

LOCUS MAP  
SCALE: 1" = 2083'+/-

# 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

#### PREPARED BY:



WATERMAN DESIGN  
ASSOCIATES, INC.

31 East Main Street  
Westborough, MA 01581

508.366.6552  
508.366.6506 (FAX)  
WATERMANDESIGN.COM WDA@WDASSOC.COM

#### OWNER:

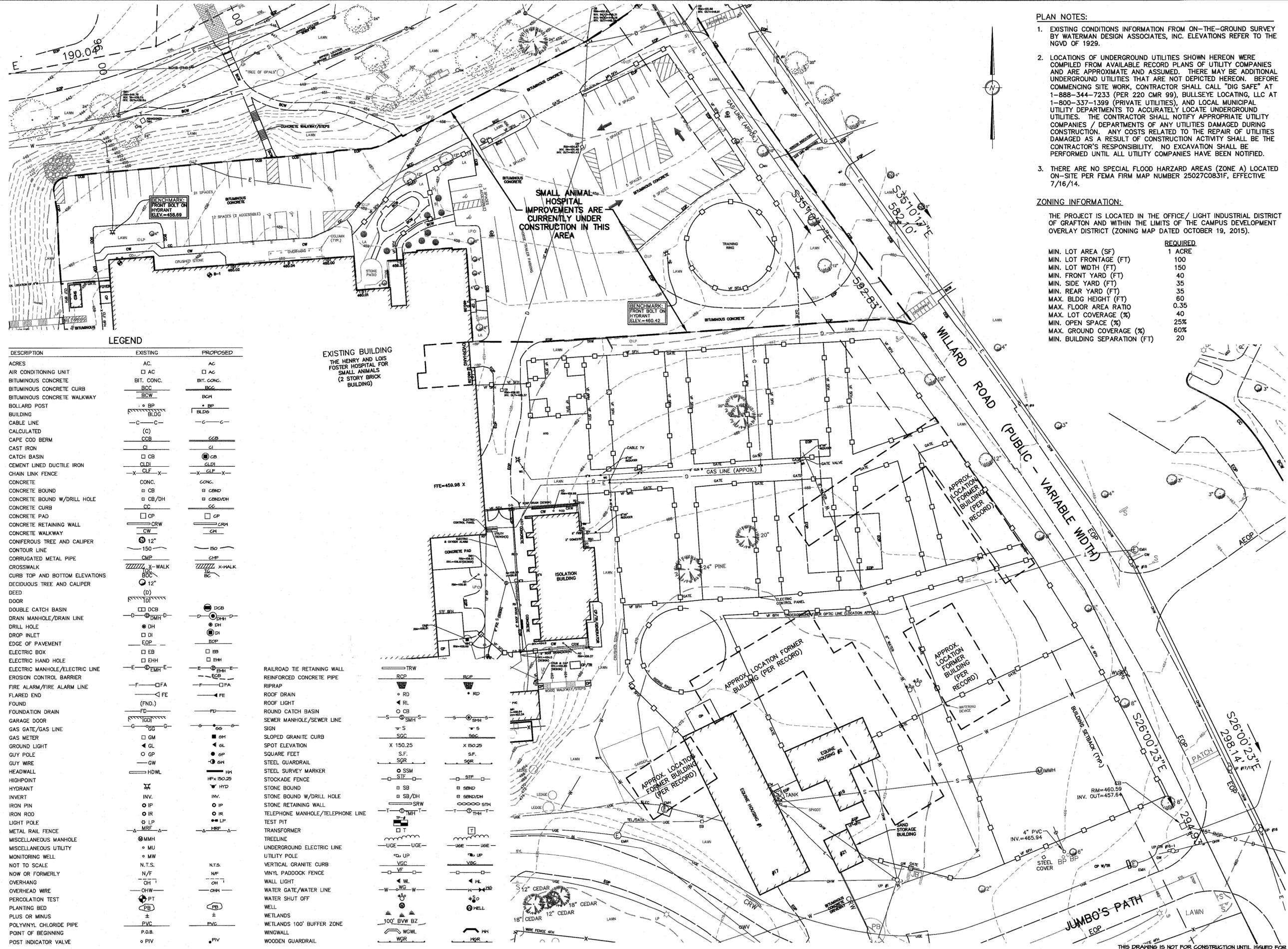
THE CUMMINGS SCHOOL OF  
VETERINARY MEDICINE AT  
TUFTS UNIVERSITY  
200 Westborough Drive  
North Grafton, MA

#### PREPARED FOR:

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

#### SHEET LIST:

- |          |                                       |                                 |
|----------|---------------------------------------|---------------------------------|
| 1.       | EXISTING CONDITIONS PLAN              | <u>ARCHITECTURAL DRAWINGS</u>   |
| 2.       | OVERVIEW PLAN                         | A100 MAIN FLOOR PLAN            |
| 3.       | SITE DEMOLITION PLAN                  | A101 ELEVATIONS                 |
| 4.       | LAYOUT AND MATERIALS PLAN             | A102 ELEVATIONS                 |
| 5.       | GRADING, DRAINAGE AND UTILITIES PLAN  | F1.1 FIRE PROTECTION FLOOR PLAN |
| 6.       | TURNING MOVEMENT EXHIBIT (FIRE TRUCK) |                                 |
| 7. - 10. | CONSTRUCTION DETAILS                  |                                 |



- PLAN NOTES:**
- EXISTING CONDITIONS INFORMATION FROM ON-THE-GROUND SURVEY BY WATERMAN DESIGN ASSOCIATES, INC. 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.

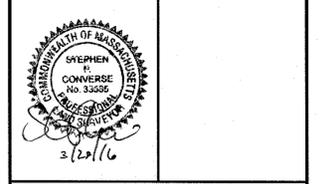
**ZONING INFORMATION:**

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

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 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:

**EXISTING CONDITIONS PLAN**

**EQUINE ARENA**

Grafton, MA (Worcester County)

PERMITTING

DATE: 3/29/16 SCALE: 1" = 30'

JOB NO.: 0016.14 DWN. BY:

FILE NO.: 0016001 CHK'D. BY:

DRAWING NO.: 0016001A SHEET: 1

**LEGEND**

DESCRIPTION	EXISTING	PROPOSED
ACRES	AC	AC
AIR CONDITIONING UNIT	AC	AC
BITUMINOUS CONCRETE	BIT. CONC.	BIT. CONC.
BITUMINOUS CONCRETE CURB	BC	BC
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"	150
CONTOUR LINE	CMP	CMP
CORRUGATED METAL PIPE	X-WALK	X-WALK
CROSSWALK	BC	BC
CURB TOP AND BOTTOM ELEVATIONS	12"	BC
DECIDUOUS TREE AND CALIPER	(D)	
DEED	DI	
DOOR	DCB	DCB
DOUBLE CATCH BASIN	DMH	DMH
DRAIN MANHOLE/RAIN LINE	DH	DH
DRILL HOLE	DI	DI
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	ECP	ECP
FIRE ALARM/FIRE ALARM LINE	FA	FA
FLARED END	FE	FE
FOUND	(FND.)	
FOUNDATION DRAIN	FD	FD
GARAGE DOOR	GD	GD
GAS GATE/GAS LINE	GS	GS
GAS METER	GM	GM
GROUND LIGHT	GL	GL
GUY POLE	GP	GP
GUY WIRE	GW	GW
HEADWALL	HDWL	HDWL
HIGHPOINT	HP	HP
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
P.O.B.	P.O.B.	P.O.B.
POST INDICATOR VALVE	PIV	PIV

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

RAILROAD TIE RETAINING WALL  
 REINFORCED CONCRETE PIPE  
 RIPRAP  
 ROOF DRAIN  
 ROOF LIGHT  
 ROUND CATCH BASIN  
 SEWER MANHOLE/SEWER LINE  
 SIGN  
 SLOPED GRANITE CURB  
 SPOT ELEVATION  
 SQUARE FEET  
 STEEL GUARDRAIL  
 STEEL SURVEY MARKER  
 STOCKADE FENCE  
 STONE BOUND  
 STONE BOUND W/DRILL HOLE  
 STONE RETAINING WALL  
 TELEPHONE MANHOLE/TELEPHONE LINE  
 TEST PIT  
 TRANSFORMER  
 TREE LINE  
 UNDERGROUND ELECTRIC LINE  
 UTILITY POLE  
 VERTICAL GRANITE CURB  
 VINYL PADDOCK FENCE  
 WALL LIGHT  
 WATER GATE/WATER LINE  
 WATER SHUT OFF  
 WELL  
 WETLANDS  
 WETLANDS 100' BUFFER ZONE  
 WINGWALL  
 WOODEN GUARDRAIL

SMALL ANIMAL  
 HOSPITAL  
 IMPROVEMENTS ARE  
 CURRENTLY UNDER  
 CONSTRUCTION IN THIS  
 AREA

THIS DRAWING IS NOT FOR CONSTRUCTION UNTIL ISSUED FOR CONSTRUCTION BY WATERMAN DESIGN ASSOCIATES, INC.

