BND SHOP
VEHICLE WASH BAYS

VICINITY MAP - NOT TO SCALE

PORT OF BROWNSVILLE
the port that *works*

INDEX

South 11 + 75 O.R.L.

90'

R.L. OSTOS ROAD
(90' R.O.W.)

SD

4' X 4' box grate inlet 10' depth

edge of pavement

PP w/ light

PP w/ light

Exist. Conc.

4' wide concrete walk

wm

PP w/ light

gate

470.91'

N 69° 14' E

wooden fence

PP

204'

overhead power line

uth 12 + 20 O.R.L.
L. OSTOS RD.
outh R.O.W. line

26.3'

garage (13 bays)

19'

tank

tank

17.4'

concrete

grass area

gasoline storage tanks

PP

29.5' gate

gate

30.2'

44'

Lounge & Conference building

Wood Ramp

24'

Offices building Exist. F.F.=14.5

44'

60'

Catch Basin Top: 11.95

A/C

wm

40'

2" Ø underground fuel line

caliche surface

fuel pumps & metal roof

Conc. Valley Gutter

metal carport

70'

mechanic shop metal building

70'

2" PVC water line

open hut

30" corrugated sewer line

asphalt driveway

199.30'

A/C

metal building

asphalt surface

chain link fence

HEAVY-DUTY EQUIPMENT, INC. 1.07 ACRES

40'

metal building

100'

Concrete

Conc. Valley Gutter

asphalt surface

39.5'

existing concrete floor (future metal building)

45.5'

chain link fence

S 20° 46' E

metal warehouse

20.5'

generator storage

47.23'

6.35'

F.L.= 8.45

Conc. Valley Gutter

4" PVC sewer line

S 45° 57' W

216.4'

Drain Ditch North R.O.W. line

mh

10.0 Ft. Utility Easement

375.56'

boat storage

22'

40'

B.N.D.
MAINTENANCE SHOP
4.44 ACRES
5100 R.L. OSTOS ROAD

PROP. WASH BAY BUILDING
(2,490 Sq.Ft.)

caliche surface

Adjust Valve Box To Grade

18" R.C.P.

22'

concrete ramp

13'

hose bib

gated sewer line

construction materials (storage area)

Top El = 9.72
F.L. El = 8.20

60.0 Ft. Drain Ditch Easement

428.23'

S 48° 38' 56" W

mh

LEGEND

- WV — W — Water valve & water line
- mh — S — Sanitary sewer line & manhole
- PP — W — Power pole & power line
- Railroad spur
- Fence
- WM — Water meter
- SD — RCP culvert
- Storm Drainage
- Guy wire
- O.R.L. — Original Reference Line
- Gate

NOTE

Reference lines shown are offset lines parallel to and based from the original centerline of the Brownsville Ship Channel
FLOOD ZONE DESIGNATION
This tract lies in Zone "X" - 0.2 PCT Annual Chance Flood Hazard as per the F.E.M.A. Flood Insurance rate map of Community - Panel No. 480101 - 0585F. Effective date: February 16, 2018.

GRAPHIC SCALE
40 20 0 20
IN FEET

PORT OF BROWNSVILLE
the port that *works*

SITE PLAN

BND SHOP
VEHICLE WASH BAYS

APPROVED BY :

REVISION DATE :

DRAWN BY : P.E.

DATE DRAWN : MAY 06, 2021

CHECKED BY : A. CHAVEZ II

DWG. NO.

SCALE : AS SHOWN

FILE NAME : C:\MY DRAWINGS\151shop\Wash Bays.dwg

BROWNSVILLE NAVIGATION DISTRICT
ENGINEERING DEPARTMENT
BROWNSVILLE, TEXAS 78521
PHONE (956) 831-4592 1-800-378-5395
FAX (956) 831-6153
EMAIL achavez@portofbrownsville.com

SHEET
C01

WAREHOUSE

CONCRETE SIDEWALK

CONCRETE GUTTER

ASPHALT SURFACE

20.00' | 41.67' | 20.00'

12.48 12.52 12.72 12.68 12.55 12.48 12.43 12.25 12.10 11.92 11.90

VACUUM W/ CONC. BASE

GUARD POSTS

CONCRETE GUTTER 11.47 11.41

GRATE INLET
TOP = 11.30
F.L. = 8.45

12.50 12.60

GUARD POST

PROPOSED 8" CONCRETE PAVEMENT

ROOF SLOPE

ROOF SLOPE

12.30 11.80

GUARD POST

11.76

11.75

11.84

11.80

GUARD POSTS

12.50

PROPOSED 8" CONCRETE PAVEMENT

11.67

55.33'

ASPHALT SURFACE

CONCRETE GUTTER 11.33 11.36 11.42

LEGEND

100.00 Proposed Elevation

100.00 Existing Elevation

LIMESTONE SURFACE

51.33'

GUARD POSTS

12.50

12.40

Wash Bay Building
(F.F. El. = 12.60)

12.42

ROOF SLOPE

ROOF SLOPE

GUARD POST

12.35

12.50

16.00'

GUARD POST

12.30 12.30

12.10 12.04

11.66

11.40

18" Ø RCP

LIMESTONE SURFACE

12.34

ROOF SLOPE

Equipment Room
(F.F. El. = 12.60)

ROOF SLOPE

13.67'

12.25

9.67'

12.25

8" CONCRETE SLAB
W/ #5 REBAR @ 12" CTRS
ON COMPACTED SELECT FILL

12.30

4.00'

32.00'

LIMESTONE SURFACE

GRAPHIC SCALE
20 10 0 10
IN FEET

PORT OF BROWNSVILLE
the port that *works*

GRADING PLAN

BND SHOP
VEHICLE WASH BAYS

DRAWN BY : P.E.
APPROVED BY :
DATE DRAWN : MAY 06, 2021
REVISION DATE :
CHECKED BY : A. CHAVEZ II
DWG. NO.
SCALE : AS SHOWN
FILE NAME : C:\MY DRAWINGS\S1shop\Wash Bays.dwg

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SHEET
C02

GENERAL STRUCTURAL NOTES

THESE GENERAL NOTES SHALL APPLY UNLESS OTHERWISE SPECIFICALLY NOTED ON PLANS OR DETAILS. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS AND SHALL COORDINATE ALL STRUCTURAL PLANS AND DETAILS WITH ARCHITECTURAL & MECHANICAL DRAWINGS BEFORE STARTING WORK. THE ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR CONTRACTOR MEANS AND METHODS OF CONSTRUCTION OR SITE SAFETY. DESIGN, CONSTRUCTION, WORKMANSHIP AND MATERIALS SHALL COMPLY WITH THE CONTROLLING PROVISIONS OF THE 2018 EDITION OF THE **INTERNATIONAL BUILDING CODE (IBC).**

DESIGN CRITERIA:

1. BASIS FOR DESIGN AND CODE COMPLIANCE

   A. GOVERNING BUILDING CODE.......................................IBC 2018 EDITION

2. WIND DESIGN BASED ON ASCE 7–16 REQUIREMENTS:

   ULTIMATE DESIGN WIND SPEED.......................................145 MPH (Vasd=112 MPH)
   RISK CATEGORY.......................................II
   WIND EXPOSURE CATEGORY.......................................C
   INTERNAL PRESSURE COEFFICIENT (GCpi).......................................+/–0.18
   Kzt.......................................1.0
   Kd.......................................0.85

3. GRAVITY DESIGN
   A. ROOF:
   DEAD LOAD.......................................SELF–WEIGHT OF STRUCTURE & ROOFING SYSTEM
   COLLATERAL LOAD.......................................5 PSF
   LIVE LOAD.......................................20 PSF (REDUCIBLE)

   B. FLOOR:
   CATWALKS.......................................40 PSF

4. DRIFT LIMIT (PRE–ENGINEERED METAL BUILDING).......................................H/300

5. THESE BUILDINGS ARE DESIGNED TO MEET ASCE 7–16 WIND PRESSURES. ALL COMPONENTS AND CLADDINGS (E.G. WINDOWS, DOORS, ARCHITECTURAL SIDINGS AND ROOFING); MUST MEET MINIMUM WIND CODE REQUIREMENTS. IN ADDITION, GLAZED EXTERIOR OPENINGS SHALL BE IMPACT RESISTANT MEETING ASTM E 1996 FOR LARGE MISSILES OR PROTECTED WITH AN IMPACT RESISTANT COVERING

PROJECT WINDSTORM REQUIREMENTS

1. THE GENERAL CONTRACTOR MUST SUBMIT COMPONENT AND CLADDING WIND PRESSURE RATINGS AND REQUIRED ATTACHMENT PROCEDURES TO THE TEXAS DEPARTMENT OF INSURANCE (TDI) APPOINTED QUALIFIED INSPECTOR (WINDSTORM INSPECTOR) FOR REVIEW. SUBMITTAL INFORMATION SHALL INCLUDE DOCUMENTATION FOR EITHER A TESTED ASSEMBLY (THIRD PARTY WIND TEST REPORT) OR AN ENGINEERED ASSEMBLY (ENGINEERED SHOP DRAWINGS AND CALCULATIONS SEALED BY A TEXAS PROFESSIONAL ENGINEER) OF THE PROPOSED ASSEMBLY.

2. THE GENERAL CONTRACTOR SHALL CONTACT THE WINDSTORM INSPECTOR TO COORDINATE AND SCHEDULE REQUIRED PERIODIC INSPECTIONS OF THE INSTALLATION OF THE EXTERIOR COMPONENTS AND CLADDINGS.

3. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR PROVIDING CONSTRUCTION SERVICES AS NEEDED TO SATISFY THE REQUIREMENTS OF THE CONSTRUCTION DRAWINGS AND SPECIFICATIONS, THE REFERENCED BUILDING CODE AND THE TEXAS DEPARTMENT OF INSURANCE WINDSTORM INSPECTION PROGRAM. ALL CONSTRUCTION ADMINISTRATION COSTS ASSOCIATED WITH SUBMITTAL PREPARATION, SUBMITTAL REVIEW, INSPECTION COORDINATION, INCLUDING ALL GENERAL CONDITIONS, OVERHEAD AND PROFIT, SHALL BE INCLUDED IN THE GENERAL CONTRACTOR'S BID.

4. FOR THE NEW EXTERIOR MECHANICAL EQUIPMENT AND EXPOSED EXTERIOR DUCTWORK, THE ENGINEERING DESIGN FOR THESE EXTERIOR ASSEMBLIES, INCLUDING THEIR SUPPORT COMPONENTS (CURBS, STANDS, SLEEPERS, ETC.) AND ANCHORING OF THESE ITEMS TO THE STRUCTURE, SHALL BE SPECIFIED AS A DELEGATED DESIGN TO BE PERFORMED BY THE EQUIPMENT AND DUCTWORK MANUFACTURER. HENCE, THIS RESPONSIBILITY FALLS ON THE GENERAL CONTRACTOR, THEIR SUBCONTRACTORS AND THEIR VENDORS. NEITHER THE STRUCTURAL ENGINEER OR WINDSTORM INSPECTOR IS RESPONSIBLE FOR DESIGNING THE ROOFTOP EQUIPMENT ASSEMBLIES OR DUCTWORK, NOR OF THE ANCHORING OF THESE ASSEMBLIES TO THE STRUCTURE. SUBMITTALS OF THE ENGINEERED ASSEMBLIES NEED TO BE PROVIDED BY THE GENERAL CONTRACTOR FOR REVIEW AND FOR USE IN PERFORMING THE FIELD INSPECTIONS.

FOUNDATION DESIGN CRITERIA

1. FOUNDATION DESIGN IS IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE, AND IS BASED ON THE GEOTECHNICAL REPORT NO. ABA22–003–00 PREPARED BY RABA KISTNER, INC., MCALLEN, TEXAS, DATED FEBRUARY 11, 2022.

   A. BEARING CAPACITY:

   GRADE BEAMS.......................................1.7 KSF
   FOOTINGS.......................................2.1 KSF

   B. POTENTIAL VERTICAL RISE (PVR) ....1 INCH

2. GROUNDWATER WAS ENCOUNTERED AT **9.5 FEET** BELOW THE GROUND SURFACE ELEVATION DURING DRILLING OPERATIONS (MAY FLUCTUATE WITH SEASON). CONTRACTOR SHALL DETERMINE ACTUAL GROUNDWATER LEVELS JUST PRIOR TO CONSTRUCTION EXCAVATION ACTIVITIES.

3. THE GEOTECHNICAL ENGINEER OF RECORD SHALL BE RETAINED TO PERFORM TESTING AND INSPECTIONS DURING SITE PREPARATION AND PLACEMENT OF BUILDING PAD FILL AS REQUIRED BY SPECIFICATIONS AND GENERAL STRUCTURAL NOTES.

FOUNDATION NOTES

1. REMOVE **AT LEAST 48 INCHES,** OR AS REQUIRED TO REACH A **SUBGRADE ELEVATION OF 7.93 FT.** OF THE EXISTING SITE SOIL, VEGETATION, TREE ROOTS, DEBRIS, ETC., FROM THE PROPOSED BUILDING AREA TO A DISTANCE OF 5'–0" OUTSIDE THE BUILDING AREA (EXTERIOR OF THE FOUNDATION, INCLUDING ATTACHED IMPROVEMENTS SUCH AS SIDE WALKS AND CANOPIES). DEPTH OF REMOVAL SHALL BE VERIFIED BY THE GEOTECHNICAL ENGINEER AT THE TIME OF CONSTRUCTION.

2. AFTER TOP SOIL HAS BEEN REMOVED, THE SUBGRADE SHALL BE PROOF–ROLLED WITH APPROPRIATE CONSTRUCTION EQUIPMENT WEIGHING AT LEAST 15 TONS UNTIL THE GRADE OFFERS A RELATIVELY UNYIELDING SURFACE. SOFT SOIL AND YIELDING AREAS, AND AREAS CONTAINING ORGANIC MATTER AND/OR DEBRIS, SHALL BE OVER EXCAVATED AND REPLACED WITH COMPACTED SELECT FILL IN ACCORDANCE WITH THE REQUIREMENTS BELOW.

3. PROOFROLLING OPERATIONS AND EXCAVATION/BACKFILL ACTIVITIES SHOULD BE PERFORMED DURING A PERIOD OF DRY WEATHER AND OBSERVED BY THE GEOTECHNICAL ENGINEER OR HIS REPRESENTATIVE TO DOCUMENT SUBGRADE CONDITIONS AND PREPARATION. IF SUBGRADE SOILS ARE ALLOWED TO BECOME WET OR SATURATED, REMOVAL AND REPLACEMENT OF SOFT SOILS OR CHEMICAL TREATMENT PROCEDURES SUCH AS LIME STABILIZATION SHALL BE PERFORMED AT THE CONTRACTOR'S EXPENSE. THE GEOTECHNICAL ENGINEER SHALL BE CONTACTED FOR ADDITIONAL RECOMMENDATIONS, IF REQUIRED.

4. SCARIFY, MOISTURE CONDITION, AND COMPACT THE TOP 8" OF THE EXPOSED SUBGRADE TO 98% OF STANDARD PROCTOR MAXIMUM DRY DENSITY AT OPTIMUM TO +3% ABOVE THE OPTIMUM MOISTURE CONTENT, IN ACCORDANCE WITH TEST METHOD ASTM D–698. MOISTURE CONTENT SHALL BE AS NOTED IMMEDIATELY PRIOR TO PLACING SELECT FILL.

5. RESTORE GRADE USING SELECT FILL, **MINIMUM OF 48 INCHES** OR AS REQUIRED TO PROVIDE THE SPECIFIED **FINISH FLOOR ELEVATION OF 12.60 FT.** WHICHEVER IS GREATER, AND PROPER SITE DRAINAGE, COMPACTED IN ACCORDANCE WITH THE REQUIREMENTS BELOW. FINISH FLOOR ELEVATIONS SHALL BE VERIFIED WITH CIVIL ENGINEER.

FOUNDATION NOTES CONTINUED:

6. SELECT FILL SHALL BE COMPACTED IN THE FIELD IN LIFTS NOT TO EXCEED 8" LOOSE MEASURE (6 COMPACTED LIFT) TO A MINIMUM OF 98% OF STANDARD PROCTOR MAXIMUM DRY DENSITY AT –2% TO +2% OF THE OPTIMUM MOISTURE CONTENT, AS EVALUATED BY ASTM D–698.

7. SELECT FILL SHALL BE FREE OF ORGANIC OR OTHER DELETERIOUS MATERIALS, HAVE A MAXIMUM PARTICLE SIZE OF 4" OR ONE–HALF THE LOOSE LIFT THICKNESS, WHICHEVER IS SMALLER, A MAXIMUM LIQUID LIMIT (LL) OF 40%, AND A PLASTICITY INDEX (PI) BETWEEN 7–18. SOILS PROPOSED FOR USE SHOULD BE CLASSIFIED IN ACCORDANCE WITH USCS ASTM D2487 AND WILL BE CONSIDERED SATISFACTORY WHEN CLASSIFIED AS: **SC** , **GC** , OR **CL.** IF BLENDED OF MIXED SOILS ARE INTENDED FOR USE, THE GEOTECHNICAL ENGINEER SHOULD BE CONTRACTED TO PROVIDE ADDITIONAL RECOMMENDATIONS AND REQUIREMENTS.

8. FOUNDATION CONCRETE SHALL NOT BE PLACED ON SELECT FILL SOILS THAT HAVE BEEN DISTURBED BY RAINFALL OR WATER SEEPAGE. IF BEARING SOILS ARE SOFTENED BY WATER INTRUSION, OR BY DESICCATION, THE UNSUITABLE SOILS SHALL BE REMOVED FROM THE FOUNDATION EXCAVATION AND BE REPLACED WITH PROPERLY COMPACTED SELECT FILL PRIOR TO PLACEMENT OF FOUNDATION CONCRETE. ALL SOIL REMOVAL AND REPLACEMENT COSTS, INCLUDING ASSOCIATED COSTS TO REMOVE AND REINSTALL REINFORCEMENT AND VAPOR BARRIER MATERIALS, SHALL BE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR. DEPTH OF SOIL REMOVAL AND RECOMPACTION REQUIREMENTS SHALL BE COORDINATED WITH THE GEOTECHNICAL ENGINEER.

9. SAMPLES OF PROPOSED SELECT FILL SHALL BE FURNISHED TO THE TESTING LABORATORY 7 DAYS PRIOR TO INSTALLATION TO PERMIT TIME FOR SPECIFICATION COMPLIANCE INSPECTION AND REVIEW BY THE GEOTECHNICAL ENGINEER.

10. LABORATORY MOISTURE–DENSITY CURVES SHALL BE DEVELOPED FOR SUBGRADE AND FILL. PROCTOR CURVES AND FIELD DENSITY TESTS SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW. A MINIMUM OF ONE (1) IN PLACE DENSITY TEST PER 2,000 SQUARE FEET OF SLAB AREA SHALL BE TAKEN ON EACH LIFT DURING PLACEMENT OF SELECT FILL. DENSITY REPORTS SHALL BE TRANSMITTED TO ENGINEER WITHIN 3 DAYS AFTER TESTS ARE MADE.

11. GRAIN SIZE ANALYSIS AND ATTERBERG LIMITS TESTS SHALL BE PERFORMED DURING FILL PLACEMENT AT A RATE OF ONE TEST PER 5,000 CUBIC YARDS OF FILL BROUGHT TO THE SITE. SAMPLES FOR TEST SHALL BE TAKEN FROM JOBSITE MATERIALS.

12. SITE SHALL BE GRADED SO THAT WATER DOES NOT POND WITHIN 10 FEET OF THE PERIMETER FOUNDATION BEAM DURING OR AFTER CONSTRUCTION. THE SLOPE OF THE GROUND SURFACE AWAY FROM THE STRUCTURE SHOULD BE A MINIMUM OF THREE (3%) PERCENT FOR A DISTANCE OF AT LEAST TEN (10') FEET. ELEVATION OF GROUND SURFACE ADJACENT TO THE FOUNDATION SHOULD BE AT LEAST 6 INCHES BELOW FINISH FLOOR.

13. FINAL DRAINAGE IS VERY IMPORTANT TO THE PERFORMANCE OF THE FOUNDATION. LANDSCAPING, PLUMBING, AND DOWNSPOUT DRAINAGE ARE ALSO VERY IMPORTANT. IT IS VITAL THAT ALL ROOF DRAINAGE BE TRANSPORTED AWAY FROM BUILDINGS SO THAT NO AREAS OF WATER POND AROUND BUILDINGS, WHICH CAN RESULT IN SOIL VOLUME CHANGE UNDER THE FOUNDATION. PLUMBING LEAKS SHOULD BE REPAIRED AS SOON AS POSSIBLE IN ORDER TO MINIMIZE THE MAGNITUDE OF MOISTURE CHANGE UNDER THE SLAB. LARGE TREES AND SHRUBS SHOULD NOT BE PLANTED IN THE IMMEDIATE VICINITY OF THE STRUCTURE, SINCE THE ROOT SYSTEMS CAN CAUSE A SUBSTANTIAL REDUCTION IN SOIL VOLUME IN THE VICINITY OF THE TREE DURING DRY PERIODS. BUSHES AND TREES SHOULD BE PLANTED A REASONABLE DISTANCE AWAY FROM THE STRUCTURE SO THAT THEIR CANOPY OR "DRIP LINE" DOES NOT EXTEND BEYOND THE PERIMETER OF THE FOUNDATION. WATERING OF VEGETATION SHOULD BE PERFORMED IN A TIMELY AND CONTROLLED MANNER. PROLONGED WATERING SHOULD BE AVOIDED.

CONCRETE:

1. ALL CONCRETE WORK SHALL CONFORM TO THE AMERICAN CONCRETE INSTITUTE SPECIFICATION, A.C.I. #301 AND BUILDING CODE REQUIREMENTS, A.C.I. #318, LATEST EDITION.

2. ALL DETAILING, FABRICATION AND ERECTION OF REINFORCING BARS, UNLESS OTHERWISE NOTED, MUST FOLLOW THE A.C.I. "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE", A.C.I. #315, LATEST EDITION.

3. CONCRETE SHALL HAVE A MINIMUM COMPRESSION STRENGTH OF 4,000 PSI AT 28 DAYS.

4. A MAXIMUM OF 25% FLYASH MAY BE USED AS A CEMENT SUBSTITUTE AND SHALL CONFORM TO ASTM C618, CLASS C. THE WATER/CEMENT RATIO SHALL NOT EXCEED 0.6 AND SLUMPS SHALL BE 5 INCHES (± 1 INCH). AGGREGATE SHALL BE WELL–GRADED, 1" MAXIMUM FOR THE SLAB ON GRADE, 1" MAXIMUM FOR CAST–IN–PLACE BEAMS AND ABOVE GRADE SLABS. COARSE AGGREGATE SHALL MEET ASTM C33, GRADATION #57. A QUALIFIED TESTING LABORATORY SHALL BE RETAINED TO FURNISH MIX DESIGNS FOR ALL CLASSES OF CONCRETE. A SAMPLE OF FOUR CYLINDERS SHALL BE TAKEN NOT LESS THAN ONCE A DAY, NOR LESS THAN ONCE FOR EACH 100 YD3 OF CONCRETE. ONE CYLINDER SHALL BE TESTED AT 7 DAYS AND TWO AT 28 DAYS. THE FOURTH CYLINDER MAY BE DISPOSED OF AFTER 45 DAYS IF NOT USED.

5. ADMIXTURES CONTAINING WATER SOLUBLE CHLORIDE IONS GREATER THAN 0.06% BY WEIGHT OF CEMENT SHALL NOT BE USED.

6. REINFORCING BARS SHALL BE NEW BILLET STEEL CONFORMING TO ASTM A–615, GRADE 60. #3 BARS MAY BE GRADE 40.

7. STANDARD PROTECTIVE COVER OF REINFORCING BARS UNLESS OTHERWISE NOTED SHALL BE:
   WHERE CAST AGAINST DIRT OR FILL .... 3 IN.
   EXPOSED TO EARTH OR WEATHER .... 2 IN.
   SLABS AND WALLS .... 1 IN.
   OTHER .... 1–1/2 IN.

8. ALL ACCESSORIES SHALL BE IN ACCORDANCE WITH THE A.C.I. "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE", A.C.I. #315, LATEST EDITION.

9. SLAB MAT TO BE SUPPORTED BY MASONRY BRICK BATTS (MIN OF 1/2 BRICK) SPACED AT 4 FEET ON CENTER EACH WAY (MAX). BEAM CAGES SUPPORTED BY BATTS AT 4 FEET ON CENTER.

10. VERTICAL CONSTRUCTION JOINTS IN FLOOR SHALL BE COORDINATED WITH STRUCTURAL ENGINEER PRIOR TO FORMING SLAB. CRACK CONTROL JOINTS SHALL BE PROVIDED AT LOCATIONS SHOWN ON THE PLANS. CONTROL JOINTS SHALL BE SAWCUT (IMMEDIATELY SUBSEQUENT TO FINISHING SLAB) WITH "SOFF–CUT" SYSTEM. JOINTS SHALL BE CLEANED AND FILLED WITH "SONOLASTIC SL1" WITHIN TWO (2) DAYS AFTER SAWCUTTING. NO HORIZONTAL JOINTS WILL BE PERMITTED IN SLABS OR BEAMS UNLESS APPROVED BY THE ENGINEER.

11. PROVIDE 2 TOP & BOTTOM CORNER BARS AT ALL DISCONTINUOUS GRADE BEAMS AND FOUNDATION CORNERS. CORNER BARS SHALL BE 4'–0" IN LENGTH (2'–0" LEGS). SIZE OF THE CORNER BARS SHALL MATCH THE SIZE OF THE GRADE BEAM REINFORCING AS SHOWN BY STRUCTURAL DRAWINGS.

12. MAINTAIN A MINIMUM OF ONE AND ONE–HALF (1–1/2) TIMES THE MAXIMUM COARSE AGGREGATE SIZE BETWEEN ALL REINFORCING BARS (EXCEPT AT LAPS).

13. BARS SCHEDULED OR DETAILED "CONT" SHALL BE LAPPED 40 BAR DIAMETERS (24 INCHES MINIMUM) UNLESS OTHERWISE NOTED.

14. WHERE CONCRETE IS TO HAVE UNEXPOSED SURFACES, THE FORMS MAY BE CONSTRUCTED OF #2 LUMBER OR BETTER. WHERE SURFACES ARE EXPOSED, SUCH AS FOR FINISH PAINTING OR STUCCO DASH, THE FORMS SHALL BE COMMERCIAL STANDARD DOUGLAS FIR, MOISTURE–RESISTANT CONCRETE FORM PLYWOOD; MINIMUM 5–PLY AND AT LEAST 9/16" THICK, OR FORMS LINED WITH COMMERCIAL STANDARD DOUGLAS FIR, CONCRETE FORM EXTERIOR, 3–PLY, NOT LESS THAN 1/4" THICK. WHERE CONCRETE IS EXPOSED, A SMOOTH SURFACE IS REQUIRED, FREE FROM FINS, HONEYCOMB, FORM MARKS OR OTHER DEFECTS.

CONCRETE CONTINUED:

15. EXPOSED SURFACES OF CONCRETE AT THE PERIMETER OF THE FOUNDATION SHALL BE FORMED WITH 2X10 #2 LUMBER OR BETTER. A SMOOTH SURFACE IS REQUIRED, FREE FROM FINS, HONEYCOMB, FORM MARKS OR OTHER DEFECTS.

16. CONSTRUCT FORMS SO THAT JOINTS ARE LEAKPROOF. MAINTAIN FORMS SUFFICIENTLY RIGID TO PREVENT DEFORMATION UNDER LOAD.

17. CONCRETE MAY BE PLACED WITH CHUTES UP TO 25' MAXIMUM. SLUMP SHALL NOT EXCEED 6" AT TRUCK DISCHARGE POINT.

18. CONCRETE PLACED BY PUMPING SHALL MEET THE FOLLOWING REQUIREMENTS:

    A. COARSE AGGREGATE SHALL BE GRADED FROM A MAXIMUM OF 1" DOWN

    B. MAXIMUM ALLOWABLE INCREASE IN CEMENT FACTOR SHALL BE 1/2 SACK PER CUBIC YARD OVER NORMAL MIX DESIGN

    C. MAXIMUM WATER CEMENT RATIO SHALL BE 7–1/2 GALLONS PER SACK OF CEMENT. IF MORE WORKABILITY IS REQUIRED, AN ADMIXTURE MAY BE USED.

