APPLICANT

BEZTAK LAND COMPANY
31731 NORTHWESTERN HIGHWAY
SUITE 250W
FARMINGTON HILLS, MICHIGAN 48334
PHONE: 248.737.6175
ATTN: MARK HIGHLEN

ENGINEER

ATWELL, LLC
311 NORTH MAIN STREET
ANN ARBOR, MICHIGAN 48104
PHONE: 734.994.4000
ATTN: MATTHEW BUSH, PE, LEED AP

ARCHITECT

NORR INC.
150 W. JEFFERSON AVENUE, SUITE 1300
DETROIT, MICHIGAN 48226
PHONE: 313-324-3100

FINAL SITE PLAN

PITTSFIELD MIXED USE

A FORM-BASED MIXED USE DEVELOPMENT

PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

SITE DATA TABLE

SITE DATA		AREA	
GROSS SITE AREA	±	15.11 ACRES	658,192 SQFT
EXISTING R.O.W.	±	0.18 ACRES	7,841 SQFT
WETLANDS	±	2.51 ACRES	109,336 SQFT
UTILITY EASEMENTS	±	0 ACRES	0 SQFT
NET SITE AREA	±	12.42 ACRES	541,015 SQFT
LOT COVERAGE		17.2 % (GROSS)	
FLOOR AREA RATIO		46.4 % (GROSS)	

BUILDING DATA*		AREA	
RETAIL FOOTPRINT	±	0.44 ACRES	18,964 SQFT
CLUBHOUSE FOOTPRINT	±	0.11 ACRES	4,729 SQFT
APARTMENT FOOTPRINT	±	0.68 ACRES	29,817 SQFT
ROWHOUSE FOOTPRINT	±	0.68 ACRES	29,816 SQFT
APARTMENT W/ GARAGE FOOTPRINT	±	0.69 ACRES	30,251 SQFT
TOTAL BUILDING FOOTPRINT	±	2.60 ACRES	113,307 SQFT
TOTAL FLOOR AREA	±	7.01 ACRES	305,367 SQFT

BUILDING*	HEIGHT	STORIES
RETAIL 1	38.00 FT	3
RETAIL 2	38.00 FT	3
CLUBHOUSE	27.58 FT	2
APARTMENTS 1-3	37.42 FT	3
APARTMENTS W/ GARAGES A-E	33.67 FT	3
ROWHOUSE F-K	24.17 FT	2

DENSITY CALCULATIONS*	QUANTITY		DENSITY
1 BEDROOM	77		5.10 UNITS/ACRE (GROSS)
2 BEDROOM	109		7.21 UNITS/ACRE (GROSS)
3 BEDROOM	11		0.73 UNITS/ACRE (GROSS)
TOTAL	197	±	13.0 UNITS/ACRE (GROSS)
		±	15.9 UNITS/ACRE (NET)

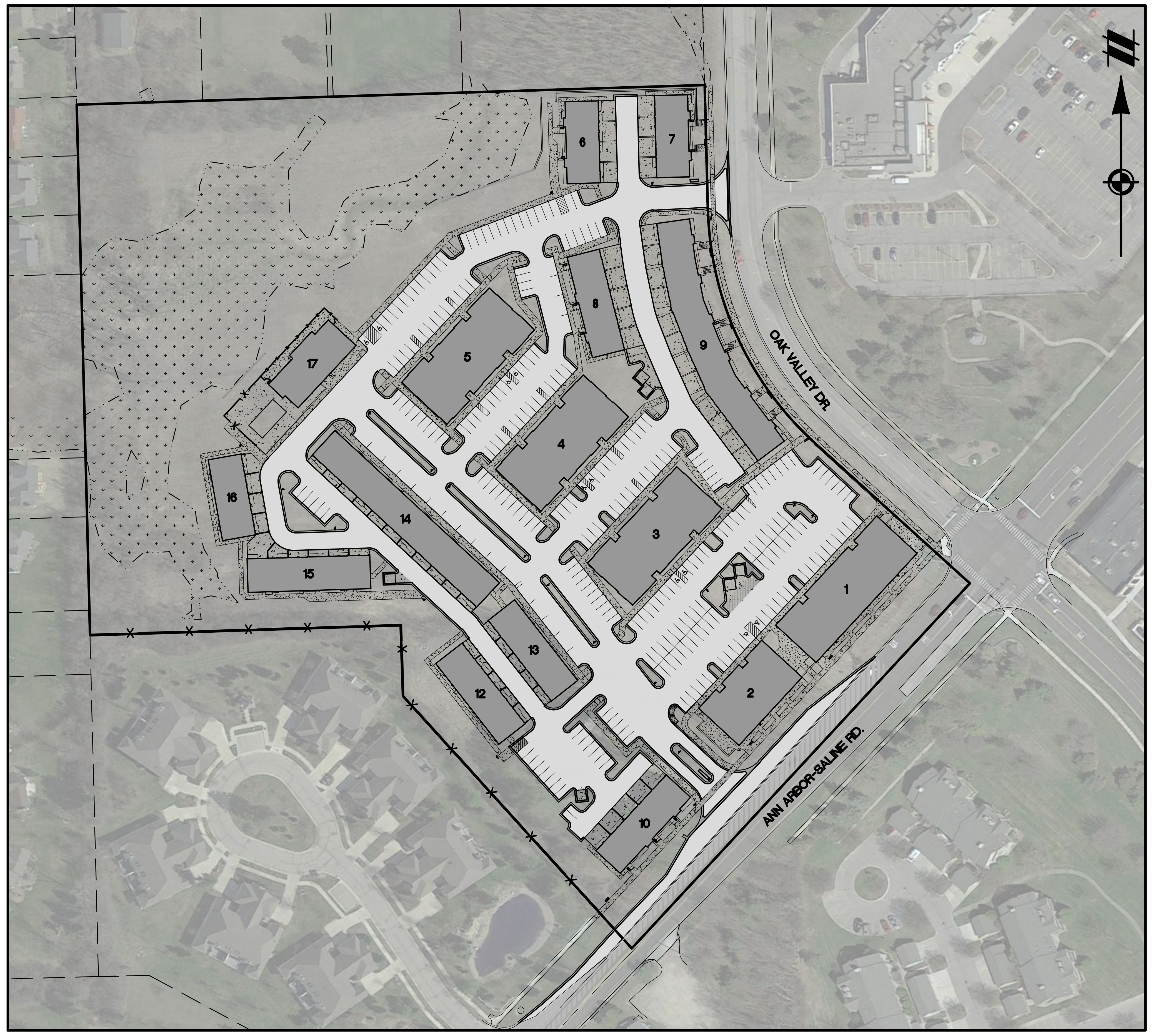
PARKING	REQUIRED	PROVIDED
RETAIL	71	86
RETAIL/RESIDENTIAL FLEX PARKING		17
RESIDENTIAL - GARAGES		112
RESIDENTIAL - STREET		265
RESIDENTIAL - TOTAL	390	377
SITE TOTAL	461	480
ADA PARKING (TOTAL)	9	11
ADA PARKING (VAN)	4	4

FRONTAGE	REQUIRED	PROVIDED
ANN ARBOR-SALINE ROAD	331.1 FT*	406 FT
OAK VALLEY DRIVE	323.5 FT	454 FT

IMPERVIOUS CALCULATIONS			
TOTAL IMPERVIOUS AREA	±	7.44 ACRES	324,035 SQFT
IMPERVIOUS PERCENT	±	59.9 % (NET)	

LANDSCAPE AREA			
TOTAL LANDSCAPE AREA	±	5.3 ACRES	230,868 SQFT
LANDSCAPE PERCENT	±	42.7 % (NET)	

* SEE ARCHITECTURAL PLANS FOR ADDITIONAL FOOTPRINT AND FLOOR AREA BREAKDOWNS
** 70% EXCLUDING SETBACKS AND DRIVE APPROACH



OVERALL DEVELOPMENT MAP
1" = 100 FEET

LEGAL DESCRIPTION

DESCRIPTION OF TAX PARCEL 12-07-200-014
COMMENCING AT THE NORTHWEST CORNER OF THE EAST FRACTIONAL 1/2 OF THE NORTHWEST FRACTIONAL 1/4 OF SECTION 7, T3S, R6E, PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN, THENCE DUE SOUTH 1222.60 FEET ON THE WEST LINE OF THE EAST FRACTIONAL 1/2 OF THE NORTHWEST FRACTIONAL 1/4 AND NORTH 89 DEGREES 39' 20" EAST 367.61 FEET FOR A PLACE OF BEGINNING; THENCE SOUTH 00 DEGREES 20' 40" EAST 83.33 FEET; THENCE SOUTH 40 DEGREES 36' 00" EAST 400.00 FEET; THENCE NORTH 43 DEGREES 53' 00" EAST 300.00 FEET ALONG THE CENTERLINE OF SALINE ROAD; THENCE NORTH 61 DEGREES 00' 00" WEST 354.30 FEET; THENCE SOUTH 89 DEGREES 39' 20" WEST 158.89 FEET TO THE POINT OF BEGINNING, BEING A PART OF THE NORTHWEST 1/4 OF SECTION 7, T3S, R6E, PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN.
COMMONLY KNOWN AS: 3300 ANN ARBOR-SALINE RD., ANN ARBOR, MI 48103.

ALSO

DESCRIPTION OF TAX PAREL 12-07-200-021
PARCEL 1
COMMENCING AT THE NORTH 1/4 CORNER OF SECTION 7, TOWN 3 SOUTH, RANGE 6 EAST, PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN; THENCE SOUTH 88°38'50" WEST 649.95 FEET ALONG THE NORTH LINE OF SAID SECTION; THENCE SOUTH 01°04'40" EAST 594.00 FEET TO THE POINT OF BEGINNING; THENCE CONTINUING SOUTH 01°04'40" EAST 244.53 FEET; THENCE NORTH 89°19'30" EAST 12.23 FEET; THENCE 214.87 FEET ALONG THE ARC OF A 386.00 FOOT RADIUS NON-TANGENTIAL CIRCULAR CURVE TO THE LEFT WITH CHORD BEARING SOUTH 31°29'17" EAST 212.11 FEET; THENCE SOUTH 47°26'07" EAST 246.91 FEET; THENCE SOUTH 42°53'53" WEST 286.52 FEET ALONG THE CENTERLINE OF ANN ARBOR-SALINE ROAD; THENCE NORTH 62°04'10" WEST 360.57 FEET; THENCE SOUTH 88°35'10" WEST 526.50 FEET; THENCE NORTH 01°04'40" WEST 628.60 FEET; THENCE NORTH 88°37'50" EAST 742.50 FEET TO THE POINT OF BEGINNING, BEING A PART OF THE NORTH 1/2 OF SAID SECTION 7.
PARCEL 2
COMMENCING AT THE NORTH 1/4 CORNER OF SECTION 7, T3S, R6E, PITTSFIELD TOWNSHIP, WASHTENAW COUNTY, MICHIGAN; THENCE S 88° 38' 50" W 649.95 FEET ALONG THE NORTH LINE OF SAID SECTION 7; THENCE S 01° 04' 40" E 742.22 FEET ALONG THE WEST LINE OF OAK VALLEY DRIVE TO THE POINT OF BEGINNING; THENCE 97.43 FEET ALONG THE ARC OF A 386.00 FEET RADIUS CIRCULAR CURVE TO THE LEFT, SAID CURVE HAVING A CENTRAL ANGLE OF 14° 27' 45" AND A CHORD WHICH BEARS S 08° 18' 33" E 97.18 FEET; THENCE S 89° 19' 30" W 12.23 FEET; THENCE N 01° 04' 40" W 96.31 (RECORDED AS 98.32 FEET) FEET TO THE POINT OF BEGINNING. BEING A PART OF THE NORTHWEST 1/4 OF SAID SECTION.
COMMONLY KNOWN AS: 3240 ANN ARBOR-SALINE RD., ANN ARBOR, MI 48103.

DEVELOPMENT NARRATIVE

THIS PROPOSED MIXED USE DEVELOPMENT ON 15 ACRES IS AN APPROPRIATE TRANSITION BETWEEN THE ADJACENT COMMERCIAL AND RESIDENTIAL AREAS. THIS DEVELOPMENT WILL CONTAIN APARTMENTS, COMMERCIAL SPACE, A CLUBHOUSE AND POOL. PATHWAYS AND PARK SPACE PROVIDE CONNECTIVITY FOR THE RESIDENTS AND NEIGHBORS TO THE FUTURE PARK AND NEARBY COMMERCIAL DEVELOPMENTS. A VARIETY OF 2-STORY AND 3-STORY BUILDING STYLES PROVIDE MANY RESIDENTIAL OPTIONS TO CHOOSE FROM, AND 2-STORY BUILDINGS ARE LOCATED CLOSEST TO ADJACENT RESIDENCES. THE COMMERCIAL SPACE IS CONFIGURED TO SUIT NEIGHBORHOOD RETAIL AND SERVICE BUSINESSES. THIS DEVELOPMENT IS DESIGNED TO BE COMPATIBLE WITH THE ADJACENT PROPERTIES.

UTILITY QUANTITIES

WATER	Quantity	Unit
8" D.I. CL. 54 Water Main	1,934	L.F.
12" D.I. CL. 54 Water Main	1,042	L.F.
3" D.I. CL. 54 Lead	278	L.F.
4" D.I. CL. 54 Lead	524	L.F.
6" D.I. CL. 54 Lead	295	L.F.
2" Type "K" Copper Lead	552	L.F.
Hydrant Assembly	14	EA.
8" Gate Valve in Well	6	EA.
12" Gate Valve in Well	4	EA.
4" Post Indicator Valve	10	EA.
6" Post Indicator Valve	6	EA.
Connection to Existing	2	EA.

STORM	Quantity	Unit
12" RCP Storm Sewer	2,013	L.F.
15" RCP Storm Sewer	465	L.F.
18" RCP Storm Sewer	182	L.F.
21" RCP Storm Sewer	196	L.F.
24" RCP Storm Sewer	367	L.F.
Concrete Flared End Section	9	EA.
2' Diameter Inlet	16	EA.
4' Diameter Catch Basin / Manhole	33	EA.
5' Diameter Catch Basin / Manhole	5	EA.
6' Dia Outlet Structures	4	EA.
Hydrodynamic Separators (Treatment)	8	EA.
Underground Detention Storage Vaults	1	L.S.

SANITARY	Quantity	Unit
10" PVC SDR 26 Sanitary Sewer	2,300	L.F.
6" PVC SDR 26 Service Lead	782	L.F.
4' Dia. Sanitary Manhole	14	EA.
5' Dia. Sanitary Manhole	2	EA.
500 Gallon Grease Trap	1	EA.

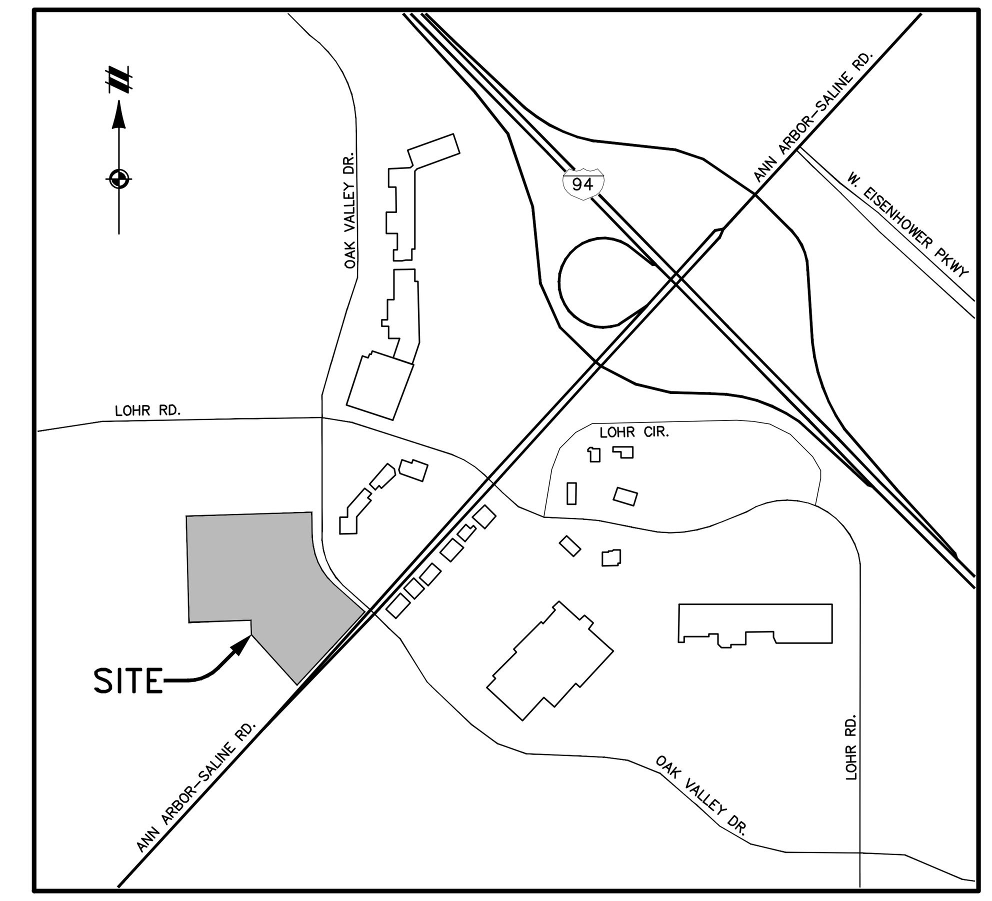
* QUANTITIES SHOWN FOR PERMITTING PROPOSES ONLY. CONTRACTOR SHALL VERIFY PRIOR TO BIDDING, ORDERING, OR CONSTRUCTION.

PARKING NOTE:

IF A PROPOSED FUTURE COMMERCIAL TENANT REQUIRES A GREATER PARKING DEMAND THAN THE TOWNSHIP STANDARD OF 1 SPACE PER 250 SQUARE FEET OF BUILDING, THE APPLICANT SHALL SUBMIT A PARKING STUDY TO THE TOWNSHIP FOR REVIEW PRIOR TO ZONING COMPLIANCE APPROVAL.

CSPA 16-15 Uptown Ann Arbor
(FKA Bexzak Pittsfield)

Rec'd 2018-10-11



VICINITY MAP
NOT TO SCALE

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BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

Know what's below. Call before you dig.

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NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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ANN ARBOR, MI 48104
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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

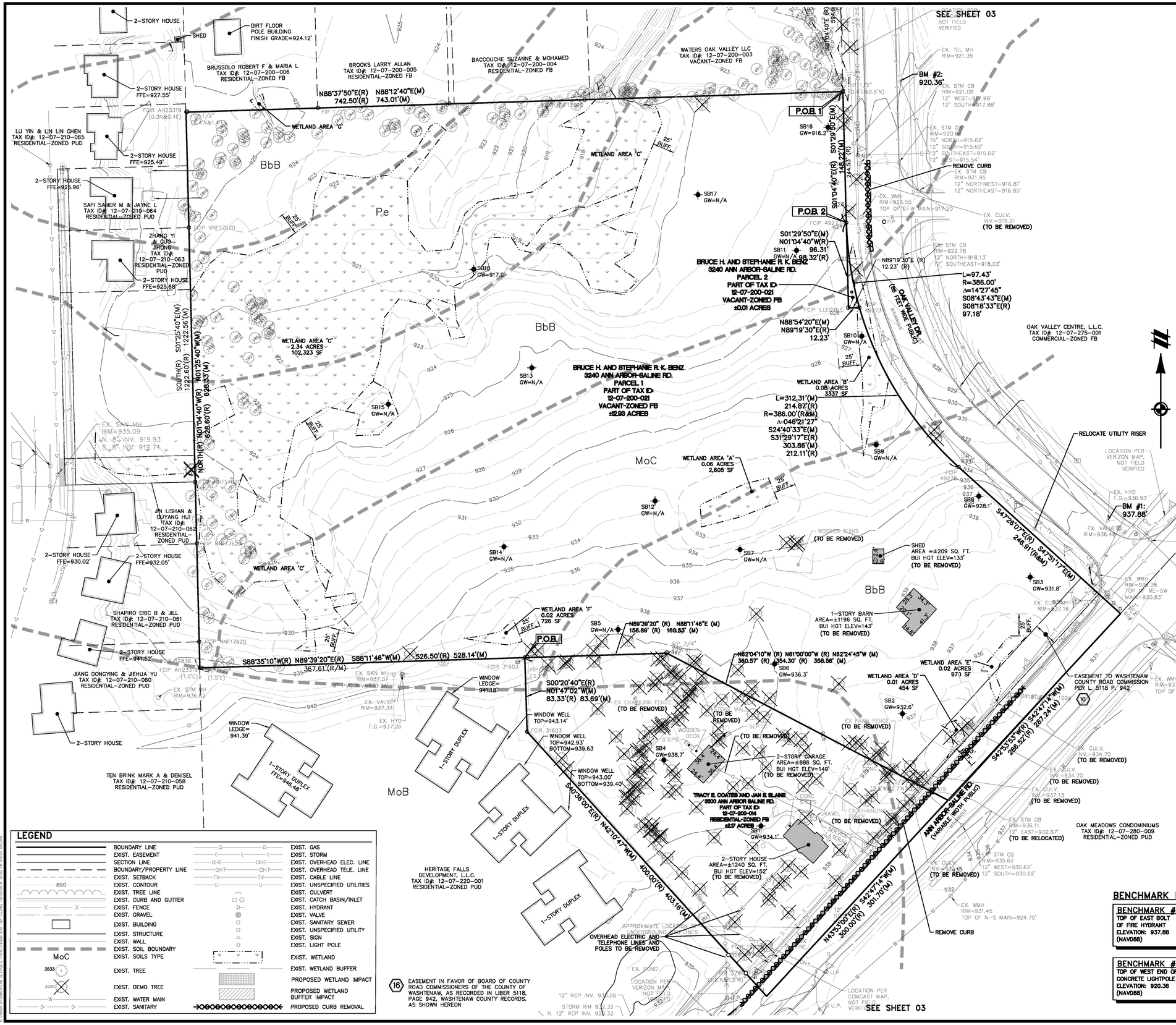
CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
COVER SHEET

DATE JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 50 100
1" = 100 FEET

DR. CR	CH. --
P.M. MB	
BOOK --	
JOB 16000137	
SHEET NO. 01	



LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. STRUCTURE
- EXIST. WALL
- EXIST. SOIL BOUNDARY
- EXIST. SOILS TYPE
- EXIST. TREE
- EXIST. DEMO TREE
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. GAS
- EXIST. STORM
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- EXIST. UNSPECIFIED UTILITY
- EXIST. SIGN
- EXIST. LIGHT POLE
- EXIST. WETLAND
- EXIST. WETLAND BUFFER
- PROPOSED WETLAND IMPACT
- PROPOSED WETLAND BUFFER IMPACT
- PROPOSED CURB REMOVAL

16 EASEMENT IN FAVOR OF BOARD OF COUNTY ROAD COMMISSIONERS OF THE COUNTY OF WASHTENAW, AS RECORDED IN LIBER 5118, PAGE 942, WASHTENAW COUNTY RECORDS. AS SHOWN HEREON

BENCHMARK INFORMATION

BENCHMARK #1:
TOP OF EAST BOLT OF FIRE HYDRANT
ELEVATION: 937.88
(NAVD88)

BENCHMARK #2:
TOP OF WEST END OF CONCRETE LIGHTPOLE BASE
ELEVATION: 920.36
(NAVD88)

DEMOLITION NOTES

1. ALL ON-SITE WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT SPECIFICATIONS AND STANDARD DETAILS OF PITTSFIELD TOWNSHIP, UNLESS OTHERWISE SPECIFIED.
2. THE CONTRACTOR SHALL DEMOLISH OR RELOCATE ANY SITE FEATURES AS APPROPRIATE TO FACILITATE THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS.
3. ALL DEMOLITION MATERIALS SHALL BE PROPERLY REMOVED FROM THE SITE AND DISPOSED OF IN A LEGALLY DESIGNATED DISPOSAL AREA.
4. THE CONTRACTOR SHALL OBTAIN THE NECESSARY PERMITS AND NOTIFY ALL AFFECTED UTILITY COMPANIES PRIOR TO THE DEMOLITION OF ANY EXISTING STRUCTURES. ALL EXISTING UTILITIES SHALL BE CAPPED OFF OR REMOVED SO AS NOT TO INTERFERE WITH THE CONSTRUCTION PROJECT. ALL DEBRIS SHALL BE HAULED AWAY FROM THE SITE AND DISPOSED OF AT AN APPROVED LOCATION.
5. THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE. PRIOR TO THE START OF ANY DEMOLITION OR CONSTRUCTION ACTIVITY, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES AND FIELD LOCATE EXISTING UTILITIES.
6. ANY REMOVAL/ABANDONMENT OF EXISTING WELLS AND SEPTIC FIELDS, SHALL BE IN ACCORDANCE WITH WCEHD STANDARDS.

SOILS NOTES

1. REFER TO SOILS INVESTIGATION REPORT PREPARED BY MCDOWEL AND ASSOCIATES, DATED JULY 5, 2016.

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

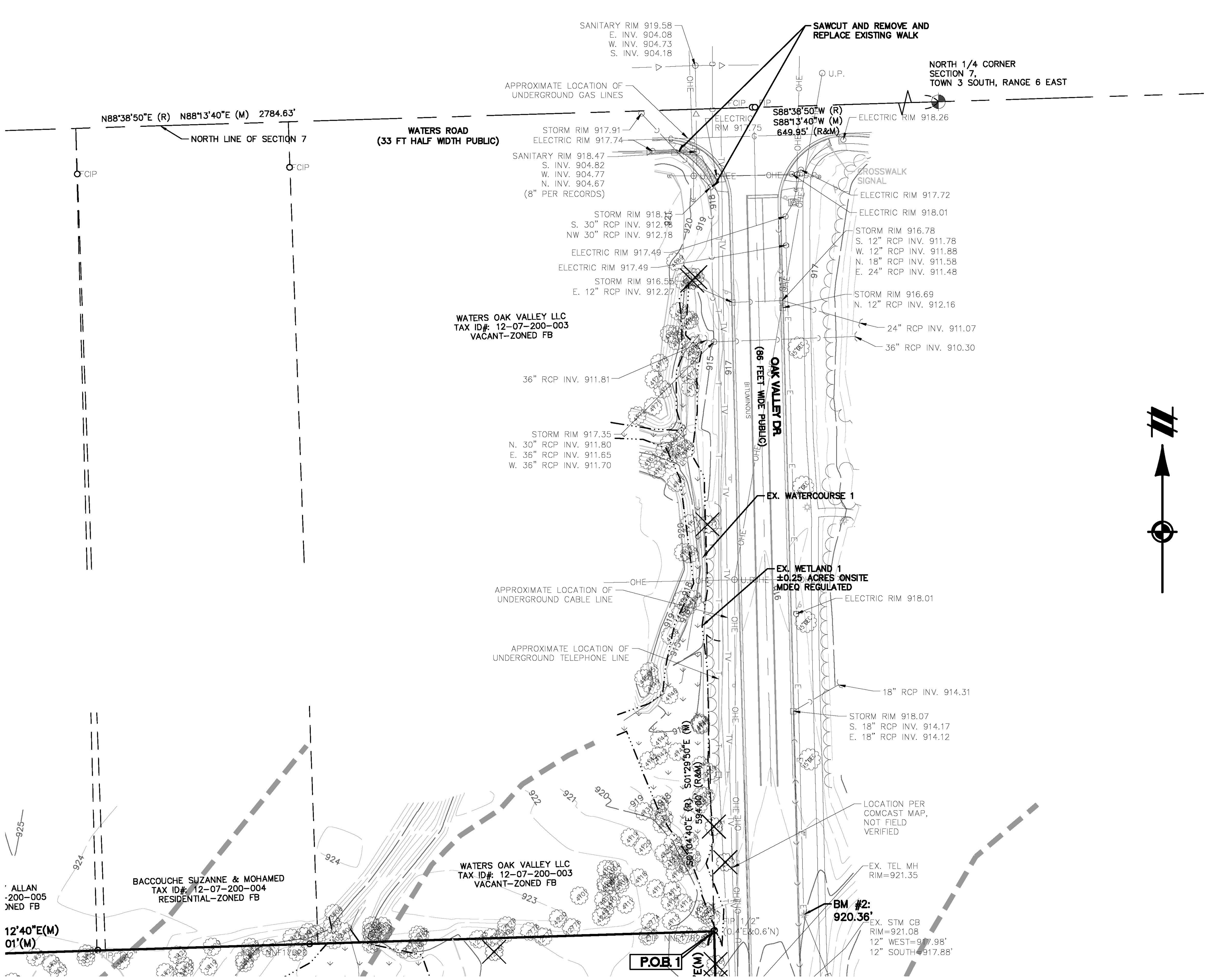
CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

EXISTING CONDITIONS & DEMOLITION PLAN 1

DATE JUNE 9, 2017

REVISIONS
9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP

SCALE 0 25 50
1" = 50 FEET
DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 02



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1. ALL ON-SITE WORK AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT SPECIFICATIONS AND STANDARD DETAILS OF PITTSFIELD TOWNSHIP, UNLESS OTHERWISE SPECIFIED.
2. THE CONTRACTOR SHALL DEMOLISH OR RELOCATE ANY SITE FEATURES AS APPROPRIATE TO FACILITATE THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS.
3. ALL DEMOLITION MATERIALS SHALL BE PROPERLY REMOVED FROM THE SITE AND DISPOSED OF IN A LEGALLY DESIGNATED DISPOSAL AREA.
4. THE CONTRACTOR SHALL OBTAIN THE NECESSARY PERMITS AND NOTIFY ALL AFFECTED UTILITY COMPANIES PRIOR TO THE DEMOLITION OF ANY EXISTING STRUCTURES. ALL EXISTING UTILITIES SHALL BE CAPPED OFF OR REMOVED SO AS NOT TO INTERFERE WITH THE CONSTRUCTION PROJECT. ALL DEBRIS SHALL BE HAULED AWAY FROM THE SITE AND DISPOSED OF AT AN APPROVED LOCATION.
5. THE LOCATIONS OF ALL EXISTING UTILITIES SHOWN ON THIS PLAN HAVE BEEN DETERMINED FROM THE BEST INFORMATION AVAILABLE. PRIOR TO THE START OF ANY DEMOLITION OR CONSTRUCTION ACTIVITY, THE CONTRACTOR SHALL NOTIFY THE UTILITY COMPANIES AND FIELD LOCATE EXISTING UTILITIES.
6. ANY REMOVAL/ABANDONMENT OF EXISTING WELLS AND SEPTIC FIELDS, SHALL BE IN ACCORDANCE WITH WCEHD STANDARDS.

BENCHMARK INFORMATION

BENCHMARK #1:
TOP OF EAST BOLT
OF FIRE HYDRANT
ELEVATION: 937.88
(NAVD88)

BENCHMARK #2:
TOP OF WEST END OF
CONCRETE LIGHTPOLE BASE
ELEVATION: 920.36
(NAVD88)

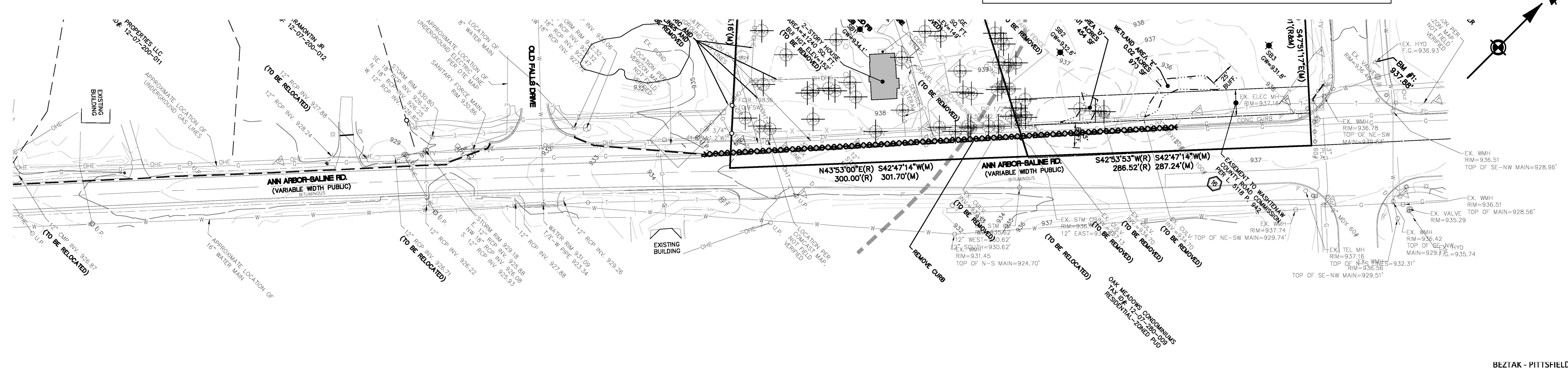
REFERENCE NOTES

1. SOILS INFORMATION REFERENCED FROM USDA NRCS WEB SOILS SURVEY, ACCESSED 2016.
2. REFER TO SOILS INVESTIGATION REPORT PREPARED BY MCDOWEL AND ASSOCIATES, DATED JULY 5, 2016.

LEGEND

BOUNDARY LINE
EXIST. EASEMENT
SECTION LINE
BOUNDARY/PROPERTY LINE
EXIST. SETBACK
890 EXIST. CONTOUR
EXIST. TREE LINE
EXIST. CURB AND GUTTER
EXIST. FENCE
EXIST. GRAVEL
EXIST. BUILDING
EXIST. STRUCTURE
EXIST. WALL
EXIST. SOIL BOUNDARY
MoC EXIST. SOILS TYPE
3533 EXIST. TREE
3529 EXIST. DEMO TREE
EXIST. WATER MAIN
EXIST. SANITARY
EXIST. GAS
EXIST. STORM
EXIST. OVERHEAD ELEC. LINE
EXIST. OVERHEAD TELE. LINE
EXIST. CABLE LINE
EXIST. UNSPECIFIED UTILITIES
EXIST. CULVERT
EXIST. CATCH BASIN/INLET
EXIST. HYDRANT
EXIST. VALVE
EXIST. SANITARY SEWER
EXIST. UNSPECIFIED UTILITY
EXIST. SIGN
EXIST. LIGHT POLE
EXIST. WETLAND
EXIST. WETLAND BUFFER
PROPOSED WETLAND IMPACT
PROPOSED WETLAND BUFFER IMPACT
PROPOSED CURB REMOVAL

(16) EASEMENT IN FAVOR OF BOARD OF COUNTY ROAD COMMISSIONERS OF THE COUNTY OF WASHTENAW, AS RECORDED IN LIBER 5118, PAGE 942, WASHTENAW COUNTY RECORDS. AS SHOWN HEREON



BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

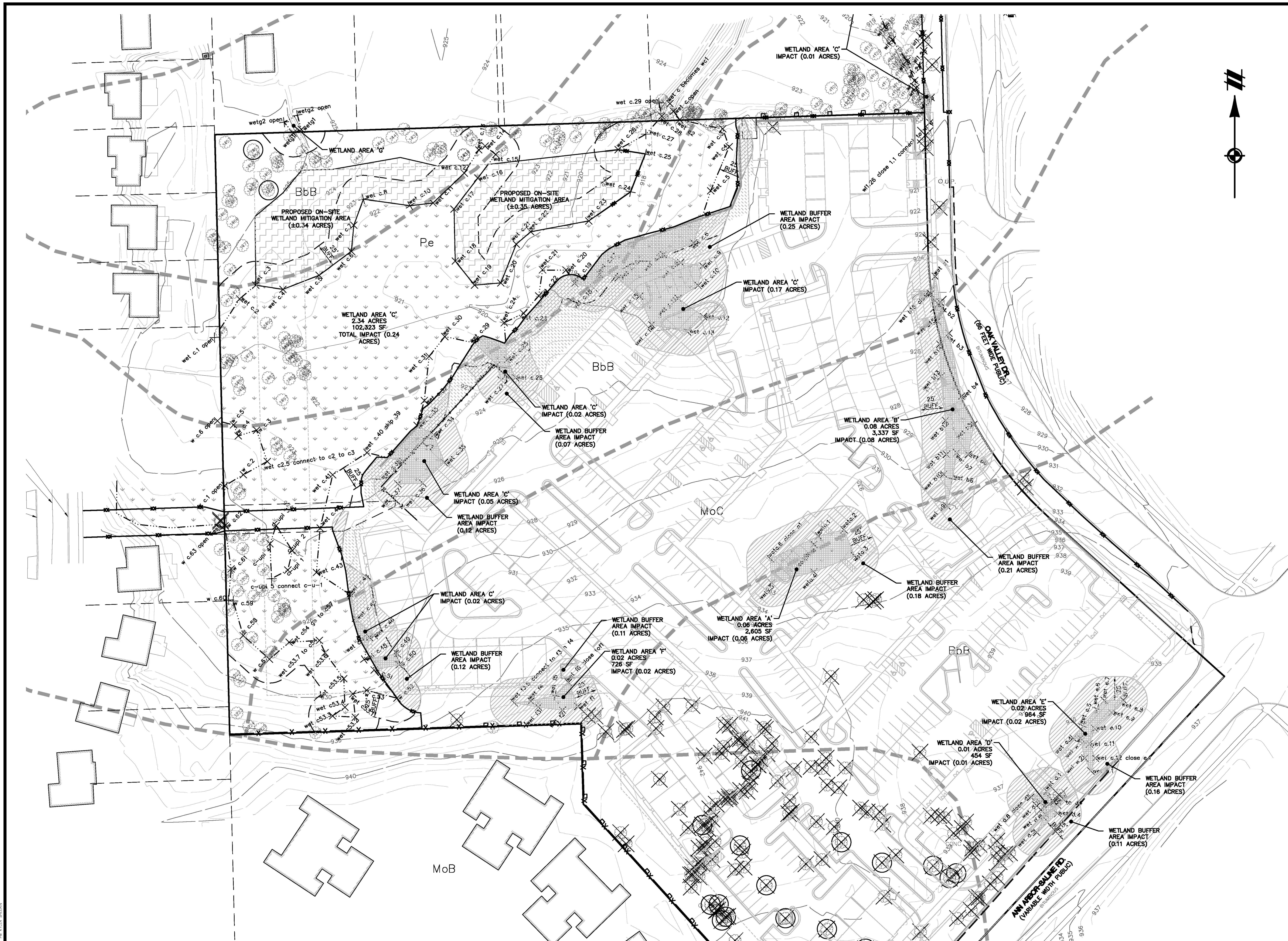
EXISTING CONDITIONS & DEMOLITION PLAN 2

DATE JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 25 50
1" = 50 FEET

DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 03



DESCRIPTION OF SITE NATURAL FEATURES

THE SUBJECT PROPERTY CONTAINS OLD BRUSHY FIELDS, HEDGEROWS, WETLANDS, AND SOME AREAS OF RESIDENTIAL LANDSCAPING. ATWELL'S BACKGROUND RESEARCH INDICATES THAT THE SUBJECT PROPERTY WAS ONCE PART OF A LARGE (CA. 2,000-ACRE) BEECH-MAPLE FOREST. HOWEVER, FIELD RECONNAISSANCE SUGGESTS THAT NONE OF THE ORIGINAL FOREST SURVIVES ON OR ADJACENT TO THE SUBJECT PROPERTY. NOT ONLY WAS THE FOREST REMOVED, BUT THE CONTEMPORARY WEEDY GROUNDCOVER INDICATES THAT SOILS WHICH WEREN'T DIRECTLY BUILT UPON FOR HOME SITES WERE DISTURBED BY REPEATED TILLAGE, LIKELY FOR AGRICULTURAL PRODUCTION. THIS AGRICULTURAL DISTURBANCE GREATLY LOWERED THE SUBJECT PROPERTY'S CAPACITY FOR RETAINING NATIVE OR SENSITIVE PLANT AND ANIMAL SPECIES. THE SUBJECT PROPERTY NOW CONTAINS RELATIVELY DISTURBANCE-TOLERANT NATIVE SPECIES, AND LOWER QUALITY AND/OR INVASIVE SPECIES.

THE PROPERTY'S OLD FIELDS AND HEDGEROWS ARE GENERALLY DOMINATED BY RELATIVELY DISTURBANCE-TOLERANT NATIVE SPECIES, AND BY LOWER QUALITY AND/OR INVASIVE SPECIES. COMMON PLANTS WITHIN OLD FIELDS AND HEDGEROWS INCLUDE AMERICAN ELM (ULMUS AMERICANA), BOX ELDER (ACER NEGUNDO), COTTONWOOD (POPULUS DELTOIDES), WILD BLACK CHERRY (PRUNUS SEROTINA), BLACK WALNUT (JUGLANS NIGRA), GRAY DOGWOOD (CORNUS FOEMINA), SILKY DOGWOOD (CORNUS AMOMUM), COMMON BUCKTHORN (RHAMNUS CATHARTICA), EURASIAN HONEYSUCKLE (LONICERA SPP.), WILD GRAPE (VITIS RIPARIA), VIRGINIA CREEPER (PARTHENOCISSUS QUINQUEFOLIA), POISON IVY (TOXICODENDRON RADICANS), TALL GOLDENROD (SOLIDAGO ALTISSIMA), WILD STRAWBERRY (FRAGARIA VIRGINIANA), COMMON BLUE VIOLET (VIOLA SORORIA), DAISY FLEABANE (ERIGERON ANNUUS AND/OR STRIGOSUS), DANDELION (TARAXACUM OFFICINALE), HEAL-ALL (PRUNELLA VULGARIS), BLUEGRASS (POA PRATENSIS AND/OR COMPRESSA), COMMON REED (PHRAGMITES AUSTRALIS), AND REED CANARY GRASS (PHALARIS ARUNDINACEA). FROM A FLORISTIC PERSPECTIVE, THE OLD FIELDS AND HEDGEROWS ON THE SUBJECT PROPERTY ARE CONSIDERED LOW QUALITY-- THEY ARE SUPPORT RELATIVELY COMMON PLANTS AND ARE EXPECTED TO SUPPORT RELATIVELY COMMON URBAN AND COUNTRYSIDE ANIMALS..

WETLANDS ON THE SUBJECT PROPERTY CONSIST OF SCRUB SHRUB AND EMERGENT VEGETATION. COMMON WOODY PLANT SPECIES IN THESE WETLANDS INCLUDE SCATTERED COTTONWOOD, COMMON BUCKTHORN, SANDBAR WILLOW (SALIX INTERIOR), PUSSY WILLOW (SALIX DISCOLOR), GRAY DOGWOOD, AND SILKY DOGWOOD. HERBACEOUS SPECIES WITHIN THESE WETLANDS INCLUDED WILLOWHERB (EPILOBIUM COLORATUM), DOGBANE (APOCYNUM CANNABINUM), PURPLE LOOSESTRIFE (LYTHRUM SALICARIA), MARSH ASTER (SYMPHYOTRICHUM LANCEOLATUM), FOX SEDGE (CAREX VULPINOIDEA), REED CANARY GRASS, REDTOP (AGROSTIS GIGANTEA), SOFT RUSH (JUNCUS EFFUSUS), COMMON REED, AND SWAMP AGRIMONY (AGRIMONIA PARVIFLORA). FROM A FLORISTIC PERSPECTIVE, THE WETLANDS ON THE SUBJECT PROPERTY ARE CONSIDERED LOW TO MODERATE QUALITY-- THEY SUPPORT RELATIVELY COMMON PLANTS AND ARE EXPECTED TO SUPPORT RELATIVELY COMMON URBAN AND COUNTRYSIDE ANIMALS.

THE LIMITED FOREST HABITAT WITHIN THE SUBJECT PROPERTY IS YOUNG, AND OFTEN WITH A DENSE SHRUB UNDERSTORY. MOST TREES OBSERVED RANGED FROM 2 TO 10 INCHES DIAMETER, WITH SOME TREES OCCASIONALLY REACHING A RANGE OF 10 TO 30 INCHES DIAMETER. NONE OF THE OBSERVED TREES APPEARED TO BE ORIGINAL (REMNANT) SPECIMENS FROM THE SUBJECT PROPERTY'S HISTORIC BEECH-MAPLE FOREST. HOWEVER, SOME OF THE YOUNGER, WIDELY SCATTERED HARDWOOD TREES ON SITE MAY HAVE DESCENDED FROM THE ORIGINAL FOREST COHORT. ON THE WHOLE, WOODED PORTIONS OF THE SUBJECT PROPERTY ARE CONSIDERED TO BE LOW QUALITY AND RELATIVELY WEEDY--THEY SUPPORT RELATIVELY COMMON PLANTS AND ARE EXPECTED TO SUPPORT RELATIVELY COMMON URBAN AND COUNTRYSIDE ANIMALS.

WE NOTE THAT ALTHOUGH THE SUBJECT PROPERTY'S WETLANDS AND HEDGEROWS ARE OF LOW QUALITY ECOLOGICALLY, THEY MAY STILL PROVIDE OTHER ENVIRONMENTAL VALUES AS GREEN AREAS, VIEW SCREENS, HABITAT FOR COMMON WILDLIFE, AND RUNOFF FILTRATION. THE PROPOSED SITE LAYOUT MAXIMIZES THE AVOIDANCE OF WETLANDS AND HEDGEROWS TO ACHIEVE THE APPLICANTS DEVELOPMENT GOALS.

LEGEND

- EXISTING OVERHEAD LINE
- EXISTING CURB AND GUTTER
- BOUNDARY LINE
- EXISTING STORM
- EXISTING TREE LINE
- EXISTING EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- 890 EXISTING CONTOUR
- EXISTING WATER MAIN
- EXISTING SANITARY
- EXISTING GAS
- EXISTING RAILROAD
- EXISTING WETLAND BUFFER
- SECTION CORNER
- EXISTING SANITARY MANHOLE
- EXISTING CATCH BASIN/INLET
- EXISTING WATER MANHOLE
- EXISTING WETLAND
- EXISTING RIP-RAP
- EXISTING SOIL TYPE BOUNDARY
- MoB EXISTING SOIL TYPE
- EXISTING TREE
- EXISTING TREE TO BE REMOVED
- EXISTING HERITAGE TREE
- PROPOSED SILT FENCE
- PROPOSED TREE PROTECTION FENCE
- PROPOSED WETLAND IMPACT
- PROPOSED WETLAND BUFFER IMPACT
- PROPOSED WETLAND MITIGATION

WETLAND IMPACTS AND MITIGATION

Wetland Area	Wetland Area (acre)	Wetland Buffer Area (acre)	Township Regulated	MDEQ Regulated	Wetland Impact Area (SF)	Estimated Cut Impact Volume (cubic yards)	Estimated Fill Impact Volume (cubic yards)	Estimated Net Impact Volume (cubic yards)	Impacts to Wetland Buffer Area (acre)
A	0.06	0.18	Yes	Yes	2,605	0.0	59.3	59.3	0.18
B	0.08	0.21	Yes	Yes	3,337	0.0	446.7	446.7	0.21
C	2.34	1.46	Yes	Yes	11,441	0.2	3102.2	3102.4	0.56
D	0.01	0.11	Yes	No	454	0.0	20.1	20.1	0.11
E	0.02	0.16	Yes	No	964	0.0	55.5	55.5	0.16
F	0.02	0.12	Yes	No	726	95.4	0.0	95.4	0.12
G	0.00	0.03	Yes	Yes	0	0.0	0.0	0.0	0
Total (MDEQ)	**2.48**	**1.88**	**-**	**-**	**17,383**	**0.2**	**3608.3**	**3608.5**	**0.95**
Total (TOWNSHIP)	**2.53**	**2.27**	**-**	**-**	**19,527**	**95.6**	**3683.9**	**3779.4**	**1.34**
MITIGATION RATIO					**1.5**	-	-	-	-
MITIGATION REQUIRED (1.5*TOTAL TOWNSHIP IMPACTS)					**29,291**	-	-	-	-
ON-SITE-MITIGATION					**30,016**	-	-	-	-

SOIL LEGEND

Map Unit Symbol	Map Unit Name
BbB	Blount loam, 2 to 6 percent slopes
MoB	Glynwood loam, 2 to 6 percent slopes
MoC	Morley loam, 6 to 12 percent slopes
Pe	Pewamo clay loam, 0 to 2 percent slopes

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
NATURAL FEATURES PROTECTION PLAN

DATE
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10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 25 50
1" = 50 FEET

DR. CR CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO.
04

Northing	Easting	Tree Tag #	Data Code	*Botanical Name*	Common Name	Diameter (inches)	Condition	Heritage Tree	Woodland Tree	Weeds & Invasive List*	Comments	To Be Removed
270461	13283838.2	3175	ACNE	*Acer negundo*	Box-elder	6.1	Good	No	No	Yes	Vines	No
270397	13283844.4	3201	RHCA	*Rhamnus cathartica*	Common Buckthorn	8.4	Fair	No	No	Yes		No
270407	13283865.5	3202	RHCA	*Rhamnus cathartica*	Common Buckthorn	8.1	Poor	No	No	Yes	Dead lower branches	No
270375	13283866.1	3203	RHCA	*Rhamnus cathartica*	Common Buckthorn	8.0	Poor	No	No	Yes	2T; 8.0"	No
270353	13283864.6	3204	MASP	*Malus species*	Crabapple/Apple	7.4	Fair	No	No	No	2T; 4.3"	No
270348	13283856	3205	ACNE	*Acer negundo*	Box-elder	8.0	Fair	No	No	Yes		No
270366	13283844.6	3206	ACNE	*Acer negundo*	Box-elder	14.0	Fair	No	No	Yes	2T; 9.0"	No
270353	13283839.1	3207	RHCA	*Rhamnus cathartica*	Common Buckthorn	4.6	Fair	No	No	Yes	2T; 3.6"	No
270369	13283828.4	3208	ACNE	*Acer negundo*	Box-elder	7.9	Fair	No	No	Yes	2T; 4.9"	No
270396	13283820.9	3209	RHCA	*Rhamnus cathartica*	Common Buckthorn	4.8	Fair	No	No	Yes	2T; 3.4"	No
270333	13283829.7	3210	CRSP	*Crataegus spp.*	Hawthorn	8.3	Fair	No	No	No		No
270311	13283823.4	3211	ACNE	*Acer negundo*	Box-elder	18.8	Fair	No	No	Yes		No
270297	13283839	3212	CRSP	*Crataegus spp.*	Hawthorn	10.1	Fair	No	No	No		No
270304	13283854	3213	CRSP	*Crataegus spp.*	Hawthorn	8.2	Fair	No	No	No		No
270289	13283875.2	3214	CRSP	*Crataegus spp.*	Hawthorn	7.3	Fair	No	No	No		No
270326	13283880.9	3215	ACNE	*Acer negundo*	Box-elder	6.8	Fair	No	No	Yes		No
270334	13283883	3216	ACNE	*Acer negundo*	Box-elder	6.9	Fair	No	No	Yes	2T; 4.2"	No
270339	13283887.6	3217	ACNE	*Acer negundo*	Box-elder	8.0	Poor	No	No	Yes	Decaying inner bark	No
270348	13283877.2	3218	MAPU	*Malus pumila*	Apple	6.8	Poor	No	No	No	Decaying inner bark. Re-sprouting	No
270334	13283888.5	3219	ACNE	*Acer negundo*	Box-elder	6.6	Fair	No	No	Yes		Yes
270332	13283888.6	3220	ACNE	*Acer negundo*	Box-elder	6.0	Fair	No	No	Yes		Yes
270259	13283841.5	3221	RHCA	*Rhamnus cathartica*	Common Buckthorn	8.5	Fair	No	No	Yes	2T; 5.5"	Yes
270265	13283835.6	3222	RHCA	*Rhamnus cathartica*	Common Buckthorn	6.9	Fair	No	No	Yes		Yes
270225	13283838.4	3223	RHCA	*Rhamnus cathartica*	Common Buckthorn	6.0	Fair	No	No	Yes	2T; 4.6"	No
270211	13283850.8	3224	RHCA	*Rhamnus cathartica*	Common Buckthorn	17.9	Fair	No	No	Yes	Fused trunk; 2T; 3.7"	No
270209	13283863.2	3225	RHCA	*Rhamnus cathartica*	Common Buckthorn	6.2	Fair	No	No	Yes		No
270204	13283920.7	3226	ACNE	*Acer negundo*	Box-elder	7.4	Fair	No	No	Yes	2T; 6.3"	No
270218	13284068.5	3227	CRSP	*Crataegus spp.*	Hawthorn	6.0	Fair	No	Yes***	No		Yes
270210	13284106.4	3228	ULAM	*Ulmus americana*	American Elm	8.6	Excellent	No	No	Yes**		No
270222	13284205.4	3229	JUNI	*Juglans nigra*	Black Walnut	5.4	Poor	No	No	No	2T; 4.5"	Yes
270222	13284213.2	3230	JUNI	*Juglans nigra*	Black Walnut	4.5	Poor	No	No	No	2T; 3.6"	Yes
270233	13284314.6	3301	JUNI	*Juglans nigra*	Black Walnut	7.9	Fair	No	Yes***	No		Yes
270232	13284285.2	3302	JUNI	*Juglans nigra*	Black Walnut	6.2	Fair	No	Yes***	No	4T; 5.8" + 4.8" + 3.6"	Yes
270210	13284389.3	3303	JUNI	*Juglans nigra*	Black Walnut	9.0	Poor	No	Yes***	No	3T; 4.6" +7.2"	Yes
270208	13284391.5	3304	ACNE	*Acer negundo*	Box-elder	6.1	Fair	No	No	Yes		Yes
270200	13284439.1	3305	JUNI	*Juglans nigra*	Black Walnut	9.6	Fair	No	Yes***	No	3T; 8.4" +7.6"	Yes
270178	13284454.9	3306	ACNE	*Acer negundo*	Box-elder	10.7	Fair	No	No	Yes		Yes
270263	13284460	3307	JUNI	*Juglans nigra*	Black Walnut	9.4	Good	No	Yes***	No	3T; 8.8" + 5.0"	Yes
270342	13284504	3308	JUNI	*Juglans nigra*	Black Walnut	10.0	Good	No	Yes***	No		Yes
270344	13284506.7	3309	JUNI	*Juglans nigra*	Black Walnut	9.7	Good	No	Yes***	No		Yes
270344	13284494.1	3310	ACNE	*Acer negundo*	Box-elder	17.7	Poor	No	No	Yes	Decaying inner bark; 3T; 9.0" + 3.8"	Yes
270184	13284553.1	3311	JUNI	*Juglans nigra*	Black Walnut	10.2	Fair	No	No	No	3T; 7.0" + 7.0"	Yes
270118	13284564.7	3312	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	8.8	Excellent	No	No	No		Yes
270118	13284572.8	3313	CEOC	*Celtis occidentalis*	Northern Hackberry	8.2	Good	No	No	No		Yes
270116	13284578.7	3314	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	5.2	Good	No	No	No	3T; 5.0" + 4.6"	Yes
270079	13284607	3315	ACNE	*Acer negundo*	Box-elder	3.8	Poor	No	No	Yes	2T; 3.8"	Yes
270111	13284601	3316	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	7.4	Good	No	Yes***	No	2T; 5.1"	Yes
270104	13284597.5	3317	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	6.4	Good	No	Yes***	No		Yes
270092	13284633.7	3318	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	6.8	Good	No	No	No		Yes
270079	13284646.9	3319	ACSA	*Acer saccharum*	Sugar Maple	6.0	Excellent	No	No	No		No
270124	13284679.5	3320	ACNE	*Acer negundo*	Box-elder	5.8	Fair	No	No	Yes	3T; 4.7" + 3.7"	No
270134	13284692.2	3321	ACRU	*Acer rubrum*	Red Maple	4.0	Good	No	No	No	2T; 3.9"	No
270139	13284698.9	3322	ULAM	*Ulmus americana*	American Elm	6.0	Excellent	No	No	Yes**		No
270057	13284591	3323	ACSA	*Acer saccharum*	Sugar Maple	28.0	Good	Yes	No	No		Yes
270052	13284584.1	3324	ACSA	*Acer saccharum*	Sugar Maple	17.0	Fair	Yes	No	No	Potential bat tree characteristics	Yes
270065	13284566.8	3325	ACSA	*Acer saccharum*	Sugar Maple	34.8	Good	Yes	No	No	Potential bat tree characteristic	Yes
270100	13284588.3	3326	ACNE	*Acer negundo*	Box-elder	7.4	Poor	No	Yes***	No	2T; 4.7"	Yes
270084	13284608.1	3327	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	6.0	Excellent	No	Yes***	No		Yes
270088	13284614.8	3328	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	7.5	Excellent	No	Yes***	No	2T; 7.1"	Yes
270079	13284633.2	3329	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	6.7	Excellent	No	Yes***	No		Yes
270070	13284636	3330	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	5.7	Fair	No	No	No	2T; 5.1"	Yes
270078	13284642	3331	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	6.0	Fair	No	Yes***	No		Yes
270034	13284515.5	3332	THOC	*Thuja occidentalis*	Arborvitae	11.5	Good	No	Yes***	No		Yes
270069	13284513.4	3333	PIAB	*Picea abies*	Norway Spruce	29.0	Good	Yes	No	No		Yes
270077	13284527.9	3334	RHCA	*Rhamnus cathartica*	Common Buckthorn	8.0	Fair	No	No	Yes		Yes
270109	13284514.2	3335	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	5.5	Good	No	No	No	2T; 5.2"	Yes
270122	13284511.2	3336	JUNI	*Juglans nigra*	Black Walnut	7.0	Good	No	Yes***	No		Yes
270122	13284497.9	3337	JUNI	*Juglans nigra*	Black Walnut	7.3	Good	No	Yes***	No		Yes
270126	13284491	3338	JUNI	*Juglans nigra*	Black Walnut	7.0	Excellent	No	Yes***	No		Yes
270090	13284470.8	3339	PIGL	*Picea glauca*	White Spruce	22.0	Good	Yes	No	No		Yes
270106	13284463.3	3340	PIPU	*Picea pungens*	Colorada Blue Spruce	16.2	Fair	No	Yes***	No		Yes
270147	13284468.3	3341	JUNI	*Juglans nigra*	Black Walnut	7.9	Excellent	No	Yes***	No		Yes
270168	13284474.8	3342	THOC	*Thuja occidentalis*	Arborvitae	5.9	Fair	No	No	No	2T; 5.6"	Yes
270150	13284455.9	3343	JUNI	*Juglans nigra*	Black Walnut	7.5	Excellent	No	Yes***	No		Yes
270167	13284451	3344	JUNI	*Juglans nigra*	Black Walnut	9.2	Excellent	No	Yes***	No		Yes
270169	13284439.2	3345	JUNI	*Juglans nigra*	Black Walnut	6.6	Excellent	No	Yes***	No		Yes
270166	13284421.1	3346	JUNI	*Juglans nigra*	Black Walnut	10.9	Excellent	No	Yes***	No		Yes
270154	13284404	3347	JUNI	*Juglans nigra*	Black Walnut	8.3	Excellent	No	Yes***	No		Yes
270134	13284417	3348	PIAB	*Picea abies*	Norway Spruce	17.2	Good	No	Yes***	No		Yes
270120	13284415.7	3349	PIAB	*Picea abies*	Norway Spruce	26.3	Good	Yes	No	No		Yes
270112	13284444.7	3350	ACNE	*Acer negundo*	Box-elder	12.0	Good	No	No	Yes	2T; 10.8"	Yes
270122	13284418.6	3351	ACNE	*Acer negundo*	Box-elder	10.0	Good	No	No	Yes		Yes
270183	13284393.1	3352	THOC	*Thuja occidentalis*	Arborvitae	10.0	Good	No	Yes***	No	2T; 4.0"	Yes
270193	13284398.3	3353	THOC	*Thuja occidentalis*	Arborvitae	8.0	Good	No	Yes***	No	4T; 6.6" + 4.2" +3.6"	Yes
270178	13284385.4	3354	THOC	*Thuja occidentalis*	Arborvitae	6.8	Fair	No	Yes***	No	2T; 5.7"	Yes
270043	13284313.8	3355	THOC	*Thuja occidentalis*	Arborvitae	6.8	Good	No	Yes***	No		Yes
270056	13284313.1	3356	THOC	*Thuja occidentalis*	Arborvitae	6.9	Good	No	Yes***	No	2T; 5.7"	Yes
270056	13284315.1	3357	THOC	*Thuja occidentalis*	Arborvitae	9.4	Good	No	Yes***	No	2T; 4.0"	Yes
270054	13284322	3358	THOC	*Thuja occidentalis*	Arborvitae	6.8	Fair	No	Yes***	No	4T; 4.8" + 3.1" + 6.5"	Yes
270068	13284321.5	3359	ULAM	*Ulmus americana*	American Elm	8.7	Fair	No	No	Yes**	4T; 7.5" + 5.5" + 5.6"	Yes
270064	13284316.1	3360	THOC	*Thuja occidentalis*	Arborvitae	7.0	Good	No	Yes***	No		Yes
270068	13284325.2	3361	THOC	*Thuja occidentalis*	Arborvitae	10.0	Fair	No	Yes***	No		Yes
270084	13284321.9	3362	THOC	*Thuja occidentalis*	Arborvitae	7.1	Fair	No	Yes***	No	2T; 4.0"	Yes
270085	13284327.1	3363	THOC	*Thuja occidentalis*	Arborvitae	5.9	Fair	No	No	No	2T; 5.7"	Yes
270090	13284329	3364	THOC	*Thuja occidentalis*	Arborvitae	8.4	Good	No	Yes***	No	2T; 4.8"	Yes
270072	13284335.5	3365	THOC	*Thuja occidentalis*	Arborvitae	9.6	Good	No	Yes***	No		Yes
270091	13284338.6	3366	THOC	*Thuja occidentalis*	Arborvitae	7.5	Fair	No	Yes***	No	2T; 6.0"	Yes
270104	13284331.2	3367	THOC	*Thuja occidentalis*	Arborvitae	9.2	Good	No	Yes***	No		Yes
270109	13284328.5	3368	THOC	*Thuja occidentalis*	Arborvitae	6.3	Good	No	Yes***	No		Yes
270108	13284325.4	3369	THOC	*Thuja occidentalis*	Arborvitae	15.9	Good	Yes	No	No	2T; 7.7"	Yes
270114	13284335.5	3370	THOC	*Thuja occidentalis*	Arborvitae	10.0	Good	No	Yes***	No	2T; 5.5"	Yes
270125	13284333.2	3371	THOC	*Thuja occidentalis*	Arborvitae	8.2	Good	No	Yes***	No	3T; 8.0" + 3.0"	Yes
270130	13284339.9	3372	THOC	*Thuja occidentalis*	Arborvitae	6.8	Fair	No	Yes***	No	3T; 5.7" + 4.0"	Yes
270136	13284349.3	3373	THOC	*Thuja occidentalis*	Arborvitae	7.7	Good	No	Yes***	No	2T; 7.0"	Yes
270139	13284354.6	3374	THOC	*Thuja occidentalis*	Arborvitae	9.0	Fair	No	Yes***	No		Yes
270135	13284354.1	3375	THOC	*Thuja occidentalis*	Arborvitae	9.2	Good	No	Yes***	No	2T; 4.9"	Yes
270138	13284353.3	3376	MOAL	*Morus alba*	White Mulberry	10.0	Good	No	Yes***	No		Yes
270144	13284365.5	3377	THOC	*Thuja occidentalis*	Arborvitae	6.6	Good	No	Yes***	No		Yes
270143	13284372.2	3378	PIGL	*Picea glauca*	White Spruce	14.4	Good	No	Yes***	No		Yes
270151	13284375	3379	PIGL	*Picea glauca*	White Spruce	13.2	Excellent	No	No	No		Yes
270175	13284366	3380	ACNE	*Acer negundo*	Box-elder	10.2	Good	No	No	Yes	2T; 7.2"	Yes
270159	13284375.1	3381	THOC	*Thuja occidentalis*	Arborvitae	7.5	Good	No	Yes***	No		Yes
270165	13284376.4	3382	THOC	*Thuja occidentalis*	Arborvitae	12.5	Excellent	Yes	No	No		Yes
270171	13284383.8	3383	THOC	*Thuja occidentalis*	Arborvitae	6.1	Fair	No	Yes***	No		Yes
270171	13284383.1	3384	THOC	*Thuja occidentalis*	Arborvitae	9.8	Good	No	Yes***	No		Yes
270176	13284387.4	3385	THOC	*Thuja occidentalis*	Arborvitae	7.4	Fair	No	Yes***	No		Yes
270192	13284374.2	3386	SAAM	*Salix amygdaloides*	Peachleaf Willow	9.2	Good	No	No	Yes		Yes
270193	13284368.2	3387	SAAM	*Salix amygdaloides*	Peachleaf Willow	9.5	Good	No	No	Yes		Yes
270198	13284362	3388	SAAM	*Salix amygdaloides*	Peachleaf Willow	9.8	Good	No	No	Yes		Yes
270198	13284365.2	3389	SAAM	*Salix amygdaloides*	Peachleaf Willow	6.3	Good	No	No	Yes		Yes
270212	13284354.5	3390	RHCA	*Rhamnus cathartica*	Common Buckthorn	12.0	Good	No	No	Yes	2T; 3.0"	Yes
270212	13284348.7	3391	PRAV	*Prunus avium*	Sweet Cherry	9.2	Fair	No	Yes***	No		Yes
270209	13284277	3392	JUNI	*Juglans nigra*	Black Walnut	12.6	Good	No	Yes***	No	3T; 10.0"; 8.0"	Yes
270221	13284276.1	3393	ULAM	*Ulmus americana*	American Elm	7.3	Fair	No	No	Yes**	Growing into the fence	Yes
270208	13284243.9	3394	PRAV	*Prunus avium*	Sweet Cherry	6.3	Good	No	Yes***	No		Yes
270209	13284246.4	3395	JUNI	*Juglans nigra*	Black Walnut	13.0	Good	No	Yes***	NO		Yes
270206	13284224.4	3396	JUNI	*Juglans nigra*	Black Walnut	12.0	Excellent	No	Yes***	No		Yes
270100	13284239.9	3397	RHCA	*Rhamnus cathartica*	Common Buckthorn	8.0	Fair	No	No	Yes		Yes
270088	13284245.7	3398	ACNE	*Acer negundo*	Box-elder	8.3	Fair	No	Yes***	Yes		Yes
270105	13284310.5	3399	MAPU	*Malus pumila*	Apple	7.5	Fair	No	Yes***	No		Yes
270125	13284301.4	3400	JUNI	*Juglans nigra*	Black Walnut	8.5	Excellent	No	No	No		Yes
270857	13284318.5	3401	SAFR	*Salix fragilis*	Crack Willow	9.0	Fair	No	No	Yes	5T; 7.0" + 5.4" + 5.7" + 4.0"	No
270858	13284310.6	3402	SAFR	*Salix fragilis*	Crack Willow	17.0	Fair	No	No	Yes		No
270850	13284311.1	3403	PODE	*Populus deltoides*	Eastern Cottonwood	6.1	Good	No	No	Yes		No
270847	13284283.2	3405	PODE	*Populus deltoides*	Eastern Cottonwood	7.0	Good	No	No	Yes		No
270853	13284290.5	3406	PODE	*Populus deltoides*	Eastern Cottonwood	8.8	Good	No	No	Yes		No
270858	13284282.3	3407	PODE	*Populus deltoides*	Eastern Cottonwood	6.9	Good	No	No	Yes		No
270867	13284283.3	3408	PODE	*Populus deltoides*	Eastern Cottonwood	14.6	Good	No	No	Yes		No
270851	13284270.4	3409	PODE	*Populus deltoides*	Eastern Cottonwood	6.9	Fair	No	No	Yes		No
270850	13284261.4	3410	PODE	*Populus deltoides*	Eastern Cottonwood	14.6	Fair	No	No	Yes		No
270853	13284264.9	3411	PODE	*Populus deltoides*	Eastern Cottonwood	13.1	Good	No	No	Yes		No
270849	13284253	3412	PODE	*Populus deltoides*	Eastern Cottonwood	6.4	Good	No	No	Yes		No
270839	13284256.5	3413	ACNE	*Acer negundo*	Box-elder	3.8	Good	No	No	Yes	2T; 3.8"	No
270841	13284237.3	3414	PODE	*Populus deltoides*	Eastern Cottonwood	16.1	Excellent	No	No	Yes		No
270842	13284223.3	3415	PODE	*Populus deltoides*	Eastern Cottonwood	17.7	Excellent	No	No	Yes		No
270838	13284223.4	3416	MASP	*Malus species*	Crabapple/Apple	7.4	Fair	No	No	No	Dead lower branches	No
270831	13284218.9	3417	ULAM	*Ulmus americana*	American Elm	10.1	Good	No	No	Yes**		No
270833	13284218.7	3418	PYCO	*Pyrus communis*	Common Pear	9.0	Good	No	No	No		No
270828	13284192.9	3419	RHCA	*Rhamnus cathartica*	Common Buckthorn	9.9	Fair	No	No	Yes	2T; 4.5"	No
270842	13284195.4	3420	MASP	*Malus species*	Crabapple/Apple	10.3	Fair	No	No	No	3T; 5.7" + 3.6"	No
270836	13284170.5	3421	MASP	*Malus species*	Crabapple/Apple	5.8	Fair	No	No	No	3T; 5.5" + 5.4"	No
270828	13284175.7	3422	PYCO	*Pyrus communis*	Common Pear	9.9	Excellent	No	No	No		No
270825	13284175.3	3423	PYCO	*Pyrus communis*	Common Pear	6.8	Good	No	No	No	2T; 6.0"	No
270817	13284171.8	3424	ULAM	*Ulmus americana*	American Elm	8.9	Good	No	No	Yes**		No
270824	13284161.7	3425	MASP	*Malus species*	Crabapple/Apple	6.3	Good	No	No	No		No
270814	13284115.5	3426	MAPU	*Malus pumila*	Apple	7.1	Good	No	No	No	2T; 5.8"	No
270832	13284129.7	3427	PRSE	*Prunus serotina*	Black Cherry	11.9	Fair	No	No	No		No
270837	13284104.7	3428	MASP	*Malus species*	Crabapple/Apple	7.9	Fair	No	No	No	2T; 5.9"	No
270835	13284104.4	3429	RHCA	*Rhamnus cathartica*	Common Buckthorn	6.1	Fair	No	No	Yes		No
270830	13284079.4	3430	PISY	*Pinus sylvestris*	Scotch Pine	10.5	Good	No	No	No		No
270825	13284084.3	3431	PYCO	*Pyrus communis*	Common Pear	6.8	Good	No	No	No		No
270835	13284068	3432	ULAM	*Ulmus americana*	American Elm	7.0	Good	No	No	Yes**		No
270809	13284075.8	3433	PISY	*Pinus sylvestris*	Scotch Pine	6.5	Good	No	No	No		No
270809	13284075.5	3434	PISY	*Pinus sylvestris*	Scotch Pine	8.7	Good	No	No	No		No
270809	13284039.9	3435	PISY	*Pinus sylvestris*	Scotch Pine	7.1	Good	No	No	No		No
270816	13284043.4	3436	PISY	*Pinus sylvestris*	Scotch Pine	6.9	Good	No	No	No		No
270813	13284051.8	3437	ULAM	*Ulmus americana*	American Elm	7.6	Excellent	No	No	Yes**		No
270817	13284051.5	3438	PISY	*Pinus sylvestris*	Scotch Pine	6.8	Good	No	No	No		No
270828	13284021.3	3439	PISY	*Pinus sylvestris*	Scotch Pine	6.4	Excellent	No	No	No		No
270836	13284013.2	3440	MASP	*Malus species*	Apple	5.2	Good	No	No	No	2T; 4.5"	No
270828	13284000.7	3441	RHCA	*Rhamnus cathartica*	Common Buckthorn	9.0	Good	No	No	Yes	2T; 5.5"	No
270822	13283986.5	3442	ULAM	*Ulmus americana*	American Elm	11.6	Good	No	No	Yes**		No
270806	13283963.7	3443	MAPU	*Malus pumila*	Apple	8.6	Good	No	No	No	4T; 6.6" + 4.6" + 4.5"	No
270807	13283919.9	3444	PRSE	*Prunus serotina*	Black Cherry	8.8	Excellent	No	No	No		No
270802	13283932.2	3445	PYCO	*Pyrus communis*	Common Pear	7.0	Good	No	No	No		No
270802	13283920.5	3446	PRSE	*Prunus serotina*	Black Cherry	8.5	Poor	No	No	No	Damaged	No
270813	13283906.6	3447	ULAM	*Ulmus americana*	American Elm	7.0	Fair	No	No	Yes**		No
270829	13283893.4	3448	PRSE	*Prunus serotina*	Black Cherry	7.3	Good	No	No	No		No
270806	13283879.3	3449	ULAM	*Ulmus americana*	American Elm	8.7	Good	No	No	Yes**	2T; 4.5"	No
270802	13283880.8	3450	MASP	*Malus species*	Apple	6.7	Fair	No	No	No	2T; 3.2"	No
270797	13283881.2	3451	MASP	*Malus species*	Apple	5.3	Fair	No	No	No	2T; 3.6"	No
270789	13283868.5	3452	ULAM	*Ulmus americana*	American Elm	7.4	Good	No	No	Yes**		No
270814	13283855.4	3453	ACRU	*Acer rubrum*	Red Maple	20.2	Good	Yes	No	No		No
270779	13283854.4	3454	MASP	*Malus species*	Apple	7.1	Fair	No	No	No		No
270808	13283856.1	3455	ULAM	*Ulmus americana*	American Elm	7.7	Good	No	No	Yes**		No
270798	13283850.8	3456	ULAM	*Ulmus americana*	American Elm	8.5	Good	No	No	Yes**		No
270822	13283826.2	3457	PRSE	*Prunus serotina*	Black Cherry	10.4	Good	No	No	No	Vines	No
270775	13283870	3458	MASP	*Malus species*	Apple	5.3	Fair	No	No	No	2T; 5.2"	No
270772	13283871.5	3459	PRSE	*Prunus serotina*	Black Cherry	18.5	Good	Yes	No	No		No
270772	13283830	3460	ULAM	*Ulmus americana*	American Elm	9.3	Good	No	No	Yes**		No
270761	13283829	3461	RHCA	*Rhamnus cathartica*	Common Buckthorn	6.3	Fair	No	No	Yes		No
270773	13283852.3	3462	RHCA	*Rhamnus cathartica*	Common Buckthorn	6.4	Fair	No	No	Yes		No
270760	13283832.7	3463	ULAM	*Ulmus americana*	American Elm	7.4	Good	No	No	Yes**		No
270796	13283905.8	3464	PRSE	*Prunus serotina*	Black Cherry	12.0	Good	No	No	No		No
270747	13283822.4	3465	RHCA	*Rhamnus cathartica*	Common Buckthorn	5.0	Fair	No	No	Yes	2 Trunks (2T); 4.2 DBH inches	No
270739	13283834	3466	RHCA	*Rhamnus cathartica*	Common Buckthorn	7.4	Fair	No	No	Yes		No
270725	13283812.6	3467	RHCA	*Rhamnus cathartica*	Common Buckthorn	6.5	Fair	No	No	Yes		No
270720	13283814.7	3468	PRSE	*Prunus serotina*	Black Cherry	6.2	Fair	No	No	No		No
270714	13283819.7	3469	PRSE	*Prunus serotina*	Black Cherry	7.6	Fair	No	No	No		No
270712	13283825.8	3470	PRSE	*Prunus serotina*	Black Cherry	7.5	Fair	No	No	No		No
270714	13283844.1	3471	RHCA	*Rhamnus cathartica*	Common Buckthorn	6.9	Fair	No	No	Yes		No
270689	13283831.2	3472	PRSE	*Prunus serotina*	Black Cherry	10.9	Good	No	No	No		No
270666	13283835.1	3473	JUVI	*Juniperus virginiana*	Eastern Red-Cedar	10.0	Good	No	No	Yes		No
270657	13283827.7	3474	RHCA	*Rhamnus cathartica*	Common Buckthorn	5.4	Fair	No	No	Yes	2T; 4.8"	No
270624	13283822.1	3475	ACSA	*Acer saccharum*	Sugar Maple	11.4	Excellent	No	No	No		No
270592	13283826.9	3476	SAAM	*Salix amygdaloides*	Peachleaf Willow	10.3	Excellent	No	No	Yes		No
270594	13283828.6	3477	ULAM	*Ulmus americana*	American Elm	11.2	Good	No	No	Yes**		No
270599	13283848.8	3478	SAAM	*Salix amygdaloides*	Peachleaf Willow	11.9	Good	No	No	Yes		No
270594	13283833.5	3479	SAAM	*Salix amygdaloides*	Peachleaf Willow	13.2	Dead	No	No	Yes		No
270572	13283839.1	3480	SAAM	*Salix amygdaloides*	Peachleaf Willow	19.0	Good	No	No	Yes		No
270564	13283841.2	3481	SAAM	*Salix amygdaloides*	Peachleaf Willow	23.0	Good	No	No	Yes		No
270576	13283871.1	3482	SAAM	*Salix amygdaloides*	Peachleaf Willow	16.4	Good	No	No	Yes	3 Trunks (3T); 9.0" + 4.6"	No
270575	13283893.2	3483	SAAM	*Salix amygdaloides*	Peachleaf Willow	12.0	Good	No	No	Yes		No
270579	13283910.1	3484	SAAM	*Salix amygdaloides*	Peachleaf Willow	8.6	Fair	No	No	Yes		No
270580	13283907.3	3485	SAAM	*Salix amygdaloides*	Peachleaf Willow	11.0	Dead	No	No	Yes		No
270588	13283909.2	3486	SAAM	*Salix amygdaloides*	Peachleaf Willow	6.4	Fair	No	No	Yes		No
270594	13283900.3	3487	SAAM	*Salix amygdaloides*	Peachleaf Willow	8.8	Fair	No	No	Yes	2T; 7.9"	No
270599	13283895.2	3488	SAAM	*Salix amygdaloides*	Peachleaf Willow	10.9	Good	No	No	Yes		No
270597	13283892.7	3489	SAAM	*Salix amygdaloides*	Peachleaf Willow	6.5	Fair	No	No	Yes		No
270633	13283869.1	3490	ULAM	*Ulmus americana*	American Elm	8.0	Fair	No	No	Yes**		No
270613	13283879.9	3491	SAAM	*Salix amygdaloides*	Peachleaf Willow	16.8	Good	No	No	Yes	2T; 9.2"	No
270609	13283889.1	3492	SAAM	*Salix amygdaloides*	Peachleaf Willow	14.5	Good	No	No	Yes	2T; 9.0"	No
270611	13283891.1	3493	SAAM	*Salix amygdaloides*	Peachleaf Willow	7.2	Poor	No	No	Yes		No
270618	13283888	3494	SAAM	*Salix amygdaloides*	Peachleaf Willow	7.0	Fair	No	No	Yes		No
270615	13283898.5	3495	SAAM	*Salix amygdaloides*	Peachleaf Willow	12.5	Fair	No	No	Yes		No
270614	13283901.4	3496	SAAM	*Salix amygdaloides*	Peachleaf Willow	16.6	Good	No	No	Yes		No
270553	13283885.7	3497	SAAM	*Salix amygdaloides*	Peachleaf Willow	31.0	Good	No	No	Yes	Fused trunk	No
270501	13283880.3	3498	PODE	*Populus deltoides*	Eastern Cottonwood	35.0	Good	No	No	Yes		No
270508	13283879.6	3499	PODE	*Populus deltoides*	Eastern Cottonwood	25.6	Good	No	No	Yes		No
270494	13283893.7	3500	PODE	*Populus deltoides*	Eastern Cottonwood	17.7	Good	No	No	Yes		No
270156	13284280.5	3501	SASP	*Salix discolor*	Pussy Willow	11.0	Excellent	No	No	Yes	3T; 8.2" + 6.0"	Yes
270183	13284345.6	3502	PODE	*Populus deltoides*	Eastern Cottonwood	10.2	Good	No	No	Yes		Yes
270190	13284347.8	3503	PODE	*Populus deltoides*	Eastern Cottonwood	11.7	Excellent	No	No	Yes		Yes
270180	13284327.4	3504	JUNI	*Juglans nigra*	Black Walnut	10.6	Good	No	Yes***	No		Yes
270025	13284342.5	3505	THOC	*Thuja occidentalis*	Arborvitae	12.5	Excellent	Yes	No	No		Yes
270025	13284334	3506	THOC	*Thuja occidentalis*	Arborvitae	16.9	Excellent	Yes	No	No		Yes
270019	13284340	3507	THOC	*Thuja occidentalis*	Arborvitae	9.0	Fair	No	No	No	2T; 8.7"	Yes
270019	13284341.6	3508	THOC	*Thuja occidentalis*	Arborvitae	8.4	Fair	No	No	No	Leaning tree	Yes
270008	13284345.8	3509	THOC	*Thuja occidentalis*	Arborvitae	12.3	Fair	Yes	No	No	Leaning tree; 2T; 9.0"	Yes
270013	13284352	3510	ACNE	*Acer negundo*	Box-elder	15.0	Fair	No	No	Yes	Leaning tree	Yes
270012	13284350	3511	THOC	*Thuja occidentalis*	Arborvitae	15.0	Fair	Yes	No	No	Leaning tree	Yes
270045	13284392.3	3512	PIST	*Pinus strobus*	White Pine	19.2	Good	Yes	No	No		Yes
270062	13284360.2	3513	RHCA	*Rhamnus cathartica*	Box-elder	7.2	Fair	No	No	Yes		Yes
270087	13284364.7	3514	PIAB	*Picea abies*	Norway Spruce	21.7	Excellent	Yes	No	No		Yes
270080	13284367.7	3515	PIAB	*Picea abies*	Norway Spruce	17.2	Good	No	Yes***	No		Yes
270064	13284369.1	3516	THOC	*Thuja occidentalis*	Arborvitae	11.6	Excellent	No	Yes***	No		Yes
270067	13284433.7	3517	ACNE	*Acer negundo*	Box-elder	7.6	Good	No	No	Yes		Yes
270072	13284450.7	3518	PIGL	*Picea glauca*	White Spruce	14.0	Good	No	Yes***	No		Yes
270010	13284412.3	3519	PIST	*Pinus strobus*	White Pine	23.1	Good	Yes	No	No		Yes
269999	13284455.7	3520	PIST	*Pinus strobus*	White Pine	19.2	Good	Yes	No	No		Yes
269971	13284376.2	3521	JUNI	*Juglans nigra*	Black Walnut	10.3	Good	No	Yes***	No		Yes
269987	13284359.6	3522	MAPU	*Malus pumila*	Apple	8.1	Fair	No	Yes***	No		Yes
269953	13284396.1	3523	THOC	*Thuja occidentalis*	Arborvitae	13.7	Fair	Yes	No	No	2T; 8.5"	Yes
269920	13284400.8	3524	JUNI	*Juglans nigra*	Black Walnut	13.0	Good	No	No	No		No
269953	13284430.6	3525	ACPL	*Acer platinoides*	Norway Maple	28.8	Good	Yes	No	No		Yes
269947	13284475.5	3526	PIST	*Pinus strobus*	White Pine	19.7	Excellent	Yes	No	No		Yes
269940	13284473.4	3527	PIST	*Pinus strobus*	White Pine	18.1	Good	Yes	No	No		Yes
269883	13284462.8	3528	THOC	*Thuja occidentalis*	Arborvitae	8.4	Poor	No	Yes***	No	2T; 4.7"	Yes
269878	13284446.8	3529	THOC	*Thuja occidentalis*	Arborvitae	8.3	Poor	No	No	No		Yes
269888	13284472.1	3530	ACSA	*Acer saccharum*	Sugar Maple	15.0	Poor	No	No	No		Yes
269915	13284435.7	3531	RHCA	*Rhamnus cathartica*	Common Buckthorn	5.6	Fair	No	No	Yes	2T; 4.8"	Yes
269959	13284485.2	3532	PIST	*Pinus strobus*	White Pine	12.8	Good	No	Yes***	No		Yes
269926	13284496.1	3533	PIAB	*Picea abies*	Norway Spruce	17.6	Good	No	No	No		Yes
269962	13284491.6	3534	PIST	*Pinus strobus*	White Pine	18.0	Excellent	Yes	No	No		Yes
269972	13284510.7	3535	JUNI	*Juglans nigra*	Black Walnut	10.1	Good	No	Yes***	No		Yes
269979	13284496.1	3536	PIST	*Pinus strobus*	White Pine	18.3	Good	Yes	No	No		Yes
269996	13284553.7	3537	ULAM	*Ulmus americana*	American Elm	6.0	Good	No	No	Yes**	2T; 4.0"	Yes
269962	13284549.7	3538	JUNI	*Juglans nigra*	Black Walnut	9.1	Good	No	Yes***	No		Yes
270010	13284592.3	3539	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	7.8	Good	No	Yes***	No		Yes
270019	13284606.8	3540	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	6.4	Good	No	Yes***	No		Yes
270032	13284612	3541	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	6.9	Excellent	No	Yes***	No		Yes
270032	13284615.1	3542	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	7.3	Excellent	No	Yes***	No		Yes
270046	13284626.7	3543	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	5.8	Fair	No	No	No	2T; 3.0"	Yes
270053	13284633.8	3544	GYDI	*Gymnocladus dioicus*	Kentucky Coffee-Tree	10.9	Good	No	Yes***	No		Yes
270455	13283841.3	12758	RHCA	*Rhamnus cathartica*	Common Buckthorn	7.0	Poor	No	No	Yes	Dead lower branches	No
270409	13283835.1	12759	RHCA	*Rhamnus cathartica*	Common Buckthorn	10.5	Fair	No	No	Yes	Dead lower branches	No
270427	13283821.3	12760	CRSP	*Crataegus spp.*	Hawthorn	6.3	Fair	No	No	No		Yes
270462	13284663.5	12761	PODE	*Populus deltoides*	Eastern Cottonwood	7.4	Good	No	No	Yes		Yes
270471	13284661	12762	PODE	*Populus deltoides*	Eastern Cottonwood	6.5	Excellent	No	No	Yes		Yes
270653	13284572.3	12763	PODE	*Populus deltoides*	Eastern Cottonwood	10.3	Excellent	No	No	Yes		Yes
270718	13284564.3	12764	PODE	*Populus deltoides*	Eastern Cottonwood	5.1	Good	No	No	Yes	2T; 4.3"	Yes
270754	13284573.3	12765	PODE	*Populus deltoides*	Eastern Cottonwood	7.7	Good	No	No	Yes		Yes
270817	13284558.8	12766	PODE	*Populus deltoides*	Eastern Cottonwood	7.5	Good	No	No	Yes		Yes
270830	13284558.9	12767	PODE	*Populus deltoides*	Eastern Cottonwood	8.3	Good	No	No	Yes		Yes
270848	13284549.6	12768	ACNE	*Acer negundo*	Box-elder	6.8	Fair	No	No	Yes		No
270850	13284551.3	12769	RHCA	*Rhamnus cathartica*	Common Buckthorn	7.2	Good	No	No	Yes		No
270865	13284551.9	12770	ULAM	*Ulmus americana*	American Elm	6.9	Fair	No	No	Yes**		No
270863	13284555.5	12771	RHCA	*Rhamnus cathartica*	Common Buckthorn	6.2	Fair	No	No	Yes	2T; 3.1"	No
270868	13284551.5	12772	ULAM	*Ulmus americana*	American Elm	11.3	Good	No	No	Yes**		No
270851	13284535.4	12773	ULAM	*Ulmus americana*	American Elm	7.3	Good	No	No	Yes**		No
270860	13284511.5	12774	FRAM	*Fraxinus americana*	White Ash	6.0	Poor	No	No	Yes		No
270850	13284509.9	12775	JUNI	*Juglans nigra*	Black Walnut	14.0	Excellent	No	Yes***	No		No
270856	13284454.6	12776	RHCA	*Rhamnus cathartica*	Common Buckthorn	4.0	Fair	No	No	Yes	2T; 4.0"	No
270850	13284434.5	12777	ULAM	*Ulmus americana*	American Elm	11.9	Good	No	No	Yes**		No
270853	13284424.5	12778	RHCA	*Rhamnus cathartica*	Common Buckthorn	6.3	Good	No	No	Yes	2T; 3.7"	No
270858	13284407.8	12779	RHCA	*Rhamnus cathartica*	Common Buckthorn	6.4	Fair	No	No	Yes	5T; 5.2"+ 5.0" + 4.5"+ 4.4"	No
270852	13284406.8	12780	ULAM	*Ulmus americana*	American Elm	10.0	Fair	No	No	Yes**		No
270839	13284399	12781	FRAM	*Fraxinus americana*	White Ash	6.0	Fair	No	No	Yes		Yes
270849	13284396.9	12782	ULAM	*Ulmus americana*	American Elm	8.8	Fair	No	No	Yes**		No
270848	13284387.5	12783	ULAM	*Ulmus americana*	American Elm	22.4	Fair	No	No	Yes**	Fused trunk	No
270849	13284345.4	12784	PODE	*Populus deltoides*	Eastern Cottonwood	7.9	Good	No	No	Yes		No
270851	13284344	12785	PODE	*Populus deltoides*	Eastern Cottonwood	8.1	Good	No	No	Yes**		No
270840	13284341.7	12786	ULAM	*Ulmus americana*	American Elm	7.3	Good	No	No	Yes		No
270841	13284334.2	12787	PODE	*Populus deltoides*	Eastern Cottonwood	6.0	Good	No	No	Yes		No
270844	13284310.3	12788	PODE	*Populus deltoides*	Eastern Cottonwood	9.1	Good	No	No	Yes		No
270853	13284310.2	12789	PODE	*Populus deltoides*	Eastern Cottonwood	8.3	Good	No	No	Yes		No
270854	13284311.5	12790	PODE	*Populus deltoides*	Eastern Cottonwood	8.0	Good	No	No	Yes		No
270853	13284318.7	12791	SAFR	*Salix fragilis*	Crack Willow	7.2	Fair	No	No	Yes	Non-native	No
270426	13283821.3	12794	ULRU	*Ulmus rubra*	Slippery/Red Elm	11.6	Excellent	No	No	No		Yes
270412	13283845.4	12800	RHCA	*Rhamnus cathartica*	Common Buckthorn	6.6	Fair	No	No	Yes		No

*According to Pittsfield Township Prohibited Weeds and/or Invasive Plant List. 2015 available: http:./www.michigan.gov/mdard/0,1607,7-125-1569_16993-11250--,00.html

**Except Ulmus americana cultivars that are restistant to Dutch Elm Disease

*** Mitigation Required

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

TREE LIST

DATE JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 25 50
1" = 50 FEET

DR. CR CH. ---
P.M. MB
BOOK ---
JOB 16000137
SHEET NO. 05

\PLAN SETS\SITE-FINAL\16000137SF-02-EC.DWG 10/10/2018 12:51 PM KYLER SHEERIN

Northing	Easting	Tree Tag #	Data Code	*Botanical Name*	Common Name	Diameter (inches)	Condition	Heritage Tree	Woodland Tree	Weeds & Invasive List*	Comments	To Be Removed
270879	13284460.4	4101	ULAM	*Ulmus americana*	*American Elm*	8.0	Poor	No	No	Yes**	Inner bark decay	No
270876	13284477.9	4102	PODE	*Populus deltoides*	*Cottonwood*	6.5	Good	No	No	Yes		No
270898	13284479.8	4103	ULAM	*Ulmus americana*	*American Elm*	6.5	Good	No	No	Yes**		No
270898	13284484.2	4104	PODE	*Populus deltoides*	*Cottonwood*	7.5	Good	No	No	Yes		No
270889	13284482.8	4105	ULAM	*Ulmus americana*	*American Elm*	6.5	Good	No	No	Yes**		No
270888	13284479.6	4106	ULAM	*Ulmus americana*	*American Elm*	7.5	Good	No	No	Yes**		No
270876	13284483.7	4107	PODE	*Populus deltoides*	*Cottonwood*	6.5	Good	No	No	Yes		No
270886	13284480	4108	PODE	*Populus deltoides*	*Cottonwood*	8.0	Fair	No	No	Yes		No
270888	13284490	4109	PODE	*Populus deltoides*	*Cottonwood*	8.0	Fair	No	No	Yes	Canker	No
270889	13284489.3	4110	PODE	*Populus deltoides*	*Cottonwood*	6.5	Good	No	No	Yes		No
270873	13284493.6	4111	PODE	*Populus deltoides*	*Cottonwood*	7.0	Good	No	No	Yes		No
270874	13284535.6	4112	PODE	*Populus deltoides*	*Cottonwood*	8.5	Good	No	No	Yes		No
270861	13284526.7	4113	JUNI	*Juglans nigra*	*Black Walnut*	6.0	Excellent	No	Yes***	No		No
270883	13284527.3	4114	SANI	*Salix nigra*	*Black Willow*	7.5	Good	No	No	Yes		No
270875	13284526	4115	SANI	*Salix nigra*	*Black Willow*	8.0	Poor	No	No	Yes	3 Trunks (3T); inner bark decay	No
270896	13284529.5	4116	SANI	*Salix nigra*	*Black Willow*	8.5	Fair	No	No	Yes		No
270884	13284515.6	4117	SANI	*Salix nigra*	*Black Willow*	12.0	Poor	No	No	Yes	2 Trunks (2T); inner bark decay	No
270892	13284503.5	4118	SANI	*Salix nigra*	*Black Willow*	6.5	Poor	No	No	Yes	evidence of decay; 2T	No
270921	13284496.9	4119	PODE	*Populus deltoides*	*Cottonwood*	8.0	Good	No	No	Yes		No
270915	13284506.2	4120	PODE	*Populus deltoides*	*Cottonwood*	6.5	Good	No	No	Yes		No
270910	13284521.3	4121	PODE	*Populus deltoides*	*Cottonwood*	8.0	Good	No	No	Yes		No
270904	13284526.6	4122	SANI	*Salix nigra*	*Black Willow*	6.5	Poor	No	No	Yes	inner bark decay	No
270909	13284529.5	4123	SANI	*Salix nigra*	*Black Willow*	7.5	Good	No	No	Yes		No
270909	13284533.7	4124	PODE	*Populus deltoides*	*Cottonwood*	7.5	Good	No	No	Yes	canker, evidence of decay	No
270902	13284535.3	4125	SANI	*Salix nigra*	*Black Willow*	10.0	Good	No	No	Yes		No
270907	13284541.7	4126	SANI	*Salix nigra*	*Black Willow*	6.5	Poor	No	No	Yes	nner bark decay, dead lower branche	No
270901	13284539.2	4127	SANI	*Salix nigra*	*Black Willow*	7.0	Good	No	No	Yes		No
270919	13284540.3	4128	SANI	*Salix nigra*	*Black Willow*	10.5	Good	No	No	Yes		No
270929	13284557.6	4129	RHCA	*Rhamnus cathartica*	*Common Buckthorn*	7.5	Fair	No	No	Yes	fused trunk measurements	Yes
270917	13284527.9	4130	SANI	*Salix nigra*	*Black Willow*	6.0	Fair	No	No	Yes	inner bark decay	No
270940	13284507	4131	ULAM	*Ulmus americana*	*American Elm*	11.5	Good	No	No	Yes**		No
270940	13284516.9	4132	ULAM	*Ulmus americana*	*American Elm*	6.0	Fair	No	No	Yes**	leaning tree	No
270945	13284518.4	4133	ULAM	*Ulmus americana*	*American Elm*	14.5	Good	No	No	Yes**		No
270935	13284521.7	4134	JUNI	*Juglans nigra*	*Black Walnut*	12.0	Good	No	Yes***	No		No
270931	13284520.1	4135	ULAM	*Ulmus americana*	*American Elm*	7.0	Good	No	No	Yes**		No
270952	13284548.6	4136	ULAM	*Ulmus americana*	*American Elm*	7.5	Good	No	No	Yes**		No
270951	13284551.6	4137	SANI	*Salix nigra*	*Black Willow*	6.5	Fair	No	No	Yes	Inner bark rot	No
270944	13284546.4	4138	ULAM	*Ulmus americana*	*American Elm*	6.5	Good	No	No	Yes**		No
270969	13284553.3	4139	ULAM	*Ulmus americana*	*American Elm*	7.0	Good	No	No	Yes**		No
270973	13284548.1	4140	PODE	*Populus deltoides*	*Cottonwood*	11.0	Good	No	No	Yes		No
270983	13284531	4141	ULAM	*Ulmus americana*	*American Elm*	10.5	Good	No	No	Yes**		No
270981	13284517.8	4142	ULAM	*Ulmus americana*	*American Elm*	6.5	Good	No	No	Yes**		No
270977	13284510.6	4143	ULAM	*Ulmus americana*	*American Elm*	14.0	Good	No	No	Yes**		No
270992	13284518.2	4144	ULAM	*Ulmus americana*	*American Elm*	8.5	Good	No	No	Yes**		No
271002	13284548.2	4145	SANI	*Salix nigra*	*Black Willow*	10.5	Good	No	No	Yes		No
271003	13284548.1	4146	SANI	*Salix nigra*	*Black Willow*	8.0	Good	No	No	Yes		No
271004	13284547.5	4147	SANI	*Salix nigra*	*Black Willow*	6.5	Good	No	No	Yes		No
271024	13284525.4	4148	SANI	*Salix nigra*	*Black Willow*	10.5	Good	No	No	Yes		No
271031	13284512.4	4149	PODE	*Populus deltoides*	*Cottonwood*	10.5	Good	No	No	Yes		No
271036	13284506.8	4150	PODE	*Populus deltoides*	*Cottonwood*	10.0	Good	No	No	Yes		No
271041	13284511	4151	PODE	*Populus deltoides*	*Cottonwood*	12.5	Good	No	No	Yes		No
271094	13284542.5	4152	SANI	*Salix nigra*	*Black Willow*	9.5	Good	No	No	Yes		No
271088	13284538.7	4153	PODE	*Populus deltoides*	*Cottonwood*	12.0	Good	No	No	Yes		No
271093	13284534.6	4154	SANI	*Salix nigra*	*Black Willow*	7.5	Good	No	No	Yes		No
271083	13284533.5	4155	PODE	*Populus deltoides*	*Cottonwood*	14.0	Fair	No	No	Yes	canker, evidence of decay	No
271067	13284526.2	4156	ULAM	*Ulmus americana*	*American Elm*	9.5	Good	No	No	Yes**		No
271148	13284540.1	4157	SANI	*Salix nigra*	*Black Willow*	8.0	Good	No	No	Yes		No
271147	13284553	4158	SANI	*Salix nigra*	*Black Willow*	12.0	Good	No	No	Yes		Yes
271126	13284540	4159	PODE	*Populus deltoides*	*Cottonwood*	10.5	Fair	No	No	Yes	canker, evidence of decay	No
271127	13284535.5	4160	PODE	*Populus deltoides*	*Cottonwood*	10.5	Excellent	No	No	Yes		No
271178	13284530.3	4161	ULAM	*Ulmus americana*	*American Elm*	11.0	Good	No	No	Yes		No
271194	13284510.1	4162	PODE	*Populus deltoides*	*Cottonwood*	11.0	Good	No	No	Yes		No
271187	13284516.5	4163	PODE	*Populus deltoides*	*Cottonwood*	8.5	Good	No	No	Yes		No
271201	13284522.1	4164	ULAM	*Ulmus americana*	*American Elm*	7.5	Good	No	No	Yes**		No
271194	13284524.6	4165	SANI	*Salix nigra*	*Black Willow*	11.5	Fair	No	No	Yes	inner bark decay	No
271206	13284525.3	4166	SANI	*Salix nigra*	*Black Willow*	10.5	Good	No	No	Yes		No
271198	13284531.4	4167	SANI	*Salix nigra*	*Black Willow*	15.5	Fair	No	No	Yes	Inner bark rot	No
271202	13284537.2	4168	SANI	*Salix nigra*	*Black Willow*	15.5	Good	No	No	Yes		No
271204	13284533.1	4169	SANI	*Salix nigra*	*Black Willow*	17.5	Fair	No	No	Yes	3T; Structural defect	No
271215	13284531.5	4170	SANI	*Salix nigra*	*Black Willow*	10.5	Good	No	No	Yes		No
271233	13284513.7	4171	PODE	*Populus deltoides*	*Cottonwood*	7.0	Good	No	No	Yes		No
271226	13284502.3	4172	PODE	*Populus deltoides*	*Cottonwood*	17.0	Excellent	No	No	Yes		No
271245	13284520.7	4173	ACNE	*Acer negundo*	*Box-elder*	10.0	Good	No	No	Yes		No
271252	13284514.4	4174	PODE	*Populus deltoides*	*Cottonwood*	9.0	Good	No	No	Yes		No
271264	13284518.3	4175	PODE	*Populus deltoides*	*Cottonwood*	11.5	Good	No	No	Yes		No
271246	13284540.6	4176	SANI	*Salix nigra*	*Black Willow*	22.0	Fair	No	No	Yes	Inner bark decay	No
271255	13284539.8	4177	SANI	*Salix nigra*	*Black Willow*	9.0	Good	No	No	Yes		No
271273	13284540.9	4178	ULAM	*Ulmus americana*	*American Elm*	8.5	Good	No	No	Yes**		No
271277	13284543.2	4179	SANI	*Salix nigra*	*Black Willow*	9.5	Fair	No	No	Yes	leaning tree	No
271280	13284530.7	4180	ULAM	*Ulmus americana*	*American Elm*	10.5	Good	No	No	Yes**	fused trunk measurement	No
271285	13284529.6	4181	ULAM	*Ulmus americana*	*American Elm*	6.5	Good	No	No	Yes**	Dead tree leaning on this tree.	No
271285	13284525.3	4182	ULAM	*Ulmus americana*	*American Elm*	7.0	Good	No	No	Yes**	2T	No
271295	13284540.1	4183	SANI	*Salix nigra*	*Black Willow*	44.0	Fair	No	No	Yes	2T; inner bark decay	No
271295	13284538.3	4184	SANI	*Salix nigra*	*Black Willow*	41.5	Fair	No	No	Yes	leaning tree; structural defect	No
271301	13284532.2	4185	ULAM	*Ulmus americana*	*American Elm*	7.0	Good	No	No	Yes**		No
271323	13284536	4186	ULAM	*Ulmus americana*	*American Elm*	7.5	Good	No	No	Yes**		No
271326	13284544.2	4187	SANI	*Salix nigra*	*Black Willow*	12.0	Fair	No	No	Yes	2T; inner bark decay	Yes
271324	13284542	4188	SANI	*Salix nigra*	*Black Willow*	12.0	Fair	No	No	Yes	Inner bark decay	Yes
271337	13284529.9	4189	MASP	*Malus pumila*	*Apple*	9.0	Good	No	Yes***	No	one canker	No
270870	13284546.4	4218	RHCA	*Rhamnus cathartica*	*Common Buckthorn*	6.5	Fair	No	No	Yes	4 Trunks (4T)	No
270903	13284565.9	4219	ULAM	*Ulmus americana*	*American Elm*	6.0	Good	No	No	Yes**		Yes
270863	13284445.2	4220	ULAM	*Ulmus americana*	*American Elm*	7.5	Fair	No	No	Yes**	3T	No
270869	13284478.9	4221	SANI	*Salix nigra*	*Black Willow*	6.5	Good	No	No	Yes		No
270864	13284476.2	4222	PODE	*Populus deltoides*	*Cottonwood*	6.0	Good	No	No	Yes		No

*According to Pittsfield Township Prohibited Weeds and/or Invasive Plant List. 2015 available: http:./www.michigan.gov/mdard/0,1607,7-125-1569_16993-11250--,00.html

**Except Ulmus americana cultivars that are restistant to Dutch Elm Disease

*** Mitigation Required

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

OFFSITE TREE LIST

DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
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8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 25 50
1" = 50 FEET

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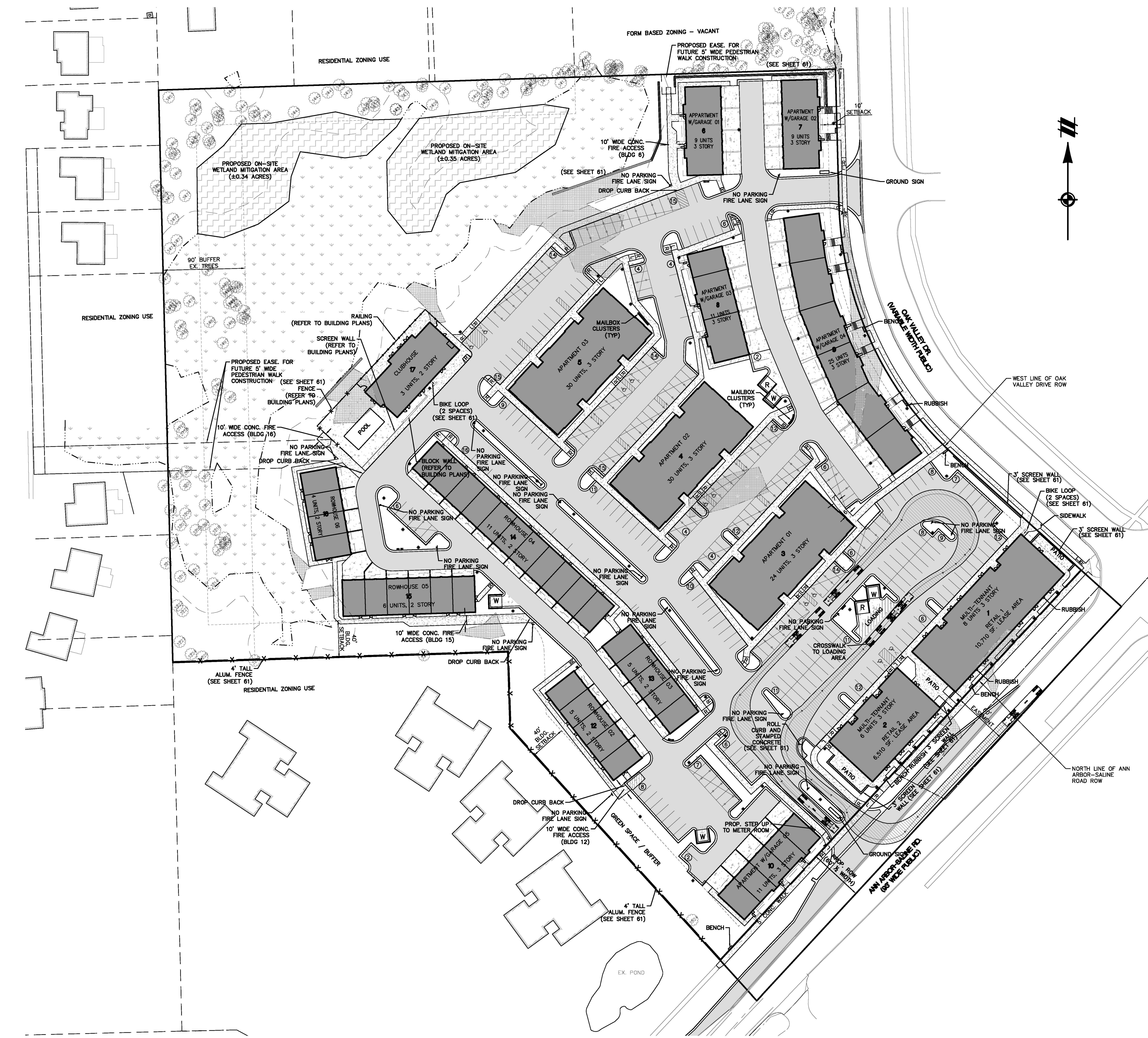
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 06

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15



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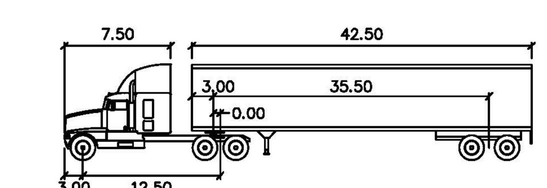
- EXIST. BUILDING
- EXIST. WETLAND BUFFER
- EXIST. WETLAND
- PROP. DEMO WETLAND
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- W R PROP. DUMPSTER
- PROP. CONCRETE
- PROP. ASPH.
- PROP. WETLAND MITIGATION
- PROP. WETLAND FILL
- PROP. ADA PARKING SPACE
- PROP. STANDARD CARPORT
- PROP. CANTILEVERED CARPORT
- PROP. LIGHT POLE

NOTES

1. ALL PUBLIC WALKWAYS AND RAMPS SHALL BE ADA COMPLIANT.
2. ALL DISTURBED AREAS NOT HATCHED WITH BUILDING, ASPHALT, OR CONCRETE HATCH SHALL BE VEGETATED. FOR ADDITIONAL WATER QUALITY MEASURES, VEGETATED SWALES WILL BE INCORPORATED INTO THE GRADING DESIGN IN AS MANY OF THE OPEN VEGETATED AREAS AS THE GRADING DESIGN WILL ALLOW.
3. NO PARKING SIGNS ALONG DRIVES UNDER 26' WIDE AND ALONG BOULEVARD ISLANDS.



WB-50 feet

Tractor Width	: 8.00	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 17.7
Tractor Track	: 8.00	Articulating Angle	: 70.0
Trailer Track	: 8.50		

WB-50 TRUCK DETAIL

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

OVERALL LAYOUT PLAN

DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
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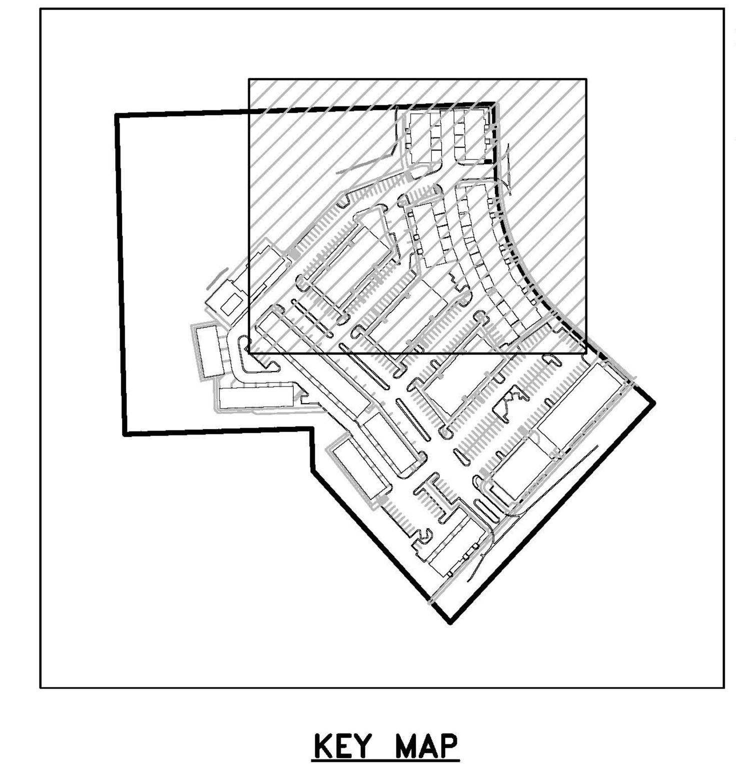
REVISIONS

SCALE 0 25 50
1" = 50 FEET

DR. CR	CH. --
P.M. MB	
BOOK --	
JOB 16000137	
SHEET NO. 07	



KEY MAP
1" = 300'

LEGEND

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BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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FINAL SITE PLAN

LAYOUT PLAN – AREA 1

DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
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SCALE 0 15 30
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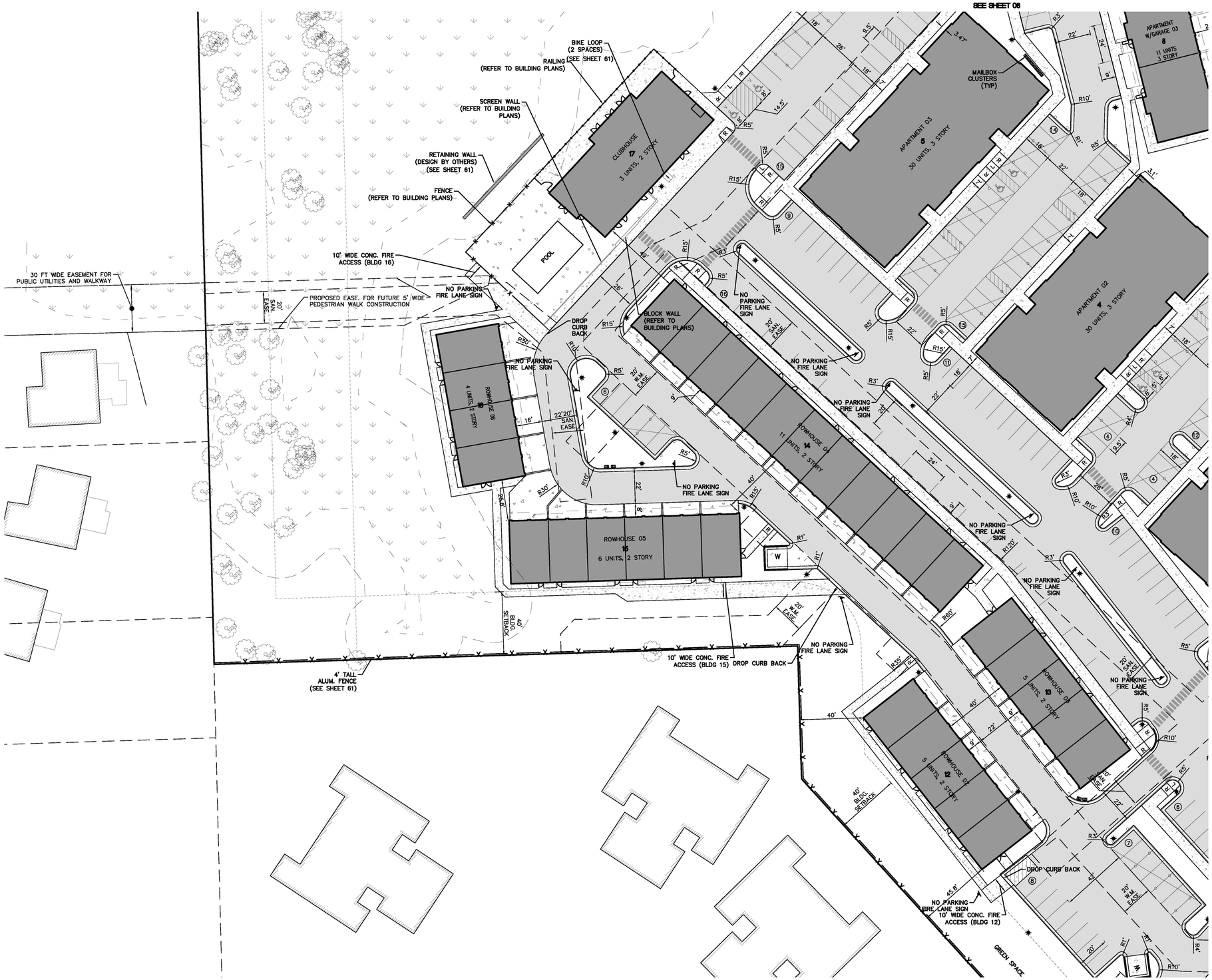
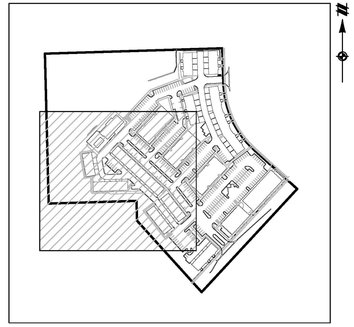
P.M. MB
BOOK --
JOB 16000137
SHEET NO.
08





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BEZTAK - PITTSFIELD
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FINAL SITE PLAN

LAYOUT PLAN – AREA 2

DATE
JUNE 9, 2017

REVISIONS
9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
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SCALE 0 15 30
1" = 30 FEET

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BOOK --
JOB 16000137
SHEET NO. 09

SEE SHEET 08

SEE SHEET 09

APARTMENT 01
3 STORY
24 UNITS

MULTI-TENNANT
6 UNITS 3 STORY
1
RETAIL 1
10,710 SF. LEASE AREA

MULTI-TENNANT
6 UNITS 3 STORY
2
RETAIL 2
6,510 SF. LEASE AREA

APARTMENT W/GARAGE 05
10
11 UNITS, 3 STORY

ROWHOUSE 01
5 UNITS, 2 STORY
13

ROWHOUSE 01
5 UNITS, 2 STORY
12

LOADING

NO PARKING FIRE LANE SIGN

CROSSWALK TO LOADING AREA

3' SCREEN WALL (SEE SHEET 61)

BIKE LOOP (2 SPACES) (SEE SHEET 61)

SIDEWALK

PATIO

RUBBISH (SEE SHEET 60)

6' WALK

10' SETBACK

EASEMENT TO WASHTENAW COUNTY ROAD COMMISSION PER L. 5118 P. 942

BENCH (SEE SHEET 60)

ROLL CURB AND STAMPED CONCRETE

DROP CURB BACK

NO PARKING FIRE LANE SIGN 10' WIDE CONC. FIRE ACCESS (BLDG 12)

GREEN SPACE / BUFFER

4' TALL ALUM. FENCE (SEE SHEET 61)

PROP. STEP UP TO METER ROOM

GROUND SIGN

PROP. ROW (90' R/W)

ANN ARBOR-SALINE RD.

EX. POND

40' BLDG. SETBACK

KEY MAP
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FINAL SITE PLAN

LAYOUT PLAN – AREA 3

DATE
JUNE 9, 2017

REVISIONS
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9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
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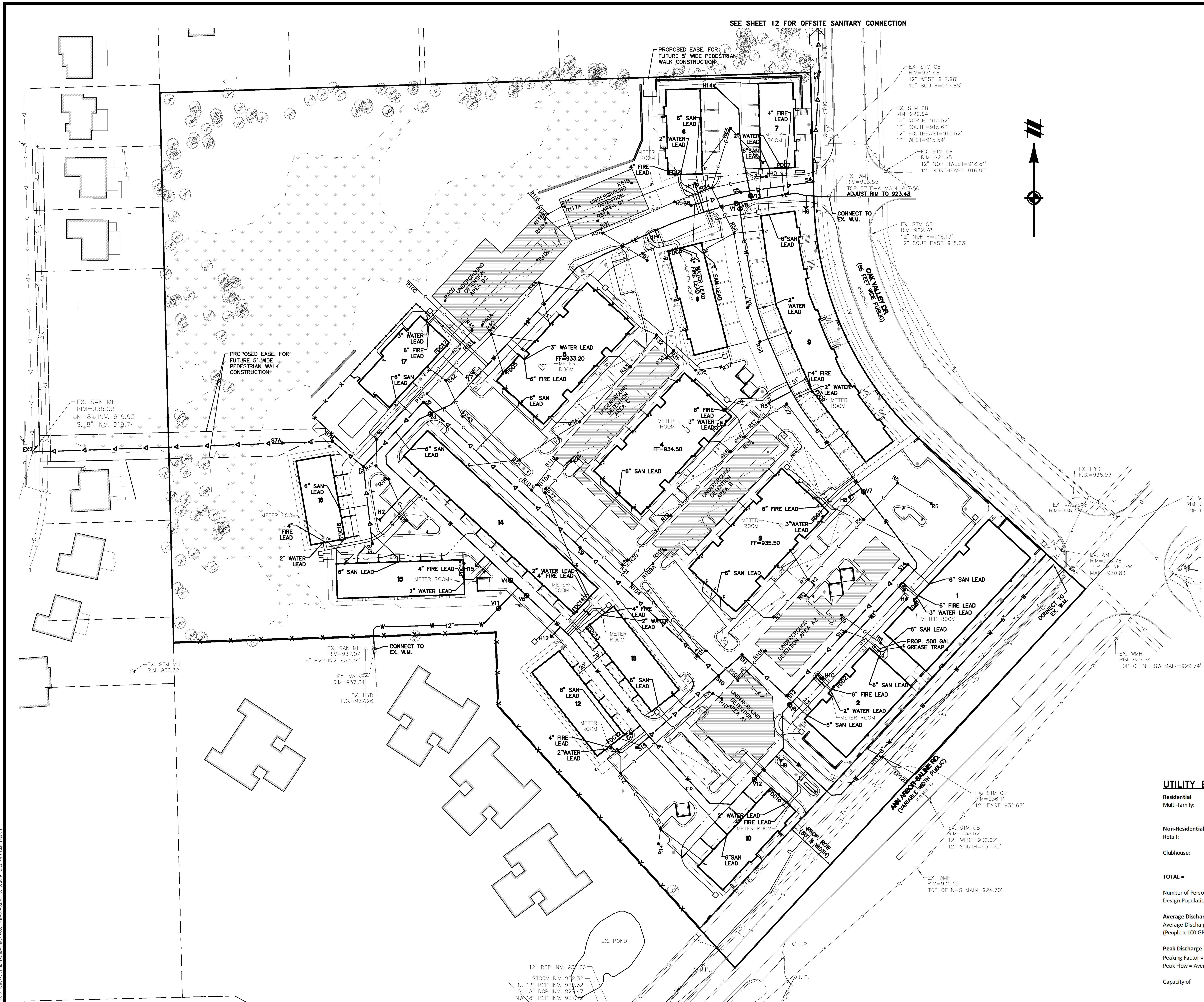
SHEET NO. 10



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- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- PROP. CARPORT
- PROP. LIGHT POLE
- PROP. PIV
- PROP. DOMESTIC CURB STOP
- PROP. ELECTRICAL TRANSFORMER
- PROP. FRANCHISE UTILITY

UTILITY NOTES

1. ALL SANITARY SEWER SHALL BE 10-INCH DIAMETER.
2. WATER MAIN SHALL BE SIZED ACCORDING TO PLAN.
3. SANITARY AND WATER SERVICE LEADS SHALL BE PROVIDED TO EACH BUILDING, NOT EACH INDIVIDUAL APARTMENT UNIT.
4. ALL BUILDINGS WILL BE ON SLAB. BASEMENT SANITARY SERVICE AND STORM SEWER SUMP DISCHARGE IS NOT APPLICABLE.
5. WATER AND SANITARY, EASEMENTS AS SHOWN ARE 20' WIDE, CENTERED ON THE RESPECTIVE UTILITY.
6. GREASE TRAP TO BE 500 GALLON INTERCEPTOR AS MANUFACTURED BY ADVANCE CONCRETE PRODUCTS, OR APPROVED ALTERNATE.
7. COMPACTION OF UTILITY TRENCHES IS REQUIRED UNDER ROADWAY CORRIDORS, SIDEWALKS AND PARKING LOTS. TRENCH BACKFILL SHALL BE CLASS II GRANULAR BACKFILL AT 95% COMPACTION.
8. A GREASE INTERCEPTOR IS BEING INSTALLED FOR THE MIXED USE BUILDINGS, AS REQUIRED. RESTAURANT TENANTS IN THE COMMERCIAL CENTER, IF ANY, WILL ALSO COLLECT GREASE THEMSELVES USING GREASE TRAPS INSTALLED NEAR THE FIXTURES THAT DISCHARGE GREASE DIRECTLY TO THEM AND CONTRACT WITH A COMPANY TO APPROPRIATELY DISPOSE OF THEIR WASTE GREASE. IN THE EVENT THAT A PROSPECTIVE TENANT IS A RESTAURANT OR OTHER GREASE PRODUCING USE, A PROGRAM PROPOSAL FOR CONTINUED MAINTENANCE AND THE TITLE OF THE INDIVIDUAL RESPONSIBLE FOR PERMANENT GREASE TRAP MAINTENANCE MUST BE PROVIDED TO AND APPROVED BY THE TOWNSHIP PRIOR TO ISSUANCE OF A BUILD-OUT PERMIT AND C OF O FOR THE TENANT.
9. REFER TO THE BUILDING DRAWINGS FOR ADDITIONAL CONSTRUCTION INFORMATION. CONTRACTOR SHALL NOTIFY ENGINEER OF ANY CONFLICTS BETWEEN BUILDING DRAWINGS AND THESE PLANS PRIOR TO CONSTRUCTION.

UTILITY BASIS OF DESIGN:

Residential

Multi-family:	197 units				
	1 units/E.R.U. x	197	units =	197	E.R.U.

Non-Residential

Retail:	18,964 S.F.				
	0.35 units/1000 sf	18,964	units =	6.6	E.R.U.
Clubhouse:	4,729 S.F.				
	1.50 units/1000 sf	4,729	units =	7.1	E.R.U.
TOTAL =				**211**	**E.R.U.**

Number of Persons per unit = 3.4 persons/ERU

Design Population = 211 units x 3.4 units = 716 people

Average Discharge Rate

Average Discharge = 100 GPD/person

(People x 100 GPCPD)/(1440 min/day)(448.8 gpm/cfs)= **0.111 cfs**

Peak Discharge Rate

Peaking Factor = $(18 + (\text{Population}/1000)^{0.5})/(4 + (\text{Population}/1000)^{0.5})$ = 3.89

Peak Flow = Average Discharge x Peaking Factor = **0.431 cfs**

Capacity of 10 " pipe @ 0.40 %= 1.39 cfs > 0.431 cfs

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
UTILITY PLAN

DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
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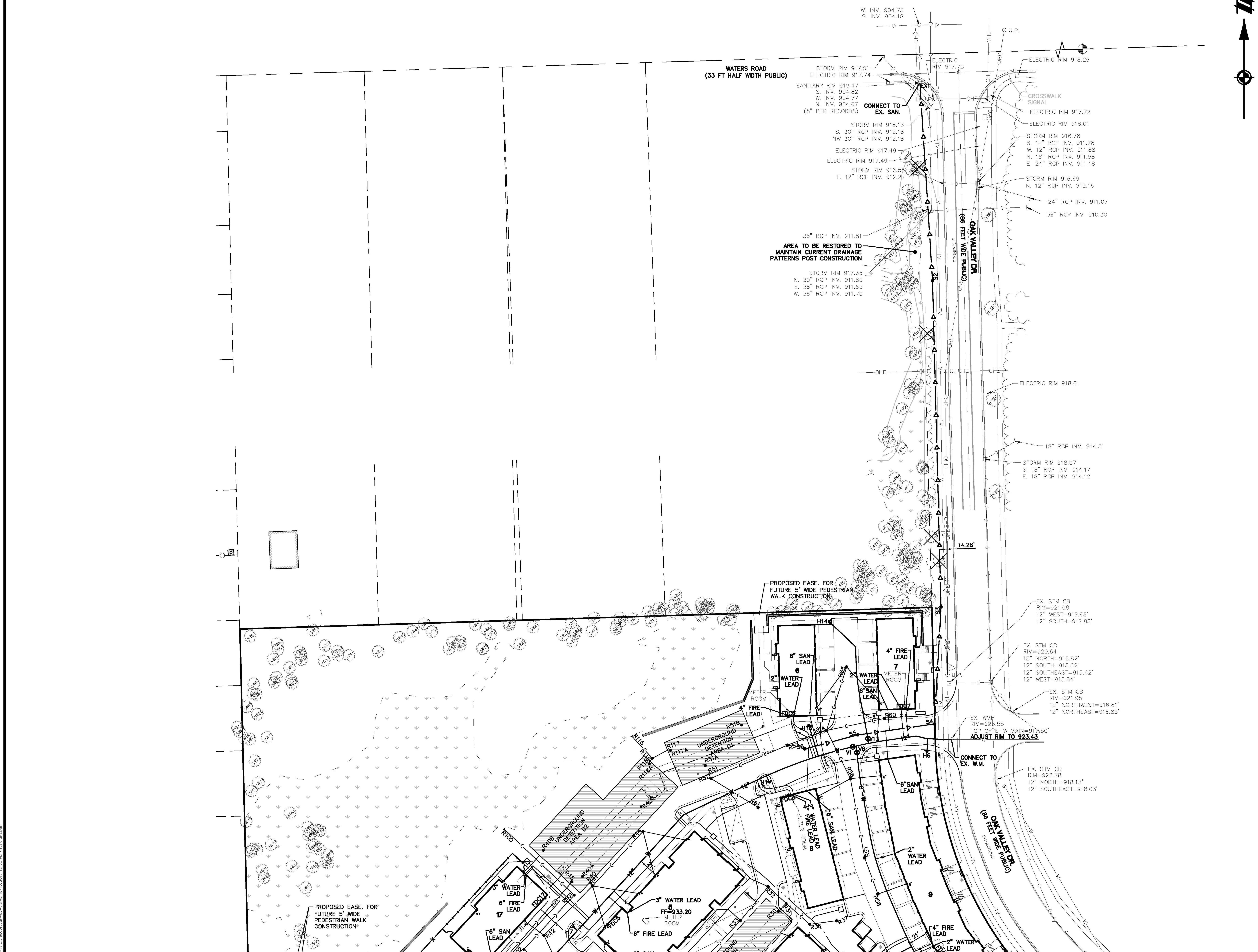
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 25 50
1" = 50 FEET

DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 11



LEGEND

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- EXIST. EASEMENT
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- EXIST. SETBACK
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- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- PROP. CARPORT
- PROP. TREE DEMO.*

*EXISTING TREE(S) TO BE REMOVED SEE SHEET 06 FOR OFFSITE TREE LIST

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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
OFFSITE SANITARY CONNECTION

DATE JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
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10/10/18 PER TWP

REVISIONS

SCALE 0 25 50
1" = 50 FEET

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P.M. MB
BOOK --
JOB 16000137
SHEET NO. 12

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- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- PROP. ASPHALT
- PROP. CONCRETE

GRADING/DRAINAGE/STORMWATER NOTES

1. THE TOTAL REQUIRED DETENTION HAS BEEN DETERMINED IN ACCORDANCE WITH THE WASHTENAW COUNTY WATER RESOURCES COMMISSIONER RULES AND GUIDELINES, REVISED OCTOBER 2016. THE SOILS ARE ASSUMED TO HAVE INFILTRATION RATES LESS THAN 0.1 INCHES AN HOUR AND NOT SUPPORT INFILTRATION. THE DESIGN STORAGE DETERMINED IS 120% OF THE 'REQUIRED VOLUME" DUE TO THE SITE NOT BEING ABLE TO SUPPORT INFILTRATION.
2. THE UNDERGROUND STORMWATER DETENTION SYSTEM IS PLANNED TO BE A MODULAR CONCRETE VAULT SYSTEM, SIMILAR TO THE STORMTRAP (R) PRODUCT OR OTHER APPROVED EQUAL. EACH UNDERGROUND STORMWATER DETENTION SYSTEM WILL HAVE AN ACCESS MANHOLE PROVIDED FOR INSPECTION AND MAINTENANCE. DETAILED DRAWINGS OF THE UNDERGROUND STORMWATER DETENTION SYSTEM WILL BE PROVIDED PRIOR TO CONSTRUCTION PLAN APPROVAL.
3. STORMWATER TREATMENT SHALL BE PROVIDED BY A HYDRODYNAMIC SEPARATOR TREATMENT STRUCTURE AT THE INLET OF EACH UNDERGROUND STORMWATER DETENTION SYSTEM. OUTLET RESTRICTION SHALL BE PROVIDED BY A RESTRICTOR STRUCTURE AT THE OUTLET OF EACH UNDERGROUND STORMWATER DETENTION SYSTEM.
4. RETAINING WALL DESIGN AND CALCULATIONS SHALL BE PROVIDED BY OTHERS PRIOR TO PRE-CONSTRUCTION MEETING.
5. SIDEWALKS AND PARKING FACILITIES HAVE BEEN DESIGNED TO MEET CURRENT ADA REQUIREMENTS.
6. FINISHED FLOOR ELEVATIONS ARE PROPOSED BY THE ARCHITECT TO BE 6" ABOVE THE FINISHED GRADE ELEVATIONS SHOWN ON BUILDINGS 3-10. THE FINISHED FLOOR WILL MATCH THE FINISHED GRADE ON THE REMAINDER OF THE BUILDINGS. THE BOTTOM OF FOOTINGS ARE PROPOSED TO BE 3.5' BELOW THE FINISHED GRADE ELEVATIONS SHOWN.

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C.S.P.A.# 16-15

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

OVERALL GRADING PLAN

DATE JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
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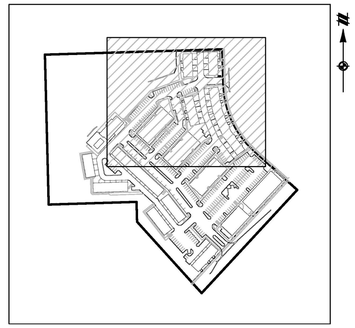
10/10/18 PER TWP
REVISIONS

SCALE 0 25 50
1" = 50 FEET

DR. CR CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 13



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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

GRADING PLAN – AREA 1

DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
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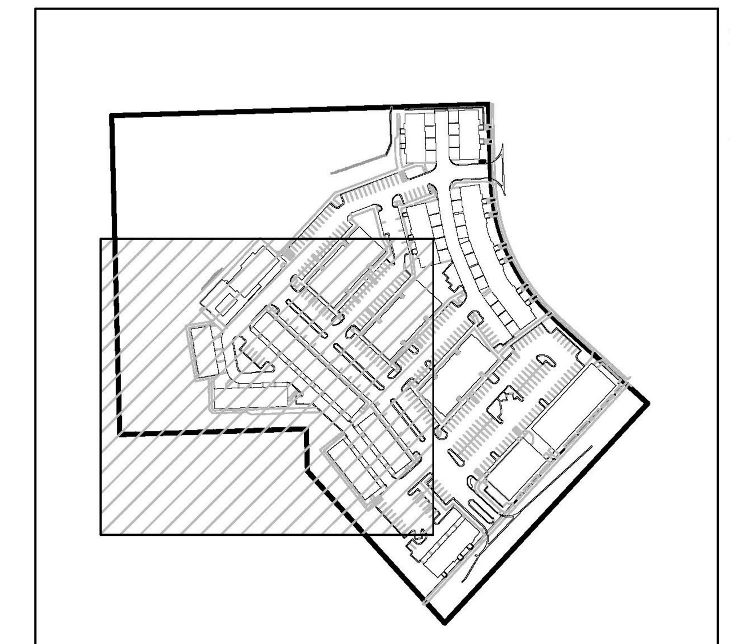
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP

REVISIONS

SCALE 0 15 30
1" = 30 FEET

DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 14

S:\16000137\CAD\A4 SITE\SITE_FINAL\16000137P_A1-SITE 10/10/2018 9:53 AM KYLE GIBSON



KEY MAP

1" = 300'

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BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
GRADING PLAN - AREA 2

DATE JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
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10/10/18 PER TWP
REVISIONS

SCALE 0 15 30
1" = 30 FEET

DR. CR	CH. --
P.M. MB	
BOOK --	
JOB 16000137	
SHEET NO. 15	

SEE SHEET 14

SEE SHEET 15

3' SCREEN WALL

BIKE LOOP (2 SPACES)

BM #1: 937.88'

3' SCREEN WALL

UNDERGROUND DETENTION AREA B

UNDERGROUND DETENTION AREA A2

UNDERGROUND DETENTION AREA A1

FF=935.50

ANN ARBOR-SALINE RD. (VARIABLE WIDTH PUBLIC)

4' TALL ALUM. FENCE (SEE SHEET 61)

MATCH GRADE AND WALK WIDTH

EX. POND

SCREEN WALL

KEY MAP
1" = 300'

LEGEND

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PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

GRADING PLAN – AREA 3

DATE
JUNE 9, 2017

REVISIONS
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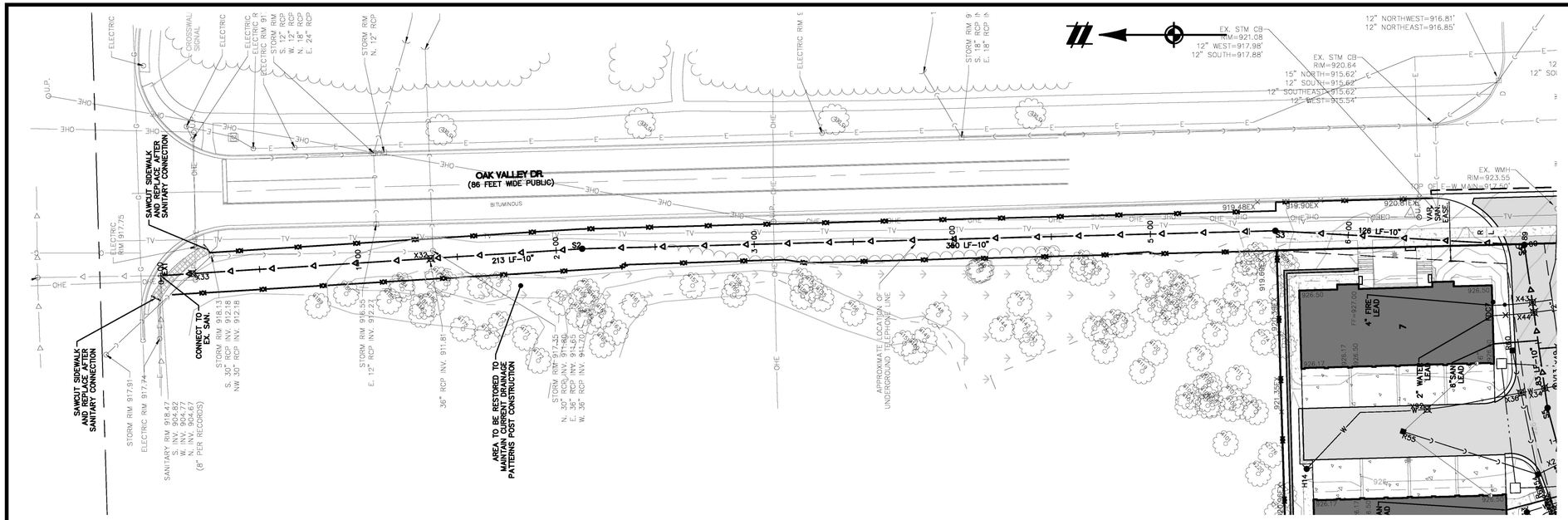
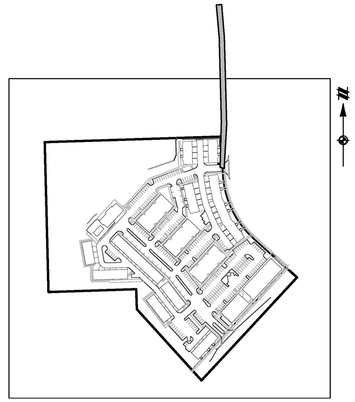
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP

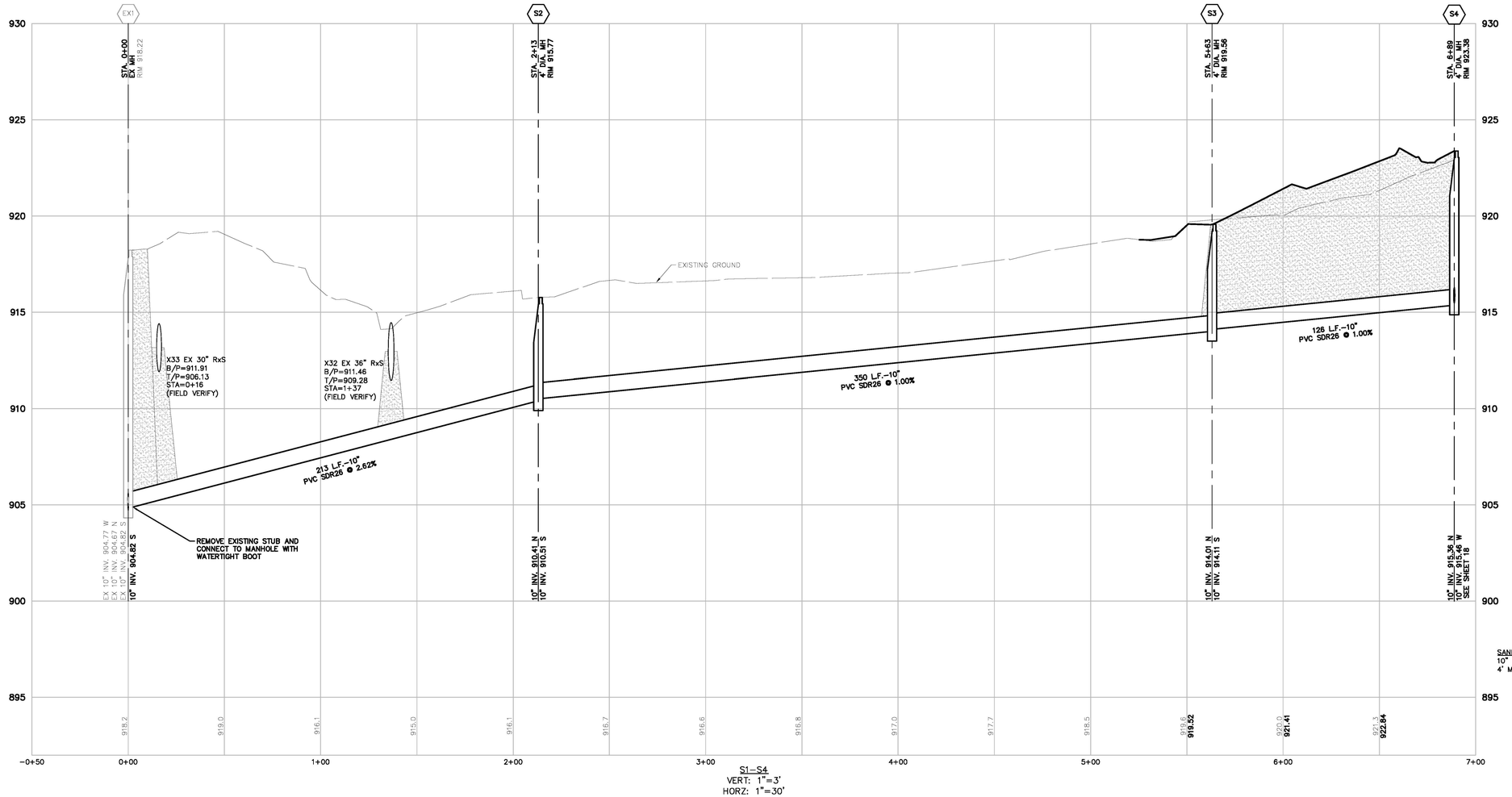
SCALE 0 15 30
1" = 30 FEET

DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 16





KEY MAP
1" = 300'



S1−S4
VERT: 1"=3'
HORZ: 1"=30'

SANITARY:
10" PVC SDR 26 689 LF
4' MANHOLE 3 EA

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- CLASS II SAND COMPACTED TO 95%
- PROP. LIGHT POLE
- PROP. PIV
- PROP. DOMESTIC CURB STOP

Know what's below. Call before you dig.

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

SANITARY PLAN & PROFILE 1

DATE
JUNE 9, 2017

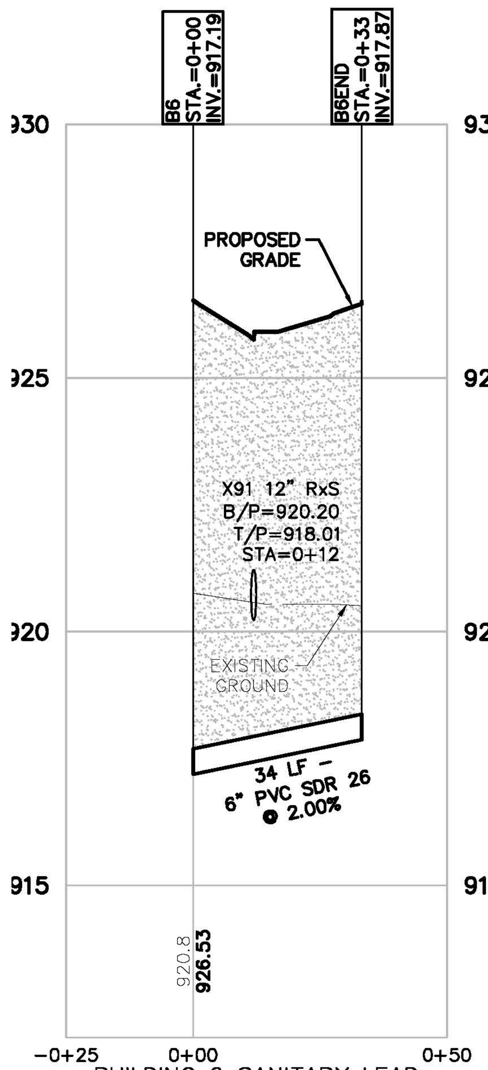
REVISIONS
9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP

SCALE 0 15 30
1" = 30 FEET

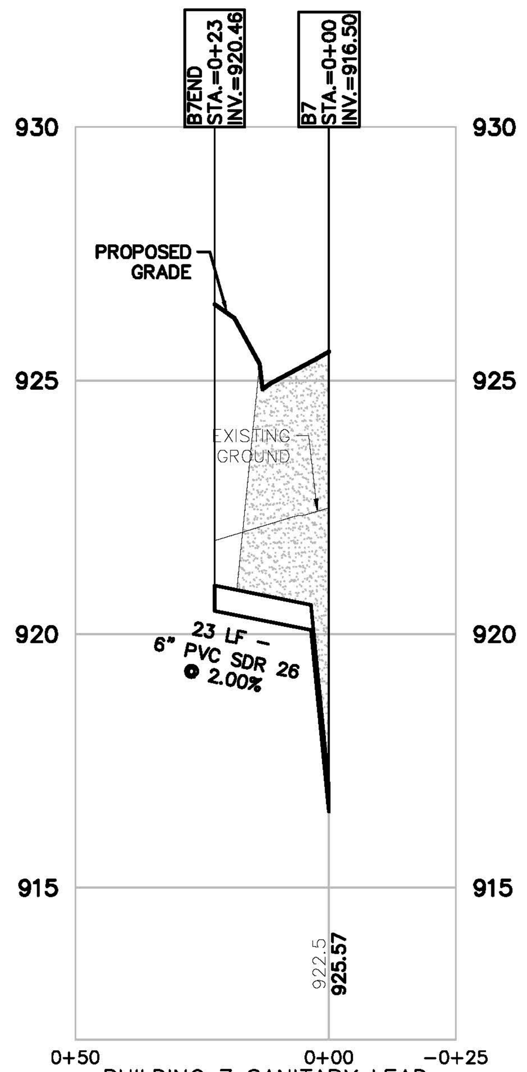
DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 17

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

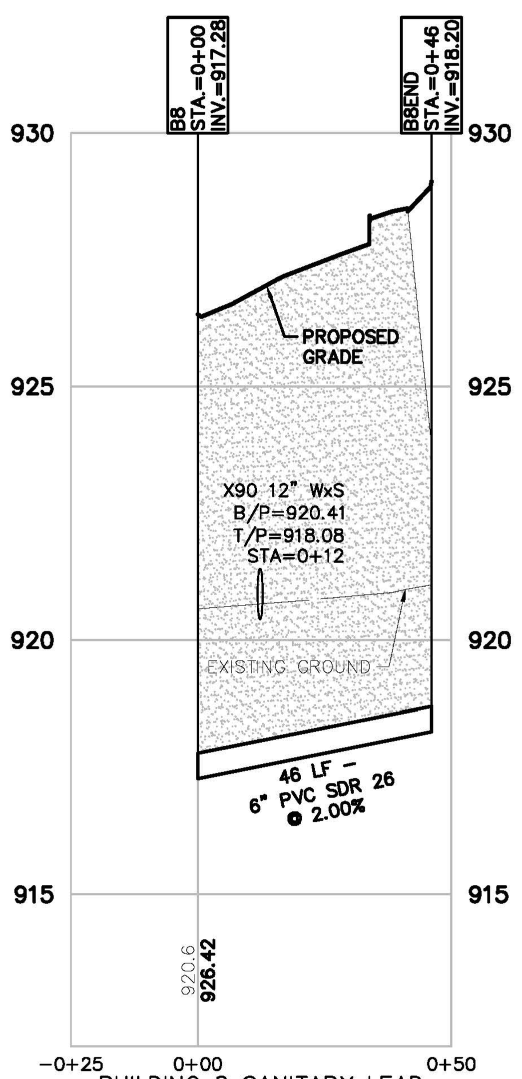
X:\16000137\CIVIL\A_SITE\SITE - FINAL\16000137 -09-SAN.DWG 10/10/2018 12:25 PM KYLE SWITZER



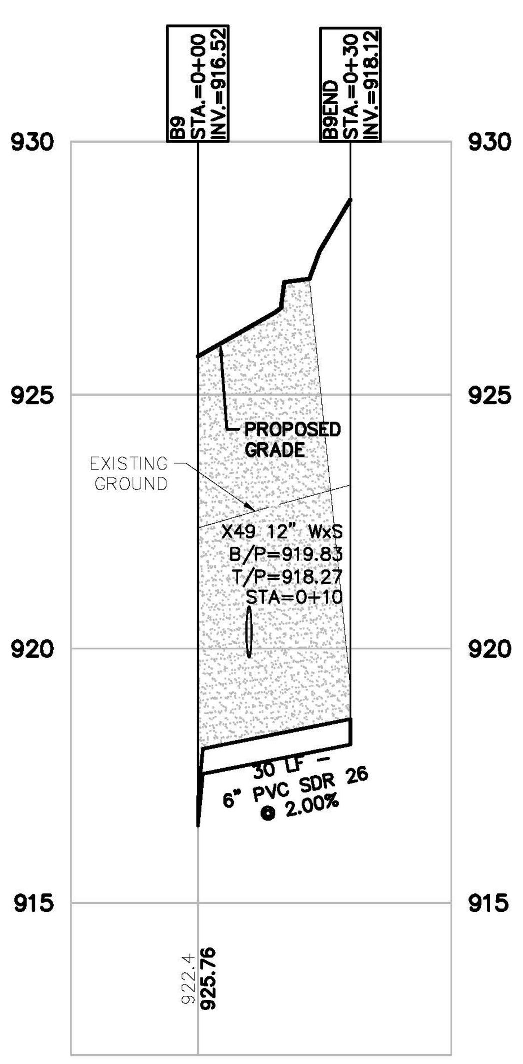
BUILDING 6 SANITARY LEAD
VERT: 1"=3'
HORZ: 1"=30'



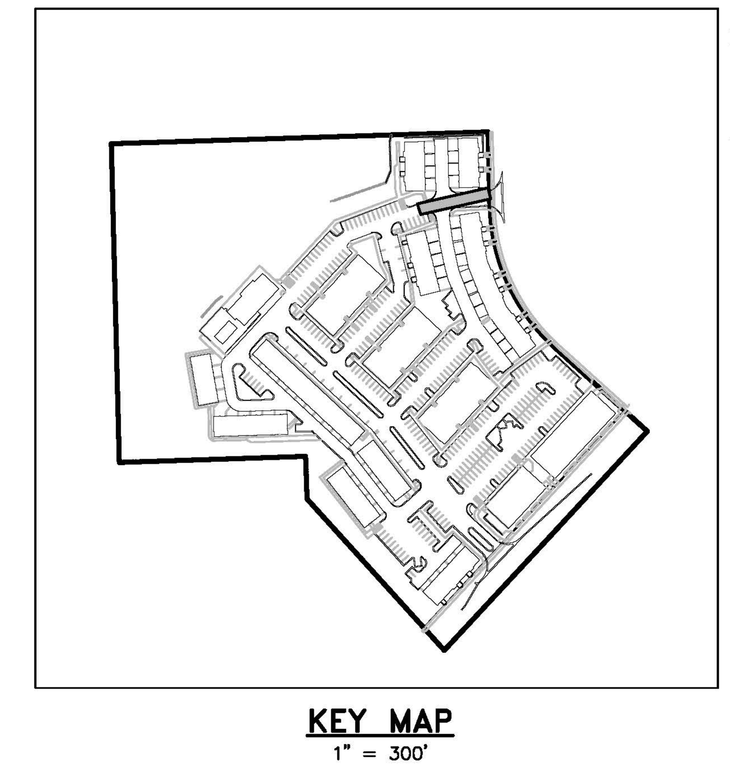
BUILDING 7 SANITARY LEAD
VERT: 1"=3'
HORZ: 1"=30'



BUILDING 8 SANITARY LEAD
VERT: 1"=3'
HORZ: 1"=30'

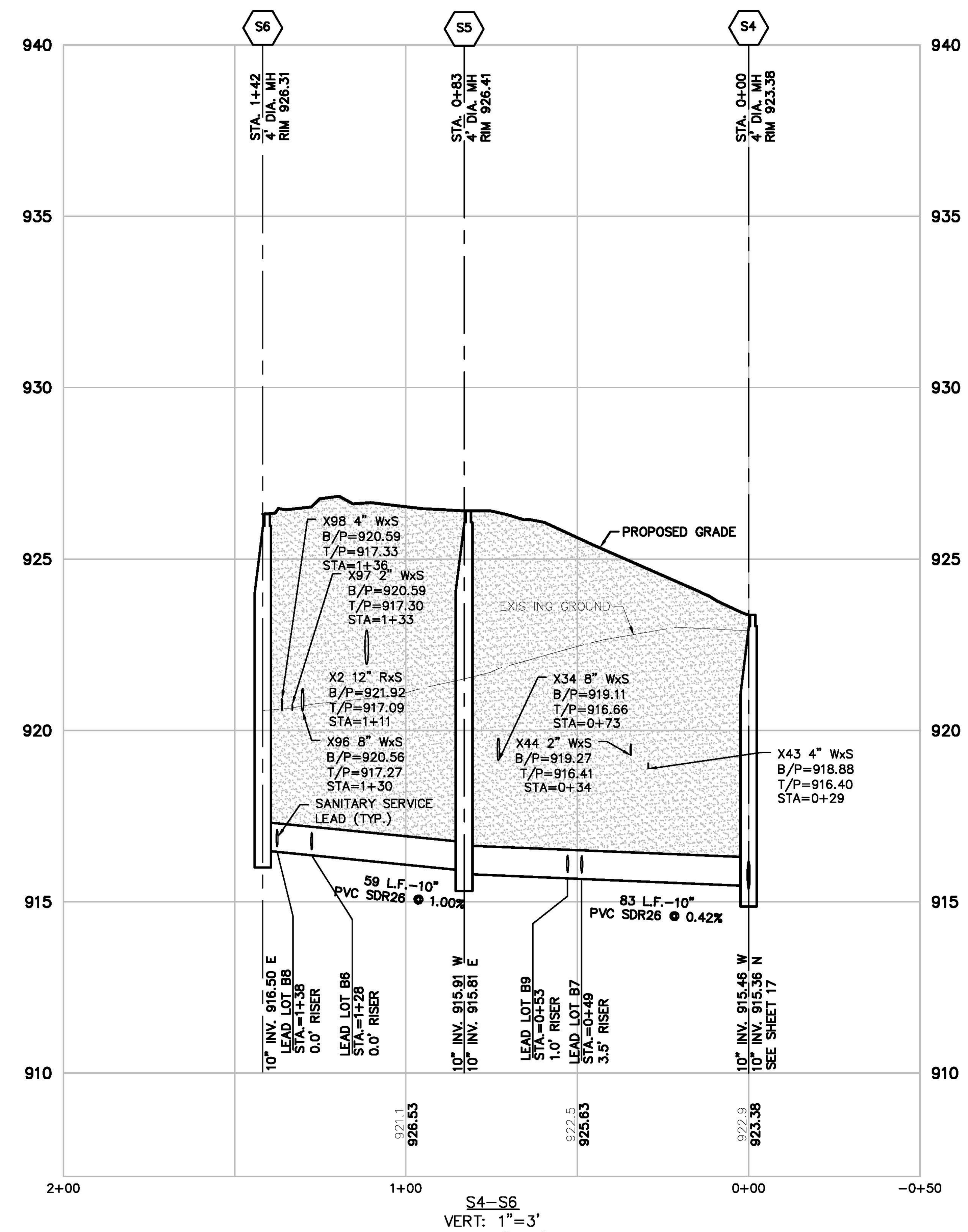


BUILDING 9 SANITARY LEAD
VERT: 1"=3'
HORZ: 1"=30'



SANITARY LEAD TABLE

LEAD NO.	PIPE DIA.	LEAD LENGTH	PIPE MATERIAL	INVERT AT MAIN	INVERT AT END	RISER HEIGHT(FT)	SLOPE	FG	FOOTING	FFE	CLEAR
B6	6"	34'	PVC SDR 26	917.19	917.87	0.0	2.00%	926.50	923.00	927.00	4.63
B7	6"	23'	PVC SDR 26	916.50	920.46	3.5	2.00%	926.50	923.00	927.00	2.04
B8	6"	46'	PVC SDR 26	917.28	918.20	0.0	2.00%	929.05	925.55	929.55	6.85
B9	6"	30'	PVC SDR 26	916.52	918.12	1.0	2.00%	928.84	925.34	929.34	6.72



S4–S6
VERT: 1"=3'
HORZ: 1"=30'

SANITARY:
10" PVC SDR 26 142 LF
4' MANHOLE 2 EA

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- CLASS II SAND COMPACTED TO 95%
- PROP. LIGHT POLE
- PROP. PIV
- PROP. DOMESTIC CURB STOP

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

SANITARY PLAN & PROFILE 2

DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
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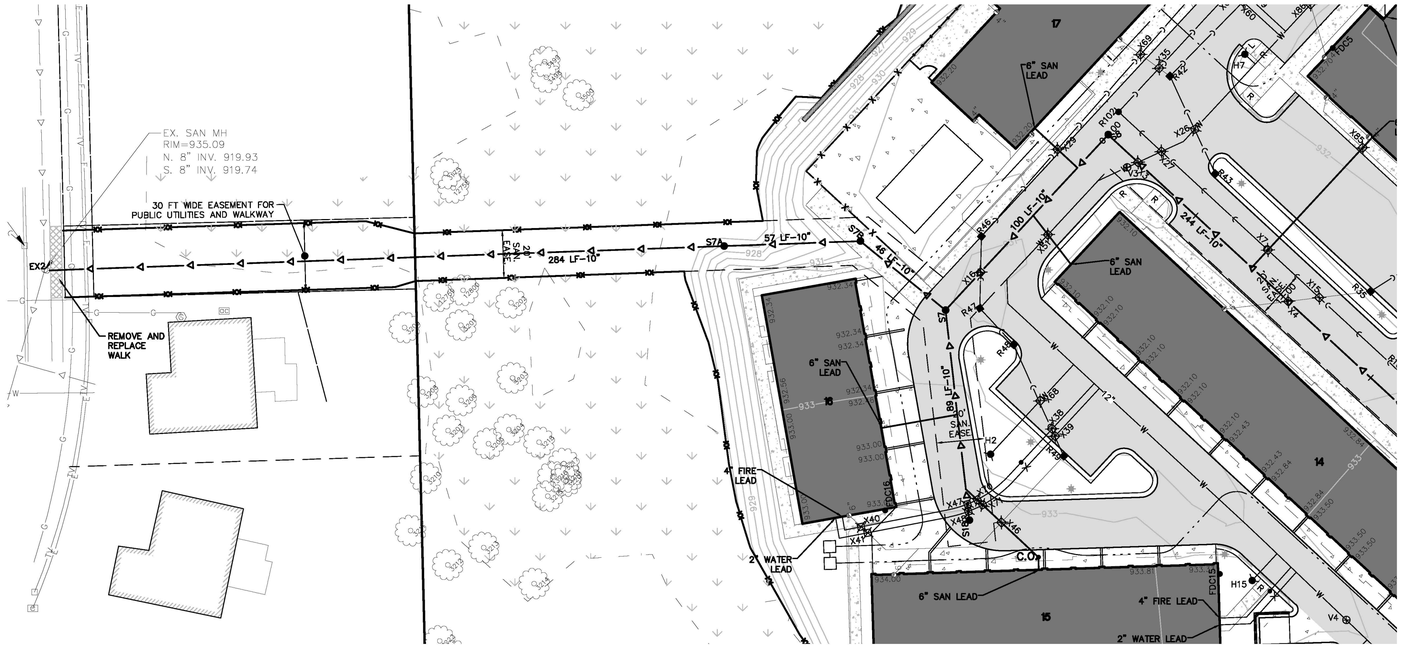
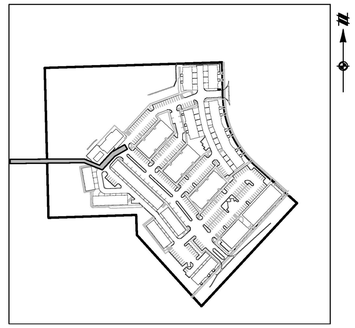
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 15 30
1" = 30 FEET

DR. CR | CH. ––
P.M. MB
BOOK ––
JOB 16000137
SHEET NO.
18

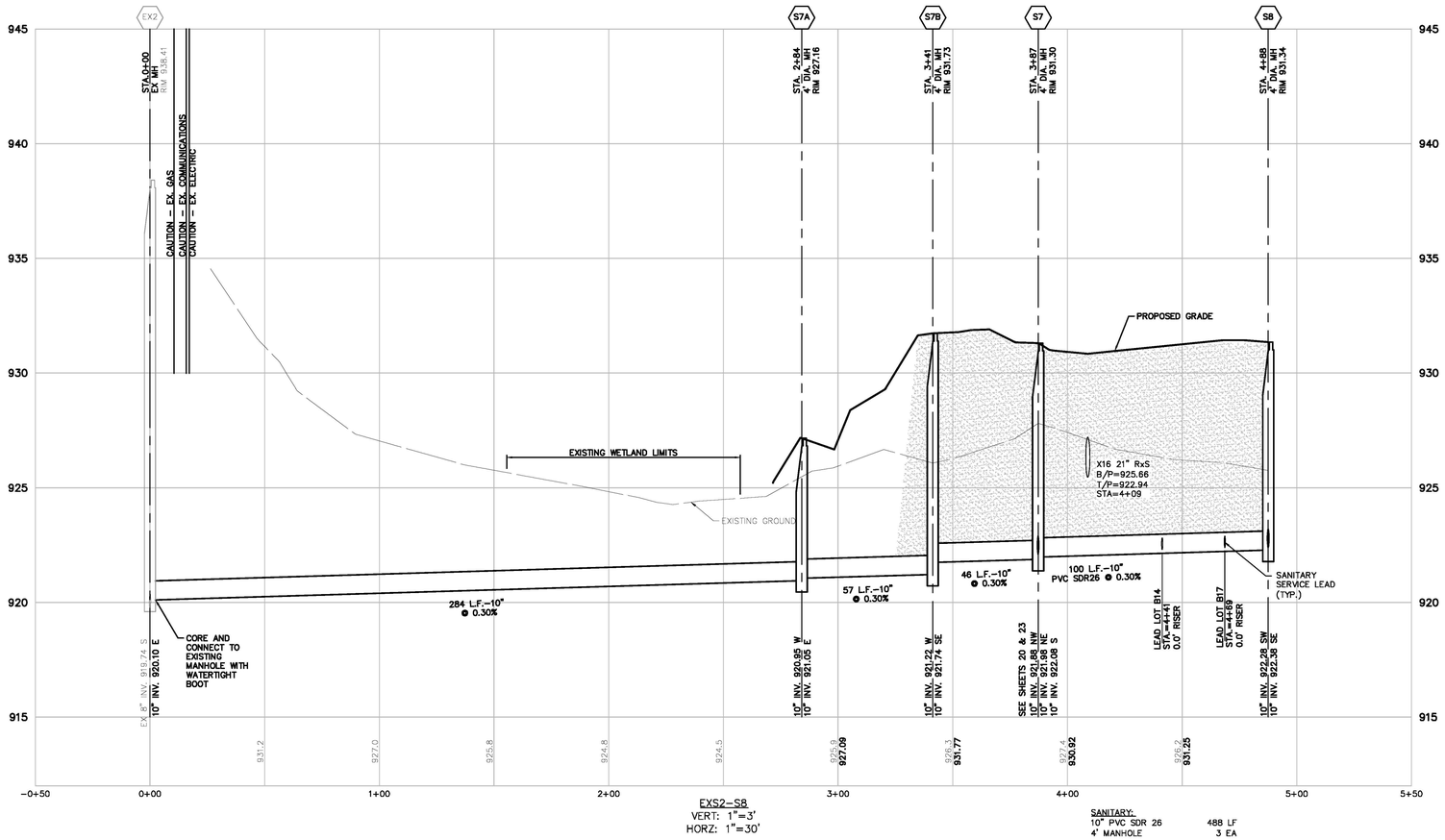




KEY MAP
1" = 300'

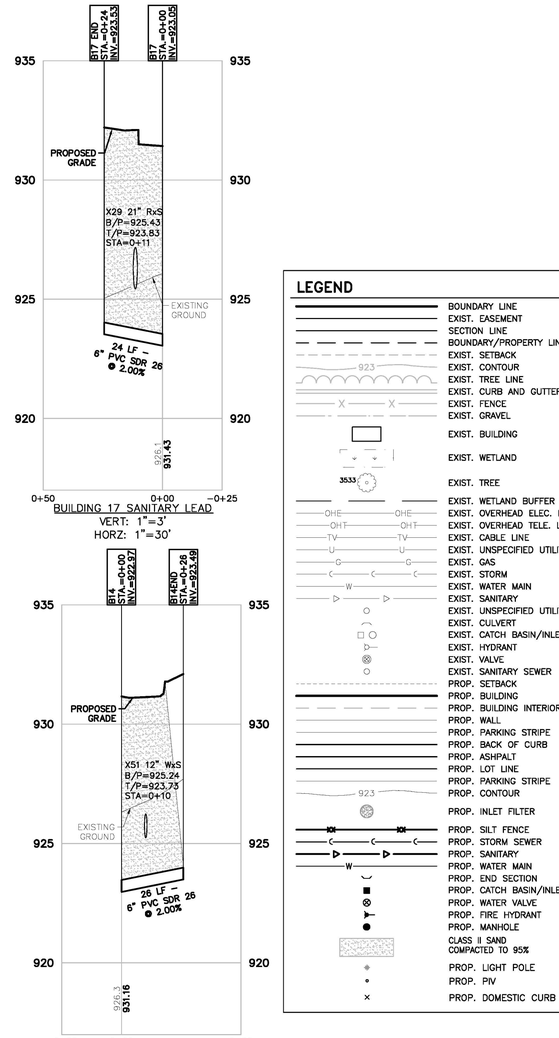
SANITARY LEAD TABLE

LEAD NO.	PIPE DIA.	LEAD LENGTH	PIPE MATERIAL	INVERT AT MAIN	INVERT AT END	RISER HEIGHT(FT)	SLOPE	FG	FOOTING	FFE	CLEAR
B14	6"	26'	PVC SDR 26	922.97	923.49	0	2.00%	932.10	928.60	932.60	4.61
B17	6"	24'	PVC SDR 26	923.05	923.53	0	2.00%	932.20	928.70	932.70	4.67



EXS2–S8
VERT: 1"=3'
HORZ: 1"=30'

SANITARY:
10" PVC SDR 26 488 LF
4' MANHOLE 3 EA



BUILDING 17 SANITARY LEAD
VERT: 1"=3'
HORZ: 1"=30'

BUILDING 14 SANITARY LEAD
VERT: 1"=3'
HORZ: 1"=30'

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- EXIST. SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT:
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

