DEXTER TOWNSHIP
NEW FIRE
SUBSTATION NO. 2

NORTH TERRITORIAL ROAD, DEXTER, MICHIGAN 48130

Dexter Township

Dexter Area Fire Department

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Gaylord Office
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Key Plan: NO SCALE

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUB-STATION NO.2

NORTH TERRITORIAL ROAD,
DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
05/29/14	INTERNAL REVIEW
06/09/14	REVIEW
09/02/14	BIDS

Drawn:	R. PHELPS
Checked:	R. JORDAN
Approved:	R. JORDAN

Sheet Title:
COVER SHEET

Project Number: 14049

Sheet Number: CS-001

File Parth: M:\2012\XXXX Project Folder\Revit Files\FileName_CENTRAIL.rvt 4/20/2015 10:50:05 AM

STATEMENT OF SPECIAL INSPECTIONS

CONSTRUCTION OPERATION	CODE SECTION	ARE SPECIAL INSPECTIONS REQUIRED?		AGENCY TO PERFORM SPECIAL INSPECTION	DATE OF APPROVED QUALITY CONTROL PROCEDURES (CODE OFFICIAL'S USE)
		YES	NO		
INSPECTION OF FABRICATIONS	(1704.2)	X	-	T.B.D.	-
STEEL CONSTRUCTION	(1704.3)	X	-	T.B.D.	-
CONCRETE CONSTRUCTION	(1704.4)	X	-	T.B.D.	-
MASONRY CONSTRUCTION	(1704.5)	X	-	T.B.D.	-
WOOD CONSTRUCTION	(1704.6)	-	X	-	-
SOILS	(1704.7)	-	X	-	-
PILE FOUNDATIONS	(1704.8)	-	X	-	-
PIER FOUNDATIONS	(1704.9)	-	X	-	-
WALL PANELS & VENEERS	(1704.10)	-	X	-	-
SPRAYED FIRE RESISTANT MATERIALS	(1704.11)	-	X	-	-
EXTERIOR INSULATION AND FINISH SYSTEMS	(1704.12)	-	X	-	-
SPECIAL CASES	(1704.13)	X	-	T.B.D.	-
SMOKE CONTROL	(1704.14)	-	X	-	-

GENERAL NOTES

ABBREVIATION LEGEND

ABBREVIATION	DEFINITION	ABBREVIATION	DEFINITION	ABBREVIATION	DEFINITION	ABBREVIATION	DEFINITION
A		F		M		SHT	SHEET
@	AT	FD	FLOOR DRAIN	MAX	MAXIMUM	SQ FT	SQUARE FEET / FOOT
ACC	ACOUSTIC CEILING TILE	FIN	FINISH / FINISHED	MET	METAL	SC	SOLID CORE
ALUM	ALUMINUM	FL	FLUSH	MEZZ	MEZZANINE	ST	STAIN
ANOD	ANODIZED	FLR	FLOOR	MIN	MINIMUM	STL	STEEL
		FOUND	FOUNDATION	MO	MASONRY OPENING		
		FRP	FIBERGLAS REINFORCED PANEL(S)	MT	MARBLE THRESHOLD	T	
B		FT	FOOT / FEET			TEMP	TEMPORARY
BF	BARRIER FREE	FTG	FOOTING	N		THRESH	THRESHOLD
BK	BLOCK			NO	NUMBER	TOS	TOP OF STEEL
BOD	BOTTOM OF DECK	G				TYP	TYPICAL
BOT	BOTTOM	GALV	GALVANIZE(D)			U	
BRG	BEARING	GYP BD	GYPSUM BOARD	O		UNO	UNLESS NOTED OTHERWISE
				OC	ON CENTER		
C		H		OD	OUTSIDE DIAMETER		
CL	CENTER LINE	H	HIGH	OHD	OVERHEAD DOOR	V	
CLG	CEILING	HC	HOLLOW CORE			VCT	VINYL COMPOSITION TILE
CLR	CLEAR	HDW	HARDWARE			VERT	VERTICAL
CMU	CONCRETE MASONRY UNIT	HM	HOLLOW METAL	P			
COL	COLUMN	HORIZ	HORIZONTAL	PEMB	PRE-ENGINEERED METAL BUILDING		
COMP	COMPACTED	HT	HEIGHT	PERIM	PERIMETER	W	
CONC	CONCRETE			PL	PLATE	W/	WITH
CONT	CONTINUOUS	I		PLAM	PLASTIC LAMINATE	WB	WALL BASE
CPT	CARPET	ID	INSIDE DIAMETER	PRE-FIN	PRE-FINISHED	WD	WOOD
CT	CERAMIC TILE	IN	INCH / INCHES	PSF	POUNDS PER SQUARE FOOT	WG	WIRED GLASS
		INSUL	INSULATED	PSI	POUNDS PER SQUARE INCH	WWF	WELDED WIRE FABRIC
		IOHD	INSULATED OVERHEAD DOOR	PT	PAINT		
D		IRD	INSULATED ROLLING DOOR			X	
DIA	DIAMETER	J		Q			
DF	DRINKING FOUNTAIN						
DL	DEAD LOAD						
DN	DOWN						
DO	DOOR OPENING					Y	
		K		R			
				R	RADIUS		
E				RD	ROOF DRAIN / ROLLING DOOR		
EC	EXPOSED CONCRETE			REINF	REINFORCING		
ELEV	ELEVATION			RO	ROUGH OPENING	Z	
EQ	EQUAL	L					
EWC	ELECTRIC WATER COOLER	LAV	LAVATORY				
EXP	EXPANSION	LL	LIVE LOAD	S			
		LLH	LONG LEG HORIZONTAL	SC	SOLID CORE		
		LLV	LONG LEG VERTICAL	SCHED	SCHEDULE		

SYMBOL LEGEND

DET. SHEET TITLE SCALE: NTS — DETAIL REFERENCE

DET. SHEET TITLE SCALE: NTS — DRAWING REFERENCE

NO. SHEET SIM — SECTION REFERENCE

1 SHEET# 1 (1 1 1) — INTERIOR ELEVATION

1 A101 SIM — PLAN DETAIL

A A-210 / A A-210 — BUILDING SECTION REFERENCE

ROOM NAME 101 — ROOM NUMBER

DOOR — DOOR NUMBER

HT — CEILING

XX XX — PARTITION TYPE

DEMO — DEMO

NO. — FIXTURE

EXIST. COLUMN

NEW COLUMN

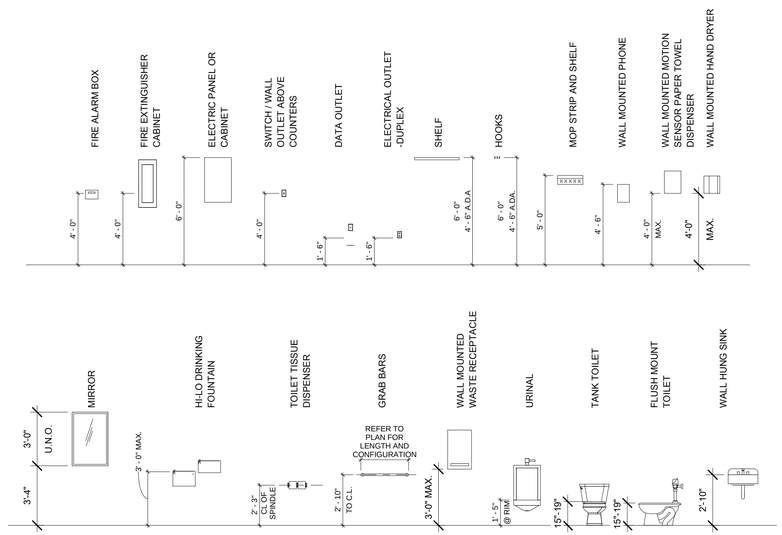
NORTH ARROW

CENTER LINE

SEE SHEET: A - 101 — MATCHLINE

WIN — WINDOW

ELEVATION



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

SHEET INDEX

SHEET NUMBER	SHEET NAME	DATE ISSUED	ISSUED FOR	DRAWN BY
CS-001	COVER SHEET	09/02/14	BIDS	SIDOCK ARCHITECTS
CS-002	GENERAL NOTES	09/02/14	BIDS	SIDOCK ARCHITECTS
C-000	CIVIL GENERAL NOTES	09/02/14	BIDS	SIDOCK ARCHITECTS
C-100	EXISTING SITE PLAN	09/02/14	BIDS	SIDOCK ARCHITECTS
C-110	SITE DEMOLITION PLAN	09/02/14	BIDS	SIDOCK ARCHITECTS
C-200	GENERAL SITE PLAN	09/02/14	BIDS	SIDOCK ARCHITECTS
C-201	PHOTOMETRIC PLAN	09/02/14	BIDS	SIDOCK ARCHITECTS
C-210	SITE DIMENSION PLAN	09/02/14	BIDS	SIDOCK ARCHITECTS
C-220	SITE GRADING PLAN	09/02/14	BIDS	SIDOCK ARCHITECTS
C-230	SITE UTILITY PLAN	09/02/14	BIDS	SIDOCK ARCHITECTS
C-240	STORM SEWER PLAN	09/02/14	BIDS	SIDOCK ARCHITECTS
C-250	SOIL EROSION & SEDIMENT CONTROL PLAN	09/02/14	BIDS	SIDOCK ARCHITECTS
C-300	PROFILES-STORM WATER	09/02/14	BIDS	SIDOCK ARCHITECTS
C-400	CALCULATIONS	09/02/14	BIDS	SIDOCK ARCHITECTS
C-801	DETAILS-PAVING	09/02/14	BIDS	SIDOCK ARCHITECTS
C-802	DETAILS-SURFACE FEATURES	09/02/14	BIDS	SIDOCK ARCHITECTS
C-803	DETAILS-WATER & SANITARY SERVICE	09/02/14	BIDS	SIDOCK ARCHITECTS
C-804	DETAILS-STORM SEWER	09/02/14	BIDS	SIDOCK ARCHITECTS
C-805	DETAILS-STORM SEWER	09/02/14	BIDS	SIDOCK ARCHITECTS
C-806	DETAILS-SOIL EROSION & SEDIMENT CONTROL	09/02/14	BIDS	SIDOCK ARCHITECTS
L-210	SITE LANDSCAPE PLAN	09/02/14	BIDS	SIDOCK ARCHITECTS
L-801	DETAILS-LANDSCAPING	09/02/14	BIDS	SIDOCK ARCHITECTS
A-210	COMPOSITE FLOOR PLAN	01/22/15	AM.FINAL SPA/FINALENG.	SIDOCK ARCHITECTS
A-301	EXTERIOR ELEVATIONS	09/02/14	BIDS	SIDOCK ARCHITECTS
A-302	BUILDING SECTIONS	09/02/14	BIDS	SIDOCK ARCHITECTS
A-401	ENLARGED PLANS & INTERIOR ELEVATIONS	09/02/14	BIDS	SIDOCK ARCHITECTS
A-610	REFLECTED CEILING PLANS	09/02/14	BIDS	SIDOCK ARCHITECTS
A-701	STAIR PLANS AND DETAILS	09/02/14	BIDS	SIDOCK ARCHITECTS
A-801	PARTITION TYPES	09/02/14	BIDS	SIDOCK ARCHITECTS
A-802	WALL SECTIONS	09/02/14	BIDS	SIDOCK ARCHITECTS
A-803	WALL SECTIONS	09/02/14	BIDS	SIDOCK ARCHITECTS
A-901	SCHEDULES	09/02/14	BIDS	SIDOCK ARCHITECTS
S-000	STRUCTURAL GENERAL NOTES & DESIGN CRITERIA	09/02/14	BIDS	SIDOCK ARCHITECTS
S-001	STRUCTURAL GENERAL NOTES & DESIGN CRITERIA	09/02/14	BIDS	SIDOCK ARCHITECTS
S-210	FOUNDATION PLAN & MEZZANINE FRAMING PLAN	09/02/14	BIDS	SIDOCK ARCHITECTS
S-801	DETAILS	09/02/14	BIDS	SIDOCK ARCHITECTS
S-802	DETAILS	09/02/14	BIDS	SIDOCK ARCHITECTS
S-901	SCHEDULES	09/02/14	BIDS	SIDOCK ARCHITECTS
P-000	PIPING SPECIFICATIONS	09/02/14	BIDS	SIDOCK ARCHITECTS
P-200	PIPING PLAN	09/02/14	BIDS	SIDOCK ARCHITECTS
P-900	PIPING DETAILS & SCHEDULES	09/02/14	BIDS	SIDOCK ARCHITECTS
M-000	HVAC SPECIFICATIONS	09/02/14	BIDS	SIDOCK ARCHITECTS
M-200	HVAC PLANS	09/02/14	BIDS	SIDOCK ARCHITECTS
M-900	MECHANICAL SCHEDULES	09/02/14	BIDS	SIDOCK ARCHITECTS
E-000	GENERAL NOTES	09/02/14	BIDS	SIDOCK ARCHITECTS
E-210	POWER PLAN	09/02/14	BIDS	SIDOCK ARCHITECTS
E-211	MISCELLANEOUS SYSTEMS	09/02/14	BIDS	SIDOCK ARCHITECTS
E-610	LIGHTING PLAN	09/02/14	BIDS	SIDOCK ARCHITECTS
E-901	ELECTRICAL ONE LINE DIAGRAM	09/02/14	BIDS	SIDOCK ARCHITECTS
E-902	PANEL SCHEDULES	09/02/14	BIDS	SIDOCK ARCHITECTS
E-903	TRUCK FILL PUMP & WELL PUMP CONTROL SCHEMATIC	09/02/14	BIDS	SIDOCK ARCHITECTS

SITE LOCATION MAP
SCALE: NO SCALE

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Project:
NEW FIRE
SUB-STATION NO.2

NORTH TERRITORIAL ROAD,
DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
05/29/14	INTERNAL REVIEW
06/09/14	REVIEW
09/02/14	BIDS

Drawn: R. PHELPS
Checked: R. JORDAN
Approved: R. JORDAN

Sheet Title:
GENERAL NOTES

Project Number: 14049

Sheet Number: CS-002

File Path: M:\2012\XXXXX Project Folder\Revit Files\FileName_CENTRAIL.rvt
4/20/2015 10:50:17 AM

NEW FIRE SUBSTATION No.2

North Territorial Rd.
Dexter, Michigan

AMENDED FINAL SITE PLAN APPROVAL/FINAL ENGINEERING PACKAGE

DEXTER, MICHIGAN 48130

PROPRIETOR

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Key Plan:

Client:
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Project:
NEW FIRE
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Seal:

Date	Issued For
05/23/14	PRELIMINARY SPA
05/29/14	INTERNAL REVIEW
07/02/14	PRELIMINARY SPA
07/08/14	WCRC PERMIT
08/20/14	REVISED PRELIMINARY SPA
08/20/14	FINAL SPA/FINAL ENG.
09/02/14	BIDS
10/13/14	REV. FINAL SPA/FINAL ENG.
01/22/15	AMEND. FINAL SPA/FINAL ENG.

Drawn:	S. MANOS
Checked:	C. LEACH
Approved:	C. LEACH

Sheet Title:
COVER SHEET

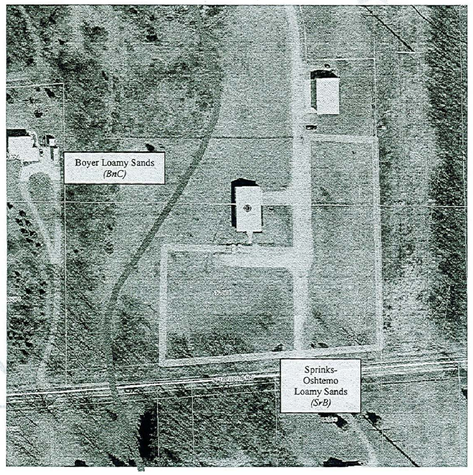
Project Number: 14049

Sheet Number: G-001

M:\2014\14049 Dexter Township New Fire Substation No 2\05 Civil and Survey\G-001.dwg Mon, 20 Apr 2015 - 11:57am

Soil Name	Slope	Location	Limitation on Small Commercial Buildings	Limitation on Drainage	Proposed Land Use	Soil Description
Sprinks-Oshtemo Loamy Sands (SrB)	0-6%	Entire Proposed Site	Not Limited	Very Limited: Cutbanks cave, slope	Open Space, Fire Substation, Parking, Driveways	This soil is on broad uplands on outwash plains, in valley trains, and on moraines. Slopes are uniform in some areas and short and complex in others. Areas range from 3 to about 160 acres in size. This soil is droughty and subject to soil blowing when cultivated. Runoff is slow and very slow. Some small areas are irrigated and used for truck crops and small fruit. Some small areas are in urban uses.

Soils Map ***(Washtenaw County GIS)***



LEGEND OF ABBREVIATIONS

@	- AT
APPROX.	- APPROXIMATELY
~	- APPROXIMATELY
ASPH.	- ASPHALT
B/	- BOTTOM OF
B/B	- BACK TO BACK
B/C	- BACK OF CURB
B.O.C.	- BACK OF CURB
B.O.P.	- BOTTOM OF PIPE
CB	- CATCH BASIN
℄	- CENTERLINE
CL	- CLASS
CMP	- CORRUGATED METAL PIPE
C.O.	- CLEAN OUT
CONC.	- CONCRETE
C.P.	- CENTER POINT
CPPP	- CORRUGATED PERFORATED PLASTIC PIPE
DEMO.	- DEMOLITION
E	- EAST
EL.	- ELEVATION
ELE	- ELECTRICAL
ES	- END SECTION
EX.	- EXISTING
EXIST.	- EXISTING
F	- HYDRANT FLANGE BREAK ELEVATION
FF	- FINISHED FLOOR
F/F	- FACE TO FACE
G	- GUTTER ELEVATION
GV&W	- GATE VALVE & WELL
H.P.	- HIGH POINT
HY	- HYDRANT
IN	- INLET
I.E.	- INVERT ELEVATION
L.P.	- LOW POINT
(M)	- MATCH
MAX.	- MAXIMUM
MH	- MANHOLE
MIN.	- MINIMUM
N	- NORTH
O.C.	- ON CENTER
P.C.	- POINT OF CURVATURE
PR.	- PROPOSED
P.T.	- POINT TANGENT
PROP.	- PROPOSED
RCP	- REINFORCED CONCRETE PIPE
R	- RADIUS
R.O.W.	- RIGHT OF WAY
RR	- RAIL ROAD
S	- SOUTH
s	- ARC LENGTH
SAN	- SANITARY SEWER
STN	- ROAD STATION
STW	- STORM SEWER
T/	- TOP OF
T/C	- TOP OF CURB
T/P	- TOP OF PAVEMENT
T/W	- TOP OF WALK
TD	- TRENCH DRAIN
T.O.P.	- TOP OF PIPE
TYP.	- TYPICAL
U.P.	- UTILITIY POLE
UNGD.	- UNDERGROUND
U.N.O.	- UNLESS NOTED OTHERWISE
W	- WEST
W/	- WITH
WM	- WATER MAIN
WS	- WATER SERVICE
Ø	- DIAMETER

PIPE SIZE DESIGNATION

XX' - XX"

- XX' - FEET
- XX" - OF
- Ø

EX. 89' - 12"

MEANS 89 FEET OF 12"Ø PIPE

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SYMBOL LEGEND

DET. / SHEET — TITLE — SCALE: X/X" = 1'-0"

TITLE — SCALE: X/X" = 1'-0"

NO. / SHEET — SIM

1 / A101 — SIM

DETAIL REFERENCE | DRAWING REFERENCE | SECTION REFERENCE | PLAN DETAIL

CIVIL SYMBOLS LEGENDS

GRADE CONTOUR

STORM SEWER

SANITARY SEWER

COMBINATION SEWER

WATER MAIN

GAS LINE

ELECTRICAL LINE

CURB AND GUTTER

FENCE

CLEAN OUT

SANITARY/STORM WATER MANHOLE (SOLID COVER)

STORM MANHOLE (OPEN COVER)

STORM CATCH BASIN/INLET (OPEN COVER)

STORM END SECTION

TRENCH DRAIN

SQUARE PIPE END

PLUG, CAP OR BULKHEAD

FIRE HYDRANT

WATER VALVE — AND

GRADE ELEVATION — + (655.40 T/C) (654.90 G)

LIGHT POLE

SIGN

SILT FENCE — UP HILL / DOWN HILL

CHECK DAM

PIPE FLOW DIRECTIONAL ARROW

CB/IN FILTER

DRAINAGE FLOW ARROW

DRAIN AREA DESIGNATION — AREA #

ASPHALT PAVING

CONCRETE PAVING

LAWN

GRAVEL

RIP RAP

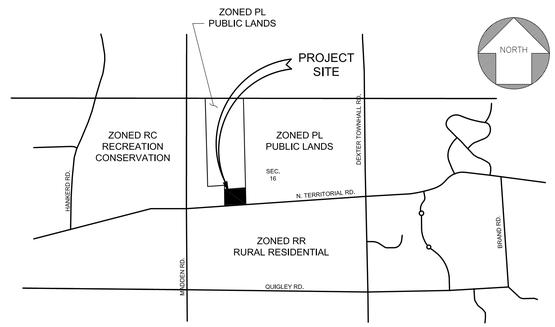
STONE

SHEET INDEX

NO.		DATE	DRAWN BY
	GENERAL		
G-001	COVER SHEET	01/22/2015	SIDOCK ARCHITECTS
G-002	ABBREVIATIONS, SYMBOLS, & SHEET INDEX	01/22/2015	SIDOCK ARCHITECTS
	BY OTHERS		
TS-1	SITE TOPOGRAPHIC/TREE SURVEY	02/10/2014	ENVIRONMENTAL ENGINEERS, INC.
	CIVIL		
C-000	CIVIL GENERAL NOTES	10/13/2014	SIDOCK ARCHITECTS
C-100	EXISTING SITE PLAN	10/13/2014	SIDOCK ARCHITECTS
C-110	SITE DEMOLITION PLAN	01/22/2015	SIDOCK ARCHITECTS
C-200	GENERAL SITE PLAN	01/22/2015	SIDOCK ARCHITECTS
C-201	PHOTOMETRIC PLAN	01/22/2015	SIDOCK ARCHITECTS
C-210	SITE DIMENSION PLAN	01/22/2015	SIDOCK ARCHITECTS
C-211	PROPERTY DIVISION & EASEMENT PLAN	01/22/2015	SIDOCK ARCHITECTS
C-212	LEGAL DESCRIPTIONS	01/22/2015	SIDOCK ARCHITECTS
C-220	SITE GRADING PLAN	01/22/2015	SIDOCK ARCHITECTS
C-230	SITE UTILITY PLAN	01/22/2015	SIDOCK ARCHITECTS
C-240	SITE STORM WATER MANAGEMENT PLAN	01/22/2015	SIDOCK ARCHITECTS
C-250	SOIL EROSION & SEDIMENT CONTROL PLAN	01/22/2015	SIDOCK ARCHITECTS
C-300	STORM SEWER PROFILES	10/13/2014	SIDOCK ARCHITECTS
C-400	CALCULATIONS	01/22/2015	SIDOCK ARCHITECTS
C-801	DETAILS - PAVING	10/13/2014	SIDOCK ARCHITECTS
C-802	DETAILS - SURFACE FEATURES	10/13/2014	SIDOCK ARCHITECTS
C-803	DETAILS - WATER AND SANITARY SERVICE	01/22/2015	SIDOCK ARCHITECTS
C-804	DETAILS - STORM SEWER	10/13/2014	SIDOCK ARCHITECTS
C-805	DETAILS - STORM SEWER	10/13/2014	SIDOCK ARCHITECTS
C-806	DETAILS - SOIL EROSION & SEDIMENT CONTROL	10/13/2014	SIDOCK ARCHITECTS
	LANDSCAPE		
L-210	SITE LANDSCAPE PLAN	01/22/2015	SIDOCK ARCHITECTS
L-801	DETAILS - LANDSCAPING	01/22/2015	SIDOCK ARCHITECTS
	ARCHITECTURAL		
A-210	FLOOR PLANS	01/22/2015	SIDOCK ARCHITECTS
A-301	EXTERIOR ELEVATIONS	10/13/2014	SIDOCK ARCHITECTS

CIVIL PERMITS/APPROVALS REQUIRED

PERMIT/APPROVAL	ISSUED BY
PRELIMINARY SITE PLAN APPROVAL	DEXTER TOWNSHIP
FINAL SITE PLAN APPROVAL	DEXTER TOWNSHIP
SPECIAL LAND USE	DEXTER TOWNSHIP
SOIL EROSION NPDES PART 91	CHELSEA AREA CONSTRUCTION AUTHORITY
WATER SUPPLY - WELL	WASHTENAW COUNTY DEPARTMENT OF PUBLIC HEALTH
SANITARY GRINDER PUMP AND LINES	MULTI-LAKES WATER AND SEWER AUTHORITY
DRIVE APPROACH IN RIGHT-OF-WAY	WASHTENAW COUNTY ROAD COMMISSION



SITE VICINITY MAP

SCALE: NO SCALE

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Key Plan:

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
07/02/14	PRELIMINARY SPA
07/08/14	WCRC PERMIT
08/20/14	REVISED PRELIMINARY SPA
08/20/14	FINAL SPA/FINAL ENG
09/02/14	BIDS
10/13/14	REV. FINAL SPA/FINAL ENG.
10/13/14	ADDENDUM #5
01/09/15	REV. FINAL SPA/FINAL ENG.
01/22/15	AMEND. FINAL SPA/FINAL ENG.

Drawn:	S. MANOS
Checked:	C. LEACH
Approved:	C. LEACH

Sheet Title:
ABBREVIATIONS, SYMBOLS & SHEET INDEX

Project Number: 14049

Sheet Number: G-002

GENERAL CIVIL NOTES

1. PRIOR TO SUBMITTING PROPOSAL, VERIFY ALL CONDITIONS GOVERNING OR AFFECTING THE CIVIL WORK; OBTAIN AND VERIFY ALL DIMENSIONS TO ENSURE THE PROPER FIT AND LOCATION OF THE CIVIL WORK, TAKE ADDITIONAL DIMENSIONS AS REQUIRED; REPORT TO THE ENGINEER ANY AND ALL CONDITIONS WHICH MAY INTERFERE WITH OR OTHERWISE AFFECT OR PREVENT THE PROPER EXECUTION AND COMPLETION OF THE WORK; FAMILIARIZE YOURSELF WITH THE ACTUAL CONDITIONS OF THE CIVIL WORK, ACCESS TO THE SITE, AVAILABLE STORAGE SPACE, FACILITIES AND OBSTRUCTIONS THAT MAY BE ENCOUNTERED DURING THE PROGRESS OF WORK.
2. CONTRACTOR TO FURNISH ALL NECESSARY LABOR, MATERIAL, EQUIPMENT AND FACILITIES TO FURNISH, FABRICATE AND PERFORM THE REQUIRED CIVIL WORK.
3. ANY EXISTING CONSTRUCTION TO BE MODIFIED AS A PART OF THIS CONTRACT SHALL BE REBUILT AS REQUIRED TO THE SATISFACTION OF THE OWNER/ENGINEER.
4. EXISTING CONSTRUCTION NOT UNDERGOING ALTERATION IS TO REMAIN UNDISTURBED. WHERE SUCH CONSTRUCTION IS DISTURBED AS A RESULT OF THE OPERATIONS OF THIS CONTRACT, THE EXITING CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AS REQUIRED AND TO THE SATISFACTION OF THE OWNER/ENGINEER.
5. ALL WORK SHOWN ON THESE DRAWINGS MAY BE CHECKED BY AN INDEPENDENT TESTING AGENCY RETAINED BY OWNER TO ENSURE COMPLIANCE WITH THE REQUIREMENTS SHOWN ON THE DRAWINGS. THE CONTRACTOR SHALL PROVIDE ACCESS AS REQUIRED FOR TESTING PURPOSES.
6. CONTRACTOR SHALL MAKE ALL NECESSARY FIELD VISITS FOR INSPECTION, MEASUREMENTS AND VERIFICATION OF EXISTING CONDITIONS.
7. THE GENERAL CIVIL NOTES ARE INTENDED TO AUGMENT THE DRAWINGS AND SPECIFICATIONS. SHOULD CONFLICTS EXIST BETWEEN THE DRAWINGS, SPECIFICATION, AND/OR THE GENERAL CIVIL NOTES, THE STRICTEST PROVISION AS DETERMINED BY THE ENGINEER SHALL GOVERN.
8. WORK THE CIVIL DRAWINGS IN CONJUNCTION WITH THE ARCHITECTURAL, MECHANICAL, STRUCTURAL, AND ELECTRICAL DRAWINGS.
9. ALL WORK SHALL CONFORM TO APPLICABLE STATE AND LOCAL CODES.
10. SOIL BORINGS: SOILS INFORMATION IS AVAILABLE FROM THE ENGINEER (SIDOCK ARCHITECTS), THE REPORT IS BY TEC, DATED JUNE 17, 2014. THE BORING LOGS SHOW SUBSURFACE CONDITIONS AT THE DATES AND LOCATIONS INDICATED, AND IT IS NOT WARRANTED THAT THEY ARE REPRESENTATIVE OF SUBSURFACE CONDITIONS AT OTHER LOCATIONS AND TIMES.
11. THE CONTRACTOR SHALL COMPLY WITH THE CONSTRUCTION SAFETY STANDARDS AND THE OCCUPATIONAL SAFETY STANDARDS (OSHA) AS ISSUED BY THE U.S. DEPARTMENT OF LABOR AND THE MICHIGAN DEPARTMENT OF LABOR (MIOSHA). THE CONTRACTOR SHALL ALSO COMPLY TO REQUIREMENTS OF THE DEXTER TOWNSHIP SPECIFIC SAFETY PLAN.
12. MATERIALS AND WORKMANSHIP SHALL COMPLY WITH INDUSTRY STANDARDS AND SPECIFICATIONS AND OTHER APPLICABLE CODES, SPECIFICATIONS, LOCAL ORDINANCES, INDUSTRY STANDARDS AND UTILITY COMPANY REGULATIONS.
13. THE CONTRACTOR SHALL FAMILIARIZE THEMSELVES WITH ALL THE EXISTING CONDITIONS AT THE SITE INCLUDING UTILITIES, SERVICES, ETC. AND SHALL BE FULLY RESPONSIBLE FOR ANY DAMAGES THEY CAUSE TO BOTH EXISTING, NEW CONSTRUCTION, PROPERTY AND ANY UNAUTHORIZED DISRUPTION TO ADJACENT OWNERS NORMAL USE OF UTILITIES, SERVICES AND THE SURROUNDING FACILITIES.
14. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION PRIOR TO MAKING CHANGES TO, OR INTERRUPTIONS OF UTILITIES AND SHALL COMPLY WITH SPECIAL INSTRUCTIONS FROM THE OWNER TO MINIMIZE THE EFFECT ON THEIR OPERATIONS. PRIOR TO ANY EXCAVATION, EARTH MOVING WORK OR REMOVAL OR REMOVAL OF ANY PIPE FROM SERVICE, THE CONTRACTOR SHALL REVIEW WITH THE OWNER'S REPRESENTATIVE THE LOCATION OF THE UNDERGROUND UTILITIES, SERVICE AND STRUCTURES IN THE AREA WHERE THE WORK IS BEING PERFORMED. PROVIDE FULL TIME SUPERVISION DURING ALL EXCAVATION AND EARTH MOVING OPERATIONS AND TAKE ALL RESPONSIBLE PRECAUTIONS TO PROTECT EXISTING UTILITIES, SERVICES AND OPERATIONS FROM DAMAGE OR DISRUPTION.
15. PROVIDE BARRIER PROTECTION FOR VEHICULAR AND PEDESTRIAN TRAFFIC AT EXCAVATIONS. TEMPORARY FENCING, BARRICADING AND PEDESTRIAN ROUTING SHALL BE COORDINATED WITH AND APPROVED BY THE OWNER'S REPRESENTATIVE PRIOR TO CONSTRUCTION.
16. FOR PROTECTION OF UNDERGROUND UTILITIES THE CONTRACTOR SHALL CALL "MISS DIG" AT 800-482-7171 OR 811, A MINIMUM TOF THREE DAYS PRIOR TO EXCAVATION ON THE SITE. ALL "MISS DIG" PARTICIPATING MEMBERS WILL THUS ROUTINELY BE NOTIFIED. THIS DOES NOT RELIEVE THE CONTRACTOR OF NOTIFYING UTILITY OWNER'S WHO MAY NOT BE A PART OF THE "MISS DIG" ALERT SYSTEM.
17. DISPOSE OF ALL EXCAVATED SOILS AND WASTE MATERIALS (NEW AND EXISTING) OFF SITE IN A LEGAL MANNER.
18. PERFORM FINAL CLEANUP OF WORK AREAS.

CONTROL

1. TOPOGRAPHIC INFORMATION: EXISTING INFORMATION IS BASED ON A TOPOGRAPHIC SURVEY BY ENVIRONMENTAL ENGINEERS, INC. DATED 2-10-2014.
2. VERTICAL CONTROL: ELEVATIONS SHOWN ARE BASED ON NAVD 88 DATUM. THE BENCH MARKS USED ARE SHOWN ON TS-1.
3. LAYOUT: LOCATE BUILDING ADDITIONS BY MEASUREMENTS FROM CONNECTING AREAS OF EXISTING BUILDINGS, & SURVEY. CONFIRM HORIZONTAL AND VERTICAL CONTROL POINTS PRIOR TO CONSTRUCTION. COORDINATES ARE FOR UTILITY LOCATIONS AND OVERALL COORDINATION ONLY.

CLEARING, GRUBBING, & EARTHWORK

1. AT THE START OF EARTHWORK OPERATIONS, ALL SURFACE VEGETATION SHALL BE CLEARED AND THE EXISTING TOPSOIL AND ANY OTHER ORGANIC SOILS SHALL BE REMOVED IN THEIR ENTIRETY FROM BELOW THE PROPOSED BUILDING AND PAVEMENT AREAS. EXISTING RANDOM CONCRETE AND OTHER DEBRIS SHALL BE REMOVED FROM WITHIN THE BUILDING AREA. REMOVE STUMPS TO 12 INCHES BELOW FINAL GRADE. DISPOSE OF VEGETATIVE MATTER AND DEBRIS OFFSITE.
2. THE SUB-GRADE SHOULD BE THOROUGHLY PROOF-ROLLED WITH A HEAVY RUBBER-TIRED VEHICLE SUCH AS A LOADED SCRAPER OR LOADED DUMP TRUCK. ANY AREAS THAT EXHIBIT EXCESSIVE PUMPING AND YIELDING DURING PROOF-ROLLING SHOULD BE STABILIZED BY AERATION, DRYING AND COMPACTION IF WEATHER CONDITIONS ARE FAVORABLE, OR REMOVAL AND REPLACEMENT WITH ENGINEERED FILL.
3. ALL EXCAVATIONS ARE SUBJECT TO THE APPROVAL OF THE OWNER'S REPRESENTATIVE WHO SHALL BE CONSULTED WHEN POOR SOIL, WATER, OBSTRUCTIONS, PIPING, EXISTING FOOTINGS, EXCAVATIONS, ETC., ARE ENCOUNTERED.
4. CONTRACTOR SHALL FURNISH ALL REQUIRED DEWATERING EQUIPMENT TO MAINTAIN A DRY EXCAVATION UNTIL BACKFILL IS COMPLETE.
5. MATERIAL FOR BACKFILL OR ENGINEERED FILL REQUIRED TO ACHIEVE DESIGN GRADES SHOULD CONSIST OF NON-ORGANIC SOILS. THE ON-SITE SOILS THAT ARE FREE OF ORGANIC MATTER AND DEBRIS MAY BE USED FOR ENGINEERED FILL WITH ENGINEER'S APPROVAL.
6. BACKFILL MATERIAL SHALL BE COMPACTED TO 95% OF ITS' MAXIMUM DENSITY AS DETERMINED BY THE MODIFIED PROCTOR METHODS (ASTM D1557), IN LIFTS NOT EXCEEDING 12-INCHES IN LOOSE THICKNESS.
7. FROZEN MATERIAL SHALL NOT BE USED AS FILL, NOR SHALL FILL BE PLACED ON FROZEN SUB-GRADE.
8. DO NOT PLACE BACKFILL AGAINST FOUNDATION WALLS UNTIL BASEMENT FLOOR LEVEL AND FIRST FLOOR LEVEL SLABS ARE IN PLACE AND HAVE REACHED 75% OF THEIR SPECIFIED DESIGN STRENGTH. SHORE AND BRACE WALLS AS REQUIRED IF BACKFILLING OPERATIONS ARE TO BE CARRIED OUT PRIOR TO PLACEMENT OF FLOOR SLABS.
9. PLACE BACKFILL AGAINST BOTH SIDES OF GRADE BEAMS AND FOUNDATIONS AT EQUAL ELEVATIONS OF FILL, EXCEPT AS SHOWN ON THE DRAWINGS.
10. CRUSHED SLAG USED AS BACKFILL SHALL BE AGED, ENVIRONMENTALLY SAFE PROCESSED BLAST FURNACE SLAG.
11. CONSTRUCTION DRAINAGE: STORM WATER ACCUMULATED IN THE PROJECT SITE EXCAVATIONS IS TO DRAIN BY NATURAL PERCOLATION.

CLEARING, GRUBBING & EARTHWORK CONT.

12. SLOPE SMOOTHLY BETWEEN INDICATED ELEVATIONS TO ACHIEVE POSITIVE DRAINAGE. SLOPE ALL EARTH BANKS 4:1 OR FLATTER.
13. NEW GRADES SHOWN ARE FINISHED GRADES AND INCLUDES TOP OF TOPSOIL OR SURFACES SUCH AS PAVEMENTS AND WALKS.
14. PROVIDE 6 INCHES OF TOPSOIL, SEED AND MULCH AT DISTURBED LAWN AREAS, EXCEPT AS NOTED OTHERWISE.
15. TREES: TREES NOT INDICATED TO BE REMOVED OR TRANSPLANTED SHALL BE FENCED OFF WITH 4' HIGH ORANGE CONSTRUCTION FENCE 10' FROM THE DRIP LINE OF THE TREE. TREES INDICATED TO BE REMOVED, SHALL BE TRANSPLANTED WHERE SHOWN ON THE PLANS AND AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
16. GREAT CARE SHALL BE TAKEN BY CONTRACTOR'S TO AVOID DAMAGE TO VEGETATION OUTSIDE THE LIMITS OF CONSTRUCTION AND TO KEEP THE CONSTRUCTION AREAS TO A MINIMUM. DRIVING SHALL NOT BE PERMITTED OUTSIDE THE LIMITS OF CONSTRUCTION.
17. TOPSOIL (REUSE EXISTING) SEED, FERTILIZE AND MULCH LAWN AREAS DISTURBED BY NEW CONSTRUCTION. MATCH EXISTING LAWN SPECIES OR SEE LANDSCAPING PLANS/SPECS.

UTILITIES

1. MINIMUM COVER OF UNDERGROUND UTILITIES:

WATER	5.5 FT
NATURAL GAS	2.5 FT
SANITARY SEWERS	3.0 FT
ALL OTHERS	3.0 FT
GRINDER PUMP DISCHARGE	4.0 FT

PRESSURE UTILITIES MAY BE LAID APPROXIMATELY PARALLEL TO FINISH GRADE, EXCEPT AS INDICATED, WITH LOCAL DEEPENING TO AVOID OTHER UTILITIES OR OBSTRUCTIONS. MAINTAIN COVER BELOW DITCHES AND SURFACE DEPRESSIONS. PROVIDE TEMPORARY PROTECTION AS REQUIRED UNTIL COVER IS COMPLETED. INFORM OWNER'S REPRESENTATIVE IF AVAILABLE COVER, AT INDICATED ELEVATIONS, IS LESS THAN MINIMUM. VERTICAL CLEARANCE FOR ALL PIPES SHALL BE 18" MIN. FROM OUTSIDE OF PIPE.

2. EXISTING UTILITIES: INFORMATION HAS BEEN OBTAINED FROM SURFACE FEATURES SHOWN ON THE TOPOGRAPHIC SURVEY. VERIFY THE INFORMATION BEFORE CONSTRUCTION. NOTIFY THE OWNER'S REPRESENTATIVE OF DISCREPANCIES OR INTERFERENCES.
3. WATER MAIN RESTRAINTS: PROVIDE ANCHORAGE AS INDICATED AND AS REQUIRED TO RESTRAIN PIPING AND APPURTENANCES DURING PRESSURE TEST AND SERVICE. RODS AND CLAMPS SHALL BE PROVIDED AS INDICATED AND MAY BE USED ELSEWHERE FOR OPTIONAL ANCHORAGE, BUT SHALL NOT BE SUBSTITUTED FOR THRUST BLOCKS AND ANCHORED DEFLECTIONS.
4. THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THESE DRAWINGS ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.
5. PRIOR TO CONSTRUCTION, EXISTING UTILITIES AT PROPOSED CONNECTIONS AND CROSSINGS SHALL BE FIELD EXCAVATED TO VERIFY LOCATIONS, ELEVATION AND SIZE. THE OWNER'S REPRESENTATIVE MAY CONFIRM, ADJUST OR REVISE DESIGN ELEVATIONS OF THE PROPOSED UTILITIES.
6. UNDERDRAIN: PROVIDE TYPICAL UNDERDRAIN UNDER PAVEMENT AT NEW CATCH BASINS OR MANHOLES RECEIVING SURFACE DRAINAGE. UNDERDRAIN SHALL HAVE A MINIMUM OF 2'-6" COVER AND A MINIMUM SLOPE OF 0.5%. SEE DETAIL ON C-804.

GENERAL PAVING NOTES

1. ALL HOT MIX ASPHALT & CONCRETE PAVEMENT SHALL CONFORM TO THE 2012 MDOT SPECIFICATIONS FOR CONSTRUCTION.
2. SURFACE RESTORATION: RESTORE PAVEMENT & OTHER SURFACES DISTURBED BY CONTRACT OPERATIONS TO THEIR ORIGINAL CONDITION OR BETTER.
3. PAVEMENT STRIPING: PROVIDE 4 INCH WIDE WHITE PAINT STRIPING FOR LANE STRIPES. ALL PAVEMENT LANE MARKINGS SHALL MEET THE REQUIREMENTS SET FORTH IN THE MDOT 2012 STANDARD SPECIFICATION FOR REGULAR DRY PAINT MARKINGS. RAILROAD SYMBOLS, LANE MARKINGS, "ONLY" SYMBOLS, STOP BARS, ETC. SHALL BE COLD PLASTIC, ALSO CONFORMING WITH THE MDOT SPECIFICATION, ANY CURING COMPOUND ON THE NEW CONCRETE PAVEMENT SURFACE MUST BE REMOVED PRIOR TO APPLICATION OF ANY MARKINGS. ALL PAINT SHALL BE LEAD FREE, & APPLIED PER MANUFACTURERS RECOMMENDATIONS.
4. EXISTING PAVEMENT TO BE REMOVED SHALL BE SAW CUT, FULL DEPTH, & RECTANGULAR.
5. EXISTING MARKING INDICATED FOR REMOVAL SHALL BE SAND BLASTED OR POWER WIRE BRUSHED.
6. WHEN PLACING NEW PAVEMENTS, MAINTAIN SLOPE OF EXISTING SURROUNDING SURFACES.
7. PROVIDE EDGE DRAIN UNDERDRAIN AT NEW CURB AS SHOWN ON DETAIL ON C-804. PLUMB @ 1% MIN. INTO NEAREST CURB CATCH BASIN.

ASPHALT

1. AFTER FINAL ROLLING, PROTECT PAVEMENT FROM VEHICULAR TRAFFIC UNTIL THE SURFACE HAS COOLED SUFFICIENTLY TO ELIMINATE SURFACE ABRASION.
2. PAVEMENT SEALER
   - A. PAVEMENT SEALER SHALL BE TARCONITE BY NEYRA INDUSTRIES, INC., OR APPROVED SUBSTITUTE. SEALER SHALL MEET FS R-P-355e PITCH, COAL TAR EMULSION (COATING FOR BITUMINOUS PAVEMENTS).

     ALTERNATE NO. 1: PAVEMENT SEALER SHALL BE JENNITE BY NEYRA INDUSTRUES INC. OR APPROVED SUBSTITUTE SEALER SHALL BE MIXED WITH 6 POUNDS OF SAND PER GALLON OF SEALER. SURFACE CLEANING, PRIMING AND NUMBER OF APPLICATIONS SHALL BE AS SPECIFIED FOR BASE BID. SEALER SHALL EXCEED FS R-P-355e.
   - B. PRIMER SHALL BE POLYPRIME PENETRATING PRIMER BY NEYRA INDUSTRIES, INC. OR APPROVED SUBSTITUTE.
   - C. CLEAN EXISTING SURFACES FREE FROM ALL LOOSE OR FOREIGN MATTER. COAT OIL SPOTS WITH ACRYLIC OIL SPOT PRIMER.
   - D. APPLY PRIMER AT MINIMUM RATE OF .015 GAL. OF CONCENTRATED POLYPRIMER PER SQUARE YARD. ALLOW PRIMER TO CURE FOR A MINIMUM OF ONE HOUR PRIOR TO APPLICATION OF TARCONITE.
   - E. SEALER SHALL BE FIELD MIXED WITH 5 POUNDS OF SAND PER 1 GALLON OF TARCONITE TO FORM HOMOGENEOUS SLURRY. SAND SHALL BE WASHED DRY SILICA SAND.
   - F. APPLICATION SYSTEM FOR MODERATE TRAFFIC: ONE COAT OF POLYPRIME PENETRATING PRIMER AND TWO SAND-SLURRY COATS OF TARCONITE. APPLICATION SPECIFICATION JV-S2.
   - G. NEW PAVEMENTS SHALL BE ALLOWED TO CURE AT LEAST 30 DAYS PRIOR TO APPLICATION.
   - H. APPLICATION OF PAVEMENT SEALER SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
   - I. BARRICADE COATED AREAS UNTIL COATING IS DRIED SUFFICIENTLY FOR TRAFFIC.

CAST-IN-PLACE CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO THE REQUIREMENTS OF ACI 301- LATEST REVISION, "SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDING", EXCEPT AS MODIFIED BY STRUCTURAL REQUIREMENTS NOTED ON THE DRAWINGS.
2. ALL CONCRETE SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH AS NOTED BELOW U.N.O. ON THE DRAWINGS:
   - A. INTERIOR SUPPORTED SLABS: 4000 psi
   - B. EXTERIOR CONCRETE EXPOSED TO WEATHER: 4500 psi
   - C. EXTERIOR FOUNDATIONS NOT EXPOSED TO WEATHER: 3500 psi
   - D. GRADE WALLS: 4000 psi
3. ALL EXTERIOR CONCRETE INCLUDING WALLS SHALL BE AIR ENTRAINED 5% +/- 1%, NO MORE THAN 15% OF CEMENT SHALL BE FLY ASH OR SLAG, AND NEITHER SHALL BE USED WHEN AMBIENT OR GROUND TEMPERATURE IS BELOW 40° F. ANY MATERIAL MUST MEET MDOT SECTION 901.
4. ALL EXTERIOR CONCRETE EXPOSED TO WEATHER SHALL HAVE A MAXIMUM WATER TO CEMENTITIOUS RATIO OF 0.45.
5. UNLESS NOTED OTHERWISE, MINIMUM CONCRETE COVER SHALL BE:

CONCRETE CAST AGAINST EARTH	3-INCHES
CONCRETE EXPOSED TO EARTH OR WEATHER	2-INCHES
CONCRETE NOT EXPOSED EARTH OR WEATHER	3/4-INCHES

6. WELDED WIRE FABRIC SHALL BE FURNISHED IN FLAT SHEETS AND SHALL CONFORM TO ASTM A185 (FY = 75 KSI) AND HAVE A MINIMUM SIDE AND END LAP OF 8 INCHES.
7. UNLESS OTHERWISE SHOWN OR NOTED, AS A MINIMUM, PROVIDE TWO #5 BARS (ONE EACH FACE) AROUND UNFRAMED OPENINGS IN SLABS AND WALLS. PLACE BARS PARALLEL TO SIDES OF OPENINGS AND EXTEND THEM 24 INCHES BEYOND CORNERS.
8. ALL CONSTRUCTION JOINTS SHALL BE FURNISHED WITH KEYWAY CENTERED ON MEMBERS. WHERE THE SIZE OF KEY IS NOT SHOWN ON THE DRAWINGS, THE KEY DEPTH SHALL BE 10% OF THE CROSS SECTION DIMENSION OF THE MEMBER - MINIMUM 3/4".
9. ANCHOR BOLTS (FURNISHED BY STRUCTURAL STEEL CONTRACTOR) SHALL BE SET USING A TEMPLATE TO WITHIN 1/8" TOLERANCE IN ANY PLAN DIRECTION IN PIERS, FOOTINGS AND FOUNDATION WALLS, WITH THE MINIMUM PROJECTION AND EMBEDMENT LENGTHS AS INDICATED ON THE DRAWINGS.
10. PROVIDE 3/4" CHAMFER STRIP AT ALL EXPOSED CORNERS OF CONCRETE WALLS, INCLUDING EXPOSED CORNERS OF CONCRETE PIERS.
11. LOCATE ALL SLEEVES, OPENINGS, EMBEDDED ITEMS, ETC., AS INDICATED ON THE DRAWINGS. THE CONCRETE CONTRACTOR SHALL CHECK WITH ALL OTHER TRADES TO MAKE SURE THE SLEEVES, OPENINGS AND EMBEDDED ITEMS THAT ARE TO BE PROVIDED AND SET BY THEM ARE IN PLACE PRIOR TO PLACING OF CONCRETE IN THE AREA INVOLVED.
12. CONTRACTORS SHALL OBTAIN APPROVAL FROM THE ENGINEER, PRIOR TO PLACING OPENINGS OR SLEEVES, NOT SHOWN ON THE DRAWINGS, THROUGH ANY STRUCTURAL MEMBERS, ROOF, WALLS OR FOUNDATIONS. REVIEW ARCHITECTURAL, MECHANICAL AND ELECTRICAL DRAWINGS FOR BASES, OPENINGS, SLEEVES, ANCHORS, INSERTS, CONDUITS, RECESSES AND OTHER DEVICES IN CONCRETE WORK BEFORE CASTING CONCRETE.
13. PROVIDE POCKETS OR RECESSES IN CONCRETE WORK FOR STEEL COLUMNS AND BEAMS AS REQUIRED AND/OR AS CALLED FOR IN THE SPECIFICATIONS EVEN IF NOT SHOWN ON THE DRAWINGS. PROVIDE CONCRETE FILL AFTER STEEL ERECTION TO SEAL OPENINGS.
14. REFER TO ARCHITECTURAL DRAWINGS FOR SLAB RECESSES AND/OR FLOOR FINISH MATERIALS.
15. WELDING OF REINFORCING STEEL IS PROHIBITED UNLESS SPECIFICALLY DETAILED. WELDING SHALL CONFORM TO AWS D1.4 SPECIFICATION.
16. THE CONCRETE SHALL BE THOROUGHLY COMPACTED BY VIBRATION SUPPLEMENTED BY SPADING, PUDDLING OR AGITATION, TO PREVENT HONEYCOMBING AND TO INSURE THE ELIMINATION OF VOIDS. VIBRATION MUST BE DIRECT ACTION IN THE CONCRETE AND NOT AGAINST FORMS OR REINFORCEMENT. HONEYCOMBING, VOIDS AND LARGE AIR POCKETS WILL NOT BE ACCEPTABLE.

SOIL EROSION AND SEDIMENTATION CONTROL

1. COMPLY WITH THE REQUIREMENTS OF THE CHELSEA AREA CONSTRUCTION AUTHORITY EROSION & SEDIMENTATION CONTROL PERMIT ALONG WITH ALL APPLICABLE FEDERAL, STATE, COUNTY, AND LOCAL LAWS, CODES, AND REGULATIONS PERTAINING TO THE IMPLEMENTATION, MAINTENANCE, AND DOCUMENTATION OF SEDIMENTATION AND EROSION CONTROL PRACTICES. THE OWNER OR OWNER'S REPRESENTATIVE SHALL OBTAIN & PAY FOR PERMIT.
1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPLEMENTATION, MAINTENANCE, AND DOCUMENTATION OF SEDIMENTATION AND EROSION CONTROL AND STORMWATER QUALITY ISSUES RELATED TO THE PROJECT, AS REQUIRED AND AS NECESSARY TO COMPLY WITH APPLICABLE LAWS, CODES, AND REGULATIONS.
2. INSPECTIONS SHALL BE MADE WEEKLY AND AFTER RAIN EVENTS TO DETERMINE THE EFFECTIVENESS OF EROSION AND SEDIMENT CONTROL MEASURES. ANY NECESSARY IMPROVEMENTS OR REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
3. SEDIMENT AND EROSION FROM ALL WORK AREAS SHALL BE CONTAINED ON THE SITE, AWAY FROM WETLANDS, OUTFALLS, WATERWAYS, AND ENVIRONMENTALLY SENSITIVE AREAS. WATERWAYS INCLUDE BOTH NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES, AND PONDS.
4. MAINTAIN EROSION CONTROL MEASURES UNTIL CONSTRUCTION IS COMPLETE AND LAWN AREAS ARE FULLY DEVELOPED.
5. PROVIDE JUTE MATTING OR NETTED MULCH ON TEMPORARY SLOPES 2:1 OR STEEPER. SEED AND MULCH OTHER SLOPES TO REMAIN UNFINISHED FOR MORE THAN 14 DAYS.
6. REMOVE SEDIMENTATION AND EROSION CONTROL MEASURES UPON COMPLETION OF PROJECT.

SEQUENCE OF EROSION AND SEDIMENTATION CONTROL OPERATIONS:

1. A PERIMETER DEFENSE WILL BE INSTALLED PRIOR TO CONSTRUCTION TO CONTAIN RUNOFF FROM ALL PROPOSED DISTURBED AREAS. SEDIMENT CONTROL WILL BE INITIATED WHICH WILL CONSIST OF MAINTAINING ALL EXISTING VEGETATION AND DIRECTING ALL RUNOFF ON SITE.
2. DURING CONSTRUCTION THE ENDS OF ALL OPEN PIPES WILL BE PROTECTED BY FILTER FABRIC, STONE FILTERS OR OTHER APPROVED MEANS.
3. ANY REMAINING DENUDED AREA SHALL BE SEEDED AND MULCHED DAILY, UPON COMPLETION OF FINAL GRADING.
4. AT THE COMPLETION OF THE CONSTRUCTION, TEMPORARY CONTROL MEASURES WILL BE REMOVED AND CONVERTED TO PERMANENT CONTROLS. FINAL GRADING WILL BE COMPLETED AND THE GROUND WILL BE PERMANENTLY STABILIZED. FILTER FABRIC FENCES SHALL BE REMOVED AND ANY BARE SPOTS WILL BE SEEDED. CATCH BASINS AND DRAIN INLETS WILL BE CAREFULLY UNCOVERED AND ANY SEDIMENT OR DEBRIS WILL BE REMOVED.
5. CONTRACTOR IS TO SEED CRITICAL AREAS IDENTIFIED BY OWNER OR OWNER'S REPRESENTATIVE DAILY, WHEN THOSE AREAS ARE SUBJECT TO EARTH CHANGES. CONTRACTOR IS ALSO RESPONSIBLE FOR REGULAR MAINTENANCE OF PLANT COVER IN THESE AREAS. COVER SHALL BE MAINTAINED SO AS TO CONTROL SOIL EROSION.
6. AT THE CONCLUSION OF CONSTRUCTION, THE OWNER WILL ASSUME THE RESPONSIBILITY FOR PERMANENT MAINTENANCE OF THE EROSION AND SEDIMENTATION CONTROL MEASURES.
7. PROVIDE DUST CONTROL WITH AN ON-SITE WATER WAGON. WATER SHALL BE IMPLEMENTED AS NEEDED AND AT THE DIRECTION OF THE CITY AGENT.

THREE FULL WORKING DAYS BEFORE YOU DIG, CALL THE MISS DIG SYSTEM AT 800-482-7171 OR 811.

MISS DIG

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Checked:	C. LEACH
Approved:	C. LEACH

Sheet Title:
CIVIL GENERAL NOTES

Project Number: 14049

Sheet Number: C-000

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EXISTING SITE PLAN

SCALE: 1" = 30'

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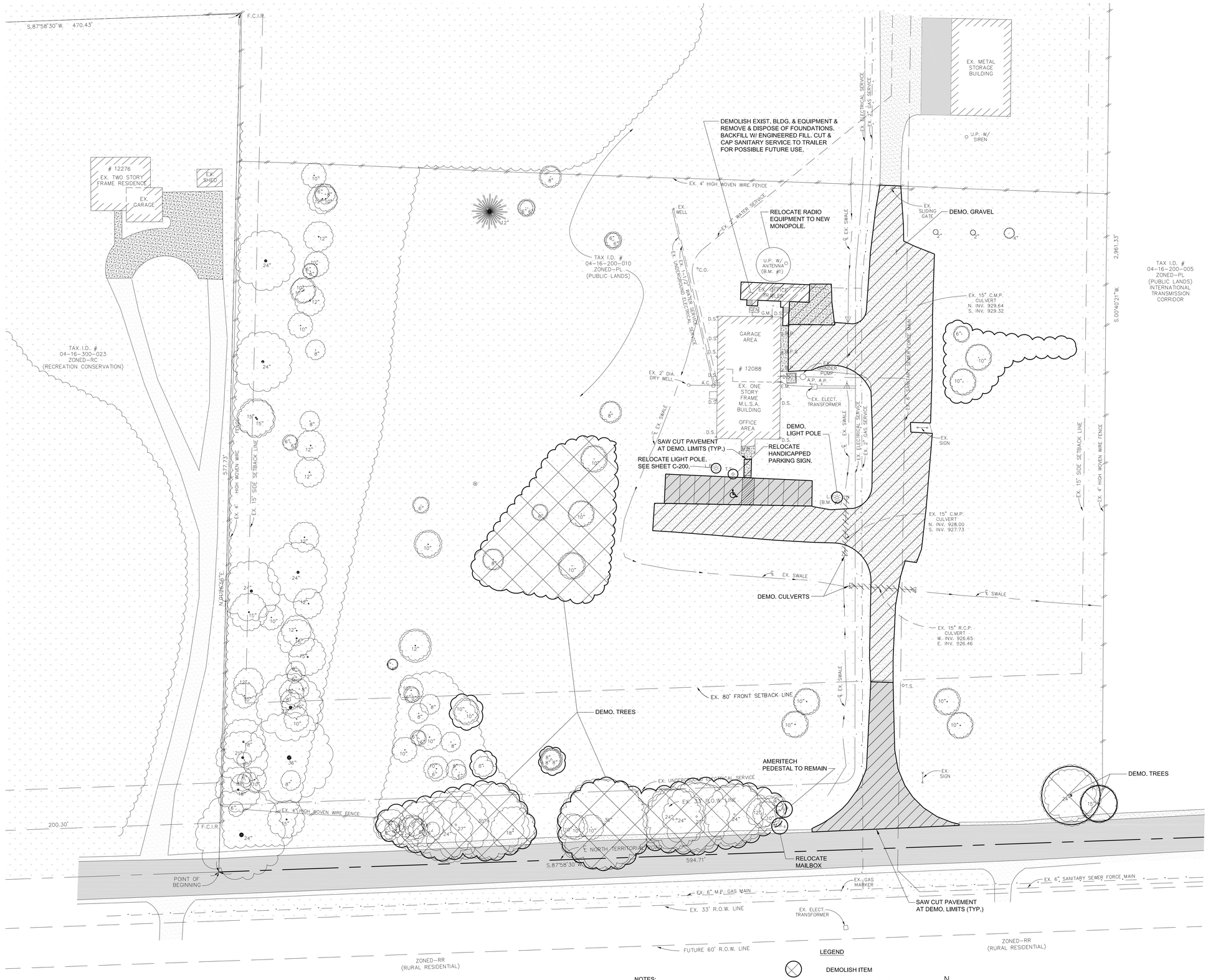
05/23/14	PRELIMINARY SPA
05/29/14	INTERNAL REVIEW
07/02/14	PRELIMINARY SPA
07/08/14	WCRC PERMIT
08/20/14	REVISED PRELIMINARY SPA
08/20/14	FINAL SPA/FINAL ENG.
09/02/14	BIDS
10/13/14	REV. FINAL SPA/FINAL ENG.

Drawn:	S. MANOS
Checked:	C. LEACH
Approved:	C. LEACH

Sheet Title:
EXISTING SITE PLAN

Project Number: 14049

Sheet Number: C-100



NOTES:
1. DEMOLISH SHALL INDICATE REMOVAL & DISPOSAL U.N.O.

LEGEND

- DEMOLISH ITEM
- DEMOLISH PIPE, CURB, ETC.
- DEMOLISH PAVEMENT FULL DEPTH

N

SITE DEMOLITION PLAN

SCALE: 1" = 30'

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Key Plan:

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
07/02/14	PRELIMINARY SPA
07/08/14	WCRC PERMIT
08/20/14	REVISED PRELIMINARY SPA
08/20/14	FINAL SPA/FINAL ENG.
09/02/14	BIDS
10/13/14	REV. FINAL SPA/FINAL ENG.
10/13/14	ADDENDUM #5
01/09/15	REV. FINAL SPA/FINAL ENG.
01/22/15	AMEND. FINAL SPA/FINAL ENG.

Drawn:	S. MANOS
Checked:	C. LEACH
Approved:	C. LEACH

Sheet Title:
SITE DEMOLITION PLAN

Project Number: 14049

Sheet Number: C-110

EXISTING LAND USE - PART OF MULTI-LAKE WATER & SEWER AUTHORITY PROPERTY
NEW LAND USE - PROPERTY SPLIT FOR NEW FIRE SUBSTATION
CURRENT ZONING - PL - PUBLIC LANDS
ALL ADJACENT PARCELS ZONED RC & RR

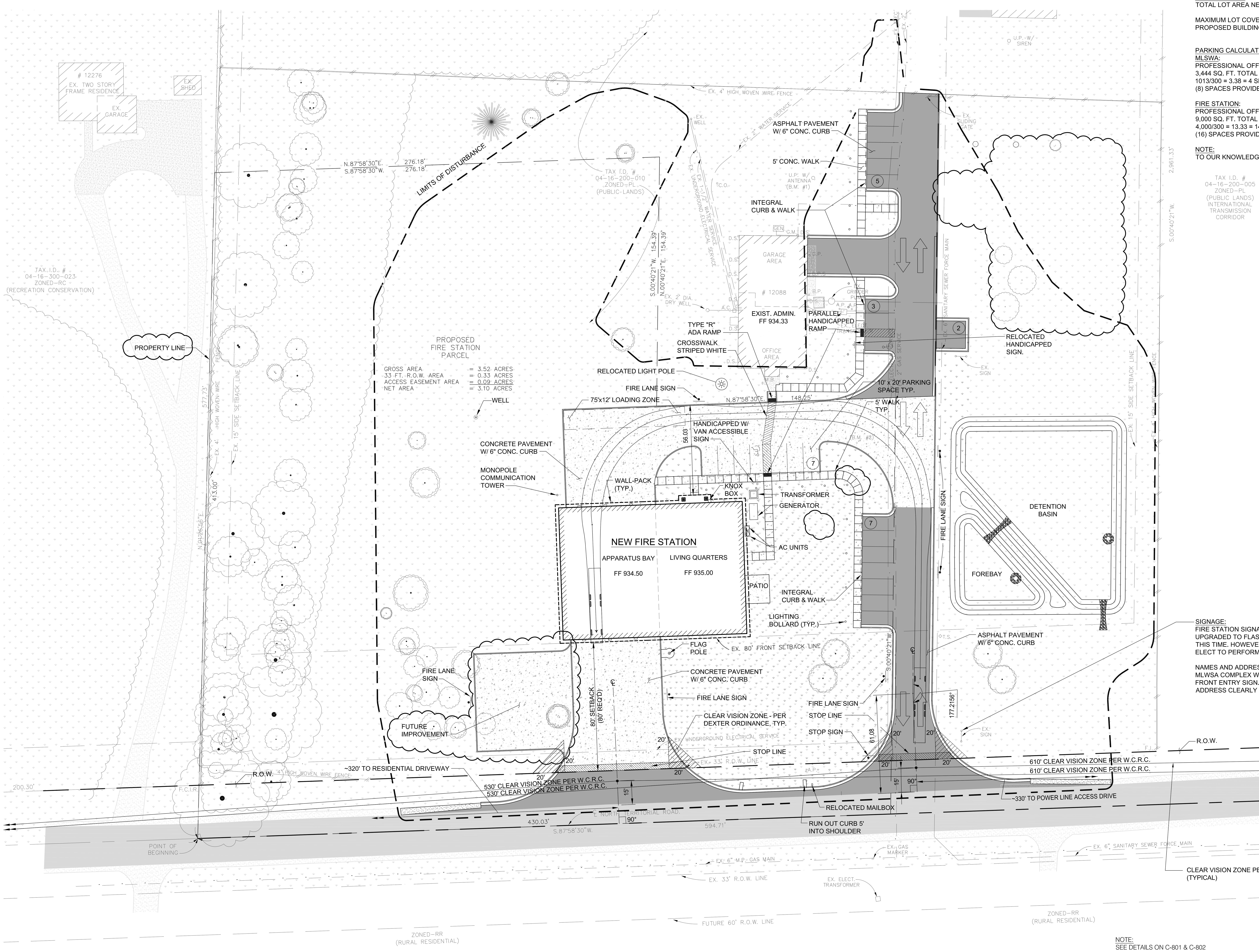
LOT COVERAGE
TOTAL LOT AREA NET OF R.O.W. = 118,300 SQ. FT.

MAXIMUM LOT COVERAGE ALLOWED = 10% = 11,830 SQ. FT.
PROPOSED BUILDING = 118'x 86' (DRIP LINE TO DRIP LINE)
= 10,148 SQ. FT. = 8.68%

PARKING CALCULATIONS
MLSWA:
PROFESSIONAL OFFICE = 1 SPACE/ 300 SQ. FT. + 1 PER PERSON IN LARGEST SHIFT
3,444 SQ. FT. TOTAL AREA; 473 SQ. FT. OFFICE + 540 SQ.FT. CONFERENCE ROOM = 1,013 OCCUPIED
1013/300 = 3.38 = 4 SPACES + 3 SPACES LARGEST SHIFT = 7 SPACES REQUIRED.
(8) SPACES PROVIDED

FIRE STATION:
PROFESSIONAL OFFICE = 1 SPACE/ 300 SQ. FT. + 1 PER PERSON IN LARGEST SHIFT.
9,000 SQ. FT. TOTAL AREA; 4,000 SQ. FT. OCCUPIED AREA
4,000/300 = 13.33 = 14 SPACES + 2 SPACES FOR LARGEST SHIFT = 16 SPACES REQUIRED.
(16) SPACES PROVIDED

NOTE:
TO OUR KNOWLEDGE THE DAFD WILL HAVE NO HAZARDOUS MATERIALS ON SITE.



SIGNAGE:
FIRE STATION SIGNAGE ALONG NORTH TERRITORIAL WILL NOT BE UPGRADED TO FLASHING SERVICE CALL ACTIVATED SIGNAGE AT THIS TIME. HOWEVER, THE DAFD AND DEXTER TOWNSHIP MAY ELECT TO PERFORM THIS UPGRADE AT A LATER DATE.

NAMES AND ADDRESS FOR ALL PROPERTY OWNERS WITHIN THE MLWSA COMPLEX WILL BE CLEARLY DISPLAYED ON THE EXISTING FRONT ENTRY SIGN. ADDITIONALLY, EACH OWNER WILL HAVE AN ADDRESS CLEARLY READABLE ON THEIR FACILITIES.

NOTE:
SEE DETAILS ON C-801 & C-802

GENERAL SITE PLAN
SCALE: 1" = 30'

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01/09/15	REV. FINAL SPA/ FINAL ENG.
01/22/15	AMEND. FINAL SPA/ FINAL ENG.

