Municipal Operation & Consulting, Inc. Oak Ridge

Phase 2 (Two) of 2 (Two)
27312 Spectrum Way
Oak Ridge, Texas 77385

Project For:
MOCI
312 Spring Hill Drive Suite 100
Spring, TX 77386

Land Owner:
Texas Equity Ventures, LLC
14115 Kenson Lane
Cypress, Texas 77429

PROJECT ANALYSIS
Jurisdiction
City: Oak Ridge North
County: Montgomery
State: Texas

Agency Information
MCAD Account Number-R425980
Oak Ridge Existing Occupancy Number N/A
TAS Project Number-EABPRJ-B5816992

Land Legal
5764200 - Oak Ridge North Commerce Park, BLOCK 4, RES I-3 (REPLAT NO 5 & REPLAT NO 6 BLOCK 1, RES E #2012045734, #2013037100), ACRES 1.3437

Code Information
International Building Code, 2009 Edition
International Fire Code, 2009 Edition
Mechanical Code, 2009 Edition
Plumbing Code, 2009 Edition
NEC 2014
Texas TAS 2012 Standards
City of Oak Ridge Additions, Insertions, Deletions, and Changes To International Building Code 2009 Edition.

Zoning Information
Zone Classification=M-2/Medium Manufacturing
Zone Tract=15 (47.03 Acres)
Parking Class=Office
Parking Required = 8 (2.5 Per 1,000 Sq Ft)
Parking Provided = 8 of 77 (69 Spaces Required and Provided for Phase One 27312 Spectrum Way under separate application)
(TAS Table 208.2) ADA Spaces Required (77 spaces) = 4/4
(TAS 208.2.4) ADA Van Accessible Spaces Required/Provided = 1/1

Occupancy
(302.1) Classification=Type B(S2)
(508.2) Separation=Mixed Use Non-Separated B Occupancy
(602.1) Construction Type=Type Existing and Proposed II-B Unprotected/ 55 feet Max Height
(Table 503) Allowable Floor Area= (B)23,000 Sq Ft
(506.3) Allowable Increase= Not Required

Actual Gross Floor Area=6,233 Sq Ft
Ground Level=6,233 Sq Ft
Actual Building Height=20.583 Feet

Fire Resistant Rating
([F] 903.2.1.3.3) Wet Fire Sprinkler Protection: Not Required
([F] 903.4) Fire Alarm System: Proposed (New) Not Required

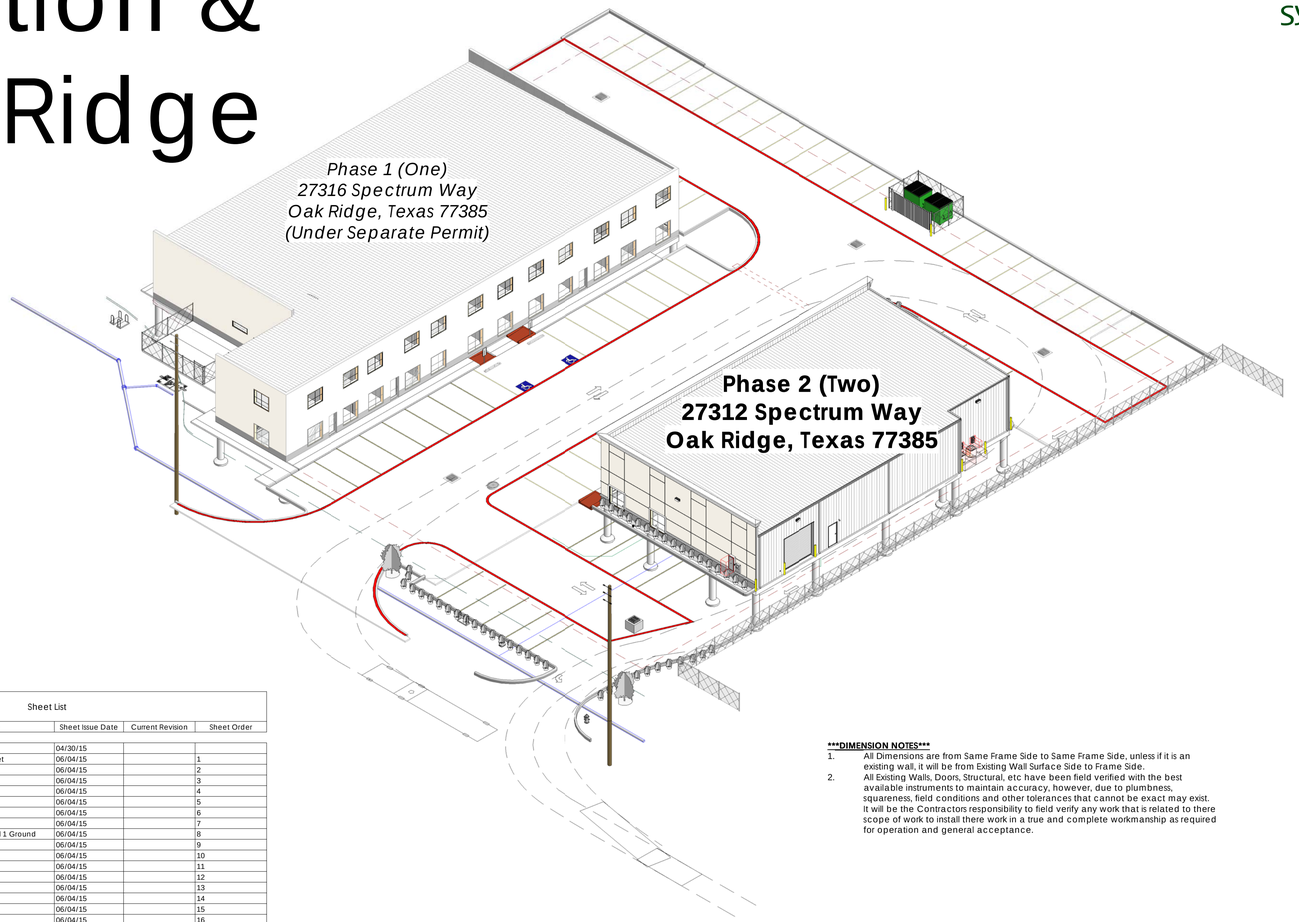
(Table 602)
Separation for Bearing and Non Bearing Exterior Walls
North Wall 38 feet = 0 Hour
East Wall 63 Feet = 0 Hour
South Wall 14 Feet = 0 Hour
West Wall 74 Feet = 0 Hour

(Table 601)
Primary Structural Frame: 0 Hour
Interior Bearing Wall: 0 Hour
Interior Nonbearing Partitions: 0 Hour
Floor & Floor/Ceiling Constructions: 0 Hour
Roofs & Roof/Ceiling Constructions: 0 Hour

Occupant Load
Total Occupancy: 90
(1014.3) Longest Common Path of Egress Travel (CPE) 75ft max: 55'
(1016.1) Longest Exit-Access Length of Travel 200ft max: 151 feet
Egress Width 0.2" per occupant:
Stair Egress Width 0.3" per occupant: NA
Min Egress width: 36"
Min Exit Egress Width: 18"

PROJECT DESCRIPTION:
A new tenant build out and new building for a water utility district operator company to be built in a new pre-engineered metal shell building. The site parking and paving are constructed on existing 1.34 acres. The Air Conditioned Office/Training area is 2,475 SQ FT, Non AC Warehouse of 3,758 SQ FT, for a total building area of 6,233 SQ FT.

GENERAL PLAN NOTES:
1. The general notes and/or drawings are supplied to illustrate the design and the general type of construction desired and are intended to imply the finest quality of construction, material and workmanship throughout. The contractor, upon acceptance and acceptance of the drawings assumes full responsibility for the construction, materials and workmanship of the work.
2. The general contractor and/or all subcontractors shall visit the project prior to construction. This on-site review of the job site shall entail a complete investigation of all existing conditions, both as it relates to the construction documents and the existing conditions. Recognition of any conflicts between the construction documents and existing conditions shall be itemized when submitting the scope of work.
3. The contractor shall notify the designer of any errors or omissions in the drawings or specifications or any discrepancies between the drawings or specifications and field conditions before commencing any work and request further clarifications.
4. All work shall conform and be installed according to all local and national laws; codes, regulation, etc, applicable to the work and the rules regulations of other authorities having jurisdiction over the work. The work shall not commence until plans have been accepted by the governing agencies having jurisdiction.
5. Provide complete operating systems, including items (installation) not necessarily specified or shown in these documents, but can be reasonably inferred as being necessary.
6. All materials and construction shall conform to the manufactures specifications used on the project.
7. The contractor shall submit detailed shop drawings and samples of materials or finishes to the Designer/Owner for acceptance prior to starting any construction or fabrication. All shop drawings, samples or finishes accepted by the Designer/Owner shall supersede any originating drawings. The contractor shall assume responsibility for all errors in their drawings affecting the integrity of their fabrications.
8. Do not scale drawings. If dimensions are in question, the Contractor shall be responsible for obtaining written clarification from the Owner/Designer prior to continuing with work that is in question.
9. Demolition may be required not specifically mentioned in these documents.



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ENERGY CODE NOTES:

Air Leakage, Component Certification, and Vapor Retarder Requirements:
1. All joints and penetrations are caulked, gasketed or covered with a moisture vapor-permeable wrapping material installed in accordance with the manufacturer's installation instructions.
2. Windows, doors, and skylights certified as meeting leakage requirements.
3. Component R-values & U-factors labeled as certified.
4. No roof insulation is installed on a suspended ceiling with removable ceiling panels.
5. 'Other' components have supporting documentation for proposed U-Factors.
6. Insulation installed according to manufacturer's instructions, in substantial contact with the surface being insulated, and in a manner that achieves the rated R-value without compressing the insulation.
7. Stair, elevator shaft vents, and other outdoor air intake and exhaust openings in the building envelope are equipped with motorized dampers.
8. Recessed lighting fixtures installed in the building envelope are Type IC rated as meeting ASTM E283, are sealed with gasket or caulk.

Texas 811
Know what's below. Call before you dig.

SUPPORTING CONSULTANTS:

Structural Engineering
R-MAC Engineering Co.
TX Reg Firm F-11358
P.O. Box 7827
The Woodlands, TX 77387
281.367.7761
PRJ M15014

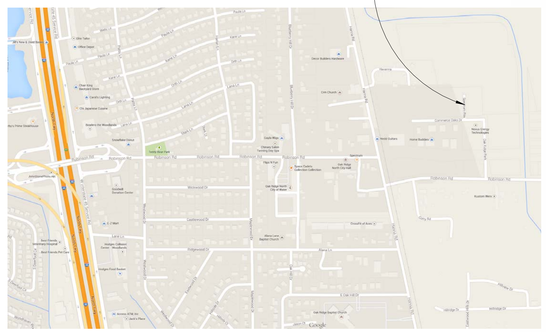
Geotechanical
Terracon
11555 Clay Road, Suite 100
Houston, TX 77043
713.690.8989
PRJ 9206553

MEP Engineering
M.S. Esiere Engineers
435 Murphy Road, #B1-136
Stafford, TX 77477
281.713.1957

Civil Engineering
L Squared Engineering
21123 Eva St, Ste #200
Montgomery, TX 77356
936.647.0420

*****DIMENSION NOTES*****
1. All Dimensions are from Same Frame Side to Same Frame Side, unless if it is an existing wall, it will be from Existing Wall Surface Side to Frame Side.
2. All Existing Walls, Doors, Structural, etc have been field verified with the best available instruments to maintain accuracy, however, due to plumbness, squareness, field conditions and other tolerances that cannot be exact may exist. It will be the Contractors responsibility to field verify any work that is related to there scope of work to install there work in a true and complete workmanship as required for operation and general acceptance.

Site Location
30°09'36.61" (N)
095°25'59.19"(W)



Enlarged Map

Area Map (Not To Scale)
Key Map Page 252- F

Cover and Information Sheet

SYMMETRY DEVELOPMENT

Services Prepared By:
SYMMETRY DEVELOPMENT, INC.
28510 Carley Cove Lane
Spring, Texas 77386
832.795.1553
symmetrydevelopment.com

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Revisions

Rev:	Date:	Description:

Sheet: D 24x36
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3031
Scale:

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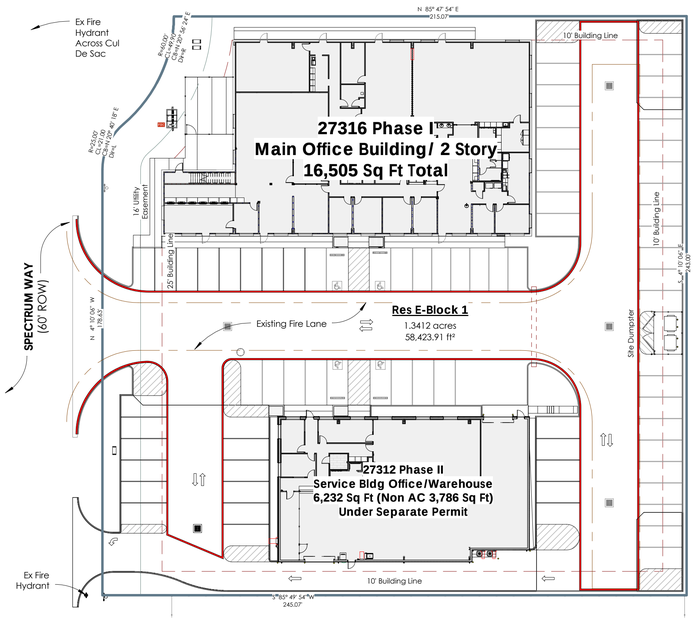
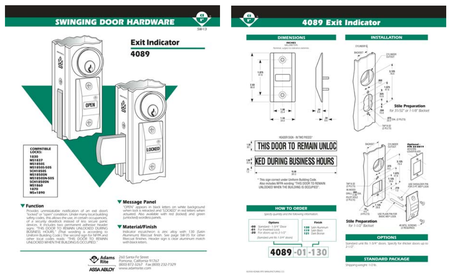
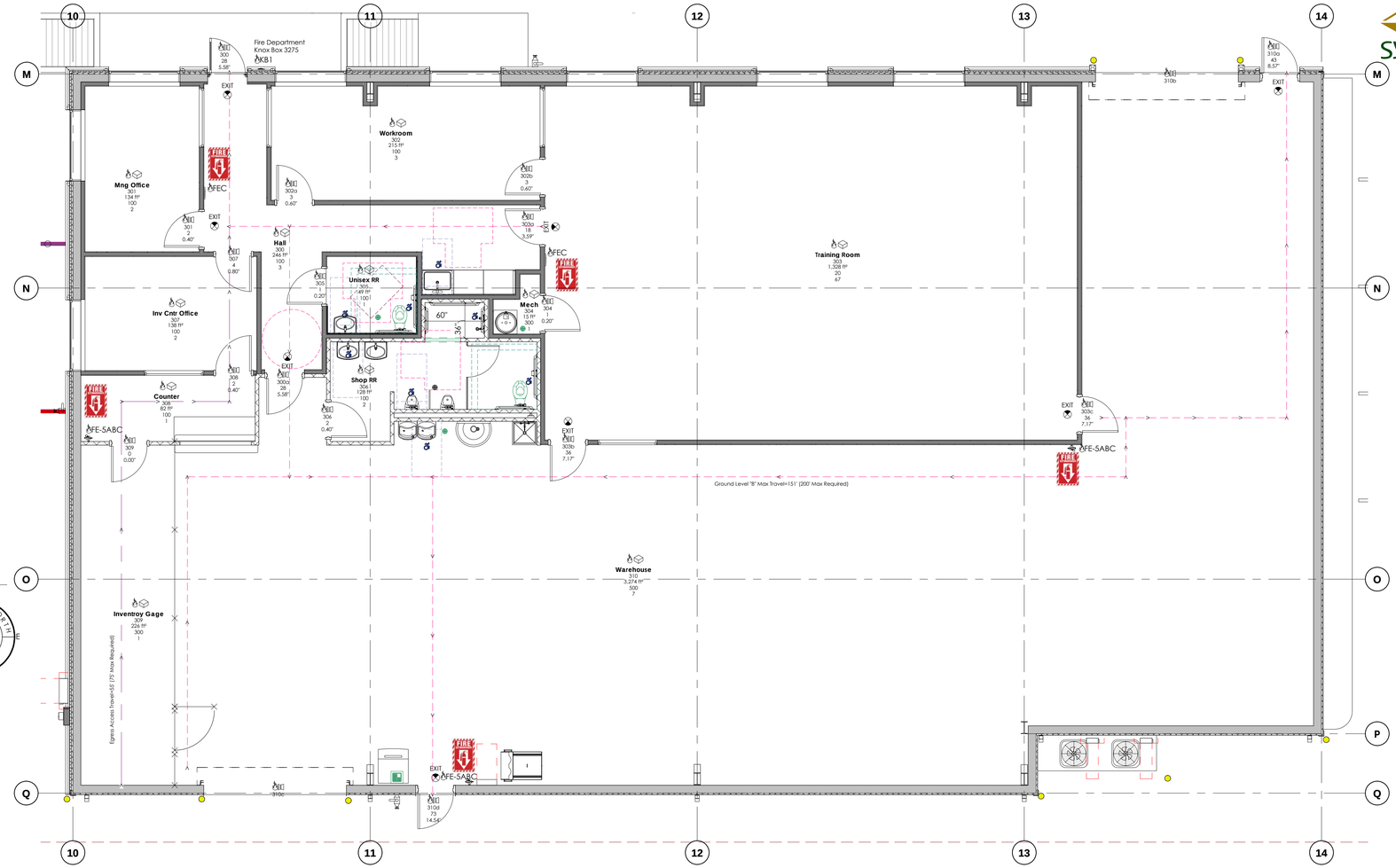


2 Fire Lane Site Plan
1" = 30'-0"



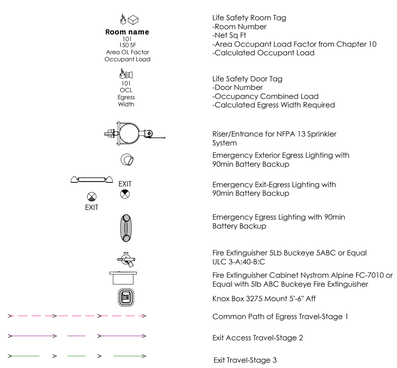
3 Exit Indicator Detail
No Scale



1 Code Plan Level 1 Ground
3/16" = 1'-0"

LIFE SAFETY NOTES:

1. Refer to General Notes on A0 for general project information.
2. Furniture, fixtures, and displays of goods for sale to the public shall be arranged so as to maintain free, immediate and unobstructed access to exits.
3. Fire partitions shall extend from floor to roof.
4. Door handles, pull latches, locks and other operating devices shall be installed 34-inches min and 48 inches maximum above finished floor.
5. Egress doors shall be readily operable from the egress side without the use of a key or special knowledge or effort. The unlatching of any leaf shall not require more than one operation.
6. The main exterior door or doors are permitted to be equipped with key-operated locking devices from the egress side provided a readily visible durable sign is posted on the egress side on or adjacent to the door stating "THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED" the sign shall be in letters 1 inch (25mm) high on a contrasting background.
7. Refer to the site plan for fire lane layout and access to the building public right-of-way.
8. Upon completion of all work, a request for final inspection form must be submitted to the fire marshal's office. This project may not be occupied until a final inspection had been performed and a certificate of compliance has been issued by the governing jurisdiction.
9. Contractor to provide and install semi-recessed fire extinguisher cabinets and certified 10 lb. (min.) ABC UL listed fire extinguisher in quantities and locations as shown, and or directed by the Fire Marshal, or other authority having jurisdiction.
10. Seal all penetrations of fire rated wall assemblies, if applicable, in accordance with UL fire rated penetration details.
11. All emergency Egress and Exit lighting shall have and provide a battery backup power source for 90 minutes after power failure.
12. All Glass and Glazing Shall be Tempered where required by Code.



Life Safety Ledgend
No Scale

Code Review Sheet

SYMMETRY DEVELOPMENT

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28510 Carley Cove Lane
Spring, Texas 77386
832.795.1553
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Sheet: D 24x36
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A0.10

Aluminum
Steel
Wood 1
Wood 2
Wood 3
Gypsum Plaster
Concrete 1
Concrete 2
Concrete 3
Earth
Earth45
Gravel 1
Gravel 2
Gravel-Aggerate
Gravel-Pebble
Ground Cover
Chain Link Fence
Rigid Insulation
Masonary Brick
Masonary Concrete Block
Plastic
Plywood
MFD Plywood
Sand 1
Sand 2
Roof Shingle 1
Roof Shingle 2
Texture Stipple
Texture
Wood End Grain
Wood Face Grain
Wood Finish

Tile 12"
Vertical 12"
Horzontial 12"
Tile 8x24
Block 8x16
Block 8x8
Brick Face
Brick King
Brick Soildier Course
Stone
Ceiling 2x2
Ceiling 2x4
Diamond Tread
Glass 1
Glass
Glass Wire
Metal Panel Wall
Metal Panel Roof
Wood Board
Wood Board Wide
Crosshatch
Crosshatch Small
Diagonal Crosshatch
Diagonal Crosshatch Small
Diagonal Down
Diagonal Down Small
Diagonal Up
Diagonal Up Small
Horizontal Lines
Horizontal Small
Ortho Crosshatch
Solid Black
Vertical Small
Vertical

Fire Resistant Wall
Load Bearing Wall Partition
Non Load Bearing Wall Partition
Fiberglass Insulation
Exterior Metal Building Wall with EFIS/Cultured Stone
Exterior Metal Building Wall with Metal Wall Panels
Concrete Masonry Unit Wall

Storm Drainage Catch Basin
Precast Concrete Manhole
Landscaping
ADA Parking Stall Pavement Symbol
ADA Site Concrete Flare Ramp
ADA Site Concrete Ramp
Dumpster Enclosure Gate
Site Concrete Parking Wheel Stop
ADA Site Signage Pole Mount

Site Legend
3/16" = 1'-0"

120v Floor Outlet Dark Bronze Finish
120v-Duplex Outlet W/Height AFF or Note
120v-Duplex Outlet-16"AFF Center UON
120v-Dedicated Duplex Outlet
120v-Dedicated Duplex Outlet w/ Height AFF
120v-GFCI Duplex Outlet
120v-GFCI Duplex Outlet w/ Height AFF
120v-GFCI Duplex Outlet Weather Resistant
120v-Quadplex Outlet 16"AFF Center
120v-Quadplex Outlet w/Height AFF
120v-Quadplex Outlet Dedicated
120v-Quadplex Outlet W/Note
120v-Quadplex Outlet W/Note and Height AFF
120v-Quadplex Outlet GFCI Protected
208/220v-Sepecial Purpose Outlet with Height AFF
208/220v-Sepecial Purpose Outlet with Height AFF
Low Voltage TV Cable RG6 Locate as other specified Outlet White-Locate as Req
Low Voltage Tele-Data Outlet White 16" AFF Center
Security Key Pad Door Access
Security Card Pad Access HID Low

Electrical Service Meter Can
Main Service Disconnect
Equipment Service Disconnect
Electrical Load Center/Panel
2x4 Recessed Troffer Light
4' High Bay Light Fixture
2' Light Strip Light- 2 Bulb
4' Light Strip Light- 2 Bulb
Exterior Wall Mount Wall Pack Light Metal Halide Type 1
4" Recessed can light-Fluorescent
6" Recessed can light-Fluorescent

120/277v-1-Gang Single Pole Switch White 48" AFF Center
120/277v-2-Gang Single Pole Switch White 48" AFF Center
120/277v-1-Gang Single Pole 3-way Switch White 48" AFF Center
120/277v-1-Gang Dimming Switch White 48" AFF Center
120/277v-1-Gang Vacancy Switch White 48" AFF Center
120/277v-1-Gang Motion Switch/Timer White 48" AFF Center
Ceiling Mounted Remote Vacancy Sensor
LED Emergency Egress Light w/ 90 Minute Battery Back Up
LED Emergency Exit & Egress Light w/ 90 Minute Battery Back Up
LED Emergency Exterior Egress Light (Remote head) w/ 90 Minute Battery Back Up

Outlet and Switch Colors
Office/Business
General Purpose Outlets-White device with white Cover Plate
Dedicated Devices- Gray Device with white cover plate
Specialized Equipment- Orange Device with White Cover Plate
Service area's and shop areas
Gray Device with SS Cover Plate

Electrical Legend
1/4" = 1'-0"

Room name
101
150 SF
Area/ OL Factor
Occupant Load
101
OCL
Egress
Width
Life Safety Room Tag
-Room Number
-Net Sq Ft
-Area Occupant Load Factor from Chapter 10
-Calculated Occupant Load
Life Safety Door Tag
-Door Number
-Occupancy Combined Load
-Calculated Egress Width Required
Riser/Entrance for NFPA 13 Sprinkler System
Emergency Exterior Egress Lighting with 90min Battery Backup
Emergency Exit-Egress Lighting with 90min Battery Backup
Emergency Egress Lighting with 90min Battery Backup
Fire Extinguisher 5Lb Buckeye 5ABC or Equal ULC 3-A:40-B:C
Fire Extinguisher Cabinet Nystrom Alpine FC-7010 or Equal with 5lb ABC Buckeye Fire Extinguisher
Knox Box 3275 Mount 5'-6" Aff
Common Path of Egress Travel-Stage 1
Exit Access Travel-Stage 2
Exit Travel-Stage 3

Life Safety Ledgend
3/8" = 1'-0"

White Adjustable Metal Wall Louver Supply Diffuser
Floor Mounted Linear Supply Slot Diffuser
White Metal 2x2 Lay-In Supply Diffuser
White Metal 2x2 Lay-In Return Diffuser
Flex Duct Insulated
Round Metal Duct Section
Rectangle Duct Section
Ceiling Mounted Exhaust Fan 120v/1Ø
Exterior Air Conditioner Condenser
Above Ceiling Air Handler w/Electric Heat

Mechanical Legend
1/4" = 1'-0"

Site Water Meter Box-HDPE
Backflow Preventer Security Cage
Clean Out
Floor Drain
Drinking Fountain
ADA Shower Valve-Single Lever
Floor Mounted Water Closet with Flush Valve
Floor Mounted Water Closet Bowel and Tank
PVC Floor Sink and Cover
Lavatory Wash Fountain
Hose Bibb

Plumbing Ledgend
1/4" = 1'-0"

Parking Tag Symbol
Plumbing Fixture Tag Symbol
Equipment Fixture Tag Symbol
Life Safety Tag Symbol
Lighting Fixture Tag Symbol
Communication Fixture Tag Symbol
Finish Tag Symbol
Mechanical Fixture Tag Symbol
Window Tag Symbol
Wall Tag Symbol
Door Tag Symbol
Electrical Fixture Tag Symbol
Ceiling Tag Symbol
-Ceiling Height Above Finished Floor
22gg gg22
101
150 SF
Room Name Tag Symbol
-Room Number
-Room Net Square Footage
Grid Line Tag Callout
Section Tag Symbol
Interior and Exterior Elevation Tag Symbol
Graphic Scale: 1 inch = 20 feet
0 20' 40' 60' 80'
Graphical Scale

1 / A101
Reference Symbol
View Number/Page Number
1 View Name
1/8" = 1'-0"
Reference View Title, Number, and Scale Symbol
Name Elevation
Reference View Title, Number, and Scale Symbol
Elevation Height Symbol (Feet-Inches)
Name Elevation FF Height
Vertical Reference Symbol
Elevation Height
N 90 00' 00" E
Distance
R=Radius
C1=Distance
CB=N/S Bearing E/W
DIR=L/R
L=Arc Lenght
Site Property Boundary Symbol
-Direction/Call (Degrees, minutes, and Seconds)
-Distance (Decimal Feet)
Property Line
Callout-Radius
Name
Acres
Sq Ft
Site Property Symbol
-Acreage of Area
-Square Feet of Area
Revision and Revision Number Symbol
Centerline Mark
Centermark
Pipe Cont. Mark/Crossing
Breakline
N
PLAN NORTH
W
E
S
True North and Plan North Symbol

Annotation Legend
No Scale

Legends

ABBREVIATIONS:

ABV	Above
A/C	Air Conditioner
ADA	Americans Disability Act
ADD	Addition
ADJ	Adjust
A.F.F.	Above Finished Floor
A.F.G.	Above Finished Grade
ALG	Align
ALT	Alternate
APPD	Approved
ASPH	Asphalt
ASTM	American Society for Testing and Materials
ASME	American Society of Mechanical Engineers
BD	Board
B.L.	Building Line
BLDG	Building
BRG	Bearing
CAB	Cabinet
CB	Catch Basin
CPCI	Contractor Furnish/ Contractor Install
COOI	Contractor Furnish/ Owner Install
CFM	Cubic Feet per Minute
CL	Center Line
CLG	Ceiling
CO	Clean Out
COL	Column
CONT	Continuous
CONC	Concrete
CT	Ceramic Tile
DS	Down spout
DBL	Double
DEMO	Demolition
DIA	Diameter
DIM	Dimension
DN	Down
DR	Door
E	East
EA	Each
EF	Exhaust fan
EJ	Expansion joint
ELEV	Elevation
ELEC	Electric, electrical
EQ	Equal
EQUIP	Equipment
EST	Estimate
EX	Existing
EXT	Exterior
FA	Fire alarm
FD	Floor drain
FE	Fire extinguisher
FAB	Fabricate
FIN	Finish
FLR	Floor
FRM	Framing
FV	Field Verify
GA	Gauge
GALV	Galvanized
GC	General Contractor
GFI	Ground Fault Interrupt
GPS	Global Positioning System
GYP	Gypsum
HB	Hose bib
HDW	Hardware
HGT	Height
HOR	Horizontal
HTR	Heater
HVAC	Heating, Venting and Air Conditioning
HW	Hot water
ID	Inside diameter
INCL	Inclusive, including
INSUL	Insulation
INT	Interior

ABBREVIATIONS: (cont)

E	East
EA	Each
EF	Exhaust fan
EJ	Expansion joint
ELEV	Elevation
ELEC	Electric, electrical
EQ	Equal
EQUIP	Equipment
EST	Estimate
EX	Existing
EXT	Exterior
FA	Fire alarm
FD	Floor drain
FE	Fire extinguisher
FAB	Fabricate
FIN	Finish
FLR	Floor
FRM	Framing
FV	Field Verify
GA	Gauge
GALV	Galvanized
GC	General Contractor
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GYP	Gypsum
HB	Hose bib
HDW	Hardware
HGT	Height
HOR	Horizontal
HTR	Heater
HVAC	Heating, Venting and Air Conditioning
HW	Hot water
ID	Inside diameter
INCL	Inclusive, Including
INSUL	Insulation
INT	Interior
JCT	Junction
JST	Joist
LF	Linear feet
LAM	Laminate
LAN	Local Area Network
LAV	Lavatory
LCD	Liquid Crystal Display
LN	Linear
LP	Light Pole
MAX	Maximum
MECH	Mechanical
MED	Medium
MFG	Manufacturing
MIN	Minimum
MH	Manhole
MTL	Metal (steel)
N	North
NTS	Not to scale
NOM	Nominal
OC	On center
OCEW	On center each way
OD	Outside diameter
OEM	Original Equipment Manufacturer
OFCI	Owner Furnish/Contractor Install
OFOI	Owner Furnish/Owner Install
OH	Overhead
OPNG	Opening

ABBREVIATIONS: (cont)

P	Paint
PAV	Pavement
PDF	Portable Document Format
PERF	Perforated
PL	Property Line
PLT	Plate
PLAS	Plastic
PLYWD	Plywood
PORC	Porcelain
PP	Power Pole
PPL	People
PROP	Proposed
PSF	Pounds per square foot
PSI	Pounds per square inch
PVC	Polyvinyl chloride
PWR	Power
QA	Quality Assurance
QC	Quality Control
QTY	Quantity
NFPA	National Fire Protection Association
RAD	Radius
RD	Roof drain
RO	Rough Opening
ROW	Right of way
REFG	Refrigerator
REF	Reference
REINF	Reinforced
REQ	Required
REV	Revision
RM	Room
S	South
SAN	Sanitary
SC	Solid core
SCHED	Schedule
SD	Smoke detector
SHTG	Sheathing
SIM	Similar
SPECS	Specifications
SF	Square feet
SQ FT	Square feet
SQ IN	Square inches
SS	Stainless Steel
STD	Standard
STL	Steel
STM	Storm Sewer
SY	Square yard
SYS	System
T&G	Tongue and groove
TBM	Temporary Benchmark
TOB	Top of Beam
TOC	Top of curb
TOS	Top of Steel
TYP	Typical
UNF	Unfinished
UON	Unless Otherwise Noted
VB	Vapor barrier
VIF	Verify in field
V	Voltage
VCT	Vinyl composition tile
W	West
WC	Toilet (water closet)
WT	Window Treatment

SYMMETRY DEVELOPMENT

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Sheet: D 24x36
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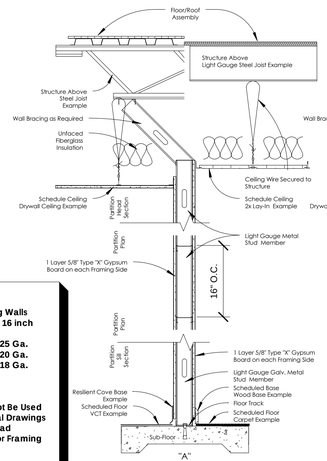
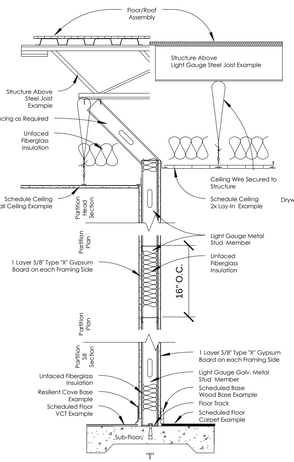
*****NLB Note*****
All Non-Load Bearing Walls
Metal Stud Members 16 inch O.C. Spacing:
Height 0'-0" to 12'-0" 25 Ga.
Height 0'-0" to 16'-0" 20 Ga.
Height 0'-0" to 20'-0" 18 Ga.

Note:
All Wall Type may Not Be Used Refer to The Structural Drawings for all Foundation/Load Bearing Walls/ & Floor Framing Details



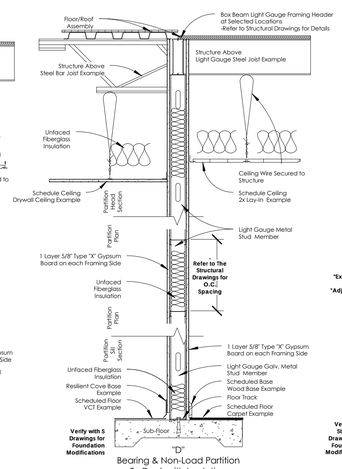
"A"
Non-Load Bearing Partition

A2= 2-1/2", 25 Gauge Metal Stud, Refer to NLB Note
A3= 3-5/8", 25 Gauge Metal Stud, Refer to NLB Note
A6= 6", 25 Gauge Metal Stud, Refer to NLB Note



"T"
Non-Load Bearing Partition With Insulation

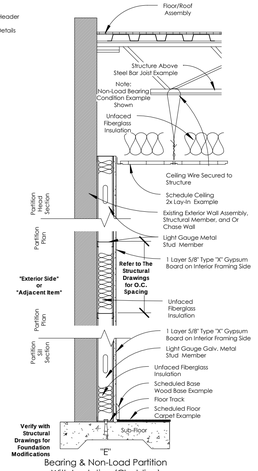
I2= 2-1/2",Metal Stud w/ Insulation, Refer to NLB Note
I3= 3-5/8", 25 Gauge Metal Stud w/ Insulation, Refer to NLB Note
I6= 6", 25 Gauge Metal Stud w/ Insulation, Refer to NLB Note



"D"
Bearing & Non-Load Partition To Deck with Insulation

Non Load Bearing
D2= 2-1/2" Metal Stud, Refer to NLB Note
D3= 3-5/8" Metal Stud, Refer to NLB Note
D6= 6" Metal Stud, Refer to NLB Note

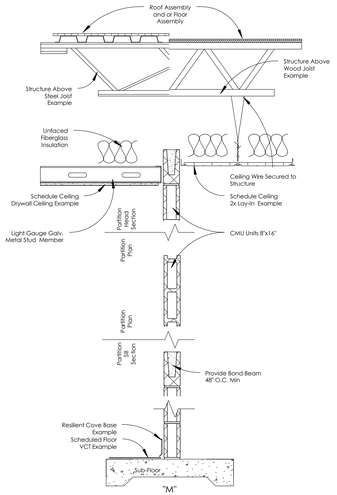
Load Bearing
BD3= 3-5/8" Metal Stud, Gauge As Specified Per Structural Drawings.
BD6= 6" Metal Stud, Gauge As Specified Per Structural Drawings.



"E"
Bearing & Non-Load Partition With Insulation (Cladding)

Non Load Bearing
E0= No Metal/ 1-Layer Gypsum Board Only Glued to Existing Wall Face
E1= 1-5/8" Metal Stud w/ Insulation, Refer to NLB Note
E2= 2-1/2" Metal Stud w/ Insulation, Refer to NLB Note
E3= 3-5/8" Metal Stud w/ Insulation, Refer to NLB Note
E6= 6" Metal Stud w/ Insulation, Refer to NLB Note

Load Bearing
BE3= 3-5/8" Metal Stud w/ Insulation, Refer to NLB Note
BE6= 6" Metal Stud w/ Insulation, Refer to NLB Note



"M"
CMU Partition
Non Load Bearing
M4= 3-5/8" CMU 8"x16"
M8= 7-5/8" CMU 8"x16"

Reinforce Per National Concrete Masonry Association Guidelines

① Partition Wall Details
3/4" = 1'-0"

Partition Details

SYMMETRY DEVELOPMENT

Services Prepared By:
SYMMETRY DEVELOPMENT, INC.
28510 Carley Cove Lane
Spring, Texas 77386
832.795.1553
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MOC (Oak Ridge) Phase 2 of 2
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Scale:
3/4" = 1'-0"

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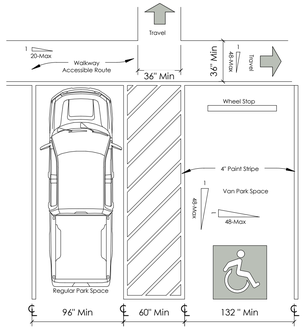
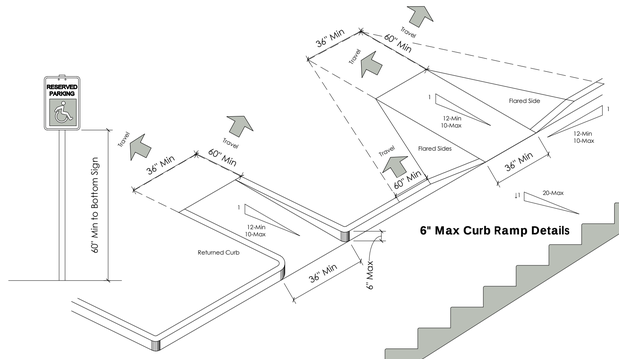
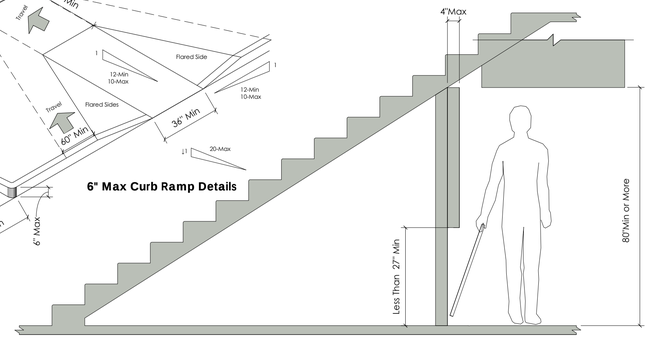
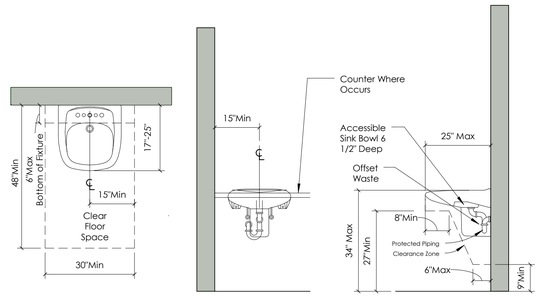


Dimensions Of Parking Spaces

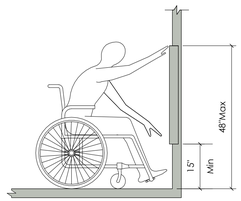


6" Max Curb Ramp Details

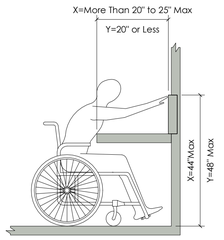




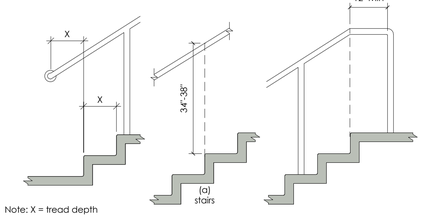
Lavatory or Sink



Obstructed High Forward Reach



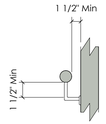
Unobstructed Side Reach



Note: X = tread depth

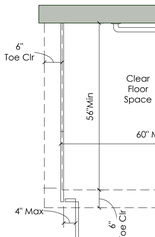
Bottom Handrail Extension at Stairs

Top Handrail Extension at Stairs

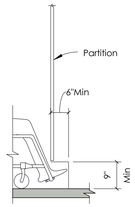


Horizontal Projections Below Gripping Surface

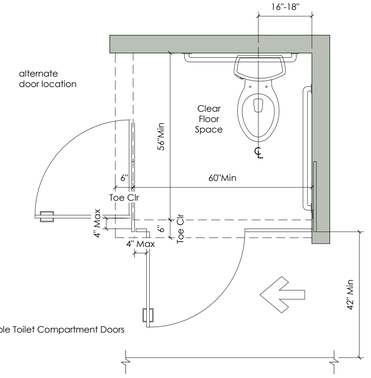
Handrail Clearance



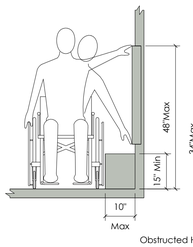
Handrail Height
at Walks and Ramps



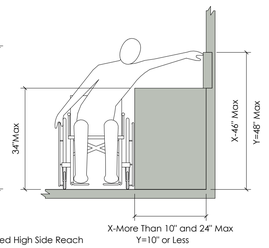
Elevation

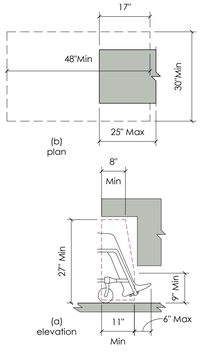


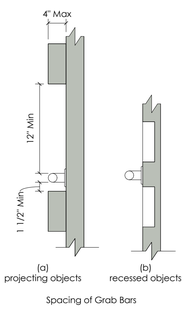
Wheelchair Accessible Toilet Compartment Doors



Obstructed High Side Reach

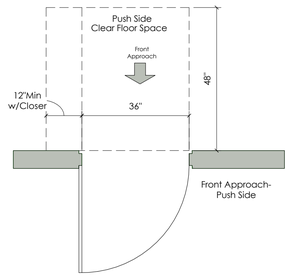


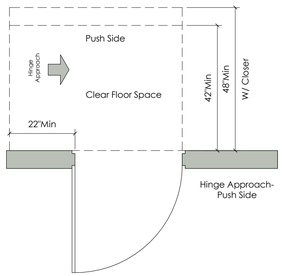


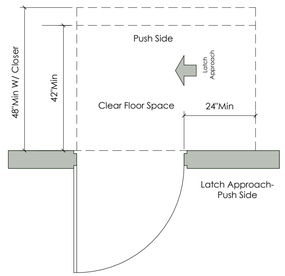


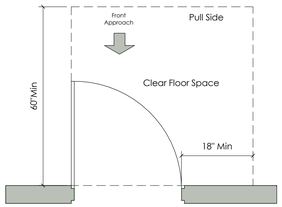
Spacing of Grab Bars

Figure 306.3 Knee and Toe Clearance

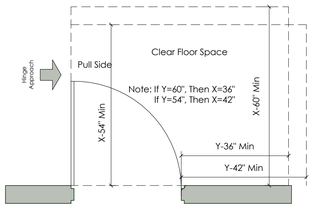




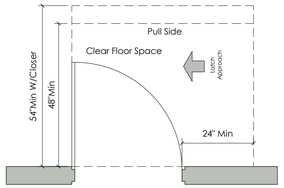




Front Approach-Pull Side

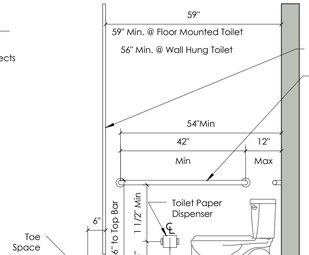


Hinge Approach-Pull Side

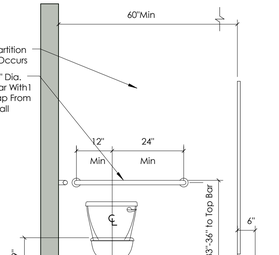


Latch Approach-Pull Side

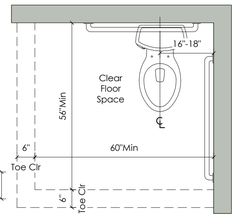
Maneuvering Clearances At Doors

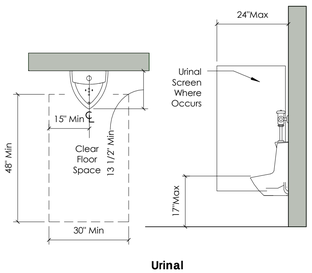


Water Closet Side Wall



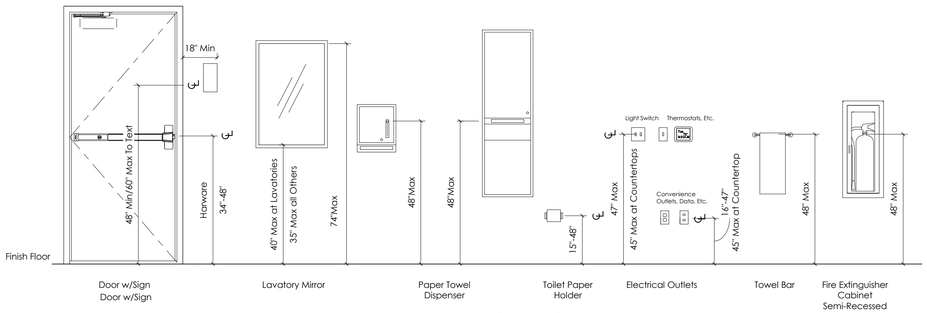
Water Closet Back Wall





Urinal

Water Closet



Door w/Sign
Door w/Sign

Lavatory Mirror

Paper Towel
Dispenser

Toilet Paper
Holder

Electrical Outlets

Towel Bar

Fire Extinguisher
Cabinet
Semi-Recessed

Typical Mounting Heights

ADA Notes

SYMMETRY DEVELOPMENT

Services Prepared By:

SYMMETRY DEVELOPMENT, INC.
28510 Carley Cove Lane
Spring, Texas 77386
832.795.1553
symmetrydevelopment.com

MOC (Oak Ridge) Phase 2 of 2

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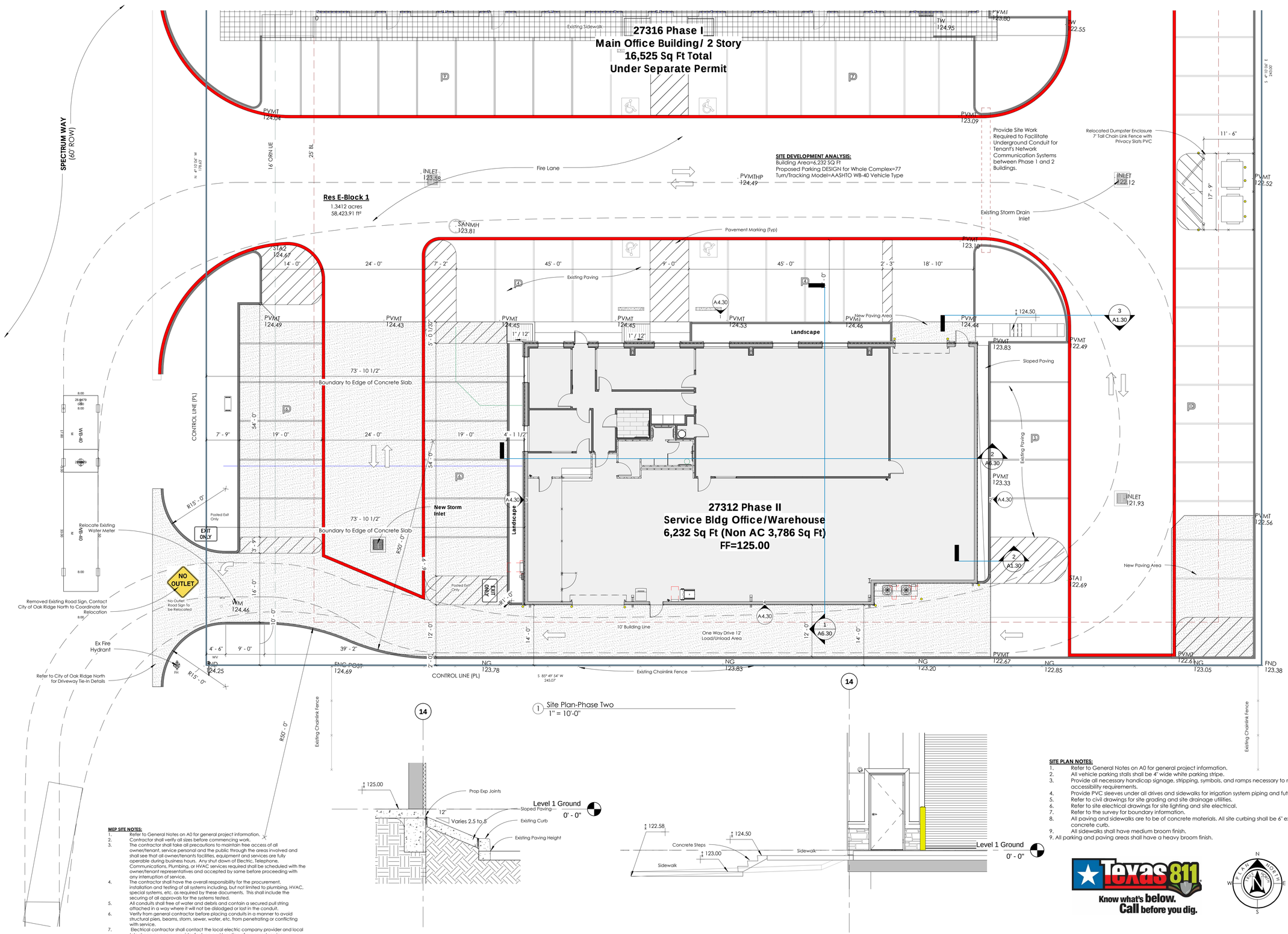

1 Site Plan-Phase Two
1" = 10'-0"

2 Sloped Paving
1/2" = 1'-0"

3 Step Sidewalk Detail
1/4" = 1'-0"

MEP SITE NOTES:

1. Refer to General Notes on A0 for general project information.
2. Contractor shall verify all sizes before commencing work.
3. The contractor shall take all precautions to maintain free access of all owner/tenant, service personal and the public through the areas involved and shall see that all owner/tenants facilities, equipment and services are fully operable during business hours. Any shut down of Electric, Telephone, Communications, Plumbing, or HVAC services required shall be scheduled with the owner/tenant representatives and accepted by same before proceeding with any interruption of service.
4. The contractor shall have the overall responsibility for the procurement, installation and testing of all systems including, but not limited to plumbing, HVAC, special systems, etc. as required by these documents. This shall include the securing of all approvals for the systems tested.
5. All conduits shall free of water and debris and contain a secured pull string attached in a way where it will not be dislodged or lost in the conduit.
6. Verify from general contractor before placing conduits in a manner to avoid structural piers, beams, storm, sewer, water, etc. from penetrating or conflicting with service.
7. Electrical contractor shall contact the local electric company provider and local telephone company provider for type and location of proposed services.
8. Contractor to verify information from owner/sign manufacture for electrical requirements.
9. Electrical contractor shall furnish and coordinate concrete anchor bolts and template for site lighting pole structures to the coordinating subcontractor.

SITE PLAN NOTES:

1. Refer to General Notes on A0 for general project information.
2. All vehicle parking stalls shall be 4" wide white parking stripe.
3. Provide all necessary handicap signage, stripping, symbols, and ramps necessary to meet T.A.S. accessibility requirements.
4. Provide PVC sleeves under all drives and sidewalks for irrigation system piping and future utilities.
5. Refer to civil drawings for site grading and site drainage utilities.
6. Refer to site electrical drawings for site lighting and site electrical.
7. Refer to the survey for boundary information.
8. All paving and sidewalks are to be of concrete materials. All site curbing shall be 6" extruded concrete curb.
9. All sidewalks shall have medium broom finish.
9. All parking and paving areas shall have a heavy broom finish.

Texas 811
Know what's below.
Call before you dig.

