

# PROJECT PLAN REVIEW

Pursuant to Town of Grafton Zoning By-Law, Section 9

FOR

## PROPOSED EQUINE ARENA

The Cummings School of Veterinary Medicine at Tufts University

IN

### North Grafton, Massachusetts (Worcester County)

Date: March 29, 2016

Revised:  
May 6, 2016 - Modified Drainage Design

**PREPARED BY:**



WATERMAN DESIGN  
ASSOCIATES, INC.  
31 East Main Street  
Westborough, MA 01581  
508.366.6552  
508.366.6506 (FAX)  
WATERMANDSIGN.COM WDA@WDASSOC.COM

**OWNER:**

THE CUMMINGS SCHOOL OF  
VETERINARY MEDICINE AT  
TUFTS UNIVERSITY  
200 Westborough Drive  
North Grafton, MA

**PREPARED FOR:**

THE CUMMINGS SCHOOL OF  
VETERINARY MEDICINE AT  
TUFTS UNIVERSITY  
200 Westborough Drive  
North Grafton, MA

**SHEET LIST:**

1.	OVERVIEW PLAN	<u>ARCHITECTURAL DRAWINGS</u>
2.	INDEX PLAN	A100 MAIN FLOOR PLAN
3. - 4.	EXISTING CONDITIONS PLAN	A101 ELEVATIONS
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9.	TURNING MOVEMENT EXHIBIT (FIRE TRUCK)	
10. - 13.	CONSTRUCTION DETAILS	

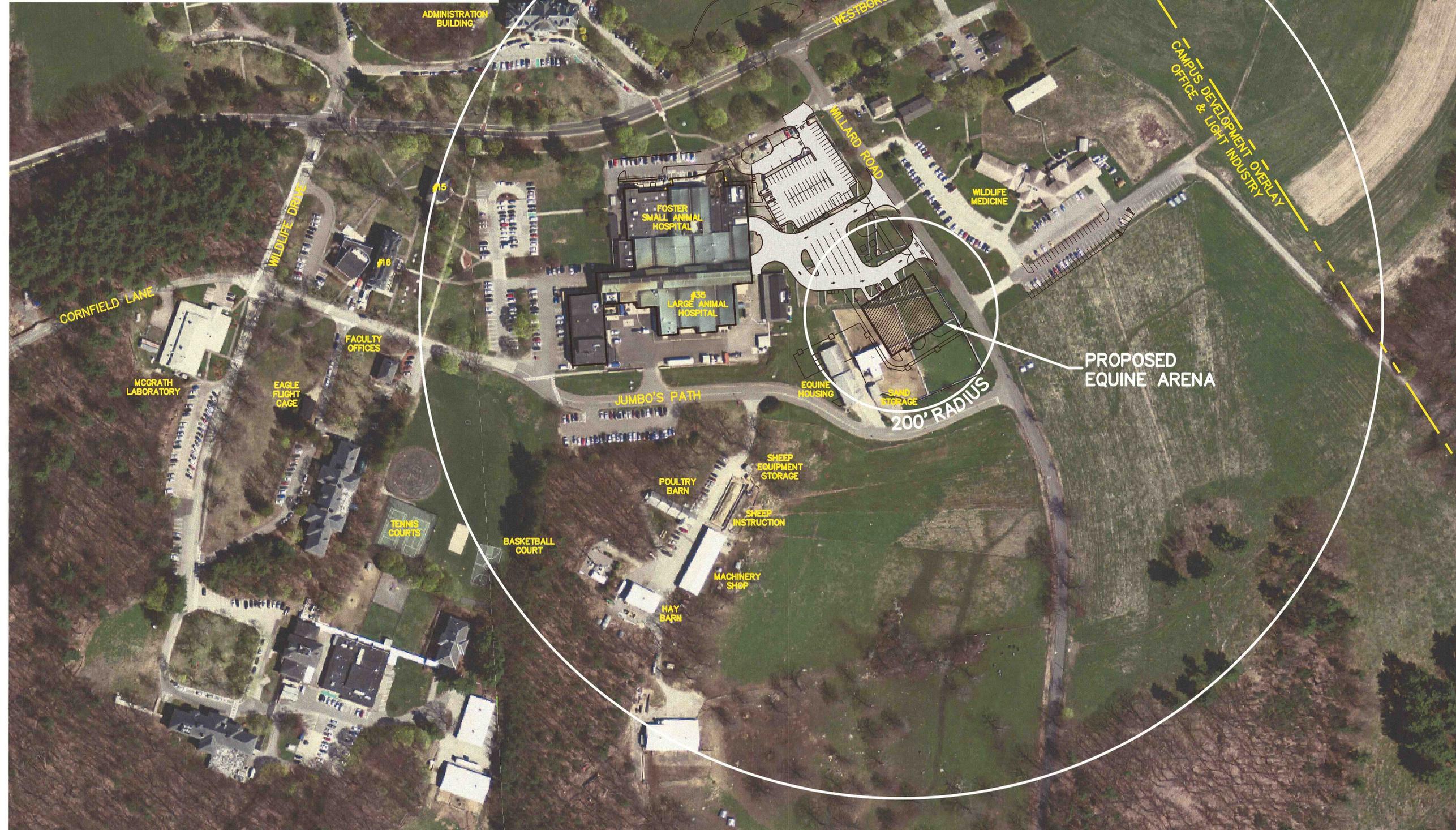
FILE NO.: 0016650  
DWG. NO.: 0016651B

**GROUND COVERAGE SUMMARY:**

- TOTAL AREA WITHIN 1000' RADIUS CIRCLE CENTERED ON PROPOSED BUILDING: 3,141,593± S.F.
- PORTION OF 1000' RADIUS CIRCLE LOCATED IN THE CAMPUS DEVELOPMENT OVERLAY (CDO): 2,981,568 (REMAINING PORTION OF 1000' RADIUS CIRCLE IS LOCATED IN THE TOWN OF WESTBOROUGH)
- TOTAL IMPERVIOUS AREA WITHIN CIRCLE: 727,000± S.F. (24.4%± OF CIRCLE AREA LOCATED IN CDO)  
 IMPERVIOUS AREA OF EXISTING AND PROPOSED BUILDINGS: 165,000± S.F.  
 IMPERVIOUS AREA OF EXISTING AND PROPOSED PAVEMENT/CONCRETE: 562,000± S.F.
- REMAINING LANDSCAPED/OPEN SPACE AREA: 2,254,568± S.F. (75.6%± OF CIRCLE AREA)

**NOTES:**

1. SEE PLANS FOR ADDITIONAL SITE INFORMATION.
2. CALCULATIONS INCLUDE APPROVED IMPROVEMENTS AT THE SMALL ANIMAL HOSPITAL (CURRENTLY UNDER CONSTRUCTION) AS WELL AS THE EXPANDED PARKING AREA TO THE SOUTH OF THE WILDLIFE MEDICINE BUILDING.



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REV.	DATE	DESCRIPTION	INT.
B	05/06/16	MODIFIED DRAINAGE DESIGN	
A		INITIAL ISSUE	



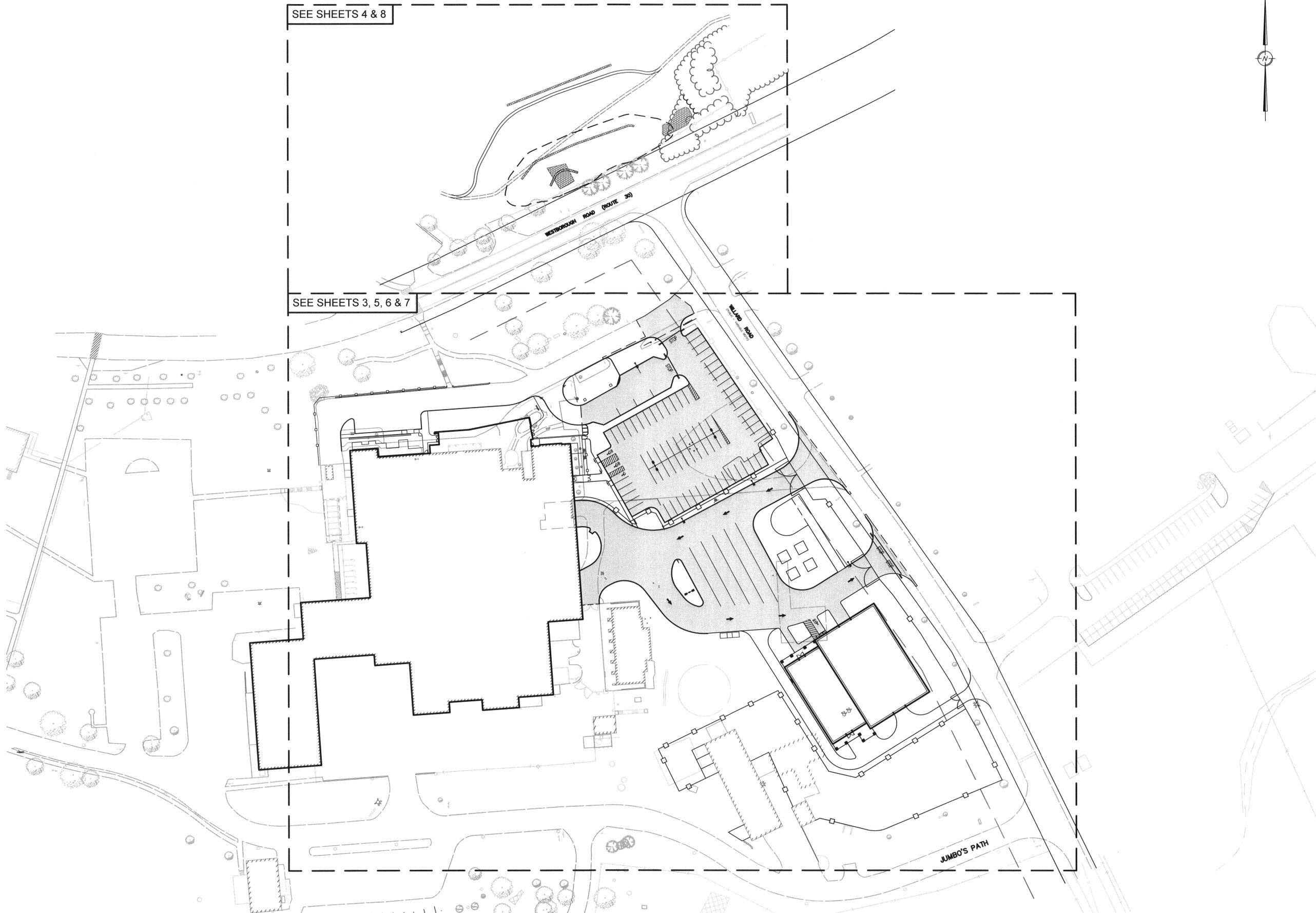
PREPARED BY:  
  
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OWNER / APPLICANT:  
**THE CUMMINGS SCHOOL OF VETERINARY MEDICINE AT TUFTS UNIVERSITY**  
 200 Westborough Drive  
 North Grafton, MA

TITLE:  
**OVERVIEW PLAN**  
**EQUINE ARENA**  
 North Grafton, MA  
 (Worcester County)  
 PERMITTING

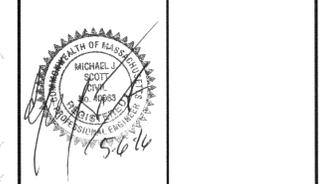
DATE:	3/29/16	SCALE:	1" = 100'
JOB NO.:	0016.14	DWN. BY:	
FILE NO.:	0016250	CHK'D. BY:	
DRAWING NO.:	0016252B	SHEET:	<b>1</b>

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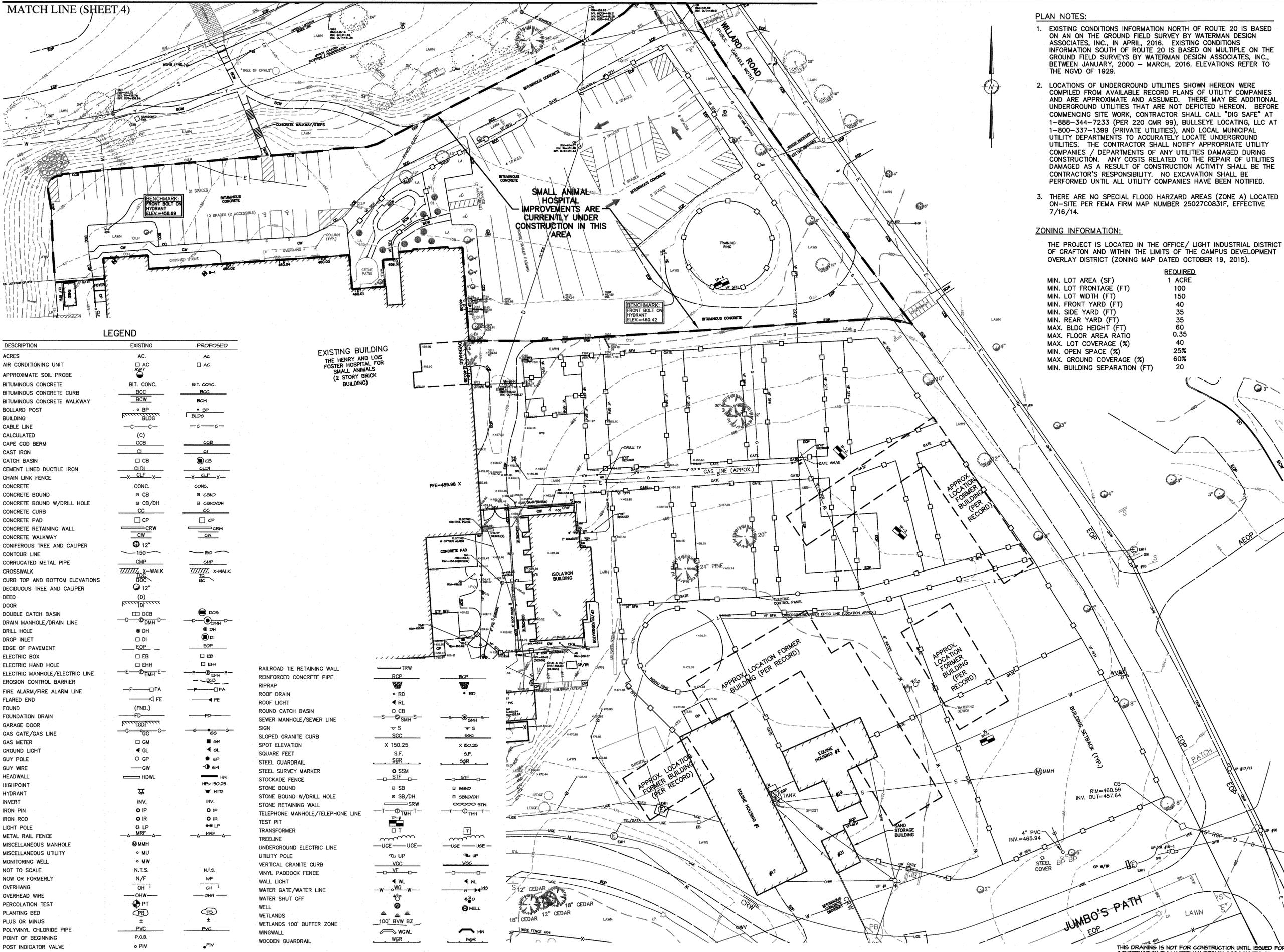
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TITLE:  
**INDEX PLAN**  
**EQUINE ARENA**  
 North Grafton, MA  
 (Worcester County)  
**PERMITTING**

DATE:	05/06/16	SCALE:	1" = 50'
JOB NO.:	0016.14	DWN. BY:	
FILE NO.:	0016250	CHK'D. BY:	
DRAWING NO.:	0016251B	SHEET:	<b>2</b>

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MATCH LINE (SHEET 4)



PLAN NOTES:

- EXISTING CONDITIONS INFORMATION NORTH OF ROUTE 20 IS BASED ON AN ON-THE-GROUND SURVEY BY WATERMAN DESIGN ASSOCIATES, INC. IN APRIL, 2016. EXISTING CONDITIONS INFORMATION SOUTH OF ROUTE 20 IS BASED ON MULTIPLE ON-THE-GROUND SURVEYS BY WATERMAN DESIGN ASSOCIATES, INC., BETWEEN JANUARY, 2000 - MARCH, 2016. ELEVATIONS REFER TO THE NGVD OF 1929.
- LOCATIONS OF UNDERGROUND UTILITIES SHOWN HEREON WERE COMPILED FROM AVAILABLE RECORD PLANS OF UTILITY COMPANIES AND ARE APPROXIMATE AND ASSUMED. THERE MAY BE ADDITIONAL UNDERGROUND UTILITIES THAT ARE NOT DEPICTED HEREON. BEFORE COMMENCING SITE WORK, CONTRACTOR SHALL CALL "DIG SAFE" AT 1-888-344-7233 (PER 220 CMR 99), BULLSEYE LOCATING, LLC AT 1-800-337-1399 (PRIVATE UTILITIES), AND LOCAL MUNICIPAL UTILITY DEPARTMENTS TO ACCURATELY LOCATE UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY APPROPRIATE UTILITY COMPANIES / DEPARTMENTS OF ANY UTILITIES DAMAGED DURING CONSTRUCTION. ANY COSTS RELATED TO THE REPAIR OF UTILITIES DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITY SHALL BE THE CONTRACTOR'S RESPONSIBILITY. NO EXCAVATION SHALL BE PERFORMED UNTIL ALL UTILITY COMPANIES HAVE BEEN NOTIFIED.
- THERE ARE NO SPECIAL FLOOD HAZARD AREAS (ZONE A) LOCATED ON-SITE PER FEMA FIRM MAP NUMBER 25027C0831F, EFFECTIVE 7/16/14.