Drawn: S. MANOS
Checked: C. LEACH
Approved: C. LEACH

Sheet Title:
GENERAL SITE PLAN

Project Number: 14049

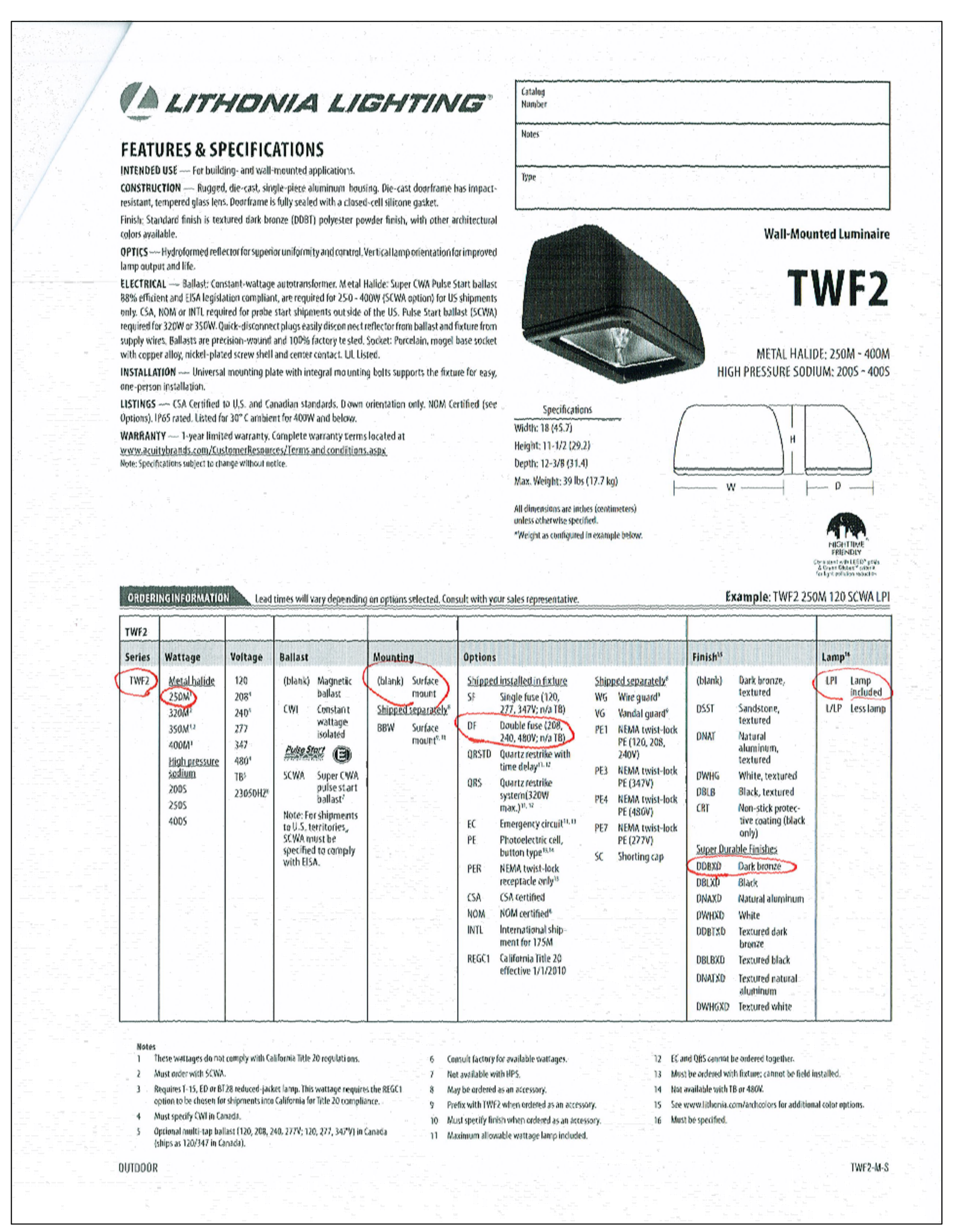
Sheet Number: C-200

STATISTICS

DESCRIPTION	SYMBOL	AVG	MAX	MIN	MAX/MIN	
CALC ZONE #1	+	2.9fc	27.6fc	0.0fc	N/A	N/A
CALC ZONE #2	+	2.2fc	26.0fc	0.0fc	N/A	N/A
CALC ZONE #3	+	0.5fc	8.3fc	0.0fc	N/A	N/A
CALC ZONE #4	+	2.7fc	11.0fc	0.0fc	N/A	N/A
CALC ZONE #5	+	3.6fc	11.9fc	0.1fc	119.0:1	36.0:1
CALC ZONE #6	+	3.0fc	12.1fc	0.0fc	N/A	N/A
CALC ZONE #7	+	0.0fc	0.0fc	0.0fc	N/A	N/A
CALC ZONE #8	+	4.0fc	5.5fc	2.4fc	2.3:1	1.7:1

LUMINAIRE SCHEDULE

SYMBOL	LABEL	QTY	CATALOG NUMBER	DESCRIPTION	FILE	LUMENS	LLF	WATTS
○	A	23	KBR6 70M R5	6 IN ROUND BOLLARD	KBR6_70M_R5 .ies	5000	0.72	95
	B	6	TWF2 250M (PULSE START)	BUILDING MOUNTED LUMINAIRE WITH VERTICAL LAMP ORIENTED (250 WATT MH MOGUL BASE LAMP)	TWF2_250M_ PULSE_START .ies	22000	0.72	291
	C	4	WST 42TRT MD	ARCHITECTURAL SCONCE WITH MEDIUM THROW DISTRIBUTION WITH CLEAR, FLAT GLASS LENS. MEETS THE "NIGHTTIME FRIENDLY" CRITERIA	WST_42TRT_MD .ies	3200	0.72	48
□	D	1	KSF2 400M R4W (PROBE)	ONE 400-WATT CLEAR ED-28 METAL HALIDE, HORIZONTAL POSITION	KSF2_400M_R4W _(PROBE).ies	32000	0.72	462

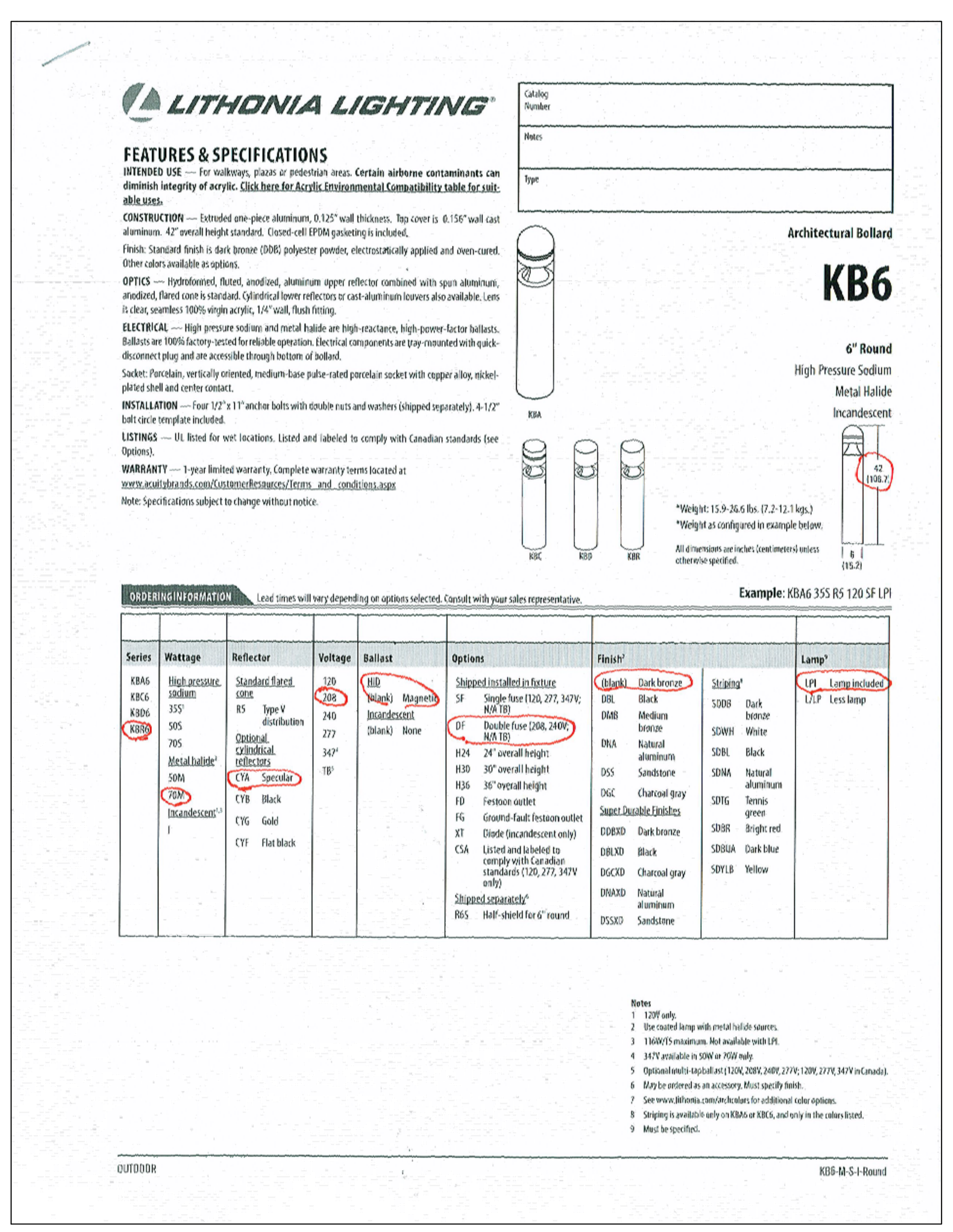

LITHONIA LIGHTING

FEATURES & SPECIFICATIONS

Wall-Mounted Luminaire

TWF2

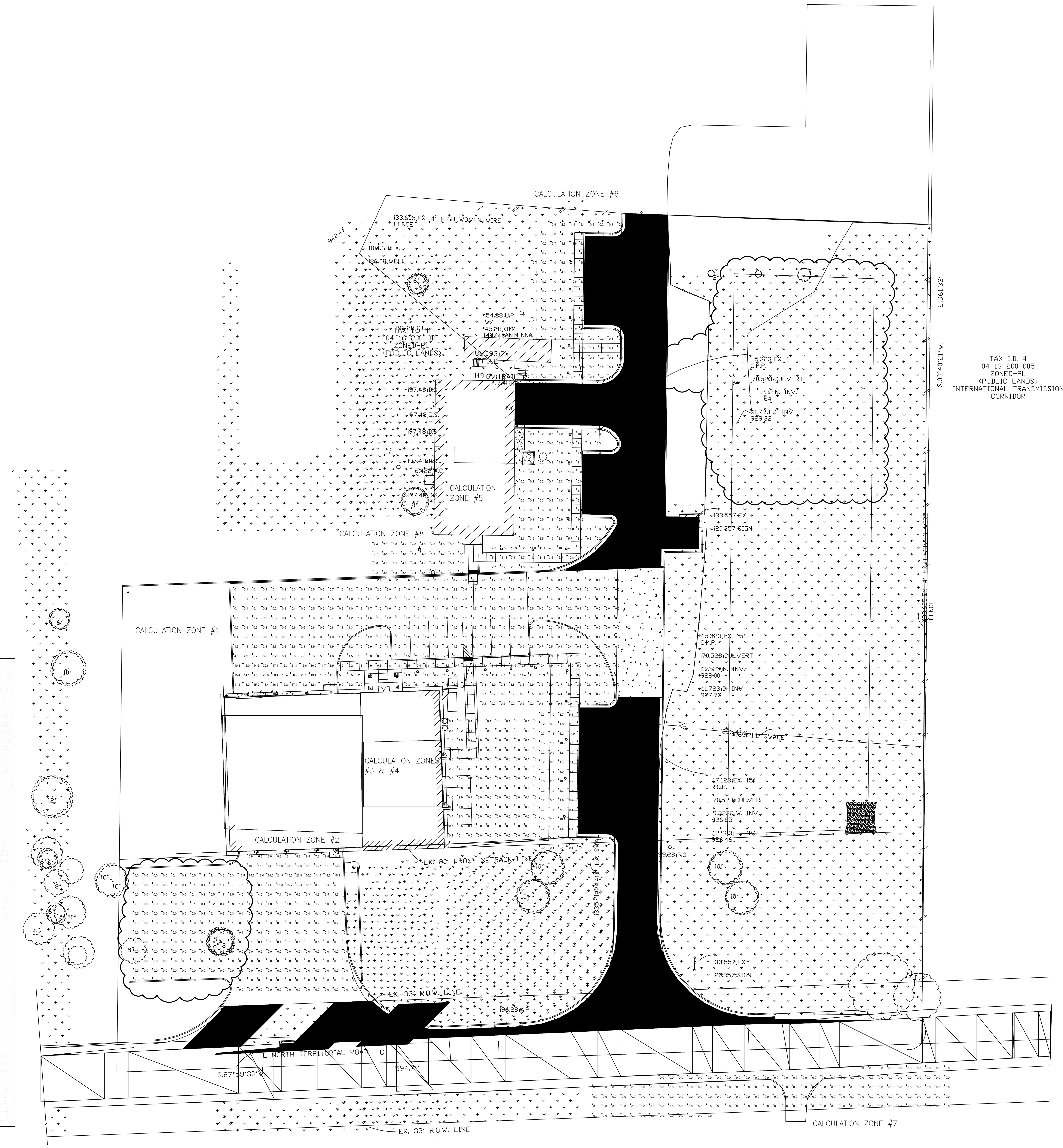
METAL HALIDE: 250M - 400M
HIGH PRESSURE SODIUM: 200S - 400S


LITHONIA LIGHTING

FEATURES & SPECIFICATIONS

Architectural Bollard

KB6



NOTES:
1. FIGURES ARE IN FOOTCANDLES

N

PHOTOMETRIC PLAN
SCALE: 1" = 30'

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Key Plan:

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
08/20/14	FINAL SPA/ENG
09/02/14	BIDS
10/13/14	REV. FINAL SPA/FINAL ENG.
01/09/15	REV. FINAL SPA/FINAL ENG.
01/22/15	AMEND. FINAL SPA/FINAL ENG.

Drawn: R. PHELPS
Checked: C. LEACH
Approved: C. LEACH

Sheet Title:
SITE PHOTOMETRIC PLAN

Project Number: 14049

Sheet Number: C-201

N

SITE DIMENSION PLAN

SCALE: 1" = 30'

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10/13/14	REV. FINAL SPA/FINAL ENG.
10/13/14	ADDENDUM #5
01/09/15	REV. FINAL SPA/FINAL ENG
01/22/15	AMEND. FINAL SPA/FINAL ENG.

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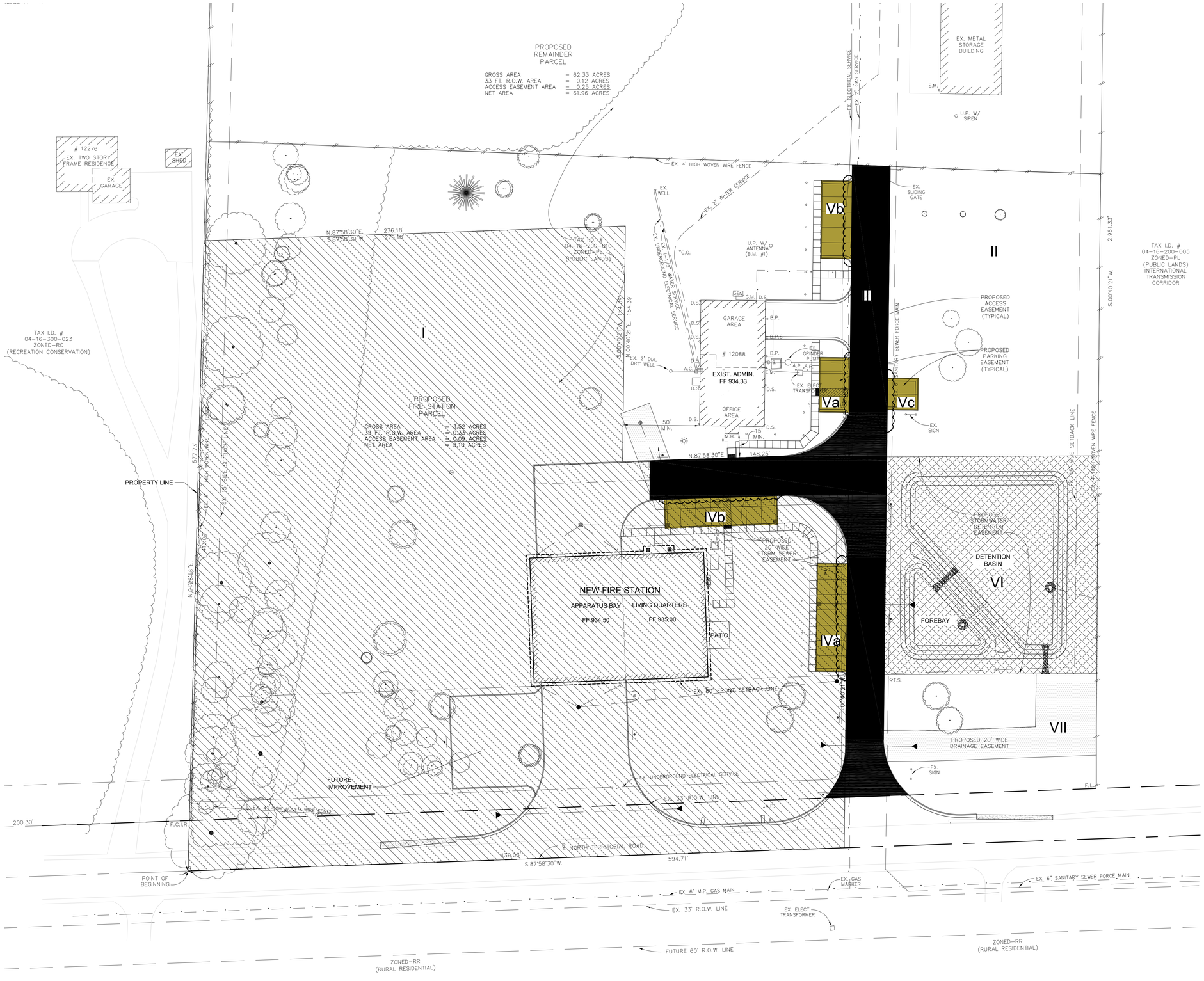
Checked:	C. LEACH
Approved:	C. LEACH

Sheet Title:
SITE DIMENSION PLAN

Project Number: 14049

Sheet Number: C-210



N

PROPERTY DIVISION & EASEMENT PLAN

SCALE: 1" = 30'

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DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
12/07/14	TWP. REVIEW
01/09/15	REV. FINAL SPA/FINAL ENG.
01/22/15	AMEND. FINAL SPA/FINAL ENG.
04/02/15	EASEMENT

Drawn:	S. MANOS
Checked:	C. LEACH
Approved:	C. LEACH

Sheet Title:
PROPERTY DIVISION & EASEMENT PLAN

Project Number: 14049

Sheet Number: C-211

I PROPOSED DEXTER TOWNSHIP FIRE STATION PARCEL PROPERTY DESCRIPTION

A PARCEL OF LAND IN THE WEST 1/2 OF SECTION 16, T.1S., R.4E., DEXTER TOWNSHIP, WASHTENAW COUNTY, MICHIGAN BEING DESCRIBED AS: COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 16; THENCE S.01°26'56"W. 439.27 FEET ALONG THE WEST LINE OF SECTION 16; THENCE N.87°58'30"E. 1,070.83 FEET ALONG THE CENTERLINE OF NORTH TERRITORIAL ROAD TO THE POINT OF BEGINNING; THENCE N.01°26'56"E. 413.00 FEET; THENCE N.87°58'30"E. 276.18 FEET; THENCE S.00°40'21"W. 154.39 FEET; THENCE N.87°58'30"E. 148.25 FEET; THENCE S.00°40'21"W. 258.31 FEET; THENCE S.87°58'30"W. 430.03 FEET ALONG THE CENTERLINE OF NORTH TERRITORIAL ROAD TO THE POINT OF BEGINNING. CONTAINING 3.52 ACRES, BEING SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THE SOUTHERLY 33 FEET THEREOF FOR NORTH TERRITORIAL ROAD AND BEING SUBJECT TO ANY EASEMENTS AND RESTRICTIONS OF RECORD.

II PROPOSED MULTI-LAKE WATER & SEWER AUTHORITY REMAINDER PARCEL PROPERTY DESCRIPTION

A PARCEL OF LAND IN THE WEST 1/2 OF SECTION 16, T.1S., R.4E., DEXTER TOWNSHIP, WASHTENAW COUNTY, MICHIGAN BEING DESCRIBED AS: COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 16; THENCE S.01°26'56"W. 439.27 FEET ALONG THE WEST LINE OF SECTION 16; THENCE N.87°58'30"E. 1,500.86 FEET ALONG THE CENTERLINE OF NORTH TERRITORIAL ROAD TO THE POINT OF BEGINNING; THENCE N.00°40'21"E. 258.31 FEET; THENCE S.87°58'30"W. 148.25 FEET; THENCE N.00°40'21"E. 154.39 FEET; THENCE S.87°58'30"E. 276.18 FEET; THENCE N.01°26'56"E. 164.73 FEET; THENCE S.87°58'30"W. 470.43 FEET; THENCE N.00°24'42"E. 2,470.04 FEET; THENCE S.87°23'00"E. 1,067.99 FEET ALONG THE NORTH LINE OF SAID SECTION 16; THENCE S.00°40'21"W. 2,076.33 FEET; THENCE N.89°19'39"W. 200.00 FEET; THENCE S.00°40'21"W. 95.07 FEET; THENCE 185.47 FEET ALONG A CURVE TO THE RIGHT HAVING A RADIUS OF 233.00 FEET AND A CHORD BEARING OF S.22°07'52"E. 180.61 FEET; THENCE S.00°40'21"W. 38.44 FEET; THENCE S.89°19'39"E. 130.00 FEET; THENCE S.00°40'21"W. 585.00 FEET; THENCE S.87°58'30"W. 164.68 FEET ALONG THE CENTERLINE OF NORTH TERRITORIAL ROAD TO THE POINT OF BEGINNING. CONTAINING 62.33 ACRES, BEING SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THE SOUTHERLY 33 FEET THEREOF FOR NORTH TERRITORIAL ROAD AND BEING SUBJECT TO ANY EASEMENTS AND RESTRICTIONS OF RECORD.

III PROPOSED SHARED ACCESS EASEMENT DESCRIPTION

A NON-EXCLUSIVE SHARED ACCESS EASEMENT OVER AND BENEFITING BOTH THE PROPOSED FIRE STATION AND REMAINDER PARCELS AND BEING DESCRIBED AS FOLLOWS:

PART OF THE WEST 1/2 OF SECTION 16, T.1S., R.4E., DEXTER TOWNSHIP, WASHTENAW COUNTY, MICHIGAN DESCRIBED AS COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 16; THENCE S.01°26'56"W. 439.27 FEET ALONG THE WEST LINE OF SECTION 16; THENCE N.87°58'30"E. 1,500.86 FEET ALONG THE CENTERLINE OF NORTH TERRITORIAL ROAD; THENCE N.00°40'21"E. 33.04 FEET TO THE POINT OF BEGINNING; THENCE S.87°58'30"W. 13.34 FEET ALONG THE 33 FOOT RIGHT-OF-WAY LINE OF NORTH TERRITORIAL ROAD; THENCE 38.69 FEET ALONG A NON-TANGENT CURVE TO THE LEFT HAVING A RADIUS OF 50.00 FEET AND A CHORD BEARING OF N.21°24'38"E. 37.64 FEET; THENCE N.00°40'21"E. 122.74 FEET; THENCE 64.72 FEET ALONG A CURVE TO THE LEFT HAVING A RADIUS OF 40.00 FEET AND A CHORD BEARING OF N.45°40'35"W. 57.88 FEET; THENCE S.87°58'30"W. 88.31 FEET; THENCE N.00°40'21"E. 28.03 FEET; THENCE N.87°58'30"E. 86.85 FEET; THENCE 55.02 FEET ALONG A CURVE TO THE LEFT HAVING A RADIUS OF 50.00 FEET AND A CHORD BEARING OF N.57°02'58"E. 52.28 FEET; THENCE N.00°40'21"E. 162.20 FEET; THENCE S.88°02'44"E. 25.01 FEET; THENCE S.00°41'21"W. 375.74 FEET; THENCE 41.21 FEET ALONG A CURVE TO THE LEFT HAVING A RADIUS OF 50.00 FEET AND A CHORD BEARING OF S.25°02'39"E. 40.06 FEET; THENCE S.87°58'30"W. 42.43 FEET ALONG THE 33 FOOT RIGHT-OF-WAY LINE OF NORTH TERRITORIAL ROAD TO THE POINT OF BEGINNING.

IV PROPOSED SHARED PARKING EASEMENT DESCRIPTIONS

SHARED PARKING EASEMENTS OVER THE PROPOSED FIRE STATION PARCEL BENEFITING BOTH THE FIRE STATION AND REMAINDER PARCELS AND BEING DESCRIBED AS FOLLOWS:

a PART OF THE WEST 1/2 OF SECTION 16, T.1S., R.4E., DEXTER TOWNSHIP, WASHTENAW COUNTY, MICHIGAN DESCRIBED AS COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 16; THENCE S.01°26'56"W. 439.27 FEET ALONG THE WEST LINE OF SECTION 16; THENCE N.87°58'30"E. 1,500.86 FEET ALONG THE CENTERLINE OF NORTH TERRITORIAL ROAD; THENCE N.00°40'21"E. 115.25 FEET TO THE POINT OF BEGINNING; THENCE N.89°19'39"W. 20.00 FEET; THENCE N.00°40'21"E. 71.00 FEET; THENCE S.89°19'39"E. 20.00 FEET; THENCE S.00°40'21"W. 71.00 FEET TO THE POINT OF BEGINNING.

b ALSO PART OF THE WEST 1/2 OF SECTION 16, T.1S., R.4E., DEXTER TOWNSHIP, WASHTENAW COUNTY, MICHIGAN DESCRIBED AS COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 16; THENCE S.01°26'56"W. 439.27 FEET ALONG THE WEST LINE OF SECTION 16; THENCE N.87°58'30"E. 1,500.86 FEET ALONG THE CENTERLINE OF NORTH TERRITORIAL ROAD; THENCE N.00°40'21"E. 232.28 FEET; THENCE S.87°58'30"W. 46.82 FEET TO THE POINT OF BEGINNING; THENCE S.02°01'30"E. 18.00 FEET; THENCE S.87°58'30"W. 74.00 FEET; THENCE N.02°01'30"W. 18.00 FEET; THENCE N.87°58'30"E. 74.00 FEET TO THE POINT OF BEGINNING.

V PROPOSED SHARED PARKING EASEMENT DESCRIPTIONS

SHARED PARKING EASEMENTS OVER THE PROPOSED REMAINDER PARCEL BENEFITING BOTH THE FIRE STATION AND REMAINDER PARCELS AND BEING DESCRIBED AS FOLLOWS:

a PART OF THE WEST 1/2 OF SECTION 16, T.1S., R.4E., DEXTER TOWNSHIP, WASHTENAW COUNTY, MICHIGAN DESCRIBED AS COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 16; THENCE S.01°26'56"W. 439.27 FEET ALONG THE WEST LINE OF SECTION 16; THENCE N.87°58'30"E. 1,500.86 FEET ALONG THE CENTERLINE OF NORTH TERRITORIAL ROAD; THENCE N.00°40'21"E. 285.22 FEET TO THE POINT OF BEGINNING; THENCE N.89°19'39"W. 20.00 FEET; THENCE N.00°40'21"E. 36.00 FEET; THENCE S.89°19'39"E. 20.00 FEET; THENCE S.00°40'21"W. 36.00 FEET TO THE POINT OF BEGINNING.

b ALSO PART OF THE WEST 1/2 OF SECTION 16, T.1S., R.4E., DEXTER TOWNSHIP, WASHTENAW COUNTY, MICHIGAN DESCRIBED AS COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 16; THENCE S.01°26'56"W. 439.27 FEET ALONG THE WEST LINE OF SECTION 16; THENCE N.87°58'30"E. 1,500.86 FEET ALONG THE CENTERLINE OF NORTH TERRITORIAL ROAD; THENCE N.00°40'21"E. 385.95 FEET TO THE POINT OF BEGINNING; THENCE N.89°19'39"W. 20.00 FEET; THENCE N.00°40'21"E. 51.00 FEET; THENCE S.89°19'39"E. 20.00 FEET; THENCE S.00°40'21"W. 51.00 FEET TO THE POINT OF BEGINNING.

c ALSO PART OF THE WEST 1/2 OF SECTION 16, T.1S., R.4E., DEXTER TOWNSHIP, WASHTENAW COUNTY, MICHIGAN DESCRIBED AS COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 16; THENCE S.01°26'56"W. 439.27 FEET ALONG THE WEST LINE OF SECTION 16; THENCE N.87°58'30"E. 1,525.89 FEET ALONG THE CENTERLINE OF NORTH TERRITORIAL ROAD; THENCE N.00°40'21"E. 286.04 FEET TO THE POINT OF BEGINNING; THENCE CONTINUING N.00°40'21"E. 21.00 FEET; THENCE S.89°19'39"E. 20.00 FEET; THENCE S.00°40'21"W. 21.00 FEET; THENCE N.89°19'39"W. 20.00 FEET TO THE POINT OF BEGINNING.

VI PROPOSED STORMWATER DETENTION EASEMENT DESCRIPTION

A SHARED STORMWATER DETENTION EASEMENT OVER THE PROPOSED REMAINDER PARCEL BENEFITING BOTH THE FIRE STATION AND REMAINDER PARCELS AND BEING DESCRIBED AS FOLLOWS:

PART OF THE WEST 1/2 OF SECTION 16, T.1S., R.4E., DEXTER TOWNSHIP, WASHTENAW COUNTY, MICHIGAN DESCRIBED AS COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 16; THENCE S.01°26'56"W. 439.27 FEET ALONG THE WEST LINE OF SECTION 16; THENCE N.87°58'30"E. 1,525.89 FEET ALONG THE CENTERLINE OF NORTH TERRITORIAL ROAD; THENCE N.00°40'21"E. 112.49 FEET TO THE POINT OF BEGINNING; THENCE CONTINUING N.00°40'21"E. 142.83 FEET; THENCE N.89°42'10"E. 139.52 FEET; THENCE S.00°40'21"W. 142.83 FEET; THENCE S.89°42'10"W. 139.52 FEET TO THE POINT OF BEGINNING.

VII PROPOSED DRAINAGE EASEMENT DESCRIPTION

A SHARED DRAINAGE EASEMENT OVER THE PROPOSED REMAINDER PARCEL BENEFITING BOTH THE FIRE STATION AND REMAINDER PARCELS AND BEING DESCRIBED AS FOLLOWS:

PART OF THE WEST 1/2 OF SECTION 16, T.1S., R.4E., DEXTER TOWNSHIP, WASHTENAW COUNTY, MICHIGAN DESCRIBED AS COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 16; THENCE S.01°26'56"W. 439.27 FEET ALONG THE WEST LINE OF SECTION 16; THENCE N.87°58'30"E. 1,500.86 FEET ALONG THE CENTERLINE OF NORTH TERRITORIAL ROAD; THENCE N.00°40'21"E. 57.07 FEET TO THE POINT OF BEGINNING; THENCE CONTINUING N.00°40'21"E. 20.00 FEET; THENCE S.89°19'39"E. 46.71 FEET; THENCE N.87°58'30"E. 77.78 FEET; THENCE N.00°40'21"E. 34.62 FEET; THENCE N.89°42'10"E. 40.11 FEET; THENCE S.00°40'21"W. 53.43 FEET; THENCE S.87°58'30"W. 117.45 FEET; THENCE N.89°19'39"W. 47.18 FEET TO THE POINT OF BEGINNING.

VIII PROPOSED STORM SEWER EASEMENT DESCRIPTION

A SHARED STORM SEWER EASEMENT OVER AND BENEFITING BOTH THE FIRE STATION AND REMAINDER PARCELS AND BEING DESCRIBED AS FOLLOWS:

PART OF THE WEST 1/2 OF SECTION 16, T.1S., R.4E., DEXTER TOWNSHIP, WASHTENAW COUNTY, MICHIGAN DESCRIBED AS COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 16; THENCE S.01°26'56"W. 439.27 FEET ALONG THE WEST LINE OF SECTION 16; THENCE N.87°58'30"E. 1,525.89 FEET ALONG THE CENTERLINE OF NORTH TERRITORIAL ROAD; THENCE N.00°40'21"E. 148.57 FEET TO THE POINT OF BEGINNING; THENCE N.89°19'39"W. 32.50 FEET; THENCE N.00°40'21"E. 75.87 FEET; THENCE S.87°58'30"W. 118.52 FEET; THENCE N.20°08'02"W. 66.99 FEET; THENCE N.69°51'58"E. 20.00 FEET; THENCE S.20°08'02"E. 52.49 FEET; THENCE N.87°58'30"E. 104.95 FEET; THENCE N.00°40'21"E. 12.31 FEET; THENCE N.87°58'30"E. 20.03 FEET; THENCE S.00°40'21"W. 89.15 FEET; THENCE S.89°19'39"E. 12.50 FEET; THENCE S.00°40'21"W. 20.00 FEET TO THE POINT OF BEGINNING.

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Key Plan:

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
01/09/15	REV. FINAL SPA/FINAL ENG.
01/22/15	AMEND. FINAL SPA/FINAL ENG.

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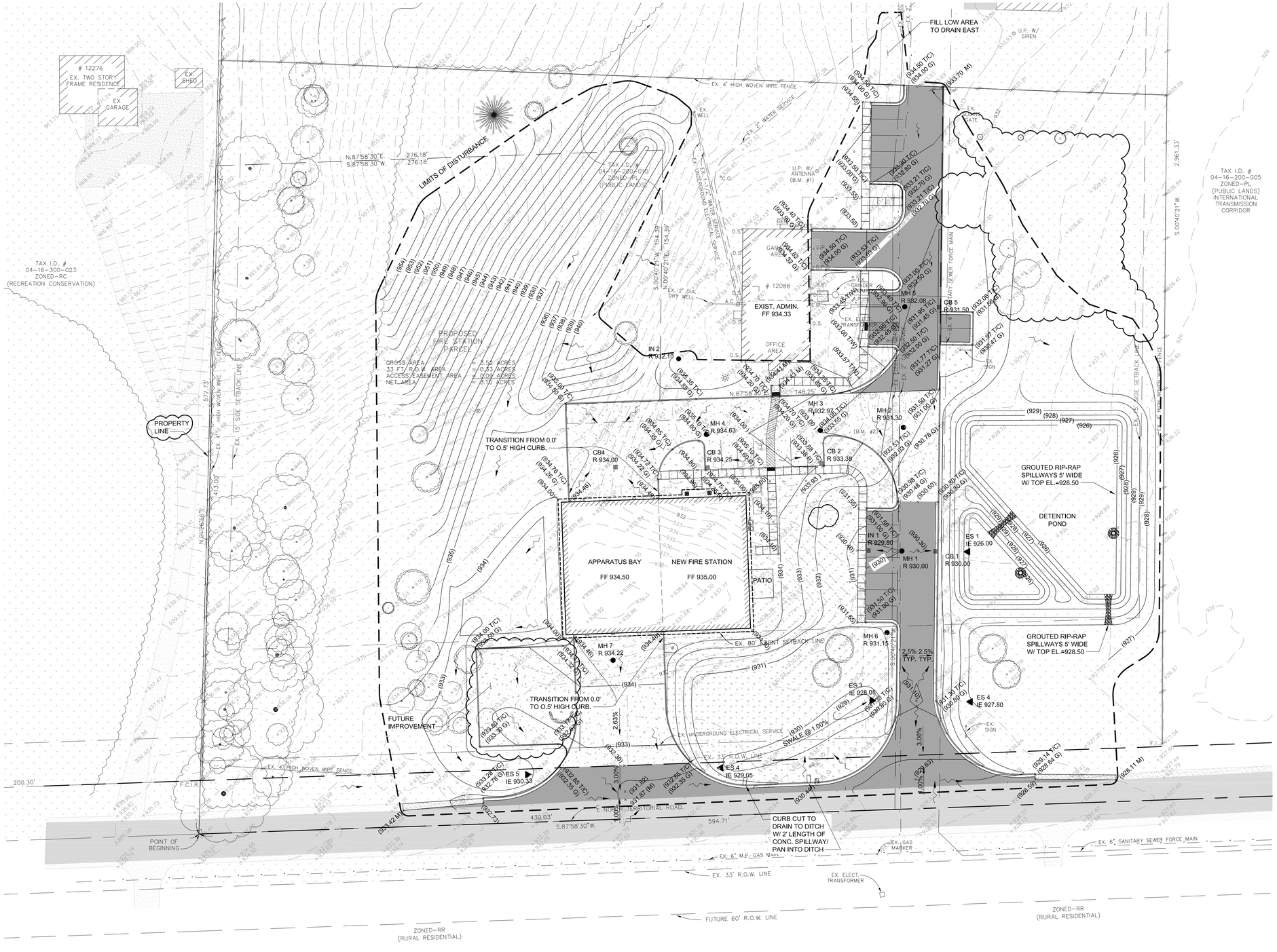
Checked:	C. LEACH
Approved:	C. LEACH

Sheet Title:
LEGAL
DESCRIPTIONS

Project Number: 14049

Sheet Number: C-212



N

SITE GRADING PLAN

SCALE: 1" = 30'

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Key Plan:

Client:
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Project:
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DEXTER, MICHIGAN 48130

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10/13/14	REV. FINAL SPA/FINAL ENG.
10/13/14	ADDENDUM #5
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01/22/15	AMEND. FINAL SPA/FINAL ENG.

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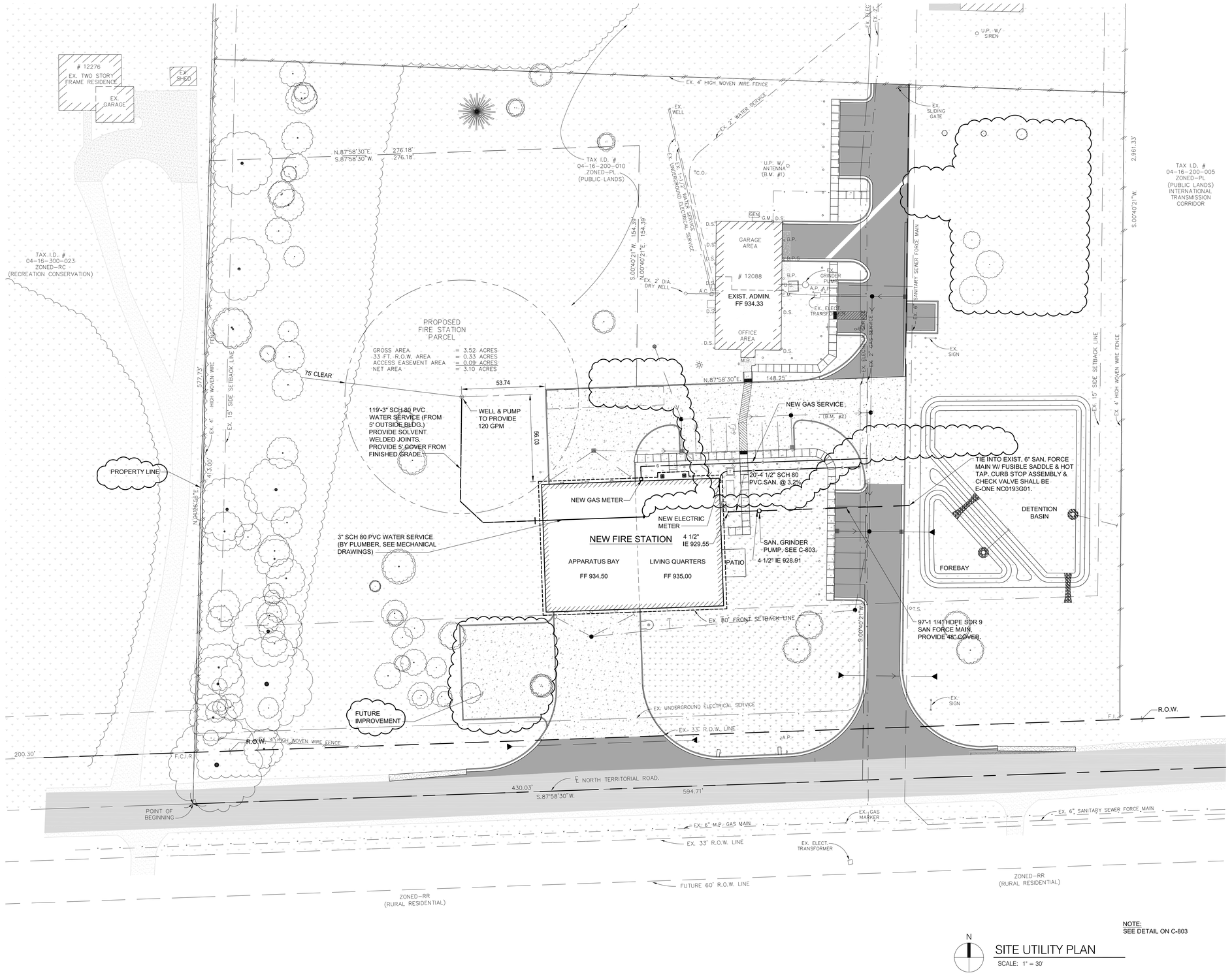
Approved:	C. LEACH

Sheet Title:
SITE GRADING PLAN

Project Number: 14049

Sheet Number: C-220



NOTE:
SEE DETAIL ON C-803

N

SITE UTILITY PLAN

SCALE: 1" = 30'

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Key Plan:

Client:
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Project:
NEW FIRE SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

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10/13/14	ADDENDUM #5
01/09/15	REV. FINAL SPA/ FINAL ENG.
01/22/15	AMEND. FINAL SPA/FINAL ENG.

Drawn:	S. MANOS
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Approved:	C. LEACH

Sheet Title:
SITE UTILITY PLAN

Project Number: 14049

Sheet Number: C-230

NOTES:

1. ALL 12" & LARGER STORM SEWER SHALL BE C-76 R.C.P. CLASS V U.N.O. 8" & 10" PIPE SHALL BE C-76 R.C.P. WALL B.
2. PLACE COMPACTED SAND BACKFILL ABOVE ALL STORM SEWER IN PAVED AREAS.
3. ALL 4" STORM SEWERS BUILDING LEADS SHALL BE SCH. 40 PVC @ 0.80% MIN. U.N.O.
4. END SECTIONS SHALL BE 6' LENGTH C76 REINFORCED CONCRETE.
5. CURB CATCH BASINS & INLETS SHALL HAVE EJIW 7450 FRAME W/ TYPE M1 LID.
6. CB3 SHALL HAVE EJIW 5000 FRAME W/ TYPE M1 LID.
7. ALL STORM MANHOLES SHALL HAVE EJIW 1130 FRAME W/ SOLID LID.
8. TRENCH DRAIN SHALL HAVE EJIW 6951 FRAME W/ TYPE M2 LID.
9. SEE SHEETS C-803, C-804, & C-805 FOR DETAILS.
10. USE LOW COVER MANHOLES AS APPLICABLE.

STORMWATER SYSTEM MAINTENANCE:

STORMWATER DRAINAGE STRUCTURES WITH OPEN/GRATED COVERS SHALL HAVE DEBRIS AND TRASH REMOVED FROM THE GRATING EACH SPRING AFTER SNOWMELT, AND EACH AUTUMN AFTER LEAVES FALL. STORMWATER STRUCTURES AND PIPES SHALL BE INSPECTED FOR SEDIMENTATION EVERY 12 MONTHS, AND INSPECTION SHALL OCCUR DURING THE SUMMER MONTHS. SEDIMENT SHALL BE REMOVED FROM CATCH BASINS IF THE DEPTH OF DEPOSITS IS GREATER THAN OR EQUAL TO ONE-THIRD (1/3) THE DEPTH FROM THE BOTTOM OF SUMP TO THE INVERT OF THE OUTLET PIPE OR WHEN A TOTAL OF 8 INCHES OF SEDIMENT HAS ACCUMULATED, WHICHEVER HAPPENS FIRST, IF A CATCH BASIN SIGNIFICANTLY EXCEEDS THE ONE-THIRD DEPTH STANDARD DURING THE ANNUAL INSPECTION, THEN IT SHOULD BE INSPECTED EVERY 6 MONTHS. SEDIMENT SHALL BE REMOVED FROM PIPES ONCE IT ACCUMULATES TO ONE-THIRD THE DIAMETER OF THE PIPE. THE DETENTION POND AND FOREBAY SHALL BE INSPECTED FOR SEDIMENTATION EVERY 12 MONTHS, AND INSPECTION SHALL OCCUR DURING THE SUMMER MONTHS. SEDIMENT SHALL BE REMOVED FROM THE BOTTOM OF THE DETENTION POND AND FOREBAY WHEN 8" OF ACCUMULATED SEDIMENT CAN BE MEASURED IN ANY ONE LOCATION. THE STONE OUTLET STANDPIPES IN THE BASIN AND FOREBAY SHALL BE INSPECTED EACH YEAR FOR SEDIMENTATION WITHIN THE STONES. IF THE STONE HAS ACCUMULATED SEDIMENT, VEGETATION, AND/OR DEBRIS TO AN EXTENT THAT WATER IS BEING RESTRICTED THROUGH THE STONE, THEN THE STONE SHOULD BE REPLACED WITH CLEAN 3" DIAMETER STONE CHOKED WITH CLEAN 6A STONE.

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SITE STORM WATER MANAGEMENT PLAN

SCALE: 1" = 30'

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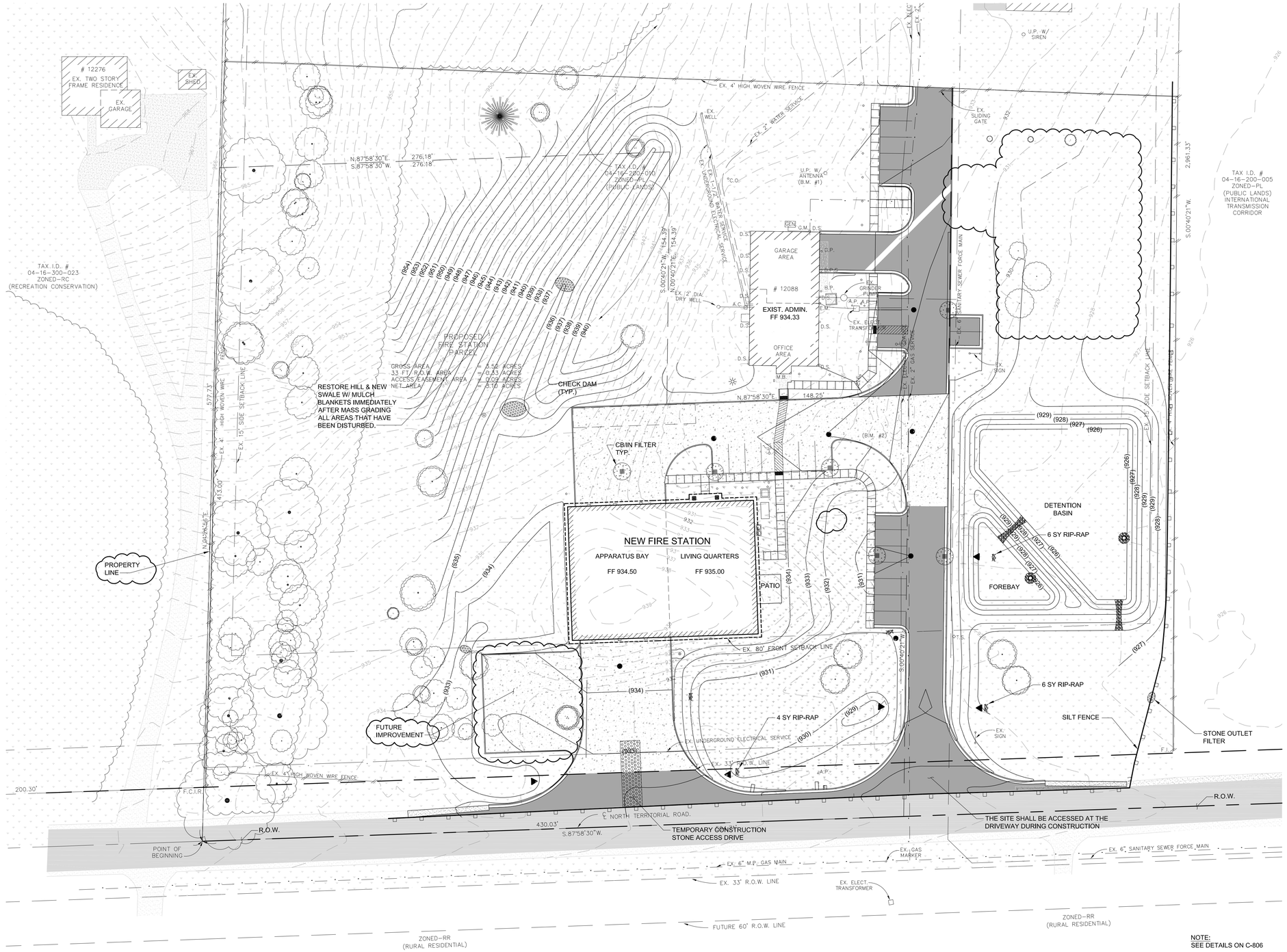
Approved:	C. LEACH

Sheet Title:
SITE STORM WATER MANAGEMANT PLAN

Project Number: 14049

Sheet Number: C-240



NOTE:
SEE DETAILS ON C-806

N

SOIL EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1" = 30'

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10/13/14	ADDENDUM #5
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01/22/15	AMEND. FINAL SPA/FINAL ENG.

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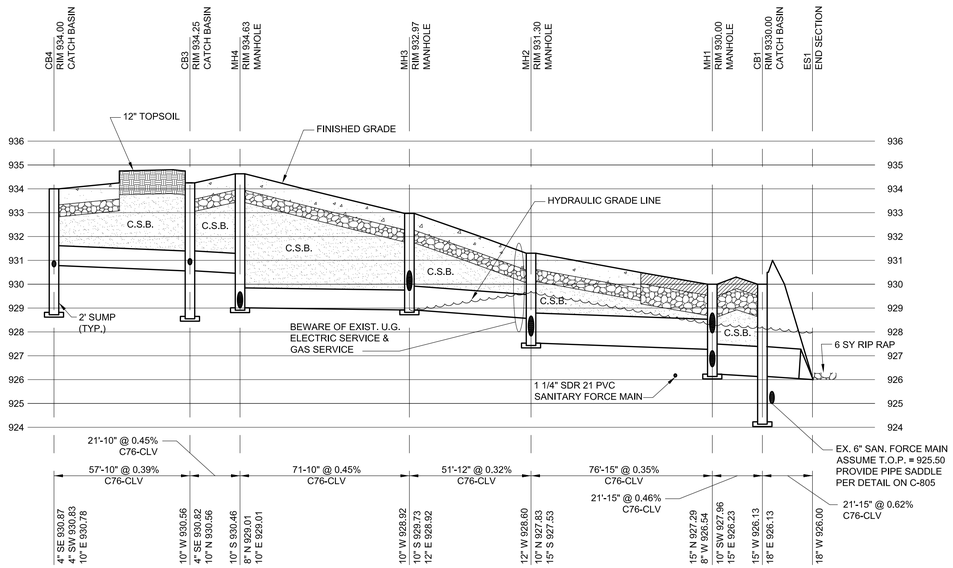
Approved:	C. LEACH

Sheet Title:
SOIL EROSION AND SEDIMENT CONTROL PLAN

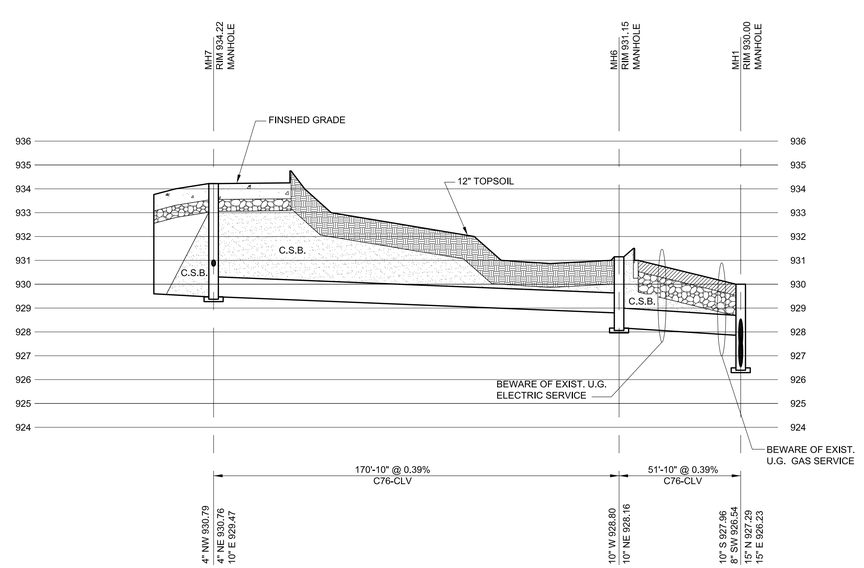
Project Number: 14049

Sheet Number: C-250



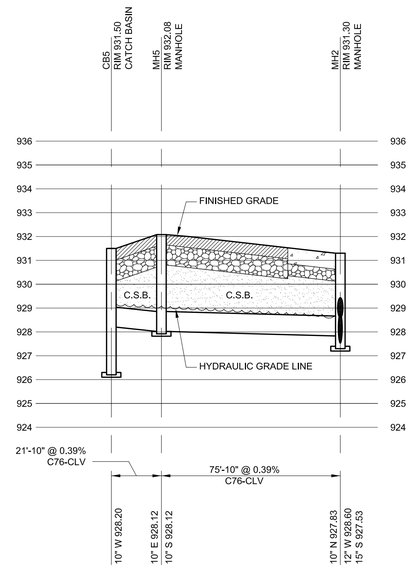
STORM SEWER PROFILE

SCALE:1"=3' VERT.
SCALF:1"=30' HORIZ.



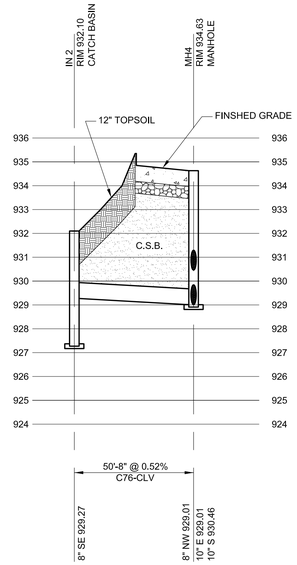
STORM SEWER PROFILE

SCALE:1"=3' VERT.
SCALF:1"=30' HORIZ.



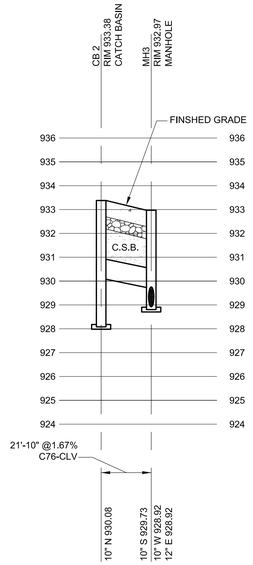
STORM SEWER PROFILE

SCALE:1"=3' VERT.
SCALF:1"=30' HORIZ.



STORM SEWER PROFILE

SCALE:1"=3' VERT.
SCALF:1"=30' HORIZ.



STORM SEWER PROFILE

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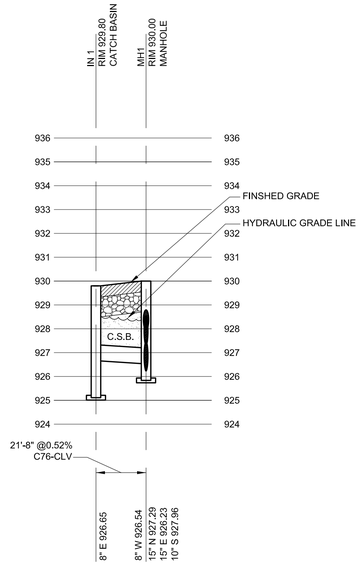
SCALF:1"=30' HORIZ.



STORM SEWER PROFILE

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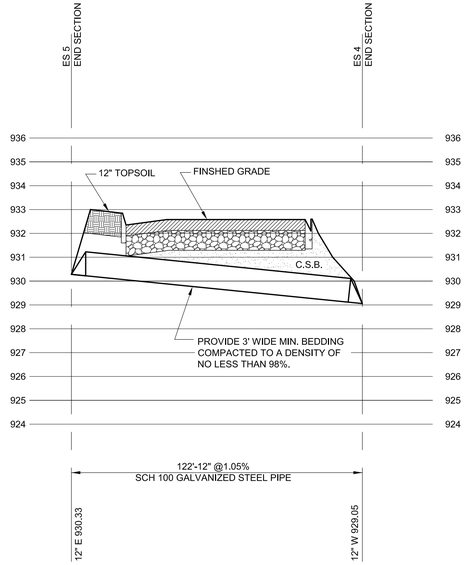
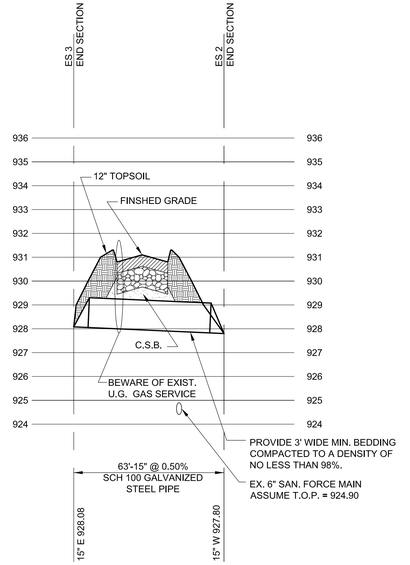
SCALF:1"=30' HORIZ.



STORM SEWER PROFILE

SCALE:1"=3' VERT.
SCALF:1"=30' HORIZ.



STORM SEWER PROFILE

SCALE:1"=3' VERT.
SCALF:1"=30' HORIZ.

NOTE:
1. ALL MANHOLES ARE 4'Ø UNLESS NOTED OTHERWISE.
2. PROVIDE COMPACTED SAND BACKFILL (C.S.B.) BELOW ALL PAVEMENT AND AS INDICATED.

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Key Plan:

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Project:
NEW FIRE
SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

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Checked:	C. LEACH
Approved:	C. LEACH

Sheet Title:
STORM SEWER PROFILES

Project Number: 14049

Sheet Number: C-300

DETENTION BASIN CALCULATIONS

AREA =2.29 ACRES
WEIGHTED C =0.67

RATIONAL METHOD

Q=CIA

$I = \frac{151.8}{T+19.9} = \frac{151.8}{15+19.9} = 4.35$

$Q_{10} = (0.67)(4.33)(2.29) = 6.67$ CFS 10-YEAR EVENT

100-YEAR VOLUME

$Q_A = (0.15\ CFS/Ac)A = (0.15\ CFS/Ac)(2.29\ Ac) = 0.3435$ CFS

$Q_{AC} = \frac{Q_A}{AC} = \frac{0.3435\ CFS}{(2.29\ Ac)(0.67)} = 0.224$ CFS/Ac

$T = -25 + V(10,312.5/Q_O) = -25 + V(10,312.5/0.224) = 189.62$Min

$V_R = \frac{16,500T}{T+25} - 400Q_OT = \frac{16,500(189.62)}{189.62+25} - (400)(0.224)(189.62) = 12,879.00$ CF/Ac

$V_T = V_RAC = (12,879.00\ CF/Ac)(2.29\ Ac)(0.67) = 19,760$ CF REQ'D

BANKFULL FLOOD

$V_{BF} = (2.25")(1'/12")(43,560\ SF/1\ Ac)AC = 8,167.5AC = 8,167.5(2.29)(0.67) = 12,531$ REQ'D

FIRST FLUSH

$V_{FF} = (0.5")(1'/12")(43,560\ SF/1\ Ac)AC = 1,815AC = 1,815(2.29)(0.67) = 2,785$ CF REQ'D

STORAGE PROVIDED

FOREBAY VOLUME			
ELEV.	AREA (FT^2)	INC. VOL. (FT^3)	Σ VOL. (FT^3)
926.00	1,182	1,428	1,428
927.00	1,573	1,947	3,374
928.00	2,220		

DETENTION BASIN VOLUME			
ELEV.	AREA (FT^2)	INC. VOL. (FT^3)	Σ VOL. (FT^3)
926.00	6,575	7,104	7,104
927.00	7,633	8,190	15,294
928.00	8,747		

TOTAL STORAGE = FOREBAY + MAIN BAY = 3,375 + 15,294 = 18,668 FT^3

STORAGE ELEVATIONS

FIRST FLUSH = $\frac{928.00-927.00}{3,374-1,428} = \frac{Z_{FF}-927.00}{2,785-1,428} \rightarrow Z_{FF} = 927.70$

VOLUME REMAINING IN FOREBAY = $V_{FB} - V_{FF} = 3,374 - 2,785 = 589\ FT^3$

MAIN BAY + VOLUME RAMIAINGN IN FOREBAY = 15,294 + 589 = 15,883 FT^3

BANKFULL == $\frac{928.00-927.00}{15,294-7,104} = \frac{Z_{BF}-927.00}{12,531-7,104} \rightarrow Z_{BF} = 927.65$

FOREBAY STANDPIPE OUTLET CONTROL STRUCTURE

$Q_{FF} = V_{FB}/T_{24} = 2,785/(24\ HR*3600\ SEC/1\ HR) = 0.032$CFS

$h_{WS} = (2/3)(El_{WT} - El_{SOT}) = (2/3)(927.70 - 926.00) = 1.13$ FT

ORIFICE FORMULA ASSUMING 4" (0.33') PIPE

$Q_A = 0.62(A_O)[2Gh]^{1/2}$

$h = (2/3)(z_{FF} - z_{SOT}) = (2/3)(927.70 - 926.00) = 1.13$ FT

$A_O = \frac{Q_{FF}}{0.62[2Gh]^{1/2}} = \frac{0.032}{(0.62)[(2)(32.2)(1.13)]^{1/2}} = 0.00804$ SF

DIAMETER ORIFICE (D_O) = $(4A_O/\pi)^{1/2} = [(4)(0.00804)/\pi]^{1/2} = 0.0877$ FT = 1.05 IN

USE 1" RESTRICTION IN 4" OUTLET PIPE

$A_{OT} = \pi r^2 = \pi(2")^2(1\ FT^2/12^2\ IN^2) = 0.0873\ FT^2$

$A_{1"} = \pi r^2 = \pi(0.5")^2(1\ FT^2/12^2\ IN^2) = 0.00545\ FT^2$

$Q_{ACT} = 0.62A_{1"}\sqrt{64.4H} = (0.62)(0.00545)\sqrt{(64.4 \times 1.33)} = 0.0313$ CFS

$T_{FF} = V_{FF} / (Q_{ACT}3,600) = 2,785/(0.0313)(3,600) = 24.7$ Hrs > 24 Hrs

FOREBAY RISER OUTLET PIPE SLOPE

$S = [nQ/1.489A_OR^{2/3}]^2 = [(0.012)(0.0313) / (1.486)(0.0873)(0.083^{2/3})]^2 = 0.0147 = 1.47\%$
n = 0.012
$Q_{ACT} = 0.0313$
R = 0.33/4 = 0.083
$A_{OT} = 0.0873\ FT^2$

SPILLWAY DESIGN

$Q_{@3} = 4.96$ CFS

$Q = CBH^{3/2} \rightarrow B = Q/CH^{3/2} = 4.96/(3.4)(0.5^{3/2}) = 4.13$ FT → USE 5 FT WIER LENGTH @ 0.50 DEPTH

BANKFULL FLOOD

$Q_{BF} = \frac{V_{BF}}{144,000} = \frac{12,531}{144,000} = 0.0870$CFS

$h = (2/3)(z_{BF} - z_{SOT}) = (2/3)(927.66 - 926.00) = 1.11$ FT

$A_O = \frac{Q_{BF}}{0.62[2Gh]^{1/2}} = \frac{0.087O}{(0.62)[(2)(32.2)(1.11)]^{1/2}} = 0.0166$ SF

1"Ø HOLE = 0.00545 SF

= 0.0166 SF/0.00545 SF = 3.05 → USE (3) 1" Ø HOLES @ ELEV = 926.00

ORIFICE FORMULA ASSUMING 6" (0.50') PIPE

$A_O = \frac{Q_{100}}{0.62[2Gh]^{1/2}} = \frac{0.3435}{(0.62)[(2)(32.2)(1.11)]^{1/2}} = 0.0655$ SF

$D_O = (4A_O/\pi)^{1/2} = [(4)(0.0655)/\pi]^{1/2} = 0.289$ FT = 3.47 IN → USE 3 1/4" RESTRICTOR IN 6" OUTLET PIPE

RISER OUTLET PIPE SLOPE

$A_{1.25"} = \pi r^2 = \pi(1.625")^2(1\ FT^2/12^2\ IN^2) = 0.0576\ FT^2$

$Q_{ACT} = 0.62A_{1.25"}\sqrt{64.4H} = (0.62)(0.0576)\sqrt{(64.4 \times 1.33)} = 0.331 < 0.3435$CFS

$S = [nQ/1.489A_OR^{2/3}]^2 = [(0.012)(0.331) / (1.486)(0.196)(0.125^{2/3})]^2 = 0.0030 = 0.30\%$
USE 0.50% FOR 2.6 FT/S VELOCITY TO PREVENT SEDIMENTATION
n = 0.012
$Q_{ACT} = 0.331$
R = 0.5/4 = 0.125
$A_{OT} = \pi r^2 = \pi(3")^2(1\ FT^2/12^2\ IN^2) = 0.196\ FT^2$

FLOOD CONTROL VOLUME PROVIDED

$V_{FOREBAY}$ = 3,374 CF
V_{MAIN} = 15,294 CF
V_{TOTAL} = 18,668 CF @ ELEV = 928.00
V_{T100} = 19,760 CF
V_{SHORT} = 1,092 CF

DUE TO SITE CONSTRAINTS THE PROVIDED STORAGE IS 1,092 CUBIC FEET (5.5%) LESS THAN THE 100 YEAR STORM AS CALCULATED BY THE WASHTENAW COUNTY WATER RESOURCE COMMISSIONER. THIS STORMWATER SYSTEM DOES NOT OUTLET TO A COUNTY DRAIN. WASHTENAW COUNTY DRAIN CALCULATION PROVIDED ABOVE ONLY FOR REFERENCE. BY OBSERVATION THE BASIN WILL HOLD MUCH MORE THAN THE 50 YEAR STORM, THUS STATISTICALLY THE BASIN HAS THE PROBABILITY OF OVERFLOWING LESS THAN ONCE EVERY 50 YEARS.

PER DEXTER TOWNSHIP ZONING ORDINANCE SECION 24.05 (B)(1) ONE INCH OF RAIN IS REQUIRED TO BE TREATED FROM ALL IMPERVIOUS SURFACES.

TOTAL AREA BOTH IMPERVIOUS AND PERVIOUS = 2.29 ACRES
(PERVIOUS AREA INCLUDED TO BE CONSERVATIVE)

(1")(2.29 ACRES)(1 FT/12 IN)(43,560 SF/1 ACRE) = 8,313 FT^3 REQUIRED PER DEXTER ZONING
18,668 FT^3 PROVIDED (2.25 X MORE THAN REQ'D)

STORM SEWER DESIGN

Sidock Group, Inc.
ENGINEERS • ARCHITECTS • CONSULTANTS • PROJECT MANAGERS

JOB No.: 13314
NAME : Dexter F.D.
CLIENT : Dexter
PATH : N:\2014eng\14049 Dexter Twp New Fire Substation Facility\04 Civil and Survey\Calculations
DATE : 1/22/2015
TIME : 09:14 AM

STORM SEWER DESIGN - 10 YEAR STORM 01/22/15

LOCATION: Dexter, MI
STARTING TIME= 15.00
MANNING'S "n" = 0.013 — 0.010 PVC
STORM "I" = 151.8 / T+19.90

13314.00
Dexter F.D.
Dexter

Upst Str. #	Dnst Str. #	Pipe Len (L) Ft	Area #	Added Area Acres	C	AC	SUM AC	Time of Conc. (T) Min	Intensity (I) In/Hr	(ACI) (Q) Cfs	PIPE DIA (D) Inches	PIPE SLP. (S) %	V Full (V) Fps	Fl Time Min	INVERT ELEV. Upst #	Dnst #	Q (capacity) Cfs	RIM or GRADE	STR. NO.	HGL
END 5	CB 4	34	8	0.04	0.95	0.034	0.03	15.00	4.35	0.15	4	0.80	2.5	0.22	931.10	930.83	0.22	934.50	END 5	
END 6	CB 4	29	9	0.05	0.95	0.044	0.04	15.00	4.35	0.19	4	0.80	2.5	0.19	931.10	930.87	0.22	934.50	END 6	
CB 4	CB 3	57	4	0.17	0.60	0.102	0.18	15.22	4.32	0.78	10	0.39	2.5	0.38	930.78	930.56	1.37	934.00	CB 4	929.85
IN 2	MH 4	50	18	0.27	0.29	0.079	0.08	15.00	4.35	0.34	8	0.52	2.5	0.33	929.27	929.01	0.87	932.10	IN 2	929.75
END 7	CB 3	23	10	0.03	0.95	0.033	0.03	15.00	4.35	0.14	4	0.80	2.5	0.15	931.00	930.82	0.22	934.50	END 7	
CB 3	MH 4	21	3	0.07	0.55	0.037	0.25	15.60	4.28	1.07	10	0.45	2.7	0.13	929.01	928.92	1.47	934.25	CB 3	929.58
MH 4	MH 3	71	0	0.00	0.00	0.000	0.33	15.73	4.26	1.40	10	0.45	2.7	0.44	928.92	928.60	1.47	934.63	MH 4	929.46
CB 2	MH 3	21	5	0.05	0.83	0.039	0.04	15.00	4.35	0.17	10	1.67	5.2	0.07	930.08	929.73	2.84	933.38	CB 2	929.31
MH 3	MH 2	51	0	0.00	0.00	0.000	0.37	16.17	4.21	1.55	12	0.32	2.6	0.33	928.92	928.75	2.02	932.97	MH 3	928.95
CB 5	MH 5	21	2	0.38	0.51	0.197	0.20	15.00	4.35	0.86	10	0.39	2.5	0.14	928.20	928.12	1.37	931.50	CB 5	929.19
MH 5	MH 2	75	0	0.00	0.00	0.000	0.20	15.14	4.33	0.86	10	0.39	2.5	0.50	928.12	927.83	1.37	932.08	MH 5	929.09
MH 2	MH 1	76	0	0.00	0.00	0.000	0.57	16.50	4.17	2.36	15	0.35	3.1	0.41	927.53	927.26	3.83	931.30	MH 2	928.71
END 1	MH 7	26	11	0.04	0.95	0.034	0.03	15.00	4.35	0.15	4	0.80	2.5	0.17	931.00	930.79	0.22	934.50	END 1	
END 2	MH 7	30	12	0.03	0.95	0.029	0.03	15.00	4.35	0.13	4	0.80	2.5	0.20	931.00	930.76	0.22	934.50	END 2	
END 3	WYE	15	13	0.02	0.95	0.015	0.01	15.00	4.35	0.06	4	0.80	2.5	0.10	931.00	930.88	0.22	934.50	END 3	
END 4	WYE	10	14	0.03	0.95	0.033	0.03	15.00	4.35	0.14	4	0.80	2.5	0.07	931.00	930.92	0.22	934.50	END 4	
MH 7	MH 6	170	0	0.00	0.00	0.000	0.30	15.43	4.30	1.27	10	0.39	2.5	1.13	929.47	928.80	1.37	934.22	MH 7	929.73
MH 6	MH 1	51	0	0.00	0.00	0.000	0.30	16.55	4.16	1.23	10	0.39	2.5	0.34	928.16	927.96	1.37	931.15	MH 6	928.69
IN 1	MH 1	21	7	0.31	0.63	0.199	0.20	15.00	4.35	0.87	8	0.52	2.5	0.14	926.65	926.54	0.87	929.80	IN 1	928.55
MH 1	CB 1	21	0	0.00	0.00	0.000	1.06	16.90	4.12	4.38	15	0.46	3.6	0.10	926.23	926.13	4.39	930.00	MH 1	928.38
CB 1	ES 1	21	6	0.19	0.78	0.144	1.21	17.00	4.11	4.96	15	0.62	4.2	0.08	926.13	926.00	5.10	930.00	CB 1	928.21
ES 5	ES 4	122	1	2.36	0.35	0.827	0.83	15.00	4.35	3.60	12	1.05	4.7	0.44	930.33	929.05	3.66	932.00	ES 5	928.00
ES 3	ES 4	63	18	0.45	0.47	0.213	1.04	15.44	4.30	4.47	15	0.50	3.7	0.28	928.12	927.80	4.58	927.80	ES 3	

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www.sidockarchitects.com

Key Plan:

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
08/20/14	FINAL SPA/FINAL ENG
09/02/14	BIDS
10/13/14	REV. FINAL SPA/FINAL ENG.
10/13/14	ADDENDUM #5
01/22/15	AMEND. FINAL SPA/FINAL ENG.

