINGS.
   b. EACH FAN SHALL BE AMCA RATED AND COMPLETE WITH MOTOR, DRIVE, AND ACCESSORIES AS SCHEDULED ON THE DRAWINGS.
3. DUCTWORK AND PLENUMS:
   a. DUCTS AND PLENUMS SHALL BE FABRICATED IN ACCORDANCE WITH THE LATEST EDITION OF THE ASHRAE GUIDE AND SMACNA MANUAL.
   b. AIR CONDITIONING DUCTWORK SHALL BE LOCK FORMING GRADE GALVANIZED SHEETMETAL, MANUFACTURED AND INSTALLED IN ACCORDANCE WITH THE LATEST EDITION OF THE SMACNA MANUAL AND LOW VELOCITY SYSTEM.
   c. ALL GREASE LADEN EXHAUST DUCTWORK FROM KITCHEN HOODS SHALL BE 16 GAUGE BLACK STEEL. ALL DISHWASHER EXHAUST DUCTWORK SHALL BE 16 GAUGE STAINLESS STEEL. ALL SEAMS AND JOINTS SHALL HAVE LIQUID TIGHT WELDS. PROVIDE ACCESS DOORS AT ALL ELBOWS FOR CLEANING PURPOSES, AVOID TRAPS AND SLOPE DUCTWORK TOWARD KITCHEN HOOD.
   d. IN EACH SQUARE ELBOW PROVIDE AIR-FOIL PATTERN DOUBLE THICKNESS TURNING VANES. TURNING VANES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SMACNA MANUAL.
   e. AT EACH BRANCH DUCT FROM MAIN, PROVIDE A SPLITTER DAMPER CONSISTING OF BLADE ON A SQUARE OPERATING ROD FITTED WITH AN ADJUSTING DEVICE. UNLESS OTHERWISE INDICATED ON THE PLANS, THE ADJUSTING DEVICES LOCATED IN FINISHED CEILINGS SHALL BE VENTFABRICS, INC. NO. 666, WITH THE ADJUSTING DEVICE SECURELY FASTENED TO THE FURRING AND CEILING AND COVER SHALL BE PAINTED TO MATCH CEILING. WHERE SPLITTERS OCCUR ABOVE REMOVABLE CEILING, THE DAMPER QUADRANT SHALL BE ABOVE THE CEILING AGAINST THE DUCT AND SHALL BE VENTFABRICS, INC. NO. 637.
   f. AT EACH DUCT OR PLENUM CONNECTION TO FANS OR AIR UNITS, PROVIDE A FLEXIBLE CONNECTION OF VENTFABRICS, 'VENTGLASS' (30 oz) INSTALLED WITH 1-1/2" SLACK TO RENDER IT FLEXIBLE.
   g. AT EACH ROUND DUCT TAP-OFF FROM MAIN, DUCTWORK SHALL BE EQUIVALENT TO THERMOFLEX TO BELL MOUTH THRU-IN CONNECTIONS WITH INTEGRAL DAMPER.
   h. FLEXIBLE INSULATED METAL DUCT SHALL BE SELF SUPPORTING, SPIRAL ALUMINUM, CORRUGATED, WITH 1" THICK INSULATION EQUAL TO CLEVAFORT SFV.
4. CEILING DIFFUSERS, RETURN GRILLES
   a. SIZE AS INDICATED ON THE DRAWINGS EQUAL TO TITUS AS SCHEDULED ON THE DRAWINGS.
5. DUCT INSULATION (ABOVE CEILING SPACE)
   a. INSULATION SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS AND BY MECHANICS SKILLED AND PERMANENTLY ENGAGED IN INSULATING. UNSIGHTLY WORK SHALL BE JUST CAUSE FOR REJECTION.
      1. SUPPLY, RETURN AND OUTSIDE AIR1 2" THICK, 3/4 LB. DENSITY FOIL BACKED FIBERGLASS WRAPPED WITH VAPOR SEALED JOINTS.
      2. INSULATION OF ALL DUCTWORK WHICH INCLUDES ALL SUPPLY AIR DUCTWORK, ALL MAKE-UP/OUTSIDE AIR DUCTWORK, ALL RETURN AIR DUCTWORK, AND THE BACKS OF ALL DIFFUSERS. ALL APPARATUS CASINGS SHALL BE ACOUSTICALLY LINED.
6. ELECTRICAL:
   a. STARTERS, CONTROLLERS AND RELAYS THAT ARE PART OF THE DIVISION 15 EQUIPMENT ARE PROVIDED BY EQUIPMENT SUPPLIERS, ELECTRICAL CONTRACTORS OR OTHERS. VERIFY WITH EQUIPMENT SPECIFICS IN CONTRACT DOCUMENTS FOR ADDITIONAL INFORMATION. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ELEMENTS OF INSTALLATION, INCLUDING ALL WIRING, ETC.
7. TEST AND BALANCE:
   a. MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR BALANCING ENTIRE HVAC SYSTEM (DUCTS, DIFFUSERS, RETURN AIR, F.A. DAMPERS FAN RPMS, EXHAUST AND SUPPLY FANS) PER AIR BALANCE SCHEDULE FOUND WITHIN THESE DOCUMENTS. WHEN PROPERLY BALANCED, FIX AND MARK DAMPER SETTINGS ON EACH PIECE OF EQUIPMENT. NOTIFY STORE OWNER AND MANAGER THAT IT WILL BE THEIR RESPONSIBILITY TO SET MANUAL HVAC FAN SWITCH ON THERMOSTAT TO "ON" POSITION WHEN HOOD EXHAUST FANS ARE TURNED ON.
      A.A.B.C. OR N.E.B.B. CERTIFIED AIR BALANCE SPECIALITY CONTRACTOR IS RECOMMENDED TO PERFORM THE AIR BALANCE AND CREATE A REPORT FOR ENGINEER'S REVIEW.

III. PLUMBING

A. SCOPE OF WORK:

1. PROVIDE ALL MATERIALS, EQUIPMENT, LABOR, FEES AND PERMITS, AND PAY ALL COSTS CONNECTED WITH THE INSTALLATION OF COMPLETE PLUMBING SYSTEMS AND AS SHOWN ON PLANS AND AS HEREINAFTER SPECIFIED.
2. IT IS THE INTENT OF THIS SPECIFICATION AND OF THE PLANS TO PROVIDE COMPLETE INSTALLATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FURNISH ALL ITEMS OF MATERIAL AND LABOR AND ALL OTHER COSTS TO COMPLETE THE CONTRACT WITHIN THE INTENT OF THIS SPECIFICATION AND THE PLANS EVEN THOUGH EACH AND EVERY ITEM NECESSARY IS NOT SPECIFICALLY MENTIONED OR SHOWN.
3. SUBMIT MANUFACTURER'S BROCHURES ON PLUMBING FIXTURES TO THE ARCHITECT / ENGINEER FOR APPROVAL.
4. WORK INCLUDED BUT NOT INCLUSIVE: THE PLUMBING SYSTEM REQUIRED FOR THIS WORK AS INDICATED ON THE DRAWINGS AND INCLUDES, BUT IS NOT LIMITED TO:
   a. DOMESTIC COLD WATER SYSTEM, INCLUDING DISTRIBUTION AND BACKFLOW PREVENTION, AS REQUIRED BY CODE AND CONNECTION TO WATER MAIN.
   b. DOMESTIC HOT WATER SYSTEM, INCLUDING WATER HEATER, CIRCULATING PUMPS AND DISTRIBUTION.
   c. SANITARY SEWER SYSTEM, INCLUDING DISTRIBUTION AND CONNECT TO SANITARY SEWER MAIN AND GREASE TRAP.
   d. NATURAL GAS SYSTEM, INCLUDING DISTRIBUTION, METER, AND CONNECTION TO GAS MAIN.
   e. CORROSION PROTECTION FOR ALL PIPING SYSTEMS.
   f. PLUMBING FIXTURES AND TRIM, INCLUDING FURNISHING, SETTING, AND FINAL CONNECTIONS.
   g. NOT USED
   h. GAS AND CONDENSATE DRAIN CONNECTIONS TO ALL AIR CONDITIONING EQUIPMENT.
   i. THERMAL INSULATION OF PIPING.
   j. ROUGH-IN AND FINAL CONNECTIONS FOR OWNER FURNISHED EQUIPMENT AND EQUIPMENT FURNISHED BY OTHER TRADES.
   k. ALL PERMITS AND FEES.
   L. INSPECTION AND TESTING.

B. MATERIALS AND WORKMANSHIP

1. UTILITY CONNECTIONS:
   a. THIS CONTRACTOR SHALL, BEFORE COMMENCEMENT OF THE PROJECT, VERIFY THE LOCATION, DEPTH, SIZE, AND PRESSURE OR GRADE OF ALL UTILITY LINES TO WHICH HE IS TO MAKE CONNECTIONS FOR SERVICE. IF, FOR ANY REASON, CONDITIONS APPEAR THAT WILL ADVERSELY AFFECT THE PROPER INSTALLATION AND OPERATION OF THE SYSTEMS, SUCH CONDITIONS SHALL BE REPORTED TO THE ARCHITECT IN WRITING FOR HIS DECISION.
   b. ALL CHARGES FOR CONNECTIONS TO UTILITY SERVICES AND COST FOR CUTTING AND PATCHING OF PAVING, SIDEWALKS, WALLS, ETC., REQUIRED FOR THE SERVICES SHALL BE INCLUDED IN THE BID.
2. SANITARY SEWER SYSTEM AND CONDENSATE DRAIN
   a. FURNISH AND INSTALL A COMPLETE SANITARY SYSTEM OF SOIL, WASTE, AND VENT PIPING FOR ALL FIXTURES, DRAINS, EQUIPMENT DISCHARGES, ETC. AS SHOWN ON THE DRAWINGS AND/OR HEREINAFTER SPECIFIED. ALL PIPING SHALL RUN STRAIGHT AS POSSIBLE AND INSTALLED TO BE GRADE 1/4" PER FOOT MINIMUM.
   b. UNLESS OTHERWISE NOTED ON THE PLANS, ALL SANITARY SYSTEM SOIL, WASTE, AND VENT PIPING SHALL BE ASPHALTUM COATED SERVICE WEIGHT CAST IRON SOIL PIPE AND FITTINGS. JOINTS SHALL BE MADE WITH "TY-SEAL" DOUBLE SEAL NEOPRENE GASKETS AND "LUBRIFAST" COMPOUND. THE CONTRACTOR SHALL INSTALL ALL UNDERGROUND SANITARY WITH LEAD AND OAKUM JOINTS. CAULKING LEAD DEPTH SHALL NOT BE LESS THAN 1". AT THE CONTRACTOR'S OPTION, AND WHERE ALLOWED BY LOCAL CODE, THE SANITARY SYSTEM MAY BE CONSTRUCTED OF PVC PIPING (DWV GRADE) AND "DRAINAGE WASTE" FITTINGS. INSTALL THE SYSTEM IN ACCORDANCE WITH THE LOCAL CODE.
   c. SANITARY VENTS SHALL EXTEND 18" ABOVE ROOF. FLASH SANITARY VENTS WITH A FABRICATED WATERPROOFING FLASHING CONSISTING OF A BASE AND A RISER SLEEVE ALL MADE OF 4 LB SHEET LEAD. JOINTS AND SEAMS OF FABRICATED FLASHINGS SHALL BE WELDED. FLASHING BASE SHALL EXTEND OVER THE ROOF 12" FROM THE STACK. DRESS THE FLASHING RISER OVER TOP OF AND DOWN INTO THE VENT STACK FOR A RAINTIGHT LEAKPROOF INSTALLATION.
      (FLASH WITH ROOFING MANUFACTURER ACCESSORIES TO MAINTAIN WARRANTY ON PENETRATIONS.)
   d. PROVIDE CLEANOUTS WHERE INDICATED ON THE PLANS AND AS REQUIRED FOR SNAKING OF THE SANITARY SYSTEM PIPING. ADJUST CLEANOUT BODIES TO HAVE THE ACCESS COVER TOP SURFACE FLUSH WITH FINISH FLOOR. CLEANOUT SPACING IN STRAIGHT PIPE LENGTHS SHALL NOT EXCEED 50' INSIDE AND 100' OUTSIDE.
   e. EXPOSED PIPE CONNECTIONS TO WASTE STACKS LOCATED IN TOILETS AND OTHER FINISHED SPACES SHALL BE CHROME PLATED.
   f. PROVIDE CONDENSATE DRAIN PIPING FOR THE A/C UNITS AS INDICATED ON THE PLANS AND AS REQUIRED. PIPING SHALL BE TYPE M HARD COPPER WITH CAST BRASS DRAINAGE FITTINGS. MAKE JOINTS WITH 50/50 SOLDER.
3. GREASE TRAP: (IF LOCATED ON FLOOR PLANS)
   a. FURNISH AND INSTALL GREASE TRAP AS DETAILED ON THE DRAWINGS.
   b. PROVIDE BASIN EXTENSION AS REQUIRED FOR COVER TO BE FLUSH WITH FINAL FINISH GRADE.
4. FLOOR DRAINS:
   a. INSTALL FLOOR DRAINS SO THAT THE TOP OF DRAIN IS FLUSH WITH FINISH FLOOR (QUARRY TILE OR CONCRETE). SLOPE TO DRAIN SHALL BE IN ACCORDANCE WITH THE FOUNDATION PLAN.
   b. SHALL BE OF CAPACITIES, CHARACTERISTICS, SIZES, ETC., AS INDICATED AND SCHEDULED ON THE DRAWINGS.
5. GAS SYSTEM:
   a. FURNISH AND INSTALL A COMPLETE OF GAS PIPING AS INDICATED ON THE PLANS AND AS SPECIFIED.
   b. GAS PIPING SHALL BE STANDARD WEIGHT BLACK STEEL PIPE. ALL INTERMEDIATE GAS PRESSURE PIPE AND ALL PIPE 2 1/2" AND LARGER SHALL HAVE WELDED JOINTS. FITTINGS 1-1/2" AND SMALLER SHALL BE STANDARD WEIGHT MALLEABLE IRON SCREWED. FITTINGS 2" AND LARGER SHALL BE "TUBE-TURN" OR EQUAL. STANDARD WEIGHT FORGED STEEL WELD FITTINGS. SCREW THREAD JOINTS SHALL BE MADE WITH AN APPROVED THREAD COMPOUND. DOMESTIC MANUFACTURED.
   c. ALL EQUIPMENT CONNECTIONS SHALL BE PRECEDED BY A MANUAL STOP COCK. GAS COCK 2" AND SMALLER SHALL BE CRANE COMPANY NO. 1228.
   d. PROVIDE SWING CONNECTIONS THROUGHOUT THE SYSTEM TO ALLOW FOR ADEQUATE HORIZONTAL AND VERTICAL EXPANSION AND CONTRACTION. UNIONS OF COMPANION FLANGES SHALL BE PROVIDED FOR REMOVAL OF EQUIPMENT.
6. WATER SYSTEM:
   a. FURNISH AND INSTALL A COMPLETE WATER SYSTEM WITH BRANCH LINES, SERVICING ALL PLUMBING FIXTURES, FAUCETS, EQUIPMENT, ETC., AS INDICATED ON THE PLANS AND HEREIN SPECIFIED.
   b. ALL WATER PIPING LOCATED ABOVE GRADE 2-1/2" AND SMALLER SHALL BE TYPE L HARD COPPER TUBING WITH ASA B16.22 WROUGHT COPPER FITTINGS. JOINTS SHALL BE MADE WITH LEAD FREE SOLDER. WATER PIPING LOCATED BELOW GRADE SHALL BE TYPE L SOFT COPPER. THERE SHALL BE NO JOINTS IN TUBING LOCATED UNDER THE SLAB.
   c. PIPING SHALL BE INSTALLED WITH A GRADE FOR DRAINAGE TOWARD MAIN SUPPLY RISERS AND TO FIXTURE CONNECTIONS TO ALLOW COMPLETE DRAINAGE OF THE SYSTEM.
   d. WATER SYSTEM SHALL BE STERILIZED WITH A SOLUTION IN ACCORDANCE WITH THE REQUIREMENTS OF THE STATE PUBLIC HEALTH DEPARTMENT. PUMP THE WTH SOLUTION INTO THE WATER SYSTEM AND FILL THE COMPLETE SYSTEM, INCLUDING BRANCH PIPES. EACH OUTLET SHALL BE PURGED OF AIR DURING THE STERIALIZATION PROCESS.
   e. AT EACH FIXTURE FAUCET PROVIDE A STOP VALVE IN EACH SUPPLY. STOP VALVES SHALL BE IN ACCORDANCE WITH PLUMBING CODE. INSTALL AIR CHAMBERS 18-6" MINIMUM HEIGHT AT ALL CONNECTIONS.
   f. ALL HORIZONTAL RUNS OF PIPING SHALL BE SUSPENDED FROM THE STRUCTURAL MEMBERS ABOVE BY MEANS OF APPROVED HANGERS. SUPPORTS AND HANGERS SHALL BE INSTALLED TO PERMIT FREE EXPANSION AND CONTRACTION IN THE PIPING SYSTEM.
   g. PROVIDE ACCESS DOORS AS REQUIRED FOR ACCESS TO ALL VALVES BEHIND GYPSUM BOARD CEILINGS AND WALLS. PAINT TO MATCH.
   h. INSTALL CHECK VALVES IN THE HOT AND COLD WATER BRANCHES TO MIXING TYPE FAUCETS FOR MIXING VALVES.
   i. PROVIDE A WATER METER AND A WATER MAIN TAP OF SIZE INDICATED ON THE PLANS. METER AND TAP SHALL BE IN ACCORDANCE WITH WATER DEPARTMENT REQUIREMENTS. (AS REQUIRED)
7. INSULATION:
   a. INSULATION OF ALL HOT AND COLD WATER PIPING WITHIN THE BUILDING, ALL CONDENSATE DRAIN PIPING, EXCEPT FOR DRAIN LINES ABOVE THE ROOF
   b. INSULATION TYPE:
      1. DOMESTIC COLD AND HOT WATER - 1" MOLDED FIBERGLASS WITH FIRE RESISTANT JACKET. ELBOW AND FITTINGS FILL THE SAME THICKNESS TO 12" AT COLD WATER
      2. REFRIGERANT - SAME AS DOMESTIC WATER.
      3. CONDENSATE DRAIN - 1/2" ARMAFLEX.
      4. ROOF AND OVERFLOW DRAINS - HORIZONTAL RUN ONLY: SAME AS DOMESTIC WATER.
8. PLUMBING FIXTURES:
   a. PLUMBING FIXTURES SHALL BE OF CAPACITIES, CHARACTERISTICS, SIZES, ETC., AS INDICATED AND SCHEDULED ON THE DRAWINGS.
9. WATER HEATERS:
   a. WATER HEATER SHALL BE OF CAPACITIES, CHARACTERISTICS, SIZES, ETC., AS INDICATED AND SCHEDULED ON THE DRAWINGS.
   b. FLUE PIPE SHALL BE DOUBLE WALL, INSULATED, FROM DOWNDRAFT DIVERTER TO THE POINT OF TERMINATION ABOVE THE ROOF, INCLUDING FLUE CAP.
10. TESTS AND INSPECTIONS:
   a. WASTE AND VENT PIPING SHALL BE TESTED ON COMPLETION OF THE ROUGH WORK AND BEFORE FIXTURES AND TRAPS ARE CONNECTED. ALL OPENINGS, EXCEPT HIGHEST VENTS, ARE TO BE PLUGGED AND THE SYSTEM COMPLETELY TESTED WITH WATER. SYSTEM SHALL STAND WITHOUT LEAKS OR LOSS OF WATER FOR A PERIOD OF NOT LESS THAN FOUR (4) HOURS.
   b. ALL WATER PIPING SHALL BE PRESSURIZED HYDRAULICALLY AT 150 POUNDS PER SQUARE INCH AND THIS PRESSURE SHALL BE HELD WITHOUT ADDITIONAL PRESSURIZATION FOR NOT LESS THAN ONE (1) HOUR. EQUIPMENT, ETC., IN THE SYSTEM THAT MAY BE DAMAGED BY THIS PRESSURE SHALL BE ISOLATED OR DISCONNECTED FROM THE SYSTEM.
   c. GAS PIPING SHALL BE TESTED WITH AIR PRESSURE BY MERCURY GAUGE TO A PRESSURE EQUAL TO 10" MERCURY COLUMN FOR A PERIOD OF FOUR (4) HOURS. SYSTEM SHALL HOLD THE PRESSURE WITHOUT RE-PRESSURIZATION.

IV. FIRE PROTECTION

A. SCOPE OF WORK:

1. PROVIDE ALL MATERIALS, EQUIPMENT, LABOR FEES AND PERMITS, AND PAY ALL OTHER COSTS CONNECTED WITH THE INSTALLATION OF COMPLETE SYSTEMS AS SHOWN ON PLANS AND AS HEREINAFTER SPECIFIED.
2. IT IS THE INTENT OF THIS SPECIFICATION AND OF THE PLANS TO PROVIDE COMPLETE INSTALLATIONS. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO FURNISH ALL ITEMS OF MATERIAL AND LABOR AND ALL OTHER COSTS TO COMPLETE THE CONTRACT WITHIN THE INTENT OF THIS SPECIFICATION AND THE PLANS EVEN THOUGH EACH AND EVERY ITEM NECESSARY IS NOT SPECIFICALLY MENTIONED OR SHOWN.
3. SUBMIT MANUFACTURER'S BROCHURES ON FIXTURES TO THE ARCHITECT/ENGINEER FOR APPROVAL AND ALL SHOP DRAWINGS SHALL BE APPROVED PER STATE AND LOCAL AUTHORITIES.
4. WORK INCLUDED, BUT NOT INCLUSIVE: THE FIRE PROTECTION SYSTEM REQUIRED FOR THIS WORK AS INDICATED ON THE DRAWINGS AND INCLUDES, BUT IS NOT LIMITED TO:
   a. COMPLETE BUILDING FIRE PROTECTION SYSTEM, INCLUDING DISTRIBUTION AND CONNECTION TO WATER MAIN.
   b. ALL PERMITS AND FEES.
   c. INSPECTION AND TESTING.
5. FIRE PROTECTION SYSTEM SHALL BE IN FULL ACCORDANCE WITH NFPA BULLETINS, GOVERNING INSURANCE CODES, AND OWNER'S INSURANCE REQUIREMENTS.

V. EXISTING BUILDING CONSTRUCTION

A. EXISTING CONDITIONS:

1. CONTRACTOR SHALL VISIT THE JOBSITE PRIOR TO BIDDING AND FIELD VERIFY EXTENT OF WORK AND EXACT LOCATIONS/CONDITIONS OF ALL EXISTING CONSTRUCTION, STRUCTURAL, CLEARANCES, ELEVATIONS, SERVICE POINTS, ETC., AND REQUIRED FOR A COMPLETE AND CORRECTLY OPERATING SYSTEM. CONTRACTOR SHALL COORDINATE WITH GENERAL CONTRACTOR, OWNER REP., AND LANDLORD REP., AND REPORT ANY CONFLICTS OR PROBLEMS WHICH MAY ARISE PRIOR TO LOCATING AND INSTALLING ANY EQUIPMENT OR FIXTURES. CONTRACTOR SHALL INCLUDE ALL COSTS IN HIS BID WITH NO ADDITIONAL EXPENSE TO OWNER.
2. RELOCATE ALL EXISTING DUCTWORK, PIPING, OR EQUIPMENT AS SHOWN AND AS REQUIRED TO ACCOMMODATE THE NEW CONSTRUCTION WHETHER OR NOT THE EXISTING MATERIAL IS SHOWN ON THE DRAWINGS.
3. CONTRACTOR SHALL COORDINATE ALL CUTTING AND PATCHING OF EXISTING WALLS, FLOORS AND ROOF AS REQUIRED FOR HIS WORK WITH GENERAL CONTRACTOR.

DIVISION 16 - ELECTRICAL

I. GENERAL

A. SCOPE OF WORK:

1. THE ELECTRICAL WORK SHALL COVER THE FURNISHING OF ALL EQUIPMENT AND MATERIALS, THE PERFORMANCE OF ALL LABOR AND SUPERVISION, AS NECESSARY FOR THE SATISFACTORY COMPLETION OF ALL WORK READY FOR OPERATION AS DESCRIBED HEREIN AND/OR AS SHOWN ON THE DRAWINGS.
2. THE CONTRACTOR SHALL VISIT THE PREMISES TO THOROUGHLY FAMILIARIZE HIMSELF WITH ALL THE DETAILS OF THE WORK AND WORKING CONDITIONS, TO VERIFY ALL DIMENSIONS IN THE FIELD, AND SHALL ADVISE THE ARCHITECT/ENGINEER AND THE OWNER OF ANY DISCREPANCY BEFORE PERFORMING ANY WORK.

B. CODES:

1. THE INSTALLATION SHALL COMPLY WITH THE NFPA LIFE SAFETY CODE, THE NATIONAL ELECTRICAL CODE, AND ALL LOCAL AND STATE BUILDING CODES.

C. TESTS:

1. UPON COMPLETION OF THE WORK, THE SYSTEM SHALL BE TESTED FOR CONTINUITY, AND GROUND AND SHALL BE PROVEN TO PROVIDE COMPLETE SATISFACTORY OPERATION IN ACCORDANCE WITH THE REQUIREMENTS OF THE DRAWINGS AND SPECIFICATIONS AS APPROVED BY THE OWNER.

D. GUARANTEE:

1. THE CONTRACTOR SHALL GUARANTEE THE ENTIRE SYSTEM INSTALLED BY HIM AND REPLACE WITHOUT ADDITIONAL CHARGE ALL WORK OR MATERIAL WHICH MAY DEVELOP DEFECTS, ORDINARY WEAR AND TEAR OR DAMAGE FOR A PERIOD OF ONE (1) YEAR FROM THE DATE OF FINAL ACCEPTANCE.

II. MATERIALS

A. WIRE AND CABLES:

1. CONDUCTORS SHALL BE COPPER, TYPE "THW", UNLESS NOTED OTHERWISE ON THE DRAWINGS.
2. THE NEUTRAL CONDUCTORS SHALL HAVE AN IDENTIFYING WHITE COVERING. OTHER CONDUCTORS SHALL BE COLOR CODED PER NEC, INCLUDING SINGLE PHASE CIRCUITS. MAINTAIN SAME COLOR ON A PARTICULAR PHASE THROUGHOUT THE JOB.
3. MINIMUM WIRE SIZE SHALL BE #2 EXCEPT CIRCUITS OF 120/208 VOLTS EXCEEDING 75 FT. AND CIRCUITS OF 277/480 VOLTS EXCEEDING 150 FT. SHALL BE #10 MINIMUM.
4. MINIMUM WIRE SIZE FOR REMOTE CONTROL WIRE SHALL BE #14.
5. MAKE ALL CONNECTIONS WITH UL APPROVED SOLDERLESS PRESSURE TYPE INSULATED CONNECTORS: SCOTCHLOCK OR AN APPROVED EQUAL.

B. CONDUIT:

1. ALL WORK SHALL BE INSTALLED IN CONDU

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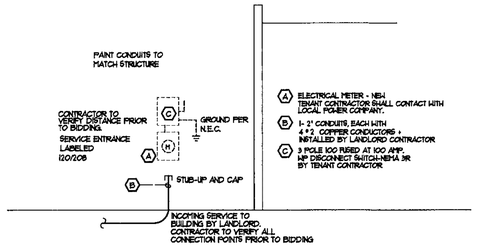
STATE OF TEXAS
FRANK P. SKIPPER
33804
REGISTERED
PROFESSIONAL ENGINEER
4/30/18



3 ELECTRICAL RISER FOR WELLS FARGO ATM BUILDING

SCALE: 1/4" = 1'-0"

CoServ Electrical Load Requirements

Please complete form in its entirety as sizing cannot be calculated if there is missing information

Project / Customer Name: Teel Crossing Phase 2 - wells fargo out parcel
Address: Main Street and Teel Parkway City: Frisco, Texas
Requested Voltage (select only one):
☐ Single Phase 120/240 ☑ 3 Phase 120/208 ☐ 3 Phase 277/480
☐ Single Phase 240/480 OH ☐ Other ____
Indicate only one: ☑ New Load ☐ Adding load to an electrically energized service
Building Type: ☐ Retail ☐ Restaurant ☐ Residential ☑ Other ATM Building
Total Square Footage: 223 Service Entrance Size (amps) 100
# of Conduits 1 Size of Conduits 2" # of Conductors 4 Size of Conductors 2

NOTE: Customer/Electrician to supply two-hole compression secondary hi-ings for all customer installed secondary conductors. No metering on transformer unless approved in writing by CoServ.