SANITARY PLAN & PROFILE 3

DATE
JUNE 9, 2017

REVISIONS
9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
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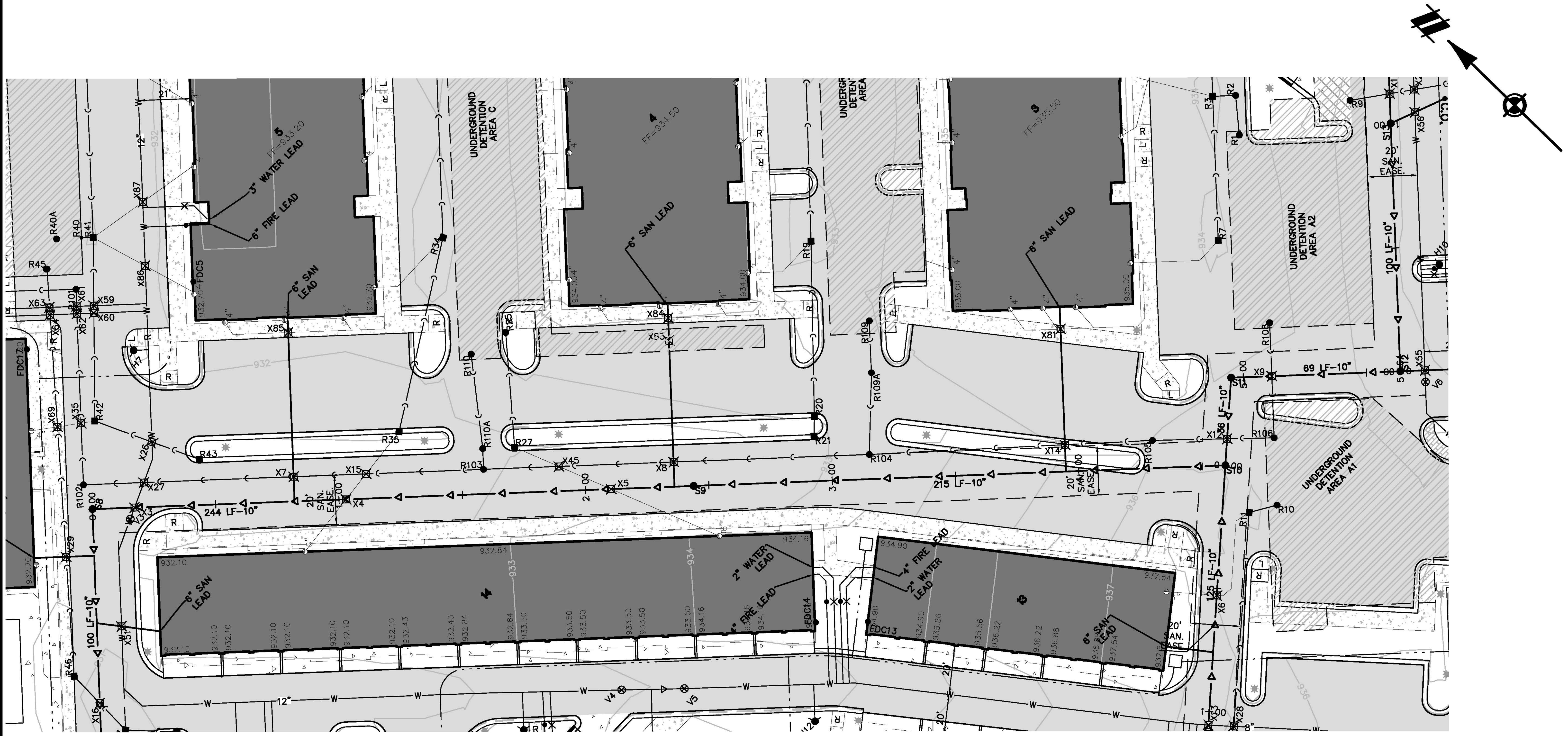
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP

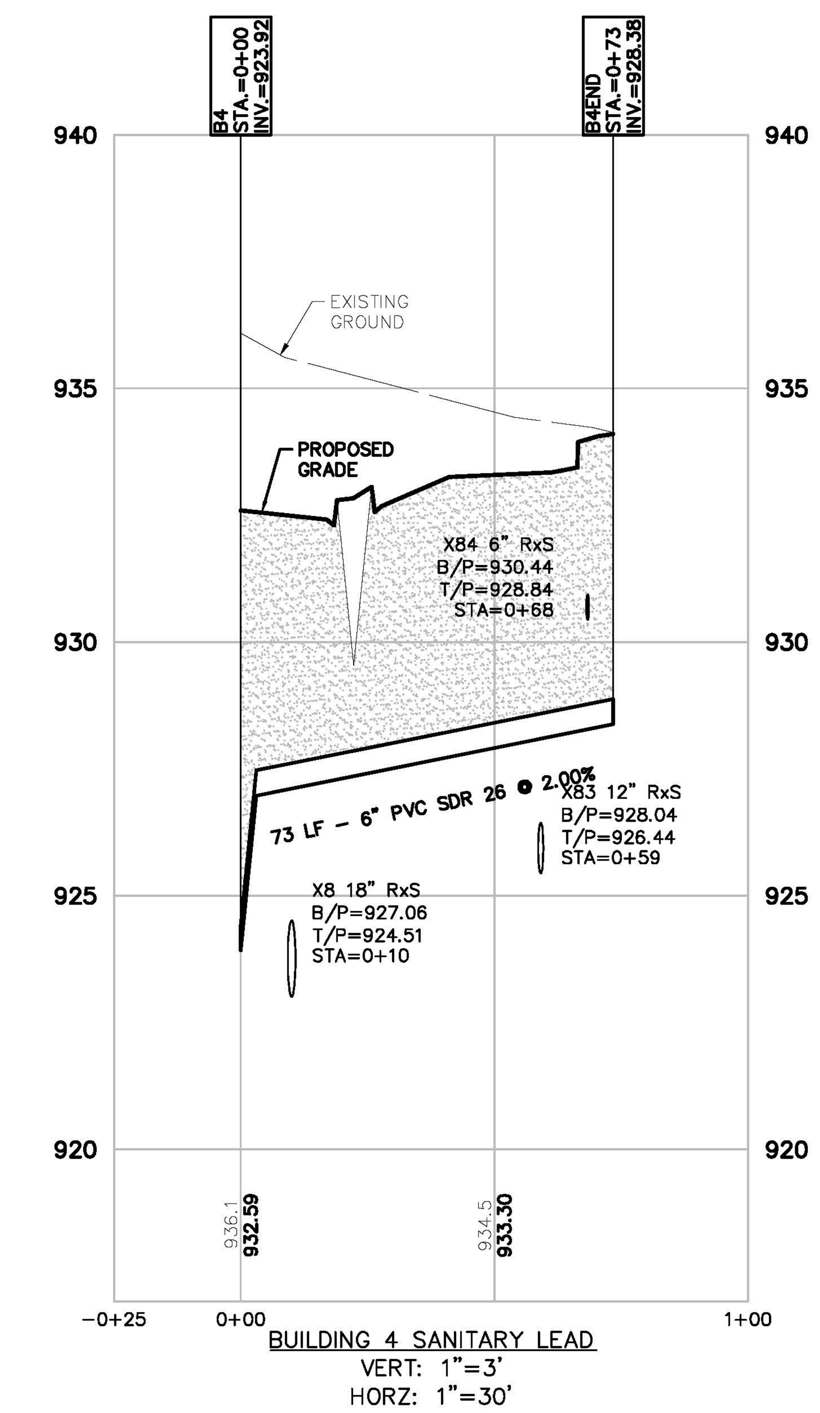
SCALE 0 15 30
1" = 30 FEET

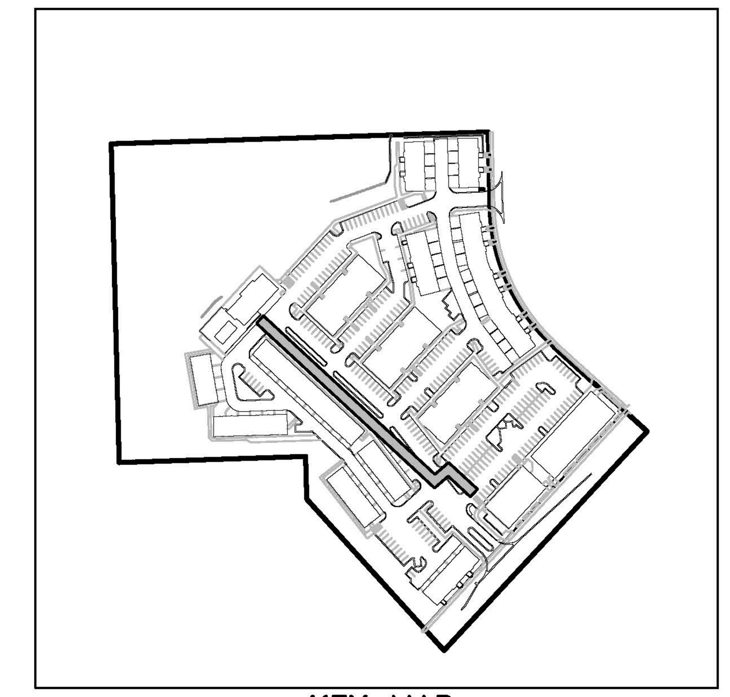
DR. CR	CH. --
P.M. MB	
BOOK --	
JOB 16000137	
SHEET NO. 19	

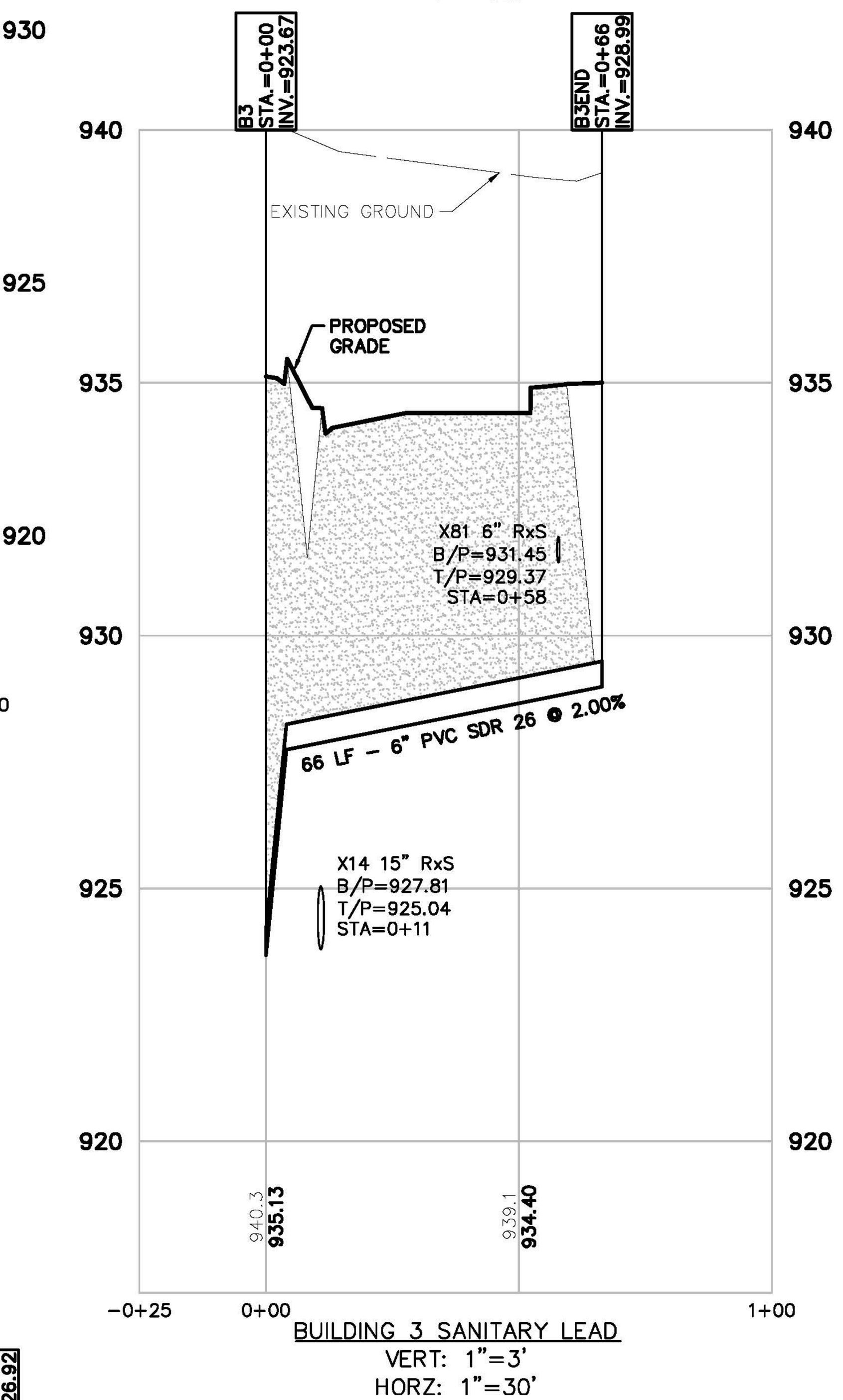
BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

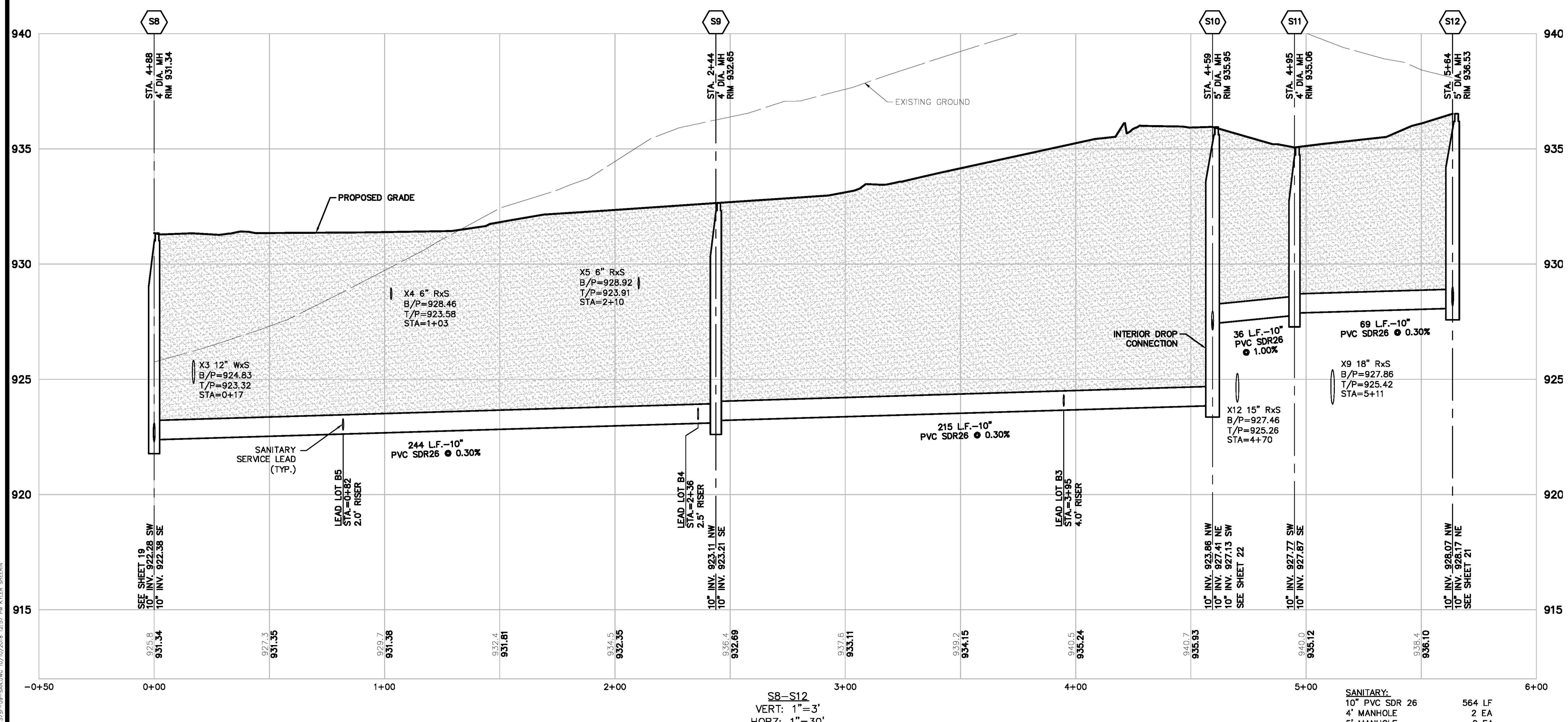
V:\2016\TOWNSHIP\PLAN SETS\FSP - FINAL\16000137 -SP-SHEETS- 10/10/2018 12:26 PM KYLE SMITH

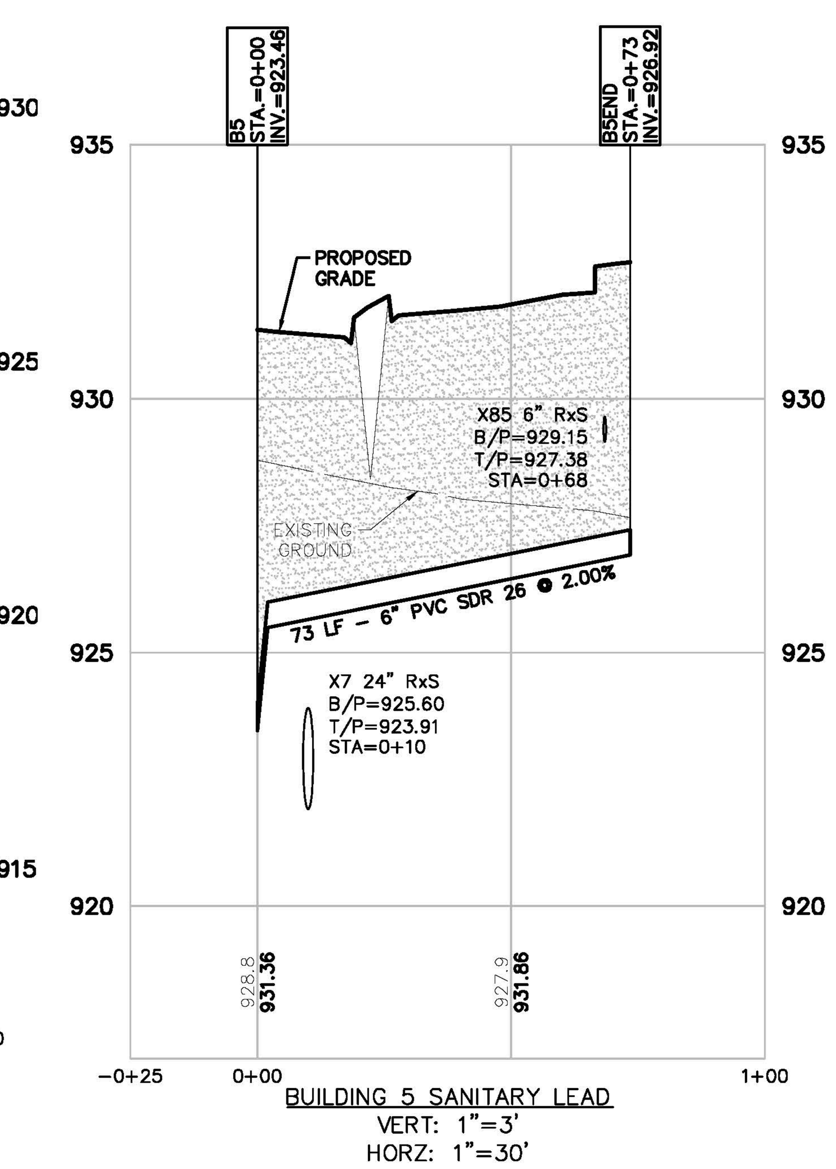












SANITARY LEAD TABLE

LEAD NO.	PIPE DIA.	LEAD LENGTH	PIPE MATERIAL	INVERT AT MAIN	INVERT AT END	RISER HEIGHT(FT)	SLOPE	FG	FOOTING	FFE	CLEAR
B3	6"	66'	PVC SDR 26	923.67	928.99	4.0	2.00%	935.00	931.50	935.50	2.01
B4	6"	73'	PVC SDR 26	923.92	927.88	2.5	2.00%	934.03	930.53	934.53	2.15
B5	6"	73'	PVC SDR 26	923.46	926.92	2.0	2.00%	932.70	929.20	933.20	1.78

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- BOUNDARY/PROPERTY LINE
- EXIST. CONTOUR
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. BACK OF CURB
- PROP. ASPHALT
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
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BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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WASHTENAW COUNTY, MICHIGAN

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PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

SANITARY PLAN & PROFILE 4

DATE JUNE 9, 2017

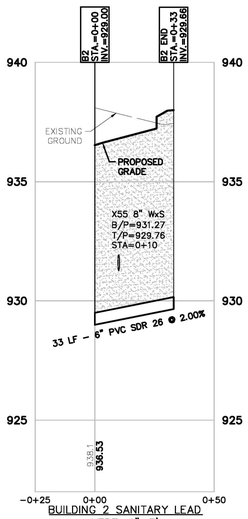
- 9/7/17 PER TWP PLANNING
- 9/21/17 PER TWP/WCWRC
- 10/04/17 PER WCRC
- 10/12/17 PER WCWRC
- 10/20/17 PER WCRC
- 11/1/17 SITE UPDATES
- 12/06/17 PER TWP
- 3/19/18 PER TWP
- 5/16/18 PER TWP
- 5/23/18 SITE UPDATES
- 6/05/18 SITE UPDATES
- 6/28/18 SITE UPDATES
- 7/26/18 PER TWP
- 8/10/18 DETENTION REV.
- 9/14/18 PER TWP
- 10/01/18 PER TWP
- 10/10/18 PER TWP

REVISIONS

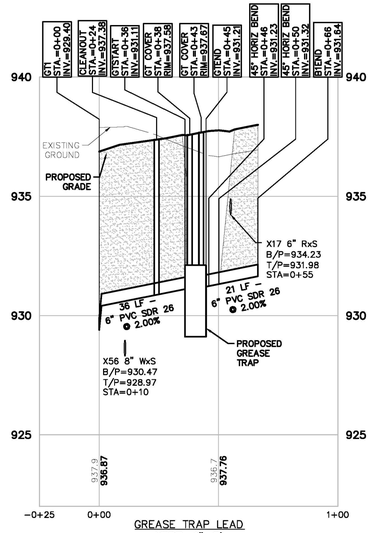
SCALE 0 15 30
1" = 30 FEET

DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137

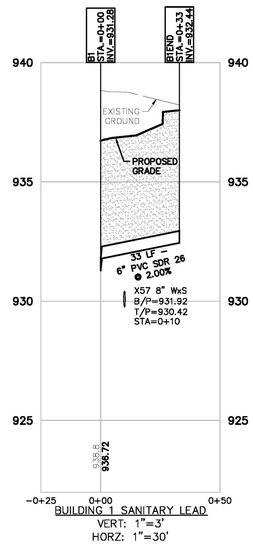
SHEET NO. 20



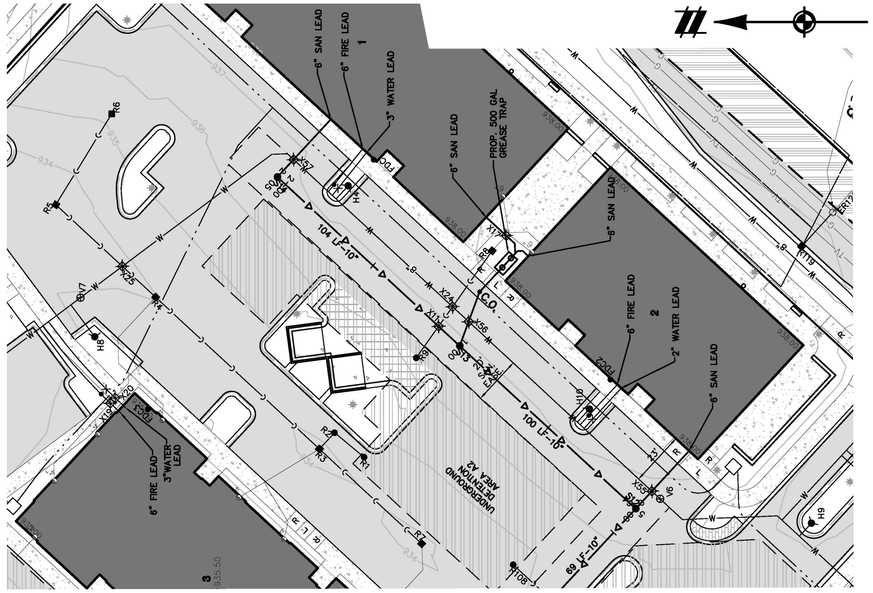
BUILDING 2 SANITARY LEAD
VERT: 1"=3'
HORZ: 1"=30'

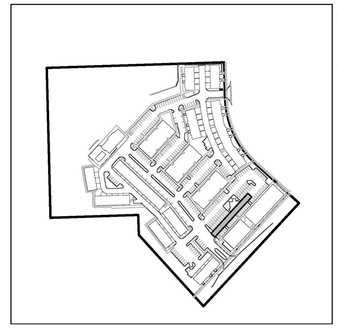


GREASE TRAP LEAD
VERT: 1"=3'
HORZ: 1"=30'



BUILDING 1 SANITARY LEAD
VERT: 1"=3'
HORZ: 1"=30'

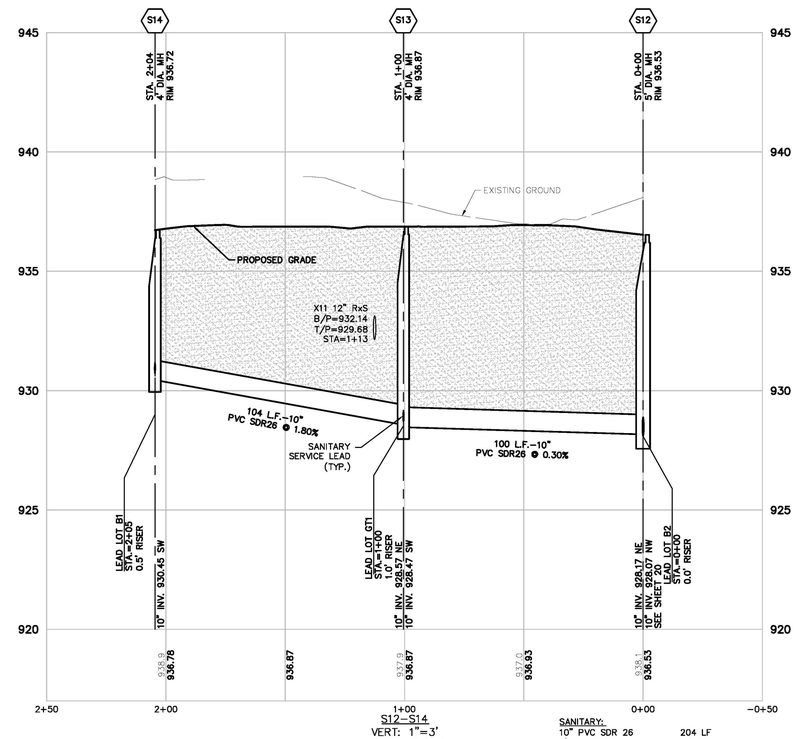




KEY MAP
1" = 300'

SANITARY LEAD TABLE

LEAD NO.	PIPE DIA.	LEAD LENGTH	PIPE MATERIAL	INVERT AT MAIN	INVERT AT END	RISER HEIGHT(FT)	SLOPE	FG	FOOTING	FFE	CLEAR
B1	6"	33'	PVC SDR 26	931.28	932.44	0.5	2.00%	938.00	934.50	938.50	1.56
B2	6"	33'	PVC SDR 26	929.00	929.66	0.0	2.00%	938.00	934.50	938.50	4.34
GREASE TRAP	6"	57'	PVC SDR 26	929.40	931.64	1.0	2.00%	938.00	934.50	938.50	2.36



S12–S14
VERT: 1"=3'
HORZ: 1"=30'

SANITARY:
10" PVC SDR 26 204 LF
4' MANHOLE 2 EA

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- CLASS II SAND COMPACTED TO 95%

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

Know what's below. Call before you dig.
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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

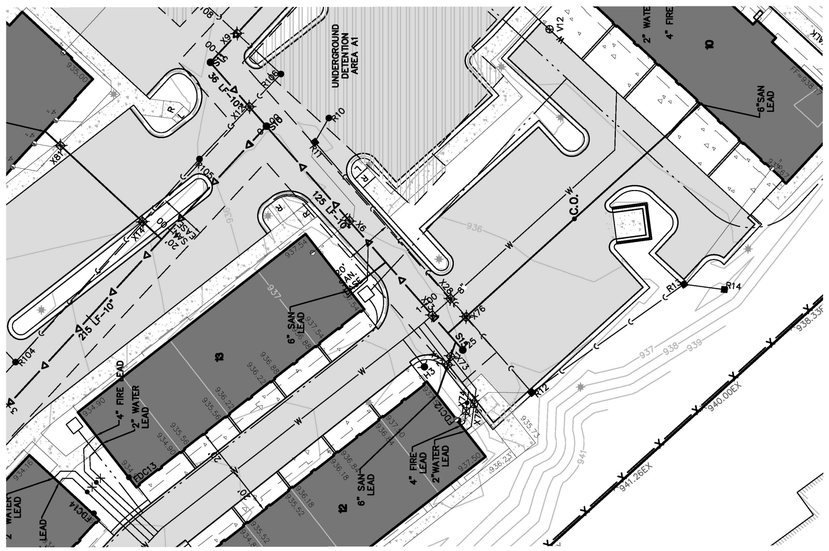
SANITARY PLAN & PROFILE 5

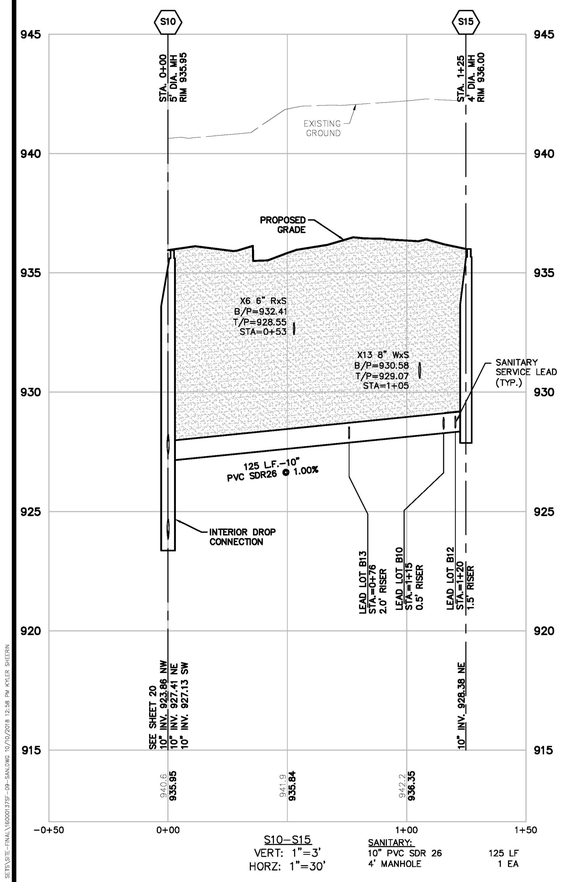
DATE
JUNE 9, 2017

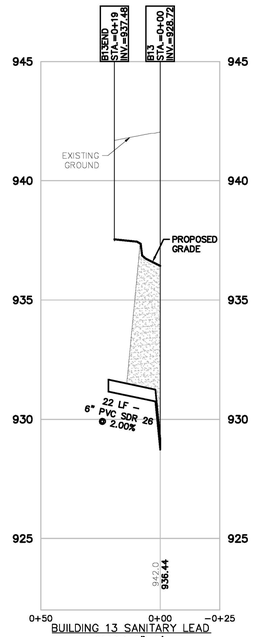
9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 15 30
1" = 30 FEET
DR. CR CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 21

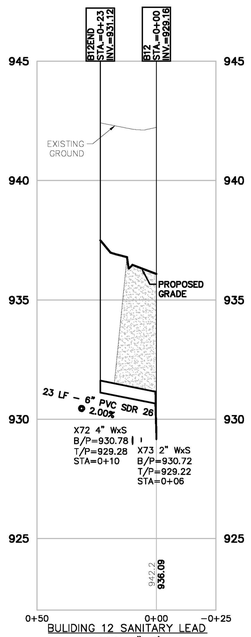
S:\16000137\CAD\PLAN SET\SITE - FINAL\16000137SP - 09 SANITARY 10/10/2018 12:37 PM KYLE SWITZER



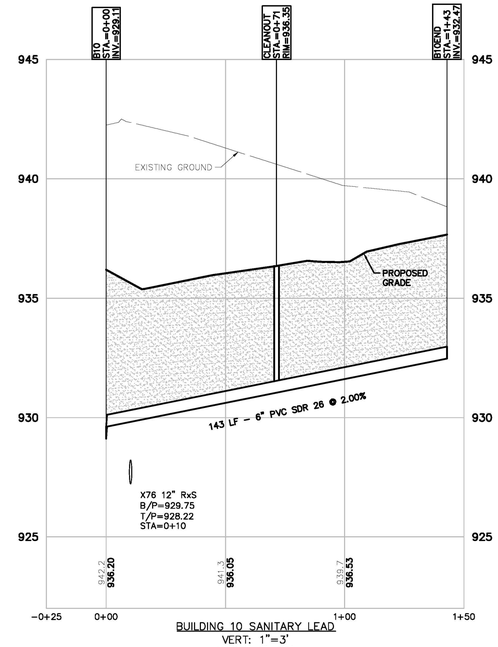




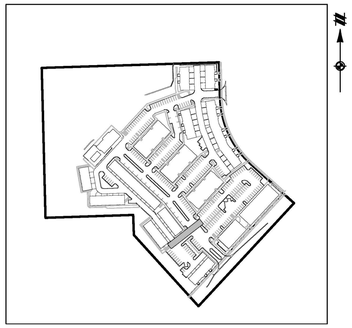
BUILDING 13 SANITARY LEAD
VERT: 1"=3'
HORZ: 1"=30'



BUILDING 12 SANITARY LEAD
VERT: 1"=3'
HORZ: 1"=30'



BUILDING 10 SANITARY LEAD
VERT: 1"=3'
HORZ: 1"=30'



KEY MAP
1" = 300'

SANITARY LEAD TABLE

LEAD NO.	PIPE DIA.	LEAD LENGTH	PIPE MATERIAL	INVERT AT MAIN	INVERT AT END	RISER HEIGHT(FT)	SLOPE	FG	FOOTING	FFE	CLEAR
B10	6"	143'	PVC SDR 26	929.11	932.47	0.5	2.00%	938.00	934.50	938.50	1.53
B12	6"	23'	PVC SDR 26	929.16	931.12	1.5	2.00%	937.50	934.00	938.00	2.38
B13	6"	19'	PVC SDR 26	928.72	931.10	2.0	2.00%	937.50	934.00	938.00	2.40

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- CLASS II SAND COMPACTED TO 95%

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT:
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

SANITARY PLAN & PROFILE 6

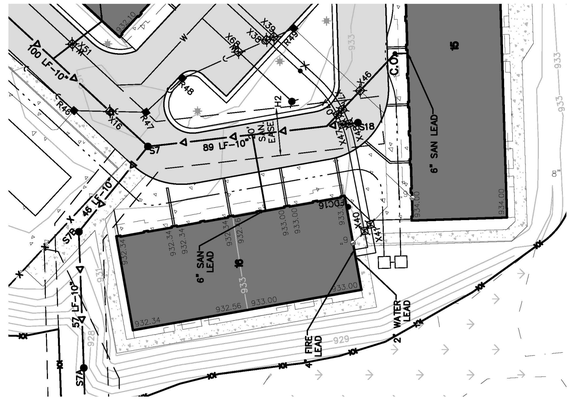
DATE
JUNE 9, 2017

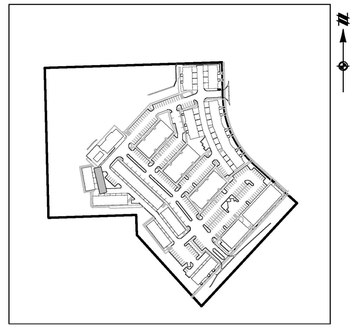
REVISIONS
9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP

SCALE 0 15 30
1" = 30 FEET
DR. CR CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 22

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

V:\2016\17\CIVIL\PLAN SETS\FSP - FINAL\16017-FSP-SP-SAN.MAP, 10/10/2018 12:28 PM, KYLE SMITH





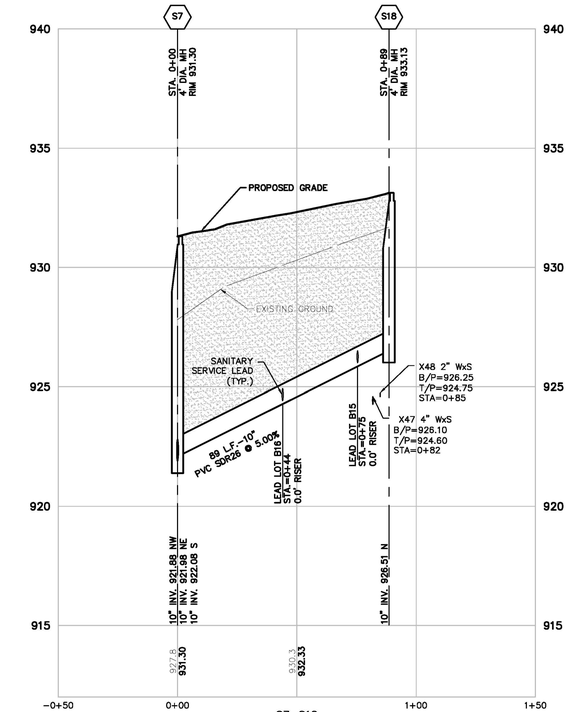
KEY MAP
1" = 300'

SANITARY LEAD TABLE

LEAD NO.	PIPE DIA.	LEAD LENGTH	PIPE MATERIAL	INVERT AT MAIN	INVERT AT END	RISER HEIGHT(FT)	SLOPE	FG	FOOTING	FFE	CLEAR
B15	6"	47'	PVC SDR 26	926.61	927.55	0	2.00%	934.00	930.50	934.50	2.45
B16	6"	32'	PVC SDR 26	925.11	925.75	0	2.00%	932.46	928.96	932.96	2.71

BUILDING 16 SANITARY LEAD
VERT: 1"=3'
HORZ: 1"=30'

BUILDING 15 SANITARY LEAD
VERT: 1"=3'
HORZ: 1"=30'



S7–S18
VERT: 1"=3'
HORZ: 1"=30'

SANITARY:
10" PVC SDR 26 89 LF
4' MANHOLE 1 EA

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- CLASS II SAND COMPACTED TO 95%
- PROP. LIGHT POLE
- PROP. PIV
- PROP. DOMESTIC CURB STOP

Know what's **below.** **Call** before you dig.

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SECTION 07
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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

SANITARY PLAN & PROFILE 7

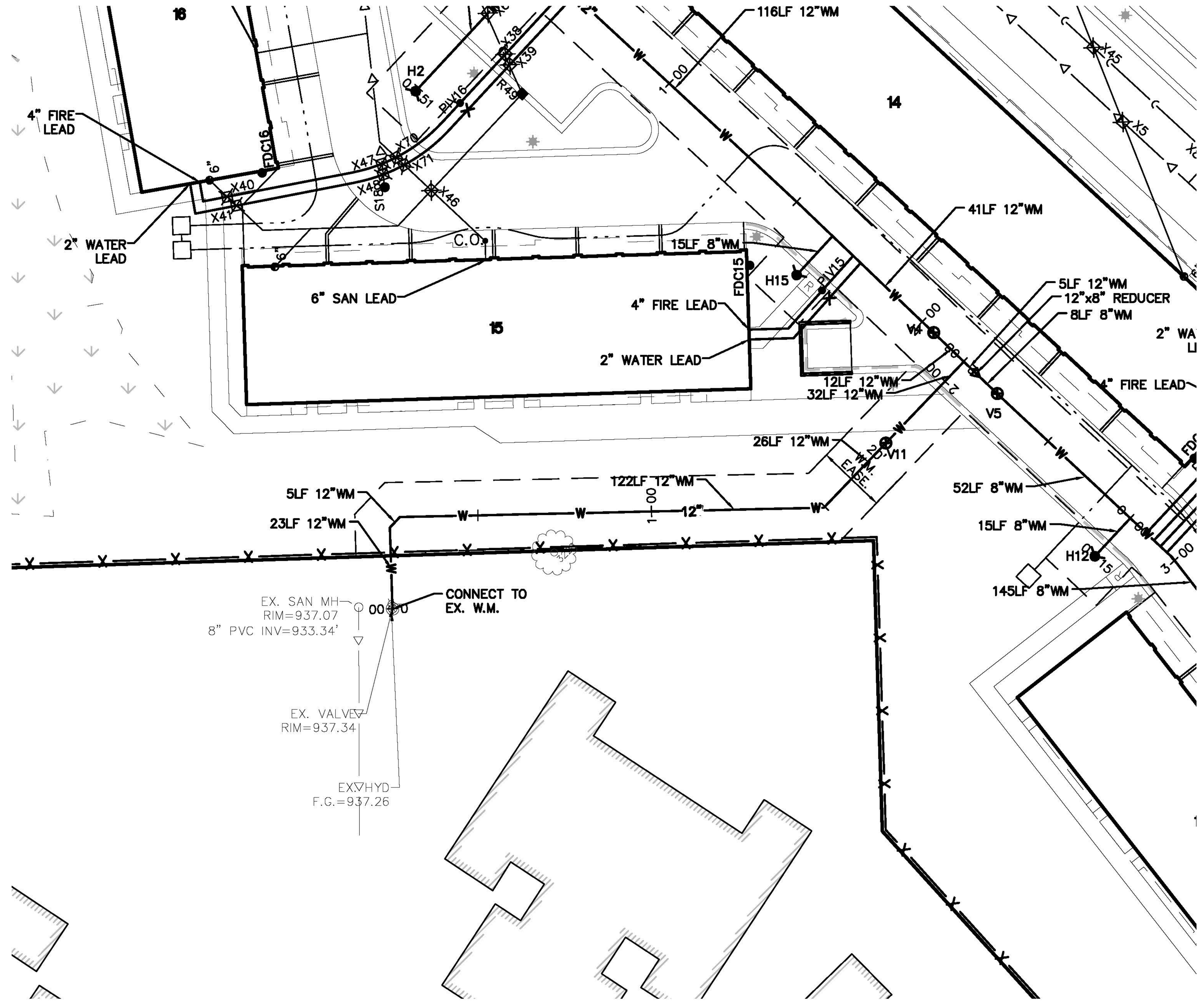
DATE
JUNE 9, 2017

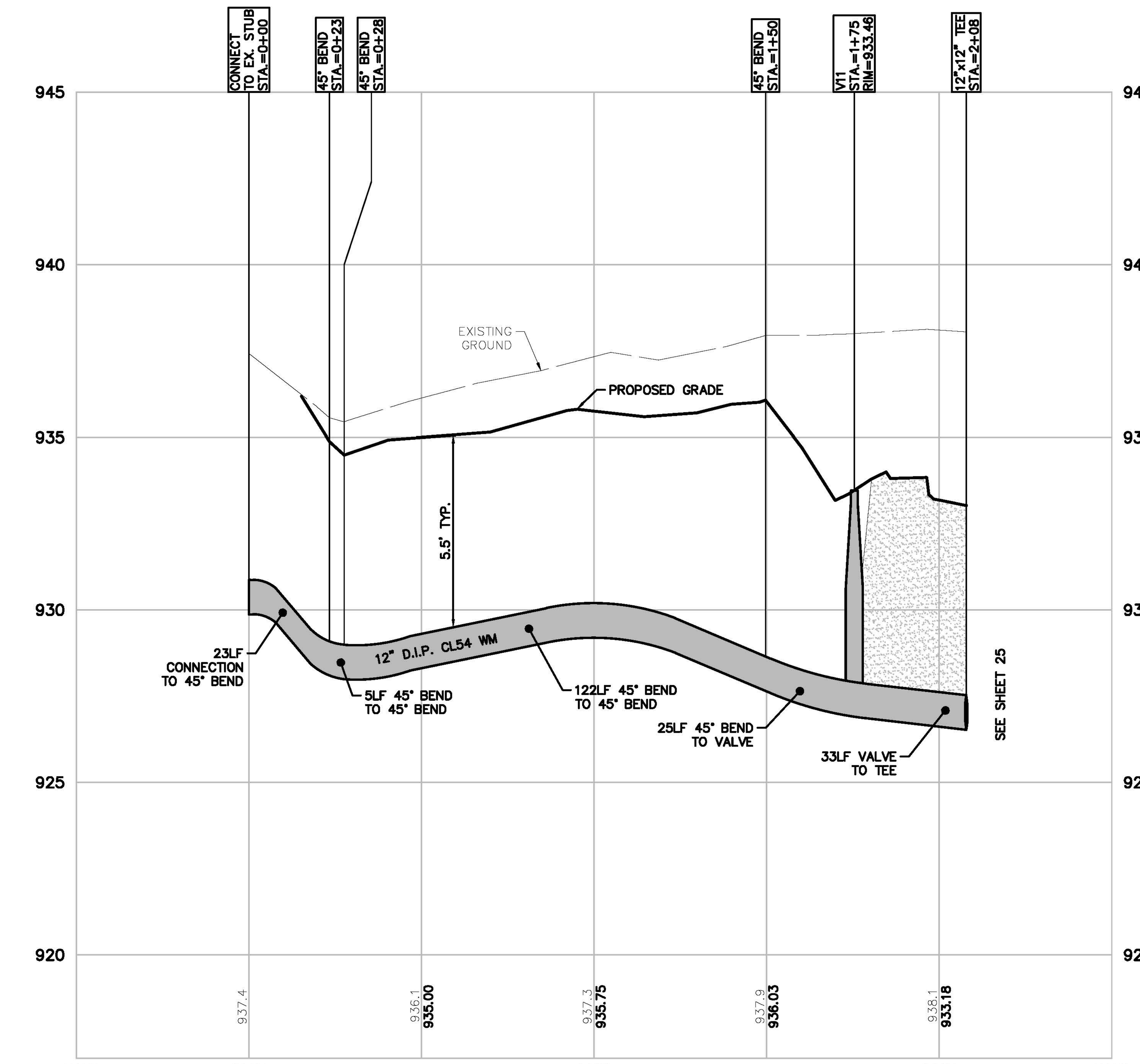
9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 15 30
1" = 30 FEET
DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 23

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

K:\16000137\DWG\PLAN SETS\FSP-FINAL\16000137FSP-39 SANITARY 10/10/2018 12:39 PM KYLER SHEEHAN

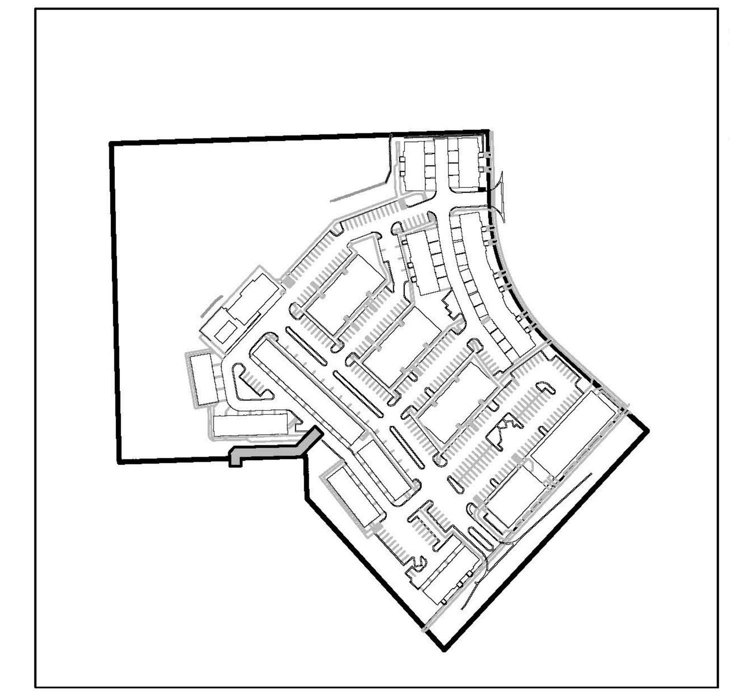




WEST WATERMAIN CONNECTION
VERT: 1"=3'
HORZ: 1"=30'

QUANTITIES

12" D.I.P. CL54:	208 LF	
12" VALVE IN WELL:	1 EA	



KEY MAP
1" = 300'

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- PROP. COMPACTED SAND BACKFILL

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

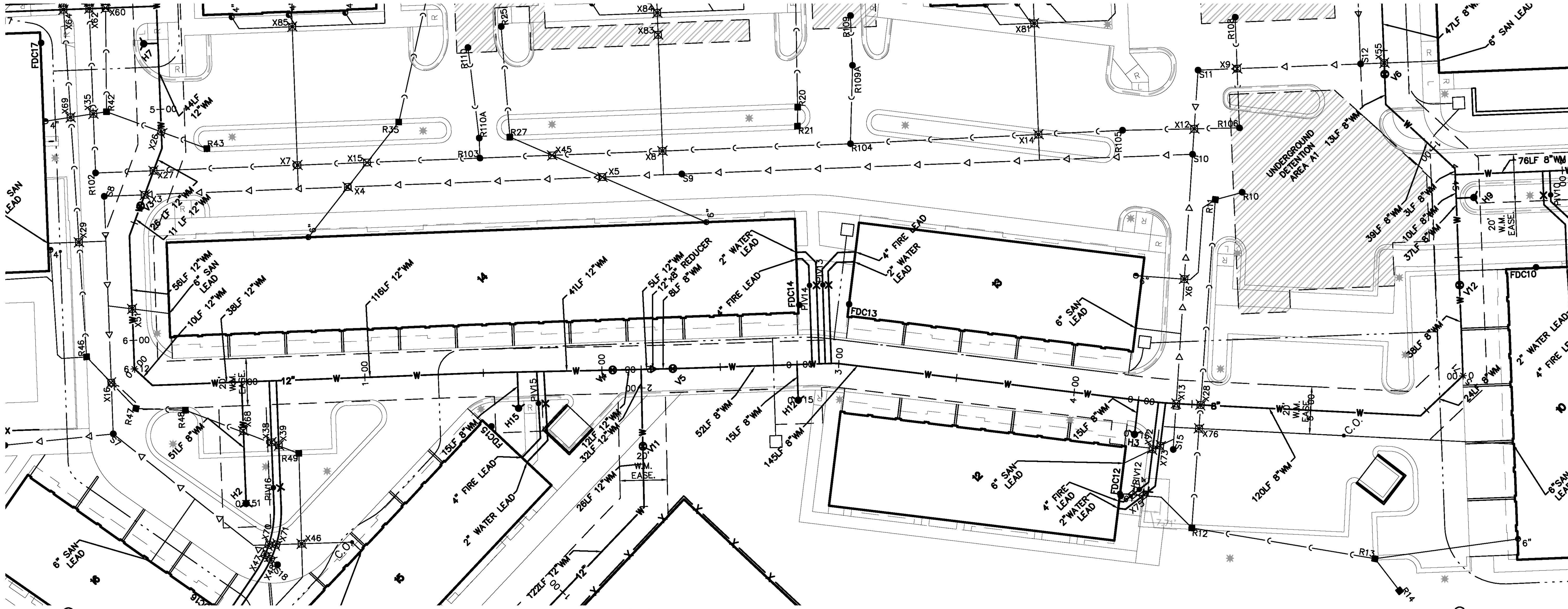
CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
WATERMAIN PLAN & PROFILE 1

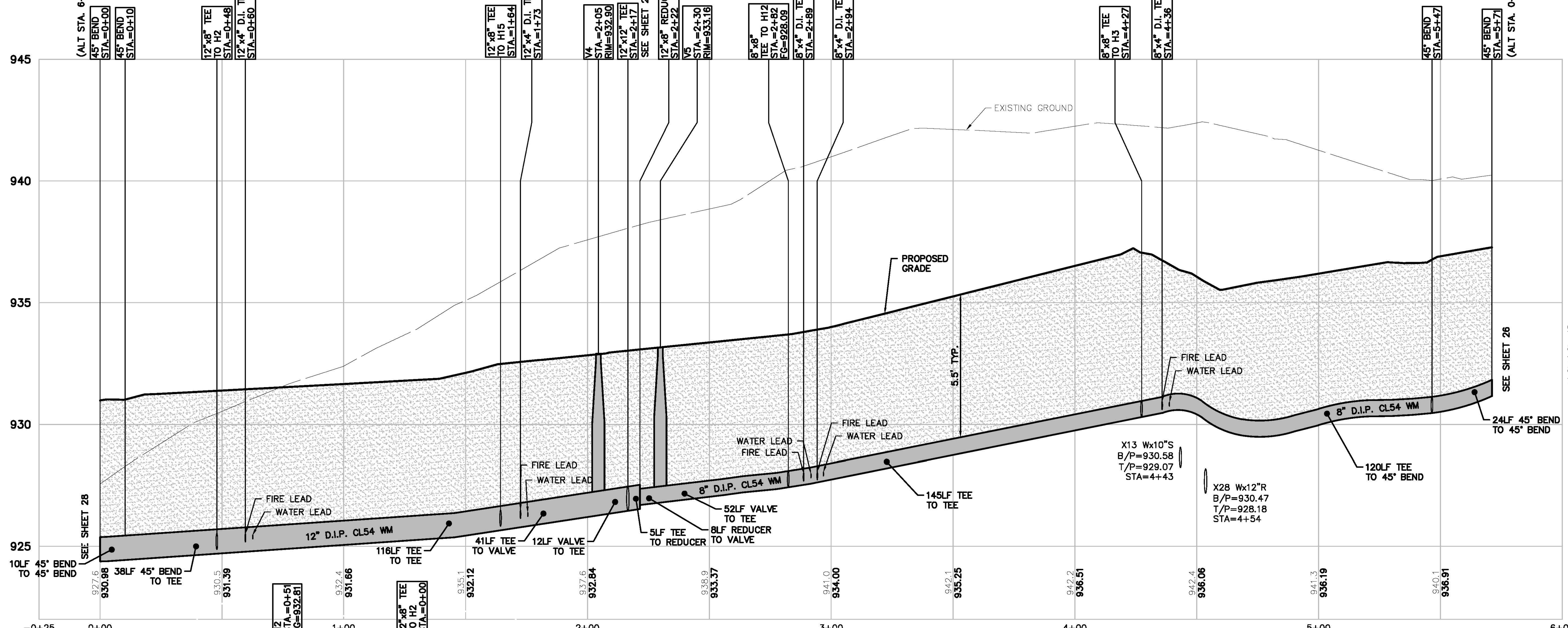
DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 15 30
1" = 30 FEET

DR. CR	CH. --
P.M. MB	
BOOK --	
JOB 16000137	
SHEET NO. 24	

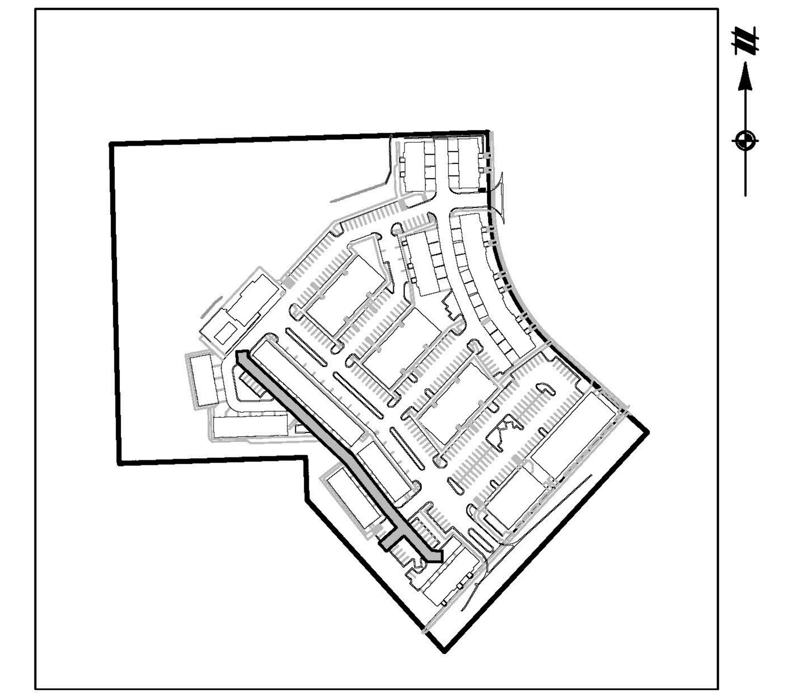




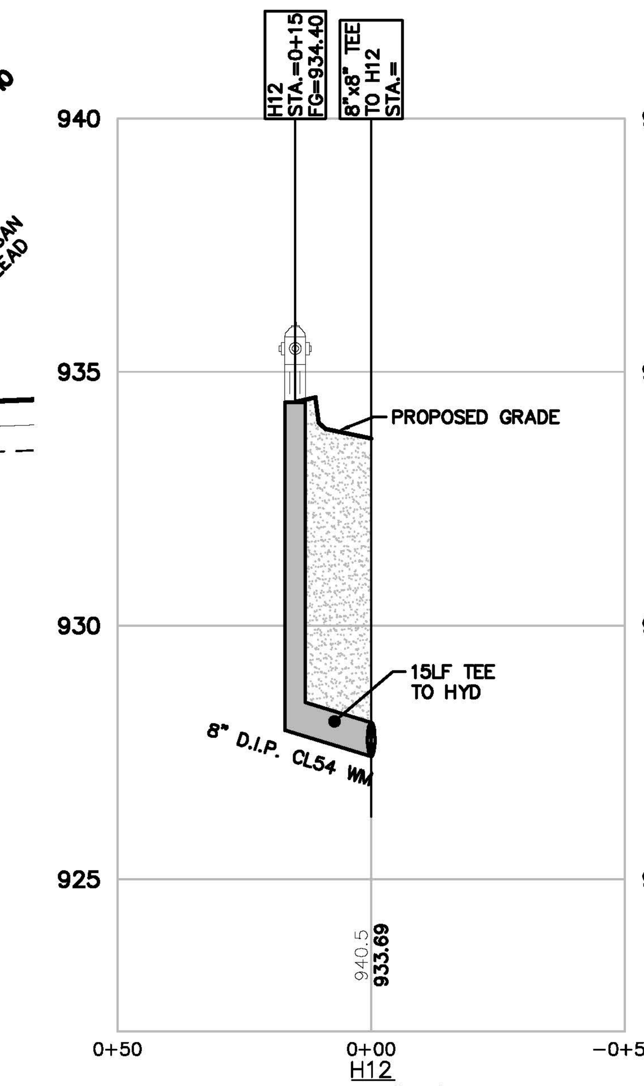
SOUTHWEST WATERMAIN ALIGNMENT
VERT: 1"=3'
HORZ: 1"=30'

QUANTITIES

8" D.I.P. CL54:	349 LF
12" D.I.P. CL54:	222 LF
8" VALVE IN WELL:	1 EA
12" VALVE IN WELL:	1 EA



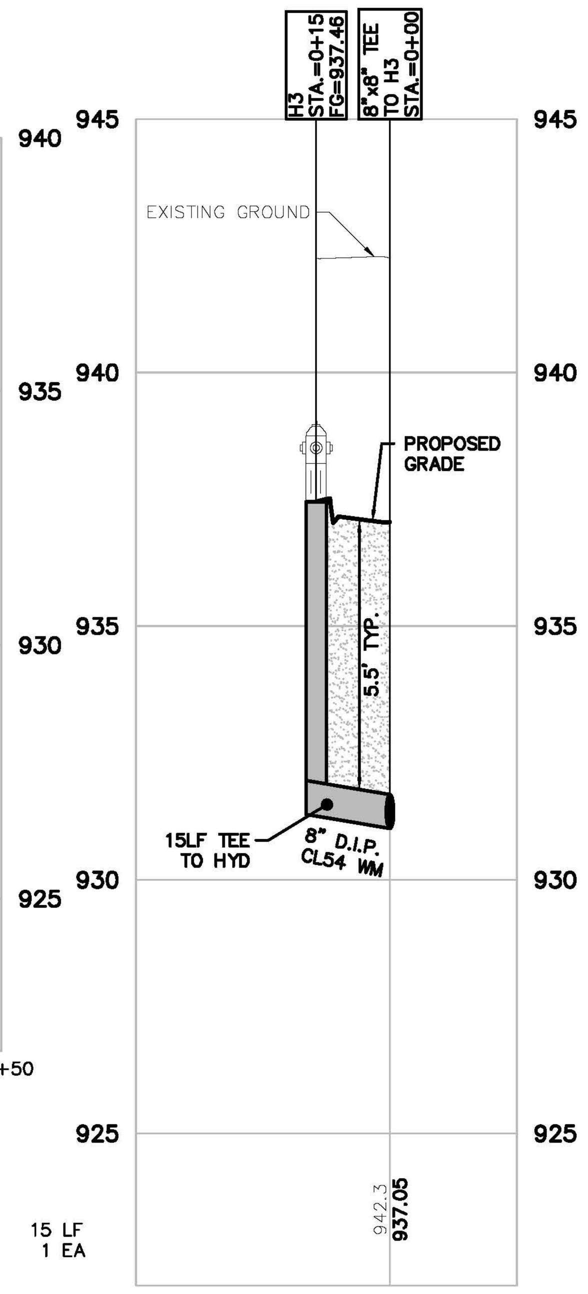
KEY MAP
1" = 300'



H12
VERT: 1"=3'
HORZ: 1"=30'

QUANTITIES

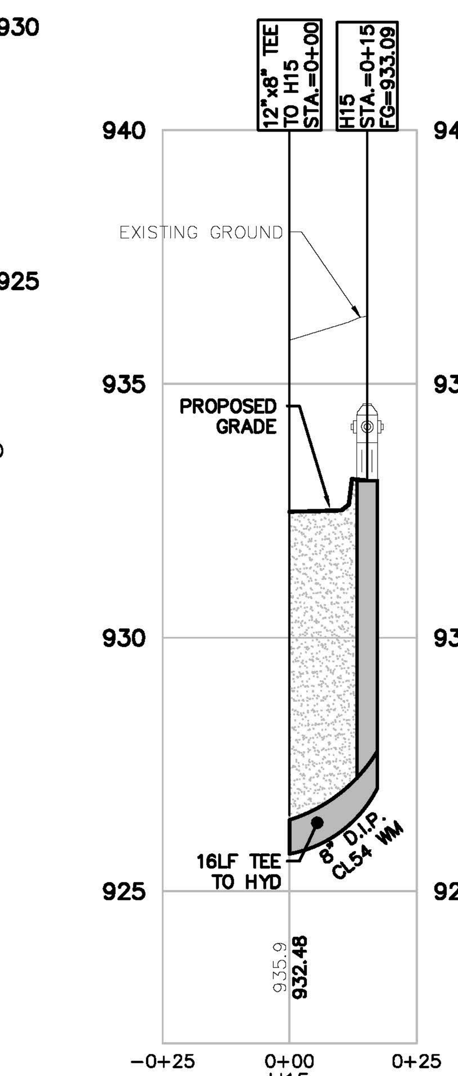
8" D.I.P. CL54:	15 LF
HYDRANT ASSEMBLY:	1 EA



H3
VERT: 1"=3'
HORZ: 1"=30'

QUANTITIES

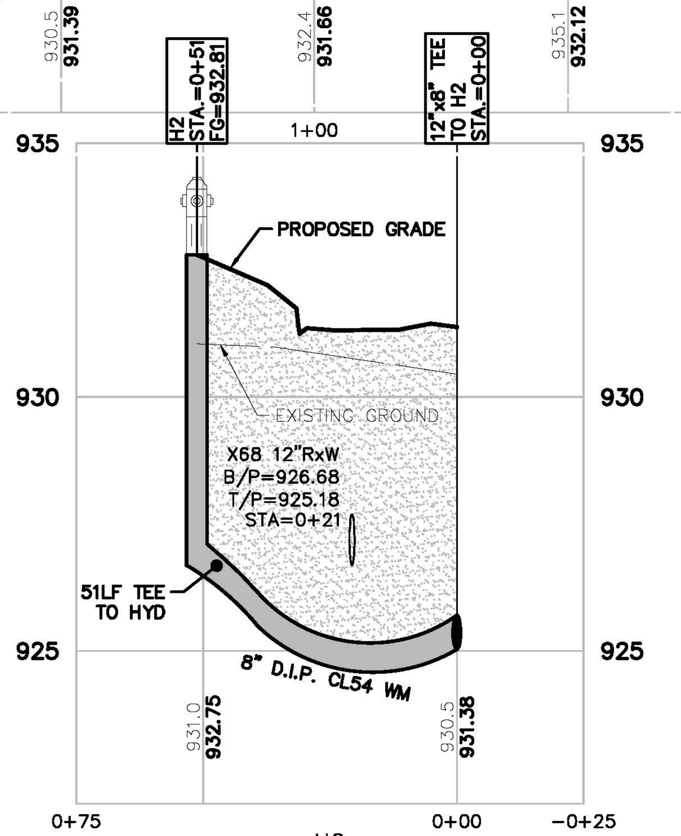
8" D.I.P. CL54:	15 LF
HYDRANT ASSEMBLY:	1 EA



H15
VERT: 1"=3'
HORZ: 1"=30'

QUANTITIES

8" D.I.P. CL54:	15 LF
HYDRANT ASSEMBLY:	1 EA



H2
VERT: 1"=3'
HORZ: 1"=30'

QUANTITIES

8" D.I.P. CL54:	51 LF
HYDRANT ASSEMBLY:	1 EA

LEGEND

EXIST. WETLAND
EXIST. TREE
EXIST. UNSPECIFIED UTILITY
EXIST. CULVERT
EXIST. CATCH BASIN/INLET
EXIST. HYDRANT
EXIST. VALVE
EXIST. SANITARY SEWER

BOUNDARY LINE
EXIST. EASEMENT
SECTION LINE
BOUNDARY/PROPERTY LINE
EXIST. SETBACK
EXIST. CONTOUR
EXIST. TREE LINE
EXIST. CURB AND GUTTER
EXIST. FENCE
EXIST. GRAVEL
EXIST. WETLAND BUFFER
EXIST. OVERHEAD ELEC. LINE
EXIST. OVERHEAD TELE. LINE
EXIST. CABLE LINE
EXIST. UNSPECIFIED UTILITIES
EXIST. GAS
EXIST. STORM
EXIST. WATER MAIN
EXIST. SANITARY
PROP. SETBACK
PROP. BUILDING
PROP. BUILDING INTERIOR
PROP. WALL
PROP. PARKING STRIPE
PROP. BACK OF CURB
PROP. ASHPALT
PROP. LOT LINE
PROP. PARKING STRIPE
PROP. CONTOUR
PROP. SILT FENCE
PROP. STORM SEWER
PROP. SANITARY
PROP. WATER MAIN
PROP. INLET FILTER
PROP. END SECTION
PROP. CATCH BASIN/INLET
PROP. WATER VALVE
PROP. FIRE HYDRANT
PROP. MANHOLE
PROP. SAND BACKFILL COMPACTED TO 95%

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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

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WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

WATERMAIN PLAN & PROFILE 2

DATE JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
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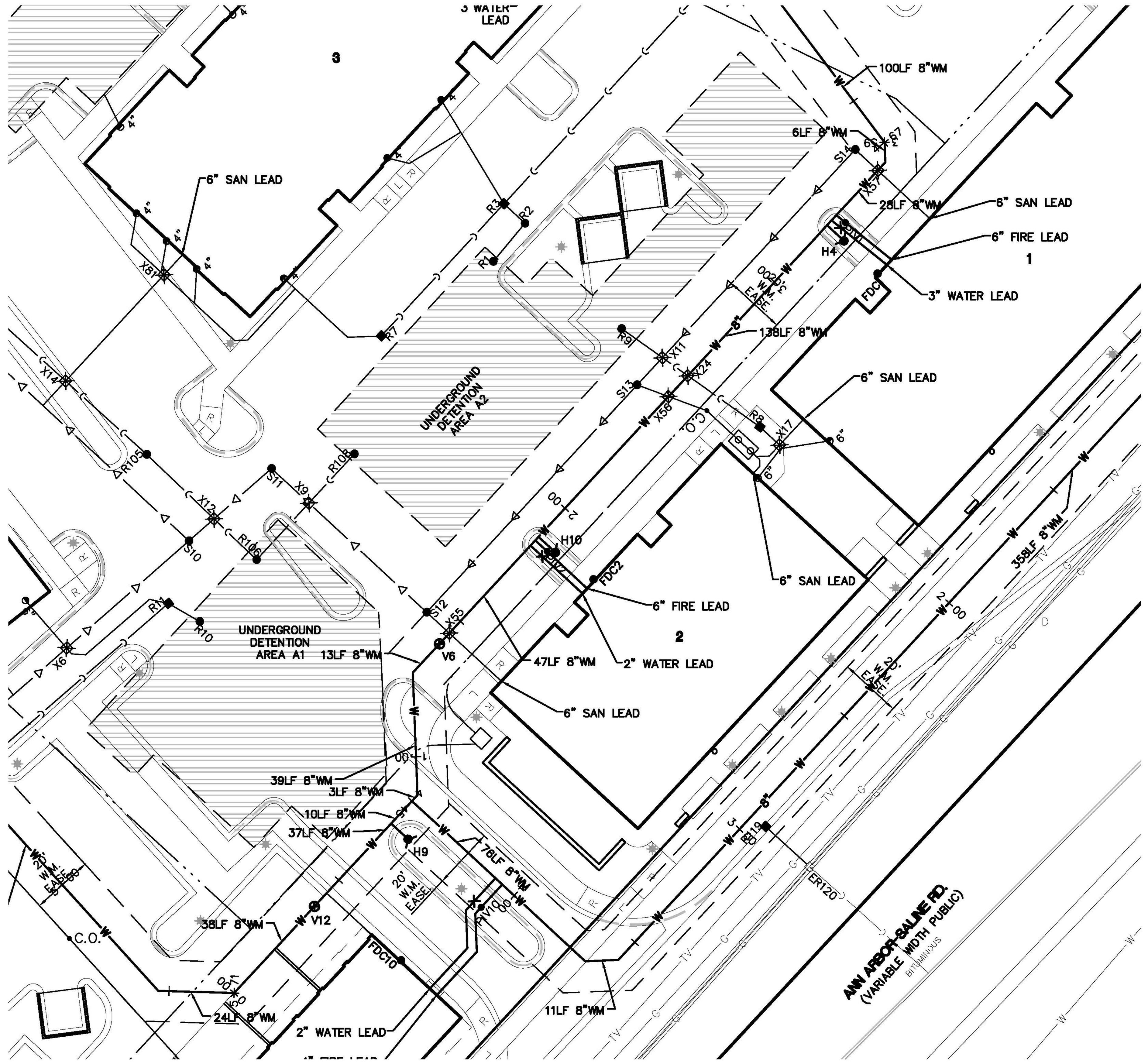
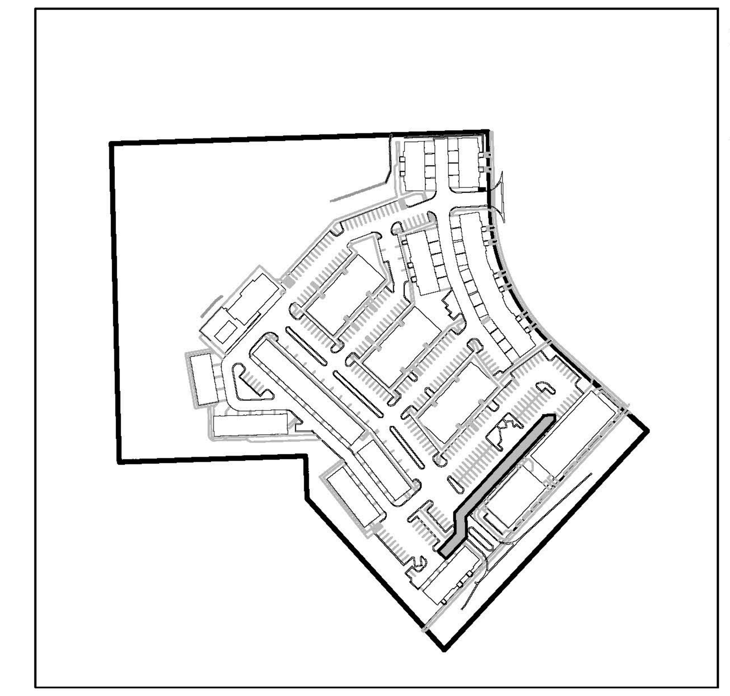
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

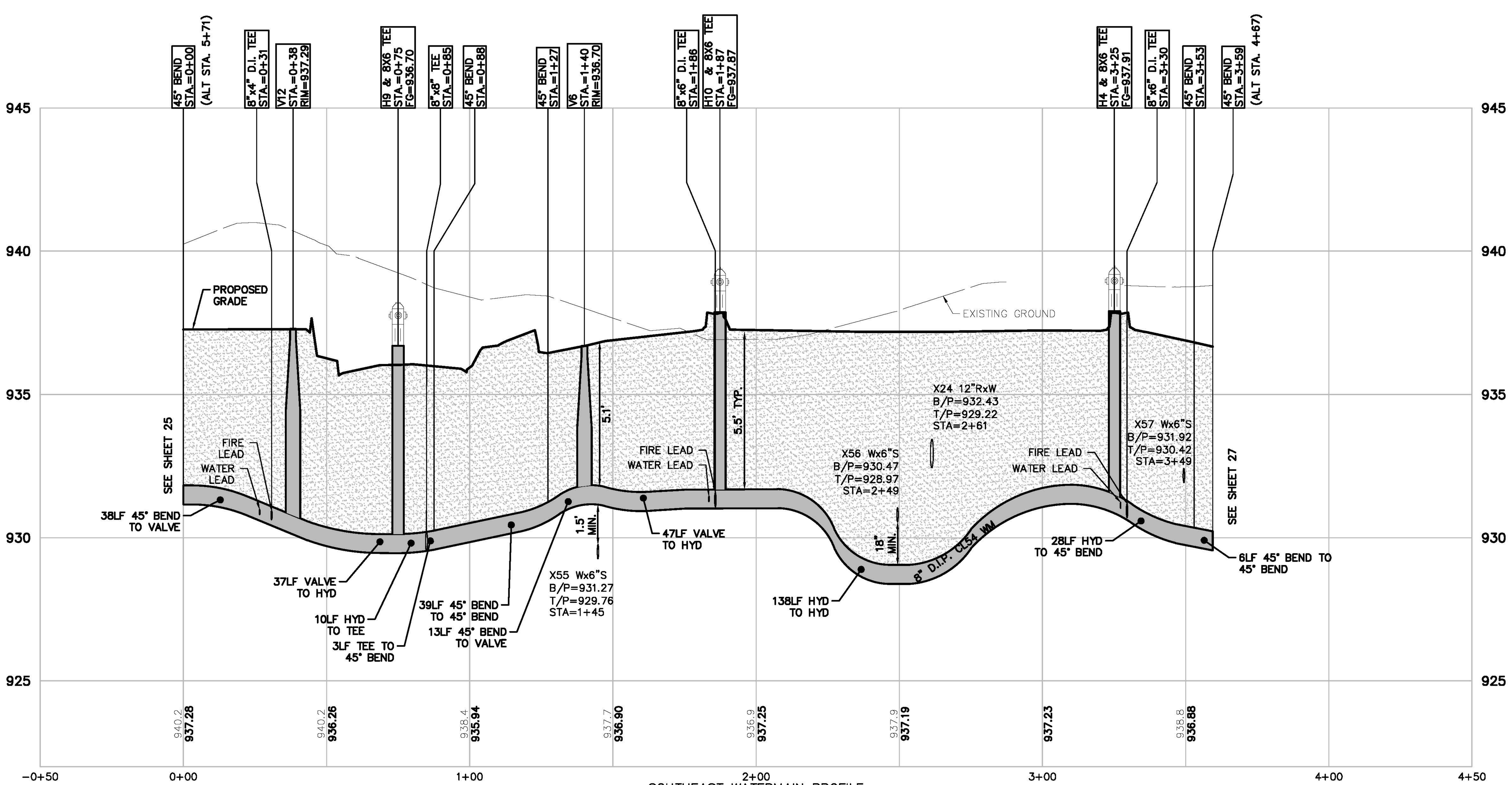
SCALE 0 15 30
1" = 30 FEET

DR. CR	CH. --
P.M. MB	
BOOK	--
JOB	16000137
SHEET NO.	25





KEY MAP
1" = 300'



SOUTHEAST WATERMAIN PROFILE
VERT: 1"=3'
HORZ: 1"=30'

QUANTITIES

8" D.I.P. CL54:	359 LF
8" VALVE IN WELL:	2 EA
HYDRANT ASSEMBLY:	3 EA

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- SAND BACKFILL COMPACTED TO 95%

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

WATERMAIN PLAN & PROFILE 3

DATE
JUNE 9, 2017

- 9/7/17 PER TWP PLANNING
- 9/21/17 PER TWP/WCWRC
- 10/04/17 PER WCRC
- 10/12/17 PER WCWRC
- 10/20/17 PER WCRC
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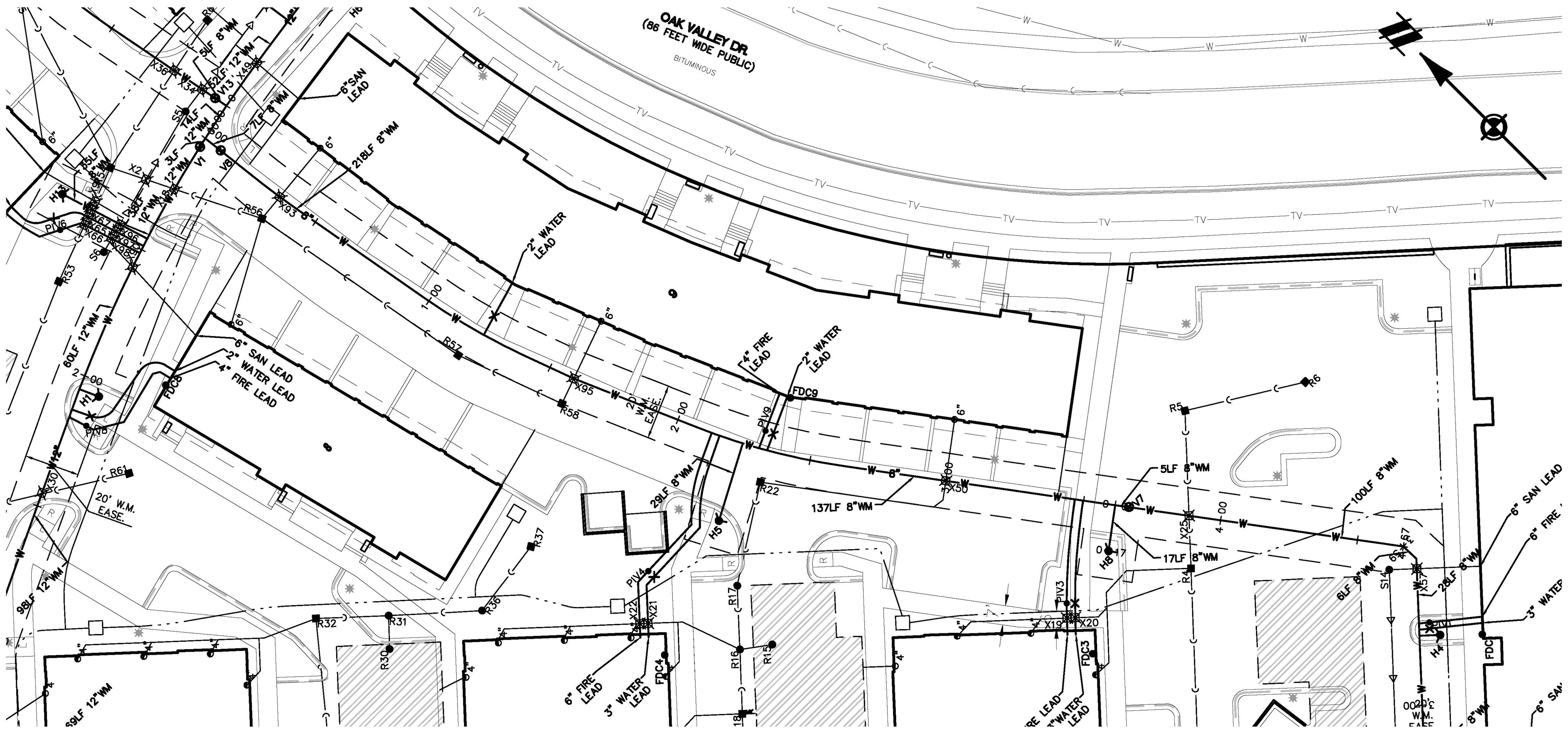
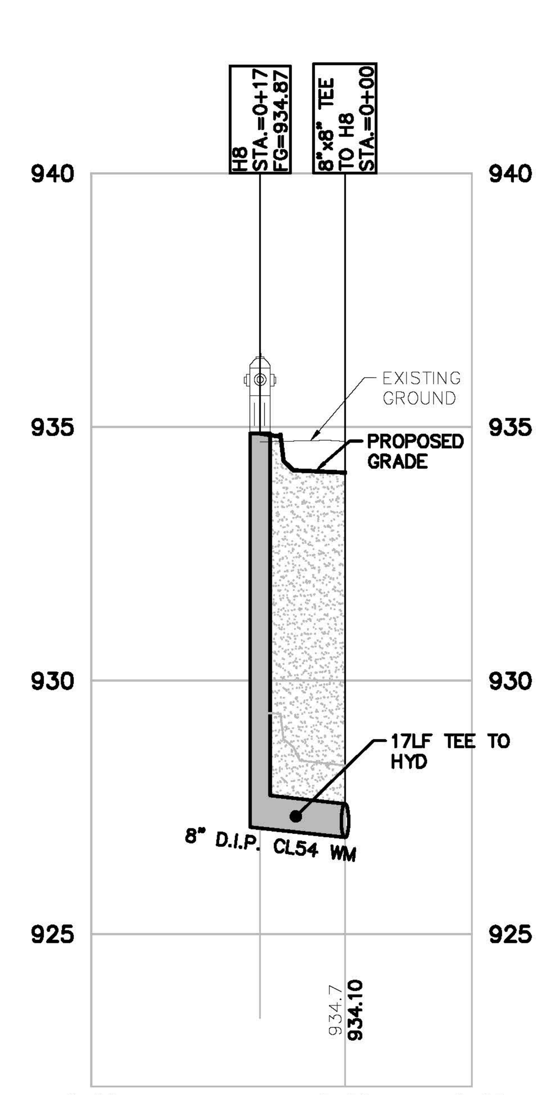
- 12/06/17 PER TWP
- 3/19/18 PER TWP
- 5/16/18 PER TWP
- 5/23/18 SITE UPDATES
- 6/05/18 SITE UPDATES
- 6/28/18 SITE UPDATES
- 7/26/18 PER TWP
- 8/10/18 DETENTION REV.
- 9/14/18 PER TWP
- 10/01/18 PER TWP
- 10/10/18 PER TWP

REVISIONS

SCALE 0 15 30
1" = 30 FEET

DR. CR	CH. --
P.M. MB	
BOOK	--
JOB	16000137
SHEET NO.	26

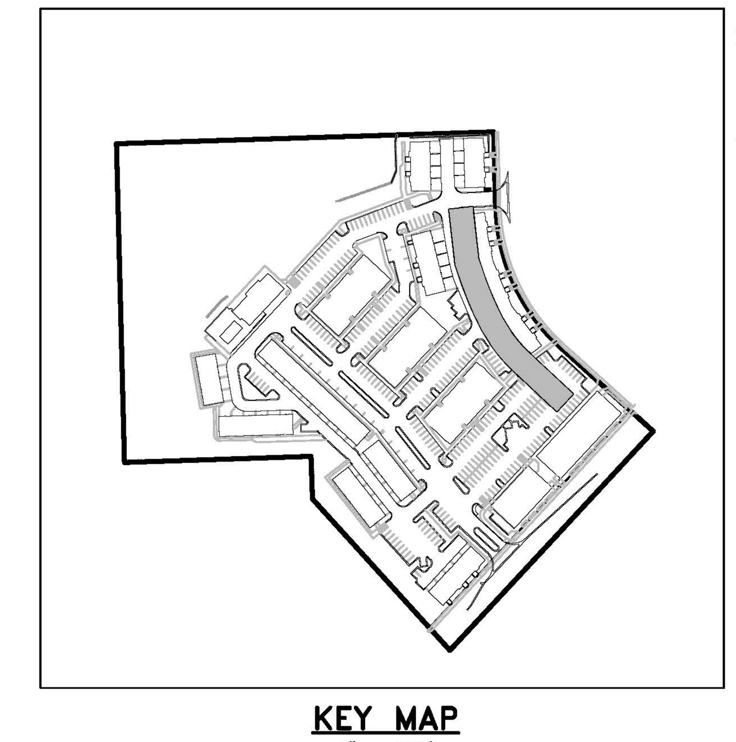


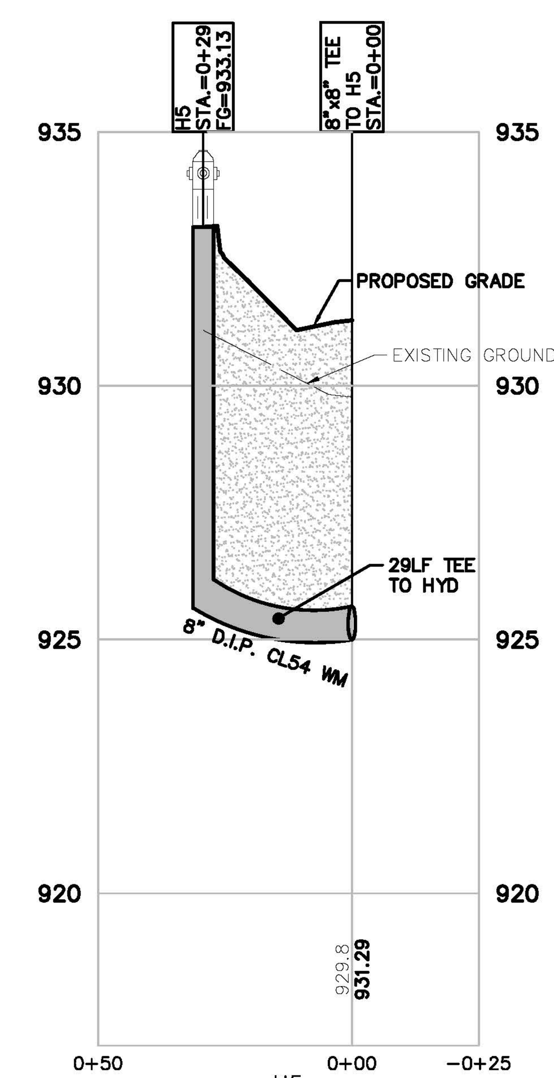


H8
VERT: 1"=3'
HORZ: 1"=30'

QUANTITIES

8" D.I.P. CL54: 17 LF
HYDRANT ASSEMBLY: 1 EA

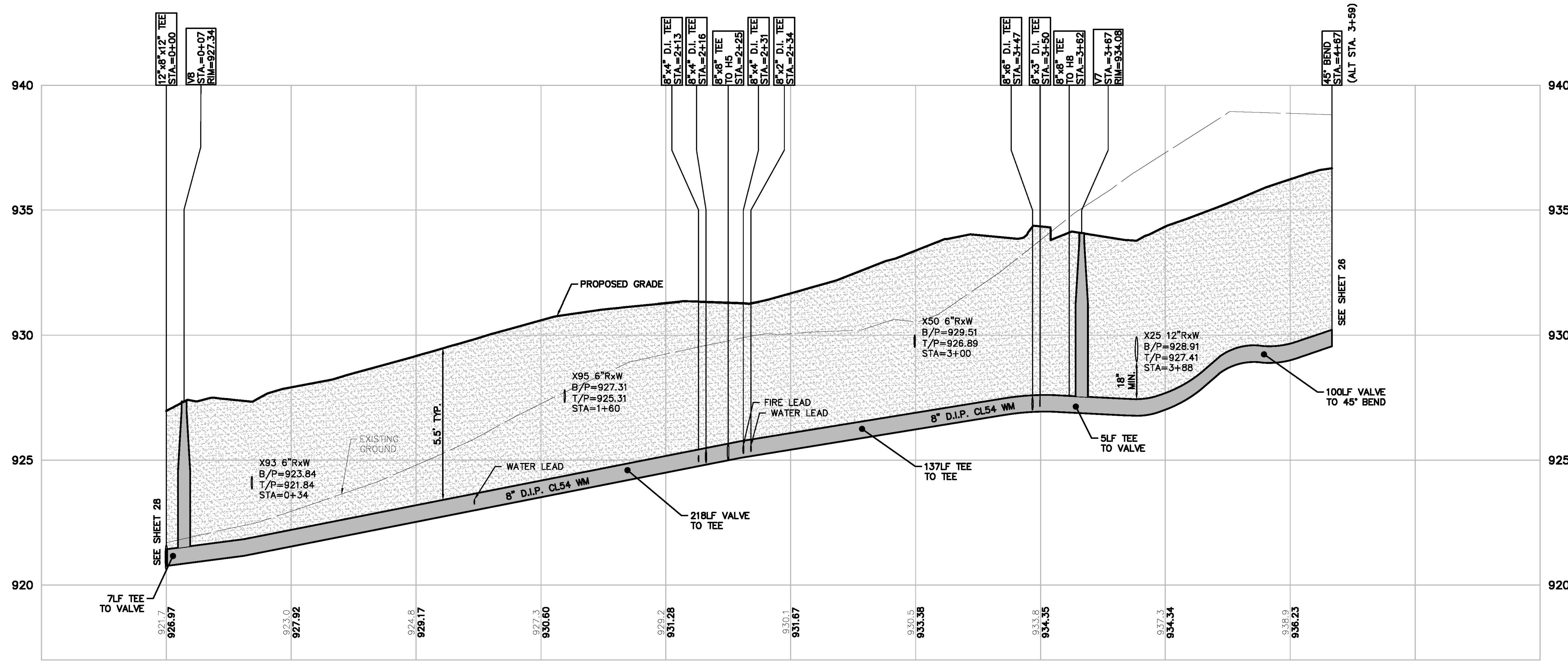




H5
VERT: 1"=3'
HORZ: 1"=30'

QUANTITIES

8" D.I.P. CL54: 29 LF
HYDRANT ASSEMBLY: 1 EA



NORTHEAST WATERMAIN PROFILE
VERT: 1"=3'
HORZ: 1"=30'

QUANTITIES

8" D.I.P. CL54: 467 LF
8" VALVE IN WELL: 2 EA

LEGEND

- EXIST. WETLAND
- EXIST. TREE
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. INLET FILTER
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- SAND BACKFILL COMPACTED TO 95%
- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

811
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WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
WATERMAIN PLAN & PROFILE 4

DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
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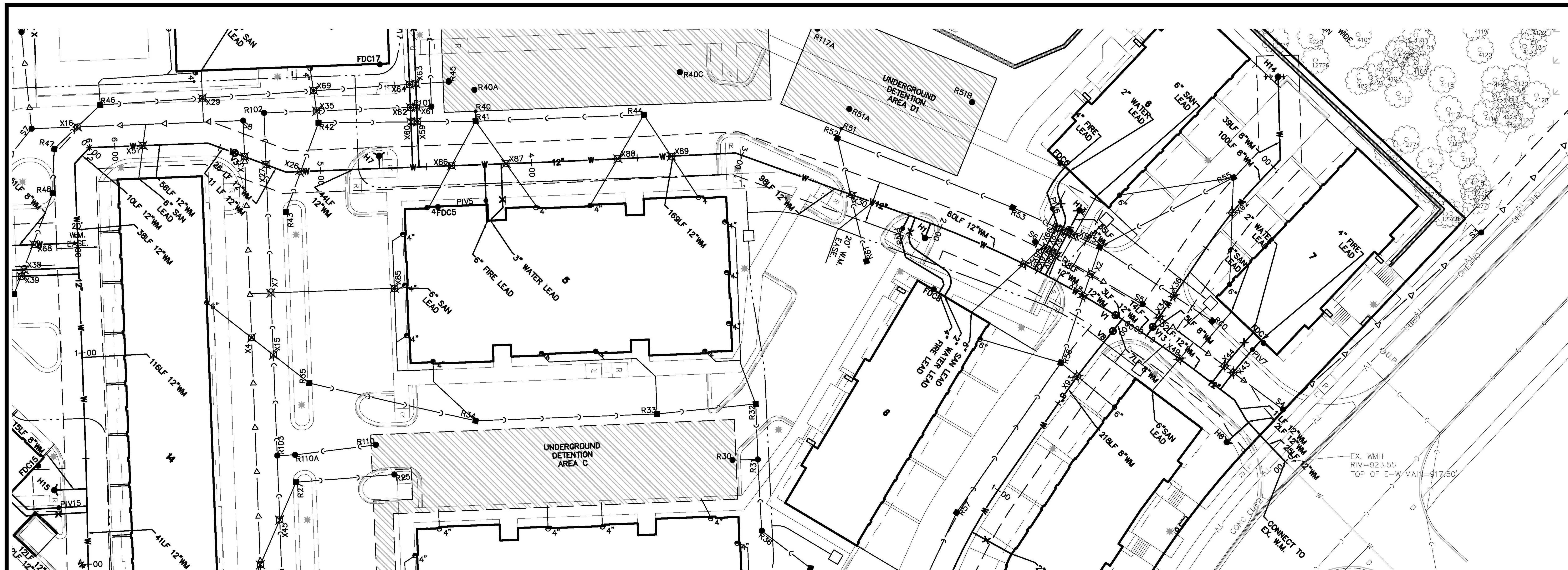
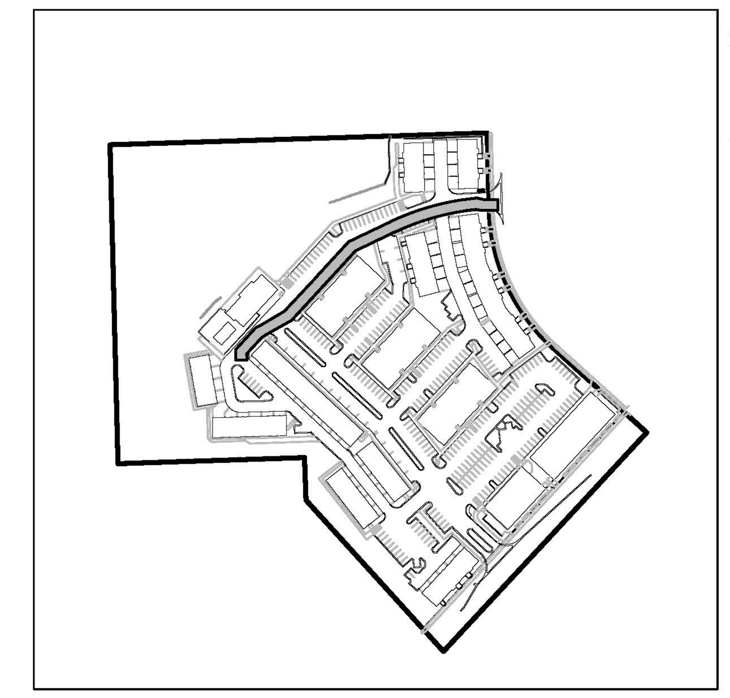
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

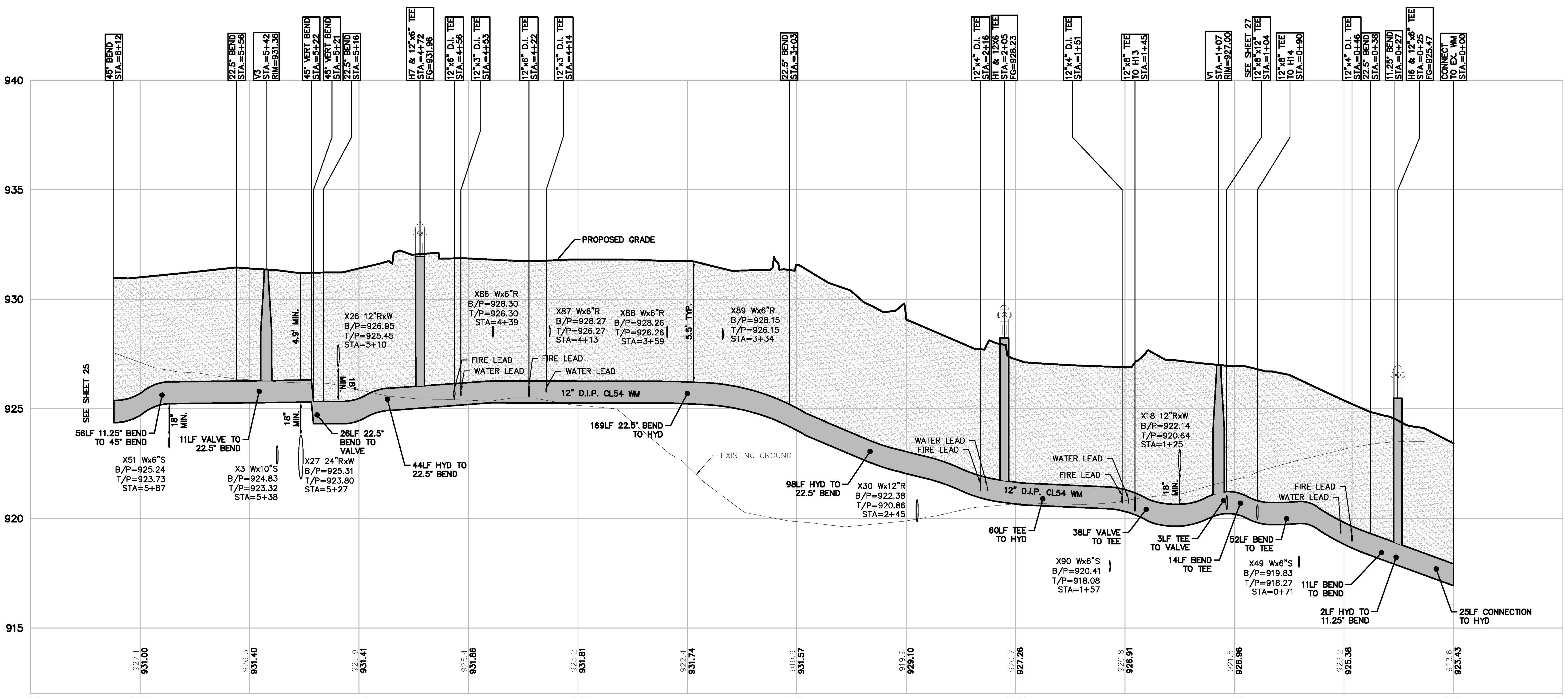
SCALE 0 15 30
1" = 30 FEET

DR. CR CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO.
27





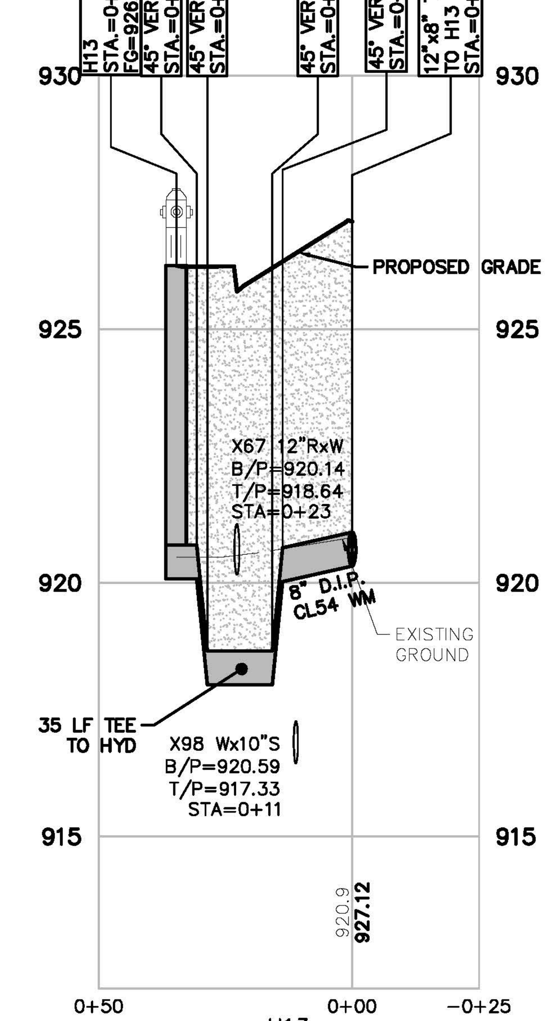
KEY MAP
1" = 300'



NORTH WATERMAIN CONNECTION
VERT: 1"=3'
HORZ: 1"=30'

QUANTITIES

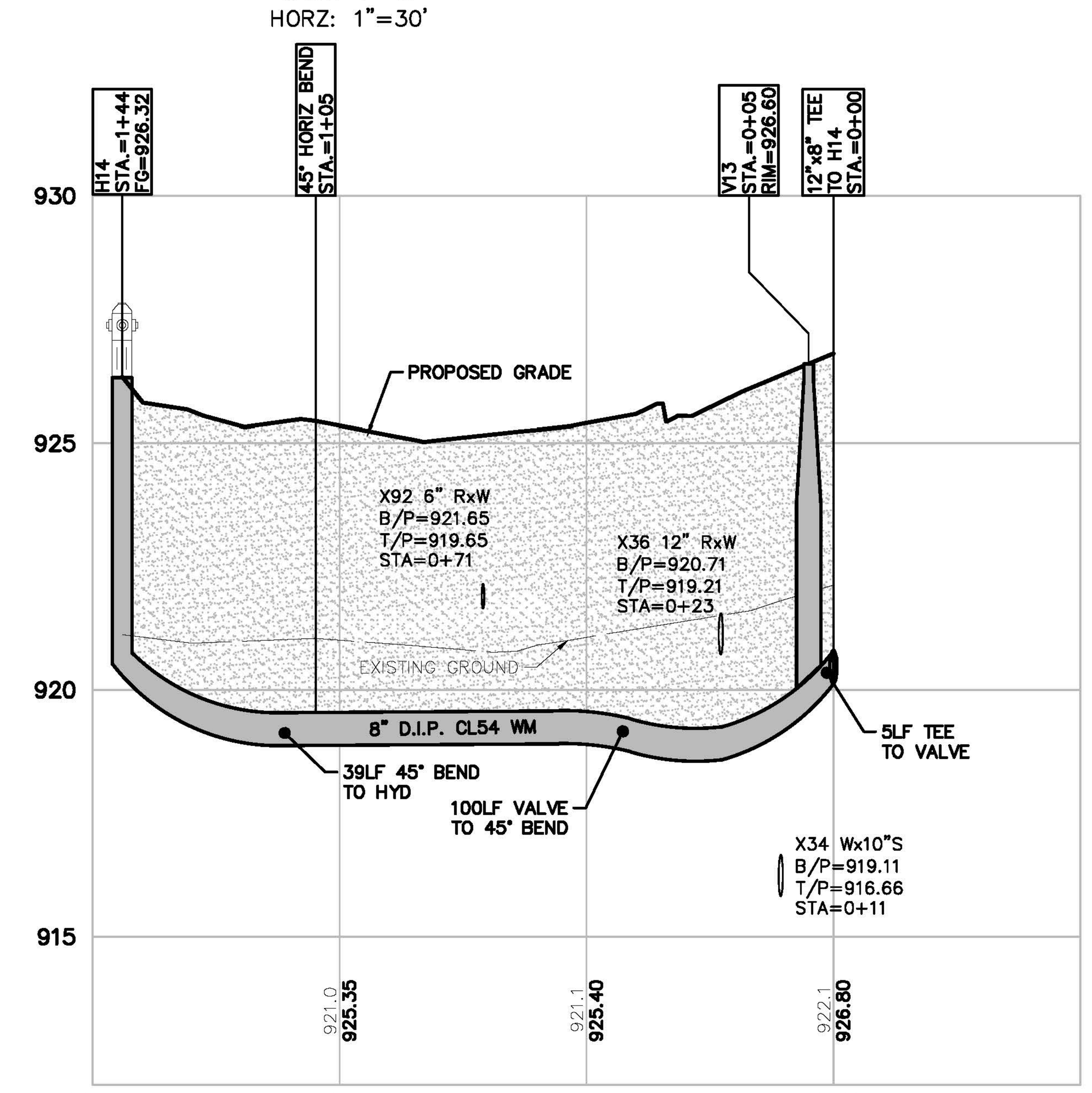
12" D.I.P. CL54:	612 LF
12" VALVE IN WELL:	2 EA
HYDRANT ASSEMBLY:	3 EA



H13
VERT: 1"=3'
HORZ: 1"=30'

QUANTITIES

8" D.I.P. CL54:	35 LF
HYDRANT ASSEMBLY:	1 EA



H14
VERT: 1"=3'
HORZ: 1"=30'

QUANTITIES

8" D.I.P. CL54:	144 LF
8" VALVE IN WELL:	1 EA
HYDRANT ASSEMBLY:	1 EA

LEGEND

BOUNDARY LINE	EXIST. TREE
EXIST. EASEMENT	EXIST. WETLAND BUFFER
SECTION LINE	EXIST. OVERHEAD ELEC. LINE
BOUNDARY/PROPERTY LINE	EXIST. OVERHEAD TELE. LINE
EXIST. SETBACK	EXIST. CABLE LINE
EXIST. CONTOUR	EXIST. UNSPECIFIED UTILITIES
EXIST. TREE LINE	EXIST. GAS
EXIST. CURB AND GUTTER	EXIST. STORM
EXIST. FENCE	EXIST. WATER MAIN
EXIST. GRAVEL	EXIST. SANITARY
EXIST. WETLAND	EXIST. UNSPECIFIED UTILITY
	EXIST. CULVERT

EXIST. CATCH BASIN/INLET	PROP. PARKING STRIPE
EXIST. HYDRANT	PROP. CONTOUR
EXIST. VALVE	PROP. INLET FILTER
EXIST. SANITARY SEWER	PROP. SILT FENCE
PROP. SETBACK	PROP. STORM SEWER
PROP. BUILDING	PROP. SANITARY
PROP. BUILDING INTERIOR	PROP. WATER MAIN
PROP. WALL	PROP. END SECTION
PROP. PARKING STRIPE	PROP. CATCH BASIN/INLET
PROP. BACK OF CURB	PROP. WATER VALVE
PROP. ASHPALT	PROP. FIRE HYDRANT
PROP. LOT LINE	PROP. MANHOLE
	SAND BACKFILL COMPACTED TO 95%

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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CLIENT
BEZTAK LAND COMPANY
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FINAL SITE PLAN
WATERMAIN PLAN & PROFILE 5

DATE
JUNE 9, 2017

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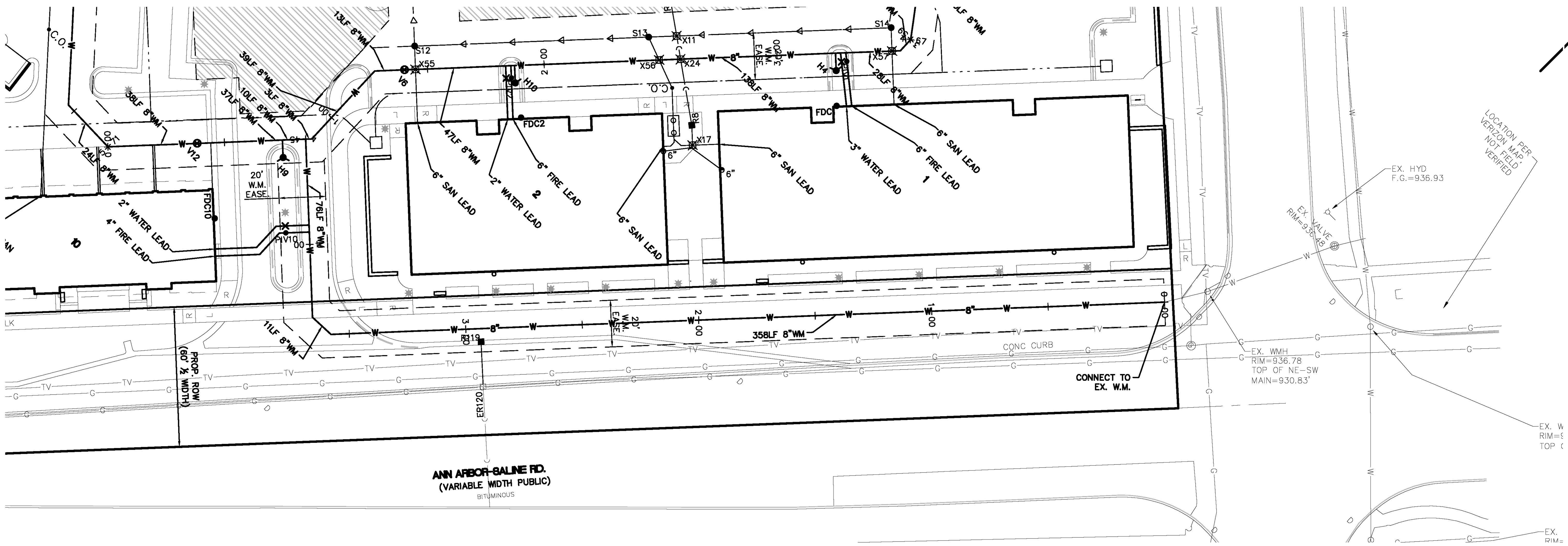
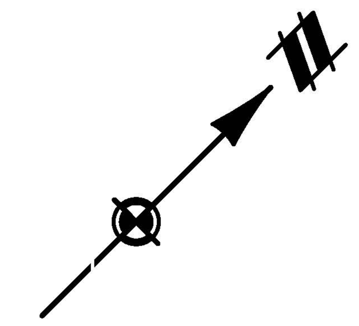
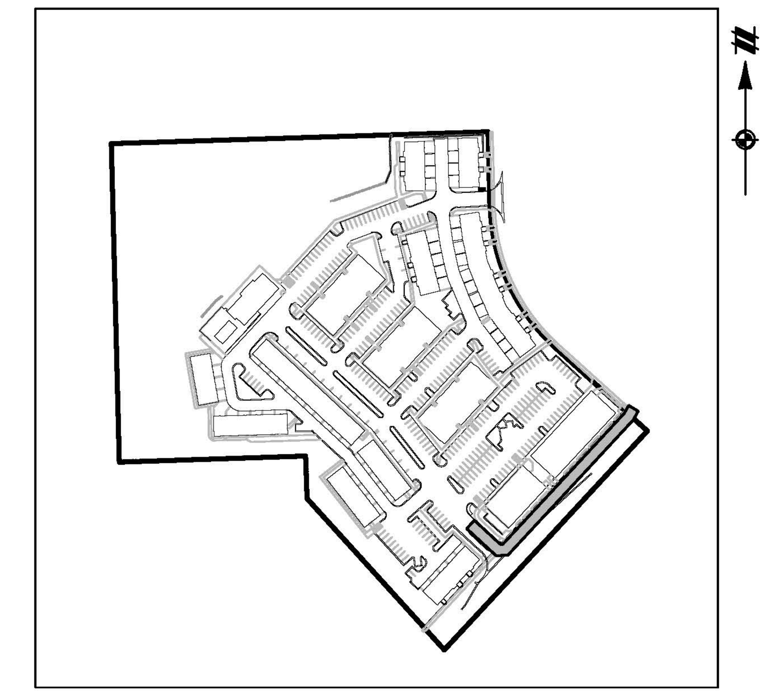
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 15 30
1" = 30 FEET

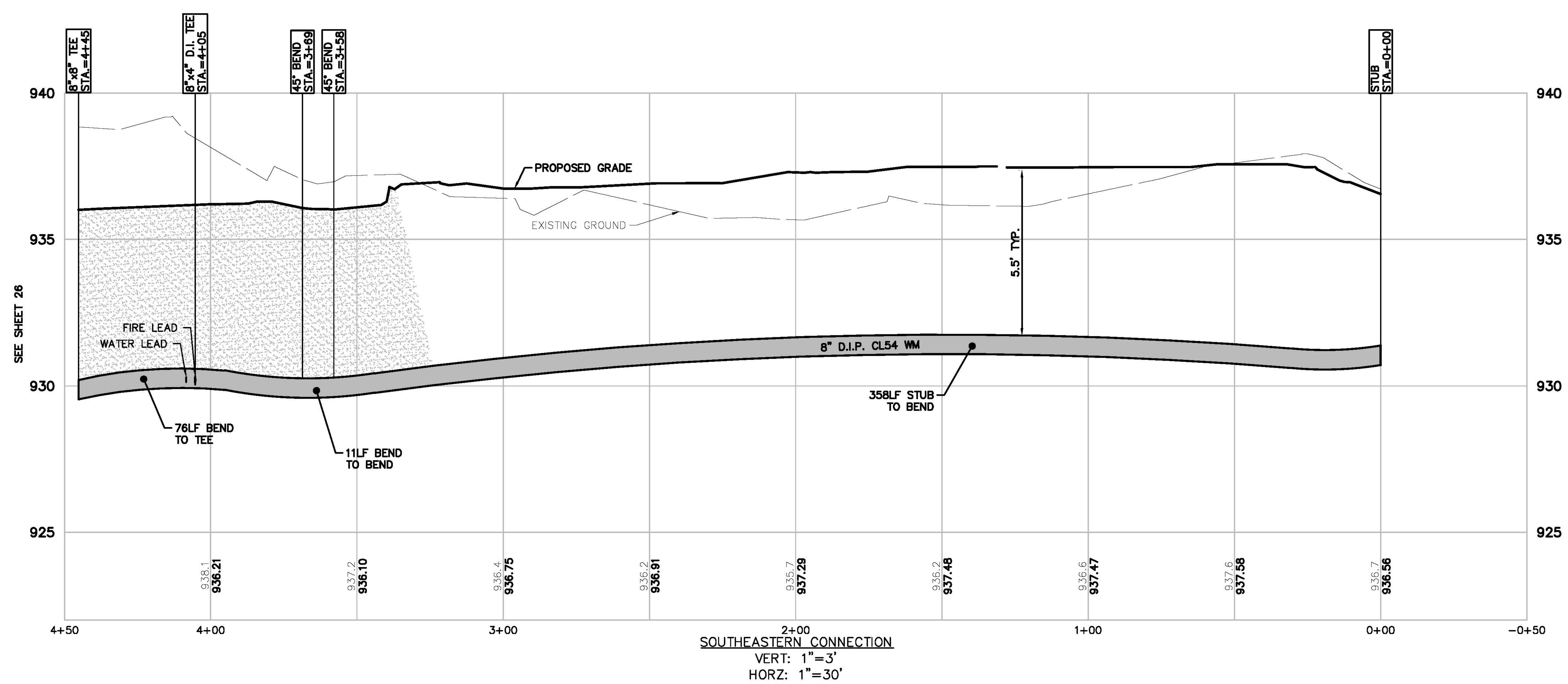
DR. CR	CH. --
P.M. MB	
BOOK	--
JOB	16000137
SHEET NO.	28







KEY MAP
1" = 300'



SOUTHEASTERN CONNECTION
VERT: 1"=3'
HORZ: 1"=30'

QUANTITIES

8" D.I.P. CL54: 445 LF

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- SAND BACKFILL COMPACTED TO 95%

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

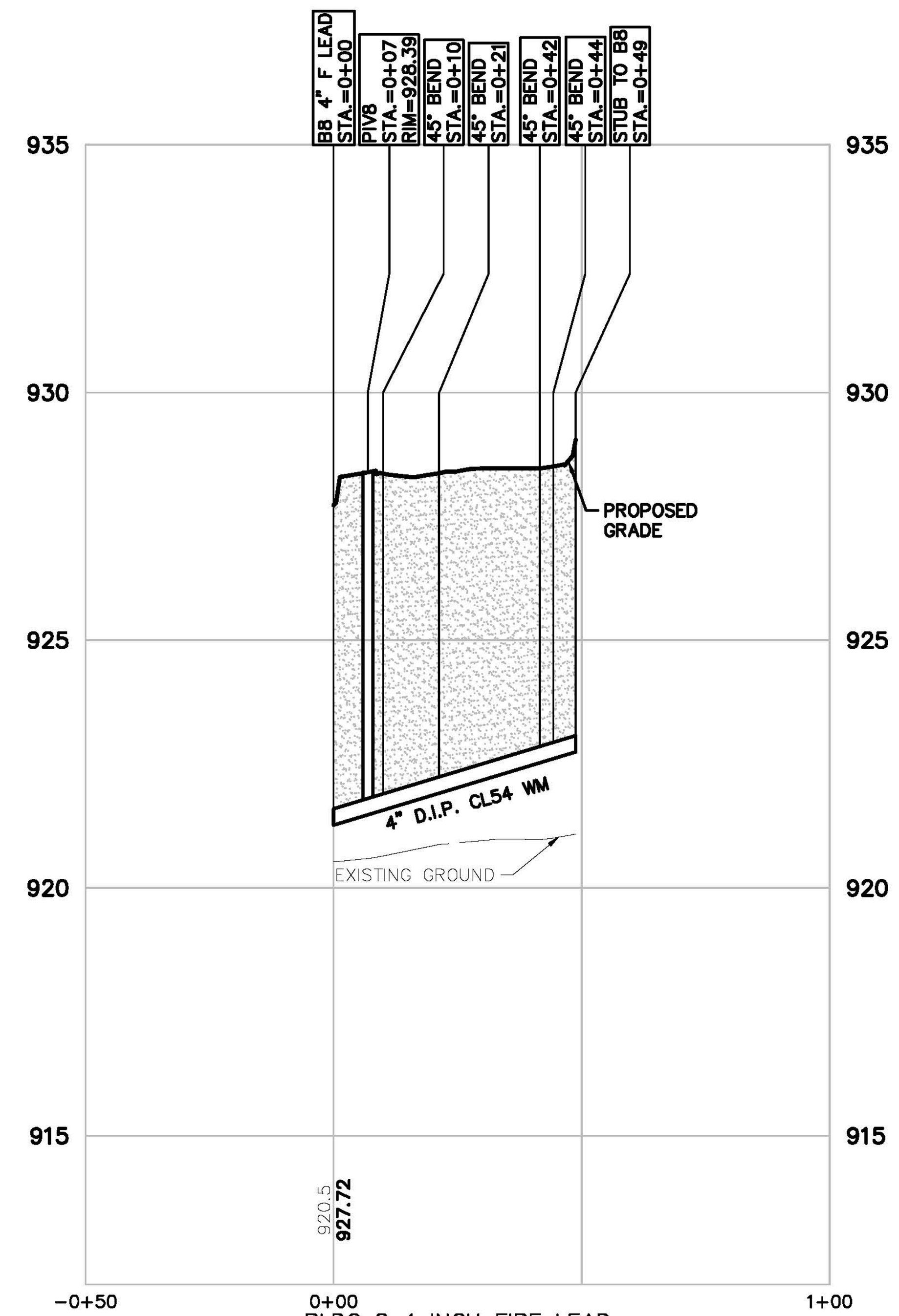
WATERMAIN PLAN & PROFILE 6

DATE JUNE 9, 2017

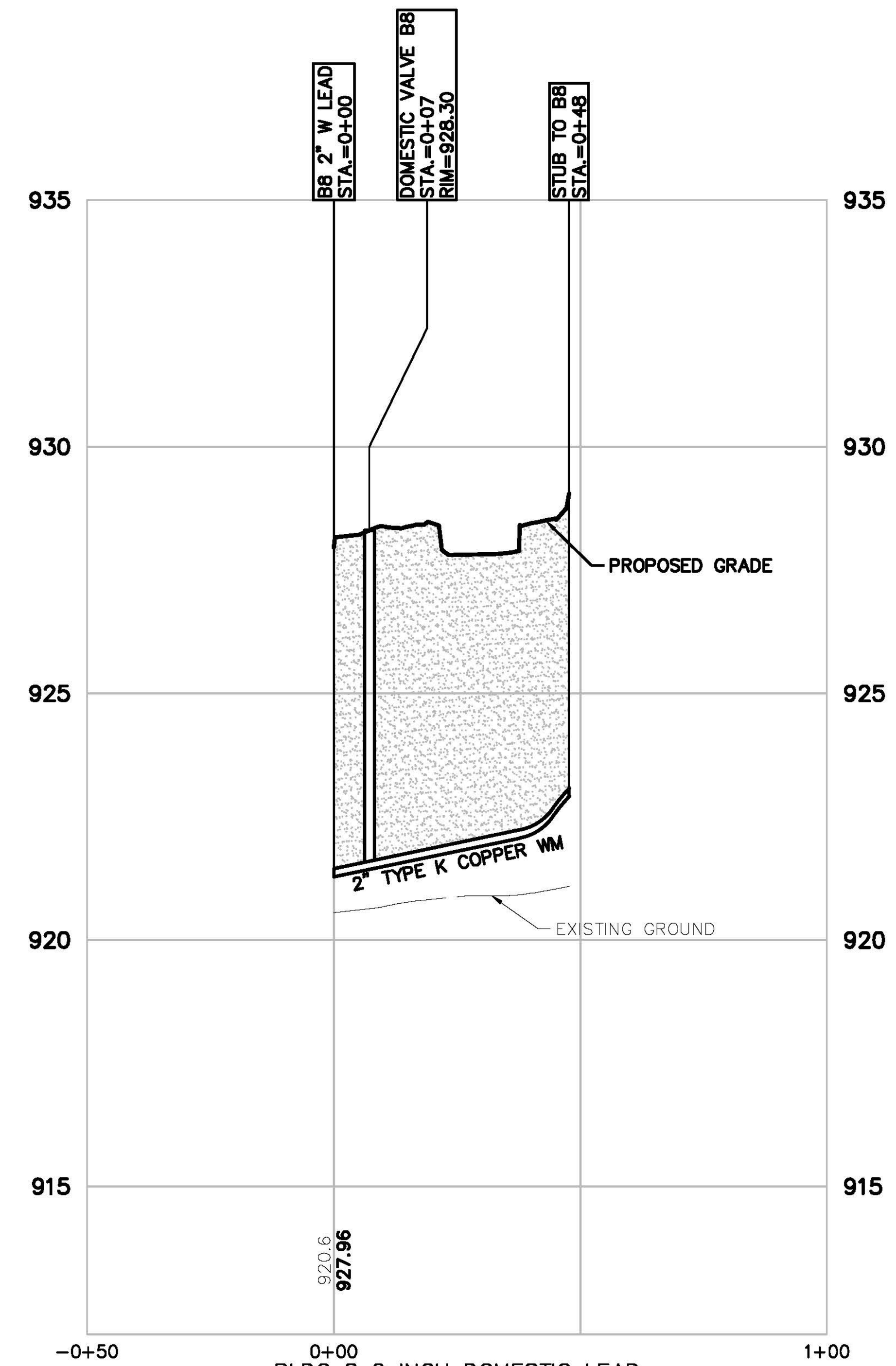
9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 15 30
1" = 30 FEET

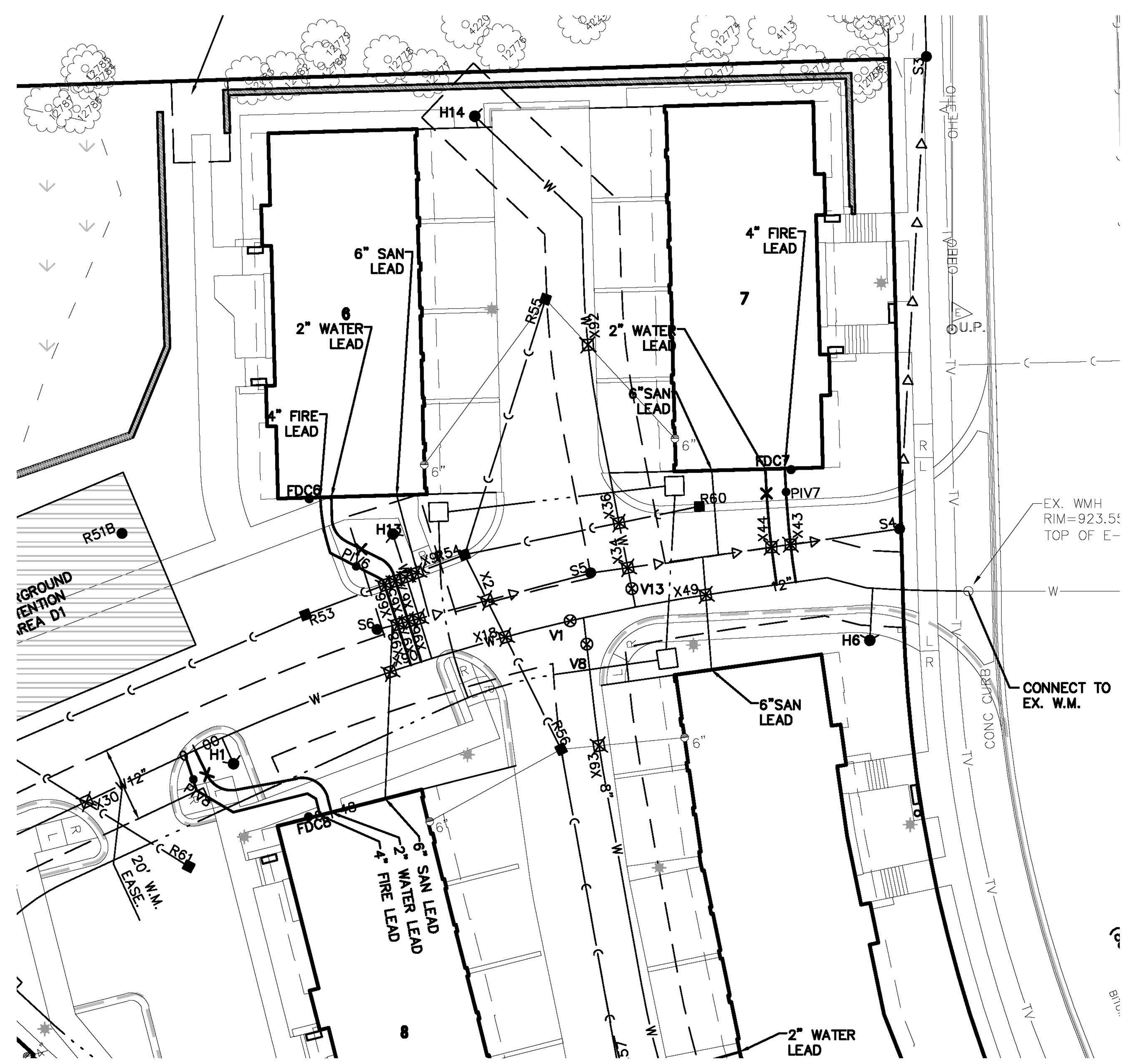
DR. CR CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO.
29

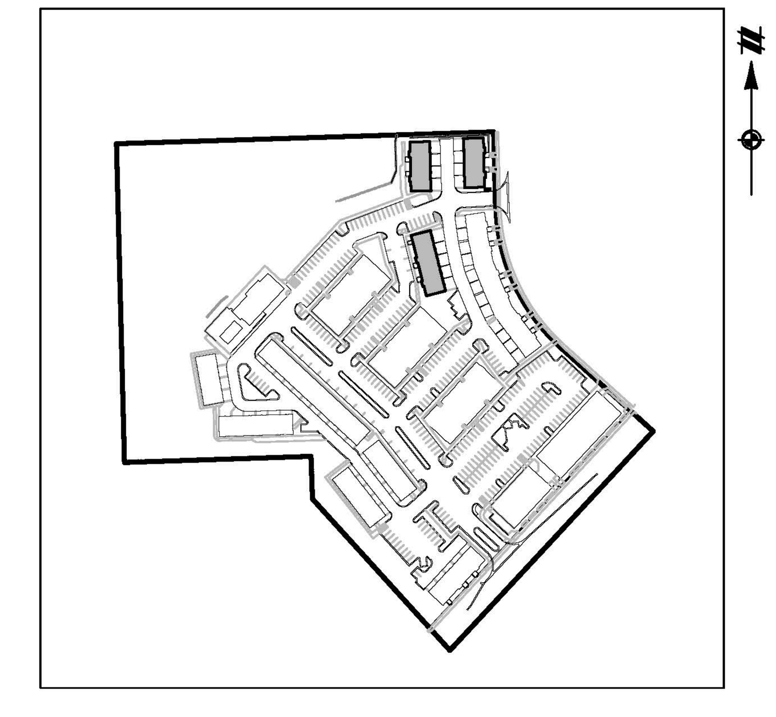


BLDG 8 4 INCH FIRE LEAD
VERT: 1"=3'
HORZ: 1"=30'



BLDG 8 2 INCH DOMESTIC LEAD
VERT: 1"=3'
HORZ: 1"=30'





KEY MAP
1" = 300'

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
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- EXIST. GAS
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- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
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- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
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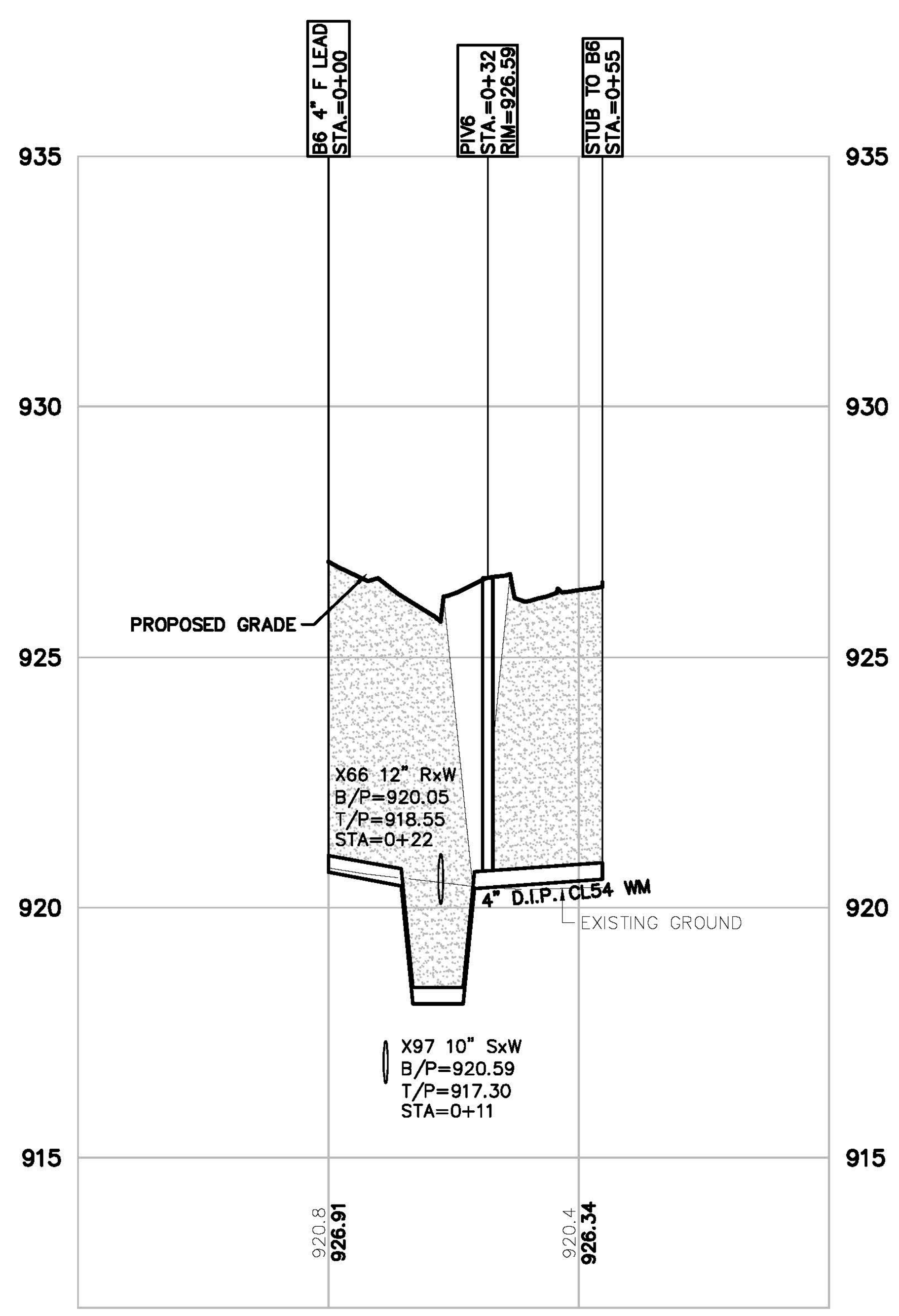
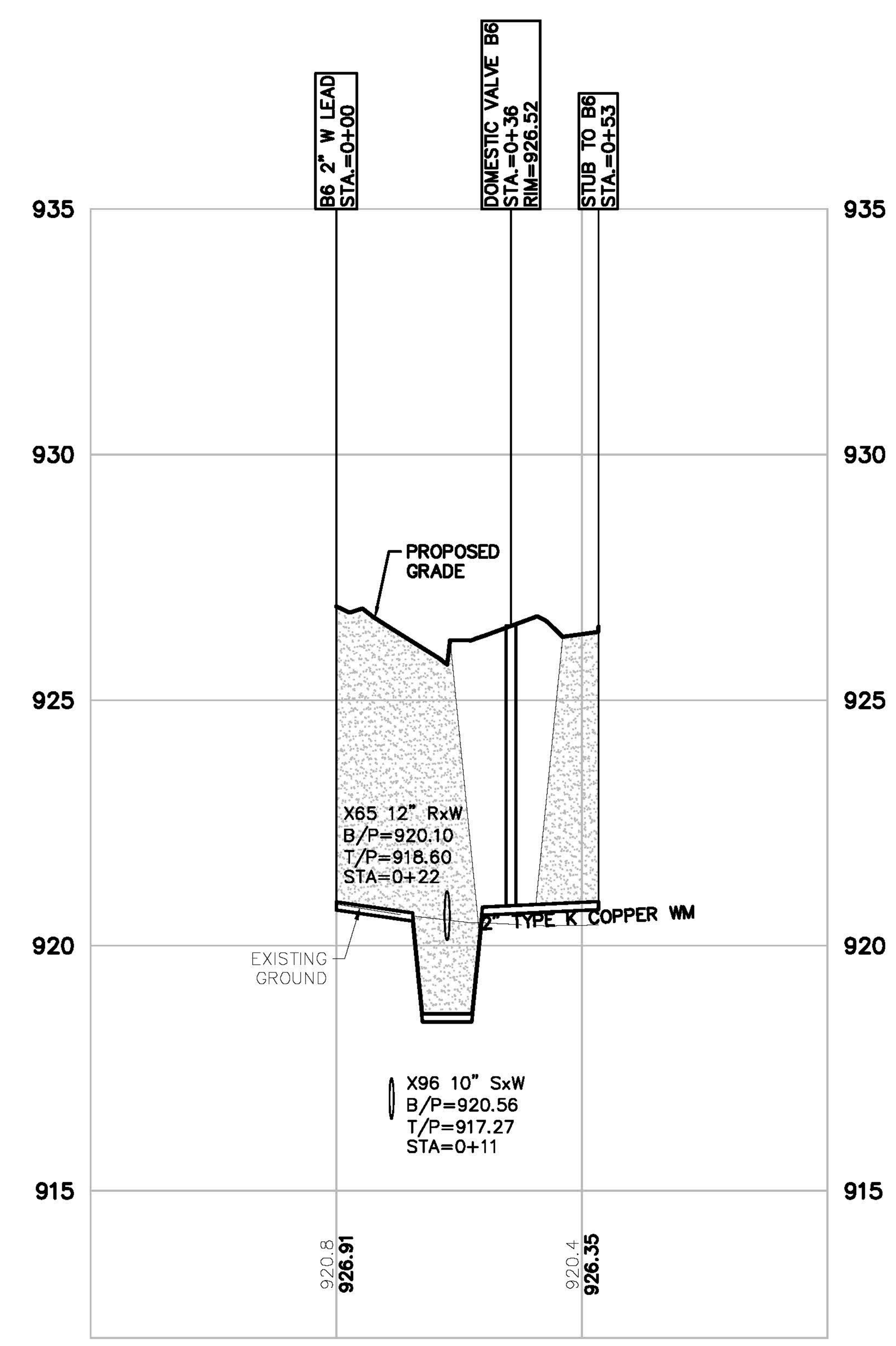
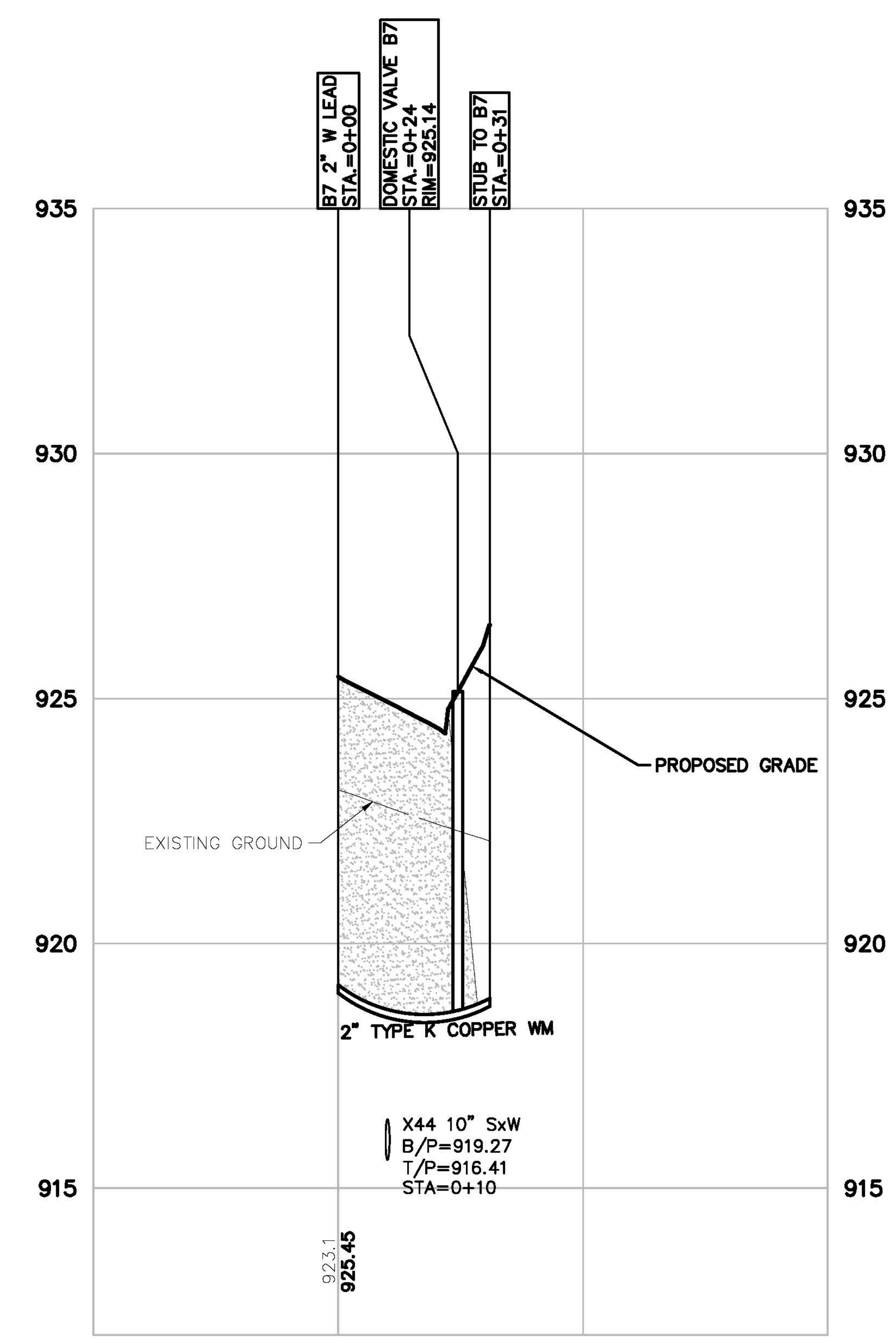
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- SAND BACKFILL COMPACTED TO 95%



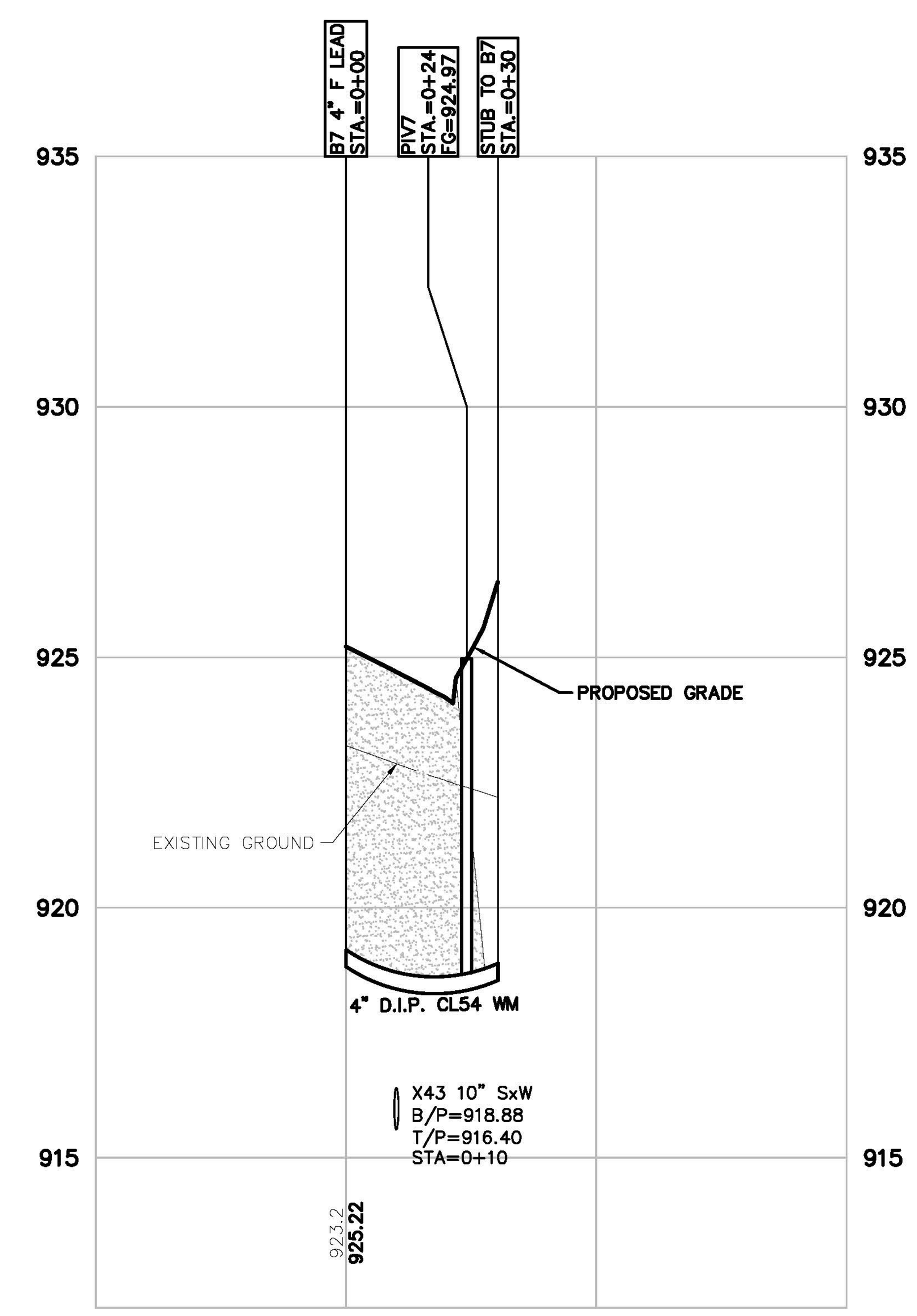
BLDG 6 4 INCH FIRE LEAD
VERT: 1"=3'
HORZ: 1"=30'



BLDG 6 2 INCH DOMESTIC LEAD
VERT: 1"=3'
HORZ: 1"=30'



BLDG 7 2 INCH DOMESTIC LEAD
VERT: 1"=3'
HORZ: 1"=30'



BLDG 7 4 INCH FIRE LEAD
VERT: 1"=3'
HORZ: 1"=30'

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

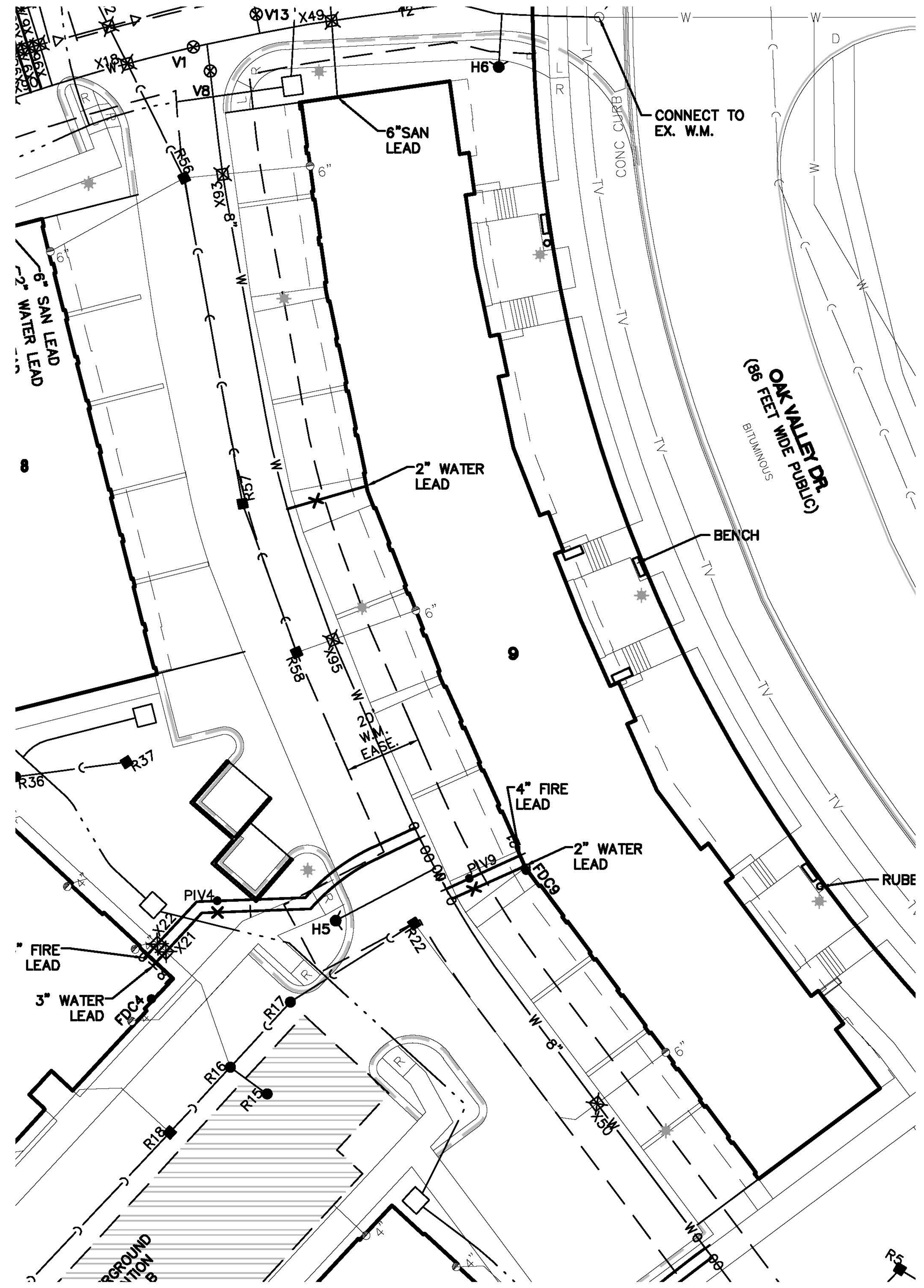
WATER LEAD PROFILE 1

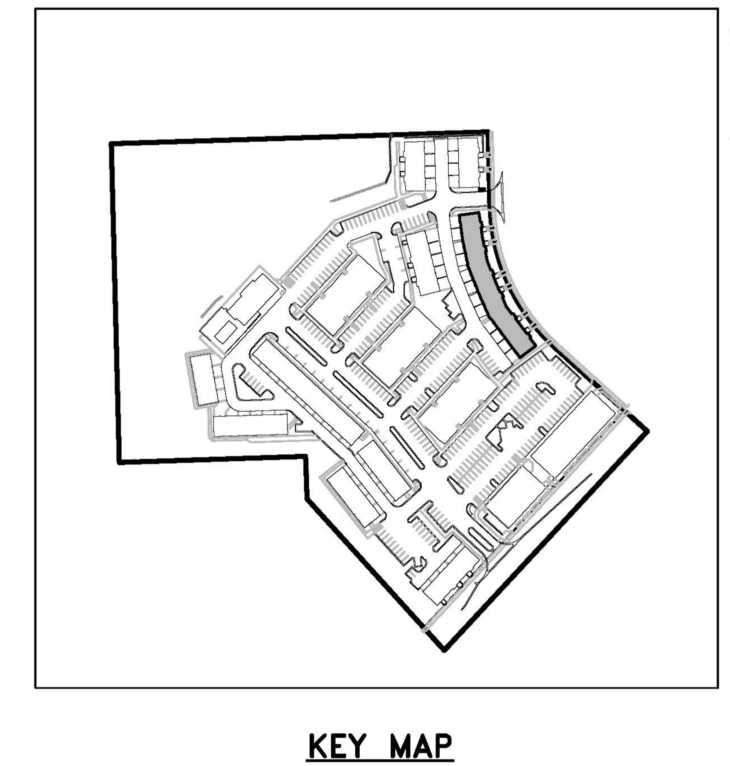
DATE
JUNE 9, 2017

REVISIONS
- 9/7/17 PER TWP PLANNING
- 9/21/17 PER TWP/WCWRC
- 10/04/17 PER WCRC
- 10/12/17 PER WCWRC
- 10/20/17 PER WCRC
- 11/1/17 SITE UPDATES
- 12/06/17 PER TWP
- 3/19/18 PER TWP
- 5/16/18 PER TWP
- 5/23/18 SITE UPDATES
- 6/05/18 SITE UPDATES
- 6/28/18 SITE UPDATES
- 7/26/18 PER TWP
- 8/10/18 DETENTION REV.
- 9/14/18 PER TWP
- 10/01/18 PER TWP
- 10/10/18 PER TWP

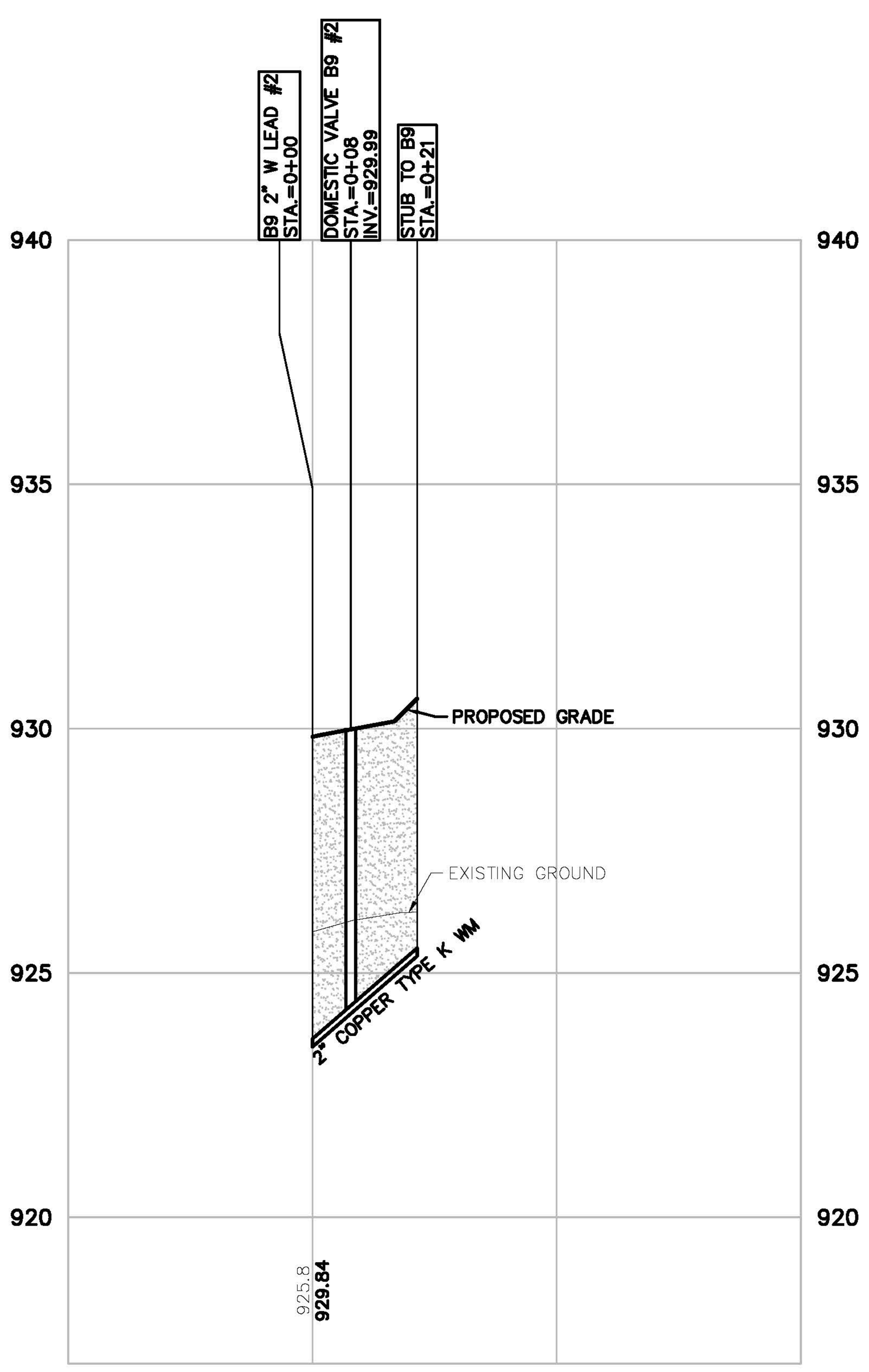
SCALE 0 15 30
1" = 30 FEET

DR. CR	CH. --
P.M. MB	
BOOK --	
JOB 16000137	
SHEET NO. 30	

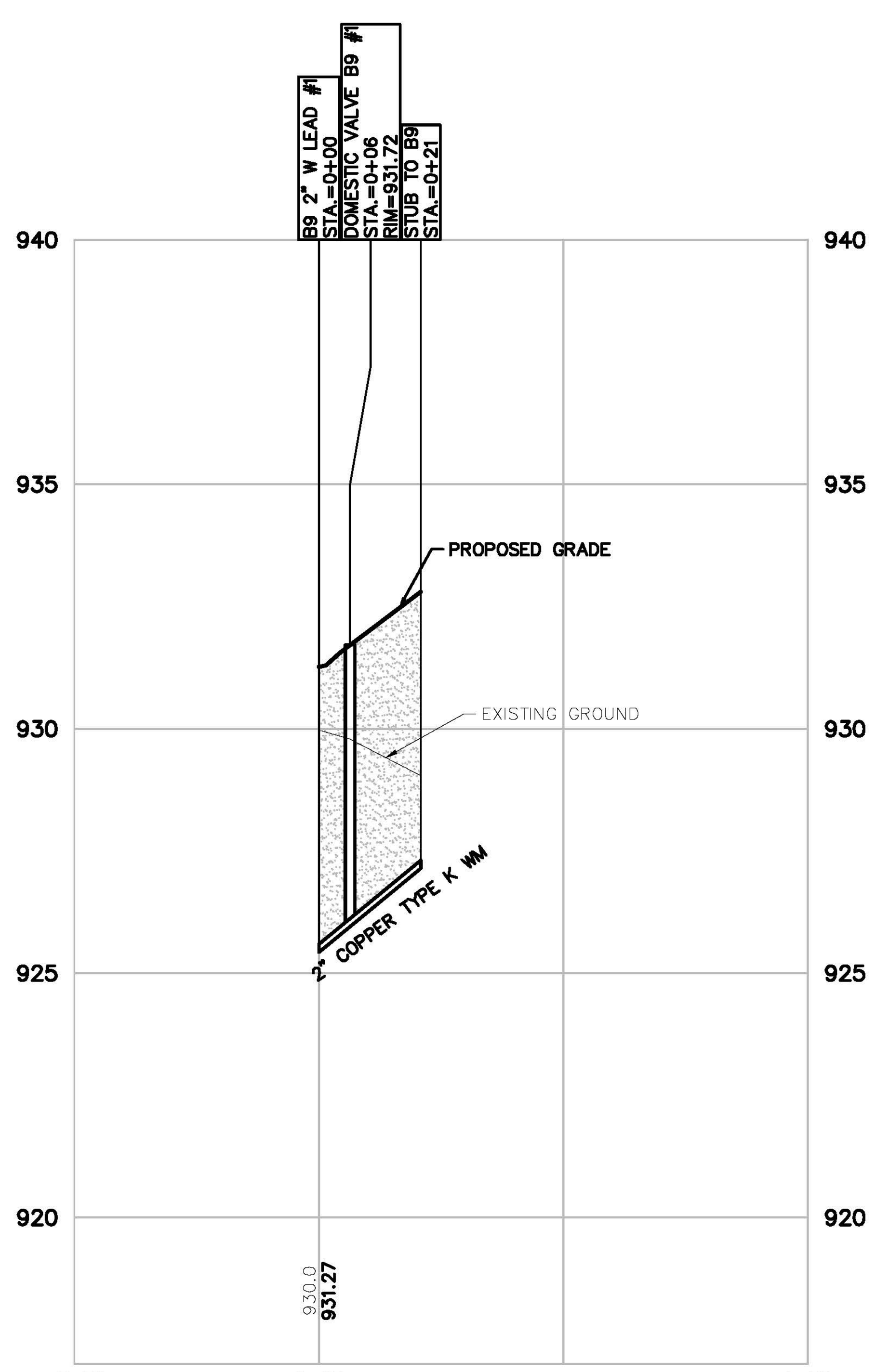




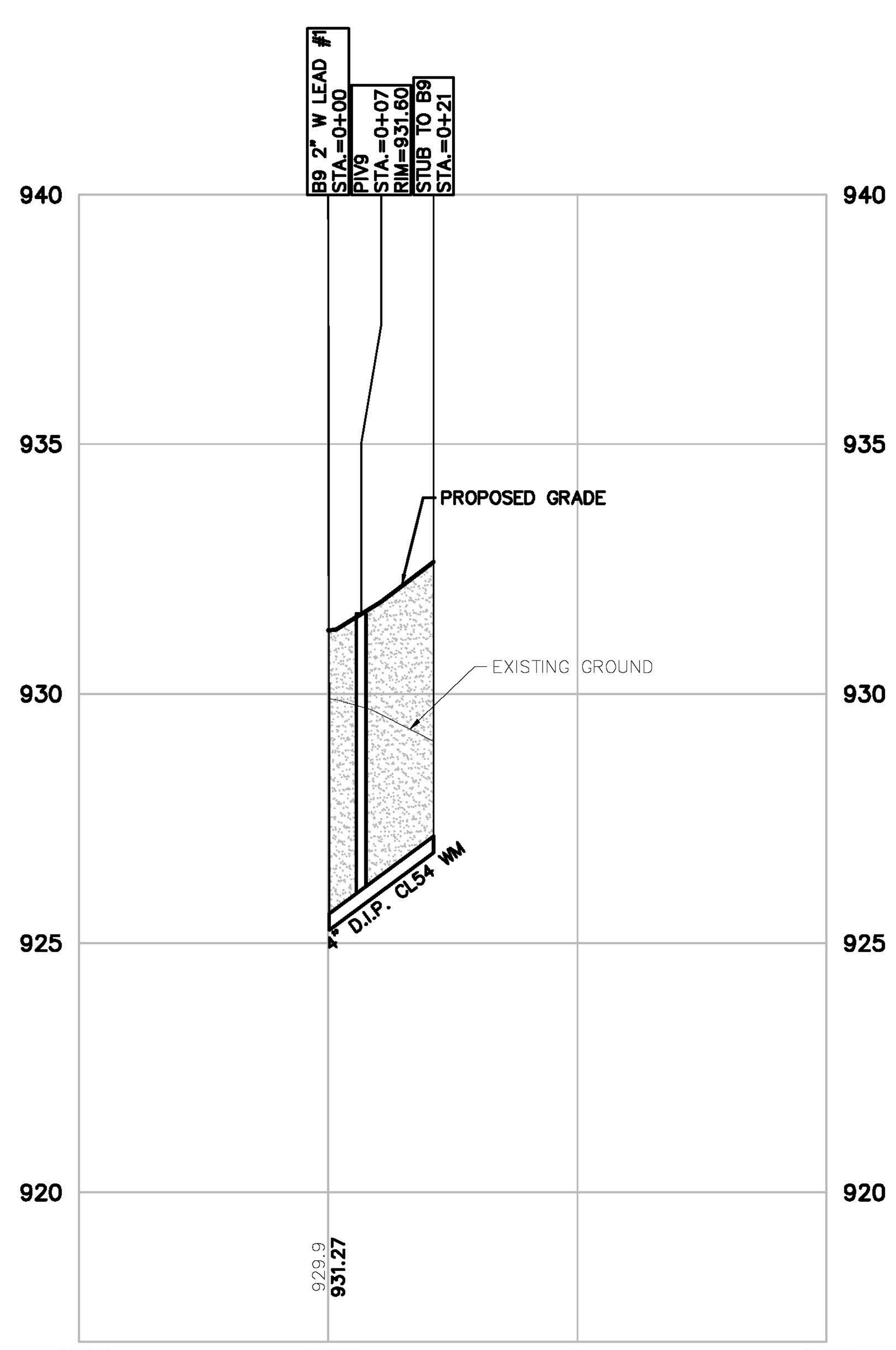
KEY MAP
1" = 300'



BUILDING 9 2 INCH DOMESTIC LEAD #2
VERT: 1"=3'
HORZ: 1"=30'



BLDG 9 2 INCH DOMESTIC LEAD #1
VERT: 1"=3'
HORZ: 1"=30'



BLDG 9 4 INCH FIRE LEAD
VERT: 1"=3'
HORZ: 1"=30'

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
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- BOUNDARY/PROPERTY LINE
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- EXIST. GAS
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- EXIST. WATER MAIN
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- EXIST. UNSPECIFIED UTILITY
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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

WATER LEAD PROFILE 2

DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
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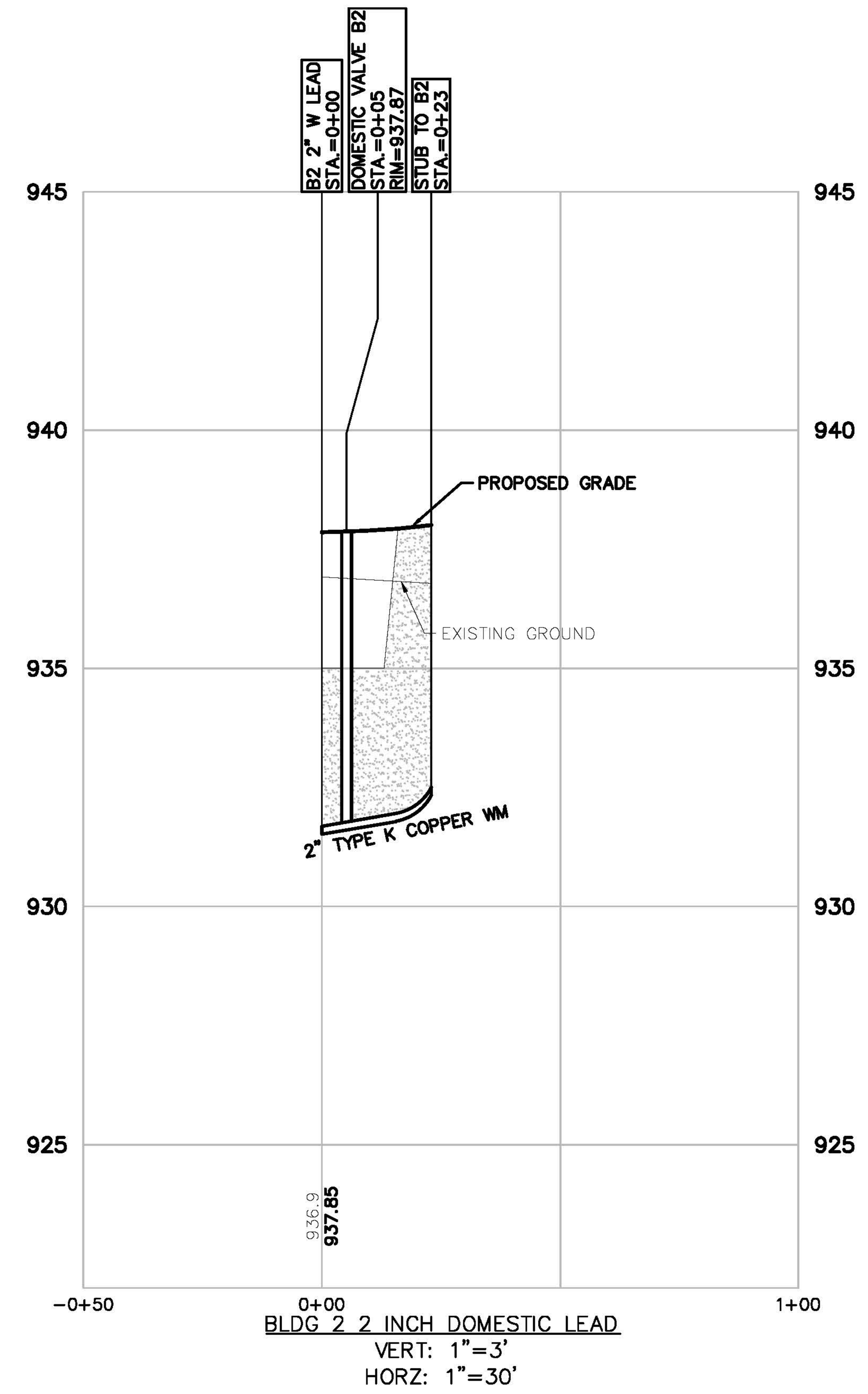
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

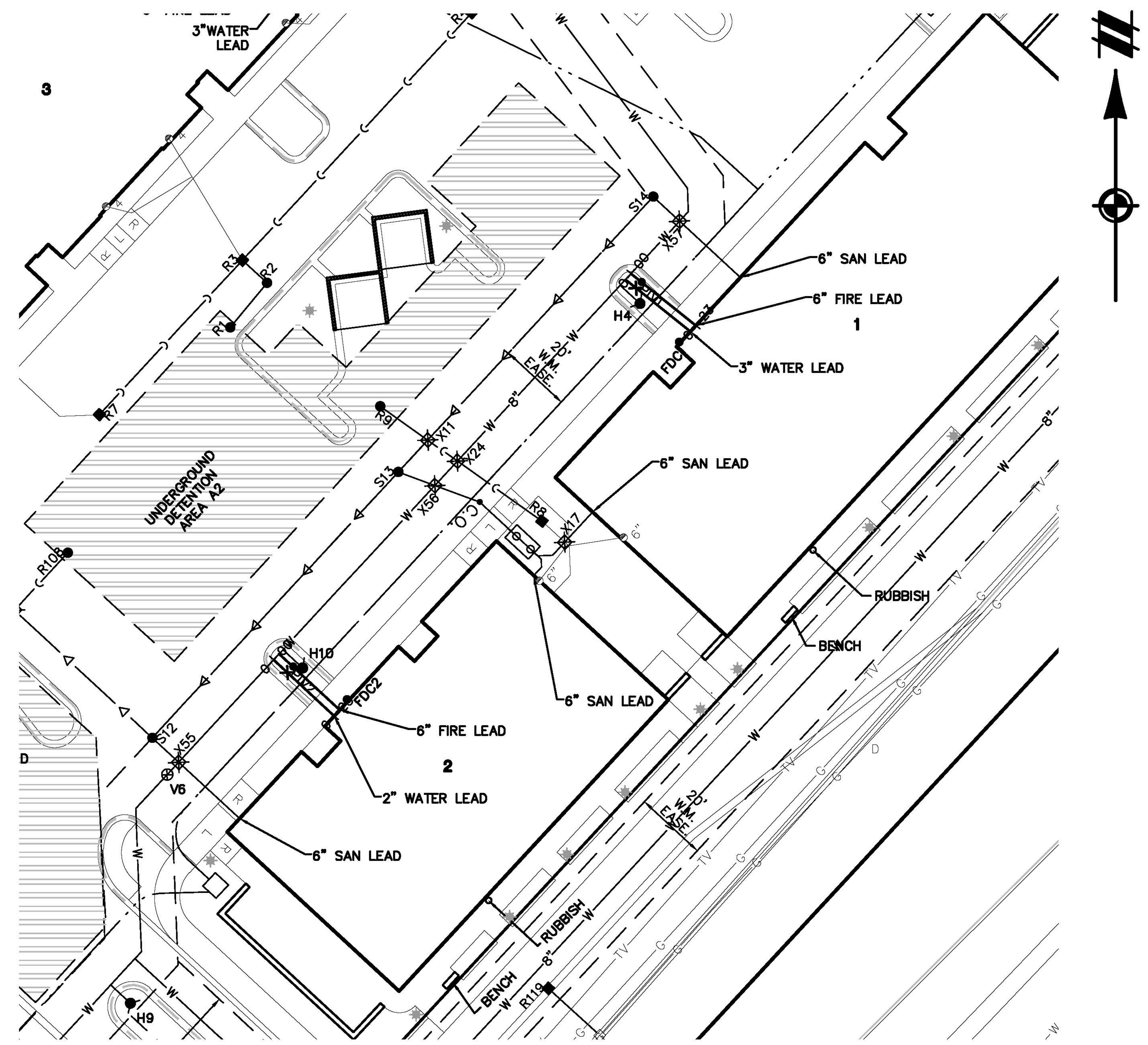
SCALE 0 15 30
1" = 30 FEET

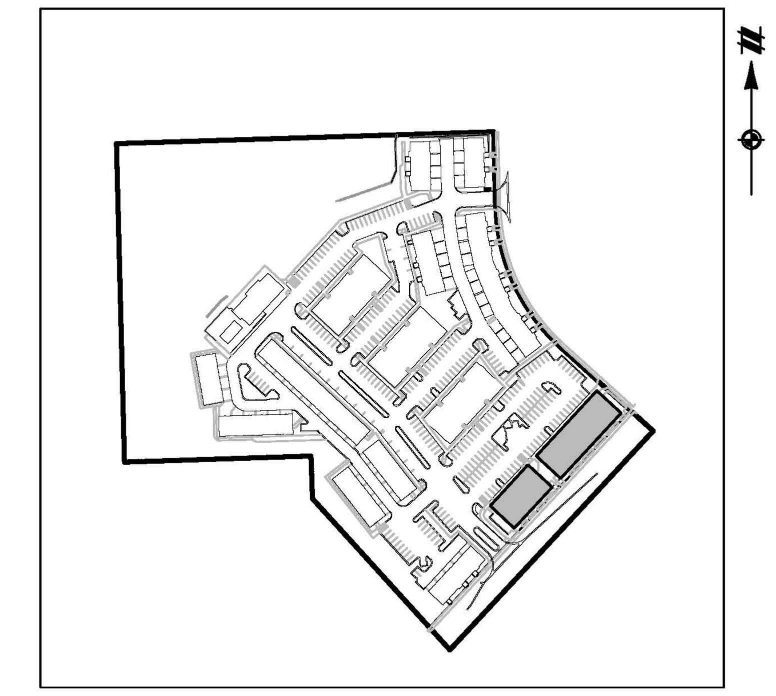
DR. CR	CH. --
P.M. MB	
BOOK --	
JOB 16000137	
SHEET NO. 31	

