PROJECT MANUAL
FOR THE CONSTRUCTION OF

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION

GRAFTON, WISCONSIN

AppliedTechnologies
Engineers - Architects

VOLUME 2

JANUARY 2016

VILLAGE OF GRAFTON

RIVER BEND ROAD & LIFT STATION

GRAFTON, WISCONSIN

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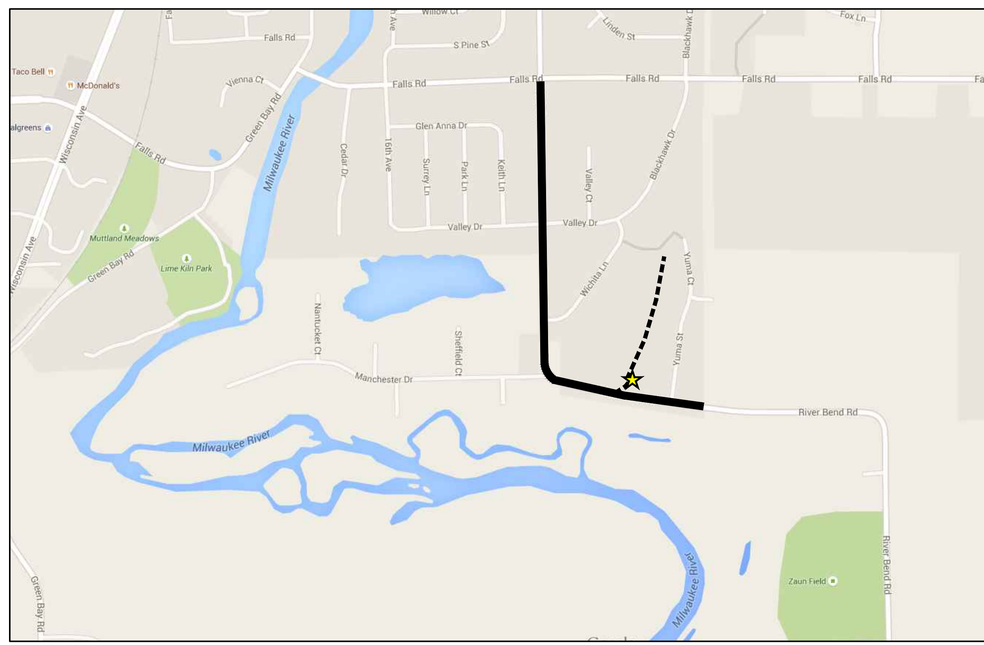
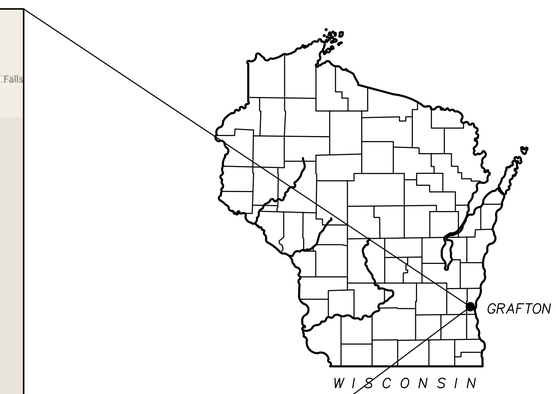


★ PROJECT LOCATION

N LOCATION MAP



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- INDICATES FACILITY NUMBER SEE LOCATION PLAN, DWG 20-G-1
- INDICATES DRAWING NUMBER
- INDICATES DISCIPLINE:
  - A ARCHITECTURAL
  - C CIVIL
  - E ELECTRICAL
  - G GENERAL
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- DUAL LETTERS INDICATE COMBINED DISCIPLINES

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1:1
PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY

NO.	DATE	REVISION	BY	APVD

Applied Technologies
Engineers - Architects

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

PROJECT REFERENCE
GENERAL
TITLE SHEET

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ABBREVIATIONS

@	AT
AAD	AUTOMATIC CONTROL AIR DAMPER
A/B	AERATION BASIN
AB	ANCHOR BOLT
ABV	ABOVE
ABDN	ABANDONED
ACA	AT CEILING ABOVE
ACBD	ACOUSTICAL BOARD
ACC	AIR COOLED COMPRESSOR/CONDENSING UNIT
ACST	ACOUSTICAL TILE
ACT	ACOUSTICAL
AD	AREA DRAIN
ADDL	ADDITIONAL
ADJ	ADJACENT
AFF	ABOVE FINISHED FLOOR
AHR	ANCHOR
AL	ALUMINUM
ALTN	ALTERNATE
ANOD	ANODIZED
APPROX	APPROXIMATE
APVD	APPROVED
ARCH	ARCHITECTURAL
AS	AIR SCRUBBER
ASPH	ASPHALT
ASSY	ASSEMBLY
ASU	CENTRAL STATION AIR HANDLING UNIT
AVG	AVERAGE
B	BOILER
BC	BOOSTER COIL
BD	BOARD
BEL	BELOW
BETW	BETWEEN
BF	BOTTOM FACE
BLDG	BUILDING
BLK	BLOCK
BM	BEAM
B.O.	BOTTOM OF
BOD	BOTTOM OF DUCT
BOD 5	BIOCHEMICAL OXYGEN DEMAND (5 DAY TEST)
BOP	BOTTOM OF PIPE
BOT/BTM	BOTTOM
BRG	BEARING
CAB	CABINET
CAF	CABINET FAN
CARP	CARPET
CB	CATCH BASIN
CC	COOLING COIL
C/C	CHLORINE CONTACT
CEF	CEILING EXHAUST FAN
CEM PLAS	CEMENT PLASTER
CF	CENTRIFUGAL FAN
CFM	CUBIC FEET PER MINUTE
CG	CORNER GUARD
CH	COAT HOOK
CHEM	CHEMICA
CHKD	CHECKERED
CJ	CONSTRUCTION JOINT
C/L	CENTER LINE
CI	CAST IRON
CL	CLOSET
CL 2	CHLORINE
CLG	CEILING
CLP	CLAY PIPE
CLR	CLEAR
CMP	CORRUGATED METAL PIPE
CMU	CONCRETE MASONRY UNITS
CO	CLEANOUT
COD	CHEMICAL OXYGEN DEMAND
COL	COLUMN
COMM	COMMUNICATION
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS, CONTINUED
CJ	CONTROL JOINT
CONTR	CONTRACTOR
COR	CORNER
CP	CONCRETE PIPE
CPLG	COUPLING
CT	CERAMIC TILE
CPVC	CHLORINATED POLYVINYL CHLORIDE
CRS	COURSES
C TO C	CENTER TO CENTER
CTR	CENTER
CTRD	CENTERED
CU FT	CUBIC FEET
CUH	CABINET UNIT HEATER
CW	COLD WATER
	CENTRAL ANGLE

D	DRAIN
DBA	DEFORMED BAR ANCHOR
DBL	DOUBLE
DECHLOR	DECHLORINATION
DET	DETAIL
DF	DRINKING FOUNTAIN
DH	DEHUMIDIFIER
DI	DUCTILE IRON
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIP	DUCTILE IRON PIPE
DIR	DIRECTION
DRWR	DRAWER
DN	DOWN
DISCH	DISCHARGE
DS	DOWNSPOUT
DWG	DRAWING
DWL	DOWEL
E	EAST
E	EXTERNAL
EA	EACH
EB	EXPANSION BOLT
ECC	ECCENTRIC
EDH	ELECTRIC DUCT HEATER
EE	EMERGENCY EYE WASH
EF	EACH FACE
EFL	EFFLUENT
EHD	ELECTRIC HAIR DRYER
EL	ELEVATION
ELB	ELBOW
ELEC	ELECTRICAL
ELEV	ELEVATOR
EQL	EQUAL
EQL SP	EQUALLY SPACED
EQPT	EQUIPMENT
EUH	ELECTRIC UNIT HEATER
EW	EACH WAY
EWC	ELECTRIC WATER COOLER
EXF	EXHAUST FAN
EJ	EXPANSION JOINT
EXT	EXTERIOR
EXST	EXISTING
FAB	FABRICATION
FACIL	FACILITY
FB	FLAT BAR
FCO	FLOOR CLEANOUT
FCTY, FACT	FACTORY
FD	FLOOR DRAIN
FDN	FOUNDATION
F. EXT	FIRE EXTINGUISHER
FFA	FROM FLOOR ABOVE
FFB	FROM FLOOR BELOW
F FL EL	FINISHED FLOOR ELEVATION
FLL	FLOW LINE ELEVATION
FLEX	FLEXIBLE
FLG	FLANGE
FLR	FLOOR
FM	FORCE MAIN
FNSH	FINISH
FNSH GD	FINISHED GRADE
FNV	FOLDED NAPKIN VENDOR
FO	FIBER OPTIC
FP	FIN TUBE CONVECTOR
FR	FIRE RATED
FRP	FIBERGLASS REINFORCED PLASTIC
FT	FOOT
FTG	FOOTING
FVNR	FULL VOLTAGE NON-REVERSING
FVR	FULL VOLTAGE REVERSING
GA	GAUGE
GAL	GALLON
GALV	GALVANIZED
GALVS	GALVANIZED STEEL
GB	GRAB BAR
GPD	GALLONS PER DAY
GWB	GYPSUM WALLBOARD
GYP PLAS	GYPSUM PLASTER

H.A.S	HEADED ANCHOR STUD
HC	HEATING COIL
HCR	HAT & COAT RACK
HD	HUB DRAIN
HDNR	HARDENER
HDR	HEADER
HDW	HARDWARE
HGT	HEIGHT
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HPRV	HYDROSTATIC PRESSURE RELIEF VALVE
HR	HOUR
HVAC	HEATING, VENTILATING, & AIR CONDITIONING
HW	HOT WATER
HWP	HOT WATER PUMP
HWRP	HOT WATER RADIANT PANEL
HX	HEAT EXCHANGER
HYD	HYDRANT
I&C	INSTRUMENTATION AND CONTROL
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IF	INSIDE FACE
IG	INSULATING GLASS
INFL	INFLUENT
INSTL	INSTALL
INSUL	INSULATION
INT	INTERIOR
INTMD	INTERMEDIATE
INV	INVERT
ITG	INSULATED TEMPERED GLASS
JAN	JANITOR
JT	JOINT
KVA	KILOVOLT-AMPERE
KSK	KITCHEN SINK
L	LENGTH OF CURVE
L	ANGLE
LAV	LAVATORY
LB	POUNDS
LB/D	POUNDS PER DAY
LCP	LOCAL CONTROL PANEL
LCUS	LOAD CENTER UNIT SUBSTATION
LF	LINEAL FEET
LG	LONG
LIW	LOAD INDICATING WASHERS
LL	LIVE LOAD
LLV	LONG LEG VERTICAL
LNTL	LINTEL
LONG	LONGITUDINAL
LOS	LOCKOUT STOP PUSHBUTTON
LR	LONG RADIUS
LT	LIGHT
LV	LABORATORY VACUUM
LV	LOW VOLTAGE
LW	LONG WAY
M-X	MIRROR
MATL	MATERIAL
MAX	MAXIMUM
MB	MACHINE BOLT
MBH	THOUSAND BTU PER HOUR
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MECH	MECHANICAL
MFR	MANUFACTURER
MGD	MILLION GALLONS PER DAY
MG/L	MILLIGRAMS PER LITRE
MH	MANHOLE
MH	MOP HOLDER
MIN	MINIMUM
MISC	MISCELLANEOUS
MJ	MECHANICAL JOINT
MLSS	MIXED LIQUOR SUSPENDED SOLIDS
MLVSS	MIXED LIQUOR VOLATILE SUSPENDED SOLIDS
MO	MONTH
MO	MASONRY OPENING
MON	MONUMENT
MTG	MOUNTING
MTL	METAL
MTRG	METERING
N	NORTH
NIC	NOT IN CONTRACT
NO.	NUMBER
NOM	NOMINAL
NORM	NORMAL
NTS	NOT TO SCALE
OC	ON CENTER
OD	OUTSIDE DIAMETER, OVERFLOW DRAIN
OF	OUTSIDE FACE
O/H	OVERHEAD
OPNG	OPENING
OPP	OPPOSITE
O TO O	OUT TO OUT
OZ.	OUNCE

P&ID	PROCESS AND INSTRUMENTATION DIAGRAM
PBX	PULL BOX
PC	POINT OF CURVATURE
P/C	PRIMARY CLARIFIERS
PE	PLAIN END
PF	PROPELLER FAN
PH	PHASE
PI	POINT OF INTERSECTION
PJF	PREMOLDED JOINT FILLER
P/L	PROPERTY LINE
PL	PLATE
PLAM	PLASTIC LAMINATE
PLAS	PLASTER
PLYWD	PLYWOOD
POC	POINT ON CURVE
POT	POINT ON TANGENT
PR	PAIR
PRCST	PRECAST
PROJ	PROJECTION
PS	PUMP STATION
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT	POINT OF TANGENCY
PTD	PAPER TOWEL DISPENSER
PTD/R	PAPER TOWEL DISPENSER/RECPTACLE
PVC	POINT OF VERTICAL CURVATURE
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
PVMT	PAVEMENT
PVT	POINT OF VERTICAL TANGENCY
PWS	PLASTIC WATER STOP
QDRNT	QUADRANT
QT	QUARRY TILE
R	R-VALUE (INSULATION)
R OR RAD	RADIUS
R	RISER
RC	REINFORCED CONCRETE
RCP	REINFORCED CONCRETE PIPE
RD	ROOF DRAIN
RDCR	REDUCER
REC	RECESSED EXTINGUISHER CABINET
REFR	REFRIGERATOR
REHAB	REHABILITATION
REINF	REINFORCE
REQD	REQUIRED
RESIL	RESILIENT
RF	RETURN FAN
RH	ROBE HOOK
RM	ROOM
RO	ROUGH OPENING
RR	RAILROAD
RS	ROOF SUPPLY
RST	REINFORCING STEEL
S	SOUTH
SAN	SANITARY SEWER
SAT	SUSPENDED ACOUSTICAL TILE
SC	SHOWER CURTAIN
S/C	SECONDARY CLARIFIERS
SCHED	SCHEDULE
SCR	SHOWER CURTAIN ROD
SD	SOAP DISPENSER
SD/GB	SOAP DISH & GRAB BAR
SEAL.	SEALER
SECT	SECTION
SF	SUPPLY FAN
SG	SAFETY GLASS
SH	SHEET
SH	SHOWER
SHS	FOLD-UP SHOWER SEAT
SHTG	SHEETING
SIM	SIMILAR
SK	SINK
SLV	SHORT LEG VERTICAL
SND	SANITARY NAPKIN DISPENSER1
S.O.	SHUTOFF
SPECD	SPECIFIED
SPECS	SPECIFICATIONS
SPG	SPACING
SQ	SQUARE
SQF	SEAMLESS QUARTZ FLOORING
SS	SUBSTATION
SSH	SAFETY SHOWER
SSK	SERVICE SINK
SST	STAINLESS STEEL
STA	STATION
STD	STANDARD
STIF	STIFFENER
ST	STORM SEWER
STOR	STORAGE
STR	STRAIGHT
STRUCT	STRUCTURAL
STL	STEEL
SUSP	SUSPENDED
SW	SHORT WAY
SWD	SIDE WATER DEPTH
SYMM	SYMMETRICAL

T	TANGENT LENGTH
T	TINTED
T	TREAD
T&B	TOP AND BOTTOM
T&G	TONGUE AND GROOVE
TC	TOP OF CONCRETE
TD	TOWEL DISPENSER
TD	TRENCH DRAIN
TEL	TELEPHONE
TEMP	TEMPORARY
TF	TOP FACE
TFA	TO FLOOR ABOVE
TFB	TO FLOOR BELOW
TG	TEMPERED GLASS
THK	THICK
THRD	THREADED
T.O.	TOP OF
TP	TOWEL PIN
TPD	TONS PER DAY
TPI	TURNOUT POINT OF INTERSECTION
TRANSV	TRANSVERSE
TSS	TOTAL SUSPENDED SOLIDS
TST	TOP OF STEEL
TTC	TELEPHONE TERMINAL CABINET
TT	TOILET TISSUE DISPENSER
TW	TOP OF WALL
TYP	TYPICAL
UF	UTILITY FAN
UG	UNDERGROUND
UHE	ELECTRIC UNIT HEATER
UHG	GAS UNIT HEATER
UHW	HOT WATER UNIT HEATER
UPS	UNINTERRUPTIBLE POWER SUPPLY
UR	URINAL
V	VENT
VB	VINYL BASE
VCP	VITRIFIED CLAY PIPE
VCT	VINYL COMPOSITION TILE
VD	MANUAL AIR VOLUME DAMPER
VE	VEHICLE EXHAUST SYSTEM
VERT	VERTICAL
VP	VAPOR PROOF
VTR	VENT THRU ROOF
VWC	VINYL WALL COVERING
W	WEST
W/	WITH
WAT	WATER MAIN
WC	WATER CLOSET
WD	WOOD
WE	WALL EXHAUSTER
WG	WIRE GLASS
WH	WATER HEATER
WK	WEEK
WP	WORKING POINT
WR	WASTE RECEPTACLE
WR GWB	WATER RESISTANT GYPSUM WALLBOARD
WS	WASH STATION
WS	WATER STOP OR WATERSURFACE
WS	WELDED STEEL
WWF	WELDED WIRE FABRIC
XFMR	TRANSFORMER
YR	YEAR

DETAIL LEGEND

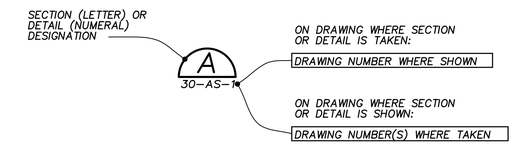
STANDARD DETAIL DESIGNATION

* (13280) STANDARD DETAIL NUMBER

02000-02999	CIVIL/SITEWORK DETAILS
03000-05999	ARCHITECTURAL/STRUCTURAL DETAILS
04000-04999	ARCHITECTURAL/STRUCTURAL DETAILS
05000-05999	ARCHITECTURAL/STRUCTURAL DETAILS
06000-10999	ARCHITECTURAL/STRUCTURAL DETAILS
13000-13999	I & C DETAILS
15000-15999	MECHANICAL DETAILS
16000-16999	ELECTRICAL DETAILS

* NOTE:
ALL STANDARD DETAILS APPLY TO THE ENTIRE PROJECT WHETHER SPECIFICALLY CALLED OUT OR NOT.

DETAIL AND SECTION DESIGNATION



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NO.	DATE	REVISION	BY	APVD

Applied Technologies
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VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

PROJECT REFERENCE
ABBREVIATIONS AND DETAIL LEGEND

PROJECT NO.	DATE
5582	JAN 2016

DRAWING NO. 10-G-2

PSLTSCALE: 1 LTSCALE: 1
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STANDARD SITEWORK LEGEND & SYMBOLS

NOTE:
THIS IS A STANDARD LEGEND AND NOT ALL OF THE INFORMATION SHOWN MAY BE USED ON THIS PROJECT.

EXISTING	DESCRIPTION	PROPOSED
	BENCHMARK	
	MONUMENT	
R/W	RIGHT OF WAY MARKER	
	IRON PIPE (PROPERTY CORNER)	
	IRON ROD/SPIKE	
	CONTROL POINT	
	CHISELED CROSS	
625.35	SPOT ELEVATION	
	SOIL BORING	
	MONITORING WELL	
	LIFT STATION	
	MANHOLES	
CO	CLEANOUT	
	WELL	
	HYDRANT	
	VALVES (GAS/WAT)	
	CURB STOP	
	CURB INLET/BASIN	
	YARD INLET/BASIN	
	CORRUGATED METAL PIPE	
	REINFORCED CONCRETE PIPE END SECTION	
	METERS (ELEC/GAS/WATER)	
	PEDESTALS (ELEC/TEL/CTV)	
	POWERLINE TOWER	
	UTILITY POLE	RELOCATED
	GUY WIRE / DEAD MAN	
	TRAFFIC SIGNAL POLE	
	TRAFFIC SIGNAL BOX/PULL BOX	
	LIGHT POLE	
	FLOOD LIGHT/YARD LIGHT	
	DECIDUOUS TREE	REMOVED
	CONIFEROUS TREE	REMOVED
	DECIDUOUS BUSH/SHRUB	REMOVED
	CONIFEROUS BUSH/SHRUB	REMOVED
	STUMP	REMOVED
	ROCK/BOULDER	
MB	MAILBOX	
POST	GUARD METAL/WOOD POST	
	FLAG POLE	
	SIGN POST/BILLBOARD POLE	
	WATER SURF. EL.	

EXISTING	DESCRIPTION	PROPOSED
	TO BE ABANDONED	
	TO BE REMOVED	
	SECTION LINE	
R/W	RIGHT OF WAY (ROW)	
P/L	PROPERTY LINE	
	EASEMENT (PERMANENT)	
	EASEMENT (TEMPORARY)	
	ROAD CENTERLINE	5+00
100YR	100 YEAR FLOODPLAIN	
	WETLAND	
SAN	SANITARY SEWER	SAN
W	WATER MAIN	W
FM	FORCE MAIN	FM
ST	STORM SEWER	ST
G	GAS LINE	
FO	FIBER OPTIC	
OE, E, UE	ELECTRICAL	
OT, T, UT	TELEPHONE	
OC, CTV, UC	CABLE TV	
	DITCH/SWALE	
	DECIDUOUS WOODS OR BRUSH	
	EVERGREEN WOODS OR BRUSH	
	FENCE	
	ROCK WALL	
	RAILROAD	
EOW	EDGE OF LAKE, RIVER, ETC.	
TB BB	TOP/BOTTOM OF BANK	
	CULVERT (CMP UNLESS NOTED)	
742	CONTOUR	742
HP	HIGH POINT	HP
	SAWCUT	XXXXXXXXXXXXXXXXXXXXXXXXX
	SILT FENCE	

EXISTING	DESCRIPTION	PROPOSED
GRAVEL	GRAVEL ROAD	GRAVEL
ASPH	PAVED ROADWAY	ASPH
ASPH	PAVED ROADWAY W/CURB & GUTTER	ASPH
	STRUCTURE	
CONC	PORTLAND CEMENT CONCRETE PAVEMENT	CONC
CONC	CONCRETE WALK	

LANDSCAPING LEGEND

DECIDUOUS TREE (10" ø)

CONIFEROUS TREE (10" ø)

DECIDUOUS SHRUB, LARGE (6' ø)

CONIFEROUS SHRUB, LARGE (6' ø)

DECIDUOUS SHRUB, MEDIUM (4' ø)

CONIFEROUS SHRUB, MEDIUM (4' ø)

DECIDUOUS SHRUB, SMALL (2' ø)

CONIFEROUS SHRUB, SMALL (2' ø)

ORNAMENTAL GRASSES

NO MOW LAWN

PERENNIALS

BENCHMARK

NO.	DESCRIPTION/LOCATION	NORTHING	EASTING	ELEV.
17	BENCHMARK AT INTERSECTION OF RIVER BEND ROAD AND LAKEFIELD ROAD	-249.41	7865.18	719.11

CONTROL POINTS

NO.	DESCRIPTION/LOCATION	NORTHING	EASTING	ELEV.
15	SECTION CORNER AT THE CENTERLINE INTERSECTION OF FALLS ROAD AND 17TH AVENUE	5000.00	5000.00	797.01
1076	SPIKE IN NORTH SHOULDER OF RIVER BEND ROAD, 2.2' NORTH OF EDGE OF PAVEMENT AND 22.4' WEST OF C/L OF CULVERT AT LOW POINT IN RIVER BEND ROAD	2633.63	5388.95	696.84
1077	SPIKE IN SHOULDER, 1.6' EAST OF EDGE OF PAVEMENT OF RIVER BEND ROAD AT MANCHESTER DRIVE AND 127.4' WEST OF LIGHT POLE LOCATED 137' EAST OF MANCHESTER AND 17TH.	2721.36	5131.73	700.65

NEW STRUCTURE LOCATION INDEX

STRUCTURE	LOCATION POINT	NORTHING	EASTING
LIFT STATION	NORTHWEST CORNER	2664.024	5724.189
	NORTHEAST CORNER	2658.939	5754.432
WET WELL	CENTER OF WET WELL	2655.990	5708.643

DESIGNED BY W.A.H.	VERIFY SCALES LENGTH OF BAR IS 1" ON ORIGINAL DRAWING 1:1 PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY	NO.	DATE	REVISION	BY	APVD
DRAWN BY P.C.G.						
CHECKED BY P.A.T.						
APPROVED BY J.J.S.						

Applied Technologies
Engineers-Architects

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

PROJECT REFERENCE
CIVIL
LEGEND

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 10-C-1

PSLTSCALE: 1 LTSCALE: 1
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HEATING VENTILATING, AND AIR CONDITIONING SYMBOLS

- WALL REGISTER OR GRILLE (SUPPLY) BG, BR, TG, TRS
- CEILING DIFFUSER OR REGISTER (SUPPLY) CD, CR
- CEILING REGISTER OR GRILLE (RETURN AND EXHAUST) CG, CR
- WALL REGISTER OR GRILLE (RETURN AND EXHAUST) BG, BR, TG, TR, RAG
- FG — FLOOR GRILLE (SUPPLY AND RETURN)
- TURNING VANES
- EXTRACTOR VANES
- SOUND ATTENUATED DUCT
- FD — FIRE DAMPER (WALL)
- FD — FIRE DAMPER (FLOOR)
- SPLITTER DAMPER
- MANUAL OPPOSED-BLADE DAMPER
- MANUAL BUTTERFLY DAMPER
- M — MOTORIZED DAMPER
- VD — VOLUME DAMPER
- SD — SMOKE DAMPER
- FLEXIBLE CONNECTION
- FLEXIBLE DUCTWORK
- R — INCLINED RISE IN DUCT
- D — INCLINED DROP IN DUCT
- SUPPLY DUCT (SECTION)
- INTAKE, RETURN, OR EXHAUST DUCT (SECTION)
- DUCT DOWN
- T — THERMOSTAT
- MMP — MECHANICAL MOUNTING PANEL
- VIBRATION ELIMINATOR
- M — MOTORIZED VALVE
- 1224CD — 12"x12" NECK SIZE, 24"x24" FACE SIZE – CEILING DIFFUSER
- 6x6CD — 6"x6" NECK SIZE – CEILING DIFFUSER

BUILDING SERVICES SYMBOLS

- SIGHT GLASS
- GAUGE WITH COCK
- THERMOMETER
- ROTAMETER
- PS — PRESSURE SWITCH
- HOSE RACK (TYPE AS INDICATED)
- EYEWASH
- S — SAFETY SHOWER
- S — EYEWASH WITH SAFETY SHOWER
- F. EXT — FIRE EXTINGUISHER, X = NO. IN SPECS
- XCO — X = F – FLOOR CLEANOUT; D – DECK CLEANOUT; W – WALL CLEANOUT
- HD-Y — HUB DRAIN W/TRAP, X – NO. IN SPECS
- FD-XY — FLOOR DRAIN W/TRAP, X – NO. IN SPECS
- OD-X — OVERFLOW DRAIN, X = NO. IN SPECS
- RD-X — ROOF DRAIN, X = NO. IN SPECS
- AD-XY — AREA DRAIN W/TRAP, X = NO. IN SPECS
- X X — BURIED DRAINAGE
- BENEATH FLOOR DRAINAGE
- BURIED OR BENEATH FLOOR VENT
- EXPOSED OR ABOVE FLOOR VENT
- ROOF DRAINAGE

MATERIAL SYMBOLS

- CONCRETE
- OR
- CMU PLAN
- SIMULATED BRICK, CMU
- CMU SECTION
- METAL STUD WALL PLAN
- RIGID INSULATION
- PLYWOOD
- GLASS
- INSULATED METAL WALL PANEL
- WOOD, ROUGH CONTINUOUS
- WOOD, ROUGH NON CONTINUOUS
- WOOD, FINISHED
- STEEL
- HANDRAIL
- REMOVABLE HANDRAIL

SYMBOL LEGEND

- 6 — ELEVATION (W/ DWG WHERE SHOWN)
- 47 — ROOM NUMBER
- 47 — DOOR NUMBER
- 47 — WINDOW NUMBER
- 3 — WALL TYPE
- F. EXT — FIRE EXTINGUISHER
- ACTIVE
- INACTIVE
- INDICATES PAIR OF DOORS

HVAC EQUIPMENT IDENTIFICATION

ACCU	AIR-COOLED CONDENSING UNIT
AL	ALUMINUM DUCT
ASU	CENTRAL STATION AIR HANDLING UNIT
B	BOILER
BC	BOOSTER HEATING COIL
BD	BUTTERFLY DAMPER
BDD	BACKDRAFT DAMPER
BG	LOW WALL GRILLE
BR	LOW WALL REGISTER
C	CONVECTOR
CC	COOLING COIL
CD	CEILING DIFFUSER
CG	CEILING GRILLE
CR	CEILING REGISTER
CUH	CABINET UNIT HEATER
DB	FIBERGLASS DUCTBOARD
DG	DOOR GRILLE
EAG	EXHAUST AIR GRILLE
EBB	ELECTRIC BASEBOARD
EDH	ELECTRIC DUCT HEATER
EHR	EXHAUST HOSE REEL
EUH	ELECTRIC UNIT HEATER
EF	EXHAUST FAN
FB	FIBERGLASS PIPE
FC	FLEXIBLE CONNECTION
FED	FLEXIBLE EXHAUST DUCT
GUH	GAS UNIT HEATER
FG	FLOOR GRILLE
FP	FINNED TUBE RADIATION
FX	VEHICLE FUME EXHAUST SYSTEM
GALVS	GALVANIZED
GH	GRAVITY HOOD
FD	FIRE DAMPER
HC	HEATING COIL
HU	HUMIDIFIER
HWP	HOT WATER PUMP
HWRP	HOT WATER RADIANT PUMP
HX	HEAT EXCHANGER
IF	INLINE FAN
LCD	LINEAR CEILING DIFFUSER
LSD	LINEAR SLOT DIFFUSER
MD	MOTORIZED DAMPER
ML	MOTORIZED LOUVER
MMP	MECHANICAL MOUNTING PANEL
OBD	OPPOSED BLADE DAMPER
PRV	PRESSURE REDUCING VALVE
RAG	RETURN AIR GRILLE
RE	ROOF EXHAUSTER
RS	ROOF SUPPLY
RTU	ROOF TOP FAN UNIT
SG	SUPPLY GRILLE
T	THERMOSTAT
TG	HIGH WALL GRILLE
TRS	HIGH WALL REGISTER, SUPPLY
UH	UNIT HEATER
VD	VOLUME DAMPER
VTR	VENT THROUGH ROOF
WCC	WATER COOLED CONDENSER
WCCU	WATER COOLED CONDENSING UNIT
WE	WALL EXHAUSTER
WG	WALL GRILLE
WSG	WALL SUPPLY GRILLE
WSR	WALL SUPPLY REGISTER
WR	WALL REGISTER
WUH	WATER UNIT HEATER
XP	EXPANSION TANK

ARCHITECTURAL LEGEND

GENERAL NOTES

1. UNLESS OTHERWISE NOTED, PLAN DIMENSIONS ARE TO COLUMN GRID ON CENTERLINES, NOMINAL SURFACE OF MASONRY, FACE OF STUDS AND FACE OF CONCRETE WALLS.
2. "FLOOR LINE" REFERS TO TOP OF CONCRETE SLABS. FINISH FLOORING IS INSTALLED ABOVE THE FLOOR LINE. FOR DEPRESSED FLOORS AND CURBS, SEE STRUCTURAL DRAWINGS.
3. REPETITIVE FEATURES ARE NOT DRAWN IN THEIR ENTIRETY AND SHALL BE COMPLETELY PROVIDED AS IF DRAWN IN FULL.
4. WHERE DOOR IS LOCATED NEAR CORNER OF ROOM AND IS NOT LOCATED BY DIMENSION ON PLAN OR DETAILS, DIMENSION SHALL BE 4 INCHES FROM FACE OF MASONRY (WALL) AND 2 INCHES FROM FACE OF METAL STUD WALL TO FACE OF ROUGH OPENING.
5. AT SOUND INSULATED WALLS, FULL HEIGHT PARTITIONS SHALL BE SEALED BOTH SIDES WITH ACOUSTIC SEALANT; TOP, BOTTOM, INTERSECTIONS, DOOR FRAMES, GLAZED OPENING FRAMES, AND OTHER PENETRATIONS.
6. LINE OF EXISTING GRADES, AS SHOWN ON THE BUILDING ELEVATIONS AND SECTION ARE APPROXIMATE. THEY ARE AT THE BUILDING FACE, OR ON THE SECTION END EXCEPT AS NOTED.
7. VERIFY ALL ROUGH-IN DIMENSIONS FOR EQUIPMENT PROVIDED IN THIS CONTRACT, OR BY OTHERS.
8. VERIFY SIZE AND LOCATION OF, AND PROVIDE: ALL OPENINGS THROUGH FLOORS AND WALLS, ACCESS DOORS, FURRING, CURBS, ANCHORS AND INSERTS. PROVIDE ALL BASES BLOCKING REQUIRED FOR ACCESSORIES, MECHANICAL, ELECTRICAL AND OTHER EQUIPMENT.

SYMBOLS USED AS ABBREVIATIONS

&	AND	C	CHANNEL
L	ANGLE	TS	STRUCTURAL TUBING
@	AT	ℙ	PLATE
℄	CENTERLINE	#	NUMBER, POUND

NOTE:
THIS IS A STANDARD LEGEND AND NOT ALL OF THE INFORMATION SHOWN MAY BE USED ON THIS PROJECT.

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DRAWN BY	J.C.S.
CHECKED BY	P.A.T.
APPROVED BY	J.J.S.

VERIFY SCALES
LENGTH OF BAR IS 1" ON ORIGINAL DRAWING
1:1
PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY

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PROJECT REFERENCE
ARCHITECTURAL/HVAC LEGEND

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 10-AH-1

PSLTSCALE: 1 LTSCALE: 1
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PIPING SYMBOLS

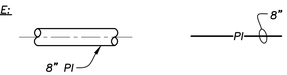
DOUBLE	SINGLE	
		EXISTING PIPE
		EXISTING PIPE TO BE ABANDONED
		EXISTING PIPE TO BE REMOVED
		NEW PIPE
		WELDED JOINT
		GROOVED END JOINT
		FLANGED JOINT
		MECHANICAL JOINT
		HUB & SPIGOT JOINT (RUBBER GASKET)
		BALL JOINT
		GROOVED END ADAPTER FLANGE
		FLANGED COUPLING ADAPTER
		FLEXIBLE COUPLING
		FLEXIBLE COUPLING WITH THRUST TIES
		STEEL BELLOWS EXP JOINT
		ELASTOMER BELLOWS EXP JOINT
		ELBOW UP
		ELBOW DOWN
		TEE UP
		TEE DOWN
		LATERAL UP
		LATERAL DOWN
		CONCENTRIC REDUCER
		ECCENTRIC REDUCER
		UNION
		CAP
		ANCHOR

DOUBLE	SINGLE	
		ELBOW, 90 DEGREE
		CROSS
		TEE
		ELBOW, 45 DEGREE
		LATERAL
		STRAINER
		SIGHT GLASS
		FLEXIBLE (ELASTOMER) PIPE CONNECTION
		HOSE VALVE (HV– X) X = NO. IN SPECS
		PIG LAUNCHER
		PIG CATCHER
		ULTRASONIC FLOWMETER (CLAMP–ON)

GENERAL PIPING NOTES

1. LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS.
2. SIZE OF FITTINGS SHOWN ON PLANS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE. UNLESS OTHERWISE INDICATED. TYPE OF JOINT AND FITTING MATERIAL SHALL BE THE SAME AS SHOWN FOR ADJACENT STRAIGHT RUN OF PIPE.
3. LOCATION AND NUMBER OF PIPE HANGERS AND PIPE SUPPORTS SHOWN IS ONLY APPROXIMATE. FINAL SUPPORT REQUIREMENTS SHALL BE DETERMINED IN THE FIELD BY THE CONTRACTOR AND APPROVED BY THE ENGINEER PRIOR TO INSTALLATION. MAXIMUM SPACING SHALL BE AS SPECIFIED.
4. ALL JOINTS SHALL BE WATERTIGHT. STANDARD WALL PIPE DETAIL (15223) SHALL BE USED WHEREVER PIPING PASSES FROM A STRUCTURE TO BACKFILL. (UNLESS NOTED OTHERWISE)
5. ALL FLEXIBLE CONNECTORS OR FLANGED COUPLING ADAPTERS SHALL BE PROVIDED WITH THRUST TIES, BLOCKS, OR ANCHORS, UNLESS OTHERWISE NOTED. THRUST PROTECTION SHALL BE ADEQUATE FOR PRESSURES SPECIFIED.
6. SYMBOLS, LEGENDS, AND PIPE USE IDENTIFICATIONS SHOWN SHALL BE FOLLOWED THROUGHOUT THE PLANS, WHEREVER APPLICABLE. ALL OF THE VARIOUS PIPING APPLICATIONS ARE NOT NECESSARILY USED IN THE PROJECT.
7. ALL BURIED PIPING SPECIFIED TO BE PRESSURE TESTED. EXCEPT FLANGED, WELDED, OR SCREWED PIPING, SHALL BE PROVIDED WITH CONCRETE THRUST BLOCKS AT ALL DIRECTION CHANGES UNLESS OTHERWISE NOTED. SEE THRUST BLOCK DETAILS AND NOTES.
8. NUMBER AND LOCATION OF UNIONS SHOWN ON PLANS IS ONLY APPROXIMATE. PROVIDE ALL UNIONS NECESSARY TO FACILITATE CONVENIENT REMOVAL OF VALVES AND MECHANICAL EQUIPMENT.
9. WHERE A GROOVED END COUPLING IS SHOWN, IT SHALL BE THE RIGID JOINT TYPE, UNLESS OTHERWISE SPECIFIED. WHERE A FLANGED COUPLING ADAPTER IS SHOWN. A STANDARD FLANGE SHALL BE USED TO JOIN THE COUPLING ADAPTER.
10. ONLY FLANGED END CONNECTIONS ARE SHOWN ON THE DRAWINGS FOR DOUBLE LINE FITTINGS AND ARE GENERAL ONLY. SIMILARLY, SYMBOLS SHOWNFOR SINGLE LINE DRAWINGS ARE GENERIC ONLY. REFER TO THE PIPING SPECIFICATIONS FOR SPECIFIC END CONNECTIONS.
11. EXISTING PIPING, VALVES AND EQUIPMENT IS SHOWN LIGHTLINED AND/OR SCREENED.
12. DESIGNATIONS FOR PIPING ARE CALLED OUT WITH IDENTIFICATION FROM FLOW STREAM AND NOMINAL PIPE DIAMETER.

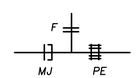
EXAMPLE:



13. PIPING END FITTINGS ARE DESIGNATED WITH THE FOLLOWING ABBREVIATIONS.

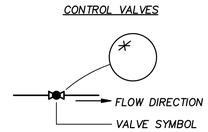
B	BELL	PE	PLAIN END
S	SPIGOT	GE	GROOVED END
F	FLANGE	MJ	MECHANICAL JOINT

EXAMPLE:



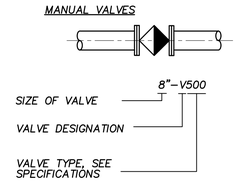
14. VALVE DESIGNATIONS FOR SIZE AND TYPE ARE SHOWN IN THE FOLLOWING EXAMPLES FOR MANUAL VALVES AND CONTROL VALVES.

