LEGEND

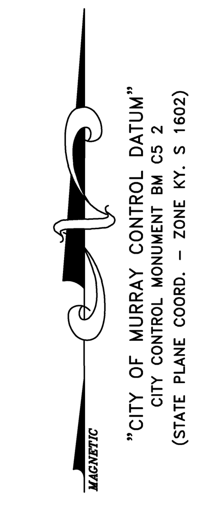
- EX. CABLE TV LINE
- EX. GAS SERVICE LINE
- EX. R.O.W. LINE
- FUTURE R.O.W. LINE
- EX. FENCE
- EX. WATER LINE
- EX. SANITARY SEWER LINE
- EX. ELECTRIC LINE
- EX. UNDERGROUND ELECTRIC LINE
- 507 — EX. CONTOUR LINE
- 497.74 — EX. SPOT ELEVATION
- EX. SANITARY SEWER CLEANOUT
- EX. SANITARY SEWER MANHOLE
- EXIST. R.O.W. POINT
- EX. WATER VALVE
- EX. LIGHT POLE
- EX. UTILITY POLE
- EX. TRAFFIC POLE
- EX. FIRE HYDRANT
- EX. SIGN
- EX. CONCRETE SIDEWALK/PAVEMENT
- EX. RIP RAP
- EX. PAINTED STRIPING
- PROPOSED CONCRETE SIDEWALK OR SURFACE
- PROPOSED STORM PIPING
- 870 — PROPOSED FINISH CONTOUR
- 512.50 / 512.50 TOP OF CURB EL. / 512.00 BOT. OF CURB EL. — PROPOSED SPOT ELEVATION