ZONING INFORMATION:

THE PROJECT IS LOCATED IN THE OFFICE/ LIGHT INDUSTRIAL DISTRICT OF GRAFTON AND WITHIN THE LIMITS OF THE CAMPUS DEVELOPMENT OVERLAY DISTRICT (ZONING MAP DATED OCTOBER 19, 2015).

	REQUIRED
MIN. LOT AREA (SF)	1 ACRE
MIN. LOT FRONTAGE (FT)	100
MIN. LOT WIDTH (FT)	150
MIN. FRONT YARD (FT)	40
MIN. SIDE YARD (FT)	35
MIN. REAR YARD (FT)	35
MAX. BLDG HEIGHT (FT)	60
MAX. FLOOR AREA RATIO	0.35
MAX. LOT COVERAGE (%)	40
MIN. OPEN SPACE (%)	25%
MAX. GROUND COVERAGE (%)	60%
MIN. BUILDING SEPARATION (FT)	20

LEGEND

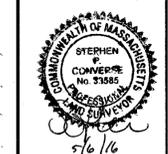
DESCRIPTION	EXISTING	PROPOSED
ACRES	AC.	AC
AIR CONDITIONING UNIT	AC	AC
APPROXIMATE SOIL PROBE	ASPT	ASPT
BITUMINOUS CONCRETE	BIT. CONC.	BIT. CONC.
BITUMINOUS CONCRETE CURB	BCC	BCC
BITUMINOUS CONCRETE WALKWAY	BCW	BCW
BOLLARD POST	BP	BP
BUILDING	BLDG	BLDG
CABLE LINE	C	C
CALCULATED	(C)	(C)
CAPE COD BERM	CCB	CCB
CAST IRON	CI	CI
CATCH BASIN	CB	CB
CEMENT LINED DUCTILE IRON	CLDI	CLDI
CHAIN LINK FENCE	CLF	CLF
CONCRETE	CONC.	CONC.
CONCRETE BOUND	CB	CB
CONCRETE BOUND W/DRILL HOLE	CB/DH	CB/DH
CONCRETE CURB	CC	CC
CONCRETE PAD	CP	CP
CONCRETE RETAINING WALL	CRW	CRW
CONCRETE WALKWAY	CW	CW
CONIFEROUS TREE AND CALIPER	12"	12"
CONTOUR LINE	150	150
CORRUGATED METAL PIPE	CMP	CMP
CROSSWALK	X-WALK	X-WALK
CURB TOP AND BOTTOM ELEVATIONS	12"	12"
DECIDUOUS TREE AND CALIPER	(D)	(D)
DEED	DCB	DCB
DOUBLE CATCH BASIN	DCB	DCB
DRAIN MANHOLE/DRAIN LINE	DMH	DMH
DRILL HOLE	DH	DH
DROP INLET	DI	DI
EDGE OF PAVEMENT	EOP	EOP
ELECTRIC BOX	EB	EB
ELECTRIC HAND HOLE	EHH	EHH
ELECTRIC MANHOLE/ELECTRIC LINE	EMH	EMH
EROSION CONTROL BARRIER	ECB	ECB
FIRE ALARM/FIRE ALARM LINE	FA	FA
FLARED END	FE	FE
FOUND	(FND.)	(FND.)
FOUNDATION DRAIN	FD	FD
GARAGE DOOR	GD	GD
GAS GATE/GAS LINE	GG	GG
GAS METER	GM	GM
GROUND LIGHT	GL	GL
GUY POLE	GP	GP
GUY WIRE	GW	GW
HEADWALL	HWL	HWL
HIGHPOINT	HPX 150.25	HPX 150.25
HYDRANT	HYD	HYD
INVERT	INV.	INV.
IRON PIN	IP	IP
IRON ROD	IR	IR
LIGHT POLE	LP	LP
METAL RAIL FENCE	MRF	MRF
MISCELLANEOUS MANHOLE	MMH	MMH
MISCELLANEOUS UTILITY	MU	MU
MONITORING WELL	MW	MW
NOT TO SCALE	N.T.S.	N.T.S.
NOW OR FORMERLY	N/F	N/F
OVERHANG	OH	OH
OVERHEAD WIRE	OHW	OHW
PERCOLATION TEST	PT	PT
PLANTING BED	PB	PB
PLUS OR MINUS	±	±
POLYVINYL CHLORIDE PIPE	PVC	PVC
POINT OF BEGINNING	P.O.B.	P.O.B.
POST INDICATOR VALVE	PIV	PIV
RAILROAD TIE RETAINING WALL	TRW	TRW
REINFORCED CONCRETE PIPE	RCP	RCP
RIPRAP	RD	RD
ROOF DRAIN	RD	RD
ROOF LIGHT	RL	RL
ROUND CATCH BASIN	RCB	RCB
SEWER MANHOLE/SEWER LINE	SMH	SMH
SIGN	S	S
SLOPED GRANITE CURB	SGC	SGC
SPOT ELEVATION	X 150.25	X 150.25
SQUARE FEET	S.F.	S.F.
STEEL GUARDRAIL	SGR	SGR
STEEL SURVEY MARKER	SSM	SSM
STOCKADE FENCE	STF	STF
STONE BOUND	SB	SB
STONE BOUND W/DRILL HOLE	SB/DH	SB/DH
STONE RETAINING WALL	SRW	SRW
TELEPHONE MANHOLE/TELEPHONE LINE	TMH	TMH
TEST PIT	T	T
TRANSFORMER	T	T
TREELINE	T	T
UNDERGROUND ELECTRIC LINE	UGE	UGE
UTILITY POLE	UP	UP
VERTICAL GRANITE CURB	VGC	VGC
VINYL PADDOCK FENCE	VF	VF
WALL LIGHT	WL	WL
WATER GATE/WATER LINE	WG	WG
WATER SHUT OFF	WSO	WSO
WELL	W	W
WETLANDS	W	W
WETLANDS 100' BUFFER ZONE	100' BWV BZ	100' BWV BZ
WINGWALL	W	W
WOODEN GUARDRAIL	WGR	WGR

EXISTING BUILDING  
THE HENRY AND LOIS  
FOSTER HOSPITAL FOR  
SMALL ANIMALS  
(2 STORY BRICK  
BUILDING)

SMALL ANIMAL  
HOSPITAL  
IMPROVEMENTS ARE  
CURRENTLY UNDER  
CONSTRUCTION IN THIS  
AREA

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**EQUINE ARENA**  
North Grafton, MA  
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**PERMITTING**

DATE:	3/29/16	SCALE:	1" = 30'
JOB NO.:	001614	DWN. BY:	
FILE NO.:	0016001	CHK'D. BY:	
DRAWING NO.:	0016001B	SHEET:	3

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LOCATION:  
TUFTS S.V.M.,  
ROUTE 30/MILLARD RD.  
GRAFTON, MA  
DEEP HOLE NUMBER:  
AS NOTED  
DATE:  
03/31/2016  
TIME:  
AM  
PARENT MATERIAL:  
PAXTON FINE  
SANDY LOAM  
STANDING WATER:  
NONE  
EST. HIGH WATER:  
VARIABLE  
SOIL EVALUATOR:  
LARRY GREENE  
WATERMAN DESIGN  
(MINI EXCAVATOR)  
FITNESS:  
N/A

**DEEP OBSERVATION HOLE LOG 316-01**

DEPTH FROM SURFACE (INCHES)	SOIL HORIZON	SOIL TEXTURE (USD)	SOIL COLOR (MUNSELL)	REDOX	OTHER (STRUCTURE, STONES, BOULDERS, CONSISTENCY, & GRAVEL)
0-32"	FILL	-	-	-	BRICK, ASH, CONCRETE, POSSIBLE OLD FDTN.
32"-56"	Cl	SANDY LOAM	2.5Y3/4	1.5YR4/4-42"	PLATY
56"-42"	Cd	SANDY LOAM	2.5Y4/3	HEEPAE-68"	PLATY, LENSES OF SAND AND GRAVEL

**DEEP OBSERVATION HOLE LOG 316-02**

DEPTH FROM SURFACE (INCHES)	SOIL HORIZON	SOIL TEXTURE (USD)	SOIL COLOR (MUNSELL)	REDOX	OTHER (STRUCTURE, STONES, BOULDERS, CONSISTENCY, & GRAVEL)
0-22"	FILL	-	-	-	-
22"-80"	Cd	SANDY LOAM	2.5Y4/4	1.5YR4/4-31"	PLATY 80" LARGE BOULDER 80" LARGE BOULDER/POSSIBLE REFUSAL

**DEEP OBSERVATION HOLE LOG 316-03**

DEPTH FROM SURFACE (INCHES)	SOIL HORIZON	SOIL TEXTURE (USD)	SOIL COLOR (MUNSELL)	REDOX	OTHER (STRUCTURE, STONES, BOULDERS, CONSISTENCY, & GRAVEL)
0-16"	Ap	SANDY LOAM	10YR3/2	-	SANDY LOAM
16"-28"	Bw	SANDY LOAM	10YR5/6	-	PLATY
56"-42"	C	SANDY LOAM	2.5Y4/4	1.5YR4/4-31"	PLATY

**DEEP OBSERVATION HOLE LOG 316-04**

DEPTH FROM SURFACE (INCHES)	SOIL HORIZON	SOIL TEXTURE (USD)	SOIL COLOR (MUNSELL)	REDOX	OTHER (STRUCTURE, STONES, BOULDERS, CONSISTENCY, & GRAVEL)
0-32"	FILL	SANDY LOAM	10YR5/2	-	ROADWAY FILL
32"-61"	Cl	SANDY LOAM	2.5Y4/3	1.5YR4/4-31"	PLATY
61"-103"	Cd	SANDY LOAM	2.5Y4/4	HEEPAE	PLATY

LOCATION:  
TUFTS S.V.M.,  
NORTH SIDE (FIELD)  
ROUTE 30  
GRAFTON, MA  
SOIL PROBE (APPROX. LOCATION):  
AS NOTED  
DATE:  
03/04/2016  
TIME:  
1:00-2:00 PM  
PARENT MATERIAL:  
PAXTON FINE  
SANDY LOAM  
STANDING WATER:  
NONE  
EST. HIGH WATER:  
VARIABLE  
SOIL REVIEWER:  
BRIAN WATERMAN  
WATERMAN DESIGN  
(APPROXIMATE SOIL  
PROBE WITH SOIL AUGER)  
FITNESS:  
N/A

**ASP-1**

DEPTH FROM SURFACE (INCHES)	SOIL TEXTURE (USD)	REDOX	OTHER (STRUCTURE, STONES, BOULDERS, CONSISTENCY, & GRAVEL)
0-21" +/-	VERY FINE LOAMY SAND	24" +/-	THIN TOPSOIL LAYER, REFUSAL AT 21" +/- ROCK

**ASP-2**

DEPTH FROM SURFACE (INCHES)	SOIL TEXTURE (USD)	REDOX	OTHER (STRUCTURE, STONES, BOULDERS, CONSISTENCY, & GRAVEL)
0-30" +/-	VERY FINE LOAMY SAND	22" +/-	THICKER TOPSOIL LAYER, REFUSAL AT 30" +/- ROCK

**ASP-3**

DEPTH FROM SURFACE (INCHES)	SOIL TEXTURE (USD)	REDOX	OTHER (STRUCTURE, STONES, BOULDERS, CONSISTENCY, & GRAVEL)
0-30" +/-	VERY FINE LOAMY SAND	25" +/-	THIN TOPSOIL LAYER, SOME STREAKING AT 14" +/-, REFUSAL AT 30" +/- ROCK

**ASP-4**

DEPTH FROM SURFACE (INCHES)	SOIL TEXTURE (USD)	REDOX	OTHER (STRUCTURE, STONES, BOULDERS, CONSISTENCY, & GRAVEL)
0-11" +/-	VERY FINE LOAMY SAND	12" +/-	REDOX & STREAKING AT 12" +/-, REFUSAL AT 11" +/- ROCK

**ASP-5**

DEPTH FROM SURFACE (INCHES)	SOIL TEXTURE (USD)	REDOX	OTHER (STRUCTURE, STONES, BOULDERS, CONSISTENCY, & GRAVEL)
0-36" +/-	VERY FINE LOAMY SAND, SAND	15" +/-	THICKER TOPSOIL LAYER, BRIGHT IRON STAINING AT 17", MIXED TO BOTTOM, SATURATED GREY SAND AT 35" +/-, REFUSAL AT 36" +/- ROCK

