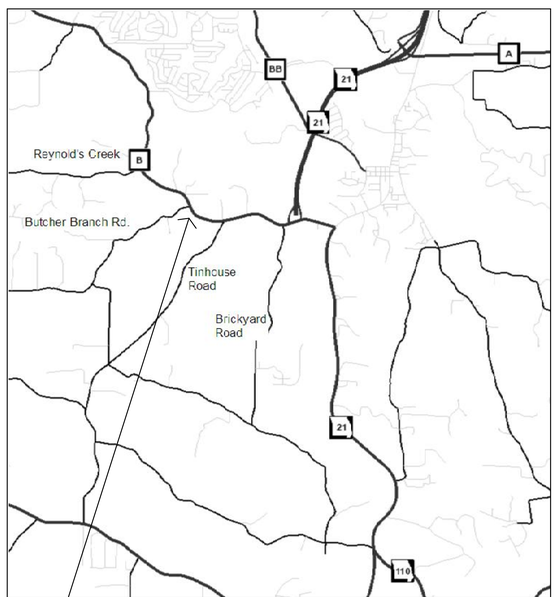
Construct & Equip a New Light Fleet Vehicle Maintenance Facility; Jefferson County, Missouri - Public Works Dept. Hillsboro, MO

Public Works Project #: PW14B005BLD



PROJECT LOCATION:
5275 HIGHWAY B; HILLSBORO, MO

List of Drawings:

G-1	COVER, CODE REVIEW, OCCUPANCY/EXITING
A-1	FLOOR PLANS, ENLARGED PLANS, INTERIOR ELEVATIONS, DOOR SCHEDULE
A-2	EXTERIOR ELEVATIONS & WINDOW SCHEDULE
A-3	BUILDING SECTIONS & WALL DETAILS
A-4	CEILING PLANS, INTERIOR FINISHES
A-5	ROOF PLAN & EQUIPMENT PLAN
S-001	STRUCTURAL NOTES/SPECIFICATIONS
S-101	STRUCTURAL DETAILS
S-201	FOOTING/FOUNDATION PLAN, DETAILS
M-1	HVAC PLAN
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E-1	LIGHTING PLAN
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C-1	CIVIL ENGINEER'S TITLE SHEET
C-2	DEMOLITION PLAN
C-3	SITE GRADING PLAN
C-4	SITE UTILITIES PLAN
C-5	CONSTRUCTION DETAILS
C-6	DRAINAGE AREA PLAN

Other Documents:

GEO-TECHNICAL INVESTIGATION,
REPORT: SCI ENGINEERING;
JUNE 20, 2014
SEE PROJECT MANUAL

GENERAL PROJECT NOTES:

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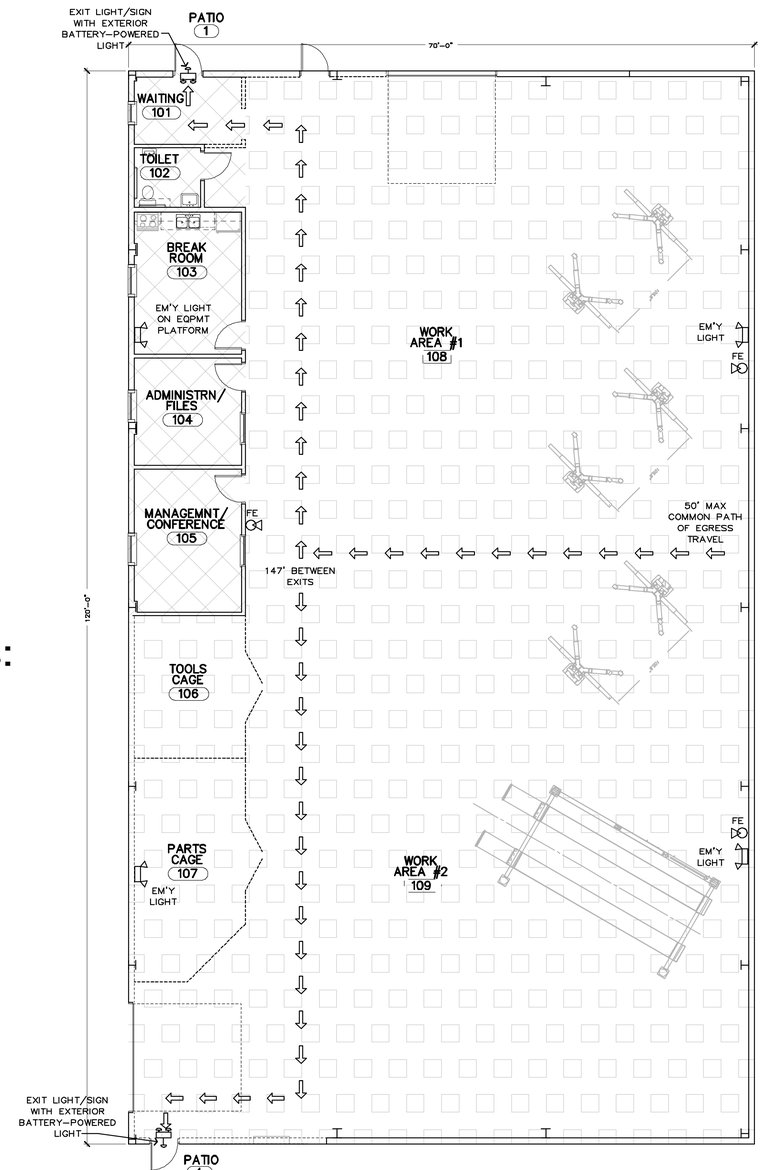

OCCUPANCY-EXITING PLAN
SCALE: 1/8" = 1'-0"

EXITING/OCC LOADS:

OFFICE AREAS:	795 SF	= 8 OCC'S
WORK/STORAGE:	7,605 SF	= 26 OCC'S
TOTALS:	8,400 SF;	34 OCC'S

BUILDING CODE REVIEW:

CHAPTER 3
USE & OCCUPANCY CLASSIFICATION
SINGLE USAGE: S-1 MODERATE HAZARD (MOTOR VEHICLE REPAIR GARAGE)
8,400 TOTAL SQUARE FEET, INCLUDES 595 SF (7%) ACCESSORY SPACE (OFFICES)
INCLUDES EQUIPMENT PLATFORM ABOVE OFFICES, 595 SF (7%)
NO SEPARATION OF USES REQUIRED (508.2.4).

SECTION 406
SPECIAL USE REQUIREMENTS FOR MOTOR VEHICLE RELATED OCCUPANCIES
FOLLOW REQUIREMENTS OF INTERNATIONAL FIRE CODE (2009) SECTIONS 406.6.1 THROUGH 406.6.6:
NO MOTOR FUEL DISPENSING IN BUILDING
MECHANICALLY VENTILATED PER INTERNATIONAL MECHANICAL CODE;
VENTILATION SYSTEM CONTROLLED BY SWITCH AT ENTRANCE TO GARAGE;
NO VEHICLES USING NON-ODORIZED GASES UNLESS GAS DETECTION SYSTEM IS ADDED.

TABLE 503
GENERAL HEIGHT & AREA LIMITATIONS
MAXIMUM BUILDING AREA = 17,500 SF
2 STORIES MAX

SECTION 505.5
EQUIPMENT PLATFORM
MAX TWO THIRDS AREA OF ROOM IT IS CONTAINED IN (SEVEN PERCENT PROPOSED)

SECTION 508.2.4
NO SEPARATION BETWEEN MAIN USE AND ACCESSORY USES REQUIRED

TABLE 601
CONSTRUCTION TYPE: II-B
(NON-COMBUSTIBLE, UN-PROTECTED)

TABLE 602
FIRE RESISTANCE REQUIREMENTS FOR EXTERIOR WALLS
FIRE SEPARATION DISTANCE TO OTHER BUILDING IS GREATER THAN 30', SO NO FIRE RESISTANCE RATING REQUIRED FOR EXTERIOR WALLS.

717
FIREBLOCKING AND DRAFTSTOPPING NOT APPLICABLE IN NON-COMBUSTIBLE CONSTRUCTION.

TABLE 803.9
WALL AND CEILING FINISHES
NO EXIT ENCLOSURES OR EXIT PASSGEWAYS
ROOMS & ENCLOSED SPACES REQUIRE TYPE C FINISHES OR BETTER

804.4
INTERIOR FLOOR FINISH REQUIREMENTS NOT LESS THAN CLASS II.

903
AUTOMATIC SPRINKLER SYSTEM NOT REQUIRED
NO S-1 FIRE AREA EXCEEDING 12,500 SF:
NO S-1 FIRE AREA EXCEEDING 5,000 SF USED FOR STORAGE OF COMMERCIAL TRUCKS OR BUSSES.

TABLE 906.3(1)
PORTABLE FIRE EXTINGUISHERS FOR CLASS A FIRE HAZARDS THREE (SEE OCCUPANCY/EXITING PLAN FOR LOCATIONS)

907
NO FIRE ALARM SYSTEM REQUIRED

TABLE 1004.1.1
OCCUPANT LOAD CALCULATION
OFFICE/PUBLIC SPACE; 795 SF at 100sf / OCCUPANT: 8 OCC'S
WORK/STORAGE SPACE; 7,605 SF at 300sf / OCC: 26 OCC'S
TOTAL CALCULATED OCCUPANT LOAD: 34

1006
ILLUMINATION OF MEANS OF EGRESS
PROVIDE MINIMUM 1 FOOTCANDLE AT THE WALKING SURFACE.
LIGHTS SHALL BE POWERED BY BATTERIES OR OTHER EMERGENCY POWER FOR NO LESS THAN 90 MINUTES.

1008.1.7
THRESHOLDS SHALL NOT EXCEED ONE HALF INCHES HIGH

1008.1.9.2 HARDWARE HEIGHT
DOOR HANDLES, PULLS, LATCHES, LOCKS AND OTHER OPERATING DEVICES SHALL BE INSTALLED 34 INCHES MINIMUM AND 48 INCHES MAXIMUM ABOVE THE FINISHED FLOOR. LOCKS USED ONLY FOR SECURITY PURPOSES AND NOT USED FOR NORMAL OPERATION ARE PERMITTED AT ANY HEIGHT

1008.1.10
PANIC HARDWARE NOT REQUIRED FOR S-1 OCCUPANCIES

1014.3
MAX COMMON PATH OF EGRESS TRAVEL = 75'

TABLE 1018.1
EXIT ACCESS TRAVEL DISTANCE = 200'

TABLE 1604.3
FLOOR MEMBER DEFLECTION LIMITS (APPLIES TO FLOOR OF EQUIPMENT PLATFORM ABOVE OFFICES): LIVE LOAD >L/360; TOTAL LOAD >L/240
CEILING MEMBER DEFLECTION LIMITS (APPLIES TO CEILINGS IN OFFICE AREA): LIVE LOAD >L/240; TOTAL LOAD >L/180

TABLE 1604.5
OCCUPANCY CATEGORY = I

TABLE 1607.1
REQUIRED FLOOR DESIGN LOADS FOR ELEVATED PLATFORM (EQUIPMENT PLATFORM ABOVE OFFICE AREA): 60 psf ULL

FIGURE 1608.2
ROOF SNOW LOAD = 20 psf

SECTION 1609
BASIC WIND LOAD = 90 mph

PERMIT ISSUERS:

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HILLSBORO, MO 63050-0100
(636) 797-5310

JEFFERSON COUNTY (MO) PLANNING DIVISION
PO BOX 100
HILLSBORO, MO 63050-0100
(636) 797-5580

UTILITIES:
NATURAL GAS MISSOURI NATURAL GAS
ELECTRICITY AMEREN MISSOURI
WATER PRIVATE WELL
SEWER PRIVATE, ON-SITE SEPTIC
TELEPHONE - AT&T

APPLICABLE CODES:

INTERNATIONAL CODE COUNCIL (2009):
INT'L BUILDING CODE, INT'L FUEL GAS CODE, INT'L FIRE CODE, INT'L MECHANICAL CODE, INT'L ENERGY CODE AND INT'L PLUMBING CODE
NFPA NATIONAL ELECTRIC CODE 2008

COMMISSION NUMBER
13-091
DRAWN BY
mjb
CHECKED BY
SJB
DATE
02/04/2015

BIDDING & PERMIT REVIEW DOCUMENTS

Status/Revised

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Structural Engineer:
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Project Consultants

JEFFERSON CO. (MISSOURI) PUBLIC WORKS DEPARTMENT
Jason Jonas, P.E.
Director

Signature / Date

New Light Fleet Maintenance Facility
Highway B
Hillsboro, MO

COMMISSION

GENERAL PROJECT INFORMATION; OCCUPANCY/ EXITING; PROJECT LOCATOR; OWNER APPROVAL

SHEET TITLE

SHEET NUMBER
G-1
OF 1

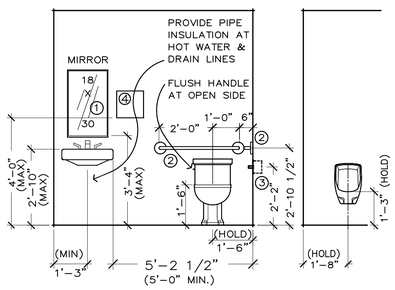
DOOR & HARDWARE SCHEDULE

MK	SIZE	ROOM	EXTER	INTER	WALL	PANIC	CLOSER	STOP	FUNCTION	NOTES
1	3'-0x7'-0	101	X		PEMB	NO	YES	YES	ENTRY	
2	3'-0x7'-0	102		X	FRAMED/GB	NO	YES	YES	PRIVACY	
3	3'-0x7'-0	103		X	FRAMED/GB	NO	YES	YES	PASSAGE	
4	3'-0x7'-0	104		X	FRAMED/GB	NO	YES	YES	OFFICE	
5	3'-0x7'-0	105		X	FRAMED/GB	NO	YES	YES	OFFICE	
6	3'-0x7'-0	109	X		PEMB	NO	YES	YES	ENTRY	
7	3'-0x7'-0	108	X		PEMB	NO	YES	YES	ENTRY	
8	3'-6 WIDE	101		X	FRAMED/GB	NA	NA	NA	NA	2)
9	12'-0x12'-0	108	X		PEMB	NA	OPERATOR	NA	NA	3)
10	12'-0x12'-0	108	X		PEMB	NA	OPERATOR	NA	NA	3)
11	(2) 4'-0x8'-0	106		X	CHAIN LINK	NA	NO	NO	4)	
12	(2) 4'-0x8'-0	107		X	CHAIN LINK	NA	NO	NO	4)	
13	4'-0x4'-0	109	X		PEMB	NA	NA	NA	4)	5)

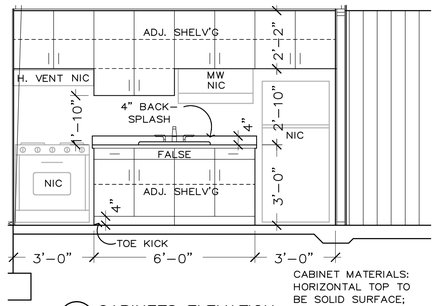
1) ALL DOOR HARDWARE TO BE SARGENT; SEE SPEC'S FOR SELECTIONS.
2) OPENING IN PARTIAL HT WALL; WRAP EXPOSED JAMBS WITH PVC EDGE
3) ELECTRIC MOTOR OPENER; WALL-MOUNT & REMOTE CONTROLLERS; OPEN/CLOSE/STOP INCLUDE SAFETY EDGE SENSING; INSULATING
4) MANUAL LATCH, WITH PADLOCK RECEIVER
5) TOP-HINGED, IN-SWINGING; TOP OF OPENING AT 7'-0 AFF; FOR PASS-THROUGH OF SCRAP TIRES

TOILET ACCESSORIES

SEE SPEC'S SECTION 10-2800
① 18X36 MIRROR; FIXED
② GRAB BARS; 36" & 42"
③ TOILET TISSUE DISPENSER; USC
④ PAPER TOWEL DISPENSER; USC

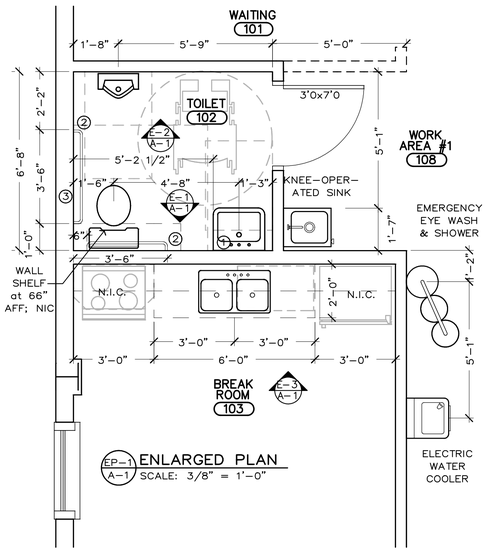


E-1,2 / A-1 TOILET ROOM ELEVATION
SCALE: 3/8" = 1'-0"
NOTE: SOAP DISPENSER, PAPER TOWEL DISPENSER, WASTE RECEPTACLES N.I.C.

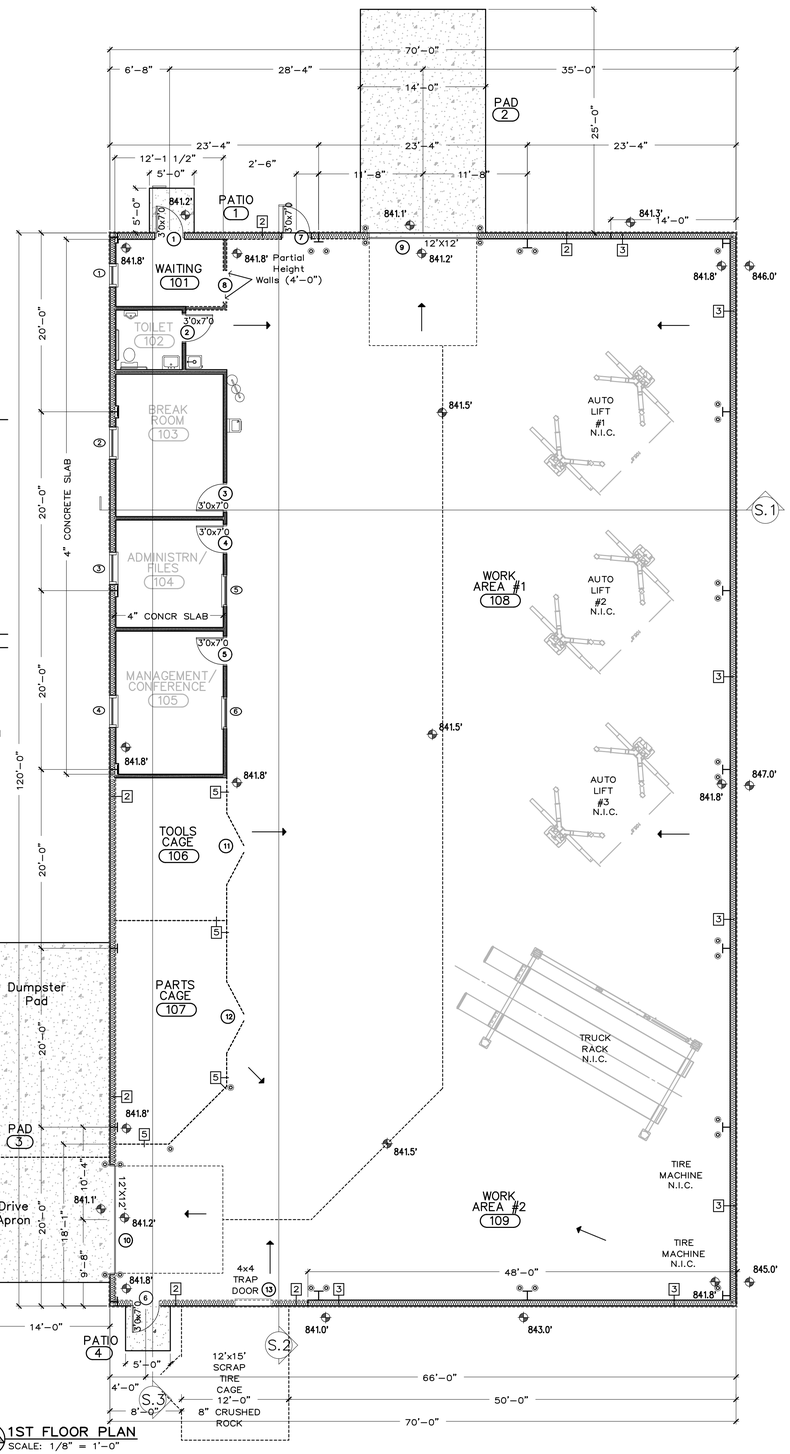


CABINET MATERIALS: HORIZONTAL TOP TO BE SOLID SURFACE; ALL OTHER EXPOSED SURFACES TO BE HIGH PRESSURE LAMINATE. CONCEALED HINGES. SEE SPECS 12-3100 & 12-3600

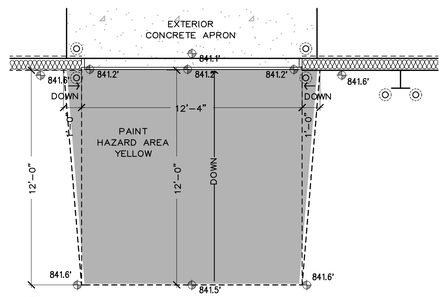
E-3 / A-1 CABINETS ELEVATION
SCALE: 3/8" = 1'-0"



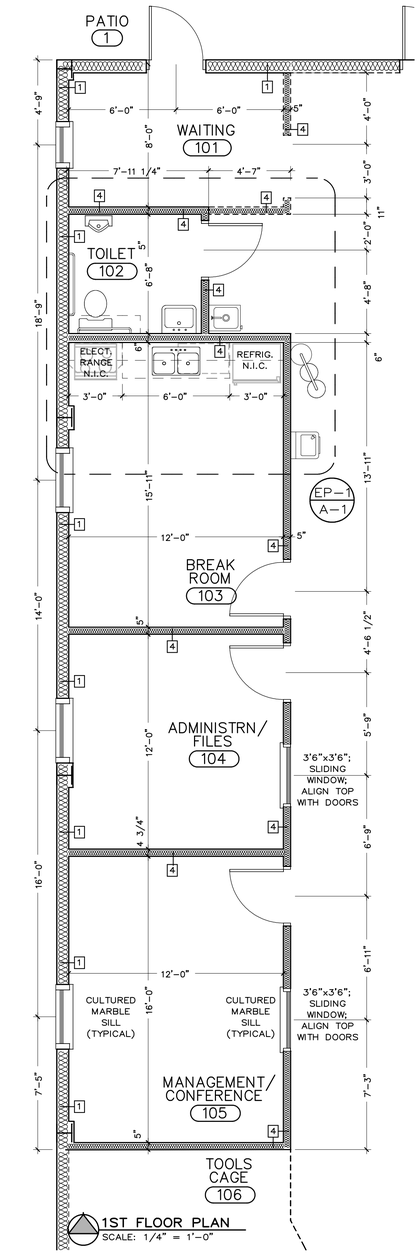
EP-1 / A-1 ENLARGED PLAN
SCALE: 3/8" = 1'-0"



1ST FLOOR PLAN
SCALE: 1/8" = 1'-0"



EP-2 / A-1 ENLARGED PLAN-TYPICAL SLOPES AT OH DOORS
SCALE: 1/4" = 1'-0"



1ST FLOOR PLAN
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LEGEND:

- THERMAL BATT INSULATION WITH INTEGRAL VAPOR BARRIER; MIN R-19; AT EXTERIOR WALLS
- FG OR MINERAL FIBER ACOUSTICAL SOUND BATT INSULATION IN VOIDS OF INTERIOR STUD WALLS
- RETRACTING REEL WITH HOSE OR CORD, FOR OIL, COMPRESSED AIR OR ELECTRIC POWER

PARTITION TYPES:

1. EXTERIOR, STEEL FRAMED WALL; 5/8" GYP BOARD AT INSIDE FACE; FROM TOP OF FOUNDATION TO 96" CEILING
2. EXTERIOR, STEEL FRAMED WALL; STEEL PANEL SIDING AT INTERIOR FROM TOP OF FOUNDATION TO 96" AFF; EXPOSED INSULATION ABOVE
3. EXTERIOR, STEEL FRAMED WALL; EXPOSED CONCRETE FOUNDATION TO 60" AFF; STEEL PANEL SIDING FROM 60" AFF TO 96" AFF.
4. INTERIOR PARTITION; STEEL 'C' STUD FRAMING; (1) LAYER 5/8" GYP BOARD EACH SIDE; SOUND BATTS IN VOIDS SEE STRUCTURAL PLANS/DETAILS.
5. CHAIN LINK FENCE; TO 96" AFF; WITH SIGHT PROOF PVC PANELS FULL HEIGHT TO OBSCURE VIEW OF INTERIOR

CONCRETE FLOORS

OPEN SHOP FLOOR: 6" THICK CONCRETE SLAB; REINFORCING AT MID-POINT.
OFFICE AREA FLOOR: 4" THICK CONCRETE SLAB; REINFORCING AT MID-POINT.
PREP OPEN SHOP FLOOR SLAB FOR EPOXY FLOOR COATING FINISH, WITH NON-SLIP ADDITIVE.
AT EXTERIOR DOORS WITH CHANGES IN INTERIOR FLOOR LEVELS, PROVIDE HIGH-VISIBILITY YELLOW PAINT AS SHOWN IN DETAIL THIS DRAWING SHEET.