CONTROL VALVES



✳ BUBBLE WITH XV OR XCV DESIGNATION SHOWN ON P&ID WHERE: X = PROCESS VARIABLE

MANUAL VALVES



15. FOR VALVE AND GATE SYMBOLS SEE I&C LEGEND

FLOW STREAM IDENTIFICATION

LEGEND	SERVICE
AA	AQUA AMMONIA
ACL	ACETYLENE GAS
AE	AERATED EFFLUENT
AG	ARGON GAS
AHP	AIR, HIGH PRESSURE PROCESS
AI	INSTRUMENT AIR
AIR	AIR, LABORATORY
ALP	AIR, LOW PRESSURE PROCESS
ALKY	ALKALINITY
APO	ANIONIC POLYMER SOLUTION
ARD	ACID RESISTANT DRAIN
ARV	ACID RESISTANT VENT
BFE	BIOFILTER EFFLUENT
BFR	BIOFILTER RECYCLE
BSD	BIOFILTER SLUDGE
CG	CHLORINE GAS (PRESSURE)
CGV	CHLORINE GAS (VACUUM)
CL	CHLORINE LIQUID (PRESSURE)
COAG	COAGULANT
COD	CHEMICAL OXYGEN DEMAND
CPO	CATIONIC POLYMER SOLUTION
CS	CHLORINE SOLUTION
CSPD	CHEMICAL SUMP PUMP DISCHARGE
CSS	CHEMICAL SCRUBBING SOLUTION
D	DRAIN
DD	PROCESS DRAIN
DG	DIGESTER GAS
DIW	DEIONIZED WATER
DMW	DEMINERALIZED WATER
DP	DRY POLYMER
DSD	DIGESTED SLUDGE
DW	DISTILLED WATER
DWSD	DEWATERED SLUDGE
F	FILTRATE
FC	FERRIC CHLORIDE
FCC	FERRIC CHLORIDE w/ CONTAINMENT
FE	FINAL EFFLUENT
FP	FIRE PROTECTION
G	NATURAL GAS
GR	GRIT SLURRY
H	HYDROGEN GAS
HCL	HYDROCHLORIC ACID
HE	HELIUM GAS
HPHW	HIGH PRESSURE HOT WATER
HPX	HYDROGEN PEROXIDE
HW	HOT WATER, DOMESTIC
HWCS	HOT WATER CLEAN SYSTEM
HWR	HOT WATER RETURN
HWS	HOT WATER SUPPLY
HRR	HEAT RECLAIM RETURN
HRS	HEAT RECLAIM SUPPLY
HRSD	HEATED RECIRCULATED SLUDGE
L	LIME
LPO	LIQUID POLYMER
LSD	LIME SLUDGE

LEGEND	SERVICE
ML	MIXED LIQUOR
N	NITROGEN GAS
NA	SODIUM HYDROXIDE
O	OXYGEN GAS
OA	ODOROUS AIR
OF	OVERFLOW
P	PROPANE GAS
PA	PHOSPHORIC ACID
PD	PLANT DRAIN
PDSD	PRIMARY DIGESTED SLUDGE
PE	PRIMARY EFFLUENT
PI	PRIMARY INFLUENT
PLE	PLANT EFFLUENT
PLI	PLANT INFLUENT
PLR	PLANT RECYCLE
PLSD	PASTEURIZED LIME SLUDGE
PO	POLYMER SOLUTION
PSD	PRIMARY SLUDGE
PSM	PRIMARY SCUM
PW	PROCESS WASTEWATER
RANS	RETURN ANAEROBIC SLUDGE
RAS	RETURN ACTIVATED SLUDGE
RCY	RECYCLE (DAF)
RD	ROOF DRAIN
RFL	REFRIGERANT LIQUID
RFS	REFRIGERANT SUCTION
RHW	RECIRCULATED HOT WATER
RS	RAW SEWAGE
RSD	RECIRCULATED SLUDGE
RW	RAW WASTEWATER
S	SANITARY SEWER
SA	SAMPLE
SAS	SULFURIC ACID
SCN	SCREENINGS
SDG	SULFUR DIOXIDE GAS (PRESSURE)
SDS	SULFUR DIOXIDE SOLUTION
SDV	SULFUR DIOXIDE GAS (VACUUM)
SE	SECONDARY EFFLUENT
SEP	SEPTAGE
SH	SODIUM HYPOCHLORITE
SI	SECONDARY INFLUENT
SPD	SUMP PUMP DISCHARGE
SPNT	SUPERNATANT
SSM	SECONDARY SCUM
ST	STORM SEWER
SW	SCREENED WASTEWATER
TA	TREATED AIR
TSD	THICKENED SLUDGE
TDSD	THICKENED DIGESTED SLUDGE
V	VENT
VAC	VACUUM
WANS	WASTE ANAEROBIC SLUDGE
WAS	WASTE ACTIVATED SLUDGE
W1	NO.1 WATER (POTABLE)
W2	NO.2 WATER (NON POTABLE)
W3	NO. 3 WATER (PLANT EFFLUENT)
WS	WASTE SOLIDS

YARD PIPING LEGEND

NEW	EXISTING	
		NON–FREEZE HOSE VALVE X = NO. IN SPECIFICATIONS
		NON–FREEZE HOSE VALVE WITH HOSE RACK X = NO. IN SPECIFICATIONS
		GATE VALVE
		BUTTERFLY VALVE
FLOW SEATING PORT		ECCENTRIC PLUG VALVE
		INDICATOR POST VALVE
		FIRE HYDRANT
CO	CO	CLEANOUT
		CATHODIC PROTECTION TEST STATION
		CATHODIC PROTECTION ANODE

NOTE:

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DRAWN BY	J.C.S.
CHECKED BY	P.A.T.
APPROVED BY	J.J.S.

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PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY

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VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

PROJECT REFERENCE
MECHANICAL
LEGEND

PROJECT NO. 5582
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PSLTSCALE: 1 LTSCALE: 1
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ELECTRICAL LEGEND

SYMBOL	DESCRIPTION
T	PLAN NOTE REFERENCE
	CONNECTION POINT TO EQUIPMENT SPECIFIED. FURNISHED AND INSTALLED UNDER OTHER DIVISIONS. RACEWAY, CONDUCTOR AND CONNECTION IN DIVISION 16.
MCC–A	MAJOR ELECTRICAL COMPONENT OR DEVICE – NAME OR IDENTIFYING SYMBOL AS SHOWN.
	BRANCH CIRCUIT PANEL, BRANCH POWER PANEL
UH1	UNIT HEATER NO.1 SEE SCHEDULE
TTC	TELEPHONE TERMINAL CABINET
	TERMINAL JUNCTION BOX
G	GENERATOR
X	SAME AS , BUT SPECIFICALLY A SQUIRREL CAGE INDUCTION MOTOR, X = HORSEPOWER
1	LUMINAIRE – SEE SCHEDULE
2	LUMINAIRE, FLUORESCENT – SEE SCHEDULE
3	LUMINAIRE AND POLE – SEE SCHEDULE
4	WALL MOUNTED LUMINAIRE – SEE SCHEDULE
5	FLOOD LIGHTS – SEE SCHEDULE
	EXIT LIGHTS – SEE SCHEDULE
OS	OCCUPANCY SENSOR
P	PHOTOCELL
S_a or 2_a	SMALL LETTER SUBSCRIPT AT SWITCH AND LUMINAIRE INDICATES SWITCHING. SUBSCRIPT NUMBER AT LUMINAIRE INDICATES CIRCUIT IN PANELBOARD.

S_X WALL SWITCH (WHERE X SUBSCRIPT INDICATES):

- 2– DOUBLE POLE
- 3– THREE WAY
- 4– FOUR WAY
- WP– WEATHERPROOF
- BLANK–SINGLE POLE
- P– PILOT LIGHT
- K– KEY OPERATED
- D– DIMMER
- M– INTEGRAL MOTION DETECTION
- CRE– CORROSION RESISTANT

	CONDUIT DOWN
	CONDUIT UP
	CONDUIT, STUBBED AND CAPPED AS SHOWN
C	CABLE TRAY – SEE SPECIFICATIONS
B	BUS DUCT – SEE SPECIFICATIONS
P	TRENCHING FOR UTILITY COMPANY PRIMARY POWER CUTS
T	TRENCHING FOR TELEPHONE COMPANY CIRCUITS
CE	CONCRETE ENCASED CONDUIT
DB	DIRECT BURIED CONDUIT
S	DATA RECEPTACLE (SCADA)
	DATA RECEPTACLE (LAN)
	TELEPHONE RECEPTACLE
XX LP–30	HOME RUN, WITH DESTINATION "LP–30". EACH HOME RUN REPRESENTS ONE CONDUIT.
XX	CONDUCTORS; POWER OR INSTRUMENTATION. FOR INSTRUMENTATION WIRING, SEE WIRING LEGEND BELOW.

INSTRUMENTATION WIRING LEGEND

ABBREVIATION	DESCRIPTION
Ax	2C#16 SHIELDED CABLE (x = NUMBER OF CABLES)
Dx	#14 THHN WIRE (x = NUMBER OF WIRES)
M	1" CONDUIT FOR CABLE SUPPLIED BY MANUFACTURER
Rx	3C#16 SHIELDED CABLE (x = NUMBER OF CABLES) RTD WIRE
Cx	CAT 5E ETHERNET CABLE (x = NUMBER OF CABLES)

SIZE EACH CONDUIT PER NEC; MIN. SIZE 3/4"

SYMBOL	DESCRIPTION
	CONVENIENCE RECEPTACLE – DUPLEX UNLESS SPECIFIED OTHERWISE WP– WEATHERPROOF TL– TWIST LOCK IG– ISOLATED GROUND GFI– GROUND FAULT INTERRUPTER C– CLOCK HANGER CRE– CORROSION RESISTANT SS– SURGE SUPPRESSION
	ABOVE COUNTER RECEPTACLE–DUPLEX UNLESS SPECIFIED OTHERWISE
	CONVENIENCE RECEPTACLE, PEDESTAL, DUPLEX SINGLE FACE UNLESS INDICATED OTHERWISE
30	RECEPTACLE – 240V., 10/ AMPERAGE INDICATED
30	RECEPTACLE, SPECIAL PURPOSE–AMPERAGE AS INDICATED VERIFY PLUG CONFIGURATION PRIOR TO ORDERING
	DUPLEX CONVENIENCE RECEPTACLE–FLUSH IN FLOOR
	MULTI OUTLET ASSEMBLY
J or HH	GENERAL CONTROL OR WIRING DEVICE. NEMA 1 ENCLOSURE UNLESS INDICATED OTHERWISE. LETTER SYMBOLS OR ABBREVIATIONS INDICATE TYPE OF DEVICE.
PB	PUSH–BUTTON STATION, NEMA 1 ENCLOSURE UNLESS INDICATED OTHERWISE. (WP = NEMA 4 ENCLOSURE) SEE CONTROL DIAGRAMS FOR TYPE PUSH BUTTON REQUIRED.
30	NONFUSED DISCONNECT SWITCH, SIZE INDICATED, 3 POLE UNLESS INDICATED OTHERWISE, NEMA 1 ENCLOSURE, WP = WEATHERPROOF NEMA 4X)
60/40 F	FUSED DISCONNECT SWITCH, SIZE INDICATED (60/40, 60 = SWITCH RATING: 40 = FUSE RATING) 3 POLE UNLESS INDICATED OTHERWISE, NEMA 1 ENCLOSURE, WP = WEATHERPROOF (NEMA 4X)
2	CONTACTOR, MAGNETIC, NEMA SIZE INDICATED, NEMA 1 ENCLOSURE, UNLESS INDICATED OTHERWISE.
30 L	LIGHTING CONTACTOR, CURRENT RATING INDICATED, NEMA 1 ENCLOSURE UNLESS INDICATED OTHERWISE. SEE CONTROL DIAGRAM FOR NUMBER OF POLES.
2	STARTER MAGNETIC NEMA SIZE INDICATED, NEMA 1 ENCLOSURE UNLESS INDICATED OTHERWISE. SEE CONTROL DIAGRAM.
2	COMBINATION (FUSE OR CIRCUIT BREAKER AS INDICATED) MAGNETIC STARTER, NEMA SIZE INDICATED, NEMA 1 ENCLOSURE UNLESS INDICATED OTHERWISE. SEE CONTROL DIAGRAM.
	MULTI–PARTY DESK TOP COMMUNICATIONS SYSTEM STATION WITH REMOTE AMPLIFIER
W	MULTI–PARTY WALL MOUNTED COMMUNICATIONS SYSTEM STATION WITH INTEGRAL AMPLIFIER
C	CONE TYPE PAGING SPEAKER, CEILING MOUNTED
H	INTERIOR PAGING TRUMPET SOUND REPRODUCER WITH REMOTE AMPLIFIER, SURFACE MOUNTED.
	OUTDOOR PAGING TRUMPET SOUND REPRODUCER WITH REMOTE AMPLIFIER, SURFACE MOUNTED.
	TERMINAL CABINET FOR COMMUNICATIONS SYSTEM
400/ST	ADJUSTABLE SOLID STATE OR STATIC TRIP CIRCUIT BREAKER, 3 POLE–CONTINUOUS CURRENT TRIP INDICATED
FIT–10–1–2 or 200–MCC–1	TYPICAL EQUIPMENT TAG NAME. SEE I&C LEGEND OR ELECTRICAL ABBREVIATIONS FOR EXPLANATION.
F	FIRE ALARM HORN
F	FIRE ALARM MANUAL PULL STATION
F	FIRE ALARM AUDIO–VISUAL DEVICE
H	FIRE ALARM SYSTEM HEAT DETECTOR
S	FIRE ALARM SMOKE DETECTOR
S D	FIRE ALARM SMOKE DETECTOR, IN DUCT

SYMBOL	DESCRIPTION
1	CONTACT – NORMALLY OPEN WITH NEMA SIZE INDICATED AS APPLICABLE
1	CONTACT – NORMALLY CLOSED WITH NEMA SIZE INDICATED AS APPLICABLE
	OVERLOAD RELAY HEATER
1	MAGNETIC STARTER WITH NEMA SIZE INDICATED
100/M	CIRCUIT BREAKER, MAGNETIC TRIP ONLY, FRAME SIZE SHOWN, 3 POLE UNLESS INDICATED OTHERWISE.
400AF/350AT	CIRCUIT BREAKER, THERMAL MAGNETIC TRIP SHOWN, 3 POLE UNLESS INDICATED OTHERWISE. FRAME SIZE & TRIP RATING SHOWN, IF ADJUSTABLE.
400 400	CIRCUIT BREAKER WITH CURRENT LIMITING FUSES, TRIP AND FUSE RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
400 225	FUSED SWITCH, SWITCH AND FUSE CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
100	SWITCH – CURRENT RATING INDICATED, 3 POLE UNLESS INDICATED OTHERWISE.
	DRAWOUT AIR CIRCUIT BREAKER, LOW VOLTAGE
	LIGHTNING ARRESTER WITH SURGE CAPACITOR
	FUSE
10	CAPACITOR – KVAR INDICATED
SW V 0–600V	METER WITH SWITCH – SCALE RANGE SHOWN
	GROUND
120V or 120/240V	TRANSFORMER, SECONDARY VOLTAGES, PHASE AND RATING INDICATED AS APPLICABLE
GFR 25A 0.1	PICK–UP SETTING TIME CURRENT CHARACTERISTIC } GROUND FAULT RELAY WITH C.T.
	PUSH–BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY OPEN
	PUSH–BUTTON SWITCH, MOMENTARY CONTACT, NORMALLY CLOSED
	PUSH BUTTON SWITCH, MAINTAINED CONTACTS WITH MECHANICAL INTERLOCK
	3 POSITION SELECTOR SWITCH MAINTAINED CONTACT
TDR TC or TDR TO	TIME DELAY RELAY CONTACT (TIME ACTION INDICATED)
	REMOTE DEVICE
0 H A 1 2	SELECTOR SWITCH – MAINTAINED CONTACT – CHART IDENTIFIES OPERATION:

	POSITION		
CKT.	HAND	OFF	AUTO
1	X	O	O
2	O	O	X

X – CLOSED CONTACT
O – OPEN CONTACT

(3)	CURRENT TRANSFORMER, NUMBER INDICATED
A	INDICATING LIGHT, PUSH–TO–TEST, LETTER INDICATES COLOR
A	INDICATING LIGHT – LETTER INDICATES COLOR A – AMBER G – GREEN B – BLUE R – RED C – CLEAR W – WHITE
SS	SOFT–START WITH BYPASS CONTACTOR

ABBREVIATIONS

ABBREV.	DESCR.
A	AMMETER, AMPERE
AC	ALTERNATING CURRENT
AF	AMPERE FRAME
AFF	ABOVE FINISHED FLOOR
AFG	ABOVE FINISHED GRADE
AM	AMMETER
AS	AMMETER SWITCH, AMPERE SENSOR
ASC	ADJUSTABLE SPEED CONTROLLER
ASU	AIR SUPPLY UNIT
AT	AMPERE TRIP
ATS	AUTOMATIC TRANSFER SWITCH
B	BELL
BC	BARE COPPER
BCP	BRANCH CIRCUIT PANEL
BPP	BRANCH POWER PANEL
C	CONDUIT, CONTACTOR
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CC	CONTROL CABLE
CKT	CIRCUIT
CL	CURRENT LIMIT
CPT	CONTROL POWER TRANSFORMER
CR	CONTROL RELAY
CRE	CORROSION RESISTANT
CRS	COATED RIGID STEEL CONDUIT
CT	CURRENT TRANSFORMER
DC	DIRECT CURRENT
DIV	DIVISION
E	EMPTY
EF	EXHAUST FAN
EP	EXPLOSION PROOF
ETD	EXISTING TO BE REMOVED
ETM	ELAPSED TIME METER
ETR	EXISTING TO BE REPLACED
ETRL	EXISTING TO BE RELOCATED
EXST	EXISTING
FDR	FEEDER
F, FU	FUSE
FLUR	FLUORESCENT
G	GREEN, GROUND
GALV	GALVANIZED
GFI	GROUND FAULT INTERRUPTER
GFR	GROUND FAULT RELAY
GND	GROUND
GRS	GALVANIZED RIGID STEEL
H	HORN, HOWLER
HH	HANDHOLE
HID	HIGH INTENSITY DISCHARGE
HPS	HIGH PRESSURE SODIUM
HS	HIGH SPEED
HT	HEAT TRACE
HV	HIGH VOLTAGE
IC	INTERRUPTING CAPACITY
I & C	INSTRUMENTATION AND CONTROL
INCAND	INCANDESCENT
INST	INSTANTANEOUS
IS	INTRINSICALLY SAFE
ISR	INTRINSICALLY SAFE RELAY
J, JB	JUNCTION BOX
K	KEY INTERLOCK
LC, L	LIGHTING CONTACTOR
LA	LIGHTNING ARRESTER
LP	LIGHTING PANEL
LS	LOW SPEED

ABBREV.	DESCR.
M	MAGNETIC CONTACTOR COIL
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MDC	MOTORIZED DAMPER CONTROL
MERC	MERCURY VAPOR
MH	MANHOLE, METAL HALIDE
MMP	MECHANICAL MOUNTING PANEL
MO	MOTOR OPERATOR
MS	MOTOR STARTER
MT, MTD	MOUNT, MOUNTED
N	NEUTRAL
NA	NON–AUTOMATIC
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NP	NAMEPLATE
OL	OVERLOAD RELAY
ONT	OFF–NORMAL–TEST
OS	OCCUPANCY SENSOR
PB	PUSHBUTTON SWITCH
P	PHOTOCELL
PNL	PANEL
PP	POWER PANEL
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER
PVC	POLYVINYL CHLORIDE
RCPT	RECEPTACLE
RMS	ROOT MEAN SQUARE
RT	REMOTE TELEMETRY
RVSS	REDUCED VOLTAGE SOLID–STATE
S	SPARE
SC	SPEED CONTROL
SF	SUPPLY FAN
SH	SPACE HEATER
S/N	SOLID NEUTRAL
SPD	SPEED
SP	STANDBY POWER
ST	STATIC TRIP
SV	SOLENOID VALVE
SW	SWITCH
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
SYM	SYMMETRICAL
T	THERMOSTAT
TB	TERMINAL BOARD
TD	TEMPERATURE DETECTOR RELAY
TDR	TIME DELAY RELAY
TJB	TERMINAL JUNCTION BOX
TSP	TWISTED, SHIELDED PAIR
TYP	TYPICAL
UH	UNIT HEATER
UVR	UNDER VOLTAGE RELAY
V	VOLTMETER, VOLT
VAR	VARMETER
VFD	VARIABLE FREQUENCY DRIVE
VM	VOLTMETER
VS	VOLTMETER SWITCH
W	WATT, WATTMETER
WHD	WATTHOUR DEMAND METER
WHM	WATTHOUR METER
WP	WEATHERPROOF
XFMR	TRANSFORMER
XP	EXPLOSION PROOF

NOTES:

1. THIS IS A STANDARD LEGEND SHEET. SOME SYMBOLS OR ABBREVIATIONS MAY APPEAR ON THIS SHEET AND NOT ON THE PLANS.
2. FOR I & C COMPONENTS AND ABBREVIATIONS, SEE I & C LEGEND.
3. FOR GENERAL ABBREVIATIONS, SEE GENERAL LEGEND.

DESIGNED BY	G.A.G.
DRAWN BY	J.C.S.
CHECKED BY	P.A.T.
APPROVED BY	J.J.S.

VERIFY SCALES
LENGTH OF BAR IS 1" ON ORIGINAL DRAWING
1:1
PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY

NO.	DATE	REVISION	BY	APVD

Applied Technologies
Engineers-Architects

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

PROJECT REFERENCE
ELECTRICAL
LEGEND

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 10–E–1

PSLTSCALE: 1 LTSCALE: 1
J:\5582\GRAPHICS\DRAWINGS\10-E-1 LEGEND.dwg Last Modified: 18 December 2015 Plotted On: 12/22/2015 11:29 AM by JCSTAHL
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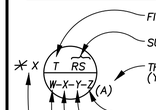
INSTRUMENTATION IDENTIFICATION

EXAMPLE SYMBOLS

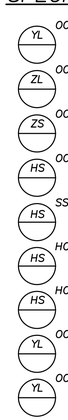


- FIRST LETTER(S)
- SUCCEEDING LETTERS
- THE TOTAL NUMBER OF UNITS PER SET (Y VARIES FROM 1 TO A)
- SET NUMBER (USED WHEN THERE ARE MULTIPLE SETS OF UNITS WITH THE SAME W–X–Y DESIGNATIONS)
- UNIT NUMBER (USED WHEN THERE ARE MULTIPLE UNITS WITH THE SAME W–X DESIGNATIONS)
- LOOP NUMBER
- UNIT PROCESS NUMBER
- COMPONENT SPECIFICATION AND FURNISH CODE @ 11:00 O'CLOCK POSITION ON SYMBOL, AS NOTED ON PANELS, PACKAGED SYSTEMS, OR OTHER I&C EQUIPMENT SYMBOLS

NONE	= SPECIFIED AND FURNISHED VIA I&C DIVISION 13710
✳ M	= SPECIFIED AND FURNISHED IN MECHANICAL/EQUIPMENT DIVISION 11 AND 15
✳ E	= SPECIFIED AND FURNISHED IN ELECTRICAL DIVISION 16
✳ P	= SPECIFIED AND FURNISHED WITH ASSOCIATED PACKAGE SYSTEM
✳ O1	= OWNER FURNISHED, OWNER INSTALLED (OFOI)
✳ O2	= OWNER FURNISHED, CONTRACTOR INSTALLED (OFCI)
EXST	= EXISTING EQUIPMENT

- FIELD MOUNTED INSTRUMENT WEATHER–PROOF
- FIELD MOUNTED INSTRUMENT EXPLOSION–PROOF
- FIELD MOUNTED INSTRUMENT EXISTING
- FIELD MOUNTED INSTRUMENT INTRINSICALLY SAFE
- FIELD MOUNTED INSTRUMENT THAT REQUIRES 120VAC AT THE DEVICE
- REAR–OF–PANEL MOUNTED INSTRUMENT
- FACE OF PANEL MOUNTED INSTRUMENT
- MOTOR CONTROL CENTER MOUNTED INSTRUMENT (FACE OF CUBICLE)

SPECIAL CASES (@ 2 O'CLOCK POSITION ON SYMBOL)



- ON AND OFF EVENT LIGHTS
- OPENED AND CLOSED POSITION LIGHTS
- OPENED AND CLOSED POSITION SWITCHES
- ON–OFF HAND SWITCH. MAINTAINED CONTACT SWITCHES (CONTROLLED DEVICE WILL RESTART ON RETURN OF POWER AFTER POWER FAILURE).
- STOP–START HAND SWITCH. MOMENTARY CONTACT SWITCHES (CONTROLLED DEVICE WILL NOT RESTART ON RETURN OF POWER AFTER POWER FAILURE).
- HAND–OFF–REMOTE HAND SWITCH. MAINTAINED CONTACT SELECTION
- HAND–OFF–AUTOMATIC HAND SWITCH. MAINTAINED CONTACT SELECTION
- ON–OFF–REMOTE EVENT LIGHTS
- ON–OFF–REMOTE–AUTO EVENT LIGHTS

INSTRUMENT SOCIETY OF AMERICA TABLE

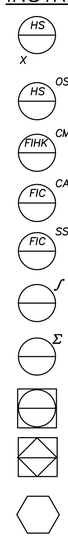
	FIRST LETTER(S)		SUCCEEDING LETTERS		
	PROCESS OR INITIATING VARIABLE	MODIFIER	READOUT OR PASSIVE FUNCTION	OUTPUT FUNCTION	MODIFIER
A	ANALYSIS *		ALARM		
B	BURNER, COMBUSTION		USER'S CHOICE *	USER'S CHOICE *	USER'S CHOICE *
C	USER'S CHOICE *			CONTROL	
D	USER'S CHOICE *	DIFFERENTIAL			
E	VOLTAGE		SENSOR(PRIMARY ELEMENT)		
F	FLOW RATE	RATIO(FRACTION)			
G	USER'S CHOICE *		GLASS, VIEWING DEVICE		
H	HAND				HIGH
I	CURRENT		INDICATE		
J	POWER	SCAN			
K	TIME OR SCHEDULE	TIME RATE OF CHANGE		CONTROL STATION	
L	LEVEL		LIGHT		LOW
M	USER'S CHOICE *	MOMENTARY			MIDDLE
N	USER'S CHOICE *		USER'S CHOICE *	USER'S CHOICE *	USER'S CHOICE *
O	USER'S CHOICE *		ORIFICE, RESTRICTION		
P	PRESSURE (OR VACUUM)		POINT (TEST) CONNECTION		
Q	QUANTITY	INTEGRATE TOTALIZE			
R	RADIATION		RECORD		
S	SPEED, FREQUENCY	SAFETY		SWITCH	
T	TEMPERATURE			TRANSMIT	
U	MULTIVARIABLE *		MULTIFUNCTION *	MULTIFUNCTION *	MULTIFUNCTION *
V	VIBRATION			VALVE, DAMPER, LOUVER	
W	WEIGHT, FORCE		WELL		
X	UNCLASSIFIED *	X AXIS	UNCLASSIFIED *	UNCLASSIFIED *	UNCLASSIFIED *
Y	EVENT, STATE	Y AXIS		RELAY, COMPUTE, CONVERT *	
Z	POSITION, DIMENSION	Z AXIS		DRIVER, ACTUATOR, UNCLASSIFIED FINAL CONTROL ELEMENT	

* WHEN USED, EXPLANATION IS SHOWN ADJACENT TO INSTRUMENT SYMBOL. SEE ABBREVIATIONS AND LETTER SYMBOLS.

TRANSDUCERS (@ 2 O'CLOCK POSITION ON SYMBOL)

A	ANALOG	I	CURRENT	I/I	SIGNAL ISOLATOR
D	DIGITAL	P	PNEUMATIC	R/I	RESISTANCE TO CURRENT
E	VOLTAGE	PF	PULSE FREQUENCY	CT	CURRENT TRANSFORMER
F	FREQUENCY	PD	PULSE DURATION		

INSTRUMENT PANEL LOCATION IDENTIFICATION

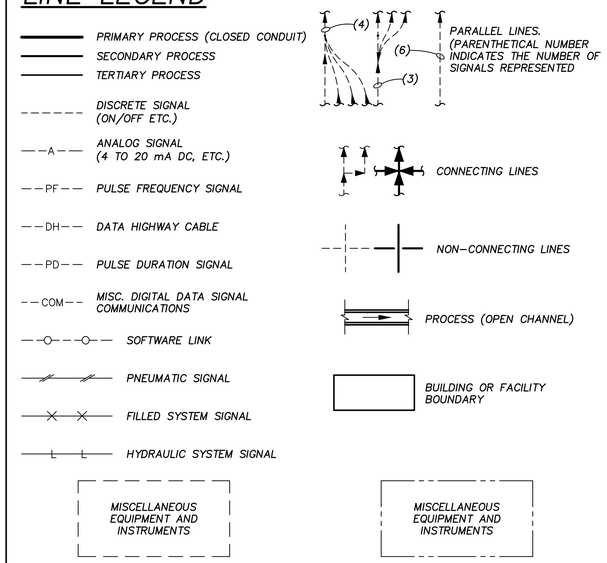


- LOCATED IN PANEL IDENTIFIED ON DRAWING "X" IS USED @ 7 O'CLOCK TO IDENTIFY PANEL LOCATION WHEN DEVICE IS NOT ON THE MCP OR OTHERWISE INDICATED ON DRAWING.
- OPEN–STOP–CLOSE MOMENTARY CONTACT CONTROL SWITCH
- FLOW INDICATING, COMPUTER/MANUAL CONTROL STATION
- FLOW INDICATING, COMPUTER/AUTO/MANUAL CONTROL STATION
- FLOW INDICATING SUPERVISORY SET POINT (BY COMPUTER), AUTO/MANUAL CONTROL STATION
- INTEGRAL
- SUMMATION
- SOFTWARE OPERATOR INTERFACE
- PROGRAMMABLE CONTROLLER INPUT OR OUTPUT
- TELEMETRY INPUT OR OUTPUT

EXAMPLE:

CURRENT TO PNEUMATIC TRANSDUCER (BACK OF PANEL, IN A FLOW LOOP)

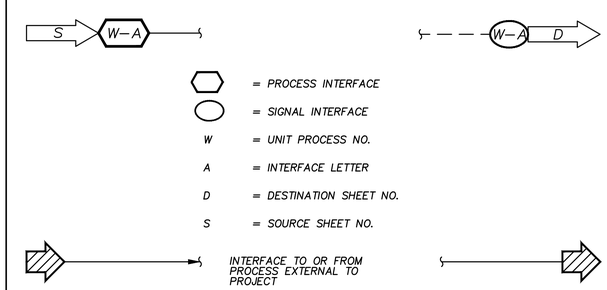
LINE LEGEND



DASHED LINE INDICATES COMPONENTS SUPPLIED AS A COMPLETE PACKAGE SYSTEM OR AS NOTED

PHANTOM LINE INDICATES TYPICAL FUNCTIONS FOR SIMILAR PROCESS SYSTEMS AS NOTED

INTERFACE SYMBOLS



ABBREVIATIONS & LETTER SYMBOLS

AC	ALTERNATING CURRENT
ALKY	ALKALINITY
AM	AUTO–MANUAL
BCP	BUILDING CONTROL PANEL
CAM	COMPUTER–AUTO–MANUAL
Cl_2	CHLORINE
CM	COMPUTER–MANUAL
COD	CHEMICAL OXYGEN DEMAND
DC	DIRECT CURRENT
DCP	DIGESTER CONTROL PANEL
DO	DISSOLVED OXYGEN
FCl_2	FREE CHLORINE RESIDUAL
FOS	FAST–OFF–SLOW
FOSA	FAST–OFF–SLOW–AUTO
FOSR	FAST–OFF–SLOW–REMOTE
FR	FORWARD–REVERSE
HDNS	HARDNESS
HOA	HAND–OFF–AUTO
HOR	HAND–OFF–REMOTE
H_2S	HYDROGEN SULFIDE
LCP–W–X	LOCAL CONTROL PANEL (W UNIT PROCESS NUMBER X PANEL NUMBER)
LEL	LOWER EXPLOSIVE LIMIT
LOS	LOCKOUT STOP
LR	LOCAL REMOTE
MA	MANUAL–AUTO
MC	MODULATE–CLOSE
MCC–X	MOTOR CONTROL CENTER NO. X
MCP	MAIN CONTROL PANEL (IN CENTRAL CONTROL ROOM)
OC	OPEN–CLOSE (D)
OCA	OPEN–CLOSE–AUTO
OCR	OPEN–CLOSE–REMOTE
OO	OFF–ON
OOA	OFF–ON–AUTO
OOR	OFF–ON–REMOTE
PCP	PROCESS CONTROL PANEL
OSC	OPEN–STOP–CLOSE
pH	HYDROGEN ION CONCENTRATION
RM–X	REMOTE MULTIPLEXING MODULE NO. X
RTD	RESISTANCE TEMPERATURE DETECTOR
SF	SLOWER–FASTER
SS	START–STOP
SSC	SUPERVISORY SET POINT CONTROL
TC	THERMOCOUPLE
VIB	VIBRATION
D	DIFFERENCE
n	SUM
X	MULTIPLY
I	DIVIDE
f(x)	CHARACTERIZED
X^n	RAISE TO THE Nth POWER
e	SQUARE ROOT
AVG	AVERAGE
1:1	REPEAT OR BOOST
>	SELECT HIGHEST SIGNAL
<	SELECT LOWEST SIGNAL

SELF CONTAINED VALVE AND EQUIPMENT TAG NUMBERS

D–W–X–Y

D:

P	= PUMP
T	= TANK
M	= MECHANICAL EQUIPMENT
G	= GATE
E	= EJECTOR
PSE	= RUPTURE DISK
ARV	= AIR RELEASE VALVE
AVRV	= AIR AND VACUUM RELEASE VALVE
PSV	= PRESSURE RELIEF VALVE
PCV	= PRESSURE CONTROL VALVE
LCV	= LEVEL CONTROL VALVE
TCV	= TEMPERATURE CONTROL VALVE

W = UNIT PROCESS NUMBER
X = LOOP NUMBER
Y = UNIT NUMBER

GENERAL NOTES

1. THIS IS A STANDARD LEGEND. NOT ALL INFORMATION SHOWN MAY BE USED ON THIS PROJECT.

DESIGNED BY	P.A.T.
DRAWN BY	J.C.S.
CHECKED BY	P.A.T.
APPROVED BY	J.J.S.

VERIFY SCALES
LENGTH OF BAR IS 1" ON ORIGINAL DRAWING
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PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY

NO.	DATE	REVISION	BY	APVD

Applied Technologies
Engineers-Architects

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

PROJECT REFERENCE
INSTRUMENTATION & CONTROL LEGEND

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 10–I–1

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VALVE SYMBOLS

- GATE
- KNIFE GATE
- BUTTERFLY
- GLOBE
- BALL
- VEE–BALL
- PLUG
- SEAT PORT ECCENTRIC PLUG
- DIAPHRAGM
- PINCH
- NEEDLE
- SWING CHECK
- BALL CHECK
- TRIPLE DUTY
- SAMPLE
- MUD
- PRESSURE RELIEF
- AIR AND/OR VACUUM RELIEF
- REGULATED SIDE
- PRESSURE CONTROL
- MULTI–PORT VALVES (BALL VALVE SHOWN. FOR OTHER VALVE TYPES, APPROPRIATE VALVE SYMBOL SHOWN.) ARROWS INDICATE FLOW PATTERN. SEAT PORTS ARE IMPLIED BY INDICATED FLOW PATTERN.
- CENTER PIVOT CHECK VALVE

GATE SYMBOLS

- SLUICE
- BUTTERFLY
- FLAP
- FABRICATED SLIDE
- SHEAR

ACTUATOR SYMBOLS

- P Z XX — PNEUMATIC W/POSITIONER
- P S XX — PNEUMATIC W/SOLENOID
- E XX — ELECTRIC
- E Z XX — ELECTRIC W/POSITIONER
- H XX — HYDRAULIC
- S — SOLENOID
- P B XX — PNEUMATIC W/ VOLUME BOOSTER

NOTE: ON LOSS OF PRIMARY POWER (PNEUMATIC OR ELECTRICAL)

XX: FO = FAIL OPEN
FC = FAIL CLOSED
FLP = FAIL TO LAST POSITION

MOTOR CONTROL INTERFACE

MS @ MCC — MOTOR STARTER (MS) AND CONTROL LOGIC FUNCTIONS– FUNCTION LOCATED IN MOTOR CONTROL CENTER (MCC)

REFER TO CONTROL DIAGRAMS FOR TYPICAL FUNCTIONS
EACH MOTOR STARTER COMPARTMENT REQUIRES FRONT MOUNTED PUSH–TO–TEST ON LIGHT, RUN TIME METER, MECH. OL RESET PUSHBUTTON

MISCELLANEOUS SYMBOLS

- SIGHT GLASS
- DIAPHRAGM SEAL
- BLIND FLANGE
- AIR GAP
- VENT TO ATMOSPHERE
- AERATOR
- PLUG
- RECEPTACLE
- A — SELF CONTAINED AIR SUPPLY
- SD D — COMPOSITE SAMPLER (DIPPER TYPE)
- SS — COMPOSITE SAMPLER (SUCTION TYPE)
- TV — TV CAMERA
- RADIO ANTENNA
- A ON–TD X–SEC B — "ON" TIME DELAY: B "ON" X–SEC. AFTER A "ON". INSTANT "OFF"
- A OFF–TD X–SEC B — "OFF" TIME DELAY B "OFF" X–SEC. AFTER A "OFF". INSTANT "ON"
- I OR I — INTERLOCK. SEE CONTROL DIAGRAMS AND LOOP DESCRIPTIONS FOR FUNCTION.
- A B S R C — MEMORY ELEMENT S=SET, R=RESET
- XP — PURGE SET X: W=WATER A=AIR
- SEE
- RTU–XXX — REMOTE TELEMETRY UNIT
- STRAINER, Y TYPE
- J = ELECTRICAL JUNCTION DEVICE – SPECIFIED IN I & C SECTION
- xxxV — xxx VOLT POWER SUPPLY POINT, (480 VOLT = 3 PHASE POWER) (208 VOLT = 1 PHASE POWER)
- ANNULAR DIAPHRAGM SEAL
- RUPTURE DISK
- PIG INSERT POINT
- OR — PIG CATCH POINT
- OR M — MIXER
- M — ELECTRIC MOTOR
- PRESSURE GAUGE
- X — TONE TRANSMITTER NO. X
- X — TONE RECEIVER NO. X
- VOICE COMMUNICATION POINT
- TV — TV MONITOR
- A B AND C — LOGIC ELEMENT: IF A AND NOT B THEN C
- A B OR C — LOGIC ELEMENT: IF A OR B THEN C
- S R — ON/OFF RELAY. INPUT IS CONNECTED TO OUTPUT WHEN SWITCHING SIGNAL IS PRESENT
- SWITCHING SIGNAL:
- S R — SWITCHING RELAY. INPUT WITH DOT IS CONNECTED TO OUTPUT WHEN SWITCHING SIGNAL IS PRESENT.
- OTHER INPUT IS CONNECTED TO OUTPUT WHEN SWITCHING SIGNAL IS NOT PRESENT.
- F — FLUSHING CONNECTION:
- HOSE ADAPTOR
- S — SEAL WATER SET:
- SIGHT FLOW GAUGE
- XX — AIR SET:
- XX = SUPPLY PRESSURE IN PSIG.
- FILTER/ REGULATOR/ GAUGE SET
- 240V OR 120V — TC — HEAT TRACE FURNISHED BY OTHERS PER DIVISION 16

PUMP COMPRESSOR SYMBOLS

NOTE:

XX: ASVT ADJUSTABLE SPEED VARIABLE TORQUE
ASCT ADJUSTABLE SPEED CONSTANT TORQUE
TS TWO SPEED

- CENTRIFUGAL PUMP (DRY PIT)
- CENTRIFUGAL PUMP (WET PIT)
- CHEMICAL FEED PUMP
- DIAPHRAGM PUMP
- LOBE PUMP (POSITIVE DISPLACEMENT)
- PISTON PUMP
- GAS COMPRESSOR (LIQUID RING)
- PROGRESSIVE CAVITY PUMP
- SUBMERSIBLE SUMP PUMP
- COMPRESSOR (CENTRIFUGAL) OR BLOWER
- COMPRESSOR (PISTON)
- EJECTOR
- COMPRESSOR OR BLOWER (POSITIVE DISPLACEMENT)
- PERISTALTIC PUMP

PRIMARY ELEMENT SYMBOLS

- PARSHALL FLUME
- WEIR
- ORIFICE PLATE
- FLOW TUBE
- PITOT–STATIC
- ULTRASONIC FLOWMETER
- ULTRASONIC FLOWMETER (CLAMP–ON)
- PROPELLER OR TURBINE METER
- ELECTROMAGNETIC FLOWMETER
- LEVEL (BUBBLE TUBE)
- LEVEL (FLOAT)
- LEVEL (ULTRASONIC OR RADAR)
- ROTAMETER
- X — DENSITY METER (X: N = NUCLEAR O = OPTICAL U = ULTRASONIC)
- FE X–X–X — THERMAL DISPERSION FLOWMETER
- D.O. AE X–X–X — DISSOLVED OXYGEN D.O. SENSOR
- TE X–X–X — TEMPERATURE ELEMENT

NOTE:

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DESIGNED BY P.A.T.	VERIFY SCALES LENGTH OF BAR IS 1" ON ORIGINAL DRAWING 1:1 PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY	NO.	DATE	REVISION	BY	APVD	
DRAWN BY J.C.S.							
CHECKED BY P.A.T.							
APPROVED BY J.J.S.							