HVAC LOAD INFORMATION

QTY	PHASE	VOLTS	TONS	SEER	A/C KW-EACH	HEAT KW-EACH	GAS HEAT
1	3	208	1.5	11.3	3.6		Yes / No
							Yes / No
							Yes / No
							Yes / No
							Yes / No

MOTOR LOAD INFORMATION

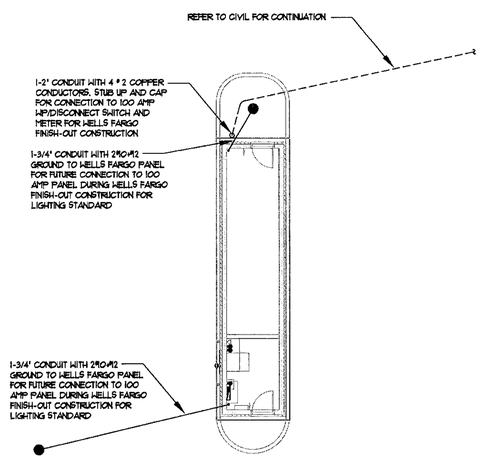
QUANTITY	PHASE	VOLTS	HP-EACH	START TYPE	EQUIPMENT DESCRIPTION
1	3	208	3/4		HVAC

LIGHTING & MISCELLANEOUS LOAD INFORMATION

QUANTITY	PHASE	VOLTS	CONNECTED KW-EACH	EQUIPMENT DESCRIPTION
	1	120	1.0	lighting
	1	120	13.5	misc. power
	1	120	1.5	exterior lighting

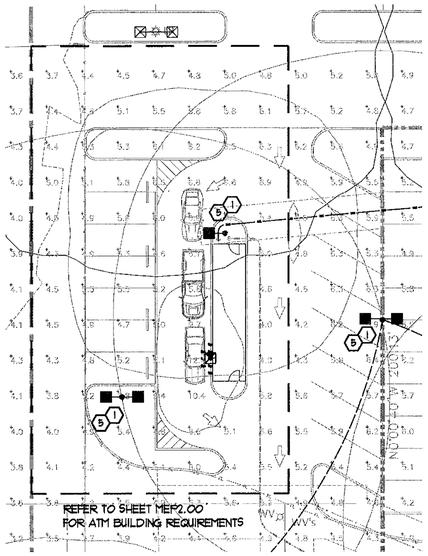
Signature (required) — 214-707-4085 Phone
M.C. Bollinger — 4-24-18 Date
Printed Name (required)

For CoServ Use
Transformer Size: ____ Tech ____
Allowance: ____ WO # ____
Revised 6/07/2018



2 PLAN FOR WELLS FARGO ATM BUILDING

SCALE: 1/8" = 1'-0"



1 UTILITY / LIGHTING PLAN FOR ATM BUILDING

SCALE: 1/16" = 1'-0"

Calculation Summary							
Label	Avg	Max	Min	Avg/Min	Max/Min	PtSpcLr	PtSpcTb
ATM 5 FT	16.8	21.1	11.1	1.5	1.9	2	2
ATM 50 FT	6.7	21.1	3.8	1.8	5.6	10	10
PHASE II PARKING	4.3	21.1	1.1	3.9	19.2	10	10

Luminaire Schedule

WLS14217 TEEL CROSSING PHASE II FRISCO, TX PM: MARK PLEASE EMAIL MARK AT MWILLIAMS@WLSLIGHTING.COM FOR PRICING.

Symbol	Qty	Label	Lumens	LLF	Description	Lum. Watts
	5	X1	44000	0.800	WLS-FVM-5-400-PSMH-FG 32' MOUNTING HEIGHT	455
	1	X2	44000	0.800	WLS-FVM-5-400-PSMH-FG 32' MOUNTING HEIGHT	455
	4	A	N.A.	0.980	WLS-OSQ-A-5SH-U-40K 32' MOUNTING HEIGHT	215
	3	B	N.A.	0.980	WLS-OSQ-A-5SH-U-40K 32' MOUNTING HEIGHT	215
	1	C	N.A.	0.980	WLS-OSQ-A-4ME-U-40K-BLS 32' MOUNTING HEIGHT	215
	1	D	N.A.	0.980	WLS-XSPW-A-3FC-U-4K 8' MOUNTING HEIGHT	42
	5	E	N.A.	0.980	WLS-XSPW-A-3FC-U-4K 12' MOUNTING HEIGHT	42

MEP SPECIAL NOTES:

A COORDINATE ALL SERVICE REQUIREMENTS WITH UTILITY COMPANIES AND INCLUDE ALL WORK REQUIRED IN BID.

B UTILITY INFORMATION IS SHOWN APPROXIMATELY, CONTRACTOR SHALL FIELD VERIFY ALL LOCATIONS AND SITE CONDITIONS PRIOR TO BID/CONSTRUCTION.

C GENERAL CONTRACTORS SHALL NOTE THAT ALL WORK TO BE DONE SUCH ON DRAWINGS IS SHOWN WITHOUT KNOWLEDGE OF UNDERGROUND UTILITIES ON THIS PARTICULAR SITE. THE ENGINEER AND OWNER ASSUME NO RESPONSIBILITY FOR DETERMINING THEIR LOCATION, SIZE, DEPTH, OR HAZARD.

D VERIFY WITH LOCAL AUTHORITIES & UTILITIES THAT SITE LIGHT POLES & THEIR APPURTENANCES ARE NOT LOCATED ON OR OVER ANY EASEMENT OR MUNICIPAL RIGHT OF WAY.

E ALL UTILITIES ARE DIAGRAMMATICALLY SHOWN. REFER TO CIVIL DRAWINGS AND VERIFY EXACT LOCATION F ALL UTILITIES WITH UTILITY COMPANIES.

F MINIMUM CONDUIT SIZE SHALL BE 3/4"C. MINIMUM CONDUCTOR SIZE SHALL BE #10/AWG COPPER UNLESS OTHERWISE NOTED.

G FOR WORK UNDER THIS DIVISION, ELECTRICAL CONTRACTOR SHALL CONTACT ALL UTILITIES FOR VERIFICATION AND IDENTIFICATION OF ALL UNDERGROUND RUNS, PRIOR TO SITE TRENCHING ("CALL BEFORE YOU DIG").

H FOR WORK UNDER THIS DIVISION, ELECTRICAL CONTRACTOR SHALL PERFORM ALL WORK IN STRICT ACCORDANCE WITH THE CURRENT EDITION OF THE NATIONAL ELECTRIC CODE (NFPA 70), AND THE LIFE SAFETY CODE (NFPA 101), AS ADOPTED AND/OR AMENDED BY STATE AND LOCAL AUTHORITIES

I FOR WORK UNDER THIS DIVISION, ELECTRICAL CONTRACTOR SHALL COORDINATE AND FIELD VERIFY LOCATIONS OF ALL UTILITY SERVICE RUNS, ORIGINATIONS, TERMINATIONS AND ANY INSTALLATION REQUIREMENTS (I.e. ELECTRICAL, TELEPHONE, ETC.) AS RELATED TO THIS JOB, THEREBY EFFECTED

J LIGHTING HEREIN SHALL BE MIN. OF 2 #10 & 3/4"C AND CONTROLLED VIA CONTACTOR (PHOTOCELL ON/TIMECLOCK OFF)

K IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT THE UTILITIES AND VERIFY ALL REQUIREMENTS WITH THE UTILITIES PRIOR TO BID. IN ANY CASE, CONTRACTOR SHALL PAY FOR ALL UTILITIES RELATED EXPENSES.

L REFER TO CIVIL DRAWINGS FOR TRENCHING AND EASEMENT REQUIREMENTS.

M EMPTY CONDUIT SHALL BE CAPPED AT EACH END.

N PROVIDE PULL STRING IN EACH EMPTY CONDUIT.

O WHEN THE WORD "PROVIDE" IS USED, IT MEANS THAT THE ELECTRICAL CONTRACTOR SHALL FURNISH, INSTALL AND MAKE FINAL CONNECTION TO EQUIPMENT PER EQUIPMENT MANUFACTURER'S SPECS. AND RECOMMENDATIONS UNLESS OTHERWISE NOTED.

P CONTRACTOR SHALL PROVIDE LARGE RADIUS 90 DEGREE SWEEPING BENDS FOR U.G. CONDUITS PER UTILITY CO. SPECS. AND REQUIREMENTS.

Q ALL MEP WORK DONE UNDER THIS CONTRACT SHALL COMPLY WITH APPLICABLE PROVISIONS & REQUIREMENTS OF THE STANDARD CODES, THE NEC & LOCAL ORDINANCES.

R CONTRACTOR SHALL COORDINATE INSTALLATION OF ALL SITE LIGHTING CIVIL & ARCHITECT.

S ALL EXTERIOR MOUNTED EQUIPMENT SHALL BE WEATHERPROOF TYPE.

T ALL EXTERIOR ELECTRICAL OUTLETS SHALL BE WEATHERPROOF GFI TYPE.

U COORDINATE INSTALLATION WITH CIVIL ON ELECTRICAL PRIMARY, TEL. AND CABLE T.V.

V COORDINATE EXACT LOCATION OF PAD MOUNTED TRANSFORMER WITH UTILITY CO.

MEP SITE UTILITY NOTES: (NOTED BY (X))

1 HOMERUN THRU TIMECLOCK-CONTROLLED MULTIPOLE LIGHTING CONTRACTOR PER EXTERIOR LIGHTING CONTROL DETAIL, SHEET E2.1 CONTROLS LOCATED IN WEATHERPROOF CASE.

2 W.P. J-BOX WITH 208V. CIRCUITS FOR SIGN. VERIFY REQUIREMENTS WITH ARCHITECT.

3 2" E.C. (SCHED. 80 PVC) WITH PULL-WIRE FOR IRRIGATION LINES. STUB-UP 4" ABOVE FINISHED GRADE INSIDE INTERIOR LINE OF CURB.

4 NOT USED

5 2 #10 THHN CUL. 1 #10 CU. GND., 3/4"C.

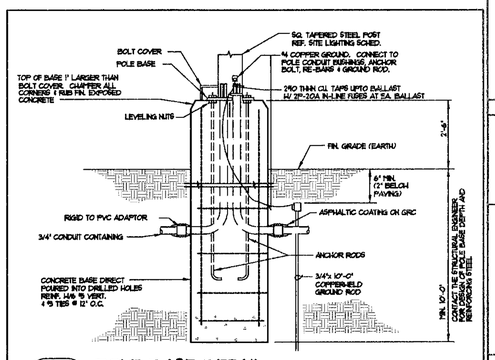
6 E.C. (SCHED. 80 PVC) WITH PULL-WIRE FOR (17) UNDERGROUND TELEPHONE SERVICE. RUN TO PROPERTY LINE AS SHOWN, STUB-UP, CAP, AND MARK. COORDINATE WITH TELEPHONE COMPANY. SEE SITE PLAN GENERAL MEP NOTES. SEE TELEPHONE RISER FOR TELEPHONE ENCLOSURE SIZE, TYPE, ET

7 UNDERGROUND ELECTRICAL SECONDARY. REFER TO ELECTRICAL RISER FOR ADDITIONAL INFORMATION. EXTEND U.G. SECONDARY TO TRANSFORMER AND TERMINTAE AS REQUIRED BY UTILITY CO.

8 MAIN TELEPHONE SERVICE ENCLOSURE. COORDINATE EXACT LOCATION WITH THE OWNER AND THE TELEPHONE SERVICE COMPANY.

9 UNDERGROUND (6) 4" PVC SCHEDULE 80 CONDUIT FOR POWER CO. PRIMARY. EXTEND FROM TRANSFORMER TO PROPERTY LINE AT POWER COMPANY POINT OF CONNECTION. TERMINATE PER POWER CO. REQUIREMENTS.

10 UNDERGROUND PVC SCHEDULE 40 CONDUIT FOR POWER CO. PRIMARY. EXTEND U.G. SECONDARY AS REQUIRED BY POWER COMPANY. TERMINATE PER POWER CO. REQUIREMENTS.



2 POLE BASE DETAIL

NO SCALE

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Teel Crossing Phase 2
Frisco, TX
Construction Documents

Revisions

MEP2.00

16 April 2018

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PLUMBING SYMBOL LEGEND

SYMBOL	DESCRIPTION
	SEWER / WASTE PIPING
	VENT PIPING
SD	STORM DRAIN PIPING
OF	STORM DRAIN OVERFLOW PIPING
CD	CONDENSATE DRAIN PIPING
	DOMESTIC COLD WATER PIPING
	DOMESTIC HOT WATER PIPING
	DOMESTIC HOT WATER RECIRCULATING PIPING
SW	SOFT TREATED WATER PIPING
F	FIRE PROTECTION PIPING
G	GAS PIPING
F.D.	FLOOR DRAIN (FD)
F.S.	FLOOR SINK (FS)
F.F.D	FUNNEL FLOOR DRAIN (FFD)
H.D.	HUB DRAIN (HD)
R.D.	ROOF DRAIN (RD) OR OVERFLOW DRAIN (OD)
	NON-FREEZE WATER HYDRANT
	GATE VALVE
	PLUG COCK
	CHECK VALVE
	BALL VALVE
	VALVE IN RISE
	UNION
	PRESSURE GUAGE
	PRESSURE REDUCING VALVE (PRV)
	CLEANOUT FLOOR AND WALL
	GLOBE VLAVE
	SAFETY OR RELIEF VALVE
	VALVE BOX
	FLOW CONTROLLER OR BALANCE VALVE
	DROP IN PIPE
	RISE IN PIPE
	PIPE SLOPED IN DIRECTION SHOWN
	FLOW IN DIRECTION OF ARROW

MECHANICAL SYMBOL SCHEDULE

SYMBOL	DESCRIPTION
	SUPPLY DUCT - CROSS SECTION
	RETURN OR EXHAUST AIR DUCT-CROSS SECTION
	ROUND DUCT - CROSS SECTION
10"x60"	DUCT SIZE - INSIDE CLEAR DIMENSION
10"x60"x1" A.L.	INSIDE CLEAR DIMENSION PLUS 1" DUCT LINING
RISE	DUCT RISE
	DROP OR RISE IN SUPPLY DUCT
	ACCOUSTICAL LINING IN DUCT
	TURNING VANES IN DUCT
H.D.	HAND DAMPER
F.D.	FIRE DAMPER
	FACTORY MADE FLEX DUCT
	SUPPLY AIR DIRECTION
	RETURN OR EXHAUST DIRECTION
	SUPPLY DIFFUSER
	RETURN AIR GRILLE
	EXHAUST GRILLE
	SIDEWALL SUPPLY DIFFUSER
	SIDEWALL RETURN OR EXHAUST GRILLE
	SPIN-IN TAP FITTING
	BRANCH DUCT TAKE-OFF
	DOOR LOUVER
D.G.	DOOR GRILLE
U.C.	UNDER CUT DOOR
	RISE OR DROP IN ROUND DUCT
T	THERMOSTAT
SD	SMOKE DETECTOR

ELECTRICAL SYMBOL SCHEDULE

SYMBOL	DESCRIPTION
	FLUORESCENT LIGHT FIXTURE
O OR	CEILING MOUNTED LIGHT FIXTURE
	WALL MOUNTED LIGHT FIXTURE
	EXIT SIGN
	EXIT SIGN WITH EMERGENCY LIGHTING
D	EMERGENCY BATTERY PACK (REF. LIGHT FIXTURE SCHEDULE)
	DATA OUTLET
	TELEPHONE OUTLET (W/ WALL MNTD P; PAYS F; FIREFIGHTER JACK)
	COMBINED TELEPHONE AND DATA OUTLET
	DUPLEX RECEPTACLE NEMA 5-20R • 18" AFF UNLESS NOTED
	DUPLEX RECEPTACLE NEMA 5-20R MOUNTED 6" ABOVE COUNTER TOP
	STATIC GROUND DEVICE
	SINGLE RECEPTACLE (C = CLOCK)
	QUAD RECEPTACLE
	SPLIT CIRCUIT DUPLEX RECEPTACLE
	ISOLATED GROUND DUPLEX RECEPTACLE
	ISOLATED GROUND QUAD RECEPTACLE
	FLOOR RECEPTACLE - DUPLEX
	ISOLATED GROUND FLOOR RECEPTACLE - DUPLEX
	ISOLATED GROUND FLOOR RECEPTACLE - QUADRAPLEX
	FLOOR RECEPTACLE - QUADRAPLEX
	SPECIAL PURPORE OUTLET
J	JUNCTION BOX- 4" SQ. OR 4" OCT. UNLESS NOTED
	PULLSHOLD AS NOTED
T	TRANSFORMER
B	PROGRAM/SERVICE BELL
H	PUSHBUTTON
C	CONTACTOR
TC	TIMECLOCK
	DISCONNECT SWITCH
	STARTER
	COMBINATION STARTER/DISCONNECT
F	FIRE ALARM PULL STATION NOM. 42" A.F.F. PER ADA
F	FIRE ALARM AUDIO/VIRUAL STATION 80" A.F.F. PER ADA
V	FIRE ALARM VIRUAL STATION 80" A.F.F. PER ADA
H	HEAT DETECTOR, FIXED TEMPERATURE RATE-OF-RISE (200 F).
S	SMOKE DETECTOR
S D	DUCT DETECTOR
PS	FLOW SWITCH APPLIED TO FIRE SPRINKLER LINE
TS	TAMPER SWITCH APPLIED TO FIRE SPRINKLER LINE
HS	REMOTE HANDSET
ICM	INTERCOMMUNICATIONS SYSTEM MASTER UNIT
D C	DOOR CONTROL
G	GLASS BREAKAGE DETECTOR
A	ALARM CONTACTS
C	SURVEILLANCE CAMERA
KP	KEY PAD
MD	MOTION DETECTOR
SCP	SECURITY CONTROL PANEL
M	MAGNETIC DOOR HOLDERS
TV	TELEVISION OUTLET
F	FLAME DETECTOR
RA	REMOTE ANNUNCIATOR
FACP	FIRE ALARM CONTROL PANEL
CR	CARD READER

SYMBOL	DESCRIPTION
D	DATA CONDUIT
T	TELEPHONE CONDUIT
E	POWER CONDUIT
FA	FIRE ALARM SYSTEM RACEWAY AND/OR CONDUCTORS
C	CONTROL SYSTEM RACEWAY AND/OR CONDUCTORS
	NOTE RUN
	BURIED, UNDERGROUND CABLE
AC	ABOVE CEILING RACEWAY
UG	UNDERGROUND RACEWAY
UB	UNDER BUILDING RACEWAY
MH	MANEHOLD
$	WALL SWITCH S.P.S.T. MNTD. 48" A.F.F.
$2	WALL SWITCH D.P.S.T. MNTD. 48" A.F.F.
$3	WALL SWITCH 3-WAY MNTD. 48" A.F.F.
$P	WALL SWITCH WITH PILOT LIGHT MNTD 48" A.F.F.
$M	120V MANUAL MOTOR STARTER WITH OVERLOAD HEATER
$a	WALL SWITCH, LETTER DENOTES FIXTURE CONTROLLED
$J	JAMB SWITCH
$K	KEYED WALL SWITCH S.P.S.T. MNTD. 48"A.F.F.
$HR	WALL SWITCH-MR
D	DIMMER SWITCH
	OCCUPANCY SENSOR
TM	TIME CLOCK MOTOR
	MOTOR LOCATION - NUMBER INSIDE DENOTES HORSE POWER
	PUSH-BUTTON STATION-MOMENTARY CONTACT
	CONTACTS NORMALLY OPEN, NORMALLY CLOSED
CR	RELAY COIL "OPEN" DENOTES COIL FUNCTION
FU	FUSE AS NOTED
	DISTRIBUTION PANEL LOCATION
	LIGHTING/POWER PANEL LOCATION
G	GROUND ROD SYMBOL
	SERVICE TAP BOX WITH WREWAY
SCII	DESIGNATES FAULT CURRENT IN RMS SYM AMPERES AT A POINT
	TRANSFORMER CONNECTION-L TO R DELTA AND WYE
	TELEPHONE PANEL BACKBOARD
MCC	MOTOR CONTROL CENTER
	HOME RUN: RIGHT-TO-LEFT NEUTRAL, HOT AND GROUND WIRES
S	SPEAKER
T	THERMOSTAT
M	MICROPHONE OUTLET
P	PHOTOELECTRIC SWITCH
R	RELAY
	CLOCK - SINGLE FACE (D= DESIGNATES DOUBLE FACE CLOCK)
	MASTER CLOCK
	ABBREVIATIONS
A	AMPERES
AC	ALTERNATING CURRENT
AFF	ABOVE FINISHED FLOOR-DESIGNATES MOUNTING HEIGHT
AFG	ABOVE FINISHED GRADE
ASYM	ASYMETRICAL FAULT CURRENT COMPONENT
BFG	BELOW FINISH GRADE
BTC	BRANCH TO CONNECTOR
BTF	BRANCH TO FIXTURE
DFA	DOWN FROM ABOVE
E.C.	EMPTY CONDUIT
EMT	ELECTRICAL METALLIC TUBING CONDUIT
FPL	FIRE PROTECTION LISTED CONDUCTOR PER N.E.C. 760, NFPA 72
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
IG	ISOLATED GROUND
NL	NIGHT LIGHT
O.C.	ON CENTER
PVC	POLY VINYL CHLORIDE CONDUIT
RGS	RIGID GALVANIZED STEEL CONDUIT
RMS	ROOT MEAN SQUARE - DESIGNATES ABSOLUTE CURRENT AC
S.U.	STUB-UP
SYM	SYMETRICAL CURRENT FAULT COMPONENT
V	VOLTS
W	WATTS
WP	WEATHER PROOF
60HZ	DESIGNATES FREQUENCY-60 CYCLES PER SECOND

MEP SPECIAL NOTES:

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S ALL EXTERIOR MOUNTED EQUIPMENT SHALL BE WEATHERPROOF TYPE.

T ALL EXTERIOR ELECTRICAL OUTLETS SHALL BE WEATHERPROOF GFI TYPE.

U COORDINATE INSTALLATION WITH CIVIL ON ELECTRICAL PRIMARY, TEL. AND CABLE T.V.

V COORDINATE EXACT LOCATION OF PAD MOUNTED TRANSFORMER WITH UTILITY CO.

MEP SPECIFICATIONS:

THE WORK IN THIS SECTION SHALL INCLUDE, BUT NOT BE LIMITED TO:
- A. A DOMESTIC COLD WATER DISTRIBUTION SYSTEM, VALVED OFR FUTURE EXTENSION
- B. A SANITARY SOIL WASTE AND VENT SYSTEM FOR FUTURE TENNANT CONNECTION

DRAWINGS ARE DIAGRAMMATICA CONFIRM DIMENSIONS AND LOCATIONS IN THE FIELD.
ADVISE OF MAJOR DISCREPENCIES.
GUARENTEE LABOR AND MATERIALS FOR ONE YEAR
APPLICABLE CODES INCLUDE BUT ARE NOT LIMITED TO LOCAL AREA
PRODUCE RECORD DRAWINGS
CONTRACTOR SHALL OBTAIN REQUIRED PERMITS AND PAY ALL FEES

DOMESTIC WATER PIPING

WATER PIPING BELOW GROUND SHALL BE TYPE K COPPER, ASTM B-88-WITH WROUGHT COPPER FITTINGS, ANSI B16.22. ALL JOINTS SHALL BE BRAZED. WATER PIPING ABOVE SLAB INSIDE THE BUILDING SHALL BE TYPE L COPPER, ASTM B-88 WITH WROUGHT IRON FITTINGS, ANSI B16.22.

ALL COPPER PIPING SHALL BE COMPLETELY ISOLATED FROM METAL HANGERS, METAL STUDES OR ANY OTHER ELECTRICALLY CONDUCTIVE BUILDING COMPONENTS.
DOMESTIC WATER PIPING SHALL BE HYDROSTATICALLY TESTED TO 150 PSI.

VALVES

VALVES SHALL BE MANUFACTURED BY NIBCO, HAMMOND, POWELL, STOCKHAM, WATTS OR EQUIVALENT APPROVED BY THE ENGINEER.

GATE VALVES SHALL CONFORM TO MSS-SP-80 FOR BRONZE AND MSS-SP-70 FOR IRON. VALVES 2" AND SMALLER SHALL BE NIBCO T-113 OR S-113 OR APPROVED EQUIVALENT.

BALL VALVES SHALL HAVE CAST IRON BODY, BLOWOUT PROOF STEMS, FULL SIZE PORT. 316 STAINLESS STEEL TRIM, TEFLON SEAT,AND SEAL AND THRUST WASHERS. VALVES 2" OR SMALLER SHALL BE NIBCO T-585-70-66 OR APPROVED EQUIVALENT.

UNIONS

UNIONS IN COPPER OR BRASS LINES SHALL BE BRASS, THREADED PATTERN UNIONS.

SANITARY SOIL WASTE AND VENT PIPING

ABOVE SLAB INSIDE BUILDING SHALL BE "NO-HUB" CAST IRON SOIL PIPING AND FITTINGS MEETING CISPI301 ASSEMBLED WITH TYPE 304 STAINLESS STEEL NO-HUB COUPLINGS ASSEMBLIES, WITH RUBBER GASKET MEETING ASTM-C-564. CLAMP HUBLESS SHALL BE:
- A. CLAMP-ALL.
- B. HUSKY 4000.
- C. TYLER "HIDE-BODY".
- D. MISSION.

ALL PIPING 6" AND LARGER SHALL BE SUPPORTED AS DETAILED.
BELOW SLAB WASTE AND VENT SHALL BE SCHEDULE 40 PVC SOIL PIPE AND FITTINGS ASSEMBLED WITH SOLVENT CEMENT JOINTS. DEBURR PIPE AFTER CUTTING. CLEAN PIPE AND FITTINGS WITH PURPLE PRIMER.

EXCAVATION

EXCAVATE TRENCHES FOR UNDERGROUND PIPING TO THE REQUIRED DEPTH.

CUT THE BOTTOM OF THE TRENCH OR EXCAVATION TO UNIFORM GRADE.

SHOULD ROCK BE ENCOUNTERED, EXCAVATE 6" BELOW GRADE, FILLING WITH BEDDING MATERIAL AND TAMP WELL.

LAY OUT ALIGNMENT OF PIPE TRENCHES TO AVOID OBSTRUCTIONS. PROVIDE ASSURANCE THAT PROPOSED ROUTE OF THE PIPE WILL NOT INTERFERE WITH BUILDING FOUNDATION BEFORE ANY CUTTING IS BEGUN. SHOULD INTERFERENCE BE FOUND, CONTACT THE ARCHITECT/ENGINEER BEFORE PROCE

BACKFILL

PROVIDE BACKFILL PER GEOTECHNICAL'S INVESTIGATION REPORT RECOMMENDATIONS.
PLUMBING PIPING HANGER SPACING
MAXIMUM SPACING SHALL BE 10 FOOT.

CLEANOUTS

FURNISH AND INSTALL CLEANOUTS AS SHOWN ON THE DRAWINGS AND AS REQUIRED BY LOCAL ORDINANCE. CLEANOUTS SHALL BE MANUFACTURED BY SOUIX CHIEF OR ZURN UNLESS NOTED OTHERWISE.
(FCO) FLOOR CLEANOUT, GREY PVC TOP HOUSING, WHITE PVC ADAPTER WITH ROUND POLISHED METAL COVER
- A. SIOUX CHIEF 882 SERIES

(ECO) EXTERIOR CLEANOUT, CAST IRON FLOOR CLEANOUT WITH THREADED ADJUSTABLE HOUSLING, FERRULE WITH PLUG, TRACTOR TOP AND VANDAL PROOF.
- A. WADE #1-6000-Z-3

CLEANING, TESTING AND ADJUSTING

THIS CONTRACTOR SHALL FURNISH ALL LABOR, TOOLS, INSTRUCTIONS, AND SUPERVISION REQUIRED IN THE PERFORMANACE OF ALL TESTS. CLEANING AND MAKING NECESSARY ADJUSTMENTS TO OPERATION OF ALL FIXTURES AND EQUIPMENT.