Site Plan

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Spring, Texas 77386
832.795.1553
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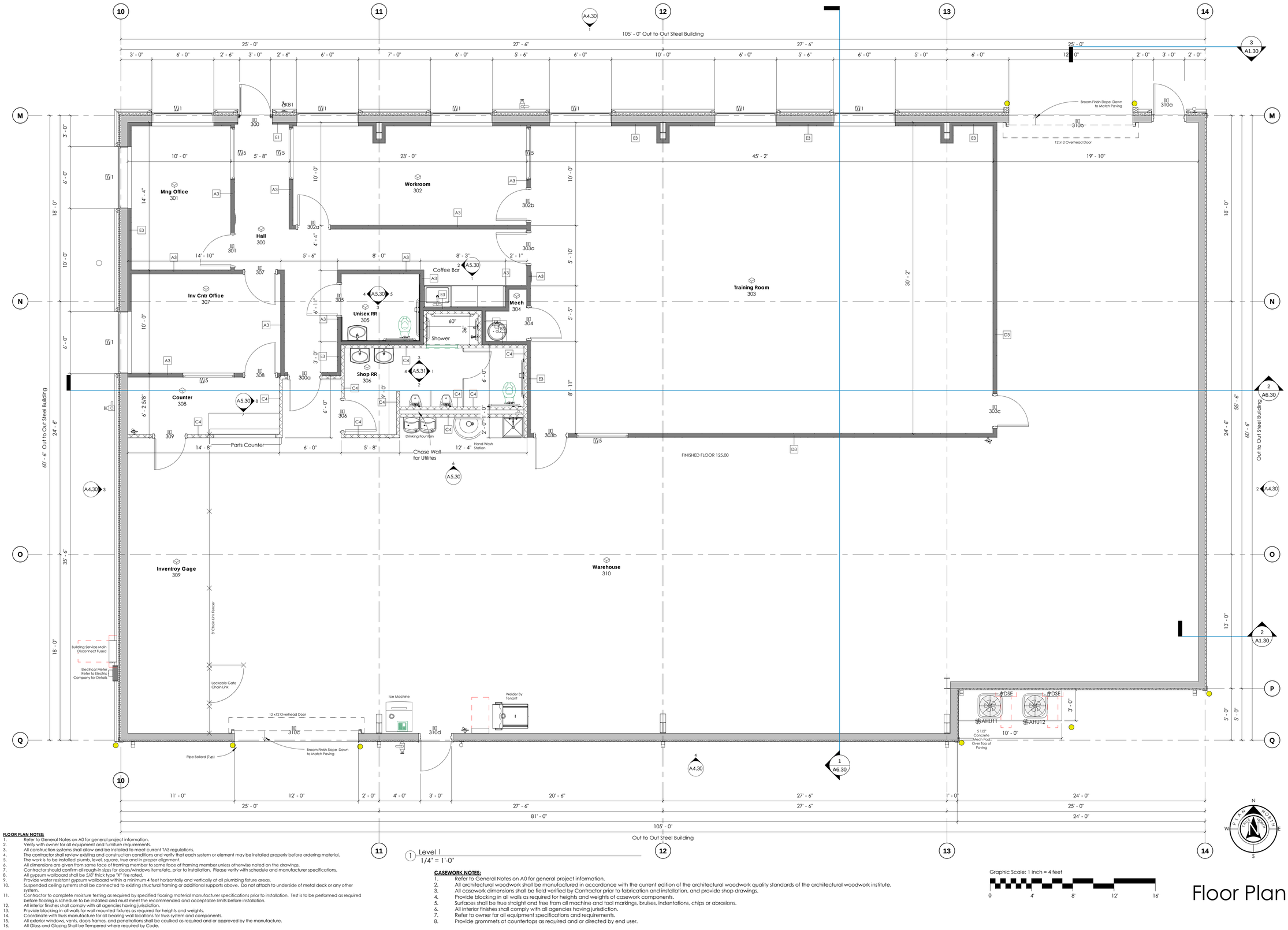

1 Level 1
1/4" = 1'-0"

FLOOR PLAN NOTES:

1. Refer to General Notes on A0 for general project information.
2. Verify with owner for all equipment and furniture requirements.
3. All construction systems shall allow and be installed to meet current TAS regulations.
4. The contractor shall review existing and construction conditions and verify that each system or element may be installed properly before ordering material.
5. The work is to be installed plumb, level, square, true and in proper alignment.
6. All dimensions are given from same face of framing member to same face of framing member unless otherwise noted on the drawings.
7. Contractor should confirm all rough-in sizes for doors/windows items/etc. prior to installation. Please verify with schedule and manufacturer specifications.
8. All gypsum wallboard shall be 5/8" thick type "X" fire rated.
9. Provide water resistant gypsum wallboard within a minimum 4 feet horizontally and vertically at all plumbing fixture areas.
10. Suspended ceiling systems shall be connected to existing structural framing or additional supports above. Do not attach to underside of metal deck or any other system.
11. Contractor to complete moisture testing as required by specified flooring material manufacturer specifications prior to installation. Test is to be performed as required before flooring is schedule to be installed and must meet the recommended and acceptable limits before installation.
12. All interior finishes shall comply with all agencies having jurisdiction.
13. Provide blocking in all walls for wall mounted fixtures as required for heights and weights.
14. Coordinate with truss manufacture for all bearing wall locations for truss system and components.
15. All exterior windows, vents, doors frames, and penetrations shall be caulked as required and or approved by the manufacture.
16. All Glass and Glazing Shall be Tempered where required by Code.

CASEWORK NOTES:

1. Refer to General Notes on A0 for general project information.
2. All architectural woodwork shall be manufactured in accordance with the current edition of the architectural woodwork quality standards of the architectural woodwork institute.
3. All casework dimensions shall be field verified by Contractor prior to fabrication and installation, and provide shop drawings.
4. Provide blocking in all walls as required for heights and weights of casework components.
5. Surfaces shall be true straight and free from all machine and tool markings, bruises, indentations, chips or abrasions.
6. All interior finishes shall comply with all agencies having jurisdiction.
7. Refer to owner for all equipment specifications and requirements.
8. Provide grommets at countertops as required and or directed by end user.

Graphic Scale: 1 inch = 4 feet

0 4' 8' 12' 16'

Floor Plan

SYMMETRY DEVELOPMENT

Services Prepared By:
SYMMETRY DEVELOPMENT, INC.
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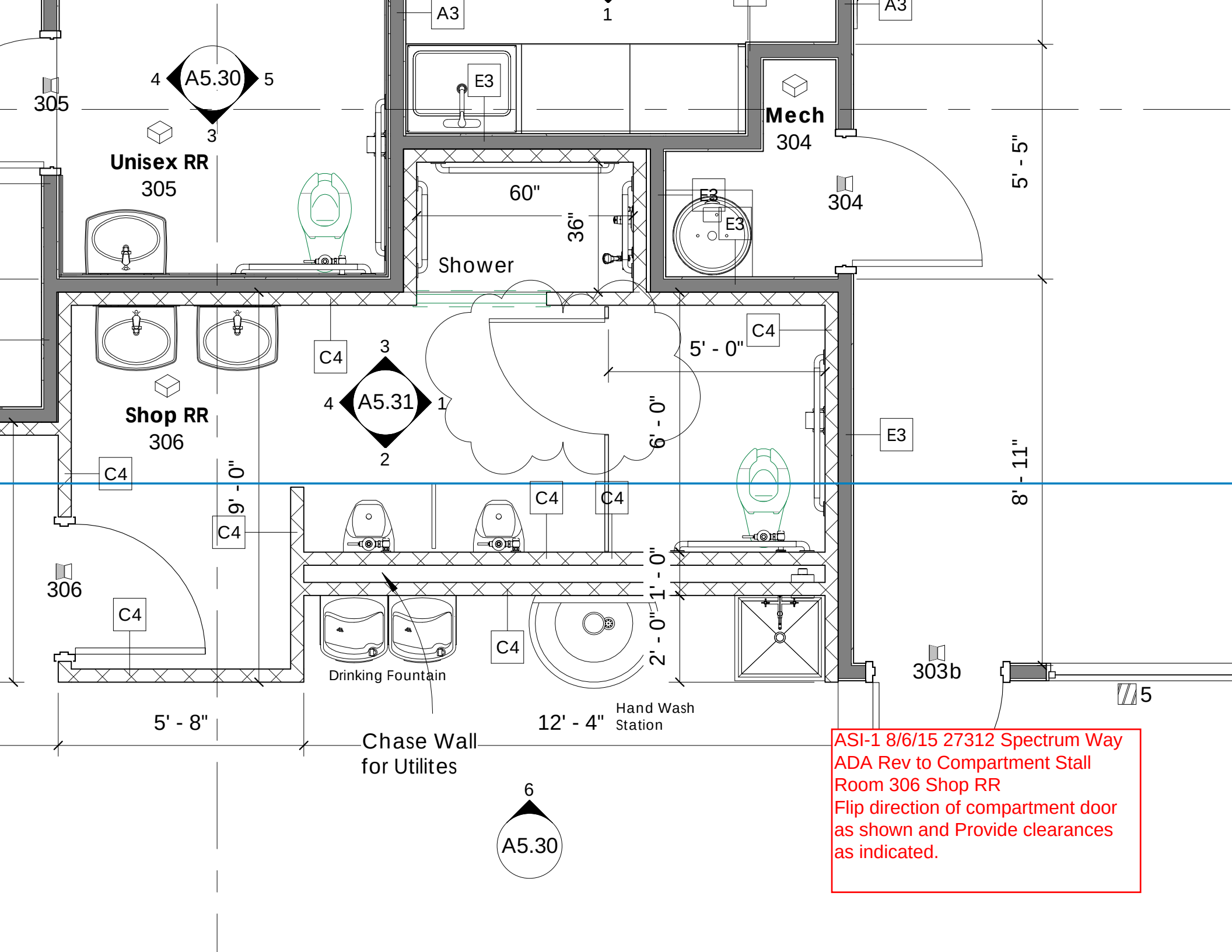

ASI-1 8/6/15 27312 Spectrum Way
ADA Rev to Compartment Stall
Room 306 Shop RR
Flip direction of compartment door
as shown and Provide clearances
as indicated.

1 Level 1 Gound
1/4" = 1'-0"

CEILING NOTES:

1. Refer to General Notes on A0 for general project information.
2. 12 gauge (minimum) hanger wires may be used for up to and Including 4 feet x 4 Feet grid spacing and shall be attached to main runners.
3. Provide 12 gauge hanger wires at the ends of all main and cross Runners within 8 inches of the support or within one-fourth (1/4) of the length of the end tee, whichever is least, for the Perimeter of the ceiling area. End connections for runners which are designed and detailed the resist the applied vertical and horizontal forces may be used on lieu of the 12 gauge hanger wires.
4. Provide trapeze and other supplementary support members at Obstructions to typical hanger spacing. Provide additional Hangers, struts, and braces as required at all ceiling breaks, Soffits, and discontinuous areas.
5. Fasten hanger wires with no less than three (3) tight turns. Fasten bracing wires with four (4) tight turns. Make all tight turns within a distance of 1 ½ inches. Hanger and bracing wire anchors to the structure, install in such a manner that the direction of the wire aligns as closely as possible with the direction of the forces acting on the wire.
6. Separate all ceiling hanging and bracing wires at least 6 inches such as single electrical conduit not exceeding ¾ inch nominal diameter, may be attached to hanger wires using connectors acceptable to the architect.
7. Attach all light fixtures and ceiling mounted air terminals and Force equal to the weight of the fixtures. Screws or approved Fasteners are required.
8. Support flush light fixtures, recessed light fixtures, air terminals and services, weighing less than 56 pounds directly on runners of a heavy duty grid system. Provide a minimum of two 12 gage slack safety wires attached to fixture at diagonal corners and anchored to structure above. All 2 feet x 4 feet light fixtures shall have slack safety wires at each corner.
9. All flush light fixtures, recessed light fixtures and air terminals and services weighing 56 pounds or more shall be independently supported by not less than four (4) taut 12 gage wires each attached to the fixture and to the structure. The Four (4) taut 12 gage wires including their attachment to the structure above must be capable of supporting four (4) times the weight of the unit.
10. Support surface mounted light fixtures by at least two positive devices which surround the ceiling runner and which are each supported from the structure above by a 12gage wire. Spring clips or clamps that connect only to the runner are not 8 feet or longer.
11. Support pendant mounted light fixtures directly from the structure above with hanger wires or cables passing through each pendant hanger and capable of supporting four (4) times the weight of the fixture. A bracing assembly is required where the pendant hanger penetrates the ceiling. Special details are required to attach the pendant hanger to the bracing assembly to transmit horizontal forces.
12. Where conflict in ceiling devices occurs, coordinate with contracting officer's representative.

Use Caddy clip AF or VF series as required at barjoist/ metal building purlins.

Reflective Ceiling Plan Level 1 Ground

SYMMETRY DEVELOPMENT

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Rev:	Date:	Description:

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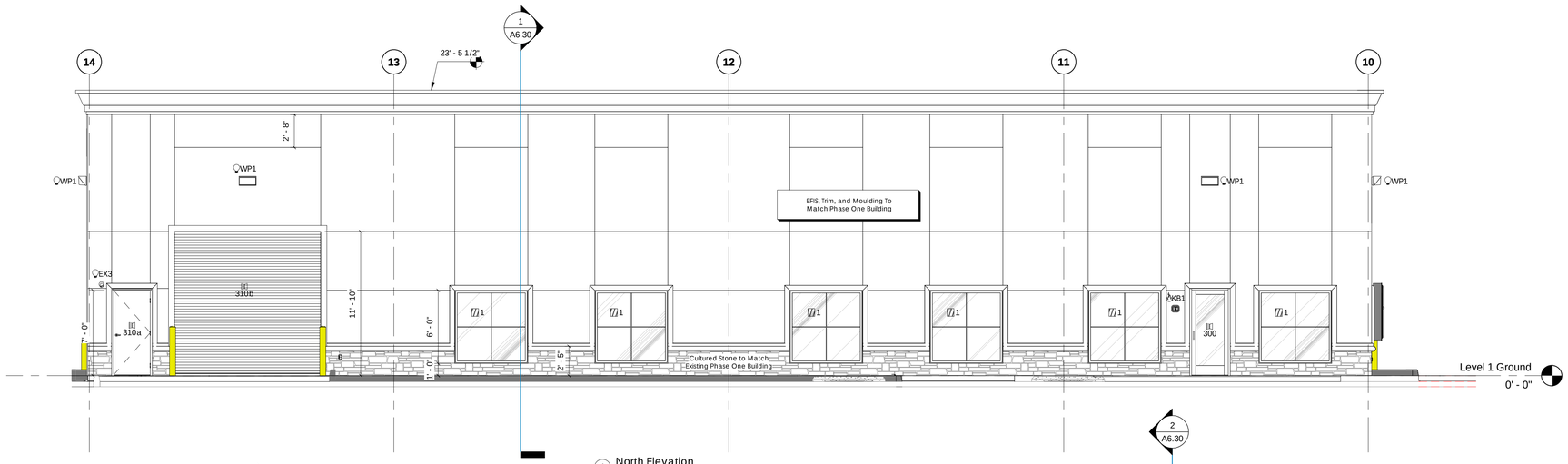
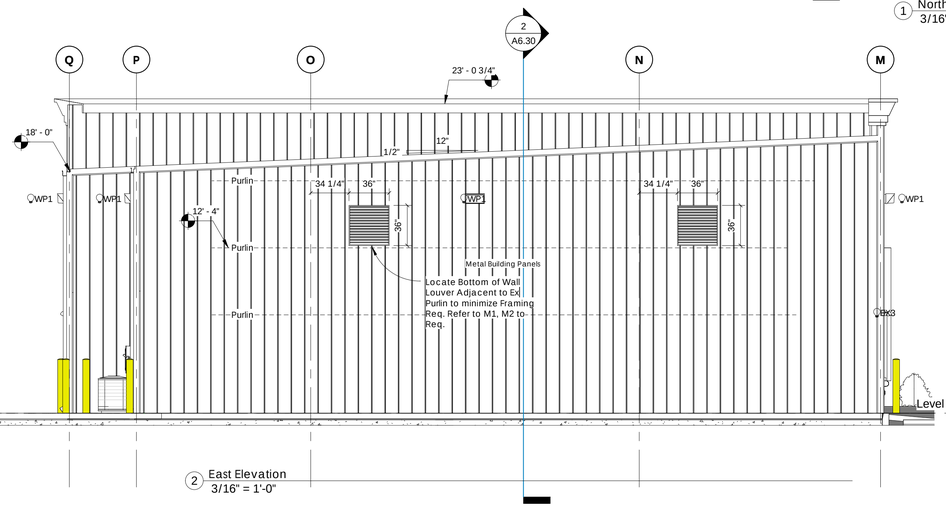
Edition:
Permit
Project #
3031
Scale:
1/4" = 1'-0"

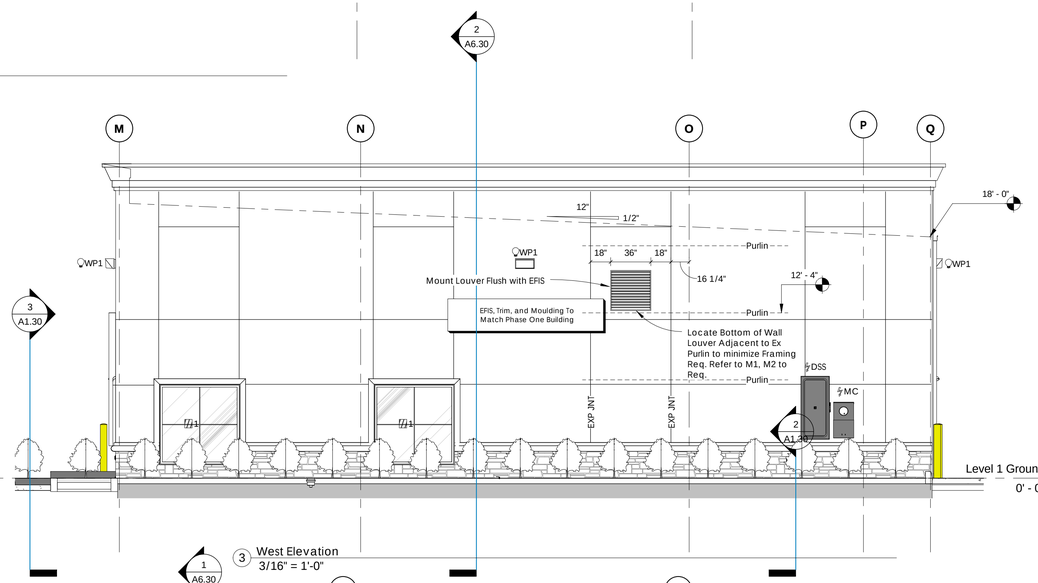
A3.30



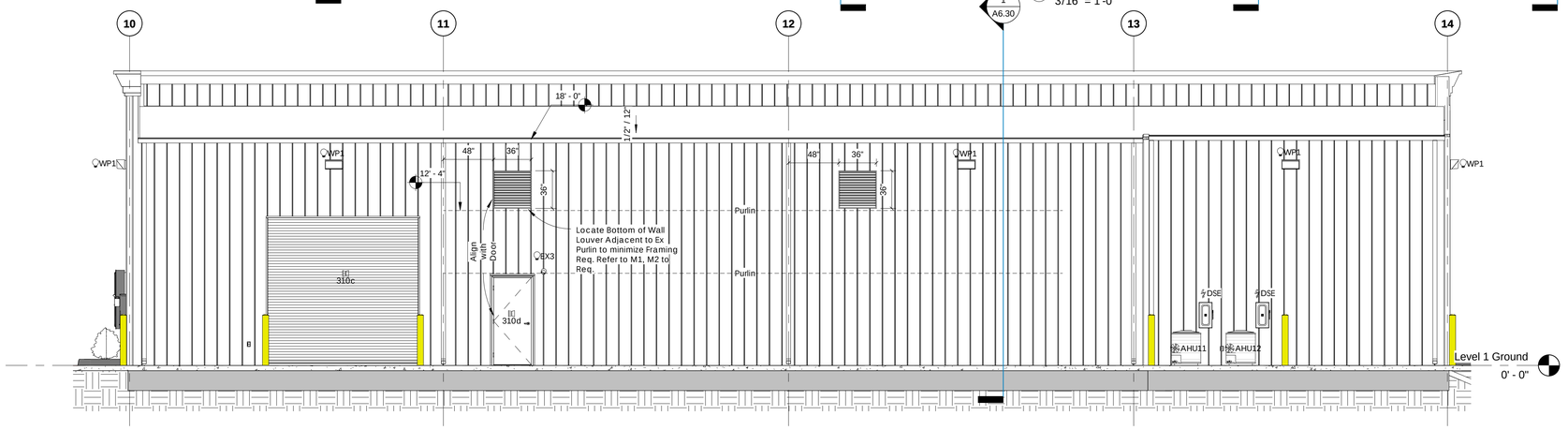
1 North Elevation
3/16" = 1'-0"



2 East Elevation
3/16" = 1'-0"



3 West Elevation
3/16" = 1'-0"



4 South Elevation
3/16" = 1'-0"

Exterior Elevations

SYMMETRY DEVELOPMENT

Services Prepared By:

SYMMETRY DEVELOPMENT, INC.
28510 Carley Cove Lane
Spring, Texas 77386
832.795.1553
symmetrydevelopment.com

MOC (Oak Ridge) Phase 2 of 2
27312 Spectrum Way
Oak Ridge, TX 77385

Project For:
MOCI

Revisions

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Scale:
3/16" = 1'-0"

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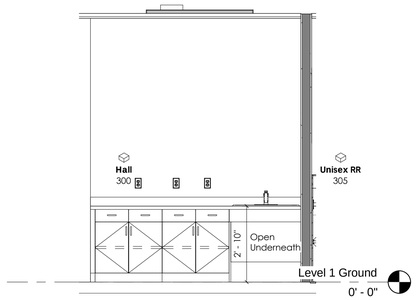
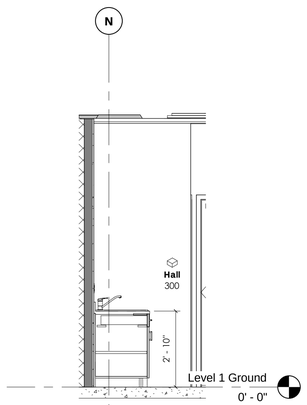
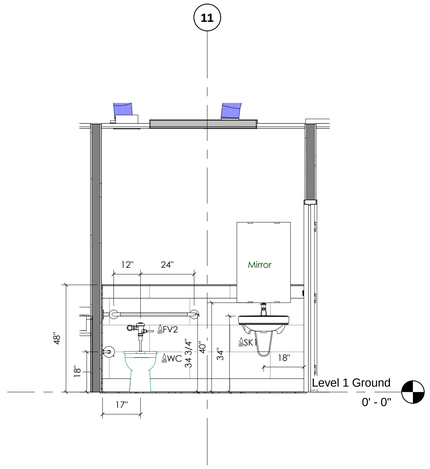


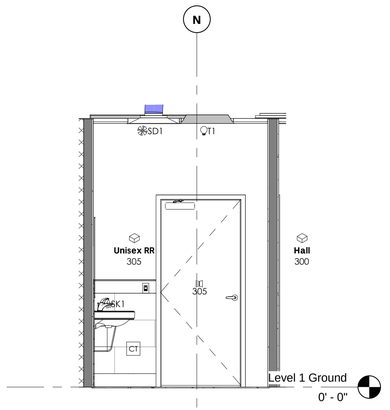
1 Coffee Bar Elevation 1
3/8" = 1'-0"



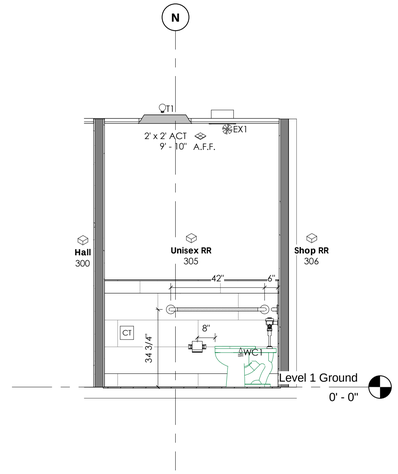
2 Coffee Bar Elevation 2
3/8" = 1'-0"



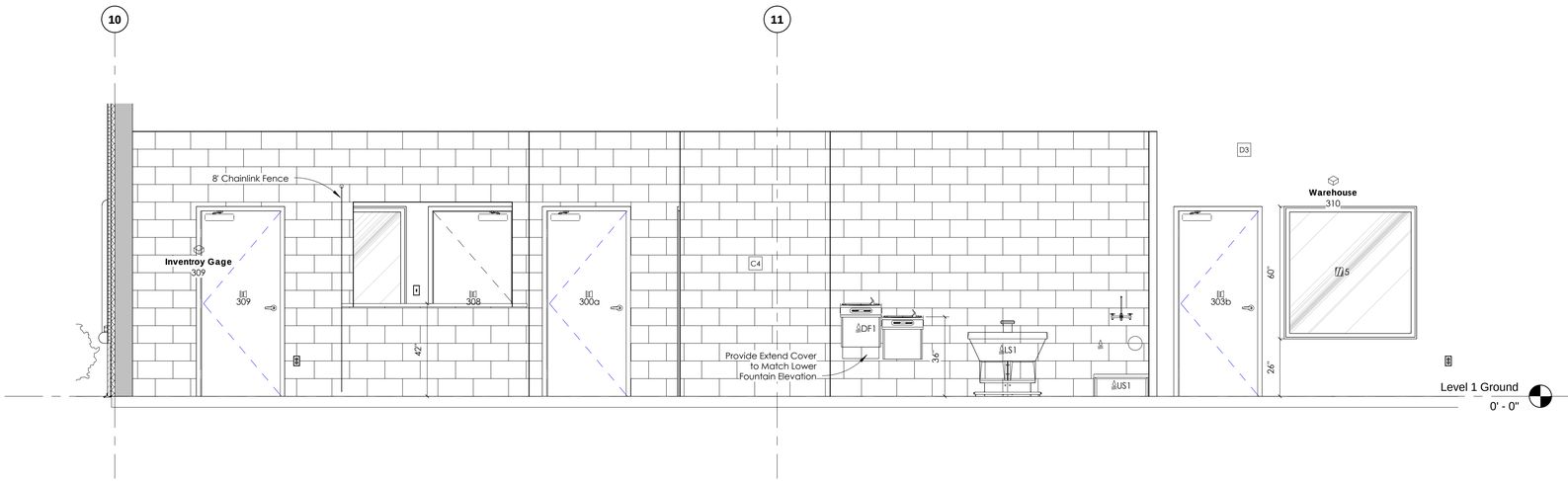
3 RR 1
3/8" = 1'-0"



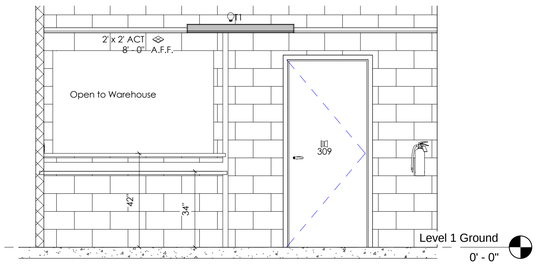
4 RR 2
3/8" = 1'-0"



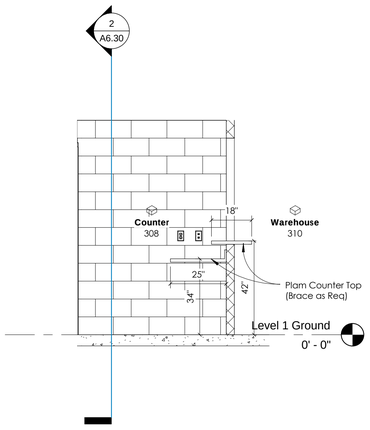
5 RR Elevation 1
3/8" = 1'-0"



6 Shop Elevation
3/8" = 1'-0"



7 Inventory Counter Elelvation 1
3/8" = 1'-0"



8 Inventory Counter Elevation 2
3/8" = 1'-0"

CASEWORK NOTES:

1. Refer to General Notes on A0 for general project information.
2. All architectural woodwork shall be manufactured in accordance with the current edition of the architectural woodwork quality standards of the architectural woodwork institute.
3. All casework dimensions shall be field verified by Contractor prior to fabrication and installation, and provide shop drawings.
4. Provide blocking in all walls as required for heights and weights of casework components.
5. Surfaces shall be true straight and free from all machine and tool markings, bruises, indentations, chips or abrasions.
6. All interior finishes shall comply with all agencies having jurisdiction.
7. Refer to owner for all equipment specifications and requirements.

Provide grommets at countertops as required and or directed by end user.

Interior Elevations

SYMMETRY DEVELOPMENT

Services Prepared By:
SYMMETRY DEVELOPMENT, INC.
28510 Carley Cove Lane
Spring, Texas 77386
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symmetrydevelopment.com

MOC (Oak Ridge) Phase 2 of 2
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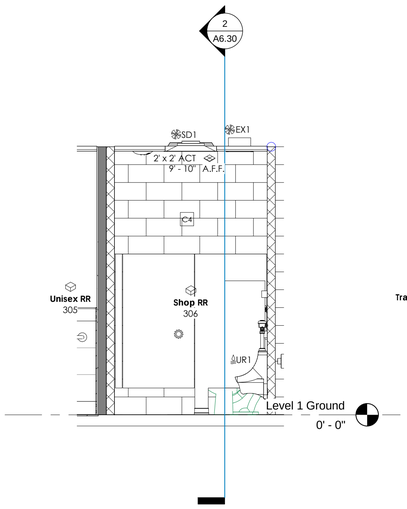
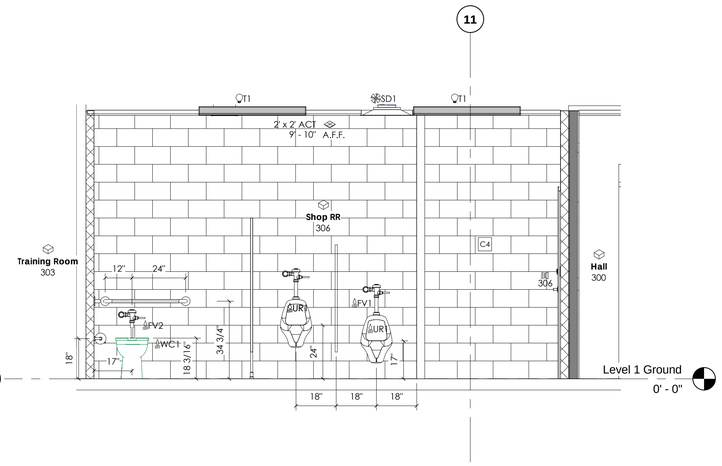
3/8" = 1'-0"

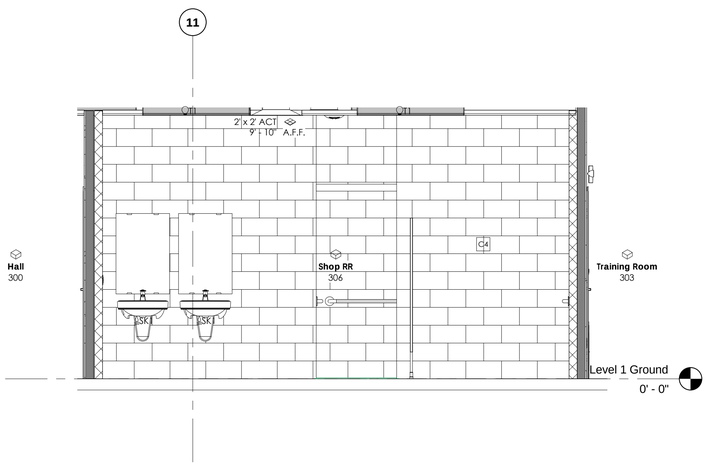
A5.30



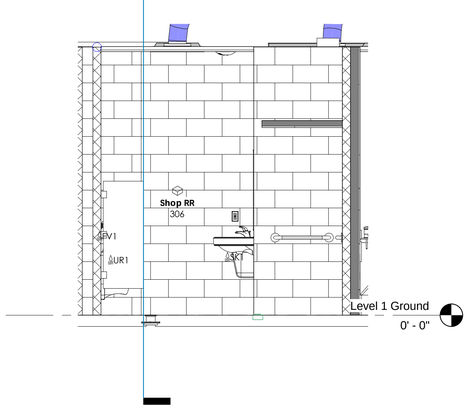
1 Shop RR 1
3/8" = 1'-0"



2 Shop RR 2
3/8" = 1'-0"



3 Shop RR 3
3/8" = 1'-0"



4 Shop RR 4
3/8" = 1'-0"

CASEWORK NOTES:

1. Refer to General Notes on A0 for general project information.
2. All architectural woodwork shall be manufactured in accordance with the current edition of the architectural woodwork quality standards of the architectural woodwork institute.
3. All casework dimensions shall be field verified by Contractor prior to fabrication and installation, and provide shop drawings.
4. Provide blocking in all walls as required for heights and weights of casework components.
5. Surfaces shall be true straight and free from all machine and tool markings, bruises, indentations, chips or abrasions.
6. All interior finishes shall comply with all agencies having jurisdiction.
7. Refer to owner for all equipment specifications and requirements.

Provide grommets at countertops as required and or directed by end user.

Interior Elevations

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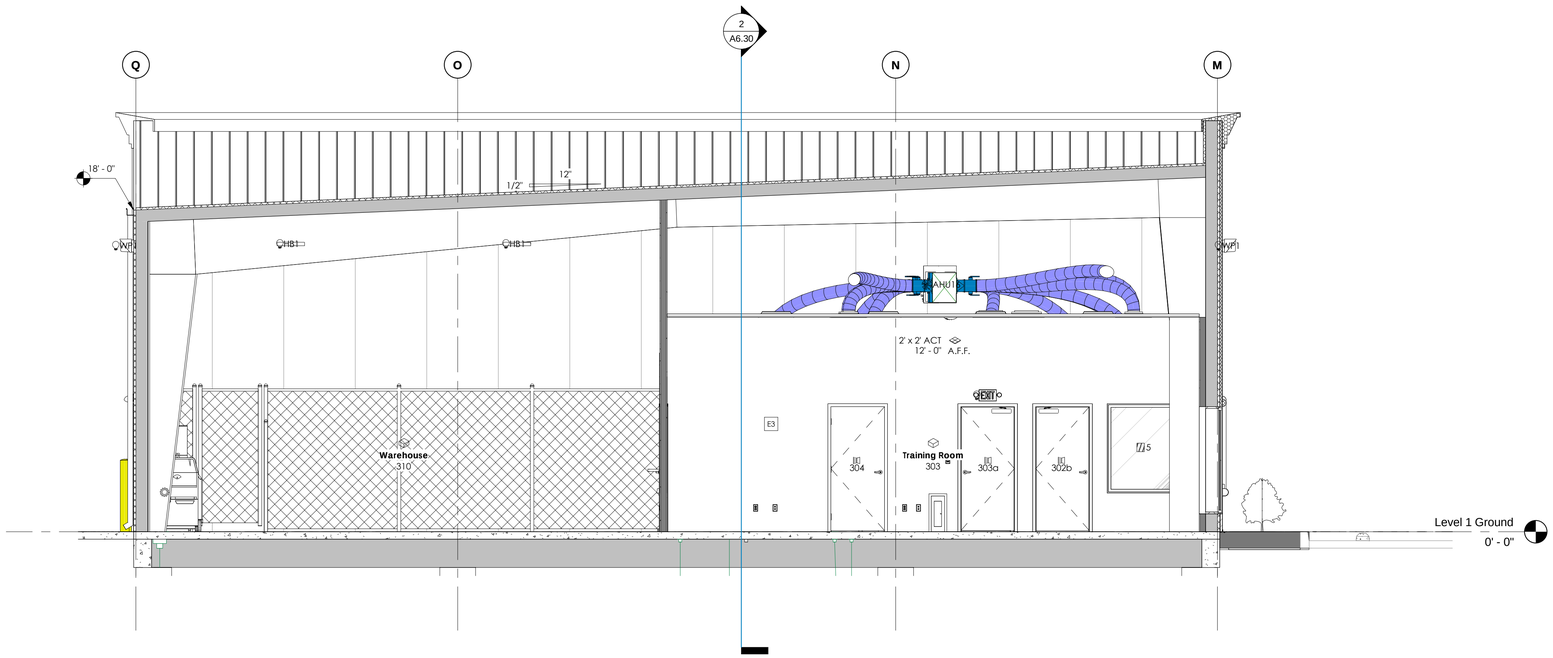
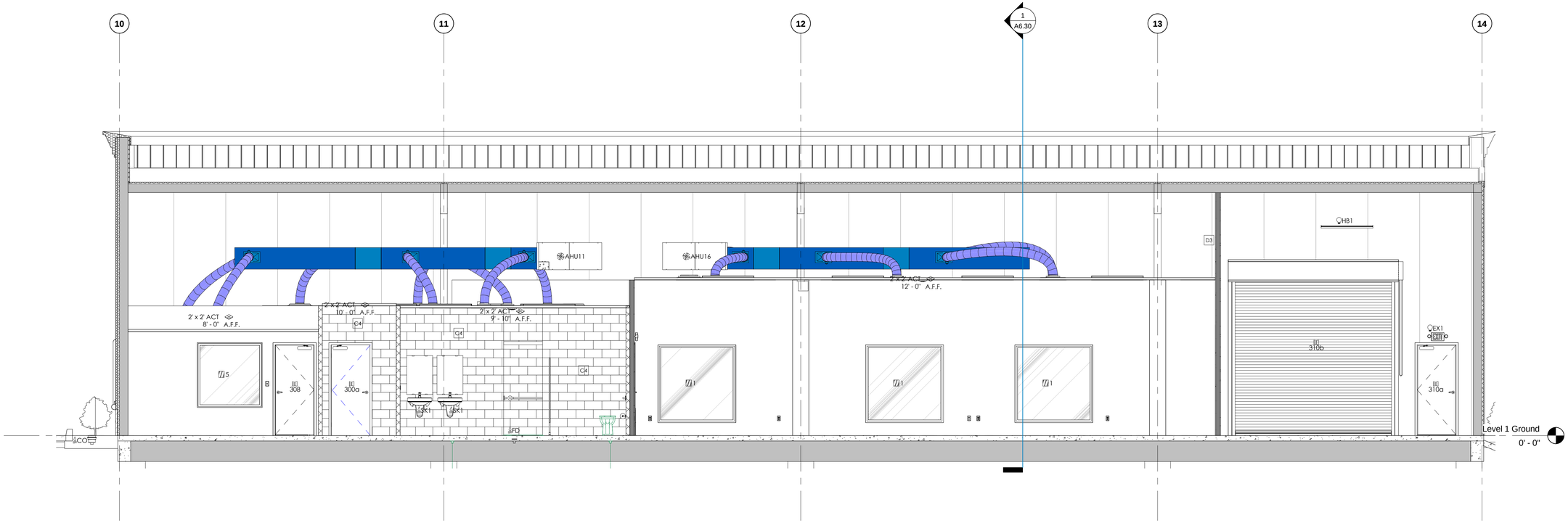


1 East-West Section
1/4" = 1'-0"



2 North-South Section
1/4" = 1'-0"

Building Sections

SYMMETRY DEVELOPMENT

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1/4" = 1'-0"

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Schedule							
Image	Type Mark	Category	Type	Description	Manufacturer	Model	Type Comments
	RA1	Air Terminals	2x2-Return				
	SD1	Air Terminals	2x2-Supply				
	DSE	Electrical Equipment	Not Configured	Heavy Duty Safety Switch	Square D by Schneider Electric		Safety Switch
	DSS	Electrical Equipment	E-DIS-400A	Heavy Duty Safety Switch	Square D by Schneider Electric		Safety Switches
	LP1	Electrical Equipment	Power and Lighting Load Center	Distribution Panelboard	Square D by Schneider Electric		
	MC	Electrical Equipment	Electric Meter				
	EO-D	Electrical Fixtures	Duplex	NEMA 5-15R Duplex Outlet 120v	Leviton	TBR15-W	
Ded	EO-DDed	Electrical Fixtures	Duplex Outlet-Dedicated				
Ded 48"	EO-DLH	Electrical Fixtures	Duplex Outlet- With Label and Height				
GFCI-WP	EO-GFIWP	Electrical Fixtures	GFCI-WP				
VS	ES-V	Electrical Fixtures	Single Switch-Vacancy				
VS3	ES-V3	Electrical Fixtures	Single Switch 3 Way				
	FE-5ABC	Fire Alarm Devices	Fire Extinguisher 5lb	5lb ABC Fire Extinguisher	Buckeye	5ABC	
	FEC	Fire Alarm Devices	Recessed 1/2		Nystrom	Fire Cabinets_Alpine Series	
	KB1	Fire Alarm Devices	3275	Emergency Key Cabinet	Knox Box	3275	Dark Bronze
	VS-CM1	Lighting Devices	OS Sensor	Exectrical Fixture as specified in 26 05 00	Hubbell Wiring Devices - Kellems	As specified in 26 05 00	
EXIT	EX1	Lighting Fixtures	Exit/Egress Light	Exit/Egress LED Sign with 90 min Backup	Lithonia	LHQM-LED-R	
	EX2	Lighting Fixtures	ELM2LED	Emergency Egress Light	Lithonia	ELM2LEDHO	
	EX3	Lighting Fixtures	Single Remote Head	Exterior Egree Remote Head w/ 90 min Battery Backup	Lithonia	ELA-Q-L0304/L0309	
	HB1	Lighting Fixtures	Refer To Type Catalog	Highbay Lights- 615	Lithonia	IBZ-654L-ACRP	
	J1	Lighting Fixtures	Downlight_Recessed_Cooper_Halo_LED_6 Inch_H750TD010	6" LED Rec Can Light	Cooper Industries, Inc.	H750ICAT-ML706835-49 45C06	
	T1	Lighting Fixtures	2x4 Toffer 3-32wT8	Recessed 2x4 Troffer 3-T828w	Lithonia	2GR8IC-32818	
	WP1	Lighting Fixtures	Refer To Type Catalog		Lithonia		
CO	CO	Plumbing Fixtures	Round 6" Floor Cleanout	Adjustable Cleanout	Oatey	Round 6Inch Brass Cleanout	
	DF1	Plumbing Fixtures	Elkay ADA Bilevel LZO STL8*C	EZ ADA	Elkay	LZOSTL8*C	
	F1	Plumbing Fixtures	Delta 8210	Single-Handle Kitchen Faucet	Moen	8701	
	FD	Plumbing Fixtures	Round 5" Strainer - 2" Drain				
	FS1	Plumbing Fixtures	4" Floor Sink 3/4	Floor Sink			
	FV1	Plumbing Fixtures	Royal 111-1.28	Exposed Water Closet Flushometer, for floor mounted or wall hung top spud bowls.	SLOAN	Royal 111-1.28	
	FV2	Plumbing Fixtures	Royal 186-0.5	Exposed urinal flushometer	SLOAN	Royal 186-0.5	
	HB1	Plumbing Fixtures	HoseBibb				
	LD1	Plumbing Fixtures	36 inch Drain Zurn Z5880		Zurn Industries, LLC	Z5880	Single Bottom Outlet
	LS1	Plumbing Fixtures	Bradley WF2803-Type A Drain	36" Semi-Circular Washfountain with 9" Deep Bowl	Bradley Corp	WF2803	
	SH1	Plumbing Fixtures	DELTA T17TH155	Trim Kit for Shower Valve Only, w/ Handshower and 24" Grab Bar	Delta	T17TH155	
	SK1	Plumbing Fixtures	Kohler Pinoir	Pinoir Wall-mount bathroom sink with Bin widespread faucet holes	Kohler	2035-8-0	
	SK3	Plumbing Fixtures	30" x 21" ADA		SMARTBIM		
	UR1	Plumbing Fixtures	Urnial	0.5 GPF High Efficiency Urinal	American Standard	6550.005	
	US1	Plumbing Fixtures	Molded Stone Service Basin with Faucet				
	WC1	Plumbing Fixtures	AS Flr Mnt WC		American Standard		
	WC2	Plumbing Fixtures	ADA Toilet				
	WH	Plumbing Fixtures	30 Gallon - 240V - 4500W Electric	Light Duty Upright Energy Saver Electric	Bradford White Corporation	LD-30R3-3	
	WM1	Plumbing Fixtures	Water Meter and Box				

Door Schedule								
Mark	Door Description	Width	Height	Thickness	Fire Rating	Hardware Set	Finish	Description
300	Storefront Door	3' - 0"	7' - 0"	0' - 1 3/4"	-	1	Bronze	
300a	Hollow Metal Door Frame	3' - 0"	7' - 0"	0' - 1 3/4"	-	4	Paint	
301	Int Door and Frame	3' - 0"	7' - 0"	0' - 1 3/4"	-	6	Bronze-PLam	
302a	Int Door and Frame	3' - 0"	7' - 0"	0' - 1 3/4"	-	8	Bronze-PLam	
302b	Int Door and Frame	3' - 0"	7' - 0"	0' - 1 3/4"	-	8	Bronze-PLam	
303a	Int Door and Frame	3' - 0"	7' - 0"	0' - 1 3/4"	-	8	Bronze-PLam	
303b	Hollow Metal Door Frame	3' - 0"	7' - 0"	0' - 1 3/4"	-	6	Paint	
303c	Hollow Metal Door Frame	3' - 0"	7' - 0"	0' - 1 3/4"	-	6	Paint	
304	Int Door and Frame	3' - 0"	7' - 0"	0' - 1 3/4"	-	6	Bronze-PLam	
305	Int Door and Frame	3' - 0"	7' - 0"	0' - 1 3/4"	-	7	Bronze-PLam	
306	Hollow Metal Door Frame	3' - 0"	7' - 0"	0' - 1 3/4"	-	4	Paint	
307	Int Door and Frame	3' - 0"	7' - 0"	0' - 1 3/4"	-	6	Bronze-PLam	
308	Int Door and Frame	3' - 0"	7' - 0"	0' - 1 3/4"	-	5	Bronze-PLam	
309	Hollow Metal Door Frame	3' - 0"	7' - 0"	0' - 1 3/4"	-	5	Paint	
310a	Mfl Bldg Hollow Metal Door and Frame	3' - 0"	7' - 0"	0' - 1 3/4"	-	3	Paint	
310b	Overhead Door-Roll Up	12' - 0"	12' - 0"		-	NA	Paint	
310c	Overhead Door-Roll Up	12' - 0"	12' - 0"		-	NA	Paint	
310d	Mfl Bldg Hollow Metal Door and Frame	3' - 0"	7' - 0"	0' - 1 3/4"	-	3	Paint	

Grand total

Room Schedule						
Room Number	Room Type	Floor Finish	Base Finish	Wall Finish	Ceiling Finish	Comments
300	Hall	VT1-VCT Tile	B1-Rubber Cove Base 4" w/ Toe	P1-2 Coat (Primer, Top Coat Egg Shell)	ACT1-2x2 Gride with USG Radar Tile	
301	Mng Office	CT-Carpet Tile	B1-Rubber Cove Base 4" w/ Toe	P1-2 Coat (Primer, Top Coat Egg Shell)	ACT1-2x2 Gride with USG Radar Tile	
302	Workroom	VT1-VCT Tile	B1-Rubber Cove Base 4" w/ Toe	P1-2 Coat (Primer, Top Coat Egg Shell)	ACT1-2x2 Gride with USG Radar Tile	
303	Training Room	CT1-Carpet Tile	B1-Rubber Cove Base 4" w/ Toe	P1-2 Coat (Primer, Top Coat Egg Shell)	ACT1-2x2 Gride with USG Radar Tile	
304	Mech	VT1-VCT Tile	B1-Rubber Cove Base 4" w/ Toe	P1-2 Coat (Primer, Top Coat Egg Shell)	ACT1-2x2 Gride with USG Radar Tile	
305	Unisex RR	C1-Ceramic Tile	CB1-Cermaic Cove Base 6" w/ Toe	P1-2 Coat (Primer, Top Coat Egg Shell)	ACT1-2x2 Gride with USG Radar Tile	
306	Shop RR	Sealed Concrete		P2- 3 Coat (Block Filler, Primer, Top Coat)	ACT2-2x2 Grid with Vinyl Face Tile	
307	Inv Cntr Office	Sealed Concrete	B1-Rubber Cove Base 4" w/ Toe	P1-2 Coat (Primer, Top Coat Egg Shell)	ACT1-2x2 Gride with USG Radar Tile	
308	Counter	Sealed Concrete	B1-Rubber Cove Base 4" w/ Toe	P2- 3 Coat (Block Filler, Primer, Top Coat)	ACT2-2x2 Grid with Vinyl Face Tile	Base at Drywall Only
309	Inventroy Gage	Sealed Concrete		P2- 3 Coat (Block Filler, Primer, Top Coat)	Open to Structure	
310	Warehouse	Sealed Concrete	B1-Rubber Cove Base 4" w/ Toe	P1/P2	Open to Structure	Base at Drywall Only

Level 1 Ground: 11
Grand total

Finish Specification (Verify with Owner before purchasing selections)

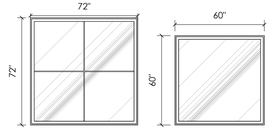
Millwork:
PL1 TBD-Standard
PL2 TBD-Breakroom Countertop
SS1 Solid Surface-TBD

Acoustical Suspened Ceiling
ACT1 USG 2x2 Tile Radar ClimaPlus 2210 with Donn DX Grid with unfaced R-19 Insulation Above
ACT2 USG 2x2 Tile Clima Plus Vinyl Face 3260 with Donn DX Grid

Paint (As Key Noted)
P1 TBD
P2 TBD

Flooring (As Key Noted)
C1 Ceramic Tile-TBD
CT1 Carpet Tile-TBD
VT1 12"x12" VCT Tile TBD
B1 4" Rubber Base with toe-TBD
CB1 Ceramic Tile Base-TBD

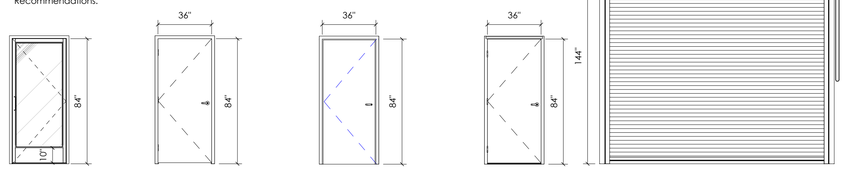
Finish Schedule
No Scale



Window Type 1
6'-0" x 6'-0" Vinyl Frame
Insulated Low-E Fixed Window
To match similar to Existing 1e Type

Window Type 5
5'-0" x 5'-0" Alumn Frame to Match Interior Door Frame Style
Provide 1/4" Glass, Tempered Where Required

Window Notes:
Flash and Weatherproof Windows in Per the Existing Metal Building Component Manufactures Recommendations.



Door Type "C"
3070 Aluminum Storefront Door Narrow Stile, Standard Hardware w/ Lock Indicator Refer To:

Door Type "D" Single
3080 Plastic Laminate Face Solid Wood
1-3/4" Door-Aluminum Frame and Trim, Provide Closer Bracing at Frame.
Verify Frame Thickness based on Wall Type.

Door Type "F1" Single Interior
3070 Hollow Metal 1-3/4" 20 Ga. Door and 16 Ga. Frame,Provide Closer Bracing at Frame and Door, Verify Frame Thickness based on Wall Type.

Door Type "F2" Single Exterior
3070 Hollow Metal 1-3/4" 20 Ga. Door and 16 Ga. Frame,Provide Closer Bracing at Frame and Door, Verify Frame Thickness based on Wall Type.

Overhead Door-Rolling

Door & Window Legend
1/4" = 1'-0"

Hardware Schedule
Notes:
1. Verify all hardware templates to door type (Door Swing, backset size, Hole Size, Hinge Location and Size)
2. Adjust Closers for ADA Compliance, Max 5 Pounds Force, and closing speed from 90 degrees to within 12 degrees of the latch in 5 Seconds. Refer To TAS 404.2.8 and 404.2.9

Hardware Sets:

1-Storefront Door
Pivot Hinges
Lock Brace
Closer Grade 2
ADA Threshold
Push/Pull Handle
Door Sweep
Weather Stripping
Sign-"Door To Remain Unlocked When The Building Is Occupied"
Lock Indicator Re to:

2-Storefront Door
Pivot Hinges
Closer Grade 2
ADA Threshold
Push/Pull Handle
Door Sweep
Weather Stripping
Blank Cylinder Covers and Plate-non lockable

3-Hollow Metal Door
Non Removable Pin Butt Hinges
Exterior Door Latch Brace
Closer Grade 2
ADA Threshold
Entry ADA Lever ANSI-F109
Door Sweep
Weather Stripping
Overhead Rain Drip Weather-strip 2.5" Wide
Sign-"Door To Remain Unlocked When The Building Is Occupied"

4-Hollow Metal Door
Non Removable Pin Butt Hinges
Closer Grade 2
ADA Threshold
Passage ADA Lever ANSI-F75
Door Sweep
Weather Stripping

5-Hollow Metal Door
Non Removable Pin Butt Hinges
Closer Grade 2
ADA Threshold
Entrance ADA Lever ANSI-F109
Door Sweep
Weather Stripping

6-Interior Keyed Door
Butt Hinges
Passage ADA Lever ANSI-F75
Sign-Restroom RE: TAS 216.8
Door Stop

7-Interior Restroom Door
Butt Hinges
Privacy ADA Lever ANSI-F76
Door Closer Grade 2
Sign-Restroom RE: TAS 216.8
Door Stop

8-Interior Passage Door
Butt Hinges
Passage ADA Lever ANSI-F75
Door Closer Grade 2
Sign-Restroom RE: TAS 216.8
Door Stop

Hardware Schedule
No Scale

Schedules

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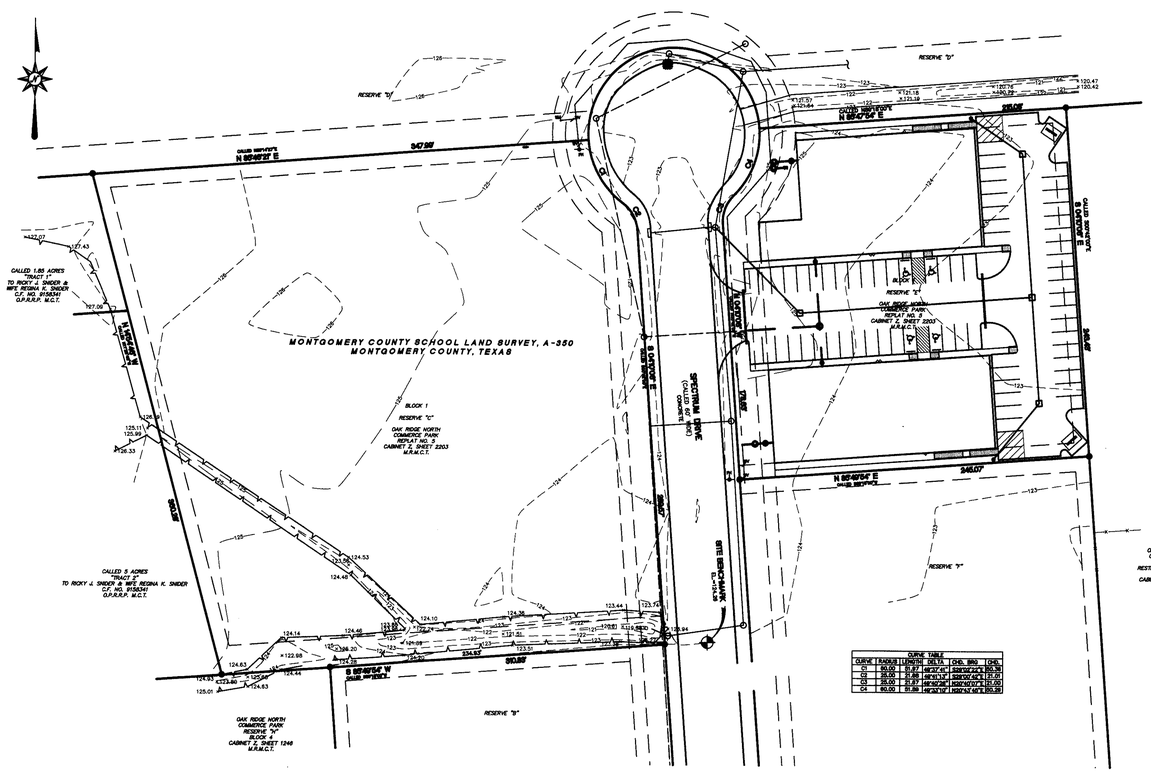
A7.30

CITY OF OAK RIDGE NORTH, TEXAS

TEXAS EQUITY VENTURES
SPECTRUM DRIVE
RESERVE E



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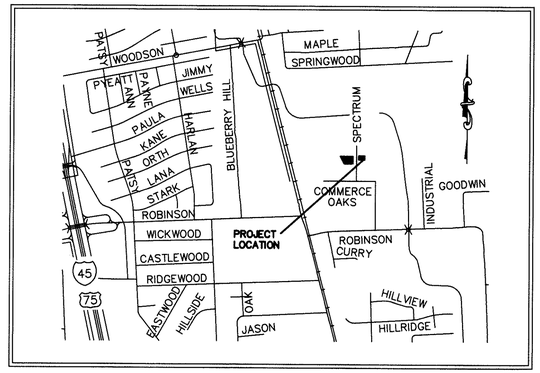


PROJECT LOCATION
SCALE: N.T.S.