ABBREVIATIONS:

AFF	ABOVE FINISHED FLOOR
NIC	NOT IN CONTRACT
USC	UNDER SEPARATE CONTRACT
VTR	VENT THROUGH ROOF
D.S.	DOWNSPOUT
VCT	VINYL COMPOSTION TILE
G.B.	GYPSUM BOARD
CFM	CUBIC FEET/MINUTE

APPLICABLE CODES:

INTERNATIONAL CODE COUNCIL (2009):
INT'L BUILDING CODE, INT'L FUEL GAS CODE, INT'L FIRE CODE, INT'L MECHANICAL CODE, INT'L ENERGY CODE AND INT'L PLUMBING CODE
NFPA NATIONAL ELECTRIC CODE 2008

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mjb
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SJB
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BIDDING & PERMIT REVIEW DOCUMENTS

Status/Revised

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Jason Jonas, P.E.
Director

New Light Fleet Maintenance Facility
Highway B
Hillsboro, MO

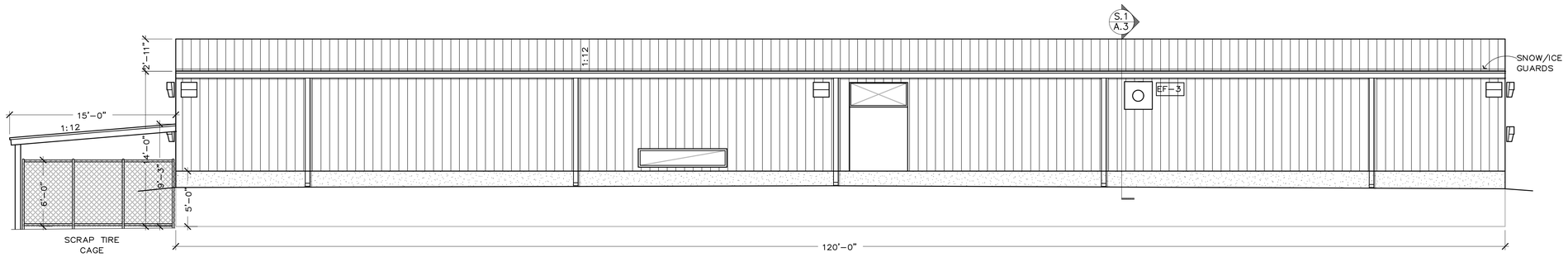
COMMISSION

FLOOR PLANS, ENLARGED PLANS, AND INTERIOR ELEVATIONS

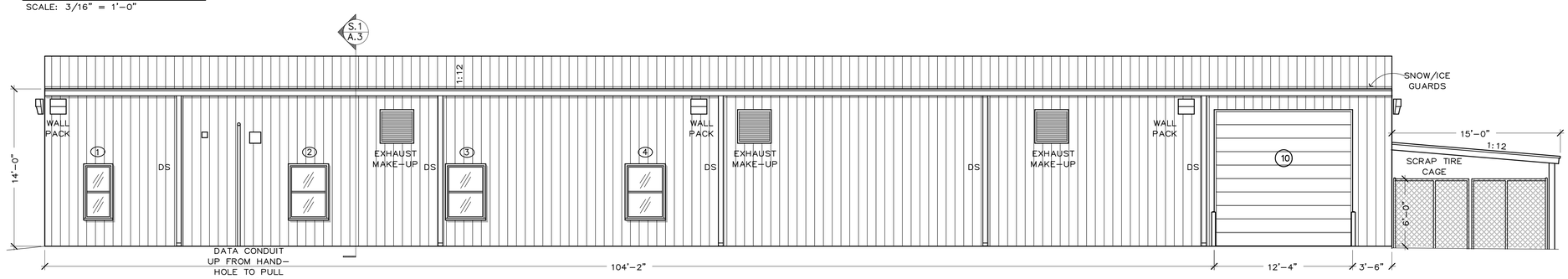
SHEET TITLE

SHEET NUMBER
A-1
OF 5

WINDOWS:		
MK	W x H	NOTES
1	2'-8"x4'-8"	EXTERIOR; MFR. STDRD
2	3'-6"x4'-8"	EXTERIOR; MFR. STDRD
3	3'-6"x4'-8"	EXTERIOR; MFR. STDRD
4	3'-6"x4'-8"	EXTERIOR; MFR. STDRD
5	3'-6"x3'-6"	INTERIOR, SLIDING; VINYL
6	3'-6"x3'-6"	INTERIOR, SLIDING; VINYL



EAST ELEVATION
SCALE: 3/16" = 1'-0"



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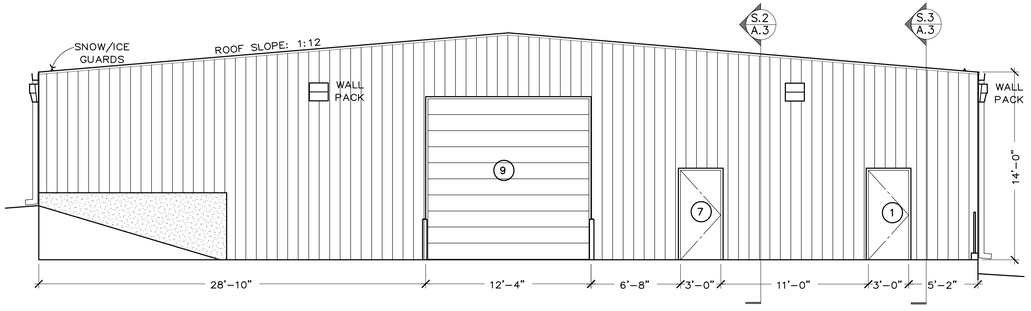

NORTH ELEVATION
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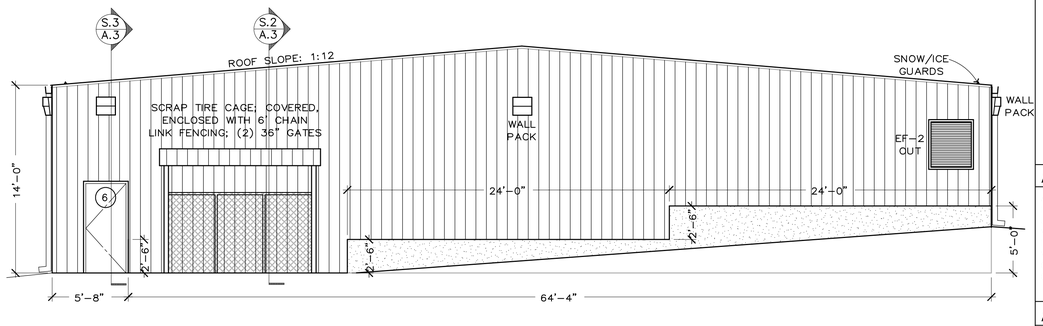

S.1 SOUTH ELEVATION
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METAL BUILDING NOTES:

1) GENERAL CONTRACTOR TO INCLUDE SUPPLY AND ERECTION OF PRE-ENGINEERED METAL BUILDING DESCRIBED IN THESE PLANS AND SPECIFICATIONS SECTION 13-3420. GC TO SUBMIT SUPPLIER DETAILS PRIOR TO MATERIAL PURCHASE, INCLUDING STRUCTURAL LAYOUT AND CALCULATIONS, FOR REVIEW AND FURTHER DETAILING BY ARCHITECT AND STRUCTURAL ENGINEER. INCLUDE MANUFACTURER STANDARD DOORS AND WINDOWS WHERE SHOWN ON PLANS.
2) OVERHEAD DOORS TO HAVE ELECTRIC MOTORS, WITH REMOTE AND WALL MOUNTED CONTROLS.
3) PMB SUPPLIER TO SUPPLY SNOW/ICE GUARDS/JACKS ACROSS BOTTOMS OF ROOF SLOPES. PROVIDE EVIDENCE OF COMPATIBILITY BETWEEN PROPOSED GUARDS/JACKS AND ROOFING MATERIAL.

ABBREVIATIONS:

AFF	ABOVE FINISHED FLOOR
NIC	NOT IN CONTRACT
USC	UNDER SEPARATE CONTRACT
VTR	VENT THROUGH ROOF
D.S.	DOWNSPOUT
VCT	VINYL COMPOSTION TILE
G.B.	GYPSUM BOARD
CFM	CUBIC FEET/MINUTE

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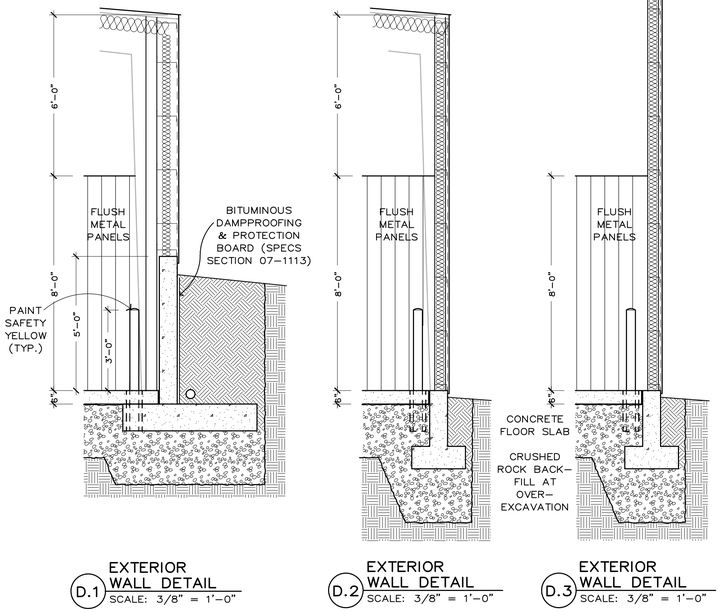
COMMISSION

EXTERIOR ELEVATIONS and WINDOW SCHEDULE

SHEET TITLE

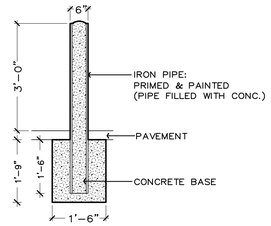
SHEET NUMBER
A-2
OF 5



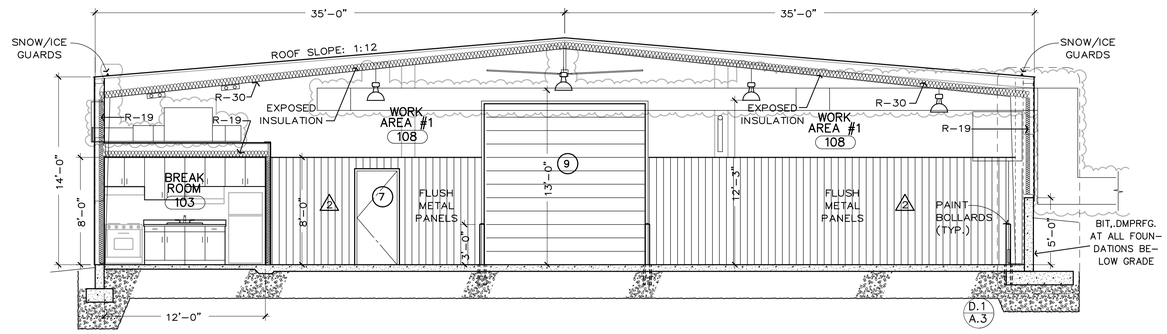
D.1 EXTERIOR WALL DETAIL
SCALE: 3/8" = 1'-0"

D.2 EXTERIOR WALL DETAIL
SCALE: 3/8" = 1'-0"

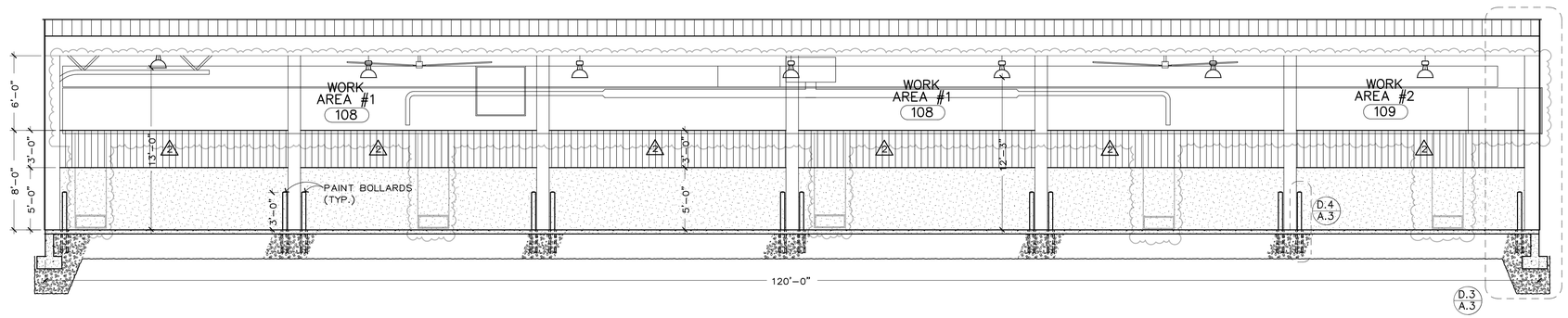
D.3 EXTERIOR WALL DETAIL
SCALE: 3/8" = 1'-0"



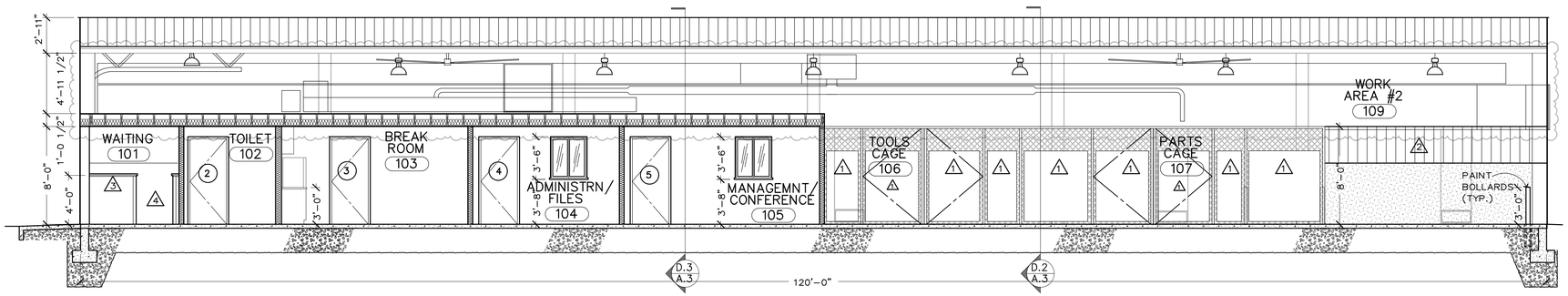
D.4 BOLLARD DETAIL
SCALE: 1/2" = 1'-0"



S.1 BUILDING CROSS SECTION
SCALE: 3/16" = 1'-0"



S.2 BUILDING LONG'L SECTION
SCALE: 3/16" = 1'-0"



S.3 BUILDING LONG'L SECTION
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KEYED NOTES:

1. RUBBER BACKED VISION PANELS ON ALL INTERIOR FENCING (TO 6'-0" AFF) BY OWNER (NIC)
2. FLUSH METAL WALL PANELS; PRE-FINISHED; WITH CAP/ENCLOSURE AT TOP AND WATER SHEDDING TRIM AT BOTTOM; BY PMB SUPPLIER; FROM TOP OF EXPOSED FOUNDATION TO 8'-0" ABOVE FLOORS.
3. WOOD CAP (1X6) AT TOP OF PARTIAL HEIGHT WALL; WITH QUARTER ROUND TRIM AT ENTIRE JOINT; PAINT
4. PVC END WALL PROTECTION, FLOOR TO BOTTOM OF QUARTER ROUND TRIM; IPC 150D; RIGID VINYL; STANDARD COLOR.

ABBREVIATIONS:

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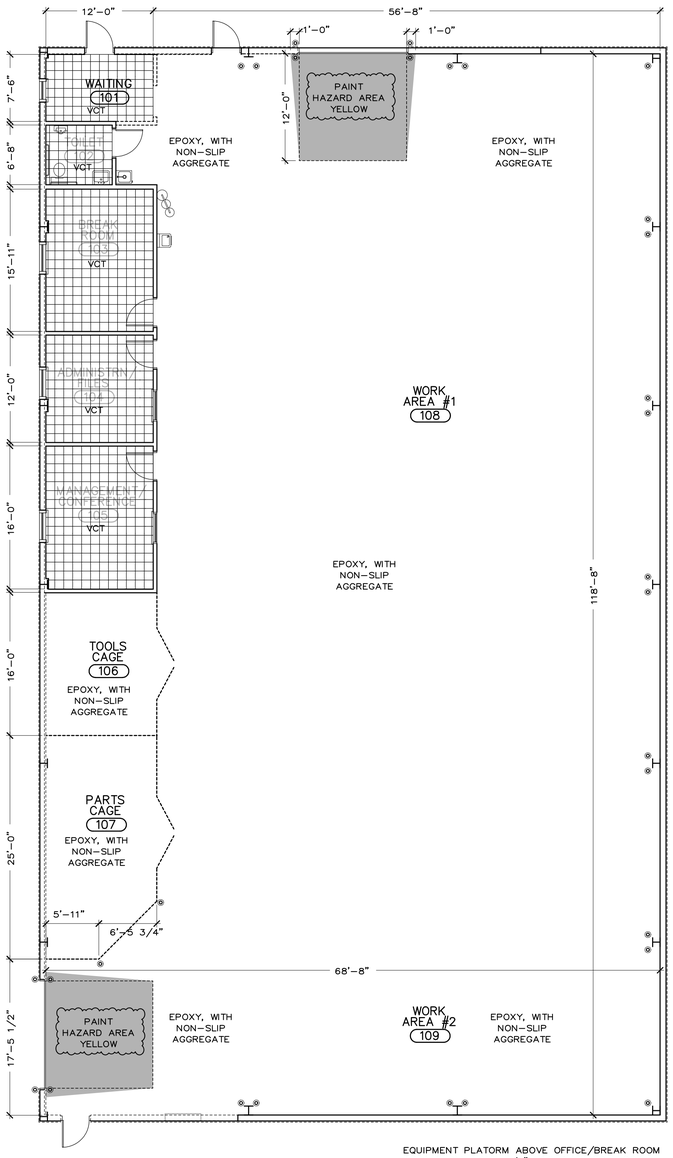
BUILDING SECTIONS & WALL DETAILS

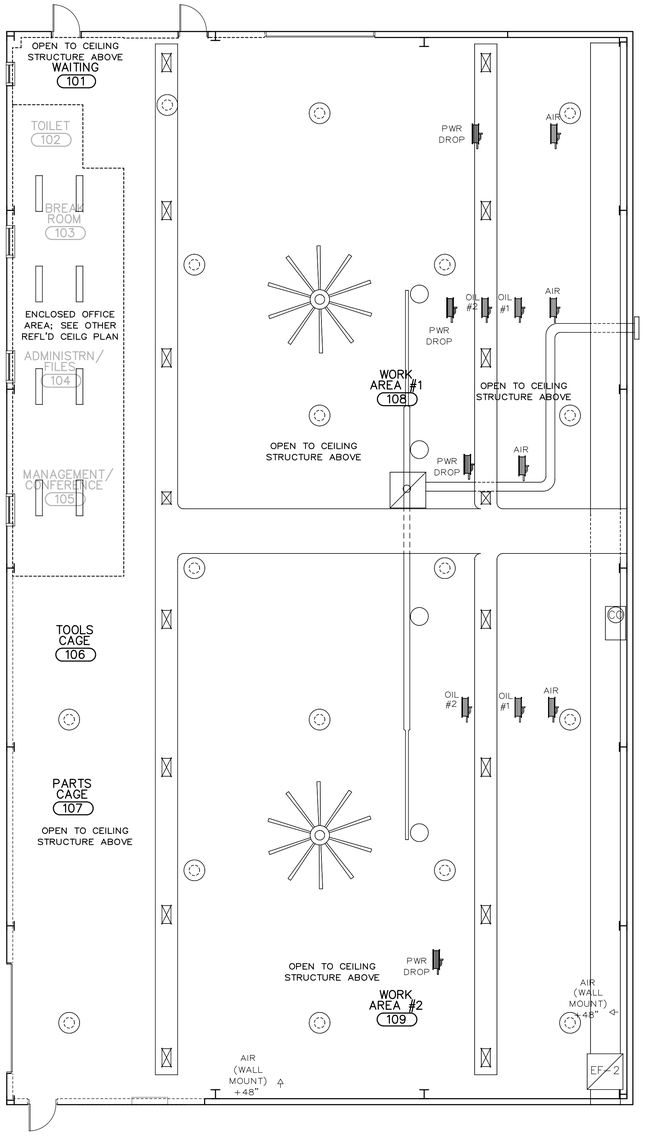
SHEET TITLE

SHEET NUMBER
A-3
OF 5

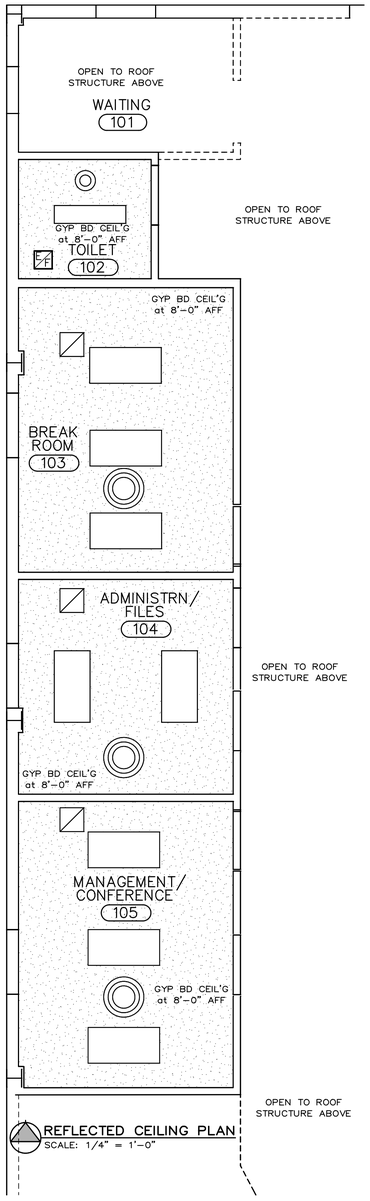


FLOOR FINISHES PLAN
SCALE: 1/8" = 1'-0"

EQUIPMENT PLATORM ABOVE OFFICE/BREAK ROOM AREA SHALL HAVE 3/4" T&G PLYWOOD FLOOR SURFACE, UNFINISHED.



REFLECTED CEILING PLAN
SCALE: 1/8" = 1'-0"



REFLECTED CEILING PLAN
SCALE: 1/4" = 1'-0"

ROOM & FLOOR FINISHES

RM	FLOOR	WALLS	CEILING	NOTES	OTHER
101	VCT	VB/PGB	OPEN	FLUSH METAL PANELS ON EXTERIOR WALLS	1) LEAVE EXPOSED CONCRETE FOUNDATION UNFINISHED 2) PAINT SHOP SIDE OF OFFICE PARTITIONS 3) EXPOSED INSULATION AT CEILING
102	VCT	FRP	PGB		
103	VCT	VB/PGB	PGB		
104	VCT	VB/PGB	PGB		
105	VCT	VB/PGB	PGB		
106	EPOXY	VB/PGB	OPEN	1), 2), 3)	
107	EPOXY	NA	OPEN	1), 3)	
108	EPOXY	PGB/P-MTL	OPEN	1), 2), 3)	
109	EPOXY	PGB/P-MTL	OPEN	1), 2), 3)	

VCT: VINYL COMPOSITION TILE (SPECS 09-6500)
EPOXY: RESINOUS FLOOR COATING, WITH NON-SLIP AGGREGATE (SPECS 09-6700)
VB: 4 X 1/8 VINYL BASE (SPECS 09-6500)
PGB: PAINTED GYPSUM BOARD
FRP: FIBERGLASS REINFORCED PLASTIC (SPECS 09-7733)
P-MTL: PARTIAL HEIGHT FLUSH METAL PANELS; TO 8'-0 AFF

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LEGEND:

- PENDANT HUNG, HID SHOP LIGHT
- 2X4 FLUORESCENT LIGHT FIXTURE
- ROOM EXHAUST FAN
- EF — OPEN SHOP AREA EXHAUST FAN, WITH CARBON MONOXIDE SENSOR SWITCH
- RETURN AIR GRILLE
- DUCT-MOUNTED, OPEN SHOP AREA SUPPLY AIR DIFFUSER
- CEILING MOUNT SUPPLY AIR DIFFUSER, OFFICE AREAS
- RETRACTING COIL FOR AIR HOSE, OIL HOSE OR ELECTRIC CORD; SUSPENDED FROM CEILING STRUCTURE ABOVE SUPPLIED BY OWNER FOR INSTALLATION BY G.C.