    D. MAXIMUM WEIGHT RATIO OF FINE AGGREGATES TO COARSE AGGREGATES SHALL NOT EXCEED 2/3.

    E. REFER TO A.C.I. #301, LATEST EDITION, SECTION 800, FOR OTHER PUMPING REQUIREMENTS.

    F. IN NO CASE SHALL CONCRETE BE PUMPED THROUGH AN ALUMINUM TUBE.

    G. SLUMP SHALL NOT EXCEED 6" AT TRUCK DISCHARGE POINT.

19. FLOOR FINISH (TOLERANCES)

    A. STEEL TROWEL FINISH 1/8" IN 10'

    B. FLOAT FINISH 1/4" IN 10'

    C. SCRATCH FINISH 1/2" IN 10'

20. CONCRETE TO BE CURED IN ACCORDANCE WITH ACI RECOMMENDATIONS. PROPOSED METHOD OF CURING TO BE COORDINATED WITH ENGINEER PRIOR TO CONCRETE PLACEMENT.

21. SHOP DRAWINGS SHALL BE PREPARED FOR ALL REINFORCING STEEL AND SUBMITTED FOR REVIEW BY ENGINEER. SUBMITTALS SHALL INCLUDE ELECTRONIC (PDF) COPIES OF EACH DRAWING. ENGINEERING DRAWINGS SHALL NOT BE REPRODUCED AND USED AS SHOP DRAWINGS.

22. THE CONTRACTOR SHALL REVIEW AND ANNOTATE SHOP DRAWINGS BEFORE SUBMITTING THEM TO THE ARCHITECT/ENGINEER FOR REVIEW. THE CONTRACTOR SHALL ALLOW ARCHITECT/ENGINEER 10 WORKING DAYS FOR REVIEW OF SHOP DRAWINGS.

23. ENGINEER TO BE NOTIFIED 48 HOURS PRIOR TO PLACEMENT OF FOUNDATION AND OF STRUCTURAL CONCRETE TO SCHEDULE REQUIRED OBSERVATIONS.

CONCRETE MASONRY

1. **THE GENERAL CONTRACTOR, PROJECT SUPERINTENDENT, TESTING LABORATORY AND THE MASONRY FOREMAN** SHALL MEET PRIOR TO THE START OF MASONRY WORK TO REVIEW PROJECT REQUIREMENTS AND PROCEDURES.

2. AN INDEPENDENT TESTING LAB SHALL VERIFY PLACEMENT OF VERTICAL REINFORCING IN WALLS AND HORIZONTAL REINFORCING IN BOND BEAMS AND LINTELS PRIOR TO PLACEMENT OF GROUT. INDEPENDENT TESTING LAB SHALL PROVIDE CONTINUOUS VISUAL OBSERVATIONS OF GROUTING PROCEDURES, REBAR PLACEMENT, SITE MIXING OF MORTAR, INSTALLATION OF EMBEDED STEEL CONNECTORS, AND GENERAL PLACEMENT OF MASONRY UNITS AND MORTAR JOINTS. INSPECTION REPORTS ARE TO BE GENERATED DAILY BY THE TESTING LAB. INSPECTION SUMMARY REPORTS SHALL BE EMAILED TO THE STRUCTURAL ENGINEER IN ELECTRONIC (PDF) FORMAT.

3. ALL CONCRETE MASONRY SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE LOCAL BUILDING CODES AND THE AMERICAN CONCRETE INSTITUTE (ACI 530–13/ ASCE 5–13/ TMS 402–16). DESIGN IS BASED ON MASONRY COMPRESSIVE STRENGTH (f'm) OF 2,000 PSI.

4. HOT AND COLD WEATHER CONSTRUCTION PROCEDURES SHALL BE UTILIZED AS REQUIRED BY THE SPECIFICATIONS AND ACI 530.1.

5. HOLLOW CONCRETE MASONRY UNITS SHALL BE DOMESTIC LIGHTWEIGHT MOISTURE CONTROLLED TYPE I UNITS, CONFORMING TO ASTM C–90–97.

6. MASONRY UNITS SHALL HAVE A MINIMUM AVERAGE COMPRESSIVE STRENGTH OF 2,000 PSI (NET AREA) WHEN TESTED IN ACCORDANCE WITH ASTM C–140, "METHODS OF SAMPLING AND TESTING CONCRETE MASONRY UNITS" .

7. MORTAR PROPORTIONS FOR REINFORCED MASONRY SHALL BE ESTABLISHED PER ASTM C270 PROPORTION SPECIFICATIONS, TYPE S USING MASONRY CEMENT. FIELD TESTS OF MORTAR SHALL BE PERFORMED BY A QUALIFIED TESTING LABORATORY IN ACCORDANCE WITH ASTM C780 AT A RATE OF ONE TEST PER 2,000 SF OF WALL SURFACE TO DETERMINE BATCH–TO–BATCH UNIFORMITY OF MORTAR. REFERENCE SPECIFICATIONS FOR NON REINFORCED MASONRY.

8. GROUT FOR ALL REINFORCED HOLLOW MASONRY UNIT WALLS SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI WITH A MAXIMUM 3/8" AGGREGATE. A MID RANGE WATER REDUCING AGENT SUCH AS "POLYHEED" (MASTER BUILDERS) SHALL BE USED. SLUMP TO BE BETWEEN 8 AND 11 INCHES. **ALL GROUT SHALL BE PUMPED**. PLACING OF GROUT TO FOLLOW AMERICAN CONCRETE INSTITUTE (ACI) RECOMMENDATIONS REGARDING **LOW & HIGH LIFT GROUTING**. MAXIMUM LIFT OF GROUT SHALL NOT EXCEED 5'–0" UNLESS APPROVED BY THE ENGINEER PRIOR TO START OF GROUTING. GROUT TO BE TESTED BY A QUALIFIED TESTING LABORATORY AT A RATE OF ONE TEST PER 25 CY OF GROUT IN ACCORDANCE WITH ASTM C1019.

9. REINFORCING STEEL SHALL CONFORM TO ASTM A–615, GRADE 60. ALL BAR REINFORCING SHALL BE LAPPED 48 BAR DIAMETERS (MIN). BARS SHALL BE PLACED WITHIN 1/2" (CENTERLINE OF BAR TO FACE OF MASONRY) OF LOCATION SHOWN IN STRUCTURAL PLANS. BARS SHALL BE HELD IN POSITION DURING GROUTING WITH BAR POSITIONERS. POSITIONERS SHALL BE LOCATED AT THE BOTTOM AND TOP OF THE WALL AND AT 8 TO 10 FOOT INTERVALS. BARS SPLICED BY NON–CONTACT LAP SPLICES SHALL NOT BE SPACED TRANSVERSELY FARTHER APART THAN ONE–FIFTH THE REQUIRED LENGTH OF LAP NOR MORE THAN 8 INCHES.

10. VERTICAL BARS SHALL EXTEND TO THE TOP OF THE PARAPET WALL OR BOND BEAM WHEN A 16" DEEP BEAM IS SPECIFIED. HOOKED DOWELS SHALL BE PROVIDED AT ROOF BOND BEAMS (W/O PARAPETS) LESS THAN 16" DEEP. DOWELS SHALL BE 30" LONG WITH 12" HOOKS.

11. ALL EXTERIOR MASONRY WALLS SHALL BE REINFORCED WITH 9 GA. HOT DIPPED GALVANIZED HORIZONTAL WIRE REINFORCEMENT (LADDER TYPE) EMBEDDED IN MORTAR JOINTS AT 16" O.C. NOMINAL WIDTH OF JOINT REINFORCING SHALL EQUAL WALL THICKNESS. (INTERIOR WALLS MAY BE MILL GALVANIZED). WIRE REINFORCEMENT SHALL CONFORM TO ASTM DESIGNATION A–82, AND SHALL BE LAPPED AT LEAST 8" WITH AT LEAST ONE CROSS WIRE WITHIN THE LAP. JOINT REINFORCING SHALL BE INSTALLED IN THE FIRST AND SECOND MORTAR BED JOINTS IMMEDIATELY ABOVE AND BELOW ALL OPENINGS. WIRE REINFORCING SHALL BE DISCONTINUOUS AT CONTROL JOINTS.

12. EXTERIOR WALLS SHALL BE BONDED WITH CONCRETE MASONRY UNITS AT BUILDING CORNERS.

13. ONE GROUTED #5 BAR SHALL BE PROVIDED AROUND THE PERIMETER OF ALL WALL OPENINGS AND AT BUILDING CORNERS UNLESS NOTED OTHERWISE ON THE STRUCTURAL PLANS.

CONCRETE MASONRY CONTINUED:

14. NEATLY TOOL INTERIOR AND EXTERIOR JOINTS IN MASONRY TO FORM A SLIGHTLY CONCAVE PROFILE WHEN MORTAR IS THUMBPRINT HARD UNLESS SHOWN OTHERWISE. ALL MORTAR JOINTS SHALL BE TOOLED THE ENTIRE HEIGHT OF WALL.

15. BOND BEAMS SHALL BE REINFORCED WITH TWO CONTINUOUS #5 BARS UNLESS NOTED OTHERWISE ON THE STRUCTURAL PLANS. REINFORCING SHALL BE CONTINUOUS AT ALL CORNERS AND INTERSECTING WALLS. (PROVIDE CORNER BARS). WHERE SIDE WALL AND END WALL BOND BEAMS DO NOT COURSE CONTINUE THE LOWER BOND BEAM AROUND THE BUILDING CORNER TO THE FIRST VERTICAL REINFORCED CELL.

16. CONTROL JOINTS SHALL BE CONSTRUCTED WITH SLOTTED MASONRY UNITS AND FACTORY MOLDED JOINT FILLER. JOINTS SHALL BE CAULKED WITH AN APPROVED MATERIAL. JOINTS SHALL BE PROVIDED AT MAXIMUM SPACING OF 22 FT. AND AT ALL LOCATIONS WHERE COLUMNS ARE PLACED IN CMU CELLS. (EXTERIOR AND INTERIOR WALLS). JOINT LOCATIONS, IF NOT SHOWN ON PLANS, SHALL BE COORDINATED WITH ARCHITECT.

17. CONTROL JOINTS **SHALL NOT** EXTEND THROUGH BOND BEAMS UNLESS INDICATED ON THE STRUCTURAL PLANS.

18. CONTROL JOINTS IN CMU WALLS SHALL NOT BE LOCATED CLOSER THAN 2'–0" FROM AN EDGE OF OPENING WITHOUT REVIEW OF STRUCTURAL ENGINEER.

19. COLUMNS WHICH EXTEND THROUGH BOND BEAMS SHALL BE WRAPPED WITH 2 LAYERS OF 30# BUILDING PAPER. REINFORCING SHALL BE CONTINUOUS PAST COLUMNS WHEN ADEQUATE CLEARANCE EXISTS.

20. LINTELS OVER ALL OPENINGS IN INTERIOR MASONRY PARTITIONS, NOT OTHERWISE COVERED, ARE TO BE OF STANDARD CMU LINTEL BLOCK WITH THICKNESS EQUAL TO WALL THICKNESS. DEPTH SHALL BE 8" FOR OPENINGS UP TO 6'–0", REINFORCED WITH TWO #5's, LOCATED 2–1/2" ABOVE THE BOTTOM EXTERIOR FACE OF THE UNIT.

STRUCTURAL STEEL

1. TOP OF BEAM/PLATE (TOB OR TOP) IS USED INTERCHANGEABLY ON PLANS. REFERENCE APPLICABLE SECTION FOR CLARIFICATION.

2. STRUCTURAL STEEL WIDE FLANGE MEMBERS SHALL CONFORM TO ASTM A 572 AND/OR ASTM A 992 (Fy = 50 KSI) UNLESS OTHERWISE NOTED. PLATE AND ANGLES MAY BE A36 (Fy = 36 KSI).

3. ALL STRUCTURAL STEEL TUBING SHALL CONFORM TO ASTM SPECIFICATION A–500, GRADE B (Fy=46 KSI). STEEL PIPE SHALL COMPLY WITH ASTM A53 TYPE E OR S (Fy=35 KSI).

4. ALL STRUCTURAL STEEL SHALL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST SPECIFICATIONS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION.

5. ALL BOLTS SHALL BE 3/4 DIAMETER ASTM A325. WASHERS SHALL BE PROVIDED AT OVERSIZED HOLES AND AT SLOTTED CONNECTIONS AT EXPANSION JOINTS. A325 CONNECTIONS SHALL BE BEARING TYPE CONNECTIONS UNLESS NOTED OTHERWISE. ANCHOR BOLTS MAY BE ASTM A307 UNLESS NOTED OTHERWISE.

6. REFER TO ARCHITECTURAL & MECHANICAL PLANS FOR VERIFICATION OF ALL BOLTS, BLOCKING ANCHORS, ETC., FOR THE ANCHORAGE OF THEIR RESPECTIVE ITEMS.

7. ALL BEAMS AND COLUMNS SHALL BE FULL LENGTH WITHOUT SPLICES UNLESS INDICATED ON PLANS OR APPROVED BY THE ENGINEER IN WRITING.

8. ALL SHOP AND FIELD WELDS SHALL BE MADE BY WELDERS WHO HAVE BEEN QUALIFIED AND CERTIFIED TO MAKE THE REQUIRED WELDS IN ACCORDANCE WITH THE LATEST AMERICAN WELDING SOCIETY SPECIFICATIONS (A.W.S. D–1.1).

9. WELDS SHALL BE MADE WITH COVERED MILD STEEL ELECTRODES COMPLYING WITH AWS D1–72 CODE AND SERIES E 70XX.

10. ERECTION CONNECTORS SHALL BE PROVIDED IN ORDER TO PROPERLY ALIGN AND BE TRUE AND PLUMB WHEN WELDS ARE MADE.

11. ALL COMPLETE PENETRATION WELDS, BOTH SHOP AND FIELD, SHALL BE TESTED BY A QUALIFIED TESTING LABORATORY UTILIZING ULTRA SONIC TESTING PROCEDURES IN ACCORDANCE WITH A.W.S. D–1.1. ANY WELDS FOUND DEFECTIVE SHALL BE REMOVED AND REPLACED AT NO ADDITIONAL COST TO THE OWNER. ALL X–RAYED WELDS SHALL BE GROUND SMOOTH.

12. THE FABRICATOR, SHALL SUPPLY BACK–UP PLATES AND EXTENSION TABS FOR ALL COMPLETE PENETRATION WELDS.

13. ALL STEEL MEMBERS INCLUDING FASTENERS AND ASSOCIATED ACCESSORIES SHALL BE HOT–DIPPED GALVANIZED.

14. WELDED HEADED STUDS (WHS) SHALL BE "NELSON ANCHORS", OR EQUAL, Fs = 60 KSI, DIAMETER AND LENGTH AS SHOWN ON PLANS. STUDS TO BE WELDED& SHOP TESTED IN ACCORDANCE W/ THE MANUFACTURER'S RECOMMENDATIONS.

15. AFTER ERECTION, PRIME WELDS, ABRASIONS AND SURFACES NOT PRIMED. USE PRIMER CONSISTENT WITH SHOP COAT. GALVANIZED SURFACES SHALL BE CLEANED AND PAINTED WITH "ZRC".

16. FIELD WELDS AND BOLTED CONNECTIONS SHALL BE VISUALLY INSPECTED BY A QUALIFIED INDEPENDENT INSPECTOR. THE INSPECTOR SHALL PROVIDE A WRITTEN REPORT TO THE STRUCTURAL ENGINEER.

17. A SINGLE ELECTRONIC FILE (PDF FORMAT) SHOP DRAWINGS SHALL BE PREPARED FOR ALL STRUCTURAL STEEL COMPONENTS AND SUBMITTED FOR REVIEW BY ENGINEER. ENGINEERING DRAWINGS SHALL NOT BE REPRODUCED AND USED AS SHOP DRAWINGS.

18. THE CONTRACTOR SHALL REVIEW AND ANNOTATE SHOP DRAWINGS BEFORE SUBMITTING THEM TO THE ARCHITECT/ENGINEER FOR REVIEW. THE CONTRACTOR SHALL ALLOW ARCHITECT/ENGINEER 10 WORKING DAYS FOR REVIEW OF SHOP DRAWINGS.

19. THE STRUCTURAL ENGINEER SHALL BE NOTIFIED FOR A FRAMING OBSERVATION IMMEDIATELY AFTER ROOF PANELS ARE INSTALLED AND BEFORE INSTALLATION OF THE CEILING.

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HERIBERTO CAVAZOS
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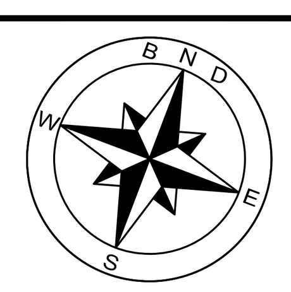

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PORT OF BROWNSVILLE
the port that works

GENERAL STRUCTURAL NOTES

BND SHOP
VEHICLE WASH BAYS

APPROVED BY :	HC
REVISION DATE :	
DWG. NO.	1240-02
DRAWN BY :	LC
DATE DRAWN :	MAY 13, 2022
CHECKED BY :	AV/BD
FILE NAME :	
SCALE :	AS SHOWN

SHEET
S1.1

GENERAL STRUCTURAL NOTES

PRE-ENGINEERED METAL BUILDING:

1. REFERENCE SCHEMATIC ROOF FRAMING PLAN AND DESIGN CRITERIA FOR DESIGN LOAD REQUIREMENTS AND SPECIFICATIONS FOR PERTINENT INFORMATION REGARDING THE PRE-ENGINEERED STRUCTURE. SPECIFICATIONS FOR THE PRE-ENGINEERED BUILDING, OTHER THAN LOAD AND CODE SPECIFICATIONS, ARE NOT IN THE SCOPE OF SERVICE PROVIDED BY THE PROJECT STRUCTURAL ENGINEER.
2. THE BUILDING MANUFACTURER SHALL FURNISH DESIGN CERTIFICATION SIGNED AND SEALED BY A STATE OF TEXAS REGISTERED PROFESSIONAL ENGINEER FOR THE STRUCTURAL FRAMING AND COVERING PANELS OF THE METAL BUILDING SYSTEM. CERTIFICATION TO SPECIFICALLY STATE THAT THE DESIGN MEETS OR EXCEEDS THE APPLICABLE REQUIREMENTS OF THE IBC.
3. THE ABOVE REFERENCED CERTIFICATION BY THE PRE-ENGINEERED BUILDING DESIGN ENGINEER SHALL BE INCLUDED WITH THE SEALED BUILDING ERECTION AND FABRICATION DRAWINGS WHEN SUBMITTED FOR REVIEW BY THE DESIGN TEAM. A REVIEW PACKAGE WITHOUT SIGNED AND SEALED CERTIFICATION FORMS AND SEALED BUILDING PLANS WILL NOT BE REVIEWED FOR RECORD BY THE STRUCTURAL ENGINEER.
4. THESE BUILDINGS ARE SPECIFIED TO BE ENCLOSED BUILDINGS AS DEFINED BY ASCE 7. ACCESSORIES (DOORS, WINDOWS, ETC.) MUST BE DESIGNED AS COMPONENTS AND CLADDING IN ACCORDANCE TO THE SPECIFIC WIND CODE DESIGNATED IN THE GENERAL STRUCTURAL NOTES.
5. ALL COMPONENTS SHALL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST SPECIFICATIONS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, AND THE METAL BUILDING MANUFACTURER ASSOCIATION.
6. ALL COMPONENTS SHALL BE SIZED FOR ALL DEAD LOADS, LIVE LOADS, WIND LOADS AS OUTLINED IN DESIGN CRITERIA AND/OR SPECIFIED ON PLANS.
7. ROOF SYSTEM INCLUDING PANELS, FASTENERS, AND TRIM MATERIALS SHALL MEET OR EXCEED UPLIFT REQUIREMENTS OF ASTM E 1592 AND UL 580 CLASS 90. FASTENERS SHALL BE SPACED TO MEET ASTM E 1592 UPLIFT LOADS AND THE WIND UPLIFT LOADS AS TABULATED AND INDICATED ON THE WIND DIAGRAMS ON THE STRUCTURAL PLANS.
8. SHOP DRAWINGS AND CALCULATIONS SHALL BE PERFORMED BY AN ENGINEER LICENSED TO PRACTICE IN THE STATE OF TEXAS. CALCULATIONS & SHOP DRAWINGS SHALL BE TRANSMITTED AS A SINGLE ELECTRONIC FILE (PDF FORMAT) TO THE A/E FOR REVIEW PRIOR TO FABRICATION OF COMPONENTS.
9. REFER TO ARCHITECTURAL & M.E.P. DRAWINGS FOR ROOF SUPPORTED ITEMS INCLUDING FANS, PLUMBING, LIGHTING, PIPING, DUCTWORK, ETC. AND PROVIDE SUPPORT FRAMING FOR ADDITIONAL LOADS AS REQUIRED.
10. PURLIN SPACING TO BE DETERMINED BY BUILDING SUPPLIER. TOTAL LOAD DEFLECTION SHALL NOT EXCEED OF L/240.

METAL BUILDING COMPONENTS

1. ALL COMPONENTS SHALL BE DESIGNED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST SPECIFICATIONS AND STANDARDS OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION, AND THE LIGHT GAGE STRUCTURAL INSTITUTE.
2. ALL PRIMARY FRAMING MEMBERS (RIGID FRAMES, PORTAL FRAMES, END WALL COLUMNS, ETC.) SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION AND ALL SECONDARY FRAMING MEMBERS (PURLINS, GIRTS, EAVE STRUTS, ETC.) SHALL BE COLD ROLLED FROM HOT-DIPPED GALVANIZED MATERIAL PER ASTM A653.
3. PURLINS AND EAVE STRUTS SHALL BE FABRICATED FROM STEEL HAVING A MINIMUM YIELD OF 55 KSI. PURLINS SHALL BE SHOP PUNCHED AND LAPPED AS SHOWN ON THE ROOF FRAMING PLANS. EAVE STRUTS SHALL BE INSTALLED WITH BOLTED CONNECTIONS. PURLINS AND EAVE STRUTS TO BE SECURED WITH MINIMUM 1/2 DIAMETER BOLTS (A307 GRADE).
4. SAG STRAPS SHALL BE LOCATED AS SHOWN ON THE PLANS. STRAPS SHALL BE FABRICATED FROM STEEL HAVING A MINIMUM YIELD OF 50 KSI. THE STRAPS SHALL BE SECURED TO TOP & BOTTOM FLANGES OF ALL PURLINS WITH #14 TEK SCREWS.

FASTENERS

1. CAST-IN-PLACE AND POST-INSTALLED ANCHORS SHALL BE PER ANCHOR DIAMETER AND EMBEDMENT DEPTH NOTED ON THE DRAWINGS. POST-INSTALLED ANCHORS SHALL BE UTILIZED ONLY WHERE SPECIFIED. ALL ANCHORS SHALL BE HOT-DIPPED GALVANIZED PER ASTM A153
2. ALL ANCHORS NOTED BELOW SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR SHALL CONTACT MANUFACTURER'S REPRESENTATIVE FOR THE INITIAL TRAINING AND INSTALLATION OF ANCHORS, AND FOR PRODUCT RELATED QUESTIONS AND AVAILABILITY.
3. SPECIAL INSPECTIONS SHALL BE PROVIDED FOR ALL MECHANICAL AND ADHESIVE ANCHORS PER THE APPLICABLE EVALUATION REPORT NOTED BELOW. SPECIAL INSPECTIONS SHALL BE PERFORMED BY INDEPENDENT TESTING LABORATORY PERFORMING QA/QC SERVICES ON PROJECT.
4. EXPANSION BOLTS (EB) IN CONCRETE/CMU SHALL BE TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193. ACCEPTABLE PRODUCTS:
   A. KWIK BOLT III (ICC-ES ESR-2302) BY HILTI (CONCRETE)
   B. KWIK BOLT III (ICC-ES-ESR-1385) BY HILTI (MASONRY)
   C. STRONG-BOLT 2 (ICC-ES ESR-3037) BY SIMPSON STRONG-TIE (CONCRETE)
   D. WEDGE-ALL ANCHOR (ICC-ES ESR-1396) BY SIMPSON STRONG-TIE (MASONRY)
5. HEAVY DUTY SLEEVE ANCHORS IN CONCRETE/CMU SHALL BE TESTED AND QUALIFIED OR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193. EXPANSION BOLTS (EB) SHALL NOT BE SUBSTITUTED FOR SLEEVE ANCHORS WITHOUT PRIOR WRITTEN APPROVAL BY STRUCTURAL ENGINEER. ACCEPTABLE PRODUCTS:
   A. HSL-3 (ICC-ES ESR-1545) BY HILTI (CONCRETE)
6. SCREW ANCHORS IN CONCRETE SHALL BE TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193. ACCEPTABLE PRODUCTS:
   A. KWIK HUS-EZ (ICC-ES ESR-3027) BY HILTI (CONCRETE)
   B. KWIK HUS-EZ (ICC-ES ESR-3056) BY HILTI (MASONRY)
   C. TITEN HD (ICC-ES ESR-2713) BY SIMPSON STRONG-TIE (CONCRETE)
   D. TAPCON ANCHORS (ICC-ES ESR-1671) (MASONRY)
   E. POWERS WEDGE BOLT (ICC-ES ESR-1678) (MASONRY)

FASTENERS CONTINUE

7. UNDERCUT ANCHORS IN CONCRETE SHALL BE TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193. ACCEPTABLE PRODUCTS:
   A. HDA (ICC-ES ESR-1546) BY HILTI (CONCRETE)
   B. TORQ-CUT (ICC-ES ESR-2705) BY SIMPSON STRONG-TIE (CONCRETE)
8. POWDER ACTUATED FASTENERS IN CONCRETE/CMU SHALL BE TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.2 AND ICC-ES AC193. ACCEPTABLE PRODUCTS:
   A. X-U (ICC-ES ESR-2269) BY HILTI (CONCRETE/MASONRY)
   B. POWDER ACTUATED FASTENERS (ICC-ES ESR-2138) BY SIMPSON STRONG TIE (CONCRETE/MASONRY)
9. ADHESIVE ANCHORS IN CONCRETE/CMU SHALL BE TESTED AND QUALIFIED FOR USE IN ACCORDANCE WITH ACI 355.4 AND ICC-ES AC308. ACCEPTABLE PRODUCTS:
   A. HIT-RE 500-V3 (ICC-ES ESR-3814) BY HILTI (CONCRETE)
   B. HIT-HY 270 (ICC-ES ESR-4143) BY HILTI (MASONRY)
   C. SET-XP (ICC-ES ESR-2508) BY SIMPSON STRONG-TIE (CONCRETE)
   D. SET (ICC-ES ESR-1772) BY SIMPSON STRONG-TIE (MASONRY
10. J-BOLTS SHALL BE FABRICATED FROM ASTM A36/A307 ROD. BOLTS, NUTS AND WASHERS SHALL BE GALVANIZED. EXPANSION BOLTS/SLEEVE ANCHORS SHALL NOT BE SUBSTITUTED FOR J-BOLTS WITHOUT PRIOR WRITTEN APPROVAL BY STRUCTURAL ENGINEER.
11. HEADED ANCHOR RODS SHALL BE FABRICATED FROM ASTM F1554 MATERIAL, FY=36 KSI
12. SUBSTITUTION REQUESTS FOR PRODUCTS LISTED ABOVE SHALL BE SUBMITTED BY THE CONTRACTOR TO THE STRUCTURAL ENGINEER ALONG WITH CALCULATIONS THAT ARE PREPARED & SEALED BY A REGISTERED PROFESSIONAL ENGINEER. THE CALCULATIONS SHALL DEMONSTRATE THAT THE SUBSTITUTED PRODUCT IS CAPABLE OF ACHIEVING THE PERTINENT EQUIVALENT PERFORMANCE VALUES OF THE SPECIFIED PRODUCT USING THE APPROPRIATE DESIGN PROCEDURE AND/OR STANDARDS. SUBSTITUTED ANCHORS SHALL HAVE A VALID CURRENT EVALUATION (ICC-ES OR IAPMO-ES) REPORT.