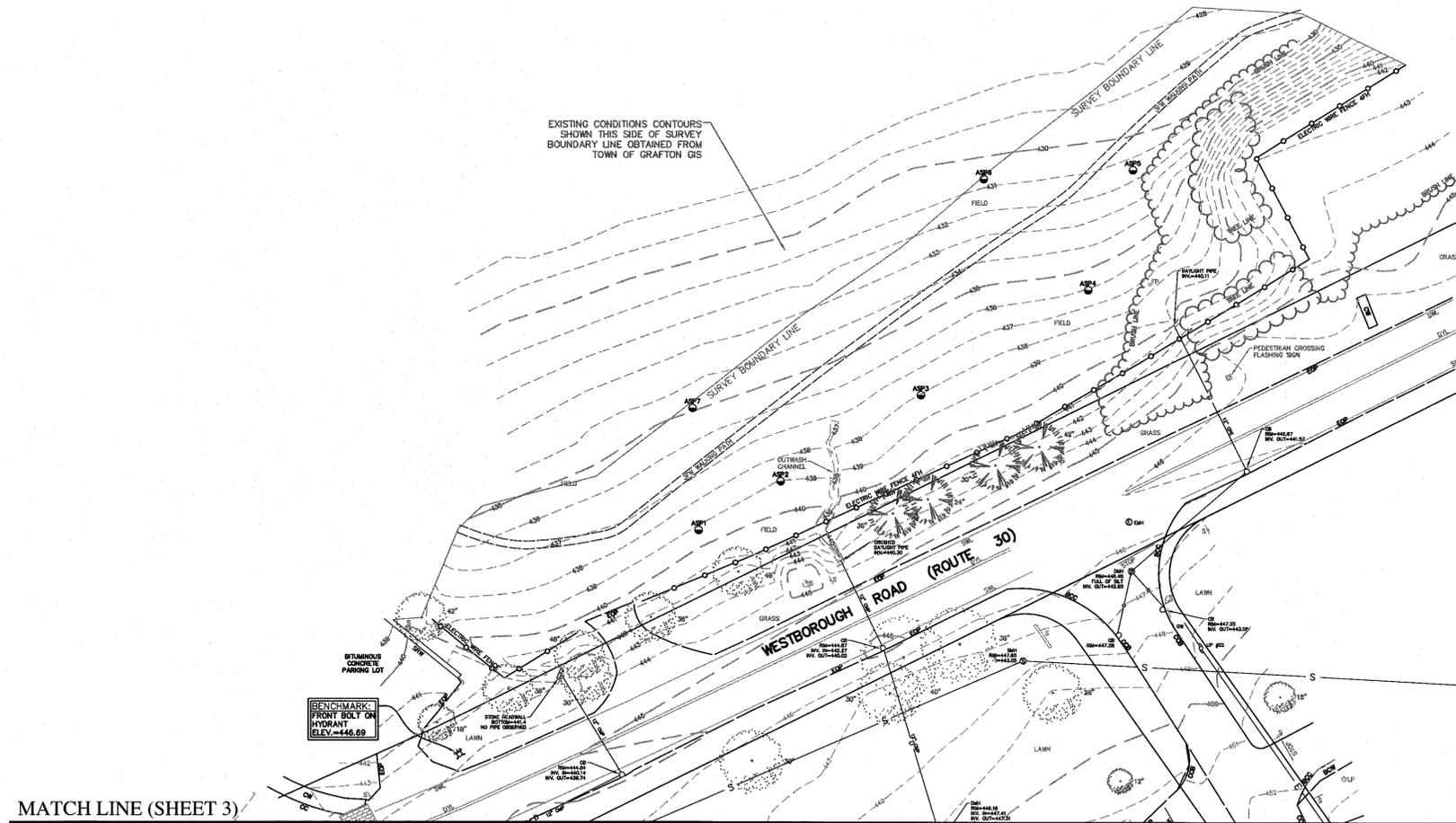
**ASP-6**

DEPTH FROM SURFACE (INCHES)	SOIL TEXTURE (USD)	REDOX	OTHER (STRUCTURE, STONES, BOULDERS, CONSISTENCY, & GRAVEL)
0-31" +/-	VERY FINE LOAMY SAND	18" +/-	THICKER TOPSOIL LAYER, REDOX TO REFUSAL AT 31" +/- ROCK

**ASP-7**

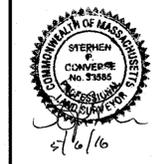
DEPTH FROM SURFACE (INCHES)	SOIL TEXTURE (USD)	REDOX	OTHER (STRUCTURE, STONES, BOULDERS, CONSISTENCY, & GRAVEL)
0-21" +/-	VERY FINE LOAMY SAND	25" +/-	REFUSAL AT 21" +/- ROCK

NOTE:  
1. REFER TO SHEET 3 FOR PLAN NOTES AND LEGEND.



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JOB NO.:	0016.14	DWN. BY:	
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**DEMOLITION AND SITE PREPARATION NOTES:**

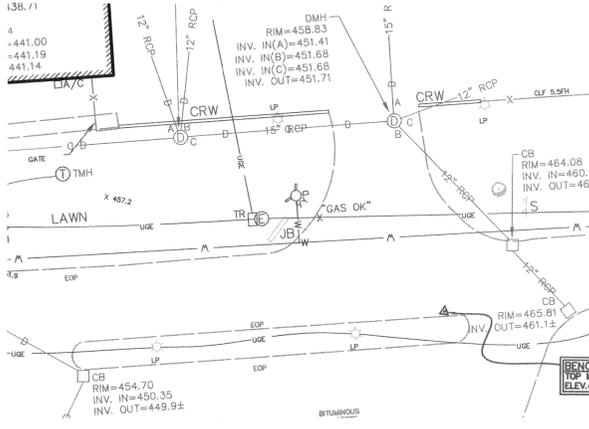
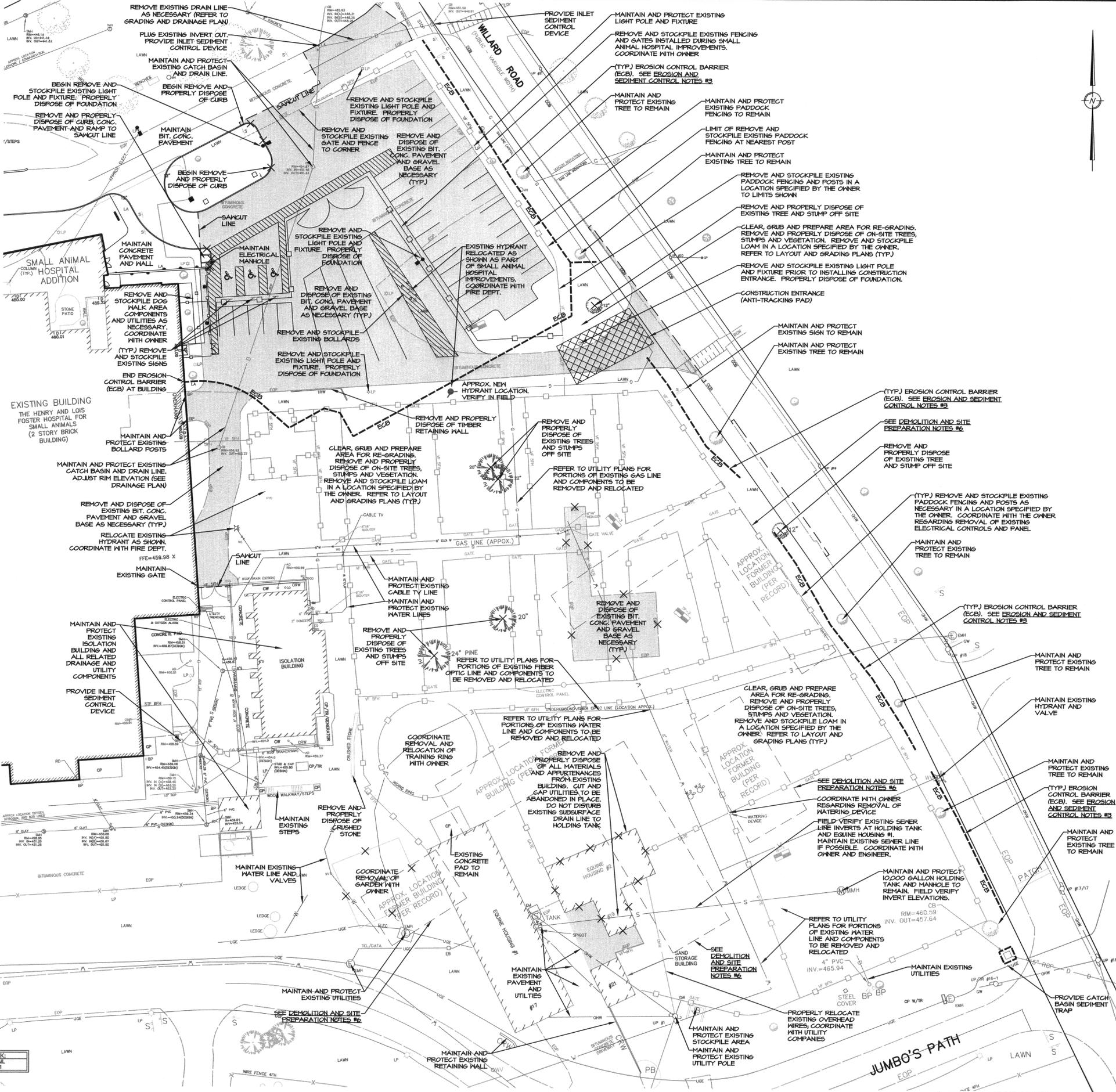
- SEE SHEET 3 FOR PLAN NOTES AND LEGEND.
- SEE SHEET 6 FOR LAYOUT AND MATERIALS NOTES AND SHEET 7 FOR GRADING, DRAINAGE AND UTILITY NOTES.
- LOCATIONS OF UNDERGROUND UTILITIES SHOWN HEREON WERE COMPILED FROM AVAILABLE RECORD PLANS OF UTILITY COMPANIES AND ARE APPROXIMATE AND ASSUMED. THERE MAY BE ADDITIONAL UNDERGROUND UTILITIES THAT ARE NOT DEPICTED HEREON. BEFORE COMMENCING SITE WORK, CONTRACTOR SHALL CALL "DIG SAFE" AT 1-800-344-1233 (PER 220 CMR 14), A PRIVATE UTILITY LOCATING CONTRACTOR, AND LOCAL MUNICIPAL UTILITY DEPARTMENTS TO ACCURATELY LOCATE UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY APPROPRIATE UTILITY COMPANIES / DEPARTMENTS OF ANY UTILITIES DAMAGED DURING CONSTRUCTION. ANY COSTS RELATED TO THE REPAIR OF UTILITIES DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITY SHALL BE THE CONTRACTOR'S RESPONSIBILITY. NO EXCAVATION SHALL BE PERFORMED UNTIL ALL UTILITY COMPANIES HAVE BEEN NOTIFIED.
- CONTRACTOR TO CONFIRM SIZE AND DISPOSITION OF ALL UTILITIES TO SITE AND COORDINATE REMOVAL/RELOCATION OF PRIVATE UTILITIES TO/IN/ON SITE WITH RESPECTIVE UTILITY COMPANIES.
- SMALL ANIMAL HOSPITAL IMPROVEMENTS CURRENTLY UNDER CONSTRUCTION ARE SHOWN AS EXISTING HEREON FOR REFERENCE ONLY. CONTRACTOR TO CONFIRM AS-BUILT LOCATIONS AND GRADES OF ALL IMPROVEMENTS PRIOR TO CONSTRUCTION.
- APPROXIMATE LOCATIONS OF FORMER BUILDINGS ARE SHOWN FOR REFERENCE ONLY BASED ON RECORDS PROVIDED BY TUFTS UNIVERSITY. CONTRACTOR SHOULD ANTICIPATE THAT SUBSURFACE BUILDING REMAINS MAY BE DISCOVERED DURING CONSTRUCTION. COORDINATE WITH OWNER, ENGINEER AND ARCHITECT REGARDING ANY SUBSURFACE BUILDING REMAINS DISCOVERED TO DETERMINE IF SUCH REMAINS SHALL BE ABANDONED IN PLACE OR REMOVED.
- THE CONTRACTOR SHALL NOTIFY THE OWNER 72 HOURS PRIOR TO ANY ANTICIPATED OR SCHEDULED UTILITY INTERRUPTIONS. THE CONTRACTOR SHALL NOT INTERRUPT UTILITY SERVICES WITHOUT OWNER'S CONSENT.
- CONTRACTOR SHALL OBTAIN PERMIT(S) FOR TRENCH EXCAVATION (PER 920 CMR 14).
- CONTRACTOR SHALL OBTAIN PERMIT(S) FOR DEMOLITION (PER 910 CMR 7 & 18, 19 AND 459 CMR 6) AS APPLICABLE.
- ALL ITEMS NOTED FOR REMOVAL AND DISPOSAL, AS WELL AS THOSE ITEMS DISCOVERED DURING EXCAVATION THAT REQUIRE REMOVAL AND REPLACEMENT, SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND MUST EITHER BE RECYCLED OR DISPOSED OF OFF SITE ACCORDING TO APPLICABLE REGULATIONS (910 CMR 7, 18 & 19 AND 459 CMR 6). CONTRACTOR IS RESPONSIBLE FOR OBTAINING NECESSARY PERMITS FOR DEMOLITION, HAULING AND DISPOSING OF SAID MATERIALS.
- EXISTING ITEMS TO BE REMOVED AND STOCKPILED MUST BE SALVAGED AND DELIVERED BY THE CONTRACTOR TO A LOCATION SPECIFIED BY THE OWNER.
- NO DEMOLITION OR CONSTRUCTION MATERIAL MAY BE DISPOSED OF ON SITE.
- MAINTAIN AND PROTECT ALL EXISTING ON-SITE UTILITY AND DRAINAGE LINES AND STRUCTURES, UTILITY POLES, AND TRAFFIC SIGNALS UNLESS OTHERWISE NOTED.
- MAINTAIN AND PROTECT EXISTING CANPUS SIDEWALKS AND STEPS TO REMAIN UNLESS OTHERWISE NOTED.
- WHERE NECESSARY, EXISTING PAVEMENT SHALL BE SAW CUT, AND NEW PAVEMENT SHALL BE BLENDED SMOOTHLY TO MEET CUT EDGES.
- ALL EXISTING SITE FEATURES THAT ARE NOT SPECIFICALLY NOTED TO BE REMOVED SHALL BE PRESERVED AND PROTECTED AT ALL TIMES DURING CONSTRUCTION.

**EROSION AND SEDIMENT CONTROL NOTES:**

- SEE SHEET 3 FOR PLAN NOTES AND LEGEND.
- SEE SHEET 6 FOR LAYOUT AND MATERIALS NOTES AND SHEET 7 FOR GRADING, DRAINAGE AND UTILITY NOTES.
- PRIOR TO CONSTRUCTION AN EROSION CONTROL BARRIER (ECB) SHALL BE PROVIDED AS SHOWN ON THE PLANS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE ECB THROUGHOUT ALL PHASES OF CONSTRUCTION UNTIL ALL DISTURBED LAND SURFACES ARE PERMANENTLY STABILIZED. WHERE PROPOSED ECB PROTECTS EXISTING PAVED AREAS TO REMAIN, BREAK SILT FENCE AND PROVIDE HAYBALES ONLY. ADDITIONALLY, THE CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO PREPARE AND FILE A FINAL STORMWATER POLLUTION PREVENTION PLAN (SWPPP) WITH THE GRAFTON DPW AND AN ELECTRONIC NOTICE OF INTENT (NOI) WITH THE US EPA. CONTRACTOR SHALL READ AND SIGN SWPPP AND SHALL BE RESPONSIBLE FOR COMPLYING WITH REQUIREMENTS OF THE SWPPP.
- PROVIDE INLET SEDIMENT CONTROL DEVICES AT ALL EXISTING CATCH BASINS TO REMAIN. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL INLET SEDIMENT CONTROL DEVICES THROUGHOUT ALL PHASES OF CONSTRUCTION UNTIL ALL DISTURBED LAND SURFACES ARE PERMANENTLY STABILIZED. REFER TO DETAILS.
- A CONSTRUCTION ENTRANCE (ANTI-TRACKING PAD) SHALL BE USED TO MINIMIZE OFF-SITE MOVEMENT OF SOIL BY VEHICLES. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER AND APPLICABLE TOWN AUTHORITIES TO DETERMINE THE LOCATION OF THE CONSTRUCTION ENTRANCE PRIOR TO INSTALLATION. CONTRACTOR TO MAINTAIN CONSTRUCTION ENTRANCE(S) FOR THE DURATION OF CONSTRUCTION TO PREVENT TRACKING OR FLOW OF SEDIMENT ONTO ADJACENT PROPERTIES AND/OR PUBLIC RIGHTS-OF-WAY.
- SEDIMENT SHALL BE RETAINED ON-SITE. UPON DISCOVERY, THE CONTRACTOR SHALL IMMEDIATELY REMOVE ANY SOIL OR DEBRIS WHICH ERODES FROM THE SITE ONTO ADJOINING PORTIONS OF THE CANPUS, TOWN STREETS OR INTO THE EXISTING DRAINAGE SYSTEM.
- STREET SWEEPING SHALL BE CONDUCTED BIWEEKLY (AT A MINIMUM) DURING CONSTRUCTION UNTIL SURFACES ARE PERMANENTLY STABILIZED.
- AN ADEQUATE SUPPLY OF CRUSHED STONE AND SILT SACS SHALL BE KEPT ON SITE DURING CONSTRUCTION FOR ROUTINE OR EMERGENCY REPAIRS. THIS SUPPLY SHALL BE STORED IN AN AREA PROTECTED FROM THE ELEMENTS.
- EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE MAINTAINED UNTIL FINAL STABILIZATION OF DISTURBED AREAS HAS BEEN ACCOMPLISHED. EROSION CONTROLS SHALL BE INSPECTED AFTER EACH RAINFALL EVENT GREATER THAN 1/2 INCH AND ONCE PER MONTH DURING CONSTRUCTION AND CONTINUE UNTIL FINAL SITE STABILIZATION.
- DUST SHALL BE MANAGED BY WATERING AND/OR DUST PALLIATIVE, AS APPROPRIATE.
- DISTURBED AREAS SHALL BE MINIMIZED AND SHALL BE STABILIZED WITHIN 14 DAYS OF THE LAST DISTURBANCE.
- SEED AND FERTILIZER SHALL BE PLACED PRIOR TO THE PLACING OF EROSION CONTROL MATTING ON SLOPES.