ABBREVIATIONS:

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USC	UNDER SEPARATE CONTRACT
VTR	VENT THROUGH ROOF
D.S.	DOWNSPOUT
VCT	VINYL COMPOSTION TILE
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Director

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Highway B
Hillsboro, MO

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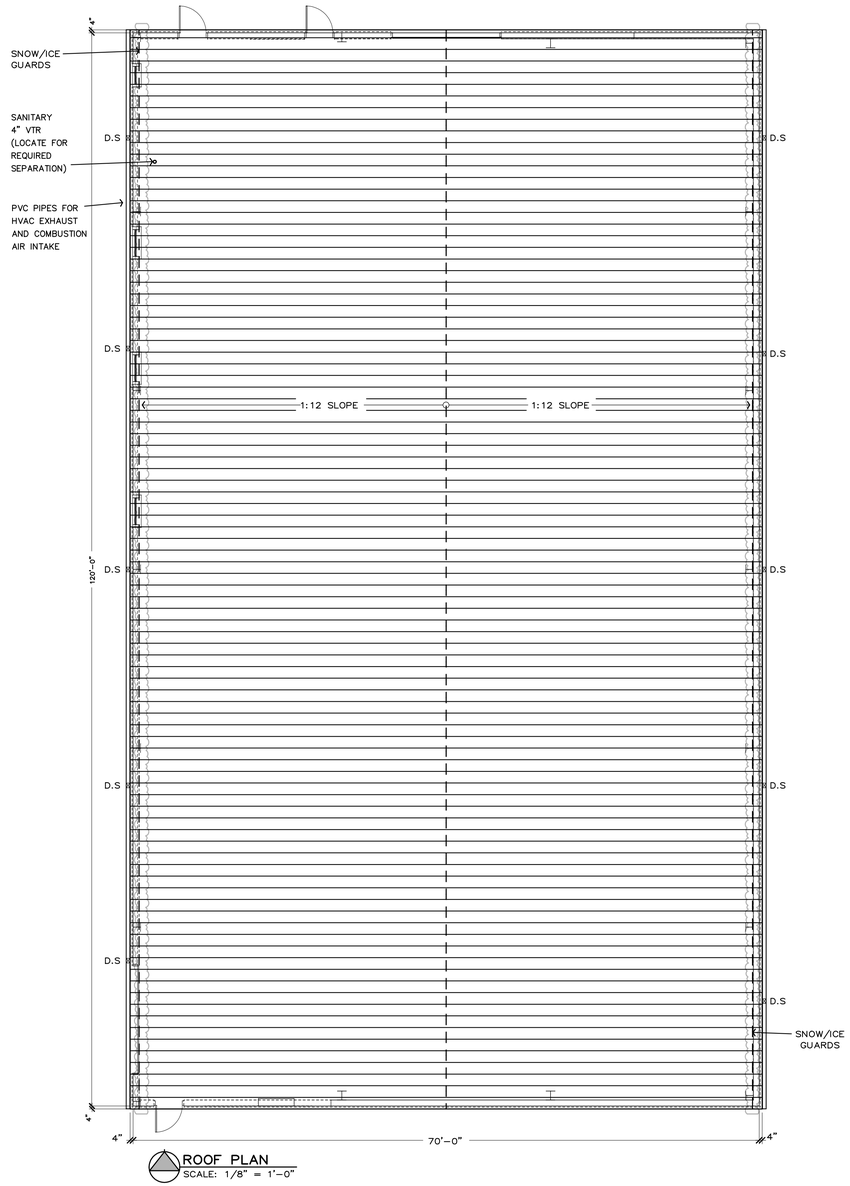
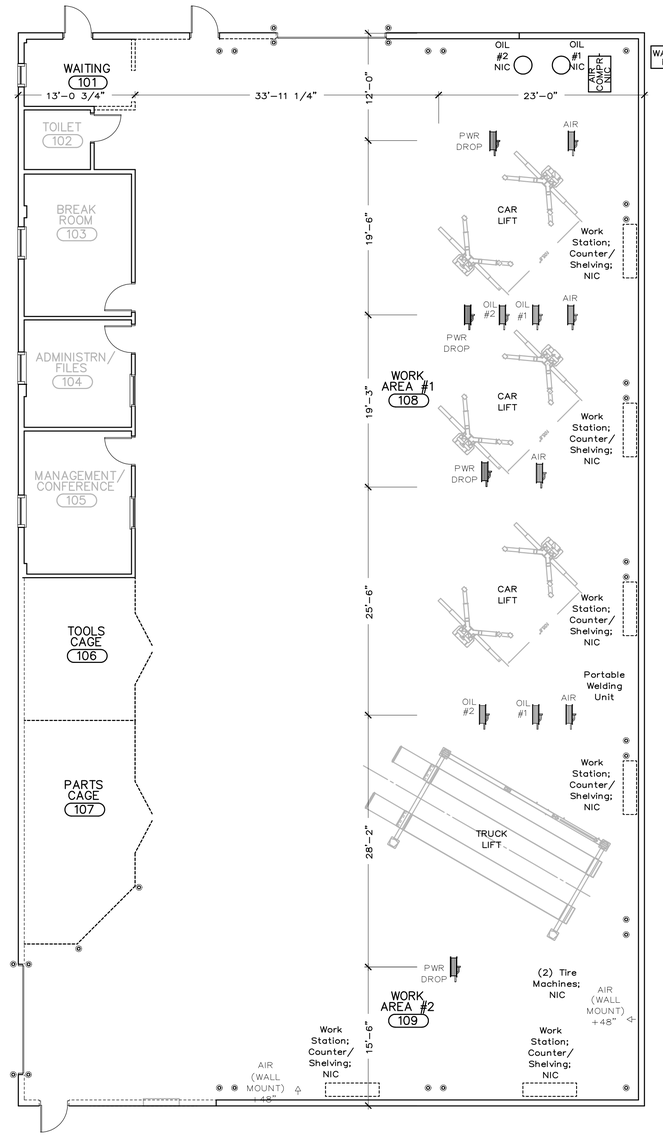
FLOOR FINISHES, REFLECTED CEILING PLANS, INTERIOR FINISH SCHEDULE

SHEET TITLE

SHEET NUMBER
A-4
OF 5



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



WORK EQUIPMENT PLAN
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LEGEND:

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CONCRETE-FILLED, STEEL PIPE BOLLARD; 36" AFF, 18" BELOW FLOOR PAINT ALL EXPOSED SURFACES.

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ROOF PLAN & WORK/EQUIPMENT LAYOUT

SHEET TITLE

SHEET NUMBER
A-5
OF 5

DIVISION 1- GENERAL REQUIREMENTS

1.1 CONSTRUCTION MEANS AND METHODS:

A. Contractor agrees that Contractor shall assume sole and complete responsibility for job site conditions during the course of the work, including safety of all persons and property; that this requirement shall apply continuously and not be limited to normal working hours; and that Contractor shall defend, indemnify, and hold Owner and Structural Engineer harmless from any and all liability, real or alleged, in connection with the performance of the Work on this Project, excepting for liability arising from the sole negligence of Owner or Structural Engineer.

B. The Contract Documents represent the finished structure. They do not include the method of construction. Contractor shall provide all measures necessary to protect the structure during construction. Such measures shall include, but not be limited to: bracing, shoring for loads due to construction equipment, temporary structures, and partially completed work. Observation visits to the site by Structural Engineer shall not include inspection of the above items.

C. Frontenac Engineering Group shall not have control over, or charge of, and shall not be responsible in any way for construction means, methods, techniques, sequences, or procedures, or for safety or safety precautions and programs in connection with any construction activities, since these are solely Contractor's responsibility under the Contract.

D. Frontenac Engineering Group shall not be responsible for contractor's schedule or failures to carry out any construction activities in accordance with the Contract Documents. Frontenac Engineering Group shall not have control over or charge of actions of Contractor, Subcontractor, or any of their Agents, or employees, or any other persons performing portions of any construction activities.

E. The structure is stable only in its completed form. Temporary supports required for stability of the structure during all intermediate stages of construction shall be designed and provided by Contractor.

1.2 SUBMITTALS:

A. Submittals prepared by Subcontractors shall be reviewed by Contractor prior to submitting to Architect.

B. Reproduction of the Contract Documents for Shop Drawings is not permitted. Electronic drawing files will not be provided to Contractor.

C. Contractor shall verify the structurally supported equipment weights, opening sizes, and locations indicated on the Structural Drawings with Documents from other disciplines and notify Architect of any discrepancies.

D. Contractor shall submit Shop Drawings showing size, method of anchorage, weight, openings, and locations of equipment not indicated on the Structural Drawings prior to ordering for review by Structural Engineer to determine adequacy of the structure.

E. All submittals reviewed by Structural Engineer are reviewed for general conformance with design concept only and does not relieve the fabricator/vendor of responsibility for conformance with design drawings and Specifications, all of which have priority over submittals.

F. Submittals shall be reviewed within 10 working days after being received by Structural Engineer.

1.3 QUALITY REQUIREMENTS:

A. Reference to standard specifications or codes of any technical society, organization, or association or to codes of local or state authorities, shall mean the standards in effect as of date of the Contract Documents, unless otherwise noted.

B. Contract Documents shall govern in the event of a conflict with standard specifications or codes of any technical society, organization, or association.

C. No provision of any referenced standard specification or code, whether or not specifically incorporated by reference in the Contract Documents, shall be effective to change the duties and responsibilities of Owner, Architect, Structural Engineer, Contractor, or any of their Consultants, Agents, or employees from those set forth in the Contract Documents, nor shall it be effective to assign to Structural Engineer or any of Structural Engineer's Consultants, Agents, or employees any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibilities contrary to the provisions of the Contract Documents.

D. Structural Documents are being released prior to Documents of other disciplines. Contractor shall coordinate Structural Documents with other portions of the Contract Documents as they are released. Report any discrepancy or omission to Architect.

E. All omissions and conflicts within the Contract Documents shall be brought to the attention of Architect prior to proceeding with the Work.

F. Contractor shall verify dimensions and conditions at the job site. Any discrepancies between the conditions found and those indicated in the Contract Documents shall be brought to the attention of Architect prior to proceeding with the Work.

G. See Documents by other disciplines for Floor, wall, and roof openings, trenches, pits, pipe sleeves, equipment pads, metal pan stairs, miscellaneous iron, etc.

H. No pipes, ducts, chases, etc. shall be placed in structural beam and column members nor shall any structural member be cut for pipes, ducts, etc., unless noted otherwise. Notify Structural Engineer when Documents by other disciplines show openings, pockets, etc. not indicated in the Structural Drawings, but are located in structural members. Contractor shall obtain prior approval from Structural Engineer for installation of such pipes, ducts, chases, etc.

I. Details labeled 'Typical' on the Structural Drawings apply to all situations occurring on Project that are the same or similar to those locations specifically indicated. Where a detail is not indicated, the detail shall be the same as for other similar conditions.

J. Contractor designed elements shall be designed by licensed Professional Engineers registered in the State where Project is located. Contractor shall submit Shop Drawings, design load data, support reactions, and certification that elements were designed for loads specified in the Contract Documents or in the Building Code. All documents noted shall be sealed by the licensed Engineer. If criteria indicated are not sufficient, submit a written request for additional information to Architect. The following elements and their connections shall be Contractor designed:
   1. Structural steel connections, if alternate design shown on the Structural Drawings
   2. Stairs
   3. Window and curtain wall systems
   4. Skylights

1.4 SPECIAL INSPECTIONS:

A. Special inspections shall be in accordance with the 2009 International Building Code, Ch. 17.

B. Special inspection reports shall be furnished to Building Official, Owner, Architect, Structural Engineer, and Contractor. Discrepancies shall be brought to the attention of Contractor, and if not corrected, shall be reported to Building Official, Owner, Architect, and Structural Engineer.

C. The Special Inspector shall submit a final report stating that the structural work was, to the best of the Special Inspector's knowledge, performed in accordance with the Contract Documents.

D. The following types of work require Special Inspections: (Refer to the Building Code and Specifications for detailed inspection requirements.)
   1. Prepared Soil Fill
   2. Concrete Construction
   3. Steel Construction

1.5 DESIGN CRITERIA:

A. The structure is designed in accordance with the International Building Code, 2009 Edition.

B. No Provisions have been made for future building horizontal or vertical expansion.

C. Gravity Loads:
   1. Uniform Roof Live Loads:
      a. Live Load: 20 psf
      b. Snow Load:
         1. Ground Snow Load: 20 psf
         2. Flat Roof Snow Load: 20 psf
         3. Snow Exposure Factor: 1.0
         4. Snow Importance Factor: 1.0
         5. Snow Thermal Factor: 1.0
   2. Uniform Floor Live Loads (reduced as allowed by the Building Code, unless noted otherwise):
      All areas 100 psf
   3. Concentrated Floor Live Loads:
      a. Loads are distributed over an area of 2-1/2 sq. ft., unless noted otherwise.
         All areas 2000 lb.
         Stairs 300 lb. (over 4 sq. in.)
   4. Concentrated Lateral Live Loads:
      a. Handrails assemblies:
         1. Top Rail: 200 lb. or 50 lb/ft applied non-concurrently in any direction.
         2. Infill: 50 lb. applied over 1 sq. ft. applied non-concurrently with the top rail load.
      b. Vehicle Barrier Systems: 6,000 lb. applied over an area of 1 sq. ft. at 18" above the floor.

D. Lateral Loads:
   1. Wind Load:
      a. Basic Wind Speed: 90 MPH
      b. Wind Importance Factor: 1.0
      c. Wind Exposure: Type B
   2. Seinic Load:
      a. Zip Code 63050
      b. Occupancy Category II
      c. Site Class C
      d. Occupancy Importance Factor, I: 1.0
      e. Seismic Design Category C

DIVISION 2- FOUNDATION

2.1 GENERAL:

A. Soils Engineer: Thomas J. Casey, P.E., SCI Engineering, Inc., 47 Andrews Dr. Union, Missouri 63084 Phone: 636-584-7991 Fax: 636-584-7966 www.sciengineering.com Foundation design is based on soils report dated: (June 20, 2014) Soils Engineer/Owner's Geotechnical Representative is sole judge of suitability of underlying material to support foundations and shall approve bearing material before Foundation installation. Structural Engineer is not responsible for subsurface conditions encountered in the field that are different from those assumed in design.

B. Prepare site and place fill in accordance with the recommendations in the soils report noted above. Observe construction recommendations noted in the soils report. All fill material shall be in accordance with the soils report recommendations.

C. Construct non-basement floor slabs on the granular fill layer required by the plan notes. Granular fill shall be placed on an 18" layer of non-expansive soil which has been placed in accordance with the soils report.

D. Backfill basements and retaining walls with ASTM 448 No. 57 stone or equivalent approved by the Soils Engineer. Extend stone from the base of the walls outward at a 45 degree angle to the vertical and provide toe drain wrapped in filter fabric.

E. Backfilling:
   1. Do not Backfill basement wall and grade beams until bracing floors are in place or adequate temporary bracing is installed.
   2. Backfill in even lifts alternating from side to side with 2'-0" maximum difference in lifts
   3. Backfill under foundations with concrete or as approved by Soils Engineer

F. Earth Trenches may be used for forming footings only, in accordance with the above referenced soils report.

2.2 FOOTINGS:

A. Total load soil bearing pressure used in design: 5000 psf

B. S.O.G. Subgrade Reaction Modulus: 150 pci

C. Coefficient of horizontal friction between concrete and soil = 0.30.

D. Minimum depth from exterior ground surface to bottom of Foundations = 30 inches.

E. Equiv. fluid pressure of soil against cantilever retaining walls = 30 pcf.

DIVISION 3- CONCRETE

3.1 GENERAL:

A. SUBMITTALS:
   1. Submit a copy of each concrete mixture, including data and submittals to comply with the requirements in ACI 301.

B. QUALITY ASSURANCES:
   1. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concret products and that complies with ASTM C 94/C requirements for production facilities and equipment.
   2. Source Limitations: Obtain each type of cement of the same brand from the same manufacturer's plant, obtain aggregates from one source, and obtain admixtures through one source from a single manufacturer.
   3. Comply with ACI 301-99, 'Specifications for Structural Concrete.'
   4. Comply with ACI 117-90, 'Specifications for Tolerances for Concrete Construction and Materials.'
   5. Locate Construction Joints as shown or noted and to least impair strength of structure. Construction Joints not shown on the Structural Drawings are Subject to approval by the Structural Engineer.
      a. Horizontal Joints:
         1. Locate in Walls and Columns at the underside of the lowest Slab, Beam, Joist or Girder intersecting each Wall or Column.
         2. Unless noted otherwise, roughen entire Joint Surface to 1/2" amplitude using a hand rake before Concrete sets or, if sets, mechanically roughen to expose course aggregate and to achieve 1/4" amplitude roughness.
         3. At Bentonite waterstops leave a smooth troweled path between roughened areas to the width of the waterstop. Horizontal Joints not permitted within the height of: Footings, Caps, Tie Beams, Grade Beams, Sten Walls, Beams, Girders, Joists, Slabs, or in Columns and Walls between levels.
      b. Vertical Joints:
         1. Locate at midspan of Slab, Joists, Beams, and Girders
         2. Make Joints perpendicular to main reinforcing.
         3. If Members intersect at midspan, Offset Joint by twice the width of the wider member.
         4. In Joists, Beams, and Girders use 3 1/2" high horizontal keys across the width of the member spaced 8" vert. leave gap in keys at water stops.
         5. At Metal Deck Slabs, Generally layout Joints midway between Beams and 5 feet before Girders. Submit proposed layout for approval by owner.

3.2 REINFORCING:

A. Reinforcing steel shall be ASTM A615 Grade 60, deformed bars, unless noted otherwise. Welding of ASTM A615, grade 60 reinforcing is not allowed.

B. Reinforcing Steel to be welded shall be ASTM 706, Grade 60, deformed bars.

C. Welded Wire Fabric shall be ASTM A185 and shall be contact lap spliced two full wire spaces.

D. All Reinforcing bars shall be detailed, fabricated, supported and placed in accordance with ACI 315-99 'Details and Detailing of Concrete Reinforcement' and CRSI's 'Manual of Standard Practice, 2001'

E. Reinforcing, including dowels, shall be securely tied and cast with the lower member. Placing reinforcing after concrete has been placed is not permitted.

F. Field bending of reinforcing partially embedded in concrete is not allowed unless specifically noted inthe Structural Documents or approved by the Structural Engineer.

G. Provide corner bars to match horizontal reinforcing at corners and intersections.

H. Provide dowels from Foundation of the same grade, size, and number as vertical wall or column reinforcing, unless noted otherwise.

I. Splice #14 and #18 using mechanical couplers of the uni-axil type capable of developing 125% of the specified yield strength of the bar in tension or compression. Stagger splice locations of adjacent bars 2'-6".

J. Provide the following reinforcing, unless noted otherwise on the Structural Drawings.
   1. Above Grade Walls
      a. Provide #4 at 12" o.c. horizontal and vertical in each face of all walls 10" and thicker, unless noted otherwise.
      b. Provide #4 at 12" o.c. horizontal and vertical at the center of all walls 8" and thinner, unless noted otherwise.
   2. Foundation Walls
      a. #5 ea. way, ea. face. Spacing in inches = 140/(wall thickness in inches) but not over 18" o.c.
   3. Slabs
      a. Provide slab bolster, high chair, and #5 support bar as necessary to maintain proper placement of reinforcing.
      b. Provide 2-#5 top and bottom diagonals (5'-0") at corners of openings and re-entrant corners unless noted otherwise. Where reinforcing is not indicated or defined, include for bid purposes only.
      c. #5 each way top and bottom. Spacing in inches = 100/(slab thickness in inches) but not over 18" o.c.
   4. Beams
      a. 1-#9 continuous, top and bottom, for each 100 square inches of bean cross sectional area and #4 stirrups spaced at ¼ of bean depth full length of bean.
   5. Columns
      a. 1-#9 vert. per 50 square inches of cross sectional area and #3 ties at 9".

K. Adhesive for reinforcing dowels into existing concrete shall be HILTI HIT 150 or approved equal. Minimum embedment length shall be 12 bar diameter, unless noted otherwise.

L. All reinforcing shall be contact lap spliced or doweled as follows:

Unless lap length is given, splice #11 and smaller bars with contact laps selected from schedules below, including locations where 'A' or 'B' laps are noted on Structural Drawings.

1. Top bars are horizontal or sloping bars with more than 12" of fresh concrete cast below them.
2. Case 1 may be used when both spacing between bars is not less than 2 bar diameters and clear cover is not less than 1 bar diameter, otherwise use case 2.
3. For lightweight concrete, multiply lengths in tables by 1.3
4. For epoxy coated reinforcement, multiply lengths in tables by 1.5.

f'c=3,000 psi SPLICE LENGTH (ft-in)

BAR	TOP BARS		OTHER BARS	
SIZE	CASE 1	CASE 2	CASE 1	CASE 2
#3	2'-4"	3'-6"	1'-10"	2'-9"
#4	3'-2"	4'-8"	2'-5"	3'-7"
#5	3'-11"	5'-10"	3'-0"	4'-6"
#6	4'-8"	7'-0"	3'-7"	5'-5"
#7	6'-9"	10'-2"	5'-3"	7'-10"
#8	7'-9"	11'-7"	6'-0"	8'-11"
#9	8'-9"	13'-1"	6'-9"	10'-1"
#10	9'-10"	14'-9"	7'-7"	11'-4"
#11	10'-11"	16'-4"	8'-5"	12'-7"

f'c=4,000 psi SPLICE LENGTH (ft-in)

BAR	TOP BARS		OTHER BARS	
SIZE	CASE 1	CASE 2	CASE 1	CASE 2
#3	2'-1"	3'-1"	1'-7"	2'-4"
#4	2'-9"	4'-1"	2'-1"	3'-1"
#5	3'-5"	5'-1"	2'-7"	3'-11"
#6	4'-1"	6'-1"	3'-1"	4'-8"
#7	5'-11"	8'-10"	4'-6"	6'-11"
#8	6'-11"	10'-1"	5'-2"	7'-9"
#9	7'-7"	11'-4"	5'-10"	8'-9"
#10	8'-6 "	12'-9"	6'-7"	9'-10"
#11	9'-6"	14'-2"	7'-3"	10'-11"

3.3 CAST-IN-PLACE CONCRETE:

A. MATERIALS:
   1. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout Project:
   2. Portland Cement: ASTM C 150, Type I. Supplement with the following as necessary:
      a. Fly Ash: ASTM C 618, Class C or F.
   3. Normal-Weight Aggregate: ASTM C 33, graded, 1-inch nominal maximum aggregate size
   4. Lightweight Aggregate: ASTM C 330, 3/4-inch nominal maximum aggregate size.
   5. Water: ASTM C 94/C 94M; potable.
   6. Air-Entraining Admixture: ASTM C 260.
   7. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
      a. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
      b. Retarding Admixture: ASTM C 494/C 494M, Type B.
      c. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
      d. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F. High-Range,
      e. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
      f. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

B. RELATED MATERIALS:
   1. Vapor Retarder: Multi-ply reinforced polyethylene sheet, ASTM E 1745, Class C, or polyethylene sheet, ASTM D 4397, not less than 10 MILS thick.
   2. Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber, or ASTM D 1752, cork or self-expanding cork.

C. CURING MATERIALS:
   1. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
   2. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry. 3. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
   3. Water: Potable.
   4. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

D. Reinforced concrete shall have the following minimum 28-day compressive strengths:
   1. Class A 3500 psi normal weight concrete.
   2. Class B 3500 psi normal weight concrete.
   3. Class C 4000 psi normal weight concrete.

E. Place concrete as follows:
   1. Class A:
      a. Slab-on-grade
   2. Class B:
      a. Foundations and Basement Walls
   3. Class C:
      a. Beams
      b. Site Walls
      c. Slab on metal deck

F. All concrete to have the following unit weights (+/- 3 pcf):
   1. Normal weight concrete: plastic = 145 pcf
   2. Lightweight: plastic = 117 pcf, air-dried = 110 pcf
   3. Max. slump 4"G. All concrete exposed to freezing and thawing and deicer chemicals shall have 6% (+1%/-1.5%) air entrainment. Do not air entrain concrete floors to be trowel finished.

G. All concrete shall have a maximum water-cement ratio of 0.45 for all concrete cast against or permanently exposed to soil or weather, 0.50 for all other concrete.

H. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.
   1. When air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.
   2. Do not add water to concrete during delivery, at Project site, or during placement.

I. Provide concrete cover for reinforcing as follows:
   1. Concrete cast against and permanently exposed to earth..... 3"
   2. Concrete exposed to earth or weather..... 2"
   3. Concrete not exposed to weather or in contact with ground:
      a. Slabs and walls..... 3/4"
      b. Beams and columns..... 1-1/2"

J. For concrete cast on metal deck, concrete thickness indicated is nominal. Contractor shall allow for the deflection of the floor assembly due to the wet weight of the concrete when calculating concrete quantity.

K. Provide construction or control joints in slab-on-grade as indicated in the Structural Drawings. If joint pattern is not indicated, provide joints at 15 Feet (+/-) in both directions and located to conform to bay spacing wherever possible (at column centerlines, half bays, third bays, etc.).

L. Interface of construction joints shall be roughened to a full amplitude of 1/4". Surface of construction joints shall be clean and free of laitance. Immediately before new concrete is placed, construction joints shall be wetted and standing water removed.

M. Provide compressible Filler and sealant in slab-on-grade and wall and column interfaces that are not doweled together u.n.o.

N. All column pockets shall be filled with concrete after column is erected.

O. Conduit and pipes embedded in walls, beams, or slabs shall be no larger in outside dimension than 1/3 the overall member thickness or 2" maximum, and shall be placed no closer than 3 diameters or widths on center.

P. Provide 4" high concrete housekeeping pads under equipment. Pads shall extend beyond equipment 6" nominal on all sides. Unless noted, Dowel to structure below with #4 hooked bars projecting 3" from concrete below at 12" each way and reinforce with #4 at 12" each way top and bottom. Apply bonding agent to existing concrete slab prior to placing housekeeping pad. See Documents from other disciplines for equipment locations. Concrete equipment pads, inertia bases and curbs not shown on the contract documents are the responsibility of the contractor.

Q. At floor drains, locally slope floor towards drain. See Documents from other disciplines for drain locations.

R. Unless otherwise shown on the Architectural Drawings, Provide 3/4"Chanfers at all Columns, Beams, Walls, and Slab edges that are exposed to view in the Finished structure.

S. See Architectural Drawings for Door and Window openings, Drip Slots, Reglets, Masonry Anchors, Precast Bearing Ledges, and for miscellaneous embedded Plates, Bolts Anchors, Etc.

T. Refer to Architectural Drawings for concrete finishes. Where Finish is not specified, Conform to requirements of ACI 301 as modified by the specifications.

U. Select Formwork to produce the finish specified. Where Finish is not specified, exposed surfaces shall be ACI 347R class C. A surface is considered exposed if the concrete texture can be seen by anyone in the completed structure.

V. Unless noted, splice continuous top and bottom bars as follows: Top bars at midspan, Bottom bars over support.

3.4 TESTING AND INSPECTING:

A. Owners will engage a qualified testing agency to perform field test and inspection and to prepare reports. A Special Inspector shall be retained where required by Division 1 and the Building Codes.
   1. INSPECTIONS:
      a. Steel reinforcement placement.
      b. Steel reinforcement welding.
      c. Headed bolts and studs.
      d. Verification of use of required design mixtures.
      e. Concrete placement, including conveying and depositing.
      f. Curing procedures and maintenance of curing temperatures.
   2. TESTS: Performed according to ACI 301
      a. Testing frequency: One composite sample for each day's pours of each concrete mix exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. of fraction there of.

3.5 REPAIR:

A. Remove and replace concrete that does not comply with the requirements mentioned above.

DIVISION 5 - METALS

5.3 METAL DECK:

A. GENERAL:
   1. Deck shall be continuous over 3 spans, unless noted otherwise.
   2. At supports parallel to the deck span, raise steel supportsor provide shims at fastening points if the deck valley does not engage the support.
   3. Where deck is welded to supports, provide welding washers for deck with design thickness less than 0.028".
   4. At Contractor's option, Hilti X-EDN and ENP fastening systems or approved equal may be used in lieu of welds to supports.
   5. Locate deck bundles to prevent overloading of supporting members.
   6. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.
   7. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.
   8. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.
   9. Power-actuated or pneumatically driven mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

5.4 COLD FORMED METAL FRAMING:

A. Cold-formed metal framing shall be designed, fabricated, and erected in accordance with AISI's 'Specification for the Design of Cold-Formed Steel Structural Members,' 1996.

B. Complete, uniform, and level bearing support shall be provided foR the top and bottom tracks of stud walls, or full size shims shall be installed to provide such bearing.

C. Studs shall be installed with their bearing ends positioned flush against the inside track web.

D. Full-height double studs shall be provided at the ends of partitions, at wall openings and at other locations indicated in the Structural Drawings.
   1. Weld the flanges of double studs together full height using 2" of weld at 12" o.c. each side.