RECEIVED
JUL 3 2013
BY:

7/1/13
CITY ENGINEER — DATE
CITY OF OAK RIDGE NORTH
SIGNATURE VALID FOR ONE (1) YEAR

L SQUARED ENGINEERING
Civil • Consulting • Management

DRAWING ISSUE/REVISIONS

No.	DATE	BY	COMMENT

L SQUARED ENGINEERING
Civil • Consulting • Management

CLIENT
TEXAS EQUITY VENTURES

PROJECT TITLE
TEXAS EQUITY VENTURES - SPECTRUM DRIVE COVER SHEET

ENGINEER CONTACT INFO.:
L Squared Engineering, LLC
21123 EVA ST. SUITE 210-H
MONTGOMERY, TX 77356
936-647-0420

PROJECT LOCATION
27316 SPECTRUM WAY
OAK RIDGE NORTH, TEXAS

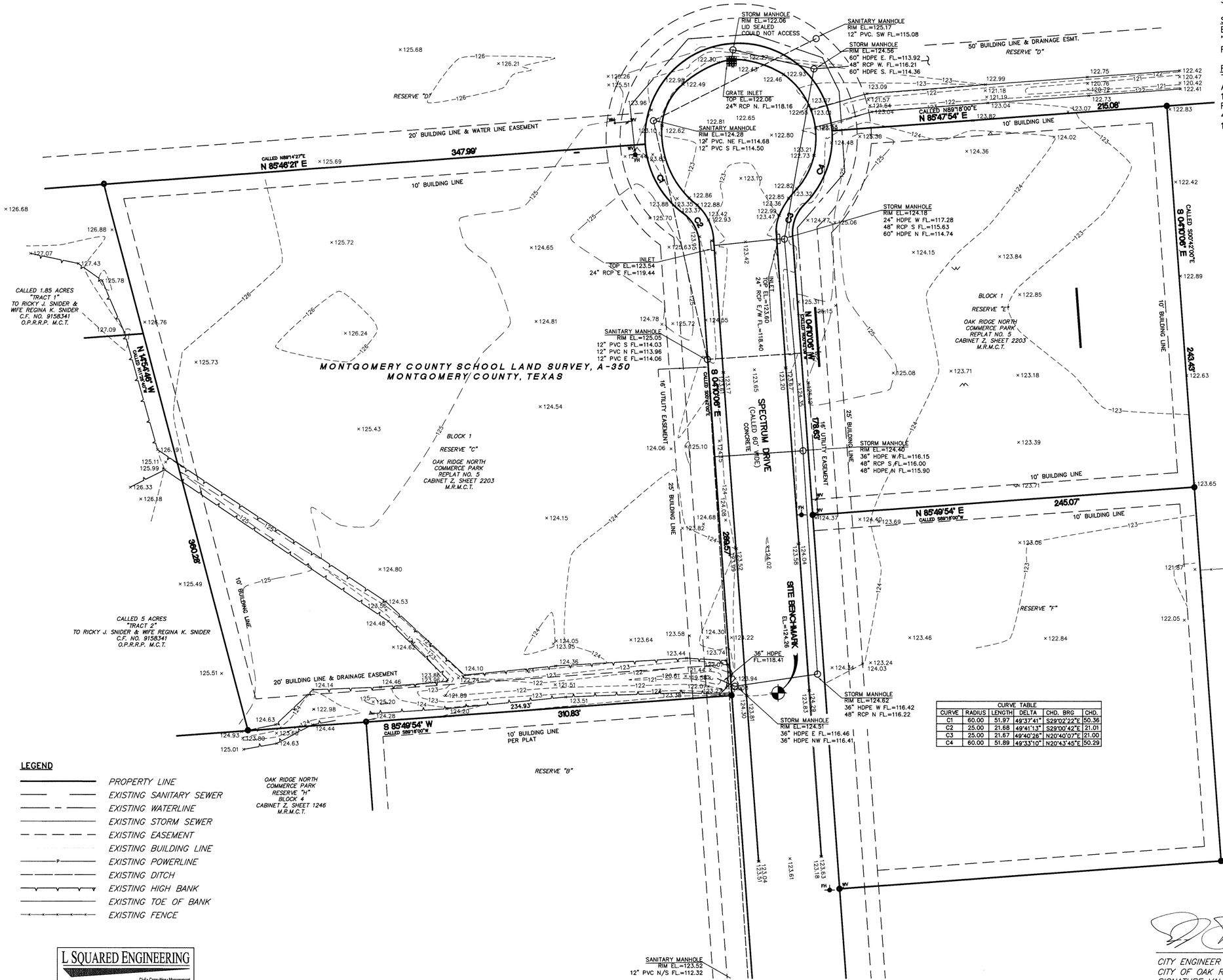
PROJECT LEGAL DESCRIPTION
RESERVE "E" BLOCK 1 OAK RIDGE NORTH COMMERCE PARK REPLAT No. 5 CABINET Z, SHEET 2203 M.R.M.C.T. IN THE MONTGOMERY COUNTY SCHOOL LAND SURVEY, A-350 MONTGOMERY COUNTY, TEXAS 1.3437 Ac. (PLAT)

SEAL

STATE OF TEXAS
E. LEVI LOVE, JR.
99340
LICENSED
PROFESSIONAL ENGINEER

07/02/2013

FIRM No.	11235
DATE	7/02/2013
PROJECT No.	10078
DRAWN BY	CBJ
SCALE	1"=50'
DRAWING No.	1



CURVE TABLE					
CURVE	RADIUS	LENGTH	DELTA	CHD. BRG	CHD.
C1	60.00	51.97	49°37'41"	S29°02'22"E	50.36
C2	25.00	21.58	49°41'13"	S29°00'42"E	21.01
C3	25.00	21.67	49°40'26"	N20°40'07"E	21.00
C4	60.00	51.89	49°33'10"	N20°43'45"E	50.29

BENCHMARK
NGS BENCHMARK C1513
ELEV=118.27 (2001 ADJ.)
STAINLESS STEEL ROD W/O SLEEVE

SITE BENCHMARK #1
ELEV=124.26
"X" SET IN CONRETE NEAR CENTER OF ROAD AS SHOWN

FLOODPLAIN
THIS PROPERTY IS LOCATED IN ZONE X AND THIS PROPERTY IS OUTSIDE THE 100-YEAR FLOODPLAIN AS SHOWN ON FIRM COMMUNITY PANEL NUMBER 48339C0541 F, EFFECTIVE DATE: 12/19/1996

LEGEND

- PROPERTY LINE
- EXISTING SANITARY SEWER
- EXISTING WATERLINE
- EXISTING STORM SEWER
- EXISTING EASEMENT
- EXISTING BUILDING LINE
- EXISTING POWERLINE
- EXISTING DITCH
- EXISTING HIGH BANK
- EXISTING TOE OF BANK
- EXISTING FENCE

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CITY ENGINEER
CITY OF OAK RIDGE NORTH
SIGNATURE VALID FOR ONE (1) YEAR

7/11/13
DATE

DRAWING ISSUE/REVISIONS

No.	DATE	BY	COMMENT

L SQUARED ENGINEERING
Civil • Consulting • Management

CLIENT
TEXAS EQUITY VENTURES

PROJECT TITLE
TEXAS EQUITY VENTURES - SPECTRUM DRIVE EXISTING SITE

ENGINEER CONTACT INFO.:
L Squared Engineering, LLC
21123 EVA ST. SUITE 210-H
MONTGOMERY, TX 77356
936-647-0420

PROJECT LOCATION
27316 SPECTRUM WAY
OAK RIDGE NORTH, TEXAS

PROJECT LEGAL DESCRIPTION
RESERVE "E" BLOCK 1 OAK RIDGE NORTH COMMERCE PARK REPLAT No. 5 CABINET Z, SHEET 2203 M.R.M.C.T. IN THE MONTGOMERY COUNTY SCHOOL LAND SURVEY, A-350 MONTGOMERY COUNTY, TEXAS
1.3437 Ac. (PLAT)

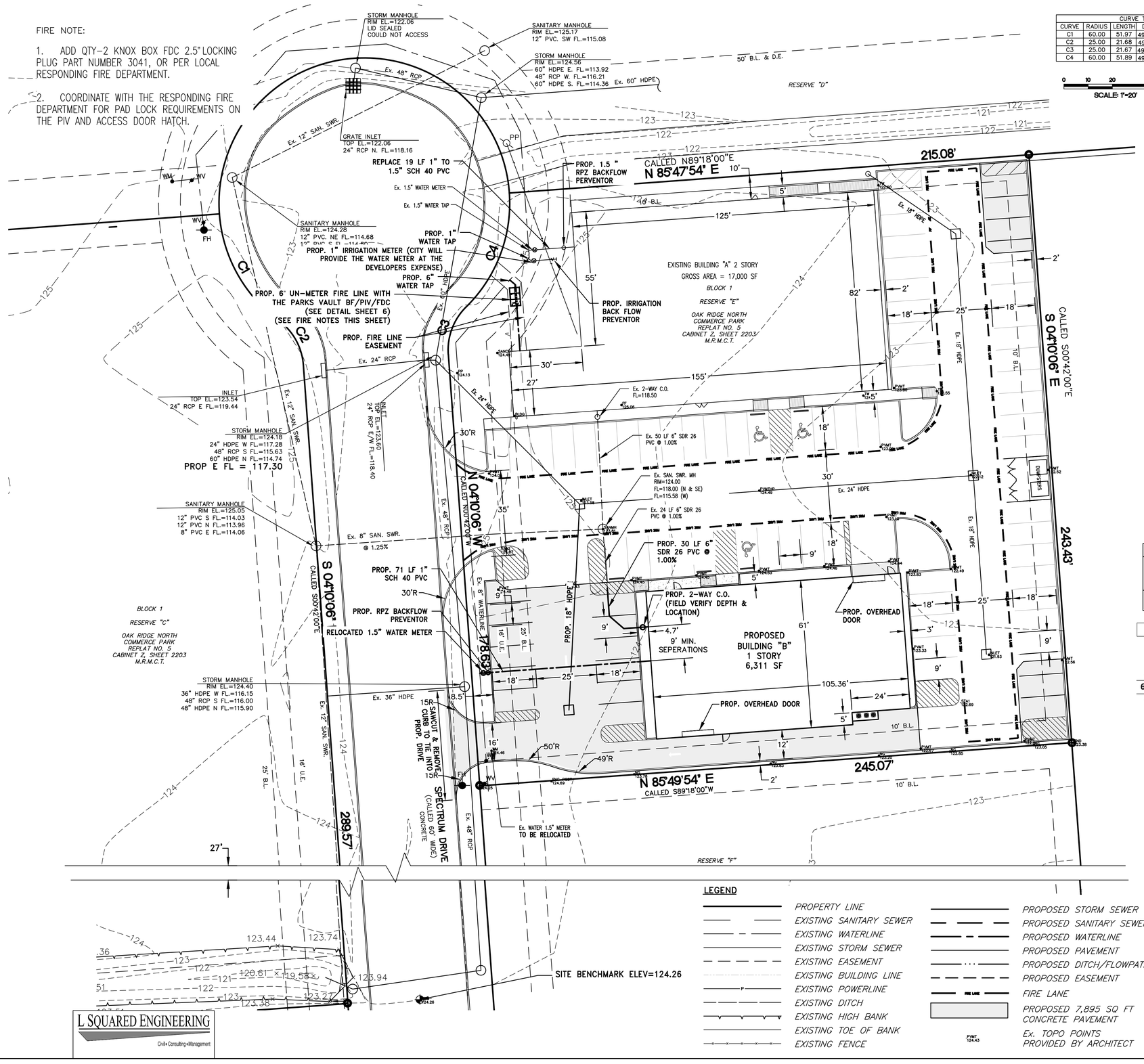
SEAL
STATE OF TEXAS
E. LEVI LOVE, JR.
99340
LICENSED
PROFESSIONAL ENGINEER
07/02/2013

FIRM No.	11235
DATE	7/02/2013
PROJECT No.	10078
DRAWN BY	CBJ
SCALE	1"=30'
DRAWING No.	2

FIRE NOTE:

1. ADD QTY-2 KNOX BOX FDC 2.5" LOCKING PLUG PART NUMBER 3041, OR PER LOCAL RESPONDING FIRE DEPARTMENT.

2. COORDINATE WITH THE RESPONDING FIRE DEPARTMENT FOR PAD LOCK REQUIREMENTS ON THE PIV AND ACCESS DOOR HATCH.



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0 10 20 40
SCALE 1"=20'

BENCHMARK
NGS BENCHMARK C1513
ELEV=118.27 (2001 ADJ.)
STAINLESS STEEL ROD W/O SLEEVE

SITE BENCHMARK #1
ELEV=124.26
"X" SET IN CONRETE NEAR CENTER OF ROAD AS SHOWN

FLOODPLAIN
THIS PROPERTY IS LOCATED IN ZONE X AND THIS PROPERTY IS OUTSIDE THE 100-YEAR FLOODPLAIN AS SHOWN ON FIRM COMMUNITY PANEL NUMBER 48339C0541 F, EFFECTIVE DATE: 12/19/1996

SYMBOLS LEGEND

- IRON ROD
- BENCHMARK
- PP EXISTING POWER POLE
- FH EXISTING FIRE HYDRANT
- WV EXISTING WATER VALVE
- EXISTING TELEPHONE PED.
- PROPOSED MANHOLE
- PROPOSED CLEANOUT
- PROPOSED STORM INLET
- PROPOSED WATER METER

NOTES:

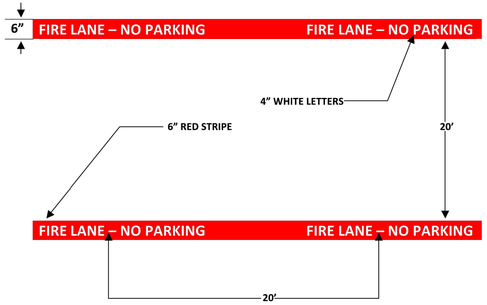
1. THE CITY OF OAK RIDGE NORTH IS NOT RESPONSIBLE FOR REPLACING PARKING LOT PAVEMENT SHOULD A REPAIR OF THE PUBLIC UTILITY, LOCATED UNDER THE PAVEMENT, BE NECESSARY.

2. EXISTING FLOWLINES SHOWN HAVE NOT BEEN VERIFIED AND ARE BASED ON PREVIOUS PLANS.

PARKING REQUIREMENTS

USE:	REQ'D RATE	AMT REQ'D
17,000 SF OFFICE (CLASS 4.c)	2.5/1000	42.5
7,425 SF WAREHOUSE (CLASS 4.b)	1/5000	1.49
TOTAL PROVIDED = 80		TOTAL REQUIRED=43.99

PROPER STRIPING OF FIRE LANES



FIRE LANE DETAIL
N.T.S.

LEGEND

- PROPERTY LINE
- EXISTING SANITARY SEWER
- EXISTING WATERLINE
- EXISTING STORM SEWER
- EXISTING EASEMENT
- EXISTING BUILDING LINE
- EXISTING POWERLINE
- EXISTING DITCH
- EXISTING HIGH BANK
- EXISTING TOE OF BANK
- EXISTING FENCE
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATERLINE
- PROPOSED PAVEMENT
- PROPOSED DITCH/FLOWPATH
- PROPOSED EASEMENT
- FIRE LANE
- PROPOSED 7,895 SQ FT CONCRETE PAVEMENT
- Ex. TOPO POINTS PROVIDED BY ARCHITECT

CITY ENGINEER — DATE
CITY OF OAK RIDGE NORTH
SIGNATURE VALID FOR ONE (1) YEAR

DRAWING ISSUE/REVISIONS

No.	DATE	BY	COMMENT

L SQUARED ENGINEERING
Civil • Consulting • Management

CLIENT
TEXAS EQUITY VENTURES

PROJECT TITLE
TEXAS EQUITY VENTURES - SPECTRUM DRIVE PROPOSED SITEPLAN

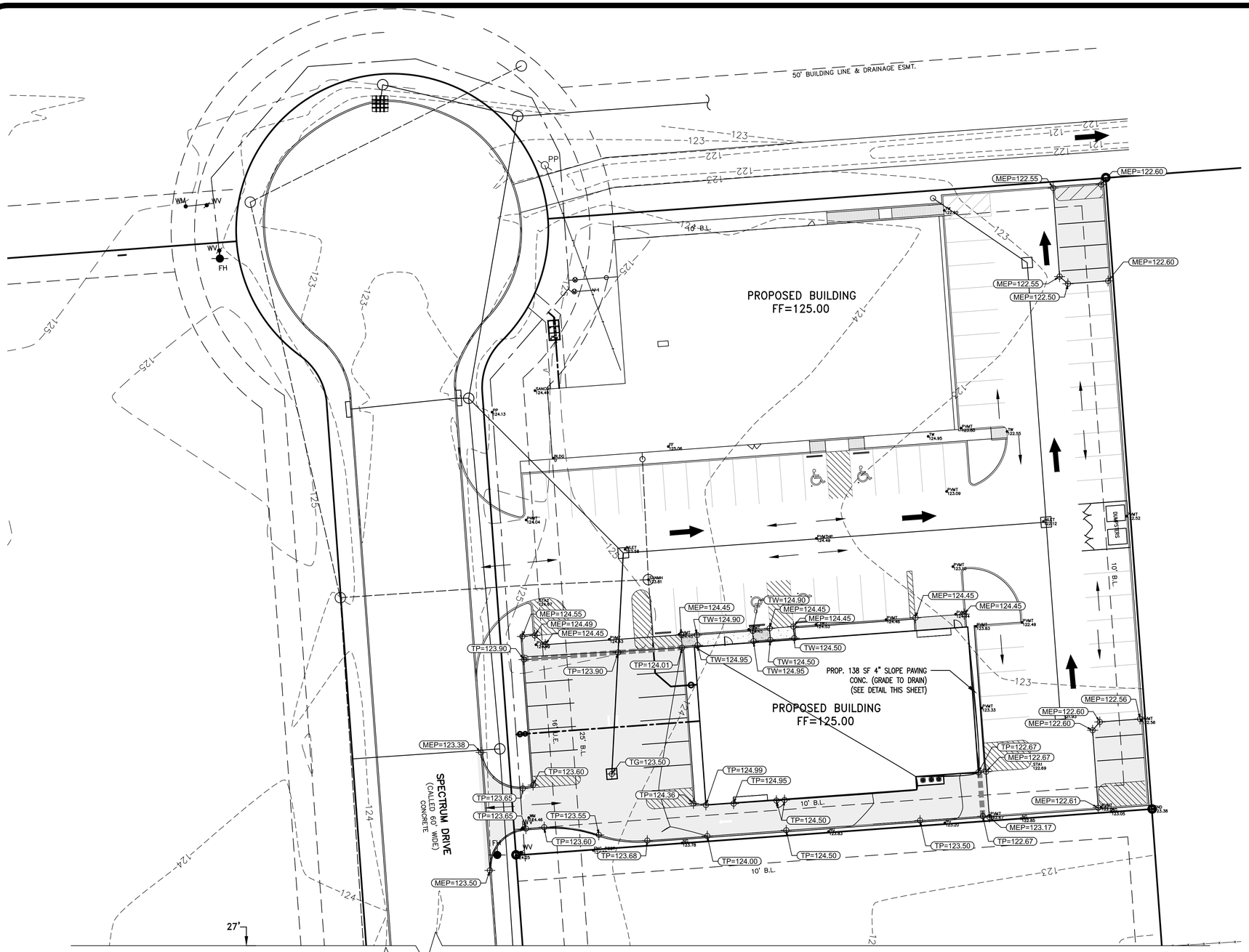
ENGINEER CONTACT INFO.:
L Squared Engineering, LLC
21123 EVA ST. SUITE 210-H
MONTGOMERY, TX 77356
936-647-0420

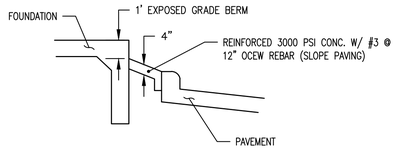
PROJECT LOCATION
27316 SPECTRUM WAY
OAK RIDGE NORTH, TEXAS

PROJECT LEGAL DESCRIPTION
RESERVE "E" BLOCK 1 OAK RIDGE NORTH COMMERCE PARK REPLAT No. 5 CABINET Z, SHEET 2203 M.R.M.C.T. IN THE MONTGOMERY COUNTY SCHOOL LAND SURVEY, A-350 MONTGOMERY COUNTY, TEXAS
1.3437 Ac. (PLAT)

SEAL
STATE OF TEXAS
E. LEVI LOVE, JR.
99340
LICENSED PROFESSIONAL ENGINEER
03/27/2015

FIRM No.	11235
DATE	3/27/2015
PROJECT No.	10078
DRAWN BY	CBJ
SCALE	1"=20'
DRAWING No.	3





SLOPE PAVING DETAIL
N.T.S.

BENCHMARK
NGS BENCHMARK C1513
ELEV=118.27 (2001 ADJ.)
STAINLESS STEEL ROD W/O SLEEVE

SITE BENCHMARK #1
ELEV=124.26
"X" SET IN CONRETE NEAR CENTER OF ROAD AS SHOWN

FLOODPLAIN
THIS PROPERTY IS LOCATED IN ZONE X AND THIS PROPERTY IS OUTSIDE THE 100-YEAR FLOODPLAIN AS SHOWN ON FIRM COMMUNITY PANEL NUMBER 48339C0541 F, EFFECTIVE DATE: 12/19/1996

SYMBOLS LEGEND

- IRON ROD
- BENCHMARK
- PP — EXISTING POWER POLE
- FH — EXISTING FIRE HYDRANT
- WV — EXISTING WATER VALVE
- EXISTING TELEPHONE PED.
- PROPOSED MANHOLE
- PROPOSED CLEANOUT
- PROPOSED STORM INLET
- PROPOSED WATER METER

0 10 20 40
SCALE: 1"=20'

CURVE TABLE					
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- EXISTING DITCH
- EXISTING HIGH BANK
- EXISTING TOE OF BANK
- EXISTING FENCE
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATERLINE
- PROPOSED PAVEMENT
- PROPOSED DITCH
- PROPOSED EASEMENT
- PROPOSED 7,895 SQ FT CONCRETE PAVEMENT
- P/VMT 124.43 — Ex. TOPO POINTS PROVIDED BY ARCHITECT
- TW=??? — TOP OF WALK
- TP=??? — TOP OF PAVEMENT
- FL=??? — FLOWLINE
- TG=??? — TOP OF GRATE
- GRADE BREAK
- EXTREME EVENT FLOW

CITY ENGINEER — DATE
CITY OF OAK RIDGE NORTH
SIGNATURE VALID FOR ONE (1) YEAR

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No.	DATE	BY	COMMENT

L SQUARED ENGINEERING
Civil • Consulting • Management

CLIENT
TEXAS EQUITY VENTURES

PROJECT TITLE
TEXAS EQUITY VENTURES - SPECTRUM DRIVE
PAVING AND GRADING PLAN

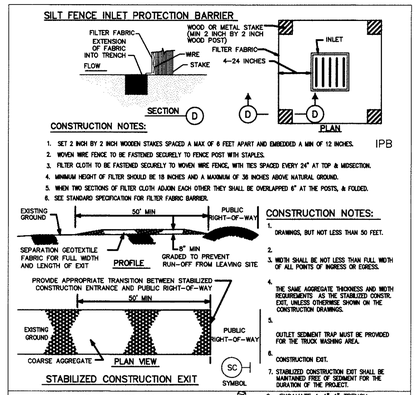
ENGINEER CONTACT INFO.:
L Squared Engineering, LLC
21123 EVA ST. SUITE 210-H
MONTGOMERY, TX 77356
936-647-0420

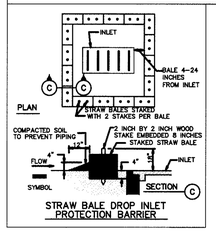
PROJECT LOCATION
27316 SPECTRUM WAY
OAK RIDGE NORTH, TEXAS

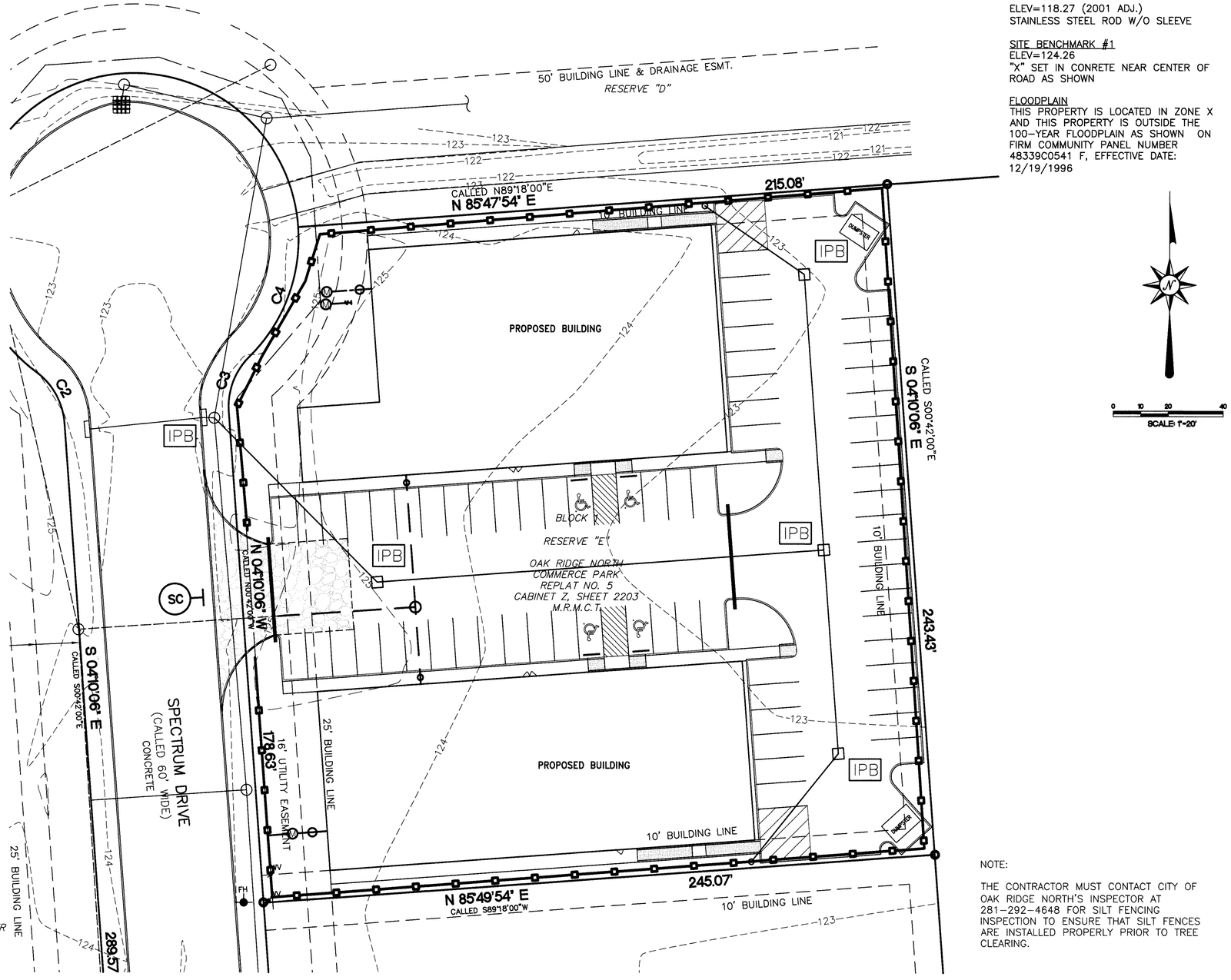
PROJECT LEGAL DESCRIPTION
RESERVE "E" BLOCK 1 OAK RIDGE NORTH COMMERCE PARK REPLAT No. 5 CABINET Z, SHEET 2203 M.R.M.C.T. IN THE MONTGOMERY COUNTY SCHOOL LAND SURVEY, A-350 MONTGOMERY COUNTY, TEXAS 1.3437 Ac. (PLAT)

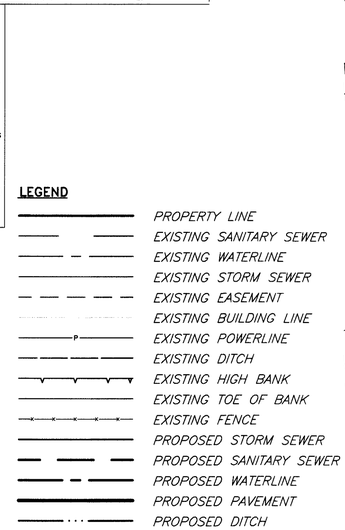
SEAL
STATE OF TEXAS
E. LEVI LOVE, JR.
99340
LICENSED
PROFESSIONAL ENGINEER
03/27/2015

FIRM No.	11235
DATE	3/27/2015
PROJECT NO.	10078
DRAWN BY	CBJ
SCALE	1"=20'
DRAWING No.	4









L SQUARED ENGINEERING
Civil • Consulting • Management

BENCHMARK
NGS BENCHMARK C1513
ELEV=118.27 (2001 ADJ.)
STAINLESS STEEL ROD W/O SLEEVE

SITE BENCHMARK #1
ELEV=124.26
"X" SET IN CONRETE NEAR CENTER OF ROAD AS SHOWN

FLOODPLAIN
THIS PROPERTY IS LOCATED IN ZONE X AND THIS PROPERTY IS OUTSIDE THE 100-YEAR FLOODPLAIN AS SHOWN ON FIRM COMMUNITY PANEL NUMBER 48339C0541 F, EFFECTIVE DATE: 12/19/1996

NOTE:

THE CONTRACTOR MUST CONTACT CITY OF OAK RIDGE NORTH'S INSPECTOR AT 281-292-4648 FOR SILT FENCING INSPECTION TO ENSURE THAT SILT FENCES ARE INSTALLED PROPERLY PRIOR TO TREE CLEARING.

7/11/13
CITY ENGINEER — DATE
CITY OF OAK RIDGE NORTH
SIGNATURE VALID FOR ONE (1) YEAR

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No.	DATE	BY	COMMENT

L SQUARED ENGINEERING
Civil • Consulting • Management

CLIENT
TEXAS EQUITY VENTURES

PROJECT TITLE
TEXAS EQUITY VENTURES - SPECTRUM DRIVE RESERVE E-SWPPP

ENGINEER CONTACT INFO.:
L Squared Engineering, LLC
21123 EVA ST. SUITE 210-H
MONTGOMERY, TX 77356
936-647-0420

PROJECT LOCATION
27316 SPECTRUM WAY
OAK RIDGE NORTH, TEXAS

PROJECT LEGAL DESCRIPTION
RESERVE "E" BLOCK 1 OAK RIDGE NORTH COMMERCE PARK REPLAT No. 5 CABINET Z, SHEET 2203 M.R.M.C.T. IN THE MONTGOMERY COUNTY SCHOOL LAND SURVEY, A-350 MONTGOMERY COUNTY, TEXAS
1.3437 Ac. (PLAT)

SEAL
STATE OF TEXAS
E. LEVI LOVE, JR.
99340
LICENSED
PROFESSIONAL ENGINEER
07/02/2013

FIRM No.	11235
DATE	7/02/2013
PROJECT NO.	10078
DRAWN BY	CBJ
SCALE	1"=20'
DRAWING NO.	5

GENERAL CONSTRUCTION NOTES:

1. MATERIALS, CONSTRUCTION AND TESTING TO BE IN ACCORDANCE WITH CITY OF OAK RIDGE NORTH ORDINANCES AND SPECIFICATIONS, LATEST PRINTING AND AMENDMENTS THERETO.

2. CONTRACTOR TO OBTAIN ALL DEVELOPMENT AND CONSTRUCTION PERMITS REQUIRED BY TEXAS AND CITY OF OAK RIDGE NORTH PRIOR TO COMMENCEMENT OF WORK.

3. CONTRACT SHALL GIVE NOTICE TO ALL AUTHORIZED INSPECTORS, SUPERINTENDENTS OR PERSONS IN CHARGE OF PRIVATE AND PUBLIC UTILITIES OR RAILROADS AFFECTED BY HIS OPERATIONS AND CITY OF OAK RIDGE NORTH, DEPARTMENT OF ENGINEERING, TELEPHONE (936)–539–7833, 48 HOURS PRIOR TO COMMENCEMENT OF WORK IN STREET RIGHT–OF–WAY OR EASEMENT.

4. CONTRACTOR HAS SOLE RESPONSIBILITY FOR FIELD LOCATION OF ALL EXISTING FACILITIES, CALL TEXAS ONE CALL FOR LOCATING SERVICES. CONTRACTOR SHALL COORDINATE ALL CONFLICTS WITH THE APPROPRIATE GOVERNING AGENCY.

5. THE LOCATION OF CONROE–LUFKIN TELEPHONE EXCHANGE OR AT&T COMPANY, ENTEX, AND ENTERGY–GSU (GULF STATE UTILITIES) UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY. THE CONTRACTOR SHALL REQUEST THE EXACT LOCATION OF THESE FACILITIES BY CALLING THE UTILITY COMPANIES, AT LEAST 48 HOURS BEFORE COMMENCING WORK. THE CONTRACTOR IS FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES, WHICH OCCURS DUE TO HIS FAILURE TO REQUEST THE LOCATION AND PRESERVATION OF THESE UNDERGROUND FACILITIES. ANY DAMAGE TO EXISTING FACILITIES INCURRED AS A RESULT OF CONSTRUCTION OPERATIONS WILL BE REPAIRED BY THE CONTRACTOR AT HIS OWN EXPENSE.

6. TEXAS LAW ARTICLE 1436C, PROHIBITS ALL ACTIVITIES IN WHICH PERSONS OR EQUIPMENT MAY COME WITHIN 6 FEET OF ENERGIZED OVERHEAD POWER LINES, AND FEDERAL REGULATION, TITLE 29, PART 1910.130 (1) AND PART 1926.440 (A) (15) REQUIRE A MINIMUM CLEARANCE OF 10 FEET FROM THESE FACILITIES. THE ABOVE LAWS CARRY BOTH CRIMINAL AND CIVIL LIABILITIES, WITH CONTRACTORS AND OWNERS BEING LEGALLY RESPONSIBLE FOR THE SAFETY OF WORKERS UNDER THESE LAWS. IF YOU OR YOUR COMPANY MUST WORK NEAR OVERHEAD POWER LINES, CALL THE POWER COMPANY FOR THE LINES TO BE DE–ENERGIZED AND/OR MOVED AT YOUR EXPENSE.

7. CONSTRUCTION SHALL COMPLY WITH THE LATEST REVISIONS OF OSHA REGULATIONS AND STATE OF TEXAS LAW CONCERNING TRENCHING AND SHORING. CONTRACTOR SHALL PROVIDE A TRENCH SAFETY SYSTEM TO MEET, AS A MINIMUM, THE REQUIREMENTS OF OSHA SAFETY AND HEALTH REGULATIONS, PART 1926, SUB–PART P AS PUBLISHED IN THE FEDERAL REGISTER, VOLUME 54, NO. 209, DATED OCTOBER 31, 1989, AND CITY OF OAK RIDGE NORTH ORDINANCE NUMBER 1033–87, AND LATEST REVISIONS.

8. DETAILS PREPARED BY CITY OF OAK RIDGE NORTH DO NOT EXTEND TO OR INCLUDE DESIGNS OR SYSTEMS PERTAINING TO THE SAFETY OF THE CONTRACTOR OR ITS EMPLOYEES, AGENTS OR REPRESENTATIVES IN THE PERFORMANCE OF THE WORK. THE CONSTRUCTION CONTRACTOR SHALL PREPARE OR OBTAIN THE APPROPRIATE SAFETY SYSTEMS, INCLUDING THE PLANS AND SPECIFICATIONS REQUIRED BY CHAPTER 756, SUBCHAPTER "C" OF THE TEXAS HEALTH AND SAFETY CODE.

9. CONTRACTOR SHALL COVER OPEN EXCAVATIONS WITH ANCHORED STEEL PLATES DURING NON–WORKING HOURS, ALONG EXISTING ROADWAYS AND TRAFFIC AREAS.

10. ADEQUATE DRAINAGE SHALL BE MAINTAINED AT ALL TIMES DURING CONSTRUCTION AND ANY DRAINAGE DITCH OR STRUCTURE DISTURBED DURING CONSTRUCTION SHALL BE RESTORED TO THE SATISFACTION OF THE CITY ENGINEER. ALL CONSTRUCTION STORM RUNOFF SHALL COMPLY WITH STORM WATER MANAGEMENT FOR CONSTRUCTION ACTIVITIES AND THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) REQUIREMENTS.

11. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ADEQUATE FLAGMAN, SIGNING, STRIPING AND WARNING DEVICES, ETC., DURING CONSTRUCTION IN ACCORDANCE WITH THE "TEXAS MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES." CONTRACTOR SHALL MAINTAIN AT LEAST ONE LANE OF TRAFFIC IN EACH DIRECTION DURING WORKING HOURS OR PROVIDE ALL–WEATHER DETOURS AROUND CONSTRUCTION SITE, PROVIDE PUBLIC NOTIFICATION, AND USE UNIFORMED POLICE OFFICERS TO CONTROL TRAFFIC.

12. EXISTING PAVEMENTS, CURBS, SIDEWALKS AND DRIVEWAYS DAMAGED OR REMOVED DURING CONSTRUCTION SHALL BE REPLACED TO CITY OF OAK RIDGE NORTH STANDARDS. ALL ASPHALT AND CONCRETE DRIVEWAYS EXCAVATED DURING CONSTRUCTION SHALL BE BACKFILLED WITH STABILIZED MATERIAL AND RETURNED TO EXISTING CONDITIONS. ALL STATE AND COUNTY HIGHWAY PAVEMENT AND RAILROAD RIGHT–OF–WAYS TO BE BORED ACCORDING TO THE RULES, REGULATIONS AND REQUIREMENTS FOR APPROVAL AND ACCEPTANCE BY SAID AGENCIES. SEE CONROE STANDARD PAVING DETAIL SHEETS DRAWING #1203 FOR REQUIREMENTS.

13. EXISTING ROADS AND/OR RIGHT–OF WAYS DISTURBED DURING CONSTRUCTION SHALL BE AS GOOD OR BETTER THAN THE CONDITION PRIOR TO STARTING THE WORK, UPON COMPLETION OF THE PROJECT. AFTER DISTURBED AREAS HAVE BEEN COMPLETED TO THE LINES, GRADES, AND CROSS–SECTIONS SHOWN ON THE PLANS, SEEDING SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE PLANS AND SPECIFICATIONS TO ESTABLISH ADEQUATE VEGETATION COVERAGE TO ELIMINATE EROSION. IF NO PROVISION FOR PLANTING GRASS IS INCLUDED IN THE PLANS OR SPECIFICATIONS, THE MINIMUM REQUIREMENT FOR THIS ITEM WILL BE IN ACCORDANCE WITH THE TEXAS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR "SODDING OR SEEDING FOR EROSION CONTROL."

14. ALL TRENCHES, INCLUDING TRENCHES FOR LEADS AND STUBS UNDER PAVEMENT AND TO A POINT ONE (1) FOOT BACK OF ALL CURBS SHALL BE BACKFILLED WITH CEMENT STABILIZED SAND AS PER SPECIFICATION TO A POINT IMMEDIATELY BELOW THE SUBGRADE. TRENCHES OTHER THAN UNDER PAVEMENT SHALL BE BACKFILLED WITH SUITABLE EARTH MATERIAL IN 6 INCH LAYERS AND MECHANICALLY COMPACTED TO A DENSITY OF NOT LESS THAN 95 PERCENT OF THE MAXIMUM DRY DENSITY AS DETERMINED BY THE STANDARD PROCTOR COMPACTION TEST (ASTM DESIGNATION D–698/AASHTO T99). MOISTURE CONTENT OF BACKFILL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CEMENT STABILIZED SAND SPECIFICATIONS. SEE CITY STANDARD DETAIL SHEETS FOR BEDDING AND OTHER DESIGN REQUIREMENTS.

15. INCLUDE PRICE OF ALL BEDDING AND BACKFILL OF TYPE REQUIRED, IN PRICE BID PER LINEAR FOOT OF PIPE.

16. CONTRACTOR TO REMOVE EXISTING PLUGS AND CONNECT TO EXISTING UTILITY LINES AS INDICATED ON PLANS.

17. UNLESS OTHERWISE NOTED ON PLANS, WHERE MANHOLES ARE LOCATED WITHIN THE UTILITY EASEMENTS, THE CONTRACTOR SHALL SET RIM ELEVATIONS TWO INCHES ABOVE FINISHED GROUND ELEVATIONS.
18. WHEN TRENCH CONDITION REQUIRES THE USE OF WELL POINTS, THIS IS TO BE REQUESTED BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.

19. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEANING THE MUD AND/OR DIRT DEPOSITED ON EXISTING PAVEMENT DUE TO HIS CONSTRUCTION ACTIVITY DAILY. ALL EQUIPMENT AND DEBRIS FROM CONSTRUCTION TO BE MOVED AT THE END OF THE PROJECT.

SANITARY SEWER CONSTRUCTION NOTES:

1. SANITARY SEWERS SHALL BE CONSTRUCTED IN COMPLIANCE WITH THE LATEST CITY SPECIFICATIONS FOR SEWER CONSTRUCTIION, AND TESTED AS SPECIFIED IN THE CITY TEST PROCEDURE FOR EITHER LIQUID OR AIR, INCLUDING ALL AMENDMENTS AND REVISIONS THERETO. BACKFILL AND BEDDING FOR SANITARY SEWERS MUST MEET ALL MINIMUM ASPECTS OF ASTM D–2321 AND MUST BE PLACED IN ACCORDANCE WITH CITY OF OAK RIDGE NORTH DETAIL.

2. ALL SANITARY SEWER MANHOLES SHALL BE STANDARD CITY OF OAK RIDGE NORTH PRE–CAST USING RAM–NECK OR CAST IN PLACE CONCRETE IN ACCORDANCE WITH ASTM C–478. NO BRICK MANHOLES ALLOWED. FOR PVC PIPE, USE MANHOLE WATER STOP GASKET AND CLAMP ASSEMBLY AT MANHOLE CONNECTIONS. SANITARY SEWER MANHOLE RIMS SHALL BE 3 INCHES ABOVE NATURAL GROUND. BACKFILL SHALL BE ADDED AND SLOPED AWAY FROM THE MANHOLE RIM FOR DRAINAGE PURPOSES.

3. MANHOLE CONCRETE BOTTOM FOUNDATION SHALL BE 12" REINFORCED WITH #5 BARS AT 12", ON CENTERS, EACH WAY, WITH A MINIMUM OF 6" EXTRA SLAB LENGTH AROUND THE MANHOLE, IF POURED IN PLACE. APPROVED CHEMICALS SHALL BE USED FOR PATCHING AROUND MANHOLE JOINTS. MORTAR CEMENT WILL NOT BE ACCEPTED.

4. SANITARY SEWER PIPE SHALL BE PVC SDR 26 OR PVC SDR 35 (WITH APPROVAL), IN ACCORDANCE WITH ASTM SPECIFICATIONS D–3034, FOR 4" THROUGH 15" AND ASTM F–879 FOR 18" THROUGH 27". MINIMUM SIZE SANITARY SEWER MAIN IS 6". SDR 35 MAY BE USED WHEN DEPTH IS MORE THAN 3 FEET AND LESS THAN 6 FEET.

5. SEWER LINES SHALL BE LOCATED ON THE OPPOSITE SIDE OF THE STREET FROM WHERE WATER IS LOCATED. SEWER LINE AND WATER LINE SEPERATION SHALL BE IN ACCORDANCE WITH TEXAS NATURAL RESOURCE CONSERVATION COMMISSION RULES, CHAPTER 317.13 APPENDIX E. (SEE THIS SHEET FOR THESE RULES).

6. NO SEWER PIPE SHALL BE LAID ON AN UNSTABLE FOUNDATION. SELECTED MATERIAL SHALL BE USED AND/OR WET SAND CONSTRUCTION DETAILS, WHICHEVER APPLIES IN THE OPINION OF THE ENGINEER. NO PIPE SHALL BE COVERED WITHOUT APPROVAL OF THE ENGINEER OR HIS REPRESENTATIVE. SANITARY SEWERS CONSTRUCTED IN WET SAND SHALL HAVE A SPECIAL PROCEDURE AND SHALL BE CONSTRUCTED AS PER CITY OF OAK RIDGE NORTH DRAWING NUMBER 1201.

7. WHEN THE NATURAL GROUND LEVEL AROUND MANHOLE LIES BELOW THE 100 YEAR FLOODPLAIN ELEVATION, THE MANHOLE SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CITY OF OAK RIDGE NORTH DRAWING NUMBER 1201, STANDARD SEALED AND VENTED MANHOLE DETAIL.

8. A DEFLECTION TEST SHALL BE REQUIRED AFTER THE BACKFILL HAS BEEN IN PLACE A MINIMUM OF 30 DAYS. THIS TEST SHALL BE DONE BY PULLING A HAND LINE WITH AN ATTACHED MANDREL FROM MAN–HOLE TO MANHOLE. THE MANDREL SHALL HAVE AN OUTSIDE DIAMETER THAT IS AT LEAST 95% OF THE ORIGINAL INSIDE DIAMETER OF THE PIPE. MANDREL TO BE MANUFACTURED WITH A MINIMUM OF SEVEN (7) RUNNERS, WITH EACH RUNNER BEING A MINIMUM OF 5 INCHES LONG. ANY PIPE NOT MEETING EST REQUIREMENTS TO BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE. THE TEST SHALL BE PERFORMED WITHOUT MECHANICAL PULLING DEVICES.

9. INFILTRATION/EXFILTRATION NOT TO EXCEED 200 GALLONS PER INCH DIAMETER PER MILE OF PIPE FOR 24 HOURS UNDER A MINIMUM OF 2 FEET OF HEAD, OR AN AIR TEST SHALL BE REQUIRED IN ACCORDANCE WITH ASTM C–828.

10. WHERE A SEWER LINE HAS LESS THAN (2) FEET OF COVER, PROVIDE CEMENT STABILIZED SAND BACKFILL MATERIAL.

11. CONTRACTOR SHALL KEEP RECORD OF LOCATION OF ALL STACKS, STUBS, SEWER LEADS, ETC. THE AS–BUILT MYLAR DRAWINGS MUST SHOW THE EXACT LOCATION.

12. IF SANITARY SERVICE LEADS ARE INSTALLED DURING CONSTRUCTION OF MAIN LINE, ALL LEADS TO HAVE A MINIMUM SLOPE OF 0.70% OR GREATER. ALL PVC LEADS TO BE THE SAME MATERIAL AS MAIN LINE. ALL DOUBLE SERVICE LEADS TO HAVE WYE LOCATED ON THE END OF THE LEAD. ALL SINGLE SERVICE LEADS TO BE 4 INCH, AND ALL DOUBLE SERVICE LEADS TO BE 6 INCH.

13. THE INSTALLATION OF ALL SANITARY SEWER LINES SHALL EXTEND ALONG THE ENTIRE LENGTH OF THE PROPERTY TO BE SERVED. SANITARY SEWER LINES THAT DEAD END SHALL EXTEND TO THE PROJECT LIMITS FOR FUTURE EXTENSIONS, WITH DEPTHS BASED ON ENTIRE SERVICE AREA.

L SQUARED ENGINEERING
Civil • Consulting • Management

PAVING CONSTRUCTION NOTES:

THE FOLLOWING NOTES OR PHRASES ARE SPECIFIC TO PAVING IMPROVEMENTS AND ARE TO BE INCLUDED IN ALL SETS OF CONSTRUCTION DRAWINGS CONTAINING ANY PAVING IMPROVEMENTS. THE PLAN AND PROFILE SHEETS MAY IDENTIFY AND REFERENCE THE NOTES OR PHRASES IN THE PLAN VIEW BY NOTE NUMBER OF THE SPECIFIC TREATMENT REQUIRED.

1. IF PROPOSED SEMI–RIGID BASE WITH 2 INCH TYPE "D" HOT MIX ASPHALTIC CONCRETE SURFACING, FOR URBAN ESTATES ONLY, SEMI–RIGID BASE MAY BE 7 INCH CEMENT STABILIZED SHELL, 8 INCH CRUSHED LIMESTONE, OR 6 INCH HOT MIX ASPHALTIC CONCRETE.

2. EXPOSE 15 INCHES OF REINFORCING STEEL AT ALL PROPOSED SAWED JOINTS. IF NO REINFORCING STEEL EXISTS, USE HORIZONTAL DOWELS PER NOTE #4.

3. REQUIRE A ONE (1) INCH REDWOOD EXPANSION BOARD OR PRE–MOLDED NON–EXTRUDING JOINT BETWEEN SIDEWALK AND BACK OF CURB.

4. HORIZONTAL DOWELS SHALL BE NO. 6 BARS, 24 INCHES LONG, DRILLED AND EMBEDDED 8 INCHES INTO THE CENTER OF THE EXISTING SLAB WITH "PO ROC" OR EQUAL. DOWELS SHALL BE 24 INCHES CENTER TO CENTER UNLESS OTHERWISE SPECIFIED.

5. WHEN PROPOSED PAVEMENT ENDS AT A CONSTRUCTION JOINT LEAVE 15 INCHES OF REINFORCING STEEL EXPOSED BEYOND PAVEMENT, COAT WITH ASPHALT, AND WRAP WITH BURLAP FOR FUTURE PAVEMENT TIE–IN. AT EXPANSION JOINTS, EXTEND DOWELS 5 INCHES; COAT AND WRAP SAME AS CONSTRUCTION JOINTS.

6. WHEREVER A SIDEWALK IS REQUIRED BY CITY ORDINANCE , PROVIDE WHEELCHAIR RAMP AND/OR SIDEWALKS IN ACCORDANCE WITH THE "TEXAS DEPARTMENT OF TRANSPORTATION STANDARD WHEELCHAIR RAMP AND SIDEWALK DETAILS".

7. ADJUST EXISTING MANHOLE FRAMES AND COVERS TO FIT NEW GRADE.

8. ADJUST EXISTING WATER VALVE BOXES TO NEW PAVING GRADE. REPLACE ALL MISSING OR DAMAGED VALVE BOXES AND COVERS.

9. PLACE WHITE OR YELLOW PLASTIC MARKER OR PAINT AS SHOWN BY THE UNIFORM TRAFFIC MANUAL FOR PAVEMENT MARKINGS.

10. PROVIDE A CONCRETE PAVING HEADER AT THE END OF THE PAVEMENT.

11. T. C. INDICATES TOP OF CURB ELEVATION AND T. P. INDICATES TOP OF PAVEMENT ELEVATION.

12. CURB RADII AT STREET INTERSECTIONS TO BE 24.50 FEET TO BACK OF CURB WITH A MINIMUM OF ONE (1) PERCENT GRADE UNLESS OTHERWISE NOTED.

13. GUIDELINES SET FORTH IN THE "TEXAS MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES" WILL BE OBSERVED.

14. TRANSVERSE EXPANSION JOINTS SHALL BE INSTALLED AT ALL RADIUS RETURNS AND AT A MAXIMUM SPACING OF 60 FOOT INTERVALS.

15. CONTRACTOR WILL USE CONTINUOUS LONGITUDINAL REINFORCING BARS IN CURBS AS SHOWN ON CITY OF OAK RIDGE NORTH PAVING DETAIL DRAWING.

16. CYLINDER COMPRESSION TEST OR BEAM FLEXURAL TEST SHALL BE REQUIRED. TWO SAMPLES SHALL BE TAKEN FOR EACH 100 CUBIC YARDS OF CONCRETE POURED. FOR SMALLER QUANTITIES, TWO SAMPLES SHALL BE TAKEN REGARDLESS OF THE AMOUNT OF CONCRETE POURED EACH DAY. CONCRETE SHALL HAVE 5 SACKS CEMENT PER CUBIC YARD AND A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 28 DAYS OR A MINIMUM FLEXURAL STRENGTH OF 600 PSI IN 28 DAYS. NO TRAFFIC SHALL BE ALLOWED ON CONCRETE FOR 28 DAYS. IF EXTRA TESTS ARE MADE 75% OF THE 28 DAY STRENGTH IS ACHIEVED THE ENGINEER MAY ALLOW TRAFFIC ON THE PAVEMENT IF IT DEEMS NECESSARY.

17. PRIOR TO PLAN APPROVAL, A CERTIFIED LAB SHALL DETERMINE THE PERCENTAGE OF CEMENT CONTENT FOR SUBGRADE STABILIZATION IN SANDY SOILS WITH P.I. LESS THAN 10 TO OBTAIN A COMPRESSIVE STRENGTH OF 400 PSI IN 28 DAYS. THE LAB SHALL ALSO DETERMINE THE PERCENTAGE OF LIME CONTENT FOR SUBGRADE STABILIZATION IN CLAY SOILS WITH A P.I. GREATER THAN 20. ALL STREETS SHALL BE TESTED EVERY 200 FEET AND SUBGRADE SHALL BE STABILIZED UNLESS THE LAB CERTIFIES THE P.I. TO BE BETWEEN 10 AND 20 AND THAT STABILIZATION IS NOT NEEDED.

18. A CONCRETE MIX DESIGN BY THE CERTIFIED LAB SHALL BE SUBMITTED TO AND APPROVED BY THE ENGINEER BEFORE ANY CONCRETE IS POURED.

19. A MINIMUM OF TWO (2) COMPACTION TESTS SHALL BE PERFORMED A MAXIMUM DISTANCE OF 500 FEET, AND FOR EACH 2'–6" MAXIMUM THICK LAYERS OF FILL. IN AREAS WHERE NO FILL IS REQUIRED, TWO (2) SAMPLES SHALL BE TAKEN AT A MAXIMUM DISTANCE OF 500 FEET. ADDITIONAL TESTING SHALL BE PERFORMED IF SEEN NECESSARY BY THE ENGINEER. NO ADDITIONAL LAYERS OF FILL SHALL BE MADE WITHOUT HAVING THE LAB'S WRITTEN APPROVAL OF COMPLETED LAYERS. PROOF ROLLING SHALL BE REQUIRED BY THE INSPECTOR ON EACH LAYER PLACED AND ANY "PUMPING" AREAS SHALL BE REMOVED IMMEDIATELY AND REPLACED OR STABILIZED AND RE–COMPACTED TO A PASSING DENSITY.

20. CONSTRUCTION OF ITEMS THAT ARE NOT SPECIFICALLY ADDRESSED TO BE IN ACCORDANCE WITH THE TEXAS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS (LATEST REVISION).

21. RIGHT–OF–WAY SHALL BE SLOPED FROM THE PROPERTY TO THE TOP OF CURB AND HYDROMULCHED OR SODDED BEFORE FINAL ACCEPTANCE BY THE CITY TO CONTROL EROSION INTO THE STREET AND STORM SEWER.