**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	INIT.
A		INITIAL ISSUE	

PREPARED BY:  
  
 MICHAEL J. SMITH  
 CIVIL ENGINEER  
 08/18/16

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

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

TITLE:  
**OVERVIEW PLAN**  
**EQUINE ARENA**  
 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.:	0016252A	SHEET:	2

**DEMOLITION AND SITE PREPARATION NOTES:**

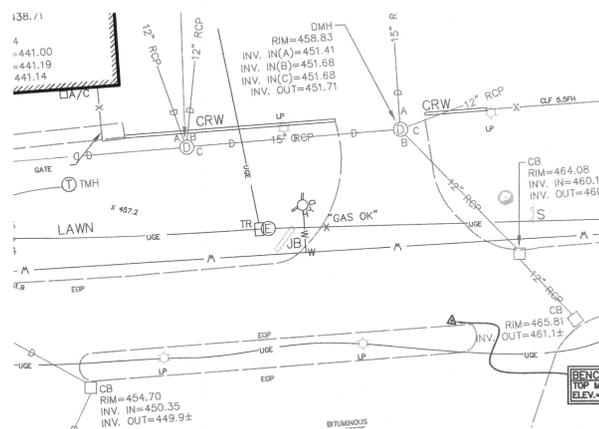
- SEE SHEET 1 FOR PLAN NOTES AND LEGEND.
- SEE SHEET 4 FOR LAYOUT AND MATERIALS NOTES AND SHEET 5 FOR GRADINGS, DRAINAGE AND UTILITY NOTES.
- LOCATIONS OF UNDERGROUND UTILITIES SHOWN HEREON WERE COMPILED FROM AVAILABLE RECORD PLANS OF UTILITY COMPANIES AND APPROXIMATE AND ASSUMED. THERE MAY BE ADDITIONAL UNDERGROUND UTILITIES THAT ARE NOT DEPICTED HEREON. BEFORE COMMENCING SITE WORK, CONTRACTOR SHALL CALL "DIG SAFE" AT 1-800-344-7239 (PER 220 CMR 94), A PRIVATE UTILITY LOCATING CONTRACTOR AND LOCAL 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/WITHIN 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 PERMITS FOR TRENCH EXCAVATION (PER 520 CMR 14).
- CONTRACTOR SHALL OBTAIN PERMITS FOR DEMOLITION (PER 310 CMR 7.1 & 14, 14 AND 453 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 DISPOSING OF OFF SITE ACCORDING TO APPLICABLE REGULATIONS (310 CMR 7.1 & 14 & 453 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 CAMPUS 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 1 FOR PLAN NOTES AND LEGEND.
- SEE SHEET 4 FOR LAYOUT AND MATERIALS NOTES AND SHEET 5 FOR GRADINGS, 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 CROSSES 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 STORED-WATER POLLUTION PREVENTION PLAN (SWPPP) WITH THE GRANTOR DPM AND AN ELECTRONIC NOTICE OF INTENT (ENOI) 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 ENTRANCES 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 FLOWS FROM THE SITE ONTO ADJACENT PORTIONS OF THE CAMPUS, 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 BAGS 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.

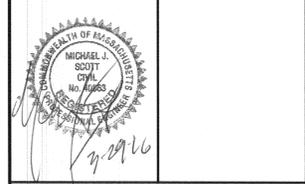
**SITE DEMOLITION KEY**

- REMOVE AND DISPOSE
- R4D BITUMINOUS CONCRETE / CONCRETE PAVEMENT
- SAWCUT BITUMINOUS CONCRETE / CONCRETE PAVEMENT



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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.: 0016351A SHEET: **3**

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**LAYOUT & MATERIALS NOTES:**

- SEE SHEET 1 FOR REFERENCES AND LEGEND.
- SEE SHEET 3 FOR DEMOLITION AND SITE PREPARATION NOTES AS WELL AS EROSION AND SEDIMENT CONTROL NOTES.
- REFER TO SHEET 5 FOR GRADING, DRAINAGE AND UTILITY NOTES.
- SMALL ANIMAL HOSPITAL IMPROVEMENTS CURRENTLY UNDER CONSTRUCTION ARE SHOWN HEREON 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 FHWA/USDOT MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, AS AMENDED.

**ZONING SUMMARY TABLE**

MIN. LOT AREA	REQUIRED (CDO)	PROVIDED
> 1 ACRE	> 1 ACRE	> 1 ACRE
MIN. LOT FRONTAGE	100 FEET	> 100 FEET
MIN. LOT WIDTH	150 FEET	> 150 FEET
MIN. FRONT YARD	40 FEET	> 40 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%	SEE SHEET 2
MIN. OPEN SPACE	25%	SEE SHEET 2
MAX. GROUND COVERAGE	60%	SEE SHEET 2
MIN. DISTANCE BETWEEN PROPOSED ARENA AND NEAREST BUILDING	20 FEET	67.0'- FEET

**SIGN SUMMARY TABLE**

SIGN ID NUMBER	SIZE OF SIGN		SCHEMATIC
	WIDTH	HEIGHT	
RI-1	30"	30"	
RS-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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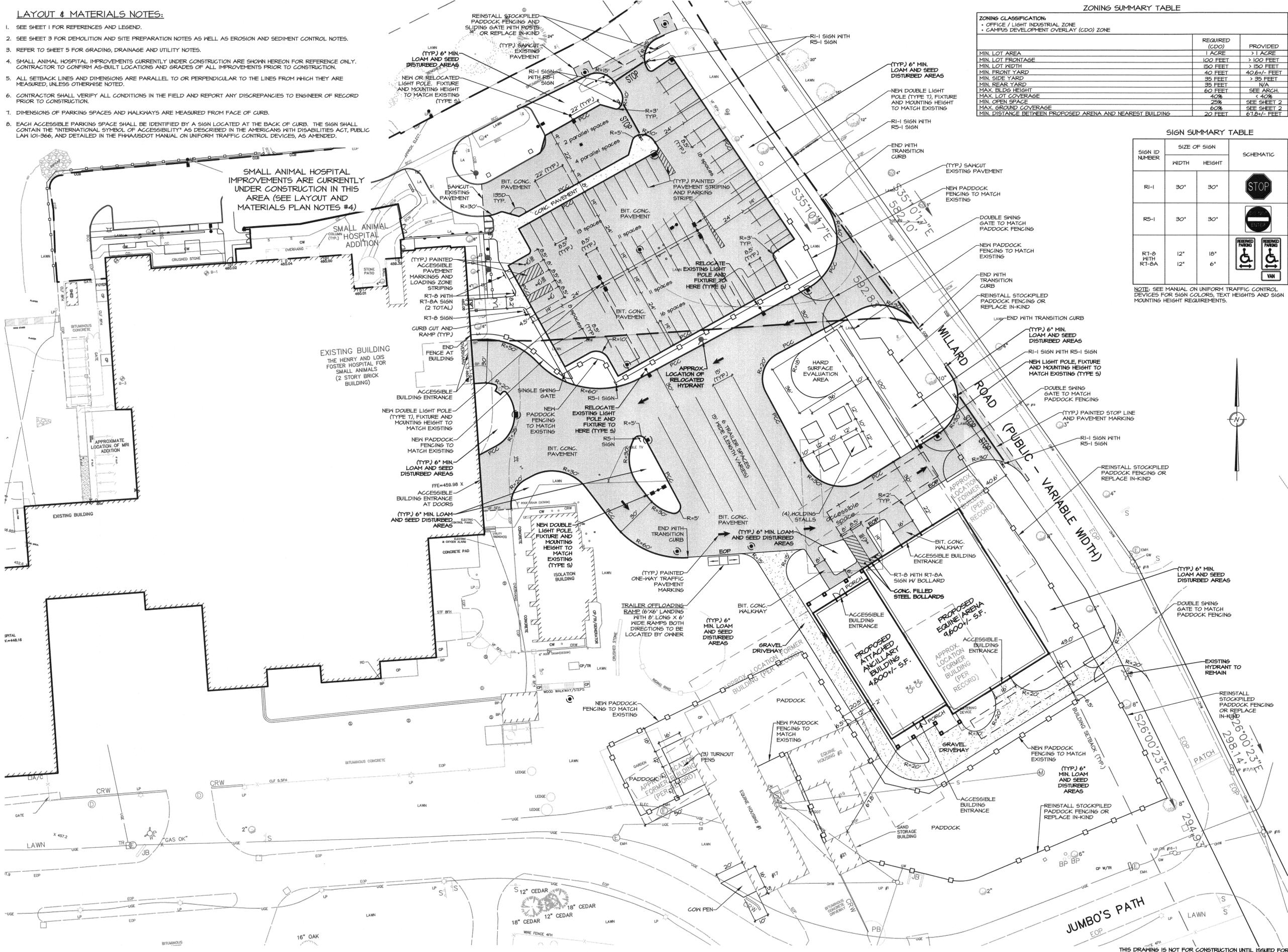
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 200 Westborough Drive  
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**TITLE:**  
**LAYOUT AND MATERIALS PLAN**  
**EQUINE ARENA**  
 Grafton, MA (Worcester County)  
**PERMITTING**