E. Anchor stud tracks with low-velocity powder actuated fasteners with a minimum shank diameter of 0.145", and a minimum penetration of 1-1/8".
   1. Locate anchors at 3" from the ends of partitions, and at 6' o.c. (maximum), 4' o.c. (minimum) throughout.

F. Provide sheathing attached to both faces of wall studs throughout the length of the studs or provide bridging at 4'-0" o.c.

G. Provide stud wall bridging according to manufacturer's recommendations.

H. Splices in studs shall not be permitted. Do not cut studs.

I. Slide clips shall be capable of resisting a lateral force of 500 lbs, unless noted otherwise on the drawings.

J. Wall studs shall have the following minimum effective properties. In the designation below, 362 is the member depth in 1/100 inches, S is the member style, 162 is the Flange width in 1/100 inches, and 54 is the material thickness in mils.

Designation	Design Thick.	Effective Properties I_x, in^4	S_x, in^3	A_f, in^2	F_y, ksi
362S162-43	0.0451	0.710	0.389	0.340	33
362S162-54	0.0566	0.873	0.468	0.422	50
362S162-68	0.0713	1.069	0.584	0.524	50
600S162-43	0.0451	2.316	0.767	0.447	33
600S162-54	0.0566	2.860	0.927	0.566	50
600S162-68	0.0713	3.525	1.164	0.693	50
800S162-43	0.0451	4.633	1.158	0.537	33
800S162-54	0.0566	5.736	1.397	0.670	50
800S162-68	0.0713	7.089	1.757	0.836	50

K. At locations requiring welding of or to metal studs, minimum stud thickness shall be 54 mil.

L. Provide 54 mil track at top and bottom of stud walls, and at headers for stud walls.

NO.	DATE	REMARKS
		ISSUE / REVISION DESCRIPTIONS

FRONTENAC ENGINEERING GROUP
CIVIL / STRUCTURAL / LAND SURVEYING
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MO CERTIFICATE OF AUTHORITY:
ENGINEERING: 000-001285
LAND SURVEYING: 000282

DATE: 1/30/15
CHECKED: JVS
DRAWN: RMT
SCALE: NOTED

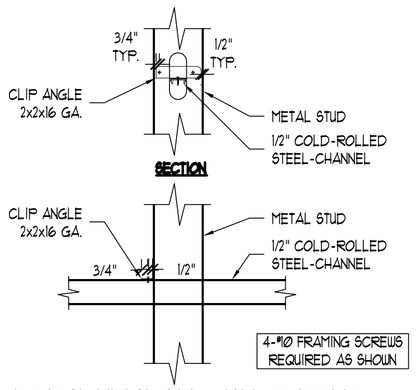
GENERAL NOTES

SHEET NO. S001

JEFFERSON COUNTY LIGHT FLEET
NEW PRE-FABRICATED STEEL BUILDING

K:\2014\140150 Bocom Commercial Design - Jefferson County Light Fleet\140150 Jeff Co. Light Fleet.dwg Plotted Date: 1/30/15 Time: 9:47 AM

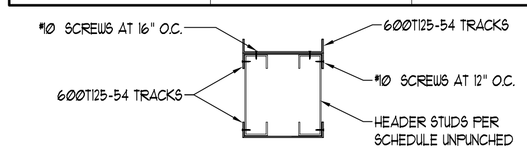
1 OF 3



TYPICAL METAL STUD WALL BRIDGING CHANNEL DETAIL

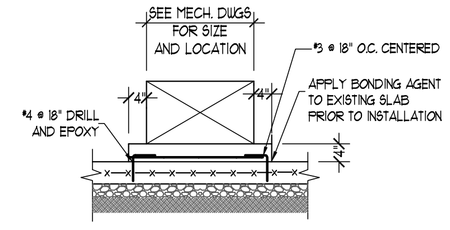
SCALE: N.T.S.

HEADER SCHEDULE		
OPENING WIDTH	HEADER STUDS	COMMENTS
1'-0" – 4'-0" 4'-1" – =8'-0"	(2) 600S162-54 (2) 800S162-54	(3) KING STUDS
8'-1" – 15'-8"	(2) 1200S162-68	(3) KING STUDS



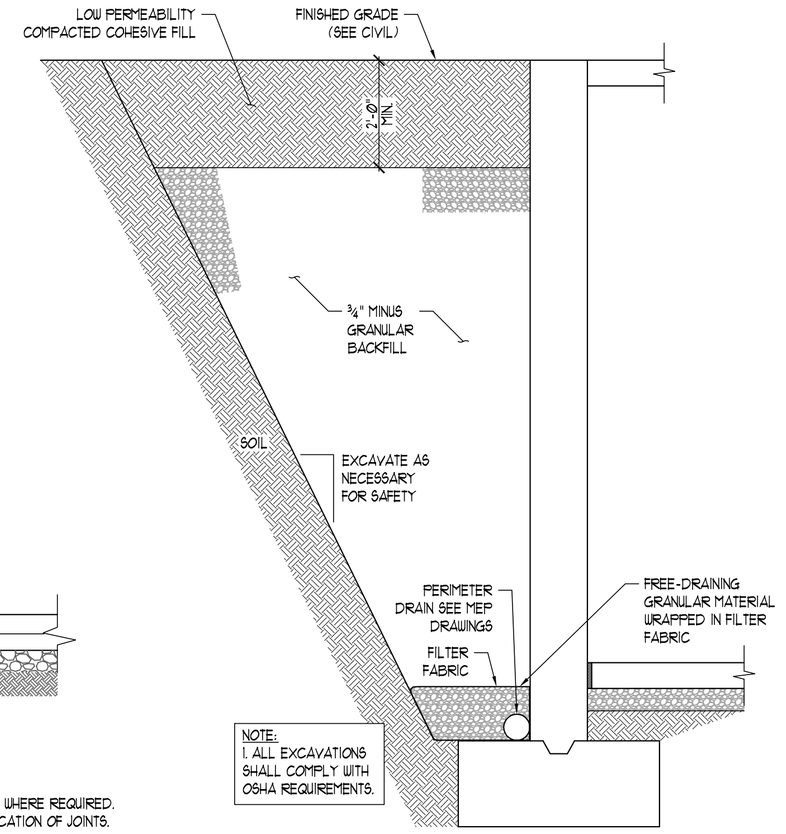
EXTERIOR METAL STUD WALL HEADER SCHEDULE

SCALE: N.T.S.



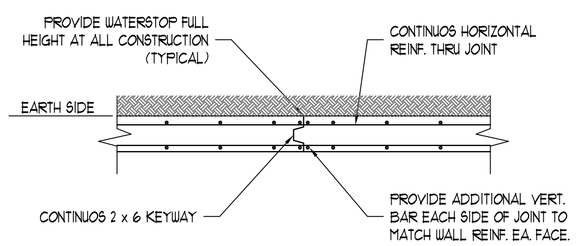
TYPICAL HOUSEKEEPING PAD DETAIL

SCALE: N.T.S.



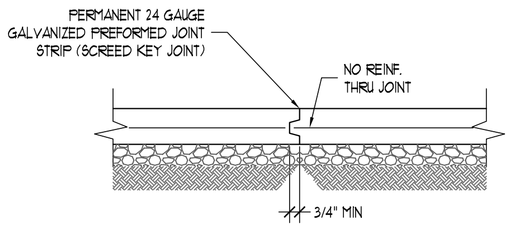
TYPICAL BACKFILL AT RETAINING WALLS & BASEMENT WALLS

SCALE: N.T.S.



TYPICAL FOUNDATION WALL CONSTRUCTION JOINTS DETAIL

SCALE: N.T.S.

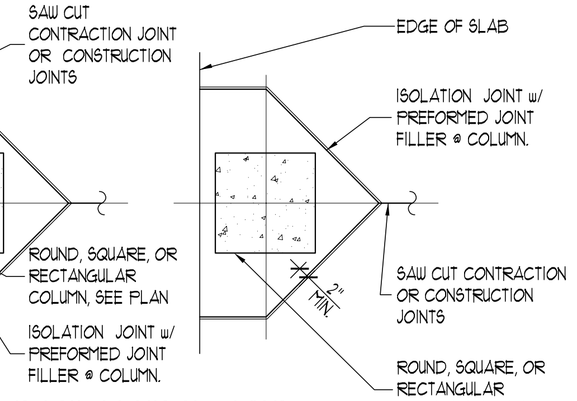


NOTE:

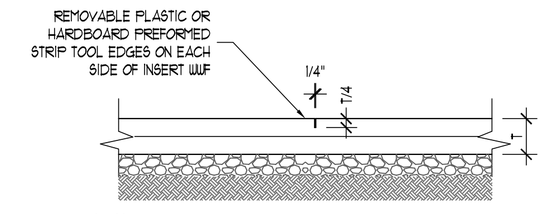
1) CONSTRUCTION JOINT MAY REPLACE CONTROL JOINT.
2) REFER TO ARCHITECTURAL DETAILS FOR JOINT FILLER WHERE REQUIRED.
3) SEE SEQUENCE OF PLACING SLAB ON GRADE FOR LOCATION OF JOINTS.

SLAB ON GRADE CONSTRUCTION JOINTS

SCALE: N.T.S.



ISOLATION JOINTS AT COLUMNS

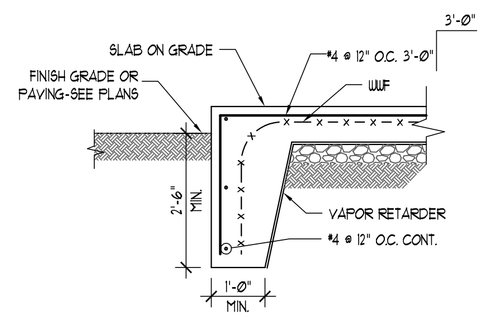


NOTE:

1) FILL JOINT WITH SEALANT AFTER SLAB HAS BEEN CURED.
2) CONSTRUCTION JOINTS MAY REPLACE CONTROL JOINTS.
3) SEE SEQUENCE OF PLACING SLAB ON GRADE FOR LOCATION OF JOINTS.
4) SAWCUT JOINTS ARE PERMITTED WITH THE APPROVAL OF THE OWNERS PROJECT MANAGER ONLY. IF APPROVED, SAWCUT JOINTS USING A "SOFT-CUT" MACHINE OR EQUAL IMMEDIATELY AFTER FINISHING SLAB.

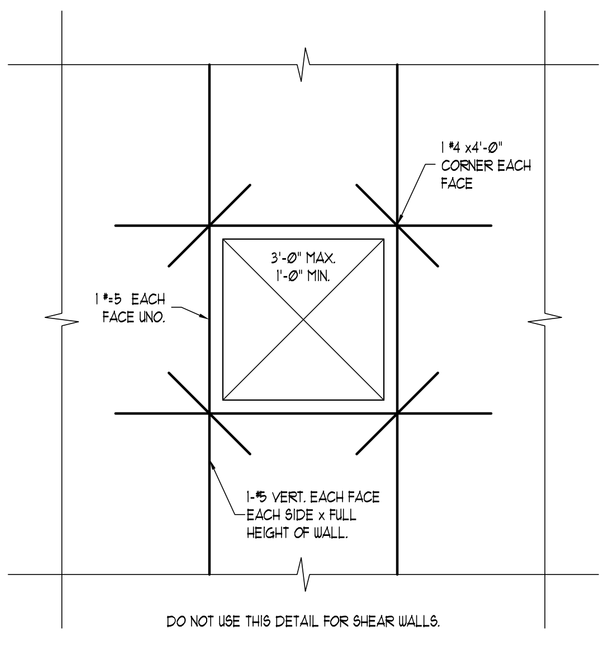
SLAB ON GRADE CONTROL JOINT

SCALE: N.T.S.



EXTERIOR PLATFORM SLAB EDGE

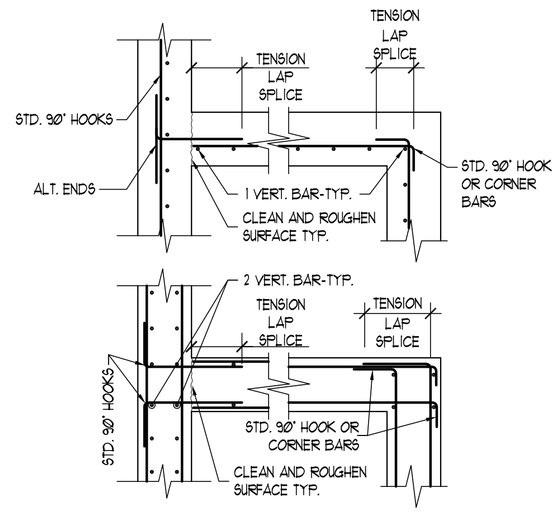
SCALE: N.T.S.



DO NOT USE THIS DETAIL FOR SHEAR WALLS.

OPENING IN CONCRETE WALL

SCALE: N.T.S.

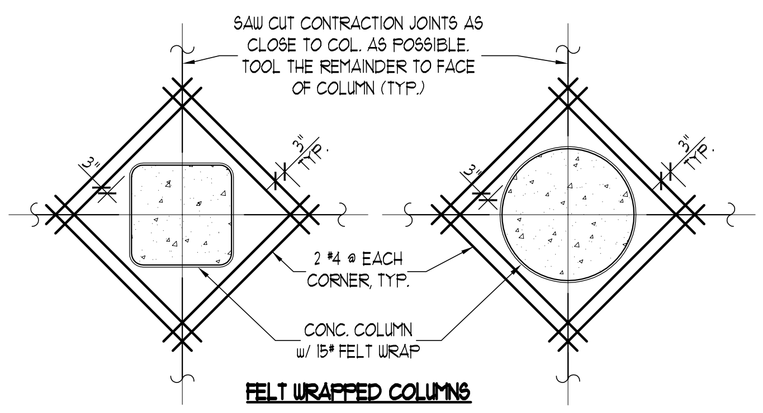


NOTE:

1) DOWEL BARS SAME SIZE AND SPACING AS HORIZONTAL REINFORCING.
2) SEE GENERAL NOTES FOR TENSION LAP SPLICE SCHEDULE.
3) CORNER BARS MAY BE SUBMITTED FOR 90° HOOKS ON END OF HORIZONTAL BARS FOR EACH LAYER OF REINFORCING. LENGTH OF EACH LEG TO BE TENSION LAP PER GENERAL NOTES.

REINFORCING AT WALL CORNERS

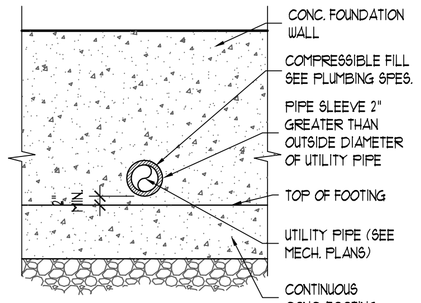
SCALE: N.T.S.



FELT WRAPPED COLUMNS

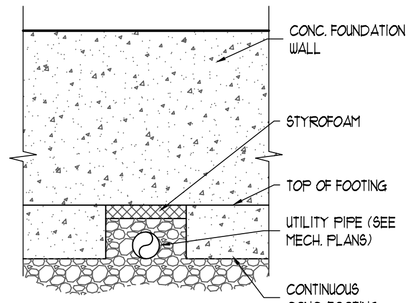
TYPICAL SLAB ON GRADE JOINT DETAILS AT CONC. COLUMNS

(CONTRACTOR'S OPTION)
SCALE: N.T.S.



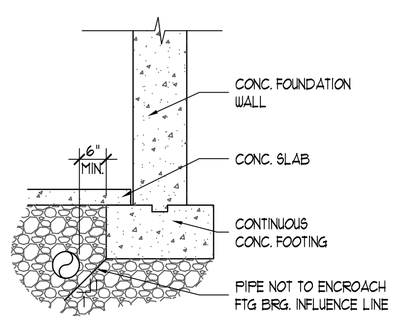
TYPICAL UTILITY PIPE THRU END WALL

SCALE: N.T.S.



TYPICAL UTILITY PIPE THRU FOOTING

SCALE: N.T.S.



TYPICAL PIPE @ FOOTING DETAIL

SCALE: N.T.S.

NO.	DATE	REMARKS
		ISSUE / REVISION DESCRIPTIONS

FRONTENAC ENGINEERING GROUP
CIVIL / STRUCTURAL / LAND SURVEYING
2725 SUTTON BLVD.
ST. LOUIS, MISSOURI 63143
PHONE: (314) 644-2200 FAX: (314) 644-0645
WWW.FESTL.COM
MO CERTIFICATE OF AUTHORITY:
CIVIL ENGINEERING: 2007025
LAND SURVEYING: 000282

DATE: 1/30/15
CHECKED: JJS
DRAWN: RMT
SCALE: NOTED

TYPICAL DETAILS

SHEET NO. S101

JEFFERSON COUNTY LIGHT FLEET

NEW PRE-FABRICATED STEEL BUILDING

.

FOUNDATION PLAN

JEFFERSON COUNTY LIGHT FLEET

NEW PRE-FABRICATED STEEL BUILDING

SHEET NO.

S201

3 OF 3

N:\2014\140150 Boson Commercial Bodge – Jefferson County Light Fleet\140150 Jeff Co. Light Fleet.dwg Plotted Date: 1/30/15 Time: 8:48 AM

DATE: 1/30/15
CHECKED: JJS
DRAWN: RWT
SCALE: NOTED

FRONTENAC ENGINEERING GROUP
CIVIL / STRUCTURAL / LAND SURVEYING
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PHONE: (314) 644-2200 FAX: (314) 644-0645
WWW.FE-STL.COM
MO CERTIFICATE OF AUTHORITY:
ENGINEERING: 001722S
LAND SURVEYING: 000282

NO.	DATE	REMARKS

ISSUE / REVISION DESCRIPTIONS

FOOTING SCHEDULE

MARK	FOOTING SIZE	PILASTER RENFORCING	PILASTER SIZE	PILASTER RENFORCING	NOTES
F 1	4'-0" x 4'-0" x 1'-0"	(4) #5 BARS EA WAY	24" x 24"	(4) #5 BENT DOUBLE	PROVIDE #3 TIES 48 POLUOB. 4" OC. AROUND ASH. 8" OC. ELSEWHERE
F 2	5'-0" x 5'-0" x 1'-0"	(5) #5 BARS EA WAY	24" x 24"	(4) #5 BENT DOUBLE	PROVIDE #3 TIES 48 POLUOB. 4" OC. AROUND ASH. 8" OC. ELSEWHERE

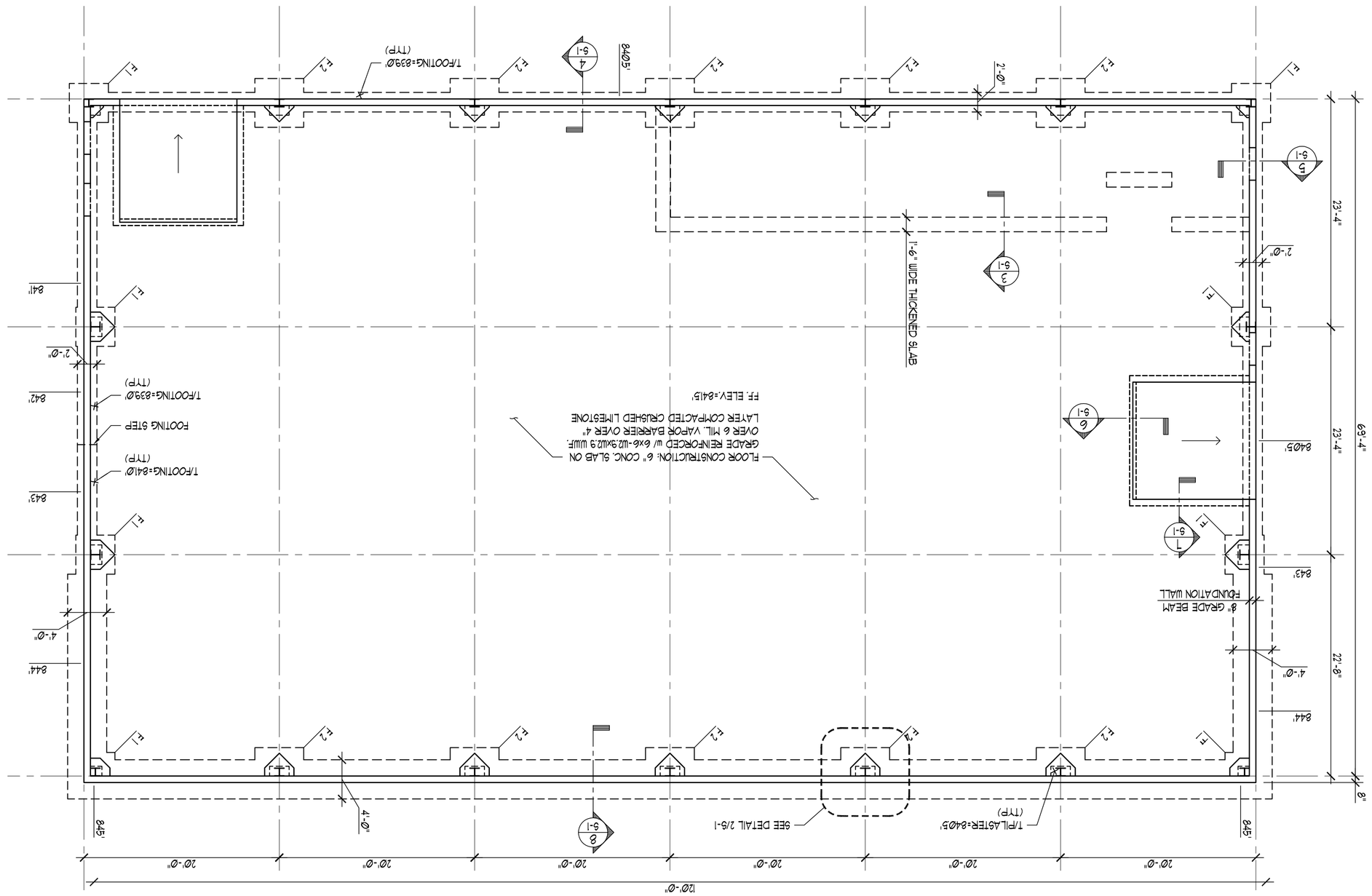
COLUMN BASE ANCHOR BOLT SCHEDULE

MARK	NUMBER OF BOLTS	DIAMETER	GRADE/TYPE	EMBEDMENT DEPTH
AB 1	8	1" ϕ	F554 GR 36 HEAVY HEX HEADED ANCHOR	24"
AB 2	4	1" ϕ	F554 GR 36 HEAVY HEX HEADED ANCHOR	24"
AB 3	4	3/4" ϕ	F554 GR 55 HEAVY HEX HEADED ANCHOR	15"
AB 4	4	3/4" ϕ	F554 GR 55 HEAVY HEX HEADED ANCHOR	12"
AB 5	2	5/8" ϕ	HILTI KWIK BOLT TZ	4"

DESIGNED PER

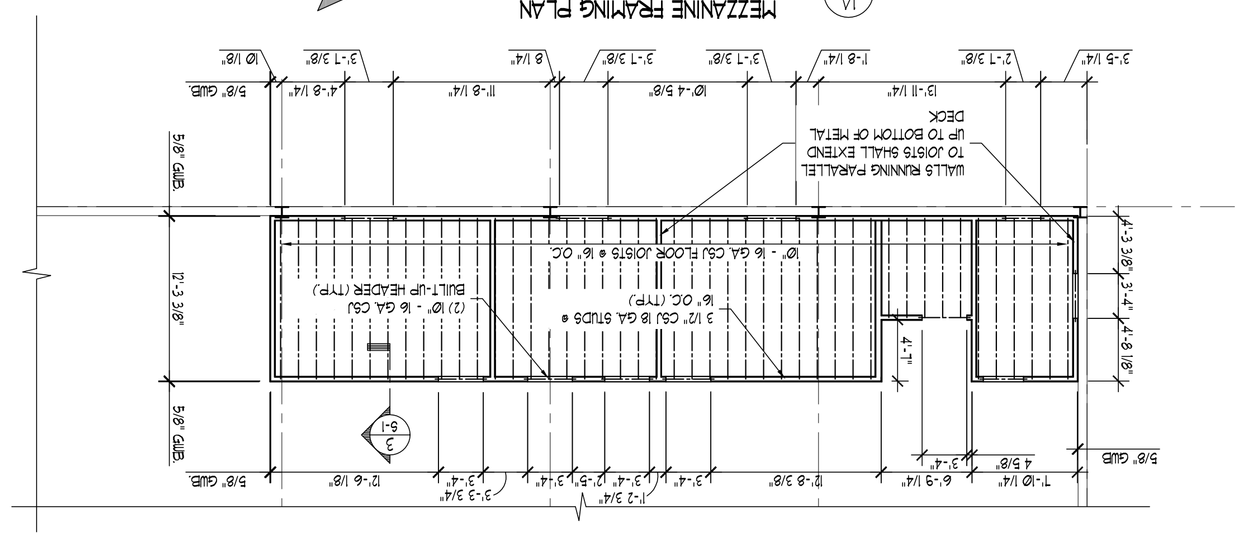
MEZZANINE FRAMING PLAN

1A / S-1 — SCALE: 1/8"=1'-0"



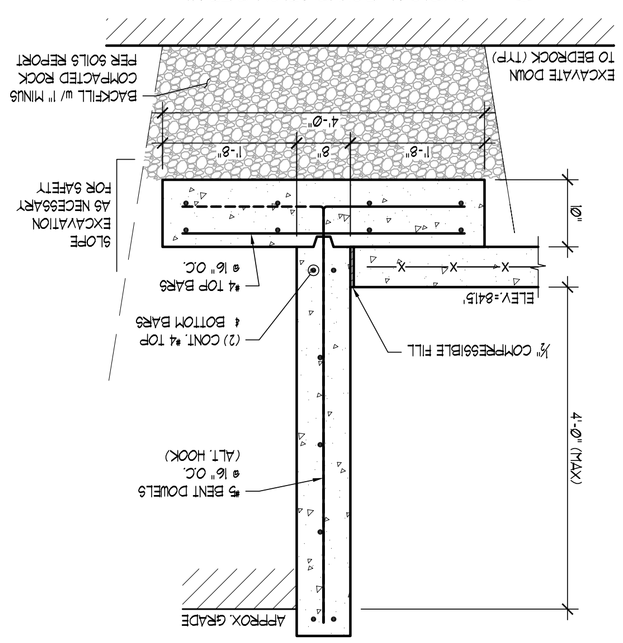
MEZZANINE FRAMING PLAN

1A / S-1 — SCALE: 1/8"=1'-0"