22. MEMBRANCE CURING TYPE 2, WHITE PIGMENTED, SHALL BE USED FOR CURING ALL CONCRETE SURFACES IMMEDIATELY AFTER FINISHING OF SURFACES AND SHALL BE IN ACCORDANCE WITH THE TEXAS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS ITEM #526.

23. ALL FIRST STAGE INLET CONSTRUCTION SHALL BE PROTECTED WITH 3 INCH THICK BOARDS AT ALL TIMES.

24. ALL SUBGRADE AND EMBANKMENT AREAS SHALL BE STRIPPED OF ALL ORGANIC AND UNSUITABLE MATERIAL BEFORE STABILIZATION OR FILLING IS BEGUN. MATERIAL USED FOR FILL SHALL BE CERTIFIED BY A LAB TO HAVE A PLASTICITY INDEX BETWEEN 10 AND 20.

25. FORMS SHALL BE SET TO THE PROPER GRADE AND PROPERLY SUPPORTED SO THAT NO DISPLACEMENT OCCURS WITH THE PAVING ACTIVITIES. ALL CONCRETE SHALL BE VIBRATED BY MECHANICAL MEANS TO INSURE PROPER COMPACTION AND NO HONEY COMBS.

26. CONCRETE SHALL NOT BE PLACED WHEN THE TEMPERATURE IS BELOW 40° F. AND FALLING, BUT MAY BE PLACED WHEN TEMPERATURE IS ABOVE 35° F. AND RISING. THE TEMPERATURE SHALL BE TAKEN IN THE SHADE AND AWAY FROM ARTIFICIAL HEAT.

27. THE CONTRACTOR SHALL ERECT AND MAINTAIN BARRICADES TO ADEQUATELY PROTECT THE PAVEMENT. THE CONTRACTOR SHALL HAVE PERSONNEL ON SITE UNTIL THE PAVEMENT HAS REACHED SUFFICIENT STRENGTH AS NOT TO BE DAMAGED BY ANIMALS OR FOOT TRAFFIC.

28. JOINT SEALING MATERIAL SHALL BE A HOT POURED RUBBER TYPE AND SHALL MEET THE REQUIREMENTS IN ACCORDANCE WITH TEST METHOD TEX–525–C, OR AN APPROVED EQUAL. TAR WILL NOT BE ALLOWED.

29. JOINTS SHALL BE CLEANED OF ALL SCALE, DIRT, DUST, CURING COMPOUND, AND CONCRETE TO THE WIDTH AND DEPTH OF THE JOINT AND SHALL BE DRY BEFORE SEALING IS PERFORMED.

30. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM 615 GRADE 60 (GRADE 40 ONLY FOR BARS REQUIRING BENDING). REINFORCING STEEL SHALL BE SUPPORTED ON CHAIRS STRONG ENOUGH TO HOLD IT IN PLACE AND BE TIED.

31. CONCRETE FOR PAVEMENT SHALL MEET TEXAS DEPARTMENT OF HIGHWAY STANDARD SPECIFICATIONS AND SHALL BE A MINIMUM OF 5 SACK, 3,000 PSI UNLESS STATED SPECIFICALLY BY THE PLANS OR THE SPECIFICATIONS.

32. CONCRETE PAVEMENT SHALL BE CORED TO VERIFY THICKNESS OF CONCRETE AT INTERVALS OF 1,000 LINEAR FEET PER TRAFFIC LANE, IF REQUIRED BY THE CITY ENGINEER.

STORM SEWER CONSTRUCTION NOTES:

THE FOLLOWING NOTES ARE SPECIFIC TO STORM SEWER CONSTRUCTION AND ARE TO BE INCLUDED IN ALL SETS OF CONSTRUCTION DRAWINGS CONTAINING ANY STORM SEWER CONSTRUCTION:

1. STORM SEWER AND LEADS SHALL BE REINFORCED CONCRETE PIPE, ASTM C–76, CLASS III, WITH O–RING RUBBER GASKET JOINTS, AND SHALL BE INSTALLED, BEDDED AND BACKFILLED IN ACCORDANCE WITH CITY OF OAK RIDGE NORTH STANDARD DETAIL DRAWING.

NOTE: HDPE PIPE MAY BE USED PROVIDED THAT IT IS BACKFILLED WITH CEMENT STABILIZED SAND ($1\frac{1}{2}$ SACK CEMENT/TON), OR OTHER BACKFILL MATERIALS THAT HAVE BEEN APPROVED BY THE COUNTY. SEE NOTES BELOW.

2. ALL PROPOSED PIPE STUB OUTS FROM MANHOLES OR INLETS ARE TO BE PLUGGED WITH 8 INCH BRICK WALLS UNLESS OTHERWISE NOTED.

3. A. ALL BOX CULVERTS INSTALLED SHALL BE PLACED ON A MINIMUM OF 6 INCHES OF CEMENT STABILIZED SAND (CEMENT STABILIZED SAND SHALL BE $1\frac{1}{2}$ SACK CEMENT PER TON).

   B. FOR INSTALLATION OF PRE–CASE CONCRETE BOX CULVERTS IN POOR SAIL CONDITIONS, A 7 INCH REINFORCED CONCRETE SLAB SHALL BE INSTALLED.

   C. FOR INSTALLATION OF MONOLITHIC REINFORCED CONCRETE BOX CULVERTS IN POOR SOIL CONDITIONS, A 4 INCH THICK CLASS "C" CONCRETE SEAL SLAB SHALL BE INSTALLED, PRIOR TO CONSTRUCTION OF BOX CULVERTS.

4. STORM SEWER MANHOLES SHALL BE STANDARD PRE–CAST, UNLESS OTHERWISE NOTED.

5. ALL INLETS TO BE CITY OF OAK RIDGE NORTH TYPE "C", "C–1" OR "C–2" UNLESS OTHERWISE STATED ON PLANS. INLETS TO BE STANDARD DEPTH UNLESS OTHERWISE NOTED.

6. ALL STORM SEWER LEADS SHALL BE 18 INCH MINIMUM UNLESS OTHERWISE INDICATED.

7. GRADE DROP ON LEADS BETWEEN INLETS TO BE A MINIMUM OF 0.20 FOOT. GRADE DROP BETWEEN INLET AND MANHOLES TO BE 0.20 FOOT UNLESS OTHERWISE SHOWN.

8. WHEN MANHOLE FRAME AND COVER IS REQUIRED, USE EAST JORDAN 24" FRAME AND COVER (OR EQUAL) WITH THE CITY OF OAK RIDGE NORTH LOGO EMBEDDED IN LID.

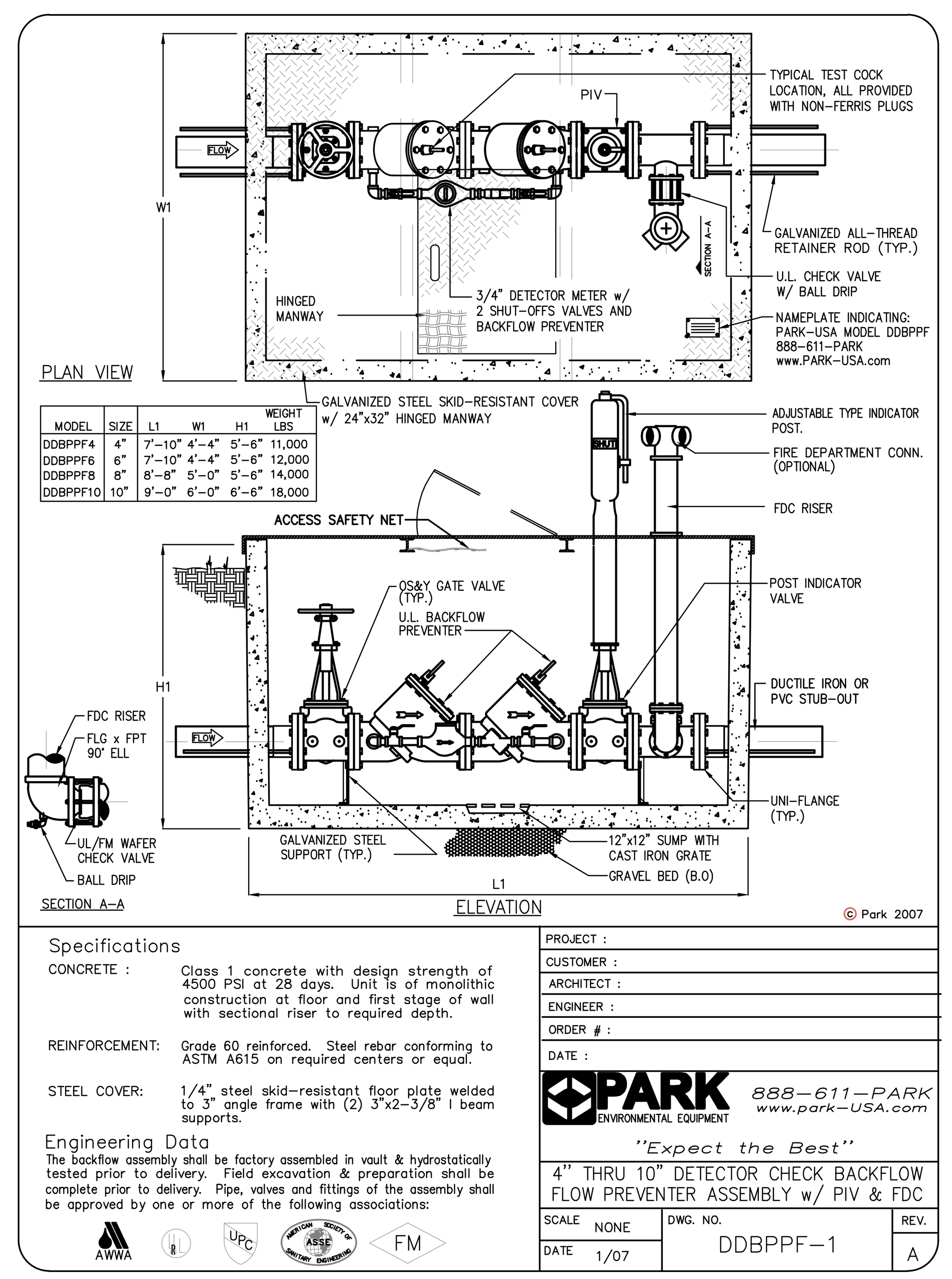
9. FOR ADJUSTMENT OF MANHOLE LIDS USE STANDARD CONCRETE RINGS.

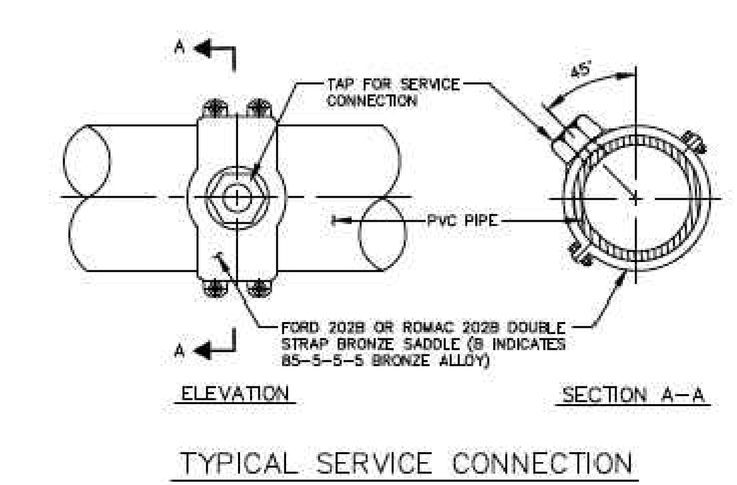
10. CONCRETE USED FOR ALL POURED–IN–PLACE MANHOLES, INLETS, WINGWALLS, HEADWALLS AND OTHER APPURTENANCES TO BE CLASS "A" CONCRETE WITH 3,000 P.S.I. STRENGTH AT 28 DAYS.

11. ALL EXPOSED CORNERS TO BE CHAMFERED 3/4".

NOTE: OTHER BACKFILL MATERIALS MAY BE USED, BASED ON THE GEOTECHNICAL REPORT, AS PER HDPE SPECIFICATIONS, SECTION 6.f. BACKFILL MUST BE USED WITH APPROPRIATE COMPACTION.

NOTE: SEE SPECIFICATIONS FOR THE USE OF HIGH DENSITY POLYETHYLENE PIPE FOR STORM DRAINS. SPECIFIC TECHNICAL INFORMATION MAY BE FOUND IN THE DESIGN MANUAL AND IN THE STREETS AND DRAINAGE SPECIFICATIONS.





TYPICAL SERVICE CONNECTION
FOR 1" OR SMALLER WATER TAPS
(FOR SERVICE TAPS LARGER THAN 1" SEE DETAIL ON SHT. 3 OF 5)

WATER CONSTRUCTION NOTES:

1. CONTRACTOR SHALL PROVIDE ADEQUATE THRUST BLOCKING TO WITHSTAND TEST PRESSURE AS SPECIFIED IN CITY OF OAK RIDGE NORTH STANDARD DRAWINGS AND REQUIREMENTS FOR WATER MAIN CONSTRUCTION AND MATERIALS.

2. PRIOR TO INSTALLATION OF WATER METER, WATER METER LEAD OR UNMETERED FIRE SPRINKLER LINE, THE CONTRACTOR SHALL CONTACT THE PERMIT DIVISION.

3. PRIOR TO WATER MAIN CONSTRUCTION, THE CONTRACTOR SHALL CONTACT THE CITY BUILDING OFFICIAL AND COMPLY WITH ALL REQUIREMENTS NECESSARY FOR THE ISSUANCE OF A WORK ORDER FOR THE WATER MAIN CONSTRUCTION.

4. SEPARATION DISTANCES FOR ALL WATER MAIN AND SANITARY SEWER MAIN CONSTRUCTION SHALL BE GOVERNED BY THE "TEXAS NATURAL RESOURCES CONSERVATION COMMISSION RULES AND REGULATIONS FOR DESIGN CRITERIA FOR SEWERAGE SYSTEMS", SECTION 317.20, LATEST PRINTING. REFER TO THE CITY OF OAK RIDGE NORTH DESIGN MANUAL DIVISION VI, WATER MAIN DESIGN REQUIREMENTS, PART 1.04, K–1, 2, AND 3 FOR CLEARANCE REQUIREMENTS.

5. TWELVE–INCH (12") AND SMALLER MAINS SHALL HAVE A MINIMUM COVER OF FOUR FEET (4') FROM THE TOP OF THE CURB OR FIVE FEET (5') FROM THE MEAN ELEVATION OF THE BOTTOM OF THE NEARBY DITCH AND NEARBY RIGHT–OF–WAY ELEVATION FOR OPEN DITCH SECTIONS.

6. MAINS LARGER THAN TWELVE–INCHES (12") SHALL HAVE A MINIMUM COVER OF FIVE FEET (5') FROM THE TOP OF THE CURB OR SIX FEET (6') FROM THE MEAN ELEVATION FOR OPEN DITCH SECTIONS.

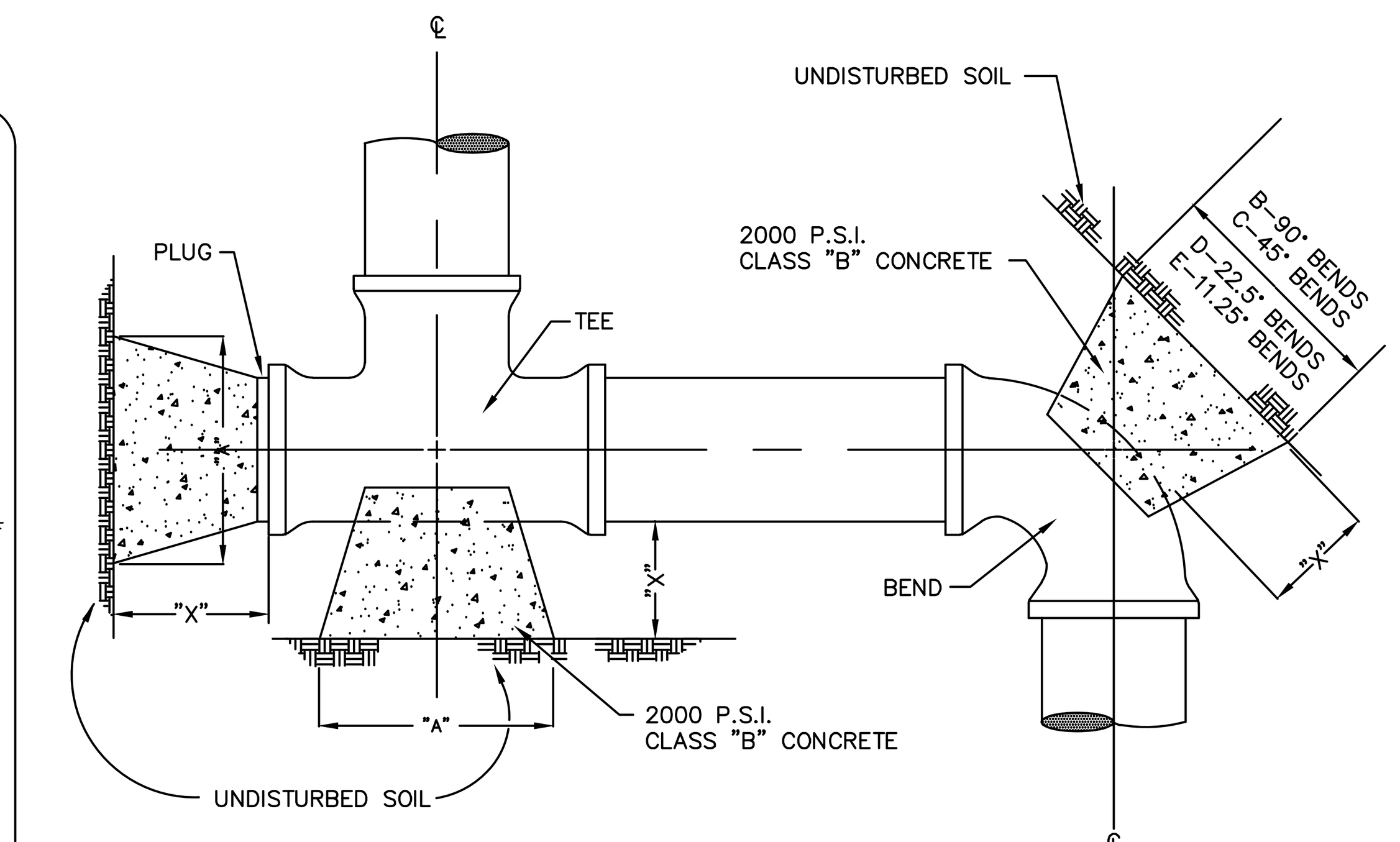
7. ALL WATER MAINS SHALL BE HYDROSTATICALLY TESTED BEFORE BACTERIOLOGICAL TESTING IN ACCORDANCE WITH AWWA STANDARD C–600.

8. ALL WATER PIPING SHALL BE DISINFECTED AND BACTERIOLOGICALLY TESTED PRIOR TO USE IN ACCORDANCE WITH AWWA STANDARD C–601.

9. ALL WATER MAINS 4" THROUGH 12" SHALL BE C–900 (SDR–18). ALL WATER MAINS 14" THROUGH 36" SHALL BE C–905 (SDR–18).

10. PRIOR TO BACKFILLING OF ALL UNDERGROUND WATER LINES, INSTALL A CONTINUOUS #14 COPPER TRACER WIRE, LOCATED DIRECTLY OVER BURIED LINES AND ACCESSIBLE AT EACH VALVE STACK.

11. THE INSTALLATION OF ALL WATER LINES SHALL EXTEND ALONG THE ENTIRE LENGTH OF THE PROPERTY TO BE SERVED. WATER LINES THAT DEAD END SHALL EXTEND TO THE PROJECT LIMITS FOR FUTURE EXTENSIONS.



HORIZONTAL BLOCKING TABLE

Dimension 'X' to be a minimum of (1) foot, but is to be increased where necessary to provide bearing against undisturbed trench wall.

PIPE SIZE	'X' DIM.	PLUGS & TEES			90° BENDS			45° BENDS			22.50° BENDS			11.25° BENDS		
		'A'	MIN. AREA	MIN. VOL.	'B'	MIN. AREA	MIN. VOL.	'C'	MIN. AREA	MIN. VOL.	'D'	MIN. AREA	MIN. VOL.	'E'	MIN. AREA	MIN. VOL.
4"	1'–0"	1'–0"	0.88	0.05	1'–0"	0.83	0.05	1'–0"	0.83	0.05	1'–0"	0.83	0.05	1'–0"	0.83	0.05
6"	1'–6"	1'–0"	1.06	0.06	1'–2"	1.50	0.09	1'–0"	0.83	0.05	1'–0"	0.83	0.05	1'–0"	0.83	0.05
8"	1'–6"	1'–3"	1.89	0.11	1'–6"	2.66	0.15	1'–3"	1.44	0.08	1'–0"	0.83	0.05	1'–0"	0.83	0.05
10"	1'–6"	1'–3"	2.95	0.17	2'–0"	4.17	0.24	1'–6"	2.26	0.13	1'–3"	1.15	0.07	1'–0"	0.83	0.05
12"	1'–6"	2'–0"	4.25	0.24	2'–3"	6.00	0.34	1'–9"	3.25	0.18	1'–3"	1.65	0.10	1'–0"	0.83	0.05
16"	2'–0"	2'–7"	7.34	0.56	3'–0"	10.65	0.79	2'–3"	5.76	0.43	1'–8"	2.94	0.22	1'–2"	1.48	0.11
18"	2'–0"	2'–11"	7.70	0.57	3'–5"	10.89	0.82	2'–6"	5.89	0.44	1'–10"	3.01	0.22	1'–5"	1.51	0.11
20"	2'–0"	3'–3"	7.86	0.59	3'–9"	11.12	0.84	2'–9"	6.01	0.45	2'–0"	3.07	0.23	1'–7"	1.54	0.12
24"	2'–6"	3'–8"	11.33	0.84	4'–3"	16.00	1.20	3'–2"	8.65	0.65	2'–6"	4.42	0.33	1'–10"	2.22	0.17

NOTE: Calculations in Minimum Area column are in square feeet.
Calculations in Minimum Volume column are in cubic yards.

HORIZONTAL BLOCKING FOR WATERLINE
N.T.S.

CITY ENGINEER DATE
CITY OF OAK RIDGE NORTH
SIGNATURE VALID FOR ONE (1) YEAR

DRAWING ISSUE/REVISIONS

No.	DATE	BY	COMMENT

L SQUARED ENGINEERING
Civil • Consulting • Management

CLIENT
TEXAS EQUITY VENTURES

PROJECT TITLE
TEXAS EQUITY VENTURES - SPECTRUM DRIVE
GENERAL NOTES & DETAILS

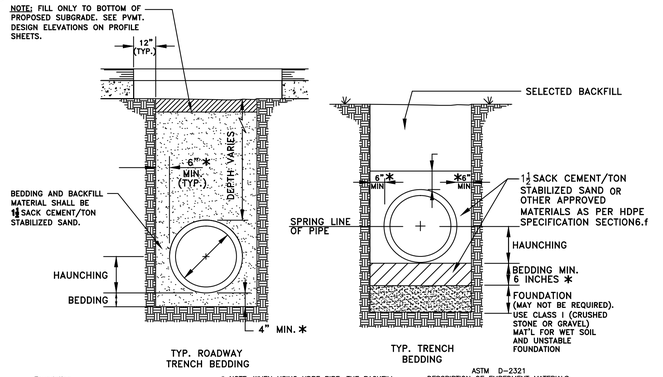
ENGINEER CONTACT INFO.:
L Squared Engineering, LLC
21123 EVA ST. SUITE 210-H
MONTGOMERY, TX 77356
936-647-0420

PROJECT LOCATION
27316 SPECTRUM WAY
OAK RIDGE NORTH, TEXAS

PROJECT LEGAL DESCRIPTION
RESERVE "E" BLOCK 1 OAK RIDGE NORTH COMMERCE PARK REPLAT No. 5 CABINET Z, SHEET 2203 M.R.M.C.T. IN THE MONTGOMERY COUNTY SCHOOL LAND SURVEY, A-350 MONTGOMERY COUNTY, TEXAS
1.3437 Ac. (PLAT)

SEAL
STATE OF TEXAS
E. LEVI LOVE, JR.
99340
LICENSED PROFESSIONAL ENGINEER
03/27/2015

FIRM No. 11235
DATE 3/27/2015
PROJECT No. 10078
DRAWN BY CBJ
SCALE NONE
DRAWING No. 6



TYP. ROADWAY TRENCH BEDDING

TYP. TRENCH BEDDING

Foundation
A foundation is required when the trench bottom is unstable. Any foundation that will support a rigid pipe without causing loss of grade or flexural breaking will be more than adequate for PVC pipes.

Bedding
The bedding directly underneath the pipe is required only to bring the trench bottom up to grade. It should not be so thick or soft that the pipe will settle and lose grade. The purpose of the bedding is to provide a firm, stable and uniform support of the pipe. A layer of material sufficient to establish line, grade, and support should be placed. Bell holes should be excavated to insure uniform bearing.

Haunching
Haunching and initial backfill are the most important areas in terms of limiting the horizontal deflection of a flexible pipe. These areas should be compacted to required or specified density.

* NOTE: WHEN USING HDPE PIPE, THE BACKFILL MATERIAL SHALL BE CEMENT STABILIZED SAND (1 ½ SACK CEMENT/TON) OR OTHER APPROVED BACKFILL MATERIAL AS SPECIFIED BY THE ENGINEER, AND IN ACCORDANCE TO CITY OF CONROE HDPE SPECIFICATION, SECTION 6.f FURTHER, THE BACKFILL MATERIAL SHALL BE USED FOR THE WHOLE DEPTH AND WIDTH OF ALL DITCHES, TRENCHES, ETC. UNDER ANY ROADWAY OR PAVED SURFACES. WHEN PIPES ARE NOT UNDER PAVED SURFACES, THE BACKFILL MATERIAL SHALL BE USED TO A MINIMUM OF 6" UNDER AND AROUND THE PIPE, BUT SHALL COVER THE FULL WIDTH OF THE TRENCH TO THE UNDISTURBED WALLS. THE MINIMUM DIMENSION OF THE TRENCH FOR THE HDPE PIPE SHALL BE AS SPECIFIED IN THE HDPE SPECIFICATION, TABLE 6.1.

ASTM D-2321
DESCRIPTION OF EMBEDMENT MATERIALS

Class I
Angular, 1/4" to 1-1/2" graded stone, including a number of fill materials that have regional significance, such as coral, slag, cinders, crushed stone and crushed shells.

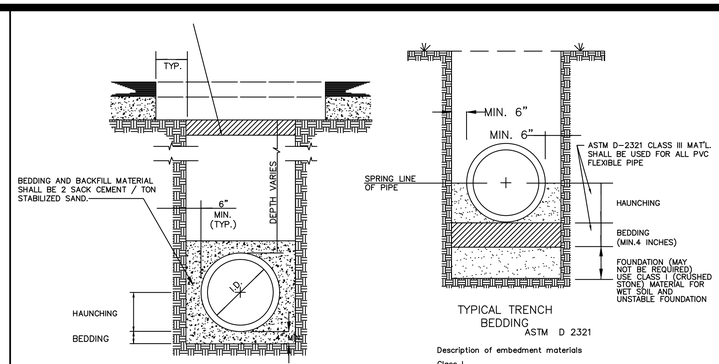
Class II
Coarse sands and gravels with maximum particle size of 1-1/2", including variously graded sands, and gravels containing small percentages of fines, generally granular and noncohesive, either wet or dry. Soil types GW, GP, SW, and SP are included in this class.

Class III
Fine sand and clayey gravels, including fine sands and sand-clay mixtures, and gravel clay mixtures. Soil types GM, GC, SM and SC are included in this class.

NOTE: NO TYPE OF PIPE SHALL BE USED UNDER THE PAVED SURFACE OF ROADWAYS. PIPE MAY ONLY BE PLACED UNDER A ROADWAY WHEN IT RUNS PERPENDICULAR TO A ROADWAY. PIPE MAY RUN LONGITUDINALLY BESIDE THE ROADWAY IN THE R.O.W.

NOTE: BACKFILL ABOVE THE BEDDING SHALL CONFORM TO "TYPICAL STORM SEW. BACKFILL AND TRENCH REPAIR" STANDARD DRAWING D-5.

TYPICAL STORM SEWER BEDDING AND TRENCH DETAIL
N.T.S.



TYPICAL ROADWAY TRENCH BEDDING

TYPICAL TRENCH BEDDING
ASTM D 2321

Foundation
A foundation is required when the trench bottom is unstable. Any foundation that will support a rigid pipe without causing loss of grade or flexural breaking will be more than adequate for PVC pipe.

Bedding
The bedding directly underneath the pipe is required only to bring the trench bottom up to grade. It should not be so thick or soft that the pipe will settle and lose grade. The purpose of the bedding is to provide a firm, stable and uniform support of the pipe. A layer of material sufficient to establish line, grade, and support should be placed. Bell holes should be excavated to insure uniform bearing.

Haunching
The haunching area is the most important in terms of limiting the deflection of a flexible pipe. This is the area that should be compacted to the required or specific density.

Description of embedment materials

Class I
Angular, 1/4" to 1 1/2" graded stone, including a number of fill materials that have regional significance, such as coral, slag, cinders, crushed stone and crushed shells.

Class II
Coarse sands and gravels with maximum particle size of 1 1/2", including variously graded sands and gravels containing small percentages of fines, generally granular and noncohesive, either wet or dry. Soil Types GW, GP, SW, and SP are included in this class.

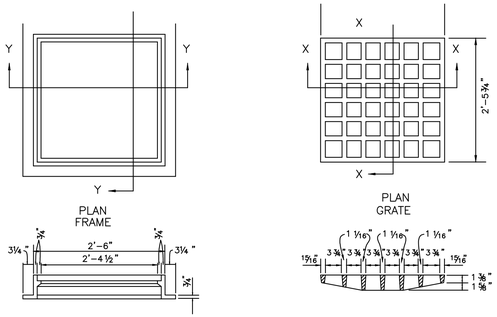
Class III
Fine sand and clayey gravels including fine sands, sand-clay mixtures, and gravel-clay mixtures. Soil Types GM, GC, SM, and SC are included in this class.

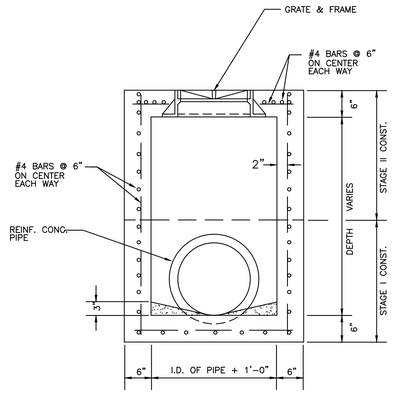
Class IV
Silt, silty clays, and clays, including inorganic clays and silts of medium to high plasticity and liquid limits. Soil Types MH, ML, CH and CL are included in this class.

Class V
This class includes the organic soils OL, OH, and PT as well as soils containing frozen earth, debris, rocks larger than 1 1/2" in diameter, and other foreign materials. These materials are not recommended for bedding, haunching, or initial backfill.

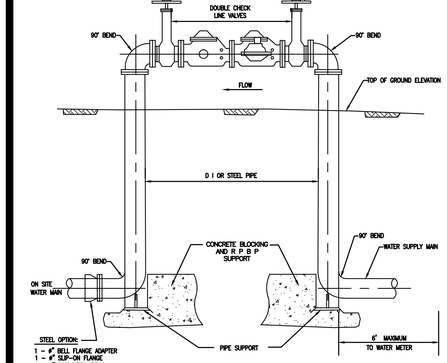
NOTE: BACKFILL ABOVE THE BEDDING SHALL CONFORM TO "TYPICAL WATERLINE BACKFILL AND TRENCH REPAIR" STANDARD DRAWING W-5.

TYPICAL WATER & SEWER BEDDING AND TRENCH DETAIL
N.T.S.



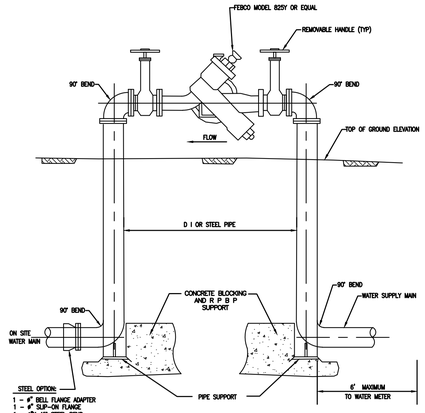


TYPE "A" BOX INLET WITH GRATE
N.T.S.



GENERAL NOTES:
1. INSULATE REDUCED PRESSURE BACKFLOW PREVENTER TO AVOID FREEZING.
2. REDUCED PRESSURE BACKFLOW PREVENTER'S DISCHARGE OPENING IS TO BE A MINIMUM OF 12 INCHES ABOVE GROUND ELEVATION OR 100 YEAR FLOOD ELEVATION WHICHEVER IS GREATER.

DOUBLE-CHECK BACKFLOW PREVENTOR
N.T.S.



GENERAL NOTES:
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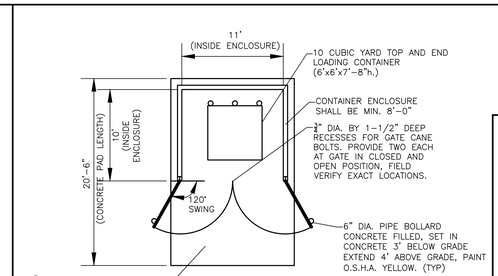
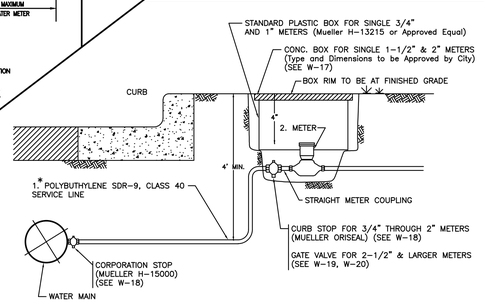
REDUCED PRESSURE BACKFLOW PREVENTOR
N.T.S.



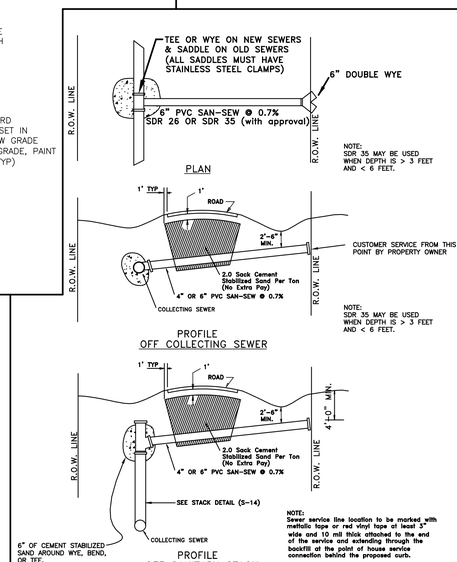
DUMPSTER ENCLOSURE DETAIL
N.T.S.



* 3/4" POLY TUBING FOR 3/4" X 5/8" METER INSTALLATION FOR SINGLE SERVICE TAP.
* 1" POLY TUBING FOR 1" METER INSTALLATION FOR DOUBLE SERVICE TAP.

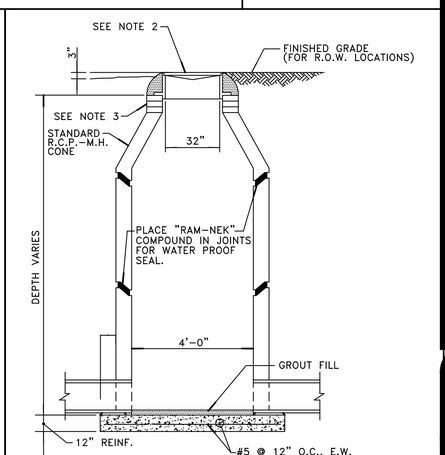
1. SDR-9 service lead by contractor, with standard plastic meter box.
2. Meter installed by the City of Conroe.

WATER SERVICE CONNECTION
N.T.S.



SANITARY SEWER SERVICE CONNECTION
4" FOR SINGLE SERVICE
6" FOR DOUBLE SERVICE

RESIDENTIAL SANITARY SEWER SERVICE CONNECTION
N.T.S.



NOTE:
1. All R.C.P. Manholes shall be in accordance A.S.T.M. C-478.
2. East Jordan 32" Frame and Cover (or equal) w/ "STORM SEER" on lid
3. For adjustment of Manhole Lid use standard concrete rings. No brick adjustment allowed.
4. Precast bottom section of manhole to be securely attached to reinforced concrete slab with waterproof sealer.
6. Manhole sections, cones and invert taps shall be coated with a suitable, protective, 20 mils thick, cold tar epoxy coating.

STANDARD PRECAST MANHOLE
N.T.S.

CITY ENGINEER
CITY OF OAK RIDGE NORTH
SIGNATURE VALID FOR ONE (1) YEAR

DATE

L SQUARED ENGINEERING
Civil • Consulting • Management

DRAWING ISSUE/REVISIONS

No.	DATE	BY	COMMENT

L SQUARED ENGINEERING
Civil • Consulting • Management

CLIENT
TEXAS EQUITY VENTURES

PROJECT TITLE
TEXAS EQUITY VENTURES - SPECTRUM DRIVE
GENERAL DETAILS

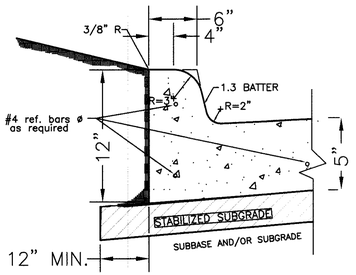
ENGINEER CONTACT INFO.:
L Squared Engineering, LLC
21123 EVA ST. SUITE 210-H
MONTGOMERY, TX 77356
936-647-0420

PROJECT LOCATION
27316 SPECTRUM WAY
OAK RIDGE NORTH, TEXAS

PROJECT LEGAL DESCRIPTION
RESERVE "E" BLOCK 1 OAK RIDGE NORTH COMMERCE PARK REPLAT No. 5 CABINET Z, SHEET 2203 M.R.M.C.T. IN THE MONTGOMERY COUNTY SCHOOL LAND SURVEY, A-350 MONTGOMERY COUNTY, TEXAS
1.3437 Ac. (PLAT)

SEAL
STATE OF TEXAS
E. LEVI LOVE, JR.
99340
LICENSED PROFESSIONAL ENGINEER
03/27/2015

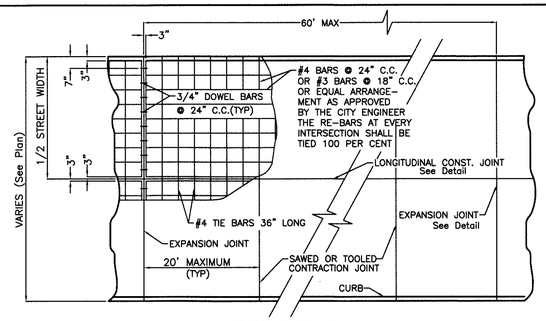
FIRM No.	11235
DATE	3/27/2015
PROJECT NO.	10078
DRAWN BY	CBJ
SCALE	NOTED
DRAWING No.	7



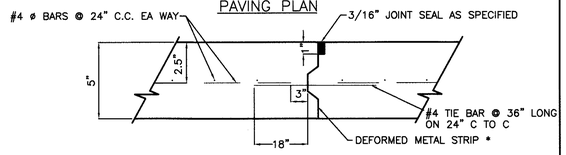
NOTES:

1. All honeycombing shall be grouted to provide a uniform surface.
2. When honeycombing is excessive as determined by the Inspector, curb and gutter shall be replaced.
3. Backfill behind curbs shall be accomplished within 7 days.
4. Curb and gutter concrete shall be Class "A" (3000 psi).
5. Reinforcing steel as shown.
6. Expansion joints at a maximum length of 60 feet.
7. Sawed contraction joinst every 20 feet between expansion joints.
8. All joints are to be properly sealed.

STANDARD CURB AND GUTTER
N.T.S.

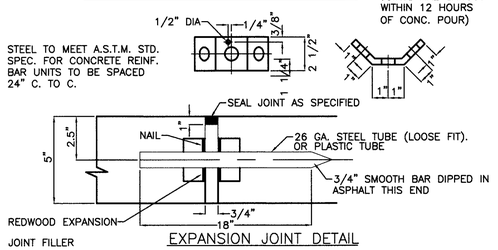


PAVING PLAN



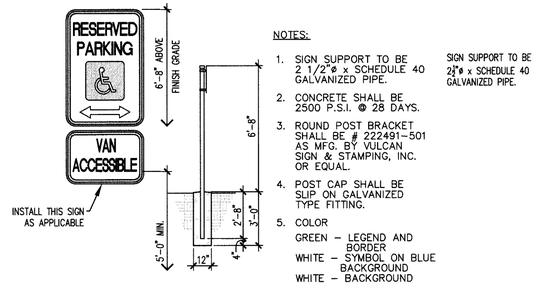
LONGITUDINAL CONST. JOINT DETAIL

(* NOT REQUIRED IF JOINTS ARE SAWCUT WITHIN 12 HOURS OF CONC. POUR)



EXPANSION JOINT DETAIL

CONCRETE PAVEMENT
N.T.S.



NOTES:

1. SIGN SUPPORT TO BE 2 1/2"ø x SCHEDULE 40 GALVANIZED PIPE.
2. CONCRETE SHALL BE 2500 P.S.I. @ 28 DAYS.
3. ROUND POST BRACKET SHALL BE # 222491-501 AS MFG. BY VULCAN SIGN & STAMPING, INC. OR EQUAL.
4. POST CAP SHALL BE SLIP ON GALVANIZED TYPE FITTING.
5. COLOR
   GREEN – LEGEND AND BORDER
   WHITE – SYMBOL ON BLUE BACKGROUND
   WHITE – BACKGROUND

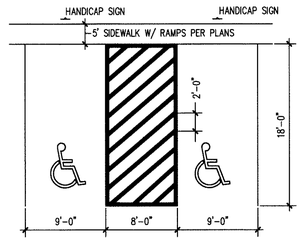
SIGN SUPPORT TO BE 2½"ø x SCHEDULE 40 GALVANIZED PIPE.

NOTES:

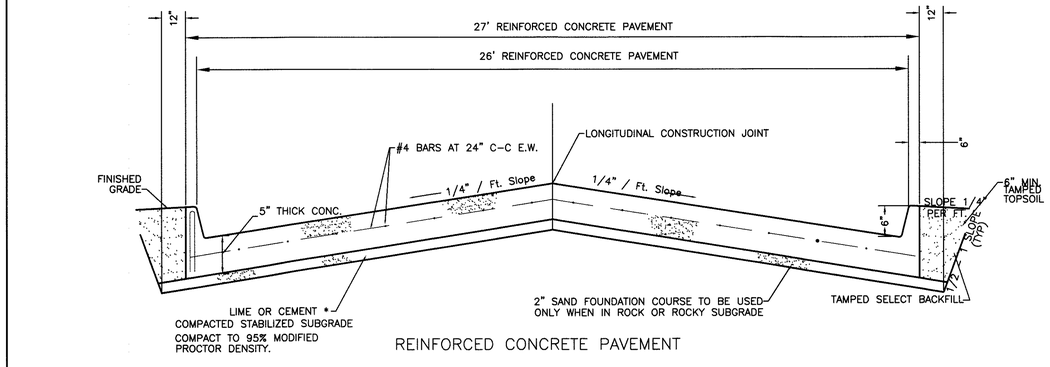
PAINT 4" WIDE STRIPING w/ WHITE TRAFFIC PAINT @ H.C. PARKING, TYP.

PAINT HANDICAP LOGO w/ BLUE TRAFFIC PAINT @ H.C. PARKING, TYPICAL

(A.D.A. SECTION 4.6)



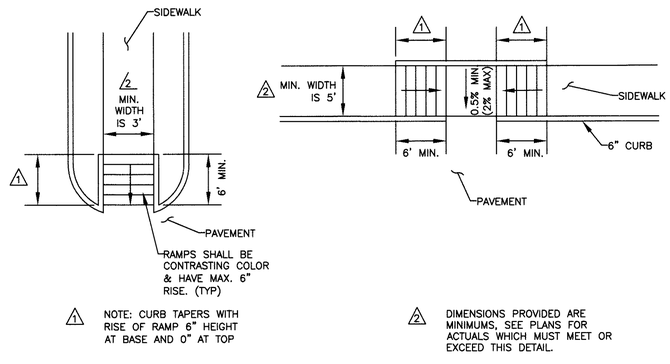
HANDICAP PARKING DETAIL
N.T.S.



REINFORCED CONCRETE PAVEMENT

* STABILIZED PER GEOTECHNICAL REPORT

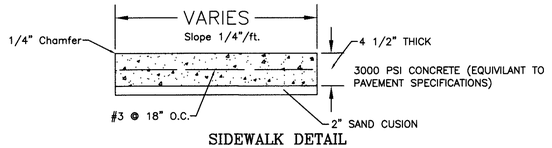
TYPICAL ENTRANCE CROSS SECTION (CONCRETE)
N.T.S.



1 NOTE: CURB TAPERS WITH RISE OF RAMP 6" HEIGHT AT BASE AND 0" AT TOP

2 DIMENSIONS PROVIDED ARE MINIMUMS, SEE PLANS FOR ACTUALS WHICH MUST MEET OR EXCEED THIS DETAIL.

SIDEWALK RAMP DETAIL
N.T.S.



SIDEWALK DETAIL
N.T.S.

CITY ENGINEER
CITY OF OAK RIDGE NORTH
SIGNATURE VALID FOR ONE (1) YEAR

7/1/13
DATE

L SQUARED ENGINEERING
Civil • Consulting • Management

DRAWING ISSUE/REVISIONS

No.	DATE	BY	COMMENT

L SQUARED ENGINEERING
Civil • Consulting • Management

CLIENT
TEXAS EQUITY VENTURES

PROJECT TITLE
TEXAS EQUITY VENTURES - SPECTRUM DRIVE
PAVING DETAILS

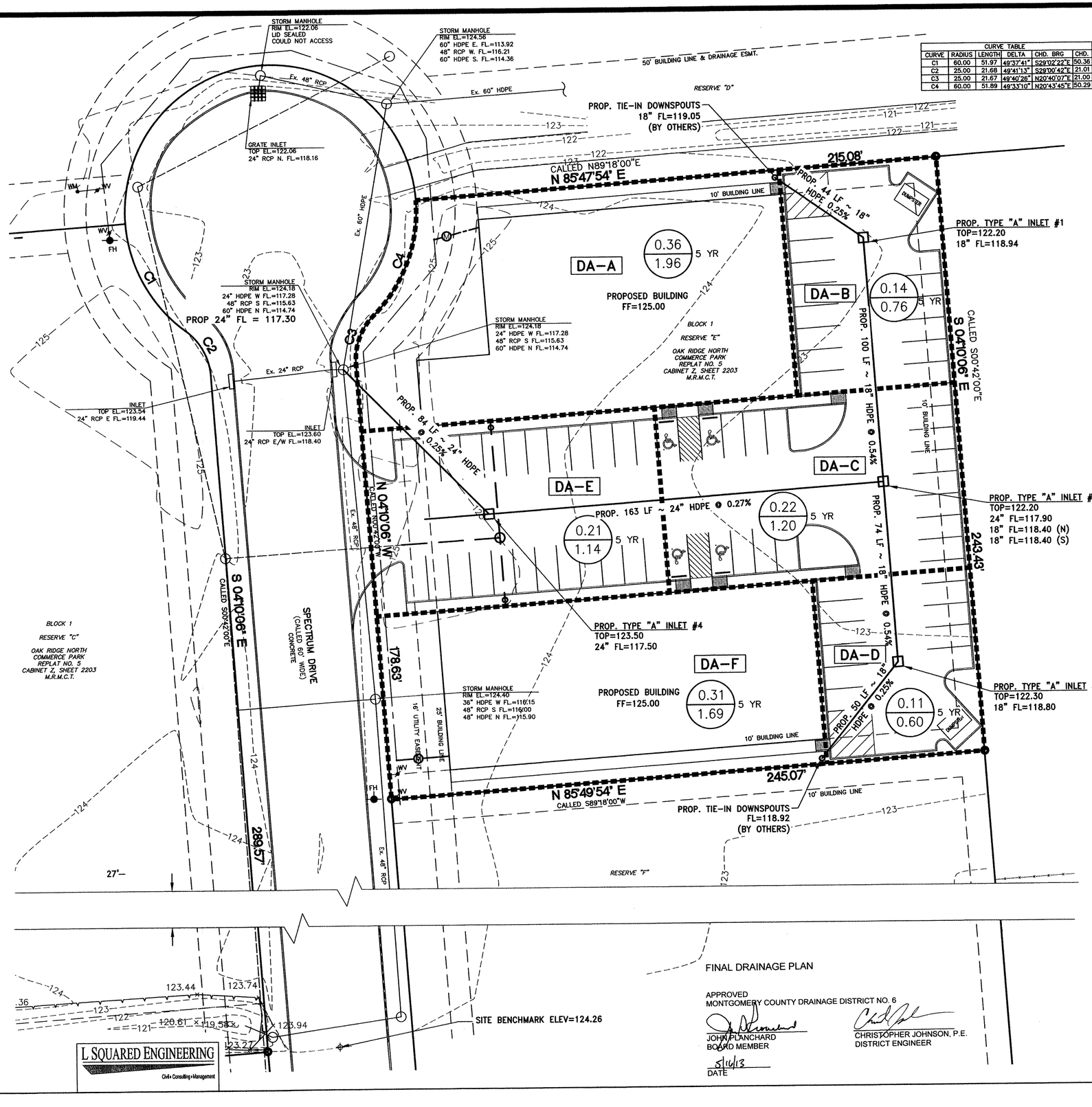
ENGINEER CONTACT INFO.:
L Squared Engineering, LLC
21123 EVA ST. SUITE 210-H
MONTGOMERY, TX 77356
936-647-0420

PROJECT LOCATION
27316 SPECTRUM WAY
OAK RIDGE NORTH, TEXAS

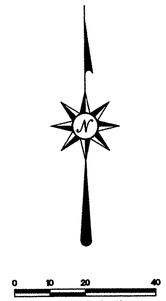
PROJECT LEGAL DESCRIPTION
RESERVE "E" BLOCK 1 OAK RIDGE NORTH COMMERCE PARK REPLAT No. 5 CABINET Z, SHEET 2203 M.R.M.C.T. IN THE MONTGOMERY COUNTY SCHOOL LAND SURVEY, A-350 MONTGOMERY COUNTY, TEXAS 1.3437 Ac. (PLAT)

SEAL
STATE OF TEXAS
E. LEVI LOVE, JR.
99340
LICENSED
PROFESSIONAL ENGINEER
07/02/2013

FIRM No.	11235
DATE	7/02/2013
PROJECT No.	10078
DRAWN BY	CBJ
SCALE	NOTED
DRAWING No.	8



CURVE TABLE					
CURVE	RADIUS	LENGTH	DELTA	CHD. BRG	CHD.
C1	60.00	51.97	49°37'41"	S29°02'22"E	50.36
C2	25.00	21.68	49°41'13"	S29°00'42"E	21.01
C3	25.00	21.67	49°40'26"	N20°40'07"E	21.00
C4	60.00	51.89	49°33'10"	N20°43'45"E	50.29



BENCHMARK
NGS BENCHMARK C1513
ELEV=118.27 (2001 ADJ.)
STAINLESS STEEL ROD W/O SLEEVE

SITE BENCHMARK #1
ELEV=124.26
"X" SET IN CONRETE NEAR CENTER OF ROAD AS SHOWN

FLOODPLAIN
THIS PROPERTY IS LOCATED IN ZONE X AND THIS PROPERTY IS OUTSIDE THE 100-YEAR FLOODPLAIN AS SHOWN ON FIRM COMMUNITY PANEL NUMBER 48339C0541 F, EFFECTIVE DATE: 12/19/1996

LEGEND

- PROPERTY LINE
- EXISTING SANITARY SEWER
- EXISTING WATERLINE
- EXISTING STORM SEWER
- EXISTING EASEMENT
- EXISTING BUILDING LINE
- EXISTING POWERLINE
- EXISTING DITCH
- EXISTING HIGH BANK
- EXISTING TOE OF BANK
- EXISTING FENCE
- PROPOSED STORM SEWER
- PROPOSED SANITARY SEWER
- PROPOSED WATERLINE
- PROPOSED PAVEMENT
- PROPOSED DITCH
- PROPOSED EASEMENT
- PROPOSED DRAINAGE AREAS

DA-C
FLOW
AREA (AC)
FLOW (CFS)
STORM EVENT

Storm Sewer Design for Reserve "E" - Spectrum Drive

For 5-year storm

Using the Rational Equation to calculate the peak flows

DA	Area	Cumul. Area	C	Peaking Factor	Tc	I	Q_{des}	Cumul. Q_{des}
acres	acres	acres		Cf	min	in/hr	cfs	cfs
DA-A	0.36	0.36	0.85	1	10.0	6.40	1.96	1.96
DA-B	0.14	0.50	0.85	1	10.0	6.40	0.76	2.72
DA-F	0.31	0.81	0.85	1	10.0	6.40	1.69	1.69
DA-D	0.11	0.92	0.85	1	10.0	6.40	0.60	2.29
DA-C	0.22	1.14	0.85	1	10.0	6.40	1.20	6.21
DA-E	0.21	1.35	0.85	1	10.0	6.40	1.14	7.35

Pre-developed 100-year storm event

Q=CIA (in/hr) (ac)

C=0.40 I = 9.4 A =1.34

Q = 0.4*9.4*1.34 =5.04 cfs

Post-developed 100-year storm event

Q=CIA (in/hr) (ac)

C=0.85 I = 9.4 A =1.34

Q = 0.85*9.4*1.34 = 10.71 cfs

Using the Manning's Equation to calculation the storm sewer system capacity

DA	D_{size}	D_{des}	Pipe Slope	V_{full}	Manning Q_{full} Capacity	Pipe Length	Adequate Pipe Size?
acres	in	in	ft/ft	ft/sec	cfs	ft	
DA-A	10.9	18	0.002500	2.98011	5.27	44	YES
DA-B	12.9	18	0.005400	4.37985	7.74	100	YES
DA-F	10.2	18	0.002500	2.98011	5.27	50	YES
DA-D	11.8	18	0.005400	4.37985	7.74	74	YES
DA-C	19.5	24	0.002700	3.75178	11.79	163	YES
DA-E	21.2	24	0.002500	3.61015	11.34	84	YES

DRAWING ISSUE/REVISIONS

No.	DATE	BY	COMMENT

L SQUARED ENGINEERING
Civil • Consulting • Management

CLIENT
TEXAS EQUITY VENTURES

PROJECT TITLE
TEXAS EQUITY VENTURES -
SPECTRUM DRIVE
DRAINAGE PLAN & CALCULATIONS

ENGINEER CONTACT INFO.:
L Squared Engineering, LLC
21123 EVA ST. SUITE 210-H
MONTGOMERY, TX 77356
936-647-0420

PROJECT LOCATION
OAK RIDGE NORTH, TEXAS

PROJECT LEGAL DESCRIPTION
RESERVE "E" BLOCK 1 OAK RIDGE NORTH COMMERCE PARK REPLAT No. 5 CABINET Z, SHEET 2203 M.R.M.C.T. IN THE MONTGOMERY COUNTY SCHOOL LAND SURVEY, A-350 MONTGOMERY COUNTY, TEXAS

STATE OF TEXAS
E. LEVI LOVE, JR.
99340
LICENSED PROFESSIONAL ENGINEER

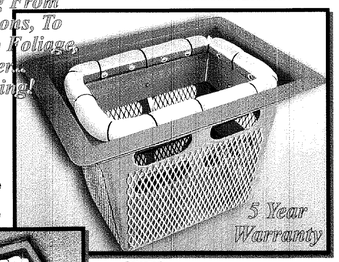
FIRM No.	11235
DATE	3/14/2013
PROJECT No.	10078
DRAWN BY	CBJ
SCALE	1"=20'
DRAWING No.	D-2

Suntree Technologies Inc.
798 Clearlake Road, Cocoa, FL 32922
Ph: 321-637-7552 FAX: 321-637-7554
www.suntreetech.com

Grate Inlet Skimmer Box

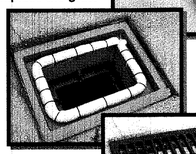
Stormwater Treatment System For A Grated Inlet

Captures Everything From Hydrocarbons, To Sediment, To Foliage, To Litter... Everything!