GENERAL NOTES

1. ALL PVC STORM OR DOWNSPOUT PIPING SHALL BE Sch. 40 WITH GASKETED OR GLUE JOINT.
2. ALL HIGH DENSITY POLYETHYLENE (HDPE) PIPING SHALL BE SEALED JOINT.
3. CONTRACTOR TO CONNECT ALL DOWNSPOUTS TO STORM PIPING WITH PVC DOWNSPOUT SHOE. TOP OF DOWNSPOUT SHOE SHALL BE 4" ABOVE FINISH GRADE.
4. ALL CONNECTIONS OF STORM DRAINAGE PIPES TO STORM STRUCTURES SHALL BE SEALED WITH NON-SHRINK GROUT, OR PER DRAIN BASIN MANUFACTURERS RECOMMENDATIONS.
5. MAXIMUM SLOPE OF ALL RAMPS SHOWN SHALL NOT EXCEED 1:12.
6. BEFORE STARTING SITE EXCAVATION, CONTRACTOR SHALL STRIP ALL TOPSOIL FROM THE PROJECT AREA AND STORE IN A PROTECTED LOCATION THAT SHALL NOT INTERFERE WITH PROJECT DEVELOPMENT. CONTRACTOR SHALL BE RESPONSIBLE FOR REDISTRIBUTING AND SUPPLYING NEW TOPSOIL IF REQUIRED (6" MIN.) IN LANDSCAPE AREAS.
7. IMPROPER GRADING/FINISHING OF ALL EXCAVATION AND FILL PLACEMENT WITHIN THE PROJECT LIMITS OR ADJACENT RIGHTS-OF-WAY THAT RESULTS IN DRAINAGE PROBLEMS SHALL BE REMOVED AND REINSTALLED TO IMPLEMENT POSITIVE DRAINAGE BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
8. BEFORE CONSTRUCTION, THE CONTRACTOR SHOULD CONTACT KENTUCKY UNDERGROUND AT 1-800-752-6007.
9. BENCHMARK INFORMATION AS PROVIDED SHALL BE USED TO CONFIRM EXISTING TOPOGRAPHIC CONDITIONS PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES. ANY CONFLICT AND/OR DISCREPANCIES ENCOUNTERED BETWEEN THE EXISTING TOPOGRAPHY SHOWN AND ACTUAL SITE CONDITIONS SHALL BE REPORTED TO ENGINEER IMMEDIATELY.
10. ALL SOFT AND UNSUITABLE MATERIAL IN AREAS TO RECEIVE FILL MUST BE OVER-EXCAVATED TO A STABLE SUB-BASE, AND BACKFILLED WITH AN APPROVED ENGINEERED BACKFILL. ALL BACKFILL MUST MEET THE COMPACTION REQUIREMENTS OF THE SPECIFICATIONS AND GEOTECHNICAL REPORT.
11. CONTRACTOR SHALL REVIEW ARCHITECTURAL PLANS FOR DOWN SPOUT PIPING LOCATIONS FOR CONNECTION TO STORM PIPING.
12. ALL BACKFILL MATERIALS SHALL BE AS SPECIFIED ON THE DETAILS AND SPECIFICATIONS.
13. ALL STORM SEWER PIPE SHALL HAVE A MINIMUM COVER OF 12" OVER THE TOP OF PIPE. CONTRACTOR SHALL PROVIDE MINIMUM COVER IN ALL CASES. IF DISCREPANCIES EXIST IN THE GRADING PLAN OR IF UNSEEN SITE CONDITIONS EXIST THAT WILL NOT ALLOW THIS COVER AS DESIGNED, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR SITE RECONNAISSANCE AND THIS DETERMINATION PRIOR TO BIDDING THE WORK.
14. ALL STORM SEWER PIPE BENEATH PROPOSED AND EXISTING PAVEMENT SHALL BE BACKFILLED FULL DEPTH WITH COMPACTED DGA. SEE DETAIL H, SHEET C1.05.
15. ANY DAMAGE AND REPAIR TO EXISTING ROADWAYS, STORM PIPING, UTILITIES AND ETC. SHALL BE BECOME THE RESPONSIBILITY OF THE CONTRACTOR.
16. THE GRADING PLAN DOES NOT INDICATE INDIVIDUAL STORM WATER FITTINGS REQUIRED FOR THIS INSTALLATION. CONTRACTOR IS RESPONSIBLE FOR OBTAINING AND INSTALLATION OF ALL FITTINGS AND COUPLINGS ALONG WITH THE PIPE AND STRUCTURES IN THE SCHEDULE AS PART OF THIS PROJECT. THIS INCLUDES, BUT IS NOT LIMITED TO "T" FITTINGS, "L" FITTINGS, DOUBLE AND TRIPLE MANIFOLDS, REDUCERS, BANDS, TIES, ETC. ALL FITTINGS SHALL BE APPROVED AND SUPPLIED BY THE PIPE MANUFACTURER.
17. THE CONTRACTOR IS RESPONSIBLE FOR FABRICATING TRANSITION FITTING FROM PROPOSED DOWNSPOUT TO PVC DOWNSPOUT SHOE. MATERIAL SHALL BE OF SAME MATERIAL AND COLOR AS DOWNSPOUT. SEE ARCHITECTURAL PLANS FOR DOWNSPOUT LOCATIONS AND DETAILS.
18. ALL GRASS SLOPES WHICH EQUAL OR EXCEED 3:1 (H:V) AND WHERE NOTED ON PLANS, SHALL UTILIZE CONTECH CONSTRUCTION PRODUCTS PERMANENT TURF REINFORCEMENT MATS C35 OR APPROVED EQUAL. MATS SHALL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS AND STANDARDS. CONTRACTOR SHALL COORDINATE INSTALLATION INSPECTION WITH MANUFACTURER.

TBM# EL.= 499.19

DIRECTIONAL ARROW ON FIRE HYDRANT SAID HYDRANT BEING LOCATED APPROXIMATELY 85 FEET NORTHEAST OF THE NORTHEAST CORNER OF THE CFSB CENTER AS SHOWN HEREON.
VERTICAL DATUM BASED ON CITY OF MURRAY CONTROL DATUM MONUMENT BM C5 2 (EL. = 547.69, NAVD-88)



GRAPHIC SCALE

(IN FEET)
1 inch = 20 ft.