**SITE DEMOLITION KEY**

- REMOVE AND DISPOSE
- R&D BITUMINOUS CONCRETE / CONCRETE PAVEMENT
- SAWCUT BITUMINOUS CONCRETE / CONCRETE PAVEMENT



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PREPARED BY:  
  
 5/1/16

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OWNER / APPLICANT:  
**THE CUMMINGS SCHOOL OF VETERINARY MEDICINE AT TUFTS UNIVERSITY**  
 200 Westborough Drive  
 North Grafton, MA

TITLE:  
**SITE PREPARATION AND DEMOLITION PLAN**

**EQUINE ARENA**  
 Grafton, MA  
 (Worcester County)  
 PERMITTING

DATE:	3/29/16	SCALE:	1" = 30'
JOB NO.:	0016.14	DWN. BY:	
FILE NO.:	0016350	CHK'D. BY:	
DRAWING NO.:	0016351B	SHEET:	5

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**LAYOUT & MATERIALS NOTES:**

- SEE SHEET 3 FOR PLAN NOTES AND LEGEND.
- SEE SHEET 5 FOR DEMOLITION AND SITE PREPARATION NOTES AS WELL AS EROSION AND SEDIMENT CONTROL NOTES.
- REFER TO SHEET 1 FOR GRADING, DRAINAGE AND UTILITY NOTES.
- SMALL ANIMAL HOSPITAL IMPROVEMENTS CURRENTLY UNDER CONSTRUCTION ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR TO CONFIRM AS-BUILT LOCATIONS AND GRADES OF ALL IMPROVEMENTS PRIOR TO CONSTRUCTION.
- ALL SETBACK LINES AND DIMENSIONS ARE PARALLEL TO OR PERPENDICULAR TO THE LINES FROM WHICH THEY ARE MEASURED, UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL VERIFY ALL CONDITIONS IN THE FIELD AND REPORT ANY DISCREPANCIES TO ENGINEER OF RECORD PRIOR TO CONSTRUCTION.
- DIMENSIONS OF PARKING SPACES AND WALKWAYS ARE MEASURED FROM FACE OF CURB.
- EACH ACCESSIBLE PARKING SPACE SHALL BE IDENTIFIED BY A SIGN LOCATED AT THE BACK OF CURB. THE SIGN SHALL CONTAIN THE "INTERNATIONAL SYMBOL OF ACCESSIBILITY" AS DESCRIBED IN THE AMERICANS WITH DISABILITIES ACT, PUBLIC LAW 101-366, AND DETAILED IN THE FHWAUSDOT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AS AMENDED.

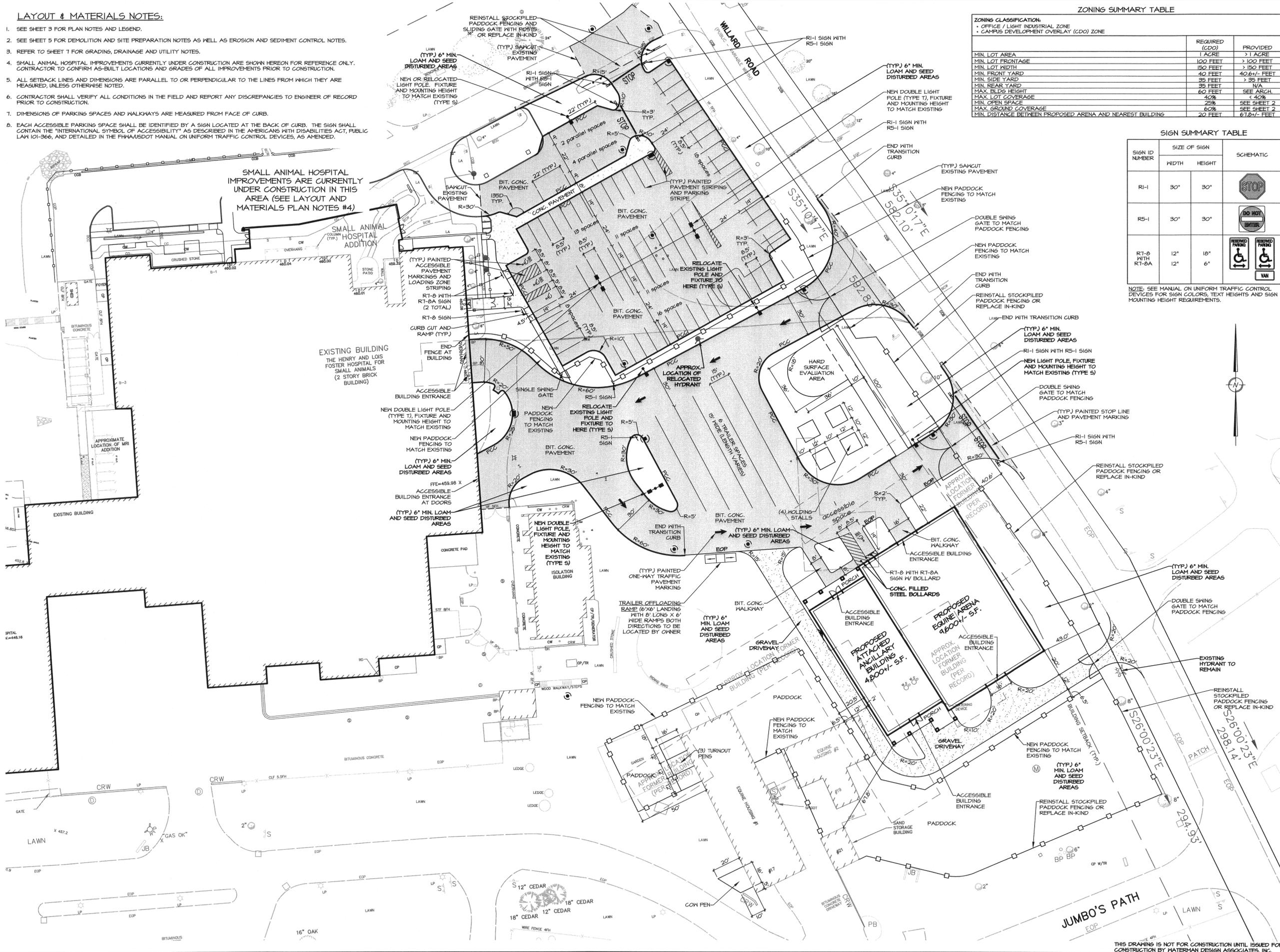
**ZONING SUMMARY TABLE**

ZONING CLASSIFICATION: OFFICE / LIGHT INDUSTRIAL ZONE CAMPUS DEVELOPMENT OVERLAY (CDO) ZONE		
	REQUIRED (CDO)	PROVIDED
MIN. LOT AREA	1 ACRE	> 1 ACRE
MIN. LOT FRONTAGE	100 FEET	> 100 FEET
MIN. LOT WIDTH	150 FEET	> 150 FEET
MIN. FRONT YARD	40 FEET	40.6'-4 FEET
MIN. SIDE YARD	35 FEET	> 35 FEET
MIN. REAR YARD	35 FEET	N/A
MAX. BLDG HEIGHT	60 FEET	SEE ARCH.
MAX. LOT COVERAGE	40%	< 40%
MIN. OPEN SPACE	25%	SEE SHEET 2
MAX. GROUND COVERAGE	60%	SEE SHEET 2
MIN. DISTANCE BETWEEN PROPOSED ARENA AND NEAREST BUILDING	20 FEET	61.2'-4 FEET

**SIGN SUMMARY TABLE**

SIGN ID NUMBER	SIZE OF SIGN		SCHEMATIC
	WIDTH	HEIGHT	
R1-1	30"	30"	
R5-1	30"	30"	
RT-8 WITH RT-8A	12"	18"	
RT-8A	12"	6"	

NOTE: SEE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR SIGN COLORS, TEXT HEIGHTS AND SIGN MOUNTING HEIGHT REQUIREMENTS.



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5/6/16

5/10/16

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OWNER / APPLICANT:

**THE CUMMINGS SCHOOL OF VETERINARY MEDICINE AT TUFTS UNIVERSITY**  
200 Westborough Drive  
North Grafton, MA

TITLE:

**LAYOUT AND MATERIALS PLAN**

**EQUINE ARENA**

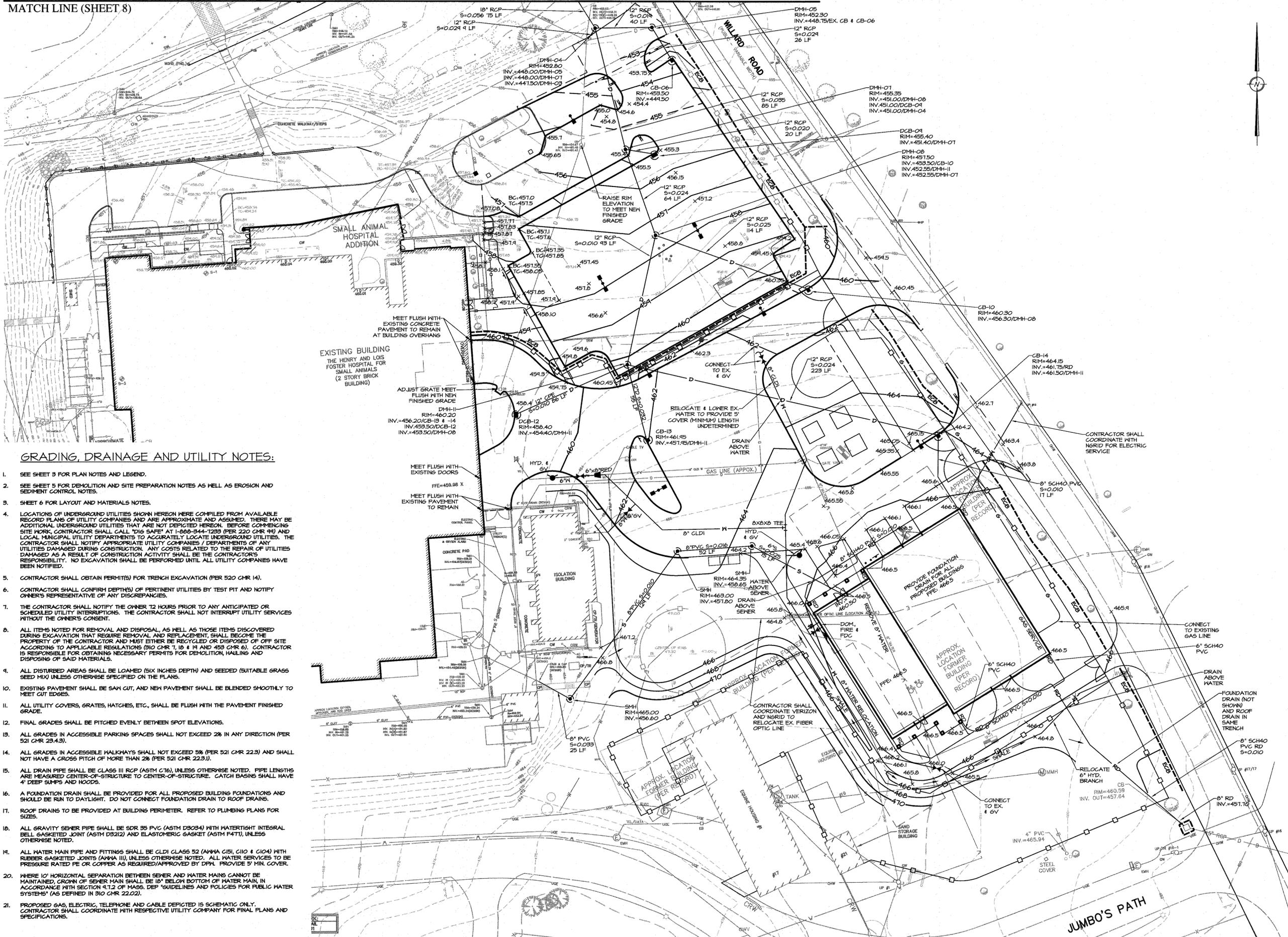
North Grafton, MA  
(Worcester County)

PERMITTING

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FILE NO.:	0016250	CHK'D BY:	
DRAWING NO.:	0016253B	SHEET:	6

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MATCH LINE (SHEET 8)