EXTERIOR COMPONENTS & CLADDINGS

ALL EXTERIOR COMPONENT AND CLADDING SYSTEMS (E.G. WINDOWS, CURTAIN WALLS, STOREFRONTS, DOORS, ARCHITECTURAL SIDINGS, METAL WALL AND ROOF PANELS, ROOFING SYSTEMS, SKYLIGHTS) MUST MEET MINIMUM WIND CODE REQUIREMENTS. CONTRACTOR MUST SUBMIT COMPONENT AND CLADDING ASSEMBLY WIND PRESSURE AND IMPACT RESISTANCE TESTING RATINGS AND REQUIRED ATTACHMENT PROCEDURES TO THE TDI APPOINTED QUALIFIED INSPECTOR (AQI) FOR REVIEW. ROOF TOP MECHANICAL EQUIPMENT AND THEIR SUPPORT COMPONENTS, AND ANCHORING OF THESE ITEMS TO THE STRUCTURE, SHALL BE DELEGATED DESIGN TO BE PERFORMED BY THE EQUIPMENT'S MANUFACTURER, TO MEET THE WIND PRESSURES CALCULATED PER ASCE 7-16 SECTION 29.4.1, USING THE WIND DESIGN PARAMETERS LISTED ON THE GENERAL STRUCTURAL NOTES DESIGN CRITERIA.

1. TESTED ASSEMBLIES
   A. THE CONTRACTOR SHALL INSTALL PROJECT SPECIFIC ASSEMBLIES THAT HAVE BEEN TESTED AND MEET THE APPLICABLE PERFORMANCE REQUIREMENTS LISTED BELOW. PROJECT ASSEMBLIES SHALL BE INSTALLED IN SAME MANNER AS TESTED ASSEMBLIES INCLUDING SYSTEM COMPONENTS, REINFORCEMENT, GLAZING, HARDWARE, ANCHORS AND FASTENING LOCATIONS, SEALANTS & ALL ACCESSORIES, AS APPLICABLE.
2. ASSEMBLY PERFORMANCE REQUIREMENTS
   A. STRUCTURAL PERFORMANCE: TESTED ASSEMBLY THAT PASSES STRUCTURAL PERFORMANCE REQUIREMENTS WHEN TESTED IN ACCORDANCE WITH THE APPLICABLE PERFORMANCE STANDARD(S) LISTED BELOW, AT A MINIMUM OF THE POSITIVE AND NEGATIVE DESIGN WIND-LOAD PRESSURES INDICATED ON THE STRUCTURAL DRAWINGS. TESTED ASSEMBLY SHALL BE NO SMALLER IN WIDTH AND LENGTH THAN ASSEMBLY INDICATED FOR USE ON THE PROJECT AND SHALL MATCH PROJECT ASSEMBLY INCLUDING ALL COMPONENTS AND SUBSTRATE(S).
   B. WINDBORNE-DEBRIS-IMPACT RESISTANCE: TESTED ASSEMBLY THAT PASSES LARGE-MISSILE IMPACT PROTECTION TESTING REQUIREMENTS ACCORDING TO ASTM E 1996 WHEN TESTED ACCORDING TO ASTM E 1886. TESTED ASSEMBLY SHALL BE NO SMALLER IN WIDTH AND LENGTH THAN ASSEMBLY INDICATED FOR USE ON THE PROJECT AND SHALL MATCH PROJECT ASSEMBLY INCLUDING ALL COMPONENTS AND SUBSTRATE(S).
3. ASSEMBLY PERFORMANCE STANDARDS
   A. ASTM E 330 – STANDARD TEST METHOD FOR STRUCTURAL PERFORMANCE OF EXTERIOR WINDOWS, DOORS, SKYLIGHTS AND CURTAIN WALLS BY UNIFORM STATIC AIR PRESSURE DIFFERENCE
   B. ASTM E 1592 – STANDARD TEST METHOD FOR STRUCTURAL PERFORMANCE OF SHEET METAL ROOF AND SIDING SYSTEMS BY UNIFORM STATIC AIR PRESSURE DIFFERENCE
   C. ASTM E 1886 – STANDARD TEST METHOD FOR PERFORMANCE OF EXTERIOR WINDOWS, CURTAIN WALLS, DOORS, AND STORM SHUTTERS IMPACTED BY MISSILE(S) AND EXPOSED TO CYCLIC PRESSURE DIFFERENTIALS
   D. ASTM E 1996 – STANDARD SPECIFICATION FOR PERFORMANCE OF EXTERIOR WINDOWS, CURTAIN WALLS, DOORS AND IMPACT PROTECTIVE SYSTEMS IMPACTED BY WINDBORNE DEBRIS IN HURRICANES
   E. FM 4450 – APPROVAL STANDARD FOR CLASS 1 INSULATED STEEL DECK ROOFS
   F. FM 4470 – APPROVAL STANDARD FOR SINGLE-PLY, POLYMER-MODIFIED BITUMEN SHEET, BUILT-UP ROOF (BUR) AND LIQUID APPLIED ROOF ASSEMBLIES FOR USE IN CLASS 1 AND NONCOMBUSTIBLE ROOF DECK CONSTRUCTION
   G. FM 4474 – AMERICAN NATIONAL STANDARD FOR EVALUATING THE SIMULATED WIND UPLIFT RESISTANCE OF ROOF ASSEMBLIES USING STATIC POSITIVE AND/OR NEGATIVE DIFFERENTIAL PRESSURES
   H. UL 580 – STANDARD FOR TESTS FOR UPLIFT RESISTANCE OF ROOF ASSEMBLIES
   I. UL 1897 – STANDARD FOR UPLIFT TESTS FOR ROOF COVERING SYSTEMS

EXTERIOR COMPONENTS & CLADDINGS CONTINUED:

4. ASSEMBLY SUBMITTALS
   A. SUBMITTALS SHALL CONSIST OF PROJECT SPECIFIC SHOP DRAWINGS AND ASSEMBLY TEST REPORTS, AS DESCRIBED BELOW. SUBMITTALS SHALL BE COMPLETE, CLEAR AND LEGIBLE; INCOMPLETE SUBMITTALS WILL BE REJECTED.
   B. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING ITEMS:
      1) SYSTEM DESCRIPTION INCLUDING MANUFACTURER'S NAME AND SPECIFIC PRODUCT MODEL NUMBER, NAME OR DESIGNATION.
      2) MANUFACTURER'S PRODUCT DATA/TECHNICAL INFORMATION AND DETAILS.
      3) SYSTEM LAYOUT PLANS, ELEVATIONS, CROSS-SECTIONS AND DETAILS AS APPLICABLE TO THE PROJECT.
      4) DESCRIPTION OF SYSTEM'S ASSEMBLY COMPONENTS (E.G. ROOF LAYERS, FRAME MEMBERS, REINFORCEMENT, DOOR TYPE, GLAZING, HARDWARE, ANCHORS AND FASTENING LOCATIONS, SEALANTS, ACCESSORIES). ALL COMPONENTS SHALL MATCH THOSE SPECIFIED ON ASSEMBLY TEST REPORTS.
      5) SHOP DRAWINGS SHALL INDICATE THE SYSTEM ATTACHMENT METHOD INCLUDING ANCHOR TYPE AND FASTENER LOCATIONS FOR EACH DIFFERENT TYPE OF SUBSTRATE. SYSTEM ATTACHMENT SHALL BE PER ASSEMBLY TEST REPORTS.
      6) ASSEMBLY TEST REPORTS OFTEN PROVIDE OPTIONS FOR MATERIALS AND FASTENING METHODS. SHOP DRAWINGS SHALL BE SPECIFIC TO THE MATERIAL OR METHOD THAT THE CONTRACTOR IS PROPOSING TO INSTALL ON THE PROJECT.
      7) CROSS-REFERENCING BETWEEN THE SHOP DRAWINGS AND THE ASSEMBLY TEST REPORTS IS ENCOURAGED, BUT THE SHOP DRAWINGS SHALL BE DETAILED ENOUGH TO STAND INDEPENDENT OF THE TEST REPORTS.
   C. ASSEMBLY TEST REPORTS SHALL INCLUDE THE FOLLOWING ITEMS:
      1) PERFORMANCE RATINGS BASED ON EVALUATION OF COMPREHENSIVE TESTING IN ACCORDANCE WITH THE APPLICABLE PERFORMANCE STANDARD(S) LISTED ABOVE.
      2) TESTING AND DEVELOPMENT OF REPORTS SHALL BE PERFORMED BY A QUALIFIED THIRD-PARTY TESTING AGENCY.
      3) TEST REPORTS SHALL BE SEALED BY THE QUALIFIED PROFESSIONAL ENGINEER RESPONSIBLE FOR THEIR PREPARATION.
      4) TEST REPORTS SHALL BE RECENT TO INCLUDE THE MOST CURRENT SYSTEM MANUFACTURER'S COMPONENTS AND AVAILABLE FASTENERS AND ACCESSORIES. EXPIRED TEST REPORTS SHALL BE REJECTED.
      5) TEST REPORTS SHALL BE SUBMITTED FOR EACH DIFFERENT TYPE OF ASSEMBLY ON THE PROJECT INCLUDING VARIATIONS OF SYSTEM COMPONENTS AND SUBSTRATES.

SPECIAL INSPECTIONS

SPECIAL INSPECTIONS INDEPENDENT OF THE CONTRACTOR, THE ARCHITECT, OR THE ENGINEER, SHALL BE PROVIDED BY A SPECIAL INSPECTOR EMPLOYED BY THE OWNER ACCORDING TO CHAPTER 17 OF THE IBC 2018. THE SPECIAL INSPECTOR SHALL OBSERVE THE WORK FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS. THE SPECIAL INSPECTOR SHALL SEND WRITTEN REPORTS TO THE OWNER, THE ARCHITECT, THE ENGINEER AND THE CONTRACTOR. THE REPORTS SHALL INDICATE IF WORK INSPECTED WAS DONE IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION. IF THE DISCREPANCIES ARE NOT CORRECTED, THE SPECIAL INSPECTOR SHALL BRING THE DISCREPANCIES TO THE ATTENTION OF THE REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE PRIOR TO THE COMPLETION OF THAT PHASE OF THE WORK. THE SPECIAL INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT STATING THAT THE SPECIAL INSPECTION WORK WAS, TO THE BEST OF THEIR KNOWLEDGE, IN OR NOT IN CONFORMANCE WITH THE DRAWINGS, SPECIFICATIONS AND APPLICABLE WORKMANSHIP PROVISIONS OF THE IBC 2018.

CONTINUOUS OR PERIODIC SPECIAL INSPECTION IS REQUIRED FOR THE FOLLOWING WORK:

REQUIRED VERIFICATION AND INSPECTION OF SOILS

VERIFICATION AND INSPECTION TASK	CONTINUOUS DURING TASK LISTED	PERIODICALLY DURING TASK LISTED
VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIAL		X
PERFORM CLASSIFICATION AND TESTING OF SELECT FILL MATERIALS		X
VERIFY USE OF PROPER MATERIALS, DENSITIES AND LIFT THICKNESSES DURING PLACEMENT AND COMPACTION OF SELECT FILL	X	
PRIOR TO PLACEMENT OF SELECT FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PREPARED PROPERLY		X

REQUIRED VERIFICATION AND INSPECTION OF STEEL CONSTRUCTION

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC
MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS AND WASHERS		X
INSPECTION OF HIGH STRENGTH BOLTING		X
INSPECTION OF WELDING:		
COMPLETE AND PARTIAL PENETRATION GROOVE WELDS	X	
MULTIPASS FILLET WELDS	X	
SINGLE-PASS FILLET WELDS		X
FLOOR AND ROOF DECK WELDS		X
INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE WITH APPROVED CONSTRUCTION DOCUMENTS		X

REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC
INSPECTION OF REINFORCING STEEL, INCLUDING PRESTRESSING TENDONS, AND PLACEMENT		X
INSPECT BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE	X	
VERIFY USE OF REQUIRED DESIGN MIX		X
PERFORM SLUMP AND AIR CONTENT TEST, AND DETERMINE THE TEMPERATURE OF THE CONCRETE AT THE TIME OF SAMPLING FRESH CONCRETE FOR MAKING SPECIMENS FOR STRENGTH TESTS PER ACI 318	X	
INSPECTION OF CONCRETE AND SHOTCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	X	
INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES		X
INSPECT FORMWORK FOR SHAPE, LOCATION AND DIMENSIONS OF THE CONCRETE MEMBER BEING FORMED		X

REQUIRED LEVEL 1 SPECIAL INSPECTION OF MASONRY CONSTRUCTION (OCCUPANCY CATEGORY I, II, III)

INSPECTION TASK	CONTINUOUS DURING TASK LISTED	PERIODICALLY DURING TASK LISTED
AS MASONRY CONSTRUCTION BEGINS, THE FOLLOWING SHALL BE VERIFIED TO ENSURE COMPLIANCE:		
PROPORTIONS OF SITE-PREPARED MORTAR		X
PLACEMENT OF MASONRY UNITS AND CONSTRUCTION OF MORTAR JOINTS		X
LOCATION OF REINFORCEMENT, CONNECTORS AND ANCHORAGES		X
THE INSPECTION PROGRAM SHALL VERIFY:		
SIZE AND LOCATION OF STRUCTURAL ELEMENTS		X
TYPE, SIZE AND LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES OR OTHER CONSTRUCTION		X
SPECIFIED SIZE, GRADE AND TYPE OF REINFORCEMENT		X
PROTECTION OF MASONRY DURING COLD WEATHER (TEMPERATURE BELOW 40°F) OR HOT WEATHER (TEMPERATURE ABOVE 90°F)		X
PRIOR TO GROUTING, THE FOLLOWING SHALL BE VERIFIED TO ENSURE COMPLIANCE:		
GROUT SPACE IS CLEAN		X
PLACEMENT OF REINFORCEMENT, CONNECTORS AND ANCHORAGES		X
CONSTRUCTION OF MORTAR JOINTS		X
GROUT PLACEMENT SHALL BE VERIFIED TO ENSURE COMPLIANCE WITH CODE AND CONSTRUCTION DOCUMENT PROVISIONS	X	
PREPARATION OF ANY REQUIRED GROUT SPECIMENS, MORTAR SPECIMENS AND/OR PRISMS SHALL BE OBSERVED	X	
COMPLIANCE WITH REQUIRED INSPECTION PROVISIONS OF THE CONSTRUCTION DOCUMENTS AND THE APPROVED SUBITTALS SHALL BE VERIFIED		X

REQUIRED VERIFICATION AND INSPECTION OF ANCHORS

VERIFICATION AND INSPECTION	CONTINUOUS PERIODIC
CAST-IN-PLACE, POST-INSTALLED, MECHANICAL AND EPOXY SET ANCHORS: AS APPLICABLE, THE INSPECTION PROGRAM SHALL VERIFY THE ANCHOR TYPE, EMBEDMENT, TIGHTENING TORQUE, DIMENSIONS, HOLE DEPTH & DIAMETER AND CLEANOUT, EPOXY MIXING AND PLACEMENT PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND THE CURRENT ICC-ES EVALUATION REPORT	FREQUENCY OF INSPECTION SHALL BE IN ACCORDANCE WITH THE CURRENT ICC-ES EVALUATION REPORT, OR PER THE SPECIAL INSPECTION REQUIREMENTS OF THE ANCHOR SUBSTRATE, WHICHEVER IS MORE STRINGENT

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PORT OF BROWNSVILLE
the port that works

GENERAL STRUCTURAL NOTES

BND SHOP
VEHICLE WASH BAYS

APPROVED BY : HC
REVISION DATE :
DWG. NO. 1240-02
DRAWN BY : LC
DATE DRAWN : MAY 13, 2022
CHECKED BY : AV/BD
FILE NAME :
SCALE : AS SHOWN

BROWNSVILLE NAVIGATION DISTRICT
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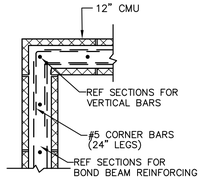
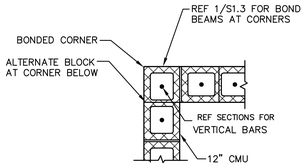
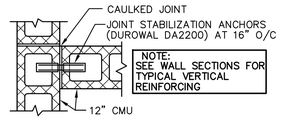
SHEET
S1.2



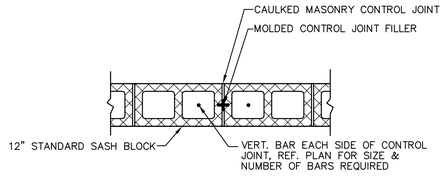
1 BOND BEAM AT EXTERIOR CORNERS



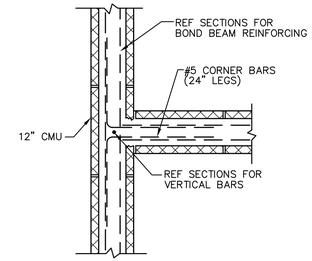
2 BONDED CORNER



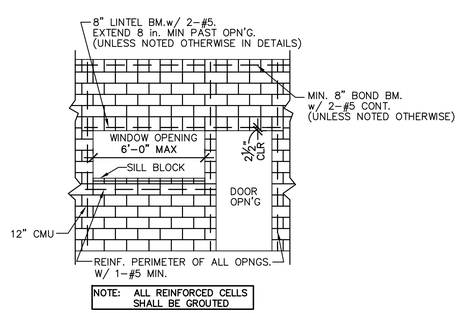
3 TYPICAL UNBONDED WALL INTERSECTION



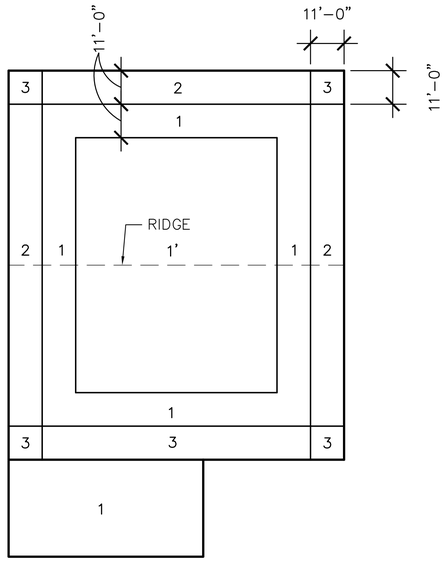
4 TYPICAL CRACK CONTROL JOINT



5 TYPICAL BOND BEAM AT INTERSECTING WALL



6 TYPICAL REINFORCING AT OPENINGS
(NON LOAD–BEARING WALLS ONLY)



BND SHOP VEHICLE WASH BAYS
ROOF DESIGN WIND PRESSURE DIAGRAM (SERVICE)

DESIGN WIND PRESSURE FOR ROOF COMPONENTS & CLADDING	
ZONE	P– (UPLIFT)
1'	–26 PSF
1	–46 PSF
2	–60 PSF
3	–82 PSF

DOORS & WINDOWS MAXIMUM DESIGN WIND PRESSURES
P+ = +26 PSF TOWARDS THE SURFACE
P– = –35 PSF AWAY FROM THE SURFACE

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TYPICAL STRUCTURAL DETAILS

BND SHOP
VEHICLE WASH BAYS

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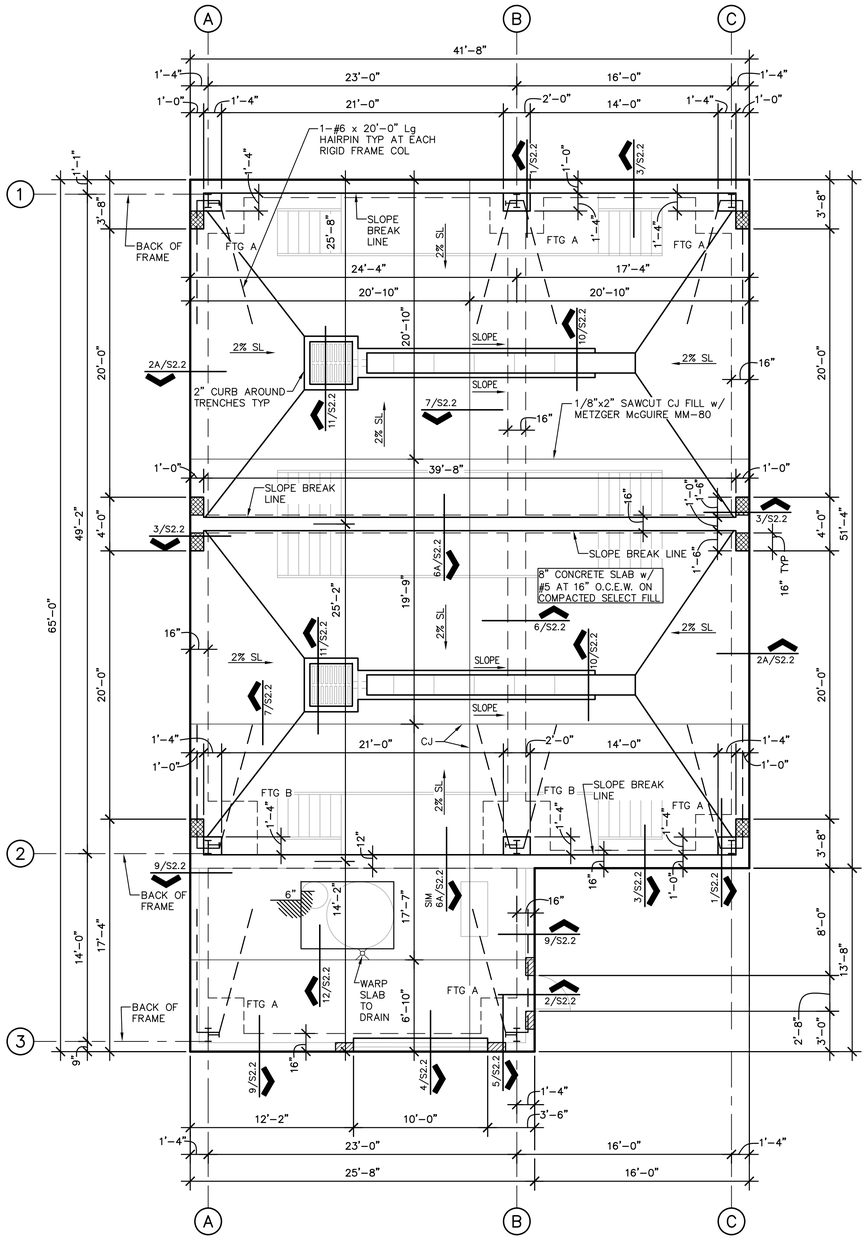
SHEET
S1.3



1 FOUNDATION PLAN

3/16" = 1'-0"

N

PLAN NORTH

NOTES:

1. REFERENCE PRE-ENGINEERED BUILDING ANCHOR BOLT PLAN FOR BOLT DIAMETER & LOCATION. COLUMN ANCHOR BOLT LENGTHS TO BE DETERMINED BY ENGINEER SUBSEQUENT TO RECEIPT & REVIEW OF THE BUILDING REACTION DIAGRAMS AND ANCHOR BOLT PLAN.
2. ALL CONDUIT GREATER THAN 1.1/2" IN DIAMETER SHALL BE RECESSED TO PROVIDE 1.1/2" CLEAR DISTANCE BETWEEN SLAB REBAR & CONDUIT.
3. MAINTAIN 2" MINIMUM CLEAR DISTANCE BETWEEN ALL CONDUIT IN SLAB.
4. A SINGLE CONDUIT (MAX 3" OD) MAY BE PLACED WITHIN THE BEAM CAGE. ALL CONDUIT IN BEAM CAGES TO BE TIED TO STIRRUPS MINIMUM OF 4" FROM HORIZONTAL BARS.
5. CRACK CONTROL JOINTS ARE NOTED ON THE PLANS. CONTRACTOR TO COORDINATE CHANGES WITH THE ENGINEER PRIOR TO FORMING FOUNDATION.
6. PLUMBING LINES SHALL NOT BE PLACED IN BOTTOM OF GRADE BEAM TRENCHES.
7. PLUMBING LINES PASSING THROUGH GRADE BEAMS SHALL BE SLEEVED. BEAMS SHALL BE DEEPENED AND BENT REBAR PROVIDED IF LOCATION OF DRAIN LINES REQUIRES CUTTING BOTTOM BARS. REFERENCE DETAIL 8/S2.2.
8. ALL JOINTS TO BE CLEANED AND FILLED w/ METZGER/McGUIRE MM-80.
9. INDICATES 8" CMU w/ #5 VERTICAL BARS AT 8" o/c.
10. INDICATES 12" CMU w/ 2-#5 VERTICAL BARS AT 8" o/c.
11. PROVIDE SEALER ON ALL CONCRETE SURFACE. REFERENCE SPECIFICATION SECTION 03 05 57.
12. PROVIDE PAINT COATING ON ALL CMU BLOCK SURFACES. REFERENCE SPECIFICATION SECTION 09 96 00.

FOOTING SCHEDULE		
MARK	SIZE	REINFORCEMENT
FTG A	4'-0" x 4'-0"	#5 AT 12" O.C.E.W.
FTG B	5'-0" x 5'-0"	#5 AT 12" O.C.E.W.