Applied Technologies Engineers-Architects

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PROJECT REFERENCE
INSTRUMENTATION & CONTROL LEGEND

PROJECT NO. 5582 | DATE JAN 2016
DRAWING NO. 10–I–2

PSLTSCALE: 1 LTSCALE: 1
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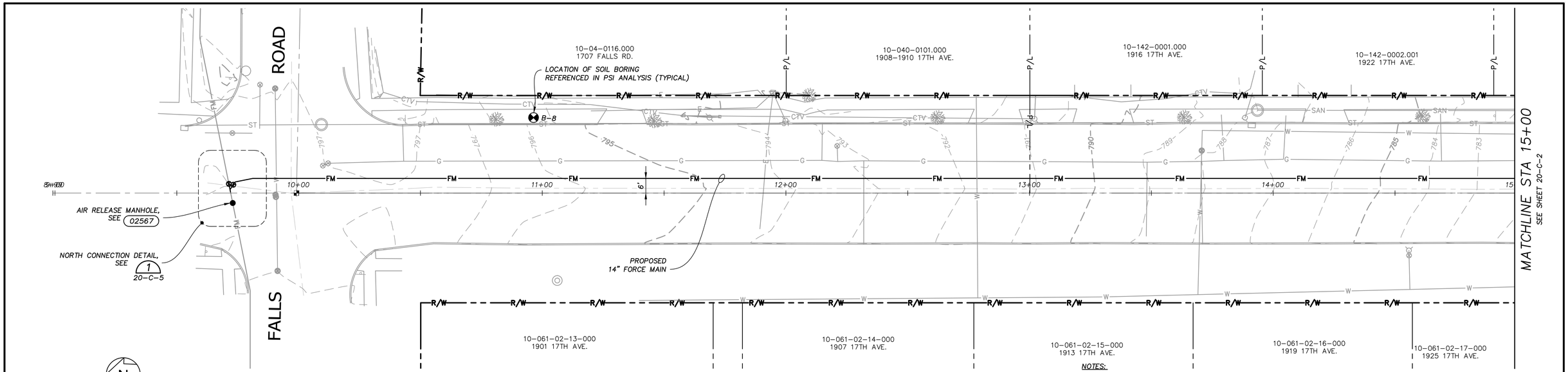
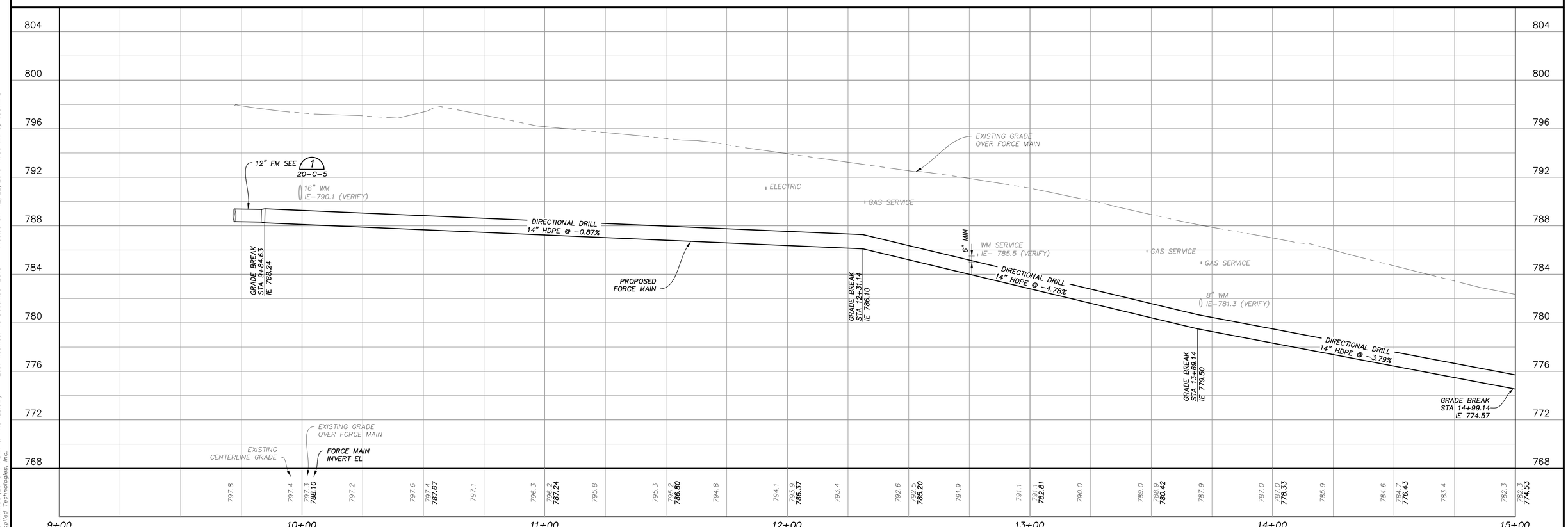


NOTES:

1. LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE BASED ON MARKINGS LOCATED IN THE FIELD AND RECORD DRAWINGS. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH PRIOR TO CONSTRUCTION.
2. ALL PAVEMENT DISTURBED OR REMOVED SHALL BE REPLACED WITH 10 INCHES OF CRUSHED TB LIMESTONE AND 5 INCHES OF HMA PAVEMENT (3" BINDER, 2" SURFACE)



DESIGNED BY W.A.H.	VERIFY SCALES LENGTH OF BAR IS 1" ON ORIGINAL DRAWING 1:1 PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY	NO.	DATE	REVISION	BY	APVD	
DRAWN BY P.C.G.							
CHECKED BY P.A.T.							
APPROVED BY J.J.S.							

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VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

17th AVENUE
CIVIL/UTILITIES
PLAN & PROFILE

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 20-C-1

PSLTSCALE: 1 LTSCALE: 1
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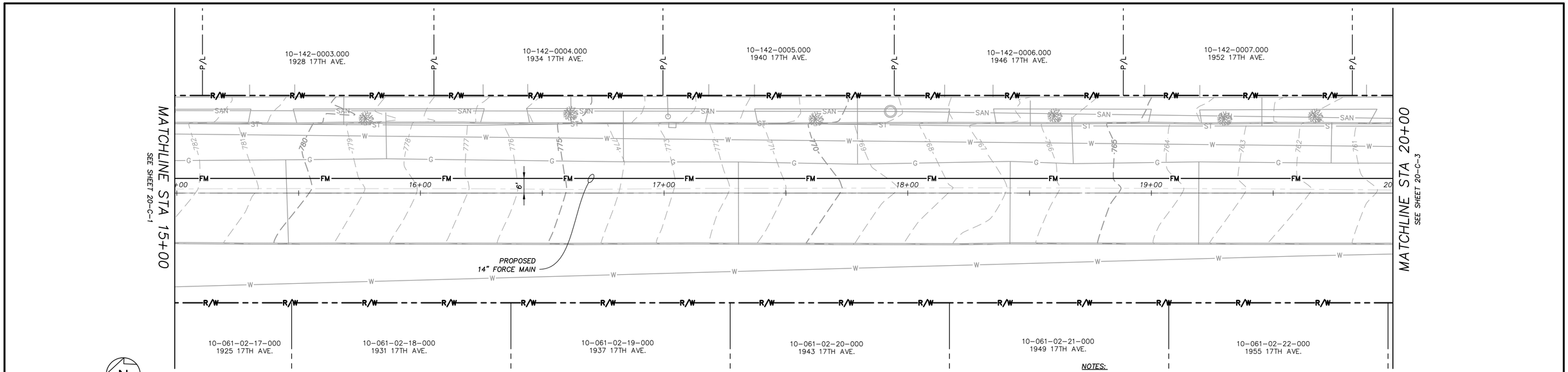

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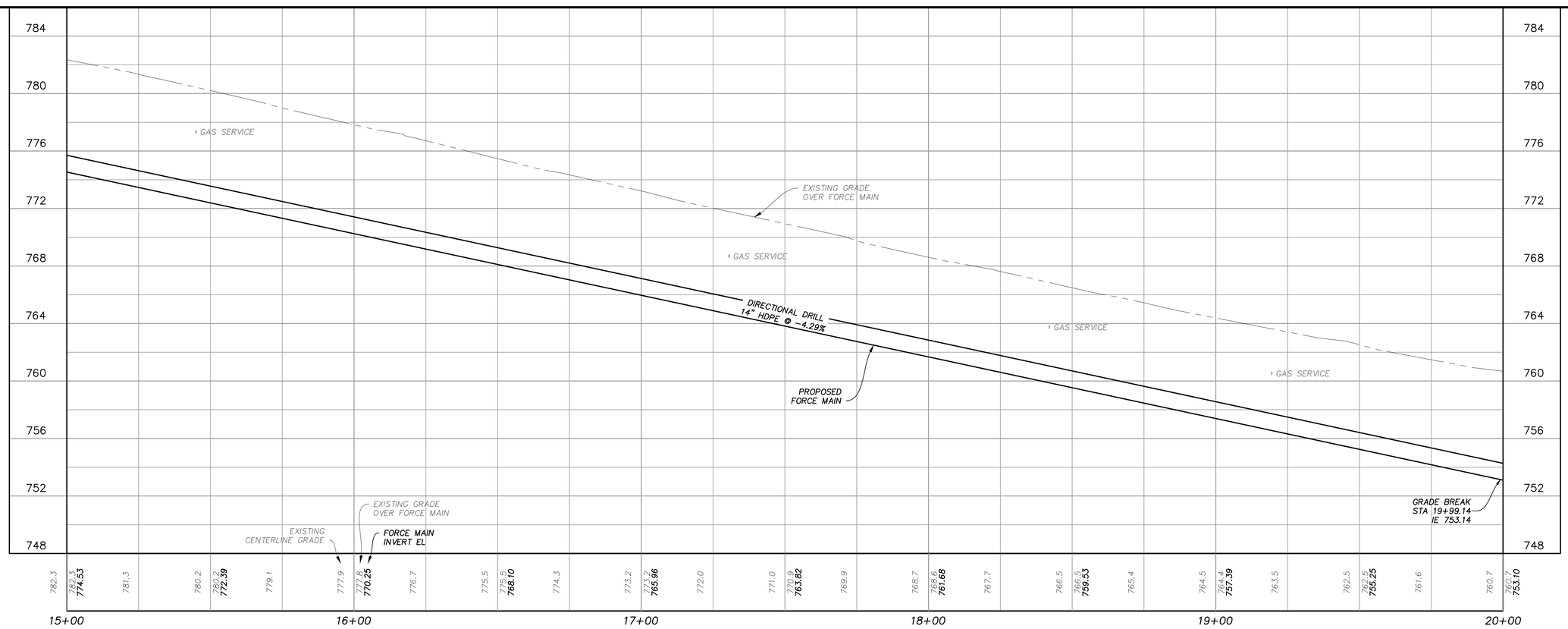

DESIGNED BY	W.A.H.
DRAWN BY	P.C.G.
CHECKED BY	P.A.T.
APPROVED BY	J.J.S.

VERIFY SCALES
LENGTH OF BAR IS 1" ON ORIGINAL DRAWING
1:1
PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY

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GRAFTON, WISCONSIN

17th AVENUE
CIVIL/UTILITIES
PLAN & PROFILE

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 20-C-2

PSLTSCALE: 1
LTSCALE: 1
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Last Modified: 9 November 2015
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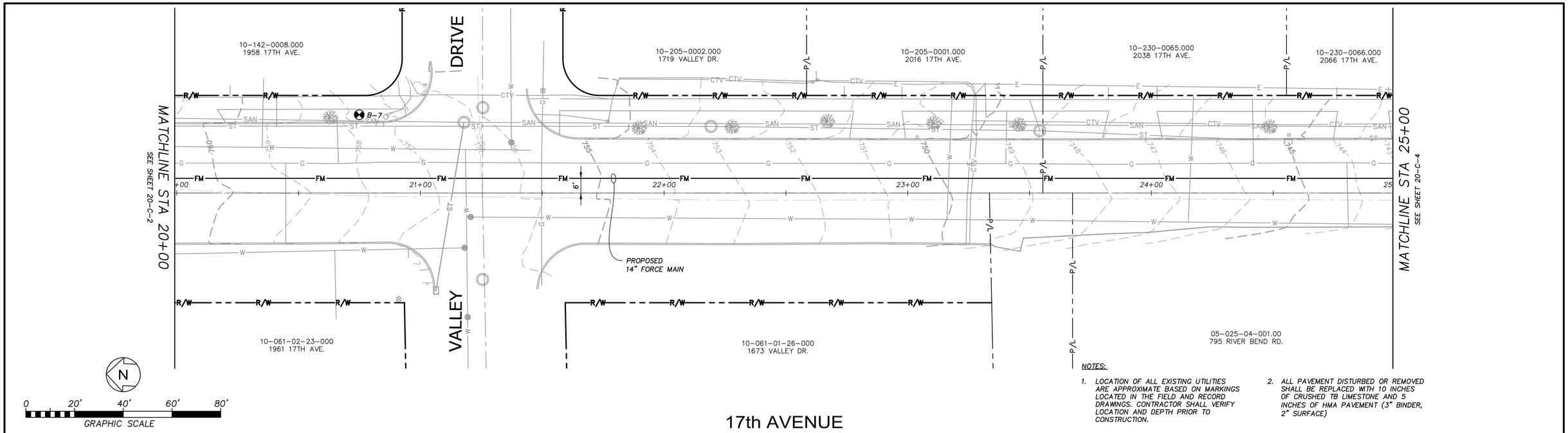

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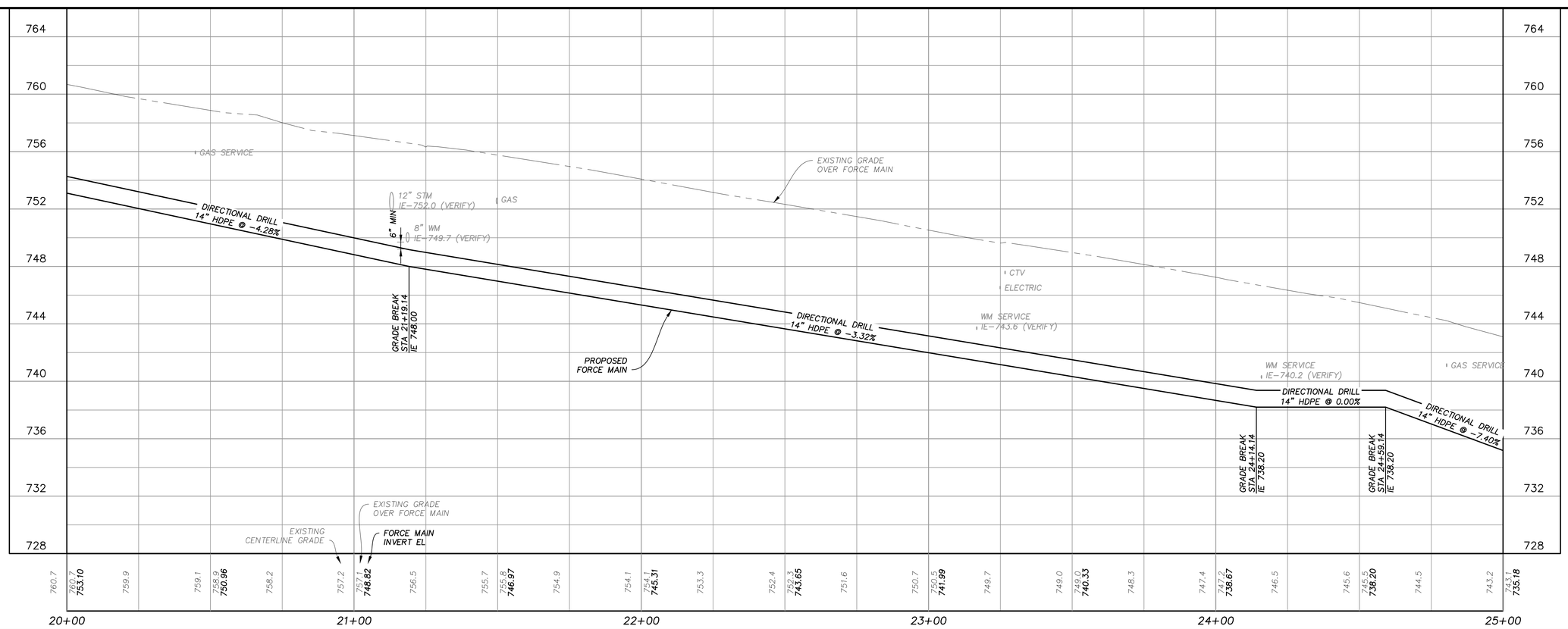

DESIGNED BY	W.A.H.
DRAWN BY	P.C.G.
CHECKED BY	P.A.T.
APPROVED BY	J.J.S.

VERIFY SCALES
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1:1
PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY

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GRAFTON, WISCONSIN

17th AVENUE
CIVIL/UTILITIES
PLAN & PROFILE

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 20-C-3

PSLTSCALE: 1 LTSCALE: 1
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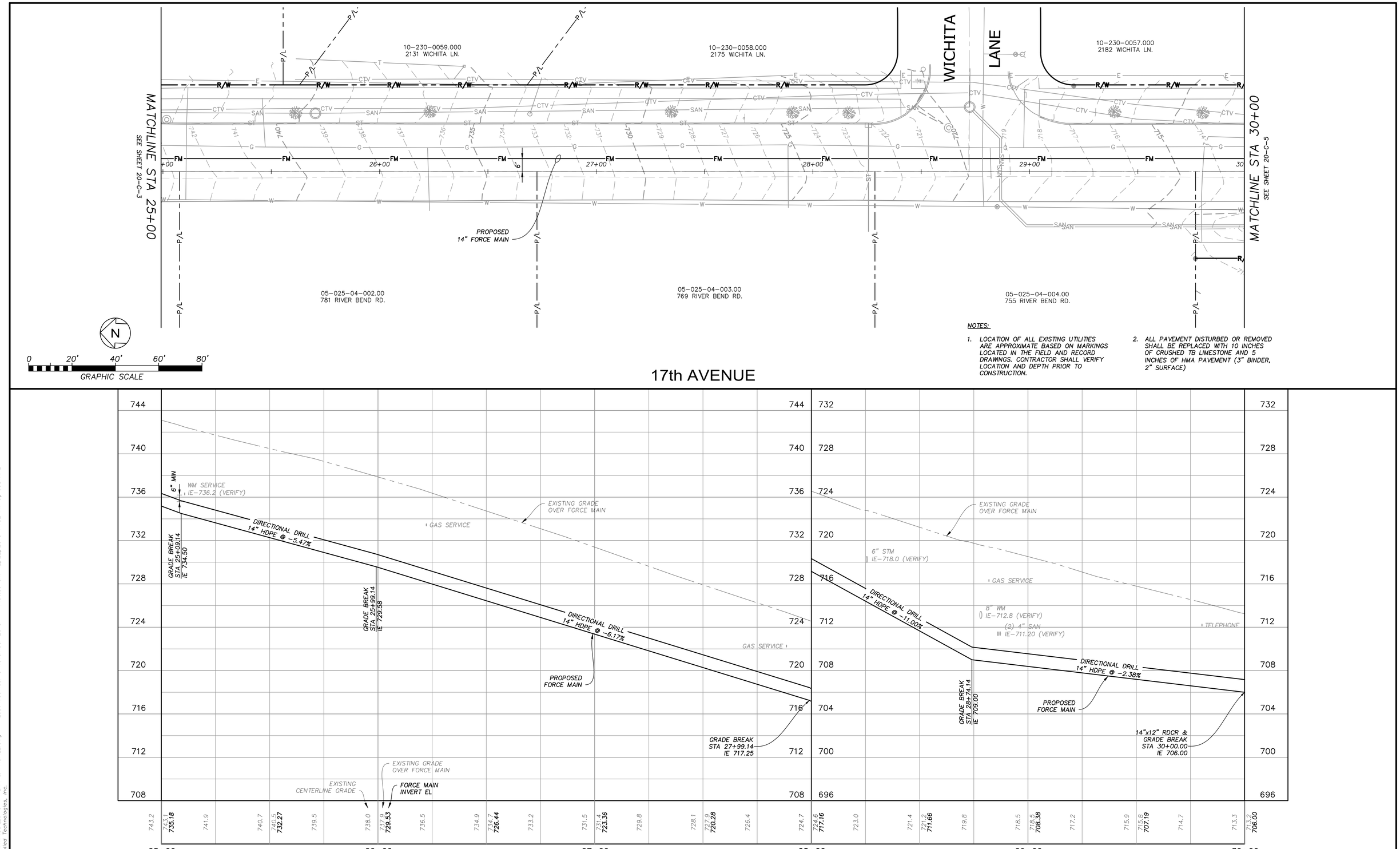

NOTES:

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2. ALL PAVEMENT DISTURBED OR REMOVED SHALL BE REPLACED WITH 10 INCHES OF CRUSHED TB LIMESTONE AND 5 INCHES OF HMA PAVEMENT (3" BINDER, 2" SURFACE)

DESIGNED BY	W.A.H.
DRAWN BY	P.C.G.
CHECKED BY	P.A.T.
APPROVED BY	J.J.S.

VERIFY SCALES
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1:1
PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY

NO.	DATE	REVISION	BY	APVD

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RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

17th AVENUE
CIVIL/UTILITIES
PLAN & PROFILE

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 20-C-4

PSLTSCALE: 1 LTSCALE: 1
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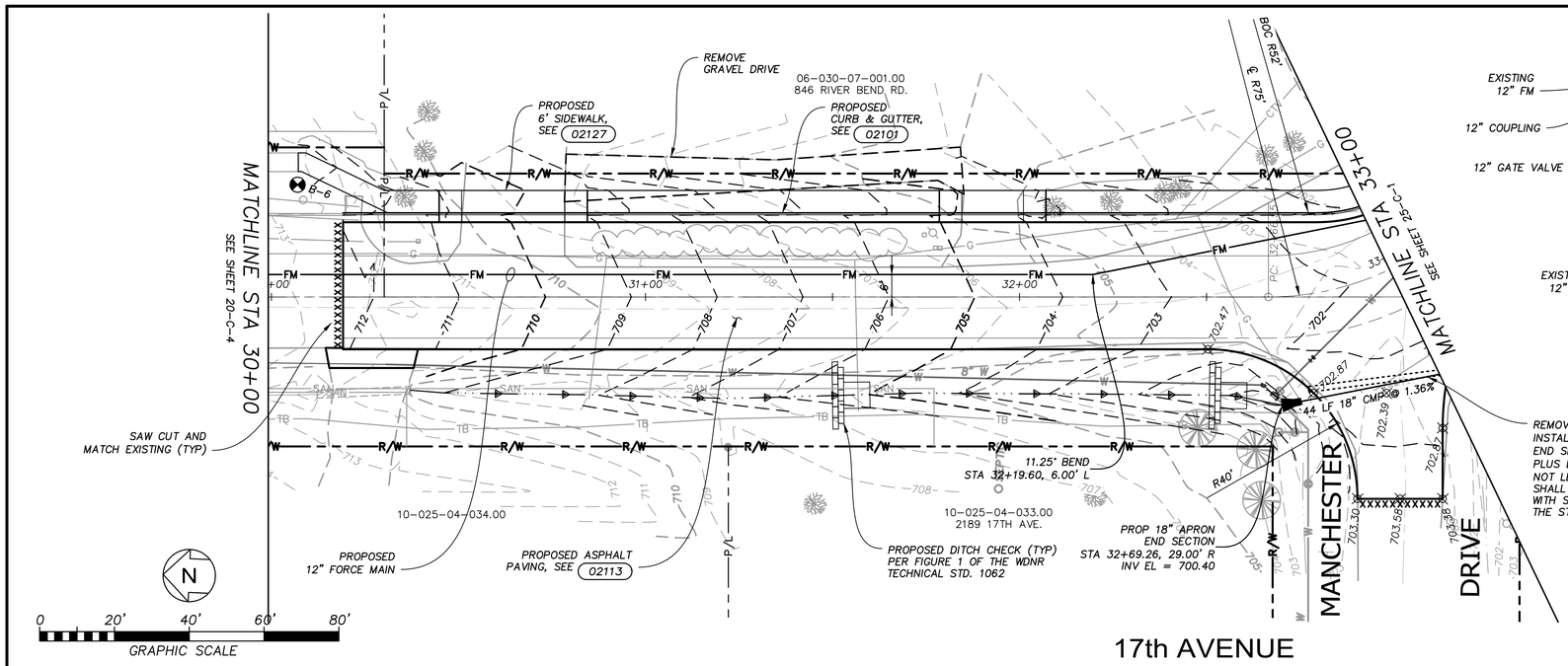
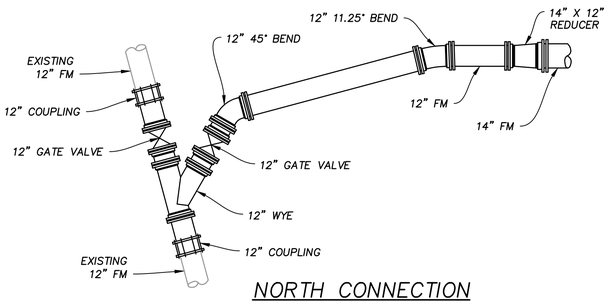
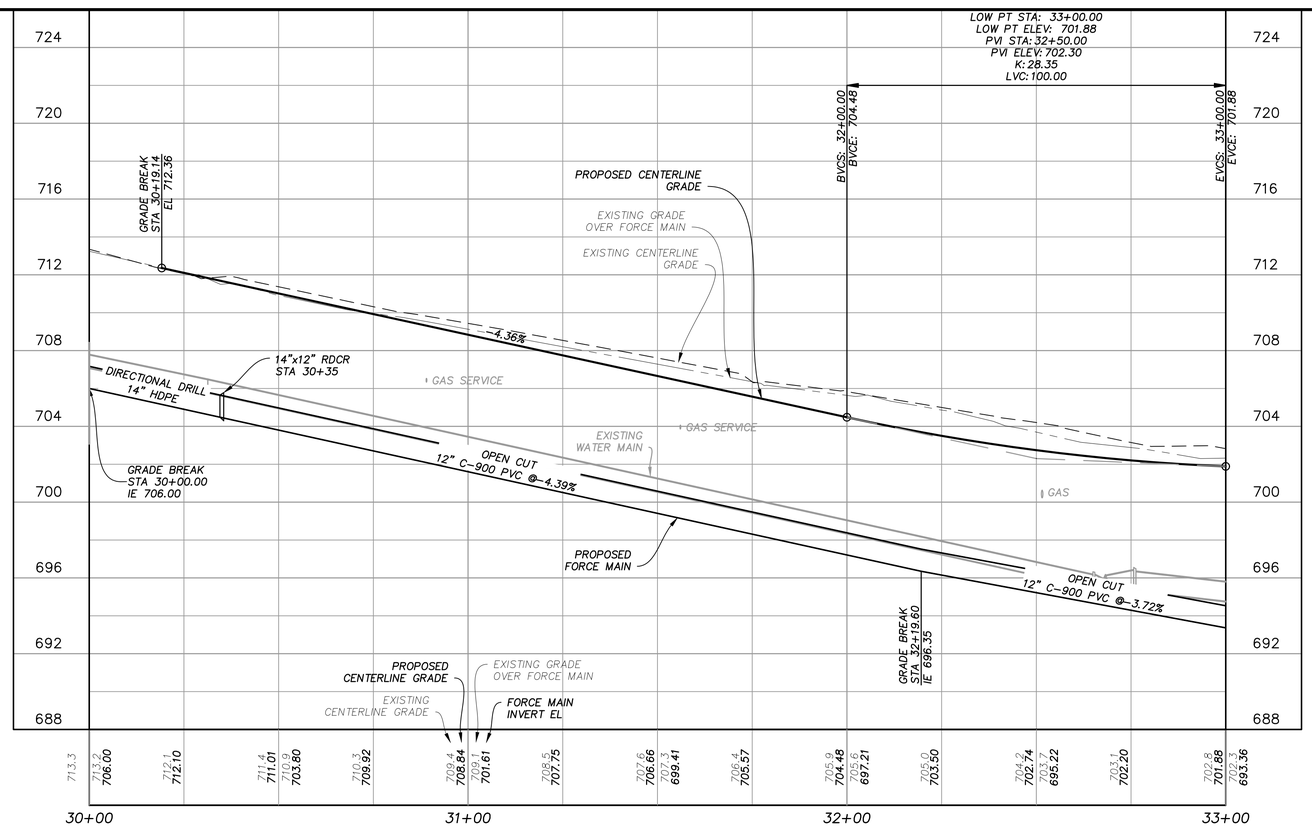




NORTH CONNECTION DETAIL 1 — 20-C-1
NTS

NOTES:

1. LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE BASED ON MARKINGS LOCATED IN THE FIELD AND RECORD DRAWINGS. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH PRIOR TO CONSTRUCTION.
2. ALL PAVEMENT DISTURBED OR REMOVED SHALL BE REPLACED WITH 10 INCHES OF CRUSHED TB LIMESTONE AND 5 INCHES OF HMA PAVEMENT (3" BINDER, 2" SURFACE)
3. RE-SHAPE DITCH LINES AS NECESSARY TO FACILITATE DRAINAGE.
4. CONTRACTOR SHALL RECONSTRUCT THIS PORTION OF THE PROJECT TO INSURE BASE THICKNESS IN ACCORDANCE WITH THE TYPICAL SECTION. BEGIN STATION 30+19 TO END STATION 33+50.
5. ALL SLOPES EXCEEDING 5:1 SHALL BE EROSION MATTED IN ACCORDANCE WITH WDNR TECHNICAL STANDARD 1052.
6. ALL DISTURBED AREAS SHALL BE TOPSOILED, SEEDED AND MULCHED SEED MIXTURE WDOT MIXTURE #10 @ 4lbs PER THOUSAND SQUARE FEET.



DESIGNED BY W.A.H.	VERIFY SCALES LENGTH OF BAR IS 1" ON ORIGINAL DRAWING 1:1 PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY	NO.	DATE	REVISION	BY	APVD
DRAWN BY P.C.G.						
CHECKED BY P.A.T.						
APPROVED BY J.J.S.						

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VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

17th AVENUE
CIVIL/UTILITIES
PLAN & PROFILE

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 20-C-5

PSI TSCALE: 1 LTSCALE: 1
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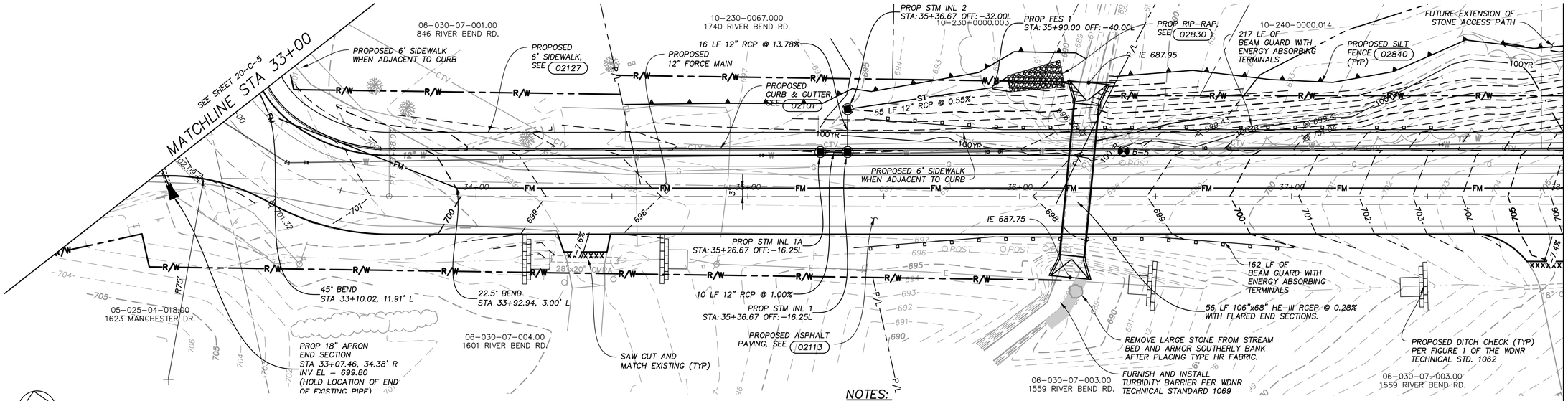

RIVER BEND ROAD

NOTES:

1. LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE BASED ON MARKINGS LOCATED IN THE FIELD AND RECORD DRAWINGS. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH PRIOR TO CONSTRUCTION.
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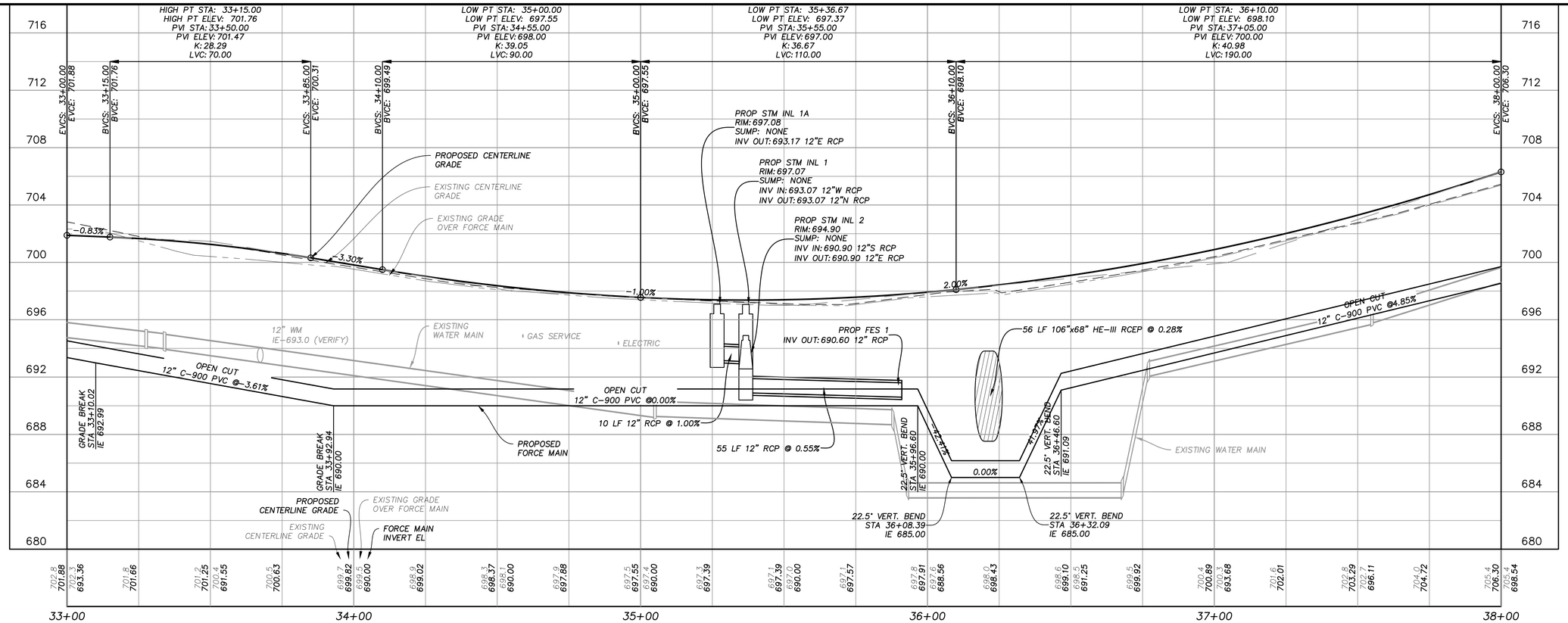
3. RE-SHAPE DITCH LINES AS NECESSARY TO FACILITATE DRAINAGE.
4. STATION 33+50 TO STATION 38+00, PULVERIZE STREET IN PLACE.
5. ALL SLOPES EXCEEDING 5:1 SHALL BE EROSION MATTED IN ACCORDANCE WITH WDNR TECHNICAL STANDARD 1052.
6. ALL DISTURBED AREAS SHALL BE TOPSOILED, SEEDED AND MULCHED SEED MIXTURE WDOT MIXTURE #10 @ 4lbs PER THOUSAND SQUARE FEET.



DESIGNED BY W.A.H.	VERIFY SCALES LENGTH OF BAR IS 1" ON ORIGINAL DRAWING 1:1 PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY	NO.	DATE	REVISION	BY	APVD
DRAWN BY P.C.G.						
CHECKED BY P.A.T.						
APPROVED BY J.J.S.						

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VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

RIVER BEND ROAD
CIVIL/UTILITIES/PAVING
PLAN & PROFILE

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 25-C-1

PSLTSCALE: 1 LTSCALE: 1
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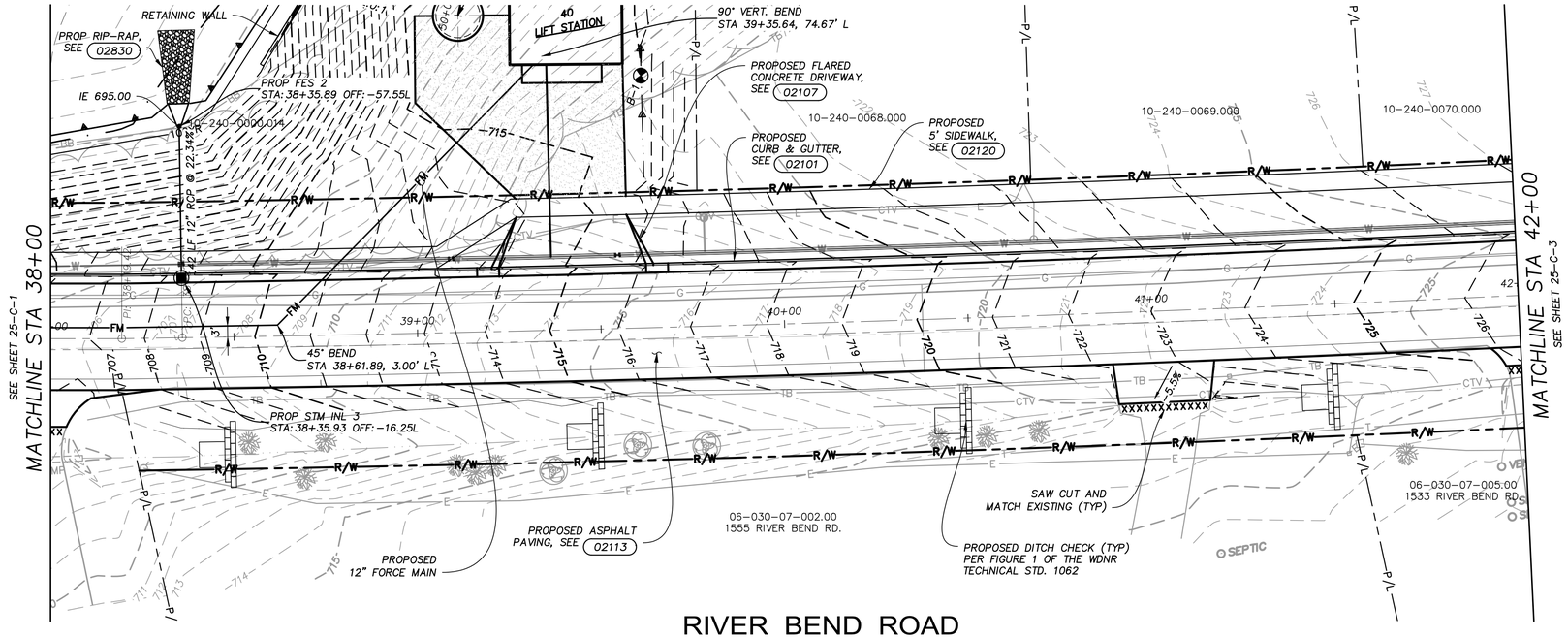

RIVER BEND ROAD

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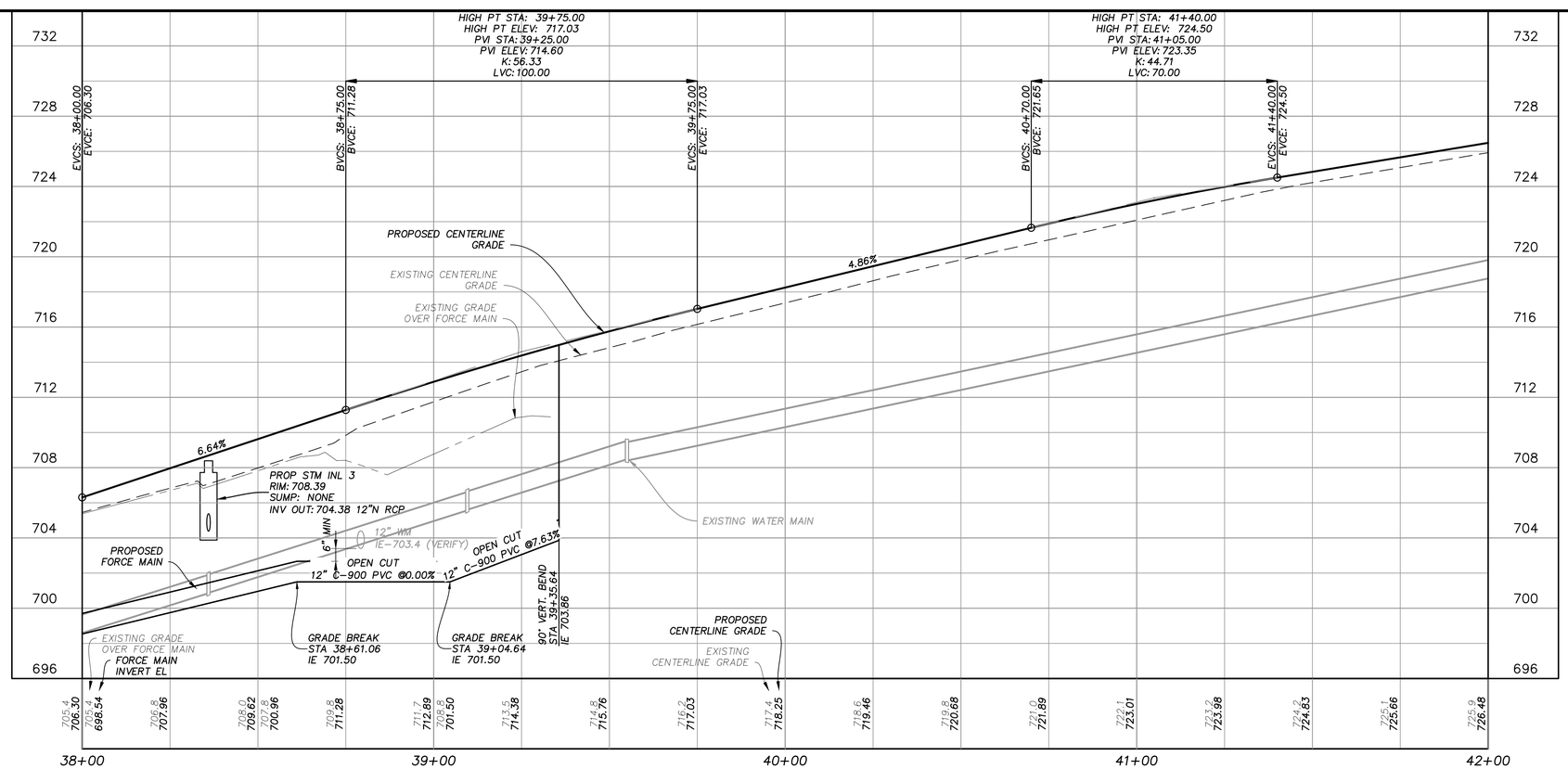

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DRAWN BY P.C.G.						
CHECKED BY P.A.T.						
APPROVED BY J.J.S.						