STORM WATER RUNOFF CALCULATION SUMMARY:

METHOD OF STORM WATER CALCULATIONS:
RATIONAL FORMULA, DESIGN STORM; 10, 25, & 100

PRE DEVELOPMENT (Q=CIA)
Total Drainage Area: 0.703 Ac.
Coefficient of Runoff: 0.60 (Average)
I_{10}=7.00 In/Hr, I_{25}=7.81 In/Hr, I_{100}=8.94 In/Hr
Q_{10}=2.96 cfs, Q_{25}=3.29 cfs, Q_{100}=3.77 cfs

POST DEVELOPMENT SIDEWALK AREA BYPASSING DETENTION SYSTEM (Q=CIA)
Total Drainage Area: 0.043 Ac.
Coefficient of Runoff: 0.98
I10=7.00 In/Hr, I25=7.81 In/Hr, I100=8.94 In/Hr
Q10=0.29 cfs, Q25=0.33 cfs, Q100=0.38 cfs

ALLOWABLE DISCHARGE FROM DETENTION SYSTEM:
Q10=2.96 cfs − 0.29 cfs = 2.67 cfs
Q25=3.29 cfs − 0.33 cfs = 2.96 cfs
Q100=3.77 cfs − 0.38 cfs = 3.39 cfs

POST DEVELOPMENT HYDROGRAPHS
Total Drainage Area: 0.703 Ac.
Coefficient of Runoff: 0.98
$Q_{10\ peak}$ @ Tc = 4.82 cfs
$Q_{25\ peak}$ @ Tc = 5.38 cfs
$Q_{10\ peak}$ @ Tc = 6.16 cfs

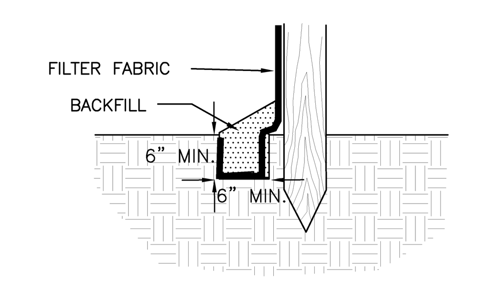
POND STORAGE
Storage Volume: 0.02 Ac-Ft
(200 L.F. 24" HDPE PIPE)

STRUCTURE
7 1/2" Orifice, I.E. 504.00
Emergency Spillway: Top of Grated Junction Box of Underground Detention Piping, Weir El. 509.50

Post Development Hydrograph Routed Through Outlet
10 Year: Peak Discharge = 2.60 cfs < 2.67 cfs
Peak Elevation = 507.01

25 Year: Peak Discharge = 2.85 cfs < 2.96 cfs
Peak Elevation = 507.62

100 Year: Peak Discharge = 3.52 cfs
Peak Elevation = 509.30

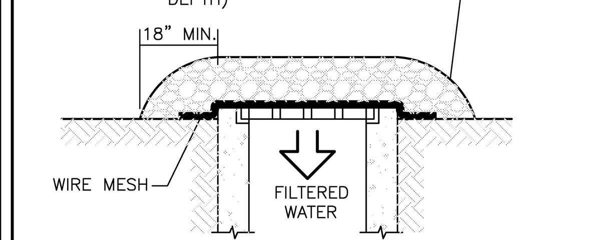


INSTRUCTIONS:

- MAKE SURE FENCE WILL CATCH ALL FLOW AREAS.
- DIG TRENCH 6" DEEP ACROSS SLOPE.
- UNROLL SILT FENCE ACROSS TRENCH.
- MAKE SURE STAKES ARE ON DOWNHILL SIDE OF TRENCH.
- DRIVE STAKES IN AGAINST DOWNHILL SIDE OF TRENCH.
- DRIVE STAKES UNTIL 12" OF FABRIC IS IN THE TRENCH.
- PUSH FABRIC INTO TRNECH; SPREAD ALONG BOTTOM.
- FILL TRENCH WILL SOIL AND TAMP DOWN.

SILT FENCE DETAIL
SCALE: N.T.S.

NOTE: INSTALL SILT FENCE AROUND SEDIMENT FILTER, SEE DETAIL 10/C3. GRAVEL (12" MIN. DEPTH)



SEDIMENT FILTER DETAIL
SCALE: N.T.S.