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

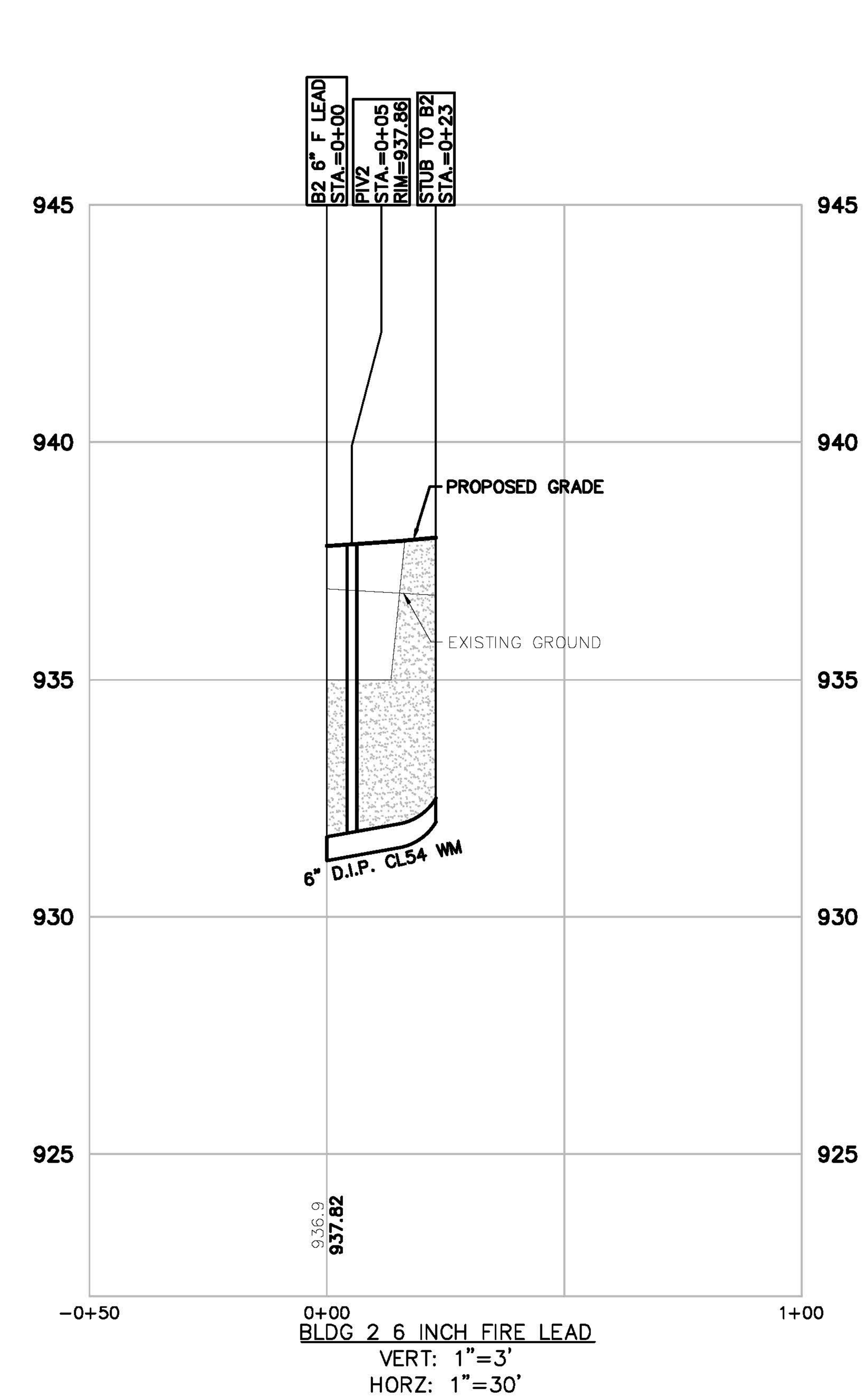


BLDG 2 2 INCH DOMESTIC LEAD
VERT: 1"=3'
HORZ: 1"=30'

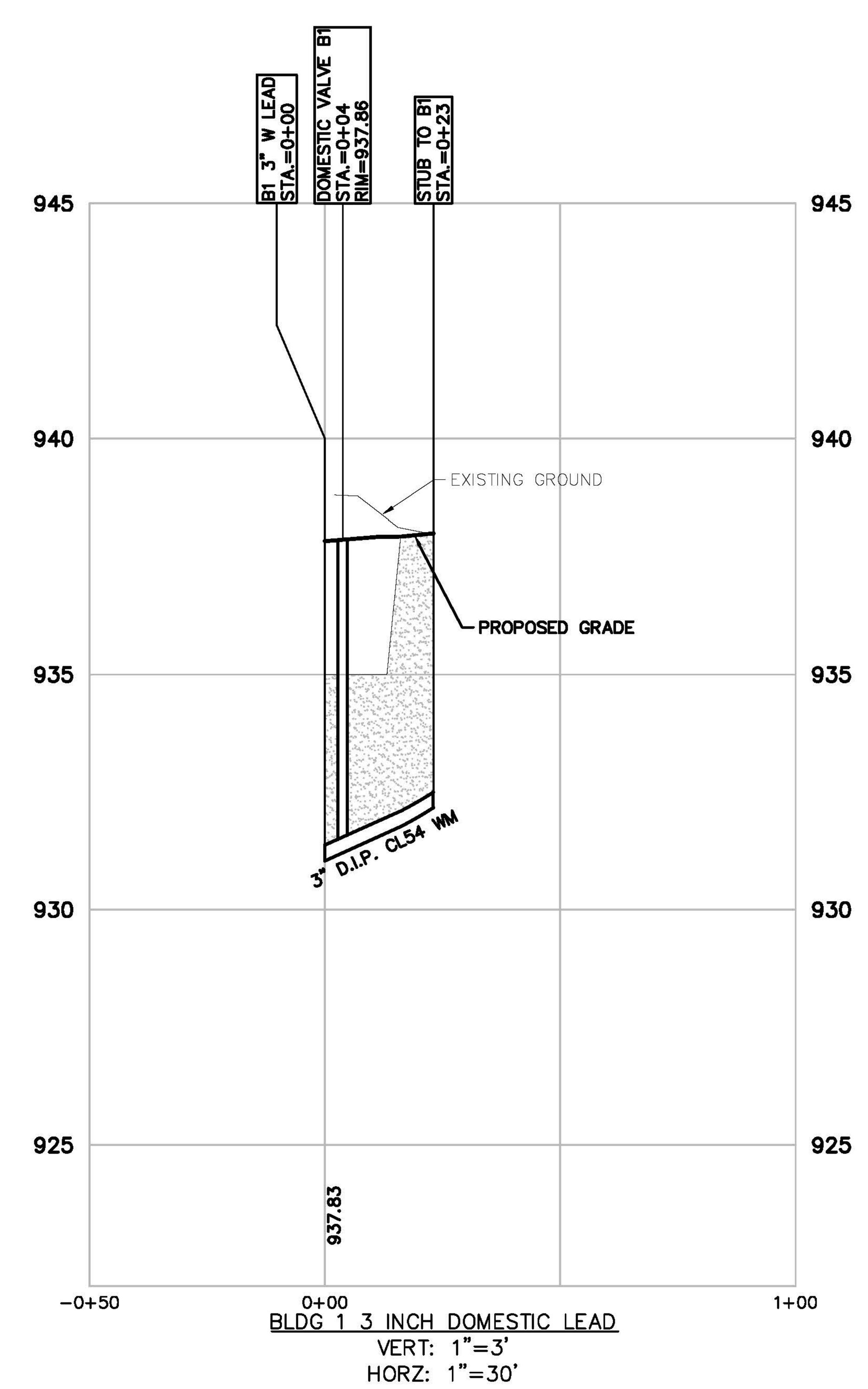




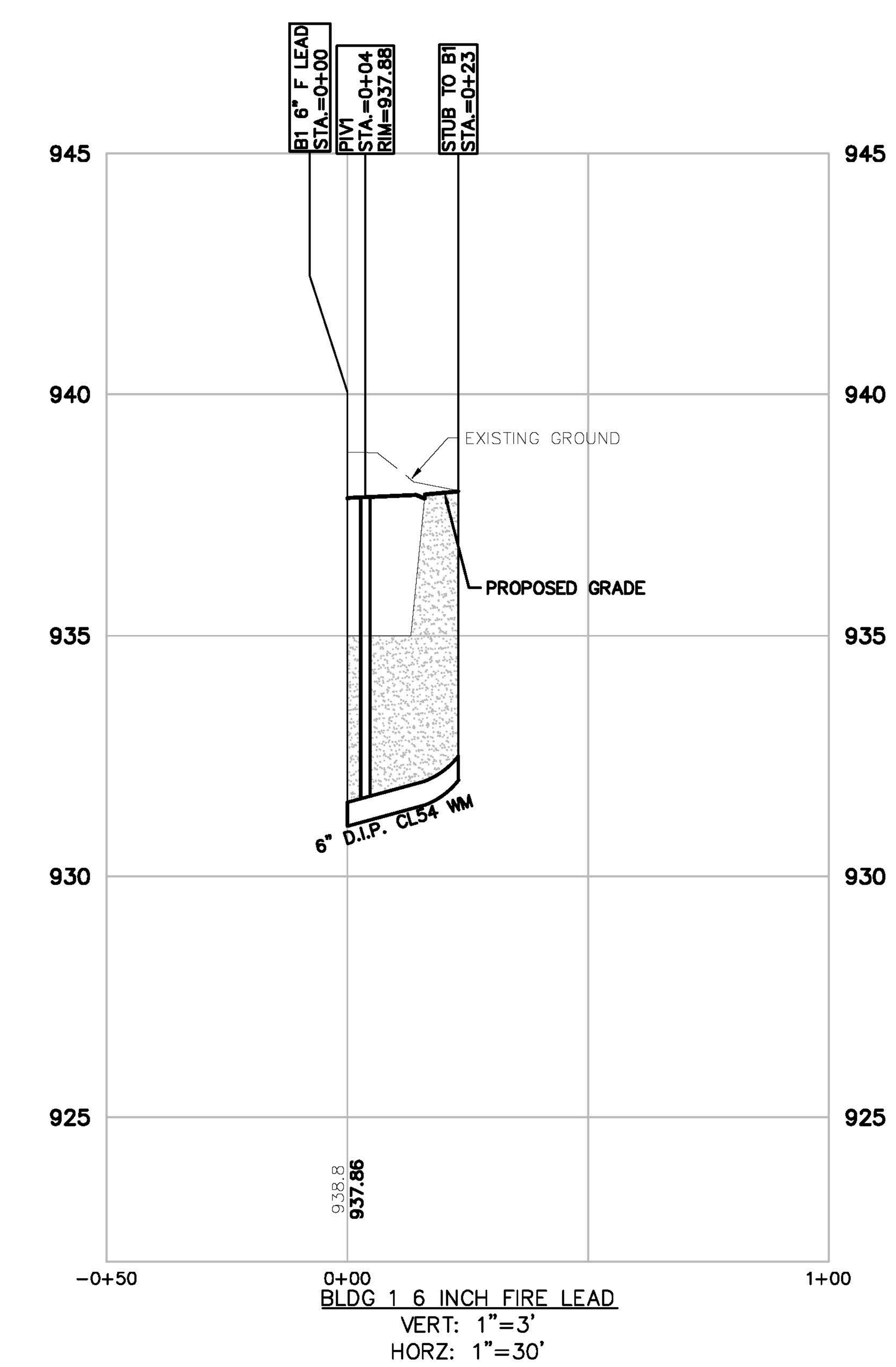
KEY MAP
1" = 300'



BLDG 2 6 INCH FIRE LEAD
VERT: 1"=3'
HORZ: 1"=30'



BLDG 1 3 INCH DOMESTIC LEAD
VERT: 1"=3'
HORZ: 1"=30'



BLDG 1 6 INCH FIRE LEAD
VERT: 1"=3'
HORZ: 1"=30'

LEGEND

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- PROP. FIRE HYDRANT
- PROP. MANHOLE
- SAND BACKFILL COMPACTED TO 95%

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

WATER LEAD PROFILE 3

DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
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REVISIONS

SCALE 0 15 30
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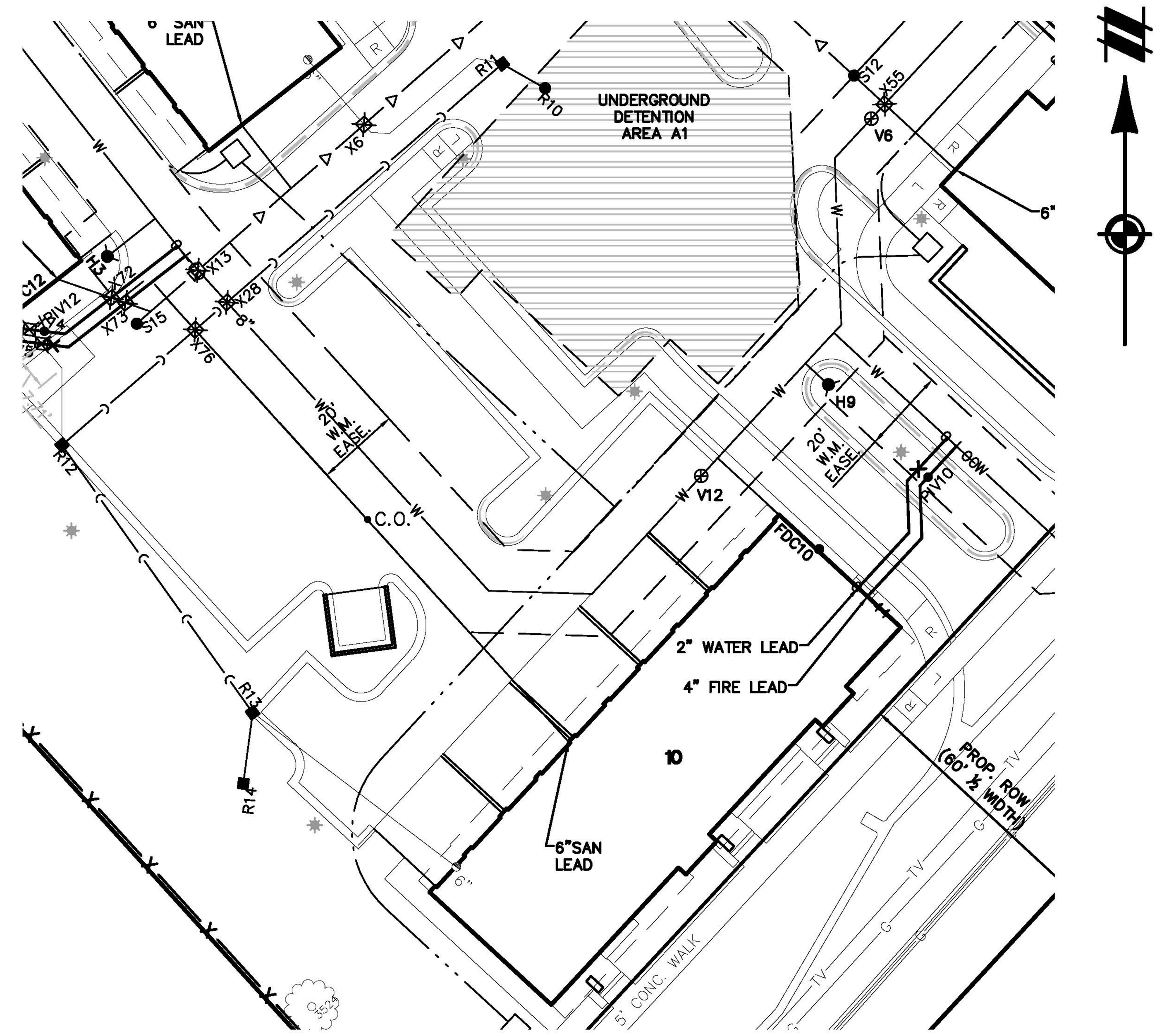
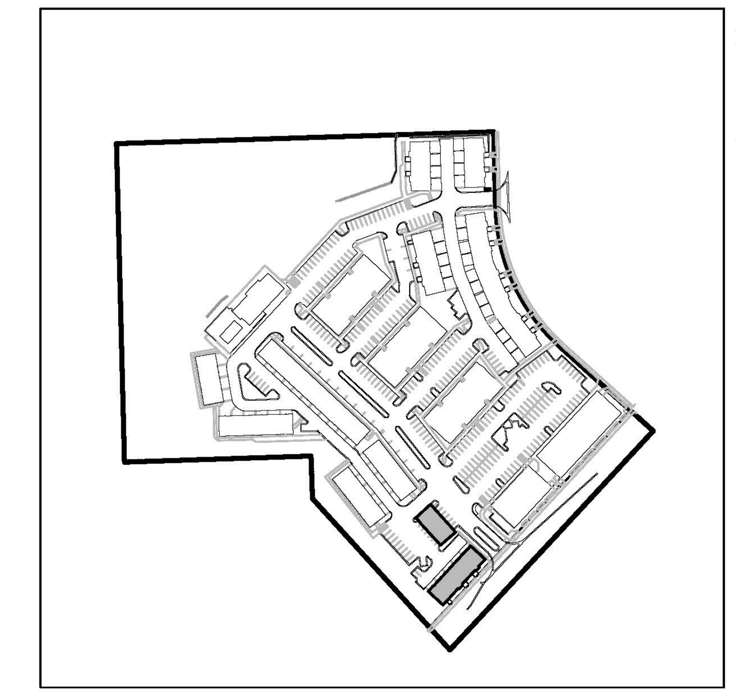
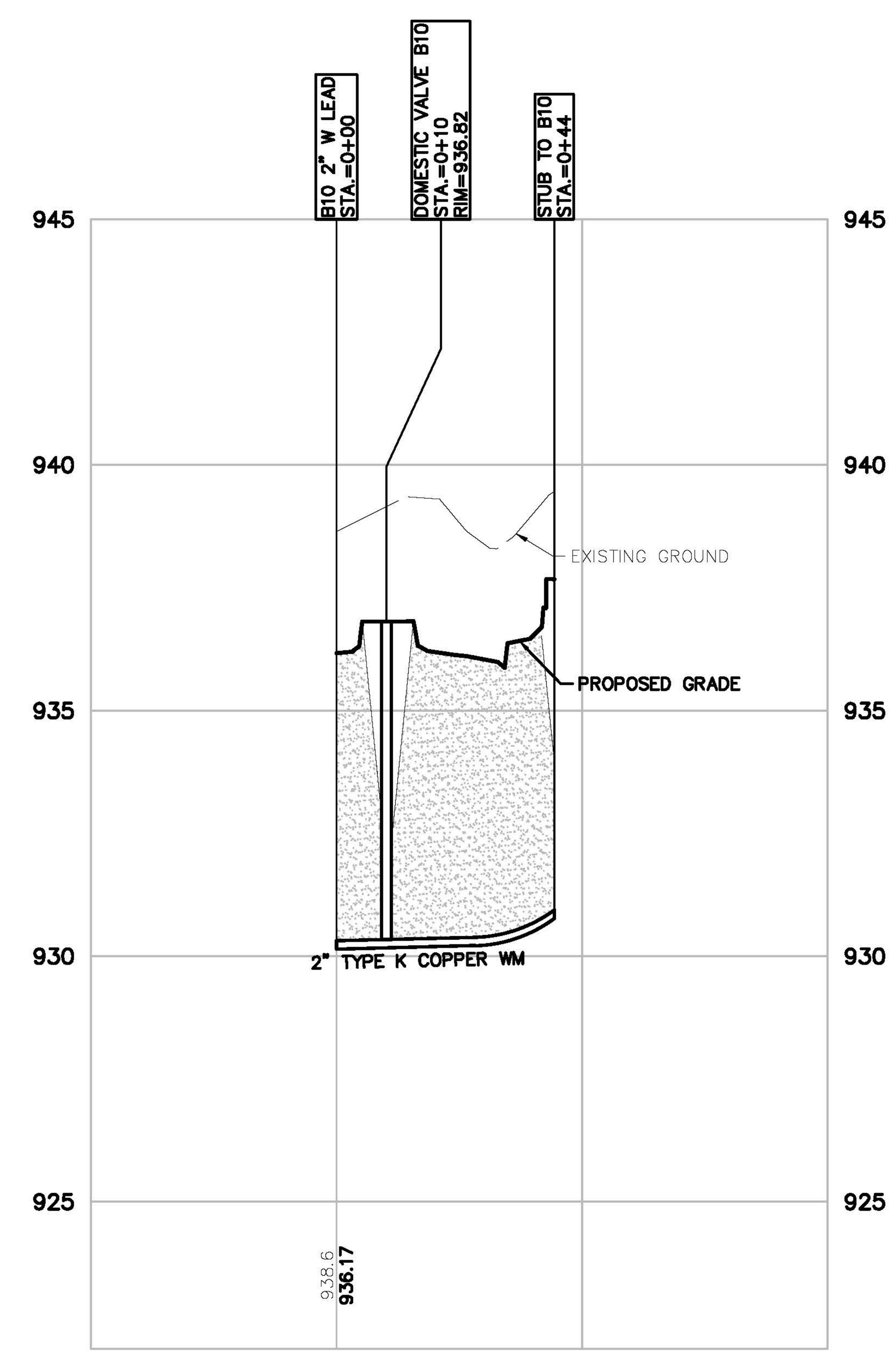
DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO.
32



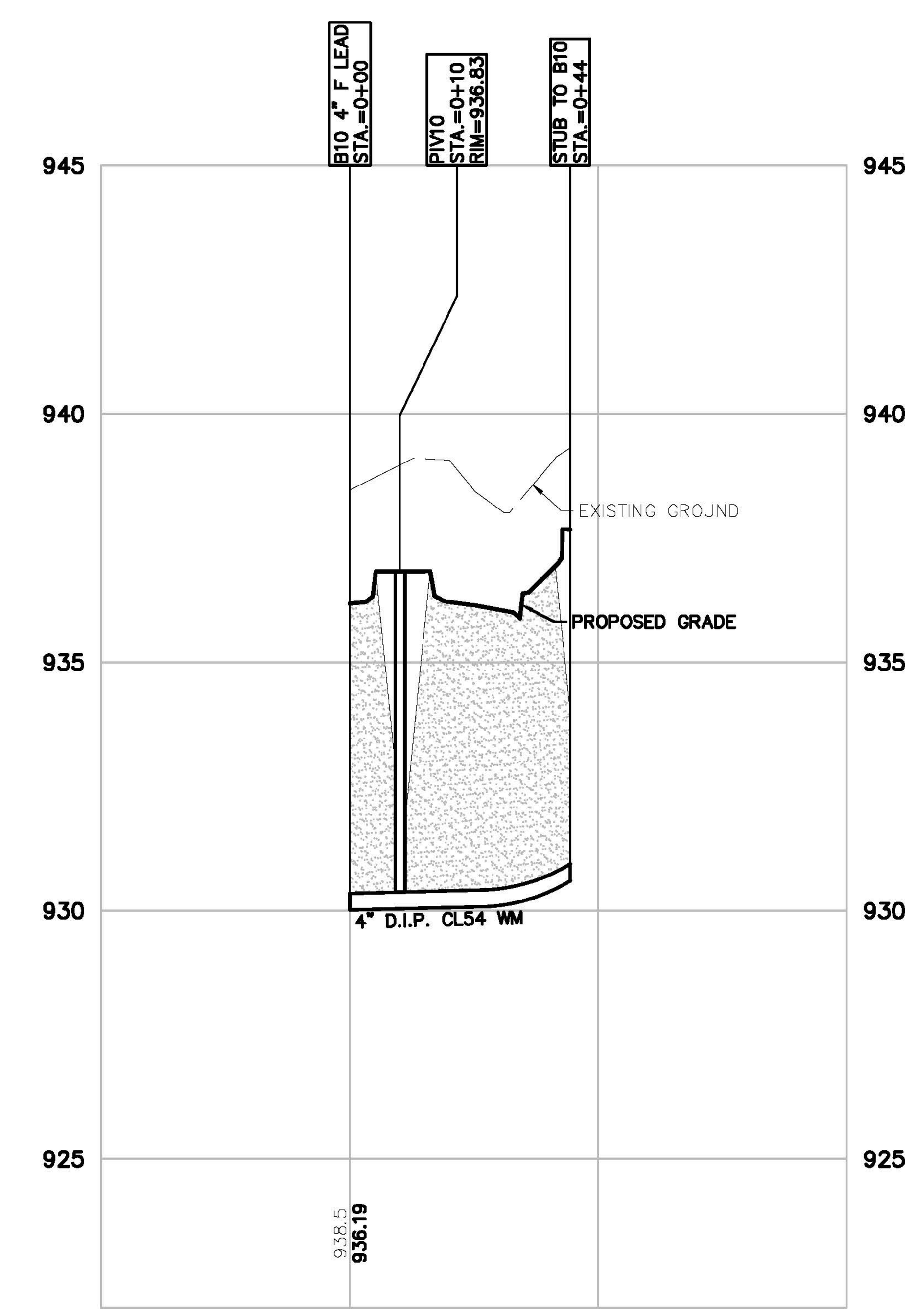


KEY MAP

1" = 300'



BLDG 10 2 INCH DOMESTIC LEAD
VERT: 1"=3'
HORZ: 1"=30'



BLDG 10 4 INCH FIRE LEAD
VERT: 1"=3'
HORZ: 1"=30'

LEGEND

BOUNDARY LINE
EXIST. EASEMENT
SECTION LINE
BOUNDARY/PROPERTY LINE
EXIST. SETBACK
EXIST. CONTOUR
EXIST. TREE LINE
EXIST. CURB AND GUTTER
EXIST. FENCE
EXIST. GRAVEL
EXIST. BUILDING
EXIST. WETLAND
EXIST. TREE
EXIST. WETLAND BUFFER
EXIST. OVERHEAD ELEC. LINE
EXIST. OVERHEAD TELE. LINE
EXIST. CABLE LINE
EXIST. UNSPECIFIED UTILITIES
EXIST. GAS
EXIST. STORM
EXIST. WATER MAIN
EXIST. SANITARY
EXIST. UNSPECIFIED UTILITY
EXIST. CULVERT
EXIST. CATCH BASIN/INLET
EXIST. HYDRANT
EXIST. VALVE
EXIST. SANITARY SEWER
PROP. SETBACK
PROP. BUILDING
PROP. BUILDING INTERIOR
PROP. WALL
PROP. PARKING STRIPE
PROP. BACK OF CURB
PROP. ASHPALT
PROP. LOT LINE
PROP. PARKING STRIPE
PROP. CONTOUR
PROP. INLET FILTER
PROP. SILT FENCE
PROP. STORM SEWER
PROP. SANITARY
PROP. WATER MAIN
PROP. END SECTION
PROP. CATCH BASIN/INLET
PROP. WATER VALVE
PROP. FIRE HYDRANT
PROP. MANHOLE
SAND BACKFILL COMPACTED TO 95%

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

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

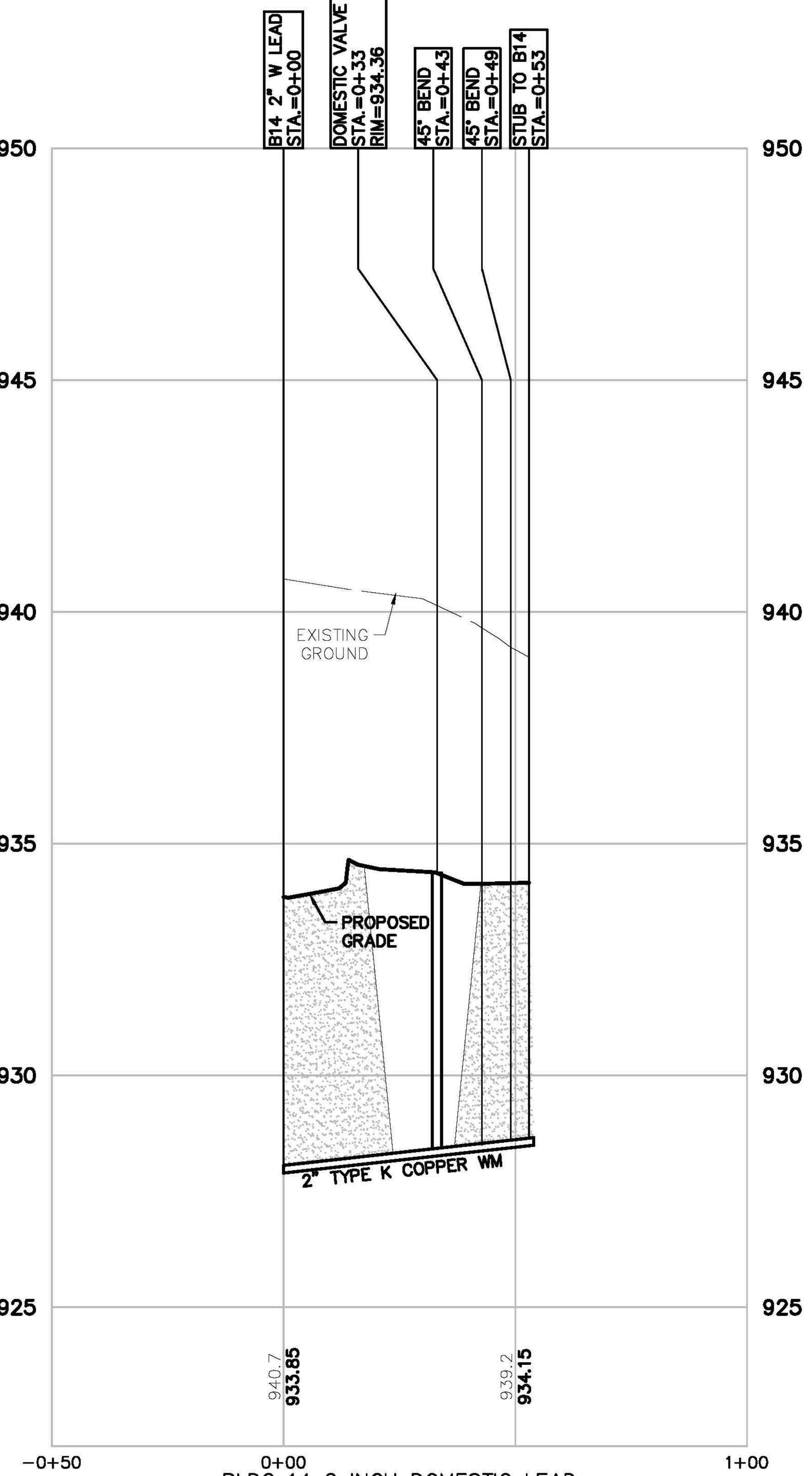
CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
WATER LEAD PROFILE 4

DATE
JUNE 9, 2017

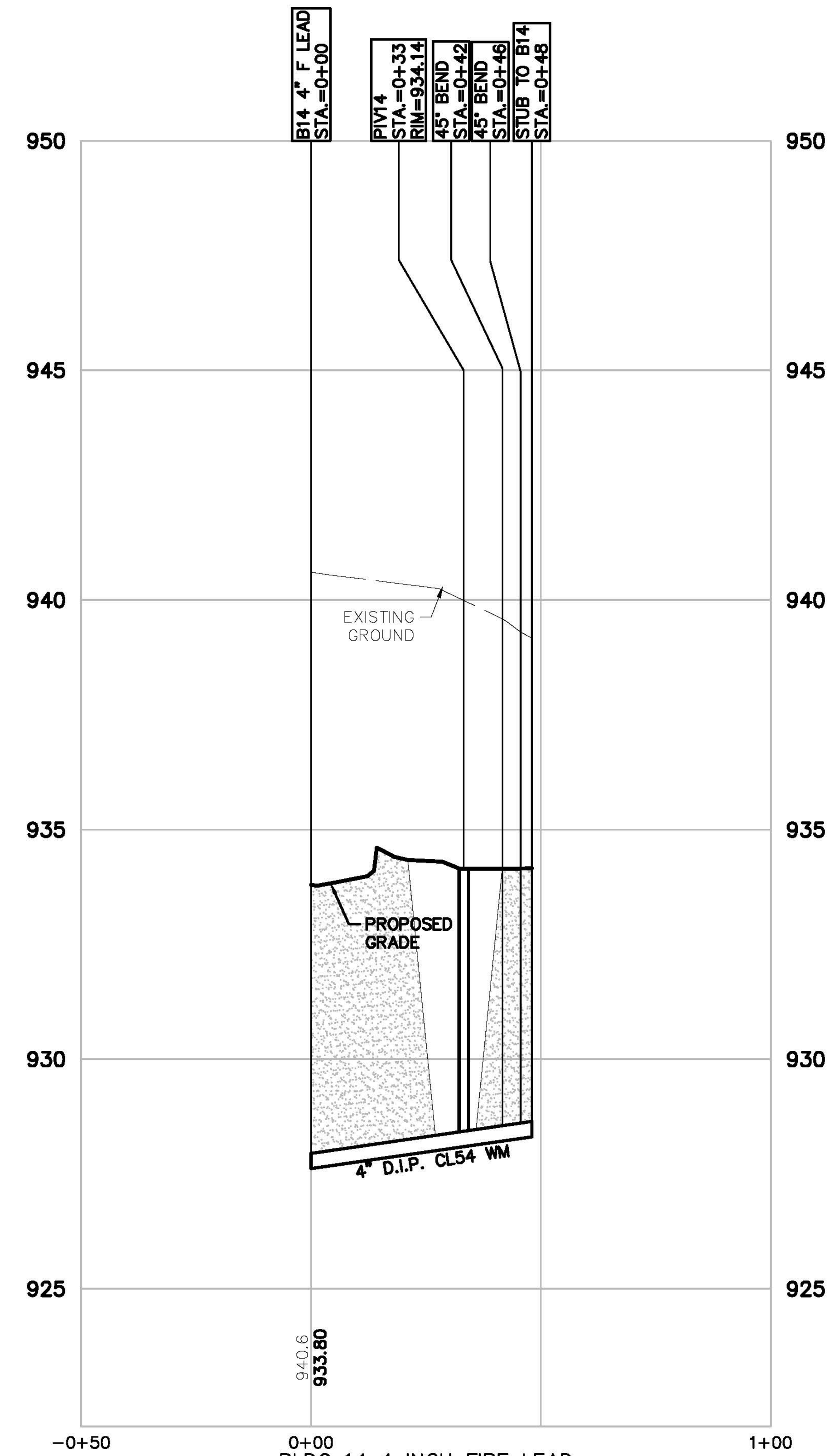
9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 15 30
1" = 30 FEET

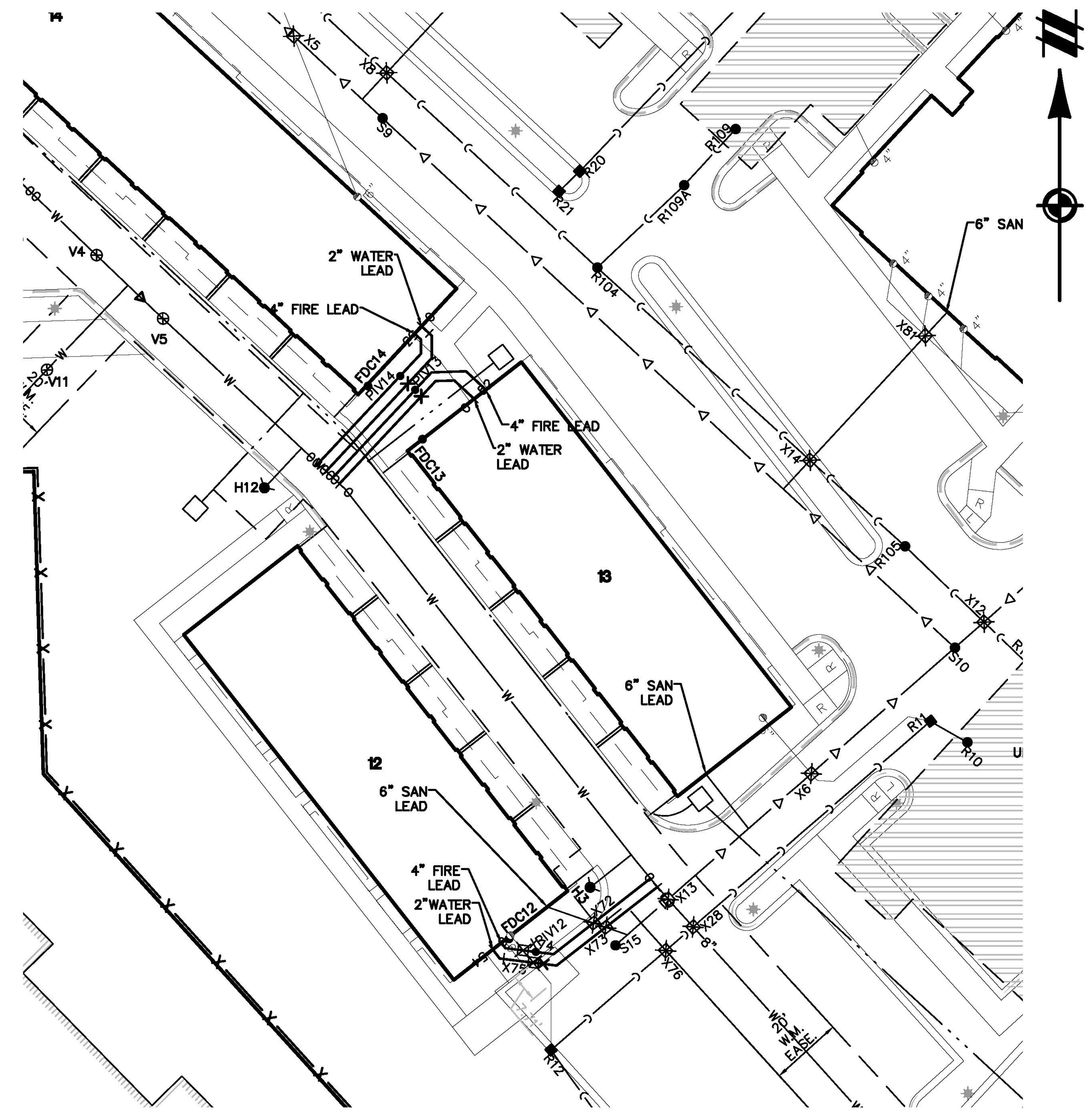
DR. CR	CH. --
P.M. MB	
BOOK --	
JOB 16000137	
SHEET NO. 33	

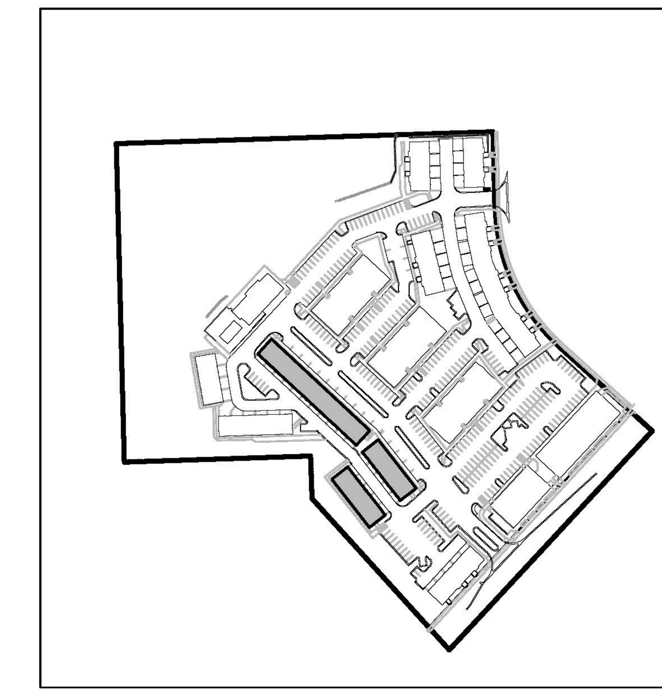


BLDG 14 2 INCH DOMESTIC LEAD
VERT: 1"=3'
HORZ: 1"=30'

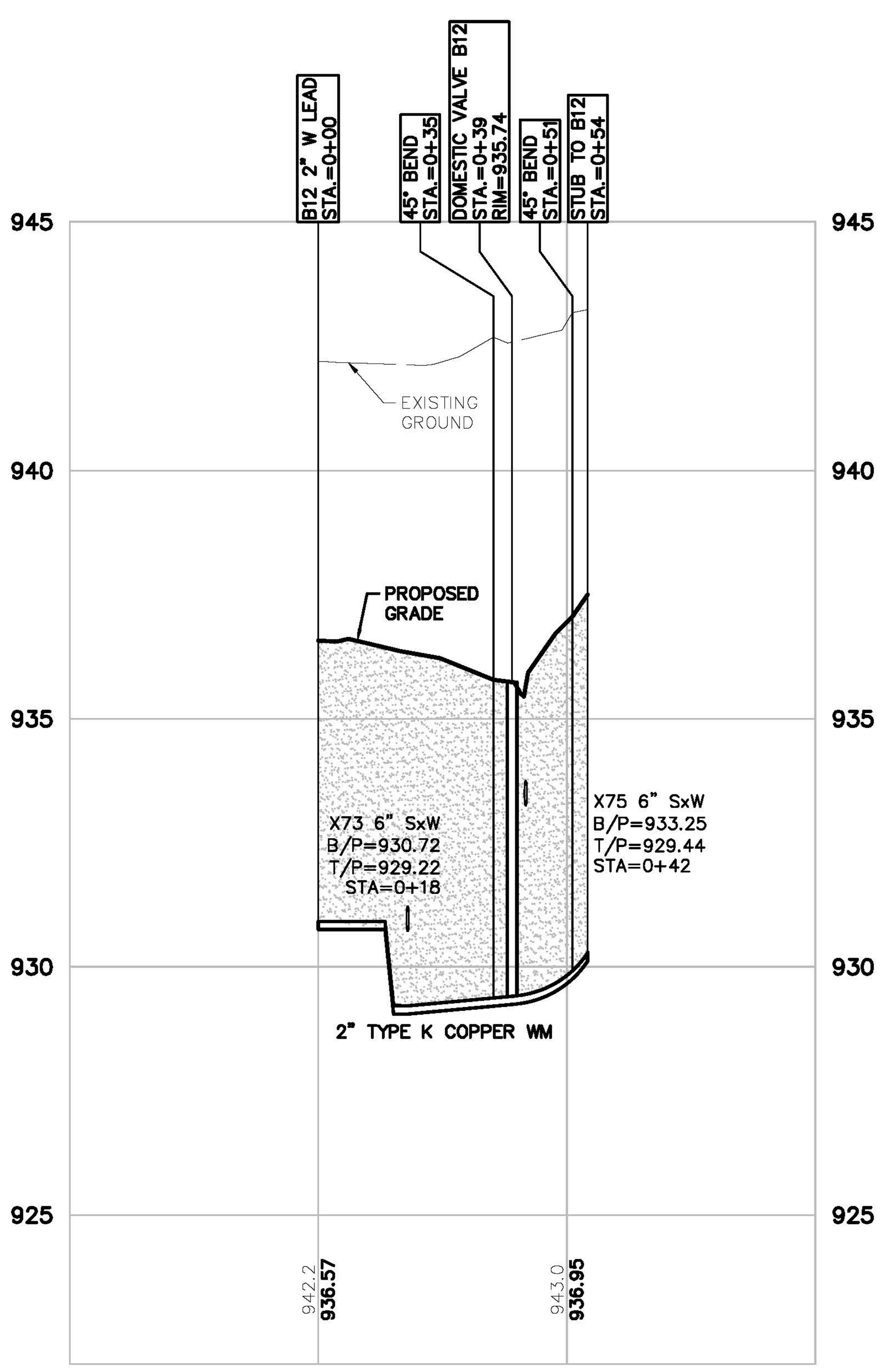


BLDG 14 4 INCH FIRE LEAD
VERT: 1"=3'
HORZ: 1"=30'

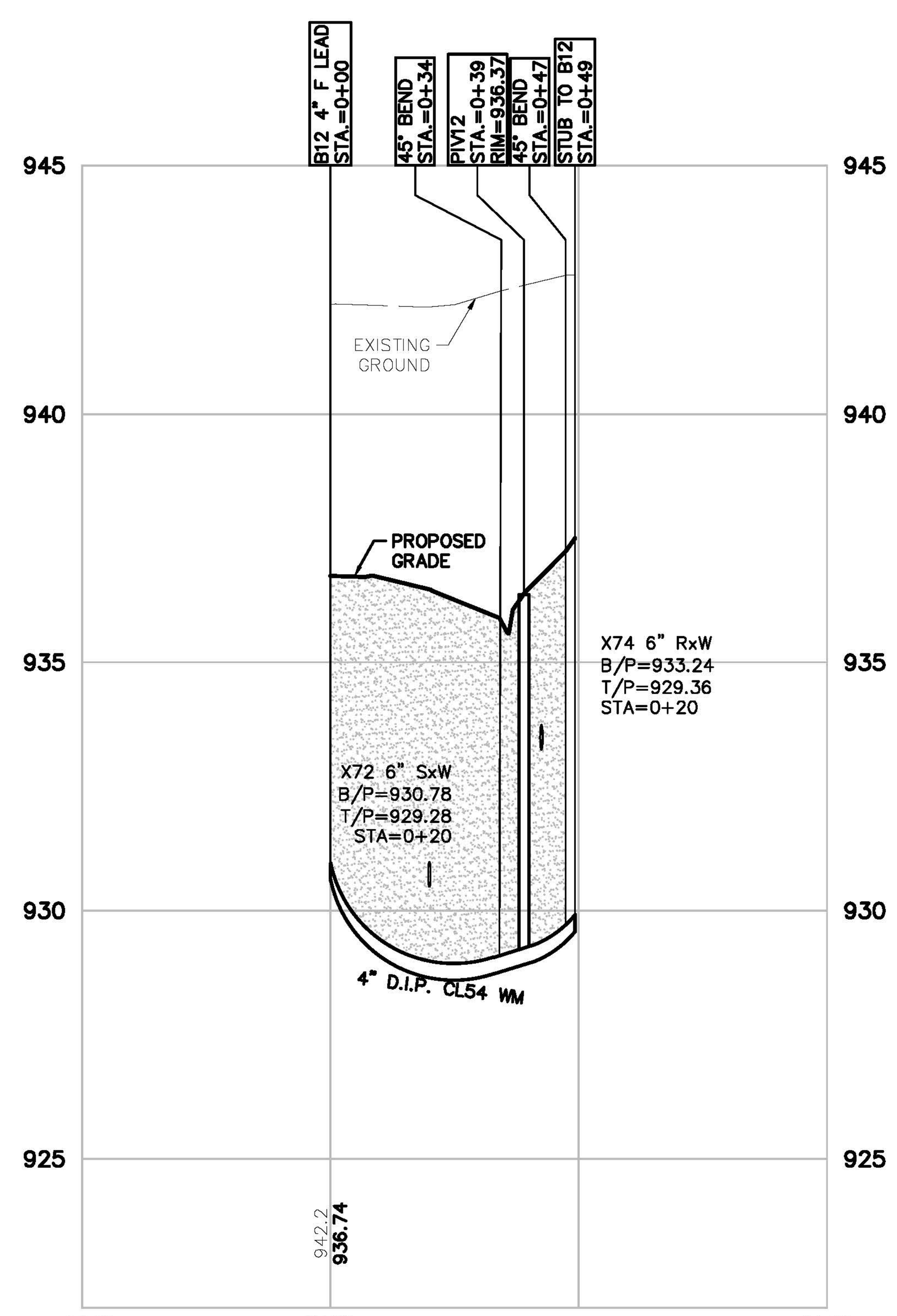




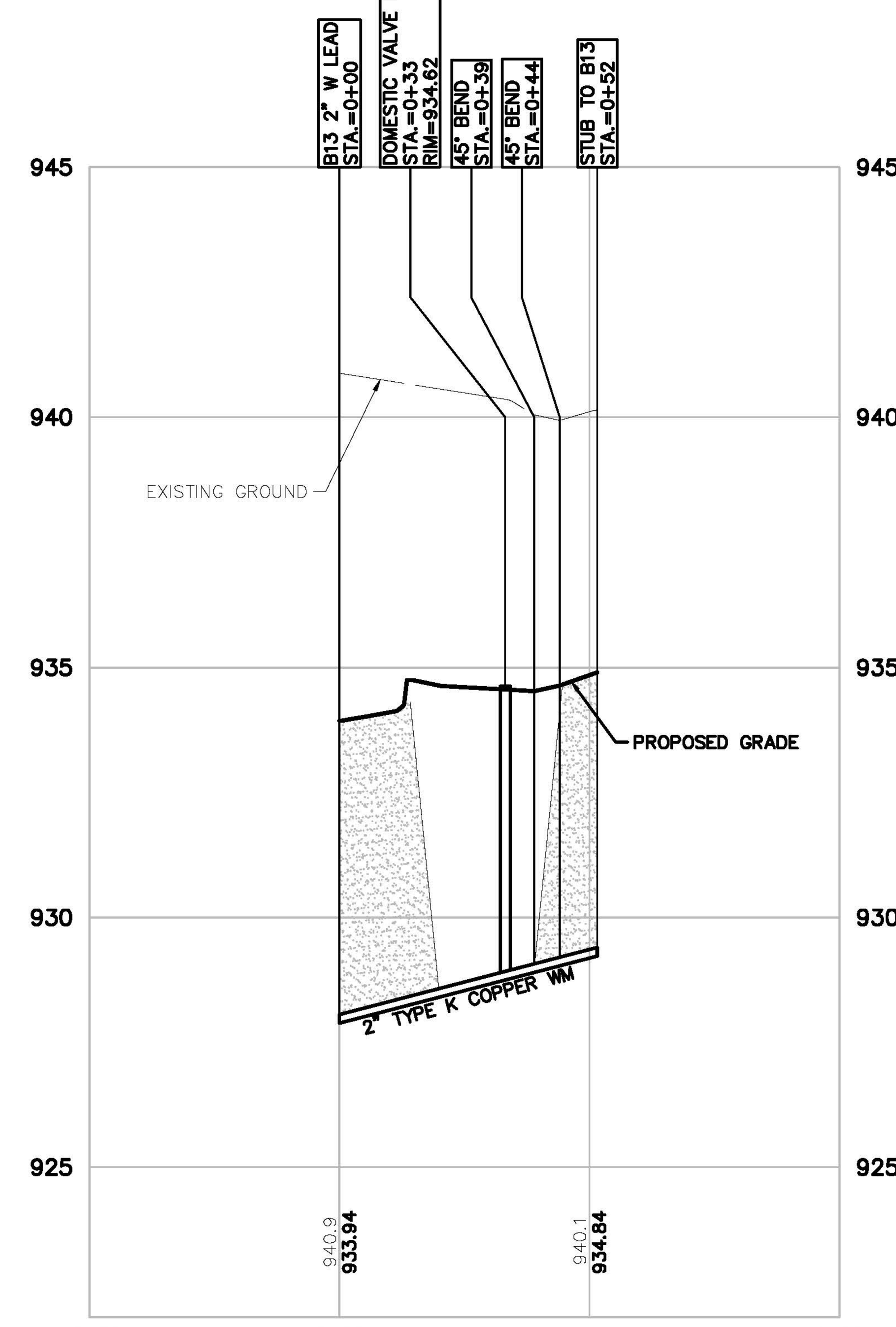
KEY MAP
1" = 300'



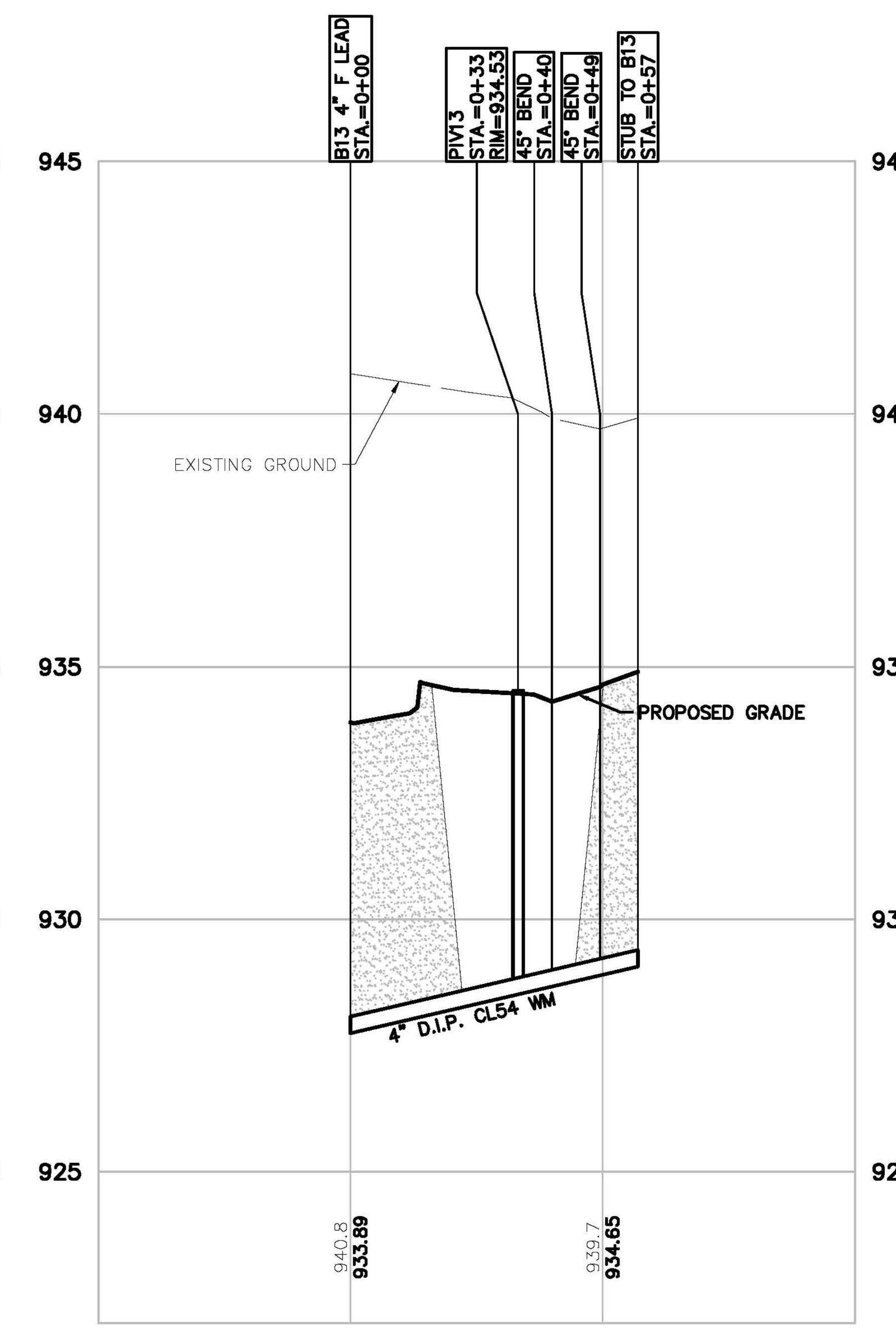
BLDG 12 2 INCH DOMESTIC LEAD
VERT: 1"=3'
HORZ: 1"=30'



BLDG 12 4 INCH FIRE LEAD
VERT: 1"=3'
HORZ: 1"=30'



BLDG 13 2 INCH DOMESTIC LEAD
VERT: 1"=3'
HORZ: 1"=30'



BLDG 13 4 INCH FIRE LEAD
VERT: 1"=3'
HORZ: 1"=30'

LEGEND

BOUNDARY LINE
EXIST. EASEMENT
SECTION LINE
BOUNDARY/PROPERTY LINE
EXIST. SETBACK
EXIST. CONTOUR
EXIST. TREE LINE
EXIST. CURB AND GUTTER
EXIST. FENCE
EXIST. GRAVEL
EXIST. BUILDING
EXIST. WETLAND
EXIST. TREE
EXIST. WETLAND BUFFER
EXIST. OVERHEAD ELEC. LINE
EXIST. OVERHEAD TELE. LINE
EXIST. CABLE LINE
EXIST. UNSPECIFIED UTILITIES
EXIST. GAS
EXIST. STORM
EXIST. WATER MAIN
EXIST. SANITARY
EXIST. UNSPECIFIED UTILITY
EXIST. CULVERT
EXIST. CATCH BASIN/INLET
EXIST. HYDRANT
EXIST. VALVE
EXIST. SANITARY SEWER
PROP. SETBACK
PROP. BUILDING
PROP. BUILDING INTERIOR
PROP. WALL
PROP. PARKING STRIPE
PROP. BACK OF CURB
PROP. ASHPALT
PROP. LOT LINE
PROP. PARKING STRIPE
PROP. CONTOUR
PROP. INLET FILTER
PROP. SILT FENCE
PROP. STORM SEWER
PROP. SANITARY
PROP. WATER MAIN
PROP. END SECTION
PROP. CATCH BASIN/INLET
PROP. WATER VALVE
PROP. FIRE HYDRANT
PROP. MANHOLE
SAND BACKFILL COMPACTED TO 95%

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

811
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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

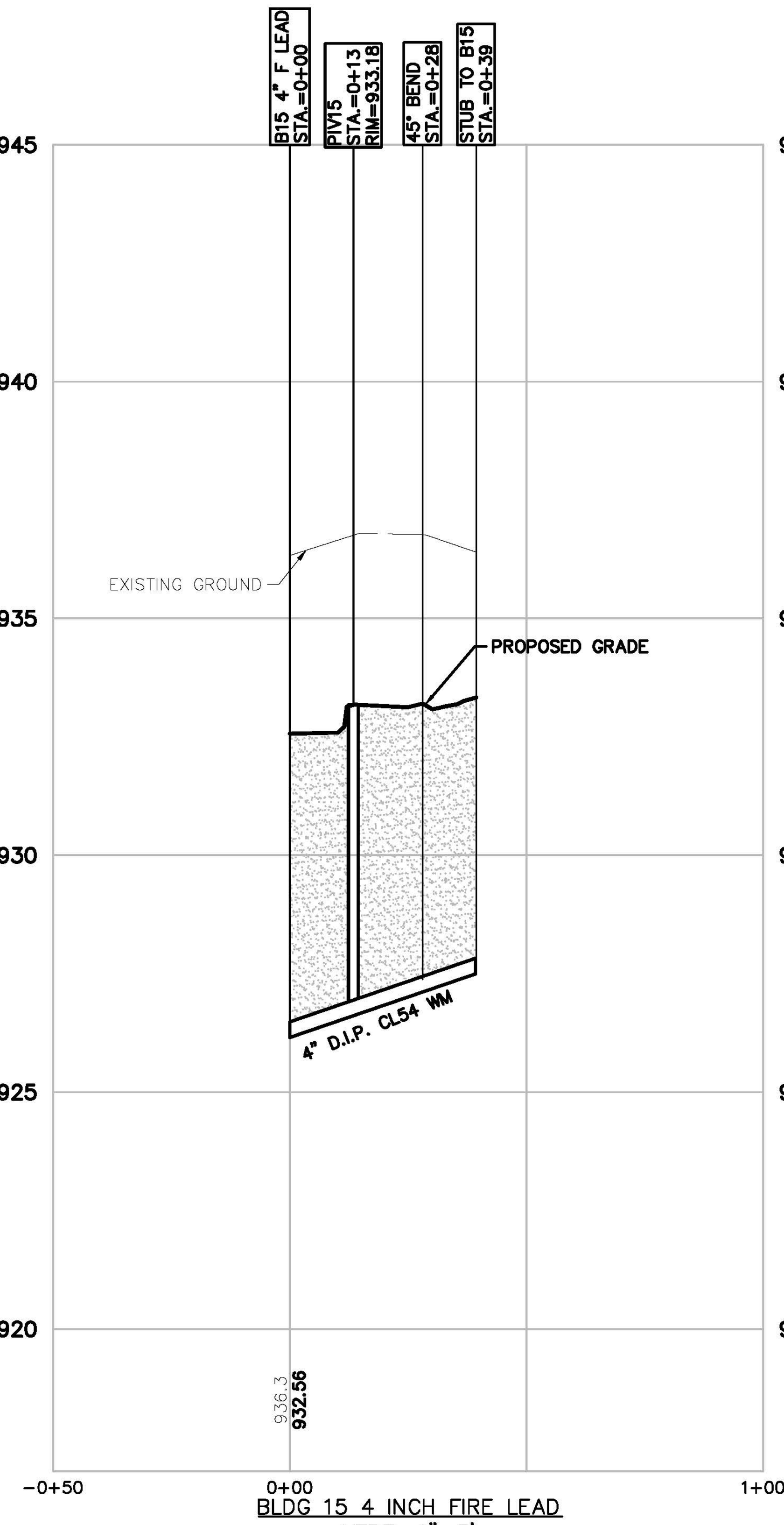
CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
WATER LEAD PROFILE 5

DATE
JUNE 9, 2017

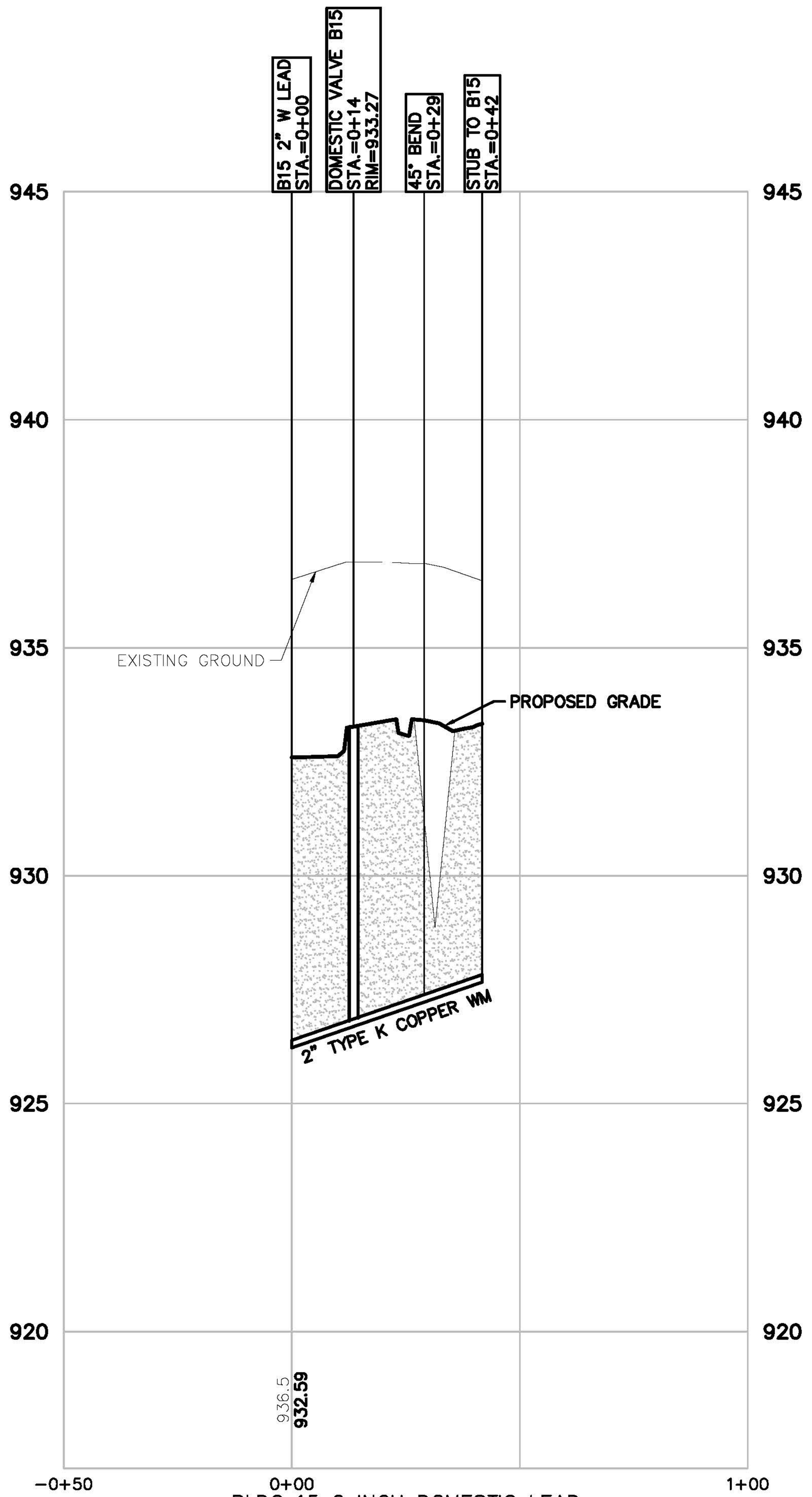
9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 15 30
1" = 30 FEET

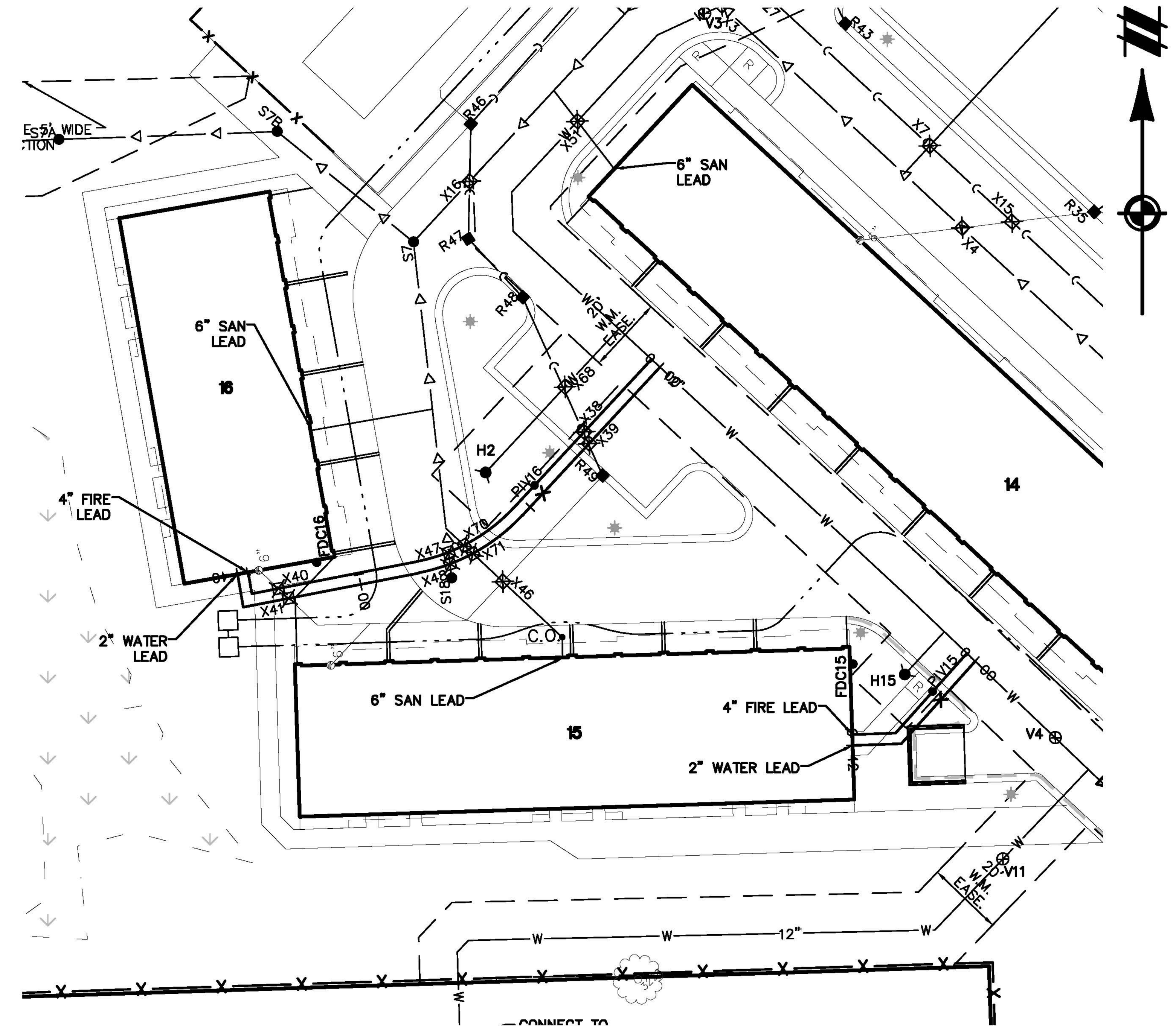
DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO.
34

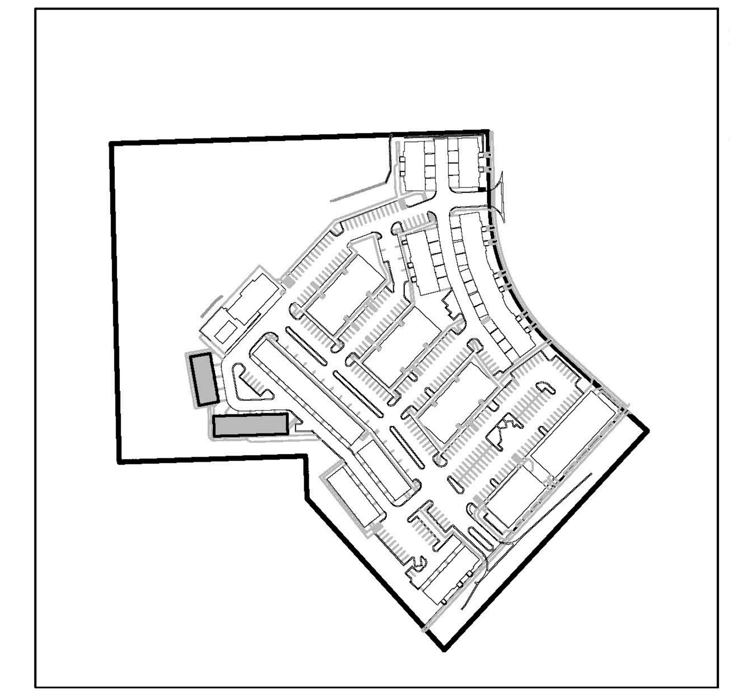


BLDG 15 4 INCH FIRE LEAD
VERT: 1"=3'
HORZ: 1"=30'

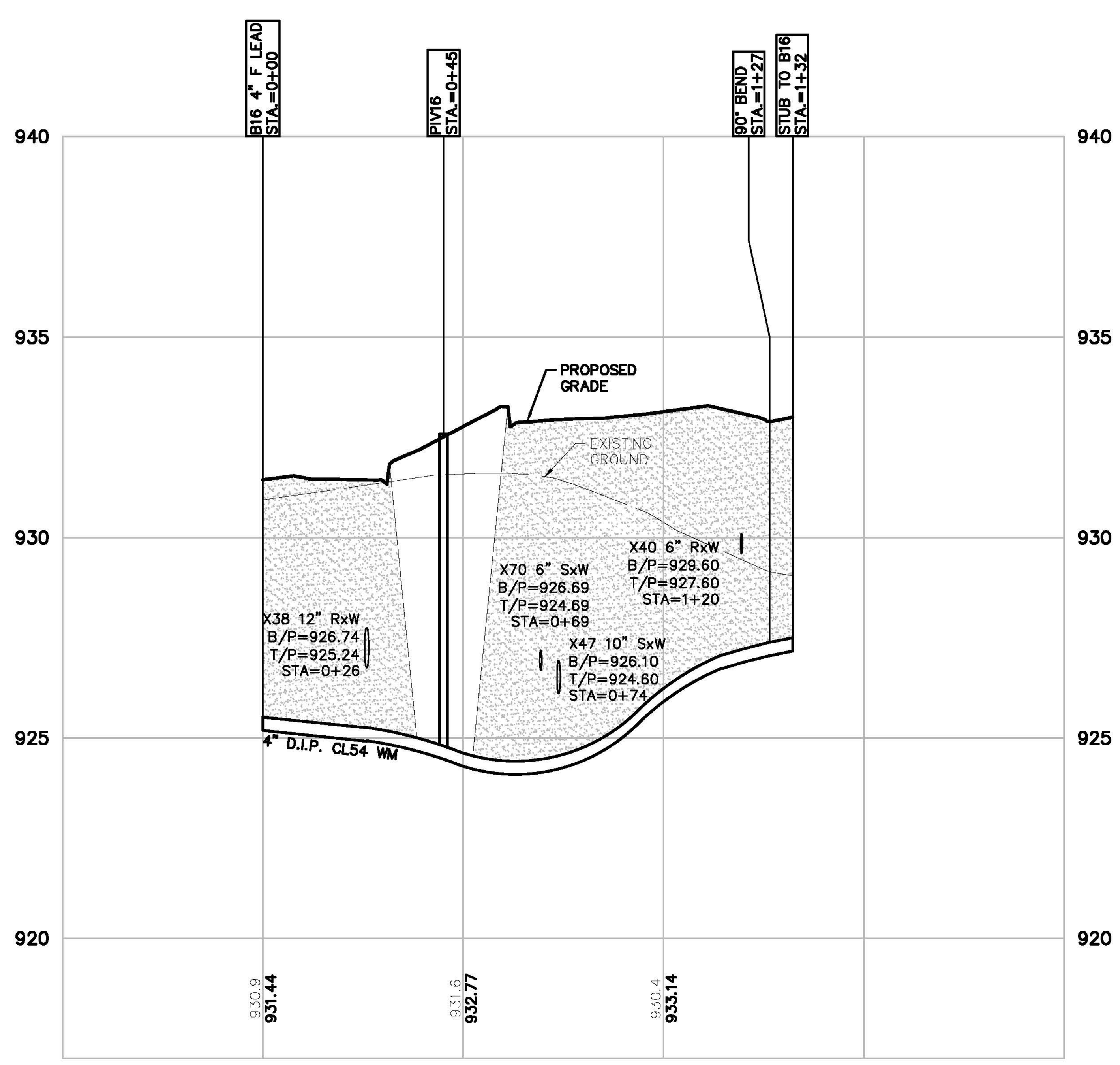


BLDG 15 2 INCH DOMESTIC LEAD
VERT: 1"=3'
HORZ: 1"=30'

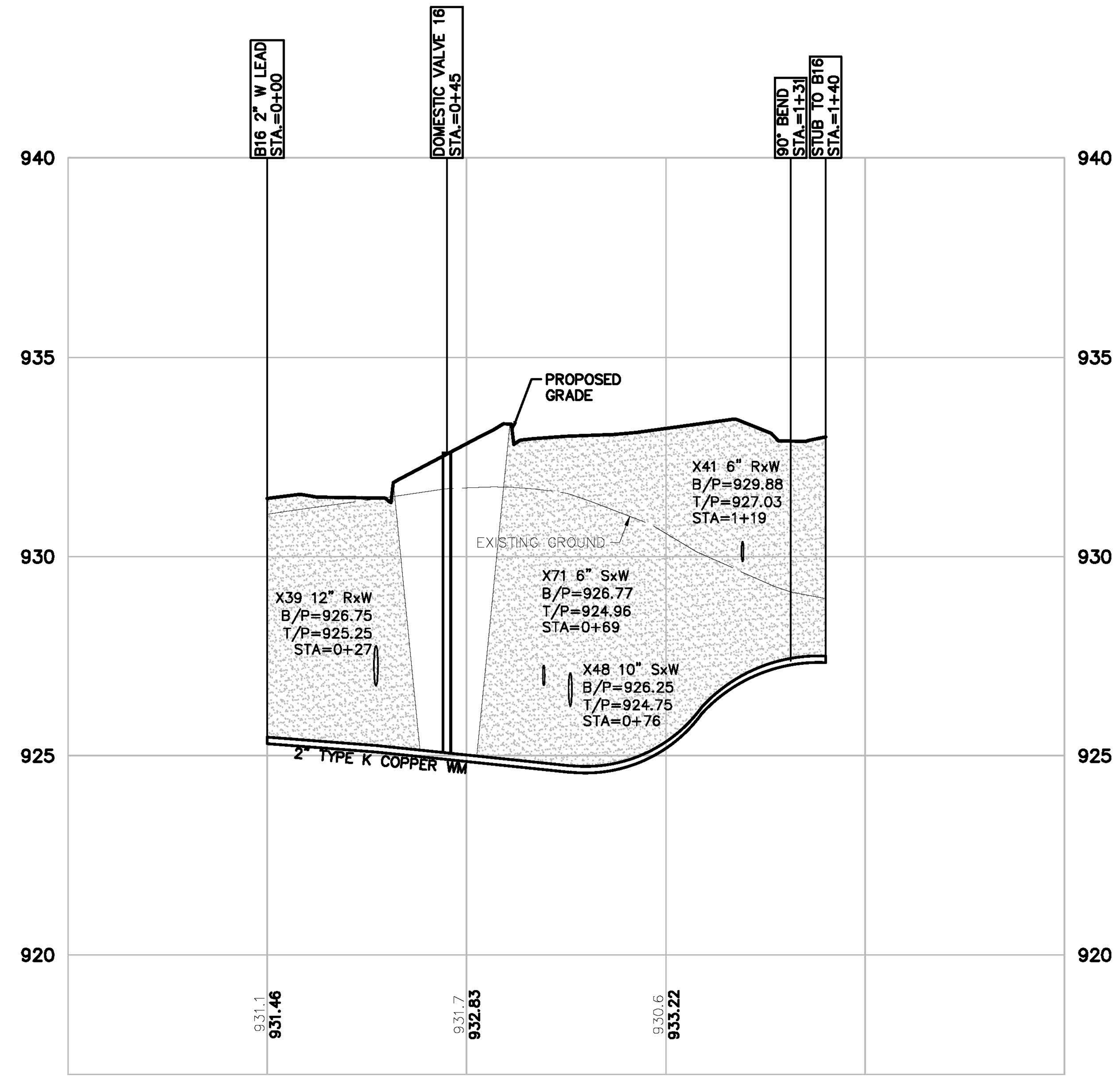




KEY MAP
1" = 300'



BLDG 16 4 INCH FIRE LEAD
VERT: 1"=3'
HORZ: 1"=30'



BLDG 16 2 INCH DOMESTIC LEAD
VERT: 1"=3'
HORZ: 1"=30'

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- SAND BACKFILL COMPACTED TO 95%

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

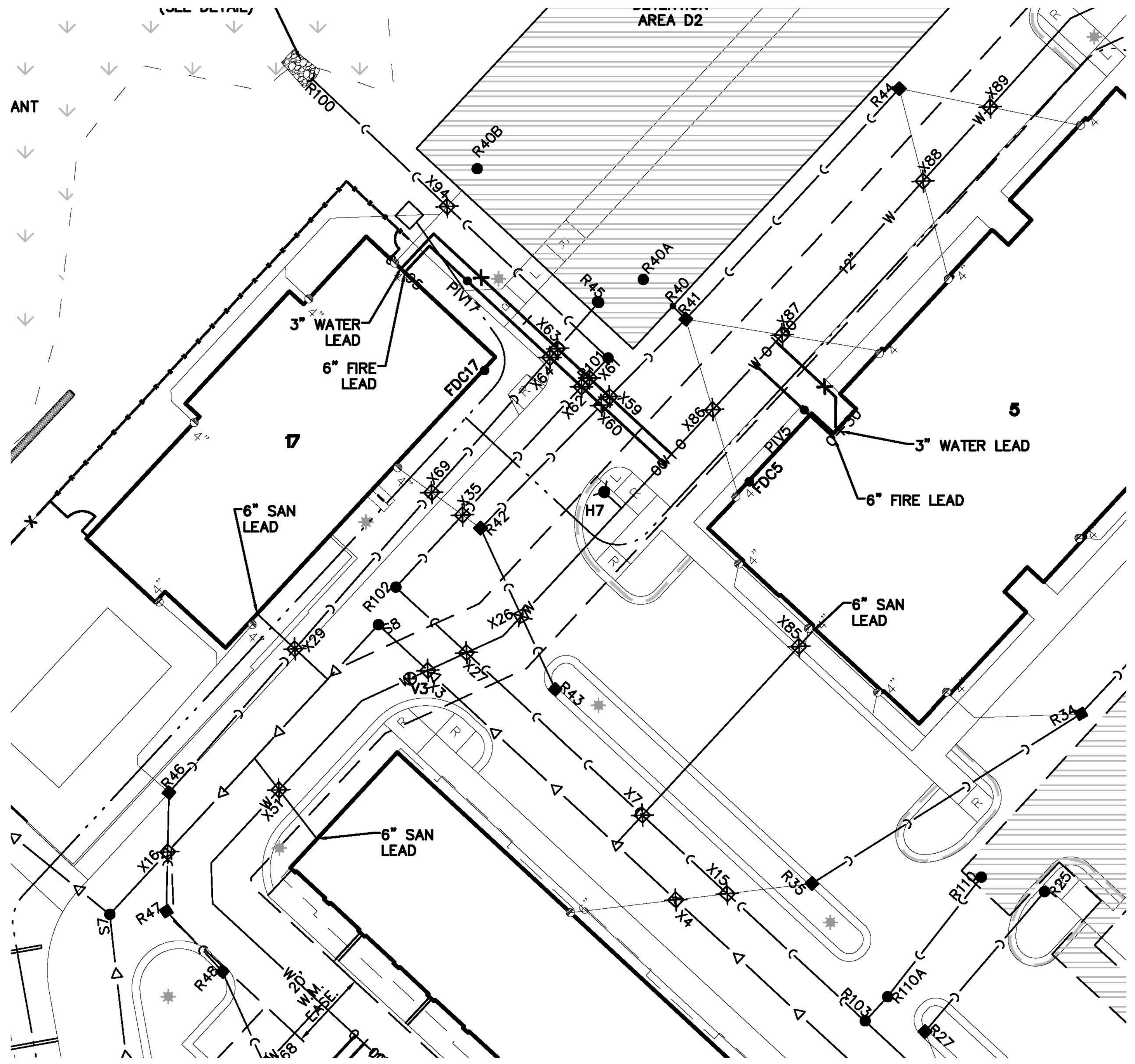
CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
WATER LEAD PROFILE 6

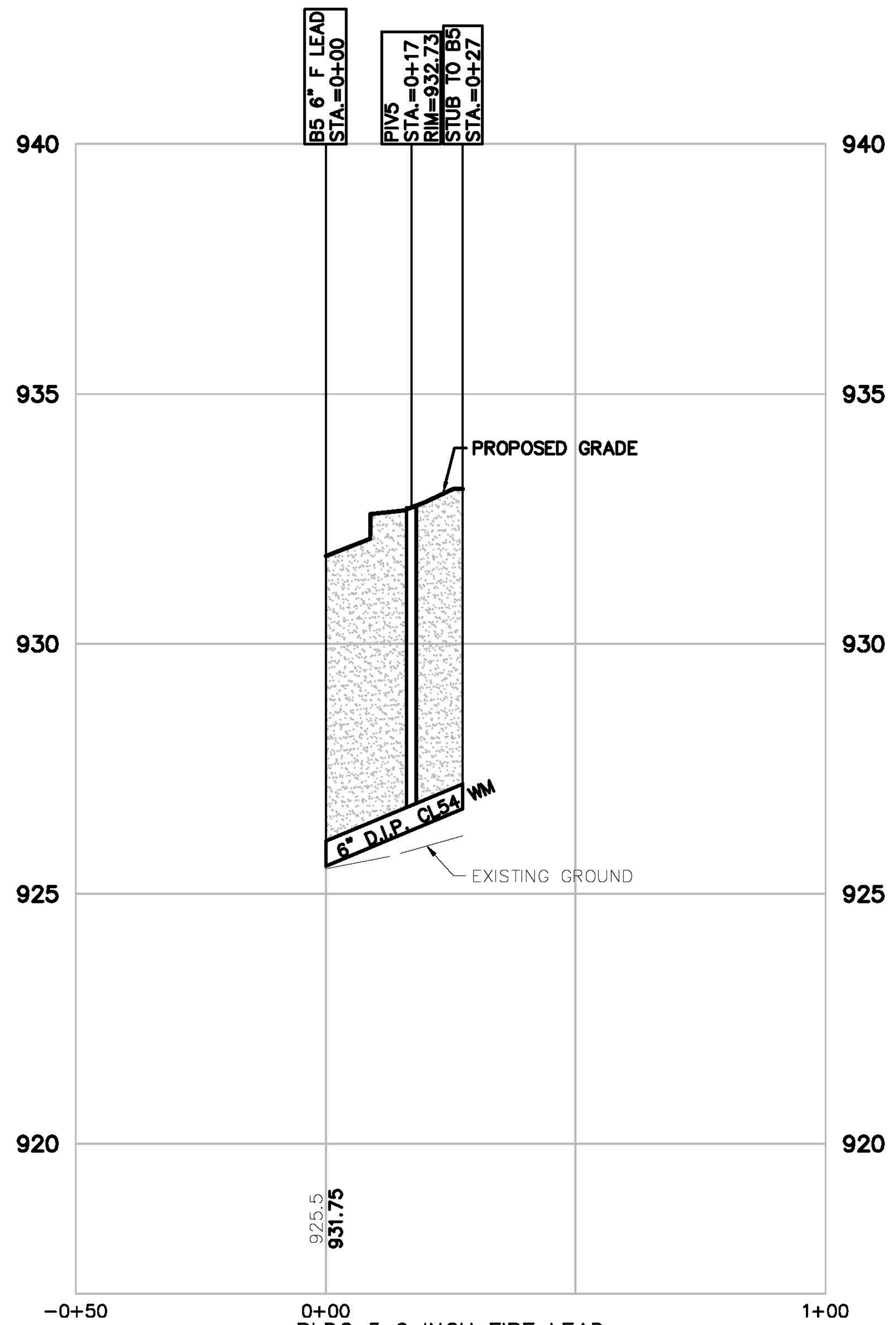
DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

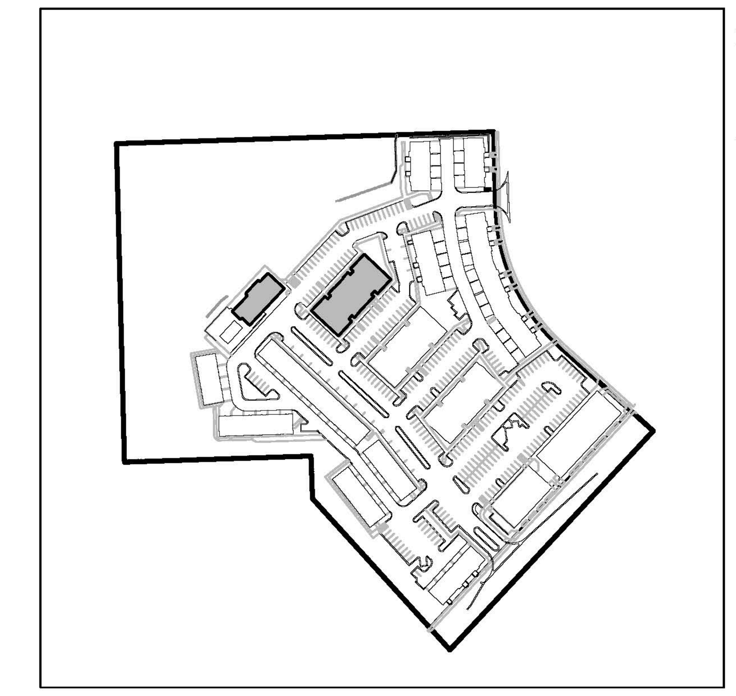
SCALE 0 15 30
1" = 30 FEET

DR. CR	CH. --
P.M. MB	
BOOK --	
JOB 16000137	
SHEET NO. 35	



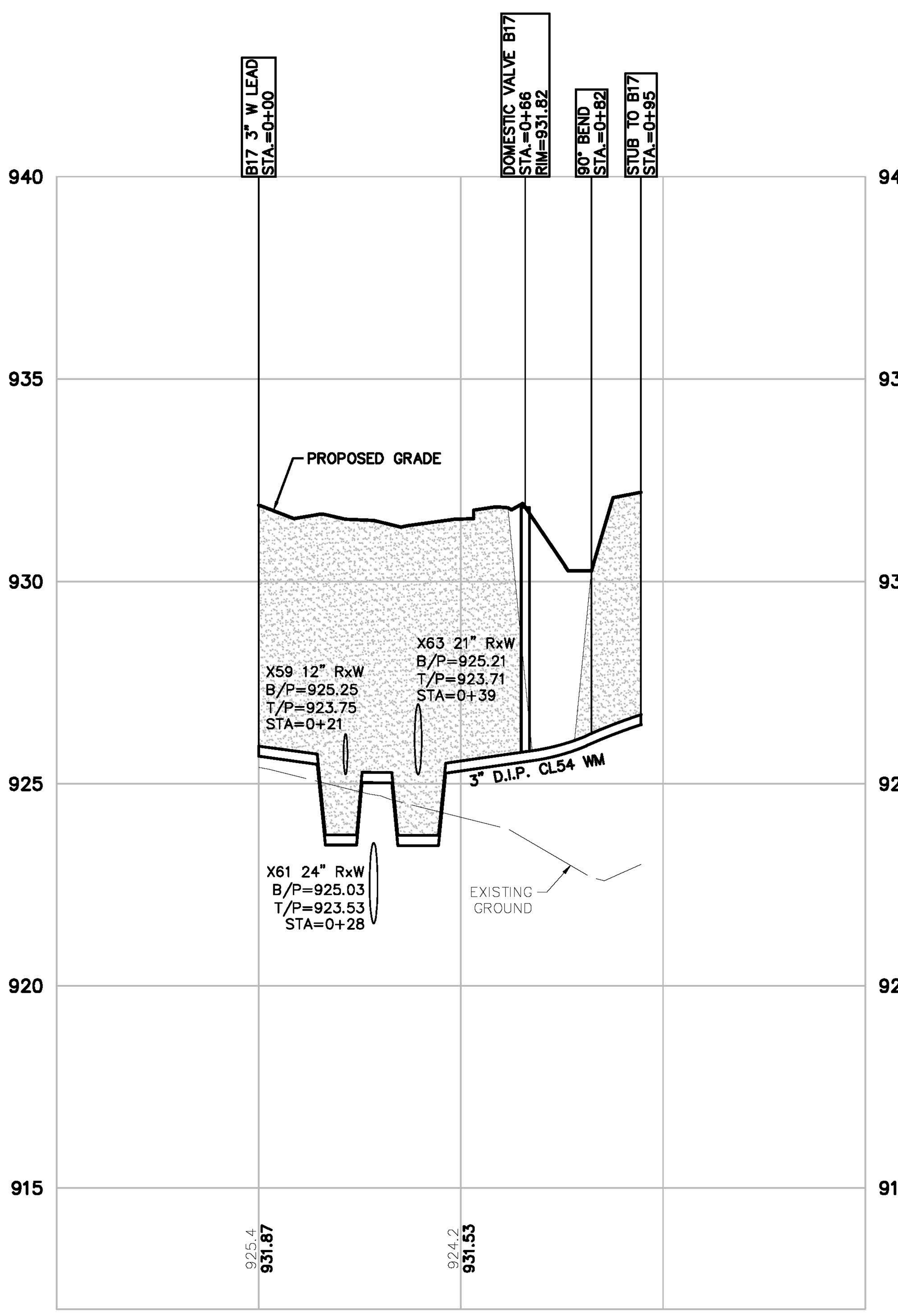


BLDG 5 6 INCH FIRE LEAD
VERT: 1"=3'
HORZ: 1"=30'

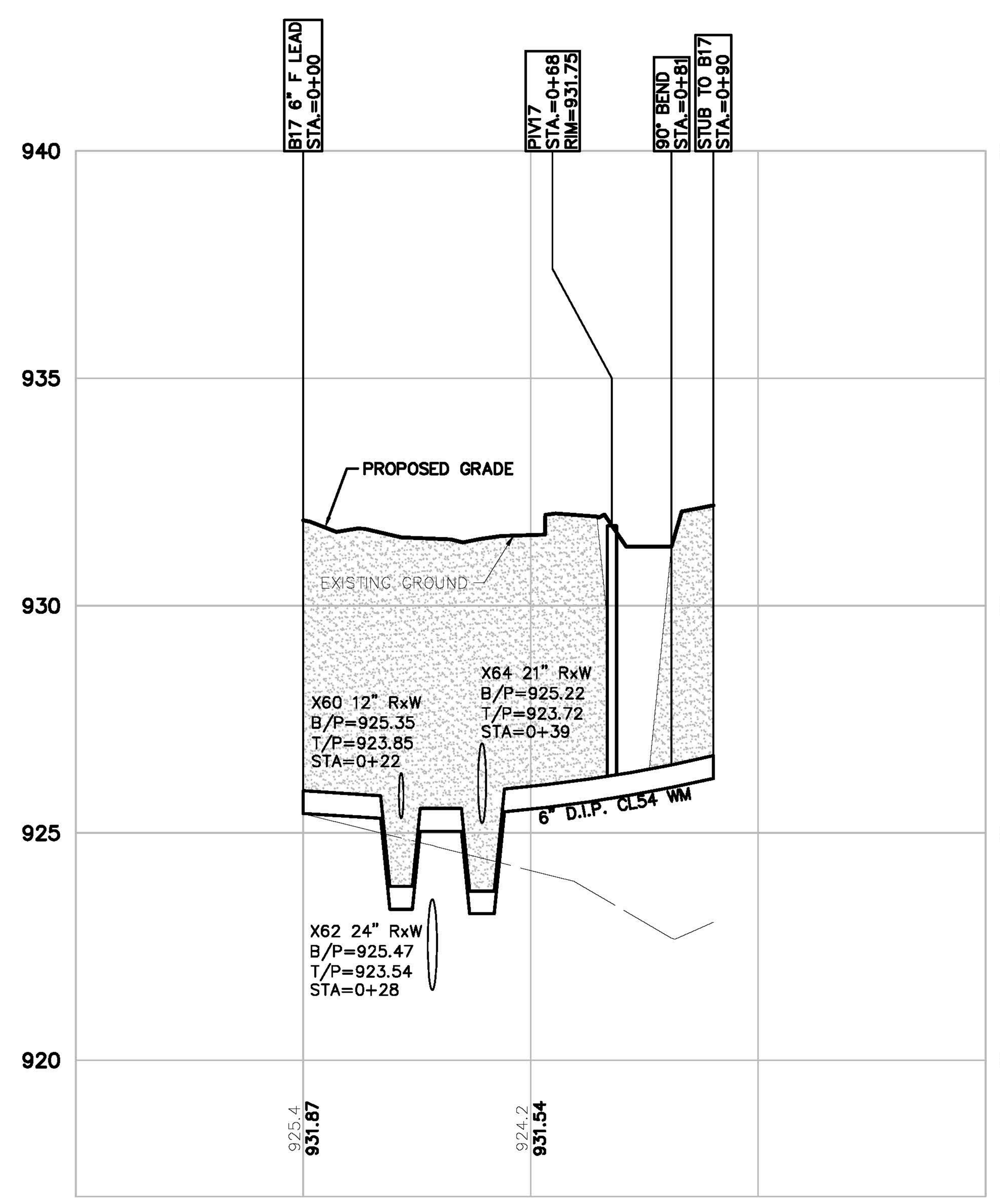


KEY MAP

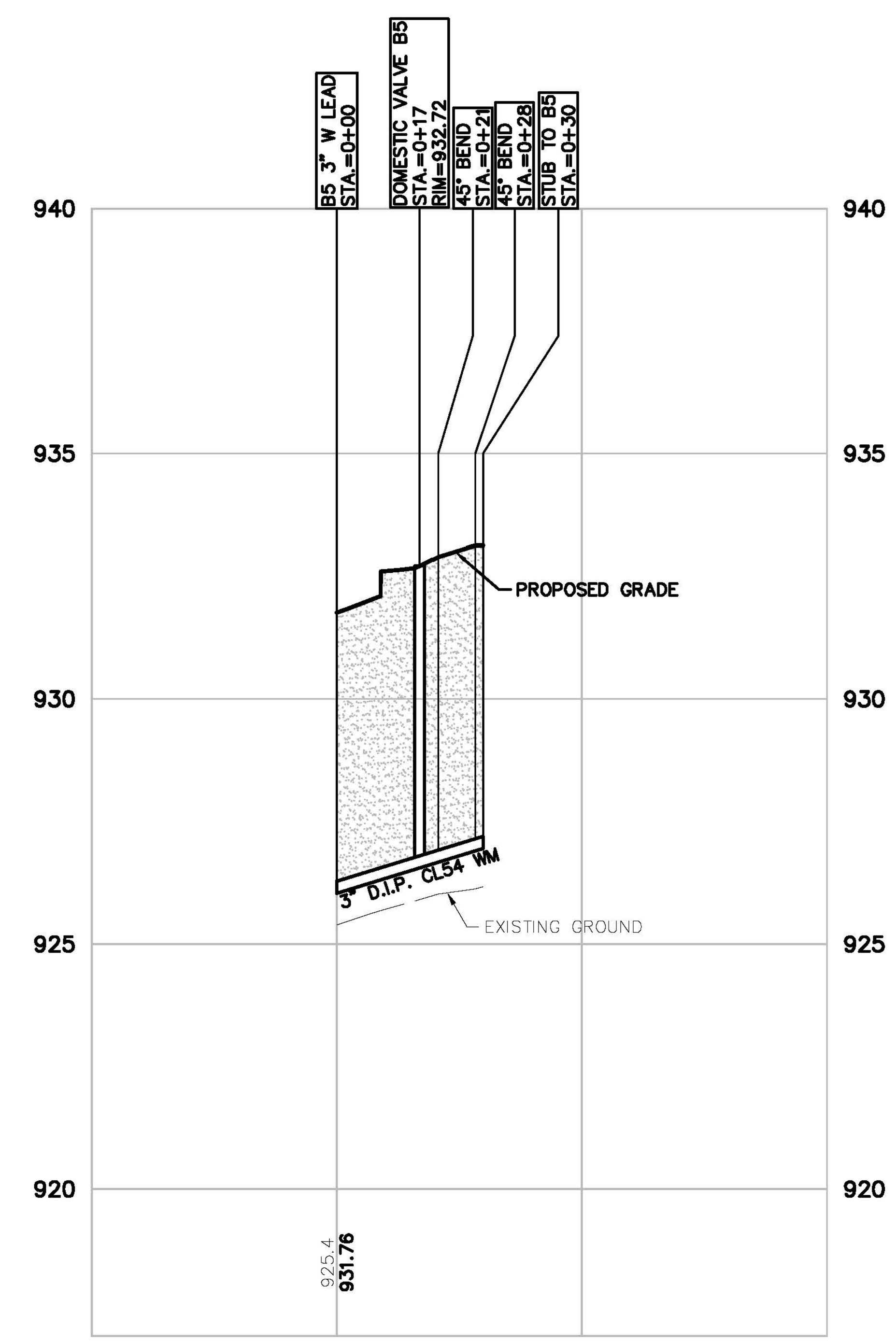
1" = 300'



BLDG 17 3 INCH DOMESTIC LEAD
VERT: 1"=3'
HORZ: 1"=30'



BLDG 17 6 INCH FIRE LEAD
VERT: 1"=3'
HORZ: 1"=30'



BLDG 5 3 INCH DOMESTIC LEAD
VERT: 1"=3'
HORZ: 1"=30'

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
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- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- SAND BACKFILL COMPACTED TO 95%

BEZTAK - PITTSFIELD
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WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

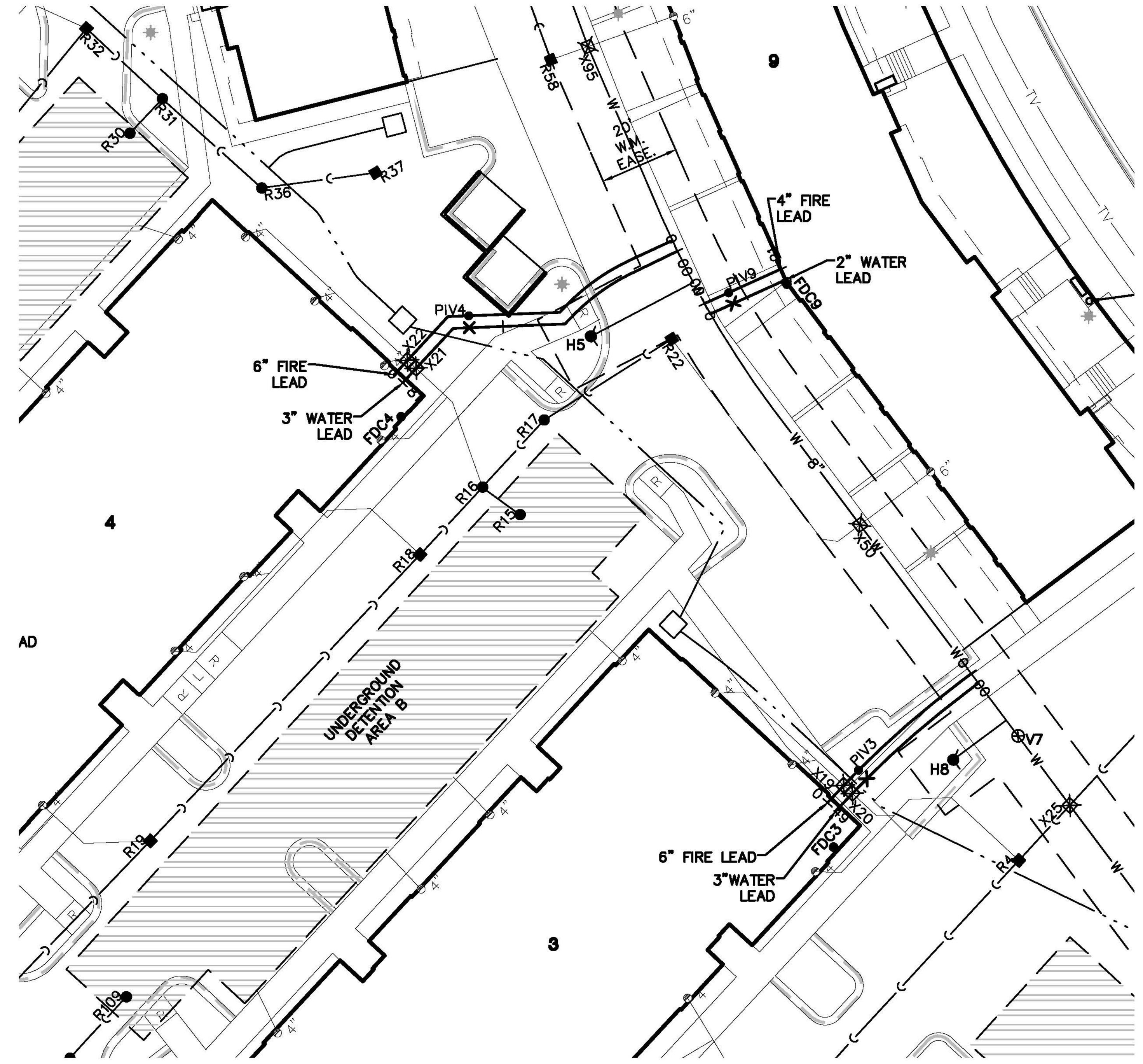
WATER LEAD PROFILE 7

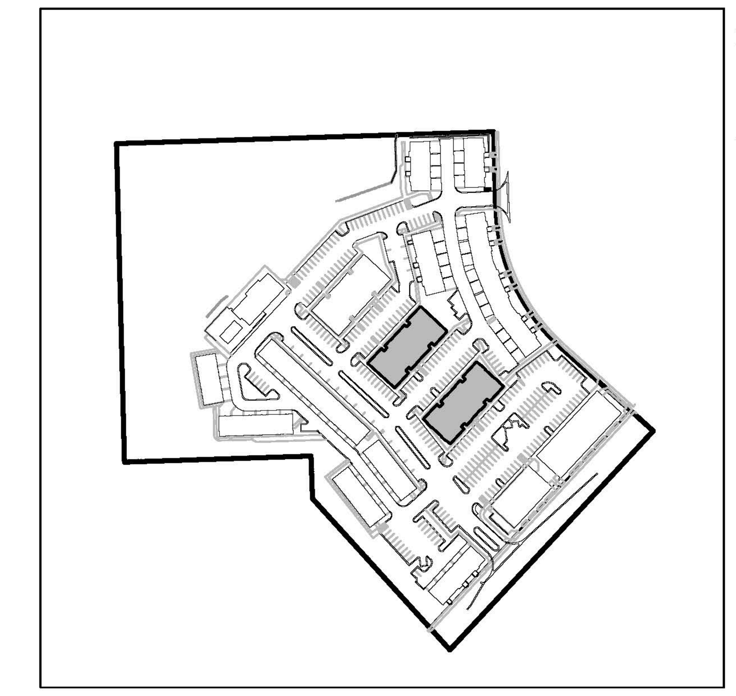
DATE
JUNE 9, 2017

REVISIONS
- 9/7/17 PER TWP PLANNING
- 9/21/17 PER TWP/WCWRC
- 10/04/17 PER WCRC
- 10/12/17 PER WCWRC
- 10/20/17 PER WCRC
- 11/1/17 SITE UPDATES
- 12/06/17 PER TWP
- 3/19/18 PER TWP
- 5/16/18 PER TWP
- 5/23/18 SITE UPDATES
- 6/05/18 SITE UPDATES
- 6/28/18 SITE UPDATES
- 7/26/18 PER TWP
- 8/10/18 DETENTION REV.
- 9/14/18 PER TWP
- 10/01/18 PER TWP
- 10/10/18 PER TWP

SCALE 0 15 30
1" = 30 FEET

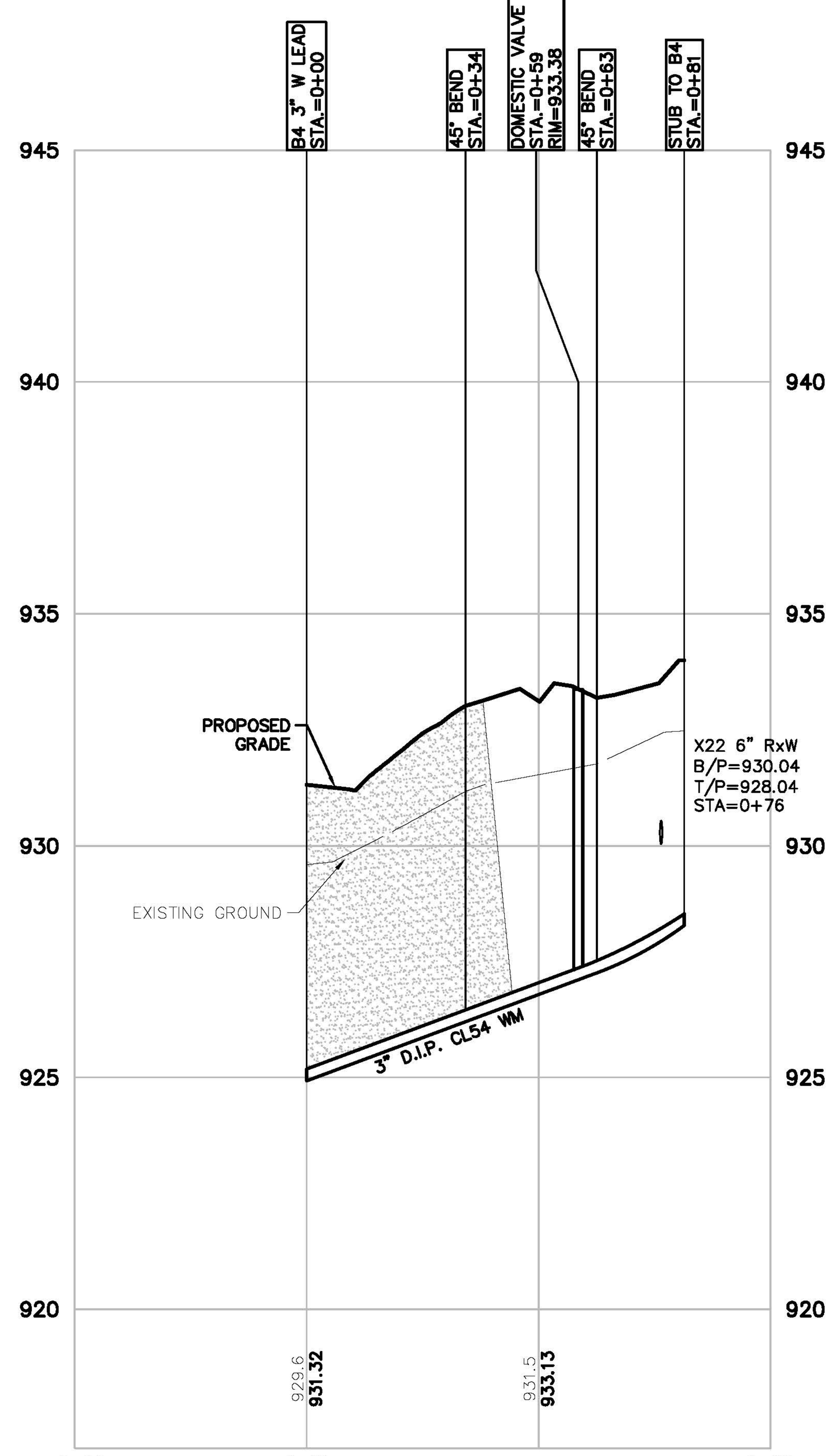
DR. CR	CH. --
P.M. MB	
BOOK	--
JOB	16000137
SHEET NO.	36



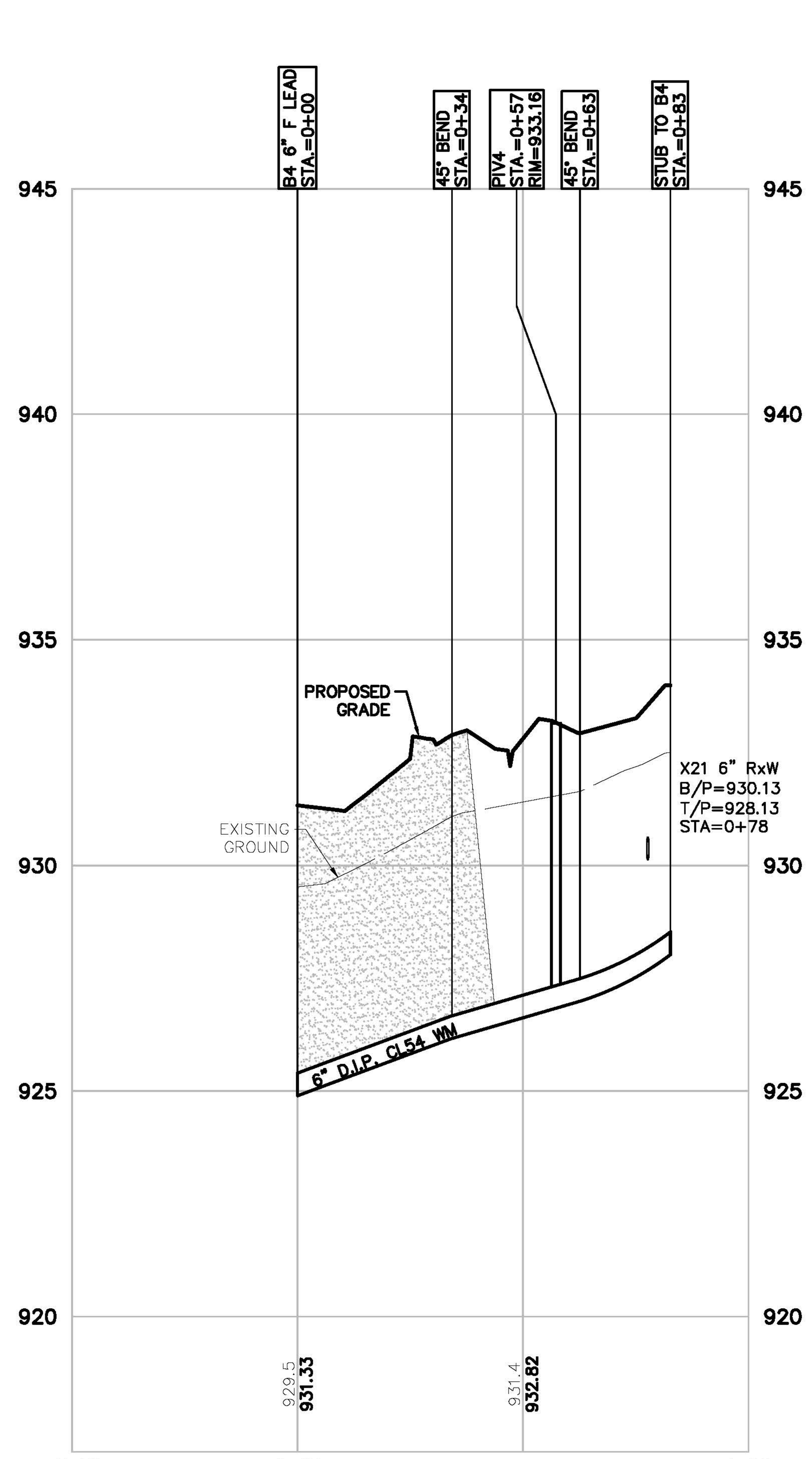


KEY MAP

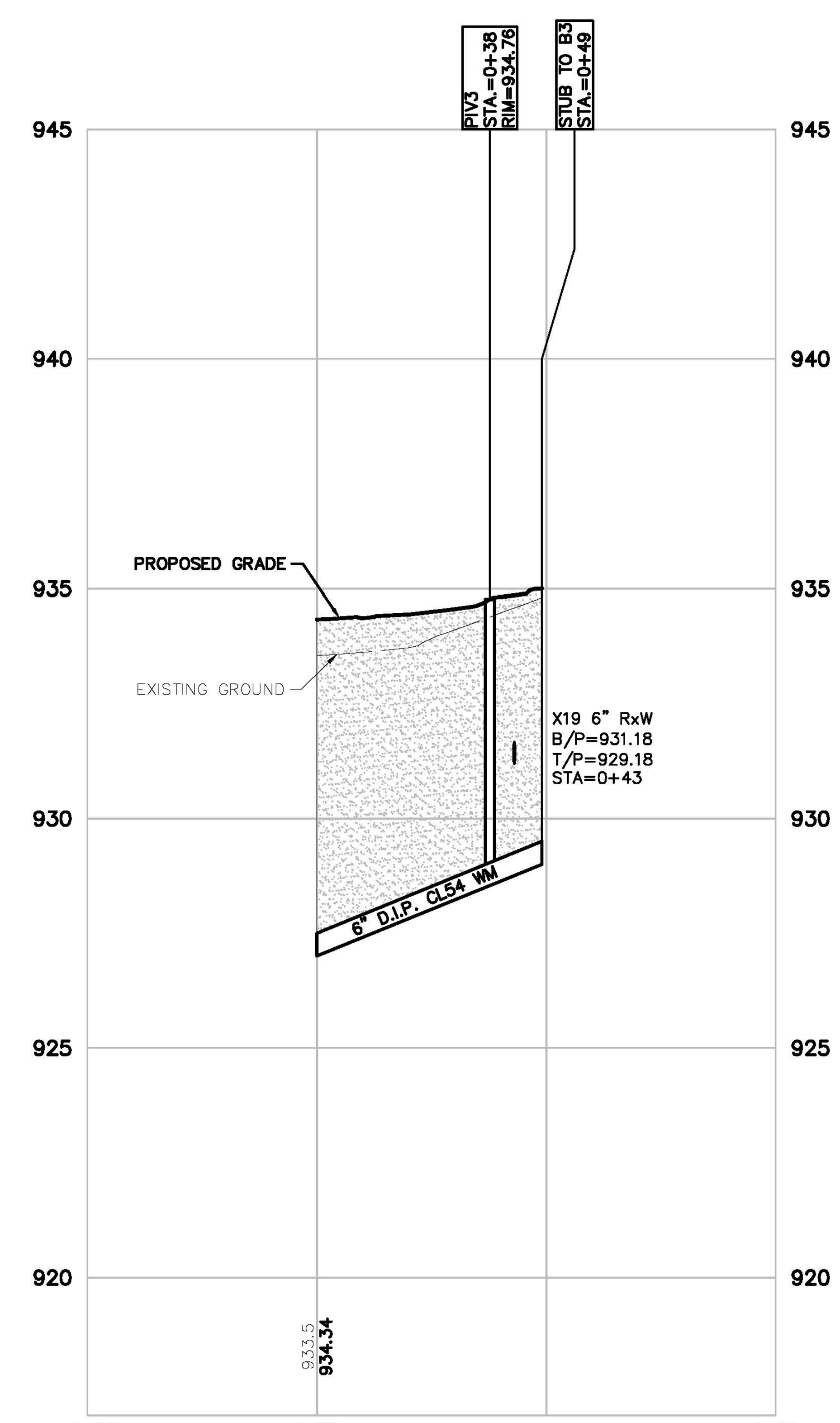
1" = 300'



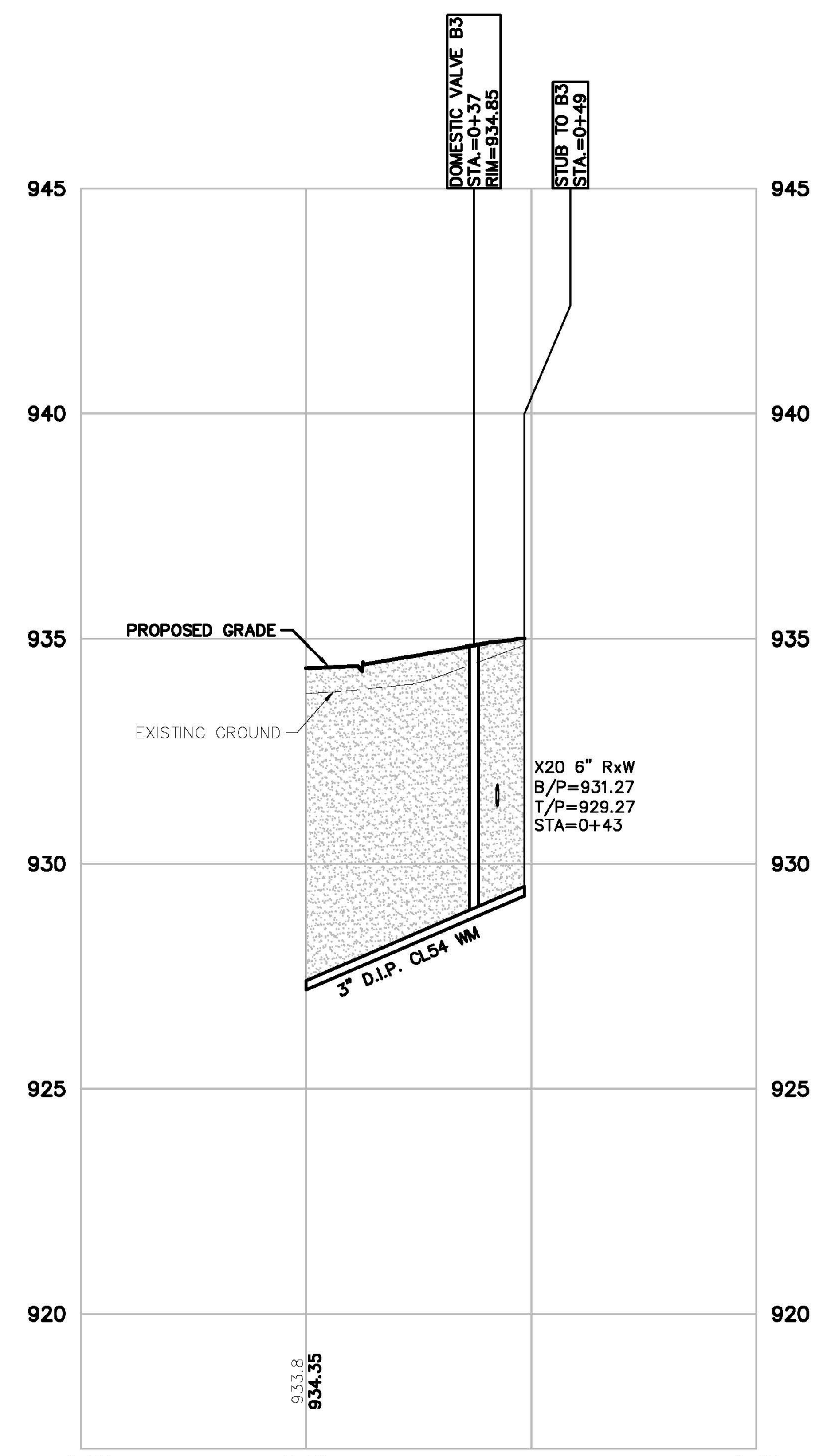
BLDG 4 3 INCH DOMESTIC LEAD
VERT: 1"=3'
HORZ: 1"=30'



BLDG 4 6 INCH FIRE LEAD
VERT: 1"=3'
HORZ: 1"=30'



BLDG 3 6 INCH FIRE LEAD
VERT: 1"=3'
HORZ: 1"=30'



BLDG 3 3 INCH DOMESTIC LEAD
VERT: 1"=3'
HORZ: 1"=30'

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- SAND BACKFILL COMPACTED TO 95%

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
WATER LEAD PROFILE 8

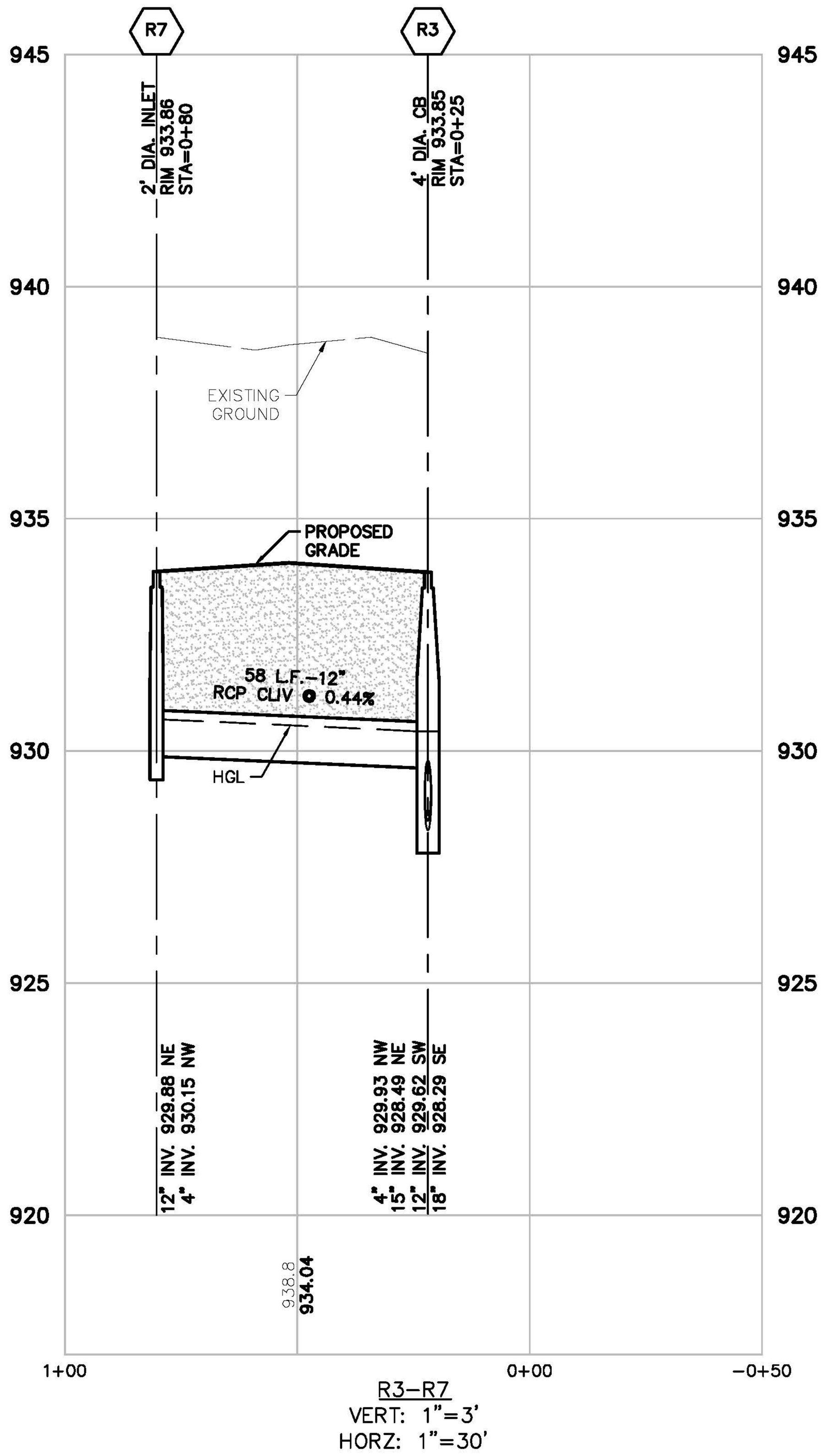
DATE JUNE 9, 2017

REVISIONS
- 9/7/17 PER TWP PLANNING
- 9/21/17 PER TWP/WCWRC
- 10/04/17 PER WCRC
- 10/12/17 PER WCWRC
- 10/20/17 PER WCRC
- 11/1/17 SITE UPDATES
- 12/06/17 PER TWP
- 3/19/18 PER TWP
- 5/16/18 PER TWP
- 5/23/18 SITE UPDATES
- 6/05/18 SITE UPDATES
- 6/28/18 SITE UPDATES
- 7/26/18 PER TWP
- 8/10/18 DETENTION REV.
- 9/14/18 PER TWP
- 10/01/18 PER TWP
- 10/10/18 PER TWP

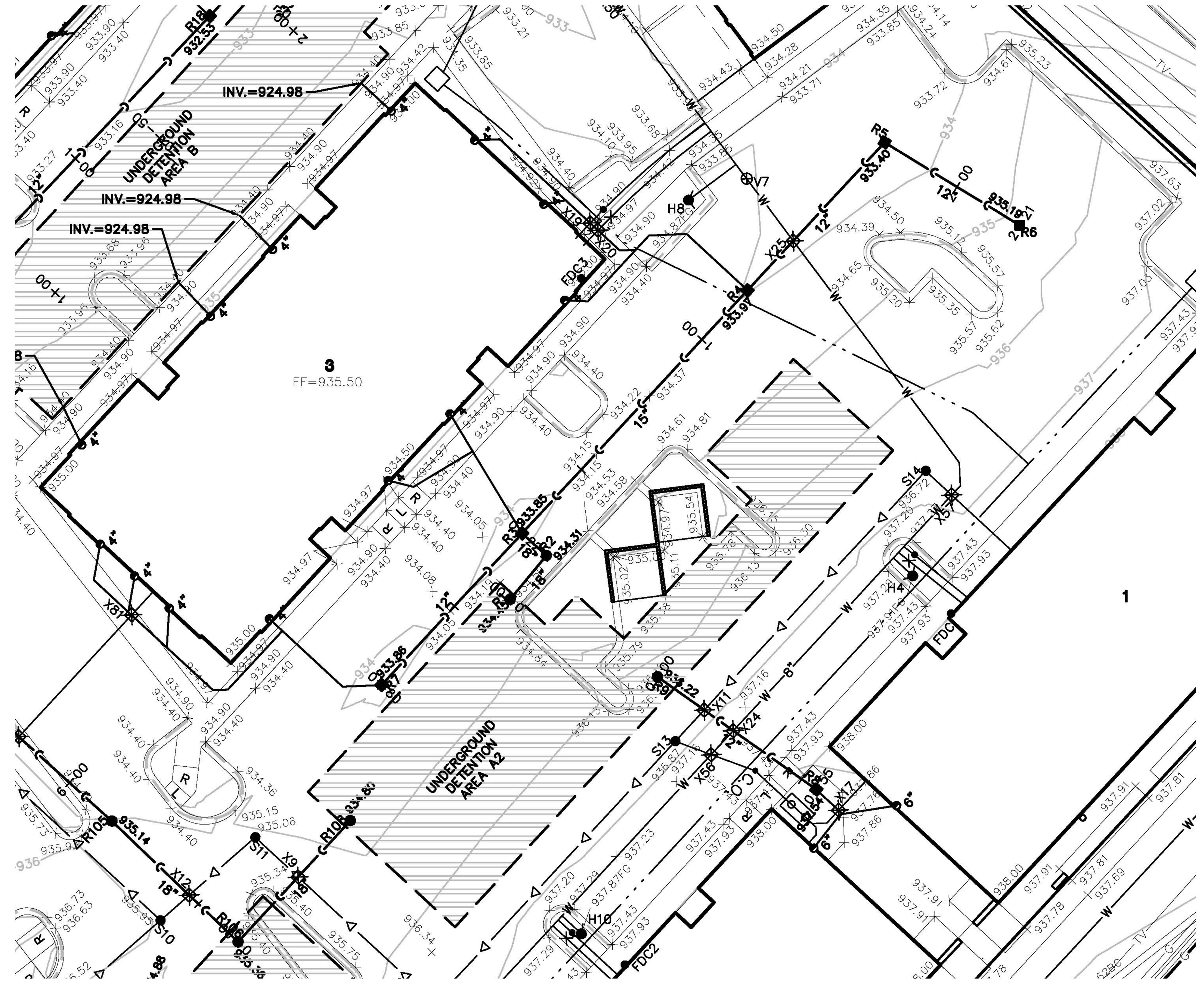
SCALE 0 15 30
1" = 30 FEET

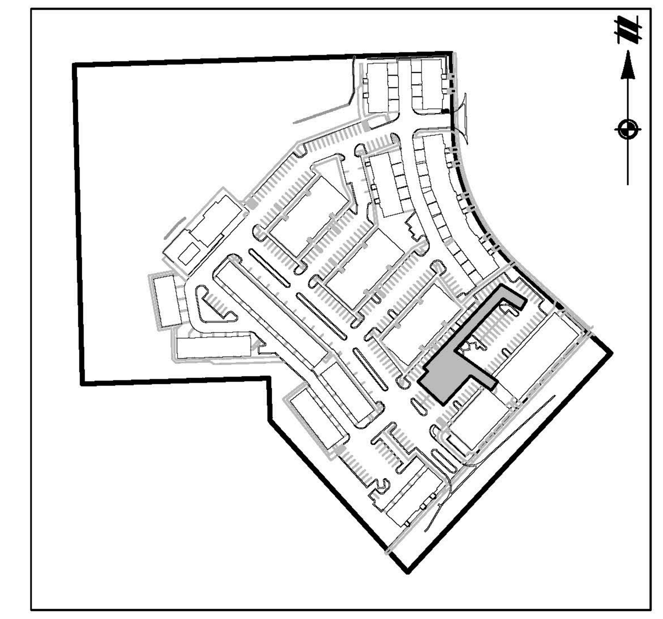
DR. CR CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 37

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15



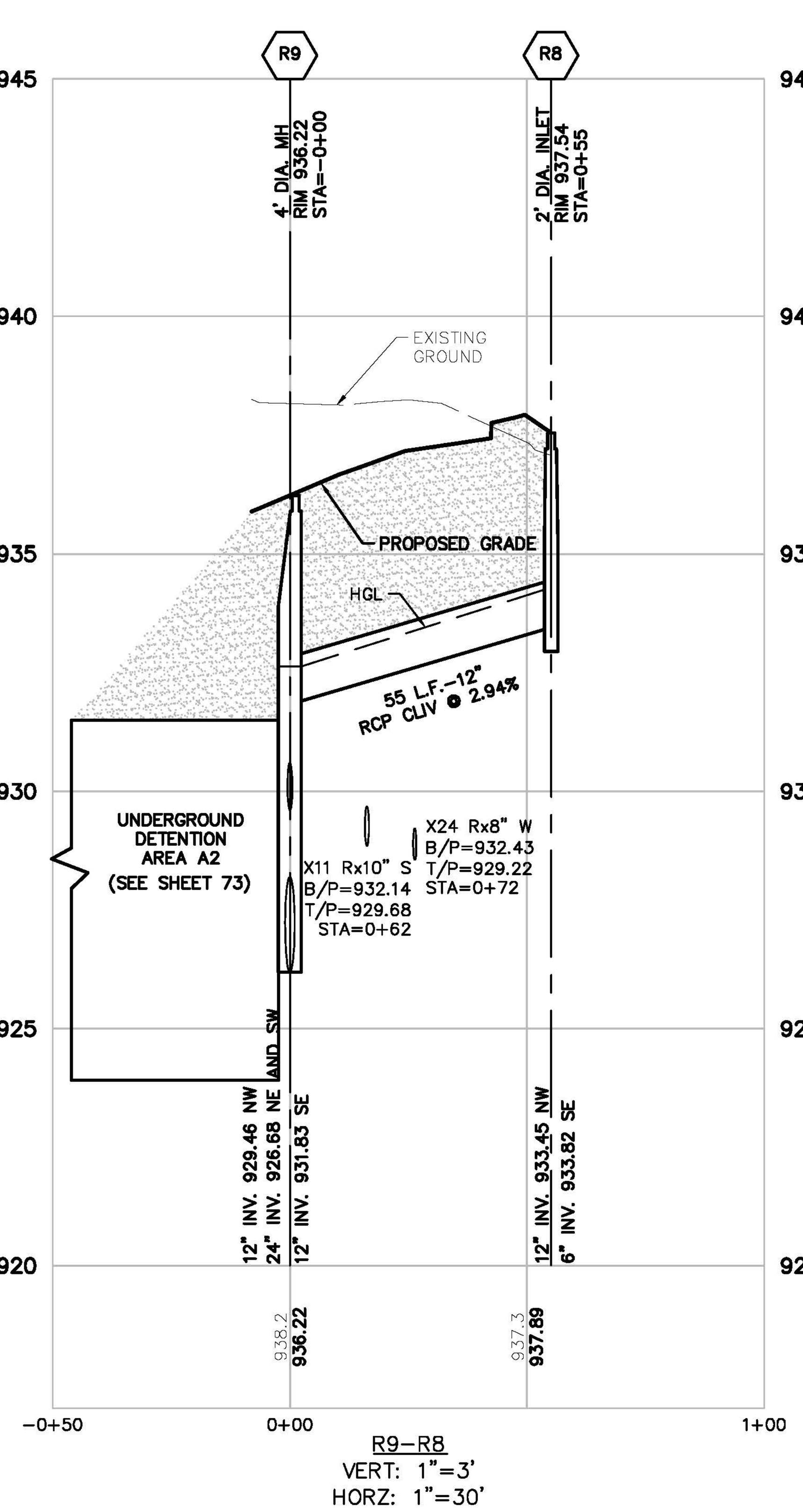
R3–R7
VERT: 1"=3'
HORZ: 1"=30'



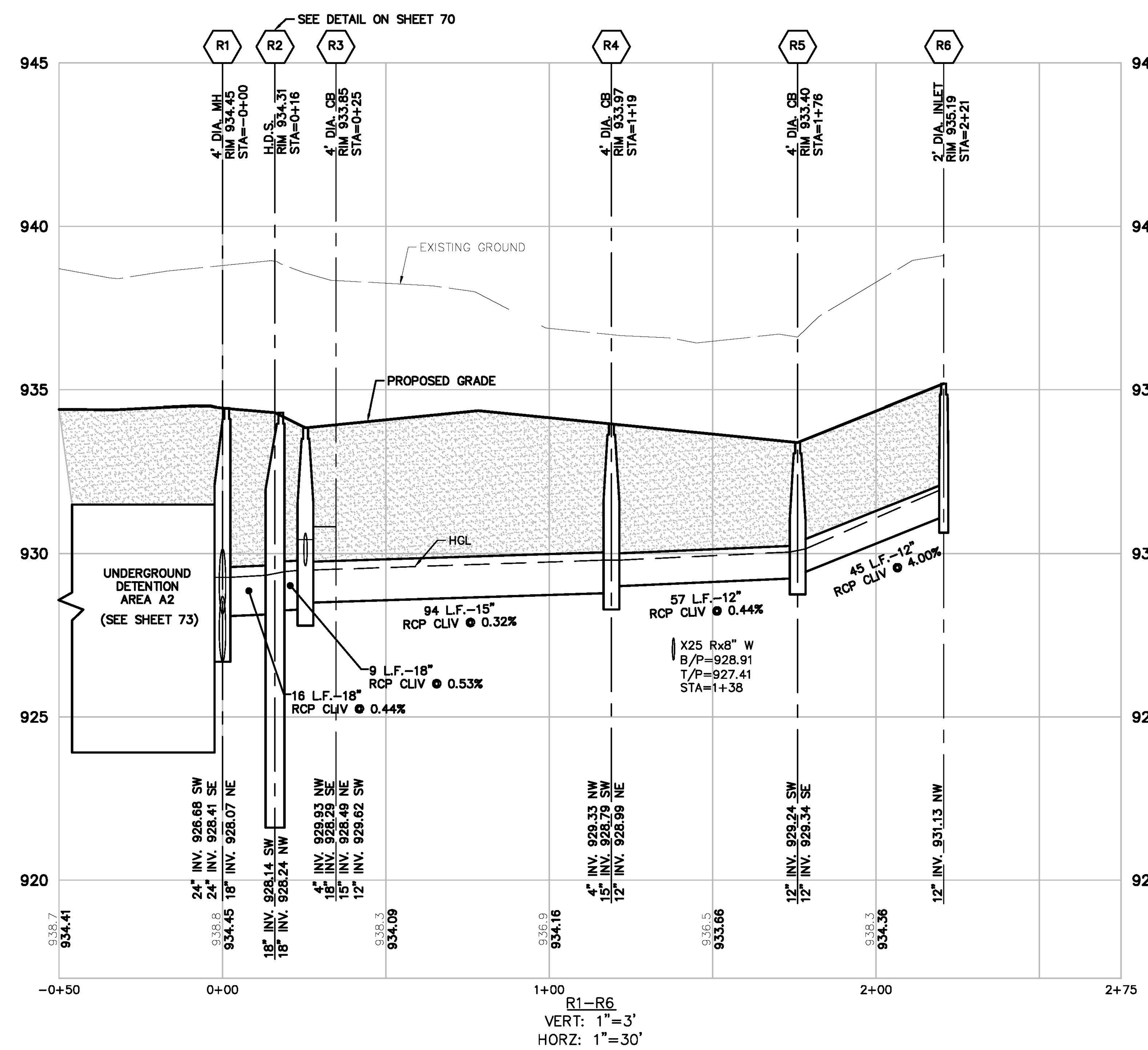


STORM SEWER NOTES

1. ALL DOWN SPOUT LEADS TO BE PVC SDR 26.
2. ALL DOWNSPOUT LEADS UNDER OR WITHIN A 1:1 INFLUENCE OF PAVEMENT WILL BE INSTALLED WITH COMPACTED SAND BACKFILL.



R9–R8
VERT: 1"=3'
HORZ: 1"=30'



R1–R6
VERT: 1"=3'
HORZ: 1"=30'

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- CLASS II GRANULAR BACKFILL AT 95% COMPACTION
- H.D.S. HYDRO–DYNAMIC SEPARATOR

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
STORMWATER PLAN & PROFILE 1

DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
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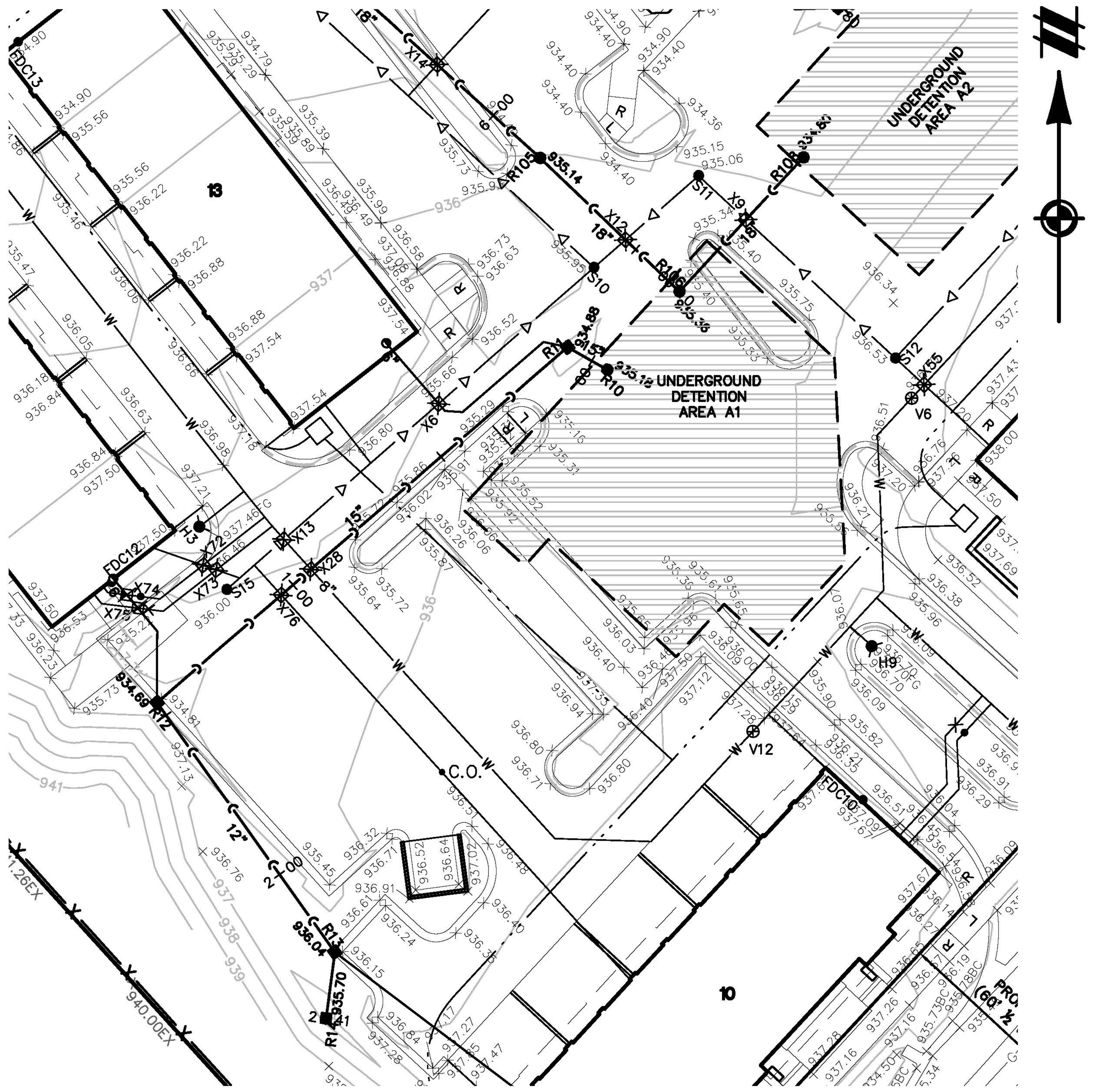
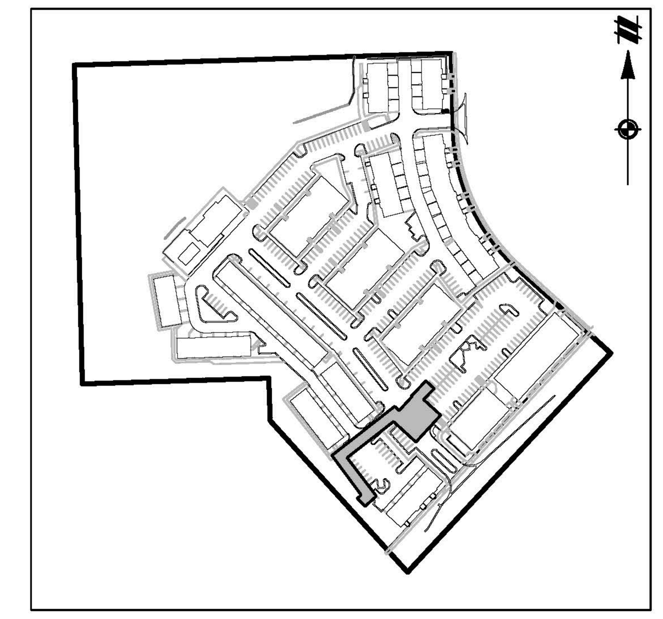
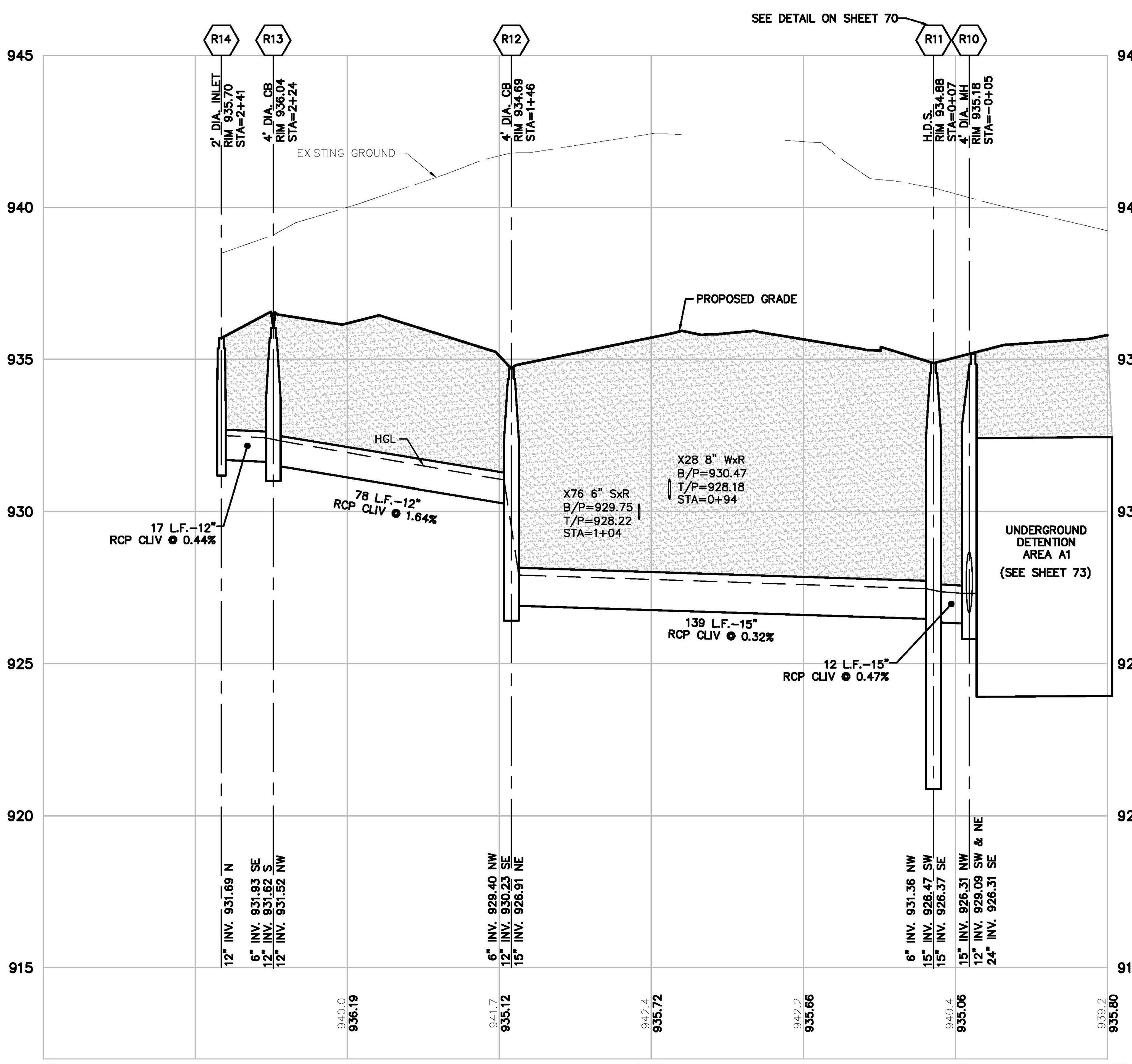
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 15 30
1" = 30 FEET
DR. CR CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO.
38

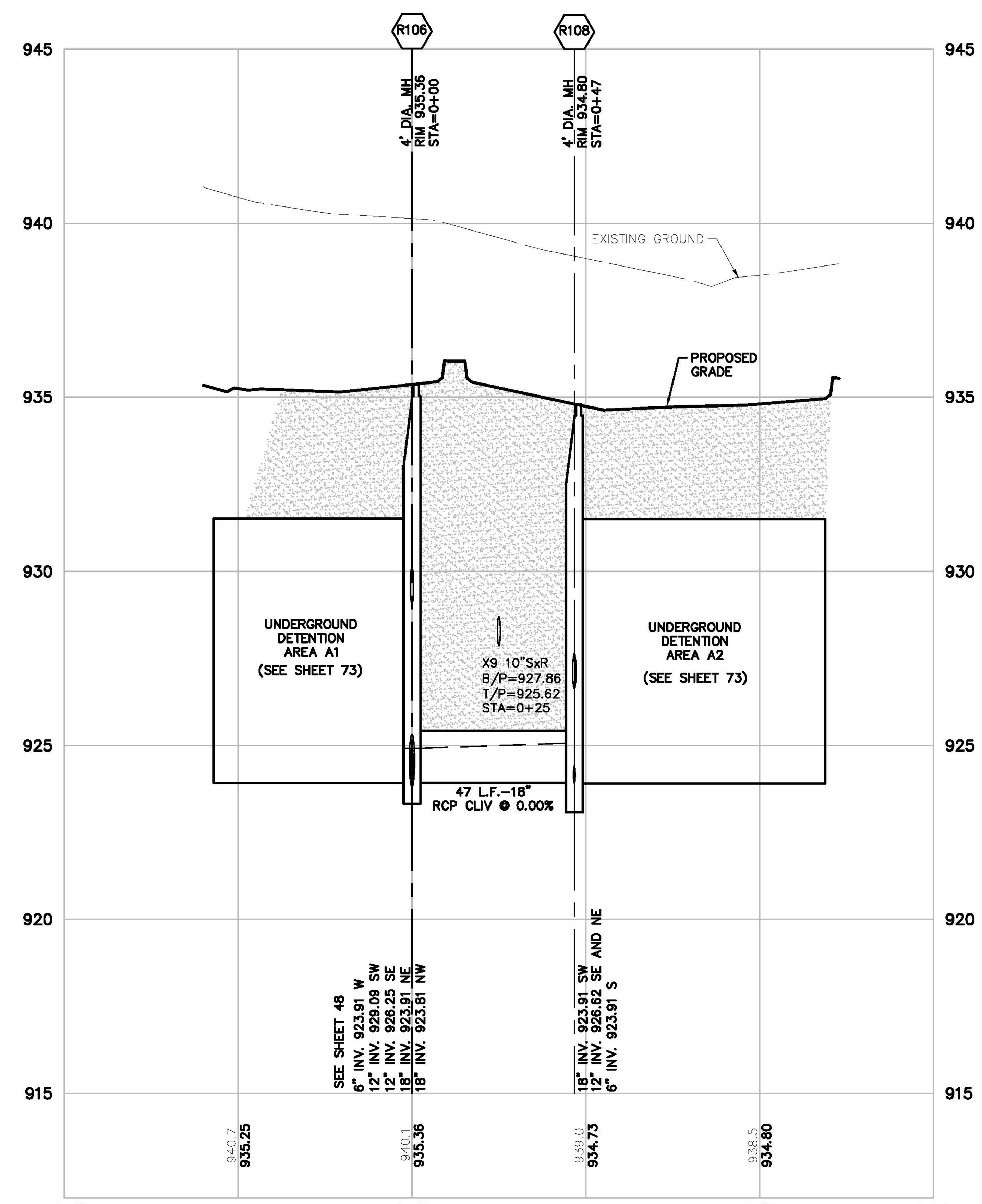




KEY MAP
1" = 300'



R10–R14
VERT: 1"=3'
HORZ: 1"=30'



R106–R108
VERT: 1"=3'
HORZ: 1"=30'

LEGEND

Symbol	Description
	BOUNDARY LINE
	EXIST. EASEMENT
	SECTION LINE
	BOUNDARY/PROPERTY LINE
	EXIST. SETBACK
923	EXIST. CONTOUR
	EXIST. TREE LINE
	EXIST. CURB AND GUTTER
X	EXIST. FENCE
	EXIST. GRAVEL
	EXIST. BUILDING
	EXIST. WETLAND
3533	EXIST. TREE
	EXIST. WETLAND BUFFER
OHE	EXIST. OVERHEAD ELEC. LINE
OHT	EXIST. OVERHEAD TELE. LINE
TV	EXIST. CABLE LINE
U	EXIST. UNSPECIFIED UTILITIES
G	EXIST. GAS
	EXIST. STORM
W	EXIST. WATER MAIN
	EXIST. SANITARY
	EXIST. UNSPECIFIED UTILITY
	EXIST. CULVERT
	EXIST. CATCH BASIN/INLET
	EXIST. HYDRANT
	EXIST. VALVE
	EXIST. SANITARY SEWER
	PROP. SETBACK
	PROP. BUILDING
	PROP. BUILDING INTERIOR
	PROP. WALL
	PROP. PARKING STRIPE
	PROP. BACK OF CURB
	PROP. ASHPALT
	PROP. LOT LINE
	PROP. PARKING STRIPE
923	PROP. CONTOUR
	PROP. INLET FILTER
	PROP. SILT FENCE
	PROP. STORM SEWER
	PROP. SANITARY
W	PROP. WATER MAIN
	PROP. END SECTION
	PROP. CATCH BASIN/INLET
	PROP. WATER VALVE
	PROP. FIRE HYDRANT
	PROP. MANHOLE
	CLASS II GRANULAR BACKFILL AT 95% COMPACTION
H.D.S.	HYDRO-DYNAMIC SEPARATOR

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WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
STORMWATER PLAN & PROFILE 2

DATE
JUNE 9, 2017

REVISIONS
9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
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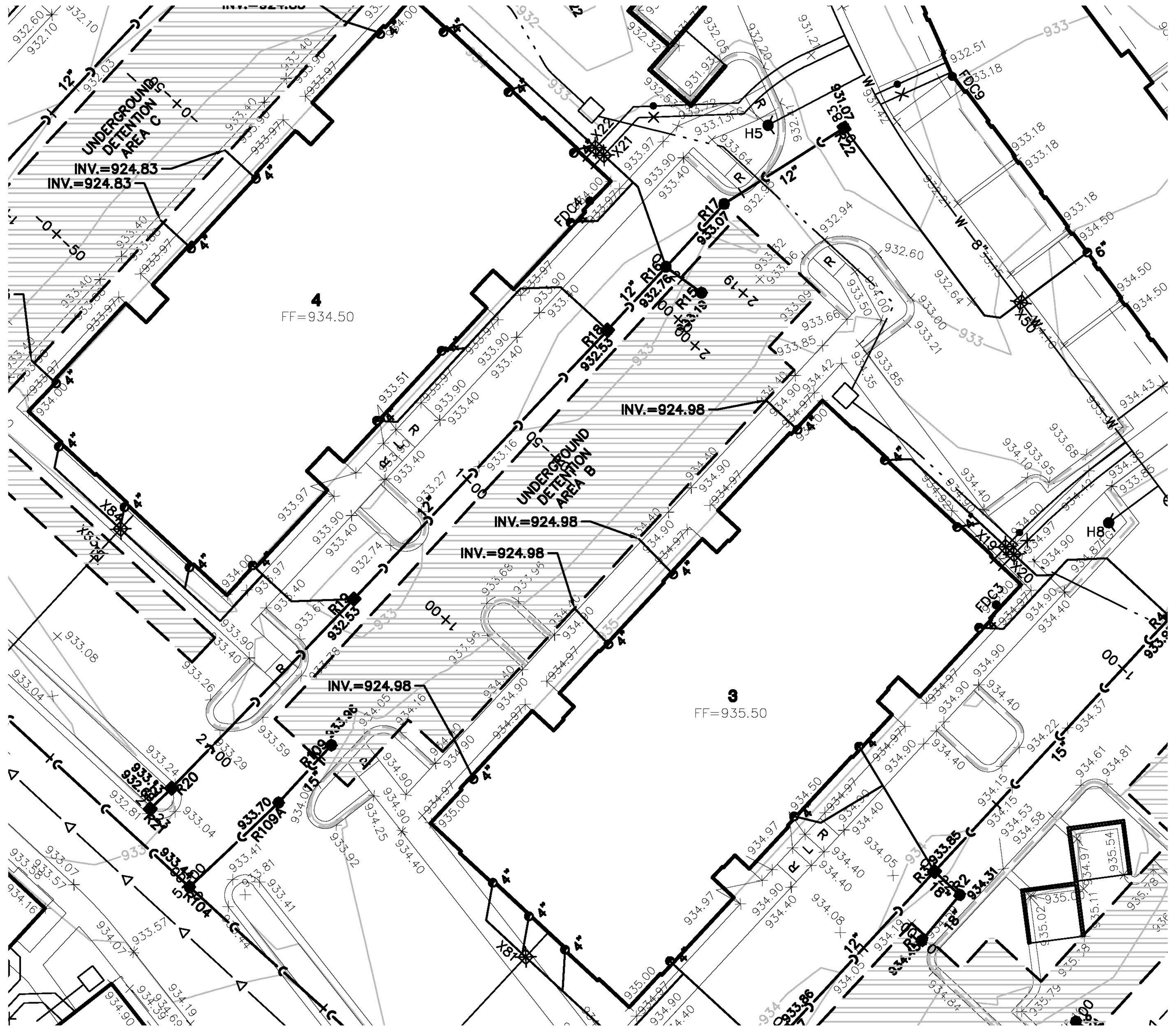
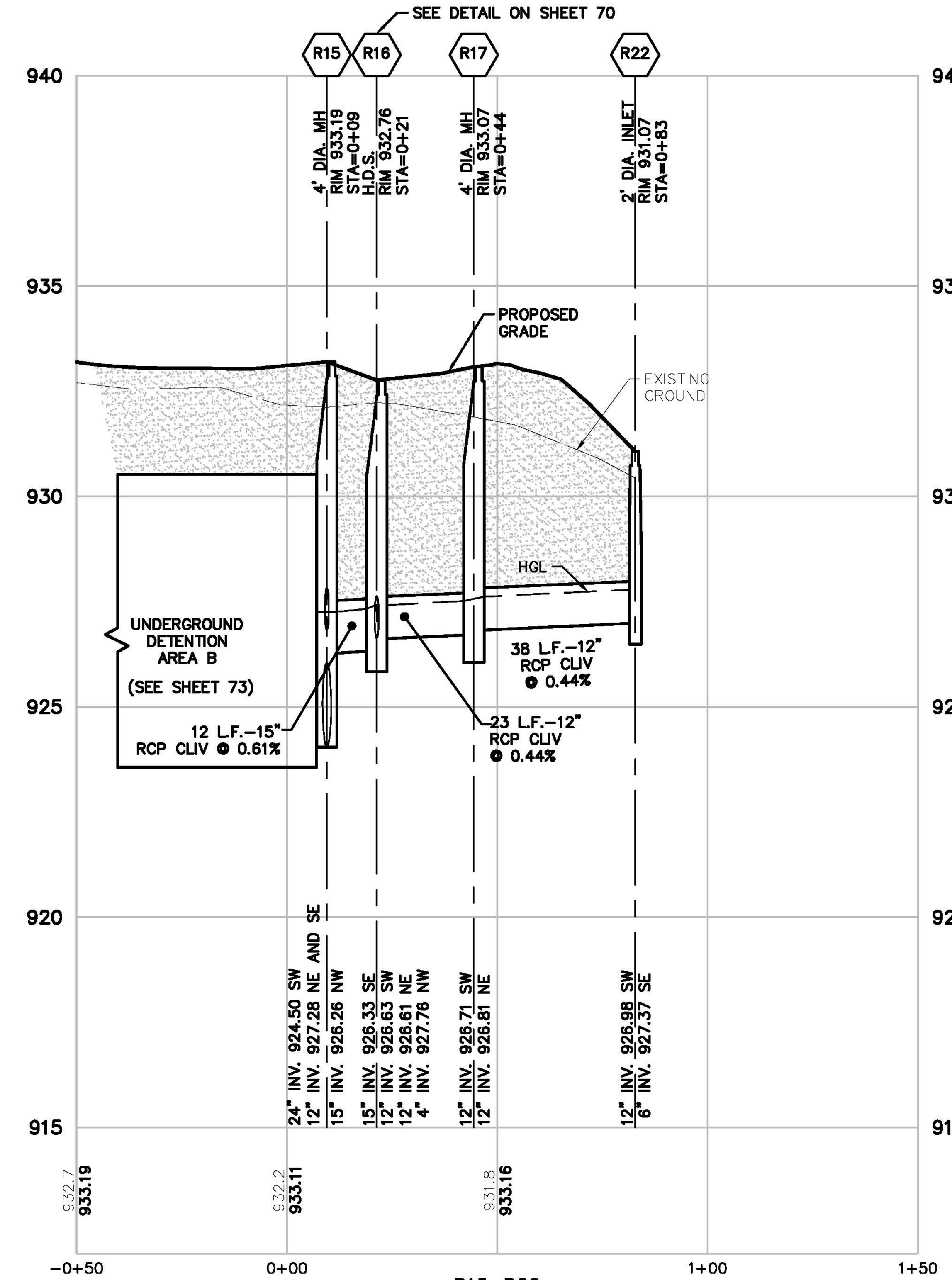
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP

SCALE 0 15 30
1" = 30 FEET

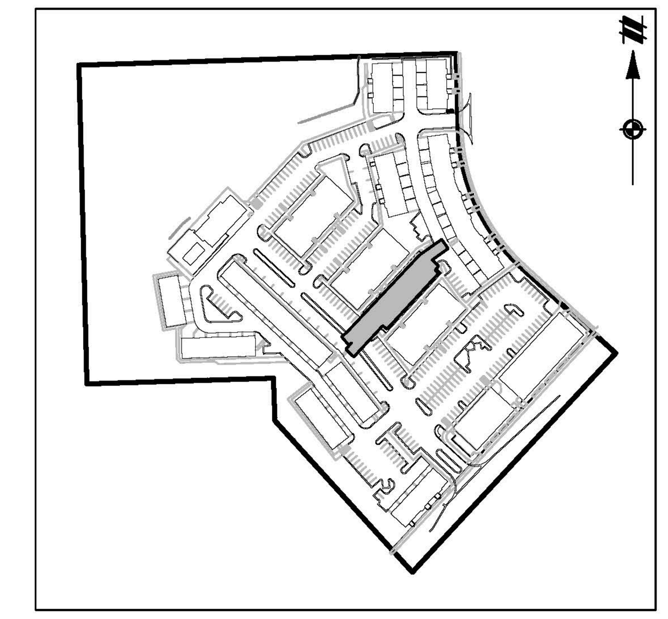
DR. CR	CH. --
P.M. MB	
BOOK	--
JOB	16000137
SHEET NO.	39