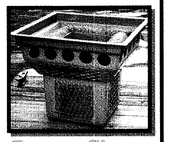


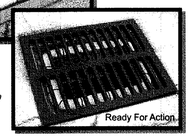
Installs Quickly

- **Remove the grate**
- **Drop in the filter**
- **Replace the grate**



Patented





Will Not Impede The Designed Flow Of The Inlet

Custom Sizes... No Problem

Multi-Stage Filtration

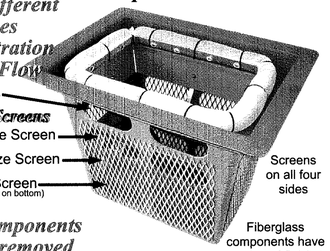
Screens of Different Sieve Sizes Optimize Filtration And Water Flow

- ○ Bypass Openings

Stainless Steel Screens

- ○ Coarse Sieve Size Screen
- ○ Medium Sieve Size Screen
- ○ Fine Sieve Size Screen
  (Fine sieve size screen also on bottom)

Grate Inlet Skimmer Box Special Features



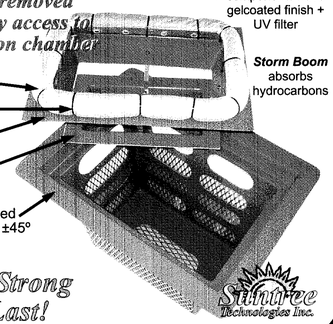
Screens on all four sides

Fiberglass components have gelcoated finish + UV filter

Storm Boom absorbs hydrocarbons

Interior components are easily removed to allow easy access to lower filtration chamber

- ○ Storm Boom
- ○ Zip Tie
- ○ Skimmer Tray
- ○ Deflection Shield
- ○ Flange is reinforced with knitted 1808 ±45° biaxial fiberglass

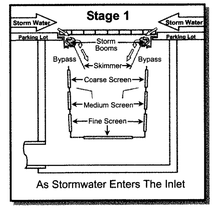


Built Strong To Last!

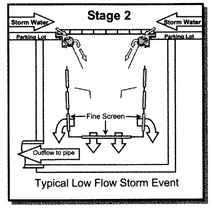
Grate Inlet Skimmer Box — Functional Description

Multi-Stage Filtration Utilizes Screens Of Different Sieve Sizes To Optimize Filtration And Water Flow

Stage 1: As stormwater enters the inlet through the grate it comes in contact with and passes through a ***Storm Boom*** located around the top perimeter of the ***Grate Inlet Skimmer Box***. After making contact with the ***Storm Boom***, the stormwater flows down into the lower filtration chamber which is equipped with 3 different sieve size filtration screens and bypass openings.



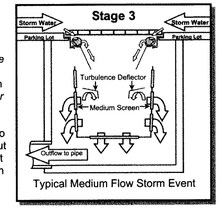
As Stormwater Enters The Inlet



Typical Low Flow Storm Event

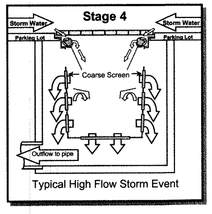
Stage 2: Throughout the entire storm event, stormwater continues to come in contact with the ***Storm Boom*** and then flow into the lower filtration chamber, adjacent to the fine sieve size screens. The fine sieve size screens are sized to be able to capture sediment such as sand, clay, phosphates, etc. A sand filter quickly forms across the bottom which has the potential to capture the finest of particles.

Stage 3: As the storm event increases in intensity the water level in the ***Grate Inlet Skimmer box*** rises to a level adjacent to the medium sieve size screens and the *turbulence deflector*. The medium screen provides additional flow with less chance of obstruction than the fine screen. The *turbulence deflector* dramatically reduces the turbulence in the lower filtration chamber, which allows sediment to continue to settle, without re-suspending sediment that has previously been captured.



Typical Medium Flow Storm Event

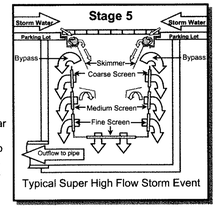
Stage 4: As the storm event increases in intensity to that of high flow storm event, the water level in the ***Grate Inlet Skimmer box*** rises to a level adjacent to the coarse sieve size screens above *turbulence deflector*.



Typical High Flow Storm Event

The coarse screen provides additional filtered flow with less chance for obstruction than either the medium or fine screen. The coarse screen is sized to capture floatables like foliage and litter. At this stage water is flowing through all the different sieve size screens, the *turbulence deflector* continues to dramatically reduce the turbulence in the lower filtration chamber, and sediment continues to settle and collect toward the bottom.

Stage 5: If the storm event creates an extremely high flow rate into the inlet which exceeds the flow through all the screens, the water flow can bypass the filtration screens through skimmer protected bypass openings near the top of the ***Grate Inlet Skimmer Box***. As water flows through the bypass openings, it also continues to flow through all the other screens. Storm events that produce such high flow rates are rare and typically don't last very long.



Typical Super High Flow Storm Event

Can Hold Hundreds of Pounds of Debris

Drains Dry After Every Storm Event

After The Storm Event: The stormwater drains completely out of the ***Grate Inlet Skimmer Box*** after the storm event. The debris collected in the unit is stored in a dry state which helps to contain the nutrient pollutant load, prevents the filter from going septic, and prevents mosquitoes from breeding in the unit. After each storm event more debris is collected, which can ultimately weigh many hundreds of pounds.

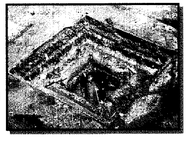
Grate Inlet Skimmer Box - Captured Debris

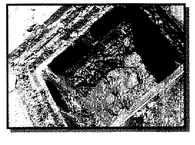
Suntree Technologies Inc.

The Challenge...

Take On The Toughest Inlets... Capture & Keep The Debris... Keep The Inlet Flowing!

The picture to the right shows an inlet with a ***Grate Inlet Skimmer Box*** immediately after the grate was removed, just 45 days after it was installed. Because this inlet is adjacent to a wash down area, it experiences a simulated storm event every day. The filter is full to capacity and has been operating in bypass mode for some time.

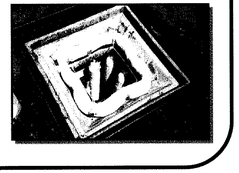




The picture to the left shows the ***Grate Inlet Skimmer Box*** immediately after the removal of booms and skimmer tray. Notice the bypass openings around the top are completely unobstructed. The filter is full to capacity and is operating in bypass mode. Because this inlet experiences an extra heavy hydrocarbon pollutant load it is fitted with extra ***Storm Booms***.

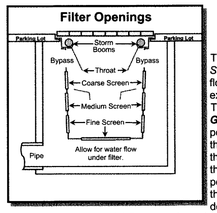
Stainless Steel Screens are easily cleaned to restore the original unobstructed flow rates to the Grate Inlet Skimmer Box

Although the inlet is relatively small with a grate that measures 24" x 24", debris weighing 232 pounds with a volume of 78 quarts was removed during this servicing. To the right is a photo of the same ***Grate Inlet Skimmer Box*** after being serviced.



Ready For The Next Storm Event!

Grate Inlet Skimmer Box - Sizing and Flow Rates



Custom Sizes No Problem

The **maximum flow rate** of a *Grate Inlet Skimmer Box* is determined by the amount of flow that can pass through the throat, the exception is found only in very large units.

To determine the **minimum flow rate** of a ***Grate Inlet Skimmer Box***, consider only the potential flow through the throat and bypass. If the potential flow through the throat is less than the potential flow through the bypass, then the throat determines the minimum flow. If the potential water flow through the bypass is less than that of the throat, then the bypass determines the minimum flow. **Filtered Flow** represents the potential flow rate through all screens, and does not include the potential flow through the bypass. Water flow through the bypass happens only when the flow rate through the grate exceeds the flow rate through all the screens.

Flow Rate Table For 8 different Models

	Dimensions of the flange around the top of the Grate Inlet Skimmer Box			Flow Rate (cubic feet per second)		
Model Number	**Width (inches)**	**Length (inches)**	**Depth (inches)**	**Throat**	**Filtered Flow**	**Bypass Flow**
GISB-I-24-24-25	24	24	25	4.4	14.9	6.7
GISB-A-24-37-25	24	37	25	10.2	21.1	8.7
GISB-C-28-37-25	28	37	25	12.2	19.4	7.4
GISB-J-24-41-25	24	41	25	12	24.6	10
GISB-NK-32-32-25	32	32	25	12.5	19.1	10.3
GISB-36-36-25	36	36	25	18.8	23.4	13.4
GISB-D-36-48-18	36	48	18	33.2	26.3	13.3
GISB-G-52-58-18	52	58	18	89.3	40.1	25

♦ **The yellow blocks represent the minimum flow rates.**
♦ **Filtered flow is based on unobstructed screens.**

Drawings and flow specifications for any size Grate Inlet Skimmer Box is available upon request.

SEE SHEET D-2

DD6 APPROVAL BY: DATE

DRAWING ISSUE/REVISIONS

No.	DATE	BY	COMMENT

L SQUARED ENGINEERING
Civil • Consulting • Management

CLIENT
TEXAS EQUITY VENTURES

PROJECT TITLE
TEXAS EQUITY VENTURES - SPECTRUM DRIVE
INLET BASKET DETAIL

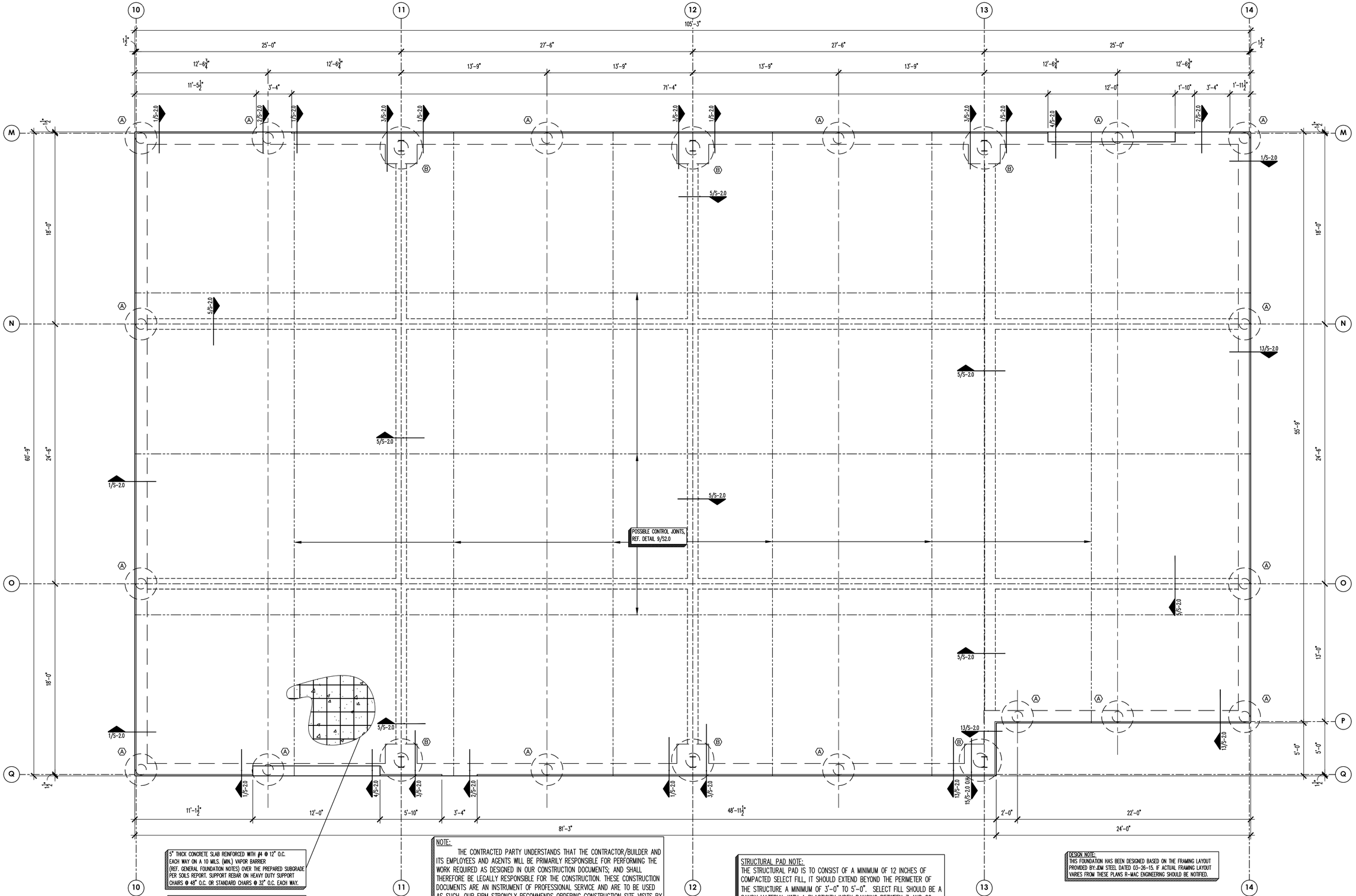
ENGINEER CONTACT INFO.:
L Squared Engineering, LLC
21123 EVA ST. SUITE 210-H
MONTGOMERY, TX 77356
936-647-0420

PROJECT LOCATION
27316 SPECTRUM WAY
OAK RIDGE NORTH, TEXAS

PROJECT LEGAL DESCRIPTION
RESERVE "E" BLOCK 1 OAK RIDGE NORTH COMMERCE PARK REPLAT No. 5 CABINET Z, SHEET 2203 M.R.M.C.T. IN THE MONTGOMERY COUNTY SCHOOL LAND SURVEY, A-350 MONTGOMERY COUNTY, TEXAS
1.3437 Ac. (PLAT)

SEAL
STATE OF TEXAS
E. LEVI LOVE, JR.
99340
LICENSED PROFESSIONAL ENGINEER
FIRM No:
DATE: 7
PRC
07/0

L SQUARED ENGINEERING
Civil • Consulting • Management



5" THICK CONCRETE SLAB REINFORCED WITH #4 @ 12" O.C. EACH WAY ON A 10 MILS. (MIN.) VAPOR BARRIER (REF. GENERAL FOUNDATION NOTES) OVER THE PREPARED SUBGRADE PER SOILS REPORT. SUPPORT REBAR ON HEAVY DUTY SUPPORT CHAIRS @ 48" O.C. OR STANDARD CHAIRS @ 32" O.C. EACH WAY.

SOIL DATA TAKEN FROM: TERRACON CONSULTANTS, INC.
REPORT NO:9206553 DATED: SEPTEMBER 14, 2006
EFFECTIVE PI = 14-31

NOTE:

THE CONTRACTED PARTY UNDERSTANDS THAT THE CONTRACTOR/BUILDER AND ITS EMPLOYEES AND AGENTS WILL BE PRIMARILY RESPONSIBLE FOR PERFORMING THE WORK REQUIRED AS DESIGNED IN OUR CONSTRUCTION DOCUMENTS; AND SHALL THEREFORE BE LEGALLY RESPONSIBLE FOR THE CONSTRUCTION. THESE CONSTRUCTION DOCUMENTS ARE AN INSTRUMENT OF PROFESSIONAL SERVICE AND ARE TO BE USED AS SUCH. OUR FIRM STRONGLY RECOMMENDS ORDERING CONSTRUCTION SITE VISITS BY THIS FIRM ON ALL STRUCTURAL ELEMENTS. OUR FIRM CANNOT ISSUE CERTIFICATES OF CONSTRUCTION APPROVAL UNLESS THESE SITE VISITS ARE PERFORMED.

WHEN OUR FIRM IS CONTRACTED TO PROVIDE PARTIAL DESIGN/CDs (i.e. FOUNDATON ONLY, FRAMING ONLY, EXT.), ROD V. McCASLAND, P.E., NOR R-MAC ENGINEERING COMPANY, INC. CANNOT BE HELD RESPONSIBLE FOR THE PERFORMANCE OF ANY OTHER STRUCTURAL ELEMENTS

STRUCTURAL PAD NOTE:

THE STRUCTURAL PAD IS TO CONSIST OF A MINIMUM OF 12 INCHES OF COMPACTED SELECT FILL, IT SHOULD EXTEND BEYOND THE PERIMETER OF THE STRUCTURE A MINIMUM OF 3'-0" TO 5'-0". SELECT FILL SHOULD BE A SANDY MATERIAL WITH A PLASTICITY INDEX RANGING BETWEEN 7 AND 20. PAD IS TO BE COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR IN SIX TO EIGHT INCH LIFTS. EACH LIFT IS TO BE TESTED BY A SOILS TESTING LAB, AND THE WRITTEN TEST RESULTS SENT TO R-MAC ENGINEERING COMPANY, INC. REFERENCE PROJECT GEOTECHNICAL REPORT FOR MORE SPECIFIC DETAILS.

DESIGN NOTE:

THIS FOUNDATION HAS BEEN DESIGNED BASED ON THE FRAMING LAYOUT PROVIDED BY:JDM STEEL DATED 03-26-15. IF ACTUAL FRAMING LAYOUT VARIES FROM THESE PLANS R-MAC ENGINEERING SHOULD BE NOTIFIED.

FOUNDATION PLAN

STATE OF TEXAS
ROD V. MC CASLAND
48002
REGISTERED PROFESSIONAL ENGINEER
06-03-15

R-MAC ENGINEERING CO.
Consulting Engineers
P.O. Box 7827
The Woodlands, TX 77387
Texas Registered Engineering Firm: F-11358
PH: (281) 367-7761 FAX: (281) 362-0304
Email: rmac@rmacengineering.com

MOC SERVICE BUILDING

27316 SPECTRUM WAY
OAKRIDGE, TEXAS

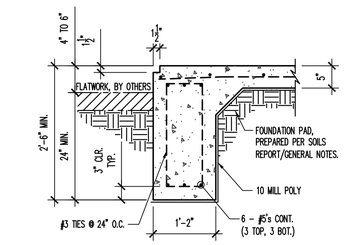
PROJECT	M15058
SCALE	1/4"=1'-0"
DSGN. BY	RVM
DWN. BY	OG
CKD. BY	CLB/RVM
TOTAL COVERED	6,273 sq.ft.

REVISIONS/ISSUED

1 For Construction 05-28-15
2 PER ARCH. 06-03-15

SHEET

S-1.0



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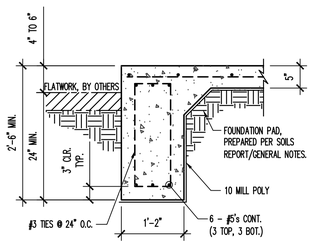

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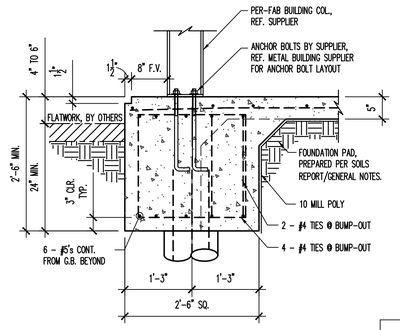

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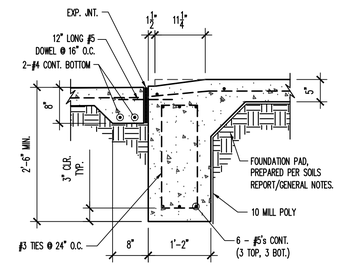

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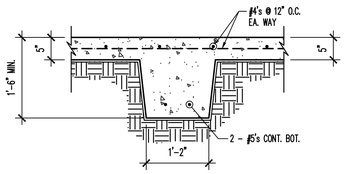

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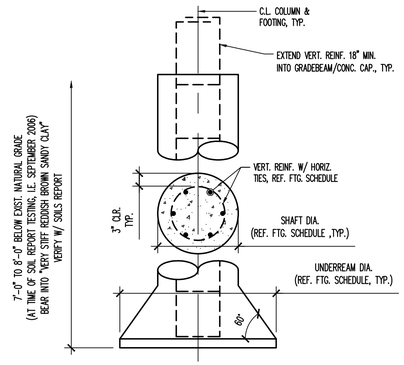


TYP. FOOTING DETAIL @ GRADE BEAMS

7

DRILLED PIER SCHEDULE			
FOOTING MARK	FTG. SIZE	VERT. REINF.	HORIZ. TIES
Ⓐ	12/36	4 - #5	#3 @ 12" O.C.
Ⓑ	16/48	5 - #5	#3 @ 12" O.C.

GENERAL FOUNDATION NOTES

FOUNDATION

THE FOUNDATION FOR THE STRUCTURE IS DESIGNED USING THE FOLLOWING SOIL BEARING PRESSURES AT A DEPTH OF 7'-0" TO 8'-0" WHICH HAS BEEN SUPPLIED BY THE GEOTECHNICAL ENGINEER: TERRACON CONSULTANTS, INC.
REPORT NO.: 9206553, DATED: SEPTEMBER 14, 2006
(DEPTH IS FROM EXISTING NATURAL GRADE)
DEAD LOAD PLUS SUSTAINED LIVE LOAD ---------- 3500-4200 PSF
TOTAL LOAD ---------- 5000-5500 PSF

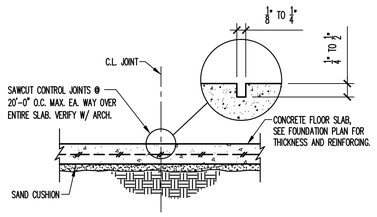
VAPOR RETARDER/BARRIER NOTES

1. ACI 302.1R-96, GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION (ACI COMMITTEE 302) RECOMMENDS THAT A VAPOR RETARDER/BARRIER WITH:
   PERMEANCE OF LESS THAN 0.3 US PERMS (ASTM E 96, "STANDARD TEST METHODS FOR WATER VAPOR TRANSMISSION OF MATERIALS"), AND

   THICKNESS NOT LESS THAN 10 MILS BE PLACED UNDER THE CONCRETE FLOOR SLAB ON GROUND TO REDUCE THE TRANSMISSION OF WATER VAPOR FROM THE SUPPORTING SOIL THROUGH THE CONCRETE SLAB AND TO FUNCTION AS A SLIP SHEET TO REDUCE SUBGRADE DRAG FRICTION.
2. WE RECOMMEND THAT A 10-MIL POLYETHYLENE SHEET OR STEGO INDUSTRIES 10 MIL "STEGO WRAP" BE USED AS THE MOISTURE RETARDER/BARRIER.
3. LOCAL PRECTICE IS TO PLACE THE CONCRETE FLOOR DIRECTLY ON THE VAPOR RETARDER/BARRER. THE VAPOR RETARDER/BARRIER SHOULD BE INSTALLED ACCORDING TO ASTM E 1643 ("STANDARD PRACTICE FOR INSTALLATION OF WATER VAPOR RETARDERS USED IN CONTACT WITH EARTH AR GRANULAR FILL UNDER CONCRETE SLABS.

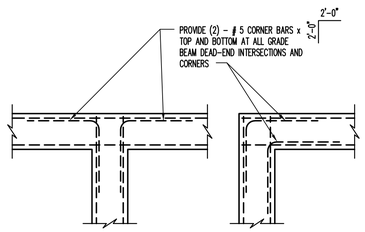
CONCRETE NOTES

1. CONCRETE IN THE FOLLOWING AREAS SHALL HAVE NORMAL-WEIGHT AGGREGATES CONFORMING TO ASTM C33, TYPE 1 PORTLAND CEMENT, AND THE FOLLOWING DESIGNATED MINIMUM COMPRESSIVE STRENGTH (f'c) IN 28 DAYS.
   DRILLED FOOTINGS ---------- 3000 PSI
   GRADE BEAMS ---------- 3000 PSI
   SLAB ON GRADE ---------- 3000 PSI
2. GROUT UNDER BASE PLATES SHALL BE A NON-SHRINKABLE TYPE AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI.
3. REINFORCING BARS FOR CONCRETE SHALL CONFORM TO ASTM A615, GRADE 60. NO. 3 BARS MAY CONFORM TO ASTM A614, GRADE 40 EXCEPT AS NOTED.
4. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185. FABRIC IS TO BE LAPPED ONE MESH MINIMUM AT SPLICES.
5. AT ALL SLAB ON GRADE CONSTRUCTION JOINTS, PROVIDE NO. 3 DOWELS X 3'-0" AT 36 INCHES ON CENTER.
6. REINFORCEMENT DESIGNATED AS "CONTINUOUS" SHALL LAP 36 BAR DIAMETERS AT SPLICES U.O.N.
7. PROVIDE 1 NO. 6 CORNER BAR TOP AND BOTTOM AT THE EXTERIOR FACE OF ALL GRADE BEAMS. CORNER BARS SHALL BE 4'-0" LONG, BENT AT THE MIDDLE OF EACH BAR.
8. REINFORCING BARS MAY NOT BE WELDED UNLESS SPECIFICALLY CALLED FOR ON THE DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER.
9. DETAILING OF CONCRETE REINFORCEMENT AND ACCESSORIES SHALL CONFORM TO THE RECOMMENDATIONS OF THE AMERICAN CONCRETE INSTITUTE. LIKEWISE, MIXING, TRANSPORTING, PLACING, AND CURING OF ALL CONCRETE SHALL CONFORM TO THE RECOMMENDATIONS OF THE AMERICAN CONCRETE INSTITUTE.
10. CONCRETE COVER OF REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF A.C.I. 318 SECTION 7.7.
11. HORIZONTAL JOINTS WILL NOT BE PERMITTED IN CONCRETE CONSTRUCTION EXCEPT AS PROVIDED ON THE STRUCTURAL DRAWINGS. ALL CONSTRUCTION JOINTS SHALL BE MADE VERTICAL BULKHEADS AT THE CENTER OF SPANS OR AT LOCATIONS APPROVED BY THE STRUCTURAL ENGINEER.



TYPICAL CONTROL JOINT

9



PLAN VIEW PLAN VIEW

10

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11

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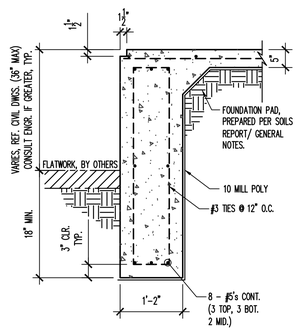
12



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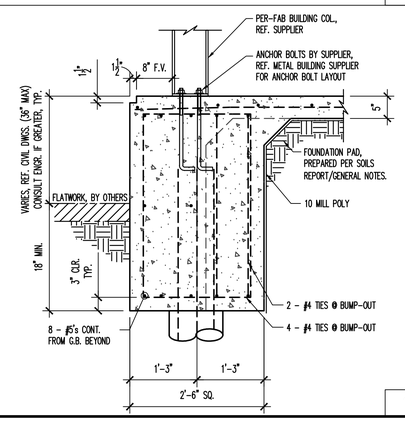

15

NOT USED

16

STATE OF TEXAS
ROD V. MC CASLAND
48002
REGISTERED PROFESSIONAL ENGINEER
06-03-15

R-MAC ENGINEERING CO.
Consulting Engineers
P.O. Box 7827
The Woodlands, TX 77387
Texas Registered Engineering Firm: F-11358
PH: (281) 367-7161 FAX: (281) 362-0304
Email: rvmac@rmacengineering.com

MOC SERVICE BUILDING
27316 SPECTRUM WAY
OAKRIDGE, TEXAS

PROJECT	M15058
SCALE	N.T.S.
DSGN. BY	RVM
DWN. BY	OG
CKD. BY	CLB/RVM
TOTAL COVERED	6,273 sq.ft.

REVISIONS/ISSUED
1 For Construction 05-28-15
2 PER ARCH. 06-03-15

SHEET
S-2.0

BUILDER / CONTRACTOR RESPONSIBILITIES

IT IS THE RESPONSIBILITY OF THE BUILDER/CONTRACTOR TO INSURE THAT ALL PROJECT PLANS AND SPECIFICATIONS COMPLY WITH THE APPLICABLE REQUIREMENTS OF ANY GOVERNING BUILDING AUTHORITIES. THE SUPPLYING OF SEALED ENGINEERING DATA AND DRAWINGS FOR THE METAL BUILDING SYSTEM DOES NOT IMPLY OR CONSTITUTE AN AGREEMENT THAT THE BUILDING COMPANY OR ITS DESIGN ENGINEER IS ACTING AS THE ENGINEER OF RECORD OR DESIGN PROFESSIONAL FOR A CONSTRUCTION PROJECT.
THE CONTRACTOR MUST SECURE ALL REQUIRED APPROVALS AND PERMITS FROM THE APPROPRIATE AGENCY AS REQUIRED.
APPROVAL OF BUILDING'S DRAWINGS AND CALCULATIONS INDICATE THAT JDM STEEL CORRECTLY INTERPRETED AND APPLIED THE REQUIREMENTS OF THE CONTRACT DRAWINGS AND SPECIFICATIONS. (SECT. 4.2.1 AISC CODE OF STANDARD PRACTICES, 9TH ED.)
WHERE DISCREPANCIES EXIST BETWEEN THE STRUCTURAL STEEL PLANS AND THE PLANS FOR OTHER TRADES, THE STRUCTURAL STEEL PLANS SHALL GOVERN. (SECT. 3.3 AISC CODE OF STANDARD PRACTICE 9TH ED.)
DESIGN CONSIDERATIONS OF ANY MATERIALS IN THE STRUCTURE WHICH ARE NOT FURNISHED BY THE BUILDING COMPANY ARE THE RESPONSIBILITY OF THE CONTRACTORS AND ENGINEERS OTHER THAN THE BUILDING COMPANY'S ENGINEERS UNLESS SPECIFICALLY INDICATED.
THE CONTRACTOR IS RESPONSIBLE FOR ALL ERECTION OF STEEL AND ASSOCIATED WORK IN COMPLIANCE WITH BUILDING COMPANY'S "FOR CONSTRUCTION" DRAWINGS.
PRODUCTS SHIPPED TO BUILDER OR HIS CUSTOMER SHALL BE INSPECTED BY BUILDER IMMEDIATELY UPON ARRIVAL. CLAIMS FOR SHORTAGES OR DEFECTIVE MATERIAL IF NOT PACKAGED MUST BE MAILED TO JDM STEEL WRITING WITHIN FIVE (5) DAYS AFTER RECEIPT OF THE SHIPMENT. HOWEVER, IF A DEFECT IS OF SUCH A NATURE THAT REASONABLE VISUAL INSPECTION WOULD FAIL TO DISCLOSE IT, THEN THE CLAIM MUST BE MADE WITHIN FIVE (5) DAYS AFTER THE BUILDER LEARNS OF THE DEFECT. BLDG. COMPANY WILL NOT BE LIABLE FOR ANY DEFECT UNLESS CLAIM IS MADE WITHIN ONE (1) YEAR AFTER DATE OF THE ORIGINAL SHIPMENT BY STEEL SUPPORT GROUP,INC. TO BUILDER OR HIS CUSTOMER. JDM STEEL . WILL BE GIVEN A REASONABLE OPPORTUNITY TO INSPECT DEFECTIVE MATERIALS UPON RECEIPT OF CLAIM BY BUILDER.
IF A DEFECT IS OF SUCH NATURE THAT IT CAN BE REMEDIED BY A FIELD OPERATION AT THE JOB SITE WITHOUT THE NECESSITY OF RETURNING THE MATERIAL TO BLDG. COMPANY, THEN UPON WRITTEN AUTHORIZATION OF THE BUILDER MAY REPAIR OR CAUSE THE MATERIAL TO BE REPAIRED AND BUILDING COMPANY WILL REIMBURSE THE BUILDER FOR THE COST OF THE REPAIR IN ACCORDANCE WITH THE WRITTEN AUTHORIZATION.
ALL BRACING AS SHOWN AND PROVIDED BY JDM STEEL . FOR THIS BUILDING IS REQUIRED AND SHALL BE INSTALLED BY THE ERECTOR AS A PERMANENT PART OF THE STRUCTURE.
TEMPORARY SUPPORTS, SUCH AS TEMPORARY GUYS, BRACES, FALSE WORK, CRIBBING OR OTHER ELEMENTS REQUIRED FOR THE ERECTION OPERATION WILL BE DETERMINED AND FURNISHED AND INSTALLED BY THE ERECTOR. THESE TEMPORARY SUPPORTS WILL SECURE THE STEEL FRAMING, OR ANY PARTLY ASSEMBLED STEEL FRAMING, AGAINST LOADS COMPARABLE IN INTENSITY TO THOSE FOR WHICH THE STRUCTURE WAS DESIGNED, RESULTING FROM WIND, SEISMIC FORCES AND ERECTION OPERATIONS, BUT NOT THE LOADS RESULTING FROM THE PERFORMANCE OF WORK BY OR THE ACTS OF OTHERS, NOR SUCH UNPREDICTABLE LOADS AS THOSE DUE TO TORNADO, EXPLOSION OR COLLISION. (SECT. 7.9.1 AISC CODE OF STANDARD PRACTICE, 9TH ED.)
DESIGN OF GUTTER AND DOWNSPOUT IS A FUNCTION OF THE RAINFALL INTENSITY AND AREA TO BE DRAINED. DESIGN PARAMETERS UTILIZED ARE IN ACCORDANCE WITH THE 1986 LOW RISE BUILDING SYSTEMS MANUAL AND/OR THE 9TH EDITION OF THE ARCHITECTURAL GRAPHIC STANDARDS, AS APPLICABLE. PROPER OWNER MAINTENANCE DICTATES THAT THE DRAINAGE SYSTEM BE KEPT FREE AND CLEAR OF DEBRIS AND/OR ICE AT ALL TIMES TO ENSURE PROPER FUNCTION OF THE GUTTER AND DOWNSPOUT. IN THOSE CASES WHERE THE OWNER/TENANT OF A PROPERTY IS UNWILLING OR UNABLE TO PROVIDE PROPER MAINTENANCE, ELIMINATION OF GUTTER SHOULD BE CONSIDERED AS AN ALTERNATIVE.

PRODUCT CERTIFICATIONS

M.B.C.I. BDG. COMPONENTS CO. IS A MEMBER OF THE METAL BUILDING MANUFACTURERS ASSOCIATION.
FABRICATION AND PRODUCTS ARE COVERED BY ONE OR MORE OF THE FOLLOWING CERTIFICATIONS:

1. APPROVED FABRICATOR OF PREFABRICATED BUILDINGS AND COMPONENTS. REFERENCE ICBO REPORT NO. FA-337
2. SBCCI COMPLIANCE REPORT NO. 9461A
3. AISC METAL BUILDING CERTIFICATION PROGRAM
4. CITY OF HOUSTON APPROVED FABRICATOR
5. TEXAS DEPT. OF INSURANCE PRODUCT EVALUATION

APPROVAL NOTES

THE FOLLOWING CONDITIONS APPLY IN THE EVENT THAT THESE DRAWINGS ARE USED AS APPROVAL DRAWINGS:
A) IT IS IMPERATIVE THAT ANY CHANGES TO THESE DRAWINGS:
1) BE MADE IN CONTRASTING INK.
3) HAVE ALL INSTANCES OF CHANGE CLEARLY INDICATED.
2) BE LEGIBLE AND UNAMBIGUOUS.

B) DATED SIGNATURE IS REQUIRED ON ALL PAGES.

C) MANUFACTURER RESERVES THE RIGHT TO RE-SUBMIT DRAWINGS WITH EXTENSIVE OR COMPLEX CHANGES REQUIRED TO AVOID MISFABRICATION. THIS MAY IMPACT THE DELIVERY SCHEDULE.

D) APPROVAL OF THESE DRAWINGS INDICATES CONCLUSIVELY THAT JDM STEEL . HAS CORRECTLY INTERPRETED THE CONTRACT REQUIREMENTS, AND FURTHER CONSTITUTES AGREEMENT THAT THE BUILDING AS DRAWN, OR AS DRAWN WITH INDICATED CHANGES REPRESENTS THE TOTAL OF THE MATERIALS TO BE SUPPLIED BY MANUFACTURER.

E) ANY CHANGES NOTED ON THE DRAWINGS NOT IN CONFORMANCE WITH THE TERMS AND REQUIREMENTS OF THE CONTRACT BETWEEN MANUFACTURER AND ITS CUSTOMER ARE NOT BINDING ON MANUFACTURER UNLESS SUBSEQUENTLY SPECIFICALLY ACKNOWLEDGED AND AGREED TO IN WRITING BY CHANGE ORDER OR SEPARATE DOCUMENTATION. MANUFACTURER RECOGNIZES THAT RUBBER STAMPS ARE ROUTINELY USED FOR INDICATING APPROVAL, DISAPPROVAL, REJECTION, OR MERE REVIEW OF THE DRAWINGS SUBMITTED. HOWEVER, MANUFACTURER DOES NOT ACCEPT CHANGES OR ADDITIONS TO CONTRACTUAL TERMS AND CONDITIONS THAT MAY APPEAR WITH USE OF A STAMP OR SIMILAR INDICATION OF APPROVAL, DISAPPROVAL, ETC. SUCH LANGUAGE APPLIED TO MANUFACTURER'S DRAWINGS BY THE CUSTOMER, ARCHITECT, ENGINEER, OR ANY OTHER PARTY WILL BE CONSIDERED AS UNACCEPTABLE ALTERATIONS TO THESE DRAWING NOTES, AND WILL NOT ALTER THE CONTRACTUAL RIGHTS AND OBLIGATIONS EXISTING BETWEEN MANUFACTURER AND ITS CUSTOMER.

GENERAL NOTES

THE STRUCTURE UNDER THIS CONTRACT HAS BEEN DESIGNED AND DETAILED FOR THE LOADS AND CONDITIONS STIPULATED IN THE CONTRACT AND SHOWN ON THESE DRAWINGS. ANY ALTERATIONS TO THE STRUCTURAL SYSTEM OR REMOVAL OF ANY COMPONENT PARTS, OR THE ADDITION OF OTHER CONSTRUCTION MATERIALS OR LOADS MUST BE DONE UNDER THE ADVICE AND DIRECTION OF A REGISTERED ARCHITECT, CIVIL OR STRUCTURAL ENGINEER.
JDM STEEL WILL ASSUME NO RESPONSIBILITY FOR ANY LOADS NOT INDICATED.
THIS METAL BUILDING IS DESIGNED WITH M.B.C.I. COMPO)NENT BUILDING COMPANY'S STANDARD PRACTICES WHICH ARE BASED ON PERTINENT PROCEDURES AND RECOMMENDATIONS OF THE FOLLOWING ORGANIZATIONS AND CODES.

1. AMERICAN INSTITUTE OF STEEL CONSTRUCTION: "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS"
2. AMERICAN IRON AND STEEL INSTITUTE: "SPECIFICATION FOR THE DESIGN OF COLD FORMED STEEL STRUCTURAL MEMBERS"
3. AMERICAN WELDING SOCIETY: "STRUCTURAL WELDING CODE" AWS D1.1.
4. METAL BUILDING MANUFACTURER'S ASSOCIATION: "LOW RISE BUILDING SYSTEMS MANUAL"
5. INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS: "UNIFORM BUILDING CODE"
6. SOUTHERN BUILDING CODE CONGRESS INTERNATIONAL: "STANDARD BUILDING CODE"
7. BUILDING OFFICIAL AND CODE ADMINISTRATORS INTERNATIONAL: "BOCA NATIONAL BUILDING CODE"
8. NATIONAL BUILDING CODE OF CANADA.

MATERIAL PROPERTIES OF STEEL PLATE USED IN THE FABRICATION OF PRIMARY RIGID FRAMES, AND OTHER PRIMARY STRUCTURAL EXCLUSIVE OF COLD-FORMED SECTIONS, CONFORM TO ASTM-A529 OR A-572 . FLANGES WITH THICKNESS OF ONE INCH OR LESS AND WIDTH OF 12" OR LESS CONFORM TO A-529 WITH A MINIMUM YIELD POINT OF 55,000 psi. FLANGES GREATER THAN 1" IN THICKNESS OR 12" IN WIDTH CONFORM TO A-572 WITH A MINIMUM YIELD POINT OF 50,000 psi. WEB MATERIAL CONFORMS TO ASTM-A36 MODIFIED WITH A MINIMUM YIELD POINT OF 46,000 psi.
MATERIAL PROPERTIES OF PIPE SECTIONS CONFORM TO ASTM-A53 TYPE E, GRADE B WITH A MINIMUM YIELD POINT OF 35,000 psi.
MATERIAL PROPERTIES OF HOT ROLLED STEEL MEMBERS CONFORM TO THE REQUIREMENTS OF ASTM-A36 OR A572 WITH A MINIMUM YIELD POINT OF 50,000 psi.
MATERIAL PROPERTIES OF COLD FORMED LIGHT GAGE STEEL MEMBERS CONFORM TO ASTM-A570 OR A607 GRADE 55 MODIFIED WITH A MINIMUM YIELD POINT OF 57,000 psi.
MATERIAL PROPERTIES OF ROOF/WALL SHEETING, BASE METAL CONFORM TO ASTM-A792 GRADES D OR E WITH MINIMUM YIELD POINTS OF 50,000 psi AND 80,000 psi RESPECTIVELY, AS REQUIRED BY DESIGN. COATING OF BASE MATERIAL IS 55% ALUMINUM-ZINC ALLOY IN ACCORDANCE WITH AZ55 SPECIFICATIONS.
CABLE UTILIZED FOR BRACING CONFORMS TO ASTM A475.
ROD AND ANGLE UTILIZED FOR BRACING MEMBERS CONFORM TO ASTM A36.
STRUCTURAL JOINTS WITH A.S.T.M. A-325 HIGH STRENGTH BOLTS, WHERE INDICATED ON THE DRAWINGS, SHALL BE ASSEMBLED AND THE FASTENERS TIGHTENED IN ACCORDANCE WITH "TURN-OF-NUT" METHOD AS DESCRIBED IN THE SPECIFICATION FOR STRUCTURAL JOINTS USING A.S.T.M. A-325 OR A-490 BOLTS (11-13-85), UNLESS OTHERWISE NOTED. ALL JOINTS WILL BE ASSEMBLED WITHOUT WASHERS UNLESS OTHERWISE NOTED.
ALL STEEL MEMBERS EXCEPT BOLTS, FASTENERS AND CABLE SHALL RECEIVE ONE SHOP COAT OF IRON OXIDE CORROSION INHIBITIVE PRIMER, MEETING THE PERFORMANCE REQUIREMENTS OF TTP-636.
SHOP AND FIELD INSPECTIONS AND ASSOCIATED FEES ARE THE RESPONSIBILITY OF THE CONTRACTOR, UNLESS STIPULATED OTHERWISE IN THE CONTRACT.
M.B.C.I. COMPONENTS BUILDING COMPANY WILL IDENTIFY PRIMARY STRUCTURAL STEEL WITH A MINIMUM YIELD POINT GREATER THAN 36,000 PSI BY MEANS OF A STICKER NEAR THE ERECTION MARK ON EACH SHIPPED PIECE. SECONDARY MEMBERS WITH A YIELD POINT EQUAL TO OR GREATER THAN 33,000 PSI SHALL BE IDENTIFIED BY MEANS OF A STICKER NEAR THE ERECTION MARK ON EACH SHIPPED PIECE.

SAFETY COMMITMENT

THE BUILDING MANUFACTURER HAS A COMMITMENT TO MANUFACTURE QUALITY BUILDING COMPONENTS THAT CAN BE SAFELY ERECTED. HOWEVER, THE SAFETY COMMITMENT AND JOB SITE PRACTICES OF THE ERECTOR ARE BEYOND THE CONTROL OF HAHNS CONSTRUCTION CO.
IT IS STRONGLY RECOMMENDED THAT SAFE WORKING CONDITIONS AND ACCIDENT PREVENTION PRACTICES BE THE TOP PRIORITY OF ANY JOB SITE.
LOCAL, STATE AND FEDERAL SAFETY AND HEALTH STANDARDS SHOULD ALWAYS BE FOLLOWED TO HELP INSURE WORKER SAFETY.
MAKE CERTAIN ALL EMPLOYEES KNOW THE SAFEST AND MOST PRODUCTIVE WAY OF ERECTING A BUILDING. EMERGENCY PROCEDURES SHOULD BE KNOWN TO ALL EMPLOYEES.
DAILY MEETINGS HIGHLIGHTING SAFETY PROCEDURES ARE ALSO RECOMMENDED. THE USE OF HARD HATS, RUBBER SOLE SHOES FOR ROOF WORK, PROPER EQUIPMENT FOR HANDLING MATERIAL, AND SAFETY NETS WHERE APPLICABLE, ARE RECOMMENDED.

BUILDING DESCRIPTION:

BASIC SIZE:	WIDTH	LENGTH	HEIGHT	ROOF PITCH	ENDWALL FRAME TYPE LEFT	RIGHT
S.S.	60'-6	105'-0	18'-0	1/2:12	M.F.	M.F.

WARNING: IN NO CASE SHOULD GALVALUME STEEL PANELS BE USED IN CONJUNCTION WITH LEAD OR COPPER. BOTH LEAD AND COPPER HAVE HARMFUL CORROSION EFFECTS ON THE ALUMINUM ZINC ALLOY COATING WHEN THEY ARE USED IN CONTACT WITH GALVALUME STEEL PANELS. EVEN RUN-OFF FROM COPPER FLASHING, WIRING, OR TUBING ONTO GALVALUME SHOULD BE AVOIDED.

BASE CONDITION:	SHEETING:			BLANKET TYPE INSULATION:	
	24GA	1.5 VULCRAFT DECK GLUME	ROOF	NONE ☐ BY MANUFACTURER ☒ BY OTHERS ☐ ROOF ☐ WALL ☐ UL-25	
	26GA.		WALL	SCREWS	* ZINC CAPPED
TAPE SEAL:	TRIM: (1/8" POP RIVETS AT SPLICES)			MEMBER ROOF(#12 X 1 1/4) STITCH ROOF(#14 x 7/8)	ANCHOR BOLTS
3/8" ☒	26GA.	COLOR	RAKE	MEMBER WALL(#12 X 1 1/4) STITCH WALL(#14 x 7/8)	BY OTHERS ☐
1" ☐	26GA.	COLOR	EAVE	RAKE TO ROOF: #14 x 7/8 RAKE TO WALL:	
WARRANTIES	26GA.	COLOR	GUTTER	GUTTER TO ROOF: #14 x 7/8 GUTTER STRAPS:	BY BUILDING MANUFACTURER ☒
U.L. 90 N/A	26GA.	COLOR	DOWNS.	CORNER TRIM: #14 x 7/8 RAKE ANGLE:	
20 YR ROOF N/A	26GA.	COLOR	CORNER	ADDITIONAL FEATURES:	
20 YR WALL N/A					

BUILDING LOADS

THIS IS TO CERTIFY THAT THIS STRUCTURE IS DESIGNED UTILIZING THE LOADS INDICATED AND APPLIED AS REQUIRED BY IBC 2009
THIS CERTIFICATION IS LIMITED TO THE STRUCTURAL DESIGN OF THE FRAMING AND COVERING PARTS MANUFACTURED BY THE BUILDING MANUFACTURER AND AS SPECIFIED IN THE CONTRACT. ACCESSORY ITEMS SUCH AS DOORS, WINDOWS, LOUVERS, TRANSLUCENT PANELS, VENTILATORS ARE NOT INCLUDED. ALSO EXCLUDED ARE OTHER PARTS OF THE PROJECT NOT PROVIDED BY THE BUILDING MANUFACTURER SUCH AS FOUNDATIONS, MASONRY WALLS, MECHANICAL EQUIPMENT AND THE ERECTION AND INSPECTION OF THE BUILDING. THE BUILDING SHOULD BE ERECTED ON A PROPERLY DESIGNED FOUNDATION IN ACCORDANCE WITH THE BUILDING MANUFACTURER'S DESIGN MANUAL, THE ATTACHED DRAWINGS, AND GOOD ERECTION PRACTICES.
THE CONTRACTOR AND/OR ENGINEER OF RECORD IS TO CONFIRM THAT THESE LOADS COMPLY WITH REQUIREMENTS OF THE LOCAL BUILDING DEPT.

ROOF DEAD LOAD 2.5 PSF
COLLATERAL DEAD LOAD 3.0 PSF
ROOF LIVE LOAD
BASED ON TRIBUTARY AREAS:
0 - 200 SQ. FT. ------ 20 PSF
201 - 600 SQ. FT. ------ IBC 2003 [EQUATION 16-6]
OVER 600 SQ. FT. ------ 12 PSF
20.0 PSF (SECONDARY)
20.0 PSF (PRIMARY)
GROUND SNOW LOAD - PSF (C = -)
ROOF SNOW LOAD - PSF
WIND SPEED 110 MPH, EXPOSURE B
SEISMIC
Use Group .
Site Class -
Design Category -
S_S= ___ -,S_1 =___ -
IMPORTANCE FACTORS
WIND LOAD 1.0
SNOW LOAD 1.2
SEISMIC LOAD 1.5
MEZZANINE LOADS
LIVE LOAD N/A PSF DEAD LOAD N/A PSF

DRAWING INDEX

ISSUE	PAGE	DESCRIPTION
0	C1 OF 1	COVER SHEET
0	E1 OF 4	ROOF PLAN
0	E2 OF 4	SIDEWALL ELEVATIONS
0	E3 OF 4	ENDWALL ELEVATIONS
0	E4 OF 4	CROSS SECTION
0	AB1 OF 1	ANCHOR BOLT PLAN
0	S1 OF 1	STD. SECTIONS
0	W1 OF 1	WELD SHEET

DSN APR. | APR. DATE
STRUCTURAL ONLY
FOUNDATION BY OTHERS
STATE OF TEXAS ROBERT V. NANGIA 96828 LICENSED PROFESSIONAL ENGINEER
NANGIA ENGR. OF TX F-8528

ROBERT V. NANGIA P.E.
7423 HOLLOW RIDGE DR.
HOUSTON, TX 77095

DRAWING STATUS
☐ FOR APPROVAL: THESE DRAWINGS, BEING FOR APPROVAL, ARE BY DEFINITION NOT FINAL, AND ARE FOR CONCEPTUAL REPRESENTATION ONLY. THEIR PURPOSE IS TO CONFIRM PROPER INTERPRETATION OF THE PROJECT DOCUMENTS. ONLY DRAWINGS ISSUED "FOR CONSTRUCTION" CAN BE CONSIDERED AS COMPLETE.
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☒ FOR CONSTRUCTION: FINAL DRAWINGS.

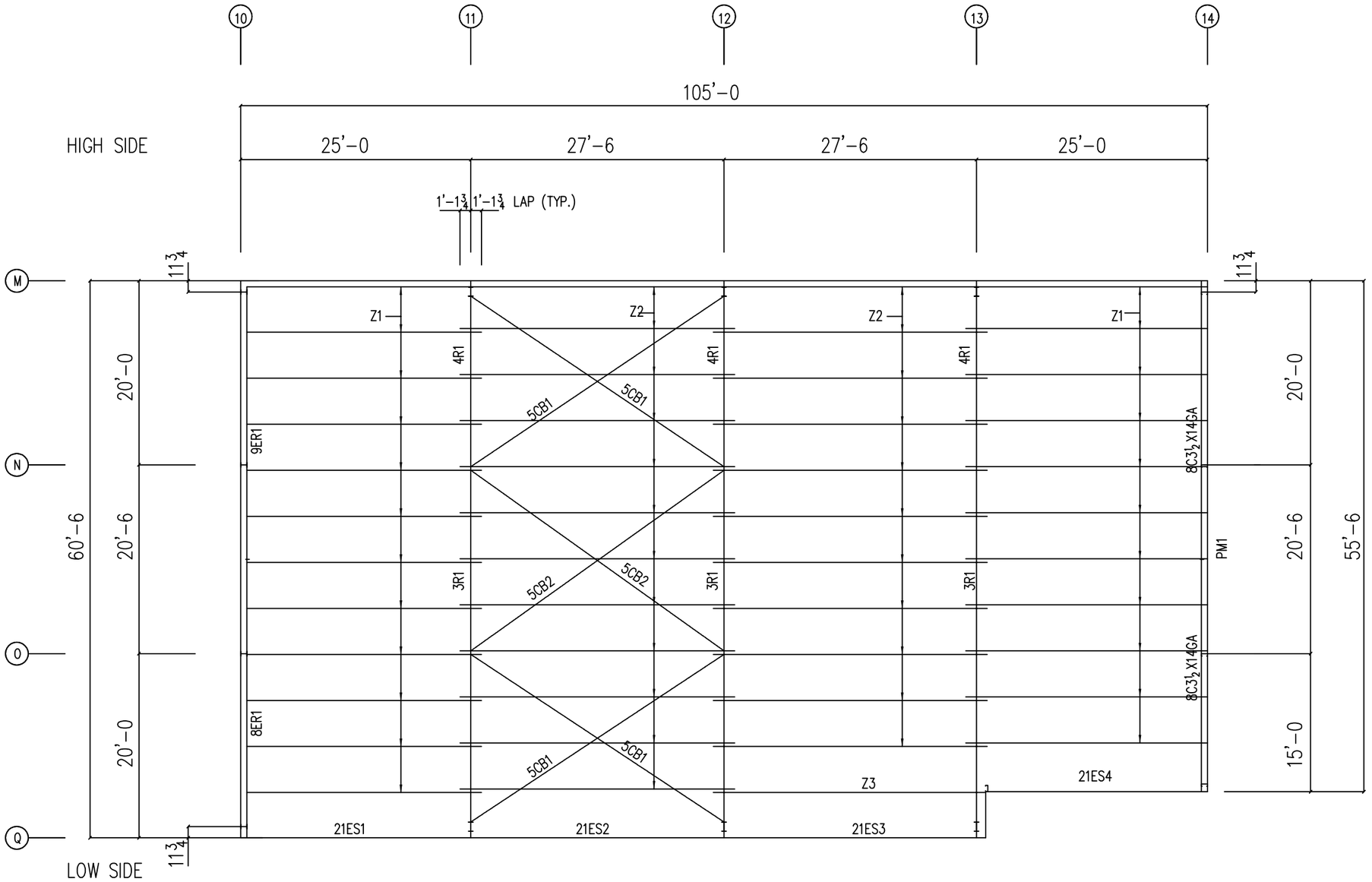
REVISIONS

NO.	DATE	DESCRIPTION	BY	CK'D
0	3/26/15	FOR CONSTRUCTION	PH	

JDM STEEL

DESCRIPTION COVER SHEET
SIZE SS 60'-6 X 105'-0 X 18'-0 L.S.
CUSTOMER MOCK
LOCATION OAK RIDGE, TEXAS
CAD BY

DRN. BY	CK'D BY	DATE	SCALE	JOB NO.	PH	BLDG. DESC. (ALPHA)	SHEET NO.	ISSUE
		3/26/15	NONE				C1 OF 1	0



ROOF FRAMING PLAN

DSN APR. | APR. DATE

STRUCTURAL ONLY
FOUNDATION BY OTHERS

STATE OF TEXAS
PROPERTY NANGIA
96438
LICENSED
PROFESSIONAL ENGINEER

NANGIA ENGR. OF TX
F-8528

DRAWING STATUS

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FINAL DRAWINGS.