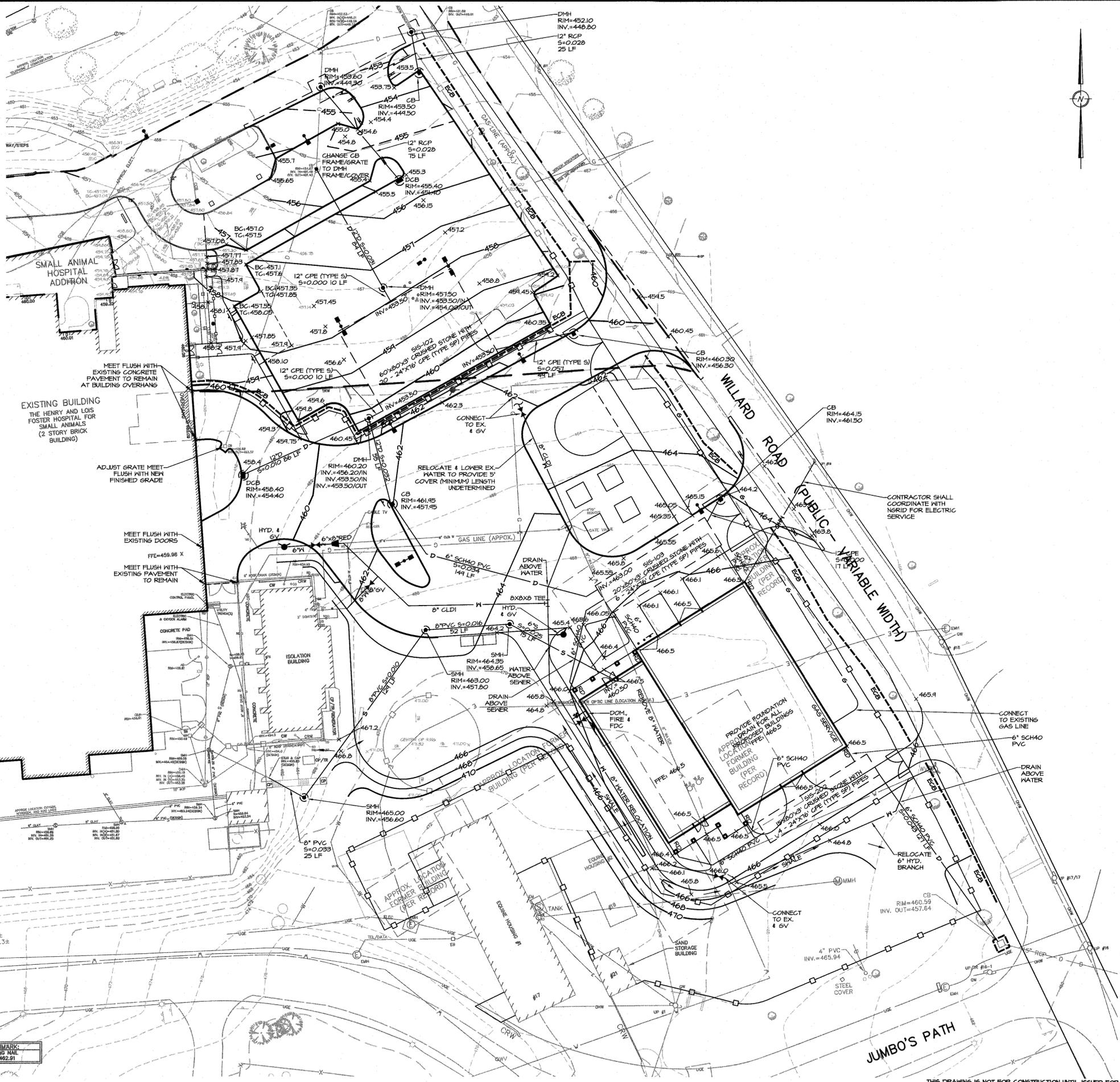
DATE:	3/29/16	SCALE:	1" = 30'
JOB NO.:	0016.14	DWN. BY:	
FILE NO.:	0016250	CHK'D. BY:	
DRAWING NO.:	0016253.A	SHEET:	4



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**GRADING, DRAINAGE AND UTILITY NOTES:**

- SEE SHEET 1 FOR PLAN NOTES AND LEGEND.
- SEE SHEET 3 FOR DEMOLITION AND SITE PREPARATION NOTES AS WELL AS EROSION AND SEDIMENT CONTROL NOTES.
- SHEET 4 FOR LAYOUT AND MATERIALS 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 "811 SAFE" AT 1-800-344-7233 (PER 220 CMR 91) 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 SHALL OBTAIN PERMIT(S) FOR TRENCH EXCAVATION (PER 520 CMR 14).
- CONTRACTOR SHALL CONFIRM DEPTHS OF PERTINENT UTILITIES BY TEST PIT AND NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES.
- THE CONTRACTOR SHALL NOTIFY THE OWNER 12 HOURS PRIOR TO ANY ANTICIPATED OR SCHEDULED UTILITY INTERRUPTIONS. THE CONTRACTOR SHALL NOT INTERRUPT UTILITY SERVICES WITHOUT THE OWNER'S CONSENT.
- 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, 10 & 14 AND 453 CMR 6). CONTRACTOR IS RESPONSIBLE FOR OBTAINING NECESSARY PERMITS FOR DEMOLITION, HAULING AND DISPOSING OF SAID MATERIALS.
- ALL DISTURBED AREAS SHALL BE LOAMED (SIX INCHES DEPTH) AND SEED (SUITABLE GRASS SEED MIX) UNLESS OTHERWISE SPECIFIED ON THE PLANS.
- EXISTING PAVEMENT SHALL BE SAW CUT, AND NEW PAVEMENT SHALL BE BLENDED SMOOTHLY TO MEET CUT EDGES.
- ALL UTILITY COVERS, GRATES, HATCHES, ETC., SHALL BE FLUSH WITH THE PAVEMENT FINISHED GRADE.
- FINAL GRADES SHALL BE PITCHED EVENLY BETWEEN SPOT ELEVATIONS.
- ALL GRADES IN ACCESSIBLE PARKING SPACES SHALL NOT EXCEED 2% IN ANY DIRECTION (PER 521 CMR 29.4.3).
- 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).
- 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 BUMPS AND HOODS.
- PIPES IN EACH STORMWATER INFILTRATION SYSTEM (SIS) SHALL BE SMOOTH INTERIOR CORRUGATED POLYETHYLENE (ASHTO CPE TYPE 5P). INLET AND OUTLET PIPES FROM EACH SIS SHALL BE SCHEDULE 40 PVC OR DUCTILE IRON AS REQUIRED BY CODE.
- A FOUNDATION DRAIN SHALL BE PROVIDED FOR ALL PROPOSED BUILDING FOUNDATIONS AND SHOULD BE RUN TO DAYLIGHT. DO NOT CONNECT FOUNDATION DRAIN TO SUBSURFACE INFILTRATION SYSTEMS.
- ROOF DRAINS TO BE PROVIDED AT BUILDING PERIMETER. REFER TO PLUMBING PLANS FOR SIZES.
- 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.
- ALL WATER MAIN PIPE AND FITTINGS SHALL BE CLDI CLASS 52 (ANNA C15, C10 & C104) WITH RUBBER GASKETED JOINTS (ANNA III), UNLESS OTHERWISE NOTED. ALL WATER SERVICES TO BE PRESSURE RATED PE OR COPPER AS REQUIRED/APPROVED BY DPM. PROVIDE 5" MIN. COVER.
- 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 91.2 OF MASS. DEP "GUIDELINES AND POLICIES FOR PUBLIC WATER SYSTEMS" (AS DEFINED IN 910 CMR 22.02).
- 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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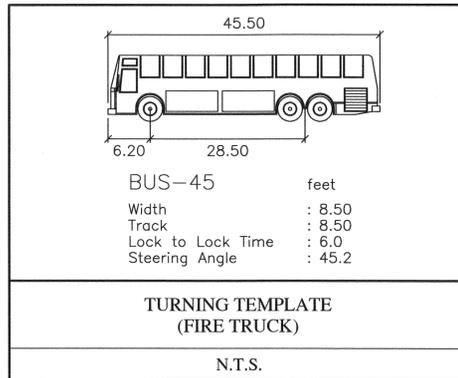
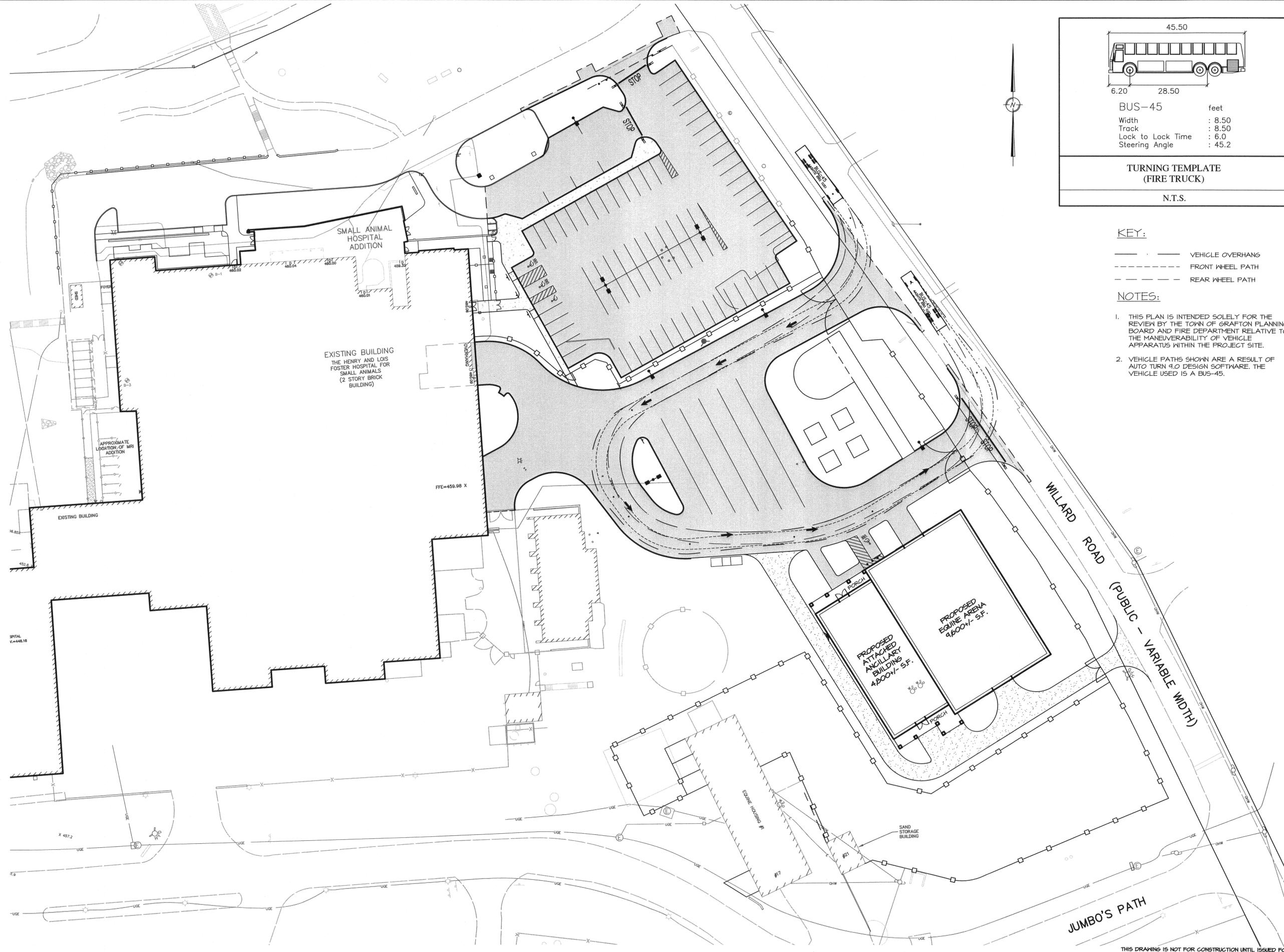
PREPARED BY:  
  