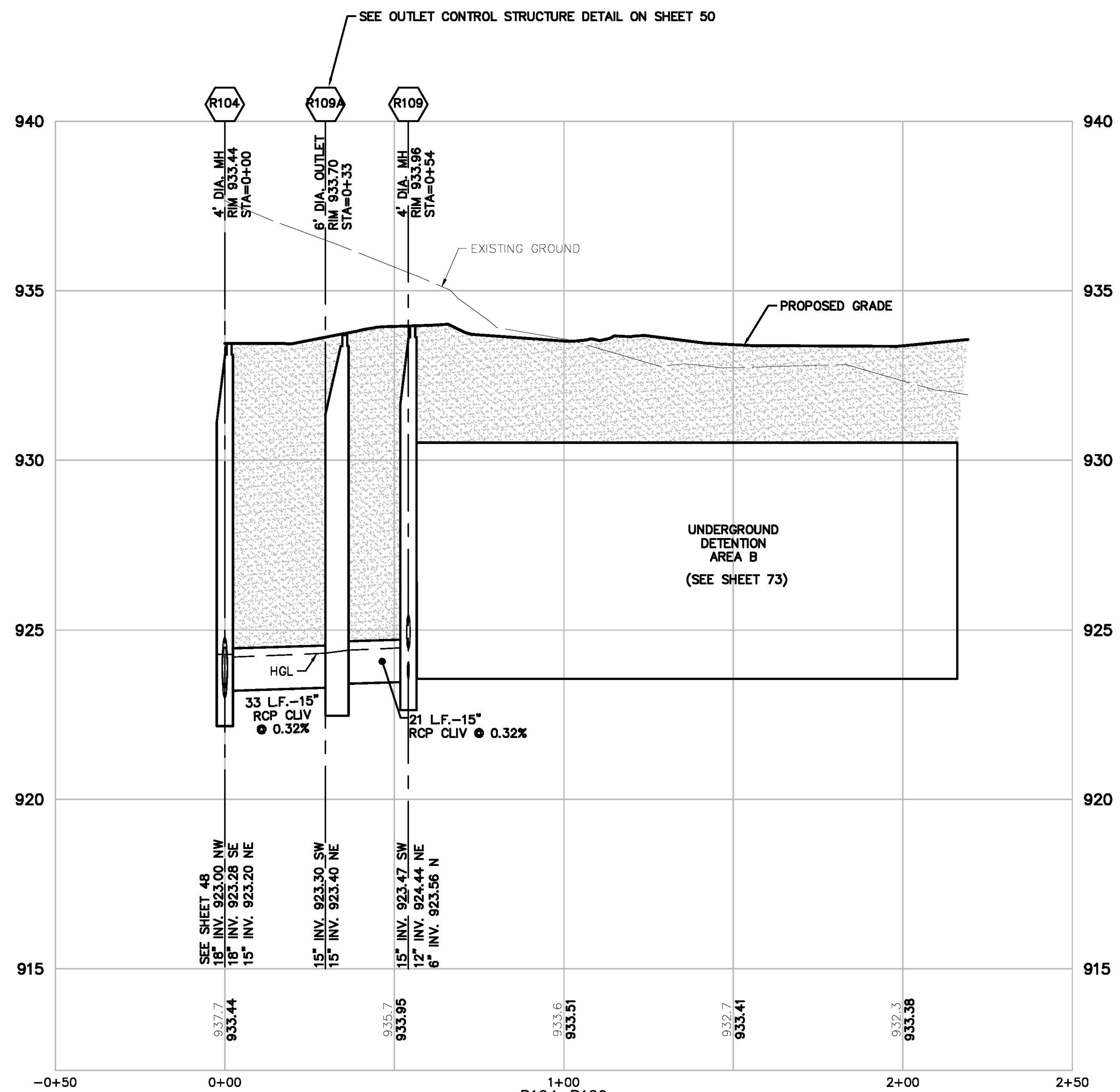
BEZTAK - PITTSFIELD
C.S.P.A.# 16-15



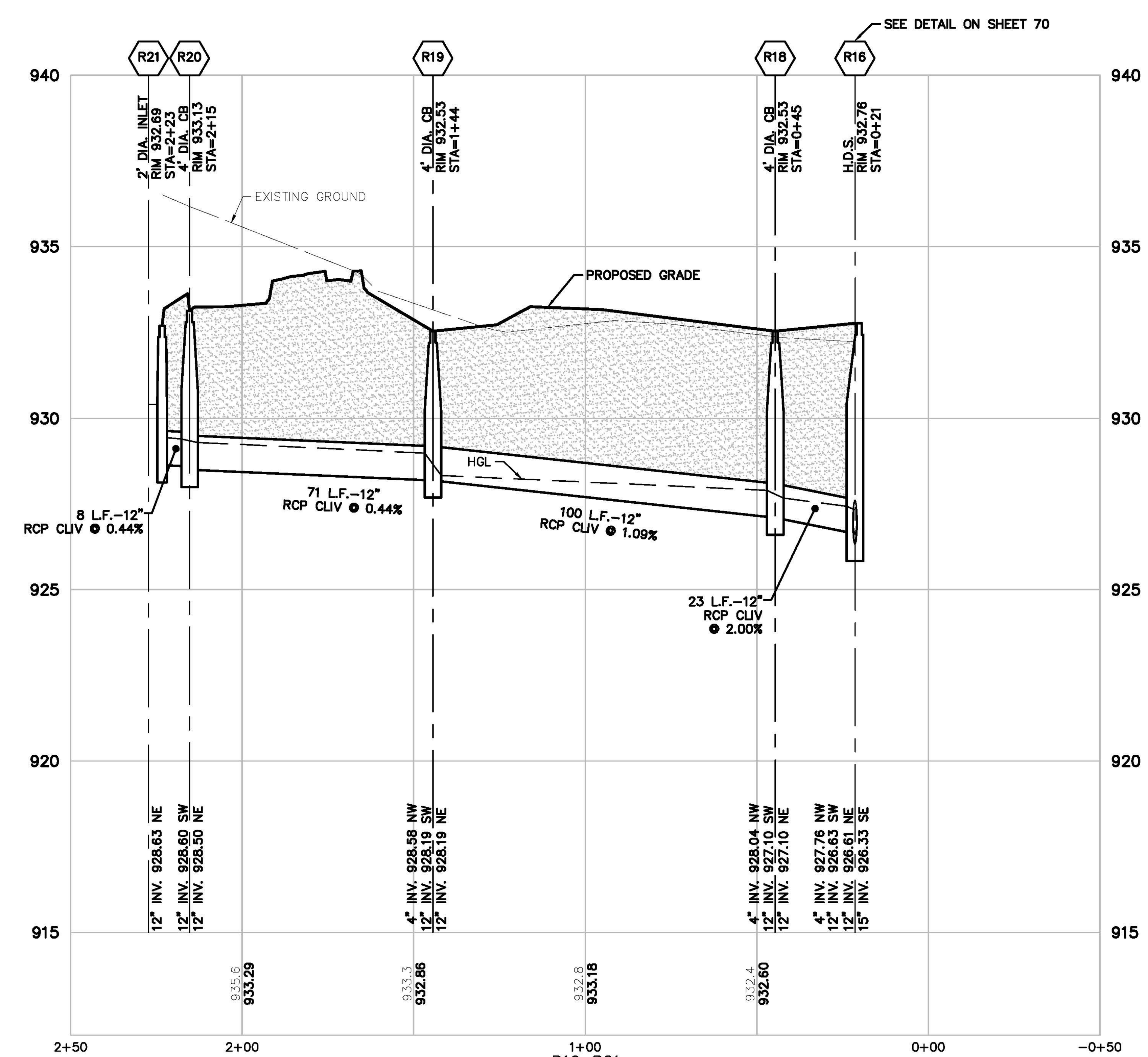


R15–R22
VERT: 1"=3'
HORZ: 1"=30'





R104–R109
VERT: 1"=3'
HORZ: 1"=30'



R16–R21
VERT: 1"=3'
HORZ: 1"=30'

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- CLASS II GRANULAR BACKFILL AT 95% COMPACTION
- H.D.S. HYDRO-DYNAMIC SEPARATOR

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

STORMWATER PLAN & PROFILE 3

DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
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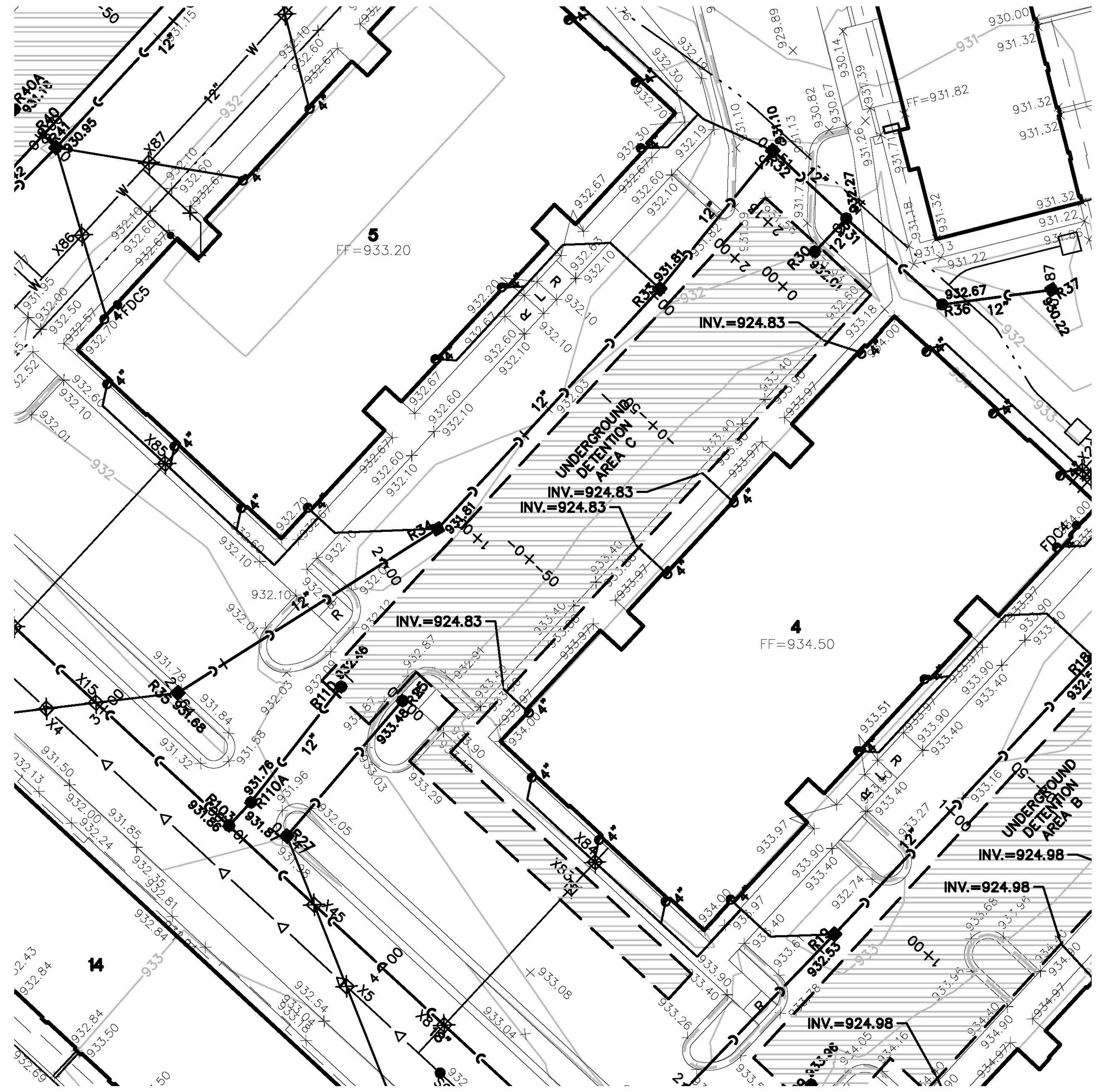
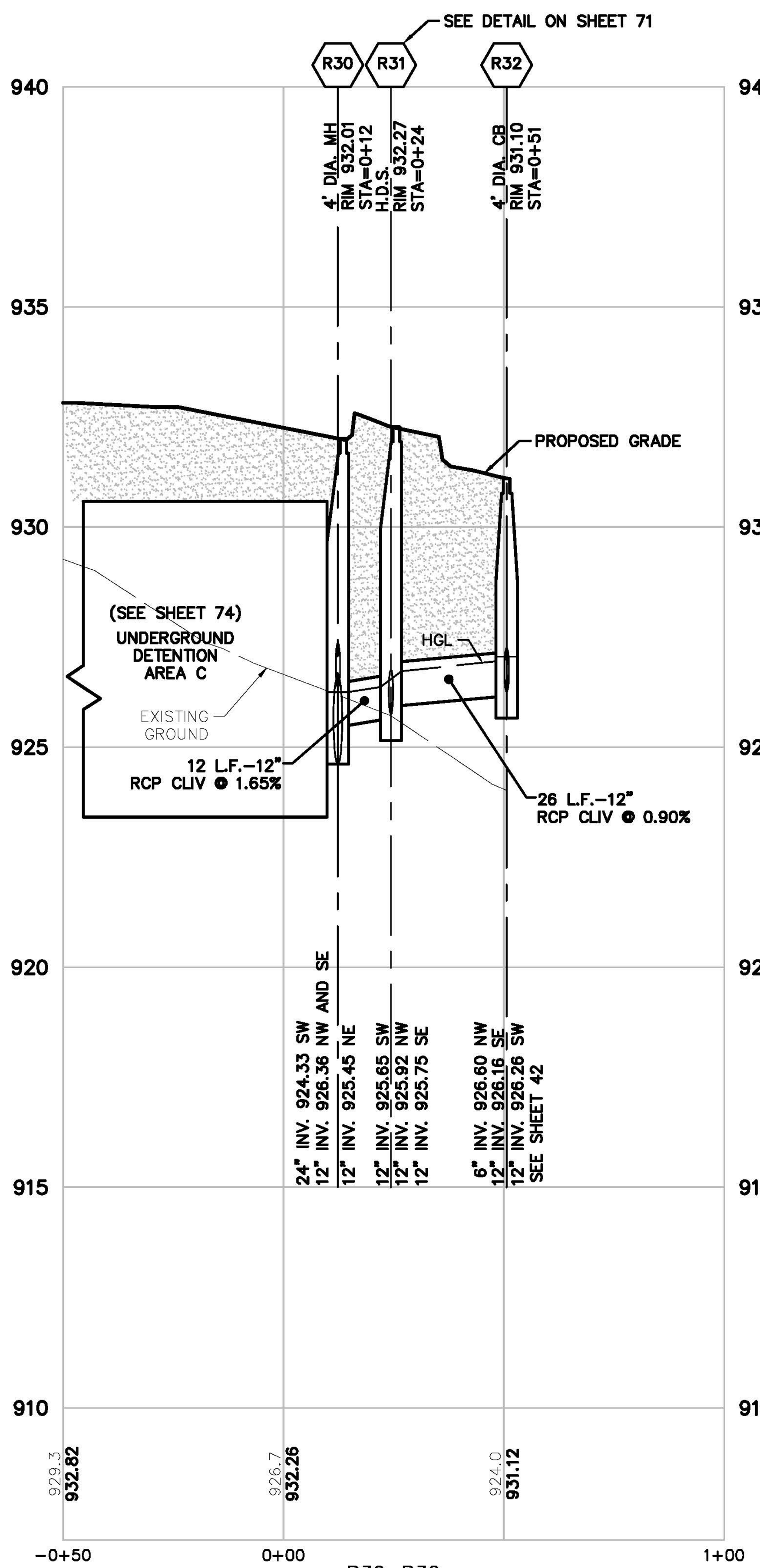
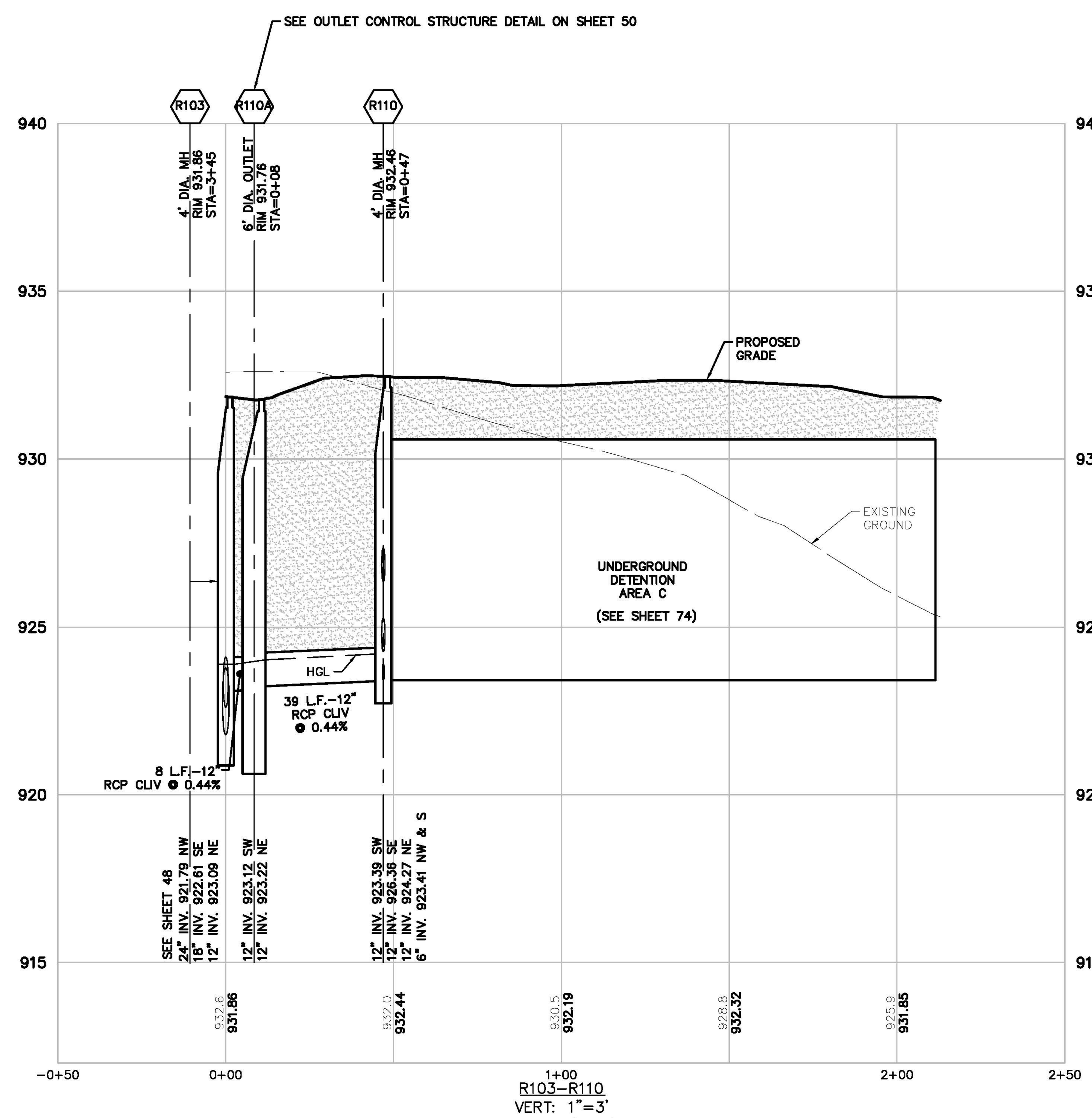
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

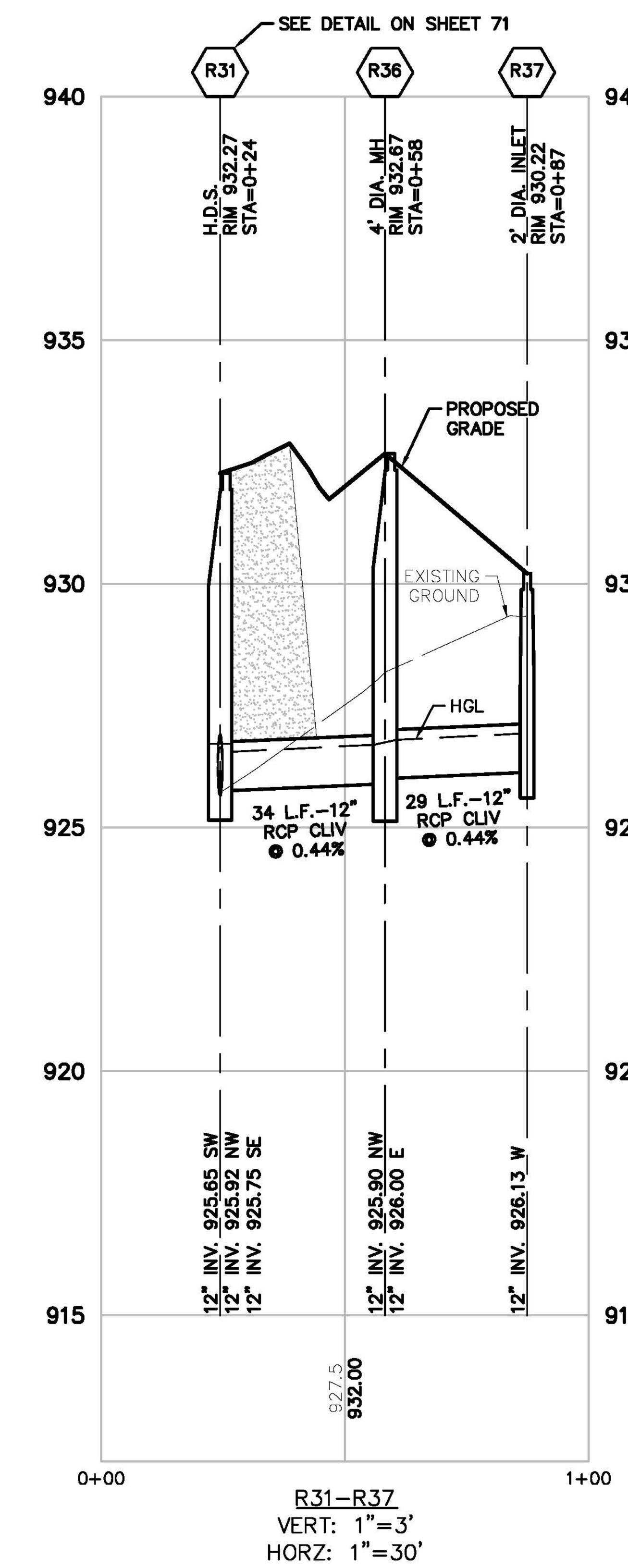
SCALE 0 15 30
1" = 30 FEET

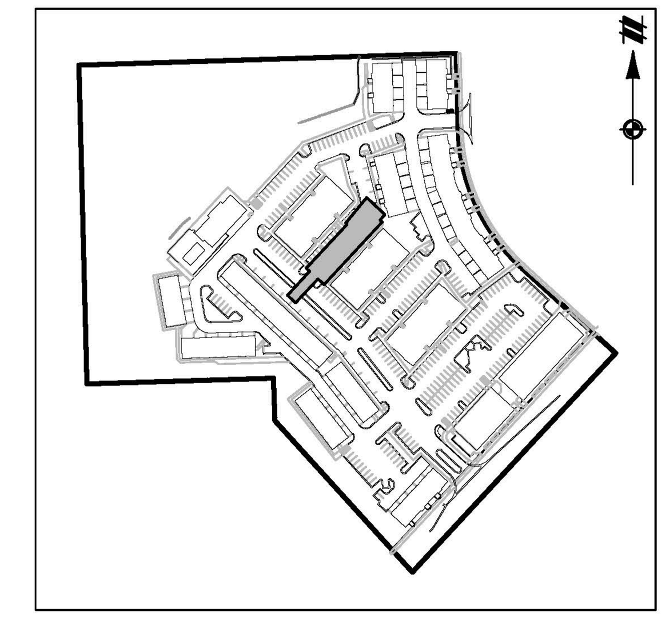
DR. CR	CH. --
P.M. MB	
BOOK --	
JOB 16000137	
SHEET NO. 40	











KEY MAP
1" = 300'

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
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- EXIST. WETLAND BUFFER
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- EXIST. WATER MAIN
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- EXIST. UNSPECIFIED UTILITY
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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
STORMWATER PLAN & PROFILE 4

DATE JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
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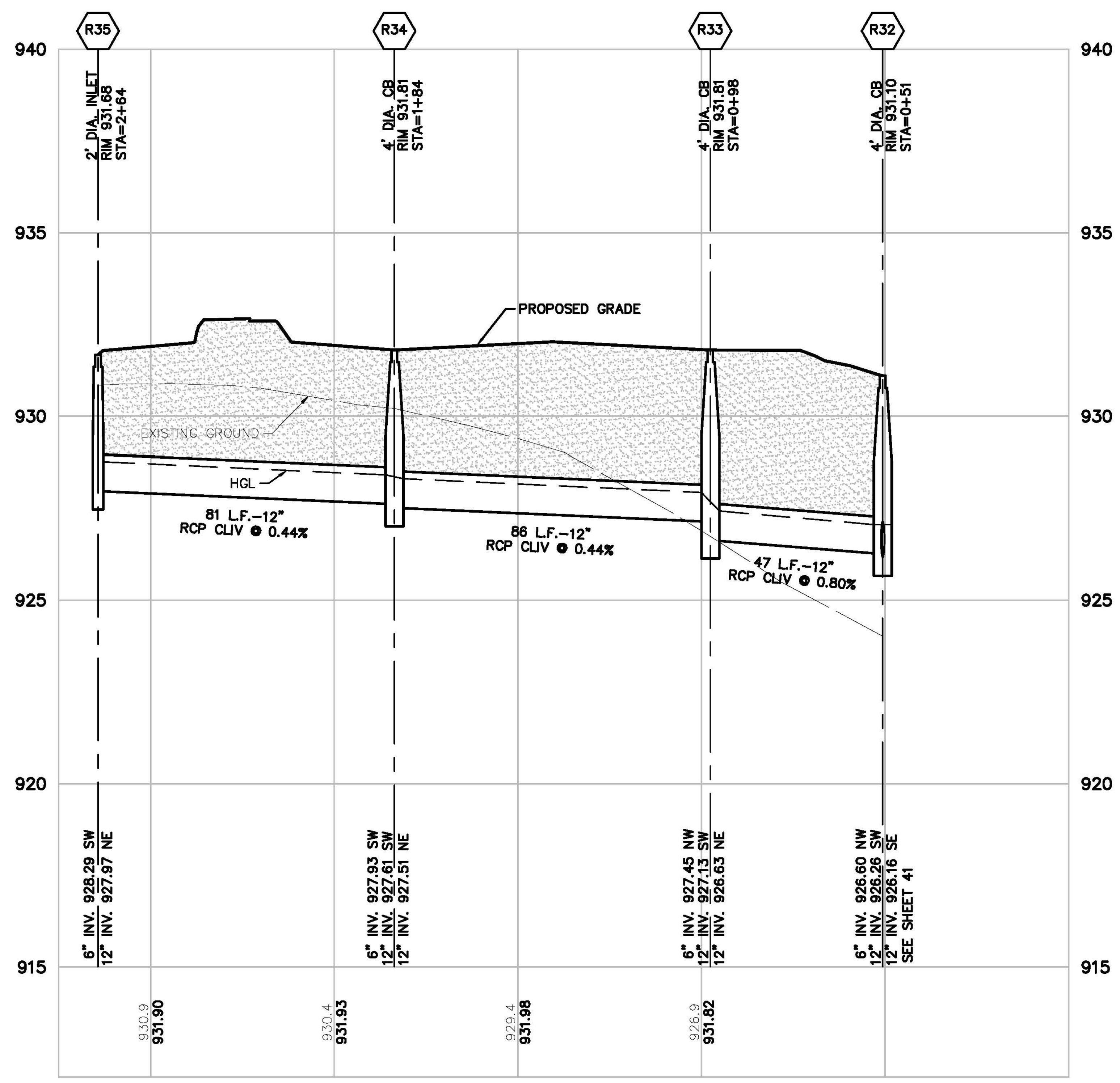
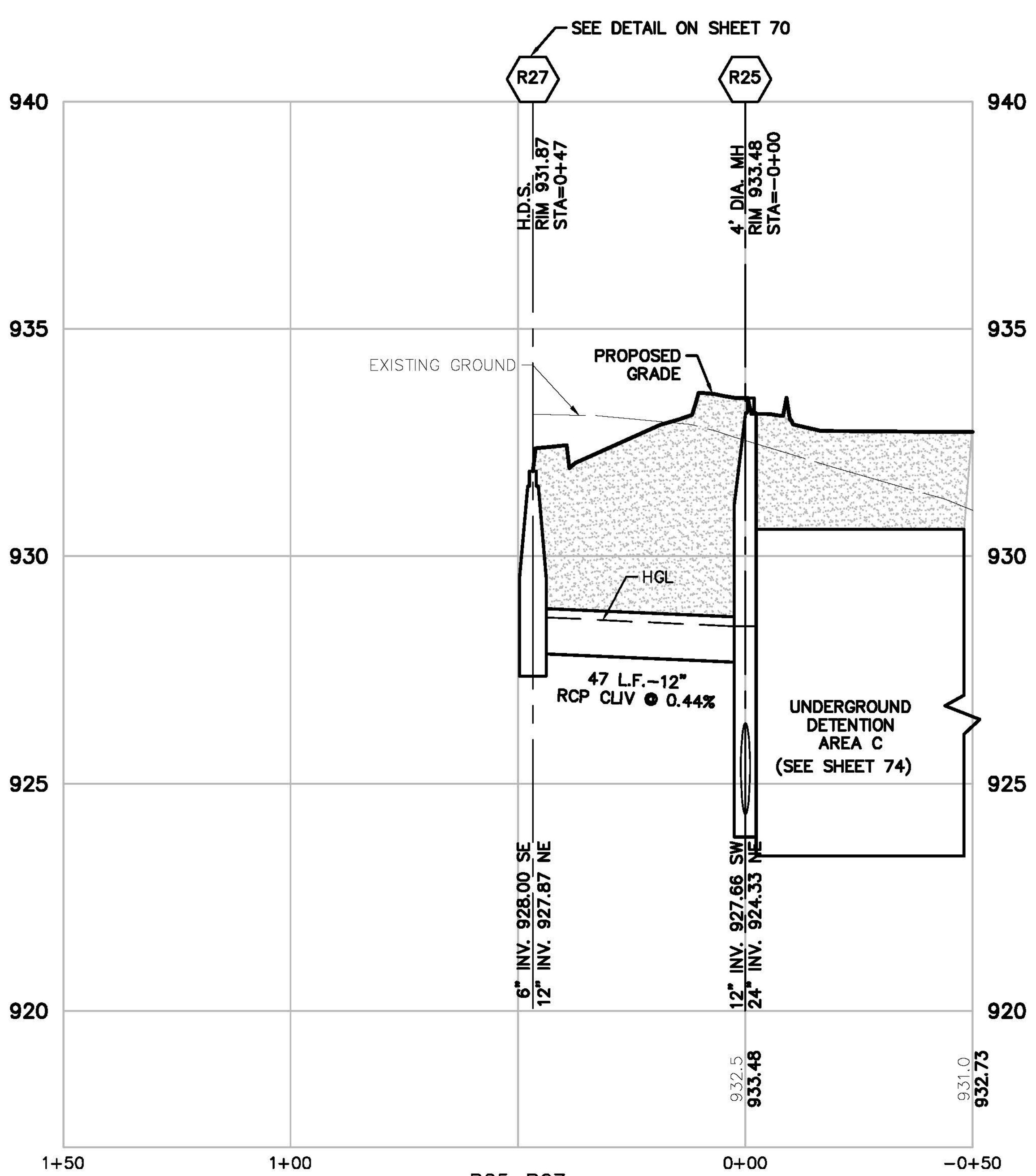
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

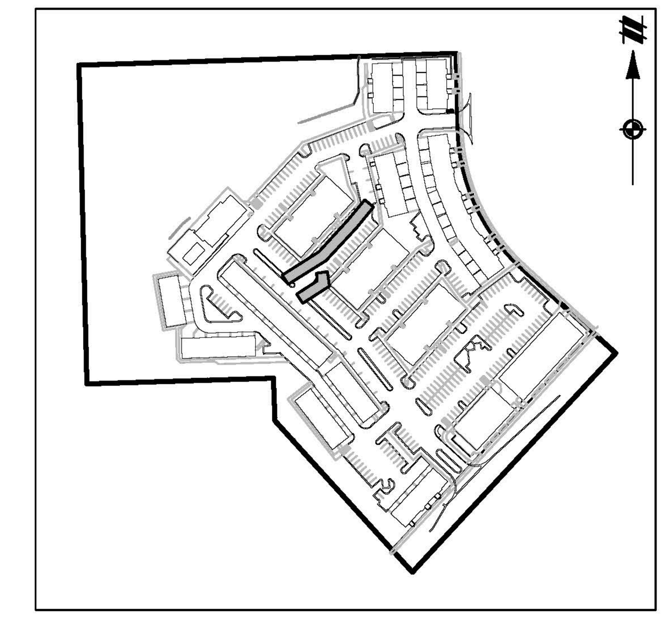
SCALE 0 15 30
1" = 30 FEET
DR. CR CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 41



R32-R35
VERT: 1"=3'
HORZ: 1"=30'



R25-R27
VERT: 1"=3'
HORZ: 1"=30'



KEY MAP
1" = 300'

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- CLASS II GRANULAR BACKFILL AT 95% COMPACTION
- H.D.S. HYDRO-DYNAMIC SEPARATOR

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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

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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
STORMWATER PLAN & PROFILE 5

DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
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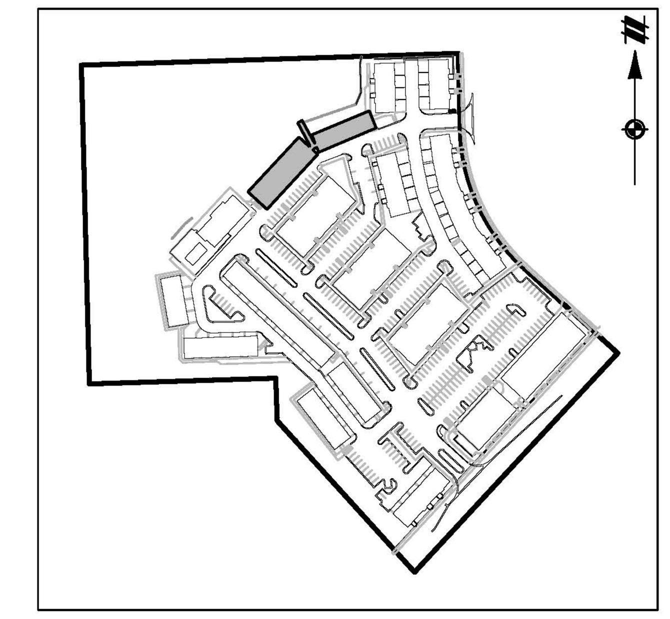
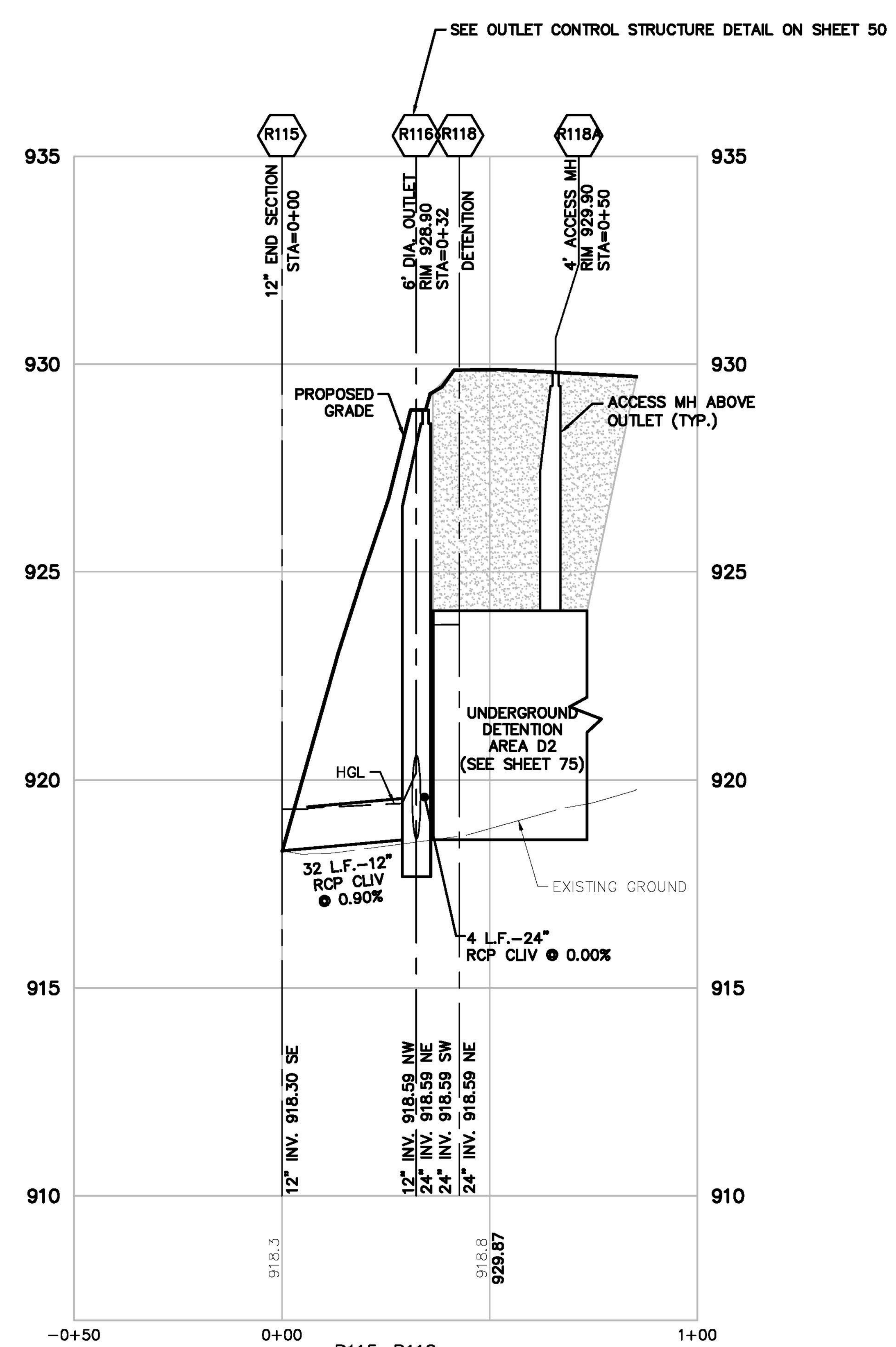
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 15 30
1" = 30 FEET

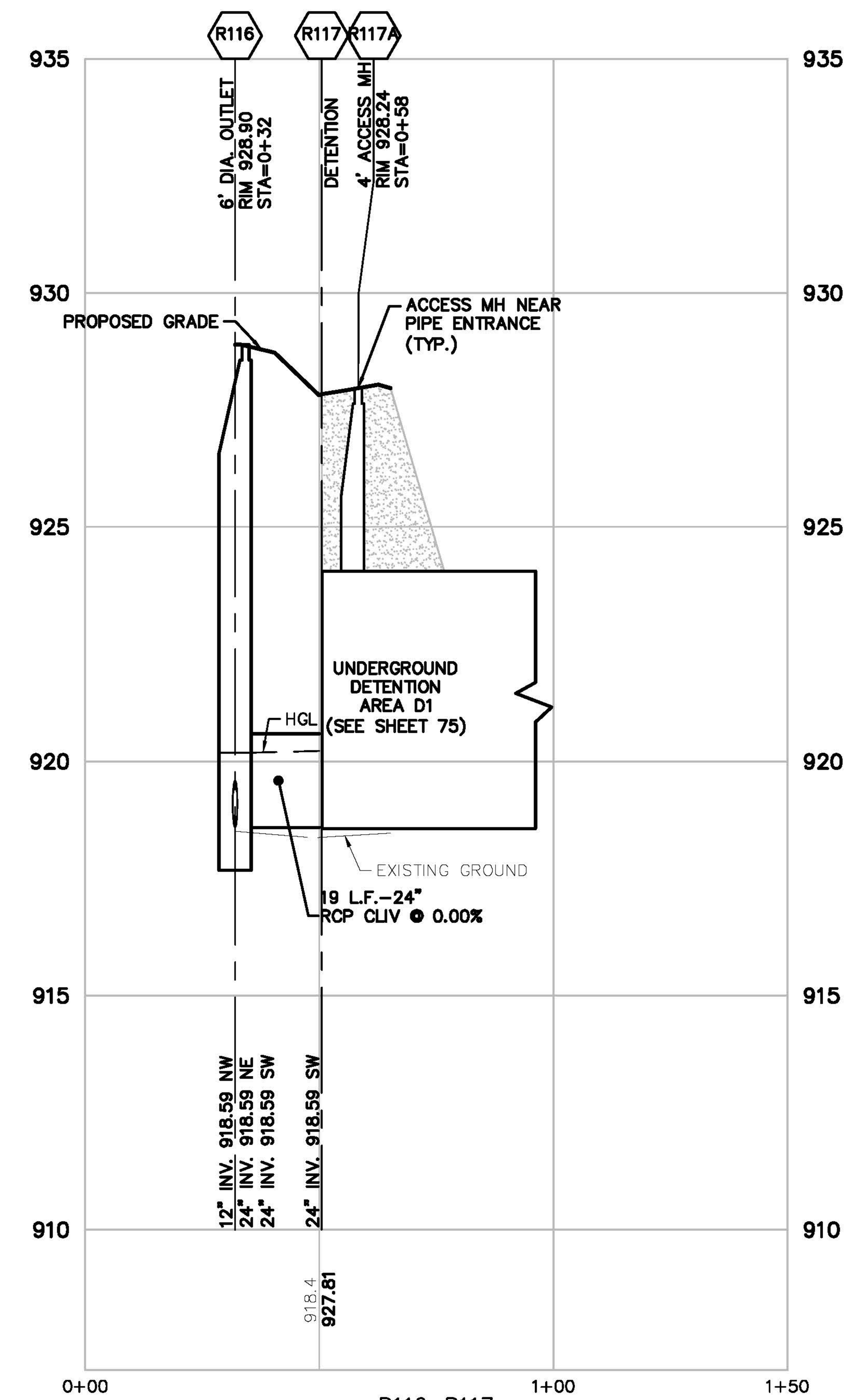
DR. CR	CH. --
P.M. MB	
BOOK --	
JOB 16000137	
SHEET NO. 42	



KEY MAP
1" = 300'



R115–R118
VERT: 1"=3'
HORZ: 1"=30'



R116–R117
VERT: 1"=3'
HORZ: 1"=30'

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
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- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
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- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
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- PROP. SILT FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
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BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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CLIENT
BEZTAK LAND COMPANY

PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

STORMWATER PLAN & PROFILE 6

DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
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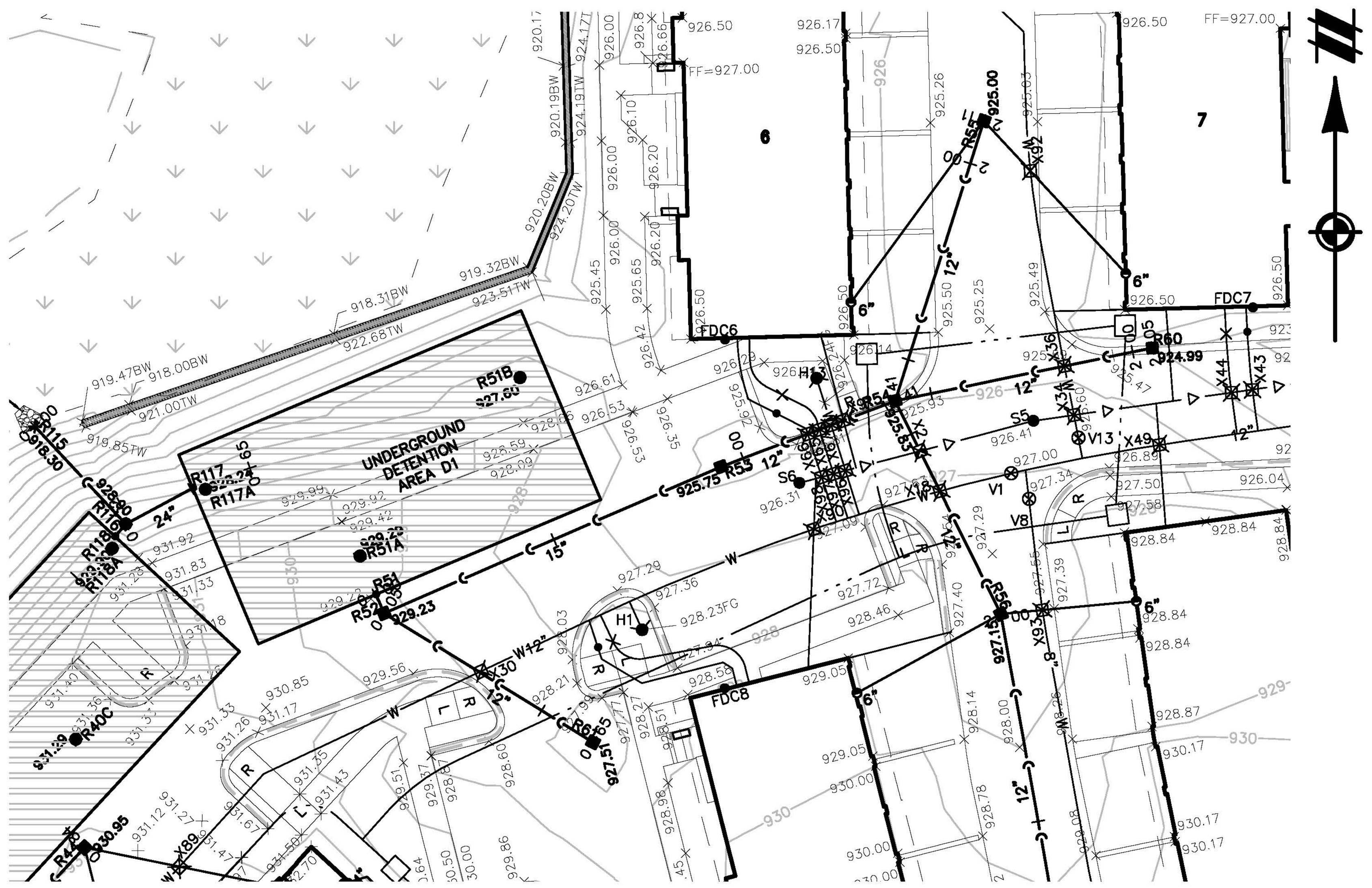
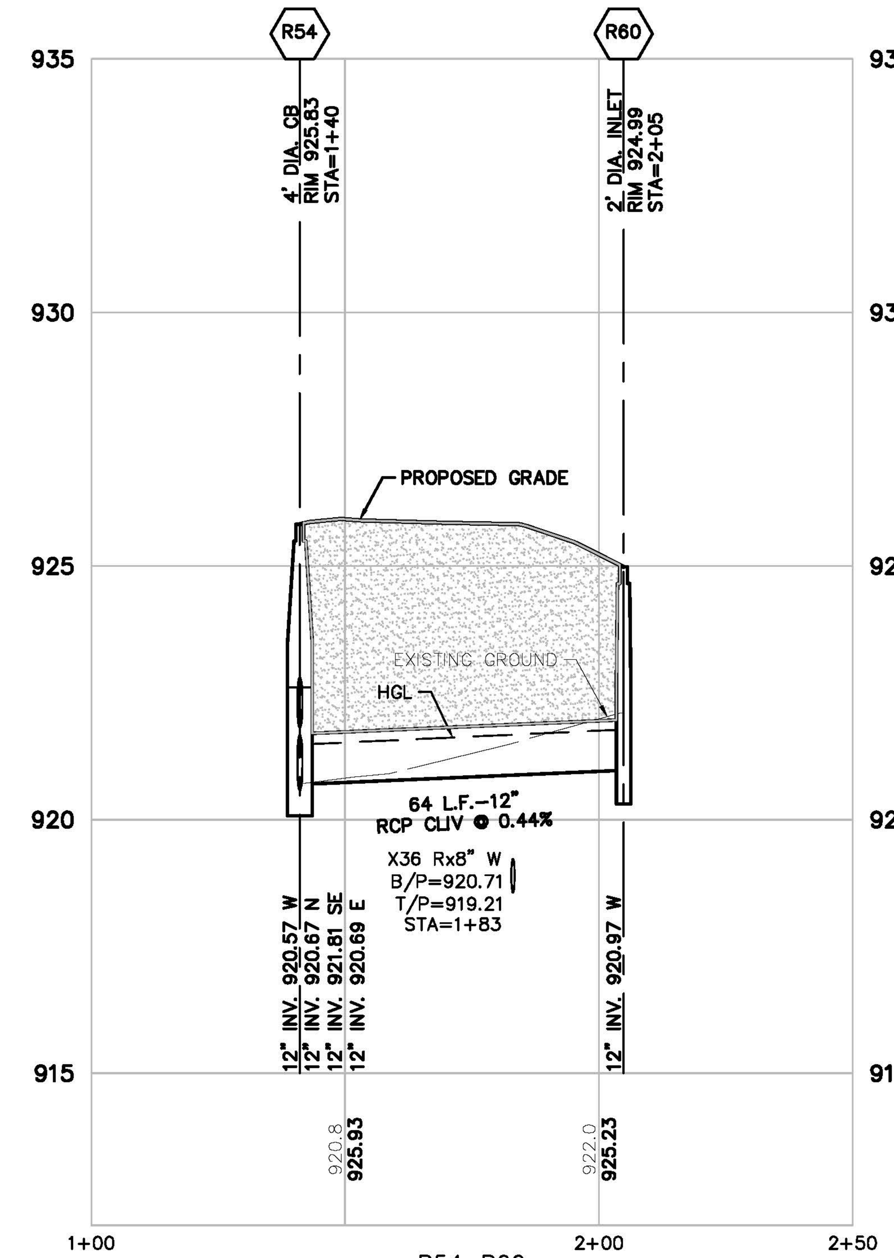
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

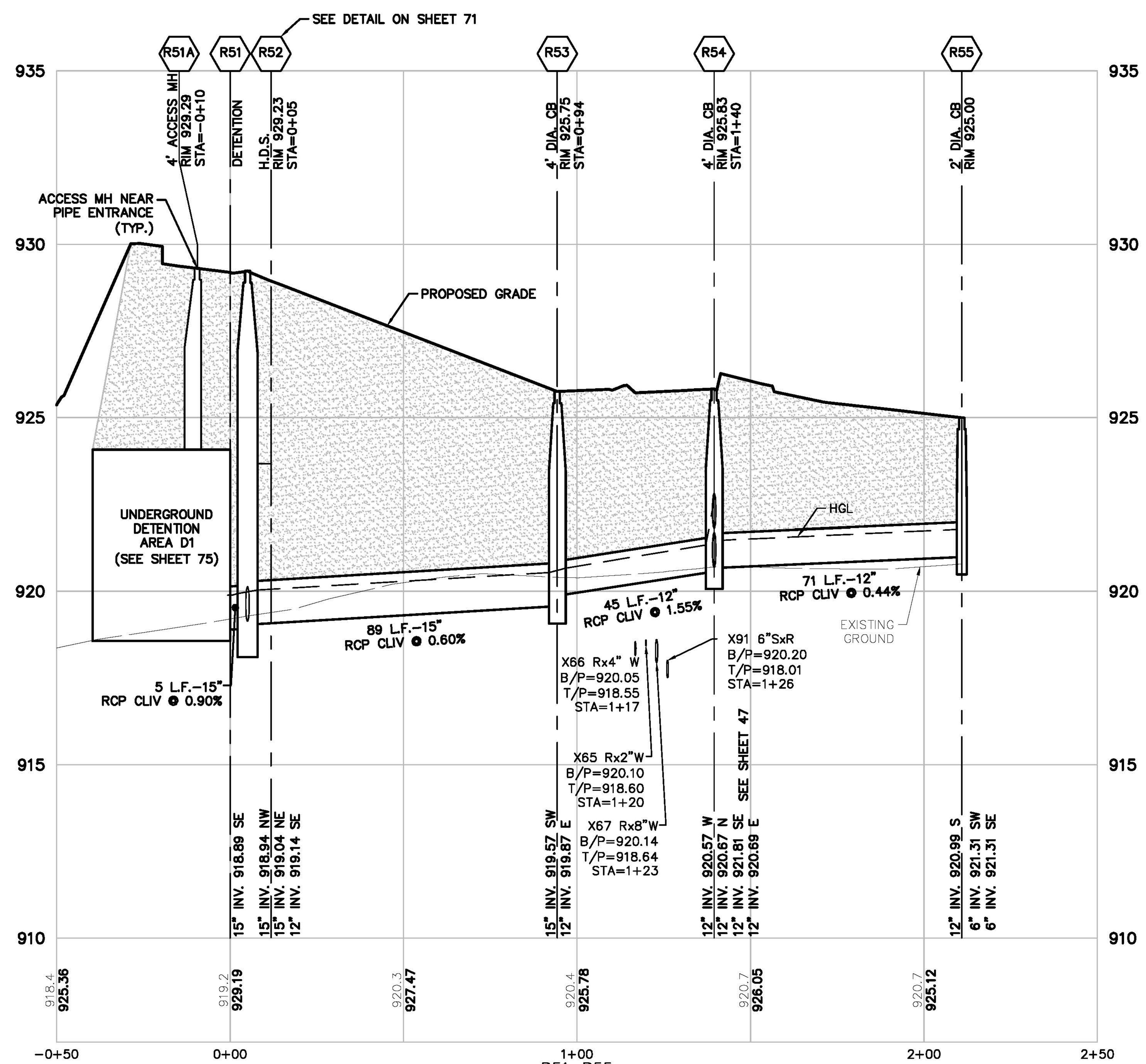
SCALE 0 15 30
1" = 30 FEET

DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO.
43

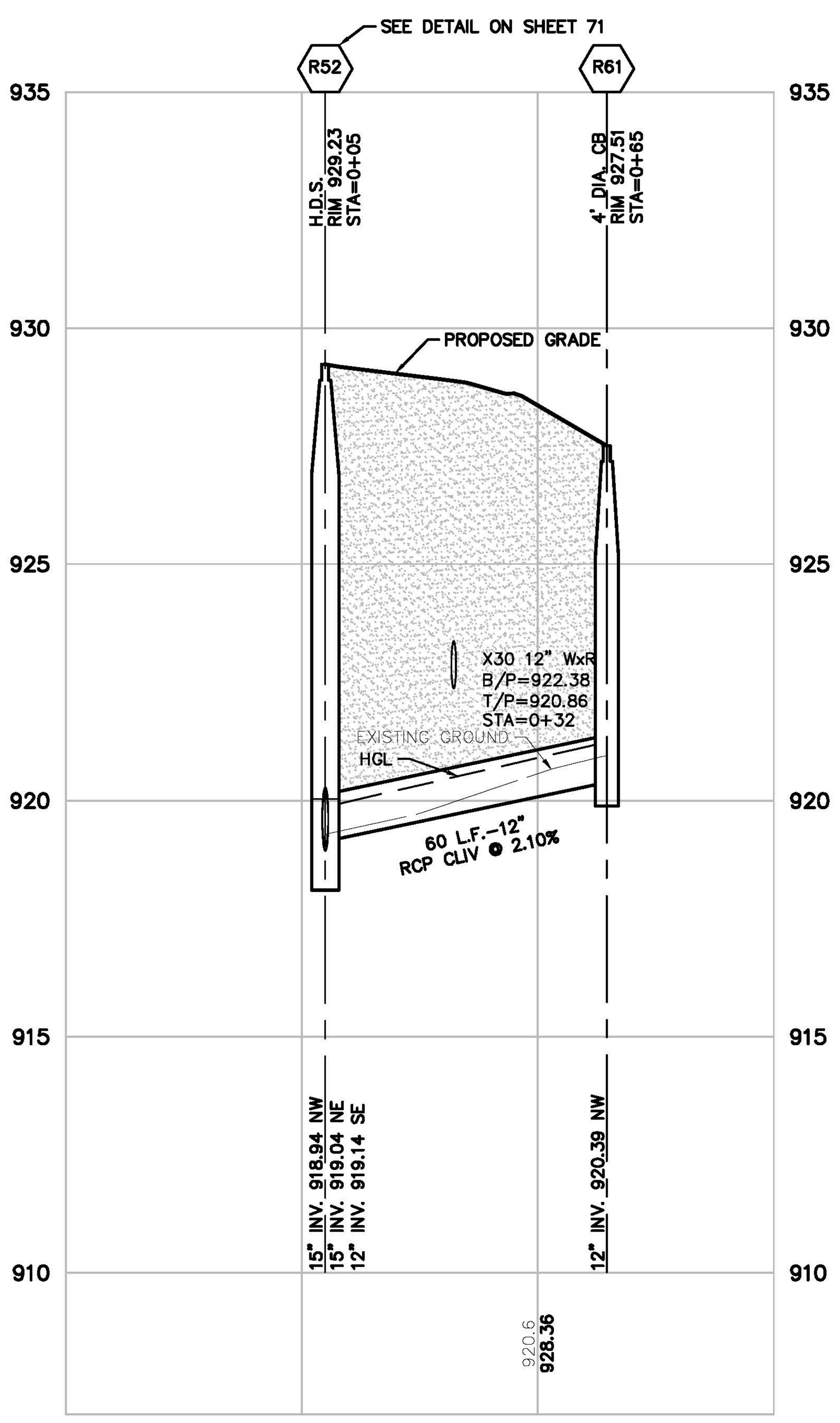




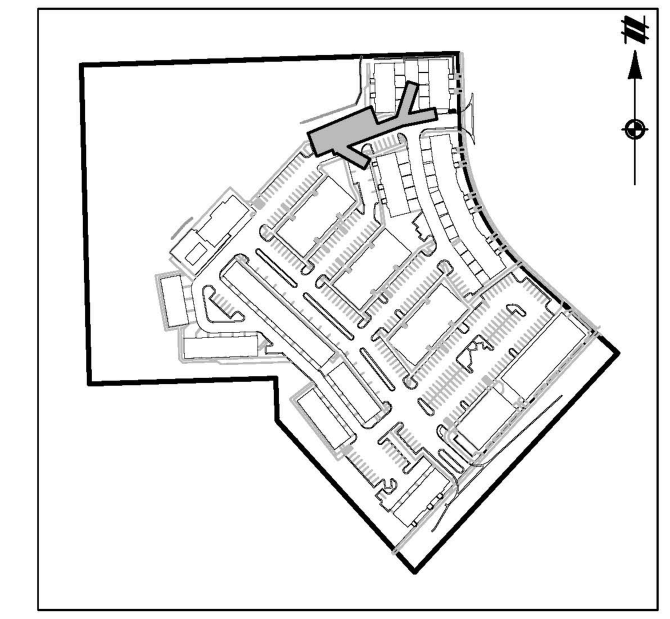
R54-R60
VERT: 1"=3'
HORZ: 1"=30'



R51-R55
VERT: 1"=3'
HORZ: 1"=30'



R52-R61
VERT: 1"=3'
HORZ: 1"=30'



KEY MAP
1" = 300'

LEGEND

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C.S.P.A.# 16-15

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CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
STORMWATER PLAN & PROFILE 7

DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
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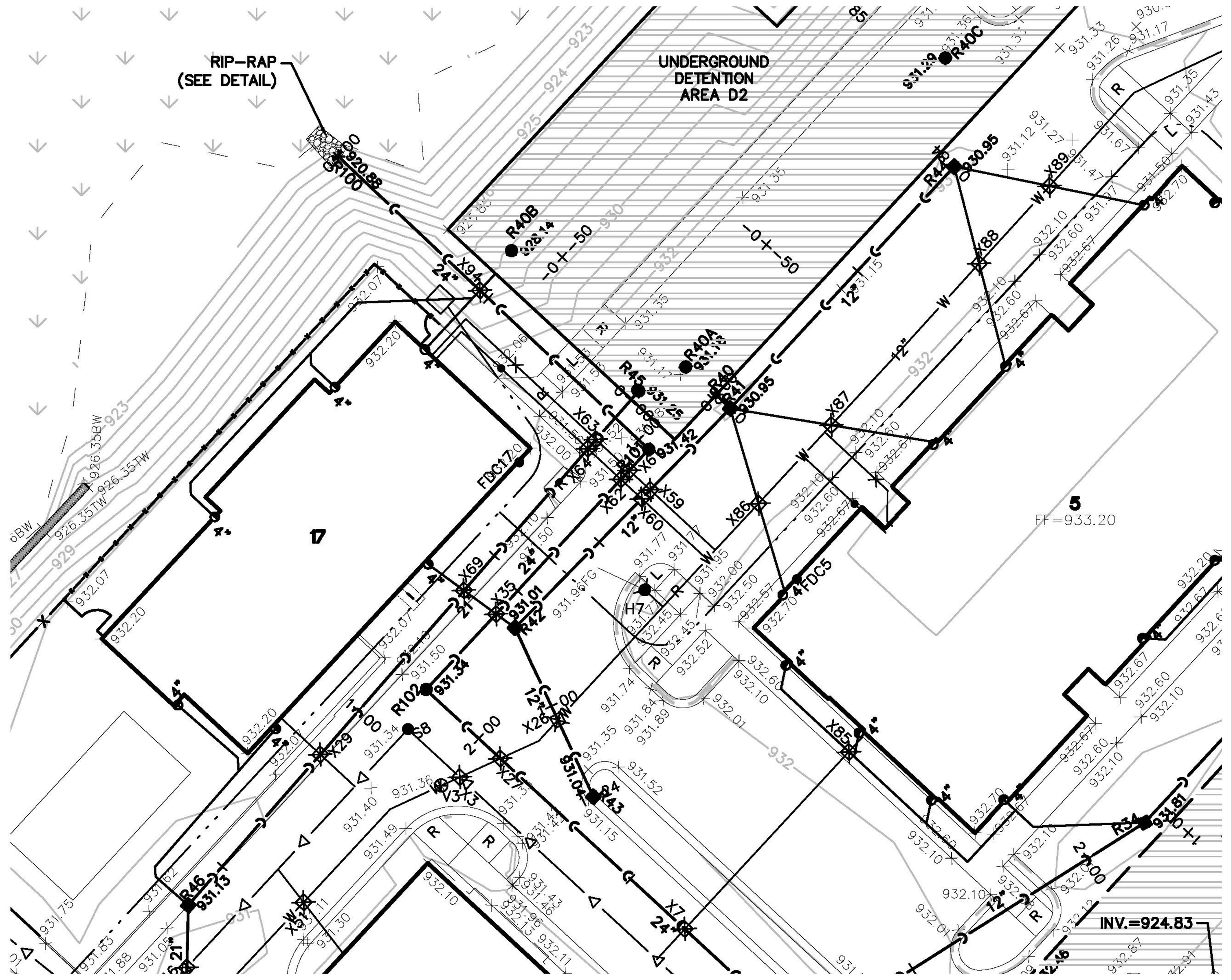
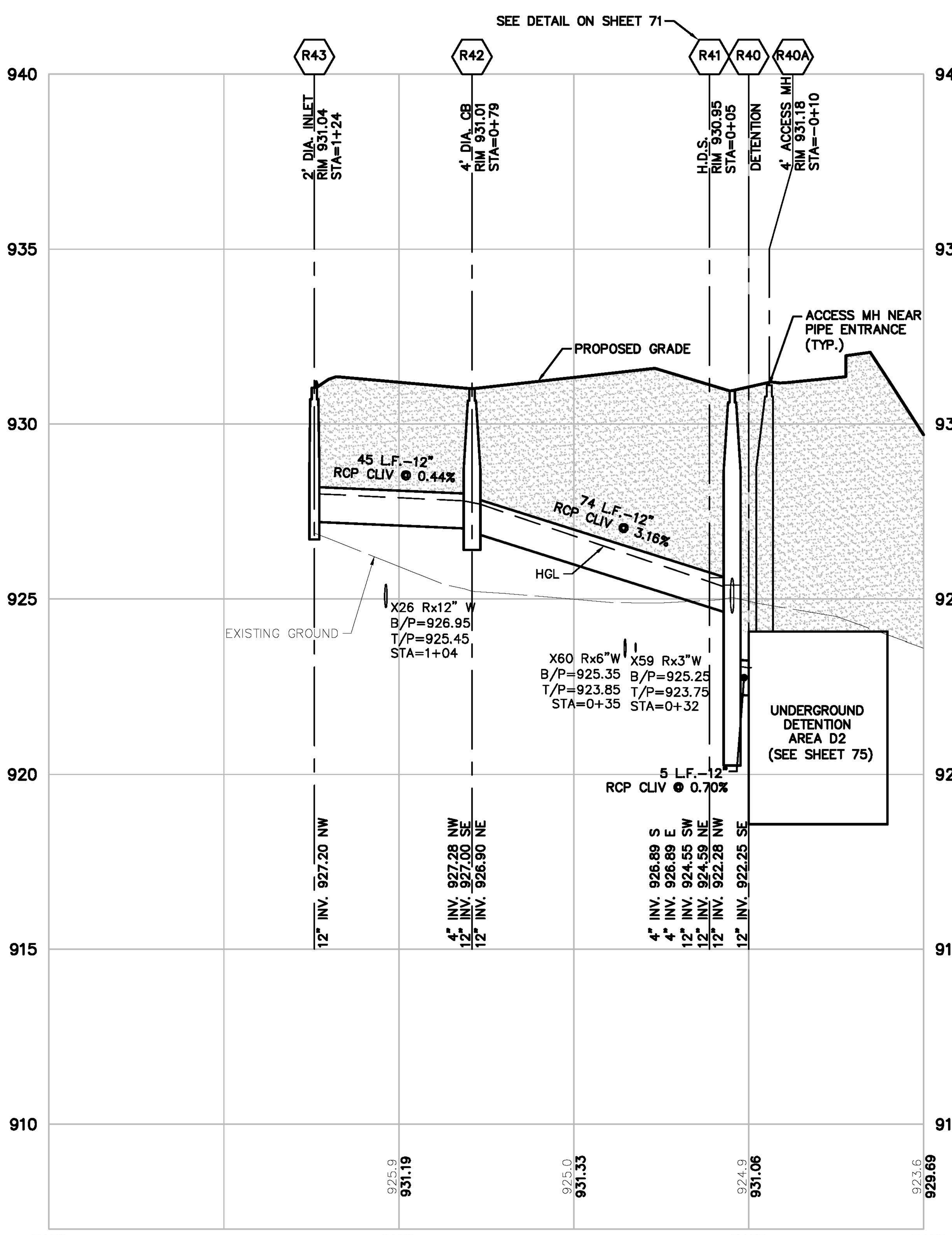
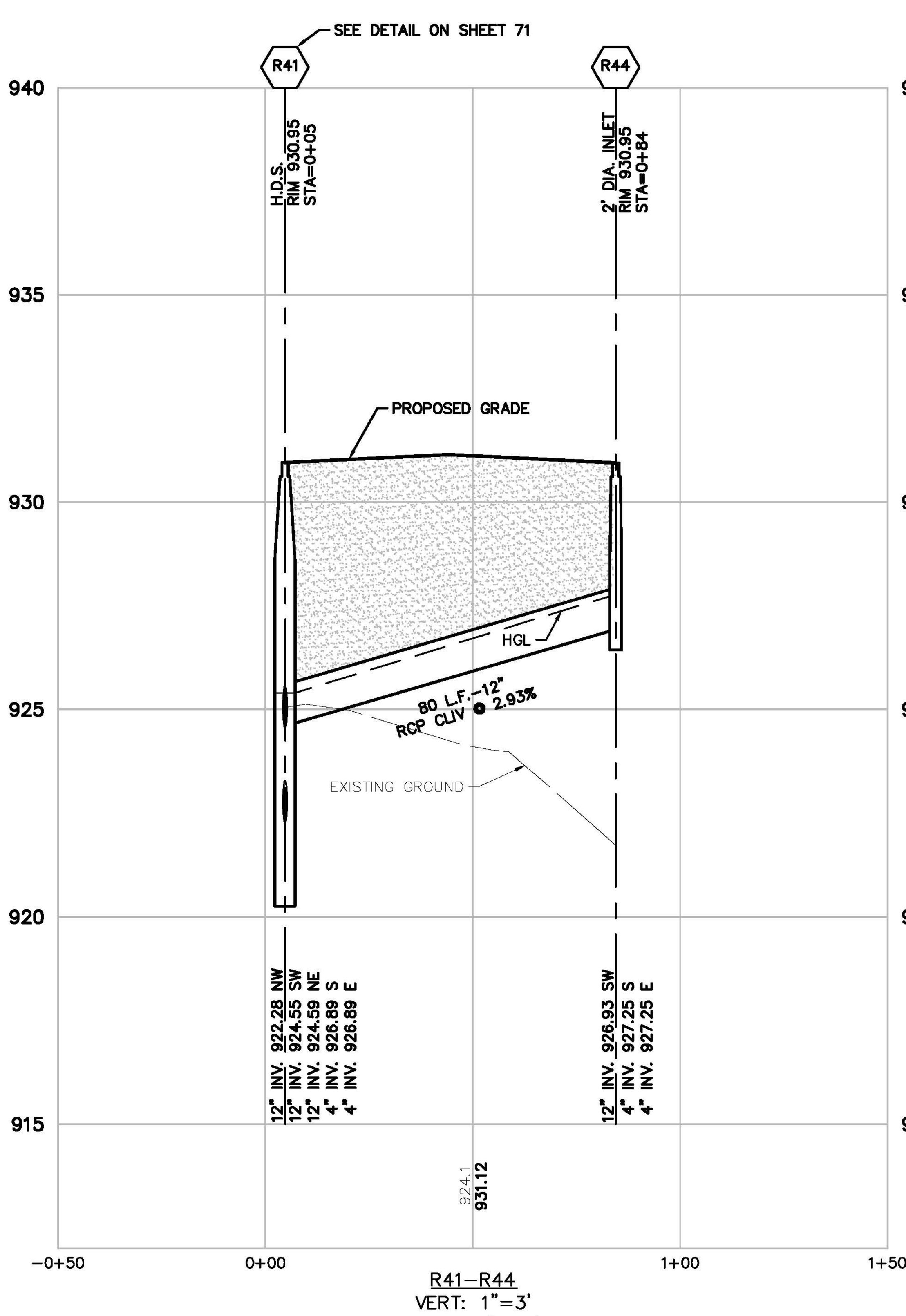
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

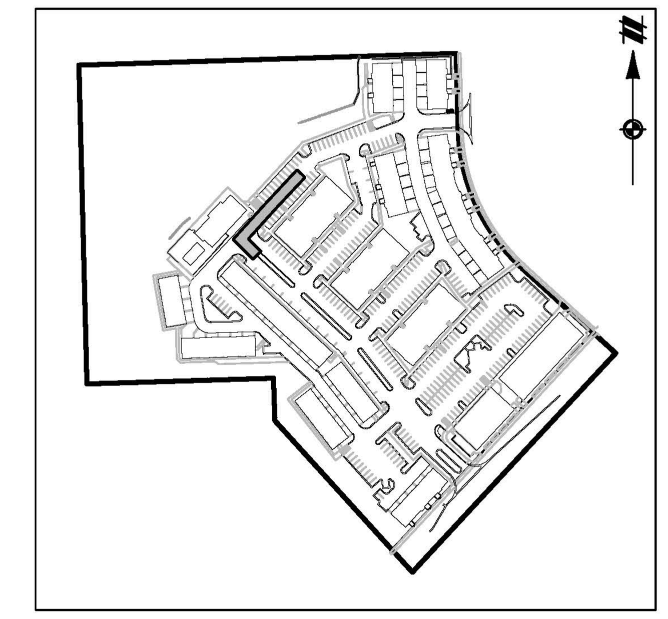
SCALE 0 15 30
1" = 30 FEET

DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO.
44









KEY MAP
1" = 300'

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
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- EXIST. WATER MAIN
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WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

STORMWATER PLAN & PROFILE 8

DATE
JUNE 9, 2017

- 9/7/17 PER TWP PLANNING
- 9/21/17 PER TWP/WCWRC
- 10/04/17 PER WCRC
- 10/12/17 PER WCWRC
- 10/20/17 PER WCRC
- 11/1/17 SITE UPDATES
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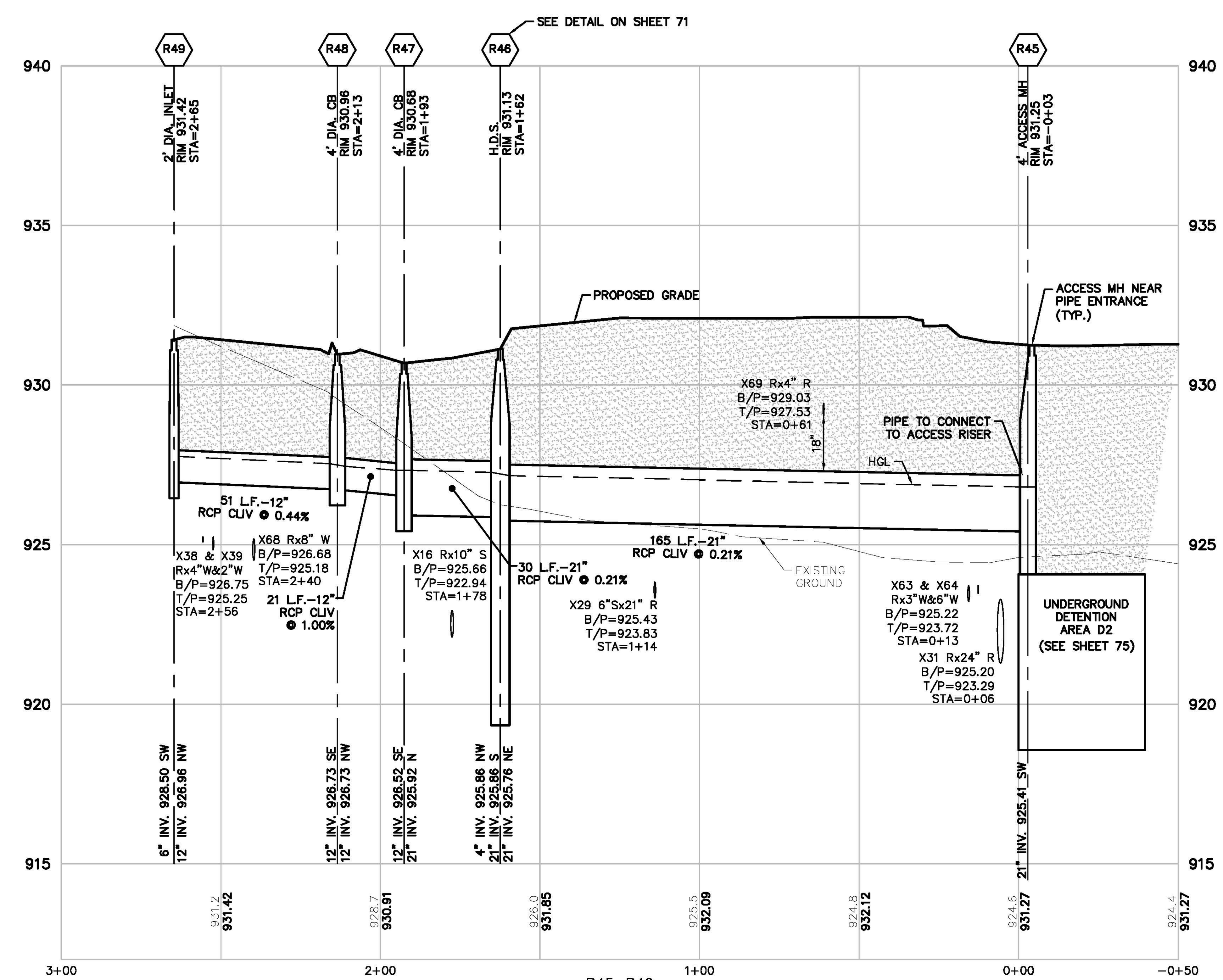
- 7/26/18 PER TWP
- 8/10/18 DETENTION REV.
- 9/14/18 PER TWP
- 10/01/18 PER TWP
- 10/10/18 PER TWP

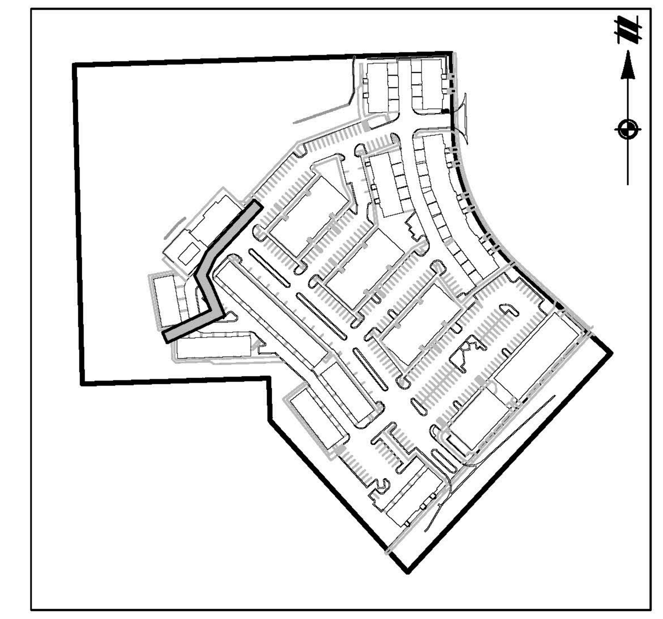
REVISIONS

SCALE 0 15 30
1" = 30 FEET

DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO.
45



R45-R49
VERT: 1"=3'
HORZ: 1"=30'



KEY MAP
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LEGEND

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PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
STORMWATER PLAN & PROFILE 9

DATE JUNE 9, 2017

- 9/7/17 PER TWP PLANNING
- 9/21/17 PER TWP/WCWRC
- 10/04/17 PER WCRC
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REVISIONS

SCALE 0 15 30
1" = 30 FEET

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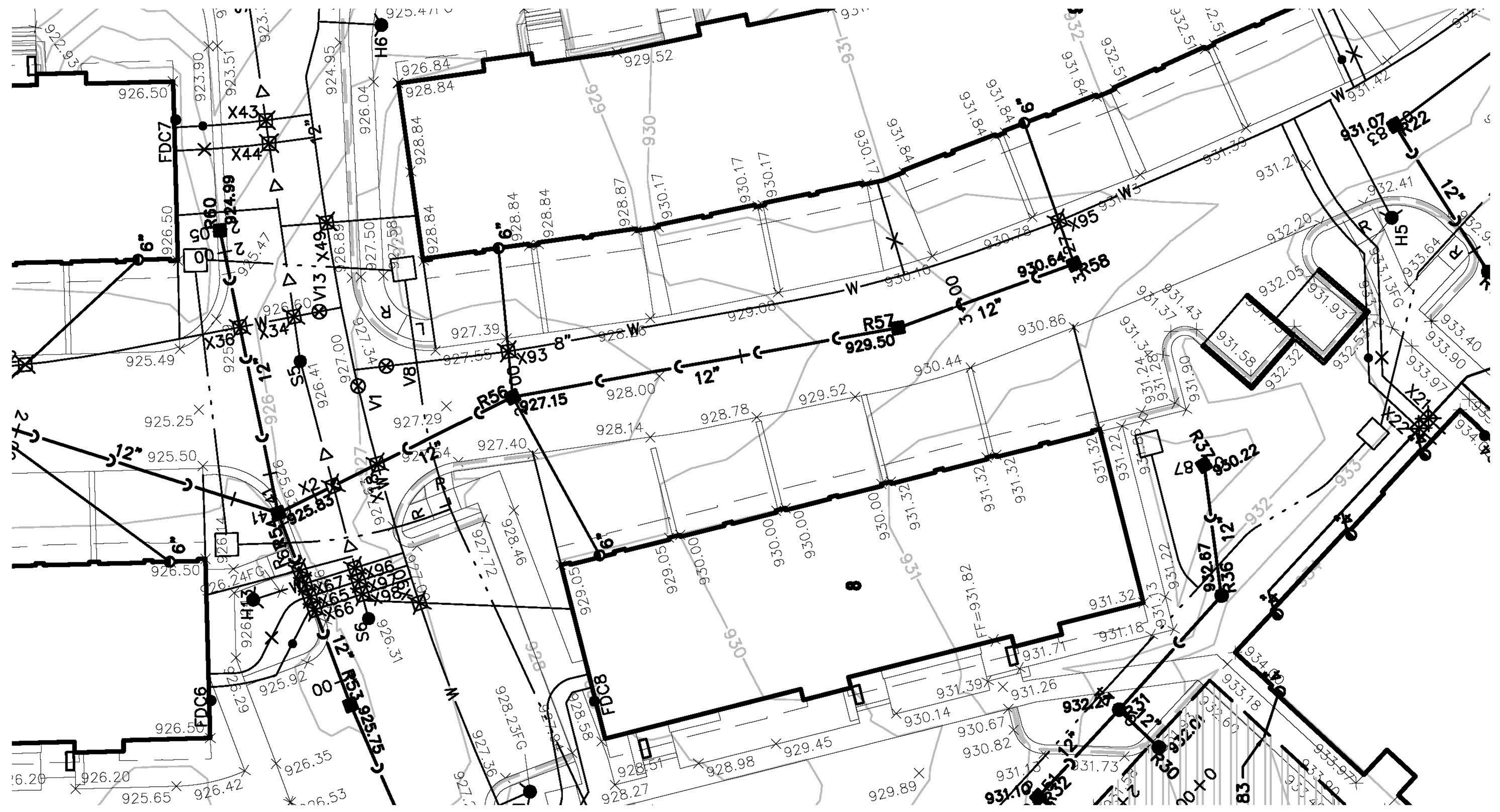
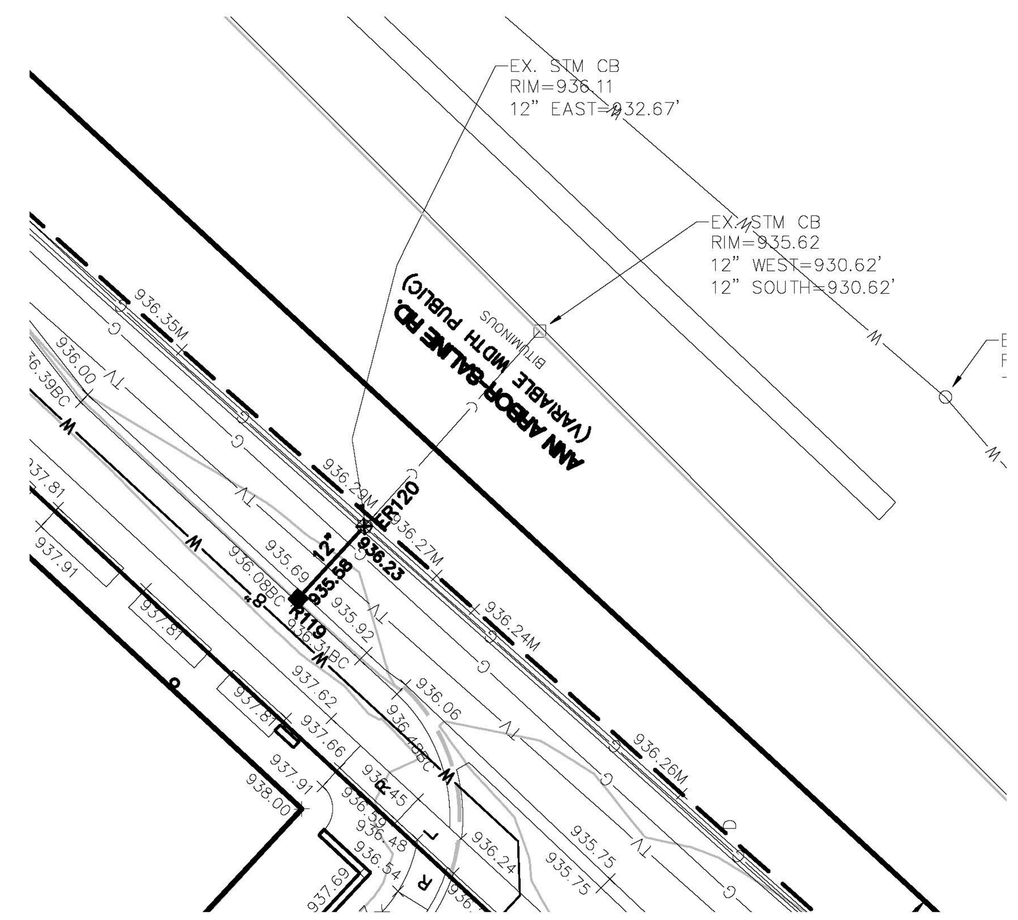
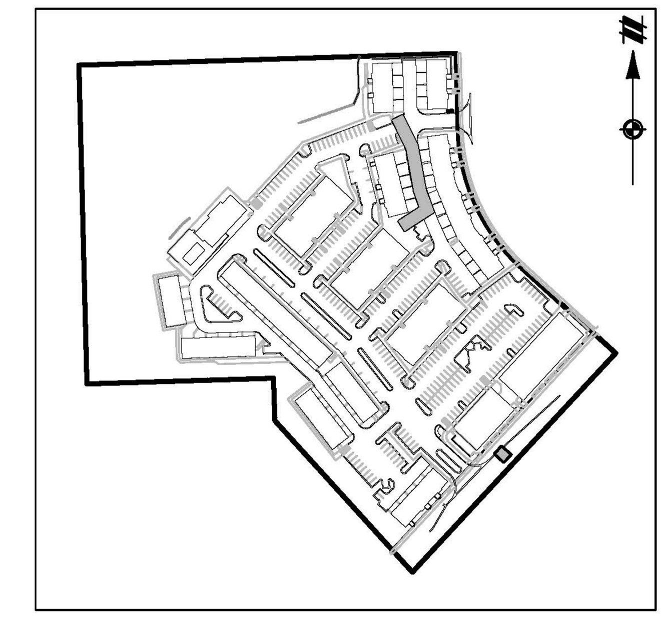
BOOK --	
JOB 16000137	
SHEET NO. 46	

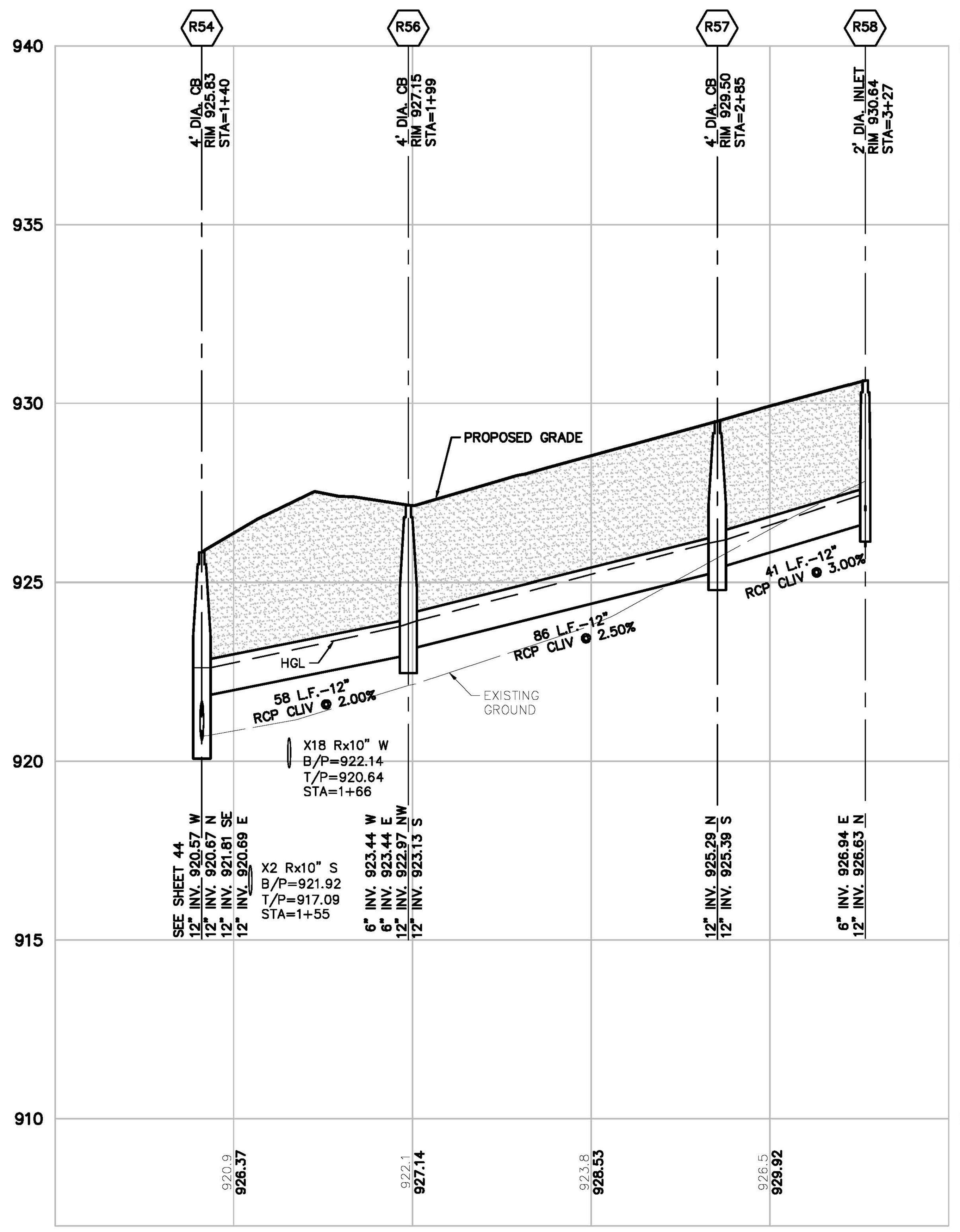
BEZTAK - PITTSFIELD
C.S.P.A.# 16-15



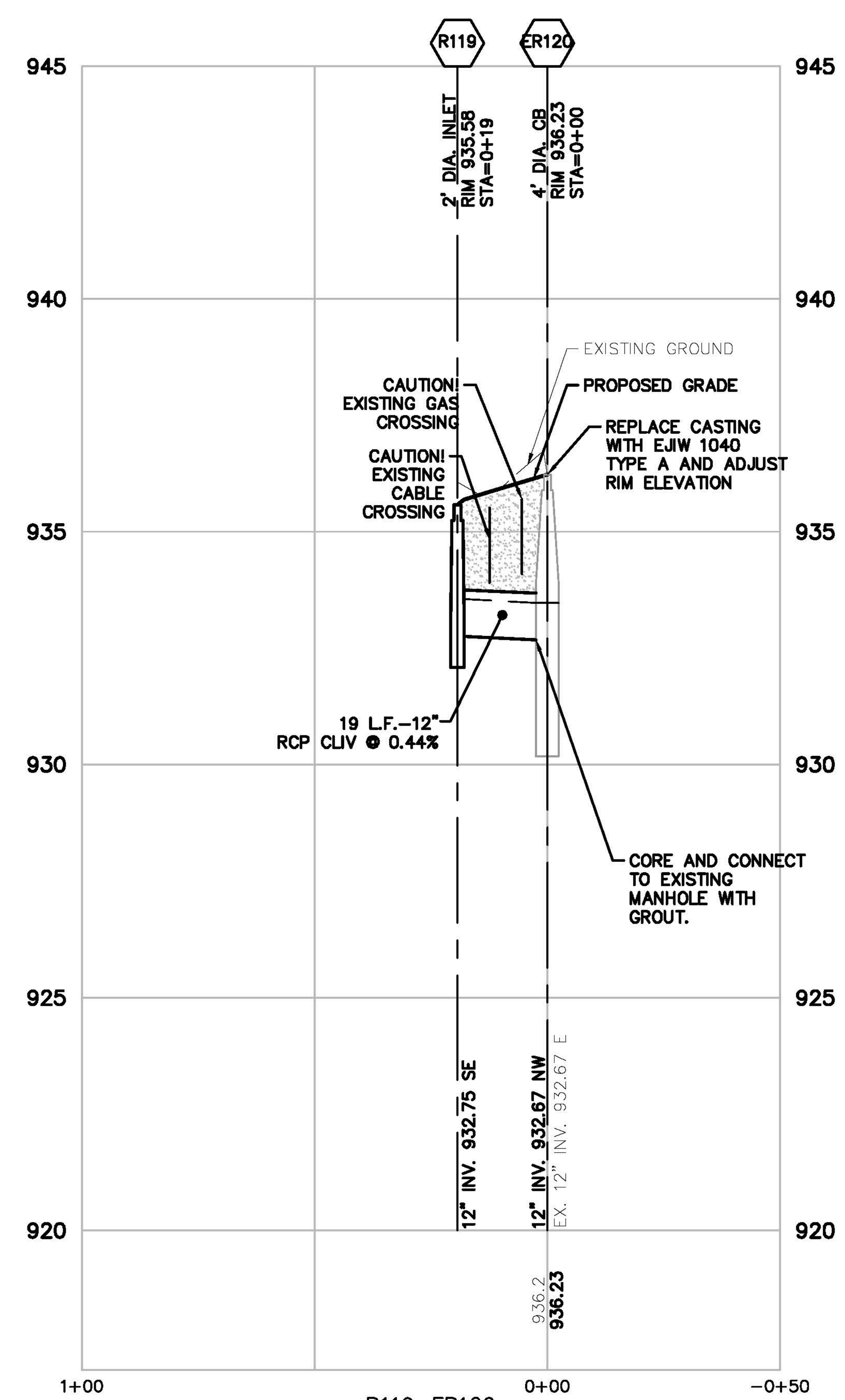




KEY MAP
1" = 300'



R54–R58
VERT: 1"=3'
HORZ: 1"=30'



R119–ER120
VERT: 1"=3'
HORZ: 1"=30'

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- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
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- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- CLASS II GRANULAR BACKFILL AT 95% COMPACTION
- H.D.S. HYDRO-DYNAMIC SEPARATOR

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SCALE 0 15 30
1" = 30 FEET

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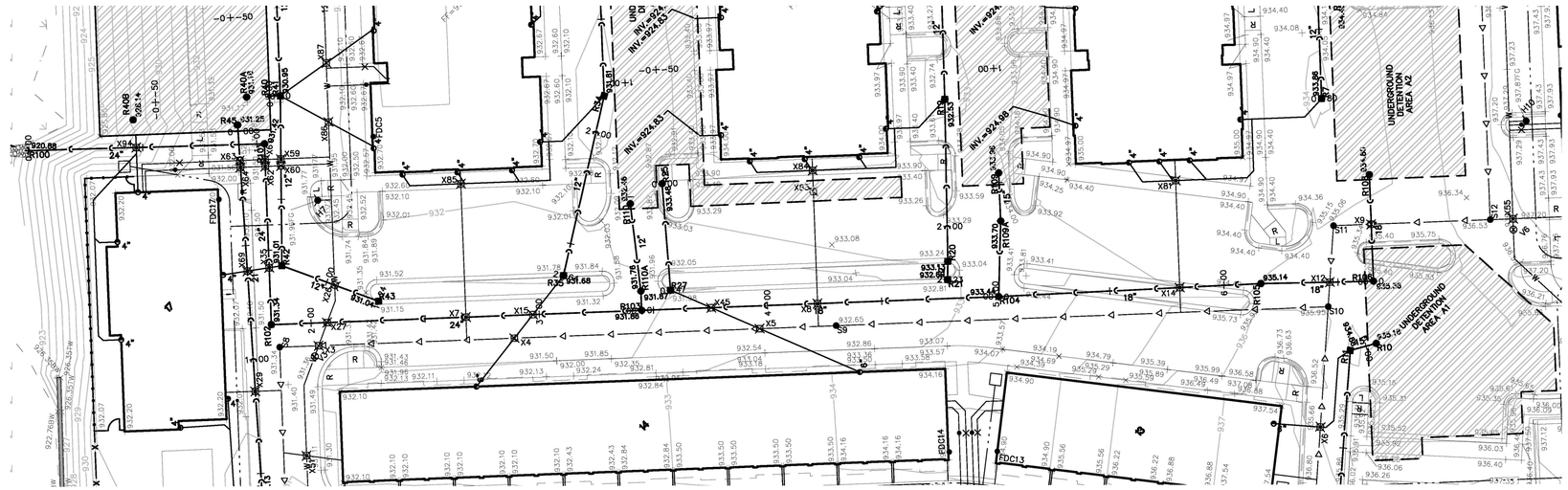
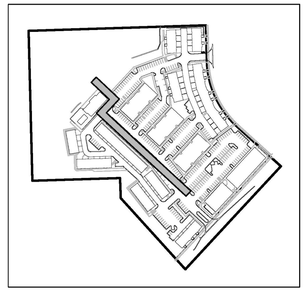
BOOK --
JOB 16000137
SHEET NO.
47





KEY MAP
1" = 300'

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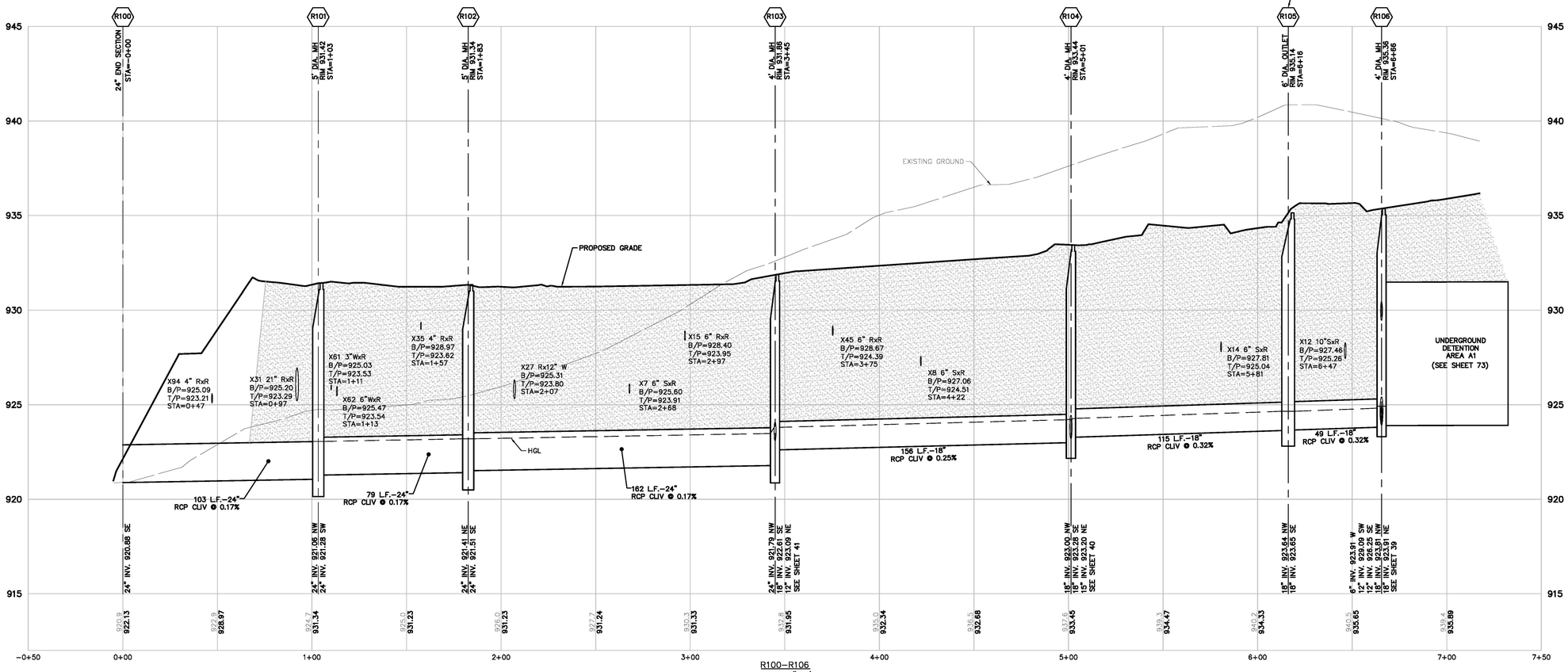
SEE OUTLET CONTROL STRUCTURE DETAIL ON SHEET 50



R100–R106
VERT: 1"=3'
HORZ: 1"=30'

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STORMWATER PLAN & PROFILE 11

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SCALE 0 15 30
1" = 30 FEET

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P.M. MB
BOOK --
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SHEET NO. 48

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LEGEND

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- PROP. FIRE HYDRANT
- PROP. MANHOLE
- PROP. OVERALL DETENTION AREA
- PROP. CATCH BASIN DRAINAGE SUBAREA

GRADING/DRAINAGE/STORMWATER NOTES

1. THE TOTAL REQUIRED DETENTION HAS BEEN DETERMINED IN ACCORDANCE WITH THE WASHTENAW COUNTY WATER RESOURCES COMMISSIONER RULES AND GUIDELINES, REVISED OCTOBER 2016. THE SOILS ARE ASSUMED TO HAVE INFILTRATION RATES LESS THAN 0.1 INCHES AN HOUR AND NOT SUPPORT INFILTRATION. THE DESIGN STORAGE DETERMINED IS 120% OF THE "REQUIRED VOLUME" DUE TO THE SITE NOT BEING ABLE TO SUPPORT INFILTRATIONS.
2. THE UNDERGROUND STORMWATER DETENTION SYSTEM IS PLANNED TO BE A MODULAR CONCRETE VAULT SYSTEM, SIMILAR TO THE STORMTRAP (R) PRODUCT OR OTHER APPROVED EQUAL. EACH UNDERGROUND STORMWATER DETENTION SYSTEM WILL HAVE AN ACCESS MANHOLE PROVIDED FOR INSPECTION AND MAINTENANCE. DETAILED DRAWINGS OF THE UNDERGROUND STORMWATER DETENTION SYSTEM WILL BE PROVIDED PRIOR TO CONSTRUCTION.
3. STORMWATER TREATMENT SHALL BE PROVIDED BY A HYDRODYNAMIC SEPARATOR TREATMENT STRUCTURE AT THE INLET OF EACH UNDERGROUND STORMWATER DETENTION SYSTEM. OUTLET RESTRICTION SHALL BE PROVIDED BY A RESTRICTING STRUCTURE NEAR THE OUTLET OF EACH UNDERGROUND STORMWATER DETENTION SYSTEM.

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DRAINAGE AREA PLAN

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SCALE 0 25 50
1" = 50 FEET
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P.M. MB
BOOK --
JOB 16000137
SHEET NO. 49

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Project: Beztak Pittsfield Date: 10/12/2017
Location: Pittsfield Township, Washtenaw County
Description: Storm Water Calculations

AREA 'A'

W1 Determining Post-Development Cover Types, Areas, Curve Numbers and runoff coefficients

Total Contributing Drainage Area = 2.94 Acres

Rational Method Variables

Cover Type	Soil Type	Area (sf)	Area (ac)	Runoff Coef	(c)(Area)
Paved Parking Lots, roofs, driveways	C	112,313	2.58	0.95	106,697
Water Surfaces	C	0	0.00	1.00	0
Developed Open Space, Good Condition	C	15,564	0.36	0.30	4,669

Total - Sum (c)(Area) = 111,366
Area Total (sf)= 127,877
Weighted C-Sum(c)(Area)/Sum(ac) or Sum(sf)= **0.87**

NRCS Variables

Pervious Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN)(Area)
Developed Open Space, Good Condition	C	15,564	0.36	74	1,151,721
			0.00		0
			0.00		0

Total - Sum (CN)(Area) = 1,151,721
Area Total - Sum(ac) of Sum(sf)= 15,564
Weighted CN-Sum(CN)(Area)/Sum(ac) or Sum(sf)= **74**

NRCS Variables

Impervious Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN)(Area)
Paved Parking Lots, roofs, driveways	C	112,313	2.58	98	11,006,674
Impervious, Ponds	C	0	0.00	98	0
			0.00		0

Total - Sum (CN)(Area) = 11,006,674
Area Total - Sum(ac) of Sum(sf)= 112,313
Weighted CN-Sum(CN)(Area)/Sum(ac) or Sum(sf)= **98**

W2 First Flush Runoff Calculations (Vff)

A. Vff = (1") (1/12) (43560/1) (C) AC = **9,271** cf

W3 Predevelopment Bankfull Runoff Calculations (Vbf-pre)

A.	2 year/24 hour storm event	P =	2.35	in
B.	Pervious Cover CN (meadow, good)	CN =	71	
C.	S = (1000/CN)-10	S =	4.08	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	0.42	in
E.	Pervious Cover Area	Area =	127,877	sf
F.	V_{bf-pre} = Q(1/12)Area	V_{bf-pre} =	**4,459**	cf

W4 Pervious Cover Post-development Bankfull Runoff Calculations (Vbf-per-post)

A.	2 year/24 hour storm event	P =	2.35	in
B.	Pervious Cover CN	CN =	74	
C.	S = (1000/CN)-10	S =	3.51	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	0.53	in
E.	Pervious Cover Area	Area =	15,564	sf
F.	$V_{bf-per-post}$ = Q(1/12)Area	$V_{bf-per-post}$ =	**682**	cf

W5 Impervious Cover Post-development Bankfull Runoff Calculations (Vbf-imp-post)

A.	2 year/24 hour storm event	P =	2.35	in
B.	Impervious Cover CN	CN =	98	
C.	S = (1000/CN)-10	S =	0.20	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	2.12	in
E.	Pervious Cover Area	Area =	112,313	sf
F.	$V_{bf-imp-post}$ = Q(1/12)Area	$V_{bf-imp-post}$ =	**19,858**	cf

W6 Pervious Cover Post-development 100-year Storm Runoff Calculations (V100-per-post)

A.	100 year storm event	P =	5.11	in
B.	Pervious Cover CN	CN =	74	
C.	S = (1000/CN)-10	S =	3.51	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	2.45	in
E.	Pervious Cover Area	Area =	15,564	sf
F.	$V_{100-imp-post}$ = Q(1/12)Area	$V_{100-imp-post}$ =	**3,181**	cf

W7 Impervious Cover Post-development 100-year Storm Runoff Calculations (V100-imp-post)

A.	100 year storm event	P =	5.11	in
B.	Pervious Cover CN	CN =	98	
C.	S = (1000/CN)-10	S =	0.20	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	4.87	in
E.	Pervious Cover Area	Area =	112,313	sf
F.	$V_{100-imp-post}$ = Q(1/12)Area	$V_{100-imp-post}$ =	**45,608**	cf

W8 Determine Time of Concentration (Tc-hrs)

User specified; assume 15 minutes

Total Time of Concentration (hrs) = 0.25

W9 Runoff Summary & Onsite Infiltration Requirement

A. Runoff Summary from Previous Worksheets

V_{ff} = **9,271 cf***
V_{bf-pre} = 4,459 cf
$V_{bf-per-post}$ = 682 cf — **Total BF Volume ($V_{bf-post}$)** 20,540 cf
$V_{bf-imp-post}$ = 19,858 cf

$V_{100-per-post}$ = 3,181 cf — **Total 100-year Volume (V_{100})** 48,789 cf
$V_{100-imp-post}$ = 45,608 cf

B. Determine Onsite Infiltration Requirement

$V_{bf-post}$ = 20,540 cf
V_{bf-pre} = 4,459 cf
Bankfull Volume Difference = **16,081 cf***

Onsite Infiltration Requirement (V_{inf}) = **16,081** cf

W10 Detention / Retention Requirement

A.	Q_p = 238.6 (T_c) ^ -0.82	743.63	cfs/in-mi^2
B.	Total Site Area	2.94	ac
C.	$Q_{100} = Q_{100-per} + Q_{100-imp}$	7.33	in
D.	Peak Flow (PF) = (Q_p*Q_{100}*A)/640	24.987	cfs
E.	Delta = PF - 0.15A	24.546	cfs
F.	V_{det} = (Delta/PF) x V_{100}	**47,929**	cf

W11 Determine Applicable BMPs and Associated Volume Credits

** Per Geotecnical investigation, infiltration is not readily achievable on this site.*

W12 Infiltration / Detention Summary

Total Infiltration Required per WCWRC Rules: 16,081 cf
Total Infiltration Provided: 0 cf
Difference: (16,081) cf

% Deficiency: 100.0%
Pro-Rated 20% Detention Penalty: **20.0%**

Total Detention Required 47,929 cf
Total Detention Required w/ Pro-Rated Penalty **57,515** cf

Basin Stage-Storage Summary:

See StormTech stage storage calculations on this sheet

Xo= 923.91
Vff Elev.= 926.19
Vbf Elev.= 927.45
Vdet Elev.= 932.43

Forebay Sizing

Pretreatment to be via hydrodynamic separator

Outlet Control Structure Sizing

1. Standpipe outlet holes sizing - "first flush" runoff
First Flush discharge should be detained for 24 hours

Qff = Vff / 24 hrs / 3600 sec — Qff= 0.107 cfs
hff(ave) = 2/3 x (Xff - Xo) — hff(ave) = 1.52 ft
Aff(required) = Qff / 0.62 x sqrt(2*32.2*h) — A(required) = 0.0175 sf
Selected Orifice Diameter = **1** in
Area of each orifice = 0.0055 sf
Number of orifice holes required = **3** holes at elev. **923.91**

Check First Flush discharge release time
Aff(actual) = 0.0164 ft^2
Qff = A x 0.62 x sqrt(2*32.2*h) = 0.1004 cfs
Tff = Vff / (Qff x 3600) 25.7 hrs O.K.

2. Standpipe outlet holes sizing - "Bankfull flood" discharge
Bankfull should discharge within 36 to 48 hours

Check release from first flush holes only
hbf(ave) = 2/3 x (Xbf - Xo) — hbf(ave) = 2.79 ft
Qbf = A x 0.62 x sqrt(2*32.2*h) = — Qbf = 0.136 cfs
Tbf = Vbf / (Qbf x 3600) = — Tbf = 41.9 hrs

Add holes at to decrease storage time
The first flush volume will discharge in Tff = 25.7 hrs
Additional volume between Xbf and Xff = Vbf - Vff = 11,269 cf
Target Bankfull Discharge Time = 46.0 hrs
Vbf = Target Discharge Time - Tff = 20.3 hrs
Qbf - Qff = (Vbf - Vff) / ((42-Tff) x 3600) = 0.15 cfs
Hff=(2/3)(Xbf-Xff)+(Xff-Xo) = 3.55 ft
$Q_1=A_{ff}(.62)$(SQRT(2gh) = 0.15 cfs
$V_1=T_{rem}Q_1$ = 11,241 cf
$V_2=V_{rem}-V_1$ = 27 cf
$Q_2=V_2/T_{rem}$ = 0.00 cfs
$H_{bf}=(2/3)(X_{bf}-X_{ff})$ = 1.27 ft
A_{bf}(required) = 0.0001 sf
Selected Orifice Diameter = **0.75** in
Area of each orifice = 0.0031 sf
Number of orifice holes required = **0** holes at elev. **926.19**

3. Standpipe outlet holes sizing - "100-yr flood" discharge

Q100 = Qa = 0.15 x Drainage Area — Q100 = 0.440 cfs
Release from above holes
hff = (Xprovided-Xo) — hff = 8.52 ft
hbf = (Xprovided-Xff) — hbf = 6.24 ft
Q = A x 0.62 x sqrt(64.4*hff) + A x 0.62 x sqrt(64.4*hbf) = 0.238 cfs
Remaining flow = — Q100-Q= 0.203 cfs
A = Q100 /(.62 x sqrt(2*32.2*h)) — A(required) = 0.0163 sf
Selected Orifice Diameter = **0.75** in
Area of each orifice = 0.0031 sf
Number of orifice holes required = **5** holes at elev. **928.10**

Check that the actual flow rate does not exceed the allowable flow rate
Qff=.62 x #ff holes x A x sqrt(2 x 32.2 x (X100-Xbot)) = 0.238 cfs
Qbf=.62 x #bf holes x A x sqrt(2 x 32.2 x (X100-Xff)) = 0.000 cfs
Qmax=Qff+Qbf+(.62 x #100 holes x sqrt(2 x 32.2 x (X100-Xbf)) = 0.396 cfs O.K.

Check "100-yr discharge" holes discharge release time
hall(ave) = 2/3 x (X100 - Xbf) + (Xbf - Xo) = — hall(ave) = 7.08 ft
Qall = .62 x #ff holes x A x sqrt(2 x 32.2 x h) = — Qall = 0.217 cfs
hbf(ave) = 2/3 x (X100 - Xbf) +(Xbf - Xff) = — hbf(ave) = 4.80 ft
Qbf+100 = A x 0.62 x #bf holes x sqrt(2 x 32.2 x h) = — Qbf+100 = 0 cfs
h100(ave) = 2/3 x (X100 - Xbf) = — h100(ave) = 2.89 ft
Q100 = A x 0.62 x #100 holes x sqrt(2 x 32.2 x h) = — Q100(ave) = 0.130 cfs
Vrem = V100-Vbf = — Vrem = 36,975 cf
T100 = Tbf + ((Vrem)/(Qboth+Q100ave)) = — T100 = 71.6 hrs O.K.

4. Riser Outlet Pipe Design
Outlet pipe designed to handle the 100-year restricted flow

100-year restricted flow = Q = 0.44 cfs
Choose outflow pipe diameter = d = **15** in
Choose outflow pipe slope = S = **0.32** %
Assume roughness factor n = 0.013
Flow velocity at 100-yr restricted flow (Manning's) = V = 2.98 fps
Design Pipe Capacity = 3.66 cfs

Project: Pittfield Mixed Use MI (S054036) A1 Cumulative Vol

Chamber Model - MC-4500
Units - Imperial (Click Here for Metric)
Number of Chambers - 129
Number of End Caps - 20
Voids in the stone (porosity) - 30 %
Base of STONE Elevation - 923.91 ft
Amount of Stone Above Chambers - 12 in
Amount of Stone Below Chambers - 31 in
Area of system - 6059 sf Min. Area - 5363 sf min. area
☑ Include Perimeter Stone in Calculations

StormTech MC-4500 Cumulative Storage Volumes

[illegible]

Project: Pittfield Mixed Use MI (S054036) A2 Cumulative Vol

Chamber Model - MC-4500
Units - Imperial (Click Here for Metric)
Number of Chambers - 165
Number of End Caps - 20
Voids in the stone (porosity) - 30 %
Base of STONE Elevation - 923.91 ft
Amount of Stone Above Chambers - 12 in
Amount of Stone Below Chambers - 31 in
Area of system - 7471 sf Min. Area - 6679 sf min. area
☑ Include Perimeter Stone in Calculations

StormTech MC-4500 Cumulative Storage Volumes

[illegible]

DET=932.43
BF=927.45
FF=926.19

Project: Beztak Pittsfield Date: 10/12/2017
Location: Pittsfield Township, Washtenaw County
Description: Storm Water Calculations

AREA 'B'

W1 Determining Post-Development Cover Types, Areas, Curve Numbers and runoff coefficients

Total Contributing Drainage Area = 1.22 Acres

Rational Method Variables

Cover Type	Soil Type	Area (sf)	Area (ac)	Runoff Coef	(c)(Area)
Paved Parking Lots, roofs, driveways	C	51,716	1.19	0.95	49,130
Water Surfaces	C	0	0.00	1.00	0
Developed Open Space, Good Condition	C	1,427	0.03	0.30	428

Total - Sum (c)(Area) = 49,558
Area Total (sf)= 53,143
Weighted C-Sum(c)(Area)/Sum(ac) or Sum(sf)= **0.93**

NRCS Variables

Pervious Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN)(Area)
Developed Open Space, Good Condition	C	1,427	0.03	74	105,613
			0.00		0
			0.00		0

Total - Sum (CN)(Area) = 105,613
Area Total - Sum(ac) of Sum(sf)= 1,427
Weighted CN-Sum(CN)(Area)/Sum(ac) or Sum(sf)= **74**

NRCS Variables

Impervious Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN)(Area)
Paved Parking Lots, roofs, driveways	C	51,716	1.19	98	5,068,168
Impervious, Ponds	C	0	0.00	98	0
			0.00		0

Total - Sum (CN)(Area) = 5,068,168
Area Total - Sum(ac) of Sum(sf)= 51,716
Weighted CN-Sum(CN)(Area)/Sum(ac) or Sum(sf)= **98**

W2 First Flush Runoff Calculations (Vff)

A. Vff = (1") (1/12) (43560/1) (C) AC = **4,119** cf

W3 Predevelopment Bankfull Runoff Calculations (Vbf-pre)

A.	2 year/24 hour storm event	P =	2.35	in
B.	Pervious Cover CN (meadow, good)	CN =	71	
C.	S = (1000/CN)-10	S =	4.08	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	0.42	in
E.	Pervious Cover Area	Area =	53,143	sf
F.	V_{bf-pre} = Q(1/12)Area	V_{bf-pre} =	**1,853**	cf

W4 Pervious Cover Post-development Bankfull Runoff Calculations (Vbf-per-post)

A.	2 year/24 hour storm event	P =	2.35	in
B.	Pervious Cover CN	CN =	74	
C.	S = (1000/CN)-10	S =	3.51	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	0.53	in
E.	Pervious Cover Area	Area =	1,427	sf
F.	$V_{bf-per-post}$ = Q(1/12)Area	$V_{bf-per-post}$ =	**63**	cf

W5 Impervious Cover Post-development Bankfull Runoff Calculations (Vbf-imp-post)

A.	2 year/24 hour storm event	P =	2.35	in
B.	Impervious Cover CN	CN =	98	
C.	S = (1000/CN)-10	S =	0.20	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	2.12	in
E.	Pervious Cover Area	Area =	51,716	sf
F.	$V_{bf-imp-post}$ = Q(1/12)Area	$V_{bf-imp-post}$ =	**9,144**	cf

W6 Pervious Cover Post-development 100-year Storm Runoff Calculations (V100-per-post)

A.	100 year storm event	P =	5.11	in
B.	Pervious Cover CN	CN =	74	
C.	S = (1000/CN)-10	S =	3.51	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	2.45	in
E.	Pervious Cover Area	Area =	1,427	sf
F.	$V_{100-imp-post}$ = Q(1/12)Area	$V_{100-imp-post}$ =	**292**	cf

W7 Impervious Cover Post-development 100-year Storm Runoff Calculations (V100-imp-post)

A.	100 year storm event	P =	5.11	in
B.	Pervious Cover CN	CN =	98	
C.	S = (1000/CN)-10	S =	0.20	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	4.87	in
E.	Pervious Cover Area	Area =	51,716	sf
F.	$V_{100-imp-post}$ = Q(1/12)Area	$V_{100-imp-post}$ =	**21,001**	cf

W8 Determine Time of Concentration (Tc-hrs)

User specified; assume 15 minutes

Total Time of Concentration (hrs) = 0.25

W9 Runoff Summary & Onsite Infiltration Requirement

A. Runoff Summary from Previous Worksheets

V_{ff} = **4,119 cf***
V_{bf-pre} = 1,853 cf
$V_{bf-per-post}$ = 63 cf — **Total BF Volume ($V_{bf-post}$)** 9,206 cf
$V_{bf-imp-post}$ = 9,144 cf

$V_{100-per-post}$ = 292 cf — **Total 100-year Volume (V_{100})** 21,293 cf
$V_{100-imp-post}$ = 21,001 cf

B. Determine Onsite Infiltration Requirement

$V_{bf-post}$ = 9,206 cf
V_{bf-pre} = 1,853 cf
Bankfull Volume Difference = **7,353 cf***

Onsite Infiltration Requirement (V_{inf}) = **7,353** cf

W10 Detention / Retention Requirement

A.	Q_p = 238.6 (T_c) ^ -0.82	743.63	cfs/in-mi^2
B.	Total Site Area	1.22	ac
C.	$Q_{100} = Q_{100-per} + Q_{100-imp}$	7.33	in
D.	Peak Flow (PF) = (Q_p*Q_{100}*A)/640	10.384	cfs
E.	Delta = PF - 0.15A	10.201	cfs
F.	V_{det} = (Delta/PF) x V_{100}	**20,917**	cf

W11 Determine Applicable BMPs and Associated Volume Credits

** Per Geotecnical investigation, infiltration is not readily achievable on this site.*

W12 Infiltration / Detention Summary

Total Infiltration Required per WCWRC Rules: 7,353 cf
Total Infiltration Provided: 0 cf
Difference: (7,353) cf

% Deficiency: 100.0%
Pro-Rated 20% Detention Penalty: **20.0%**

Total Detention Required 20,917 cf
Total Detention Required w/ Pro-Rated Penalty **25,101** cf

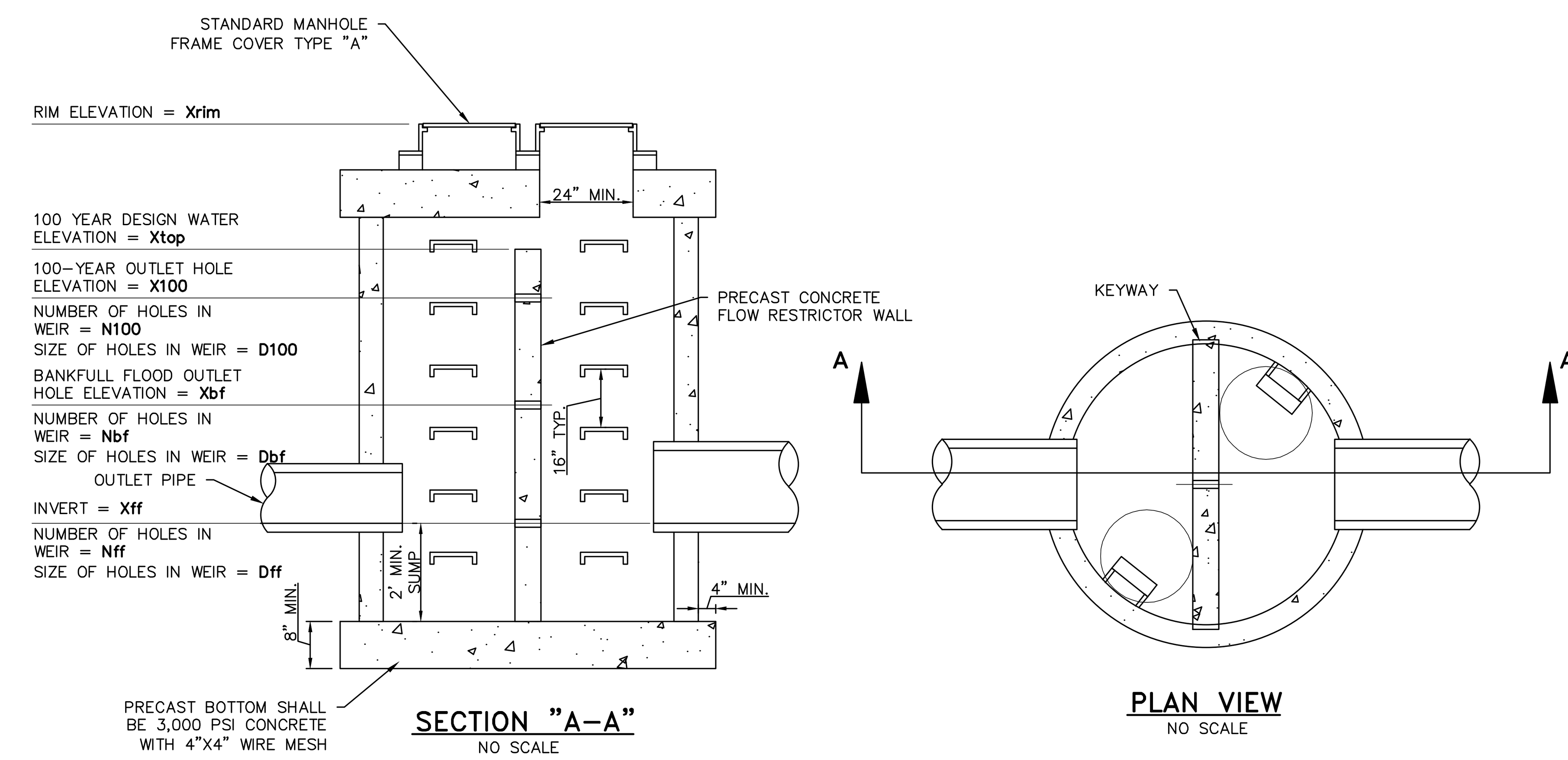
Basin Stage-Storage Summary:

See StormTech stage storage calculations on this sheet

Xo= 923.56
Vff Elev.= 924.84
Vbf Elev.= 925.89
Vdet Elev.= 930.95

Forebay Sizing

Pretreatment to be via hydrodynamic separator



SECTION "A-A"
NO SCALE

PLAN VIEW
NO SCALE

NOTES:

1. THE PRECAST REINFORCED FLOW RESTRICTOR STRUCTURE SHALL NE MANUFACTURED PER ASTM C478 SPECIFICATIONS.
2. ALL JOINTS SHALL BE MADE WATERTIGHT.
3. MULTIPLE HOLES TO BE INSTALLED AT THE SAME ELEVATION SHALL BE SPACED A MINIMUM OF 6" O.C.

OUTLET CONTROL STRUCTURE DETAIL
NOT TO SCALE

Structure	Area ID	Xrim	Xtop	X100	N100	D100	Xbf	Nbf	Dbf	Xff	Nff	Dff
R105	A	935.14'	932.43	928.10	5	0.75"	926.19	0	N/A	923.91	3	1"
R109A	B	933.70'	930.95	926.75	1	0.75"	924.84	0	N/A	923.56	3	0.75"
R110A	C	931.76'	930.54	926.00	1	0.75"	924.58	0	N/A	923.41	3	0.75"
R116	D	928.90'	924.02	920.55	2	1"	919.46	0	N/A	918.57	6	1"

Outlet Control Structure Sizing

1. Standpipe outlet holes sizing - "first flush" runoff
First Flush discharge should be detained for 24 hours

Qff = Vff / 24 hrs / 3600 sec — Qff= 0.048 cfs
hff(ave) = 2/3 x (Xff - Xo) — hff(ave) = 0.85 ft
Aff(required) = Qff / 0.62 x sqrt(2*32.2*h) — A(required) = 0.0104 sf
Selected Orifice Diameter = **0.75** in
Area of each orifice = 0.0031 sf
Number of orifice holes required = **3** holes at elev. **923.56**

Check First Flush discharge release time
Aff(actual) = 0.0092 ft^2
Qff = A x 0.62 x sqrt(2*32.2*h) = 0.0423 cfs
Tff = Vff / (Qff x 3600) 27.0 hrs O.K.

2. Standpipe outlet holes sizing - "Bankfull flood" discharge
Bankfull should discharge within 36 to 48 hours

Check release from first flush holes only
hbf(ave) = 2/3 x (Xbf - Xo) — hbf(ave) = 2.13 ft
Qbf = A x 0.62 x sqrt(2*32.2*h) = — Qbf = 0.067 cfs
Tbf = Vbf / (Qbf x 3600) = — Tbf = 38.3 hrs

Add holes at to decrease storage time
The first flush volume will discharge in Tff = 27.0 hrs
Additional volume between Xbf and Xff = Vbf - Vff = 5,087 cf
Target Bankfull Discharge Time = 40.0 hrs
Vbf = Target Discharge Time - Tff = 13.0 hrs
Qbf - Qff = (Vbf - Vff) / ((40-Tff) x 3600) = 0.11 cfs
Hff=(2/3)(Xbf-Xff)+(Xff-Xo) = 2.55 ft
$Q_1=A_{ff}(.62)$(SQRT(2gh) = 0.07 cfs
$V_1=T_{rem}Q_1$ = 3,416 cf
$V_2=V_{rem}-V_1$ = 1,672 cf
$Q_2=V_2/T_{rem}$ = 0.04 cfs
$H_{bf}=(2/3)(X_{bf}-X_{ff})$ = 1.27 ft
A_{bf}(required) = 0.0064 sf
Selected Orifice Diameter = **1** in
Area of each orifice = 0.0055 sf
Number of orifice holes required = **0** holes at elev. **924.84**

3. Standpipe outlet holes sizing - "100-yr flood" discharge

Q100 = Qa = 0.15 x Drainage Area — Q100 = 0.183 cfs
Release from above holes
hff = (Xprovided-Xo) — hff = 7.39 ft
hbf = (Xprovided-Xff) — hbf = 6.11 ft
Q = A x 0.62 x sqrt(64.4*hff) + A x 0.62 x sqrt(64.4*hbf) = 0.124 cfs
Remaining flow = — Q100-Q= 0.059 cfs
A = Q100 /(.62 x sqrt(2*32.2*h)) — A(required) = 0.0048 sf
Selected Orifice Diameter = **0.75** in
Area of each orifice = 0.0031 sf
Number of orifice holes required = **1** holes at elev. **926.75**

Check that the actual flow rate does not exceed the allowable flow rate
Qff=.62 x #ff holes x A x sqrt(2 x 32.2 x (X100-Xbot)) = 0.124 cfs
Qbf=.62 x #bf holes x A x sqrt(2 x 32.2 x (X100-Xff)) = 0.000 cfs
Qmax=Qff+Qbf+(.62 x #100 holes x sqrt(2 x 32.2 x (X100-Xbf = 0.156 cfs O.K.

Check "100-yr discharge" holes discharge release time
hall(ave) = 2/3 x (X100 - Xbf) +(Xbf - Xo) = — hall(ave) = 5.99 ft
Qall = .62 x #ff holes x A x sqrt(2 x 32.2 x h) = — Qall = 0.112 cfs
hbf(ave) = 2/3 x (X100 - Xbf) +(Xbf - Xff) = — hbf(ave) = 4.71 ft
Qbf+100 = A x 0.62 x #bf holes x sqrt(2 x 32.2 x h) = — Qbf+100 = 0 cfs
h100(ave) = 2/3 x (X100 - Xbf) = — h100(ave) = 2.798 ft
Q100 = A x 0.62 x #100 holes x sqrt(2 x 32.2 x h) = — Q100(ave) = 0.026 cfs
Vrem = V100-Vbf = — Vrem = 15,895 cf
T100 = Tbf + ((Vrem)/(Qboth+Q100ave)) = — T100 = 70.4 hrs O.K.

4. Riser Outlet Pipe Design
Outlet pipe designed to handle the 100-year restricted flow

100-year restricted flow = Q = 0.18 cfs
Choose outflow pipe diameter = d = **15** in
Choose outflow pipe slope = S = **0.32** %
Assume roughness factor n = 0.013
Flow velocity at 100-yr restricted flow (Manning's) = V = 2.98 fps
Design Pipe Capacity = 3.66 cfs

Underground Detention Analysis Summary

Area ID	Contributing Area (ac)	WCWRC Required Detention (cf)	Proposed Detention Volume (cf)
A	2.94	57,515	58,196
B	1.22	25,101	25,609
C	1.23	23,903	24,309
D	3.41	68,644	69,212
	8.79	175,162	177,326

Notes:
1. Required detention is based on WCWRC method. Includes 20% penalty for no infiltration.
2. Underground detention to be open concrete vault chamber system .
3. See undeground detention details for provided volumes.
4. Contractor to supply signed and sealed shop drawings of storage chamber designs prior to construction.

Project: Pittsfield Mixed use MI S054036 B Cumulative Vol.

Chamber Model - MC-4500
Units - Imperial (Click Here for Metric)
Number of Chambers - 137
Number of End Caps - 18
Voids in the stone (porosity) - 30 %
Base of STONE Elevation - 923.56 ft
Amount of Stone Above Chambers - 20 in
Amount of Stone Below Chambers - [illegible]
Area of system - [illegible]
☑ Include Perimeter Stone in Calculations

[illegible]

DET=930.95
BF=925.89
FF=924.84

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

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
STORMWATER MANAGEMENT CALCULATIONS 1

DATE JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 25 50
1" = 50 FEET
DR. CR CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 50

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

[illegible]137SF-12-ODA.DWG 10/10/2018 1:14 PM KYLER SHEERIN

Project: Beztak Pittsfield
Location: Pittsfield Township, Washtenaw County
Description: Storm Water Calculations
Date: 10/12/2017

AREA 'C'

W1 Determining Post-Development Cover Types, Areas, Curve Numbers and runoff coefficients

Total Contributing Drainage Area = 1.23 Acres

Rational Method Variables

Cover Type	Soil Type	Area (sf)	Area (ac)	Runoff Coef	(c)(Area)
Paved Parking Lots, roofs, driveways	C	46,427	1.07	0.95	44,106
Water Surfaces	C	0	0.00	1.00	0
Developed Open Space, Good Condition	C	6,963	0.16	0.30	2,089
				Total - Sum (c)(Area) =	46,195
				Area Total (sf)=	53,390
				Weighted C-Sum(c)(Area)/Sum(ac) or Sum(sf)=	**0.87**

NRCS Variables

Pervious Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN)(Area)
Developed Open Space, Good Condition	C	6,963	0.16	74	515,250
			0.00		0
			0.00		0
Total - Sum (CN)(Area) =					515,250
Area Total - Sum(ac) of Sum(sf)=					6,963
Weighted CN-Sum(CN)(Area)/Sum(ac) or Sum(sf)=					**74**

NRCS Variables

Impervious Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN)(Area)
Paved Parking Lots, roofs, driveways	C	46,427	1.07	98	4,549,846
Impervious, Ponds	C	0	0.00	98	0
			0.00		0
Total - Sum (CN)(Area) =					4,549,846
Area Total - Sum(ac) of Sum(sf)=					46,427
Weighted CN-Sum(CN)(Area)/Sum(ac) or Sum(sf)=					**98**

W2 First Flush Runoff Calculations (Vff)

A. Vff = (1") (1/12) (43560/1) (C) AC = **3,871** cf

W3 Predevelopment Bankfull Runoff Calculations (Vbf-pre)

A.	2 year/24 hour storm event	P =	2.35	in
B.	Pervious Cover CN (meadow, good)	CN =	71	
C.	S = (1000/CN)-10	S =	4.08	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	0.42	in
E.	Pervious Cover Area	Area =	53,390	sf
F.	$V_{bf\text{-}pre}$ = Q(1/12)Area	$V_{bf\text{-}pre}$ =	**1,862**	cf

W4 Pervious Cover Post-development Bankfull Runoff Calculations (Vbf-per-post)

A.	2 year/24 hour storm event	P =	2.35	in
B.	Pervious Cover CN	CN =	74	
C.	S = (1000/CN)-10	S =	3.51	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	0.53	in
E.	Pervious Cover Area	Area =	6,963	sf
F.	$V_{bf\text{-}per\text{-}post}$ = Q(1/12)Area	$V_{bf\text{-}per\text{-}post}$ =	**305**	cf

W5 Impervious Cover Post-development Bankfull Runoff Calculations (Vbf-imp-post)

A.	2 year/24 hour storm event	P =	2.35	in
B.	Impervious Cover CN	CN =	98	
C.	S = (1000/CN)-10	S =	0.20	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	2.12	in
E.	Pervious Cover Area	Area =	46,427	sf
F.	$V_{bf\text{-}imp\text{-}post}$ = Q(1/12)Area	$V_{bf\text{-}imp\text{-}post}$ =	**8,209**	cf

W6 Pervious Cover Post-development 100-year Storm Runoff Calculations (V100-per-post)

A.	100 year storm event	P =	5.11	in
B.	Pervious Cover CN	CN =	74	
C.	S = (1000/CN)-10	S =	3.51	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	2.45	in
E.	Pervious Cover Area	Area =	6,963	sf
F.	$V_{100\text{-}imp\text{-}post}$ = Q(1/12)Area	$V_{100\text{-}imp\text{-}post}$ =	**1,423**	cf

W7 Impervious Cover Post-development 100-year Storm Runoff Calculations (V100-imp-post)

A.	100 year storm event	P =	5.11	in
B.	Pervious Cover CN	CN =	98	
C.	S = (1000/CN)-10	S =	0.20	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	4.87	in
E.	Pervious Cover Area	Area =	46,427	sf
F.	$V_{100\text{-}imp\text{-}post}$ = Q(1/12)Area	$V_{100\text{-}imp\text{-}post}$ =	**18,853**	cf

W8 Determine Time of Concentration (Tc-hrs)

User specified; assume 15 minutes

Total Time of Concentration (hrs) = 0.25

W9 Runoff Summary & Onsite Infiltration Requirement

A. Runoff Summary from Previous Worksheets

V_{ff} =	**3,871** cf*	
$V_{bf\text{-}pre}$ =	1,862 cf	
$V_{bf\text{-}per\text{-}post}$ =	305 cf	**Total BF Volume ($V_{bf\text{-}post}$)**
$V_{bf\text{-}imp\text{-}post}$ =	8,209 cf	8,514 cf
$V_{100\text{-}per\text{-}post}$ =	1,423 cf	**Total 100-year Volume (V_{100})**
$V_{100\text{-}imp\text{-}post}$ =	18,853 cf	20,276 cf

B. Determine Onsite Infiltration Requirement

$V_{bf\text{-}post}$ = 8,514 cf
$V_{bf\text{-}pre}$ = 1,862 cf
Bankfull Volume Difference = **6,652** cf*

Onsite Infiltration Requirement (V_{inf}) = **6,652** cf

W10 Detention / Retention Requirement

A.	Q_p = 238.6 (T_c) ^ -0.82	743.63	cfs/in-mi^2
B.	Total Site Area	1.23	ac
C.	Q_{100} = $Q_{100\text{-}per}$ + $Q_{100\text{-}imp}$	7.33	in
D.	Peak Flow (PF) = (Q_p*Q_{100}*A)/640	10.432	cfs
E.	Delta = PF - 0.15A	10.248	cfs
F.	V_{det} = (Delta/PF) x V_{100}	**19,919**	cf

W11 Determine Applicable BMPs and Associated Volume Credits

** Per Geotecnical investigation, infiltration is not readily achievable on this site.*

W12 Infiltration / Detention Summary

Total Infiltration Required per WCWRC Rules: 6,652 cf
Total Infiltration Provided: 0 cf
Difference: (6,652) cf

% Deficiency: 100.0%
Pro-Rated 20% Detention Penalty: **20.0%**

Total Detention Required: 19,919 cf
Total Detention Required w/ Pro-Rated Penalty: **23,903** cf

Basin Stage-Storage Summary:

See StormTech stage storage calculations on this sheet

	Xo=	923.41
3,871 cf at	Vff Elev.=	924.58
8,514 cf at	Vbf Elev.=	925.46
23,903 cf at	Vdet Elev.=	930.54

Forebay Sizing

Pretreatment to be via hydrodynamic separator

Outlet Control Structure Sizing

1. Standpipe outlet holes sizing - "first flush" runoff
First Flush discharge should be detained for 24 hours

Qff = Vff / 24 hrs / 3600 sec	Qff=	0.045 cfs
hff(ave) = 2/3 x (Xff - Xo)	hff(ave) =	0.78 ft
Aff(required) = Qff / 0.62 x sqrt(2*32.2*h)	A(required) =	0.0102 sf
Selected Orifice Diameter =		**0.75** in
Area of each orifice =		0.0031 sf
Number of orifice holes required =	=	**3** holes at elev. **923.41**

Check First Flush discharge release time

Aff(actual) =	0.0092 ft^2
Qff = A x 0.62 x sqrt(2*32.2*h) =	0.0404 cfs
Tff = Vff / (Qff x 3600)	26.6 hrs O.K.

2. Standpipe outlet holes sizing - "Bankfull flood" discharge
Bankfull should discharge within 36 to 48 hours

Check release from first flush holes only

hbf(ave) = 2/3 x (Xbf - Xo)	hbf(ave) =	1.73 ft
Qbf = A x 0.62 x sqrt(2*32.2*h) =	Qbf =	0.060 cfs
Tbf = Vbf / (Qbf x 3600) =	Tbf =	39.3 hrs

Add holes at to decrease storage time

The first flush volume will discharge in Tff	=	26.6 hrs
Additional volume between Xbf and Xff = Vbf - Vff	=	4,643 cf
Target Bankfull Discharge Time =		46.0 hrs
Vbf = Target Discharge Time - Tff	=	19.4 hrs
Qbf - Qff = (Vbf - Vff) / ((46-Tff) x 3600)	=	0.07 cfs
Hff=(2/3)(Xbf-Xff)+(Xff-Xo)	=	2.12 ft
Q_1=A_{ff}(.62)(SQRT(2gh)	=	0.07 cfs
V_1=$T_{rem}$$Q_1$	=	4,657 cf
V_2=V_{rem}-V_1	=	(14) cf
Q_2=V_2/T_{rem}	=	(0.00) cfs
H_{bf}=(2/3)(X_{bf}-X_{ff})	=	0.95 ft
A_{bf}(required)	=	(0.0000) sf
Selected Orifice Diameter =		**1** in
Area of each orifice =		0.0055 sf
Number of orifice holes required =	=	**0** holes at elev. **924.58**

3. Standpipe outlet holes sizing - "100-yr flood" discharge

Q100 = Qa = 0.15 x Drainage Area	Q100 =	0.184 cfs
Release from above holes		
hff = (Xprovided-Xo)	hff =	7.13 ft
hbf = (Xprovided-Xff)	hbf =	5.96 ft
Q = A x 0.62 x sqrt(64.4*hff) + A x 0.62 x sqrt(64.4*hbf) =		0.122 cfs
Remaining flow =	Q100-Q=	0.062 cfs
A = Q100 /(.62 x sqrt(2*32.2*h))	A(required) =	0.0051 sf
Selected Orifice Diameter =		**0.75** in
Area of each orifice =		0.0031 sf
Number of orifice holes required =	=	**1** holes at elev. **926.00**

Check that the actual flow rate does not exceed the allowable flow rate

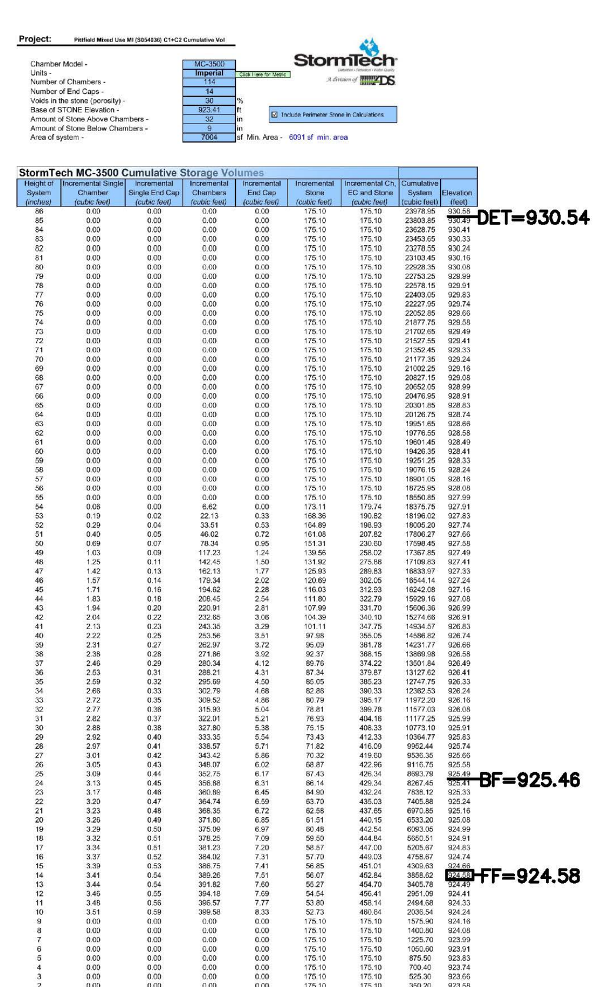
Qff=.62 x #ff holes x A x sqrt(2 x 32.2 x (X100-Xbot))	=	0.122 cfs
Qbf=.62 x #bf holes x A x sqrt(2 x 32.2 x (X100-Xff))	=	0.000 cfs
Qmax=Qff+Qbf+(.62 x #100 holes x sqrt(2 x 32.2 x (X100-Xbf	=	0.155 cfs O.K.

Check "100-yr discharge" holes discharge release time

hall(ave) = 2/3 x (X100 - Xbf) +(Xbf - Xo) =	hall(ave) =	5.61 ft
Qall = .62 x #ff holes x A x sqrt(2 x 32.2 x h) =	Qall =	0.108 cfs
hbf(ave) = 2/3 x (X100 - Xbf)+(Xbf - Xff) =	hbf(ave) =	4.44 ft
Qbf+100 = A x 0.62 x #bf holes x sqrt(2 x 32.2 x h) =	Qbf+100 =	0.000 cfs
h100(ave) = 2/3 x (X100 - Xbf) =	h100(ave) =	3.02 ft
Q100 = A x 0.62 x #100 holes x sqrt(2 x 32.2 x h) =	Q100(ave) =	0.027 cfs
Vrem = V100-Vbf =	Vrem =	15,389 cf
T100 = Tbf + ((Vrem)/((Qboth+Q100ave)*3600) =	T100 =	71.0 hrs O.K.

4. Riser Outlet Pipe Design
Outlet pipe designed to handle the 100-year restricted flow

100-year restricted flow =	Q =	0.18 cfs
Choose outflow pipe diameter =	d =	**12** in
Choose outflow pipe slope =	S =	**0.44** %
Assume roughness factor	n =	0.013
Flow velocity at 100-yr restricted flow (Manning's) =	V =	3.01 fps
Design Pipe Capacity =	=	2.36 cfs



Project: Beztak Pittsfield
Location: Pittsfield Township, Washtenaw County
Description: Storm Water Calculations
Date: 10/12/2017

AREA 'D'

W1 Determining Post-Development Cover Types, Areas, Curve Numbers and runoff coefficients

Total Contributing Drainage Area = 3.41 Acres

Rational Method Variables

Cover Type	Soil Type	Area (sf)	Area (ac)	Runoff Coef	(c)(Area)
Paved Parking Lots, roofs, driveways	C	138,160	3.17	0.95	131,252
Water Surfaces	C	0	0.00	1.00	0
Developed Open Space, Good Condition	C	10,397	0.24	0.30	3,119
				Total - Sum (c)(Area) =	134,371
				Area Total (sf)=	148,557
				Weighted C-Sum(c)(Area)/Sum(ac) or Sum(sf)=	**0.90**

NRCS Variables

Pervious Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN)(Area)
Developed Open Space, Good Condition	C	10,397	0.24	74	769,392
			0.00		0
			0.00		0
Total - Sum (CN)(Area) =					769,392
Area Total - Sum(ac) of Sum(sf)=					10,397
Weighted CN-Sum(CN)(Area)/Sum(ac) or Sum(sf)=					**74**

NRCS Variables

Impervious Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN)(Area)
Paved Parking Lots, roofs, driveways	C	138,160	3.17	98	13,539,680
Impervious, Ponds	C	0	0.00	98	0
			0.00		0
Total - Sum (CN)(Area) =					13,539,680
Area Total - Sum(ac) of Sum(sf)=					138,160
Weighted CN-Sum(CN)(Area)/Sum(ac) or Sum(sf)=					**98**

W2 First Flush Runoff Calculations (Vff)

A. Vff = (1") (1/12) (43560/1) (C) AC = **11,142** cf

W3 Predevelopment Bankfull Runoff Calculations (Vbf-pre)

A.	2 year/24 hour storm event	P =	2.35	in
B.	Pervious Cover CN *(meadow, good)*	CN =	71	
C.	S = (1000/CN)-10	S =	4.08	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	0.42	in
E.	Pervious Cover Area	Area =	148,557	sf
F.	$V_{bf\text{-}pre}$ = Q(1/12)Area	$V_{bf\text{-}pre}$ =	**5,180**	cf

W4 Pervious Cover Post-development Bankfull Runoff Calculations (Vbf-per-post)

A.	2 year/24 hour storm event	P =	2.35	in
B.	Pervious Cover CN	CN =	74	
C.	S = (1000/CN)-10	S =	3.51	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	0.53	in
E.	Pervious Cover Area	Area =	10,397	sf
F.	$V_{bf\text{-}per\text{-}post}$ = Q(1/12)Area	$V_{bf\text{-}per\text{-}post}$ =	**456**	cf

W5 Impervious Cover Post-development Bankfull Runoff Calculations (Vbf-imp-post)

A.	2 year/24 hour storm event	P =	2.35	in
B.	Impervious Cover CN	CN =	98	
C.	S = (1000/CN)-10	S =	0.20	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	2.12	in
E.	Pervious Cover Area	Area =	138,160	sf
F.	$V_{bf\text{-}imp\text{-}post}$ = Q(1/12)Area	$V_{bf\text{-}imp\text{-}post}$ =	**24,428**	cf

W6 Pervious Cover Post-development 100-year Storm Runoff Calculations (V100-per-post)

A.	100 year storm event	P =	5.11	in
B.	Pervious Cover CN	CN =	74	
C.	S = (1000/CN)-10	S =	3.51	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	2.45	in
E.	Pervious Cover Area	Area =	10,397	sf
F.	$V_{100\text{-}imp\text{-}post}$ = Q(1/12)Area	$V_{100\text{-}imp\text{-}post}$ =	**2,125**	cf

W7 Impervious Cover Post-development 100-year Storm Runoff Calculations (V100-imp-post)

A.	100 year storm event	P =	5.11	in
B.	Pervious Cover CN	CN =	98	
C.	S = (1000/CN)-10	S =	0.20	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	4.87	in
E.	Pervious Cover Area	Area =	138,160	sf
F.	$V_{100\text{-}imp\text{-}post}$ = Q(1/12)Area	$V_{100\text{-}imp\text{-}post}$ =	**56,104**	cf

W8 Determine Time of Concentration (Tc-hrs)

User specified; assume 15 minutes

Total Time of Concentration (hrs) = 0.25

W9 Runoff Summary & Onsite Infiltration Requirement

A. Runoff Summary from Previous Worksheets

V_{ff} =	**11,142** cf*	
$V_{bf\text{-}pre}$ =	5,180 cf	
$V_{bf\text{-}per\text{-}post}$ =	456 cf	**Total BF Volume ($V_{bf\text{-}post}$)**
$V_{bf\text{-}imp\text{-}post}$ =	24,428 cf	24,883 cf
$V_{100\text{-}per\text{-}post}$ =	2,125 cf	**Total 100-year Volume (V_{100})**
$V_{100\text{-}imp\text{-}post}$ =	56,104 cf	58,229 cf

B. Determine Onsite Infiltration Requirement

$V_{bf\text{-}post}$ = 24,883 cf
$V_{bf\text{-}pre}$ = 5,180 cf
Bankfull Volume Difference = **19,703** cf*

Onsite Infiltration Requirement (V_{inf}) = **19,703** cf

W10 Detention / Retention Requirement

A.	Q_p = 238.6 (T_c) ^ -0.82	743.63	cfs/in-mi^2
B.	Total Site Area	3.41	ac
C.	Q_{100} = $Q_{100\text{-}per}$ + $Q_{100\text{-}imp}$	7.33	in
D.	Peak Flow (PF) = (Q_p*Q_{100}*A)/640	29.028	cfs
E.	Delta = PF - 0.15A	28.516	cfs
F.	V_{det} = (Delta/PF) x V_{100}	**57,203**	cf

W11 Determine Applicable BMPs and Associated Volume Credits

** Per Geotecnical investigation, infiltration is not readily achievable on this site.*

W12 Infiltration / Detention Summary

Total Infiltration Required per WCWRC Rules: 19,703 cf
Total Infiltration Provided: 0 cf
Difference: (19,703) cf

% Deficiency: 100.0%
Pro-Rated 20% Detention Penalty: **20.0%**

Total Detention Required: 57,203 cf
Total Detention Required w/ Pro-Rated Penalty: **68,644** cf

Basin Stage-Storage Summary:

Elev.	Area	Avg. Area	Depth	Volume
924.07	12,584	12,584	0.07	69,212
924.00	12,584	12,584	1.00	68,331
923.00	12,584	12,584	1.00	55,747
922.00	12,584	12,584	1.00	43,163
921.00	12,584	12,584	1.00	30,579
920.00	12,584	12,584	1.43	17,995
918.57	12,584			

Vff Elev.= 919.46
Vbf Elev.= 920.55
Vdet Elev.= 924.02

Forebay Sizing

Pretreatment to be via hydrodynamic separator

Outlet Control Structure Sizing

1. Standpipe outlet holes sizing - "first flush" runoff
First Flush discharge should be detained for 24 hours

Qff = Vff / 24 hrs / 3600 sec	Qff=	0.129 cfs
hff(ave) = 2/3 x (Xff - Xo)	hff(ave) =	0.59 ft
Aff(required) = Qff / 0.62 x sqrt(2*32.2*h)	A(required) =	0.0337 sf
Selected Orifice Diameter =		**1** in
Area of each orifice =		0.0055 sf
Number of orifice holes required =	=	**6** holes at elev. **918.57**

Check First Flush discharge release time

Aff(actual) =	0.0327 ft^2
Qff = A x 0.62 x sqrt(2*32.2*h) =	0.1251 cfs
Tff = Vff / (Qff x 3600)	24.7 hrs O.K.

2. Standpipe outlet holes sizing - "Bankfull flood" discharge
Bankfull should discharge within 36 to 48 hours

Check release from first flush holes only

hbf(ave) = 2/3 x (Xbf - Xo)	hbf(ave) =	1.318 ft
Qbf = A x 0.62 x sqrt(2*32.2*h) =	Qbf =	0.187 cfs
Tbf = Vbf / (Qbf x 3600) =	Tbf =	37.0 hrs

Add holes at to decrease storage time

The first flush volume will discharge in Tff	=	24.7 hrs
Additional volume between Xbf and Xff = Vbf - Vff	=	13,741 cf
Target Bankfull Discharge Time =		42.0 hrs
Vbf = Target Discharge Time - Tff	=	17.3 hrs
Qbf - Qff = (Vbf - Vff) / ((42-Tff) x 3600)	=	0.22 cfs
Hff=(2/3)(Xbf-Xff)+(Xff-Xo)	=	1.61 ft
Q_1=A_{ff}(.62)(SQRT(2gh)	=	0.21 cfs
V_1=$T_{rem}$$Q_1$	=	12,851 cf
V_2=V_{rem}-V_1	=	890 cf
Q_2=V_2/T_{rem}	=	0.01 cfs
H_{bf}=(2/3)(X_{bf}-X_{ff})	=	0.73 ft
A_{bf}(required)	=	0.0034 sf
Selected Orifice Diameter =		**1** in
Area of each orifice =		0.0055 sf
Number of orifice holes required =	=	**0** holes at elev. **919.46**

3. Standpipe outlet holes sizing - "100-yr flood" discharge

Q100 = Qa = 0.15 x Drainage Area	Q100 =	0.512 cfs
Release from above holes		
hff = (Xprovided-Xo)	hff =	5.45 ft
hbf = (Xprovided-Xff)	hbf =	4.57 ft
Q = A x 0.62 x sqrt(64.4*hff) + A x 0.62 x sqrt(64.4*hbf) =		0.380 cfs
Remaining flow =	Q100-Q=	0.131 cfs
A = Q100 /(.62 x sqrt(2*32.2*h))	A(required) =	0.012 sf
Selected Orifice Diameter =		**1** in
Area of each orifice =		0.0055 sf
Number of orifice holes required =	=	**2** holes at elev. **920.55**

Check that the actual flow rate does not exceed the allowable flow rate

Qff=.62 x #ff holes x A x sqrt(2 x 32.2 x (X100-Xbot))	=	0.380 cfs
Qbf=.62 x #bf holes x A x sqrt(2 x 32.2 x (X100-Xff))	=	0.000 cfs
Qmax=Qff+Qbf+(.62 x #100 holes x sqrt(2 x 32.2 x (X100-Xbf)	=	0.481 cfs O.K.

Check "100-yr discharge" holes discharge release time

hall(ave) = 2/3 x (X100 - Xbf)+(Xbf - Xo) =	hall(ave) =	4.30 ft
Qall = .62 x #ff holes x A x sqrt(2 x 32.2 x h) =	Qall =	0.337 cfs
hbf(ave) = 2/3 x (X100 - Xbf) +(Xbf - Xff) =	hbf(ave) =	3.41 ft
Qbf+100 = A x 0.62 x #bf holes x sqrt(2 x 32.2 x h) =	Qbf+100 =	0.000 cfs
h100(ave) = 2/3 x (X100 - Xbf) =	h100(ave) =	2.32 ft
Q100 = A x 0.62 x #100 holes x sqrt(2 x 32.2 x h) =	Q100(ave) =	0.083 cfs
Vrem = V100-Vbf =	Vrem =	43,761 cf
T100 = Tbf + ((Vrem)/((Qboth+Q100ave)*3600) =	T100 =	65.9 hrs O.K.

4. Riser Outlet Pipe Design
Outlet pipe designed to handle the 100-year restricted flow

100-year restricted flow =	Q =	0.51 cfs
Choose outflow pipe diameter =	d =	**12** in
Choose outflow pipe slope =	S =	**0.9** %
Assume roughness factor	n =	0.013
Flow velocity at 100-yr restricted flow (Manning's) =	V =	4.31 fps
Design Pipe Capacity =	=	3.38 cfs

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

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE: CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT: BEZTAK LAND COMPANY

PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

STORMWATER MANAGEMENT CALCULATIONS 2

DATE: JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 25 50
1" = 50 FEET

DR. CR CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 51

Structure Name	Northing	Easting	Rim	Inner Dia.	Type	Casting	Inverts	Depth	Sump
R1	270255.6532'	13284551.6285'	934.45	48.00"	MH	EJIW 1040Z, Type B Cover	18" 928.07 NE 24" 928.41 SE 24" 926.68 SW	7.77	N
R2	270268.0312'	13284561.8869'	934.31	60.00"	CDS Model 2025-5	EJIW 41600484	18" 928.14 SW 18" 928.24 NW	11.87	Y
R3	270274.3570'	13284555.0632'	933.85	48.00"	CB	EJIW 1040Z, Type M1 Cover	18" 928.29 SE 15" 928.49 NE 12" 929.62 SW 4" 929.93 NW	5.56	N
R4	270343.0089'	13284618.6867'	933.97	48.00"	CB	EJIW 1040Z, Type M1 Cover	15" 928.79 SW 12" 929.99 NE 4" 929.33 NW	5.18	N
R5	270384.8182'	13284657.4292'	933.40	48.00"	CB	EJIW 1040Z, Type M1 Cover	12" 929.24 SW 12" 929.34 SE	4.16	N
R6	270361.4037'	13284695.5493'	935.19	24.00"	INLET	EJIW 1040Z, Type M1 Cover	12" 931.13 NW	4.06	N
R7	270231.5174'	13284515.3733'	933.86	24.00"	INLET	EJIW 1040Z, Type M1 Cover	12" 929.88 NE 4" 930.15 NW	3.98	N
R8	270201.9631'	13284638.1263'	937.54	24.00"	INLET	EJIW 1040Z with 1040 N 7"	12" 933.45 NW 6" 933.82 SE	4.09	N
R9	270233.8193'	13284593.2411'	936.22	48.00"	MH	EJIW 1040Z, Type B Cover	12" 931.83 SE 12 929.46 NW 24" 926.68 NE 24"926.68 SW	9.53	N
R10	270138.8078'	13284456.4020'	935.18	48.00"	MH	EJIW 1040Z, Type B Cover	15" 926.31 NW 12" 929.09 SW 12" 929.09 NE 24" 926.31 SE	8.87	N
R11	270144.6730'	13284446.2427'	934.88	48.00"	CDS Model 2015-4	EJIW #43600301 and #41610201	15" 926.37 SE 15" 926.47 SW 6" 931.36 NW	13.21	Y
R12	270053.7290'	13284341.2903'	934.69	48.00"	CB	EJIW 7045	15" 926.91 NE 12" 930.23 SE 6" 929.40 NW	7.78	N
R13	269989.9290'	13284386.7225'	936.04	48.00"	CB	EJIW 7045	12" 931.52 NW 12" 931.62 S 6" 931.93 SE	9.52	N
R14	269972.9949'	13284384.4898'	935.70	24.00"	INLET	EJIW 1040Z with 1040 N 7"	12" 931.69 N	4.01	N
R15	270430.5812'	13284492.2007'	933.19	48.00"	MH	EJIW 1040Z, Type B Cover	15" 926.26 NW 12" 927.28 NE 12" 927.28 SE 24" 924.50 SW	8.69	N
R16	270437.5883'	13284482.6528'	932.76	60.00"	CDS Model 2020-5	EJIW #41600484	15" 926.33 SE 12" 926.63 SW 12" 926.61 NE 4" 927.76 NW	11.92	Y
R17	270454.5837'	13284498.2668'	933.07	48.00"	MH	EJIW 1040Z, Type B Cover	12" 926.71 SW 12" 926.81 NE	6.36	N
R18	270420.5231'	13284466.8394'	932.53	48.00"	CB	EJIW 1040Z, Type M1 Cover	12" 927.10 NE 12" 927.10 SW 4" 928.04 NW	5.43	N
R19	270347.9212'	13284398.4231'	932.53	48.00"	CB	EJIW 1040Z, Type M1 Cover	12" 928.19 NE 12" 928.19 SW 4" 928.58 NW	4.34	N
R20	270296.8263'	13284349.2428'	933.13	48.00"	CB	EJIW 7045	12" 928.50 NE 12" 928.60 SW	4.63	N
R21	270291.2249'	13284343.5027'	932.69	24.00"	INLET	EJIW 7045	12" 928.63 NE	4.06	N
R22	270475.1375'	13284530.6487'	931.07	24.00"	INLET	EJIW 1040Z, Type M1 Cover	12" 926.98 SW 6" 927.37 SE	4.09	N
R25	270409.2690'	13284284.7943'	933.48	48.00"	MH	EJIW 1040Z, Type B Cover	12" 927.66 SW 24" 924.33 NE	9.52	N
R27	270373.7494'	13284254.4834'	931.87	48.00"	CDS Model 2015-4	EJIW #00704533B01	12" 927.87 NE 6" 928.00 SE	8.69	Y
R30	270527.2764'	13284393.2131'	932.01	48.00"	MH	EJIW 1040Z, Type B Cover	12" 925.45 NE 12" 926.36 NW 12" 926.36 SE 24" 924.33 SW	7.68	N
R31	270536.0248'	13284401.4956'	932.27	48.00"	CDS Model 2015-4	EJIW #41600484	12" 925.65 SW 12" 925.75 SE 12" 925.92 NW	11.22	Y
R32	270553.8670'	13284382.2288'	931.10	48.00"	CB	EJIW 1040Z, Type M1 Cover	12" 926.16 SE 12" 926.26 SW 6" 926.60 NW	4.94	N
R33	270517.5306'	13284352.5191'	931.81	48.00"	CB	EJIW 1040Z, Type M1 Cover	12" 926.63 NE 12" 927.13 SW 6" 927.45 NW	5.17	N
R34	270454.4499'	13284294.0655'	931.81	48.00"	CB	EJIW 1040Z, Type M1 Cover	12" 927.51 NE 12" 927.61 SW 6" 927.93 SW	4.29	N
R35	270411.3706'	13284225.8251'	931.68	24.00"	INLET	EJIW 7045	12" 927.97 NE 6" 928.29 SW	3.71	N
R36	270513.4332'	13284426.6804'	932.67	48.00"	MH	EJIW 1040Z, Type B Cover	12" 925.90 NW 12" 926.00 E	6.77	N
R37	270517.2867'	13284455.5632'	930.22	24.00"	INLET	EJIW 1040Z with 1040 N 7"	12" 926.13 W	4.09	N
R40	270557.9785'	13284190.4206'			Vault		12" 922.25 SE		
R40A	270564.740'	13284182.944'	931.18	48.00"	ACCESS MH	EJIW 1040Z, Type B Cover			
R40B	270592.847'	13284140.825'	928.14	48.00"	ACCESS MH	EJIW 1040Z, Type B Cover			
R40C	270639.474'	13284245.784'	931.29	48.00"	ACCESS MH	EJIW 1040Z, Type B Cover			
R41	270554.6761'	13284193.7874'	930.95	48.00"	CDS Model 2015-4	EJIW #43600301 and #41610201	12" 924.55 SW 12" 924.59 NE 12" 922.28 NW 4" 926.89 S 4" 926.89 E	13.27	Y
R42	270501.5820'	13284141.7097'	931.01	48.00"	CB	EJIW 1040Z, Type M1 Cover	12" 926.90 NE 12" 927.00 SE 4" 927.28 NW	4.11	N
R43	270460.7078'	13284160.6658'	931.04	24.00"	INLET	EJIW 7045	12" 927.20 NW	3.84	N
R44	270613.2036'	13284247.9669'	930.95	24.00"	INLET	EJIW 1040Z, Type M1 Cover	12" 926.93 SW 4" 927.25 S 4" 927.25 E	4.02	N
R45	270559.377'	13284171.866'	931.25	48.00"	MH	EJIW 1040Z, Type B Cover	21" 925.41 SW		
R46	270434.4468'	13284062.6510'	931.13	60.00"	CDS Model 2020-5	EJIW #43600301 and #41610201	21" 925.76 NE 21" 925.86 S 4" 925.86 NW	10.87	Y
R47	270404.3093'	13284061.9824'	930.68	48.00"	CB	EJIW 7045	21" 925.92 N 12" 926.52 SE	4.76	N
R48	270389.0169'	13284076.1963'	930.96	48.00"	CB	EJIW 7045	12" 926.73 NW 12" 926.73 SE	4.23	N
R49	270342.3277'	13284097.1475'	931.42	24.00"	INLET	EJIW 1040Z with 1040 N 7"	12" 926.96 NW 6" 928.50 SW	4.46	N
R51	270674.6564'	13284318.7692'			Vault		15" 918.89 SE		
R51A	270683.946'	13284314.856'	929.29	48.00"	ACCESS MH	EJIW 1040Z, Type B Cover			
R51B	270727.270'	13284353.713'	927.60	48.00"	ACCESS MH	EJIW 1040Z, Type B Cover			
R52	270670.0650'	13284320.7035'	929.23	60.00"	CDS Model 2020-5	EJIW #43600301 and #41610201	15" 918.94 NW 15" 919.04 NE 12" 919.14 SE	15.69	Y
R53	270705.6642'	13284402.5889'	925.75	48.00"	CB	EJIW 7045	15" 919.57 SW 12" 919.87 E	6.18	N
R54	270721.6336'	13284444.8972'	925.83	48.00"	CB	EJIW 7045	12" 920.57 W 12" 920.67 N 12" 920.69 E 12" 921.81 SE	5.26	N
R55	270789.6333'	13284466.4532'	925.00	24.00"	CB	EJIW 1040Z, Type M1 Cover	12" 920.99 S 6" 921.31 SW 6" 921.31 SE	4.01	N
R56	270669.8994'	13284470.5751'	927.15	48.00"	CB	EJIW 1040Z, Type M1 Cover	12" 922.97 NW 12" 923.13 S 6" 923.44 W 6" 923.44 E	4.18	N
R57	270584.8213'	13284485.8530'	929.50	48.00"	CB	EJIW 1040Z, Type M1 Cover	12" 925.29 N 12" 925.39 S	4.21	N
R58	270545.9123'	13284499.9706'	930.64	24.00"	INLET	EJIW 1040Z, Type M1 Cover	12" 926.63 N 6" 926.94 E	4.01	N
R60	270734.4956'	13284507.3697'	924.99	24.00"	INLET	EJIW 7045	12" 920.97 W	4.02	N
R61	270638.7667'	13284371.4949'	927.51	48.00"	CB	EJIW 1040Z, Type M1 Cover	12" 920.39 NW	8.11	N
R100	270615.6715'	13284098.9035'			End Section		24" 920.88 SE		
R101	270544.7598'	13284174.0514'	931.42	60.00"	MH	EJIW 1040Z, Type B Cover	24" 921.06 NW 24" 921.28 SW	10.36	N

Structure Name	Northing	Easting	Rim	Inner Dia.	Type	Casting	Inverts	Depth	Sump
R102	270486.6156'	13284120.1722'	931.34	60.00"	MH	EJIW 1040Z, Type B Cover	24" 921.41 NE 24" 921.51 SE	9.93	N
R103	270376.3990'	13284239.2611'	931.86	48.00"	MH	EJIW 1040Z, Type B Cover	24" 921.79 NW 18" 922.61 SE 12" 923.09 NE	10.07	N
R104	270270.1466'	13284354.0667'	933.44	48.00"	MH	EJIW 1040Z, Type B Cover	18" 923.00 NW 15" 923.20 NE 18" 923.28 SE	10.44	N
R105	270193.0240'	13284439.2160'	935.14	72.00"	OUTLET	EJIW 1040Z, Type B Cover	18" 923.64 NW 18" 923.65 SE	11.50	N
R106	270158.8737'	13284474.8375'	935.36	48.00"	MH	EJIW 1040Z, Type B Cover	18" 923.81 NW 18" 923.91 NE 12" 929.09 SW 12" 926.25 SE 6" 923.91 W	11.55	N
R108	270193.1618'	13284506.5493'	934.80	48.00"	MH	EJIW 1040Z, Type B Cover	18" 923.91 SW 12" 926.62 SE 12" 926.62 NE 6" 923.91 S	10.89	N
R109	270308.4243'	13284392.3177'	933.96	48.00"	MH	EJIW 1040Z, Type B Cover	15" 923.47 SW 12" 924.44 NE 6" 923.56 N	10.49	N
R109A	270292.9340'	13284378.0861'	933.70	72.00"	OUTLET	EJIW 1040Z, Type B Cover	15" 923.30 SW 15" 923.40 NE	10.40	N
R110	270412.9376'	13284268.7005'	932.46	48.00"	MH	EJIW 1040Z, Type B Cover	12" 923.39 SW 12" 926.36 SE 12" 924.27 NE 6" 923.41 NW 6" 923.41 S	9.07	N
R110A	270419.091'	13284272.847'	931.76	72.00"	OUTLET	EJIW 1040Z, Type B Cover	12" 923.12 SW 12" 923.22 NE	8.64	N
R115	270715.4015'	13284235.9022'			End Section		12" 918.30 SE		
R116	270691.7323'	13284257.9668'	928.90	72.00"	OUTLET	EJIW 1040Z, Type B Cover	12" 918.59 NW 24" 918.59 NE 24" 918.59 SW	10.31	N
R117	270700.4747'	13284274.2970'			Vault		24" 918.59 SW		
R117A	270700.158'	13284277.328'	928.24	48.00"	ACCESS MH	EJIW 1040Z, Type B Cover			
R118	270688.7183'	13284255.4102'			Vault		24" 918.59 NE		
R118A	270669.390'	13284233.608'	929.90	48.00"	ACCESS MH	EJIW 1040Z, Type B Cover			
R119	270072.2756'	13284639.9701'	935.58	24.00"	INLET	EJIW 7045	12" 932.75 SE	2.83	N
R122	269743.9150'	13284337.3742'	931.61	24.00"	INLET	EJIW 7045	12" 927.64 NW	4.01	N

Note: Hydro-dynamic separators manufactured by CDS with their model number are shown in the schedule per preliminary sizing. Shop drawings for each of the strucutres will be provided prior to construction. Approved alternates may be considered.