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VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

RIVER BEND ROAD
CIVIL/UTILITIES/PAVING
PLAN & PROFILE

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 25-C-2

PSLTSCALE: 1 LTSCALE: 1
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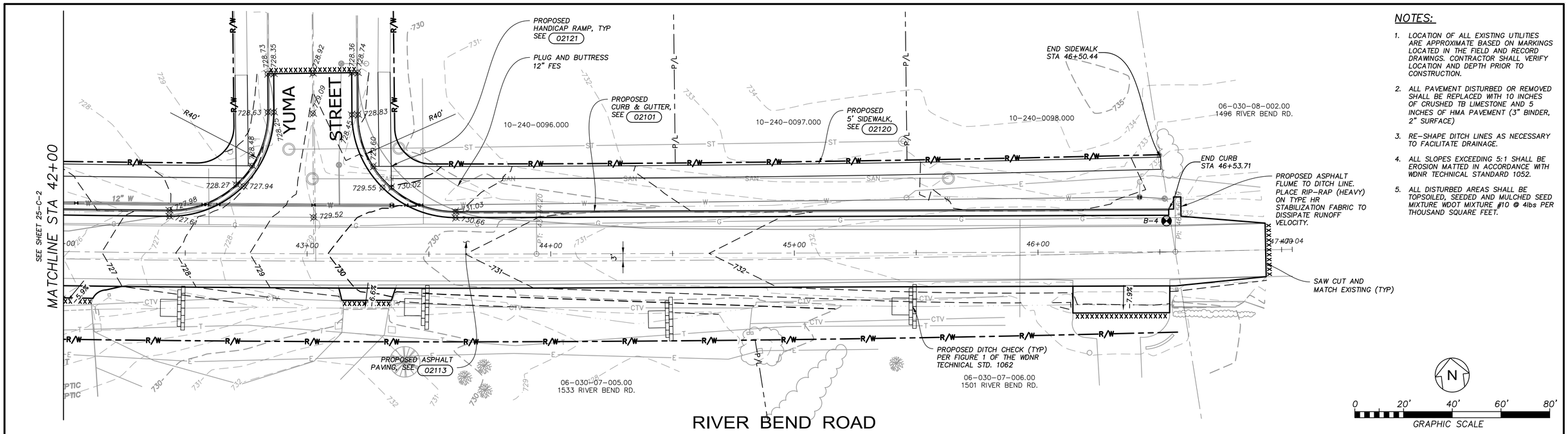

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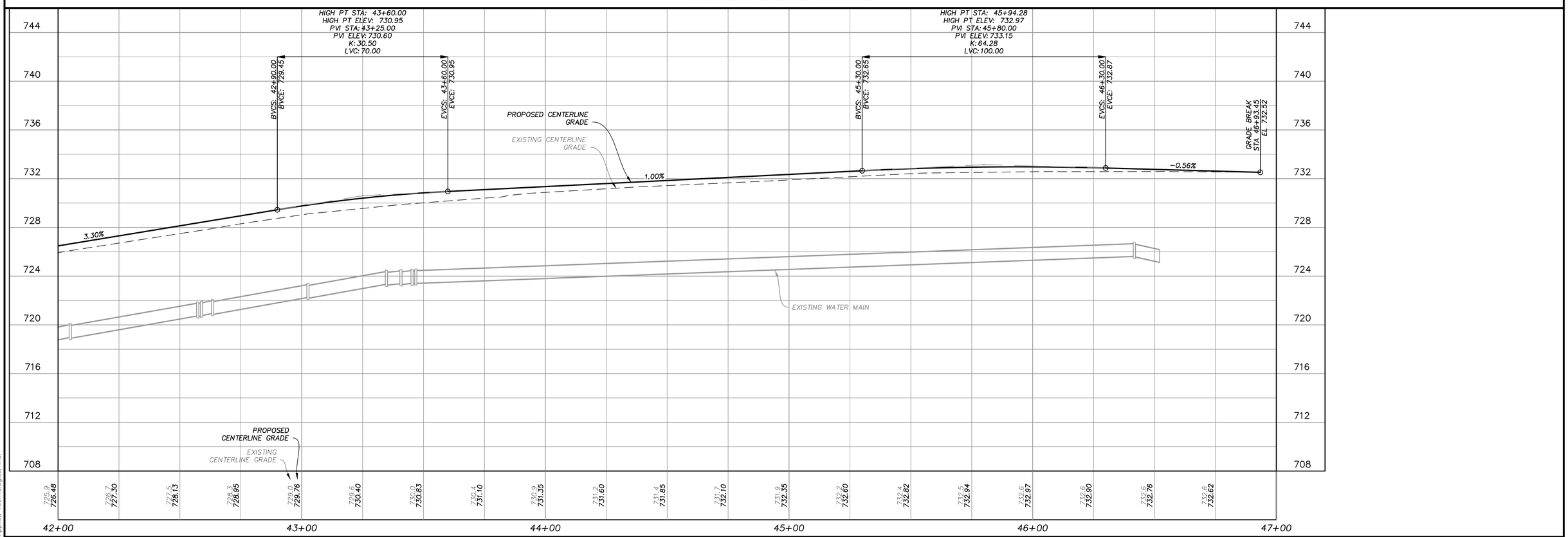

DESIGNED BY	W.A.H.	VERIFY SCALES LENGTH OF BAR IS 1" ON ORIGINAL DRAWING 1:1 PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY	NO.	DATE	REVISION	BY	APVD
DRAWN BY	P.C.G.						
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RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

RIVER BEND ROAD
CIVIL/UTILITIES/PAVING
PLAN & PROFILE

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 25-C-3

PSI TSCALE: 1 LTSCALE: 1
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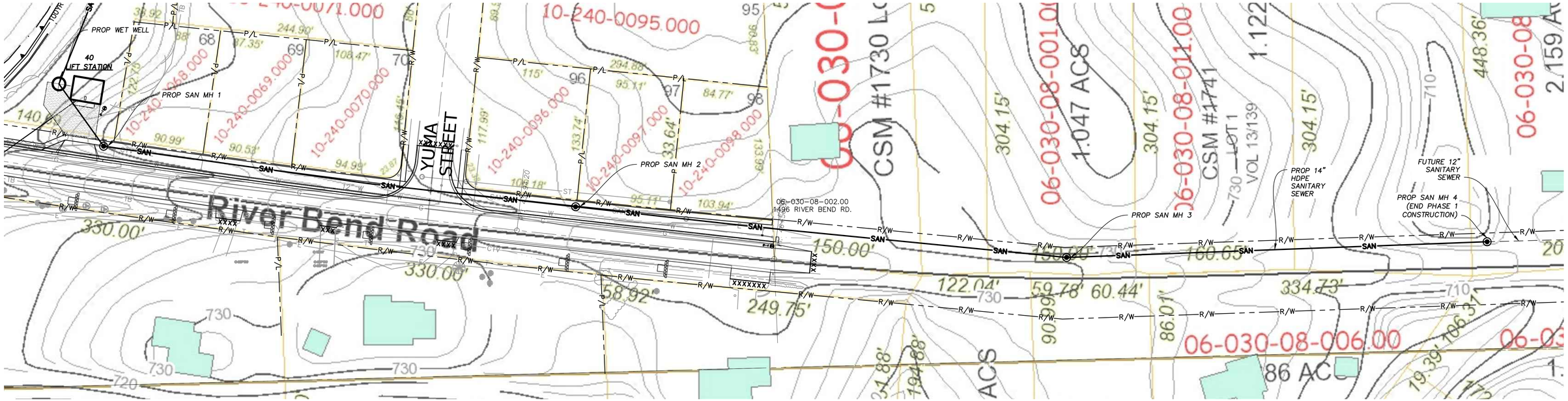

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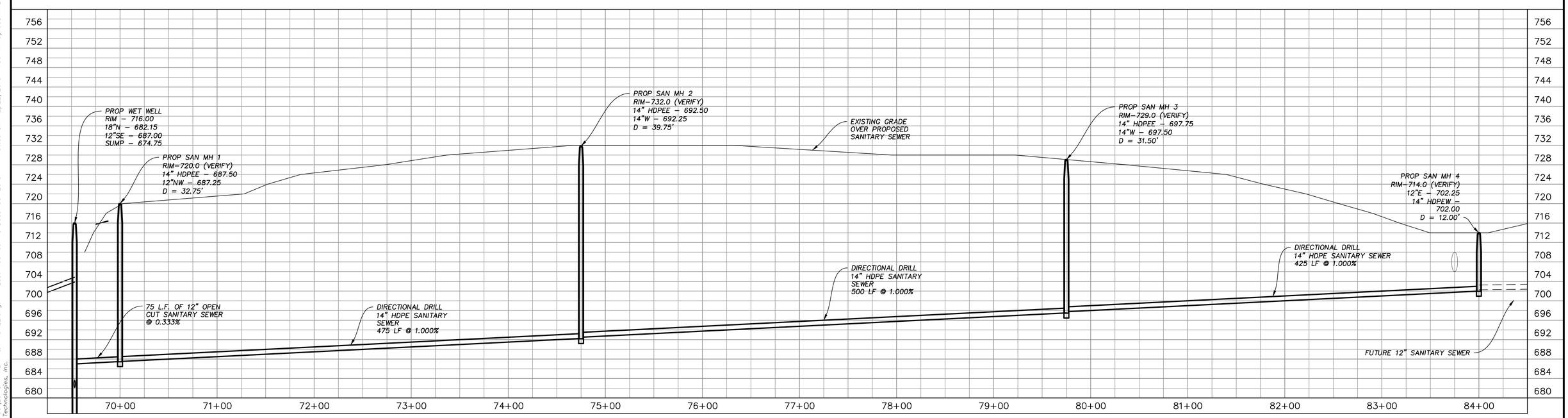
GRAPHIC SCALE

RIVER BEND ROAD

NOTE:

BASE MAP PREPARED FROM GIS INFORMATION. REFER TO SHEET 25-C-2 AND 25-C-3 FOR FIELD SURVEYED PORTION OF PROJECT.



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VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

RIVER BEND ROAD
CIVIL/UTILITIES
PLAN & PROFILE

PROJECT NO. 5582

DATE JAN 2016

DRAWING NO. 25-C-4

PSLTSCALE: 1 LTSCALE: 1
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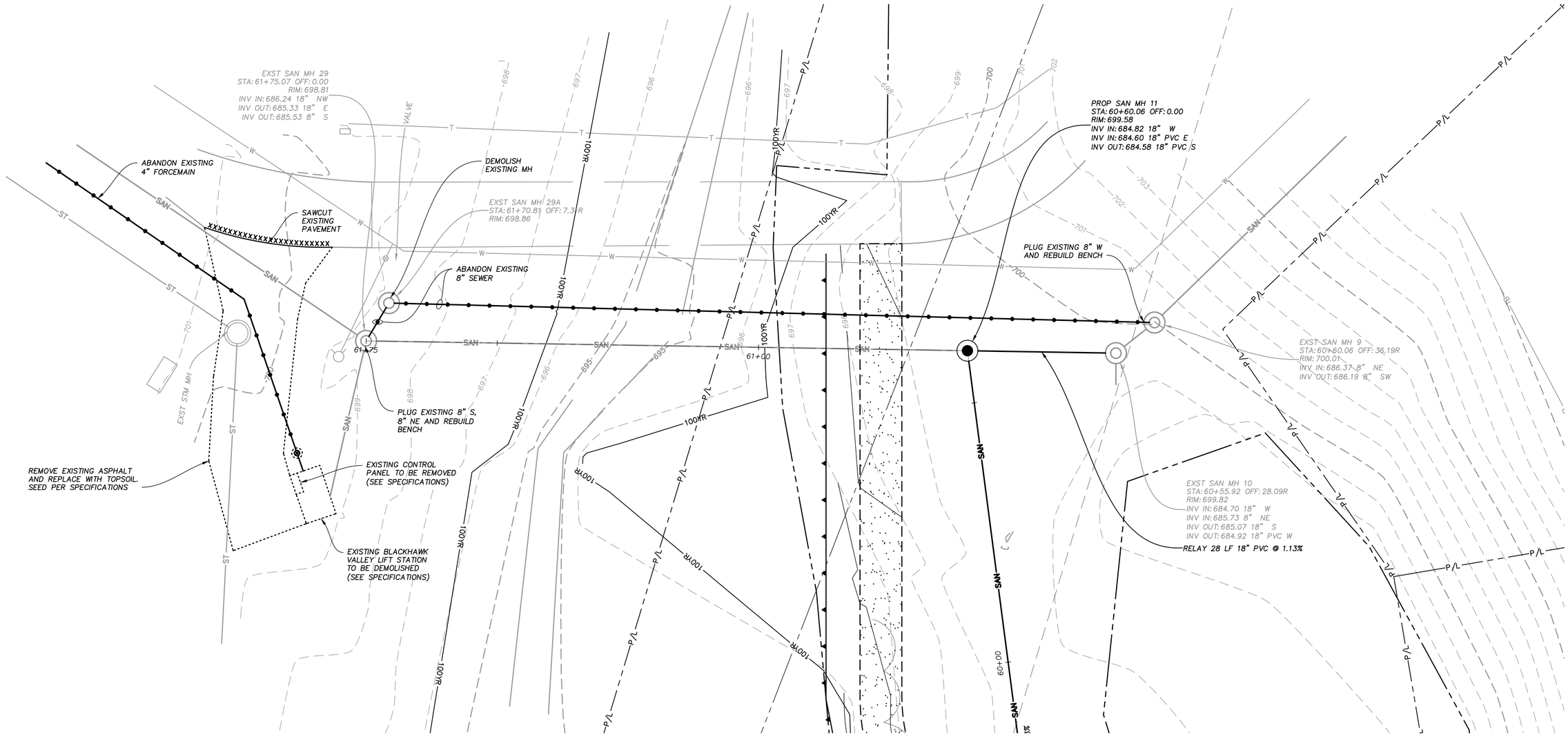

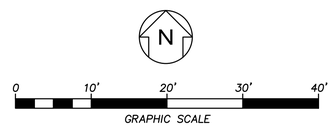

NOTES:

1. PROVIDE FIRST RIGHT OF REFUSAL TO THE VILLAGE OF GRAFTON FOR ALL REMOVED EQUIPMENT.
2. EXISTING WET WELL, LIFT STATION AND PIPING TO REMAIN IN SERVICE UNTIL NEW STATION IS CONSTRUCTED, TESTED AND OPERATIONAL.
3. SCHEDULE ALL DEMOLITION AND TEMPORARY FACILITIES WITH THE ENGINEER AND OWNER.
4. BLIND FLANGE OR CAP ALL ABANDONED PIPING.
5. COORDINATE WITH WE ENERGIES THE REMOVAL OF THE ELECTRICAL SERVICE AFTER THE NEW STATION IS IN SERVICE.
6. OWNER TO CLEAN WET WELL AND SALVAGE THE EXISTING PUMPS AND CONTROLS AS DESIRED.
7. FOR DEMOLISHED LIFT STATION AND MANHOLE, REMOVE STRUCTURES TO A MINIMUM OF TWO FEET BELOW FINISHED GRADE, AND FILL WILL AGGREGATE SLURRY.

DESIGNED BY P.A.T.	VERIFY SCALES LENGTH OF BAR IS 1" ON ORIGINAL DRAWING 1:1 PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY						
DRAWN BY J.C.S.							
CHECKED BY P.A.T.							
APPROVED BY J.J.S.		NO.	DATE	REVISION	BY	APVD	

Applied Technologies Engineers-Architects

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

YUMA INTERCEPTOR & LIFT STATION REMOVAL PLAN

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 26-R-1

PSLTSCALE: 1 LTSCALE: 1
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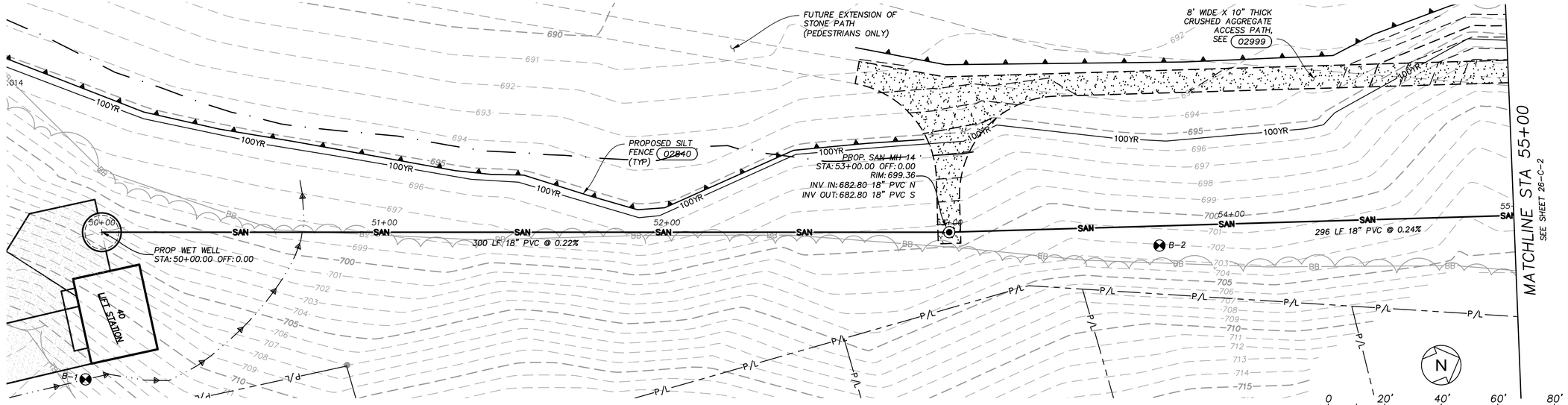
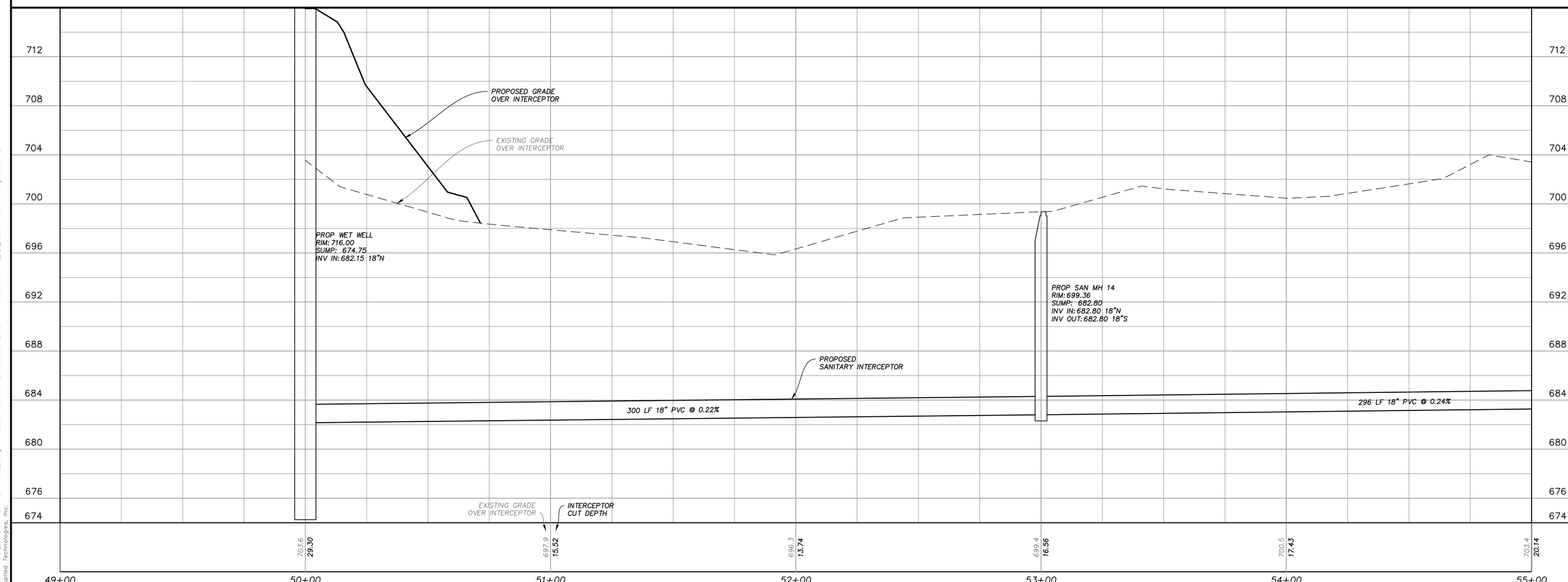
3. ANCHORED MANHOLE FRAME AND COVER REQUIRED IN ACCORDANCE WITH FILE NO. 32 OF THE STANDARD SPECIFICATION, FOR SEWER AND WATER CONSTRUCTION IN WISCONSIN, CURRENT EDITION.
4. ALL SLOPES EXCEEDING 5:1 SHALL BE EROSION MATTED IN ACCORDANCE WITH WDNR TECHNICAL STANDARD 1052.
5. ALL DISTURBED AREAS SHALL BE TOPSOILED, SEEDED AND MULCHED SEED MIXTURE WDOT MIXTURE #10 @ 4lbs PER THOUSAND SQUARE FEET.



YUMA INTERCEPTOR AND LIFT STATION



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VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

YUMA INTERCEPTOR & LIFT STATION
CIVIL/UTILITIES
PLAN & PROFILE

PROJECT NO. 5582 | DATE JAN 2016
DRAWING NO. 26-C-1

PSLTSCALE: 1 LTSCALE: 1
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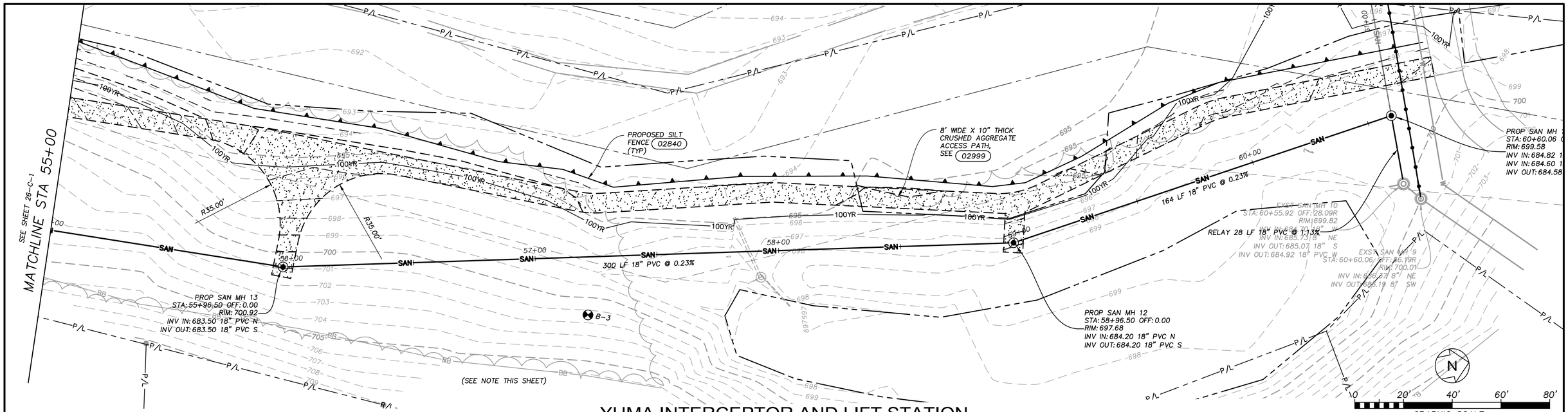
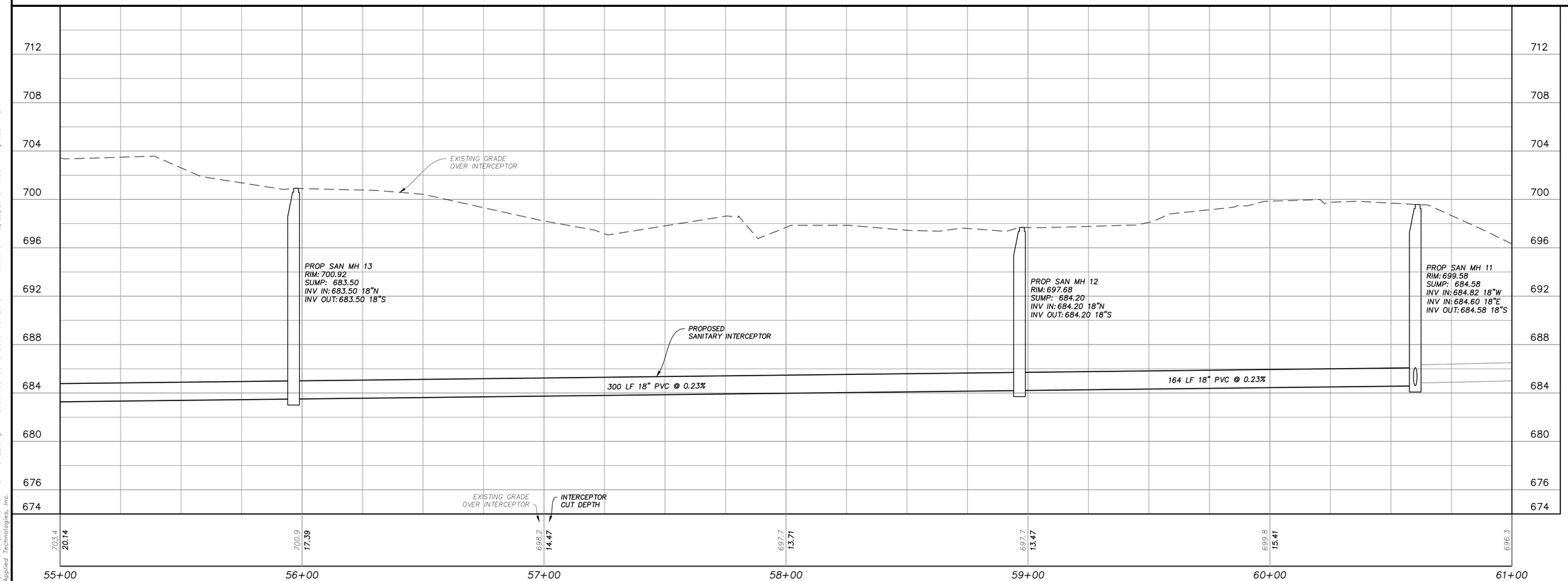


YUMA INTERCEPTOR AND LIFT STATION



NOTES:

1. LOCATION OF ALL EXISTING UTILITIES ARE APPROXIMATE BASED ON MARKINGS LOCATED IN THE FIELD AND RECORD DRAWINGS. CONTRACTOR SHALL VERIFY LOCATION AND DEPTH PRIOR TO CONSTRUCTION.
2. ALL PAVEMENT DISTURBED OR REMOVED SHALL BE REPLACED WITH 10 INCHES OF CRUSHED TB LIMESTONE AND 5 INCHES OF HMA PAVEMENT (3" BINDER, 2" SURFACE)
3. ANCHORED MANHOLE FRAME AND COVER REQUIRED IN ACCORDANCE WITH FILE NO. 32 OF THE STANDARD SPECIFICATION, FOR SEWER AND WATER CONSTRUCTION IN WISCONSIN, CURRENT EDITION.
4. ALL SLOPES EXCEEDING 5:1 SHALL BE EROSION MATTED IN ACCORDANCE WITH WDNR TECHNICAL STANDARD 1052.
5. ALL DISTURBED AREAS SHALL BE TOPSOILED, SEEDED AND MULCHED SEED MIXTURE WDOT MIXTURE #10 @ 4lbs PER THOUSAND SQUARE FEET.

DESIGNED BY	W.A.H.
DRAWN BY	P.C.G.
CHECKED BY	P.A.T.
APPROVED BY	J.J.S.

VERIFY SCALES
LENGTH OF BAR IS 1" ON ORIGINAL DRAWING
1:1
PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY

NO.	DATE	REVISION	BY	APVD

AppliedTechnologies
Engineers-Architects

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

YUMA INTERCEPTOR & LIFT STATION
CIVIL/UTILITIES
PLAN & PROFILE

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 26-C-2

PSLTSCALE: 1 LTSCALE: 1
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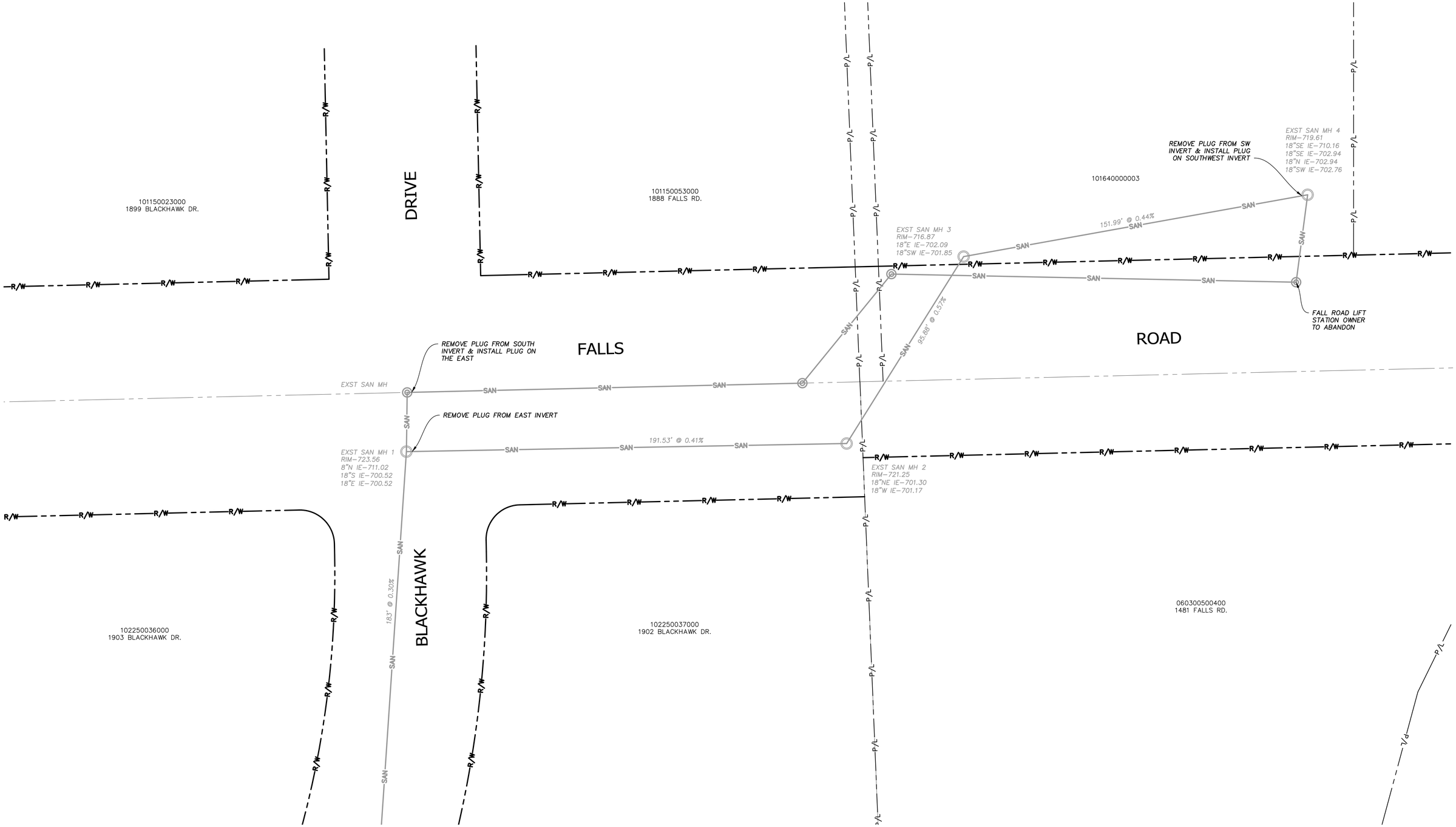

SANITARY SEWER PLAN

DESIGNED BY W.A.H.	VERIFY SCALES LENGTH OF BAR IS 1" ON ORIGINAL DRAWING 1:1 PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY	NO.	DATE	REVISION	BY	APVD
DRAWN BY P.C.G.						
CHECKED BY P.A.T.						
APPROVED BY J.J.S.						

AppliedTechnologies Engineers-Architects

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

FALLS ROAD SANITARY SEWER
CIVIL/UTILITIES
PLAN

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 28-C-1

PSLTSCALE: 1 LTSCALE: 1
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EROSION CONTROL NOTES:

1. CONTRACTOR SHALL PROVIDE EROSION CONTROL CONSISTENT WITH "WISCONSIN CONSTRUCTION SITE EROSION CONTROL TECHNICAL STANDARDS".
2. RECOMMENDED EROSION CONTROL MEASURES ARE INTENDED TO BE USED AS GUIDELINES FOR BEST MANAGEMENT PRACTICES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FURNISH, INSTALL, AND MAINTAIN THE APPROPRIATE EROSION AND SEDIMENT CONTROL MEASURES AS REQUIRED BY ALL APPLICABLE PERMITS.
3. ALL ACTIVITIES ON THE SITE SHALL BE CONDUCTED IN A LOGICAL SEQUENCE TO MINIMIZE THE AREA OF UNSTABILIZIED SOIL AT ANY ONE TIME.
4. ANY DISTURBED SOIL LEFT INACTIVE FOR SEVEN OF MORE DAYS SHALL BE STABILIZED BY SEEDING OR SODDING, OR BY MULCHING OR COVERING, OR OTHER EQUIVALENT CONTROL MEASURES IN ACCORDANCE WITH THE "WISCONSIN CONSTRUCTION SITE EROSION CONTROL TECHNICAL STANDARDS".
5. ANY SOIL OR DIRT STORAGE PILES CONTAINING MORE THAN 10 CUBIC YARDS OF MATERIAL SHALL NOT BE LOCATED WITH DOWN-SLOPE DRAINAGE LENGTH OF LESS THAN 25 FEET TO A ROADWAY, DRAINAGE CHANNEL, OR BODY OF WATER. IF REMAINING FOR MORE THAN 14 DAYS, THE PILE SHALL BE STABILIZIED WITH MULCH, VEGETATIVE COVER, TARPS OR OTHER MEANS. EROSION FROM PILES IN EXISTENCE LESS THAN 14 DAYS SHALL BE CONTROLLED BY PLACING STRAW BALES OR FILTER FENCE BARRIER AROUND THE PILE.
6. FILTER FENCES, STRAW BALES, OR EQUIVALENT BEST MANAGEMENT PRACTICES SHALL BE PLACED ALONG ALL SIDE-SLOPE AND DOWN-SLOPE SIDES OF SITE. FILTER FENCES SHALL ALSO BE PLACED ALONG CHANNEL EDGES TO REDUCE SEDIMENT AMOUNTS REACHING THE CHANNEL.
7. ALL EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO DISTURBING ANY LANDS ON SITE. ALL APPLICABLE PERMITS AND AUTHORIZATIONS PERTAINING TO EROSION CONTROL ACTIVITIES SHALL BE OBTAINED PRIOR TO DISTURBING ANY LANDS ON SITE.
8. EROSION CONTROL MEASURES SHALL REMAIN IN PLACE AND BE MAINTAINED UNTIL THE SITE IS STABILIZIED BY PERMANENT BEST MANAGEMENT PRACTICES.
9. WATER GENERATION ON SITE BY CONSTRUCTION OR DEWATERING ACTIVITIES SHALL BE FREE OF SEDIMENT OR OTHER CONTAMINANTS BEFORE BEING DISPOSED OF.

NOTES:

1. ALL SLOPES EXCEEDING 5:1 SHALL BE EROSION MATTED IN ACCORDANCE WITH WDNR TECHNICAL STANDARD 1052.
2. ALL DISTURBED AREAS SHALL BE TOPSOILED, SEEDED AND MULCHED SEED MIXTURE WDOT MIXTURE #10 @ 4lbs PER THOUSAND SQUARE FEET.
3. CONTRACTOR SHALL INSTALL CRUSHED STONE TRACKING PAD IN ACCORDANCE WITH WDNR TECHNICAL STANDARD 1057.

FIELD SURVEY PERFORMED BY:

EDGEWOOD SURVEYING, INC.
14195 BEECHWOOD TRAIL
NEW BERLIN, WI 53151
DATE OF SURVEY: April 23, 2015

N PLAN NORTH

SITE PLAN

0 10' 20' 30' 40'
GRAPHIC SCALE

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DRAWN BY P.C.G.							
CHECKED BY P.A.T.							
APPROVED BY J.J.S.							