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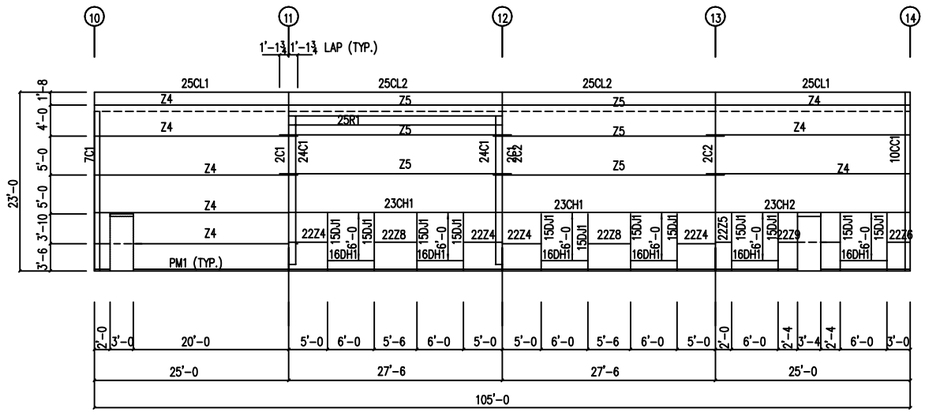
0	3/26/15	FOR CONSTRUCTION	PH	

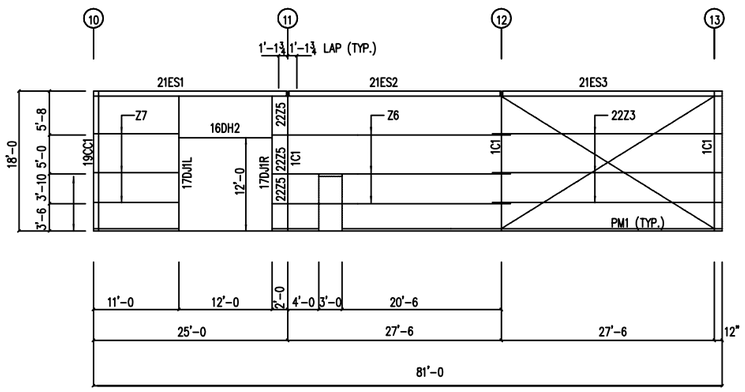
JDM STEEL

DESCRIPTION	ROOF FRAMING PLAN
SIZE	SS 60'-6 X 105'-0 X 18'-0 L.S.
CUSTOMER	MOCK
LOCATION	OAK RIDGE, TEXAS

DRN. BY	CK'D BY	DATE	SCALE	JOB NO.	PH	BLDG. DESC. (A/M/N)	CAD BY SHEET NO.	ISSUE
		3/26/15	NONE				E1 OF 4	0



SIDEWALL FRAMING
AT LINE"M"



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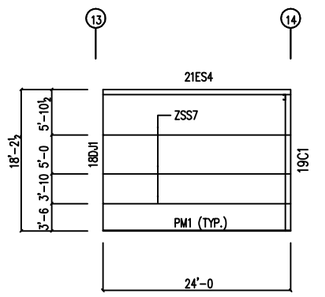

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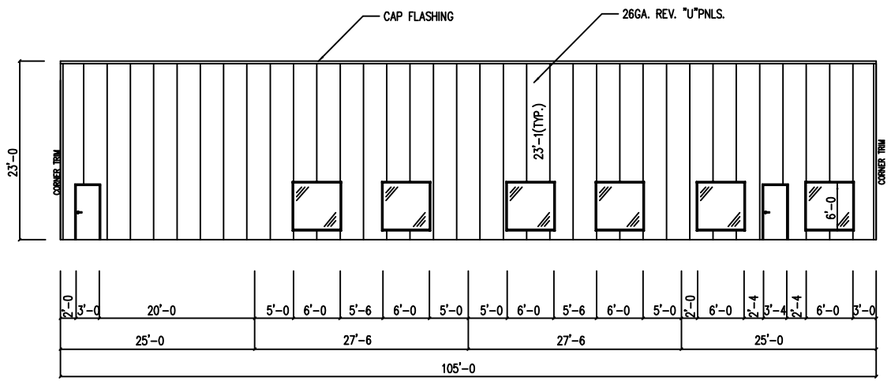

SIDEWALL SHEETING
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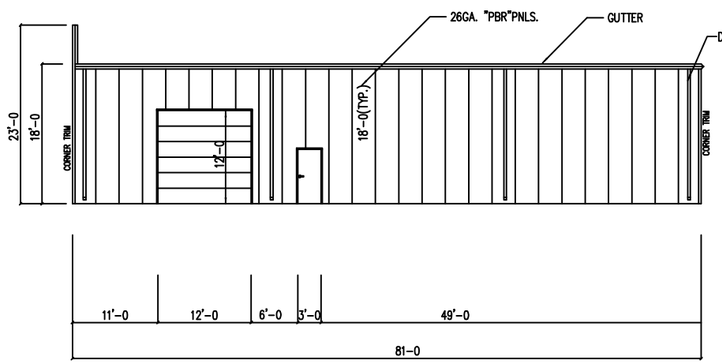

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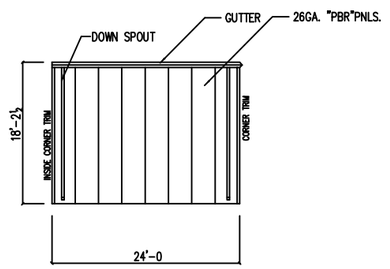

SIDEWALL SHEETING
AT LINE "P"

DSN APR | APR DATE

STRUCTURAL ONLY
FOUNDATION BY OTHERS

STATE OF TEXAS
ROBERT V. NANGIA
86528
LICENSED
PROFESSIONAL ENGINEER

NANGIA ENGR. OF TX
F-8528

DRAWING STATUS

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FINAL DRAWINGS.

REVISIONS

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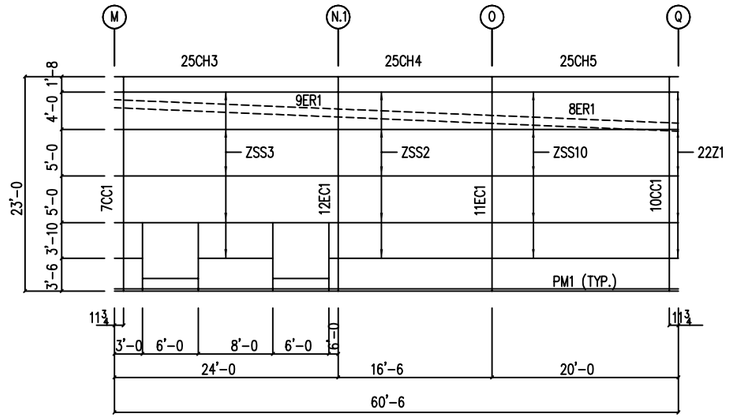
0	3/26/15	FOR CONSTRUCTION	PH	

JDM STEEL

DESCRIPTION SIDEWALL ELEVATIONS
SIZE SS 60'-6 X 105'-0 X 18'-0 L.S.
CUSTOMER MOCK
LOCATION OAK RIDGE, TEXAS

DRN. BY	CK'D BY	DATE	SCALE	JOB NO.	PH	BLDG. DESC. (ALPHA)	CAD BY	SHEET NO.	ISSUE
		3/26/15	NONE					E2 OF 4	0



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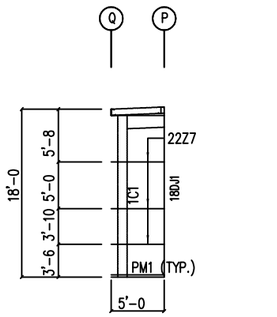

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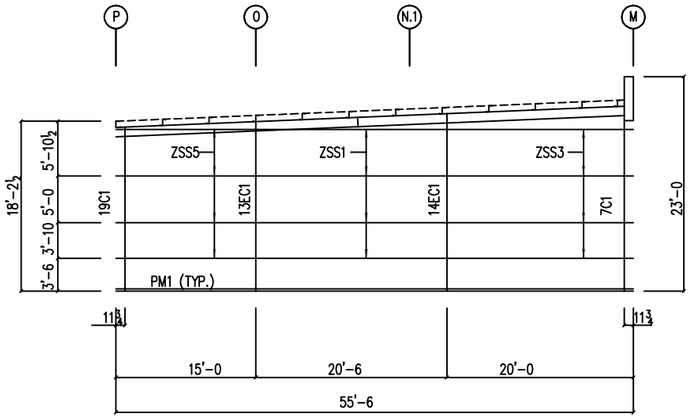

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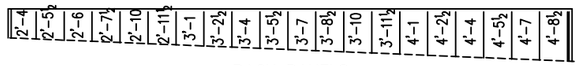
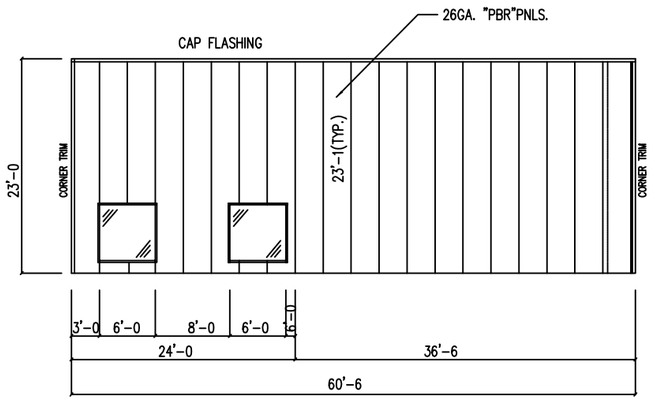


BACK PANELS



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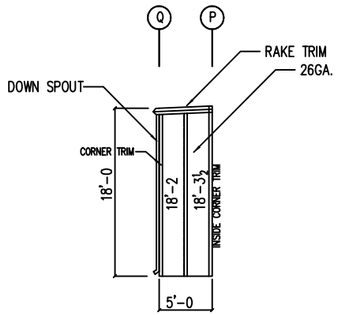

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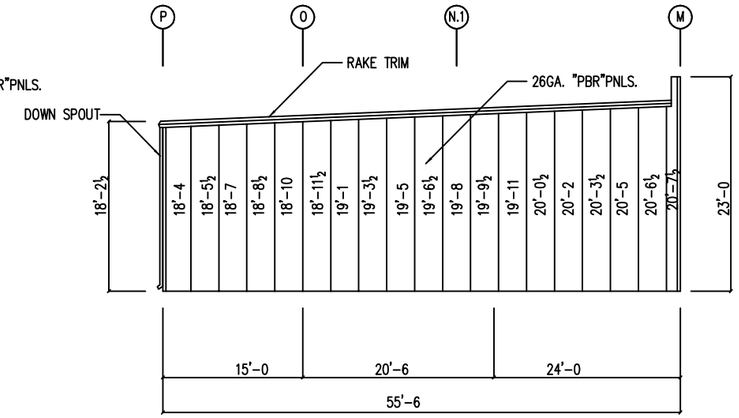

ENDWALL SHEETING

AT LINE "14"

DSN APR | APR DATE

STRUCTURAL ONLY
FOUNDATION BY OTHERS

STATE OF TEXAS
ROBERT V. NANGIA
95428
PROFESSIONAL ENGINEER

NANGIA ENGR. OF TX
F-8528

DRAWING STATUS

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FINAL DRAWINGS.

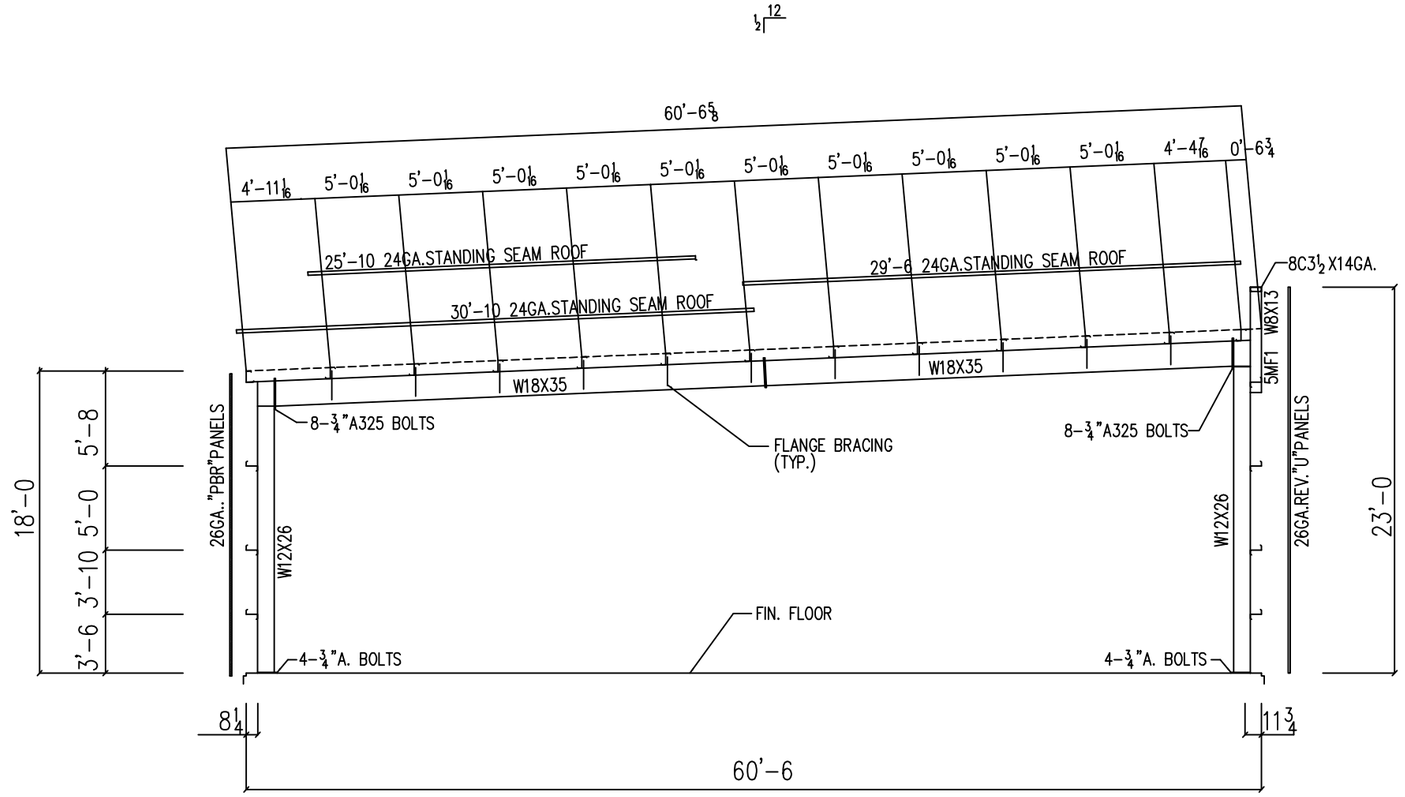
REVISIONS

NO.	DATE	DESCRIPTION	BY	CK'D
0	3/26/15	FOR CONSTRUCTION	PH	

JDM STEEL

DESCRIPTION ENDWALL ELEVATIONS
SIZE SS 60'-6 X 105'-0 X 18'-0 L.S.
CUSTOMER MOCK
LOCATION OAK RIDGE, TEXAS

DRN. BY	CK'D BY	DATE	SCALE	JOB NO.	PH	BLDG. DESC. (ALPHA)	CAD BY	SHEET NO.	ISSUE
		3/26/15	NONE					E3 OF 4	0



CROSS SECTION

AT LINES "11,12, & 13"

DSN APR. | APR. DATE

STRUCTURAL ONLY
FOUNDATION BY OTHERS

STATE OF TEXAS
ROBERT V. NANGIA
96528
LICENSED
PROFESSIONAL ENGINEER

NANGIA ENGR. OF TX
F-8528

DRAWING STATUS

☐ FOR APPROVAL:
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☒ FOR CONSTRUCTION:
FINAL DRAWINGS.

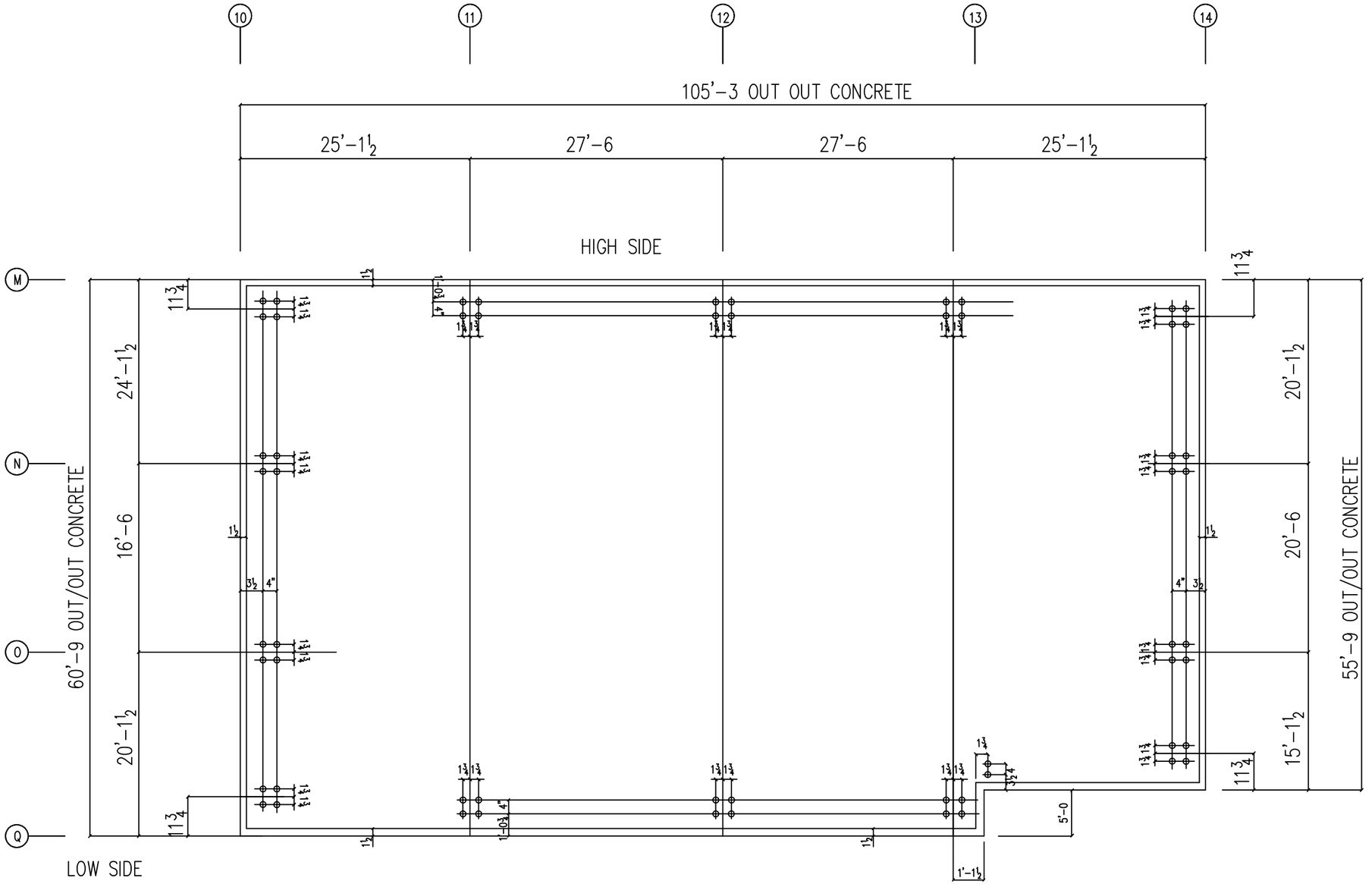
REVISIONS

NO.	DATE	DESCRIPTION	BY	CK'D
0	3/26/15	FOR CONSTRUCTION	PH	

JDM STEEL

DESCRIPTION	CROSS SECTION
SIZE	SS 60'-6 X 105'-0 X 18'-0 L.S.
CUSTOMER	MOCK
LOCATION	OAK RIDGE, TEXAS

DRN. BY	CK'D BY	DATE	SCALE	JOB NO.	PH	BLDG. DESC. (A/M/W)	CAD BY SHEET NO.	ISSUE
		3/26/15	NONE				E4 OF 4	0



ANCHOR BOLT PLAN

DSN APR. | APR. DATE

STRUCTURAL ONLY
FOUNDATION BY OTHERS

STATE OF TEXAS
ROBERT V. NANGIA
85328
LICENSED
PROFESSIONAL ENGINEER

NANGIA ENGR. OF TX
F-8528

DRAWING STATUS

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☒ FOR CONSTRUCTION:
FINAL DRAWINGS.

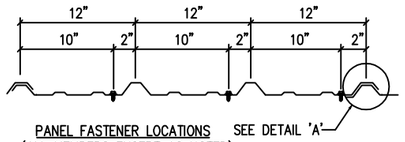
REVISIONS

NO.	DATE	DESCRIPTION	BY	CK'D
0	3/26/15	FOR CONSTRUCTION	PH	

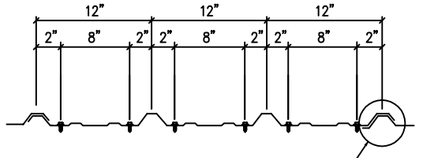
JDM STEEL

DESCRIPTION	ANCHOR BOLT PLAN
SIZE	SS 60'-6 X 105'-0 X 18'-0 L.S.
CUSTOMER	MOCK
LOCATION	OAK RIDGE, TEXAS

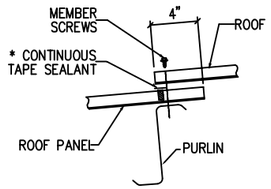
DRN. BY	CK'D BY	DATE	SCALE	JOB NO.	PH	BLDG. DESC. (ALPHA)	CAD BY SHEET NO.	ISSUE
		3/26/15	NONE				AB1 OF 1	0



PANEL FASTENER LOCATIONS SEE DETAIL 'A'
(ALL MEMBERS EXCEPT AS NOTED)

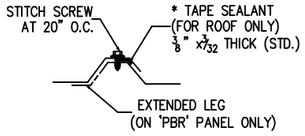


PANEL FASTENER LOCATIONS SEE DETAIL 'A'
(EAVE MEMBER, PEAK MEMBER AND ENDLAPS)



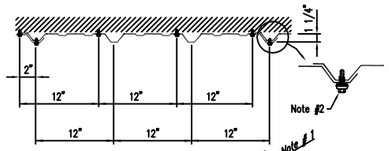
SECTION THRU PANEL ENDLAPS AND PEAK PURLIN

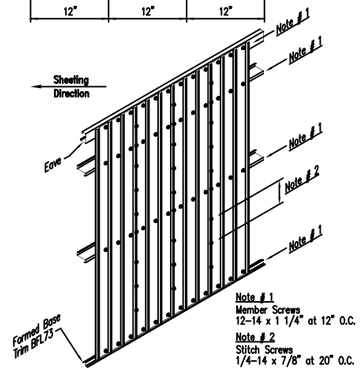
* 1" WIDE x 3/32 THICK MASTIC (OPTIONAL) MUST BE SPECIFIED ON THE WORK ORDER.



DETAIL 'A'

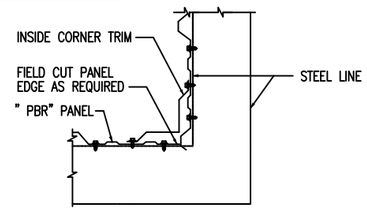
'PBR' AND 'R' PANEL AT ROOF



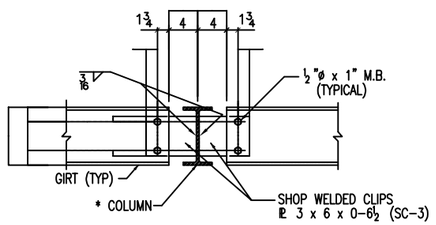


Note # 1
Member Screws
12-14 x 1 1/4" at 12" O.C.
Note # 2
Stitch Screws
1/4-14 x 7/8" at 20" O.C.

Fastener Location "PBR" Panel At Wall

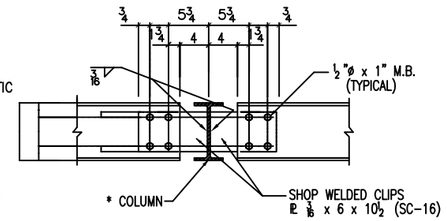


INSIDE CORNER TRIM DETAIL "PBR" PANEL



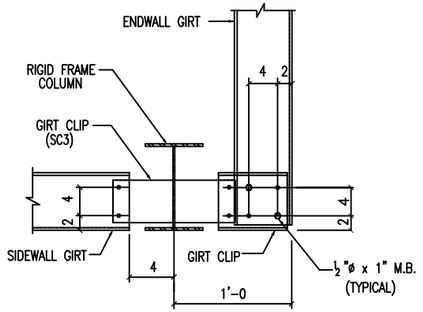
FLUSH MAIN FRAME GIRT CONN.
(SHORT CLIP CONDITION)

* ENDWALL COLUMN CAN BE A SINGLE CEE, DOUBLE CEE BUILT-UP PLATES OR MILL SHAPED MEMBER.

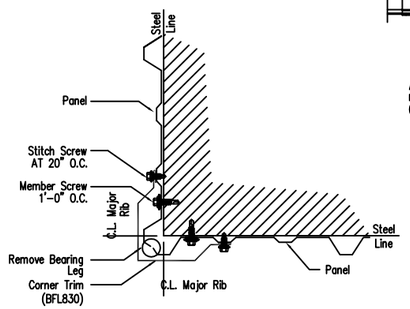


FLUSH MAIN FRAME GIRT CONN.
(LONG CLIP CONDITION)

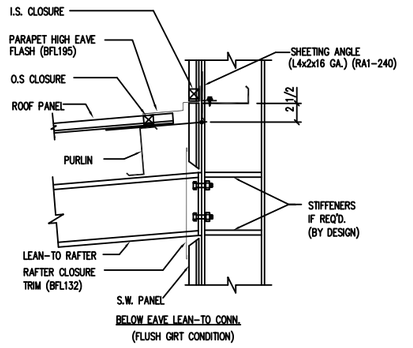
* ENDWALL COLUMN CAN BE A SINGLE CEE, DOUBLE CEE BUILT-UP PLATES OR MILL SHAPED MEMBER.



MAIN FRAME COLUMN GIRT CONN.
(W FLUSS SIDEWALL)

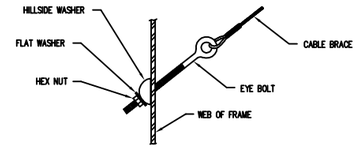


"PBR" Panel Outside Corner Trim



BELOW EAVE LEAN-TO CONN.
(FLUSH GIRT CONDITION)

LEAN-TO CONNECTION TO MAIN FRAME COLUMN (FLUSH GIRTS)



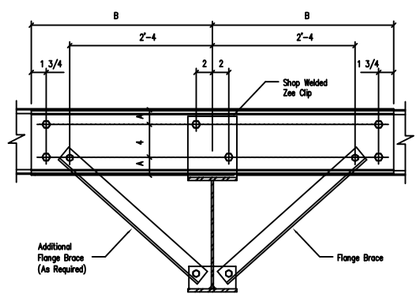
CABLE BRACE TO FRAME DETAIL

CABLE OR ROD BRACE TO FRAME CONNECTION

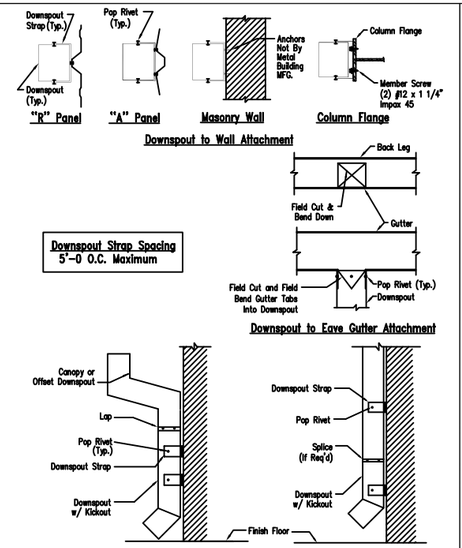
Zee	A
8"	2"
10"	3"
12"	4"

NOTE:
All Bolts are 1/2" x 1" A307 M. Bolts (Typ. U.N.)

Lap	B	Pattern
Long	1'-2 3/4"	LL
Extra Long	2'-5 3/4"	XX
Super	3'-1 3/4"	UU

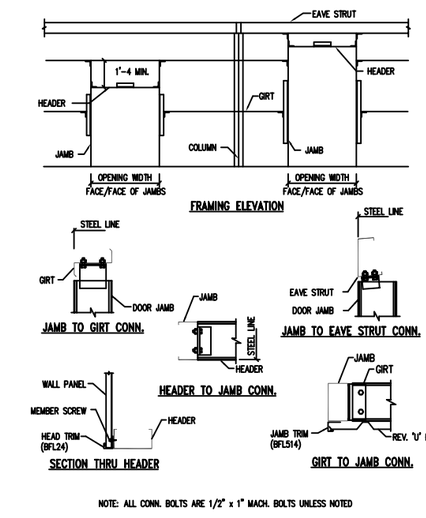


Interior Bay Purlin/Girt Framing



Downspout Detail

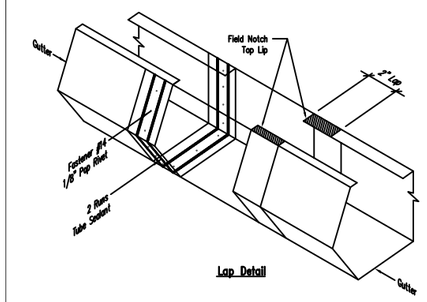
REV.	NO.	BY	CHK'D.	CHK'D.	NOTE: These drawings are intended to depict general installation of item(s) described above. Some item(s) may have been omitted for clarity of presentation. Consult your erection manual or additional S-Sheets for further guidelines and/or clarifications.	DRAWING NO.
	1.1	CT		6/28/01		NS9



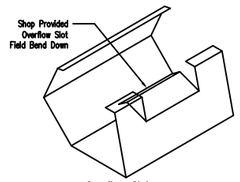
NOTE: ALL CONN. BOLTS ARE 1/2" x 1" MACH. BOLTS UNLESS NOTED

FRAMED OPENING FRAMING DETAILS

REV.	NO.	BY	CHK'D.	CHK'D.	NOTE: These drawings are intended to depict general installation of item(s) described above. Some item(s) may have been omitted for clarity of presentation. Consult your erection manual or additional S-Sheets for further guidelines and/or clarifications.	DRAWING NO.
	1.0	FM		4/15/01		NS21



Lap Detail



Overflow Slot

Gutter Lap Detail

REV.	NO.	BY	CHK'D.	DATE	NOTE: These drawings are intended to depict general installation of item(s) described above. Some item(s) may have been omitted for clarity of presentation. Consult your erection manual or additional NS-Sheets for further guidelines and/or clarifications.	DRAWING NO.
	1.0	CT		6/28/01		NS10A

DSN'D APR'D | APR'D DATE

STRUCTURAL ONLY FOUNDATION BY OTHERS

STATE OF TEXAS
GARY V. NANGIA
86528
LICENSED PROFESSIONAL ENGINEER

NANGIA ENGR. OF TX
F-8528

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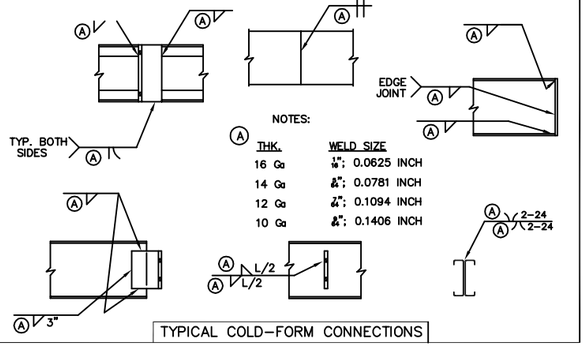
REVISIONS

NO.	DATE	DESCRIPTION	BY	CK'D
0	3/26/15	FOR CONSTRUCTION	PH	

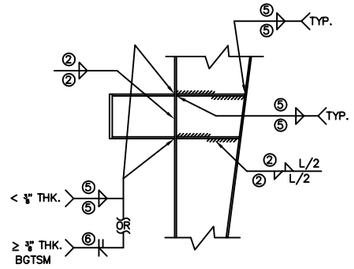
JDM STEEL

DESCRIPTION STANDARD DETAILS
SIZE SS 60'-6 X 105'-0 X 18'-0 L.S.
CUSTOMER MOCK
LOCATION OAK RIDGE, TEXAS
CAD BY

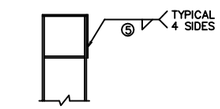
DRN. BY	CK'D BY	DATE	SCALE	JOB NO.	PH	BLDG. DESC. (Purlin)	SHEET NO.	ISSUE
		3/26/15	NONE				S1 OF 1	0



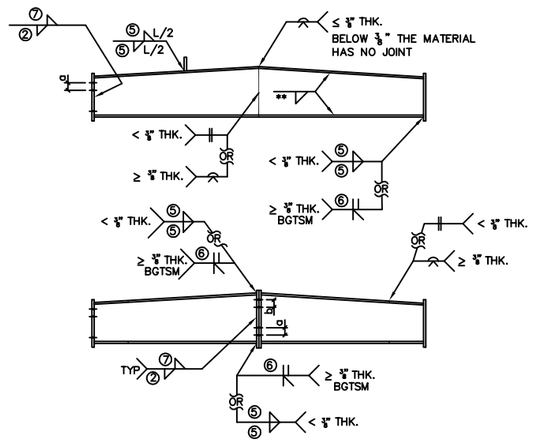
TYPICAL COLD-FORM CONNECTIONS



CANOPY LUG



KNEE WITH FLANGE THICKNESS BUILT UP BY SCAB PLATE.



** NOTE: SIZES OF FILLET WELD FOR WEB TO FLANGE WELD.

WEB THICKNESS	FLANGE THICKNESS		
	3/16"	1/4" TO 1/2"	OVER 1/2"
10 GA. & 3/16"	3/16	SEE NOTE 2	SEE NOTE 2
1/4"	SEE NOTE 1	3/16	
5/16"		1/4"	
3/8"		5/16	
OVER 3/8"	SEE NOTE 3		

NOTES:

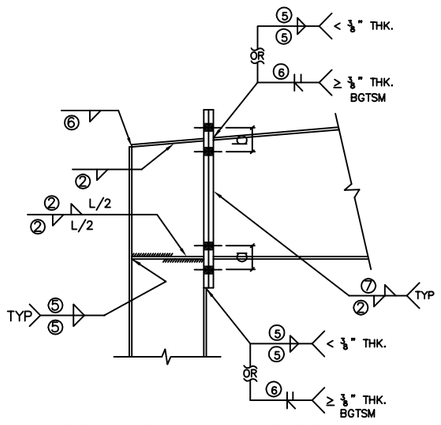
1. 3/16" FLANGES ARE NOT TO BE USED FOR WEB THICKNESS OF 1/4" OR OVER UNLESS SPECIFIED BY ENGINEERING.
2. WELD SIZE EQUALS TO THICKNESS OF WEB OR SEE NOTE 5.
3. FOR WEB THICKNESS OVER 3/8" ALL FILLET SIZES ARE TO BE SPECIFIED BY ENGINEERING.
4. WELD BOTH SIDES OF WEB TO FLANGE 3" BEYOND BOTH ENDS OF BRACKET.
5. FLANGE TO FLANGE OR FLANGE TO CONNECTION PLATE WELD SIZES ARE DETERMINED BY THE FOLLWING CRITERIA:

$t_f \leq 3/8"$	3/16" FILLET
$3/8" < t_f \leq 3/4"$	⟍ WITH 1/4" FILLET
$t_f > 3/4"$	⟍ WITH 5/16" FILLET

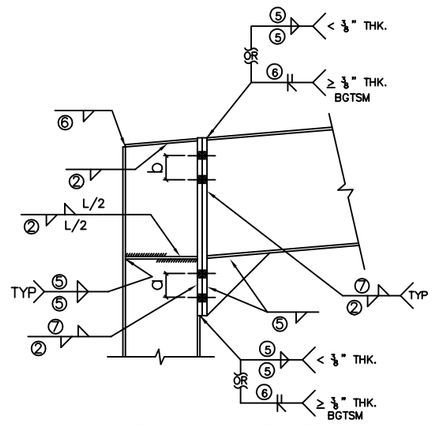
WELD NEED NOT EXCEED THICKNESS OF THINNER PART JOINED.

6. WELD SIZE IS TO BE 1/16" LESS THAN THICKER PLATE, BUT NOT TO EXCEED THICKNESS OF THINNER PLATE.
7. OPPOSITE SIDE WELD LENGTH TO BE a DIMENSION PLUS 3 INCHES, AND b DIMENSION PLUS 3 INCHES.

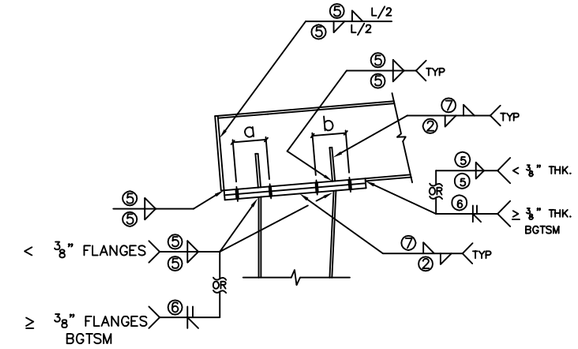
NOTE!!!
BGTSM = BACK GOUGE TO SOLID METAL (TYPICAL)



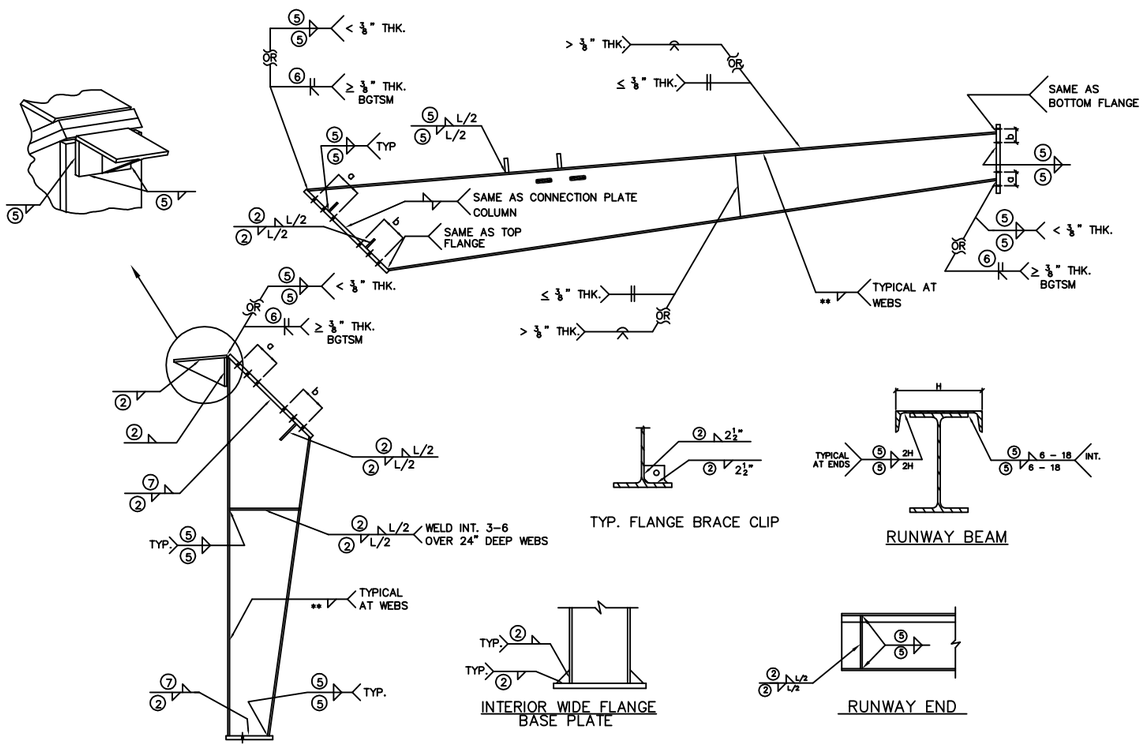
STRAIGHT COLUMN TYPE 1



STRAIGHT COLUMN TYPE 2



EXPRESS FRAME

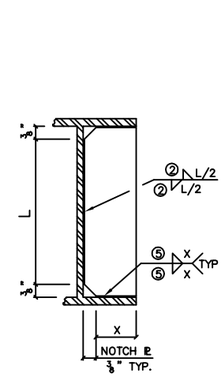


TYP. FLANGE BRACE CLIP

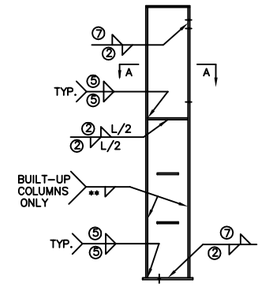
RUNWAY BEAM

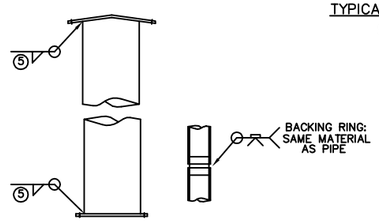
INTERIOR WIDE FLANGE BASE PLATE

RUNWAY END



TYPICAL STIFFENER DETAIL
SECTION A-A





INTERIOR COLUMN CONNECTION PLATES

DSN APR. | APR DATE

STRUCTURAL ONLY
FOUNDATION BY OTHERS

STATE OF TEXAS
ROBERT V. NANGIA
95428
LICENSED PROFESSIONAL ENGINEER

NANGIA ENGR. OF TX
F-8528

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REVISIONS

NO.	DATE	DESCRIPTION	BY	CK'D
0	3/26/15	FOR CONSTRUCTION	PH	

JDM STEEL

DESCRIPTION	WELD SHEET
SIZE	SS 60'-6 X 105'-0 X 18'-0 L.S.
CUSTOMER	MOCK
LOCATION	OAK RIDGE, TEXAS
CAD BY	

DRN. BY	CK'D BY	DATE	SCALE	JOB NO.	PH	BLDG. DESC. (A/M/A)	SHEET NO.	ISSUE
		3/26/15	NONE				W1 OF 1	0

GENERAL HVAC NOTES (APPLY TO ALL SHEETS)

- THE DRAWINGS ARE SCHEMATIC IN NATURE AND SHOW APPROXIMATE LOCATIONS OF EQUIPMENT, DUCTWORK ETC. IT IS IT IS CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY LOCATIONS OF NEW EQUIPMENT, DUCTWORK ETC.
- CONTRACTOR SHALL GUARANTEE LABOR AND MATERIALS FOR ONE(1) YEAR.
- CONTRACTOR SHALL, AT HIS OWN EXPENSE, OBTAIN ALL NECESSARY PERMITS, PAY ALL LEGAL FEES AND CHARGES PERTAINING TO THE WORK UNDER THIS SECTION, AND COMPLY W/ ALL NATIONAL CODES, STATE AND LOCAL MUNICIPAL BUILDING CODES, SAFETY LAWS, ORDINANCES AND REGULATIONS REGARDING CODES, SAFETY LAWS APPLICABLE TO PROJECT.
- CONTRACTOR SHALL PRODUCE RECORD DRAWINGS ON REPRODUCIBLE MEDIA.
- REFER TO ARCHITECTURAL REFLECTED CEILING PLANS FOR TYPE OF CEILING AND LOCATION OF CEILING DEVICES.
- PLENUMS ARE CROWDED AND NOT ALL OBSTACLES ARE INDICATED. ALLOW FOR ADDITIONAL DUCT OR PIPE OFFSETS TRANSITIONS NOT INDICATED ON DRAWINGS.
- SEAL ALL NEW OR EXISTING PENETRATIONS OF RATED WALLS AND EXTERIOR WALLS.
- PROVIDE ANY REQUIRED TEMPORARY UTILITIES.
- SCHEDULE ALL SERVICE INTERRUPTIONS IN ADVANCE WITH THE OWNER.
- VISIT SITE PRIOR TO BIDDING. NO EXTRAS WILL BE ALLOWED FOR CONDITIONS THAT COULD BE READILY OBSERVED.
- DO NOT RUN DUCTS OVER ELECTRICAL PANELS.
- WHERE SUPPLY OR RETURN GRILLS OR DIFFUSERS ARE INSTALLED IN FIRE RATED WALL OR CEILING, INSTALL FIRE DAMPER AHEAD OF IT AS PART OF THE DIFFUSER OR GRILL.
- INSTALL FIRE DAMPER WHEREVER FIRE WALLS ARE PENETRATED BY DUCTWORK.

HVAC SPECIFICATIONS

DEMOLITION:

NOT APPLICABLE. THIS IS ALL NEW.

DUCTWORK:

DO NOT FABRICATE DUCT FROM THESE DRAWINGS, FIELD VERIFY ALL DIMENSIONS AND AVAILABLE SPACE. DIMENSIONS GIVEN ON DRAWINGS ARE INSIDE FREE AREA. BALANCE DAMPERS IN ALL SUPPLY AND RETURN BRANCHES. BRANCH TAKEOFFS SHALL HAVE 45° ENTRY FITTING W/ VOLUME DAMPER. PROVIDE ALL SUPPLY ELBOWS W/ TURNING VANES.

DUCT DIMENSIONS SHOWN ARE TYPICAL AND MAY BE ADJUSTED TO FIT CONSTRUCTION METHOD AND LOCATION WITHOUT DECREASING THE CROSS-SECTIONAL AREA SPECIFIED. VERIFY CLEARANCES THROUGH ALL STRUCTURAL OPENINGS BEFORE FABRICATION.

FIBERGLAS DUCT: FIBERGLAS 1.50" DUCTBOARD WITH FOIL-SCCRIM-KRAFT FACING CONSTRUCTED, REINFORCED AND CONFORMED TO SMACNA, NAIMA OR TIMA STANDARDS FOR LOW VELOCITY DUCT. (<2" STATIC).

PIPING:

A/C CONDENSATE DRAIN SHALL BE INSULATED COPPER OR GALVANIZED STEEL INSIDE BLDG, AND PVC SUPPORTED ON TREATED WOOD BLOCKS ON THE ROOF. SLOPE PIPE TO OUTLET AND PROVIDE 4" DEEP TRAP W/ CLEANOUT PLUGS.

ROUTE CONDENSATE DRAIN AS SHOWN OR TO NEAREST FLOOR DRAIN.

INSULATION:

ALL INSULATION SHALL HAVE FLAME SPREAD LESS THAN 25, SMOKE DEVELOPED LESS THAN 50 AS PER ASTM E84, NFPA 255, UL 273. EXTERNAL DUCT WRAP- 2" THICK, R=5.0 INSTALLED, FOIL FACE FLEXIBLE FIBER GLASS. ADHERE TO DUCT W/ VAPOR BARRIER-TYPE ADHESIVE. OVERLAP ALL JOINTS, COVER ALL JOINTS OR BREAKS W/ GLASS FAB IMBEDDED IN VAPOR BARRIER MASTIC.

SPLIT SYSTEM AIR CONDITIONING UNITS :

AC UNITS SHALL BE STD EFFICIENCY, ELECTRIC, DX, SINGLE ZONE, CONSTANT VOLUME UNITS, UL OR CSA LISTED AND ARI CERTIFIED, INSULATED CABINET. COILS SHALL BE COPPER TUBE W/ ALUMINUM FINS. MANUAL OUTSIDE AIR DAMPER, LOW AMBIENT OPERATION, CRANKCASE HEATERS AND OVERLOAD PROTECTION, TIME DELAY RELAY, ANTI-SHORT CYCLE, THRU-THE-BASE POWER AND CONTROL WIRING; ROOF CURB; STATICALLY AND DYNAMICALLY BALANCED, ADJUSTABLE SHEAVE SUPPLY FAN W/ VIBRATION ISOLATION. FILTER RACK FOR 2" CARTRIDGE TYPE. ROUTE CONTROL WIRES INSIDE UNIT; CONTROL WIRES SHALL BE IN CONDUIT IF ROUTED OUTDOORS. UNIT SHALL BE SINGLE POINT ELECTRICAL CONNECTION.

AC UNITS SHALL BE TRANE, OR EQUAL FROM CARRIER, YORK, BRYANT OR RUDD.

AIR BALANCE:

ADJUST SYSTEM TO ACHIEVE AIR QUANTITIES SHOWN, THEN ADJUST VOLUMES TO PROVIDE CONSTANT TEMPERATURE (+ 2 F°) THROUGHOUT THE ZONE. SUBMIT REPORT (NEBB OR AABC FORMAT) SHOWING CFM EACH SUPPLY, EXHAUST AND RETURN AIR GRILL AND ACTUAL ROOM TEMPERATURES VS SETPOINTS. INCLUDE OUTSIDE AIR TEMPERATURE, A/C UNIT SUPPLY AND RETURN AIR TEMP, SUPPLY FAN AMPS., RPM AND TOTAL CFM. CALIBRATE ALL THERMOSTATS. RETURN TO PROJECT @ 1 & 3-MONTH INTERVALS AFTER COMPLETION TO MAKE BALANCE ADJUSTMENTS IN RESPONSE TO OWNER'S PERCEIVED COMFORT.

WARRANTY:

FIVE(5) WARRANTY, PARTS ONLY, ON COMPRESSORS.

CONTROLS:

ELECTRICAL SYSTEM, INCLUDING REQUIRED WIRING. USE PLENUM RATED CABLING INDOORS, CONDUIT OUTDOORS. THERMOSTATS SHALL BE NON-PROGRAMMABLE, AUTOMATIC CHANGEOVER.
SEQUENCE OF CONTROL FOR A/C COOLING - FAN RUNS CONTINUOUSLY, COMPRESSOR(S) AND HEATING UNIT ARE SEQUENCED BY ZONE THERMOSTAT. FOR RTUS, INSTALL DUCT SMOKE STATS(PER DIVISION 16) THAT SHUT DOWN UNIT WHEN ACTIVATED BY PRODUCTS OF COMBUSTION

PLUMBING SPECIFICATIONS

DEMOLITION:

DAMAGE TO EXISTING MATERIAL/EQUIPMENT SHALL BE REPAIRED AT NO ADDITIONAL COST TO OWNER.
RESUPPORT ANY REMAINING PIPING THAT WAS SUPPORTED BY WALLS BEING REMOVED. GIVE DEMO'D EQUIPMENT TO OWNER OR DISPOSE OF SUCH IF THE OWNER DOES NOT WANT IT.

SHOP DRAWINGS:

SUBMIT ON ALL FIXTURES AND TRIM.

ACCESS DOORS:

MILCOR OR EQUAL AS REQUIRED FOR ACCESS TO ALL VALVES, CONTROLS, WATER HAMMER ARRESTORS, OR OTHER DEVICES REQUIRING ATTENTION. DOORS SHALL MATCH WALL OR CEILING RATING.ARCHITECT MUST APPROVE LOCATION AND APPEARANCE OF ALL ACCESS DOORS.

PIPING:

DOMESTIC HOT/COLD WATER - ASTM B88 TYPE L COPPER. SYSTEM SHALL BE DRAINABLE.
WASTE AND VENT - DWV PVC

FLUSH AND STERILE WATER PIPE - FOR PIPE 1" OR LARGER SUPPORT PIPING EVERY 10'-0"; FOR PIPING 3/4" OR SMALLER SUPPORT EVERY 6'-0". WITH COPPER PIPE USE COPPER HANGRERS OR TAPE AT CONTACT POINT.

INSULATION:

ALL INSULATION SHALL HAVE FLAME SPREAD LESS THAN 25, SMOKE DEVELOPED LESS THAN 50 AS PER ASTM E84, NFPA 255, UL 273. GALVANIZED SHEET METAL SHIELDS AT PIPE HANGERS FOR PIPES 1-1/2" OR LARGER.

FOR DOMESTIC COLD WATER IN EXTERIOR WALLS, PLENUM ABOVE BLDG INSULATION OR OTHER AREAS SUBJECT TO FREEZING - USE 1" FIBER GLASS.
FOR DOMESTIC HOT WATER - USE 1" FIBER GLASS W/ ALL SERVICE JAC.

PLUMBING FIXTURES:

PROVIDE STOP VALVES; WATER HAMMER ARRESTER OR 18" LONG AIR CHAMBER, TAIL PIECES, P-TRAP W/ CLEANOUT PLUG AND GRD JOINT UNIONS @ EVERY FIXTURE. CONFIRM ALL FAUCETS/FITTINGS ARE COMPATIBLE W/ FIXTURES PRIOR TO ORDERING.

GENERAL NOTE RE PLUMBING FIXTURE WATER USE: FIXTURE SHALL BE CERTIFIED TO MEET THE WATER SAVING PERFORMANCE STANDARDS OF TEXAS CIVIL STATUTES SECTION 337.252 AND SHALL BE LISTED WITH THE STATE AS COMPLYING WITH SUCH. ALL FIXTURES SHALL COMPLY WITH THE MORE RESTRICTIVE OF ANSI OR THE FOLLOWING (WHEN TESTED PER ANSI TESTING PROCEDURES): A) MAXIMUM FLOW FROM SINK OR LAVATORY FAUCET OR FAUCET AERATOR SHALL BE 2.20 GALLONS PER MINUTE (GPM) AT A PRESSURE OF 60 PSI. B) MAX VOLUME OF WATER PER FLUSH FROM A TOILET SHALL NOT EXCEED EXCEED 1.60 GALLONS.

GENERAL NOTE RE HANDICAP PLUMBING FIXTURES: FIXTURES SHALL COMPLY WITH REQMNTS OF THE AMERICANS WITH DISABILITIES ACT. PUBLIC LAW 101-336 AND WITH STATE OF TEXAS CIVIL STATUS ARTICLES 7, 601B. FLUSH CONTROLS SHALL BE NO MORE THAN 44" ABOVE FLOOR & ON THE WIDE SIDE OF STALLS. EXPOSED HOT WATER & DRAIN PIPES SHALL BE CONFIGURED TO PROTECT AGAINST CONTACT & SHALL BE INSULATED. DRINKING FOUNTAIN SPOUTS SHALL BE NO HIGHER THAN 36"; FLOW SHALL BE PARALLEL TO UNIT FRON & ARC AT LEAST 4" HIGH. LAVATORIES SHALL BE MINIMUM 17" FRONT TO BACK AND SHALL ALLOW MINIMUM 27" HIGH KNEE CLEARANCE.