NOTE: ALL SANITARY MANHOLE CASTINGS TO BE EJIW 1040 Z BOLT DOWN FRAME WITH 1040 AGS COVER, PER TOWNSHIP STANDARD DETAIL

Structure Number	Easting	Northing	Rim	Dia.	Invert	Depth
EX1	13284545.1249'	271416.6899'	918.22	48.00"	10" 904.67 N 10" 904.82 S 10" 904.77 W	13.55
S2	13284558.6837'	271204.0261'	915.77	48.00"	10" 910.41 N 10" 910.51 S	5.36
S3	13284567.7674'	270854.1440'	919.56	48.00"	10" 914.01 N 10" 914.11 S	5.55
S4	13284560.6061'	270728.5125'	923.38	48.00"	10" 915.36 N 10" 915.46 W	8.02
S5	13284478.4165'	270716.7713'	926.41	48.00"	10" 915.81 E 10" 915.91 W	10.60
S6	13284421.6041'	270701.7026'	926.31	48.00"	10" 916.50 E	9.81
S7	13284047.6077'	270403.4997'	931.30	48.00"	10" 921.88 NW 10" 921.98 NE 10" 922.08 S	9.42
S7A	13283954.8024'	270430.3609'	927.16	48.00"	10" 920.50 W 10" 920.60 E	6.66
S7B	13284011.9017'	270432.4197'	931.73	48.00"	10" 921.22 W 10" 921.74 SE	10.51
S8	13284115.7718'	270477.0626'	931.34	48.00"	10" 922.28 SW 10" 922.38 SE	9.06
S9	13284294.7100'	270311.4556'	932.65	48.00"	10" 923.11 NW 10" 923.21 SE	9.54
S10	13284452.9552'	270164.9999'	935.95	60.00"	10" 923.86 NW 10" 927.41 NE 10" 927.13 SW	12.09
S11	13284479.6931'	270188.4580'	935.06	48.00"	10" 927.77 SW 10" 927.87 SE	7.29
S12	13284530.0305'	270141.8226'	936.53	60.00"	10" 928.07 NW 10" 928.17 NE	8.46
S13	13284598.2863'	270215.5645'	936.87	48.00"	10" 928.47 SW 10" 928.57 NE	8.40
S14	13284669.0108'	270291.9736'	936.72	48.00"	10" 930.45 SW	6.27
S15	13284359.1140'	270082.6695'	936.00	48.00"	10" 928.38 NE	7.62
S18	13284057.6042'	270315.4730'	933.13	48.00"	10" 926.51 N	6.62
EX2	13283670.8450'	270420.1224'	938.41	48.00"	8" 920.00 S 10" 920.10 E	18.41

Structure Name	Northing	Easting	FG	Casting
V1	270704.0495'	13284472.9981'	927.002'	EJIW 1040 A
V3	270463.3699'	13284123.7677'	931.360'	EJIW 1040 A
V4	270273.6010'	13284215.6064'	932.903'	EJIW 1040 A
V5	270256.0632'	13284233.9393'	933.163'	EJIW 1040 A
V6	270131.5538'	13284534.1588'	936.696'	EJIW 1040 A
V7	270374.5384'	13284618.4654'	934.079'	EJIW 1040 A
V8	270697.8106'	13284477.4047'	927.344'	EJIW 1040 A
V11	270241.8284'	13284201.8629'	933.463'	EJIW 1040 A
V12	270046.3272'	13284493.5807'	937.292'	EJIW 1040 A
V13	270712.6272'	13284489.3894'	926.597'	EJIW 1040 A
H1	270666.0663'	13284383.4278'	928.231'	
H2	270343.1175'	13284066.5130'	932.805'	
H3	270098.7328'	13284352.0970'	937.457'	
H4	270262.3215'	13284665.3665'	937.912'	
H5	270475.8501'	13284510.1727'	933.129'	
H6	270698.8860'	13284552.7314'	925.475'	
H7	270510.7659'	13284173.0877'	931.962'	
H8	270368.5083'	13284602.0696'	934.870'	
H9	270068.1767'	13284523.9786'	936.702'	
H10	270161.2126'	13284571.7809'	937.872'	
H12	270209.2675'	13284262.0339'	934.403'	
H13	270721.1178'	13284427.6995'	926.237'	
H14	270838.3103'	13284447.6376'	926.321'	
H15	270290.2022'	13284176.1816'	933.343'	

CROSSING	CROSSING PIPE 1				CROSSING PIPE 2				Clearance	NOTES
2	12 "	ST	B/P=	921.92	10 "	SAN	T/P=	917.09	4.83	
3	10 "	SAN	T/P=	923.32	12 "	WM	B/P=	924.83	1.51	
4	10 "	SAN	T/P=	923.58	6 "	STM	B/P=	928.46	4.88	
5	10 "	SAN	T/P=	923.91	6 "	STM	B/P=	928.92	5.01	
6	10 "	SAN	T/P=	928.55	6 "	STM	B/P=	932.41	3.86	
7	24 "	ST	T/P=	923.91	6 "	SAN	B/P=	925.60	1.69	
8	18 "	ST	T/P=	924.51	6 "	SAN	B/P=	927.06	2.55	
9	18 "	ST	T/P=	925.42	10 "	SAN	B/P=	927.86	2.44	
11	12 "	ST	B/P=	932.14	10 "	SAN	T/P=	929.68	2.45	
12	18 "	ST	T/P=	925.26	10 "	SAN	B/P=	927.46	2.20	
13	10 "	SAN	T/P=	929.07	8 "	WM	B/P=	930.58	1.51	
14	18 "	ST	T/P=	925.04	6 "	SAN	B/P=	927.81	2.77	
15	24 "	ST	T/P=	923.95	6 "	STM	B/P=	928.40	4.45	
16	21 "	ST	B/P=	925.66	10 "	SAN	T/P=	922.94	2.72	
17	6 "	SAN	T/P=	931.98	6 "	STM	B/P=	934.23	2.25	
18	12 "	ST	B/P=	922.14	12 "	WM	T/P=	920.64	1.50	DIP WATER MAIN
19	6 "	WM	T/P=	929.18	6 "	STM	B/P=	931.18	2.00	
20	3 "	WM	T/P=	929.27	6 "	STM	B/P=	931.27	2.00	
21	3 "	WM	T/P=	928.13	6 "	STM	B/P=	930.13	2.00	
22	6 "	WM	T/P=	928.04	6 "	STM	B/P=	930.04	2.00	
24	12 "	ST	B/P=	932.43	8 "	WM	T/P=	929.22	3.21	
25	12 "	ST	B/P=	928.91	8 "	WM	T/P=	927.41	1.50	DIP WATER MAIN
26	12 "	ST	B/P=	926.95	12 "	WM	T/P=	925.45	1.50	DIP WATER MAIN
27	24 "	ST	T/P=	923.80	12 "	WM	B/P=	925.31	1.51	
28	15 "	ST	T/P=	928.18	8 "	WM	B/P=	930.47	2.29	
29	21 "	ST	B/P=	925.43	6 "	SAN	T/P=	923.83	1.60	
30	12 "	ST	T/P=	920.86	12 "	WM	B/P=	922.38	1.52	
31	24 "	ST	T/P=	923.29	21 "	ST	B/P=	925.20	1.91	
32	36 "	ST	B/P=	911.46	10 "	SAN	T/P=	909.28	2.18	
33	30 "	ST	B/P=	911.91	10 "	SAN	T/P=	906.13	5.77	
34	10 "	SAN	T/P=	916.66	8 "	WM	B/P=	919.11	2.45	
35	24 "	ST	T/P=	923.62	4 "	STM	B/P=	928.97	5.35	
36	12 "	ST	B/P=	920.71	8 "	WM	T/P=	919.21	1.50	DIP WATER MAIN
38	12 "	ST	B/P=	926.74	4 "	WM	T/P=	925.24	1.50	DIP WATER MAIN
39	12 "	ST	B/P=	926.75	2 "	WM	T/P=	925.25	1.50	DIP WATER MAIN
40	4 "	WM	T/P=	927.60	6 "	STM	B/P=	929.60	2.00	
41	2 "	WM	T/P=	927.03	6 "	STM	B/P=	929.88	2.85	
43	10 "	SAN	T/P=	916.40	4 "	WM	B/P=	918.88	2.48	
44	10 "	SAN	T/P=	916.41	2 "	WM	B/P=	919.27	2.86	
45	18 "	ST	T/P=	924.39	6 "	STM	B/P=	928.67	4.28	
46	6 "	SAN	T/P=	927.59	6 "	STM	B/P=	929.79	2.20	
47	10 "	SAN	B/P=	926.10	4 "	WM	T/P=	924.60	1.50	DIP WATER MAIN
48	10 "	SAN	B/P=	926.25	2 "	WM	T/P=	924.75	1.50	DIP WATER MAIN
49	6 "	SAN	T/P=	918.27	12 "	WM	B/P=	919.83	1.56	
50	8 "	WM	T/P=	926.89	6 "	STM	B/P=	929.51	2.62	
51	6 "	SAN	T/P=	923.73	12 "	WM	B/P=	925.24	1.51	
55	6 "	SAN	T/P=	929.76	8 "	WM	B/P=	931.27	1.51	
56	6 "	SAN	B/P=	930.47	8 "	WM	T/P=	928.97	1.50	DIP WATER MAIN
57	6 "	SAN	B/P=	931.92	8 "	WM	T/P=	930.42	1.50	DIP WATER MAIN
59	12 "	ST	B/P=	925.25	3 "	WM	T/P=	923.75	1.50	DIP WATER MAIN
60	12 "	ST	B/P=	925.35	6 "	WM	T/P=	923.85	1.50	DIP WATER MAIN
61	24 "	ST	T/P=	923.53	3 "	WM	B/P=	925.03	1.50	
62	24 "	ST	T/P=	923.54	6 "	WM	B/P=	925.47	1.93	
63	21 "	ST	B/P=	925.21	3 "	WM	T/P=	923.71	1.50	DIP WATER MAIN
64	21 "	ST	B/P=	925.22	6 "	WM	T/P=	923.72	1.50	DIP WATER MAIN
65	12 "	ST	B/P=	920.10	2 "	WM	T/P=	918.60	1.50	DIP WATER MAIN
66	12 "	ST	B/P=	920.05	4 "	WM	T/P=	918.55	1.50	DIP WATER MAIN
67	12 "	ST	B/P=	920.14	8 "	WM	T/P=	918.64	1.50	DIP WATER MAIN
68	12 "	ST	B/P=	926.68	8 "	WM	T/P=	925.18	1.50	DIP WATER MAIN
69	21 "	ST	T/P=	927.53	4 "	STM	B/P=	929.03	1.50	
70	6 "	SAN	B/P=	926.69	4 "	WM	T/P=	924.69	2.00	
71	6 "	SAN	B/P=	926.77	2 "	WM	T/P=	924.96	1.81	
72	6 "	SAN	B/P=	930.78	4 "	WM	T/P=	929.28	1.50	DIP WATER MAIN
73	6 "	SAN	B/P=	930.72	2 "	WM	T/P=	929.22	1.50	DIP WATER MAIN
74	4 "	WM	T/P=	929.36	6 "	STM	B/P=	933.24	3.88	
75	2 "	WM	T/P=	929.44	6 "	STM	B/P=	933.25	3.81	
76	15 "	ST	T/P=	928.22	6 "	SAN	B/P=	929.75	1.54	
81	6 "	SAN	T/P=	929.37	6 "	STM	B/P=	931.45	2.08	
83	6 "	SAN	B/P=	928.04	12 "	ST	T/P=	926.44	1.61	
84	6 "	SAN	T/P=	928.84	6 "	STM	B/P=	930.44	1.60	
85	6 "	SAN	T/P=	927.38	6 "	STM	B/P=	929.15	1.77	
86	12 "	WM	T/P=	926.30	6 "	STM	B/P=	928.30	2.00	
87	12 "	WM	T/P=	926.27	6 "	STM	B/P=	928.27	2.00	
88	12 "	WM	T/P=	926.26	6 "	STM	B/P=	928.26	2.00	
89	12 "	WM	T/P=	926.15	6 "	STM	B/P=	928.15	2.00	
90	12 "	WM	B/P=	920.41	6 "	SAN	T/P=	918.08	2.33	
91	12 "	ST	B/P=	920.20	6 "	SAN	T/P=	918.01	2.19	
92	8 "	WM	T/P=	919.65	6 "	STM	B/P=	921.65	2.00	
93	8 "	WM	T/P=	921.84	6 "	STM	B/P=	923.84	2.00	
94	24 "	ST	T/P=	923.21	6 "	STM	B/P=	925.09	1.88	
95	8 "	WM	T/P=	925.31	6 "	STM	B/P=	927.31	2.00	
96	10 "	SAN	T/P=	917.27	8 "	WM	B/P=	920.56	3.29	
97	10 "	SAN	T/P=	917.30	2 "	WM	B/P=	920.59	3.29	
98	10 "	SAN	T/P=	917.33	4 "	WM	B/P=	920.59	3.26	

I = B/(T+D)^E B = 175.0 D = 25.0 E = 1
C = varies
T = 15 (min.)

FROM MH INPUT	TO MH	INCRE-MENT ACRES (A)	C	EQUIV. AREA 100% ACRES CA	TOTAL AREA 100% ACRES SUM CA	T TIME (MIN.)	I (IN PER HOUR)	Q=CIA C.F.S. FLOW	CAPAC-ITY OF SEWER (C.F.S.)	DIAM. OF PIPE (IN.)	LENGTH OF LINE (FT.)	SLOPE OF PIPE (%)	MIN HG BASED ON "Q" (%)	HG FOR 3.0 FPS GIVEN "D" (%)	ACTUAL HG (%)	VEL. FLOW FULL (FT./SEC.)	TIME OF FLOW (MIN.)	H.G.L. ELEV. UPPER END	H.G.L. ELEV. LOWER END	GROUND ELEV. UPPER END	GROUND ELEV. LOWER END	INVERT ELEV. UPPER END	INVERT ELEV. LOWER END
AREA A																							
R6	R5	0.16	0.91	0.14	0.14	15.00	4.38	0.63	7.13	12	45	4.00	0.03	0.44	0.44	9.1	0.1	931.93	930.14	935.19	933.40	931.13	929.34
R5	R4	0.32	0.91	0.29	0.43	15.10	4.36	1.89	2.36	12	57	0.44	0.28	0.44	0.44	3.0	0.3	930.05	929.80	933.40	933.97	929.24	928.99
R4	R3	0.22	0.94	0.21	0.64	15.40	4.33	2.77	3.65	15	94	0.32	0.18	0.32	0.32	3.0	0.5	929.80	929.49	933.97	933.85	928.79	928.49
R3	R2	0.48	0.91	0.44	1.51	15.90	4.28	6.47	7.65	18	9	0.53	0.38	0.25	0.38	4.3	0.0	929.48	929.44	933.85	934.31	928.29	928.24
R2	R1	0.00	0.00	0.00	1.51	15.90	4.28	6.47	6.97	18	16	0.44	0.38	0.25	0.38	3.9	0.1	929.33	929.27	934.31	934.45	928.14	928.07
R7	R3	0.46	0.94	0.43	0.43	15.00	4.38	1.88	2.36	12	58	0.44	0.28	0.44	0.44	3.0	0.3	930.68	930.42	933.86	933.85	929.88	929.62
R8	R9	0.04	0.57	0.02	0.02	15.00	4.38	0.09	6.10	12	55	2.94	0.00	0.44	0.44	7.8	0.1	934.25	932.63	937.54	936.22	933.45	931.83
R14	R13	0.12	0.31	0.04	0.04	15.00	4.38	0.16	2.36	12	17	0.44	0.00	0.44	0.44	3.0	0.1	932.49	932.42	935.70	936.04	931.69	931.62
R13	R12	0.05	0.94	0.05	0.09	15.10	4.36	0.38	4.56	12	78	1.64	0.01	0.44	0.44	5.8	0.2	932.32	931.03	936.04	934.69	931.52	930.23
R12	R11	0.52	0.84	0.44	0.53	15.30	4.34	2.29	3.65	15	139	0.32	0.13	0.32	0.32	3.0	0.8	927.92	927.47	934.69	934.88	926.91	926.47
R11	R10	0.56	0.89	0.50	1.03	16.10	4.26	4.38	4.43	15	12	0.47	0.46	0.32	0.46	3.6	0.1	927.37	927.31	934.88	935.18	926.37	926.31
AREA B																							
R21	R20	0.13	0.93	0.12	0.12	15.00	4.38	0.52	2.36	12	8	0.44	0.02	0.44	0.44	3.0	0.0	929.43	929.40	932.69	933.13	928.63	928.60
R20	R19	0.18	0.89	0.16	0.28	15.00	4.38	1.21	2.36	12	71	0.44	0.12	0.44	0.44	3.0	0.4	929.30	928.99	933.13	932.53	928.50	928.19
R19	R18	0.20	0.91	0.18	0.46	15.40	4.33	1.98	3.72	12	100	1.09	0.31	0.44	0.44	4.7	0.4	928.33	927.90	932.53	932.53	928.19	927.10
R18	R16	0.41	0.94	0.39	0.84	15.80	4.29	3.61	5.04	12	23	2.00	1.03	0.44	1.03	6.4	0.1	927.67	927.43	932.53	932.76	927.10	926.63
R16	R15	0.00	0.00	0.00	1.12	15.90	4.28	4.80	5.05	15	12	0.61	0.55	0.32	0.55	4.1	0.0	927.33	927.26	932.76	933.19	926.33	926.26
R22	R17	0.30	0.92	0.28	0.28	15.00	4.38	1.22	2.36	12	38	0.44	0.12	0.44	0.44	3.0	0.2	927.78	927.61	931.07	933.07	926.98	926.81
R17	R16	0.00	0.00	0.00	0.28	15.20	4.35	1.22	2.36	12	23	0.44	0.12	0.44	0.44	3.0	0.1	927.51	927.41	933.07	932.76	926.71	926.61
AREA C																							
R27	R25	0.23	0.94	0.21	0.21	15.00	4.38	0.93	2.36	12	47	0.44	0.07	0.44	0.44	3.0	0.3	928.66	928.46	931.87	933.48	927.87	927.66
R37	R36	0.08	0.48	0.04	0.04	15.00	4.38	0.17	2.36	12	29	0.44	0.00	0.44	0.44	3.0	0.2	926.93	926.80	930.22	932.67	926.13	926.00
R36	R31	0.00	0.00	0.00	0.04	15.20	4.35	0.17	2.36	12	34	0.44	0.00	0.44	0.44	3.0	0.2	926.70	926.55	932.67	932.27	925.90	925.75
R35	R34	0.34	0.74	0.25	0.25	15.00	4.38	1.10	2.36	12	81	0.44	0.09	0.44	0.44	3.0	0.4	928.76	928.41	931.68	931.81	927.97	927.61
R34	R33	0.26	0.90	0.24	0.49	15.40	4.33	2.11	2.36	12	86	0.44	0.35	0.44	0.44	3.0	0.5	928.31	927.93	931.81	931.81	927.51	927.13
R33	R32	0.27	0.95	0.25	0.74	15.90	4.28	3.16	3.19	12	47	0.80	0.79	0.44	0.79	4.1	0.2	927.43	927.06	931.81	931.10	926.63	926.26
R32	R31	0.05	0.78	0.04	0.78	16.10	4.26	3.33	3.38	12	26	0.90	0.87	0.44	0.87	4.3	0.1	926.95	926.72	931.10	932.27	926.16	925.92
R31	R30	0.00	0.00	0.00	0.82	16.20	4.25	3.49	4.58	12	12	1.65	0.96	0.44	0.96	5.8	0.0	926.37	926.25	932.27	932.01	925.65	925.45
AREA D																							
R43	R42	0.12	0.95	0.12	0.12	15.00	4.38	0.51	2.36	12	45	0.44	0.02	0.44	0.44	3.0	0.2	928.00	927.80	931.04	931.01	927.20	927.00
R42	R41	0.23	0.90	0.21	0.33	15.20	4.35	1.43	6.33	12	74	3.16	0.16	0.44	0.44	8.1	0.2	927.70	925.35	931.01	930.95	926.90	924.55
R41	R40	0.18	0.95	0.17	0.67	15.40	4.33	2.90	2.98	12	5	0.70	0.66	0.44	0.66	3.8	0.0	923.08	923.05	930.95	931.03	922.28	922.25
														0.00									
R44	R41	0.18	0.94	0.17	0.17	15.00	4.38	0.76	6.10	12	80	2.93	0.05	0.44	0.44	7.8	0.2	927.73	925.39	930.95	930.95	926.93	924.59
R49	R48	0.32	0.88	0.28	0.28	15.00	4.38	1.21	2.36	12	51	0.44	0.12	0.44	0.44	3.0	0.3	927.75	927.53	931.42	930.96	926.96	926.73
R48	R47	0.46	0.78	0.36	0.63	15.30	4.34	2.75	3.56	12	21	1.00	0.60	0.44	0.60	4.5	0.1	927.45	927.32	930.96	930.68	926.73	926.52
R47	R46	0.24	0.93	0.22	0.85	15.40	4.33	3.70	7.26	21	30	0.21	0.05	0.21	0.21	3.0	0.2	927.32	927.26	930.68	931.13	925.92	925.86
R46	R45	0.17	0.95	0.16	1.01	15.60	4.31	4.37	7.26	21	165	0.21	0.08	0.21	0.21	3.0	0.9	927.15	926.81	931.13	931.26	925.76	925.41
R58	R57	0.19	0.94	0.18	0.18	15.00	4.38	0.77	6.17	12	41	3.00	0.05	0.44	0.44	7.9	0.1	927.43	926.19	930.64	929.50	926.63	925.39
R57	R56	0.10	0.95	0.10	0.27	15.10	4.36	1.20	5.63	12	86	2.50	0.11	0.44	0.44	7.2	0.2	926.09	923.93	929.50	927.15	925.29	923.13
R56	R54	0.29	0.94	0.28	0.55	15.30	4.34	2.39	5.04	12	58	2.00	0.45	0.44	0.45	6.4	0.1	923.77	922.61	927.15	925.83	922.97	921.81
R54	R53	0.08	0.80	0.06	1.00	15.40	4.33	4.32	4.44	12	45	1.55	1.47	0.44	1.47	5.7	0.1	921.34	920.67	925.83	925.75	920.57	919.87
R53	R52	0.15	0.88	0.13	1.13	15.50	4.32	4.87	5.00	15	89	0.60	0.57	0.32	0.57	4.1	0.4	920.54	920.04	925.75	929.23	919.57	919.04
R52	R51	0.10	0.76	0.08	1.37	15.90	4.28	5.87	6.13	15	5	0.90	0.83	0.32	0.83	5.0	0.0	919.93	919.89	929.23	929.18	918.94	918.89
R55	R54	0.38	0.92	0.35	0.35	15.00	4.38	1.54	2.36	12	71	0.44	0.19	0.44	0.44	3.0	0.4	921.78	921.47	925.00	925.83	920.99	920.67
R60	R54	0.03	0.89	0.03	0.03	15.00	4.38	0.13	2.36	12	64	0.44	0.00	0.44	0.44	3.0	0.4	921.77	921.49	924.99	925.83	920.97	920.69
R61	R52	0.19	0.89	0.17	0.17	15.00	4.38	0.73	5.16	12	60	2.10	0.04	0.44	0.44	6.6	0.2	921.19	919.94	927.51	929.23	920.39	919.14
OUTLETS																							
R116	R115	0.00	0.00	0.00	0.00	15.00	4.38	0.00	3.38	12	32	0.90	0.00	0.44	0.44	4.3	0.1	919.44	919.30	928.90	919.55	918.59	918.30
R118	R116	0.00	0.00	0.00	0.00	15.00	4.38	0.00	0.00	24	4	0.00	0.00	0.17	0.17	0.0		920.20	920.19	929.38	928.90	918.59	918.59
R117	R116	0.00	0.00	0.00	0.00	15.00	4.38	0.00	0.00	24	19	0.00	0.00	0.17	0.17	0.0		920.22	920.19	927.83	928.90	918.59	918.59
R106	R105	0.00	0.00	0.00	0.00	15.00	4.38	0.00	5.94	18	49	0.32	0.00	0.25	0.25	3.4	0.2	924.78	924.65	935.36	935.14	923.61	923.45
R105	R104	0.00	0.00	0.00	0.00	15.20	4.35	0.00	5.94	18	115	0.32	0.00	0.25	0.25	3.4	0.6	924.57	924.28	935.14	933.44	923.44	923.08
R104	R103	0.00	0.00	0.00	0.00	15.80	4.29	0.00	5.25	18	156	0.25	0.00	0.25	0.25	3.0	0.9	924.20	923.81	933.44	931.86	923.00	922.61
R103	R102	0.00	0.00	0.00	0.00	16.70	4.20	0.00	9.33	24	162	0.17	0.00	0.17	0.17	3.0	0.9	923.48	923.20	931.86	931.34	921.79	921.51
R102	R101	0.00	0.00	0.00	0.00	17.60	4.11	0.00	9.33	24	79	0.17	0.00	0.17	0.17	3.0	0.4	923.20	923.06	931.34	931.42	921.41	921.28
R101	R100	0.00	0.00	0.00	0.00	18.00	4.07	0.00	9.33	24	103	0.17	0.00	0.17	0.17	3.0	0.6	923.06	922.88	931.42	924.77	921.06	920.88
R108	R106	0.00	0.00	0.00	0.00	15.60	4.31	0.00	0.00	18	47	0.00	0.00	0.25	0.25	0.0		925.03	924.91	934.80	935.36	923.71	923.71
R109	R109A	0.00	0.00	0.00	0.00	15.00	4.38	0.00	3.65	15	21	0.32	0.00	0.32	0.32	3.0	0.1	924.47	924.40	933.96	933.70	923.47	923.40
R109A	R104	0.00	0.00	0.00	0.00	15.10	4.36	0.00	3.65	15	33	0.32	0.00	0.32	0.32	3.0	0.2	924.31	924.20	933.70	933.44	923.30	923.20
R110	R110A	0.00	0.00	0.00	0.00	15.00	4.38	0.00	2.36	12	39	0.44	0.00	0.44	0.44	3.0	0.2	924.19	924.02	932.46	931.76	923.39	923.22
R110A	R103	0.00	0.00	0.00	0.00	15.20	4.35	0.00	2.36	12	8	0.44	0.00	0.44	0.44	3.0	0.0	923.92	923.89	931.76	931.86	923.12	923.09
R119	ER120	0.00	0.00	0.00	0.00	15.00	4.38	0.00	2.36	12	19	0.44	0.00	0.44	0.44	3.0	0.1	933.55	933.47	935.58	936.25	932.75	932.67
R122	ER121	0.00	0.00	0.00	0.00	15.00	4.38	0.00	2.36	12	8	0.44	0.00	0.44	0.44	3.0	0.0	928.60	928.57	931.61	932.86	927.60	927.57

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
STORMWATER CONVEYANCE AND UTILITY TABLES

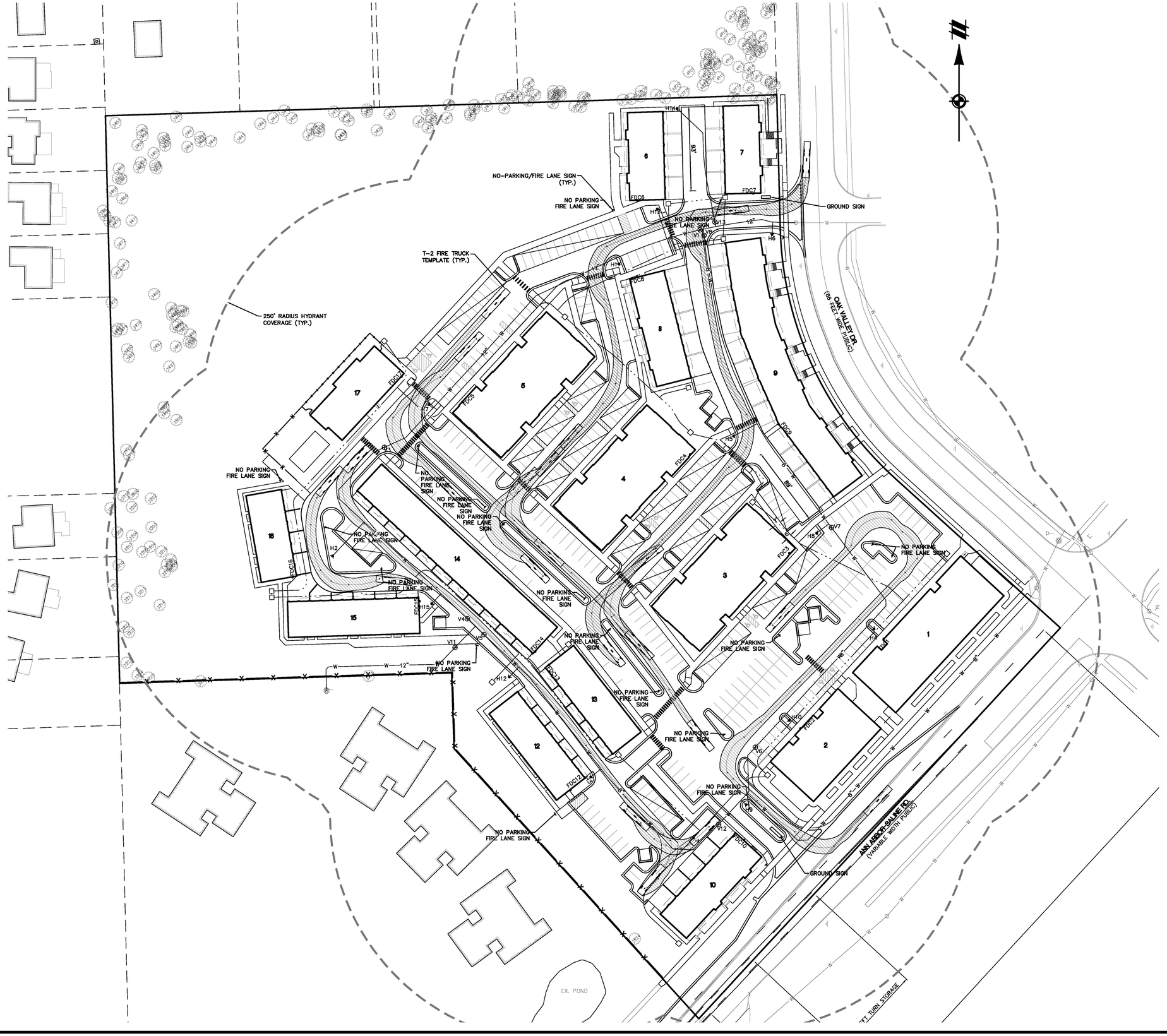
DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 25 50
1" = 50 FEET

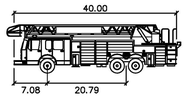
DR. CR CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO.
52

...AL\16000137SF-12-ODA.DWG 10/10/2018 1:14 PM KYLER SHEERIN



LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR (923)
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE (3533)
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. WATER MAIN
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. CARPORT
- PROP. ELECTRICAL TRANSFORMER
- PROP. FRANCHISE UTILITY



	feet
Width	: 6.90
Track	: 6.90
Lock to Lock Time	: 6.0
Steering Angle	: 45.0

T-2 FIRE TRUCK DETAIL
NOT TO SCALE

NO PARKING/FIRE LANE SIGN DETAIL
NO SCALE

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

FIRE PROTECTION PLAN

DATE
JUNE 9, 2017

REVISIONS
9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
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6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP

SCALE 0 25 50
1" = 50 FEET
DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 53

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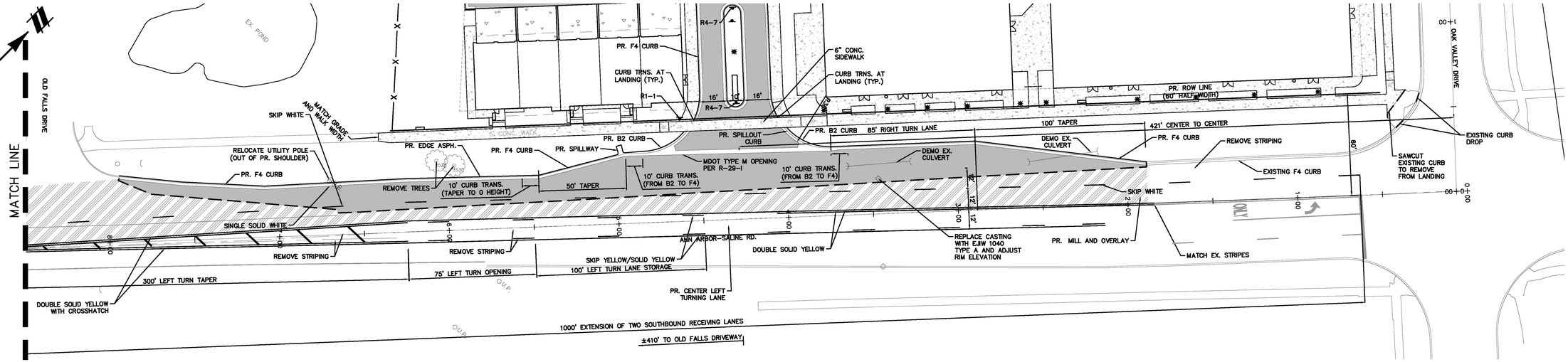
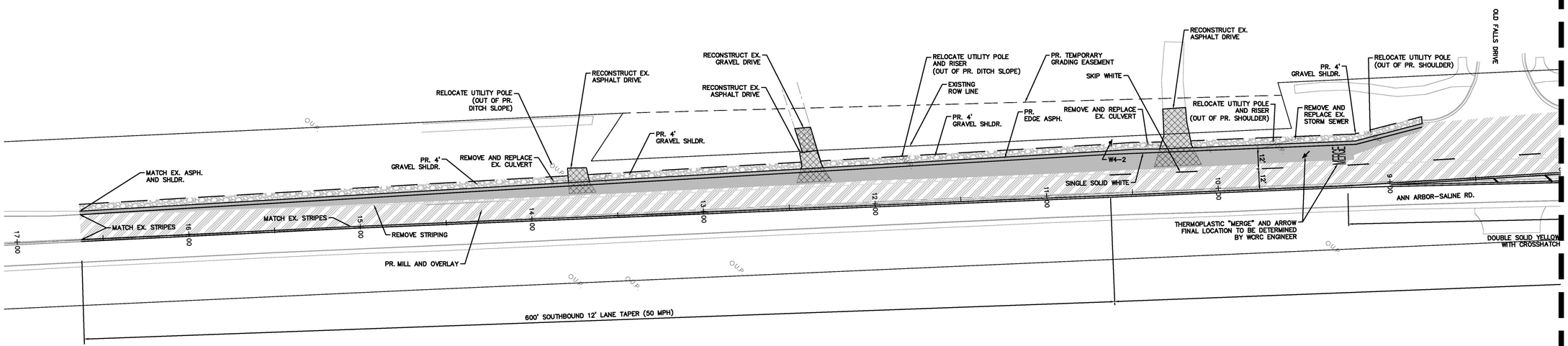


ANN ARBOR SALINE ENTRANCE



ANN ARBOR SALINE ROAD

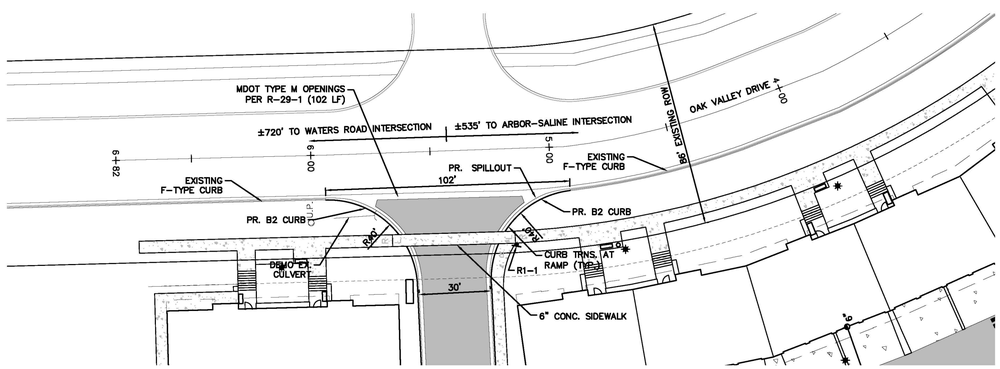
TRAFFIC CONTROL SIGN TABLE

SIGN TYPE	SIGN SIZE	TOTAL
R1-1	30" X 30"	2
R4-7	24" X 30"	1
W4-2	36" X 36"	1

R1-1

R4-7

W4-2



OAK VALLEY DRIVE ENTRANCE

LEGEND

- PROP. CURB AND GUTTER
- PROP. SIGN / SIDEWALK RAMP
- PROP. DEMO
- PROP. ASPHALT PAVEMENT
- PROP. ASPHALT MILL/OVERLAY
- PROP. GRAVEL SHOULDER

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

ROW IMPROVEMENTS PLAN

DATE
JUNE 9, 2017

REVISIONS
9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
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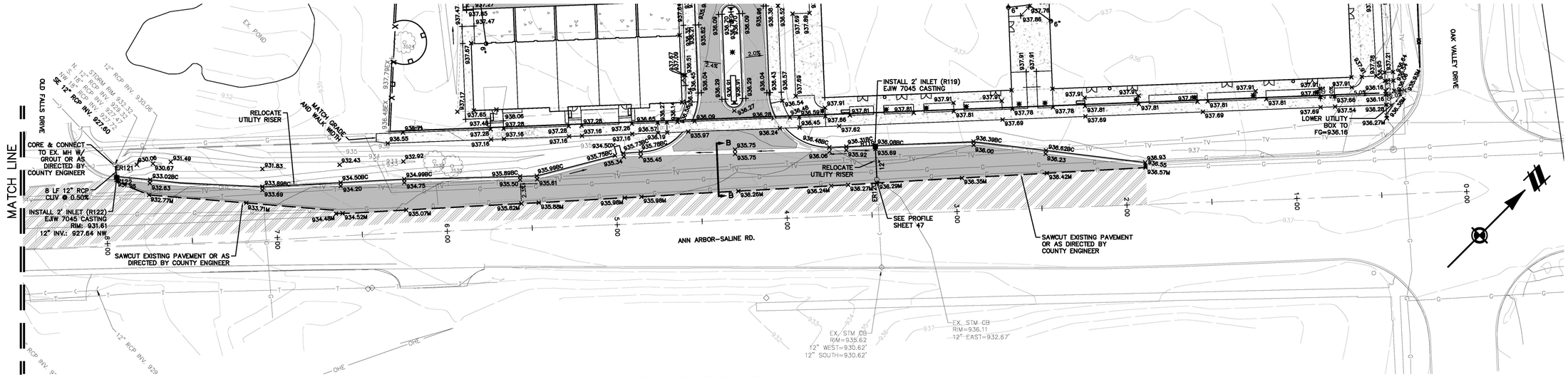
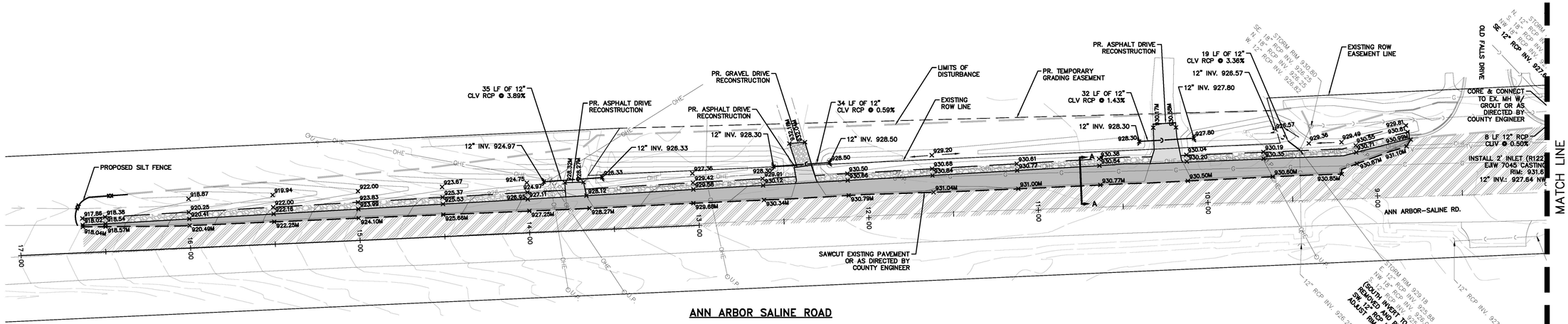
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP

SCALE 0 15 30
1" = 30 FEET
DR. CR | CH. ---
P.M. MB
BOOK ---
JOB 16000137
SHEET NO. 54

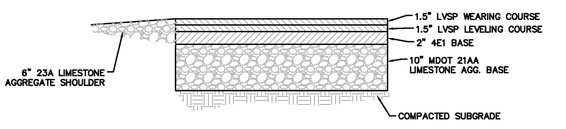
K:\16000137\CIVIL\PLAN SETS\SITE-FINAL\16000137-SHEETS.DWG 10/01/2018 1:15 PM KEVIN SWERIN



ANN ARBOR SALINE ENTRANCE

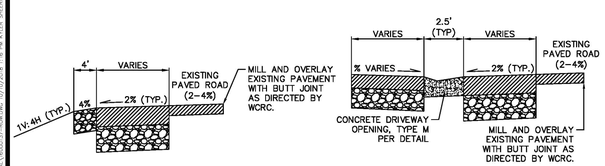


ANN ARBOR SALINE ROAD



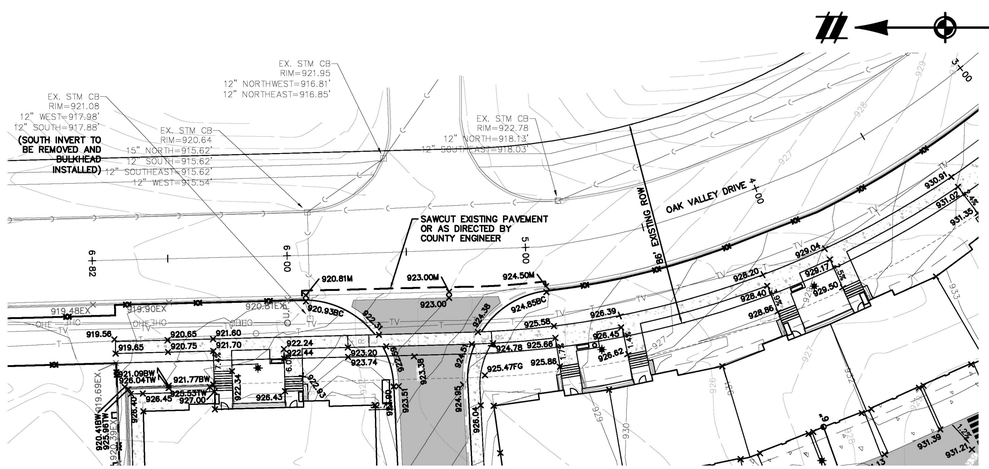
NOTES:
1. REFER TO CURRENTLY APPROVED WCRC HMA MIX DESIGNS AND BINDER REQUIREMENTS
2. THE HMA THICKNESS SHALL MATCH THE EXISTING HMA THICKNESS IF GREATER THAN 5"

ASPHALT PAVING SECTION
(FOR PAVEMENT WITHIN COUNTY ROW)
NOT TO SCALE



CROSS-SECTION A-A
TYPICAL WIDENING PAVEMENT
NOT TO SCALE

CROSS-SECTION B-B
TYPICAL WIDENING PAVEMENT W/APPROACH
NOT TO SCALE



OAK VALLEY DRIVE ENTRANCE

GENERAL NOTES

1. THE PROPOSED GEOMETRIC ROAD LAYOUT IN THE RIGHT-OF-WAY IS SHOWN PER THE TRAFFIC IMPACT STUDY (DRAFT) PREPARED BY FLEIS & VANDENBRINK, DATED MARCH 31, 2017.
2. THE EXISTING ROADWAY GEOMETRIES AND THE LIMITS OF RIGHT-OF-WAY ARE SHOWN IN THESE PLANS AS APPROXIMATE PER WASHTENAW COUNTY GIS. ADDITIONAL FIELD SURVEY WILL BE NEEDED TO BE PERFORMED PRIOR THE FINALIZATION OF THE GEOMETRIC ROAD LAYOUT AND GRADING DESIGN.
3. ANY DAMAGE TO THE PUBLIC ROAD DURING THE CONSTRUCTION OF THE PROJECT SHALL REQUIRE AT A MINIMUM THE CONTRACTOR TO MILL OFF THE ENTIRE TRAVEL LANE OF WHERE THE DAMAGE OCCURRED AND RESURFACE THE ROADWAY'S 2-INCHES HMA TOP COURSE AT THE DIRECTION OF THE WCRC.
4. MILL AND OVERLAY TO BE 1.5" OR AS DIRECTED BY WCRC.
5. ALL SIDEWALKS AND RAMPS MUST COMPLY WITH CURRENT ADA STANDARDS.

LEGEND

- PROP. CURB AND GUTTER
- CENTERLINE OF DITCH OR EDGE OF WATER
- PROP. SIGN
- SIDEWALK RAMP
- EXIST. CONTOUR
- PROP. CONTOUR
- EXIST. SPOT ELEVATION
- PROP. SPOT ELEVATION
- EXIST. CULVERT
- EXIST. MANHOLE
- EXIST. CATCH BASIN/INLET
- EXIST. OVERHEAD ELECTRIC
- EXIST. UTILITY POLE
- EXIST. UNDERGROUND CABLE
- EXIST. UNDERGROUND TELEPHONE
- EXIST. GAS
- EXIST. TELEPHONE RISER
- PROP. DEMO
- PROP. ASPHALT PAVEMENT
- PROP. ASPHALT MILL/OVERLAY
- PROP. GRAVEL SHOULDER
- PROP. TEMP. SILT FENCE
- PROP. LIMITS OF DISTURBANCE

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
ROW IMPROVEMENTS
GRADING PLAN

DATE
JUNE 9, 2017

REVISIONS
9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
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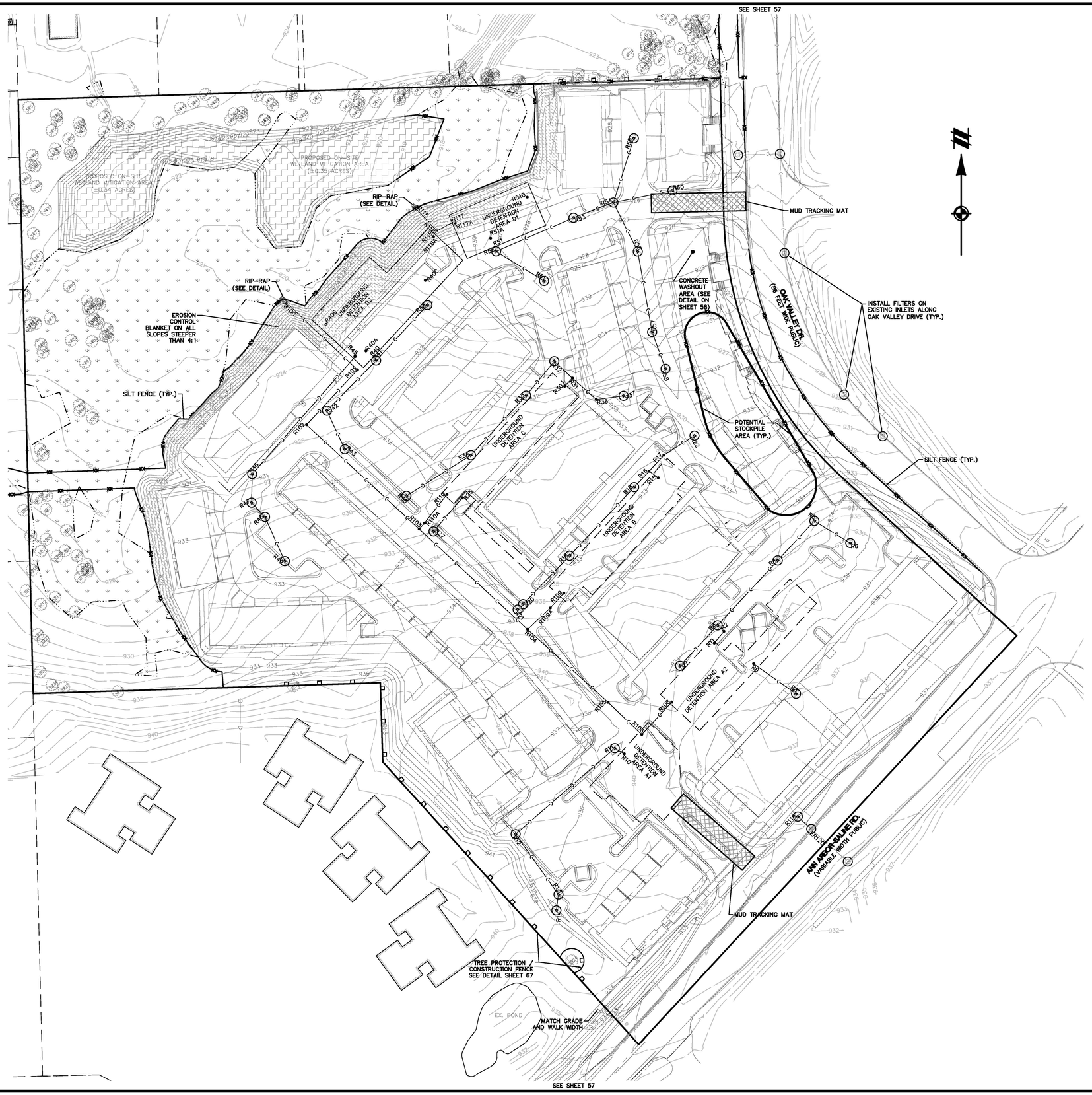
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP

SCALE 0 15 30
1" = 30 FEET

DR. CR | CH. ---
P.M. MB
BOOK ---
JOB 16000137
SHEET NO. 55



LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. CONSTRUCTION FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- PROP. TRACKING MAT
- PROP. EROSION CONTROL BLANKET

NOTES:

- SEE SESC DETAILS ON SHEET 67.
- IF SOIL STOCKPILING IS UNDERTAKEN, SAID STOCKPILE SHALL HAVE SILT FENCE INSTALLED AND MAINTAINED AROUND IT'S PERIMETER.
- BEAVER DAMS, IN ADDITION TO SILT SACKS, SHALL BE INSTALLED ON ALL CURB STYLE INLETS.

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SECTION 07
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PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

SOIL EROSION AND SEDIMENT CONTROL PLAN

DATE
JUNE 9, 2017

REVISIONS
9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
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7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP

SCALE 0 25 50
1" = 50 FEET
DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 56

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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TEMPORARY SEDIMENT TRAP DETAIL
NO SCALE

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. CONTOUR
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. BUILDING
- EXIST. WETLAND
- EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. OVERHEAD ELEC. LINE
- EXIST. OVERHEAD TELE. LINE
- EXIST. CABLE LINE
- EXIST. UNSPECIFIED UTILITIES
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. LOT LINE
- PROP. PARKING STRIPE
- PROP. CONTOUR
- PROP. INLET FILTER
- PROP. SILT FENCE
- PROP. CONSTRUCTION FENCE
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- PROP. TRACKING MAT
- PROP. EROSION CONTROL BLANKET

NOTE:

SEE SESC DETAILS ON SHEET 67.

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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FINAL SITE PLAN

SOIL EROSION AND SEDIMENT CONTROL PLAN

DATE JUNE 9, 2017

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10/10/18 PER TWP

SCALE 0 25 50
1" = 50 FEET

DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 57

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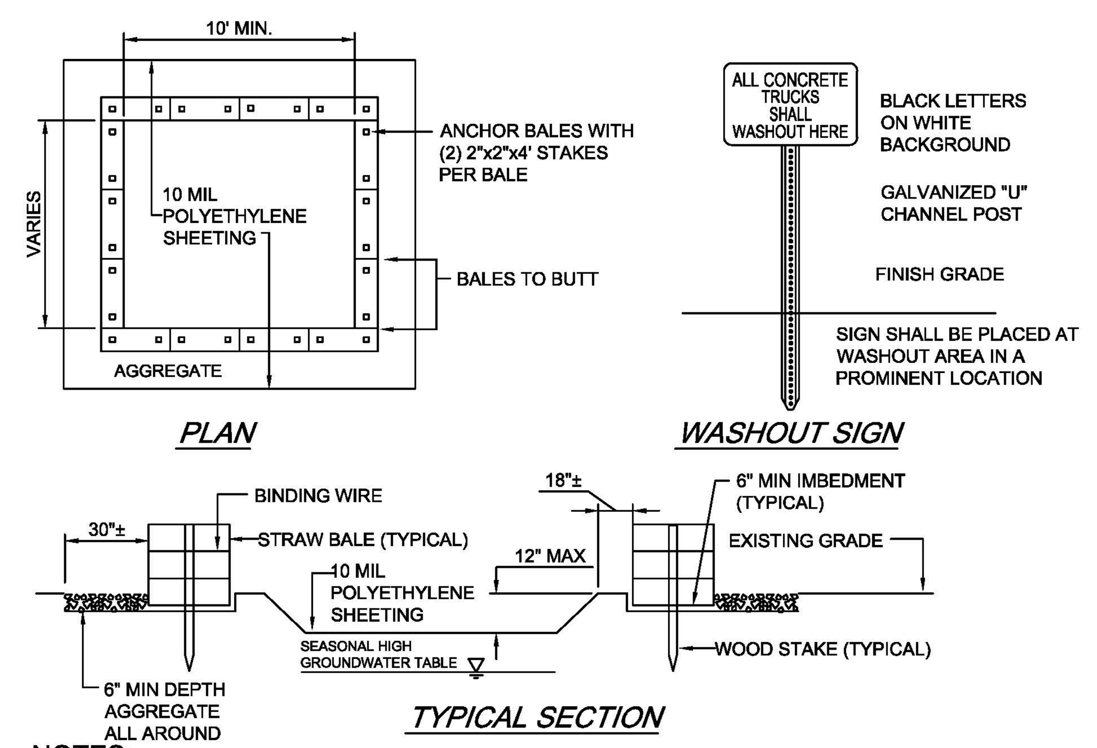
POTENTIAL SOIL LOSS CALCULATIONS

County:	Washtenaw		County:	Washtenaw	
Site	Pittsfield Mixed Use		Site	Pittsfield Mixed Use	
Soil:	Blount Loam		Soil:	Glynwood Loam	
Soil Symbol:	BbB		Soil Symbol:	Mob	
Slope:	4%		Slope:	6%	
Slope Length:	50	Ft.	Slope Length:	50	Ft.
Mulch Type:	Straw/Hay		Mulch Type:	Straw/Hay	
Mulch Rate:	1.5	(tons/acre)	Mulch Rate:	1.5	(tons/acre)
Acreage:	12.7	Acres	Acreage:	6.7	Acres
Calculated Soil Loss:			Calculated Soil Loss:		
Erosion Factors:	R = 100		Erosion Factors:	R = 100	
	K = 0.43			K = 0.43	
	LS = 0.3			LS = 0.5	
	C = 0.12			C = 0.12	
	P = 1			P = 1	
Tolerable Soil Loss:	T = 3.00 tons/acre/year		Tolerable Soil Loss:	T = 3.00 tons/acre/year	
Calculated Soil Loss (total):	A = 1.55 tons/acre		Calculated Soil Loss (total):	A = 2.58 tons/acre	
Potential Soil Loss (total):	19.66 (tons/year)		Potential Soil Loss (total):	17.29 (tons/year)	

County:	Washtenaw		County:	Washtenaw	
Site	Pittsfield Mixed Use		Site	Pittsfield Mixed Use	
Soil:	Glynwood Loam		Soil:	Pewamo Clay Loam	
Soil Symbol:	Moc		Soil Symbol:	Pe	
Slope:	6%		Slope:	2%	
Slope Length:	50	Ft.	Slope Length:	200	Ft.
Mulch Type:	Straw/Hay		Mulch Type:	Straw/Hay	
Mulch Rate:	1.5	(tons/acre)	Mulch Rate:	1.5	(tons/acre)
Acreage:	5.8	Acres	Acreage:	2.0	Acres
Calculated Soil Loss:			Calculated Soil Loss:		
Erosion Factors:	R = 100		Erosion Factors:	R = 100	
	K = 0.37			K = 0.24	
	LS = 0.5			LS = 0.6	
	C = 0.12			C = 0.12	
	P = 1			P = 1	
Tolerable Soil Loss:	T = 4.00 tons/acre/year		Tolerable Soil Loss:	T = 5.00 tons/acre/year	
Calculated Soil Loss (total):	A = 2.22 tons/acre		Calculated Soil Loss (total):	A = 1.73 tons/acre	
Potential Soil Loss (total):	12.88 (tons/year)		Potential Soil Loss (total):	3.46 (tons/year)	



NOTES:

1. CONTAINMENT MUST BE STRUCTURALLY SOUND AND LEAK FREE AND CONTAIN ALL LIQUID WASTES.
2. CONTAINMENT DEVICES MUST BE OF SUFFICIENT QUANTITY OR VOLUME TO COMPLETELY CONTAIN THE LIQUID WASTES GENERATED.
3. WASHOUT MUST BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE ASHOUT IS 75% FULL.
4. WASHOUT AREA(S) SHALL BE INSTALLED IN A LOCATION EASILY ACCESSIBLE BY CONCRETE TRUCKS.
5. ONE OR MORE AREAS MAY BE INSTALLED ON THE CONSTRUCTION SITE AND MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
6. AT LEAST WEEKLY REMOVE ACCUMULATION OF SAND AND AGGREGATE AND DISPOSE OF PROPERLY.

CONCRETE WASHOUT AREA

NO SCALE

TASKS	COMPONENTS							SCHEDULE	
	Storm Sewer System	Catch Basin Inlet Filters	Silt Fence	Ditches and Swales	Outflow Control Structure	Rip-Rap	Hydro-Dynamic Separators	Storm Detention Vaults	
Inspect for sediment, floatables, and debris	X	X	X	X	X	X	X	X	Weekly / Within 24 hrs after a Rain Event
Removal of sediment, floatables, and debris	X	X	X	X	X	X	X	X	As Needed
Inspection for erosion				X	X	X	X	X	Weekly / Within 24 hrs after a Rain Event
Re-establish permanent vegetation on eroded slopes				X	X	X	X	X	As needed
Replacement of stone					X				At turnover
Inspect structural elements during wet weather and compare as-built plans	X	X		X	X	X	X	X	Annually and at turnover
Make adjustments or replacements as determined by pre-turnover inspection	X	X		X	X	X	X	X	As Needed

NOTE: "As Needed" refers to when sediment has accumulated to a maximum of one foot depth, visually apparent debris exists, or if the stormwater management basins do not drain within 48-72 hours after a rain event.
A vactor or similar machinery will be required for cleaning hydro-dynamic separators and detention vaults.

STORMWATER MAINTENANCE SCHEDULE (DURING CONSTRUCTION)

TASKS	COMPONENTS						SCHEDULE	Annual Cost
	Storm Sewer System	Ditches and Swales	Outflow Control Structure	Pond Outlet & Rip-Rap	Hydrodynamic Separators	Storm Detention Vaults		
Inspect for sediment, floatables, and debris	X	X	X		X	X	Annually	$ 600.00
Removal of sediment, floatables, and debris	X	X	X		X	X	As Needed	$ 1,400.00
Inspection for erosion		X	X	X		X	Quarterly	$ 300.00
Re-establish permanent vegetation on eroded slopes		X	X	X		X	As needed	$ 500.00
Replacement of stone		X	X	X			As Needed	$ 700.00
Mowing		X					1-2 times per year	$ 400.00
Inspect Stormwater system components during wet weather and compare to as-built plans	X	X	X	X	X	X	Annually	$ 400.00
Make adjustments as determined by annual inspection	X	X	X	X	X	X	As needed	$ 500.00
NOTE: "As Needed" refers to when sediment has accumulated to a maximum of one foot depth, visually apparent debris exists, or if the stormwater management basins do not drain within 48-72 hours after a rain event. A vactor or similar machinery will be required for cleaning hydro-dynamic separators and detention vaults.								$ 4,800.00

STORMWATER MAINTENANCE SCHEDULE (POST-CONSTRUCTION)

SITE INFORMATION

SITE LOCATION: SOUTHEAST 1/4 OF SECTION 07, PITTSFIELD TOWNSHIP, MICHIGAN.

1. ULTIMATE RECEIVING WATER: MALLETTS CREEK
2. SITE SOILS INFORMATION: PER THE NRCS WEB SURVEY FOR WASHTENAW COUNTY; BbB, MoB, MoC, Pe
3. APPROXIMATE AREA OF DISTURBANCE: 12.8± ACRES

SOIL EROSION AND SEDIMENTATION CONTROL NOTES:

1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT.
2. WHEN LAND IS EXPOSED DURING DEVELOPMENT, THE EXPOSURE SHALL BE KEPT TO THE SHORTEST PERIOD OF TIME.
3. TEMPORARY VEGETATION AND/OR MULCHING SHALL BE BE USED TO PROTECT CRITICAL AREAS EXPOSED DURING DEVELOPMENT.
4. THE PERMANENT FINAL VEGETATION AND STRUCTURES SHALL BE INSTALLED AS SOON AS PRACTICAL IN DEVELOPMENT.
5. THE DEVELOPMENT PLAN SHOULD BE FITTED TO THE TOPOGRAPHY AND SOIL SO AS TO CREATE THE LEAST SOIL EROSION POTENTIAL.
6. REFER TO WASHTENAW COUNTY STANDARD DETAILS OF THE SESC BMP MEASURES AS THEY CORRESPOND WITH THIS PLAN.
7. ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE TOWNSHIP AND THE WASHTENAW COUNTY DRAIN COMMISSIONER.
8. THE CONTRACTOR SHALL MAKE DAILY INSPECTIONS TO DETERMINE EFFECTIVENESS OF EROSION AND SEDIMENT CONTROL MEASURES, AND ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
9. EROSION AND ANY SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS. WATERWAYS INCLUDE NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES AND PONDS.
10. EROSION AND ANY SEDIMENTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CONSTRUCTION. SEDIMENT CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTING OF SILT OFF THE SITE.
11. PERMANENT SOIL EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 5 CALENDAR DAYS AFTER FINAL GRADING OR THE FINAL EARTH CHANGE HAS BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH CHANGE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH CHANGE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED. ALL PERMANENT SOIL EROSION CONTROL MEASURES WILL BE IMPLEMENTED AND ESTABLISHED BEFORE A CERTIFICATE OF COMPLIANCE IS ISSUED.
12. A WATER TRUCK SHALL BE AVAILABLE TO WATER DOWN THE SITE ON A DAILY BASIS FOR DUST CONTROL.
13. ALL MUD/DIRT TRACKED ONTO EXISTING CITY/COUNTY ROADS FROM THIS SITE, DUE TO CONSTRUCTION, SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR/BUILDER, AS DIRECTED BY THE TOWNSHIP. MUD MAT DAILY MAINTENANCE WILL INCLUDE THE ADDITION OF EXTRA LAYERS OF STONE AS NECESSARY.
14. DURING CONSTRUCTION OF THE STORM SEWER SYSTEM, STRAW BALES, STONE FILTERS OR OTHER APPROVED MEANS, WILL PROTECT THE ENDS OF ALL OPEN PIPES.
15. PROMPTLY UPON THE BACKFILLING OF STORM STRUCTURES, INLET FILTERS WILL BE PLACED AROUND THE STRUCTURE PER DETAILS.
16. WITHIN FIVE (5) DAYS AFTER COMPLETION OF PAVING, A 16-FOOT STRIP AROUND PAVED AREAS SHALL BE PROTECTED FROM SOIL EROSION BY AN APPROVED METHOD CONSISTENT WITH THE GROWING SEASON.
17. ANY REMAINING DENUDED AREA SHALL BE SEEDED AND MULCHED WITHIN 5 DAYS AFTER COMPLETION OF FINAL GRADING. SEED MIX AND APPLICATION RATES SHALL BE PER MDOT CLASS A SEED.
18. SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE MAINTAINED ON A DAILY BASIS TO ENSURE PROPER FUNCTIONING. SEDIMENT DEPOSIT MUST BE REMOVED WHEN ACCUMULATION REACHES 1/3 TO 1/2 OF THE HEIGHT OF THE SILT FENCE AND SHOULD BE REMOVED AFTER EACH STORM EVENT. FABRIC SHALL BE REPLACED PROMPTLY IF IT DECOMPOSES OR BECOMES INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USEABLE LIFE.
19. THAT ALL EROSION CONTROL MEASURES ARE INSTALLED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE OF CONSTRUCTION
    - 19.1. INSTALL SILT FENCE/STRAW BERMS AS SHOWN ON PLANS.
    - 19.2. STRIP AND STOCKPILE TOPSOIL AND GRADE SITE.
    - 19.3. INSTALL ON-SITE AND OFF-SITE STORM SEWER SYSTEMS COMPLETE, IMMEDIATELY INSTALL STONE FILTERS ON ALL PIPE INLETS AND CATCH BASINS AND ESTABLISH VEGETATION ON ALL DITCHES, SWALES, AND DISTURBED AREAS.
    - 19.4. INSTALL ALL PUBLIC UTILITIES (GAS, ELECTRICITY, AND TELEPHONE)
    - 19.5. INSTALL PAVEMENT COMPLETE REPAIR AND/OR REPLACE STONE FILTERS AS REQUIRED.
    - 19.6. FINISH GRADE, REDISTRIBUTE TOPSOIL, ESTABLISH VEGETATION AND/OR LANDSCAPE ALL DISTURBED AREAS.
    - 19.7. CLEAN PAVEMENT, WALKS, CULVERTS, WATERCOURSES, AND STORM SEWER SYSTEMS OF ALL SEDIMENT IN CONJUNCTION WITH THE REMOVAL OF ALL TEMPORARY EROSION CONTROL MEASURES. REESTABLISHED VEGETATION AS NECESSARY.
20. SHOULD DEWATERING BE NECESSARY, DISCHARGE SHALL BE ROUTED THROUGH A SEDIMENT FOREBAY, FILTER BAG OVER A WELL VEGETATED AREA OR OTHER APPROVED FILTERING MECHANISM PRIOR TO BEING DISCHARGED FROM THE SITE. DISCHARGE MUST BE LIMITED TO A NON-EROSIVE VELOCITY.
21. SOIL EROSION WILL BE CONTROLLED DURING AND AFTER CONSTRUCTION TO PROTECT ADJACENT PROPERTIES OR FACILITIES.
22. EROSION CONTROL BLANKET/MATTING SHALL BE INSTALLED ON SLOPES AT OR NEAR MAXIMUM ALLOWABLE GRADE AND AS NEEDED TO EFFECTIVELY ESTABLISH BOTH TEMPORARY AND PERMANENT VEGETATIVE COVER.
23. ALL EXISTING AND PROPOSED CULVERTS AND STORM PIPES ALONG ANN ARBOR-SALINE ROAD MUST BE KEPT FREE OF SEDIMENT.

NOTE: NO WORK WITHIN REGULATED WETLANDS UNTIL MDEQ PERMIT IS ISSUED

SOIL EROSION CONSTRUCTION SEQUENCE

1. NOTIFY SOIL EROSION OFFICE 48 HOURS BEFORE WORK IS TO BEGIN.
2. PRIOR TO CONSTRUCTION, INSTALL TEMPORARY STONE ACCESS DRIVES AT ENTRANCE, PERIMETER SILT FENCE, SNOW FENCE, AND EROSION CONTROL MEASURES ON EXISTING STORM INLETS AS DESIGNATED ON THE SESC PLAN.
3. INSTALL UNDERGROUND UTILITIES (I.E. SANITARY, STORM, AND WATER MAIN.). INSTALL INLET FILTER PROTECTION ON PROPOSED STORM SEWER STRUCTURES. (4/1/18 – 120 DAYS)
4. PAVING ACTIVITIES. REMOVE STONE ACCESS DRIVE WHEN COMPLETE. (8/15/18 – 30 DAYS)
5. INSTALL PUBLIC UTILITIES (ELECTRIC, TELEPHONE, AND CABLE T.V.). (9/15/18 – 30 DAYS)
6. FINAL GRADING AND INSTALLATION OF LANDSCAPING. ESTABLISH PERMANENT VEGETATION FOR REMAINING DISTURBED AREAS. (10/15/18 – 45 DAYS)
7. CLEAN OUT STORM SEWER SYSTEM INCLUDING WATER QUALITY STRUCTURES AND STORAGE FACILITIES. (MAY 2019 – 15 DAYS)
8. CALL SOIL EROSION OFFICE FOR FINAL INSPECTION. REMOVE TEMPORARY SOIL EROSION MEASURES UPON APPROVAL. (JULY 2019)

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

Know what's below. Call before you dig.

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NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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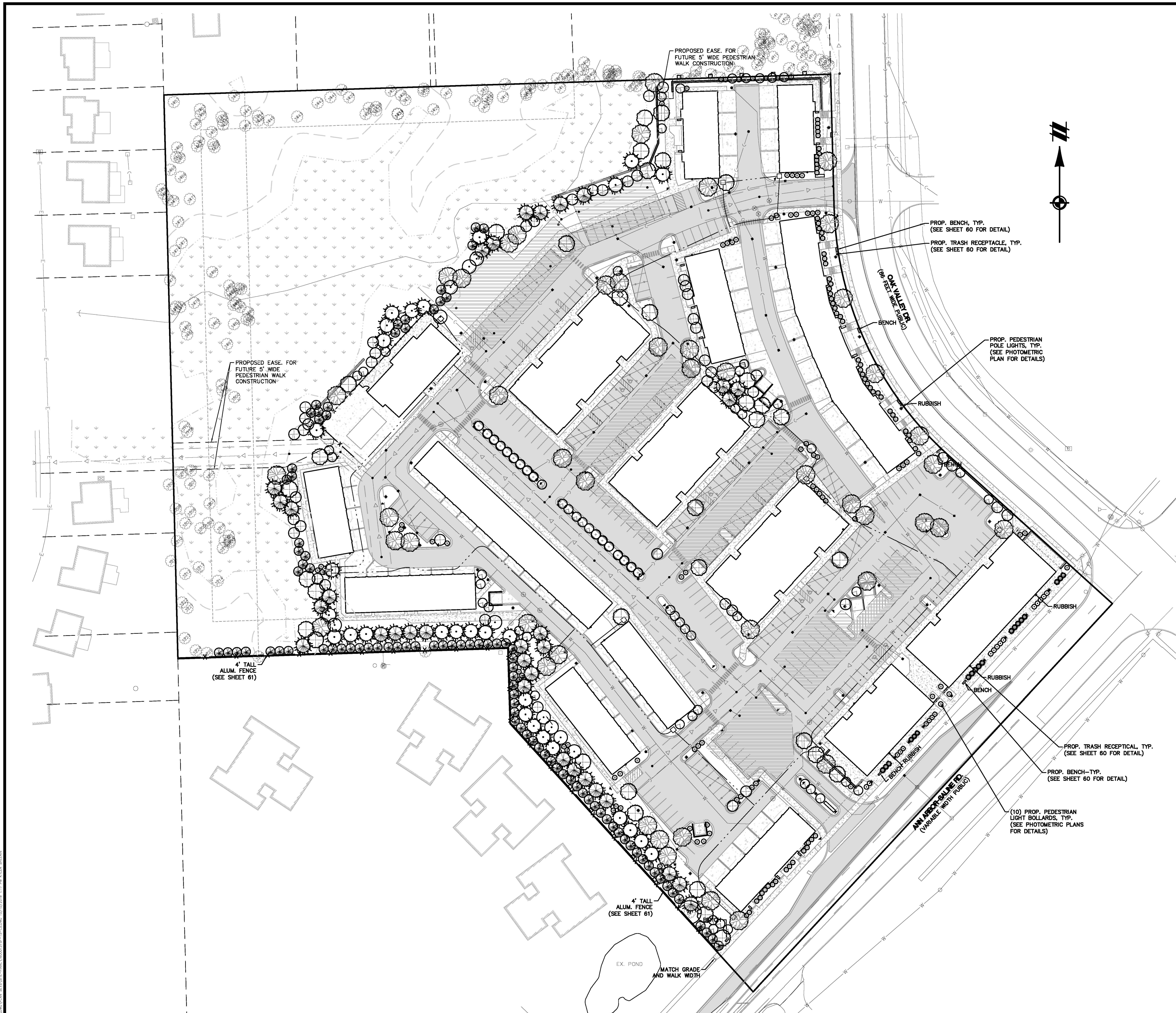
SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
SOIL EROSION AND SEDIMENT CONTROL NOTES AND DETAILS

DATE JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 25 50
1" = 50 FEET
DR. CR CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 58



BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. FENCE
- EXIST. GRAVEL
- EXIST. WETLAND
- 3533 EXIST. TREE
- EXIST. WETLAND BUFFER
- EXIST. GAS
- EXIST. STORM
- EXIST. WATER MAIN
- EXIST. SANITARY
- EXIST. UNSPECIFIED UTILITY
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- PROP. SETBACK
- PROP. BUILDING
- PROP. BUILDING INTERIOR
- PROP. WALL
- PROP. PARKING STRIPE
- PROP. BACK OF CURB
- PROP. ASHPALT
- PROP. STORM SEWER
- PROP. SANITARY
- PROP. WATER MAIN
- PROP. END SECTION
- PROP. CATCH BASIN/INLET
- PROP. WATER VALVE
- PROP. FIRE HYDRANT
- PROP. MANHOLE
- PROP. STANDARD CARPORT
- PROP. CANTILEVERED CARPORT

LANDSCAPE LEGEND

SYMBOL PROPOSED DECIDUOUS TREE – 2.5"

- ARMSTRONG RED MAPLE — ACER X FREEMANII 'ARMSTRONG'
- GOLDSPIRE SUGAR MAPLE — ACER SUCCHARUM 'GOLDSPIRE'
- NORTHERN HACKBERRY — CELTIS OCCIDENTALIS
- REGAL PRINCE OAK — QUERCUS X WAREI 'REGAL PRINCE'
- COLUMNAR SWEETGUM — LIQUIDAMBAR STYRACIFLUA 'SLENDER SILHOUETTE'
- COLUMNAR PIN OAK — QUERCUS PLAUSTRIS 'GREEN PILLAR'
- AMERICAN BASSWOOD BOWHALL RED MAPLE — ACER RUBRUM BOWHALL

PROPOSED EVERGREEN TREE

- WHITE PINE — PINUS STROBUS
- GREEN GIANT ARBORVITAE — THUJA 'GREEN GIANT"
- WHITE SPRUCE — PICEA GLAUCA

PROPOSED SHRUBS

- FEATHER REED GRASS — CALAMAGROSTIS 'KARL FOERSTER'
- FOUNTAIN GRASS — PENNISETUM ALOPECUROIDES
- LITTLE HENRY DWARF VIRGINIA SWEETSPIRE — ITEA VIRGINICA 'SPRICH'

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

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WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

LANDSCAPE PLAN

DATE JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
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9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

SCALE 0 25 50
1" = 50 FEET

DR. CR | CH. ––
P.M. MB
BOOK ––
JOB 16000137
SHEET NO. 59

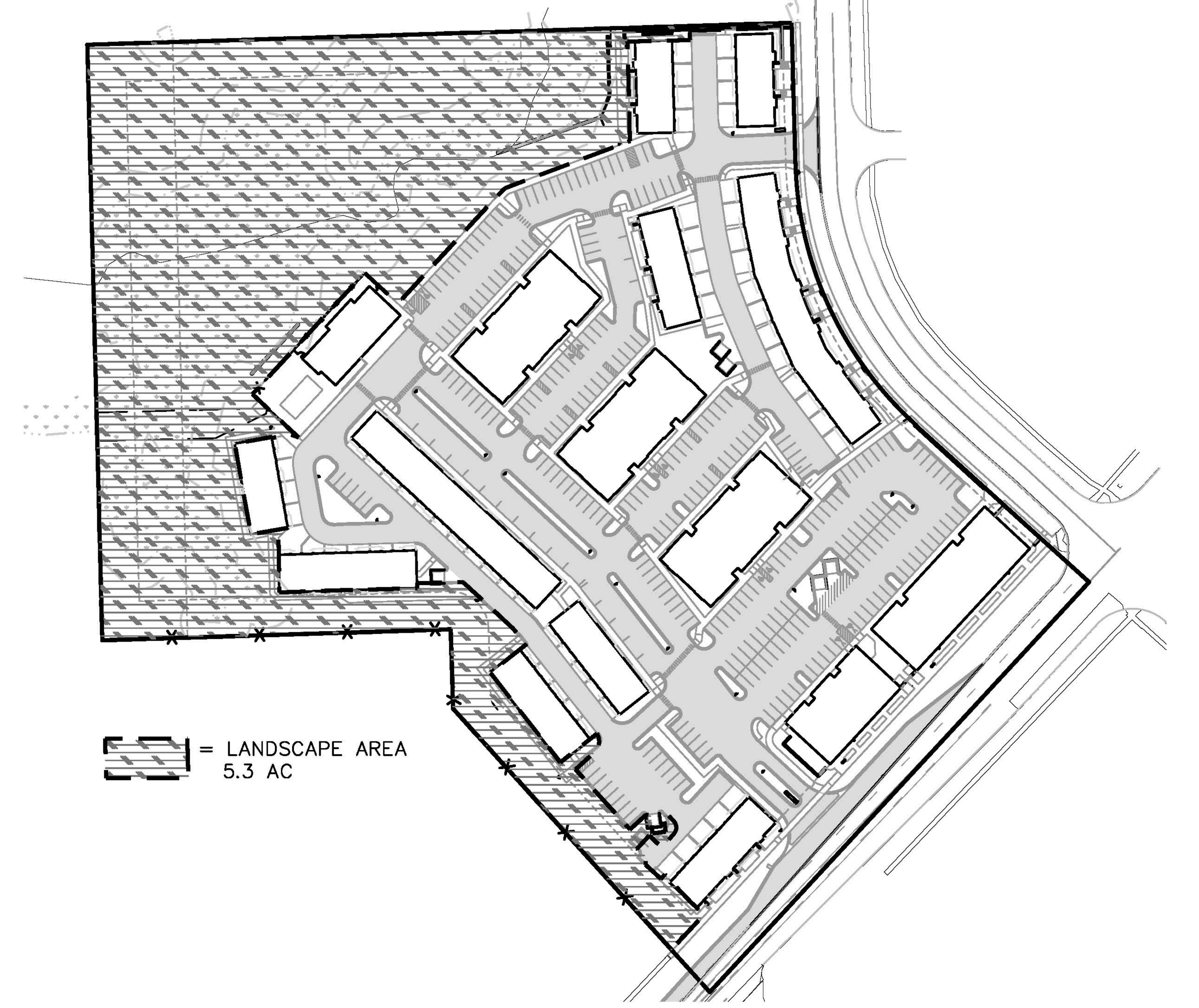
SITE PLANTING LIST

SYMBOL	PROPOSED DECIDUOUS TREE – 2.5"	QUANTITY	SIZE	SPEC.
	ARMSTRONG RED MAPLE ACER X FREEMANII 'ARMSTRONG'	36	2.5" CAL.	B & B
	GOLDSPIRE SUGAR MAPLE ACER SUCCHARUM 'GOLDSPIRE'	48	2.5" CAL.	B & B
	NORTHERN HACKBERRY CELTIS OCCIDENTALIS	47	2.5" CAL.	B & B
	REGAL PRINCE OAK QUERCUS X WAREI 'REGAL PRINCE'	11	2.5" CAL.	B & B
	COLUMNAR SWEETGUM LIQUIDAMBAR STYRACIFLUA 'SLENDER SILHOUETTE'	72	2.5" CAL.	B & B
	COLUMNAR PIN OAK QUERCUS PLAUSTRIS 'GREEN PILLAR'	17	2.5" CAL.	B & B
	AMERICAN BASSWOOD BOWHALL RED MAPLE ACER RUBRUM BOWHALL	47	2.5" CAL.	B & B
	PROPOSED EVERGREEN TREE			
	WHITE PINE PINUS STROBUS	30	8' HT.	B & B
	GREEN GIANT ARBORVITAE THUJA 'GREEN GIANT"	94	8' HT.	B & B
	WHITE SPRUCE PICEA GLAUCA	34	8' HT.	B & B
	PROPOSED SHRUBS			
	FEATHER REED GRASS CALAMAGROSTIS 'KARL FOERSTER'	19	NO. 3	CONT.
	FOUNTAIN GRASS PENNISETUM ALOPECUROIDES	19	NO. 3	CONT.
	LITTLE HENRY DWARF VIRGINIA SWEETSPIRE ITEA VIRGINICA 'SPRICH'	65	NO. 3	B & B
		TOTAL: 539		

LANDSCAPE REQUIREMENTS

Heritage Tree	Total Removed	Required Replacement
	317.6"	191 @ 2.5" cal
Screening	**Location**	**Screen Type Required and Proposed**
	South West Boundary	Screen Type 2
		66 Evergreens
	West Boundary	Screen Type 2
		63 Evergreens
Parking	**Required**	**Proposed**
Perimeter	2320 LF/40	58
Parking Spaces	344 Spaces/8	61
Greenbelt	**Required**	
Ann Arbor Saline	N/A due to zero front setback	
Oak Valley	N/A due to zero front setback	
Site Landscaping	**Required**	**Proposed**
	15.12 Ac x 20%=3.0 Acres	3.0 Acres

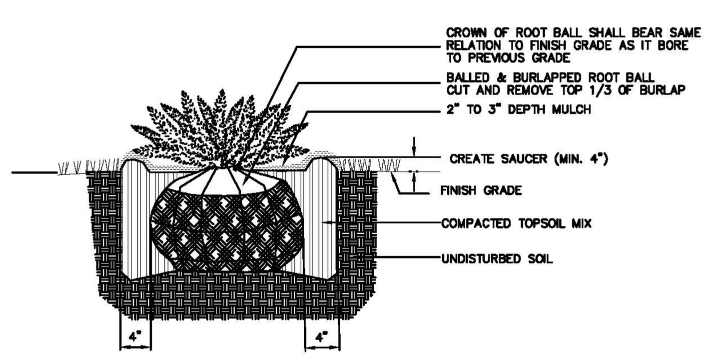
TOTAL TREES REQUIRED = 742
TOTAL PROVIDED = 452**
**APPLICANT SEEKING AN ALTERNATIVE FOR REPLACEMENT OF 290 2.5"CAL. TREES ON SITE THE APPLICANT PROPOSES TO PLANT THESE TREES ON THE TOWNSHIP PROPERTY TO THE NORTH OR PAY INTO A TREE MITIGATION BANK.



SITE LANDSCAPING AREA
NOT TO SCALE

LANDSCAPE NOTES

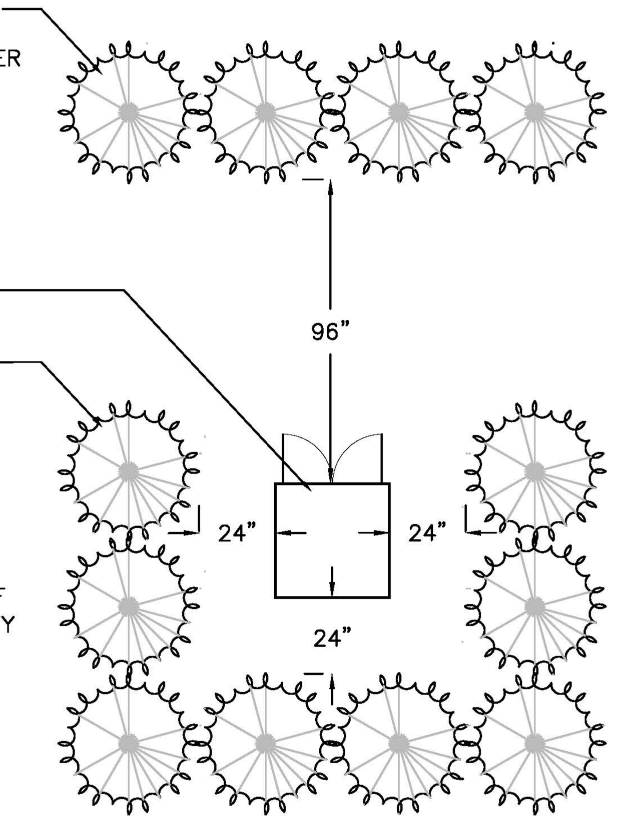
1. THE LANDSCAPE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING LOCATION OF ALL UNDERGROUND AND OVERHEAD UTILITIES.
2. LANDSCAPING OPERATIONS, INCLUDING PLANTING OF TREES AND SHRUBS, SHALL NOT DAMAGE ANY UTILITY OR INTERRUPT ANY UTILITY SERVICE, AND SHALL NOT DAMAGE OR CREATE A NUISANCE AFFECTING ADJACENT PROPERTY, PUBLIC STREETS, OR SIDEWALKS.
3. PLANT AND GRASS MATERIALS SHALL BE INSTALLED ACCORDING TO GENERALLY ACCEPTED PLANTING PROCEDURES.
4. ALL PARKING LOT ISLANDS, BOULEVARDS, OPEN OR OTHERWISE DISTURBED AREAS THAT ARE NOT SPECIFIED WITH OTHER PLANTING, PAVING OR SEED MIXTURES SHALL BE PLANTED WITH A STANDARD PERMANENT GRASS SEED MIXTURE TO INDUSTRY STANDARDS.
5. LANDSCAPING MATERIALS THAT ARE UNSIGHTLY, DEAD, DYING, OR THAT BECOME UNHEALTHY BECAUSE OF DAMAGE, NEGLECT, DRAINAGE PROBLEMS, DISEASE, INSECT INFESTATION, OR OTHER CAUSES SHALL BE REPLACED WITHIN ONE YEAR, OR THE NEXT PLANTING PERIOD, WHICHEVER OCCURS FIRST. REPLACEMENT MATERIALS SHALL MEET ALL STANDARDS OF THE ORIGINAL INSTALLATION.
6. ALL LANDSCAPED AREAS SHALL BE PROVIDED WITH AN ADEQUATE WATER SUPPLY.
7. THE PROPERTY OWNER (OR ANY APPLICABLE OWNER'S ASSOCIATION) SHALL BE RESPONSIBLE TO ENSURE THE PROPER CARE AND MAINTENANCE OF LANDSCAPE AREAS, INCLUDING KEEPING ALL LANDSCAPE MATERIALS IN A HEALTHY AND GROWING STATE. ALL LANDSCAPE ELEMENTS SUCH AS, BUT NOT LIMITED TO, FENCES, SCREENS, WALLS, OR LIGHTING SHALL BE KEPT IN GOOD REPAIR.
8. TOPSOIL REMOVED DURING CONSTRUCTION SHALL BE STOCKPILED IN AN APPROPRIATE MANNER TO PREVENT EROSION, AND SHALL BE REDISTRIBUTED ON RE-GRADED SURFACES TO BE LANDSCAPED, TO PROVIDE A MINIMUM OF FOUR INCHES OF EVEN COVER. THE TOPSOIL SHALL THEN BE PERMANENTLY STABILIZED BY GRASS, GROUND COVER, OR OTHER PLANTINGS.
9. NO PLANT MATERIAL SHALL BE PLANTED CLOSER THAN 4 FEET FROM ANY PROPERTY LINE.
10. REMOVE ALL TWINE, WIRE, NURSERY GUARDS, TAGS AND INORGANIC MATERIAL FROM ROOT BALL. PEEL BACK THE BURLAP FROM EARTH BALLS AND REMOVE ANY BURLAP, TWINE OR WIRE AROUND THE TRUNK FLARE AND ABOVE.
11. ALL PLANTING AREAS ARE TO BE EXCAVATED OF ALL BUILDING / CONSTRUCTION AND FILL MATERIALS AND BACKFILLED WITH GOOD MEDIUM TEXTURED PLANTING SOIL. SEEDING AREAS ARE TO BE TREATED WITH 4" OF NEW TOPSOIL AND ROTOTILLED OR OTHERWISE SCARIFIED TO BREAK UP COMPACTION AT LEAST 8" BELOW THE TOPSOIL.
12. TOPSOIL SHALL BE SCREENED AND SUITABLE FOR GROWING VEGETATION AND MEET AT A MINIMUM ASTM D-5268 AND MDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.
13. RECOMMENDED PLANTING DATES ARE MARCH 15 TO JUNE 15 AND SEPTEMBER 15 TO NOVEMBER 15.
14. IF IT IS DETERMINED BY THE DEVELOPER THAT SOME PLAN MATERIALS ARE NOT SUITABLE FOR THE EXISTING CONDITIONS, THE DEVELOPER WILL WORK WITH THE TOWNSHIP STAFF TO PICK SUITABLE TREE SPECIES AS REPLACEMENTS.



NOTES:

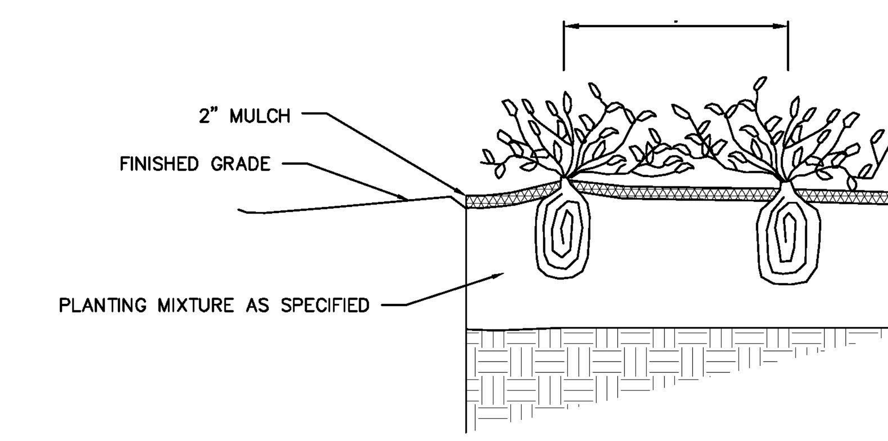
1. DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING
2. WATER SHRUB THOROUGHLY SUBSEQUENT TO INSTALLATION

SHRUB PLANTING DETAIL
NO SCALE



SHRUBS SHOULD BE EVERGREEN OR DENSELY BRANCHED DECIDUOUS, WITH HEIGHT AT LEAST EQUAL TO HEIGHT OF TRANSFORMER/UTILITY BOX.

TRANSFORMER SCREENING DETAIL
NO SCALE



PERENNIAL PLANTING DETAIL
NO SCALE

98-S6
DURHAM BENCH WITHOUT BACK

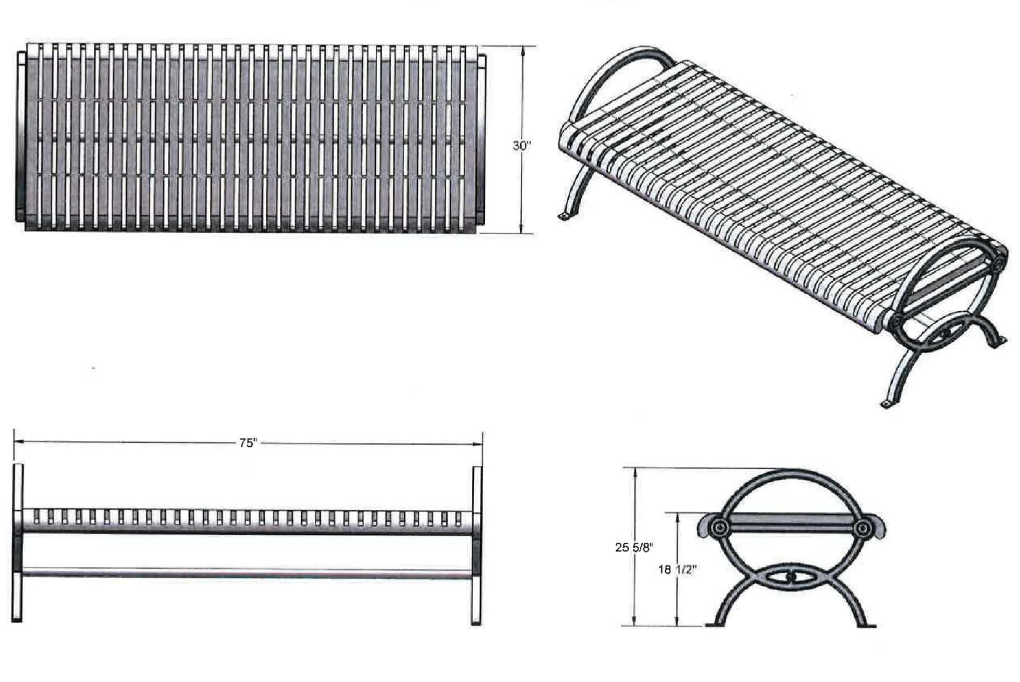
Seats: Seats dimensions are 30" x 72". 12 gauge sheet steel is precision punched to create the slat pattern. End plates are made of 7 gauge flat steel plate. Reinforced with 3/16 x 1-1/2" flat strip. Electrically MIG welded.

Frame: Legs are cast aluminum.

Frame Coating: Metal is sandblasted to near white condition. Coated with zinc rich epoxy primer and top coated with electrostatic powdercoat, oven cured.

Hardware: All fasteners are stainless steel.

Dimensions: 6' portable/surface mount bench without back. Seats are 30" wide x 72" long. Seat height is 18-1/2" from the ground to the top of the seat. The overall dimensions are 75" x 30" x 25-5/8" Tall.



398-8002
36 GALLON TRASH RECEPTACLE

Material: Sides are fabricated with 1-1/2" x 1/4" flat steel strips. Top and bottom rings are 1" pipe. Bottom plate fabricated from 10 gauge sheet steel precision punched. All electrically MIG welded.

Receptacle Coating: Steel is sandblasted to near white condition. Then coated with electrostatic powder coat, oven cured.

Receptacle Dimensions: 32-3/4" high x 27-1/2" in diameter x 36 gallon capacity.

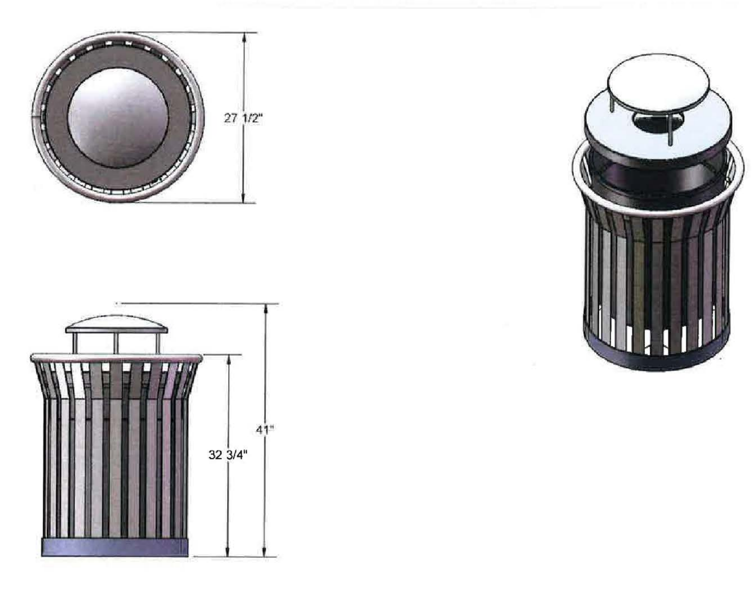
32 GALLON RAIN BONNET TOP

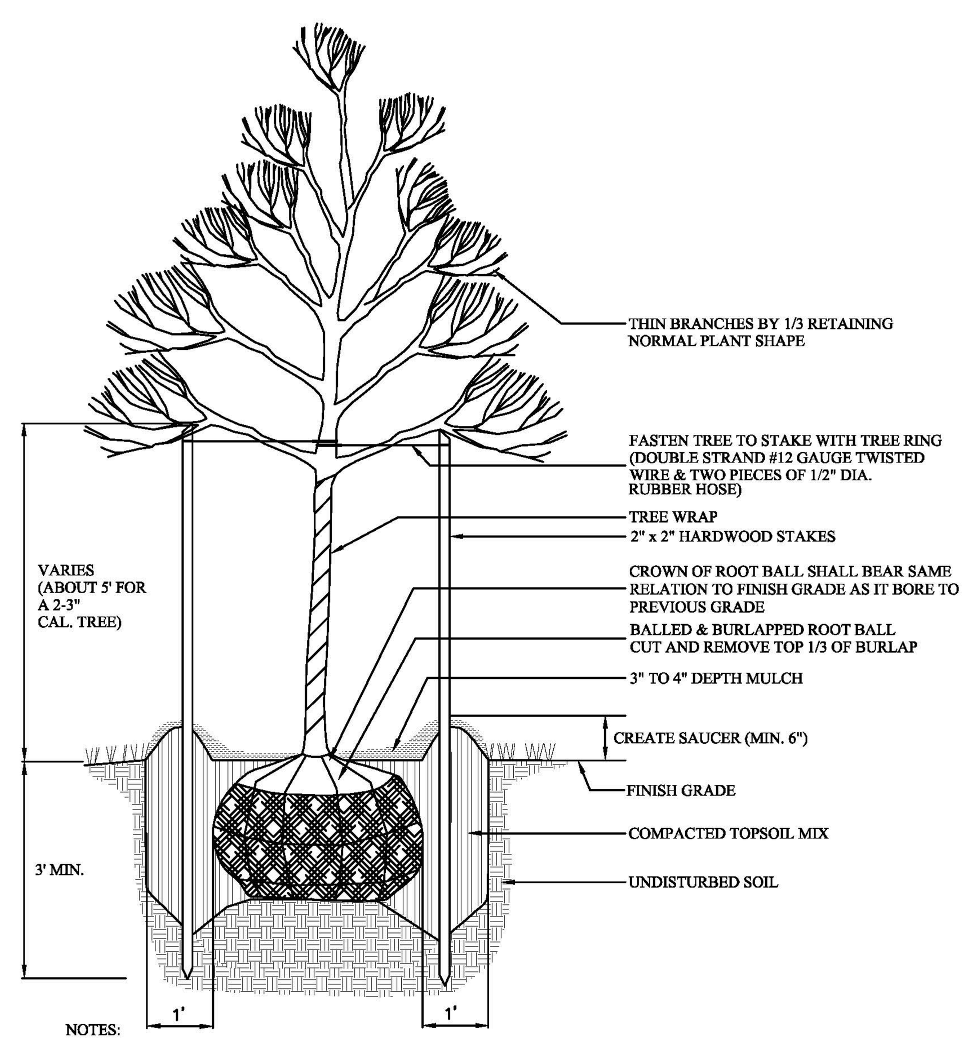
Material: Top plate shall be fabricated from 18 gauge steel flat, spun to form. Vertical posts are 1/2" diameter steel rods. Bonnet top shall be fabricated from 20 gauge steel flat, spun to form. All electrically MIG welded.

Coating: Steel is sandblasted to near white condition. Then coated with electrostatic powder coat, oven cured.

Top Dimensions: Center opening shall be an 8" inside diameter. The overall dimensions shall be 23-1/2" x 13" high.

32 GALLON LINER: Made of heavy duty plastic.

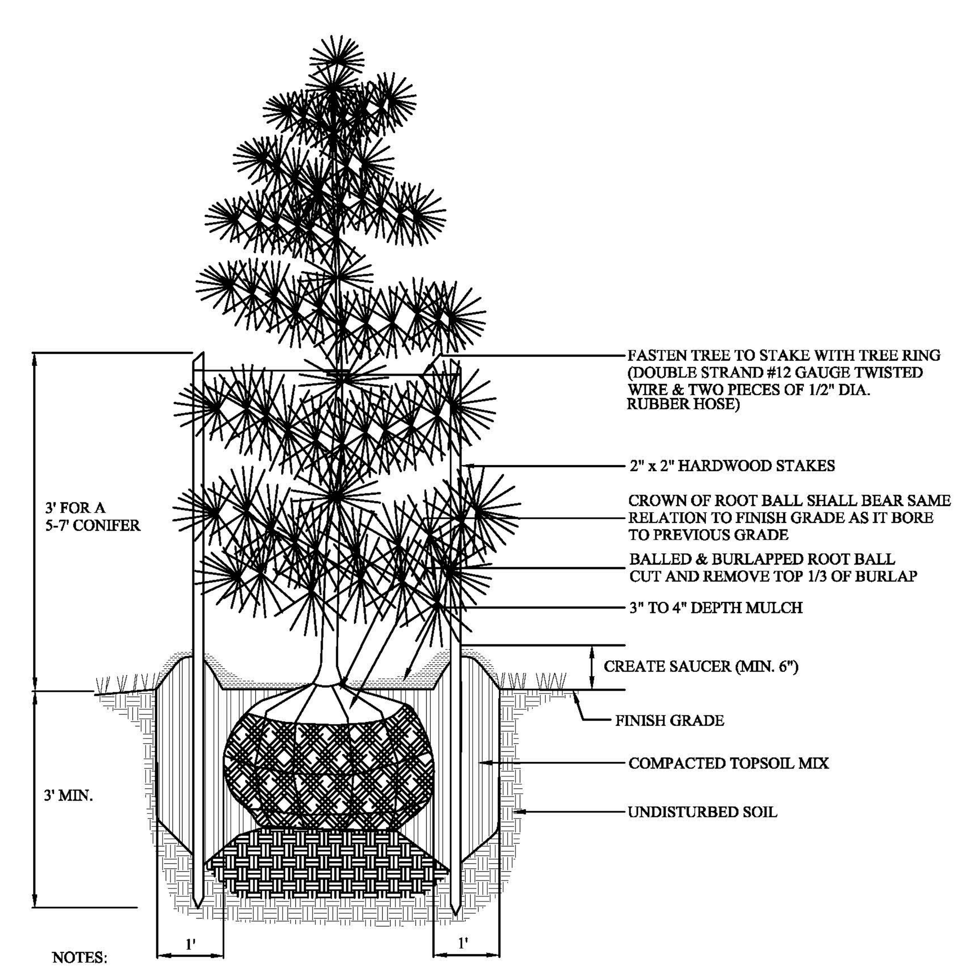




NOTES:

1. DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING
2. DO NOT DAMAGE MAIN ROOTS OR DESTROY ROOT BALL WHEN INSTALLING TREE STAKE
3. REMOVE TREE RINGS, TREE WRAP AND STAKES TWO YEARS AFTER INSTALLATION
4. WATER TREE THOROUGHLY SUBSEQUENT TO INSTALLATION

DECIDUOUS TREE PLANTING DETAIL
NO SCALE



NOTES:

1. DO NOT ALLOW AIR POCKETS TO FORM WHEN BACKFILLING
2. DO NOT DAMAGE MAIN ROOTS OR DESTROY ROOT BALL WHEN INSTALLING TREE STAKE
3. REMOVE TREE RINGS AND STAKES TWO YEARS AFTER INSTALLATION
4. WATER TREE THOROUGHLY SUBSEQUENT TO INSTALLATION

CONIFEROUS TREE PLANTING DETAIL
NO SCALE

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

Know what's **below.**
Call before you dig.

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NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN
LANDSCAPE DETAILS

DATE
JUNE 9, 2017

9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP
REVISIONS

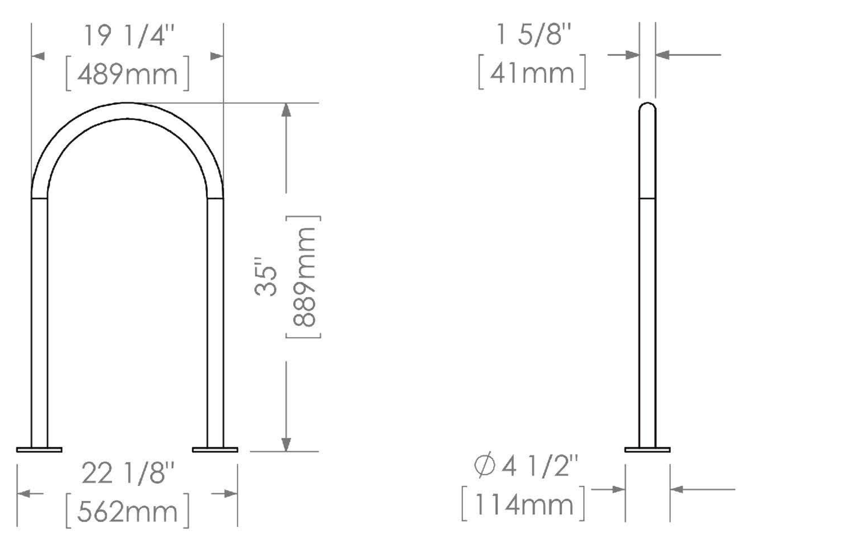
SCALE 0 25 50
1" = 50 FEET

DR. CR | CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO.

500 SERIES

MBR500-S

MATERIALS:	All parts are made from H.S. steel tube.
FINISH:	All steel components are protected with E-Coat rust proofing. The Maglin Powdercoat System provides a durable finish on all metal surfaces.
INSTALLATION:	The bike rack is delivered pre-assembled. It is available with either a surface mount or direct burial installation option.
TO SPECIFY:	Select MBR500-S Choose: - Powdercoat Color Galvanized Finish - Surface Mount (MBR500-S-G)



DIMENSIONS:
Height: 35" (88.9cm)
Length: 19.25" (48.9cm)
Weight: 13.27lbs (6.0kg)

MAGLIN

T 800-716-5506
F 877-260-9393
www.maglin.com
sales@maglin.com

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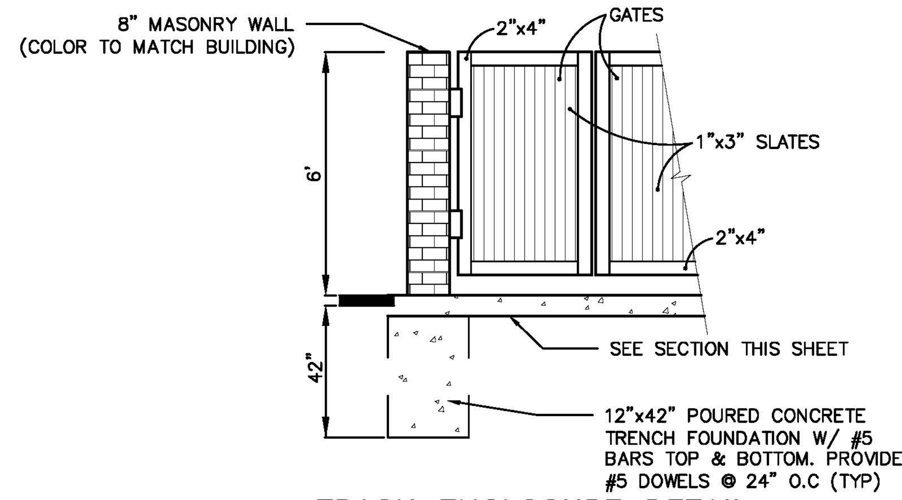
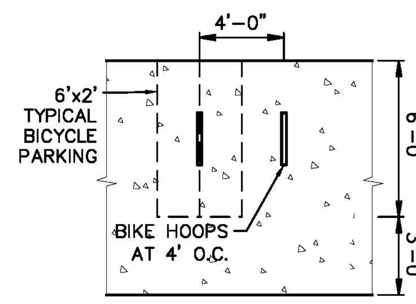
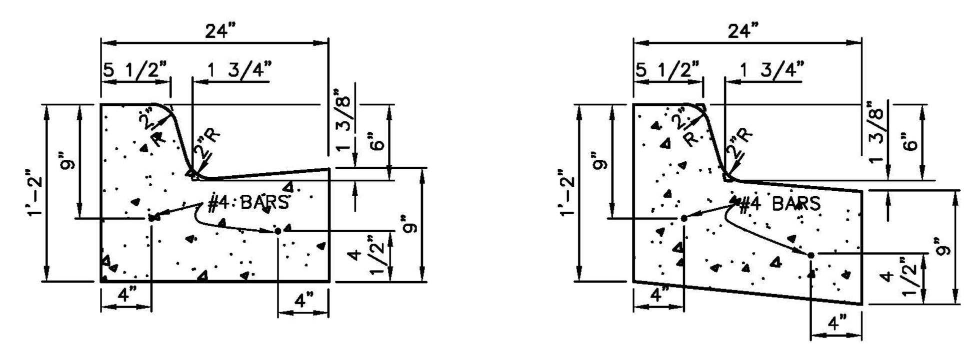
- Details and specifications may vary due to continuing improvements of our products.



TRASH ENCLOSURE DETAIL
NO SCALE

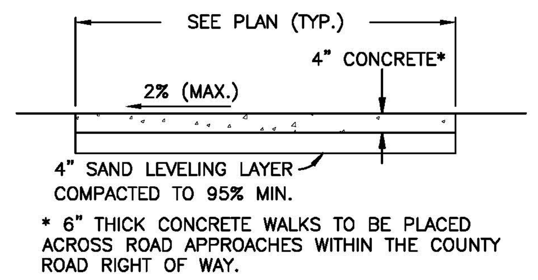


BIKE RACK DETAIL
NO SCALE



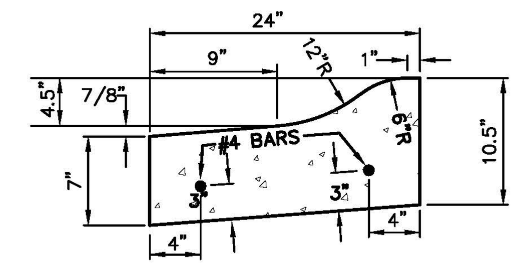
BASE AND SUBBASE AGGREGATES TO EXTEND MINIMUM 1'-0" BEHIND BACK OF CURB.

F4 CURB DETAIL
NO SCALE



* 6" THICK CONCRETE WALKS TO BE PLACED ACROSS ROAD APPROACHES WITHIN THE COUNTY ROAD RIGHT OF WAY.

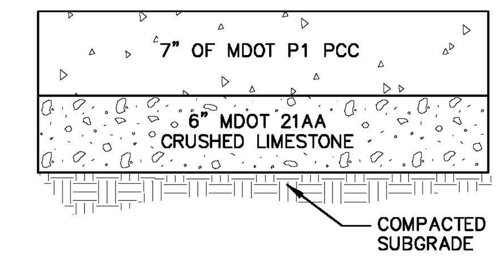
CONCRETE SIDEWALK DETAIL
NO SCALE



PITCH OUT

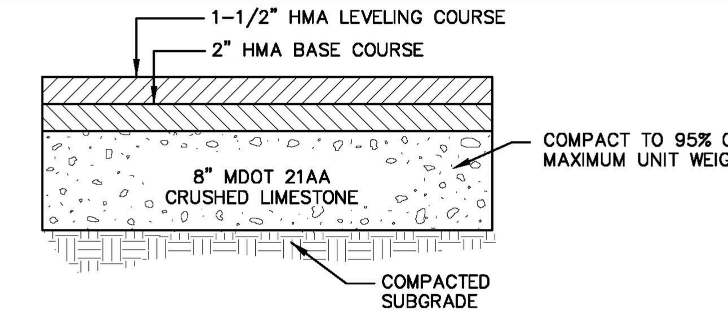
ROLL CURB AND GUTTER
NO SCALE

FOR USE WITHIN ON-SITE TRUCK TURNING MOVEMENT.



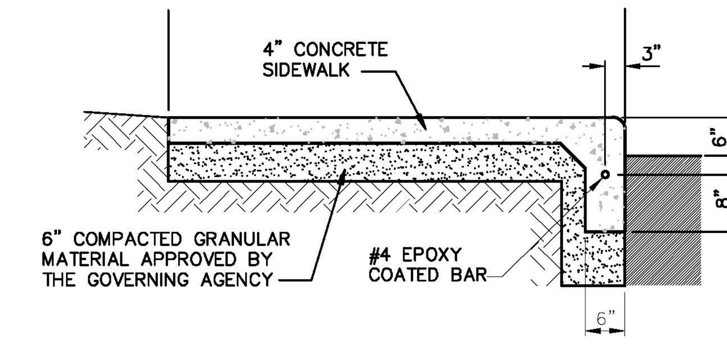
CONCRETE PAVING SECTION
NO SCALE

FOR USE IN DUMPSTER PAD AND ON-SITE DRIVEWAY AREAS.
CONFIRM SECTION WITH GEOTECHNICAL ENGINEER PRIOR TO CONSTRUCTION.



NOT APPLICABLE FOR USE WITHIN PUBLIC RIGHT-OF-WAY. FOR ONSITE USE ONLY. PAVEMENT WITHIN THE RIGHT OF WAY SHALL CONFORM TO WCRC STANDARDS.

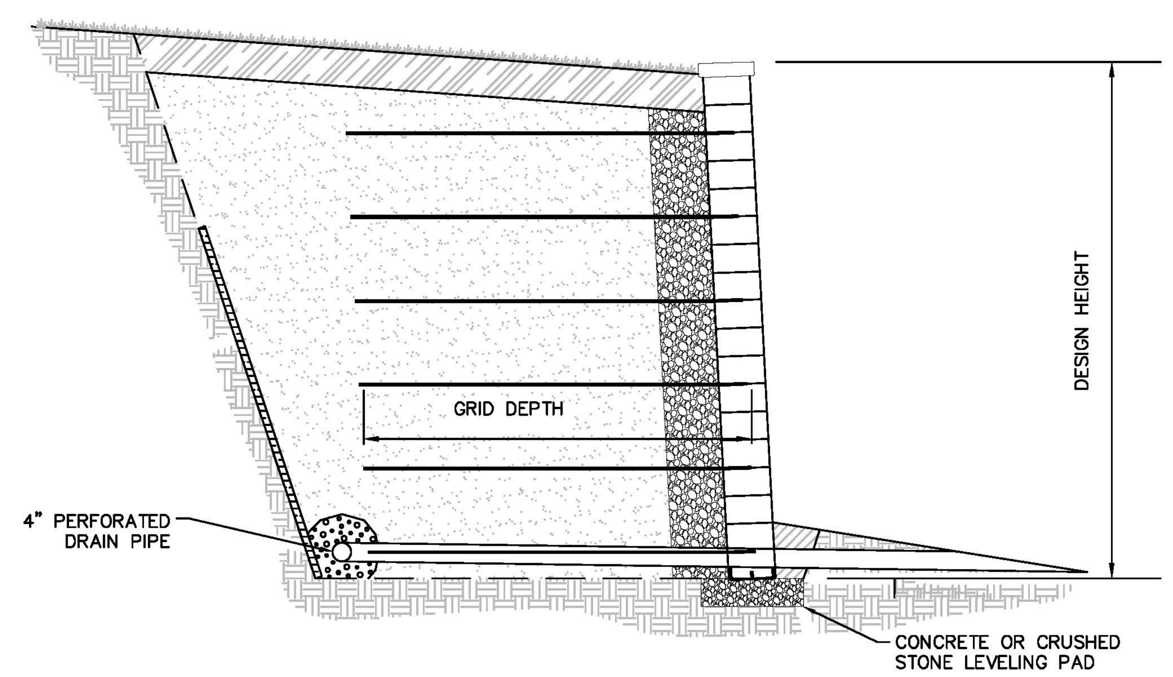
ASPHALT PAVING SECTION
CONFIRM SECTION WITH GEOTECHNICAL REPORT
NO SCALE



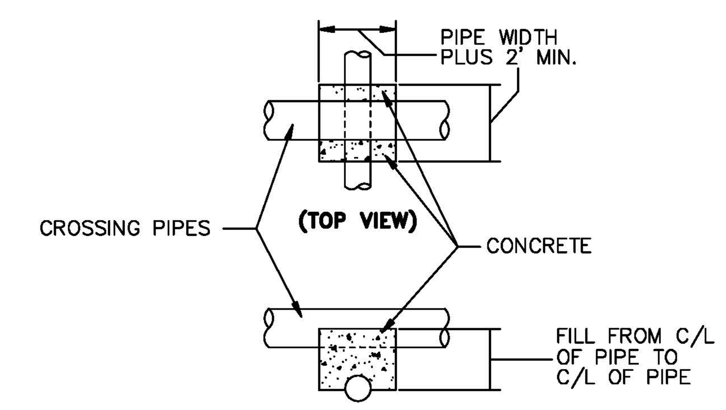
NOT APPLICABLE FOR USE WITHIN PUBLIC RIGHT-OF-WAY. FOR ONSITE USE ONLY.

WHERE THE CURB HEIGHT IS BEING REDUCED FOR ADA RAMPS THE RE-BAR SHALL HAVE A MINIMUM OF 3 INCHES OF COVER BELOW THE TOP OF CURB

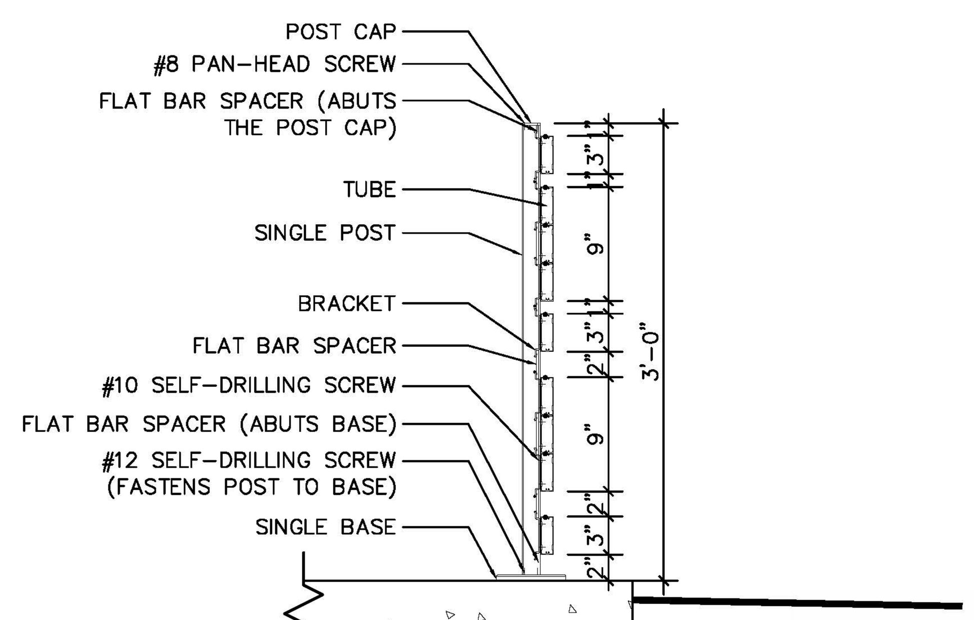
INTEGRAL CURB AND SIDEWALK
NO SCALE



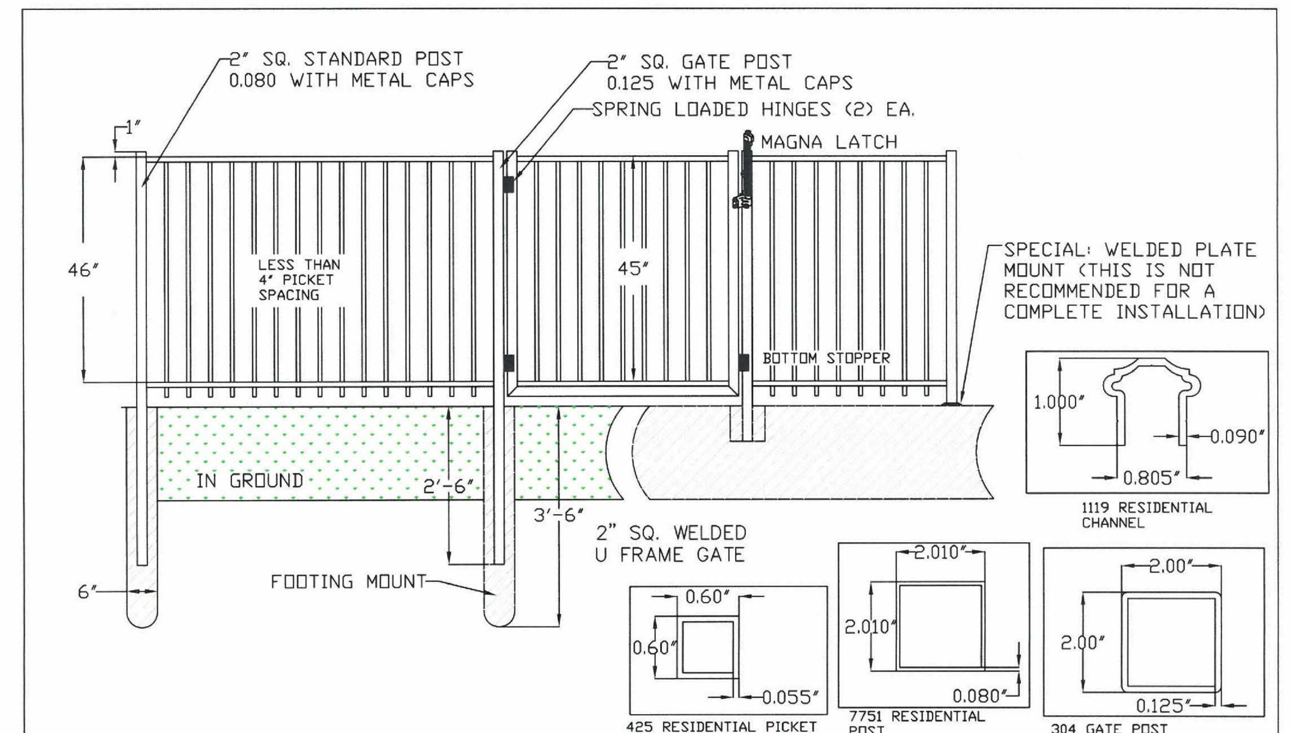
TYPICAL RETAINING WALL
OR APPROVED ALTERNATE
(FOR ILLUSTRATIVE PURPOSES ONLY, DESIGN BY OTHERS)
NO SCALE



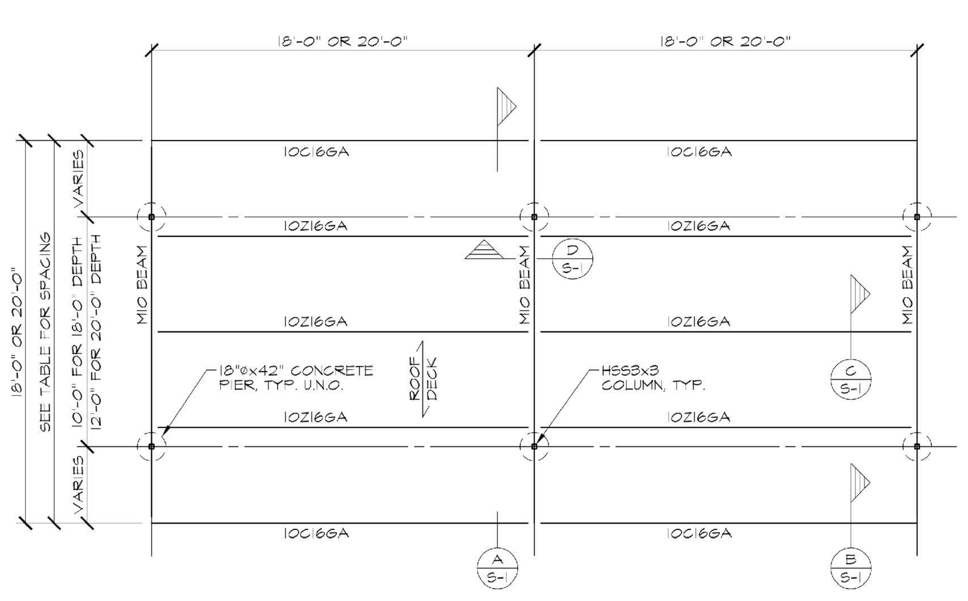
CONCRETE CRADLE DETAIL
NO SCALE



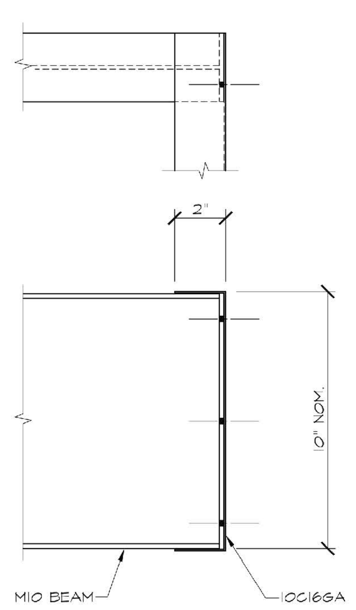
TYPICAL SCREEN WALL SECTION
NO SCALE



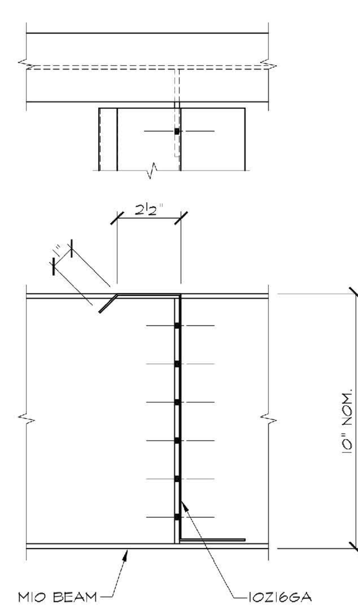
MANUFACTURED BY:	"F" SIGNATURE (2 CHANNEL)	CUSTOMER:
ELEGANT ALUMINUM PRODUCTS 16965 MASONIC, FRASER MI 48026 586-293-1020 FAX 586-293-1070 WWW.ELEGANTALUMINUM.COM	FENCE ELEVATION RESIDENTIAL GRADE FENCE	(OR APPROVED ALTERNATE)



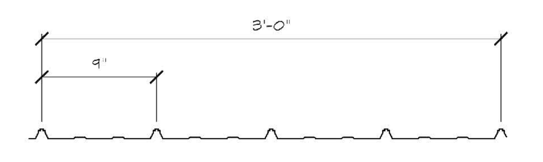
TYPICAL 20'-0" X 20'-0" BAY FRAMING PLAN
SCALE 3/16"=1'-0"



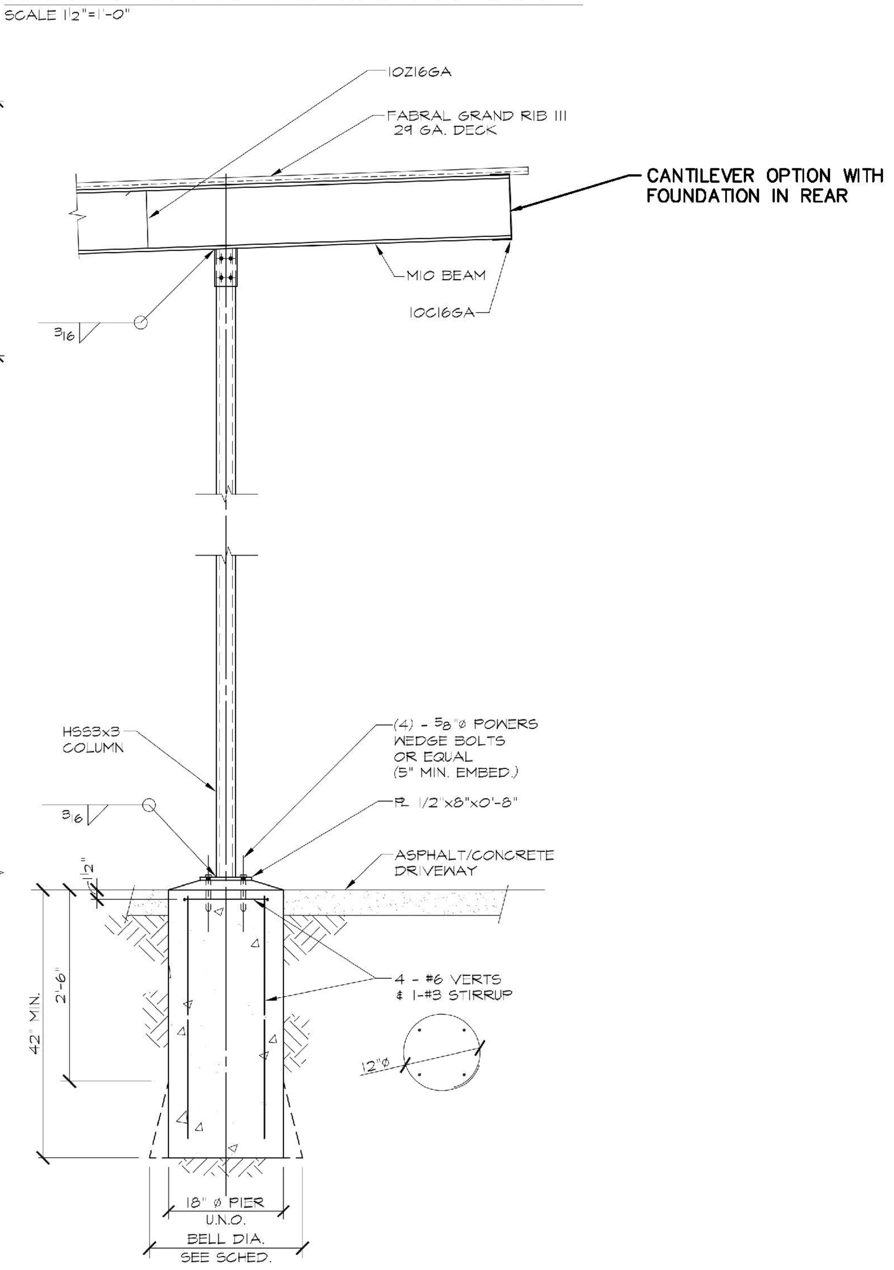
SECTION (B)
SCALE 3"=1'-0"



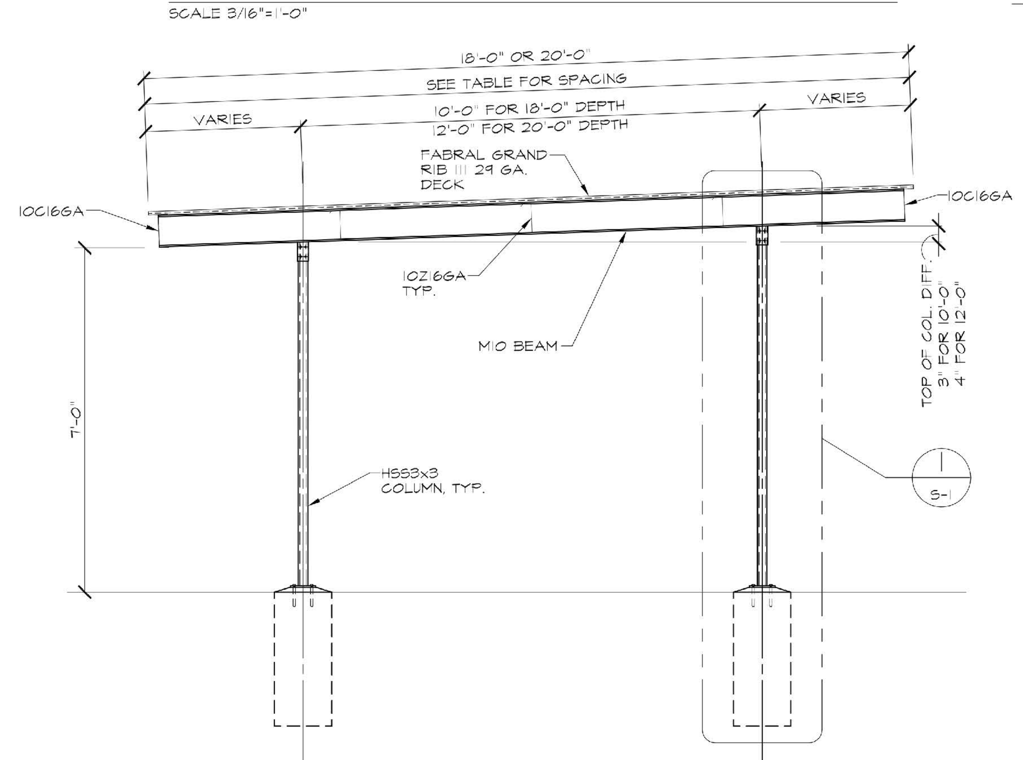
SECTION (C)
SCALE 3"=1'-0"



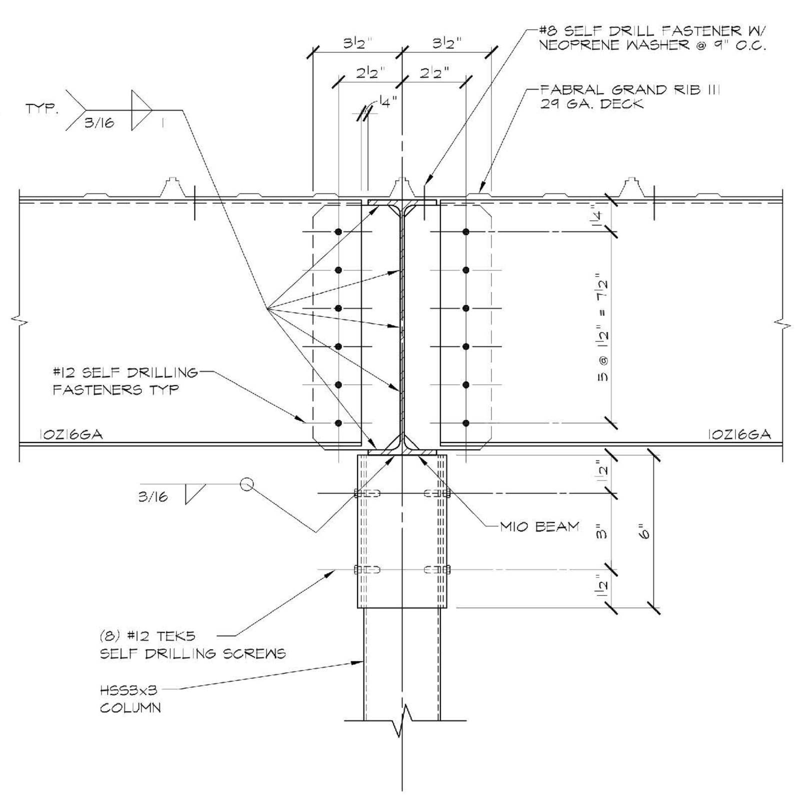
FABRAL GRAND RIB III 29 GA DECK
SCALE 1/2"=1'-0"



SECTION (1)
SCALE 3/4"=1'-0"



SECTION (A)
SCALE 3/16"=1'-0"



SECTION (D)
SCALE 3"=1'-0"

NOTE:
CANTILEVER CARPORTS OR ALTERNATIVE FOUNDATIONS WILL BE UTILIZED AS NEEDED TO AVOID CONFLICTS WITH STORM SEWER AND UNDERGROUND DETENTION.

TYPICAL CARPORT DETAIL
OR APPROVED ALTERNATE
(FOR ILLUSTRATIVE PURPOSES ONLY, DESIGN BY OTHERS)
NO SCALE

811
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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

DETAILS

DATE
JUNE 9, 2017

REVISIONS
9/7/17 PER TWP PLANNING
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6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP

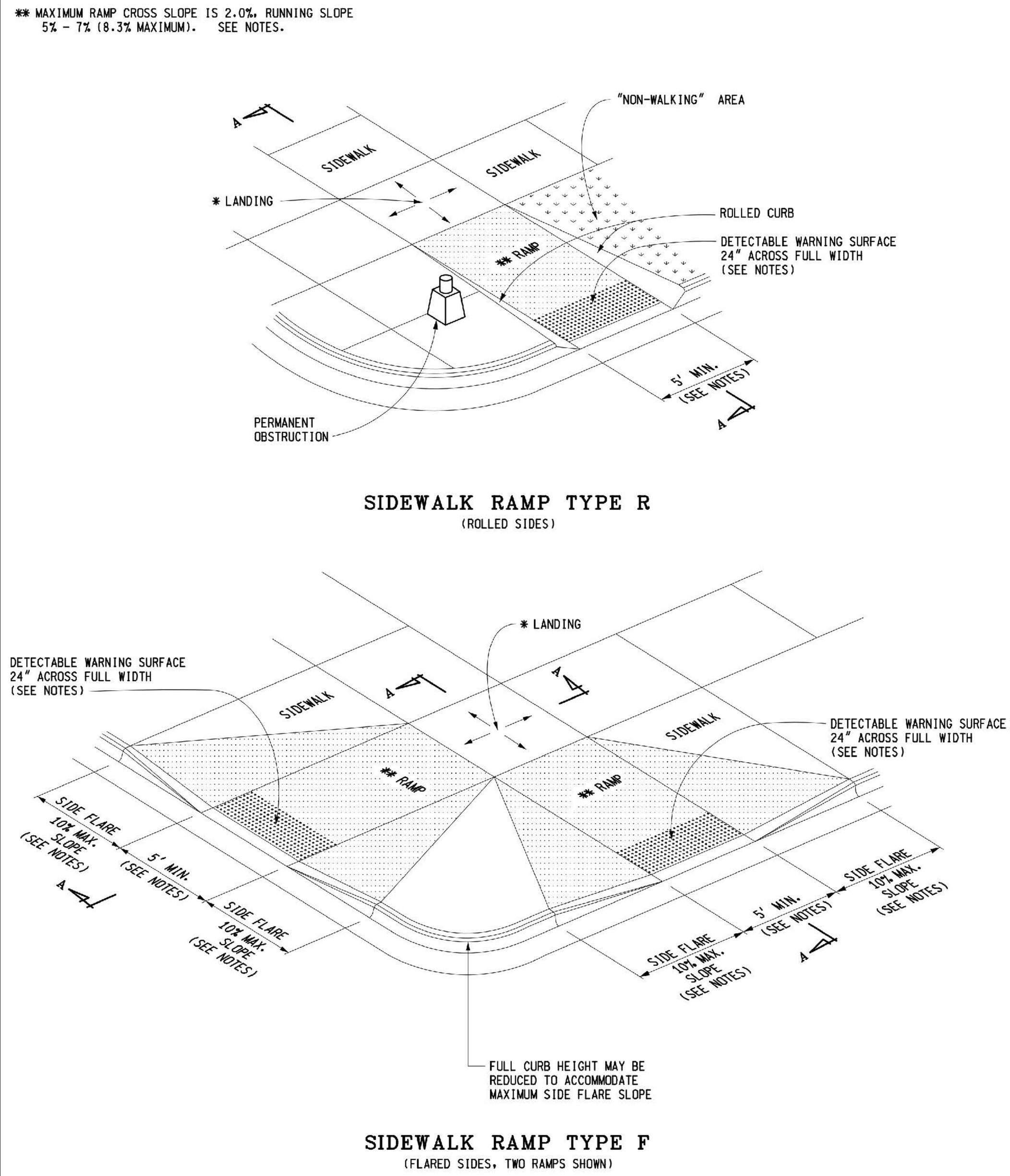
SCALE 0 25 50
1" = 50 FEET

DR. CR	CH. --
P.M. MB	
BOOK	--
JOB	16000137
SHEET NO.	61

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%. RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.

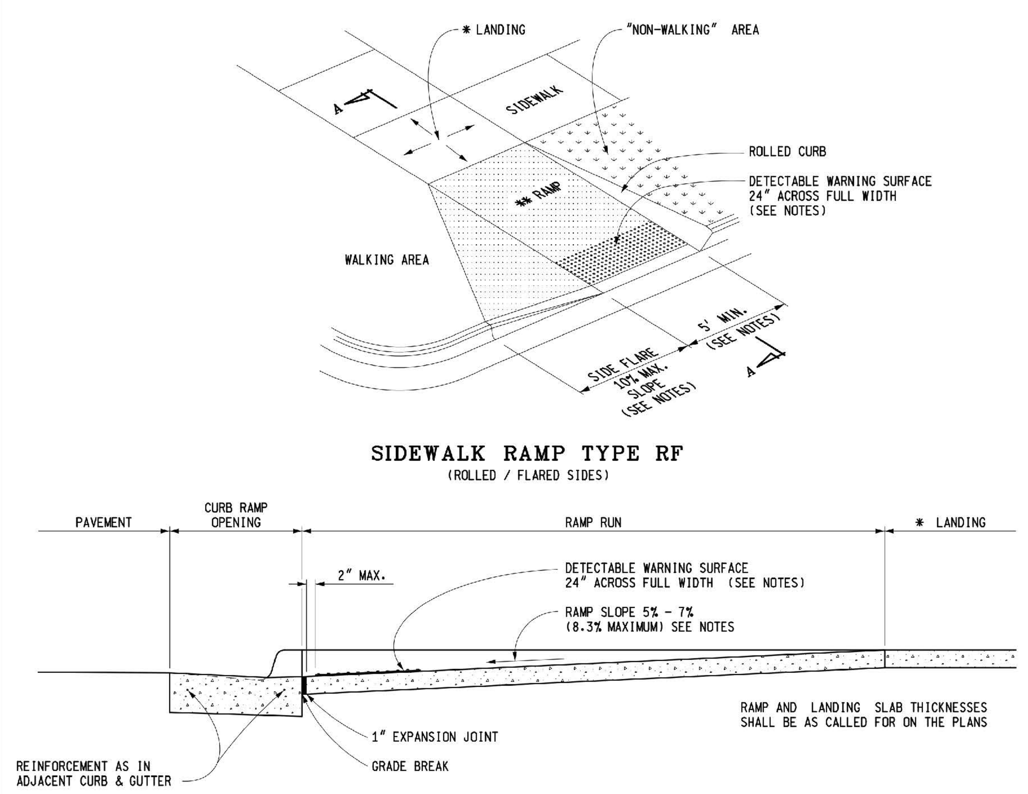


SIDEWALK RAMP TYPE R (ROLLED SIDES)

SIDEWALK RAMP TYPE F (FLARED SIDES, TWO RAMPS SHOWN)

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
3-31-2017 PLAN DATE — R-28-J — SHEET 1 OF 7

MDOT — PREPARED BY DESIGN DIVISION — APPROVED BY: DIRECTOR, BUREAU OF FIELD SERVICES — APPROVED BY: DIRECTOR, BUREAU OF DEVELOPMENT — F.H.W.A. APPROVAL

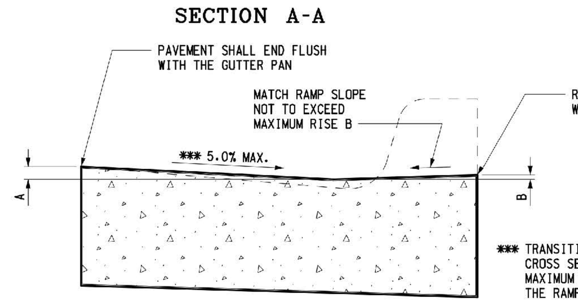


SIDEWALK RAMP TYPE RF (ROLLED / FLARED SIDES)

SECTION A-A

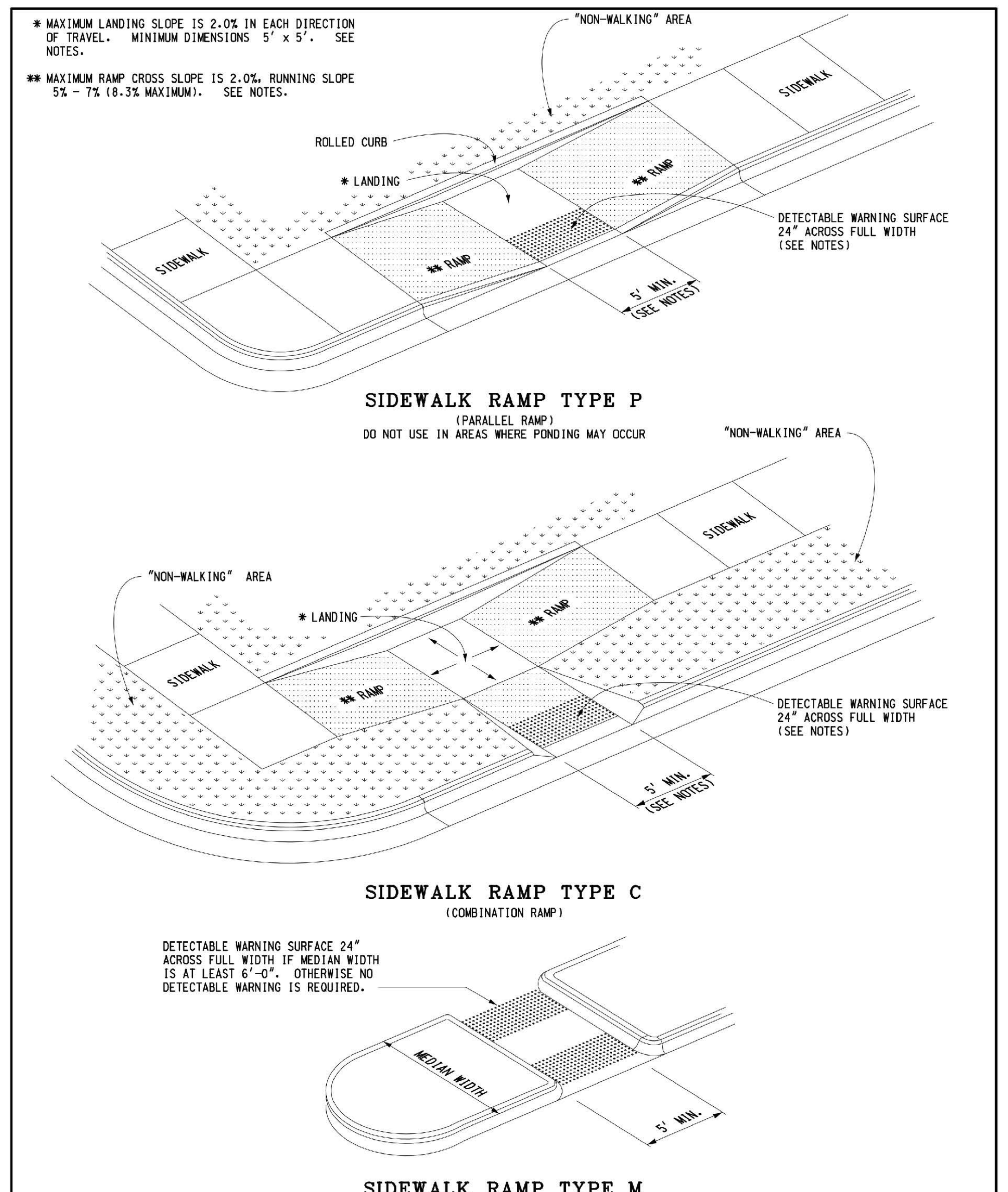
CURB TYPE	MAXIMUM RISE (INCHES) A	MAXIMUM RISE (INCHES) B
B1	3/4	1
B2	3/4	1
B3	3/4	1
D1	3/4	1
D2	3/4	1
D3	3/4	1
C1	1/2	1/2
C2	1/2	1/2
C3	3/4	1/2
C4	3/4	1/2
C5	1	1/2
C6	1	1/2
F1	1/2	1/2
F2	1/2	1/2
F3	3/4	1/2
F4	3/4	1/2
F5	1	1/2
F6	1	1/2

FOR CURB TYPES SEE STANDARD PLAN R-30-SERIES



SECTION THROUGH CURB RAMP OPENING (TYPICAL ALL RAMP TYPES)

MICHIGAN DEPARTMENT OF TRANSPORTATION
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
3-31-2017 — R-28-J — SHEET 2 OF 7

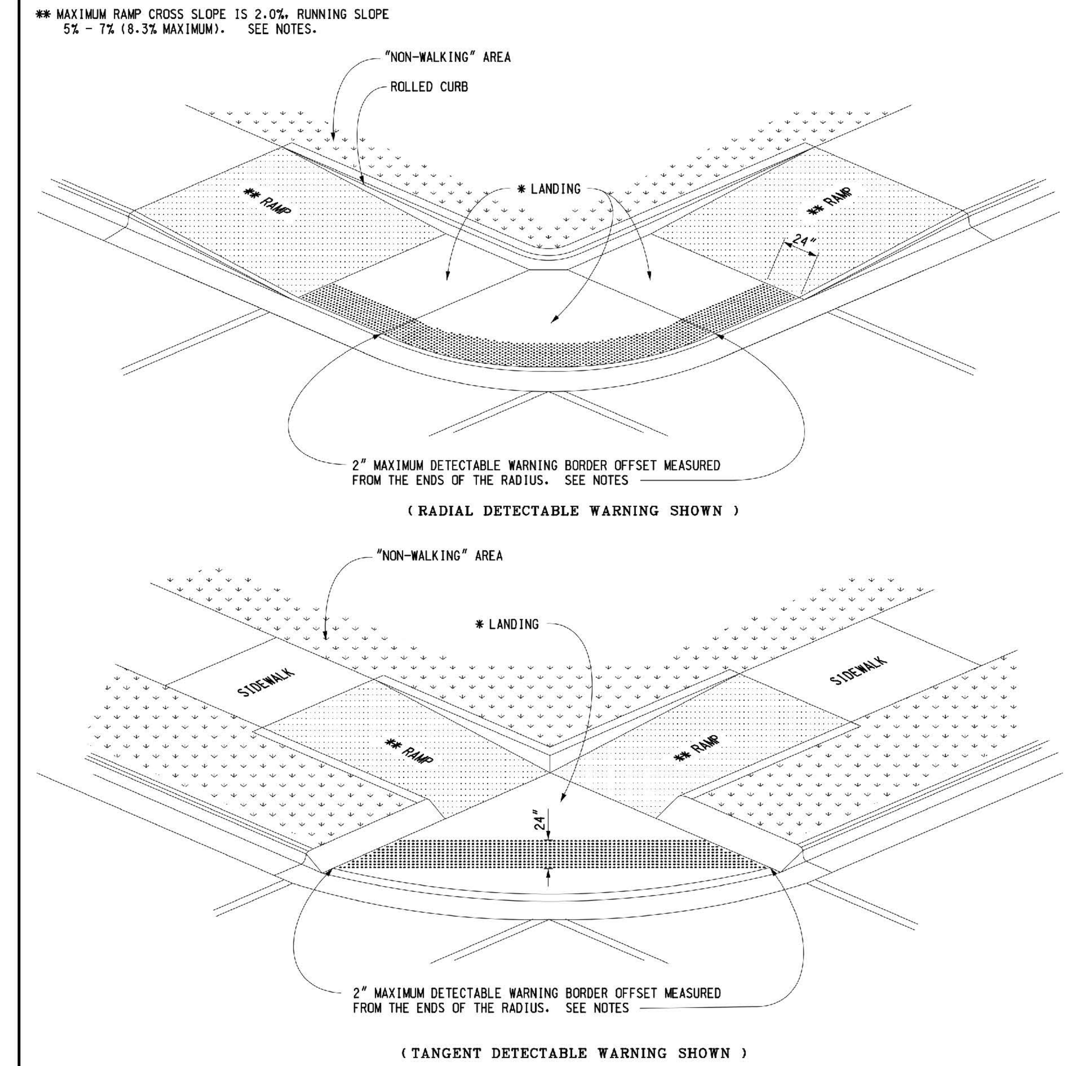


SIDEWALK RAMP TYPE P (PARALLEL RAMP) DO NOT USE IN AREAS WHERE PONDING MAY OCCUR

SIDEWALK RAMP TYPE C (COMBINATION RAMP)

SIDEWALK RAMP TYPE M (MEDIAN ISLAND)

MICHIGAN DEPARTMENT OF TRANSPORTATION
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
3-31-2017 — R-28-J — SHEET 3 OF 7

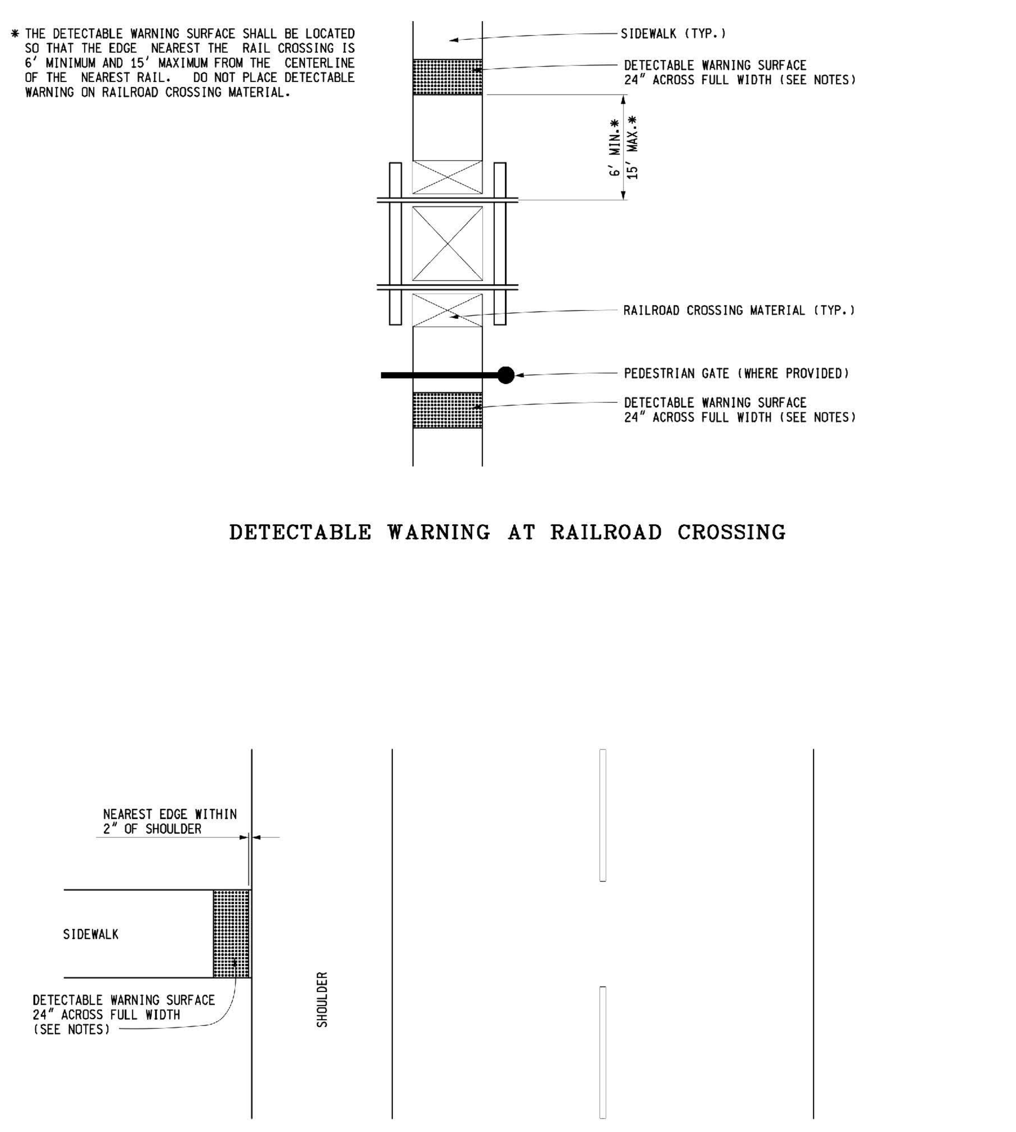


SIDEWALK RAMP TYPE D (DEPRESSED CORNER)

USE ONLY WHEN INDEPENDENT DIRECTIONAL RAMPS CAN NOT BE CONSTRUCTED FOR EACH CROSSING DIRECTION

MICHIGAN DEPARTMENT OF TRANSPORTATION
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
3-31-2017 — R-28-J — SHEET 4 OF 7

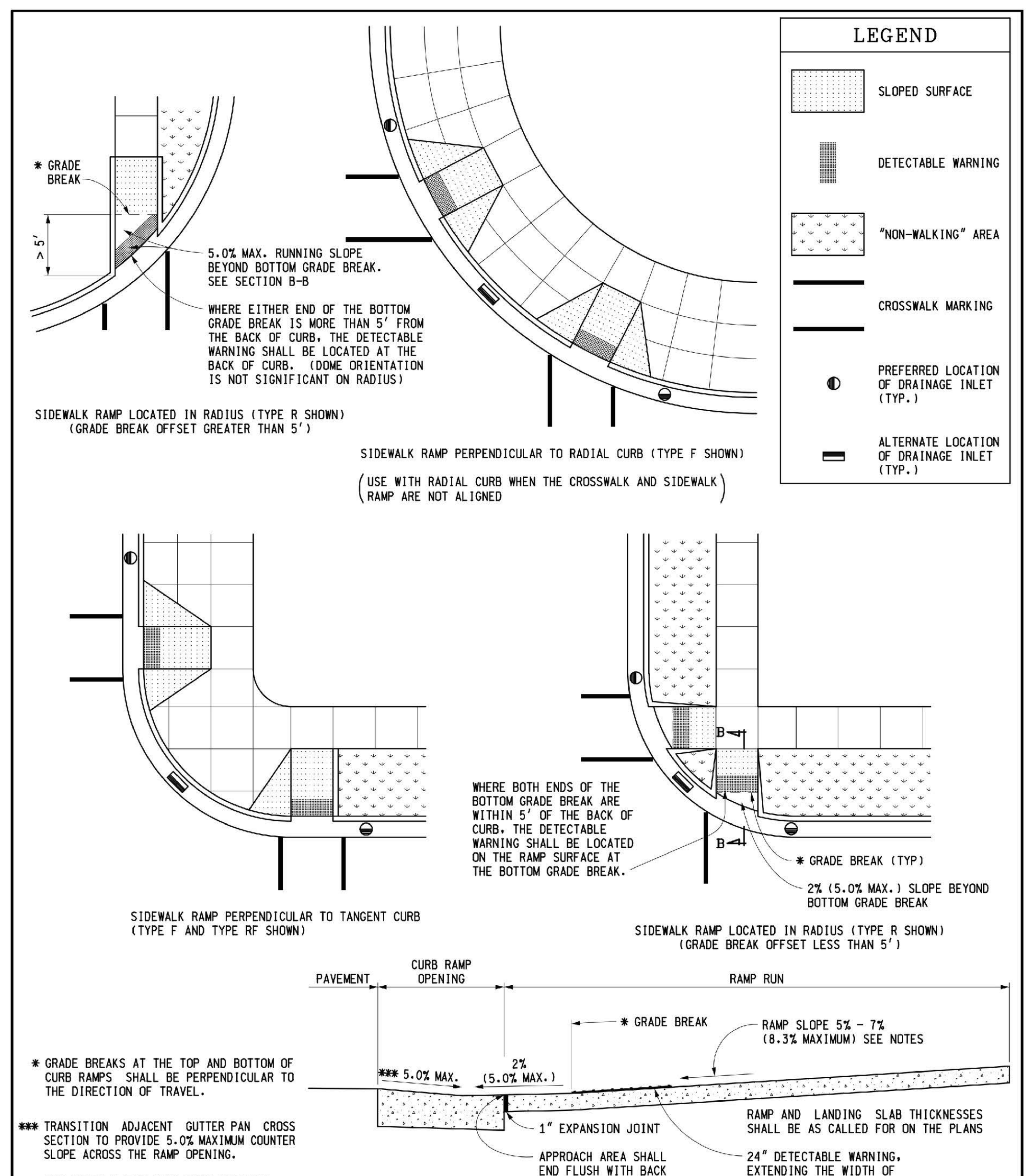
* THE DETECTABLE WARNING SURFACE SHALL BE LOCATED SO THAT THE EDGE NEAREST THE RAIL CROSSING IS 6' MINIMUM AND 15' MAXIMUM FROM THE CENTERLINE OF THE NEAREST RAIL. DO NOT PLACE DETECTABLE WARNING ON RAILROAD CROSSING MATERIAL.



DETECTABLE WARNING AT RAILROAD CROSSING

DETECTABLE WARNING AT FLUSH SHOULDER OR ROADWAY

MICHIGAN DEPARTMENT OF TRANSPORTATION
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
3-31-2017 — R-28-J — SHEET 5 OF 7



* GRADE BREAKS AT THE TOP AND BOTTOM OF CURB RAMPS SHALL BE PERPENDICULAR TO THE DIRECTION OF TRAVEL.

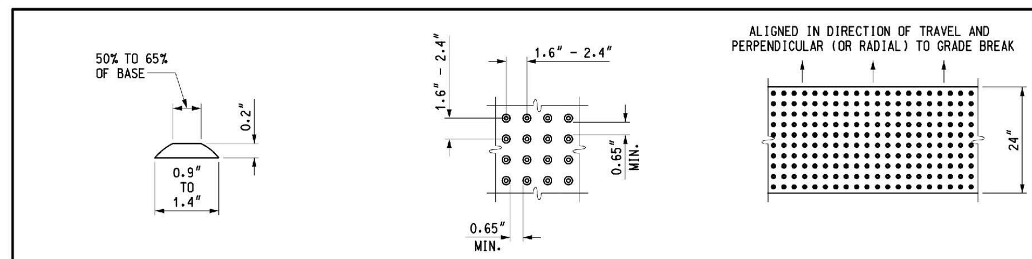
*** TRANSITION ADJACENT GUTTER PAN CROSS SECTION TO PROVIDE 5.0% MAXIMUM COUNTER SLOPE ACROSS THE RAMP OPENING.

SEE SHEET 2 FOR CURB RAMP OPENING DETAILS.

SECTION B-B

SIDEWALK RAMP ORIENTATION

MICHIGAN DEPARTMENT OF TRANSPORTATION
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
3-31-2017 — R-28-J — SHEET 6 OF 7



DETECTABLE WARNING DETAILS

NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS IN THE PUBLIC RIGHT OF WAY.

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

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPS SHALL 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.

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED 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 SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

WHEN 5' MINIMUM WIDTHS ARE NOT PRACTICABLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4' AND LANDINGS TO NOT LESS THAN 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 BORDER OFFSET NOT GREATER THAN 2" MEASURED ALONG THE EDGES OF THE DETECTABLE WARNING IS ALLOWABLE. FOR RADIAL CURB THE OFFSET IS MEASURED FROM THE ENDS OF THE RADIUS.

FOR NEW ROADWAY CONSTRUCTION, THE RAMP CROSS SLOPE MAY NOT EXCEED 2.0%. FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE MAY BE TRANSITIONED 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 OF 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 MANUFACTURER'S ADA COMPLIANT GRATE. OPENINGS SHALL NOT BE GREATER THAN 1/2". ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

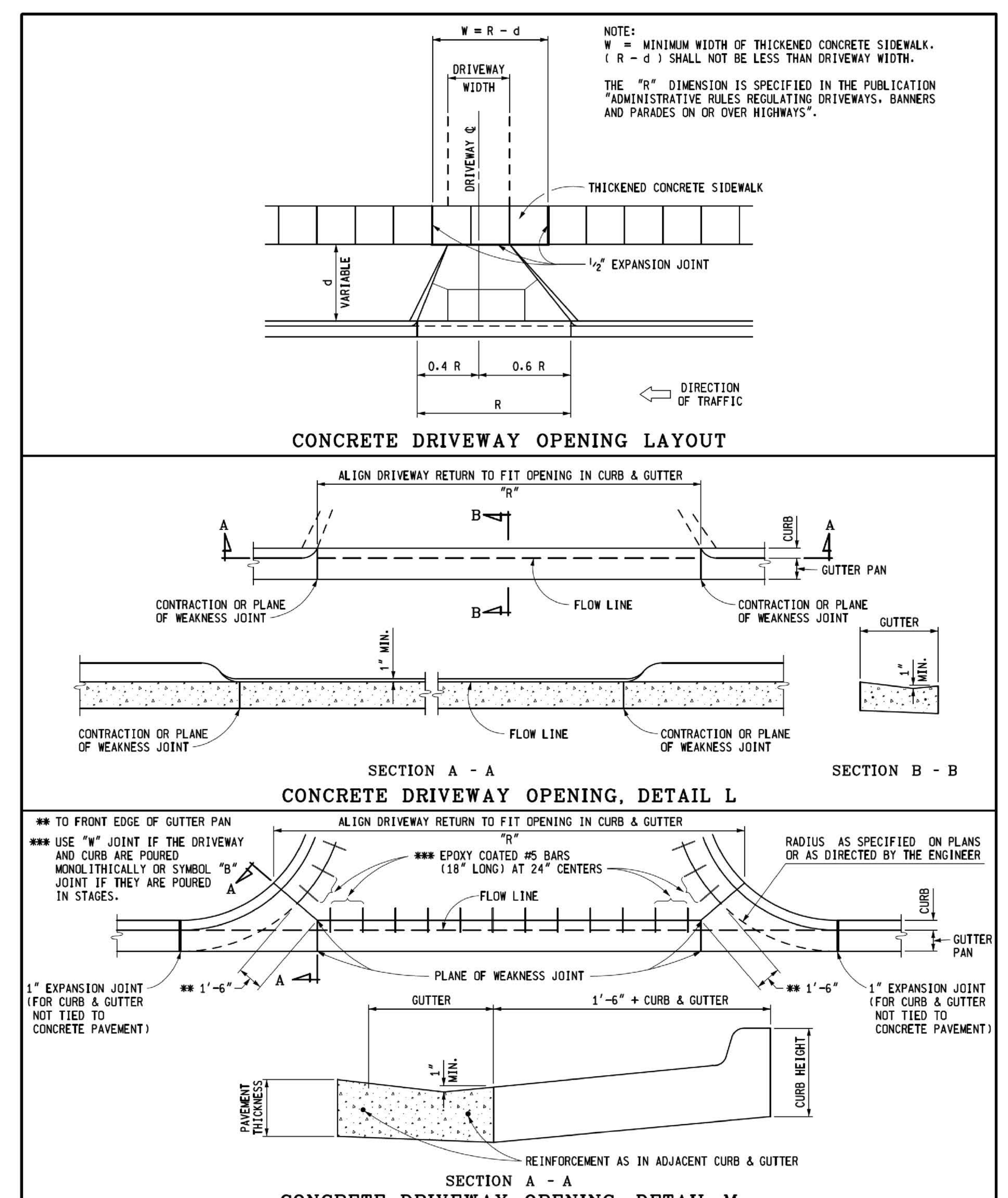
THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

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

MICHIGAN DEPARTMENT OF TRANSPORTATION
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
3-31-2017 — R-28-J — SHEET 7 OF 7



NOTE: W = MINIMUM WIDTH OF THICKENED CONCRETE SIDEWALK. (R - d) SHALL NOT BE LESS THAN DRIVEWAY WIDTH.

THE "R" DIMENSION IS SPECIFIED IN THE PUBLICATION "ADMINISTRATIVE RULES REGULATING DRIVEWAYS, BANNERS AND PARADES ON OR OVER HIGHWAYS".

NOTE: FOR ROADWAYS WITH CONCRETE PAVEMENTS, LONGITUDINAL LANE TIES WILL BE CONTINUOUS THROUGH THE DRIVEWAY OPENING AND THE SPACING OF THE #5 BARS IN CONCRETE DRIVEWAYS SHALL BE ADJUSTED TO AVOID CONFLICT WITH THE LONGITUDINAL LANE TIES.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DEVELOPMENT STANDARD PLAN FOR
DRIVEWAY OPENINGS & APPROACHES, AND CONCRETE SIDEWALK
9-30-2014 F.H.W.A. APPROVAL — 7-1-2014 PLAN DATE — R-29-I — SHEET 2 OF 4

BEZTAK - PITTSFIELD
C.S.P.A.# 16-15

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

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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SECTION 07
TOWN 03 SOUTH, RANGE 06 EAST
PITTSFIELD TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT: BEZTAK LAND COMPANY
PITTSFIELD MIXED USE DEVELOPMENT
FINAL SITE PLAN

MDOT DETAILS

DATE: JUNE 9, 2017

REVISIONS
9/7/17 PER TWP PLANNING
9/21/17 PER TWP/WCWRC
10/04/17 PER WCRC
10/12/17 PER WCWRC
10/20/17 PER WCRC
11/1/17 SITE UPDATES
12/06/17 PER TWP
3/19/18 PER TWP
5/16/18 PER TWP
5/23/18 SITE UPDATES
6/05/18 SITE UPDATES
6/28/18 SITE UPDATES
7/26/18 PER TWP
8/10/18 DETENTION REV.
9/14/18 PER TWP
10/01/18 PER TWP
10/10/18 PER TWP

SCALE 0 25 50 — 1" = 50 FEET

DR. CR — CH. --
P.M. MB
BOOK --
JOB 16000137
SHEET NO. 62

Earthwork

1.00 GENERAL

1.01 DESCRIPTION

A. The CONTRACTOR shall perform all excavation and backfilling necessary to complete the work. This shall include the excavation of earth and rock, the removal and disposal of unsuitable material, dewatering, placement of suitable fill and backfill material, pipe boring and jacking, all quality assurance testing, and the restoration and final grading for all earth surfaces.