PIPING INSULATION

ALL COLD WATER PIPING, FITTINGS AND VALVES SHALL BE INSULATED WITH NOMINAL 1/2" WALL THICKNESS IMCOLOCK PIPE INSULATION, OR AN APPROVED EQUAL HAVING A FLAME SPREAD RATING OF 25 OR LESS AND A SMOKE DENSITY OF 50 OR LESS WHEN TESTED BY ASTME-84 METHOD.

IMCOLOCK PIPE INSULATION MAY BE SLIPPED ONTO THE PIPE PRIOR TO CONNECTON OR APPLIED AFTER THE PIPE IS INSTALLED, AT THE CONTRACTOR'S OPINION. ALL BUTT JOINTS AND MITER JOINTS SHALL BE CLOED USING IMCOA'S FUSE SEAL JOINING SYSTEM OR FACTORY APPROVED CONTAC

FITTING COVER INSULATION SHALL BE FABRICATED AND INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDED PROCEDURES. SHEAT FITTINGS SHALL BE INSULATED WITH MITER CUT PIECES OF IMCOLOCK PIPE INSULATION THE SAME SIZE AS IN ADJACENT PIPING. THREADED FITTINGS
SUPPORTING HANGERS SHALL BE DESIGNED TO RESIST COMPRESSION.

INSTALL THERMAL INSULATION ON CLEAN, DRY SURFACES AFTER TESTING AND INSPECTION IS COMPLETED. INSTALLATION SHE BE IN STRICT ACCORDANCE WITH THESE SPECIFICATIONS AND WITH MANUFACTURERS INSTRUCTIONS.

MEP GENERAL NOTES:

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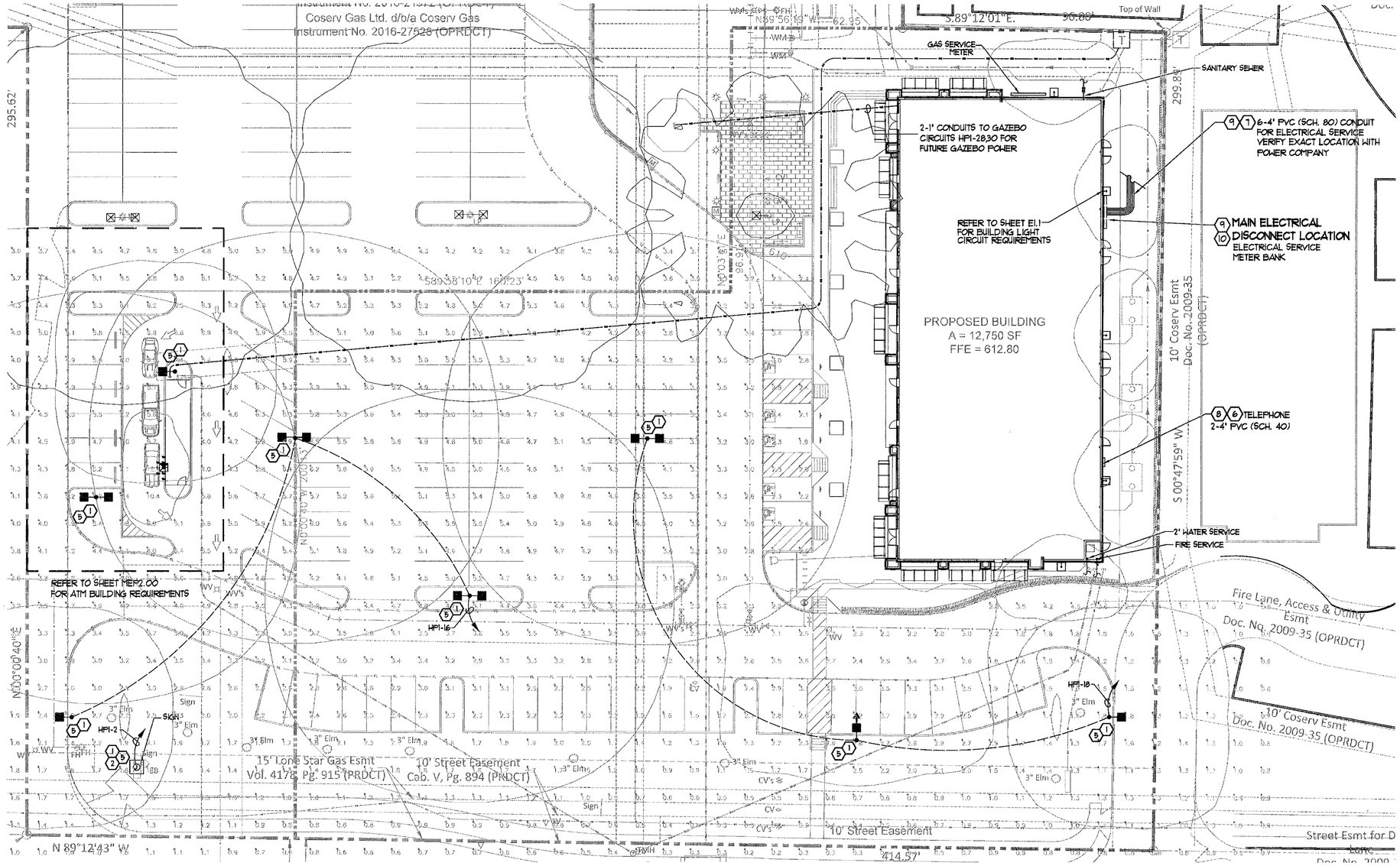
Teel Crossing Phase 2
Frisco, TX
Construction Documents

Revisions

MEP2

16 April 2018



1 MEP SITE UTILITY PLAN
SCALE: 1/16" = 1'-0"

Calculation Summary							
Label	Avg	Max	Min	Avg/Min	Max/Min	PtSpcLr	PtSpcTb
ATM 5 FT	16.8	21.1	11.1	1.5	1.9	2	2
ATM 50 FT	6.7	21.1	3.8	1.8	5.6	10	10
PHASE II PARKING	4.3	21.1	1.1	3.9	19.2	10	10

Luminaire Schedule

WLS14217 TEEL CROSSING PHASE II FRISCO, TX PM: MARK PLEASE EMAIL MARK AT MWILLIAMS@WLSLIGHTING.COM FOR PRICING.

Symbol	Qty	Label	Lumens	LLF	Description	Lum. Watts
	5	X1	44000	0.800	WLS-FVM-5-400-PSMH-FG 32' MOUNTING HEIGHT	455
	1	X2	44000	0.800	WLS-FVM-5-400-PSMH-FG 32' MOUNTING HEIGHT	455
	4	A	N.A.	0.980	WLS-OSQ-A-5SH-U-40K 32' MOUNTING HEIGHT	215
	3	B	N.A.	0.980	WLS-OSQ-A-5SH-U-40K 32' MOUNTING HEIGHT	215
	1	C	N.A.	0.980	WLS-OSQ-A-4ME-U-40K-BLS 32' MOUNTING HEIGHT	215
	1	D	N.A.	0.980	WLS-XSPW-A-3FC-U-4K 8' MOUNTING HEIGHT	42
	5	E	N.A.	0.980	WLS-XSPW-A-3FC-U-4K 12' MOUNTING HEIGHT	42

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MEP SITE UTILITY NOTES: (NOTED BY (X))

1 HOMERUN THRU TIMECLOCK-CONTROLLED MULTIPOLE LIGHTING CONTRACTOR PER EXTERIOR LIGHTING CONTROL DETAIL, SHEET E2.1 CONTROLS LOCATED IN HEATHERPROOF CASE.

2 M.P. J-BOX WITH 208V. CIRCUITS FOR SIGN. VERIFY REQUIREMENTS WITH ARCHITECT.

3 2" E.C. (SCHED. 80 PVC) WITH PULLWIRE FOR IRRIGATION LINES. STUB-UP 4" ABOVE FINISHED GRADE INSIDE INTERIOR LINE OF CURB.

4 NOT USED

5 2 #10 THWN CU, 1 #10 CU GND., 3/4"C

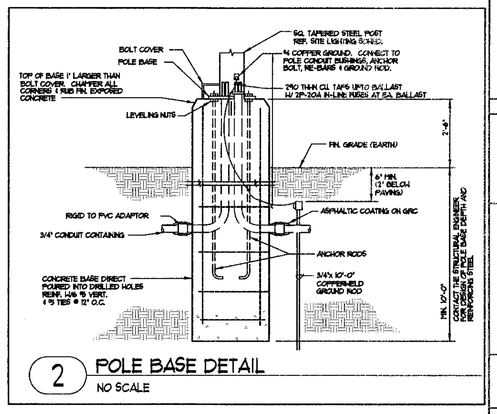
6 E.C. (SCHED. 80 PVC) WITH PULLWIRE FOR (UT) UNDERGROUND TELEPHONE SERVICE. RUN TO PROPERTY LINE AS SHOWN, STUB-UP, CAP, AND MARK. COORDINATE WITH TELEPHONE COMPANY. SEE SITE PLAN GENERAL MEP NOTES. SEE TELEPHONE RISER FOR TELEPHONE ENCLOSURE SIZE, TYPE, ET

7 UNDERGROUND ELECTRICAL SECONDARY. REFER TO ELECTRICAL RISER FOR ADDITIONAL INFORMATION. EXTEND U.G. SECONDARY TO TRANSFORMER AND TERMINTAE AS REQUIRED BY UTILITY CO.

8 MAIN TELEPHONE SERVICE ENCLOSURE. COORDINATE EXACT LOCATION WITH THE OWNER AND THE TELEPHONE SERVICE COMPANY.

9 UNDERGROUND (6) 4" PVC SCHEDULE 80 CONDUIT FOR POWER CO. PRIMARY. EXTEND FROM TRANSFORMER TO PROPERTY LINE AT POWER COMPANY POINT OF CONNECTION. TERMINATE PER POWER CO. REQUIREMENTS.

10 UNDERGROUND PVC SCHEDULE 40 CONDUIT FOR POWER CO. PRIMARY. EXTEND U.G. SECONDARY AS REQUIRED BY POWER COMPANY. TERMINATE PER POWER CO. REQUIREMENTS.



2 POLE BASE DETAIL
NO SCALE

Frank P. Skipper, P.E.
PROFESSIONAL ENGINEER
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IRVING, TEXAS 75038
214 723 3019 cell
TEXAS FIRM REGISTRATION #F-18305
Project Manager:
M. Claire Bollinger-Glass
214 707 4085 cell
mcoolinger@bollingeryatesdesign.com

STATE OF TEXAS
FRANK P. SKIPPER
91804
REGISTERED PROFESSIONAL ENGINEER
4/30/18

Duane Meyers
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duane@duanemeyers.com
972-534-4049
www.duanemeyers.com

Teel Crossing Phase 2
Frisco, TX

Construction Documents

Revisions

MEP3

16 April 2018

COM*check* Software Version 4.0.8.1

Exterior Lighting Compliance Certificate

Project Information

Energy Code:	2015 IECC
Project Title:	Teel Crossing Phase 2
Project Type:	New Construction
Exterior Lighting Zone	2 (Residential mixed use area)

Construction Site: Main Street and Teel Parkway, Frisco, TX

Owner/Agent:

Designer/Contractor: TX

Allowed Exterior Lighting Power

A Area/Surface Category	B Quantity	C Allowed Watts / Unit	D Tradable Wattage	E Allowed Watts (B X C)
Entry canopy	315 ft2	0.25	Yes	79
Parking area	66283 ft2	0.09	Yes	3977
Illuminated area of facade wall or surface	2475 ft2	0.1	No	248
		Total Tradable Watts (a) =		4056
		Total Allowed Watts =		4305
		Total Allowed Supplemental Watts (b) =		600

(a) Wattage tradeoffs are only allowed between tradable areas/surfaces.
(b) A supplemental allowance equal to 600 watts may be applied toward compliance of both non-tradable and tradable areas/surfaces.

Proposed Exterior Lighting Power

A Fixture ID : Description / Lamp / Wattage Per Lamp / Ballast	B Lamps/ Fixture	C # of Fixtures	D Fixture Watt.	E (C X D)
Entry canopy (315 ft2): Tradable Wattage				
LED 2 copy 2: D; Other:	1	13	18	234
Parking area (66283 ft2): Tradable Wattage				
HID 1: Other; Standard;	1	8	215	1720
Illuminated area of facade wall or surface (2475 ft2): Non-tradable Wattage				
LED 1: A: BUILDING LIGHT; LED A Lamp 13W;	1	13	13	169
LED 2: B: LED A Lamp 13W;	1	6	13	79
HID 2: S; Other; Standard;	1	5	42	210
		Total Tradable Proposed Watts =		1904

Exterior Lighting PASS88: Design 56% better than code

Exterior Lighting Compliance Statement

Compliance Statement: The proposed exterior lighting design represented in this document is consistent with the building plans, specifications, and other calculations submitted with this permit application. The proposed exterior lighting systems have been designed to meet the 2015 IECC requirements in COM*check* Version 4.0.8.1 and to comply with any applicable mandatory requirements listed in the Inspection Checklist.

Name - Title _____ Signature _____ Date _____

Project Title: Teel Crossing Phase 2 — Report date: 04/28/18
Data filename: C:\Users\Claire\claire work 2011\Duane Meyers\teel crossing\IECC\TEEL CROSSING.cck — Page 1 of 6

COM*check* Software Version 4.0.8.1

Inspection Checklist

Energy Code: 2015 IECC

Requirements: 0.0% were addressed directly in the COM*check* software

Text in the "Comments/Assumptions" column is provided by the user in the COM*check* Requirements screen. For each requirement, the user certifies that a code requirement will be met and how that is documented, or that an exception is being claimed. Where compliance is itemized in a separate table, a reference to that table is provided.

Section # & Req.ID	Plan Review	Complies?	Comments/Assumptions
C103.2 [PR8]^	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the exterior lighting and electrical systems and equipment and document where exceptions to the standard are claimed. Information provided should include exterior lighting power calculations, wattage of bulbs and ballasts, transformers and control devices.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	
C405 [PR9]^	Plans, specifications, and/or calculations provide all information with which compliance can be determined for the additional energy efficiency package options.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

Additional Comments/Assumptions:

1 High Impact (Tier 1)	2 Medium Impact (Tier 2)	3 Low Impact (Tier 3)

Project Title: Teel Crossing Phase 2 — Report date: 04/28/18
Data filename: C:\Users\Claire\claire work 2011\Duane Meyers\teel crossing\IECC\TEEL CROSSING.cck — Page 2 of 6

Section # & Req.ID	Footing / Foundation Inspection	Complies?	Comments/Assumptions
C402.2.6 [FO12]^	Radiant heating systems panels insulated to >=R-3.5 on face opposite space being heated.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	See the Envelope Assemblies table for values.

Additional Comments/Assumptions:

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Data filename: C:\Users\Claire\claire work 2011\Duane Meyers\teel crossing\IECC\TEEL CROSSING.cck — Page 3 of 6

Section # & Req.ID	Rough In Electrical Inspection	Complies?	Comments/Assumptions
C405.3.5 [EL25]^	Automatic lighting controls for exterior lighting installed. Controls will be daylight controlled, set based on business operation time-of-day, or reduce connected lighting > 39%.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	

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Data filename: C:\Users\Claire\claire work 2011\Duane Meyers\teel crossing\IECC\TEEL CROSSING.cck — Page 4 of 6

Section # & Req.ID	Final Inspection	Complies?	Comments/Assumptions
C405.5.1 [FI19]^	Exterior lighting power is consistent with what is shown on the approved lighting plans, demonstrating proposed watts are less than or equal to allowed watts.	☐Complies ☐Does Not ☐Not Observable ☐Not Applicable	See the Exterior Lighting fixture schedule for values.

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Project Title: Teel Crossing Phase 2 — Report date: 04/28/18
Data filename: C:\Users\Claire\claire work 2011\Duane Meyers\teel crossing\IECC\TEEL CROSSING.cck — Page 5 of 6

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4/30/18

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Teel Crossing Phase 2
Frisco, TX Construction Documents

Revisions

MEP4

16 April 2018

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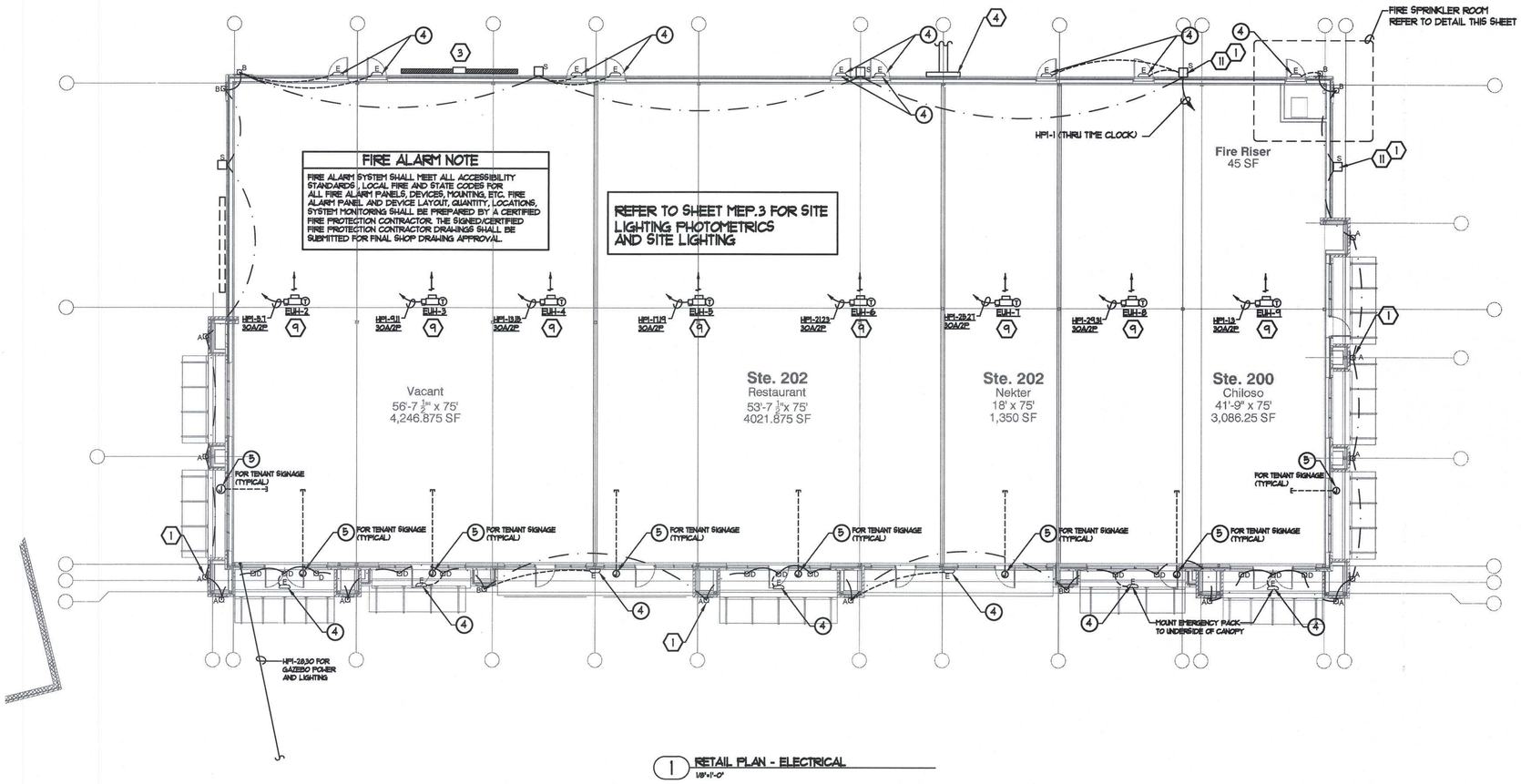
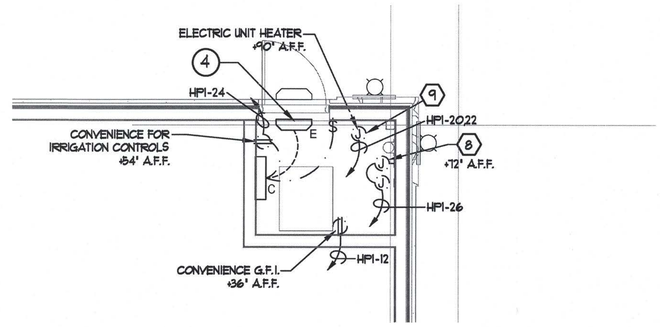


1 RETAIL PLAN - ELECTRICAL
1/8"=1'-0"

ELECTRICAL WILL BE DESIGNED AND INSTALLED PER THE 2014 NATIONAL ELECTRICAL CODE WITH THE LOCAL AMENDMENTS STATED IN CITY OF FRISCO ORDINANCE 16-12-101 ALONG WITH THE FOLLOWING COMMENTS.



2 DETAIL FIRE RISER ROOM - ELECTRICAL
3/16"=1'-0"

NOTES BY SYMBOL 'O' - POWER FLOOR PLAN

1. HOMERUN THROUGH PHOTOCELL. 'ON' - TIMECLOCK 'OFF' EXTERIOR LIGHTING CONTROL. PHOTOCELL TO BE MOUNTED AT ROOFLINE, FACING NORTH, AND MANUF. BY INTERMATIC (OR EQUAL). TIMECLOCK 'TB4' SHALL BE 125V, 40A. RATED, SKIPPER-TYPE, MANUF. BY TORK, INTERMATIC (OR EQUAL) MOUNT IN WEATHERPROOF ENCLOSURE WITH LOCKABLE COVER. SEE EXTERIOR LIGHTING CONTROL DIAGRAM SHEET E2.1
2. CONTRACTOR SHALL PROVIDE FIRE BOLLARDS AROUND THE ELECTRIC DISTRIBUTION EQUIPMENT PER ARCHITECTS DIRECTION AND AS REQUIRED. FIRE AROUND THE POWER CO. TRANSFORMER SHALL BE PER LOCAL POWER CO. SPECIFICATIONS AND REQUIREMENTS.
3. MAIN ELECTRICAL SERVICE ENTRANCE EQUIPMENT. SEE ELECTRICAL RISER DIAGRAM, SHEET E2.1, AND CIVIL SITE PLAN.
4. MAIN TELEPHONE SERVICE ENTRANCE EQUIPMENT. SEE TELEPHONE ENCLOSURE DETAILS, SHEET E2.1, AND CIVIL SITE PLAN.
5. TELEPHONE SERVICE CONDUIT AND EQUIPMENT TO EACH TENANT SPACE FROM MAIN TELEPHONE SERVICE EQUIPMENT SHALL BE PROVIDED BY TENANT.
6. EXTERIOR LIGHTING CONTROLS (TIMECLOCK 'TC4' & CONTACTOR 'C4') IN L.P. LOCKABLE ENCLOSURE. SEE ELECTRICAL RISER DIAGRAM, SHEET E.2.
7. EXTERIOR DECORATIVE WALL SCONCE. SEE LIGHTING FIXTURE SCHEDULE ON THIS SHEET, ARCHITECT'S ELEVATIONS FOR MOUNTING
8. JUNCTION BOX AT 'D' AFF FOR POWER CONNECTION TO FIRE PROTECTION SYSTEM. COORDINATE EXACT REQUIREMENT WITH F.P. CONTRACTOR. (IF LOCATED ON PLANS)
9. JUNCTION BOX AT 9 ft. AFF FOR CONNECTION TO ELECTRIC UNIT HEATER EH-1. COORDINATE EXACT CONNECTION REQUIREMENTS WITH UNIT SPECIFIED. SEE BELOW FOR SUGGESTED MODEL *

   HORIZONTAL ELECTRIC UNIT HEATER - MODEL MARKEL FPUH3003. 3.3 KW, 208V/1Ø, 15.9 AMPS, 11.2 BTUH, 26" TEMP RISE, 12 FT. THROW, 400 CFM. PROVIDE WITH WALL MOUNTED THERMOSTAT, MOUNTING BRACKET, LOUVERS, OSHA APPROVED FAN GUARD, DUST SHIELD, SUMMER FAN SWITCH. MOUNT BOTTOM OF UNIT 9 FT. A.F.F. UNIT HEIGHT = 11.75", WIDTH = 14.9", DEPTH = 6.5", HEIGHT APPROX. 30 lbs. TOTAL WITH ACCESSORIES.
10. INSTALL ALL CONDUIT CONCEALED IN BUILDING CEILING STRUCTURE. PENETRATE WALL TO EXTERIOR ONLY AT LIGHT FIXTURE LOCATION.
11. WALL PACK FLOODLIGHT AT 12 FT. AFF. REFER TO THIS SHEET FOR CIRCUITING AND CONTROL.
12. JUNCTION BOX AT 9 ft. AFF FOR CONNECTION TO ELECTRIC UNIT HEATER EH-2 THRU EH-5. COORDINATE EXACT CONNECTION REQUIREMENTS WITH UNIT SPECIFIED AND FIRE SPRINKLER INTERLOCK . SEE BELOW FOR SUGGESTED MODEL *

    VERTICAL ELECTRIC UNIT HEATER - MODEL MARKEL FPUH3003. 3 KW, 208V/1Ø, 24.1 AMPS, 11.1 BTUH, 40° TEMP RISE, 26 FT. THROW, 400 CFM. PROVIDE WITH UNIT MOUNTED THERMOSTAT, MOUNTING BRACKET, LOUVERS, OSHA APPROVED FAN GUARD, DUST SHIELD, SUMMER FAN SWITCH. MOUNT BOTTOM OF UNIT 9 FT. A.F.F. UNIT HEIGHT = 11.75", WIDTH = 14.9", DEPTH = 6.5", HEIGHT APPROX. 30 lbs. TOTAL WITH ACCESSORIES.

SPECIAL NOTES TO THE CITY

A. WORK RELATED TO FIRE ALARM SYSTEM AND DEVICES ARE NOT WITHIN THE SCOPE OF WORK ON THIS PROJECT. FIRE ALARM SYSTEM AND DEVICES SHALL BE FURNISHED/INSTALLED BY FUTURE TENANT PER NEC.

B. WORK RELATED TO EMERGENCY LIGHTING, EXIT SIGNS, ALL ELECTRICAL WORK (LIGHTING/POWER/HVAC ETC.) RELATED TO TENANTS ARE NOT WITHIN THE SCOPE OF WORK ON THIS PROJECT AND THEY WILL BE FURNISHED/INSTALLED BY FUTURE TENANTS.

LIGHTING PLAN NOTES: NOTED BY 'O'

1. REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELEVATIONS, AND SECTIONS FOR EXACT LOCATIONS OF ALL LIGHT FIXTURES.
2. ALL EXTERIOR LIGHTING SHALL BE RUN THROUGH A PHOTOCELL WITH TIME CLOCK OVERRIDE.
3. CIRCUITS SHOWN AS SINGLE HOMERUNS FOR CLARITY PURPOSES ONLY, CONTRACTOR HAS OPTION OF GROUPING CIRCUITS PER N.E.C.
4. EXIT AND EMERGENCY LIGHTS SHALL BE CONNECTED TO THE UNSWITCHED PHASE WIRE.
5. JUNCTION BOX WITH 1/2" E.C. AND PULL WIRE FOR TENANT SIGNAGE. REFER TO ARCHITECURAL PLANS FOR ROUTING OF CONDUIT THRU OVERHEAD CANOPY. TENANT SIGNAGE TO BE FURNISHED BY TENANT CONTRACTOR.
6. J-BOX FOR BUILDING SIGN . REFER TO ARCHITECTURAL ELEVATIONS FOR LOCATIONS. ELECTRICAL CONTRACTOR TO FURNISH AND INSTALL ELECTRICAL SERVICE. SIGN CONTRACTOR TO FURNISH AND INSTALL SIGN. ELECTRICAL CONTRACTOR SHALL MAKE FINAL CONNECTIONS.
7. 1/2" E.C. AND PULL WIRE FOR HOUSE CONTROLLED LIGHTING. REFER TO ARCHITECTURAL PLANS FOR ROUTING OF CONDUIT.