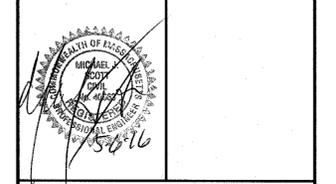


**GRADING, DRAINAGE AND UTILITY NOTES:**

1. SEE SHEET 3 FOR PLAN NOTES AND LEGEND.
2. SEE SHEET 5 FOR DEMOLITION AND SITE PREPARATION NOTES AS WELL AS EROSION AND SEDIMENT CONTROL NOTES.
3. SHEET 6 FOR LAYOUT AND MATERIALS NOTES.
4. LOCATIONS OF UNDERGROUND UTILITIES SHOWN HEREIN WERE COMPILED FROM AVAILABLE RECORD PLANS OF UTILITY COMPANIES AND ARE APPROXIMATE AND ASSUMED. THERE MAY BE ADDITIONAL UNDERGROUND UTILITIES THAT ARE NOT DEPICTED HEREON. BEFORE COMMENCING SITE WORK, CONTRACTOR SHALL CALL "DIG SAFE" AT 1-888-344-7225 (PER 220 CMR 4F) AND LOCAL MUNICIPAL UTILITY DEPARTMENTS TO ACCURATELY LOCATE UNDERGROUND UTILITIES. THE CONTRACTOR SHALL NOTIFY APPROPRIATE UTILITY COMPANIES / DEPARTMENTS OF ANY UTILITIES DAMAGED DURING CONSTRUCTION. ANY COSTS RELATED TO THE REPAIR OF UTILITIES DAMAGED AS A RESULT OF CONSTRUCTION ACTIVITY SHALL BE THE CONTRACTOR'S RESPONSIBILITY. NO EXCAVATION SHALL BE PERFORMED UNTIL ALL UTILITY COMPANIES HAVE BEEN NOTIFIED.
5. CONTRACTOR SHALL OBTAIN PERMITS FOR TRENCH EXCAVATION (PER 520 CMR 14).
6. CONTRACTOR SHALL CONFIRM DEPTHS OF PERTINENT UTILITIES BY TEST PIT AND NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES.
7. THE CONTRACTOR SHALL NOTIFY THE OWNER 72 HOURS PRIOR TO ANY ANTICIPATED OR SCHEDULED UTILITY INTERRUPTIONS. THE CONTRACTOR SHALL NOT INTERRUPT UTILITY SERVICES WITHOUT THE OWNER'S CONSENT.
8. ALL ITEMS NOTED FOR REMOVAL AND DISPOSAL, AS WELL AS THOSE ITEMS DISCOVERED DURING EXCAVATION THAT REQUIRE RECYCLING, SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND MUST EITHER BE RECYCLED OR DISPOSED OF OFF SITE ACCORDING TO APPLICABLE REGULATIONS (910 CMR 7.10 & 19 AND 453 CMR 6). CONTRACTOR IS RESPONSIBLE FOR OBTAINING NECESSARY PERMITS FOR DEMOLITION, HAULING AND DISPOSING OF SAID MATERIALS.
9. ALL DISTURBED AREAS SHALL BE LOAMED (SIX INCHES DEPTH) AND SEEDED (SUITABLE GRASS SEED MIX UNLESS OTHERWISE SPECIFIED ON THE PLANS).
10. EXISTING PAVEMENT SHALL BE SAW CUT, AND NEW PAVEMENT SHALL BE BLENDED SMOOTHLY TO MEET CUT EDGES.
11. ALL UTILITY COVERS, GRATES, HATCHES, ETC., SHALL BE FLUSH WITH THE PAVEMENT FINISHED GRADE.
12. FINAL GRADES SHALL BE PITCHED EVENLY BETWEEN SPOT ELEVATIONS.
13. ALL GRADES IN ACCESSIBLE PARKING SPACES SHALL NOT EXCEED 2% IN ANY DIRECTION (PER 521 CMR 23.4.3).
14. ALL GRADES IN ACCESSIBLE WALKWAYS SHALL NOT EXCEED 5% (PER 521 CMR 22.3) AND SHALL NOT HAVE A CROSS PITCH OF MORE THAN 2% (PER 521 CMR 22.3.1).
15. ALL DRAIN PIPE SHALL BE CLASS III RCP (ASTM C76), UNLESS OTHERWISE NOTED. PIPE LENGTHS ARE MEASURED CENTER-OF-STRUCTURE TO CENTER-OF-STRUCTURE. CATCH BASINS SHALL HAVE 4" DEEP SUMPS AND HOODS.
16. A FOUNDATION DRAIN SHALL BE PROVIDED FOR ALL PROPOSED BUILDING FOUNDATIONS AND SHOULD BE RUN TO DAYLIGHT. DO NOT CONNECT FOUNDATION DRAIN TO ROOF DRAINS.
17. ROOF DRAINS TO BE PROVIDED AT BUILDINGS PERIMETER. REFER TO PLUMBING PLANS FOR SIZES.
18. ALL GRAVITY SEWER PIPE SHALL BE SDR 35 PVC (ASTM D3034) WITH WATERTIGHT INTEGRAL BELL GASKETED JOINT (ASTM D3212) AND ELASTOMERIC GASKET (ASTM F471), UNLESS OTHERWISE NOTED.
19. ALL WATER MAIN PIPE AND FITTINGS SHALL BE CLDI CLASS 52 (ANMA G51, C10 & C104) WITH RUBBER GASKETED JOINTS (ANMA III), UNLESS OTHERWISE NOTED. ALL WATER SERVICES TO BE PRESSURE RATED PE OR COPPER AS REQUIRED/APPROVED BY DPH. PROVIDE 5' MIN. COVER.
20. WHERE 10' HORIZONTAL SEPARATION BETWEEN SEWER AND WATER MAINS CANNOT BE MAINTAINED, CROWN OF SEWER MAIN SHALL BE 18" BELOW BOTTOM OF WATER MAIN, IN ACCORDANCE WITH SECTION 9.1.2 OF MASS. DEP "GUIDELINES AND POLICIES FOR PUBLIC WATER SYSTEMS" (AS DEFINED IN 910 CMR 22.02).
21. PROPOSED GAS, ELECTRIC, TELEPHONE AND CABLE DEPICTED IS SCHEMATIC ONLY. CONTRACTOR SHALL COORDINATE WITH RESPECTIVE UTILITY COMPANY FOR FINAL PLANS AND SPECIFICATIONS.

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OWNER / APPLICANT:  
**THE CUMMINGS SCHOOL OF VETERINARY MEDICINE AT TUFTS UNIVERSITY**  
 200 Westborough Drive  
 North Grafton, MA

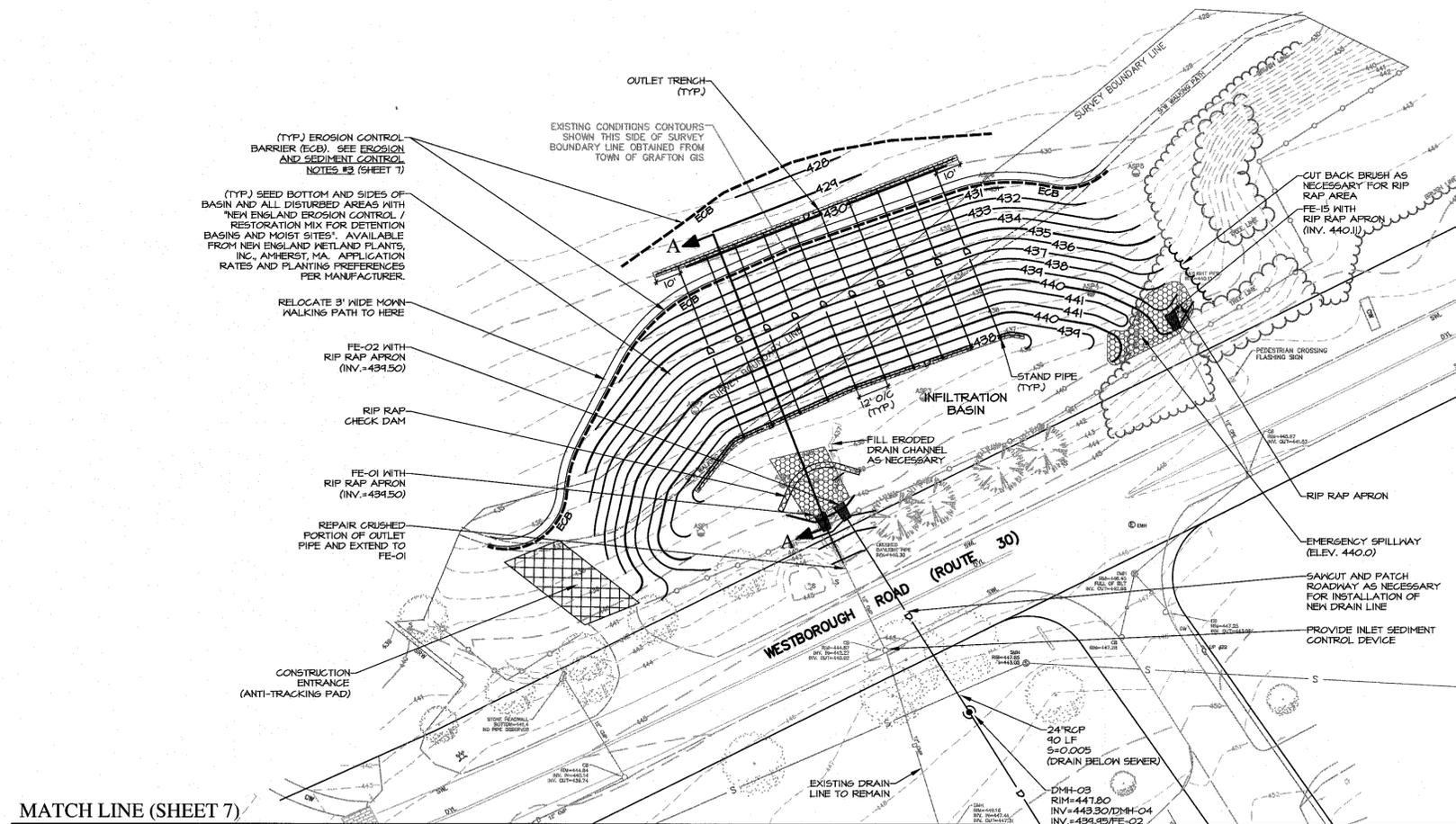
TITLE:  
**GRADING, DRAINAGE AND UTILITIES PLAN**  
**EQUINE ARENA**  
 North Grafton, MA  
 (Worcester County)  
 PERMITTING

DATE:	3/29/16	SCALE:	1" = 30'
JOB NO.:	001614	DWN. BY:	
FILE NO.:	0016350	CHK'D. BY:	
DRAWING NO.:	0016352B	SHEET:	7

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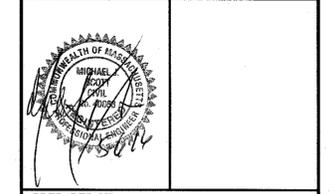
- SEE SHEET 5 FOR DEMOLITION AND SITE PREPARATION NOTES AS WELL AS EROSION AND SEDIMENT CONTROL NOTES.
- SEE SHEET 7 FOR GRADING, DRAINAGE AND UTILITY NOTES.



MATCH LINE (SHEET 7)

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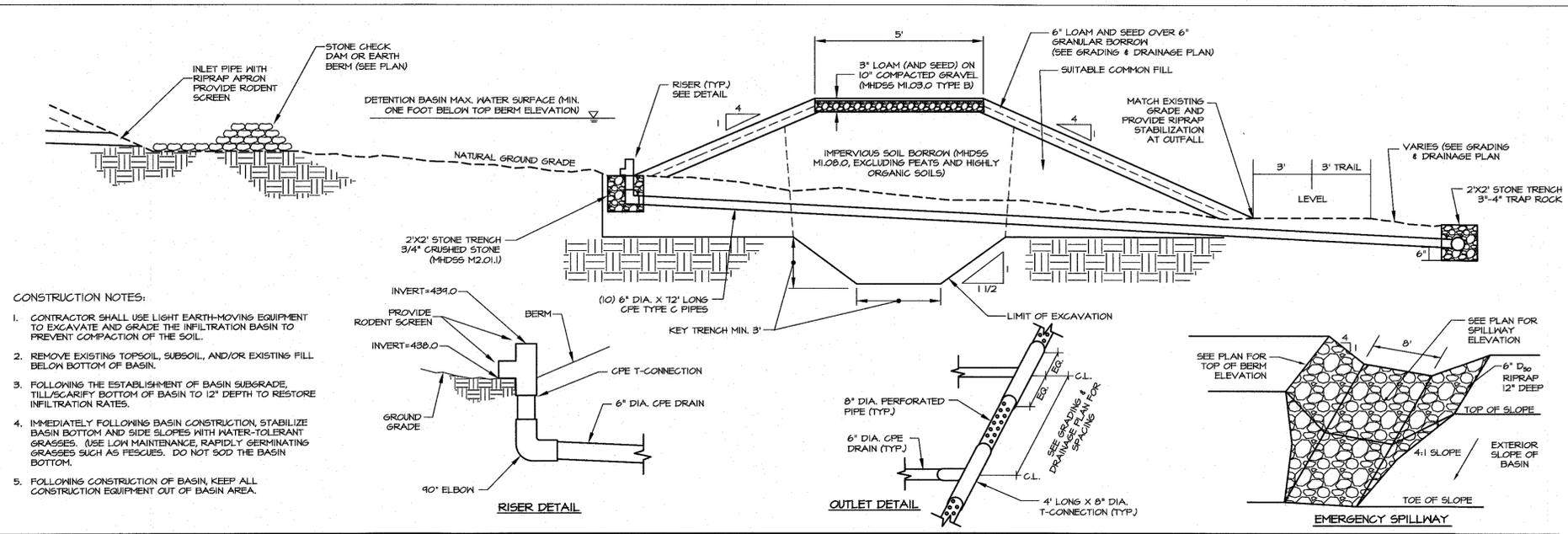


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 200 Westborough Drive  
 North Grafton, MA

TITLE:  
**GRADING, DRAINAGE AND UTILITIES PLAN**  
**EQUINE ARENA**  
 North Grafton, MA (Worcester County)  
 PERMITTING

DATE:	05/06/16	SCALE:	1" = 30'
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FILE NO.:	0016350	CHK'D. BY:	
DRAWING NO.:	0016353B	SHEET:	8

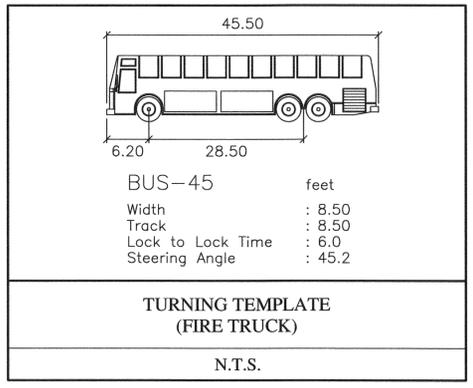
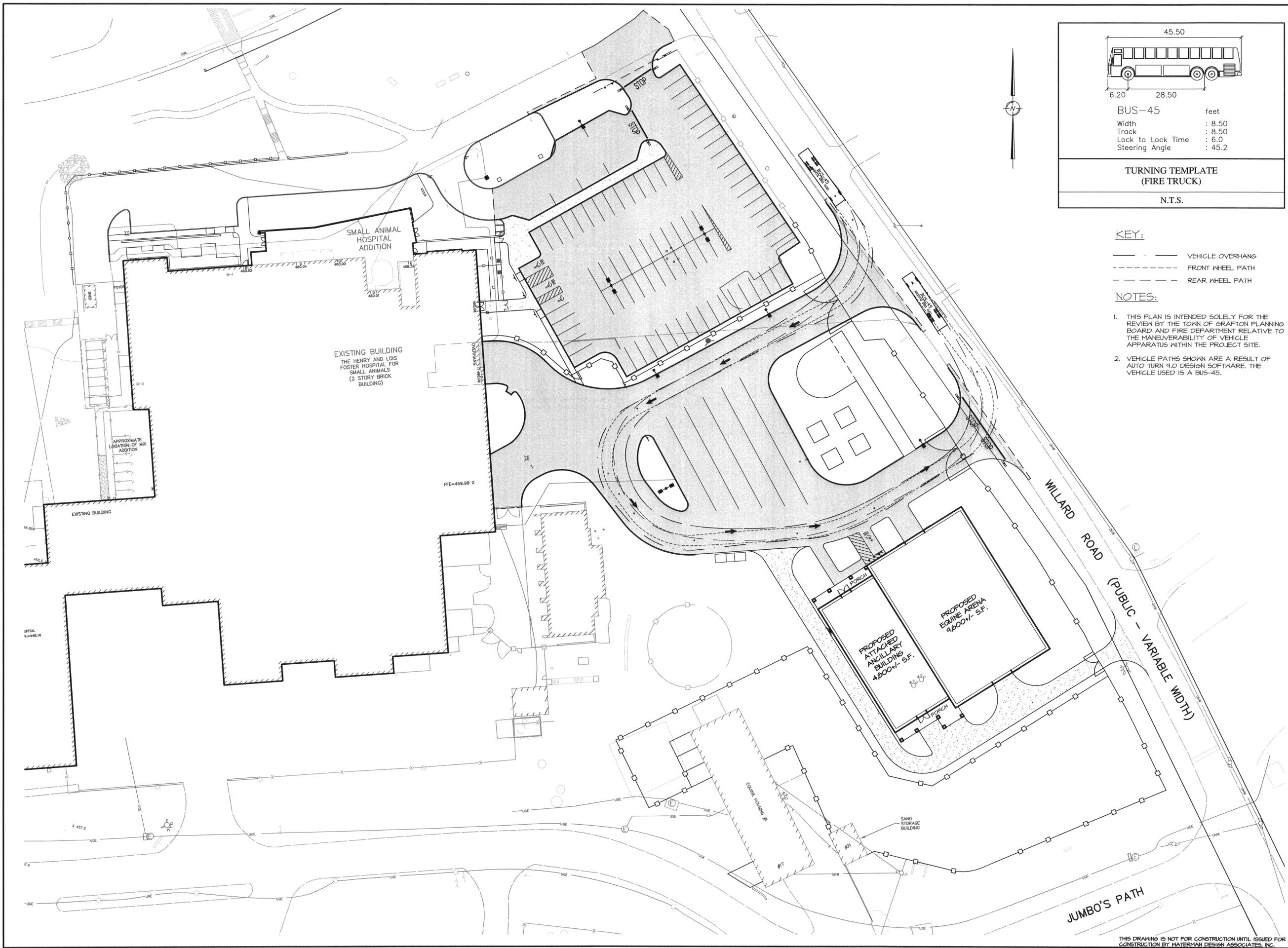


- CONSTRUCTION NOTES:**
- CONTRACTOR SHALL USE LIGHT EARTH-MOVING EQUIPMENT TO EXCAVATE AND GRADE THE INFILTRATION BASIN TO PREVENT COMPACTION OF THE SOIL.
  - REMOVE EXISTING TOPSOIL, SUBSOIL, AND/OR EXISTING FILL BELOW BOTTOM OF BASIN.
  - FOLLOWING THE ESTABLISHMENT OF BASIN SUBGRADE, TILLAGE/GRIP BOTTOM OF BASIN TO 12" DEPTH TO RESTORE INFILTRATION RATES.
  - IMMEDIATELY FOLLOWING BASIN CONSTRUCTION, STABILIZE BASIN BOTTOM AND SIDE SLOPES WITH WATER-TOLERANT GRASSES. USE LOW MAINTENANCE, RAPIDLY GERMINATING GRASSES SUCH AS FESCUES. DO NOT SOD THE BASIN BOTTOM.
  - FOLLOWING CONSTRUCTION OF BASIN, KEEP ALL CONSTRUCTION EQUIPMENT OUT OF BASIN AREA.