1.02 WORK WITHIN RIGHTS-OF-WAY

A. Where the governmental bodies having jurisdiction of the streets or rights-of-way have specific specifications relating to the requirements for work within their jurisdiction, such requirements must be met as a minimum requirement, and if these Specifications impose further limitation on the work, they shall also be met as the required work standard.

B. During all operations of the CONTRACTOR in the streets and roadways, the CONTRACTOR shall maintain barricades, lights, and warning signs as required by the agency having jurisdiction.

1.03 WORK WITHIN EASEMENTS

A. During construction within any easements, the CONTRACTOR shall confine himself to the limits shown on the Plans. He shall notify property owners in advance of moving equipment on easements and use of the access routes which will be designated by the OWNER. The OWNER will cooperate in working out the details of access. The topsoil over the trench shall be removed and carefully replaced upon completion of the work. The backfill of the trench in the easement may be left slightly high to provide for any slight residual settlement. Any trees, shrubs, or bushes removed shall be replaced to the satisfaction of the property owner.

1.04 SOIL BORINGS

A. Soil boring results, if taken on a site, are appended to these Specifications with locations noted. Boring logs are shown to be generally representative of the site and to assist in the design and construction of the work.

2.00 PRODUCTS

2.01 BACKFILL MATERIAL

A. For areas not requiring "granular backfill" material, backfill shall be of the excavated material, with the exception that materials such as soft clay, topsoil, muck, cinders, vegetable matter, refuse, boulders and other objectionable and non-packing earth shall be excluded from the backfill and removed from the site. Stone larger than 3 inches in any dimension shall be excluded from the backfill and removed from the site by the CONTRACTOR.

B. Where "granular material" backfill is required as specified herein, backfill material shall be defined as a material meeting granular material Class II as defined in 2003 MDOT 902.08.

C. All utilities within road right-of-way corridor (existing or proposed) shall be backfilled with MDOT CL II granular material compacted to 95% maximum unit weight.

D. All utilities shall be installed with 2 NS sand bedding or better.

2.02 ENCASING PIPE

A. Steel encasing pipe for boring and jacking shall conform to the requirements of either, ASTM A53, Type E or S, Grade B or ASTM A139, Grade B.

B. Steel encasing pipe used under channels and highways shall meet the requirements of the governmental agency having jurisdiction and the following minimum requirements:

Nominal Diameter (Inches)	Maximum Wall Thickness
Under 13	0.188 inches
13-24	0.250 inches
25-36	0.312 inches
42	0.438 inches
48	0.500 inches
54	0.563 inches

C. Steel encasing pipe used under railroads shall meet the requirements of the railroad and the following minimum requirements:

	Minimum Wall Thickness (inches)	
Nominal Diameter (Inches)	Coated or Cathodically Protected.	Uncoated & Unprotected.
Under 14	0.180	0.251
14-16	0.219	0.282
18	0.250	0.313
20	0.281	0.344
22	0.312	0.375
24	0.344	0.407
26	0.375	0.438
28-30	0.406	0.469
32	0.438	0.501
34-36	0.469	0.532
38-42	0.500	0.563
48	0.563	0.626

D. Casing pipe joints shall be welded to form a leak-proof continuous casing.

E. The inside diameter of casing pipe shall be at least 2 inches greater than the largest outside diameter of the carrier pipe joints or couplings for carrier pipe less than 6 inches in diameter, and at least 4 inches greater than the largest outside diameter of the carrier pipe joints for carrier pipe 6 inches and over in diameter, unless otherwise shown on the Plans.

F. The steel casing pipe shall be of smooth interior and shall be placed accurately to line and grade, allowing for the encased pipe thickness and supports under each length of encased pipe.

3.00 EXECUTION

3.01 GENERAL EXCAVATION

A. Excavation shall be performed by any practicable method consistent with the integrity and protection of the work and neighboring structures, workmen, and the public. Topsoil shall be separately removed and stockpiled for reuse.

B. All excavation, except where necessary to tunnel, bore or jack under roads, railroads, tree roots and other obstructions within the limits indicated on the Plans, may be open cut from the surface. Tunneling or boring under trees shall be considered as incidental to construction and will not be considered as cause for request for additional payment.

C. Foreign material or unsuitable foundation material encountered such as wood, boulders, etc., which obstruct the excavation, shall be removed. Such materials found at the bottom of the excavation shall be removed and the foundation restored with approved materials.

D. If excess excavation is made or the material becomes disturbed so as to require removal beyond the prescribed limits, the resulting space shall be filled with selected material solidly tamped into place, in not more than 6-inch layers to the satisfaction of the ENGINEER, before the construction work proceeds. At the direction of the ENGINEER, the excess excavation may be filled with 2000 psi concrete at the CONTRACTOR'S expense.

E. The excavation shall be kept dry during the work. Where water is encountered in the excavation, it shall be removed by pumping or well points. All necessary precautions shall be taken to prevent damage to existing wells and to completed or partially completed structures. The CONTRACTOR shall be responsible for all damages caused by him due to inadequate or improper protection.

F. The CONTRACTOR shall take ample precautions to protect all trees and ornamental shrubbery not within the limits of the construction areas, or within the construction areas shown on the Plans to be retained from injury by workmen, equipment, or any other agencies connected with the work, including subcontractors. Such protection shall be provided during the progress of the excavation, grading, or other phases of the work as necessary. Such trees or shrubbery shall be surrounded by protective posts or fencing before construction begins, when in judgment of the ENGINEER, such precautionary measures are necessary. If, as a result of any phase of the work, trees are damaged or it is necessary to remove limbs in the way of construction, the repair of the damage and such limb removal shall be done by the CONTRACTOR as directed by the ENGINEER. All costs for the protective work shall be borne by the CONTRACTOR as incidental to the Contract work.

G. Any excavation not backfilled at the end of each day must be clearly marked and surrounded by appropriate safety fencing as directed by the ENGINEER. If directed by the ENGINEER, the CONTRACTOR shall cover the open excavation with a steel plate and light the excavated area.

3.02 EXCAVATION FOR SEWERS AND WATER MAINS

A. Trenches shall be excavated to the depth required with allowance for bedding the pipe. The trench shall be cut wider and deeper at each pipe joint location to provide for properly completing the pipe joint and to relieve the joint of all loadings.

B. The width of the trench at the top of a rigid pipe shall be sufficient to allow the pipe to be laid and jointed properly and shall provide for a minimum net clearance of 6 inches and a maximum net clearance of 12 inches on each side of the barrel of the pipe and to allow the backfill to be placed and properly compacted.

C. The width of trench at the top of a flexible pipe backfill when using concrete bedding shall be sufficient to allow the pipe to be laid and jointed properly with the minimum net clearance of 12 inches and a maximum net clearance of 18 inches on each side of the barrel of the pipe.

D. Where the conditions of the ground require or where the work is in close proximity of existing structures, the sides of excavation shall be securely held by bracing and/or sheeting which may be removed in units when the level of the backfill has reached a point where it is safe to pull the sheeting without disturbing the protected feature. No sheeting, bracing, or other timber shall be left in the excavation upon the completion of the main or other structures, except with the specific review and direction of the ENGINEER.

E. Other underground mains, sewers or structures encountered in the excavation shall be adequately supported during the CONTRACTOR's operations, and before backfilling, shall be given permanent support as directed by the ENGINEER to meet the standards or requirements of the owning utility or agency.

F. Water, sewer, gas and other utility services disturbed by the CONTRACTOR in his operations shall be repaired or replaced in a manner equal to the original condition by the CONTRACTOR at his own expense. Where these services are encountered and are undamaged, they shall be supported and/or protected by the CONTRACTOR at his expense against later settlement and/or damage after backfill. The CONTRACTOR shall consult the agency or the utility firm having jurisdiction over any duct line, gas main, etc., which may cross the excavation to determine method of supporting such duct or pipe.

G. All excavated material shall be piled in a manner that will not endanger the work and that will avoid obstructing sidewalks and driveways. Hydrants under pressure, valve manhole covers, valve boxes, curb stop boxes, fire and police call boxes, or other utility controls shall be left unobstructed and accessible until the work is completed. Gutters shall be kept clean, or other satisfactory provisions made for street drainage, and natural water courses shall not be obstructed except as otherwise provided for herein on a temporary basis.

3.03 EXCAVATION FOR STRUCTURES

A. Excavation for structures shall be extended sufficiently beyond the limits of the structure to provide ample room for form construction and for practicable construction methods to be followed.

B. Requirements for excavation of sewers and water mains shall also apply to this Section.

3.04 EXCAVATION FOR PAVED SURFACES

A. In excavating around manholes and catch basins or inlets, care shall be exercised to avoid removing the casings and pushing dirt into the structures. Dirt pushed into manholes, catch basins or inlets by the CONTRACTOR's operations shall be immediately removed so that the dirt will not be carried into the sewer by the flow of sewage or storm water.

B. The CONTRACTOR shall take ample precautions to protect all trees and ornamental shrubbery not within the limits of the construction area, or within the construction areas shown on the Plans to be retained from injury by workmen, equipment, or any other agencies connected with the work, including subcontractors. Such protection shall be provided during the progress of the excavation, grading, or other phases of the work as necessary. Such trees or shrubbery shall be surrounded by protective posts or fencing before construction begins, when in judgment of the ENGINEER, such precautionary measures are necessary. If, as a result of any phase of the work, trees are damaged or it is necessary to remove limbs in the way of construction, the repair of the damage and such limb removal shall be done by the CONTRACTOR as directed by the ENGINEER. All costs for the protective work shall be borne by the CONTRACTOR as incidental to the Contract work.

3.05 ROCK EXCAVATION

A. Rock excavation shall consist of excavating igneous, metamorphic and sedimentary rock which cannot be excavated without continuous drilling and blasting or drilling and splitting to fracture the rock. Blasting shall be permitted only after it has been shown that other methods of excavation are impractical. All rock excavation shall be carried to a minimum depth of 8 inches below the pipe or manhole bottom and to the bottom of all footings. The width of the rock excavation shall not exceed the diameter of the pipe plus 12 inches on either side or the edge of the foundation footing.

B. When the use of explosives is necessary for the progression of the work, the CONTRACTOR shall comply with all laws, ordinances and applicable safety code requirements and regulations relative to the handling, storage and use of explosives and protection of life and property. A person competent and experienced in the use of explosives shall be employed to supervise the work. The CONTRACTOR shall schedule all blasting for a definite hour of the day and shall so notify all residents and businesses in the area as to the scheduled day and hour for such blasting operations. Explosive materials shall not be stockpiled and stored in residential areas. Explosives and initiating devices shall not be carried in the same vehicle.

C. Suitable weighted plank coverings or timber mats shall be provided to confine all materials lifted by blasting within the limits of the excavation of trench. Excessive blasting or overshooting shall not be permitted. Any material outside of the authorized excavation cross section which may be shattered or loosened shall be removed at the CONTRACTOR's expense. The CONTRACTOR shall be responsible for all damage resulting from the use of explosives.

3.06 PIPE BORING AND JACKING

A. The CONTRACTOR shall obtain all necessary permits for jacking the encasing pipe under channels, highways and/or railroads and shall notify the governmental agency and/or company having jurisdiction 48 hrs before work at any crossing is started. The CONTRACTOR shall pay all costs for an inspector and/or flagmen required by a railroad or governmental agency.

B. A suitable approach trench shall be opened, adjacent to the toe of the slope of the embankment. The approach trench shall be long enough to accommodate the length of pipe units to be placed, and wide enough to provide sufficient working room. Guide timbers or rails for keeping the pipe on-line and grade shall be installed in the bottom of the trench and heavy timber backstop supports installed at the rear of the trench to take the thrust of the jacks. A timber bearing a "pushing frame" shall be built and furnished to fit or match the end of the pipe to be jacked, so that the pressure of the jacks will be evenly distributed over the end of the pipe. Two (2) hydraulic jacks of sufficient power shall be used to apply pushing or jacking pressure. For firm ground, excavation shall be carried on from inside the pipe, not to exceed twelve (12) inches ahead of the lead pipe. For unstable ground, the lead pipe shall precede the auger. Excavation at the top and sides shall be accurately cut to line and grade. Adjoining sections of steel pipe shall be welded. Pipe shall be jacked on successive shifts until completed to guard against the "freezing of the line" due to settlement and compaction of surrounding soil.

C. The sheeting of pits along any road will be required if the leading edge of all work pits will be closer to the pavement edge than the shoulder point or ten (10) ft, which ever distance is greater, or on curb and gutter sections, at least five (5) ft from back of curb.

D. Upon completion of the installation of the steel pipe encasement, the contractor shall furnish and install a bolted style casing spacer as described below on the carrier pipe. Casing spacers shall be placed a maximum of seven (7) feet apart along the length of the carrier pipe with one casing spacer within 2-1/2 feet of each side of a pipe joint and the rest evenly spaced. Wood skids are not an acceptable method of supporting the carrier pipe.

1. Casing spacers for carrier pipes from 4" - 24" shall be made of a molded, segmented high density polyethylene plastic with 304 stainless steel connecting nuts and bolts. Minimum spacer width shall be 5.2" for carrier pipes from 4" - 12" and 7.0" for carrier pipes 14" - 24". Each casing spacer shall have at least six (6) integrally molded skids extending 1" beyond the bell or mechanical joint of the carrier pipe. The casing spacers shall be equal to the PSI Ranger as manufactured by Pipeline Seal and Insulator, Inc., Houston, TX.

2. Casing spacers for carrier pipes larger than 24" shall be a PVC fusion bonded coated (10-16 mils) steel shell (minimum 14 gauge steel) with a 90 mil PVC inner liner and 2" wide 30% glass reinforced polyester runners (minimum compressive strength = 18,000 psi) (polyethylene is not an acceptable runner material) attached by 3/8" coated steel studs welded to the steel shell. All bolts and nuts used to fasten the shell to the carrier pipe shall be cadmium plated steel. Where riser are required under the runners they shall be a minimum 10 gauge steel welded to the shell and coated as specified for the shell (epoxy is not an acceptable coating for the shell riser). The casing spacers shall be equal to the PSI Model C as manufactured by Pipeline Seal and Insulator, Inc., Houston, Texas.

E. Boring shall be performed by accepted and recognized methods which will provide adequate safety and protection at all times to workmen employed in the work and to inspectors and others involved in the construction.

F. If voids should develop around the outside of the encasing pipe, grouting or other methods approved by the ENGINEER shall be employed to fill such voids.

G. After the pipes are tested satisfactorily, the remaining space between the carrier pipe and the encasing pipe shall be pressure grouted or otherwise filled with concrete. The carrier pipe shall be adequately braced to prevent floating or movement of the pipe.

3.07 SHORING, SHEETING AND BRACING

A. Where sheet piling, shoring, sheeting, bracing, or other supports are necessary, they shall be furnished, placed, maintained, and except as shown or specified otherwise, removed by the CONTRACTOR.

B. All sheet piling, shoring, sheeting and bracing shall be designed by a professional engineer engaged by the CONTRACTOR with demonstrated competence and experience in such work. The sheeting system shall be designed to prevent bottom failure and hydrostatic uplift within the excavation. Provision shall also be made in the design for lateral pressures due to side slope and construction equipment or other surcharge loads, as applicable.

C. The CONTRACTOR shall provide to the ENGINEER for his review, design calculation and arrangement drawings of the sheeting system prior to ordering any materials for bracing, sheeting, etc., and prior to the commencement of the excavation.

D. All materials, except as otherwise specified, used for sheeting and sheet piling, lagging, braces, shores, and stringers, or waling strips shall be of approved quality and dimensions throughout.

E. Materials for sheeting systems shall be furnished and driven or set in place by the CONTRACTOR, where necessary or wherever ordered by the ENGINEER, whether the same is or is not considered necessary by the CONTRACTOR. If, in the opinion of the ENGINEER, the materials furnished by the CONTRACTOR are not of proper quality or sufficient size or not properly placed to ensure the safety of the work or of adjacent structures and property, the CONTRACTOR shall, upon notice from the ENGINEER to that effect, forthwith procure, furnish and set in place or drive other and satisfactory materials, or place the material in a satisfactory manner; and if he shall fail or neglect to do so, the ENGINEER may order all or any part of the work to be stopped until such materials so used are furnished and placed; and the CONTRACTOR shall not be entitled to claim, demand, or receive any compensation for larger size or better quality or different disposal of materials ordered by the ENGINEER, nor any compensation for allowance of any kind whatsoever for or on account of any damage or delay resulting from such stoppage of work.

F. Steel sheet piling may be either new or used. It shall be of adequate strength, straight and properly braced. Steel sheet piling shall be of the interlocking type. Friction in the interlocks shall not be assumed to contribute to the strength of the sheet piling.

G. The design, planning, installation and removal, if required, of all sheet piling, shoring, sheeting, and bracing shall be accomplished in such a manner as to maintain the required excavation or trench section and to maintain the undisturbed state of the soils below and adjacent to the excavation.

H. Steel sheet piling for the excavation shall be driven straight and in-line. The piling shall be supported above ground, before driving, by a guide frame at least 20 ft high which will keep the piling accurately in the required position and vertical. Each piece of piling shall be driven only a few feet at a time and driving shall proceed continuously around the perimeter so that the piles shall reach their full penetration together.

I. Walers and bracing shall be supplied and installed as required to complete the sheeting system. Walers and braces shall be of adequate strength for the load imposed. Splices in walers shall develop the full strength of the member in bending, shear, and axial compression.

J. If bracing members are to be removed during construction, the timing and procedure for removal shall not induce excessive stresses in the permanent structures or in steel sheet piling and bracing members.

K. If the construction sequence of structures requires the transfer of bracing to the completed portions of any structure, the CONTRACTOR shall secure written acceptance of the ENGINEER prior to the installation of such bracing.

L. In trenching operations the use of horizontal strutting below the barrel of pipe or the use of the pipe as support for trench racing will not be permitted. The use of a traveling shield for sewer construction shall require that the device be approved for use by a professional engineer. Sheet piling and timbers in trench excavations shall be withdrawn in a manner so as to prevent subsequent settlement of the pipe or additional backfill loadings which might overload the pipe.

M. The neglect, failure, or refusal of the ENGINEER to order the use of sheeting, or sheet piling or steel, or to order the same to be left in place, or the giving or failure to give of any order or directions as to the manner or methods of driving or placing sheeting, sheet piling, bracing, shores, etc., shall not in any way relieve the CONTRACTOR of any or all obligations under this Contract. Sheeting left in place shall be cut off one (1) ft below existing grade.

N. The rules of the OSHA and the State Department of Labor with respect to excavation and construction shall at all times be strictly observed.

3.08 GENERAL BACKFILLING

A. For all areas, unless otherwise noted, backfilling shall consist of placing excavated material as defined in Paragraph 2.01.A. of this Section, in 12-inch lifts to finish grade. Compaction of backfill shall be such as to obtain 90% of the maximum density.

B. Under pavements, curb, paved driveways, and sidewalks, and where pipe is within a one on one influence of pavement, compaction testing shall be performed by an independent testing laboratory. Testing shall be performed at intervals of one test per lift per 50 feet of trench or as determined necessary by the ENGINEER.

C. In residential developments, all backfill within the road corridor shall be granular material compacted in layers not to exceed 12 inches loose thickness with backfilling carried up to subgrade. Compaction of backfill shall be as such to obtain 95% of the maximum unit density as determined at the optimum moisture content. For purposes of this section, the road corridor is defined as front of house to front of house, including right-of-way and adjacent easements and setbacks.

3.09 BACKFILLING FOR SEWERS AND WATER MAINS

A. Backfilling shall consist of placement of the prescribed materials from a level 12 inches above the crown of the pipe. Placement shall be as follows:

1. Under gravel driveways, gravel roads and shoulders, the backfill shall be granular material which shall be solidly compacted by mechanical tamps in layers of not more than 12 inches loose thickness with backfilling carried up to within 12 inches of finished grade. Compaction of backfill shall be such as to obtain 95% of the maximum unit density as determined at the optimum moisture content.

2. Under pavements, curb, paved driveways, and sidewalks, the backfill shall be granular material compacted in layers not to exceed 12 inches loose thickness with backfilling carried up to subgrade. Compaction of backfill shall be such as to obtain 95% of the maximum unit density as determined at the optimum moisture content. After a period of about 60 days or less, if the backfill compaction is satisfactory to the ENGINEER, to provide for any slight settlement, the CONTRACTOR shall retrim neatly any broken edges of pavement and replace the top surface of the backfill within the pavement area with pavement surface equal to that surface which was removed. The pavement shall be replaced in accordance with the standard specifications of the agency having jurisdiction.

3. Backfill around lift stations, or buried underground structures shall be granular material compacted in 12-inch lifts. Compaction of backfill shall be such as to obtain 95% of the maximum unit density as determined at the optimum moisture content.

4. For all other areas, backfilling shall consist of placing excavated material as defined in Paragraph 2.01.A. of this Section, in 12-inch lifts to finish grade. Compaction of backfill shall be such as to obtain 90% of the maximum unit density as determined at the optimum moisture content.

3.10 FILLING AND BACKFILLING FOR STRUCTURES

A. Embankments underlying structural footings, streets and drives, sidewalks and around structures shall be granular material meeting the requirements of the Michigan Department of Transportation for granular material compacted to 95% density.

B. In all other areas, material required for embankments and backfilling shall be soil or soil-rock mixture free of organic and other deleterious matter and shall contain no more than 15% rocks or lumps larger than 2-1/2 inches in the greatest dimension, compacted to 90% density.

C. Under all interior and exterior floor slabs, an 8-inch thick granular cushion shall be placed. This material shall be clean mineral aggregate meeting the following gradation requirements:

Passing the No. 4 Sieve	100%
Passing the No. 200 Sieve	0-3%

D. Where embankment material is placed to achieve a new surface elevation, the top 4 inches shall be approved topsoil either salvaged from the site or hauled in by the CONTRACTOR.

3.11 FILLING AND BACKFILLING FOR PAVED SURFACES

A. Embankments, including sand cushions and granular fills, shall be placed in successive layers not more than 6 inches in depth the full width of the cross section, each layer to be thoroughly compacted by means of vibratory compactors or by an approved pneumatic-tired roller or combination thereof, as required by the ENGINEER. Each layer shall be compacted to not less than 95% of the maximum unit density as determined at the optimum moisture content. All parts of the embankment shall be uniformly compacted and the CONTRACTOR shall so direct all earthmoving equipment used in the work so that the same shall be attained. Embankment or fill outside the limits of the subgrade where sand or gravel is not required shall be made with suitable material which is free from perishable organic matter, rubbish, stones, broken concrete, roots, or other foreign materials, at no additional compensation. Before any embankments are begin, the base shall be made firm and cleared of topsoil, sod or other perishable material. The sides of the embankment shall be neatly and evenly dressed to the slope shown on the Plans, or such other slope as the ENGINEER may direct.

B. Upon completion of the placing of the curbs, and after the concrete has cured sufficiently, forms shall be removed and the excavated space behind the curb shall be backfilled with a good quality of surface soil, free of rubbish, stone, broken concrete, roots or other foreign material. Where adequate acceptable material for backfill behind the curb is not available, granular fill conforming to 2003 MDOT 8.02.06, Class II, shall be used. Where the area behind the curb is in cut, it shall be trimmed from the top of the curb on the slope shown on the Plans. If the area is in embankment or fill, an earth berm shall be placed immediately adjacent to the top of the curb and then the embankment of fill shall be finished to the slope shown on the Plans. All trimming and finishing shall be done in a neat, workmanlike manner. All excess concrete and debris shall be removed from the excavation behind the curb line before backfilling begins.

C. In construction of non-rigid pavements, backfilling back of curb and gutter shall be completed before placement and compaction of the base course of the roadway.

3.12 PREPARATION OF SUBGRADE FOR ROADWAY SURFACES

A. The bottom of the excavation for the pavement or top of the fill shall be known as the pavement subgrade and shall be smoothed, trimmed and compacted to the required line, grade and cross section to receive the road metal. It shall be thoroughly compacted by rolling with a roller of approved type weighing not less than 8 tons. The subgrade shall be compacted to at least 95% of the maximum density as designated by the test method AASHTO T-180. Inaccessible areas, where rolling is not practical, shall be thoroughly compacted by mechanical tampers capable of striking a blow equivalent to at least 250 foot-pounds per square foot. The subgrade thus formed shall be maintained in a smooth and compacted condition until the pavement has been placed. No base course, surfacing, curb, or curb and gutter, shall be placed until the subgrade has been reviewed by the ENGINEER. The subgrade shall be finished in an acceptable condition at least one day in advance of the pavement construction at all times. Six inches of compacted depth of granular material shall be used where uncompactable soil is encountered. The granular fill shall conform to the 2003 MDOT 9.02.08., Class II, compacted to 95% of its density.

B. Immediately prior to placing the pavement, the subgrade shall be tested for conformity with the cross section shown on the Plans by means of an approved template riding on the curb and gutter sections or on side forms. If necessary, materials shall be removed or added, as required, to bring all portions of the subgrade to the correct elevation. Corrected portions shall then be thoroughly compacted and again tested with the template. Pavement material shall not be placed at any portion of the subgrade which has not been tested for correct elevation.

C. The finished subgrade shall be maintained in a smooth and compacted condition until the pavement is placed. No storage piles of fine or coarse aggregate shall be placed directly upon the finished subgrade. Should the subgrade become rutted or disturbed in any manner, it shall be reshaped and recompacted.

3.13 GRADING

A. The CONTRACTOR shall grade the site to achieve the elevations as shown on the Plans. All disturbed areas beyond the grading limits shall be restored to prior condition.

B. Surplus excavated material not needed for embankment shall be disposed of by the CONTRACTOR. Headwalls, culverts, drains, sewers and appurtenances filled or damaged by the CONTRACTOR during the course of his operations shall be cleaned, repaired, or replaced at his expense.

C. All temporary earth changes shall be in conformance with the Soil and Erosion Control Act.

3.14 RESTORATION

A. Headwalls, culverts, and drainage systems filled or damaged by the CONTRACTOR during the course of his operations shall be cleaned, relaid or rebuilt with new materials to a condition equal to the original state, and of thickness equal to the original structure and to the original line and grade at the CONTRACTOR's expense.

B. Where the excavation is located beside a ditch and/or where an existing ditch is filled or disturbed in the CONTRACTOR's operations, the CONTRACTOR shall clean, repair, or replace the ditch with properly pitched bottom and side slopes and of section and capacity not less than the original section.

C. Where excavation has been through lawn areas, the CONTRACTOR shall restore the disturbed area by placing topsoil and seeding or sodding over the final backfill material.

D. The CONTRACTOR shall remove excess dirt and other construction material from the site of the work and leave the site in a condition equal to its original state.

E. The final condition of the streets and roadways shall be subject to the approval of the governmental body having jurisdiction thereof, as well as review by the ENGINEER.

PITTSFIELD CHARTER TOWNSHIP
Pittsfield Township

Pittsfield Charter Township
6201 W. Michigan Ave.
Ann Arbor, MI 48108-9721
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www.pittsfield-mi.gov

TWP REV		BWA	DRW	11.04.27
UPDATES		TTN	DRW	10.01.20
Revision		By	Appd.	YY.MM.DD
Issued		By	Appd.	YY.MM.DD
File Name: SE-02	TTN	DRW	DRW	07.10.01
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
PITTSFIELD TOWNSHIP

Pittsfield Township, Michigan

Title
EARTHWORK SPECIFICATIONS

Project No.
2075001300

Scale
NOT TO SCALE

Revision

STORM SEWER AND DRAINAGE STRUCTURES

1.00 GENERAL

1.01 DESCRIPTION

A. Furnish all labor, tools, equipment and materials to construct all storm sewers, and drainage structures as herein specified. No sewers shall be accepted until the sewer system has passed the system acceptance tests.

1.02 TESTING

A. General

1. The CONTRACTOR shall furnish all equipment and personnel to conduct system acceptance tests as specified herein on all completed sewers. All tests shall be conducted under the supervision of the ENGINEER. No acceptance tests shall be conducted until the entire sewer system is constructed or just prior to placing the line in service providing the sewer pipe has been installed for not less than 30 days.

B. Test for Alignment

1. All sewers shall be laid accurately to the line and grade designed by the ENGINEER. The sewers will be tested for alignment by shining a light through the pipe at a manhole and viewing the light from an adjacent manhole. Any section of sewer in which a light cannot be seen from one manhole to the next shall be corrected to the satisfaction of the ENGINEER to pass this test.

C. Material Tests

1. The CONTRACTOR shall have tests of pipe strength made by an independent testing laboratory. Tests of up to 4 lengths of sewer pipe per hundred lengths may be required to show compliance with the Specifications. All pipe delivered to the job site shall be accompanied with a manufacturer's certificate of compliance to the Specifications.

D. Submittals

1. The CONTRACTOR shall submit shop drawings, or data sheets for all castings, steps and manholes.

2. The CONTRACTOR shall submit certification letters for all pipes. All letters must contain the following: Contractors name, project name, township name, current date, certification of pipe provided and letterhead of the certifying company.

2.00 PRODUCTS

2.01 PIPE

A. Reinforced concrete pipe and manhole tees shall be no less than the latest revision of ASTM C76, with the class designation as shown on the Plans or in the Proposal.

B. Concrete pipe shall have tongue and groove gasketed premium joints.

C. Corrugated steel pipe shall meet the requirements of AASHO M-190 for coated pipe latest revision. Minimum gage thickness shall be as shown on the Plans.

2.02 REINFORCED CONCRETE MANHOLES

A. Manholes shall conform to the current ASTM Specifications for precast reinforced concrete Manhole Sections, serial designation C478. Manhole section joints shall conform to ASTM Designation C990. All cones shall be eccentric with an offset step configuration. Concrete adjustment rings or riser rings shall not be used for adjusting the height of the structure.

B. All manhole component parts shall have the name of the manufacturer stenciled on the inside. The lettering or logo shall be a minimum of 4 inches high.

2.03 MORTAR FOR MANHOLES

A. Mortar for plastering manholes and drainage structures shall be made of one part Portland cement and two parts fine aggregate.

2.04 BRICK AND BLOCK

A. Brick for brick and mortar structures shall conform to the current ASTM Specification C32. Block for block and mortar structures shall conform to the current ASTM Specification C135.

B. The concrete block masonry used to construct manhole and catch basin walls shall be solid curved blocks with the inside and outside surfaces curved to the required radii. The blocks shall have tongue and groove or other approved type of joint at the ends so that the units interlock to form a strong, rigid structure. Curved blocks shall have the inside and outside surfaces parallel.

C. The block shall not exceed 18 inches in length or 8 inches in depth (height). No block shall be less than 6 inches in width (thickness). All blocks in one structure shall be of the same height dimension. The blocks shall be designed for length so that only full-length or half-length blocks are required to lay the circular wall of any one course.

D. Blocks intended for use in the cones or tops of manholes and catch basins shall have such shape as may be required to form the structure as shown on the Plans with inside and outside joint not to exceed 1/4-inch in thickness.

2.05 STRUCTURE FRAMES AND COVERS

A. Structures frames and covers shall weigh not less than 350 lbs. Each frame and cover shall have machined bearing surfaces and shall be suitably notched for convenient removal of the cover. Each solid manhole cover shall be marked Storm Sewer with letters integrally cast into the cover.

B. Frames and Covers shall be as follows:

1. For use on manholes: East Jordan 1040Z, with Type B cover lettered "STORM SEWER", or equal. Structures 24-inches in diameter shall have the 1045 Z frame.
2. For use on drainage structures in paved areas: East Jordan 1040Z, with Type M1 cover, with "DUMP NO WASTE" lettering and trout logo.
3. For use on drainage structures in curbed areas: East Jordan 7045 or 7065, with "DUMP NO WASTE" lettering and trout logo.
4. For use on drainage structures in landscaped areas: East Jordan 1040Z, with 1040 N 7", with "DUMP NO WASTE" lettering and trout logo.

C. All frames and covers shall be coated by the manufacturer with coal tar pitch varnish or other asphaltum coating reviewed by the ENGINEER.

D. All covers for drainage structures shall have storm drain markers affixed to the nearest available flat surface. The storm drain markers shall be manufactured by Das Manufacturing and shall be #SDR "No Dumping. Drains to River." The storm drain markers shall be installed per the manufacturer's recommendations.

2.06 MANHOLE STEPS

A. Steps shall be plastic coated steel. They shall be M.A. Industries PS1-PF for precast manholes, PS1-B for block manholes, or equal.

2.07 DRAINAGE STRUCTURES

A. All manholes and catch basins shall be precast unless otherwise specified.

B. Manhole and catch basin bottoms shall be concrete and top of slab shall have a troweled finish.

C. Upon approval by the ENGINEER, the manhole and catch basin walls may be constructed of concrete block masonry or concrete manhole pipe conforming to the requirements of the specifications previously listed. Construction shall be in accordance with the details for Catch Basin and Storm Sewer Manhole shown on the Plans.

D. A plaster coat of mortar 1/2-inch in thickness shall be applied to the inside and outside surface of all manholes and catch basins constructed with concrete block masonry or sewer brick. The inside coat of mortar shall be applied in a smooth, neat workmanlike manner.

E. Final adjustment of the top of manholes and catch basins, so that the manhole or catch basin cover is at finished elevations as shown on the Plans or meets the finished surface, may be accomplished with sewer brick conforming to the previously listed Specifications. The total height of brick for this purpose shall not exceed 9 inches. The total chimney height shall not exceed 18 inches.

F. All block and brick masonry units shall be laid in a full bed of mortar. The inside joints of the block masonry construction shall be tooled in a neat and workmanlike manner.

3.00 EXECUTION

3.01 EXCAVATION AND BACKFILL

A. All excavation and backfill 12 inches above the crown of pipe shall conform to Section 2.04, Earthwork of these specifications.

B. The trench shall be backfilled closely behind the pipe laying. Unless otherwise directed or permitted by the ENGINEER, the backfilling shall follow and be completed to the top of the trench within four pipe lengths behind pipe laying.

3.02 BEDDING

A. Concrete pipe shall be laid on a compacted granular material placed on the bottom of the trench to a depth of not less than 4 inches. Where indicated on the Plans or required by the ENGINEER, concrete encasement or cradle shall be used.

B. For all pipes, compacted aggregate material shall be placed at the sides of the pipe in 12-inch lifts and cover not less than 12 inches above the crown of the pipe.

C. "Granular Material" shall be MDOT class II, placed in not more than 6-inch layers and compacted to not less than 90% standard density.

3.03 PIPE INSTALLATION

A. All pipe shall be laid true to the required lines and grades. All trenches when pipe laying is in progress, shall be kept dry, and all pipes and fittings shall be uniformly supported on a properly trimmed bedding with holes at each joint to receive bells. All pipe shall be laid with bells uphill.

B. The grade as shown on the profiles is that of the pipe invert and that to which the work must conform. The grade shall be kept by laser or other tools which shall be furnished by the CONTRACTOR at his expense. Each pipe shall be laid accurately to the line and grade as shown on the Plans and in such manner as to form a close concentric joint with the adjoining pipe and prevent sudden offsets of the invert. The interior of sewers shall, as the work progresses, be cleaned of all dirt, cement, debris and other superfluous materials of every description. Bulkheads shall be used to keep foreign materials out of the open end of the sewer when work is not in progress.

C. The location of the piping as shown on the Plans has been determined to avoid, insofar as possible, interference with trees or structures or fixtures above ground and other underground mains, services, utilities or structures. Any change in location or alignment of piping, which may be found more feasible or practicable as the work progresses, shall be made by the CONTRACTOR, as the ENGINEER may direct.

D. All pipe shall be carefully lowered and moved into position in trench or vault in a controlled manner such as will prevent damage to the pipe and any coatings or lining. An excessive amount of scratching on the surface of the concrete pipe will be considered cause for rejection.

E. All cutting of the pipe shall be done in a neat workmanlike manner with the least amount of waste and without damage to existing or new lines. A fine toothsaw, tubing cutter or similar tool may be used to cut concrete pipe. Cuts must be square. Ragged edges shall be removed with a cutting tool or file.

F. Breaks in pipe or joints shall be repaired to the satisfaction of the ENGINEER and at the expense of the CONTRACTOR.

3.04 CONNECTIONS TO EXISTING MANHOLES

A. When a sewer is connected to an existing manhole, a hole adequate to receive the new pipe shall be cored into the manhole.

B. If the existing manhole is of brick construction, a single rowlock of brick shall be turned over the new pipe and the existing manhole brick work shall be cleaned, pointed and given a 1/2-inch mortar coat on the outside surface.

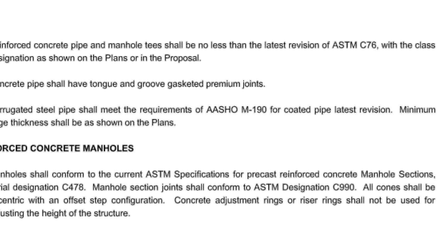
C. For connections to existing precast reinforced concrete manholes, a hole shall be cored into the concrete manhole wall to receive the pipe. Reinforcing steel shall not be cut out shall be bent and replaced in the area that is to be patched. A form shall be constructed over the area of pipe penetration. The formed area shall then be filled with concrete.

D. Closure of the manhole wall shall be made watertight using concrete.

3.05 ANIMAL GRATES

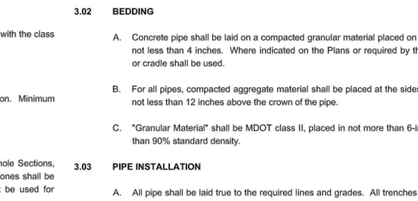
A. Animal grates shall be required on all endsections greater than 12-inch diameter.

PCT February 2008



PLAN VIEW

1. RIPRAP THICKNESS AS SHOWN ON PLANS.



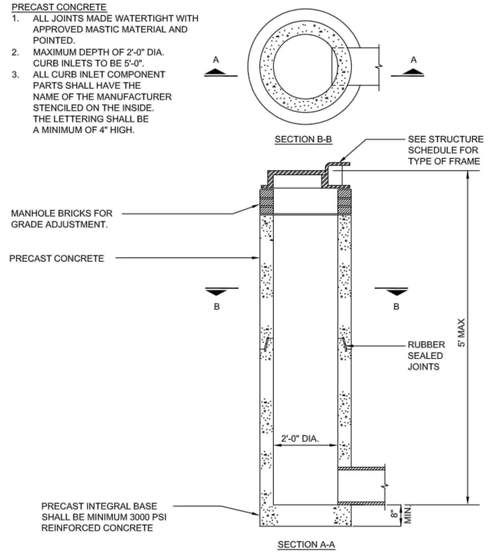
NOTES:

EXTENT OF RIPRAP SHALL BE AS SHOWN HERE OR AS SHOWN ON PLANS, WHICH-EVER IS GREATEST.

SECTION A–A

END SECTION AND RIPRAP DETAIL

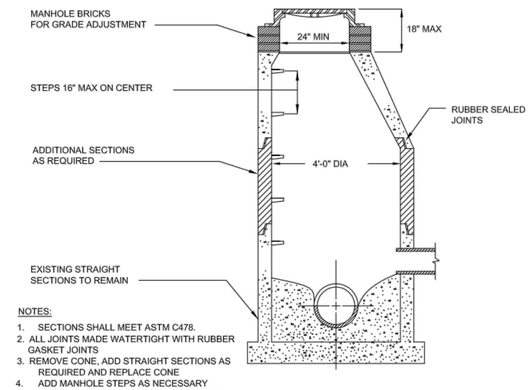
PRECAST CONCRETE
1. ALL JOINTS MADE WATERTIGHT WITH APPROVED MASTIC MATERIAL AND POINTED.
2. MAXIMUM DEPTH OF 2'-0" DIA. CURB INLETS TO BE 5'-0".
3. ALL CURB INLET COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE. THE LETTERING SHALL BE A MINIMUM OF 4" HIGH.



2' DIAMETER INLET

AFFIX TO SURFACE ON OR NEAR ALL DRAINAGE COVERS.

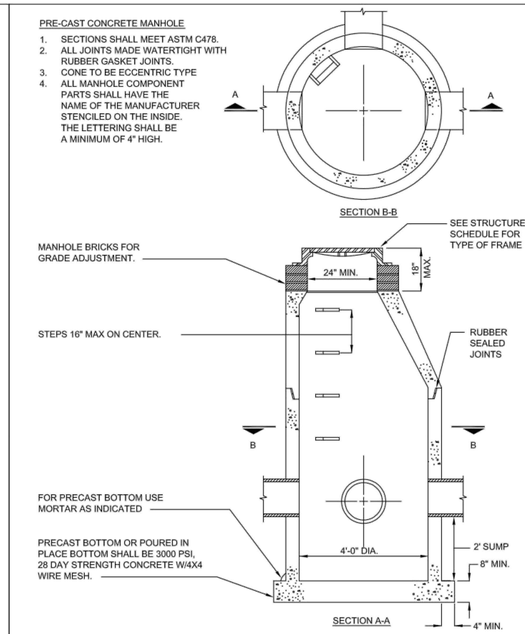
STORM DRAIN MARKER



NOTES:
1. SECTIONS SHALL MEET ASTM C478.
2. ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS
3. REMOVE CONE, ADD STRAIGHT SECTIONS AS REQUIRED AND REPLACE CONE
4. ADD MANHOLE STEPS AS NECESSARY
5. ADD ADJUSTMENT RINGS FOR RIM GRADE ADJUSTMENT

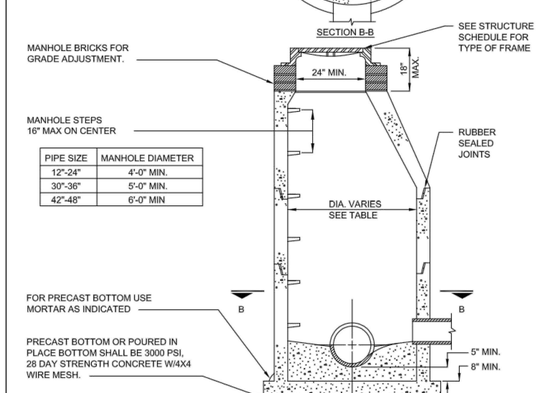
MANHOLE & CATCH BASIN RECONSTRUCTION DETAIL

PRE-CAST CONCRETE MANHOLE
1. SECTIONS SHALL MEET ASTM C478.
2. ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS.
3. CONE TO BE ECCENTRIC TYPE
4. ALL MANHOLE COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE. THE LETTERING SHALL BE A MINIMUM OF 4" HIGH.



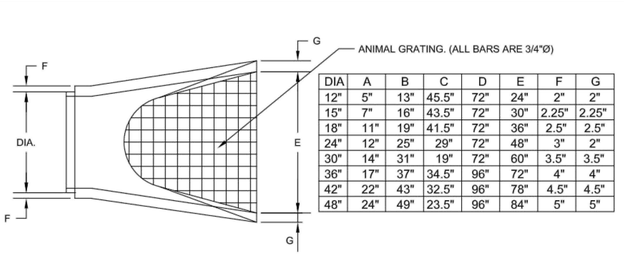
4' DIAMETER CATCH BASIN

PRE-CAST CONCRETE MANHOLE
1. SECTIONS SHALL MEET ASTM C478.
2. ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS
3. CONE TO BE ECCENTRIC TYPE
4. ALL MANHOLE COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE. THE LETTERING SHALL BE A MINIMUM OF 4" HIGH.

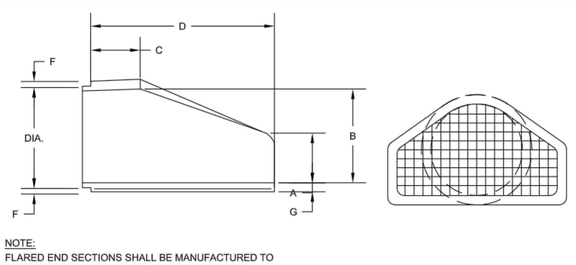


PIPE SIZE	MANHOLE DIAMETER
12"-24"	4'-0" MIN.
30"-36"	5'-0" MIN.
42"-48"	6'-0" MIN

STORM SEWER MANHOLE



DIA	A	B	C	D	E	F	G
12"	5"	13"	45.5"	72"	24"	2"	2"
15"	7"	16"	43.5"	72"	30"	2.25"	2.25"
18"	11"	19"	41.5"	72"	36"	2.5"	2.5"
24"	12"	25"	29"	72"	48"	3"	2"
30"	14"	31"	19"	72"	60"	3.5"	3.5"
36"	17"	37"	34.5"	96"	72"	4"	4"
42"	22"	43"	32.5"	96"	78"	4.5"	4.5"
48"	24"	49"	23.5"	96"	84"	5"	5"



NOTE:
FLARED END SECTIONS SHALL BE MANUFACTURED TO THE CLASS SPECIFICATIONS AS THE PIPE ITSELF.

STANDARD END SECTIONS FOR PRECAST CONCRETE

Pittsfield Charter Township
6201 W. Michigan Ave.
Ann Arbor, MI 48108–9721
48108–9721
Tel. 734.822.3101
www.pittsfield–mi.gov

Revision	By	Appd.	YY.MM.DD
UPDATES	MRH	DRW	14.01.24
TWP REV	BWA	DRW	12.08.09
TWP REV	BWA	DRW	11.04.27
UPDATES	BWA	DRW	10.10.25
UPDATES	TTN	DRW	10.01.20

Issued	By	Appd.	YY.MM.DD
File Name: ST–01	TTN	DRW	DRW	07.10.01
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
PITTSFIELD TOWNSHIP

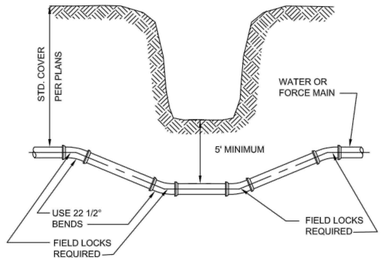
Pittsfield Township, Michigan

Title
STORM SEWER DETAILS AND SPECIFICATIONS

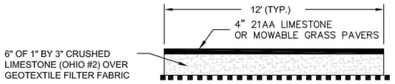
Project No.
2075001300

Scale
NOT TO SCALE

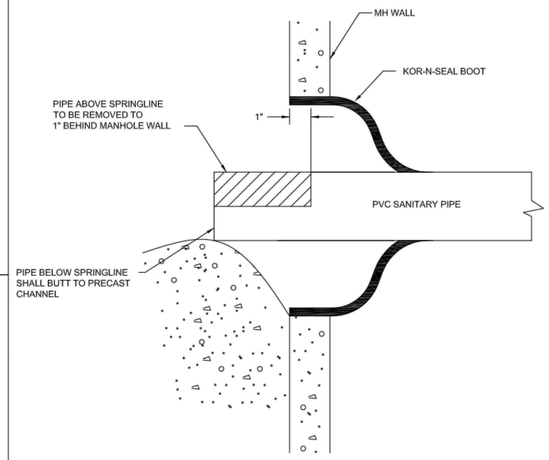
Revision



DITCH & STREAM CROSSING

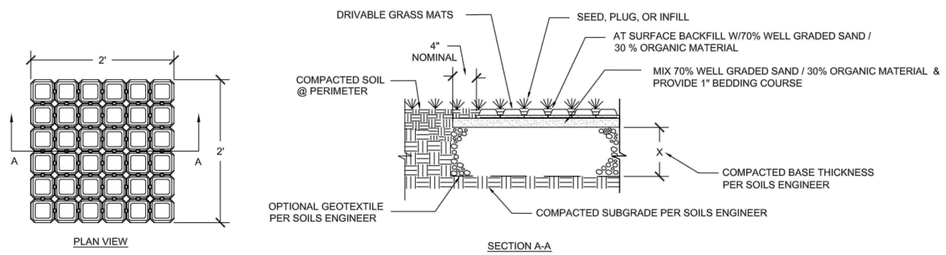


SANITARY SEWER ACCESS PATH

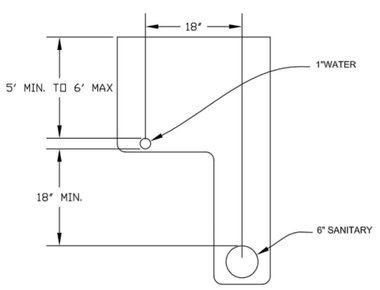


SANITARY PIPE PENETRATION

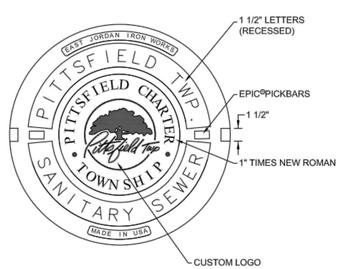
NOTE:
FOR STORMWATER MANAGEMENT APPLICATIONS INCLUDING STORAGE AND INFILTRATION, ALTERNATE INFILLS, BASE MATERIAL, AND DRAINAGE MAY BE REQUIRED



TYPICAL HEAVY TRAFFIC DRIVABLE GRASS DETAIL



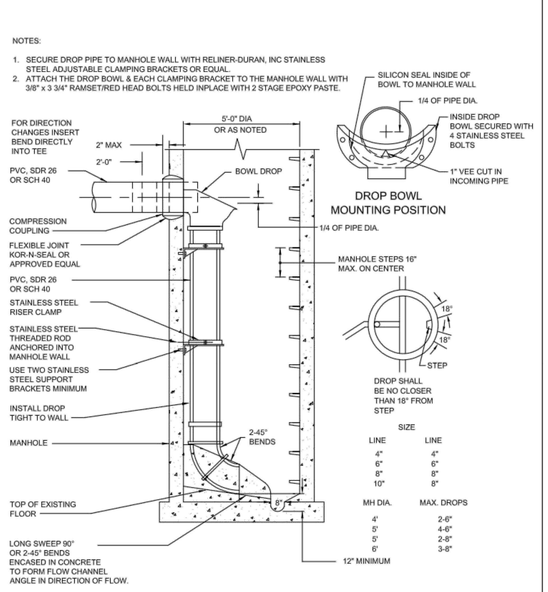
TYPICAL L TRENCH DETAIL
HOUSE LEADS



EAST JORDAN IRON WORKS 1040 Z BOLT DOWN FRAME
EAST JORDAN IRON WORKS 1040 AGS COVER

COVER DETAIL

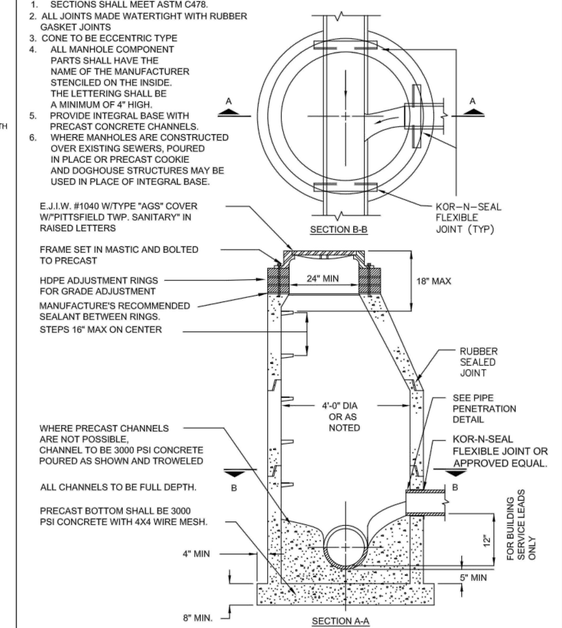
NOTES:
1. SECURE DROP PIPE TO MANHOLE WALL WITH RELINER-DURAN, INC STAINLESS STEEL ADJUSTABLE CLAMPING BRACKETS OR EQUAL.
2. ATTACH THE DROP BOWL & EACH CLAMPING BRACKET TO THE MANHOLE WALL WITH 3/8" x 3 3/4" RAMSET/RED HEAD BOLTS HELD INPLACE WITH 2 STAGE EPOXY PASTE.



NO UTILITY STRUCTURES (ie. MANHOLES, CURB BOXES etc.) SHALL BE PLACED IN ANY DRIVEWAY OR SIDEWALK

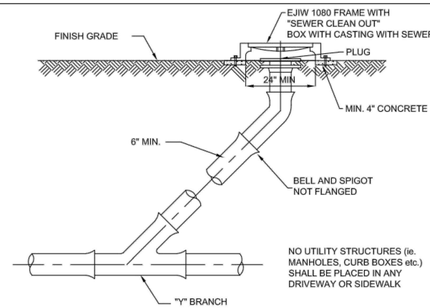
INTERIOR DROP
SANITARY MANHOLE

PRE-CAST CONCRETE MANHOLE
1. SECTIONS SHALL MEET ASTM C478.
2. ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS
3. CONE TO BE ECCENTRIC TYPE
4. ALL MANHOLE COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE. THE LETTERING SHALL BE A MINIMUM OF 4" HIGH.
5. PROVIDE INTEGRAL BASE WITH PRECAST CONCRETE CHANNELS.
6. WHERE MANHOLES ARE CONSTRUCTED OVER EXISTING SEWERS, POURED IN PLACE OR PRECAST COOKIE AND DOGHOUSE STRUCTURES MAY BE USED IN PLACE OF INTEGRAL BASE.

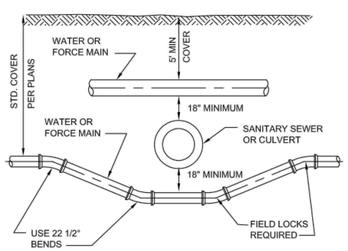


NO UTILITY STRUCTURES (ie. MANHOLES, CURB BOXES etc.) SHALL BE PLACED IN ANY DRIVEWAY OR SIDEWALK

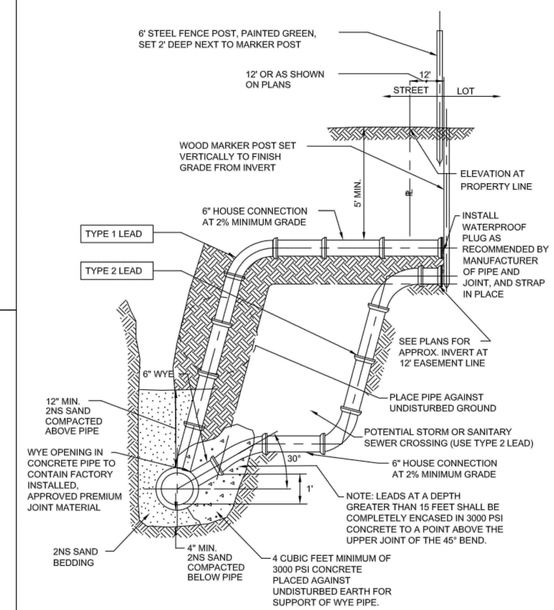
SANITARY MANHOLE



SANITARY SEWER CLEANOUT



SEWER OR CULVERT CROSSING



SANITARY SEWER SERVICE
& RISER CONNECTION DETAIL

Pittsfield Charter Township
6201 W. Michigan Ave.
Ann Arbor, MI 48108-9721
48108-9721
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COVER DETAIL UPDATE	MRH	DRW	14.01.24
TWP REV	BWA	DRW	11.04.27
MANHOLE UPDATES	BWA	DRW	10.10.25
UPDATES	TTN	DRW	10.01.20
Revision	By	Appd.	YY.MM.DD
Issued	By	Appd.	YY.MM.DD
File Name: SS-01	BWA	DRW	DRW	07.10.01
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
PITTSFIELD TOWNSHIP

Pittsfield Township, Michigan

Title
SANITARY SEWER DETAILS

Project No.
2075001300

Scale
NOT TO SCALE

Revision

SANITARY SEWER AND MANHOLES

1.00 GENERAL

1.01 DESCRIPTION

A. The CONTRACTOR shall furnish all labor, tools, equipment and materials to construct all sanitary sewers, manholes and necessary appurtenant work as herein specified. No sewers shall be accepted until the sewer system has passed the system acceptance tests.

1.02 TESTING

A. General

1. The CONTRACTOR shall furnish all equip\-ment and personnel to conduct system acceptance tests as specified herein on all completed sewers. All tests shall be conducted under the supervision of the ENGINEER. No acceptance tests shall be conducted until the entire sewer system is constructed and has been installed for not less than 30 days.

2. The CONTRACTOR may desire to make an air test prior to backfill for his own purposes but the line acceptance tests shall be conducted after backfilling or extensions.

3. All sewer lines shall be televised while running enough water through the line to be visible at the next downstream manhole.

4. All sewer lines shall be checked for alignment.

5. All manholes shall be tested for leakage. All PVC lines shall be tested for deflection.

6. Sewer pipe 30 inches and smaller shall be air tested. Sewer pipe larger than 30 inches shall be tested by either infiltration or exfiltration and shall be tested in lengths of 1600 feet or less.

7. Should the results of any test fail to meet the criteria established in this Specification, the CONTRACTOR shall, at his own expense, locate and repair rejected section and retest until it is within specified allowance.

B. Test for Leakage - Air Test

1. Section 33-95 (pg 30-6) 2004-Ten State Standards.

2. After a manhole-to-manhole section of line has been backfilled and cleaned, it shall be plugged at each manhole with pneumatic plugs inflated to 35 psig internal pressure. The design of the pneumatic plugs shall be such that they will hold against the line test pressure without requiring external blocking or bracing.

3. There shall be three (3) hose connections to the pneumatic plug. One hose shall be used only for inflation of the pneumatic plug. The second hose shall be used for continuously reading the air pressure rise in the sealed line. The third hose shall be used only for introducing low pressure air into the sealed line.

4. There shall be a 0-30 psig gauge for reading the internal pressure of the line being tested. Calibrations from the 1-10 psig range shall be in tenths of lbs (not ounces) and this 0-10 portion shall cover 90% of the complete dial range.

5. Low pressure air shall be introduced into the sealed line until the internal air pressure reaches 4.0 psig greater than the average back pressure of any ground water pressure that may be over the pipe. At least two (2) minutes shall be allowed for the air pressure to stabilize. After the stabilization period, the third hose shall be disconnected.

6. The portion of line being tested shall be accepted if the portion under test meets the following conditions.

a. DI, and RCP Pipes

(1) The time requirement for the pressure to decrease from 3.5 to 2.5 psig (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time given in the following table:

Pipe	Min. Holding Time Seconds/100 ft. Pipe
4-inch	18
6-inch	42
8-inch	72
10-inch	90
12-inch	108
15-inch	126
18-inch	144
21-inch	180
24-inch	216
27-inch	252
30-inch	288

(2) In areas where ground water is known to exist, the CONTRACTOR shall install a 1/2-inch diameter capped pipe nipple, approximately 10 inches long, through the manhole wall on top of one of the sewer lines entering the manhole. This shall be done at the time the sewer line is installed. Immediately prior to the performance of the line acceptance test, the ground water level shall be determined by removing the pipe cap, blowing air through the pipe nipple into the ground so as to clear it, and then connecting a clear plastic tube to the pipe nipple. The hose shall be held vertically and a measurement of the height in feet of water shall be taken after the water stops rising in this plastic tube. The height in feet shall be divided by 2.3 to establish the lbs of pressure that will be added to all readings. For example, if the height of water is 11-1/2 ft, then the added pressure will be 5 psig. This makes the 3.5 psig to be 8.5 psig, and the 2.5 psig to be 7.5 psig. The 1 lb allowable drop and the timing remains the same.

a. PVC Pipe

(1) The time requirement for the pressure to decrease from 3.5 to 3.O psig (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than that shown in the following table:

Pipe Size (inches)	Holding Time (seconds)	Minimum Holding Time (seconds)
4-inch	0.190xL	113
6-inch	0.427xL	170
8-inch	0.760xL	227
10-inch	1.187xL	283
12-inch	1.709xL	340
15-inch	2.671xL	425
18-inch	3.846xL	512

(2) If any section of the sewer fails to meet this requirement, the CONTRACTOR shall perform a television inspection of the faulty section and repair or replace at his own expense all defective materials and/or workmanship to the satisfaction of the ENGINEER. The test procedure shall be repeated until the results are acceptable.

C. Test for Infiltration

1. Sewer pipe over 18 inches shall be tested to measure the infiltration of ground water. If the measured leakage exceeds 100 gallons per inch diameter per mile of pipe per 24 hr period, the CONTRACTOR shall locate the points of excessive leakage and make the necessary repairs at his own expense.

2. In the event the line does not pass the infiltration test as stated above, the test shall be repeated after suitable repairs have been completed.

D. Test for Exfiltration

1. Where the ground water provides less than a 2 ft head on the sewer, an exfiltration test shall be conducted by filling the sewer with water to a 4 ft head or 4 ft above the ground water level, whichever is greater. The allowable water loss shall be 100 gal/in./mi/day as calculated above for infiltration.

2. After the sewer has been filled with water, 4 hrs time shall be allowed for water absorption by the pipe before exfiltration tests are initiated.

3. For the purpose of establishing the 4 ft test head, the head shall be measured from the center of the sewer pipe at the midpoint of the test section length. This procedure shall be used for both infiltration and exfiltration tests.

E. Test for Manhole Leakage

1. All manholes shall be tested for leakage by using plugs on inleting-outleting sewers, and filling the manholes with water to the top of the man\-hole. Four hours shall be allowed for water absorption by the manhole before testing is initiated. Allowable exfiltration for 48-inch diameter manholes shall be 2 gallons per foot of depth per day.

F. Test for Alignment

1. All sewers shall be laid accurately to the line and grade designed by the ENGINEER. The sewers will be tested for alignment by shining a light through the pipe at a manhole and viewing the light from an adjacent manhole. Any section of sewer in which a light cannot be seen from one manhole to the next shall be corrected to the satisfaction of the ENGINEER to pass this test.

G. Test for Deflection of PVC Pipe

1. PVC pipe sewers shall be installed in such a manner that the initial deflection of the conduit shall conform to the latest revision of ASTM D-3034.

2. Deflection of PVC pipe shall be tested by pulling a rigid pig or equivalent through the pipe. The pig shall be constructed in accordance with the following table of maximum outside diameters and shall be submitted to the ENGINEER for review before testing is initiated.

Pipe I.D.	Pig O.D.
6 inches	5.33 inches
8 inches	7.11 inches
10 inches	8.87 inches
12 inches	10.55 inches
15 inches	12.90 inches
18 inches	15.74 inches

3. The pig shall be drawn by hand through the pipe from manhole to manhole. Any portion of pipe through which the pig passes freely shall be deemed to have passed the deflection test. Sections of pipe through which the pig does not pass shall be located, un\-covered and the pipe zone bedding improved and backfilled by the CONTRACTOR at his own expense. The pipe shall then be retested before acceptance is granted.

H. Material Tests

1. The CONTRACTOR shall have tests of pipe and strength made by an independent testing laboratory. Tests of up to 4 lengths of sewer pipe per hundred lengths may be required to show compliance with the Specifications. All pipe delivered to the job site shall be accompanied with a manufacturer's certificate of compliance to the Specifications.

1.03 SUBMITTALS

A. The CONTRACTOR shall submit shop drawings or data sheets for all pipe, manholes, manhole castings, pipe to manhole connections, and valves. The Contractor shall submit certification letter for all pipe proposed on the project. The letters shall contain the following: Contractor name, project name, township name, current date, certification of pipe provided and letterhead of the certifying company.

2.00 PRODUCTS

2.01 SEWER PIPE

A. Pipe for sewer 24-inch diameter and smaller shall be polyvinyl chloride (PVC). Pipe for 30-inch diameter and larger shall be PVC truss pipe. Ductile iron pipe and reinforced concrete pipe shall be used as specified by the ENGINEER.

B. Pipe for service leads 4 though 8 inches in diameter shall be polyvinyl chloride (PVC).

C. Reinforced concrete pipe shall be no less than the latest revision of ASTM C76, with the class designation as shown on the Plans or in the Pro\-posal.

D. PVC pipe 4 inches through 15 inches in diameter shall meet or exceed all of the requirements of the current ASTM D-3034 SDR-26 polyvinyl chloride sewer pipe and fittings. 18-inch diameter PVC pipe shall meet or exceed all the requirements of the current ASTM F-794 SDR 26 polyvinyl chloride sewer pipe and fittings. Samples of pipe and physical and chemical data sheets shall be submitted to the ENGINEER for review. Approval shall be obtained before pipe is purchased.

E. If the sewer pipe is greater than 15 feet deep PVC pipe shall be SDR 21.

F. Truss pipe shall meet or exceed all of the requirements of the current ASTM D2680.

G. Ductile iron pipe shall meet or exceed all the requirements of ANSI A21.50 with a cement lining.

2.02 SEWER PIPE FITTINGS

A. Fittings shall be of the same material as the pipe, and in no case shall the walls be thinner than that of the pipe furnished.

B. Wye and tee fittings for PVC pipe shall be reviewed by the ENGINEER before purchasing.

C. The dry fit of all fittings must be snug. If the fit is such that it is loose, the pipe or fitting will be rejected as faulty and of improper size.

2.03 SEWER PIPE JOINTS

A. Concrete pipe joints shall be made of a resilient material conforming to the latest revision of ASTM Designation C443. Proper lubricant shall be furnished by the joint manufacturer.

B. Concrete pipe for use with rubber joints shall be smooth and precisely formed to provide a uniform annular space for joint materials.

C. PVC pipe shall be jointed with ring gusseted bell ends. (ASTM-D3212) Jointing materials shall be applied to the bell end of the pipe at the point of manufacture in such a manner that a tight uniform joint will be achieved and such that when the joint is made up in the field, the joint material will not roll or tear from the pipe. A proper joint lubricant shall be furnished by the pipe manufacturer.

2.04 REINFORCED CONCRETE MANHOLES

A. Manholes shall conform to the current ASTM specifications for precast reinforced concrete manhole sections, serial designation C478. Manhole section joints shall conform to ASTM C990-96. Cone sections shall be straight side type, with an offset step configuration.

B. All manhole component parts shall have the name of the manufacturer stenciled on the inside. The lettering or logo shall be a minimum of 4-inches high.

C. Manholes constructed over an existing sewer line shall have a doghouse mudded to an 8-inch thick cookie. The bottom of the existing pipe shall be the channel. All other manholes shall have precast integral base sections with pre-formed concrete channels.

D. All channels shall be constructed to the full flow depth of the pipe.

2.05 MORTAR FOR MANHOLES

A. Mortar for plastering manholes shall be made of one part Portland cement and two parts fine aggregate.

2.06 MANHOLE FRAMES AND COVERS

A. Manhole frames and covers shall weigh not less than 350 lbs. Each frame and cover shall have machined bearing surfaces and shall be suitably notched for convenient removal of the cover. Each cover shall be marked with the Pittsfield Township logo and the letters, PITTSFIELD TWP SANITARY SEWER integrally cast into the cover.

B. Covers shall be of the "self-sealing" design having a continuous gasket glued in a machined groove and a concealed pickhole. Frames and covers shall be East Jordan 1040Z, with Type AGS cover.

C. All manhole frames and covers shall be coated by the manufacturer with coal tar pitch varnish or other asphaltum coating reviewed by the ENGINEER.

2.07 MANHOLE STEPS

A. Steps shall be plastic coated steel. They shall be M.A. Industries PS1-PF or PS1-B, or approved equal.

2.08 MANHOLE CONNECTIONS

A. Sewer pipe (6-inch to 24-inch) to manhole connections shall be through: 1) a flexible rubber boot which shall be securely clamped into a core-drilled pipe port. Pipe ports shall be core-drilled at the point of manhole manufacturer and shall be accurately located within 1/2-inch of proposed sewer centerline (Kor-N-Seal); or, 2) a self-adjusting mechanical pipe to manhole seal which provides a resilient flexible and infiltration-proof joint (Res-seal); or, 3) a flexible rubber wedge firmly rammed into a rubber gasket which is cast into the manhole (Press Wedge II), or equal. All flexible pipe to manhole connections shall be installed per the manufacturers specifications.

B. Neoprene rubber for the manhole boot shall meet ASTM Specification C443 and shall have a minimum thickness of 3/8-inch. Pipe clamp bands shall be of corrosion-resistant steel.

C. Sewer pipe over 24 inches to manhole connections shall be in accordance with details shown on the Plan.

2.09 SANITARY MANHOLE ADJUSTMENTS

A. All final grade adjustment of manhole covers and frame assemblies shall be completed utilizing injection molded High Density Polyethylene (HDPE) adjustment rings as manufactured by LADTECH, INC. or approved equal. The adjustment rings shall be manufactured from polyethylene plastic as identified in ASTM Designation D 1248.

B. All adjustment for matching road grade shall be made utilizing a molded indexed slope ring.

C. Each adjustment ring shall be sealed with a 3/16 to ¼ inch bead of butyl rubber sealant per the manufacturer's instructions. Sealant shall meet ASTM specification C-990.

D. All castings and adjustment rings shall be securely fastened to the cone of the structure with four 3/8-inch threaded rods. The rods shall be galvanized or stainless steel anchored to the structure with Redhead concrete anchors or equal. Stainless steel or galvanized nuts and washers shall be used to attach the casting.

2.10 MANHOLE DROPS

A. Manhole drop connections shall be interior drops using the drop bowl as produced by Reliner-Duran Inc. or approved equal.

B. Drop bowl model A-4" shall be used for all lines up through full 6-inch inlets. Drop bowl model A-6" shall be used for all 8-inch inlets. Drop bowl model B-8" shall be used for all 10-inch inlets. Lines larger than 10 inches shall be as directed by the ENGINEER.

C. The force line hood shall be attached on models A-4" and A-6" when the incoming line is from a force main or the slope is 3 percent or greater.

D. The drop pipe shall be secured to the manhole wall with Reliner-Duran, Inc. stainless steel adjustable clamping brackets or approved equal.

E. The drop bowl and each clamping bracket shall be attached to the manhole wall with 3/8-inch x 3 3/4-inch bolts.

F. The incoming pipe shall be trimmed such that it protrudes 2 inches into the manhole .

G. A 1-inch V shaped notch shall be cut into the bottom edge of the incoming pipe.

3.00 EXECUTION

3.01 EXCAVATION AND BACKFILL

A. All excavation and backfill above a line 12 inches above the crown of the pipe shall conform to Section 2.04, Earthwork, of these Specifications.

3.02 BEDDING

A. Reference Section 33.83a of 10 State Standards.

B. Reference Section 33.83b of 10 State Standards.

C. Ductile iron, and concrete pipes shall be laid on a compacted granular material placed on the bottom of the trench to a depth of not less than 3 inches for 24-inch and smaller pipe and not less than 4 inches for pipe larger than 24-inch conforming to Class B bedding as shown on the Plans. Where shown on the Plans or required by the ENGINEER, concrete encasement or concrete cradle shall be used.

D. PVC pipe shall be laid on a compacted granular material placed on the bottom of the trench to a depth of not less than 4 inches conforming to Class B bedding as shown on the Plans. Where shown on the Plans, or where the pipe passes under a road with less than 4 ft of cover, the pipes shall be encased.

E. For all pipes, compacted granular material shall be placed at the sides of the pipe and cover not less than 12 inches above the crown of the pipe.

F. "Granular Material" shall be class 2NS sand, pea gravel or crushed stone conforming to ASTM C33 Size No. 67 placed in not more than 6-inch layers and com\-pacted to not less than 95% standard density for PVC and 90% standard density for reinforced concrete.

G. Pea gravel or crushed stone used for bedding shall be separated from the sand backfill with a non-woven geotextile fabric. The fabric shall be Amoco 4551, or approved equal.

3.03 PIPE INSTALLATION

A. Installation of PVC pipe shall be in confor\-mance with ASTM D2321-89.

B. All pipe shall be laid true to the required lines and grades. All trenches when pipe laying is in progress shall be kept dry; and all pipes and fittings shall be uniformly supported on a properly trimmed bedding with holes at each joint to receive bells. All pipe shall be laid with bells uphill.

C. All joints shall be made up in accordance with the manufacturer's instructions using materials and equipment especially prepared for the type of joint to be used.

D. The grade as shown on the profiles is that of the pipe invert and that to which the work must conform. The grade shall be kept by levels, laser or other tools which shall be furnished by the CONTRACTOR at his expense. Each pipe shall be laid accurately to the line and grade as shown on the Plans and in such manner as to form a close concentric joint with the adjoining pipe and prevent sudden offsets of the invert. The interior of sewers shall, as the work progresses, be cleaned of all dirt, cement, debris and other superfluous materials of every description. Bulkheads shall be used to keep foreign materials out of the open end of the sewer when work is not in progress.

E. The location of the piping as shown on the Plans has been determined to avoid, insofar as possible, interference with trees or structures or fixtures above ground and other underground mains, services, utilities, or structures. Any change in location or alignment of piping which may be found more feasible or practicable as the work progresses shall be made by the CONTRACTOR, as the ENGINEER may direct.

F. All pipe and fittings shall be carefully lowered and moved into position in trench or vault in a controlled manner such as will prevent damage to the pipe and any coatings or lining. An excessive amount of scratching on the surface of the PVC pipe will be considered cause for rejection.

G. The trench shall be backfilled closely behind the pipe laying. Unless otherwise directed or permitted by the ENGINEER, the backfilling shall follow and be completed to the top of the trench within two pipe lengths behind pipe laying.

H. All cutting of the pipe shall be done in a neat workmanlike manner with the least amount of waste and without damage to existing or new lines. A fine tooth saw, tubing cutter or similar tool may be used to cut PVC pipe. Cuts must be square. Ragged edges shall be removed with a cutting tool or file.

I. After cutting bell and spigot or socket pipe, a stop mark shall be made with a pencil or crayon using dimensions as shown by the manufacturer's instructions or by using another pipe in the field as a guide.

J. Breaks in pipe or joints shall be repaired to the satisfaction of the ENGINEER and at the expense of the CONTRACTOR.

3.04 CONNECTIONS TO EXISTING MANHOLES AND OTHER RIGID STRUCTURES

A. When a sewer is connected to an existing manhole, a hole adequate to receive the new pipe shall be cut into the manhole.

B. If the existing manhole is of brick construction, a single rowlock of brick shall be turned over the new pipe and the existing manhole brick work shall be cleaned, pointed and given a 1/2-inch mortar coat on the outside surface.

C. For connections to existing precast reinforced concrete manholes, a hole shall be cored into the concrete manhole wall to receive the pipe. A Kor-N-Seal boot or engineer approved equal shall be clamped into the cored hole and used to make the connection.

D. For connections to existing fiberglass manholes, a hole shall be cored into the manhole wall to receive the pipe. A Kor-N-Seal boot or engineer approved equal shall be installed using fiberglass reinforced pipe stubout for Kor-N-Seal boot sealing surface.

3.05 STREAM AND RIVER CROSSING

A. Whenever a pipe is required to cross a stream or river, all work shall be in accordance with the provisions of Act 346, the Inland Lakes and Streams Act of 1962, and the rules and regulations promulgated thereunder. Stream crossings and all restoration required shall be completed within five days of the construction.

B. The CONTRACTOR shall utilize such con\-struction methods as are feasible and practicable to divert or stop stream flow to lay the pipe in the dry. Pipe shall be ductile iron, mechanical joint, or compression gasket joint pipe with joints at transition to other types of sewer pipe encased with no less than 1 cu yd of concrete, placed at a minimum of 6 inches thickness around the pipe. After the sewer is properly laid, jointed and encased, the stream-channel shall be cleaned of dirt and debris resulting from the CONTRACTOR'S operations.

C. After the crossing is made, heavy riprap and sodding shall be placed to protect the banks from corrosion as shown on the Plans.

PCT July 2008

Pittsfield Charter Township
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TWP REV	BWA	DRW	11.04.27
UPDATES	BWA	DRW	10.10.25
UPDATES	TTN	DRW	10.01.20
Revision	By	Appd.	YY.MM.DD

Issued	By	Appd.	YY.MM.DD

File Name: SS-02	BWA	DRW	DRW	07.10.01
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
PITTSFIELD TOWNSHIP

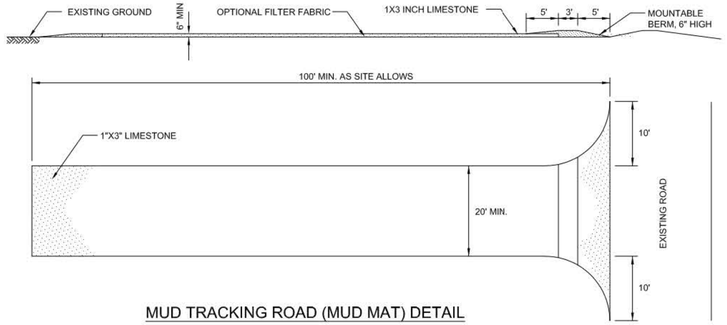
Pittsfield Township, Michigan

Title
SANITARY SEWER SPECIFICATIONS

Project No.
2075001300

Scale
NOT TO SCALE

Revision



MUD TRACKING ROAD (MUD MAT) DETAIL

PITTSFIELD CHARTER TOWNSHIP
SOIL EROSION AND SEDIMENTATION CONTROL NOTES

GENERAL

1. The contractor shall implement and maintain the soil erosion control measures as shown on the plans at all times during construction on this project. Any modifications or additions to the soil erosion control measures due to construction or changed conditions, shall be complied with as required or directed by the owner, project engineer or Pittsfield Township.
2. All soil erosion and sedimentation control work shall conform to the permit requirements of Pittsfield Township and the laws of the State of Michigan.
3. A NPDES construction activity permit is required for all sites greater than 5 acres.
4. Daily inspections shall be made by the contractor. Periodic inspections may be made by the owner/project engineer/Township to determine the effectiveness of erosion and sedimentation control measures. Any necessary corrections shall be made without delay.
5. Erosion and sedimentation from work on the site shall be contained on the site and not be allowed to collect on any off-site areas or in waterways.
6. All mud/dirt tracked onto roads from the site due to construction, shall be promptly removed by the contractor.
7. Restoration of all disturbed areas, including placement of topsoil, seed, fertilizer and mulch and/or sod shall be done within 5 days of the completion of final grade.
8. Construction operations shall be scheduled and performed so that preventative soil erosion control measures are in place prior to excavation in critical areas and temporary stabilization measures are in place immediately following backfilling operations.
9. Special precautions will be taken in the use of construction equipment to prevent situations that promote erosion.
10. Proper dust control shall be maintained during construction by use of water trucks and/or chloride as required.
11. The contractor shall be responsible for maintaining all temporary soil erosion control measures and removal of some upon authorized completion of project. Completion of project will not be authorized until all site work, home building, road work and utility construction is complete and all soils are stabilized.
12. The contractor shall not grade in existing wetland or conservation areas to be protected. Silt fence shall be installed and maintained adjacent to existing wetland and conservation areas to prevent grading, erosion and sedimentation into them.
13. Tree protection fencing must remain intact until restoration of the site is complete.

SEQUENCE OF CONSTRUCTION

1. Install sediment fence and tree protection fencing prior to any grading operation.
2. Install mud-tracking pad.
3. Construct temporary sediment/detention basin.
4. Place topsoil, fertilizer, seed and mulch over the entire detention basin area.
5. Rough grade site, stockpile topsoil and begin building construction.
6. Install storm drainage system including riprap and parking lot inlet filters and detention basin standpipe.
7. Maintain erosion and sedimentation control measures, as required.
8. Install sanitary sewer and water systems.
9. Bring pavement areas to sub-base grade, place sub-base and bituminous pavement.
10. Install franchised utilities.
11. Finish grade, redistribute topsoil, seed and mulch all disturbed areas.
12. Remove any accumulated sediment within the detention basin and replace clean washed stone around standpipe.
13. Complete construction of site.
14. Insure all soil is stabilized. Remove all temporary soil erosion control measures.

SEEDING/SOD

1. Seed or sod in accordance with project specifications.
2. All areas of disturbed earth that are not to be paved or sodded shall have 4 inches of topsoil, seed, fertilizer and mulch.
3. Immediately after seeding, mulch all seeded areas with unweathered small grain straw (preferably wheat) or hay spread. Spread uniformly at the rate of 1 ½ to 2 tons or 100 pounds (2 to 3 bales) per 1,000 square foot. This mulch should be anchored with a disc-type mulch-anchoring tool.
4. Any disturbed area not paved, seeded or mulched, sodded or built upon by November 15, is to be mulched in the manner as specified above, in order to provide soil erosion protection during the winter and early spring.
5. All erosion and sedimentation control prevention procedures and structures are to comply with the Standards and Specifications for soil erosion and sediment control of the Washtenaw County Soil Conservation District.
6. Drainage ditches and slopes steeper than 1:4 (25%) shall be stabilized with erosion control blankets.
7. Steep slopes that do not take upon initial seeding must be re-seeded and stabilized with erosion control blankets.
8. Where excavation has been through lawn areas, the CONTRACTOR shall restore the disturbed area by placing topsoil and seeding or sodding over the final backfill material.

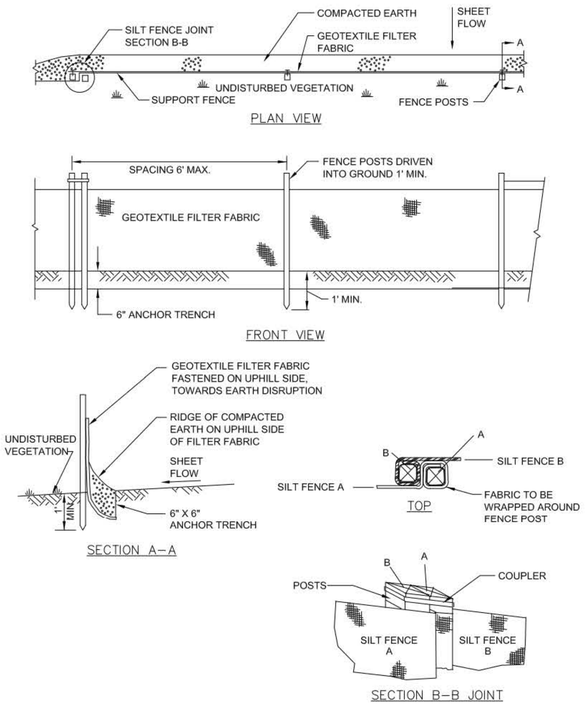
CATCH BASIN/MANHOLE PROTECTION

1. Protect storm sewer catch basins with Siltsack. or approved equivalent as follows:

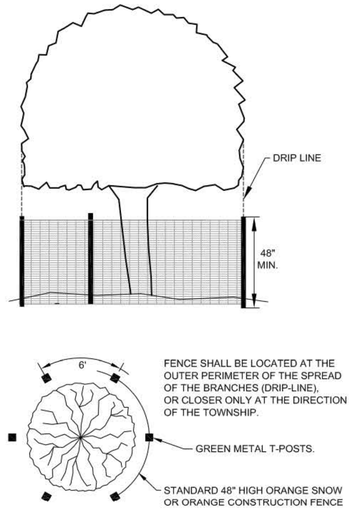
ROADS

1. During construction, all roads shall be protected from unvegetated areas washing onto road surfaces by placement of silt fence behind curb or a 10 foot wide straw mulch bank behind the curb or other approved method and/or as shown on the plans.
2. During construction of any portion of the project, roads shall be maintained free of dirt, silt and construction debris.

Pittsfield SEC 9/22/2009

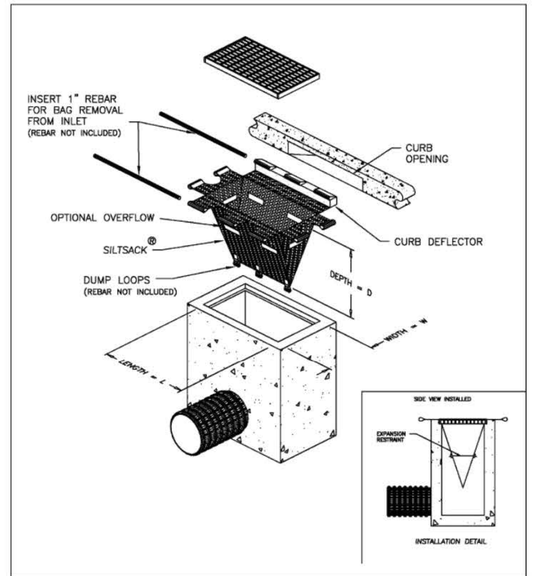


SILT FENCE
NOT TO SCALE



NOTES:
1. ALL TREES TO BE REMOVED WILL BE IDENTIFIED BY RED FLAGGING.
2. TREE PROTECTION FENCING IS TO BE ERECTED PRIOR TO ANY EARTHWORK OR CONSTRUCTION AND IS TO REMAIN IN PLACE UNTIL CONSTRUCTION AND GRADING IS COMPLETE.
3. ALL DEBRIS, FILL, EQUIPMENT OR MATERIAL IS TO BE KEPT CLEAR OF AREA WITHIN PROTECTIVE FENCE. NO CLEANING OF EQUIPMENT OR MATERIAL OR STORAGE OR DISPOSAL OF ANY MATERIAL WITHIN THE DRIP LINE OF ANY TREES TO BE SAVED.

TREE PROTECTION FENCE DETAIL
NOT TO SCALE



DETAIL OF INLET SEDIMENT CONTROL DEVICE
TYPE B – WITH CURB DEFLECTOR

ACF **Environmental**
Your Complete Source for Geosynthetic Solutions

ACF Environmental, Inc.
2831 Cardwell Rd.
Richmond, Virginia 23234
(800) 448-3636

SILTSACK®
SPECIFICATIONS

NOTE: THE SILTSACK ● WILL BE MANUFACTURED FROM A WOVEN POLYPROPYLENE FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS.

REGULAR FLOW SILTSACK ●
(FOR AREAS OF LOW TO MODERATE PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS	
GRAB TENSILE STRENGTH	ASTM D-4632		300 LBS
GRAB TENSILE ELONGATION	ASTM D-4632		20 %
PUNCTURE	ASTM D-4833		120 LBS
MULLEN BURST	ASTM D-3786		800 PSI
TRAPEZOID TEAR	ASTM D-4533		120 LBS
UV RESISTANCE	ASTM D-4355		80 %
APPARENT OPENING SIZE	ASTM D-4751		40 US SIEVE
FLOW RATE	ASTM D-4491		40 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491		0.55 SEC -1

* HI-FLOW SILTSACK ●
(FOR AREAS OF MODERATE TO HEAVY PRECIPITATION AND RUN-OFF)

PROPERTIES	TEST METHOD	UNITS	
GRAB TENSILE STRENGTH	ASTM D-4632		265 LBS
GRAB TENSILE ELONGATION	ASTM D-4632		20 %
PUNCTURE	ASTM D-4833		135 LBS
MULLEN BURST	ASTM D-3786		420 PSI
TRAPEZOID TEAR	ASTM D-4533		45 LBS
UV RESISTANCE	ASTM D-4355		90 %
APPARENT OPENING SIZE	ASTM D-4751		20 US SIEVE
FLOW RATE	ASTM D-4491		200 GAL/MIN/SQ FT
PERMITTIVITY	ASTM D-4491		1.5 SEC -1

OIL-ABSORBANT SILTSACK ●
(FOR AREAS WHERE THERE IS A CONCERN FOR OIL RUN-OFF OR SPILLS)

DEPENDING ON YOUR PARTICULAR APPLICATION, THE SILTSACK CAN BE MADE FROM EITHER ONE OF THE ABOVE FABRICS WITH AN OIL-ABSORBANT PILLOW INSERT OR, MADE COMPLETELY FROM AN OIL-ABSORBANT SILTSACK ●WITH A WOVEN PILLOW INSERT.

SILTSACK DISTRIBUTORS:
PRICE & COMPANY
(www.priceandcompany.com)

METRO GRAND RAPIDS, MI
425 36TH STREET SW
WYOMING, MI 49548-2108
1-800-248-8230

METRO DETROIT, MI
29165 WALL STREET
WIXOM, MI 48393-3525
1-866-960-4300

(* HI-FLOW SILT SACK SHALL BE USED FOR ALL APPLICATIONS WITHIN PITTSFIELD TOWNSHIP)

SILTSACK
NOT TO SCALE

Pittsfield Charter Township
6201 W. Michigan Ave.
Ann Arbor, MI 48108-9721
48108-9721
Tel. 734.822.3101
www.pittsfield-mi.gov

SILTSACK	BWA	DRW	12.01.03
TWP REV	BWA	DRW	11.04.27
UPDATES	TTN	DRW	10.01.20
Revision	By	Appd.	YY.MM.DD
Issued	By	Appd.	YY.MM.DD
File Name: SE-01	TTN	DRW	07.10.01
	Dwn.	Chkd.	Dsgn. YY.MM.DD

Permit-Seal

Client/Project
PITTSFIELD TOWNSHIP

Pittsfield Township, Michigan

Title
SOIL EROSION DETAILS AND NOTES

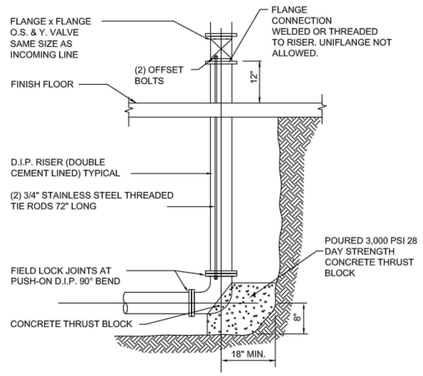
Project No.
2075001300

Scale
NOT TO SCALE

Revision

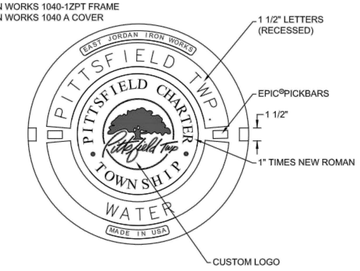
FIRST VALVE SHALL BE INSTALLED PRIOR TO FLUSHING

RISER TO BE A MAXIMUM 5 HORIZONTAL FEET FROM POINT WHERE PIPE ENTERS THE BUILDING.



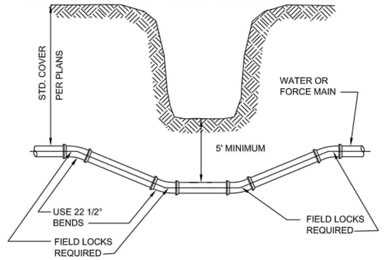
FIRE PROTECTION RISER DETAIL

EAST JORDAN IRON WORKS 1040-1ZPT FRAME
EAST JORDAN IRON WORKS 1040 A COVER

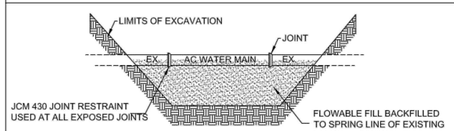


COVER DETAIL

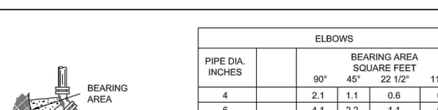
PIPES SHALL BE RESTRAINED PER DIPRA RESTRAINT REQUIREMENTS



DITCH & STREAM CROSSING



ASBESTOS CEMENT (AC) WATER MAIN



ELBOWS

ELBOWS					
PIPE DIA. INCHES		BEARING AREA SQUARE FEET 90°	45°	22 1/2°	11 1/4°
4		2.1	1.1	0.6	0.3
6		4.1	2.2	1.1	0.6
8		6.8	3.7	1.9	0.9
10		10.1	5.5	2.8	1.4
12		14.1	7.6	3.9	2.0
16		24.2	13.0	6.7	3.3
18		30.0	16.3	8.3	4.2
20		36.8	19.9	10.1	5.1

TEES, CROSSES & HYDRANTS

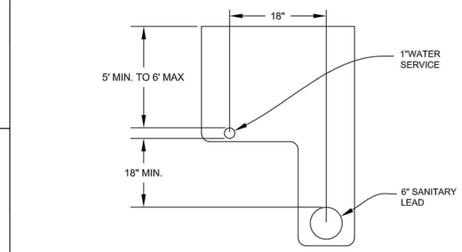
TEES, CROSSES & HYDRANTS		
PIPE DIA. INCHES		BEARING AREA SQUARE FEET
4		1.5
6		2.9
8		4.8
10		7.1
12		10.0
16		17.1
18		21.0
20		26.0

NOTES:
1. CONCRETE FOR ALL THRUST BLOCKS SHALL BE 3000 PSI, 28 DAY STRENGTH MIN.
2. ALL THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED EARTH
3. BOLTS, FITTINGS & JOINTS SHALL BE KEPT CLEAR OF CONCRETE
4. A BEARING CAPACITY OF 2000# PER FOOT WAS USED IN DETERMINING THE MINIMUM "BEARING AREAS" IN THE ABOVE TABLE
5. THE CROSS SECTION OF THE THRUST BLOCKS SHALL BE SQUARE
6. IN ADDITION TO THRUST BLOCKS, ALL PIPE JOINTS SHALL BE RESTRAINED WITH LOCKING GASKETS PER DIPRA'S STANDARDS.

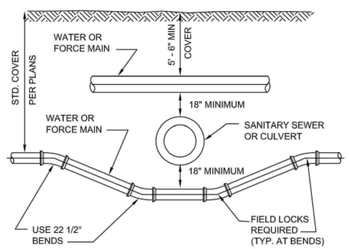
SOIL CHARACTERISTICS	FACTOR
(A) LOOSE COARSE OR MEDIUM SAND; COMPACT FINE SAND; COMPACT SAND-CLAY SOILS; STIFF CLAY	0.33
(B) FIRM FINE SAND; COMPACT INORGANIC SILT; FIRM SAND-CLAY SOILS; MEDIUM CLAY	0.50
(C) LOOSE FINE SAND; FIRM INORGANIC SILT	0.67
(D) LOOSE SAND-CLAY SOILS; LOOSE INORGANIC SILT SOFT CLAY	1.00

"BEARING AREA" x FACTOR = ACTUAL BEARING AREA
2.1 x .5 = 1.05 SQ. FT.
BASED UPON 150# TEST PRESSURE

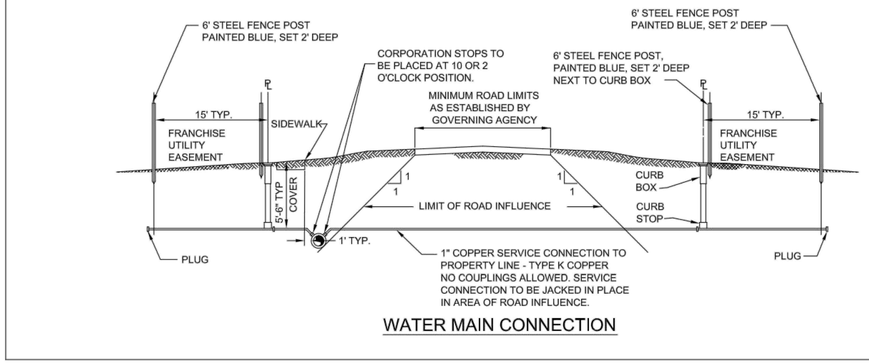
THRUST BLOCK



TYPICAL L TRENCH DETAIL HOUSE LEADS

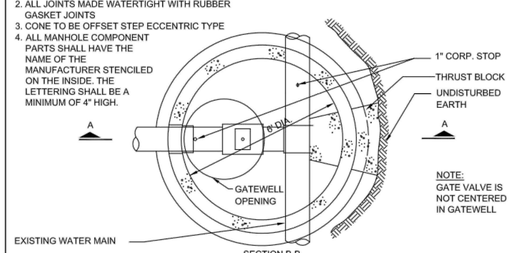


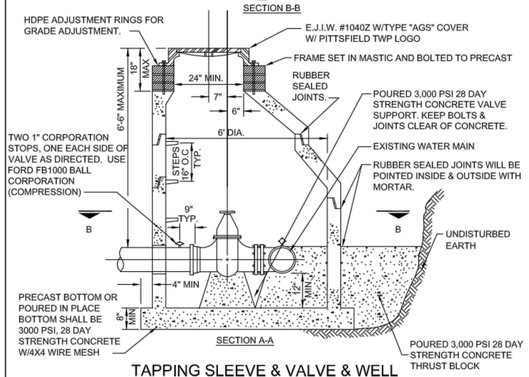
SEWER OR CULVERT CROSSING



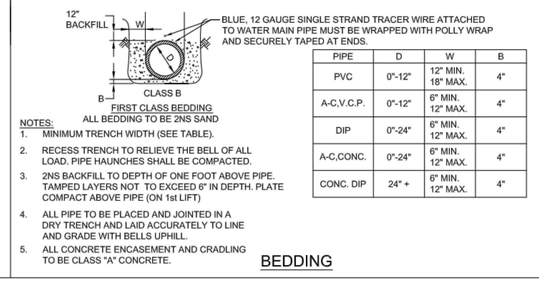
WATER MAIN CONNECTION

PRE-CAST CONCRETE MANHOLE
1. SECTIONS SHALL MEET ASTM C478.
2. ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS
3. CONE TO BE OFFSET STEP ECCENTRIC TYPE
4. ALL MANHOLE COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE. THE LETTERING SHALL BE A MINIMUM OF 4" HIGH.





TAPPING SLEEVE & VALVE & WELL

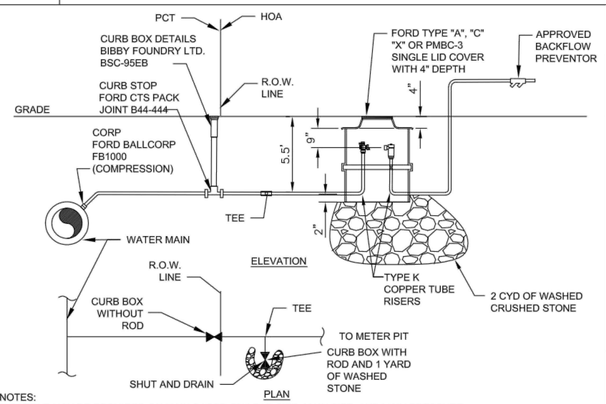


PIPE	D	W	B
PVC	0"-12"	12" MIN. 18" MAX.	4"
A-C,V.C.P.	0"-12"	6" MIN. 12" MAX.	4"
DIP	0"-24"	6" MIN. 12" MAX.	4"
A-C,CONC.	0"-24"	6" MIN. 12" MAX.	4"
CONC. DIP	24" +	6" MIN. 12" MAX.	4"

ALL BEDDING TO BE 2NS SAND

NOTES:
1. MINIMUM TRENCH WIDTH (SEE TABLE).
2. RECESS TRENCH TO RELIEVE THE BELL OF ALL LOAD. PIPE HAUNCHES SHALL BE COMPACTED.
3. 2NS BACKFILL TO DEPTH OF ONE FOOT ABOVE PIPE. TAMPED LAYERS NOT TO EXCEED 6" IN DEPTH. PLATE COMPACT ABOVE PIPE (ON 1st LIFT)
4. ALL PIPE TO BE PLACED AND JOINTED IN A DRY TRENCH AND LAID ACCURATELY TO LINE AND GRADE WITH BELLS UPHILL.
5. ALL CONCRETE ENCASEMENT AND CRADLING TO BE CLASS "A" CONCRETE.

BEDDING



NOTES:
1. SADDLE MAY BE REQUIRED ON MAIN BASED ON LEAD SIZE, MAIN SIZE, AND MAIN PRESSURE
2. ALL WATER MAIN TAPS AND COMPONENT PARTS SHALL BE APPROVED BY THE PITTSFIELD TOWNSHIP UTILITIES DEPARTMENT PRIOR TO INSTALLATION.
3. INSTALLATION SHALL BE INSPECTED AND APPROVED BY THE PITTSFIELD TOWNSHIP UTILITIES DEPARTMENT.

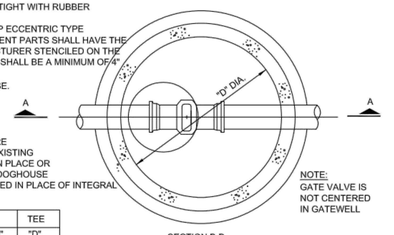
IRRIGATION METER PIT DETAIL

FDC

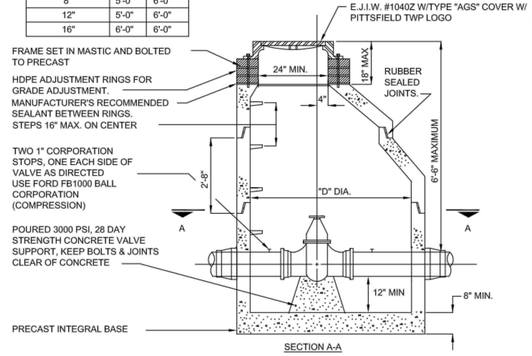
RED "REFLECTIVE" LETTERS WITH WHITE "REFLECTIVE" BACKGROUND. LETTERS WILL BE A MINIMUM OF 8" TALL BY 4" WIDE WITH 2" GIRTH, WITH AN 8" TALL 4" WIDE RED ARROW UNDER LETTERS POINTING DIRECTLY AT THE CONNECTION. TALLER BUILDINGS MAY REQUIRE LARGER LETTERING. SIGN SIZE AND LOCATION DETERMINED BY FIRE MARSHALL

FIRE DEPARTMENT CONNECTION LABEL DETAIL

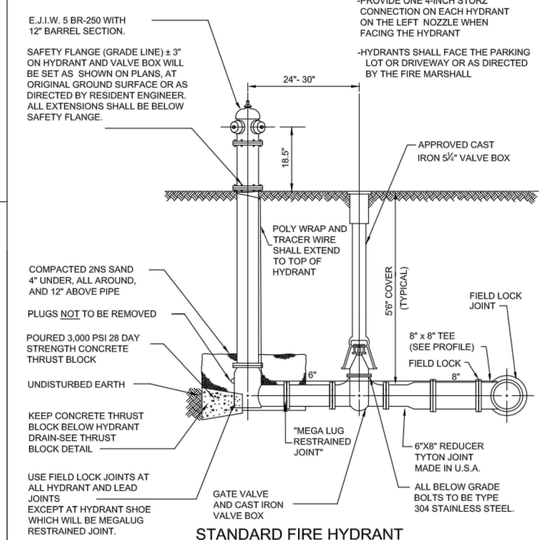
PRE-CAST CONCRETE MANHOLE
1. SECTIONS SHALL MEET ASTM C478.
2. ALL JOINTS MADE WATERTIGHT WITH RUBBER GASKET JOINTS
3. CONE TO BE OFFSET STEP ECCENTRIC TYPE
4. ALL MANHOLE COMPONENT PARTS SHALL HAVE THE NAME OF THE MANUFACTURER STENCILED ON THE INSIDE. THE LETTERING SHALL BE A MINIMUM OF 4" HIGH.
5. PROVIDE INTEGRAL BASE.
6. KOR-N-SEAL BOOTS OR APPROVED EQUAL TO BE INSTALLED AT PIPE PENETRATIONS.
7. WHERE GATE WELLS ARE CONSTRUCTED OVER EXISTING WATERMAIN, POURED IN PLACE OR PRECAST COOKIE AND DOGHOUSE STRUCTURES MY BE USED IN PLACE OF INTEGRAL BASE.



STRAIGHT THRU		TEE
VALVE SIZE	"D"	"D"
8"	5'-0"	6'-0"
12"	5'-0"	6'-0"
16"	6'-0"	6'-0"

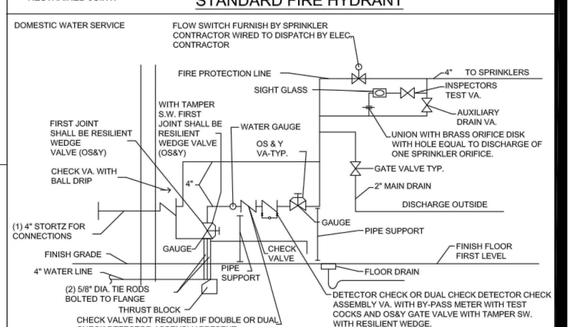


STANDARD GATE VALVE & WELL



STANDARD FIRE HYDRANT

NOTES:
-PROVIDE ONE 4-INCH STORZ CONNECTION ON EACH HYDRANT ON THE LEFT NOZZLE WHEN FACING THE HYDRANT
-HYDRANTS SHALL FACE THE PARKING LOT OR DRIVEWAY OR AS DIRECTED BY THE FIRE MARSHALL



METER ROOM DETAIL

Pittsfield Charter Township
6201 W. Michigan Ave.
Ann Arbor, MI 48108-9721
48108-9721
Tel. 734.822.3101
www.pittsfield-mi.gov

Revision	By	Appd.	YY.MM.DD
UPDATES	MRH	DRW	14.01.24
FDC UPDATE	BWA	DRW	11.09.13
TWP REV	BWA	DRW	11.04.27
HYDRANT, MANHOLE UPDATE	BWA	DRW	10.10.25
UPDATES	TTN	DRW	10.01.20

Issued	By	Appd.	YY.MM.DD
File Name: W-01	BWA	DRW	07.10.01
	Dwn.	Chkd.	Dsgn. YY.MM.DD

Permit-Seal

Client/Project
PITTSFIELD TOWNSHIP

Pittsfield Township, Michigan

Title
WATER MAIN DETAILS

Project No.
2075001300

Scale
NOT TO SCALE

Revision

1.00 GENERAL

1.01 DESCRIPTION

A. The CONTRACTOR shall furnish all labor, materials, and equipment required to construct a water main and necessary appurtenant work as herein specified. The water main shall be installed in the locations as shown on the Plans and shall meet all acceptance tests.

1.02 NOTIFICATION

A. CONTRACTOR shall notify the ENGINEER and the Pittsfield Township Utilities Department at (734) 882-2110, 24 hours prior to flushing or chlorination of the water main.

B. CONTRACTOR shall schedule bacteriological testing with the ENGINEER 48 hours prior.

C. CONTRACTOR shall notify the ENGINEER and the Pittsfield Township Utilities Department 48 hours prior to connecting to an existing water main.

1.03 SUBMITTALS

A. The CONTRACTOR shall submit shop drawings or data sheets for all pipe, manholes, manhole castings, pipe to manhole connections, valves, hydrants and the B-1 Poly Pig. The Contractor shall submit a certification letter for all pipe proposed on the project. The letters shall contain the following: Contractor name, project name, Township name, current date, certification of pipe provided and letterhead of the certifying company.

1.04 TESTING

A. General

1. CONTRACTOR shall furnish all equipment and personnel to conduct system acceptance tests as specified herein. All tests shall be conducted under the supervision of the ENGINEER. All water mains, branches and valves shall be subject to cleaning with a poly-pig, hydrostatic pressure testing, disinfection and bacteriological testing. No acceptance tests shall be conducted until the water main has been installed and backfilled for not less than 30 days. A copy of all test results shall be furnished to the ENGINEER.

2. Hydrostatic pressure testing must be performed in accordance with ANSI/AWWA C600. Disinfection and bacteriological testing must be performed in accordance with ANSI/AWWA C651.

3. CONTRACTOR shall furnish all material and labor to provide for an acceptable full size blow-off to flush the poly-pigs out of the main at the far end of the project not connected to the existing system.

4. Should the results of any test fail to meet the criteria established in this Specification, the CONTRACTOR shall, at his own expense, locate and repair the rejected section and retest until it is within the specified allowance.

5. Only Pittsfield Township personnel or the CONTRACTOR under direct supervision of Pittsfield Township personnel may fill or flush lines.

B. Preparation

1. After the pipe has been laid and backfilled as specified, the CONTRACTOR shall fill the line, or a valve section thereof, to be tested with water in such a manner as to expel all air from the pipe. This may be done through fire hydrants at the high points; or, if no hydrant is available at such point, the CONTRACTOR shall make the taps necessary to accomplish the expulsion of all air. At the close of the test, all taps shall be satisfactorily plugged with brass plugs.

C. Sequence

1. All water mains connected to an existing water system shall be flushed, swabbed, chlorinated and bacteriological tested prior to pressure testing. The sequence for acceptance testing shall be:

   a. Flushing with approved B-1 Poly-Pig
   b. Chlorination
   c. Flushing
   d. Bacteriological Testing
   e. Pressure Testing

2. Where mains can be totally isolated from the existing water system with airgaps, pressure testing shall precede chlorination and bacteriological testing. The sequence for acceptance testing shall be:

   a. Pressure Testing
   b. Connect to System
   c. Flushing with approved B-1 Poly Pig
   d. Chlorination
   e. Flushing
   f. Bacteriological Testing

3. If a hydrostatic pressure test fails, the chlorination and flushing process must be repeated after repairs to the system are completed.

D. Flushing

1. All flushing will be conducted by the TOWNSHIP with clean potable water until the water runs clear.

E. Chlorination

1. All new mains and pipe or any existing mains contaminated by the CONTRACTOR shall be chlorinated to a minimum residual chlorine concentration of fifty (50) parts per million with commercial liquid chlorine solution or approved equal. The chlorinated water shall be allowed to stand in the mains for 24 hours. The end of the 24-hour period the chlorinated water at all parts of the mains shall show a free available chlorine residual of not less than twenty-five (25) parts per million. If less than twenty-five (25) parts per million residual is shown at the end of the first 24 hours period, additional chlorine shall be added until a residual of not less than twenty-five (25) parts per million at all parts of the system is shown after a subsequent 24 hour period. The chlorinated water shall then be removed from the mains and the mains flushed with potable water for bacteriological testing. No flushing shall take place between the two required bacteriological testing.

F. Bacteriological Testing

1. The Pittsfield Township Utilities Department will take bacteriological samples of the water in the mains for analysis at two different times. The first samples will be taken 24 hours after the mains have been satisfactorily chlorinated, flushed and filled with potable water. The second sample will be taken 24 hours later. Each sample will be incubated for 48 hours. No flushing shall be done during or between tests, unless supervised and approved by ENGINEER. Two sets of safe consecutive bacteriological samples, collected at least 24 hours apart, must be obtained before placing the water main in service.

2. The CONTRACTOR shall provide a sufficient number of corporation cocks and copper tubing for taking samples. Samples shall not be collected from hoses or fire hydrants.

3. Bacteriological testing must begin on Mondays to allow Pittsfield Township personnel and the testing laboratory a full work week to conduct the testing.

G. Hydrostatic Pressure Testing

1. The CONTRACTOR shall pressure test sections of water main as sections of 2,000 feet or less unless otherwise authorized by the ENGINEER. When permitted to test lengths in excess of 2,000 feet, only the allowable leakage for 2,000 feet will be permitted.

2. All water mains shall be subjected to a hydrostatic pressure of 150 psi based on the elevation of the lowest point in the system. The main shall be maintained under the test pressure for a minimum continuous period of two (2) hours by pumping potable water into the line at frequent intervals. The volume of water so added shall be measured and considered to represent the leakage from the main. No pipeline installed will be accepted until the leakage measured is less than 0.092 gallons per inch diameter of the pipe per 1 hour per 1,000 feet.

3. In the event that the leakage exceeds the specified amount, the main shall be carefully inspected for leaks and repaired as necessary. Any cracked or defective pipe, fittings, valves or hydrants discovered shall be removed and replaced with sound material and the test repeated to the satisfaction of the ENGINEER.

4. If the CONTRACTOR chooses to pressure test against an existing valve he assumes the responsibility of meeting the leakage requirements. The CONTRACTOR may at his discretion provide a physical break and cutting in sleeve for pressure testing.

5. Temporary connections (jumpers) between existing water mains and the newly constructed system for testing purposes, shall include a reduced zone backflow preventer to prevent backflow and possible contamination of the public water.

H. Material Tests

1. The CONTRACTOR shall have test of pipe and strength made by an independent testing laboratory. Tests of up to 4 lengths of water main per hundred lengths may be required to show compliance with the Specifications. All pipe delivered to the job site shall be accompanied with a manufacturers certificate of compliance to the specifications.

2.00 PRODUCTS

A. All products shall be consistent with the current component part submittal sheet posted on the Township website.

2.01 PIPE AND FITTINGS

A. Ductile-iron pipe water main shall meet all the requirements of the latest revision of ANSI/AWWA C151/A21.51. Pipe shall be furnished in eighteen-foot or twenty-foot lengths, unless otherwise required. All joints, to include joints for fittings, valves and hydrants, must be of the push on joint type and compatible tyton joint gaskets. Ductile iron pipe must be designed in accordance with the latest revision of ANSI/AWWA C150/A21.50 to meet requirements for Pressure Class 350.

B. Ductile iron pipe and fittings shall be double-cement lined with an approved bituminous seal coat in accordance with ANSI/AWWA C104/A21.4.

C. Ductile iron fittings shall meet all the requirements of the latest revision of ANSI/AWWA C110/A21.10 for full body fittings and ANSI/AWWA C153/A21.53 for compact fittings for a minimum working pressure of 250 psi and be of the push-on joint type. Plugs, where shown on the plans, shall be solid mechanical joint plug type.

D. Restrained mechanical joints of the wedge action type shall use a follower gland and shall include a restraining mechanism which, when activated, impart multiple wedging action against the pipe, increasing its resistance as the pressure increases. Twist off nuts shall be used to insure proper actuating of the restraining device. Restrained mechanical joints for ductile iron pipe shall be Megalug, Series 1100, or approved equal. Mechanical joints shall be in conformity with the requirements of the latest revision of the ANSI AWWA C111/A21.11. Bolts and nuts must be type 304 stainless steel.

E. Push-on joints shall meet all requirements of ANSI/AWWA C111/A21.11. Push-on joints shall consist of a ductile-iron bell provided with a recess to receive a circular molder rubber gasket to effect the joint seal. A rubber gasket and sufficient lubricant to assemble the joint shall be furnished with each joint. The lubricant shall have no deleterious effect upon the color, taste or odor of potable water and shall not be corrosive to either the pipe or gasket. Pipe furnished with push-on type joints shall be equal in strength and leak tightness to pipe furnished with mechanical joints as specified when installed under identical conditions, and shall meet all other requirements of these specifications. In addition to the above requirements, the gasket and lubricant shall conform to the latest revision of ANSI/AWWA C111/A21.11. When it is necessary to utilize a locking mechanism for a push-on joint upstream or downstream of a restrained mechanical joint, field-lok gaskets or equal shall be utilized and shall be used in conformance with DIPRA Standards for restraint distance from a restrained mechanical joint fitting.

F. All pipe and fittings shall be manufactured in the United States of America.

G. The ENGINEER shall witness the delivery and unloading of all pipe and collect the appropriate manufacturer's certificate of compliance per Section 1.04 of this Specification.

2.02 VALVES

A. All valves installed under this Specification shall conform to the applicable requirements of ANSI/AWWA C500, C504 and C509 standards governing construction materials and workmanship. Each valve shall carry the name or trademark of the manufacturer. All valves shall have operating nuts that turn to the right (clockwise) to open.

B. Resilient-Seated Gate Valves

1. Resilient seated gate valves shall conform to the applicable requirements of ANSI/AWWA C515. Valves shall have a minimum working pressure of 250 psi. The gate shall be ductile iron encased in a bonded synthetic rubber to form resilient seating surfaces. Stem shall be bronze with a non-rising design and double o-ring packing. Joints shall be push-on type.

2. Resilient Seated Gate Valves shall be manufactured by American Flow Control or Clow.

C. Tapping Sleeves and Valves

1. Tapping sleeves shall be full length of heavy-duty stainless steel construction designed for use with the type of pipe to be tapped. Tapping sleeve flange and body shall be type 304 stainless steel. Bolts and nuts shall be 304 stainless steel. Gasket shall be full circumferential SBR compounded for water service. Tapping sleeve shall contain a test plug to assure seal prior to tapping. Tapping sleeve shall be JCM Industries 432; Romac Industries SST, Ford FAST, Powerseal 3490AS; Dresser 630 or equal.

2. Tapping valves shall meet the specifications for gate valves except that the valve shall have a flange compatible with the tapping sleeve.

3. The tapping sleeves and valves shall be subjected to a hydrostatic pressure of 200 psi. The sleeves and valves shall be maintained under pressure for a minimum continuous period of 5 minutes by pumping potable water into the sleeve. Upon any visual leakage observed by the ENGINEER, the tapping sleeve and valve shall be removed and replaced, and the test repeated at the CONTRACTOR's expense to the satisfaction of the ENGINEER.

D. Corporation Stops

1. Corporation stops used for insertion into mains shall be ball valve type. All stops shall have no lead brass bodies, keys, stem washers and nuts. Inlet threads shall conform to the latest revision of AWWA C800. The outlet connection shall be of the compression type to receive copper service pipe.

E. Valve Boxes

1. Valves boxes shall be 5-1/4-inch and be of cast-iron construction. They shall be of three-piece, screw-type adjustment design. All valve boxes shall be installed flush with the top of the proposed site grade. Cover shall be designed to be removed easily to provide access to the valve. The base shall not rest upon the valve assembly. Valve boxes shall be Tyler 6860 Item DD with number 6 base, or equal.

F. Valve Extensions

1. All gate valves with operating nuts at a distance greater than 6.5 feet below ground surface shall be provided with an extension stem. The length of the extension stem shall reach within 6.5 feet of the ground surface. Details of the extension system and method of installation shall be approved by the ENGINEER prior to installation.

G. Post Indicators and Valves

1. Post indicators, when specified, shall be American Flow Control series A240 or Clow series 2945A with aluminum plates indicating OPEN and SHUT. Post indicators shall open left.

2. Post indicator valves shall be American Flow Control Model 2500 or Clow model F-6120. All valves shall open left.

3. Post indicators and their corresponding valves must be made by the same manufacturer.

4. Bollards must be placed to protect post indicators, except as specified by the ENGINEER.

5. Bollards shall be 4-inch diameter galvanized schedule 40 steel posts 36 to 48 inches high with minimum depth of 24 inches. The posts shall be set in and filled with 3000 psi concrete. Bollards protecting hydrants and PIVs shall be painted red.

2.03 GATEWELLS

A. Gatewells shall conform to the latest revision of ASTM C478 for Precast Reinforced Concrete Manhole Sections. Section joints shall be rubber gasketed and shall conform to ASTM C990. Cone sections shall be eccentric, with an offset step configuration.

B. All gatewell components shall have the name of the manufacturer stenciled on the inside. The lettering shall be a minimum of 4-inches high.

C. Gatewells constructed over an existing water main shall have a doghouse mudded to an 8-inch thick cookie. All other gatewells shall have precast integral base sections.

D. Mortar for masonry or plastering outside of gatewells shall be made of one part of Portland Cement to two parts fine aggregate. Mortar materials and mixing shall correspond, in general, to those for concrete. All openings in gate wells shall be closed with brick and mortar in a manner that will make them watertight.

E. Gatewell steps shall be reinforced polypropylene coated steel. They shall be M.A. Industries models PS1-PF or PS1-B, or approved equal.

2.04 GATEWELL FRAMES AND COVERS

A. Gatewell frames and covers shall weigh not less than 350 lbs. Each frame and cover shall have machined bearing surfaces and shall be suitable notched for convenient removal of the cover.

B. Frames and covers shall be East Jordan Iron Works Model 1040Z frame with 1040 A cover. Each cover shall have the Pittsfield Township logo and the letters "PITTSFIELD TWP WATER" cast integrally into the cover.

C. All frames and covers shall be coated at the place of manufacturer with coal tar pitch varnish or other asphaltum coating approved by the ENGINEER.

2.05 GATEWELL CONNECTIONS

A. Water pipe to gate well connections shall be through a watertight flexible pipe-to-manhole connector, which shall be securely clamped into a core-drilled port. Pipe ports shall be core-drilled at the point of manufacturer and shall be accurately located within 1/2-inch of the proposed water main centerline. Flexible pipe-to-manhole connectors shall meet the requirements of ASTM C923 and shall be NPC, Kor-N-Seal, or equal.

B. All non-rubber components including wedges, bands and pipe clamps shall be stainless steel.

2.06 GATEWELL ADJUSTMENTS

A. All final grade adjustment of gatewell cover and frame assemblies shall be completed utilizing injection molded High Density Polyethylene (HDPE) adjustment rings as manufactured by Ladtech, Inc., or approved equal. The adjustment rings shall be manufactured from polyethylene plastic meeting the requirements of ASTM D4976. Brick adjustments are not acceptable.

B. All adjustment for matching road grade shall be made utilizing a molded indexed slope ring.

C. Each adjustment ring shall be sealed with a 3/16 to 1/4-inch bead of butyl rubber sealant per the manufacturer's instructions. Sealant shall meet the requirements of ASTM C990.

D. All castings and adjustment rings shall be securely fastened to the cone of the structure with four 3/8-inch threaded rods. The rods shall be galvanized or stainless steel anchored to the structure with Redhead Trubolt concrete anchors, or equal. Stainless steel or galvanized nuts and washers shall be used to attach the casting.

E. When the depth of the gate well requires an adjustment greater than the maximum allowed, the CONTRACTOR shall provide additional pre-cast gate well barrel sections required to maintain acceptable chimney heights.

2.07 HYDRANTS

A. Fire hydrants shall comply with the latest revision of ANSI/AWWA C502. Hydrants shall be compression type to open with the pressure. They shall have a 5-1/4" valve opening and 6" mechanical joint inlet. Hydrants shall have two 3-1/2" (4.05" O.D.) pumper connections with National Standard 7-1/2 threads per inch. All hydrants shall have City of Ann Arbor standard thread pattern.

B. Fire hydrants shall have an inside barrel dimension of not less than 7.375" I.D. from top to bottom. The 1-1/8" pentagon operating nut shall open left (counter clockwise).

C. All nozzles shall be on a removable head with a flange so that they may be rotated by changing the position of the flange.

D. Hydrant shall be fully bronze mounted, including top of the operating stem where it passes through the double o-ring seal in the bronze packing gland. The forged operating stem in the base and the valve seat shall also be of bronze. The molded valve shall be of composition rubber and the cast iron valve clamps shall be packed with o-ring seals and held tight to the stem by a threaded bronze hex retainer ring and threaded bronze locknut, anchored with set screws.

E. Hydrant shall be designed for 150 psi working pressure and tested to 300 psi. Those portions of the hydrant above grade shall have two coats of red enamel. All unpainted surfaces shall have two coats of coal tar pitch varnish.

F. The hydrants shall be EJIW WaterMaster 5BR-250 with mechanical joint connections and break flange barrel with standard head.

G. Hydrant bolts located below grade shall be type 304 stainless steel

H. All hydrants shall have a 4" Harrington Integral Hydra-Storz (HIHS) adaptor. The HIHS shall meet the requirements of AWWA C502 regarding material and pressure testing. Storz nozzle shall have a brass metal face and hard anodized ramps and lugs. The aluminum finish shall be hardcoat anodized to Mil-A-8625f, type 3 dark gray. The adapter shall be made from forged or extruded 6061-T6 aluminum.

I. The blind cap shall have hard anodized aluminum Storz ramps and lugs, made of forged or extruded 6061-T6 aluminum. the cap shall be equipped with suction seal. The cap shall be connected to the adapter or the hydrant with 0.125 vinyl coated aircraft cable.

J. Fire hydrant extensions shall be manufactured by the hydrant manufacturer for use with the model hydrant being installed.

K. Hydrants adjacent to truck routes on commercial developments shall be protected by bollards.

2.08 SERVICE LEADS

A. Pipe for service leads 1-inch to 2-inch shall be soft annealed Type K copper. Service leads 4-inch to 8-inch shall be Pressure Class 350 Ductile Iron, Double cement lined.

B. Curb Stops

1. Curb stops used for service connections shall be ball valve type. All parts shall be no lead brass. Both the inlet and outlet connections shall be of the compression type to receive copper service pipe. Curb stops shall be consistent with the most current shop drawing checklist posted on the Township website.

C. Curb Boxes

1. Curb boxes shall be the Bibby Screw Style V010 with S169 top, V201 bottom, V223 extention, and V240 water cover . All curb boxes shall be coated inside and out with a tar base enamel. The minimum bury shall be 5'-0" (60") and the maximum 6' (72"). Curb boxes shall be consistent with the most current shop drawing checklist posted on the Township website.

D. Couplings

1. Couplings used for service connections shall be located outside the pavement and more than 10 feet from any building wherever possible. They shall have a three part union, and both connections shall be of the compression type to receive copper service pipe. All parts shall be no lead brass..

2. All service connections between two copper service pipes (two-inch or less in diameter) located under the pavement or within 10 feet of a building shall be connected using wrought copper, solder-sweat type couplings conforming to ASME B16.18 or ASME B16.22. Fittings shall bear made in USA labels. Joining of copper piping shall be a solder-sweat connection using lead free Silfos. The use of 95-5, Tin-Antimony or equivalent solders will not be allowed.

2.09 TRACER WIRE

A. Tracer wire to be used on open cut pipe shall be AWG #12 single strand copper with blue 30 mil HDPE insulation. Connections shall be made using 3M DBR-6 wire connectors, or equal.

2.10 POLYETHYLENE ENCASEMENT

A. All ductile iron pipe and fittings must be polyethylene encased. In addition, the initial 24-inches of copper service lead must be encased from the corporation stop. Polyethylene encasement must be manufactured in accordance with the requirements of the latest revision of ANSI/AWWA C105/A21.5.

B. Polyethylene Encasement shall be black linear low-density polyethylene with a minimum thickness of 8 mils.

C. The wrap shall overlap the joint by 12 inches to either side and be secured to the pipe with polyethylene adhesive tape.

3.00 EXECUTION

3.01 EXCAVATION AND BACKFILL

A. All excavation and backfill shall conform to the Earthwork specification.

3.02 PIPE INSTALLATION

A. The installation of ductile iron water main must conform to the requirements of ANSI/AWWA C600.

B. Any pipe damaged in transport or handling shall be rejected and removed from the site of the work.

C. Before lowering in the trench, and while suspended, each pipe and fitting shall be inspected for defects. Defective, damaged or unsound pipe shall immediately be removed from the construction site. The interior of each pipe shall be inspected for cleanness and cleared of all dirt and foreign matter before being lowered into the trench.

D. In handling and placing ductile iron pipe and fittings, no metal shall be used in contact with the inside of the pipe to fit or support the pipe. The pipe shall be moved only through the use of belt slings or automatic release type pipe tongs. Care shall be taken not to injure the pipe or pipe coating, and no damaged or imperfect pipe shall be used in the work except that minor damage to pipe coating may be repaired subject to the review of the ENGINEER.

E. Unless otherwise directed, pipe shall be laid with bell ends facing in the direction of laying. After a length of pipe is placed in the trench, the spigot shall be centered in the bell of the adjacent pipe; the pipe shoved into position and brought to a true alignment. It will then be secured with sand backfill tamped under and on each side of the pipe, except at bell holes. No earth or other foreign matter shall be allowed to enter the joint space.

F. All excavation and backfill above the pipe shall conform to specifications under Earthwork and as shown on the Drawings.

G. A minimum of 18-inches vertical clearance shall be provided between the water main and any existing underground facility, unless otherwise approved by the ENGINEER. Whenever a main is installed under any existing utility line such as gas, buried electric power, telephone line, sewer or water, provisions shall be made to properly support or distribute any concentrated load to avoid settlement and possible failure of either main. Such provisions shall consist of concrete bedding of the main, complete concrete encasement, or some other method as shown on the plans. Water mains passing under sewers, in addition, shall be protected by providing:

1. A vertical separation of at least 18-inches between the bottom of the sewer and the top of the water main.

2. Adequate structural support for the sewer to prevent excessive deflection of joints and settlement of the sewer about the water main; i.e., a concrete saddle under the pipe with a span length extending to undistributed earth bearing.

H. Water mains shall be installed at least 10 feet horizontally from any existing or proposed gravity sanitary or storm sewer, septic tank, or subsoil treatment system. The distance shall be measured edge to edge.

I. In assembly of push-on or shove type joints, the bell socket recess and the gasket shall be wiped clean and the gasket placed properly in position. A thin film of lubricant shall then be applied to the surface of the gasket to come into contact with the entering pipe. The plain end of the entering pipe shall be cleaned and then entered and forced home to the base of the socket.

J. Where necessary to cut pipe, cutting shall be done with approved tools and cut ends of pipe shall be square and regular. Cutting shall be done in a manner to avoid damage to lining and coating. Minor damage may be repaired subject to review of the ENGINEER.

K. To prevent trench water from entering the pipe, joints, which for any reason may not be completed as the pipe is laid, shall be thoroughly packed with approved material, in a manner to make them watertight. Open ends of fittings shall be tightly closed with approved plugs and well packed, as shall the end of the last pipe laid whenever work is not in progress.

L. Each pipe shall be laid accurately to the line and grade shown on the Plans. Wherever deflections at joints are required by changes in grade or alignment or to plumb valve stems, the deflection at any bell and spigot joint shall not exceed that which will cause the spigot end of pipe to be away from home in the bell of the adjacent pipe a distance of 1/4 inch at the point of greatest opening.

M. The deflection at any mechanical joint shall not exceed three-quarters of the maximum deflection recommended by the manufacturer or 3 degrees, whichever is more conservative of the joint used.

N. The CONTRACTOR shall not be entitled to any additional compensation because depth is more than specified at certain locations or due to clearances at manholes, or due to unforeseen obstacles, or occasioned in order to avoid undue changes in grade.

O. Pipe shall be laid at depths to provide minimum cover of 5' - 6" over the top of the pipe unless otherwise noted on the Drawings or elsewhere in these specifications.

3.03 GATE VALVES AND WELLS

A. All pre-cast section joints and lift holes shall be pointed and plugged, inside and outside, with mortar.

B. Gate valves shall be of the size and installed at the location as shown on the plans. They shall be set square with the line of the main, and unless otherwise directed by the Township ENGINEER, all gate valves shall be set with stems plumb. At each side of gate valve, the CONTRACTOR shall furnish and install a 1-inch corporation stop on the main as shown on the Standard Details.

C. All gate valves with operating nuts at a distance greater than 6.5 feet below ground surface shall be provided with an extension stem.

3.04 HYDRANTS

A. Fire hydrants shall be constructed in accordance with the details shown on the plans. Finish grade level to center of nozzle caps shall measure between 24 and 30 inches. A maximum of one hydrant barrel extension and one operating stem extension may be used to accommodate changes in grade. Under no conditions shall extended hydrant have more than one coupling in the operating stem. Pumper connections shall point toward the street.

B. Fire hydrants shall be installed with barrel vertical and properly based. Concrete thrust blocks shall be placed behind the hydrant, tee, and every bend. Care should be taken to insure the drain holes on the hydrant are not plugged by the thrust blocks. Hydrant shall be set in 1 yard of coarse gravel for drainage purposes. If ground water is encountered, the drain hole shall be plugged as directed by the manufacturer. The backfill shall be sand thoroughly tamped around the hydrant and valve box in 1 ft layers.

C. Fire hydrant and gate valve shall be set apart 24 inches. Gate valves and valve box shall be as specified under the valve paragraphs of this section.

D. Hydrant leads shall have a minimum of 5.5 feet of cover in all areas, including crossings through ditch sections.

E. Hydrants shall be carefully plumbed, braced and backfilled so they remain plumb.

F. All grade, facing, and vertical alignment adjustment of hydrants shall be completed prior to pressure testing and charging of the hydrants.

G. All hydrants shall be cleaned and painted with a rust inhibitive, oil base paint such as "rustoleum" or approved equal to the Township's color code prior to acceptance.

H. The lubricant reservoirs in all hydrants having such construction shall be filled with a lubricant acceptable to the Michigan Department of Environmental Quality and recommended by the hydrant manufacturer.

I. Backfilling around fire hydrants shall be carefully tamped sand in 12-inch layers from the centerline of the lead main to a height of 1-foot below finished grade.

J. CONTRACTOR shall place burlap sack or equivalent material over the hydrant nozzles after installation.

K. Fire hydrant nozzles shall be aligned as required by the Township Fire Marshal.

L. Fire hydrant extensions shall be provided as necessary so that the safety flange is located at or above surface grade.

3.05 TRACER WIRE

A. Tracer wire shall be installed along the top of all water mains. For directional drilling, the tracer wire shall be installed at the same time as the pipe. For open cut construction, the tracer wire shall be installed at a height of not more than 6 inches above the main line pipe or service leads. Wire shall be extended to all hydrants, blow-offs, dead ends, service leads and post indicator valves. Tracer wire shall be brought to grade, leaving enough excess material to avoid loss or damage to the wire during construction and subsequent activities. Wire shall be trimmed to finish grade following completion of the landscaping.

B. When tracer wire is to be run along short offsets (less than 20 feet), a loop of wire shall be utilized to loop to the end of the offset, bring the loop to grade and terminate it in an approved manner. For service leads and offsets of more than 20 feet in length, or installed by directional drilling method, a splice may be utilized to make the connection at the main. The tracer wire shall then be installed and terminated in an approved manner.

C. Tracer wire terminations shall be made by one of the following methods:

1. Tracer wire shall be terminated at hydrants by tying off the wire at the head flange, leaving excess material for future trimming following landscape activities.

2. Terminations at valve/curb boxes, post indicators, valves and blow-offs shall be made with 2 wraps of wire at grade around the box or pipe, leaving excess material for future trimming following landscaping.

3. Gatewell terminations shall be made by running the tracer wire through the pipe opening in the wall, down to and across the floor to the steps, up the wall and secure to the top step leaving the stub accessible at the casting. Wire shall be run through the gatewell such that it does not create a hazard.

4. Terminations at existing water mains without tracer wire shall be made at the nearest hydrant or gate well as outlined above. If no hydrant or gatewell is available, an upper section of valve box shall be installed with the tracer wire stubbed up inside

D. When connections are made to existing water mains which do not have tracer wire, the following method most applicable to field conditions shall be used.

1. When connection is made at/near a valve or hydrant, the connection shall be made in the same manner as the termination at said structures in Item C(2) above.

2. When connection takes place in a gatewell, the same procedure shall be used as in termination at a gatewell (see Item C(3) above).

3. If no valve or hydrant is available, the upper section only of a valve box shall be set with the tracer wire stubbed up inside.

3.06 POLYETHYLENE ENCASEMENT

A. The polyethylene encasement must be installed in accordance with the specifications and requirements of ANSI/AWWA C105/A21.5. For open cut applications a single wrap is required, and for directional drill applications a double wrap is required.

B. The polyethylene encasement must be taped and overlapped at pipe joints and must be taped in a spiral configuration along the length of the pipe.

3.07 CONNECTION TO EXISTING MAINS

A. All connections to existing water mains shall be made at the locations as shown on the plans.

B. All valves shall be operated by the Pittsfield Township Utilities Department.

C. Prior to beginning construction of the final connections, the CONTRACTOR shall provide sequence of all final connections to the existing system and coordinate a meeting between the ENGINEER, OWNER and CONTRACTOR in the field to review the procedure.

D. When making a dry connection to an existing main, the existing main to which a connection is to be made shall be isolated by the closing of the necessary existing valves, and the water from the existing main shall then be pumped out or removed by other means so the connection may be made in the dry. After the connection has been acceptably made, the portion of the new line to the nearest valve shall be satisfactorily tested and disinfected, along with the drained portion of the existing water main, before the isolated existing main is placed back in service, except as the ENGINEER may otherwise direct. In as much as residents served by this isolated main will be temporarily out of water during this period, the work shall be executed as rapidly as possible, and the time of, and the procedure in, making such connections shall be subject to the review of the ENGINEER. Such work may be required to be done at night in order to minimize inconvenience of water users. The CONTRACTOR shall not be entitled to any additional compensation because of night work or other special requirements in work under this section.

E. The CONTRACTOR shall make particular effort, prior to bidding, to ascertain whether or not valves in the existing mains to be connected to the new mains are so located as to provide isolation. If valves are not found to be adequate, then the CONTRACTOR shall utilize other means to make the connections with a minimum of interruption to service.

F. When making a wet tap connection to an existing main, a tapping sleeve designed for the type of pipe being tapped shall be utilized and the tap shall be made in accordance with the manufacturer of the tapping equipment.

G. Wherever adapters are required to properly connect the pipe with existing pipe or other material or manufacturer, the nominal I.D. of adapters shall be the same size as the nominal diameter of pipe connected thereto. Adapters shall also be furnished and used as required by the manufacturer for connection to fittings.

3.08 BEDDING

A. Ductile iron pipes shall be fully enclosed in polywrap and laid on a compacted sand cushion, 4 inches thick. Sand shall conform to fine aggregate 2NS as defined in 2003 MDOT, Section 902.

B. 2NS sand bedding material shall be placed around and above the main to a height of 12 inches above the main.

C. Sand shall be compacted on top of the 12-inches of sand above the pipe to not less than 95 percent of the maximum unit density as determined at optimum moisture content.

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Revision	By	Appd.	YY.MM.DD
SPEC. UPDATES	MRH	DRW	14.01.24
TWP REV	BWA	DRW	11.04.27
SPEC. UPDATES	BWA	DRW	10.10.25
SPEC. UPDATES	TTN	DRW	10.01.19

Issued	By	Appd.	YY.MM.DD
File Name: W-02	BWA	DRW	DRW	07.10.01
	Dwn.	Chkd.	Dsgn.	YY.MM.DD

Permit-Seal

Client/Project
PITTSFIELD TOWNSHIP

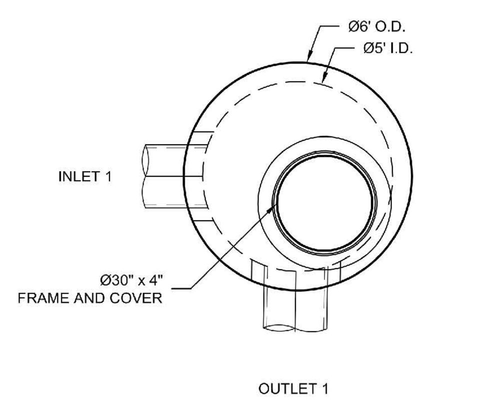
Pittsfield Township, Michigan

Title
WATER MAIN SPECIFICATIONS

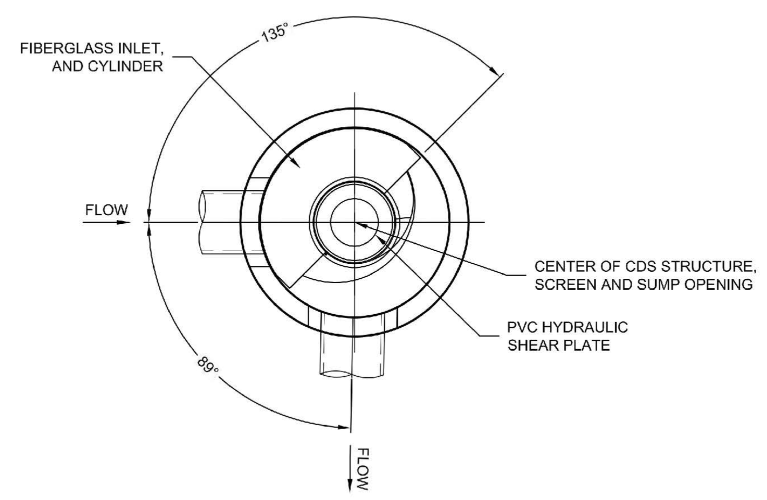
Project No.
2075001300

Scale

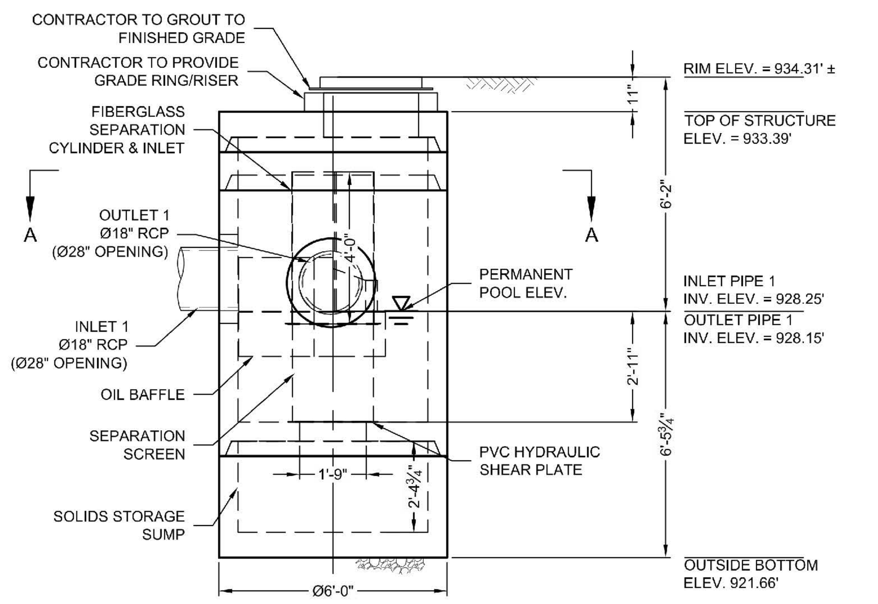
Revision



PLAN VIEW



SECTION A-A



ELEVATION VIEW

MATERIAL LIST (PROVIDED BY CONTECH)

COUNT	DESCRIPTION	INSTALLED BY
1	FIBERGLASS INLET AND CYLINDER	CONTECH
1	2400 micron, 2' O.D. x 2.58' SEP. SCREEN	CONTECH
1	3/16 INCH PVC HYDRAULIC SHEAR PLATE *	CONTECH
1	SEALANT FOR JOINTS (BY PRECASTER)	CONTRACTOR
1	Ø30" x 4" FRAME & COVER, EJ#41600484, OR EQUIV.	CONTRACTOR

* SEE HYDRAULIC SHEAR PLATE DETAIL

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 10500 LBS.
STRUCTURE IS DELIVERED IN 4 PIECES

MAX FOOTPRINT = Ø6'

CONTECH
CONTRACT
DRAWING

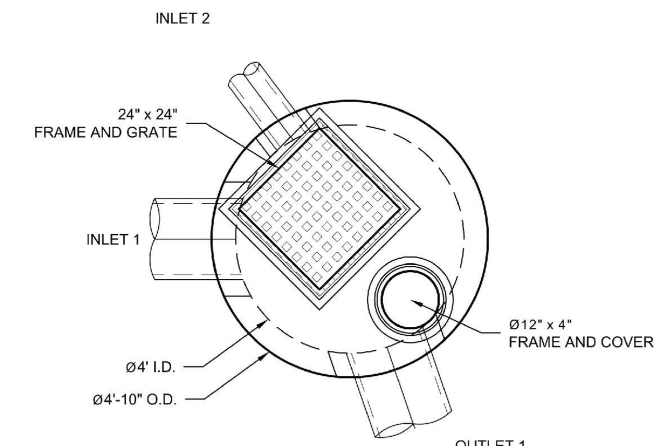
NCI
LAYOUT 1A
2025-5-FGIS
5824 / NORW10
10.16T

MARK	DATE	REVISION DESCRIPTION	BY
1	8/7/18	REVISED	PWV

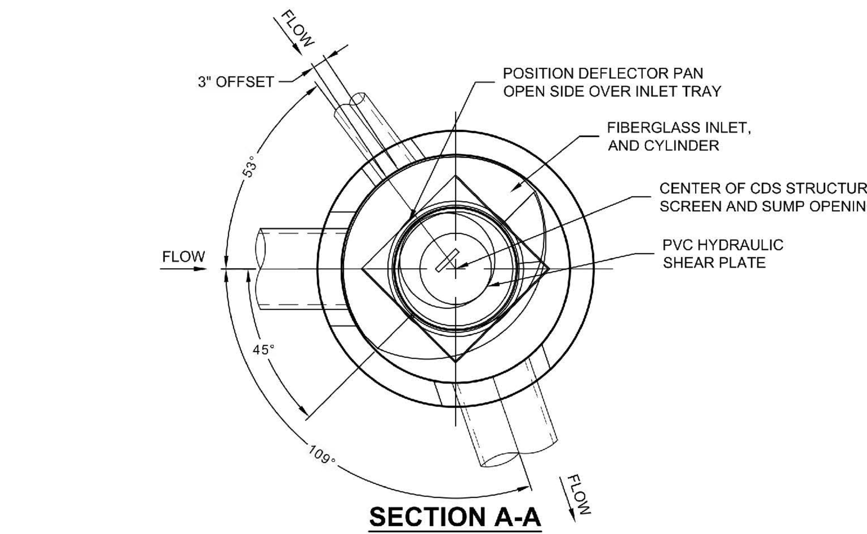
CDS2025-5-C - 564663-10
PITTSFIELD MIXED USE
DEVELOPMENT
PITTSFIELD, MI
for SYSTEM: R2

CONTECH ENGINEERED SOLUTIONS LLC

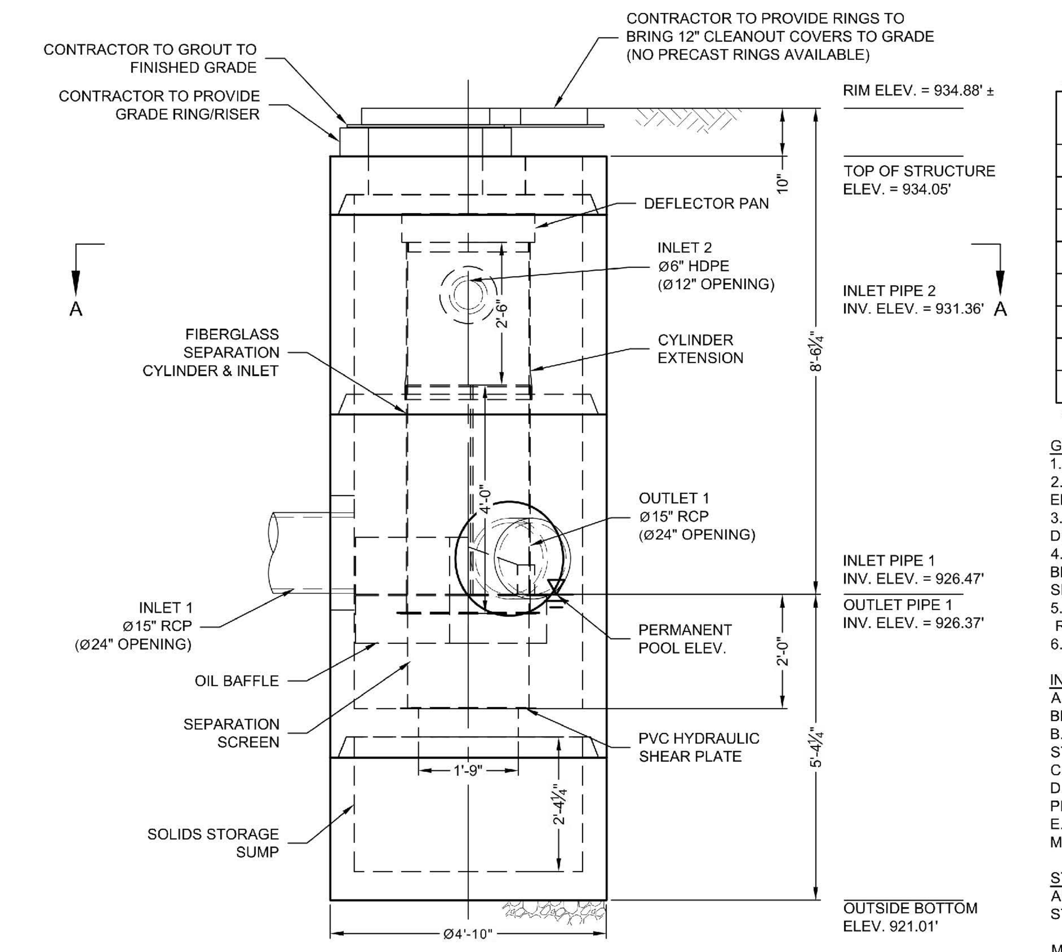
DATE: 10/11/17	SCALE: 1/4" = 1'-0"
DESIGNED: PWV	DRAWN: PWV
CHECKED: ###	APPROVED: ###
PROJECT No.: 564663	SEQUENCE No.: 10
SHEET: 1 OF 1	



PLAN VIEW



SECTION A-A



ELEVATION VIEW

MATERIAL LIST (PROVIDED BY CONTECH)

COUNT	DESCRIPTION	INSTALLED BY
1	FIBERGLASS INLET AND CYLINDER	CONTECH
1	2400 micron, 2' O.D. x 1.67' SEP. SCREEN	CONTECH
1	CYLINDER EXTENSION	CONTRACTOR
1	DEFLECTOR PAN	CONTRACTOR
1	3/16 INCH PVC HYDRAULIC SHEAR PLATE *	CONTECH
1	SEALANT FOR JOINTS (BY PRECASTER)	CONTRACTOR
1	24" x 24" FRAME & GRATE, EJ#45624050A01, OR EQUIV.	CONTRACTOR
1	Ø12" x 4" FRAME & COVER, EJ#41610201, OR EQUIV.	CONTRACTOR

* SEE HYDRAULIC SHEAR PLATE DETAIL

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 6500 LBS.
STRUCTURE IS DELIVERED IN 4 PIECES

MAX FOOTPRINT = Ø4'-10"

CONTECH
CONTRACT
DRAWING

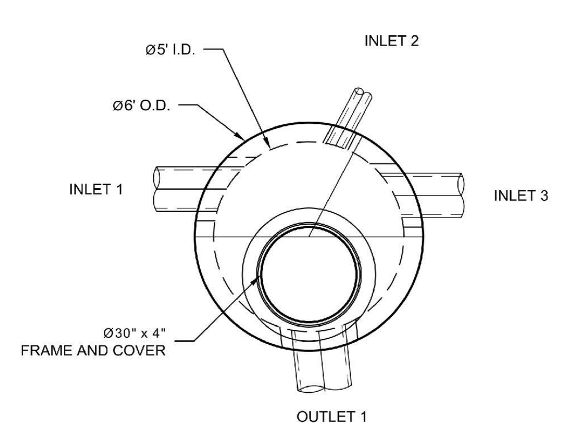
NCI
LAYOUT 1A
2015-4-FGIS
5824 / NORW10
7.74T

MARK	DATE	REVISION DESCRIPTION	BY
3	9/17/18	PER MARKUPS	KMC
2	8/7/18	REVISED	PWV
1	3/5/18	ELEVATION AND INLET 2	KMC

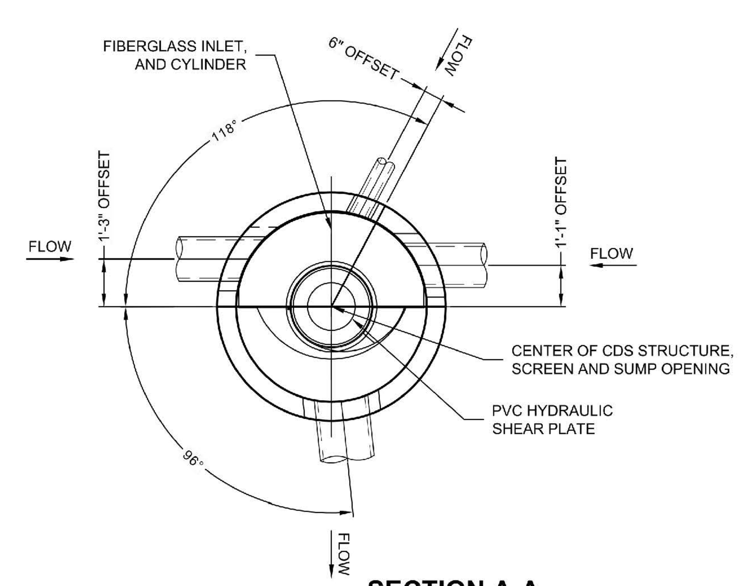
CDS2015-4-C - 564663-20
PITTSFIELD MIXED USE
DEVELOPMENT
PITTSFIELD, MI
for SYSTEM: R11

CONTECH ENGINEERED SOLUTIONS LLC

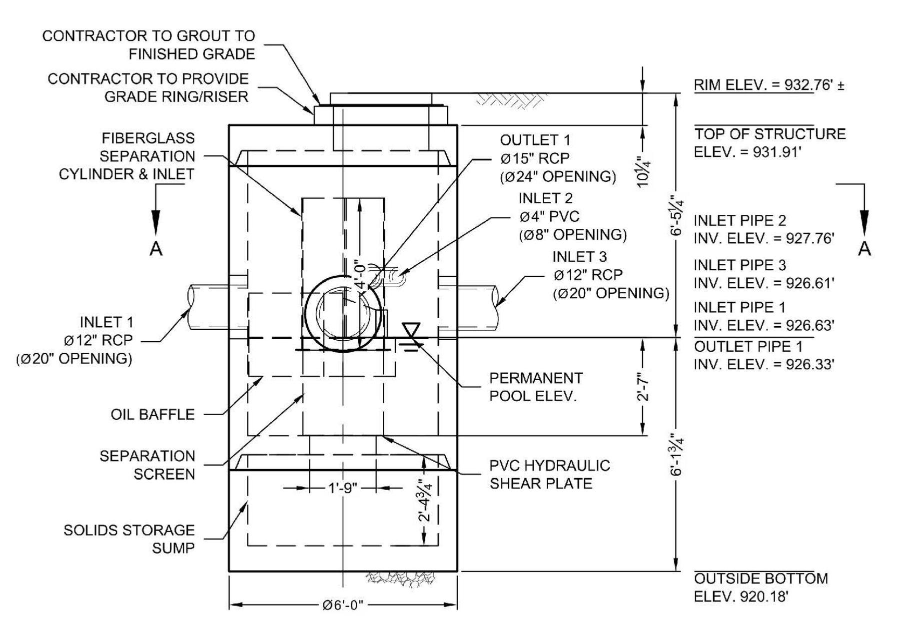
DATE: 10/11/17	SCALE: 3/8" = 1'-0"
DESIGNED: PWV	DRAWN: PWV
CHECKED: ###	APPROVED: ###
PROJECT No.: 564663	SEQUENCE No.: 20
SHEET: 1 OF 1	



PLAN VIEW



SECTION A-A



ELEVATION VIEW

MATERIAL LIST (PROVIDED BY CONTECH)

COUNT	DESCRIPTION	INSTALLED BY
1	FIBERGLASS INLET AND CYLINDER	CONTECH
1	2400 micron, 2' O.D. x 2.25' SEP. SCREEN	CONTECH
1	3/16 INCH PVC HYDRAULIC SHEAR PLATE *	CONTECH
1	SEALANT FOR JOINTS (BY PRECASTER)	CONTRACTOR
1	Ø30" x 4" FRAME & COVER, EJ#41600484, OR EQUIV.	CONTRACTOR

* SEE HYDRAULIC SHEAR PLATE DETAIL

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 12000 LBS.
STRUCTURE IS DELIVERED IN 3 PIECES

MAX FOOTPRINT = Ø6'

CONTECH
CONTRACT
DRAWING

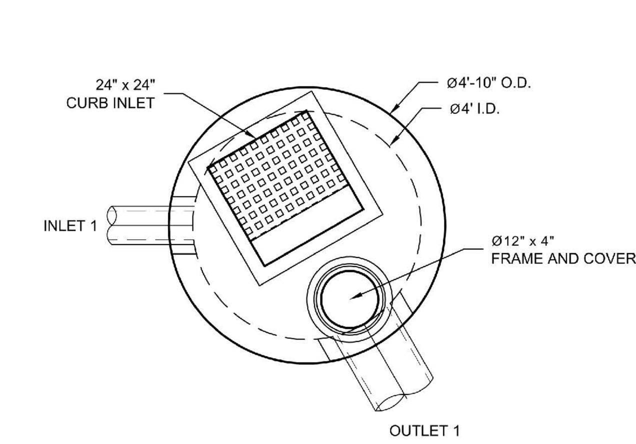
NCI
LAYOUT 1A
2020-5-FGIS
5824 / NORW10
10.16T

MARK	DATE	REVISION DESCRIPTION	BY
2	9/17/18	PIPE SIZES & ELEVATIONS	KMC
1	8/7/18	REVISED	PWV

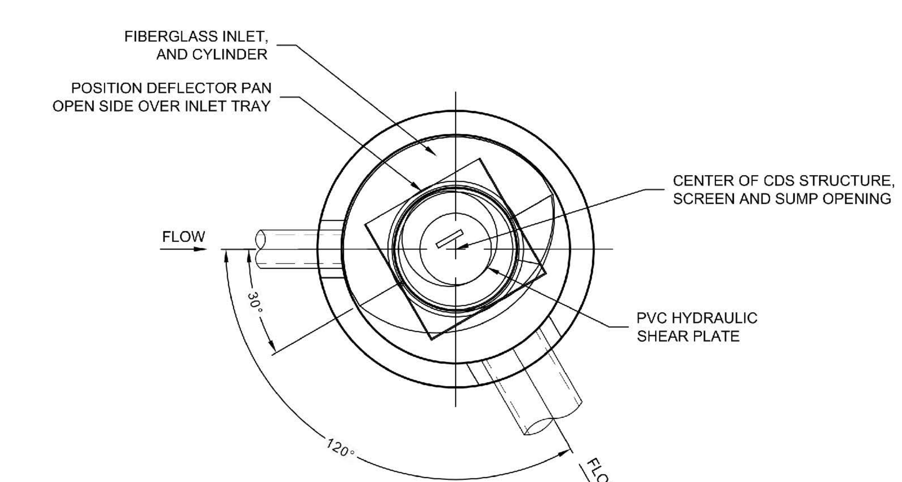
CDS2020-5-C - 564663-30
PITTSFIELD MIXED USE
DEVELOPMENT
PITTSFIELD, MI
for SYSTEM: R16

CONTECH ENGINEERED SOLUTIONS LLC

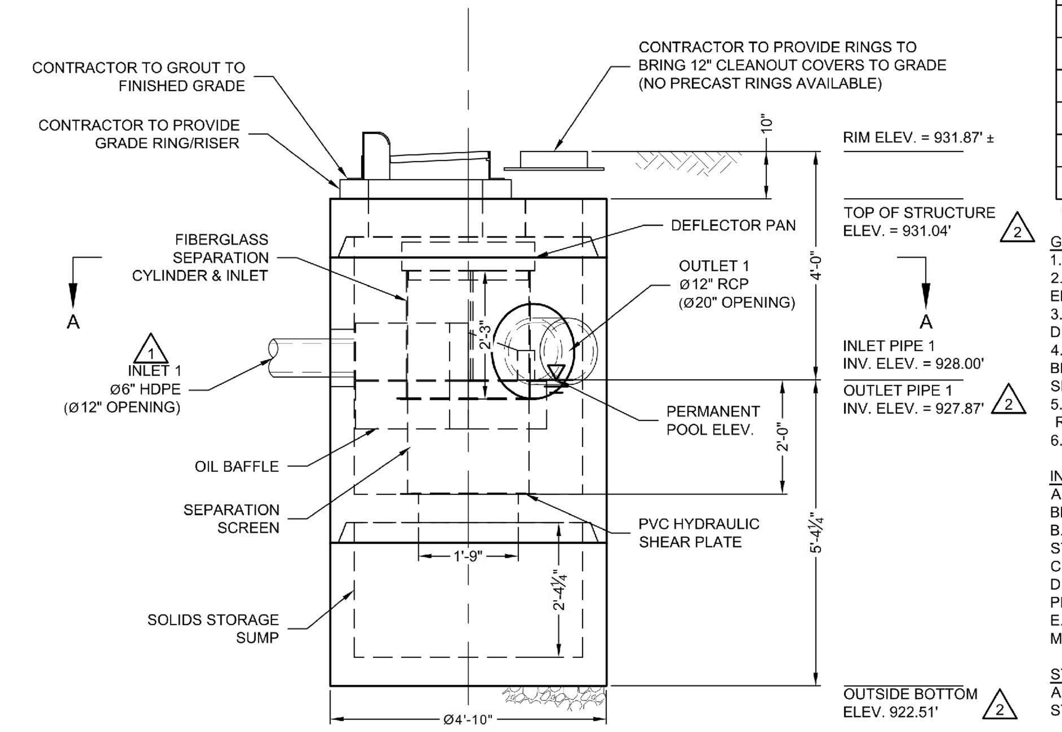
DATE: 10/11/17	SCALE: 1/4" = 1'-0"
DESIGNED: PWV	DRAWN: PWV
CHECKED: ###	APPROVED: ###
PROJECT No.: 564663	SEQUENCE No.: 30
SHEET: 1 OF 1	



PLAN VIEW



SECTION A-A



ELEVATION VIEW

MATERIAL LIST (PROVIDED BY CONTECH)

COUNT	DESCRIPTION	INSTALLED BY
1	FIBERGLASS INLET AND CYLINDER	CONTECH
1	2400 micron, 2' O.D. x 1.67' SEP. SCREEN	CONTECH
1	CYLINDER EXTENSION	CONTRACTOR
1	DEFLECTOR PAN	CONTRACTOR
1	3/16 INCH PVC HYDRAULIC SHEAR PLATE *	CONTECH
1	SEALANT FOR JOINTS (BY PRECASTER)	CONTRACTOR
1	24" x 24" CURB INLET, EJ#0719131C01, OR EQUIV.	CONTRACTOR
1	Ø12" x 4" FRAME & COVER, EJ#41610201, OR EQUIV.	CONTRACTOR

* SEE HYDRAULIC SHEAR PLATE DETAIL

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
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4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
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E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 5500 LBS.
STRUCTURE IS DELIVERED IN 3 PIECES

MAX FOOTPRINT = Ø4'-10"

CONTECH
CONTRACT
DRAWING

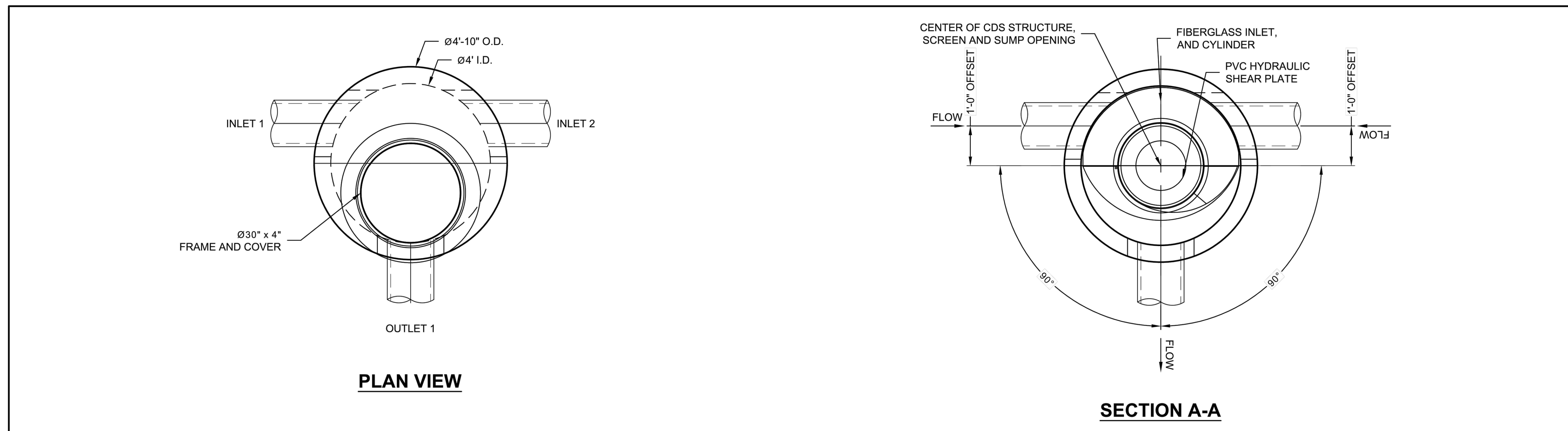
NCI
LAYOUT 1A
2015-4-FGIS
5824 / NORW10

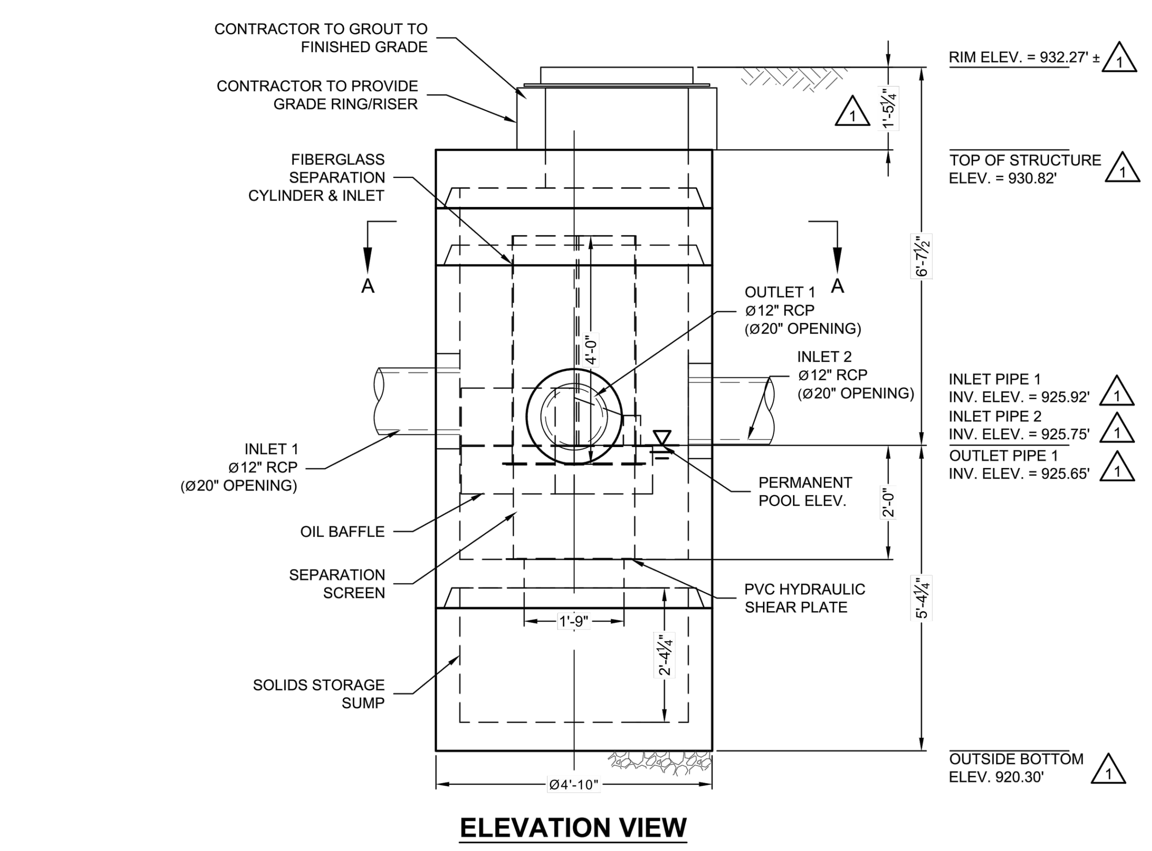
MARK	DATE	REVISION DESCRIPTION	BY
2	9/17/18	OUTLET ELEVATION	KMC
1	3/5/18	OUTLET ELEVATION & INLET 1 ADDED	KMC

CDS2015-4-C - 564663-40
PITTSFIELD MIXED USE
DEVELOPMENT
PITTSFIELD, MI
for SYSTEM: R27

CONTECH ENGINEERED SOLUTIONS LLC

DATE: 10/11/17	SCALE: 3/8" = 1'-0"
DESIGNED: PWV	DRAWN: PWV
CHECKED: XXX	APPROVED: ---
PROJECT No.: 564663	SEQUENCE No.: 40
SHEET: 1 OF 1	





MATERIAL LIST (PROVIDED BY CONTECH)

COUNT	DESCRIPTION	INSTALLED BY
1	FIBERGLASS INLET AND CYLINDER	CONTECH
1	2400 micron, 2' O.D. x 1.67' SEP. SCREEN	CONTECH
1	3/16 INCH PVC HYDRAULIC SHEAR PLATE *	CONTECH
1	SEALANT FOR JOINTS (BY PRECASTER)	CONTRACTOR
1	Ø30" x 4" FRAME & COVER, EJ#41600484, OR EQUIV.	CONTRACTOR

* SEE HYDRAULIC SHEAR PLATE DETAIL

GENERAL NOTES
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INSTALLATION NOTES
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E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 6000 LBS.
STRUCTURE IS DELIVERED IN 4 PIECES

MAX FOOTPRINT = Ø4'-10"

CONTECH CONTRACT DRAWING

NCI
LAYOUT 1A
2015-4-FGIS
5824 / NORW10

MARK	DATE	REVISION DESCRIPTION	BY
1	3/5/18	ELEVATIONS REVISED	KMC

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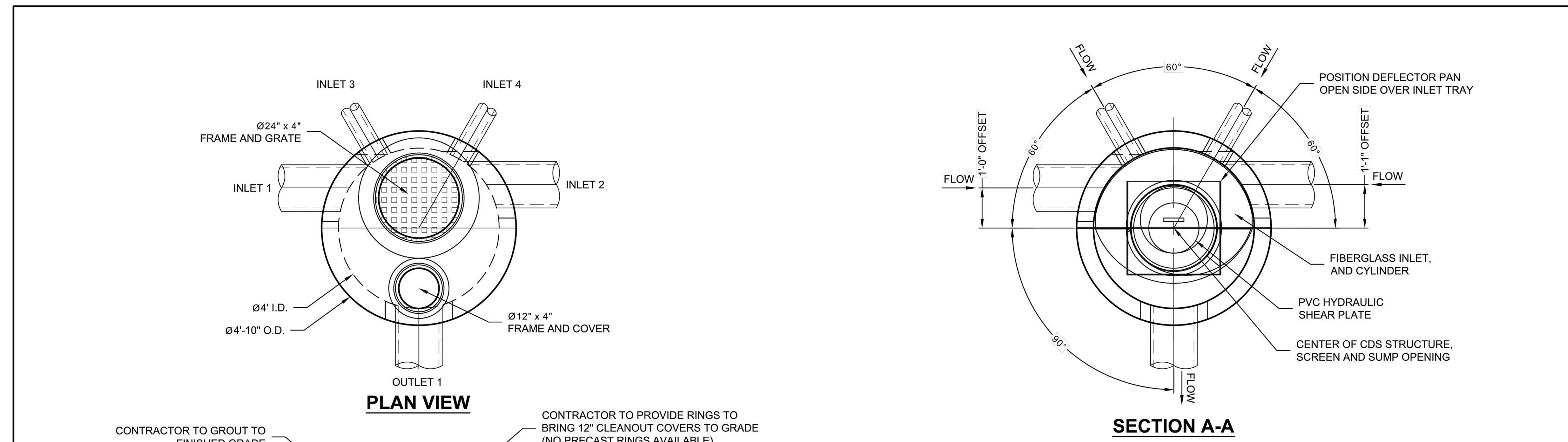
If discrepancies between the supplied information upon which the drawing is based and actual field conditions are encountered as site work progresses, these discrepancies must be reported to CONTECH immediately for re-evaluation of the design. CONTECH accepts no liability for designs based on missing, incomplete or inaccurate information supplied by others.