LIGHT FIXTURE SCHEDULE

CODE	FIXTR.	MODEL *	DESCRIPTION	LAMP
A * * *	HI-LITE FIXT. CO.	H-LCS2-H-B3 FT BRONZE CLR-3M LED 3000K-120V	DECORATIVE WALL SCONCE SAUCER VAPOR JAR FOR WET LOCATIONS	13W LED
B * * *	HI-LITE FIXT. CO.	H-CS2-10-B3 FT BRONZE CLR-13M LED 3000K-120V	DECORATIVE WALL SCONCE SAUCER VAPOR JAR FOR WET LOCATIONS	13W LED
C	LITHONIA	VDS-2-32-120V-GSD	WALL MOUNTED 2 LAMP FLUORESCENT FIXT* WITH COLD WEATHER BALLAST	2- 32 W
D * * *	ELITE LIGHTING	SWC-LED-120V 3CK-LAMM/ROCL 18 WATTS	RECESSED DOWNLIGHT IN ENTRY CANOPY FOR WET LOCATIONS	18W LED
E	EXIT LIGHT CO	EL-LSTILED MOUNTED-9'-0"	EXIT LIGHT COMPANY EXIT SIGNS FOR WET LOCATIONS WITH SEALED NICKEL CADMIUM BATTERY	FURNISHED WITH FIXTURE
S	ALS LIGHT CO	ALS-WSPM-L-A-2FC-U-BC MOUNTED-12'-0"	WALL PACK WITH SEALED NICKEL CADMIUM BATTERY	42 WATTS FURNISHED WITH FIXTURE

* * * FIXTURE TO MATCH EXISTING BUILDING AND LIGHT SOURCE, VERIFY ALL PRIOR TO FINALIZING BID

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E1.1

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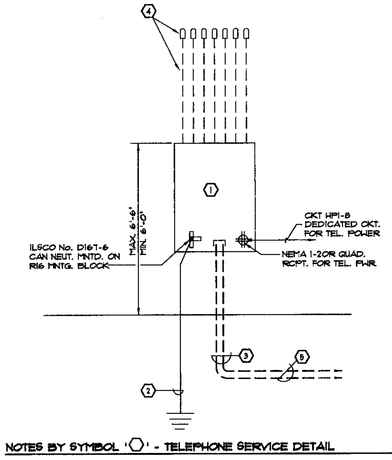
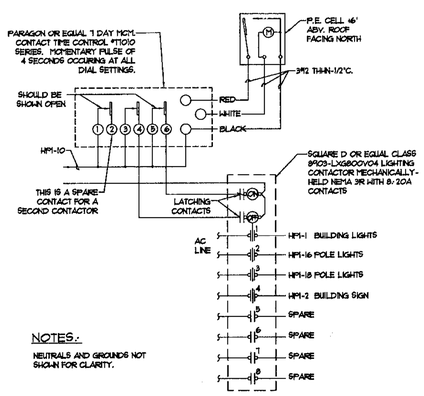


NOTES BY SYMBOL '⬡' - TELEPHONE SERVICE DETAIL

1. 30"W X 42" H X 12" D LOCKABLE WEATHERPROOF TELEPHONE ENCLOSURE WITH 3/4" 'AB' GRADE PLYWOOD TELEPHONE BACKBOARD OF EQUAL SIZE AND ISOLATED GROUND QUAD RECEPTACLE MOUNTED INSIDE.
2. ¾ CIL TO MAIN BUILDING GROUND
3. TWO 4" SCHEDULE 40 PVC CONDUITS WITH PULLWIRE, UNDERGROUND TO TELEPHONE COMPANY POINT OF SERVICE AT PROPERTY LINE. CONDUIT, TRENCHING AND BACKFILL BY CONTRACTOR PER TELEPHONE COMPANY SPECIFICATIONS / REQUIREMENTS. REFER TO GENERAL SITE PLAN GENERAL ELECTRICAL NOTES.
4. EMPTY CONDUIT WITH PULLWIRE FOR TENANT TELEPHONE SERVICE, PROVIDED BY TENANTS. REFER TO GENERAL ELECTRICAL NOTES FOR ADDITIONAL INFORMATION.
5. LONG SWEEP RADIUS ELLS (TYPICAL FOR ALL SERVICE CONDUITS) PER UTILITY COMPANY AND N.E.C.

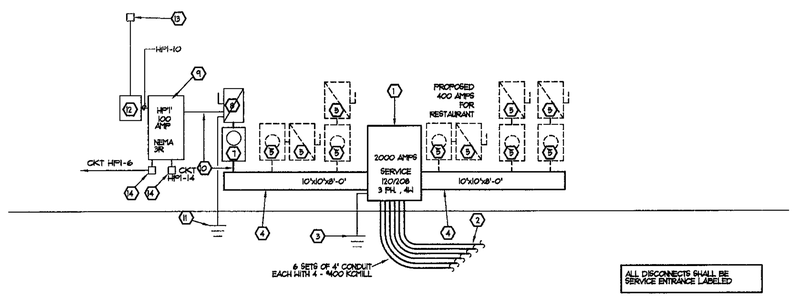


NOTES:-

NEUTRALS AND GROUNDS NOT SHOWN FOR CLARITY.

BUILDING/ PARKING LIGHTING CONTACTOR DETAIL

NO SCALE



ALL DISCONNECTS SHALL BE SERVICE ENTRANCE LABELED

ELECTRICAL RISER DIAGRAM

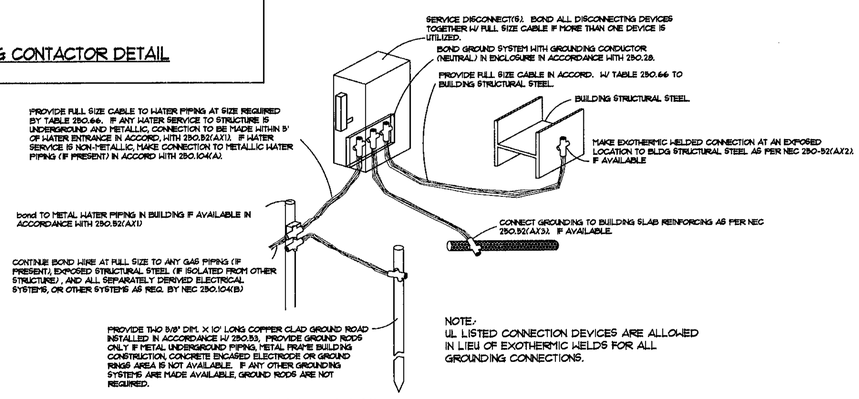
NO SCALE — SCHEMATIC ONLY

NOTES BY SYMBOL '⬡' - ELECTRICAL RISER DIAGRAMS

1. INSTALL DISTRIBUTION TAP CAN FURNISHED BY TXU ELECTRIC DELIVERY PER THEIR STANDARDS ON WALL WITH BOTTOM AT NOMINAL 6' ABOVE FINAL PAVING.
2. ELECTRICAL CONTRACTOR TO PROVIDE (6) 4" SCHEDULE 80 PVC CONDUITS FROM TRANSFORMER TO TAP CAN (TRANSCLOSURE). CONTRACTOR TO PROVIDE SERVICE CABLES IN CONDUITS SUGGESTED CAPACITY OF 2000 AMPS AT 120/208V, 3 PHASE, 4 WIRE. INSTALL PER POWER COMPANY REQUIREMENTS.
3. GROUNDING, BONDING AND GROUNDING ELECTRODE CONDUCTOR PER NEC ARTICLE 250, MINIMUM #10 GROUNDING ELECTRODE CONDUCTOR, 10'x ¾" DIA. DRIVEN GROUND ROD AND 20' CU. UFER LOOP. GROUND TO BUILDING STEEL AND DOMESTIC MAIN COLD WATER METAL PIPE. (WITHIN 5' OF ENTERING BUILDING)
4. PROVIDE NEMA 3R, SCREW COVER WIREWAY OF SIZES NOTED. PROVIDE WITH PADLOCK CLASPS. INSTALL WITH BOTTOM AT NOMINAL 12" ABOVE FINAL PAVING. CONNECT TO TAP CAN WITH 8" RND. CHASE NIPPLE, LOCKNUTS AND BUSHING.
5. TYPICAL/ FUTURE TENANT METERING ARRANGEMENT N.I.C (OR OTHER)
6. NOT USED
7. INSTALL LANDLORD'S METER FURNISHED BY CONTRACTOR AT NOMINAL 4'-0" ABOVE FINAL PAVING TO CENTER OF METER WINDOW. LABEL PER TXU ELEC. DELIVERY INSTALL PER LOCAL STANDARDS.
8. PROVIDE LANDLORD'S DISCONNECT SWITCH. PROVIDE CUTLER HAMMER (OR EQUAL) 100 AMP SWITCH NEMA 3R FOR RAIN TIGHT INSTALLATION. PROVIDE BUSSMAN * LPN-RK-100A-SP (100 AMP OR EQUAL FUSE) CLASS RK1 FUSES. LABEL SWITCH. INSTALL WITH TOP AT 6'0" ABOVE FINAL PAVING MAXIMUM.
9. PROVIDE LANDLORD'S HOUSE PANEL. LABEL. INSTALL ON WALL WITH TOP AT NOMINAL 6'-0" ABOVE FINAL PAVING. COMPLETE CIRCUIT DIRECTORY. WEATHERPROOF - REFER TO PANEL SCHEDULE.
10. PROVIDE LANDLORD'S ELECTRICAL SERVICE COMPLETE FROM TAP CAN LUGS TO MAIN LUGS OF HOUSE PANEL. PROVIDE (4) # 2 AND # 8 GROUND IN 1 1/2" GRS WITH WEATHERPROOF HUBS.
11. PROVIDE # 6 GROUND TO GROUND ROD, BUILDING STEEL AND COPPER WATER LINE IN NOTE 3 ABOVE. BOND TO NEUTRAL AT SWITCH PER CITY INSPECTOR.
12. PROVIDE LIGHTING CONTACTOR FOR CONTROL OF EXTERIOR BUILDING MOUNTED LIGHTING. PROVIDE SQUARE 'D' 8 POLE ELECTRICALLY HELD LIGHTING CONTACTOR WITH RELAY FOR PHOTOCELL OPERATION AND 120 VOLT COILS. LABEL. INSTALL ON WALL WITH TOP EVEN WITH TOP OF HOUSE PANEL. PROVIDE A NEMA 3R ENCLOSURE.
13. PROVIDE PARAGON MODEL # CI-201-00 UL PHOTOCELL MOUNTED TO 1/2" EMT WITH (3) # 12 CONTROL WIRES TO LIGHTING CONTACTOR BELOW. PROVIDE WEATHERPROOF HUB AT CONTACTOR. INSTALL AS HIGH AS POSSIBLE BEHIND SCREEN WALL AND AIM NORTH. ADJUST BAND PER LANDLORD'S REPRESENTATIVE. STRAP EMT TO WALL.
14. PROVIDE A SURFACE 16" BOX WITH (2) GFI DUPLEX RECEPTACLES AND A WEATHERPROOF, LOCKING COVER. INSTALL BELOW PANEL. CONNECT TO BRANCH CIRCUIT (2) # 12 AND # 12 GROUND IN 1/2" CHASE NIPPLE WITH WEATHERPROOF HUB AT PANEL.
15. PROVIDE A SURFACE MOUNTED TIME CLOCK FOR PHOTOCELL OVERRIDE

GENERAL NOTES - CONDUIT ROUTING

1. IN GENERAL, CONCEAL ALL CONDUITS AND SUPPORTS AS MUCH AS POSSIBLE WITHIN THE BUILDING STRUCTURE. WHERE NECESSARY TO EXPOSE TO VIEW, ROUTE PARALLEL AND PERPENDICULAR TO BUILDING STRUCTURE. PAINT ALL EXPOSED CONDUITS AND SUPPORTS AS DIRECTED BY ARCHITECT.
2. INSIDE THE BUILDING, ROUTE ALL CONDUITS AS HIGH AS POSSIBLE WITHIN THE ROOF JOISTS SPACE AND STRAP TO THE TOP CHORD OF ROOF JOISTS. DO NOT ROUTE ON TOP OF NOR SUSPENDED FROM THE BOTTOM CHORD OF ROOF JOISTS. FAILURE TO FOLLOW THIS DIRECTION WILL REQUIRE RELOCATION OF CONDUITS.
3. SEAL ALL WALL AND ROOF PENETRATIONS AS DIRECTED BY THE ARCHITECT.
4. ROUTE CONDUITS FROM BUILDING TO SWITCHGEAR THROUGH ROOF JOISTS SPACE TO REAR WALL. DOWN INSIDE FACE OF REAR WALL ON UNISTRUT RACKS, THROUGH DRILLED HOLES IN REAR WALL, ACROSS GAP BETWEEN BUILDING AND SCREEN WALL ON UNISTRUT RACKS AND DOWN FACE OF SCREEN WALL TO SWITCHGEAR. VERIFY EXACT LOCATION OF CONDUITS AND SUPPORTS WITH ARCHITECT PRIOR TO ROUGH-IN.



NOTE:-
UL LISTED CONNECTION DEVICES ARE ALLOWED IN LIEU OF EXOTHERMIC WELDS FOR ALL GROUNDING CONNECTIONS.

GROUNDING DETAIL

NO SCALE

ELECTRICAL LOAD BREAKDOWN PER AREA

LOAD DESCRIPTION		CONNECTED LOAD KVA	DEMAND FACTOR	DEMAND KVA	DEMAND LOAD AMPS 208V/3 PH	TOTALS LOAD AMPS 208V/3 PH
RESTAURANT 1350 SQ. FT.	50 WATTS/ SF WITH GAS HEAT	67.00	1.25	84.35	234.31	250.00
RESTAURANT 3066 SQ. FT.	50 WATTS/ SF WITH GAS HEAT	154.00	1.25	192.88	535.75	600.00
RESTAURANT 4021 SQ. FT.	50 WATTS/ SF WITH GAS HEAT	201.05	1.25	251.31	698.00	700.00
RETAIL 2123 SQ. FT.	25 WATTS/ SF WITH GAS HEAT	53.075	1.25	66.34	184.28	200.00
RETAIL 2123 SQ. FT.	25 WATTS/ SF WITH GAS HEAT	53.075	1.25	66.34	184.28	200.00
HOUSE METER COMMON AREA 1000 SQ. FT.	20 WATTS/ SF	20.00	1.25	25.00	69.00	100.00
						2050.00
						2000 AMPS TOTAL BUILDING

CoServ Electrical Load Requirements

Please complete form in its entirety as sizing cannot be calculated if there is missing information

Project / Customer Name: Tool Crossing Phase 2

Address: Main Street and Tool Parkway City: Frisco, Texas

Requested Voltage (select only one):
☐ Single Phase 120/240 ☑ 3 Phase 120/208 ☐ 3 Phase 277/480
☐ Single Phase 240/480 OH ☐ Other _____

Indicate only one: ☑ New Load ☐ Adding load to an electrically energized service

Building Type: ☐ Retail ☐ Restaurant ☐ Residential ☑ Other multi-tenant retail/restaurant

Total Square Footage: 12,750 Service Entrance Size (amps) 2000

# of Conduits 6 Size of Conduits 4" # of Conductors 6 Size of Conductors 400 kcmil

NOTE: Customer/Electrician to supply two-hole compression secondary bi-lugs for all customer installed secondary conductors. No metering on transformer unless approved in writing, by CoServ.

HVAC LOAD INFORMATION

QTY	PHASE	VOLTS	TONS	SEER	A/C KW-EACH	HEAT KW-EACH	GAS HEAT
4	3	208	10	11.8	16		Yes / No
6	3	208	7.5	11.8	12		Yes / No
4	3	208	5	13	8		Yes / No
2	3	208	12	11.5	18		Yes / No
							Yes / No

MOTOR LOAD INFORMATION

QUANTITY	PHASE	VOLTS	HP-EACH	START TYPE	EQUIPMENT DESCRIPTION
4	3	208	1.5		roof top units
6	3	208	1.0		roof top units
4	3	208	.75		roof top units
2	3	208	2.25		roof top units
3	1	208	2.0 kw		cooler/freezer compressors

LIGHTING & MISCELLANEOUS LOAD INFORMATION

QUANTITY	PHASE	VOLTS	CONNECTED KW-EACH	EQUIPMENT DESCRIPTION
	1	120	.29	lighting
	1	120	.100	misc. power
	1	120	.75	kitchen
	3	208	.75	kitchen

Signature (required) M.C. Bollinger — Phone 214-707-4085

Printed Name (required) — Date 4-24-18

For CoServ Use
Transformer Size: _____ Tech _____
Allowance: _____ W.O. # _____

Revised 01/30/14

	PNL:	"HP1"	MAIN:	100 AMP	M.L.O.	VOLTS:	120/208	3P/4W	MOUNT:	SURFACE		NEMA 3R	
C	CKT	SERVES	WATTS	BKR	WIRE/CONDUIT	PH	CKT	SERVES	WATTS	BKR	WIRE/CONDUIT	C
2	1	EUH-9	2500	30/2	2#10+#10G-3/4"C	A	2 (i)	BUILDING LIGHTING	691	20/1	2#10+#10G-3/4"C	1
2	3	"	2500			B	4 (i)	BUILDING SIGN	1000	20/1	2#10+#10G-3/4"C	1
2	5	EUH-2	2500	30/2	2#10+#10G-3/4"C	C	6 (g)	MISC. CONVENIENCE	750	20/1	2#12+#12G-3/4"C	2
2	7	"	2500			A	8	TELEPHONE QUAD	750	20/1	2#12+#12G-3/4"C	2
2	9	EUH-3	2500	30/2	2#10+#10G-3/4"C	B	10	LTG. CONTROLS	1000	30/1	2#10+#10G-3/4"C	2
2	11	"	2500			C	12 (g)	MISC. CONVENIENCE	750	30/1	NONE	2
2	13	EUH-4	2500	30/2	2#10+#10G-3/4"C	A	14 (g)	MISC. CONVENIENCE	750	20/1	2#12+#12G-3/4"C	2
2	15	"	2500			B	16	PARKING LIGHTING	1075	20/1	2#10+#10G-3/4"C	1
2	17	EUH-5	2500	30/2	2#10+#10G-3/4"C	C	18	PARKING LIGHTING	1075	20/1	2#10+#10G-3/4"C	1
2	19	"	2500			A	20	EUH-1	1650	20/2	2#10+#10G-3/4"C	2
2	21	EUH-6	2500	30/2	2#10+#10G-3/4"C	B	22	"	1650		"	2
2	23	"	2500			C	24 (g)	IRRIGATION CONTROLS	500	20/1	2#12+#12G-3/4"C	2
2	25	EUH-7	2500	30/2	2#10+#10G-3/4"C	A	26	TAMPER AND FLOW SWITCH	500	20/1	2#12+#12G-3/4"C	2
2	27	"	2500			B	28	GAZEBO LIGHTING	500			1
2	29	EUH-8	2500	30/2	2#10+#10G-3/4"C	C	30 (g)	GAZEBO POWER	180			2
2	31	"	2500			A	32	SPACE			NONE	
2	33	SPACE				B	34	SPACE			NONE	
2	35	SPACE				C	36	SPACE			NONE	
2	37	SPACE			NONE	A	38	SPACE			NONE	
2	39	SPACE			NONE	B	40	SPACE			NONE	
2	41	SPACE			NONE	C	42	SPACE			NONE	

1	S	CONTINUOUS	4341	1.25	5426	TOTALS PER PHASE CONNECTED		
2	U	RECEPTACLES	48580	NEC	29290			
3	M	KITCHEN	0	0.65	0		A	19341
4	M	HVAC	0	1	0		B	17725
5	A	SUB-TOTAL	52921		34716		C	15855
6	R	LARGEST MOTOR	1500	0.25	375		TOTAL :	52921
	Y	TOTAL WATTS			35091	NOTES:	(a) LOCKED CIRCUIT BREAKER	
		AMPERES			98		(d) DEDICATED CIRCUIT	
							(i) CIRCUIT VIA TIME CLOCK & PHOTO-CELL	
							(g) GROUND FAULT	

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4/30/18

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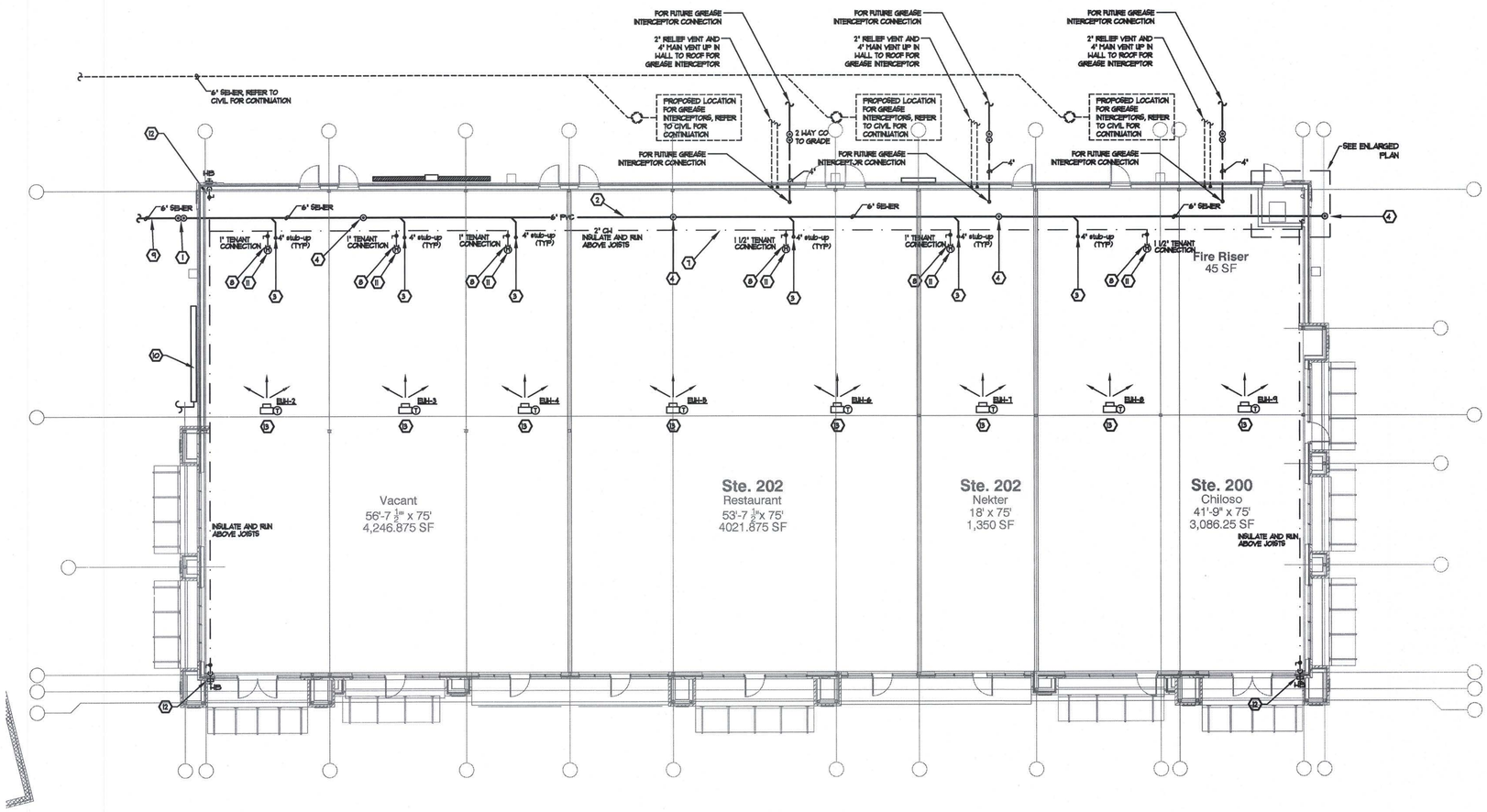

1 BASE BUILDING - MECHANICAL/PLUMBING PLAN
SCALE: 1/8" = 1'-0"

NOTES BY SYMBOL '○' - PLUMBING FLOOR PLAN

1. LOCATE AND EXTEND 6" SANITARY SEWER TO A 2-WAY CLEANOUT SET FLUSH WITH FINAL GRADE WITHIN 5'-0" OF BUILDING WALL. VERIFY EXACT LOCATION AND FLOW LINE ELEVATION. REFER TO CIVIL ENGINEER'S PLAN FOR CONTINUATION.
2. TYPICAL: PROVIDE 6" SANITARY SEWER PIPING AT 2% SLOPE MINIMUM CENTERED IN FLOOR SLAB LEAVEOUT AREA AT REAR OF BUILDING.
3. PROVIDE 4" SANITARY SEWER STUB-UP TO 12"A.F.F. FOR TENANT CONNECTION. SET FLOW LINE ELEVATION AS NOTED AT 3'-0" BELOW FINISHED FLOOR ELEVATION.
4. PROVIDE 4" SANITARY SEWER STUB-UP FOR FLOOR CLEAN-OUT SET FLUSH WITH FINISHED FLOOR ELEVATION.
5. LOCATE AND EXTEND 2" DOMESTIC WATER SERVICE PIPING INTO BUILDING. REFER TO CIVIL ENGINEER'S PLAN FOR CONTINUATION. VERIFY EXACT LOCATION WITH CIVIL PLANS.
6. PROVIDE 2" DOMESTIC WATER RISER INSIDE BUILDING. RISE TO A MAIN 2" BALL VALVE SHUT-OFF VALVE AND PROVIDE A CITY APPROVED BACKFLOW PREVENTER AS REQUIRED BY CITY. ROUTE PIPING UP AS TIGHT AGAINST WALL AS POSSIBLE TO ROOF JOISTS SPACE ABOVE. STRAP TO WALL. INSULATE ALL ABOVE GRADE PIPING AND VALVES.

   A CERTIFIED TESTER SHALL TEST ALL BACKFLOW PREVENTION DEVICES (DOMESTIC AND IRRIGATION) AND SUBMIT A COPY OF THE BACKFLOW CERTIFICATION TO THE BUILDING INSPECTOR AT THE TIME OF THE BUILDING FINAL INSPECTION. FORMS ARE AVAILABLE AT THE PERMIT COUNTER.
7. TYPICAL: PROVIDE INSULATED 2" DOMESTIC WATER PIPING ROUTED AS HIGH IN ROOF JOISTS SPACE AS POSSIBLE. SUPPORT WITH CLEVIS HANGERS WITH ROD SUPPORTS TO CLAMPS AT THE TOP CHORD OF ROOF JOISTS. DO NOT LAY ON BOTTOM CHORD OF ROOF JOISTS.
8. TYPICAL: PROVIDE INSULATED 1 1/2" BALL VALVE AT DOMESTIC WATER PIPING IN ROOF JOISTS ABOVE FOR FUTURE TENANT CONNECTION.

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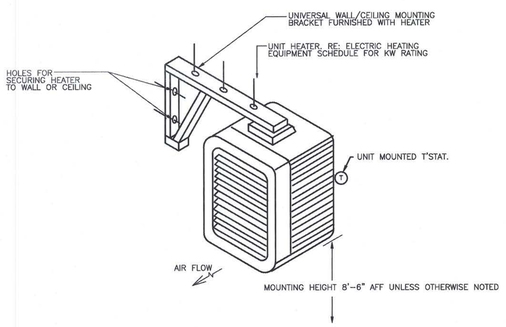
9. LOCATE AND EXTEND 6" SANITARY SEWER TO A 2-WAY CLEANOUT SET FLUSH WITH FINAL GRADE WITHIN 5'-0" OF BUILDING WALL. VERIFY EXACT LOCATION AND FLOW LINE ELEVATION. REFER TO CIVIL ENGINEER'S PLAN FOR CONTINUATION.
10. GAS TENANT SERVICE MANIFOLD AND MAIN METER , REFER TO CIVIL FOR ADDITIONAL INFORMATION.
11. PROVIDE WATER SUB-METER EQUAL TO; WATER METER WITH CONTACT PULSERS FOR REMOTE READING, EQUAL TO ISTEC SUPER JET 1100 SERIES. 903-241-8880 PHONE. REMOTE DISPLAYS ARE TO BE LOCATED IN NEAR REAR DOOR.