**SECTION A-A - INFILTRATION BASIN**

N.T.S. 02600-20  
KDA, INC.

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**KEY:**  
 - - - - - VEHICLE OVERHANG  
 - - - - - FRONT WHEEL PATH  
 - - - - - REAR WHEEL PATH

- NOTES:**
1. THIS PLAN IS INTENDED SOLELY FOR THE REVIEW BY THE TOWN OF GRAFTON PLANNING BOARD AND FIRE DEPARTMENT RELATIVE TO THE MANEUVERABILITY OF VEHICLE APPARATUS WITHIN THE PROJECT SITE.
  2. VEHICLE PATHS SHOWN ARE A RESULT OF AUTO TURN 4.0 DESIGN SOFTWARE. THE VEHICLE USED IS A BUS-45.

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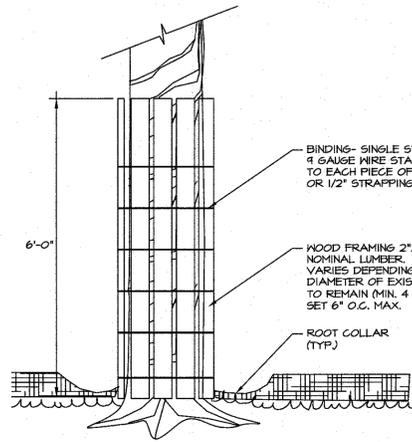
**THE CUMMINGS SCHOOL OF VETERINARY MEDICINE AT TUFTS UNIVERSITY**  
 200 Westborough Drive  
 North Grafton, MA

TITLE:  
**TURNING MOVEMENT EXHIBIT (FIRE TRUCK)**  
**EQUINE ARENA**  
 North Grafton, MA (Worcester County)  
 PERMITTING

DATE: 3/29/16 SCALE: 1" = 30'  
 JOB NO.: 0016.14 DWN. BY:  
 FILE NO.: 0016250 CHKD. BY:  
 DRAWING NO.: 0016254B SHEET: **9**

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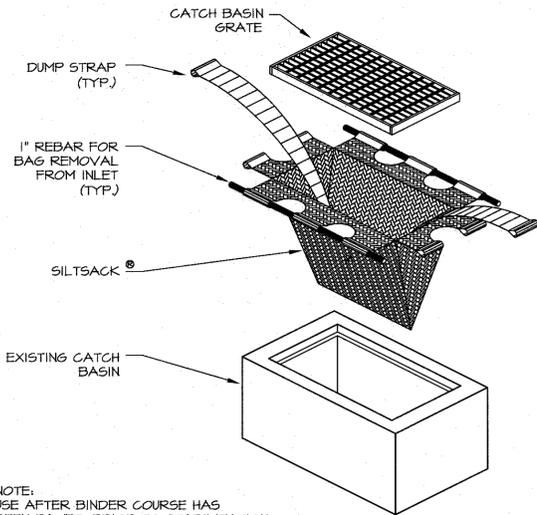
- NOTES:**
- USE FOR SINGLE TRUNK TREES WITHIN CONSTRUCTION AREA WHERE ROOT ZONE PROTECTION IS NOT FEASIBLE.
  - REMOVE ALL CHIPPER MULCH FROM ROOT CONE AFTER REMOVAL FROM SITE OF ALL HEAVY EQUIPMENT.
  - SHALL BE IN ACCORDANCE WITH MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.



**TREE TRUNK PROTECTION**

N.T.S.

WDA, INC.

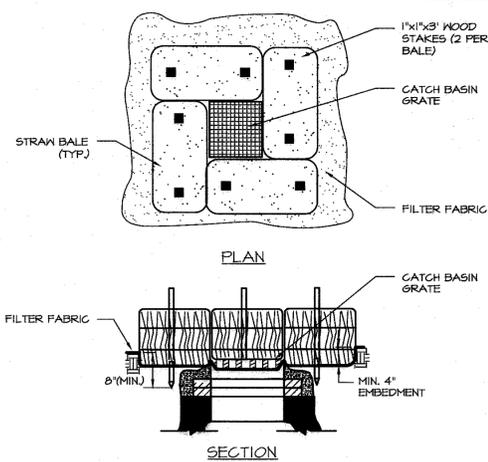


**NOTE:**  
USE AFTER BINDER COURSE HAS BEEN PAVED, PRIOR TO STABILIZATION OF SURROUNDING UPGRADIENT TERRAIN.

**INLET SEDIMENT CONTROL DEVICE**

N.T.S.

028710-10  
WDA, INC.

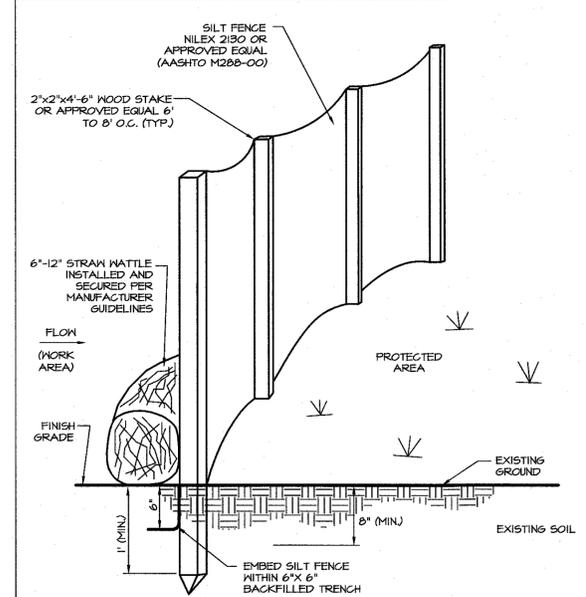


- NOTES:**
- TO BE USED OFF OF PAVEMENT OR PRIOR TO PAVING ONLY. USE INLET SEDIMENT CONTROL DEVICE FOR PAVEMENT AREAS (SEE DETAIL).
  - ENCLOSE STRUCTURE WITH STRAW BALES IMMEDIATELY AFTER CATCH BASIN CONSTRUCTION.
  - MAINTAIN UNTIL PAVING BINDER COURSE IS COMPLETE OR A PERMANENT STAND OF GRASS HAS BEEN ESTABLISHED.
  - IF GRATE IS AGAINST EXISTING CURB THEN STRAW BALES ARE TO BE PLACED AROUND THREE SIDES OF THE GRATE ONLY.
  - GRATE TO BE PLACED OVER FILTER FABRIC.
  - STRAW BALES SHALL BE INSPECTED PERIODICALLY AND AFTER ALL STORM EVENTS AND REPAIR OR REPLACEMENT SHALL BE PERFORMED PROMPTLY AS NEEDED.

**CATCH BASIN SEDIMENT TRAP**

N.T.S.

028710-09  
WDA, INC.



**EROSION CONTROL BARRIER (ECB)**

N.T.S.

UNCHKD  
028710-16  
WDA, INC.

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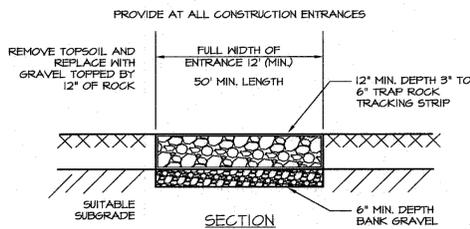
**WATERMAN DESIGN ASSOCIATES, INC.**  
31 East Main Street  
Westborough, MA 01581  
508.366.6552  
508.366.6506 (fax)  
watermandesign.com wda@wdassoc.com

OWNER / APPLICANT:

**THE CUMMINGS SCHOOL OF VETERINARY MEDICINE AT TUFTS UNIVERSITY**  
200 Westborough Drive  
North Grafton, MA

**TITLE:**  
CONSTRUCTION DETAILS  
EQUINE ARENA  
North Grafton, MA (Worcester County)  
PERMITTING

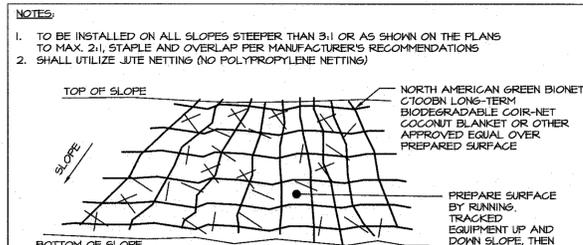
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JOB NO.:	0016.14	DWN. BY:	
FILE NO.:	0016550	CHK'D. BY:	
DRAWING NO.:	0016551B	SHEET:	10



**CONSTRUCTION ENTRANCE**

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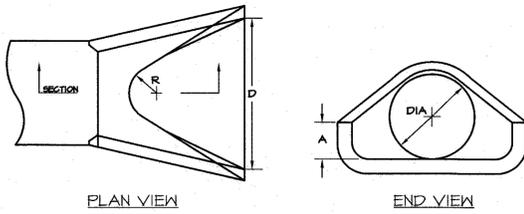
027100-13  
WDA, INC.



**SLOPE STABILIZATION MEASURES**

N.T.S.

WDA, INC.

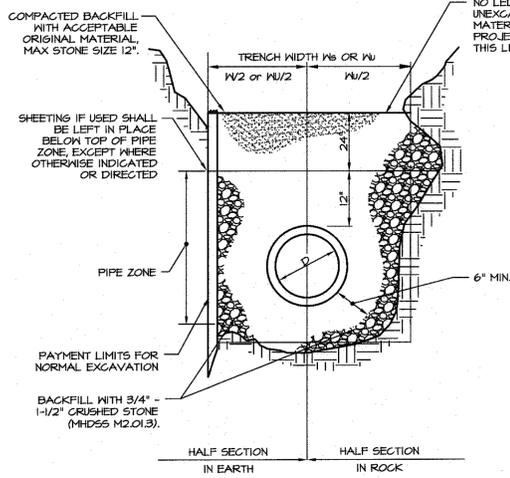


DIA.	A	B	C	D	E	R
12"	4"	2'-0"	4'-0"	10'	2'-0"	4"
15"	6"	2'-3"	5'-0"	2'-6"	2'-10"	11"
18"	8"	2'-6"	5'-6"	3'-0"	2'-12"	12"
24"	11/2"	3'-1 1/2"	2'-6"	4'-0"	3"	14"
30"	12"	4'-6"	1'-7 3/4"	5'-0"	3'-1/2"	15"
36"	5"	5'-3"	2'-10 3/4"	6'-0"	4"	20"

**CONCRETE FLARED END (FE)**

N.T.S.

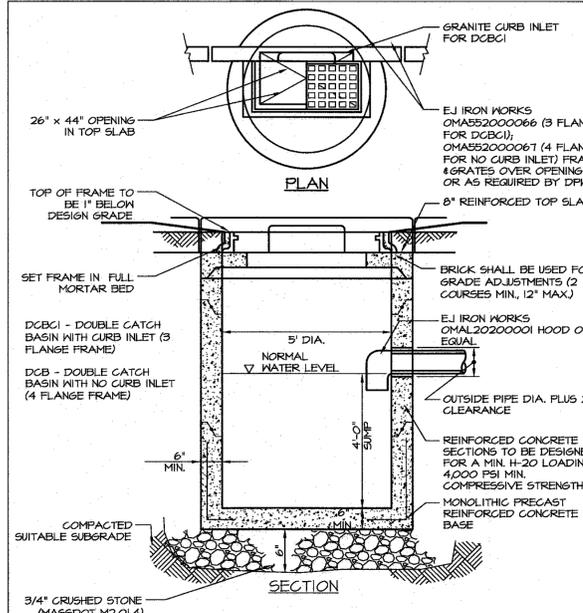
02600-30  
WDA, INC.



**DRAIN TRENCH SECTION**

N.T.S.

PER WESTBOROUGH DPM DETAILS  
WB-2500-03  
WDA, INC.

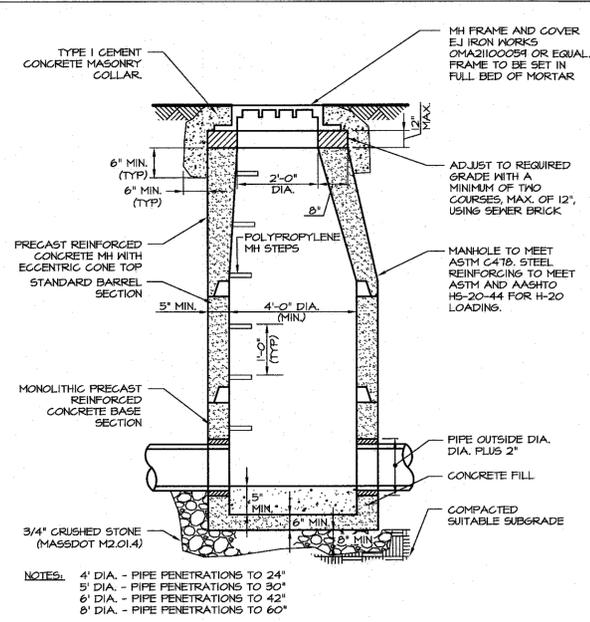


**DOUBLE GRATE CATCH BASIN (DCB)**

N.T.S.

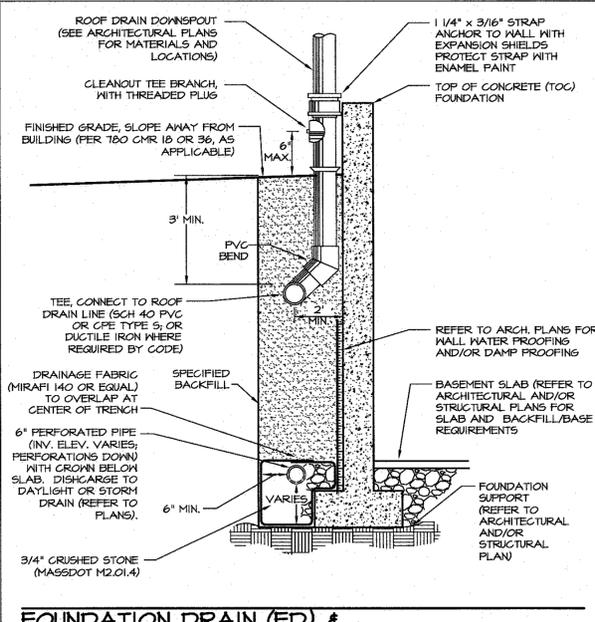
02600-03  
WDA, INC.