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FOUNDATION PLAN

BND SHOP
VEHICLE WASH BAYS

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SHEET
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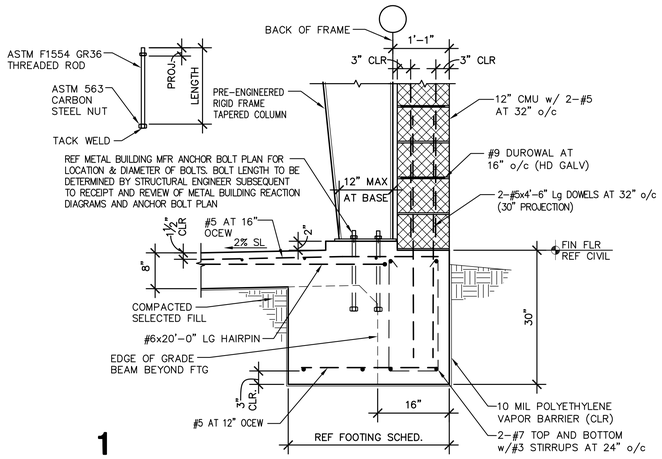

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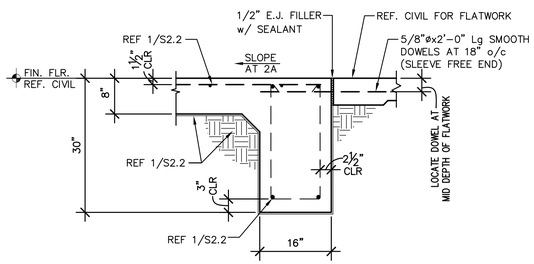

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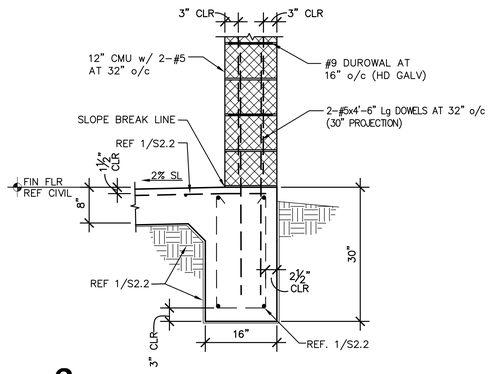

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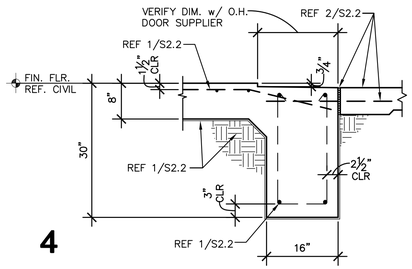

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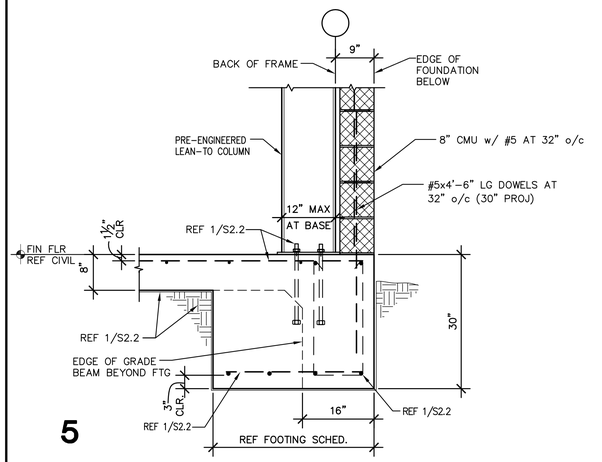

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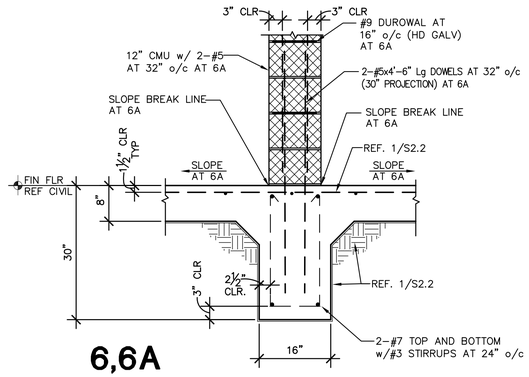

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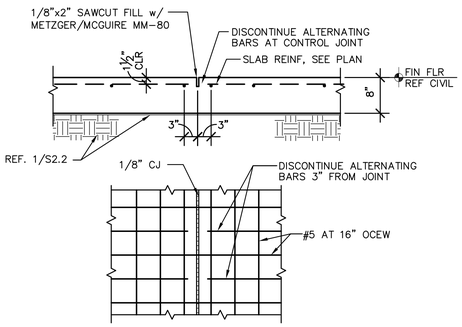
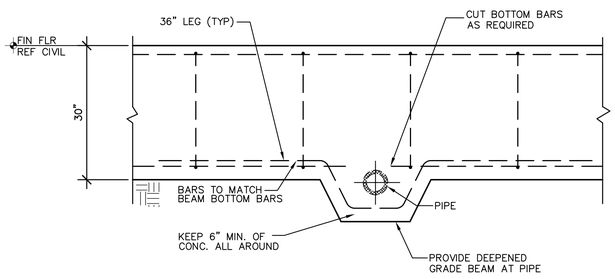
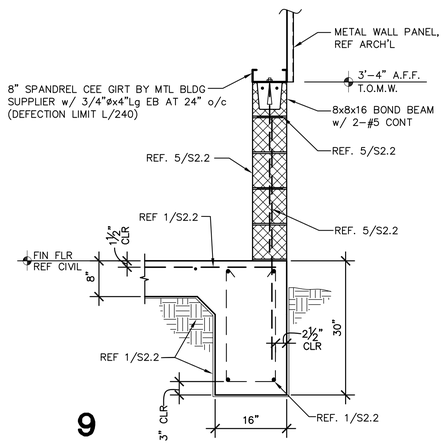


7 CONTROL JOINT

NOTE: ALL JOINTS ARE TO BE CLEANED AND FILLED WITH METZGER/McGUIRE MM-80



8 PIPE INTERRUPTS REINFORCING



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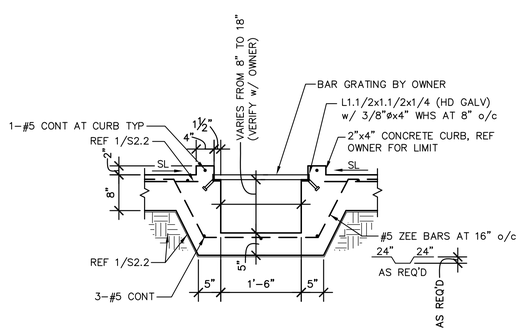
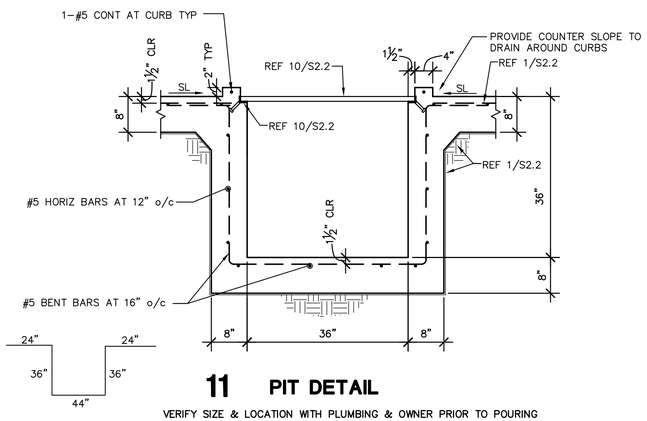


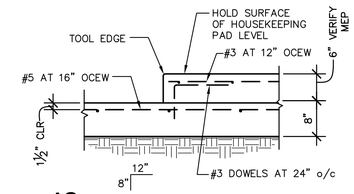
10 TRENCH DETAIL

VERIFY SIZE & LOCATION WITH PLUMBING & OWNER PRIOR TO POURING



11 PIT DETAIL

VERIFY SIZE & LOCATION WITH PLUMBING & OWNER PRIOR TO POURING



12 HOUSEKEEPING PAD

COORDINATE HOUSEKEEPING PAD DIMENSIONS AND LOCATIONS WITH OWNER AND EQUIPMENT SUPPLIER PRIOR TO FORMING

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FOUNDATION DETAILS

BND SHOP
VEHICLE WASH BAYS

APPROVED BY : HC
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FILE NAME :
DRAWN BY : LC
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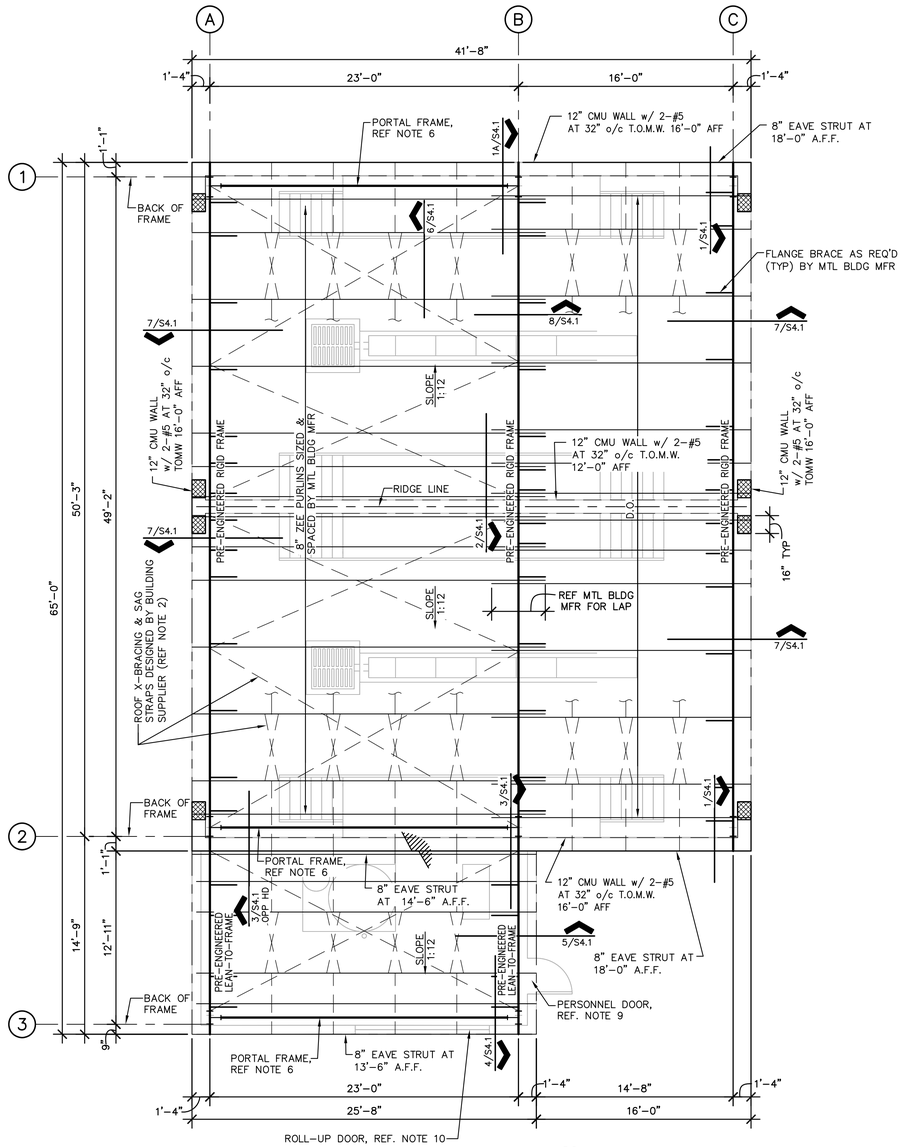
SHEET
S2.2



1 SCHEMATIC ROOF FRAMING PLAN

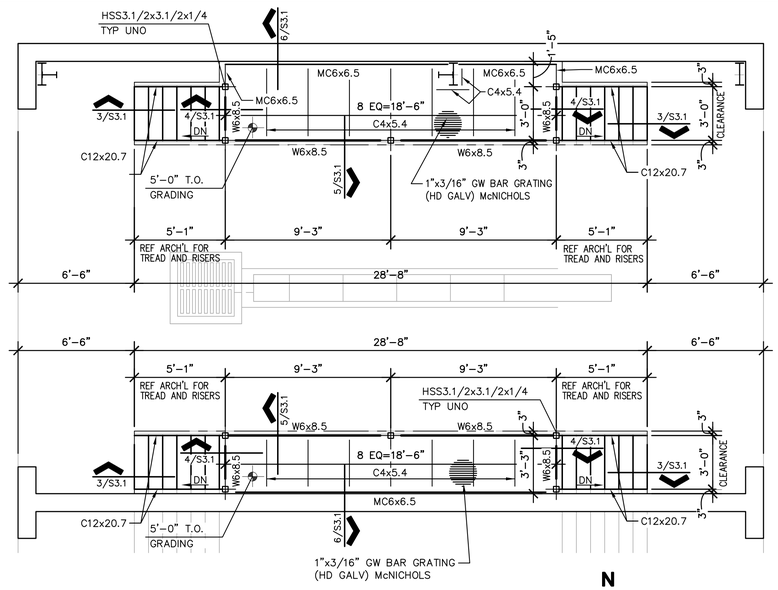
3/16" = 1'-0"

N

PLAN NORTH

NOTES:

1. ALL PRIMARY FRAMING MEMBERS (RIGID FRAMES, PORTAL FRAMES, END WALL COLUMNS, ETC.) SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION AND ALL SECONDARY FRAMING MEMBERS (PURLINS, GIRTS, EAVE STRUTS, ETC.) SHALL BE COLD ROLLED FROM HOT-DIPPED GALVANIZED MATERIAL PER ASTM A653.
2. SCHEMATIC ROOF FRAMING PLAN DEPICTS PRE-ENGINEERED METAL BUILDING COMPONENTS AND INDICATES THE STRUCTURAL ENGINEER'S INTENT PERTAINING TO THE ESTABLISHMENT OF THE STRUCTURAL INTEGRITY OF THE BUILDING.
3. PRE-ENGINEERED METAL BUILDING SUPPLIERS MAY UTILIZE STANDARD MEMBERS AND SPACING OF THE ROOF SYSTEM COMPONENTS TO MEET OR EXCEED THE SPECIFIED DESIGN REQUIREMENTS.
4. PRE-ENGINEERED METAL BUILDING SUPPLIER SHALL SUBMIT SHOP / ERECTION DRAWINGS AND BUILDING DESIGN CALCULATIONS TO THE ENGINEER FOR REVIEW PRIOR TO FABRICATION.
5. ADDITIONAL ROOF PURLINS AND WALL GIRT SHALL BE PROVIDED AS REQUIRED FOR SUPPORT OF METAL ROOF AND WALL PANELS TO SATISFY PROJECT DESIGN WIND PRESSURES.
6. METAL BUILDING DESIGNER TO COORDINATE PORTAL FRAME BEAM AND COLUMN DIMENSIONS WITH ARCHITECTURAL WRAPS AND SIZE TO FIT (12" MAX DEPTH).
7. ▨ INDICATES 12" CMU w/ 2-#5 VERTICAL BARS AT 8" o/c.
8. REFERENCE 2/S3.1 FOR CATWALK FRAMING PLANS.
9. PROVIDE 2'-8" x 7'-0" FIBER REINFORCED PLASTIC (FRP) DOOR. REFERENCE SPECIFICATION SECTION 08 22 00.
10. PROVIDE 10'-0" x 10'-0" OVERHEAD COILING DOOR. REFERENCE SPECIFICATION SECTION 08 33 23.
11. REFERENCE DETAIL 9/S4.1 FOR TYPICAL DOOR JAMB FRAMING REQUIRED AT ALL EXTERIOR CMU WALL FRAMED OPENINGS.
12. PROVIDE PAINT COATING ON ALL CMU BLOCK SURFACES. REFERENCE SPECIFICATION SECTION 09 96 00.



2 CATWALK FRAMING PLANS

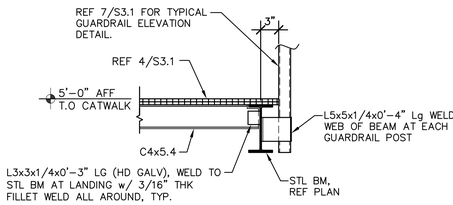
1/4" = 1'-0" — 2-LOCATIONS

N

PLAN NORTH

NOTES:

1. TOP OF PLATFORM HEIGHT SHALL BE 5'-0" ABOVE GRADE. UNLESS NOTED OTHERWISE.
2. ALL STRUCTURAL STEEL SHALL BE HOT DIPPED GALVANIZED UNLESS NOTED OTHERWISE.
3. ALL STEEL SHALL BE PAINTED AFTER ERECTION. REFERENCE SPECIFICATION 09 9700 FOR PAINTING REQUIREMENTS.



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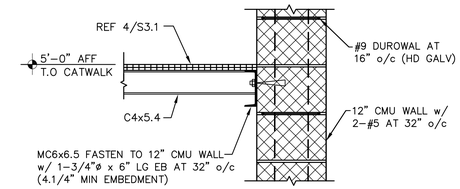

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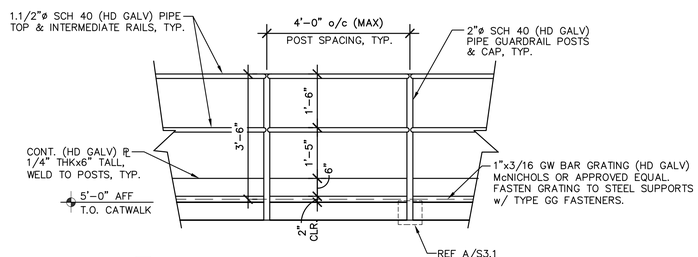
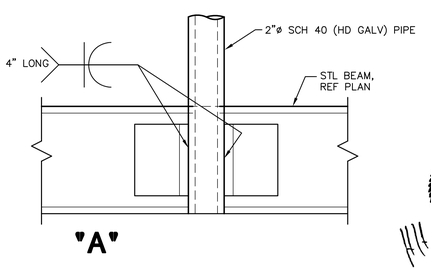


7 TYPICAL GUARDRAIL ELEVATION



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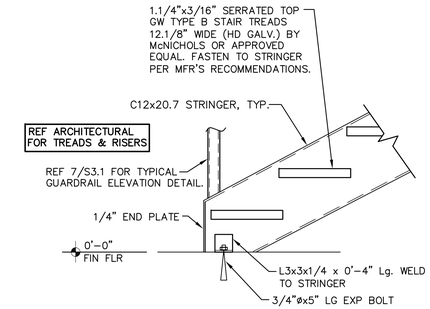

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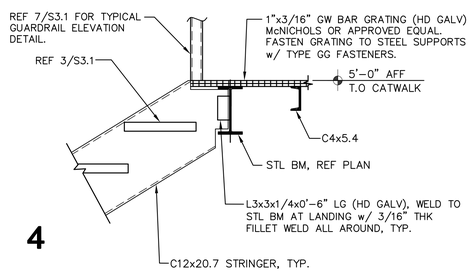

4

STATE OF TEXAS
MERIBERTO CAMAZOS
103450
LICENSED PROFESSIONAL ENGINEER
5/13/22

GREEN, RUBIANO & ASSOCIATES
CONSULTING STRUCTURAL ENGINEERS
1220 WEST HARRISON
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(956)428-4461
FIRM REGISTRATION # F-4145

PORT OF BROWNSVILLE
the port that works

SCHEMATIC ROOF FRAMING PLAN AND CATWALK FRAMING PLANS

BND SHOP
VEHICLE WASH BAYS

DRAWN BY : LC	DATE DRAWN : MAY 13, 2022	CHECKED BY : AV/BD	SCALE : AS SHOWN
APPROVED BY : HC	REVISION DATE :	DWG. NO. 1240-02	FILE NAME :

BROWNSVILLE NAVIGATION DISTRICT
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BROWNSVILLE, TEXAS 78521
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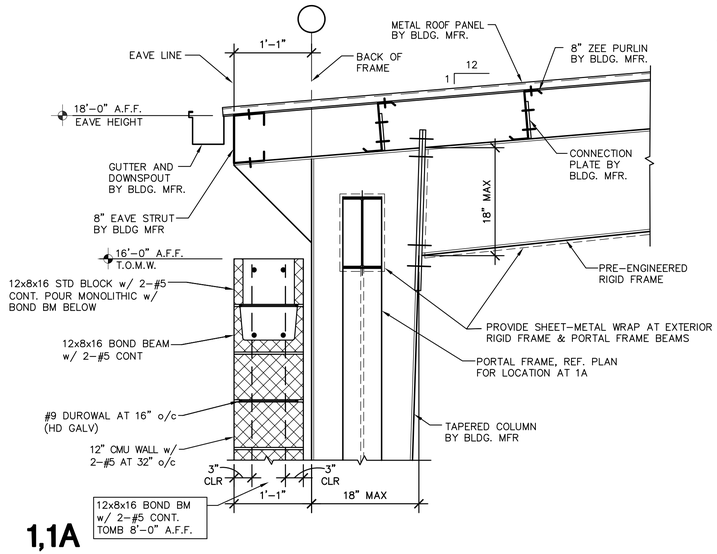
SHEET
S3.1



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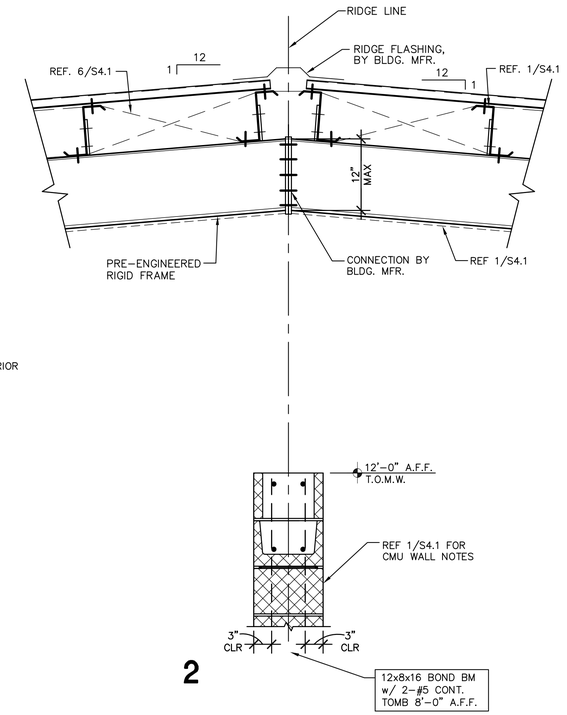

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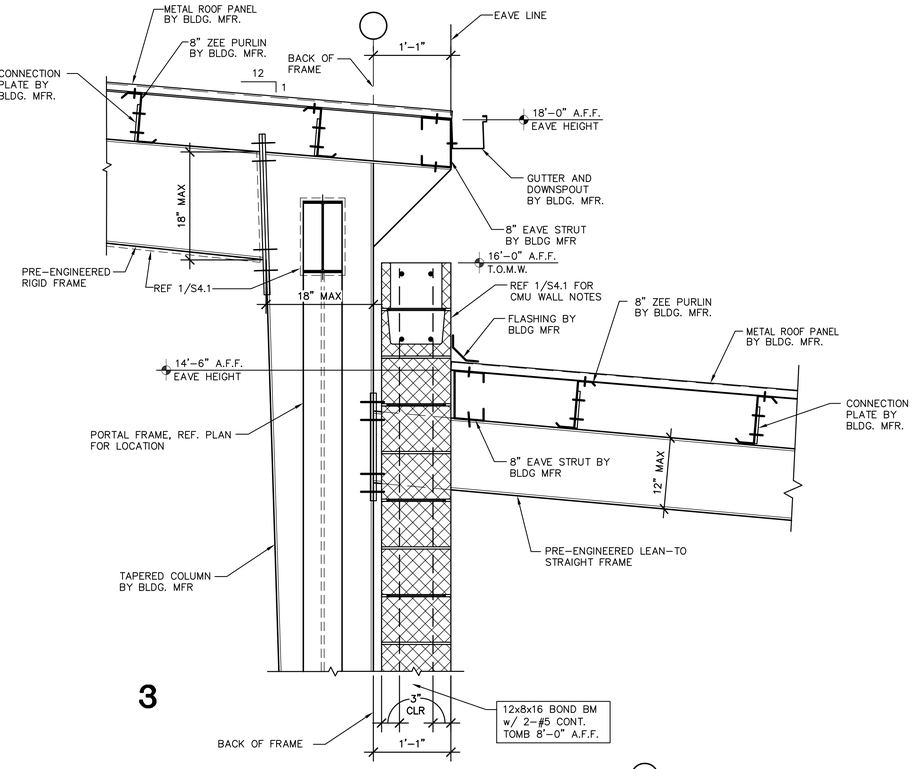

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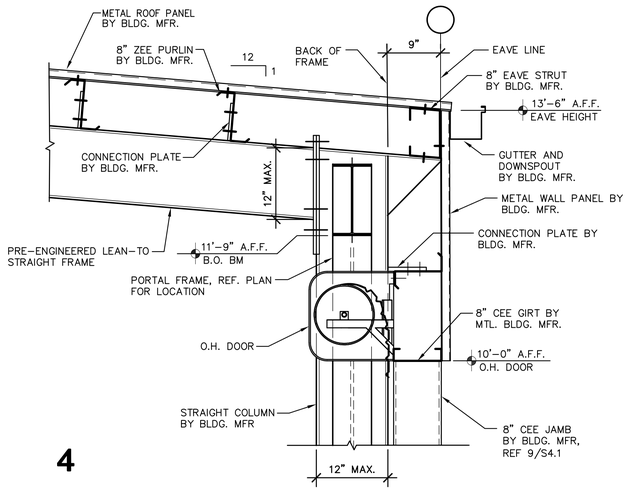

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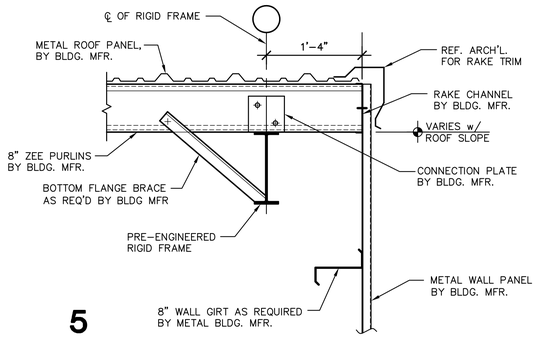

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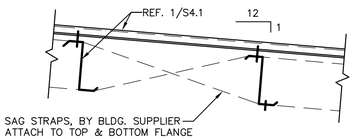

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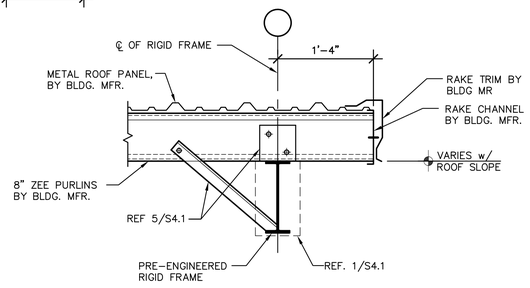

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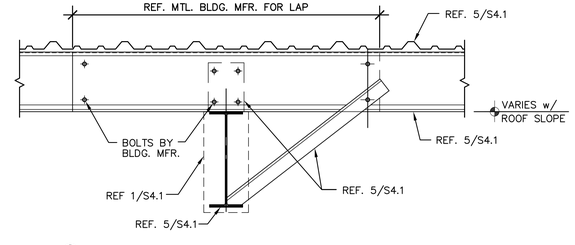

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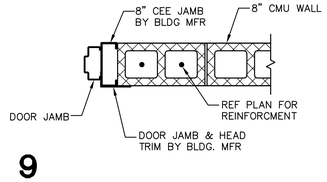

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PORT OF BROWNSVILLE
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FRAMING DETAILS

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APPROVED BY : HC	REVISION DATE :	DWG. NO. 1240-02	
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FILE NAME :

SHEET
S4.1

GENERAL NOTES - MECHANICAL:

(1) THE MECHANICAL CONTRACTOR IS FULLY RESPONSIBLE FOR PERFORMING THE WORK IN FULL COMPLIANCE WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL CODES UNDER THIS SECTION OF THE CONTRACT. IF THE CONTRACTOR DETERMINES THAT THE CONTRACT DOCUMENTS AND PLANS ARE NOT IN COMPLIANCE WITH THE APPLICABLE LOCAL CODES, HE/SHE SHALL INFORM THE ARCHITECT PRIOR TO CONSTRUCTION START FOR DIRECTION. FAILURE TO DO SO SHALL NOT RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY TO MEET APPLICABLE LOCAL CODES, AND RE-WORK SHALL BE AT CONTRACTOR'S EXPENSE.

(2) CONTRACTOR SHALL HANG AND INSTALL ALL DUCTWORK FLUSH WITH THE BUILDING STRUCTURE TO ACCOMMODATE NEW CEILINGS. CONTRACTOR SHALL COORDINATE ALL INSTALLATION WORK WITH ARCHITECTURAL AND ELECTRICAL DESIGN. ALL DUCTWORK SHALL BE MODIFIED AS NECESSARY AND REQUIRED TO FIT AROUND BUILDING STRUCTURES, ARCHITECTURAL BUILD-OUT AND ELECTRICAL CABLE TRAY INSTALLATIONS. MECHANICAL CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE WORK SCOPE OF OTHER TRADES AND PARTICIPATE IN COORDINATING ALL CONSTRUCTION EFFORTS.

(3) CONNECT EACH DIFFUSER TO THE MAIN DISTRIBUTION DUCTS WITH A FLEX-DUCT SECTION; CONNECTIONS SHALL BE COMPLETED IN ACCORDANCE WITH THE DETAIL. EACH FLEX-DUCT CONNECTION SHALL INCLUDE A BUTTERFLY DAMPER TO BE INSTALLED AT THE TRUNK DUCT.

(4) CONTRACTOR SHALL PROVIDE ALL DUCTWORK REQUIRED TO COMPLETE THE HVAC SYSTEM. TIE IN BRANCH DUCTS TO MAIN DUCTS WITH SHEET METAL FLANGES. FLANGE CONNECTION SHALL BE FASTENED WITH CRIMPED SHEET METAL STRIPS AND SEALED WITH SILICONE CAULK.

(5) CONTRACTOR SHALL SUPPLY AND INSTALL FIRE DAMPERS AND ACCESS DOORS IN THE HORIZONTAL DUCTS WHERE THEY PENETRATE FIRE WALLS & BARRIERS.