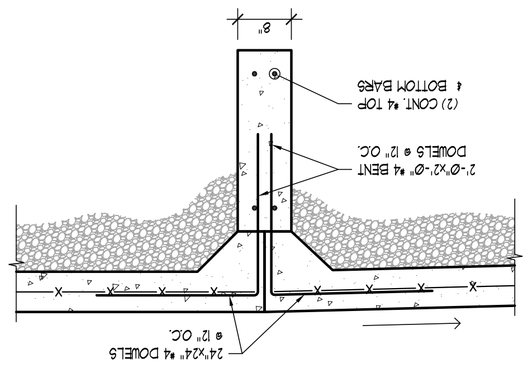
TYPICAL FOUNDATION DETAIL

6 / S-1 — SCALE: 3/4"=1'-0"



SECTION AT SLOPED SLAB

5 / S-1 — SCALE: 3/4"=1'-0"

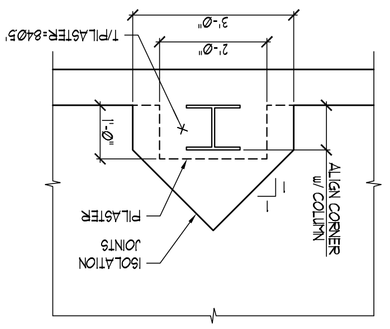


TYPICAL FOUNDATION DETAIL

4 / S-1 — SCALE: 3/4"=1'-0"

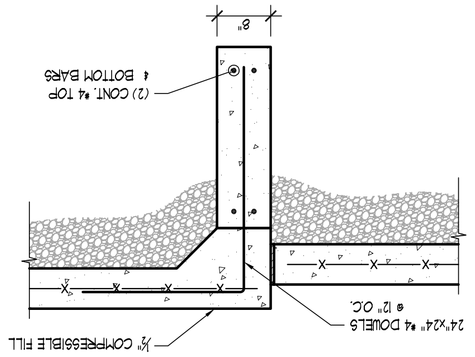
ENLARGED FOUNDATION PLAN AT COLUMN

2 / S-1 — SCALE: 1/2"=1'-0"



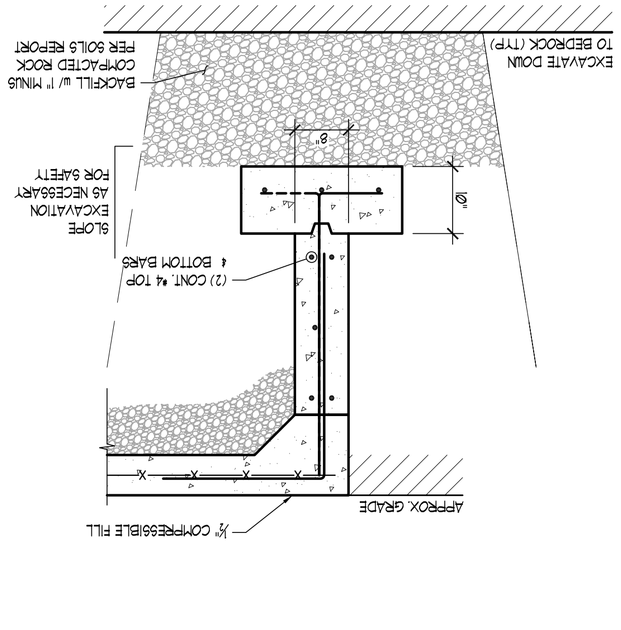
TYPICAL FOUNDATION DETAIL

7 / S-1 — SCALE: 3/4"=1'-0"



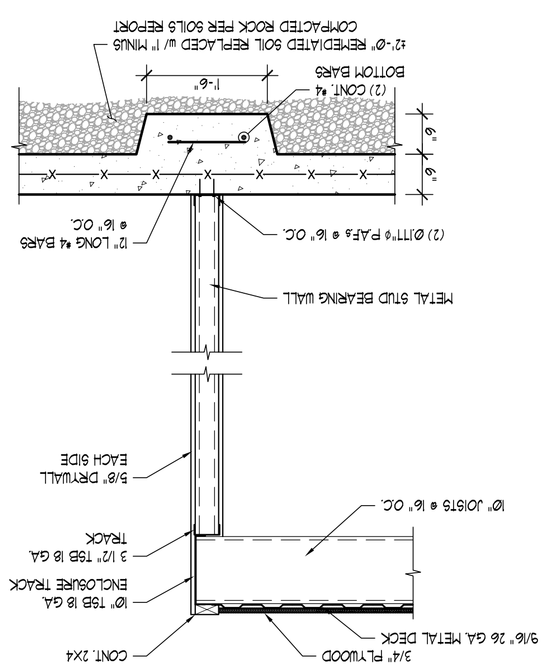
TYPICAL FOUNDATION DETAIL

8 / S-1 — SCALE: 3/4"=1'-0"



THICKENED SLAB DETAIL

3 / S-1 — SCALE: 3/4"=1'-0"



AIR DEVICE SCHEDULE

DESIGNATION	TITUS MODEL	MODULE SIZE	NECK SIZE	DAMPER	COMMENT	MAX CFM	MOUNTING
1	TMRA 6	13 1/2 Ø	6" Ø	D–100	SUPPLY	100	SURFACE
2	TMRA 12	27 Ø	12 Ø	D–100	SUPPLY	400	SURFACE
3	DL	--	15 X 20	NONE	SUPPLY	1000	DRUM
4	355RL	---------	16 X 16"	NONE	RETURN	400	SURFACE
5	8R	---------	48" X 48"	NONE	RETURN	8000	SURFACE
6	IL–23	---------	12 X 12	NONE	LOUVER	200	WALL
7	IL–23	---------	36 X 36	BACKDRAFT	LOUVER	4000	WALL

MECHANICAL EQUIPMENT SCHEDULE

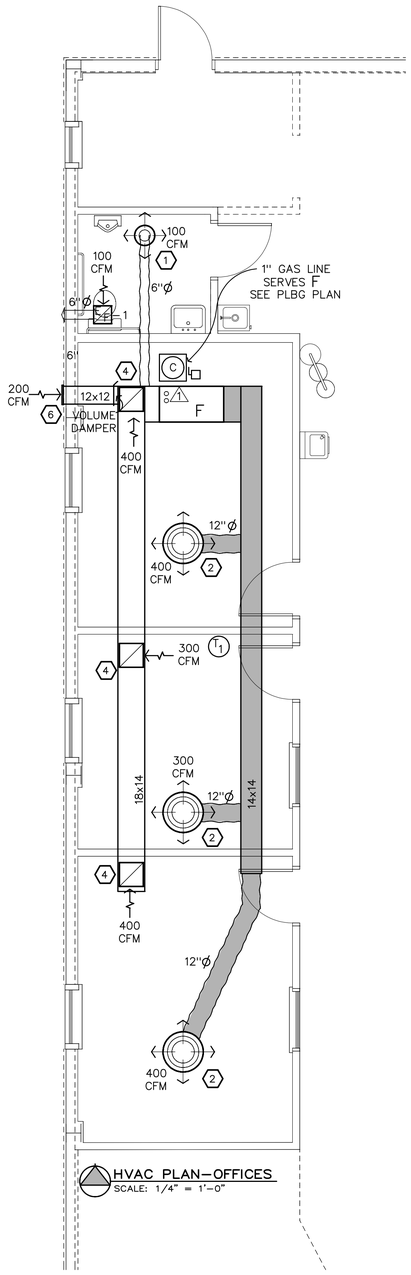
RTU	ROOFTOP UNIT, SINGLE PACKAGE, CONSTANT VOLUME, HORIZONTAL FLOW, COOLING WITH NATURAL GAS HEAT. NOMINAL 40 TONS COOLING AT 16,000 CFM INDOOR EVAPORATOR AIR FLOW. TWO STAGE HEATING OUTPUT OF 640,000 AT A NATURAL GAS INPUT OF 800,000 BTU/HR. LENNOX. 208 VOLTS. 3 PHASE, 204 MCA, 225 MOCP. OPTIONS AND ACCESSORIES TO INCLUDE: 15 HP BLOWER MOTOR WITH DRIVE KIT NO.8, 930 RPM, 120 VOLT GFI PROTECTED OUTLET, SMOKE DETECTOR MOUNTED IN RETURN AIR DUCT, DISCONNECT SWITCH, ECONOMIZER WITH DIFFERENTIAL ENTHALPY CONTROLS AND BAROMETRIC RELIEF DAMPERS AND OUTDOOR AIR HOOD, AND 2 STAGE HEAT, 2 STAGE COOLING PROGRAMMABLE THERMOSTAT. MINIMUM OUTSIDE AIR SET AT 1000 CFM. WEIGHT=6881 POUNDS.
F	FURNACE, NATURAL GAS, DIRECT VENT, LENNOX MODEL NO. ML193UH090XP48C–60–135. 83,000 BTUH OUTPUT AT A NATURAL GAS INPUT OF 88,000 BTUH. 1200 CFM INDOOR AIR FLOW AT 0.5" S. P. 120 VOLTS. 15 AMPS MOCP. OPTIONS AND ACCESSORIES TO INCLUDE: NOMINAL 3.5 TON EVAPORATOR COIL, AND PROGRAMMABLE THERMOSTAT. SET OUTSIDE AIR AT 200 CFM.
C	CONDENSING UNIT, NOMINAL 3 TONS. LENNOX MODEL NO. 13ACD–060. 240 VOLTS, SINGLE PHASE, 60 HZ. 33.3 MCA, 60 MOCP.
EF–1	EXHAUST FAN, 100 CFM @ 0.125" S.P., 120 VOLTS, 1.1 AMPS, 6"Ø DISCHARGE FLANGE WITH BACKDRAFT DAMPER. BROAN MODEL NO. L–100. DISCHARGE THROUGH WALL WITH WALL JACK.
EF–2	EXHAUST FAN, 12,000 CFM @ 0.375" S.P., SQUARE INLINE CENTRIFUGAL FAN, 3 HP BELT DRIVEN MOTOR 208 VOLTS, 3 PHASE, 11 AMPS, 44" X 44" DISCHARGE FLANGE WITH GRAVITY BACKDRAFT DAMPER. TWIN CITY MODEL NO. BSI–330A. DISCHARGE THROUGH WALL. SWITCHED AT DOOR #7 AND BY CO SENSOR.
EF–3	NSGV VEHICLE EXHAUST REMOVAL SYSTEM, 4 DROPS, EACH WITH 23 FEET OF 4" FLEXIBLE HOSE AND SPRING OPERATED HOSE REEL, AND TAPERED CONE ADAPTER. BELT DRIVE BLOWER, 1200 CFM @ 5" S.P., 2 HP, 208 VOLTS, THREE PHASE, 12–1/4" FAN. NSGV MODEL NO.122. DOUBLE SEALED SPIRAL DUCT SYSTEM AND ALL INSTALLATION HARDWARE.
FAN	CEILING FAN, 14 FT. DIAMETER, 6 BLADES, 104 RPM 128,010 CFM, 1.0 HP, 120 VOLTS, 750 WATTS, 194 AMPS, MODEL NO. MA14XL1006. PROVIDE WALL MOUNTED FORWARD/REVERSE SPEED CONTROL SWITCH.

MECHANICAL EQUIPMENT COMMENTS:

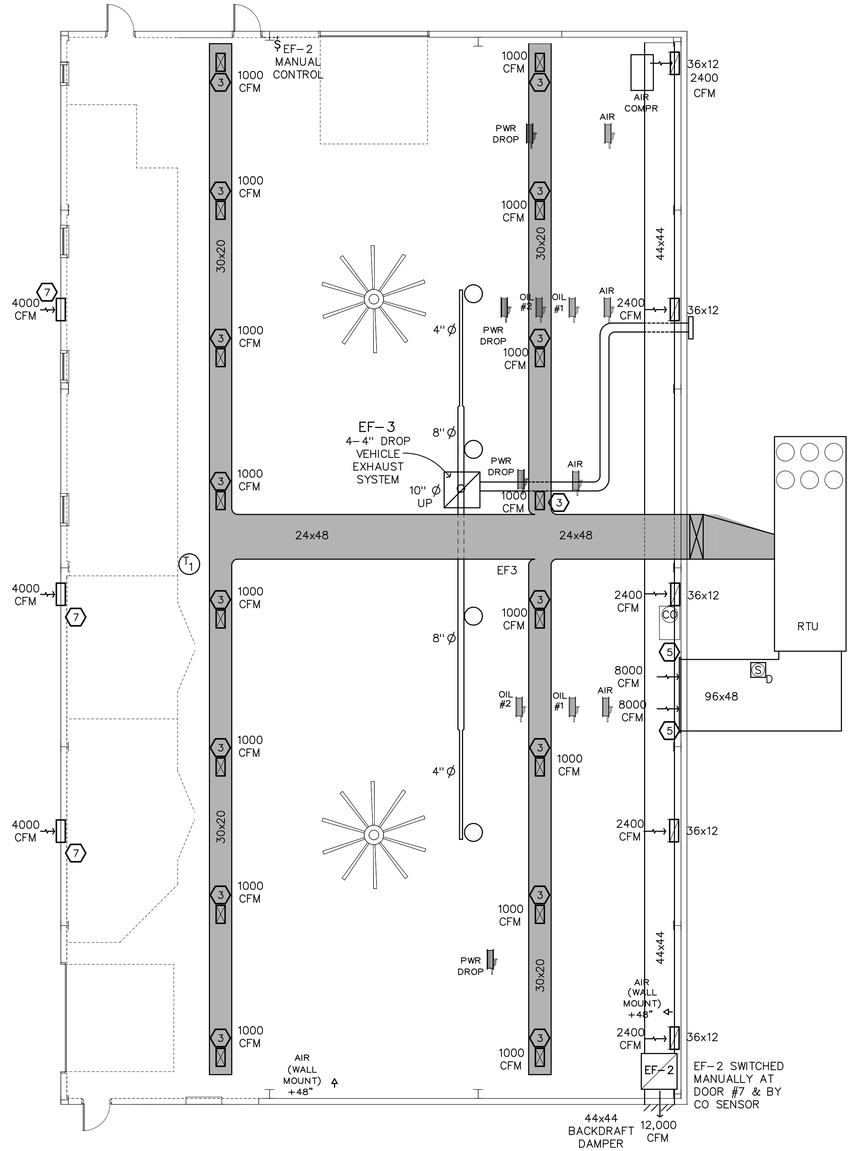
1) SPECIFIED LENNOX RTU, FURNACE & CONDENSING UNITS SHALL BE CONSIDERED AS A BASELINE MODEL. SYSTEMS BY OTHER MANUFACTURERS WHICH MEET THE SPECIFICATIONS AND WHICH INCLUDE THE SAME OPTIONS/ACCESSORIES WILL BE CONSIDERED. GENERAL CONTRACTORS SHALL IDENTIFY MANUFACTURER OF THE SYSTEM INCLUDED IN THEIR PROPOSALS.

(T1) THERMOSTAT CONTROLLING RTU

(T2) THERMOSTAT CONTROLLING FURNACE/AC



HVAC PLAN–OFFICES
SCALE: 1/4" = 1'–0"



HVAC PLAN–OPEN AREA
SCALE: 1/8" = 1'–0"

GENERAL NOTES:

1) DO NOT SCALE DRAWINGS. FOLLOW WRITTEN DIMENSIONS ONLY. FOR CRITICAL DIMENSIONS NOT SHOWN IN THE DRAWINGS, CONTACT THE ARCHITECT.
2) THESE DRAWINGS ARE ACCOMPANIED BY A PROJECT MANUAL, INCLUDING THE SPECIFICATIONS. DO NOT RELY SOLELY ON ONE OR THE OTHER. ADVISE THE ARCHITECT OR ENGINEER IMMEDIATELY OF ANY CONFLICTS BETWEEN THE TWO. IF NO TIMELY RESPONSE IS RECEIVED FROM THE ARCHITECT OR ENGINEER, ASSUME THE MORE EXPENSIVE OR MORE RESTRICTIVE CONDITION WILL PREVAIL.
3) DO NOT CUT OR MODIFY ANY STRUCTURAL ITEM WITHOUT FIRST REVIEWING THE PROPOSED MODIFICATION WITH THE ARCHITECT AND SUBMITTING A PLAN FOR ANY TEMPORARY SHORING NECESSARY.
4) ALL MATERIALS SHALL BE NEW AND INSTALLED TO MANUFACTURER'S WRITTEN SPECIFICATIONS.
5) PROVIDE ALL NECESSARY BARRIERS AND SAFETY SIGNAGE NECESSARY FOR A SAFE WORK ENVIRONMENT. CONFORM TO ALL LOCAL, COUNTY, STATE AND FEDERAL REQUIREMENTS WHICH APPLY.
6) WHERE AN ITEM OR SYSTEM IS SHOWN TO BE INCLUDED IN THE WORK, IT SHALL BE PROVIDED AS A COMPLETE, OPERABLE, CODE–COMPLIANT ITEM OR SYSTEM. THE CONTRACTOR SHALL INCLUDE ALL CONNECTIONS, SWITCHING, POWER, VENTILATION AND ANY OTHER ACCESSORIES NECESSARY TO PROVIDE A COMPLETE, OPERABLE ITEM OR SYSTEM.
7) ROUTING OF ELECTRICAL WIRING, PLUMBING LINES (WATER SUPPLY, WASTE, DRAIN, VENTS), AND DUCT WORK WHERE SHOWN ON PLANS IS SCHEMATIC. IT IS THE RESPONSIBILITY OF EACH OF THESE CONTRACTORS (SUBCONTRACTORS) TO COORDINATE INSTALLATION OF THESE ITEMS WITH EACH OTHER.
8) LOCATION OF HVAC EQUIPMENT (RTU'S, AIR HANDLERS, CONDENSERS, EXHAUST FANS, ETC) IS SCHEMATIC. COORDINATE THE FINAL LOCATIONS WITH OTHER CONSIDERATIONS AND CONFIRM WITH ARCHITECT.
9) RENDER ALL PENETRATIONS THROUGH BUILDING'S EXTERIOR ENCLOSURE WEATHER TIGHT.
10) PAINT ALL ROOF AND/OR WALL PENETRATIONS TO MATCH (AS CLOSELY AS IS PRACTICAL) THE ADJACENT ROOF OR WALL MATERIAL.
11) COMMENCING INSTALLATION OF ANY ITEM, EQUIPMENT OR SYSTEM INDICATES ACCEPTANCE OF ANY PRE–EXISTING CONDITION UPON WHICH THE SUBSEQUENT CONSTRUCTION IS DEPENDENT OR ATTACHED TO OR SUPPORTED ON. FOR EXAMPLE, BEGINNING FLOORING INSTALLATION REPRESENTS ACCEPTANCE OF THE SUB FLOOR CONSTRUCTION.

HVAC NOTES:

1) COORDINATE CEILING DIFFUSERS WITH CEILING LIGHT FIXTURES.
2) GAS PIPING IN CONCEALED LOCATIONS SHALL NOT HAVE JOINTS, UNIONS OR RUNNING THREADS.
3) RENDER ANY PASSAGE OF DUCTWORK THRU OUTSIDE WALLS OR ROOF PERMANENTLY WATERTIGHT.
4) LOCATE EQUIPMENT SO AS TO PROVIDE ADEQUATE FILTER REMOVAL AND MAINTENANCE ACCESS SPACE.
5) THIS CONTRACTOR SHALL COORDINATE WITH OTHER CONTRACTORS IN THE LOCATION OF ALL PIPING, DUCTWORK AND EQUIPMENT TO AVOID INTERFERENCE.
6) OUTSIDE AIR INTAKE AND EXHAUST OPENINGS SHALL BE PROTECTED AGAINST WEATHER AND ENTRY OF SNOW AND WATER.
7) PROVIDE 3/4" CONDENSATE DRAINS FROM FURNACE TO DRAIN.
8) FLEXIBLE AIR DUCT SHALL BE LIMITED IN LENGTH TO FOURTEEN FEET.
9) SIZE REFRIGERANT PIPING TO FURNACE PER MANUFACTURERS RECOMMENDATION.
10) PROVIDE SAFE RUST PROOF PANS WITH 1–1/2" CONDENSATE DRAIN FROM FURNACE.
11) DUCT LININGS SHALL BE 1/2" MINIMUM, INSTALLED IN ALL SUPPLY AND RETURN DUCTS (BUT NOT INTAKE OR EXHAUST DUCTS) AND HAVE A FLAME SPREAD INDEX OF NOT MORE THAN 25 AND A SMOKE–DEVELOPED INDEX OF NOT MORE THAN 50 WHEN TESTED IN ACCORDANCE WITH ASTM E 84.
12) ALL DUCTWORK PER SMACNA STANDARDS.
13) PROVIDE 4" THICK CONCRETE PAD FOR CONDENSING UNIT AND PACKAGED UNIT.
14) GAS CONNECTION TO EACH GAS APPLIANCE TO BE COMPLETE WITH UNION, SHUT–OFF COCK AND 6" DIRT LEG.
15) PROVIDE 2" CONDENSATE TRAP FOR RTU.
16) SET MINIMUM OUTSIDE AIR ON FURNACE AT 200 CFM.
17) SET MINIMUM OUTSIDE AIR ON RTU AT 1000 CFM.
18) INSULATE OUTSIDE RTU DUCTS WITH EXTERNAL WEATHERPROOF WRAP TO A MINIMUM OF R–8.
19) OWNER TO SUPPLY AIR COMPRESSOR WITH NOISE REDUCING HOUSING.

⚠ PROVIDE TWO 2" PVC PIPES. ONE FOR EXHAUST, ONE FOR COMBUSTION AIR. TERMINATE BOTH PIPES THROUGH ROOF WITH A VENT TERMINATION KIT.

ABBREVIATIONS:

AFF	ABOVE FINISHED FLOOR
NIC	NOT IN CONTRACT
USC	UNDER SEPARATE CONTRACT
VTR	VENT THROUGH ROOF
RTU	ROOF TOP UNIT
EWC	ELECTRIC WATER COOLER
GFI	GROUND FAULT INTERRUPTION PROT'N
CFM	CUBIC FEET/MINUTE

APPLICABLE CODES:

INTERNATIONAL CODE COUNCIL (2009):
INT'L BUILDING CODE, INT'L FUEL GAS CODE, INT'L FIRE CODE, INT'L MECHANICAL CODE, INT'L ENERGY CODE AND INT'L PLUMBING CODE.
NFPA NATIONAL ELECTRIC CODE 2008

COMMISSION NUMBER
13-091
DRAWN BY
mjb
CHECKED BY
SJB
DATE
02/04/2015

BIDDING & PERMIT REVIEW DOCUMENTS

Status/Revised

Frank F Freiner
Professional Engineer
MO Lic #: 018743

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ARCHITECTURAL & INTERIOR DESIGN
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crystal city
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corporate authority certificate #: 2006007290

MEP Engineer:
FF Freiner, P.E.

Civil/Site Engineer
David Vonarx, P.E.