    EACH TENANT SHALL PROVIDE AN APPROVED BACKFLOW PREVENTION DEVICE (DOUBLE CHECK VALVE ASSEMBLY) AND SHALL BE INSTALLED ON THE DOMESTIC WATER LINE TO EACH SUITE. TENANT INSTALLATION TO OCCUR AT TIME OF FINISHOUT.
12. 3/4" NON-FREEZE, ALL BRONZE NICKEL PLATED HYDRANT WITH INTEGRAL VACUUM BREAKER AND STAINLESS STEEL OR NICKEL BRONZE ROUND BOX WITH DOOR.
    A. WOODFORD R816
    B. WADE 8600-TB
    C. ZURN Z-1300-F1-P

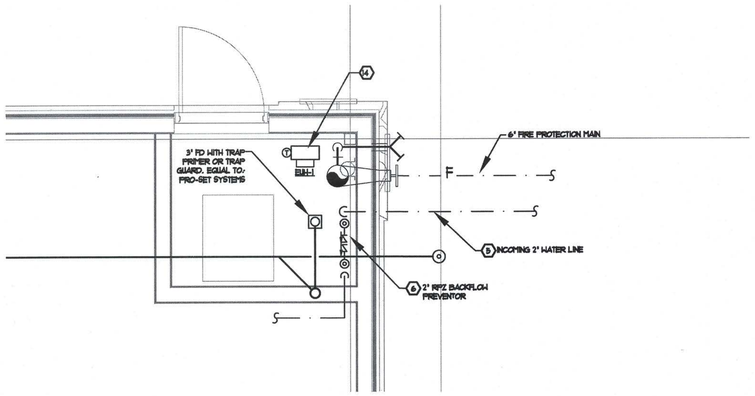
    VERIFY WALL THICKNESS PRIOR TO CONSTRUCTION.
13. JUNCTION BOX AT 9 ft. AFF FOR CONNECTION TO ELECTRIC UNIT HEATER EUH-2 THRU EUH-9. COORDINATE EXACT CONNECTION REQUIREMENTS WITH UNIT SPECIFIED AND FIRE SPRINKLER INTERLOCK . SEE BELOW FOR SUGGESTED MODEL #.

    VERTICAL ELECTRIC UNIT HEATER - MODEL MARKEL FRUH08003.
    9 KW, 208/1/60, 24.1 AMPS, 11.1 BTUH, 40° TEMP RISE, 26 FT. THROW, 400 CFM. PROVIDE WITH UNIT MOUNTED THERMOSTAT, MOUNTING BRACKET, LOUVERS, OSHA APPROVED FAN GUARD, DUST SHIELD, SUMMER FAN SWITCH. MOUNT BOTTOM OF UNIT 9 FT. A.F.F. UNIT HEIGHT = 11.75", WIDTH = 14.5", DEPTH = 6.5", WEIGHT APPROX. 50 lbs. TOTAL WITH ACCESSORIES.
14. JUNCTION BOX AT 9 ft. AFF FOR CONNECTION TO ELECTRIC UNIT HEATER EUH-1. COORDINATE EXACT CONNECTION REQUIREMENTS WITH UNIT SPECIFIED. SEE BELOW FOR SUGGESTED MODEL #.

    HORIZONTAL ELECTRIC UNIT HEATER - MODEL MARKEL FRUH03003.
    3.3 KW, 208/1/60, 15.9 AMPS, 11.2 BTUH, 26° TEMP RISE, 12 FT. THROW, 400 CFM. PROVIDE WITH WALL MOUNTED THERMOSTAT, MOUNTING BRACKET, LOUVERS, OSHA APPROVED FAN GUARD, DUST SHIELD, SUMMER FAN SWITCH. MOUNT BOTTOM OF UNIT 9 FT. A.F.F. UNIT HEIGHT = 11.75", WIDTH = 14.5", DEPTH = 6.5", WEIGHT APPROX. 50 lbs. TOTAL WITH ACCESSORIES.



2 ELECTRIC UNIT HEATER DETAIL
SCALE: NONE



3 ENLARGEMENT - FIRE RISER ROOM
SCALE: 1/4" = 1'-0"

MECHANICAL WILL BE DESIGNED AND INSTALLED PER THE 2015 INTERNATIONAL MECHANICAL CODE WITH THE LOCAL AMENDMENTS STATED IN CITY OF FRISCO ORDINANCE 16-12-97 ALONG WITH THE FOLLOWING COMMENTS.

Teel Crossing Phase 2
Frisco, TX

Construction Documents

Revisions

MP1.1

16 April 2018

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STATE OF TEXAS
FRANK P. SKIPPER
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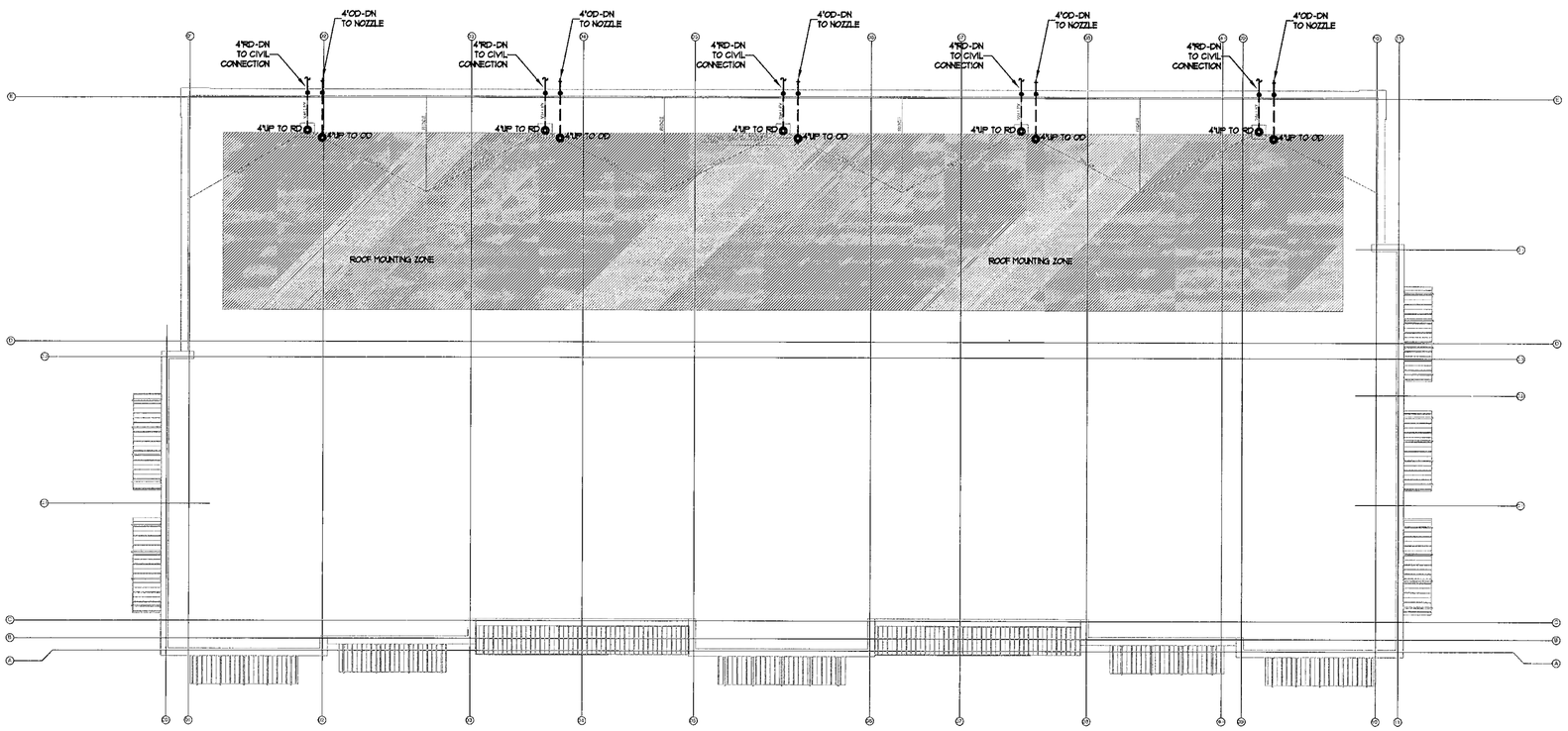
REGISTERED PROFESSIONAL ENGINEER
4/30/18



1 BASE BUILDING - MECHANICAL / PLUMBING ROOF PLAN
SCALE: 1/8" = 1'-0"

NOTES BY SYMBOL '◯' - PLUMBING FLOOR PLAN

1. LOCATE AND EXTEND 6" SANITARY SEWER TO A 2-WAY CLEANOUT SET FLUSH WITH FINAL GRADE WITHIN 5'-0" OF BUILDING WALL. VERIFY EXACT LOCATION AND FLOW LINE ELEVATION. REFER TO CIVIL ENGINEER'S PLAN FOR CONTINUATION.
2. TYPICAL: PROVIDE 6" SANITARY SEWER PIPING AT 2% SLOPE MINIMUM CENTERED IN FLOOR SLAB LEAVEOUT AREA AT REAR OF BUILDING.
3. PROVIDE 4" SANITARY SEWER STUB-UP TO 12"A.F.F. FOR TENANT CONNECTION. SET FLOW LINE ELEVATION AS NOTED AT 3'-0" BELOW FINISHED FLOOR ELEVATION.
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    A. WOODFORD R516
    B. WADE 8400-1TB
    C. ZURN Z-1300-M-P

    VERIFY WALL THICKNESS PRIOR TO CONSTRUCTION.
13. TYPICAL: PROVIDE ELECTRIC UNIT HEATER IN EACH BAY
    UNIT HEATER SHALL BE: MARKEL #FZHUH08C03, 400 CFM, 8 K.W. 208V/3 PHASE
    PROVIDE HEATER WITH DISCONNECT SWITCH, WALL / CEILING BRACKET AND UNIT MOUNTED T-STAT

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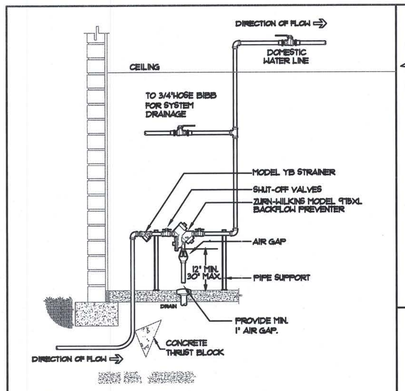
Teel Crossing Phase 2
Frisco, TX Construction Documents

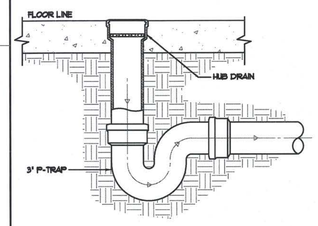
Revisions

MP1.2

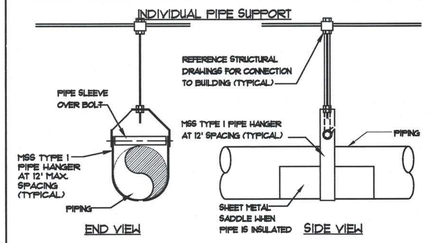
16 April 2018



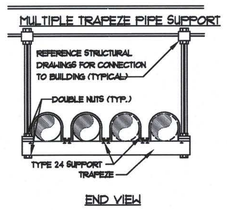
1 BACK FLOW PREVENTER DETAIL
NO SCALE



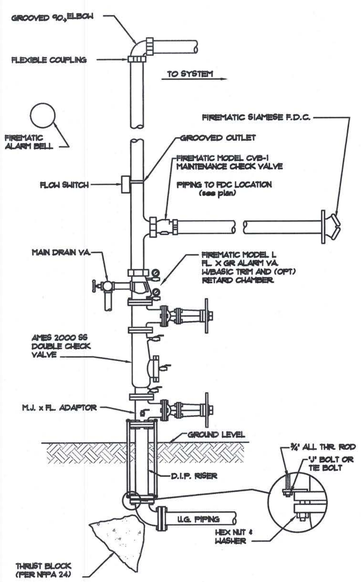
3 CLEAN-OUT AT GRADE
NO SCALE



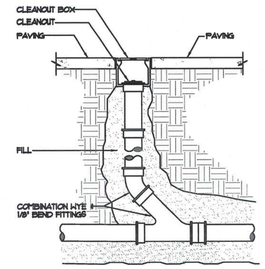
6 PIPING SUPPORT DETAIL
NO SCALE



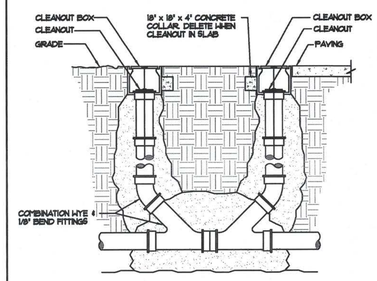
ALL PIPING SHALL BE PROPERLY SUPPORTED. VERTICAL COPPER TUBING SHALL BE SUPPORTED AT MAXIMUM INTERVALS OF 10 FT. HORIZONTAL COPPER TUBING SHALL BE SUPPORTED AT 6 FT. INTERVALS FOR PIPING 1 1/4" AND SMALLER AND 10 FT. FOR PIPING 1 1/2" AND LARGER IN DIAMETER. HORIZONTAL PVC PIPE SHALL BE SUPPORTED AT 4 FT. INTERVALS. VERTICAL PVC PIPE SHALL BE SUPPORTED AT 10 FT. INTERVALS.



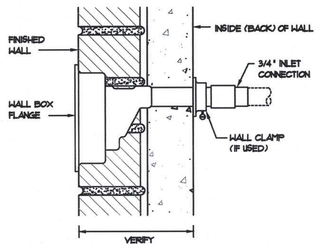
2 FIRE RISER DETAIL
NO SCALE



4 SANITARY SEWER STUB-UP
NO SCALE

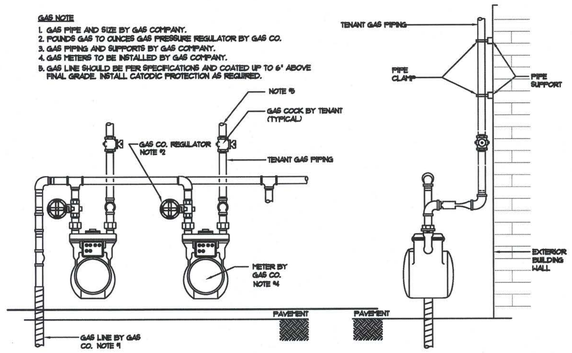


7 TWO WAY CLEAN-OUT TO GRADE
NO SCALE

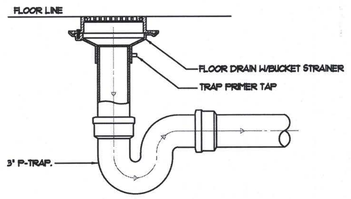


8 FREEZEPROOF WALL HYDRANT DETAIL
NO SCALE

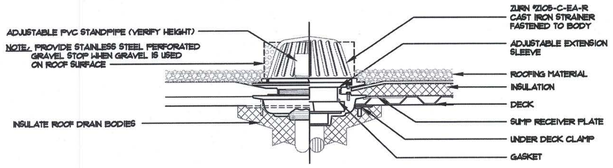
GAS NOTE
1. GAS PIPE AND SIZE BY GAS COMPANY.
2. POUNDS GAS TO OUNCES GAS PRESSURE REGULATOR BY GAS CO.
3. GAS PIPING AND SUPPORTS BY GAS COMPANY.
4. GAS METERS TO BE INSTALLED BY GAS COMPANY.
5. GAS LINE SHOULD BE PER SPECIFICATIONS AND COATED UP TO 6" ABOVE FINAL GRADE. INSTALL CATODIC PROTECTION AS REQUIRED.



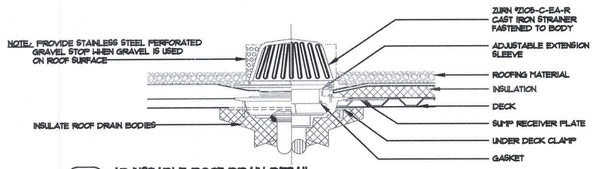
5 GAS METER BANK DETAIL
NO SCALE



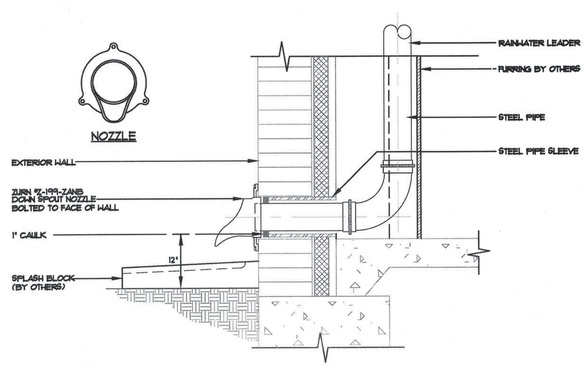
9 FLOOR DRAIN DETAIL
NO SCALE



10 OVERFLOW ROOF DRAIN DETAIL
NO SCALE



11 ADJUSTABLE ROOF DRAIN DETAIL
NO SCALE



12 OVERFLOW DISCHARGE PIPING NOZZLE DETAIL
NO SCALE

GENERAL PLUMBING REQUIREMENTS:

1. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER ANY WORK THAT HAS THE POTENTIAL TO HINDER PLUMBING SERVICES TO AREAS OUTSIDE OF THIS CONTRACT. ALL SHUT-DOWNS OR TIE-INS RELATING TO THESE SYSTEMS SHALL BE SCHEDULED AND SUBMITTED IN WRITING TO BE APPROVED BY THE OWNER AND THIS OFFICE. CONTRACTOR SHALL SUBMIT IN WRITING A SCHEDULE FOR PHASING OF CONSTRUCTION THAT INDICATES AREAS OF FIRST PRIORITY DURING EACH PHASE AND ANTICIPATED COMPLETION TIMES. THE OWNER SHALL REVIEW THESE SCHEDULES AND NOTIFY CONTRACTOR OF ACCEPTANCE PRIOR TO COMMENCEMENT OF WORK.
2. WHERE STRUCTURE IS ALTERED OR DAMAGED DURING CONSTRUCTION, INSTALLATION AND REMOVAL OF EQUIPMENT OR FIXTURES, THE CONTRACTOR SHALL REPAIR THE AREA TO MATCH SURROUNDING AREA PER ARCHITECTURAL SPECIFICATIONS. CUTTING, TRENCHING, AND PENETRATIONS THROUGH FIRE WALL, CONCRETE, AND OTHER STRUCTURES ARE A PART OF THIS PROJECT SCOPE AND SHALL BE INCLUDED IN THE CONTRACTOR'S BID. ALL EXCAVATION AND BACKFILLING REQUIRED FOR PLUMBING WORK IS ALSO INCLUDED AS PART OF THIS CONTRACT AND SHALL BE INCLUDED IN CONTRACTOR'S BID.
3. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND PROVIDE A WRITTEN REPORT TO THE OWNER AND THIS ENGINEERING OFFICE. THIS REPORT SHALL DESCRIBE EXISTING DAMAGE OR OTHER CONDITIONS THAT MAY INTERFERE WITH THIS PROPOSED NEW WORK. THIS SITE SURVEY SHALL ALSO INCLUDE VERIFICATION OF SIZES, LOCATIONS, AND CONDITION OF EXISTING UTILITIES.
4. ALL PIPING BRANCHES TO EQUIPMENT SHALL BE VALVED AND ALL VALVES SHALL HAVE UNIONS ADJACENT. ALL FIXTURE CONNECTIONS SHALL BE OF NEW FITTINGS. THE CONTRACTOR SHALL MAKE PROPER WASTE, VENT, HOT AND COLD WATER PIPING CONNECTIONS WITH REQUIRED FITTINGS TO ALL FIXTURES AND EQUIPMENT. NOT ALL BRANCH PIPING MAY BE SHOWN. COORDINATE ALL PLUMBING WORK WITH ARCHITECTURAL INSTRUCTIONS. SHOCK ARRESTOR FITTINGS SHALL BE FURNISHED AND SUPPLIED FOR EACH PLUMBING FIXTURE EITHER AS AIR CHAMBERS OR APPROVED MANUFACTURED DEVICES OR IN COMBINATION. REFER TO PLANS FOR SPECIFICALLY REQUIRED ITEMS AND LOCATIONS.
5. PLUMBING FIXTURES ARE FURNISHED BY CONTRACTOR UNLESS SPECIFIED OTHERWISE. THE PLUMBING CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ROUGH-INS INTERCONNECTING PIPING, TRAPS, INDIRECT WASTE LINES AND OTHER CONNECTIONS FOR THE EQUIPMENT TO MAKE ALL EQUIPMENT AND FIXTURES OPERATIONAL AND IN COMPLIANCE WITH APPLICABLE CODES AND REGULATING AUTHORITIES.
6. ALL PIPING SHALL BE SUPPORTED APPROPRIATELY IN WALLS, CEILING, AND BELOW FLOORS. SEE SPECIFICATIONS FOR DETAILS.
7. ALL PLUMBING WORK SHALL CONFORM WITH FEDERAL, STATE, AND LOCAL CODES, RULES AND REGULATIONS. ALL WORK SHALL BE PERFORMED BY A LICENSED PLUMBING CONTRACTOR IN A FIRST CLASS WORKMANLIKE MANNER. THE COMPLETED SYSTEMS SHALL BE FULLY OPERATIVE.
8. GAS FIRED EQUIPMENT SHALL BE PROVIDED WITH GAS COCK, PRESSURE REGULATOR (IF REQUIRED BY MANUFACTURER), MIN. 6" DIRT LEG WITH REMOVABLE CAP, AND UNION. SIZE AS SHOWN ON PLANS. ALL PIPING SHALL BE RIGID METALIC TYPE UNLESS SPECIFIED OTHERWISE. COORDINATE WITH EQUIPMENT MANUFACTURER BEFORE PIPING ROUGH-IN.
9. PROVIDE SLEEVES AND FIRE SEAL FOR ALL PIPE PENETRATIONS THROUGH FLOORS, FIRE AND SMOKE WALLS.
10. REFER TO ARCHITECTURAL DOCUMENTS FOR MOUNTING LOCATIONS OF ALL FIXTURES, ESPECIALLY FOR ADA/ CAB COMPLIANCE. HARDIE ARCHITECT DOES NOT NOTE SPECIFIC MOUNTING INSTRUCTIONS, REFER TO MANUFACTURER'S GUIDELINES TO ASSURE COMPLIANCE. THIS INCLUDES RIM HEIGHTS, CLEARANCE TO VALVE ACTUATORS, WHEEL CHAIR ACCESS, ETC....

GENERAL BID REQUIREMENTS:

1. REQUIRED INSURANCE SHALL BE PROVIDED BY THIS CONTRACTOR FOR PROTECTION AGAINST PUBLIC LIABILITY AND PROPERTY DAMAGE FOR THE DURATION OF WORK. CONTRACTOR SHALL SECURE AND PAY ALL PERMITS, FEES, INSPECTIONS, AND TESTS. SUBSTITUTIONS REQUESTED BY THE CONTRACTOR SHALL BE PAID FOR BY THE CONTRACTOR.
2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BE ASSURED ALL DESIGN DOCUMENTS ARE AVAILABLE PRIOR TO SUBMITTING BIDS. THIS INCLUDES, BUT IS NOT LIMITED TO: SCALED DRAWINGS, SPECIFICATIONS, CORRESPONDENCE, CONTRACT PROPOSALS, UTILITY CONNECTION AGREEMENTS, ADDENDUMS, AND ANY OTHER INFORMATION THAT COULD AFFECT MATERIAL SELECTION, INSTALLATION REQUIREMENTS, AND/OR FINAL APPROVALS. VERIFY WITH THE OWNER, ARCHITECT, AND THIS ENGINEERING OFFICE THAT THESE DOCUMENTS HAVE BEEN RECEIVED AND ARE A PART OF THIS CONTRACTOR'S FEE PROPOSAL.

FIRE PROTECTION REQUIREMENTS

1. FIRE PROTECTION SYSTEM IS PART OF THIS CONTRACT AND PERMIT. FINAL DESIGN, SPECIFICATION, AND INSTALLATION OF THIS SYSTEM IS THE RESPONSIBILITY OF THE FIRE PROTECTION CONTRACTOR.
2. THE FIRE PROTECTION ZONES AND THEIR OCCUPANCY TYPES FOR THIS BUILDING SHALL BE AS DEFINED BY ARCHITECT AND OTHERS. THE FIRE PROTECTION CONTRACTOR SHALL COORDINATE WITH ARCHITECTURAL, STRUCTURAL, AND OTHER CONSULTANTS TO PROPERLY PROTECT EACH ZONE TYPE.
3. IT IS THE RESPONSIBILITY OF THE FIRE PROTECTION CONTRACTOR TO VERIFY THAT ALL FIRE PROTECTION COMPONENTS AND SYSTEMS COMPLY WITH APPLICABLE CITY, STATE, AND FEDERAL FIRE PROTECTION CODES AND AUTHORITIES.

MINIMUM PIPE MATERIAL REQUIREMENTS

SEWER BELOW GRADE	SCH. 40 PVC
WASTE VENT ABOVE GRADE IN DUCTED RETURN SYSTEMS	SCH. 40 PVC
COLD AND HOT WATER (ABOVE GROUND)	TYPE "L" COPPER
COLD WATER (BURIED)	TYPE "K" COPPER
GAS (ON ROOF)	SCH. 40 BLACK IRON
GAS (INSIDE BUILDING)	SCH. 40 BLACK IRON
CONDENSATE DRAIN	DWV COPPER
INDIRECT DRAIN (INSIDE BUILDING)	DWV COPPER

TESTING REQUIREMENTS

1. TEST INSTALLED WATER PIPING AT 100 PSI FOR A PERIOD OF 8 HOURS, OBSERVING FOR ANY VISIBLE LEAKS. TEST PIPING AGAIN WITH FIXTURES INSTALLED.
2. CHLORINATE ALL WATER PIPING FOR A PERIOD OF 8 HRS, BY CHARGING WITH A HYPOCHLORINATE SOLUTION TO ACHIEVE A 5 PPM STRENGTH AT THE FIXTURE FURTHEST FROM THE POINT OF APPLICATION. UPON COMPLETION OF THE CHLORINATION, FLUSH ALL PIPING UNTIL NO CHLORINE CAN BE DETECTED BY TASTE. CLEAN ALL STRAINERS AND SET WATER FLOWS FROM FIXTURES IN ACCORDANCE WITH MANUFACTURER AND LOCAL REQUIREMENTS.
3. TEST INSTALLED GAS PIPING AT 60 PSI FOR A PERIOD OF 2 HRS, USING SOAP AND WATER OBSERVING FOR ANY VISIBLE LEAKS AT ALL JOINTS.
4. TEST INSTALLED WASTE AND VENT PIPING FOR A PERIOD OF 8 HRS, BY CAPPING OR PLUGGING ALL JOINTS TO A LEVEL OF THE HIGHEST FIXTURE OR FITTING. FILL THE SYSTEM WITH WATER AND OBSERVE FOR ANY LEAKS.

PLUMBING WILL BE DESIGNED AND INSTALLED PER THE 2015 INTERNATIONAL PLUMBING CODE WITH THE LOCAL AMENDMENTS STATED IN CITY OF FRISCO ORDINANCE 16-12-100 ALONG WITH THE FOLLOWING COMMENTS.