SITE SOIL RECOMMENDATION NOTE:
SOFT, UNSUITABLE SOILS WERE FOUND IN SEVERAL BORINGS ON THIS SITE. CONTRACTOR SHALL INCLUDE 6300 CUBIC YARDS OF OVER EXCAVATION & ENGINEERED BACKFILL IN BASE BID FOR THE CONTRACT. THIS OVER EXCAVATION SHALL BE CALCULATED FROM SUBGRADE DOWN TO SUITABLE SOILS. UNSUITABLE SOILS SHALL BE REMOVED FROM THE SITE. ALL EXCESS/OVER EXCAVATION SHALL BE MONITORED AND OBSERVED BY A QUALIFIED GEOTECHNICAL ENGINEER. CONSTRUCTION CONTRACT SHALL BE ADJUSTED BY CHANGE ORDER BASED ON ACTUAL QUANTITY OF OVER EXCAVATION/ENGINEERED BACKFILL REQUIRED AND MEASURED IN FIELD.

DISTURBED LIMITS = 0.94 ACRES
SUBMISSION OF NOTICE OF INTENT (NOI) NOT REQUIRED

ESTIMATED EARTHWORK & ENGINEERED FILL QUANTITIES:

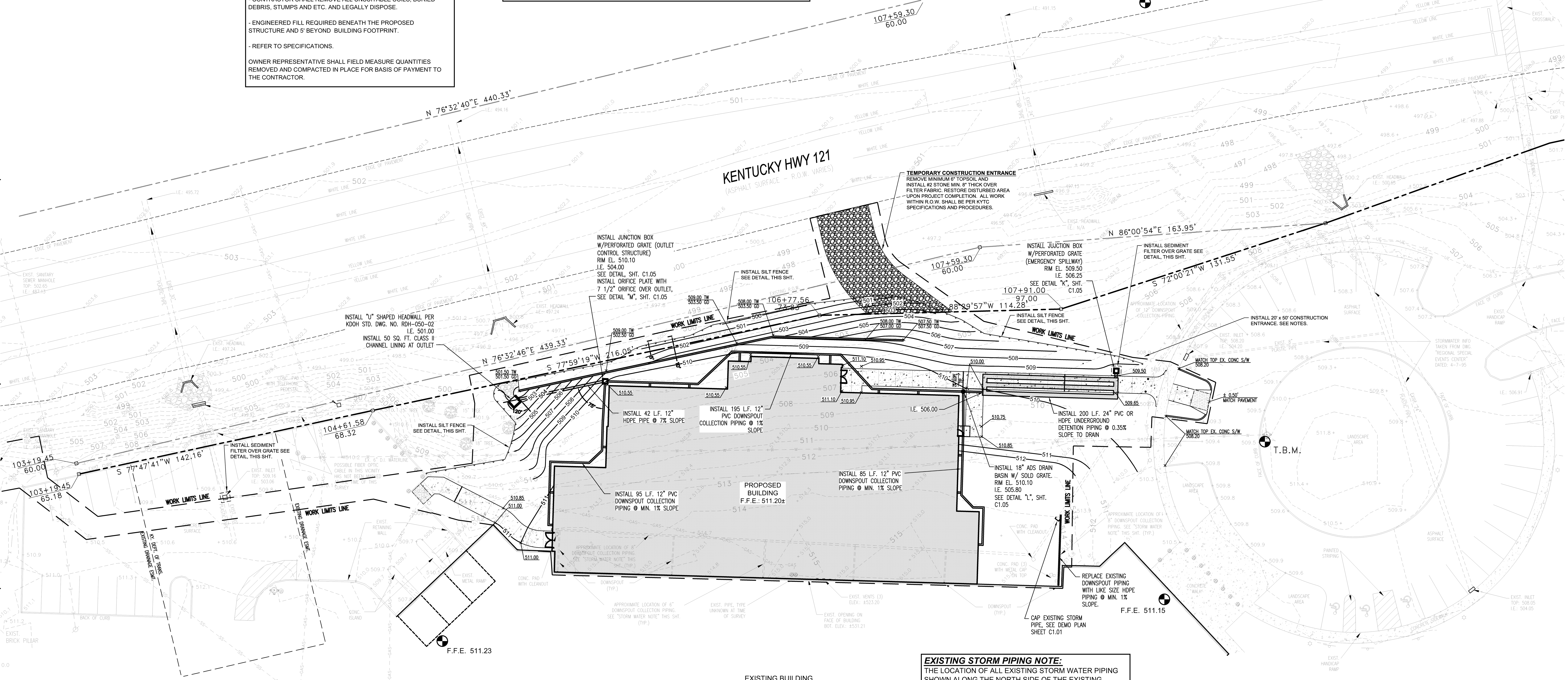
UNSUITABLE SOILS (HAUL OFF)	=	6,300 C.Y.
ENGINEERED FILL (COMPACTED)	=	6,950 C.Y.