**WATERMAN DESIGN ASSOCIATES, INC.**  
 31 East Main Street  
 Westborough, MA 01581  
 508.366.6552  
 508.366.6506 (fax)  
 watermandesign.com wda@wdassoc.com

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

TITLE:  
**GRADING, DRAINAGE AND UTILITIES PLAN**  
**EQUINE ARENA**  
 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.:	0016352A	SHEET:	<b>5</b>

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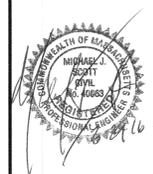


**KEY:**  
 - - - - - VEHICLE OVERHANG  
 - - - - - FRONT WHEEL PATH  
 - - - - - REAR WHEEL PATH

**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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 31 East Main Street  
 Westborough, MA 01581  
 508.366.6552  
 508.366.6506 (fax)  
 watermandesign.com wda@wassoc.com

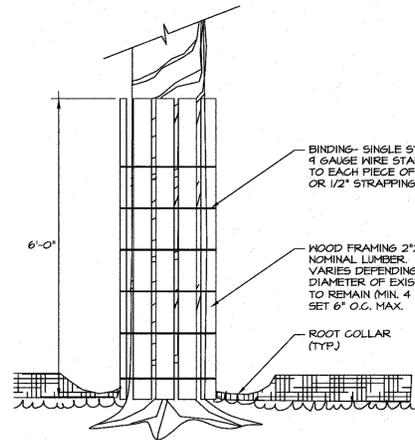
OWNER / APPLICANT:  
**THE CUMMINGS SCHOOL OF VETERINARY MEDICINE AT TUFTS UNIVERSITY**  
 200 Westborough Drive  
 North Grafton, MA

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

DATE:	3/29/16	SCALE:	1" = 30'
JOB NO.:	0016.14	DWN. BY:	
FILE NO.:	0016250	CHK'D. BY:	
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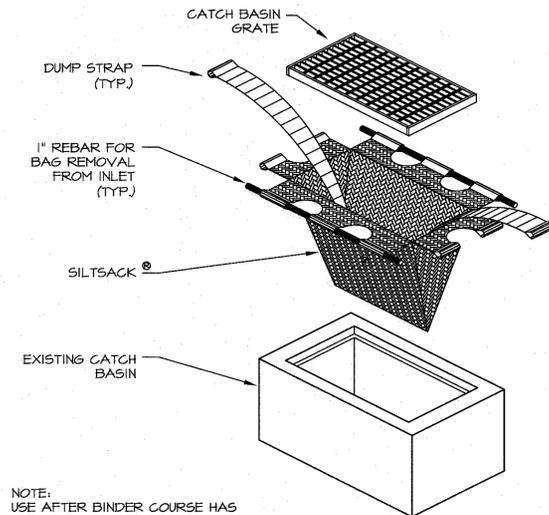
- NOTES:**
- USE FOR SINGLE TRUNK TREES WITHIN CONSTRUCTION AREA WHERE ROOT ZONE PROTECTION IS NOT FEASIBLE.
  - REMOVE ALL CHIPPER MULCH FROM ROOT CONE AFTER REMOVAL FROM SITE OF ALL HEAVY EQUIPMENT.
  - SHALL BE IN ACCORDANCE WITH MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS.



**TREE TRUNK PROTECTION**

N.T.S.

NDA, INC.

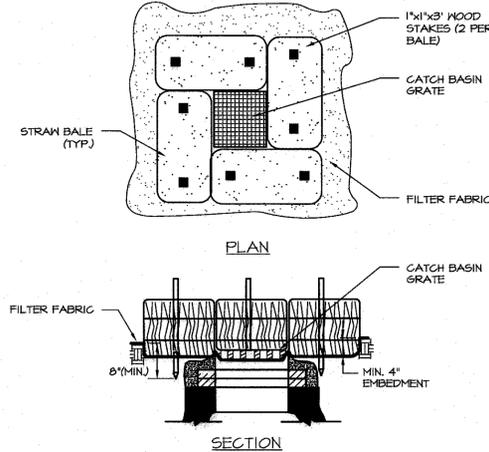


**NOTE:**  
USE AFTER BINDER COURSE HAS BEEN PAVED, PRIOR TO STABILIZATION OF SURROUNDING UPGRADIENT TERRAIN.

**INLET SEDIMENT CONTROL DEVICE**

N.T.S.

02370-10  
NDA, INC.

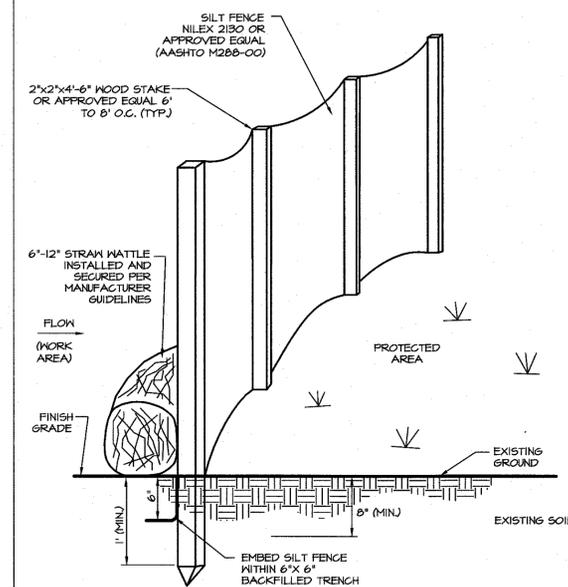


- NOTES:**
- TO BE USED OFF OF PAVEMENT OR PRIOR TO PAVING ONLY. USE INLET SEDIMENT CONTROL DEVICE FOR PAVEMENT AREAS (SEE DETAIL).
  - ENCLOSE STRUCTURE WITH STRAW BALES IMMEDIATELY AFTER CATCH BASIN CONSTRUCTION.
  - IF GRATE IS AGAINST EXISTING CURB THEN STRAW BALES ARE TO BE PLACED AROUND THREE SIDES 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.

02370-05  
NDA, INC.



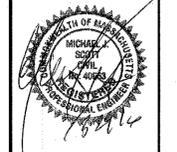
**EROSION CONTROL BARRIER (ECB)**

N.T.S.

UNCHKD  
02370-16  
NDA, INC.