Structural Engineer:
Frontenac Engineering

Project Consultants

JEFFERSON CO. (MISSOURI)
PUBLIC WORKS DEPARTMENT
Jason Jonas, P.E.
Director

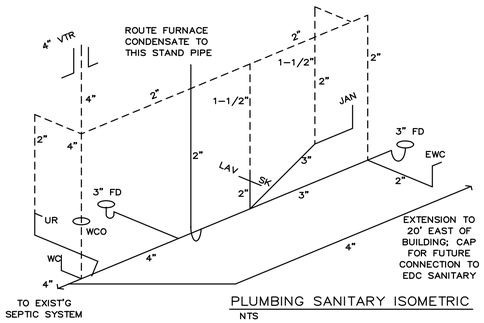
New Light Fleet Maintenance Facility
Highway B
Hillsboro, MO

COMMISSION

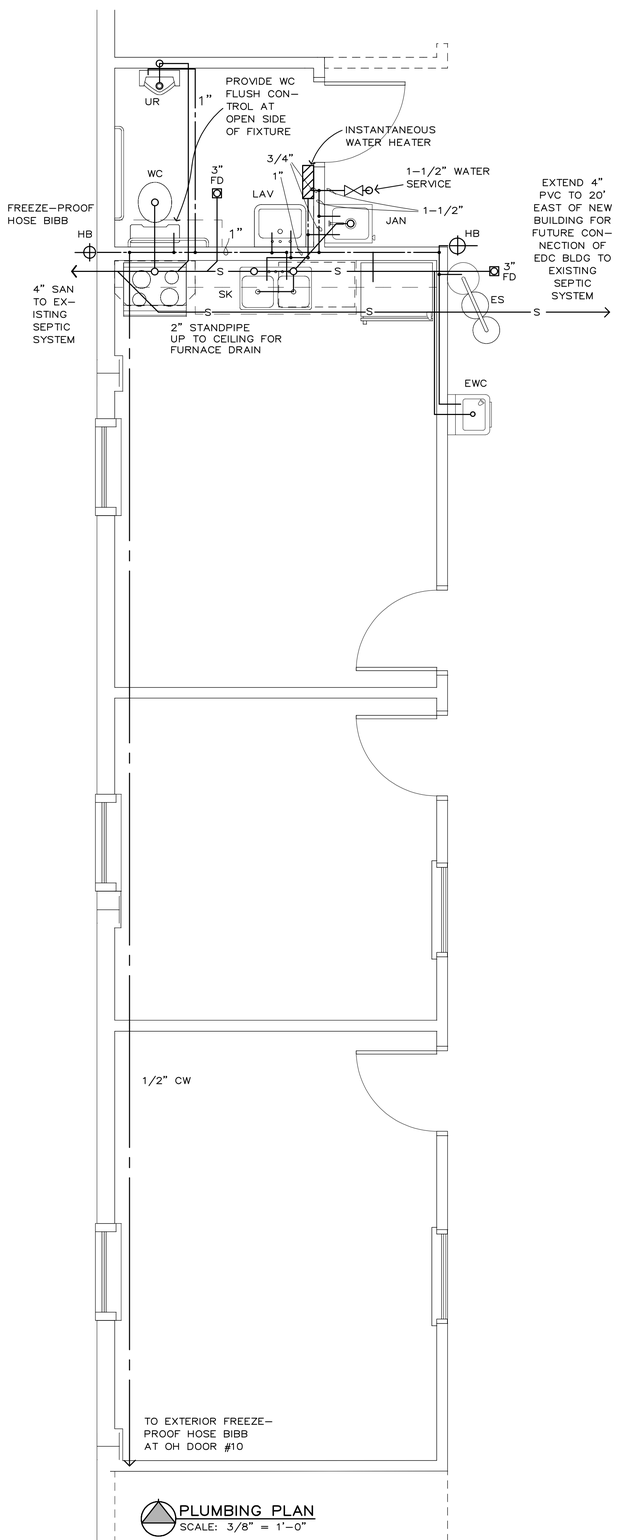
HVAC PLAN

SHEET TITLE

SHEET NUMBER
M-1
OF 2

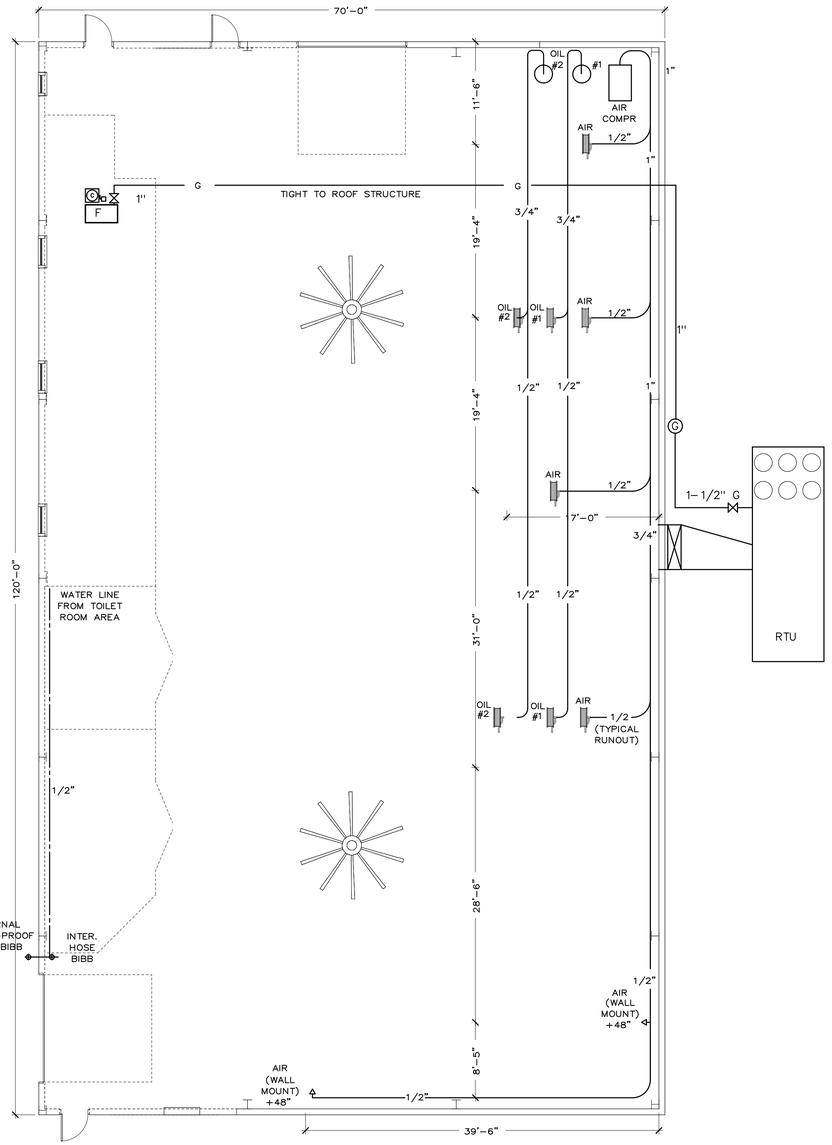


PLUMBING SANITARY ISOMETRIC
NTS



PLUMBING PLAN
SCALE: 3/8" = 1'-0"

PLUMBING EQUIPMENT SCHEDULE	
WC	WATER CLOSET: TANK TYPE, BARRIER FREE, 17" HIGH, 1.6GPF, ELONGATED BOWL, WHITE VITREOUS CHINA, SIPHON FLUSH ACTION, AMERICAN STANDARD CADET II MODEL NO.2216.170. WHITE OPEN FRONT SEAT.
UR	URINAL, WALL HUNG, BARRIER FREE, WHITE VITREOUS CHINA, LOW CONSUMPTION (1.0 gpf). SIPON JET FLUSHING ACTION, 3/4" INLEET SPUD, 2" THREADED OUTLET CONNECTION, WALL HANGER. AMERICAN-STANDARD ALLBROOK MODEL #6541.132 WITH SLOAN ROYAL 186-1-DFB-SMO AUTOMATIC FLUSH VALVE.
LAV	LAVATORY: WALL HUNG WITH WALL HANGER, BARRIER FREE, WHITE VITREOUS CHINA, 20" X 18" FAUCET HOLES ON 4 CENTERS. AMERICAN STANDARD LUCERNE MODEL NO. 0355.012 WITH AMERICAN STANDARD HERITAGE FAUCET NO. 5400.000 WITH NO. 172H WRIST BLADE HANDLES, OFFSET DRAIN AND STRAINER, LAV-GUARD UNDER SINK PROTECTIVE PIPE COVERS, MODEL NO. 103 WHITE.
WH	WATER HEATER: ELECTRIC, INSTANTANEOUS, TANKLESS, 208 VOLTS, 1 PHASE, 4125 WATTS, 19.8 AMPS. 75F RISE AT 0.5 GPM. EEMAX MODEL NO. SP55.
JAN	JANITORS SINK: ADVANCE-TABCO 7-PS-30; KNEE-OPERATED, GOOSE NECK FAUCET; 16" X 14" X 6" BOWL; WALL MOUNT
HB	WALL HYDRANT: ANTI-SIPHON, NON-FREEZE WITH INTEGRAL BACKFLOW PREVENTER, BRONZE BOX, WADE NO. W-8625
SK	KITCHEN SINK: DOUBLE COMPARTMENT, STAINLESS STEEL, 18 GAUGE TYPE 302, SELF - RIMMING, 33L X 22W X 8"D. 3 FAUCET HOLES ON 4" CENTERS .ELKAY MODEL NO. LR 3322. FAUCET- ELKAY LKA - 2443 HI-ARC, TWO HANDLE, DECK MOUNT, WITH SPRAY.
FD	FLOOR DRAIN: 3, WADE NO. 1103-TY-STD6 CAST IRON FLOOR DRAIN WITH FLANGE, TY-SEAL, VANDAL PROOF AND NICKEL BRONZE STRAINER.
WCO	WALL CLEAN OUT: WADE NO. W-8474-R8 RAISED HEAD PLUG WITH ROUND STAINLESS STEEL VANDAL PROOF SECURED ACCESS COVER
EWC	ELECTRIC WATER COOLER: DRINKING FOUNTAIN AND BOTTLEFILLER; ELKAY EZSBWSLK; WALL MOUNT
ES	EMERGENCY SHOWER & EYE WASH: HAWS MODEL 8300-8309 (AXION MSR); FLOOR MOUNT



PLUMBING PLAN-OPEN AREA
SCALE: 1/8" = 1'-0"

GENERAL NOTES:

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7) ROUTING OF ELECTRICAL WIRING, PLUMBING LINES (WATER SUPPLY, WASTE, DRAIN, VENTS), AND DUCT WORK WHERE SHOWN ON PLANS IS SCHEMATIC. IT IS THE RESPONSIBILITY OF EACH OF THESE CONTRACTORS (SUBCONTRACTORS) TO COORDINATE INSTALLATION OF THESE ITEMS WITH EACH OTHER.
8) LOCATION OF HVAC EQUIPMENT (RTU'S, AIR HANDLERS, CONDENSERS, EXHAUST FANS, ETC) IS SCHEMATIC. COORDINATE THE FINAL LOCATIONS WITH OTHER CONSIDERATIONS AND CONFIRM WITH ARCHITECT.
9) RENDER ALL PENETRATIONS THROUGH BUILDING'S EXTERIOR ENCLOSURE WEATHER TIGHT.
10) PAINT ALL ROOF AND/OR WALL PENETRATIONS TO MATCH (AS CLOSELY AS IS PRACTICAL) THE ADJACENT ROOF OR WALL MATERIAL.
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PLUMBING NOTES:

1) ALL SUPPLY WATER LINES ABOVE GRADE TO BE INSULATED.
2) ALL PLUMBING SUPPLY PIPES ARE 1/2" COPPER, UNLESS THE SIZE IS OTHERWISE SPECIFIED.
3) SUPPLY PLUMBING LINES ARE SHOWN OUTSIDE THE WALL CAVITIES FOR CLARITY ONLY.
4) CONNECT TO EXISTING WATER WELL.
5) COMPRESSED AIR AND MOTOR OIL DISTRI-BUTION PIPING TO BE INSTALLED TIGHT TO ROOF STRUCTURE ABOVE. MOUNT RE-TRACTABLE HOSE REELS AT ROOF STRUC-TURE ABOVE IN THE APPROXIMATE LOCA-TIONS SHOWN IN THE PLANS. COORDINATE LOCATIONS WITH OTHER ROOF-MOUNTED EQUIPMENT TO AVOID CONFLICTS. ADVISE OWNER AND ARCHITECT PRIOR TO CHAN-GING THE PROPOSED LOCATION OF ANY ITEM SHOWN IN THE PLANS.
6) OWNER TO SUPPLY OIL CONTAINERS AND OIL PUMPING SYSTEM, TO CONNECT TO CONTRACTOR SUPPLIED/INSTALLED DISTRI-BUTION PIPING.
7) OWNER TO SUPPLY AND INSTALL AIR COMPRESSOR, AND CONNECT TO DISTRIBU-TION PIPING DESCRIBED ABOVE.
8) HOSE AND ELECTRIC CORD RETRACTING REELS TO BE SUPPLIED BY OWNER AND INSTALLED BY GENERAL CONTRACTOR.

LEGEND:

- COLD WATER SUPPLY LINE
- HOT WATER SUPPLY LINE
- S — SANITARY LINE
- RETRACTING REEL WITH HOSE OR CORD, FOR OIL, COMPRESSED AIR OR ELECTRIC POWER SUPPLIED BY OWNER TO BE IN-STALLED BY GENERAL CONTRACTOR
- SHUTOFF VALVE
- FLOOR DRAIN
- HOSE BIBB/WALL HYDRANT; FREEZE-PROOF AT EXTERIOR WALLS

ABBREVIATIONS:

AFF	ABOVE FINISHED FLOOR
NIC	NOT IN CONTRACT
USC	UNDER SEPARATE CONTRACT
VTR	VENT THROUGH ROOF
RTU	ROOF TOP UNIT
EWC	ELECTRIC WATER COOLER
GFI	GROUND FAULT INTERRUPTION PROT'N
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COMMISSION NUMBER
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BIDDING & PERMIT REVIEW DOCUMENTS

Status/Revised

Frank F Freiner
Professional Engineer
MO Lic #: 018743

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David Vonarx, P.E.
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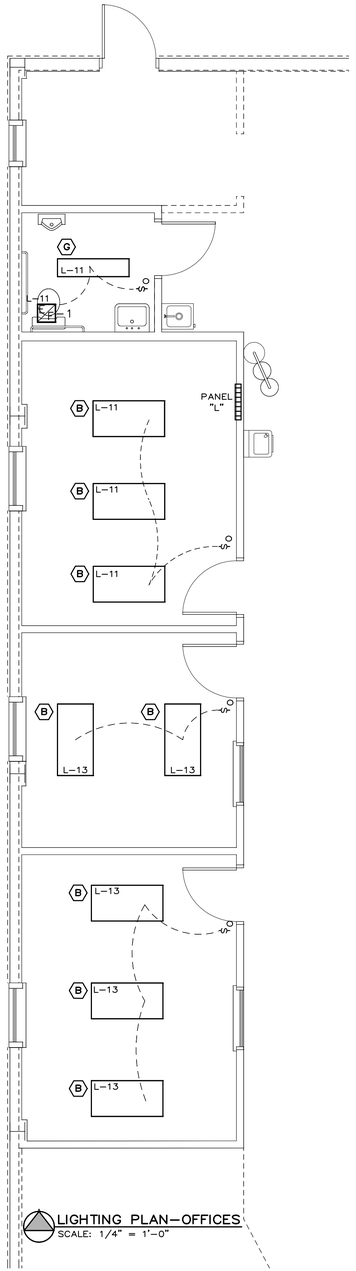
COMMISSION

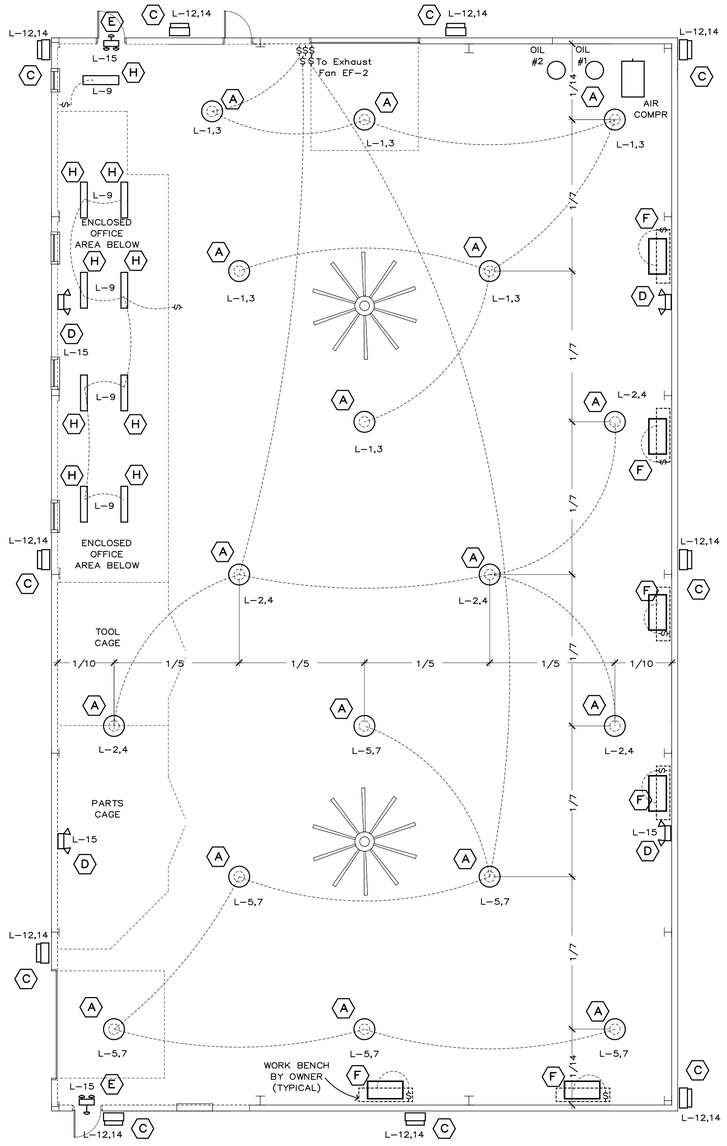
PLUMBING PLAN

SHEET TITLE

SHEET NUMBER
M-2
OF 2



LIGHTING PLAN—OFFICES
SCALE: 1/4" = 1'-0"



LIGHTING PLAN—SHOP AREA
SCALE: 1/8" = 1'-0"

LIGHT FIXTURE SCHEDULE

MK	DESCRIPTION	MFR CATALOG	LAMPS	MOUNTING	FINISH
A	OPEN WORK AREA, HID	LITHONIA THC400MA15—208	400W METAL HALIDE	PENDANT	MILL
B	SURFACE MOUNT 4 LAMP FLUORESCENT IN OFFICES	LITHONIA LB432—120—1/4	4F—32 T—8	CEILING SURFACE	WHITE
C	EXTERIOR WALL MOUNT AREA/SECURITY LIGHT	LITHONIA TWH 175M208PELPI	175W METAL HALIDE	WALL SURFACE	DARK BRONZE
D	EMERGENCY LIGHT; 90—MINUTE BATTERY BACKUP	LITHONIA QUATUM ELM10	N1212	WALL SURFACE	WHITE
E	EMERGENCY/EXIT LIGHT COMBO; 90—MINUTE BAT—TERY BACKUP	LITHONIA QUANTUM LHQMPW1R120N	LED	WALL SURFACE	WHITE
F	FLUORESCENT WORK LIGHT; 2X4	LITHONIA EJ432120GEB1/4	4F32 T—8	CHAIN HUNG	WHITE
G	SURFACE MOUNT 2 LAMP FLUORESCENT—TOILET RM	LITHONIA LB432—120—1/2	2F—32 T—8	CEILING SURFACE	WHITE
H	SURFACE MOUNT 2 LAMP FLUORESCENT—WAITING RM	LITHONIA XXXXX—120—1/2	2F—32 T—8	WALL SURFACE	DARK BRONZE

EXTERIOR WALL—PACK LIGHTS; SWITCH WITH PHOTO—CELL

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LEGEND:

- 2X4 FLUORESCENT LIGHT FIXTURE; SURFACE MOUNT
- CHAIN HUNG, FLUORESCENT LIGHT AT WORK STATION
- HID PENDANT; SUSPENDED FROM ROOF STRUCTURE; METAL HALIDE
- EXTERIOR WALL—PACK; METAL HALIDE; PHOTO—CELL SWITCHED
- COMBO EMERGENCY/EXIT LIGHT WITH REMOTE HEAD; 90—MINUTE BATTERY BACKUP
- EMERGENCY LIGHT; 90—MINUTE BATTERY BACKUP
- $ MANUAL SWITCH
- $O OCCUPANCY SENSOR SWITCH, WITH MANUAL OVERRIDE
- $3 MANUAL, THREE—WAY SWITCH

ABBREVIATIONS:

AFF	ABOVE FINISHED FLOOR
NIC	NOT IN CONTRACT
USC	UNDER SEPARATE CONTRACT
VTR	VENT THROUGH ROOF
RTU	ROOF TOP UNIT
EWC	ELECTRIC WATER COOLER
GFI	GROUND FAULT INTERRUPTION PROT'N
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New Light Fleet Maintenance Facility
Highway B
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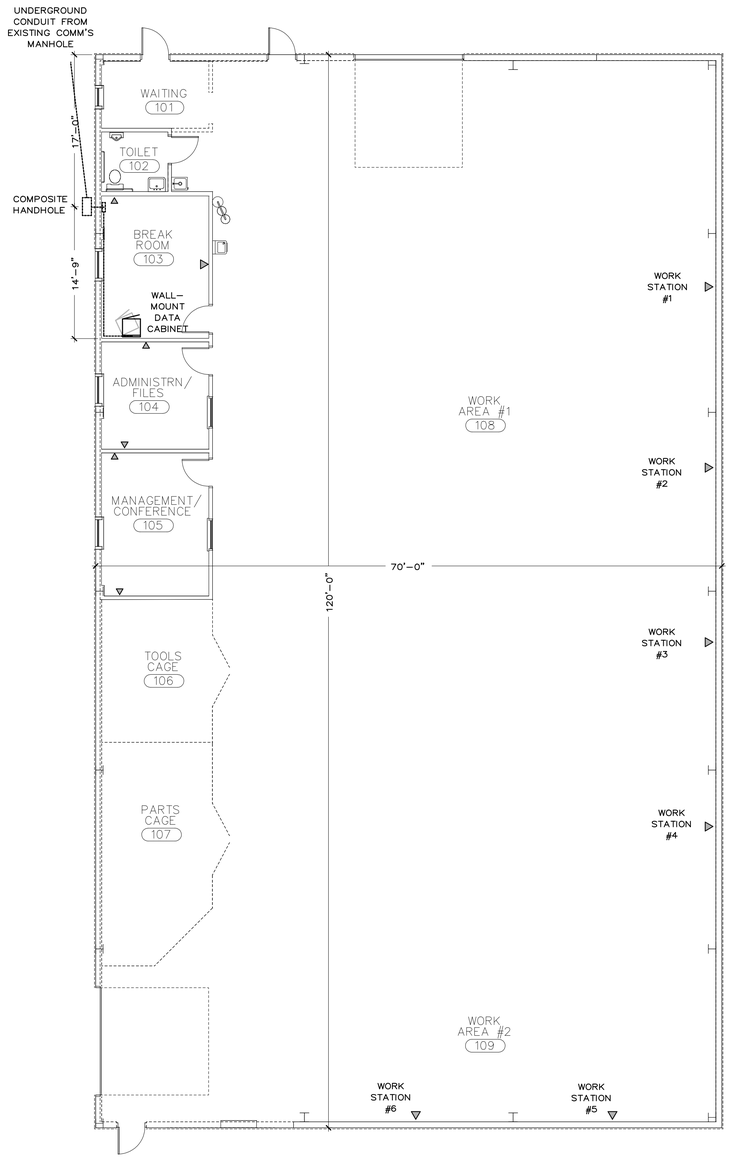
COMMISSION

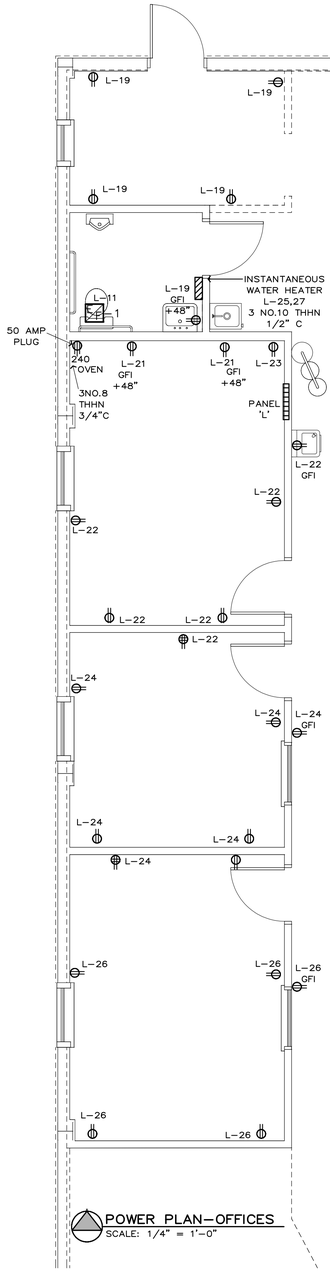
LIGHTING PLANS

SHEET TITLE

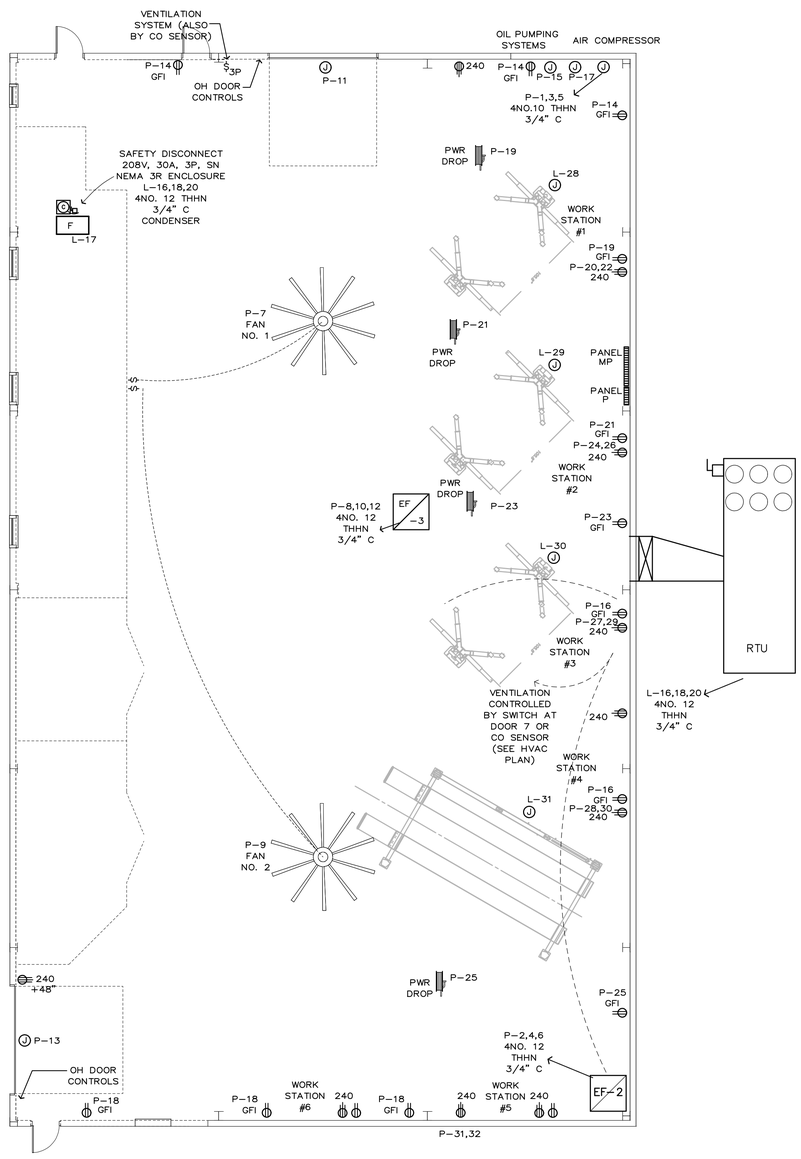
SHEET NUMBER
E-1
OF 2



IT-COMMS PLAN
SCALE: 1/8" = 1'-0"

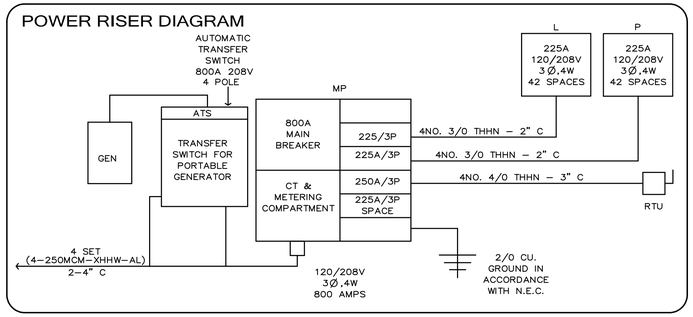


POWER PLAN—OFFICES
SCALE: 1/4" = 1'-0"



POWER PLAN—OPEN AREA
SCALE: 1/8" = 1'-0"

POWER RISER DIAGRAM



SCHEDULE OF PANEL: L — LOCATION: WEST WALL
120/208 VOLT 3 Ø WIRE 4 — MOUNTING: SURFACE
BUS MAIN BREAKER AMPS 225 — SECTIONS:

CIRC. NO.	AMP	P	SERVES	VA	O	VA	SERVES	AMP	P	CIRC. NO.
1	20	2	LIGHTS–GARAGE	1500	A	1500	LIGHTS–GARAGE	20	2	2
3	––	–	LIGHTS–GARAGE	1500	B	1500	LIGHTS–GARAGE	––	–	4
5	20	2	LIGHTS–GARAGE	1500	C	4000	ELECTRIC	50	2	6
7	––	–	LIGHTS–GARAGE	1500	A	4000	OVEN	––	1	8
9	20	1	LIGHTS–PLATFORM	900	B					10
11	20	1	LIGHTS–OFFICE	900	C	1200	EXTERIOR	20	2	12
13	20	1	LIGHTS–OFFICE	900	A	1200	LIGHTS	––	–	14
15	20	1	EMERGENCY LIGHTS	700	B	1500	AIR	20	3	16
17	15	1	FURNACE	1500	C	1500	CONDITIONER	––	–	18
19	20	1	4 Ø WAITING	1000	A	1500	CONDENSER	––	–	20
21	20	1	2 Ø COUNTERTOP	1000	B	1200	7 Ø OFFICE	20	1	22
23	20	1	1 Ø REFRIGERATOR	1000	C	1200	7 Ø OFFICE	20	1	24
25	30	2	WATER HEATER	2100	A	800	5 Ø OFFICE	20	1	26
27	––	–		2100	B		AUTO LIFT			28
29			AUTO LIFT		C		AUTO LIFT			30
31			TRUCK LIFT		A					32
33					B					34
35					C					36
37					A					38
39					B					40
41					C					42

SCHEDULE OF PANEL: P — LOCATION: EAST WALL
120/208 VOLT 3 Ø WIRE 4 — MOUNTING: SURFACE
BUS MAIN BREAKER AMPS 225 — SECTIONS:

CIRC. NO.	AMP	P	SERVES	VA	O	VA	SERVES	AMP	P	CIRC. NO.
1	30	3	AIR	2500	A	1300	EXHAUST	20	3	2
3	––	–	COMPRESSOR	2500	B	1300	FAN	––	–	4
5	––	–	SYSTEM	2500	C	1300	NO. 2	––	–	6
7	20	1	FAN NO. 1	1000	A	1500	VEHICLE	20	3	8
9	20	1	FAN NO. 2	1000	B	1500	EXHAUST	––	–	10
11	20	1	DOOR NO. 1	1500	C	1500	SYSTEM	––	–	12
13	20	1	DOOR NO. 2	1500	A	900	2 Ø NORTH WALL	20	1	14
15	20	1	OIL PUMP. NO. 1	1500	B	1200	4 Ø EAST WALL	20	1	16
17	20	1	OIL PUMP NO. 2	1500	C	1200	4 Ø SOUTH WALL	20	1	18
19	20	1	POWER DROP NO. 1	1500	A	1500	WORK	20	2	20
21	20	1	POWER DROP NO. 2	1500	B	1500	STATION 1	––	–	22
23	20	1	POWER DROP NO. 3	1500	C	1500	WORK	20	2	24
25	20	1	POWER DROP NO. 4	1500	A	1500	STATION 2	––	–	26
27	20	2	WORK	1500	B	1500	WORK	20	2	28
29	––	–	STATION 3	1500	C	1500	STATION 4	––	–	30
31	20	2	240 VOLT	1500	A					32
33	––	–	OUTLET SO. WALL	1500	B					34
35					C					36
37					A					38
39					B					40
41					C					42

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LEGEND:

- DUPLEX PHONE & DATA OUTLET
- CONVENIENCE DUPLEX OUTLET
- SPECIAL USE OUTLET
- CONVENIENCE QUAD OUTLET
- JUNCTION BOX
- RETRACTING REEL WITH HOSE OR CORD, FOR OIL, COMPRESSED AIR OR ELECTRIC POWER
- ELECTRICAL PANEL
- EXHAUST FAN

NOTES:

1) JUNCTION BOXES TO SERVE LIFTS: RECESS IN CONCRETE FLOOR SLAB AT APPROXIMATE LOCATIONS SHOWN. COORDINATE WITH OWNER'S REP FOR FINAL LOCATION, AND POWER REQUIRED BY LIFTS (TO BE SUPPLIED BY OWNER).
2) DATA/TELECOMM'S OUTLETS: PROVIDE CONDUIT WITHIN FRAMED WALLS OR IN RACEWAY ON SURFACE IF NO WALL CAVITY IS AVAILABLE. COORDINATE ANY PROPOSED RACEWAY OR CONDUIT TO BE EXPOSED WITH OWNER AND ARCHITECT. AT EACH OUTLET, PROVIDE TWO PORTS; ONE EACH FOR VOIP (TOP) AND DATA (BOTTOM). HOME RUN ALL CABLING TO DATA CABINET IN BREAK ROOM. ALL CABLING TO BE IN CONDUIT OR RACEWAY.
3) DATA CABINET: CHATSWORTH CUBEIT 36" HIGH X 24" DEEP X 24" WIDE WALL MOUNTED CABINET, WITH SWING–OUT REAR ACCESS; TINTED WINDOW.
4) DATA JUNCTION BOX/HANDHOLE: PROVIDE 'QUAZITE' UNDERGROUND ENCLOSURE ASSEMBLY; NOMINAL 22"L X 16"W X 16"D. PROVIDE COVER MEETING REQUIREMENTS OF LOCATION, AND LABELLED 'FIBER–OPTICS'. PROVIDE 3" METAL CONDUIT FROM HANDHOLE BOX UP SIDE OF BUILDING TO PULL BOX ON EQUIPMENT PLATFORM ABOVE OFFICES.

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USC	UNDER SEPARATE CONTRACT
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Highway B
Hillsboro, MO

COMMISSION

POWER PLAN

SHEET TITLE

SHEET NUMBER
E-2
OF 2

NEW FACILITY
JEFFERSON COUNTY LIGHT FLEET
SITE DEVELOPMENT PLAN

A TRACT OF LAND IN THE NORTEAST QUARTER OF SECTION 5, TOWNSHIP 40 NORTH, RANGE 4 EAST

GENERAL NOTES:

1. THE UTILITIES SHOWN HEREIN WERE PLOTTED FROM AVAILABLE INFORMATION AND DO NOT NECESSARILY REFLECT THE ACTUAL EXISTENCE, NON–EXISTENCE, SIZE, TYPE, OR LOCATION OF THESE OR OTHER UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACTUAL LOCATION OF ALL UTILITIES, SHOWN OR NOT SHOWN, AND SAID UTILITIES SHALL BE LOCATED IN THE FIELD PRIOR TO ANY CONSTRUCTION OF IMPROVEMENTS. THESE PROVISIONS SHALL IN NO WAY ABSOLVE ANY PARTY FROM COMPLYING WITH THE UNDERGROUND FACILITY SAFETY AND DAMAGE PREVENTION ACT, CHAPTER 319 RSMo.
2. ALL ELEVATIONS ARE BASED ON U.S.G.S. DATUM.
3. PROPERTY AND TOPOGRAPHIC INFORMATION PROVIDED ON THIS PLAN ARE FROM THE PROPERTY AND TOPOGRAPHIC SURVEY PERFORMED BY ASSOCIATED LAND SURVEYORS, INC. A BOUNDARY SURVEY WAS NOT PERFORMED.
4. ALL MATERIALS AND METHODS OF CONSTRUCTION TO MEET THE CURRENT STANDARDS AND SPECIFICATIONS OF JEFFERSON COUNTY.
5. ALL GRADED AREAS SHALL BE PROTECTED FROM EROSION BY EROSION CONTROL DEVICES AND/OR SEEDING AND MULCHING AS REQUIRED BY THE JEFFERSON COUNTY PUBLIC WORKS DEPT. & MISSOURI DNR.
6. PRIOR TO BEGINNING ANY WORK ON THE SITE, THE DEVELOPER SHALL HAVE A PRECONSTRUCTION CONFERENCE WITH THE PUBLIC WORKS DEPARTMENT INSPECTOR PRIOR TO ANY CLEARING , GRADING, OR INSTALLATION OF IMPROVEMENTS.
7. GRADING CONTRACTOR SHALL INSTALL SILTATION CONTROL PRIOR TO STARTING THE GRADING. ADDITIONAL SILTATION CONTROL DEVICES SHALL BE INSTALLED PER JEFFERSON COUNTY.
8. ALL FILLS AND BACKFILLS SHALL BE MADE OF SELECTED EARTH MATERIALS, FREE FROM BROKEN MASONRY, ROCK, FROZEN EARTH, RUBBISH, ORGANIC MATERIAL AND DEBRIS.
9. GRADING CONTRACTOR SHALL KEEP EXISTING ROADWAYS CLEAN OF MUD AND DEBRIS AT ALL TIMES.
10. PROPOSED CONTOURS SHOWN ARE FINISHED ELEVATIONS ON PAVED AREAS.
11. NO GRADE SHALL EXCEED 3:1 SLOPE.
12. A GRADING PERMIT IS REQUIRED PRIOR TO ANY GRADING ON THE SITE. NO CHANGE IN WATERSHEDS SHALL BE PERMITTED.
13. INTERIM STORMWATER DRAINAGE CONTROL IN THE FORM OF SILTATION CONTROL MEASURES ARE REQUIRED.
14. THE DEVELOPER IS REQUIRED TO PROVIDE ADEQUATE STORMWATER SYSTEMS IN ACCORDANCE WITH JEFFERSON COUNTY STANDARDS.
15. ALL STORMWATER SHALL BE DISCHARGED AT AN ADEQUATE NATURAL DISCHARGE POINT.
16. ADEQUATE TEMPORARY OFF–STREET PARKING SHALL BE PROVIDED FOR CONSTRUCTION EMPLOYEES. PARKING ON NON–SURFACED AREAS SHALL BE PROHIBITED IN ORDER TO ELIMINATE THE CONDITION WHEREBY MUD FROM CONSTRUCTION AND EMPLOYEE VEHICLES IS TRACKED ONTO THE PAVEMENT CAUSING HAZARDOUS ROADWAY AND DRIVING CONDITIONS.
17. NORMAL WORK HOURS SHALL BE 6:30 AM TO 3:00 PM (MARCH – OCTOBER) AND 7:00 AM – 3:30 PM (OCTOBER – MARCH). WORK DAYS ARE MONDAY – FRIDAY, UNLESS OTHERWISE APPROVED BY COUNTY ENGINEER. .

LOCATION MAP
PARCEL NO. 173.005.0 028.

SITE DATA

PROPERTY OWNER: COUNTY OF JEFFERSON, STATE OF MISSOURI, P.O. BOX 100, HILLSBORO, MISSOURI 63050

EXISTING ZONING: LR2

SITE ADDRESS: 5217 STATE ROAD B, HILLSBORO, MISSOURI 63050

SITE ACREAGE: 3.96 ACRES (172,395 S.F.)

PARCEL NUMBERS: 173.005.0 028.

FIRM: COMMUNITY – PANEL NUMBER 29099C0330E, MAP REVISED APRIL 5, 2006, ZONE X

PARKING ANALYSIS:
GROSS FLOOR AREA (GFA) OF BUILDING= 7,500 S.F.
PARKING REQUIRED = 4 SPACES
PARKING PROVIDED = 3 SPACES WITH 1 HANDICAP SPACE
LOADING AND UNLOADING DOCK PROVIDED = 1

PHASING:
THIS PROPERTY IS PROPOSED TO BE DEVELOPED IN TWO PHASES.
PROPOSED LOT 2 WILL BE DEVELOPED INITIALLY
PROPOSED LOT 3 IS FUTURE DEVELOPMEN
AREA OF GREEN SPACE WITHIN THE PARKING LOT IS 22.6%
CALCULATED FROM FRONT OF BUILDING TO RIGHT–OF–WAY.

SERVICE DISTRICTS

FIRE: HILLSBORO FIRE PROTECTION DISTRICT, 120 FIFTH STREET, HILLSBORO, MISSOURI 63050, 636.797.3619

AMBULANCE: VALLE AMBULANCE DISTRICT, 12363 HIGHWAY 21, DE SOTO, MISSOURI 63020, 636.586.2132

SCHOOL: HILLSBORO R3 SCHOOL DISTRICT, 20 HAWK DRIVE, HILLSBORO, MISSOURI 63050, 636.789.3216

SEWER: ON–SITE SEWAGE DISPOSAL, JEFFERSON COUNTY PUBLIC WORKS, P.O. BOX 100, HILLSBORO, MISSOURI 63050, 636.797–5369

WATER: ON SITE WELL, JEFFERSON COUNTY PUBLIC WORKS, P.O. BOX 100, HILLSBORO, MISSOURI 63050, 636.797–5369

GAS: MISSOURI NATURAL GAS COMPANY, P.O. BOX 219, FESTUS, MISSOURI 63028, 636.931.5639

ELECTRIC: AMEREN UE, 6450 HIGHWAY MM, HOUSE SPRINGS, MISSOURI 63051, 636.671.6134

TELEPHONE: SOUTHWESTERN BELL TELEPHONE CO., 120 N. 2ND, FESTUS, MISSOURI 63028, 636.931.7506

POST OFFICE: U.S. POST OFFICE, 7050 STATE ROAD BB, CEDAR HILL, MISSOURI 63016, 800.275.8777

CABLE TV: CHARTER COMMUNICATIONS, 941 CHARTER COMMONS, TOWN AND COUNTRY, MISSOURI 63017, 866.373.3884

JEFFERSON COUNTY 911: 5475 BUCKEYE VALLEY ROAD, HOUSE SPRINGS, MISSOURI 63051, 636.797.9797

PROJECT BENCHMARK: BRONZE USC & GS TRIANGULATION STATION DISK STAMPED "HILLSBORO 2, 1962"; LOCATED 1.5 MILES +/– SOUTHWEST OF HILLSBORO ON THE NORTH RIGHT–OF–WAY LINE OF MO ROUTE B. IT IS 46 FEET NORTH OF THE CENTER OF ROUTE B; 4.3 FEET SOUTH OF A METAL AND CARSONITE WITNESS POST IN THE RIGHT–OF–WAY FENCE LINE; 72.9 FEET WEST OF RM #3 AND 96.2 FEET NORTHWEST OF RM #2. ELEVATION: 853.67'

SITE BENCHMARK: SET SPIKE IN NORTHEAST FACE OF POWER POLE. LOCATED 41.5 FEET +/– WEST FROM CENTERLINE OF MO. ROUTE B AND 79 FEET +/– SOUTH FROM CENTERLINE OF BUTCHER BRANCH COUNTY ROAD; LOCATED IN FRONT OF JEFFERSON COUNTY HIGHWAY DIVISION BUILDING. (#5275 STATE RD B) ELEVATION: 837.30

ABBREVIATIONS

N/F	NOW OR FORMERLY
w	WIDE
DB.	DEED BOOK
PB.	PLAT BOOK
PG.	PAGE
CONC.	CONCRETE
SAN.	SANITARY
MH	MANHOLE
R	RADIUS
L	LENGTH
D	DELTA
TBR	TO BE REMOVED
UIP	TO BE USED IN PLACE
D.S.	ROOF DOWNSPOUT

LEGEND

UTILITY POLE
FIRE HYDRANT
GAS VALVE
SANITARY SEWER
STORM SEWER
GAS LINE
WATER LINE
OVERHEAD ELECTRIC LINE
580 EXISTING CONTOURS
600 PROPOSED CONTOURS
PROPOSED SANITARY SEWERS
PROPOSED STORM SEWERS
PROPOSED LIGHT STANDARD

DRAWING INDEX

TITLE SHEET

Revisions | Date

DEVELOPER:
JEFFERSON COUNTY
PUBLIC WORKS DEPARTMENT
JASON JONAS, P.E. DIRECTOR
636-797-5340

SEAL: DAVID L. VONARX E-26647 DATE:

CIVIL ENGINEER

VonArx Engineering
10795 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
dvonarx@vonarxengineering.com
CERTIFICATE OF AUTHORITY 00975
OFFICE: (636) 797-8425
CELL: (314) 952-5038

NEW LIGHT FLEET MAINTENANCE
FACILITY SITE DEVELOPMENT PLAN
HILLSBORO, MISSOURI

ISSUE DATE: 2/4/2015
SCALE: NONE
Job Number: 14516
Sheet Number: C1

DEMOLITION NOTES

1. CONTRACTOR SHALL REMOVE, HAUL–OFF, AND LEGALLY DISPOSE OF ALL MATERIAL, AND ITEMS OF REFUSE.
2. CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE EXISTING UTILITIES AND OTHER ITEMS TO REMAIN IN PLACE.
3. CONTRACTOR MAY STOCKPILE BROKEN ASPHALT PAVEMENT AND GRAVEL PAVEMENT FOR USE AS ENGINEERED FILL AS DIRECTED BY THE GEOTECHNICAL ENGINEER.

STATE HIGHWAY 'B' RIGHT-OF-WAY

CHORD 197.92' (R)

S31°19'00"E (R)

160.00' (R)

N69°55'04"E

N09°12'39"W (R)

200.00' (R)

15"CMP FL=836.95'

12"RCP FL=838.22'

UTILITY POLE

GUYWIRE

TBM = 837.30'

ASPHALT

8' CHAIN LINK FENCE

GATE POST

UNDERGROUND UTILITY BOX

EXIST. SAW CUT FOR UTILITIES

EXISTING BUILDING

EXISTING WELL HEAD

IRON WATERMAIN APPROX. 8" CAST

C.O.

W

ASPHALT U.I.P.

152.40' (R)

S64°18'00"E (R)

S87°42'00"E (R) 102.15'

242.00' (R)

SIGN SHOP & VEHICLE MAINTENANCE

MAINT OFFICE & GARAGE

COMMUNCATION MANHOLE

N/F COUNTY OF JEFFERSON, STATE OF MISSOURI 674/059 173.005.0 027.

N/F COUNTY OF JEFFERSON, STATE OF MISSOURI DOC.020021672 173.005.0 028.

COUNTY EDC OFFICE

CLEARING & GRUBBING 3,206 S.F.

CLEARING & GRUBBING 2,678 S.F.

TBR

SAWCUT 135'± L.F. EXIST. ASPH. PVMT.

F.L.=835.33' U.I.P.

EXISTING ASPH. PVMT. TBR

10,467 S.F. EXISTING ASPH. PVMT. TBR

22"X14"OVAL RCP U.I.P.

32'± L.F. CONC WALL (TBR)

44'± L.F. CONC WALL (TBR)

CONCRETE TBR

3,865 S.F. EXISTING CONC. PVMT. TBR

GRAVEL TBR

20,483 S.F. EXISTING GRAVEL PVMT. TBR

F.L.=829.51'

UTILITY POLE W/LIGHT (U.I.P.)

18"HICKORY

8"OAK

20"OAK

18"OAK

BARBED WIRE FENCE U.I.P.

N/F MICHAEL A. & ANITA . JONES 1071/1958 173.005.0 042.01 ZONE LR2

466.87' (R)

DEMOLITION PLAN

NEW LIGHT FLEET MAIN–14516, Plotted On: 2/3/2015 3:12 PM

Revisions

Date

DEVELOPER:
JEFFERSON COUNTY
PUBLIC WORKS DEPARTMENT
JASON JONAS, P.E. DIRECTOR
636-797-5340

SEAL: DAVID L. VONARX E-26647 DATE:

CIVIL ENGINEER
VonArx Engineering
10785 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
dvonarx@vonarxengineering.com
CERTIFICATE OF AUTHORITY 00675
OFFICE: (636) 797-8425
CELL: (314) 952-5038

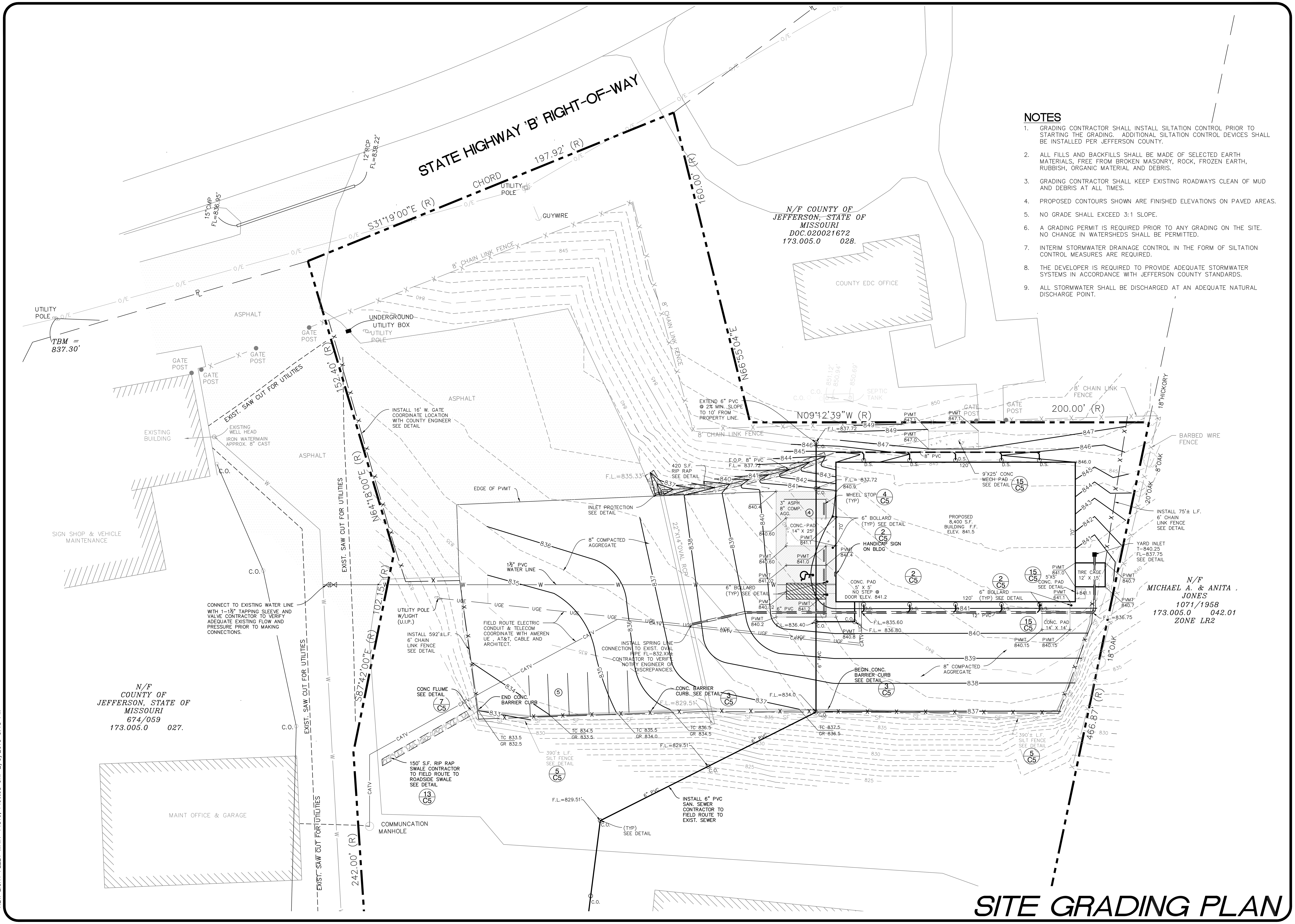
NEW LIGHT FLEET MAINTENANCE FACILITY SITE DEVELOPMENT PLAN
HILLSBORO, MISSOURI

ISSUE DATE 2/4/2015

SCALE 1"=20'

Job Number 14516

Sheet Number C2


STATE HIGHWAY 'B' RIGHT-OF-WAY
CHORD 197.92' (R)
S31°19'00"E (R)
160.00' (R)
N66°55'04"E
N09°12'39"W (R)
200.00' (R)
152.40' (R)
N64°18'00"E (R)
102.15' (R)
S87°42'00"E (R)
242.00' (R)
46.87' (R)
UTILITY POLE
TBM = 837.30'
15"CMP FL=836.95'
12"RCP FL=838.22'
GUYWIRE
8' CHAIN LINK FENCE
ASPHALT
GATE POST
UNDERGROUND UTILITY BOX
UTILITY POLE
EXIST. SAW CUT FOR UTILITIES
EXISTING WELL HEAD
IRON WATERMAIN APPROX. 8" CAST
EXISTING BUILDING
SIGN SHOP & VEHICLE MAINTENANCE
N/F COUNTY OF JEFFERSON, STATE OF MISSOURI DOC.020021672 173.005.0 028.
COUNTY EDC OFFICE
SEPTIC TANK
EXTEND 6" PVC @ 2% MIN. SLOPE TO 10' FROM PROPERTY LINE.
INSTALL 16' W. GATE COORDINATE LOCATION WITH COUNTY ENGINEER SEE DETAIL
420 S.F. RIP RAP SEE DETAIL
F.L.=835.33'
E.O.P. 8" PVC F.L.= 837.72
EDGE OF PVMT
INLET PROTECTION SEE DETAIL
8" COMPACTED AGGREGATE
22"X14" OVAL RCP
1½" PVC WATER LINE
CONNECT TO EXISTING WATER LINE WITH 1-1½" TAPPING SLEEVE AND VALVE CONTRACTOR TO VERIFY ADEQUATE EXISTING FLOW AND PRESSURE PRIOR TO MAKING CONNECTIONS.
UTILITY POLE W/LIGHT (U.I.P.)
INSTALL 592±L.F. 6' CHAIN LINK FENCE SEE DETAIL
FIELD ROUTE ELECTRIC CONDUIT & TELECOM COORDINATE WITH AMEREN UE , AT&T, CABLE AND ARCHITECT.
INSTALL SPRING LINE CONNECTION TO EXIST. OVAL PIPE FL=832.XX± CONTRACTOR TO VERIFY NOTIFY ENGINEER OF DISCREPANCIES.
CONC FLUME SEE DETAIL
END CONC. BARRIER CURB
CONC. BARRIER CURB. SEE DETAIL
150' S.F. RIP RAP SWALE CONTRACTOR TO FIELD ROUTE TO ROADSIDE SWALE SEE DETAIL
390'± L.F. SILT FENCE SEE DETAIL
N/F COUNTY OF JEFFERSON, STATE OF MISSOURI 674/059 173.005.0 027.
MAINT OFFICE & GARAGE
COMMUNCATION MANHOLE
INSTALL 6" PVC SAN. SEWER CONTRACTOR TO FIELD ROUTE TO EXIST. SEWER
(TYP) SEE DETAIL
3" ASPH. 8" COMP. AGG.
CONC. PAD 14' X 25'
WHEEL STOP (TYP)
6" BOLLARD (TYP) SEE DETAIL
HANDICAP SIGN ON BLDG
CONC. PAD 5' X 5' NO STEP @ DOOR ELEV. 841.2
PROPOSED 8,400 S.F. BUILDING F.F. ELEV. 841.5
9'X25' CONC MECH PAD SEE DETAIL
TIRE CAGE 12' X 15'
5'X5' CONC. PAD SEE DETAIL
CONC. PAD 14' X 14'
BEGIN CONC. BARRIER CURB SEE DETAIL
8" COMPACTED AGGREGATE
BARBED WIRE FENCE
18"HICKORY
8"OAK
20"OAK
18"OAK
INSTALL 75'± L.F. 6' CHAIN LINK FENCE SEE DETAIL
YARD INLET T=840.25 FL=837.75 SEE DETAIL
N/F MICHAEL A. & ANITA . JONES 1071/1958 173.005.0 042.01 ZONE LR2
390'± L.F. SILT FENCE SEE DETAIL
F.L.=829.51'

NOTES

1. GRADING CONTRACTOR SHALL INSTALL SILTATION CONTROL PRIOR TO STARTING THE GRADING. ADDITIONAL SILTATION CONTROL DEVICES SHALL BE INSTALLED PER JEFFERSON COUNTY.
2. ALL FILLS AND BACKFILLS SHALL BE MADE OF SELECTED EARTH MATERIALS, FREE FROM BROKEN MASONRY, ROCK, FROZEN EARTH, RUBBISH, ORGANIC MATERIAL AND DEBRIS.
3. GRADING CONTRACTOR SHALL KEEP EXISTING ROADWAYS CLEAN OF MUD AND DEBRIS AT ALL TIMES.
4. PROPOSED CONTOURS SHOWN ARE FINISHED ELEVATIONS ON PAVED AREAS.
5. NO GRADE SHALL EXCEED 3:1 SLOPE.
6. A GRADING PERMIT IS REQUIRED PRIOR TO ANY GRADING ON THE SITE. NO CHANGE IN WATERSHEDS SHALL BE PERMITTED.
7. INTERIM STORMWATER DRAINAGE CONTROL IN THE FORM OF SILTATION CONTROL MEASURES ARE REQUIRED.
8. THE DEVELOPER IS REQUIRED TO PROVIDE ADEQUATE STORMWATER SYSTEMS IN ACCORDANCE WITH JEFFERSON COUNTY STANDARDS.
9. ALL STORMWATER SHALL BE DISCHARGED AT AN ADEQUATE NATURAL DISCHARGE POINT.