Drawn: S. MANOS
Checked: C. LEACH
Approved: C. LEACH

Sheet Title:
CALCULATIONS

Project Number: 14049

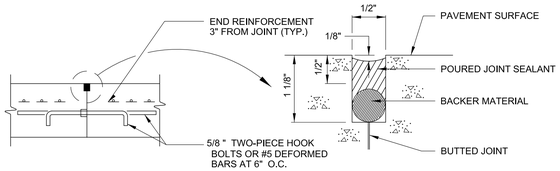
Sheet Number: C-400

M:\2014\14049 Dexter Township New Fire Substation No 2\05 Civil and Survey\C-400 CALCULATIONS.dwg Mon, 20 Apr 2015 - 11:43am

NOTES:

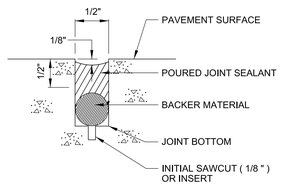
1. NORMALLY END PAVING AT PLANNED JOINTS.

2. IF PAVING IS UNAVOIDABLY INTERRUPTED MORE THAN 1/2 HOUR BETWEEN PLANNED JOINTS:
   A. WITHIN 10' OF JOINT BEHIND, REMOVE CONCRETE, MODIFY TO TYPE "E".
   B. WITHIN 10' OF JOINT AHEAD, REMOVE CONCRETE TO 10' FROM JOINT AHEAD AND PLACE THIS JOINT.
   C. MORE THAN 10' FROM A JOINT, PLACE THIS JOINT.



PAVING INTERRUPTION

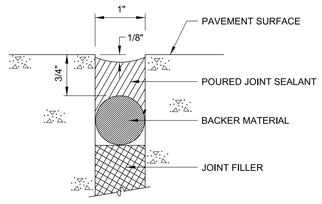
NOTE:
RELIEF GROOVE: SAW CUT, INSERT, OR FORMED GROOVE, 1/8" WIDE X 2 1/2" MIN.



TYPE C

JOINT SEAL

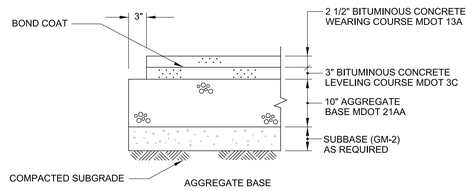
NOTE:
RELIEF GROOVE: SAW CUT, INSERT, OR FORMED GROOVE, 1/8" MAX X 2 1/2" MIN.
SAW CUT 1/2" MIN INTO JOINT FILLER.



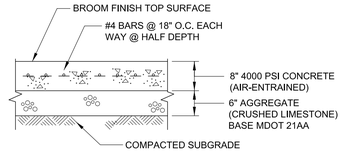
TYPE E

JOINT SEAL

NOTE:
PROVIDE 2" EXTRA THICKNESS OF BITUMINOUS CONCRETE AT MANHOLES, CATCH BASINS, ETC. TAPER TO NORMAL THICKNESS IN 3'-0".

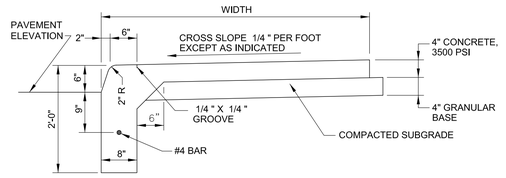


HEAVY DUTY ASPHALT PAVEMENT

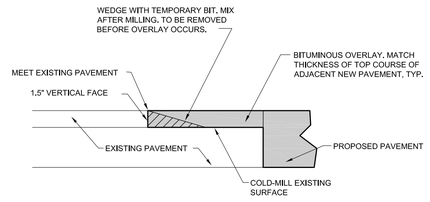


CONCRETE PAVEMENT

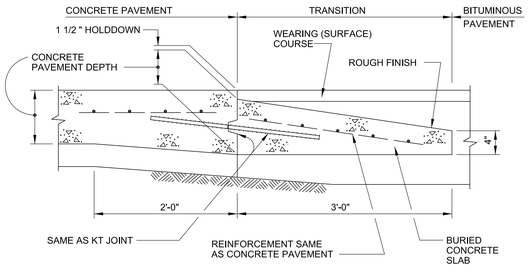
NOTES:
1. EXPANSION JOINTS: 1/2 " WIDE JOINT FILLER, FULL DEPTH:
   - AT 50 FOOT INTERVALS TRANSVERSELY.
   - AROUND EMBEDDED ITEMS SUCH AS LIGHT BASES.
   - AT ABUTTING STRUCTURES SUCH AS BUILDINGS OR CURBS.
2. CONTRACTION (PLANE OF WEAKNESS) JOINTS: 1/4 " WIDE, 1" DEEP GROOVE, ARRANGE TO FORM PANELS 6' MAXIMUM IN EITHER DIRECTION.
3. TACTILE WARNING TEXTURE: PROVIDE ON RAMPS AND NEAR TOP OF STAIRS.



INTEGRAL CURB & WALK

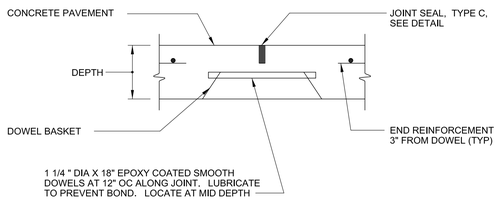


BUTT JOINT DETAIL



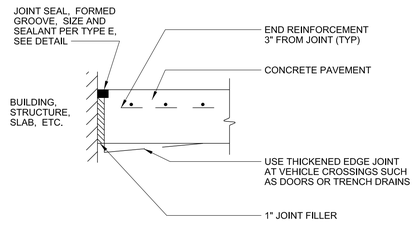
TYPE (SYMBOL) CB

TRANSITION JOINT



TYPE (SYMBOL) C

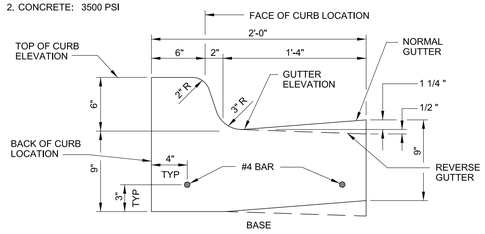
CONTRACTION JOINT



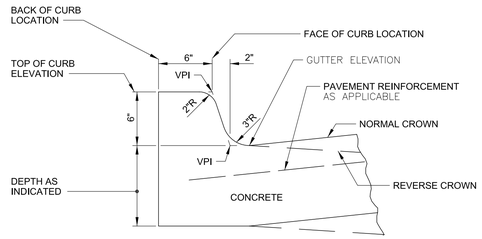
TYPE (SYMBOL) EE

EDGE EXPANSION JOINT

NOTES:
1. USE NORMAL OR REVERSE GUTTER TO EXTEND THE SLOPE OF THE ADJACENT PAVEMENT EXCEPT AS INDICATED.
2. CONCRETE: 3500 PSI

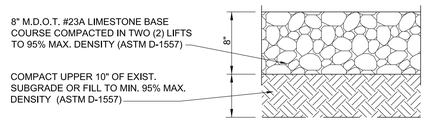


CURB & GUTTER



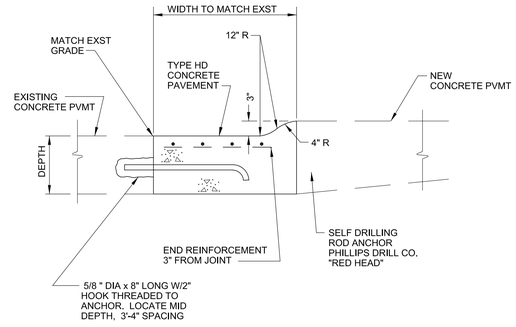
TYPE S

INTEGRAL CURB



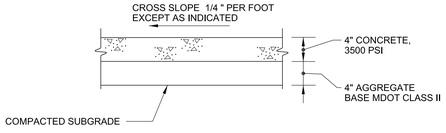
GRAVEL TRAINING PAD SECTION

(N.T.S.)



MOUNTABLE CURB

NOTES:
1. EXPANSION JOINTS: 1/2 " WIDE JOINT FILLER, FULL DEPTH:
   - AT 50 FOOT INTERVALS TRANSVERSELY.
   - AROUND EMBEDDED ITEMS SUCH AS LIGHT BASES.
   - AT ABUTTING STRUCTURES SUCH AS BUILDINGS OR CURBS.
2. CONTRACTION (PLANE OF WEAKNESS) JOINTS: 1/4 " WIDE, 1" DEEP GROOVE, ARRANGE TO FORM PANELS 6' MAXIMUM IN EITHER DIRECTION.
3. TACTILE WARNING SURFACE: PROVIDE NEAR TOP OF STAIRS AND RAMPS.
4. BROOM FINISH



CONCRETE WALK

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Gaylord, Michigan 49735
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Key Plan:

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

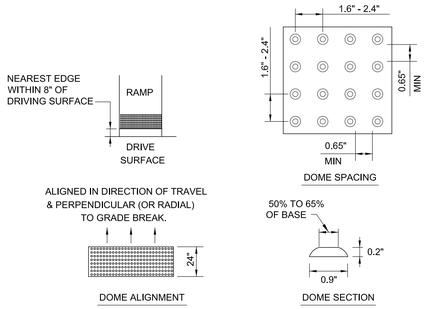
Date	Issued For
05/23/14	PRELIMINARY SPA
05/29/14	INTERNAL REVIEW
07/02/14	PRELIMINARY SPA
07/08/14	WCRC PERMIT
08/20/14	REVISED PRELIMINARY SPA
08/20/14	FINAL SPA/FINAL ENG.
09/02/14	BIDS
10/13/14	REV. FINAL SPA/FINAL ENG.
10/13/14	ADDENDUM #5

Drawn:	S. MANOS
Checked:	C. LEACH
Approved:	C. LEACH

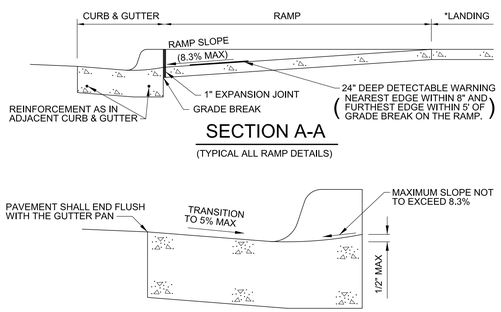
Sheet Title:
DETAILS - PAVING

Project Number: 14049

Sheet Number: C-801



DETECTABLE WARNING DETAILS



SECTION A-A

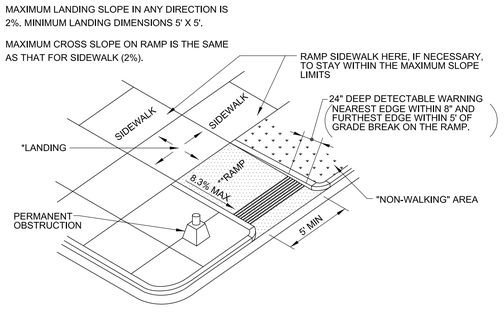
(TYPICAL ALL RAMP DETAILS)

SECTION THRU CURB CUT

(TYPICAL ALL RAMP TYPES)

* MAXIMUM LANDING SLOPE IN ANY DIRECTION IS 2%. MINIMUM LANDING DIMENSIONS 5' X 5'.

** MAXIMUM CROSS SLOPE ON RAMP IS THE SAME AS THAT FOR SIDEWALK (2%).



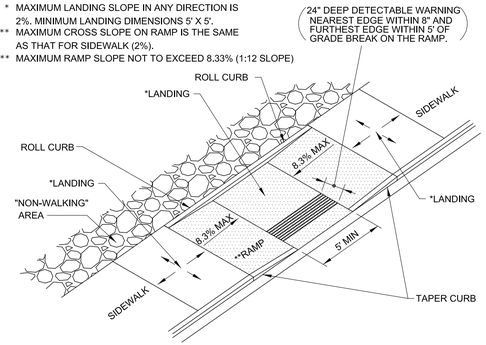
SIDEWALK RAMP TYPE R

(ROLLED SIDES)

* MAXIMUM LANDING SLOPE IN ANY DIRECTION IS 2%. MINIMUM LANDING DIMENSIONS 5' X 5'.

** MAXIMUM CROSS SLOPE ON RAMP IS THE SAME AS THAT FOR SIDEWALK (2%).

*** MAXIMUM RAMP SLOPE NOT TO EXCEED 8.33% (1:12 SLOPE)



SIDEWALK RAMP

(PARALLEL RAMP)

ALL RAMPS SHALL CONFORM TO THE MDOT R-28-H SPECIFICATION.

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION OR ALTERATION OF STREETS, CURBS, OR SIDWALKS BY ALL PUBLIC AGENCIES AND BY ALL PRIVATE ORGANIZATIONS CONSTRUCTING FACILITIES FOR PUBLIC USE.

SIDEWALK RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS ORAS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTIONWHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPSSHALL ALSO BE PROVIDED AT MARKED AND/OR SIGNALIZED MID-BLOCK-CROSSINGS.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE RUNNING SLOPE.

SIDWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP, WHERE CONDITIONS PERMIT. IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION. PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICPALITY.

PROVIDE TURNING SPACES WHERE PEDESTRIAN TURNING MOVEMENTS ARE REQUIRED.

WHEN 5' MINIMUM WIDTHS ARE NOT FEASIBLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4' AND TURNING SPACES TO NOT LESS THAT 4' X 4'.

DETECTABLE WARNING SURFACE COVERAGE IS 24" MINIMUM IN THE DIRECTION OF RAMP/PATH TRAVEL AND THE FULL WIDTH OF THE RAMP/PATH OPENING EXCLUDING CURBED OR FLARED CURB TRANSITION AREAS. A CURB OFFSET NOT GREATER THAN 2" MEASURED ALONG THE EDGES OF THE DETECTABLE WARNING ***(OR OTHERWISE SHOWN ON THIS STANDARD)*** IS ALLOWABLE.

FOR NEW ROADWAY CONSTRUCTION, THE RAMP CROSS SLOPE MAY NOT EXCEED 2%. FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE MAY BE TRANSTIONED TO MEET AN EXISTING ROADWAY GRADE. THE CROSS SLOPE TRANSITION SHALL BE APPLIED UNIFORMLY OVER THE FULL LENGTH OF THE RAMP.

THE MAXIMUM RUNNING SLOPE OF 8.3% IS RELATIVE TO A FLAT (0%) REFERENCE. HOWEVER, IT SHALL NOT REQUIRE ANY RAMP OR SERIES OR RAMPS TO EXCEED 15 FEET IN LENGTH.

DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS. THE LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER THE LOCATION OF THE DRAINAGE STRUCTURE. WHERE EXISTING DRAINAGE STRUCTURES ARE LOCATED IN THE RAMP PATH OF TRAVEL. USE A MANUFACTURE'S ADA COMPLIANT GRATE. OPENINGS SHALL NOT BE GRATER THAN ½". ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LOND DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

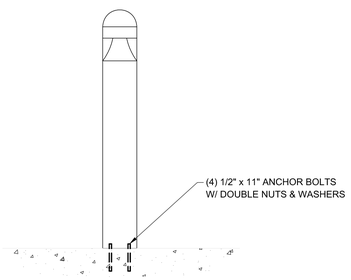
TRANSITION THE GUTTER PAN CROSS SECTION SUCH THAT THE COUNTER SLOPE IN THE DIRECTION OF RAMP TRAVEL IS NOT GREATER THAN 5%, MAINTAIN THE NORMA GUTTER PAN CROSS SECTION ACROSS DRAINAGE STRUCTURES.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

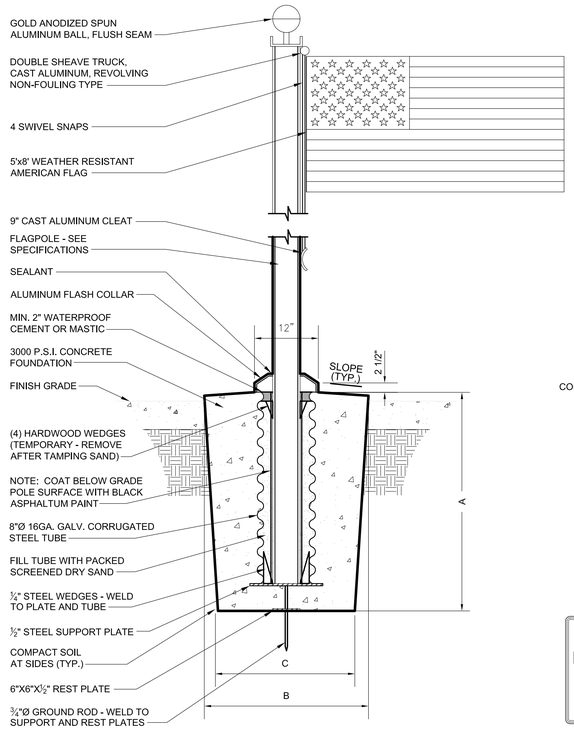
CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFICE SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".

FLARED SIDES WITH A SLOPE OF 10% MAXIMUM. MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED CIRCULATION PATH LATERALLY CROSSES THE SIDEWALK RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPAVED SURFACE OR PERMANENT FIXED OBJECTS. WHERE THEY ARE NOT REQUIRED, FLARED SIDES CAN BE CONSIDERED IN ORDER TO AVOID SHARP CURB RETURNS AT RAMP OPENINGS.

DETECTABLE WARNING PLATES MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR HEAVING.



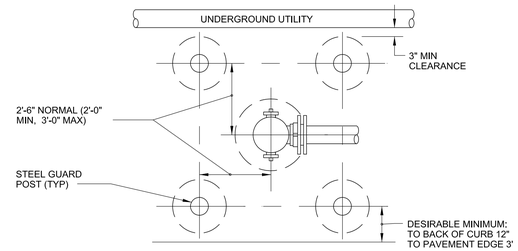
LIGHT BOLLARD DETAIL



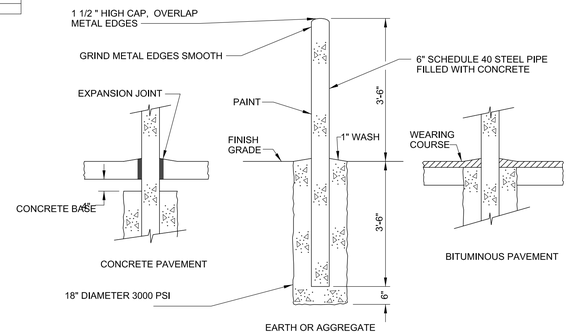
35' FLAGPOLE & FOUNDATION

GROUND SLEEVE SPECIFICATIONS					
SHAFT FOUNDATION DIMENSIONS					
HEIGHT	BUTT DIA.	SLEEVE DIA.	DEPTH A	DEPTH B	DEPTH C
35'	5"	8"	4'0"	36"	30"

NOTE: THIS DRAWING IS SCHEMATIC AND ILLUSTRATES A SINGLE PROTECTED UNIT SUCH AS A HYDRANT. PROVIDE A SIMILAR POST ARRANGEMENT FOR MULTIPLE UNITS.

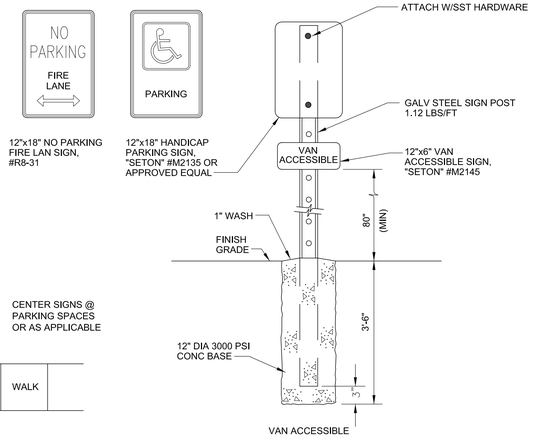


SCHEMATIC PLAN



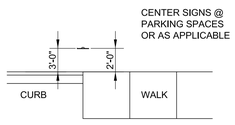
TYPICAL SECTIONS

PROTECTION BOLLARD



12"x18" NO PARKING FIRE LAN SIGN, #R8-31

12"x18" HANDICAP PARKING SIGN, "SETON" #M2135 OR APPROVED EQUAL



SIGN LOCATION DIAGRAM

HANDICAPPED PARKING SIGN MOUNTING

SIGNAGE NOTE:
ALL SIGNS SHALL CONFORM TO THE MUTCD 2009 EDITION

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Gaylord, Michigan 49735
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Key Plan:

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
05/23/14	PRELIMINARY SPA
05/29/14	INTERNAL REVIEW
07/02/14	PRELIMINARY SPA
07/08/14	WCRC PERMIT
08/20/14	REVISED PRELIMINARY SPA
08/20/14	FINAL SPA/FINAL ENG
09/02/14	BIDS
10/13/14	REV. FINAL SPA/FINAL ENG.

Drawn:	S. MANOS
Checked:	C. LEACH
Approved:	C. LEACH

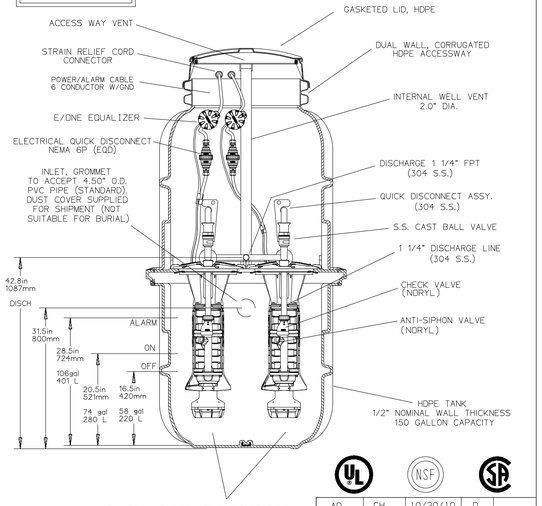
Sheet Title:
DETAILS - SURFACE FEATURES

Project Number: 14049

Sheet Number: C-802

OPTIONS : ☐ DH152 (HARD WIRED LEVEL CONTROLS)
☐ DR152 (WIRELESS LEVEL CONTROLS)

FIELD JOINT REQUIRED FOR MODELS



CONCRETE BALLAST MAY BE REQUIRED SEE INSTALLATION INSTRUCTIONS FOR DETAILS

NOTE: DIMENSIONS ARE FOR REF ONLY

AD	CH	10/20/10	D	
DR BY	CHK'D	DATE	ISSUE	SCALE

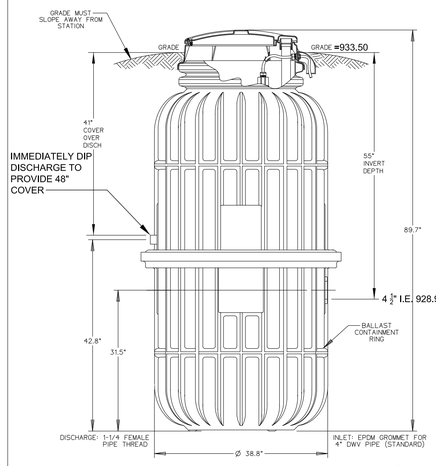
e/one SEWER SYSTEMS

MODEL DH152 / DR152 DETAIL SHEET

NA0052P02

CONTACT DUBOIS-COOPER ASSOCIATES FOR PURCHASING OF EONE PUMP STATION
(313) 920-7064
905 DENNIMAN - P.O. BOX 6161
PLYMOUTH, MI 48170

OPTIONS : ☐ DH152-93 (HARD WIRED LEVEL CONTROLS)
☐ DR152-93 (WIRELESS LEVEL CONTROLS)



CONCRETE BALLAST MAY BE REQUIRED SEE INSTALLATION INSTRUCTIONS FOR DETAILS

NOTE: DIMENSIONS ARE FOR REF ONLY

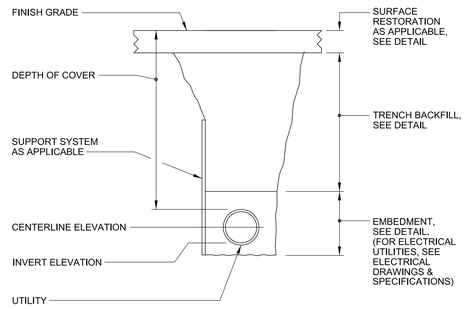
AD	CAH	7/13/07	B	1/16
DR BY	CHK'D	DATE	ISSUE	SCALE

e/one SEWER SYSTEMS

MODEL DH152-93 / DR152-93

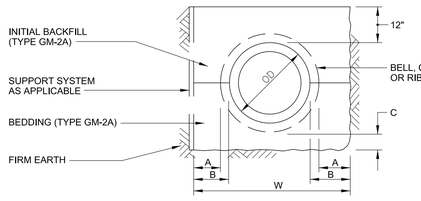
NA0052P04

NOTES:
1. "UTILITY" INCLUDES WATER MAINS, CULVERTS, SEWERS, OTHER SITE UNDERGROUND PIPING; AND ELECTRICAL CONDUITS, CONCRETE ENCASED DUCTS, AND DIRECT BURIAL CABLES.
2. SUPPORT SYSTEM: PROVIDE AS REQUIRED FOR EXCAVATION PROTECTION, AS INDICATED, AND TO ALLOW REQUIRED COMPACTION. MAINTAIN COMPACTION DURING REMOVAL.



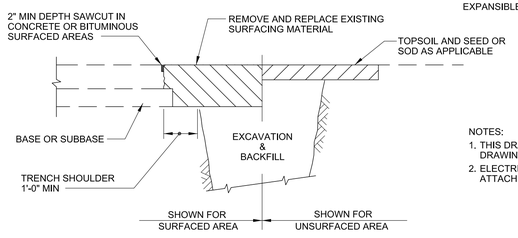
UTILITY/TRENCH

NOTES:
1. DIMENSIONS: A=6" MIN; B=8" MIN; W=1 1/4 OD MIN IN ROCK; C= 1/8 OD 4" MIN IN EARTH, 6" MIN IN ROCK.
2. BEDDING: SHAPE TO PROVIDE FULL LENGTH SUPPORT FOR PIPE BARREL AND TO PREVENT POINT LOADING AT BELL, COUPLING, OR RIB.



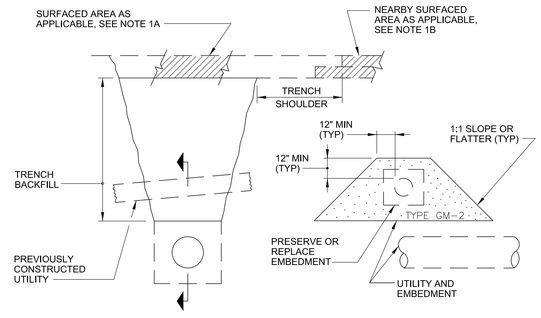
CLASS 1.5

EMBEDMENT



SURFACE RESTORATION

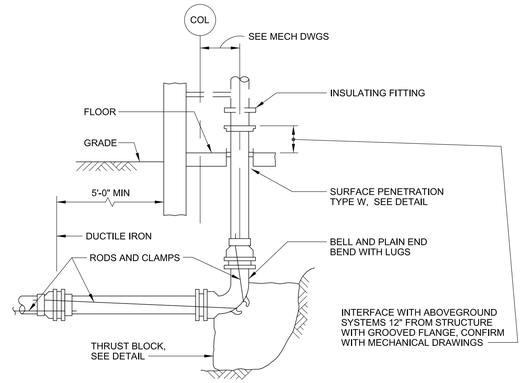
NOTES:
1. TRENCH BACKFILL TYPE GM-2:
   A. UNDER PORTLAND CEMENT OR BITUMINOUS CONCRETE, OR AGGREGATE SURFACED AREAS, SUCH AS ROADS, WALKS, PARKING LOTS, OR SHOULDERS, INCLUDING TRENCHES IN EXISTING OR FUTURE LOCATIONS.
   B. WHERE TRENCH SHOULDER IS 2'-0" OR LESS.
   C. UNDER PREVIOUSLY-CONSTRUCTED UTILITIES, SEE SECTION.
   D. WITHIN BUILDING WALL LINES
2. TRENCH BACKFILL TYPE E:
   ALLOWED FOR OTHER EXTERIOR AREAS IF OTHER TYPES ARE NOT INDICATED. TYPE GM-2 MAY BE SUBSTITUTED.



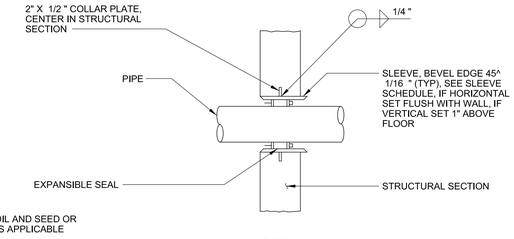
SCHEMATIC TRENCH SECTION

TRENCH BACKFILL

NOTES:
1. THIS DRAWING IS SCHEMATIC. SEE MECHANICAL/STRUCTURAL/ARCHITECTURAL DRAWINGS FOR STRUCTURE, LOCATION DIMENSIONS, FOUNDATIONS, WATERPROOFING, ETC.
2. ELECTRICAL ISOLATION: PLACE INSULATING FITTING UPSTREAM OF BUILDING ATTACHMENT/SUPPORT.



WATER SERVICE ENTRY DETAIL THRU FLOOR



TYPE W

SURFACE PENETRATION

NOTES:
1. THIS DRAWING IS SCHEMATIC. SEE MECHANICAL/STRUCTURAL/ARCHITECTURAL DRAWINGS FOR STRUCTURE, LOCATION DIMENSIONS, FOUNDATIONS, WATERPROOFING, ETC.
2. ELECTRICAL ISOLATION: PLACE INSULATING FITTING UPSTREAM OF BUILDING ATTACHMENT/SUPPORT.

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Key Plan:

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
05/23/14	PRELIMINARY SPA
05/29/14	INTERNAL REVIEW
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08/20/14	FINAL SPA/FINAL ENG
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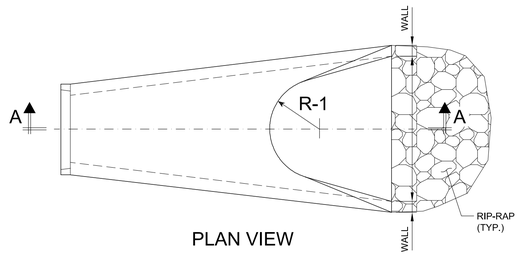
01/22/15	AMEND. FINAL SPA/FINAL ENG.

Drawn:	S. MANOS
Checked:	C. LEACH
Approved:	C. LEACH

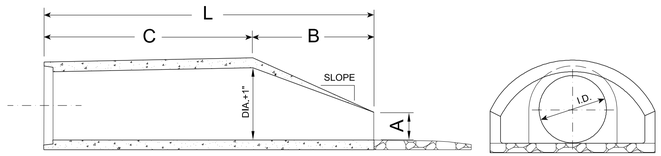
Sheet Title:
DETAILS - WATER & SANITARY SERVICE

Project Number: 14049

Sheet Number: C-803



PLAN VIEW



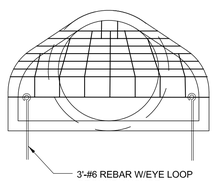
SECTION 'A-A'

FRONT VIEW

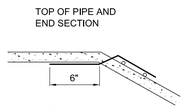
STANDARD DIMENSIONS

PIPE DIA. (In.)	SLOPE	WALL (In.)	A	B	C	L	E	R-1	WT. PER SECTION (lbs.)	RIP-RAP REQUIRED (y)
12	2.2:1	2	4"	2'-0"	4'-1"	6'-1"	2'-0"	9"	530	4
15	2.2:1	2 1/4	6"	2'-3"	3'-10"	6'-1"	2'-8"	11"	740	4
18	2.2:1	2 1/2	9"	2'-3"	3'-10"	6'-1"	3'-0"	1'-0"	990	6
21	2.2:1	2 3/4	9"	2'-11"	3'-2"	6'-1"	3'-6"	1'-0"	1,280	10
24	2.4:1	3	10"	3'-8"	2'-6"	6'-2"	4'-0"	1'-2"	1,520	12
27	2.4:1	3 1/4	10 1/2"	4'-0"	1'-1 1/2"	6'-1 1/2"	4'-6"	1'-2 1/2"	1,930	14
30	2.4:1	3 1/2	12"	4'-6"	1'-8"	6'-2"	5'-0"	1'-3"	2,190	16
33	2.4:1	3 3/4	13"	4'-11"	3'-3"	8'-2"	5'-6"	1'-3"	3,150	18
36	2.4:1	4	15"	5'-3"	2'-11"	8'-2"	6'-0"	1'-10"	4,100	20

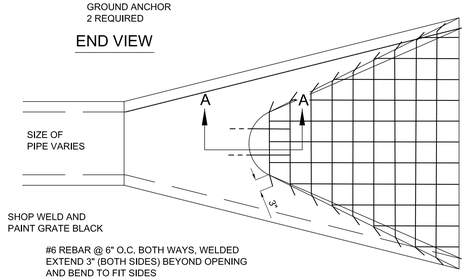
CONCRETE END SECTIONS



END VIEW

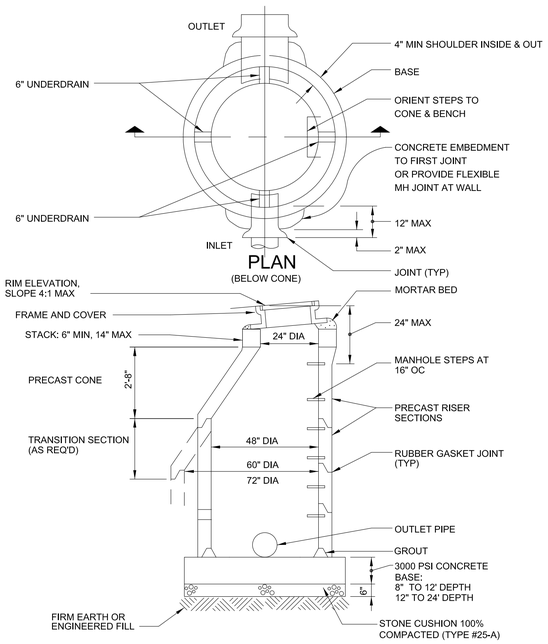


SECTION A-A



PLAN VIEW

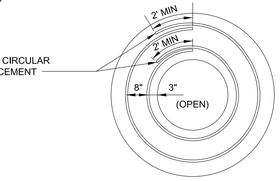
END SECTION BAR GRATE



SECTION

STANDARD STORM MANHOLE

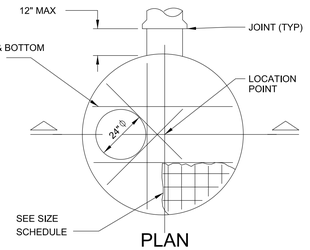
NOTES:
1. REFERENCE: COMPLY WITH REQUIREMENTS OF STANDARD MANHOLE, EXCEPT AS INDICATED.
2. HEADROOM: WHERE 5'-0" OR MORE, OMIT SUMP AND PROVIDE CONCRETE CHANNEL AS SHOWN BY DASHED LINES.
3. PRECAST FLAT SLAB: DESIGN BASIS, 16,000 LB WHEEL LOAD, 4000 PSI CONCRETE.
4. PROVIDE 20 LF OF 6" UNDERDRAIN AT 4 LOCATION PER MANHOLE. SLOPE AWAY FROM STRUCTURE AT 1.00%.



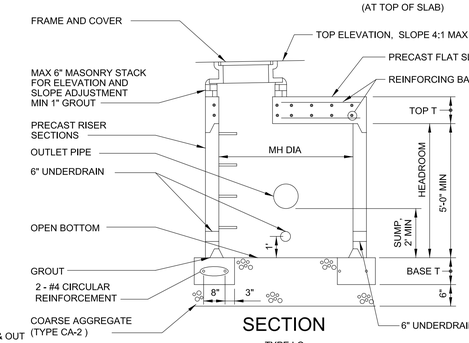
CIRCULAR REINFORCEMENT IN BASE

MH DIA	T	REINFORCING BARS (EACH WAY)	
IN	IN	TOP	BASE
48	9	#6 @ 9"	AS SHOWN
54	9	#6 @ 9"	AS SHOWN
60	12	#6 @ 9"	AS SHOWN
66	12	#6 @ 9"	AS SHOWN

SIZE SCHEDULE

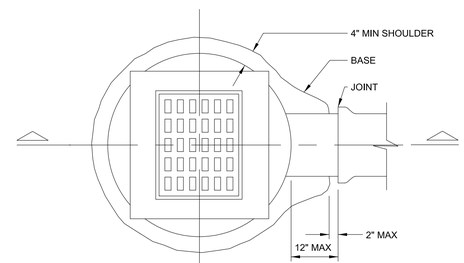


PLAN
(AT TOP OF SLAB)

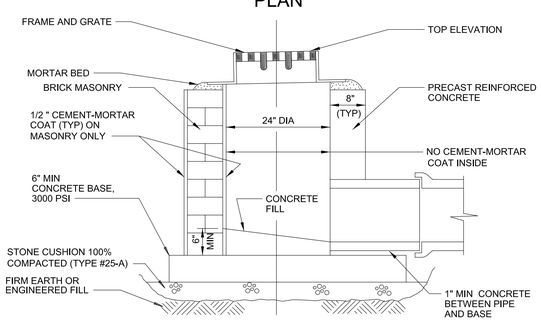


SECTION
TYPE LC

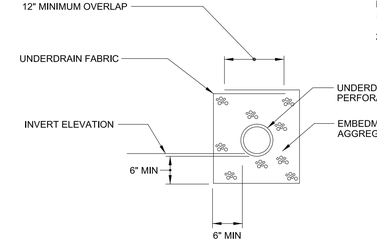
LOW COVER MANHOLE



PLAN

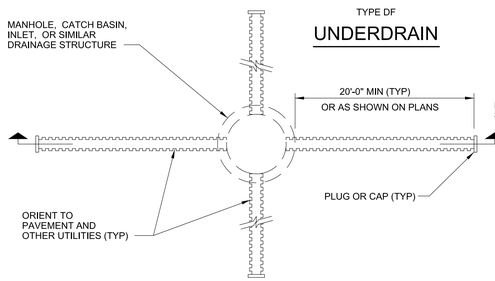


SECTION
INLET

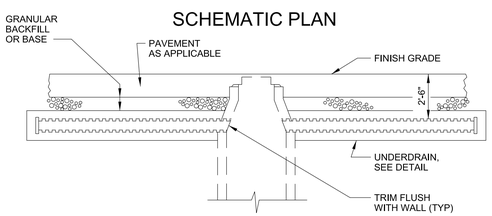


TYPE DF

UNDERDRAIN



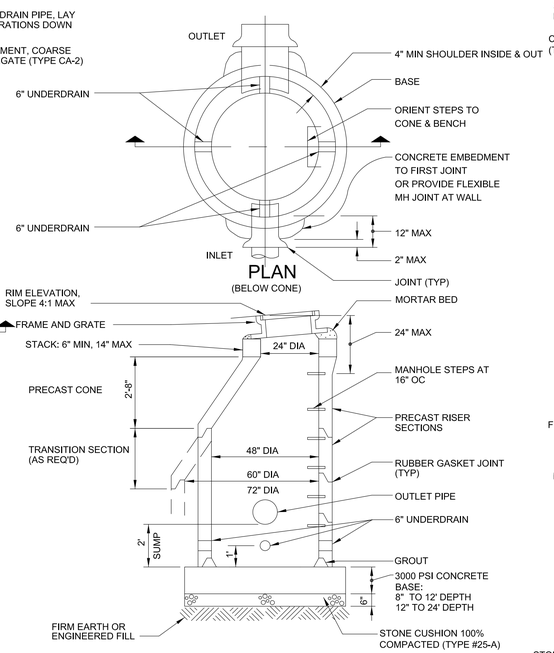
SCHEMATIC PLAN



SECTION

STUB UNDERDRAIN

NOTE:
1. PROVIDE TRANSITION SECTIONS FOR MANHOLES LARGER THAN 48" DIA.
2. PROVIDE 20 LF OF 6" UNDERDRAIN AT 4 LOCATION PER MANHOLE. SLOPE AWAY FROM STRUCTURE AT 1.00%.



SECTION

STANDARD STORM CATCHBASIN

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Key Plan:

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

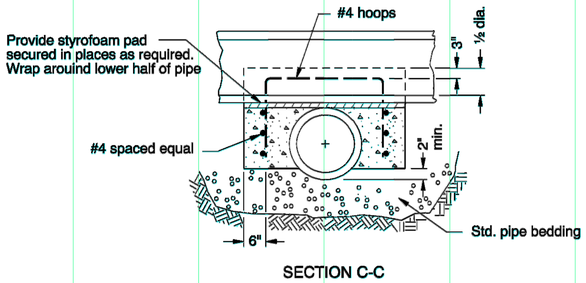
Date	Issued For
05/23/14	PRELIMINARY SPA
05/29/14	INTERNAL REVIEW
07/02/14	PRELIMINARY SPA
08/20/14	REVISED PRELIMINARY SPA
08/20/14	FINAL SPA/FINAL ENG
09/02/14	BIDS
10/13/14	REV. FINAL SPA/FINAL ENG.

Drawn:	S. MANOS
Checked:	C. LEACH
Approved:	C. LEACH

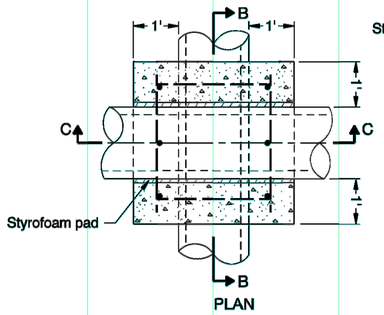
Sheet Title:
DETAILS -
STORM SEWER

Project Number: 14049

Sheet Number: C-804

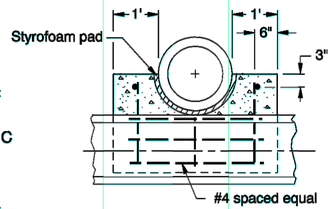


SECTION C-C



PLAN

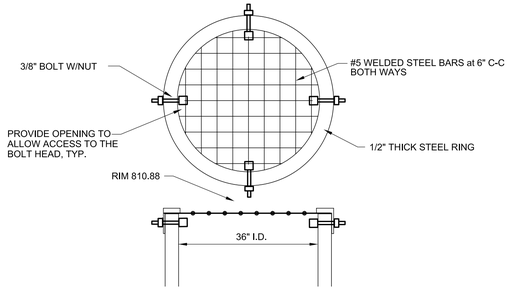
SADDLE



SECTION B-B

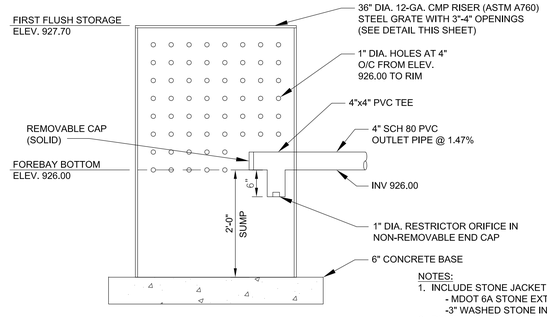
GENERAL NOTES FOR ALL DETAILS:

1. All concrete shall be Commercial Grade Concrete.



BAR GRATE FOR OUTLET CONTROL STRUCTURE

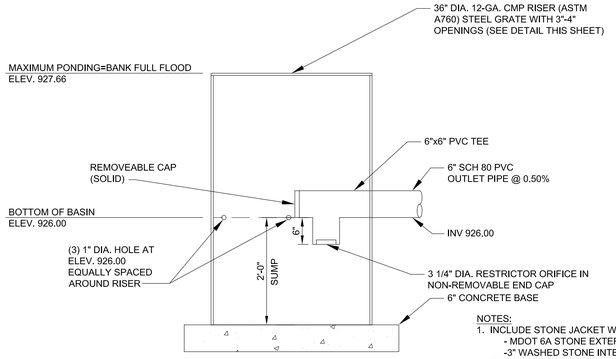
N.T.S.



NOTES:
1. INCLUDE STONE JACKET WITH 4H:1V SLOPE
   - MDOT 6A STONE EXTERIOR
   -3" WASHED STONE INTERIOR
2. RISER HOLES MUST BE PRE-DRILLED PRIOR TO GALVANIZATION.

FOREBAY OUTLET STAND PIPE DETAIL

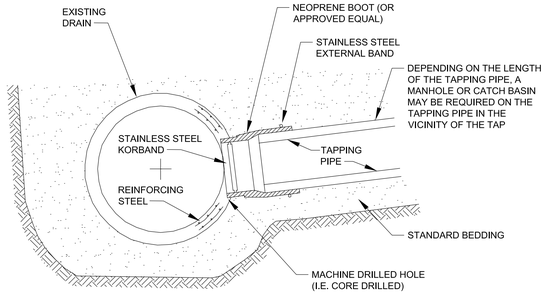
N.T.S.



NOTES:
1. INCLUDE STONE JACKET WITH 4H:1V SLOPE
   - MDOT 6A STONE EXTERIOR
   -3" WASHED STONE INTERIOR
2. RISER HOLES MUST BE PRE-DRILLED PRIOR TO GALVANIZATION.

BASIN OUTLET STANDPIPE DETAIL

N.T.S.



KOR-N-TEE TAP
FOR CONCRETE PIPE

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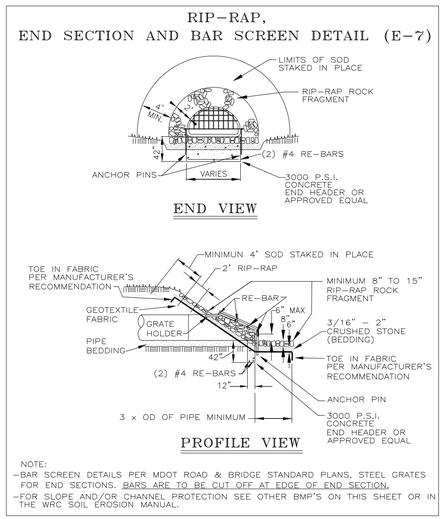
10/13/14	ADDENDUM #5

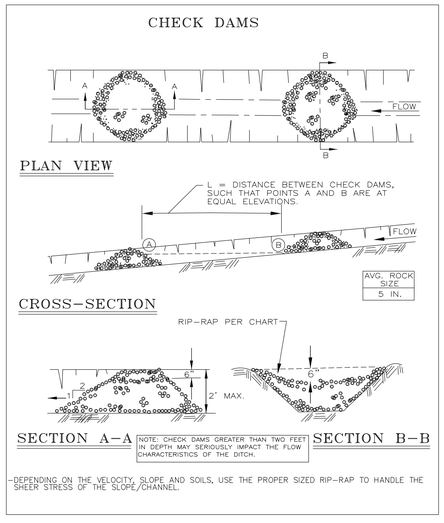
Drawn:	S. MANOS
Checked:	C. LEACH
Approved:	C. LEACH

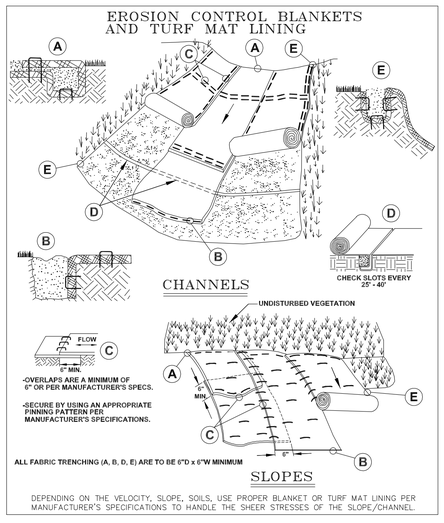
Sheet Title:
DETAILS -
STORM SEWER

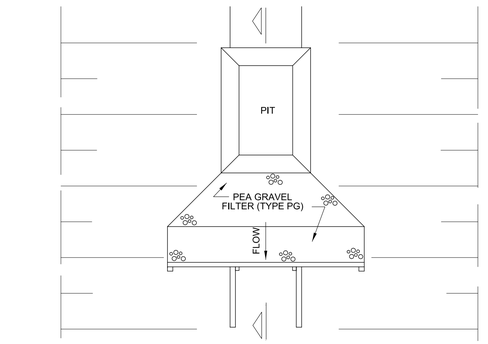
Project Number: 14049

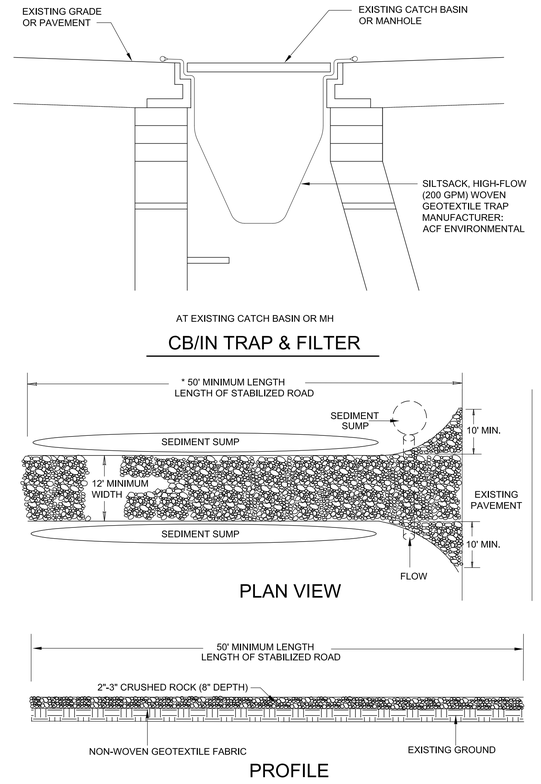
Sheet Number: C-805







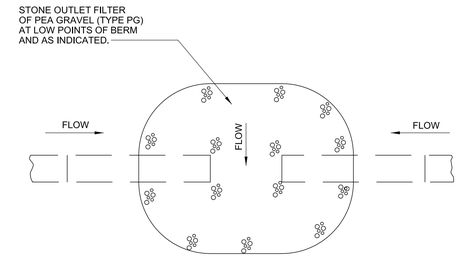




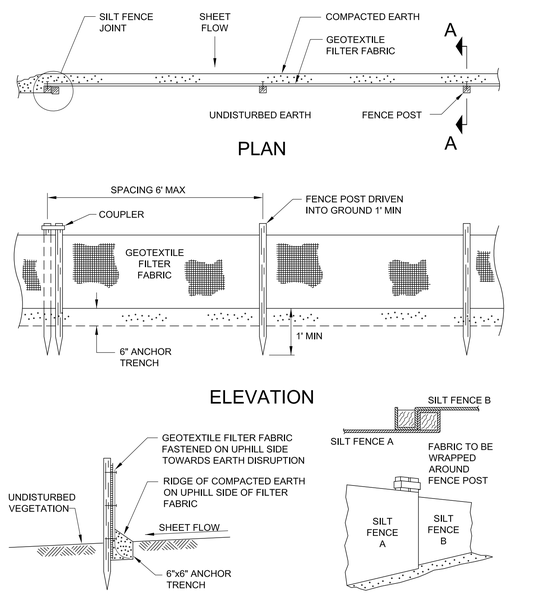
NOTES:

1. ESTABLISH STABILIZED CONSTRUCTION ENTRANCE PRIOR TO THE INITIATION OF SITE CONSTRUCTION ACTIVITIES.
2. CARE SHOULD BE TAKEN TO PREVENT MATERIAL MOVEMENT INTO ADJACENT WETLANDS/WATERBODIES.
3. CARE SHOULD BE TAKEN TO MAINTAIN EXISTING ROADSIDE DRAINAGE VIA CULVERT INSTALLATION, WITH SEDIMENT SUMP PLACED DOWNFLOW OF CULVERT.

TEMPORARY STONE ACCESS DRIVE



STONE OUTLET FILTER



SILT FENCE

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Client:
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DEXTER, MICHIGAN 48130

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10/13/14	REV. FINAL SPA/FINAL ENG.
10/13/14	ADDENDUM #5

Drawn:	S. MANOS
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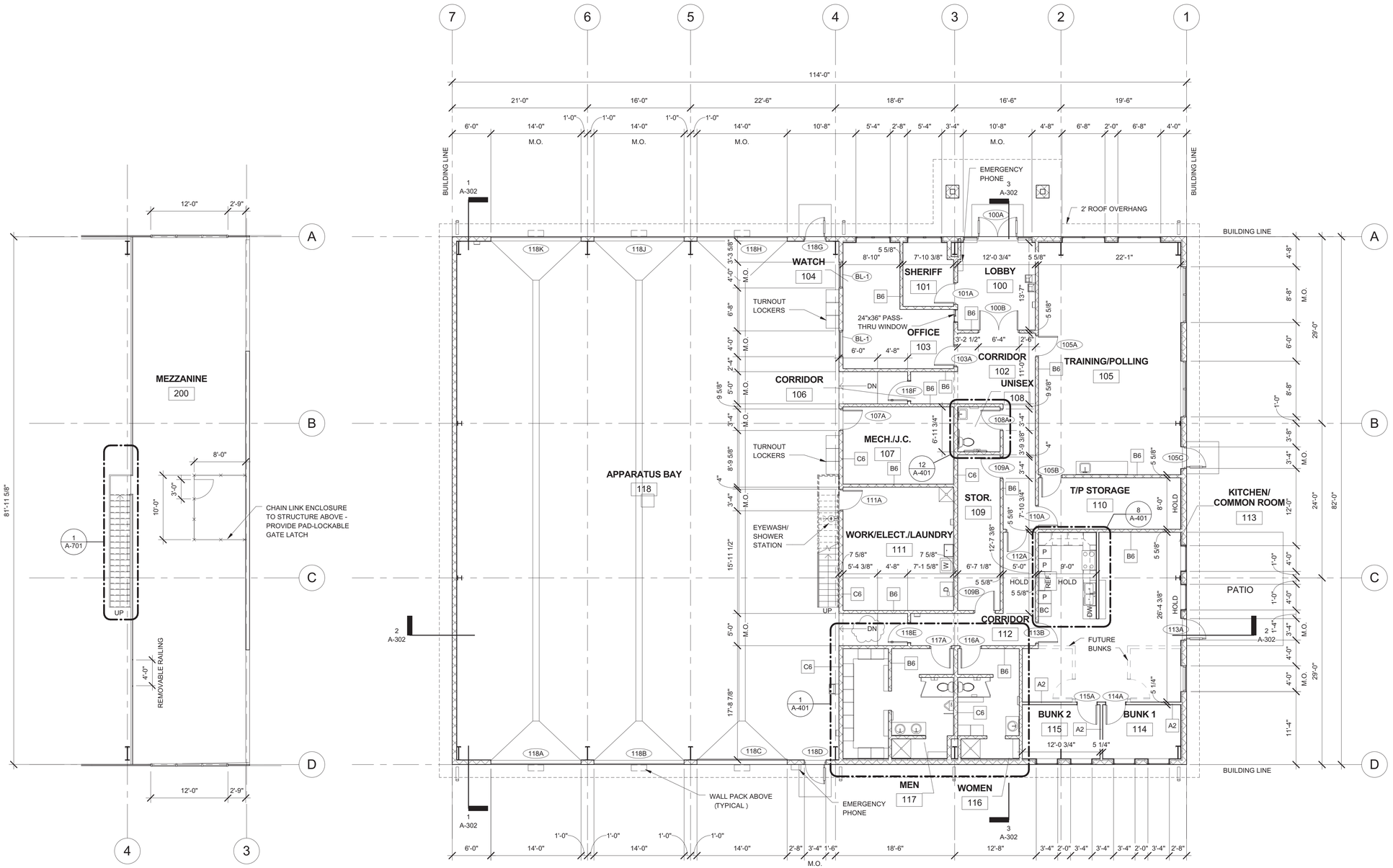
Sheet Title:
DETAILS - SOIL EROSION & SEDIMENT CONTROL

Project Number: 14049

Sheet Number: C-806



MEZZANINE PLAN
SCALE 1/8" = 1'-0"

FIRST FLOOR PLAN
SCALE 1/8" = 1'-0"

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Key Plan: NO SCALE

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUB-STATION NO.2

NORTH TERRITORIAL ROAD,
DEXTER, MICHIGAN 48130

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09/02/14	BIDS
01/22/15	AMEND. FINAL SPA/FINAL ENG.

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Sheet Title:
COMPOSITE FLOOR PLAN

Project Number: 14049

Sheet Number: A-210

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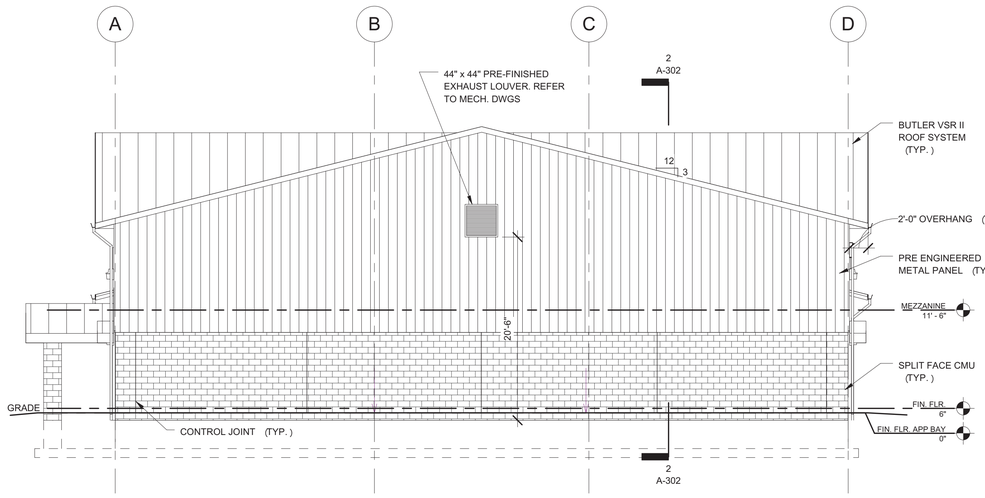
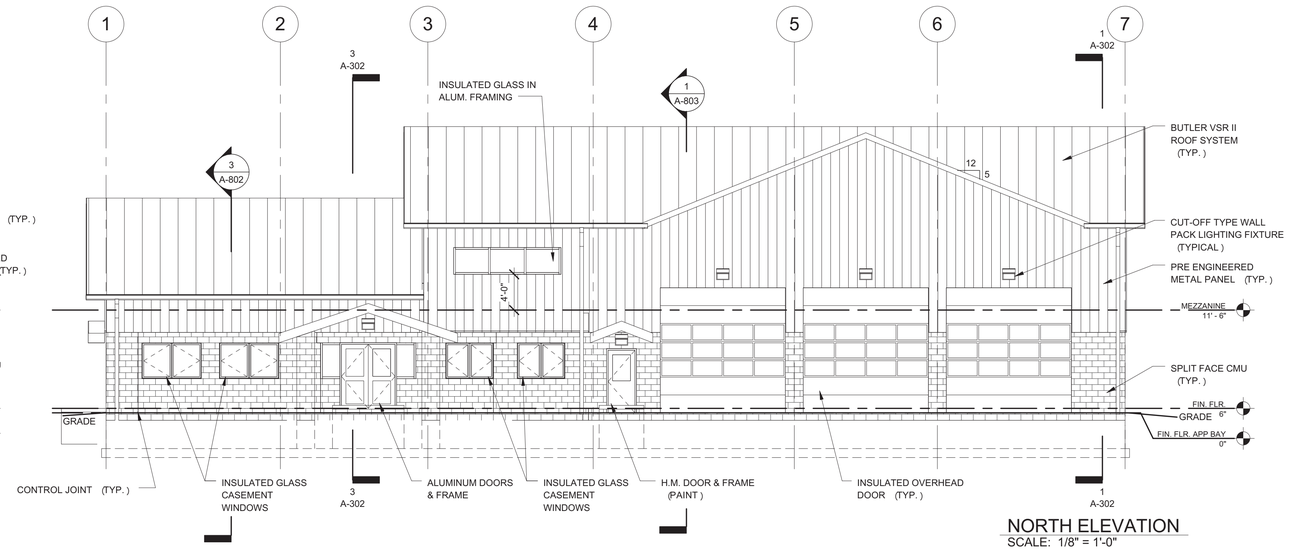


WEST ELEVATION
SCALE: 1/8" = 1'-0"



NORTH ELEVATION
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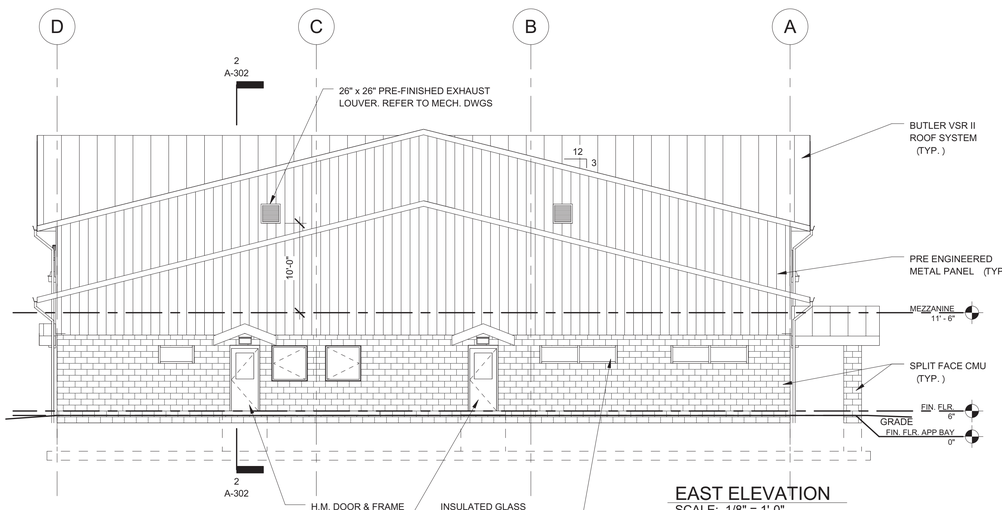
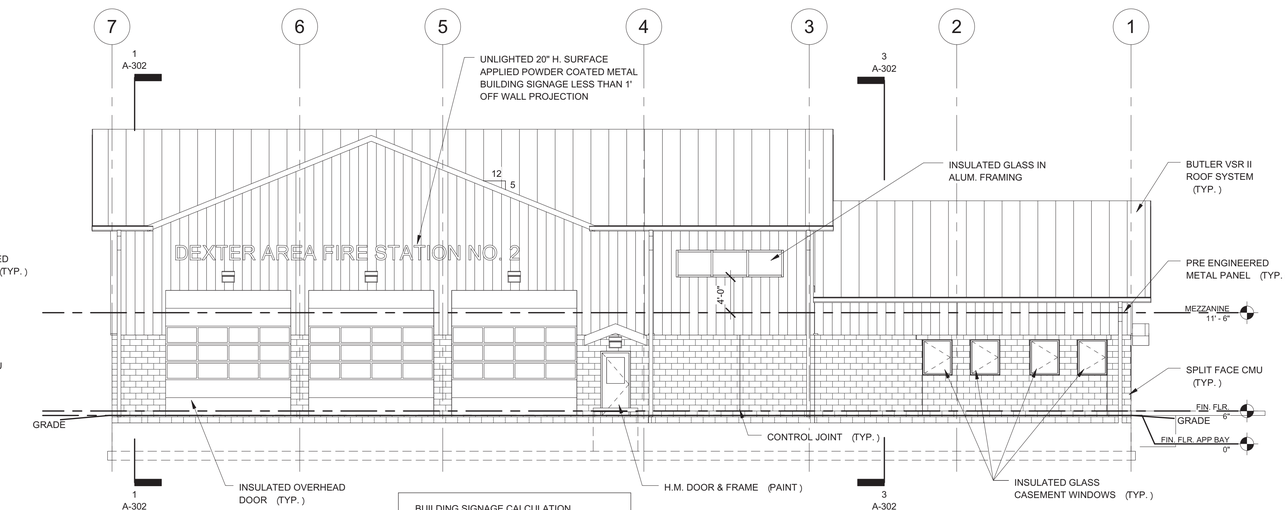


EAST ELEVATION
SCALE: 1/8" = 1'-0"



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

BUILDING SIGNAGE CALCULATION
SOUTH ELEVATION TOTAL AREA = 2,306 S.F.
BUILDING SIGNAGE AREA = 79 S.F.
% SIGNAGE AREA = 79/2,306 x 100 = 3.42%

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Sheet Title:
EXTERIOR ELEVATIONS

Project Number: 14049

Sheet Number: A-301

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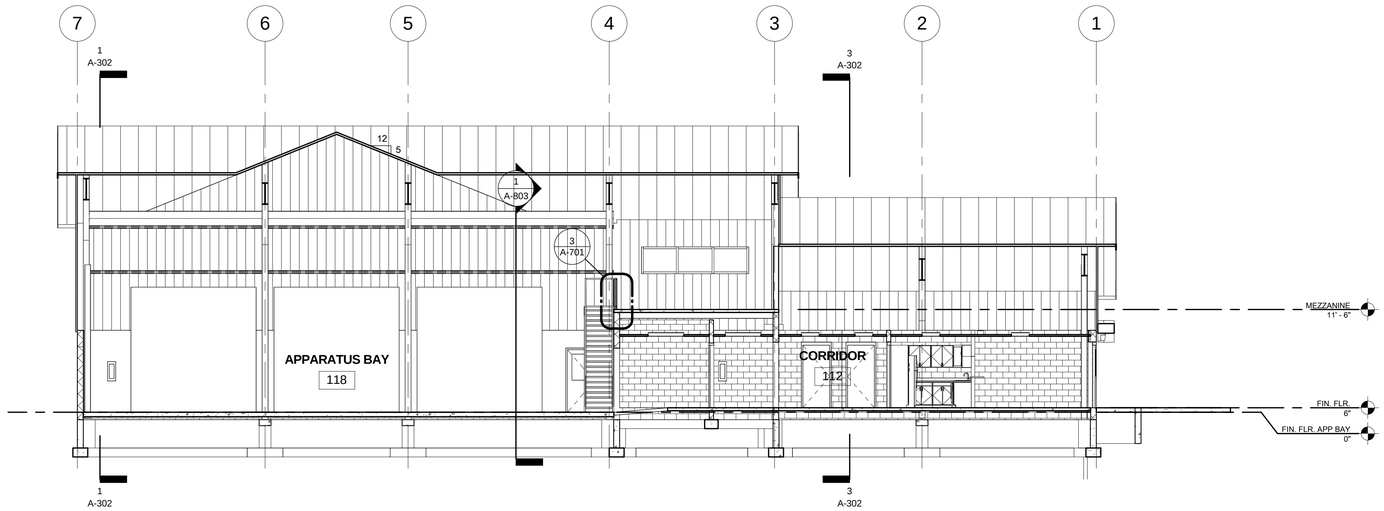

2 A-210 BUILDING SECTION
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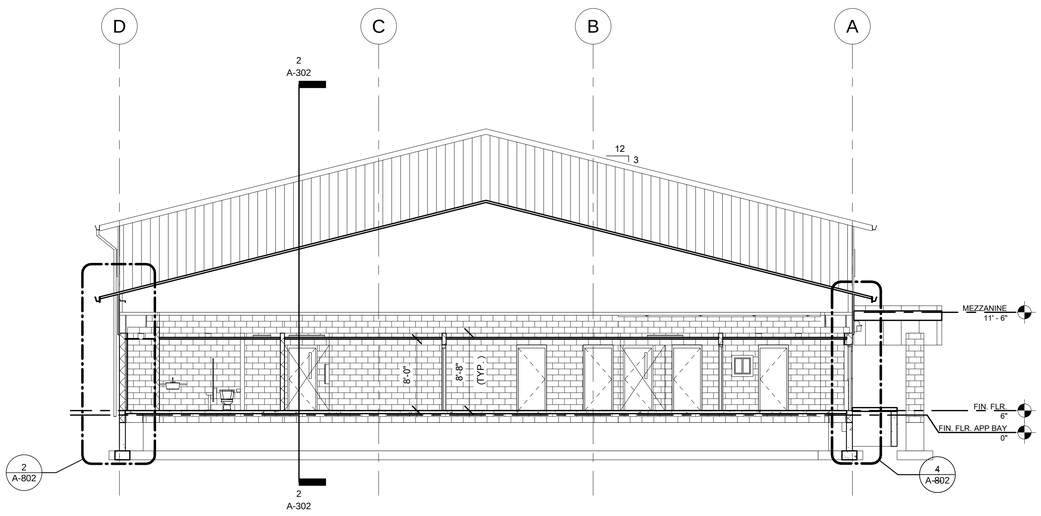

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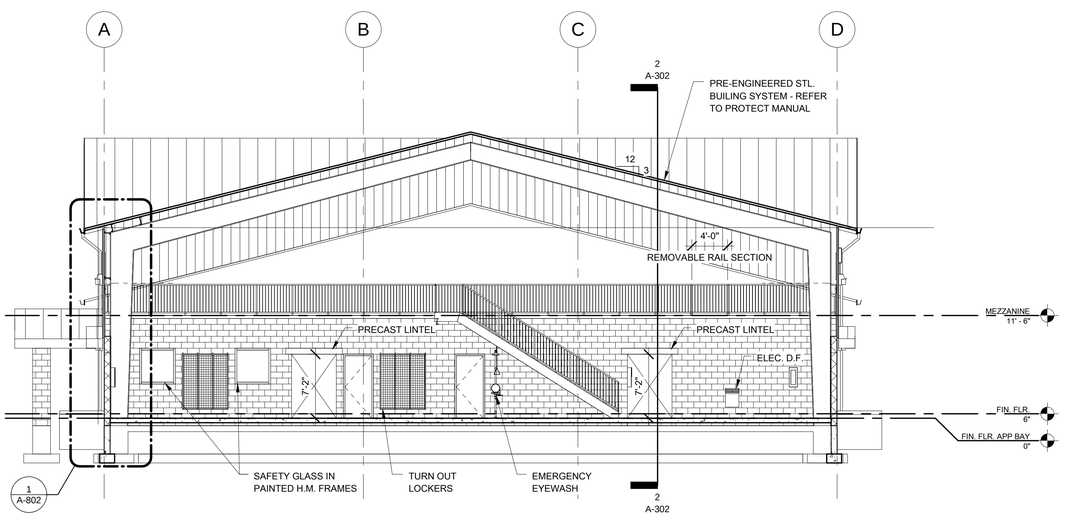

1 A-210 BUILDING SECTION
SCALE: 1/8" = 1'-0"

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Approved:	R. JORDAN

Sheet Title:
BUILDING
SECTIONS

Project Number: 14049

Sheet Number: A-302

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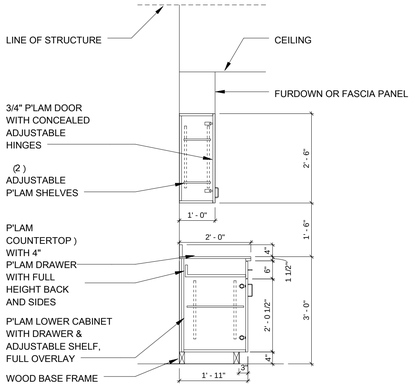
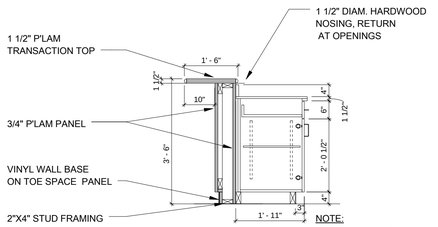
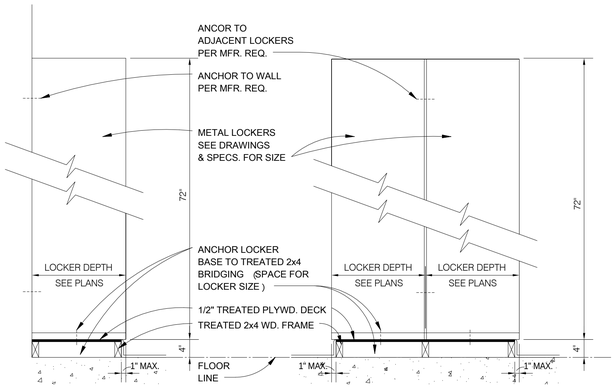




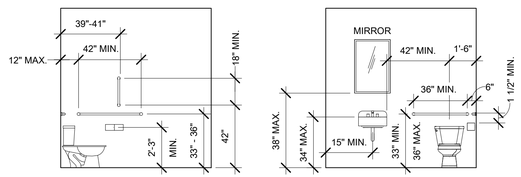
NOTE:
PROVIDE 2 1/2" GROMMET HOLES @ 36" O.C.