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PREPARED BY:



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31 East Main Street  
Westborough, MA 01581

508.366.6552  
508.366.6506 (fax)  
watermandesign.com wda@wdsassoc.com

OWNER / APPLICANT:

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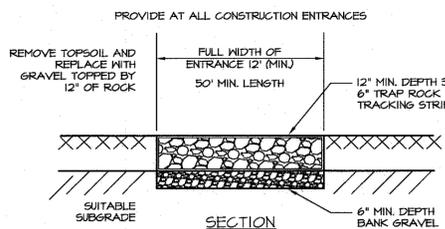
200 Westborough Drive  
North Grafton, MA

**CONSTRUCTION DETAILS**  
**EQUINE ARENA**

Grafton, MA  
(Worcester County)

PERMITTING

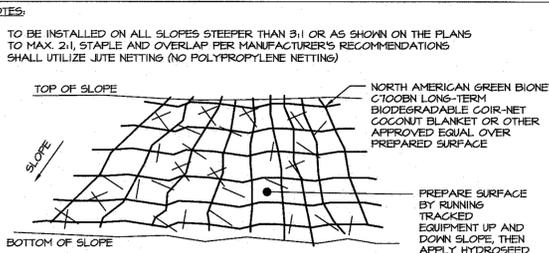
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JOB NO.:	0016.14	DWN. BY:	
FILE NO.:	0016550	CHK'D. BY:	
DRAWING NO.:	0016551A	SHEET:	7



**CONSTRUCTION ENTRANCE**

N.T.S.

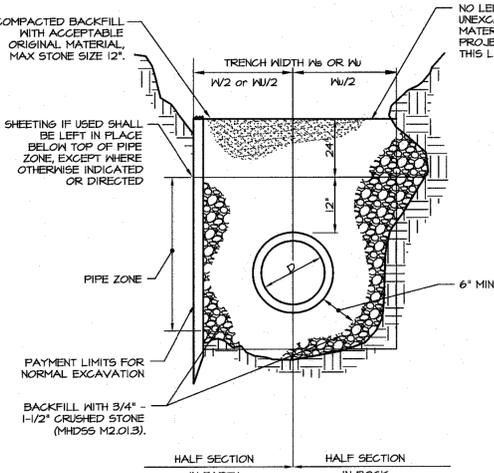
02100-13  
NDA, INC.



**SLOPE STABILIZATION MEASURES**

N.T.S.

NDA, INC.

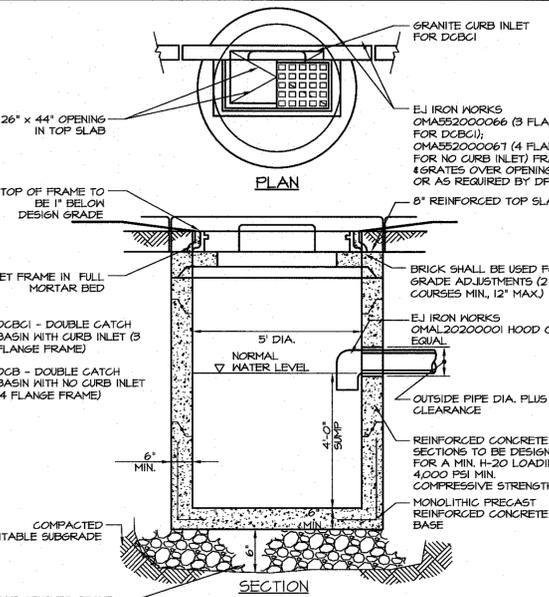


**DRAIN TRENCH SECTION**

N.T.S.

PER WESTBOROUGH DPM DETAILS

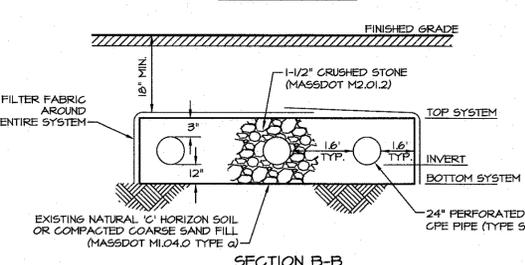
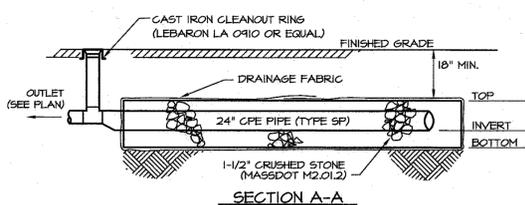
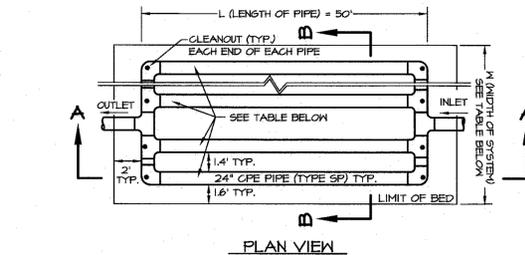
WB-2500-03  
NDA, INC.



**DOUBLE GRATE CATCH BASIN (DCB)**

N.T.S.

02600-03  
NDA, INC.



SIS #	(L) PIPE LENGTH (FEET)	(W) SYSTEM WIDTH (FEET)	BOTTOM SYSTEM ELEV.	NUMBER OF PIPES	PIPE DIA. (INCHES)	PIPE LENGTH (FEET)	INVERT ELEV.	TOP OF SYSTEM ELEV.
102	80	63	453.0	17	24	76	453.5	456.0
103	80	16	461.0	4	24	76	461.5	464.0
202	80	16	461.0	4	24	76	461.5	464.0

**STORMWATER INFILTRATION SYSTEM (SIS)**

N.T.S.

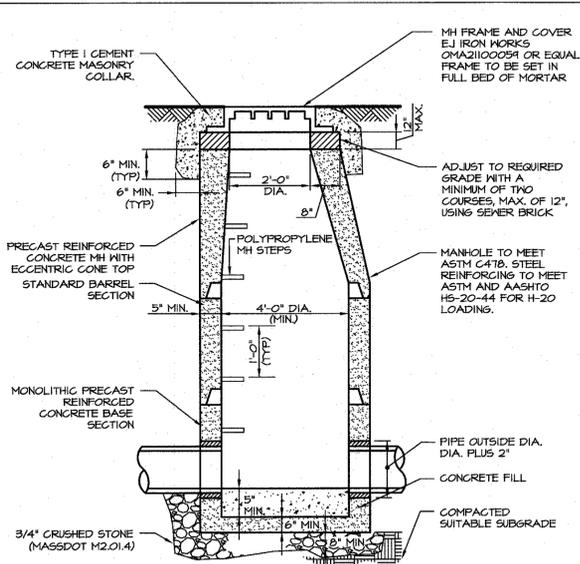
02600-23  
NDA, INC.

MTCO REFERS TO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, 1980 EDITION (AS AMENDED) AND/OR STANDARD HIGHWAY SIGNS, LETS (AS AMENDED), BOTH ISSUED BY THE USDOT/FHWA.

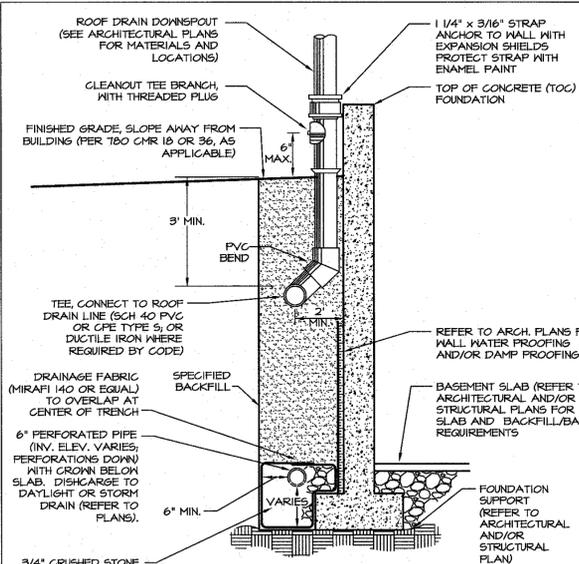
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MHDS REFERS TO MASS. HIGHWAY DEPT. STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, 1988 (AS AMENDED).

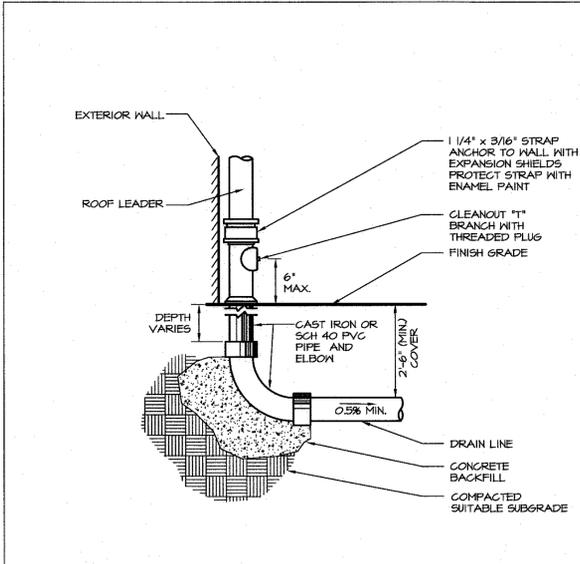
DPM REFERS TO LOCAL DEPARTMENT OF PUBLIC WORKS.  
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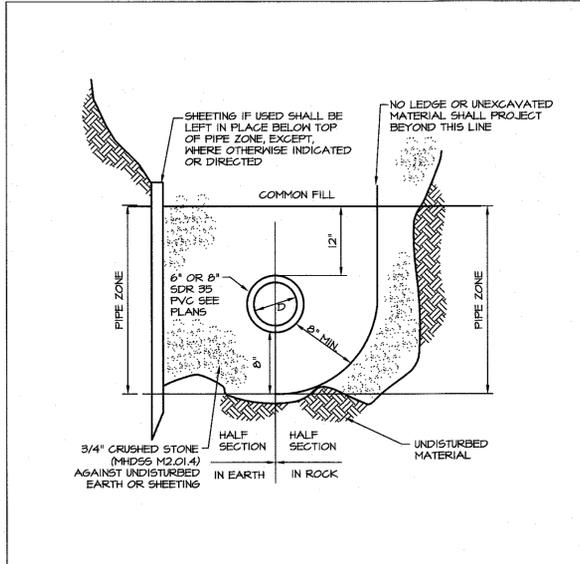
**DRAIN MANHOLE (DMH)**  
N.T.S. 02600-04 WDA, INC.