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

LIFT STATION SITE WORK
CIVIL
PLAN

PROJECT NO. 5582 | DATE JAN 2016
DRAWING NO. 30-C-1

PSLTSCALE: 1 LTSCALE: 1
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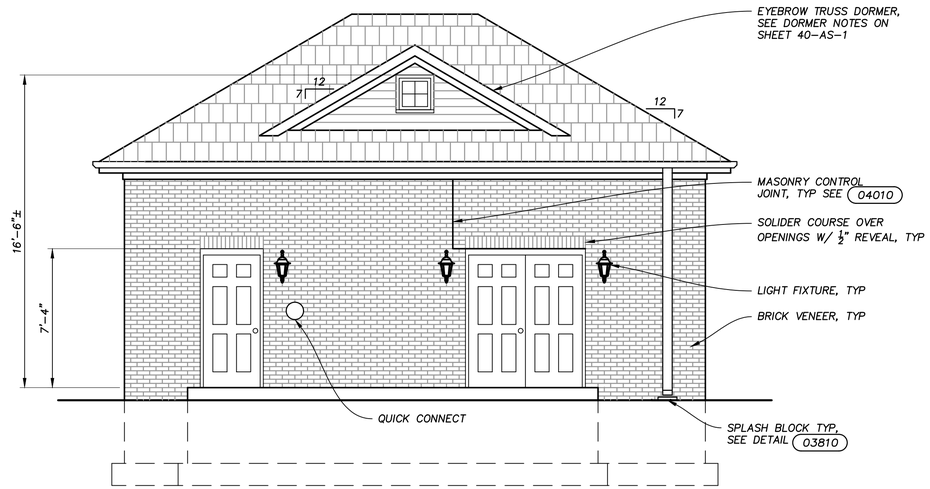
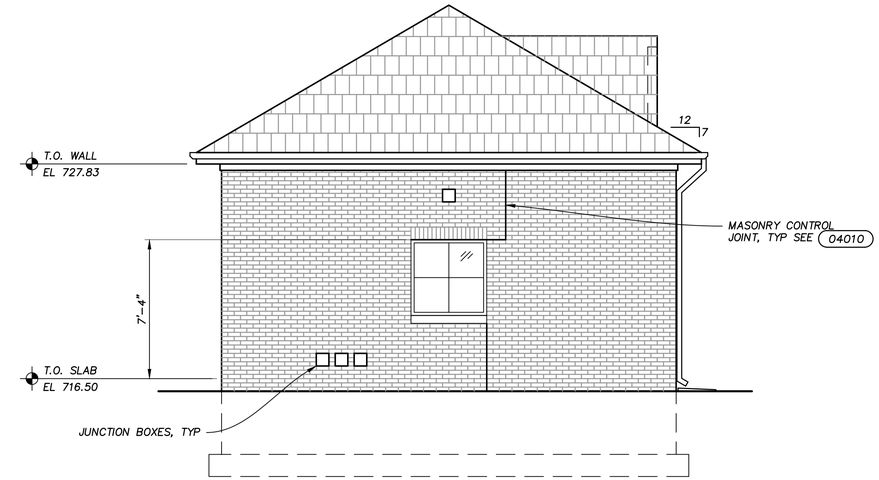
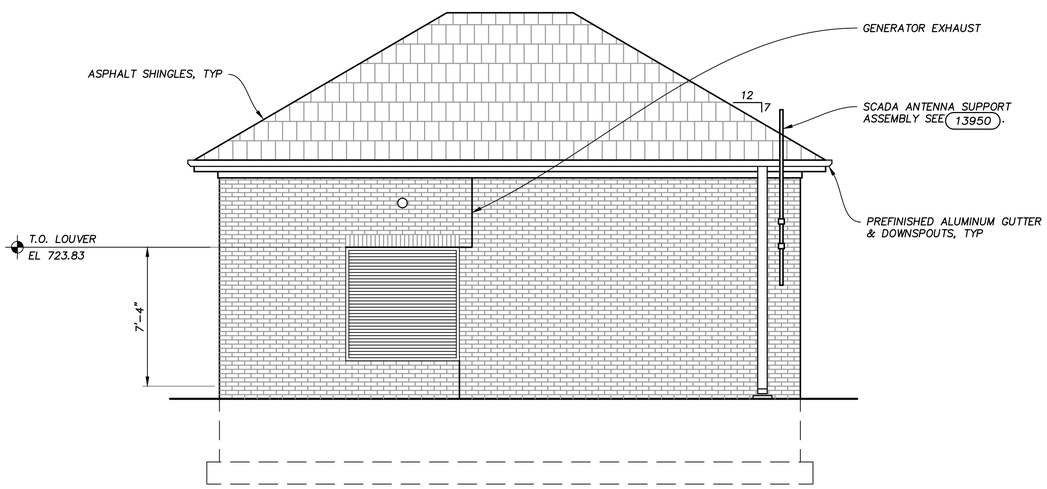


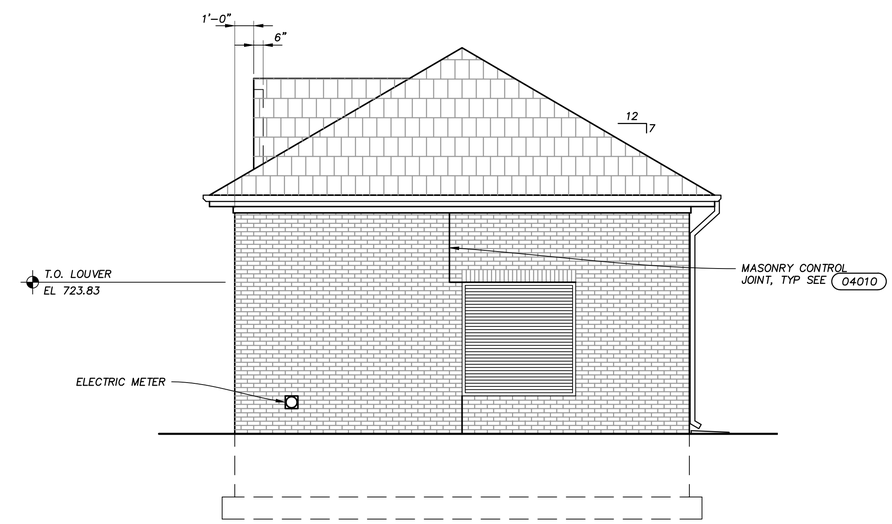
SOUTH
ELEVATION 1
1/4" = 1'-0"



WEST
ELEVATION 2
1/4" = 1'-0"



NORTH
ELEVATION 3
1/4" = 1'-0"



EAST
ELEVATION 4
1/4" = 1'-0"

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DRAWN BY P.C.G.						
CHECKED BY P.A.T.						
APPROVED BY J.J.S.						

Applied Technologies
Engineers-Architects

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

LIFT STATION
ARCHITECTURAL
ELEVATIONS

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 40-A-1

PSLTSCALE: 1 LTSCALE: 1
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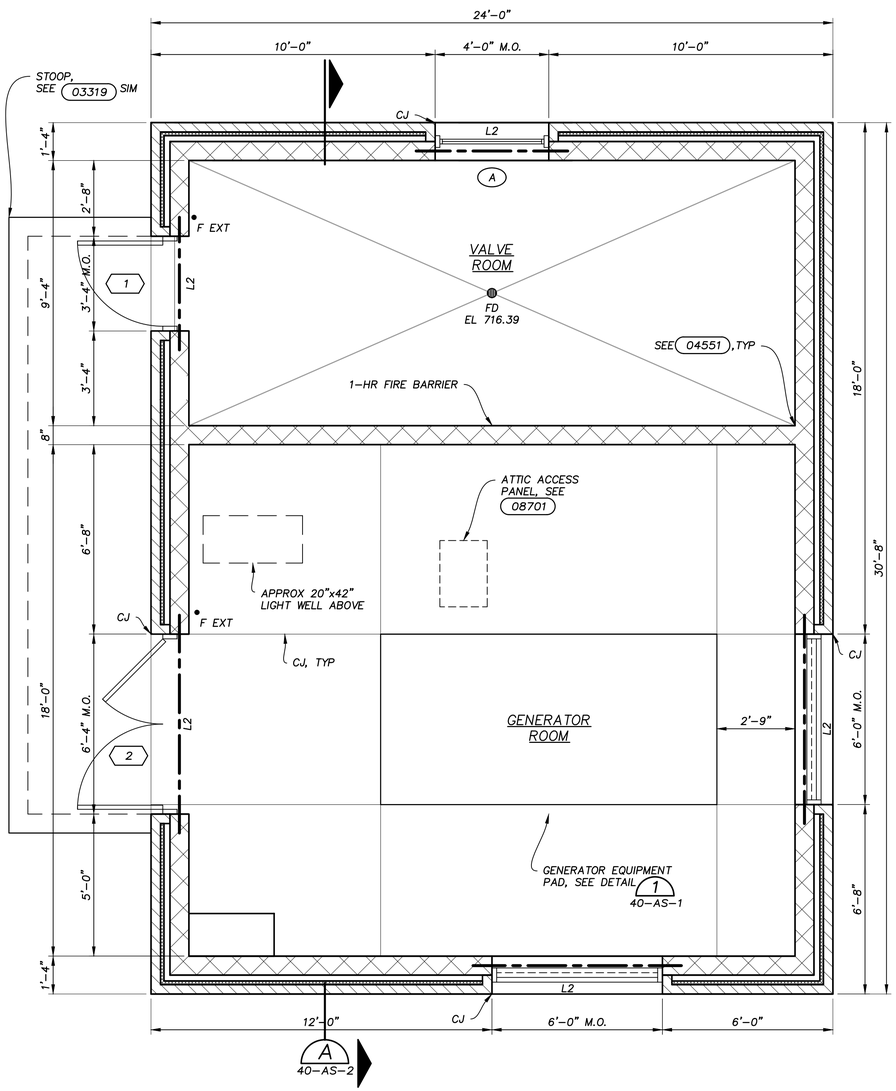
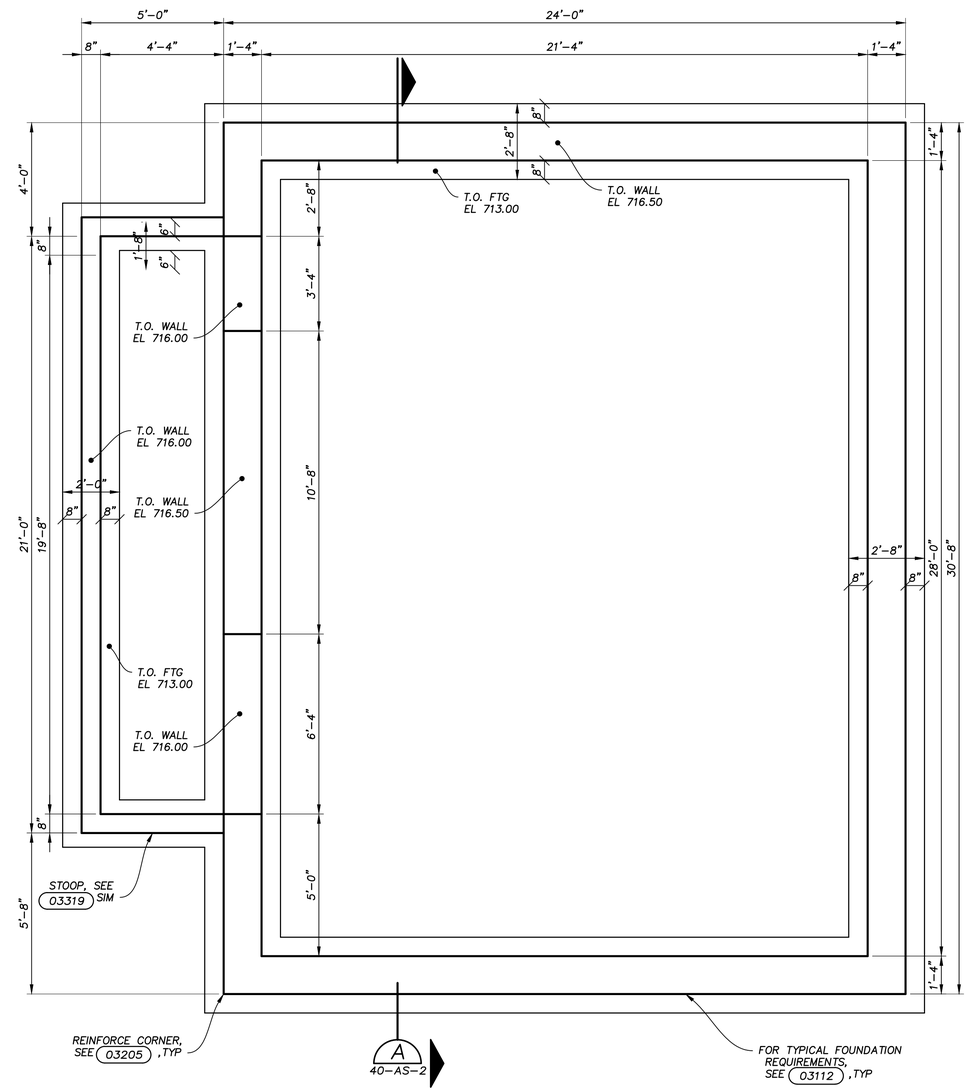


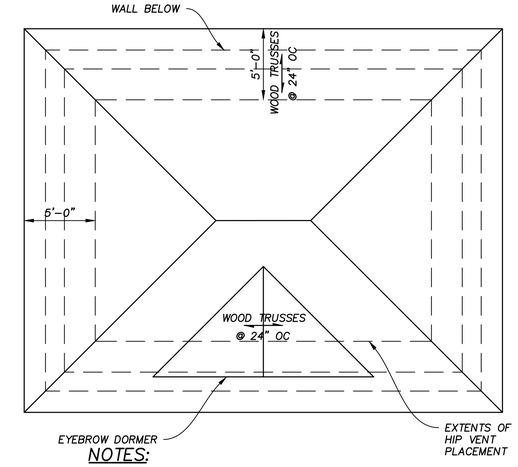
FLOOR PLAN

3/8" = 1'-0"



FOUNDATION PLAN

3/8" = 1'-0"



NOTES:

1. MAIN ROOF: PROVIDE ATTIC VENTILATION OF MINIMUM 105 SQ IN NFA WITH RIDGE AND HIP VENTS LOCATED 3 FT MIN ABOVE EAVE. PROVIDE ATTIC VENTILATION OF MINIMUM 130 SQ IN NFA AT SOFFIT. NFA AT RIDGE AND HIP VENTS SHALL NOT EXCEED NFA AT SOFFIT.
2. DORMER ROOF: PROVIDE ATTIC VENTILATION OF MIN 16 SQ IN NFA WITH RIDGE VENT. PROVIDE ATTIC VENTILATION WITH MIN 20 SQ IN NFA WITH SMART VENT, BY DCI PRODUCTS, MID ROOF APPLICATION OR EQUAL.
3. TRUSS SUPPLIER TO VERIFY ANY HANGING MECHANICAL EQUIPMENT AND PIPING FOR HANGER DETAIL SEE 15156.
4. ALIGN MAIN ROOF TRUSSES ON EACH SIDE OF DORMER WINDOW FOR LIGHT WELL CONSTRUCTION.

ROOF PLAN

3/16" = 1'-0"

STRUCTURAL DATA

LOADING INFORMATION

GOVERNING CODE:	WISCONSIN COMMERCIAL BUILDING CODE (IECC 2009)
BUILDING USE CATEGORY	III

DEAD LOADS

ROOF LOADS:	
INSULATION	1 PSF
SHINGLES	2 PSF
MECHANICAL/ELECTRICAL	4 PSF
TOTAL MAX ROOF DEAD LOAD	7 PSF
EQUIPMENT – GROUND FLOOR	7 PSF
GENERATOR	

LIVE LOADS

ROOF LIVE LOADS:	
MINIMUM ROOF LIVE LOAD	30 PSF

ROOF SNOW LOAD

SNOW IMPORTANCE FACTOR	1.1
GROUND SNOW LOAD	Pg = 30 PSF
SNOW EXPOSURE FACTOR	Ce = 1.0
THERMAL FACTOR	Ct = 1.0
UNBALANCED SNOW LOADING REQUIRED	Pf = 23 PSF

WIND LOADING

WIND IMPORTANCE FACTOR	1.15
BASIC WIND SPEED	90 MPH
WIND EXPOSURE	C
ENCLOSURE CLASSIFICATION	ENCLOSED

SEISMIC LOADING

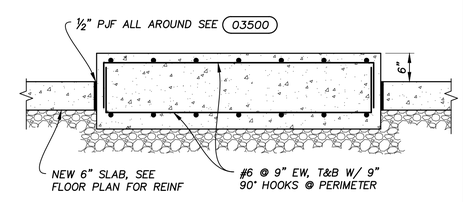
SEISMIC IMPORTANCE FACTOR	1.25
MAPPED SPECTRAL RESPONSE ACCELERATION	Ss = 0.098
	S1 = 0.042
SPECTRAL RESPONSE COEFFICIENTS	SDS = 0.103
	SD1 = 0.067
SITE CLASS	D
SEISMIC DESIGN CATEGORY	B
SEISMIC FORCE RESISTING SYSTEM	CMU
SEISMIC RESPONSE COEFFICIENT	Cs = 0.087

GENERAL NOTES:

1. ALL CONTROL JOINTS, HEAD OF WALL, AND WALL TO WALL JOINTS IN FIRE RATED WALLS SHALL BE FIRE STOPPED TO MAINTAIN FIRE RATING. SEE 07840.
2. LOCATION OF ATTIC ACCESS HATCH IS APPROXIMATE, CONTRACTOR TO VERIFY EXACT LOCATION WITH TRUSS LAYOUT.
3. "CJ" DENOTES LOCATION OF MASONRY CONTROL JOINTS SEE 04010, TYP.
4. FOR LINTEL SCHEDULE SEE 04560.
5. CONTRACTOR TO VERIFY SIZE AND LOCATION OF ALL EQUIPMENT PADS WITH MANUFACTURER.
6. FLOOR SLABS THROUGHOUT BUILDING SHALL BE 6" THICK ON 12" CRUSHED STONE WITH #5 @ 12" OC, E.W., CENTERED.
7. MASONRY OPENINGS FOR LOUVERS SHALL BE 6'-0"x6'-0". HEAD & JAMB DETAILS SIM TO WINDOW. FOR LOUVER SILL, SEE 08114, SIM.

DORMER NOTES:

1. ALL PROPRIETARY NAMES LISTED IN THESE NOTES ARE THE BASIS OF DESIGN ONLY. APPROVED EQUAL ALTERNATES ARE ALLOWED.
2. EXTERIOR WALL CONSTRUCTION:
   a. FIBER-CEMENT LAP SIDING: HARDIPLANK SELECT CEDARMILL, 5/16" THICKNESS, 5" EXPOSURE, COLOR – AUTUMN TAN
   b. FIBER-CEMENT TRIM BOARDS: 4/4 HARDITRIM NT3 BOARDS SMOOTH, 3/4" THICKNESS, 3 1/2" WIDTH; COLOR – ARCTIC WHITE
   c. WEATHER-RESISTIVE BARRIER: TYVEK HOME WRAP
   d. 5/8" PLYWOOD SHEATHING
   e. GABLE END TRUSS WITH 2X4 FRAMING FOR WINDOW OPENING AND INSULATED PORTION OF EXTERIOR WALL
   f. 3 1/2" BATT INSULATION
   g. 6 MIL POLYVINYL VAPOR RETARDER
   h. 5/8" GYPSUM WALLBOARD (GWB)
3. DORMER ROOF CONSTRUCTION SIMILAR TO MAIN ROOF CONSTRUCTION. PROVIDE BAFFLE VENTS FOR INSULATION AS REQUIRED BETWEEN DORMER TRUSSES.
4. DORMER WINDOW:
   a. WEATHERSHIELD SIGNATURE SERIES FIXED ALUMINUM CLAD WOOD WINDOW.
   b. NOMINAL SIZE 24" X 24". WIDTH SHALL BE SIZED TO FIT LIGHT WELL BETWEEN TRUSSES.
   c. GLAZING: 3/4" INSULATED, LOW-E, U-VALUE 0.31, SHGC 0.33
   d. GRILLES: BETWEEN GLASS, 5/8" FLAT, COLOR – WHITE
   e. INTERIOR TRIM: FLAT CASING, COLOR – WHITE
   f. INTERIOR COLOR: PREFINISHED WHITE
   g. EXTERIOR COLOR: WHITE
5. LIGHT WELL CONSTRUCTION:
   a. CEILING CONSTRUCTION, INLUDING ALL REQUIREMENTS FOR 1-HOUR RATING SHALL BE CONTINUOUS AT LIGHT WELL WHERE SEPARATING ATTIC SPACE FROM THE GENERATOR ROOM.
   b. FLARE WALL OF LIGHT WELL BELOW MAIN ROOF SHEATHING, PERPENDICULAR TO TRUSS TOP CHORD



NOTE: SEE EQUIPMENT PAD NOTES 03601

DETAIL 1 / 40-AS-1

NTS

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APPROVED BY J.J.S.						

Applied Technologies Engineers-Architects

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

LIFT STATION ARCHITECTURAL/STRUCTURAL PLANS

PROJECT NO. 5582 | DATE JAN 2016
DRAWING NO. 40-AS-1

PSLTSCALE: 1 LTSCALE: 1
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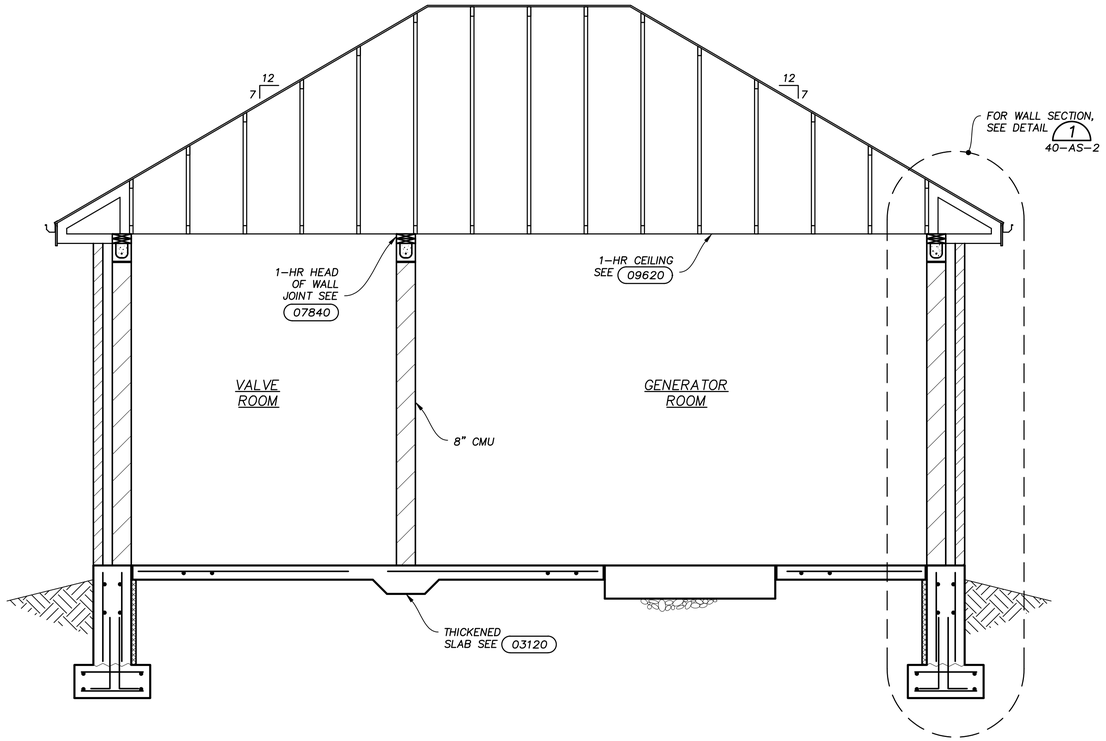
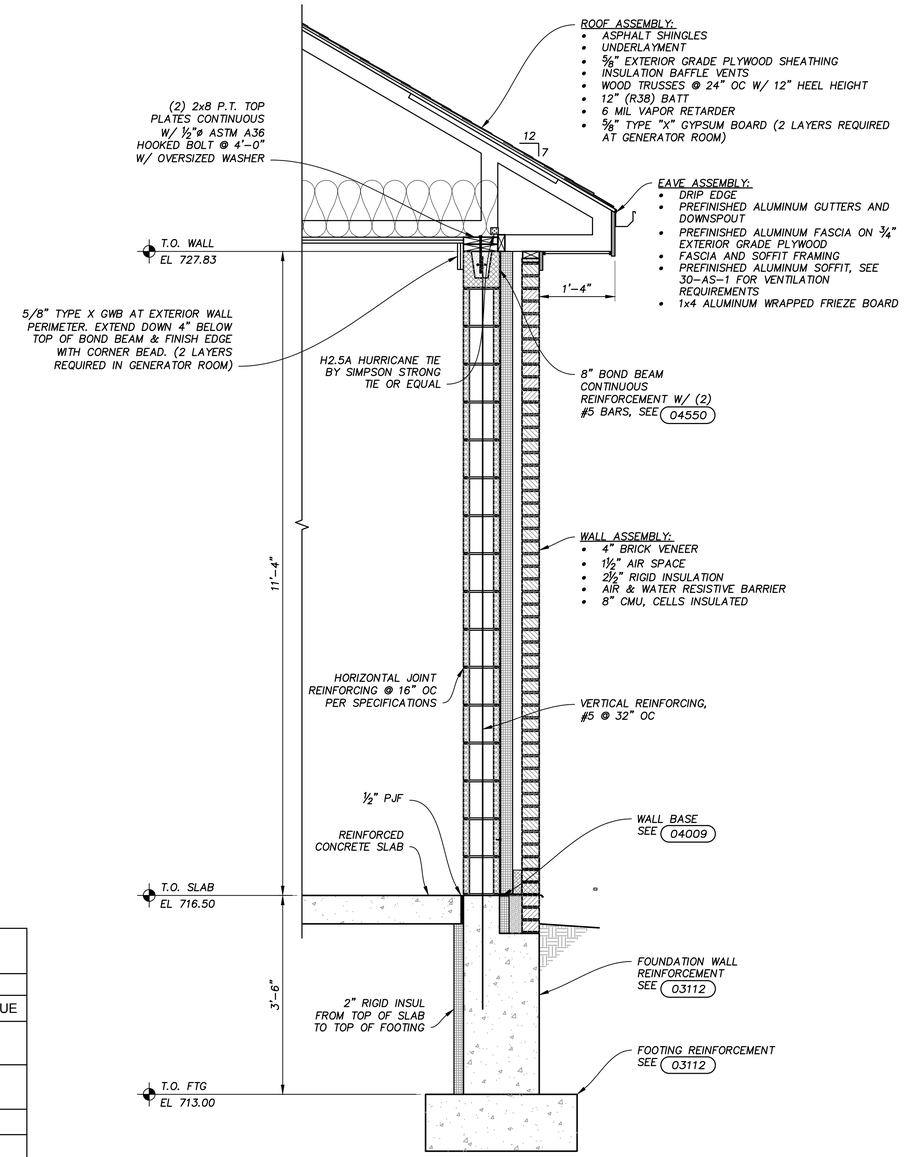


SECTION A 40-AS-1
3/8"=1'-0"



DETAIL 1 40-AS-2
3/4" = 1'-0"

CODE DATA

WISCONSIN COMMERCIAL BUILDING CODE (IBC 2009)

CODE DATA	PROPOSED	CODE REFERENCE
USE AND OCCUPANCY	F-2	S-301
ALLOWABLE AREA PER FLOOR	13,000 SF	T-503
ACTUAL AREA	736 SF	T-503
ALLOWABLE HEIGHT	2 STORIES 40 FEET	T-503
ACTUAL HEIGHT	1 STORY 16'-6"	CALCULATED
CONSTRUCTION TYPE	5B	T-601
FIRE SEPARATION REQUIREMENTS	EMERGENCY POWER GENERATOR – GENERATOR ROOM SEPARATION: 1 HOUR FIRE BARRIER, 1 HOUR CEILING	NFPA 37
OCCUPANCY RATE	300 SF / OCC	T-1004.1.1
OCCUPANCY LOAD	PER CODE: 3 OCC ACTUAL: 0 OCC	CALCULATED
PLUMBING FACILITIES	NONE – BUILDING NOT OCCUPIED	T-2902.1
PROJECT VOLUME	8,589 CU. FT.	CALCULATED

THERMAL ENVELOPE

WISCONSIN COMMERCIAL BUILDING CODE (IECC 2009)

COMPONENT	PROPOSED ASSEMBLY	THERMAL VALUE
ROOF	12" BATT INSULATION	R-38
WALLS	2 1/2" RIGID INSULATION	R-12.5
DOORS	INSULATED METAL	U-0.60 (1)
WINDOWS	METAL FRAME W/ THERMAL BREAK; DOUBLE PANE; LOW-E	U-0.65 (1) SHGC 0.70
LOUVERS	INSULATED DAMPERS	U-0.44
SLAB	2" RIGID INSULATION	R-10

NOTES:
1. U-FACTORS LISTED ARE MINUMUM REQUIRED FOR ENERGY CODE COMPLIANCE. SEE SPECIFICATIONS FOR REQUIRED U-FACTORS FOR THIS PROJECT.

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DRAWN BY P.C.G.							
CHECKED BY P.A.T.							
APPROVED BY J.J.S.		NO.	DATE	REVISION	BY	APVD	

AppliedTechnologies Engineers-Architects

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

LIFT STATION
ARCHITECTURAL/STRUCTURAL SECTIONS

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 40-AS-2

PSLTSCALE: 1 LTSCALE: 1
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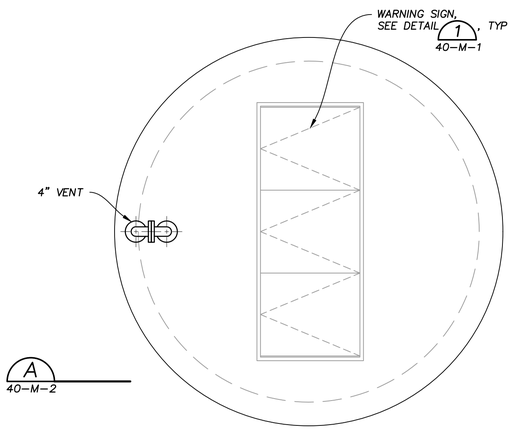
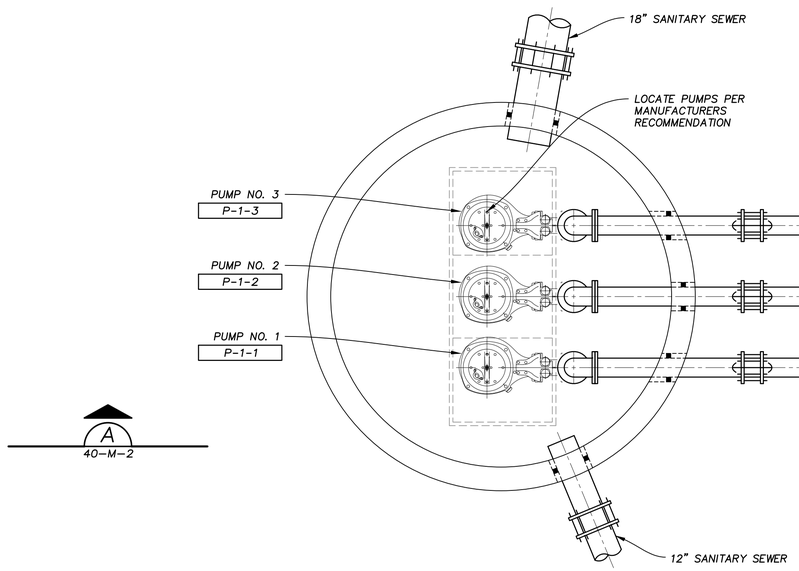
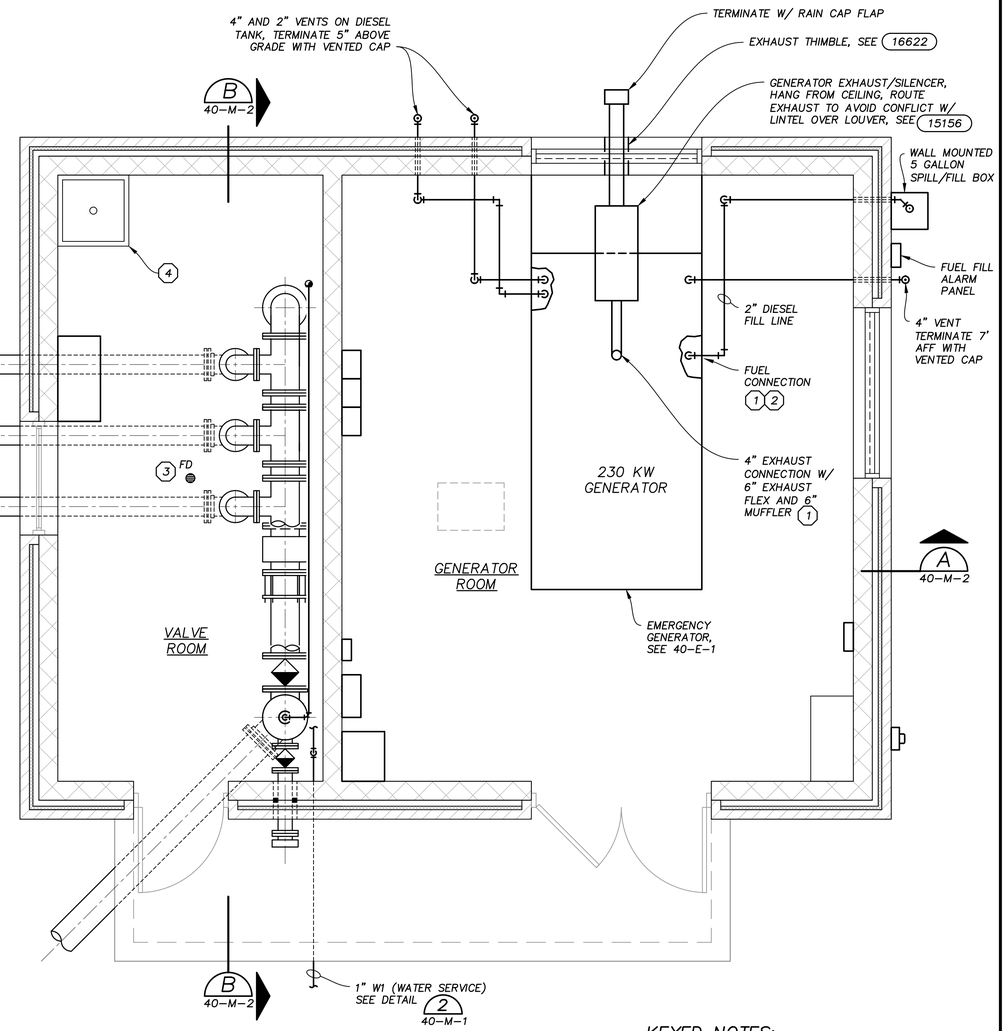
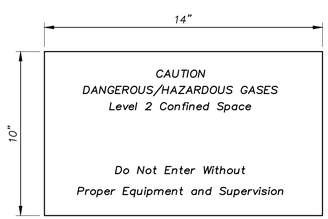




N TOP PLAN
3/8" = 1'-0"

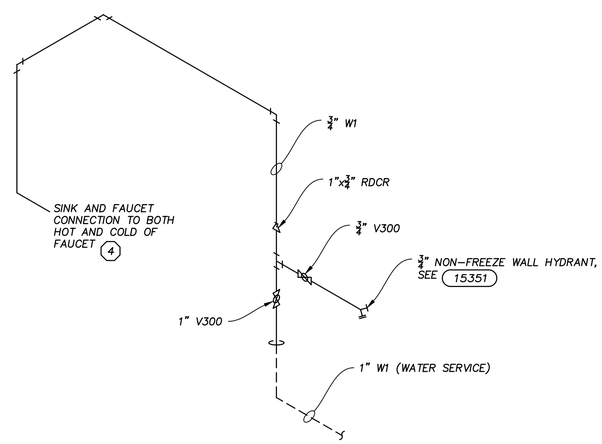


N FLOOR PLAN
3/8" = 1'-0"



NOTES:
1. FIBERGLASS OR VINYL MATERIAL
2. MIN LETTER SIZE 1"
3. BLACK PRINT ON YELLOW BACKING
4. FASTEN TO UNDERSIDE OF WETWELL ACCESS HATCH

WARNING SIGN
DETAIL 1 40-M-1
NTS



WATER SERVICE
DETAIL 2 40-M-1 40-M-2
NTS

KEYED NOTES:

1. REFER TO FURNISHED GENERATOR FOR ACTUAL CONNECTION LOCATIONS.
2. SEE SPECIFICATION SECTION 16620 FOR GENERATOR/DIESEL TANK PIPING REQUIREMENTS
3. 3" FLOOR DRAIN, JAY R. SMITH MODEL 2005Y03(-A06NB-U), DUCO CAST IRON BODY WITH NO-HUB OUTLET, FLASHING COLLAR AND 6" ROUND NICKEL BRONZE ADJUSTABLE STRAINER HEAD WITH VANDAL PROOF SCREWS.
4. 32" X 32" X 6" PRECAST TERRAZZO MOP BASIN, FIAT (SB-3232) WITH PLAIN CURBS AND STAINLESS STEEL CAST-IN DRAIN BODY FOR 3" PIPE.
   FAUCET: CHICAGO FAUCET 897 WITH VACUUM BREAKER SPOUT, 3/4" HOSE THREAD, WALL BRACE & PAIL HOOK. PROVIDE WATTS 8B.
   HOSE: FIAT #832-AA, 30" LONG FLEXIBLE HEAVEY DUTY 5/8" RUBBER HOSE WITH 3/4" COUPLING ON ONE END.
   WALL GUARD: FIAT #MSG-3232, HEAVY GAUGE STAINLESS STEEL CONSTRUCTION.
5. INSTALL WASTE DRAIN VENT SYSTEM IN VALVE ROOM FOR THE FLOOR DRAIN, MOP BASIN AND PROCESS VENTS PER SPECIFICATION SECTION 15030 AND THE REQUIREMENTS OF LOCAL PLUMBING CODE. ROUTE 4" DRAIN TO THE WET WELL.