MUTCD REFERS TO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, 1988 EDITION (AS AMENDED) AND/OR STANDARD HIGHWAY SIGNS, LETS (AS AMENDED), BOTH ISSUED BY THE USDOT/FHWA.  
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MHD55 REFERS TO MASS. HIGHWAY DEPT. STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, 1982 (AS AMENDED).  
DPM REFERS TO LOCAL DEPARTMENT OF PUBLIC WORKS.  
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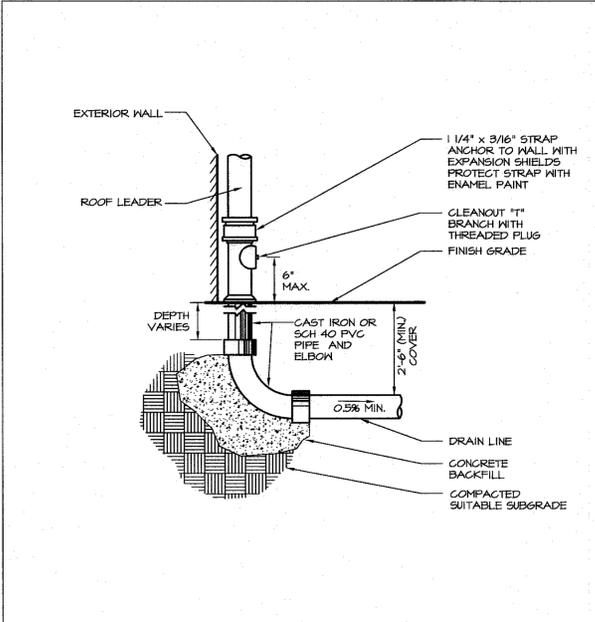
**DRAIN MANHOLE (DMH)**

N.T.S. 02600-04 WDA, INC.



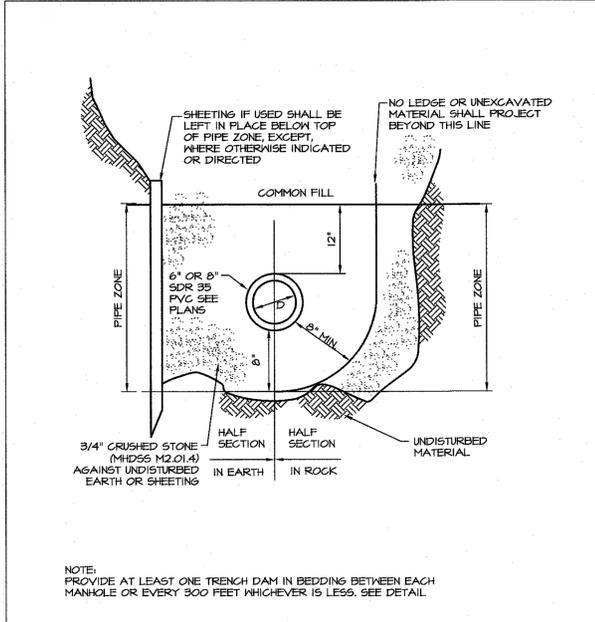
**FOUNDATION DRAIN (FD) & ROOF DRAIN (RD)**

N.T.S. 02600-07 WDA, INC.



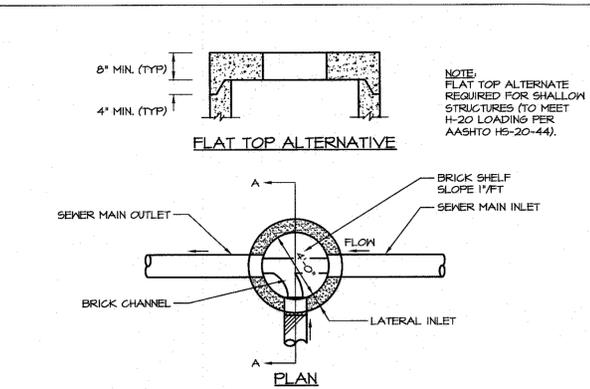
**ROOF LEADER CONNECTION**

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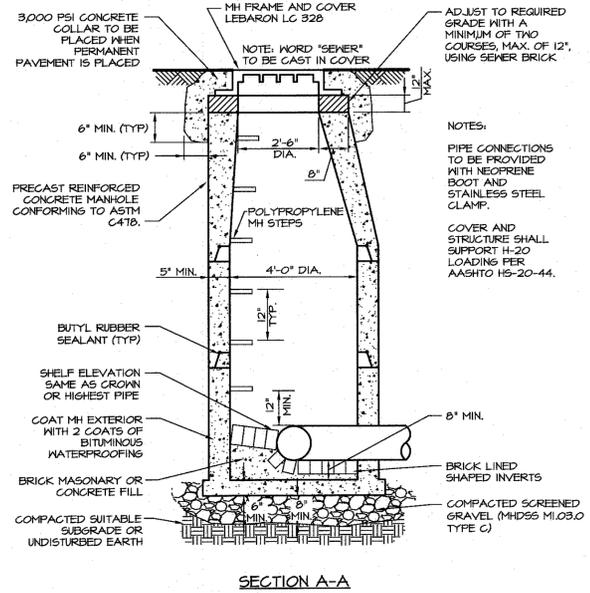
**PVC SEWER TRENCH**

N.T.S. 02500-01-GRAFTON WDA, INC.



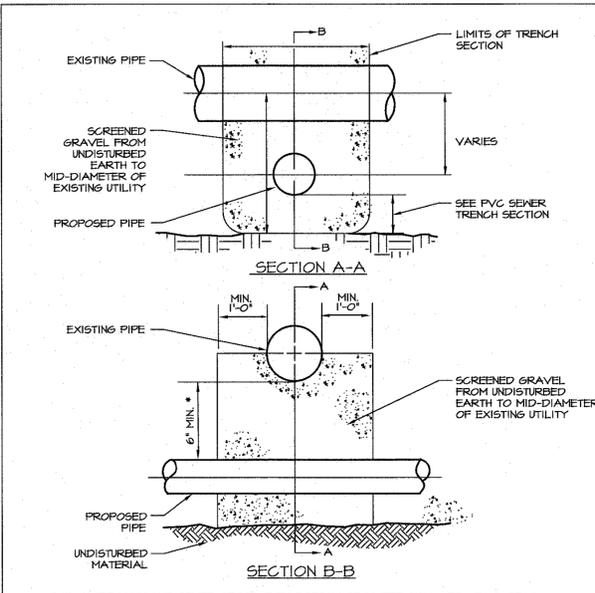
**FLAT TOP ALTERNATIVE**

NOTE: FLAT TOP ALTERNATE REQUIRED FOR SHALLOW STRUCTURES TO MEET H-20 LOADING PER AASHTO H5-20-44.



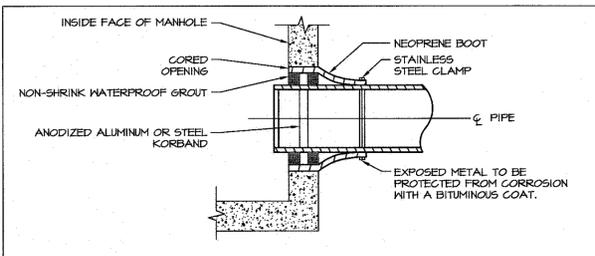
**SEWER MANHOLE (SMH)**

N.T.S. 02530-02-GRAFTON WDA, INC.



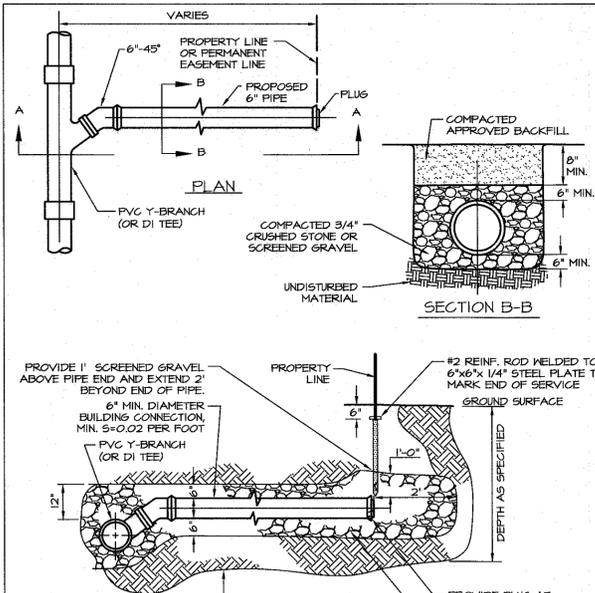
**UTILITY CROSSING**

N.T.S. 02500-03-GRAFTON WDA, INC.



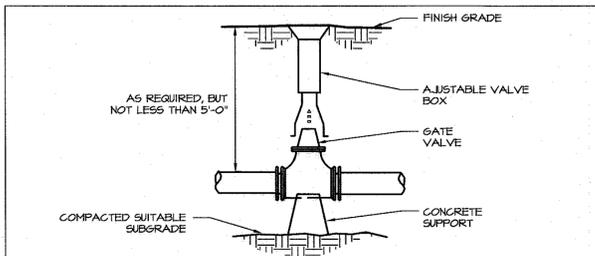
**SEWER PIPE CONNECTION**

N.T.S. 02530-08 WDA, INC.



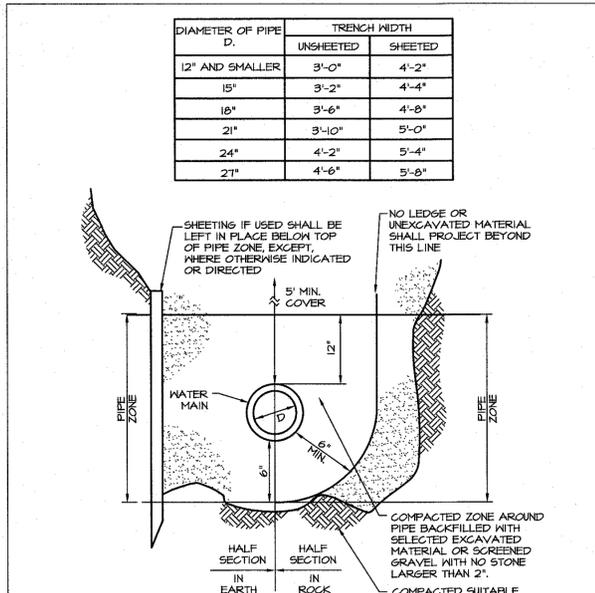
**SEWER SERVICE STUB**

N.T.S. 02530-10-GRAFTON WDA, INC.



**WATER GATE VALVE (WG)**

N.T.S. 02510-01 WDA, INC.



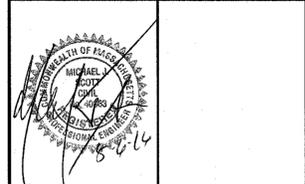
**WATER MAIN TRENCH SECTION**

N.T.S. 02510-03 WDA, INC.

DIAMETER OF PIPE D.	TRENCH WIDTH	
	UNSHEETED	SHEETED
12" AND SMALLER	3'-0"	4'-2"
15"	3'-2"	4'-4"
18"	3'-6"	4'-8"
21"	3'-10"	5'-0"
24"	4'-2"	5'-4"
27"	4'-6"	5'-8"