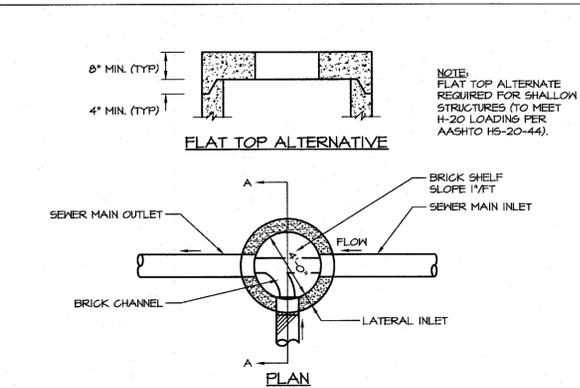
**FOUNDATION DRAIN (FD) & ROOF DRAIN (RD)**  
N.T.S. 02600-07 WDA, INC.



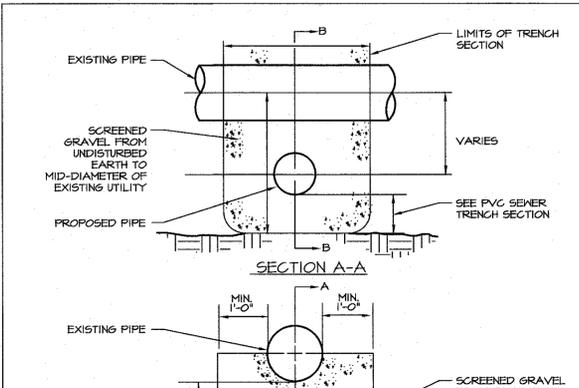
**ROOF LEADER CONNECTION**  
N.T.S. 02600-08 WDA, INC.



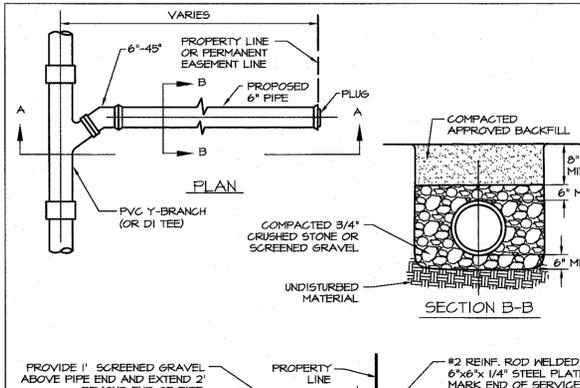
**PVC SEWER TRENCH**  
N.T.S. 02500-01-GRAFTON WDA, INC.



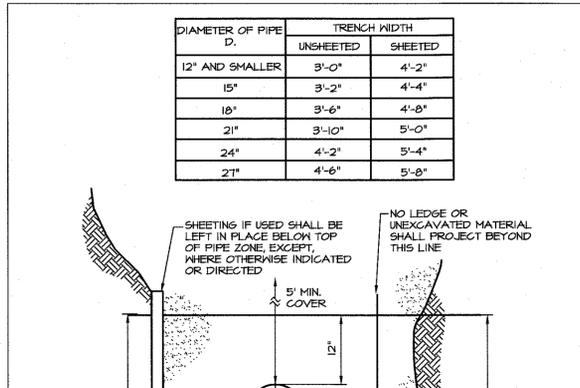
**FLAT TOP ALTERNATIVE**  
N.T.S. 02530-02-GRAFTON WDA, INC.



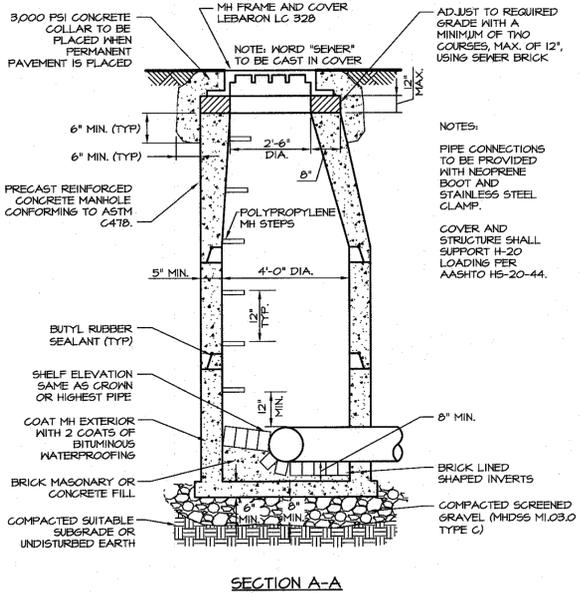
**UTILITY CROSSING**  
N.T.S. 02500-03-GRAFTON WDA, INC.



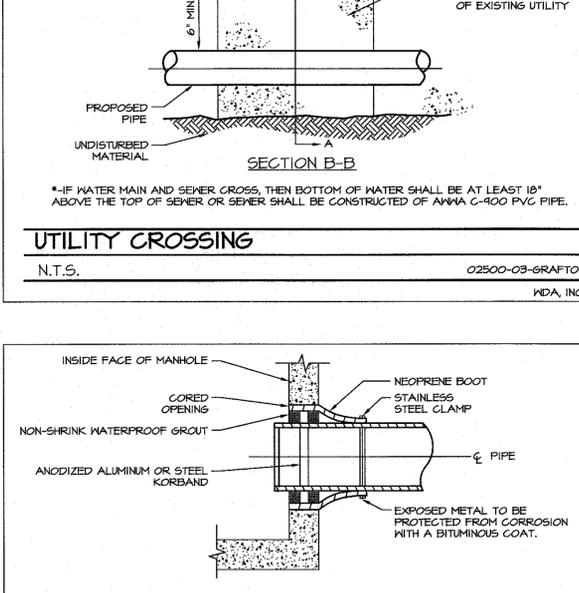
**SEWER SERVICE STUB**  
N.T.S. 02510-10-GRAFTON WDA, INC.



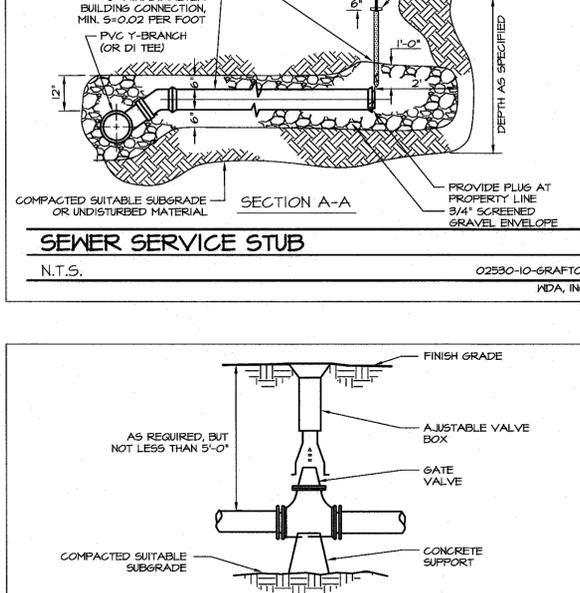
**WATER MAIN TRENCH SECTION**  
N.T.S. 02510-03 WDA, INC.



**SEWER MANHOLE (SMH)**  
N.T.S. 02530-02-GRAFTON WDA, INC.



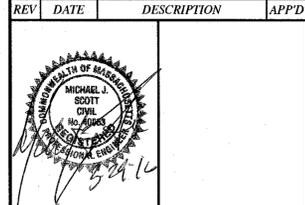
**SEWER PIPE CONNECTION**  
N.T.S. 02530-08 WDA, INC.