SITE GRADING PLAN

NEW LIGHT FLEET MAINTENANCE, Plotted On: 2/3/2015 3:18 PM

Revisions | Date

DEVELOPER: JEFFERSON COUNTY PUBLIC WORKS DEPARTMENT JASON JONAS, P.E. DIRECTOR 636-797-5340

SEAL: DATE: DAVID L. VONARX E-26647

CIVIL ENGINEER: VonArx Engineering
10785 BUSINESS 21, SUITE A HILLSBORO, MISSOURI 63050 OFFICE: (636) 797-8425 CELL: (314) 952-5088 dvonarx@vonarxengineering.com CERTIFICATE OF AUTHORITY 0975

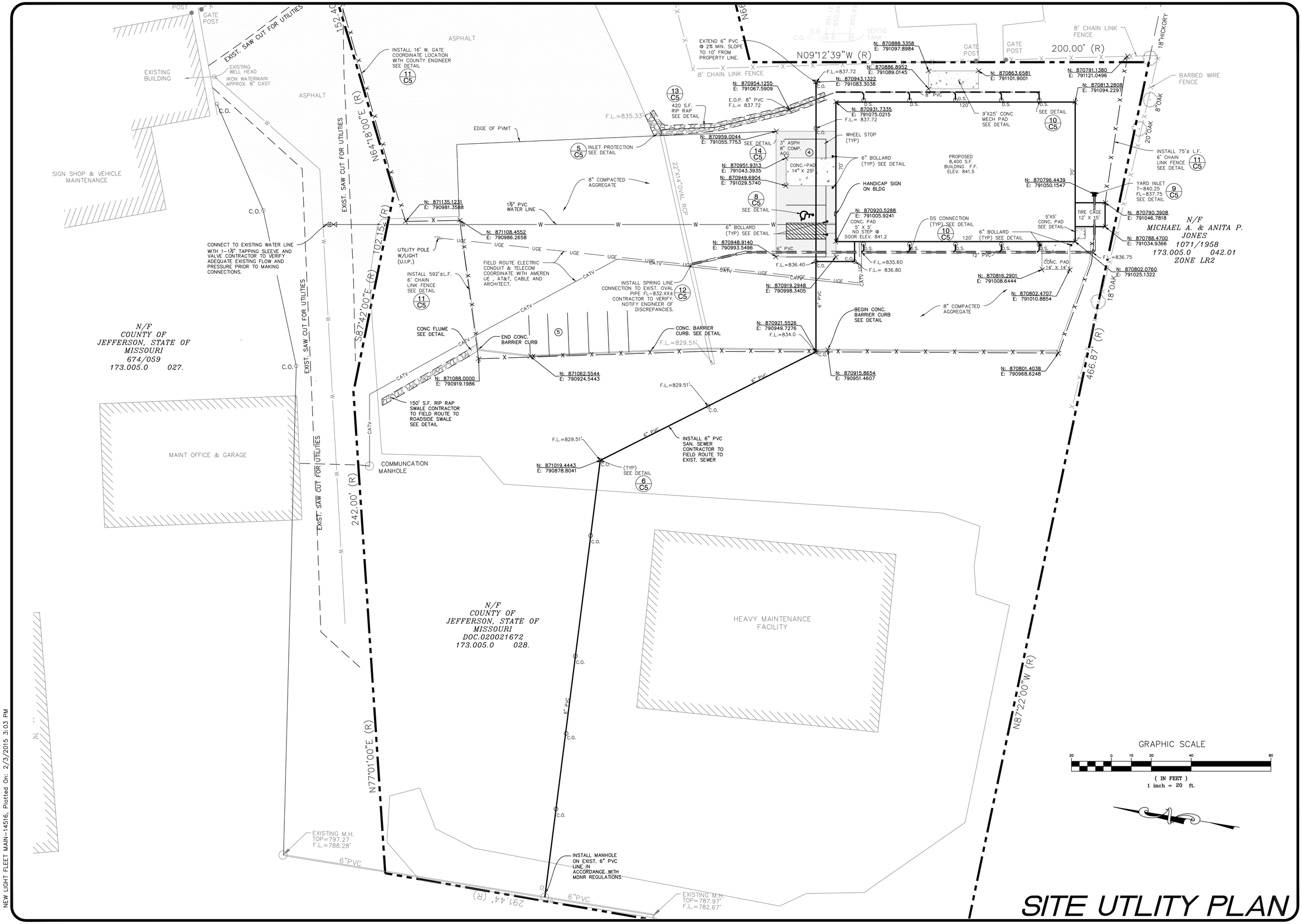
NEW LIGHT FLEET MAINTENANCE FACILITY SITE DEVELOPMENT PLAN HILLSBORO, MISSOURI

ISSUE DATE 2/4/2015

SCALE 1"=20'

Job Number 14516

Sheet Number C3



SITE UTLITY PLAN

NEW LIGHT FLEET MAIN-14516, Plotted On: 2/3/2015 3:03 PM

Revisions

Date

DEVELOPER:
JEFFERSON COUNTY
PUBLIC WORKS DEPARTMENT
JASON JONAS, P.E. DIRECTOR
636-797-5340

SEAL:
DAVID L. VONARX E-26647
DATE: 2/4/2015

CIVIL ENGINEER:
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10795 BUSINESS 21, SUITE A
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CELL: (314) 952-5038
dvonarx@vonarxengineering.com
CERTIFICATE OF AUTHORITY 00975

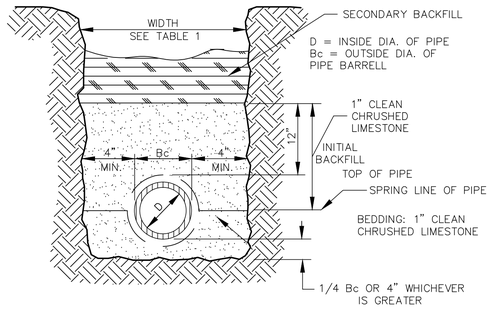
NEW LIGHT FLEET MAINTENANCE
FACILITY SITE DEVELOPMENT PLAN
HILLSBORO, MISSOURI

ISSUE DATE
2/4/2015

SCALE
1"=20'

Job Number
14516

Sheet Number
C4



1 C5 PIPE BEDDING IN EARTH
N.T.S.

NOTE: WHERE APPLICABLE AND NOT OTHERWISE STATED IN THE SPECIFICATIONS, THE MINIMUM TRENCH WIDTHS SHOWN BELOW SHALL BE THE PAY WIDTH FOR TRENCHING IN ROCK

TABLE 1

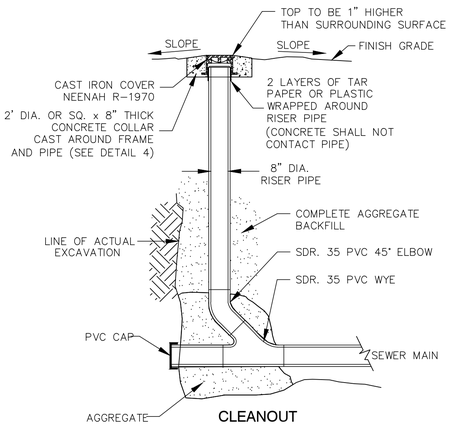
INSIDE DIA. OF PIPE	MINIMUM TRENCH WIDTH (INCHES)	MAXIMUM TRENCH WIDTH (INCHES)
8	24	30
10	24	30
12	24	30
15	30	36
18	36	36
24	38	42
30	44	49
36	48	55

INITIAL BACKFILL:
1" CLEAN CHRUSHED LIMESTONE

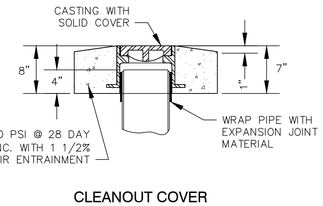
SECONDARY BACKFILL:
1.) IN PAVED AREAS, COMPLETE AGGREGATE BACKFILL WITH 1" CLEAN CRUSHED LIMESTONE.
2.) IN UNPAVED AREAS, CAREFULLY PLACED AND COMPACTED SELECT EARTH BACKFILL IN 6" LAYERS.

BEDDING AND PRIMARY BACKFILL SHALL BE 1" CLEAN CRUSHED LIMESTONE. AT THE CONTRACTORS OPTION, CRUSHED LIMESTONE HAVING THE FOLLOW GRADATION MAY BE USED.

SIEVE SIZE:	% PASSING:	SIEVE SIZE:	% PASSING:
1 1/2"	100%	#8	25–60%
1"	100%	#16	20–40%
1/2"	60–100%	#20	MAX.–15%
#4	40–80%		

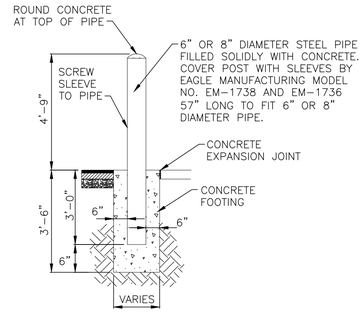


CLEANOUT



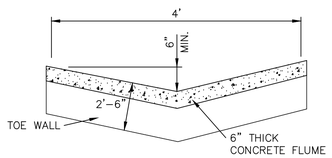
CLEANOUT COVER

6 C5 CLEANOUT DETAIL
N.T.S.



2 C5 TYPICAL BOLLARD DETAIL
N.T.S.

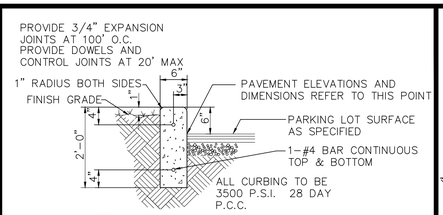
NOTE: PLACE BOLLARD PRIOR TO INSTALLING PAVEMENT. EXPANSION JOINT NOT USED WITH ASPHALT PAVEMENT.



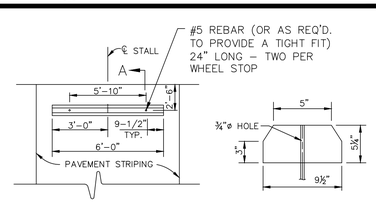
NOTES:

1. CONCRTE SHALL BE 4000 p.s.i. STRENGTH AT 28 DAYS.
2. TOE WALL SHALL BE CONSTRUCTED AT BOTH UPSTREAM AND DOWNSTREAM ENDS.
3. 1/2" PREFORMED FIBER JOINT WITH JOINT SEALER TO BE CONSTRUCTED AS TRANSVERSE JOINT AT 50' INTERVALS.
4. MINUMUM CHANNEL SLOPE TO BE 0.5%.
5. DISTURBED AREAS TO BE SEEDED AND MULCHED UPON COMPLETION OF CONSTRUCTION AND EROSION CONTROL DEVICES INSTALLED PER DIRECTION OF OWNER OR ENGINEER.

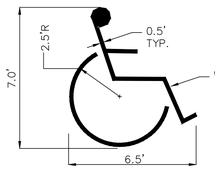
7 C5 CONCRETE FLUME DETAIL
N.T.S.



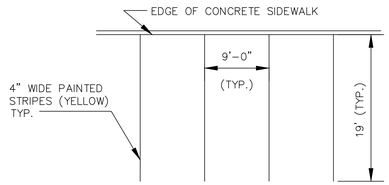
3 C5 BARRIER CURB DETAIL
N.T.S.



4 C5 TYPICAL PRECAST CONCRETE WHEEL STOP
N.T.S.

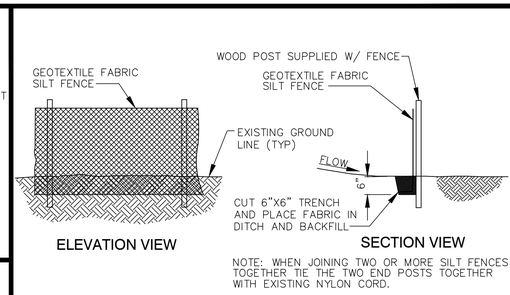


HANDICAP SYMBOL DETAIL



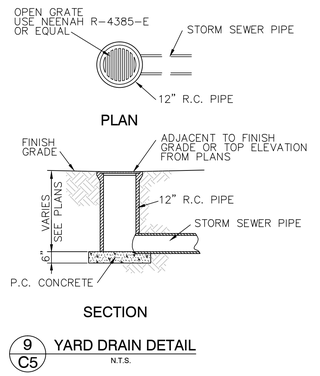
PARKING SPACE STRIPING

8 C5 PARKING DETAILS
N.T.S.

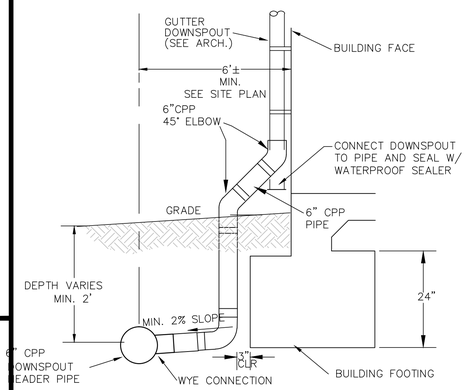


NOTE: WHEN JOINING TWO OR MORE SILT FENCES TOGETHER TIE THE TWO END POSTS TOGETHER WITH EXISTING NYLON CORD.

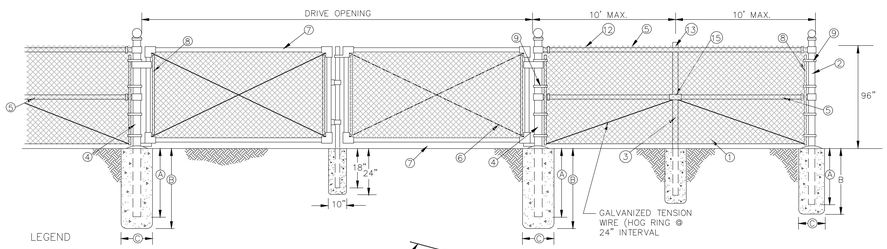
5 C5 SILTATION CONTROL SILTFENCE DETAIL
N.T.S.

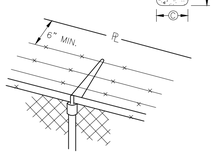


9 C5 YARD DRAIN DETAIL
N.T.S.

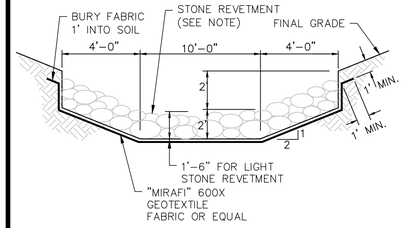


10 C5 DOWNSPOUT CONNECTION
N.T.S.



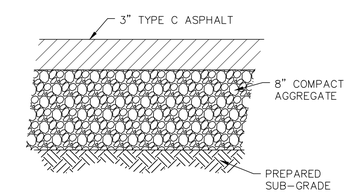


BARBED WIRE TOP DETAIL

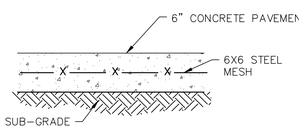


NOTES:
1. STONE REVETMENT SHALL BE SOUND, DURABLE AND FREE FROM CRACKS AND OTHER STRUCTURAL DEFECTS THAT WOULD CAUSE IT TO DETERIORATE. IT SHALL NOT CONTAIN ANY SOAPSTONE, SHALE OR OTHER MATERIAL EASILY DISINTEGRATED. STONE REVETMENT SHALL BE AT LEAST 6 INCH TO 8 INCH DIAMETER.

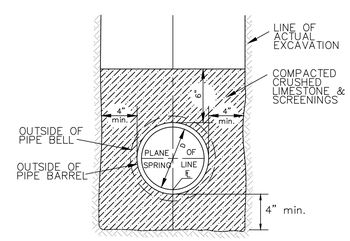
13 C5 STONE REVETMENT SWALE DETAIL
N.T.S.



14 C5 ASPHALT PAVEMENT DETAIL
N.T.S.



15 C5 CONCRETE PAVEMENT DETAIL
N.T.S.



PIPE BEDDING CLASS "C"
(FOR ALL PIPE EXCEPT REINFORCED CONCRETE PIPE)

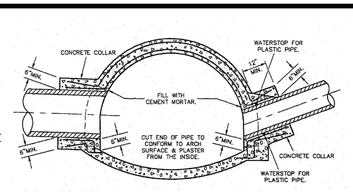
16 C5 PIPE BEDDING DETAILS
N.T.S.

DESCRIPTION		HEIGHT OF FENCE 72" SIZE	#/FT.
② END CORNER, & PULL POST	ROUND	2–1/2"	5.79
	Ⓐ	36"	
	Ⓑ & Ⓒ	42"x12"	
③ LINE POST	ROUND	2"	3.65
	H–SECT.	5" x 1.95"	3.26
	Ⓐ	36"	
	Ⓑ Ⓒ	42"x10"	
④ GATE POST * (SINGLE GATE OR I LEAF OF DOUBLE) WIDTH	6' AND LESS	2 1/2"ø	5.79
	13' AND LESS	3 1/2"ø	9.10
	18' AND LESS	6"ø	18.97
	OVER 18'	8"ø	24.70
⑤ TOP RAIL AND BRACE		1–1/4"	2.27
⑥ TRUSS ROD		3/8"	
⑦ GATE FRAME	ALL WIDTHS	1–1/2" Ø	2.72

NOTES:
1. DO NOT SCALE DRAWING. FOLLOW DIMENSIONS.
2. MATERIAL SHALL BE BLACK VINYL COATED STEEL FENCING.
3. WEIGHTS OF MATERIALS SHOWN IN TABLE ARE FOR STEEL SIZES. SHOWN ARE APPLICABLE FOR ALL MATERIALS.
4. PULL POSTS SHALL BE USED AT SHARP BREAKS IN VERTICAL GRADE OR AT APPROXIMATE 500' CENTERS ON STRAIGHT RUNS OR AS DIRECTED BY THE ENGINEER.
5. DRILLED HOLES ON CENTER IN SOLID ROCK SHALL PROVIDE A DIAMETER OF NOT LESS THAN TWO INCHES GREATER THAN THE MAXIMUM TRANSVERSE DIMENSION OF THE POST SECTION.
6. ALTERNATE FOR TOP RAIL AND BRACE 5 MAY BE TUBULAR 1–5/8" O.D. (±.005") AT 1.35 POUNDS PER FOOT (TOLERANCE – 5±; + NO LIMIT).
7. CONCRETE FOR FOOTINGS SHALL BE CLASS B. A QUICK SETTING POLYURETHANE FOAM MAY BE USED IN LIEU OF CONCRETE FOR LINE POST OR LINE POST MAY BE DRIVEN AS SHOWN ON THE PLANS.
8. GATE STOPS AND THE DIRECTION OF SWING SHALL BE SHOWN ON THE PLANS.

11 C5 CHAIN-LINK FENCE DETAIL
N.T.S.

NOTES:
1. OPENING INTO EXISTING SEWER TO BE CAREFULLY BUT TO AVOID DAMAGE TO ADJACENT MASONRY.
2. HOLE TO BE CUT TO PROPER ELEVATION AND ANGLE TO ALLOW AT LEAST TWO INCHES SPACE AROUND THE OUTSIDE OF THE PIPE.
3. THIS SPACE WILL BE SOLIDLY FILLED WITH 1 TO 3 CEMENT TO SAND MORTAR MIX, COMPACTED INTO PLACE AFTER THE PIPE HAS BEEN INSERTED AND PROPERLY SUPPORTED TO LINE AND GRADE.
4. EXISTING REINFORCING BARS ARE TO BE BENT BACK INTO THE CONCRETE COLLAR AROUND THE PIPE TO PROVIDE REINFORCEMENT EQUALLY ON ALL SIDES.



12 C5 CONNECTIONS TO OVAL SEWERS
N.T.S.

DETAILS

Revisions
Date

DEVELOPER:
JEFFERSON COUNTY
PUBLIC WORKS DEPARTMENT
JASON JONAS, P.E. DIRECTOR
636-797-5340

SEAL:
DATE:
DAVID L. VONARX E–26647

CIVIL ENGINEER:
VonArx Engineering
10795 BUSINESS 21, SUITE A
HILLSBORO, MISSOURI 63050
OFFICE: (636) 797-8425
CELL: (314) 952-5038
dvonarx@vonarxengineering.com
CERTIFICATE OF AUTHORITY 00975

NEW LIGHT FLEET MAINTENANCE FACILITY SITE DEVELOPMENT PLAN
HILLSBORO, MISSOURI

ISSUE DATE
2/4/2015
SCALE
NTS
Job Number
14516
Sheet Number
C5

NEW LIGHT FLEET MAIN–14516, Plotted On: 2/3/2015 1:48 PM

			15 YR-20 MIN. RUN OFF	
ID	D.A. (ac)	% IMP.	PI (CFS/AC)	Q (CFS)
DA1	0.14	40	2.39	0.32
DA2	0.29	40	2.39	0.68
DA3	0.48	40	2.39	1.14
DA4	0.17	95	3.54	0.62
DA5	0.04	95	3.54	0.15
DA6	0.10	100	4.20	0.40
DA7	0.31	95	3.54	1.10
DA8	0.10	100	4.20	0.41
DA9	0.17	95	3.54	0.61

STATE HIGHWAY 'B' RIGHT-OF-WAY

S31°19'00"E (R) CHORD 197.92' (R)

N09°12'39"W (R) 161.00' (R)

N66°53'00"E 200.00' (R)

S87°42'00"E (R) 102.15' (R)

N64°18'00"E (R) 152.40' (R)

N09°12'39"W (R) 200.00' (R)

S87°42'00"E (R) 466.87' (R)

DA1 DA2 DA3 DA4 DA5 DA6 DA7 DA8 DA9

15" CMP FL=836.95'

12" RCP FL=838.22'

TBM = 837.30'

GUYWIRE

UTILITY POLE

8' CHAIN LINK FENCE

UNDERGROUND UTILITY BOX

GATE POST

ASPHALT

EXIST. SAW CUT FOR UTILITIES

EXISTING BUILDING

EXISTING WELL HEAD

IRON WATERMAIN APPROX. 8" CAST

C.O.

SIGN SHOP & VEHICLE MAINTENANCE

MAINT OFFICE & GARAGE

N/F COUNTY OF JEFFERSON, STATE OF MISSOURI 674/059 173.005.0 027.

N/F COUNTY OF JEFFERSON, STATE OF MISSOURI DOC.020021672 173.005.0 028.

COUNTY EDC OFFICE

PROPOSED ROCK PVMT AREA= 6,223 S.F. (ORIGINALLY ASPH PVMT)

F.L.=835.33

F.L.=829.51

22"X14" OVAL RCP

1½" PVC WATER LINE

CONNECT TO EXISTING WATER LINE WITH 1-1½" TAPPING SLEEVE AND VALVE CONTRACTOR TO VERIFY ADEQUATE EXISTING FLOW AND PRESSURE PRIOR TO MAKING CONNECTIONS.

UTILITY POLE W/LIGHT (U.I.P.)

390'± L.F. SILT FENCE SEE DETAIL

INSTALL 6" PVC SAN. SEWER CONTRACTOR TO FIELD ROUTE TO EXIST. SEWER

COMMUNCATION MANHOLE

NEW IMPERVIOUS AREA = 1,212 S.F.

BARBED WIRE FENCE

N/F MICHAEL A. & ANITA P. JONES 1071/1958 173.005.0 042.01 ZONE LR2

NOTE:
INCREASE IN IMPERVIOUS AREA IS 1,212 S.F. < 12,000 S.F.
STORM WATER DETENTION NOT REQUIRED

PROPOSED DRAINAGE AREA PLAN

Revisions

Date

DEVELOPER:
JEFFERSON COUNTY
PUBLIC WORKS DEPARTMENT
JASON JONAS, P.E. DIRECTOR
636-797-5340

SEAL: DATE: DAVID L. VONARX E-26647

CIVIL ENGINEER:
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CERTIFICATE OF AUTHORITY: 00675

NEW LIGHT FLEET MAINTENANCE
FACILITY SITE DEVELOPMENT PLAN
HILLSBORO, MISSOURI

ISSUE DATE
2/4/2015

SCALE
1"=20'

Job Number
14516

Sheet Number
C6

NEW LIGHT FLEET MAIN-14516, Plotted On: 2/3/2015 3:20 PM