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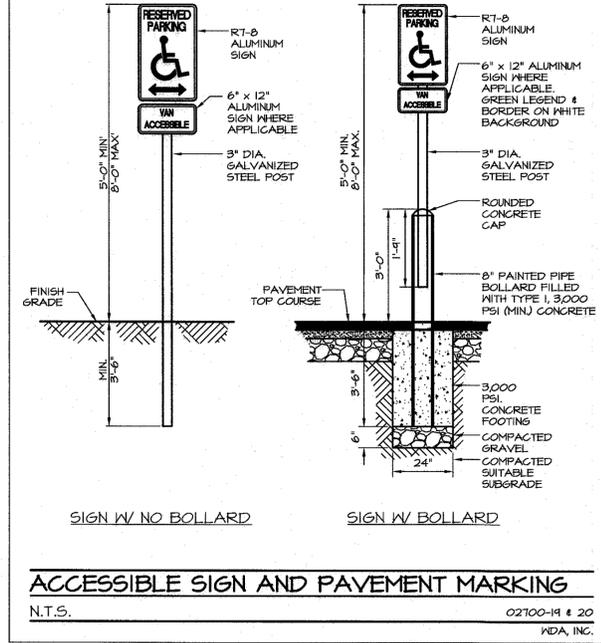
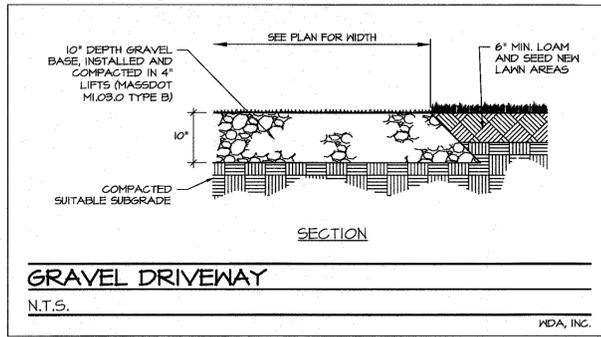
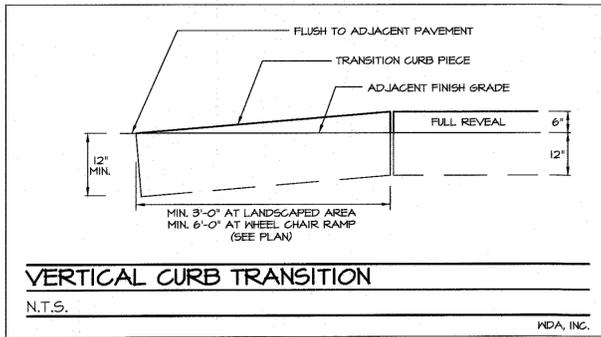
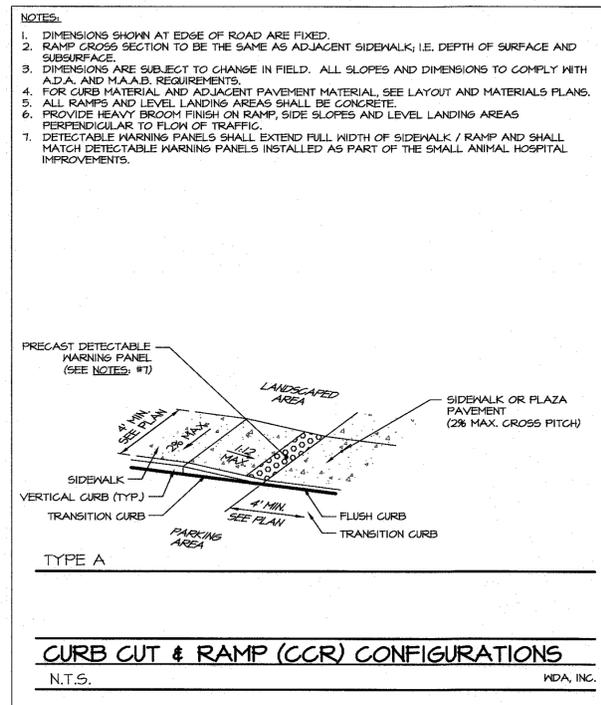
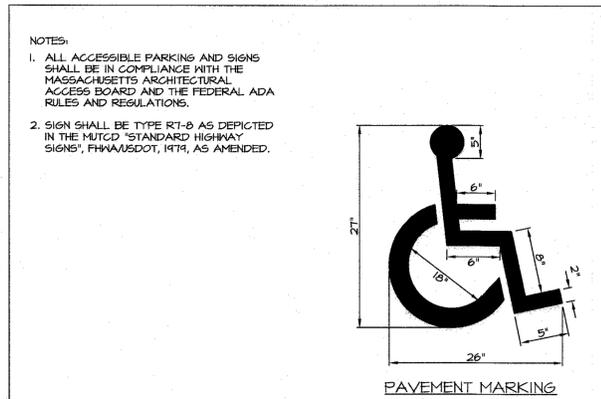
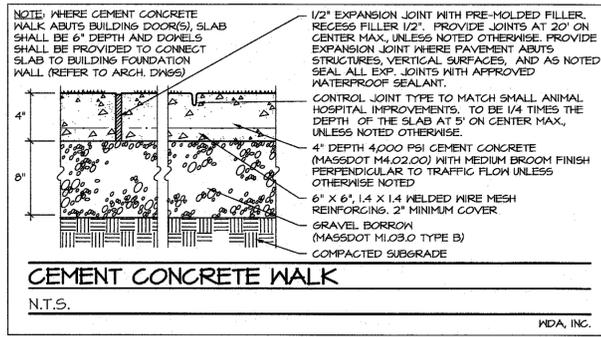
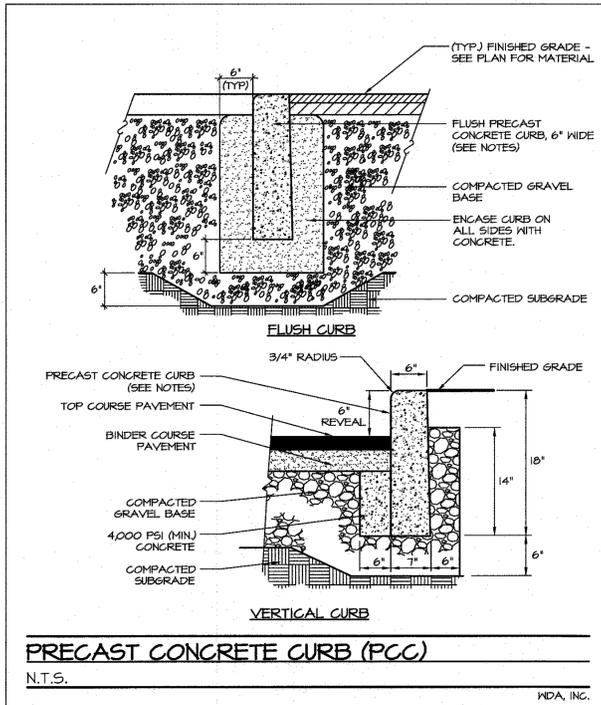
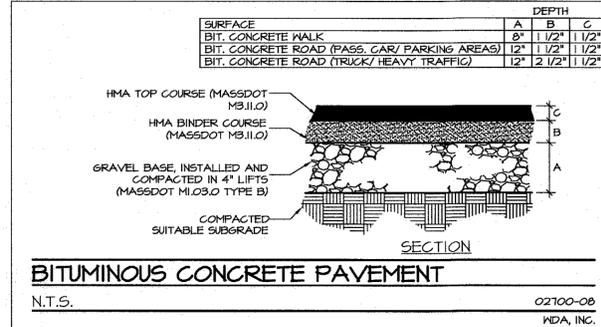
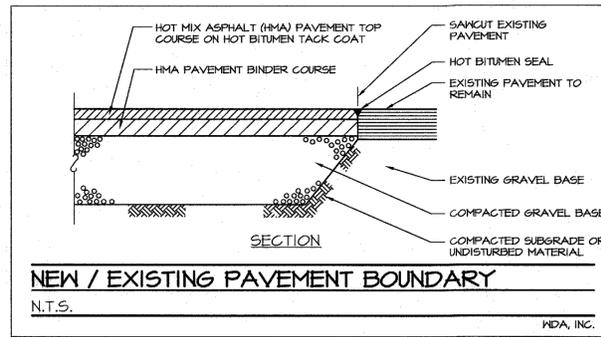
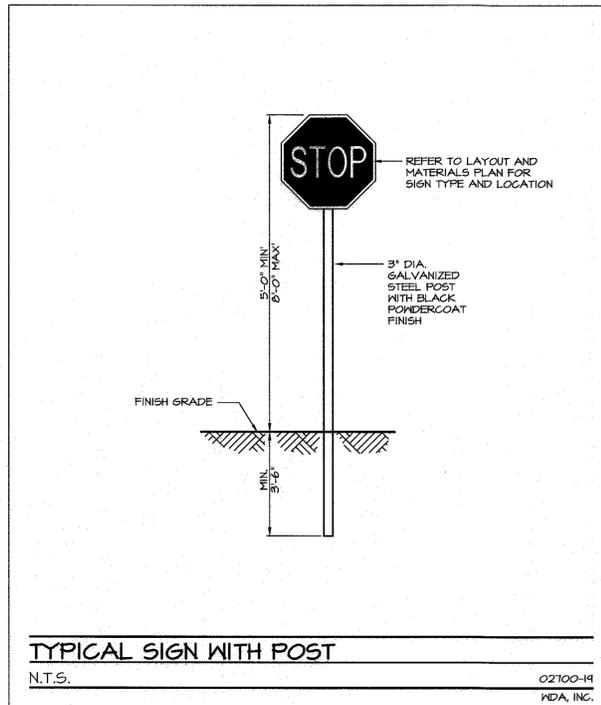
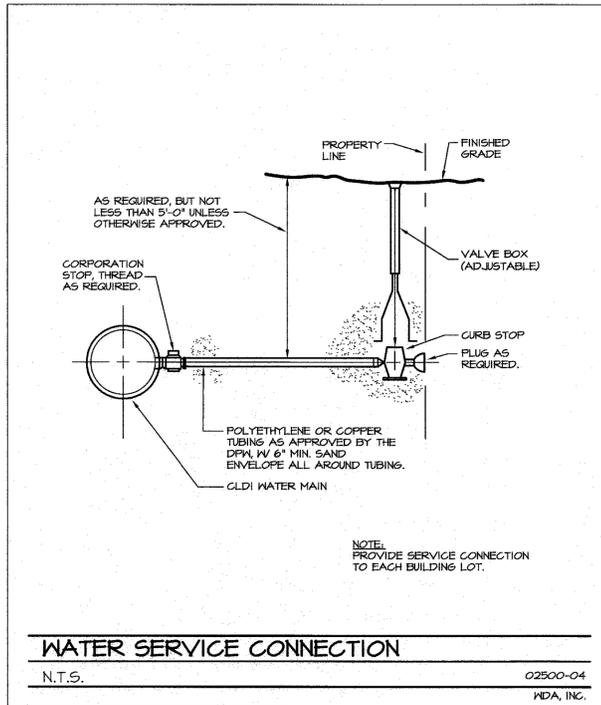
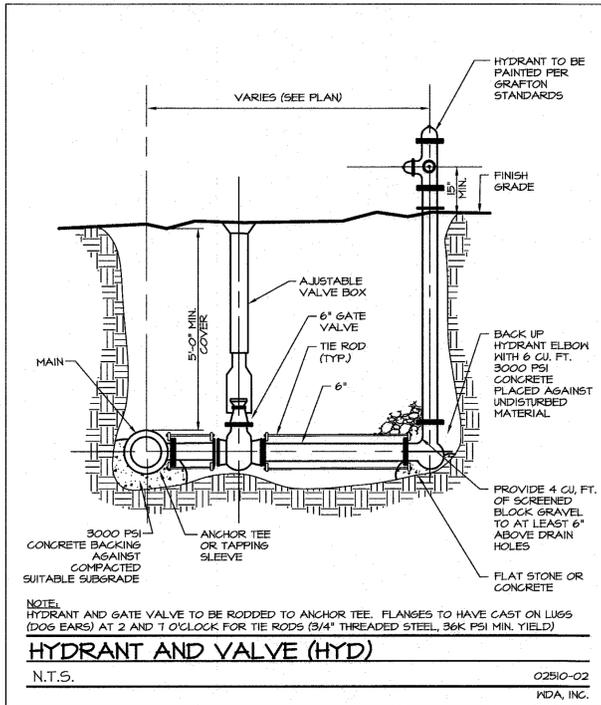
PREPARED BY:  
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TITLE:  
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**EQUINE ARENA**  
North Grafton, MA (Worcester County)  
PERMITTING

DATE: 03/29/16 SCALE: AS SHOWN  
JOB NO.: 001614 DWN. BY:  
FILE NO.: 0016580 CHK'D. BY:  
DRAWING NO.: 0016552B SHEET: 11

MUTCD REFERS TO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, 1988 EDITION (AS AMENDED) AND/OR STANDARD HIGHWAY SIGNS, 1978 (AS AMENDED), BOTH ISSUED BY THE USDOT/FHWA.  
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MHDSS REFERS TO MASS. HIGHWAY DEPT. STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, 1992 (AS AMENDED).  
DPW REFERS TO LOCAL DEPARTMENT OF PUBLIC WORKS.  
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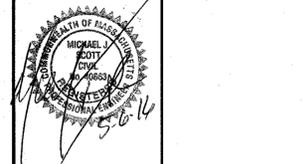


NOTES:  
 1. DIMENSIONS SHOWN AT EDGE OF ROAD ARE FIXED.  
 2. RAMP CROSS SECTION TO BE THE SAME AS ADJACENT SIDEWALK; I.E. DEPTH OF SURFACE AND SUBSURFACE.  
 3. DIMENSIONS ARE SUBJECT TO CHANGE IN FIELD. ALL SLOPES AND DIMENSIONS TO COMPLY WITH ADA AND M.A.A.B. REQUIREMENTS.  
 4. FOR CURB MATERIAL AND ADJACENT PAVEMENT MATERIAL, SEE LAYOUT AND MATERIALS PLANS.  
 5. ALL RAMP AND LEVEL LANDING AREAS SHALL BE CONCRETE.  
 6. PROVIDE HEAVY BROOM FINISH ON RAMP, SIDE SLOPES AND LEVEL LANDING AREAS PERPENDICULAR TO FLOW OF TRAFFIC.  
 7. DETECTABLE WARNING PANELS SHALL EXTEND FULL WIDTH OF SIDEWALK / RAMP AND SHALL MATCH DETECTABLE WARNING PANELS INSTALLED AS PART OF THE SMALL ANIMAL HOSPITAL IMPROVEMENTS.

MUTCD REFERS TO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, 1982 EDITION (AS AMENDED) AND/OR STANDARD HIGHWAY SIGNS, 1978 (AS AMENDED), BOTH ISSUED BY THE USDOT/FHWA.  
 AASHTO REFERS TO AASHTO STANDARD SPECIFICATIONS FOR TRANSPORTATION MATERIALS AND METHODS OF SAMPLING AND TESTING, PART 1 - SPECIFICATIONS, TENTH EDITION (AS AMENDED).  
 MHDSS REFERS TO MASS. HIGHWAY DEPT. STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, 1982 (AS AMENDED).  
 DPM REFERS TO LOCAL DEPARTMENT OF PUBLIC WORKS.  
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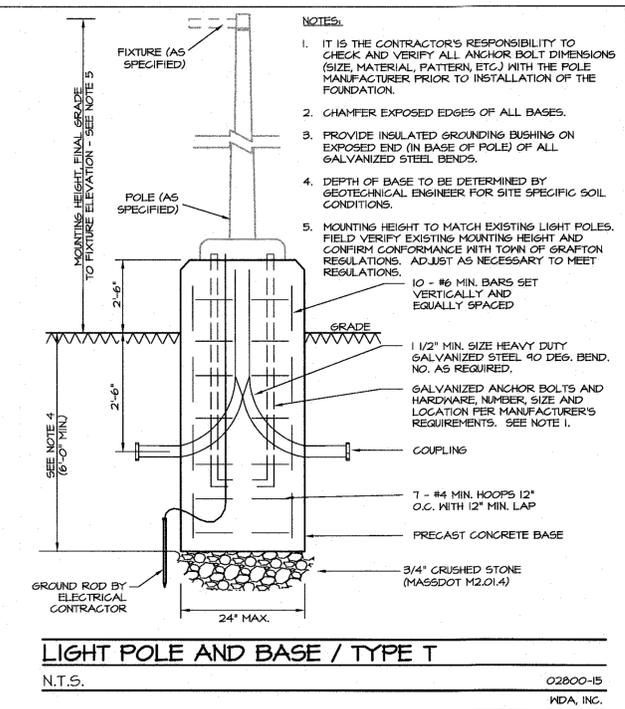
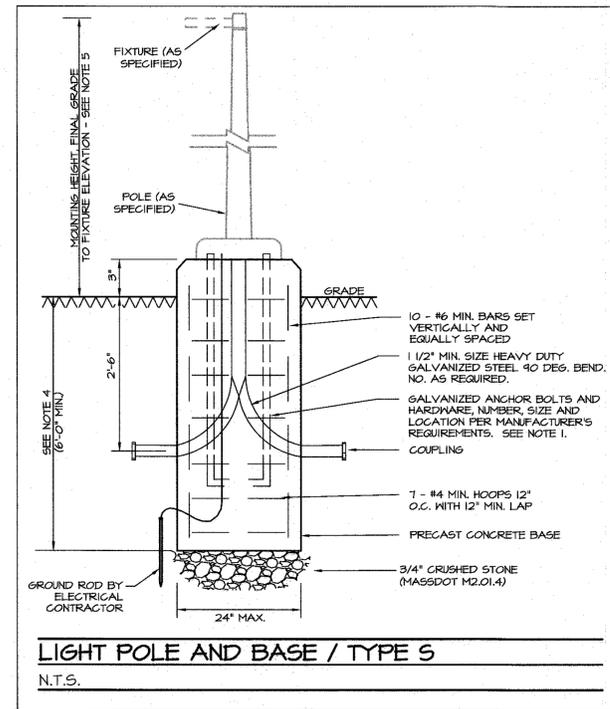
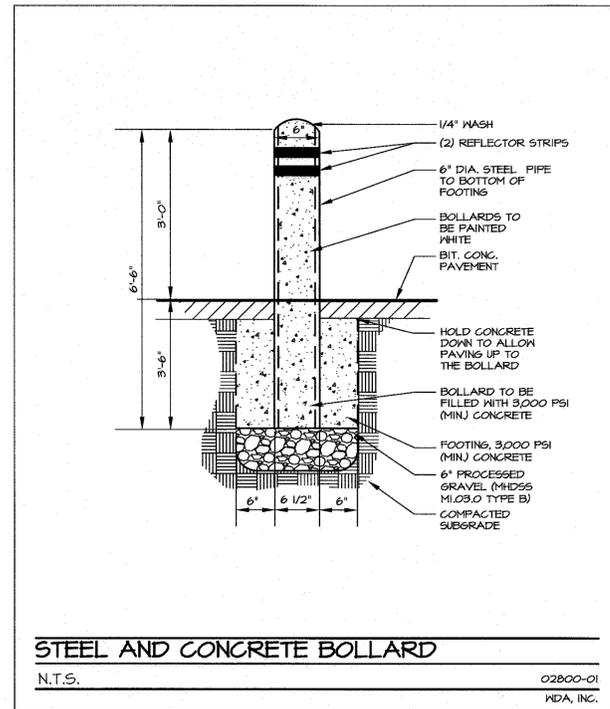


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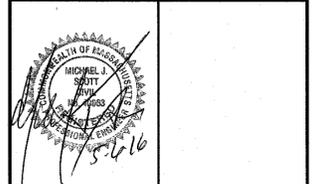
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DRAWING NO.:	0016553B	SHEET:	12



- NOTES:**
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO CHECK AND VERIFY ALL ANCHOR BOLT DIMENSIONS (SIZE, MATERIAL, PATTERN, ETC.) WITH THE POLE MANUFACTURER PRIOR TO INSTALLATION OF THE FOUNDATION.
  - CHAMFER EXPOSED EDGES OF ALL BASES.
  - PROVIDE INSULATED GROUNDING BUSHING ON EXPOSED END (IN BASE OF POLE) OF ALL GALVANIZED STEEL BENDS.
  - DEPTH OF BASE TO BE DETERMINED BY GEOTECHNICAL ENGINEER FOR SITE SPECIFIC SOIL CONDITIONS.
  - MOUNTING HEIGHT TO MATCH EXISTING LIGHT POLES. FIELD VERIFY EXISTING MOUNTING HEIGHT AND CONFIRM CONFORMANCE WITH TOWN OF GRAFTON REGULATIONS. ADJUST AS NECESSARY TO MEET REGULATIONS.

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MHDSS REFERS TO MASS. HIGHWAY DEPT. STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, 1998 (AS AMENDED).

DPW REFERS TO LOCAL DEPARTMENT OF PUBLIC WORKS.

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DRAWING NO.:	0016554B	SHEET:	13