**WATER GATE VALVE (WG)**  
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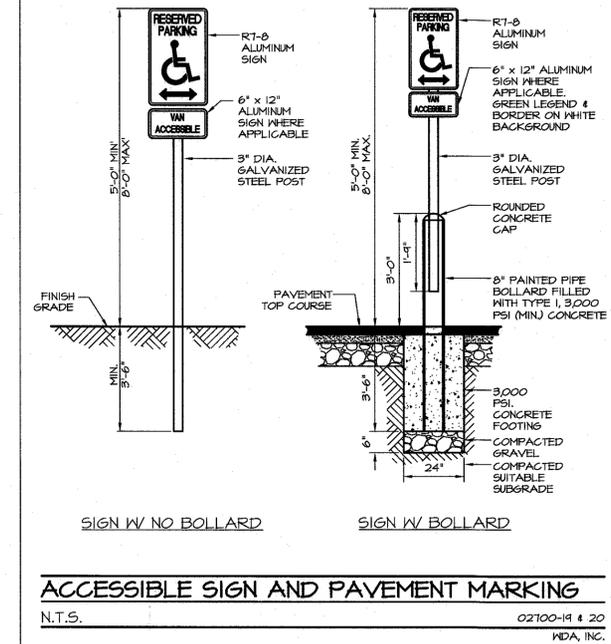
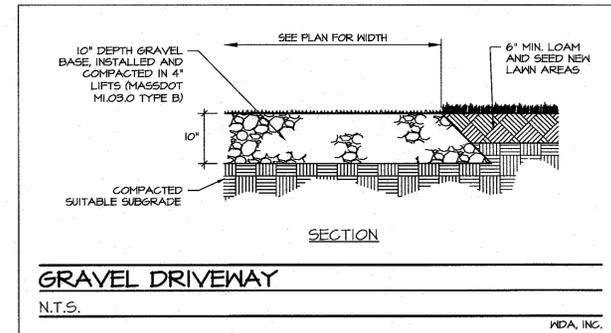
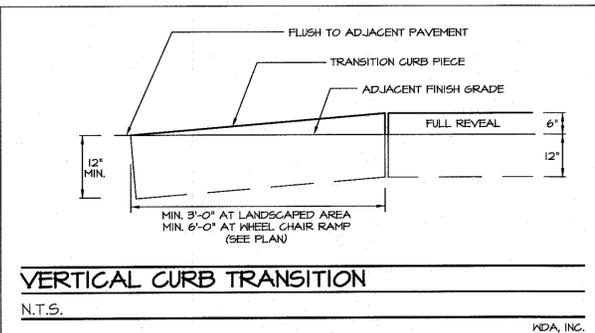
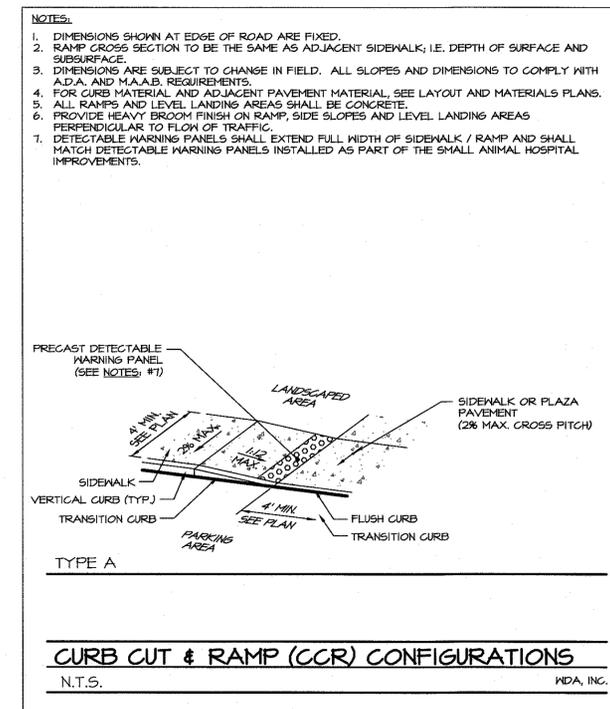
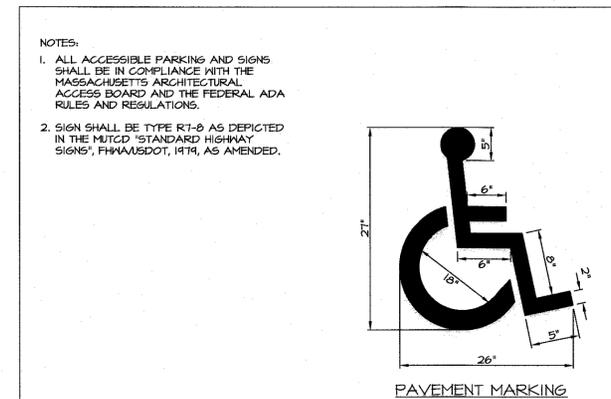
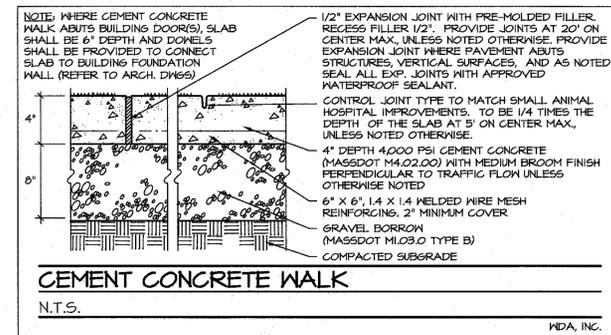
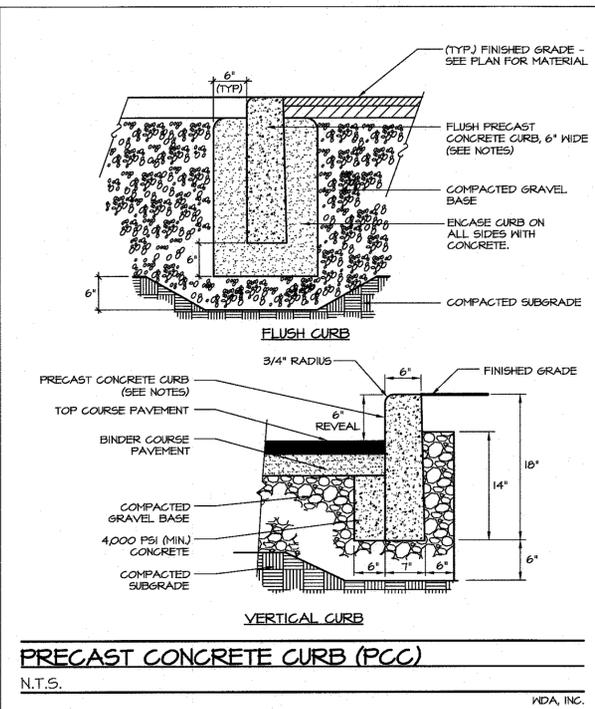
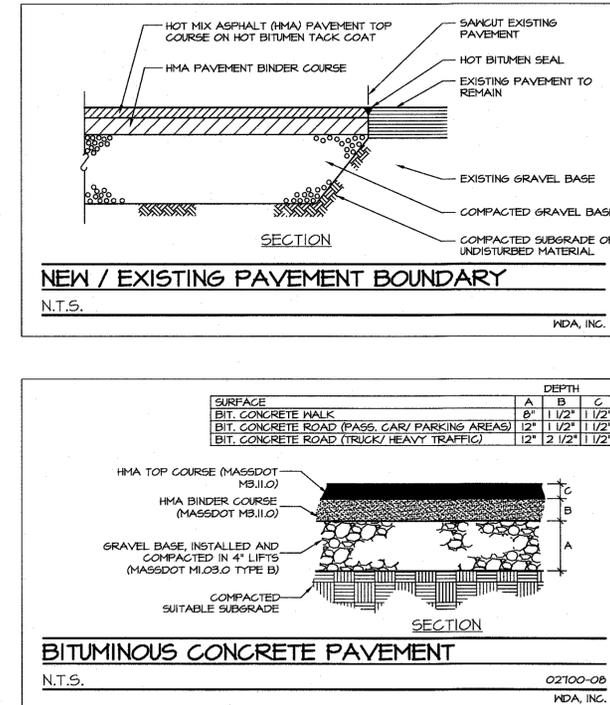
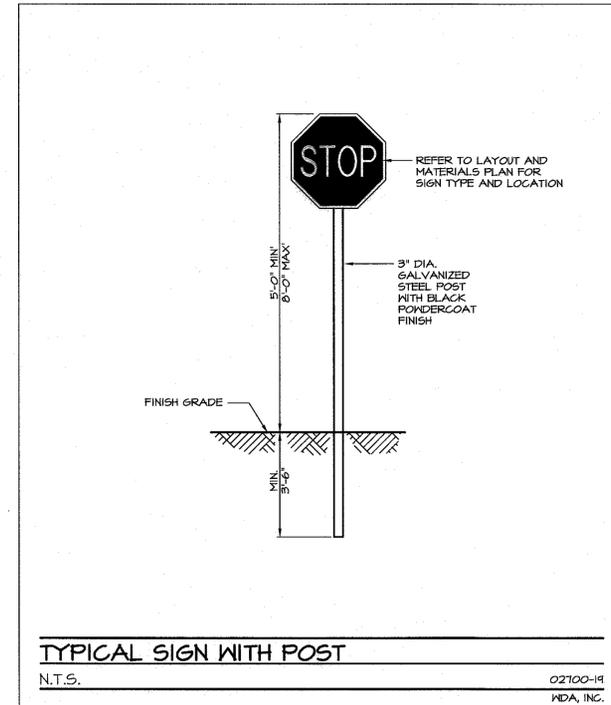
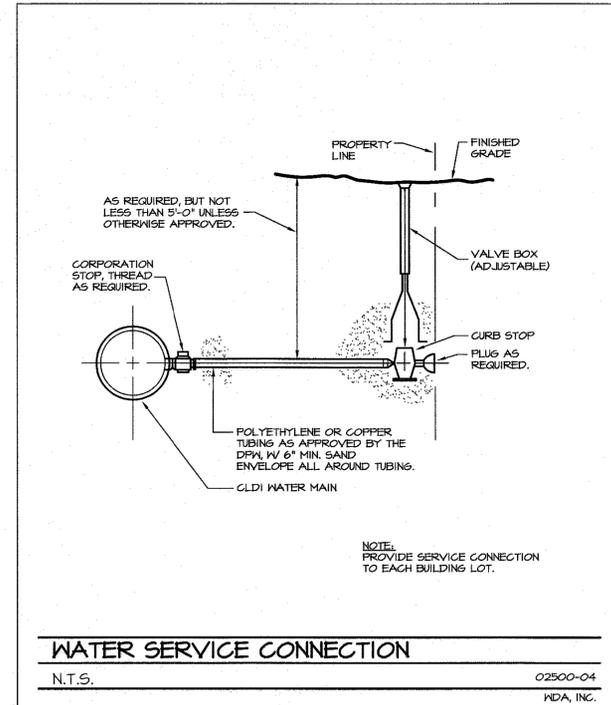
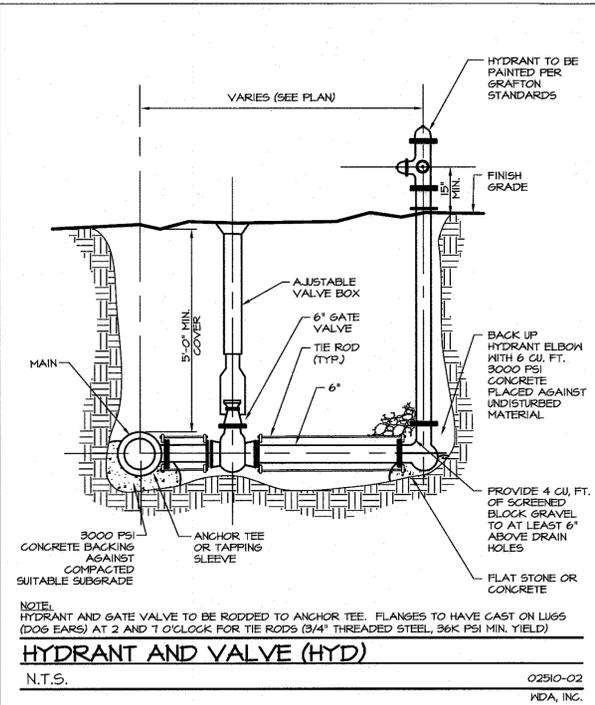
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**WDA**  
WATERMAN DESIGN ASSOCIATES, INC.  
31 East Main Street  
Westborough, MA 01581  
508.366.6552  
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200 Westborough Drive  
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TITLE:  
**CONSTRUCTION DETAILS**  
**EQUINE ARENA**  
Grafton, MA (Worcester County)  
PERMITTING