HANDICAP WATER CLOSET WC-1 --FLOOR MOUNT, TANK TYPE, 18" RIM HEIGHT, OPEN FRONT PLASTIC WHITE SEAT, NO COVER.
HANDICAP LAVATORY LAV-1 4" CENTERS, VITREOUS CHINA, WALL HUNG CONCEALED ARMS. GRID DRAIN DELTA #500-WF AND SOFT FLO AERATOR. MOUNT AT HANDICAPPED HEIGHT.
FLOOR DRAIN FD-1: J.R. SMITH #2005A-P CASH IRON, NICKEL BRONZE STRAINER, TRAP PRIMER
ELECTRIC WATER HEATER EWH-1: A.O SMITH #DEL-6 6 GALLON STORAGE, 120V/1/60HZ, 3 KW.

GENERAL NOTES: (APPLY TO ALL SHEETS)

G1 ALL CIRCUIT NUMBERS SHOWN ARE FOR REFERENCE ONLY. FIELD VERIFY ACTUAL CIRCUIT NUMBERS REQD AND ADJUST ACCORDINGLY. PROVIDE NEW TYPE-WRITTEN DIRECTORIES REFLECTING ACTUAL CIRCUIT NUMBERS USED, W/NEW AND/OR RELOCATED CIRCUITS CLEARLY INDICATED. NERW DIRECTORIES SHALL INCLUDE DATE AND PROJECT DESCRIPTION, EXAMPLE: 1997 NEW LEASE. DO NOT DISCARD OLD DIRECTORIES. PLACE NEW DIRECTORIES OVER OLD.

G2 EACH CIRCUIT IS SHOWN W/AN INDIVIDUAL HOMERUN. E.C. MAY ELECT TO COMBINE TWO OR MORE CIRCUITS IN ONE COMMON CONDUIT AND W/ COMMON NEUTRAL WHERE ALLOWED (CIRCUITS W/ HIGH CONTENT OF HARMONIC CURRENTS MAY NOT USE COMMON NEUTRAL, EXAMPLE: LIGHTING CIRCUITS W/ELECTRONIC BALLASTS, CIRCUITS W/NON-LINEAR ELECTRONIC POWER SUPPLIES, ETC).
NOTE: AMPACITIES OF CONDUCTORS SHALL BE REDUCED IF MORE THAN 3 CURRENT CARRYING CONDUCTORS ARE INSTALLED IN A RACEWAY. SEE N.E.C. ARTICLE 310-15,8(a) "NOTES TO AMPACITY TABLES OF 0 TO 2000 VOLTS". CONDUCTORS SHALL BE DERATED IF 4 OR MORE WIRES ARE INSTALLED IN ONE CONDUIT (SEE RELATED NOTE "G3" ON TEMPERATURE LIMITATION OF CONDUCTOR AMPACITY), TYP. EXAMPLES FOR 20-AMP. CIRCUITS ARE SHOWN BELOW:

NO. OF CURRENT CARRYING CONDUCTORS	% OF VALUE IN TABLES AS ADJUSTED FOR TEMPERATURE IF NECESSARY	WIRE SIZE, 4 OR MORE WIRES IN ONE CONDUIUT 60°C WIRE (E.G: TW)	WIRE SIZE, 4 OR MORE WIRES IN ONE CONDUIT 75°C WIRE (E.G: THWN)	WIRE SIZE, 4 OR MORE WIRES IN ONE CONDUIT 90°C WIRE (E.G: THHN)
4 THRU 6	80 %	# 12	# 12	# 12
7 THRU 9	70 %	# 10	# 10	# 12
10 THRU 20	50 %	# 8	# 8	# 10
21 THRU 30	45 %	# 6	# 8	# 8
31 THRU 40	40 %	# 6	# 8	# 8
41 & ABOVE	35 %	# 4	# 6	# 6

G3 TEMPERATURE LIMITATIONS ON AAMPACITY OF CONDUCTOR:
THE AMPACITY OF A CONDUCTOR SHALL BE SELECTED BASED ON THE NATIONAL ELECTRICAL CODE ARTICLES 310-15 AND 110-14-(C)-(1),(2),(3). THE TEMPERATURE LIMITATIONS NOTED IN 110-14-(C)-(1),(2),(3) MAY BE PARAPHRASED AS FOLLOWS:
(A) CIRCUITS RATED 100 AMPS. OR LESS:
USE 60°C RATED CONDUCTORS ONLY; 75°C AND 90°C CONDUCTOR MAY BE USED BUT ONLY @ 60°C AMPACITY.
EXCEPTIONS: HIGHER TEMPERATURE CABLES ARE ALLOWED PROVIDED THE EQUIPMMENT IS LISTED AND IDENTIFIED FOR USE WITH THE HIGHER RATED CONDUCTORS.
(B) CIRCUITS RATED MORE THAN 100 AMPS. OR CONDUCTOR LARGER THAN NO. 1:
USE 75°C RATED CONDUCTORS ONLY; 90°C CONDUCTOR MAY BE USED BUT ONLY @ 75°C AMPACITY.
EXCEPTIONS: HIGHER TEMPERATURE CABLES ARE ALLOWED PROVIDED THE EQUIPMMENT IS LISTED AND IDENTIFIED FOR USE WITH THE HIGHER RATED CONDUCTORS.

G4 ALL CONDUIT AND WIRE MUST BE CONCEALED FROM VIEW. EXPOSED CONDUIT AND WIRE ARE NOT ACCEPTABLE.

G5 ALL ELECTRICAL AND COMMUNICATION DEVICES(LIGHT SWITCHES, RECEPTACLES, TELEPHONE, DATA, ETC.) SHALL BE RECESSED MOUNTED UNLESS NOTED OTHERWISE. FIELD VERIFY RECEPTACLE MOUNTING REQUIREMENTS WITH OWNER/ARCHITECT. IF NO REQUIREMENTS, MOUNT ALL DUPLEX RECEPTACLES WITH THE "U" GROUND TERMINAL ON TOP. UNLESS NOTED OTHERWISE OR AS REQUIRED BY OWNER/ARCHITECT.

G6 EQUIPMENT LAYOUT IS BASED ON SQUARE D AND/OR SIEMENS, OTHER MANUFACTURERS SUCH AS GE MAY HAVE LARGER DIMENSIONS. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO PROVIDE EQUIPMMENT WITH SIMILAR DIMENSIONS THAT WOULD FIT IN THE SPACE NOTED.

G7 VERIFY LOCATION OF ALL OUTLETS (POWER & COMMUNICATION) WITH OWNER/ARCHITECT PRIOR TO ROUGH-IN. OWNER RESERVES THE RIGHT TO MOVE ANY OUTLETS 5 FT. IN ANY DIRECTION PRIOR TO ROUGH-IN. ALL RECEPTACLES WITHIN 6 FEET OF ANY WET AREA (EXAMPLE: SINK, DISHWASHER, ETC.) SHALL HAVE GROUND FAULT PROTECTION, WHETHER SPECIFICALLY INDICATED OR NOT ON DRAWINGS.
MOUNTING HEIGHTS OF ALL OUTLETS (RECEPTACLES, SWITCHES, TELEPHONE, DATA, ETC.) IN AREAS WITH COUNTERTOP SHALL BE VERIFIED W/ ARCHITECT/OWNER. GENERALLY ALL OUTLETS ARE TO BE MOUNTED ABOVE COUNTERTOP EXCEPT TELEPHONE, DATA, AND OUTLETS FOR DISPOSERS, UNDERCOUNTER DISHWASHER, UNDERCOUNTER REFRIGERATORS ETC. REFER TO ARCHITECTURAL INTERIOR ELEVATIONS.
ALL WEATHERPROOF/WET LOCATION AND/OR OUTDOOR RECEPTACLES SHALL HAVE "WEATHERPROOF-WHILE-IN-USE" COVERS (NEC ARTICLE 410-57(b). PROVIDE RACO BELL RAYNTITE II COVERS OR EQUAL.

G8 SWITCHES/STARTERS FOR MECH AND OTHER EQUIPMENT: LOCATION OF DISCONNECT SWITCHES, STARTERS, CONTROL STATIONS ETC ARE SHOWN DIAGRAMMATICALLY ON THE DWGS. E.C. SHALL INSTALL SUCH DEVICES IN COMPLIANCE WITH CODE CLEARANCE REQUIREMENTS. REMOVE AND RE-INSTALL DEVICES THAT ARE INACCESSIBLE OR WITH INADEQUATE CODE CLEARANCE.

G9 HVAC EQUIPMENT: OVERCURRENT DEVICES, DISCONNECT SWITCHES, CONDUIT/WIRE ARE SELECTED BASED ON EQUIPMENT SHOWN ON MECH. DRAWINGS. FIELD VERIFY RATINGS OF EQUIP. SUPPLIED BY HVAC CONTRACTOR AND REVISE ELECT. AS REQUIRED TO MATCH ACTUAL EQUIP. SUPPLIED BY MECH. CONTRACTOR.

G10 PROVIDE HOUSE KEEPING CONCRETE PAD (MIN. 4" HIGH) FOR ALL FLOOR MNTD ELECTRICAL EQIP. INCLUDING TRANSFORMERS, SWITCHBOARDS,M.C.C., SWITCHES ETC. PROVIDE ALL REQD. AND NECESSARY UNISTRUT SUPPORT FOR ALL INDOOR/OUTDOOR ELECTRICAL EQUIPMENT.

G11 FIRE WALL: DO NOT INSTALL RECEPTACLES, TELEPHONE, DATA OUTLETS ETC. BACK-TO-BACK IN FIRE/SMOKE PARTITIONS OR WITHIN THE SAME SPACE ENCLOSED BY TWO ADJACENT STUDS. SAME RESTRICTION APPLIES TO ALL CORRIDOR WALLS.

G12 EACH HOMERUN CIRCUIT SHALL BE 2 #10 THWN, 1 #12 GROUND, 1/2" CONDUIT TO NEW 20 AMP./1-POLE BREAKER TYPICAL UNLESS NOTED OTHERWISE IN THE PANEL SCHEDULES. NEW BREAKERS SHALL EXISTING IN STYLE, MAKE AND A.I.C. RATINGS.
ELECT. CONTRACTOR MAY USE EXISTING SPARE BREAKERS IF AVAILABLE.

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GENERAL NOTES (LIGHTING-APPLY TO ALL SHEETS)

A. REFER TO ARCH. REFLECTED CLG PLAN FOR EXACT LOCATION OF LIGHTING FIXTURES.

B.

C. EXISTING FIXTURES: EXISTG FIXTURES INDICATED TO BE RE-USED SHALL BE CLEANED AND RE-LAMPED. E.C. TO EXAMINE CONDITION OF EXISTING BALLASTS, REPLACE IF NOISY/OR INOPERABLE. ALL BALLASTS DATED BEFORE 1976 ARE PRESUMED TO CONTAIN PCB AND SHALL BE REMOVED BY E.C. DISPOSE OF SUCH BALLASTS IN STRICT COMPLIANCE W/APPLICABLE FEDERAL AND STATE LAWS AND LOCAL CODES.
FIXTURES NOT INDICATED TO BE REUSED SHALL BE DELIVERED TO A LOCATION TO BE SPECIFIED BY THE OWNER.

GENERAL NOTES AND ELECTRICAL SPECIFICATIONS

1. PERMITS AND CODES: OBTAIN AND PAY FOR ALL NECESSARY PERMITS. COMPLY W/ALL NATIONAL, STATE & MUNICIPAL LAWS, CODES & ORDINANCES RELATING TO BUILDING & PUBLIC SAFETY. PROVIDE ANY REQD TEMPORARY POWER & UTILITIES. APPLICABLE CODES INCLUDE BUT ARE NOT LIMITED TO: STANDARD BUILDING CODE, NEC 1996, LIFE SAFETY CODE(NFPA 101), TEXAS ACCESSIBILITY STDS.
2. MATERIAL: ALL MATERIALS SHALL BE NEW, MADE IN USA & UL LISTED. MATERIAL INSTALLATION SHALL COMPLY W/ NEC REQUIREMENTS & BE PERFORMED BY CRAFTMAN SKILLED IN THIS PARTICULAR WORK.
3. EQUIPMENT PROTECTION: PROTECT EQUIP. & WORK FROM DAMAGE DURING HANDLING & INSTALLATION UNTIL COMPLETION OF CONSTRUCTION.
4. GROUNDING: ALL CONDUIT WORK & ELECT. EQUIPMENT SHALL BE EFFECTIVELY AND PERMANENTLY GROUNDED IN ACCORDANCE W/ NEC. PROVIDE GREEN EQUIP.GROUNDING CONDUCTOR W/ ALL POWER, RECEPT., & LIGHTING CIRCUITS.
5. RELATION W/OTHER TRADES: COOPERATE WITH OTHER TRADES TO ACCOMPLISH THE FULL INTENT OF THE DOCUMENTS.
6. ACCESS PANEL: PROVICE ACCESS PANELS OR DOORS FOR ALL DEVICES REQUIRING ADJUSTMENT.
7. PLENUMS: PLENUMS ARE CROWDED AND NOT ALL OBSTACLES ARE INDICATED. ALLOW FOR CIRCUIT OFFSETS & PULL BOXES NOT INDICATED ON DRAWINGS.
8. PLASTER, GYPSUM BOARD OR OTHER NON-ACCESSABLE CEILINGS: MINIMIZE CUTTING & PATCHING BY INSTALLING CONDUIT PRIOR TO CEILING/WALL/PARTITION COVER-UP.
9. WORK IN OCCUPIED AREAS: WORK IN, ABOVE, BELOW OR NEAR OCCUPIED AREAS SHALL BE @ OWNER'S CONVENIENCE & MAY BE DURING EVENINGS OR WEEKENDS. SCHEDULE ALL REQUIRED POWER OUTAGES A MINIMUM OF 7 DAYS IN ADVANCE W/ FACILITY ENGINEER. DO NOT TURN OFF ANY POWER SOURCE. ONLY FACILITY ENGR OR HIS AUTHORIZED REPRESENTATIVE MAY DO SO.
10. DRAWINGS: DRAWINGS ARE DIAGRAMMATIC. CONFIRM DIMENSIONS & LOCATIONS IN THE FIELD. IF CONFLICTING DIMENSIONS ARE SHOWN, USE LARGER DIMENSIONS AND VERIFY W/ ARCHITECT. SEE ARCHITECTURAL PLANS & ELEVATIONS FOR EXACT LOCATION OF FIXTURES AND WALL MOUNTED DEVICES.
11. CLEAN UP: I) PROVIDE FOR ISOLATION OF WORK AREAS AND DAILY REMOVAL OF DEBRIS. B) CLEAN ALL EQUIPMENT & FIXTURE LENSES. C) REPLACE ALL BURNED OUT LAMPS. D) TOUCH UP WITH PAINT WHERE REQUIRED.
12. COMPLETE SYSTEM: ALL SYSTEMS SHALL BE COMPLETE AND WORKING AT COMPLETION OF CONSTRUCTION.
13. PANELBOARD DIRECTORIES: IDENTIFY EACH CIRCUIT W/LOAD AND LOCATIONS AND INDICATE W/ TYPED DIRECTORIES.
14. GUARANTEE: GUARANTEE ALL WORK AND MATERIALS FURNISHED UNDER THIS CONTRACT FOR A PERIOD OF ONE YEAR FROM DATE OF ACCEPTANCE BY OWNER AND ARCHITECT.
15. CONDUIT: SHALL BE RIGID GALVANIZED STEEL (RGS) OR ELECTRICAL METALLIC TUBING (EMT) AS MANUFACTURED BY ALLIED, TRIANGLE OR WHEATLAND. INDOOR ABOVE GRADE: EMT OR RGS; OUT DOOR ABOVE GRADE: RGS, IMC OR RIGID ALUMINUM; BELOW GRADE: SCH. 40 PVC OR RGS; UNDER SLAB: SCH 80 PVC. PROVIDE PULL WIRE IN ALL CONDUITS (POWER, FIRE ALARM, TELEPHONE AND OTHER COMMUNICATION CONDUITS). PULL WIRE REQD IN ALL SPARE CONDUITS.
16. WIRE: (TRIANGLE, AMERICAN INSULATED CABLE CO., OR CABLEC)
ALL WIRING SHALL BE IN CONDUIT.
A.) MINIMUM SIZE #12 EXCEPT CONTROLS MAY BE #14. B.) TYPE THHN/THWN STRANDED COPPER THERMOPLASTIC IN DRY LOCATIONS. C.) TYPE THWN IN WET LOCATIONS (OUTDOOR, UNDERGROUND, OR ON ROOF, ETC.). D.) ALL WIRE SHALL BE 98% CONDUCTIVITY COPPER , 600 VOLT. NO ALUMINUM WIRES. E.) WIRE #10 AND SMALLER MAY BE SOLID OR STRANDED, #8 OR LARGER SHALL BE STRANDED. F.) COMMUNICATION WIRE (FIRE ALARM, TELEPHONE, DATA, ETC): PLENUM RATED LOW-SMOKE CABLE MAY BE USED IN LIEU OF WIRE/CONDUIT TYPE INSTALLATION. ALL PLENUM RATED CABLE SHALL BE PROPERLY SUPPORTED BY CABLE TIES, CLIPS ETC. DO NOT LAY COMMUNICATION CABLE DIRECTLY ON TOP OF CEILING TILES.
17. WIRING DEVICES: FURNISH & INSTALL WHERE INDICATED ON DRAWINGS. STYLE AND COLOR TO BE SELECTED BY ARCHITECT. ALL RECEPTACLES SHALL BE "SPEC GRADE" TYPE. ISOLATED POWER RECEPTACLES(IF USED) TO BE ORANGE COLOR, W/CIRCUIT NUMBER & PANEL NAME ENGRAVED ON FACE PLATE. COVER PLATES: HIGH ABUSE NYLON OR STAINLESS STEEL. ALL ELECTRICAL BOXES ON OPPOSITE SIDES OF CORRIDOR WALLS AND FIREWALLS MUST BE SEPARATED BY HORIZONTAL DISTANCE OF NOT LESS THAN 24 INCHES (1991 B.B.C. 4304(f).
18. TESTING & CERTIFICATION: CONTRACTOR SHALL DELIVER A WRITTEN REPORT CERTIFYING THAT EVERY RECEPTACLE HAS BEEN TESTED AS FOLLOWS & FOUND ACCEPTABLE:(a) THE PHYSICAL INTEGRITY OF EACH RECEPTACLE SHALL BE CONFIRMED BY VISUAL INSPECTION. (b) THE CONTINUITY OF THE GROUNDING CIRCUIT IN EACH ELECT. RECEPTACLE SHALL BE VERIFIED. (c) CORRECT POLARITY OF THE HOT & NEUTRAL CONNECTIONS IN EACH ELECT. RECEPTACLE SHALL BE CONFIRMED. (d) THE RETENTION FORCE OF THE GROUNDING BLADE OF EACH ELECTRICAL RECEPTACLE (EXCEPT LOCKING-TYPE RECEPTACLES) SHALL BE NOT LESS THAN 115 GRAMS (4 OZ).
19. OUTLET BOXES: SHALL BE GALV. STEEL SUITABLE FOR LOCATION. CEILING OUTLET BOXES SHALL BE 4" OCTAGON. WALL OUTLET BOXES SHALL BE PROPER DESIGN TO ACCOMODATE THE DEVICES REQUIRED - 4 INCH SQUARE W/ RAISED COVER. PROVIDE RACO, STEEL CITY OR APPLETON.
20. IDENTIFICATION: LABEL ALL JUNCTION & PULL BOXES W/PANELS & CIRCUIT NUMBERS. LABEL ALL HOMERUN AND MAJOR CONDUIT W/ HOME PANELS/SWITCHES ETC. AT EVERY 10-FT INTERVAL. MARK ALL BRANCH CONDUIT WITH CIRCUIT NUMBERS AT EACH SURFACE MNTD PANEL LOCATION. FOR RECESSED PANELS, MARK BRANCH CONDUIT IN CEILING PLENUM JUST ABOVE PANELS. ALL PANELS SHALL BE IDENTIFIED WITH 4 ROWS OF TEXT (LETTER HEIGHT SHALL BE 1/4" MINIMUM, WHITE LETTER ON BLACK BACKGROUND), EXAMPLE:
PANEL "XXX" 225 AMPS
120/240V, 1-PHASE, 3-WIRE
FEEDER SIZE: 3# 4/0 THWN, 1-#4 G, 2"C.
FED FROM PANEL "XXX"
21. SWITCHGEAR, TRANSFORMERS, PANELBOARDS: SHALL BE SQUARE D, WESTINGHOUSE/CUTLER HAMMER, SIEMENS/ITE OR GE. MATCH EXISTING WHERE REQUIRED BY OWNER. ALL EQUIPMENT SHALL HAVE COPPER BUSES OR WINDINGS. LOAD-CENTER TYPE PANELBOARDS ARE NOT ACCEPTABLE AND SHALL NOT BE USED. ALL EQUIPMENT SHALL BE LABELED. FOR EACH PANEL: FURNISH & INSTALL ONE SPARE 3/4" CONDUIT FOR EVERY 6 SPARES &/OR SPACES IN THE PANEL. EACH SPARE CONDUIT SHALL BE INSTALLED W/ PULL STRING STUBBED TO J-BOX LOCATED IN ACCESSIBLE CEILING/ PLENUM SPACE. INSTALL A MINIMUM OF ONE SPARE 3/4" CONDUIT FOR EVERY PANEL SHOWN ON PLANS, EVEN IF THERE IS NO SPARES/SPACES IN SOME PANELS.
22. ELECTRICAL SERVICE OUTAGE: SERVICE TO THE EXISTING BLDG SHALL BE MAINTAINED DURING NORMAL WORKING HOURS. ANY SERVICE OUTAGE REQUIRED TO COMPLETE THE WORK SHALL BE THE TIME & FOR THE LENGTH OF TIME AS DIRECTED BY OWNER. ALL PREMIUM TIME SHALL BE INCLUDED IN CONTRACTOR'S BID.
23. RECORD DRAWINGS: MAINTAIN A CONTINUOUS RECORD DURING CONSTRUCTION OF ALL CHANGES IN THE WORK FROM THE ACCOMPANYING DRAWINGS. UPON COMPLETION OF WORK, PURCHASE A SET OF MYLAR REPRODUCIBLES & MAKE CORRECTIONS AS REQUIRED TO REFLECT THE ELECTRICAL SYSTEMS AS INSTALLED. SUBMIT THREE PRINTS OF THE TRACINGS FOR APPROVAL. MAKE CORRECTIONS TO TRACINGS AS DIRECTED & DELIVER MYLAR TRACINGS TO OWNER.
24. JOB SITE VISIT: CONTRACTOR SHALL VISIT THE JOB SITE & GET FAMILIAR W/ ALL EXISTING CONDITIONS THAT WILL AFFECT HIS WORK. NO ADDITIONAL COMPENSATE WILL BE ALLOWED FOR WORK OR ITEMS OMITTED FROM CONTRACTOR'S BID DUE TO FAILURE TO INFORM HIMSELF OF ALL FACTORS AFFECTING HIS WORK.
25. EXISTING FACILITIES: CONTRACTOR SHALL BE RESPONSIBLE FOR LOSS OR DAMAGE TO EXISTING FACILITIES CAUSED BY HIS WORKMEN, AND SHALL BE RESPONSIBLE FOR RAPAIRING OR REPLACING SUCH DAMAGE OR LOSS. CONTRACTOR SHALL ERECT TEMPORARY BARRICADES, W/ NECESSARY SAFETY DEVICES, AS REQUIRED TO PROTECT PERSONNEL & THE GENERAL PUBLIC FROM INJURY, REMOVING ALL SUCH TEMPORARY PROTECTION UPON COMPLETION OF THE WORK. SALVAGE MATERIALS SHALL REMAIN THE PROPERTY OF THE OWNER AND SHALL BE DELIVERED TO SUCH DESTINATION AS DIRECTED BY THE OWNER.
WHERE EXISTING CONSTRUCTION IS REMOVED TO PROVIDE WORKING & EXTENSION ACCESS TO EXISTING UTILITIES, CONTRACTOR SHALL REMOVE CEILING GRID, TILES, DOORS, PIPING, AC DUCTWORK & EQUIPMENT, ETC TO PROVIDE THIS ACCESS & SHALL REINSTATE SAME UPON COMPLETION OF WORK IN AREAS AFFECTED.
26. FIRE STOPS & PENETRATION STOPS: ALL PENETRATIONS THROUGH FIRE RATED FLOORS AND WALLS SHALL BE SEALED WITH CHASE-FOAM, CTC PR-855 FIRE RESISTANT FOAM SEALANT, TO PREVENT THE SPREAD OF SMOKE, FIRE, TOXIC GASES OR WATER THROUGH THE PENETRATION EITHER BEFORE, DURING OR AFTER A FIRE. THE FIRE RATING OF THE PENETRATION SEAL SHALL BE AT LEAST THAT OF THE FLOOR OR WALL INTO WHICH IT IS INSTALLED, SO THAT THE ORIGINAL FIRE RATING OF THE FLOOR OR WALL IS MAINTAINED AS REQUIRED BY ARTICLE 300-21 OF THE NATIONAL ELECTRICAL CODE.
27. TELEPHONE, DATA SYSTEMS: PROVIDE & INSTALL WALL OUTLET BOXES, COVER PLATES AND 3/4' CONDUIT AND PULL STRING STUBBED TO A J-BOX ABOVE ACCESSIBLE CEILING FOR INSTALLATION OF WIRING BY OTHERS.
28. COLOR CODE: CONDUCTORS SHALL BE COLOR CODED AS FOLLOWS (FOLLOW CITY OF OAKRIDGE COLOR CODES IF APPLICABLE)-

	480Y/277V 3-PHASE, 4W	208Y/120V 3-PHASE, 4W	240/120V, 3-PHASE, 4W (DELTA HIGH LEG SYSTEM)	120/240V 1-PH., 3W
PHASE A	BROWN	BLACK	BLACK	BLACK
PHASE B	PURPLE	RED	ORANGE(HIGH LEG)	RED
PHASE C	YELLOW	BLUE	BLUE	- -
NEUTRAL	GRAY OR WHITE	WHITE	WHITE	WHITE
GROUND	GREEN	GREEN	GREEN	GREEN

29. FINAL INSPECTION: AT THE TIME DESIGNATED BY ARCHITECT, THE ENTIRE SYSTEM SHALL BE INSPECTED BY ARCHITECT & THE ENGINEER. CONTRACTOR OR HIS REPRESENTATIVE SHALL BE PRESENT AT THIS INSPECTION. CONTRACTOR SHALL PROVIDE A SET OF AS-BUILT DRAWINGS AND MYLAR REPRODUCIBLES TO OWNER/ARCH. AFTER THE INSPECTION ITEMS NOTED AS NEEDING CHANGES OR CORRECTION TO MEET CONTRACT DOCUMENT SHALL BE CORRECTED OR CHANGED WITHOUT DELAY.

M. S. ESIERE ENGINEERS
REGISTERED # F-11441
MECHANICAL ELECTRICAL PLUMBING
435 FM 1092, # B1-136, STAFFORD
TX 77477
(832) 987-1928.E-MAIL: msemep@gmail.com

Written dimensions on these drawings shall have precedence over scale dimensions. Contractor shall verify and be responsible for all dimensions and conditions on the job and this office must be notified of any variation from the dimensions and conditions shown by these drawings.

MOC (Oak Ridge)
Phase 2 of 2
27312 Spectrum Way
Oak Ridge, TX 77385

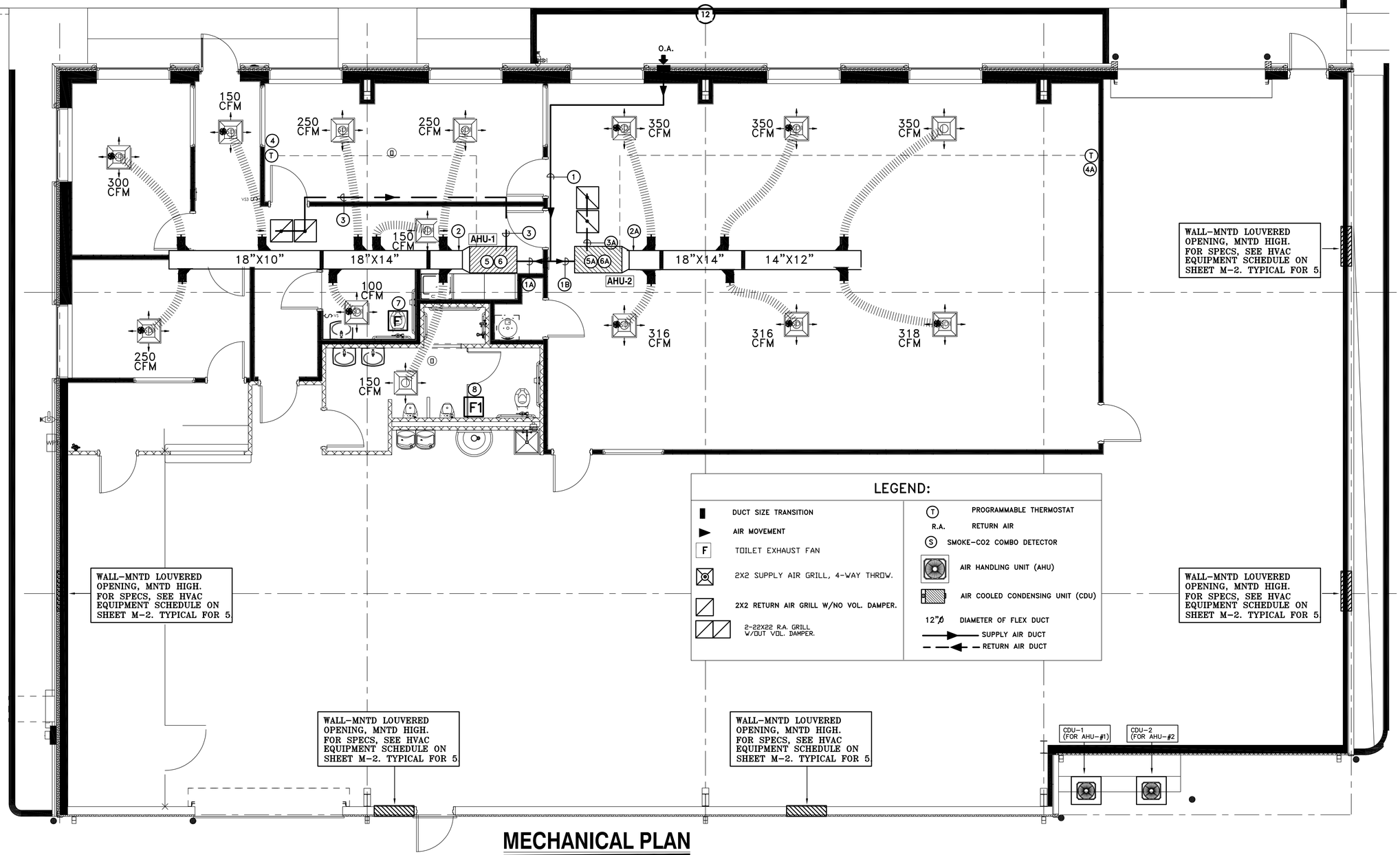
MAY 31, 2015

REVISIONS:

DATE ISSUED:

SHEET:

MEP



WALL-MNTD LOUVERED OPENING, MNTD HIGH. FOR SPECS, SEE HVAC EQUIPMENT SCHEDULE ON SHEET M-2. TYPICAL FOR 5

WALL-MNTD LOUVERED OPENING, MNTD HIGH. FOR SPECS, SEE HVAC EQUIPMENT SCHEDULE ON SHEET M-2. TYPICAL FOR 5

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WALL-MNTD LOUVERED OPENING, MNTD HIGH. FOR SPECS, SEE HVAC EQUIPMENT SCHEDULE ON SHEET M-2. TYPICAL FOR 5

LEGEND:

▮	DUCT SIZE TRANSITION	Ⓣ	PROGRAMMABLE THERMOSTAT
▶	AIR MOVEMENT	R.A.	RETURN AIR
F	TOILET EXHAUST FAN	Ⓢ	SMOKE-CO2 COMBO DETECTOR
⊠	2X2 SUPPLY AIR GRILL, 4-WAY THROW.	⊞	AIR HANDLING UNIT (AHU)
⧄	2X2 RETURN AIR GRILL W/NO VOL. DAMPER.	▨	AIR COOLED CONDENSING UNIT (CDU)
⧄⧄	2-22X22 R.A. GRILL W/OUT VOL. DAMPER.	12"ø	DIAMETER OF FLEX DUCT
		──▶──	SUPPLY AIR DUCT
		– –◀– –	RETURN AIR DUCT

MECHANICAL PLAN

SCALE: 1/4"= 1'-0"

FOR KEYED NOTES THIS SHEET, SEE SHEET M-2

M. S. ESIERE ENGINEERS
REGISTERED # F-11441
MECHANICAL ELECTRICAL PLUMBING
435 FM 1092, # B1-136, STAFFORD
TX 77477
(832) 987-1928.E-MAIL: msemep@gmail.com

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MOC (Oak Ridge)
Phase 2 of 2
27312 Spectrum Way
Oak Ridge, TX 77385

ENGINEER
M. S. ESIERE
52078
MAY 31, 2015

REVISIONS:

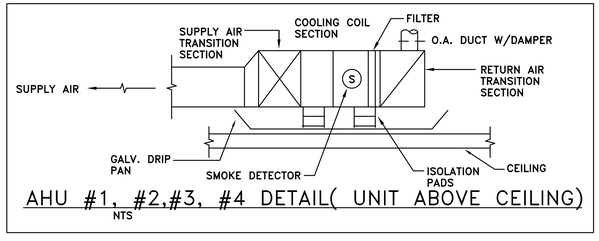
DATE ISSUED:

SHEET:

M-1

HVAC EQUIPMENT SCHEDULE – THIS SHEET

MARK	DESCRIPTION	ELECT.
AHU–#1 OFFICE AREAS	4–TON, FAN COIL UNIT, 48.0 MBTUH TOTAL COOLING, 37.1 MBTUH SENSIBLE, 1,600 CFM SUPPLY AIR, 200 CFM O.A., STD MOTOR & SHEAVE; LENNOX; ESP=0.75", MCA=46.9, MAX FUSE=50A; ESP=0.60", 11.25 KW ELECT HEAT. HIGH EFFICIENCY (SEER=13 MIN), UNIT IS HORIZONTAL SUPPLY, HORIZONTAL RETURN.	208–230/3/60
CDU–#1 OFFICE AREAS	4–TON AIR–COOLED CONDENSING UNIT, SINGLE COMPRESSOR, LRA=140 RLA=24.4, FAN FLA=1.4, MCA=31.9, MAX FUSE=50A LENNOX, HIGH EFFICIENCY SEER=13 (MINIMUM)	208–230/3/60
AHU–#2 TRAINING ROOM AREA	5–TON, FAN COIL UNIT, 60 MBTUH GROSS COOLING, 48.1 MBTUH SENSIBLE, 2,000 CFM SUPPLY AIR, 300 CFM O.A., 1.0 STD MOTOR, LENNOX, HIGH EFFICIENCY (SEER 13 MIN) ESP=1.0", MCA= 53, MAX FUSE=60A., 14.96 KW ELECTRIC HEAT; UNIT IS HORIZONTAL SUPPLY AND HORIZONTAL RETURN.	208–230/3/60
CDU–#2 TRAINING ROOM AREA	5.0–TON AIR–COOLED ONDENSING UNIT, SINGLE COMPRESSOR, LRA=172.0, RLA= 27.1, FAN FLA=3.1, MCA=19.9, MAX FUSE= 30A LENNOX, HIGH EFFFICIENCY (SEER=13 MIN).	208–230/3/60
LOUVERS FOR WAREHOUSE AREA	LOUVERS SHALL BE BEST MODEL BL400 OR EQUAL; 36"X36", EXTRUDED ALUMINUM, STATIONARY, 4" LOUVER DEPTH, 45–DEGREE BLADE ANGLE, MILL FINISH.	–
F	CEILING MOUNTED EXHAUST FAN, 80 CFM, 2.5 SONES, FLA=0.75, 6" ROUND EXHAUST DUCT W/BACK DRAFT DAMPER, INSTALL APPROVED ROOF CAP.	120/1/60
F1	CEILING MOUNTED EXHAUST FAN, 150 CFM, 2.5 SONES, FLA=0.91, 7" ROUND EXHAUST DUCT W/BACK DRAFT DAMPER, INSTALL APPROVED ROOF CAP.	120/1/60



AHU #1, #2,#3, #4 DETAIL(UNIT ABOVE CEILING)

NTS

FLEX DUCT SIZE VS CFM	
50 CFM	4"ø
100 CFM	7"ø
100 CFM	8"ø
150 CFM	8"ø
200 CFM	8"ø
250 CFM	9"ø
300 CFM	9"ø
400 CFM	10"ø
500 CFM	12"ø
600 CFM	12"ø

KEYED NOTES FOR AHU-1, SHEET M-1:

(1) 12"X10" OUTSIDE AIR DUCT FROM WALL LOUVERED OPENING W/ MOTORIZED VOLUME DAMPER SET AT 500 CFM. DAMPER SHALL AUTOMATICALLY SHUT WHEN THE SYSTEM OR SPACE IS NOT IN USE. VENTILATION OUTDOOR AIR DAMPERS SHALL BE CAPABLE OF AUTOMATICALLY SHUTTING OFF DURING PREOCCUPANCY BUILDING WARM–UP, COOL–DOWN, AND SET BACK, EXCEPT WHEN VENTILATION REDUCES ENERGY COSTS (E.G. NIGHT PURGE) OR WHEN VENTILATION MUST BE SUPPLIED TO MEET CODE REQUIREMENTS.

(1A) 8" ROUND DUCT W/VOLUME DAMPER SET AT 200 CFM.

(2) 18"X16" HORIZONTAL SUPPLY AIR DUCT W/VOLUME DAMPER SET AT 1,600 CFM.

(3) 18"X14" HORIZONTAL RETURN AIR DUCT, W/VOLUME DAMPER SET AT 1,400 CFM.

(4) SOLID STATE PROGRAMMABLE THERMOSTAT W/ LOCKABLE COVER FOR AHU #6. THERMOSTAT SHALL BE CAPABLE TO SET BACK OR SHUT DOWN THE SYSTEM BASED ON DAY OF WEEK AND TIME OF DAY. FOR ADDITIONAL REQUIREMENT REFER TO IECC SECTION 803.2.3.1.

(5) PRIMARY AC CONDENSATE DRAIN : ROUTE FULL SIZE INSULATED AC UNIT CONDENSATE DRAIN FROM AHU–#1 TO CONNECT TO LAVATORY TAIL PIPE DRAIN VIA TEE FITTING IN NEAREST REST ROOM.

(6) AUXILLIARY AC CONDENSATE DRAIN: ROUTE 1" INSULATED AUXILLIARY AC CONDENSATE DRAIN TO SPILL OVER LAV IN NEAREST REST ROOM CEILING. PROVIDE CEILING ESCUTCHEON PLATE.

(7) CEILING MOUNTED EXHAUST FAN, 50 CFM, 2.5 SONES, FLA=0.75; BROAN OR EQUAL. RUN 4" ROUND EXHAUST DUCT W/BACK DRAFT DAMPER UP TO RAIN CAP ON THE ROOF. INSTALL BIRD SCREEN AND MANUFACTURER'S RECOMMENDED ROOF CAP.

(8) CEILING MOUNTED EXHAUST FAN, 150 CFM, 2.5 SONES, FLA=0.95; BROAN OR EQUAL. RUN 8" ROUND EXHAUST DUCT W/BACK DRAFT DAMPER UP TO RAIN CAP ON THE ROOF. INSTALL BIRD SCREEN AND MANUFACTURER'S RECOMMENDED ROOF CAP.

KEYED NOTES FOR AHU-2, SHEET M-1:

(1B) 10" ROUND DUCT W/VOLUME DAMPER SET AT 300 CFM.

(2A) 20"X18" HORIZONTAL SUPPLY AIR DUCT W/VOLUME DAMPER SET AT 2,000 CFM.

(3A) 18"X16" HORIZONTAL RETURN AIR DUCT, W/VOLUME DAMPER SET AT 1,700 CFM.

(4A) SOLID STATE PROGRAMMABLE THERMOSTAT W/ LOCKABLE COVER FOR AHU #2. THERMOSTAT SHALL BE CAPABLE TO SET BACK OR SHUT DOWN THE SYSTEM BASED ON DAY OF WEEK AND TIME OF DAY. FOR ADDITIONAL REQUIREMENT REFER TO IECC SECTION 803.2.3.1.

(5A) PRIMARY AC CONDENSATE DRAIN : ROUTE FULL SIZE INSULATED AC UNIT CONDENSATE DRAIN FROM AHU–#1 TO CONNECT TO LAVATORY TAIL PIPE DRAIN VIA TEE FITTING IN NEAREST REST ROOM.

(6A) AUXILLIARY AC CONDENSATE DRAIN: ROUTE 1" INSULATED AUXILLIARY AC CONDENSATE DRAIN TO SPILL OVER LAV IN NEAREST REST ROOM CEILING. PROVIDE CEILING ESCUTCHEON PLATE.

ENERGY CODE – COMPLETION REQUIREMENTS

WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE, RECORD DRAWINGS OF THE ACTUAL INSTALLATION BE PROVIDED TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE BUILDING OWNER. RECORD DRAWINGS SHALL INCLUDE AS A MINIMUM THE LOCATION AND PERFORMANCE DATA ON EACH PIECE OF EQUIPMENT, GENERAL CONFIGURATION OF DUCT AND PIPE DISTRIBUTION SYSTEM INCLUDING SIZES, AND THE TERMINAL AIR OR WATER DESIGN FLOW RATES. FOR ADDITIONAL REQUIREMENTS REFER TO – 2009 IECC COMMERCIAL ENERGY CONSERVATION CODE.

MANUALS: OPERATING MANUAL AND A MAINTENANCE MANUAL SHALL BE PROVIDED TO THE BUILDING OWNER OR THE DESIGNATED REPRESENTATIVE OF THE BUILDING OWNER WITHIN 90 DAYS AFTER THE DATE OF SYSTEM ACCEPTANCE. THESE MANUALS SHALL BE IN ACCORDANCE WITH INDUSTRY–ACCEPTED STANDARDS (SEE APPENDIX E) AND INCLUDE, AT A MINIMUM, THE FOLLOWING:

(A) SUBMITTAL DATA STATING EQUIPMENT SIZE AND SELECTED OPTIONS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE.

(B) OPERATION MANUALS AND MAINTENANCE MANUALS FOR EACH PIECE OF EQUIPMENT REQUIRING MAINTENANCE, EXCEPT EQUIPMENT NOT FURNISHED AS PART OF THE PROJECT. REQUIRED ROUTINE MAINTENANCE ACTIONS SHALL BE CLEARLY IDENTIFIED.

(C) NAMES AND ADDRESSES OF AT LEAST ONE SERVICE AGENCY.

(D) HVAC CONTROLS SYSTEM MAINTENANCE AND CALIBRATION INFORMATION, INCLUDING WIRING DIAGRAMS SCHEMATICS, AND CONTROL SEQUENCE DESCRIPTIONS. DESIRED OR FIELD–DETERMINED SET–POINTS SHALL BE PERMANENTLY RECORDED ON CONTROL DRAWINGS AT CONTROL DEVICES OR, FOR DIGITAL SYSTEMS, IN PROGRAMMING COMMENTS.

(E) A COMPLETE NARRATIVE OF HOW EACH SYSTEM IS INTENDED TO OPERATE, INCLUDING SUGGESTED SET–POINTS.

SEE 2009 IECC COMMERCIAL ENERGY CONSERVATION CODE.

ENERGY CODE – SYSTEM BALANCING

CONTRACTOR SHALL ENSURE THAT ALL HVAC SYSTEMS ARE BALANCED IN ACCORDANCE WITH GENERALLY ACCEPTED ENGINEERING STANDARDS (SEE APPENDIX E). WRITTEN BALANCE REPORT SHALL BE PROVIDED TO THE OWNER OR THE DESIGNATED REPRESENTATIVE OF THE BUILDING OWNER FOR HVAC SYSTEMS SERVING ZONES WITH A TOTAL CONDITIONED AREA EXCEEDING 5000 SQ–FT. SEE 2009 IECC COMMERCIAL ENERGY CONSERVATION CODE.

HVAC GENERAL NOTES:

1. FURNISH ALL LABOR, MATERIAL, AND EQUIPMENT REQUIRED FOR THE COMPLETION AND OPERATION OF ALL SYSTEMS IN THIS SECTION OF WORK IN ACCORDANCE WITH ALL APPLICABLE CODES. MECHANICAL CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES.

2. GC TO PROVIDE FRAMED OPENINGS THRU WALLS, ABOVE CEILINGS, COVERING METAL STUDS, FOR FULL RETURN AIR TRANSFER ABOVE THE FURRED–DOWN CEILINGS.

3. ALL MATERIAL AND EQUIPMENT IS TO BE INSTALLED PER MANUFACTURER'S INSTALLATION INSTRUCTIONS.

4. DO NOT SCALE DRAWINGS. SEE ARCHITECTURAL DRAWINGS & REFLECTED CEILING PLANS FOR EXACT LOCATION OF DOORS, WINDOWS, CEILING DIFFUSERS, ETC.

5. ALL PIPING, DUCTS, VENTS, ETC., EXTENDING THROUGH WALLS & ROOF SHALL BE FLASHED & COUNTERFLASHED IN A WATERPROOF MANNER. SEAL ALL PENETRATIONS OF THE FLOOR/CEILING ASSEMBLY AND RATED WALLS WITH FIRE DAMPER, SEALANT MATERIAL APPROVED BY LOCAL CODE. (COLOR TO MATCH EXTERIOR).

6. EXTEND ALL CONDENSATE DRAIN LINES AS INDICATED, ROUTED TO AVOID INTERFERENCE WITH PASSAGEWAYS AND MAINTENANCE. DRAINS FROM AIR HANDLING UNITS SHALL BE TRAPPED. COORDINATE WITH P.C.

7. ALL DUCTWORK INSULATION SHALL BE RUN CONTINUOUSLY THROUGH FLOORS AND PARTITIONS.

8. ALL PIPING AND DUCTWORK LOCATIONS SHALL BE COORDINATED W/ WORK UNDER OTHER DIVISIONS OF THE SPECIFICATIONS, TO AVOID INTERFERENCE.

9. LOCATE ALL THERMOSTATS AND SWITCHES 4'–0" ABOVE FINISHED FLOOR. ANY DEVICE REQUIRING A THERMOSTAT FOR CONTROL SHALL BE FURNISHED WITH A THERMOSTAT WHETHER INDICATED ON THE DRAWINGS OR NOT.

10. DUCTS SHALL HAVE R–8(MINIMUM) INSULATION. ALL DUCT SYSTEMS ARE TO BE PER SMACNA AND U.L. STANDARDS.

11. ALL EQUIPMENT SHALL BE UL LISTED.

12. FLEX DUCT IS TO BE INSTALLED WITHOUT SHARP BENDS OR CRIMPS, FLEX IS TO BE PERMANENTLY FASTENED TO ANY SHEETMETAL FITTINGS. MAX. LENGTH 14' PER CODE. NO FLEX DUCT IS TO BE EXPOSED.

13. PROVIDE SHEET METAL COLLARS OR EQUAL UNDER DRYWALL WHENEVER GRILLE REGISTERS ARE TO BE INSTALLED.

14. THE MECHANICAL CONTRACTOR SHALL PROVIDE REFRIGERANT AND LOW VOLTAGE CONTROL LINES FROM THE CONDENSER TO THE AIR HANDLING UNIT. COORDINATE ROUTING AND INSTALLATION WITH THE GENERAL CONTRACTOR. SIZE REFRIGERANT LINES PER MANUFACTURER'S REQUIREMENTS.

15. PIPING (INSULATED): REFRIGERANT – SEAMLESS COPPER ACR TUBING WITH SILVER SOLDERED JOINTS. CONDENSATE – SCHEDULE 40 PVC INSULATED AS REQUIRED.

16. MECHANICAL CONTRACTOR SHALL BALANCE SYSTEM TO AIR QUANTITIES INDICATED ON PLANS AND PROVIDE OWNERS REPRESENTATIVE WITH COMPLETE BALANCE REPORT. PROVIDE NEW AIR FILTERS FOR EACH UNIT.

17. ALL DUCT DIMENSIONS ARE INTERIOR DUCT DIMENSIONS.

18. DUCTWORK, DIFFUSERS, REGISTERS, GRILLS AND OTHER ITEMS OF THE AIR HANDLING SYSTEM SHALL NOT BE SUPPORTED BY THE CEILING OR CEILING SUSPENSION SYSTEM. COORDINATE LOCATION OF GRILLES, DIFFUSERS AND LOUVERS WITH ELECTRICAL, ARCHITECTURAL AND PLUMBING WORK.

19. THE DRYER VENT MATERIAL IS TO BE ROUND RIGID SHEETMETAL. THE LENGTH SHALL NOT EXCEED MAXIMUM ALLOWED BY CODE OR MFG. IF MFG. RECOMMENDATIONS ARE FOLLOWED, DRYER MUST BE PROVIDED AT FINAL INSPECTION. NO SCREWS PROTRUDING INTO DUCT, ETC. PER CODE.

20. ALL MECHANICAL EQUIPMENT SHALL OPERATE FREE OF ANY OBJECTIONABLE NOISE OR VIBRATION.

21. AS REQUIRED BY LOCAL CODES, MECHANICAL CONTRACTOR SHALL PROVIDE U.L. LISTED FIRE DAMPERS WHERE REQUIRED FOR FIRE PROTECTION REQUIREMENTS OF THE HVAC SYSTEM & THE UL ASSEMBLY.

22. ON MAKING PIPE CONNECTIONS TO EQUIPMENT, CARE SHOULD BE TAKEN TO ARRANGE PIPES SO AS NOT TO INTERFERE WITH OPENING OF ACCESS DOORS.

23. REFRIGERANT PIPING, NOT SHOWN ON PLANS, SHALL BE SIZED & INSTALLED IN ACCORDANCE WITH THE MANUFACTURES RECOMMENDATIONS & INSTALLATION INSTRUCTIONS & PER THE T.E.L.

24. ELECTRICAL CONTRACTOR TO PROVIDE ALL HIGH VOLTAGE ELECTRICAL WIRING, CONDUIT, DISCONNECT SWITCHES, FUSES, ECT. TO CONDENSING UNITS AND AIR HANDLERS. ALL FINAL ELECTRICAL CONNECTIONS ARE BY ELECTRICAL CONTRACTOR.

25. PROVIDE 5 YEAR WARRANTY ON COMPRESSORS AND 1 YEAR ON ALL OTHER EQUIPMENT.

26. VERIFY CLEARANCES BEFORE FABRICATING DUCTWORK AND ORDERING EQUIPMENT.

27. MINIMUM S.E.E.R. FOR UNITS SHALL BE 13.0

28. CONDENSING UNITS SHALL BE MOUNTED ON CONCRETE PADS.

29. DRAWINGS ARE DIAGRAMMATIC AND DO NOT RELEASE THE CONTRACTOR FROM THE RESPONSIBILITY OF INSTALLING THE HVAC SYSTEM PER LOCAL CODE, AND IN EXCELLENT WORKING CONDITION.

30. DUCTWORK & PLENUMS SHALL BE SEALED IN ACCORDANCE WITH THE MECHANICAL CODE AND SMACNA METHOD A. FOR ADDITIONAL REQUIREMENTS REFER TO ASHRAE 90.1–2007 VERSION.

M. S. ESIERE ENGINEERS
REGISTERED # F–11441
MECHANICAL ELECTRICAL PLUMBING
435 FM 1092, # B1–136, STAFFORD
TX 77477
(832) 987–1928.E–MAIL: msemep@gmail.com

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MOC (Oak Ridge)
Phase 2 of 2
27312 Spectrum Way
Oak Ridge, TX 77385

ENGINEER

MAY 31, 2015

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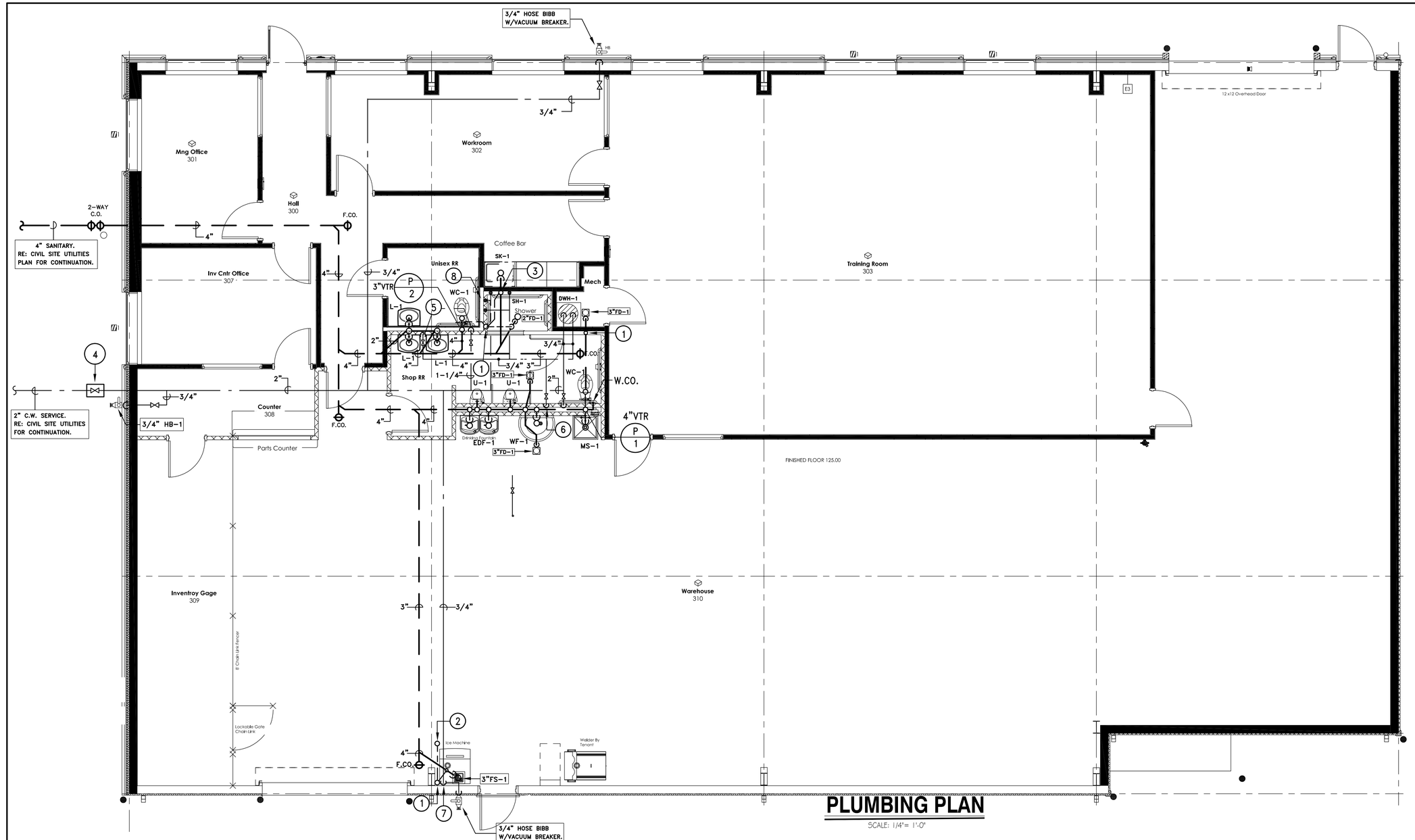
M-2



PLUMBING PLAN

SCALE: 1/4"= 1'-0"

KEYED NOTES THIS SHEET

1. 2" VENT DN.
2. 2" VENT UP THRU ROOF.
3. 2" WASTE DN, 2" VENT UP, 1/2" H & C.W. DN.
4. 2" GLOBE VALVE IN CITY APPROVED VALVE BOX.
5. 1 C.W. DN, 3/4" H.W. DN.
6. 3/4" HW DN TO WASH FOUNTAIN WF-1. AND MOP SINK.
7. 3/4" CW DN TO ICE MAKER CONNECTION & TO HOSE BIBB, HB-1.
8. 1/2" H & CW DN TO SHOWER MIXING VALVE.