(6) ALL OPENINGS CUT IN MASONRY AND PLASTER WALLS OR CONCRETE FLOORS SHALL BE CORE DRILLED OR SAWED WHEN POSSIBLE. CONTRACTOR SHALL CHECK BUILDING CONSTRUCTION BEFORE MAKING PENETRATIONS TO AVOID CUTTING THROUGH STRUCTURAL BEAMS AND REINFORCING. CONTRACTOR SHALL INFORM THE ENGINEER IF REINFORCING IS CUT OR DAMAGED WHILE MAKING OPENINGS. CONTRACTOR SHALL REINFORCE ALL OPENINGS AS REQUIRED BY DRAWINGS AND SPECIFICATIONS. PATCH AND SEAL OPENINGS WITH 8000 PSI CEMENT GROUT. INSTALL DECORATIVE TRIM (EQUIPMENT FLANGES, FRAMING OR ESCUTCHEONS) AROUND OPENINGS IN FINISHED AREAS. COORDINATE ALL CUTTING AND PATCHING WITH THE OTHER TRADES

(7) ON ANY WORK SHOWN ON MECHANICAL DRAWINGS REQUIRING DEMOLITION OF EXISTING OR NEW BUILDING STRUCTURES AND FINISHES, IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO COMPLETE THE NECESSARY DEMOLITION. CONTRACTOR SHALL PATCH AND REPAIR ALL DEMOLITION WORK. PATCHING SHALL BE COMPLETED WITH THE SAME MATERIALS AS THE SURROUNDING AREAS, OR WITH ARCHITECT-APPROVED PATCHING MATERIALS. REPAIRS SHALL BE COMPLETED ACCORDING TO ARCHITECTURAL SPECIFICATIONS. ALL REFINISHING SHALL BE APPROVED BY THE ARCHITECT.

(8) CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETING THE INSTALLATION OF THE AIR DISTRIBUTION SYSTEM SHOWN. DUCTWORK, DUCT ACCESSORIES AND CONTROLS SHOWN AND REQUIRED SHALL BE SUPPLIED AND INSTALLED. ALL INSTALLATION WORK SHALL BE DONE IN ACCORDANCE WITH APPLICABLE CODES, INCLUDING NFPA 90A AND 90B.(NFPA 90A: STANDARD FOR THE INSTALLATION OF AIR-CONDITIONING AND VENTILATING SYSTEMS)(NFPA 90B: STANDARD FOR THE INSTALLATION OF WARM AIR HEATING AND AIR-CONDITIONING SYSTEMS)

(9) CONTRACTOR SHALL BALANCE ALL AIR DISTRIBUTION SYSTEMS TO ACHIEVE THE AIR VOLUME REQUIREMENTS INDICATED. BALANCING SHALL INCLUDE ADJUSTMENT OF ALL MANUAL VOLUME DAMPERS, SHUTTER DAMPERS, ZONE DAMPERS (IF REQUIRED), BUTTERFLY DAMPERS AND INDIVIDUAL DIFFUSER VOLUME DAMPERS (FINAL BALANCING ONLY). CONTRACTOR SHALL SUPPLY THE ENGINEER WITH A COMPLETE BALANCING REPORT WHICH INCLUDES, VOLUME, ROOM REFERENCE AND ZONE VOLUME TOTALS.

(10) MOUNT ALL THERMOSTATS (SENSORS) 48" ABOVE THE FINISHED FLOOR LEVEL. THERMOSTATS SHOWN SHALL BE IN CONTROL OF THE ZONE SYSTEM WHICH IS SUPPLYING AIR TO THE AREA WHERE THE THERMOSTAT IS LOCATED. CONTRACTOR SHALL SUPPLY AND INSTALL ALL CONTROL VOLTAGE WIRING AND CONDUIT FOR THERMOSTAT (DDC CONTROL) INSTALLATION.

(11) CONTRACTOR SHALL INSTALL NEW REFRIGERANT PIPING FLUSH WITH THE BUILDING STRUCTURE AND MECHANICAL ROOM BOUNDARIES AS SHOWN. CONTRACTOR SHALL COORDINATE ALL INSTALLATION WORK WITH DUCTS AND ELECTRICAL CONDUIT. MECHANICAL CONTRACTOR SHALL FAMILIARIZE HIMSELF WITH THE WORK SCOPE OF OTHER TRADES AND PARTICIPATE IN COORDINATING ALL CONSTRUCTION EFFORTS.

(12) ALL PIPING SHALL BE INSULATED AND JACKETED. REFER TO THE SPECIFICATIONS. THE CONDENSING AND ROOF TOP CONDENSER COILS ARE TO BE COATED IN ACCORDANCE WITH THE SPECIFICATIONS.

(13) PROVIDE EACH HVAC SYSTEM OF 2000 CFM & GREATER W/ DUCT SMOKE DETECTOR(S) IN COMPLIANCE WITH IBC 907.2.13.1.2 & 907.3.1 IN RETURN AIR DUCTWORK TO SHUTDOWN CONTROLS ON AIR HANDLERS AND SUPPLY FANS. SMOKE DETECTORS SHALL BE PROVIDED BY MECHANICAL & INSTALLED BY ELECTRICAL (OR REGISTERED FIRE ALARM COMPANY WHERE APPLICABLE). COORDINATE W/ EQUIPMENT MANUFACTURER & AUTHORITY HAVING JURISDICTION FOR RECOMMENDED MOUNTING LOCATION AND METHOD. COORDINATE TO PROVIDE A COMPLETE SYSTEM. PROVIDE BOTH SUPPLY AND RETURN SIDE DEVICES.

(14) PROVIDE SEVEN DAY PROGRAMMABLE THERMOSTAT, 24 HOUR SINGLE/MULTI STAGE COMMERCIAL THERMOSTAT, DUAL SET POINTS, OCCUPIED AND UNOCCUPIED PERIODS, UNIT OPTIMIZATION, AUTO HEATING/COOLING AND AUTO CHANGE OVER. SUB-BASE BACK-UP BATTERY AND TEMPORARY OVER-RIDE. 24 VAC CONTROL VOLTAGE. PROVIDE PLASTIC SEE THRU PROTECTIVE COVER WITH KEY LOCK.

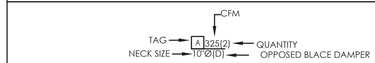
(15) **FILTER INSTALLATION AND REPLACEMENT**

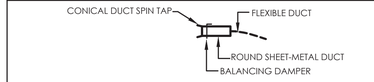
A. INSTALL CONSTRUCTION RETURN FILTER AT EACH RETURN GRILLE BEFORE OPERATING PERMANENT AIR HANDLERS DURING CONSTRUCTION.

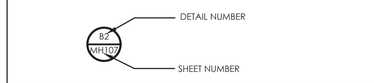
B. REPLACE FILTERS AFTER COMPLETING CONSTRUCTION AND BEFORE CONDUCTING BUILDING FLUSH-OUT.

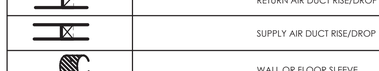
1. REPLACE CONSTRUCTION RETURN FILTERS WITH FLUSH-OUT RETURN FILTERS.
2. REPLACE SUPPLY FILTERS.

MECHANICAL SYMBOL LEGEND









MECHANICAL ABBREVIATIONS

A/C	AIR CONDITIONED	MAX	MAXIMUM
AD	ACCESS DOOR	MBD	MANUAL BALANCING DAMPER
AFF	ABOVE FINISHED FLOOR	MD	MOTORIZED DAMPER
AHU	AIR HANDLING UNIT	MECH	MECHANICAL
APPROX	APPROXIMATE	MIN	MINIMUM
ARCH	ARCHITECTURAL	MS	MOTOR STARTER
BDD	BACK DRAFT DAMPER	NA	NOT APPLICABLE
BHP	BRAKE HORSEPOWER	NC	NORMALLY CLOSED
BTU	BRITISH THERMAL UNIT	NIC	NOT IN CONTRACT
CFM	CUBIC FEET PER MINUTE	NO	NORMALLY OPEN
CH	CHILLER	NTS	NOT TO SCALE
CHP	CHILLED WATER PUMP		
CLG	CEILING	OA	OUTSIDE AIR
CWP	CONDENSER WATER PUMP	OAH	OUTSIDE AIR INTAKE HOOD
CO	CLEANOUT	OBD	OPPOSED BLADE DAMPER
CT	COOLING TOWER	OC	ON CENTER
CU	CONDENSING UNIT		
CW	COLD WATER	P	PUMP
CL	CENTER LINE	PBD	PARALLEL BLADE DAMPER
		PP	PRIMARY CHILLED WATER PUMP
DB	DRY BULB	PRESS	PRESSURE
DIA	DIAMETER	PRV	PRESSURE REDUCING VALVE
DN	DOWN	PSIG	POUNDS PER SQUARE INCH (GAUGE)
DWG	DRAWING		
DX	DIRECT EXPANSION	R	RETURN (AIR DEVICE)
EA	EXHAUST AIR	RA	RETURN AIR
EAT	ENTERING AIR TEMPERATURE	RE: 4M7.01	REFER TO DETAIL 4, SHEET M7.01
EDH	ELECTRIC DUCT HEATER	RET	RETURN
EF	EXHAUST FAN	RH	RELATIVE HUMIDITY
ELEC	ELECTRICAL	RHD	RELIEF HOOD
ELEV	ELEVATION	RPM	REVOLUTIONS PER MINUTE
		RTU	ROOF TOP UNIT
F	DEGREES FAHRENHEIT		
FC	FAN COIL		
FD	FIRE DAMPER W/ DUCT ACCESS DOOR	S	SUPPLY (AIR DEVICE)
FLEX	FLEXIBLE	SA	SUPPLY AIR
FLG	FLANGE	SCH	SCHEDULE
FLR	FLOOR	SCHP	SECONDARY CHILLED WATER PUMP
FPM	FEET PER MINUTE	SD	SMOKE DAMPER
FT	FEET, FOOT	SEC	SECOND
FS	FLOW SWITCH	SF	SUPPLY FAN
		SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
GAL	GALLON		
GALV	GALVANIZED	SP	STATIC PRESSURE
GPM	GALLONS PER MINUTE	SPEC	SPECIFICATION
		SF	SQUARE FOOT
HB	HOSE BIBB	STD	STANDARD
HP	HORSEPOWER		
HR	HEAT PUMP (WATER SOURCE)	TEMP	TEMPERATURE
HR	HOUR	TSTAT	THERMOSTAT
HVAC	HEATING/VENTILATING/ AIR CONDITIONING	TYP	TYPICAL
HWP	HOT WATER PUMP	UF	UNDER FLOOR
HZ	HERTZ	UH	UNIT HEATER
		UL	UNDERWRITERS LABORATORIES
ID	INSIDE DIAMETER		
IE	INVERT ELEVATION (FLOW LINE)	VEL	VELOCITY
IN	INCHES	VENT	VENTILATE
INSUL	INSULATION	VF	VENTILATION FAN
IN WG	INCHES OF WATER	VOL	VOLUME
KW	KILOWATT(S)	VOLT	VOLTAGE
		W	WIDE, WIDTH
LAT	LEAVING AIR TEMPERATURE	W/	WITH
LB	POUND	WB	WET BULB
L	LOUVER	W/O	WITHOUT

TESTING, ADJUSTING & BALANCING

A.	**Air Handlers & Roof Top Units:**	
	1.	Test Data: Include design and actual values for the following:
	a.	Total airflow rate in CFM.
	b.	Total system static pressure in inches w.c.
	c.	Discharge static pressure in inches w.c.
	d.	Outside airflow in CFM.
	e.	Return airflow in CFM.
	f.	Outside-air damper position. Damper Position shall be marked with oil-based paint marker
B.	**Fan Test:**	
	1.	Test Data: Include design and actual values for the following:
	a.	Total airflow rate in CFM.
	b.	Total system static pressure in inches w.c.
	c.	Discharge static pressure in inches w.c.
	d.	Suction static pressure in inches w.c.
C.	**Room Grilles, Registers, or Diffusers:**	
	1.	Test Data: Include design and actual values for the following:
	a.	Total airflow rate in CFM.
	b.	Damper Position shall be marked with oil-based paint marker.

H.V.A.C. SYSTEM SECTION 15500

THE WORK INCLUDES PROVIDING THE HVAC SYSTEMS, INCLUDING DUCTWORK, DIFFUSERS AND GRILLES, INSULATION, CONTROLS, AND ALL OTHER EQUIPMENT NECESSARY FOR A COMPLETE FUNCTIONING SYSTEM. HVAC SYSTEM SHALL INCLUDE BUT IS NOT LIMITED TO THE FOLLOWING:

- HEATING, VENTILATION, AND AIR CONDITIONING (HVAC) UNITS.
- SUPPLY AND RETURN DUCTWORK SYSTEMS WITH GRILLES, DIFFUSERS, FILTERS, AND DAMPERS.
- TEMPERATURE CONTROL SYSTEM INCLUDING LOW VOLTAGE WIRING AND CONDUIT.
- DUCT, PIPING, AND EQUIPMENT INSULATION, WHERE INDICATED HEREIN.
- CONTROLS AND WIRING FOR CONNECTION TO LANDLORD'S FIRE-SMOKE ALARM SYSTEM (WHERE APPLICABLE).

THE CONTRACTOR SHALL COORDINATE ALL NEW DUCTWORK INCLUDING DUCTWORK INSULATION AND REINFORCING WITH EXISTING DUCTWORK AND DUCTWORK ANGLE BRACING SUCH THAT THE NEW DUCTWORK WILL FIT WITHIN THE SPACE LIMITATIONS OF THE PROJECT.

CONDENSATE PIPING: CONDENSATE PIPING SHALL BE A MINIMUM OF 3/4" COPPER TYPE "L" PIPE. ALL CONDENSATE DRAINS SHALL BE INSULATED WITH 1/2" THICK CLOSED CELL INSULATION SIMILAR TO ARMAFLEX 2000.

THE DESIGN, SELECTION, SPACING AND APPLICATION OF HORIZONTAL PIPE HANGERS, SUPPORTS, RESTRAINTS, ANCHORS AND GUIDES SHALL BE IN ACCORDANCE WITH THE STANDARD CODE FOR PRESSURE PIPING ANSI B31.1 AND THE LATEST EDITION OF THE MANUFACTURERS' STANDARDIZATION SOCIETY STANDARDS MSS SP- 69, "PIPE HANGERS AND SUPPORTS--SELECTION AND APPLICATION".

PROVIDE PIPE COVERING PROTECTION SHIELDS AND SADDLES FOR ALL INSULATED PIPING AT THE LOCATIONS OF ALL SUPPORTS. THE PROTECTION SHIELD LENGTH AND GAUGE THICKNESS FOR USE AT EACH CLEVIS HANGER SHALL BE AS SPECIFIED FOR TYPE 40 PROTECTION SHIELDS IN THE CURRENT EDITION OF MSS SP-69. PROTECTION SHIELDS SHALL BE GALVANIZED AND SHALL BE ARRANGED TO COVER ONE-HALF OF THE CIRCUMFERENCE OF THE INSULATION AND SHALL BE MOUNTED ON THE OUTSIDE OF THE INSULATION WITH INSULATION BLOCKING BETWEEN THE PIPE AND SADDLE TO PREVENT CRUSHING OF THE INSULATION. INSULATION BLOCKING SHALL BE UPJOHN 2 POUND HIGH DENSITY MOLDED URETHANE OR SEGMENTED MACHINERY CORK DIPPED IN HOT ASPHALT VAPOR SEAL OF NOT LESS THAN THE SAME LENGTH AND CIRCUMFERENCE AS THE PIPE PROTECTION SHIELD.

ALL HANGERS, HARDWARE, RODS, CLAMPS, CHANNELS, BASE PLATES, ANGLES, BOLTS, NUTS AND OTHER FACTORY-BUILT OR SHOP FABRICATED PIPE SUPPORT DEVICES SHALL BE GALVANIZED OR CADMIUM PLATED UNLESS NOTED OTHERWISE ON THE DRAWINGS. ALL SHOP FABRICATED AND WELDED STEEL SUPPORTS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION.

ALL CONCRETE INSERTS FOR HANGER RODS SHALL BE NATIONAL PIPE HANGERS CORPORATION FIGURE 606 WITH FIGURE 607, OR GRINNELL FIGURE 282, FIGURE 152, OR APPROVED EQUAL. METAL DECK CONCRETE INSERT SHALL BE F & S MANUFACTURING CORPORATION FIGURE 282, GALVANIZED FABRICATED STEEL METAL DECK CEILING BOLT, PHILLIPS RED HEAD, OR APPROVED EQUAL. HANGER RODS, INSERTS, ETC., SHALL BE SIZED AND INSTALLED AS RECOMMENDED BY THE HANGER MANUFACTURER FOR THE SERVICE INTENDED.

FIELD VERIFY THE EXACT SIZES AND LOCATIONS OF ALL EXISTING DUCTWORK AND PIPING PRIOR TO DEMOLITION OF ANY EXISTING WORK. THE DEMOLITION WORK SHALL BE COORDINATED WITH THE NEW WORK TO ASSURE PROPER LIMITS OF DEMOLITION.

WARRANTY: PROVIDE LABOR AND MATERIALS TO REPAIR OR REPLACE DEFECTIVE PARTS AND MATERIALS AS REQUIRED FOR ONE YEAR AFTER SUBSTANTIAL COMPLETION OR OWNER ACCEPTANCE OF THE COMPLETED PROJECT. PROVIDE A SEPARATE LINE ITEM DEDUCT AMOUNT ON THE PROPOSAL FORM TO DELETE WARRANTY SERVICE, AT THE OWNER'S OPTION.

DRAWINGS FOR HVAC WORK ARE DIAGRAMMATIC, SHOWING THE GENERAL LOCATION, TYPE, LAYOUT, AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. REFER TO MANUFACTURER'S STANDARD INSTALLATION DRAWINGS FOR EQUIPMENT CONNECTIONS AND INSTALLATION REQUIREMENTS, AS REQUIRED. PROVIDE ALL DUCTWORK, CONNECTIONS, ACCESSORIES, OFFSETS, AND MATERIALS NECESSARY TO FACILITATE THE SYSTEM FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED. THE WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES OR ORDINANCES AND SUBJECT TO INSPECTION.

COORDINATE WITH THE WORK OF OTHER SECTIONS, EQUIPMENT FURNISHED BY OTHERS, REQUIREMENTS OF THE LANDLORD, AND WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

EXTRA STOCK: PROVIDE TWO SETS OF REPLACEMENT FILTERS PER EACH INSTALLED FOR ALL THE ROOFTOP UNITS, AND OTHER EQUIPMENT AND DEVICES, AND PROVIDE AN ITEMIZED LIST OF THE NUMBER, TYPE REQUIRED, AND WHERE USED. OBTAIN RECEIPT FROM OWNER THAT THESE ITEMS HAVE BEEN DELIVERED AND ACCEPTED BY THE OWNER'S REPRESENTATIVE.

DUCT DIMENSIONS: UNLESS OTHERWISE NOTED, DUCT DIMENSIONS ON DRAWING ARE SHEET METAL DIMENSIONS ON UNLINED DUCTS (INTERIOR DIMENSIONS).

SHEET METAL DUCTWORK: SHEET METAL DUCTWORK SHALL BE FABRICATED AND INSTALLED TO MEET ASHRAE AND SMACNA STANDARDS, FOR 1" W.G. PRESSURE CLASS. SHEET METAL SHALL BE GALVANIZED SHEET STEEL OF LOCK FORMING QUALITY, ASTM A-525. ALL ANGLE IRON USED FOR SUPPORT SHALL BE GALVANIZED. CONNECTIONS TO WALLS OR FLOOR SHALL BE AIR TIGHT WITH ANGLE IRON AND CAULKING. SEAL ALL DUCT SEAMS, TRANSVERSE AND LONGITUDINAL, AIR TIGHT. PROVIDE TURNING VANES AT ALL ELBOWS OR OFFSETS EXCEEDING 30°.

DUCT SHALL BE EXTERNALLY WRAPPED W/ 2" FIBERGLASS BLANKET INSULATION.

RIGID ROUND GALVANIZED DUCT SHALL BE SPIRAL OR SNAP LOCK GALVANIZED SHEETMETAL COMPLYING WITH SMACNA.

FIBERGLASS DUCT BOARD IS AN ACCEPTABLE W/ PRIOR WRITTEN OWNER PERMISSION, MINIMUM R-VALUE OF 5 REQUIRED FOR CONDITIONED SPACES AND MINIMUM R-VALUE OF 8 FOR UNCONDITIONED SPACES.

FLEXIBLE DUCT CONNECTOR: WHERE INDICATED PROVIDE U.L. LABELED 30oz. NEOPRENE COATED FIBERGLASS FABRIC DUCT CONNECTORS.

GRILLES AND DIFFUSERS: PROVIDE GRILLES, DIFFUSERS, AND DAMPERS IN SIZES, CAPACITIES, MATERIALS, AND PATTERN INDICATED ON THE DRAWINGS.

ACCESS PANELS: PROVIDE HINGED ACCESS PANELS IN DUCTWORK WHERE REQUIRED FOR ACCESS TO EQUIPMENT. PROVIDE INSULATED ACCESS DOORS IN INSULATED DUCTWORK.

PROVIDE WHERE APPLICABLE, DUCT MOUNTED SUPPLY AND/OR RETURN AIR PHOTOELECTRIC TYPE UL LISTED SMOKE DETECTORS. DETECTORS SHALL BE LISTED FOR THE AIR VELOCITIES ENCOUNTERED. PROVIDE INTERLOCK WIRING AND RELAYS FOR UNIT SHUT DOWN. ON ACTIVATION OF ANY DETECTOR, ALL HVAC UNIT FANS SHALL STOP.

TEST AND ADJUST EACH PIECE OF EQUIPMENT AND EACH SYSTEM AS REQUIRED TO ASSURE PROPER BALANCE AND OPERATION. TEST AND BALANCE SHALL BE PERFORMED BY AN INDEPENDENT NEBB OR AABC REGISTERED CONTRACTOR. ELIMINATE NOISE AND VIBRATION, AND ASSURE PROPER FUNCTION OF ALL CONTROLS, MAINTENANCE OF TEMPERATURE, AND OPERATION. BALANCE MECHANICAL SYSTEM, AND SUBMIT COMPLETED TEST

EXPOSED ROUND (SPIRAL) DUCT TO BE INTERNALLY LINED. SUPPLY DUCTWORK SHALL BE LINED W/1" INSULATION. RETURN/EXHUAST/VENTILATION DUCT TO BE LINED W/1/2" INSULATION. CONCEALED ROUND DUCT TO BE EXTERNALLY INSULATED. USING R-5 INSULATION MIN FOR CONDITIONED SPACES (WHERE PLENUM RETURN IS USED) OR R-8 INSULATION MIN FOR UNCONDITIONED SPACES.

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MECHANICAL LEGEND

BND SHOP
VEHICLE WASH BAYS

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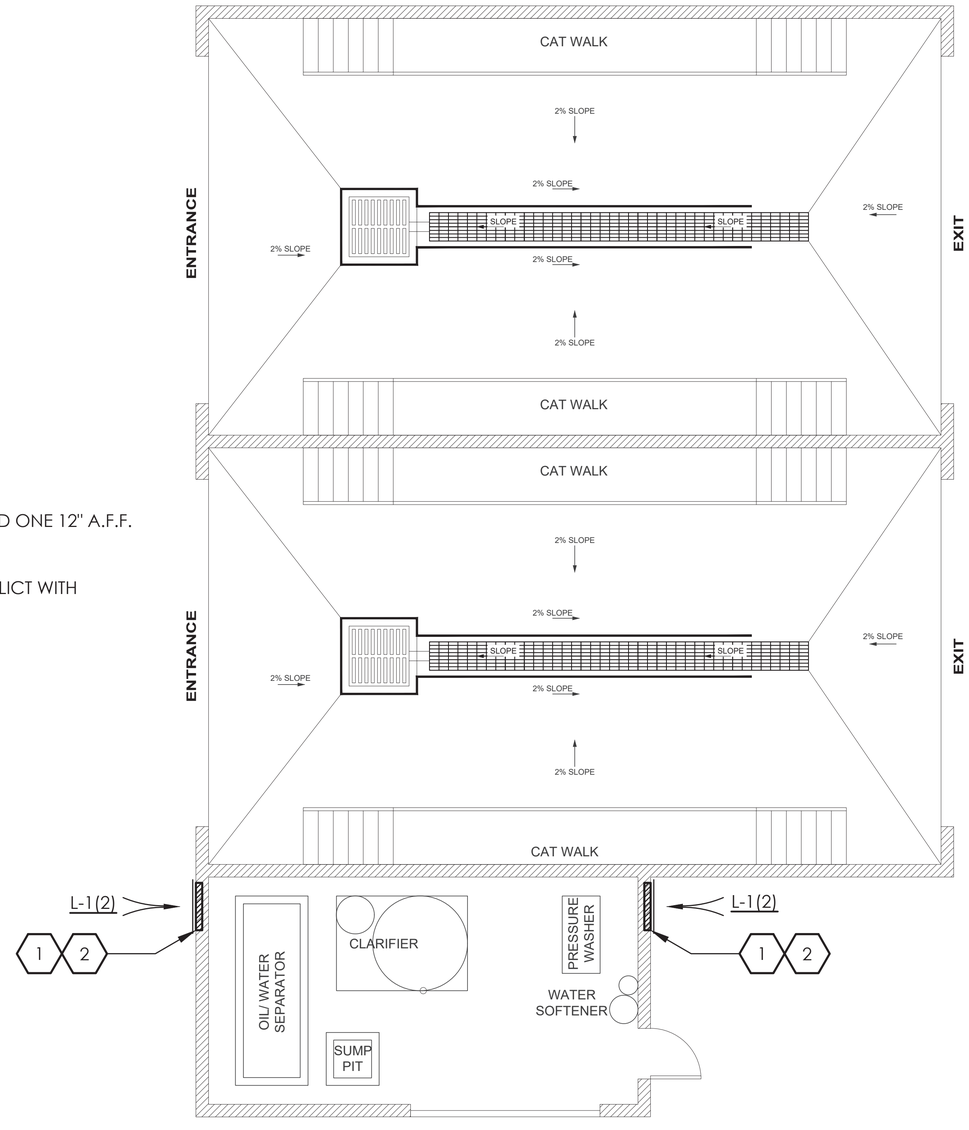
MG01

KEYED NOTES: MECHANICAL

1. 2 LOUVERS AT INDICATED LOCATION. ONE 6" BELOW CEILING AND ONE 12" A.F.F.
2. COORDINATE LOCATION OF LOUVERS/WALLCAPS TO NOT CONFLICT WITH CONTROL JOINTS AND DOWNSPOUTS.



1 MECHANICAL FLOOR PLAN
1/8"=1'-0"

LOUVER SCHEDULE

TAG	L-1
TYPE	VENTILATION
SERVICE	EQUIP RM
DETAILS AND ACCESSORIES	
MAX CFM	---
LENGTH/HEIGHT (IN)	30/30
FREE AREA (SQ FT)	2.67
MAX VELOCITY (FPM)	---
MAX PRESSURE DROP (IN. H2O)	---
FINISH	1.2 mils 70% PVDF
INCLUDED SCREENS	BIRD
ACTUATION TYPE	NONE
BORDER STYLE	2" FLANGE
MAUNUFACTURER	GREENHECK
MODEL	EVH-302
NOTES	1,2,3,4

NOTES:
01. LOUVER OPENINGS TO BE SAW CUT.
02. SEAL OPENING WEATHER TIGHT.
03. LOUVER TO BE FLORIDA STATE APPROVED.
04. TO BE AMCA 540 & 550 LISTED.

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MECHANICAL FLOOR PLAN

BND SHOP
VEHICLE WASH BAYS

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MP01

ELECTRICAL LEGEND - WIRING DEVICES

---ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS.
SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE.