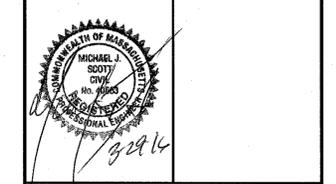
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FILE NO.:	0016550	CHK'D. BY:	
DRAWING NO.:	0016552A	SHEET:	8

MTC/D refers to MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, 1988 EDITION (AS AMENDED) AND/OR STANDARD HIGHWAY SIGNS, 1973 (AS AMENDED), BOTH ISSUED BY THE USDOT/FHWA.  
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MDS&S refers to MASS. HIGHWAY DEPT. STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, 1982 (AS AMENDED).  
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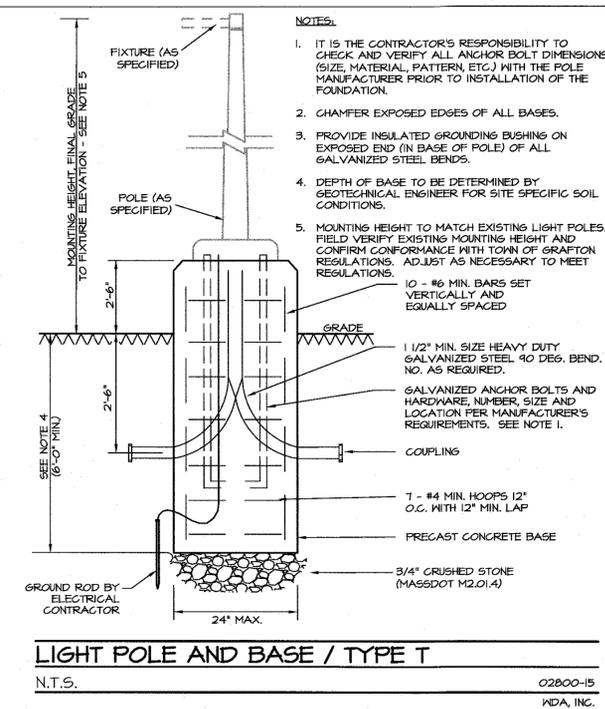
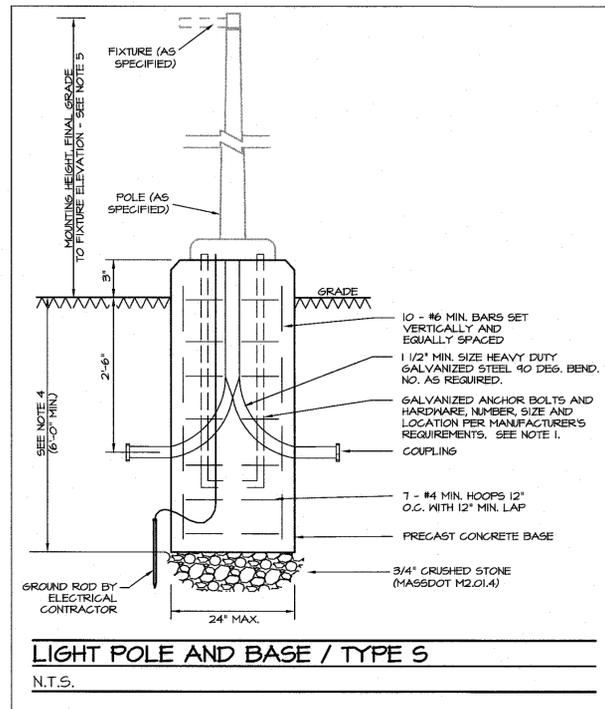
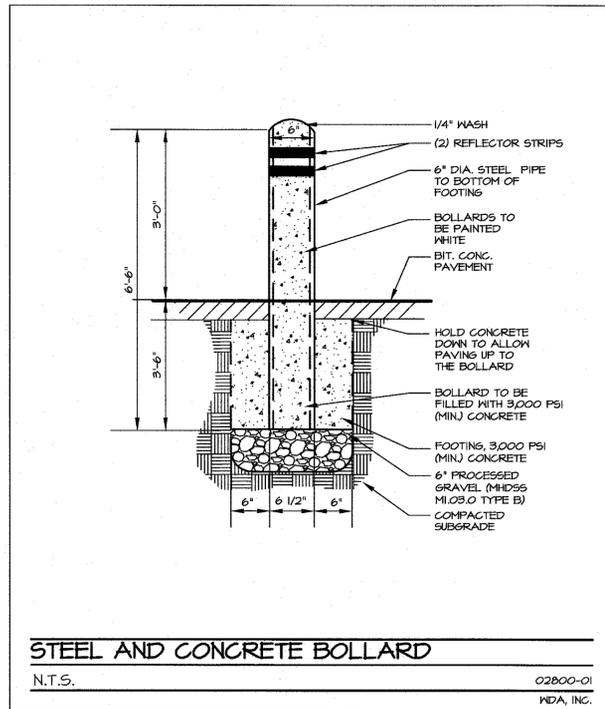
PREPARED BY:  
**WDA**  
WATERMAN DESIGN ASSOCIATES, INC.  
31 East Main Street  
Westborough, MA 01581  
508.366.6552  
508.366.6506 (fax)  
watermandesign.com wda@wdasoc.com

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

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

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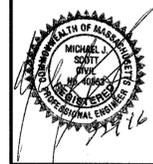
MUTCD REFERS TO MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS, 1982 EDITION (AS AMENDED) AND/OR STANDARD HIGHWAY SIGNS, 1978 (AS AMENDED), BOTH ISSUED BY THE USDOT/FHWA.  
AASHTO REFERS TO AASHTO STANDARD SPECIFICATIONS FOR TRANSPORTATION MATERIALS AND METHODS OF SAMPLING AND TESTING, PART I - SPECIFICATIONS, TWENTIETH EDITION (AS AMENDED), 1982 (AS AMENDED).  
MDS&S REFERS TO MASS. HIGHWAY DEPT. STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, 1982 (AS AMENDED).  
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- NOTES:**
1. 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.
  2. CHAMFER EXPOSED EDGES OF ALL BASES.
  3. PROVIDE INSULATED GROUNDING BUSHING ON EXPOSED END (IN BASE OF POLE) OF ALL GALVANIZED STEEL BENDS.
  4. DEPTH OF BASE TO BE DETERMINED BY GEOTECHNICAL ENGINEER FOR SITE SPECIFIC SOIL CONDITIONS.
  5. 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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