- CONTRACTOR SHALL REMOVE ALL UNSUITABLE SOILS, BURIED DEBRIS, STUMPS AND ETC. AND LEGALLY DISPOSE.

- ENGINEERED FILL REQUIRED BENEATH THE PROPOSED STRUCTURE AND 5' BEYOND BUILDING FOOTPRINT.

- REFER TO SPECIFICATIONS.

OWNER REPRESENTATIVE SHALL FIELD MEASURE QUANTITIES REMOVED AND COMPACTED IN PLACE FOR BASIS OF PAYMENT TO THE CONTRACTOR.



EXISTING STORM PIPING NOTE:
THE LOCATION OF ALL EXISTING STORM WATER PIPING SHOWN ALONG THE NORTH SIDE OF THE EXISTING C.F.S.B. BUILDING SHOULD BE CONSIDERED APPROXIMATE ONLY. INFORMATION OBTAINED FROM "REGIONAL SPECIAL EVENTS CENTER, DATED: 4-7-95."

BACON | FARMER | WORKMAN
ENGINEERING & TESTING, INC.

500 SOUTH 17th STREET, PADUCAH, KY 42003, PHONE - 270.443.1995
403 NORTH COURT STREET, MARION, IL 62959, PHONE - 618.997.9190
1215 DIUGUID DRIVE, MURRAY, KY 42071, PHONE - 270.753.7307

(FORMERLY GEOTECH ENGINEERING & TESTING, INC.)

www.bfwengineers.com

COPYRIGHT ©, 2011 - BACON FARMER WORKMAN ENGINEERING & TESTING, INC.

STATE OF KENTUCKY — KENNETH D. McDANIEL 21911 — LICENSED PROFESSIONAL ENGINEER

Hastings+Chivetta
ARCHITECTURE • PLANNING • ENGINEERING
622 Emerson, Suite 200 | Saint Louis, Missouri 63141 | Tel.314.863.5717 | Fax.314.863.2823 | www.hastingschivetta.com

CIVIL: BACON, FARMER, WORKMAN ENGINEERING & TESTING, INC., 1215 DIUGUID DRIVE, MURRAY, KENTUCKY 42071
STRUCTURAL: BACON, FARMER, WORKMAN ENGINEERING & TESTING, INC., 403 N. COURT ST., MARION, ILLINOIS 62959
MPE: MARCUM ENGINEERING, LLC, 500 SOUTH 17TH STREET, PADUCAH, KENTUCKY, 42002

© Copyright 2012 Hastings+Chivetta Architects, Inc. Any reproduction or unauthorized use of this document or any part of this document without the express written consent of Hastings+Chivetta Architects, Inc. is prohibited.

MURRAY STATE UNIVERSITY
FACILITIES DESIGN AND CONSTRUCTION
DEPARTMENT FOR FACILITIES MANAGEMENT
615 GILBERT GRAVES DRIVE, MURRAY, KY 42071-3354
CHIEF FACILITIES OFFICER AND DIRECTOR FOR FACILITIES DESIGN & CONSTRUCTION
APPROVED FOR PROGRAM CONCEPT ONLY
DATE 01/06/12

SPORTS PRACTICE FACILITY
MURRAY STATE UNIVERSITY
MURRAY, KENTUCKY
BID SET - 2012-01-04

MURRAY STATE UNIVERSITY

REVISIONS

Date -	2012-01-04
H+C Project No -	2983.00
FDC Project No -	10-007
BFW Project No -	11194
Marcum Project No -	11557

Sheet Name -
SITE GRADING PLAN

C1.03