CASEWORK STANDARDS
SCALE: 1/2" = 1'-0"



NOTE:
SEE ROOM FINISH SCHEDULE FOR BASE, FLOOR AND WALL FINISH

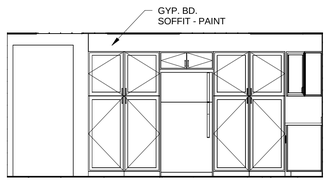
TYPICAL SECTION THRU LOCKERS
SCALE: 3/4" = 1'-0"



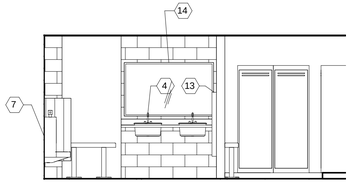
GENERAL TOILET ROOM CONFIGURATION
SCALE: 1/4" = 1'-0"

ACCESSORY LEGEND

1. 42" S.S. GRAB BAR
2. 18" S.S. GRAB BAR
3. 36" S.S. GRAB BAR
4. LAVATORY
5. WALL HUNG SINK
6. FLOOR MOUNTED TOILET
7. URINAL
8. TOILET TISSUE DISPENSER - DOUBLE
9. FLOOR MOUNTED SERVICE SINK
10. SANITARY DISPOSAL
11. HADRIAN FLOOR MOUNTED OVERHEAD BRACED TOILET PARTITION
12. COAT HOOK
13. SEMI-RECESSED MOUNT C-FOLD PAPER TOWEL DISPENSER & RECEPTACLE
14. MIRROR W/ S.S. FRAME 4'W x 3'H
15. MIRROR W/ S.S. FRAME 2'W x 3'H
16. 9" x 48" WOOD BENCH
17. SHOWER
18. ROBE HOOK
19. SHOWER CURTAIN & HOOKS
20. 18" S.S. TOWEL BAR



11 A-401 KITCHEN
SCALE: 1/4" = 1'-0"



7 A-401 MEN
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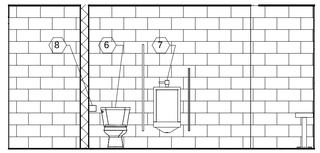

4 A-401 MEN
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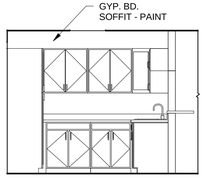
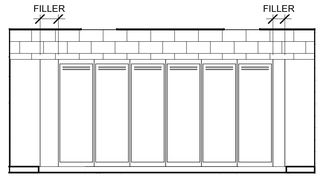
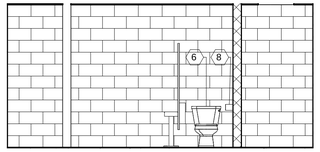


10 A-401 KITCHEN
SCALE: 1/4" = 1'-0"



6 A-401 MEN
SCALE: 1/4" = 1'-0"



3 A-401 WOMEN
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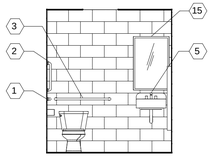

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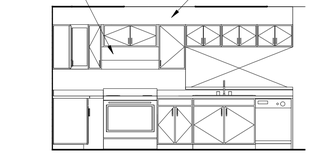

9 A-401 KITCHEN
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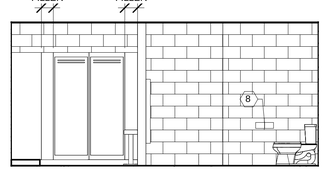

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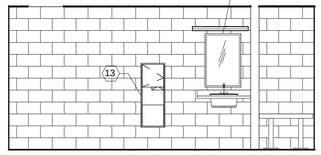

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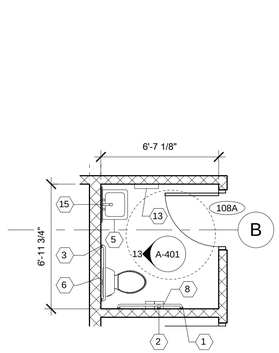
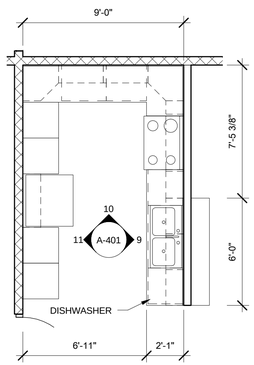


12 A-210 ENLARGED PLAN
SCALE: 1/4" = 1'-0"



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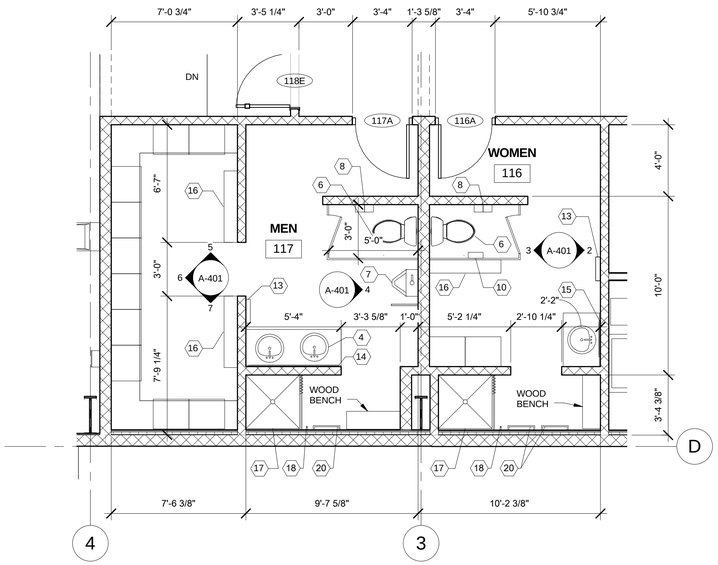
SCALE: 1/4" = 1'-0"



1 A-210 ENLARGED PLAN
SCALE: 1/4" = 1'-0"

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Key Plan: NO SCALE

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUB-STATION NO.2

NORTH TERRITORIAL ROAD,
DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
05/29/14	INTERNAL REVIEW
06/09/14	REVIEW
09/02/14	BIDS

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Approved: R. JORDAN

Sheet Title:
ENLARGED PLANS & INTERIOR ELEVATIONS

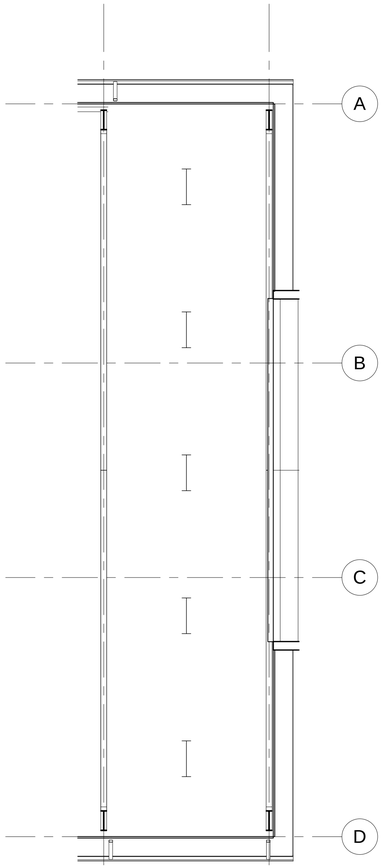
Project Number: 14049

Sheet Number: A-401

File Path: M:\2012\XXXXX Project Folder\Revit Files\FileName_CENTRAIL.rvt
4/20/2015 10:47:03 AM

CEILING LEGEND

X'-X"	CEILING HEIGHT		2'x4' LAY-IN CEILING SYSTEM. REFER TO FINISH SCHEDULE
	STRIP LIGHT		2'x2' LAY-IN CEILING SYSTEM. REFER TO FINISH SCHEDULE
	CHAIN HUNG 4' LONG INDUSTRIAL LIGHT		SOUND INSULATION AT CEILING EDGE AS INDICATED
	LAY IN FLUORESCENT LIGHT		GYP. BD. CEILING
	SURFACE MOUNT LIGHT		1 HR FIRE RATING
	WALL MOUNT LIGHT		
	EXIT SIGN		
	RECESSED CAN		
	RETURN AIR DIFFUSER/GRILLE		
	SUPPLY AIR DIFFUSER/GRILLE		
	LINEAR SLOT DIFFUSER		



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

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

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CEILING PLANS

Project Number: 14049

Sheet Number: A-610

File Parth: M:\2012\XXXXX Project Folder\Revit Files\FileName_CENTRAIL.rvt
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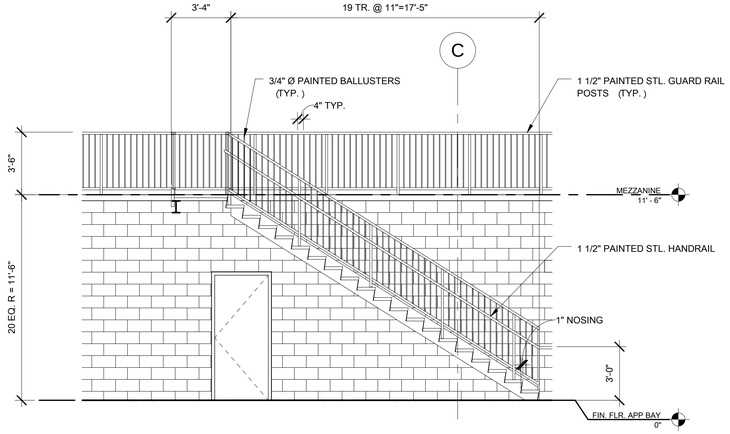
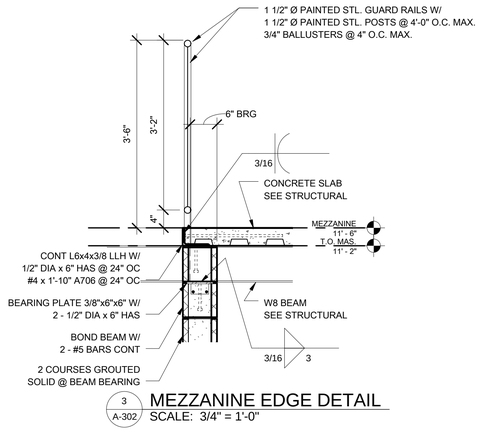
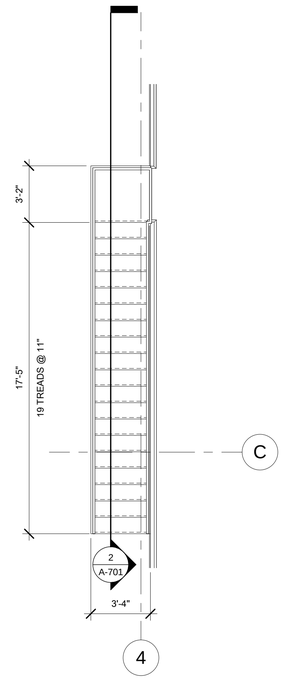


2 / A-701 STAIR DETAIL
SCALE: 1/4" = 1'-0"



3 / A-302 MEZZANINE EDGE DETAIL
SCALE: 3/4" = 1'-0"



1 / A-210 STAIR PLAN
SCALE: 1/4" = 1'-0"

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Sheet Title:
STAIR PLANS AND DETAILS

Project Number: 14049

Sheet Number: A-701

File Parth: M:\2012\XXXXX Project Folder\Revit Files\FileName_CENTRAIL.rvt 4/20/2015 10:47:28 AM

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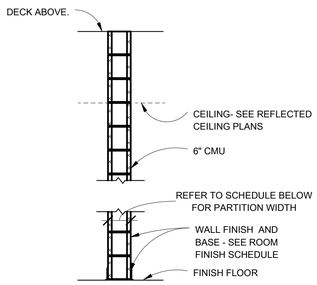
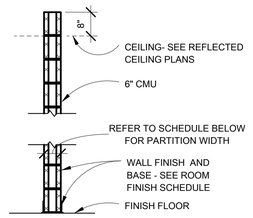


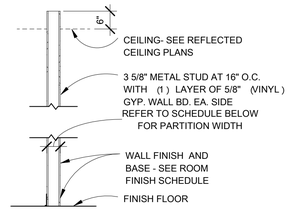
FLOOR PLAN DESIGNATION NO SOUND ATTENUATION	FLOOR PLAN DESIGNATION WITH SOUND ATTENUATION	STUD WIDTH	PART WIDTH	FIRE RATING	UL LISTING
C6	C6	-	5 5/8"	NON-RATED	N/A
C8	C8	-	7 5/8"	ONE HOUR	U465

TYPE "B"



FLOOR PLAN DESIGNATION NO SOUND ATTENUATION	FLOOR PLAN DESIGNATION WITH SOUND ATTENUATION	STUD WIDTH	PART WIDTH	FIRE RATING	UL LISTING
B6	B6	-	5 5/8"	NON-RATED	N/A
B8	B8	-	7 5/8"	ONE HOUR	U465

TYPE "A"



FLOOR PLAN DESIGNATION NO SOUND ATTENUATION	FLOOR PLAN DESIGNATION WITH SOUND ATTENUATION	STUD WIDTH	PART WIDTH	FIRE RATING	UL LISTING
A2	A2	3 5/8"	4 5/8"	NON-RATED	N/A
A3	A3	3 5/8"	4 5/8"	ONE HOUR	U465

NOTES

1. PARTITIONS ARE DISTINGUISHED ON FLOOR PLANS BY SYMBOL DESIGNATION, GRAPHIC DESIGNATION OR A COMBINATION OF BOTH DESIGNATIONS.

2. THERE ARE TWO TYPES OF SYMBOL DESIGNATIONS, ONE FOR PARTITIONS NOT REQUIRING SOUND ATTENUATION AND ANOTHER FOR PARTITIONS WHICH REQUIRE SOUND ATTENUATIONS. REFER TO PARTITION MATRICES FOR SOUND ATTENUATION BLANKET (SAB) MINIMUM THICKNESS FOR STC INDICATED.

X# SYMBOL DESIGNATION (NO SOUND ATTENUATION)

X# SYMBOL DESIGNATION (WITH SOUND ATTENUATION)

3. THE SYMBOL DESIGNATION HAS TWO CHARACTERS, THE FIRST CHARACTER IS A LETTER INDICATING THE PARTITION TYPE. THE SECOND CHARACTER IS A NUMERIC INDICATING THE STUD OR CMU WIDTH. REFER TO LEGEND BELOW.

NUMERIC CHARACTER	STUD WIDTH	CMU WIDTH
1	1 5/8"	
2	2 1/2"	
3	3 1/2"	
4	4"	3 5/8"
6	5 1/2"	5 5/8"
8		7 5/8"
12		11 5/8"

4. IF NO SYMBOL DESIGNATION IS PROVIDED, THE STUD SIZE WILL BE 3 5/8".

5. THE GRAPHIC DESIGNATION IS INCORPORATED FOR PARTITIONS REQUIRED TO BE SMOKE RESISTANT, OR BOTH FIRE AND SMOKE RESISTANT. REFER TO NOTE 17.

6. "LINE OF STRUCTURE" INDICATED FOR EACH PARTITION IS DIAGRAMMATIC ONLY AND DOES NOT INDICATE EXACT CONSTRUCTION CONDITIONS OR GEOMETRY.

7. ALL DIMENSIONS ARE FROM FACE OF GYPSUM BOARD TO FACE OF GYPSUM BOARD. REFER TO PARTITION MATRICES FOR PARTITION WIDTH DIMENSIONS UNLESS INDICATED TO BE SHOWN ON PLAN.

8. SEALANT:
   1. FIRE RESISTANCE RATED PARTITIONS SHALL USE RATED FIRE/SMOKE FIRE STOPPING SYSTEM.
   2. NON-RATED PARTITIONS AND NON-RATED SMOKE RESISTANT PARTITIONS SHALL USE ACOUSTICAL SEALANT.

9. INSULATION: - HEAD CONDITIONS AT FLOOR/ROOF DECK
   1. FIRE RESISTANCE RATED PARTITIONS SHALL USE MINERAL WOOL INSULATION.
   2. NON-RATED PARTITIONS REQUIRING SOUND ATTENUATION SHALL USE SOUND ATTENUATION BLANKETS (SAB).

10. REFER TO SPECIFICATIONS FOR MINIMUM STUD THICKNESS, MAXIMUM SPACING AND ALLOWABLE LIMITING HEIGHTS DEFLECTION CRITERIA FOR GYPSUM BOARD ASSEMBLIES.

11. FOR PARTITIONS INDICATED TO RECEIVE SOUND ATTENUATION BLANKETS (SAB), EXTEND SAB TO FULL HEIGHT OF PARTITION UNLESS OTHERWISE INDICATED. FLOOR TRACK TO BE SET IN A CONT. BED OF SEALANT.

12. FIRE RESISTANT AND FIRE RESISTANT SMOKE BARRIER RATINGS ARE TO SURROUND ALL OPENINGS IN RATED PARTITIONS.

13. SMOKE RESISTANT, FIRE RESISTANT AND FIRE RESISTANT SMOKE BARRIER PARTITIONS SHALL EXTEND AND SEAL TO INSIDE FACE OF EXTERIOR SHEATHING, INCLUDING EXTENSIONS THROUGH SOFFITS.

14. EACH PARTITION SHOWN ON THE DRAWINGS TO HAVE A FIRE OR SMOKE RESISTANT RATING SHALL BE IDENTIFIED AS SUCH WITH A LABEL ABOVE THE CEILING ON EACH SEGMENT OF THE WALL AND 20'-0" O.C. MAX EACH SIDE OR AS REQUIRED BY THE AHJ.

15. REFER TO TOILET ACCESSORIES AND CASEWORK SHEET FOR MOUNTING DETAIL INFORMATION.

16. REFER TO METAL FABRICATIONS DETAILS FOR MF REFERENCES IN PARTITIONS SELECTIONS.

17. GRAPHIC DESIGNATION

1 HR FIRE BARRIER

1 HR FIRE BARRIER/SHAFT WALL

SOUND ATTENUATION

NOTE:

1. NOT ALL PARTITION TYPES SHOWN ON THIS SHEET ARE USED ON THIS PROJECT.

2. THE SHADED PORTIONS OF A PARTITION TYPE ARE NOT INCLUDED IN THE SCOPE OF THE WORK.

3. THE UN-SHADED PORTIONS OF ALL PARTITION TYPES ARE INTENDED TO BE IN THE SCOPE OF THE WORK.

HATCHING:

PARTITION TYPE INCLUDED IN SCOPE OF WORK

PARTITION TYPE NOT INCLUDED IN SCOPE OF WORK

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Key Plan: NO SCALE

Client:
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Project:
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SUB-STATION NO.2

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DEXTER, MICHIGAN 48130

Seal:

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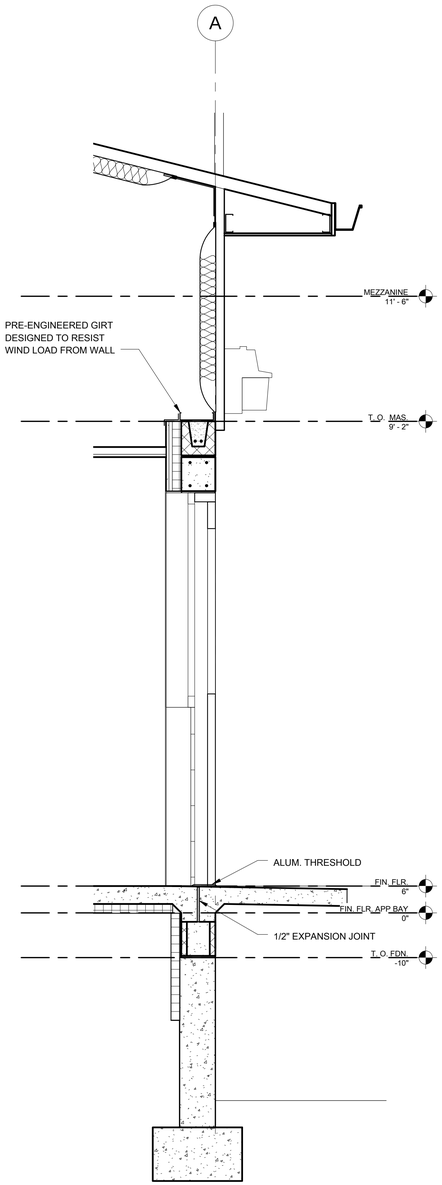
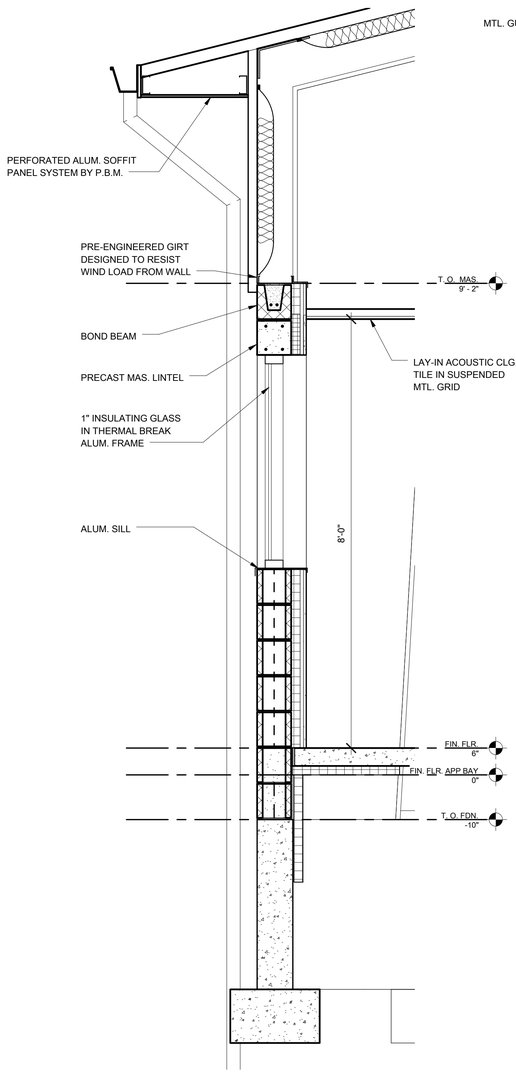
Sheet Title:
PARTITION TYPES

Project Number: 14049

Sheet Number: A-801



4 A-302 WALL SECTION
SCALE: 3/4" = 1'-0"



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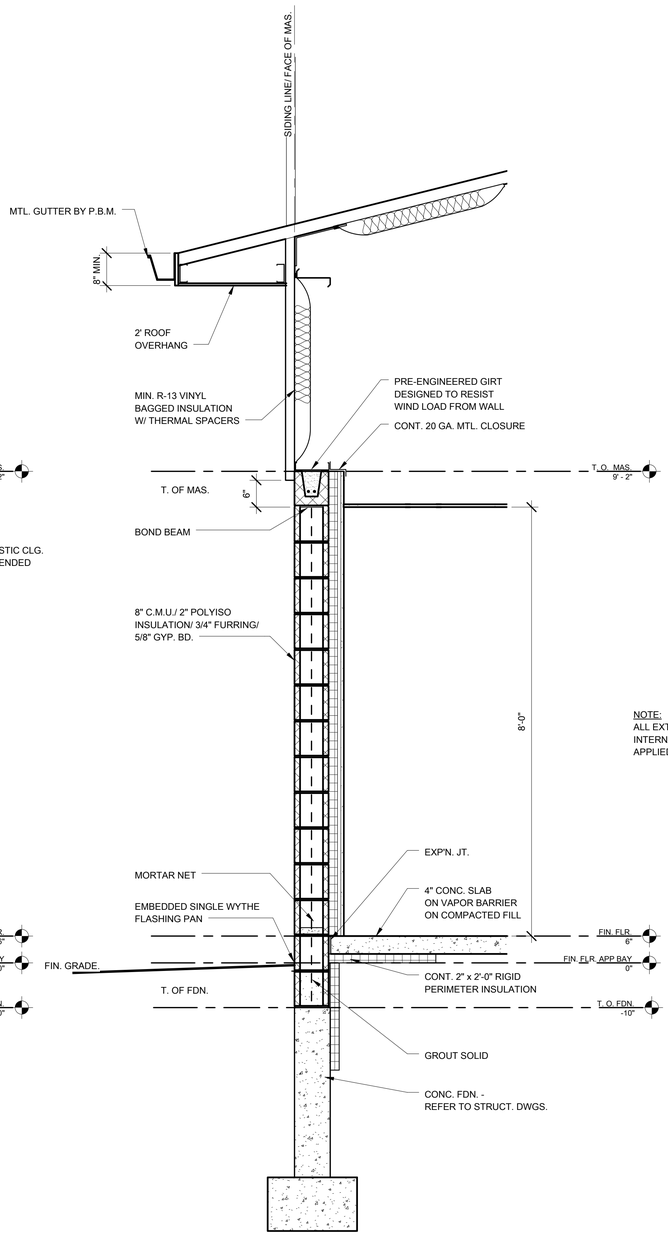
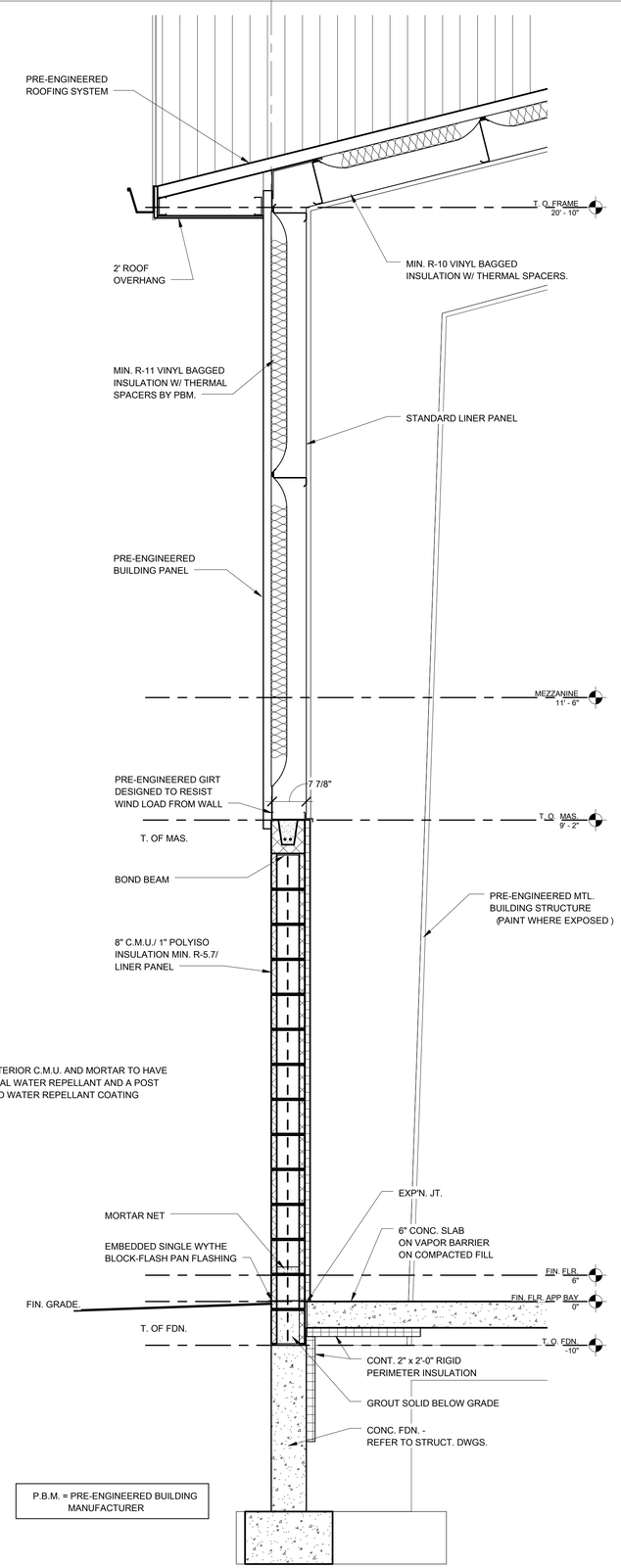


2 A-302 WALL SECTION
SCALE: 3/4" = 1'-0"



NOTE:
ALL EXTERIOR C.M.U. AND MORTAR TO HAVE INTERNAL WATER REPELLANT AND A POST APPLIED WATER REPELLANT COATING

P.B.M. = PRE-ENGINEERED BUILDING MANUFACTURER

1 A-302 WALL SECTION
SCALE: 3/4" = 1'-0"

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Sheet Title:
WALL SECTIONS

Project Number: 14049

Sheet Number: A-802

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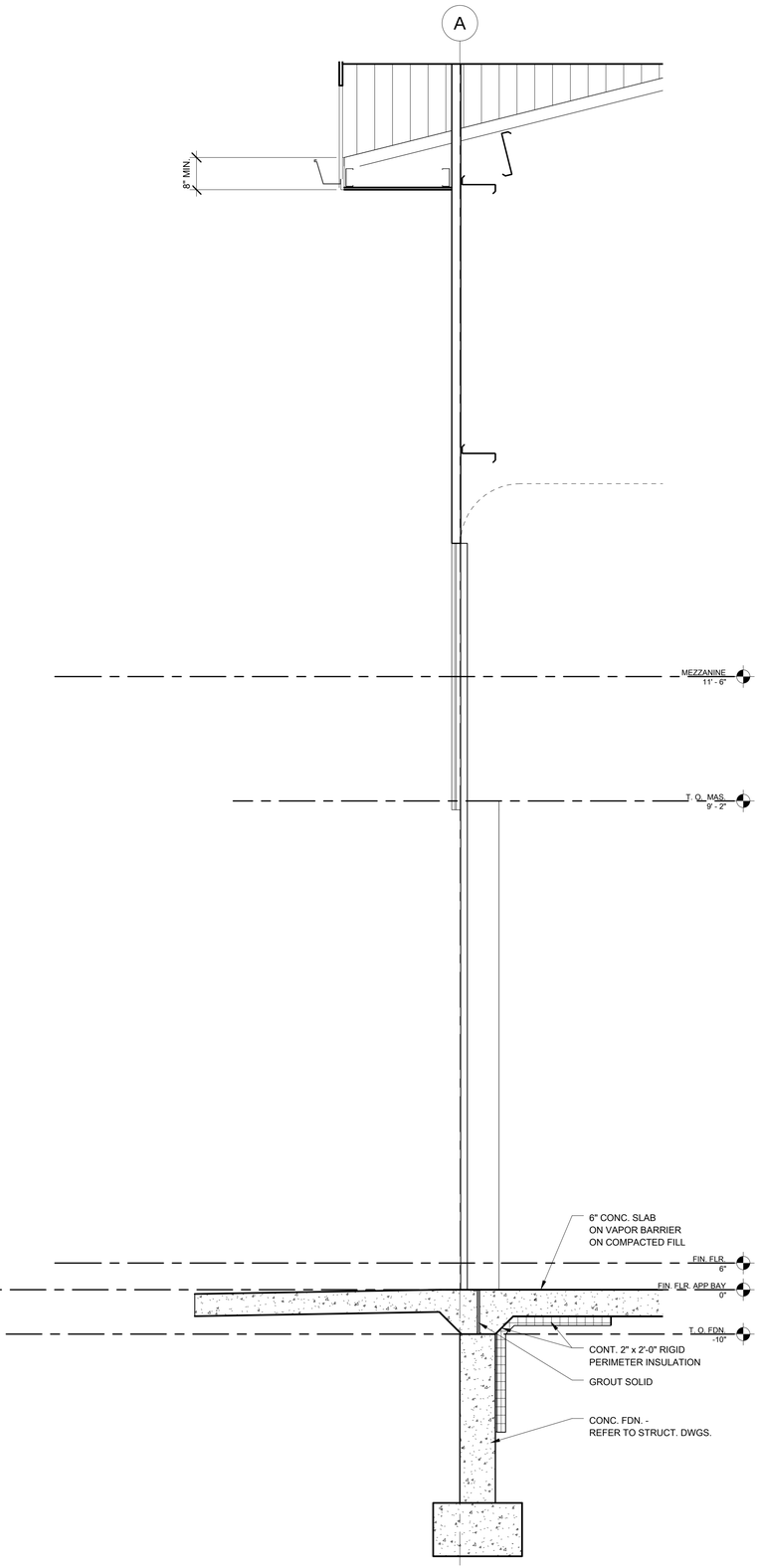

1 / A-301 WALL SECTION
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WALL SECTIONS

Project Number: 14049

Sheet Number: A-803

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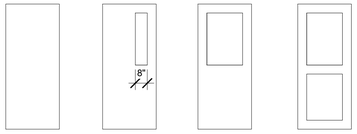
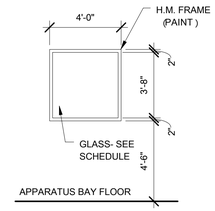
DOOR NUMBER	ROOM NAME	DOOR SIZE		MATERIALS AND FINISHES								DETAILS				
		WIDTH	HEIGHT	FRAME TYPE	DOOR TYPE	DOOR MATERIAL	DOOR FINISH	FRAME MATERIAL	FRAME FINISH	GLAZING TYPE	THRESHOLD	DOOR RATING	HEAD	JAMB	SILL	HARDWEAR SET	COMMENTS
100A	LOBBY	2 @ 3'-0"	7'-2"	D	4	ALUM.	FACTORY	ALUM.	PAINT	1" INSUL.	ALUM.	-	H1	J1	4/A-802	1	
100B	CORRIDOR	2 @ 3'-0"	7'-2"	C	3	ALUM.	FACTORY	ALUM.	PAINT	1/4" SAFETY		-	H2	J2		2	
101A	SHERIFF	3'-0"	7'-0"	B	1	WD.	STAIN/SEAL	H.M.	PAINT	-		-	H3	J3		3	
103A	OFFICE	3'-0"	7'-0"	B	1	WD.	STAIN/SEAL	H.M.	PAINT	-		-	H3	J3		3	
105A	TRAINING/POLLING	3'-0"	7'-0"	B	1	WD.	STAIN/SEAL	H.M.	PAINT	-		-	H3	J3		4	
105B	TRAINING/POLLING	3'-0"	7'-0"	B	1	WD.	STAIN/SEAL	H.M.	PAINT	-		-	H3	J3		5	
105C	TRAINING/POLLING	3'-0"	7'-0"	B	3	H.M.	PAINT	H.M.	PAINT	1" INSUL.	ALUM.	-	H4	J4	4/A-802	6	
107A	MECHANICAL/ELECTRICAL/ JANITOR CLOSET	3'-0"	7'-0"	A	1	H.M.	PAINT	H.M.	PAINT	-		-	H5	J5		5	
108A	UNISEX	3'-0"	7'-0"	B	1	WD.	STAIN/SEAL	H.M.	PAINT	-	MARBLE	-	H3	J3		7	
109A	STORAGE	3'-0"	7'-0"	B	1	WD.	STAIN/SEAL	H.M.	PAINT	-		-	H3	J3		5	
109B	STORAGE	3'-0"	7'-0"	B	1	WD.	STAIN/SEAL	H.M.	PAINT	-		-	H3	J3		5	
110A	T/P STORAGE	3'-0"	7'-0"	B	1	WD.	STAIN/SEAL	H.M.	PAINT	-		-	H3	J3		5	
111A	WORK/ELECT./LAUNDRY	3'-0"	7'-0"	A	1	H.M.	PAINT	H.M.	PAINT	-		45 MIN.	H5	J5		5	
112A	CORRIDOR	3'-0"	7'-0"	B	2	WD.	STAIN/SEAL	H.M.	PAINT	1/4" SAFETY		-	H3	J3		4	
113A	KITCHEN/ COMMON ROOM	3'-0"	7'-0"	B	5	H.M.	PAINT	H.M.	PAINT	1" INSUL.	ALUM.	-	H4	J4	4/A-802	8	
113B	KITCHEN/ COMMON ROOM	3'-0"	7'-0"	B	2	WD.	STAIN/SEAL	H.M.	PAINT	1/4" SAFETY		-	H3	J3		4	
114A	BUNK 1	3'-0"	7'-0"	A	1	WD.	STAIN/SEAL	H.M.	PAINT	-		-	H6	J6		4	
115A	BUNK 2	3'-0"	7'-0"	A	1	WD.	STAIN/SEAL	H.M.	PAINT	-		-	H6	J6		4	
116A	WOMEN	3'-0"	7'-0"	B	1	WD.	STAIN/SEAL	H.M.	PAINT	-	MARBLE	-	H3	J3		9	
117A	MEN	3'-0"	7'-0"	B	1	WD.	STAIN/SEAL	H.M.	PAINT	-	MARBLE	-	H3	J3		9	
118A	APPARATUS BAY	14'-0"	14'-0"	-	O.H.	STL.	FACTORY	-	PAINT	1" INSUL.			-	-	-		
118B	APPARATUS BAY	14'-0"	14'-0"	-	O.H.	STL.	FACTORY	-	PAINT	1" INSUL.			-	-	-		
118C	APPARATUS BAY	14'-0"	14'-0"	-	O.H.	STL.	FACTORY	-	PAINT	1" INSUL.			-	-	-		
118D	APPARATUS BAY	3'-0"	7'-0"	A	3	H.M.	PAINT	H.M.	PAINT	1" INSUL.	ALUM.	-	H5	J5	4/A-802	8	
118E	APPARATUS BAY	3'-0"	7'-0"	B	2	H.M.	PAINT	H.M.	PAINT	1/4" SAFETY		-	H3	J3		4	
118F	APPARATUS BAY	3'-0"	7'-0"	B	2	H.M.	PAINT	H.M.	PAINT	1/4" SAFETY		-	H3	J3		4	
118G	APPARATUS BAY	3'-0"	7'-0"	B	2	H.M.	PAINT	H.M.	PAINT	1" INSUL.	ALUM.	-	H5	J5	4/A-802	8	
118H	APPARATUS BAY	14'-0"	14'-0"	-	O.H.	STL.	FACTORY	-	PAINT	1" INSUL.			-	-	-		
118J	APPARATUS BAY	14'-0"	14'-0"	-	O.H.	STL.	FACTORY	-	PAINT	1" INSUL.			-	-	-		
118K	APPARATUS BAY	14'-0"	14'-0"	-	O.H.	STL.	FACTORY	-	PAINT	1" INSUL.			-	-	-		



BORROWED LITE SCHEDULE										
LITE NO.	GLASS	FRAME		SIZE		DETAILS			FIRE RATING	REMARKS
		TYPE	MAT	W	H	HEAD	JAMB	SILL	HRS.	
104-1	1/4" SAFETY	BL-1	H.M.	4'-0"	4'-0"	H7	J7	S2	1 HR	
103-1	1/4" SAFETY	BL-1	H.M.	4'-0"	4'-0"	H7	J7	S2	1 HR	



BORROWED LITE FRAME TYPES
SCALE: 1/4" = 1'-0"

ROOM #	ROOM NAME	FLOOR	BASE	WALLS				CLG.	REMARKS
				NORTH	SOUTH	EAST	WEST		
100	LOBBY	CT	CT	BK-P	BK-P	BK-P	BK-P	ACT-1	
101	SHERIFF	CPT	VWB	GB-P	BK-P	BK-P	BK-P	ACT-1	
102	CORRIDOR	CONC-EC	CONC-EC	BK-P	BK-P	BK-P	BK-P	ACT-1	
103	OFFICE	CONC-EC	CONC-EC	BK-P	BK-P	BK-P	BK-P	ACT-1	
104	WATCH	CONC-EC	CONC-EC	GB-P	-	BK-P	BK-P	ACT-1	
105	TRAINING/POLLING	VCT	VWB	GB-P	BK-P	GB-P	BK-P	ACT-1	
106	CORRIDOR	CONC-EC		BK-P	BK-P	-	BK-P	ACT-1	
107	MECHANICAL/ELECTRICAL/JANITOR CLOSET	CONC-S		BK-P	BK-P	BK-P	BK-P	EXP.	MECH./J.C.
108	UNISEX	VCT	VWB	BK-P	BK-P	BK-P	BK-P	ACT-1	
109	STORAGE	CONC-S		BK-P	BK-P	BK-P	BK-P	ACT-1	STOR.
110	T/P STORAGE	VCT	VWB	BK-P	BK-P	GB-P	BK-P	ACT-1	
111	WORK/ELECT./LAUNDRY	CONC-S		BK-P	BK-P	BK-P	BK-P	EXP.-P	
112	CORRIDOR	CONC-EC	CONC-EC	BK-P	BK-P	-	-	ACT-1	
113	KITCHEN/ COMMON ROOM	CONC-EC	VWB	BK-P	-	GB-P	BK-P	ACT-1	
114	BUNK 1	CPT	VWB	BK-EP	BK-EP	BK-EP	BK-EP	ACT-1	
115	BUNK 2	CPT	VWB	BK-EP	BK-EP	BK-EP	BK-EP	ACT-1	
116	WOMEN	CT	CT	BK-EP	BK-EP	BK-EP	BK-EP	ACT-1	
117	MEN	CT	CT	BK-EP	BK-EP	BK-EP	BK-EP	ACT-1	
118	APPARATUS BAY	CONC-EC	CONC-EC			BK-EP		EXP.-P	
200	MEZZANINE	CONC-S	VWB			-		EXP.-P	

GENERAL NOTES:

NOTE: PROVIDE TRANSITION STRIP AT ALL CHANGES IN FLOOR FINISH.

ALL TOILET ROOM FLOORS TO BE SLIP RESISTANT PER CABO ANSI A.117.

ALL INTERIOR FINISHES TO HAVE A FLAME SPREAD RATING PER MBC CODE SECTION 803.

ALL CONCEALED INSULATION TO HAVE A FLAME SPREAD RATING OF 75 (25 IF EXPOSED)
OR LESS AND A MAXIMUM SMOKE DEVELOPED RATING OF 450 PER MBC CODE SECTION 719.

ALL CARPET SHALL COMPLY WITH DOC FF-1 "PILL TEST"

ROOM FINISH SCHEDULE LEGEND:

FLOORS:

CT:	CERAMIC TILE
V:	RUBBER BASE OR HEAVY GAUGE VINYL BASE
VCT:	VINYL COMPOSITION TILE
EXPC:	EXPOSED CONCRETE
CPT:	CARPET
CONC-S:	CONCRETE-SEALED
CONC-EC:	CONCRETE-EPOXY FLOOR SYSTEM

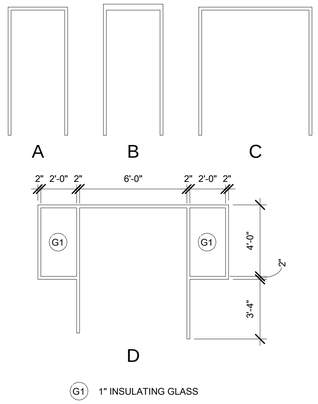
WALLS:

BK:	BLOCK
EXP:	EXPOSED CONSTRUCTION
EP:	EPOXY PAINT (APPARATUS BAY, LOCKER & TOILET ROOMS)
FRP:	FIBER REINFORCED PLASTIC PANELS
GB:	GYPSUM BOARD
P:	PAINT
WT:	WALL HARD TILE
V:	VINYL

CEILINGS:

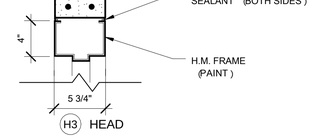
ACT-1:	ACOUSTIC 2' X 4' X 5/8", CERTAINTEED BET 197, NON-DIRECTIONAL MINERAL FIBER TILE
ACT-2:	ACOUSTIC 2' X 2' X 5/8", CERTAINTEED BET 157, NON-DIRECTIONAL MINERAL FIBER TILE
ACT-3:	ACOUSTIC 2' X 2' X 5/8", VINYL FACED, NON-DIRECTIONAL MINERAL FIBER TILE
EXP:	EXPOSED CONSTRUCTION
GB:	GYPSUM BOARD

DOOR TYPES



G1 1" INSULATING GLASS

FRAME TYPES



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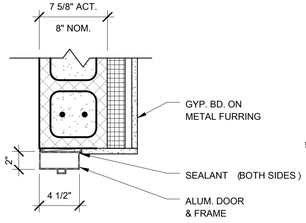

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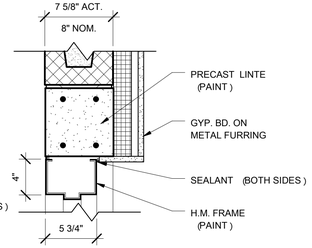

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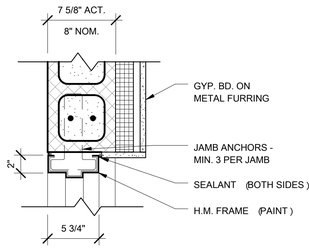

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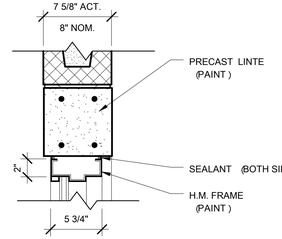

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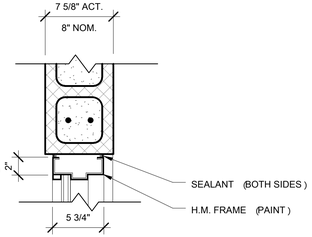

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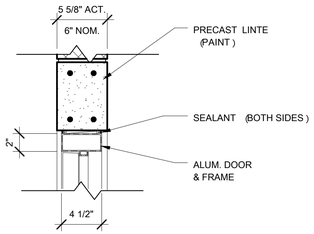

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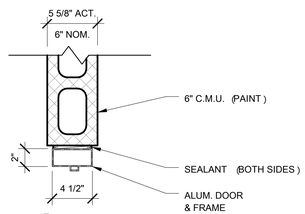

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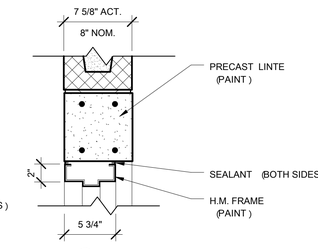

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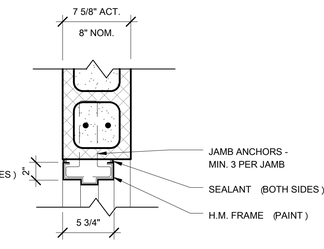

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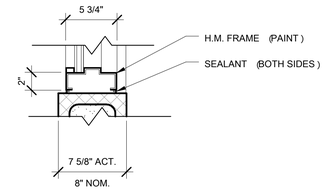
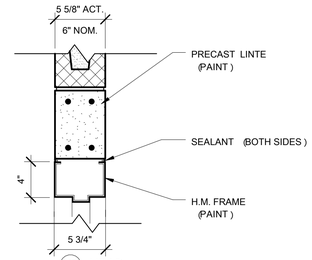


S2 SILL



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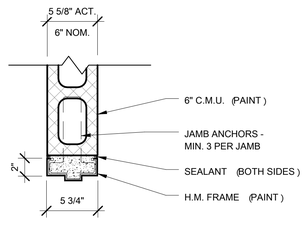

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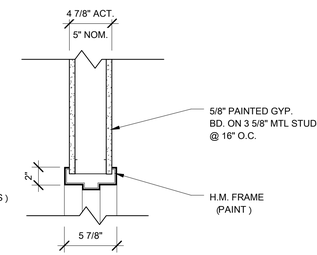

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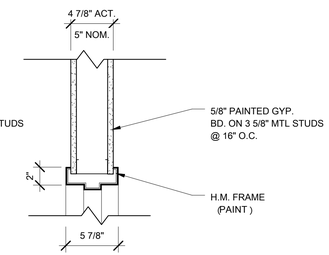

J6 JAMB

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Key Plan: NO SCALE

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUB-STATION NO.2

NORTH TERRITORIAL ROAD,
DEXTER, MICHIGAN 48130

Seal:

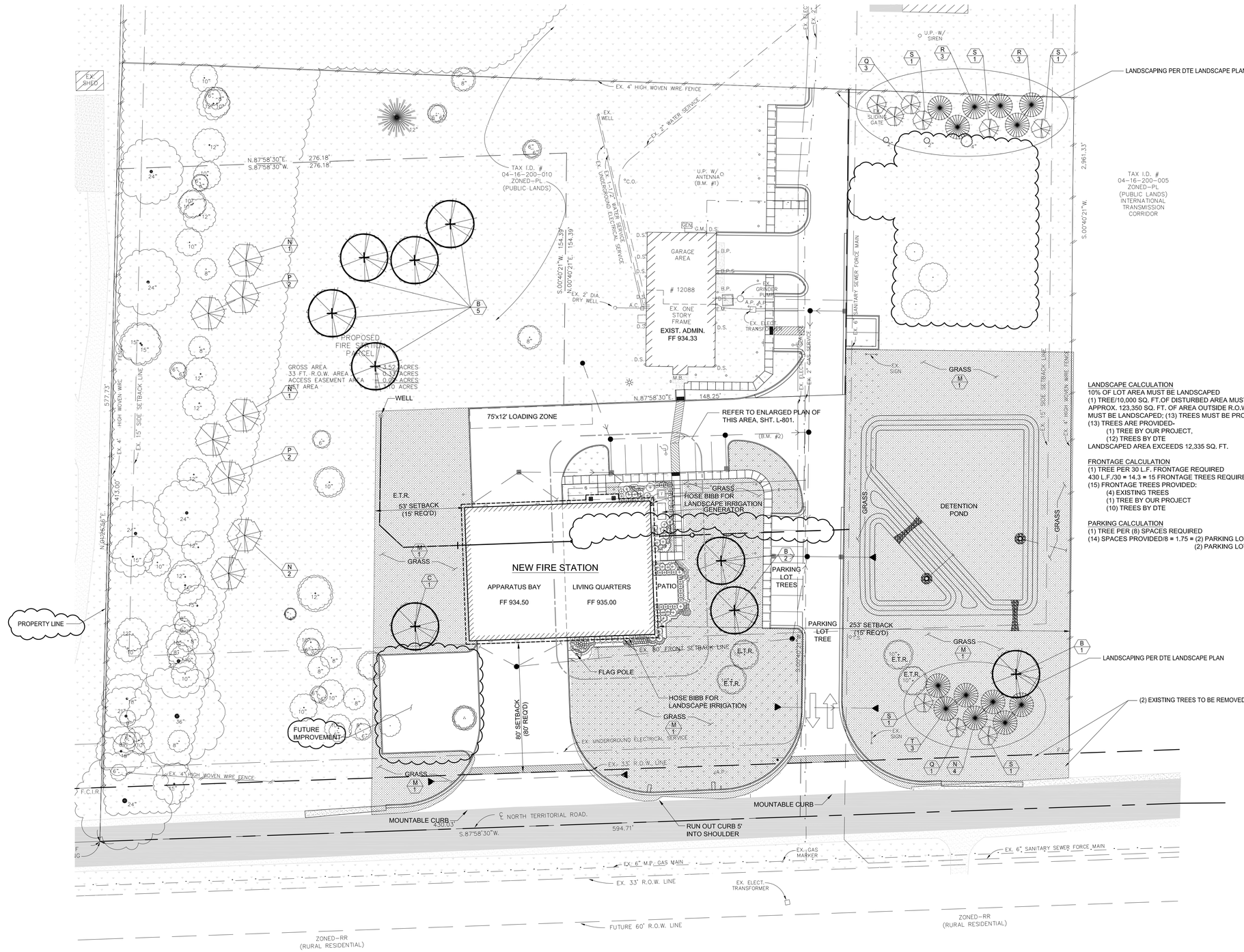
Date	Issued For
05/29/14	INTERNAL REVIEW
06/09/14	REVIEW
09/02/14	BIDS

Drawn: R. PHELPS
Checked: R. JORDAN
Approved: R. JORDAN

Sheet Title:
SCHEDULES

Project Number: 14049

Sheet Number: A-901



N

LANDSCAPE PLAN

SCALE: 1" = 30'

E.T.R. - EXISTING TREE TO REMAIN

LANDSCAPE CALCULATION
10% OF LOT AREA MUST BE LANDSCAPED
(1) TREE/10,000 SQ. FT.OF DISTURBED AREA MUST BE PROVIDED
APPROX. 123,350 SQ. FT. OF AREA OUTSIDE R.O.W. = 12,335 SQ. FT. MUST BE LANDSCAPED; (13) TREES MUST BE PROVIDED.
(13) TREES ARE PROVIDED-
(1) TREE BY OUR PROJECT,
(12) TREES BY DTE
LANDSCAPED AREA EXCEEDS 12,335 SQ. FT.

FRONTAGE CALCULATION
(1) TREE PER 30 L.F. FRONTAGE REQUIRED
430 L.F./30 = 14.3 = 15 FRONTAGE TREES REQUIRED
(15) FRONTAGE TREES PROVIDED:
(4) EXISTING TREES
(1) TREE BY OUR PROJECT
(10) TREES BY DTE

PARKING CALCULATION
(1) TREE PER (8) SPACES REQUIRED
(14) SPACES PROVIDED/8 = 1.75 = (2) PARKING LOT TREES REQUIRED
(2) PARKING LOT TREES PROVIDED

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Key Plan:

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

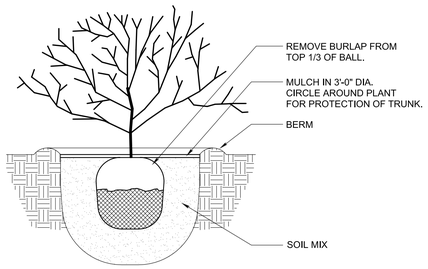
Date	Issued For
05/29/14	INTERNAL REVIEW
07/02/14	PRELIMINARY SPA
07/08/14	WCRC PERMIT
08/20/14	REVISED PRELIMINARY SPA
08/20/14	FINAL SPA/FINAL ENG.
10/13/14	REV. FINAL SPA/FINAL ENG.
10/13/14	ADDENDUM #5
01/09/15	REV. FINAL SPA/FINAL ENG.
01/22/15	AMEND. FINAL SPA/FINAL ENG.

Drawn:	K. GILSON
Checked:	C. LEACH
Approved:	C. LEACH

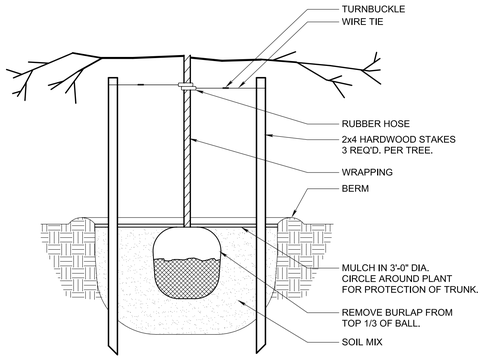
Sheet Title:
LANDSCAPE PLAN

Project Number: 14049

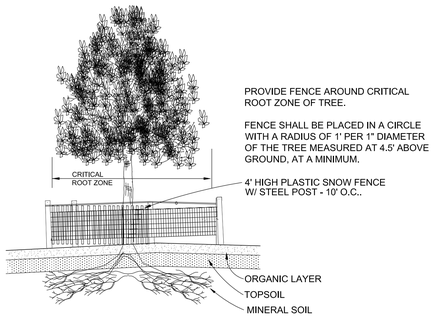
Sheet Number: L-210



SINGLE SHRUB PLANTING



TREE PLANTING



TREE PROTECTION DETAIL

TREE PROTECTION NOTES:

TREE PROTECTION SHALL BE ERECTED PRIOR TO START OF CONSTRUCTION ACTIVITIES, AND SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE.

NO PERSON MAY CONDUCT ANY ACTIVITY WITHIN THE DRIP LINE OF ANY TREE DESIGNATED TO REMAIN; INCLUDING, BUT NOT LIMITED TO PLACING SOLVENTS, BUILDING MATERIAL, CONSTRUCTION EQUIPMENT, OR SOIL DEPOSITS WITHIN DRIP LINES.

GRADE CHANGES MUST BE MINIMAL WITHIN THE DRIP LINE OF PROTECTED TREES.

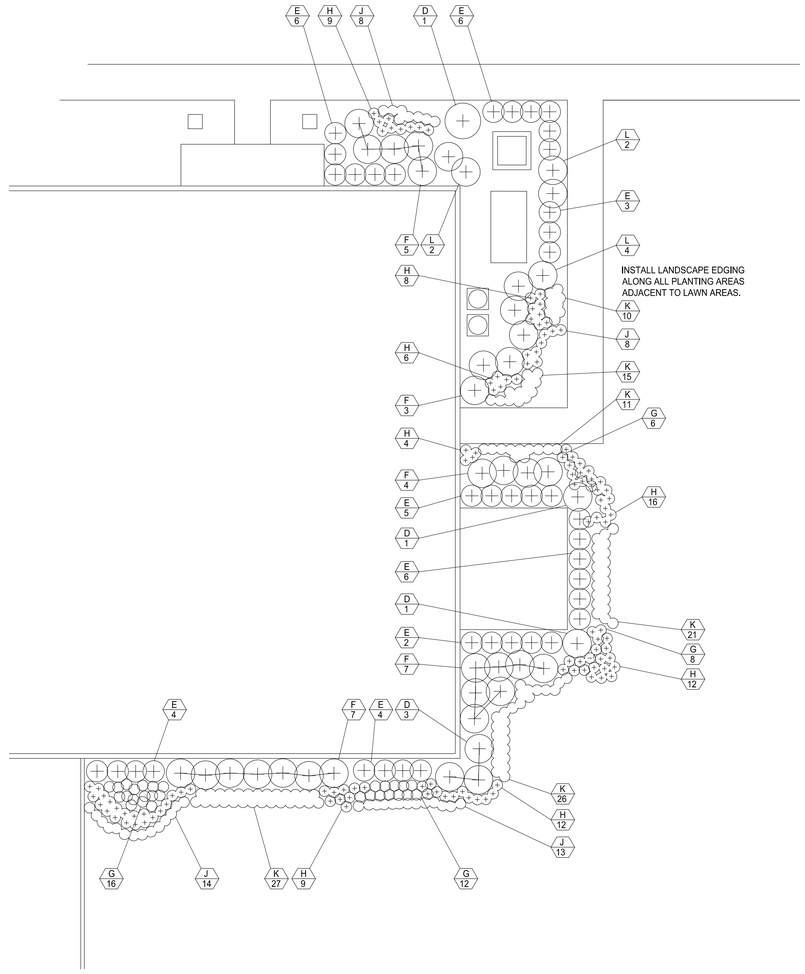
DURING CONSTRUCTION, NO PERSON SHALL ATTACH ANY DEVICE OR WIRE TO ANY REMAINING TREE.

ALL UTILITY SERVICE REQUESTS MUST INCLUDE NOTIFICATION TO THE INSTALLER THAT PROTECTED TREES MUST BE AVOIDED. ALL TRENCHING SHALL OCCUR OUTSIDE OF THE PROTECTIVE FENCING, WHERE POSSIBLE.

REGULATED TREES LOCATED ON ADJACENT PROPERTY THAT MAY BE AFFECTED BY CONSTRUCTION ACTIVITIES MUST BE PROTECTED.

PLANT LIST

TYPE	QUANTITY	COMMON NAME	SCIENTIFIC NAME	SIZE
B	8	RED MAPLE	Acer rubrum	2 1/2" B & B
C	1	SWEET GUM	Liquidambar styrum	2 1/2" B & B
D	6	MAIDEN GRASS	Miscanthus sinensus 'Gracillimus'	No. 5 CONTAINER
E	39	GREEN MOUNTAIN BOXWOOD	Buxus 'Green Mountain'	18" B & B
F	26	RUSSIAN SAGE	Perovskia atriplicifolia	No. 2 CONTAINER
G	42	LAVANDER	Lavandula angustifolia	No. 2 CONTAINER
H	76	PURPLE CONEFLOWER	Echinacea purpurea	No. 2 CONTAINER
J	43	SWEET WOODRUFF	Galium odoratum	3 1/2" POT
K	110	PACHYSANDRA	Pachysandra termaniiis	No. 1 CONTAINER
L	8	JAPANESE PIERIS	Pieris japonica	18" B & B
N	8	WHITE SPRUCE	Picea glauca	6' B & B
P	4	COLORADO SPRUCE	Picea plungens	8' B & B
Q	4	SNOWDRIFT CRAB	Malus 'snowdrift'	2" CAL. B & B
R	6	DOUGLAS FIR	Pseudotsuga	8-10' HT. B & B
S	5	PRAIRFIRE FLOWERING CRAB	Malus 'prairifire'	2" CAL. B & B
T	3	COLORADO BLUE SPRUCE	Picea pungens 'glauca'	8-10' B & B



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LANDSCAPE ENLARGED PLAN

SCALE: 3/32" = 1'-0"

LANDSCAPE NOTES

1. ALL LIVING MATERIALS SHALL HAVE A (1) YEAR REPLACEMENT WARRANTY.
2. ALL DISEASED, DAMAGED, OR DEAD MATERIALS SHALL BE REPLACED IN ACCORDANCE WITH THE DEXTER TOWNSHIP ZONING ORDINANCE AS REGULAR & CONTINUED MAINTENANCE.
3. PROVIDE TREE PROTECTION AT ALL TREES THAT ARE TO REMAIN WITHIN THE LIMITS OF DISTURBANCE AS SHOWN ON C-200.

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Key Plan:

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
05/29/14	INTERNAL REVIEW
07/02/14	PRELIMINARY SPA
07/08/14	WCRC PERMIT
08/20/14	REVISED PRELIMINARY SPA
08/20/14	FINAL SPA/FINAL ENG.
09/02/14	BIDS
10/13/14	REV. FINAL SPA/FINAL ENG.
10/13/14	ADDENDUM #5
01/22/15	AMEND. FINAL SPA/FINAL ENG.

Drawn:	K. GILSON
Checked:	E. JOHNSON
Approved:	C. LEACH

Sheet Title:
DETAILS - LANDSCAPING

Project Number: 14049

Sheet Number: L-801

GENERAL STRUCTURAL NOTES

GENERAL REQUIREMENTS

1. STRUCTURAL DRAWINGS SHALL BE USED IN CONJUNCTION WITH THE SPECIFICATIONS AND DESIGN DRAWINGS OF OTHER DISCIPLINES, WHICH TOGETHER WILL BE REFERRED TO AS THE "CONTRACT DOCUMENTS".

2. "CONTRACTOR" IS DEFINED TO INCLUDE ANY OF THE FOLLOWING: GENERAL CONTRACTOR AND THEIR SUBCONTRACTORS, CONSTRUCTION MANAGER AND THEIR SUBCONTRACTORS, OR DESIGN-BUILD CONTRACTOR AND THEIR SUBCONTRACTORS.

3. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE COMPLETED STRUCTURE, AND ARE NOT INTENDED TO INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, PROCEDURES, TECHNIQUES, SEQUENCES, AND FOR JOB SAFETY.

4. THE CONTRACTOR SHALL ENSURE THAT ALL CONSTRUCTION METHODS USED WILL NOT CAUSE DAMAGE TO ADJACENT BUILDINGS, UTILITIES, OR OTHER PROPERTY.

5. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATION OF THE STRUCTURAL WORK WITH THE ARCHITECTURAL, CIVIL, MECHANICAL, ELECTRICAL, AND PLUMBING CONTRACT DOCUMENTS, AS WELL AS ANY OTHER APPLICABLE TRADES. NOTIFY THE ARCHITECT/ENGINEER OF ANY DISCREPANCIES.

6. THE CONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS AND COORDINATE WITH THE STRUCTURAL DRAWINGS, ARCHITECTURAL DRAWINGS, DRAWINGS FROM OTHER CONSULTANTS, PROJECT SHOP DRAWINGS AND FIELD CONDITIONS.

7. IN CASES OF CONFLICT BETWEEN DRAWINGS AND/OR SPECIFICATIONS AND OTHER DISCIPLINES OR EXISTING CONDITIONS, CONTRACTOR SHALL NOTIFY THE ARCHITECT/ENGINEER AND OBTAIN CLARIFICATION PRIOR TO BIDDING AND PROCEEDING WITH THE WORK.

8. THE CONTRACTOR SHALL VERIFY ALL OPENING SIZES AND LOCATIONS WITH OTHER DISCIPLINES. THE DRAWINGS DO NOT SHOW ALL OPENINGS REQUIRED. ADDITIONAL OPENINGS, BLOCKOUTS AND SLEEVES MAY BE REQUIRED BY OTHER DISCIPLINES AND SHALL BE CONSTRUCTED USING THE TYPICAL DETAILS AND/OR THE CRITERIA INDICATED ON THE DRAWINGS. OPENINGS REQUIRED BUT NOT SHOWN ON THE STRUCTURAL DRAWINGS MUST BE APPROVED BY THE STRUCTURAL ENGINEER.

9. APPLY DETAILS, SECTIONS, AND NOTES ON THE DRAWINGS WHERE CONDITIONS ARE SIMILAR TO THOSE INDICATED BY DETAIL, DETAIL TITLE OR NOTE.

10. DO NOT SCALE DRAWINGS. ONLY USE DIMENSIONS INDICATED ON THE DRAWINGS.

11. ASSUME EQUAL SPACING BETWEEN ESTABLISHED DIMENSIONS, IF NOT INDICATED ON DRAWINGS.

12. CENTERLINES OF FRAMING MEMBERS COINCIDE WITH COLUMN CENTERLINES, UNLESS NOTED OTHERWISE.

13. CENTERLINES OF COLUMNS AND FOUNDATIONS COINCIDE WITH GRID LINE INTERSECTIONS, UNLESS NOTED OTHERWISE.

14. THE CONTRACTOR SHALL OBTAIN COPIES OF THE LATEST CONTRACT DOCUMENTS, INCLUDING ALL ADDENDA, AND PROVIDE THE RELEVANT PORTIONS TO ALL SUB-CONTRACTORS AND SUPPLIERS PRIOR TO SUBMITTAL OF SHOP DRAWINGS AND FABRICATION AND ERECTION OF STRUCTURAL MEMBERS.