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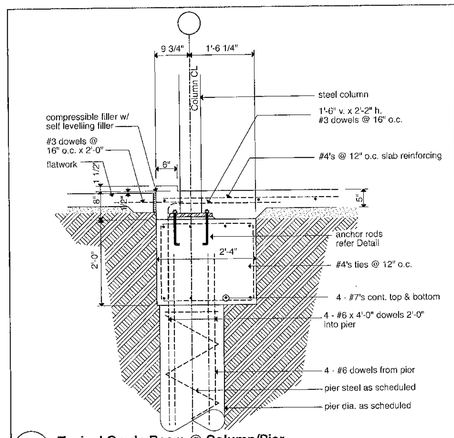
Teel Crossing Phase 2
Frisco, TX

Construction Documents

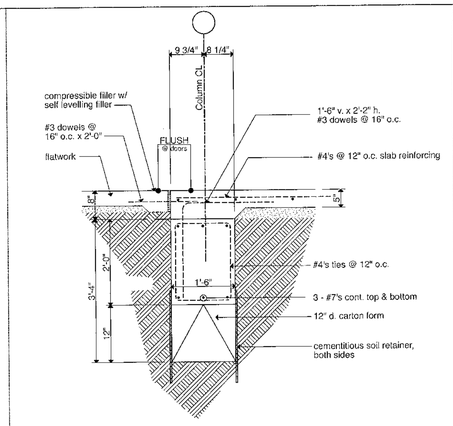
Revisions

MP2.1

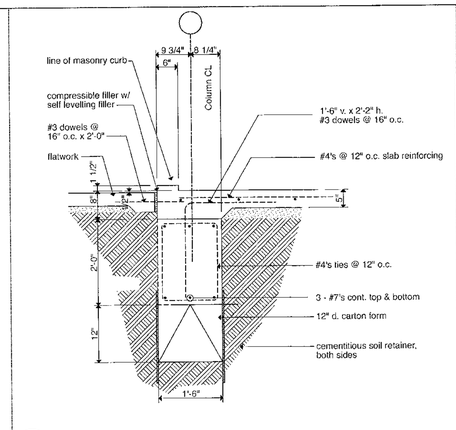
16 April 2018



01 Typical Grade Beam @ Column/Pier
scale: 3/4" = 1'-0"



02 Typical Grade Beam @ Storefront & HM Doors
scale: 3/4" = 1'-0"



03 Typical Grade Beam
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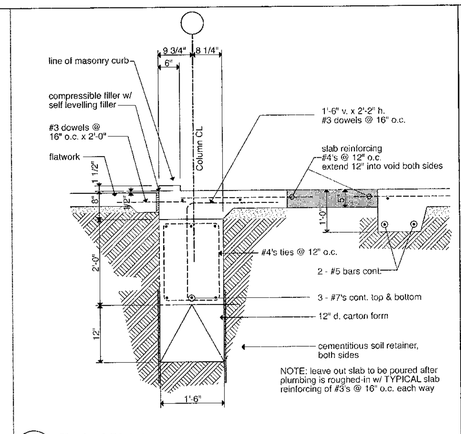

04 Typical Slab Leaveout
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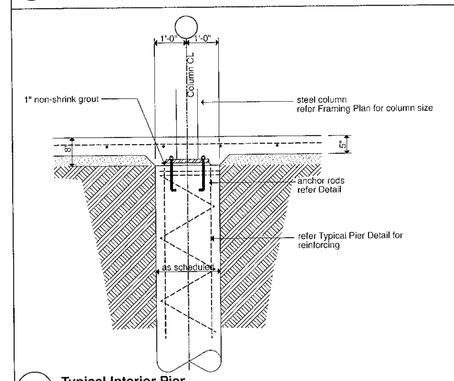
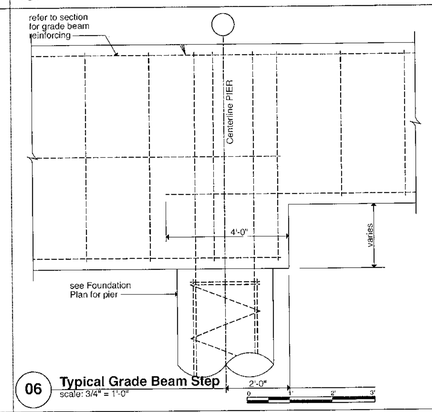


05 Typical Interior Pier
scale: 3/4" = 1'-0"



06 Typical Grade Beam Step
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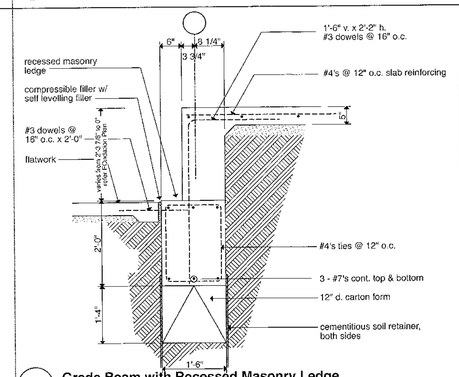
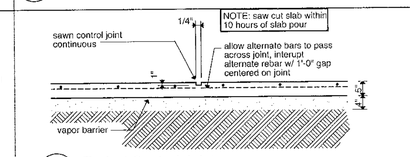
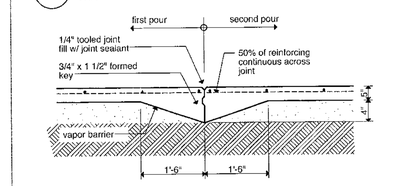


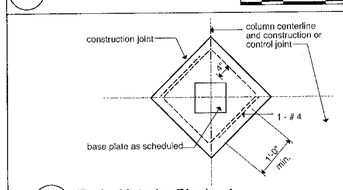
07 Grade Beam with Recessed Masonry Ledge
scale: 3/4" = 1'-0"



08 Typical Control Joint
scale: NTS



09 Typical Construction Joint
scale: NTS



10 Typical Interior Blockout
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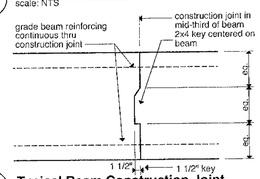
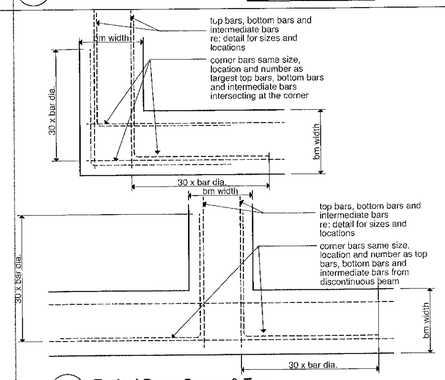


11 Typical Beam Construction Joint
scale: NTS



12 Typical Beam Corner & Tee
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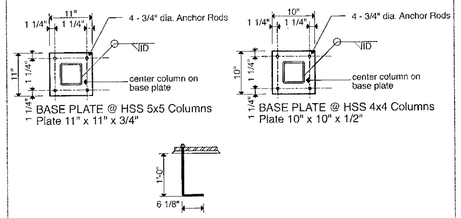
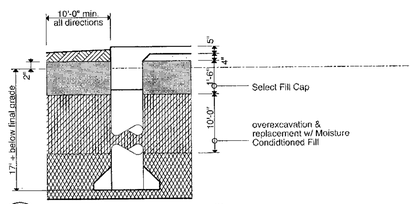


13 Base Plate & Anchor Rod Details
scale: NTS

Overexcavate & Install Fill as per the requirements per the Specifications outlined in the Geo-Tecnnical Report

- GRANULAR FILL as specified in GeoTech Report
- SELECT FILL as specified in GeoTech Report
- MOISTURE CONDITIONED FILL as specified in GeoTech Report
- NATIVE SOIL as depicted in GeoTech Report



14 Subgrade Preparation Profile
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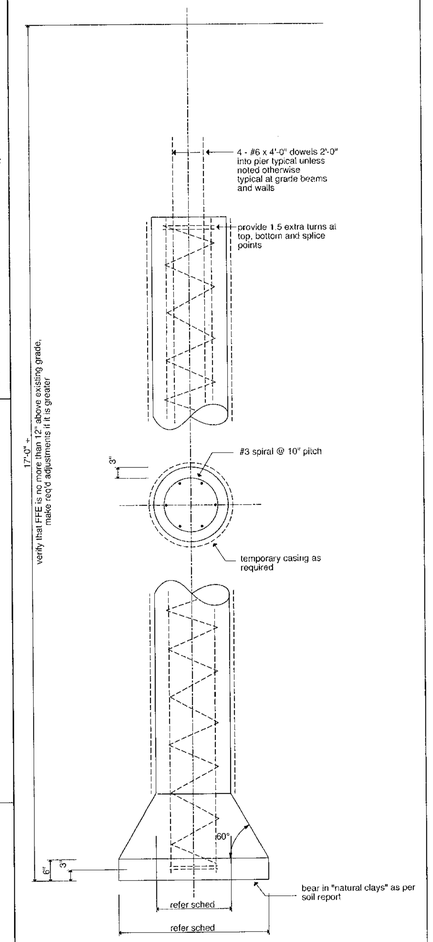
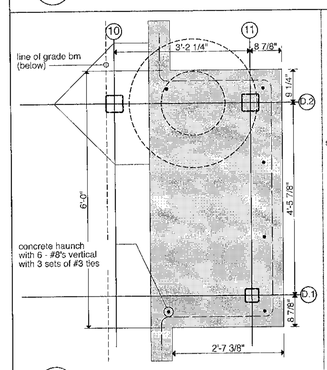
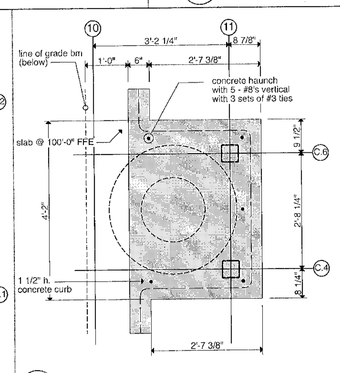


Pier & Bell Schedule			
	Shaft Dia.	Bell Dia.	Reinf'g
	18" dia.	36" dia.	6 - #6's
	18" dia.	54" dia.	6 - #6's

15 Belled Pier Schedule
scale: NTS



16 Pier Haunch
scale: NTS



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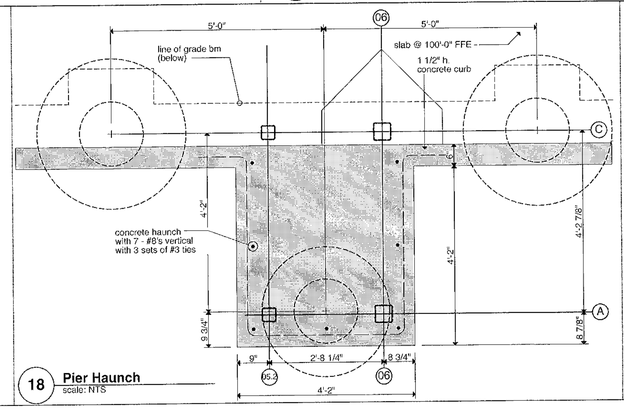

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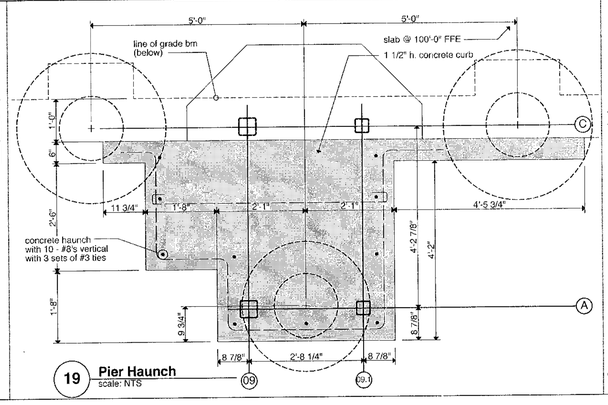
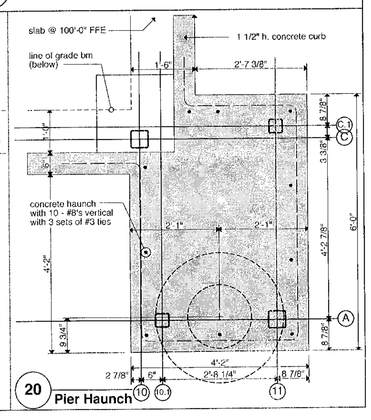


19 Pier Haunch
scale: NTS



20 Pier Haunch

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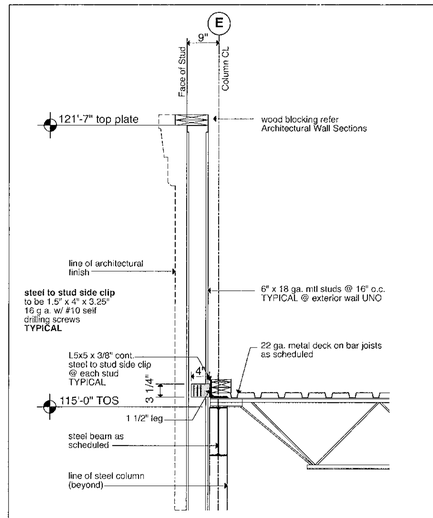
Teel Crossing Phase 2
Frisco, TX
Construction Documents

Revisions

S1.01

30 April 2018



01 Rear Wall Section
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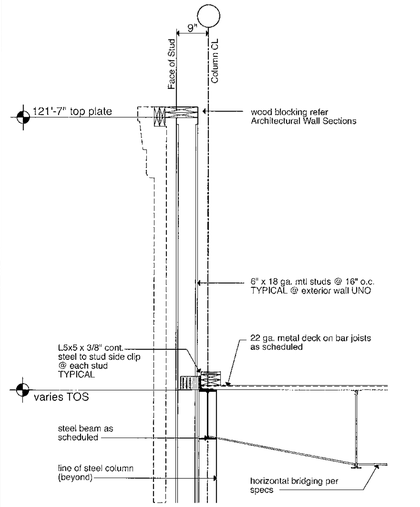

02 Side Wall Section
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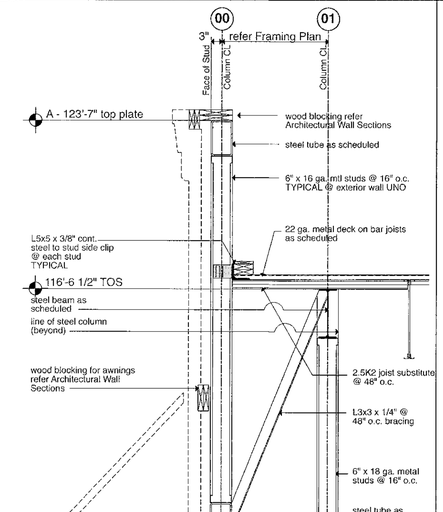
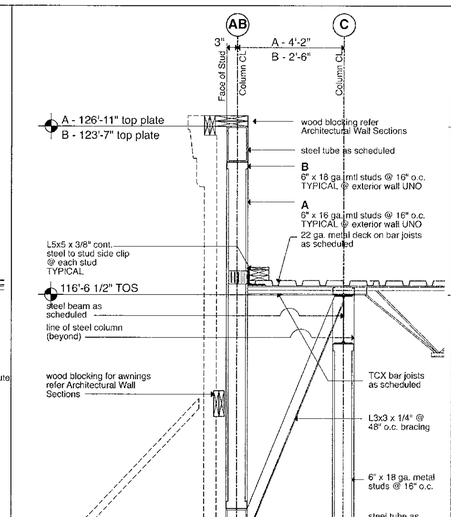
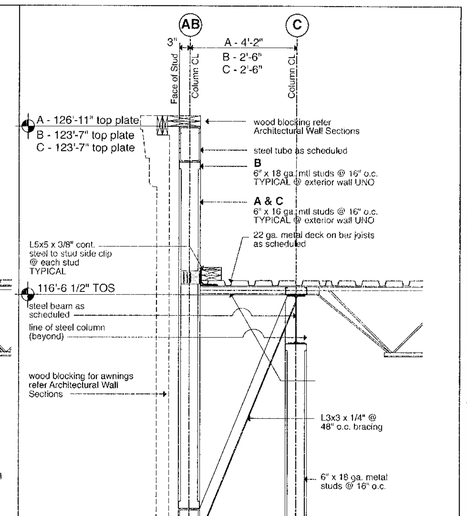


03 Side Wall Section @ Storefront Header
scale: 3/4" = 1'-0"



04 AB Front Wall Section @ Storefront Header
scale: 3/4" = 1'-0"



05 ABC Front Wall Section @ Pilaster
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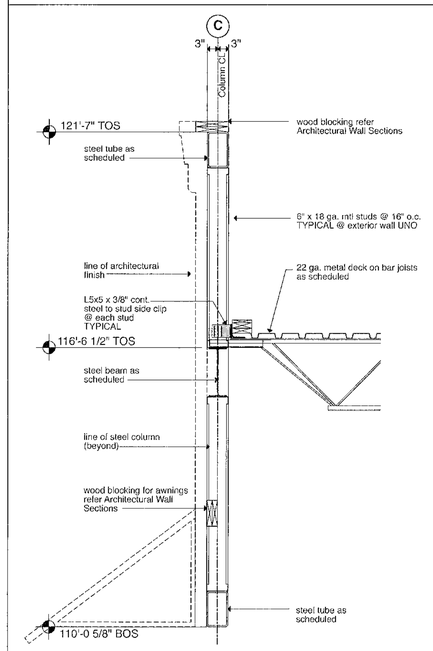
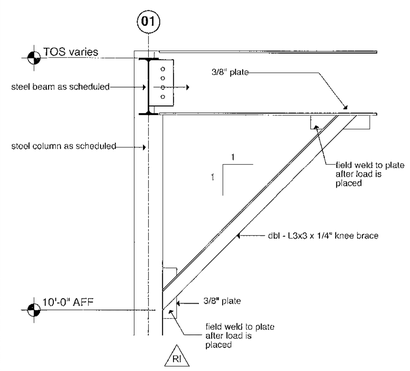
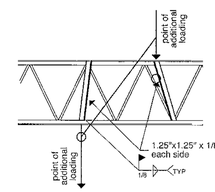


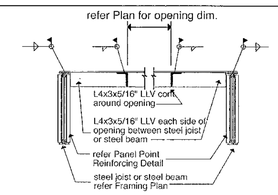
06 Front Wall Storefront Section
scale: 3/4" = 1'-0"



07 Knee Brace Detail
scale: NTS



08 Joist Panel Point Reinforcing @ RTU
scale: NTS



09 Typical Roof Opening Framing
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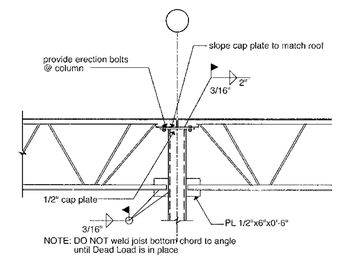
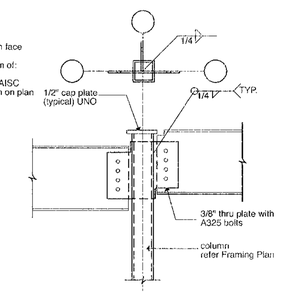


10 Typical Joist Connection
scale: NTS

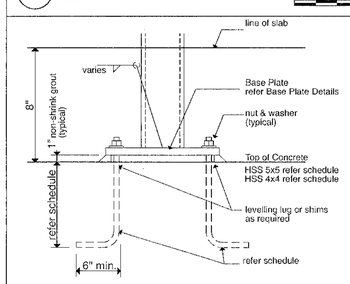
Beam Depth	No. of IL" Dia. Bolts
W8,W10	2
W12, 14	3
W16	4
W18	5
W21	5
W24	6

NOTE:
for Beams 14" deep or less thru Plates not required.
Use Tab Plate, weld to Column face

No. of bolts to be the maximum of:
1. Schedule (above)
2. Required for 50% of Part 2 AISC
3. Required for reaction shown on plan



11 Typical Beam to Column
scale: NTS



12 Base Plate Elevation
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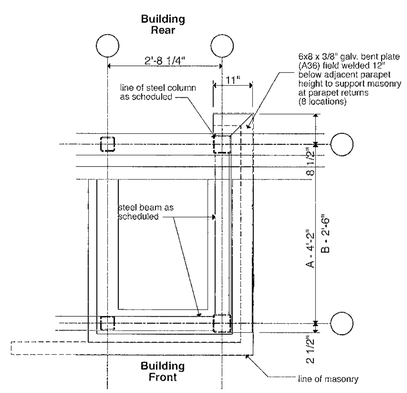
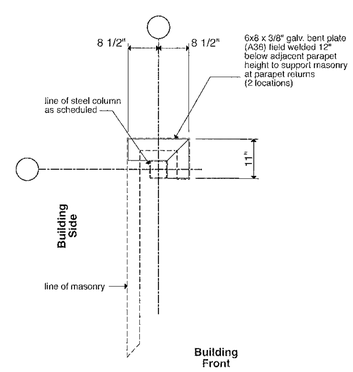


13 Parapet Masonry Returns @ Front of Building
scale: NTS



14 Parapet Masonry Returns @ Side of Building
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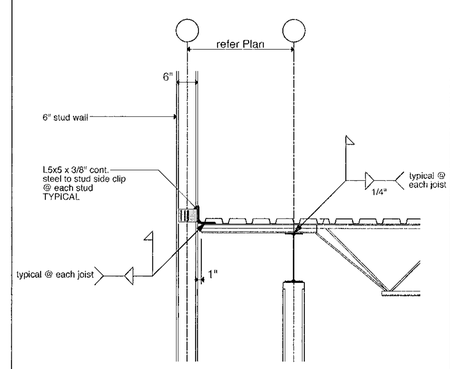

15 Extended Joist Detail
scale: NTS

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04/30/2018

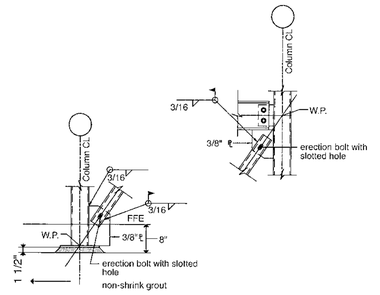
Construction Documents

Steel Crossing Phase 2
Frisco, TX

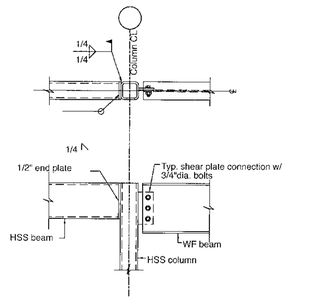
Revisions

S1.02

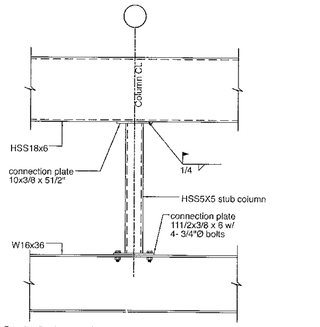
30 April 2018



01 Bracing Connection Details
scale: 3/4" = 1'-0"



02 Typical Connection Details
scale: 3/4" = 1'-0"



03 Typical Stub Column Detail
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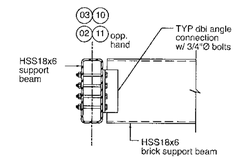
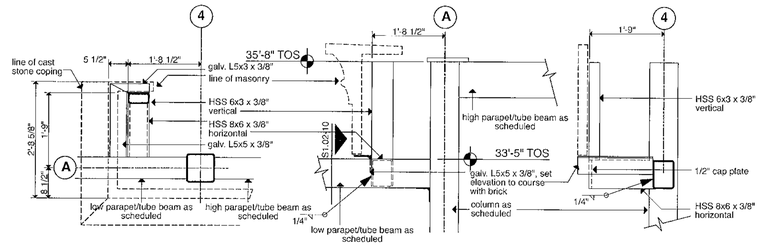


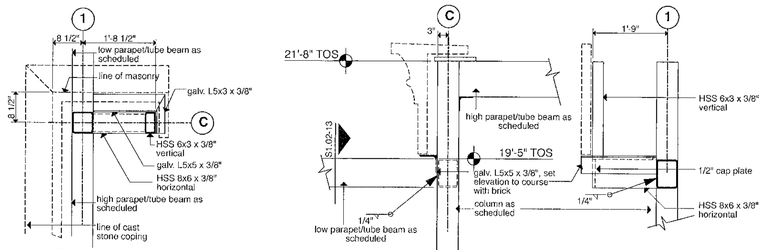
04 HSS 18x6 - Grid B Connection Detail
scale: 3/4" = 1'-0"



02 Parapet Wall Return Plan Detail
scale: NTS refer S1.04-05 Top of Column Detail typical

03 Parapet Wall Return Elevation
scale: NTS refer S1.04-05 Top of Column Detail typical

10 Parapet Wall Return Section
scale: NTS



11 Parapet Wall Return Plan Detail
scale: NTS refer S1.04-05 Top of Column Detail typical

12 Parapet Wall Return Elevation
scale: NTS refer S1.04-05 Top of Column Detail typical

13 Parapet Wall Return Section
scale: NTS

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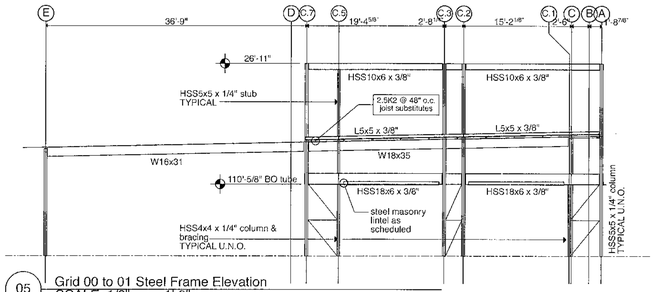
Teel Crossing Phase 2
Frisco, TX
Construction Documents

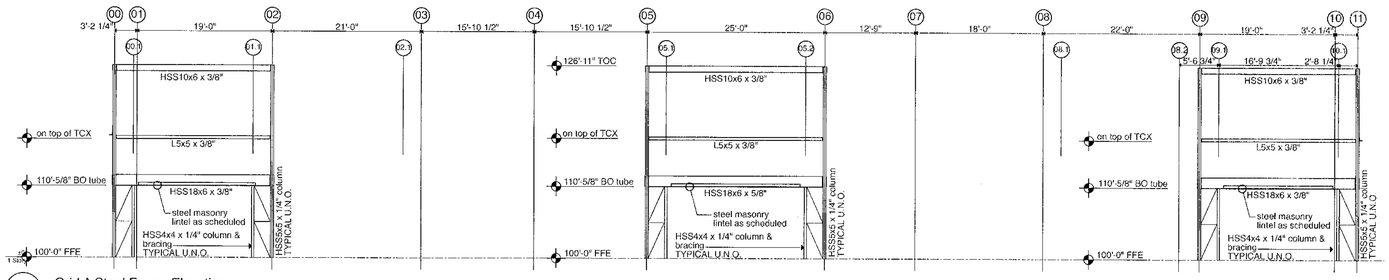
Revisions

S1.02b

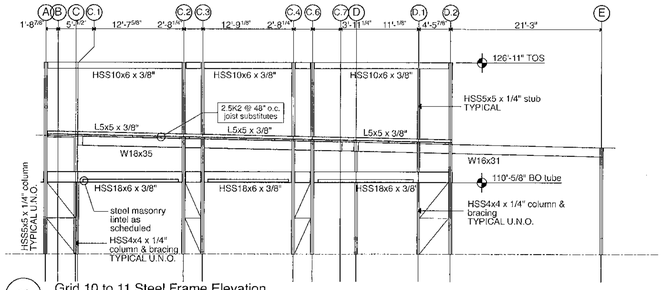
30 April 2018



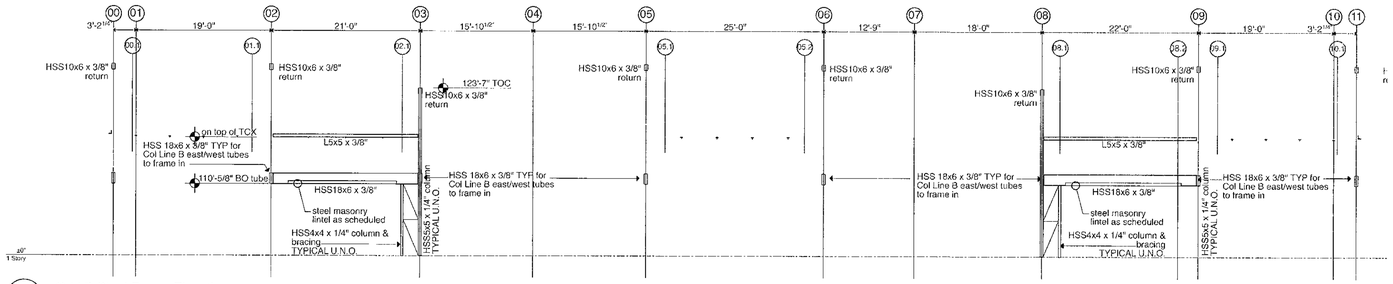
05 Grid 00 to 01 Steel Frame Elevation
SCALE: 1/8" = 1'-0"