	DUPLEX RECEPTACLE - 20A/125V/2P/3W/G NEMA 5-20R
WP/ "IN-USE"	DUPLEX RCPT.,WEATHER RESISTANT "WR", GFI INSTALLED IN A "IN-USE" WEATHER PROOF STEEL ENCLOSURE- 20A/125V/2P/3W/G NEMA 5-20R WP/"IN-USE" SHALL BE EQUAL TO MFR. CARLON, METALLIC SERIES SINGLE GANG, VERTICAL MOUNT #ME9UVMG DOUBLE GANG, VERTICAL MOUNT #ME9U2VMG
	HEAVY DUTY DISCONNECT SWITCH FUSED
	HEAVY DUTY DISCONNECT SWITCH NONFUSED
	SPECIAL PURPOSE RECEPTACLE (NEMA NO. AS INDICATED)
	PANELBOARD, CLEARANCE AS PER LATEST NEC
	SWITCH LEG
	ELECTRICAL CONDUIT
	UNDERGROUND ELECTRICAL CONDUIT
C	COMMUNICATION CONDUIT AND WIRING
X, X, X	MULTI-POLE DEVICE CIRCUIT NUMBERS
X/X/X	THREE SINGLE POLE DEVICE CIRCUIT NUMBERS
A-1	CONDUIT AND WIRE HOMERUN TO PANEL. SHORT HATCH INDICATES NEUTRAL CONDUCTOR, LONG HATCHES INDICATE PHASE CONDUCTORS, AND LONG HATCH WITH CIRCLE INDICATES ISOLATES OR INSULATED GROUND. ALPHANUMERIC DESCRIPTION INDICATES PANEL AND BREAKER.
A-1	UNDERGROUND CONDUIT AND WIRE HOMERUN TO PANEL. SHORT HATCH INDICATES NEUTRAL CONDUCTOR, LONG HATCHES INDICATE PHASE CONDUCTORS, AND LONG HATCH WITH CIRCLE INDICATES ISOLATED OR INSULATED GROUND. ALPHANUMERIC DESCRIPTION INDICATES PANEL AND BREAKER.
(J) (J)	JUNCTION BOX - SIZE & MOUNTING AS REQUIRED MINIMUM OF 4" SQUARE

ELECTRICAL LEGEND-LIGHTING

---ALL SYMBOLS SHOWN MAY NOT APPEAR IN ALL DRAWINGS.
SYMBOLS ARE SHOWN SCHEMATIC AND MAY NOT BE TO SCALE.

SYMBOL	DESCRIPTION
	4' LIGHT FIXTURE, REFER TO LUMINAIRE SCHEDULE
	INCANDESCENT, LED, FLUORESCENT, OR HID FIXTURE CLG. OR WALL MTD, REFER TO LUMINAIRE SCHEDULE
$	WALL SWITCH SPST, 20A,120/277V
PC	PHOTO CELL(MFR.INTERMATIC #K4136M)

GENERAL ELECTRICAL NOTES

1. ALL SYMBOLS AND ABBREVIATIONS SHOWN ON THIS LEGEND MAY NOT APPEAR ON THIS SET OF DRAWINGS.
2. USE DIRECTIONAL ARROW ON EXIT SIGNS AS REQUIRED.
3. IEEE STANDARD C37.2-1991, ELECTRICAL POWER SYSTEM DEVICE FUNCTION NUMBERS.
4. CONTRACTOR SHALL NOT INSTALL MORE THAN THREE CURRENT CARRYING CONDUCTORS IN A COMMON RACEWAY. IF CONTRACTOR IS PLANNING ON GROUPING MULTIPLE CIRCUITS IN A SINGLE RACEWAY, THE CONTRCATOR MUST SUBMIT ALL DERATING CALCULATIONS FOR THE PROPOSED INSTALLATION IN ACCORDANCE WITH NEC ARTICLE 310.15 (B) (2) FOR APPROVAL PRIOR TO INSTALLATION. NON APPROVED INSTALLATIONS WILL BE REMOVED AND REINSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH THE NEC AT NO ADDITIONAL COST TO THE OWNER.
5. THERE SHALL NOT BE MORE THAN THE EQUIVALENT OF THREE 90° BENDS (270 DEGREES TOTAL) BETWEEN PULL POINTS. WHERE THERE ARE MORE THAN THREE QUARTER BENDS, CONTRACTOR SHALL PROVIDE PULL BOXES AS SPECIFIED AND SIZED IN ACCORDANCE WITH NEC.
6. COMPLY WITH NEC REQUIREMENTS FOR ELECTRICAL INSTALLATIONS. ALL ELECTRICAL EQUIPMENT AND MATERIAL TO BE APPROVED, LISTED, LABELED, IDENTIFIED AND INSTALLED PER RECOGNIZED ELECTRICAL TESTING LABORATORY.
7. ALL RECEPTACLES, SWITCHES AND JUNCTION BOXES SERVED BY EMERGENCY BRANCH CIRCUITS SHALL BE "RED" IN COLOR. COVERPLATES SHALL BE LABELED IN ACCORDANCE WITH SPECIFICATIONS TO INDICATE PANELBOARD AND CIRCUIT NO. (IE: ET*LA-3).

ELECTRICAL: LIGHTING FUNCTIONAL TESTING / COMMISSIONING PLAN:

CONTRACTOR SHALL PERFORM THE TASK BELOW TO COMMISSION THE LIGHTING CONTROL SYSTEM. CONTRACTOR SHALL SUBMIT A DOCUMENTATION DETAILING THE LIGHTING CONTROL SYSTEM, SETTING/CONDITION, ACTIONS PERFORMED AND FINAL SETTING CONDITION. SUBMIT DOCUMENTATION AT OR BEFORE SUBSTANTIAL COMPLETION TO FACILITATE OBTAINING THE CERTIFICATE OF OCCUPANCY.

A. ENSURE ALL LIGHTING FIXTURES FIXTURES HAVE LAMPS INSTALLED AND ARE FUNCTIONAL.
B. TEST ALL EXIT SIGNS, EMERGENCY LIGHTING FIXTURES, AND EMERGENCY BALLASTS FURNISHED INTEGRAL TO FIXTURES.
C. ENSURE ALL OCCUPANCY SENSORS HAVE BEEN INSTALLED AND ARE OPERATIONAL.
D. VERIFY ALL WALLBOX AND SCENE CONTROLLERS ARE INSTALLED AND OPERATIONAL.
E. TEST EACH INDIVIDUAL DEVICE FOR OCCUPANCY SENSOR TYPES OS1, OS2 AND TEST THE LIGHTING CONTROL RELAY PANEL SYSTEM.
F. TEST 10% OF ALL THE DEVICES FOR OCCUPANCY SENSOR TYPE: WSX-PDT-SA.
G. VERIFY THE FOLLOWING:
1. ALL SENSORS ARE LOCATED AND AIMED PER THE MANUFACTURER'S RECOMMENDATIONS.
2. STATUS INDICATORS ON DEVICES ARE OPERATIONAL AND CORRECT.
3. DEVICES CONTROL LIGHTING FIXTURES AS INDICATED ON DRAWINGS.
4. TIME DELAYS HAVE BEEN SET AS PER CODE AND PER OWNERS DIRECTIONS.
5. MOVEMENT IN ADJACENT AREAS AND/ CYCLING OF HVAC SYSTEMS DOES NOT FALSE TRIGGER SENSORS.
6. PHOTOCELL LOCATION AND AIMED PER MANUFACTURERS RECOMMENDATIONS.
7. PROGRAM INTERIOR RELAYS WITH A TIME FUNCTION ACCEPTABLE TO OWNER.
8. PROGRAM INTERIOR OVERRIDE SWITCH WITH A TIME FUNCTIONAL ACCEPTABLE BY OWNER.

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ELECTRICAL LEGEND AND GENERAL NOTES

BND SHOP
VEHICLE WASH BAYS

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EG01

LUMINAIRE SCHEDULE

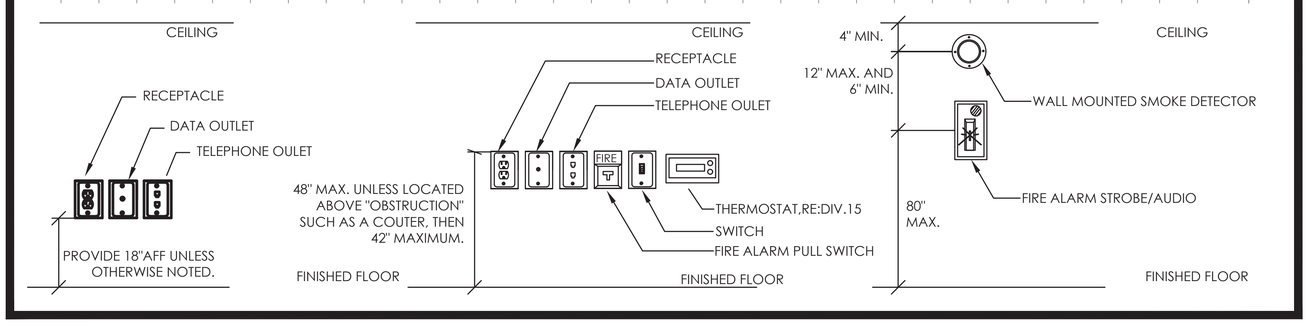
MARK	VOLTAGE	LAMP	MOUNTING	DESCRIPTION	MODEL NO.
A	MVOLT	LED 6213LM 4000K 49W	PENDANT	LED STRIP LIGHT FIXTURE, UL LISTED WET LOCATIONS. PROVIDE ALL NECESSARY MATERIALS FOR PROPER INSTALLATION.	LITHONIA CSVT L48 6000LM MVOLT 40K 80CRI STSL
B	MVOLT	LED 2950LM 40K 22W	SURFACE +14' AFF VERIFY	WALL MOUNT LED FIXTURE , UL LISTED, WET LOCATIONS	LITHONIA TWX1 P2 40K MVOLT DDBXD
X1	120V	LED	SURFACE	LED THERMOPLASTIC EXIT/EMERGENCY UNIT WITH SELF-DIAGNOSTICS	LITHONIA LHQM LED _ R SD
AA	MVOLT	LED 8,199 LM 4000K 71W	SURFACE +14' AFF	LED WALLPACK, WET LOCATIONS LISTED	LITHONIA TWR1 P2 50K MVOLT DDBTXD

NOTE:

1.) EQUAL MANUFACTURER SHALL BE ACCEPTABLE WITH EQUAL PERFORMANCE OF SPECIFIED EQUIPMENT AND APPROVED BY ENGINEER.
2.) SUBMIT EQUAL MANUFACTURERS TO ENGINEER 10 DAYS PRIOR TO BID DATE.
3.) SUBMIT LIGHT FIXTURES CUTSHEETS TO OWNER FOR APPROVAL PRIOR TO ORDER.
4.) CONTRACTOR SHALL VERIFY THAT ANY IRRIGATION SPRINKLER HEAD IS AWAY FROM ANY LIGHT POLE A MINIMUM OF 75' TO AVOID CONSISTENT WATER TO LIGHT POLE. COORDINATE WITH IRRIGATION CONTRACTOR PRIOR TO ANY WORK.
5.) CONTRACTOR SHALL VERIFY THAT ANY LIGHT POLES ON COMMON AREAS AND SIDE WALKS, THAT THE LOCATION OF THE POLE TO MEET THE ADA REQUIREMENTS.
6.) CONTRACTOR SHALL FIELD VERIFY FOR EXISTING/NEW UNDERGROUND UTILITIES PRIOR TO ANY WORK.

MOUNTING HEIGHT DETAIL

NOTE: VERIFY WITH ARCHITECTURAL FOR **ADA REQUIREMENTS.**



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LUMINAIRE SCHEDULE

BND SHOP
VEHICLE WASH BAYS

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EG02

GENERAL ELECTRICAL NOTES (TO ALL SHEETS)

A. CONTRACTOR TO VERIFY ALL EXISTING MAIN POWER SERVICES AND COORDINATE WITH POWER COMPANY FOR ALL NEW REQUIREMENTS AND ALL COST ASSOCIATED. CONTRACTOR SHALL INCLUDE ANY COST FOR THE NEW TRANSFORMER AND OTHER ASSOCIATED FEES IN BID. CONTRACTOR IS RESPONSIBLE TO VERIFY ALL FEES WITH POWER COMPANY AND TO INCLUDE IN BID. CONTRACTOR IS RESPONSIBLE TO COORDINATE WITH POWER COMPANY AS SOON THE CONTRACT IS AWARDED TO ORDER TRANSFORMER AND THE RELATED ELECTRICAL SERVICE EQUIPMENT AS SOON AS POSSIBLE.

B. CONTRACTOR IS RESPONSIBLE FOR ALL EXCAVATION, TRENCHING AND BACKFILLING. COORDINATE WITH ALL UTILITIES PRIOR TO EXCAVATION.

C. CONTRACTOR TO VERIFY ALL EXISTING MAIN TELEPHONE SERVICES AND COORDINATE WITH TELEPHONE COMPANY FOR ALL REQUIREMENTS AND ALL COST ASSOCIATED. INCLUDE ALL COST IN BID. CONDUIT FROM MAIN TELEPHONE RISER SHALL BE FURNISHED AND INSTALLED BY ELECTRICAL CONTRACTOR.

D. ALL ELECTRICAL EQUIPMENT OUTDOORS SHALL BE RATED TYPE NEMA 3R UNLESS OTHERWISE NOTED.

E. CONTRACTOR SHALL HAVE A WORKING KNOWLEDGE OF LOCAL CODES AND ORDINANCES. ALL WORK SHALL CONFORM TO NATIONAL ELECTRICAL CODES AND ALL OTHER AUTHORITY HAVING JURISDICTION. OBTAIN PERMITS AND PAY ALL FEES. PERFORM MODIFICATIONS TO MEET CODE AND ORDINANCE REQUIREMENTS AT NO ADDITIONAL COST TO OWNER, ARCHITECT OR ENGINEER. VERIFY PRIOR TO BID DATE.

F. VERIFY AT JOB SITE THE EXACT LOCATIONS OF STRUCTURAL MEMBERS SUCH AS BEAMS, COLUMNS, ETC. TO LOCATE EQUIPMENT CONDUIT, PANELS AND DEVICES. IF DEVIATIONS FROM THE DRAWING ARE NECESSARY TO MEET STRUCTURAL CONDITIONS MAKE DEVIATIONS WITHOUT ADDITIONAL COST, TO OWNER, ARCHITECT, OR ENGINEER.

G. IN COOPERATION WITH OTHER CONTRACTORS, DETERMINE THE EXACT LOCATION OF EQUIPMENT AND DEVICES AND CONNECTIONS THERETO BY REFERENCE TO THE SUBMITTALS AND ROUGH-IN DRAWINGS, AND BY MEASUREMENTS AT THE SITE. REFER TO ALL OTHER TRADES SUBMITTAL FOR ELECTRICAL INFORMATION.

H. GROUND ENTIRE ELECTRICAL SYSTEM IN STRICT ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE.

I. VERIFY AT JOB SITE GENERAL WORK TO BE DONE AS SPECIFIED, AS NOTED, OR AS REQUIRED FOR INSTALLATION ELECTRICAL SYSTEMS PRIOR TO SUBMISSION OF BIDS.

J. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND EQUIPMENT TO BE REMOVED AND REPLACED BEFORE SUBMITTING HIS BID.

K. ELECTRICAL DRAWINGS ARE DIAGRAMMATIC AND SMALL SCALE ONLY. THEY CONVEY THE INTENT OF THE WORK BUT DO NOT SHOW DETAIL SUCH AS JUNCTION AND PULL BOXES REQUIRED BY THE SPECIFICATIONS AND THE NATIONAL ELECTRICAL CODE(NEC). PROVIDE ALL MATERIALS AND METHODS CALLED FOR IN THE SPECIFICATIONS AND AS REQUIRED IN THE NEC TO PROVIDE A COMPLETE INSTALLATION OF ALL WORK.

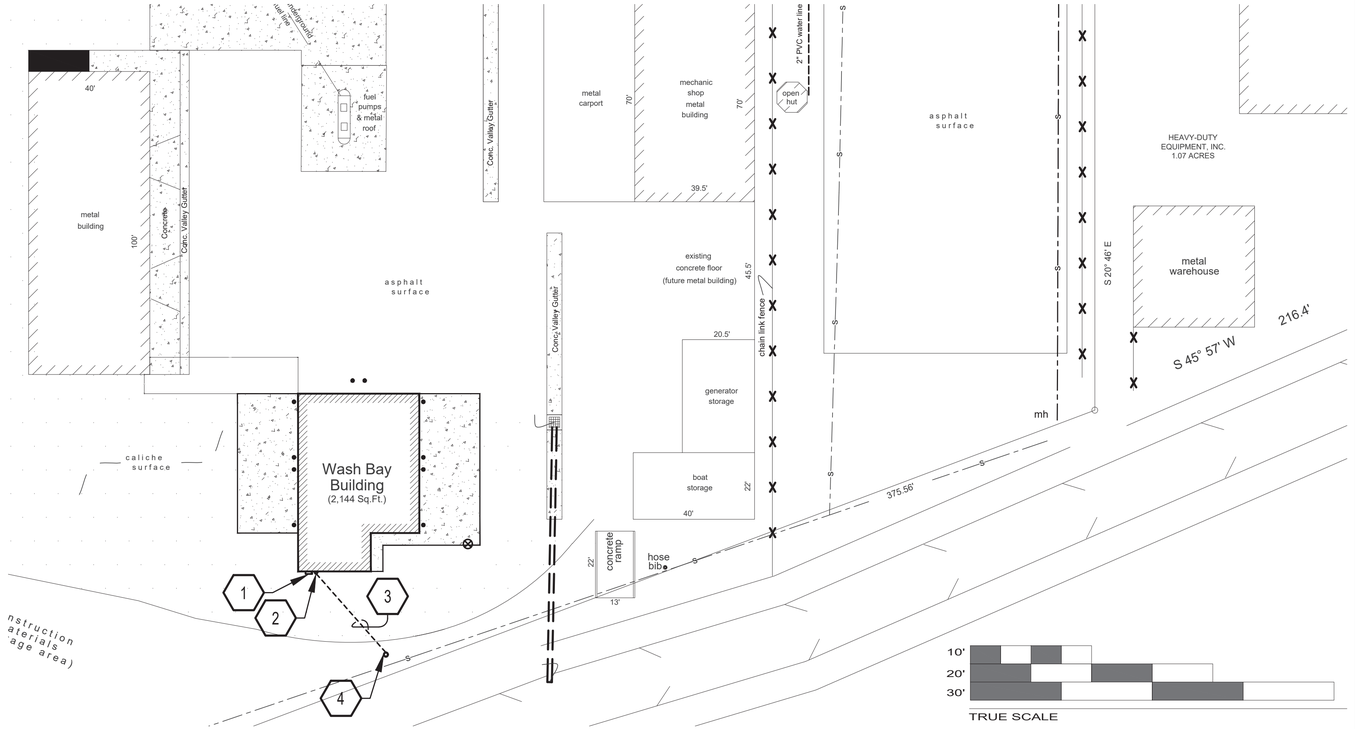
L. ALL WIRING SHALL BE COPPER.

M. ALL SLEEVES, PENETRATIONS, ETC. SHALL BE SEALED SOLID NON-SHRINKING MATERIAL IMMEDIATELY UPON FILLING OF THE OPENING WITH PIPE OR CONDUIT.

N. ARRANGE FOR SOURCES OF TEMPORARY CONSTRUCTION SERVICES. SUCH SERVICES SHALL BE NOMINALLY 120/240V, 1-PHASE, 3-WIRE FROM WHICH A COMPLETE SYSTEM OF TEMPORARY POWER AND LIGHTING SHALL BE PROVIDED FOR ALL CONSTRUCTION NEEDS.

O. CONTRACTOR IS RESPONSIBLE TO VERIFY AND COORDINATE WITH EXISTING/NEW UNDERGROUND UTILITIES PRIOR TO ANY WORK.

P. CONTRACTOR IS RESPONSIBLE CALL DIG-TESS; 1-1800-DIG-TESS 2-BUSINESS DAYS IN ADVANCE.



1 ELECTRICAL SITE PLAN
1"=50'-0"

KEYED NOTES: ELECTRICAL

1. NEW 120/208V, 3Ø, 4W, ELECTRICAL SERVICE METER.
2. NEW BUILDING MAIN SWITCH DISCONNECT 'MS'. PROVIDE WEATHER PROOF LABEL.
3. CONTRACTOR TO PROVIDE AND INSTALL PVC CONDUIT FROM NEW POWER COMPANY POLE MOUNTED TRANSFORMER WITH DIP POLE TO NEW ELECTRICAL SERVICE EQUIPMENT PER POWER COMPANY STANDARDS. VERIFY ALL REQUIREMENTS PRIOR TO ANY ROUGH-IN. REFER TO ELECTRICAL RISER DIAGRAM.
4. NEW POWER COMPANY POWER POLE WITH POLE MOUNTED TRANSFORMER AND RISER DIP POLE.

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PORT OF BROWNSVILLE
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FLOOR PLAN AND TRENCH DETAILS

BND SHOP
VEHICLE WASH BAYS

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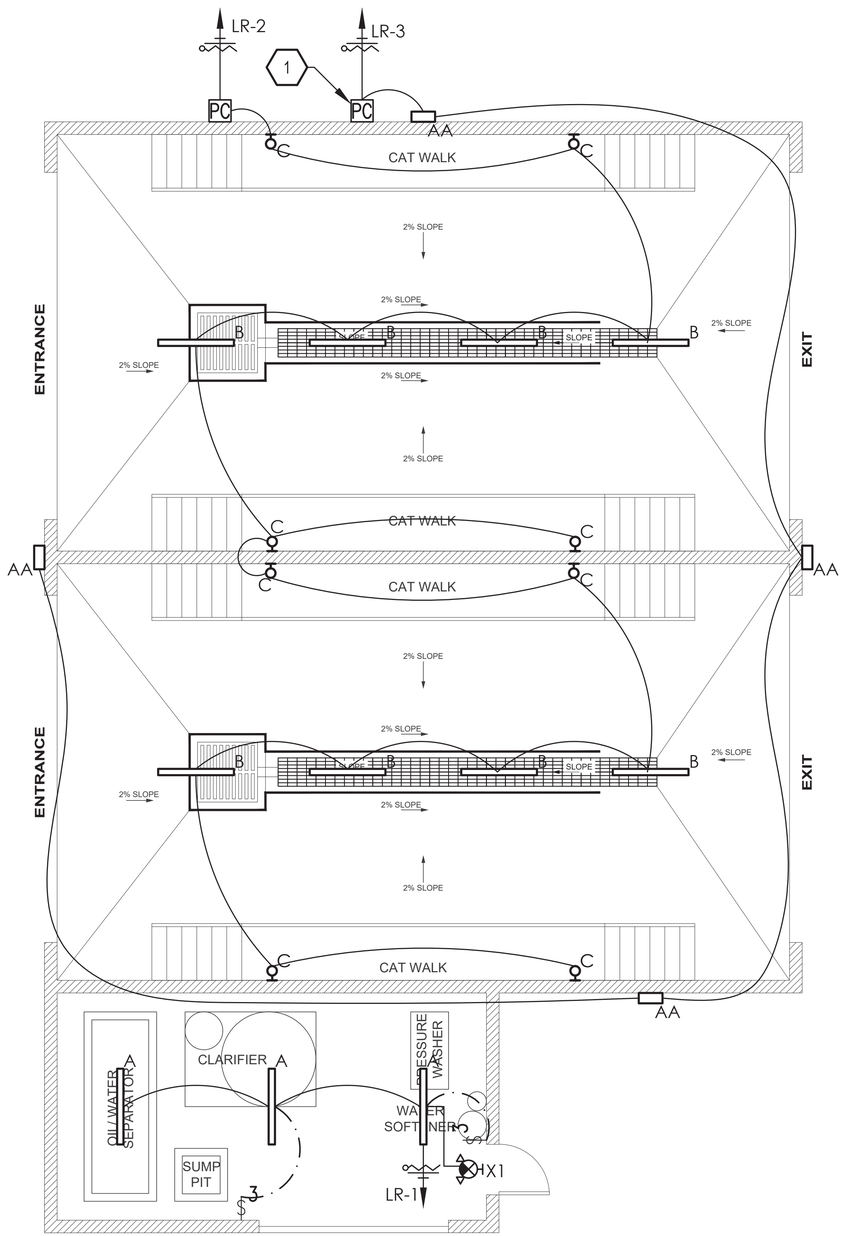

1 LIGHTING PLAN
1/8"=1'-0"

GENERAL NOTES: LIGHTING

A. ALL EXIT FIXTURES/EMERGENCY BATTERY PACK LIGHT FIXTURE SHALL BE CONNECTED TO UNSWITCHED OR NON-DIMMING HOT LEG OF SAME VOLTAGE/PHASE OF LOCAL LIGHTING CIRCUIT IN SPACE.

B. VERIFY CEILING TYPES AND COORDINATE WITH FIXTURE TYPE LIGHT FIXTURE SHALL BE COMPATIBLE WITH CEILING TYPE AS INDICATED ON THE ARCHITECTURAL DOCUMENTS. NOTIFY ENGINEER IF DISCREPANCIES EXIST PRIOR TO ORDERING FIXTURES.

C. COORDINATE EXACT ROUTING OF ALL CONDUIT ABOVE CEILING IN BUILDING. TYPICAL FOR ALL BUILDING EXTERIOR LIGHTING.

D. COORDINATE LOCATION OF LIGHTS WITH DIFFUSERS AND GRILLES.

E. SWITCH LEGS ARE NOT SHOWN WHERE SWITCHING SCHEME IS OBVIOUS.

F. ALL EXIT FIXTURES TYPE-"X1 & X2", EMERGENCY LIGHT FIXTURE TYPE-"E" AND ALL EMERGENCY BALLAST SHALL BE ON CIRCUIT "LB-8". FIXTURE TYPE LABEL WITH AN "_E" ARE LIGHT FIXTURES WITH EMERGENCY BALLAST. REFER TO LIGHT FIXTURE SCHEDULE.

G. CONTRACTOR SHALL REFER TO EQUIPMENT SUBMITTAL FOR ALL ELECTRICAL REQUIREMENTS PRIOR TO COMMENCING ANY WORK.

KEYED NOTES: LIGHTING

(1) 120V EXTERIOR LIGHTING PHOTOCELL. LOCATE AS DIRECTED BY MANUFACTURER.

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LIGHTING PLAN

BND SHOP
VEHICLE WASH BAYS

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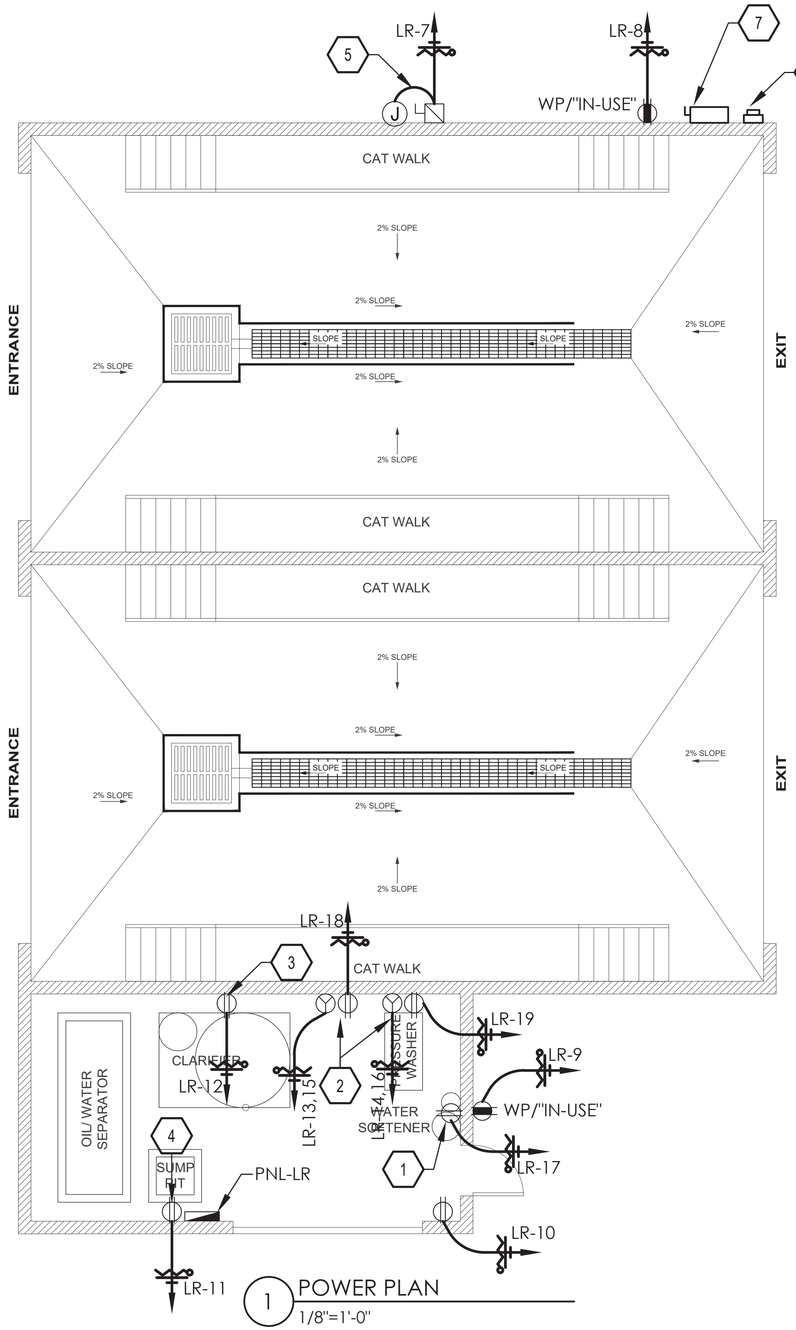

1 POWER PLAN
1/8"=1'-0"

GENERAL NOTES: POWER

A. COORDINATE EXACT LOCATION AND MOUNTING HEIGHT OF ALL POWER SOURCE WIRING IN ACCORDANCE WITH ARCHITECTURAL MILLWORK.

B. ELECTRICAL CONTRACTOR SHALL MAKE FINAL CONNECTION TO H.V.A.C EQUIPMENT, PLUMBING EQUIPMENT, REFER TO PANEL SCHEDULE FOR WIRE SIZE.