PLUMBING SYMBOLS

——— ———	SANITARY SEWER	FD	FLOOR DRAIN
— — — —	VENT PIPING	C.O.	CLEAN OUT
——— - ———	COLD WATER LINE	VTR	VENT THRU ROOF
——— - - ———	HOT WATER LINE	HB	HOSE BIBB
CW	COLD WATER	DWH	WATER HEATER
HW	HOT WATER	G	GAS LINE

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REGISTERED # F-11441
MECHANICAL ELECTRICAL PLUMBING
435 FM 1092, # B1-136, STAFFORD
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Phase 2 of 2
27312 Spectrum Way
Oak Ridge, TX 77385

M. S. ESIERE
52078
REGISTERED
PROFESSIONAL ENGINEER
STATE OF TEXAS
MAY 31, 2015

REVISIONS:

DATE ISSUED:

SHEET:

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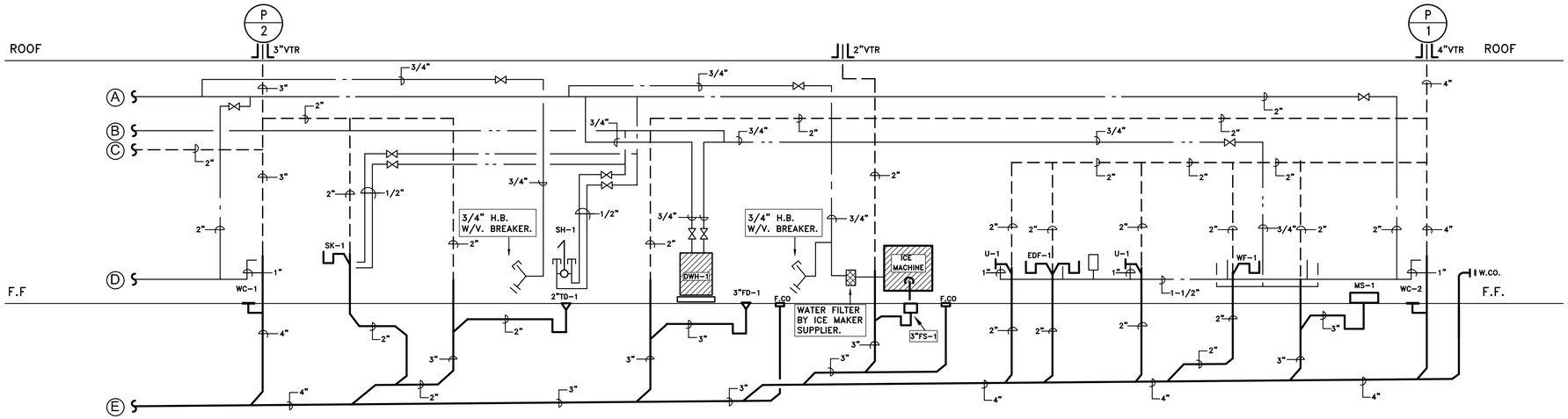
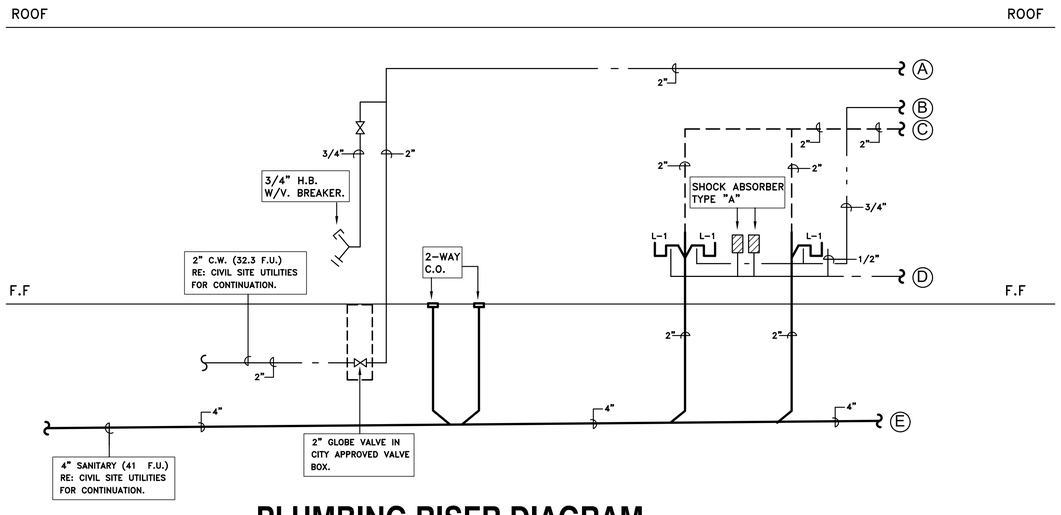


PLUMBING RISER DIAGRAM

NTS



PLUMBING RISER DIAGRAM

NTS

PLUMBING SYMBOLS

——— ———	SANITARY SEWER	FD	FLOOR DRAIN
— — — —	VENT PIPING	C.O.	CLEAN OUT
——— - ———	COLD WATER LINE	VTR	VENT THRU ROOF
——— - - ———	HOT WATER LINE	HB	HOSE BIBB
CW	COLD WATER	DWH	WATER HEATER
HW	HOT WATER	G	GAS LINE

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MECHANICAL ELECTRICAL PLUMBING
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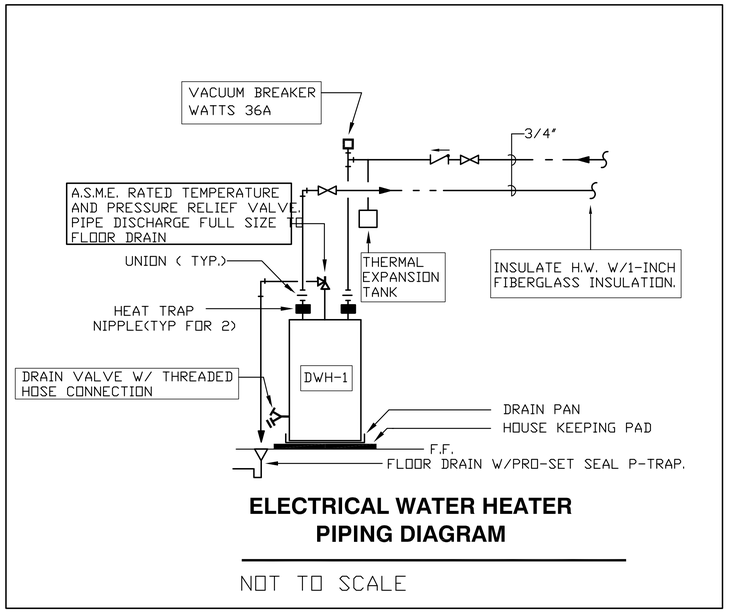


ELECTRICAL WATER HEATER PIPING DIAGRAM

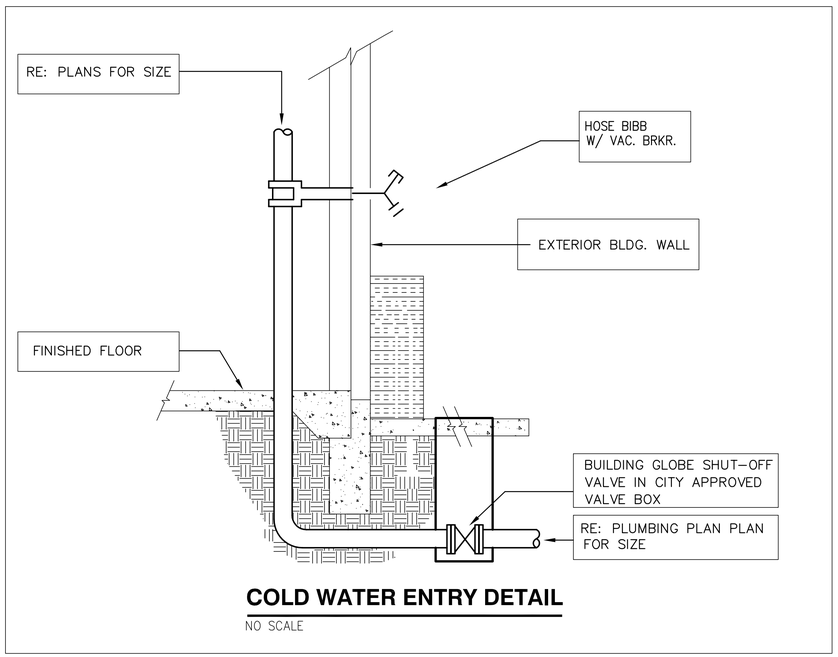
NOT TO SCALE

PLUMBING FIXTURE SCHEDULE

	SYMBOL	DESCRIPTION	PROVIDE THE FOLLOWING SIZE BRANCH CONNECTION TO THE DISTRIBUTION MAIN UNLESS OTHERWISE SPECIFIED. CW	HW	SAN.	VENT	REMARKS	P-TRAP SIZE	SPECIFICATIONS
	WC-1	FLOOR MNTD WATER CLOSET 1.28 GPF (BARRIER FREE)	1"	–	4"	2"	–	INTEGRAL	AMERICAN STD 3461.001 "MODERA" FLOWISE, REGULAR HEIGH, ELONGATED WITH 1.28, SLOAN ROYAL #111-1.28 FLUSHOMETER. ADA COMPLIANT.
	U-1	ADA URINAL	3/4"	–	4"	2"	–	INTEGRAL	AMERICAN STD. ALLBROKE MODEL #6550.510-0.5GPF, SLOAN # 186-0.5 GPF FLUSHOMETER.
*	L-1	WALL-HUNG ADA LAVATORY	1/2"	1/2"	2"	1-1/2"	–	1-1/4"	AMERICAN STD MURRO UNIVERSAL DESIGN, WALL HUNG WITH EVERCLEAN; P-TRAP, 1/2" H & C.W. STOP VALVES WITH ESCUTCHEON PLATES; FAUCET SHALL BE ----------
	EDF-1	ADA HI/LO DRINKING FOUNTAIN.	1/2"	–	2"	1-1/2"	–	1-1/4"	HALSEY TAYLOR HTV-8-BL-Q-TTG
	MS-1	MOP SINK	1/2"	1/2"	3"	2"	–	3"	SUBMIT CUTSHEETS FOR PROPOSED FIXTURE TO OWNER FOR APPROVAL.
**	FD-1	FLOOR DRAIN	–	–	2"	1-1/2"	–	2"	TRUE SET COMMERCIAL DRAIN MODEL TP311B.
	SK-1	SINGLE COMP. SINK	1/2"	1/2"	2"	1-1/2"	–	1-1/2"	ELKAY MODEL LR 2521, STAINLESS STEEL CONSTRUCTION; P-TRAP, 1/2" H & C.W. ANGLE STOP VALVES WITH ESCUTCHEONS, LK-35 STRAINER, FAUCET LK 320 CAST SWING SPOUT WITH AERATOR.
	SH-1	ADA SHOWER	1/2"	1/2"	2"	1-1/2"	–	2"	REFER TO ARCHITECTURAL DETAILS FOR SHOWER ENCLOSURE. CHICAGO FAUCET 2500-VOCCP, ADA COMPLIANT. TEMPSHIELD SHOWER VALVE WITH TRIM 151-CP HAND SPRAY WITH 778-009 VACUUM BREAKER. INSTALL 2" FD-1 SHOWER FLOOR DRAIN.
	WF-1	WASH FOUNTAIN	3/4"	3/4"	2"	2"	–	1-1/4"	SUBMIT CUTSHEET OF PROPOSED FIXTURE TO OWNER FOR APPROVAL BEFORE ORDERING.

** PROVIDE PRO-SEAL INSERT TRAP PRIMER.

* INSULATE UTILITIES UNDER LAVATORTIES WITH TRUEBRO LAV GUARD.



COLD WATER ENTRY DETAIL

NO SCALE

WATER HEATER SCHEDULE

ITEM	GALS.	LITERS	RECOVERY RATE/PER/HR.	ELECTRICAL DATA KW	VOLTS/PHASE/CYCLE	MANUFACTURERS MODEL NUMBER
DWH-1	40.00	–	–	4.5	208 / 1 / 60	A.O. SMITH MODEL # ELJF-40D OR EQUAL. TWO ELEMENTS WIRED SIMULTANEOUSLY.

PLUMBING PIPING MATERIALS:

A. DOMESTIC HOT AND COLD WATER SHALL BE TYPE "L" COPPER (ASTM B88) WITH WROUGHT COPPER SOLDER FITTINGS (ANSIB16.22) USING 95/5 SOLDER, OR CPVC PIPING.

B. SANITARY WASTE & VENT PIPING WITH FITTING SHALL BE SCHEDULE 40 PVC CONFORMING TO ASTM-1785.

C. PROVIDE ISOLATION FITTINGS WHENEVER DISSIMILAR MATERIALS ARE USED.

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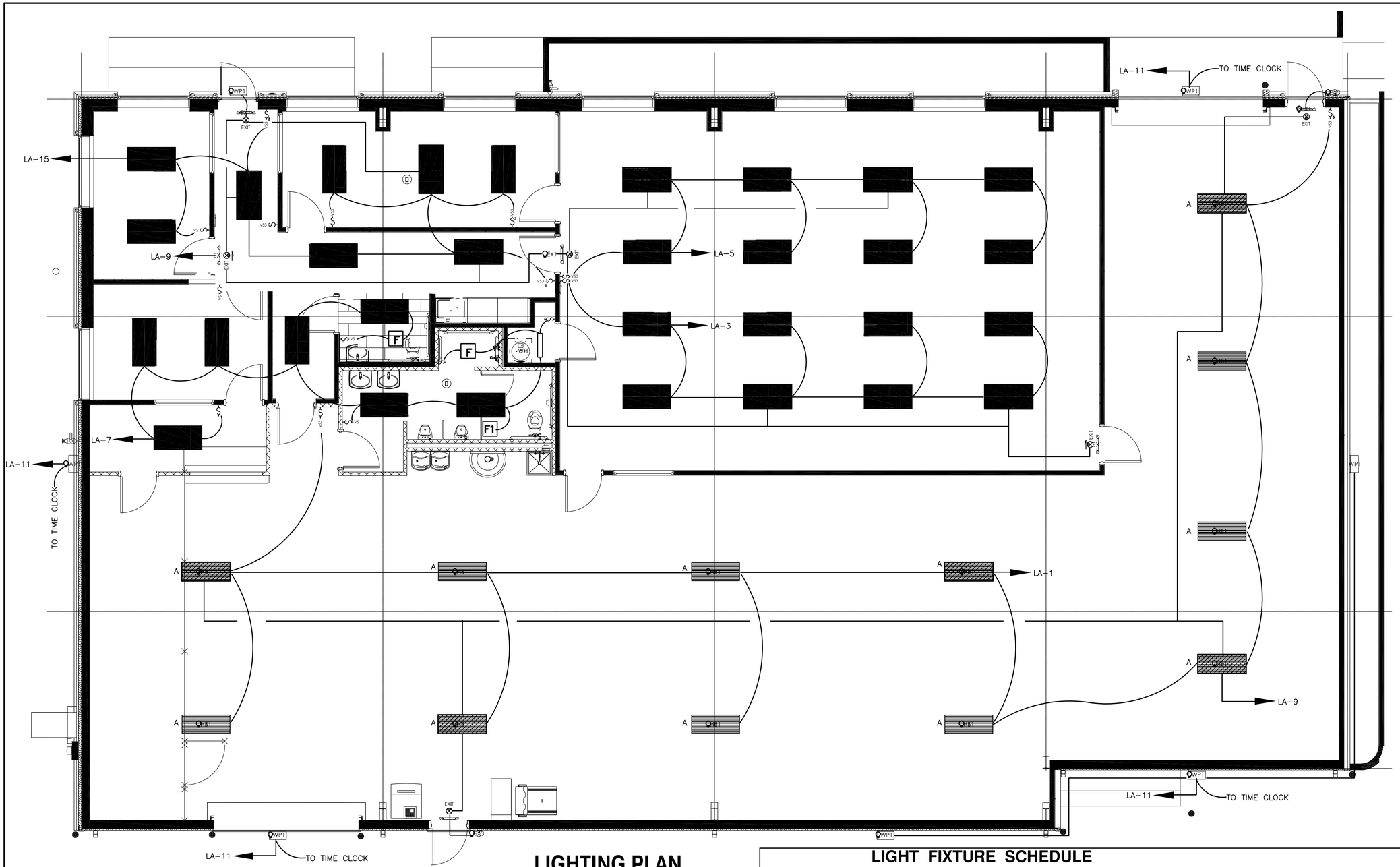
P-3



LIGHTING PLAN

SCALE: 1/4"= 1'-0"

LIGHT FIXTURE SCHEDULE

MARK	MANUFACTURER	WATTS	LAMP	VOLTS	REMARK
A LB1	LITHONIA OR EQUAL	128	4-32W	120V	2'X4' FLUORESCENT LIGHT FIXTURE W/PARABOLIC LENS.
A LB1	LITHONIA OR EQUAL	128	4-32W	120V	2'X4' FLUORESCENT LIGHT FIXTURE W/PARABOLIC LENS. NIGHT/EMERGENCY LIGHT FIXTURE W/ 90-MINUTE BATTERY BACK-UP BALLAST.
	LITHONIA OR EQUAL	96	3-32W	120V	2'X4' FLUORESCENT LIGHT FIXTURE W/PARABOLIC LENS.
	LITHONIA OR EQUAL	96	3-32W	120V	2'X4' FLUORESCENT LIGHT FIXTURE W/PARABOLIC LENS.

M. S. ESIERE ENGINEERS
REGISTERED # F-11441
MECHANICAL ELECTRICAL PLUMBING
435 FM 1092, # B1-136, STAFFORD
TX 77477
(832) 987-1928.E-MAIL: msemep@gmail.com

Written dimensions on these drawings shall have precedence over scale dimensions. Contractor shall verify and be responsible for all dimensions and conditions on the job. These drawings are not to be scaled. Any discrepancies must be notified of any variation from the dimensions and conditions shown by these drawings.

MOC (Oak Ridge)
Phase 2 of 2
27312 Spectrum Way
Oak Ridge, TX 77385

M. S. ESIERE
52078
REGISTERED
PROFESSIONAL ENGINEER
STATE OF TEXAS

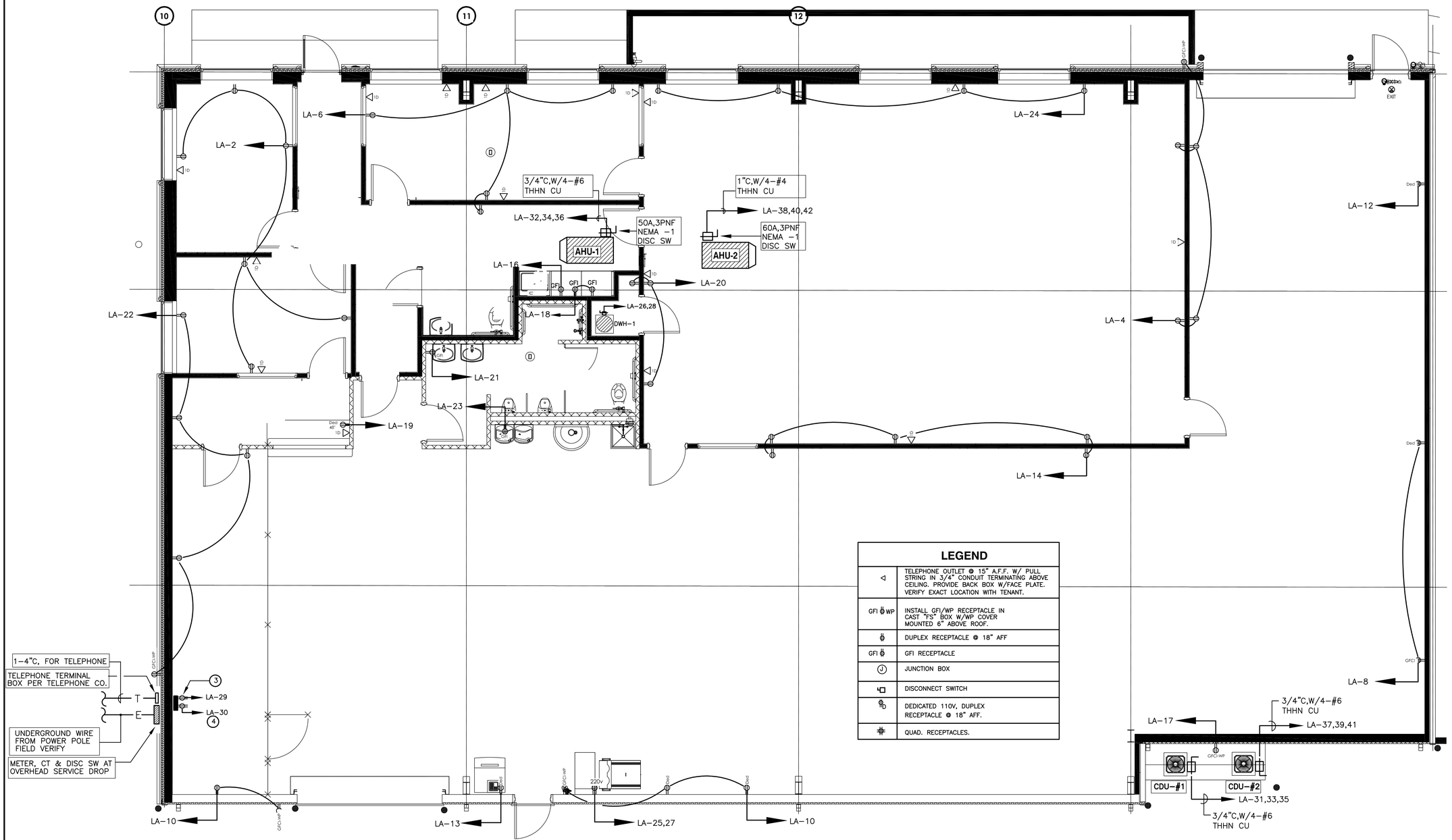
APRIL 10, 2015

REVISIONS:

DATE ISSUED:

SHEET:

E-1



LEGEND	
◁	TELEPHONE OUTLET @ 15" A.F.F. W/ PULL STRING IN 3/4" CONDUIT TERMINATING ABOVE CEILING. PROVIDE BACK BOX W/FACE PLATE. VERIFY EXACT LOCATION WITH TENANT.
GFI WP	INSTALL GFI/WP RECEPTACLE IN CAST "FS" BOX W/WP COVER MOUNTED 6" ABOVE ROOF.
	DUPLEX RECEPTACLE @ 18" AFF
GFI	GFI RECEPTACLE
J	JUNCTION BOX
	DISCONNECT SWITCH
D	DEDICATED 110V, DUPLEX RECEPTACLE @ 18" AFF.
	QUAD. RECEPTACLES.

ELECTRICAL POWER PLAN

SCALE: 1/4"= 1'-0"

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MOC (Oak Ridge)
Phase 2 of 2
27312 Spectrum Way
Oak Ridge, TX 77385

M. S. ESIERE
52078
REGISTERED
PROFESSIONAL ENGINEER
STATE OF TEXAS
MAY 31, 2015

REVISIONS:

DATE ISSUED:

SHEET:
E-2

NEMA-1 PANEL, SURFACE-MOUNTED

120/208 VOLT,3Φ,4W WIRE SIZE: #350MCM CU **PANEL "LA"** MCB=300A BUSS AMPS: 300

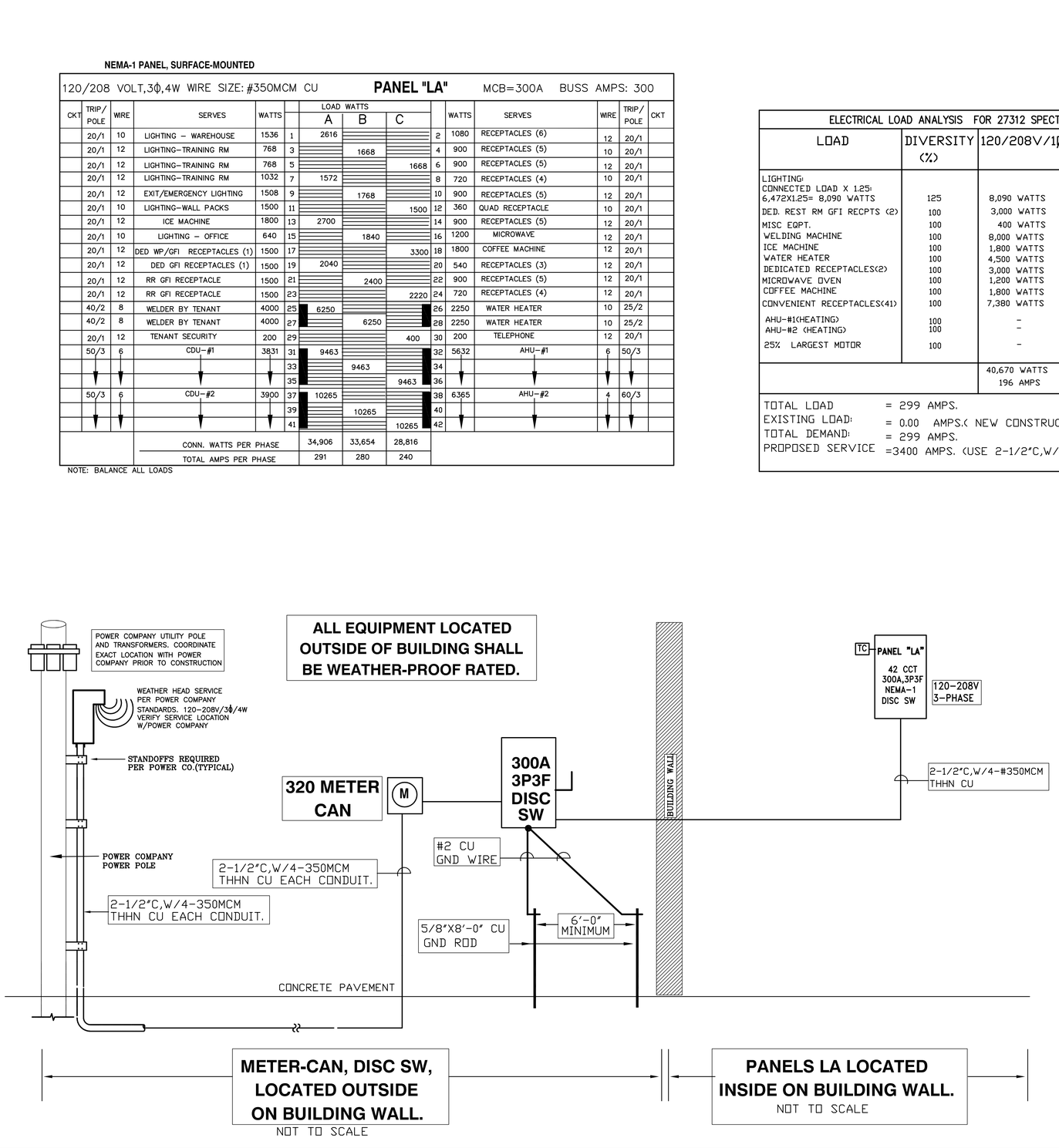
CKT	TRIP/POLE	WIRE	SERVES	WATTS		LOAD WATTS A	LOAD WATTS B	LOAD WATTS C		WATTS	SERVES	WIRE	TRIP/POLE	CKT
	20/1	10	LIGHTING – WAREHOUSE	1536	1	2616			2	1080	RECEPTACLES (6)	12	20/1	
	20/1	12	LIGHTING–TRAINING RM	768	3		1668		4	900	RECEPTACLES (5)	10	20/1	
	20/1	12	LIGHTING–TRAINING RM	768	5			1668	6	900	RECEPTACLES (5)	12	20/1	
	20/1	12	LIGHTING–TRAINING RM	1032	7	1572			8	720	RECEPTACLES (4)	10	20/1	
	20/1	12	EXIT/EMERGENCY LIGHTING	1508	9		1768		10	900	RECEPTACLES (5)	12	20/1	
	20/1	10	LIGHTING–WALL PACKS	1500	11			1500	12	360	QUAD RECEPTACLE	10	20/1	
	20/1	12	ICE MACHINE	1800	13	2700			14	900	RECEPTACLES (5)	12	20/1	
	20/1	10	LIGHTING – OFFICE	640	15		1840		16	1200	MICROWAVE	12	20/1	
	20/1	12	DED WP/GFI RECEPTACLES (1)	1500	17			3300	18	1800	COFFEE MACHINE	12	20/1	
	20/1	12	DED GFI RECEPTACLES (1)	1500	19	2040			20	540	RECEPTACLES (3)	12	20/1	
	20/1	12	RR GFI RECEPTACLE	1500	21		2400		22	900	RECEPTACLES (5)	12	20/1	
	20/1	12	RR GFI RECEPTACLE	1500	23			2220	24	720	RECEPTACLES (4)	12	20/1	
	40/2	8	WELDER BY TENANT	4000	25	6250			26	2250	WATER HEATER	10	25/2	
	40/2	8	WELDER BY TENANT	4000	27		6250		28	2250	WATER HEATER	10	25/2	
	20/1	12	TENANT SECURITY	200	29			400	30	200	TELEPHONE	12	20/1	
	50/3	6	CDU–#1	3831	31	9463			32	5632	AHU–#1	6	50/3	
	↓	↓	↓	↓	33		9463		34	↓	↓	↓	↓	
					35			9463	36					
	50/3	6	CDU–#2	3900	37	10265			38	6365	AHU–#2	4	60/3	
	↓	↓	↓	↓	39		10265		40	↓	↓	↓	↓	
					41			10265	42					
			CONN. WATTS PER PHASE			34,906	33,654	28,816						
			TOTAL AMPS PER PHASE			291	280	240						

NOTE: BALANCE ALL LOADS

ELECTRICAL LOAD ANALYSIS FOR 27312 SPECTRUM WAY

LOAD	DIVERSITY (%)	120/208V/1Ø	120–208V/3Ø
LIGHTING: CONNECTED LOAD X 1.25: 6,472X1.25= 8,090 WATTS	125	8,090 WATTS	USE CODE LOAD
DED. REST RM GFI RECPTS (2)	100	3,000 WATTS	–
MISC EQPT.	100	400 WATTS	–
WELDING MACHINE	100	8,000 WATTS	–
ICE MACHINE	100	1,800 WATTS	–
WATER HEATER	100	4,500 WATTS	–
DEDICATED RECEPTACLES(2)	100	3,000 WATTS	–
MICROWAVE OVEN	100	1,200 WATTS	–
COFFEE MACHINE	100	1,800 WATTS	–
CONVENIENT RECEPTACLES(41)	100	7,380 WATTS	–
AHU–#1(HEATING)	100	–	16,896 WATTS
AHU–#2 (HEATING)	100	–	19,094 WATTS
25% LARGEST MOTOR	100	–	1,053 WATTS
		40,670 WATTS 196 AMPS	37,043 WATTS 103 AMPS

TOTAL LOAD = 299 AMPS.
EXISTING LOAD: = 0.00 AMPS.(NEW CONSTRUCTION)
TOTAL DEMAND: = 299 AMPS.
PROPOSED SERVICE =3400 AMPS. (USE 2-1/2"C,W/4-#350MCM THHN CU)



ELECTRICAL NOTES

1. INSTALLATION SHALL COMPLY WITH NEC AND LOCAL CODES IN EVERY RESPECT.
2. FIELD VERIFY EXACT LOCATION OF ELECT. CO. SERVICE POLE. VERIFY EXACT LOCATION OF SERVICE WIREWAY AND PANELS ON BUILDING WITH ARCHITECT.
3. ALL CONDUITS SHALL BE RGS OR EMT ABOVE GROUND AND SCHEDULE 40 PVE UNDERGROUND. ALL CONDUCTORS SHALL BE COPPER THW, THHN OR THWN. INSTALL PULL WIRE IN ALL SPARE CONDUITS.
4. GROUND ALL SERVICE EQUIPMENT ETC PER NEC AND LOCAL CODES.
5. SUBMIT SHOP DRAWINGS ON ALL EQUIPMENT, SWITCHES, FIX-TURES, ETC FOR APPROVAL BY ENGINEER BEFORE PURCHASING.
6. COORDINATE LOCATION OF SWITCHES AND OUTLETS WITH ARCH. PLANS.
7. FUSES AND DISCONNECT SWITCHES SHALL BE RATED FOR ELECT. CO. MAX. AVAILABLE FAULT CURRENT PER ELECT. CO. OUTLET LOCATION REPORT.
8. ALL SWITCHES, RECEPTACLES AND PLATES ARE TO BE IVORY IN COLOR UNLESS NOTED OTHERWISE ON PLANS.
9. FURNISH AND INSTALL ALL TELEPHONE AND CABLE TV EQUIPMENT AND CABLES. VERIFY LOCATIONS W/ OWNER AND OR ARCHITECT.
10. INSTALL GROUND FAULT INTERRUPTING RECEPTACLES WHERE LOCATED NEAR SINKS, LAVATORIES AND WHERE LOCATED OUTSIDE.
11. COORDINATE INSTALLATION OF ALL AC UNITS CONDUCTORS WITH THE HVAC CONTRACTOR. CONDUCTORS AND CONDUITS MAY BE ADJUSTED DOWN IF UNITS FLA IS LESS THAN PROVIDED FOR IN THESE PLANS COORDINATE LOCATION OF AC DISCONNECTS WITH HVAC CONTRACTOR.
12. VERIFY LOADS OF ALL APPLIANCES AND HVAC EQUIPMENT WITH VENDOR PRIOR TO INSTALLING CIRCUITS AND ADJUST WIRE, CONDUIT AND CIRCUIT BREAKER SIZES ACCORDINGLY.
13. PROVIDE AND INSTALL IECC 805.2.2.2 COMPLIANT CLOCK. ALL INTERIOR LIGHTING CIRCUITS SHALL BE CONTROLLED BY TIMECLOCK. TIMECLOCK SHALL HAVE A COMBINATION 7-DAY AND SEASONAL DAYLIGHT PROGRAM SCHEDULE AND A MINIMUM 4-HOUR POWER BACKUP.
14. PROVIDE AND INSTALL IECC 805.2.2.2 COMPLIANT TIME CLOCK. ALL EXTERIOR LIGHTING CIRCUITS SHALL BE CONTROLLED BY TIMECLOCK. TIMECLOCK SHALL HAVE A COMBINATION 7-DAY AND SEASONAL DAYLIGHT PROGRAM SCHEDULE AND A MINIMUM 4-HOUR POWER BACKUP.
15. PROVIDE AND INSTALL OCCUPANT SENSOR SWITCH IN THE EMPLOYEE ROOM AND ALL REST ROOMS. SWITCH SHALL AUTOMATICALLY TURN LIGHTING OFF WITHIN 30 MINUTES OF ALL OCCUPANTS LEAVING THE ROOM.

FOR ADDITIONAL GENERAL NOTES & SPECIFICATIONS SEE SHEET MEP

LEGEND

$	3–WAY SWITCH, LEVITON DECORA BRAND, IVORY COLOR.
$	DIMMER SWITCH, LEVITON DECORA BRAND, IVORY COLOR.
$	SINGLE POLE SWITCH, LEVITON DECORA BRAND, IVORY COLOR.
◀	DATA OUTLET.
◁	TELEPHONE OUTLET @ 12" A.F.F. W/ PULL STRING IN 3/4" CONDUIT TERMINATING ABOVE CEILING. PROVIDE BACK BOX W/FACE PLATE.
GFI WP	INSTALL GFI RECEPTACLE IN CAST "FS" BOX W/WP COVER MOUNTED 6" ABOVE ROOF.
	DUPLEX RECEPTACLE @ 18" AFF
GFI	GFI RECEPTACLE
J	JUNCTION BOX
	DISCONNECT SWITCH
D	DEDICATED 110V, DUPLEX RECEPTACLE @ 18" AFF.
	NOT USED
220V	220V, 1–PHASE OUTLET
VS DT	LEVITON ODS WALL SWITCH INFRARED OCCUPANCY AND VACANCY SENSOR; LEVITON CAT # ODS15–ID.
ⓓ	LEVITON ODC SERIES CEILING–MNTD VACANCY SENSOR; MODEL # 03C20–MDW. WALL SWITCH INFRARED OCCUPANCY

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MOC (Oak Ridge)
Phase 2 of 2
27312 Spectrum Way
Oak Ridge, TX 77385

REVISIONS:

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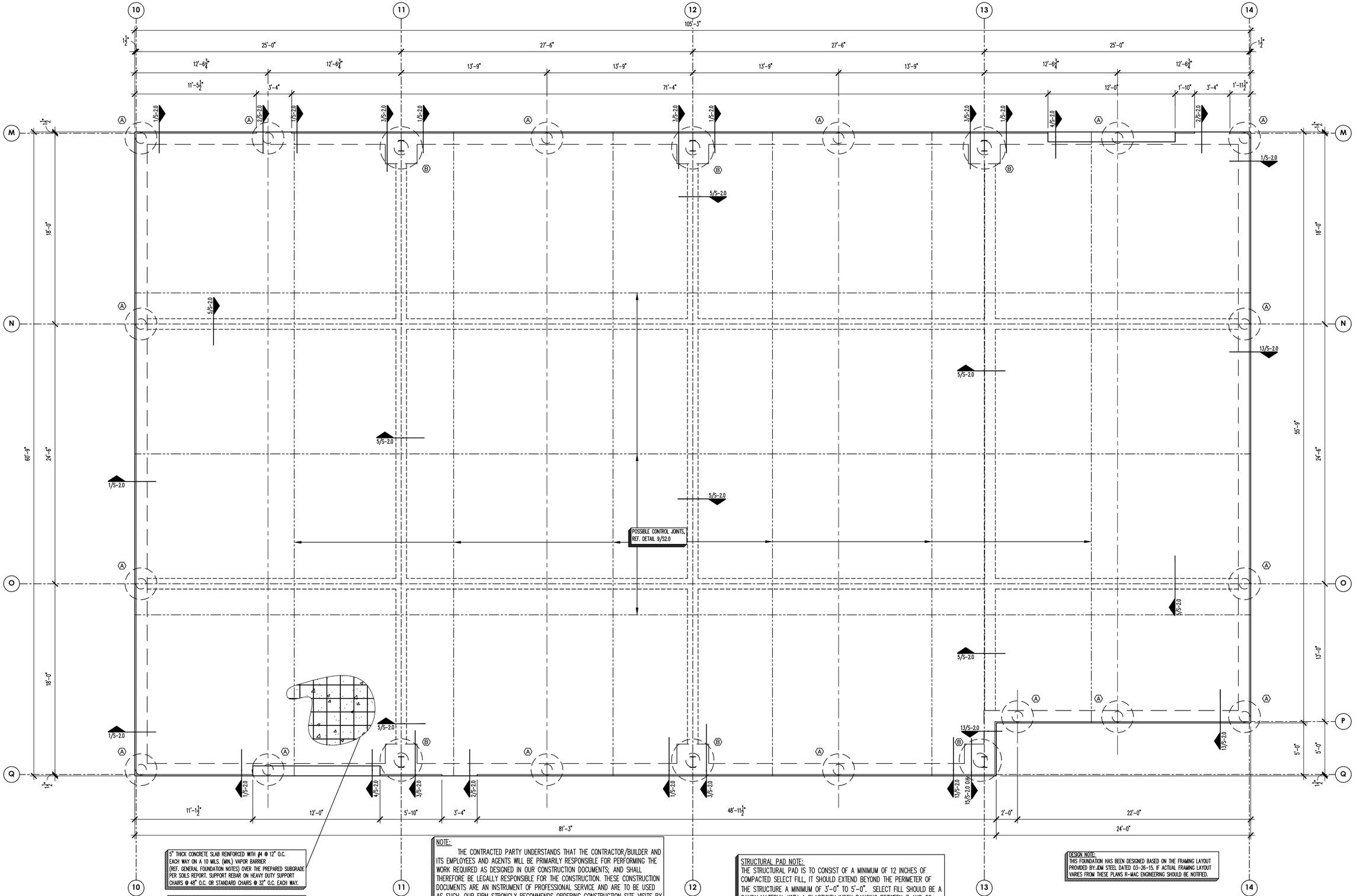
SHEET:
E-3



5" THICK CONCRETE SLAB REINFORCED WITH #4 @ 12" O.C. EACH WAY ON A 10 MILS. (MIN.) VAPOR BARRIER (REF. GENERAL FOUNDATION NOTES) OVER THE PREPARED SUBGRADE PER SOILS REPORT. SUPPORT REBAR ON HEAVY DUTY SUPPORT CHAIRS @ 48" O.C. OR STANDARD CHAIRS @ 32" O.C. EACH WAY.

SOIL DATA TAKEN FROM: TERRACON CONSULTANTS, INC.
REPORT NO:9206553 DATED: SEPTEMBER 14, 2006
EFFECTIVE PI = 14-31

NOTE:

THE CONTRACTED PARTY UNDERSTANDS THAT THE CONTRACTOR/BUILDER AND ITS EMPLOYEES AND AGENTS WILL BE PRIMARILY RESPONSIBLE FOR PERFORMING THE WORK REQUIRED AS DESIGNED IN OUR CONSTRUCTION DOCUMENTS; AND SHALL THEREFORE BE LEGALLY RESPONSIBLE FOR THE CONSTRUCTION. THESE CONSTRUCTION DOCUMENTS ARE AN INSTRUMENT OF PROFESSIONAL SERVICE AND ARE TO BE USED AS SUCH. OUR FIRM STRONGLY RECOMMENDS ORDERING CONSTRUCTION SITE VISITS BY THIS FIRM ON ALL STRUCTURAL ELEMENTS. OUR FIRM CANNOT ISSUE CERTIFICATES OF CONSTRUCTION APPROVAL UNLESS THESE SITE VISITS ARE PERFORMED.

WHEN OUR FIRM IS CONTRACTED TO PROVIDE PARTIAL DESIGN/CDs (i.e. FOUNDATON ONLY, FRAMING ONLY, EXT.), ROD V. McCASLAND, P.E., NOR R-MAC ENGINEERING COMPANY, INC. CANNOT BE HELD RESPONSIBLE FOR THE PERFORMANCE OF ANY OTHER STRUCTURAL ELEMENTS

STRUCTURAL PAD NOTE:

THE STRUCTURAL PAD IS TO CONSIST OF A MINIMUM OF 12 INCHES OF COMPACTED SELECT FILL, IT SHOULD EXTEND BEYOND THE PERIMETER OF THE STRUCTURE A MINIMUM OF 3'-0" TO 5'-0". SELECT FILL SHOULD BE A SANDY MATERIAL WITH A PLASTICITY INDEX RANGING BETWEEN 7 AND 20. PAD IS TO BE COMPACTED TO A MINIMUM OF 95% STANDARD PROCTOR IN SIX TO EIGHT INCH LIFTS. EACH LIFT IS TO BE TESTED BY A SOILS TESTING LAB, AND THE WRITTEN TEST RESULTS SENT TO R-MAC ENGINEERING COMPANY, INC. REFERENCE PROJECT GEOTECHNICAL REPORT FOR MORE SPECIFIC DETAILS.

DESIGN NOTE:

THIS FOUNDATION HAS BEEN DESIGNED BASED ON THE FRAMING LAYOUT PROVIDED BY:JDM STEEL DATED 03-26-15. IF ACTUAL FRAMING LAYOUT VARIES FROM THESE PLANS R-MAC ENGINEERING SHOULD BE NOTIFIED.

FOUNDATION PLAN

STATE OF TEXAS
ROD V. MC CASLAND
48002
REGISTERED PROFESSIONAL ENGINEER
06-03-15

R-MAC ENGINEERING CO.
Consulting Engineers
P.O. Box 7827
The Woodlands, TX 77387
Texas Registered Engineering Firm: F-11358
PH: (281) 367-7761 FAX: (281) 362-0304
Email: rmac@rmacengineering.com

MOC SERVICE BUILDING

27316 SPECTRUM WAY
OAKRIDGE, TEXAS

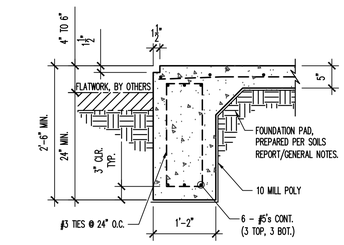
PROJECT	M15058
SCALE	1/4"=1'-0"
DSGN. BY	RVM
DWN. BY	OG
CKD. BY	CLB/RVM
TOTAL COVERED	6,273 sq.ft.

REVISIONS/ISSUED

1 For Construction 05-28-15
2 PER ARCH. 06-03-15

SHEET

S-1.0



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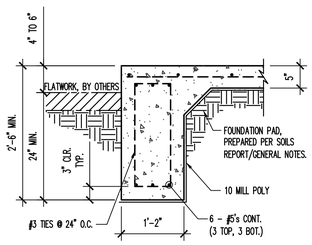

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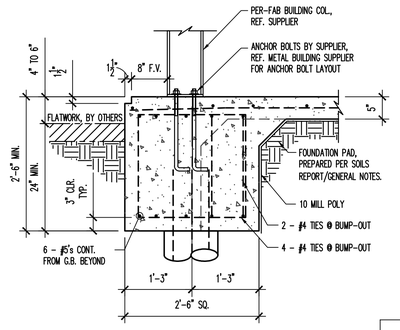

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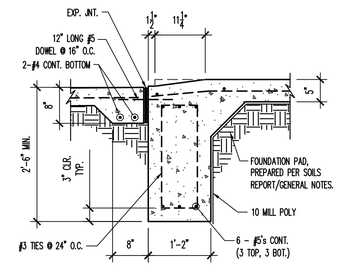

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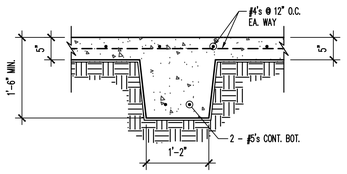

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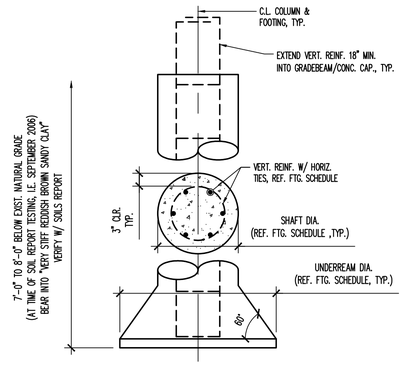


TYP. FOOTING DETAIL @ GRADE BEAMS

7

DRILLED PIER SCHEDULE			
FOOTING MARK	FTG. SIZE	VERT. REINF.	HORIZ. TIES
Ⓐ	12/36	4 - #5	#3 @ 12" O.C.
Ⓑ	16/48	5 - #5	#3 @ 12" O.C.

GENERAL FOUNDATION NOTES

FOUNDATION

THE FOUNDATION FOR THE STRUCTURE IS DESIGNED USING THE FOLLOWING SOIL BEARING PRESSURES AT A DEPTH OF 7'-0" TO 8'-0" WHICH HAS BEEN SUPPLIED BY THE GEOTECHNICAL ENGINEER: TERRACON CONSULTANTS, INC.
REPORT NO.: 9206553, DATED: SEPTEMBER 14, 2006
(DEPTH IS FROM EXISTING NATURAL GRADE)
DEAD LOAD PLUS SUSTAINED LIVE LOAD ---------- 3500-4200 PSF
TOTAL LOAD ---------- 5000-5500 PSF

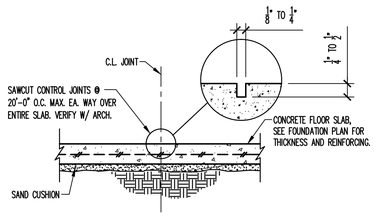
VAPOR RETARDER/BARRIER NOTES

1. ACI 302.1R-96, GUIDE FOR CONCRETE FLOOR AND SLAB CONSTRUCTION (ACI COMMITTEE 302) RECOMMENDS THAT A VAPOR RETARDER/BARRIER WITH:
   PERMEANCE OF LESS THAN 0.3 US PERMS (ASTM E 96, "STANDARD TEST METHODS FOR WATER VAPOR TRANSMISSION OF MATERIALS"), AND

   THICKNESS NOT LESS THAN 10 MILS BE PLACED UNDER THE CONCRETE FLOOR SLAB ON GROUND TO REDUCE THE TRANSMISSION OF WATER VAPOR FROM THE SUPPORTING SOIL THROUGH THE CONCRETE SLAB AND TO FUNCTION AS A SLIP SHEET TO REDUCE SUBGRADE DRAG FRICTION.
2. WE RECOMMEND THAT A 10-MIL POLYETHYLENE SHEET OR STEGO INDUSTRIES 10 MIL "STEGO WRAP" BE USED AS THE MOISTURE RETARDER/BARRIER.
3. LOCAL PRECTICE IS TO PLACE THE CONCRETE FLOOR DIRECTLY ON THE VAPOR RETARDER/BARRER. THE VAPOR RETARDER/BARRIER SHOULD BE INSTALLED ACCORDING TO ASTM E 1643 ("STANDARD PRACTICE FOR INSTALLATION OF WATER VAPOR RETARDERS USED IN CONTACT WITH EARTH AR GRANULAR FILL UNDER CONCRETE SLABS.

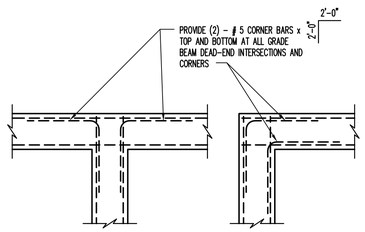
CONCRETE NOTES

1. CONCRETE IN THE FOLLOWING AREAS SHALL HAVE NORMAL-WEIGHT AGGREGATES CONFORMING TO ASTM C33, TYPE 1 PORTLAND CEMENT, AND THE FOLLOWING DESIGNATED MINIMUM COMPRESSIVE STRENGTH (f'c) IN 28 DAYS.
   DRILLED FOOTINGS ---------- 3000 PSI
   GRADE BEAMS ---------- 3000 PSI
   SLAB ON GRADE ---------- 3000 PSI
2. GROUT UNDER BASE PLATES SHALL BE A NON-SHRINKABLE TYPE AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI.
3. REINFORCING BARS FOR CONCRETE SHALL CONFORM TO ASTM A615, GRADE 60. NO. 3 BARS MAY CONFORM TO ASTM A614, GRADE 40 EXCEPT AS NOTED.
4. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185. FABRIC IS TO BE LAPPED ONE MESH MINIMUM AT SPLICES.
5. AT ALL SLAB ON GRADE CONSTRUCTION JOINTS, PROVIDE NO. 3 DOWELS X 3'-0" AT 36 INCHES ON CENTER.
6. REINFORCEMENT DESIGNATED AS "CONTINUOUS" SHALL LAP 36 BAR DIAMETERS AT SPLICES U.O.N.
7. PROVIDE 1 NO. 6 CORNER BAR TOP AND BOTTOM AT THE EXTERIOR FACE OF ALL GRADE BEAMS. CORNER BARS SHALL BE 4'-0" LONG, BENT AT THE MIDDLE OF EACH BAR.
8. REINFORCING BARS MAY NOT BE WELDED UNLESS SPECIFICALLY CALLED FOR ON THE DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER.
9. DETAILING OF CONCRETE REINFORCEMENT AND ACCESSORIES SHALL CONFORM TO THE RECOMMENDATIONS OF THE AMERICAN CONCRETE INSTITUTE. LIKEWISE, MIXING, TRANSPORTING, PLACING, AND CURING OF ALL CONCRETE SHALL CONFORM TO THE RECOMMENDATIONS OF THE AMERICAN CONCRETE INSTITUTE.
10. CONCRETE COVER OF REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF A.C.I. 318 SECTION 7.7.
11. HORIZONTAL JOINTS WILL NOT BE PERMITTED IN CONCRETE CONSTRUCTION EXCEPT AS PROVIDED ON THE STRUCTURAL DRAWINGS. ALL CONSTRUCTION JOINTS SHALL BE MADE VERTICAL BULKHEADS AT THE CENTER OF SPANS OR AT LOCATIONS APPROVED BY THE STRUCTURAL ENGINEER.



TYPICAL CONTROL JOINT

9



PLAN VIEW PLAN VIEW

10

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11

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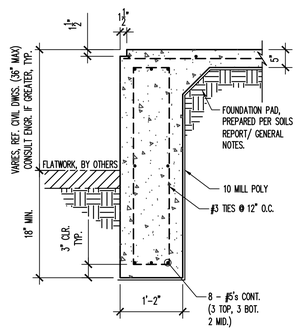

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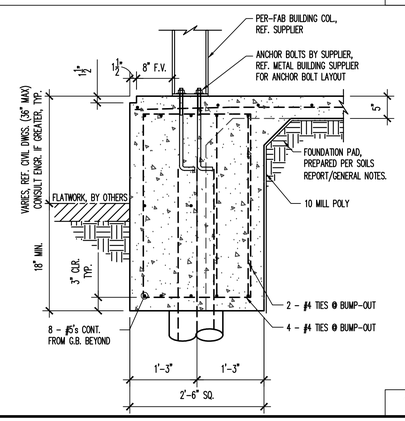

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16

STATE OF TEXAS
ROD V. MC CASLAND
48002
REGISTERED PROFESSIONAL ENGINEER
06-03-15

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Consulting Engineers
P.O. Box 7827
The Woodlands, TX 77387
Texas Registered Engineering Firm: F-11358
PH: (281) 367-7161 FAX: (281) 362-0304
Email: rvmac@rmacengineering.com

MOC SERVICE BUILDING
27316 SPECTRUM WAY
OAKRIDGE, TEXAS

PROJECT	M15058
SCALE	N.T.S.
DSGN. BY	RVM
DWN. BY	OG
CKD. BY	CLB/RVM
TOTAL COVERED	6,273 sq.ft.

REVISIONS/ISSUED
1 For Construction 05-28-15
2 PER ARCH. 06-03-15

SHEET
S-2.0