15. STRUCTURAL ENGINEER'S ACCEPTANCE MUST BE SECURED FOR ALL STRUCTURAL SUBSTITUTIONS.

16. NO STRUCTURAL MEMBER SHALL BE CUT, NOTCHED, OR OTHERWISE REDUCED IN STRENGTH WITHOUT STRUCTURAL ENGINEER'S APPROVAL.

17. PERIODIC SITE OBSERVATION VISITS MAY BE PROVIDED BY THE ARCHITECT/ENGINEER. THE SOLE PURPOSE OF THESE OBSERVATIONS IS TO REVIEW THE GENERAL CONFORMANCE OF THE CONSTRUCTION WITH THE CONTRACT DOCUMENTS. THESE LIMITED OBSERVATIONS SHOULD NOT BE CONSTRUED AS CONTINUOUS OR EXHAUSTIVE TO VERIFY THAT ALL CONSTRUCTION IS IN COMPLIANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERFORMING ALL WORK IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.

REFERENCED CODES AND STANDARDS

PERFORM ALL CONSTRUCTION IN CONFORMANCE WITH THE BUILDING AND DESIGN CODES REFERENCED WITHIN THESE DOCUMENTS. THE CONTRACT DOCUMENTS REFER TO THE FOLLOWING CODES AND STANDARDS, UNLESS NOTED OTHERWISE:

2009 MICHIGAN BUILDING CODE, REFERENCING:
ASCE 7-05 MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES

CONCRETE:
ACI 301-08 SPECIFICATIONS FOR STRUCTURAL CONCRETE FOR BUILDINGS
ACI 318-08 BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE

MASONRY:
ACI 530-08 BUILDING CODE REQUIREMENTS FOR MASONRY STRUCTURES
ACI 530.1-08 SPECIFICATIONS FOR MASONRY STRUCTURES

METAL BUILDING SYSTEMS (MBS):
2006 MBMA METAL BUILDING SYSTEMS MANUAL

METAL DECK:
ANSI/SDI C1.0-06 STANDARD FOR COMPOSITE STEEL FLOOR DECK
ANSI/SDI NC1.0-06 STANDARD FOR NON-COMPOSITE STEEL FLOOR DECK
ANSI/SDI RD1.0-06 STANDARD FOR STEEL ROOF DECK

STRUCTURAL STEEL:
AISC 2005 STEEL CONSTRUCTION MANUAL, THIRTEENTH EDITION
AISC 303-05 CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES
AISC 360-05 SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS

DESIGN CRITERIA

DEAD LOADS FOR APPARATUS ROOF:	
ROOFING, INSULATION, PURLINS, AND FRAMES	SEE MBS MANUFACTURER
CEILING	0 PSF
MECHANICAL/ELECTRICAL	3 PSF
SPRINKLER SYSTEM	2 PSF
EQUIPMENT OVER 50 LBS	SEE DRAWINGS

DEAD LOADS FOR LIVING QUARTERS ROOF:	
ROOFING, INSULATION, PURLINS, AND FRAMES	SEE MBS MANUFACTURER
CEILING	2 PSF
MECHANICAL/ELECTRICAL	3 PSF
SPRINKLER SYSTEM	0 PSF
EQUIPMENT OVER 50 LBS	SEE DRAWINGS

DEAD LOADS FOR MEZZANINE:	
FLOORING	5 PSF
DECKING	40 PSF
BEAMS	5 PSF
CEILING	2 PSF
MECHANICAL/ELECTRICAL	3 PSF
SPRINKLER SYSTEM	0 PSF
EQUIPMENT	0 PSF
TOTAL	55 PSF

LIVE LOADS:	
CORRIDORS ABOVE 1ST FLOOR:	80 PSF OR 2000 LBS
GYMNASIUMS, MAIN FLOOR & BALCONIES:	100 PSF
LOBBIES AND 1ST FLOOR CORRIDORS:	100 PSF OR 2000 LBS
MECHANICAL/ELECTRICAL ROOMS:	150 PSF OR ACTUAL WEIGHT
OFFICES PLUS PARTITIONS:	65 PSF OR 2000 LBS
ROOFS:	20 PSF OR 300 LBS

UNLESS OTHERWISE SPECIFIED, THE INDICATED CONCENTRATED LOAD SHALL BE ASSUMED TO BE UNIFORMLY DISTRIBUTED OVER AND AREA 2 1/2 FT BY 2 1/2 FT AND SHALL BE LOCATED SO AS TO PRODUCE THE MAXIMUM LOAD EFFECTS IN THE STRUCTURAL MEMBERS.

LIVE LOADS THAT EXCEED 100 PSF SHALL NOT BE REDUCED.

SNOW LOADS:	
GROUND SNOW LOAD (Pg):	25 PSF
SNOW EXPOSURE FACTOR (Ce):	0.9
SNOW LOAD IMPORTANCE FACTOR (Is):	1.2 (OCCUP'Y CATEGORY IV)
THERMAL FACTOR (Ct):	1.1
FLAT ROOF SNOW LOAD (Pf):	20.8 PSF
SLOPED ROOF SNOW LOAD (Ps):	19.4 PSF
SLIDING SNOW:	SEE SLIDING SNOW DIAGRAM
SNOW DRIFTING:	SEE SNOW DRIFT DIAGRAM

WIND DESIGN DATA:	
BASIC WIND SPEED (3-SECOND GUST):	90 MPH
WIND IMPORTANCE FACTOR (Iw):	1.15 (OCCUP'Y CATEGORY III)
WIND EXPOSURE	
EAST-WEST DIRECTION:	B
NORTH-SOUTH DIRECTION:	B
INTERNAL PRESSURE COEFFICIENT:	+/- 0.18
WIND BASE SHEAR:	SEE MBS MANUFACTURER
COMPONENTS AND CLADDING:	SEE COMPONENTS AND CLADDING DIAGRAM

EARTHQUAKE DESIGN DATA:	
SEISMIC IMPORTANCE FACTOR (Ie):	1.5 (OCCUP'Y CATEGORY IV)
MAPPED SPECTRAL RESPONSE ACCELERATIONS	
SHORT PERIOD (Ss):	0.114 g
1-SECOND PERIOD (S1):	0.045 g
SITE CLASS:	D
DESIGN SPECTRAL RESPONSE ACCELERATIONS	
SHORT PERIOD (SDS):	0.121 g
1-SECOND PERIOD (SD1):	0.071 g
SEISMIC DESIGN CATEGORY:	C
BASIC SEISMIC-FORCE-RESISTING SYSTEM(S)	
EAST-WEST DIRECTION:	SEE MBS MANUFACTURER
NORTH-SOUTH DIRECTION:	SEE MBS MANUFACTURER
SEISMIC DESIGN BASE SHEAR	
EAST-WEST DIRECTION:	SEE MBS MANUFACTURER
NORTH-SOUTH DIRECTION:	SEE MBS MANUFACTURER
SEISMIC RESPONSE COEFFICIENT(S)	
EAST-WEST DIRECTION (Cs):	SEE MBS MANUFACTURER
NORTH-SOUTH DIRECTION (Cs):	SEE MBS MANUFACTURER
RESPONSE MODIFICATION FACTOR(S)	
EAST-WEST DIRECTION (R):	SEE MBS MANUFACTURER
NORTH-SOUTH DIRECTION (R):	SEE MBS MANUFACTURER
ANALYSIS PROCEDURE USED:	SEE MBS MANUFACTURER

GEOTECHNICAL INFORMATION:	
MAXIMUM ALLOWABLE BEARING PRESSURE:	2500 PSF (FOR ISOLATED FOOTINGS)
MAXIMUM ALLOWABLE BEARING PRESSURE:	2500 PSF (FOR WALL FOOTINGS)
DESIGN ACTIVE LATERAL SOIL LOAD:	40 PSF/FT (LEVEL BACKFILL)
DESIGN AT-REST LATERAL SOIL LOAD:	60 PSF/FT (LEVEL BACKFILL)
ALLOWABLE LATERAL BEARING PRESSURE:	200 PSF/FT (BELOW NATURAL GRADE)
COEFFICIENT OF FRICTION:	0.35

A 30 PERCENT INCREASE IN THESE VALUES HAS BEEN USED IN THE DESIGN OF FOUNDATIONS TO RESIST WIND AND EARTHQUAKE LOADS.

THE FROST LINE FOR THIS LOCALITY IS 42 INCHES BELOW GRADE.

THE FOUNDATION DESIGN IS BASED ON THE GEOTECHNICAL INVESTIGATION REPORT NO. 5455 BY TESTING ENGINEERS & CONSULTANTS, INC., DATED 6/17/2014.

FLOOD DESIGN DATA:
THE BUILDING IS NOT LOCATED IN WHOLE OR IN PART IN A FLOOD HAZARD AREA AS ESTABLISHED IN SECTION 1612.3 OF THE BUILDING CODE.

SPECIAL LOADS:
BALCONY RAILINGS AND GUARDRAILS; 50 PLF APPLIED HORIZONTALLY AT RIGHT ANGLES TO THE TOP RAIL OR 200 LBS APPLIED IN ANY DIRECTION AT ANY POINT.

INTERMEDIATE RAILS, PANEL FILLERS AND THEIR CONNECTIONS; LL=25 PSF APPLIED HORIZONTALLY AT RIGHT ANGLES OVER THE ENTIRE TRIBUTARY AREA, INCLUDING OPENINGS AND SPACES BETWEEN RAILS. REACTIONS DUE TO THIS LOADING NEED NOT BE COMBINED

ADDITIONAL LOADS FROM MECHANICAL EQUIPMENT IS NOTED SPECIFICALLY ON THE DRAWINGS.

SERVICEABILITY:		
ALLOWABLE STORY DRIFT:		
FROM WIND FORCES	H/100	(10 YEAR WIND)
FROM SEISMIC FORCES	H/100	

DEFLECTION LIMITS:

CONSTRUCTION	LL	SL OR WL	DL+LL
ROOF MEMBERS			
SUPPORTING PLASTER CEILING	L/360	L/360	L/240
SUPPORTING NONPLASTER CEILING	L/240	L/240	L/180
NOT SUPPORTING CEILING	L/180	L/180	L/120
FLOOR MEMBERS	L/360	-	L/240
EXTERIOR WALLS AND INTERIOR PARTITIONS			
WITH BRITTLE FINISHES	-	L/240	-
WITH FLEXIBLE FINISHES	-	L/120	-
FARM BUILDINGS	-	-	L/180
GREEN HOUSES	-	-	L/120

NOTES:
A) FOR STRUCTURAL ROOFING AND SIDING MADE OF FORMED METAL SHEETS, THE TOTAL LOAD DEFLECTION SHALL NOT EXCEED L/60. FOR SECONDARY ROOF STRUCTURAL MEMBERS SUPPORTING FORMED METAL ROOFING, THE LIVE LOAD DEFLECTION SHALL NOT EXCEED L/150. FOR SECONDARY WALL MEMBERS SUPPORTING FORMED METAL SIDING, THE DESIGN WIND LOAD DEFLECTION SHALL NOT EXCEED L/90. FOR ROOFS, THIS EXCEPTION ONLY APPLIES WHEN THE METAL SHEETS HAVE NO ROOF COVERING.
B) THE WIND LOAD IS PERMITTED TO BE TAKEN AS 0.7 TIMES THE "COMPONENT AND CLADDING" LOADS FOR THE PURPOSE OF DETERMINING DEFLECTION LIMITS HEREIN.
C) FOR STEEL STRUCTURAL MEMBERS, THE DEAD LOAD SHALL BE TAKEN AS ZERO.
D) FOR CANTILEVER MEMBERS, L SHALL BE TAKEN AS TWICE THE LENGTH OF THE CANTILEVER.
E) SEE BUILDING CODE FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

SUBMITTALS

1. THE CONTRACTOR SHALL SUBMIT FOR ARCHITECT/ENGINEER'S REVIEW A SCHEDULE WHICH DETAILS THE ESTIMATED QUANTITY OF SUBMITTALS AND THE DATE THEY WILL BE RECEIVED, AT LEAST TWENTY WORKING DAYS PRIOR TO THE FIRST SUBMITTAL. THE SCHEDULE SHOULD ACCOUNT FOR AT LEAST TEN WORKING DAYS OF REVIEW TIME BY THE ARCHITECT/ENGINEER FOR EACH SUBMITTAL. THE ARCHITECT/ENGINEER SHALL REVIEW THE PROPOSED SCHEDULE AND SUBMIT COMMENTS TO THE CONTRACTOR, WHICH SHALL BE RE-SUBMITTED FOR RECORD.

2. THE CONTRACTOR IS TO REVIEW EACH SUBMITTAL PRIOR TO FORWARDING TO ARCHITECT/ENGINEER. THE CONTRACTOR IS TO STAMP EACH SUBMITTAL VERIFYING THAT THE FOLLOWING HAS BEEN ADDRESSED:

A) THE SUBMITTAL IS REQUESTED.
B) THE SUBMITTAL IS BASED ON THE LATEST DESIGN.
C) THE SUBMITTAL IS COMPLETE.
D) THE PROJECT NAME, LOCATION AND SUBMITTAL NUMBER ARE NOTED.
E) THE WORK IS COORDINATED AMONG ALL CONSTRUCTION TRADES.
F) THE SUBMITTAL DOES NOT INCLUDE SUBSTITUTION REQUEST.
G) IF REQUIRED, SPECIALTY ENGINEER HAS SEALED SUBMITTAL.
H) PREVIOUS ARCHITECT/ENGINEER'S COMMENTS HAVE BEEN ADDRESSED.
I) REVISIONS ARE CLEARLY MARKED BY CIRCLING OR CLOUDS.

3. THE ARCHITECT/ENGINEER MAY RETURN, WITHOUT COMMENT, SUBMITTALS WHICH THE CONTRACTOR HAS NOT STAMPED OR WHICH DO NOT MEET THE ABOVE REQUIREMENTS.

4. THE CONSTRUCTION, MANUFACTURE OR FABRICATION OF ANY ITEMS PRIOR TO ARCHITECT/ENGINEER REVIEW WILL BE ENTIRELY AT THE RISK OF THE CONTRACTOR.

5. ARCHITECT/ENGINEER'S REVIEW IS FOR GENERAL CONFORMANCE AND COMPLIANCE WITH DESIGN CONCEPT AND CONTRACT DOCUMENTS. ANY ACTION NOTED DOES NOT WAIVE ANY REQUIREMENTS OF CONTRACT DOCUMENTS; COORDINATION OF TRADES; AND SATISFACTORY PERFORMANCE OF THEIR WORK ARE CONTRACTOR'S COMPLETE RESPONSIBILITY.

6. FOR COMPONENTS THAT REQUIRE A SPECIALTY ENGINEER, THE SUBMITTAL SHALL BE SEALED BY THE ENGINEER RESPONSIBLE FOR THE DESIGN. SEALING OF THE SUBMITTAL IMPLIES THAT THE SPECIALTY ENGINEER HAS REVIEWED THE CONTRACT DOCUMENTS AND HAS TO THE BEST OF THEIR KNOWLEDGE INCORPORATED ALL OF THE SPECIAL DESIGN CRITERIA CONTAINED THEREIN.

7. "SPECIALTY ENGINEER" IS DEFINED AS THE STRUCTURAL ENGINEER EMPLOYED BY THE SUPPLIER TO DESIGN PRODUCTS TO MEET THE SPECIFIC CRITERIA OUTLINED IN THE CONTRACT DOCUMENTS.

8. THE ITEMS THAT REQUIRE SUBMITTALS FOR STRUCTURAL REVIEW ARE AS FOLLOWS:

ITEM	SPECIALTY ENGINEER REQUIRED	REMARKS
CONCRETE REINFORCING LAYOUT	NO	
CONCRETE MIX DESIGNS	NO	
MASONRY REINFORCEMENT LAYOUT	NO	
METAL BUILDING SYSTEMS	YES	
METAL DECK	NO	
STRUCTURAL STEEL	NO	

8. THE ITEMS THAT REQUIRE SUBMITTALS FOR REVIEW OF INTERACTION WITH THE BASE BUILDING STRUCTURE ARE AS FOLLOWS:

ITEM	REMARKS
ARCHITECTURAL ORNAMENTATION	I.E. FLAGPOLES, CANOPIES,
BANNERS, MASTS, ETC.	
SKYLIGHTS	
PHOTOVOLTAIC PANELS	
HANGING EQUIPMENT OVER 300 LBS	

NOTE: THE SUBMITTALS SHALL INDICATE THE MAGNITUDES, DIRECTIONS, LOCATIONS AND CONNECTION CONDITIONS OF ALL LOADS IMPOSED ON THE SUPPORTING STRUCTURE.

FOUNDATIONS

1. CONTRACTOR TO FOLLOW ALL RECOMMENDATIONS IN THE GEOTECHNICAL INVESTIGATION REPORT NOTED IN THE DESIGN CRITERIA SECTION OF THE STRUCTURAL GENERAL NOTES.

2. A REPRESENTATIVE OF THE GEOTECHNICAL ENGINEER SHALL BE RETAINED BY THE OWNER TO VERIFY FOUNDATION INSTALLATION AND CONSTRUCTION IS IN CONFORMANCE WITH THE RECOMMENDATIONS OUTLINED IN THE GEOTECHNICAL INVESTIGATION REPORT.

3. CONTRACTOR SHALL NOTIFY GEOTECHNICAL ENGINEER WHEN EXCAVATIONS ARE COMPLETED SO THAT CONDITIONS MAY BE INSPECTED PRIOR TO PLACEMENT OF ANY FILL OR CONCRETE.

4. EXCEPT WHERE OTHERWISE PROTECTED FROM FROST, FOUNDATIONS AND OTHER PERMANENT SUPPORTS OF BUILDINGS AND STRUCTURES SHALL BE PROTECTED FROM FROST BY EXTENDING BELOW THE FROST LINE, WHICH IS NOTED IN THE DESIGN CRITERIA SECTION OF THE STRUCTURAL GENERAL NOTES.

5. CONTRACTOR SHALL BE RESPONSIBLE TO ADEQUATELY PROTECT ALL EXCAVATION. WHERE NECESSARY, SHEET AND SHORE THE EXCAVATION WITH ALL REQUIRED TIEBACKS AND BRACING AS DETERMINED BY CONTRACTOR'S STRUCTURAL ENGINEER.

6. DO NOT BACKFILL AGAINST CANTILEVER RETAINING WALLS OR BASEMENT WALLS UNTIL THE CONCRETE HAS ATTAINED 100% OF ITS DESIGN STRENGTH.

7. DO NOT PLACE BACKFILL AGAINST FOUNDATION WALLS UNTIL BASEMENT LEVEL AND FIRST FLOOR SLABS ARE IN PLACE. SHORE AND BRACE WALLS AS REQUIRED IF BACKFILLING OPERATIONS ARE TO BE CARRIED OUT PRIOR TO PLACEMENT OF FLOOR SLABS.

8. PLACE BACKFILL AGAINST GRADE BEAMS AND FOUNDATIONS ELEVATION OF THE FILL IS ESSENTIALLY EQUAL ON BOTH SIDES OF THE GRADE BEAM OR FOUNDATION, EXCEPT AS SHOWN ON THE DRAWINGS.

CONCRETE

1. ALL CONCRETE SHALL BE MADE WITH PORTLAND CEMENT, STONE AGGREGATE, WITH MIXES DESIGNED TO MEET THE FOLLOWING CRITERIA FOR USE IN VARIOUS ELEMENTS OF THE STRUCTURE AS FOLLOWS:

STRUCTURAL ELEMENT	28 DAY COMP STRGTHCONC (PSI)	MAX AGG TYPE	MAX W/CM (IN)	MAX SLUMP RATIO	(IN)
EXTERIOR SLABS	4500	II	1	0.45	3
FOOTINGS AND PIERS	4500	II	3/4	0.45	3
FOUNDATION WALLS	4500	II	3/4	0.45	3
INTERIOR SLABS	3000	I/II	1	0.68	3
SUPPORTED SLABS	4000	II	3/4	0.57	3

NOTE: MAXIMUM SLUMP MAY BE INCREASED WHEN CHEMICAL ADMIXTURES ARE USED, PROVIDED THAT THE ADMIXTURE-TREATED CONCRETE HAS THE SAME OR LOWER WATER-CEMENT OR LOWER WATER-CEMENTITIOUS MATERIAL RATIO AND DOES NOT EXHIBIT SEGREGATION POTENTIAL OR EXCESSIVE BLEEDING.

2. PROVIDE NORMAL WEIGHT CONCRETE WITH CURED DENSITY OF 145 PCF, AND AGGREGATE CONFORMING TO ASTM C33, UNLESS NOTED OTHERWISE. WHERE INDICATED, PROVIDE LIGHTWEIGHT CONCRETE WITH CURED DENSITY OF 110 PCF AND AGGREGATE CONFORMING TO ASTM C330.

3. CONCRETE EXPOSED TO MOISTURE AND FREEZING-AND-THAWING CYCLES WITH OR WITHOUT EXPOSURE TO DEICING CHEMICALS SHALL BE AIR-ENTRAINED.

4. THE USE OF CALCIUM CHLORIDE AND OTHER CHLORIDE CONTAINING AGENTS IS PROHIBITED. THE USE OF RECYCLED CONCRETE IS PROHIBITED. PLACEMENT WITHIN AND CONTACT BETWEEN ALUMINUM ITEMS, INCLUDING ALUMINUM CONDUIT, AND CONCRETE IS PROHIBITED.

5. SLABS, TOPPING, FOOTINGS, BEAMS AND WALLS SHALL NOT HAVE JOINTS IN A HORIZONTAL PLANE. ANY STOP IN CONCRETE WORK MUST BE MADE AT THIRD POINT OF SPAN WITH VERTICAL BULKHEADS AND HORIZONTAL SHEAR KEYS UNLESS OTHERWISE SHOWN. ALL CONSTRUCTION JOINTS SHALL BE AS DETAILED OR AS APPROVED BY THE STRUCTURAL ENGINEER.

6. CONTRACTOR MAY POUR SLABS-ON-GRADE CONTINUOUS AND SAW CUT JOINTS WITHIN 4 TO 12 HOURS AFTER POURING.

7. ALL CONCRETE SHALL INCLUDE REINFORCEMENT. IF REINFORCEMENT IS NOT SPECIFICALLY INDICATED ON THE DRAWINGS VERIFY WITH THE STRUCTURAL ENGINEER.

CONCRETE REINFORCING

1. REINFORCEMENT SHALL CONFORM TO THE FOLLOWING STANDARDS AND MATERIAL PROPERTIES:

MATERIAL	STANDARD
DEFORMED BARS	ASTM A615, GRADE 60
WELDABLE DEFORMED BARS	ASTM A706
EPOXY COATED DEFORMED BARS	ASTM A615/A775

CONTINUED

MATERIAL	STANDARD
WELDED WIRE REINFORCEMENT	ASTM A185
EPOXY COATED WELDED WIRE REINFORCEMENT	ASTM A185/A884

3. DETAIL REINFORCEMENT BASED ON THE PROJECT REQUIREMENTS, ACI 318 AND ACI 315, UNLESS NOTED OTHERWISE.

4. WHERE A 90 DEG, 135 DEG OR 180 DEG HOOK IS GRAPHICALLY INDICATED, PROVIDE CORRESPONDING ACI STANDARD HOOKS, UNLESS NOTED OTHERWISE.

5. DOWELS SHALL MATCH SIZE AND SPACING OF MAIN REINFORCEMENT, UNLESS NOTED OTHERWISE.

6. UNLESS NOTED OTHERWISE, THE CONCRETE COVER FOR REINFORCEMENT IN NONPRESTRESSED CAST-IN-PLACE CONCRETE SHALL NOT BE LESS THAN THE FOLLOWING:

A) CONCRETE CAST AGAINST AND PERMANENTLY EXP TO EARTH	3"
B) CONCRETE EXPOSED TO EARTH OR WEATHER:	
NO. 6 THROUGH NO. 18 BARS	2"
NO. 5 BAR AND SMALLER	1 1/2"
C) CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:	
SLABS, WALLS, JOISTS:	
NO. 14 AND NO. 18 BARS	1 1/2"
NO. 11 BAR AND SMALLER	3/4"
BEAMS, COLUMNS:	
PRIMARY REINF, TIES, STIRRUPS, SPIRALS	1 1/2"
SHELLS, FOLDED PLATE MEMBERS	
NO. 6 THROUGH NO. 18 BARS	3/4"
NO. 5 BAR AND SMALLER	1/2"

7. LAP REINFORCEMENT AS SPECIFICALLY DETAILED ON THE DRAWINGS (SEE LAP SPLICE AND DEVELOPMENT SCHEDULE).

8. UNLESS NOTED OTHERWISE, ALL LAP SPLICES ARE TO BE CLASS B TENSION LAP SPLICES PER LAP SPLICE AND EMBEDMENT SCHEDULE.

9. PROVIDE MECHANICAL SPLICES FOR BARS LARGER THAN #11 OR WHERE INDICATED PROVIDE TENSILE, PRE-QUALIFIED, WELDED OR THREADED MECHANICAL SPLICES.

10. LAP WELDED WIRE REINFORCEMENT TWO PANEL SPACES.

11. UNLESS NOTED OTHERWISE, PROVIDE LAP LOCATIONS AS FOLLOWS:

STRUCTURAL ELEMENT	REINFORCING LOCATION	SPLICE LOCATION
GRADE BEAM / FDN WALL	TOP HORIZONTAL	MID-SPAN
GRADE BEAM / FDN WALL	BOTTOM HORIZONTAL	AT SUPPORT
WALL	INSIDE FACE VERTICAL	AT SUPPORT
WALL	OUTSIDE FACE VERTICAL	MID-HEIGHT

12. UNLESS OTHERWISE NOTED TERMINATE BARS AT DISCONTINUOUS ENDS WITH STANDARD HOOKS.

13. PROVIDE EPOXY COATED REINFORCEMENT AND ACCESSORIES IN AREAS OF DIRECT EXPOSURE TO THE ENVIRONMENT, CHEMICALS, OR DEICING FOR THE AREAS INDICATED ON THE DRAWINGS.

MASONRY

1. CONCRETE MASONRY ASSEMBLAGE SHALL DEVELOP 2000 PSI COMPRESSIVE STRENGTH IN 28 DAYS, UNLESS NOTED OTHERWISE.

2. LOAD BEARING AND BACKUP WALL CONCRETE MASONRY CONSTRUCTION SHALL CONFORM TO THE FOLLOWING MATERIAL STANDARDS:

MATERIAL	STANDARD
CONCRETE BLOCK	ASTM C9O, NORMAL WEIGHT TYPE I
MORTAR	ASTM C270, TYPE M OR S PORTLAND CEMENT/LIME ONLY (USE TYPE M MORTAR WHEN MASONRY IS IN DIRECT CONTACT WITH SOIL; TYPE S IN ALL OTHER CONDITIONS)
GROUT	ASTM C476 (MINIMUM 28 DAY COMP STRENGTH OF 2500 PSI)
REINFORCEMENT	ASTM A615, GRADE 60
JOINT REINFORCEMENT	ASTM A82, LADDER TYPE
EXTERIOR JOINT REINF	GALVANIZE PER ASTM A153
INTERIOR JOINT REINF	GALVANIZE PER ASTM A641

3. CALCIUM CHLORIDE SHALL NOT BE USED IN MORTAR OR GROUT.

4. LAY MASONRY UNITS IN RUNNING BOND PATTERN, UNLESS NOTED OTHERWISE.

5. HOLLOW-UNIT MASONRY SHALL HAVE FACE-SHELL BEDDING EXCEPT FOR PIERS, COLUMNS, PILASTERS, THE COURSE IMMEDIATELY ABOVE FOUNDATIONS, AND WHERE CONTAINMENT OF GROUT OR LOOSE FILL INSULATION REQUIRES THAT WEBS AND FACE SHELLS BE MORTARED. IN FULLY GROUTED OR UNGROUTED MASONRY ONLY THE FACE SHELLS NEED TO BE MORTARED.

6. HORIZONTAL WALL JOINTS SHALL BE REINFORCED AT 16" ON CENTER WITH LADDER TYPE REINFORCEMENT.

7. WALLS SHALL BE REINFORCED VERTICALLY AS SHOWN ON STRUCTURAL DRAWINGS. REINFORCING SHALL BE FULLY GROUTED IN PLACE.

8. WALLS SHALL ALSO BE REINFORCED VERTICALLY AT WALL ENDS, CORNERS, EACH SIDE OF DOOR OR WINDOW OPENINGS WITH ONE #5 BAR, UNLESS NOTED OTHERWISE.

9. FILL ALL VOIDS AND BLOCK CELLS SOLIDLY WITH GROUT FOR A DISTANCE OF 24" BENEATH AND 16" EACH SIDE OF ALL BEAM REACTIONS OR OTHER CONCENTRATED LOADS, UNLESS NOTED OTHERWISE.

10. LAP REINFORCEMENT 40 BAR DIAMETERS BUT NOT LESS THAN 12", UNLESS NOTED OTHERWISE.

METAL BUILDING SYSTEMS

1. METAL BUILDING SYSTEMS INCLUDE:
A) STRUCTURAL STEEL FRAMING SYSTEM
B) METAL ROOF SYSTEM
C) METAL WALL SYSTEM
D) ROOF AND WALL INSULATIONS SYSTEMS

2. THE METAL BUILDING SYSTEMS DESIGN SHALL MATCH THE BUILDING DIMENSIONS, NUMBER OF BAYS AND SPACING, ELEVATIONS, ROOF PROFILE, BRACING LOCATIONS, AND CLEAR HEIGHT REQUIREMENTS SHOWN ON THE CONTRACT DOCUMENTS.

3. THE METAL BUILDING SYSTEMS DESIGN SHALL COMPLY WITH THE DESIGN CRITERIA LISTED IN THE DESIGN CRITERIA SECTION OF THE GENERAL STRUCTURAL NOTES.

4. PROVIDE ALL BRIDGING AND ACCESSORIES REQUIRED FOR A COMPLETE AND PROPER INSTALLATION, AND AS RECOMMENDED BY THE MANUFACTURER.

5. ALL STRUCTURAL STEEL MATERIAL SHALL RECEIVE STANDARD SHOP PAINT, UNLESS NOTED OTHERWISE.

6. SUBMITTALS SHALL INCLUDE:
A) PRODUCT DATA - MANUFACTURER'S PRODUCT INFORMATION, SPECIFICATI0NS, AND INSTALLATION INSTRUCTIONS FOR BUILDING COMPONENTS AND ACCESSORIES.
B) ERECTION DRAWINGS - MANUFACTURER'S ERECTION DRAWINGS, INCLUDING PLANS, ELEVATIONS, SECTIONS, AND DETAILS, INDICATING ROOF FRAMING, TRANSVERSE CROSS-SECTIONS, COVERING AND TRIM DETAILS, AND ACCESSORY INSTALLATION DETAILS TO CLEARLY INDICATE PROPER ASSEMBLY OF BUILDING COMPONENTS.
C) CERTIFICATION - WRITTEN "CERTIFICATE OF DESIGN AND MANUFACTURING CONFORMANCE" PREPARED AND SIGNED BY A PROFESSIONAL ENGINEER, REGISTERED TO PRACTICE IN THE STATE OF THE PROJECTS LOCATION VERIFYING THAT THE METAL BUILDING SYSTEM DESIGN AND METAL ROOF SYSTEM DESIGN (INCLUDING PANELS, CLIPS, AND SUPPORT SYSTEM COMPONENTS) MEET INDICATED LOADING REQUIREMENTS AND CODES OF AUTHORITIES HAVING JURISDICTION. CERTIFICATION SHALL REFERENCE SPECIFIC DEAD LOADS, LIVE LOADS, SNOW LOADS, WIND LOADS/SPEEDS, TRIBUTARY AREA LOAD REDUCTIONS (IF APPLICABLE), CONCENTRATED LOADS, COLLATERAL LOADS, SEISMIC LOADS, END-USE CATEGORIES, GOVERNING CODE BODIES, INCLUDING YEAR, AND LOAD APPLICATIONS.

D) CERTIFICATION VERIFYING THAT THE METAL ROOF SYSTEM HAS BEEN TESTED AND APPROVED BY UNDERWRITER'S LABORATORY AS CLASS 90.
E) CERTIFICATION VERIFYING THAT THE METAL STANDING SEAM ROOF SYSTEM HAS BEEN TESTED IN ACCORDANCE WITH ASTM E 1592 TEST PROTOCOLS.

F) CERTIFICATION THAT THE METAL BUILDING SYSTEM SUPPLIER OR METAL ROOF SYSTEM SUPPLIER IS A MANUFACTURER'S AUTHORIZED AND FRANCHISED DEALER OF THE SYSTEM TO BE FURNISHED. CERTIFICATION SHALL STATE DATE ON WHICH AUTHORIZATION WAS GRANTED.
G) CERTIFICATION THAT THE METAL BUILDING SYSTEM OR ROOF SYSTEM INSTALLER HAS BEEN REGULARLY ENGAGED, FOR PAST 5 YEARS, IN THE INSTALLATION OF BUILDING SYSTEMS OF THE SAME OR EQUAL CONSTRUCTION TO THE SYSTEM SPECIFIED.
H) CERTIFICATION THAT THE METAL BUILDING SYSTEM'S MANUFACTURER HAS BEEN REGULARLY ENGAGED, FOR PAST 10 YEARS, IN THE MANUFACTURE OF BUILDING SYSTEMS OF THE SAME OR EQUAL CONSTRUCTION TO THE SYSTEM SPECIFIED.
I) MANUFACTURER'S STANDARD WARRANTY DOCUMENTATION.

METAL DECK

1. THE DECK TYPE AND THICKNESS SHALL BE AS SHOWN ON THE PLANS.

2. SHEET STEEL FOR DECK AND ACCESSORIES SHALL CONFORM TO ASTM A611 WITH A MINIMUM YIELD STRENGTH OF 33 KSI.

3. DECK SHALL BE SHOP-PAINTED OR GALVANIZED AS INDICATED ON THE PLANS.

4. THE DECK SHALL BE LAYED UP IN A MINIMUM THREE SPAN CONDITION.

5. PROVIDE ALL ACCESSORIES INCLUDING, BUT NOT NECESSARILY LIMITED TO; RIDGE AND VALLEY PLATES, FLAT PLATES AT CHANGE IN DIRECTION SUMP PANS, AND OTHER ACCESSORIES REQUIRED FOR A COMPLETE AND PROPER INSTALLATION, AND AS RECOMMENDED BY THE MANUFACTURER.

6. ANCHOR DECK UNITS TO STEEL SUPPORTING MEMBERS BY ARC SPOT PUDDLE WELDS OR APPROVED MECHANICAL FASTENERS. ARC SPOT PUDDLE WELDS SHALL BE 5/8 INCH MINIMUM VISIBLE DIAMETER WITH THE ATTACHMENT PATTERN SHOWN ON THE DRAWINGS. MECHANICAL FASTENERS, EITHER POWDER ACTUATED OR PNEUMATICALLY DRIVEN OR SELF DRILLING SCREWS MAY BE USED IN LIEU OF WELDING, PROVIDED PRODUCT DATA HAS BEEN SUBMITTED AND APPROVED. FASTEN SIDE LAPS AND PERIMETER EDGES OF UNITS BETWEEN SUPPORTS AT INTERVALS SHOWN ON THE DRAWINGS USING #10 SELF DRILLING SCREWS.

7. FASTEN PERIMETER EDGES OF DECK UNITS AT INTERVALS MATCHING THE ATTACHMENT PATTERN AND METHOD AT SUPPORTING MEMBERS OR AS SHOWN ON THE DRAWINGS.

8. BEFORE CONCRETE PLACEMENT, THE DECK SHALL BE INSPECTED FOR TEARS, DENTS, OR OTHER DAMAGE THAT MAY PREVENT THE DECK FROM ACTING AS A TIGHT AND SUBSTANTIAL FORM. THE NEED FOR THE REPAIR OR TEMPORARY SHORING OF THE DAMAGED DECK SHALL BE DETERMINED.

STRUCTURAL STEEL

1. STEEL MATERIALS SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS UNLESS NOTED OTHERWISE ON THE CONTRACT DOCUMENTS:

MATERIAL	STANDARD
W-SHAPES	ASTM A992, MIN YIELD STRENGTH 50 KSI
SQUARE AND RECTANGULAR HSS	ASTM A500, GRADE B, MIN YIELD STRENGTH 46 KSI
ROUND HSS	ASTM A500, GRADE B, MIN YIELD STRENGTH 42 KSI
PIPES	ASTM A53, GRADE B, MIN YIELD STRENGTH 35 KSI
ALL OTHER	ASTM A36, MIN YIELD STRENGTH 36 KSI

2. CONNECTION MATERIAL SHALL CONFORM TO THE FOLLOWING MINIMUM REQUIREMENTS OR AS NEEDED FOR CONNECTION DESIGN:

MATERIAL	STANDARD
ANGLES	ASTM A36, MIN YIELD STRENGTH 36 KSI
WT-SHAPES	ASTM A992, MIN YIELD STRENGTH 50 KSI
PLATES	ASTM A36, MIN YIELD STRENGTH 36 KSI
BOLTS	ASTM A325 OR A490
NUTS	ASTM A563
WASHERS	ASTM F436
THREADED RODS	ASTM A36, MIN YIELD STRENGTH 36 KSI
ANCHOR RODS	ASTM F1554 WELDABLE GRADE 55
WELD ELECTRODES	E70XX
CLEVISES	ASTM A668

3. STRUCTURAL STEEL MEMBERS AND CONNECTIONS DENOTED "SLRS" SHALL SATISFY REQUIREMENTS FOR THE SEISMIC LOAD RESISTING SYSTEM.

4. WHERE NO CAMBER IS INDICATED, FABRICATE BEAMS SO THAT ANY NATURAL CAMBER IS UPWARD AFTER ERECTION.

5. SPLICES SHALL BE ALLOWED ONLY AT LOCATIONS SPECIFICALLY INDICATED ON THE STRUCTURAL DRAWINGS UNLESS APPROVED OTHERWISE BY THE STRUCTURAL ENGINEER.

6. ALL BOLTED CONNECTIONS ARE BEARING-TYPE CONNECTIONS MADE WITH BOLTS INSTALLED TO ONLY THE SNUG-TIGHT CONDITION, UNLESS NOTED OTHERWISE.

7. DO NOT USE OVERSIZED OR SLOTTED HOLES FOR ANY CONNECTIONS UNLESS SPECIFICALLY INDICATED ON THE DRAWINGS OR APPROVED BY THE STRUCTURAL ENGINEER.

8. ALL CONNECTIONS NOT SPECIFICALLY DETAILED, SHALL BE BEARING-TYPE CONNECTIONS DESIGNED AND DETAILED BY THE FABRICATOR TO SUPPORT THE END REACTIONS NOTED ON THE DRAWINGS.

9. ALL FLOOR AND ROOF OPENINGS, UNLESS OTHERWISE NOTED, TO BE FRAMED WITH L5X3X1/4" (LLV.) VERIFY SIZE AND LOCATION OF ALL OPENINGS WITH THE TRADE INVOLVED.

10. PROVIDE L4X4X1/4 SEATS AT COLUMN WEBS WHERE REQUIRED FOR SUPPORT OF ROOF AND FLOOR DECKS.

11. STEEL THAT MAY ACCUMULATE WATER SHALL HAVE DRAIN HOLES. ALL PENETRATIONS THROUGH MAIN MEMBERS SHALL NOT EXCEED 1 1/8" DIA AND SHALL BE GROUND SMOOTH. THESE DRAINS MUST BE KEPT CLEAN AND OPEN.

12. ALL STEEL TO RECEIVE ONE SHOP COAT OF PAINT. OMIT PAINT AT HOLES FOR SLIP CRITICAL TYPE CONNECTIONS, AT STRUCTURAL STEEL TO BE FIREPROOFED, ENCASED OR IN CONTACT WITH CONCRETE, AND ON TOP FLANGE OF BEAMS RECEIVING SHEAR CONNECTORS.

13. FOR STEEL MEMBERS AND EMBEDMENTS EXPOSED TO WEATHER, PROVIDE HOT DIPPED GALVANIZED FINISH.

14. SHOW ALL COPES, HOLES, OPENINGS AND MODIFICATIONS REQUIRED IN STRUCTURAL STEEL MEMBERS FOR ERECTION OR THE WORK OF OTHER TRADES ON THE SHOP DRAWINGS.

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Key Plan: NO SCALE

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUB-STATION NO.2

NORTH TERRITORIAL ROAD,
DEXTER, MICHIGAN 48130

Seal:

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STRUCTURAL
GENERAL NOTES &
DESIGN CRITERIA

Project Number: 14049

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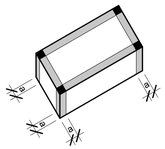
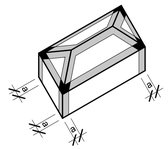
STRUCTURAL ABBREVIATIONS

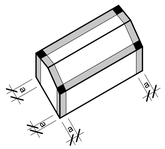
A/E	ARCHITECT/ENGINEER
ABV	ABOVE
ACI	AMERICAN CONCRETE INSTITUTE
ADH	ADHESIVE
ADJ	ADJUST, ADJUSTABLE, ADJACENT
AGG	AGGREGATE
AHU	AIR HANDLING UNIT
AIA	AMERICAN INSTITUTE OF ARCHITECTS
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALT	ALTERNATE
ALUM	ALUMINUM
ANCH	ANCHOR, ANCHORAGE
APPROX	APPROXIMATE
ARCH	ARCHITECT, ARCHITECTURAL
ASCE	AMERICAN SOCIETY OF CIVIL ENGINEERS
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS
ASSOC	ASSOCIATION; ASSOCIATE
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AVG	AVERAGE
AWG	AMERICAN WIRE GAUGE
AWS	AMERICAN WELDING SOCIETY
B TO B	BACK TO BACK
B/	BOTTOM (OF)
BAL	BALANCE
BD	BOARD
BEL	BELOW
BETW	BETWEEN
BJF	BITUMINOUS JOINT FILLER
BL	BASE LINE, BUILDING LINE,
BLDG	BUILDING
BLK	BLOCK
BLKG	BLOCKING
BM	BEAM, BENCH MARK
BOT	BOTTOM
BP	BASE PLATE
BRDG	BRIDGE, BRIDGING
BRG	BEARING
BRK	BRICK
BS	BOTH SIDES
BSMT	BASEMENT
BT	BOLT
BTR	BETTER
BVL	BEVEL, BEVELLED
BW	BOTH WAYS
BYP	BY PASS
C	CHANNEL
C/C	CENTER TO CENTER
CAP	CAPACITY
CB	CATCH BASIN
CEM	CEMENT
CF	CUBIC FEET
CFS	COLD FORMED STEEL
CHAM	CHAMFER
CI	CAST IRON
CIP	CAST IRON PIPE, CAST-IN-PLACE
CIR	CIRCLE, CIRCULAR
CIRC	CIRCUMFERENCE
CJ	CONTROL JOINT
CL	CENTERLINE
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CNTR	CENTER, COUNTER
CO	COMPANY
COEF	COEFFICIENT
COL	COLUMN
CONC	CONCRETE
CONN	CONNECTION
CONST	CONSTRUCTION
CONT	CONTINUOUS, CONTINUE, CONTROL
CONTR	CONTRACTOR
CRS	COURSE, COLD ROLLED STEEL
CSN	CAISSON
CTD	COATED
CTR	CENTER
CY	CUBIC YARD
CYL	CYLINDER
D	DEEP, DEPTH, DROP, DRAIN
DBL	DOUBLE
DEG	DEGREE
DEMO	DEMOLISH, DEMOLITION
DEP	DEPRESSED
DEPT	DEPARTMENT
DET	DETAIL
DIAG	DIAGONAL
DIA	DIAMETER
DIM	DIMENSION
DIV	DIVISION
DL	DEAD LOAD
DN	DOWN
DO	DITTO, DOOR OPENING
DR	DOOR, DRAIN
DTL	DETAIL
DWG(S)	DRAWING(S)
DWL	DOWEL
E	EAST
E TO E	END TO END
EA	EACH
ECC	ECCENTRIC
EE	EACH END
EF	EACH FACE
EIFS	EXTERIOR INSUL AND FINISH SYSTEM
EJ	EXPANSION JOINT
EL	ELEVATION
ELEC	ELECTRICAL
ELEV	ELEVATOR
EMBED	EMBEDMENT
ENGR	ENGINEER
EQ	EQUAL
EQUIP	EQUIPMENT
ES	EACH SIDE
EW	EACH WAY
EXCAV	EXCAVATE
EXIST	EXISTING
EXP	EXPANSION, EXPOSED
EXT	EXTERIOR, EXTINGUISH
F	DEGREES FAHRENHEIT
F TO F	FACE TO FACE
FB	FLAT BAR, FACE BRICK
FD	FLOOR DRAIN
FDN	FOUNDATION
FF	FAR FACE, FINISHED FLOOR
FH	FLAT HEAD
FIN	FINISH, FINISHED
FL	FLOOR, FRAME LINE
FLEX	FLEXIBLE
FLG	FLANGE, FLASHING, FLOORING
FLR	FLOOR
FM	FACTORY MUTUAL COMPANY
FO	FINISHED OPENING
FOC	FACE OF CONCRETE
FOS	FACE OF STUDS
FR	FRAME, FRONT
FS	FAR SIDE
FT	FOOT, FEET
FTG	FOOTING
FUT	FUTURE
G	GIRDER
GA	GAUGE, GAGE
GAL	GALLON
GALV	GALVANIZED
GB	GLASS BLOCK, GYPSUM BOARD
GC	GENERAL CONTRACTOR
GEN	GENERAL, GENERATOR
GND	GROUND
GOVT	GOVERNMENT
GRAN	GRANULAR
GRND	GROUND
GRTG	GRATING
GYP	GYPSUM
H	HAND, HIGH
HC	HOLLOW CORE
HDR	HEADER
HEX	HEXAGONAL
HGR	HANGER
HK	HOOK OR HOOKS
HKD	HOOKED (RE-BARS)
HORIZ	HORIZONTAL
HP	HIGH POINT
HSS	HOLLOW STRUCTURAL SHAPE
HR	HOT ROLLED, HOUR
HRS	HOT ROLLED STEEL, HOURS
HT	HEIGHT
HVAC	HEATING, VENTILATING & AIR CONDITIONING
HVY	HEAVY
HWH	HOT WATER HEATER
ID	INSIDE DIAMETER
IN	INCH
INFO	INFORMATION
INSUL	INSULATION
INT	INTERIOR, INTERNAL
INV	INVERT
JST	JOIST
JT	JOINT
KIP(S)	KILOPOUND(S) (1000 POUNDS)
KO	KNOCKOUT
L	ANGLE, LEFT, LENGTH, LONG
LAM	LAMINATED
LAT	LATERAL
LB(S)	POUND(S)
LBR	LUMBER
LH	LEFT HAND
LIN	LINEAR
LL	LIVE LOAD
LLH	LONG LEG HORIZONTAL
LLV	LONG LEG VERTICAL
LNDG	LANDING
LNTL	LINTEL
LOC(S)	LOCATION(S)
LP	LOW POINT
LT	LIGHT
M	BENDING MOMENT, M-SHAPE
MAS	MASONRY
MATL	MATERIAL
MAU	MAKE UP AIR UNIT
MAX	MAXIMUM
MC	MISC CHANNEL
MECH	MECHANICAL
MED	MEDIUM
MEZZ	MEZZANINE
MFD	MANUFACTURED, METAL FLOOR DECK
MFR	MANUFACTURE, MANUFACTURER
MIN	MINIMUM
MISC	MISCELLANEOUS
MK	MARK
MO	MASONRY OPENING
MONO	MONOLITHIC
MTL	METAL
N	NORTH
NF	NEAR FACE
NIC	NOT IN CONTRACT
NMT	NON-METALLIC
NO	NUMBER
NOM	NOMINAL
NS	NEAR SIDE
NTS	NOT TO SCALE
O TO O	OUT TO OUT
OA	OVERALL
OC	ON CENTER
OD	OUTSIDE DIAMETER
OF	OUTSIDE FACE
OH	OVERHEAD
OPNG	OPENING
OPP	OPPOSITE
OR	OUTSIDE RADIUS
PAF	POWDER ACTUATED FASTENERS
PAR	PARALLEL
PCF	POUNDS PER CUBIC FOOT
PED	PEDESTAL
PERF	PERFORATED
PERIM	PERIMETER
PERP	PERPENDICULAR
PH	PAN HEAD
PL	PLATE, PLAN, PROPERTY LINE
PLBG	PLUMBING
PLF	POUNDS PER LINEAL FOOT
PLTF	PLATFORM
PLYWD	PLYWOOD
PNL	PANEL
PR	PAIR
PRCST	PRECAST
PREFAB	PREFABRICATED
PRSTR	PRESTRESSED
PSF	POUNDS PER SQUARE FOOT
PSI	POUNDS PER SQUARE INCH
PT(S)	POINT(S)
PVC	POLYVINYL CHLORIDE
PVMT	PAVEMENT
QTR	QUARTER
QTY	QUANTITY
R	RISER
RAD	RADIUS
RD	ROOF DRAIN, ROUND
REBAR	REINFORCING BAR
REF	REFER, REFERENCE
REG	REGULAR
REINF	REINFORCEMENT, OR REINFORCE
REQD	REQUIRED
REV	REVERSE, REVISE, REVISION
RH	RIGHT HAND
RLL	ROOF LIVE LOAD
RO	ROUGH OPENING
RTN	RETURN
RTU	ROOF TOP UNIT
S	SOUTH, S-SHAPE
SCHED	SCHEDULE
SCR	SCREW
SECT	SECTION
SHT	SHEET
SHTHG	SHEATHING
SIM	SIMILAR
SL	SNOW LOAD
SPEC	SPECIFICATION, SPECIFICATIONS
SQ	SQUARE
SS	STAINLESS STEEL
STD	STANDARD
STGR	STAGGER
STIFF	STIFFENER
STL	STEEL
STR	STRAIGHT (RE-BARS), STRUCTURAL
STRUCT	STRUCTURAL
STWY	STAIRWAY
SYM	SYMMETRICAL
T	TREAD
T/	TOP (OF)
T&B	TOP AND BOTTOM
T&G	TONGUE & GROOVE
TAN	TANGENT
TD	TRENCH DRAIN
TEMP	TEMPORARY
THRD	THREADED
THK	THICK, THICKNESS
THRU	THROUGH
TOL	TOLERANCE
TYP	TYPICAL
UL	UNDERWRITERS' LABORATORIES
UNO	UNLESS NOTED OTHERWISE
VERT	VERTICAL
VIF	VERIFY IN THE FIELD
VOL	VOLUME
W	WEST, WIDTH, WIDE, W-SHAPE
W/	WITH
W/O	WITHOUT
WD	WOOD
WL	WIND LOAD
WP	WORKING POINT
WT	WEIGHT
WWR	WELDED WIRE REINFORCING
X STR	EXTRA STRONG
XX STR	DOUBLE-EXTRA STRONG



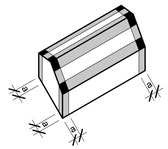
FLAT ROOF



HIP ROOF, 7° < Θ ≤ 27°



GABLE ROOF, Θ ≤ 7°



GABLE ROOF, 7° < Θ ≤ 45°

COMPONENTS & CLADDING NET DESIGN WIND PRESSURES				
	ZONE	EFFECTIVE WIND AREA (SF)	PRESSURE (PSF)	
ROOF 7 TO 27 DEGREES	1	10	10.0	-15.3
	1	20	10.0	-14.9
	1	50	10.0	-14.4
	1	100	10.0	-13.9
	2	10	10.0	-26.7
	2	20	10.0	-24.6
	2	50	10.0	-21.7
	2	100	10.0	-19.5
	3	10	10.0	-39.4
	3	20	10.0	-36.9
	3	50	10.0	-33.5
	3	100	10.0	-30.9
ROOF OVERHANG	2	10	10.0	-31.3
	2	20	10.0	-31.3
	2	50	10.0	-31.3
	2	100	10.0	-31.3
	3	10	10.0	-52.6
	3	20	10.0	-47.4
	3	50	10.0	-40.6
	3	100	10.0	-35.5
WALL	4	10	16.8	-18.2
	4	20	16.0	-17.4
	4	50	15.0	-16.4
	4	100	14.3	-15.6
	4	500	12.5	-13.9
	5	10	16.8	-22.4
	5	20	16.0	-20.9
	5	50	15.0	-19.0
	5	100	14.3	-17.4
	5	500	12.5	-13.9

NOTES:

1. PRESSURES SHOWN ARE APPLIED NORMAL TO THE SURFACE.

2. PLUS AND MINUS SIGNS SIGNIFY PRESSURES ACTING TOWARD AND AWAY FROM SURFACES, RESPECTIVELY.

3. FOR EFFECTIVE WIND AREA BETWEEN THOSES GIVEN, VALUE MAY BE INTERPOLATED, OTHERWISE USE THE VALUE ASSOCIATED WITH THE LOWER EFFECTIVE WIND AREA.

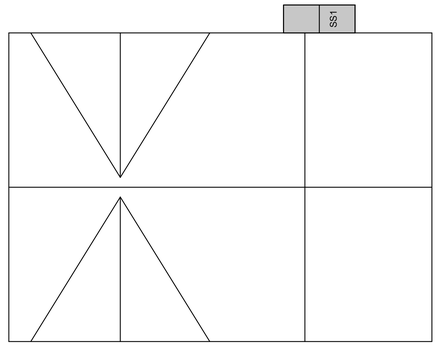
4. NOTATION:
   a = WIDTH OF PRESSURE ZONE = 8.2 FT
   h = MEAN ROOF HEIGHT = 26 FT

INTERIOR ZONES
ROOFS - ZONE 1 / WALLS - ZONE 4

END ZONES
ROOFS - ZONE 2 / WALLS - ZONE 5

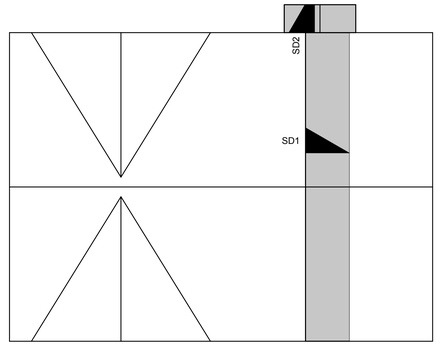
CORNER ZONES
ROOF - ZONE 3

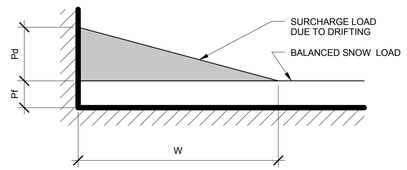
C&C WIND LOAD DIAGRAM
SCALE: NTS



SLIDING SNOW TABLE		
MARK	Pss	REMARKS
SS1	21 PSF	

SLIDING SNOW DIAGRAM
SCALE: NTS





SNOW DRIFT TABLE			
MARK	Pd	W	REMARKS
SD1	53 PSF	12'-3"	
SD2	54 PSF	12'-6"	

SNOW DRIFT DIAGRAM
SCALE: NTS

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Key Plan: NO SCALE

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUB-STATION NO.2

NORTH TERRITORIAL ROAD,
DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
09/02/14	BIDS

Drawn: R. PHELPS
Checked: P. LARSEN
Approved: P. LARSEN

Sheet Title:
STRUCTURAL GENERAL NOTES & DESIGN CRITERIA

Project Number: 14049

Sheet Number: S-001

MEZZANINE FRAMING PLAN NOTES:

1. TOP OF SUPPORTED CONCRETE SLAB AT ELEVATION = 11'-6", UNLESS NOTED OTHERWISE.

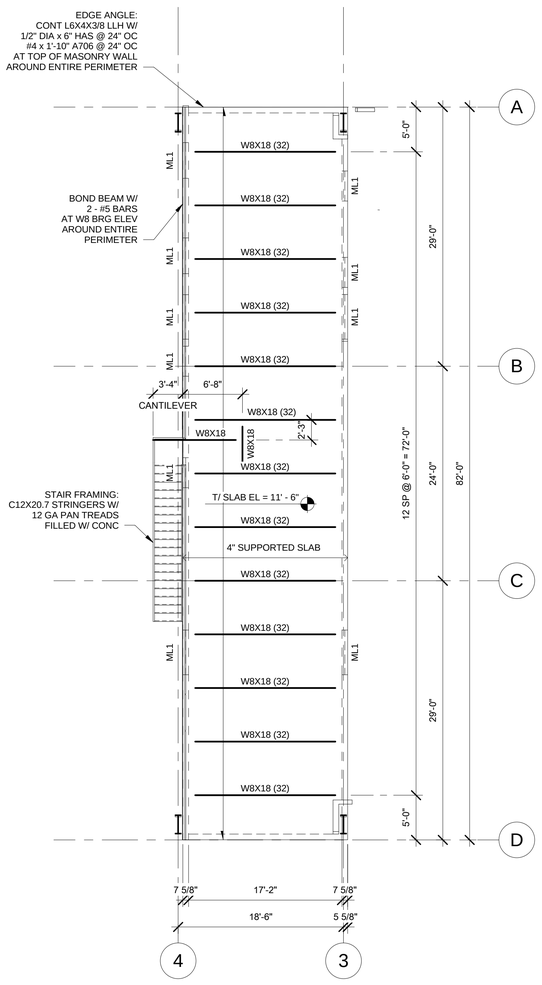
2. TOP OF STEEL AT ELEVATION 11'-2", UNLESS NOTED OTHERWISE.

3. THE 4" SUPPORTED SLAB SHALL BE 4" NORMAL WEIGHT CONCRETE CAST ON 1.5" 18 GAUGE TYPE VLI COMPOSITE DECK REINFORCED WITH 6X6-W1.4X1.4 WWR. FASTEN USING 5/8" PUDDLE WELDS ON A 36/4 PATTERN WITH 3 WELDS AT SIDELAPS.

4. STEEL BEAM CAMBER NOTED THUS "c=#".

5. THE QUANTITY OF STEEL BEAM COMPOSITE SHEAR STUD CONNECTORS NOTED THUS "(#)" AND SHALL BE 3/4" DIA X 3" LONG.

6. MASONRY LINTELS NOTED THUS "ML1" ON PLAN SHALL BE TWO COURSES GROUTED SOLID REINFORCED WITH 2 - #5 BARS AT THE BOTTOM AND CONSTRUCTED USING LINTEL UNITS AT THE HEAD.



MEZZANINE FRAMING PLAN
SCALE 1/8" = 1'-0"

FOUNDATION PLAN NOTES:

1. TOP OF APPARATUS BAY FINISH FLOOR ELEVATION = 0'-0" (EQUALS CIVIL ELEVATION 934.5 FT).

2. TOP OF FOUNDATION WALL AT ELEVATION = -10", UNLESS NOTED OTHERWISE.

3. TOP OF PIERS AT ELEVATION = -10" , UNLESS NOTED OTHERWISE.

4. TOP OF EXTERIOR FOOTINGS AT ELEVATION = -4'-0", UNLESS OTHERWISE NOTED.

5. TOP OF INTERIOR FOOTINGS AT ELEVATION = -4'-0", UNLESS OTHERWISE NOTED.

6. SEE METAL BUILDING SYSTEM DRAWINGS FOR COLUMN SIZES, BASE PLATES AND ANCHOR RODS. ANCHOR ROD DIAMETER AND QUANTITY SHALL BE THAT SHOWN ON THE METAL BUILDING DRAWINGS, WITH THE LENGTH, TYPE AND PROJECTION AS FOLLOWS:

1/2" DIAMETER - 6" LONG BOLT WITH 2" PROJECTION
3/4" DIAMETER - 2'-3" LONG THREADED ROD WITH NUT AT BOTTOM AND 5" PROJECTION
1" DIAMETER - 2'-3" LONG THREADED ROD WITH NUT AT BOTTOM AND 5" PROJECTION

7. PIER TYPES NOTED THUS "P#", SEE SCHEDULE FOR SIZE AND REINFORCING. PIER SHAPE TYPES AND REINFORCING CASES ARE DETAILED ON SHEET S-901.

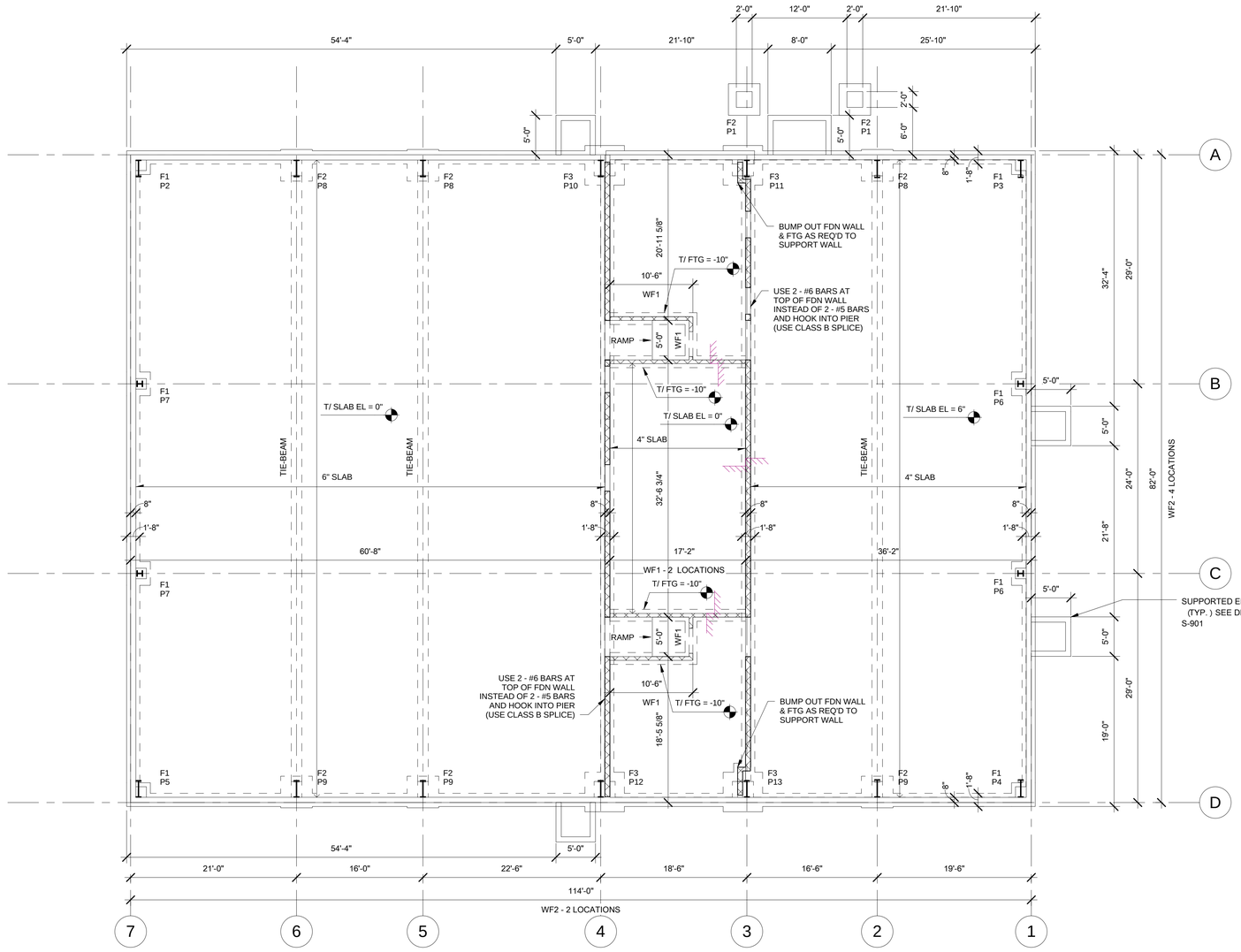
8. SPREAD FOOTING TYPES NOTED THUS "F#, SEE SCHEDULE FOR SIZE AND REINFORCING.

9. WALL FOOTING TYPES NOTED THUS "WF#", SEE SCHEDULE FOR SIZE AND REINFORCING.

10. REINFORCE ABOVE GRADE MASONRY WALLS VERTICALLY WITH #5 BARS @ 48" O.C. IN GROUTED CELL, UNLESS OTHERWISE NOTED.

11. CONCRETE SLABS-ON-GROUND SHALL BE THE THICKNESS NOTED ON THE PLAN PLACED OVER 10 MIL POLYETHYLENE SHEET VAPOR BARRIER WITH 4" OF COMPACTED CLEAN SAND MEETING MDOT CLASS II SPECIFICATIONS ABOVE AND BELOW THE VAPOR RETARDER AND REINFORCED AS FOLLOWS:

4" SLAB - WITH 6X6-W1.4XW1.4 WWR.
6" SLAB - WITH 6X6-W2.9XW2.9 WWR.



FOUNDATION PLAN
SCALE 1/8" = 1'-0"

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FOUNDATION PLAN
& MEZZANINE
FRAMING PLAN

Project Number: 14049

Sheet Number: S-210

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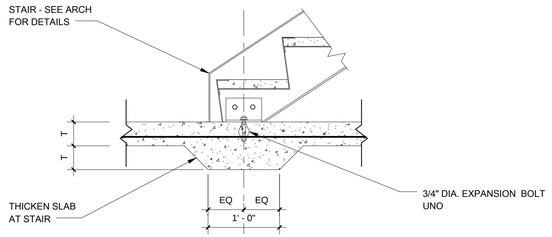
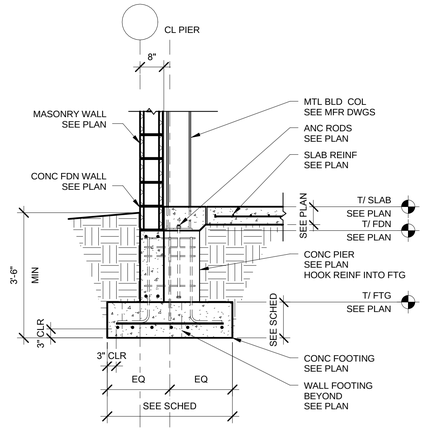
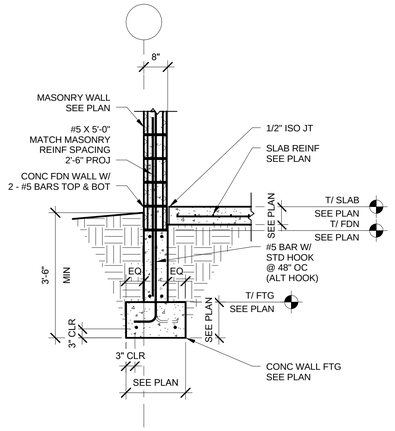


TYPICAL STRINGER CONN. TO CONCRETE SLAB DETAIL
SCALE: 1" = 1'-0"



TYP EXT FTG W/ MAS WALL (DROPPED BP)
SCALE: 1/2" = 1'-0"



TYP EXT WALL FTG W/ MAS WALL
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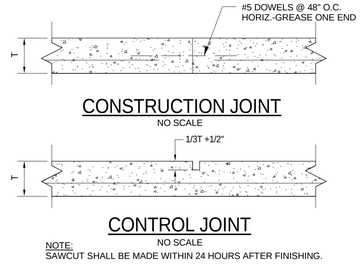
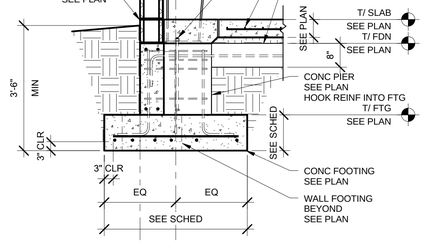
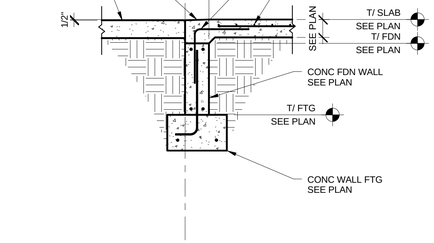


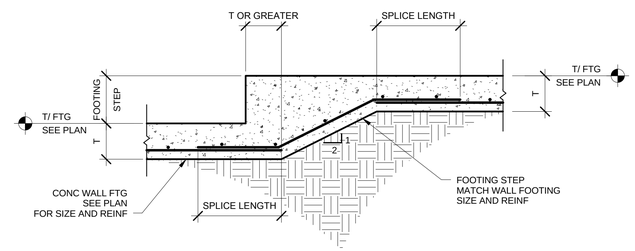
TYPICAL CONCRETE SLAB JOINTS
SCALE: 12" = 1'-0"



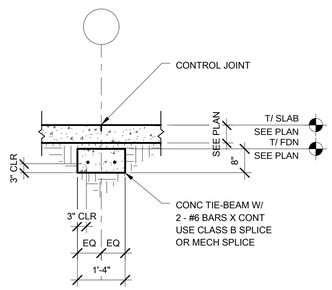
TYP EXT FTG W/ MAS WALL & TIE-BEAM (DROPPED BP)
SCALE: 1/2" = 1'-0"



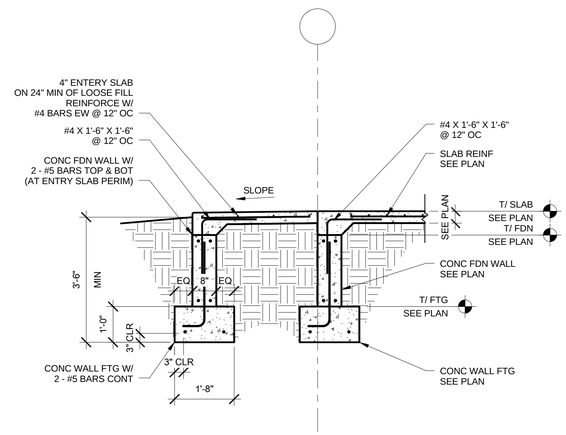
TYP EXT WALL FTG AT OH DOOR
SCALE: 1/2" = 1'-0"



TYPICAL STEPPED FOOTING
SCALE: 1/2" = 1'-0"



TYPICAL TIE-BEAM
SCALE: 1/2" = 1'-0"



TYP EXT WALL FTG AT MAN DOOR
SCALE: 1/2" = 1'-0"

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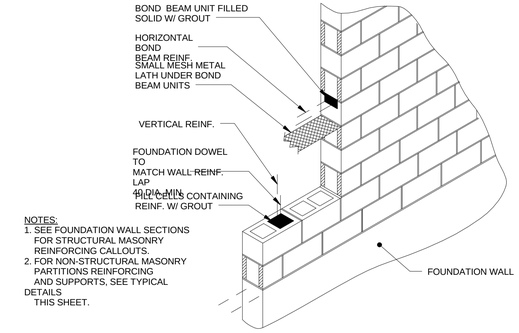
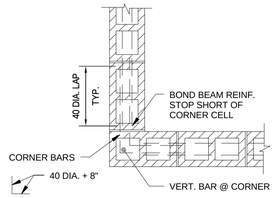
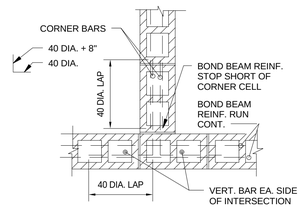


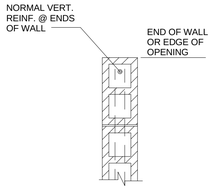
NOTES:
1. SEE FOUNDATION WALL SECTIONS FOR STRUCTURAL MASONRY REINFORCING CALLOUTS.
2. FOR NON-STRUCTURAL MASONRY PARTITIONS REINFORCING AND SUPPORTS, SEE TYPICAL DETAILS THIS SHEET.