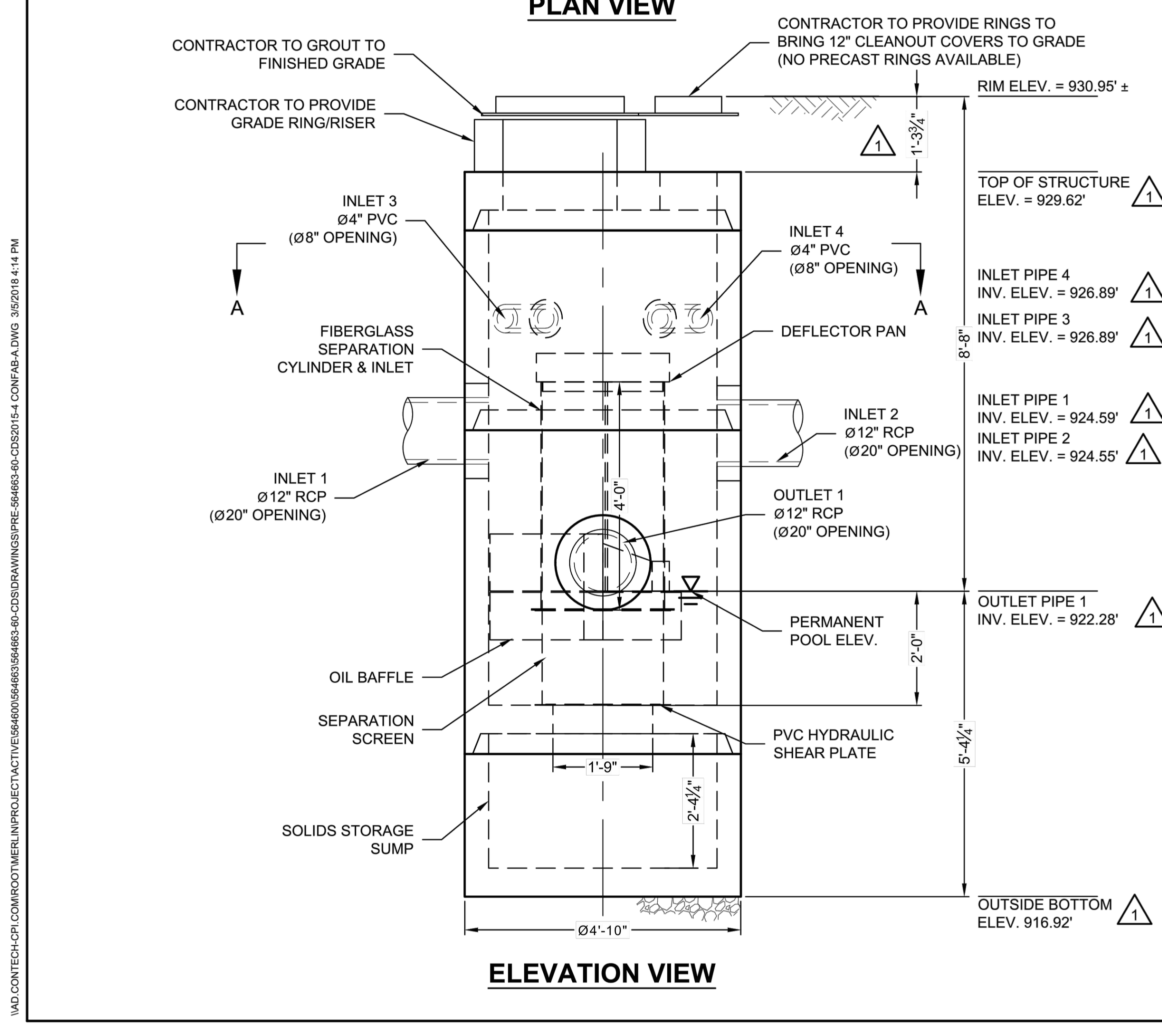
CDS2015-4-C - 564663-50
PITTSFIELD MIXED USE DEVELOPMENT
PITTSFIELD, MI
for SYSTEM: R31

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,788,848; 6,641,720; 6,511,595; 6,581,783; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

DATE: 10/11/17	SCALE: 3/8" = 1'-0"
DESIGNED: PWV	DRAWN: PWV
CHECKED: XXX	APPROVED: ----
PROJECT No.: 564663	SEQUENCE No.: 50
SHEET: 1 OF 1	





MATERIAL LIST (PROVIDED BY CONTECH)

COUNT	DESCRIPTION	INSTALLED BY
1	FIBERGLASS INLET AND CYLINDER	CONTECH
1	2400 micron, 2' O.D. x 1.67' SEP. SCREEN	CONTECH
1	DEFLECTOR PAN	CONTRACTOR
1	3/16 INCH PVC HYDRAULIC SHEAR PLATE *	CONTECH
1	SEALANT FOR JOINTS (BY PRECASTER)	CONTRACTOR
1	Ø24" x 4" FRAME & GRATE, EJ#43600301, OR EQUIV.	CONTRACTOR
1	Ø12" x 4" FRAME & COVER, EJ#41610201, OR EQUIV.	CONTRACTOR

* SEE HYDRAULIC SHEAR PLATE DETAIL

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
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5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
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STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 6000 LBS.
STRUCTURE IS DELIVERED IN 4 PIECES

MAX FOOTPRINT = Ø4'-10"

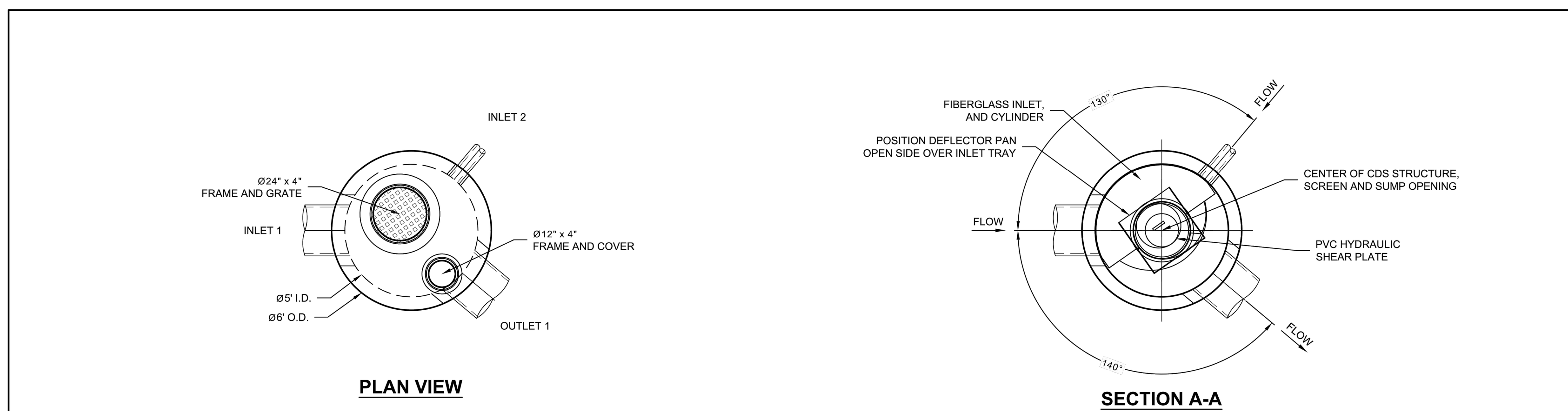
CONTECH CONTRACT DRAWING

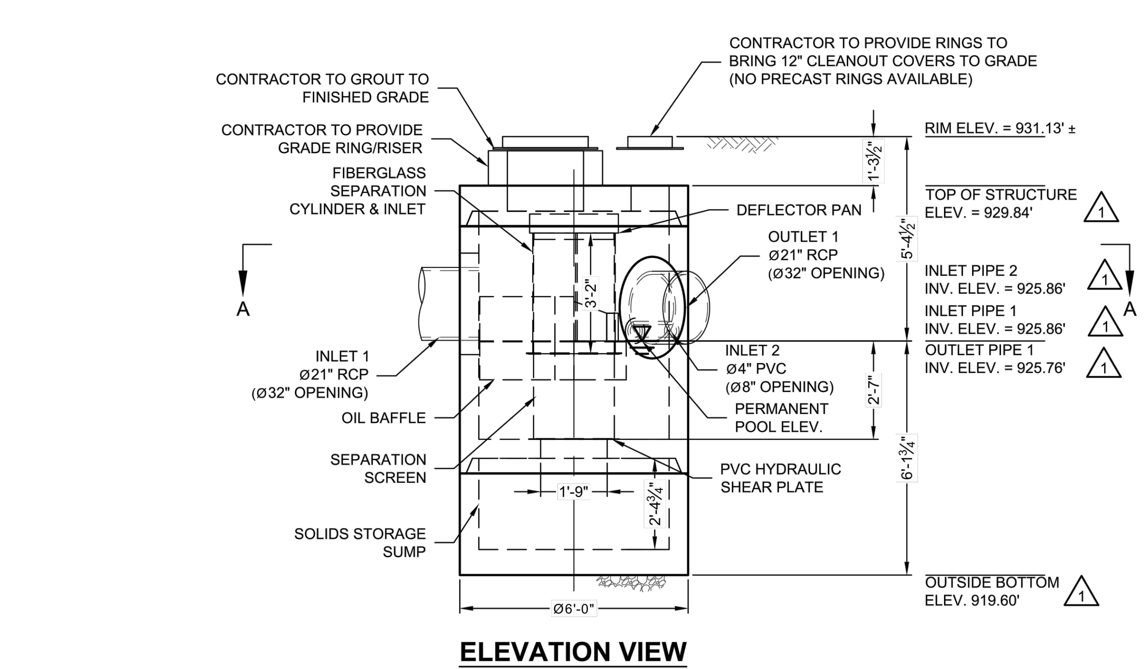
NCI
LAYOUT 1A
2015-4-FGIS
5824 / NORW10

MARK	DATE	REVISION DESCRIPTION	BY
1	3/5/18	ELEVATIONS REVISED	KMC

CDS2015-4-C - 564663-60
PITTSFIELD MIXED USE DEVELOPMENT
PITTSFIELD, MI
for SYSTEM: R41

DATE: 10/11/17	SCALE: 3/8" = 1'-0"
DESIGNED: PWV	DRAWN: PWV
CHECKED: XXX	APPROVED: ----
PROJECT No.: 564663	SEQUENCE No.: 60
SHEET: 1 OF 1	





MATERIAL LIST (PROVIDED BY CONTECH)

COUNT	DESCRIPTION	INSTALLED BY
1	FIBERGLASS INLET AND CYLINDER	CONTECH
1	2400 micron, 2' O.D. x 2.25' SEP. SCREEN	CONTECH
1	DEFLECTOR PAN	CONTRACTOR
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1	Ø24" x 4" FRAME & GRATE, EJ#43600301, OR EQUIV.	CONTRACTOR
1	Ø12" x 4" FRAME & COVER, EJ#41610201, OR EQUIV.	CONTRACTOR

* SEE HYDRAULIC SHEAR PLATE DETAIL

GENERAL NOTES
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4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 9500 LBS.
STRUCTURE IS DELIVERED IN 3 PIECES

MAX FOOTPRINT = Ø6'

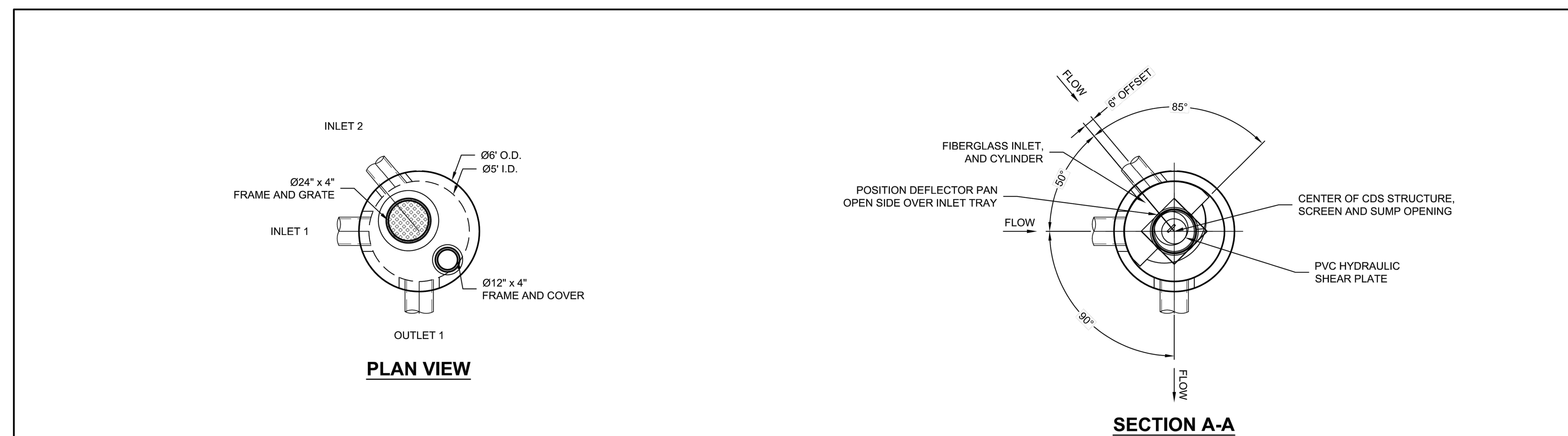
CONTECH CONTRACT DRAWING

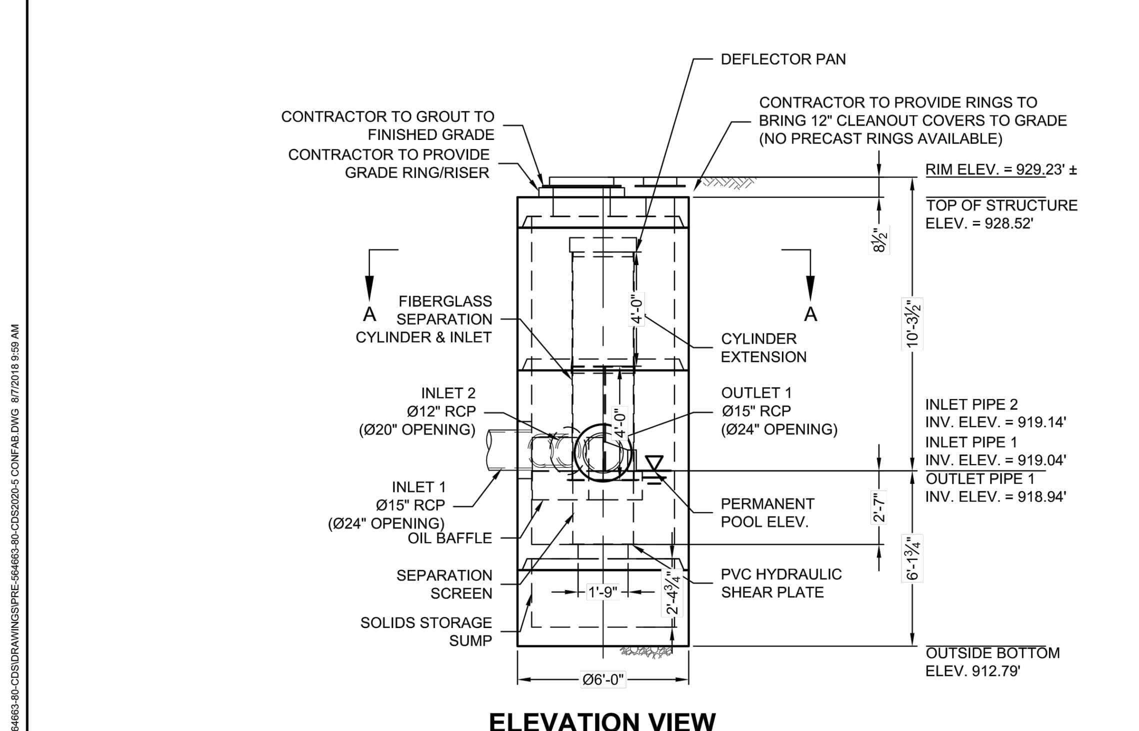
NCI
LAYOUT 1A
2020-5-FGIS
5824 / NORW10

MARK	DATE	REVISION DESCRIPTION	BY
1	3/5/18	PIPE ELEVATIONS REVISED	KMC

CDS2020-5-C - 564663-70
PITTSFIELD MIXED USE DEVELOPMENT
PITTSFIELD, MI
for SYSTEM: R46

DATE: 10/11/17	SCALE: 1/4" = 1'-0"
DESIGNED: PWV	DRAWN: PWV
CHECKED: XXX	APPROVED: ----
PROJECT No.: 564663	SEQUENCE No.: 70
SHEET: 1 OF 1	





MATERIAL LIST (PROVIDED BY CONTECH)

COUNT	DESCRIPTION	INSTALLED BY
1	FIBERGLASS INLET AND CYLINDER	CONTECH
1	2400 micron, 2' O.D. x 2.25' SEP. SCREEN	CONTECH
1	CYLINDER EXTENSION	CONTRACTOR
1	DEFLECTOR PAN	CONTRACTOR
1	3/16 INCH PVC HYDRAULIC SHEAR PLATE *	CONTECH
1	SEALANT FOR JOINTS (BY PRECASTER)	CONTRACTOR
1	Ø24" x 4" FRAME & GRATE, EJ#43600301, OR EQUIV.	CONTRACTOR
1	Ø12" x 4" FRAME & COVER, EJ#41610201, OR EQUIV.	CONTRACTOR

* SEE HYDRAULIC SHEAR PLATE DETAIL

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.ContechES.com
3. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM STRUCTURE MEETS REQUIREMENTS OF PROJECT.
4. STRUCTURE SHALL MEET AASHTO HS-20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 2', AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
5. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.
6. CDS STRUCTURE SHALL BE PRECAST CONCRETE CONFORMING TO ASTM C-478 AND AASHTO LOAD FACTOR DESIGN METHOD.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE.
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT INLET AND OUTLET PIPE(S). MATCH PIPE INVERTS WITH ELEVATIONS SHOWN. ALL PIPE CENTERLINES TO MATCH PIPE OPENING CENTERLINES.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 10500 LBS.
STRUCTURE IS DELIVERED IN 4 PIECES

MAX FOOTPRINT = Ø6'

CONTECH CONTRACT DRAWING

NCI
LAYOUT 1A
2020-5-FGIS
5824 / NORW10
12.82T

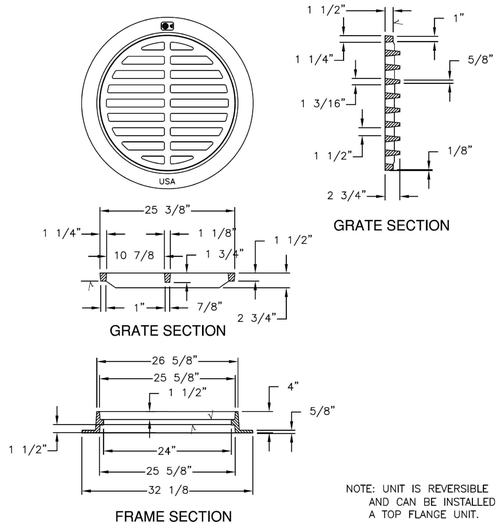
MARK	DATE	REVISION DESCRIPTION	BY
2	8/7/18	REVISED RIM	
1	3/5/18	RIM AND INLET 2 ELEVATION	KMC

CDS2020-5-C - 564663-80
PITTSFIELD MIXED USE DEVELOPMENT
PITTSFIELD, MI
for SYSTEM: R52

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
605 Global Way Suite 113, Linthicum, MD 21090
866-740-3318 410-796-5505 866-376-8511 FAX

DATE: 10/11/17	SCALE: 3/16" = 1'-0"
DESIGNED: PWV	DRAWN: PWV
CHECKED: ###	APPROVED: ###
PROJECT No.: 564663	SEQUENCE No.: 80
SHEET: 1 OF 1	

V3600-3 BF RG V3600-3 DI GR Assembly



NOTE: UNIT IS REVERSIBLE
AND CAN BE INSTALLED AS
A TOP FLANGE UNIT.

Product Number
43600301

Design Features
-Materials
Frame
Gray Iron (CL35B)
Grate
Ductile Iron (70-50-05)

-Design Load
Extra Heavy Duty
-Open Area
180 Sq. Inches
-Coating
Undipped
-√ Designates Machined Surface

Certification
- ASTM A48
- ASTM A536
-
-Country of Origin:USA

Major Components
41600310
43600330

Drawing Revision
04/08/2003 Designer: DEW
02/04/2015 Revised By: DVD

Disclaimer
Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

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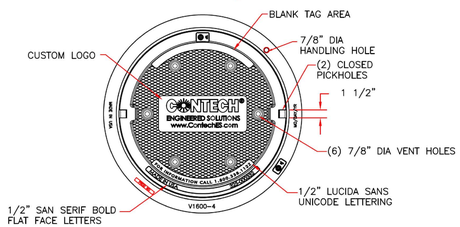
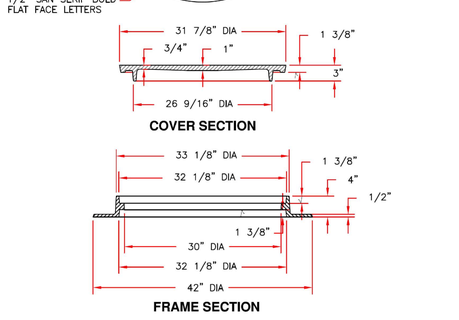
Contact
800 626 4653
ejco.com

1810B4 V1600-4 Assembly





Product Number
41600484

Design Features
-Materials
Cover
Gray Iron (CL35B)
Frame
Gray Iron (CL35B)

-Design Load
Heavy Duty
-Open Area
n/a
-Coating
Undipped
-√ Designates Machined Surface

Certification
-
- ASTM A48
-
-Country of Origin:USA

Major Components
00180783
41600419

Drawing Revision
11/19/2007 Designer: DEW
6/20/2017 Revised By: DAE

Disclaimer
Weights (lbs./kg) dimensions (inches/mm) and drawings provided for your guidance. We reserve the right to modify specifications without prior notice.

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Contact
800 626 4653
ejco.com

PROPOSED LAYOUT: AREA A1

129	STORMTECH MC-4500 CHAMBERS
20	STORMTECH MC-4500 END CAPS
16.5	STONE ABOVE (in)
26.5	STONE BELOW (in)
30	% STONE VOID
25,720	**INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)**
6,059	SYSTEM AREA (ft²)
327	SYSTEM PERIMETER (ft)

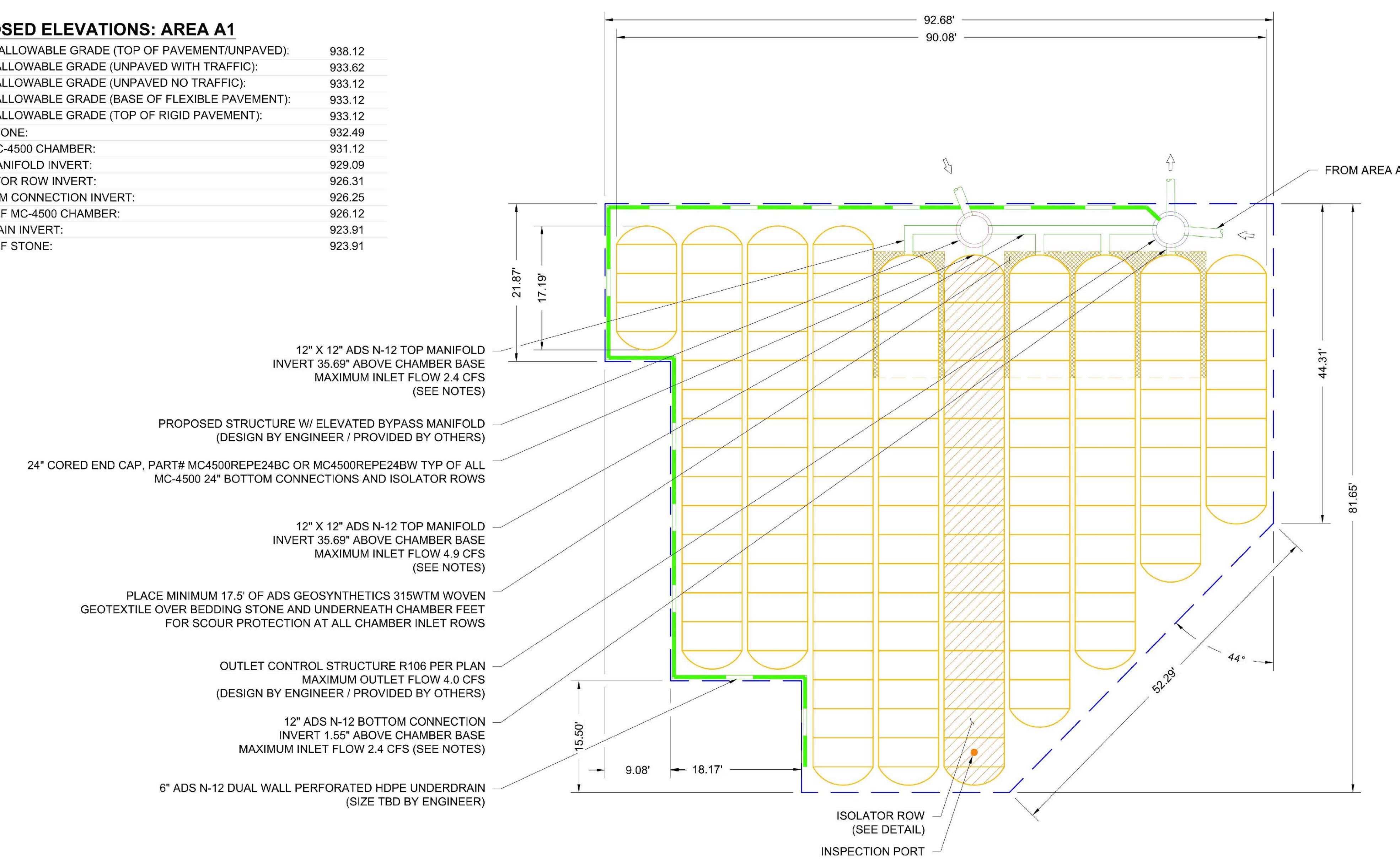
PROPOSED ELEVATIONS: AREA A1

MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	938.12
MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	933.62
MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	933.12
MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	933.12
MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):	933.12
TOP OF STONE:	932.49
TOP OF MC-4500 CHAMBER:	931.12
12" TOP MANIFOLD INVERT:	929.09
24" ISOLATOR ROW INVERT:	926.31
12" BOTTOM CONNECTION INVERT:	926.25
BOTTOM OF MC-4500 CHAMBER:	926.12
UNDERDRAIN INVERT:	923.91
BOTTOM OF STONE:	923.91

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH SHEET #7 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.

TOTAL STORAGE VOLUME AREA A (A1+A2) = 57,760 CF



PITTSFIELD MIXED-USE
PITTSFIELD, MI

DATE: 01-17-18 | DRAWN: AMD | PROJECT #: S054036 | CHECKED: EMH

StormTech

4640 TRUEMAN BLVD
HILLIARD, OH 43026

SHEET 3 OF 13

PROPOSED LAYOUT: AREA A2

165	STORMTECH MC-4500 CHAMBERS
20	STORMTECH MC-4500 END CAPS
12	STONE ABOVE (in)
31	STONE BELOW (in)
30	% STONE VOID
32,040	**INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)**
7,471	SYSTEM AREA (ft²)
515	SYSTEM PERIMETER (ft)

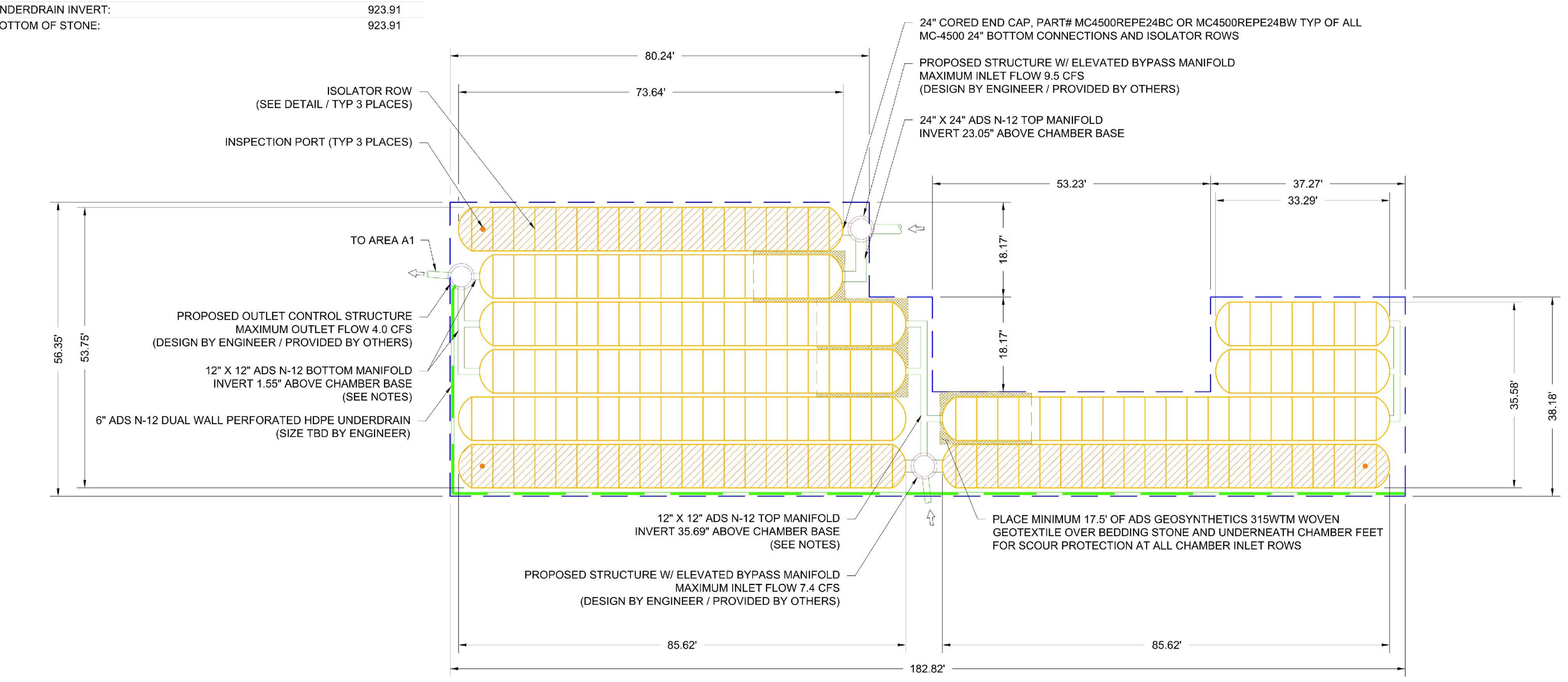
PROPOSED ELEVATIONS: AREA A2

MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	938.49
MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	933.99
MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	933.49
MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	933.49
MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):	933.49
TOP OF STONE:	932.49
TOP OF MC-4500 CHAMBER:	931.49
12" TOP MANIFOLD INVERT:	929.46
24" TOP MANIFOLD INVERT	928.41
24" ISOLATOR ROW INVERT:	926.68
12" BOTTOM MANIFOLD / CONNECTION INVERT:	926.62
BOTTOM OF MC-4500 CHAMBER:	926.49
UNDERDRAIN INVERT:	923.91
BOTTOM OF STONE:	923.91

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH SHEET #7 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.

TOTAL STORAGE VOLUME AREA A (A1+A2) = 57,760 CF



PITTSFIELD MIXED-USE
PITTSFIELD, MI

DATE: 01-17-18 | DRAWN: AMD | PROJECT #: S054036 | CHECKED: EMH

StormTech

4640 TRUEMAN BLVD
HILLIARD, OH 43026

SHEET 4 OF 13

PROPOSED LAYOUT: AREA B

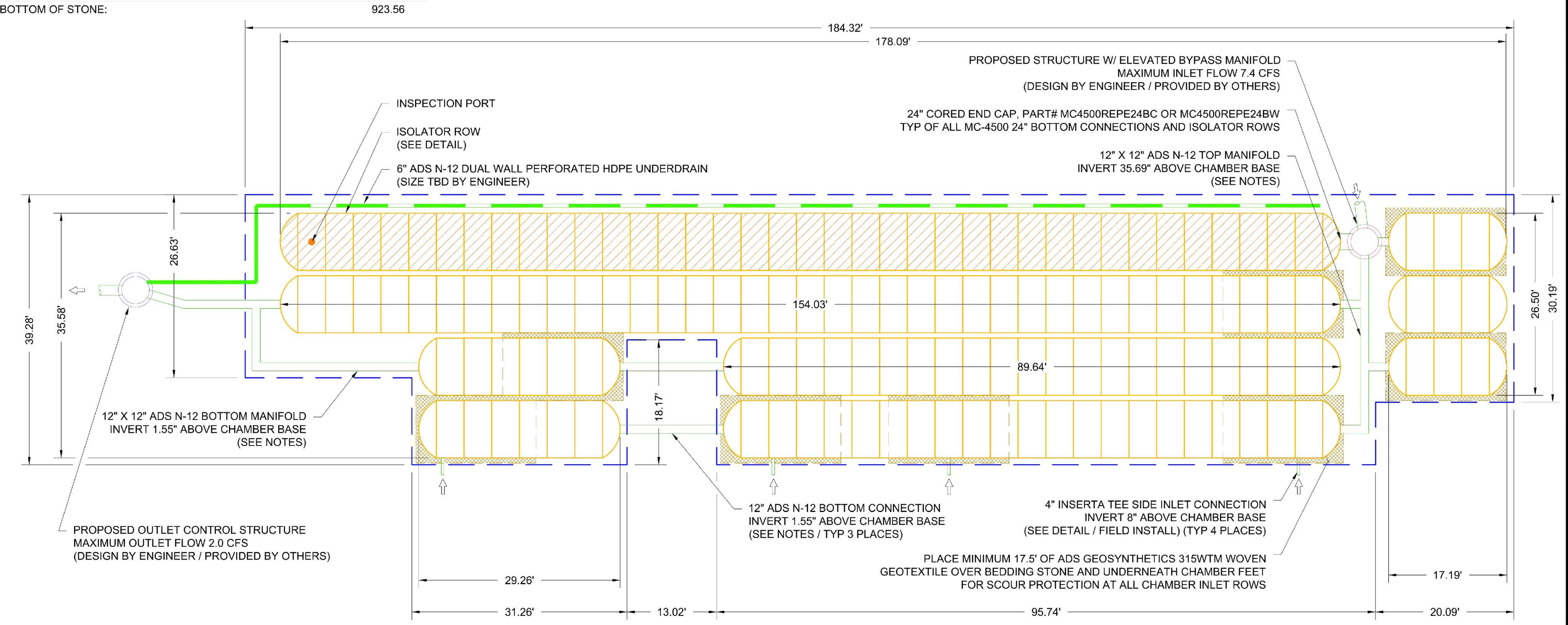
137	STORMTECH MC-4500 CHAMBERS
18	STORMTECH MC-4500 END CAPS
20	STONE ABOVE (in)
9	STONE BELOW (in)
30	% STONE VOID
25,160	**INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)**
6,515	SYSTEM AREA (ft²)
500	SYSTEM PERIMETER (ft)

PROPOSED ELEVATIONS: AREA B

MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	936.31
MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	931.81
MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	931.31
MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	931.31
MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT):	931.31
TOP OF STONE:	930.98
TOP OF MC-4500 CHAMBER:	929.31
12" TOP MANIFOLD INVERT:	927.28
INSERTA TEE SIDE INLET CONNECTION INVERT:	924.98
24" ISOLATOR ROW INVERT:	924.50
12" BOTTOM MANIFOLD INVERT:	924.44
BOTTOM OF MC-4500 CHAMBER:	924.31
UNDERDRAIN INVERT:	923.56
BOTTOM OF STONE:	923.56

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH SHEET #7 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.



PITTSFIELD MIXED-USE
PITTSFIELD, MI

DATE: 01-17-18 | DRAWN: AMD | PROJECT #: S054036 | CHECKED: EMH

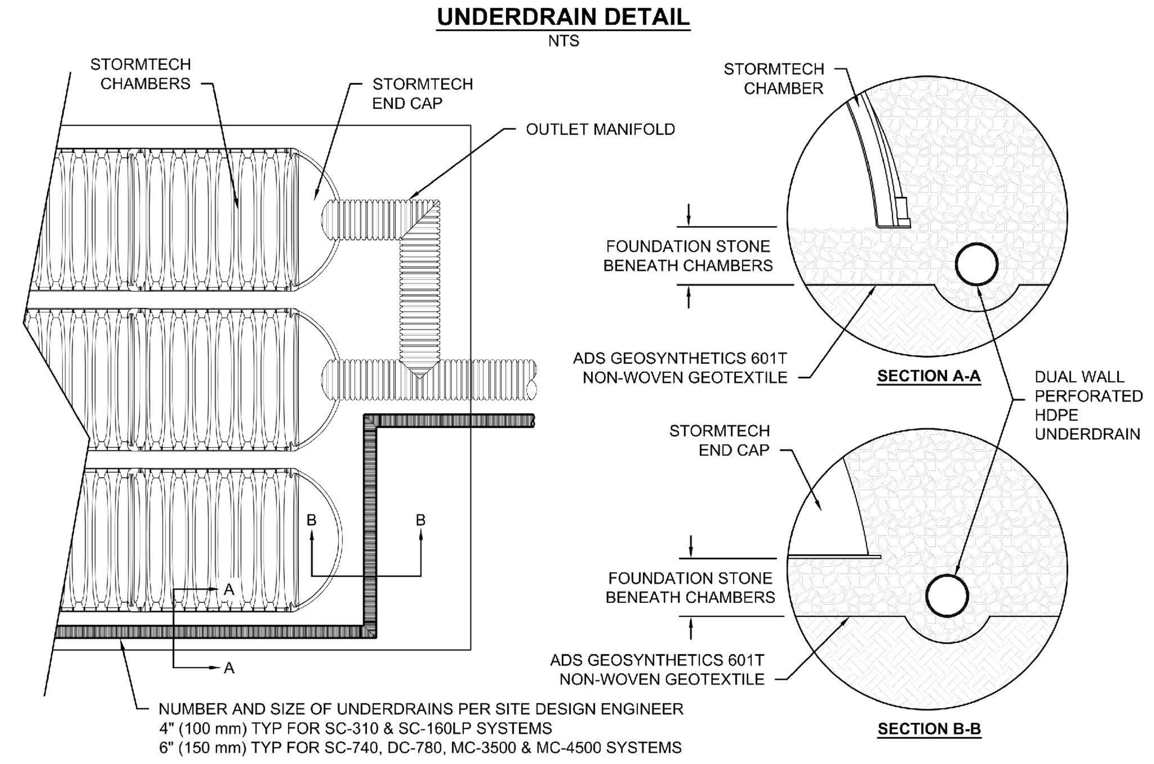
StormTech

4640 TRUEMAN BLVD
HILLIARD, OH 43026

SHEET 5 OF 13

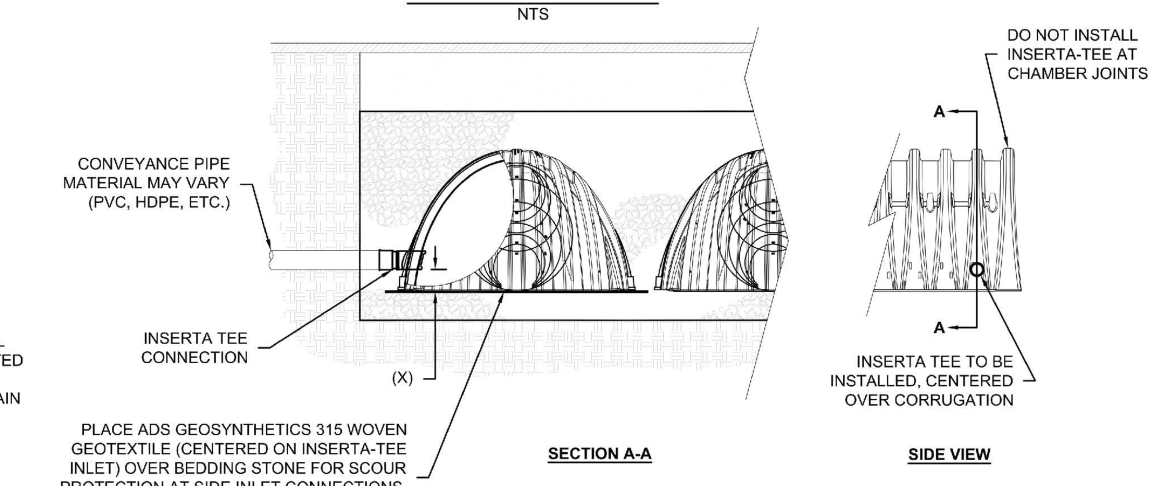
UNDERDRAIN DETAIL

NTS



INSERTA TEE DETAIL

NTS

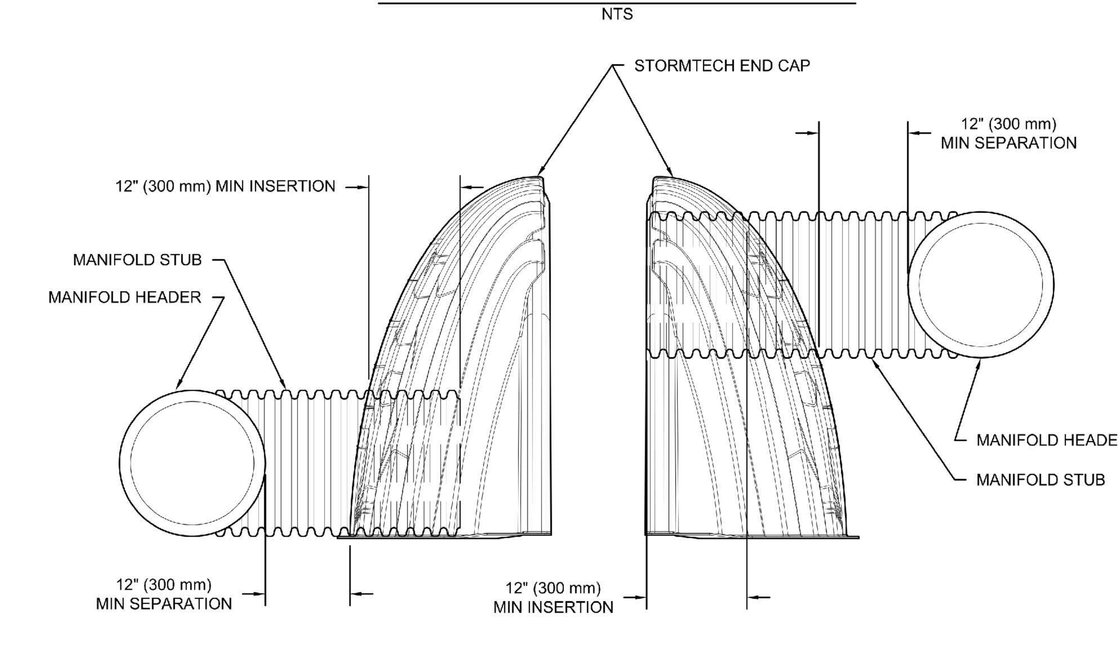


CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	8" (200 mm)
INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON		

NOTE:
PART NUMBERS WILL VARY BASED ON INLET PIPE MATERIALS. CONTACT STORMTECH FOR MORE INFORMATION.

MC-SERIES END CAP INSERTION DETAIL

NTS



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

PITTSFIELD MIXED-USE
PITTSFIELD, MI

DATE: 01-17-18 | DRAWN: AMD | PROJECT #: S054036 | CHECKED: EMH

StormTech

4640 TRUEMAN BLVD
HILLIARD, OH 43026

SHEET 13 OF 13

THIS SHEET IS FOR INFORMATIONAL PURPOSES ONLY.
CONTRACTOR NOTE: MANUFACTURER TO PROVIDE CONTRACT DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION AND CONSTRUCTION

PROPOSED LAYOUT: AREA C1 + C2

114	STORMTECH MC-3500 CHAMBERS
14	STORMTECH MC-3500 END CAPS
32	STONE ABOVE (in)
9	STONE BELOW (in)
30	% STONE VOID
23,979	**INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED)**
7,004	SYSTEM AREA (ft²)
629	SYSTEM PERIMETER (ft)

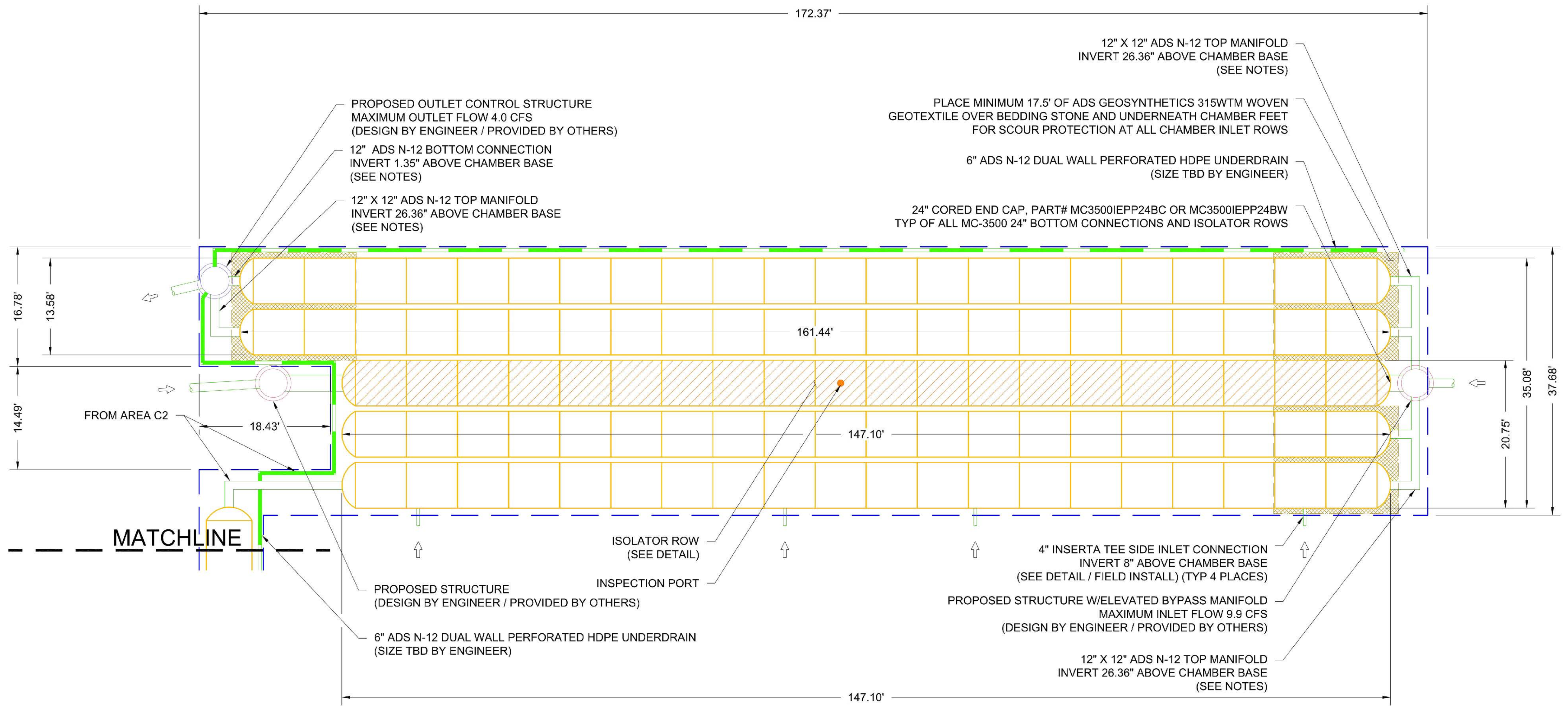
PROPOSED ELEVATIONS: AREA C1

935.91	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
931.79	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
931.29	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
931.29	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
931.29	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
930.58	TOP OF STONE
927.91	TOP OF MC-3500 CHAMBER
926.36	12" TOP MANIFOLD INVERT
924.66	INSERTA TEE SIDE INLET CONNECTION INVERT
924.33	24" ISOLATOR ROW CONNECTION INVERT
924.27	12" BOTTOM CONNECTION INVERT
924.16	BOTTOM OF MC-3500 CHAMBER
923.41	UNDERDRAIN INVERT
923.41	BOTTOM OF STONE

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH SHEET #7 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.

TOTAL STORAGE VOLUME AREA C (C1+C2) = 23,979 CF



PITTSFIELD MIXED-USE
PITTSFIELD, MI
DATE: 01-17-18 DRAWN: AMD
PROJECT #: S054036 CHECKED: EMH

StormTech

4640 TRUEMAN BLVD
HILLIARD, OH 43026

SHEET 6 OF 13

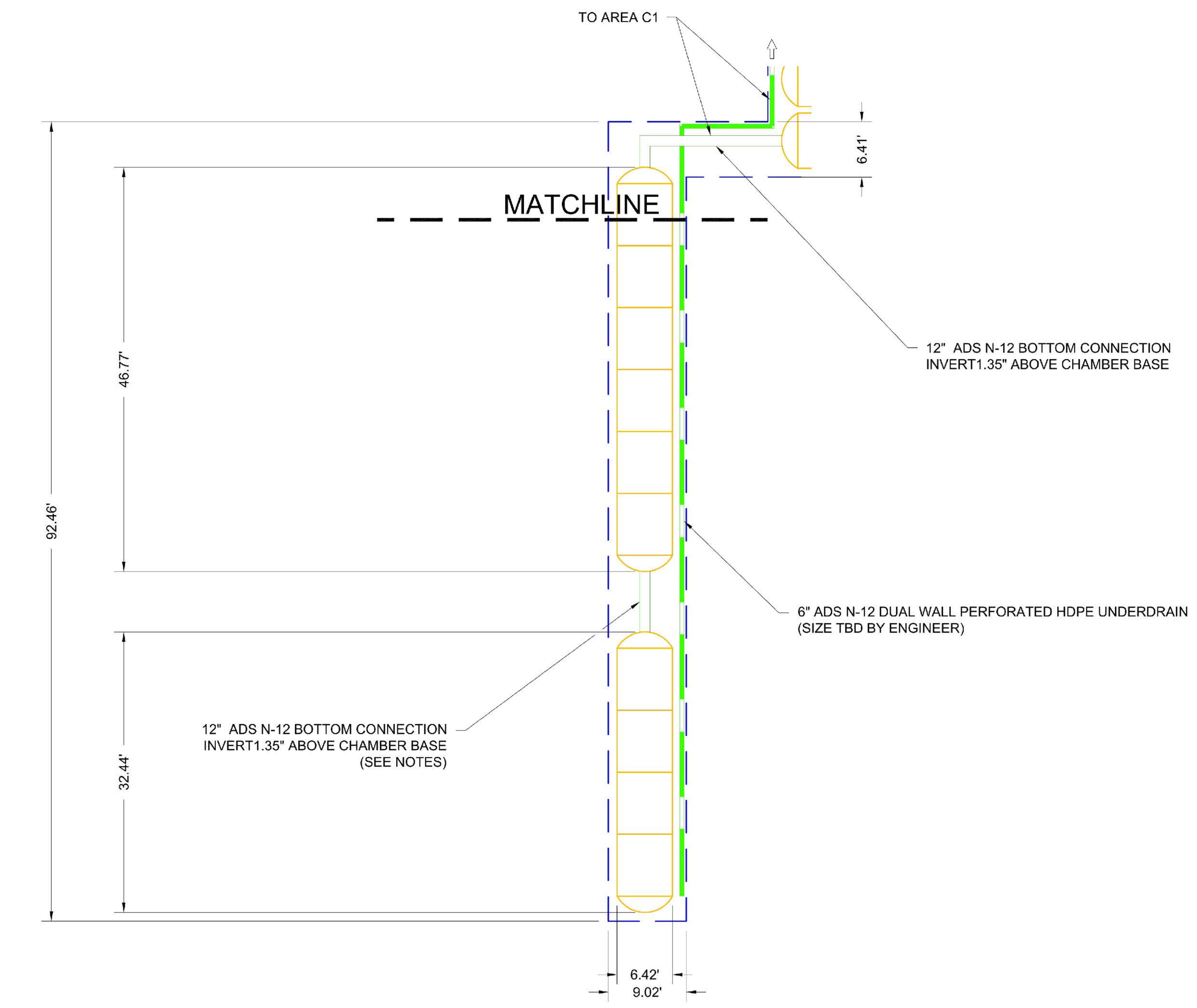
PROPOSED ELEVATIONS: AREA C2

935.91	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED)
931.79	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC)
931.29	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC)
931.29	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT)
931.29	MINIMUM ALLOWABLE GRADE (TOP OF RIGID PAVEMENT)
930.58	TOP OF STONE
927.91	TOP OF MC-3500 CHAMBER
924.27	12" BOTTOM CONNECTION INVERT
924.16	BOTTOM OF MC-3500 CHAMBER
923.41	UNDERDRAIN INVERT
923.41	BOTTOM OF STONE

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH SHEET #7 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- THE SITE DESIGN ENGINEER MUST REVIEW THE PROXIMITY OF THE CHAMBERS TO THE BUILDING/STRUCTURE. NO FOUNDATION LOADS SHALL BE TRANSMITTED TO THE CHAMBERS. THE SITE DESIGN ENGINEER MUST CONSIDER EFFECTS OF POSSIBLE SATURATED SOILS ON BEARING CAPACITY OF SOILS AND SEEPAGE INTO BASEMENTS.

TOTAL STORAGE VOLUME AREA C (C1+C2) = 23,979 CF



PITTSFIELD MIXED-USE
PITTSFIELD, MI
DATE: 01-17-18 DRAWN: AMD
PROJECT #: S054036 CHECKED: EMH

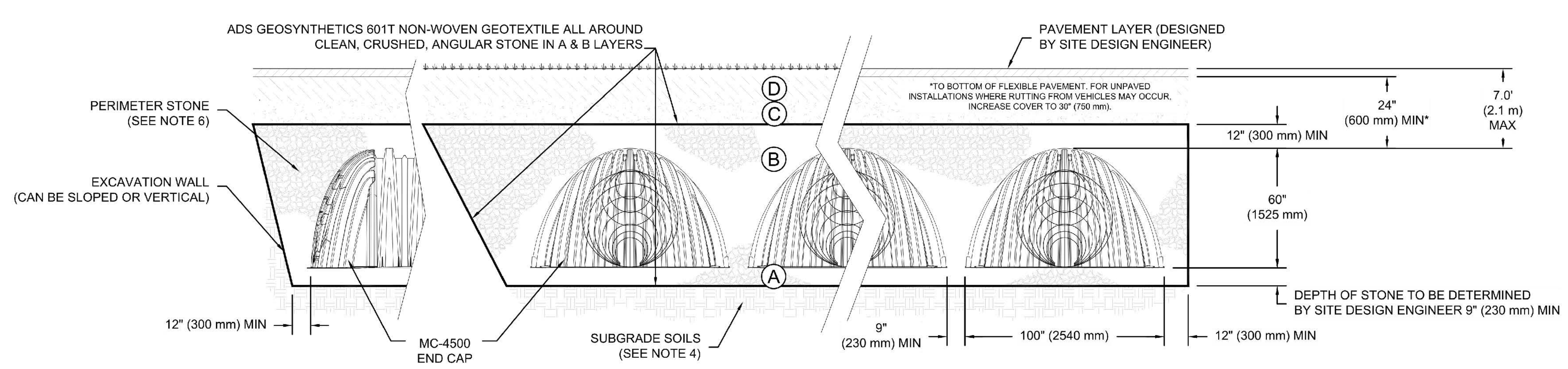
SHEET 7 OF 13

ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:

1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.

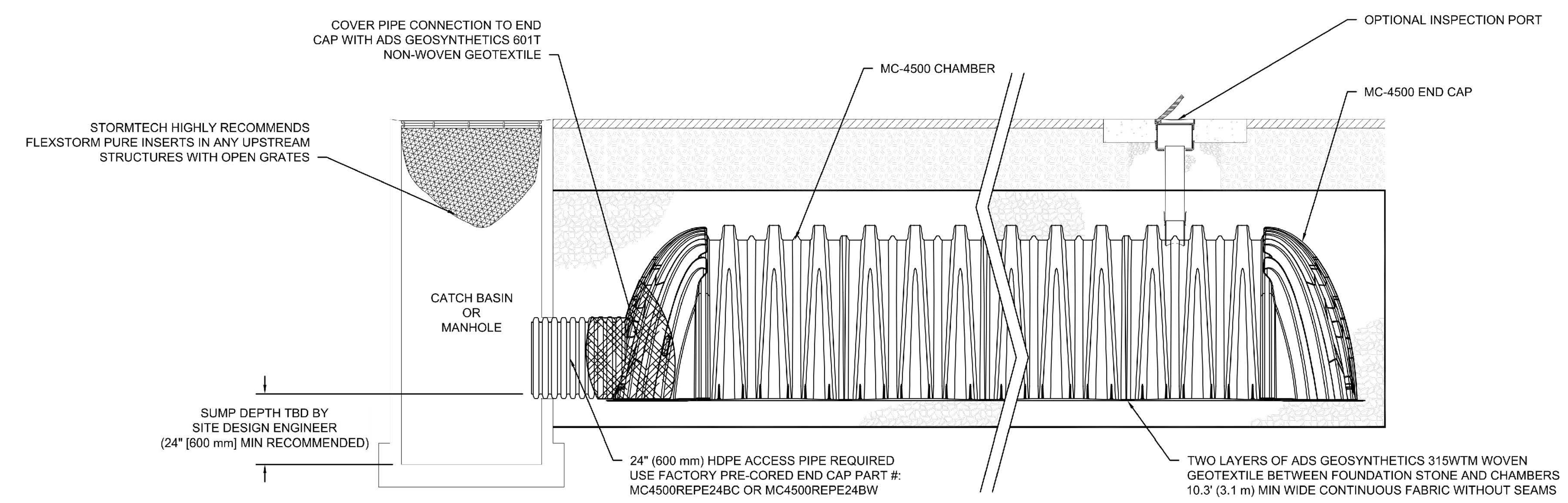


NOTES:

1. MC-4500 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
2. MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
4. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
5. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.
6. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.

PITTSFIELD MIXED-USE
PITTSFIELD, MI
DATE: 01-17-18 DRAWN: AMD
PROJECT #: S054036 CHECKED: EMH

SHEET 8 OF 13



MC-4500 ISOLATOR ROW DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

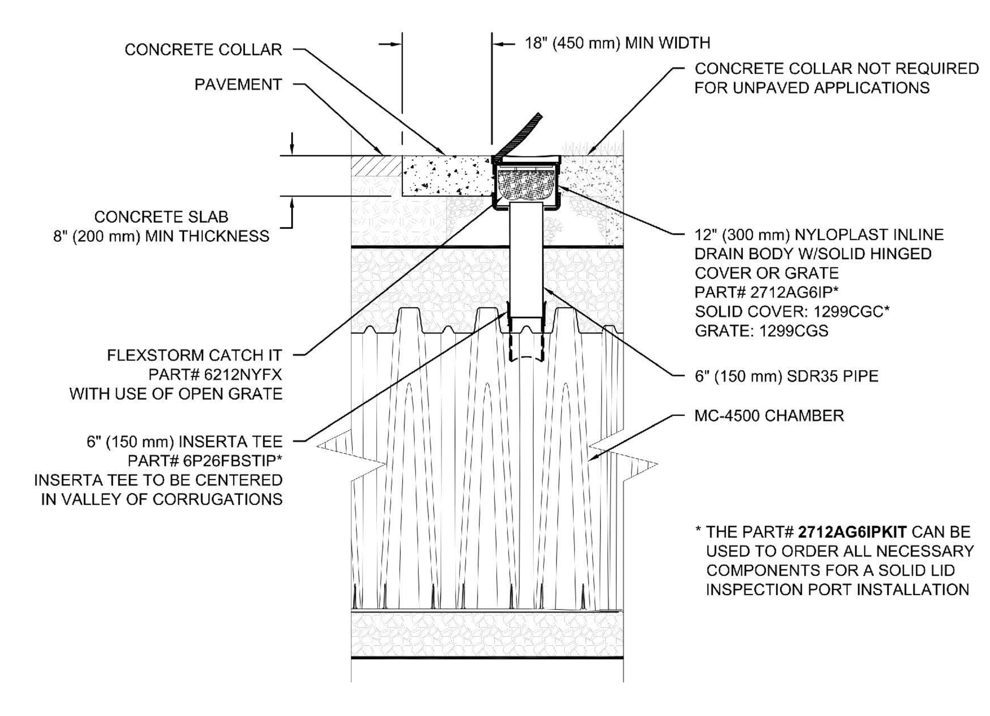
STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.



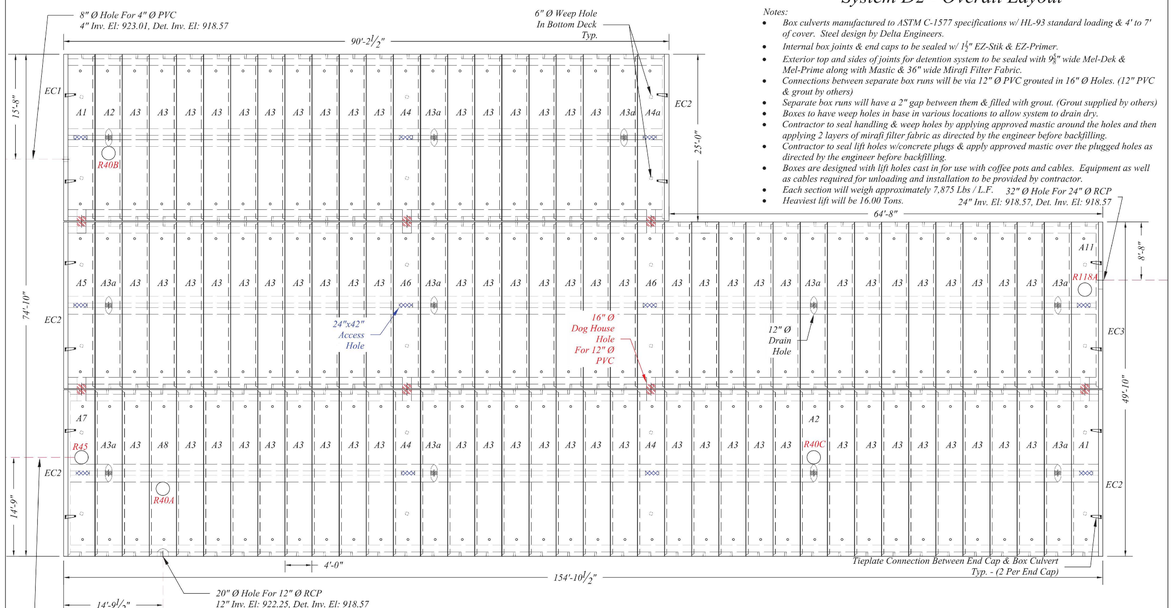
MC-4500 6" INSPECTION PORT DETAIL
NTS

PITTSFIELD MIXED-USE
PITTSFIELD, MI
DATE: 01-17-18 DRAWN: AMD
PROJECT #: S054036 CHECKED: EMH

SHEET 10 OF 13

THIS SHEET IS FOR INFORMATIONAL PURPOSES ONLY. CONTRACTOR NOTE: MANUFACTURER TO PROVIDE CONTRACT DRAWINGS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION AND CONSTRUCTION

Pittsfield Mixed Use Development - Retention System
System D2 - Overall Layout



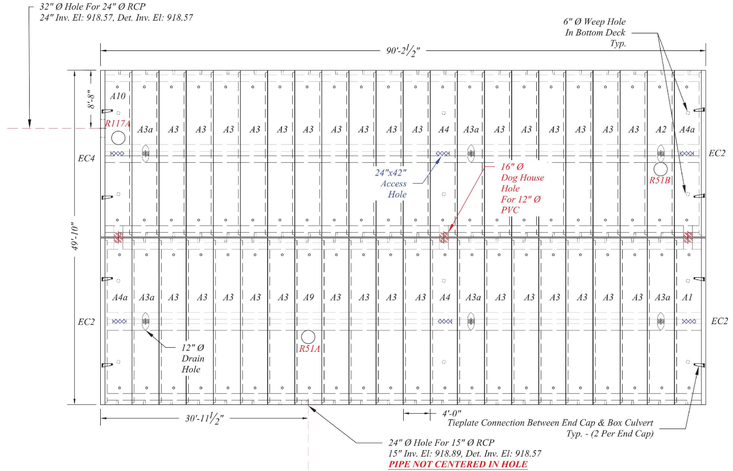
Notes:

- *Box culverts manufactured to ASTM C-1577 specifications w/ HL-93 standard loading & 4' to 7' of cover. Steel design by Delta Engineers.*
- *Internal box joints & end caps to be sealed w/ 1½" EZ-Stik & EZ-Primer.*
- *Exterior top and sides of joints for detention system to be sealed with 9" wide Mel-Dek & Mel-Prime along with Mastic & 36" wide Mirafi Filter Fabric.*
- *Connections between separate box runs will be via 12" Ø PVC grouted in 16" Ø Holes. (12" PVC & grout by others)*
- *Separate box runs will have a 2" gap between them & filled with grout. (Grout supplied by others)*
- *Boxes to have weep holes in base in various locations to allow system to drain dry.*
- *Contractor to seal handling & weep holes by applying approved mastic around the holes and then applying 2 layers of mirafi filter fabric as directed by the engineer before backfilling.*
- *Contractor to seal lift holes w/concrete plugs & apply approved mastic over the plugged holes as directed by the engineer before backfilling.*
- *Boxes are designed with lift holes cast in for use with coffee pots and cables. Equipment as well as cables required for unloading and installation to be provided by contractor.*
- *Each section will weigh approximately 7,875 Lbs / L.F.*
- *Heaviest lift will be 16.00 Tons.*

Box Culvert Quantities										
A1	A2	A3	A3a	A4	A4a	A5	A6	A7	A8	A11
2	2	75	9	3	1	1	2	1	1	1

www.ncp-inc.com/	401 Kelton Street, Bay City, MI 48706	Proposed - System D2 - 23'-6" x 5'-6" Dual Cell	
	5281 Lansing Road Charlotte, MI 48813 / 2701 Chicago Dr. SW Wyoming, MI 49519	Concordia Exc. Sterling Heights, MI	Pittsfield Mixed Use Development Pittsfield Twp., MI
	4950 White Lake Rd. Clarkston, MI 48346 / 3756 Centennial Rd. Sylvania, OH 43560	Date: 20th July, 2018 / Revised: 14th Sept., 2018 / Rev. No.: 2 / Drawn By: MRZ / Scale: ⅜" = 1'	Sheet 1 of 21

Pittsfield Mixed Use Development - Retention System
System D1 - Overall Layout



Notes:

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Box Culvert Quantities							
A1	A2	A3	A3a	A4	A4a	A9	A10
1	1	31	5	2	2	1	1

www.ncp-inc.com/	401 Kelton Street, Bay City, MI 48706	Proposed - System D1 - 23'-6" x 5'-6" Dual Cell	
	5281 Lansing Road Charlotte, MI 48813 / 2701 Chicago Dr. SW Wyoming, MI 49519	Concordia Exc. Sterling Heights, MI	Pittsfield Mixed Use Development Pittsfield Twp., MI
	4950 White Lake Rd. Clarkston, MI 48346 / 3756 Centennial Rd. Sylvania, OH 43560	Date: 20th July, 2018 / Revised: 14th Sept., 2018 / Rev. No.: 3 / Drawn By: MRZ / Scale: ⅜" = 1'	Sheet 1 of 19

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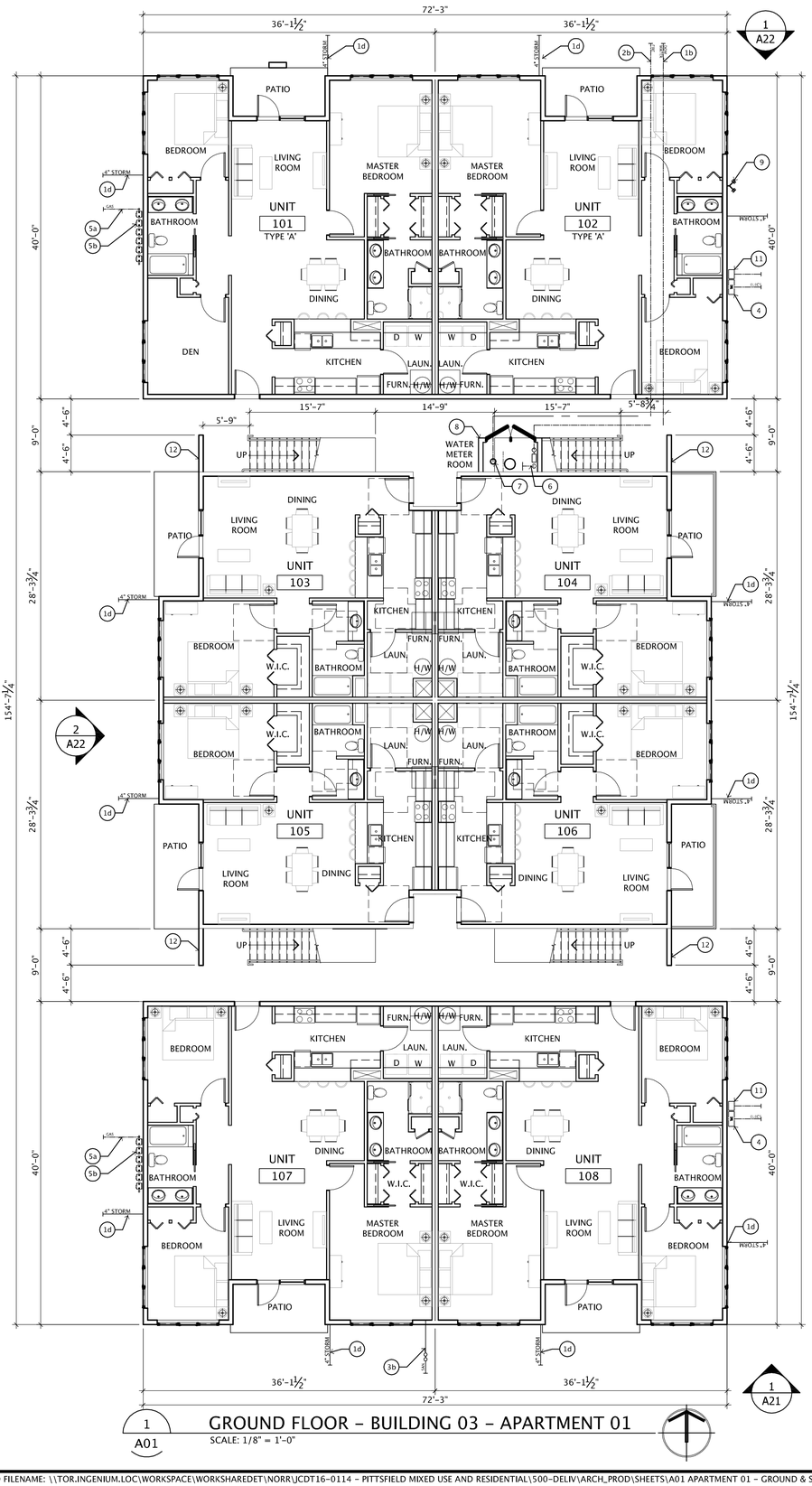
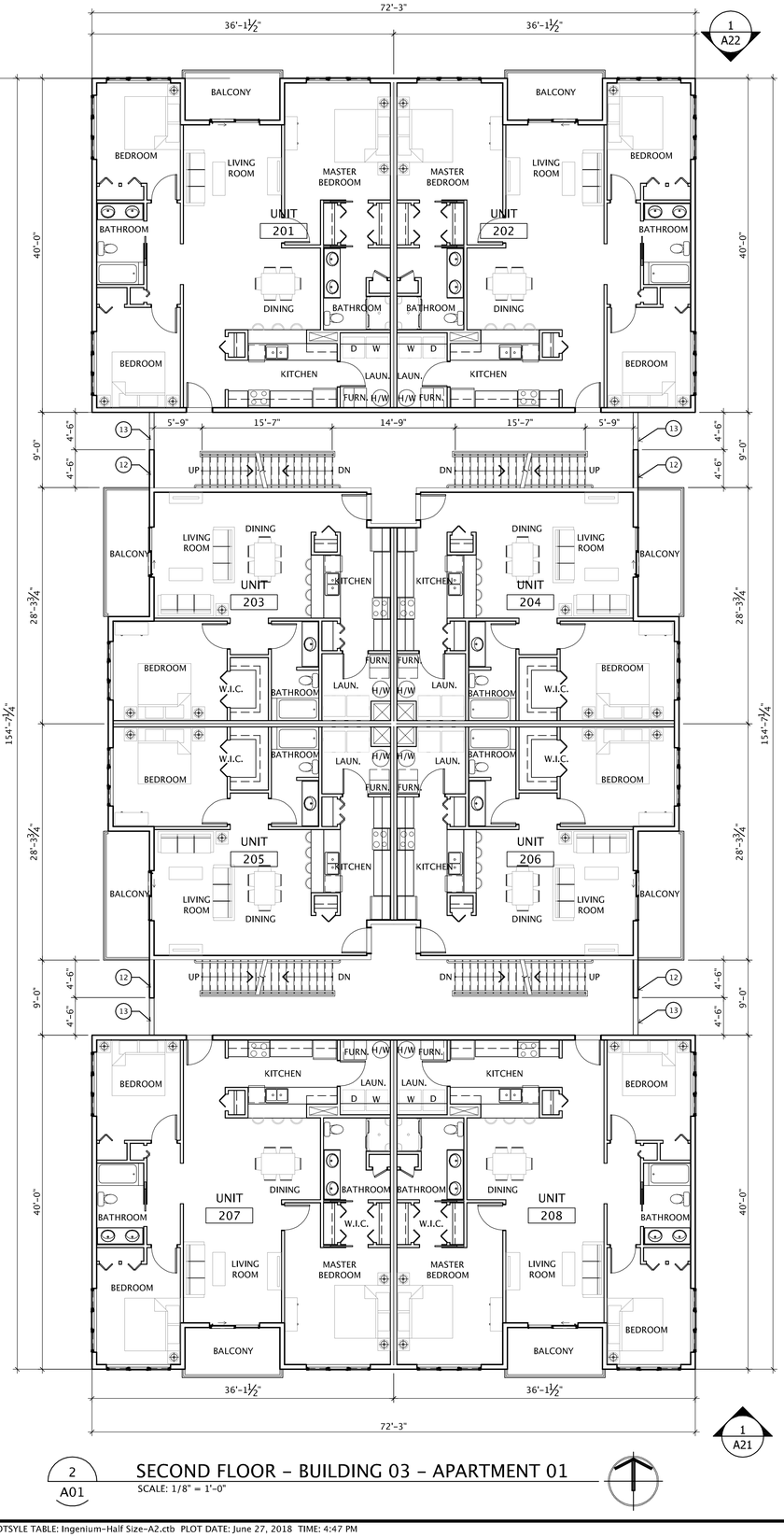
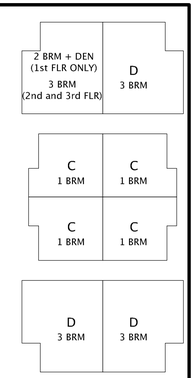
CONTRACTOR NOTE: MANUFACTURER TO PROVIDE
CONTRACT DRAWINGS FOR REVIEW AND APPROVAL
PRIOR TO FABRICATION AND CONSTRUCTION

ARCH D - 24"x36" - 610mmx914mm (rounded)







Floor Plan Key Notes

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1d ROOF STORM LEAD (SIZE AS INDICATED)
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2b 6" FIRE SUPPRESSION LEAD
3a 4" SANITARY LEAD
3b 6" SANITARY LEAD
4 ELECTRICAL SERVICE METERS BANK
5a GAS LEAD (SIZE TBD)
5b GAS METER BANK
6 FIRE RISER
7 DOMESTIC WATER METER
8 KNOX BOX PER TOWNSHIP STANDARDS
9 FIRE DEPARTMENT CONNECTION - LOCATION TO BE COORDINATED WITH FIRE MARSHAL COMMENTS
10 4" SANITARY GREASE LEAD
11 TELEPHONE SERVICE CAB
12 FULL HEIGHT WALL AT STAIR CORRIDOR
13 42" HEIGHT WALL AT STAIR CORRIDOR

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	
05-30-2018	FSP RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR
NORR LLC
An Ingenium Group Company
150 W. Jefferson Avenue
Suite 1300
Detroit, MI 48226
T: 313 324 3100
www.norr.com

Project Manager B. COLBURN	Drawn
Project Leader --	Checked --

Client
BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

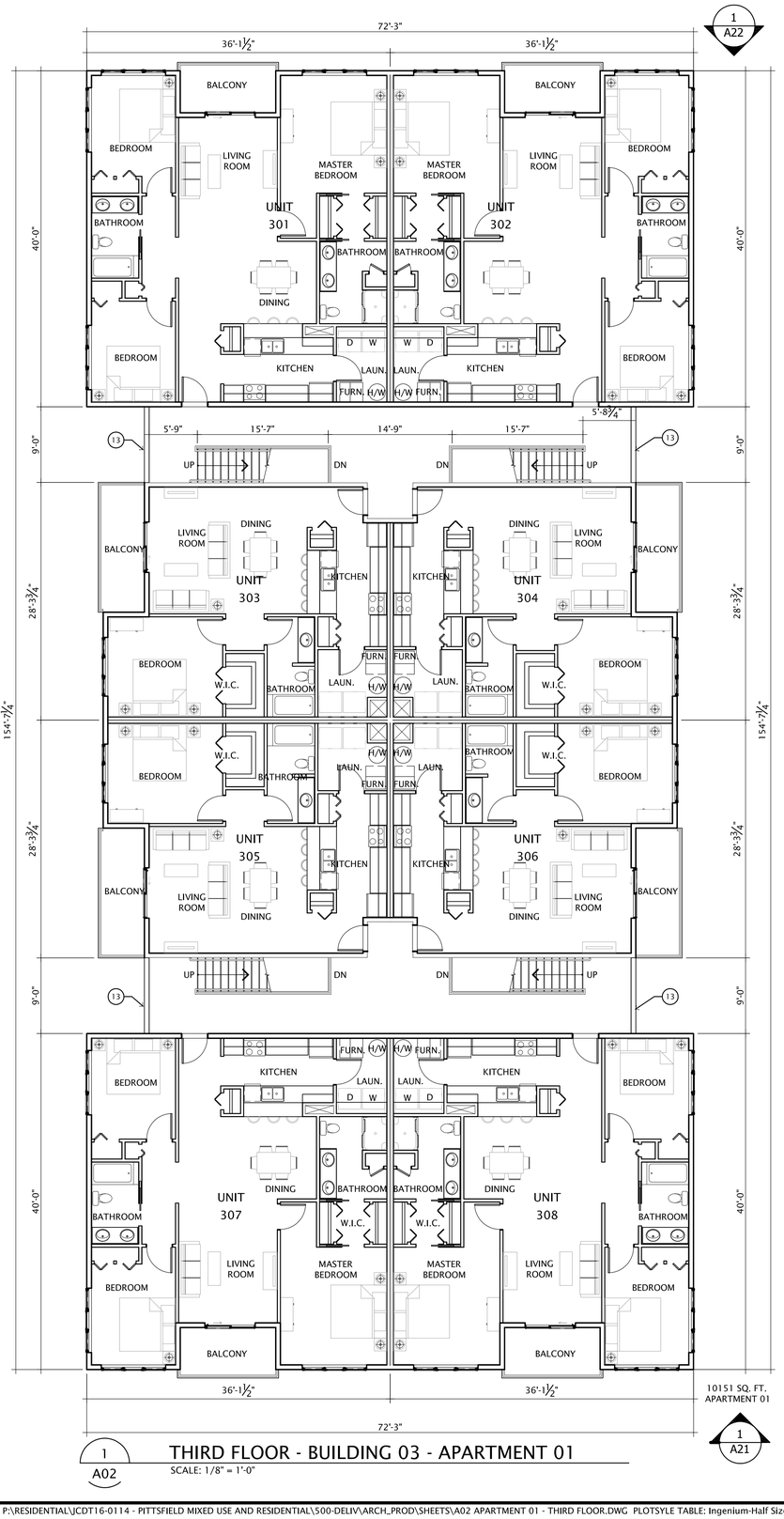
Drawing Title
BUILDING 03 -
APARTMENT 01 (AP01) -
GROUND & SECOND FLOOR PLANS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

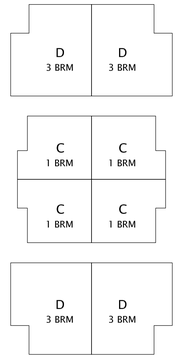
Drawing No.
A01
76

ARCH D - 24"x36" - 610mmx914mm (rounded)



THIRD FLOOR - BUILDING 03 - APARTMENT 01

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



Floor Plan Key Notes

1a 2" DOMESTIC WATER LEAD
1b 2-1/2" DOMESTIC WATER LEAD
1c 3" DOMESTIC WATER LEAD
1d ROOF STORM LEAD (SIZE AS INDICATED)
2a 4" FIRE SUPPRESSION LEAD
2b 6" FIRE SUPPRESSION LEAD
3a 4" SANITARY LEAD
3b 6" SANITARY LEAD
4 ELECTRICAL SERVICE METERS BANK
5a GAS LEAD (SIZE TBD)
5b GAS METER BANK
6 FIRE RISER
7 DOMESTIC WATER METER
8 KNOX BOX PER TOWNSHIP STANDARDS
9 FIRE DEPARTMENT CONNECTION - LOCATION TO BE COORDINATED WITH FIRE MARSHAL COMMENTS
10 4" SANITARY GREASE LEAD
11 TELEPHONE SERVICE CAB
12 FULL HEIGHT WALL AT STAIR CORRIDOR
13 42" HEIGHT WALL AT STAIR CORRIDOR

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	

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CREASE LINE 24" PAPER ROLL

Seal(s)

NORR LLC
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Project Manager B. COLBURN	Drawn J. BROCK
Project Leader --	Checked --

Client
BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

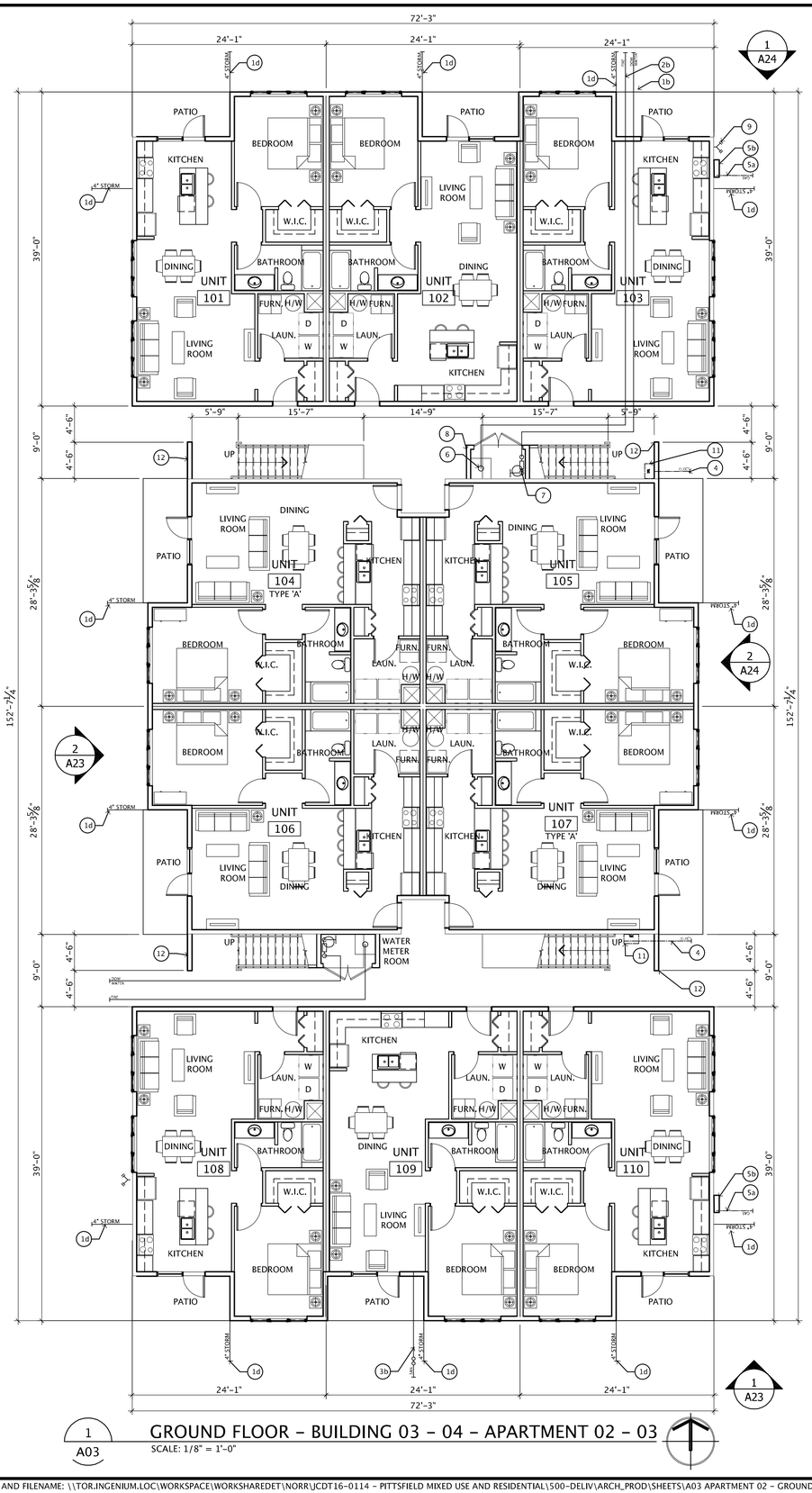
Drawing Title
BUILDING 03 -
APARTMENT 01 (AP01) -
THIRD FLOOR PLANS

Check Scale (may be photo reduced)
0 1inch 0 10mm

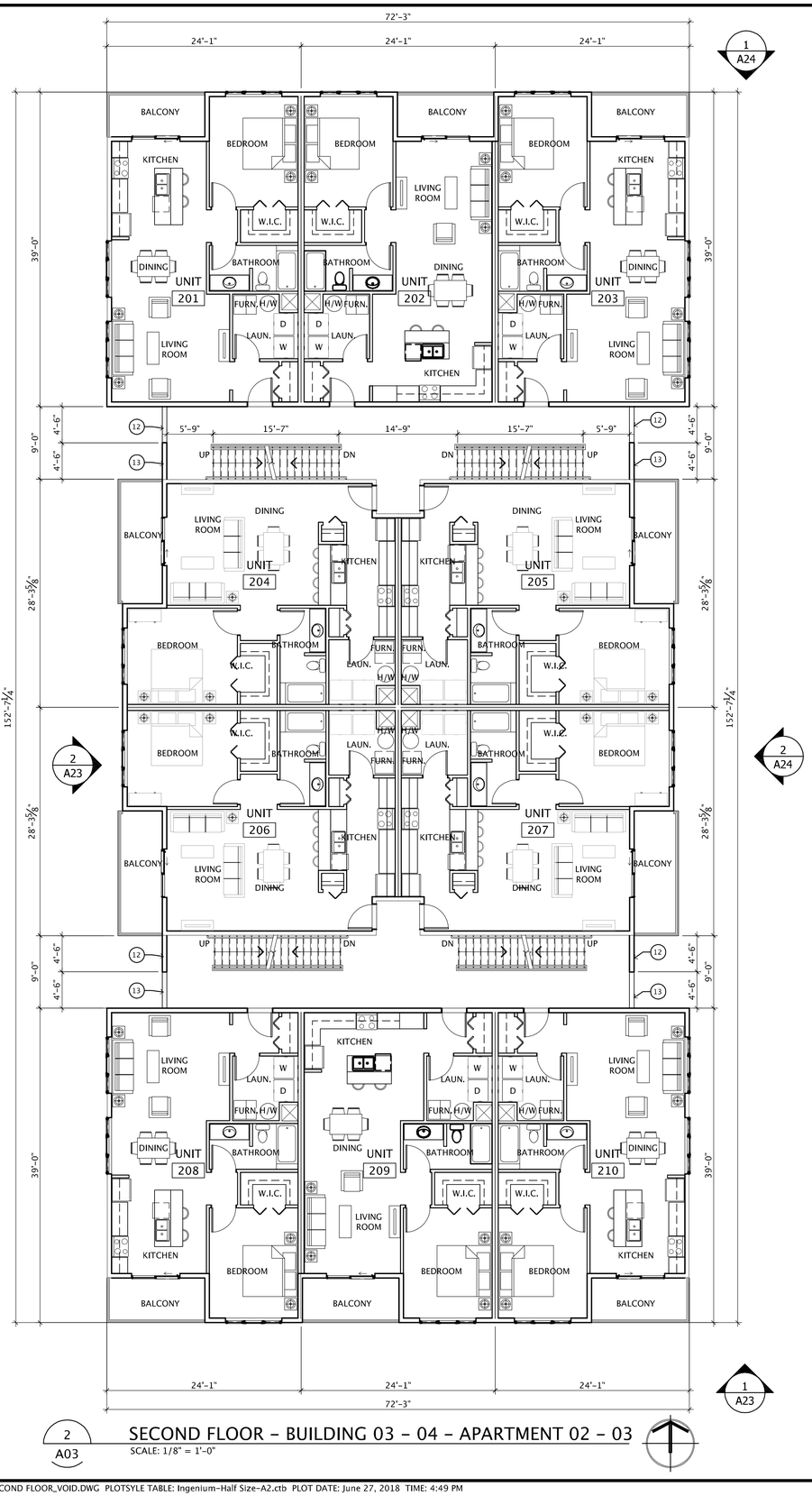
Project No.
JCDT16.0114.00

Drawing No.
A02 77

ARCH D - 24"x36" - 610mm x914mm (rounded)



1 A03



2 A03

B 1 BRM | A 1 BRM | B 1 BRM

C 1 BRM | C 1 BRM

C 1 BRM | C 1 BRM

B 1 BRM | A 1 BRM | B 1 BRM

Floor Plan Key Notes

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1b 2-1/2" DOMESTIC WATER LEAD
1c 3" DOMESTIC WATER LEAD
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2a 4" FIRE SUPPRESSION LEAD
2b 6" FIRE SUPPRESSION LEAD
3a 4" SANITARY LEAD
3b 6" SANITARY LEAD
4 ELECTRICAL SERVICE METERS BANK
5a GAS LEAD (SIZE TBD)
5b GAS METER BANK
6 FIRE RISER
7 DOMESTIC WATER METER
8 KNOX BOX PER TOWNSHIP STANDARDS
9 FIRE DEPARTMENT CONNECTION - LOCATION TO BE COORDINATED WITH FIRE MARSHAL COMMENTS
10 4" SANITARY GREASE LEAD
11 TELEPHONE SERVICE CAB
12 FULL HEIGHT WALL AT STAIR CORRIDOR
13 42" HEIGHT WALL AT STAIR CORRIDOR

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11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	
05-30-2018	FSP RE-SUBMITTAL	

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Keyplan

North Arrow

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Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

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Project Manager B. COLBURN	Drawn J. BROCK
Project Leader --	Checked --

Client
BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

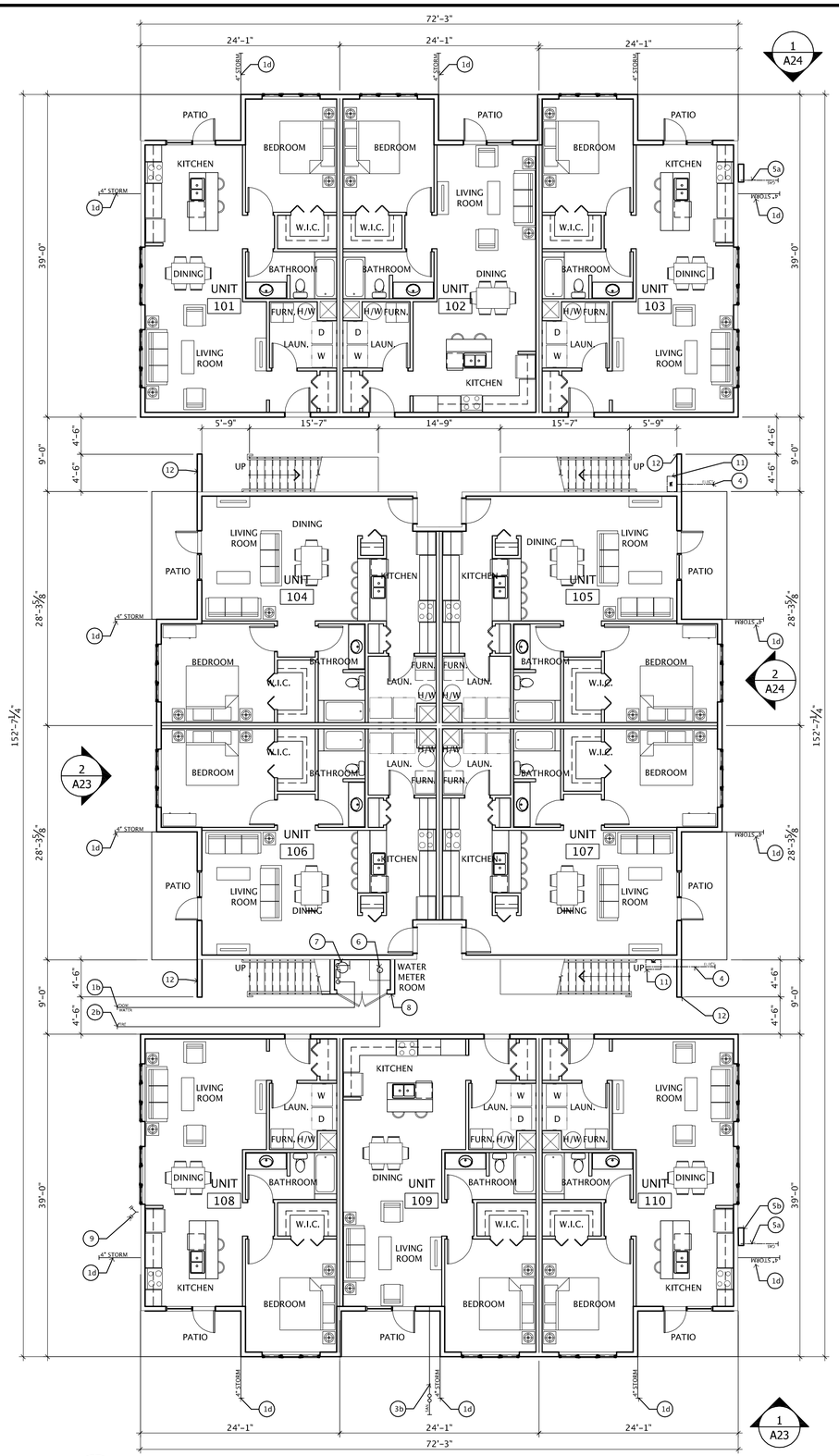
Drawing Title
BUILDING 04_05 - APARTMENT 02 (AP02) - GROUND & SECOND FLOOR PLANS

Check Scale (may be photo reduced)
0 1inch 0 10mm

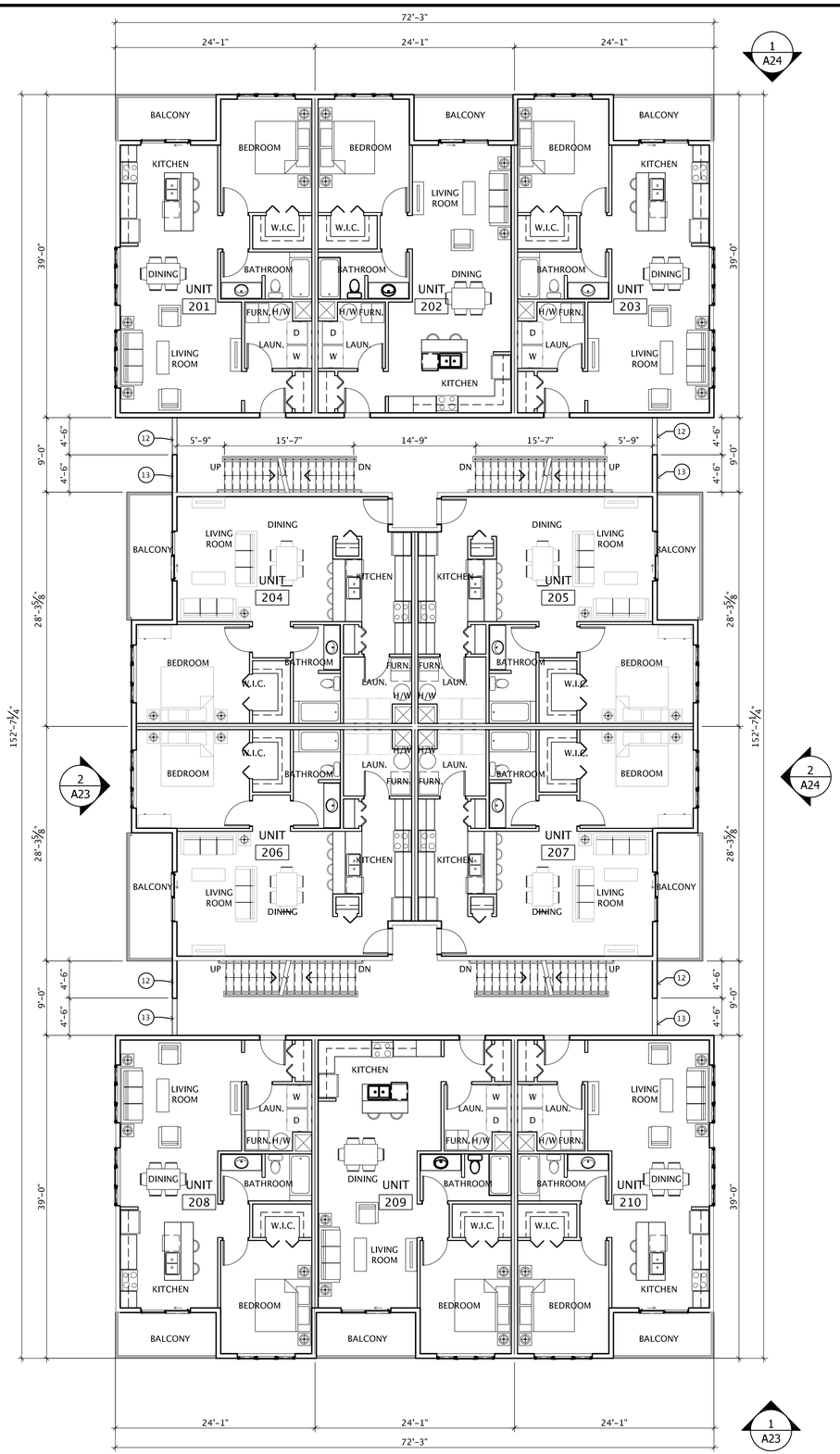
Project No.
JCDT16.0114.00

Drawing No.
A03 78

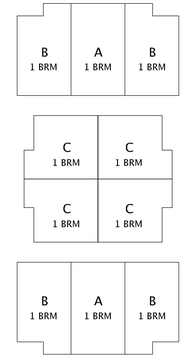
ARCH D - 24"x36" - 610mmx914mm (rounded)



1 A03 GROUND FLOOR - BUILDING 05 - APARTMENT 03
SCALE: 1/8" = 1'-0"



2 A03 SECOND FLOOR - BUILDING 05 - APARTMENT 03
SCALE: 1/8" = 1'-0"



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11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	

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Keyplan

North Arrow

Detail Symbol
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Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR
NORR LLC
An Ingenium Group Company
150 W. Jefferson Avenue
Suite 1300
Detroit, MI 48226
T: 313 324 3100
www.norr.com

Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client
BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

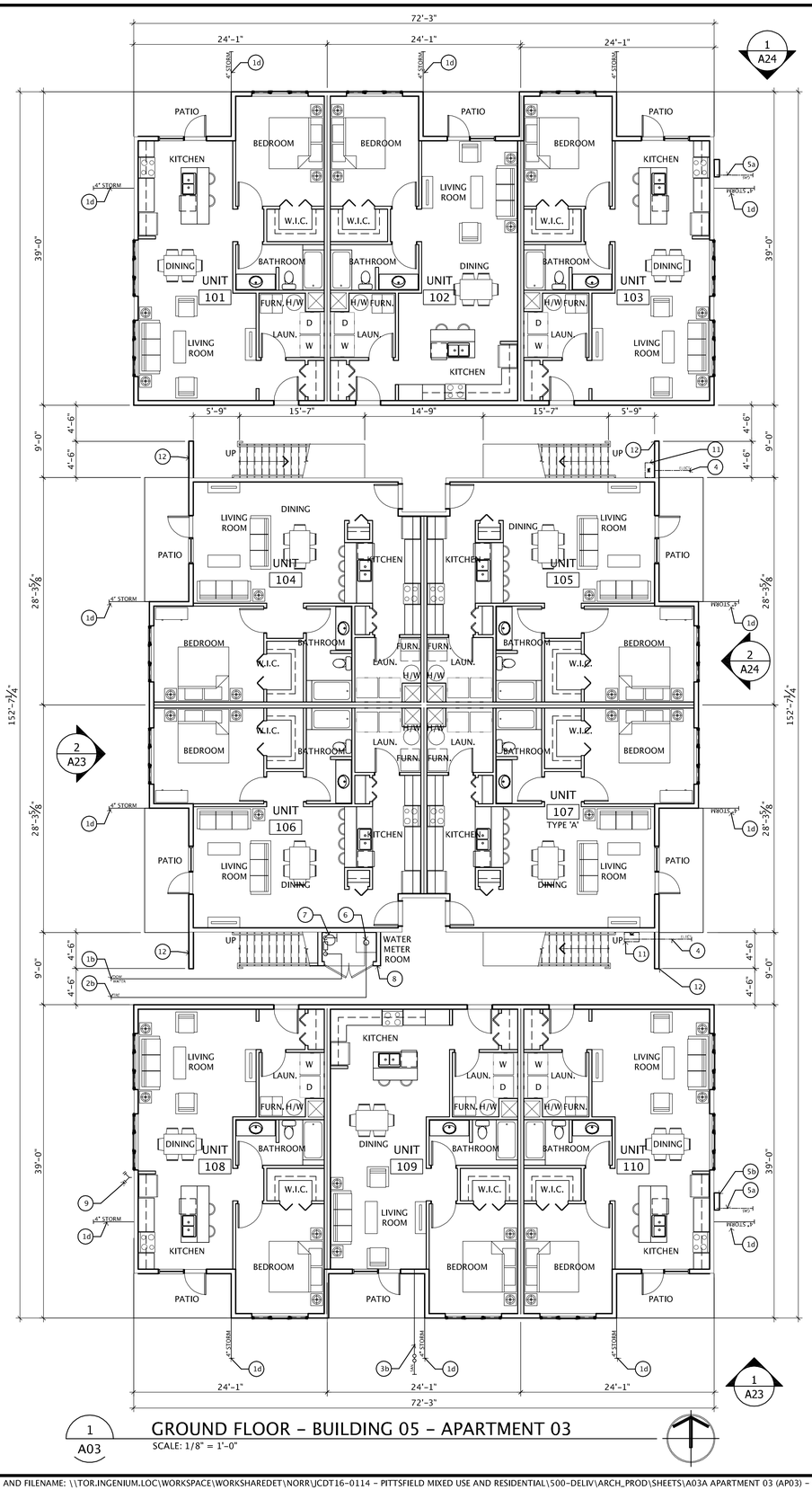
Drawing Title
BUILDING 05 -
APARTMENT 03 (AP03) -
GROUND & SECOND FLOOR PLANS

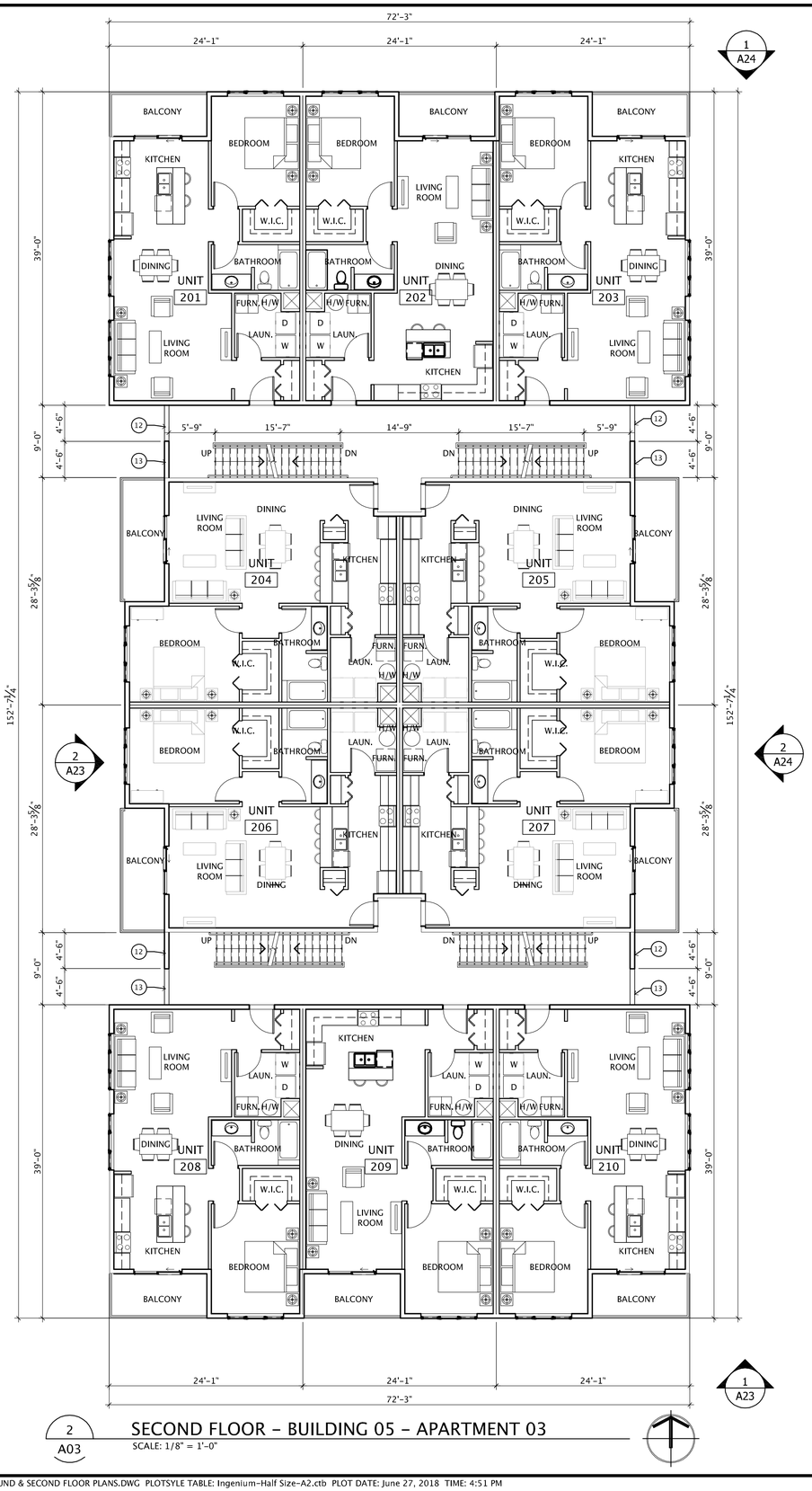
Check Scale (may be photo reduced)
0 1inch 0 10mm

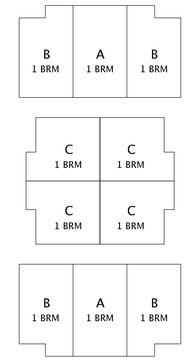
Project No.
JCDT16.0114.00

Drawing No.
A03A 79

ARCH D - 24"x36" - 610mm x 914mm (rounded)







Floor Plan Key Notes

1a 2" DOMESTIC WATER LEAD
1b 2-1/2" DOMESTIC WATER LEAD
1c 3" DOMESTIC WATER LEAD
1d ROOF STORM LEAD (SIZE AS INDICATED)
2a 4" FIRE SUPPRESSION LEAD
2b 6" FIRE SUPPRESSION LEAD
3a 4" SANITARY LEAD
3b 6" SANITARY LEAD
4 ELECTRICAL SERVICE METERS BANK
5a GAS LEAD (SIZE TBD)
5b GAS METER BANK
6 FIRE RISER
7 DOMESTIC WATER METER
8 KNOX BOX PER TOWNSHIP STANDARDS
9 FIRE DEPARTMENT CONNECTION - LOCATION TO BE COORDINATED WITH FIRE MARSHAL COMMENTS
10 4" SANITARY GREASE LEAD
11 TELEPHONE SERVICE CAB
12 FULL HEIGHT WALL AT STAIR CORRIDOR
13 42" HEIGHT WALL AT STAIR CORRIDOR

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	
05-30-2018	FSP RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

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Project Manager	Drawn
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Project Leader	Checked
--	--

Client
BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

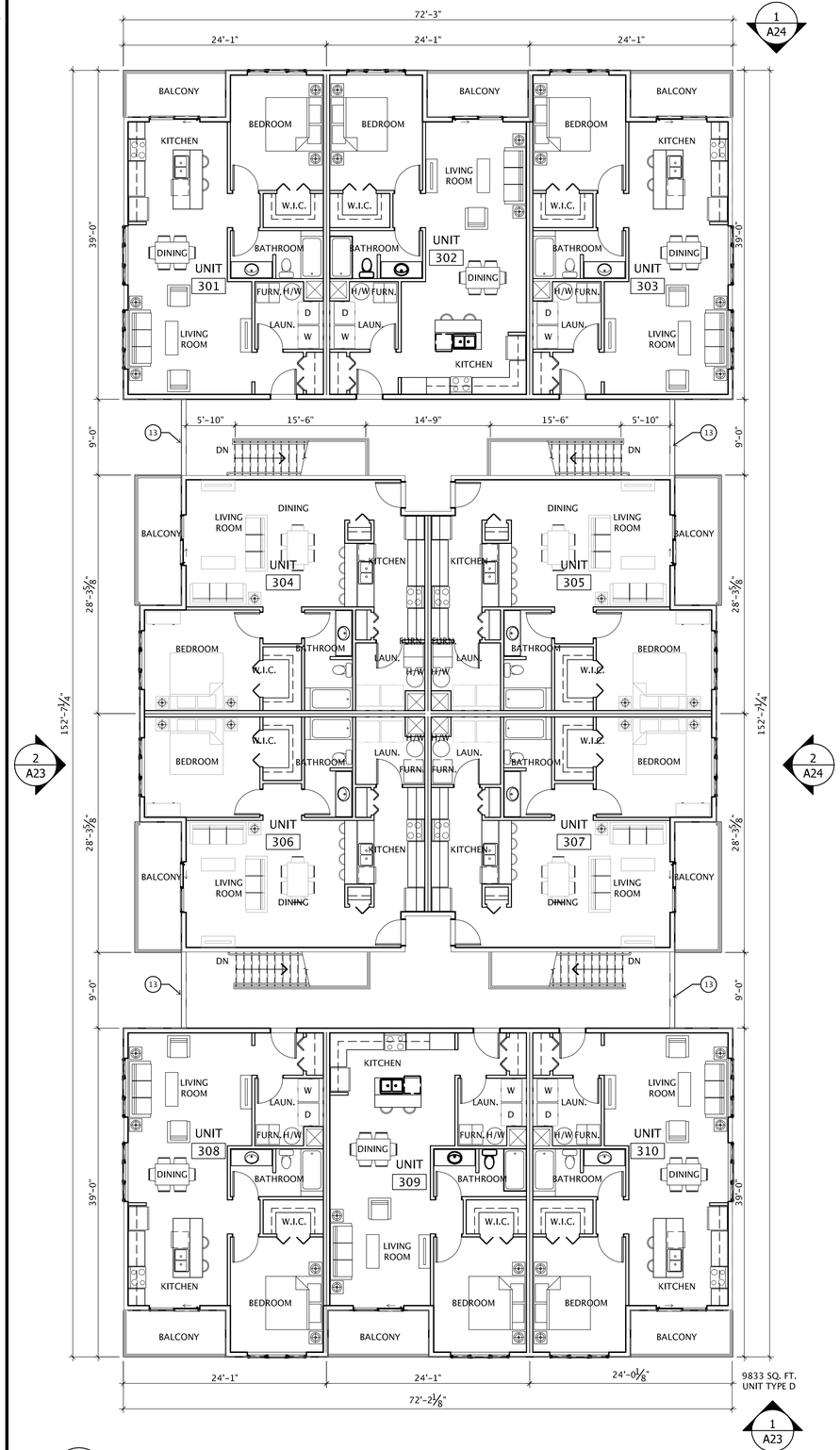
Drawing Title
BUILDING 05 - APARTMENT 03 (AP03) - GROUND & SECOND FLOOR PLANS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

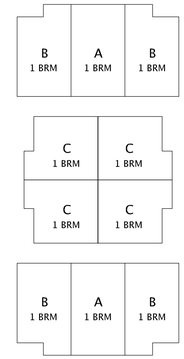
Drawing No.
A03A 79

ARCH D - 24"x36" - 610mmx914mm (rounded)



1 A04 THIRD FLOOR - BUILDING 04 - 05 - APARTMENT 02 - 03

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



Floor Plan Key Notes

1a 2" DOMESTIC WATER LEAD
1b 2-1/2" DOMESTIC WATER LEAD
1c 3" DOMESTIC WATER LEAD
1d ROOF STORM LEAD (SIZE AS INDICATED)
2a 4" FIRE SUPPRESSION LEAD
2b 6" FIRE SUPPRESSION LEAD
3a 4" SANITARY LEAD
3b 6" SANITARY LEAD
4 ELECTRICAL SERVICE METERS BANK
5a GAS LEAD (SIZE TBD)
5b GAS METER BANK
6 FIRE RISER
7 DOMESTIC WATER METER
8 KNOX BOX PER TOWNSHIP STANDARDS
9 FIRE DEPARTMENT CONNECTION - LOCATION TO BE COORDINATED WITH FIRE MARSHAL COMMENTS
10 4" SANITARY GREASE LEAD
11 TELEPHONE SERVICE CAB
12 FULL HEIGHT WALL AT STAIR CORRIDOR
13 42" HEIGHT WALL AT STAIR CORRIDOR

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE - 24" PAPER ROLL

Seal(s)

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Project Manager B. COLBURN	Drawn J. BROCK
Project Leader --	Checked --

Client
BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

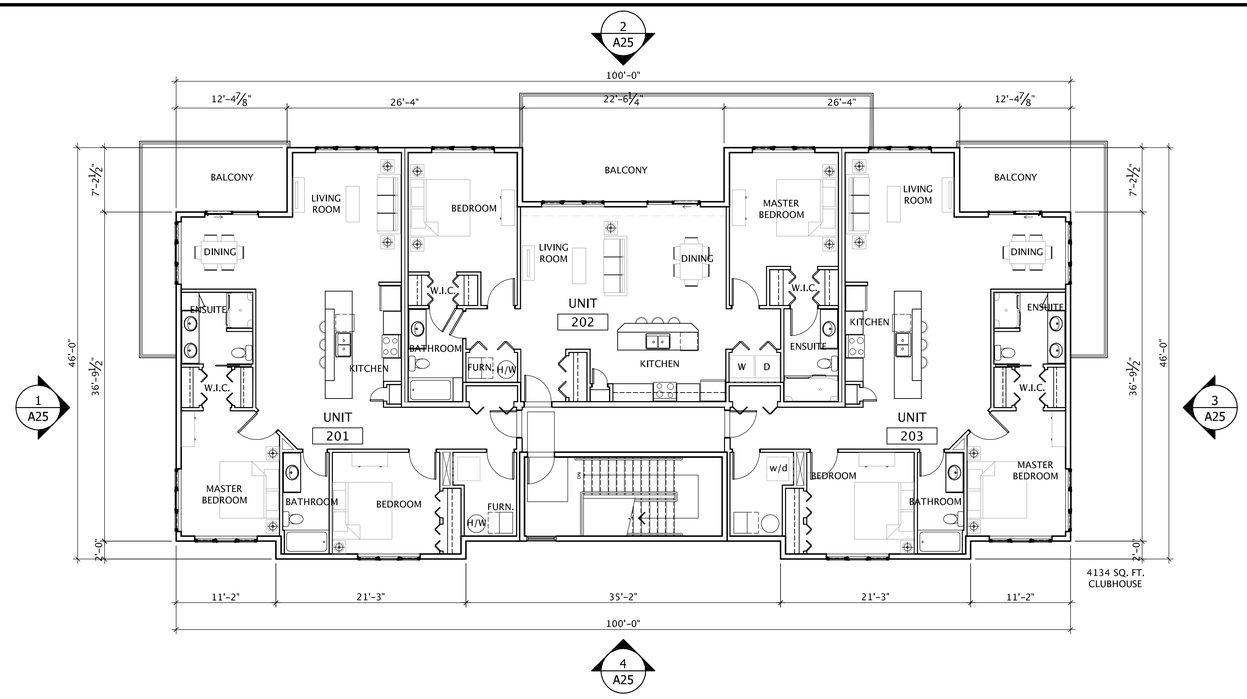
Drawing Title
BUILDING 04_05 - APARTMENT 02_03 (AP02 - AP03) - THIRD FLOOR PLANS

Check Scale (may be photo reduced)
0 1inch 0 10mm

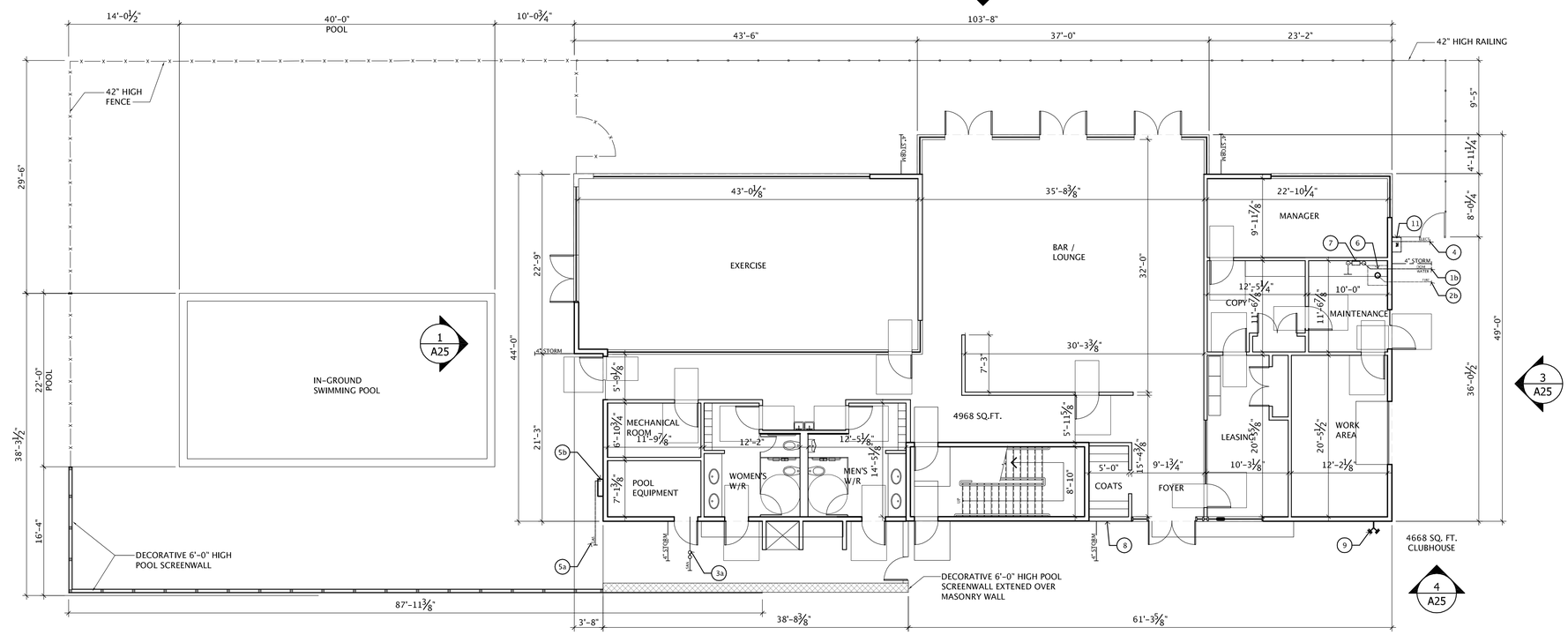
Project No.
JCDT16.0114.00

Drawing No.
A04 80

ARCH D – 24"x36" – 610mmx914mm (rounded)



01 A05 SECOND FLOOR – BUILDING 17 – CLUBHOUSE
SCALE: 1/8" = 1'-0"



01 A05 GROUND FLOOR – BUILDING 17 – CLUBHOUSE
SCALE: 1/8" = 1'-0"

Floor Plan Key Notes

1a 2" DOMESTIC WATER LEAD
1b 2-1/2" DOMESTIC WATER LEAD
1c 3" DOMESTIC WATER LEAD
1d ROOF STORM LEAD (SIZE AS INDICATED)
2a 4" FIRE SUPPRESSION LEAD
2b 6" FIRE SUPPRESSION LEAD
3a 4" SANITARY LEAD
3b 6" SANITARY LEAD
4 ELECTRICAL SERVICE METERS BANK
5a GAS LEAD (SIZE TBD)
5b GAS METER BANK
6 FIRE RISER
7 DOMESTIC WATER METER
8 KNOX BOX PER TOWNSHIP STANDARDS
9 FIRE DEPARTMENT CONNECTION – LOCATION TO BE COORDINATED WITH FIRE MARSHAL COMMENTS
10 4" SANITARY GREASE LEAD
11 TELEPHONE SERVICE CAB
12 FULL HEIGHT WALL AT STAIR CORRIDOR
13 42" HEIGHT WALL AT STAIR CORRIDOR

DATE	ISSUED FOR	REV
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12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL – FDC LOCATIONS	
05-30-2018	FSP RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

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Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client
BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 17 – CLUBHOUSE (CH01) – FLOOR PLANS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A05 81

ARCH D - 24"x36" - 610mmx914mm (rounded)

Floor Plan Key Notes

1a 2" DOMESTIC WATER LEAD
1b 2-1/2" DOMESTIC WATER LEAD
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1d ROOF STORM LEAD (SIZE AS INDICATED)
2a 4" FIRE SUPPRESSION LEAD
2b 6" FIRE SUPPRESSION LEAD
3a 4" SANITARY LEAD
3b 6" SANITARY LEAD
4 ELECTRICAL SERVICE METERS BANK
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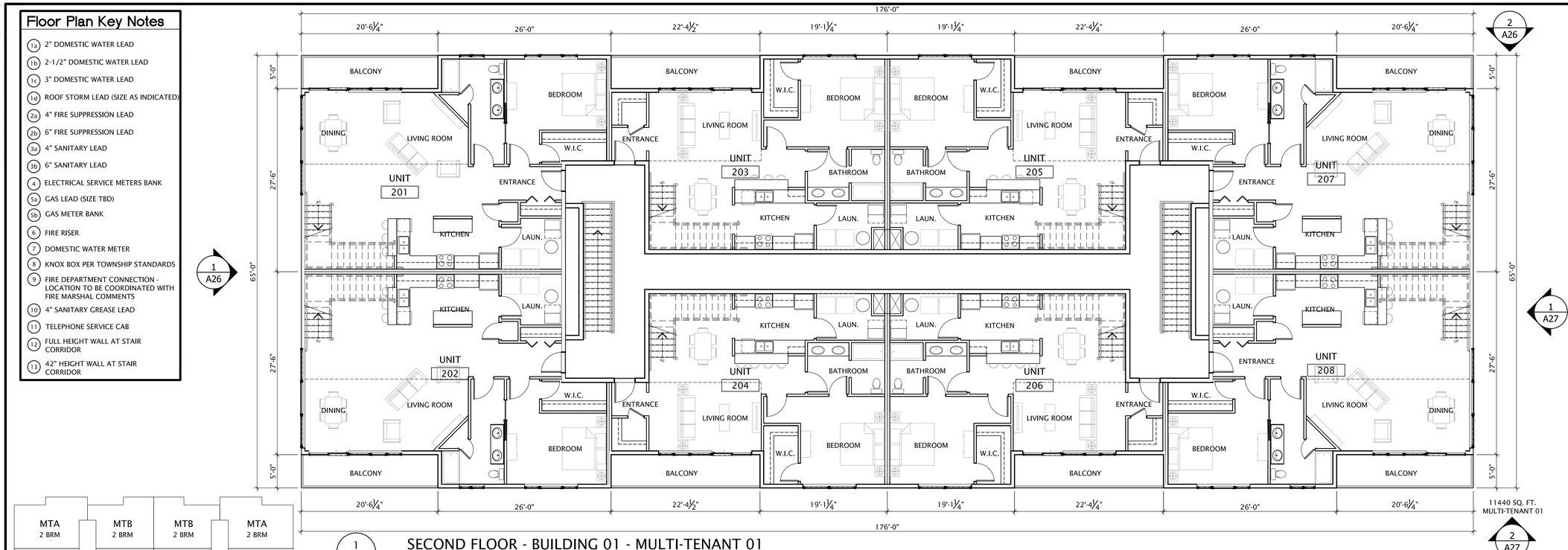
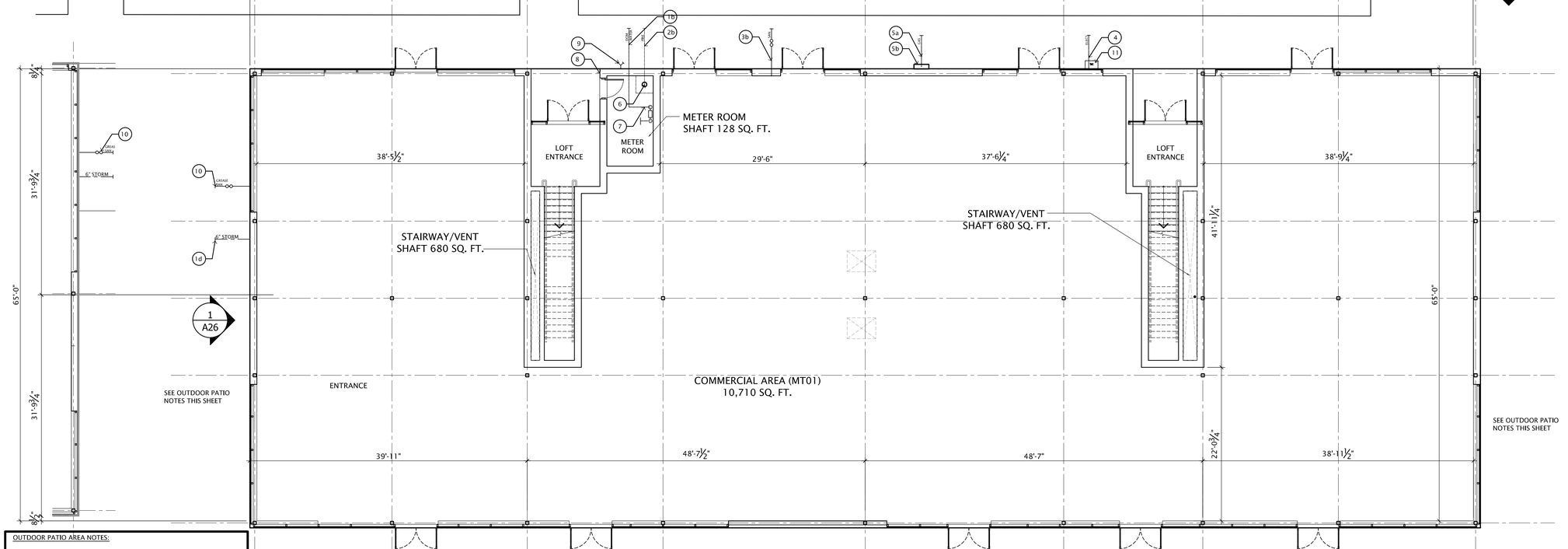
12 FULL HEIGHT WALL AT STAIR CORRIDOR
13 42" HEIGHT WALL AT STAIR CORRIDOR



MTA 2 BRM | MTB 2 BRM | MTB 2 BRM | MTA 2 BRM
MTA 2 BRM | MTB 2 BRM | MTB 2 BRM | MTA 2 BRM

1 A06 SECOND FLOOR - BUILDING 01 - MULTI-TENANT 01
SCALE: 1/8" = 1'-0"

11440 SQ. FT.
MULTI-TENANT 01



OUTDOOR PATIO AREA NOTES:

1. CONCEPTUAL LAYOUT OF OUTDOOR PATIO AREAS AND LANDSCAPING ARE FOR REFERENCE ONLY - EXACT CONFIGURATION SHALL DETERMINED/COORDINATED WITH FUTURE TENANT LEASING REQUIREMENTS.
2. OUTDOOR SEATING AREA SHALL COMPLY WITH ALL ORDINANCE REQUIREMENTS.
3. THE HOURS OF OPERATION FOR THE OUTDOOR PATIO AREAS WILL BE CONSISTENT WITH THE HOURS OF OPERATION OF INSIDE ASSOCIATED TENANT SPACES.

1 A06 GROUND FLOOR - BUILDING 01 - MULTI-TENANT 01
SCALE: 1/8" = 1'-0"

11440 SQ. FT.
MULTI-TENANT 01

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR LLC
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150 W. Jefferson Avenue
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T: 313 324 3100
www.norr.com

Project Manager B. COLBURN	Drawn ####
Project Leader --	Checked --

Client
BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 01 -
MULTI-TENANT 01 (MT01) -
GROUND & SECOND FLOOR PLANS

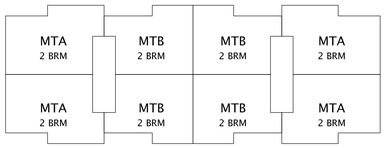
Check Scale (may be photo reduced)
0 1inch 0 10mm

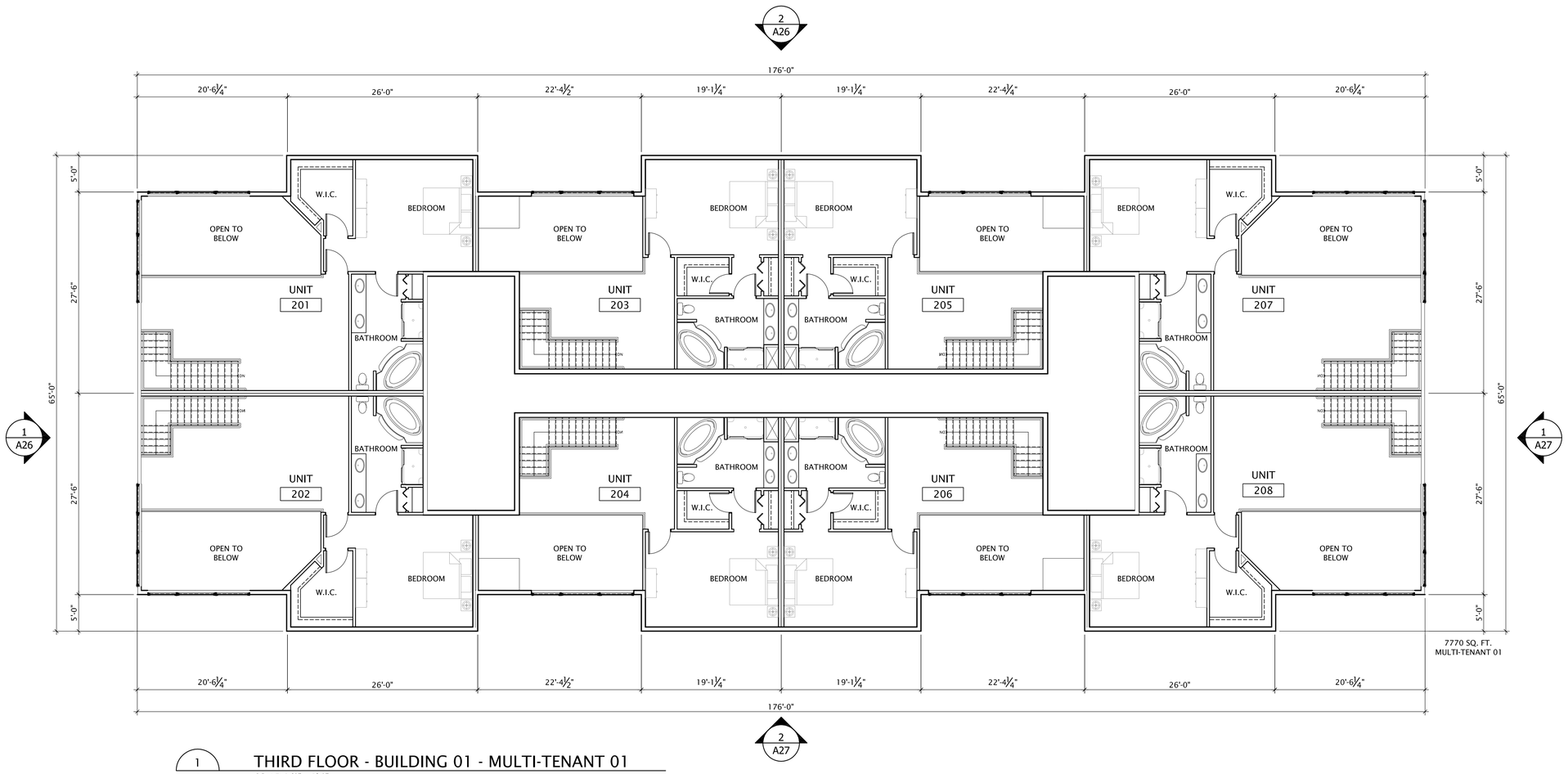
Project No.
JCDT16.0114.00

Drawing No.
A06 82

PATH AND FILENAME: \\TOR.INGENIUM.LOC\WORKSPACE\WORKSHAREDET\NORR\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\ARCH_PROD\SHEETS\A06 MULTI-TENNANT 01 - FLOOR PLANS.DWG PLOTSYLE TABLE: Ingenium-Half Size-A2.ctb PLOT DATE: April 24, 2018 TIME: 3:12 PM

ARCH D - 24"x36" - 610mmx914mm (rounded)





1 A07 THIRD FLOOR - BUILDING 01 - MULTI-TENANT 01

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

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	

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Keyplan

North Arrow

Detail Symbol

Detail No.
Sheet No.

CHECK LINE 24" PAPER ROLL

Seal(s)

NORR LLC
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150 W. Jefferson Avenue
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T: 313 324 3100
www.norr.com

Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client

BEZTAK

31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project

Pittsfield Mixed Use Development

Drawing Title

BUILDING 01 -
MULTI-TENANT 01 (MT01) -
THIRD FLOOR PLANS

Check Scale (may be photo reduced)

0 1inch 0 10mm

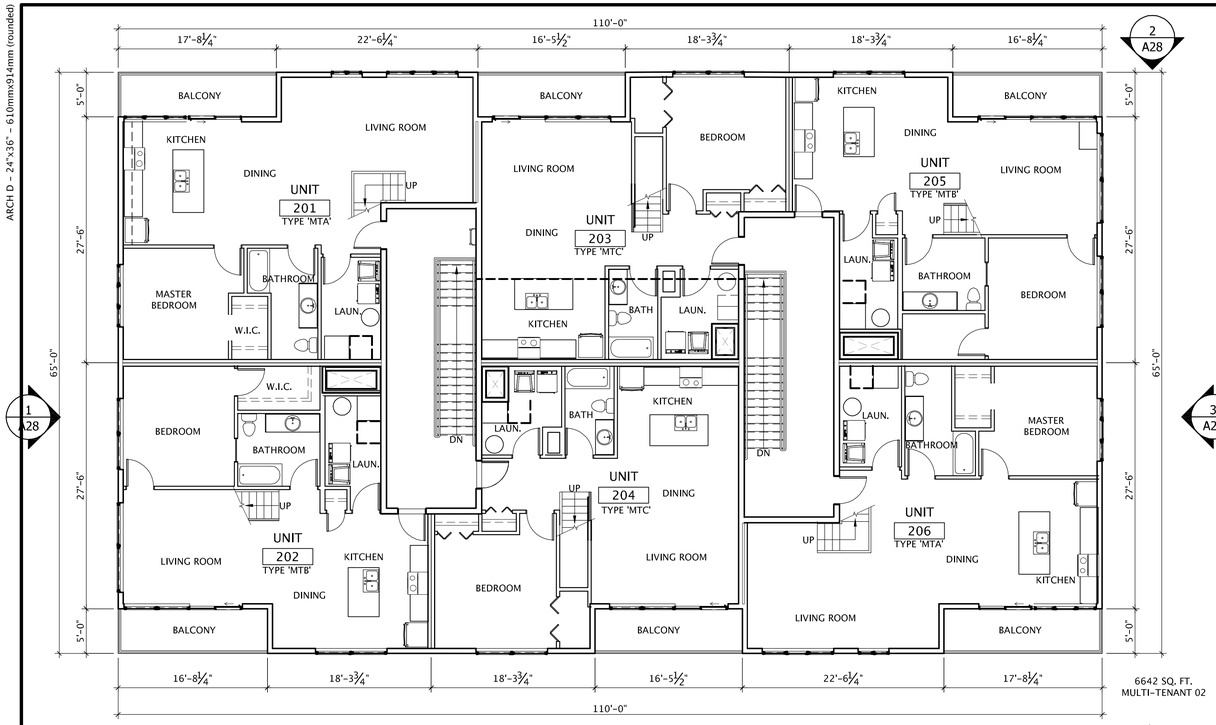
Project No.

JCDT16.0114.00

Drawing No.

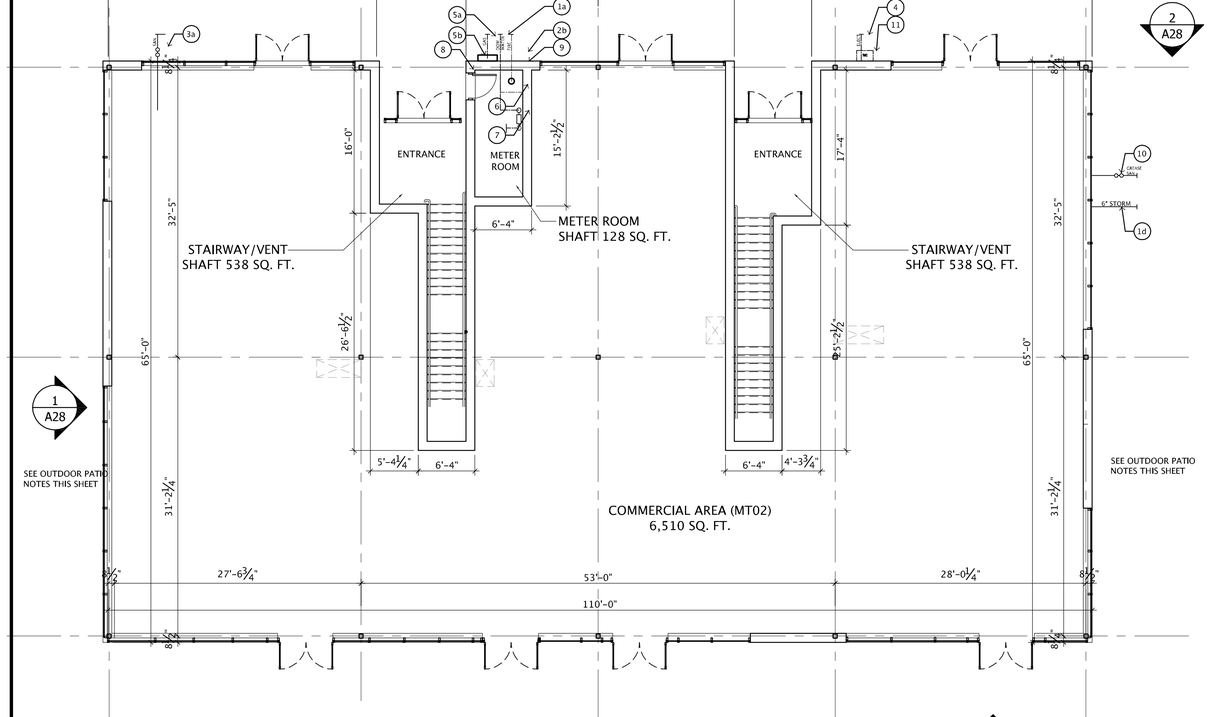
A07 83

ARCH D - 24"x36" - 610mm x 914mm (rounded)



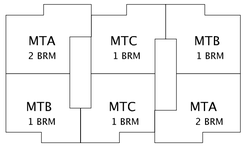
2 A08 SECOND FLOOR - BUILDING 02 - MULTI-TENANT 02

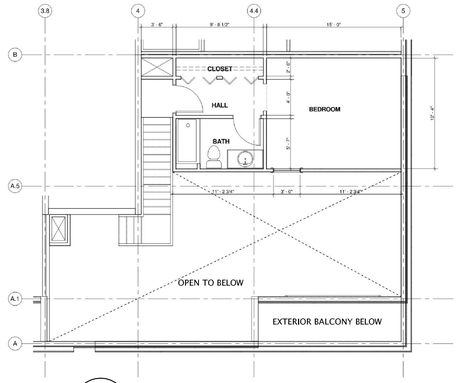
SCALE: 1/8" = 1'-0"



1 A08 GROUND FLOOR - BUILDING 02 - MULTI-TENANT 02

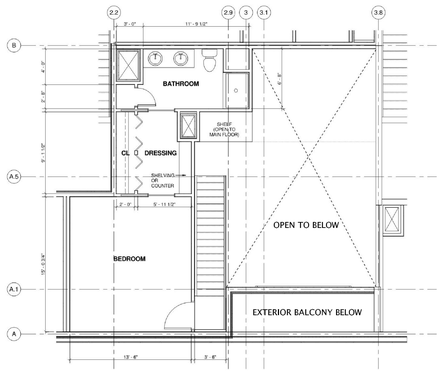
SCALE: 1/8" = 1'-0"





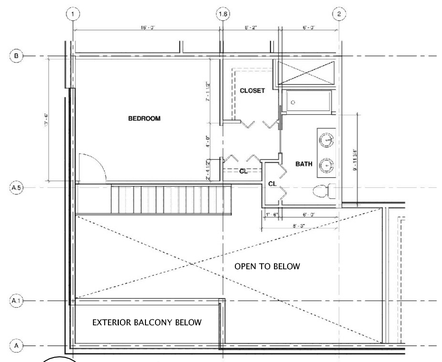
5 A08 3rd FLOOR - BUILDING 02 -MTA

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



4 A08 3rd FLOOR - BUILDING 02 -MTC

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



3 A08 3rd FLOOR - BUILDING 02 -MTB

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

Floor Plan Key Notes

1a 2" DOMESTIC WATER LEAD
1b 2-1/2" DOMESTIC WATER LEAD
1c 3" DOMESTIC WATER LEAD
1d ROOF STORM LEAD (SIZE AS INDICATED)
2a 4" FIRE SUPPRESSION LEAD
2b 6" FIRE SUPPRESSION LEAD
3a 4" SANITARY LEAD
3b 6" SANITARY LEAD
4 ELECTRICAL SERVICE METERS BANK
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5b GAS METER BANK
6 FIRE RISER
7 DOMESTIC WATER METER
8 KNOX BOX PER TOWNSHIP STANDARDS
9 FIRE DEPARTMENT CONNECTION - LOCATION TO BE COORDINATED WITH FIRE MARSHAL COMMENTS
10 4" SANITARY GREASE LEAD
11 TELEPHONE SERVICE CAB
12 FULL HEIGHT WALL AT STAIR CORRIDOR
13 42" HEIGHT WALL AT STAIR CORRIDOR

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Detail No.
Sheet No.

CREASE LINE - 24" PAPER ROLL

Seal(s)

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Project Manager B. COLBURN	Drawn J. BROCK
Project Leader --	Checked --

Client
BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

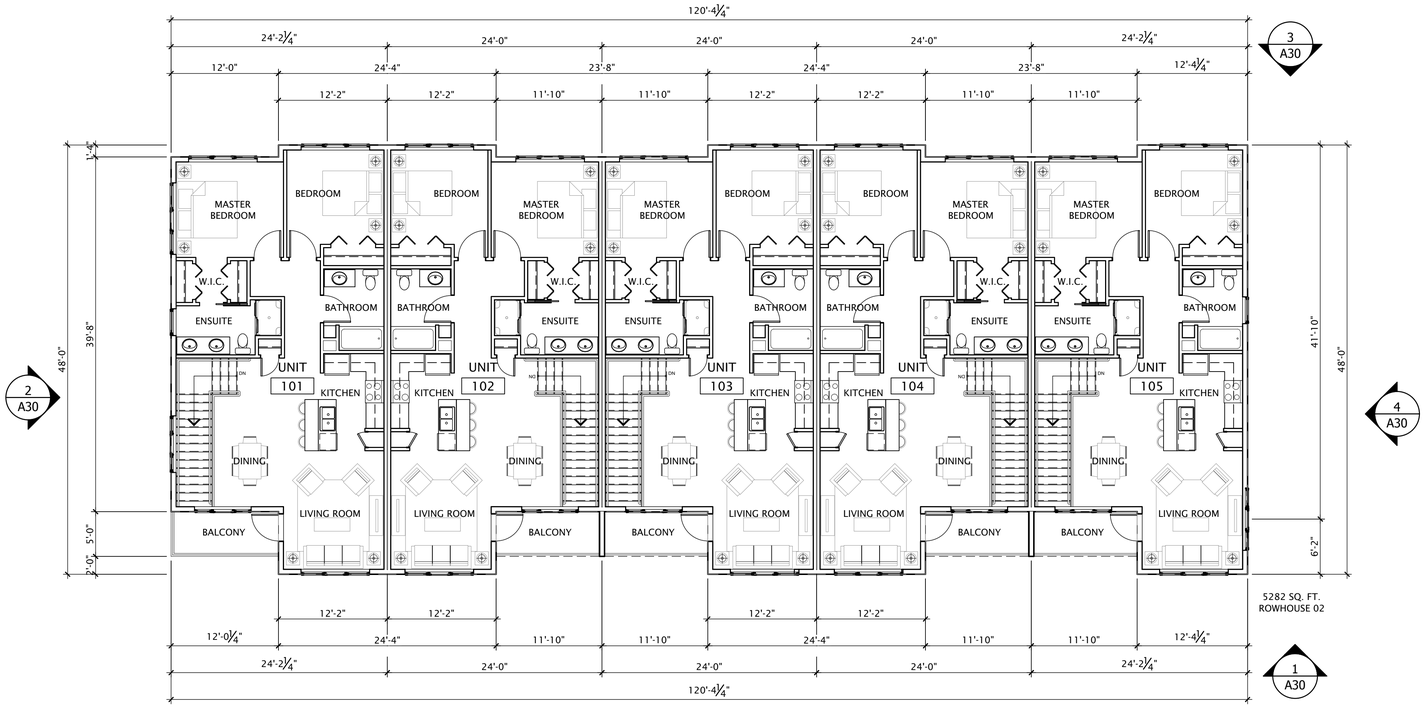
Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 02 - MULTI-TENANT 02 (MT02) - GROUND & SECOND FLOOR PLANS

Check Scale (may be photo reduced)
0 1inch 0 10mm

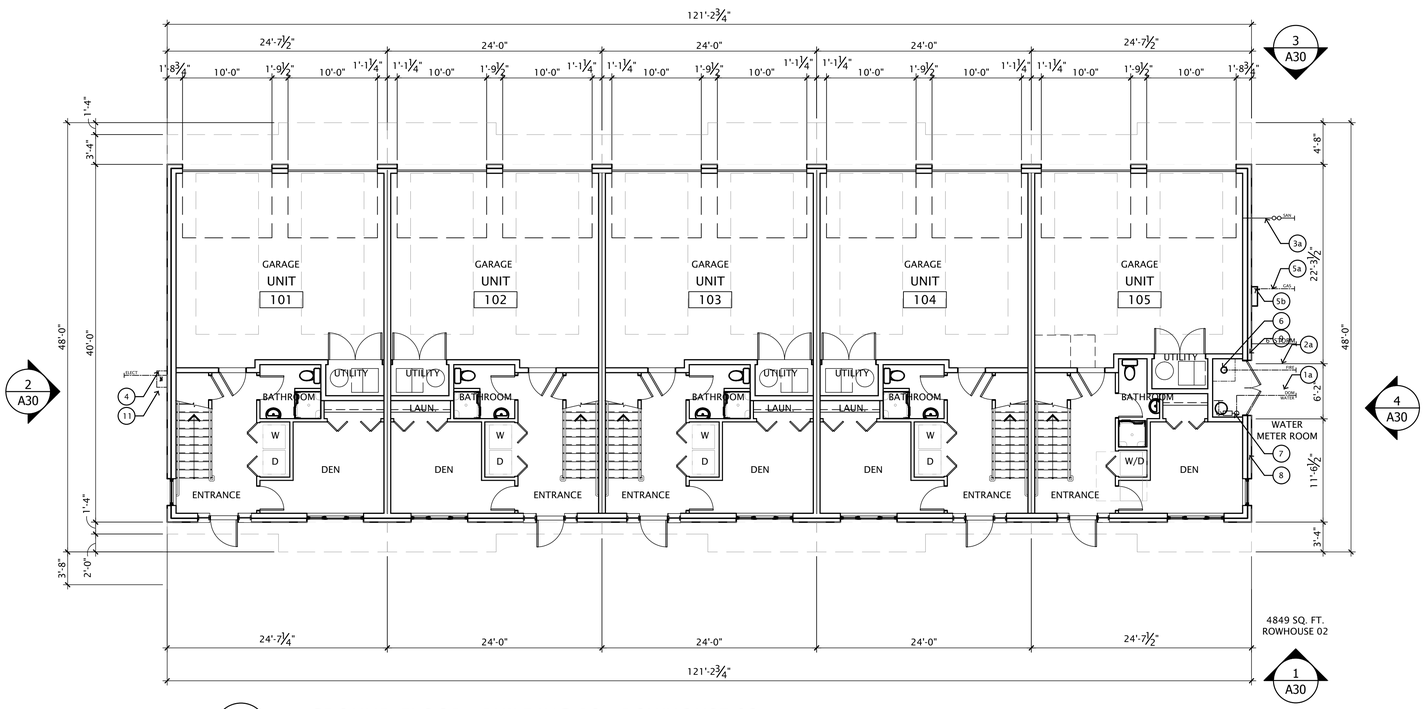
Project No.
JCDT16.0114.00

Drawing No.
A08 84



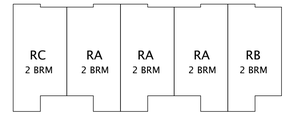
2 A10 SECOND FLOOR - BUILDING 12 - ROWHOUSE 02

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



1 A10 GROUND FLOOR - BUILDING 12 - ROWHOUSE 02

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



Floor Plan Key Notes

1a 2" DOMESTIC WATER LEAD
1b 2-1/2" DOMESTIC WATER LEAD
1c 3" DOMESTIC WATER LEAD
1d ROOF STORM LEAD (SIZE AS INDICATED)
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3b 6" SANITARY LEAD
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DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	

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Keyplan

North Arrow

Detail Symbol

Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

150 W. Jefferson Avenue
Suite 1300
Detroit, MI 48226
T: 313 324 3100
www.norr.com

Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client

BEZTAK

31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project

Pittsfield Mixed Use Development

Drawing Title

BUILDING 12 -
ROWHOUSE 02 (RH02) -
FLOOR PLANS

Check Scale (may be photo reduced)
0 1inch 0 10mm

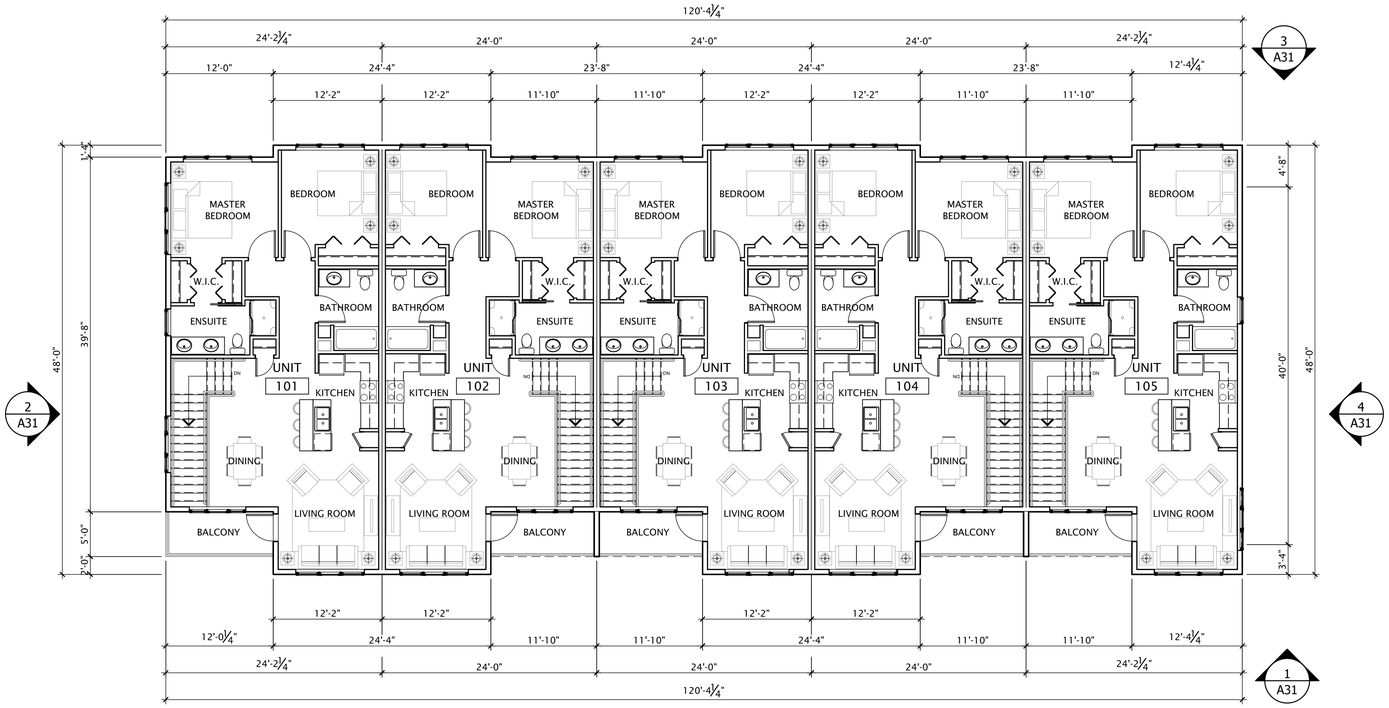
Project No.
JCDT16.0114.00

Drawing No.
A10 **86**

ARCH D - 24"x36" - 610mmx914mm (rounded)

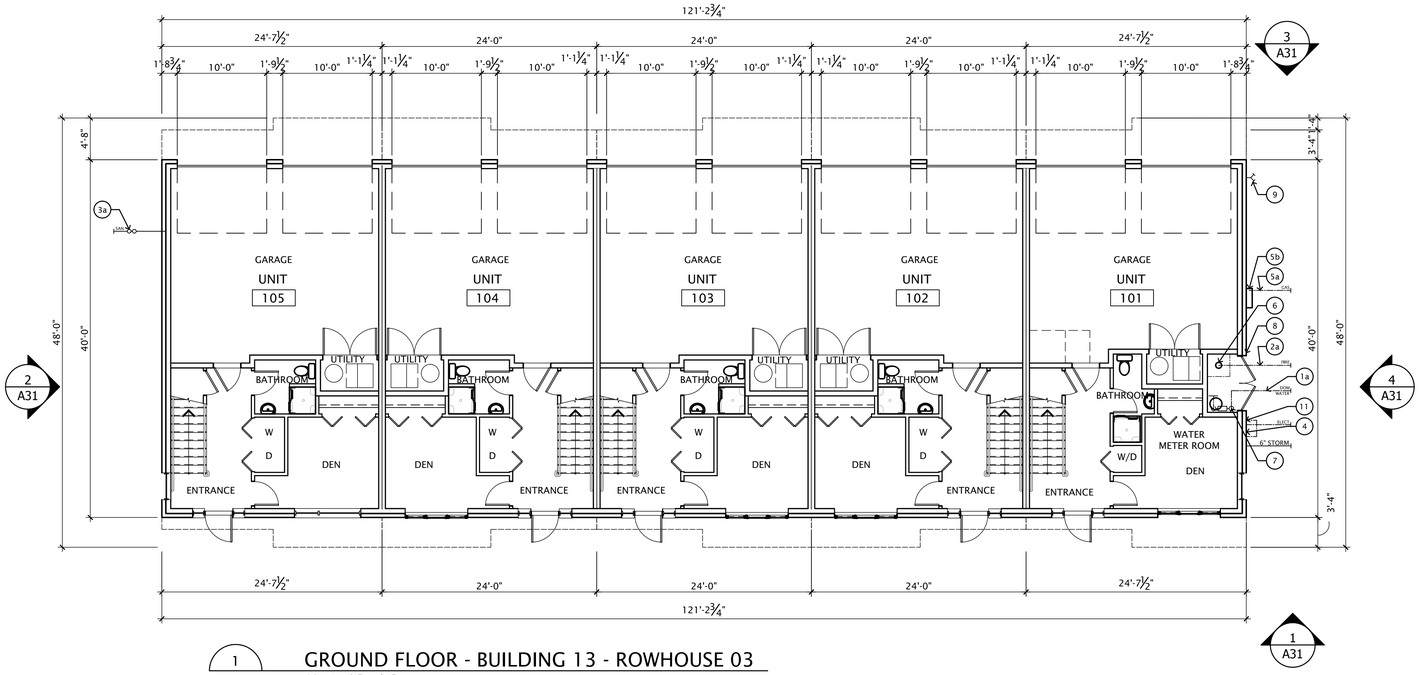
PATH AND FILENAME: \\TOR-INGENIUM-LOC\WORKSPACE\WORKSHAREDFT\NORR\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\ARCH_PROD\SHEETS\A10 ROWHOUSE 02 - FLOOR PLANS.DWG, PLOTSYLE TABLE: Ingenium.ctb, PLOT DATE: April 24, 2018, TIME: 12:28 PM

ARCH D - 24"x36" - 610mm x 914mm (rounded)



2 A11 SECOND FLOOR - BUILDING 13 - ROWHOUSE 03

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



1 A11 GROUND FLOOR - BUILDING 13 - ROWHOUSE 03

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

RB 2 BRM | RA 2 BRM | RA 2 BRM | RA 2 BRM | RC 2 BRM

Floor Plan Key Notes

1a 2" DOMESTIC WATER LEAD
1b 2-1/2" DOMESTIC WATER LEAD
1c 3" DOMESTIC WATER LEAD
1d ROOF STORM LEAD (SIZE AS INDICATED)
2a 4" FIRE SUPPRESSION LEAD
2b 6" FIRE SUPPRESSION LEAD
3a 4" SANITARY LEAD
3b 6" SANITARY LEAD
4 ELECTRICAL SERVICE METERS BANK
5a GAS LEAD (SIZE TBD)
5b GAS METER BANK
6 FIRE RISER
7 DOMESTIC WATER METER
8 KNOX BOX PER TOWNSHIP STANDARDS
9 FIRE DEPARTMENT CONNECTION - LOCATION TO BE COORDINATED WITH FIRE MARSHAL COMMENTS
10 4" SANITARY GREASE LEAD
11 TELEPHONE SERVICE CAB
12 FULL HEIGHT WALL AT STAIR CORRIDOR
13 42" HEIGHT WALL AT STAIR CORRIDOR

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	

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Keyplan

North Arrow

Detail Symbol

Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
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150 W. Jefferson Avenue
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www.norr.com

Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project

Pittsfield Mixed Use Development

Drawing Title

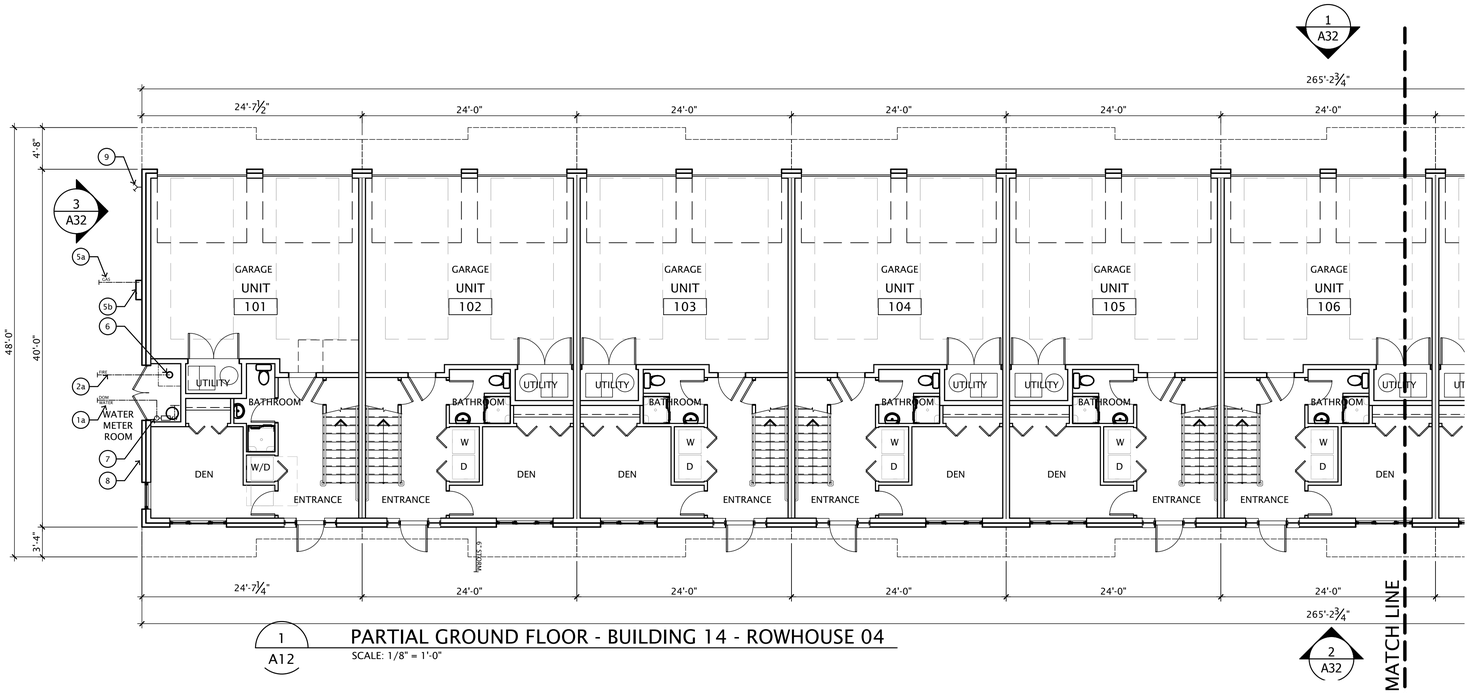
BUILDING 13 -
ROWHOUSE 03 (RH03) -
FLOOR PLANS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

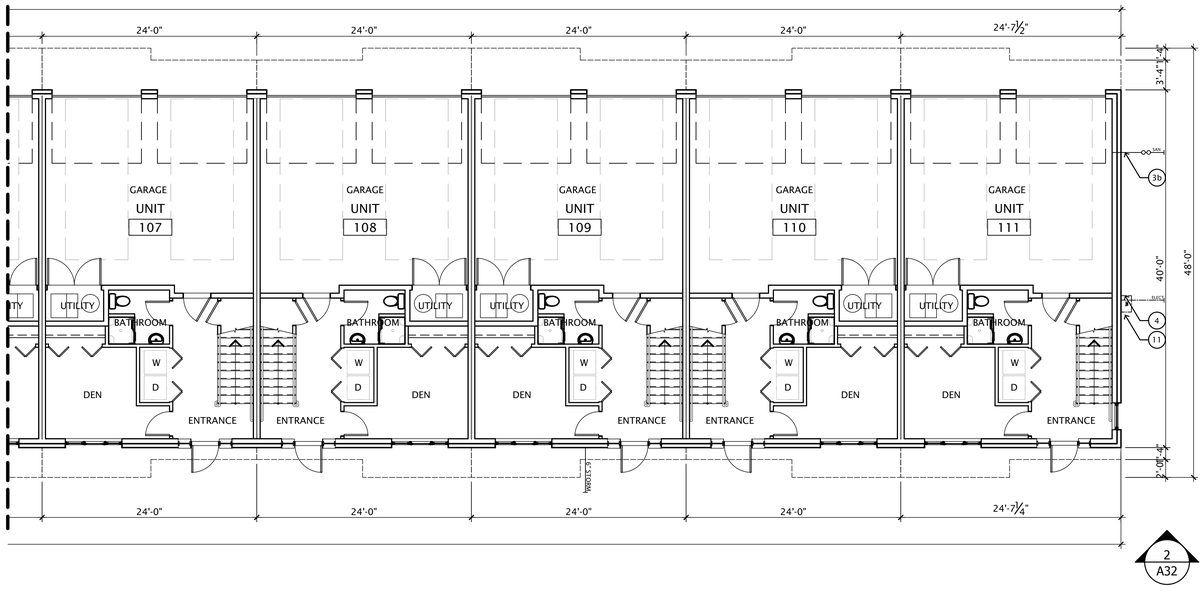
Drawing No.
A11 87

ARCH D - 24"x36" - 610mm x 914mm (rounded)



1 A12 PARTIAL GROUND FLOOR - BUILDING 14 - ROWHOUSE 04
SCALE: 1/8" = 1'-0"

MATCH LINE



1 A12 PARTIAL GROUND FLOOR - BUILDING 14 - ROWHOUSE 04
SCALE: 1/8" = 1'-0"

RB 2 BRM	RA 2 BRM	RA 2 BRM	RA 2 BRM	RA 2 BRM	RA 2 BRM	RA 2 BRM	RA 2 BRM	RA 2 BRM	RA 2 BRM	RC 2 BRM

Floor Plan Key Notes

1a 2" DOMESTIC WATER LEAD
1b 2-1/2" DOMESTIC WATER LEAD
1c 3" DOMESTIC WATER LEAD
1d ROOF STORM LEAD (SIZE AS INDICATED)
2a 4" FIRE SUPPRESSION LEAD
2b 6" FIRE SUPPRESSION LEAD
3a 4" SANITARY LEAD
3b 6" SANITARY LEAD
4 ELECTRICAL SERVICE METERS BANK
5a GAS LEAD (SIZE TBD)
5b GAS METER BANK
6 FIRE RISER
7 DOMESTIC WATER METER
8 KNOX BOX PER TOWNSHIP STANDARDS
9 FIRE DEPARTMENT CONNECTION - LOCATION TO BE COORDINATED WITH FIRE MARSHAL COMMENTS
10 4" SANITARY GREASE LEAD
11 TELEPHONE SERVICE CAB
12 FULL HEIGHT WALL AT STAIR CORRIDOR
13 42" HEIGHT WALL AT STAIR CORRIDOR

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR
NORR LLC
An Ingenium Group Company
150 W. Jefferson Avenue
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Detroit, MI 48226
T: 313 324 3100
www.norr.com

Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client
BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

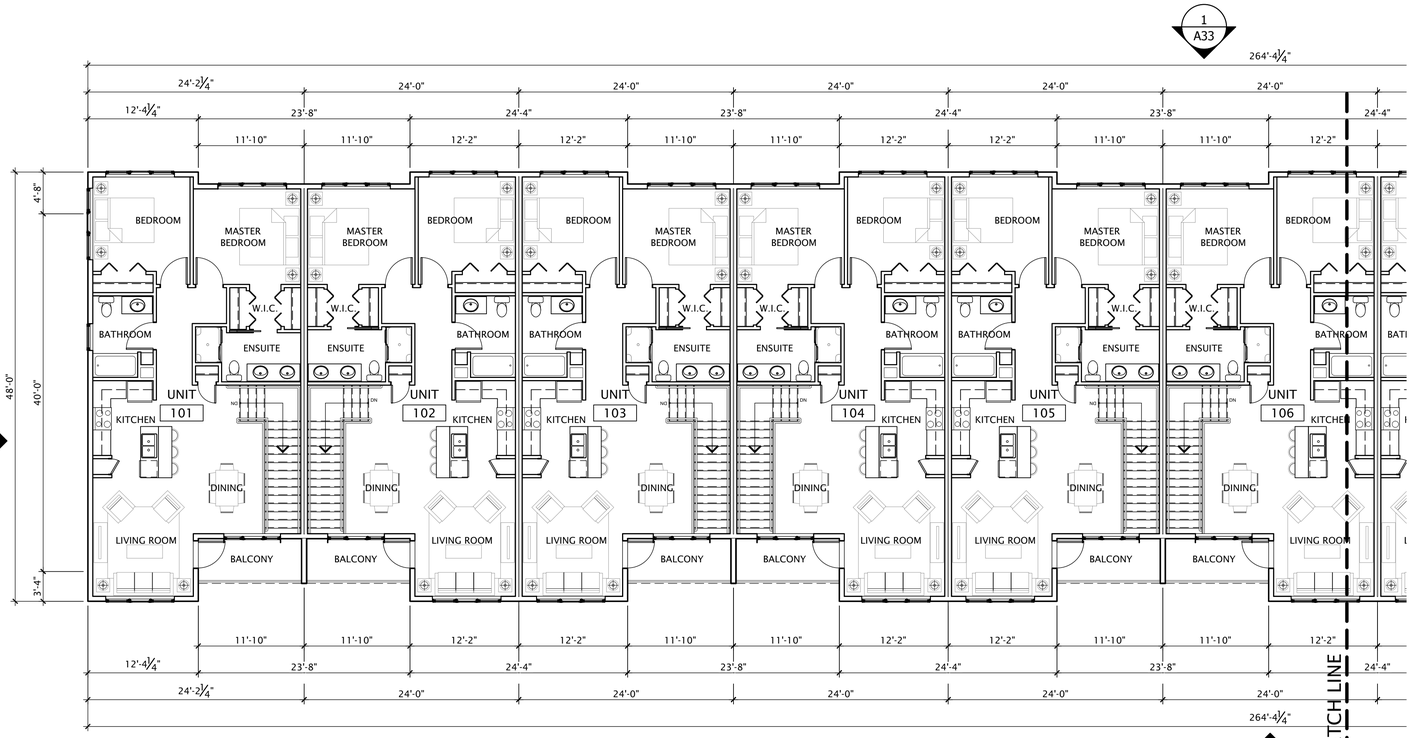
Drawing Title
BUILDING 14 -
ROWHOUSE 04 (RH04) -
FLOOR PLANS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

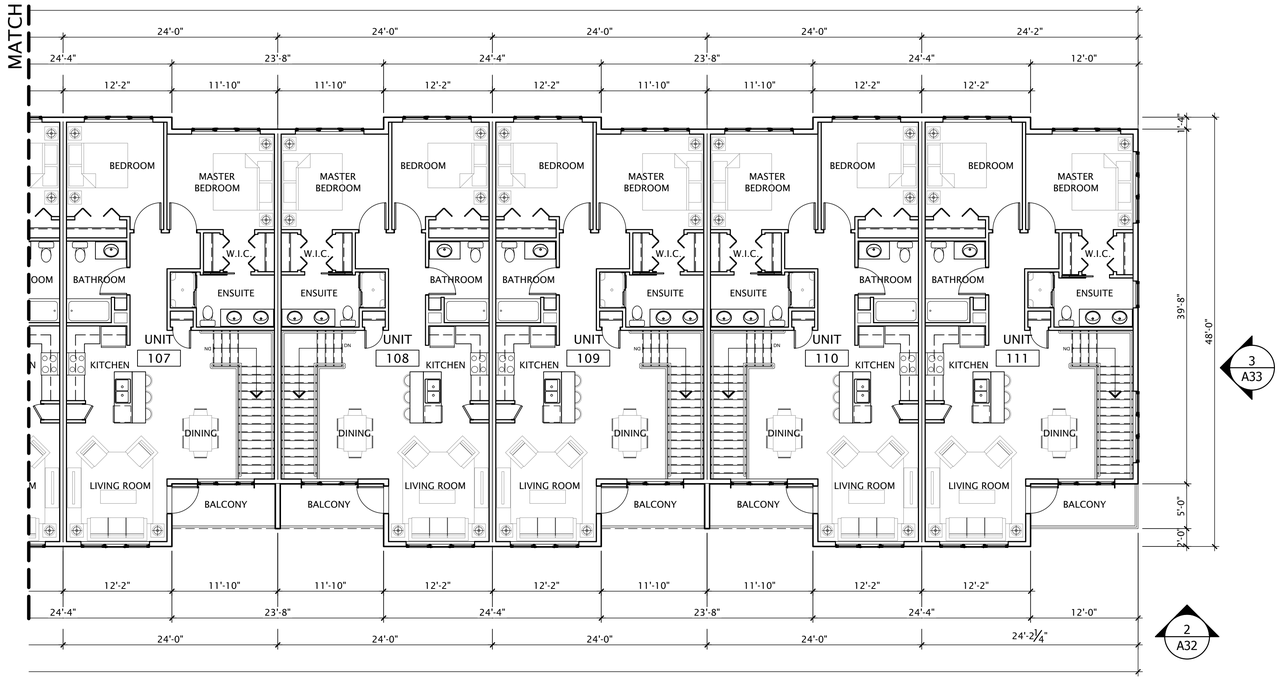
Drawing No.
A12 88

ARCH D - 24"x36" - 610mm x 914mm (rounded)



1 A12Aa — PARTIAL SECOND FLOOR - BUILDING 14 - ROWHOUSE 04

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



1 A12Aa — PARTIAL SECOND FLOOR - BUILDING 14 - ROWHOUSE 04

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

RB	RA	RA	RA	RA	RA	RA	RA	RA	RA	RC
2 BRM	2 BRM	2 BRM	2 BRM	2 BRM	2 BRM	2 BRM	2 BRM	2 BRM	2 BRM	2 BRM

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	

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Keyplan

North Arrow

Detail Symbol

Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

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Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project

Pittsfield Mixed Use Development

Drawing Title

BUILDING 14 -
ROWHOUSE 04 (RH04) -
FLOOR PLANS (2)

Check Scale (may be photo reduced)

0 1inch 0 10mm

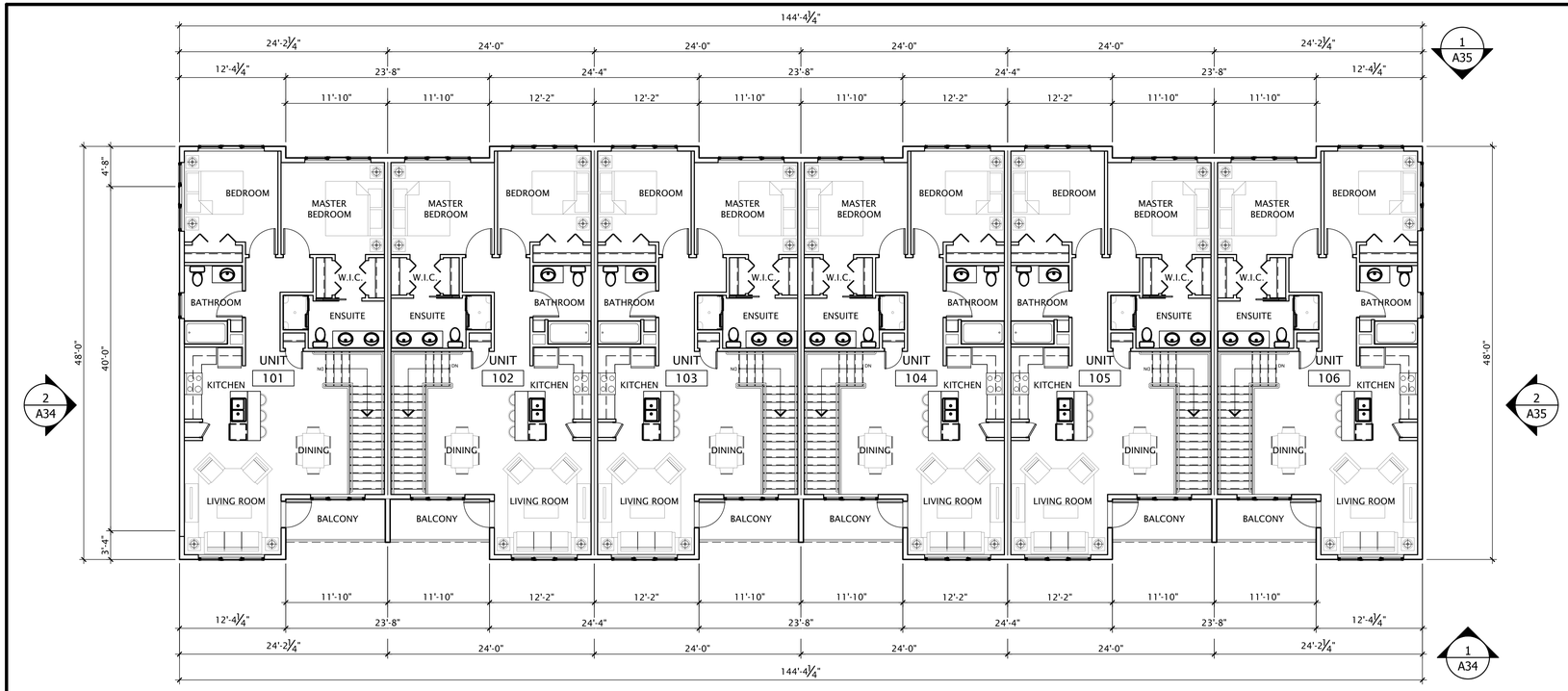
Project No.