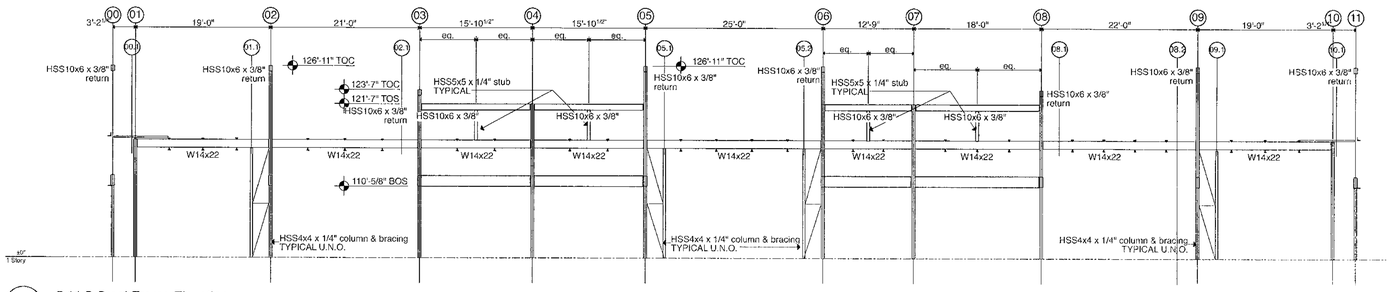
01 Grid A Steel Frame Elevation
SCALE: 1/8" = 1'-0"



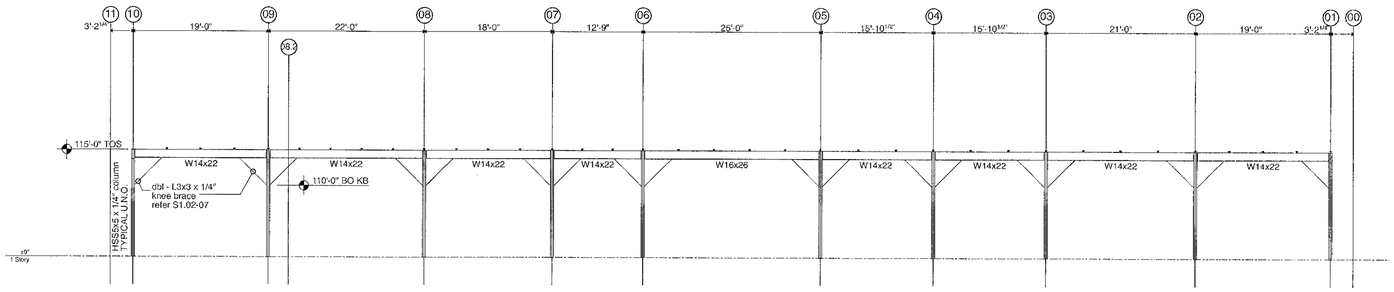
06 Grid 10 to 11 Steel Frame Elevation
SCALE: 1/8" = 1'-0"



02 Grid B Steel Frame Elevation
SCALE: 1/8" = 1'-0"



03 Grid C Steel Frame Elevation
SCALE: 1/8" = 1'-0"



04 Grid E Steel Frame Elevation
SCALE: 1/8" = 1'-0"

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Frisco, TX
Construction Documents

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S1.03

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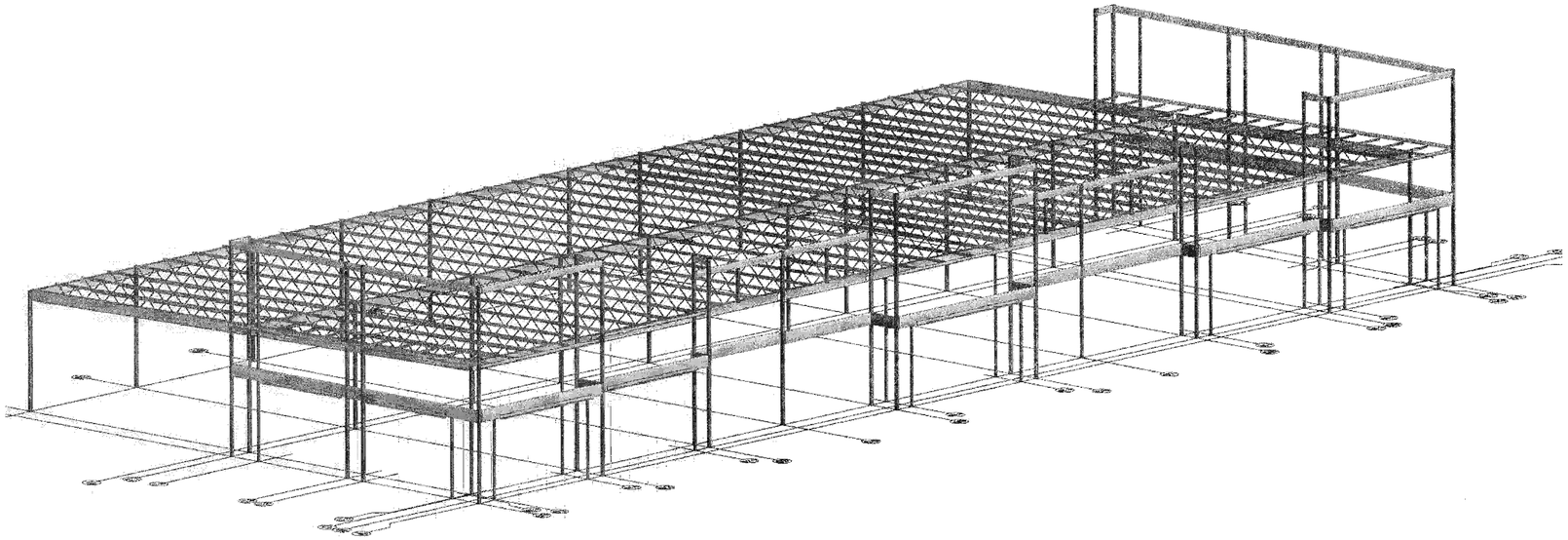
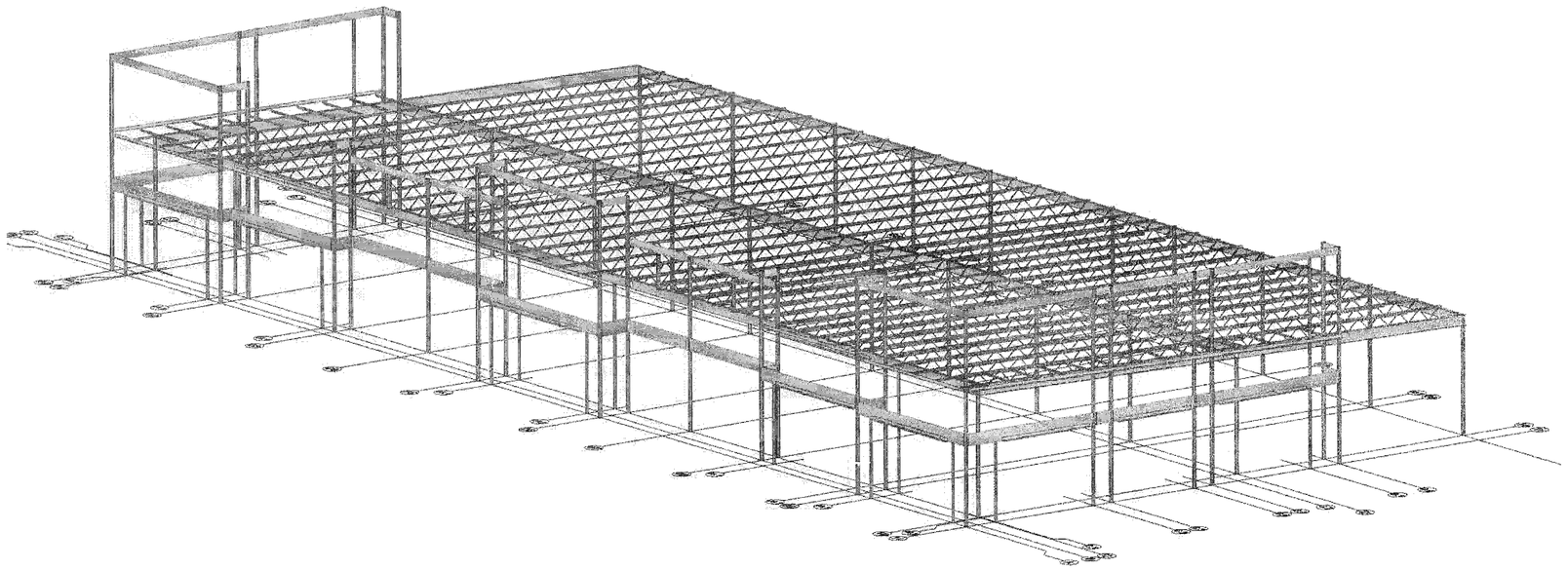


01 NW Framing Axo
SCALE: 1:100



01 SW Framing Axo
SCALE: 1:100

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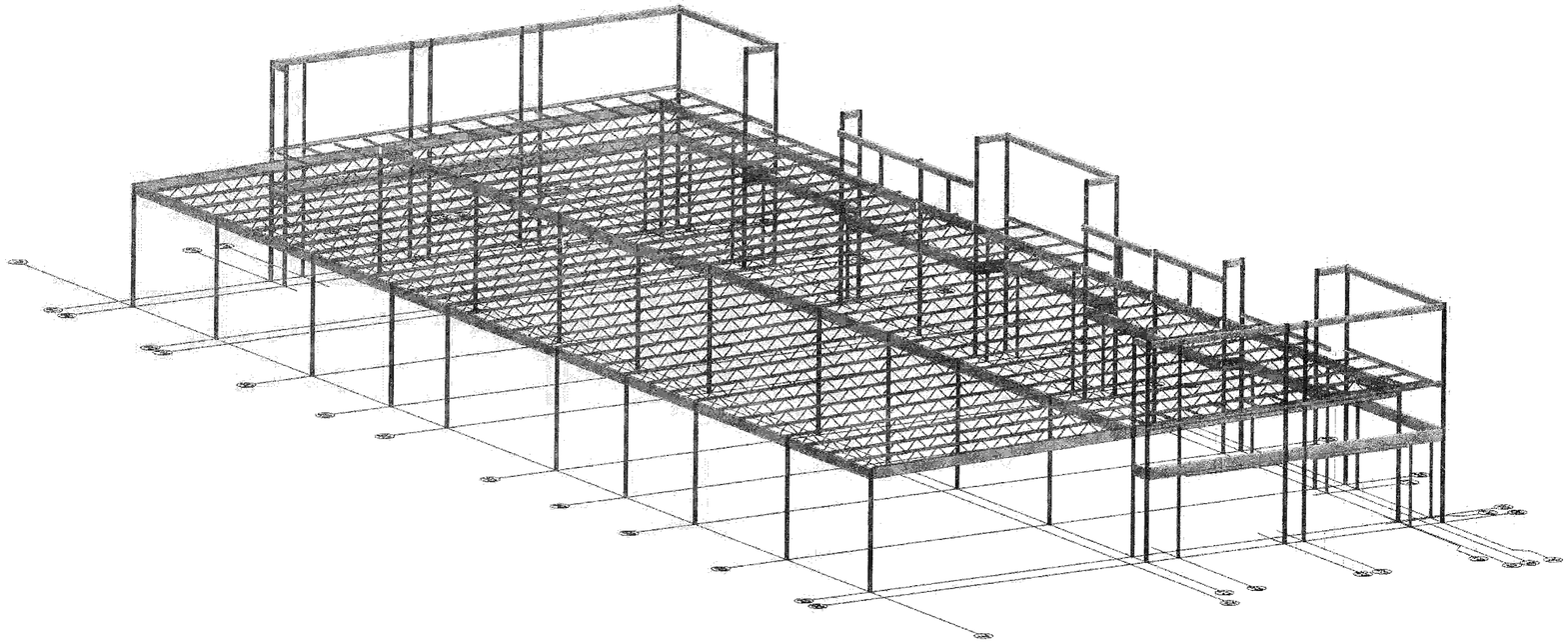

01 NE Framing Axo
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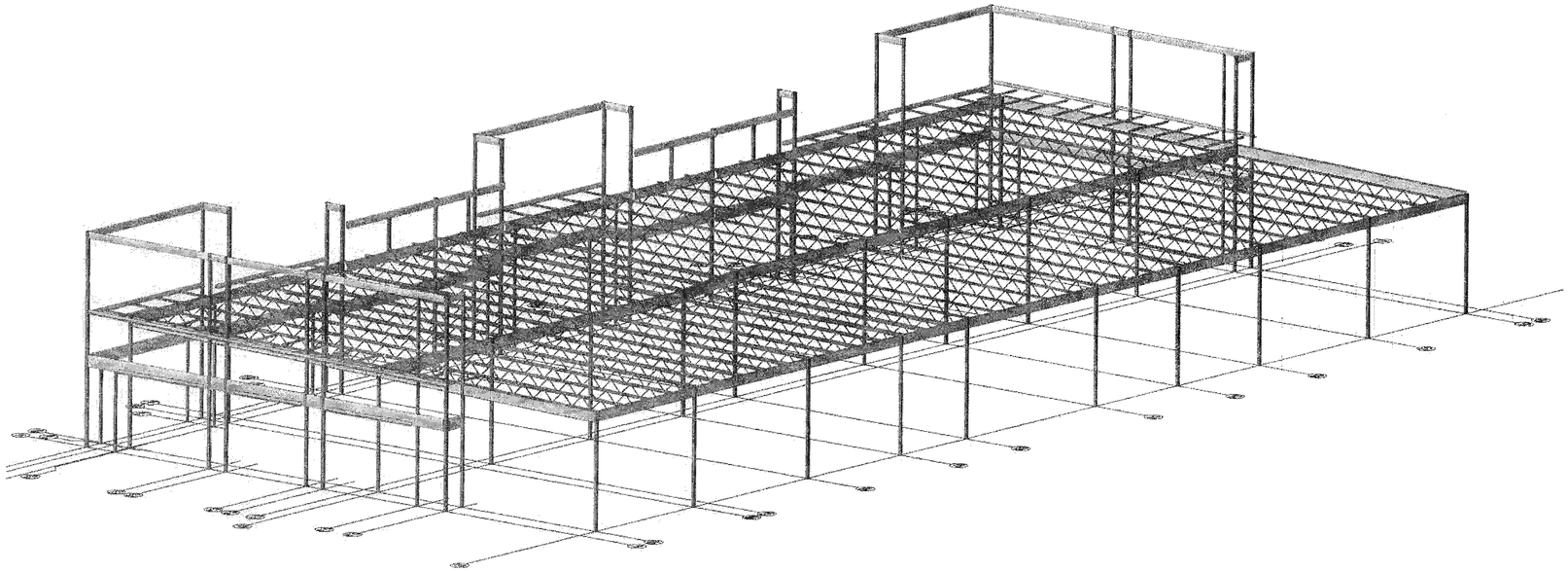

01 SE Framing Axo
SCALE: 1:100

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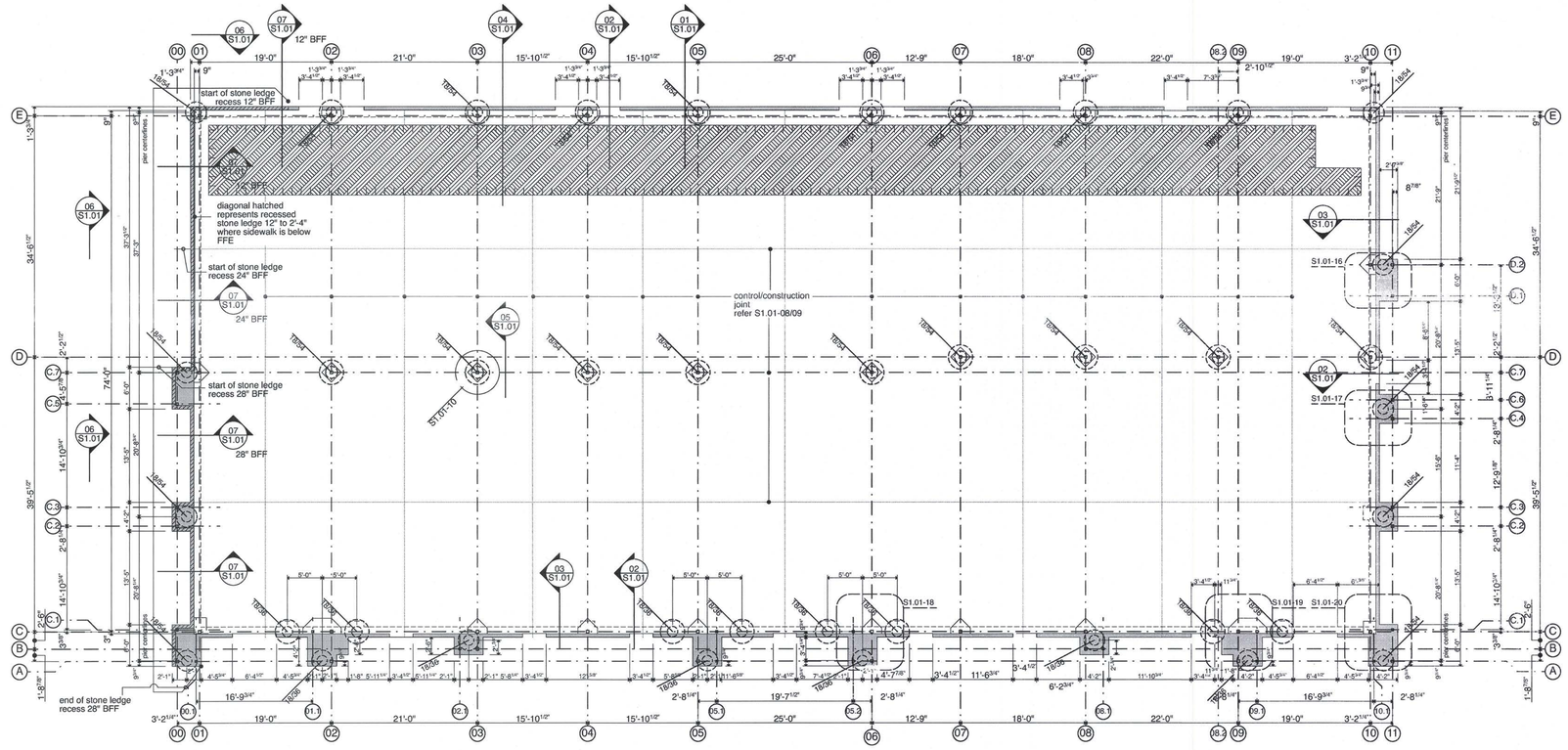
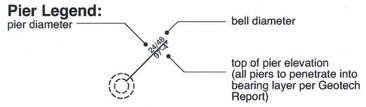


01 Foundation Plan Phase 2
SCALE: 1/8" = 1'-0"

General Notes Foundation:

1. Floor slab to be 5 inch concrete w/ #4's @ 12" o.c.c each way.
2. Provide Control Joints @ ALL Column Lines and as shown on Foundation Plan.
3. Provide vapor barrier below slab, refer Specifications.
4. Center piers under columns U.N.O.
5. Relative Finished Floor Elevation (FFE) = 100'-0"
6. Foundation Plan and Details are based upon the Geotechnical Report published by Alpha Testing, Inc dated 14 Oct 2008. A copy of the report is published in the Project Manual. All subgrade and foundation preparation shall meet or exceed the recommendations of the Geotechnical Report. Refer S1.01-15 for Schematic Section.
7. AL.L piers to penetrate 17'-0" minimum into sub grade.

Pier Legend:



GENERAL

1. THE CONTRACTOR SHALL VERIFY FIELD DIMENSIONS AND CONDITIONS BEFORE CONSTRUCTION AND NOTIFY THE ARCHITECT OF ANY DISCREPANCIES OR INCONSISTENCIES BEFORE PROCEEDING WITH THE WORK.
2. THE CONTRACTOR SHALL VERIFY LOCATIONS AND SIZES OF ALL OPENINGS IN FLOORS AND ROOFS AND ALL INSERTS AND EMBEDDED ITEMS WITH MECHANICAL, ELECTRICAL, AND ARCHITECTURAL DRAWINGS BEFORE PLACING CONCRETE, INSTALLING METAL DECKING OR ERECTING ANY STRUCTURAL LOAD BEARING MATERIAL. THE GENERAL CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL COORDINATION WITH SUB-CONTRACTORS.
3. ADEQUATE TEMPORARY BRACING WILL BE REQUIRED OF ALL STRUCTURAL PIECES OR UNITS UNTIL ALL MASONRY WALLS AND/OR FLOOR OR ROOF DECKS ARE IN PLACE, AND ALL CONCRETE HAS BEEN PLACED AND GAINED ITS ULTIMATE STRENGTH.
4. IN CASE OF DISCREPANCIES IN DIMENSIONS AND ELEVATIONS BETWEEN STRUCTURAL AND ARCHITECTURAL DRAWINGS, CONTRACTOR SHALL VERIFY WITH ARCHITECT PRIOR TO FABRICATION AND CONSTRUCTION.
5. THE LATEST EDITION OF ACI, AISC, AWS, CRSI AND SJI SPECIFICATIONS SHALL GOVERN ALL PHASES OF FABRICATION AND CONSTRUCTION.
6. DESIGN CODES AND GENERAL CRITERIA:
   a. 2015 INTERNATIONAL BUILDING CODE:
   b. ACI 318 BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE.
   c. AISC SPECIFICATION FOR STRUCTURAL STEEL FOR BUILDINGS – ALLOWABLE STRESS DESIGN AND PLASTIC DESIGN, THIRTEENTH EDITION
   d. ASCE 7-05 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES.
7. STRUCTURAL DESIGN CRITERIA:
   ROOF DEAD LOAD - 20 PSF
   ROOF LIVE LOAD - 25 PSF
   FLOOR LIVE LOAD - 50 PSF
8. WIND DESIGN DATA:

WIND LOAD	-	115 MPH PER ASCE 7-10
IMPORTANCE FACTOR	-	1.00
RISK CATEGORY	-	2
WIND EXPOSURE CATEGORY	-	0.18

FOUNDATION

1. EARTHWORK: ALL EXISTING PAVEMENTS, FOUNDATIONS, UTILITIES, VEGETATION, TOPSOIL CONTAINING ORGANIC MATERIALS AND ANY SOFT SOILS SHALL BE CLEARED AND GRUBBED FROM THE BUILDING SITE. EXCAVATE FROM EXISTING GRADE AS REQUIRED. SLOPE FINAL CUT OF EXCAVATED SURFACE ON ONE PERCENT (1%) TO ALLOW DRAINAGE OF ANY WATER UNDER FOUNDATION. AFTER REMOVAL OF VEGETATION AND EXCAVATION, THE EXPOSED SURFACE SHALL BE PROOF ROLLED AND ANY SORT OF COMPRESSIBLE MATERIAL SHALL BE REMOVED OR IMPROVED BY DENSIFICATION AS RECOMMENDED FOR COMPACTED FILL BELOW FOUNDATIONS. AFTER COMPLETION OF PROOF ROLLING THE SURFACE SHALL BE SCARIFIED FOR A MINIMUM DEPTH OF TWELVE (12) INCHES AND RECOMPACTED AS PER COMPACTION NOTE.
2. EXPOSED SURFACE COMPACTION: EXPOSED SURFACE SOIL TO RECEIVE SELECT FILL SHOULD BE SCARIFIED TO A MINIMUM OF TWELVE (12) INCHES AND MOISTURE CONDITIONED TO A MINIMUM OF NINETY-FIVE PERCENT (95%) OF MAXIMUM DRY DENSITY AT MINUS ONE (-1%) PERCENTAGE POINTS BELOW TO PLUS THREE (+3%) PERCENTAGE POINTS ABOVE ITS OPTIMUM MOISTURE CONTENT AS DETERMINED BY THE STANDARD PROCTOR METHOD, ASTM SPECIFICATION D698.
3. AFTER SURFACE SOIL TO RECEIVE SELECT FILL HAS SCARIFIED AND COMPACTED THE SELECT FILL SHOULD BE PLACED PROMPTLY TO PREVENT DRYING OF THE SUBGRADE SOILS. REFER TO SOIL REPORT SECTION 4.6 FOR ADDITIONAL INFORMATION.
4. ALL SOIL USED AS FILL SHALL BE A NON-EXPANSIVE SANDY CLAY OR CLAYEY SAND WITH A MAXIMUM LIQUID LIMIT OF 35, PLASTICITY INDEX BETWEEN 5 AND 15 AND LESS THAN 40% PASSING THE #200 SIEVE. SAND CUSHION UNDER SLABS ON GRADE SHALL BE EITHER WELL-GRADED WASHED CONCRETE SAND OR PEA GRAVEL.
5. SELECT FILL COMPACTION: SELECT FILL PAD SHOULD EXTEND AT LEAST THREE (3) FEET BEYOND THE EDGE OF BUILDING. SELECT FILL REQUIRED BENEATH THE GRADE SLAB SHALL BE PLACED IN EIGHT (8) INCH THICK LOOSE LIFTS AND COMPACTED TO A MINIMUM OF NINETY-FIVE PERCENT (95%) OF MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR METHOD, ASTM SPECIFICATION D698.
6. POSITIVE SURFACE DRAINAGE AWAY FROM THE STRUCTURES SHALL BE ESTABLISHED AND MAINTAINED AT ALL TIMES BOTH DURING AND AFTER CONSTRUCTION. WATER SHALL NOT BE ALLOWED TO COLLECT NEAR THE BUILDING SITE AT ANY TIME.
7. FINISH GRADES OF FILL: THE FINISH GRADES OF FILL AGAINST GRADE BEAMS SHALL SLOPE AWAY FROM THE BUILDING AND CARE SHALL BE TAKEN THAT NO LOW SPOTS EXIST IN FILL THAT ALLOWS WATER TO COLLECT.
8. CONTRACTOR SHALL PROVIDE ADEQUATE EXCAVATION SHORING TO PREVENT CAVE-INS.
9. ALL FOUNDATION EXCAVATIONS SHALL BE INSPECTED BY THE ARCHITECT PRIOR TO PLACEMENT OF REINFORCING STEEL OR CONCRETE.
10. EACH LIFT OF COMPACTED SOIL SHOULD BE TESTED AND INSPECTED BY THE SOILS ENGINEER OR HIS REPRESENTATIVE PRIOR TO PLACEMENT OF SUBSEQUENT LIFTS.
11. CONDUCT IN-PLACE DENSITY TESTS AT THE RATE OF NOT LESS THAN ONE (1) TEST PER 2500 SQUARE FEET OF SURFACE AREA OR MINIMUM OF FOUR (4) TESTS PER LIFT FOR EACH TESTED AREA.
12. CONFIRM SUITABILITY BY ATTERBERG LIMIT TESTS AT THE RATE OF AT LEAST ONE TEST PER 250 CUBIC YARDS.
13. CONTRACTOR SHALL PROVIDE FOR DEWATERING AT EXCAVATIONS FROM EITHER SURFACE WATER OR SEEPAGE.
14. CONTRACTOR SHALL PERFORM ALL SUBGRADE SOILS AND FOUNDATION AS SPECIFIED IN GEOTECHNICAL REPORT BY ALPHA TESTING, INC., DATED 14 OCTOBER 2008, REPORT NO. G0808098.