TYPICAL WALL REINF. @ CORNERS



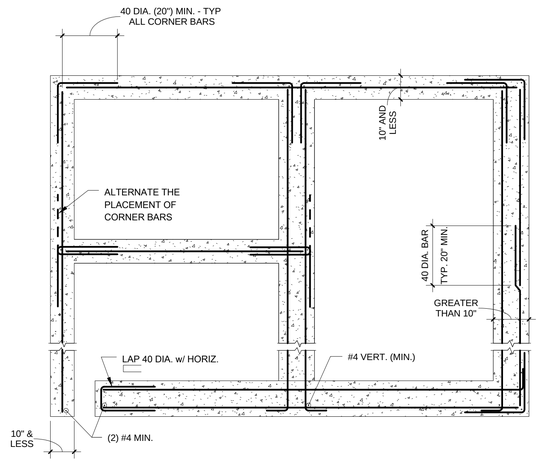
TYPICAL WALL REINF. @ INTERSECTION



TYPICAL WALL REINF. @ END OF WALL

NOTES:
1. HOOK ALL REINF. THAT CANNOT BE EXTENDED.
2. GROUT ALL CELLS CONTAINING REINF., ANCHOR BOLTS OR OTHER EMBEDDED ITEMS.
3. TYPICAL REINF. SHOWN. USE MORE IF REQ'D. BY SPECIAL DETAIL.

TYPICAL MASONRY WALL REINFORCING
SCALE: 12" = 1'-0"



NOTES:
1. REINF. SHOWN IS MINIMUM UNLESS OTHERWISE NOTED.
2. VERT. REINF. SHOWN IS ADDITIONAL IF NORMAL WALL REINF. IS NOT IN PROPER LOCATION.
3. CORNER BARS ARE SAME SIZE & SPACING AS HORIZONTAL REINF.
4. REINF. AT ALL CORNERS, ENDS & INTERSECTIONS OF WALLS SHALL BE PLACED IN ACCORDANCE WITH APPROPRIATE DETAIL SHOWN, UNLESS OTHERWISE NOTED.
5. WALL 10 INCHES THICK AND LESS USE SINGLE MAT OF REINF. WALLS GREATER THAN 10 INCHES THICK USE DOUBLE MAT OF REINF.

TYPICAL CONCRETE WALL REINFORCEMENT PLACING PLAN
SCALE: 3/4" = 1'-0"

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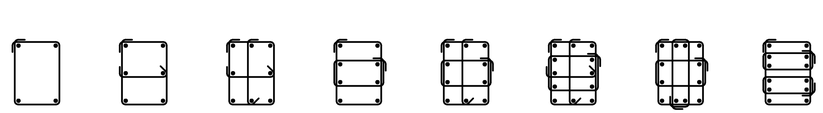
CONCRETE REINFORCING TENSION LAP SPLICE AND DEVELOPMENT LENGTH SCHEDULE

BAR SIZE	CLASS "B" LAP SPLICE LENGTH								DEVELOPMENT LENGTH							
	f'c = 3000 PSI				f'c = 4000 PSI				f'c = 3000 PSI				f'c = 4000 PSI			
	TOP BARS		OTHER BARS		TOP BARS		OTHER BARS		TOP BARS		OTHER BARS		TOP BARS		OTHER BARS	
	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2	CASE 1	CASE 2
#3	28	42	22	32	24	36	19	28	22	32	17	25	19	28	15	22
#4	37	56	29	43	32	48	25	37	29	43	22	33	25	37	19	29
#5	47	70	36	54	40	60	31	47	36	54	28	41	31	47	24	36
#6	56	84	43	64	48	72	37	56	43	64	33	50	37	56	29	43
#7	81	122	63	94	70	106	54	81	63	94	48	72	54	81	42	63
#8	93	139	72	107	80	121	62	93	72	107	55	82	62	93	48	71
#9	105	157	81	121	91	136	70	105	81	121	62	93	70	105	54	81
#10	118	177	91	136	102	153	79	118	91	136	70	105	79	118	61	91
#11	131	196	101	151	113	170	87	131	101	151	78	116	87	131	67	101

BEAMS, COLUMNS	CASE 1	CONCRETE COVER AT LEAST 1.0 db AND CENTER-TO-CENTER SPACING AT LEAST 2.0 db
	CASE 2	CONCRETE COVER LESS THAN 1.0 db OR CENTER-TO-CENTER SPACING LESS THAN 2.0 db
ALL OTHERS	CASE 1	CONCRETE COVER AT LEAST 1.0 db AND CENTER-TO CENTER SPACING AT LEAST 3.0 db
	CASE 2	CONCRETE COVER LESS THAN 1.0 db OR CENTER-TO-CENTER SPACING LESS THAN 3.0 db

NOTES:

1. TABULATED VALUES ARE BASED ON NORMAL WEIGHT CONCRETE, GRADE 60 UNCOATED REINFORCING, CLEAR SPACING OF BARS EQUAL TO OR GREATER THAN 2 x BAR DIA OR 1 1/2 INCHES, WHICHEVER IS GREATER, AND CLEAR COVER EQUAL TO OR GREATER THAN 1.0 x BAR DIA OR 3/4 INCHES, WHICHEVER IS GREATER
2. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12 INCHES OF CONCRETE CAST BELOW THE BARS
3. TABULATED LENGTHS ARE IN INCHES
4. TABULATED VALUES FOR BEAMS OR COLUMNS ARE BASED ON TRANSVERSE REINFORCEMENT AND CONCRETE COVER MEETING MINIMUM CODE REQUIREMENTS
5. ALL REBAR DEVELOPMENT LENGTHS AND LAP SPLICES SHALL BE DETAILED AND FURNISHED IN ACCORDANCE WITH CRSI, "REINFORCING BARS: ANCHORAGES AND SPLICES," 5TH EDITION 2008
6. USE CODE EQUATIONS FOR CONCRETE COMPRESSIVE STRENGTH GREATER THAN 4000 PSI
7. SPLICES SHALL NOT BE MADE AT POINTS OF MAXIMUM STRESS AS DETERMINED BY THE ENGINEER



CASE 1 CASE 2 CASE 3 CASE 4 CASE 5 CASE 6 CASE 7 CASE 8

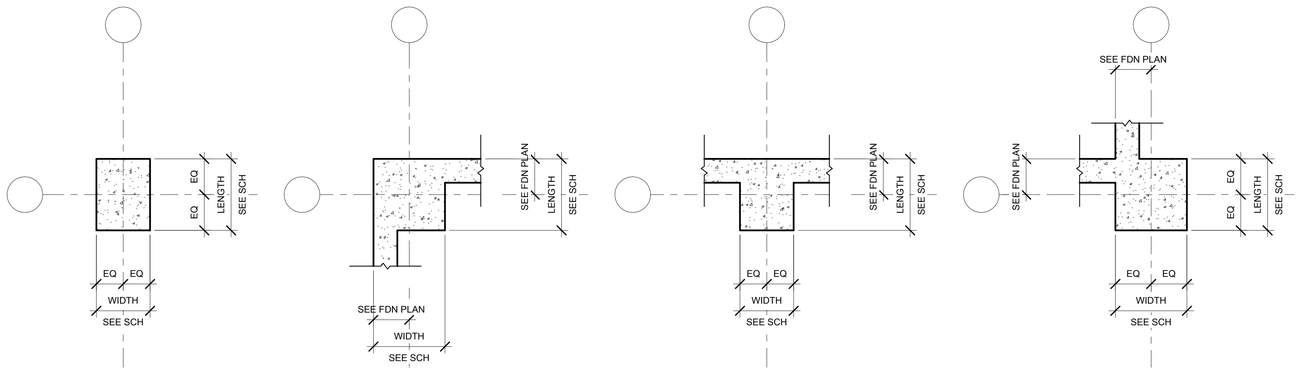
NOTES:

1. PLACE REINFORCING FOR RECTANGULAR PIERS WITH THE GREATER NUMBER OF VERTICAL BARS PARALLEL TO THE LONGEST SIDE OF THE PIER UNLESS NOTED IN THE PIER SCHEDULE REMARKS AS "ROTATE REINF 90 DEG".

2. WHERE ANCHOR BOLTS ARE PLACED IN THE TOP OF COLUMNS OR PEDESTALS, THE BOLTS SHALL BE ENCLOSED BY LATERAL REINFORCEMENT THAT ALSO SURROUNDS AT LEAST FOUR VERTICAL BARS OF THE COLUMN OR PEDESTAL. THE LATERAL REINFORCEMENT SHALL BE DISTRIBUTED WITHIN 5" OF THE TOP OF THE COLUMN OR PEDESTAL, AND SHALL CONSIST OF AT LEAST TWO #4 OR THREE #3 BARS.

PIER REINFORCING CASES

SCALE: 1/2" = 1'-0"



TYPE A TYPE B TYPE C TYPE D

CONC PIER SHAPE TYPES

SCALE: 1/2" = 1'-0"

SPREAD FOOTING SCHEDULE

NOTE: NORTH-SOUTH DIMENSION GIVEN FIRST.

MARK	TOP OF FOOTING	SIZE	THICKNESS	REINFORCING	REMARKS
F1	-4'-0"	3'-0" x 3'-0"	1'-0"	3 - #5 x 2'-6" EW TOP & BOTTOM	
F2	-4'-0"	4'-0" x 4'-0"	1'-0"	4 - #5 x 3'-6" EW TOP & BOTTOM	
F3	-4'-0"	5'-0" x 5'-0"	1'-0"	5 - #5 x 4'-6" EW TOP & BOTTOM	

WALL FOOTING SCHEDULE

MARK	TOP OF FOOTING	WIDTH	THICKNESS	REINFORCING	REMARKS
WF1	-10"	1'-6"	10"	2 - #4 x CONT BOTTOM	
WF2	-4'-0"	1'-8"	1'-0"	2 - #5 x CONT BOTTOM	

REINFORCED CONCRETE PIER SCHEDULE

MARK	TOP OF PIER	SHAPE TYPE	SIZE	VERTICAL REINFORCING	TIES	REINFORCING CASE	REMARKS
P-1	-10"	A	2'-0" x 2'-0"	8 - #6	#3 @ 12" O.C.	3	
P-2	-10"	B	2'-0" x 2'-0"	8 - #6	#3 @ 12" O.C.	3	
P-3	-10"	B	2'-0" x 2'-0"	8 - #6	#3 @ 12" O.C.	3	ROTATE 90-DEG
P-4	-10"	B	2'-0" x 2'-0"	8 - #6	#3 @ 12" O.C.	3	ROTATE 180-DEG
P-5	-10"	B	2'-0" x 2'-0"	8 - #6	#3 @ 12" O.C.	3	ROTATE 270-DEG
P-6	-10"	C	2'-0" x 1'-4"	6 - #6	#3 @ 12" O.C.	2	ROTATE 90-DEG
P-7	-10"	C	2'-0" x 1'-4"	6 - #6	#3 @ 12" O.C.	2	ROTATE 270-DEG
P-8	-10"	C	2'-8" x 1'-4"	8 - #6	#3 @ 12" O.C.	4	
P-9	-10"	C	2'-8" x 1'-4"	8 - #6	#3 @ 12" O.C.	4	ROTATE 180-DEG
P-10	-10"	C	2'-8" x 2'-8"	12 - #6	#3 @ 12" O.C.	7	SHIFT 6" EAST
P-11	-10"	C	2'-8" x 2'-8"	12 - #6	#3 @ 12" O.C.	7	SHIFT 6" WEST
P-12	-10"	C	2'-8" x 2'-8"	12 - #6	#3 @ 12" O.C.	7	ROTATE 180-DEG, SHIFT 6" EAST
P-13	-10"	C	2'-8" x 2'-8"	12 - #6	#3 @ 12" O.C.	7	ROTATE 180-DEG, SHIFT 6" WEST

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Key Plan: NO SCALE

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUB-STATION NO.2

NORTH TERRITORIAL ROAD,
DEXTER, MICHIGAN 48130

Seal:

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LEGEND AND ABBREVIATIONS

AFF	- ABOVE FINISHED FLOOR
APPROX. OR ~	- APPROXIMATELY
BFP	- BACK FLOW PREVENTER
B.O.	- BOTTOM OF
BOT.	- BOTTOM
CAP.	- CAPACITY
CFM	- CUBIC FEET PER MINUTE
CONC.	- CONCRETE
CONST.	- CONSTRUCTION
CONT.	- CONTINUOUS
DIA	- DIAMETER
DN	- DOWN
E.W.	- EACH WAY
EA.	- EACH
EF	- EXHAUST FAN
EL.	- ELEVATION
EQUIP.	- EQUIPMENT
EXIST.	- EXISTING
°F	- DEGREES FAHRENHEIT
FD	- FLOOR DRAIN
GALV.	- GALVANIZED
GPM	- GALLONS PER MINUTE
HOR.	- HORIZONTAL
HP	- HORSEPOWER
IN	- INCHES
HVAC	- HEATING/VENTILATING/AIR CONDITIONING
HW	- HOT WATER (DOMESTIC)
LAV.	- LAVATORY
MAX.	- MAXIMUM
MBH	- BTUH (1,000'S)
MIN.	- MINIMUM
MISC.	- MISCELLANEOUS
N.T.S.	- NOT TO SCALE
QTY	- QUANTITY
RAD.	- RADIUS
RD	- ROOF DRAIN
REF.	- REFERENCE
REQ'D.	- REQUIRED
RM.	- ROOM
SCH.	- SCHEDULE
SHT	- SHEET
SI	- SOLID INTERCEPTOR
STD.	- STANDARD
TEMP	- TEMPERATURE
T.O.	- TOP OF
TYP.	- TYPICAL
U.N.O.	- UNLESS NOTED OTHERWISE
VAV	- VARIABLE AIR VOLUME BOXES/ TERMINAL REHEAT
V.I.F.	- VERIFY IN FIELD
VERT.	- VERTICAL
W.C.	- WATER CLOSET

LEGEND:

- NEW PIPE (UNDERGROUND)
- EXISTING PIPE (ABOVEGROUND)
- NEW PIPE (ABOVEGROUND)
- EXISTING VENT
- NEW VENT
- NEW HOT WATER
- NEW COLD WATER
- NEW COMPRESSED AIR
- EXISTING DUCT WORK (TO REMAIN)
- EXISTING DUCT WORK (TO BE REMOVED)
- NEW DUCT WORK
- FLEXIBLE CONNECTION
- POINT OF CONNECTION, NEW TO EXISTING
- FIRE DAMPER AND ACCESS DOOR
- VOLUME DAMPER
- VARIABLE AIR VOLUME BOX
- SUPPLY
- RETURN/ EXHAUST
- SUPPLY
- THERMOSTAT
- CAP
- PIPING CONNECTION - UP
- PIPING CONNECTION - DOWN
- PIPING CONNECTION - BOTTOM
- VALVE

MECHANICAL SPECIFICATION

WORK INCLUDED:
FURNISH ALL LABOR AND MATERIAL, APPLIANCES, EQUIPMENT AND SUPERVISION TO PUT IN PLACE A COMPLETE AND FUNCTIONING MECHANICAL INSTALLATION READY FOR OPERATION, AS SPECIFIED HEREIN AND AS INDICATED ON THE DRAWINGS. SYSTEMS SHALL INCLUDE BUT NOT NECESSARILY LIMITED TO THE FOLLOWING MAJOR EQUIPMENT OR OPERATIONS: PLUMBING

PERMITS, FEES AND INSPECTIONS:
SECURE ALL NECESSARY PERMITS AND ARRANGE FOR ALL INSPECTIONS, INCLUDE ALL RELATED COSTS.
FURNISH CERTIFICATES OF FINAL INSPECTION AND APPROVAL UPON COMPLETION OF PROJECT.

SHOP DRAWINGS:
SUBMIT COMPLETE SHOP DRAWINGS FOR ALL MATERIALS AND EQUIPMENT INTENDED FOR USE ON THIS PROJECT.

SHOP DRAWINGS SHALL CLEARLY INDICATE ALL PHYSICAL, PERFORMANCE AND ELECTRICAL CHARACTERISTICS FOR ALL MATERIALS AND EQUIPMENT.

SUBMIT A MINIMUM OF SIX (6) COPIES OF ALL SHOP DRAWINGS FOR REVIEW BY ARCHITECT. ONE (1) COPY WILL BE RETAINED BY ARCHITECT, ONE (1) COPY TO BE INCLUDED IN OPERATION AND MAINTENANCE MANUAL, AND A MINIMUM OF ONE (1) COPY TO BE USED BY MECHANICAL TRADES.

NO WORK IS TO BE INSTALLED PRIOR TO RETURN OF ARCHITECT REVIEWED SHOP DRAWINGS.

CLEANING AND FINISHING:
PRIOR TO FINAL ACCEPTANCE BY OWNER, THOROUGHLY CLEAN ALL WORK INSIDE AND OUT AS APPLICABLE, AND LEAVE ALL SYSTEMS AND EQUIPMENT IN PERFECT WORKING ORDER. THOROUGHLY CLEAN ALL PLUMBING FIXTURES, EXPOSED PIPING, FLOOR DRAIN GRATES, AND CLEANOUT COVERS AS APPLICABLE.

PLUMBING SYSTEM:
THE WORK UNDER THIS SECTION SHALL CONSIST OF PROVIDING AND INSTALLING NEW PLUMBING FIXTURE, EQUIPMENT, AND PIPING, INCLUDING ALL LABOR AND MATERIALS, FOR A COMPLETE PLUMBING SYSTEM, TESTED AND READY FOR USE, AS INDICATED ON THE ARCHITECTURAL AND MECHANICAL DRAWINGS AND AS DESCRIBED HEREIN.

PLUMBING FIXTURES AND EQUIPMENT.

SYSTEM DESCRIPTION:
SANITARY SEWER SYSTEM: CONNECT TO EXISTING SYSTEMS AS INDICATED. VERIFY THE EXACT LOCATION, SIZE, AND DEPTH BEFORE STARTING CONSTRUCTION.

PLUMBING SERVICES TO EQUIPMENT FURNISHED UNDER THE OTHER SECTIONS OF THE WORK OR OWNER-FURNISHED.

ROUGH-IN AND MAKE ALL FINAL CONNECTIONS FOR WATER, AND WASTE SERVICES, AS REQUIRED, AND AS INDICATED AND SPECIFIED.

ALL DRILLING, CUTTING AND PATCHING REQUIRED FOR THE WORK; PATCHING MATERIALS AND FINISH SHALL MATCH THE SURROUNDING WORK.

ALL LABOR, MATERIALS, AND EQUIPMENT NOT INDICATED BY THE DRAWINGS OR SPECIFICATIONS, WHICH ARE REQUIRED FOR PROPER OPERATION OF THE SYSTEMS IN ACCORDANCE WITH THE TRUE INTENT AND MEANING OF THE CONTRACT DOCUMENTS, SHALL BE PROVIDED AND INCORPORATED IN THE WORK BY AND AT THE EXPENCE OF THE CONTRACTOR.

PIPING NOTES:
SANITARY AND VENT PIPE, FITTINGS: ABOVE GRADE, BELOW GRADE AND/OR BELOW FLOOR SLABS WITHIN BUILDING WALLS.

UP TO 6" DIAMETER (IF CODE APPROVED): PIPE: ASTM D2665 SCHEDULE 40 PVC-DWV INSTALLED PER MANUFACTURER'S RECOMMENDATIONS, FITTINGS: ASTM D1554 SOLVENT CEMENTED, SOLVENT CEMENT: ASTM D2564, INSTALLATION: IN ACCORDANCE WITH ASTM D2321. WHEN PENETRATING FIRE RATED ASSEMBLY THE PIPING MATERIAL NEEDS TO COMPLY WITH UL 723 AND ASTM E84.

ABOVEGROUND DOMESTIC HOT AND COLD WATER:

DOMESTIC HOT WATER:
PIPE: ASTM B88, TYPE L, SEAMLESS HARD DRAWN RIGID COPPER WATER TUBE. FITTINGS: ANSI B16.22, WROUGHT COPPER, ASTM B32-95TA SOLDER JOINT. FOR PIPING 2" AND SMALLER, "SILFOS" SILVER BRAZING ALLOY SOLDER RATED FOR 1000 DEGREES FOR PIPING 3" AND LARGER.

DOMESTIC COLD WATER 4" AND SMALLER:

PIPE: ASTM B88, TYPE L, SEAMLESS HARD DRAWN RIGID COPPER WATER TUBE. FITTINGS: ANSI B16.22, WROUGHT COPPER, ASTM B32-95TA SOLDER JOINT. FOR PIPING 2" AND SMALLER, "SILFOS" SILVER BRAZING ALLOY SOLDER RATED FOR 1000 DEGREES FOR PIPING 3" AND LARGER.

BALL VALVES:
BALL VALVES 1/4" TO 1" PIPE SIZE: APOLLO 77C-140-01 FULL PORT, TWO PIECE WITH SCREWED ENDS, BRONZE BODY AND END PIECE, STAINLESS STEEL BALL, TEFLON SEAT RINGS, STAINLESS STEEL STEM, REINFORCED PTFE TEFLON PACKING WITH BRASS PACKING GLAND, ZINC PLATED STEEL HANDLE WITH PLASTIC GRIP SECURED BY ZINC PLATED STEEL HANDLE NUT, 150 PSI STEAM, 600 PSI WOG WORKING PRESSURE.

BALL VALVES 1-1/4" TO 2" PIPE SIZE: APOLLO 82-140-01, 3 PIECE, FULL SIZE PORT WITH SCREWED ENDS, BRONZE BODY, STAINLESS STEEL BALL, TEFLON DOUBLE SEAL SEATS AND THRUST WASHER, BRASS PACKING GLAND, REINFORCED TEFLON PACKING, STAINLESS STEEL STEM, PLASTIC COATED ZINC PLATED STEEL HANDLE AND ZINC PLATED STEEL HANDLE NUT, 150 PSI SATURATES STEAM, 600 PSI WOG.

BALANCING VALVES:
INSTALL IN EACH HOT WATER CIRCULATION RETURN BRANCH AND DISCHARGE SIDE OF EACH HOT WATER RECIRCULATION PUMP. VALVES SHALL BE CALIBRATED BALANCE VALVES, LEAD FREE BRASS CONSTRUCTION, WITH DIFFERENTIAL PRESSURE READ-OUT PORTS ACROSS VALVE SEAT AREA. VALVE BODIES TO HAVE 1/4" NPT TAPPED DRAIN/PURGE PORT. VALVES TO BE DESIGNED FOR POSITIVE SHUT-OFF.

ACCEPTABLE MANUFACTURERS:
1. BELL AND GOSSETT CIRCUIT SETTER PLUS
2. NIBCO

CHECK VALVES:
BRONZE SWING DISC. ACCEPTABLE MANUFACTURERS:
1. NIBCO
2. CRANE
3. GRINNELL

HOT WATER TEMPERING VALVE:
PROVIDE THERMOSTATIC MIXING VALVES MEETING ASSE 1017 WHERE SHOWN ON THE CONTRACT DOCUMENTS FOR SOURCE HOT WATER MIXING. UNITS SHALL HAVE A BRASS BODY. REPLACEABLE HYDRAULICALLY OPERATED THERMOSTAT, HEAVY DUTY STAINLESS STEEL PRESSURE EQUALIZING SPRING, THREADED CONNECTIONS AND MANUAL DIAL TEMPERATURE ADJUSTMENT CAP RANGING FROM 100 DEGREES F., TO 130 DEGREES F., TEMPERED WATER DISCHARGE TEMPERATURE: 105 DEGREES F.

PROVIDE TEMPERING VALVES MEETING ASSE 1070 FOR ALL SINKS AND LAVATORIES. POWERS HYDROGUARD T/P E480 OR OWNER APPROVED EQUAL.

PIPING INSTALLATION:
INSTALL ALL PIPING PARALLEL OR PERPENDICULAR TO BUILDING WALL AND COLUMNS IN LOCATIONS TO AVOID INTERFERENCE WITH DUCTWORK, STRUCTURE, OTHER PIPING, LIGHTING AND ELECTRICAL EQUIPMENT OR OTHER EQUIPMENT.

DO NOT LOCATE PIPING ABOVE OR WITHIN 3 FEET HORIZONTALLY OF ELECTRICAL PANELS OR EQUIPMENT.

FOR PIPING PASSING THROUGH WALLS, PACK VOID BETWEEN PIPE AND STRUCTURE WITH APPROVED, NON-COMBUSTIBLE MATERIAL.

DO NOT ALLOW CONTACT BETWEEN PIPING AND MASONRY OF CONCRETE SURFACES.

PROVIDE ALL THE NECESSARY HANGERS, RODS, SUPPORTS, CHANNELS, ANGLES, STRUCTURAL MEMBERS AND CONCRETE INSERTS TO PROPERLY SECURE PIPING AND RELATED EQUIPMENT. ALL SUPPORTS AND PARTS SHALL CONFORM TO THE LATEST REQUIREMENTS OF ANSI CODE FOR PRESSURE PIPING B31.1, AND MSS STANDARD PRACTICE SP-58.

PROTECT ALL INSULATED PIPE LINES AGAINST INSULATION DAMAGE AT ALL HANGERS BY THE USE OF 1 FOOT LONG, 12 GAUGE STEEL SEMI-CIRCULAR SHIELDS FOR PIPE SIZES WITH 12" OD AND LESS (INCLUDING INSULATION) AND 2 FOOT LONG, 1/2" STEEL SEMI-CIRCULAR SHIELDS FOR PIPE SIZES OVER 12" OD (INCLUDING INSULATION), SECURELY CEMENT ALL SHIELDS TO THE INSULATION. PROVIDE RIGID PIPE INSULATION AT EACH HANGER.

FIXTURE CONNECTIONS SHALL BE IN ACCORDANCE WITH THE FOLLOWING TABLE:

FIXTURE	SOIL OR WASTE	VENT	TRAP	HOT WATER	COLD WATER
WATER CLOSETS (FLUSHOMETER TNK.)	4"	2"			1/2"
URINALS	2"	1-1/2"			3/4"
LAVATORY	1-1/2"	1-1/2"	1-1/4"	1/2"	1/2"
SINK	1-1/2"	1-1/2"	1-1/4"	1/2"	1/2"

OTHERS AS INDICATED IN THE CONTRACT DOCUMENTS.

FIXTURES SHALL BE AMERICAN STANDARD, KOHLER OR CRANE. AMERICAN STANDARD MODEL NUMBERS ARE USED TO ESTABLISH A STANDARD.
FIXTURE SUPPORTS SHALL BE ZURN, J.R. SMITH, JOSAM OR WADE.
FLUSH VALVE SHALL BE SLOAN OR ZURN.
TOILET SEATS SHALL BE OPEN FRONT OLSONITE, CHURCH, CENTOCO OR BENEKE.
FAUCETS SHALL BE SYMMONS, CHICAGO, SPEAKMAN, OR ZURN

WC-1: FLOOR MOUNTED WATER CLOSET (BARRIER FREE):

A. BOWL SHALL BE FLOOR MOUNTED, PRESSURE-ASSISTED, FLUSHOMETER TANK, VITREOUS CHINA CLOSET WITH ELONGATED RIM. , CHINA BOLT CAPS; 1.6 GALLONS PER FLUSH.

B. ACCEPTABLE MANUFACTURERS:
1. AMERICAN STANDARD CADET MODEL.
2. KOHLER
3. ZURN

C. SEAT SHALL BE SOLID WHITE PLASTIC, OPEN FRONT, EXTENDED BACK, SELF-SUSTAINING HINGE, BRASS BOLTS, WITHOUT COVER; MANUFACTURED BY CHURCH, MODEL 5320-114.

WC-2: FLOOR MOUNTED WATER CLOSET:

SHALL BE THE SAME AS FOR ITEM WC-1, EXCEPT FIXTURE SHALL BE SET AT STANDARD HEIGHT.

L-1 LAVATORY:

A. BASIN SHALL BE VITREOUS CHINA WALL MOUNT LAVATORY 21" x 17" MINIMUM, WITH FAUCET HOLES ON 4" CENTERS.
B. ACCEPTABLE MANUFACTURERS
1. AMERICAN STANDARD LUCERNE MODEL
2. KOHLER
3. ZURN
C. TRIM SHALL BE CHROME PLATED SUPPLY FITTINGS, WATER ECONOMY AERATOR, SLOW CLOSING TIP-TAP FAUCET (ADJUSTABLE FOR 15 SECONDS), CHROME PLATED BRASS P-TRAP WITH CLEAN-OUT PLUG AND ARM WITH ESCUTCHEON; MANUFACTURED BY CHICAGO FAUCET CO. (#802-335CP).

D. ACCESSORIES
1. LAVATORY INSULATION KIT
PROVIDE THE FOLLOWING: SAFETY COVERS CONSISTING OF MOLDED CLOSED-CELL VINYL CONSTRUCTION 1/8" THICK NOMINAL, WHITE COLOR FOR TAIL PIECE, VALVES, P-TRAP AND SUPPLY PIPING. FURNISH WITH WEEP HOLE AND ANGLE VALVE ACCESS COVERS. MANUFACTURER: TRUEBRO LAV-GAURD.
2. LAVATORIES DESIGNATED AS BARRIER-FREE SHAPE SHALL BE SUPPLIED WITH UNDER COUNTER THERMOSTATIC BLENDING VALVE.
3. LAVATORY SUPPORTS: FIXTURE SUPPORTS WITH CONCEALED ADJUSTABLE ARMS AND STEEL FLOOR MOUNTED UPRIGHTS WITH WELDED BASES.

L-2 LAVATORY:

A. BASIN SHALL BE VITREOUS CHINA COUNTER TOP OVAL LAVATORY 20" x 16" MINIMUM, WITH FAUCET HOLES ON 4" CENTERS

B. ACCEPTABLE MANUFACTURERS
1. AMERICAN STANDARD
2. KOHLER BRYANT MODEL
3. ZURN

C. TRIM SHALL BE CHROME PLATED SUPPLY FITTINGS, WATER ECONOMY AERATOR, SLOW CLOSING TIP-TAP FAUCET (ADJUSTABLE FOR 15 SECONDS), CHROME PLATED BRASS P-TRAP WITH CLEAN-OUT PLUG AND ARM WITH ESCUTCHEON; MANUFACTURED BY CHICAGO FAUCET CO. (#802-335CP).

D. ACCESSORIES
1. LAVATORY INSULATION KIT
PROVIDE THE FOLLOWING: SAFETY COVERS CONSISTING OF MOLDED CLOSED-CELL VINYL CONSTRUCTION 1/8" THICK NOMINAL, WHITE COLOR FOR TAIL PIECE, VALVES, P-TRAP AND SUPPLY PIPING. FURNISH WITH WEEP HOLE AND ANGLE VALVE ACCESS COVERS. MANUFACTURER: TRUEBRO LAV-GAURD.
2. LAVATORY SUPPORTS: FIXTURE SUPPORTS WITH CONCEALED ADJUSTABLE ARMS AND STEEL FLOOR MOUNTED UPRIGHTS WITH WELDED BASES.

S-1 SINK:
A. SINK SHALL BE COUNTERTOP TYPE, SINGLE BOWL, 18 GAUGE, TYPE 304, 18-8 STAINLESS STEEL, OVERALL DIMENSIONS 21"x19"x7.5"DEEP, SELF-RIMMING TOP MOUNT, FULLY COATED UNDERSIDE, 3 HOLES ON FOUR INCH CENTERS. 304 STAINLESS STEEL DRAIN AND GRID STRAINER W/4" LONG 1 1/2"O.D. 304 STAINLESS STEEL TAIL PIECE.

B. FAUCET: CAST BRASS BODY, POLISHED CHROME FINISH, 5 1/4" RIGID GOOSENECK SPOUT, 2.2 GPM AERATOR, 4" WRIST BLADE. CHICAGO FAUCET MODEL 1100-GN2AE3-317ABCP OR OWNER APPROVED EQUAL.

S-2 SINK:
A. SINK SHALL BE COUNTERTOP TYPE, DOUBLE BOWL, 18 GAUGE, TYPE 304, 18-8 STAINLESS STEEL, OVERALL DIMENSIONS 32"x21"x7.5"DEEP, SELF-RIMMING TOP MOUNT, FULLY COATED UNDERSIDE, 3 HOLES ON FOUR INCH CENTERS.

B. FAUCET: CAST BRASS BODY, POLISHED CHROME FINISH, SINGLE CONTROL MIXING TYPE, 8" CENTERS, DECK MOUNTED, LEVER HANDLE, 3/8" BRAIDED HOSE SUPPLIES, SWIVEL SPOUT, AERATOR, SYMMONS S-23 MODEL, 2.2 GPM OR OWNER APPROVED EQUAL.

C. FOOD WASTE DISPOSER: 1/2 HP, 120V/60HZ/1725 RPM, INSINKERATOR BADGER 5, WITH QUICK LOCK MOUNT, SINK FLANGE, STOPPER, SINK BAFFLE AND POWER CORD KIT.

SINK TRIM: (ALL SINKS) CHROME PLATED STOPS AND SUPPLY FITTINGS, CHROME PLATED BRASS P-TRAPS WITH CLEAN-OUT PLUG AND ESCUTCHEON.

SINK ACCEPTABLE MANUFACTURERS:
1. JUST MANUFACTURING COMPANY
2. AMERICAN STANDARD
3. KOHLER
4. STERLING PLUMBING GROUP
5. ZURN
6. ELKAY

UR-1 URINAL:

A. AUTO FLUSH, URINAL SHALL BE WALL MOUNTED VITREOUS CHINA WITH WASHOUT FLUSHING ACTION AND INTEGRAL FLUSH SPREADER WITH CONCEALED CARRIER.
B. ACCEPTABLE MANUFACTURERS:
1. AMERICAN STANDARD WASHBROOK MODEL
2. KOHLER
3. ELJER
C. TOP SPUD FLUSH VALVE SHALL BE SLOAN OPTIMA PLUS MODEL 8186-1.0, BATTERY POWERED, SENSOR OPERATED. THE URINAL AND FLUSH VALVE SHALL BE RATED AT 1.0 GALLONS PER FLUSH.
D. SUPPORT SHALL BE MATCHING ADJUSTABLE WITH BOTTOM BEARING PLATE.

SS-1 MOP SINK:

FLOOR MOUNTED MOP SINK, PRE-CAST, SQUARE, 24"x24"x10" HIGH, CAPPED ON TWO SURFACES, GRID TYPE DRAIN WITH 3" NPS OUTLET, STERN-WILLIAMS CO, MODEL MTB-2424, OR OWNER APPROVED EQUAL.

FAUCET: CHICAGO FAUCET MODEL #897-CP OR OWNER APPROVED EQUAL.

LT-1 LAUNDRY TRAY:

A. SINK SHALL BE FLOOR MOUNTED ON FINISHED STEEL LEGS W/LEVELERS, ONE PIECE MOLDED CONTRUCTION, OVERALL DIMENSIONS 33"Hx18"Wx23"D. LEAKPROOF, INTEGRALLY MOLDED-IN DRAIN W/STOPPER, ACCOMMODATES DUAL HANDLE FAUCET WITH 4" CENTER, 15 GALLON CAPACITY TUB 13" DEEP CONNECTS TO 1 1/2" P-TRAP.
E.L. MUSTEE & SONS, INC., UTILATUB MODEL 12 OR OWNER APPROVED EQUAL.

B. TRIM: CHROME PLATED STOPS AND SUPPLY FITTINGS, CHROME PLATED BRASS P-TRAP WITH CLEAN-OUT PLUG AND ESCUTCHEON.

C. FAUCET: CHROME FINISH, 4" CENTER SET BRASS FAUCET, 7" SWING SPOUT WITH AERATOR, LEVEL HANDLES, REPLACEABLE SEATS AND STEMS. E.L. MUSTEE MODEL NO. 93.600 OR OWNER APPROVED EQUAL.

EEW-1 EMERGENCY EYEWASH:
A. EYE/FACE WASH: PEDESTAL MOUNTED PLASTIC BOWL, (2) PLASTIC SPRAY OUTLETS WITH FLIP TOP DUST CAPS, 1/2" NPT FEMALE CHROME PLATED BRASS STAY-OPEN BALL VALVE, STAINLESS STEEL PUSH HANDLE ACTIVATOR, 1/2" NPT MALE INLET, 4.5 GPM @ 30 PSI.
B. MANUFACTURERS:
1. SPEAKMAN
2. HAWS
3. BRADLEY S19214B
C. THERMOSTATIC MIXING VALVE (TMV): EMERGENCY FIXTURE TYPE WITH 5.6 GPM COLD WATER BYPASS AND 7 GPM FLOW AT 30 PSI. IN CONFORMANCE WITH ASSE 1071 AND ANSI Z358.1, BRASS CONSTRUCTION, TEPID WATER DISCHARGE TEMPERATURE OF 85°F (+/- 3°F). VALVE INCLUDES AUTOMATIC SPRING CHECK STOPS, DIAL THERMOMETER, HOT WATER SHUT OFF ON LOSS OF COLD WATER, VANDAL-RESISTANT TEMPERATURE ADJUSTMENT.

SH-1 SHOWER:
1. 36"W. x 36"D.x 80½"H, WHITE, REINFORCED THREE-PIECE FIBERGLASS MODULE WITH GEL COAT FINISH, ANTI-SLIP FLOOR, LOW PROFILE BOTTOM.
2. PRE-INSTALLED THROUGH-BOLTED CURTAIN ROD
3. DRAIN WITH STAINLESS STEEL GRID
4. MODEL #36KD AS MANUFACTURED BY FIBER-FAB PRODUCTS
12657 PORTLAND ROAD NE P.O. BOX 78
GERVAIS, OREGON 97026-0078
PHONE: 1-877-792-3456 E-MAIL: FFI@FIBERFAB.COM

- SIMILAR PRODUCTS MEETING OR EXCEEDING ABOVE SPECIFIED UNIT WILL BE CONSIDERED -

SHOWER VALVE AND HEAD SYSTEM
1. ACCEPTABLE MANUFACTURERS:
A. SYMMONS TEMPTROL, MODEL C-96-1-295-X
B. AMERICAN STANDARD
C. KOHLER
D. CHICAGO
2. TRIM: CHROME PLATED BRASS

EWC-1 ELECTRIC WATER COOLER:

BARRIER FREE, BI-LEVEL, TWO STATION, WALL MOUNTED, 8 GPH DRINKING WATER AT 50°F, 90° AMBIENT AND 80°F INLET TEMP, 115V/60HZ/1 PH. ELKAY MODEL EZSTL8C.

EWC-2 ELECTRIC WATER COOLER:

SINGLE STATION, WALL MOUNTED, 8 GPH DRINKING WATER AT 50°F, 90° AMBIENT AND 80°F INLET TEMP, VANDAL RESISTANT, 115V/60HZ/1 PH. ELKAY MODEL EZS8 OR OWNER APPROVED EQUAL.

WATER HAMMER ARRESTERS:
PROVIDE PPE (PRECISION PLUMBING PRODUCTS, INC.) WATER HAMMER ARRESTERS AT ALL FIXTURE HEADERS WITH TWO OR MORE FIXTURES OR AT EACH FIXTURE OR EQUIPMENT WHICH MAY CREATE SURGES IN WATER SUPPLY PIPING, DUE TO SUDDEN ON AND OFF OPERATION OF THE VALVES. SIZES SHALL BE AS RECOMMENDED BY MANUFACTURER FOR THE APPLICATION.

INSTALL WATER HAMMER ARRESTERS BEHIND WALL ACCESS PANEL AS CLOSE AS POSSIBLE TO THE VALVE OR VALVES BEING SERVED.

ROOF FLASHING:

FLASH ALL VENTS AND OTHER PIPING STUBBED UP THROUGH ROOF WITH A WATERPROOF FLASHING CONSTRUCTED OF 18 GAUGE GALVANIZED STEEL METAL OR ALUMINUM NOT LESS THAN .040-INCH THICK. EXTEND BASE OF FLASHING ON ROOF NOT LESS THAN 10-INCHES FROM PIPE. EXTEND FLASHING UP THE PIPE NOT LESS THAN 6-INCHES AND IN CONTACT WITH THE PIPE FOR 1-INCH AT THE TOP, PROVIDE VANDAL-PROOF HOOD.

FLOOR DRAINS:
3" FLOOR DRAINS (3"FD) SHALL BE ANSI A112.21.1; GALVANIZED CAST IRON TWO PIECE BODY WITH DOUBLE DRAINAGE FLANGE, WEEP HOLES, REVERSIBLE CLAMPING COLLAR, AND ROUND, ADJUSTABLE NICKEL-BRONZE STRAINER. FLOOR DRAINS (3"FD-A) SHALL HAVE FUNNEL TYPE STRAINERS, JR SMITH FIG. NO. 3750-3755,
OR OWNER APPROVED EQUAL. TRAP SEALERS SHALL BE INLINE FLOOR DRAIN SURESEAL TRAP SEALERS MEETING ASSE 1072.

CLEANOUTS:

MANUFACTURERS: SMITH, JOSAM, ZURN, WADE.

INTERIOR FINISHED FLOOR AREAS SHALL BE GALVANIZED CAST IRON, TWO PIECE BODY WITH DOUBLE DRAINAGE FLANGE, WEEP HOLES, REVERSIBLE CLAMPING COLLAR, AND ADJUSTABLE NICKEL-BRONZE STRAINER, ROUND WITH SCORIATED COVER IN SERVICE AREAS AND ROUND WITH DEPRESSED COVER TO ACCEPT FLOOR FINISH IN FINISHED FLOOR AREAS.

INTERIOR FINISHED WALL AREAS SHALL BE LINE TYPE WITH LACQUERED CAST IRON BODY AND ROUND EPOXY COATED GASKETED COVER, AND ROUND STAINLESS STEEL ACCESS COVER SECURED WITH MACHINE SCREW.

INTERIOR UNFINISHED ACCESSABLE AREAS SHALL BE CAULKED OR THREADED TYPE.

CLEANOUTS IN PLANT SHALL BE EXTRA HEAVY-DUTY, SUITABLE FOR FORKLIFT TRAFFIC.

PIPING INSULATION:

INSULATION SHALL BE APPLIED BY EXPERIENCED PIPE COVERERS AS PER BEST TRADE PRACTICE.
ALL ADHESIVES, SEALERS AND COATINGS SHALL BE NONCOMBUSTIBLE.

WHERE EXISTING INSULATED PIPING AND SURFACES ARE EXPOSED DUE TO RENOVATIONS, RE-INSULATE EXPOSED SURFACES TO MATCH THE EXISTING INSTALLATION.

APPLY INSULATION TO PIPE LINES AND EQUIPMENT ONLY AFTER TESTING AND INSPECTION, AND ALL SURFACES HAVE BEEN THOROUGHLY CLEANED.

EXPOSED AND CONCEALED: 1" THICK OWENS-CORNING FIBERGLAS ASJ-SSL-II "ONE PIECE" PIPE INSULATION WITH FACTORY APPLIED JACKET WITH SELF-SEALING LAP.

INSULATE EXPOSED DRAIN LINES AND HOT AND COLD WATER SUPPLY LINES BELOW PHYSICALLY HANDICAPPED LAVATORIES AND SINKS PER PHYSICALLY HANDICAPPED CODE REQUIREMENTS.

APPROVED MANUFACTURERS: TRUEBRO "LAVGUARD", PLUMBEREX "HANDY SHIELD"

COLOR: WHITE.

MINIMUM PIPE INSTALLATION (DOMESTIC HOT AND COLD WATER):

PIPE SIZE	UP TO 1"	1 1/2"-2"	OVER 2"
INSULATION THICKNESS	0.5"	0.5"	1.0"

TESTING AND BALANCING:
GENERAL:
TEST AND ADJUST ALL NEW PIPING SYSTEMS INSTALLED IN THIS PROJECT.

PROVIDE ALL TESTING INSTRUMENTS, GAUGES, PUMPS AND OTHER EQUIPMENT REQUIRED OR NECESSARY FOR TEST.

REPAIR ALL DEFECTS DISCLOSED BY TESTS WITHOUT ADDITIONAL COST TO THE OWNER.

REPEAT TESTS AFTER ANY DEFECTS DISCLOSED ARE REPAIRED OR REPLACED, UNLESS WAIVED BY ARCHITECT.

ARRANGE AND PAY THE COST OF ALL UTILITIES USED ON TESTS.

COMPLETE ALL TESTS BEFORE COVERING IS APPLIED.

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Key Plan: NO SCALE

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUB-STATION NO. 2

Seal:

Date	Issued For
09/02/14	BIDS

Drawn: R. McCARTHY
Checked: C. MIRANDA
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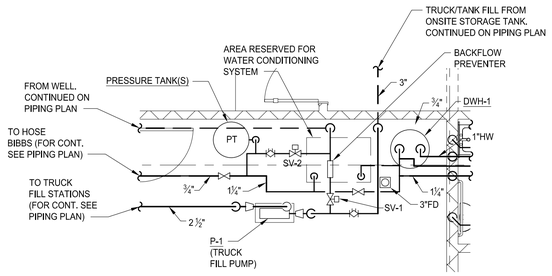
Sheet Title:
PIPING SPECIFICATIONS

Project Number: 14049

Sheet Number: P-000



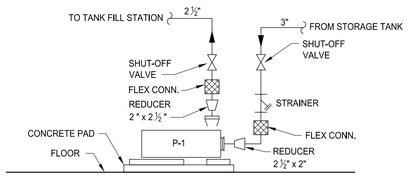
ENLARGED PIPING PLAN

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

NOTES: 1) 20 GPM PEAK DEMAND FOR DOMESTIC WATER SYSTEM (EXCLUDES STORAGE TANK FILL).

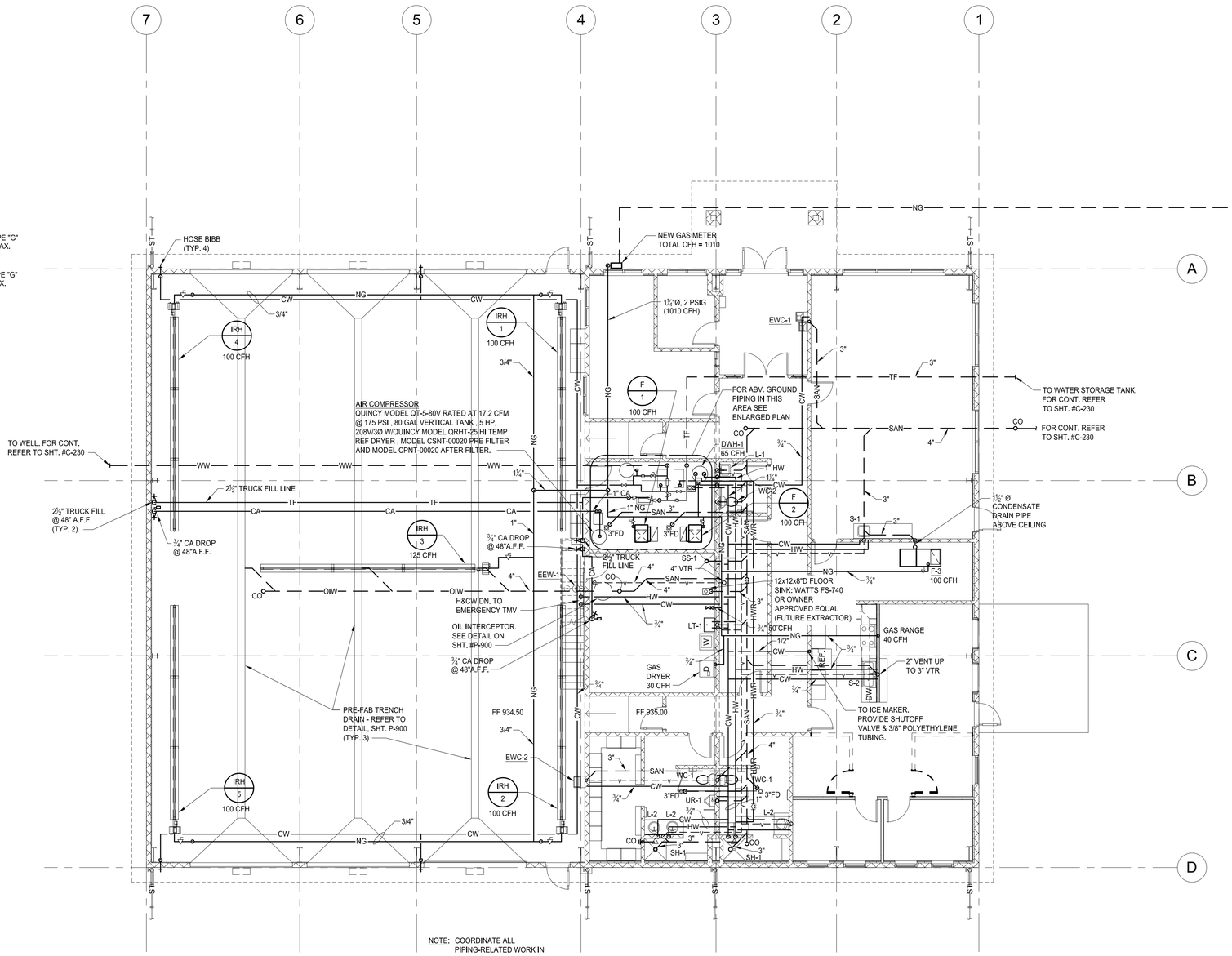
2) SV-1: SOLENOID VALVE, EQUAL TO MAGNATROL CORP. 1 ¼ ", TYPE "G" FULL PORT, NORMALLY CLOSED, 120 VAC; MODEL No. 133G25, MAX. DIFF. PRESS. 50 PSI.

3) SV-2: SOLENOID VALVE, EQUAL TO MAGNATROL CORP. 1 ¼ ", TYPE "G" FULL PORT, NORMALLY CLOSED, 120 VAC; MODEL No.118G25, MAX. DIFF. PRESSURE 30 PSI.



TRUCK FILL PUMP DETAIL

SCALE: N.T.S.



PIPING PLAN

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

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Key Plan:

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUB-STATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

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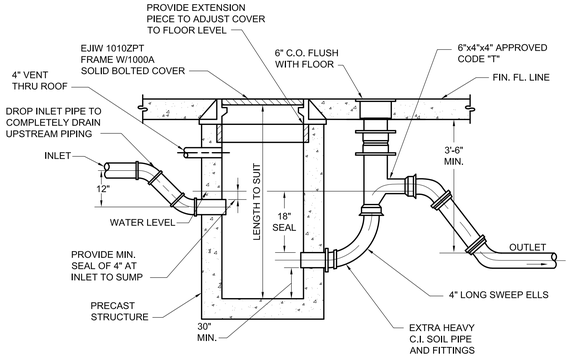
PIPING PLAN

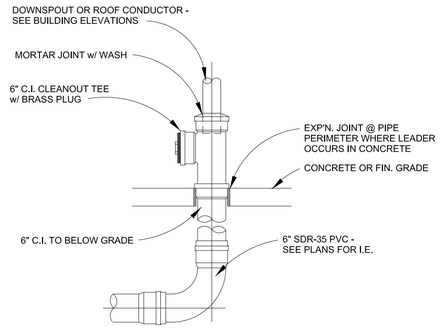
Project Number: 14049

Sheet Number: P-200



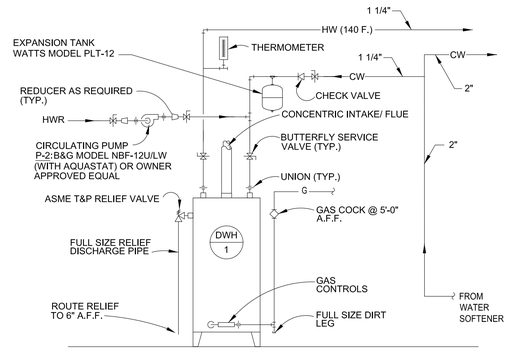
DETAIL OF OIL INTERCEPTOR

SCALE: N.T.S.



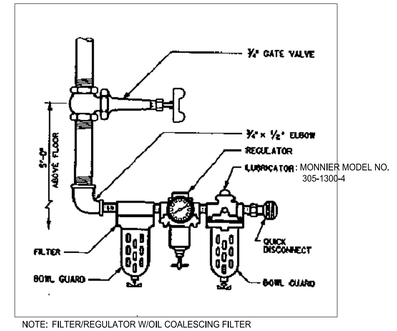
DOWNSPOUT LEADER DETAIL

SCALE: N.T.S.



DOMESTIC WATER HEATER DWH-1 PIPING DIAGRAM

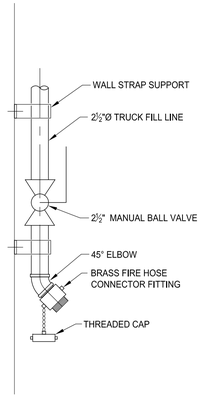
SCALE: N.T.S.



NOTE: FILTER/REGULATOR W/OIL COALESCING FILTER MONNIER MODEL NO. C01-1309-4

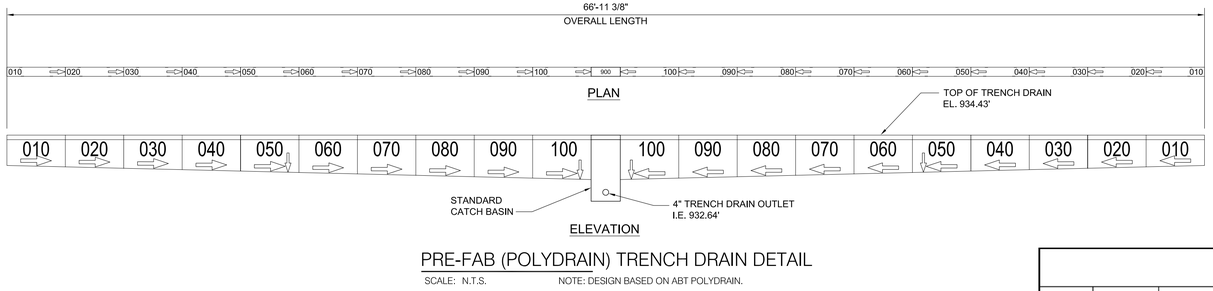
TYPICAL COMPRESSED AIR DROP

SCALE: N.T.S.



TRUCK FILL STATION DETAIL

SCALE: N.T.S.



ELEVATION

PRE-FAB (POLYDRAIN) TRENCH DRAIN DETAIL

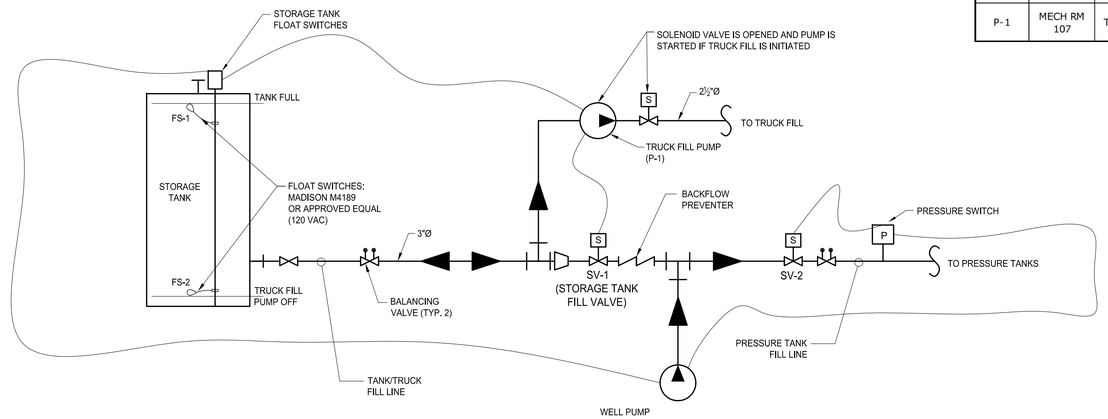
SCALE: N.T.S. NOTE: DESIGN BASED ON ABT POLYDRAIN.

GAS FIRED DOMESTIC WATER HEATER

TAG	SYSTEM SERVED	LOCATION	MANUFACTURER AND MODEL NUMBER	CAPACITIES			BTU/HR INPUT	NOTES/ACCESSORIES
				RECOVERY	GALLON CAPACITY	TEMP. RISE		
DWH-1	DOMESTIC WATER	MECHANICAL ROOM #107	BRADFORD WHITE 65T-65FB-3N	70 GPH	65	90 deg F	65,000	ASME T&P RELIEF VALVE

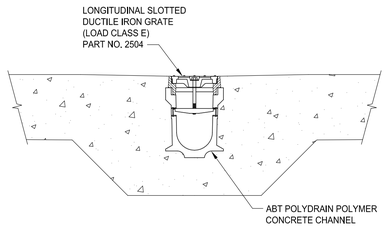
PUMP SCHEDULE

MARK	LOCATION	SERVICE	TYPE	CIRCULATING FLUID				ELECTRICAL					DESIGN BASIS			REMARKS
				FLUID	FLOW (GPM)	HEAD (FT)	TEMP (^{0}F)	HP	PHASE	VOLT	MAX RPM	SPEED CONTROL	MAKE	MODEL	PUMP SIZE	
P-1	MECH RM 107	TRUCK FILL RESERVOIR	BASE MOUNTED END SUCTION	WATER	120	25	50	1.5	3	208	1750	CONSTANT SPEED	B&G	SERIES E-1532	2AD	REFER TO CONTROL DIAGRAMS



DOMESTIC WATER & STORAGE TANK/TRUCK FILL CONTROL SCHEMATIC

SCALE: N.T.S. NOTE: DESIGN BASED ON ABT POLYDRAIN.



TYPICAL TRENCH DRAIN CROSS SECTION

SCALE: N.T.S. NOTE: DESIGN BASED ON ABT POLYDRAIN.

MODES OF OPERATION:

1) PRESSURE TANK WITHIN DESIGN PRESSURE SETPOINTS AND STORAGE TANK FULL:
SOLENOID VALVES SV-1 AND SV-2 BOTH CLOSED.
WELL PUMP AND TRUCK FILL PUMP (P-1) DEENERGIZED.

2) PRESSURE TANK AT OR BELOW CUT-IN PRESSURE AND STORAGE TANK FULL:
SV-2 OPEN AND SV-1 CLOSED,
WELL PUMP ENERGIZED, P-1 DEENERGIZED.

3) PRESSURE TANK WITHIN DESIGN PRESSURE SETPOINTS AND STORAGE TANK LESS THAN FULL (REFER TO CIVIL DRAWINGS):
SV-1 IS OPEN AND SV-2 IS CLOSED.
WELL PUMP ENERGIZED, P-1 DEENERGIZED.

4) PRESSURE TANK AT OR BELOW CUT-IN PRESSURE AND STORAGE TANK LESS THAN FULL:
SV-2 OPEN AND SV-1 OPEN.
WELL PUMP ENERGIZED, P-1 DEENERGIZED.

5) IN MODES 1 THRU 4, ABOVE, WITH STORAGE TANK LEVEL WITHIN RANGE OF FLOAT SWITCHES (REFER TO CIVIL DRAWINGS) :
ON ENERGIZATION OF TRUCK FILL PUMP (P-1), SOLENOID VALVE SV-1 CLOSES. WELL PUMP SHALL ENERGIZE, AS REQUIRED, FOR DOMESTIC WATER DEMAND, ONLY.

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Key Plan: NO SCALE

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NEW FIRE SUB-STATION NO. 2

Seal:

Date	Issued For
09/02/14	BIDS
10/06/14	ADDENDUM #4

Drawn: R. McCARTHY
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Approved: C. MIRANDA

Sheet Title:
PIPING DETAILS AND SCHEDULES

Project Number: 14049

Sheet Number: P-900

MECHANICAL GENERAL NOTES

WORK INCLUDED:

FURNISH ALL LABOR AND MATERIAL, EQUIPMENT AND SUPERVISION TO PUT IN PLACE A COMPLETE AND FUNCTIONING MECHANICAL INSTALLATION READY FOR OPERATION, AS SPECIFIED HEREIN AND AS INDICATED ON THE DRAWINGS. SYSTEMS SHALL INCLUDE BUT NOT NECESSARILY LIMITED TO THE FOLLOWING MAJOR EQUIPMENT OR OPERATIONS:

PLUMBING
HEATING, VENTILATING AND AIR CONDITIONING
TEMPERATURE CONTROLS

DEFINITIONS:

"PROVIDE": TO FURNISH AND COMPLETELY INSTALL SPECIFIED PRODUCTS AND INCIDENTALS, WHETHER SPECIFICALLY INDICATED OR NOT, NECESSARY FOR A COMPLETE, FUNCTIONAL INSTALLATION. INCLUDES ALL GENERAL AND SPECIALIZED LABOR, EQUIPMENT AND TOOLS NECESSARY TO COMPLETE THE INSTALLATION.

"PIPING": A COMPLETE SYSTEM, INCLUDING PIPE, TUBING, FITTINGS, HANGERS, SUPPORTS, VALVES, AND ALL SPECIALTIES THAT COMPRISE A FULLY FUNCTIONAL PIPING SYSTEM, WHETHER SPECIFICALLY INDICATED OR NOT.

CODES, ORDINANCES, AND STANDARDS:

ALL WORK SHALL CONFORM IN ALL RESPECTS TO THE REQUIREMENTS OF THE LATEST ADOPTED FEDERAL, STATE AND LOCAL CODES, ORDINANCES, AND STANDARDS HAVING JURISDICTION OVER THE WORK.

WHERE CONTRACT DOCUMENT REQUIREMENTS EXCEED THE REQUIREMENTS OF THE REFERENCED CODES, ORDINANCES AND STANDARDS, THE CONTRACT DOCUMENT REQUIREMENTS SHALL BE TAKEN AS MINIMUM.

ALL EQUIPMENT CONTAINING ELECTRICAL WIRING AND/OR ELECTRICAL COMPONENTS SHALL HAVE A UNDERWRITERS LABORATORIES (UL) "PACKAGE" LABEL.

PERMITS, FEES AND INSPECTIONS:

SECURE ALL NECESSARY PERMITS AND ARRANGE FOR ALL INSPECTIONS, INCLUDE ALL RELATED COSTS. FURNISH CERTIFICATES OF FINAL INSPECTION AND APPROVAL UPON COMPLETION OF PROJECT.

EXAMINATION OF SITE:

VISIT PROJECT SITE AND BECOME FULLY COGNIZANT OF ALL EXISTING ARCHITECTURAL, MECHANICAL, ELECTRICAL, STRUCTURAL AND SITE CONDITIONS, OR EXISTING CODE VIOLATIONS WHICH MAY AFFECT THE WORK.

NOTIFY ARCHITECT PRIOR TO SUBMITTING BID IF REVISIONS TO CONTRACT DOCUMENTS ARE NECESSARY TO RECTIFY ANY OF THE AFOREMENTIONED EXISTING CONDITIONS.

NO "EXTRAS" TO CONTRACT PRICE WILL BE ALLOWED AFTER RECEIVING BID IN ORDER TO RECTIFY EXISTING CONDITIONS IN ORDER TO MEET THE DESIGN INTENT OF THE CONTRACT DOCUMENTS OR SATISFY CODE REQUIREMENTS.

COORDINATION WITH OTHER TRADES:

COORDINATE ALL WORK BEFORE AND DURING CONSTRUCTION WITH ALL OTHER AFFECTED TRADES. WHERE INTERFERENCES DEVELOP, NOTIFY ARCHITECT FOR RESOLUTION OF CONFLICT. RELOCATION OF CONFLICTING WORK INSTALLED DUE TO LACK OF COORDINATION OR POOR COORDINATION WILL NOT BE CONSIDERED EXTRA WORK.

APPROVED MANUFACTURERS:

USE ONLY MATERIALS SPECIFICALLY INDICATED IN CONTRACT DOCUMENTS, OR COMPARABLE MATERIALS BY OTHER LISTED ACCEPTABLE MANUFACTURERS. NOTE THAT "ACCEPTABLE MANUFACTURER" DOES NOT CONSTRUE AUTOMATIC APPROVAL OF SPECIFIC MATERIALS BY ONE OR ALL OF THE LISTED ACCEPTABLE MANUFACTURERS. ARCHITECT RESERVES THE RIGHT OF FINAL DETERMINATION OF ACCEPTABILITY OF EACH ITEM.

FURNISHING OF MATERIALS AND MANUFACTURERS OTHER THAN THOSE INDICATED AS ACCEPTABLE IN THE CONTRACT DOCUMENTS WILL BE CONSIDERED VOLUNTARY SUBSTITUTES.

SUBMIT ALL VOLUNTARY SUBSTITUTES TO ARCHITECT FOR REVIEW NO LATER THAN FIFTEEN (15) DAYS PRIOR TO BID DUE DATE. IF ACCEPTABLE, ARCHITECT WILL AUTHORIZE USE OF SUBSTITUTE IN WRITTEN FORM BY LETTER OR ADDENDUM TO CONTRACT DOCUMENTS.

APPROVED VOLUNTARY SUBSTITUTES MUST ONLY BE INDICATED ON FORM OF PROPOSAL WITH APPROPRIATE "ADD" OR "DEDUCT" TO CONTRACT PRICE. DO NOT USE VOLUNTARY SUBSTITUTES FOR BASE BID.

AFTER FIFTEEN (15) DAYS PRIOR TO BID DUE DATE, NO CONSIDERATION WILL BE GIVEN TO VOLUNTARY SUBSTITUTES

SHOP DRAWINGS:

SUBMIT COMPLETE SHOP DRAWINGS FOR ALL MATERIALS AND EQUIPMENT INTENDED FOR USE ON THIS PROJECT.

SHOP DRAWINGS SHALL CLEARLY INDICATE ALL PHYSICAL, PERFORMANCE AND ELECTRICAL CHARACTERISTICS FOR ALL MATERIALS AND EQUIPMENT.

SUBMIT A MINIMUM OF SIX (6) COPIES OF ALL SHOP DRAWINGS FOR REVIEW BY ARCHITECT. ONE (1) COPY WILL BE RETAINED BY ARCHITECT, ONE (1) COPY TO BE INCLUDED IN OPERATION AND MAINTENANCE MANUAL, AND A MINIMUM OF ONE (1) COPY TO BE USED BY MECHANICAL TRADES.

NO WORK IS TO BE INSTALLED PRIOR TO RETURN OF ARCHITECT REVIEWED SHOP DRAWINGS.

OPERATION AND MAINTENANCE MANUALS:

PRIOR TO FINAL ACCEPTANCE BY OWNER, PROVIDE ALL PERSONNEL, EQUIPMENT, AND LABOR AS NECESSARY TO INSTRUCT OWNER'S PERSONNEL IN PROPER OPERATION AND MAINTENANCE OF THE SYSTEMS AND EQUIPMENT INSTALLED IN THIS PROJECT. PROVIDE INSTRUCTIONAL SESSION DURING TIME PERIOD AGREED TO WITH OWNER.

CUTTING AND PATCHING:

ALL CUTTING AND PATCHING SHALL BE PROVIDED BY THE GENERAL TRADES UNDER THE DIRECTION OF THE MECHANICAL TRADES. COST WILL BE PAID BY THE MECHANICAL TRADE REQUESTING THE WORK.

RESTORED SURFACES SHALL BE OF SAME MATERIALS AND QUALITY AS ADJACENT SURFACES, AND SHALL MATCH SURROUNDING SURFACES, AND/OR BE RESTORED TO PRE-CONSTRUCTION CONDITION.

REPAIR AND/OR REPLACE EXISTING ACTIVE SERVICES INTENDED TO REMAIN IN SERVICE, BUT DAMAGED DURING THE COURSE OF CONSTRUCTION, ABSORB ALL RELATED COSTS. NO "EXTRAS" WILL BE PAID TO RESTORE EXISTING ACTIVE SERVICES DAMAGED DURING CONSTRUCTION.

ARCHITECT WILL DETERMINE COURSE OF ACTION WHEN EXISTING INACTIVE SERVICES ARE DAMAGED DURING COURSE OF CONSTRUCTION. ABSORB ALL COSTS RELATIVE TO ADDITIONAL DEMOLITION, TERMINATION, RELOCATION AND/OR RESTORATION OF EXISTING, DAMAGED INACTIVE SERVICES AS DIRECTED BY ARCHITECT.

DEMOLITION:

DEMOLITION DRAWINGS ARE DIAGRAMMATIC, INTENDED TO CONVEY THE SCOPE OF THE WORK AND INDICATE GENERAL ARRANGEMENT OF EQUIPMENT, PLUMBING FIXTURES, DUCTS, PIPING AND APPROXIMATE SIZES AND APPROXIMATE LOCATIONS. DO NOT SCALE DRAWINGS FOR EXACT MEASUREMENTS.

ALL MECHANICAL WORK SHOWN ON THE DEMOLITION DRAWINGS HAS BEEN TAKEN FROM THE OWNER'S RECORD ARRANGEMENT OF EQUIPMENT, PLUMBING FIXTURES, DUCTS, PIPING AND APPROXIMATE SIZES AND APPROXIMATE LOCATIONS. DO NOT SCALE DRAWINGS FOR EXACT MEASUREMENTS.