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VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

LIFT STATION MECHANICAL PLANS

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 40-M-1

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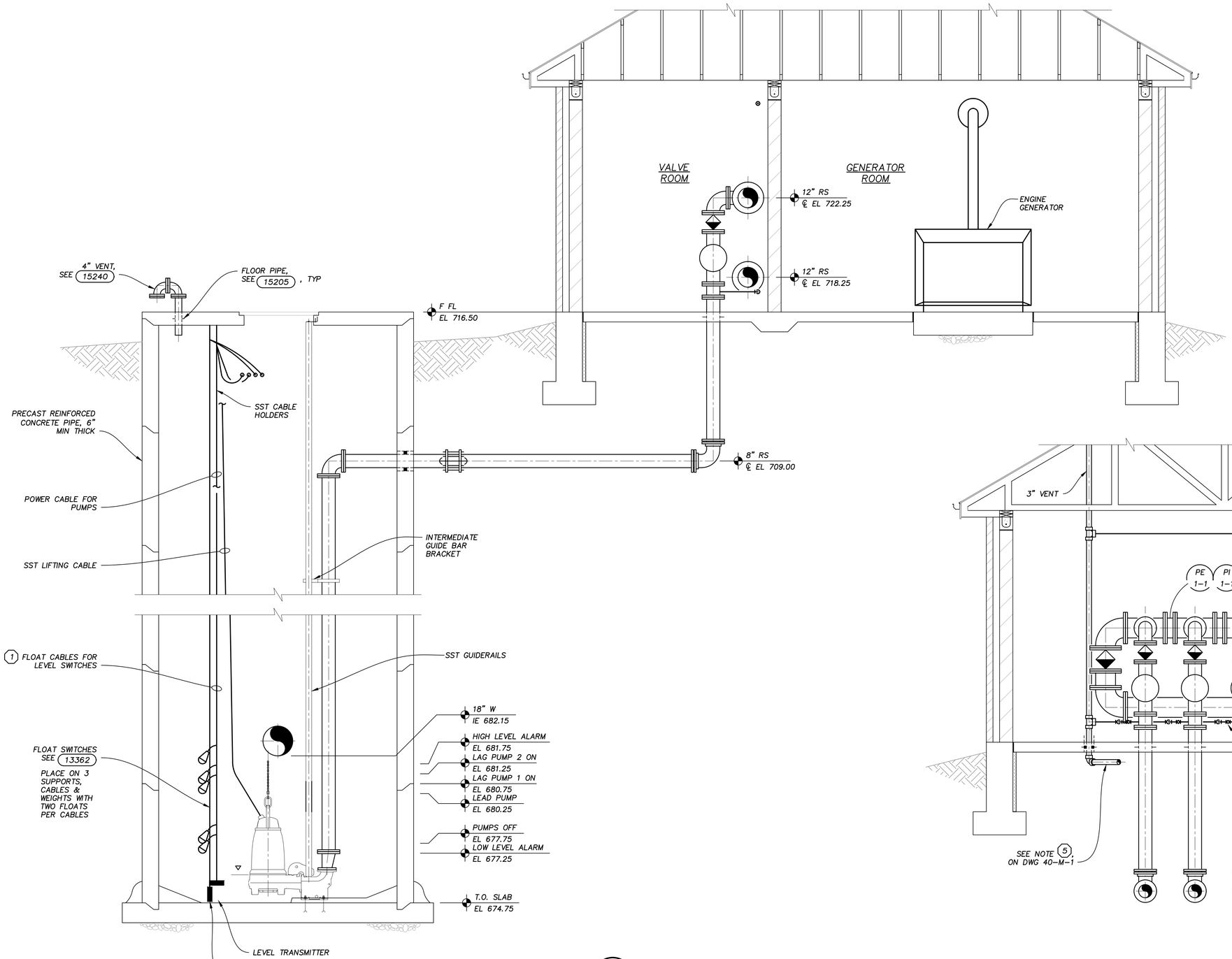
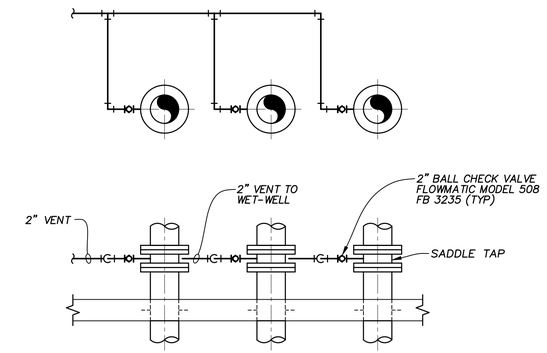


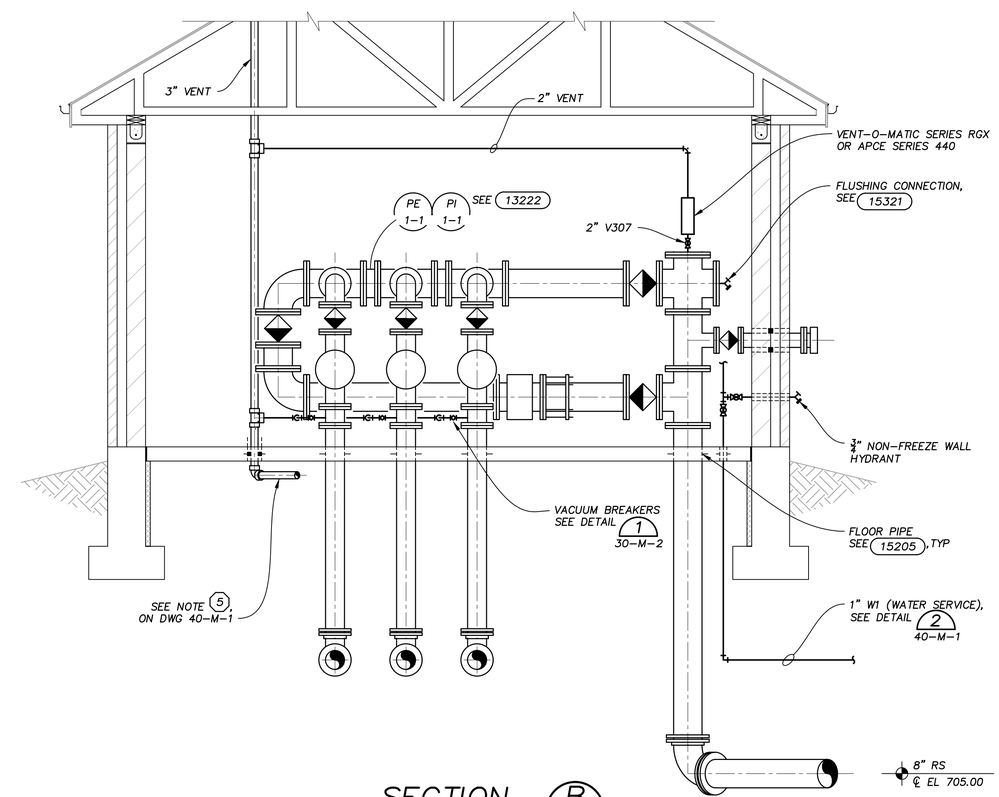
KEYED NOTES:

1. PROVIDE SEPARATE CABLE FOR EACH LEVEL SWITCH TO ALLOW OPERATORS TO REMOVE EACH SWITCH INDIVIDUALLY.

SECTION A
3/8"=1'-0" 40-M-1



DETAIL 1
N.T.S. 40-M-2



SECTION B
3/8"=1'-0" 40-M-1

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VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

LIFT STATION
MECHANICAL
SECTIONS AND DETAIL

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 40-M-2

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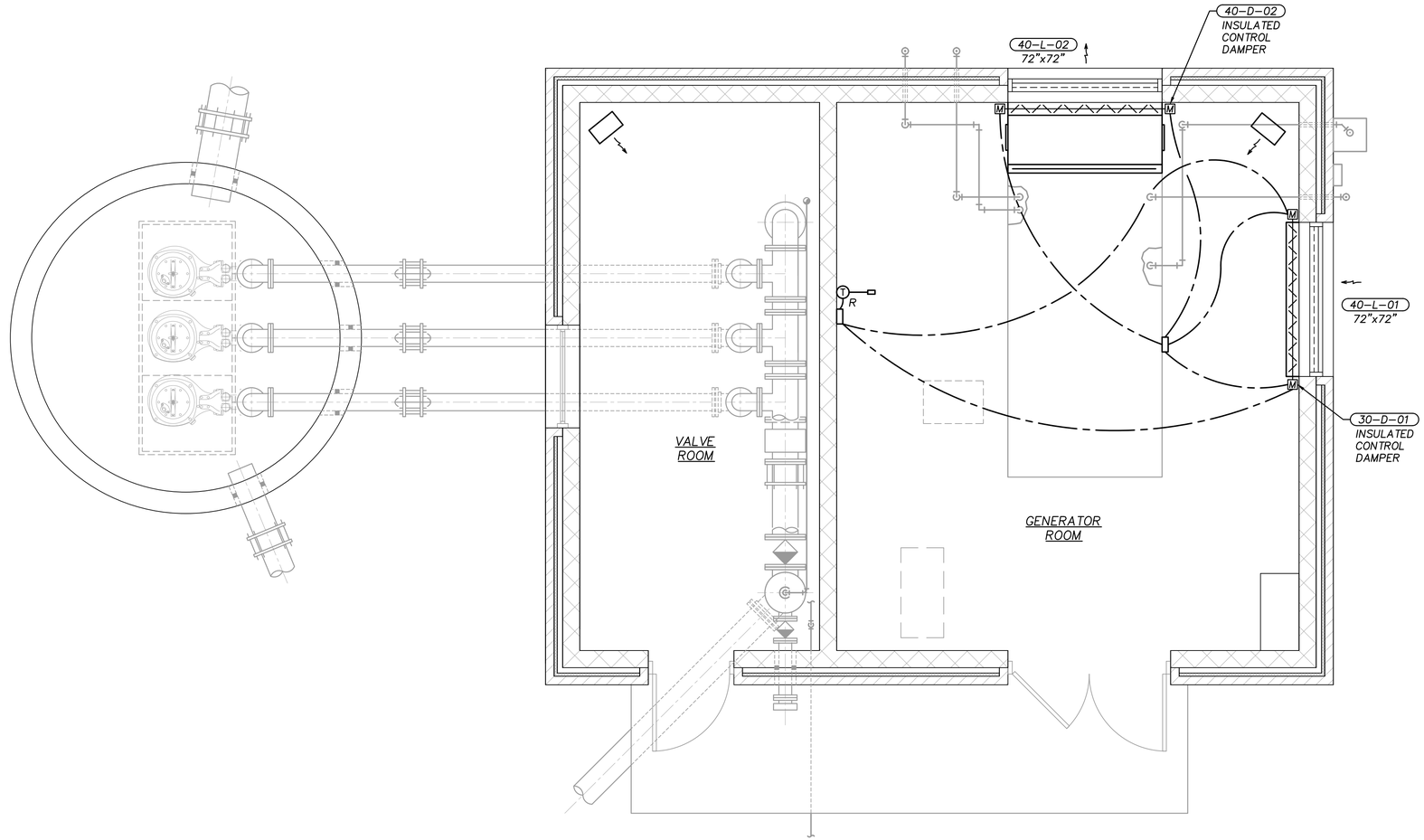

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FLOOR PLAN

3/8" = 1'-0"

KEYED NOTES:

1. HVAC CONTROL PANEL AND REVERSE ACTING THERMOSTAT WITH SENSING BULB NEAR THE CEILING FOR ELECTRIC CONTROL DAMPERS. SIMILAR TO THE TYPICAL HVAC CONTROL PANEL DETAIL ON SHEET 95-H-1. FIELD VERIFY FINAL LOCATION.
2. PROVIDE DUCTED CONNECTION FROM GENERATOR RADIATOR TO LOUVER (30-L-02). COORDINATE RADIATOR CONNECTION SIZE WITH GENERATOR MANUFACTURER. PROVIDE ACCESS PANELS IN DUCTWORK.
3. TOP OF LOUVER SHALL BE AT A HEIGHT OF APPROX. 7'-4" AFF.

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VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

LIFT STATION
HVAC
PLAN

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 40-H-1

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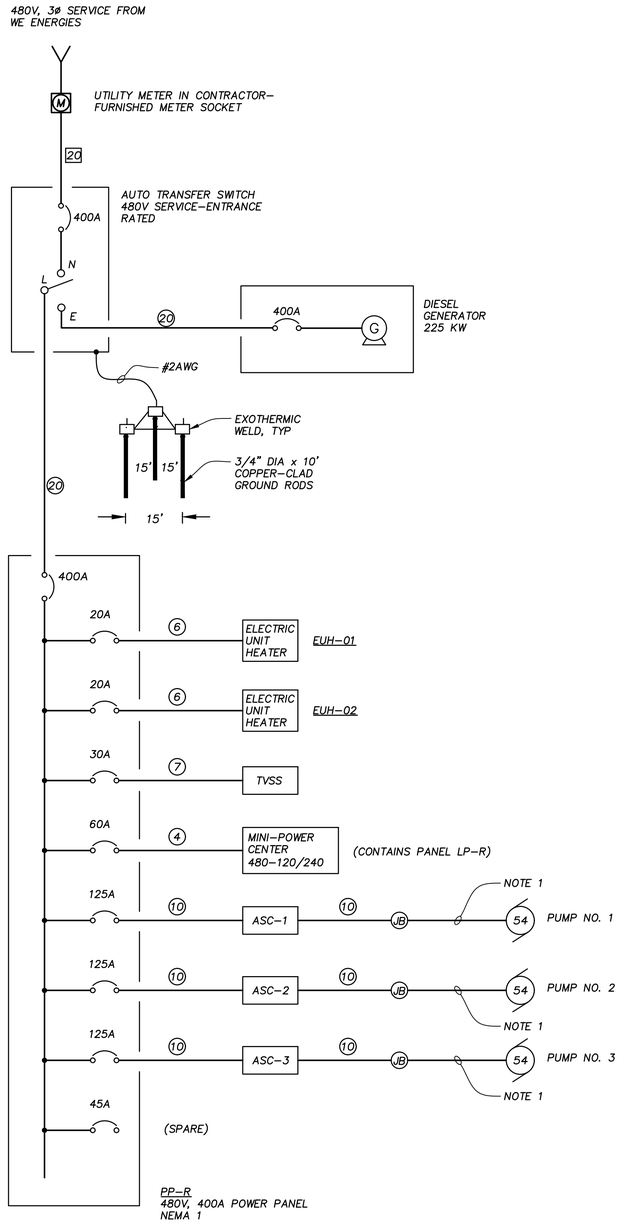

ONE-LINE DIAGRAM

N.T.S.

ELECTRICAL NOTES:

1. CABLE FURNISHED WITH SUBMERSIBLE PUMP. SEE (16236) AND 40-E-3.
2. THE AMPERE RATING OF THE GENERATOR, THE ATS, AND THE POWER PANEL ARE LARGE ENOUGH TO HANDLE THE (FUTURE) REPLACEMENT OF THE 54 HP PUMPS WITH 102 HP PUMPS.

PANEL:	BUS AMPS:	MAIN CB SIZE:	MOUNTING		REMARKS:
LP-R	VOLTAGE: 120/240V	70A @ 240V	SURFACE	X	PART OF 15KVA MINI POWER CENTER
	PHASE: 1		FLUSH		
	WIRE: 3				

CIRCUIT DESCRIPTION	CB	CKT	CKT	CB	CIRCUIT DESCRIPTION
LIGHTING - INTERIOR	15/1	1	2	15/1	DAMPERS
LIGHTING - EXTERIOR AND EMERGENCY	15/1	3	4	15/1	OUTLETS - EAST
GENERATOR BATTERY CHARGER	15/1	5	6	15/1	DAMPER/HVAC CONTROL PANEL POWER
GENERATOR BLOCK HEATER	20/1	7	8	15/1	CONTROL PANEL LCP-1
OUTLETS - WEST	15/1	9	10	15/1	MAGMETER FE/FIT-1-1
POWER MONITOR PANEL	15/1	11	12	15/1	(SPARE)
(SPARE)	15/1	13	14	15/1	(SPARE)
		15	16		
		17	18		
		19	20		

CIRCUIT SCHEDULES

SINGLE-PHASE CIRCUIT SCHEDULE

AMPS	MARK	CONDUIT SIZE	PHASE CONDUCTORS				EQUIPMENT GROUNDING CONDUCTOR
20	1	3/4"	2#12				#12
30	2	3/4"	2#10				#10
50	3	3/4"	2#8				#10
60	4	3/4"	2#6				#10
80	5	1"	2#4				#8
						REV. 3/26/07	

3ø 3W & 4W CIRCUIT SCHEDULE

AMPS	3ø 3W MARK	CONDUIT SIZE	PHASE CONDUCTORS	3ø 4W MARK	CONDUIT SIZE	PHASE CONDUCTORS	EQUIPMENT GROUNDING CONDUCTOR
20	6	3/4"	3#12	6	3/4"	4#12	#12
30	7	3/4"	3#10	7	3/4"	4#10	#10
50	8	3/4"	3#8	8	3/4"	4#8	#10
60	9	1"	3#6	9	1"	4#6	#10
80	10	1"	3#4	10	1-1/4"	4#4	#8
100	11	1-1/4"	3#3	11	1-1/2"	4#3	#8
110	12	1-1/4"	3#2	12	1-1/2"	4#2	#6
125	13	1-1/2"	3#1	13	2"	4#1	#6
150	14	2"	3#1/0	14	2-1/2"	4#1/0	#6
200	15	2"	3#3/0	15	2-1/2"	4#3/0	#6
225	16	2-1/2"	3#4/0	16	3"	4#4/0	#4
250	17	2-1/2"	(3) 250 kcmil	17	3"	(4) 250 kcmil	#4
300	18	3"	(3) 350 kcmil	18	3-1/2"	(4) 350 kcmil	#4
350	19	3-1/2"	(3) 500 kcmil	19	4"	(4) 500 kcmil	#3
400	20	3-1/2"	(3) 600 kcmil	20	4"	(4) 600 kcmil	#3
450	21	(2) 2-1/2"	2 SETS OF (3)#4/0	21	(2) 3"	2 SETS OF 4#4/0	#2
500	22	(2) 2-1/2"	2 SETS OF (3) 250 kcmil	22	(2) 3"	2 SETS OF (4) 250 kcmil	#2
600	23	(2) 3"	2 SETS OF (3) 350 kcmil	23	(2) 3-1/2"	2 SETS OF (4) 350 kcmil	#1
700	24	(2) 3-1/2"	2 SETS OF (3) 500 kcmil	24	(2) 4"	2 SETS OF (4) 500 kcmil	#1/0
800	25	(2) 3-1/2"	2 SETS OF (3) 600 kcmil	25	(2) 4"	2 SETS OF (4) 600 kcmil	#1/0
900	26	(3) 3"	3 SETS OF (3) 350 kcmil	26	(3) 3"	3 SETS OF (4) 350 kcmil	#2/0
1000	27	(4) 2-1/2"	4 SETS OF (3) 250 kcmil	27	(4) 3"	4 SETS OF (4) 250 kcmil	#2/0
1200	28	(4) 3"	4 SETS OF (3) 350 kcmil	28	(4) 3-1/2"	4 SETS OF (4) 350 kcmil	#3/0
1600	29	(4) 3-1/2"	4 SETS OF (3) 600 kcmil	29	(4) 4"	4 SETS OF (4) 600 kcmil	#4/0
1800	30	(6) 3"	6 SETS OF (3) 350 kcmil	30	(6) 3"	6 SETS OF (4) 350 kcmil	250 kcmil
2000	31	(6) 3"	6 SETS OF (3) 500 kcmil	31	(6) 3-1/2"	6 SETS OF (4) 500 kcmil	250 kcmil
2500	32	(6) 3-1/2"	6 SETS OF (3) 600 kcmil	32	(6) 4"	6 SETS OF (4) 600 kcmil	350 kcmil
3000	33	(8) 3-1/2"	8 SETS OF (3) 500 kcmil	33	(8) 3-1/2"	8 SETS OF (4) 500 kcmil	400 kcmil
4000	34	(10) 3-1/2"	10 SETS OF (3) 600 kcmil	34	(10) 4"	10 SETS OF (4) 600 kcmil	500 kcmil
						REV. 3/26/07	

NOTE:

1. EQUIPMENT GROUNDING CONDUCTORS SHALL BE INSTALLED IN ALL CONDUITS INCLUDING SINGLE AND THREE PHASE, 2 WIRE, 3 WIRE AND 4 WIRE CIRCUITS.

LIGHTING FIXTURE SCHEDULE

TYPE	FIXTURE DESCRIPTION	SIZE	MANUFACTURER	CATALOG NUMBER	LAMP QUANTITY	LAMP TYPE	VOLTS	MOUNTING	NOTES
E	EMERGENCY	5"X16"	RUUD/ECONOLIGHT	E-XMLIW	2	LED	120	WALL	2
F	FLUORESCENT, ENCLOSED	8"x48"	COLUMBIA	XEM4-232-RA-E120-SSL	2	T8	120	SUSPEND	1
W	WALL-PACK	6"x10"	RUUD/ECONOLIGHT	E-SR4MO7QZ	1	70W PSMH	120	WALL	2
X	EXIT	12"x7"	RUUD/ECONOLIGHT	E-XPL2RBW	-	LED	120	MULTI	2
DE	DECORATIVE ENTRY	12"x7"	HONEYWELL	SS0101-08	-	LED	120	WALL	3

NOTES:

1. ORDER LAMP SEPARATELY
2. UNIT INCLUDES LAMP(S)
3. FIXTURES INCLUDES PHOTOCELL.

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VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

LIFT STATION
ELECTRICAL
DIAGRAM & SCHEDULES

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 40-E-1

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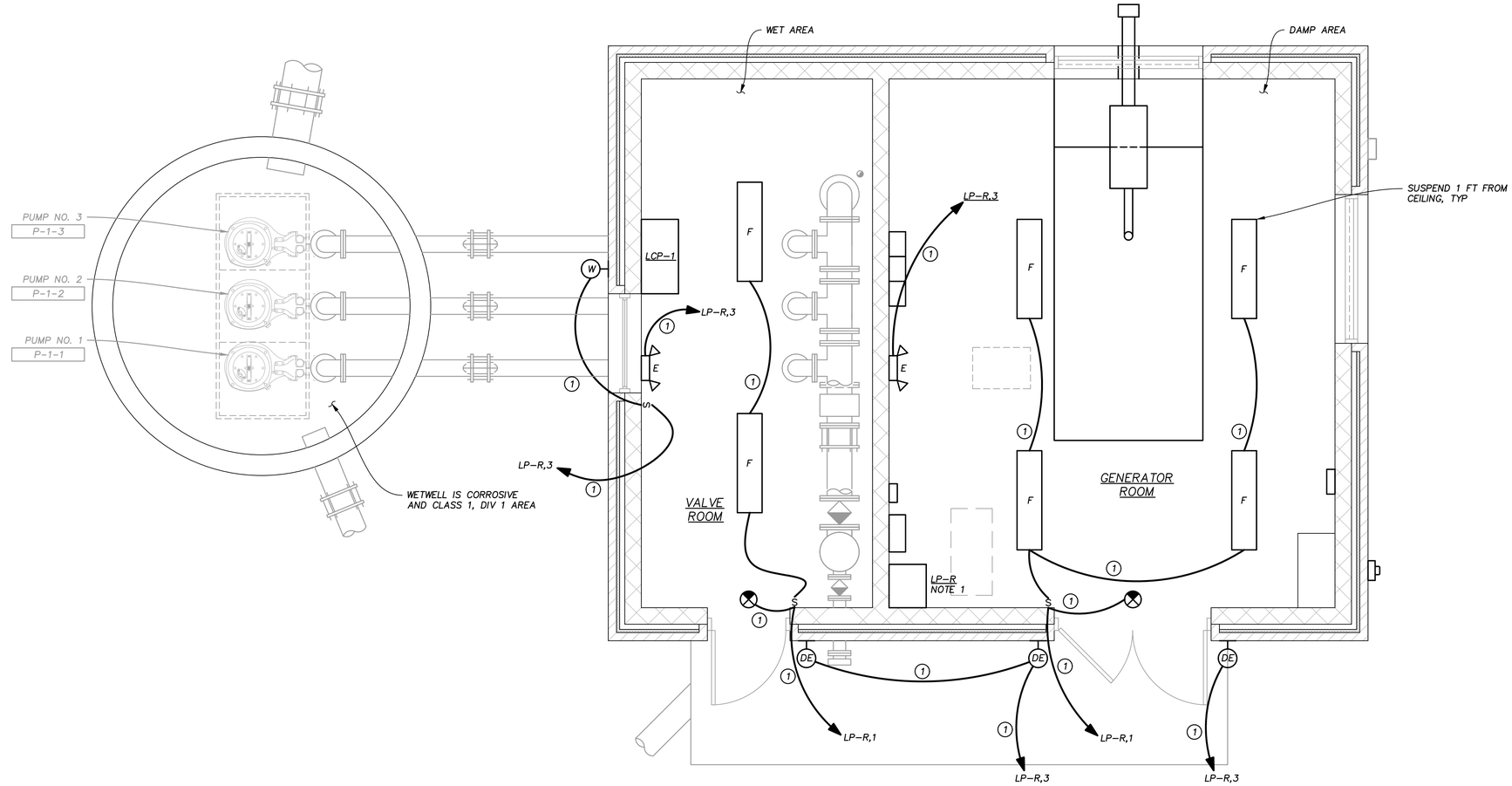

N

LIGHTING PLAN

3/8" = 1'-0"

GENERAL NOTES:

1. LP-R IS INTEGRAL WITH A TRANSFORMER (MINI POWER CENTER).

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VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

LIFT STATION ELECTRICAL PLAN

PROJECT NO. 5582 | DATE JAN 2016
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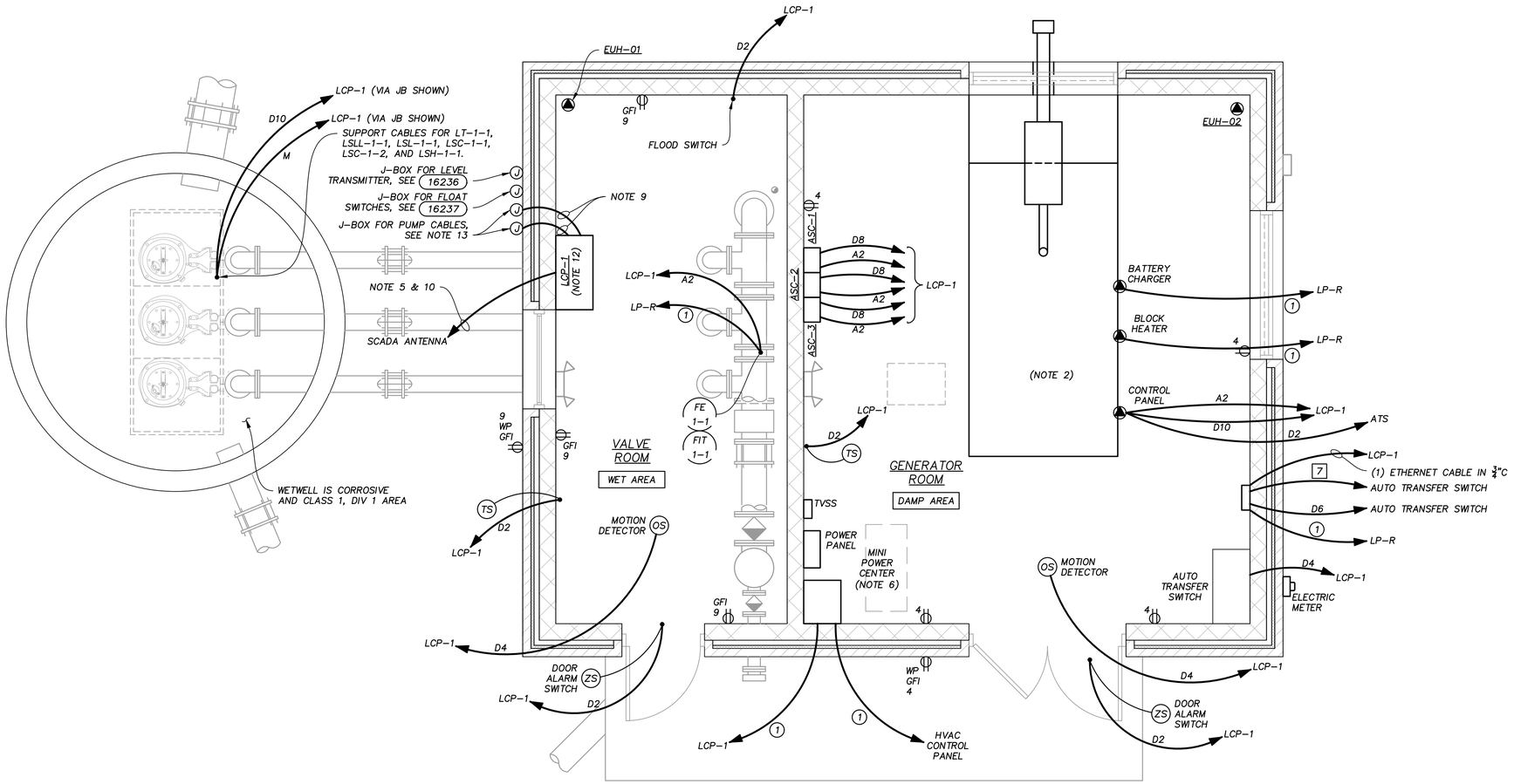

POWER & SYSTEM PLAN

3/8" = 1'-0"

GENERAL NOTES:

1. REFER ALSO TO HVAC PLAN AND DIV 15 SPECIFICATIONS FOR ADDITIONAL LOW VOLTAGE HVAC EQUIPMENT/DEVICE WIRING REQUIREMENTS. THIS INCLUDES, BUT IS NOT LIMITED TO, DAMPER WIRING.
2. ELECTRICAL CONNECTION POINTS SHOWN ON GENERATOR ARE DIAGRAMMATIC ONLY. REFER TO FURNISHED GENERATOR FOR ACTUAL LOCATIONS.
3. PROVIDE A LOCAL DISCONNECT SWITCH FOR EACH UNIT HEATER SHOWN (IF NOT INTEGRAL WITH UNIT HEATER).
4. INSTALL SO TOP OF ANTENNA IS 25 FT ABOVE FINISHED GRADE, SEE 13960 . CONTRACTOR SHALL COORDINATE WITH INTEGRATOR AND AIM ANTENNA TO GRAFTON PUBLIC HIGH SCHOOL.
5. PROVIDE ANTENNA CABLE IN CONFORMANCE WITH SPECIFICATION 13227.
6. THE MINI POWER CENTER IS THE COMBINATION OF A TRANSFORMER AND LIGHTING PANEL LP-R.
7. REFER TO ONE-LINE DIAGRAM FOR ADDITIONAL WIRING REQUIREMENTS.
8. FORTIFY WALLS AS REQUIRED TO SUPPORT WALL MOUNTED EQUIPMENT.
9. SPLICE THESE DISCRETE WIRES TO THE SEAL-FAIL AND HIGH TEMP CONDUCTORS THAT ARE FURNISHED AS PART OF EACH PUMPS CABLE. SPLICE SHALL BE LOCATED IN JUNCTION BOX SHOWN.
10. 2" CONDUIT, SEE 13960 .
11. INSTALL 10 FT AFG.
12. CONTROL PANEL LCP-1 ENCLOSURE SHALL BE NEMA 3R.
13. EACH PUMP CABLE J-BOX SHALL CONSIST OF EP CONDUIT SEALS, SEALING COMPOUND, AND A NEMA 4 JB AS REFERENCED IN 16236

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VILLAGE OF GRAFTON
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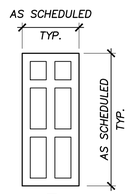
GRAFTON, WISCONSIN

LIFT STATION ELECTRICAL PLAN

PROJECT NO. 5582 | DATE JAN 2016
DRAWING NO. 40-E-3

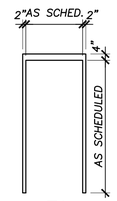
DOOR AND FRAME SCHEDULE

MARK	DOOR TYPE	DOOR SIZE WIDTH	DOOR SIZE HEIGHT	DOOR SIZE THK	DOOR MATL	DOOR GLAZING	DOOR LOUVER WIDTH	DOOR LOUVER HEIGHT	FRAME TYPE	FRAME DEPTH	FRAME MATL	FRAME EL	FRAME DETAIL HEAD	FRAME DETAIL JAMB	FRAME DETAIL SILL	FIRE RATING LABEL	HARDWARE SET NO	HARDWARE KEYSIDE RM NO	NOTES
1	E	3'-0"	7'-0"	1-3/4"	HM	N/A	N/A	N/A	F1	5-3/4"	HM	7'-4"	1	2	3	N/A	2	EXT	
2	E	PAIR 3'-0"	7'-0"	1-3/4"	HM	N/A	N/A	N/A	F1	5-3/4"	HM	7'-4"	1	2	3	N/A	1	EXT	



E

DOOR TYPES



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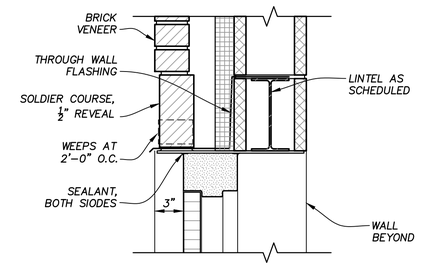
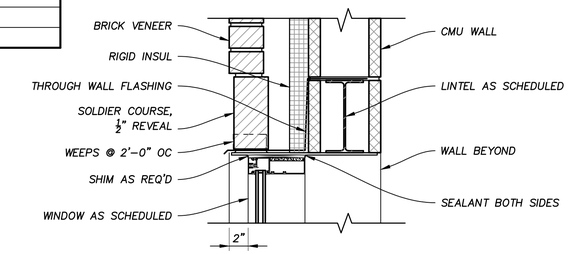
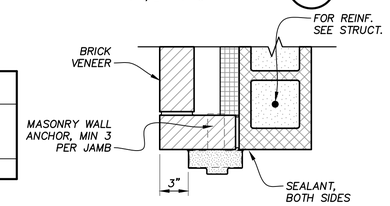
FRAME TYPES



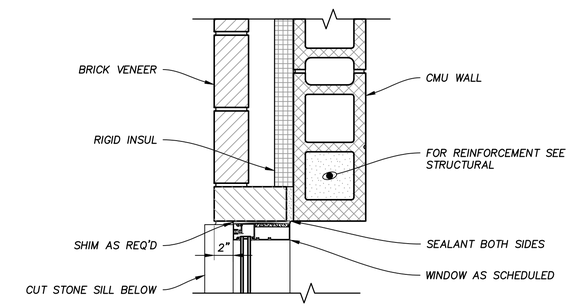
HEAD 1
1 1/2" =1'-0"



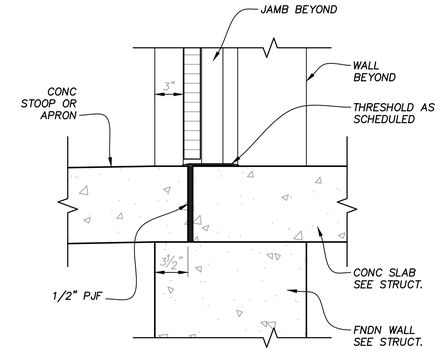
HEAD 4
1 1/2" =1'-0"



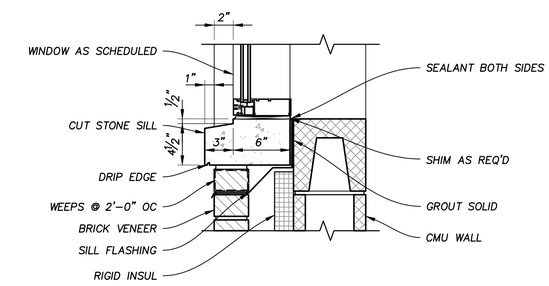
JAMB 2
1 1/2" =1'-0"



JAMB 5
1 1/2" =1'-0"



SILL 3
1 1/2" =1'-0"



SILL 6
1 1/2" =1'-0"

WINDOW SCHEDULE

MARK	ROUGH OPENING WIDTH	ROUGH OPENING HEIGHT	HEAD HEIGHT	STYLE	MATL	FRAME DEPTH	FRAME WIDTH	DETAILS HEAD	DETAILS JAMB	DETAILS SILL	GLAZING	NOTES
A	4'-0"	4'-0"	7'-4"	FIXED	ALUM	6"	2"	4	5	6	ITG	

EXTERIOR FINISH SCHEDULE

COMPONENT	MATERIAL	FINISH	COLOR
SHINGLES	ASPHALT	N/A	CHARCOAL
LAP SIDING	FIBER CEMENT	FF	AUTUMN TAN
DORMER TRIM	FIBER CEMENT	FF	WHITE
DORMER WINDOW	ALUMINUM	FF	WHITE
FASCIA	ALUMINUM	FF	WHITE
SOFFIT	ALUMINUM	FF	WHITE
GUTTERS AND DOWNSPOUTS	ALUMINUM	FF	WHITE
DOOR	HOLLOW METAL	P-6	MATCH SIDING
FRAME	HOLLOW METAL	P-6	WHITE
WINDOW	ALUMINUM	A-1	WHITE
LOUVER	ALUMINUM	A-1	BY OWNER
FACE BRICK	CLAY BRICK	VELOUR	SEE SPECS

EXTERIOR FINISH NOTES:
1. SUBMIT COLOR SAMPLE FOR ALL MATERIAL AT THE SAME TIME SO THAT THE OWNER CAN MAKE AN INFORMED SELECTIONS BASED ON RELATIONSHIPS OF THE VARIOUS COMPONENTS.
2. A-1: AAMA 2605 MINIMUM 2 COATS FLUOROPOLYMER COATING WITH MINIMUM 70% POLYVINYLIDENE FLUORIDE RESIN.

ROOM FINISH SCHEDULE

ROOM NUMBER	ROOM NAME	FLOOR MATL	FLOOR FINISH	WALLS BASE MATL	WALLS BASE HEIGHT	WALLS NORTH MATL	WALLS NORTH FINISH	WALLS SOUTH MATL	WALLS SOUTH FINISH	WALLS EAST MATL	WALLS EAST FINISH	WALLS WEST MATL	WALLS WEST FINISH	CEILING / TRIM MATL	CEILING / TRIM FINISH	CEILING / TRIM HEIGHT	NOTES
101	VALVE ROOM	CONC	P-17	N/A	N/A	CMU	P-109	CMU	P-109	CMU	P-109	CMU	P-109	GYP BD	P-115	11'-4"	
102	GENERATOR ROOM	CONC	P-17	N/A	N/A	CMU	P-109	CMU	P-109	CMU	P-109	CMU	P-109	GYP BD	P-115	11'-4"	CONTINUE CEILING FINISH INSIDE LIGHT WELL, UP TO DORMER WINDOW

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APPROVED BY J.J.S.							

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

SCHEDULES
ARCHITECTURAL
SCHEDULES

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 95-A-1

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PIPE SCHEDULE

SERVICE	LEGEND	SIZE (INCHES)	SPECIFICATION SECTION (SEE NOTE 2)	MATERIAL (SEE NOTE 3)	INSTALLATION	TEST PRESSURE AND TYPE (PSIG, X) (SEE NOTE 4)	MAX OPERATING PRESSURE (PSIG)	MAX OPERATING TEMPERATURE (°FAHRENHEIT)	COLOR CODE	REMARKS
DRAIN	D	ALL	15030	PVC	EXPOSED / BURIED	5, H	ATM	75	GRAY (SW4031)	
DESIEL FUEL		ALL	15008	STL	EXPOSED	25, P	10	100	SAFETY YELLOW (SW4084)	
ENGINE EXHAUST		ALL	15014	SST	EXPOSED	N/A	2	1200	NOT PAINTED	INSULATE PIPING
FORCE MAIN	FM	ALL	15004	CLDI	BURIED	150, H	100	75		UNDER BUILDING AND WITHIN 10 FT OF FOOTING
FORCE MAIN	FM	ALL	02612	PVC	BURIED	150, H	100	75		AS CALLED OUT ON DRAWINGS
FORCE MAIN	FM	ALL	02619	HDPE	BURIED	150, H	100	75		AS CALLED OUT ON DRAWINGS
RAW SEWAGE	RS	<2.5	15020	PVC	EXPOSED	150, H	100	75	GRAY (SW4031)	LIFT STATION PIPING
RAW SEWAGE	RS	ALL	15004	CLDI	EXPOSED / BURIED	150, H	100	75	GRAY (SW4031)	LIFT STATION PIPING
SANITARY SEWER	SAN	ALL	02611	PVC	BURIED	5, H	ATM	75		
VENT	V	ALL	15030	PVC	EXPOSED / BURIED	5, H	ATM	75	GRAY (SW4031)	
WATER, POTABLE	W1	<2.5	15018	CU	BURIED/EXPOSED	100, H	60	75	SAFETY BLUE (SW 4086)	INSULATE EXPOSED PIPING

NOTES:

1. SYMBOLS > : GREATER THAN OR EQUAL TO
   < : LESS THAN OR EQUAL TO
2. PIPE SPECIFICATIONS - SEE SECTIONS 15000 THROUGH 15030
3. MATERIALS
   - CISP - CAST IRON SOIL PIPE
   - CLDI - CEMENT LINED DUCTILE IRON
   - CPVC - CHLORINATED POLYVINYL CHLORIDE
   - CU - COPPER
   - DIP - DUCTILE IRON (UNLINED)
   - FRP - FIBERGLASS REINFORCED PIPE
   - FSTL - FABRICATED STEEL PIPE
   - GLDI - GLASS LINED DUCTILE IRON
   - GSTL - GALVANIZED STEEL
   - NRCP - NON-REINFORCED CONCRETE PIPE
   - PCCP - PRESTRESSED CONCRETE CYLINDER PIPE
   - PE - POLYETHYLENE
   - PPL - POLYPROPELNE
   - PPLS - POLYPROPELYNE-LINED STEEL
   - PSTL - PVDF-LINED STEEL
   - PVC - POLYVINYL CHLORIDE
   - PVDF - POLYVINYLIDENE FLUORIDE PLASTIC PIPE
   - RCP - REINFORCED CONCRETE PIPE
   - SST - STAINLESS STEEL
   - STL - CARBON STEEL
   - VCP - VITRIFIED CLAY PIPE
4. TESTING METHOD (X) : H = HYDROTEST
   P = PNEUMATIC
5. LABEL EVERY 10 FT MAX, W/2 LABELS PER ROOM, CLOSET OR CHASE MIN.
6. INSTALL UNDER STRUCTURAL SLABS AND FOOTINGS AND 3 FEET BEYOND.
7. NOT FOR USE UNDER STRUCTURAL SLABS AND FOOTINGS.
8. PAINT COLOR NUMBERS ARE SHERWIN-WILLIAMS FOR REFERENCE. VERIFY COLOR SELECTIONS W/ OWNER.
9. DO NOT INSULATE EXPOSED W3 PIPING ON AERATION BASINS.

NOTE: FOR INTERIOR INSULATED PIPING, PROVIDE SPECIFIED JACKETING COLOR CODED PER PIPE SCHEDULE.

DESIGNED BY	P.A.T.
DRAWN BY	J.C.S.
CHECKED BY	P.A.T.
APPROVED BY	J.J.S.

VERIFY SCALES
LENGTH OF BAR IS 1" ON ORIGINAL DRAWING
1:1
PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY

NO.	DATE	REVISION	BY	APVD

Applied Technologies
Engineers-Architects

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

SCHEDULES
MECHANICAL
SCHEDULES

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 95-M-1

PSLTSCALE: 1 LTSCALE: 1
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ELECTRIC UNIT HEATER

EQPT TAG	MANUFACTURER	MODEL	KW	CFM	MOTOR		ELECTRICAL		OPERATING WEIGHT	REMARKS
					HP	RPM	AMPS	VOLTS/PHASE		
EUH-01	QMARK	MUH05-41	5	350	1/100	1600	6	480V / 3Ø	27 LBS	1, 2, 3
EUH-02	QMARK	MUH05-41	5	350	1/100	1600	6	480V / 3Ø	27 LBS	1, 2, 3

1. PROVIDE FACTORY MOUNTED AND WIRED DISCONNECT SWITCH.
2. MOUNT UNIT A MINIMUM OF 8'-0" AFF.
3. PROVIDE WITH FACTORY MOUNTED AND WIRED INTEGRAL THERMOSTAT.

ELECTRIC CONTROL DAMPERS

EQPT TAG	MANUFACTURER	MODEL	BLADE CONFIGURATION	SIZE	LOCATION	REMARKS
40-D-01	TAMCO	SERIES 9000	PARALLEL	72" x 72"	40-L-01	1,2
40-D-02	TAMCO	SERIES 9000	PARALLEL	72" x 72"	40-L-02	1,2

1. PROVIDE WITH 120V BELIMO ACTUATOR (VERIFY NUMBER OF ACTUATORS REQUIRED AND COORDINATE WITH ELECTRICAL CONTRACTOR).
2. PROVIDE WITH THERMALLY BROKEN INSULATED DAMPER UNIT OPTION.