C. ELECTRICAL CONTRACTOR SHALL PROVIDE STARTERS, RELAYS, CONTACTORS AND THE REQUIRED ELECTRICAL ACCESSORIES FOR MECHANICAL SYSTEM AS REQUIRED.

D. COORDINATE EXACT LOCATION OF ALL MECHANICAL EQUIPMENT IN ACCORDANCE W/MECHANICAL DRAWINGS TO MEET ELECTRICAL AND MECHANICAL REQUIRED CLEARANCE BY THE LATEST CODE.

E. CONTRACTOR SHALL REFER TO EQUIPMENT SUBMITTAL FOR ALL ELECTRICAL REQUIREMENTS PRIOR TO COMMENCING ANY WORK.

F. ELECTRICAL CONTRACTOR SHALL PROVIDE J-BOX AND CONDUIT FOR H.V.A.C. CONTROLS AND THERMOSTATS. COORDINATE EXACT LOCATION WITH MECHANICAL CONTRACTOR.

G. NEMA RATED OUTLETS, REFER TO BREAKER SIZE AND COORDINATE WITH EQUIPMENT REQUIREMENTS PRIOR TO BID.

KEYED NOTES: POWER

1. JBOX/RECEPTACLE FOR WATER SOFTENER. COORDINATE EXACT LOCATION PRIOR TO ANY WORK.
2. JBOX/RECEPTACLE FOR PRESSURE WASHER. COORDINATE EXACT LOCATION PRIOR TO ANY WORK.
3. JBOX/RECEPTACLE FOR CLARIFIER. COORDINATE EXACT LOCATION PRIOR TO ANY WORK.
4. JBOX/RECEPTACLE FOR SUMP PUMP. COORDINATE EXACT LOCATION PRIOR TO ANY WORK.
5. JBOX/RECEPTACLE FOR VACUUM. COORDINATE EXACT LOCATION PRIOR TO ANY WORK.
6. FIELD VERIFY EXACT LOCATION FOR NEW ELECTRICAL 120/240V, 1Ø, 4W, ELECTRICAL SERVICE METER.
7. FIELD VERIFY EXACT LOCATION FOR NEW ELECTRICAL SERVICE DISCONNECT.

03/21/22

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POWER PLAN

BND SHOP
VEHICLE WASH BAYS

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GENERAL NOTES:

A. PROVIDE GROUND /BONDING AS INDICATED ON THE NATIONAL ELECTRICAL CODE.

B. NAME PLATES SHALL BE PROVIDED FOR ALL ELECTRICAL SWITCH GEAR, PANEL BOARDS, LIGHTING CONTACTORS, LIGHTING CONTROL PANELS, ETC.. BY ELECTRICAL CONTRACTOR.

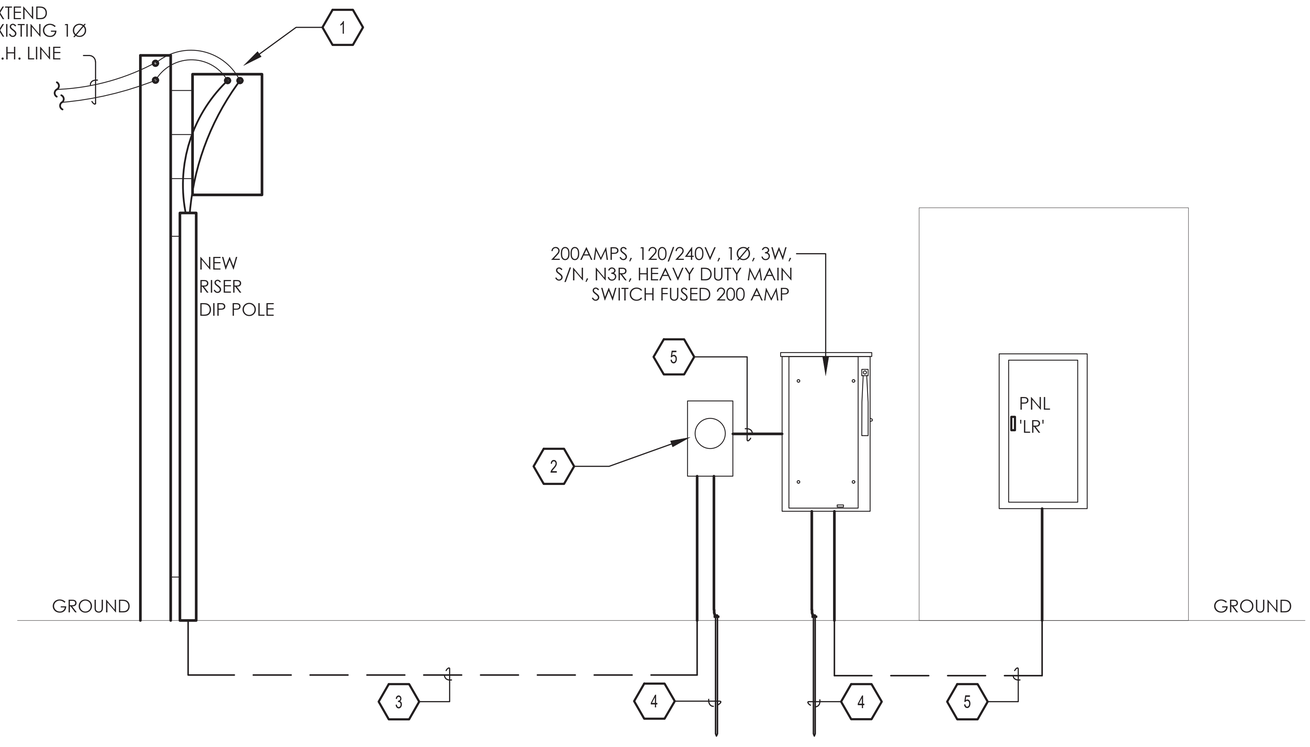
C. NEW ELECTRICAL METERING AND SERVICE EQUIPMENT SHALL BE PROVIDED AND INSTALLED ACCORDING TO THE LOCAL POWER UTILITY CO. AND CITY REQUIREMENTS. VERIFY AND COORDINATE WITH POWER UTILITY CO. AND AHJ BEFORE BID AND INSTALLATION.

D. COMPLY WITH NFPA 70E SAFETY REQUIREMENTS.

E. CONTRACTOR SHALL BE RESPONSIBLE FOR DELIVERY OF ELECTRICAL SERVICE TO THE NEW BUILDING WITHIN PROJECT SCHEDULE. COORDINATE ALL COST FOR LABOR AND MATERIALS WITH LOCAL ELECTRICAL UTILITY COMPANY PRIOR TO BID. ALL COST ASSOCIATED WITH THE DELIVERY OF ELECTRICAL SERVICE INCLUDING ALL MATERIALS SHALL BE INCLUDED IN BID. TRANSITION OF NEW ELECTRICAL SERVICE SHALL PROCEED IN WEEKENDS OR HOLIDAYS, INCLUDE ALL COST IN BID FOR OVERTIME FROM ELECTRIC UTILITY COMPANY. NO ADDITIONAL PAYMENT WILL BE MADE FOR SERVICE DELIVERY COSTS AFTER CONTRACT HAS BEEN AWARDED.

KEYED NOTES:

1. NEW POWER CO. POWER POLE AND POLE MOUNTED XFMR ATNEW LOCATION. COORDINATE LOCATION WITH POWER CO.
2. NEW ELECTRICAL SERVICE METER, 120/240V, 1Ø,3W. CONTRACTOR SHALL COORDINATE ALLOCATION OF METER, METER SOCKETS AND WIRING WITH POWER COMPANY.
3. PROVIDE 3#3/0, 2"C.
4. 1#8G IN 1"C, 3/4"X10' COPPER CLAD RODS. PROVIDE GROUNDING AS PER NEC REQUIREMENTS.
5. PROVIDE 3#3/0, 1#6G, 2"C.



1 ELECTRICAL SCHEMATIC DIAGRAM

SCALE: N.T.S.

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RISER DIAGRAM

BND SHOP
VEHICLE WASH BAYS

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ER01

PANEL-LR -	AMP 200	LUGS MLO	NEMA 3R	V(LL) 240		(P) 1	(W) 3		V(LN) 120	MNT S	KAIC 10	FDR 1-RUN 3#3/0, 1#6G, 2 "C	
LOAD SERVED	CKT #	LOAD KVA	BKR SIZE	POLE	FEEDER/BRANCH CIRCUIT SIZE	A	B	FEEDER/BRANCH CIRCUIT SIZE	POLE	BKR SIZE	LOAD KVA	CKT #	LOAD SERVED
LIGHTING	1	0.3	20	1	2#12, 1#12G,1/2"C	*		2#12, 1#12G,1/2"C	1	20	1.2	2	LIGHTING
LIGHTING	3	0.5	20	1	2#12, 1#12G,1/2"C		*	-				4	SPACE
	5				-	*		-				6	SPACE
VACUUM	7	1.2	20	1	2#10, 1#10G, 3/4"C		*	2#10, 1#10G, 3/4"C	1	20	1.2	8	1 RCPT
1 RCPT	9	1.2	20	1	2#12, 1#12G,1/2"C	*		2#12, 1#12G,1/2"C	1	20	1.2	10	1 RCPT
SUMP PIT	11	1.2	20	1	2#12, 1#12G,1/2"C		*	2#12, 1#12G,1/2"C	1	20	1.2	12	CLARIFIER
PRESSURE WASHER	13	4	50	2	3#8, 1#10G,3/4"C	*		3#8, 1#10G,3/4"C	2	50	4	14	PRESSURE WASHER
"	15	4			-		*	-			4	16	"
WATER SOFTENER	17	1.2	20	1	2#12, 1#12G,1/2"C	*		2#12, 1#12G,1/2"C	1	20	1.2	18	1 RCPT
1 RCPT	19	1.2	20	1	2#12, 1#12G,1/2"C		*	-				20	SPACE
SPACE	21				-	*		-				22	SPACE
SPACE	23				-		*	-				24	SPACE
SPACE	25				-	*		-				26	SPACE
SPACE	27				-		*	-				28	SPACE
SPACE	29				-	*		-				30	SPACE
SPACE	31				-		*	-	1	20		32	SPARE
SPACE	33				-	*		-	1	20		34	SPARE
SPACE	35				-		*	-	1	20		36	SPARE
1.) SPD	37		30	2	3#10, 1#10G,3/4"C	*		-	1	20		38	SPARE
"	39				-		*	-	1	20		40	SPARE
"	41				-	*		-	1	20		42	SPARE

LOADS	-	(KVA)						(KVA)	-	DESCRIPTIVE LOADS
CONNECTED LOAD	-	29		14	15			2	-	LIGHTING
RESERVE	25	7		KVA/PHASE				27	-	RECEPTACLES
TOTAL LOAD	-	**36**						0	-	COOLING
								0	-	HEATING
TOTAL AMPS	-	**150**						0	-	OTHER

NOTES:
1.) PROVIDE INTEGRAL SURGE PROTECTION DEVICE, 100KA
2)
3)

DISCONNECT SCHEDULE

LABEL	DESCRIPTION
VACUUM	30AMP, 1Ø, 3W, N3R, 120V, S/N, H.D. FUSED DISCONNECT

NOTE: 1. REFER TO BREAKER SIZE FOR FUSE SIZE.
2. REFER TO PANELBOARD FOR DISCONNECT PHASES AND VOLTAGE.

120/208V, 3Ø, 4W ELECTRICAL LOAD ANALYSIS

DESCRIPTION	TOTAL KVA
LIGHTING	2
GENERAL POWER	4
EQUIPMENT	23
TOTAL WATTS:	29 KVA
TOTAL AMPS:	120 AMPS
TOTAL AMPS+25%:	150 AMPS
WIRE SIZE AMPS:	200 AMPS

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PANEL SCHEDULE
DISCONNECT SCH
LOAD ANALYSIS

BND SHOP
VEHICLE WASH BAYS

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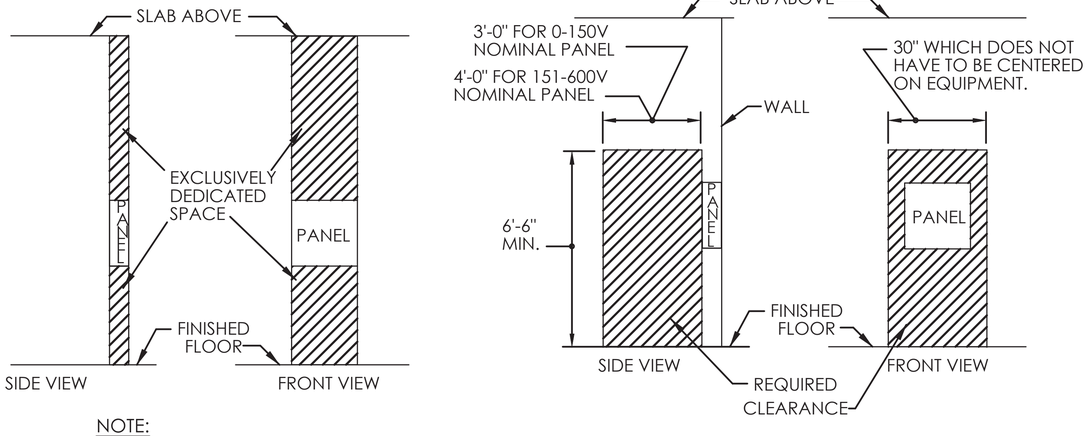
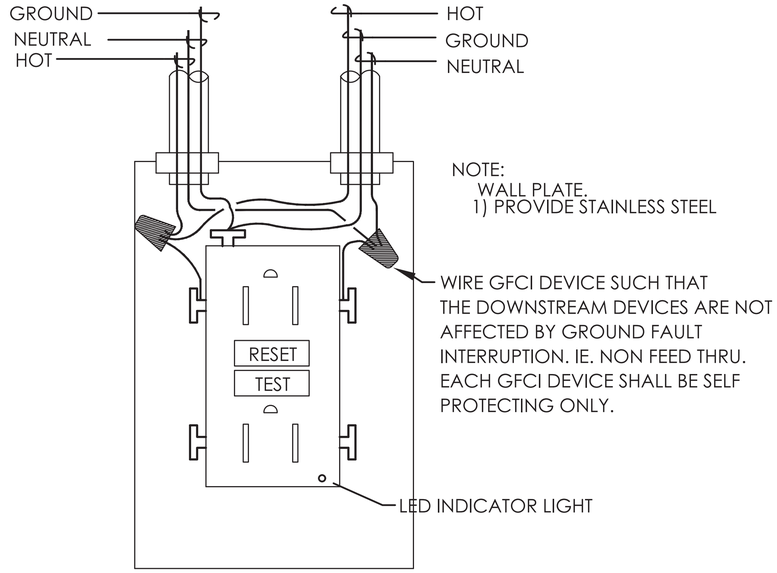


NOTE:
REFER TO THE LATEST NATIONAL ELECTRICAL CODE AND LOCAL CODES.

TYPICAL PANEL BOARD REQUIRED CLEARANCE

NO SCALE

02



GFI RECEPTACLE- WIRING DIAGRAM

NO SCALE

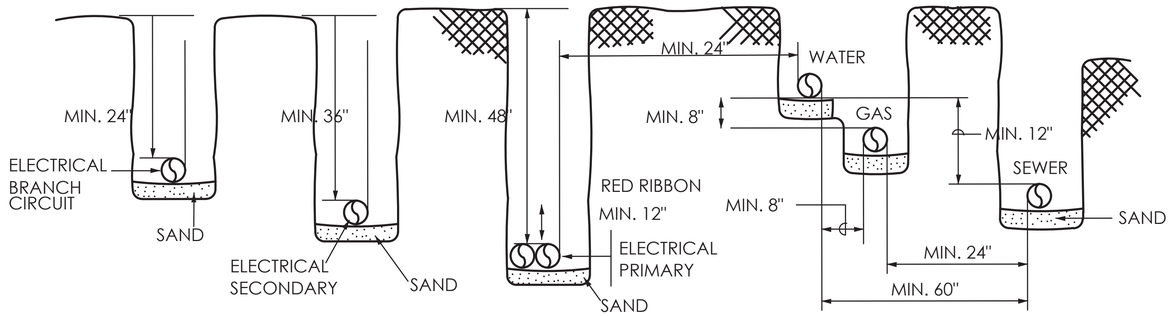
03

CLEAR TRENCH OF ALL ROCKS AND DEBRIS BEFORE ADDING SAND CUSHION.

COMPACT TRENCH FILL TO 95% PROCTOR DENSITY.

MAINTAIN A MINIMUM OF 60 INCHES UNDISTURBED EARTH BETWEEN PARALLEL WATER AND SEWER LINES OR SUPPORT WATER LINE ON SEPARATE SHELF A MINIMUM OF 12" ABOVE SEWER LINE.

MAINTAIN A MINIMUM OF 24" HORIZONTALLY BETWEEN ELECTRICAL PRIMARY AND SEWER. MAINTAIN A MINIM OF 12" VERTICALLY OR 24" HORIZONTALLY BETWEEN ELECTRICAL PRIMARY AND WATER LINES, GAS LINES, TELEPHONE RACEWAYS AND CABLE RACEWAYS.



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ELECTRICAL DETAILS

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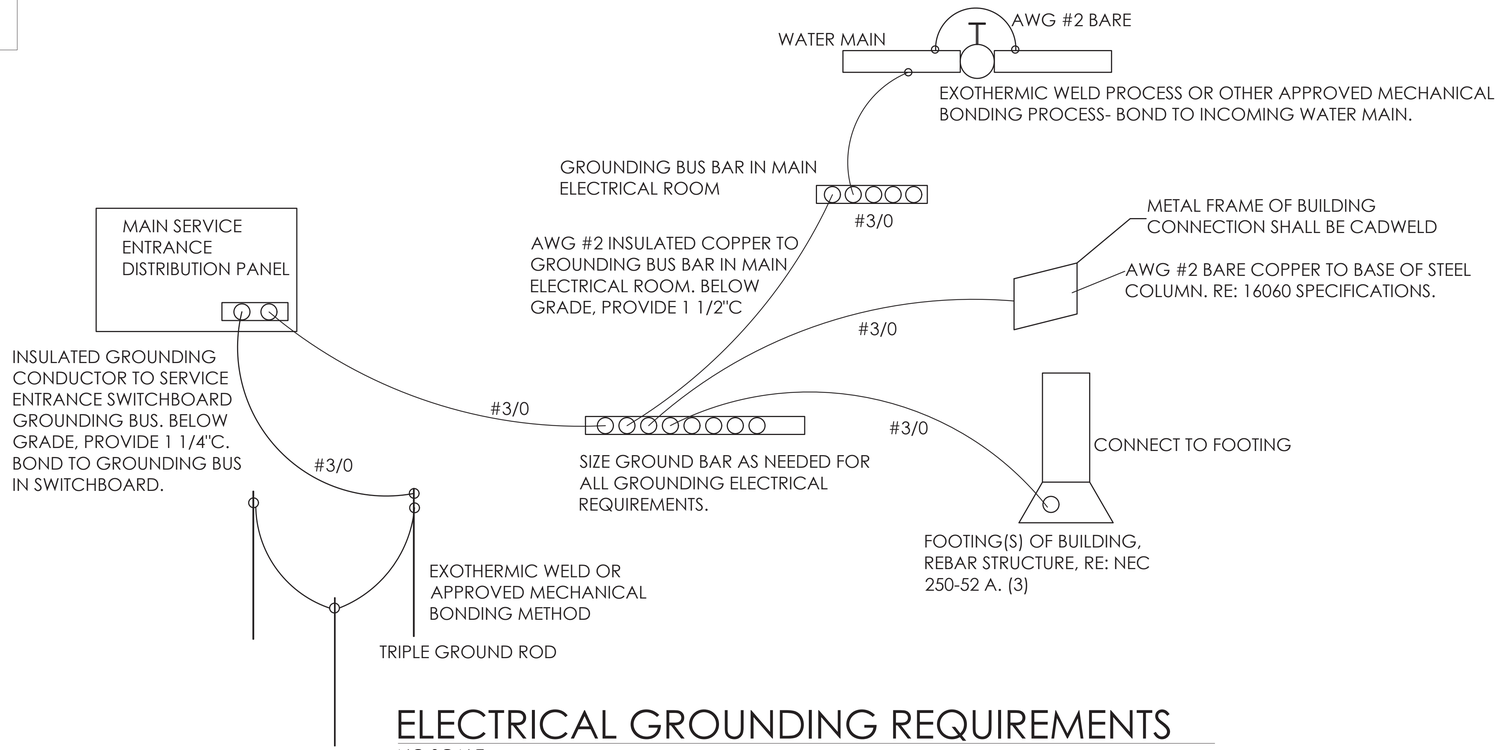

ELECTRICAL GROUNDING REQUIREMENTS

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ELECTRICAL SYSTEM GENERAL NOTES

THE ELECTRICAL WORK INCLUDES PROVIDING NEW MATERIALS, FIXTURES, DEVICES AND ACCESSORIES NECESSARY FOR A COMPLETE FUNCTIONING ELECTRICAL SYSTEM. THE WORK ALSO INCLUDES FINAL CONNECTIONS TO EQUIPMENT ITEMS PROVIDED BY OTHERS. ALL WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES OR ORDINANCES AND SUBJECT TO INSPECTION.

THE INTENT OF THE DRAWINGS IS TO INDICATE THE GENERAL EXTENT OF WORK REQUIRED FOR THE PROJECT. THE DRAWINGS FOR ELECTRICAL WORK ARE DIAGRAMMATIC, SHOWING THE LOCATION, TYPE DEVICES AND EQUIPMENT REQUIRED. THE DRAWINGS SHALL NOT BE SCALED FOR EXACT MEASUREMENTS. PROVIDE ALL FIXTURES, LAMPS, DEVICES, ACCESSORIES, OFFSETS AND MATERIALS NECESSARY TO FACILITATE THE SYSTEM'S FUNCTIONING AS INDICATED BY THE DESIGN AND THE EQUIPMENT INDICATED.

COORDINATE WITH THE WORK OF OTHER SECTIONS. VERIFY EXISTING SITE CONDITIONS BEFORE BIDDING. MAKE ALL CONNECTIONS TO EQUIPMENT FURNISHED BY OTHERS. COMPLY WITH THE CONSTRAINTS OF THE EXISTING CONDITIONS OF THE PROJECT SITE.

ALL WORK SHALL COMPLY WITH LOCAL LAWS GOVERNING ELECTRICAL INSTALLATIONS, AND THE MOST RECENT EDITION OF THE "NATIONAL ELECTRIC CODE", REFER TO REFERENCE STANDARDS. PROVIDE CODE REQUIRED CLEARANCES AROUND ALL ELECTRICAL EQUIPMENT. OBTAIN ALL PERMITS RELATING TO ELECTRICAL WORK.

1.1 REFERENCE STANDARDS

A. Materials, equipment, devices and workmanship shall comply with applicable local, county, state and national codes, laws and ordinances, utility company regulations and industry standards.
B. In case of differences between building codes, state laws, local ordinances, industry standards, utility company regulations and the Contract Documents, the most stringent shall govern. The Contractor shall promptly notify the Owner's Representative in writing of any such difference. Should the Contractor perform any work that does not comply with local codes, laws and ordinances, industry standards or other governing regulations, the work shall be corrected of noncompliance deficiencies with the Contractor bearing all costs.
C. In addition to the aforementioned ordinances, industry standards published by the following organizations shall apply:

AABM - American Association of Battery Manufacturers
ADA - American's with Disabilities Act
AIA - American Institute of Architects
ANSI - American National Standards Institute
ASTM - American Society for Testing and Materials
CBM - Certified Ballast Manufacturers Association
ETL - Electrical Testing Laboratories
FM - Factory Mutual
ICEA - Insulated Cable Engineers Associated
IEEE - Institute of Electrical and Electronic Engineers
IES - Illuminating Engineering Society
IRI - Industrial Risk Insurance
NBS - National Bureau of Standards
NEC - National Electrical Code
NECA - National Electrical Contractors Association
NEMA - National Electrical Manufacturers Association
NESC - National Electrical Safety Code
NETA - National Electrical Testing Association
NFPA - National Fire Protection Association
UL - Underwriters Laboratories
IECC - International Energy Code

VERIFY VOLTAGE DROPS AND A.I.C. RATINGS FOR ALL EQUIPMENT CONNECTED, AND VERIFY SIZE OF ELECTRICAL SYSTEM BREAKERS, CONDUITS, ETC. REFER TO NEC 2020 FOR VOLTAGE DROP REQUIREMENTS.

ROOF PENETRATIONS SHALL COMPLY WITH "SMACNA" AND "NRCA" STANDARDS, AND WITH THE REQUIREMENTS OF THE EXISTING ROOFING WARRANTY, IF APPLICABLE. DO NOT PERFORM ROOFING PENETRATIONS IN A MANNER WHICH WOULD VOID OR OTHERWISE LIMIT THE EXISTING ROOFING WARRANTY.

TEMPORARY SERVICES: ARRANGE FOR SOURCES OF TEMPORARY CONSTRUCTION SERVICES. SUCH SERVICES SHALL BE NOMINALLY 120/208 VOLT, 1-PHASE, 3-WIRE FROM WHICH A COMPLETE SYSTEM OF TEMPORARY POWER AND LIGHTING SHALL BE PROVIDED FOR ALL CONSTRUCTION NEEDS.

DISCONNECT SWITCHES SHALL BE HEAVY-DUTY, QUICK-MAKE, QUICK-BREAK TYPE NEMA 1 ENCLOSURE (NEMA 3R FOR OUTDOOR). SWITCHES SHALL BE AS MANUFACTURED BY SQUARE "D", SIEMEN'S I.T.E., EATON MFR., & GE. PROVIDE ALL FUSES AS MANUFACTURED BY BUSSMAN, GOULD-SHAWMUT, OR LITTLE-FUSE. ALL CONDUCTOR TERMINALS TO BE U.L. FOR MINIMUM 75°C. MAIN SWITCH DISCONNECT SHALL BE LABELED "MAIN DISCONNECT".

PANELBOARDS SHALL BE AS MANUFACTURED BY SQUARE "D", EATON MFR., GE, OR SIEMEN'S I.T.E.; MEETING U.L. STANDARDS 30 AND 67, WITH U.L. LABEL. ALL CONDUCTOR TERMINALS TO BE U.L. FOR MINIMUM 75°C. BREAKERS TO BE THERMAL MAGNETIC TYPE, BOLT-IN, QUICK-MAKE, QUICK- BREAK TYPE SINGLE UNIT CONSTRUCTION. TWO AND THREE POLE BREAKERS SHALL BE SINGLE UNIT COMMON TRIP TYPE. ALL BREAKERS CONNECTED TO LIGHTING BRANCH CIRCUITS SHALL BE APPROVED FOR THAT USE AND MARKED "SWD". PANELBOARD CABINETS SHALL BE ONE PIECE CODE GAGE GALVANIZED STEEL WITH MOUNTING STUDS. WIRING GUTTERS OF AMPLE SIZE AND KNOCKOUTS FOR CONDUIT CONNECTIONS AS REQUIRED. BUS BARS SHALL BE 98% COPPER. FRONTS SHALL BE ONE PIECE CODE GAGE STEEL WITH ADJUSTABLE FASTENERS. PROVIDE FLUSH MOUNT UNITS UNLESS OTHERWISE INDICATED. PROVIDE A PLASTIC COVERED TYPEWRITTEN SCHEDULE IDENTIFYING ALL BRANCH CIRCUITS INSIDE EACH CABINET.