ALL MECHANICAL WORK SHOWN ON THE DEMOLITION DRAWINGS HAS BEEN TAKEN FROM THE OWNER'S RECORD DRAWINGS AND/OR CERTAIN FIELD OBSERVATIONS. EXACT SIZES, LOCATIONS, ARRANGEMENT AND ELEVATIONS OF ALL EXISTING MECHANICAL EQUIPMENT, EXISTING PLUMBING FIXTURES, EXISTING DUCTWORK, EXISTING PIPING AND EXISTING MECHANICAL DEVICES SHALL BE VERIFIED IN THE FIELD.

THE CONTRACTOR SHALL INCLUDE, IN HIS QUOTE, ALLOWANCES FOR REASONABLE DEVIATIONS BETWEEN WHAT IS SHOWN AND ACTUAL JOB CONDITIONS IN ORDER TO COMPLETE THE WORK IN THE SCOPE INDICATED.

REMOVE, RECONNECT, CAP, PLUG AND REPLACE EXISTING PIPING AND DUCTWORK ONLY WHERE INDICATED IN THE CONTRACT DOCUMENTS.

REMOVE AND/OR REPLACE EXISTING EQUIPMENT, VALVES, CONTROLS, ETC., ONLY WHERE INDICATED IN THE CONTRACT DOCUMENTS.

INTERRUPTION OF EXISTING ACTIVE PIPING: WHERE THE WORK MAKES TEMPORARY SHUT-DOWNS OF SERVICE UNAVOIDABLE, SHUT-DOWN AT TIME AS APPROVED BY THE OWNER, WHICH WILL CAUSE LEAST INTERFERENCES WITH ESTABLISHED OPERATING ROUTINE. ARRANGE TO WORK CONTINUOUSLY, INCLUDING OVERTIME, IF REQUIRED TO MAKE NECESSARY CONNECTION TO EXISTING WORK.

UNLESS SPECIFICALLY NOTED TO THE CONTRARY, REMOVED MATERIALS SHALL NOT BE REUSED IN THE WORK. SALVAGE MATERIALS THAT ARE TO BE REUSED SHALL BE STORED SAFE AGAINST DAMAGE AND TURNED OVER TO THE APPROPRIATE TRADE FOR REUSE.

SALVAGED MATERIALS OF VALUE THAT ARE NOT TO BE REUSED SHALL REMAIN THE PROPERTY OF THE OWNER UNLESS POSSESSION RIGHTS ARE WAIVED. THE MATERIALS ARE TO BE REMOVED FROM THE SYSTEMS BY THIS CONTRACTOR AND TURNED OVER TO THE OWNER IN THEIR ORIGINAL CONDITIONS. THE OWNER SHALL MOVE AND STORE THE MATERIALS. WHERE THE OWNER WAIVES POSSESSION RIGHTS, THESE MATERIALS SHALL BECOME THE PROPERTY OF THIS CONTRACTOR, WHO SHALL REMOVE AND LEGALLY DISPOSE OF THE SAME, AWAY FROM THE PREMISES.

ELECTRICAL WORK:

PROVIDE ALL ELECTRICAL WORK ASSOCIATED WITH, AND NECESSARY TO COMPLETE THIS PROJECT, WHICH IS NOT INCLUDED AS ELECTRICAL TRADES WORK.

CLEANING AND FINISHING:

PRIOR TO FINAL ACCEPTANCE BY OWNER, THOROUGHLY CLEAN ALL WORK INSIDE AND OUT AS APPLICABLE, AND LEAVE ALL SYSTEMS AND EQUIPMENT IN PERFECT WORKING ORDER. THOROUGHLY CLEAN ALL PLUMBING FIXTURES, EXPOSED PIPING, FLOOR DRAIN GRATES, AND CLEANOUT COVERS AS APPLICABLE.

GUARANTEE:

PROVIDE A ONE (1) YEAR GUARANTEE COVERING ALL LABOR AND MATERIAL PROVIDED IN THIS PROJECT. GUARANTEE SHALL INCLUDE ALL SHIPPING AND TRANSPORTATION CHARGES NECESSARY TO RETURN DEFECTIVE MATERIALS TO MANUFACTURER, AS WELL AS LABOR CHARGES NECESSARY TO REMOVE AND REPLACE DEFECTIVE MATERIALS.

DEFECTIVE MATERIALS AND/OR EQUIPMENT MAY BE REPAIRED IN LIEU OF REPLACED WITH PRIOR APPROVAL OF ARCHITECT AND/OR OWNER

SHEET METAL NOTES:

BLANK-OFF RETURN DUCTWORK IN AREAS OF WORK THAT CREATES DUST TO PREVENT DEBRIS FROM ENTERING MECHANICAL SYSTEM.

MEDIUM AND LOW PRESSURE DUCTWORK: ALL DUCTWORK ON DISCHARGE OF FURNACES, ALL RETURN AIR DUCTWORK AND EXHAUST AIR DUCTWORK SHALL BE CONSTRUCTED AND SUPPORTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LATEST SMACNA'S ISSUE OF CONSTRUCTION STANDARDS. IN ADDITION, ALL JOINTS AND SEAMS SHALL BE SEALED WITH DUCT SEALANT EQUAL TO FOSTER #32-14. APPROVED SEALANT MANUFACTURERS: 3M COMPANY, BENJAMIN FOSTER COMPANY, UNITED SHEET METAL, FLINTKOTE.

ALL ROUND TAKE-OFFS SHALL BE MADE WITH CONICAL TAKE-OFF SPIN-IN FITTINGS TYPE SM-2DG, WITH FACTORY INSTALLED ADJUSTABLE DAMPER AS MANUFACTURED BY GENERAL ENVIRONMENT CORPORATION, GLENDALE, CALIFORNIA OR EQUAL.

VANES AND DEFLECTORS: ALL ELBOWS AND TURNS SHALL BE MADE WITH A RADIUS NOT LESS THE 1-1/2" TIMES THE DUCT DIAMETER OR WIDTH. WHERE BUILDING CONSTRUCTION DOES NOT PERMIT A LONG RADIUS ELBOW OR TURN OR IF SHOWN ON THE CONTRACT DOCUMENTS, ACOUSTICAL TURNING VANES AND DEFLECTORS SHALL BE PROVIDED.

FIRE DAMPERS: ALL DUCTS, EXCEPT COMBUSTION AIR DUCTS, PASSING THROUGH A REQUIRED FIRE RATED AREA SEPARATION SHALL BE EQUIPPED WITH AN APPROVED MULTI-BLADE OR CURTAIN TYPE FIRE DAMPER COMPLYING WITH THE REQUIREMENTS OF THE LOCAL APPLICABLE BUILDING CODE, FIRE MARSHAL AND ANY OTHER LOCAL AUTHORITY HAVING JURISDICTION. CURTAIN TYPE FIRE DAMPERS SHALL BE AIR BALANCE, INC., NO. 119 UL LISTED WITH TYPE "B" FRAMES.

FLEXIBLE DUCTWORK:

ALL LOW PRESSURE AND HIGH PRESSURE FLEXIBLE DUCT SHALL BE FLEXMASTER USA, INC., TYPE 8M INSULATED FLEXIBLE DUCT CONSISTING OF A FACTORY FABRICATED ASSEMBLY OF A TRILAMINATE ALUMINUM FOIL, FIBERGLASS AND POLYESTER. THE FLEXIBLE DUCT SHALL BE UL LISTED 181 CLASS 1 AIR DUCT AND COMPLY WITH NFPA 90A AND 90B AND HAVE A FLAME SPREAD OF NOT OVER 25 AND A SMOKE DEVELOPED OF NOT OVER 50, THE FLEXIBLE DUCT SHALL HAVE A MINIMUM PRESSURE RATING OF 12" WC" THROUGH TEMPERATURE RANGE OF -20 DEGREES F. TO +250 DEGREES F.

INSULATION:

INSULATION SHALL BE APPLIED BY EXPERIENCED WORKERS AS PER BEST TRADE PRACTICE.

DUCT INSULATION:

ALL DUCTWORK SHALL BE THERMALLY INSULATED AS SPECIFIED.

ALL DUCT INSULATION SHALL HAVE A FLAME SPREAD CLASSIFICATION OF 25 OR LESS, A FUEL CONTRIBUTED RATING OF 35 OR LESS AND SMOKE DEVELOPED RATING OF 50 OR LESS, AS RATED BY UNDERWRITERS' LABORATORIES.

BLANKET TYPE (UP TO 1-1/2 LB./CU. FT. INSULATION):

INSULATION WITH ATTACHED FACING SHALL BE SECURED TO THE DUCTS WITH ADHESIVE APPLIED IN 6" BRUSH WIDTHS EVERY 12". THE ADHESIVE SHALL BE RIDGED SLIGHTLY BY USING A SERRATED TROWEL.

INSULATION WITHOUT ATTACHED FACING (PLAIN) SHALL BE SECURED TO THE DUCTS THE SAME AS ABOVE THEN BOUND WITH TYING CORD, SPIRAL WRAPPED OR HALF HITCHED.

DUCT FITTINGS SHALL BE INSULATED BY WRAPPING WITH A GLASS FIBER BLANKET. BLANKETS SHALL BE SECURED TO THE DUCT FITTINGS BY INSULATION STAPLES OR JUTE TWINE. THE BLANKET SHALL BE COVERED WITH AN OPEN MESH CLOTH OR GLASS FIBER HEAVILY COATED WITH VAPOR BARRIER ADHESIVE. THE INSULATION THICKNESS SHALL BE EQUAL TO THE THICKNESS OF THE INSULATION ON THE ADJOINING DUCTWORK.

DUCT INSULATION APPLICATION:

THE FOLLOWING DUCTWORK SHALL BE INSULATED AS DESCRIBED HEREIN. REFER TO PREVIOUS PARAGRAPHS FOR RELATED INSULATION MATERIALS, DUCT INSULATION AND FINISH APPLICATIONS.

CONCEALED AIR CONDITIONING SUPPLY AIR DUCTWORK, CONCEALED OUTDOOR INTAKE DUCTWORK AND CONCEALED MIXING PLENUMS: (THIS INCLUDES DUCTWORK IN CEILING SPACES USED AS RETURN AIR PLENUM, DUCTWORK IN UNVENTED ATTIC SPACES OR UNVENTED CEILINGS SPACES WITH ROOF INSULATION). OWENS-CORNING FIBERGLAS FACED DUCTWRAP COMMERCIAL GRADE TYPE 100 1-1/2" THICK, MINIMUM INSTALLED R VALUE 4.5, 1 LB./CU. FT. DENSITY WITH FACTORY "FRK" VAPOR BARRIER JACKET OR LAMINATED ALUMINUM FOIL, OPEN MESH GLASS FIBER REINFORCING MESH SCRIM AND FLAMEPROOF KRAFT PAPER.

HEATING AND AIR CONDITIONING SUPPLY AIR DUCTWORK, OUTDOOR AIR INTAKE DUCTWORK, RETURN AIR DUCTWORK AND MIXING PLENUMS LOCATED IN CONCEALED SPACES VENTED TO THE OUTDOORS (THIS INCLUDES DUCTWORK IN VENTED CEILING SPACES OR ATTICS) AND IN UNVENTED ATTICS OR CEILINGS SPACES WITH INSULATED CEILINGS: OWENS-CORNING FIBERGLAS FACED DUCTWRAP COMMERCIAL GRADE TYPE 100 2"THICK MINIMUM INSTALLED R VALUE 6.0 1 LB./CU. FT. DENSITY WITH FACTORY "FRK" VAPOR BARRIER JACKET OR LAMINATED ALUMINUM FOIL, OPEN MESH GLASS FIBER REINFORCING MESH SCRIM AND FLAMEPROOF KRAFT PAPER.

ACOUSTIC DUCT INSULATION:

WHERE DUCTWORK IS ACOUSTICALLY LINED, DUCTWORK SIZES SHOWN ON THE DRAWINGS SHALL BE INTERIOR AIR STREAM SIZES AND NOT EXTERIOR SHEET METAL SIZES.

PROVIDE ACOUSTIC DUCT LINER OF TYPE, THICKNESS AND LOCATION AS SPECIFIED HEREINAFTER. ALL ACOUSTIC INSULATION SHALL HAVE A FLAME SPREAD CLASSIFICATION OF LESS THAN 25 AND SMOKE DEVELOPED LESS THAN 50 IN ACCORDANCE WITH UL, ASTM, AND NFPA.

THE SIDE FACING THE AIR STREAM SHALL BE COATED WITH A FIRE RESISTANT COATING.

METHOD OF ATTACHMENT - RECTANGULAR DUCTS: ADHERE DUCT LINER TO ALL INTERIOR SIDES OF DUCT WITH 100% COVERAGE OF FIRE RETARDANT ADHESIVE. USE MECHANICAL FASTENERS, GRAHAM WELDED PINS OR APPROVED EQUAL, ON MAXIMUM OF 16" CENTERS AT TOP SECTIONS WHEN DUCT WIDTH EXCEEDS 12" ON ALL SIDES WHEN HEIGHTS EXCEED 24".

ALL JOINTS AND CAPS SHALL BE CAULKED WITH A FIRE RETARDANT MASTIC. IN ADDITION, COAT CAP OF FASTENERS WITH A BRUSH COAT OF FIRE RETARDANT INSULATION COATING. USE METAL CORNER TO PROTECT LEADING CORNERS OF INSULATION.

ACOUSTIC INSULATION SHALL BE JOHNS-MANVILLE "LINACOUSTIC" WITH A .70 NRC, 1-1/2"/CU.FT, MINIMUM DENSITY, 1" THICK UNLESS OTHERWISE NOTED. INSULATION SHALL BE SUITABLE FOR VELOCITIES OF 5,000 FPM. ABSOLUTE ROUGHNESS FACTOR SHALL NOT EXCEED .0008 FEET.

SCOPE: DUCTWORK AND EQUIPMENT LISTED BELOW AND/OR NOTED ON THE CONTRACT DOCUMENTS SHALL BE ACOUSTICALLY LINED.

AIR CONDITIONING SUPPLY AIR DUCTWORK WITHIN 20'-0" OF ROOFTOP UNITS.

RETURN AIR DUCTWORK WITHIN 20'-0" OF ROOFTOP UNITS.

APPROVED MANUFACTURERS: CERTAIN-TEED/SAINT GOBAIN, OWENS-CORNING FIBERGLAS, JOHNS-MANVILLE

FURNACE UNITS: F-1, F-2, F-3

FURNISH MATERIALS IN ACCORDANCE WITH THE 2012 MICHIGAN MECHANICAL CODE.

UNITS: SELF-CONTAINED, PACKAGED, FACTORY ASSEMBLED, PRE-WIRED UNIT CONSISTING OF CABINET, SUPPLY FAN, HEATING ELEMENT,

CONTROLS, AIR FILTER, HUMIDIFIER, AND ACCESSORIES; WIRED FOR SINGLE POWER CONNECTION WITH CONTROL TRANSFORMER.

1. AIR FLOW CONFIGURATION: UPFLOW.
2. HEATING: NATURAL GAS FIRED.
3. ELECTRIC REFRIGERATION: REFRIGERANT COOLING COIL AND OUTDOOR PACKAGE CONTAINING COMPRESSOR, CONDENSER COIL AND CONDENSER FAN.
4. ACCESSORIES: ROOF TERMINATION KIT.
5. PROGRAMMABLE THERMOSTAT.

CABINET: STEEL WITH BAKED ENAMEL FINISH AND ACCESS DOORS WITH SAFETY INTERLOCK SWITCH.

SUPPLY FAN: CENTRIFUGAL TYPE RUBBER MOUNTED WITH DIRECT OR BELT DRIVE, ADJUSTABLE VARIABLE PITCH MOTOR PULLEY, MULTIPLE SPEED MOTOR.

HEAT EXCHANGER: ALUMINIZED STEEL.

GAS BURNER:
1. ATMOSPHERIC TYPE WITH ADJUSTABLE COMBUSTION AIR SUPPLY.
2. GAS VALVE, TWO STAGE CAPABLE OF 100 PERCENT SAFETY GAS SHUT-OFF; 24 VOLT COMBINING PRESSURE REGULATION, SAFETY PILOT, MANUAL SET (ON-OFF), PILOT FILTRATION, AUTOMATIC ELECTRIC VALVE.
3. ELECTRONIC PILOT IGNITION, WITH HOT SURFACE IGNITER.
4. COMBUSTION AIR DAMPER WITH SYNCHRONOUS SPRING RETURN DAMPER MOTOR.
5. NON-CORROSIVE COMBUSTION AIR BLOWER WITH PERMANENTLY LUBRICATED MOTOR.

FURNACE OPERATING CONTROLS:
1. ROOM THERMOSTAT: CYCLES TO MAINTAIN ROOM TEMPERATURE SETTING.
2. SUPPLY FAN CONTROL: ENERGIZE FROM BONNET TEMPERATURE INDEPENDENT OF BURNER CONTROLS, WITH ADJUSTABLE TIMED OFF DELAY AND FIXED TIMED ON DELAY, WITH MANUAL SWITCH FOR CONTINUOUS FAN OPERATION.

AIR FILTERS: 1 INCH (25 MM) THICK GLASS FIBER, DISPOSABLE TYPE.

FURNACE REFRIGERATION PACKAGE:
1. EVAPORATOR COIL: COPPER TUBE ALUMINUM FIN ASSEMBLY, GALVANIZED DRAIN PAN, DRAIN CONNECTION, REFRIGERANT PIPING CONNECTIONS, RESTRICTED DISTRIBUTOR OR THERMOSTATIC EXPANSION VALVE, STEEL CABINET WITH BAKED ENAMEL FINISH AND INSULATION.
2. COMPRESSOR: HERMETIC, 3600 RPM, RESILIENTLY MOUNTED INTEGRAL WITH CONDENSER, WITH POSITIVE LUBRICATION, CRANKCASE HEATER, HIGH PRESSURE CONTROL, MOTOR OVERLOAD PROTECTION, SERVICE VALVES AND DRIER. INCLUDE TIME DELAY CONTROL TO PREVENT SHORT CYCLING AND RAPID SPEED CHANGES.
3. REFRIGERATION ACCESSORIES: FILTER DRIER, HIGH-PRESSURE SWITCH (MANUAL RESET), LOW PRESSURE SWITCH (AUTOMATIC RESET), SERVICE VALVES AND GAUGE PORTS, AND THERMOMETER WELL (IN LIQUID LINE), FURNISH THERMOSTATIC EXPANSION VALVES, FURNISH REFRIGERANT LINES, FACTORY CLEANED, DRIED, PRESSURIZED AND SEALED, WITH INSULATED SUCTION LINE.
4. AIR COOLED CONDENSER: AIR 520; ALUMINUM FIN AND COPPER TUBE COIL, WITH DIRECT DRIVE AXIAL PROPELLER FAN RESILIENTLY MOUNTED, GALVANIZED FAN GUARD.
5. REFRIGERATION OPERATING CONTROLS:
   a. ROOM THERMOSTAT; CYCLES CONDENSING UNIT AND SUPPLY FAN TO MAINTAIN ROOM TEMPERATURE SETTING.
   b. LOW AMBIENT KIT: FURNISH REFRIGERANT PRESSURE SWITCH TO CYCLE CONDENSER FAN.

D.DRAIN PAN: GALVANIZED STEEL OR PLASTIC DRAIN PAN WITH DRAIN OUTLET, MATCH PAN SIZE TO DIMENSIONS OF FURNACE.

E. ADJUSTABLE ROOM THERMOSTAT; LOW VOLTAGE, TO CONTROL BURNER OPERATION, HEATER STAGES IN SEQUENCE WITH DELAY BETWEEN STAGES, COMPRESSOR AND CONDENSER FAN AND SUPPLY FAN TO MAINTAIN TEMPERATURE SETTING. INCLUDE SYSTEM SELECTOR SWITCH (HEAT-OFF-COOL) AND FAN CONTROL SWITCH (AUTO-ON).

ELECTRICAL CHARACTERISTICS AND COMPONENTS

A.REQUIREMENTS FOR ELECTRICAL CHARACTERISTICS.
1. ¾ HP.
2. 120 VOLTS, SINGLE PHASE, 60 HZ.
3. 20 AND 15 AMPERES MAXIMUM CIRCUIT BREAKER SIZE. (SEE DRAWING SCHEDULE)
4. 14.5 AND 9.7 MINIMUM CIRCUIT AMPACITY. (SEE DRAWING SCHEDULE)

B.DISCONNECT SWITCH: BY ELECTRICAL CONTRACTOR.

TYPE B DOUBLE WALL GAS VENTS

A.MANUFACTURERS:
1. TRANE
2. CARRIER
3. SUBSTITUTIONS: NOT PERMITTED.

B.FURNISH MATERIALS IN ACCORDANCE WITH THE 2009 MICHIGAN MECHANICAL CODE.
1. FABRICATION: INNER PIPE OF SHEET ALUMINUM, AND OUTER PIPE OF GALVANIZED SHEET STEEL, TESTED IN COMPLIANCE WITH UL 441.
2. VENT DAMPERS: ELECTRICALLY ACTUATED, SAME SIZE AS DRAFT HOOD COLLAR, CONSTRUCTED OF STAINLESS STEEL OR GALVANIZED STEEL, WITH CORROSION-RESISTANT COMPONENTS, IN COMPLIANCE WITH ANSI Z21.66.

INSTALLATION

A.INSTALL IN ACCORDANCE WITH NFPA 54.

B.INSTALL WORK IN ACCORDANCE WITH THE 2009 MICHIGAN MECHANICAL CODE AND THE 2009 INTERNATIONAL FUEL GAS CODE.

C.INSTALL DRAIN PIPING FROM COOLING COILS TO NEAREST FLOOR DRAIN.

D.INSTALL REFRIGERANT PIPING TO REMOTE CONDENSER.

FORCED AIR FURNACES MANUFACTURERS:
1. THE TRANE COMPANY: MODEL TUX1C100A9. (BASIS OF DESIGN).
2. CARRIER CORP.
3. SUBSTITUTIONS: NOT PERMITTED.

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Key Plan:

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
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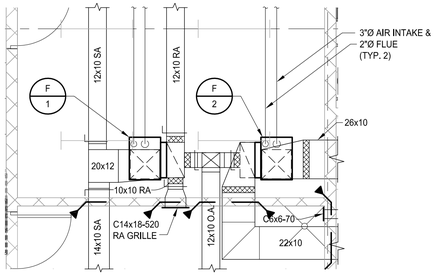
HVAC
SPECIFICATIONS

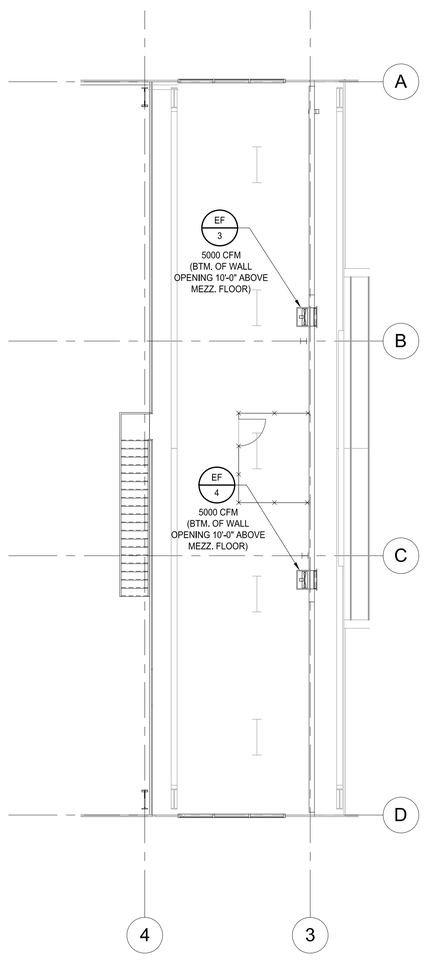
Project Number: 14049

Sheet Number: M-000



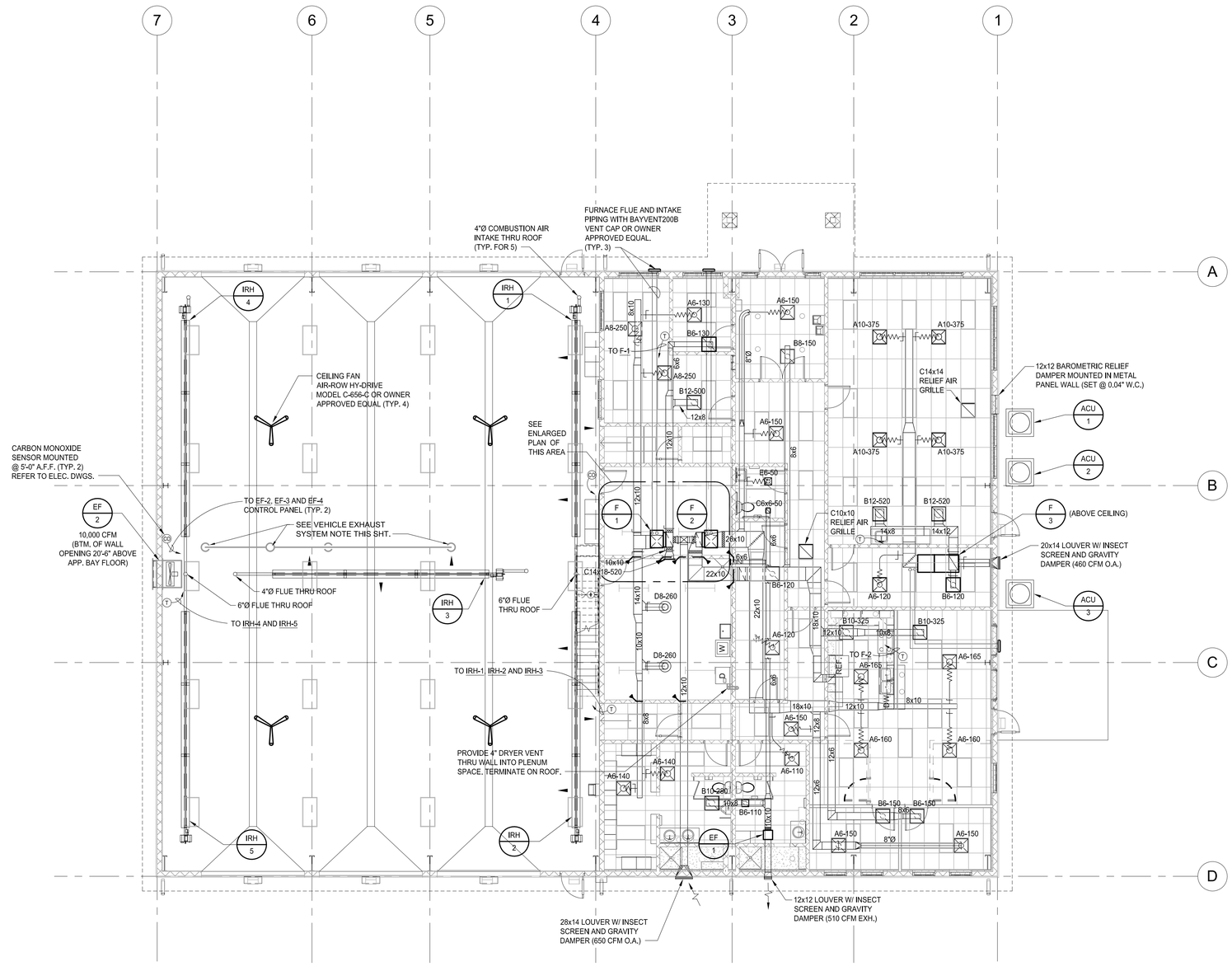
ENLARGED HVAC PLAN

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



HVAC PLAN - MEZZANINE

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



HVAC PLAN

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

VEHICLE EXHAUST SYSTEM NOTE
FURNISH AND INSTALL A (3) DROP 'PLYMOVENT' TRUCK EXHAUST SYSTEM COMPLETE WITH ALL REQUIRED TRACKS,EXHAUST PIPING, EXHAUST FAN, ROOF DISCHARGE AND CONTROLS NECESSARY FOR A COMPLETE AND OPERABLE SYSTEM.

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HVAC PLANS

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FURNACE AND AIR-COOLED CONDENSING UNIT SCHEDULE

TAG	SYSTEM AND/OR SEVICE	LOCATION	ELEC (FURNACE UNIT)	MIN. O.A. (CFM)	SUPPLY FAN DATA			DX COOLING COIL DATA								HEATING SECTION (INDIRECT GAS-FIRED)							FILTER DATA	AIR-COOLED CONDENSING UNIT							DESIGN BASIS	REMARKS
					AIR FLOW (CFM)	FAN SPEED (RPM)	MOTOR HP	EAT DB (°F)	EAT WB (°F)	LAT DB (°F)	LAT WB (°F)	TOTAL (MBH)	SENS (MBH)	FACE VEL (FPM)	FACE AREA (SQ.FT)	ROWS / FPI	EAT (°F)	LAT (°F)	OUTPUT (MBH)	INPUT (MBH)	GAS CONS. (CFH)	GAS PRESS. (PSIG)	GAS CONN. (" DIA.)	TYPE & EFFICIENCY	TAG	NO. OF COMPR.	REFRIG. TYPE	FAN TYPE	HP	ELEC	MCA/ MAX. BRKR.		
F-1 / ACU-1	OFFICE AND WORK AREAS	MECH/ELEC 107	120V/1/60	350	1,620	VARIABLE	3/4	76.0	63.0	55.0	54.5	50.7	44.7	270	6.00	3/14	55	115	93	100	100	0.5	0.5	1" THROWAWAY	ACU-1	1	R-410	PROP.	0.2	200-230V/1/60	28.0A/50.0A	FURNACE UNIT: TRANE TUX1C100A9H41B AIR-COOLED CONDENSING UNIT: TRANE 4TTB3048D1000 CASED COIL: TRANE 4TXCC048DC3HC	REFRIGERANT LINE SET, PROGRAMMABLE 7-DAY, 3 HEAT/2 COOL THERMOSTAT w/ DEHUMIDIFICATION
F-2 / ACU-2	LIVING AREAS	MECH/ELEC 107	120V/1/60	300	1,490	VARIABLE	3/4	77.6	64.4	55.0	54.2	46.9	38.2	248	6.00	3/14	60	111	93	100	100	0.5	0.5	1" THROWAWAY	ACU-2	1	R-410	PROP.	0.2	200-230V/1/60	28.0A/50.0A	FURNACE UNIT: TRANE TUX1C100A9H41B AIR-COOLED CONDENSING UNIT: TRANE 4TTB3048D1000 CASED COIL: TRANE 4TXCC048DC3HC	REFRIGERANT LINE SET, PROGRAMMABLE 7-DAY, 3 HEAT/2 COOL THERMOSTAT w/ DEHUMIDIFICATION
F-3 / ACU-3	TRAINING/POLLING AND T/P STORAGE	T/P STORAGE CEILING	120V/1/60	456	1,620	VARIABLE	3/4	79.0	65.7	55.0	52.3	63.3	41.7	270	6.00	3/14	52	106	93	100	100	0.5	0.5	1" THROWAWAY	ACU-3	1	R-410	PROP.	0.2	200-230V/1/60	28.0A/50.0A	FURNACE UNIT: TRANE TUX1C100A9H41B AIR-COOLED CONDENSING UNIT: TRANE 4TTB3048D1000 CASED COIL: TRANE 4TXCC048DC3HC	REFRIGERANT LINE SET, PROGRAMMABLE 7-DAY, 3 HEAT/2 COOL THERMOSTAT w/ DEHUMIDIFICATION

EXHAUST FAN SCHEDULE

MARK	SERVING	LOCATION	FAN TYPE	WHEEL DIA. (INCHES)	TYPE	AIR QUANTITY (CFM)	EXT. ST. PR. (IN. W.C.)	RPM	DRIVE	BHP	HP	ELECTRICAL		DESIGN BASIS		DRAWING NUMBER	REMARKS
												VOLT	PHASE	MAKE	MODEL		
EF-1	TOILET/LOCKER ROOM EXHAUST	WOMEN #116	IN-LINE	9.5	CENTRIFUGAL	510	0.110	1,520	BELT	0.15	1/4	120	1	GREENHECK	BSQ-80-4	M-200	1, 2
EF-2	APPARATUS BAY	APPARATUS BAY #118	SIDEWALL	36.0	CENTRIFUGAL	10,000	0.270	860	DIRECT	1.1	1.0	120	1	GREENHECK	SE2-36-611-C10	M-200	3, 4, 5
EF-3	APPARATUS BAY	APPARATUS BAY #118	SIDEWALL	20.0	CENTRIFUGAL	5,000	0.230	1,750	DIRECT	0.88	3/4	120	1	GREENHECK	SE2-20-420-A7	M-200	3, 4, 5
EF-4	APPARATUS BAY	APPARATUS BAY #118	SIDEWALL	20.0	CENTRIFUGAL	5,000	0.230	1,750	DIRECT	0.88	3/4	120	1	GREENHECK	SE2-20-420-A7	M-200	3, 4, 5

	REMARKS/ACCESSORIES
1	GRAVITY BACKDRAFT DAMPER
2	HANGING SPRING ISOLATORS & RODS
3	WALL COLLAR
4	MOTORIZED DAMPER
5	INTERLOCK w/ CO MONITORING SYSTEM

DIFFUSER, REGISTER AND GRILLE SCHEDULE

REF	SERVICE & TYPE	MODEL NUMBERS (DESIGN BASIS)	ACCESSORIES					MATERIAL		FINISH		COLOR				DEFLECTION	BLADE SPACING	REMARKS
			CONTROL GRID	OPPOSED BLADE DAMPER	SQ. TO ROUND ADAPTER	SEPARATE PLASTER FRAME	OTHER DAMPER	STEEL	ALUMINUM	OTHER	BAKED ENAMEL	LACQUER	ANODIZED	STANDARD GRAY	CLEAR OR LACQUER	STD OFF-WHITE	MATCH T-BAR	MATCH CEILING			
A	CELING DIFFUSER	TITUS - OMNI SERIES							X		X					X					BORDER TYPE - LAY IN
B	RETURN AIR GRILLE	TITUS - PAR SERIES							X		X					X					BORDER TYPE - LAY IN
C	EXHAUST AIR GRILLE	TITUS - 350RL SERIES		X					X		X					X			35	3/4"	SURFACE (CEILING) MOUNT
D	ROUND DIFFUSER	TITUS - TMR SERIES						X			X					X					ADJUSTABLE DISCHARGE
E	CELING DIFFUSER	TITUS - OMNI SERIES						X			X					X					BORDER TYPE - LAY-IN; 12x12 MODULE

NOTES: DIFFUSER, REGISTER AND GRILLE SCHEDULE

1. MODEL NUMBERS ARE FOR GENERAL IDENTIFICATION. SPECIFIC MODEL NUMBERS DEPEND ON APPLICABLE NOTES AND ARCHITECTURAL PLANS. VERIFY MOUNTING TYPE AND DIMENSIONS WITH ARCHITECTURAL WORK. REFER TO ARCHITECTURAL SPECIFICATIONS, REFLECTED CEILING PLANS AND

2. ALL TYPE A AND B CEILING DIFFUSERS SHALL HAVE 18" x 18" BACK PAN AND ROUND NECK, SIZES AS INDICATED ON THE DRAWINGS.

3. REFERENCE NOTES USED ON THE DRAWINGS.

REF. TYPE A,D,E: **A6(2)-200**	**A:** REFERENCE; **6:** CONECTION SIZE IN INCHES; **(2):** THROW 2 WAY. IF NOT SHOWN THROW SHALL BE STANDARD (4-WAY TYPICAL); **200:** CFM
REF. TYPE B: **B10-325**	**B:** REFERENCE; **10:** CONNECTION SIZE IN INCHES; **325:** CFM
REF. TYPE C: **C6x8-150**	**C:** REFERENCE; **6x8:** CONNECTION SIZE IN INCHES; **150:** CFM

GAS-FIRED INFRARED HEATER SCHEDULE

MARK	LOCATION	HEATING SECTION				MOUNTING		ELECTRICAL			DESIGN BASIS		REMARKS
		GAS TYPE	INPUT (MBH)	TUBE LENGTH FT.	GAS CONN. SIZE	HEIGHT CENTER OF TUBE	ROTATION	VOLTAGE	PHASE	IGNITION/ RUNNING CURRENT	MAKE	MODEL	
IRH-1, 2, 4, 5	APPARATUS BAY #118	NAT.	100	30	1/2"	18'-6"	SEE PLAN	120	1	4.8A/ 1.1A	RE-VERBER-RAY	DX3-30-100-NF-2S	1, 2, 3, 4
IRH-3	APPARATUS BAY #118	NAT.	125	30	1/2"	18'-6"	SEE PLAN	120	1	4.8A/ 1.1A	RE-VERBER-RAY	DX3-30-125-NFS-2	1, 2, 3, 4

REMARKS:

1. STAINLESS STEEL TUBES AND REFLECTORS
2. MODEL No. TH-ET5 LINE VOLTAGE THERMOSTAT - SEE PLAN FOR QUANTITIES AND LOCATIONS
3. SINGLE OR COMMON ROOF VENT AND INTAKE PACKAGE PER PLAN
4. MOUNTING HANGER AND CHAIN SET

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MECHANICAL SCHEDULES

Project Number: 14049

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ELECTRICAL SPECIFICATION

PART 1 - GENERAL

COOPERATION WITH OTHER TRADES

WHEN INTERFERENCES EXIST WITH THE WORK OF OTHER TRADES, NOTIFY THE OWNER BEFORE PROCEEDING WITH THE INSTALLATION OF THE WORK. IF ADDITIONAL WORK IS REQUIRED TO REARRANGE INTERFERING EQUIPMENT AND THE CONTRACTOR HAS FAILED TO NOTIFY THE OWNER OF THE INTERFERENCE, THEN THE CORRECTIVE WORK REQUIRED TO MODIFY THE INTERFERENCE WILL BE DONE AT NO ADDITIONAL EXPENSE TO THE OWNER.

ORDINANCES AND CODES

THE ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH THE GOVERNING RULES AND REGULATIONS OF THE NATIONAL ELECTRIC CODE, ALL LOCAL GOVERNING BOARDS HAVING JURISDICTION, AND, IN ADDITION, SHALL MEET ALL THE STANDARDS AND REQUIREMENTS OF THE OWNER.

THE ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF APPLICABLE FEDERAL, STATE AND LOCAL CODES, ORDINANCES AND REGULATIONS.

PROVIDE MATERIALS LISTED BY THE UNDERWRITERS' LABORATORIES, INC. AND BEARING THEIR LABEL WHERE SUCH SERVICE IS AVAILABLE FOR THE TYPE OF EQUIPMENT SPECIFIED.

WHERE PLANS AND SPECIFICATIONS CONFLICT WITH SUCH LAWS AND ORDINANCES, NOTIFY THE ARCHITECT BEFORE SUBMISSION OF THE BID. AFTER ENTERING INTO THE CONTRACT, THE CONTRACTOR WILL BE HELD RESPONSIBLE TO COMPLETE ALL WORK IN STRICT ACCORDANCE WITH ALL GOVERNING REGULATIONS WITHOUT ADDITIONAL COST TO THE OWNER.

PERMITS

OBTAIN AND PAY FOR ALL REQUIRED PERMITS.

INSPECTIONS

GIVE ALL REQUIRED NOTICES OF INSPECTIONS REQUIRED BY THE LAWS OR OTHER REGULATIONS AND PAY ALL FEES IN CONNECTION THEREWITH.

FINAL ELECTRICAL INSPECTION IS REQUIRED BY THE LOCAL INSPECTION AUTHORITY. FORWARD A COPY OF THE FINAL APPROVAL TO THE FIRE MARSHAL DIVISION, LOCAL FIELD OFFICE.

COORDINATION AND PROJECT RECORD DOCUMENTS

PROJECT RECORD DOCUMENTS ARE REQUIRED UPON COMPLETION OF THE WORK AND BEFORE FINAL PAYMENT IS MADE.

GUARANTEE

THE COMPLETE ELECTRICAL SYSTEM OR SYSTEMS FURNISHED AND INSTALLED SHALL BE GUARANTEED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE OF THE WORK AGAINST DEFECTIVE MATERIALS AND/OR WORKMANSHIP. UPON RECEIPT OF NOTICE OF FAILURE OF ANY PART OF THE WORK DURING THE GUARANTEE PERIOD, THE AFFECTED PART OR PARTS SHALL BE REPLACED PROMPTLY AT NO ADDITIONAL COST TO THE OWNER, INCLUDING ANY DAMAGE DONE TO THE WORK OF OTHERS CAUSED BY THE FAILURE OF THE ELECTRICAL SYSTEM.

CHARACTER OF WORK

THE INSTALLATION SHALL BE SO MADE THAT ITS MANY COMPONENT PARTS WILL FUNCTION TOGETHER AS A WORKABLE SYSTEM. IT SHALL BE COMPLETE WITH ALL ACCESSORIES NECESSARY FOR ITS OPERATION, AND SHALL BE LEFT WITH ALL EQUIPMENT PROPERLY ADJUSTED AND IN WORKING ORDER.

EXECUTE THE WORK IN CONFORMITY WITH THE BEST PRACTICE, SO AS TO CONTRIBUTE TO EFFICIENCY OF OPERATION, MINIMUM MAINTENANCE, ACCESSIBILITY AND SIGHTLINESS. EXECUTE SO THAT THE INSTALLATION WILL CONFORM AND ACCOMMODATE ITSELF TO THE BUILDING STRUCTURE, ITS EQUIPMENT AND ITS USAGE.

MOUNTING HEIGHTS

MOUNT OUTLET BOXES AND EQUIPMENT AS SHOWN BELOW, UNLESS OTHERWISE INDICATED ON DRAWINGS. MOUNTING HEIGHTS SHOWN, IN GENERAL, ARE ABOVE FINISHED FLOOR TO CENTER LINE OF OUTLET BOXES OR EQUIPMENT.

BRACKET MOUNTED MIRROR LIGHTING FIXTURES: ABOVE MIRROR.

SWITCHES: 3'-10".

RECEPTACLES: FINISHED AREAS: 18".

TELEPHONE OUTLETS - DESK MOUNTED: 18".

TELEPHONE OUTLETS - WALL MOUNTED: 4'-6".

SAFETY SWITCHES: 4'-10".

MOTOR STARTERS: 4'-10".

BRACKET EXIT LIGHTING FIXTURES: 6'-8" TO BOTTOM OF FIXTURE FOR CEILINGS UP TO 9 FEET. MOUNT AT 8'-0" FOR CEILINGS HIGHER THAN 9 FEET.

FIRE ALARM PULL STATION: 4'-0".

FIRE ALARM AUDIO/VISUAL OR VISUAL DEVICE: 6'-8" MINIMUM TO BOTTOM OF DEVICE AND 8'-0" MAXIMUM TO TOP OF DEVICE.

REFER TO ARCHITECTURAL AND MECHANICAL DRAWINGS BEFORE INSTALLING ANY OF THE ABOVE OUTLETS OR EQUIPMENT FOR INTERFERENCE, AND ADJUST HEIGHTS TO AVOID INTERFERENCES THAT WOULD OCCUR. IF DEVIATIONS ARE REQUIRED, OBTAIN APPROVAL OF THE OWNER BEFORE PROCEEDING WITH INSTALLATION.

DEMOLITION AND REMOVAL WORK

PROVIDE DEMOLITION AND REMOVAL WORK AS INDICATED. ITEMS FOR REUSE OR TO BE TURNED OVER TO OWNER SHALL BE CAREFULLY REMOVED, DISMANTLED AND STORED TO PREVENT DAMAGE TO SAME. WHERE EQUIPMENT IS TO BE REMOVED, ASSOCIATED CIRCUIT INCLUDING BOXES, CONDUIT, AND WIRE SHALL ALSO BE REMOVED BACK TO THE SOURCE. ITEMS NOT NOTED TO BE REUSED OR TURNED OVER TO OWNER SHALL BECOME PROPERTY OF CONTRACTOR AND SHALL BE REMOVED FROM SITE AND LEGALLY DISPOSED.

WHEN RELOCATING OR REMOVING A LIGHTING FIXTURE, RECEPTACLE OR OTHER ELECTRICAL DEVICE, BUT NOT OTHER DEVICES ON SAME CIRCUIT, CIRCUIT SHALL BE RECONNECTED FOR CONTINUED SERVICE TO REMAINING ITEMS ON CIRCUIT.

ELECTRICAL WORK INTERFERING WITH AND REQUIRING RELOCATION OR MODIFICATION FOR NEW REQUIREMENTS SHALL BE DISCONNECTED, REMOVED OR REROUTED TO SUIT FINAL INSTALLATION.

EQUIPMENT IDENTIFICATION

IDENTIFY ALL PANELS, CONTROL POINTS, CONTROL CENTERS, EQUIPMENT BREAKERS, SWITCHES, ETC., AS APPROVED IN ACCORDANCE WITH THE IDENTIFICATION MARKINGS SHOWN ON THE DRAWINGS AND/OR AS DIRECTED. IDENTIFY EQUIPMENT WITH SUITABLY SIZED ENGRAVED PLASTIC LAMINATE PHENOLIC WHITE BACKGROUND WITH BLACK LETTERING AND ATTACH WITH SHEET METAL SCREWS.

DISCONNECT SWITCHES (INDIVIDUALLY OR PANEL MOUNTED), COMBINATION STARTERS AND TRANSFORMERS SHALL BE IDENTIFIED BY NAME, SOURCE OF POWER AND EQUIPMENT SERVED. PROVIDE NEW NAMEPLATES FOR REVISIONS TO EXISTING EQUIPMENT AFFECTED BY WORK IN THIS CONTRACT.

PANELBOARDS SHALL HAVE TYPED CIRCUIT DIRECTORIES IDENTIFYING EACH LOAD AND LOCATION. UP-DATE ALL EXISTING PANEL SCHEDULES WITH NEW TYPED SCHEDULES FOR PANELS AFFECTED BY WORK IN THIS CONTRACT INCLUDING ADDITIONS OR DELETIONS TO EXISTING PANELS.

CONDUCTORS SHALL BE IDENTIFIED WITH WIRE MARKERS INDICATING THE CIRCUIT NUMBER, WIRE NUMBER OR PHASE LETTER AT EVERY TERMINAL POINT OR SPLICE. PROVIDE CIRCUIT IDENTIFICATION OF EVERY UNSPLICED CONDUCTOR WITHIN EACH JUNCTION OR PULL BOX.

PARTS 2 AND 3 - PRODUCTS, INSTALLATION AND TESTING

RACEWAYS AND FITTINGS

CONDUIT:

ELECTRICAL METALLIC TUBING: ZINC-COATED STEEL PER ANSI C80.3-1977 "SPECIFICATION FOR ELECTRICAL TUBING, ZINC-COATED".

RIGID STEEL CONDUIT, ELBOWS, AND COUPLINGS: ZINC-COATED THREADED STEEL PER ANSI C80.1 "SPECIFICATION FOR RIGID STEEL CONDUIT, ZINC-COATED". EACH LENGTH OF CONDUIT SHALL BE THREADED ON BOTH ENDS.

LIQUID-TIGHT FLEXIBLE STEEL CONDUIT: PER UL-360 "LIQUIDTIGHT FLEXIBLE STEEL CONDUIT, ELECTRICAL", "SEALTITE ELECTRIFLEX".

RIGID NON-METALLIC CONDUIT, ELBOWS, AND COUPLINGS: SMOOTH-WALL POLYVINYLCHLORIDE (PVC), 90°C, UL LISTED AND IN COMPLIANCE WITH THE TESTING REQUIREMENTS DEFINED IN NEMA WTC-2, NEMA TC-3, UL-651, AND UL-514 (FITTINGS). SCHEDULE 40: CARLON PLUS 40 (HEAVY WALL EPC) & SCHEDULE 80: CARLON PLUS 80 (EXTRA HEAVY EPC-80).

MANUFACTURERS: ALLIED, ANACONDA-SEALTITE, CERTAINTEED, ELECTRI-FLEX CO., APPLETON, CROUSE-HINDS, PITTSBURGH, REPUBLIC, STEELDUCT, TRIANGLE/PWC AND WHEATLAND TUBE.

CONDUIT FITTINGS:

COUPLINGS AND CONNECTORS FOR EMT: ZINC-PLATED STEEL, COMPRESSION TYPE.

FITTINGS FOR FLEXIBLE STEEL CONDUIT: MALLEABLE IRON OR STEEL, ZINC OR CADMIUM PLATED, SECURING THE CONDUIT BY CLAMPING ACTION AROUND THE PERIPHERY OF THE CONDUIT. DO NOT FURNISH FITTINGS THAT ANCHOR THE CONDUIT BY MEANS OF SET SCREWS.

MANUFACTURERS: SAME AS LISTED FOR CONDUIT PLUS APPLETON, CROUSE-HINDS, ERICKSON, HUBBELL INC., MIDLAND-ROSS, MIDWEST, RACO, O.Z./GEDNEY ELECTRIC CO., STEEL CITY, THOMAS & BETTS OR TOMIC.

CONDUIT SUPPORT:

PIPE STRAPS USED FOR EXPOSED WORK SHALL BE ONE HOLE MALLEABLE IRON GALVANIZED. USE OF PERFORATED STRAP OR WIRE IS NOT ALLOWED. PROVIDE GALVANIZED TRAPEZE HANGERS FOR GROUPS OF CONDUITS.

INDIVIDUAL CONDUITS NOT SUPPORTED ON PIPE STRAPS SHALL BE PROVIDED WITH CLEVIS TYPE HANGERS. HANGER SUPPORTS SHALL BE ROD OR PIPE WITH THREADED CONNECTIONS.

BEAM CLAMPS FOR SUPPORT OF CONDUIT SHALL BE MALLEABLE IRON OR WROUGHT STEEL WITH HOOK RODS TO GRIP BEAM FLANGE. C-CLAMPS SHALL NOT BE USED.

MANUFACTURERS: SAME AS LISTED FOR CONDUITS, PLUS B-LINE HUBBELL INC., KINDORF, MIDLAND-ROSS, RACO, O.Z./GEDNEY ELECTRIC CO., STEEL CITY, THOMAS & BETTS AND UNISTRUT.

INSTALLATION - RACEWAYS AND FITTINGS

CONDUIT:

USE EMT (WITH COMPRESSION FITTINGS ONLY) IN CONCEALED DRY LOCATIONS UP TO 4-INCHES WHERE CONDUITS ARE NOT SUBJECT TO MECHANICAL DAMAGE.

INSTALL CONDUIT SIZES AS INDICATED. WHERE CONDUIT SIZES ARE NOT INDICATED, INSTALL SIZES PER NEC REQUIREMENTS, EXCEPT DO NOT USE CONDUIT SIZES SMALLER THAN 3/4-INCH UNLESS OTHERWISE SPECIFIED. USE 1/2-INCH FIXTURE STEMS OPTIONALLY, UNLESS OTHERWISE INDICATED.

CONCEAL ALL CONDUIT IN FINISHED AREAS EITHER ABOVE CEILINGS, IN WALLS OR FLOORS, OTHER THAN SLABS ON GRADE UNLESS OTHERWISE SPECIFIED OR INDICATED. INSTALL CONDUIT IN MECHANICAL ROOMS AND SIMILAR SPACES EXPOSED, UNLESS OTHERWISE SPECIFIED OR INDICATED.

FLEXIBLE STEEL CONDUIT SHALL BE USED FOR ALL FINAL CONNECTIONS TO CEILING MOUNTED EQUIPMENT SUCH AS LIGHTING FIXTURES AND SMOKE DETECTORS.

LIQUID TIGHT FLEXIBLE STEEL CONDUIT SHALL BE USED FOR ALL FINAL CONNECTIONS TO TRANSFORMERS, VIBRATING EQUIPMENT SUCH AS MOTORS AND UNDER RAISED ACCESS FLOORING.

INSTALL CONDUIT A MINIMUM OF 12 INCHES FROM HOT WATER OR STEAM PIPES AND 3 INCHES FROM OTHER MECHANICAL PIPING.

SUPPORT CONDUIT EVERY 8 FEET IF SMALLER THAN 2 INCHES AND EVERY 10 FEET IF 2 INCHES OR LARGER.

DO NOT SUPPORT CONDUIT FROM PIPES, HANGERS, OR EXTENSION OF INSTALLATION OF OTHER TRADES.

DO NOT SUPPORT 1-1/2-INCH AND LARGER CONDUIT RUNS ABOVE SUSPENDED CEILING FROM CEILING MEMBERS. SUPPORT SUCH CONDUIT FROM STRUCTURAL SUPPORT SYSTEM. INSTALL PULL BOXES AT LEAST EVERY 100 FEET IN LONG CONDUIT RUNS.

DO NOT EXCEED LOADING LIMITS OF STRUCTURAL SYSTEMS WHERE GROUPS OF CONDUITS ARE SUPPORTED ON COMMMON HANGERS. SEE STRUCTURAL DRAWINGS FOR LIMITS.

EXPANSION FITTINGS:

INSTALL A CONDUIT EXPANSION FITTING IN EACH CONDUIT RUN WHEREVER IT CROSSES AN EXPANSION JOINT IN THE STRUCTURE TO WHICH IT IS ATTACHED. IN ADDITION, INSTALL AN EXPANSION FITTING IN EACH CONDUIT RUN WHICH IS MECHANICALLY ATTACHED TO SEPARATE STRUCTURES. INSTALL A BONDING JUMPER OR GROUND CLAMP TO CONNECT THE CONDUITS.

SLEEVES:

INSTALL SLEEVES AS NOTED. WHERE CONDUITS ARE TO PASS THROUGH FLOOR SLABS, AND PIPE SLOTS ARE NOT PROVIDED, INSTALL PIPE SLEEVES OF SIZE AS INDICATED. INSTALL PIPE SLEEVES WITH BOTTOM OF SLEEVES FLUSH WITH SLAB AND TOP 3 INCHES ABOVE FINISHED FLOOR.

CLOSE AND MAKE WATERTIGHT ALL OPEN SPACES AROUND INSTALLED CONDUIT WITH OAKUM AND AN APPROVED MASTIC. SUPPORT CONDUIT AT EACH LEVEL. PROVIDE APPROVED MASTIC FOR FIRE STOP AND/OR FIRE RATED WALL/FLOOR PENETRATION SYSTEM AT ALL FLOOR/WALL PENETRATIONS.

BUSHINGS:

INSTALL INSULATING BUSHINGS ON CONDUIT ENDS BEFORE THE INSTALLATION OF ANY CONDUCTORS.

PULL ROPE:

INSTALL 1/8 INCH-DIAMETER NYLON PULLING ROPE WITH WOODEN BLOCKS AND IDENTIFICATION FASTENED TO BOTH ENDS IN ALL EMPTY ELECTRICAL AND TELEPHONE CONDUITS.

PULL AND JUNCTION BOXES:

BOXES LESS THAN 5-INCHES BY 5-INCHES: CONFORM TO PARAGRAPH ON "OUTLET BOXES".

SHEET METAL BOXES: CODE GAGE, FULL SEAM WELDED WITH BENT-IN FLANGES SEAM WELDED AT CORNER JOINTS, SCREW FASTENED COVER OF SAME GAGE AS BOX. FASTEN COVER WITH BRASS MACHINE SCREWS. GALVANIZE BOX AND COVER AFTER FABRICATION. PROVIDE SIZES CONFORMING TO NEC REQUIREMENTS FOR WIRING SPACE, EXCEPT WHERE BOXES OF LARGER SIZE ARE INDICATED. FURNISH GASKETS WHEN LOCATED IN AREAS REQUIRING GASKETS.

SPECIAL BOXES SHALL BE PROVIDED AS NOTED ON THE DRAWINGS.

PROVIDE SIZES PER NEC REQUIREMENTS FOR WIRING SPACE.

MANUFACTURERS: APPLETON, CROUSE-HINDS, HOFFMAN, KEYSTONE, AND KILLARK.

INSTALLATION - PULL AND JUNCTION BOXES:

FOR JUNCTION OR PULL BOXES NOT OVER 100 CUBIC INCHES IN SIZE USE 4-11/16-INCHES X 4-11/16-INCHES OUTLET BOXES. FOR JUNCTION OR PULL BOXES OVER 100 CUBIC INCHES IN SIZE, CONSTRUCT SAME AS CABINETS WITH COVERS OF SAME GAGE METAL AS BOXES AND SECURE BY SCREWS OR BOLTS. USE GALVANIZED SHEET STEEL BOXES WITH METAL THICKNESS NOT LESS THAN NO. 14 GAGE. SIZE AND INSTALL BOXES PER THE LATEST EDITION OF NEC ARTICLE NO. 314. INSTALL REMOVABLE COVERS FOR ACCESS AT ALL TIMES.

OUTLET BOXES:

IN GENERAL, USE OUTLET BOXES NOT LESS THAN 4-INCHES SQUARE, AT LEAST 2-INCHES DEEP AND OF SUFFICIENT SIZE TO ACCOMMODATE THE WIRING DEVICES TO BE INSTALLED AT THE OUTLET LOCATION. FLUSH MOUNTED BOXES FOR MULTIPLE OUTLET SHALL BE OF GANG TYPE AND SHALL BE NOT LESS THAN 2-1/4 INCH DEEP AND NOT LESS THAN 3 INCHES DEEP FOR CEILING BOXES.

WHERE SHOWN ON THE DRAWINGS, AND NOTED IN THESE SPECIFICATIONS, USE THREADED-HUB, CAST METAL OUTLETS ON EXPOSED CONDUIT SYSTEMS OR FOR WEATHERPROOF DEVICES SUITABLE FOR THE WIRING DEVICES TO BE INSTALLED.

USE OULET BOXES WITH PLASTER COVERS FOR WIRING DEVICES IN FINISHED WALLS WHERE PRACTICABLE, TO BRING BOX OPENINGS FLUSH WITH FINISHED WALL OR NOT MORE THAN 1/4-INCH BACK OF SAME.

WHERE MOUNTING HEIGHT OR LOCATION OF OUTLETS IS NOT SHOWN OR SPECIFIED LOCATE THE OUTLET AS BEST SUITED FOR THE EQUIPMENT CONNECTED THERETO OR AS DIRECTED.

USE 4-INCH OCTAGON BOXES WITH 3/8-INCH FIXTURE STUD FOR LIGHTING FIXTURES.

WIREWAYS:

PAINTED STEEL ENCLOSURE NEMA 1 (OR OTHER AS NOTED ON DRAWINGS) WITH SCREWED FASTENED COVER, BENDS, ELBOWS, TEES, CROSSES, ADAPTERS AND ACCESSORIES AS REQUIRED, EASILY ASSEMBLED INTO A COMPLETE SYSTEM. PROVIDE SIZES PER NEC REQUIREMENTS FOR WIRING SPACE, EXCEPT WHERE LARGER SIZES ARE INDICATED. FURNISH GASKETS WHEN LOCATED IN AREAS REQUIRING GASKETS.

MANUFACTURERS: COPE, HOFFMAN, KEYSTONE, PARK METAL AND SQUARE D.

INSTALLATION - WIREWAYS:

INSTALL WIREWAYS COMPLETE WITH ALL REQUIRED COUPLINGS, END CLOSURES, ETC., AS REQUIRED. TAPS & SPLICES ARE PERMITTED WITHIN THE WIREWAY BUT SHALL BE LIMITED TO THE REQUIREMENTS OF NEC ARTICLE NO. 376.

WIRES AND CABLES:

PROVIDE WIRE AND CABLE FOR STANDARD SPECIFICATIONS ESTABLISHED FOR SUCH MATERIAL AND CONSTRUCTION BY ASTM, ANSI, IPCEA AND NEMA, WHERE APPLICABLE. PROVIDE COPPER CONDUCTORS OF 98% CONDUCTIVITY, NOT LESS THAN NO. 12 AWG. PROVIDE CONDUCTOR SIZES AS INDICATED. PROVIDE STRANDED CONDUCTORS.

WIRE FOR GENERAL INTERIOR AND EXTERIOR USE: SINGLE CONDUCTOR, ANNEALED COPPER, RATED 600 VOLTS AS FOLLOWS:

NEC TYPE THHN, RATED 90°C, DRY AND DAMP LOCATION.

NEC TYPE XHHW, RATED 90°C, DRY AND DAMP LOCATION AND 75°C, WET LOCATION.

INSTALLATION - WIRES AND CABLES:

INSTALL WIRING IN ACCORDANCE WITH ARTICLES NO. 210 AND NO. 300 OF THE NATIONAL ELECTRICAL CODE OR PER ANY OTHER CODES THAT TAKE PRECEDENCE.

INSTALL CONDUCTORS IN SUCH A MANNER THAT THE BENDING RADIUS OF ANY WIRE OR CABLE IS NOT LESS THAN THE MINIMUM RECOMMENDED BY ICEA AND/OR THE MANUFACTURER. DO NOT EXCEED MANUFACTURER'S RECOMMENDED VALUES FOR MAXIMUM PULLING TENSION OR SIDEWALL FORCE APPLIED TO ANY WIRE OR CABLE.

PROVIDE A GREEN GROUND WIRE FOR EVERY CIRCUIT.

COLOR CODING AND CONDUCTOR IDENTIFICATION:

MATCH EXISTING COLOR SCHEME OR AS REQUIRED BY THE NEC.

BRANCH CIRCUITS:

PROVIDE A SEPARATE NEUTRAL WIRE FOR EVERY BRANCH CIRCUIT REQUIRING A NEUTRAL. SHARING OF NEUTRAL WIRES IS NOT ALLOWED.

GROUND WIRE:

GROUND WIRE FOR GENERAL INTERIOR USE SHALL BE GREEN INSULATED STRANDED COPPER AND SHALL MEET REQUIREMENTS OF WIRE FOR INTERIOR AND EXTERIOR USE.

MANUFACTURERS: AMERICAN INSULATED WIRE CORP., CABLEC, CAROL, GENERAL CABLE, OKONITE, ROME, SOUTH WIRE AND TRIANGLE.

INSULATING TAPE:

SCOTCH 33 PLUS OR OKONITE TYPE CLF SERIES 602-20 FOR GENERAL USE AND SCOTCH 27 FOR HIGH TEMPERATURE AREAS.

WIRING DEVICES:

RECEPTACLES:

20 AMPERE SINGLE OR DUPLEX CONVENIENCE RECEPTACLES FOR 120 VOLT, SINGLE PHASE SERVICE: STRAIGHT BLADE, 2 POLE, 3 WIRE, NEMA CONFIGURATION 5-10R, RATED 20 AMPERES, 125 VOLTS, NEMA PERFORMANCE STANDARD, SPECIFICATION GRADE, FOR BACK AND SIDE WIRING, COLOR TO MATCH EXISTING OR PER ARCHITECT, NYLON, ARROW-HART 5362, BRYANT, OR HUBBELL INC.

GROUND-FAULT INTERRUPTER SHALL BE DUPLEX, 2 POLE, 3 WIRE, GROUNDING TYPE, RATED 20 AMPERE, 125 VOLT, NEMA CONFIGURATION 5-20R, ARROW-HART GF5342, BRYANT OR HUBBELL.

LIGHTING SWITCHES:

TOGGLE OPERATED, SINGLE POLE SINGLE THROW, SINGLE POLE DOUBLE THROW, DOUBLE POLE DOUBLE THROW, SPECIFICATION GRADE, COMPOSITION BASED, HEAVY DUTY, FLUSH, QUIET TYPE, WITH PROVISION FOR BACK AND SIDE WIRING AND RATED 20 AMPERES, 120/277 VOLTS A.C. ARROW-HART 1991 THRU 1994, BRYANT 4901 THRU 4904, OR HUBBELL HBL 1221 THRU HBL 1224.

BOXES, PROVIDE PERMANENTLY INSTALLED BARRIERS BETWEEN ADJACENT SWITCHES.

ILLUMINATED TOGGLE SWITCHES SHALL HAVE LONG LIFE NEON LAMPS AND LEXAN HANDLES, IN EITHER RED OR IVORY, AS INDICATED. HUBBELL #1223-IL-PL, OR #1223-IL-IL.

DEVICE PLATES:

GANG TOGETHER ALL SWITCHES LOCATED IN ONE LOCATION AND COVER WITH ONE CUSTOM MADE WALL PLATE. SELECT THE CORRECT COMBINATION AND TYPE OF OPENING.

DEVICE PLATES IN FINISHED AREAS SHALL BE SMOOTH, BRUSHED STAINLESS STEEL NO. 302/304 FINISH. FOR RECEPTACLES WIRED TO THE EMERGENCY SYSTEM, THE PLATE SHALL BE ENGRAVED WITH "EMERGENCY" IN RED FILLED LETTERS.

INSTALLATION - WIRING DEVICES:

INSTALL WALL SWITCHES NEAR DOORS AT STRIKE SIDE OF DOORS AS FINALLY HUNG, 6 INCHES FROM DOOR FRAME. INSTALL SWITCHES IN 4-11/16 INCHES SQUARE BOXES WHERE POSSIBLE.

USE GANGED BOXES, 2-1/2 INCH DEEP, FOR 120 VOLT AND 277 VOLT SWITCHES AT THE SAME LOCATION WITH ISOLATING PARTITION BETWEEN 120 VOLT AND 277 VOLT SWITCHES. PROVIDE ISOLATING PARTITION BETWEEN 277 VOLT SWITCHES.

INSTALL PLUG-IN STRIPS AS INDICATED ON THE DRAWINGS. IF NOT INDICATED, INSTALL STRIPS ABOVE COUNTER 1 INCH ABOVE BACKSPLASH AND STRIPS ABOVE BASEBOARD, FLUSH WITH TOP OF BASEBOARD.

GROUNDING:

GROUNDING CONDUCTORS:

BARE GROUNDING CONDUCTORS: STRANDED ANNEALED COPPER (SIZE AS INDICATED ON THE DRAWINGS).

INSULATED GROUNDING CONDUCTORS: REFER TO "WIRES AND CABLES" IN THIS SPECIFICATION.

GROUNDING CONNECTIONS:

FOR OCCUPIED INTERIOR OF BUILDINGS, USE THE LOW EMISSION WELD PROCESS WHICH IS VIRTUALLY SMOKELESS. IGNITION SHALL BE BY MEANS OF A BATTERY POWERED ELECTRCIAL IGNITION WHICH ELIMINATES ALL OPEN FLAME.

APPROVED MANUFACTURER: CADWELD "EXOLON".

COPPER COMPRESSION GROUNDING: PIPE AND CLAMP-ON CONNECTIONS SHALL BE MADE WITH APPROVED BOLT CLAMPS OF CAST BRONZE OR BRASS.

MANUFACTURERS: BURNDY, PENN UNION AND THOMAS & BETTS.

GROUNDING FITTINGS FOR BONDING A GROUND CONDUCTOR TO ITS OWN CONDUIT: BURNDY TYPE NE, OR PENN UNION TYPE BD.

INSTALLATION - GROUNDING:

THOROUGHLY CLEAN ALL BONDING SURFACES OF NON-CONDUCTING MATERIALS. TIN AND SWEAT CONTACT SURFACES WHILE BOLTING. DO NOT USE SOLDER TYPE CONNECTIONS.

PROVIDE SUPPLEMENTAL GROUNDING SYSTEM / RODS / MATS AS REQUIRED TO CONFORM TO NEC.

COMBINATION MAGNETIC MOTOR STARTERS:

COMBINATION TYPE, INDIVIDUALLY MOUNTED MOTOR STARTERS SHALL CONSIST OF A FUSIBLE SWITCH, FULL VOLTAGE MAGNETIC STARTER, THERMAL OVERLOADS, CONTROL TRANSFORMER AND CONTROL DEVICES AS INDICATED AND ALL MOUNTED IN A UNIT DOOR FRAME ASSEMBLY. PROVIDE NEMA 1 ENCLOSURE UNLESS OTHERWISE NOTED. FOR OUTDOOR APPLICATIONS PROVIDE NEMA 3R. UNITS SHALL BE AS MANUFACTURED BY CUTLER-HAMMER / WESTINGHOUSE, GENERAL ELECTRIC OR SQUARE D.

SINGLE PHASE MANUAL STARTERS (FOR FRACTIONAL HORSEPOWER MOTORS ONLY):

FOR SINGLE PHASE MOTORS, PROVIDE MANUAL STARTERS CONSISTING OF SINGLE POLE, QUICK-MAKE, QUICK-BREAK TYPE STARTER, AMBIENT COMPENSATED THERMAL OVERLOAD AND RED PILOT LIGHT. PROVIDE TOGGLE OPERATED STARTERS, UNLESS OTHERWISE SHOWN. UNITS SHALL BE AS MANUFACTURED BY ALLEN BRADLEY BULLETIN; "600", GENERAL ELECTRIC; "CR101", SQUARE D CLASS; "2510" OR CUTLER-HAMMER / WESTINGHOUSE.

DISCONNECT SWITCHES (FUSED OR NON-FUSED):

DISCONNECT SWITCHES, IN GENERAL, SHALL BE TYPE "HD", QUICK-MAKE, QUICK-BREAK, NON-ROTARY, (600 VOLT) AND/OR (250 VOLT) AC RATED, HORSEPOWER RATED AND CAPABLE OF INTERRUPTING STALLED MOTOR CURRENT OF CONNECTED MOTOR, FUSED OR UNFUSED AS SHOWN WITH VISIBLE BLADES. PROVIDE NEMA 1 UNLESS OTHERWISE NOTED. FOR OUTDOOR APPLICATION PROVIDE NEMA 3R.

ARRANGE HANDLES FOR PADLOCKING IN THE "OFF" OR "OPEN" POSITION AND EQUIP THE SWITCH WITH CLASS R TYPE FUSE CLIPS TO MATCH FUSES.

DISCONNECT SWITCHES LOCATED AT MOTORS CONTROLLED BY REMOTE VARIABLE FREQUENCY DRIVES (VFD'S) SHALL BE PROVIDED WITH "EARLY BREAK" CONTACTS TO DISCONNECT THE LOAD PRIOR TO DISCONNECTING THE LINE.

UNITS SHALL BE AS MANUFACTURED BY GENERAL ELECTRIC; "TYPE TH", SQUARE D; "HEAVY DUTY" OR CUTLER-HAMMER / WESTINGHOUSE; "H-600".

FUSING:

FUSES FOR POWER FEEDERS AND/OR BRANCH CIRCUITS RATED 600 AMPERE OR LOWER: UL CLASS RK1 CURRENT LIMITING TYPE WITH 200,000 AMPERE INTERRUPTING RATING, BUSSMANN LOW-PEAK LPN-RK AND LPS-RK, GOULD SHAWMUT A2D-R AND A6D-R.