CONCRETE

1. ALL CONCRETE SHALL HAVE A MINIMUM ULTIMATE COMPRESSIVE STRENGTH OF 3000 P.S.I. AT 28 DAYS. ALL CONCRETE EXPOSED TO WEATHER SHALL HAVE 5-12% (+/-) 1-12% AIR ENTRAINMENT. AIR ENTRAINMENT SHALL NOT EXCEED 3% FOR INTERIOR SLABS WITH A STEEL TROWEL FINISH.
2. MINIMUM CONCRETE 28 DAY COMPRESSIVE STRENGTH AND SLUMP:
   a. FOOTINGS - 3000PSI SLUMP (MIN.MAX.) 4IN/6IN
   b. GRADE BEAMS - 3000PSI SLUMP (MIN.MAX.) 3IN/5IN
   c. SLABS ON GRADE - 3000PSI SLUMP (MIN.MAX.) 2IN/4IN
3. CONCRETE MIX DESIGNS FROM THE CONCRETE SUPPLIER AND TEST RESULTS FROM THE TESTING LAB SHALL BE SUBMITTED TO THE ARCHITECT/ENGINEER FOR EVALUATION AND APPROVAL.
4. ALL CAST-IN-PLACE CONCRETE WORK SHALL BE IN ACCORDANCE WITH ACI 301, LATEST EDITION.
5. ALL DETAILING, FABRICATION AND INSTALLATION OF STEEL REINFORCEMENT SHALL BE IN ACCORDANCE WITH ACI 315 AND ACI 318 (LATEST EDITIONS).
6. CONCRETE REINFORCING REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60 BARS.
7. MINIMUM COVERAGE ON REINFORCING STEEL:
   a. CONCRETE CAST AGAINST EARTH - 3IN CLEAR TO STIRRUP
   b. CONCRETE CAST AGAINST FORMS - 2IN CLEAR TO STIRRUP
   c. GRADE BEAMS - 0.75IN TOP, 3IN BOTTOM, 1.5IN ON PANEL FORMED SIDES
8. GRADE BEAMS SHALL BE ON SIZE AND WITH REINFORCEMENT AS INDICATED ON PLANS. VAPOR RETARDER SHALL BE FOLDED INTO TRENCH TO WITHIN 2 INCHES OF TRENCH BOTTOM WHEN SPECIFIED. DETAIL REINFORCING AND PROVIDE CORNER BARS AT GRADE BEAM INTERSECTIONS TO MATCH HORIZONTAL REINFORCING. SPLICE BOTTOM REINFORCING WHEN NECESSARY OVER SUPPORTS. SPLICE TOP REINFORCING WHEN NECESSARY AT MID-SPAN. ALL SPLICES SHALL BE ACCORDANCE WITH THE ACI 318 AND THE TYPICAL DETAILS CONTAINED ON THE DRAWINGS.
9. SLABS ON GRADE: SLABS ON GRADE SHALL BE OF THE THICKNESS AND WITH REINFORCEMENT AS SHOWN ON DRAWINGS. APPLY CURING COMPOUND IN ACCORDANCE WITH THE SPECIFICATIONS AND MANUFACTURER'S RECOMMENDATIONS. SLAB REINFORCING SHALL BE CENTERED IN SLAB. CARE SHALL BE TAKEN TO MAINTAIN SLAB REINFORCEMENT POSITION DURING PLACING OPERATION.
10. UNLESS NOTED OTHERWISE, PROVIDE 90 DEGREE CORNERS AT ALL EXPOSED EDGES AND CORNERS.
11. PROVIDE CONSTRUCTION JOINTS AS REQUIRED. COORDINATE JOINT LOCATIONS WITH ARCHITECT/ENGINEER.

REINFORCING STEEL

1. ALL REINFORCING STEEL SHALL BE NEW BILLET, ASTM A615 GRADE 60 DEFORMED DOMESTIC BARS. ALL DETAILING, FABRICATION, PLACING AND SUPPORTING SHALL BE IN ACCORDANCE WITH ACI 318 AND CRSI.
2. ALL DOWELS SHALL BE THE SAME SIZE AND SPACING AS ADJOINING MAIN BARS (MIN. LAP 30 BAR DIA.), UNLESS NOTED OR DETAILED OTHERWISE.
3. THE MINIMUM SPLICE OF ALL CONTINUOUS BARS SHALL BE 40 BAR DIA. (2'-0" MIN.). PROVIDE OUTSIDE CORNER BARS IN ALL BEAMS. BARS SHALL BE SAME SIZE AS MAIN BEAM STEEL, LAP 30 BAR DIA.
4. CLEAR MINIMUM COVERAGE OF CONCRETE OVER REINFORCING BARS SHALL BE AS FOLLOWS:
   1.CONCRETE PLACED AGAINST EARTH ---------- 3"
   2.FORMED CONCRETE AGAINST EARTH ---------- 2"
   3.BEAMS TO TIES/STIRRUPS ---------- 1-1/2"
5. ALL REINFORCING BARS, W.W.F., BOLTS, DOWELS, INSERTS, ETC., SHALL BE RIGIDLY SECURED IN POSITION PRIOR TO PLACING CONCRETE.
6. CONTRACTOR SHALL SUBMIT COMPLETE SHOP AND PLACING DRAWINGS AND OBTAIN APPROVAL PRIOR TO FABRICATION.

STRUCTURAL STEEL

1. ALL WIDE FLANGE SECTIONS SHALL BE ASTM A992. ALL ANGLES, AND PLATES SHALL BE ASTM A36. ALL HOLLOW STRUCTURAL STEEL TUBE SECTIONS SHALL BE ASTM A500 GRADE B.
2. STRUCTURAL STEEL SECTIONS SHALL BE DESIGNED, DETAILED FABRICATED AND ERECTED IN ACCORDANCE WITH THE AISC "MANUAL OF STEEL CONSTRUCTION", ALLOWABLE STRESS DESIGN, LATEST EDITION.
3. ALL BOLTED CONNECTIONS FOR STRUCTURAL STEEL SHALL USE MIN. 3/4" DIAMETER ASTM A325 HIGH STRENGTH BOLTS. CONNECTIONS SHALL BE BEARING TYPE WITH THREADS ALLOWED IN THE SHEAR PLANE.
4. ALL STRUCTURAL STEEL BOLTED CONNECTIONS WITH ASTM-A325 3/4" DIAMETER BOLTS SHALL BE TIGHTENED TO ACHIEVE A MINIMUM BOLT TENSION FOR CALIBRATED WRENCHES OF 30,000LBS. THE CONTRACTOR SHALL HAVE A QUALIFIED TESTING AGENCY CHECK ALL CONNECTIONS.
5. ALL WELDING SHALL CONFORM TO THE RECOMMENDATIONS OF THE AWS, AND ALL WELDS, INCLUDING FIELD, SHALL BE MADE ONLY BY CERTIFIED WELDERS USING E70XX ELECTRODES.
6. ALL STRUCTURAL BOLTS SHALL BE ASTM A325-N, BEARING TYPE (3/4" DIA. UNLESS NOTED OTHERWISE). ANCHOR BOLTS SHALL BE ASTM A307.
7. ALL STRUCTURAL STEEL SHALL BE PAINTED WITH A SHOP PRIME COAT AND FIELD RETOUCHED WHERE THE SHOP COAT HAS BEEN DAMAGED DUE TO PLACING, HANDLING AND WELDING. ALL STEEL BEAMS SHALL BE FABRICATED WITH NATURAL CAMBER UP.
8. CONTRACTOR SHALL SUBMIT COMPLETE SHOP DRAWINGS AND OBTAIN APPROVAL PRIOR TO FABRICATION.
9. CONNECTIONS OF STRUCTURAL STEEL BEAMS TO COLUMNS AND BEAMS TO BEAMS SHALL BE BEARING TYPE WITH STANDARD CLIP ANGLES SELECTED TO SUPPORT 1/2 OF THE TOTAL UNIFORM LOAD CAPACITY SHOWN IN THE TABLES OF UNIFORM LOAD CONSTANTS, PART 2 OF THE AISC MANUAL, ALLOWABLE STRESS DESIGN. FOR THE GIVEN BEAM SPAN AND GRADE OF STEEL SPECIFIED UNLESS NOTED OTHERWISE. ALSO THE EFFECTS OF ANY CONCENTRATED LOADS MUST BE TAKEN INTO ACCOUNT. STRUCTURAL STEEL FLOOR OR ROOF FILLER BEAMS CARRYING GRAVITY LOAD ONLY MAY BE CONNECTED TO GIRDERS USING SINGLE PLATE SHEAR CONNECTIONS OR SINGLE ANGLE CONNECTIONS SIZED TO DEVELOP THE FULL STRENGTH OF THE MEMBER UNLESS NOTED OTHERWISE.
10. ALL ANCHOR BOLTS SHALL BE SET WITH TEMPLATES.
11. STEEL JOISTS SHALL BE DESIGNED, MANUFACTURED AND BRIDGED TO CONFORM WITH THE LATEST EDITION OF THE "STEEL JOIST INSTITUTE" STANDARD SPECIFICATIONS. PROVIDE RECOMMENDED CAMBER FOR JOIST SPAN.
12. ROOF DECKING SHALL BE 1-1/2", 22 GAUGE, TYPE B, GALVANIZED STEEL DECK. ATTACH ROOF DECK TO SUPPORTS WITH 5/8" PUDDLE WELDS AT 12" O.C. (36/4 FASTENER PATTERN). PROVIDE ONE (1) #10 TEK SCREW SIDE LAP FASTENER AT MIDSPAN OF DECK, TYPICAL UNLESS NOTED OTHERWISE. ATTACH ROOF DECK TO PERIMETER SUPPORTS WITH 5/8" PUDDLE WELDS AT 12" O.C. AT ROOF EDGES.

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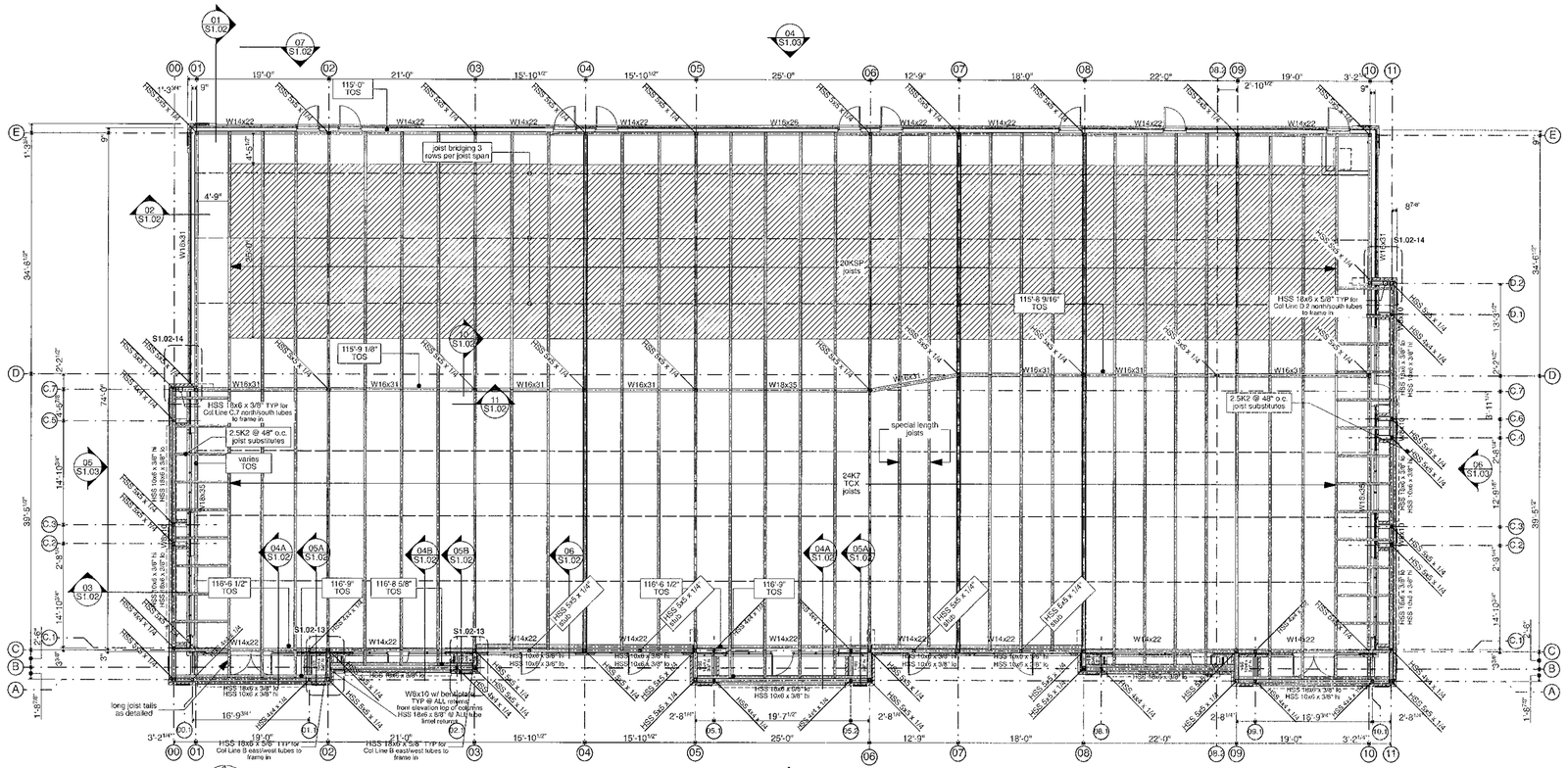

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General Framing Notes:

1. Metal Roof Deck to be 1.5B22 Steel Deck
2. All joists at columns to be designed for Wind Moment = 12K-FT @ Roof
3. Elevation noted on Framing Plan as 000'-0" are to Top Of Steel (TOS) bearing. Slope roof uniformly between noted elevations.
4. Relative Finished Floor Elevation One (FFE1) = 100'-0"
5. Provide minimum 6 inch fastener spacing at building perimeter, struts and end laps. Number of sidelap fasteners specified are total between deck support points.
6. Design joists marked "KSP" for 25 psf Dead Load and 20 psf Live Load and one mechanical unit weighing up to 1,500 lbs to be placed in the Mechanical Unit Zone equally supported by two joists, two per bay between columns. No RTU's can be located in consecutive joist bays. Refer to Framing Details

01 Framing Plan Phase 2
SCALE: 1/8" = 1'-0"

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SITE DATA SUMMARY

LOT	ZONING	PROPOSED USE	LOT SIZE (ACRES)	LOT SIZE (SQ. FT.)	BLDG. AREA (SQ. FT.)	BLDG HGT. (FT-# ST.)	LOT COVERAGE REQ.	LOT COVERAGE PROV.	FLR AREA RATIO REQ.	FLR AREA RATIO PROV.	PARKING REQ. RATIO	PARKING REQ.	PARKING PROV.	HANDICAP SP. REQ.	HANDICAP SP. PROV.	TOTAL IMPERVIOUS (SQ. FT.)	TOTAL IMPERVIOUS	OPEN SPACE USABLE OPEN SPACE REQ.	OPEN SPACE USABLE OPEN SPACE PROV.	OPEN SPACE WATER RESOURCE ZONE REQ.	OPEN SPACE WATER RESOURCE ZONE PROV.
BUILDING A PHASE 1	R	RETAIL / INLINE RESTAURANT CAP AT 30% / SCHOOL / BANK	3.85	167,716	20,324	22' - 1 ST.	50% MAX	12.1%	1:1 MAX	8.2:1	RETAIL 1:200; RESTAURANT 1:200 FOR 30% OF TOTAL RESTAURANT SPACE; 1:100 FOR OVER 30% OF REST. SPACE; SECONDARY SCHOOL 1:17 STUDENTS; BANK 1:300	102	123	5	6	110,836	66%	7%	11,740	21575 (12.8%)	15 SF PER PARKING	1,845	2,537
BUILDING B PHASE 2	R (SUP118)	RETAIL / INLINE RESTAURANT CAP AT 30% / SCHOOL / BANK	1.83	79,517	12,750	22' - 1 ST.	50% MAX	7.0%	1:1 MAX	1.6:1	RETAIL 1:200; RESTAURANT 1:200 FOR 30% OF TOTAL RESTAURANT SPACE; 1:100 FOR OVER 30% OF REST. SPACE; SECONDARY SCHOOL 1:17 STUDENTS; BANK 1:300	64	90	5	5	60,591	76%	10%	7,952	7558 (9.5%)	15 SF PER PARKING	1,350	4,361
TOTAL			5.68	247,233	33,074			13.3%		5:1		166	213	10	12	171,427	69%	-	19,692	29,133	-	3,195	6,898

OPEN SPACE SUMMARY

** 2,4995SF OF OPEN SPACE IS PROVIDED ON LOT 5 + 5,059 SF OF NEW OPEN SPACE IS PROVIDED IMMIEDIATELY ADJACENT ON LOT 4R FOR A TOTAL OF 7,558 SF OF OPEN SPACE.

GENERAL NOTES:

1. 18-FOOT DEEP PARKING STALLS SHALL HAVE AN UNOBSTRUCTED 2' PARKING OVERHANG.
2. SIDEWALKS ADJACENT TO 18' DEEP PARKING STALLS SHALL BE 6' WIDE TO ACCOMMODATE THE 2' PARKING OVERHANG.
3. PARKING FOR RETAIL BUILDINGS A & B MEET ZONING ORDINANCE STANDARDS FOR 1:200.

FLOODPLAIN NOTE

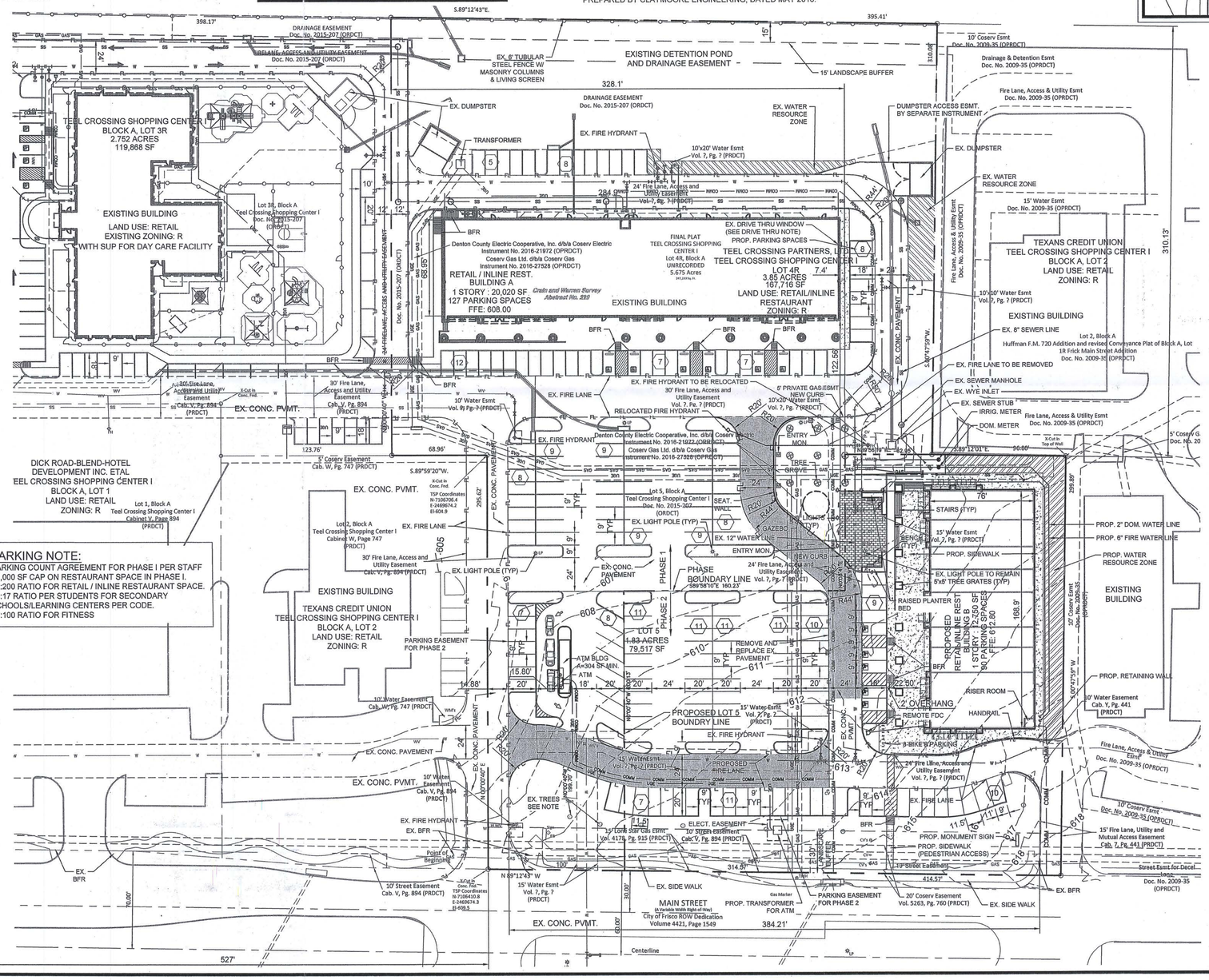
ACCORDING TO MAP NO. 48121C0440G, DATED APRIL 18, 2011 OF THE NATIONAL FLOOD INSURANCE PROGRAM MAP, FLOOD INSURANCE RATE MAP OF DENTON COUNTY, TEXAS, FEDERAL EMERGENCY MANAGEMENT AGENCY, FEDERAL INSURANCE ADMINISTRATION, THIS PROPERTY IS WITHIN ZONE "X" (SHADED) AND IS NOT WITHIN A SPECIAL FLOOD HAZARD AREA.

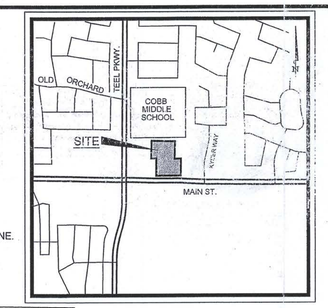
DETENTION NOTES:

REGIONAL DETENTION IS PROVIDED FOR THIS PROJECT AS DEMONSTRATED IN THE CIVIL PLANS TITLED TEEL CROSSING, LOT 4 BLOCK A, TEEL CROSSING SHOPPING CENTER 1 (SCSP15-0042), PREPARED BY CLAYMOORE ENGINEERING, DATED MAY 2016.

LAND USE:

RESTAURANT, RETAIL AND BANK WITH AUTOMATED TELLER MACHINE.





VICINITY MAP

GRAPHIC SCALE

1 inch = 40 ft.

LEGEND
EX. STORM LINE
EX. SEWER LINE
EX. WATER LINE
EX. FIRE HYDRANT
PROPOSED FIRE HYDRANT
PROPOSED SEWER LINE
PROPOSED WATER LINE
PROPOSED STORM DRAIN
PROPOSED HEAVY DUTY PAVEMENT
PROPOSED WATER RESOURCE ZONE

CITY OF FRISCO SITE PLAN NOTES:

1. ANY REVISION TO THIS PLAN WILL REQUIRE CITY APPROVAL AND WILL REQUIRE REVISIONS TO ANY CORRESPONDING PLANS TO AVOID CONFLICTS BETWEEN PLANS.
2. OPEN STORAGE, WHERE PERMITTED, SHALL BE SCREENED IN ACCORDANCE WITH THE ZONING ORDINANCE.
3. BUILDINGS WITH AN AGGREGATE SUM OF 5,000 SQUARE FEET OR GREATER ON A LOT SHALL BE SHALL HAVE AUTOMATIC FIRE SPRINKLERS INSTALLED THROUGHOUT ALL STRUCTURES. ALTERNATIVE FIRE PROTECTION MEASURES MAY BE APPROVED BY THE FIRE DEPARTMENT.
4. ALL SIGNAGE IS SUBJECT TO BUILDING INSPECTION DIVISION APPROVAL.
5. ALL FENCES AND RETAINING WALLS SHALL BE SHOWN ON THE SITE PLAN AND ARE SUBJECT TO BUILDING INSPECTION DIVISION APPROVAL.
6. WHEN USED, WHEEL STOPS SHALL BE INSTALLED SO THAT ALL SURFACE PARKING SPACES ARE A MINIMUM OF 18 FEET DEEP MEASURED FROM THE FACE OF THE WHEEL STOP. ANY VERTICAL OBSTRUCTION IN FRONT OF A SURFACE PARKING SPACE SHALL BE LOCATED 20 FEET FROM THE BACK OF THE PARKING SPACE.

ADA NOTE:

1. HANDICAP PARKING IS PROVIDED IN ACCORDANCE WITH ADA STANDARDS

EXISTING TREES:

1. ALL EXISTING TREES IN BAD SHAPE SHALL BE REMOVED AND REPLACED.

DUMPSTER NOTE:

1. INTERIOR DIMENSIONS AND MASONRY MATERIAL TO MATCH BUILDING.

DRIVE-THRU NOTE:

DRIVE-THRU LANE NO LONGER IN USE AND TO BE REPLACED WITH PARKING SPACES AS APPROVED ON ORIGINAL 2015 SCSP.

PARKING NOTE:

PARKING COUNT AGREEMENT FOR PHASE I PER STAFF
- 8,000 SF CAP ON RESTAURANT SPACE IN PHASE I.
- 1:200 RATIO FOR RETAIL / INLINE RESTAURANT SPACE.
- 1:17 RATIO PER STUDENTS FOR SECONDARY SCHOOLS/LEARNING CENTERS PER CODE.
- 1:100 RATIO FOR FITNESS

ACTION

APPROVED DENIED

STAFF _____ Date _____ Initials

P&Z 2-13-18 Date GM Initials

Neighborhood # 45

See the Staff Approval Letter or P&Z Result Memo for any conditions associated with the approval of the project.

INCLUDE IN PERMIT PACKET

SITE PLAN
CITY PROJECT #SP17-0094

OWNER:
TEEL CROSSING PARTNERS LTD.
25 HIGHLAND PARK VILLAGE, SUITE 100-464
DALLAS, TX 75205
PH: 214.390.3444

APPLICANT:
CLAYMOORE ENGINEERING, INC.
1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PH: 817.281.0572

SURVEYOR:
AJ BEDFORD GROUP INC.
301 N. ALAMO RD
ROCKWALL, TX 75087
PH: 972.722.0225

LEGAL DESCRIPTION:
5.68 AC
TEEL CROSSING SHOPPING CENTER 1
BLOCK A, LOT 4R (PHASE 1) & LOT 5 (PHASE 2)

CITY: FRISCO		STATE: TEXAS
COUNTY: DENTON	SURVEY: CRAIN & WARREN SURVEY	ABSTRACT NO. 229

TEXAS REGISTRATION #14199
CLAYMOORE ENGINEERING
1903 CENTRAL DRIVE, SUITE #406
BEDFORD, TX 76021
PHONE: 817.281.0572
WWW.CLAYMOOREENG.COM

STATE OF TEXAS
DREW DONOSKY
125651
LICENSED PROFESSIONAL ENGINEER
2/9/2018

TEEL CROSSING PHASE 2
MAIN STREET
FRISCO, TX

No.	DATE	REVISION	BY

SITE PLAN

DESIGN:	MBT
DRAWN:	MBT
CHECKED:	DD
DATE:	2/9/2018

SHEET
SP-1

File No. 2017-165

PLOTTED BY: DENG TORRES
PLOT DATE: 2/9/2018 1:42 PM
LOCATION: Z:\PROJECTS\PROJECTS\2017-165 VCM FRISCO TEEL PHASE 2\CADD\SHEETS\SP-1 SITE PLAN.DWG
LAST SAVED: 2/9/2018 1:17 PM

SP17-0094