JCDT16.0114.00

Drawing No.

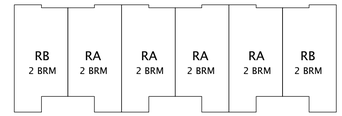
A12Aa 89

ARCH D - 24"x36" - 610mm x 914mm (rounded)



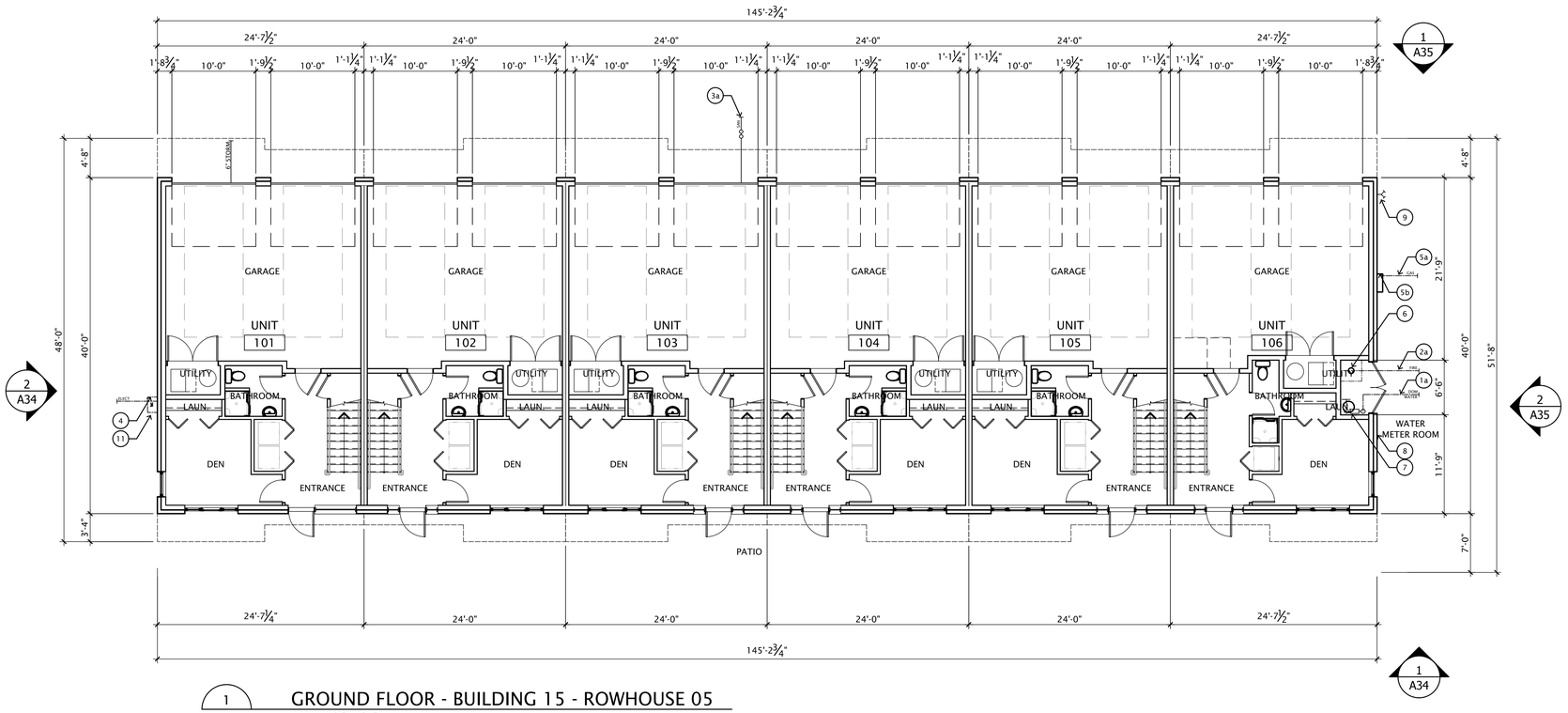
2 / A13 SECOND FLOOR - BUILDING 15 - ROWHOUSE 05

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



Floor Plan Key Notes

1a 2" DOMESTIC WATER LEAD
1b 2-1/2" DOMESTIC WATER LEAD
1c 3" DOMESTIC WATER LEAD
1d ROOF STORM LEAD (SIZE AS INDICATED)
2a 4" FIRE SUPPRESSION LEAD
2b 6" FIRE SUPPRESSION LEAD
3a 4" SANITARY LEAD
3b 6" SANITARY LEAD
4 ELECTRICAL SERVICE METERS BANK
5a GAS LEAD (SIZE TBD)
5b GAS METER BANK
6 FIRE RISER
7 DOMESTIC WATER METER
8 KNOX BOX PER TOWNSHIP STANDARDS
9 FIRE DEPARTMENT CONNECTION - LOCATION TO BE COORDINATED WITH FIRE MARSHAL COMMENTS
10 4" SANITARY GREASE LEAD
11 TELEPHONE SERVICE CAB
12 FULL HEIGHT WALL AT STAIR CORRIDOR
13 42" HEIGHT WALL AT STAIR CORRIDOR



1 / A13 GROUND FLOOR - BUILDING 15 - ROWHOUSE 05

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

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	

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Keyplan

North Arrow

Detail Symbol

Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

150 W. Jefferson Avenue
Suite 1300
Detroit, MI 48226
T: 313 324 3100
www.norr.com

Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project

Pittsfield Mixed Use Development

Drawing Title

BUILDING 15 -
ROWHOUSE 05 (RH05) -
FLOOR PLANS

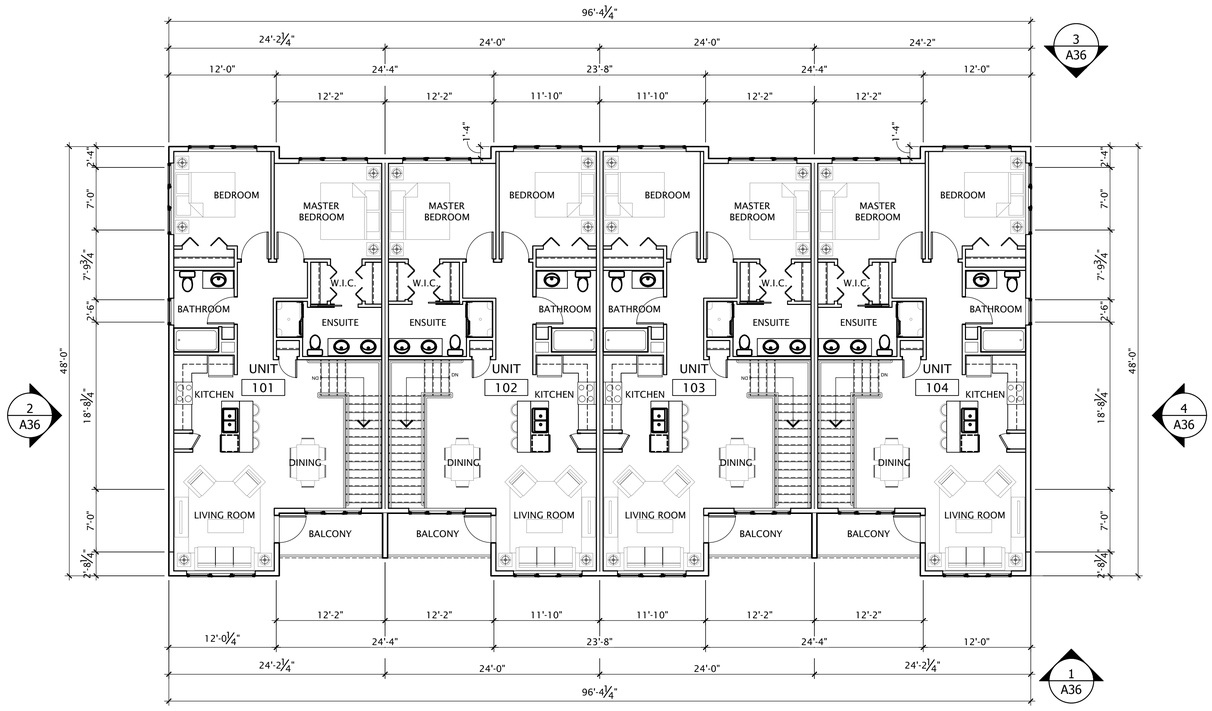
Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A13 90

PATH AND FILENAME: \\TOR.INGENIUM.LOC\WORKSPACE\WORKSHAREDET\NORR\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\ARCH_PROD\SHEETS\A13 ROWHOUSE 05 - FLOOR PLANS.DWG PLOTSYLE TABLE: Ingenium.ctb PLOT DATE: April 24, 2018 TIME: 12:28 PM

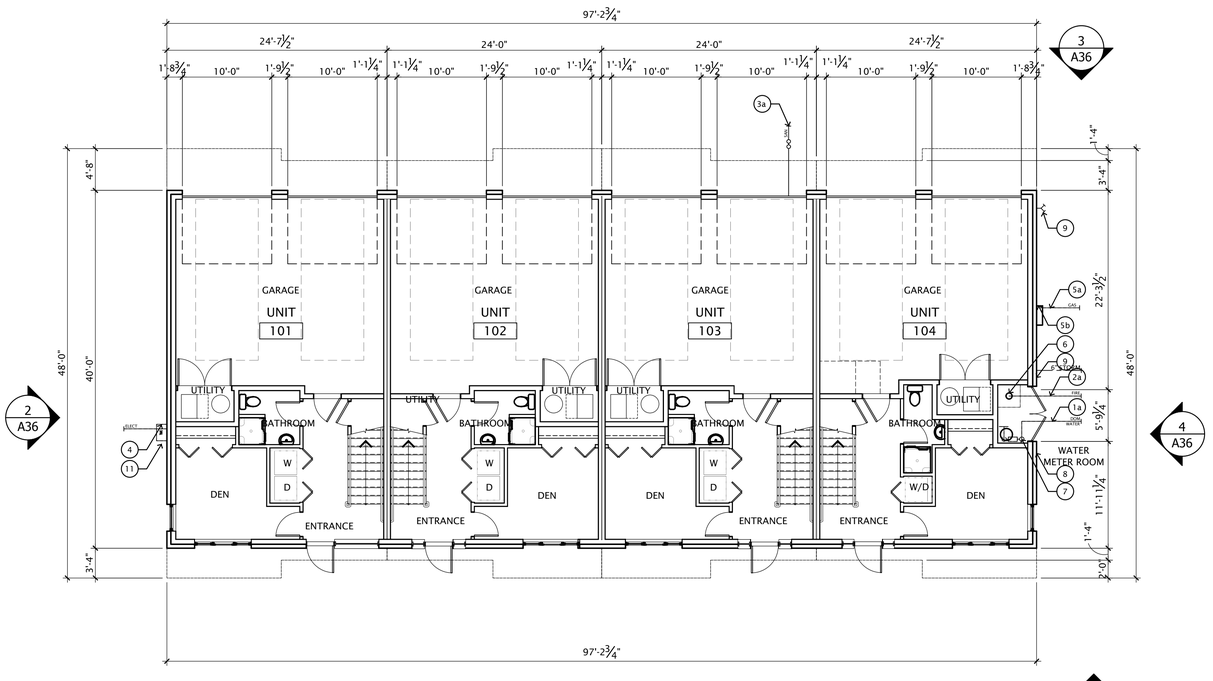
ARCH D - 24"x36" - 610mm x 914mm (rounded)



2 A14

SECOND FLOOR - BUILDING 16 - ROWHOUSE 06

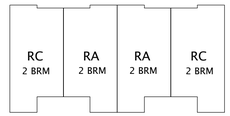
SCALE: 1/8" = 1'-0"



1 A14

GROUND FLOOR - BUILDING 16 - ROWHOUSE 06

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



Floor Plan Key Notes

1a 2" DOMESTIC WATER LEAD
1b 2-1/2" DOMESTIC WATER LEAD
1c 3" DOMESTIC WATER LEAD
1d ROOF STORM LEAD (SIZE AS INDICATED)
2a 4" FIRE SUPPRESSION LEAD
2b 6" FIRE SUPPRESSION LEAD
3a 4" SANITARY LEAD
3b 6" SANITARY LEAD
4 ELECTRICAL SERVICE METERS BANK
5a GAS LEAD (SIZE TBD)
5b GAS METER BANK
6 FIRE RISER
7 DOMESTIC WATER METER
8 KNOX BOX PER TOWNSHIP STANDARDS
9 FIRE DEPARTMENT CONNECTION - LOCATION TO BE COORDINATED WITH FIRE MARSHAL COMMENTS
10 4" SANITARY GREASE LEAD
11 TELEPHONE SERVICE CAB
12 FULL HEIGHT WALL AT STAIR CORRIDOR
13 42" HEIGHT WALL AT STAIR CORRIDOR

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	

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Keyplan

North Arrow

Detail Symbol

Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

150 W. Jefferson Avenue
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Detroit, MI 48226
T: 313 324 3100
www.norr.com

Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client

BEZTAK

31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project

Pittsfield Mixed Use Development

Drawing Title

BUILDING 16 -
ROWHOUSE 06 (RH06) -
FLOOR PLANS

Check Scale (may be photo reduced)
0 1inch 0 10mm

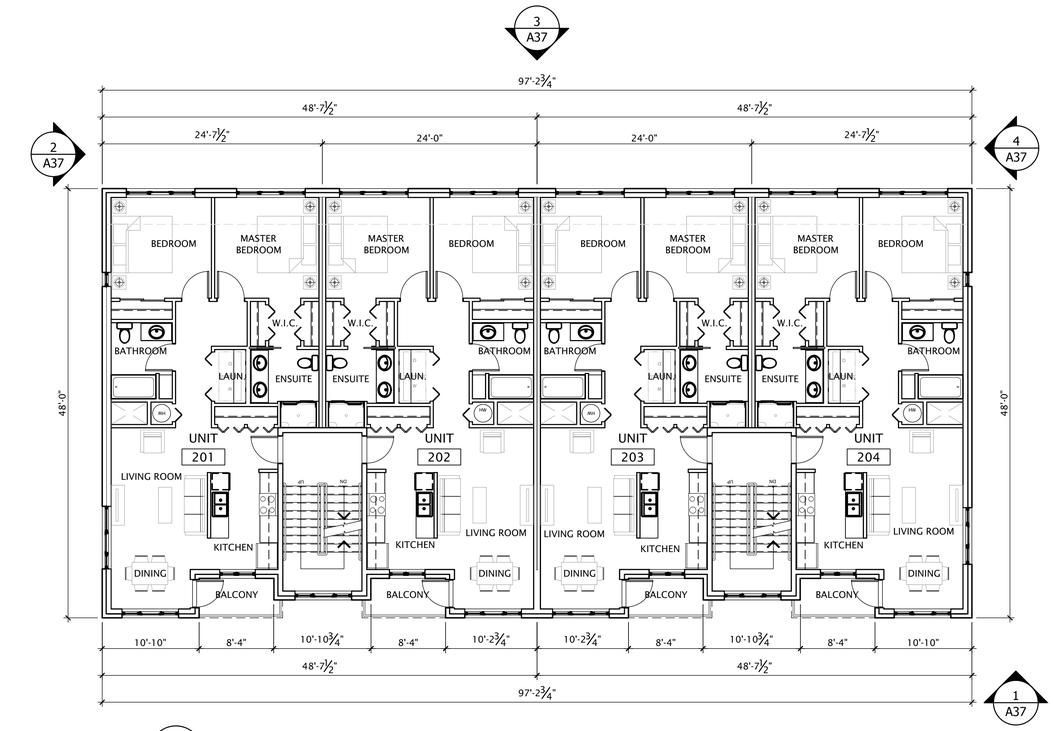
Project No.
JCDT16.0114.00

Drawing No.
A14 91

PATH AND FILENAME: \\TOR-INGENIUM-LOC\WORKSPACE\WORKSHAREDET\NORR\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\ARCH_PROD\SHEETS\A14 ROWHOUSE 06 - FLOOR PLANS.DWG, PLOTSYLE TABLE: Ingenium-Half Size-A2.ctb, PLOT DATE: April 24, 2018, TIME: 3:17 PM

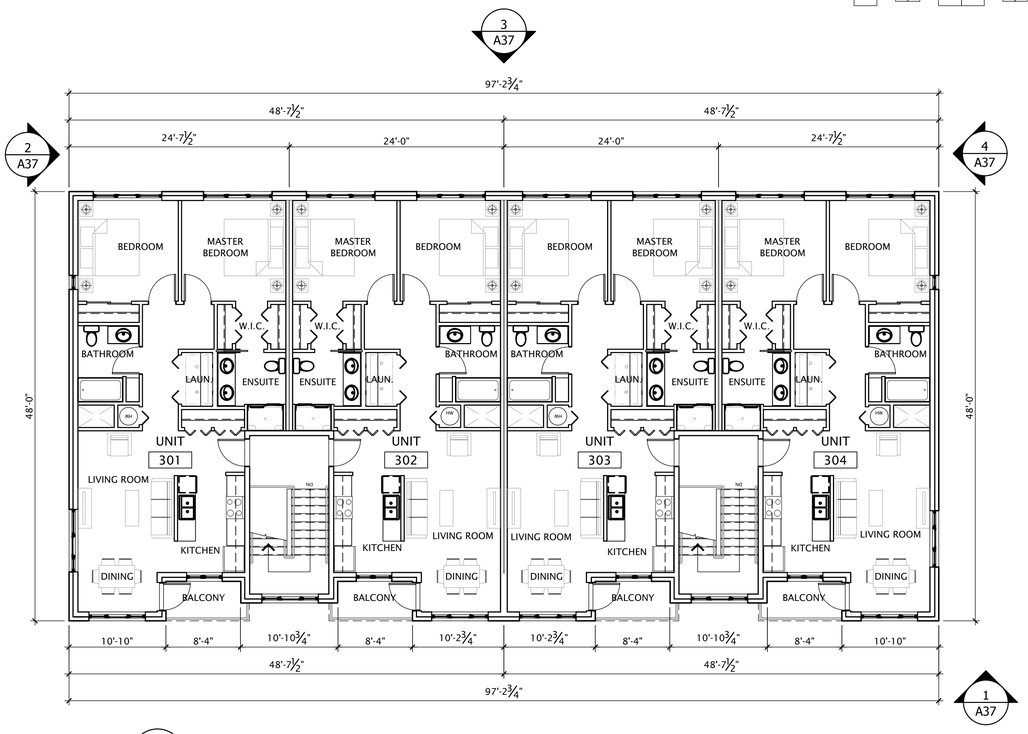
ARCH D - 24"x36" - 610mmx914mm (rounded)

AGB	AGA	AGA	AGB
2 BRM	2 BRM	2 BRM	2 BRM



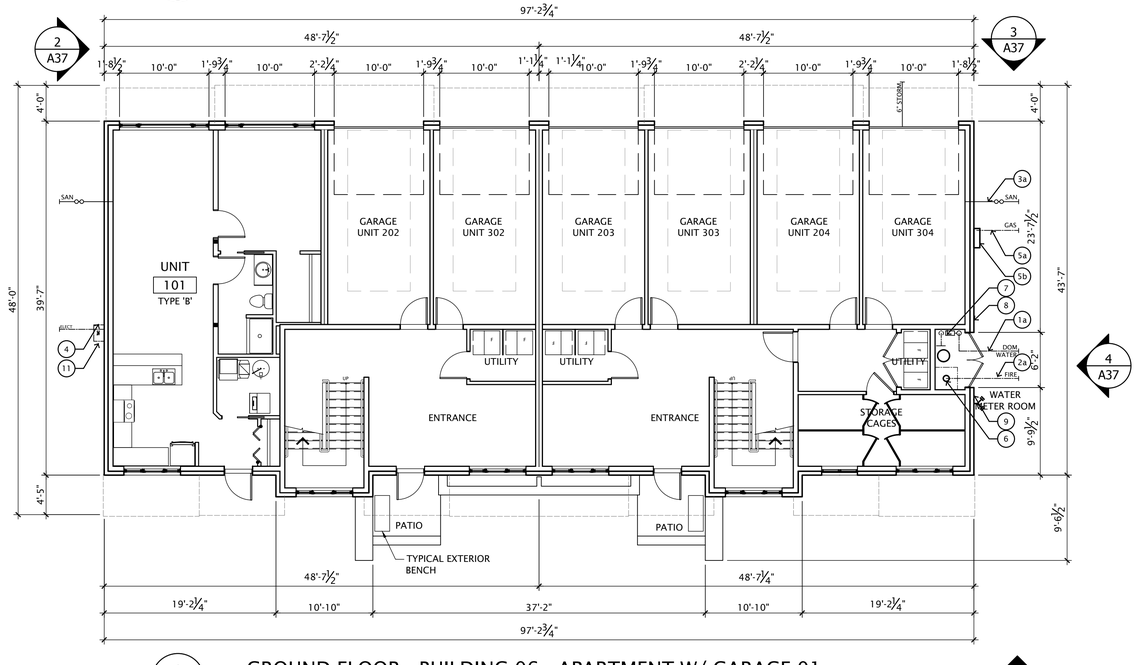
2 A15 SECOND FLOOR - BUILDING 06 - APARTMENT W/ GARAGE 01

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



3 A15 THIRD FLOOR - BUILDING 06 - APARTMENT W/ GARAGE 01

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



1 A15 GROUND FLOOR - BUILDING 06 - APARTMENT W/ GARAGE 01

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

Floor Plan Key Notes

1a 2" DOMESTIC WATER LEAD
1b 2-1/2" DOMESTIC WATER LEAD
1c 3" DOMESTIC WATER LEAD
1d ROOF STORM LEAD (SIZE AS INDICATED)
2a 4" FIRE SUPPRESSION LEAD
2b 6" FIRE SUPPRESSION LEAD
3a 4" SANITARY LEAD
3b 6" SANITARY LEAD
4 ELECTRICAL SERVICE METERS BANK
5a GAS LEAD (SIZE TBD)
5b GAS METER BANK
6 FIRE RISER
7 DOMESTIC WATER METER
8 KNOX BOX PER TOWNSHIP STANDARDS
9 FIRE DEPARTMENT CONNECTION - LOCATION TO BE COORDINATED WITH FIRE MARSHAL COMMENTS
10 4" SANITARY GREASE LEAD
11 TELEPHONE SERVICE CAB
12 FULL HEIGHT WALL AT STAIR CORRIDOR
13 42" HEIGHT WALL AT STAIR CORRIDOR

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	

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Keyplan

North Arrow

Detail Symbol

Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

150 W. Jefferson Avenue
Suite 1300
Detroit, MI 48226
T: 313 324 3100
www.norr.com

Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project

Pittsfield Mixed Use Development

Drawing Title

BUILDING 06 -
APARTMENT W GARAGE 01
(AG01) - FLOOR PLANS

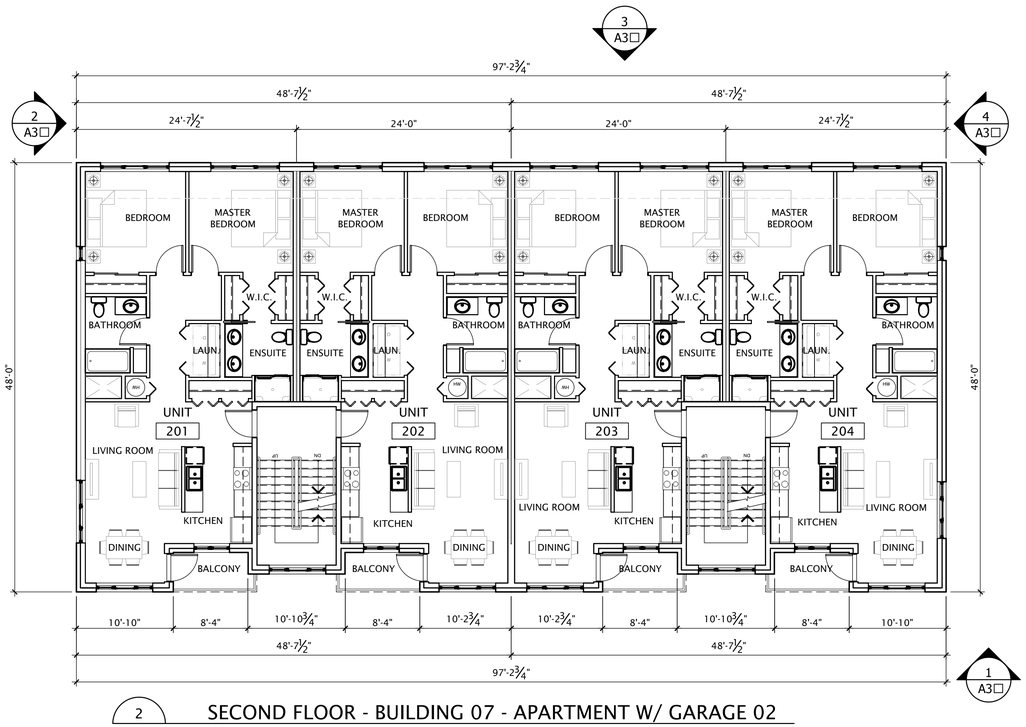
Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A15 92

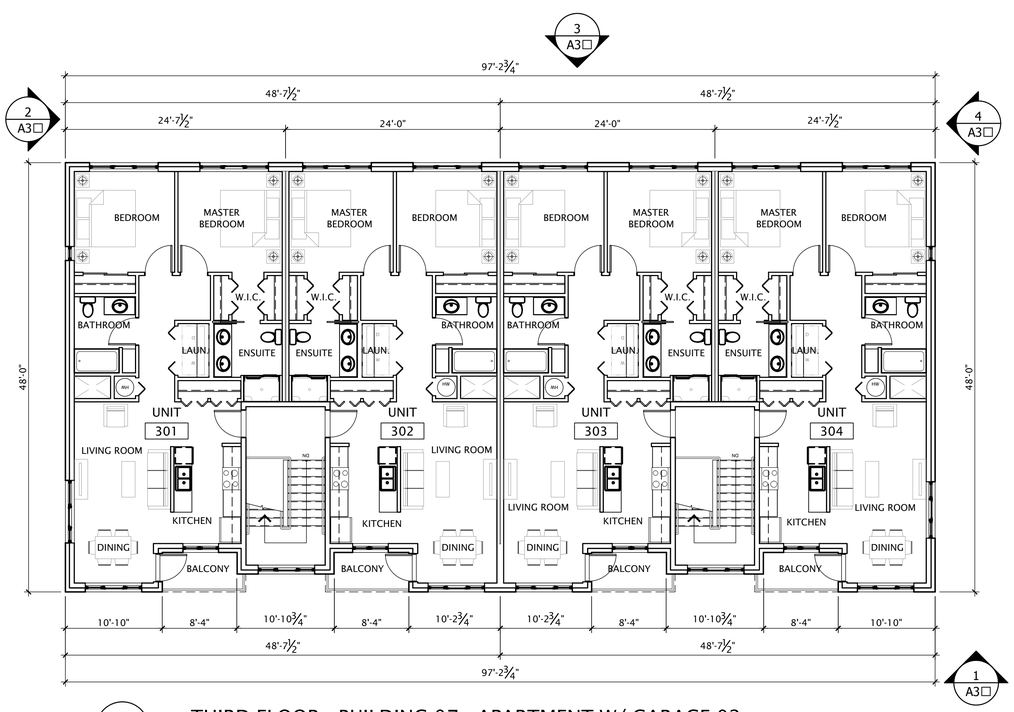
ARCH D - 24"x36" - 610mm x 914mm (rounded)

AGB	AGA	AGA	AGB
2 BRM	2 BRM	2 BRM	2 BRM



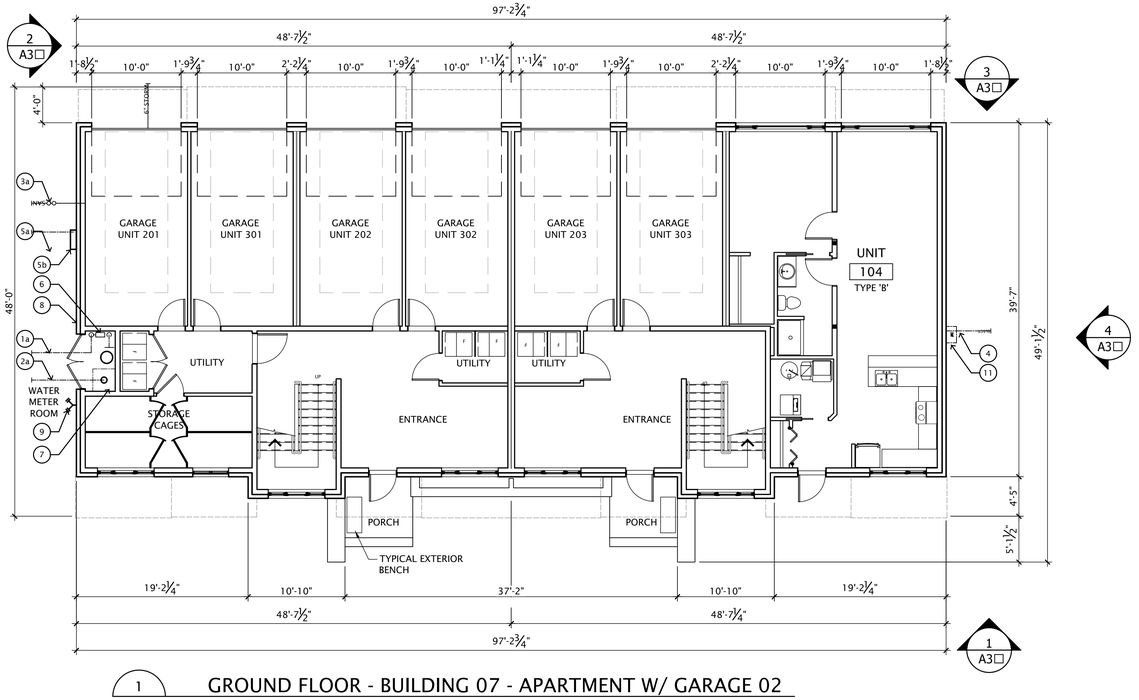
2 A16 SECOND FLOOR - BUILDING 07 - APARTMENT W/ GARAGE 02

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



3 A16 THIRD FLOOR - BUILDING 07 - APARTMENT W/ GARAGE 02

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



1 A16 GROUND FLOOR - BUILDING 07 - APARTMENT W/ GARAGE 02

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

Floor Plan Key Notes

1a 2" DOMESTIC WATER LEAD
1b 2-1/2" DOMESTIC WATER LEAD
1c 3" DOMESTIC WATER LEAD
1d ROOF STORM LEAD (SIZE AS INDICATED)
2a 4" FIRE SUPPRESSION LEAD
2b 6" FIRE SUPPRESSION LEAD
3a 4" SANITARY LEAD
3b 6" SANITARY LEAD
4 ELECTRICAL SERVICE METERS BANK
5a GAS LEAD (SIZE TBD)
5b GAS METER BANK
6 FIRE RISER
7 DOMESTIC WATER METER
8 KNOX BOX PER TOWNSHIP STANDARDS
9 FIRE DEPARTMENT CONNECTION - LOCATION TO BE COORDINATED WITH FIRE MARSHAL COMMENTS
10 4" SANITARY GREASE LEAD
11 TELEPHONE SERVICE CAB
12 FULL HEIGHT WALL AT STAIR CORRIDOR
13 42" HEIGHT WALL AT STAIR CORRIDOR

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	

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Keyplan

North Arrow

Detail Symbol: Detail No. / Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

150 W. Jefferson Avenue
Suite 1300
Detroit, MI 48226
T: 313 324 3100
www.norr.com

Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project

Pittsfield Mixed Use Development

Drawing Title

BUILDING 07 -
APARTMENT W GARAGE 02
(AG02) - FLOOR PLANS

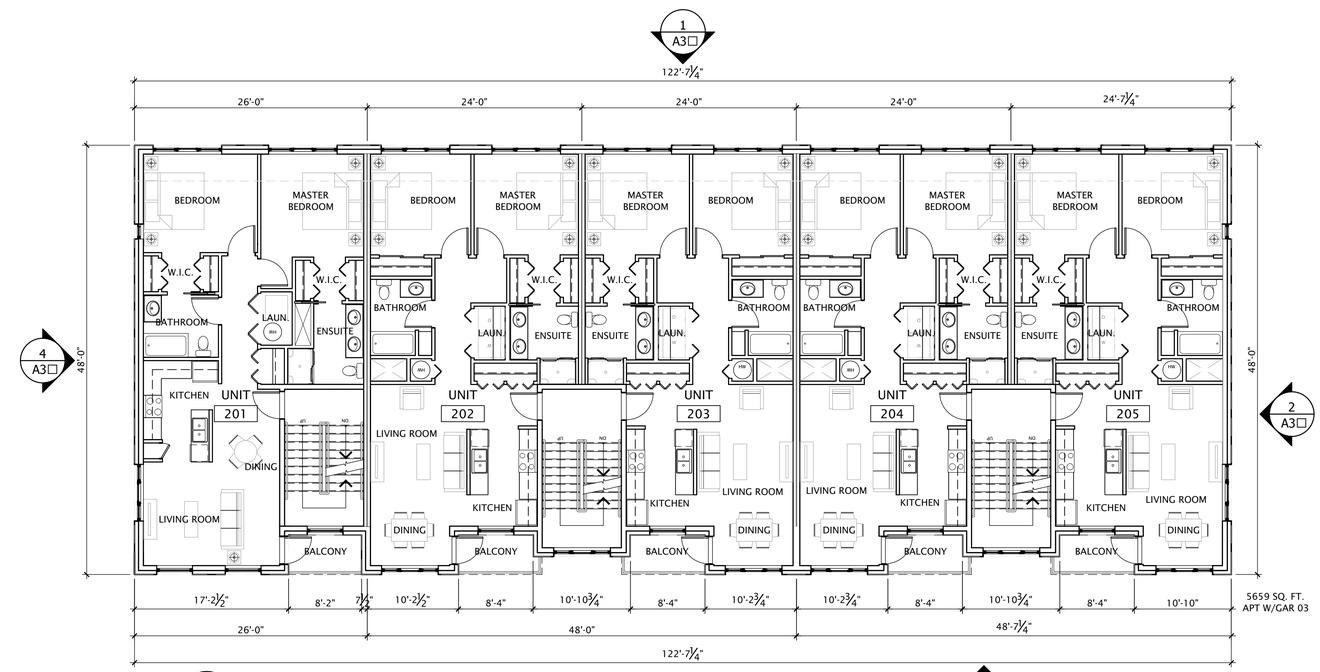
Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A16 93

ARCH D - 24"x36" - 610mm x 914mm (rounded)

AGE	AGA	AGA	AGA	AGB
2 BRM	2 BRM	2 BRM	2 BRM	2 BRM



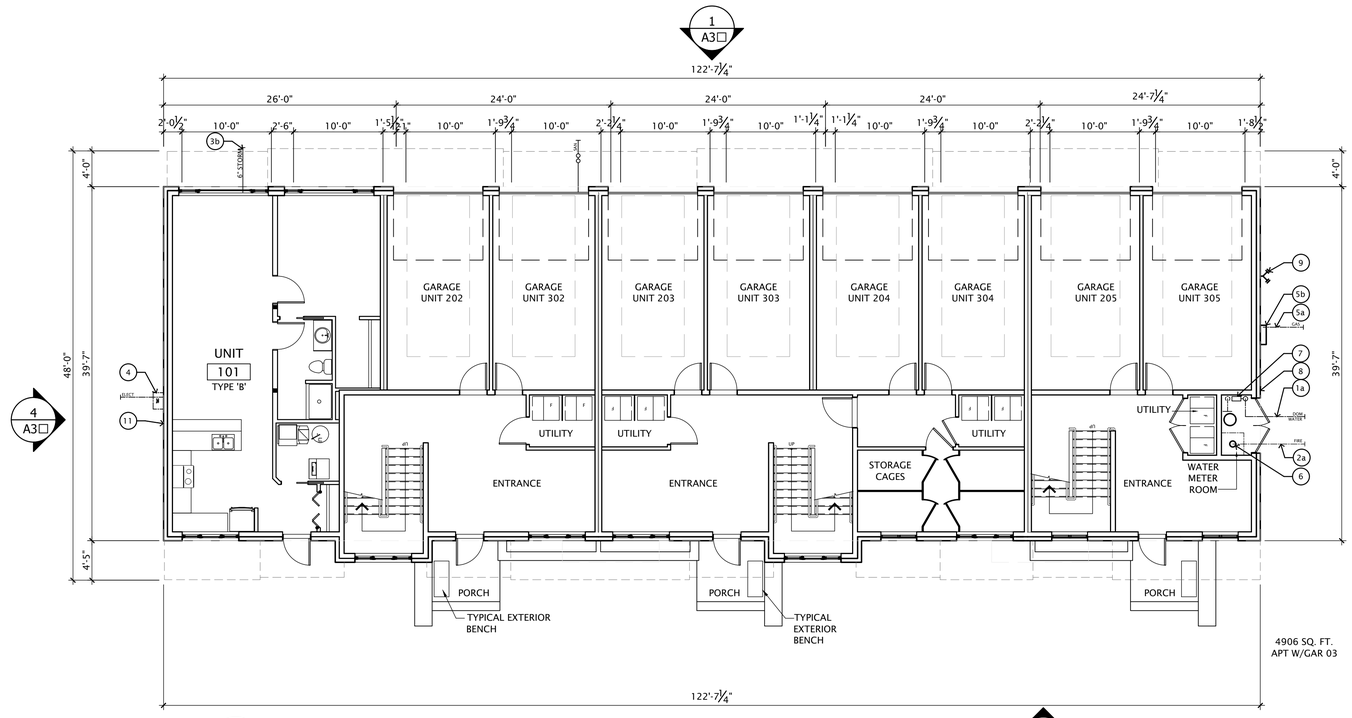
2 A17 SECOND FLOOR - BUILDING 08 - APARTMENT W/ GARAGE 03

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

3 A3□

Floor Plan Key Notes

1a	2" DOMESTIC WATER LEAD
1b	2-1/2" DOMESTIC WATER LEAD
1c	3" DOMESTIC WATER LEAD
1d	ROOF STORM LEAD (SIZE AS INDICATED)
2a	4" FIRE SUPPRESSION LEAD
2b	6" FIRE SUPPRESSION LEAD
3a	4" SANITARY LEAD
3b	6" SANITARY LEAD
4	ELECTRICAL SERVICE METERS BANK
5a	GAS LEAD (SIZE TBD)
5b	GAS METER BANK
6	FIRE RISER
7	DOMESTIC WATER METER
8	KNOX BOX PER TOWNSHIP STANDARDS
9	FIRE DEPARTMENT CONNECTION - LOCATION TO BE COORDINATED WITH FIRE MARSHAL COMMENTS
10	4" SANITARY GREASE LEAD
11	TELEPHONE SERVICE CAB
12	FULL HEIGHT WALL AT STAIR CORRIDOR
13	42" HEIGHT WALL AT STAIR CORRIDOR



1 A17 GROUND FLOOR - BUILDING 08 - APARTMENT W/ GARAGE 03

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

3 A3□

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	

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Keyplan

North Arrow

Detail Symbol

Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

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www.norr.com

Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client

BEZTAK

31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project

Pittsfield Mixed Use Development

Drawing Title

BUILDING 08 -
APARTMENT W GARAGE 03
(AG03) - FLOOR PLANS

Check Scale (may be photo reduced)

0 1inch 0 10mm

Project No.

JCDT16.0114.00

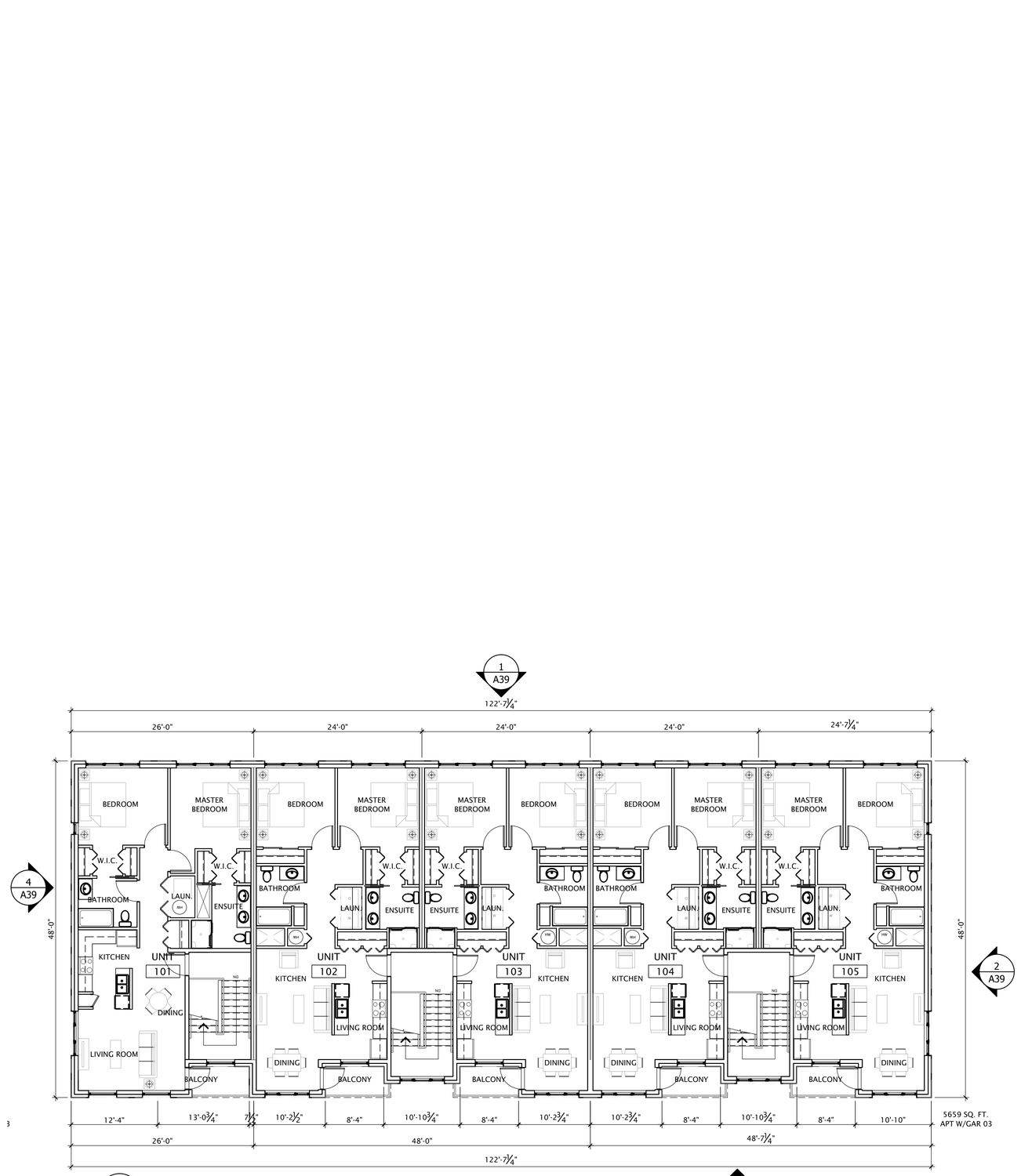
Drawing No.

A17 94

PATH AND FILENAME: \\TOR-INGENIUM-LOC\WORKSPACE\WORKSHAREDFT\NORR\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\ARCH_PROD\SHEETS\A17 APT W GAR 03 - FLOOR PLANS.DWG, PLOTSYLE TABLE: Ingenium.ctb, PLOT DATE: June 5, 2018, TIME: 10:07 AM

ARCH D - 24"x36" - 610mm x 914mm (rounded)

AGE	AGA	AGA	AGA	AGB
2 BRM	2 BRM	2 BRM	2 BRM	2 BRM



1 A17Aa

THIRD FLOOR - BUILDING 08 - APARTMENT W/ GARAGE 03

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

3 A39

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	

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Keyplan

North Arrow

Detail Symbol

Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

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Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client

BEZTAK

31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project

Pittsfield Mixed Use Development

Drawing Title

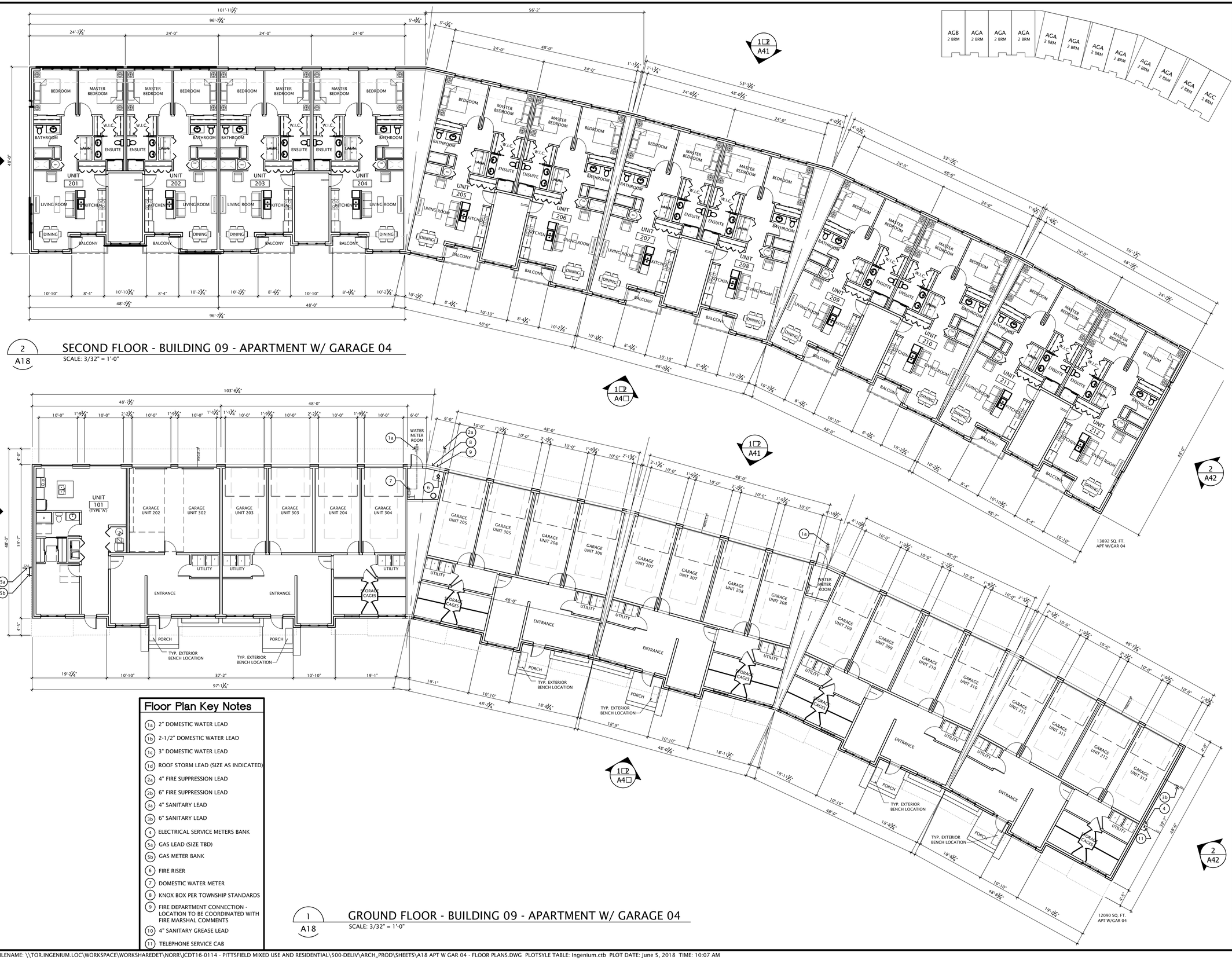
BUILDING 08 -
APARTMENT W GARAGE 03
(AG03) - FLOOR PLANS (2)

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A17Aa 95

ARCH D - 24"x36" - 610mm x 914mm (rounded)



DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	

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Keyplan

North Arrow

Detail Symbol: Detail No. / Sheet No.

CREASE LINE 24" FROM EDGE

Seal(s)

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Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

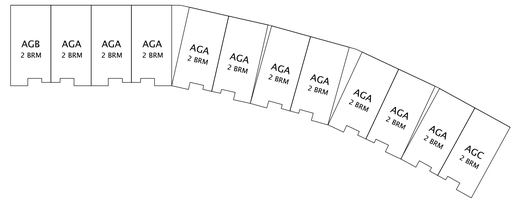
Drawing Title
BUILDING 09 -
APARTMENT W GARAGE 04
(AG04) - GROUND & SECOND FLOOR PLANS

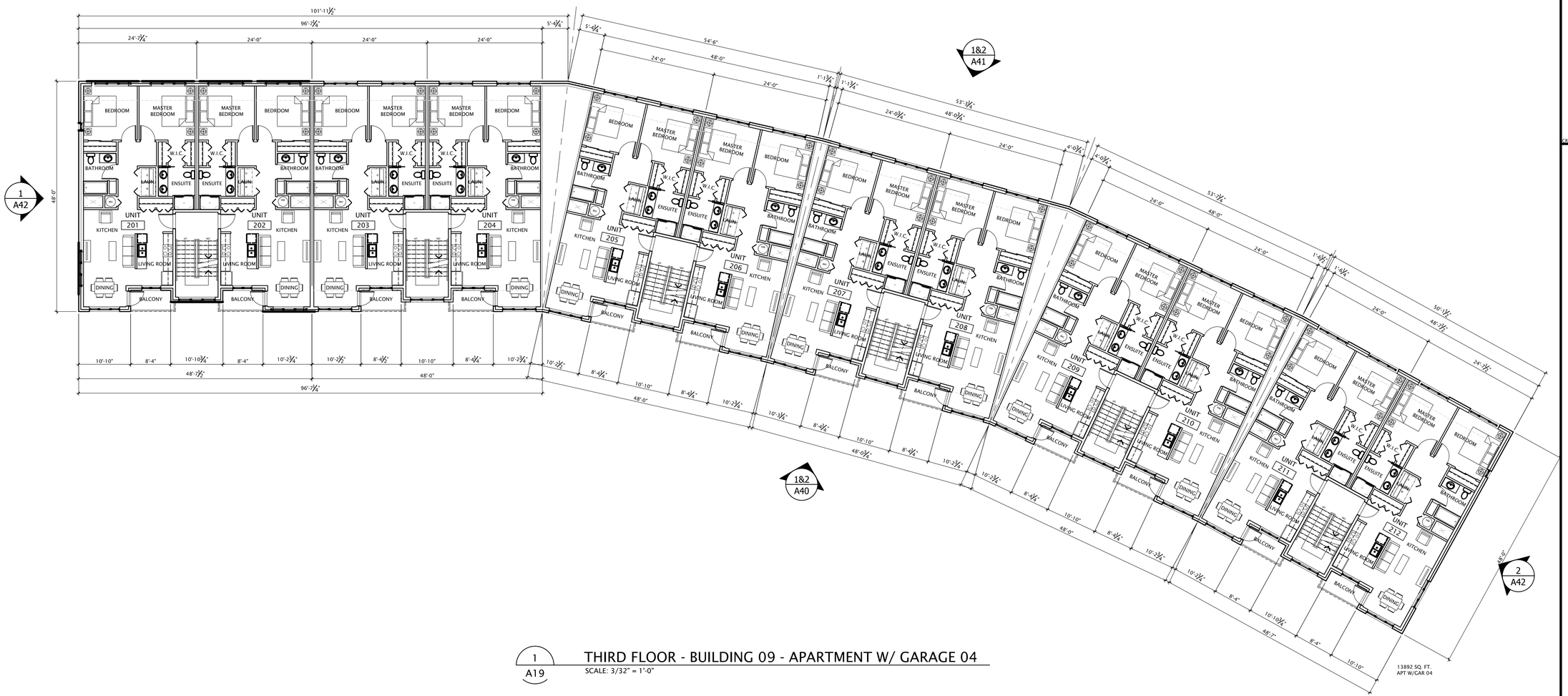
Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A18 96

ARCH D - 24"x36" - 610mm x 914mm (rounded)





1 A19 THIRD FLOOR - BUILDING 09 - APARTMENT W/ GARAGE 04

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

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	

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Keyplan

North Arrow

Detail Symbol

Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

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Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 09 -
APARTMENT W GARAGE 04
(AG04) - THIRD FLOOR PLANS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A19 97

PATH AND FILENAME: \\TOR-INGENIUM-LOC\WORKSPACE\WORKSHAREDFT\NORR\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\ARCH_PROD\SHEETS\A19 APT W GAR 04 - THIRD FLOOR PLAN.DWG, PLOTSYLE TABLE: Ingenium-Half Size-A2.ctb, PLOT DATE: April 24, 2018, TIME: 3:22 PM

ARCH D - 24"x36" - 610mm x 914mm (rounded)

AGE	AGA	AGA	AGA	AGB
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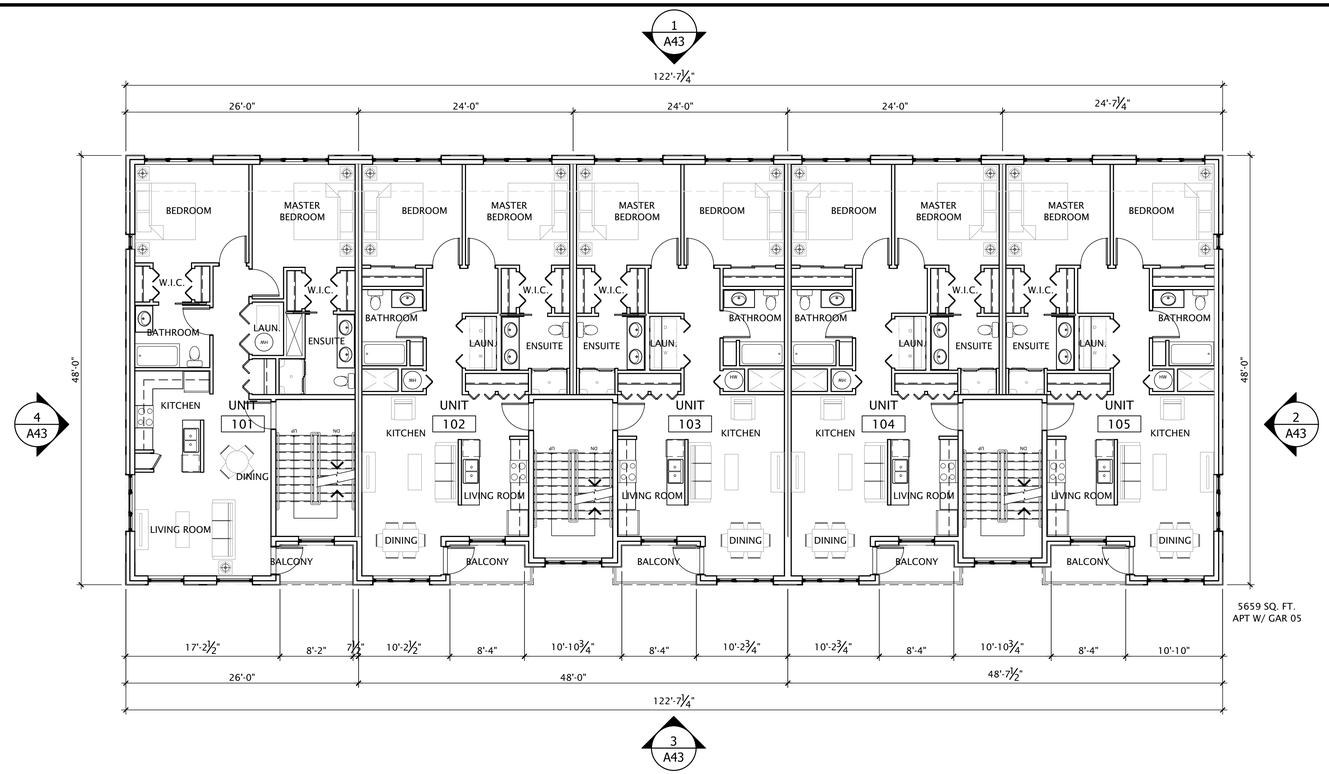
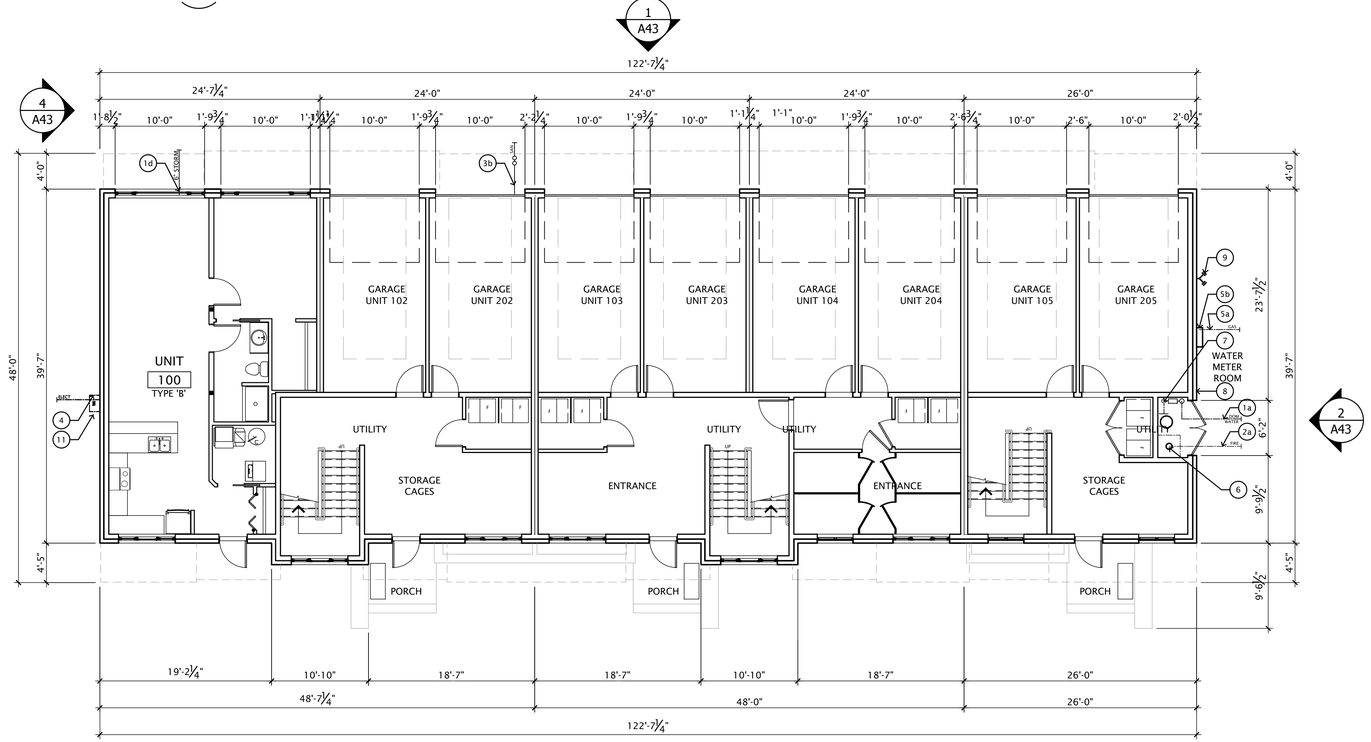


2 A20 SECOND FLOOR - BUILDING 10 - APARTMENT W/ GARAGE 05

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



1 A20 GROUND FLOOR - BUILDING 10 - APARTMENT W/ GARAGE 05

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

Floor Plan Key Notes

1a	2" DOMESTIC WATER LEAD
1b	2-1/2" DOMESTIC WATER LEAD
1c	3" DOMESTIC WATER LEAD
1d	ROOF STORM LEAD (SIZE AS INDICATED)
2a	4" FIRE SUPPRESSION LEAD
2b	6" FIRE SUPPRESSION LEAD
3a	4" SANITARY LEAD
3b	6" SANITARY LEAD
4	ELECTRICAL SERVICE METERS BANK
5a	GAS LEAD (SIZE TBD)
5b	GAS METER BANK
6	FIRE RISER
7	DOMESTIC WATER METER
8	KNOX BOX PER TOWNSHIP STANDARDS
9	FIRE DEPARTMENT CONNECTION - LOCATION TO BE COORDINATED WITH FIRE MARSHAL COMMENTS
10	4" SANITARY GREASE LEAD
11	TELEPHONE SERVICE CAB
12	FULL HEIGHT WALL AT STAIR CORRIDOR
13	42" HEIGHT WALL AT STAIR CORRIDOR

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	

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Keyplan

North Arrow

Detail Symbol

Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

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Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project

Pittsfield Mixed Use Development

Drawing Title

BUILDING 10 -
APARTMENT W GARAGE 05
(AG05) - FLOOR PLANS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A20 **98**

PATH AND FILENAME: \\TOR-INGENIUM-LOC\WORKSPACE\WORKSHAREDFT\NORR\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\ARCH_PROD\SHEETS\A20 APT W GAR 05 - FLOOR PLANS.DWG, PLOTSYLE TABLE: Ingenium.ctb, PLOT DATE: May 30, 2018, TIME: 12:26 PM

ARCH D - 24"x36" - 610mm x 914mm (rounded)

AGE	AGA	AGA	AGA	AGB
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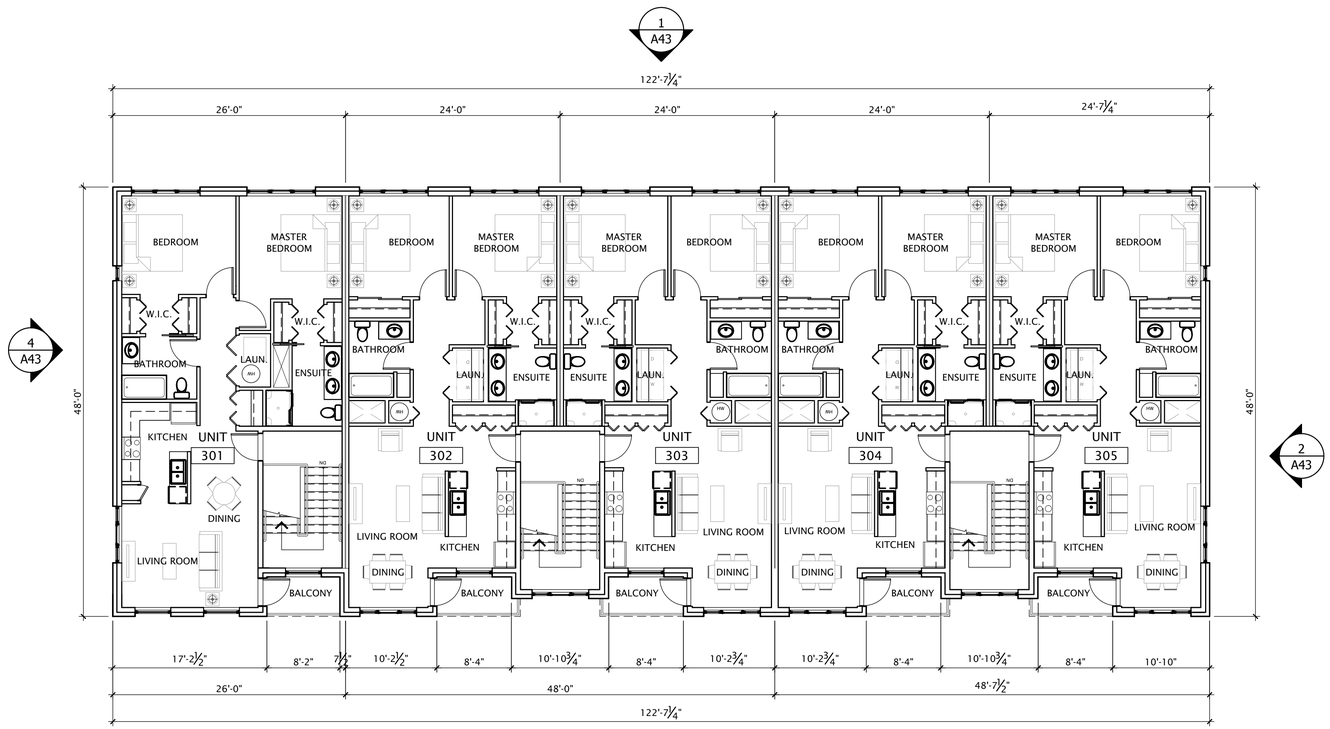

1 A20A

THIRD FLOOR - BUILDING 10 - APARTMENT W/ GARAGE 05

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

3 A43

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	

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Keyplan

North Arrow

Detail Symbol

Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

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Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client

BEZTAK

31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project

Pittsfield Mixed Use Development

Drawing Title

BUILDING 10 -
APARTMENT W GARAGE 05
(AG05) - FLOOR PLANS (2)

Check Scale (may be photo reduced)

0 1inch 0 10mm

Project No.

JCDT16.0114.00

Drawing No.

A20a 99

PATH AND FILENAME: \\TOR.INGENIUM.LOC\WORKSPACE\WORKSHAREDET\NORR\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\ARCH_PROD\SHEETS\A20 APT W GAR 05 - FLOOR PLANS.DWG, PLOTSYLE TABLE: Ingenium.ctb, PLOT DATE: June 5, 2018, TIME: 10:07 AM

ARCH D - 24"x36" - 610mmx914mm (rounded)

SOUTH-EAST VIEW

MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X07	PAINT FINISH	SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	SHERWIN WILLIAMS OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL	BUCKSKIN	ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X13	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 7019 -GAUNLET GRAY	JAMES HARDIE OR APPROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X14	PRE-FINISHED METAL COPING / TRIM	TO MATCH X13	UNICLAD or APPROVED EQUAL	
X15	ASHPALT SHINGLE	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X17	PAINT FINISH	SHERWIN-WILLIAMS - 7019 - GAUNLET GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X20	PAINT FINISH	SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	

1 / A21 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

2 / A21 EAST ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP - RE-SUBMITTAL	
11-01-2017	FSP - RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol

Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

719 Griswold Street, Suite 1000
Detroit, Michigan, 48226 USA
www.norr.com

Project Manager B. COLBURN	Drawn
Project Leader --	Checked --

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project

Pittsfield Mixed Use Development

Drawing Title

BUILDING 03 - APARTMENT 01 (AP01) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A21 **100**

PATH AND FILENAME: P:\RESIDENTIAL\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\GENERAL\DET_I_ARCHD_BDR.DWG PLOTSYLE TABLE: ---- PLOT DATE: ---- TIME: ----

ARCH D - 24"x36" - 610mmx914mm (rounded)

MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X07	PAINT FINISH	SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	SHERWIN WILLIAMS OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL	BUCKSKIN	ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X13	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 7019 -GAUNLET GRAY	JAMES HARDIE OR APPROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X14	PRE-FINISHED METAL COPING / TRIM	TO MATCH X13	UNICLAD or APPROVED EQUAL	
X15	ASHPALT SHINGLE	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X17	PAINT FINISH	SHERWIN-WILLIAMS - 7019 - GAUNLET GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X20	PAINT FINISH	SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	

1 / A22 NORTH ELEVATION
SCALE: 1/8" = 1'-0"

2 / A22 WEST ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP - RE-SUBMITTAL	
11-01-2017	FSP - RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

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Detroit, Michigan, 48226 USA
www.norr.com

Project Manager	Drawn
B. COLBURN	
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 03 - APARTMENT 01 (AP01) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A22 101

ARCH D - 24"x36" - 610mm x914mm (rounded)

NORTH-WEST VIEW

MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X07	PAINT FINISH	SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	SHERWIN WILLIAMS OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL		ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X13	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 7019 -GAUNLET GRAY	JAMES HARDIE OR APPROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X14	PRE-FINISHED METAL COPING / TRIM	TO MATCH X13	UNICLAD or APPROVED EQUAL	
X15	ASHPALT SHINGLE	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X17	PAINT FINISH	SHERWIN-WILLIAMS - 7019 - GAUNLET GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	

1 / A23 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

2 / A23 WEST ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP - RE-SUBMITTAL	
11-1-2017	FSP - RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

719 Griswold Street, Suite 1000
Detroit, Michigan, 48226 USA
www.norr.com

Project Manager	Drawn
B. COLBURN	
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 04 - 05 - APARTMENT 02_03 (AP02 - AP03) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A23

PATH AND FILENAME: P:\RESIDENTIAL\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\GENERAL\DET_I_ARCHD_BDR.DWG PLOTSYLE TABLE: ---- PLOT DATE: ---- TIME: ----

ARCH D - 24"x36" - 610mm x 914mm (rounded)

1 / A24 NORTH ELEVATION
SCALE: 1/8" = 1'-0"

MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X07	PAINT FINISH	SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	SHERWIN WILLIAMS OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL		ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X13	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 7019 -GAUNLET GRAY	JAMES HARDIE OR APPROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X14	PRE-FINISHED METAL COPING / TRIM	TO MATCH X13	UNICLAD or APPROVED EQUAL	
X15	ASHPALT SHINGLE	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X17	PAINT FINISH	SHERWIN-WILLIAMS - 7019 - GAUNLET GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	

2 / A24 EAST ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP - RE-SUBMITTAL	
11-1-2017	FSP - RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

719 Griswold Street, Suite 1000
Detroit, Michigan, 48226 USA
www.norr.com

Project Manager
B. COLBURN

Drawn

Project Leader
--

Checked
--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 04 - 05 - APARTMENT 02_03 (AP02 - AP03) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A24

PATH AND FILENAME: P:\RESIDENTIAL\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\GENERAL\DET_I_ARCHD_BDR.DWG PLOTSYLE TABLE: ---- PLOT DATE: ---- TIME: ----

ARCH D - 24"x36" - 610mm x914mm (rounded)

5 / A25 SOUTH-WEST VIEW
SCALE:

3 / A25 NORTH ELEVATION
SCALE: 1/8" = 1'-0"

MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X07	PAINT FINISH	SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	SHERWIN WILLIAMS OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL		ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X13	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 7019 -GAUNLET GRAY	JAMES HARDIE OR APPROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X14	PRE-FINISHED METAL COPING / TRIM	TO MATCH X13	UNICLAD or APPROVED EQUAL	
X15	ASHPALT SHINGLE	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X17	PAINT FINISH	SHERWIN-WILLIAMS - 7019 - GAUNLET GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	

4 / A25 EAST ELEVATION
SCALE: 1/8" = 1'-0"

1 / A25 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

2 / A25 WEST ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP - RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

719 Griswold Street, Suite 1000
Detroit, Michigan, 48226 USA
www.norr.com

Project Manager	Drawn
B. COLBURN	
Project Leader	Checked
--	--

Client
BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 17 - CLUBHOUSE (CH01) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A25 104

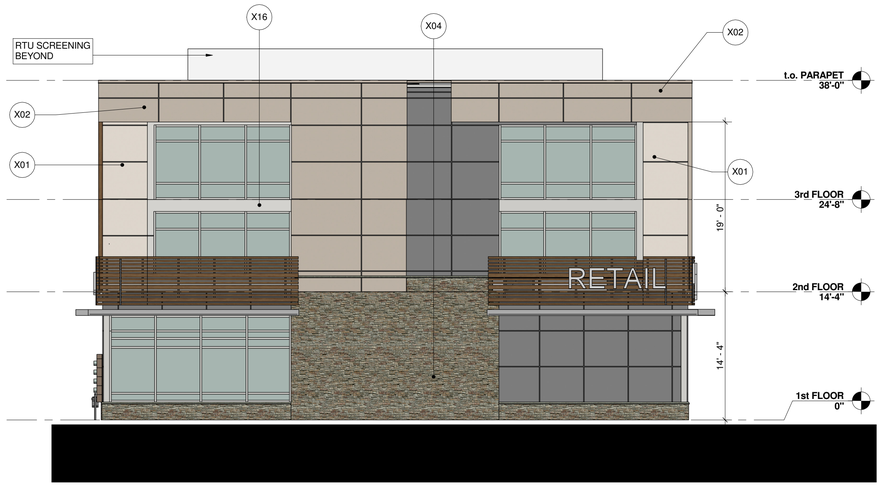
ARCH D - 24"x36" - 610mmx914mm (rounded)

MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X05	PRE-FINISHED METAL COPING / TRIM	TO MATCH X02	UNICLAD or APPROVED EQUAL	
X06	MEMBRANE ROOF	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X07	PAINT FINISH	SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	SHERWIN WILLIAMS OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL	BUCKSKIN	ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X13	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 7019 -GAUNLET GRAY	JAMES HARDIE OR APPROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X15	ASHPALT SHINGLE	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X16	STOREFRONT WINDOW FRAME	CLEAR ANODIZED	KAWNEER OR APPROVED EQUAL	ALUMINUM
X17	PAINT FINISH	MATCH SHERWIN-WILLIAMS - 7019 -GAUNLET GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X18	PRE-FINISHED METAL COPING/TRIM	TO MATCH X13	UNICLAD or APPROVED EQUAL	
X20	PAINT FINISH	SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X21	STOREFRONT ALUMINUM TRIM	CLEAR ANODIZED		ALUMINUM
X22	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	1x3 TUBE - HORIZONTAL
X23	ALUMINUM CANOPY	BLACK	MAPES ARCHITECTURAL CANOPIES	

3 / A26 NORTH-WEST VIEW
SCALE:

NOTE: EXTERIOR SOFFIT AND WALL RETURN AT BALCONY TO MATCH X03 AS INDICATED



1 / A26 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

2 / A26 WEST ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP - RE-SUBMITTAL	
11-01-2017	FSP - RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

719 Griswold Street, Suite 1000
Detroit, Michigan, 48226 USA
www.norr.com

Project Manager	Drawn
B. COLBURN	
Project Leader	Checked
--	--

Client
BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 01 - MULTI-TENANT 01 (MT01) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A26 **105**

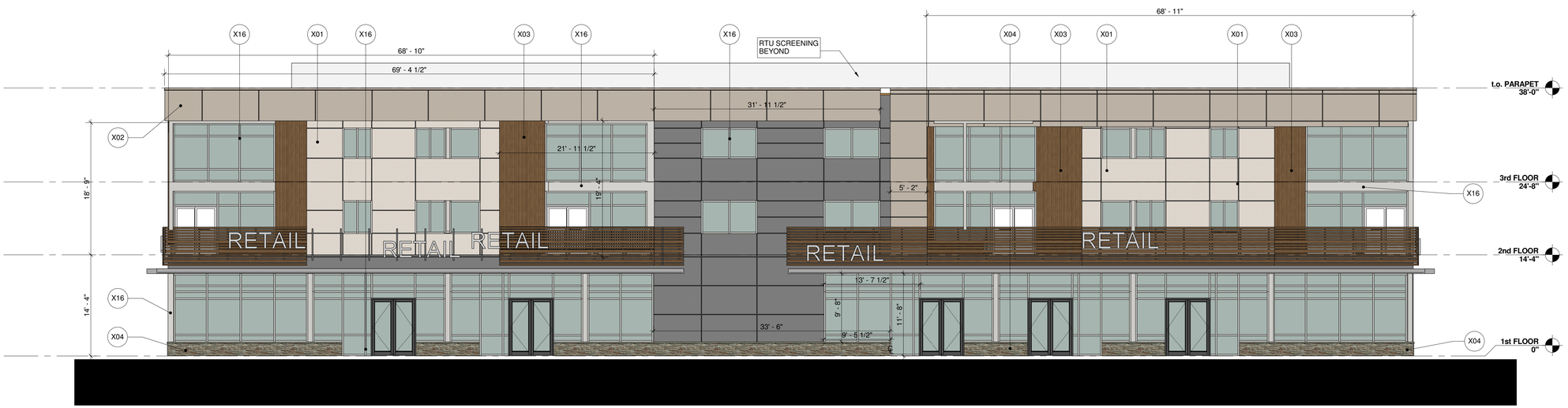
PATH AND FILENAME: P:\RESIDENTIAL\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\GENERAL\DET_I_ARCHD_BDR.DWG PLOTSYLE TABLE: ---- PLOT DATE: ---- TIME: ----

ARCH D - 24"x36" - 610mmx914mm (rounded)

MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X05	PRE-FINISHED METAL COPING / TRIM	TO MATCH X02	UNICLAD or APPROVED EQUAL	
X06	MEMBRANE ROOF	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X07	PAINT FINISH	SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	SHERWIN WILLIAMS OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL	BUCKSKIN	ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X13	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 7019 -GAUNLET GRAY	JAMES HARDIE OR APPROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X15	ASHPALT SHINGLE	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X16	STOREFRONT WINDOW FRAME	CLEAR ANODIZED	KAWNEER OR APPROVED EQUAL	ALUMINUM
X17	PAINT FINISH	MATCH SHERWIN-WILLIAMS - 7019 -GAUNLET GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X18	PRE-FINISHED METAL COPING/TRIM	TO MATCH X13	UNICLAD or APPROVED EQUAL	
X20	PAINT FINISH	SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X21	STOREFRONT ALUMINUM TRIM	CLEAR ANODIZED		ALUMINUM
X22	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	1x3 TUBE - HORIZONTAL
X23	ALUMINUM CANOPY	BLACK	MAPES ARCHITECTURAL CANOPIES	

1 / A27 NORTH ELEVATION
SCALE: 1/8" = 1'-0"



2 / A27 EAST ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP - RE-SUBMITTAL	
11-01-2017	FSP - RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

719 Griswold Street, Suite 1000
Detroit, Michigan, 48226 USA
www.norr.com

Project Manager	Drawn
B. COLBURN	
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 01 - MULTI-TENANT 01 (MT01) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A27 106

ARCH D - 24"x36" - 610mm x 914mm (rounded)

5 / A28 NORTH-WEST VIEW
SCALE:

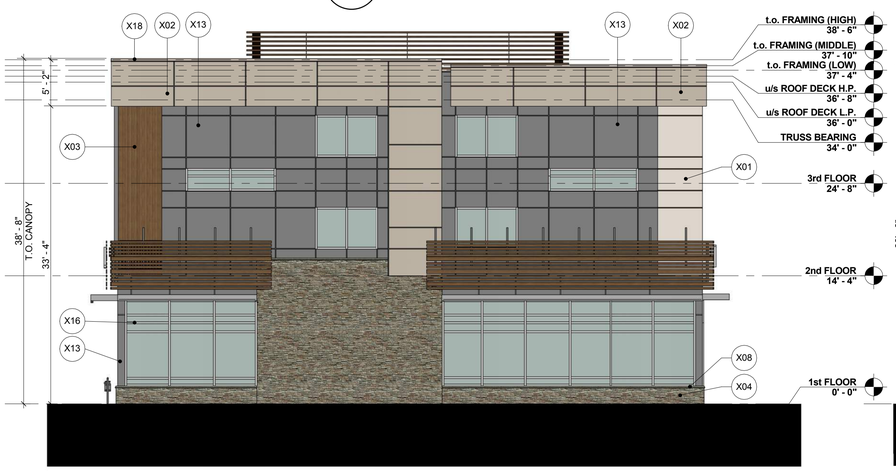
MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X05	PRE-FINISHED METAL COPING / TRIM	TO MATCH X03	UNICLAD or APPROVED EQUAL	
X07	PAINT FINISH	SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	SHERWIN WILLIAMS OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL	BUCKSKIN	ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X10	ALUMINUM CANOPY	Selected from Kynar Colors Available	MAPES ARCHITECTURAL CANOPIES	ANODIZED ALUMINUM
X11	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01	UNICLAD or APPROVED EQUAL	
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X13	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 7019 -GAUNLET GRAY	JAMES HARDIE OR APPROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X14	PRE-FINISHED METAL COPING / TRIM	TO MATCH X13	UNICLAD or APPROVED EQUAL	
X15	ASHPALT SHINGLE	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X16	STOREFRONT WINDOW FRAME	CLEAR ANODIZED	KAWNEER OR APPROVED EQUAL	ALUMINUM
X17	PAINT FINISH	SHERWIN-WILLIAMS - 7019 - GAUNLET GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X18	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01	UNICLAD or APPROVED EQUAL	
X20	PAINT FINISH	SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	

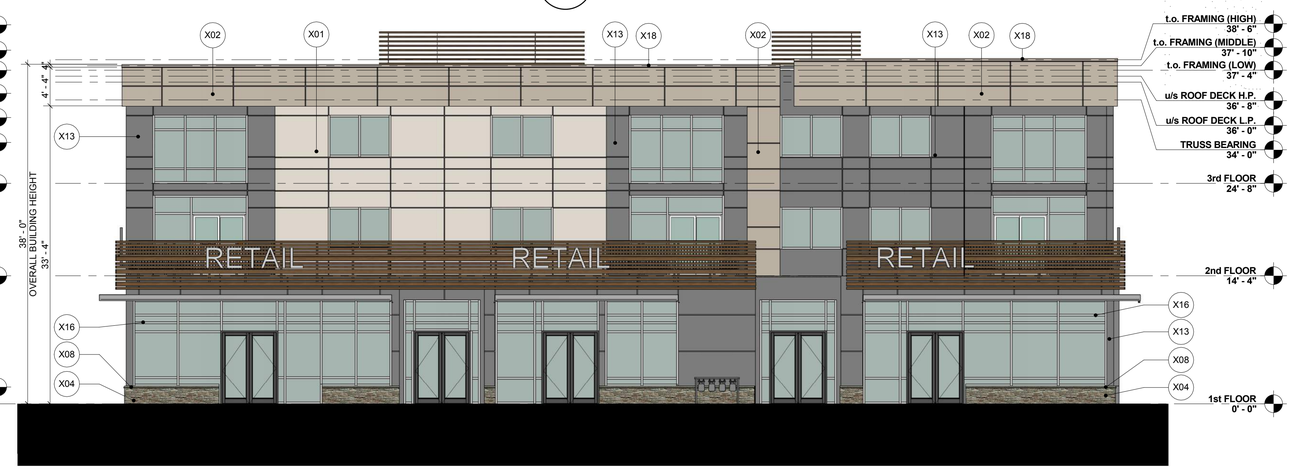
NOTE: EXTERIOR SOFFIT AND WALL RETURN AT BALCONY TO MATCH X03 AS INDICATED

3 / A28 NORTH ELEVATION
SCALE: 1/8" = 1'-0"

4 / A28 EAST ELEVATION
SCALE: 1/8" = 1'-0"



1 / A28 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



2 / A28 WEST ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP - RE-SUBMITTAL	
11-01-2017	FSP - RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

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An Ingenium Group Company

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Detroit, Michigan, 48226 USA
www.norr.com

Project Manager	Drawn
B. COLBURN	--
Project Leader	Checked
--	--

Client
BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 02 - MULTI-TENANT 02 (MT02) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A28 107

PATH AND FILENAME: P:\RESIDENTIAL\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\GENERAL\DET_I_ARCHD_BDR.DWG PLOTSYLE TABLE: ---- PLOT DATE: ---- TIME: ----

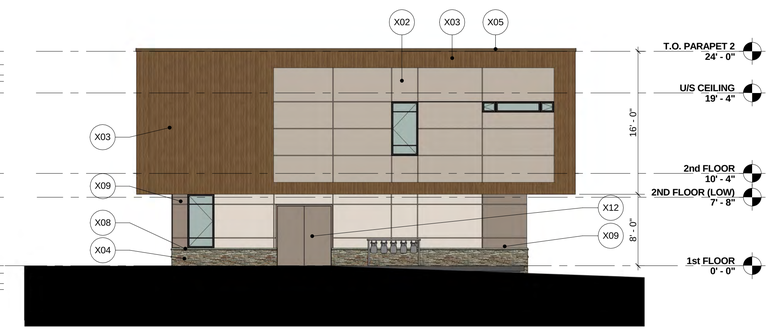
ARCH D - 24"x36" - 610mm x914mm (rounded)

SOUTH-WEST VIEW

MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X06	MEMBRANE ROOF	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X07	PAINT FINISH - DARK GREY			
X08	PRE-CAST CONCRETE SILL		ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X11	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01.	UNICLAD or APPROVED EQUAL	
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	

3 / A30 NORTH ELEVATION
SCALE: 1/8" = 1'-0"



4 / A30 EAST ELEVATION
SCALE: 1/8" = 1'-0"

1 / A30 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

2 / A30 WEST ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

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An Ingenium Group Company

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www.norr.com

Project Manager	Drawn
B. COLBURN	
Project Leader	Checked
--	--

Client
BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 12 - ROWHOUSE 02 (RH02) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A30 109

PATH AND FILENAME: P:\RESIDENTIAL\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\GENERAL\DET_I_ARCHD_BDR.DWG PLOTSYLE TABLE: ---- PLOT DATE: ---- TIME: ----

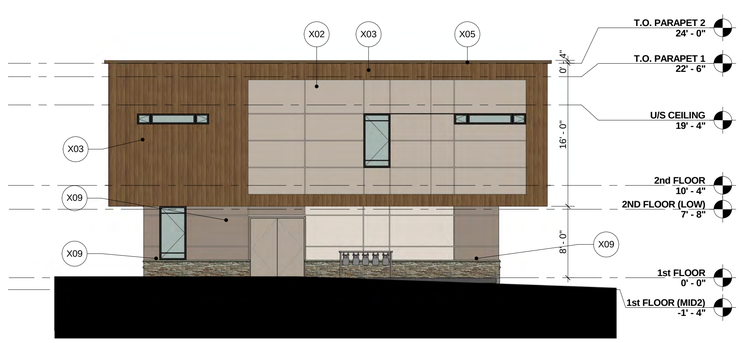
ARCH D - 24"x36" - 610mmx914mm (rounded)

NORTH-EAST VIEW

MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X05	PRE-FINISHED METAL COPING / TRIM	TO MATCH X03	UNICLAD or APPROVED EQUAL	
X06	MEMBRANE ROOF	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X07	PAINT FINISH	SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	SHERWIN WILLIAMS OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL		ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X11	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01	UNICLAD or APPROVED EQUAL	

3 / A31 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



4 / A31 WEST ELEVATION
SCALE: 1/8" = 1'-0"

1 / A31 NORTH ELEVATION
SCALE: 1/8" = 1'-0"

2 / A31 EAST ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

719 Griswold Street, Suite 1000
Detroit, Michigan, 48226 USA
www.norr.com

Project Manager B. COLBURN	Drawn
Project Leader --	Checked --

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 13 - ROWHOUSE 03 (RH03) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A31 110

ARCH D - 24"x36" - 610mmx914mm (rounded)

NORTH-EAST VIEW

MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE		REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X05	PRE-FINISHED METAL COPING / TRIM	TO MATCH X03	UNICLAD or APPROVED EQUAL	
X06	MEMBRANE ROOF	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL		ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X11	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01	UNICLAD or APPROVED EQUAL	
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	

REFER TO 2 / A32

1 / A32 NORTH ELEVATION - EAST WING
SCALE: 1/8" = 1'-0"

REFER TO 1 / A32

2 / A32 NORTH ELEVATION - WEST WING
SCALE: 1/8" = 1'-0"

3 / A32 EAST ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

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Detroit, Michigan, 48226 USA
www.norr.com

Project Manager B. COLBURN	Drawn
Project Leader --	Checked --

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 14 - ROWHOUSE 04 (RH04) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A32

PATH AND FILENAME: P:\RESIDENTIAL\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\GENERAL\DET_I_ARCHD_BDR.DWG PLOTSYLE TABLE: ---- PLOT DATE: ---- TIME: ----

ARCH D - 24"x36" - 610mm x 914mm (rounded)

MATERIAL LEGEND

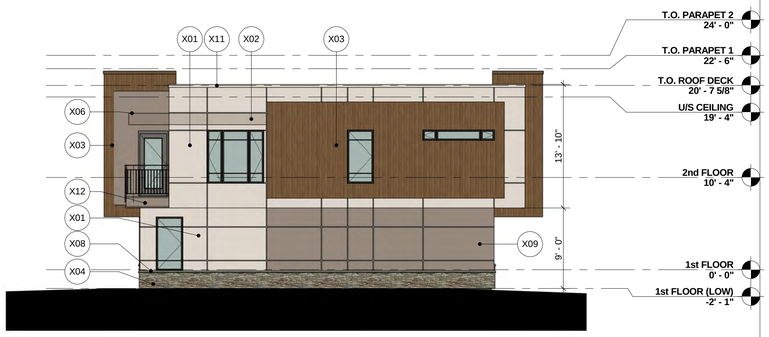
	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE		REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X05	PRE-FINISHED METAL COPING / TRIM	TO MATCH X03	UNICLAD or APPROVED EQUAL	
X06	MEMBRANE ROOF	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL		ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X11	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01	UNICLAD or APPROVED EQUAL	
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	

REFER TO 2 / A33

1 / A33 SOUTH ELEVATION - WEST WING
SCALE: 1/8" = 1'-0"

REFER TO 1 / A33

2 / A33 SOUTH ELEVATION - EAST WING
SCALE: 1/8" = 1'-0"



3 / A33 WEST ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

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An Ingenium Group Company

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Detroit, Michigan, 48226 USA
www.norr.com

Project Manager	Drawn
B. COLBURN	
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 14 - ROWHOUSE 04 (RH04) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A33

PATH AND FILENAME: P:\RESIDENTIAL\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\GENERAL\DET_I_ARCHD_BDR.DWG PLOTSYLE TABLE: ---- PLOT DATE: ---- TIME: ----

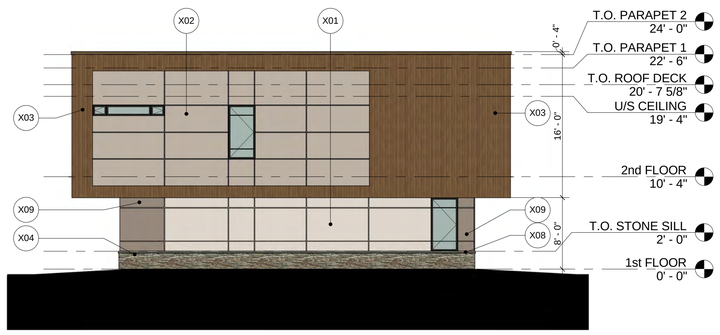
ARCH D - 24"x36" - 610mm x 914mm (rounded)

5
A34

SOUTH-EAST VIEW
SCALE:

1
A34

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



2
A34

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

MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE		REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X05	PRE-FINISHED METAL COPING / TRIM	TO MATCH X03	UNICLAD or APPROVED EQUAL	
X06	MEMBRANE ROOF	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL		ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X11	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01	UNICLAD or APPROVED EQUAL	
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

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Detroit, Michigan, 48226 USA
www.norr.com

Project Manager	Drawn
B. COLBURN	
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 15 - ROWHOUSE 05 (RH05) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A34

PATH AND FILENAME: P:\RESIDENTIAL\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\GENERAL\DET_I_ARCHD_BDR.DWG PLOTSTYLE TABLE: ---- PLOT DATE: ---- TIME: ----

ARCH D - 24"x36" - 610mmx914mm (rounded)

1 / A35 WEST ELEVATION
SCALE: 1/8" = 1'-0"

2 / A35 NORTH ELEVATION
SCALE: 1/8" = 1'-0"

MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE		REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X05	PRE-FINISHED METAL COPING / TRIM	TO MATCH X03	UNICLAD or APPROVED EQUAL	
X06	MEMBRANE ROOF	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL		ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X11	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01	UNICLAD or APPROVED EQUAL	
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

719 Griswold Street, Suite 1000
Detroit, Michigan, 48226 USA
www.norr.com

Project Manager B. COLBURN	Drawn
Project Leader --	Checked --

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 15 - ROWHOUSE 05 (RH05) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A35

PATH AND FILENAME: P:\RESIDENTIAL\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\GENERAL\DET_I_ARCHD_BDR.DWG PLOTSYLE TABLE: ---- PLOT DATE: ---- TIME: ----

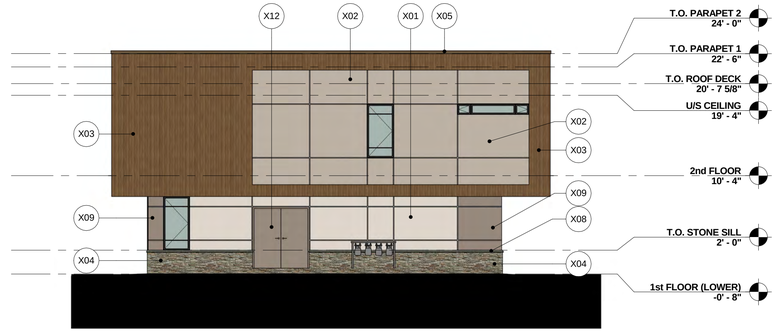
ARCH D - 24"x36" - 610mmx914mm (rounded)

5 / A36 NORTH-EAST VIEW
SCALE:

MATERIAL LEGEND

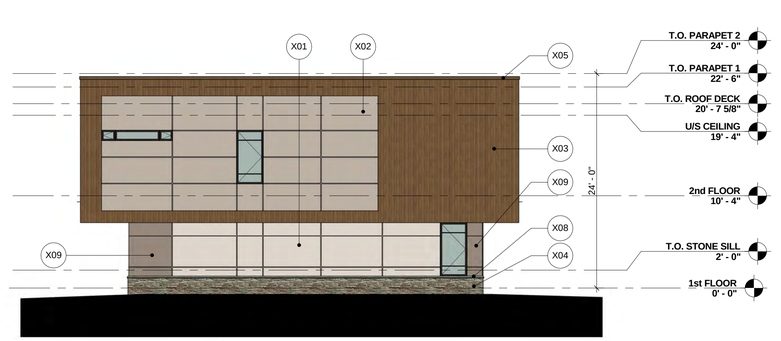
	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	JAMES HARDIE OR APPROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X05	PRE-FINISHED METAL COPING / TRIM	TO MATCH X03	UNICLAD or APPROVED EQUAL	
X06	MEMBRANE ROOF	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL		ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X11	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01	UNICLAD or APPROVED EQUAL	

3 / A36 NORTH ELEVATION
SCALE: 1/8" = 1'-0"



4 / A36 EAST ELEVATION
SCALE: 1/8" = 1'-0"

1 / A36 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



2 / A36 WEST ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

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www.norr.com

Project Manager B. COLBURN	Drawn
Project Leader --	Checked --

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 16 - ROWHOUSE 06 (RH06) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A36

PATH AND FILENAME: P:\RESIDENTIAL\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\GENERAL\DET_I_ARCHD_BDR.DWG PLOTSYLE TABLE: ---- PLOT DATE: ---- TIME: ----

ARCH D - 24"x36" - 610mmx914mm (rounded)

SOUTH-WEST VIEW

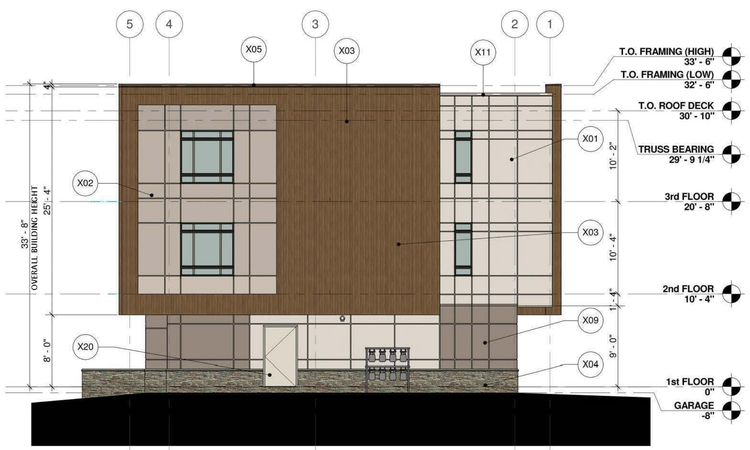
MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X05	PRE-FINISHED METAL COPING / TRIM	TO MATCH X03	UNICLAD or APPROVED EQUAL	
X06	MEMBRANE ROOF	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X07	PAINT FINISH	SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	SHERWIN WILLIAMS OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL	BUCKSKIN	ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X10	ALUMINUM CANOPY	Selected from Kynar Colors Available	MAPES ARCHITECTURAL CANOPIES	ANODIZED ALUMINUM
X11	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01	UNICLAD or APPROVED EQUAL	
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X13	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 7019 -GAUNLET GRAY	JAMES HARDIE OR APPROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X15	ASHPALT SHINGLE	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X16	STOREFRONT WINDOW FRAME	CLEAR ANODIZED	KAWNEER OR APPROVED EQUAL	ALUMINUM
X17	PAINT FINISH	SHERWIN-WILLIAMS - 7019 - GAUNLET GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X18	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01	UNICLAD or APPROVED EQUAL	
X20	PAINT FINISH	SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X21	STOREFRONT ALUMINUM TRIM	CLEAR ANODIZED		ALUMINUM
X22	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	1x3 TUBE - HORIZONTAL
X23	VINYL WINDOW FRAME		MI WINDOWS	
X24	BALCONY WOOD DECKING	NATURAL		PRESSURE TREATED WOOD
X25			Zurn Industries	

3 / A37 WEST ELEVATION
SCALE: 1/8" = 1'-0"

4 / A37 NORTH ELEVATION
SCALE: 1/8" = 1'-0"

1 / A37 EAST ELEVATION
SCALE: 1/8" = 1'-0"



2 / A37 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP - RE-SUBMITTAL	
11-01-2017	FSP - RE-SUBMITTAL	
05-30-2018	FSP - RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

719 Griswold Street, Suite 1000
Detroit, Michigan, 48226 USA
www.norr.com

Project Manager	Drawn
B. COLBURN	--
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 06 - APARTMENT W_GARAGE 01 (AG01) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A37 116

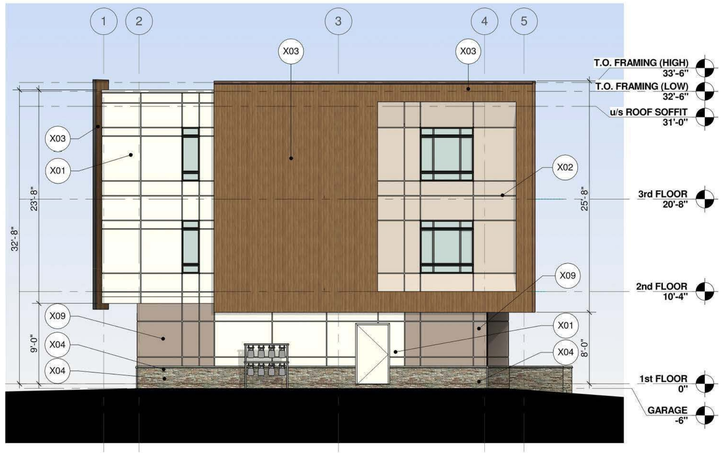
ARCH D - 24"x36" - 610mmx914mm (rounded)

SOUTH-WEST VIEW

MATERIAL LEGEND

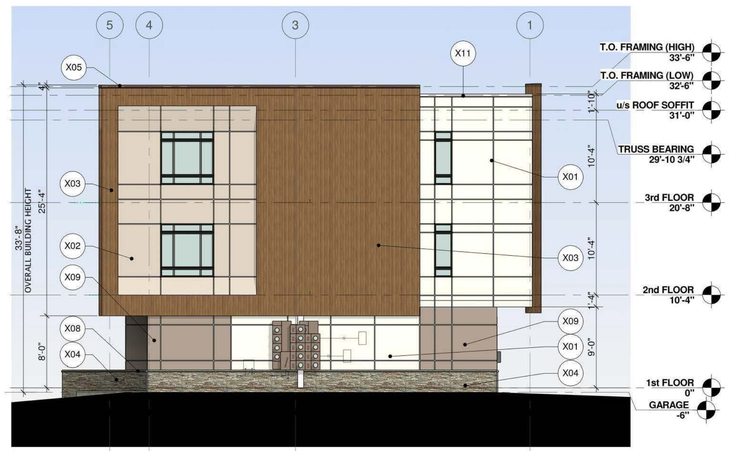
	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS 6073 - PERFECT GREIGE	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X05	PRE-FINISHED METAL COPING / TRIM	TO MATCH X03	UNICLAD or APPROVED EQUAL	
X06	MEMBRANE ROOF	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X07	PAINT FINISH	SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	SHERWIN WILLIAMS OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL	BUCKSKIN	ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X20	PAINT FINISH	SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	

3 / A38 EAST ELEVATION
SCALE: 1/8" = 1'-0"



4 / A38 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

1 / A38 WEST ELEVATION
SCALE: 1/8" = 1'-0"



2 / A38 NORTH ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP - RE-SUBMITTAL	
11-01-2017	FSP - RE-SUBMITTAL	
05-30-2018	FSP - RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

719 Griswold Street, Suite 1000
Detroit, Michigan, 48226 USA
www.norr.com

Project Manager	Drawn
B. COLBURN	--
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 07 - APARTMENT W_GARAGE 02 (AG02) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A38

117

PATH AND FILENAME: P:\RESIDENTIAL\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\GENERAL\DET_I_ARCHD_BDR.DWG PLOTSYLE TABLE: ---- PLOT DATE: ---- TIME: ----

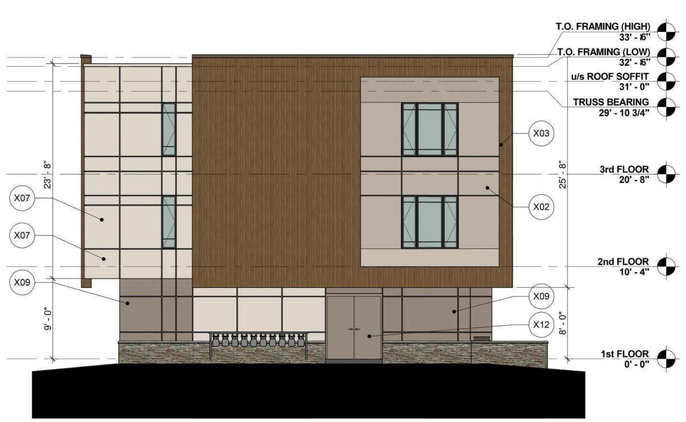
ARCH D - 24"x36" - 610mmx914mm (rounded)

NORTH-EAST VIEW

MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X05	PRE-FINISHED METAL COPING / TRIM	TO MATCH X03	UNICLAD or APPROVED EQUAL	
X06	MEMBRANE ROOF	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL		ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X11	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01	UNICLAD or APPROVED EQUAL	
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	

3 / A39 WEST ELEVATION
SCALE: 1/8" = 1'-0"



4 / A39 NORTH ELEVATION
SCALE: 1/8" = 1'-0"

1 / A39 EAST ELEVATION
SCALE: 1/8" = 1'-0"

2 / A39 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06- 09- 2017	FSP/ENG SUBMITTAL	
08- 17- 2017	FSP - RE- SUBMITTAL	
11- 01- 2017	FSP - RE- SUBMITTAL	
05-30-2018	FSP - RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

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Project Manager	Drawn
B. COLBURN	
Project Leader	Checked
- -	- -

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 08 - APARTMENT W_GARAGE 03 (AG03) - ELEVATIONS

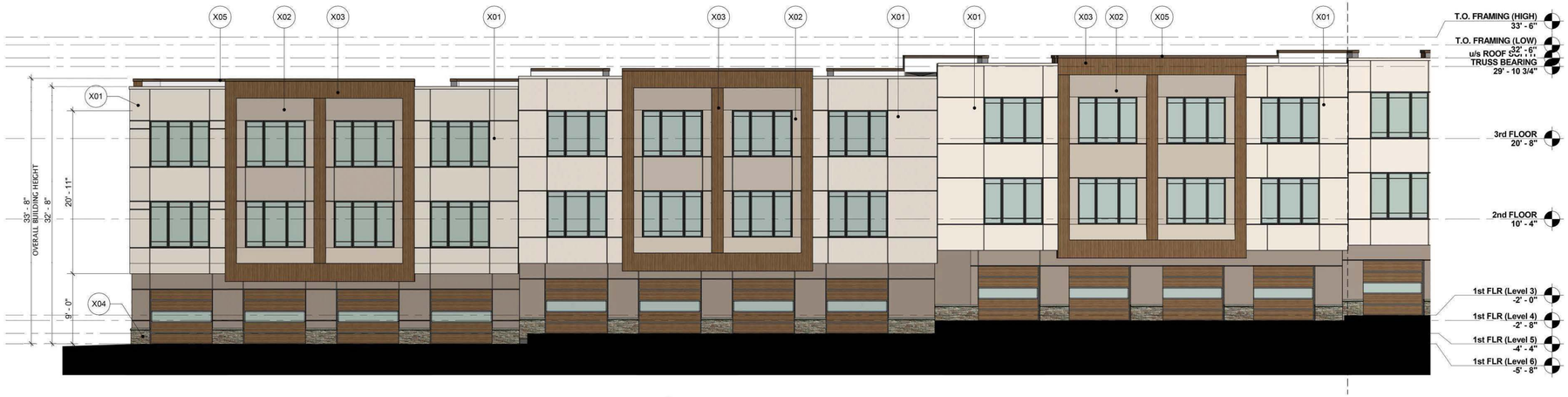
Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A39 118

ARCH D - 24"x36" - 610mmx914mm (rounded)

1 / A40 PARTIAL SOUTH ELEVATION
SCALE: 1/8" = 1'-0"



2 / A40 PARTIAL SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

NORTH-WEST VIEW

MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X05	PRE-FINISHED METAL COPING / TRIM	TO MATCH X03	UNICLAD or APPROVED EQUAL	
X06	MEMBRANE ROOF	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X07	PAINT FINISH	SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	SHERWIN WILLIAMS OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL		ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X11	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01	UNICLAD or APPROVED EQUAL	
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	

DATE	ISSUED FOR	REV
06- 09- 2017	FSP/ENG SUBMITTAL	
08- 17- 2017	FSP - RE- SUBMITTAL	
11- 01- 2017	FSP - RE- SUBMITTAL	
05-30-2018	FSP - RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol

Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

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Project Manager	Drawn
B. COLBURN	
Project Leader	Checked
- -	- -

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 09 - APARTMENT W/ GARAGE 04 (AG04) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A40

119

ARCH D - 24"x36" - 610mmx914mm (rounded)

1 / A41 PARTIAL NORTH ELEVATION
SCALE: 1/8" = 1'-0"

2 / A41 PARTIAL NORTH ELEVATION
SCALE: 1/8" = 1'-0"

MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X05	PRE-FINISHED METAL COPING / TRIM	TO MATCH X03	UNICLAD or APPROVED EQUAL	
X06	MEMBRANE ROOF	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X07	PAINT FINISH	SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	SHERWIN WILLIAMS OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL		ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X11	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01	UNICLAD or APPROVED EQUAL	
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	

DATE	ISSUED FOR	REV
06- 09- 2017	FSP/ENG SUBMITTAL	
08- 17- 2017	FSP - RE- SUBMITTAL	
11- 01- 2017	FSP - RE- SUBMITTAL	
05-30-2018	FSP - RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

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Project Manager B. COLBURN	Drawn
Project Leader - -	Checked - -

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

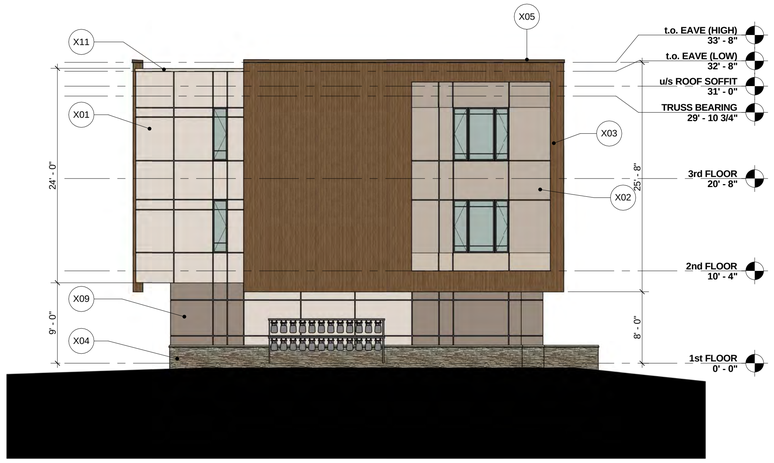
Drawing Title
BUILDING 09 - APARTMENT W/ GARAGE 04 (AG04) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

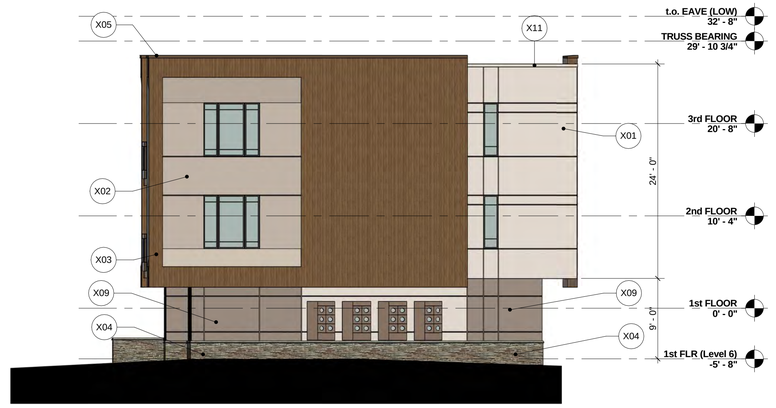
Project No.
JCDT16.0114.00

Drawing No.
A41 120

ARCH D - 24"x36" - 610mmx914mm (rounded)



1 A42 EAST ELEVATION
SCALE: 1/8" = 1'-0"



2 A42 WEST ELEVATION
SCALE: 1/8" = 1'-0"

MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X05	PRE-FINISHED METAL COPING / TRIM	TO MATCH X03	UNICLAD or APPROVED EQUAL	
X06	MEMBRANE ROOF	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X07	PAINT FINISH	SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	SHERWIN WILLIAMS OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL		ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X11	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01	UNICLAD or APPROVED EQUAL	
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP - RE-SUBMITTAL	
11-01-2017	FSP - RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

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Project Manager
B. COLBURN

Drawn

Project Leader
- -

Checked
- -

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
BUILDING 09 - APARTMENT W/ GARAGE 04 (AG04) - ELEVATIONS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A42 121

ARCH D - 24"x36" - 610mmx914mm (rounded)

NORTH-EAST VIEW

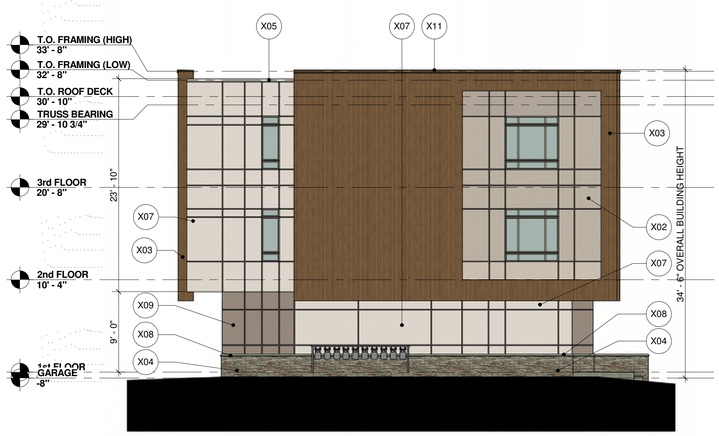
MATERIAL LEGEND

	DESCRIPTION	COLOR	MANUFACTURER	STYLE / MATERIAL
X01	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X02	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X03	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	6" V GROOVE SIDING - VERTICAL
X04	STONE VENEER	CASTAWAY	ELDORADO STONE	STACKED STONE
X05	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01	UNICLAD or APPROVED EQUAL	
X06	MEMBRANE ROOF	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X07	PAINT FINISH	SHERWIN-WILLIAMS - 6073 - PERFECT GREIGE	SHERWIN WILLIAMS OR APPROVED EQUAL	
X08	PRE-CAST CONCRETE SILL	BUCKSKIN	ELDORADO STONE	CHISELED EDGE WAINSCOT SILL
X09	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	JAMES HARDIE OR APROVED EQUAL	REVEAL PANEL SYSTEM - COARSE
X10	ALUMINUM CANOPY	Selected from Kynar Colors Available	MAPES ARCHITECTURAL CANOPIES	ANODIZED ALUMINUM
X11	PRE-FINISHED METAL COPING / TRIM	TO MATCH X03	UNICLAD or APPROVED EQUAL	
X12	PAINT FINISH	SHERWIN-WILLIAMS - 6074 - SPALDING GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X13	FIBER-CEMENT PANEL SIDING	MATCH SHERWIN-WILLIAMS - 7019 -GAUNLET GRAY	JAMES HARDIE OR APPROVED EQUAL	REVEAL PANEL SYSTEM - SMOOTH
X15	ASHPALT SHINGLE	DARK GREY	FIRESTONE OR APPROVED EQUAL	
X16	STOREFRONT WINDOW FRAME	CLEAR ANODIZED	KAWNEER OR APPROVED EQUAL	ALUMINUM
X17	PAINT FINISH	SHERWIN-WILLIAMS - 7019 - GAUNLET GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X18	PRE-FINISHED METAL COPING / TRIM	TO MATCH X01	UNICLAD or APPROVED EQUAL	
X20	PAINT FINISH	SHERWIN-WILLIAMS - 6071 - POPULAR GRAY	SHERWIN WILLIAMS OR APPROVED EQUAL	
X21	STOREFRONT ALUMINUM TRIM	CLEAR ANODIZED		ALUMINUM
X22	SIMULATED WOOD METAL SIDING	LIGHT NATURAL WALNUT	LONGBOARD	1x3 TUBE - HORIZONTAL
X23	VINYL WINDOW FRAME		MI WINDOWS	
X24	BALCONY WOOD DECKING	NATURAL		PRESSURE TREATED WOOD

3 A43 EAST ELEVATION
SCALE: 1/8" = 1'-0"

4 A43 NORTH ELEVATION
SCALE: 1/8" = 1'-0"

1 A43 WEST ELEVATION
SCALE: 1/8" = 1'-0"



2 A43 SOUTH ELEVATION
SCALE: 1/8" = 1'-0"

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP - RE-SUBMITTAL	
11-01-2017	FSP - RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol

Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company

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Project Manager	Drawn
B. COLBURN	- -
Project Leader	**Checked**
- -	- -

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project

Pittsfield Mixed Use Development

Drawing Title

BUILDING 10 - APARTMENT W_GARAGE 05 (AG05) - ELEVATIONS

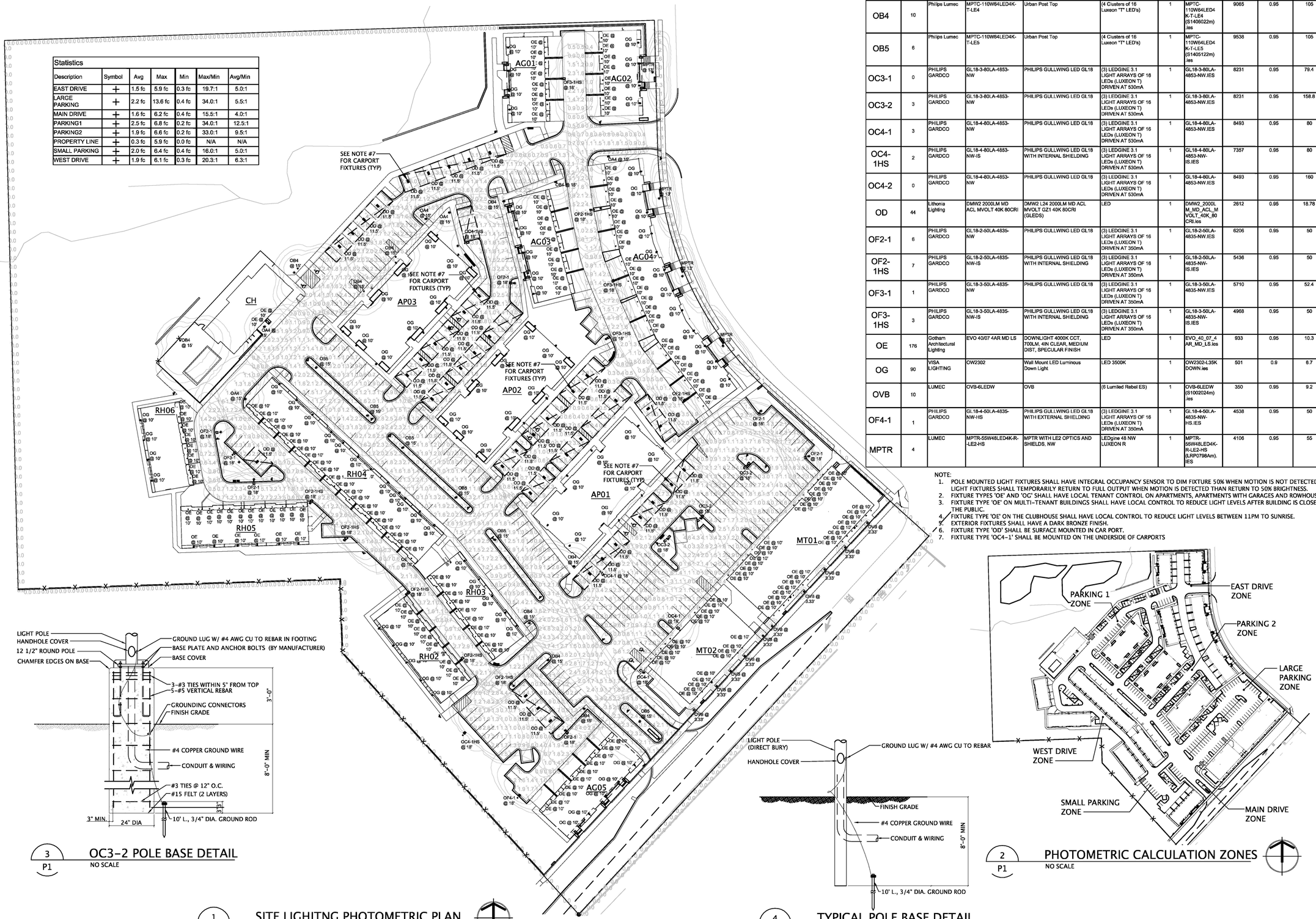
Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
A43 122

ARCH D - 24"x36" - 610mmx914mm (rounded)

Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
EAST DRIVE	+	1.5 fc	5.9 fc	0.3 fc	19.7:1	5.0:1
LARGE PARKING	+	2.2 fc	13.6 fc	0.4 fc	34.0:1	5.5:1
MAIN DRIVE	+	1.6 fc	6.2 fc	0.4 fc	15.5:1	4.0:1
PARKING1	+	2.5 fc	6.8 fc	0.2 fc	34.0:1	12.5:1
PARKING2	+	1.9 fc	6.6 fc	0.2 fc	33.0:1	9.5:1
PROPERTY LINE	+	0.3 fc	5.9 fc	0.0 fc	N/A	N/A
SMALL PARKING	+	2.0 fc	6.4 fc	0.4 fc	16.0:1	5.0:1
WEST DRIVE	+	1.9 fc	6.1 fc	0.3 fc	20.3:1	6.3:1



3 / P1 OC3-2 POLE BASE DETAIL
NO SCALE

1 / P1 SITE LIGHITNG PHOTOMETRIC PLAN
SCALE 1" = 50'

4 / P1 TYPICAL POLE BASE DETAIL
NO SCALE

2 / P1 PHOTOMETRIC CALCULATION ZONES
NO SCALE

Label	QTY	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Filename	Lumens per Lamp	LLF	Wattage
OA4	5	Philips Lumec	MPTC-55W48LED4K-T-LE4	Urban Post Top	(3 Clusters of 16 Luxeon "T" LED's)	1	MPTC-55W48LED4K-T-LE4 (S1406022m).ies	4898	0.95	55
OB4	10	Philips Lumec	MPTC-110W64LED4K-T-LE4	Urban Post Top	(4 Clusters of 16 Luxeon "T" LED's)	1	MPTC-110W64LED4K-T-LE4 (S1406022m).ies	9065	0.95	105
OB5	6	Philips Lumec	MPTC-110W64LED4K-T-LE5	Urban Post Top	(4 Clusters of 16 Luxeon "T" LED's)	1	MPTC-110W64LED4K-T-LE5 (S1405122m).ies	9538	0.95	105
OC3-1	0	PHILIPS GARDCO	GL18-3-80LA-4853-NW	PHILIPS GULLWING LED GL18	(3) LEDGINE 3.1 LIGHT ARRAYS OF 16 LEDs (LUXEON T) DRIVEN AT 530mA	1	GL18-3-80LA-4853-NW.IES	8231	0.95	79.4
OC3-2	3	PHILIPS GARDCO	GL18-3-80LA-4853-NW	PHILIPS GULLWING LED GL18	(3) LEDGINE 3.1 LIGHT ARRAYS OF 16 LEDs (LUXEON T) DRIVEN AT 530mA	1	GL18-3-80LA-4853-NW.IES	8231	0.95	158.8
OC4-1	3	PHILIPS GARDCO	GL18-4-80LA-4853-NW	PHILIPS GULLWING LED GL18	(3) LEDGINE 3.1 LIGHT ARRAYS OF 16 LEDs (LUXEON T) DRIVEN AT 530mA	1	GL18-4-80LA-4853-NW.IES	8493	0.95	80
OC4-1HS	2	PHILIPS GARDCO	GL18-4-80LA-4853-NW-IS	PHILIPS GULLWING LED GL18 WITH INTERNAL SHIELDING	(3) LEDGINE 3.1 LIGHT ARRAYS OF 16 LEDs (LUXEON T) DRIVEN AT 530mA	1	GL18-4-80LA-4853-NW-IS.IES	7357	0.95	80
OC4-2	0	PHILIPS GARDCO	GL18-4-80LA-4853-NW	PHILIPS GULLWING LED GL18	(3) LEDGINE 3.1 LIGHT ARRAYS OF 16 LEDs (LUXEON T) DRIVEN AT 530mA	1	GL18-4-80LA-4853-NW.IES	8493	0.95	160
OD	44	Lithonia Lighting	DMW2 2000LM MD ACL MVOLT 40K 80CRI	DMW2 L24 2000LM MD ACL MVOLT GZ1 40K 80CRI (GLEDS)	LED	1	DMW2_2000LM_MD_ACL_MVOLT_40K_80CRI.ies	2612	0.95	18.78
OF2-1	6	PHILIPS GARDCO	GL18-2-50LA-4835-NW	PHILIPS GULLWING LED GL18	(3) LEDGINE 3.1 LIGHT ARRAYS OF 16 LEDs (LUXEON T) DRIVEN AT 350mA	1	GL18-2-50LA-4835-NW.IES	6206	0.95	50
OF2-1HS	7	PHILIPS GARDCO	GL18-2-50LA-4835-NW-IS	PHILIPS GULLWING LED GL18 WITH INTERNAL SHIELDING	(3) LEDGINE 3.1 LIGHT ARRAYS OF 16 LEDs (LUXEON T) DRIVEN AT 350mA	1	GL18-2-50LA-4835-NW-IS.IES	5436	0.95	50
OF3-1	1	PHILIPS GARDCO	GL18-3-50LA-4835-NW	PHILIPS GULLWING LED GL18	(3) LEDGINE 3.1 LIGHT ARRAYS OF 16 LEDs (LUXEON T) DRIVEN AT 350mA	1	GL18-3-50LA-4835-NW.IES	5710	0.95	52.4
OF3-1HS	3	PHILIPS GARDCO	GL18-3-50LA-4835-NW-IS	PHILIPS GULLWING LED GL18 WITH INTERNAL SHIELDING	(3) LEDGINE 3.1 LIGHT ARRAYS OF 16 LEDs (LUXEON T) DRIVEN AT 350mA	1	GL18-3-50LA-4835-NW-IS.IES	4968	0.95	50
OE	176	Gotham Architectural Lighting	EVO 40/07 4AR MD LS	DOWNLIGHT 4000K CCT, 700LM, 4IN CLEAR, MEDIUM DIST, SPECULAR FINISH	LED	1	EVO_40_07_4AR_MD_LS.ies	933	0.95	10.3
OG	90	VISA LIGHTING	OW2302	Wall Mount LED Luminous Down Light	LED 3500K	1	OW2302-L35K DOWN.ies	501	0.9	8.7
OVB	10	LUMEC	OVB-6LEDW	OVB	(6 Lumiled Rebel ES)	1	OVB-6LEDW (S1002024m).ies	350	0.95	9.2
OF4-1	1	PHILIPS GARDCO	GL18-4-50LA-4835-NW-HS	PHILIPS GULLWING LED GL18 WITH EXTERNAL SHIELDING	(3) LEDGINE 3.1 LIGHT ARRAYS OF 16 LEDs (LUXEON T) DRIVEN AT 350mA	1	GL18-4-50LA-4835-NW-HS.IES	4538	0.95	50
MPTR	4	LUMEC	MPTR-55W48LED4K-R-LE2-HS	MPTR WITH LE2 OPTICS AND SHIELDS, NW	LEDgine 48 NW LUXEON R	1	MPTR-55W48LED4K-R-LE2-HS (LRP0798Am).IES	4106	0.95	55

NOTE:
1. POLE MOUNTED LIGHT FIXTURES SHALL HAVE INTEGRAL OCCUPANCY SENSOR TO DIM FIXTURE 50% WHEN MOTION IS NOT DETECTED. LIGHT FIXTURES SHALL TEMPORARILY RETURN TO FULL OUTPUT WHEN MOTION IS DETECTED THAN RETURN TO 50% BRIGHTNESS.
2. FIXTURE TYPES 'OE' AND 'OG' SHALL HAVE LOCAL TENANT CONTROL ON APARTMENTS, APARTMENTS WITH GARAGES AND ROWHOUSES.
3. FIXTURE TYPE 'OE' ON MULTI-TENANT BUILDINGS SHALL HAVE LOCAL CONTROL TO REDUCE LIGHT LEVELS AFTER BUILDING IS CLOSED TO THE PUBLIC.
4. FIXTURE TYPE 'OE' ON THE CLUBHOUSE SHALL HAVE LOCAL CONTROL TO REDUCE LIGHT LEVELS BETWEEN 11PM TO SUNRISE.
5. EXTERIOR FIXTURES SHALL HAVE A DARK BRONZE FINISH.
6. FIXTURE TYPE 'OD' SHALL BE SURFACE MOUNTED IN CAR PORT.
7. FIXTURE TYPE 'OC4-1' SHALL BE MOUNTED ON THE UNDERSIDE OF CARPORTS

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	
05-30-2018	FSP RE-SUBMITTAL	
07-13-2018	FSP RE-SUBMITTAL	

This drawing has been prepared solely for the use of CLIENT NAME and there are no representations of any kind made by LEGAL COMPANY NAME to any party with whom LEGAL COMPANY NAME has not entered into a contract.

This drawing shall not be used for construction purposes until the seal appearing hereon is signed and dated by the Architect or Engineer.

Keyplan

North Arrow

Detail Symbol
Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR
NORR LLC
An Ingenium Group Company
150 W. Jefferson Avenue
Suite 1300
Detroit, MI 48226
T: 313 324 3100
www.norr.com

Project Manager	Drawn
B. COLBURN	J. BROCK, S. PIC-KELL
Project Leader	Checked
--	--

Client
BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
P1 SITE PHOTOMETRIC PLAN

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
P1 123

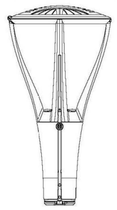
PATH AND FILENAME: \\TOR.INGENIUM.LOC\WORKSPACE\WORKSHAREDET\NORR\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\ARCH_PROD\SHEETS\P1 SITE PHOTOMETRIC PLAN.DWG PLOTSYLE TABLE: Ingenium-Half Size-A2.ctb PLOT DATE: July 20, 2018 TIME: 11:39 AM

ARCH D - 24"x36" - 610mmx914mm (rounded)

OA4, OB4, OB5

Modern styling meets advanced lighting technology

URBANSCAPE LED POST-TOP URBAN LUMINAIRE



PHILIPS LUMEC URBANSCAPE LED POST-TOP URBAN LUMINAIRE

The Philips Lumec UrbanScape LED post-top luminaire features flexible, robust energy-saving solutions for modern-styled urban architectural lighting. With its slightly rounded hood, the post-top model comes with a flat lens to highlight the thinness of the LEDs. The luminaire provides attractive lighting at night, adding appeal to the surroundings and promoting safe use of the environment.

Project:
Location:
Catalog No:
Fixture Type:
Mfg: Lamps: Qty:
Notes:

Ordering guide

example: MPTC-42W32LED4K-T-LE3-120-CDMGM25-PH8-BKTX

Luminaire	LED Module	Optical System	Voltage	Driver Options	Luminaire Options	Mounting	Pole	Accessories	Finish
MPTC[1]	16W16LED4K-T[2]	LE2: Type II (ASYM) flat lens	120: 120V	HS: House Side Shield	CWR: Dynadimmer override function	—	—	SPC[4,5]: Stanserae Photo-cell Control Node On-Off	BE2TX BE4TX BE8TX BG2TX BKTX BRTX GN4TX GN6TX GN8TX GNTX GR GY3TX NP RD2TX RD4TX TG TS WHTX (Consult sp # for code descriptions)
UrbanScape Post-Top LED Luminaire	24W16LED4K-T[2]	LE3W: Type III (ASYM) wide flat lens	208: 208V	PHB: Photoelectric cell	PHBXL: Photoelectric cell, extended life	Consult the Philips web site for details and the complete line of Mountings	Consult the Philips web site for details and the complete line of Poles	SPCD[4,5]: Stanserae Photo-cell Control Node Dimming	
	30W16LED4K-T[2]	LE3: Type III (ASYM) flat lens	240: 240V	PH9: Shorting Cap	RCD[6]: 5-Pin receptacle for dimming photoelectric cell				
	48W16LED4K-T[2]	LE4: Type IV (ASYM) flat lens	277: 277V	TNJ: Fitter to fit over a 3" (76 mm) O.D. by 4" (102 mm) long tenon					
	35W32LED4K-T[3]	LE5: Type V (SYMM) flat lens	347: 347V[4]	TNJ.5: Fitter to fit over a 3 1/2" (89 mm) O.D. by 4" (102 mm) long tenon					
	55W32LED4K-T[3]		480: 480V[4]	CDMG: Dynadimmer for standard dimming (Consult sp.) for complex Dynadimmer screens)					
	72W32LED4K-T[3]			CLO: Pre-set driver to manage lumen depreciation					
	97W32LED4K-T[3]			AST: Pre-set driver for progressive start-up					
	55W48LED4K-T			OTL: Pre-set driver to signal end of life of the lamp					
	80W48LED4K-T			DALI: Pre-set driver compatible with the DALI control system					
	108W48LED4K-T								
	140W48LED4K-T[3]								
	70W64LED4K-T								
	110W64LED4K-T								
	90W80LED4K-T								
	135W80LED4K-T								

1. Luminaire is always shipped with a dimmable 0-10V driver (except for 35W32LED4K).
2. 347V and 480V not available.
3. Not available with HS option.
4. Not available with driver options.
5. Use of photoelectric cell or shorting cap is required to ensure proper illumination.
6. Not available with Motion Response.
7. Luminaire option RCD is required with this accessory.
8. CDMG, CDMGP and DALI are not available with SPC and SPCD.

UrbanScape MPTC Spec 06/14 page 1 of 7

OC3-1, OC3-1HS, OC3-2, OF2-1, OF2-1HS, OF3-1, OF3-1HS OF4-1, OC4-1, OC4-1HS

PHILIPS GARDCO

Site & Area

Gullwing LED

Large, GL18

Philips Gardco Gullwing LED luminaires combine LED performance excellence and advanced Gardco LED thermal management technology with the distinct Gullwing style to provide outdoor area lighting that is both energy efficient and aesthetically pleasing

Project:
Location:
Cat.No:
Type:
Quantity:
Notes:

Ordering guide

Example: GL18-APD-1-4-80LA-4853-NW-120-BRP-LF

Prefix	Controls	Mounting	Optical System[4]	Wattage	LED Color	Voltage	Finish	Options
GL18 18" Gullwing LED Luminaire Constant Wattage	- Gullwing Standard Luminaire	1 Single	2 Type 2	50LA: 4835 48 LEDs, 350mA	NW Neutral White 4000K, 70 min CRI	120	BLP Black Paint	F[1] Fusing
GL18- DIM 18" Gullwing LED with 0-10V Dimming		2 2@180°	2-90 Type 2@90°	80LA: 4853 48 LEDs, 520mA	CW Cool White 5700K, 70 min CRI	208	WP White Paint	LP[2] In-Line/In-Pole Fusing
GL18- APD[1] 18" Gullwing LED with Automatic Profile Dimming		2@90 2@90°	2-270 Type 2@270°	105LA-4870 48 LEDs, 700mA	WW Warm White 3000K, 70 min CRI	240	BRP Bronze Paint	PC[1,4,5] Photocontrol and Receptacle (Includes PCBS)
GL18- MRS0[1,4,5] 18" Gullwing LED with Motion Response - 50% Low (pole mounted sensor)		3 3@120 3@90°	3 Type 3	100LA-481A 48 LEDs, 1A		277	BNP Bronze Paint	PCBS[1,4,5] Photocell Receptacle only with 2 dimming connectors
GL18- APD- MRS[1,4,5] 18" Gullwing LED with APD with Motion Response Override (pole mounted sensor)		4 4@90°	3-90 Type 3@90°	130LA-6490 64 LEDs, 900mA		347	NP Natural Aluminum Paint	PCR7[1,4,5] Photocell Receptacle only with 2 dimming and 2 auxiliary connections
GL18- MRS[1,4,5] 13' Gullwing LED with Motion Response at 50% Low (luminaire mounted sensor)		W Wall Mount, Recessed J-Box	3-270 Type 3@270°	210LA-G41A 64 LEDs, 1A		480	OC Optional Color Specify optional color or RAL ex: OC-LGP or OC-RAL7024.	HS External Housedside Shield
GL18- APD- MRS[1,4,5] 13' Gullwing LED with APD with Motion Response Override (luminaire mounted sensor)		WS Wall Mount, Surface Conduit	4 Type 4	200LA-9670 96 LEDs, 700mA		UNV (120-277V)	SC Special Color Specify Manufacturer's color chip. Requires factory quote.	IS Internal Housedside Shield (types 2, 3, 4 only)
Wireless Controls (Remote wireless controller available. See p.2 for details)			4-90 Type 4@90°	230LA-9680 96 LEDs, 800mA		HVU (347-480V)		CLR[1] Clear Glass Lens (reduces performance)
LLC2[4,5] 82 lens for 6" mounting heights			4-270 Type 4@270°	260LA-9690 96 LEDs, 900mA				RPA1 3" Round Pole Adapter Required for 3" O.D. round or tapered round poles wheretop O.D. is less than 4"
LLC3[4,5] 83 lens for 9-20' mounting heights			5 Type 5	290LA-901A 96 LEDs, 1A				RPA2 4" and 5" Round Pole Adapter Required for 4"-5" O.D. round poles
LLC4[4,5] 84 lens for 21-40' mounting heights								MA Mast Arm Fitter - Mounts to a 2-3/8" O.D. mast arm.
								TR[6] Single Tenon
								TR2[6] Twin Tenon
								PTF2[6] Pole Top Fitter - 2 3/8" - 3" Dia. Tenon
								PTF3[6] Pole Top Fitter - 3" - 3 1/2" Dia. Tenon
								PTF4[6] Pole Top Fitter - 3 1/2" - 4" Dia. Tenon
								SQPTF[6] Square Pole Fitter

1. Available 120-277V only.
2. Available 120 or 277V only.
3. M2S0 and APD-M2O luminaires require one motion sensor per pole, ordered separately. See page 2 for accessories.
4. Not available with Retrofit Kits (GL18-RK).
5. LLC2,LLC3,LLC4,LLP wireless controls not configurable with PC/PCR6/PCR7 Options. See pages 5-6 for more info.
6. Luminaire door frame and optic assembly provided standard without glass lens. Specify CLR option for clear glass lens.
7. Works with 3-pin or 6-pin NEMA photocell/dimming device.
8. If ordered with DIM, APD, MRI, MRSO, APD-MRI, APD-MSO, dimming will not be connected to NEMA receptacle.
9. Works with 3-pin or 6-pin NEMA photocell,/dimming device and auxiliary connections are not connected (for future use only).
10. Mounts to a 2-3/8" Top Tenon. Specify a round pole with a 4.50" O.D. for a smooth transition.
11. Not available in 120° mounting configurations.
12. Requires a 2-3/8"O.D. x 4" tenon or a 2-4" round pole top O.D. Specify Drilling (1, 2, 2@90, 3 or 4 only.)

GL18 03/16 page 1 of 8

Job:
Type:
Notes:

Poles

Page 1 of 4

4.5" Straight Round Aluminum - Cast Base

The Philips Gardco RA4.5 straight aluminum pole consists of a one-piece 4.5" round extruded aluminum lighting standard mounted to a cast aluminum base. The poles are finished with either Architectural Class I anodizing or electrostatically applied TGIC polyester powdercoat. All poles include anchor bolts, full base cover, hand hole, ground lug and top cap.

PREFIX	BASE	HEIGHT	DRILLING	FINISH	OPTIONS

Enter the order code into the appropriate box above. Note: Gardco reserves the right to refuse a configuration. Not all combinations and configurations are valid. Refer to notes below for exclusions and limitations. For questions or concerns, please consult the factory.

PREFIX

RA4.5

BASE

CB Fixed Cast Base

Hinged Bases are available for this pole size. Please refer to Hinged Base Pole sheet 7941.5-8 for specifications and dimensions.

HEIGHT

10'
12'
15'
18'
20'

DRILLING

D1 1 Way
D2 2 Way
D2@90 2 Way at 90°
D3 3 Way
D3@120 3 Way at 120°
D4 4 Way
T2 2 3/8" OD Tenon
T4 4" OD Tenon

FINISH

BRP	Bronze Paint
BLP	Black Paint
WP	White Paint
NP	Natural Aluminum Paint
BRA	Bronze Anodized
BLA	Black Anodized
NA	Natural Anodized
OC	Optional Color Paint *Specify Optional Color or RAL ex: OC-LGP or OC-RAL7024.*
SC	Special Color Paint *Specify. Must supply color chip.*

OPTIONS

DR	Duplex Receptacle
GFCI	Ground Fault Receptacle
VDA	Vibration Dampener

Nipples and Couplings

Indicate size (1/2", 3/4", 1", 1 1/4", 1 1/2",) Indicate height above base and orientation to hand hole. See Pole Orientation Information on Page 4.

NL	Nipple - External thread
CL	Coupling - Internal thread

Single Mount Bullhorn Brackets

Indicate height above base and orientation to hand hole. See Pole Orientation Information on Page 4.

A15BH-19	Single - 1.9" OD
A15BH-24	Single - 2.4" OD
A215BH-19	2-Tenon - 1.9" OD
A215BH-24	2-Tenon - 2.4" OD

Motion Response Provisions

GMR	Provision for Gardco HID Motion Response System

Maximum Pole Height is 18'. Includes a 1/2" coupling placed 180° to the hand hole, 12' above the pole base.

MSM	Motion Sensor Mounting Provision for LED Luminaires available with Motion Response

Minimum Pole Height is 18'. Includes a special hand hole with 1/2" coupling placed in the cover plate, 180° to the hand hole, 15' above the pole base.

1611 Clovis Barker Road, San Marcos,TX 78666
(800) 227-0758 (512) 753-1000 FAX:(512) 753-7855 sitelighting.com
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Philips Gardco reserves the right to change materials or modify the design of its product without notification as part of the company's continuing product improvement program.
7941.5-35/0611

PHILIPS GARDCO

LITHONIA LIGHTING

Catalog Number
Notes
Type OD

LED Enclosed and Gasketed

DMW2

FEATURES & SPECIFICATIONS

INTENDED USE —For areas that require good vertical illumination and excellent glare control at low mounting heights. Ideal for open areas, not all spaces and aisles. **Certain airborne contaminants can diminish the integrity of acrylic and/or polycarbonate. Click here for Acrylic-Polycarbonate Compatibility table for suitable uses.**

CONSTRUCTION — One-piece 5VA rated fiberglass housing with integral perimeter channel utilizes continuous poured-in-place NEMA 4X gasket. Simple two-piece design consists of housing and optical assembly to the ceiling during the entire installation process. Polymeric latches positively attach housing and keep from becoming a hindrance during install.

OPTICS — Injection-molded, acrylicfens (.080" thick), provides high impact-resistance comparable to 100% UR. F1 rated for outdoor use, lenses resist breaking, yellowing or becoming brittle over time. UV stabilized polycarbonate diffuser available (.080" thick) in clear or frosted for additional impact strength. Polycarbonate lens is recommend for lower mounting heights where vandal protection is desired.

ELECTRICAL — Tool-less one piece optical assembly combines LEDs and lens into one component. Optical assembly easily connects to housing with plug and play harness, eliminating time consuming wiring connections. LED drivers consumes 40 input watts maximum and offers 1% dimming standard. Integral surge protection tested in accordance with IEEE/ANSI C62.41.2 to industrial standards 6kV/3kA. L85 at 60,000 hours.

INSTALLATION — Two-piece design makes installations faster than ever by simplifying wiring connections. Power connections easily accommodate through-the-drilled holes at each end, optional wet location fittings available for maximum flexibility.

Stainless steel (#316) surface spring-mounting brackets with ball wires standard (2 included) allow for ceiling, wall or suspended mount.

Swivel stem (provided by others) when pendant mounting. Factory installed junction box option accommodates up to 4#4 sized boxes and includes integrated gasket to maintain wet location listings.

Quick Mount Bracket (QMB) ships installed on fixture and is recommended for fastest surface mount installs, ideal for end to end installations or larger jobs.

LISTINGS — CSA Certified to UL and CAN/ CSA standards for ambient temperatures ranging from -40°F (-40°C) to 104°F (40°C). See Operational Data chart for actual temperature ratings per lumen package). IP rating makes luminaire suitable for wet locations without covered ceilings. NEMA 4X rated. IP ratings: IP65 and IP66 rated. 1500 PSI horse-down.

NSF listed for Splash Zone II.

DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

WARRANTY — 5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Ambient temperatures that exceed 104°F (40°C) will result in reduced life and will void warranty.

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions at 25 °C. Specifications subject to change without notice.

Capable Luminaire

This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and out-of-the-box control compatibility with simple commissioning.

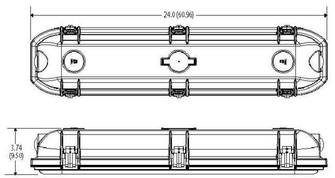
- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is part of an A+ Certified solution for nLight® or XPoint™ Wireless control networks marked by a shaded background*

To learn more about A+, visit www.acuitybrands.com/aplus.

*See ordering tree for details

DIMENSIONS

All dimensions are shown in inches (centimeters) unless otherwise noted.



PHOTOMETRICS

Please see www.lithonia.com.

INDUSTRIAL DMW2

gotham

Luminaire Type:
Catalog Number (autopopulated): OB

Gotham Architectural Downlighting
LED Downlights

4" Evo® Downlight

Solid-State Lighting

OPTICAL SYSTEM
- Self-flanged or flangeless semi-specular, matte-diffuse or specular finishing trim
- Patented Bounding Ray™ optical design (U.S. Patent No. 5,800,050)
- 45° cutoff to source and source image
- Top-down flash characteristics
- Polycarbonate lens integral to light engine

MECHANICAL SYSTEM
- 16-gauge galvanized steel construction; maximum 1-1/2" ceiling thickness
- Telescopic mounting bars maximum of 32" and minimum of 15", preinstalled, 4" vertical adjustment
- Toolless adjustments post installation
- Junction box capacity: 8 (4 in, 4 out.) 12AWG rated for 90°C
- Light engine and driver accessible through aperture
- Injection molded mud ring included with flangeless trims. Ships separately. Installs independently of the mounting frame to reduce cracks in plaster due to vibration.

ELECTRICAL SYSTEM
- Fully serviceable and upgradeable lensed LED light engine
- 70% lumen maintenance at 60,000 hours
- Tested according to LM-79 and LM-80 standards
- Overload and short circuit protected
- 2.5 SDCM; 85 CRI typical, 90+ CRI optional

LISTINGS
- Fixtures are CSA certified to meet US and Canadian standards; wet location, covered ceiling. ENERGY STAR® certified product.

WARRANTY
- 5-year limited warranty. Complete warranty terms located at: www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Note: Actual performance may differ as a result of end-user environment and applications. All values are design or typical values, measured under laboratory conditions at 25° C.

CONFIGURATION INFORMATION

An Capable options indicated by the color background.

EXAMPLE: EVO 35/10 4AR MVOLT LSS MVOLT EZ1

Series	Color temperature	Nominal lumen values	Aperture/Trim color	Trim Style	Distribution	Finish	Voltage
EVO	27/ 2700 K	07 750 lumens	4AR Clear	(blank) Self-flanged	MD Medium (0.9 s/mh)	LSS Semi-specular	MVOLT
	30/ 3000 K	10 1000 lumens	4PR Powter	FL Flangeless	MWD Medium wide (1.0 s/mh)	LD Matte-diffuse	120
	35/ 3500 K	15 1500 lumens	4WTR Wheat		WD Wide (1.2 s/mh)	LS Specular	277
	40/ 4000 K	20 2000 lumens	4GD Gold				347[1]
		25 2500 lumens	4WH[1] White				
		30 3000 lumens	4BR[1] Black				
			4WRAMF[1] White anti-microbial				

Driver[2]		Options	
EZ1D elvoLED 0-10V ECOdrive. Linear dimming to 10% min.		SF Single fuse. Specify 120V or 277V.	BGTD Bodine generator transfer device. Specify 120V or 277V.
EZ1 elvoLED 0-10V ECOdrive. Linear dimming to 1% min.		TRW[3] White painted flange	
EZD elvoLED 0-10V SOLOdrive. Logarithmic dimming to <1%.		TRBL[3] Black painted flange	CR190 High CRI (90+). Specify 120V or 277V.
EBAB elvoLED SOLOdrive DALI. Logarithmic dimming to <1%.		EL[4] Emergency battery pack with integral test switch	CP[11] Chicago plenum
EBXB elvoLED PowerDrive DMX with RDM (remote device management). Square Law dimming to <1%. Includes termination resistor. Refer to DMDG Manual.		ELR[4] Emergency battery pack with remote test switch	RRL__ RELOC® ready luminaire connectors enable a simple and consistent factory installed option across all ABL luminaire brands. Refer to RRL for complete nomenclature.
EXA1 XPoint Wireless, elvoLED 0-10V ECOdrive. Linear dimming to 1%. Refer to XPoint tech sheet.		NPSBUE[2] nLight® dimming pack controls 0-10V elvoLED drivers.	
EXAB XPoint Wireless, elvoLED 0-10V SOLOdrive. Logarithmic dimming to <1%. Refer to XPoint tech sheet.		NPSBUEZER[2,5] nLight® dimming pack controls 0-10V elvoLED drivers. ER controls fixtures on emergency circuit. nLight® Lumen Compensation	
ECOSYS[2,5] Lutron® Hi-Lum eco® 2-wire forward-phase driver. Minimum dimming level 1%. Minimum lumen 1060/Maximum lumen 3000.			
ECOSYS[2,5] Lutron® Hi-Lum eco® 3-wire or EcoSystem® dimming driver. Minimum dimming level 1%. Minimum lumen 1061/Maximum lumen 4500.			

EVO-4-OPEN PAGE 1 OF 4

GOTHAM ARCHITECTURAL DOWNLIGHTING | P 800.315.4982 | gothamlighting.com

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gotham

Caterham Collection
Caterham 1 Light Outdoor Wall Light in Olde Bronze

49643OZ (Olde Bronze)

Dimensions

Height	14.75"
Width	8.00"

Project Name: OG
Location:
Type:
Qty:
Comments:

Ordering Information

Product ID	49643OZ
Finish	Olde Bronze
Available Finishes	OZ, OZ
Collection	Caterham Collection

Dimensions

Extension	9.00"
Height from center of Wall opening	4.00"
Base Backplate	4.50 X 8.00
Weight	5.00 LBS

Specifications

Material	Aluminum
Glass Description	Satin Etched Cased Opal

Electrical

Voltage	120V

Qualifications

Safety Rated	Wet
Title 24	Yes
Warranty	www.kichler.com/warranty

Primary Lamping

Light Source	Incandescent
Lamp Included	Not Included
Number of Lights/LEDs	1
Max or Nominal Watt	18W
Socket Wire	150
Socket Type	Medium
Lamp Type	A19
Bulb Product ID	4044

Alternate Lamps

Lamp Included	Bulb Listing	Light Source	Max Wattage/Range	Bulb Product ID	Dimming
No	Hybrid	CFL	23-30W		

Kichler
7711 East Pleasant Valley Road
Cleveland, Ohio 44131-5510
Toll free: 866.558.5706 or kichler.com

Notes:
1) Information presented is subject to change without notice. All values are design or typical values when measured under laboratory conditions.
2) Incandescent Equivalent: The incandescent equivalent as presented is an approximate number and is for reference only.

KICHLER

DATE	ISSUED FOR	REV
06-09-2017	FSP/ENG SUBMITTAL	
08-17-2017	FSP RE-SUBMITTAL	
11-01-2017	FSP RE-SUBMITTAL	
12-19-2017	FSP RE-SUBMITTAL SITE LIGHTING	
04-24-2018	FSP RE-SUBMITTAL - FDC LOCATIONS	
05-30-2018	FSP RE-SUBMITTAL	
07-13-2018	FSP RE-SUBMITTAL	

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Keyplan

North Arrow

Detail Symbol

Detail No
Sheet No.

CAD FILE LINE 24" PAPER ROLL

Seal(s)

NORR

NORR LLC
An Ingenium Group Company
150 W. Jefferson Avenue
Suite 1300
Detroit, MI 48226
T: 313 324 3100
www.norr.com

Project Manager	Drawn
B. COLBURN	J. BROCK
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
P2 SITE LIGHTING CUT SHEETS

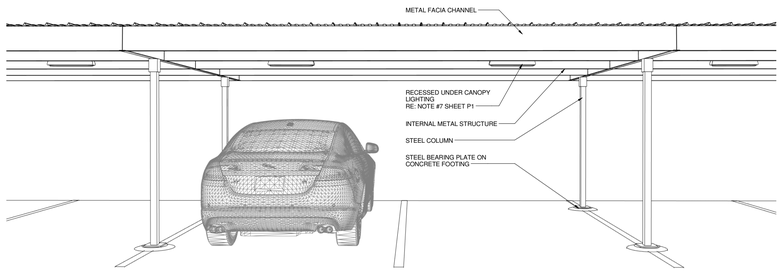
Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
P2 124

PATH AND FILENAME: \\TOR.INGENIUM.LOC\WORKSPACE\WORKSHAREDET\NORR\JCDT16-0114 - PITTSFIELD MIXED USE AND RESIDENTIAL\500-DELIV\ARCH_PROD\SHEETS\P2 SITE LIGHTING CUT SHEETS.DWG PLOTSYLE TABLE: Ingenium.ctb PLOT DATE: July 20, 2018 TIME: 7:40 AM

ARCH D - 24"x36" - 610mmx914mm (rounded)



1 CARPORT PERSPECTIVE
SCALE: 6" = 1'-0"

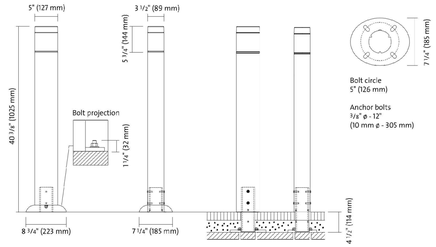
OVB

BOLLARD/OVB

OVAL SERIES

LUMINAIRES

*Conform to the **UL 1598** and **CSA C22.2 No. 250.0-08** standards*



OVB_surface mounting **OVB_**underground mounting

SPECIFICATIONS

Hood
Die cast (356) aluminum cover.

Body
Made from a 5" (127 mm) wide by 3 1/2" (89 mm) deep, elliptical, extruded (6061-T6) aluminum tubing, having a 0.250" (6.4 mm) wall thickness, mechanically assembled to the anchor plate at the bottom of the bollard with 4 steel anchor bolts.

Two mounting possible
Surface mounting : A base cover hides the anchor plate and the bolts.
Underground mounting : The anchor plate and the bolts are located 4 1/2" (114 mm) below apparent ground level.

Lens
Clear acrylic, elliptical lens, satin finish and internal flute.

6LEDA/6LEDB/6LEDG/6LEDR/6LEDW Lamp
6-watt light-emitting diodes (LEDs).

Driver
High power factor of 90%. Electronic driver, operating range 50-60 kHz. Lamp starting capacity of -40°F (-40°C). Assembled on a tray with quick disconnect plug.

Access Mechanism
Four screws integrated to the base of the body offer access to the inside of the luminaire and to the lamp.

Base cover
Oval shaped, one piece cast (356) aluminum base cover mechanically fastened with two stainless steel screws.

Finish
"Hot dip" chemical etching preparation. Lumital™ polyester powder coat finish. Excellent color retention as per #ASTM D2244, and outstanding salt-spray resistance according to #ASTM D2247 testing procedures.

Philips Lumec reserves the right to substitute materials or change the manufacturing process of its products without prior notification.
For the latest updates go to **www.lumec.com**

PHILIPS LUMEC

MPTR

PHILIPS
LUMEC

Urban

MetroScape

MPTR Post top luminaire

DLC PREMIUM

LED

Project:
Location:
Cat No:
Type:
Lamps: Qty:
Notes:

The Philips Lumec MetroScape LED post top luminaire features flexible, robust energy-saving solutions for heritage-styled urban architectural lighting. Crowned with an ornamental hood, the post top model comes with a flat lens to highlight the thinness of the LEDs. The luminaire provides attractive lighting at night, adding appeal to the surroundings and promoting safe use of the environment.

Luminaire ordering guide

Example: MPTR-55W32LED4K-T-LE3-120-CDMG1M25-PH8-BKTX

Series	LED Module	CCT	Gen.	Optical System	Voltage	Driver	Luminaire option	Mounting	Pole	Finish
MPTR[1] MetroScape LED post top luminaire	**35W32LED**[2] **55W32LED**[2] **72W32LED** **97W32LED**[2] **55W48LED** **80W48LED** **108W48LED** **140W48LED**[2] **70W64LED** **110W64LED** **90W80LED** **135W80LED**	**3K** 3000K **4K** 4000K	**G2** Gen2	**LE2** Type II (ASYM) flat lens **LE3** Type III (ASYM) flat lens **LE3W**[3] Type III (ASYM) wide flat lens **LE4** Type IV (ASYM) flat lens **LE5** Type V (SYMM) flat lens	**120** 120V **208** 208V **240** 240V **277** 277V **347** 347V **480** 480V	**CDMG**[2] Dynadimmer for standard dimming (consult complete Dynadimmer scenarios on pg 3) **CLO**[2] Pre-set driver to manage Lumen depreciation **AST**[2] Pre-set driver for progressive start-up **OTL**[2] Pre-set driver to signal end of life of the lamp **DALI**[2] Pre-set driver compatible with the DALI control system **DMG** 0-10 volt	**HS** House Side Shield **OVR** Dynadimmer override function **PH8** Photoelectric cell **PH9** Shorting Cap **PHXL**[3] Photoelectric cell, extended life **RCD**[4] 5-Pin receptacle for dimming photoelectric cell **RCD7**[4] 7-Pin receptacle for photoelectric cell **TN3**[5] Fitter to fit over a 3" (76 mm) O.D. by 4" (102 mm) long tenon **TN3.5**[5] Fitter to fit over a 3½" (89 mm) O.D. by 4" (102 mm) long tenon	Consult the Philips web site for details and the complete line of Mountings	Consult the Philips web site for details and the complete line of Poles	**BE2TX** **BE6TX** **BE8TX** **BG2TX** **BKTX** **BRTX** **GN4TX** **GN6TX** **GN8TX** **GNTX** **GR** **GY3TX** **NP** **RD2TX** **RD4TX** **TG** **TS** **WHTX** (consult pg 4 for code descriptions)

1. DMG 0-10V driver come standard.
2. The 347V and 480V are not available.
3. Not available with HS option.
4. Use of photoelectric cell or shorting cap is required to ensure proper illumination.
5. Not available with Motion Response.

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North Arrow

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Detail No.
Sheet No.

CREASE LINE 24" PAPER ROLL

Seal(s)

NORR

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www.norr.com

Project Manager	Drawn
B. COLBURN	S. PIC-KELL
Project Leader	Checked
--	--

Client

BEZTAK
31731 Northwestern Highway
Suite 250W
Farmington Hills, Michigan 48334

Project
Pittsfield Mixed Use Development

Drawing Title
P3 SITE LIGHTING CUT SHEETS

Check Scale (may be photo reduced)
0 1inch 0 10mm

Project No.
JCDT16.0114.00

Drawing No.
P3 125