DIFFUSERS AND GRILLES

EQPT TAG	MANUFACTURER	MODEL	REMARKS
A	CONTRACTOR FABRICATED	-	1" x 1" STAINLESS STEEL SCREENING WITH STAINLESS STEEL FRAMED BORDER

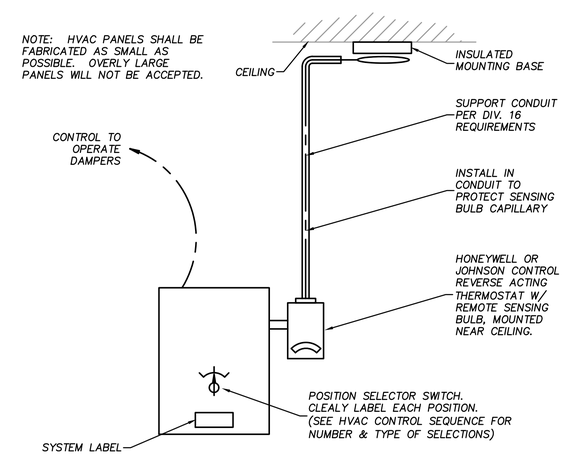
HVAC GENERAL NOTES:

1. THESE DRAWINGS DO NOT ATTEMPT TO SHOW THE COMPLETE DETAILS OF BUILDING CONSTRUCTION, WHICH AFFECT THE MECHANICAL INSTALLATION. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND REFER TO THE ARCHITECTURAL, CIVIL, STRUCTURAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ADDITIONAL DETAILS WHICH AFFECT THE PROPER INSTALLATION OF THIS WORK. NO EXTRA PAYMENT WILL BE ALLOWED FOR THE FAILURE TO OBTAIN THIS INFORMATION.
2. CONTRACTOR SHALL COORDINATE HIS WORK WITH EXISTING CONDITIONS AND WITH THE WORK OF OTHER TRADES. RESOLVE ALL CONFLICTS AT NO ADDITIONAL COST TO THE OWNER OR ARCHITECT.
3. THESE DRAWINGS ARE A DIAGRAMMATIC REPRESENTATION OF WORK TO BE ACCOMPLISHED AND AS SUCH DO NOT SHOW ALL REQUIRED OFFSETS OF DUCTWORK AND PIPING. CONTRACTOR SHALL INSTALL MATERIAL AND EQUIPMENT AS TO CONFORM TO THE STRUCTURE, EQUIPMENT CONNECTIONS AND MAINTAIN EQUIPMENT SERVICE CLEARANCES, HEADROOM AND PASSAGEWAY.
4. KEYNOTES PERTAIN ONLY TO THE DRAWING THEY ARE LOCATED ON.
5. ALL CONTROL WIRING SHALL BE RUN IN CONDUIT.
6. MAINTAIN 10' MINIMUM DISTANCE FROM OUTSIDE AIR INTAKE TO ANY EXHAUST OR TOILET VENTS.

LOUVERS

PLAN DESIGNATION		40-L-01	40-L-02
MANUFACTURER		GREENHECK	GREENHECK
MODEL		ESK-402	ESK-402
CONSTRUCTION	TYPE	INTAKE	EXHAUST
	MATERIAL	ALUMINUM	ALUMINUM
CFM		11,339	11,000
SIZE	WIDTH	72"	72"
	HEIGHT	72"	72"
	DEPTH	4"	4"
MAX FREE AREA VELOCITY - FPM		689	689
MAX PRESSURE DROP - IN WC		0.08	0.08
FINISH		KYNAR	KYNAR
REMARKS		1, 2	1, 2

1. COORDINATE COLOR WITH ARCHITECT.
2. PROVIDE BIRD SCREEN.



TYPICAL HVAC CONTROL PANEL

NTS

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DRAWN BY J.C.S.						
CHECKED BY P.A.T.						
APPROVED BY J.J.S.						

Applied Technologies Engineers-Architects

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

SCHEDULES
HVAC
SCHEDULES

PROJECT NO. 5582 | DATE JAN 2016
DRAWING NO. 95-H-1

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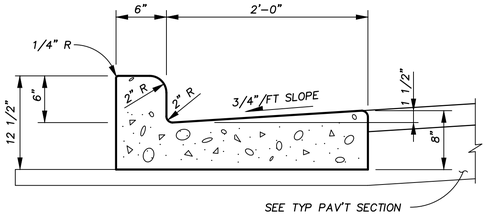
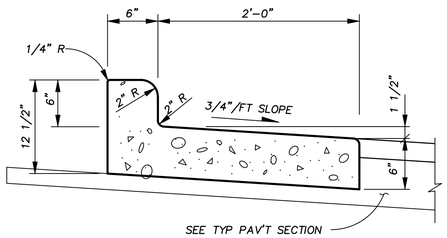


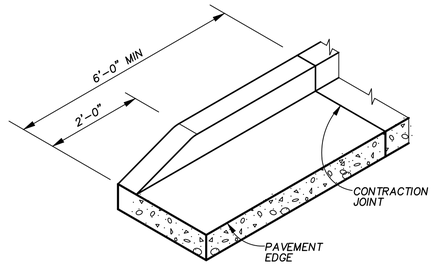
STANDARD



REJECT

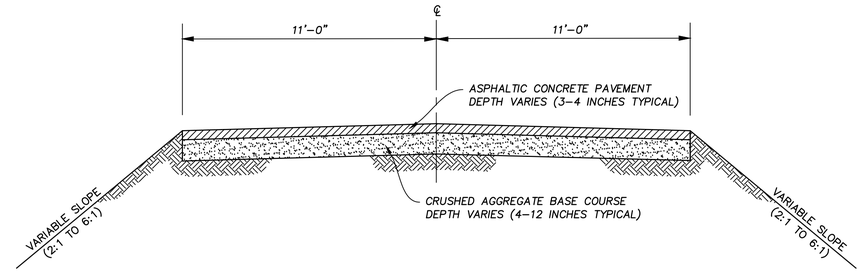
CURB AND GUTTER (02101)

NTS



CURB TAPER (02106)

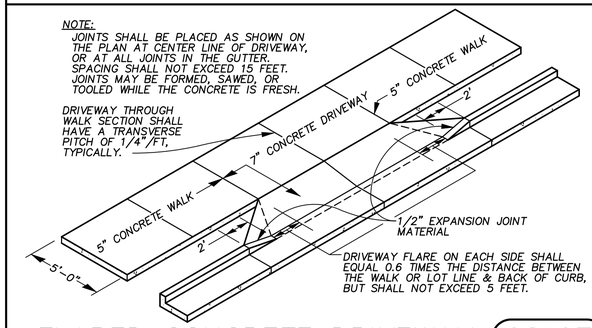
NTS



EXISTING ROADWAY SECTION (02112)

NTS

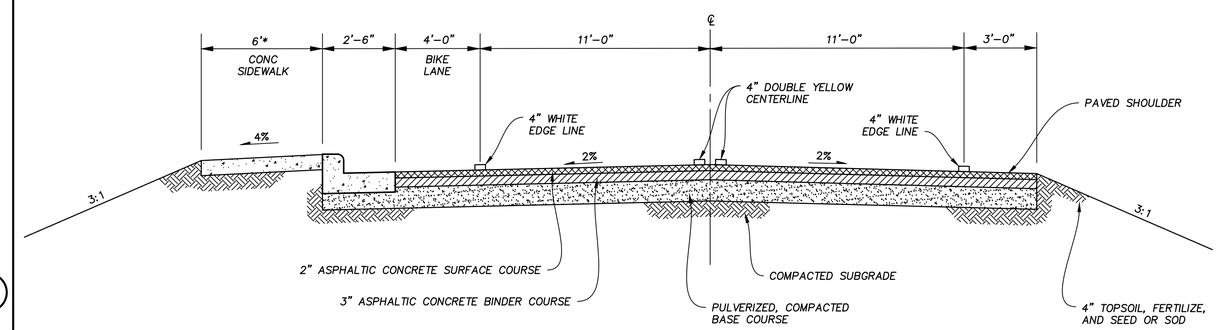
NOTE:
JOINTS SHALL BE PLACED AS SHOWN ON THE PLAN AT CENTER LINE OF DRIVEWAY, OR AT ALL JOINTS IN THE GUTTER. SPACING SHALL NOT EXCEED 15 FEET. JOINTS MAY BE FORMED, SAWED, OR TOOLED WHILE THE CONCRETE IS FRESH.



FLARED CONCRETE DRIVEWAY (02107)

NTS

* 5' WIDE, WHEN NOT ADJACENT TO CURB

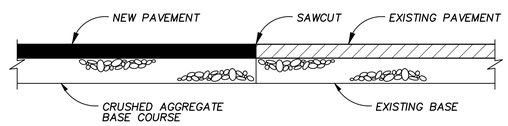


NOTES:

1. CONTRACTOR SHALL FURNISH AND INSTALL TYPE 1 GEO-GRID (GEO STAR 6B1515 OR EQUAL) FOLLOWING PULVERIZATION AND PRIOR TO RE-SHAPING.
2. EPOXY PAVEMENT MARKING SHALL COMPLY WITH SECTION 646 OF THE STATE SPECIFICATIONS.
3. CONTRACTOR SHALL PREPARE AND SUBMIT PAVEMENT MARKING PLAN TO VILLAGE FOR APPROVAL PRIOR TO THE PRE-CONSTRUCTION MEETING.
4. BIKE LANE MARKING SHALL COMPLY WITH WDOT SDD 15-C-29.
5. INTERSECTIONS (INCLUDING STOP LINES) SHALL COMPLY WITH WDOT SDD 15-C-33.
6. EDGE LINES SHALL BE OMITTED THROUGH INTERSECTIONS.
7. EPOXY BIKE LANE MARKING SHALL CONSIST OF THE BIKE LANE SYMBOL AND BIKE LANE ARROW IN ACCORDANCE WITH WDOT SDD 15-C-29-3e. BIKE LANE MARKING SHALL BE SPACED AT INTERVALS NOT EXCEEDING 250 FEET.
8. THE COST OF EPOXY PAVEMENT MARKINGS WILL BE INCIDENTAL TO THE COST OF HMA SURFACE.

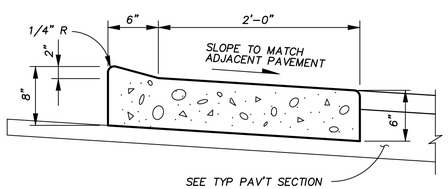
TYPICAL ROADWAY SECTION WITH CURB & GUTTER (02113)

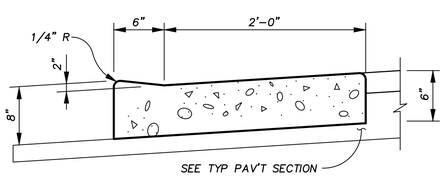
NTS



BUTT JOINT (02110)

NTS





DEPRESSED CURB & GUTTER (02102)

NTS

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DRAWN BY	P.C.G.						
CHECKED BY	P.A.T.						
APPROVED BY	J.J.S.						

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VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

STANDARD DETAILS
CIVIL
DETAILS

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 99-C-1

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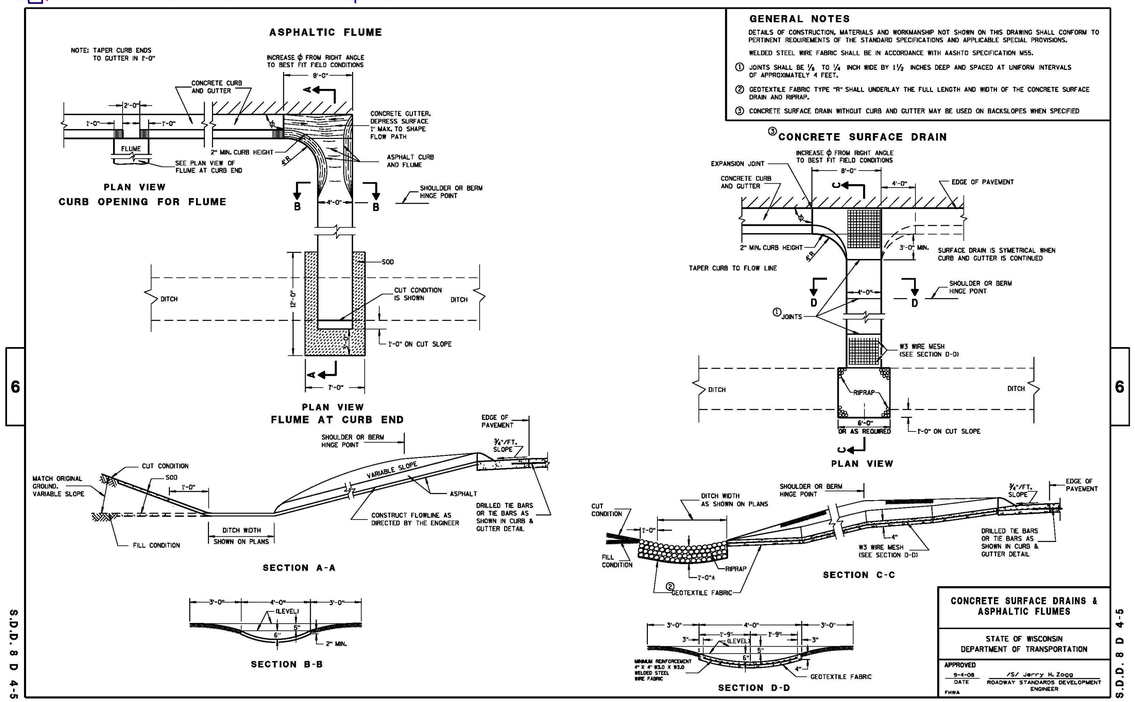
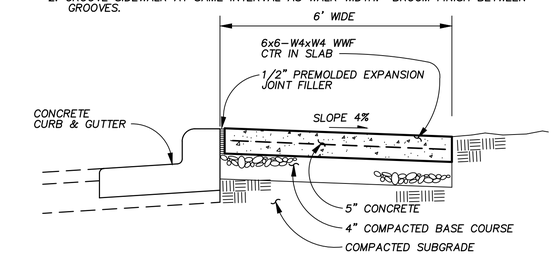
8D4: Concrete Surface Drains & Asphaltic Flumes

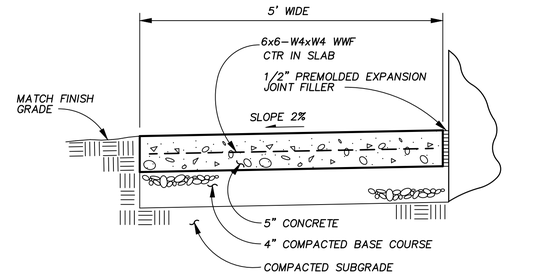


NOTES:

1. PROVIDE 1/4"PREMOLDED EXPANSION JOINT FILLER AT EVERY JOINT OF WALKWAY INTERSECTION AND SPACING NOT GREATER THAN 20' IN SIDEWALK.
2. GROOVE SIDEWALK AT SAME INTERVAL AS WALK WIDTH. BROOM FINISH BETWEEN GROOVES.



AT CURBED ROADWAYS

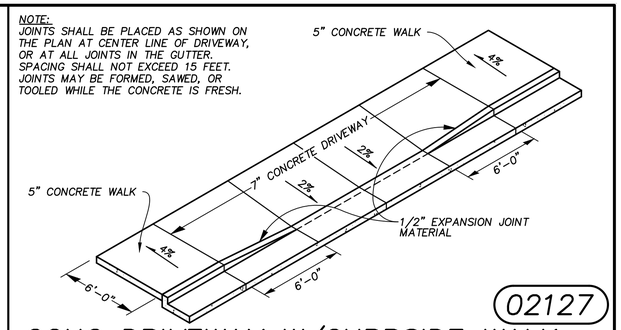


BETWEEN STRUCTURES AND GRASSED AREAS

TYP CONCRETE WALK (02120)

NTS

NOTE:
JOINTS SHALL BE PLACED AS SHOWN ON THE PLAN AT CENTER LINE OF DRIVEWAY, OR AT ALL JOINTS IN THE GUTTER. SPACING SHALL NOT EXCEED 15 FEET. JOINTS MAY BE FORMED, SAWED, OR TOOLED WHILE THE CONCRETE IS FRESH.

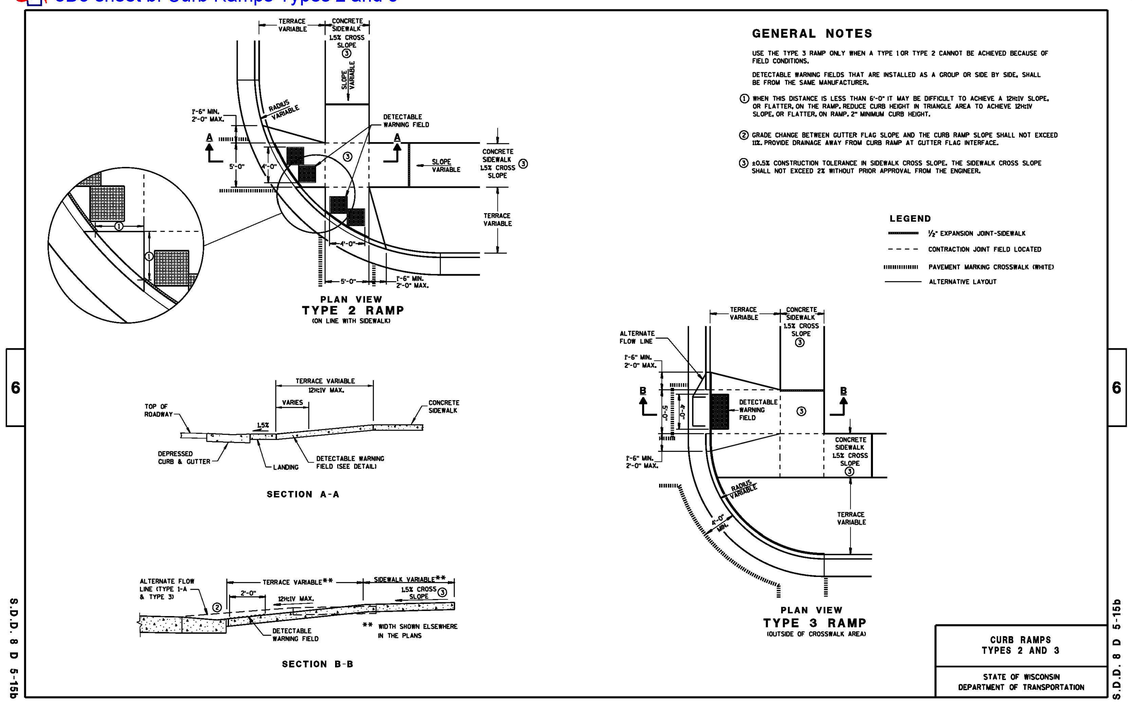


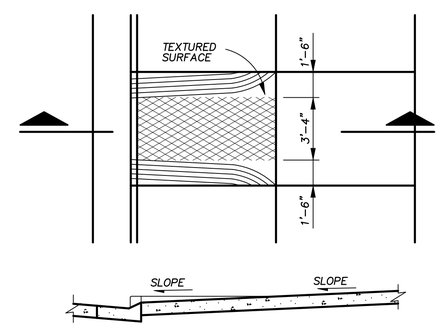
(02127)

CONC DRIVEWAY W/CURBSIDE WALK

NTS

8D5 sheet b: Curb Ramps Types 2 and 3





SECTION

GENERAL NOTES:

DETAILS OF CONSTRUCTION MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE STANDARD SPECIFICATIONS AND THE APPLICABLE SPECIAL PROVISIONS.

RAMPS SHALL BE BUILT AT 12:1 OR FLATTER

SURFACE TEXTURE SHALL CONSIST OF LINEAR IMPRESSIONS APPROXIMATELY 1/4 INCH TO 3/8 INCH IN DEPTH AND WIDTH, ORIENTED TO PROVIDE A UNIFORM PATTERN OF DIAMOND SHAPES MEASURING APPROXIMATELY 1 1/4 INCHES IN WIDTH TO 2 1/4" INCHES IN LENGTH WITH THE LENGTH BEING PARALLEL TO THE DIRECTION OF PEDESTRIAN MOVEMENT. THIS SURFACE TEXTURE MAY BE ACHIEVED BY IMPRESSING AND REMOVING A PIECE OF EXPANDED METAL REGULAR INDUSTRIAL MESH INTO THE SURFACE OF THE RAMP WHILE THE CONCRETE IS IN A PLASTIC STATE.

HANDICAP RAMP (02121)

NTS

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CHECKED BY P.A.T.							
APPROVED BY J.J.S.							

Applied Technologies Engineers-Architects

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

STANDARD DETAILS
CIVIL
DETAILS

PROJECT NO. 5582 | DATE JAN 2016
DRAWING NO. 99–C–2

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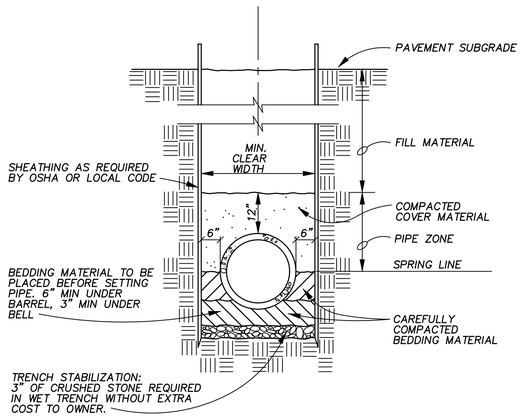
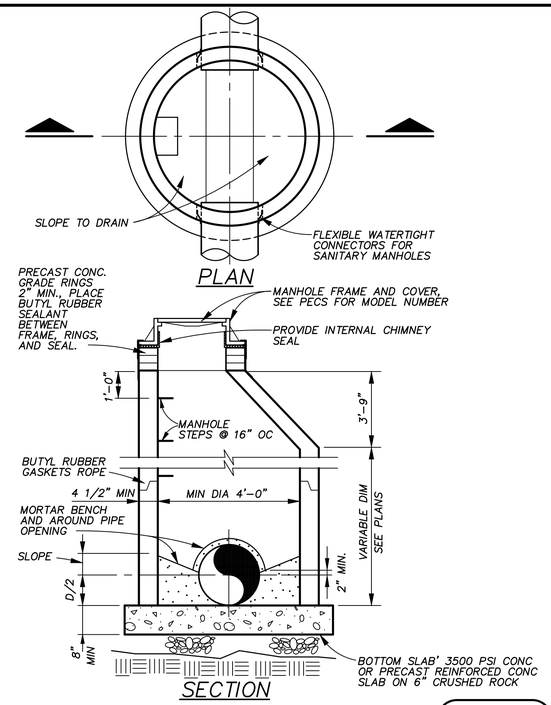


TYPICAL TRENCH W/ CLASS "B" BEDDING (02281)

NTS

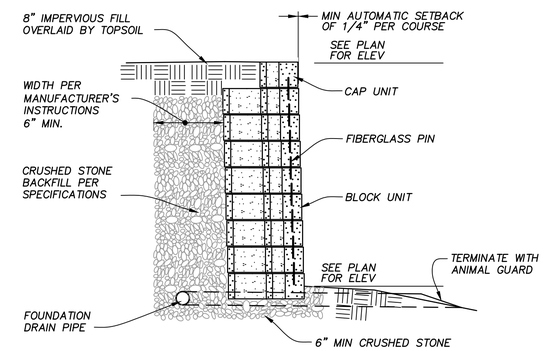


STANDARD SANITARY MANHOLE (02539)

NTS

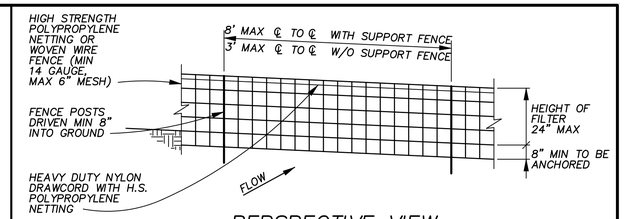
NOTES:

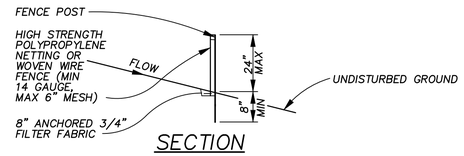
1. BACKFILL AS EACH COURSE IS PUT IN PLACE.
2. ALL VOIDS SHOULD BE FILLED USING CRUSHED STONE FILL.
3. PROVIDE GEOSYNTHETIC GRID SOIL REINFORCEMENT PER MANUFACTURE'S INSTALLATION INSTRUCTIONS.



RETAINING WALL (02820)

NTS





CONSTRUCTION NOTES FOR FABRICATION

1. WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES TO THE UPSLOPE SIDE OF POSTS.
2. FILTER FABRIC TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 12" AT TOP AND MID SECTION.
3. WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY 6" AND FOLDED.
4. THE FILTER FABRIC SHALL BE ANCHORED BY SPREADING AT LEAST 8" OF FABRIC IN A 4"x 4" TRENCH OR A 4" DEEP V-TRENCH ON THE UPSLOPE SIDE OF THE FENCE. THE TRENCH SHALL BE BACKFILLED AND COMPACTED.
5. MAINTENANCE: SILT FENCE SHALL BE INSPECTED WITHIN 24 HOURS AFTER EACH RAINFALL OR DAILY DURING PROLONGED RAINFALL. REPAIR OR REPLACEMENT SHALL BE MADE IMMEDIATELY. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT.

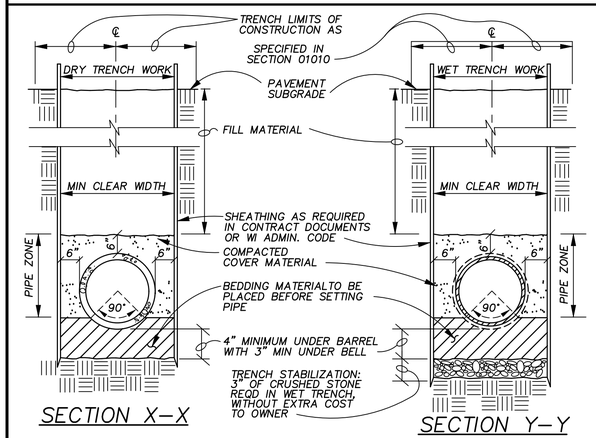
POSTS:
STEEL STUDDED 'T' OR 'U' TYPE OR 2"x 2" KILNDRIED HARDWOOD

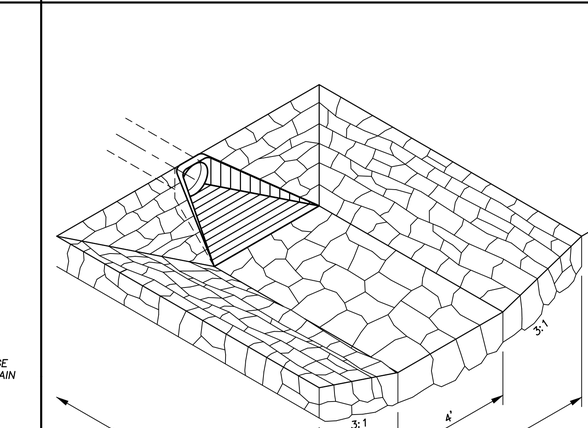
SUPPORT FENCE:
WOVEN WIRE, 14 GAUGE
6" MAX MESH OPENING

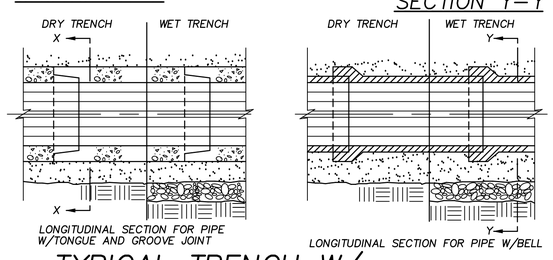
FILTER FABRIC:
AS PER SPECIFICATIONS

SILT FENCE (02840)

NTS





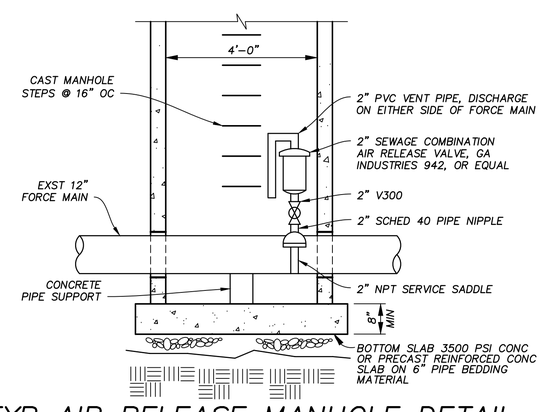


TYPICAL TRENCH W/ CLASS "C" BEDDING (02282)

NTS

NOTE:

FRAME AND COVER, CHIMNEY SEAL AND MANHOLE REDUCTION PER (02539)



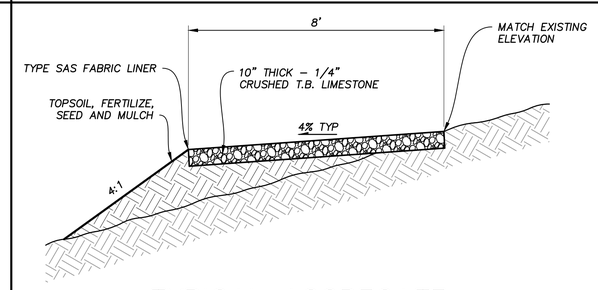
TYP AIR RELEASE MANHOLE DETAIL (02567)

NTS

PRIOR TO PLACEMENT OF RIPRAP, DISCHARGE CHANNEL SHALL BE GRADED AND SHAPED AND LINED WITH TYPE H17 GEO-TEXTILE FABRIC. RIPRAP SHALL CONFORM TO HEAVY RIPRAP AS DEFINED IN THE DOT SPECIFICATIONS.

RIPRAP PLACEMENT AT STORM SEWER OUTFALL (02830)

NTS



TYPICAL AGGREGATE ACCESS PATH (02999)

NTS

DESIGNED BY W.A.H.	VERIFY SCALES LENGTH OF BAR IS 1" ON ORIGINAL DRAWING 1:1 PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY	NO.	DATE	REVISION	BY	APVD
DRAWN BY P.C.G.						
CHECKED BY P.A.T.						
APPROVED BY J.J.S.						

Applied Technologies Engineers-Architects

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

STANDARD DETAILS
CIVIL
DETAILS

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 99-C-3

PSLTSCALE: 1 LTSCALE: 1
J:\5582\GRAPHICS\DRAWINGS\99-C-3 DETAILS.dwg Last Modified: 16 December 2015 Plotted On: 12/22/2015 11:42 AM by JCSTAHL
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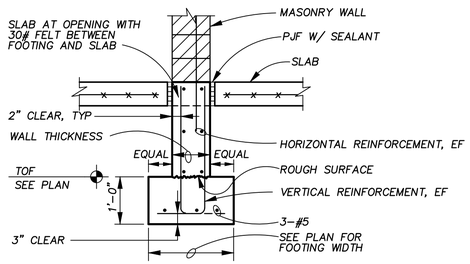
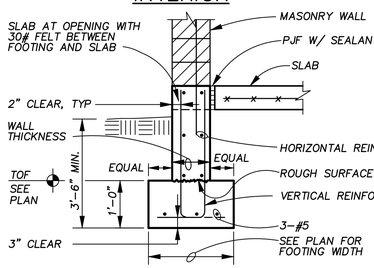


INTERIOR



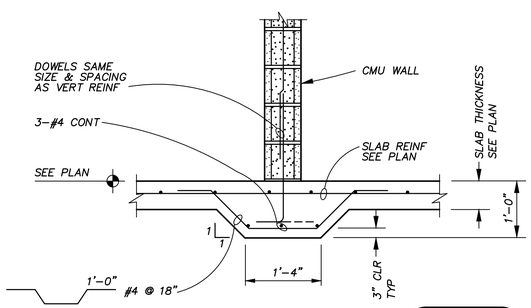
EXTERIOR

In Each of Two Layers of Reinforcement

Wall Thickness	Reinforcement Horizontal	Reinforcement Vertical
12",14",16"	#5@18"	#4@18"
18"	#6@18"	#4@18"

STANDARD WALL FOOTING AND FOUNDATION WALL (03112)

NTS



THICKENED SLAB (03120)

NTS

1. ALL REINFORCEMENT DETAILS SHALL CONFORM TO THE METHODS AND STANDARDS OF ACI 318.
2. UNLESS OTHERWISE SHOWN, CONCRETE WALLS AND SLABS SHALL BE REINFORCED AS FOLLOWS: #4@12" EACH WAY CENTER OF 6" SECTIONS; #5@12" EACH WAY CENTER OF 8" SECTIONS; #4@12" EACH WAY EACH FACE OF 10" SECTIONS; #5@12" EACH WAY EACH FACE OF 12" SECTIONS; SINGLE MAT REINFORCEMENT SHALL BE AT CENTER OF SECTION, UNLESS SHOWN OTHERWISE.
3. CLEARANCE FOR REINFORCEMENT FOR CAST-IN-PLACE CONCRETE UNLESS SHOWN OTHERWISE, SHALL BE WHEN CAST AGAINST GROUND 3" CLEARANCE; FOR SURFACE EXPOSED TO WATER OR WEATHER 1 1/2" CLEARANCE FOR #5 BARS OR SMALLER AND 2" CLEARANCE FOR LARGER BARS; INTERIOR SLABS 3/4" CLEARANCE FOR #11 BARS OR SMALLER; INTERIOR BEAMS AND COLUMNS 1 1/2" CLEARANCE.
4. PLACE HORIZONTAL BARS WITHIN 3" OF TOP AND BOTTOM OF WALLS, UNLESS SHOWN OTHERWISE.
5. REFER TO CORNER AND INTERSECTION REINFORCEMENT DETAILS. IN GENERAL, THE REINFORCEMENT SIZES AND SPACINGS SHALL BE CALLED OUT ON THE PLANS AND REFERENCED TO THESE DETAILS AND THE REINFORCEMENT SHALL LAP WITH THE CORNER AND INTERSECTING REINFORCEMENT.
6. ALL INSIDE DIAMETER OF BENDS, UNLESS OTHERWISE SHOWN, SHALL BE AS DEFINED IN ACI 7.2.
7. UNLESS INDICATED OTHERWISE, CONTRACTOR MAY SPLICE CONTINUOUS SLAB OR LONGITUDE BEAM BARS AT LOCATIONS OF HIS CHOOSING, EXCEPT THAT TOP BAR SPLICES SHALL BE LOCATED AT MIDSPAN AND BOTTOM BAR SPLICES SHALL BE LOCATED AT SUPPORTS.
8. UNLESS OTHERWISE NOTED, ALL WALL REINFORCEMENT BARS SHALL BE CONTINUOUS AROUND CORNERS AND THROUGH COLUMNS OR PILASTERS. REINFORCEMENT SHALL BE EXTENDED INTO CONNECTING WALLS AND LAPPED ON THE OPPOSITE FACE OF THE CONNECTING WALLS. VERTICAL WALL BARS SHALL BE LAPPED WITH DOWELS FROM BASE SLABS AND EXTENDED INTO THE TOP FACE OF ROOF SLABS AND LAPPED WITH TOP SLAB REINFORCEMENT.
9. ROUGH SURFACE-WHEN CONCRETE IS PLACED AGAINST PREVIOUSLY HARDENED CONCRETE, THE INTERFACE SURFACE OF THE HARDEND CONCRETE SHALL BE CLEAN AND FREE OF LAITANCE AND SHALL BE ROUGHENED TO A FULL AMPLITUDE OF 1/4 INCH. THIS CAN BE ACCOMPLISHED BY USING A FORM LINER OR RAKING THE PLASTIC CONCRETE OF THE FIRST POUR OR BY BUSHHAMMERING OR CHISELING HARDENED CONCRETE SURFACES OR ANY OTHER METHOD APPROVED BY THE ENGINEER.
10. ALL REINFORCEMENT DEVELOPMENT LENGTHS, LAP SPLICE LENGTHS, AND HOOK DEVELOPMENT LENGTHS SHALL SATISFY THE FOLLOWING MINIMUM LENGTH REQUIRMENTS:

Tension Development Length (inches), Fy=60000psi				
fc'=	3000	3000	4000	4000
Bar Size	Top	Other	Top	Other
3	22	17	19	15
4	29	22	25	19
5	36	28	31	24
6	43	33	37	29
7	63	48	54	42
8	72	55	62	48
9	81	62	70	54
10	91	70	79	61
11	101	78	87	67

Uncoated Reinforcement
Normal Weight Concrete
Top Bar, more than 12" of concrete cast below bar

Tension Lap Splice Length (inches), Fy=60000psi				
fc'=	3000	3000	4000	4000
Bar Size	Top	Other	Top	Other
3	28	22	25	19
4	38	29	33	25
5	47	36	41	31
6	56	43	49	37
7	81	63	71	54
8	93	72	81	62
9	105	81	91	70
10	118	91	102	79
11	131	101	114	87

Uncoated Reinforcement
Normal Weight Concrete
Top Bar, more than 12" of concrete cast below bar

Compression Development Length (inches), Fy=60000psi		
fc'=	3000	4000
Bar Size		
3	9	8
4	11	10
5	14	12
6	17	15
7	20	17
8	22	19
9	25	22
10	28	25
11	31	27

Enclosed within spirals or ties per ACI 12.3.3.2

Compression Lap Splice Length (inches), Fy=60000psi		
fc'=	< 3000	>=3000
Bar Size		
3	15	12
4	20	15
5	25	19
6	30	23
7	35	27
8	40	30
9	46	34
10	51	39
11	57	43

Tension Hook Development Length (inches), Fy=60000psi		
fc'=	3000	4000
Bar Size		
3	6	6
4	8	7
5	10	9
6	12	10
7	14	12
8	16	14
9	18	15
10	20	17
11	22	19

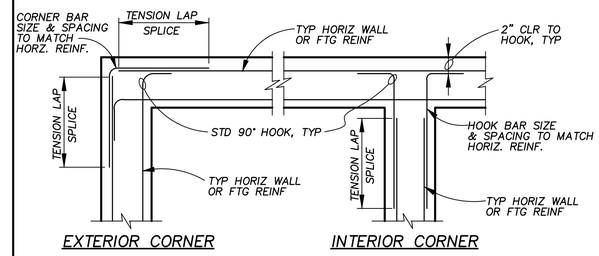
Uncoated Reinforcement
Normal Weight Concrete
For <=#11, Side Cover >=2.5"
For 90° Hook, Tail Cover >=2"

FOR LIGHTWEIGHT AGGREGATE CONCRETE, INCREASE TENSION DEVELOPMENT LENGTH, TENSION LAP SPLICE LENGTH, AND TENSION HOOK DEVELOPMENT LENGTH BY 30%.

FOR EPOXY COATED REINFORCEMENT; INCREASE TENSION DEVELOPMENT LENGTH AND TENSION LAP SPLICE LENGTH BY 50%, AND INCREASE TENSION HOOK DEVELOPMENT LENGTH BY 20%.

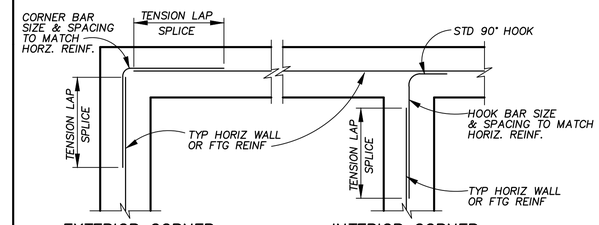
GENERAL REINFORCEMENT NOTES (03201)

NTS



EXTERIOR CORNER INTERIOR CORNER

DOUBLE MAT



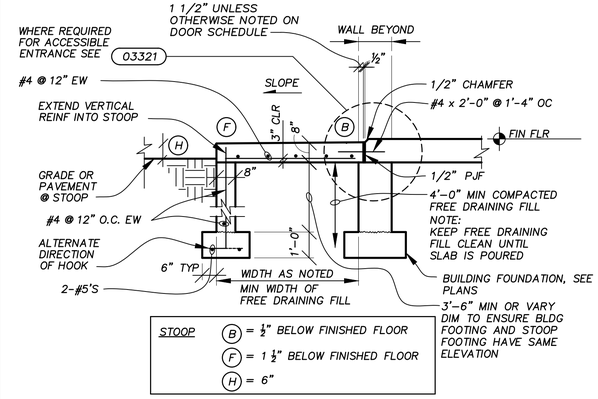
EXTERIOR CORNER INTERIOR CORNER

SINGLE MAT

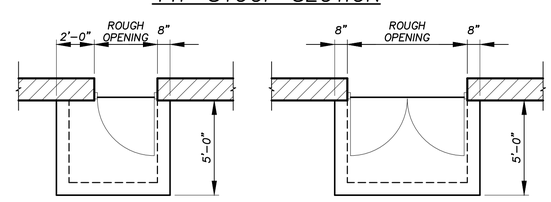
NOTE:
"TENSION LAP SPLICE LENGTH" PER TABLE IN THE GENERAL REINFORCMENT NOTES (03201). ALL SPLICE BARS TO BE SAME SIZE AND SPACING AS TYPICAL HORIZ REINF UON.