FUSES FOR LIGHTING FEEDERS AND/OR LIGHTING PANELS: UL CLASS RK1, CURRENT LIMITING TYPE WITH 200,000 AMPERE INTERRUPTING RATING, BUSSMAN LIMITRON KTN-R AND KTS-R, GOULD SHAWMUT A2K-R AND A6K-R.

FUSES FOR MOTORS: UL CLASS RK1, DUAL ELEMENT, TIME-DELAY, CURRENT LIMITING WITH 200,000 AMPERE INTERRUPTING RATING, BUSSMANN LOW-PEAK, GOULD SHAWMUT A2D-R AND A6D-R.

SPARE FUSES: PROVIDE ONE SPARE SET OF THREE OF EACH SIZE AND TYPE OF FUSES INSTALLED.

LIGHTING SYSTEMS:

PROVIDE LIGHTING SYSTEMS AS REQUIRED, AND ALL MATERIALS AND EQUIPMENT, INCLUDING LUMINAIRES, LAMPS, BALLASTS, POLES, ACCESSORIES AND ASSOCIATED SYSTEMS AND EQUIPMENT, AS INDICATED OR SPECIFIED.

FURNISH LUMINAIRES AND OTHER EQUIPMENT, INCLUDING ALL MODIFICATIONS THERETO AND COMPONENT ELECTRICAL PARTS, LISTED BY UNDERWRITERS' LABORATORIES AS MEETING NATIONAL ELECTRICAL CODE REQUIREMENTS AND BEARING THE UL LABEL WHERE SUCH SERVICE IS AVAILABLE FOR EQUIPMENT SPECIFIED.

PROVIDE EXIT LUMINAIRES AND EMERGENCY LIGHTING UNITS THAT ARE LISTED AND LABELED FOR THEIR INDICATED USE ON THE PROJECT.

PROVIDE LUMINAIRES FOR USE IN DAMP OR WET LOCATIONS, UNDERWATER, AND RECESSED IN COMBUSTIBLE CONSTRUCTION SPECIFICALLY LISTED AND LABELED FOR SUCH USE. PROVIDE LUMINAIRES FOR USE IN HAZARDOUS LOCATIONS THAT ARE LISTED AND LABELED FOR THE SPECIFIC HAZARD.

PROVIDE SUPPORTS AND MOUNTING HARDWARE FOR ALL LUMINAIRES AS DETAILED, AS SPECIFIED OR AS OTHERWISE REQUIRED BY THE FIXTURE SPECIFIED.

EQUIP RECESSED INCANDESCENT AND HID LUMINAIRES WITH THERMAL PROTECTION AND IDENTIFY AS THERMALLY PROTECTED.

PERFORM OPERATING TESTS ON LIGHTING SYSTEMS TO PROVE THAT ALL DESIGN FUNCTIONS ARE SATISFACTORILY PERFORMED.

INCANDESCENT LAMPS:

INCANDESCENT LAMPS SHALL BE EXTENDED SERVICE, RATED AT 130 VOLTS, 2500 HOURS LIFE AT RATED VOLTAGE, INSIDE FROSTED AND WATTAGE AS INDICATED.

MANUFACTURERS: GENERAL ELECTRIC, PHILIPS AND SYLVANIA.

BALLASTS:

FLUORESCENT ELECTRONIC: ENERGY SAVING, HIGH POWER FACTOR, NON-PCB, CBM CERTIFIED AND CLASS "P" APPROVED, UNLESS OTHERWISE SPECIFIED IN THE FIXTURE SPECIFICATIONS. FURNISH COMMERCIAL AND RECESSED TYPE FIXTURES WITH BALLASTS HAVING A NEMA SOUND RATING OF "A" OR BETTER. ALL BALLASTS SHALL MATCH THE LAMPS SPECIFIED.

MANUFACTURERS: ADVANCE/PHILIPS, GENERAL ELECTRIC AND UNIVERSAL, OSRAM/SYLVANIA.

FLUORESCENT LAMPS:

FLUORESCENT T-8: RAPID START, 48" LONG, 32 WATT, MEDIUM BIPIN LAMP, 2850 LUMENS, 3500K, 82 CRI (MINIMUM), UNLESS OTHERWISE NOTED OR SPECIFIED IN THE LIGHTING FIXTURE SCHEDULE.

FLUORESCENT COMPACT: TYPE AND WATTAGE AS INDICATED IN THE LUMINAIRE SCHEDULE, PREHEAT, 3500K, 82 CRI (MINIMUM), UNLESS OTHERWISE NOTED OR SPECIFIED IN THE SCHEDULE.

MANUFACTURERS: GENERAL ELECTRIC, PHILLIPS AND SYLVANIA.

LIGHTING CONTROL SYSTEM:

PROVIDE OCCUPANCY SENSORS AS SHOWN ON THE DRAWINGS

MANUFACTURERS: WATT STOPPER, LEVITON, SENSOR SWITCH

INSTALLATION - LIGHTING:

SUPPORTS:

PROVIDE SUPPORTS FOR ALL LIGHTING FIXTURES AS DETAILED, AS SPECIFIED OR AS OTHERWISE REQUIRED BY THE FIXTURE SPECIFIED. SUPPORT SINGLE UNITS FROM FIXTURE STUDS IN OUTLET BOXES. IN FINISHED AREAS, PROVIDE SUPPORTS INDEPENDENT OF THE ACOUSTIC TILE OR PLASTER; SUPPORT FIXTURES FROM THE CEILING SUPPORT SYSTEM, OR FROM THE CONCRETE FLOOR OR ROOF STEEL ABOVE THE CEILING.

PROVIDE SUPPORTS FOR RECESSED FIXTURES AS RECOMMENDED BY THE FIXTURE MANUFACTURER OR AS SPECIFIED. VERIFY CEILING SUPPORT SYSTEMS AND COORDINATE FIXTURE INSTALLATION. FASTEN "LAY-IN" FIXTURES TO THE CEILING GRID.

LUMINAIRE CLEANING:

THE FOLLOWING PROCEDURE IS FOR CLEANING EXISTING LUMINAIRES.

REMOVE LENS/LOUVER AND LAMPS, DISCONNECT BALLAST AS CALLED FOR IN THE FIXTURE SCHEDULE AND MAKE THE LUMINAIRE SHOCK-FREE BY TURNING IT OFF OR COVERING THE SOCKETS.

IF REQUIRED, REMOVE HEAVY DIRT BY VACUUMING, WIPING OR BRUSHING. WASH ALL SURFACES WITH A NON-ABRASIVE DETERGENT SOLUTION. USE CAUTION TO AVOID SCRATCHING OR DULLING THE REFLECTIVE SURFACES. RINSE THOROUGHLY TO REMOVE ANY RESIDUE OF SOLUTION OR DIRT.

RELAMP, REASSEMBLE AND LEAVE FIXTURE IN GOOD WORKING CONDITION.

REMOVE LENS AND THOROUGHLY CLEAN BY IMMERSING IN A SOLUTION OF WATER AND NON-ABRASIVE DETERGENT. AIR DRY. TO AVOID ELECTRO-STATIC CHARGES, DO NOT RUB DRY.

POWER DISTRIBUTION PANELBOARDS - (480 OR 208/120) VOLT - FUSIBLE SWITCH TYPE:

PROVIDE A DEAD-FRONT SAFETY TYPE POWER DISTRIBUTION PANELBOARDS CONSISTING OF 3 PHASE, 3 WIRE OR 4 WIRE WITH SOLID NEUTRAL, AND GROUND BUS, ALL FABRICATED OF 98% CONDUCTIVITY COPPER SIZED TO LIMIT TOTAL TEMPERATURE RISE OF 55°C OVER AN AMBIENT OF 40°C AT RATED LOAD, WITH MAIN LUGS OR MAIN FUSIBLE SWITCH AS INDICATED, AND BRANCH FUSIBLE SWITCHES. MULTI-SECTION PANELS SHALL BE FULL CAPACITY BUS OR CABLE CONNECTED. ALL BUSSES SHALL BE UNTAPERED FULL CAPACITY THROUGHOUT.(SYSTEM IS HIGH LEG DELTA)

FUSIBLE SWITCHES SHALL BE QUICK-MAKE, QUICK-BREAK TYPE, HORESPOWER RATED UP TO 200 AMPERES. EQUIP THE SWITCH WITH EXTERNAL OPERATING HANDLE AND INTERLOCK WITH THE COVER DOOR TO PREVENT OPENING IN THE "ON" POSITION. INCORPORATE MEANS FOR PADLOCKING THE OPERATING HANDLE IN THE "OFF" POSITION WITH A MINIMUM OF THREE 5/16 INCH SHACKLE PADLOCKS. EQUIP THE SWITCHES WITH CLASS R REJECTION TYPE FUSE CLIPS AND CLASS R FUSES AS SPECIFIED TO OBTAIN A SHORT CIRCUIT WITHSTAND RATING OF 50,000 A.I.C. MINIMUM.

CABINETS: FLUSH OR SURFACE MOUNTING TYPE AS INDICATED. PROVIDE NEMA 1 UNLESS OTHERWISE NOTED. FABRICATE CABINETS FROM CODE GAGE SHEET STEEL AND GALVANIZE OR PHOSPHATIZE, AND PRIME AND FINISH PAINT SURFACES WITH MANUFACTURER'S STANDARD FINISH. GALVANIZE RECESSED BOXES. PROVIDE GUTTER SPACE TO ACCOMMODATE SIZE OF CABLE USED IN ACCORDANCE WITH NEC.

MANUFACTURERS / PRODUCTS: CUTLER-HAMMER TYPE PRLC OR EQUAL BY GE OR SQUARE-D

LIGHTING AND RECEPTACLE PANELBOARDS - 208/120 VOLT & 240/120 VOLT:

GENERAL: DEAD-FRONT SAFETY TYPE LIGHTING AND RECEPTACLE PANELBOARDS CONSISTING OF 3 PHASE, 4 WIRE AND 1 PHASE, 3 WIRE WITH SOLID NEUTRAL AND GROUND BUS, ALL FABRICATED OF 98% CONDUCTIVITY COPPER SIZED TO LIMIT TOTAL TEMPERATURE RISE OF 55°C OVER AN AMBIENT OF 40°C AT RATED LOAD, WITH MAIN LUGS OR MAIN CIRCUIT BREAKER AS INDICATED, AND BRANCH CIRCUIT BREAKERS. ALL CIRCUIT BREAKERS USED FOR SWITCHING FLUORESCENT LIGHTING SHALL BE APPROVED FOR SUCH SWITCHING DUTY AND SHALL BE LABELED "SWD".

NEUTRAL BUS BAR: PROVIDE NEUTRAL BUS BAR OF SUFFICIENT CAPACITY TO TERMINATE ALL THE BRANCH CIRCUIT NEUTRAL WIRES. THE SIZE OF NEUTRAL LUGS SHALL BE AT LEAST 173% OF PHASE LUGS FOR PANELBOARDS FED FROM K-RATED TRANSFORMERS, OR OTHERWISE NOTED.

CIRCUIT BREAKERS: BOLT-ON MOLDED CASE TYPE, THERMAL MAGNETIC, 1, 2 OR 3 POLES, QUICK-MAKE, QUICK-BREAK WITH COMMON TRIP FOR 2 AND 3 POLE BREAKERS, TRIP INDICATION AND MINIMUM INTERRUPTING RATING OF 10,000 RMS SYMMETRICAL AMPERES AT 120 VOLTS AC FOR SINGLE POLE BREAKERS AND AT 240 VOLTS AC FOR 2 AND 3 POLE BREAKERS. SERIES RATED BREAKERS ARE NOT ACCEPTABLE.

CABINETS: FLUSH OR SURFACE MOUNTING TYPE AS INDICATED, WITH MINIMUM 20 INCH BOX, EXCEPT COLUMN WIDTH PANEL. PROVIDE NEMA 1 UNLESS OTHERWISE NOTED. FABRICATE CABINETS FROM CODE GAGE SHEET STEEL. GALVANIZE OR PHOSPHATIZE, AND PRIME AND FINISH PAINT SURFACES WITH MANUFACTURER'S STANDARD FINISH. GALVANIZE RECESSED BOXES. PROVIDE GUTTER SPACE TO ACCOMMODATE SIZE OF CABLE USED IN COMBINATION CATCH AND LOCK. PROVIDE A THREE-POINT COMBINATION CATCH AND LOCK WITH VAULT-TYPE HANDLE FOR DOORS MORE THAN 48 INCHES HIGH. KEY ALL LOCKS ALIKE OR TO THE EXISTING MASTER SYSTEM.

MANUFACTUERS / PRODUCTS: CUTLER-HAMMER: "POW-R-LINE 1A" OR EQUAL BY GE OR SQUARE-D.

INSTALLATION - PANELBOARDS:

INSTALL PANELBOARDS AT LOCATIONS INDICATED ON THE DRAWINGS. INSTALL HANDLE LOCKING DEVICES FOR NIGHT LIGHTING, EMERGENCY LIGHTING, AND OTHER DESIGNATED CIRCUITS.

SECURELY FASTEN TO WALLS OR COLUMNS AS INDICATED, WITH REQUIRED INSERTS, ANCHORS, BOLTS, AND BRACKETS. DO NOT SUPPORT FROM CONNECTING CONDUITS.

DRY-TYPE DISTRIBUTION TRANSFORMERS:

GENERAL PURPOSE DRY-TYPE FOR INDOOR OR OUTDOOR USE:

PROVIDE VENTILATED, FLOOR OR WALL MOUNTED, DRY-TYPE TWO WINDING, TRANSFORMER AS SHOWN: OF SIZES, PHASE(S), VOLTAGES, AND CONNECTIONS AS INDICATED. PROVIDE TWO 2-1/2% FULL CAPACITY TAPS ABOVE AND TWO 2-1/2% FULL CAPACITY TAPS BELOW NORMAL VOLTAGE ON PRIMARY SIDE.

INSULATE WITH 150°C RISE INSULATION AND RATE FOR CONTINUOUS OPERATION AT RATED KVA. CUSHION-MOUNT TRANSFORMERS WITH EXTERNAL VIBRATION ISOLATION SUPPORTS: SOUND LEVEL RATED FOR QUIET APPLICATION AND NOT TO EXCEED ANSI / NEMA STANDARDS. GROUND CORE TO TRANSFORMER ENCLOSURE BY MEANS OF VISIBLE FLEXIBLE METAL GROUNDING STRAP.

ANCHOR, SUPPORT AND SPACE AWAY ALL WINDINGS, TERMINALS AND CONNECTIONS FROM CORE AND STRUCTURAL MEMBERS TO PREVENT ACCIDENTAL GROUNDING OF WINDING AND CONNECTIONS. IMPREGNATE THE ENTIRE COIL ASSEMBLY WITH NON-HYGROSCOPIC THERMOSETTING VARNISH TO SEAL OUT MOISTURE.

PROVIDE NEMA3R ENCLOSURE SUITABLE FOR OUTDOOR USE.

MANUFACTURERS SHALL BE SIMILAR TO, GENERAL ELECTRIC, CUTLER-HAMMER / WESTINGHOUSE, OR SORGEL ELECTRIC DIV., SQUARE D CO.

INSTALLATION - TRANSFORMERS:

INSTALL TRANSFORMERS AS INDICATED, COMPLYING WITH MANUFACTURER'S WRITTEN INSTRUCTIONS, APPLICABLE REQUIREMENTS OF NEC, NEMA, ANSI AND IEEE STANDARDS, AND IN ACCORDANCE WITH RECOGNIZED INDUSTRY PRACTICES TO ENSURE THAT PRODUCTS FULFILL REQUIREMENTS.

INSTALL TRANSFORMERS UTILIZING VIBRATION DAMPERS TO PREVENT MECHANICAL COUPLING TO THE BUILDING AS INDICATED OR AS REQUIRED. USE FLEXIBLE CONDUIT FOR FINAL CONNECTIONS TO DRY-TYPE TRANSFORMERS.

TESTING:

PERFORM TESTS REQUIRED TO ENSURE THE PROPER AND DESIRED OPERATION OF ALL ELECTRICAL EQUIPMENT, SYSTEMS, AND WIRING AT THE COMPLETION OF THE WORK AND IN THE PRESENCE OF THE OWNER OR THEIR AUTHORIZED REPRESNTATIVE.

FURNISH ALL TESTING EQUIPMENT AND PERSONNEL REQUIRED TO CONDUCT THESE TESTS.

PROPERLY ADJUST ALL MOTOR OVERLOAD PROTECTIVE DEVICES AND CHECK EACH MOTOR FOR CORRECT ROTATION.

CORRECT OR REPLACE ANY FAULTS OR DEFECTS FOUND IN MATERIALS AND/OR WORKMANSHIP DURING THESE TESTS, TO THE SATISFACTION OF THE OWNER.

FIRE ALARM SYSTEM:

PROVIDE AN ADDRESSABLE ANALOG NON-CODED FIRE ALARM SYSTEM PER THE LATEST APPLICABLE CODES AND AHJ REQUIREMENTS.

MANUFACTURERS: SIMPLEX/GRINNEL, NOTIFIER, GAMEWELL OR OWNER STANDARD

LIGHTNING PROTECTION SYSTEM:

PROVIDE A UL LISTED LIGHTNING PROTECTION SYSTEM FOR THE ENTIRE BUILDING. INSTALLATION SHALL BE PER NFPA - 780 AND BE PERFORMED BY A LICENSED LIGHTNING PROTECTION CONTRACTOR. PROVIDE A MASTER LABEL CERTIFICATE.

STANDBY GENERATOR

A NEW, NATURAL GAS-FIRED 100KW GENERATOR SET OPERATING AT 208/120V, 3PH, 4WIRE, SOLIDLY GROUNDED WILL BE REQUIRED. THE GENERATOR WILL PROVIDE POWER FOR CONTINUED OPERATION OF THE BUILDING CRITICAL AREAS UPON THE LOSS OF UTILITY POWER. THE NEW GAS ENGINE GENERATOR SET SHALL BE CATERPILLAR MODEL #G3306 OR APPROVED EQUAL BY ONAN, KOHLER OR KATO. PROVIDE ENVIRONMENTALLY PROTECTIVE AND SOUND-PROOF HOUSING/ENCLOSURE WITH CRITICAL SILENCER. ENGINE JACKET WATER HEATER AND BATTERY STRIP HEATER ARE REQUIRED, AND SHALL BE SUITABLE FOR 208/120V SERVICE.

NEW AUTOMATIC TRANSFER SWITCH (ATS) WILL BE INSTALLED IN THE ELECTRICAL ROOM, SIZED TO CARRY THE ASSOCIATED LOAD AND WILL BE STANDARD OPEN TRANSITION TYPE AS PER ONE-LINE DIAGRAM ATTACHED. THE NEW ATS SHALL BE CATERPILLAR CTG SERIES AUTOMATIC TRANSFER SWITCH WITH MX150 CONTROL PANEL, INCLUDING PLANT EXERCISER (OPTIONAL FEATURE).

END OF SECTION

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Key Plan:

Client:
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Project:
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SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
09/02/14	BIDS

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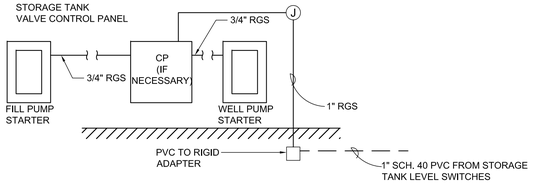
GENERAL NOTES

Project Number: 14049

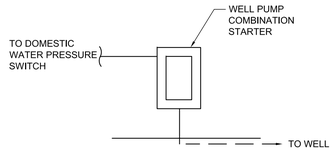
Sheet Number: E-000

M:\2014\14049 Dexter Township New Fire Substation No 2\08 Electrical\E-000 GENERAL NOTES.dwg Wed, 03 Sep 2014 - 1:22pm



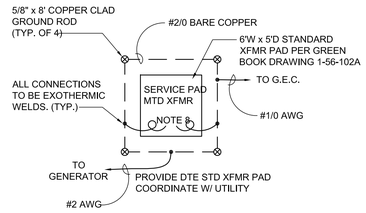
STORAGE TANK LEVEL CONTROL BLOCK DIAGRAM

SCALE: NTS



WELL PUMP BLOCK DIAGRAM

SCALE: NTS

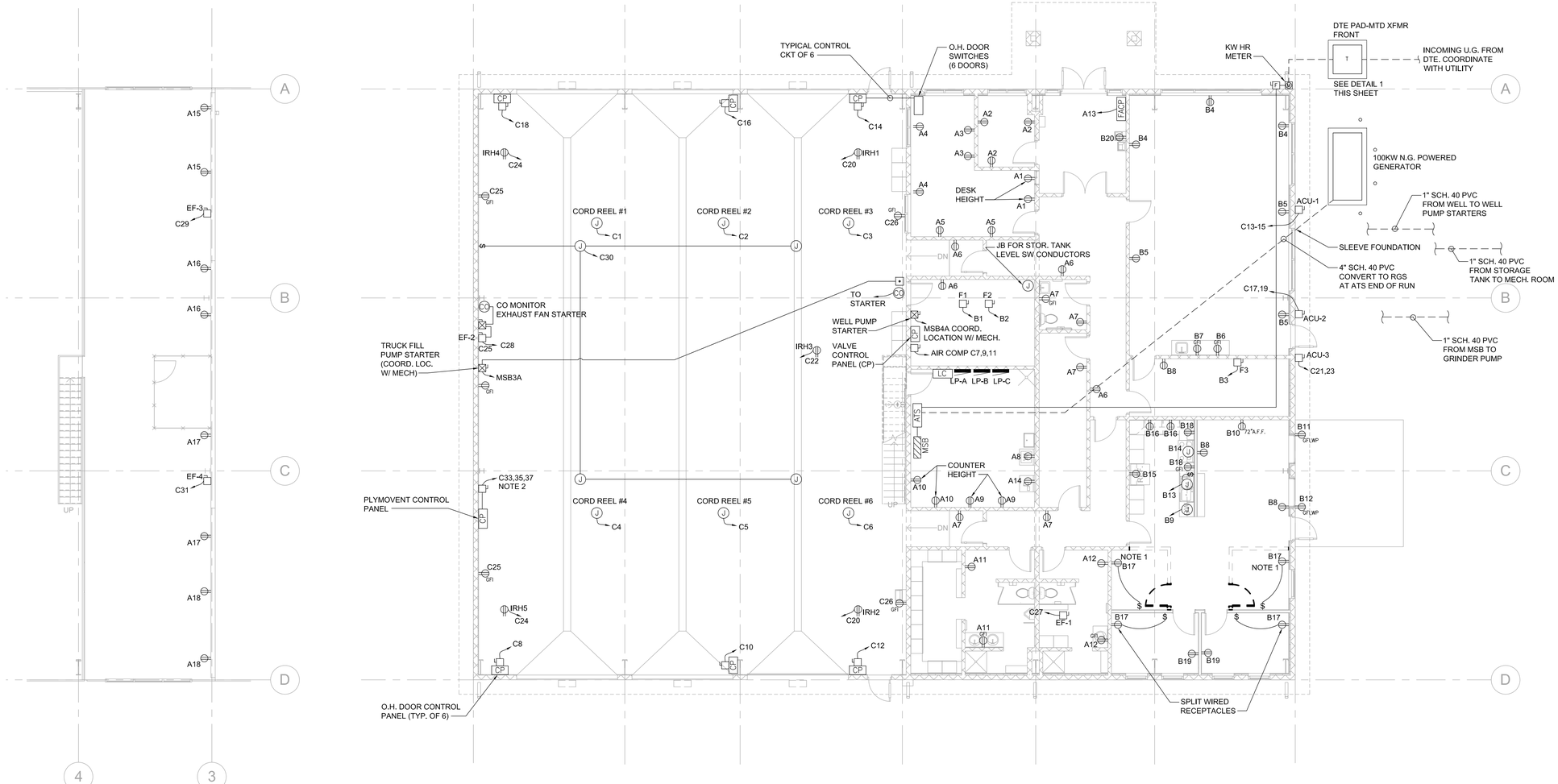


DETAIL 1

SCALE: NTS

ELECTRICAL NOTES

1. SPLIT WIRED RECEPTACLES FOR FUTURE SLEEP ROOMS.
2. ASSUMED 3HP, 208V 3ϕ MOTOR



POWER PLAN

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

SYMBOL LEGEND

- POWER PANEL 208/120V
- LIGHTING PANEL 480/277V
- RECEPTACLE PANEL 208/120V
- T — TRANSFORMER
- MANUAL STARTER
- COMBINATION STARTER
- MCC — MOTOR CONTROL CENTER
- DISCONNECT SWITCH (UNFUSED)
- F — DISCONNECT SWITCH (FUSED)
- CP — CONTROL PANEL
- V — VFD
- SP — SPECIAL RECEPTACLE
- SINGLE GANG BOX w/ ¾" C. STUB TO ABOVE CLG. FOR TELCO/DATA JACK
- J_P — JUNCTION BOX W/POWER POLE
- DUPLEX RECEPTACLE
- GFI — GROUND FAULT RECEPTACLE
- QUAD RECEPTACLE
- $_M — MOMENTARY TOGGLE SWITCH
- $ — SINGLE POLE SWITCH
- F — FLOOR MOUNTED POKE-THRU WITH RECEPTACLE, TELEPHONE AND DATA JACKS
- P — CEILING MOUNTED RECEPTACLE FOR PROJECTOR
- J_R — JUNCTION BOX (ROUTER IN CLG.)
- J_FP — JUNCTION BOX (FAN POWERED TERMINAL)
- SU — 2 STUB UP CONDUITS INTO TABLE LEG
- F — EMBEDDED FLOOR BOX WITH RECEPTACLE, PHONE AND DATA JACKS
- XX-XX: POWER CIRCUIT NUMBER / RECEPTACLE PANEL NUMBER. IMPLIED (RP-) PREFIX UNLESS NOTED
- REMOTE ON-OFF SELECTOR SWITCH STATION

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Project:
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SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

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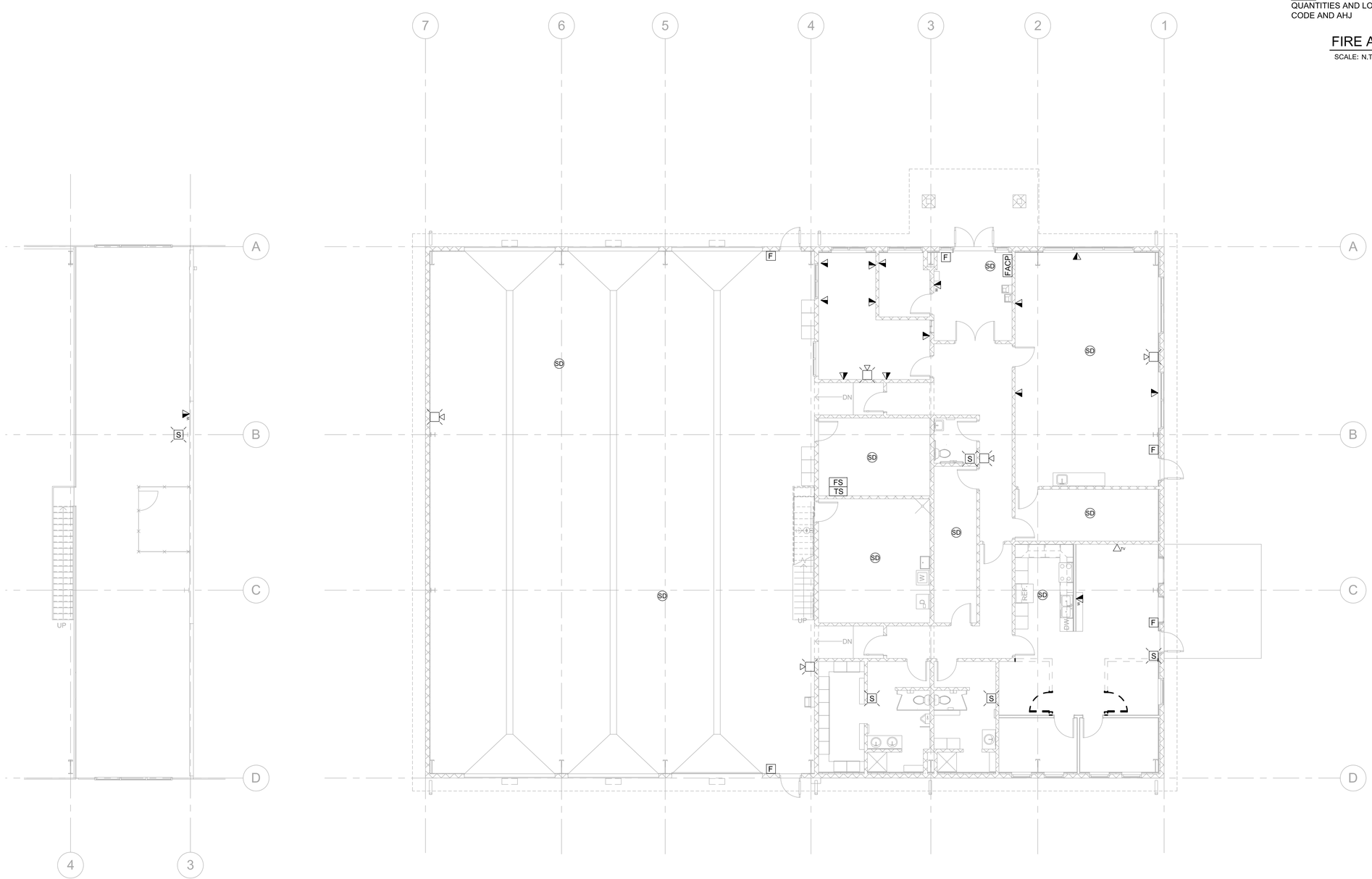
POWER PLAN

Project Number: 14049

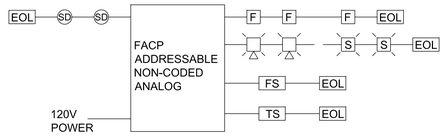
Sheet Number: E-210

M:\2014\14049 Dexter Township New Fire Substation No 2\08 Electrical\E-210 Floor Plan.dwg Wed, 10 Sep 2014 - 5:16pm



MISCELLANEOUS SYSTEMS PLAN

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



NOTE: FIRE ALARM CONTRACTOR TO ADJUST QUANTITIES AND LOCATIONS PER THE LATEST CODE AND AHJ

FIRE ALARM RISER DIAGRAM

SCALE: N.T.S.

SYMBOL LEGEND

- SINGLE GANG BOX w/ 3/4" C. STUB TO ABOVE CLG. FOR TELCO/DATA JACK
- P — SINGLE GANG BOX W/ 3/4" STUB UP TO ABOVE CEILING SPACE FOR DATA JACK TO PRINTER
- TV — SINGLE GANG BOX W/ 3/4" STUB UP TO ABOVE CEILING SPACE FOR TV VIDEO JACK. COORDINATE ELEVATION AND DETAILS W/ OWNER
- W — SINGLE GANG BOX W/ 3/4" STUB UP TO ABOVE CEILING SPACE FOR WALL MOUNTED TELEPHONE
- SP — PA SPEAKERS
- IC — INTERCOM REMOTE
- ICM — INTERCOM MASTER
- CO — CO MONITOR
- FACP — FIRE ALARM CONTROL PANEL
- F — FIRE ALARM PULL STATION
- FIRE ALARM HORN STROBE
- S — FIRE ALARM STROBE
- EOL — END OF LINE DEVICE
- FS — FIRE ALARM FLOW SWITCH
- TS — FIRE ALARM TAMPER SWITCH
- SD — SMOKE DETECTOR
- J — R — JUNCTION BOX (ROUTER IN CLG.)

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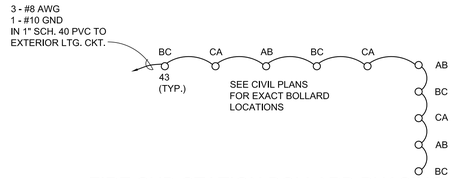
MISCELLANEOUS
SYSTEMS

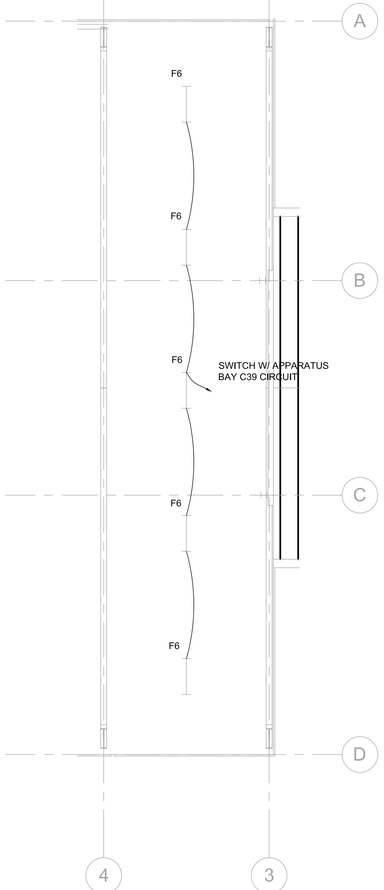
Project Number: 14049

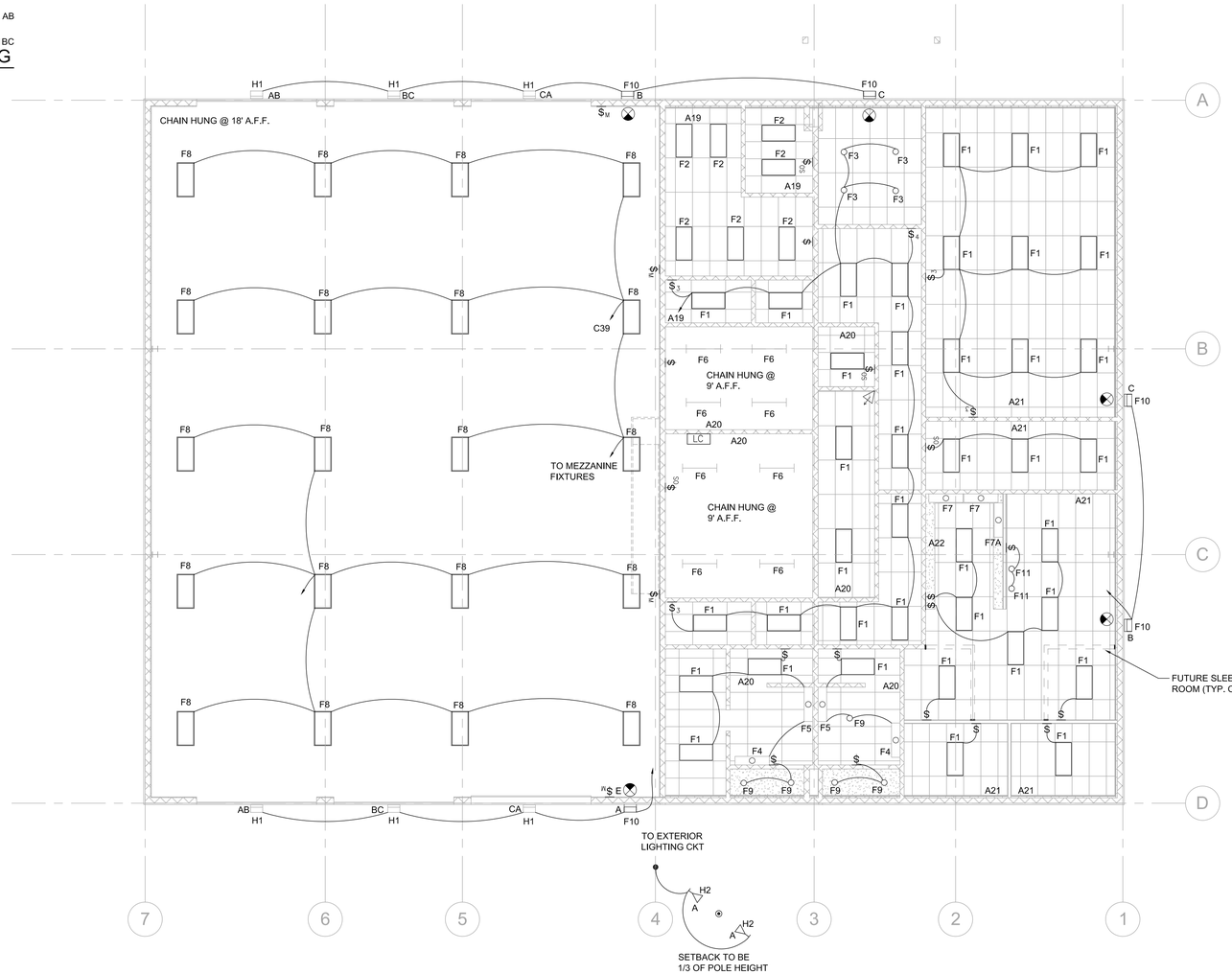
Sheet Number: E-211

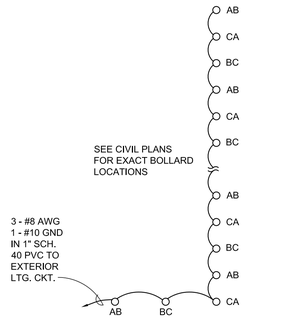


FIRE SUB-STATION BOLLARD PHASING

SCALE: N.T.S.





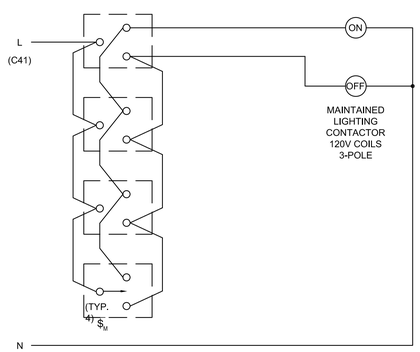


UPPER BLDG BOLLARD PHASING

SCALE: N.T.S.

LIGHTING ENERGY CALCULATION

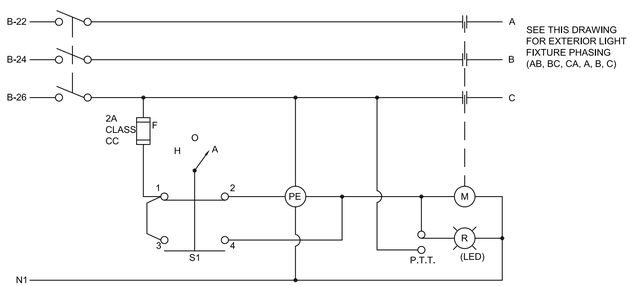
1. FIRE STATION AREA = 10,005 S.F.
2. ALLOWABLE W/S.F. PER 90.1-2007
   TABLE 9.5.1 (BUILDING AREA METHOD) = 1.0 W/S.F.
3. TOTAL LIGHTING POWER BUDGET = 10,005W
4. INSTALLED LIGHTING POWER = 6,373W
   (64% OF ALLOWABLE)



C39 — APP. BAY CKT1
C41 — APP. BAY CKT2
SPARE

APPARATUS ROOM LIGHTING SCHEMATIC

SCALE: N.T.S.



CONTACT #	HAND	OFF	AUTO
1-2			X
3-4	X		

S1

X = CLOSED CONTACT

EXTERIOR LIGHTING CONTROL SCHEMATIC

SCALE: N.T.S.

REFLECTED CEILING PLAN

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

- LAY-IN FIXTURE
- SURFACE OR WALL MOUNTED FIXTURE
- ⌀ DOWNLIGHT
- NL CONTINUOUSLY ENERGIZED NIGHT LIGHT
- $OS PIR WALLBOX OCCUPANCY SENSOR
- OS CEILING MOUNTED OCCUPANCY SENSOR W/ POWER SUPPLY
- PIR PASSIVE INFRA-RED
- DT DUAL TECHNOLOGY
- $ SINGLE POLE SWITCH
- $3 3-WAY SWITCH
- $4 4-WAY SWITCH
- $D DIMMER SWITCH
- $M MOMENTARY SWITCH
- EXIT SIGN WITH ARROWS IF REQUIRED
- WALL MOUNTED FIXTURE
- CORNER MOUNTED PIR OCCUPANCY SENSOR
- LC LIGHTING CONTACTOR

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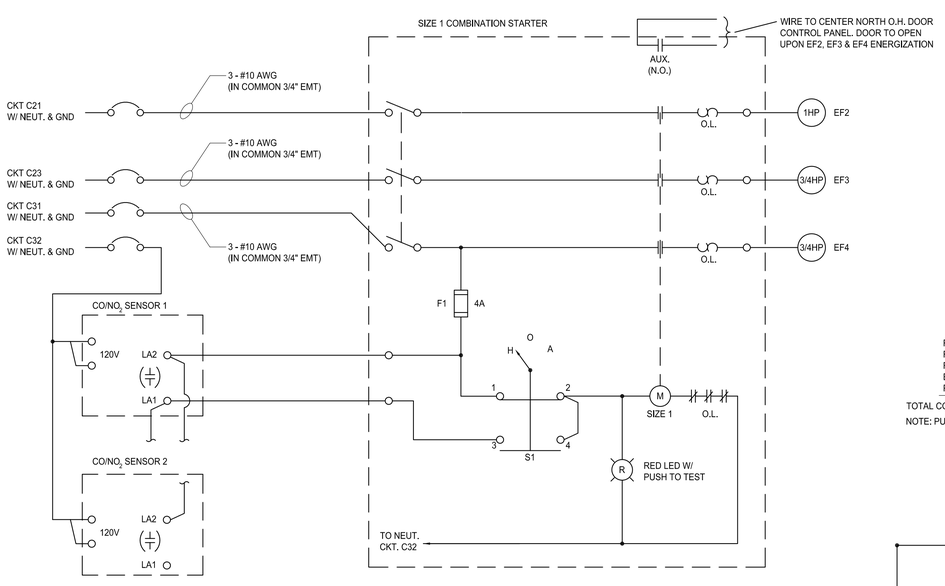
Sheet Title:
LIGHTING PLAN

Project Number: 14049

Sheet Number: E-610

FIXTURE SCHEDULE

SYMBOL	DESCRIPTION	MODEL	VOLTS/WATTS	LAMPS	COMMENTS
F1	2' x 4' RECESSED LENSED TROFFER	LITHONIA 2GT8 - 232 - A12 - MVOLT - GEB10IS - GLR OR EQUAL BY COOPER/METALUX, PHILIPS DAYBRITE	120V/58W	2-T8 3500° K LAMPS	A12 LENS, FUSED ELECTRONIC INSTANT START BALLAST
F2	2' x 4' RECESSED VOLUMETRIC TROFFER	LITHONIA 2RT8B 232 - MVOLT - GEB10IS - GLR OR EQUAL BY COOPER/METALUX, PHILIPS DAYBRITE	120V/58W	2-T8 3500° K LAMPS	FUSED ELECTRONIC INSTANT START BALLAST
F3	6" APERTURE OPEN FLUORESCENT DOWNLIGHT	LITHONIA/GOTHAM AF-1/42 TRT - 6AR - 120 - GLR OR EQUAL BY COOPER/METALUX, PHILIPS DAYBRITE	120V/48W	1-CF TRT 3500° K LAMP	ACRYLIC LENS, FUSED ELECTRONIC INSTANT START BALLAST, SEMI-SPECULAR REFLECTOR, 120V FUSED ELECTRONIC BALLAST
F4	4' OVER-MIRROR FLUORESCENT	LITHONIA WS 232 - 120V - GEB10IS - GLR OR EQUAL BY COOPER/METALUX, PHILIPS DAYBRITE	120V/58W	2-T8 3500° K LAMPS	A12 ACRYLIC LENS, FUSED ELECTRONIC INSTANT START BALLAST
F5	3' X 6" W PERIMETER RECESSED FLUORESCENT	LITHONIA GNAT - G - 225 - 203W - MVOLT - GEB10IS - GLR OR EQUAL BY COOPER/METALUX, PHILIPS DAYBRITE	120V/54W	2-25W (3') T8 3500° K LAMPS	2" WHITE LOUVERS, FUSED ELECTRONIC INSTANT START BALLAST
F6	4' - INDUSTRIAL, NO UPLIGHT	LITHONIA AFST 232 - MVOLT - GEB10IS - GLR OR EQUAL BY COOPER/METALUX, PHILIPS DAYBRITE	120V/58W	2-T8 3500° K LAMPS	SOLID REFLECTOR, FUSED ELECTRONIC INSTANT START BALLAST, CHAIN HUNG
F7	4' - UNDER - CABINET FIXTURE	LITHONIA N2S32 - MVOLT - GEB10IS - GLR OR EQUAL BY COOPER/METALUX, PHILIPS DAYBRITE	120V/32W	1-T8 3500° K LAMP	
F7A	2' - UNDER - CABINET FIXTURE	SAME AS F7 BUT 2' LONG	120V/17W	1-17W T8 3500° K LAMP	
F8	4' HIGH BAY FLUORESCENT	LITHONIA IB432 - WD - MVOLT - 1/4GEB10IS-GLR-WGX OR EQUAL BY COOPER/METALUX, PHILIPS DAYBRITE	120V/110W	4-T8 3500° K LAMPS	WITH UPLIGHT, WIDE DISTRIBUTION, 1-4 LAMP FUSED ELECTRONIC INSTANT START BALLAST, CHAIN HUNG, CORD W/ TWIST LOCK RECEPT, LENGTH A/R, WIRE GUARD
F9	6" APERTURE, LENSED FLUORESCENT DOWNLIGHT	GOTHAM AF - 1/42 TRT - 6AR - PPC - 120 - SF - WL OR EQUAL BY COOPER/PORTFOLIO, PHILIPS/OMEGA	120V/48W	1 - 42W TRT 3500° K LAMP	FUSED ELECTRONIC BALLAST, WET LOCATION LISTED, CLEAR POLY CARBONATE LENS
F10	ARCHITECTURAL FLUORESCENT WALL PACK	LITHONIA WST - 42TRT - MD - 120 - GLR OR EQUAL BY COOPER/LUMARK, PHILIPS/GARDCO	120V/48W	1 - 42W TRT 3500° K LAMP	FUSED ELECTRONIC BALLAST, ARCHITECTURAL BRONZE FINISH, WET LOCATION LISTED
F11	4" APERTURE OPEN FLUORESCENT DOWNLIGHT	LITHONIA/GOTHAM AFV-26 TRT 4AR - 120 - GLR OR EQUAL BY COOPER/PORTFOLIO, PHILIPS/OMEGA	120V/29W	1 - 29W TRT 3500° K LAMP	FUSED ELECTRONIC BALLAST, SEMI-SPECULAR REFLECTOR
H1	O.H. DOOR MH ARCHITECTURAL WALL PACK	LITHONIA TWF2 - 250 - 208 - SCWA - DF - DDBXD - LPI OR EQUAL BY COOPER/SHAPER, PHILIPS/DAY-BRITE.	208V/291W	1 - 250W MH LAMP	CAST HOUSING GLASS LENS, FUSED BALLAST, WET LOCATION LISTED
H2	MH FLOODLIGHT FOR FLAGPOLE	ACUITY HYDREL 7000 - 70M - 120 - MFL - KM -ARJB - DDB OR EQUAL BY COOPER/INVUE, PHILIPS/NITEBRITES	120V/94W	1-70W MH LAMP	COMPACT FLOODLIGHT MEDIUM FLOOD OPTICS, 120V FUSED BALLAST, KNUCKLE MOUNT W/ ARCH. JB, DARK BRONZE FINISH
H3	6" ROUND BOLLARD	LITHONIA KBR6 - 70M - CYA - 208 - DF - LPI OR EQUAL BY COOPER/MCGRAW EDISON, PHILIPS	208V/95W	1 - 70W MH LAMP	CYLINDRICAL SPECULAR REFLECTOR, 208F FUSED MAGNETIC BALLAST, DARK BRONZE FINISH
EX	RED LED EXIT SIGN	LITHONIA QUANTUM LQM - S - W - R - 120/277 OR EQUAL BY COOPER/SURE-LITES, PHILIPS/MCPHILBEN	120V/5W	RED LED'S	WHITE THERMOPLASTIC CASE, RED STENCIL LETTERS, DUAL VOLATAGE



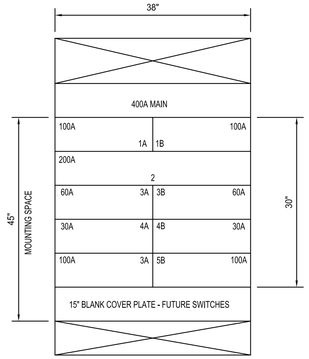
CONTACT #	HAND	OFF	AUTO	
1-2	X			S1
3-4			X	
	S1			

X = CLOSED CONTACT

* SQUARE-D SIZE 1 UNFUSED COMBINATION STARTER WITH SINGLE CONTROL POWER FUSE, HOA SWITCH, PUSH - TO - TEST RED LED INDICATOR LIGHT, NEMA 1 ENCLOSURE, 120VAC COIL, 1 N.O. AUXILIARY CONTACT
SQUARE-D CLASS 8538, TYPE SCG11 - VO2 - F - C - P21 - XO1 (N.O.)

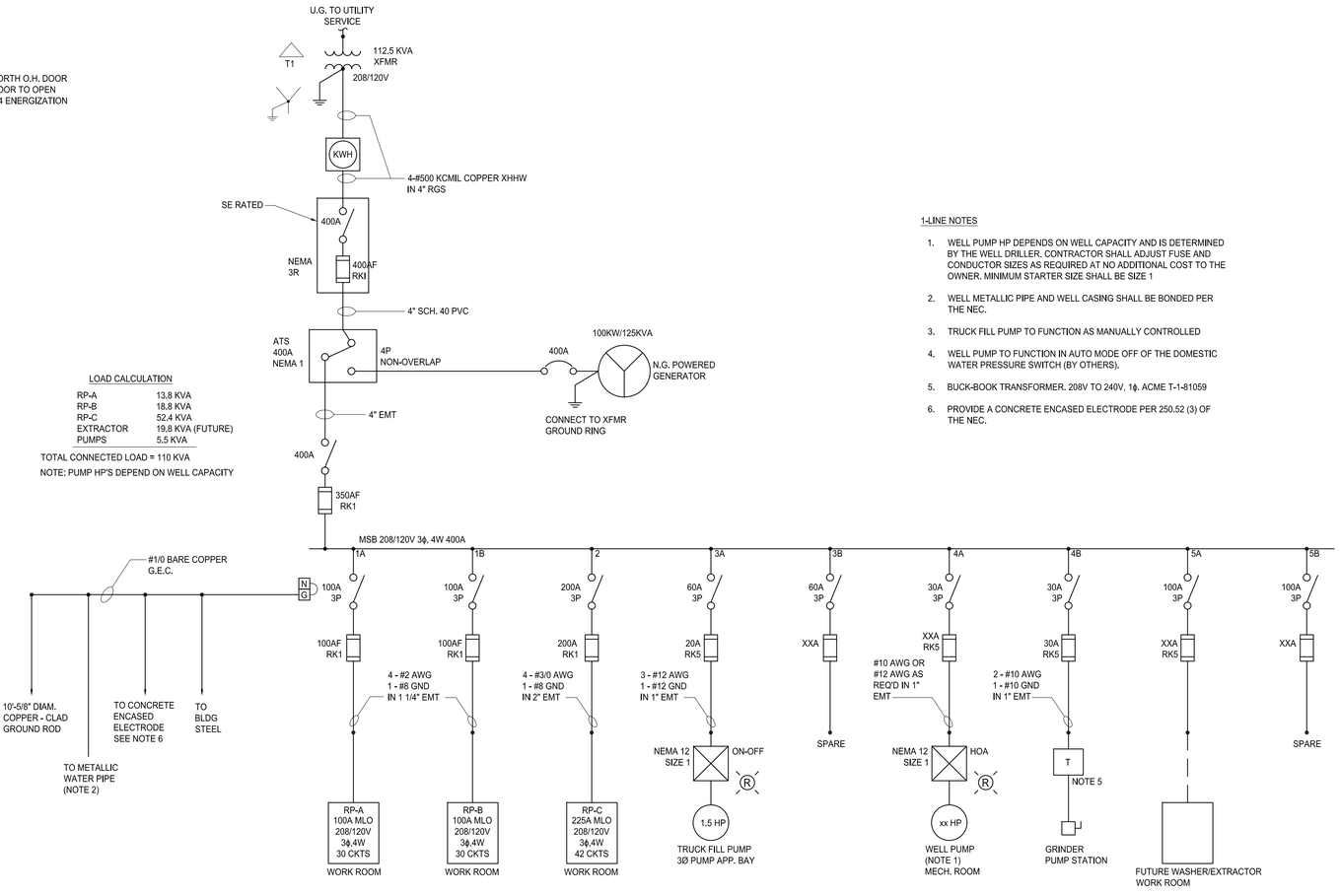
CO/NO_2 MONITORING CONTROL SCHEMATIC

SCALE: N.T.S.



MSB - FRONT VIEW

SCALE: N.T.S.



LOAD CALCULATION

RP-A	13.8 KVA
RP-B	18.8 KVA
RP-C	52.4 KVA
EXTRACTOR	19.8 KVA (FUTURE)
PUMPS	5.5 KVA

TOTAL CONNECTED LOAD = 110 KVA

NOTE: PUMP HP'S DEPEND ON WELL CAPACITY

1-LINE NOTES

1. WELL PUMP HP DEPENDS ON WELL CAPACITY AND IS DETERMINED BY THE WELL DRILLER. CONTRACTOR SHALL ADJUST FUSE AND CONDUCTOR SIZES AS REQUIRED AT NO ADDITIONAL COST TO THE OWNER. MINIMUM STARTER SIZE SHALL BE SIZE 1
2. WELL METALLIC PIPE AND WELL CASING SHALL BE BONDED PER THE NEC.
3. TRUCK FILL PUMP TO FUNCTION AS MANUALLY CONTROLLED
4. WELL PUMP TO FUNCTION IN AUTO MODE OFF OF THE DOMESTIC WATER PRESSURE SWITCH (BY OTHERS).
5. BUCK-BOOK TRANSFORMER. 208V TO 240V, 1ϕ. ACME T-1-81059
6. PROVIDE A CONCRETE ENCASED ELECTRODE PER 250.52 (3) OF THE NEC.

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Key Plan:

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
09/02/14	BIDS

Drawn:	R. PHELPS
Checked:	J. ORANCHAK
Approved:	J. ORANCHAK

Sheet Title:
ELECTRICAL ONE LINE DIAGRAM

Project Number: 14049

Sheet Number: E-901

RP-A

MANUF.: TBD
MODEL: TBD
LOCATION: WORK/LAUNDRY ROOM
SERVICE: RECEPTS / OFFICE SOUTH

VOLTS: 208/120V
FEEDER: 4-#2AWG
MAINS: 100A M.L.O.
ENTRY/MOUNTING: TOP/SURFACE

SERVICE	LOAD WATTS A	LOAD WATTS B	LOAD WATTS C	BKR. AMP.	CKT. NO.
OFFICE RECEPT AT WINDOW	360			20	1
WATCH RM RECEPT CKT #1		360		20	3
WATCH RM RECEPT CKT #3			360	20	5
UNISEX TOILET/CORR. 112 RECEPT	900			20	7
WORK RM COUNTER RECEPT CKT #1		720		20	9
MEN'S LOCKER RECEPT			360	20	11
FACP	600			20	13
MEZZANINE RECEPT		360		20	15
MEZZANINE RECEPT			360	20	17
WATCH ROOM, OFFICE, LOBBY, CORRIDOR LIGHTING	1220			20	19
TRAINING, STORAGE, DAY ROOM, SLEEPING ROOM LIGHTING		1300		20	21
SPARE				20	23
SPARE				20	25
SPARE				20	27
SPARE				20	29

CKT. NO.	BKR. AMP.	LOAD WATTS A	LOAD WATTS B	LOAD WATTS C	SERVICE
2	20	540			SHERIFF'S OFF. RECEPT
4	20		360		WATCH RM RECEPT CKT #2
6	20			900	LOBBY/CORR. 102 RECEPT
8	20	1200			WASHING MACHINE
10	20		720		WORK RM COUNTER RECEPT CKT #2
12	20			360	WOMEN'S LOCKER ROOM RECEPT
14	20	700			CLOTHES DRYER (GAS)
16	20		360		MEZZANINE RECEPT
18	20			360	MEZZANINE RECEPT
20	20	1150			MECH, RM, WORK RM, UNISEX TOILET, STORAGE, TOILET/LOCKERS LIGHTING
22	20		225		KITCHEN LIGHTING
24	20				SPARE
26	20				SPARE
28	20				SPARE
30	20				SPARE

A B C

A	B	C	TOTAL
6,670	4,435	2,700	13.8 KVA

✳ DENOTES LOCKED ON BREAKER

S/N

GRD BUS

RP-B

MANUF.: TBD
MODEL: TBD
LOCATION: WORK/LAUNDRY ROOM
SERVICE: RECEPTS / OFFICE NORTH

VOLTS: 208/120V
FEEDER: 4-#2AWG
MAINS: 100A M.L.O.
ENTRY/MOUNTING: TOP/SURFACE

SERVICE	LOAD WATTS A	LOAD WATTS B	LOAD WATTS C	BKR. AMP.	CKT. NO.
FURNACE F1	1660			20	1
FURNACE F3		1660		20	3
TRAINING/POLING RECEPT			540	20	5
TRAINING COUNTER RECEPT #2	180			20	7
DISHWASHER		1200		20	9
OUTSIDE RECEPT #1			180	20	11
DISPOSAL	1200			20	13
REFRIGERATOR		875		20	15
SPLIT RECEPT-SLEEPING ROOMS			180	20	17
SLEEPING ROOM RECEPT	360			20	19
SPARE				20	21
SPARE				20	23
SPARE				20	25
SPARE				20	27
SPARE				20	29

CKT. NO.	BKR. AMP.	LOAD WATTS A	LOAD WATTS B	LOAD WATTS C	SERVICE
2	20	1660			FURNACE F3
4	20		540		TRAINING POLING RECEPT
6	20			1200	TRAINING COUNTER RECEPT #1
8	20	540			T/P STOR. & DAY ROOM RECEPT
10	20		450		DAYROOM TV
12	20			180	OUTSIDE RECEPT #2
14	20	600			RANGE HOOD
16	20		360		KITCHEN COUNTER RECEPT
18	20			360	KITCHEN COUNTER RECEPT
20	20	650			EWC
22	30		1470		EXTERIOR LIGHTING
24				1294	EXTERIOR LIGHTING
26	3P	1422			EXTERIOR LIGHTING
28	20				SPARE
30	20				SPARE

A B C

A	B	C	TOTAL
8,272	6,555	3,934	18.8 KVA

★ SHUNT-TRIP C.B.

S/N

GRD BUS

RP-C

MANUF.: TBD
MODEL: TBD
LOCATION: WORK/LAUNDRY ROOM
SERVICE: RECEPTS / LOADS APPARATUS ROOM

VOLTS: 208/120V
FEEDER: 4-#3/0 AWG
MAINS: 225A M.L.O.
ENTRY/MOUNTING: TOP/SURFACE

SERVICE	LOAD WATTS A	LOAD WATTS B	LOAD WATTS C	BKR. AMP.	CKT. NO.
CORD REEL #1	700			20	1
CORD REEL #3		700		20	3
CORD REEL #5			700	20	5
AIR COMPRESSOR	2010			30	7
		2010		-	9
			2010	3P	11
ACU-1	2915			40	13
		2915		2P	15
ACU-2			2915	40	17
	2915			2P	19
ACU-3		2915		40	21
			2915	2P	23
APPARATUS BAY RECEPT-SOUTH	540			20	25
EF-1		700		20	27
EF-3			2070	30	29
EF-4	2070			30	31
PLYMOVENT EXH. SYSTEM		1300		20	33
			1300	-	35
	1300			3P	37
APPARATUS BAY LIGHTING		1390		20	39
APPARATUS BAY LIGHTING			1100	20	41

CKT. NO.	BKR. AMP.	LOAD WATTS A	LOAD WATTS B	LOAD WATTS C	SERVICE
2	20	700			CORD REEL #2
4	20		700		CORD REEL #4
6	20			700	CORD REEL #6
8	20	1075			O.H. DOOR
10	20		1075		O.H. DOOR
12	20			1075	O.H. DOOR
14	20	1075			O.H. DOOR
16	20		1075		O.H. DOOR
18	20			1075	O.H. DOOR
20	20	1155			IR HEATERS #1 AND #2
22	20		576		IR HEATERS #3
24	20			1155	IR HEATERS #4 AND #5
26	20	360			APPARATUS BAY RECEPT-NORTH
28	30		2400		EF-2
30	20			600	APPARATUS BAY FANS
32	20	250			CO MONITORING CONTROL POWER
34	20				SPARE
36	20				SPARE
38	20				SPARE
40	20				SPARE
42	20				SPARE

A B C

A	B	C	TOTAL
17,065	17,760	17,615	52.4 KVA

S/N

GRD BUS

ELECTRICAL NOTES

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Key Plan: NO SCALE

Client:
CITY OF WESTLAND
MICHIGAN

Project:
NEW FIRE STATION

Seal:

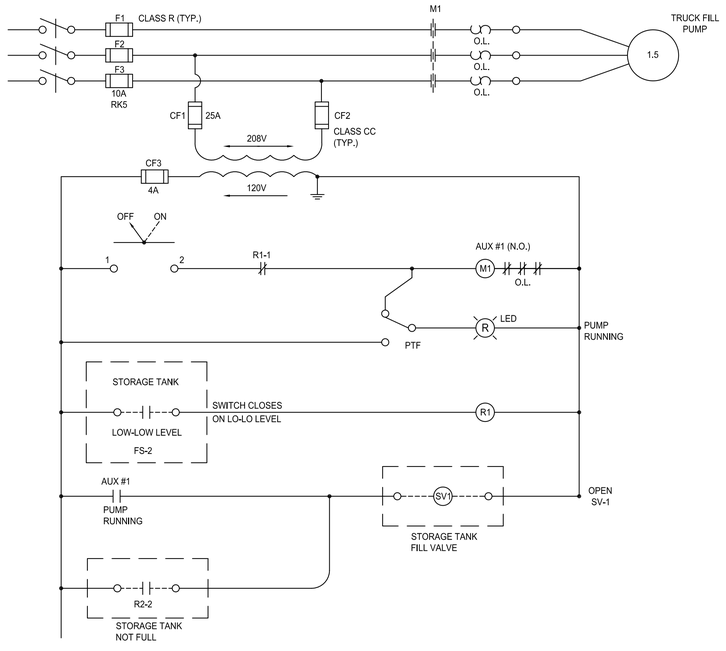
Date	Issued For
09/02/14	BIDS

Drawn: R. PHELPS
Checked: J. ORANCHAK
Approved: J. ORANCHAK

Sheet Title:
PANEL
SCHEDULES

Project Number: 13314

Sheet Number: E-902



CONTACT #	OFF	ON
1-2		X

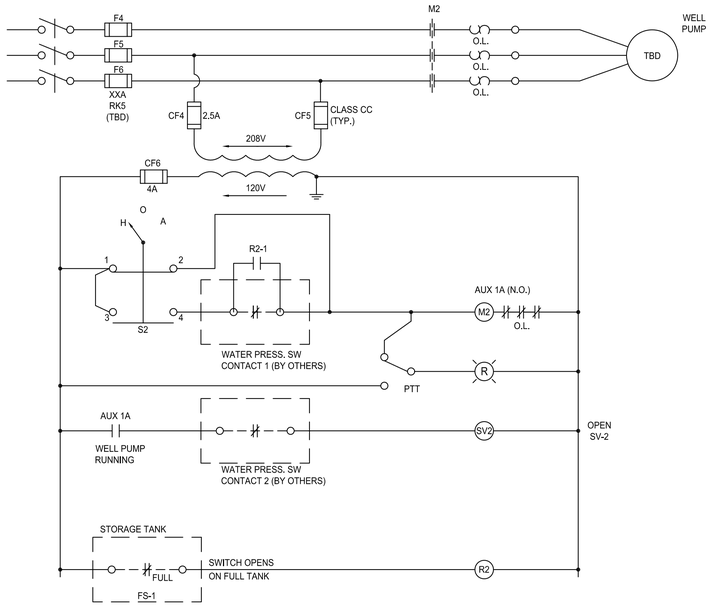
X = CLOSED CONTACT
S1

COMBINATION MOTOR STARTER - TRUCK FILL PUMP

SCALE: N.T.S.

COMBINATION MOTOR STARTER WITH AMBIENT COMPENSATED MELTING ALLOY OVERLOADS, FUSIBLE WITH CLASS R CLIPS, ON - OFF SELECTOR SWITCH, RED PUSH - TO - TEST LED INDICATOR LIGHT, NEMA SIZE 1, 1 - N.O. AUX - CONTACT, FUSED 500VA 208V - 120V CONTROL TRANSFORMER, 1 - 4 POLE CONTROL RELAY, THRU - DOOR O.L. RESETS, NEMA 12 ENCLOSURE

SQUARE - D CLASS 8538, TYPE SCA42V02C6P42B X 1 - NOR174FF4T14



CONTACT #	HAND	OFF	AUTO
1-2	X		
3-4			X

X = CLOSED CONTACT
S2

COMBINATION MOTOR STARTER - WELL PUMP

SCALE: N.T.S.

COMBINATION MOTOR STARTER WITH AMBIENT COMPENSATED MELTING ALLOY OVERLOADS, FUSIBLE WITH CLASS R CLIPS, HOA SWITCH, RED PUSH - TO - TEST LED INDICATOR LIGHT, NEMA SIZE 1, 1 - N.O. AUX - CONTACT, FUSED 500VA 208V - 120V CONTROL TRANSFORMER, 1 - 4 POLE CONTROL RELAY, THRU - DOOR O.L. RESETS, NEMA 12 ENCLOSURE

SQUARE - D CLASS 8538, TYPE SCA42V02CP42B X 1 - NOR174FF4T14

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Gaylord, Michigan 49735
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Key Plan:

Client:
DEXTER TOWNSHIP

Project:
NEW FIRE
SUBSTATION NO. 2

DEXTER, MICHIGAN 48130

Seal:

Date	Issued For
09/02/14	BIDS

Drawn:	R. PHELPS
Checked:	J. ORANCHAK
Approved:	J. ORANCHAK

Sheet Title:
TRUCK FILL PUMP & WELL PUMP CONTROL SCHEMATIC

Project Number: 14049

Sheet Number: E-903

LOCATION MAP

SCALE: 1"=2000'

LEGEND

× 935.00	– EXISTING ELEVATION
+ 35.00	– PROPOSED ELEVATION (ADD 900 FEET)
—935—	– EXISTING CONTOUR
—35—	– PROPOSED CONTOUR (ADD 900 FEET)
U.P.	– UTILITY POLE
L.P.	– LIGHT POLE
D.S.	– DOWNSPOUT
T.S.	– TRAFFIC SIGN
G.M.	– GAS METER
G.S.O.	– GAS SHUT-OFF
B.P.	– BUMPER POST
A.M.	– AMERITECH MARKER
A.P.	– AMERITECH PEDESTAL
F.I.	– FOUND IRON
F.M.	– FOUND MONUMENT
F.C.I.R.	– FOUND CAPPED IRON ROD
6"	– EX. TREE DIAMETER

NORTH

SCALE: 1"=30'

0 10 20 30 60

SITE BENCH MARKS

B.M. #1 TOP OF R.R. SPIKE IN WEST FACE OF UTILITY POLE LOCATED 35'± NORTH OF THE NORTHEAST M.L.S.A. BUILDING CORNER. ELEVATION 936.43

B.M. #2 CUT "X" ON TOP OF LIGHT POLE BASE LOCATED 55'± SOUTHEAST OF THE SOUTHEAST M.L.S.A. BUILDING CORNER ELEVATION 932.04

PROPERTY DESCRIPTION

A 66.98 ACRE PARCEL OF LAND IN THE WEST 1/2 OF SECTION 16, T.1S., R.4E., DEXTER TOWNSHIP, WASHTENAW COUNTY, MICHIGAN BEING DESCRIBED AS: COMMENCING AT THE WEST 1/4 CORNER OF SAID SECTION 16; THENCE S.01°26'56"W. 439.27 FEET ALONG THE WEST LINE OF SECTION 16; THENCE N.87°58'30"E. 1,070.83 FEET ALONG THE CENTERLINE OF NORTH TERRITORIAL ROAD TO THE POINT OF BEGINNING; THENCE N.01°26'56"E. 577.73 FEET; THENCE S.87°58'30"W. 470.43 FEET; THENCE N.00°24'42"E. 2,470.04 FEET; THENCE S.87°23'00"E 1,067.99 FEET ALONG THE NORTH LINE OF SAID SECTION 16; THENCE S.00°40'21"W. 2,961.33 FEET; THENCE S.87°58'30"W. 594.71 FEET ALONG THE CENTERLINE OF NORTH TERRITORIAL ROAD TO THE POINT OF BEGINNING. BEING SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THE SOUTHERLY 33 FEET THEREOF FOR NORTH TERRITORIAL ROAD, AND SUBJECT TO ANY EASEMENTS AND RESTRICTIONS OF RECORD.

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 (TOLL FREE)

NOTE: HEAVY SNOW ACCUMULATION ON SITE AT TIME OF SURVEY. SOME EXISTING OBJECTS MAY NOT HAVE BEEN VISIBLE.

CLIENT:
SIDOCK GROUP, INC.
45650 GRAND RIVER AVE.
NOVI, MICHIGAN 48374
PHONE: 248/349-4500

REVISIONS

PROPOSED SITE FOR
DEXTER TOWNSHIP FIRE SUBSTATION FACILITY
DEXTER TOWNSHIP WASHTENAW COUNTY MICHIGAN

SITE TOPOGRAPHIC/TREE SURVEY

Environmental engineers, Inc.
18620 WEST TEN MILE ROAD SOUTHFIELD, MICHIGAN 48075
PHONE: 248/424-9510 FAX: 248/424-2954

CLIENT PROJECT No.

PROJECT No. 1405

DATE ISSUED 02/10/14

SHEET No. TS-1

.DWG