GROUNDING SYSTEM: PERMANENTLY AND EFFECTIVELY GROUND ALL METALLIC CONDUITS, SUPPORTS, CABINETS, PANELBOARDS AND SYSTEM GROUNDING NEUTRAL. MAINTAIN CONTINUITY OF EQUIPMENT GROUND THROUGHOUT THE SYSTEM BY INSTALLING GROUNDING CONDUCTORS IN ALL FEEDERS AND CIRCUITS. PROVIDE INSULATED GREEN-COLORED GROUND CONDUCTOR. GROUND CLAMPS SHALL BE APPROVED TYPE, SPECIFICALLY DESIGNED FOR GROUNDING. GROUND WIRE SIZED IN ACCORDANCE WITH "NEC" TABLE 250-122. GROUND ROD SHALL BE COPPER-CLAD STEEL, SIZE: 3/4" BY 120" INCHES IN DIAMETER.

CONDUIT SHALL BE SIZED TO COMPLY WITH "NEC" FOR NUMBER AND SIZE OF CONDUCTORS INSTALLED, MINIMUM SIZE OF 1/2" ABOVE GRADE (UNLESS 3/4" IS REQUIRED BY LOCAL JURISDICTION). PROVIDE SCHEDULE 40 PVC PLASTIC OR RIGID STEEL CONDUIT BELOW GRADE, MINIMUM SIZE OF 3/4". MINIMUM 3/4". PROVIDE ELECTRICAL METAL TUBING (EMT) MEETING FS #W-C563, OR FLEXIBLE CONDUIT (IN LENGTHS 6'-0" OR LESS) FOR INTERIOR LOCATIONS. EMT CONNECTORS AND COUPLINGS SHALL BE SET-SCREW TYPE. CLAMP CONDUIT TO BOXES WITH BUSHINGS INSIDE AND LOCKNUT OUTSIDE. TYPE AC & MC ARMORED CABLE AND METAL CLAD CABLE ARE NOT ACCEPTABLE FOR THIS INSTALLATION.

CONDUCTORS SHALL BE INSULATED SOFT ANNEALED 98% PURE COPPER WITH COLOR CODING, B & S GAGE, #10 AND SMALLER TO BE SOLID, #8 AND LARGER TO BE STRANDED, MINIMUM #12 UNLESS OTHERWISE INDICATED. ALUMINUM CONDUCTORS SHALL NOT BE ALLOWED. "THHN" MAY NOT BE USED UNDERGROUND, AT SERVICE ENTRANCE, OUTSIDE, OR IN WET LOCATIONS. ALL INSULATION TO BE RATED AT 75° FOR 600 VOLT AND TYPES AS FOLLOWS:

#10 AND SMALLER: THW, THHN, OR THWN
#8 AND LARGER: THW OR THHN
SERVICE ENTRANCE: USE-RHW

WIRE THROUGH LIGHT FIXTURES OR WITHIN 3" OF HEATING EQUIPMENT TO BE "THHN".

DEVICES SHALL BE MANUFACTURED BY LEVITON OR EQUAL. ALL DEVICES AND COVER PLATES SHALL BE IVORY COLOR. STANDARD DUPLEX RECEPTACLES SHALL BE GROUNDING TYPE, 20 AMP, NEMA 5-20R, BACK AND SIDE WIRED. OTHER DEVICES SHALL BE AS INDICTED ON THE DRAWINGS OR AS REQUIRED BY THE EQUIPMENT ITEM INTENDED TO BE SERVED. WHERE SWITCHES ARE GROUPED, PROVIDE GANG PLATES.

LIGHT SWITCHES SHALL BE DECORA TYPE, GROUNDING TYPE, 20AMP. COORDINATE FINISH WITH OWNER PRIOR TO BID DATE.

WALL PLATES: PROVIDE STAINLESS STEEL PLATES AT ALL WIRING DEVICE LOCATIONS.

LAYOUT BRANCH CIRCUIT WIRING AND ARRANGEMENT OF HOME RUNS FOR MAXIMUM ECONOMY AND EFFICIENCY. INCREASE WIRE SIZE IF VOLTAGE DROP EXCEEDS 3% OR CONDUCTOR LENGTH EXCEEDS 100 FEET.

CONCEAL WIRING SYSTEM ABOVE SUSPENDED CEILINGS OR IN WALL OR FLOOR CONSTRUCTION WHERE POSSIBLE. INSTALL CONDUIT PARALLEL TO BUILDING LINES AND TO CLEAR ALL OPENINGS, DEPRESSIONS, PIPES, DUCTS, STRUCTURE, ETC.

INSTALL CONDUIT CONTINUOUS BETWEEN BOXES AND CABINETS WITH NO MORE THAN FOUR (4) 90° BENDS. SECURELY FASTEN IN PLACE WITH STRAPS, HANGERS AND STEEL SUPPORTS AS REQUIRED. DO NOT SUPPORT CONDUIT FROM SUSPENDED CEILING GRID OR SUSPENSION WIRES. REAM CONDUIT ENDS BEFORE INSTALLATION AND THOROUGHLY CLEAN BEFORE INSTALLATION. OPENINGS SHALL BE PLUGGED OR COVERED TO KEEP CONDUIT CLEAN. TERMINALS ON SWITCHES AND RECEPTACLES SHALL NOT BE USED TO "FEED-THRU" TO THE NEXT SWITCH OR RECEPTACLE. THE DISCONNECTING OR REMOVAL OF A DEVICE FROM A BOX SHALL NOT INTERFERE WITH OR INTERRUPT THE CONDUCTOR CONTINUITY.

CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EQUIPMENT AND SYSTEMS AGAINST HARMFUL EXPOSURE, OR ACCUMULATION OF DUST OR MOISTURE, FLOODING, CORROSION, AND ALL OTHER FORMS OF DAMAGE. CLEAN AND RESTORE DAMAGED FINISHES AND EQUIPMENT TO "LIKE-NEW" CONDITION.

ALL ELECTRICAL EQUIPMENT SHALL BE ADJUSTED AND TESTED FOR PROPER OPERATION. AFTER WIRES ARE IN PLACE AND CONNECTED TO DEVICES AND EQUIPMENT, THE SYSTEM SHALL BE TESTED FOR SHORTS AND GROUNDS. ALL HOT AND NEUTRAL CONDUCTORS, IF SHORTED OR GROUNDED, SHALL BE REMOVED AND REPLACED. ALL METERS, INSTRUMENTS, CABLE CONNECTIONS, EQUIPMENT, OR APPARATUS NECESSARY FOR MAKING ALL TESTS SHALL BE FURNISHED BY THIS CONTRACTOR.

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ELECTRICAL DETAILS

BND SHOP
VEHICLE WASH BAYS

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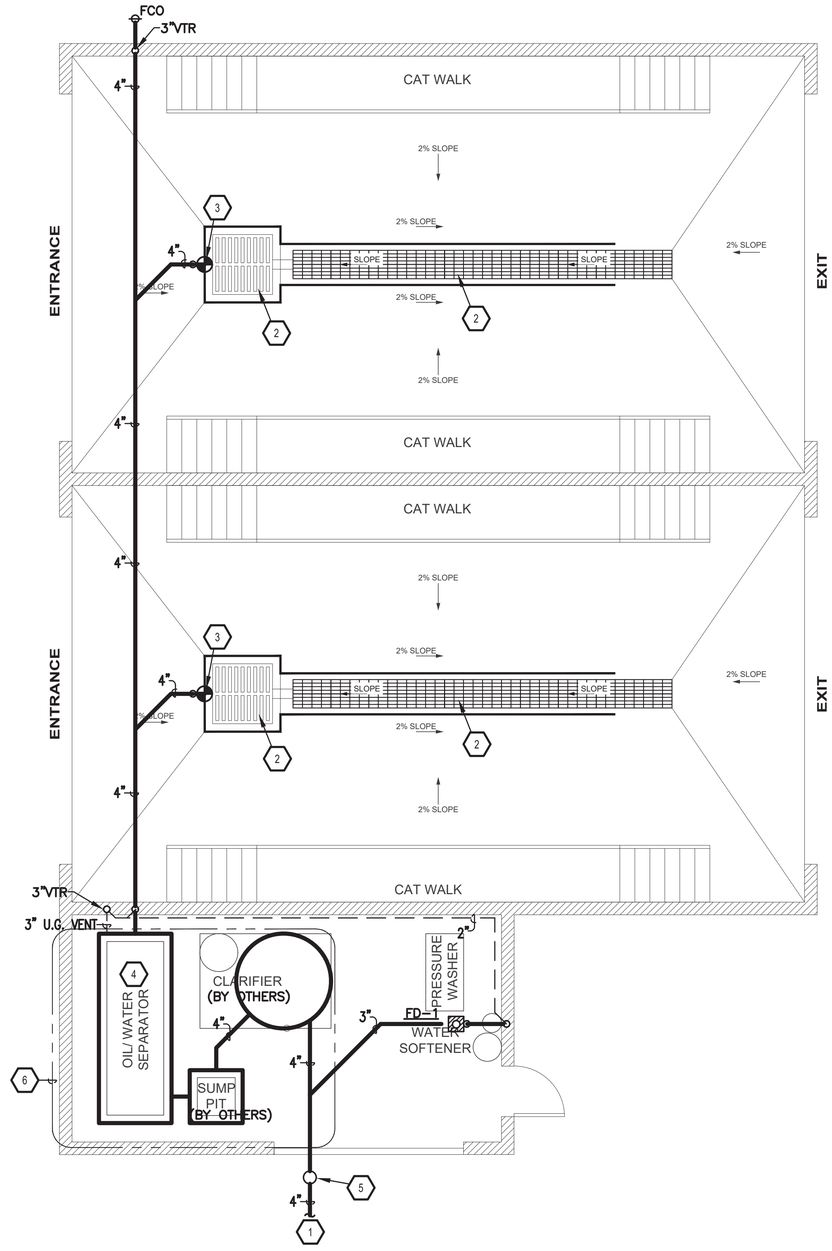

PLUMBING KEYED NOTES:

1. REFER TO CIVIL SITE PLAN FOR CONTINUATION.
2. WASH BAY TRENCH DRAIN BY OTHERS.
3. APPROXIMATE LOCATION OP SEWER PIPE POINT OF CONNECTION. PLUMBING CONTRACTOR TO TO VERIFY WITH CONTRACTOR EXACT LOCATION OF SEWER CONNECTION TO BUS WASH TRENCH.
4. PLUMBER TO PROVIDE GRIT OIL SEPARATOR EQUAL TO PARK GO-1000. REFER TO MANUFACTURE'S SPECS AND DETAILS FOR INSTALLATION. GRIT OIL SEPARATOR TO BE INSTALLED AND COMPLY WITH LOCAL CODE.
5. SAMPLE WELL. REFER TO DETAIL 03/PD01.
6. ALL WASTE WATER CONNECTION AND SIZING ON THIS AREA ARE BY WASH BAY EQUIPMENT SUPPLIER/ INSTALLER.

SEWER & VENT

1 WASH BAY FLOOR PLAN: PLUMBING

SCALE: 1/8" = 1'-0"

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PLUMBING SEWER & VENT PLAN

BND SHOP
VEHICLE WASH BAYS

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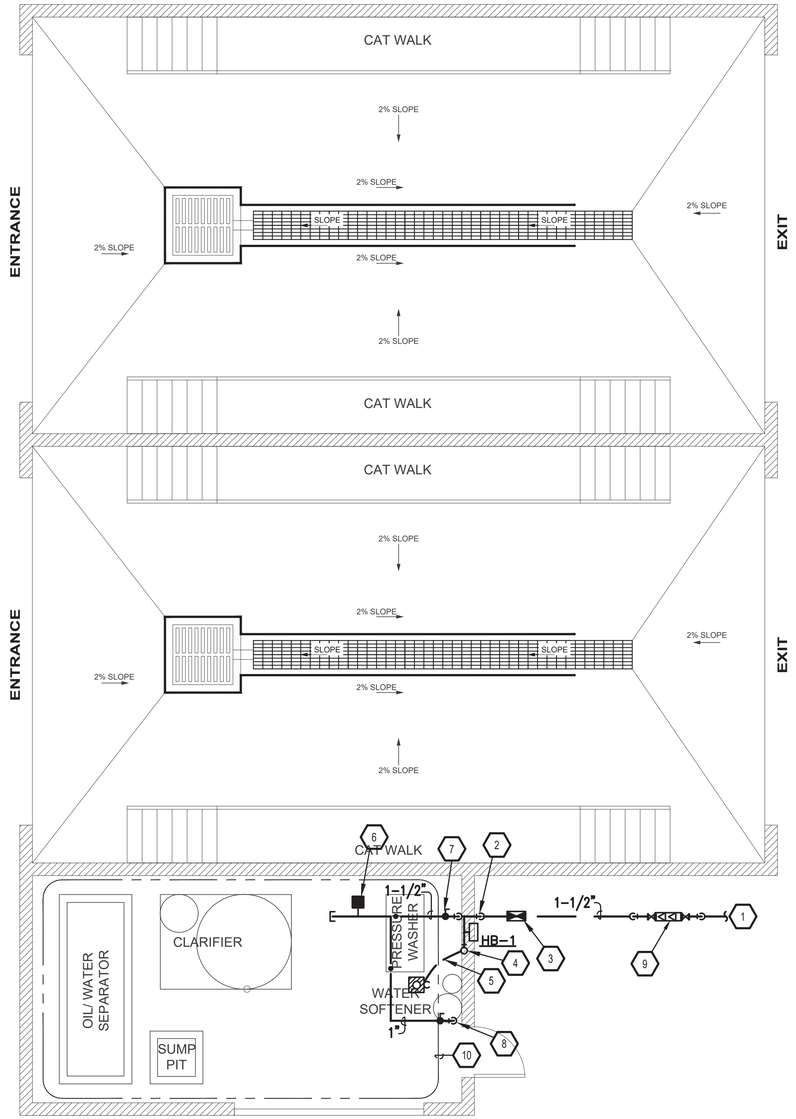
PP01



PLUMBING KEYED NOTES:

1. REFER TO CIVIL SITE PLAN FOR CONTINUATION.
2. WATER SERVICE ENTRANCE. REFER TO DETAIL 01/PD01.
3. CUT-OFF VALVE IN CAST IRON BOX. SET BOX FLUSH WITH FINISHED FLOOR.
4. TRAP-PRIMER, MIFAB OR EQUAL. PROVIDE ACCESS PANEL WHERE LOCATED IN AN INACCESSIBLE WALL. PANEL SHALL BE 12"X12" PAINTED TO MATCH CEILING. REFER TO DETAIL 04/PS01.
5. 1/2" COPPER FROM TRAP-PRIMER COVER WITH POLYETHYLENE SLEEVE "POLY SLEEVE" OR EQUAL.
6. WATER HAMMER ABOVE CEILING. PROVIDE ACCESS PANEL WHERE LOCATED IN AN INACCESSIBLE CEILING. PANEL SHALL BE 12"X12" PAINTED TO MATCH CEILING.
7. BRONZE CUT-OFF VALVE ABOVE CEILING. PROVIDE ACCESS PANEL WHERE LOCATED IN AN INACCESSIBLE CEILING. PANEL SHALL BE 12"X12" PAINTED TO MATCH CEILING.
8. 1" WATER LINE FOR WATER SOFTENER. COORDINATE WITH CONTRACTOR. INSTALLATION BY PLUMBER.
9. 1-1/2" BACKFLOW PREVENTER AS REQUIRED BY LOCAL AUTHORITY. CONTRACTOR TO BE BACKFLOW PREVENTER CERTIFIED.
10. ALL WATER CONNECTION AND SIZING ON THIS AREA ARE BY CAR WASH EQUIPMENT INSTALLER.

DOMESTIC WATER

1 WASH BAY FLOOR PLAN: PLUMBING

SCALE: 1/8" = 1'-0"

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PLUMBING DOMESTIC WATER PLAN

BND SHOP
VEHICLE WASH BAYS

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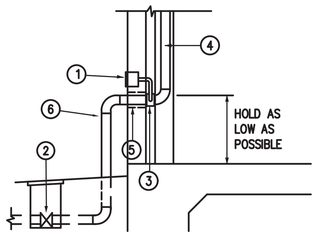
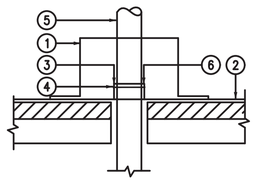
PP02



1. WALL HYDRANT – INSTALL LOW ENOUGH TO DRAIN RISER.
2. SHUT-OFF VALE IN CAST IRON BOX FLUSH WITH FINISHED GRADE
3. TEE
4. TYPE "L" COPPER
5. SLEEVE
6. PROVIDE 1" ARMAFLEX INSULATION W/ METAL JACKET ON EXPOSED PIPING.

01 WATER SERVICE ENTRANCE DETAIL

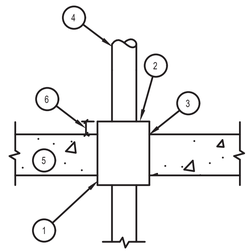
NO SCALE



1. PREFABRICATED ROOF CURB. FURNISHED & INSTALLED BY ROOFING CONTR. (COORDINATE)
2. METAL ROOFING
3. STAINLESS STEEL CLAMP
4. SLEEVE PIPE BY ROOFING CONTR.
5. VTR
6. PROVIDE CAULKING GROVE
7. LOCATE MIN. 10'-0" FROM A/C AIR INTAKES

03 VENT THRU ROOF DETAIL

NO SCALE



1. METAL SLEEVE TWO SIZES LARGER THAN PIPE
2. FILL VOID WITH NON-SHRINKING WATERPROOF, VERMIN PROOF MATERIAL
3. ALL PLUMBING PIPE PENETRATIONS THROUGH GROUND FLOOR, AND GRADE BEAMS SHALL BE SLEEVED
4. PIPE
5. CONCRETE SLAB
6. MINIMUM 2"

05 FLOOR PENETRATION DETAIL

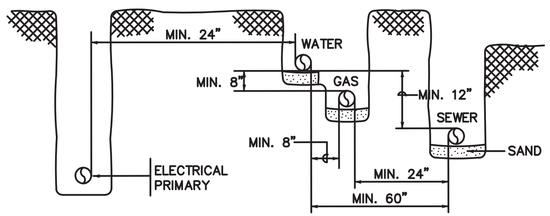
NO SCALE

CLEAR TRENCH OF ALL ROCKS AND DEBRIS BEFORE ADDING SAND CUSHION.

COMPACT TRENCH FILL TO 95% PROCTOR DENSITY.

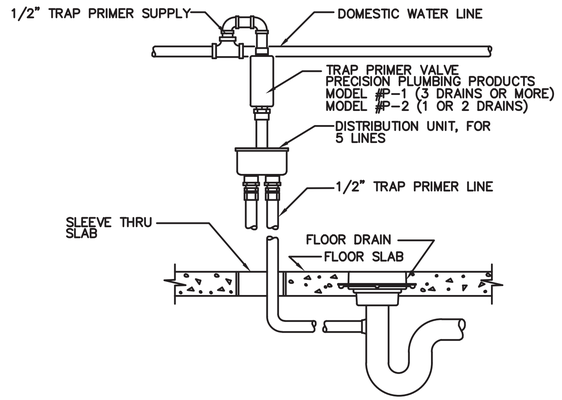
MAINTAIN A MINIMUM OF 60 INCHES UNDISTURBED EARTH BETWEEN PARALLEL WATER AND SEWER LINES OR SUPPORT WATER LINE ON SEPARATE SHELF A MINIMUM OF 12" ABOVE SEWER LINE.

MAINTAIN A MINIMUM OF 24" HORIZONTALLY BETWEEN ELECTRICAL PRIMARY AND SEWER. MAINTAIN A MINIM OF 12" VERTICALLY OR 24" HORIZONTALLY BETWEEN ELECTRICAL PRIMARY AND WATER LINES, GAS LINES, TELEPHONE RACEWAYS AND CABLE RACEWAYS.



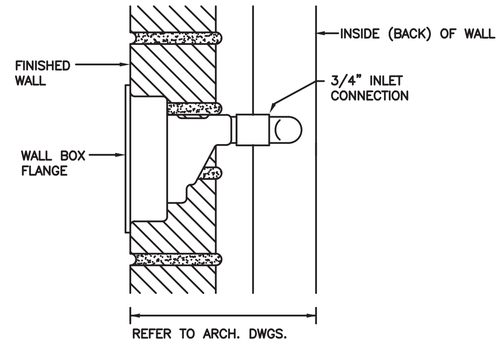
02 TRENCHING DETAIL

NO SCALE



04 TRAP SEAL PRIMER DETAIL

NO SCALE



06 WALL HYDRANT DETAIL

NO SCALE

PLUMBING FIXTURE SCHEDULE

MARK	FIXTURE TYPE	CONNECTION SIZE				DESCRIPTION
		San. Sewer	Vent	Cold Water	Hot Water	
HB-1	WALL HYDRANT EXTERIOR GENERAL USE	–	–	3/4"	–	MILD TEMPERATURE WALL HYDRANT SHALL BE WADE MODEL 8600MT-175 3/4" INLET WITH BRONZE CASING, BRONZE FACE AND STRAIGHT INLET CONNECTION WITH INTEGRAL BACKFLOW PREVENTER.
FD-1	GENERAL DUTY FLOOR DRAIN	AS NOTED ON PLANS				WADE MODEL NO. 1103STD6 CAST IRON FLOOR DRAIN COMPLETE WITH BRASS STRAINER, AND WITH TRAP PRIMER CONNECTION.

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PLUMBING DETAILS & SCHEDULS

BND SHOP
VEHICLE WASH BAYS

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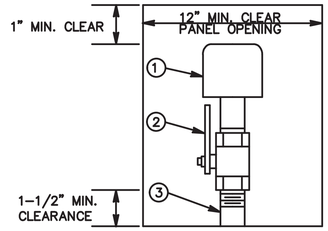
PS01

1. MASONRY WALL
2. GALVANIZED SCHEDULE 40 STEEL OR COPPER SLEEVE, SIZE TO BE MINIMUM 3/8" LARGER IN DIAMETER THAN PIPE AND INSULATION.
3. PLUMBING PIPE (RELIER LINES, DOMESTIC WATER, AIR, AND GAS PIPING).
4. FILL VOID WITH MINERAL WOOL AND CAULK VERMIN TIGHT.

01 WALL SLEEVE DETAIL

NO SCALE



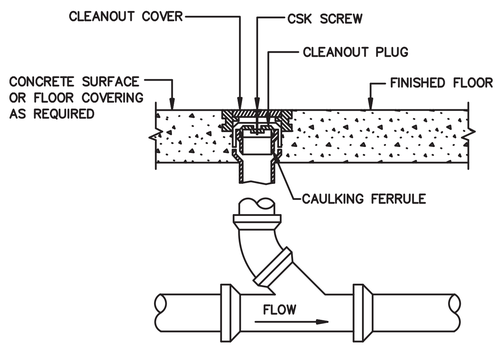
1. WATER HAMMER ARRESTOR
2. BALL VALVE, SAME NOMINAL SIZE AS PIPE BRANCH. OPENING IN BALL VALVE TO MATCH PIPE I.D.
3. PIPE SAME SIZE AS BRANCH LINE TO WHICH IT IS ATTACHED.

NOTE: PROVIDE REDUCER IF REQUIRED BETWEEN VALVE AND WATER HAMMER ARRESTOR.

DIMENSIONS FOR MIN. PANEL SIZE AND OPENING IF WATER HAMMER ARRESTOR IS LOCATED IN WALL. LOCKING PANEL COLOR TO BE DETERMINED BY ARCHITECT.

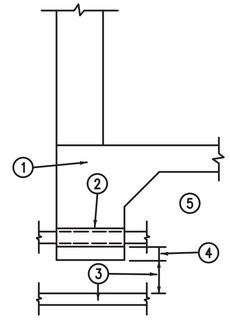
04 WATER HAMMER ARRESTOR DETAIL

NO SCALE



02 FLOOR CLEANOUT DETAIL

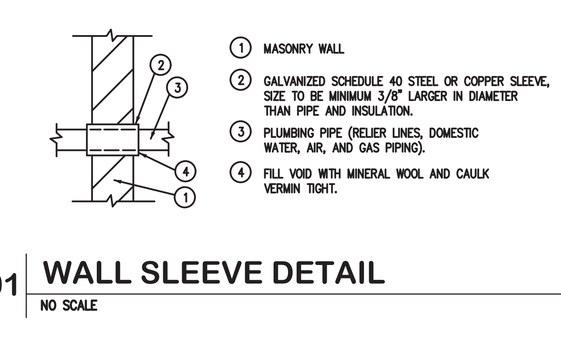
NO SCALE



1. GRADE BEAM
2. GALVANIZED SCH 40 STEEL SLEEVE. SIZE PER SPECS. CENTER PIPE IN SLEEVE.
3. PIPING PASSING HORIZONTALLY UNDER GRADE BEAM SHALL BE LOCATED A MINIMUM OF 6" BELOW BEAM. PROVIDE A SLEEVE.
4. PIPING PASSING HORIZONTALLY THROUGH GRADE BEAM SHALL BE LOCATED NO LESS THAN 6" ABOVE BOTTOM OF BEAM.
5. COORDINATE LOCATIONS OF PIPING IN 3,4,5 ABOVE AS RELIEVING ARCHES OR ADDITIONAL CONCRETE MAY BE REQUIRED TO MAINTAIN STRUCTURAL INTEGRITY OF BEAM.

05 GRADE BEAM SLEEVE DETAIL

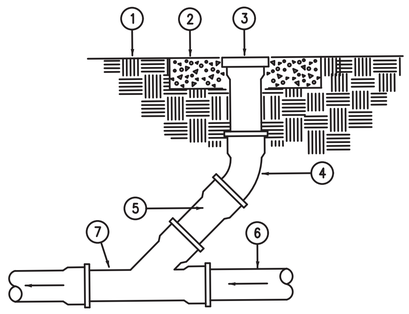
NO SCALE



03 SAMPLE/TEST WELL DETAIL

NO SCALE

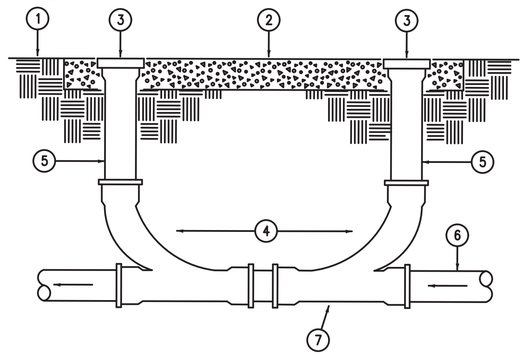
1. GRADE LEVEL
2. 24" X 24" X 6" CONCRETE PAD.
3. CLEANOUT FITTING ZURN ZN-1400-4. (SEE SPECS.)
4. 1/8 BEND.
5. SAME SIZE AS LINE SERVED EXEPT 4" MAXIMUM REQUIRED.
6. SEWER LINE.
7. 1/8 BEND (END OF LINE) OR "Y" FITTING.



06 YARD CLEANOUT DETAIL

NO SCALE

1. GRADE LEVEL
2. 24" X 6" X LENGTH AS REQUIRED CONCRETE PAD.
3. CLEANOUT FITTING ZURN ZN-1400-4. (SEE SPECS.)
4. LONG SWEEP.
5. SAME SIZE AS LINE SERVED EXCEPT 4" MAXIMUM REQUIRED.
6. SEWER LINE.
7. 1/8 BEND (END OF LINE) OR "Y" FITTING.



07 2-WAY YARD CLEANOUT DETAIL

NO SCALE

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PLUMBING DETAILS

BND SHOP
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PD01