CORNER REINFORCEMENT FOR WALLS AND FOOTINGS (03205)

NTS



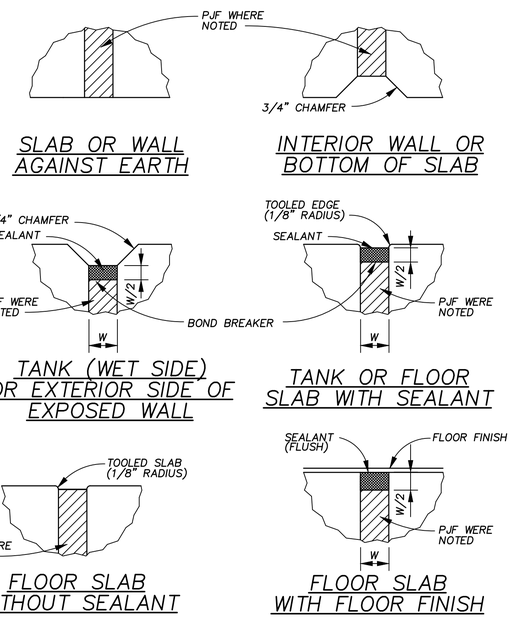
TYP STOOP SECTION



STOOP PLAN AT SERVICE DOOR STOOP PLAN AT DOUBLE SERVICE DOOR

STOOP W/ FROST FOOTING (03319)

NTS



SLAB OR WALL AGAINST EARTH INTERIOR WALL OR BOTTOM OF SLAB

TANK (WET SIDE) OR EXTERIOR SIDE OF EXPOSED WALL TANK OR FLOOR SLAB WITH SEALANT

FLOOR SLAB WITHOUT SEALANT FLOOR SLAB WITH FLOOR FINISH

JOINT TREATMENT DETAILS (03500)

NTS

1. PAD SIZE SHALL BE MINIMUM SHOWN ON PLANS OR AS SPECIFIED BY THE MANUFACTURER AND APPROVED BY THE ENGINEER.
2. THE SIZE, NUMBER, TYPE, LOCATION AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE AS SPECIFIED BY THE EQUIPMENT MANUFACTURER.
3. BOLTS SHALL BE HELD IN POSITION WITH A TEMPLATE WHILE PAD IS BEING POURED.
4. ANCHOR BOLT SLEEVES SHALL BE AS DETAILED IN (03602) .
5. EQUIPMENT BASES SHALL BE INSTALLED LEVEL UNLESS SPECIFIED OTHERWISE.
6. WEDGES OR SHIMS SHALL BE USED TO SUPPORT THE BASE WHILE THE NON-SHRINK GROUT IS PLACED. TEMPORARY LEVELING NUTS SHALL BE BACKED OFF. IF LEFT IN, THE WEDGES OR SHIMS SHALL NOT BE EXPOSED TO VIEW.

EQUIPMENT PAD NOTES (03601)

DESIGNED BY J.P.G.	VERIFY SCALES LENGTH OF BAR IS 1" ON ORIGINAL DRAWING 1:1 PLOT SCALE, ADJUST SCALE(S) ACCORDINGLY	NO.	DATE	REVISION	BY	APVD	Applied Technologies Engineers-Architects
DRAWN BY J.C.S.							
CHECKED BY P.A.T.							
APPROVED BY J.J.S.							

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

STANDARD DETAILS
ARCHITECTURAL/STRUCTURAL DETAILS

PROJECT NO. 5582 | DATE JAN 2016
DRAWING NO. 99-AS-1

PSLTSCALE: 1 LTSCALE: 1
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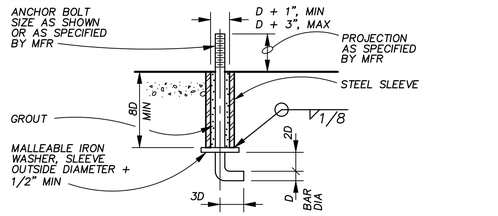
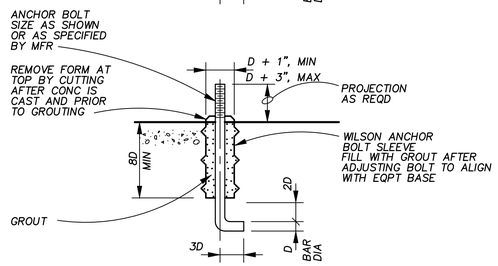




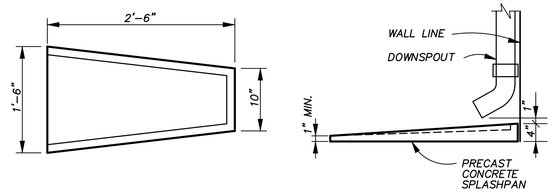
ALTERNATIVE

NOTES:

1. THE SIZE, NUMBER, TYPE, LOCATION AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE AS SPECIFIED BY THE EQUIPMENT MANUFACTURER.
2. BOLTS SHALL BE HELD IN POSITION WITH A TEMPLATE WHILE PAD IS BEING POURED.
3. ANCHOR BOLT SLEEVES SHALL BE USED TO PROVIDE THE ANCHOR BOLT A MINIMUM ADJUSTMENT OF 1/2" IN ALL DIRECTIONS.
4. THE MINIMUM SLEEVE LENGTH SHALL BE 8 TIMES THE BOLT DIAMETER. SLEEVES SHALL HAVE A MINIMUM INTERNAL DIAMETER 1" GREATER THAN BOLT DIAMETER AND A MAXIMUM INTERNAL DIAMETER 3" GREATER THAN ANCHOR BOLT DIAMETER.
5. SLEEVES SHALL BE FILLED WITH NON-SHRINK GROUT AFTER ADJUSTMENTS ARE COMPLETED.

SLEEVED ANCHOR BOLT (03602)

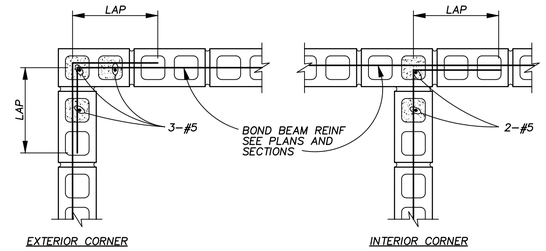
NTS



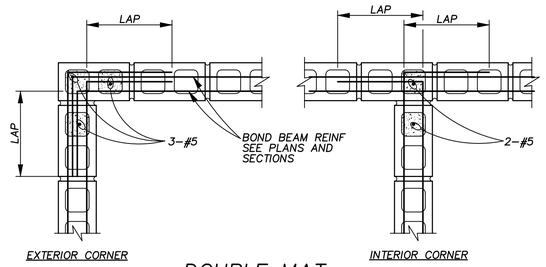
PLAN ELEVATION

SPLASH PAN DETAIL (03810)

NTS



SINGLE MAT



DOUBLE MAT

NOTE:

1. LAP=37 BAR DIAMETERS OR 2'-0" MINIMUM UNLESS NOTED OTHERWISE.
2. GROUT ALL VERT CELLS HAVING REINFORCEMENT.
3. REINFORCE JOINT CORNERS AND INTERSECTIONS WITH STRAP ANCHORS AT 16" OC.

BLOCK WALL CORNERS REINF (04550)

NTS

LINTEL SCHEDULE

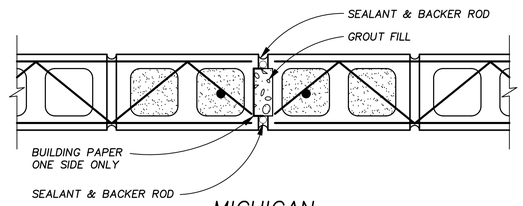
MARK	MEMBER SIZE	REMARKS
L1	8"x 8" CMU BOND BEAM W/2-#5, BOTTOM	FOR BRG SEE 04561
L2	W8x10	FOR BRG SEE 04562
L3	W8x15	FOR BRG SEE 04562
L4	W8x21	FOR BRG SEE 04562
L5	W16x26	FOR BRG SEE 04562
L6	W16x31	FOR BRG SEE 04562
L7	W16x50	FOR BRG SEE 04562
L8		
L9		
L10		

NOTES:

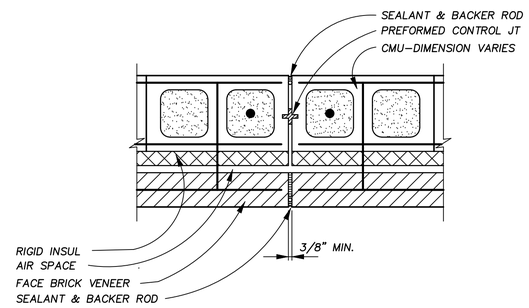
1. MASONRY OPENINGS LESS THAN 4'-0" IN WIDTH THAT DO NOT HAVE A LINTEL SCHEDULED SHALL HAVE A BOND BEAM WITH (2) #5'S. PROVIDE 8" OF BEARING AT EACH END. IF THE SAME OPENING REQUIRES AN ANGLE LINTEL FOR BRICK SUPPORT, PROVIDE A 3 1/2"x5"x5/16" ANGLE. INSTALL ANGLE WITH LLV WITH 4" OF BEARING ON EACH END. ATTACHMENT TO BOND BEAM IS NOT REQUIRED. MASONRY LINTEL BEARING TO BE SIMILAR TO 04562 U.O.N.
2. SEE 04561 OR 04562 FOR LINTEL BEARING REQUIREMENTS.
3. SEE 04563 FOR LINTEL SECTION.
4. FOR STEEL LINTELS, FACESHELLS ARE REQUIRED ON EACH FACE OF LINTEL U.O.N.
5. FOR 16" OR DEEPER LINTELS, ADJUSTABLE ANCHORS ARE REQUIRED TO BE SECURED TO WEB OF THE STEEL LINTEL @ 16" O.C. HORIZONTAL AND 8" O.C. VERTICAL.

LINTEL SCHEDULE (04560)

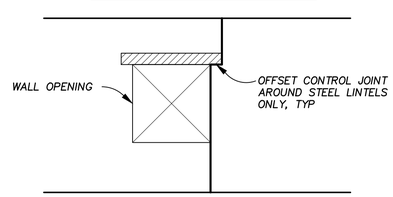
NTS



MICHIGAN



PREMOLDED GASKET



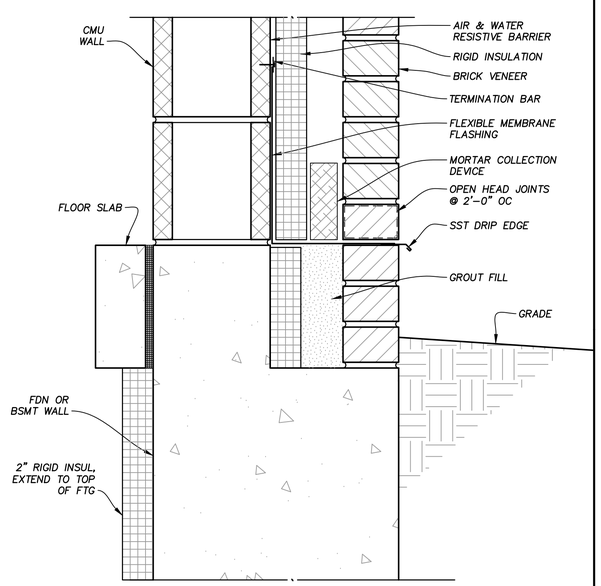
ELEVATION

NOTES:

1. TERMINATE HORIZ REINF EACH SIDE OF JOINT. PROVIDE ONE REINFORCED AND GROUTED VERTICAL CELLS ON EACH SIDE OF JOINT. BOND BEAM REINF AT ROOF SHALL BE CONT THROUGH CONTROL JOINT.
2. SPECIAL CONTROL JOINT CMU CAN ALSO BE USED.

CONTROL JOINT DETAIL (04010)

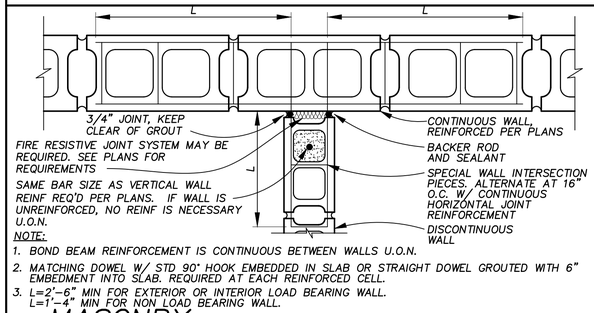
NTS



NOTE: CAVITY WALL DRAINAGE SYSTEM BASIS OF DESIGN IS "TOTAL FLASH" BY MORTAR NET USA, LTD.

WALL BASE DETAIL (04009)

NTS

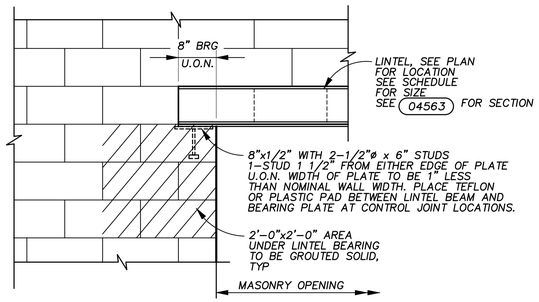


NOTE:

1. BOND BEAM REINFORCEMENT IS CONTINUOUS BETWEEN WALLS U.O.N.
2. MATCHING DOWEL W/ STD 90° HOOK EMBEDDED IN SLAB OR STRAIGHT DOWEL GROUTED WITH 6" EMBEDMENT INTO SLAB. REQUIRED AT EACH REINFORCED CELL.
3. L=2'-6" MIN FOR EXTERIOR OR INTERIOR LOAD BEARING WALL. L=1'-4" MIN FOR NON LOAD BEARING WALL.

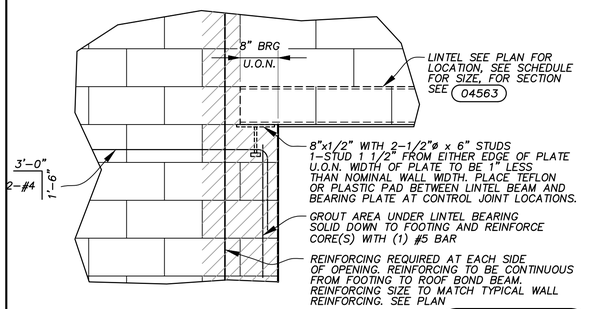
MASONRY WALL INTERSECTION DETAIL (04551)

NTS



LINTEL BEARING (04561)

NTS



LINTEL BEARING (04562)

NTS

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Applied Technologies Engineers-Architects

VILLAGE OF GRAFTON
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STANDARD DETAILS
ARCHITECTURAL/STRUCTURAL DETAILS

PROJECT NO. 5582 | DATE JAN 2016
DRAWING NO. 99-AS-2

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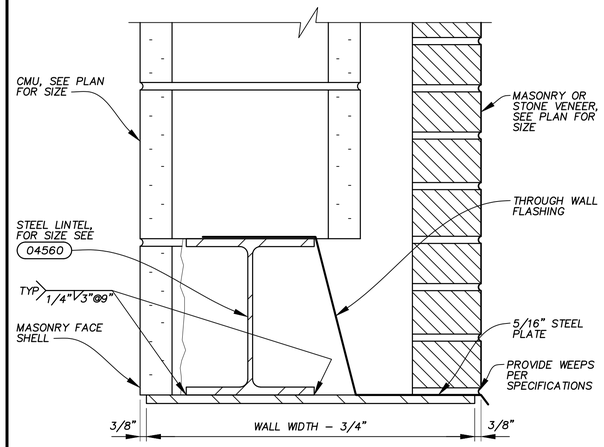
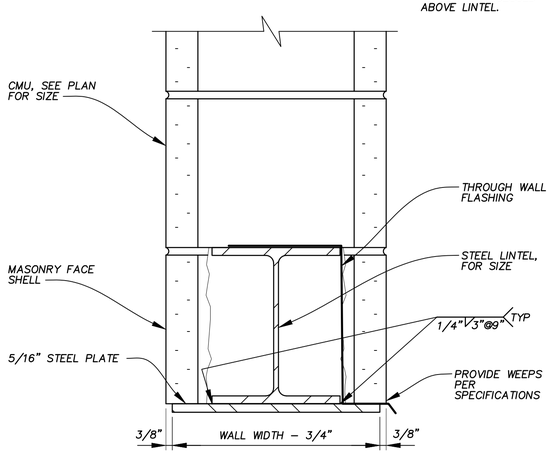


DOUBLE WYTHE LINTEL

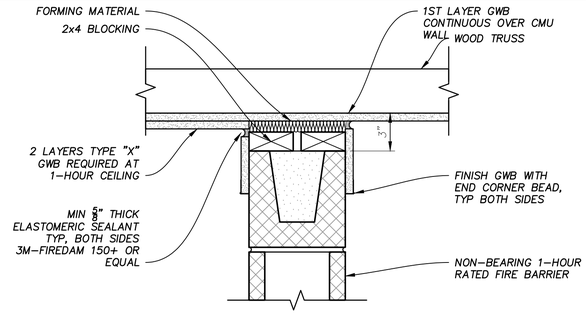
NOTE:
ADJUST SIZE OF STEEL PLATE WHEN MASONRY VENEER IS RECESSED ABOVE LINTEL.



SINGLE WYTHE LINTEL

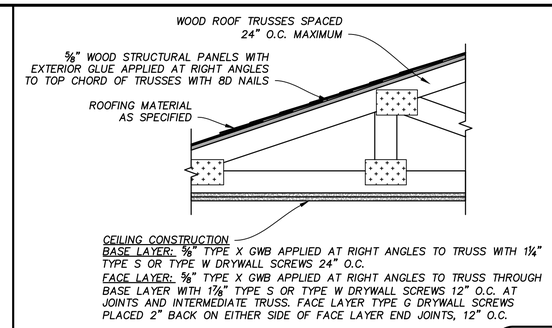
LINTEL SECTION (04563)

NTS



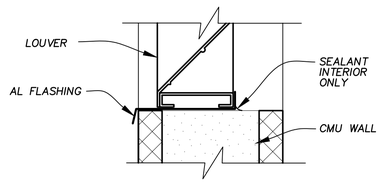
1 HR HEAD OF WALL JOINT (07840)

NTS



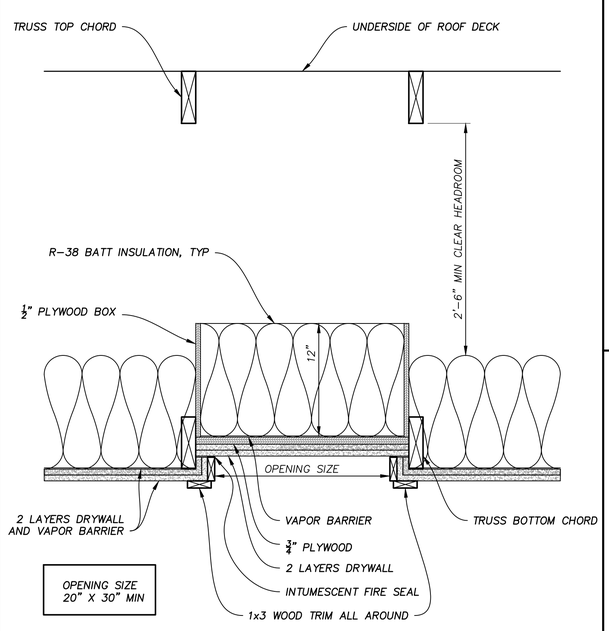
1 HR GYPSUM BOARD CEILING (09620)

NTS



LOUVER SILL (08114)

NTS



1 HOUR RATED ATTIC ACCESS PANEL (08701)

NTS

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APPROVED BY J.J.S.						

Applied Technologies
Engineers - Architects

VILLAGE OF GRAFTON
RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

STANDARD DETAILS
DISCIPLINE
DETAILS

PROJECT NO. 5582
DATE JAN 2016
DRAWING NO. 99–AS–3

PSLTSCALE: 1 LTSCALE: 1
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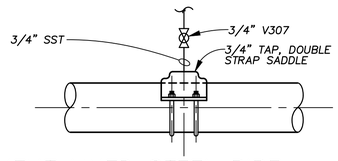
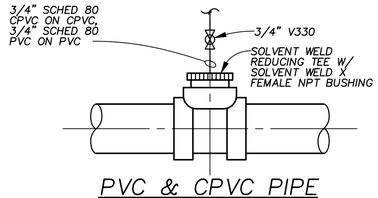
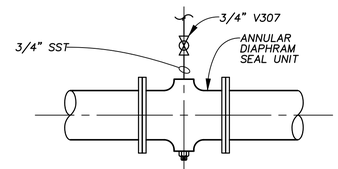


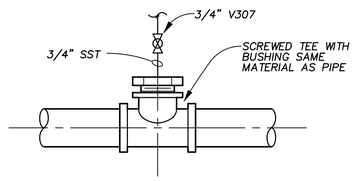
CEMENT LINED STEEL PIPE, CAST IRON PIPE & DUCTILE IRON PIPE



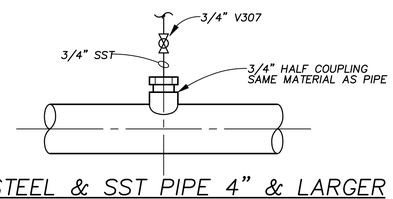
PVC & CPVC PIPE



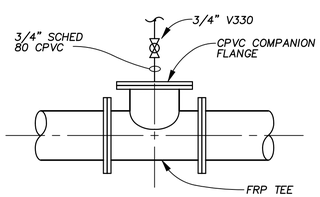
GLASS LINED CAST IRON PIPE



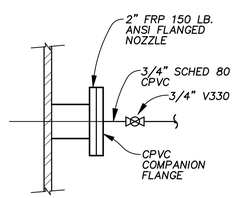
STEEL & SST PIPE 3-1/2" & SMALLER



STEEL & SST PIPE 4" & LARGER



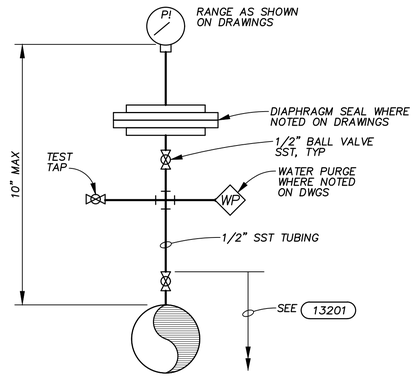
FRP PIPE



FRP TANK

PRESSURE CONNECTION INSTALLATION DETAILS (13201)

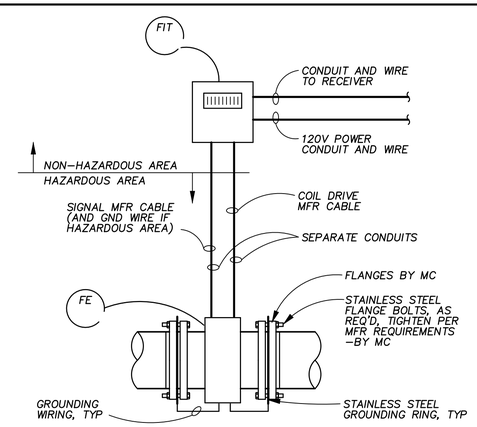
NTS



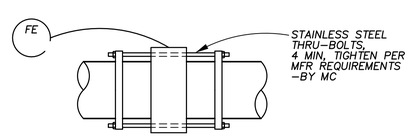
DIRECT MOUNTING

PRESSURE INDICATOR INSTALLATION (13222)

NTS



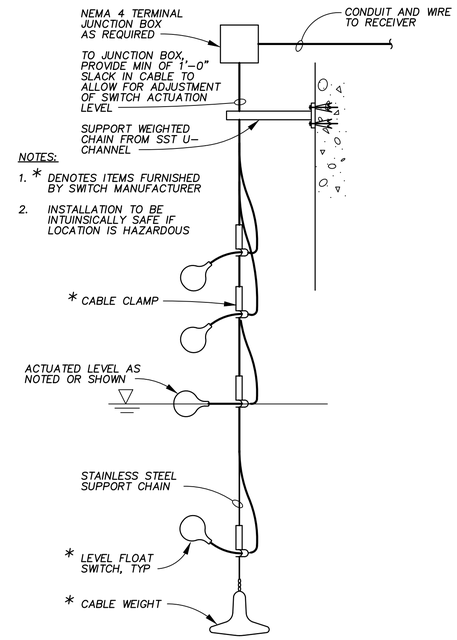
FLANGED BODY STYLE



WAFER BODY STYLE

INLINE PRIMARY ELEMENT INSTALLATION - MAGMETER-REMOTE TRANSMITTER (13260)

NTS

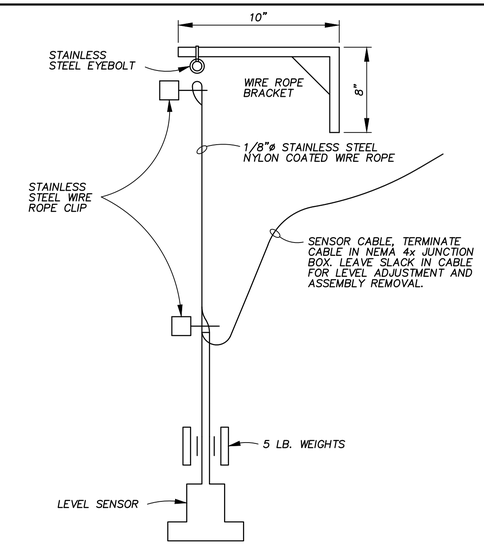


NOTES:

1. * DENOTES ITEMS FURNISHED BY SWITCH MANUFACTURER
2. INSTALLATION TO BE INTUINSICALLY SAFE IF LOCATION IS HAZARDOUS

FLOAT TYPE LEVEL SWITCH INSTALLATION (13362)

NTS

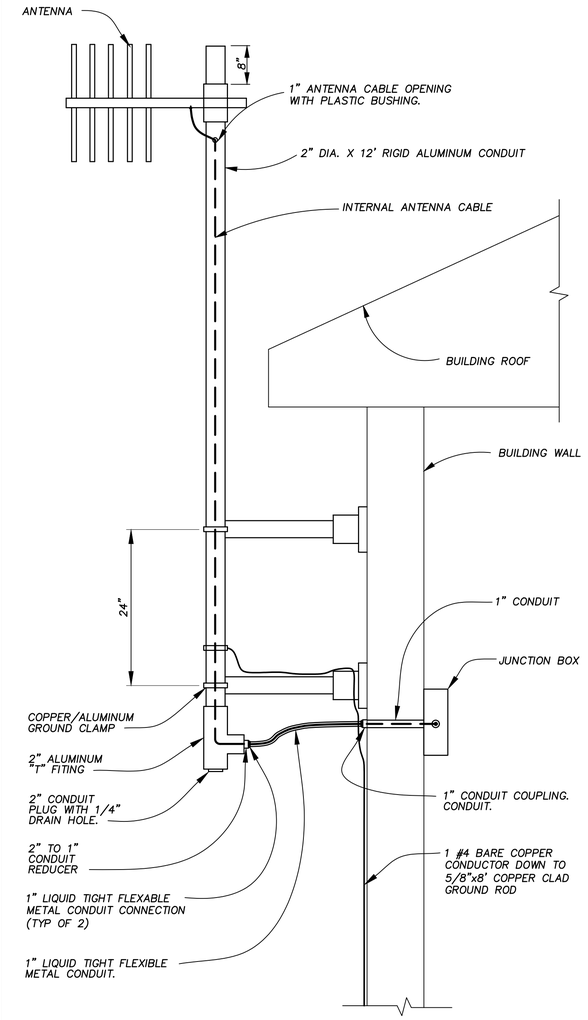


NOTES:

1. CONTRACTOR IS REQUIRED TO DETERMINE LENGTH OF CABLE AND PLACEMENT OF SENSOR.

LEVEL SENSOR INSTALLATION (13365)

NTS



BUILDING MOUNTED ANTENNA (13950)

NTS

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RIVER BEND ROAD & LIFT STATION
GRAFTON, WISCONSIN

STANDARD DETAILS MECHANICAL DETAILS

PROJECT NO. 5582 | DATE JAN 2016
DRAWING NO. 99-M-1

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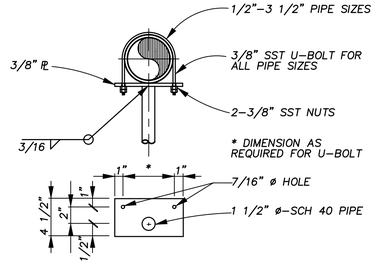
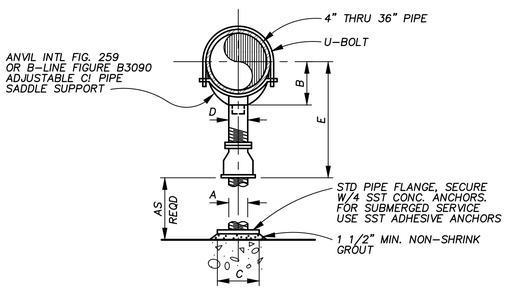
DIMENSION TABLE						
PIPE SIZE	A	B	C	D	E MIN	E MAX
2-1/2"	2-1/2"	3-1/2"	9"	1-1/2"	8"	13"
3"	2-1/2"	3-3/4"	9"	1-1/2"	8-1/4"	13-1/4"
3-1/2"	2-1/2"	4"	9"	1-1/2"	8-1/2"	13-1/2"
4"	3"	4-1/4"	9"	2-1/2"	9-1/4"	14"
5"	3"	4-7/8"	9"	2-1/2"	10"	14-3/4"
6"	3"	5-1/2"	9"	2-1/2"	10-1/2"	15-1/4"
8"	3"	6-7/8"	9"	2-1/2"	11-3/4"	16-1/2"
10"	3"	8-1/2"	9"	2-1/2"	13-1/2"	18-1/4"
12"	3"	9-15/16"	9"	2-1/2"	15"	19-3/4"
14"	4"	10-15/16"	11"	3"	16-1/4"	20-3/4"
16"	4"	12-3/8"	11"	3"	17-3/4"	22-1/4"
18"	6"	13-7/8"	13-1/2"	3-1/2"	19-1/2"	24"
20"	6"	15-3/8"	13-1/2"	3-1/2"	21"	25-1/2"
24"	6"	17-15/16"	13-1/2"	4"	23-3/4"	28-1/4"
30"	6"	21-5/16"	13-1/2"	4"	27"	31-1/2"
32"	6"	22-1/2"	13-1/2"	4"	28-1/4"	32-3/4"
36"	6"	24-1/2"	13-1/2"	4"	30-1/4"	34-3/4"



PIPE SIZES 1/2"-3 1/2"



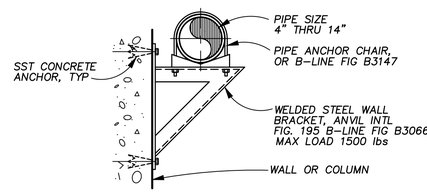
PIPE SIZES 4"-36"

NOTES

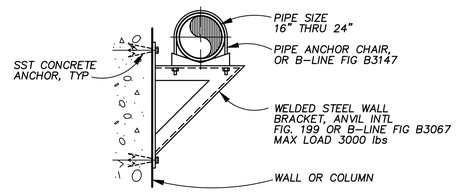
1. PROVIDE HALF ROUND RIGID INSULATION AND INSULATION PROTECTION SHIELD, SIMILAR TO ANVIL INTL FIG. 167 OR ELCEN FIG. 219, WHERE PIPING IS INSULATED.
2. PROVIDE NEOPRENE WAFFLE ISOLATION PAD, SIMILAR TO MASON TYPE "W" OR KORFUND KORPAD 40, UNDER SUPPPORT FOOT WHEN PIPING IS ISOLATED OR SUPPORT IS ADJACENT TO MECHANICAL EQUIPMENT.
3. PIPING SUPPORTS TO RECIEVE SAME PAINT SYSTEM AS PIPING

PIPE SUPPORT (15100)

NTS



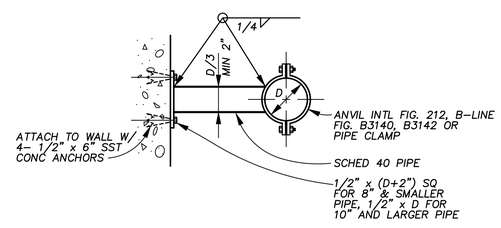
MEDIUM



HEAVY

PIPE SUPPORT (15114)

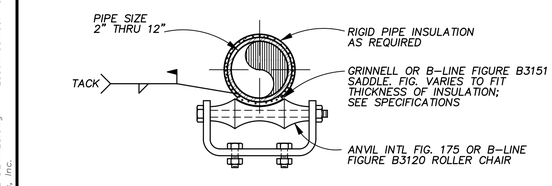
NTS



PLAN

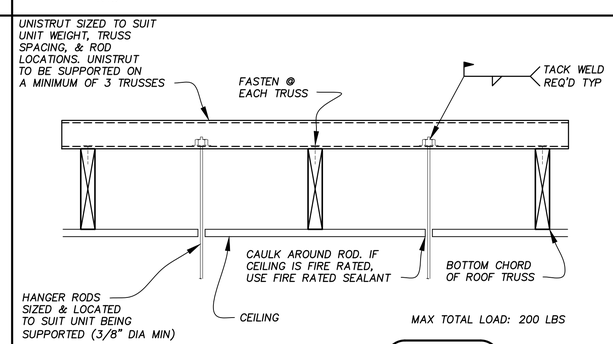
PIPE SWAY BRACE (15140)

NTS



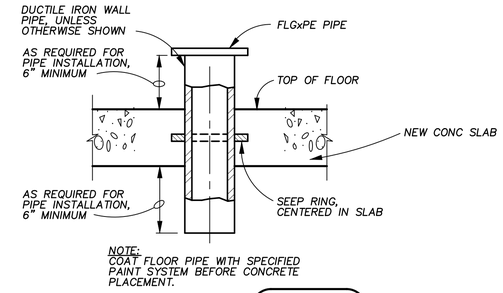
PIPE SUPPORT (15104)

NTS



HANGER DETAIL (15156)

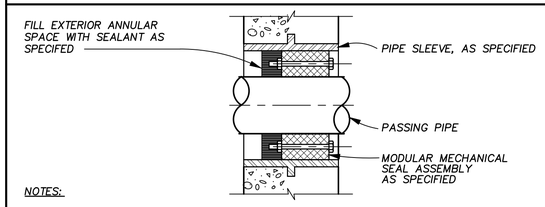
NTS



NOTE:
COAT FLOOR PIPE WITH SPECIFIED PAINT SYSTEM BEFORE CONCRETE PLACEMENT.

FLOOR PIPE (15205)

NTS

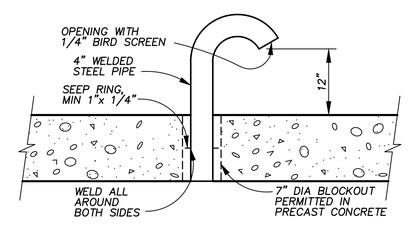


NOTES:

1. CORE DRILLED HOLE WITHOUT SLEEVE PERMITTED IN PRECAST CONCRETE OR EXISTING CONCRETE.
2. COAT WALL SLEEVE WITH SPECIFIED PAINT SYSTEM BEFORE CONCRETE PLACEMENT.
3. INSTALL MODULAR MECHANICAL SEAL ASSEMBLY IN WALL WITH ADJUSTMENT BOLT HEADS FACING INTO INTERIOR SPACES WHEN POSSIBLE FOR FUTURE ADJUSTMENT.
4. FOR FIRE-RATED CONSTRUCTION. INSTALL MODULAR MECHANICAL SEAL ASSEMBLY(IES) AS SPECIFIED FOR REQUIRED FIRE RATING.

WALL PENETRATION SEAL (15221)

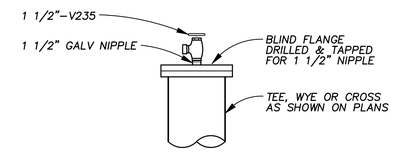
NTS



NOTE:
COAT ALL PIPE WITH SYSTEM NO. 6, SPEC SECTION 09900.

TANK VENT PIPE (15240)

NTS



TYPE 2

FLUSHING CONNECTION (15321)

NTS

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STANDARD DETAILS
MECHANICAL
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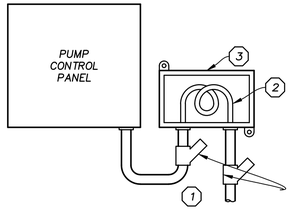
KEYED NOTES:

1. EXPLOSION-PROOF CONDUIT SEAL FITTING. CROUSE-HINDS SERIES "EYS" OR EQUAL. REQUIRES USE OF SEALING COMPOUND.
2. LEVEL TRANSMITTER CABLE.
3. NEMA 4 JUNCTION BOX, SURFACE MOUNTED. CROUSE-HINDS SERIES "WJB" OR EQUAL.

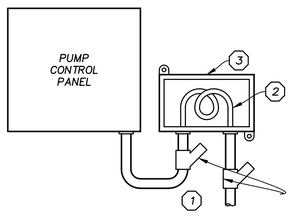


JUNCTION BOX WITH SEAL-OFFS, WETWELL LEVEL TRANSMITTER (16236)

NTS

KEYED NOTES:

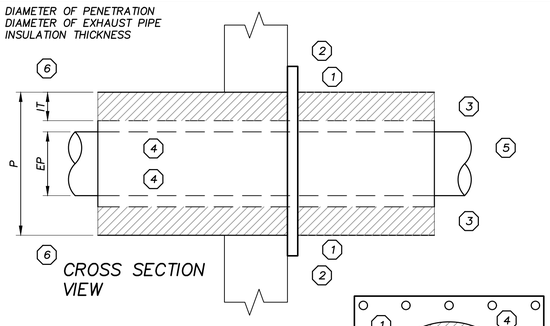
1. EXPLOSION-PROOF CONDUIT SEAL FITTING. CROUSE-HINDS SERIES "EYS" OR EQUAL. REQUIRES USE OF SEALING COMPOUND.
2. FLOAT SWITCH CABLE OR WIRING. PROVIDE EXCESS CABLE OR WIRES IN JUNCTION BOX TO ENABLE (FUTURE) SPLICING OF REPLACEMENT FLOAT SWITCH(ES).
3. NEMA 4 JUNCTION BOX, SURFACE MOUNTED. MINIMUM INTERIOR DIMENSIONS OF 8"x8"x6". CROUSE-HINDS SERIES "WJB" OR EQUAL.



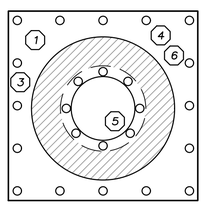
JUNCTION BOX WITH SEAL-OFFS, WETWELL FLOAT SWITCHES (16237)

NTS

P: DIAMETER OF PENETRATION
EP: DIAMETER OF EXHAUST PIPE
IT: INSULATION THICKNESS



CROSS SECTION VIEW



BUILDING EXTERIOR VIEW

GENERAL NOTES:

1. THIMBLE INSTALLATION AND MATERIALS SHALL COMPLY WITH NFPA 37 CHAPTER 7.

KEYED NOTES:

1. MOUNTING PLATE, BOLT ASSEMBLY TO EXTERIOR SURFACE OUTSIDE.
2. EXTERIOR SURFACE. FRAME AS REQ'D TO PREPARE FOR MOUNTING PLATE INSTALLATION.
3. HIGH TEMPERATURE INSULATION. REFER TO GENERATOR MANUFACTURER'S DATA FOR EXHAUST TEMPERATURE INFORMATION AND TO NFPA 37 CHAPTER 7 FOR INSULATION REQUIREMENTS.
4. HEAT DISSIPATION CHAMBER.
5. EXHAUST PIPE. MINIMUM DIAMETER PER GENSET MANUFACTURER'S REQUIREMENTS. INSTALL SPACERS AS REQUIRED TO CENTER EXHAUST PIPE WITHIN THIMBLE.
6. HEAT DISSIPATION VENT OPENINGS (INTERIOR SIDE OF THIMBLE ONLY.)

STANDBY GENERATOR EXHAUST PIPE SURFACE PENETRATION (EXHAUST THIMBLE) (16622)

NTS

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